International Exhibition

INVENTCOR

POSTERS

6th edition

3-5 April 2025

Deva, Romania



SCAN ME

Opportunity
CORNELIUGROUP
Research-Innovation Association
Creation
Realization
INVENTCOR
Power of Creative Mind
Deva ROMANIA

www.corneliugroup.ro inventcordeva@gmail.com

Posters 6th International Exhibition INVENTCOR

3-5 April 2025 – Deva, Romania

International Exhibition INVENTCOR 6th edition

CORNELIUGROUP Research-Innovation Association in collaboration with **Politehnica University of Timisoara**, **"Lucian Blaga" University of Sibiu** and **Romanian Association of Alternative Technologies Sibiu (A.R.T.A. Sibiu)** is organizing in a hybrid format, the 6th edition of **International Exhibition INVENTCOR**, in the period 3-5 April 2025, at the **Cultural Center „Drăgan Muntean"** from **Deva** city, **ROMANIA**.

The event is dedicated to non-formal education for all ages. **INVENTCOR** presents inventions, research projects, products, educational programs and experimental teaching stands from universities, research institutes, companies and private inventors.

The main objective of **International Exhibition INVENTCOR 2025** is the importance of developing the **creative-innovative spirit**, through the **Power of Example** with the involvement of **young people** and the promotion of **Hunedoara County & Romania,** the theme of the 6th edition being **community**.

INVENTCOR is organized with the support of the City Hall of DEVA

Site: www.inventcor.ro FB event page: INVENTCOR 2025

https://facebook.com/events/s/inventcor-2025/2248073672191620/

Period & Location: 3-5 April 2025, **Cultural Center „Drăgan Muntean"**

Motto: Creation **O**pportunity **R**ealization in short, **CORe**!

Promo: https://youtu.be/6pJ2zudQvNw

Hashtag: #INVENTCOR2025 #CorneliuGroup # PowerofCreativeMind

Origin: Deva City





INVENTCOR President: Corneliu BIRTOK BANEASA

https://www.facebook.com/corneliu.birtokbaneasa

Be stubborn and follow your dream!

Posters 6th International Exhibition INVENTCOR

3-5 April 2025 – Deva, Romania

The **International Exhibition INVENTCOR** covers the following fields: environmental protection, materials, bio & nanotechnology, food industry, architecture, IT, electronics, computer science, automotive, aeronautics, publications, history, medicine, agriculture, textiles, includes **KidsCorner** and **InnovativeART**.

The **Power of Creative Mind Symposium** will be held within **INVENTCOR** with presentations on various topics: science, innovation, ecology, security, health, community, intellectual property, teaching methods, entrepreneurship, art and others.

The interest shown for the 6th edition of INVENTCOR 2024 is quantified in more than 450 registrations from 40 countries.

Participating Countries: Australia, Brazil, Belgium, Canada, Cambodia, Cameroon, Czech, Chile, China, Egypt, England, Finland, Georgia, Germany, Greece, Hungary, India, Indonesia, Iraq, Israel, Italy, Lebanon, Malaysia, Moldova, Philippines, Paraguay, Portugal, Romania, Saudi Arabia, Serbia, Slovakia, Spain, Sweden, Switzerland, Thailand, Turkey, Ukraine, USA, Vietnam and Zanzibar.

Co-organizer

Politehnica University of Timișoara
https://www.upt.ro/Universitatea-Politehnica-Timisoara_en.html

Faculty of Engineering Hunedoara
http://www.fih.upt.ro/v4/#

"Lucian Blaga" University of Sibiu
https://www.ulbsibiu.ro/en/

Romanian Association for Alternative Technologies Sibiu - A.R.T.A. Sibiu
http://artasibiu.ro
https://www.facebook.com/mihail.titu/
mihail.titu@yahoo.com

Posters 6th International Exhibition
INVENTCOR
3-5 April 2025 – Deva, Romania

Educational partners

"Gheorghe Şincai" Socio-Human Research Institute of the Romanian Academy - Târgu-Mureş
https://www.icsumures.ro/

Westphalian University of Applied Sciences – Germany
https://www.en.w-hs.de/

Technofest Innovations & Institute of Technology- Belgium
https://www.titu.edu.eu/

Hunedoara County Directorate for Sport and Youth
https://djsthunedoara.ro/

Hunedoara County Center of Excellence
https://cexhd.ro/despre/

Middle Technical University-Iraq
College of Health and Medical Techniques
https://mtu.edu.iq/

Hunedoara County School Inspectorate
http://isj.hd.edu.ro/index.php

Technical College TRANSILVANIA Deva
https://cttdeva.ro/

Energetic Technological High School "Dragomir Hurmuzescu" Deva
https://www.energeticdeva.ro/

"Universul" Theoretical High School Chisinau
https://www.liceul-universul.md/

Territorial Aeroclub "Constantin Manolache" Deva
https://www.facebook.com/AeroclubulDeva/?locale=ro_RO

The House of Science Deva
https://www.facebook.com/Casa-Stiintei-112843810370259/?ref=page_internal

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3-5 April 2025 – Deva, Romania

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Research and innovation partners

State Office for Inventions and Trademarks
https://www.osim.ro/en/

World Invention Intellectual Property associations
https://wiipa.org/about-us/

UPT Center for Innovation and Technology Transfer
https://citt.upt.ro/en/

The General Association of the Engineers in Romania Hunedoara Branch https://www.hunedoara.agir.ro/

The Patent - International Magazine of World Inventions
https://www.thepatent.news/

Research Center for Engineering and Management
http://www.mpt.upt.ro/eng/research/research-center.html

Romanian Inventors Forum
http://www.afir.org.ro/

Toronto International Society of Innovation & Advanced Skills
https://www.tisias.org/

Satit Chula Innovation Society
Chulalongkorn University in Bangkok, Thailand
https://www.chula.ac.th/en/

International Center for Research and Development (ICRD) Iraq
https://sites.google.com/view/drali471/

Al Amaan Al Mutahida Company - Bagdad, Iraq
www.alamaan-iq.com

Indonesian Young Scientist Association (IYSA)
https://iysa.or.id/

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3-5 April 2025 – Deva, Romania

Macedonian Association Doza Srekja
https://www.facebook.com/djovanov24

Association of Thai Innovation and Invention Promotion
http://atip-thailand.org/

NWERA Association
https://nwera.org/our-team/

Bliss Education Center
https://www.facebook.com/blisseducationcenter?locale=ro_RO

Public Association "Innovation in Performance Education"
https://inovatie-educatie.md/

Paraguayan Institute of Telecommunications – FIUNA
https://www.ipt.edu.py/

Cultural partners

County Library "Ovid Densusianu" Hunedoara-Deva
https://www.bibliotecadeva.ro/desprenoi.html

General Directorate of Monuments Administration and Tourist Promotion of Hunedoara County – DGAMPT
https://www.dgampt.ro/?page_id=5592

Museum of Dacian and Roman Civilization
https://mcdr.ro/index.php/en/home-5

Kotsanas Museum of Ancient Greek Technology
https://kotsanasmuseum.com/?lang=en

Artă Tradițională Deva
https://www.facebook.com/artatraditionaladeva/

Posters 6th International Exhibition INVENTCOR

3-5 April 2025 – Deva, Romania

Dnipro Science and Technology Museum "Time Machines"
Ukraine http://mvr.org.ua/en/

Bačka Palanka Cultural Center
https://kcbp.rs/

Automuseums.info, the Motoring Museums' Lighthouse
https://automuseums.info

UNESCO International Geopark Țara Hațegului
https://www.hateggeoparc.ro/new/index.php/en/home/

Business partners

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3-5 April 2025 – Deva, Romania

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Media partners

TOP axe DESIGN

euro grAfics by AK Team

Mihoc Studio PHOTOGRAPHER

Flo Art Decor

tele U

BIG FM 92,6

ANTENA DEVA

INFO HD

DENISUCA.com

Cotidian Judeţean Independent SERVUS HUNEDOARA Ziarul băngă tine!

Alexandru Mic

Ziarul HUNEDOREANULUI

R

Accent Media

HunedoaraMea.ro Tot ce contează în judeţul Hunedoara

axe DESIGN

Independent TV Proiect Independent Media

ZIAR DE HUNEDOARA

glasul Hunedoarei

Mesagerul HUNEDOREAN

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KTV

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JURY

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3-5 April 2025 – Deva, Romania

INVENTCOR Jury

President of The Jury



Prof. Eng.& Ec. Aurel Mihail ȚÎȚU, Sc.D. & Ph.D., Dr. Habil., Dr.h.c.
"Lucian Blaga" University of Sibiu,
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3-5 April 2025 – Deva, Romania



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3-5 April 2025 – Deva, Romania



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3-5 April 2025 – Deva, Romania



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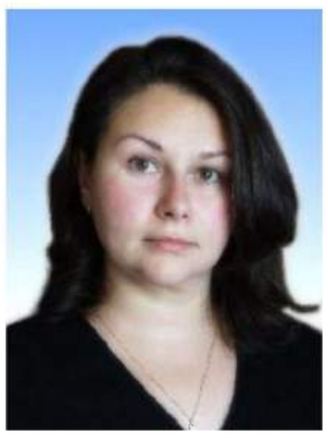
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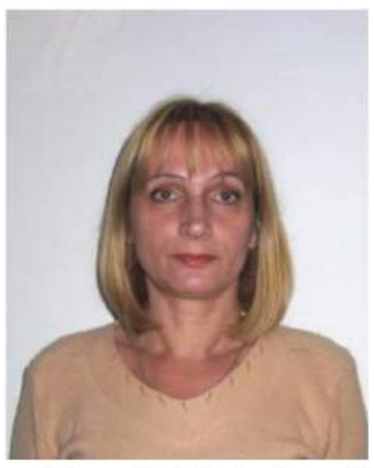
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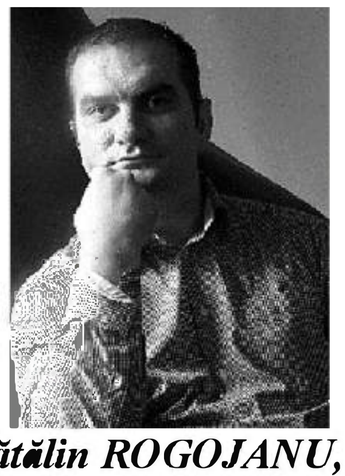
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Creation
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Realization
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Deva ROMANIA



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President of The Jury
Professor Aurel Mihail TITU
"Lucian Blaga" University of Sibiu

Awards

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3-5 April 2025 – Deva, Romania

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Deva ROMANIA

INVENTCOR Awards

The following awards are presented at the **INVENTCOR International Exhibition**



- **INVENTCOR GRAND AWARD**
- **JURY AWARD**
- **UPT AWARD**
- **ULBS AWARD**
- **CORNELIUGROUP AWARD**
- **A.R.T.A. Sibiu AWARD**
- **CITT AWARD**
- **MEDICINE AWARD**
- **EDUCATION AWARD**
- **A.G.I.R. AWARD**
- **RESEARCHER AWARD**
- **PhD Student AWARD**
- **BEST INNOVATION AWARD**
- **MEDIA AWARD**
- **BUSINESS AWARD**
- **LEADERSHIP AWARD**
- **MANAGEMENT AWARD**
- **INNOVATIVE ART AWARD**
- **CREATIVE AWARD**
- **POPULARITY AWARD**
- **VOLUNTEER AWARD**
- **KIDS CORNER AWARD**



Categories Awards

Special Awards of the INVENTCOR partners

Awards

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3-5 April 2025 – Deva, Romania

Following the international judging process, gold, silver and bronze medals will be awarded for all INVENTCOR participants.



Guests Speakers

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3-5 April 2025 – Deva, Romania

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Guests and speakers



Constantin FULGA

Prefect of Hunedoara County



Prof. Eng. Florin DRĂGAN Sc.D.

Rector of Politehnica University of Timisoara



Laurențiu NISTOR

President of Hunedoara County Council



Prof. Maria ȘTEFĂNIE

General School Inspector Hunedoara County School Inspectorate



Lucian Ioan RUS

Mayor of Deva



A/Prof. Ovidiu Gelu TIRIAN Sc.D.

Dean of Faculty of Engineering Hunedoara, Politehnica University of Timisoara

Guests Speakers

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3-5 April 2025 – Deva, Romania



A/Prof. Sorin Aurel RATIU, Sc.D.

President of General Association of the Engineers in Romania Hunedoara Branch



Ioan Sebastian BARA

Manager
County Library "Ovid Densusianu" Hunedoara-Deva



Patricia KUMBAKISAKA

Foreign Policy researcher & Global advocate
Canada



Prof. Habil. Victoria-Larisa IVAȘCU, Ph.D.

Politehnica University of Timisoara
Faculty of Management in Production and Transport



Dimitrie-Cristian FODOR

BIOENG. & Ph.D. Student
"Gheorghe Asachi" Technical University of Iasi
"Dr. Iacob Czihac" Military Emergency Clinical Hospital of Iasi



Daniela DRAGOMIR

Head of Communication and Operational Marketing Service, State Office for Inventions and Trademarks



Prof. Marius PÎSLARU Ph.D.

Gheorghe Asachi Technical University of Iasi
Department of Engineering and Management



Herdiana Dewi NURfiKA

Bliss Education Center, Indonesia



Dr. Luy MITHONA

Department of Computer Studies
Norton University, Cambodia



Chef Ioana BOGDAN

Owner of
Ritual by Iona Bogdan

Guests Speakers

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3-5 April 2025 – Deva, Romania





Prof. Dr. Anuja MALIK

New era group of science and technology
New Delhi, India

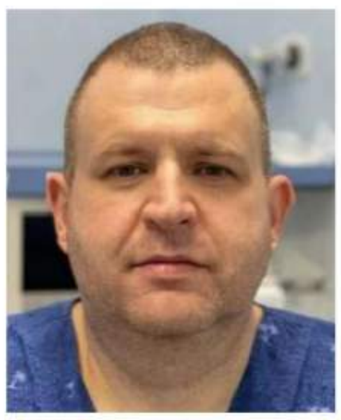


Prof. Nada RATKOVIĆ
Croatia
Assistant Professor on Faculty of Economics, Business and Tourism Split. President of IIU Research Centre, Co-founder IIU Europe, Co-founder ICWP



Andreea RUSAN-MOTIU

Dance coach
DANSANDRA
Romania



A/Prof. Gabriel Petre GORECKI, MD, MSc, PhD, RS III

Titu Maiorescu University, Bucharest



A/Prof. Dr. Eng. Neyara RADWAN

Industrial Management Department, Abu Dhabi, UAE



Đorđe ŠTANGL

UPI ČIB – Serbia Center for Development and Application of Innovations



Dr. Inga KHARCHILAVA

Ambassador-Leader of the Global Trainers Academy from Georgia



Tiberiu STROIA

Founder of the "House of Science"



Mr. Fernando LOPES

Member of the Executive Committee Member of International Federation of Inventors Associations
IFIA



Dr. Ciprian NICOLAE

Expert in nutrition and health

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Distinguished INVENTCOR 2025 participants,

The 6th edition, will take place according to the following program

For more information, notifications and catalogs follow us on the INVENTCOR 2025 Facebook page **https://facebook.com/events/s/inventcor-2025/2248073672191620/** and visit **www.inventcor.ro**

Being an environmentally friendly exhibition, please do not print your posters, they will be displayed on the INVENTCOR virtual totem!

Participants who wish to exhibit models, prototypes, products or roll-up are expected starting from 10 AM to 4 PM on Wednesday, April 2, to set up the stand at the "Dragan Muntean" Cultural Center.

INVENTCOR Location: DEVA City, VICTORIA Square, No.7, HUNEDOARA County, ROMANIA

https://www.centrulculturaldeva.ro/contact/

Centrul Cultural Drăgan Muntean Deva



DAY 1: 3 Aprilie 2025
09:00 – 18:00

Arrival of participants starting 10:00 (AM)

Opening ceremony: 13:00 – 14:00

Symposium: 14:00 – 16:00

Visiting program / discussions: 11:00 – 18:00

DAY 2: 4 April 2025
09:00 – 15:00

Award ceremony 11:00 – 13:00

Closing of the INVENTCOR 13:00 – 15:00
(expo will be dismantled)

INVENTCOR Gala Dinner 17:00

Power of Creative Mind Symposium
14:00 – 16:00

The Power of Creative Mind Symposium will be held within INVENTCOR with presentations on various topics: innovation, ecology, health, community, intellectual property and others.

INVENTCOR Motto:

Creation
Opportunity
Realization

Restaurant CASINA

Address: DEVA City, UNIRII Square, No.9

https://www.restaurantcasina.ro/



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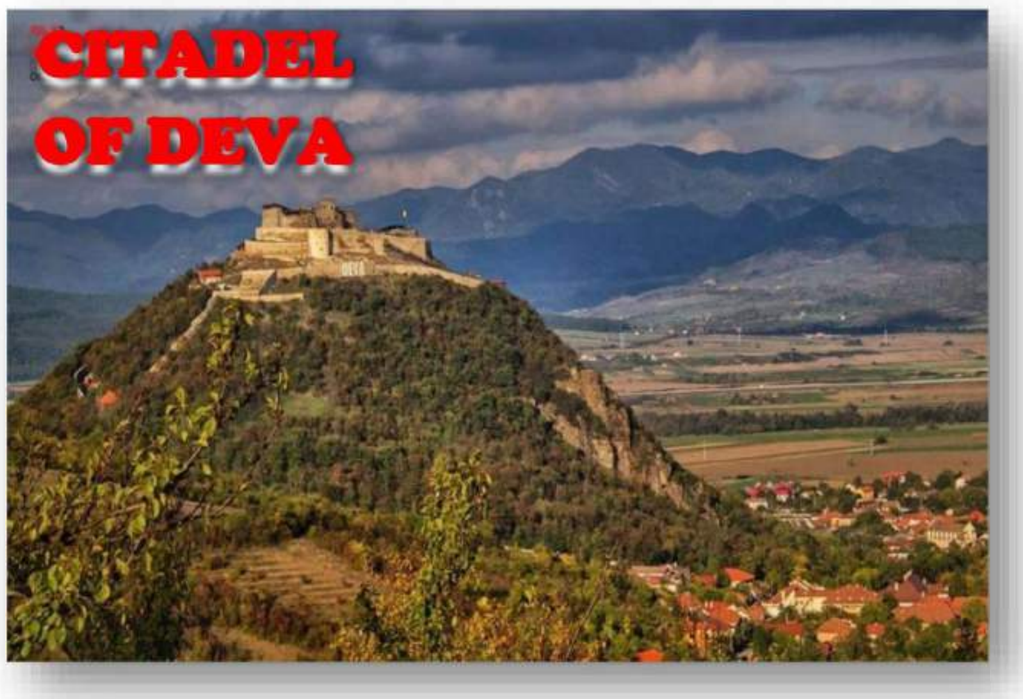
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DAY 3: 05 April 2025

The third day is dedicated for relaxation in order to enjoy our beautiful city DEVA and the Hunedoara County, we offer you four extraordinary opportunities to visit tourist / historical sites and one art gallery as follows: CITADEL OF DEVA; MUSEUM OF DACIAN AND ROMAN CIVILIZATION; GEOAGIU-BĂI; ANCIENT CITY OF SARMIZEGETUSA ULPIA TRAIANA and EM Art Gallery.









Discover Hunedoara https://www.hunedoararaturism.ro/

Millions of years of stories and legends!

INVENTCOR Teaser:

https://youtu.be/6pJ2zudQvNw

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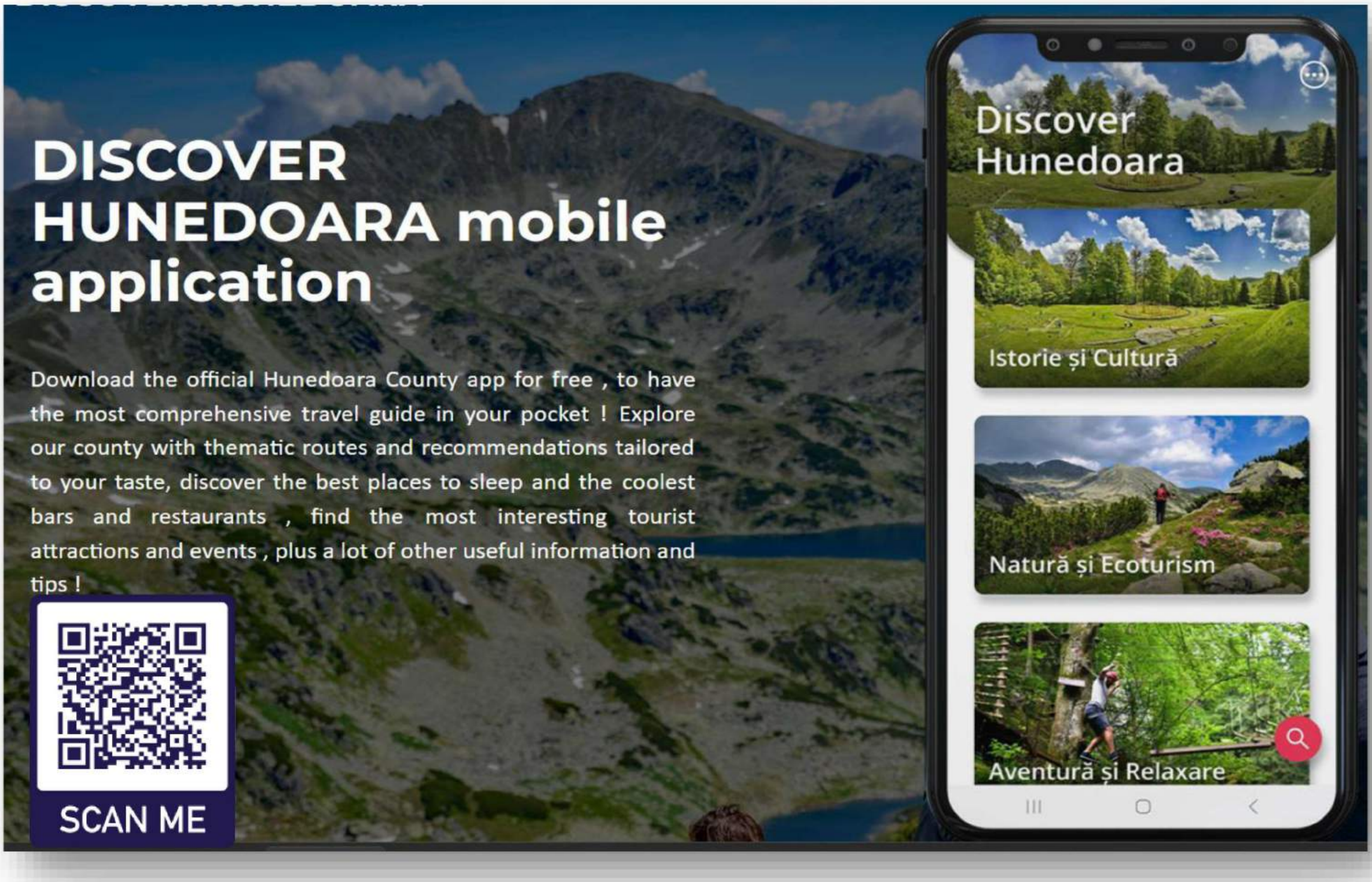




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Slow-moving traveler

2 DAYS IN THE LAND OF ZARAND



Explorer traveler

2 DAYS IN THE LAND OF THE FORESTS



Pretentious traveler

2 DAYS IN THE MUREș VALLEY



Restless traveler

2 DAYS IN THE JIUL VALLEY



Passionate traveler

2 DAYS IN THE CITY COUNTY



Enthusiastic traveler

2 DAYS IN THE COUNTRY OF HAȚEG

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3-5 April 2025 – Deva, Romania

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Deva ROMANIA

Visit CITADEL OF DEVA



Address: Cetatii Street, 337450, Deva
https://www.facebook.com/telecabina.cetate.deva/
Program: Monday - Sunday: 9:00 – 17.00

For several centuries, the Deva Fortress was one of the strategic military settlements of Transylvania. The appearance of the fortress built "at the gates of Transylvania" has fascinated historians, archaeologists, and visitors over the centuries. In its history, it was considered one of the impregnable fortresses. Deva Fortress was, over time, involved in almost all major historical events of Transylvania. It was the voivodeship residence, it was under the rule of the Transylvanian princes. And the walls were a shelter, or prison, for political, military or religious personalities.

The construction included, over time, several successive enclosures, a two-story palace for the owner of the fortress, bastion platforms, a cistern, a row of casemates, towers, bellows buttresses, curtains, road gates, and also the powder magazine. Just like the Hunedoara fortress, the Corvin Castle, the history of the Deva Fortress also shows several construction stages: in this case, five in number! In parallel with the expansion works, a plan was also developed to build a Vauban-style fortification, which targeted the slopes of the fortress hill, but it remained in the project phase.



Our guide

Cristian DAMIEAN
Tel.: +40734549308



Since 1896, the Society of History, Archaeology and Natural Sciences of Hunedoara County has coordinated the arrangement of the access alleys to the fortress and the afforestation of the Fortress Hill. A major renovation was completed in the year 2024, during which the ruins were preserved and access to the fortress was made easier. The Deva Fortress, perched like an eagle's nest above the volcanic cone, at an altitude of 378 meters, sums up an architectural evolution spanning more than 700 years.

SCAN ME



Posters 6th International Exhibition INVENTCOR

3-5 April 2025 – Deva, Romania

Visit the Museum of Dacian and Roman Civilization Deva

Address: B-dul 1 Decembrie No. 39, DEVA
Web: www.mcdr.ro
Program: Tuesday - Sunday: 10:00 - 18:00



The beginning of the Dacian and Roman Civilization Museum in Deva is linked to the founding of the History and Archeology Society of Hunedoara County, in 1880. The Deva Museum operates in the Magna Curia building, known as the Bethlen Castle, an old architectural monument located at the foot of the Deva Citadel, in its southern part. The antiquity, importance and beauty of this baroque building was the reason why it was included on the List of Historical Monuments of category A.



Since 2012, in the courtyard of the Magna Curia Palace, there has been an open-air Lapidarium which houses a collection of monuments, belonging to the prehistoric, Dacian and Roman eras, from the archaeological researches of Baia de Criş, the Dacian Citadels of the Orăştiei Mountains, the Capital of Roman Dacia - Ulpia Traiana Sarmizegetusa, Micia, Germisara, Aquae or from accidental discoveries.

Our guide

Corina MUNTEAN
Tel.: +40751666891



Today, on the ground floor of the Magna Curia building, you can visit the basic exhibition of Natural Sciences, entitled "Past and present in Hunedoara nature" as well as a room dedicated to the history of the 19th century in Hunedoara county, called "Noble environment of the 19th century". In the other spaces, various temporary exhibitions are organized such as "Treasure objects from the collections of the Museum of Dacian and Roman Civilization in Deva" or the one dedicated to the bronze mold discovered at Sarmizegetusa Regia.

SCAN ME



Posters 6th International Exhibition INVENTCOR

3-5 April 2025 – Deva, Romania

Visit Geoagiu-Băi

Address: Vilelor Street, FN, Geoagiu Bai
Web: https://www.cniptgeoagiubai.ro/
Program: Monday - Sunday: 9:00 – 17.00

European Destinations of Excellence



From an administrative point of view, the Geoagiu-Băi balneo-climatic resort is a component of the city of Geoagiu, being located 6 km. from the city of residence. The natural healing factors consist of alkaline, slightly sulfurous, bicarbonated, magnesian, mesothermal and thermal mineral waters (29 - 32 degrees C); peat mud, ferruginous, sedative climate. The ozonated air and always refreshed by mountain breezes recommends the resort for the treatment of diseases of the nervous system, in states of fatigue, overwork, anemia, neurosis.



Roman Road. This road dates back to the 2nd century and connected the Roman Castrum of Cigmău and the Roman Baths of Germisara. Today, a 165 m section is still visible.

Clocota Waterfall: The waterfall is located on the Clocota River, at the entrance to the Geoagiu Băi resort and has a level difference of almost 20 m along the water, this is due to the existence of a steep break in the terrain. It is one of the two waterfalls with mesothermal waters in our country.

Our guide

Claudiu Nicolae ȘIMONAȚI
Tel.: +40748553264



The Roman Thermal Baths "Germisara". In 1986, systematic archaeological research began in the perimeter of the site of the ancient thermal complex in the center of the Geoagiu-Băi resort. These researches identified a unique thermal complex in the world through the organization and arrangement of the pools, as well as the mobile inventory discovered here. In successive layers, it can be observed how the thermal spring was used by the Geto-Dacians even before the Roman conquest.

SCAN ME



Posters 6th International Exhibition INVENTCOR

3-5 April 2025 – Deva, Romania

Visit Ulpia Traiana Sarmizegetusa

Address: Principala Street, no. 1, Sarmizegetusa
Web:https://www.mcdr.ro/index.php/ro/sectii-si-compartimente/sectia-de-arheologie-sarmizegetusa
Program: Monday - Sunday: 9:00 – 17.00



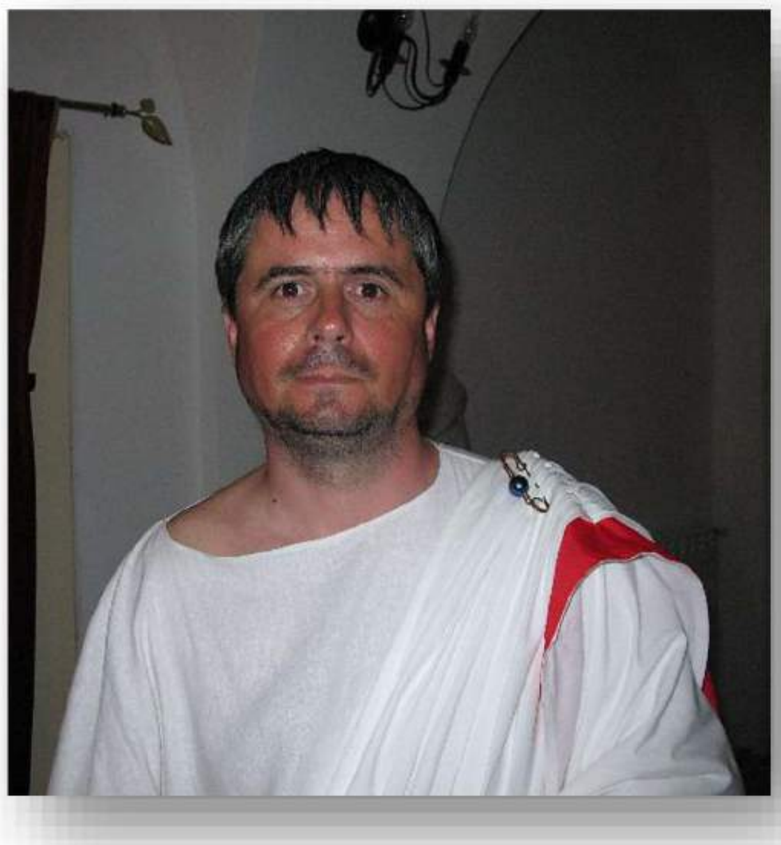
Ulpia Traiana Sarmizegetusa (full name: Colonia Ulpia Traiana Augusta Dacica Sarmizegetusa) was the capital of the Roman province of Dacia. Located 40 km from Sarmizegetusa Regia, the previous capital of the Dacian kingdom, the colony Ulpia Traiana was founded after its conquest by Emperor Trajan, between 108–110. The colony Ulpia Traiana Augusta Sarmizegetusa Dacica was founded by the division of veterans. The ruins of the ancient city constitute an archaeological complex located in the town of Sarmizegetusa, Hunedoara County. Nearby is the Sarmizegetusa Archaeological Museum.

Ulpia Traiana was founded by the governor of Roman Dacia Decimus Terentius Scaurianus and had a common shape for the Romans at that time: a quadrangle with rounded sides, with an area of 32.4 ha, a length of 600 m, a width of 540 m and a wall height of 4–5 m. The wall was built of carved stone blocks, joined with mortar, and was provided with battlements in the upper part, with a gate on each side. The gates on the parallel sides were connected to each other by two main streets, which crossed the fortress from one side to the other.



The amphitheater is the most imposing building of the complex. It was built in the first half of the 2nd century. Gladiator fights, fights between wild animals and humans, theatrical performances, declamations and other public events took place inside. With a capacity of approximately 5,000 people, the benches were of two types: the cobblestone ones, near the stage, reserved for important people, and the upper, wooden ones, reserved for ordinary spectators.

Our guide
Dr. Gică BĂEŞTEAN
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SCAN ME

Posters 6th International Exhibition INVENTCOR

3-5 April 2025 – Deva, Romania

Visit the Corvinians Castle Hunedoara

Address: Castelului Street, no. 1-3, Hunedoara
Web: https://www.castelulcorvinilor.ro/
Program: Tuesday - Sunday: 9:00 – 17.00



Ioan de Hunedoara initiates, after 1440, large-scale constructions aimed at transforming the citadel into a castle, the first stage including the erection of two curtains around the old citadel, built of dolomitic limestone blocks, provided with battlements on the upper part. These curtain walls were flanked by circular and rectangular towers, the former constituting a novelty for the military architecture of Transylvania in the 15th century.

The first stone fortification in Hunedoara was dated by most researchers to the 14th century (Gheorghe Anghel), although there are specialists who attribute the royal camp to the first half of the 15th century (Elemér Mályusz, Adrian Andrei Rusu, Radu Lupescu). The walls, with a thickness of up to 2 m, were built from dolomitic limestone blocks and river stone, directly on the native rock.



The circular towers with the exception of the painted tower, were provided with a solid masonry ground floor, followed by two levels, the ones on the lower part being used as rooms for riflemen and the ones on the upper part as living areas and/or defense areas. It should be noted that the Capistrano tower includes the only (restored) Gothic fireplace in the Hunedorean monument. The painted tower has only one level of defense and is painted in fresco on the outside with geometric motifs and portholes, with typological correspondences in the German space.

Our guide

Harald SUSANYI
Tel.: +40770 806 840



SCAN ME



Posters 6th International Exhibition INVENTCOR

3-5 April 2025 – Deva, Romania

Visit EM Art Gallery Deva

Address: 1 Decembrie 1918 Street, no 27, Deva
Web: https://www.facebook.com/p/EM-ART-Gallery-100064689549014/
Program: Monday - Sunday: 9:00 – 17.00

EM Art Gallery-Deva was born from the desire to promote contemporary visual artists, on December 5, 2018.

From the beginning to the present, more than 50 contemporary professional artists have been exhibited, the gallery registering as the first private gallery in Hunedoara County!

Artists from the main cities in Romania and artists from France, the USA and the Republic of Moldova exhibited on the EM Art Gallery!Out of the desire to do more, we have created a magazine of visual arts and cultural support entitled EM Art.

Owner of EM Art Gallery
***Painter* Mircea POPITIU**
Tel.: +40723355939





SCAN ME



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3-5 April 2025 – Deva, Romania

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Dimitrie-Cristian FODOR - "Gheorghe Asachi" Technical University of Iasi

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Categories

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InventCor Categories

A - Energy, Protection of the environment, Biotechnology

B - Nanotechnology, Advanced materials, Metallurgy, Civil engineering

C - Computer sciences, Electronics and Electrical engineering

D - Automotive, Space science, Aviation, Ships, Mechanics

E – Management, Teaching methods, Books, History and Cultural studies

F - Medicine, Paramedical, Pharmacy, Cosmetics, Hygiene

G - Agriculture, Veterinary medicine

H - Foods, Drinks, Restaurants, Hotels & Spa

I - Textiles, Clothing, Fashion, Handmade

J - Kids Corner, Games, Toys, Outdoor activities

K - Innovative ART, Music, Video, Photography, Publicity

A

Energy

Protection of the environment

Biotechnology

FIELD METHOD FOR ASSESSING THE IMPACT OF VOLATILE ORGANIC COMPOUNDS ON HUMAN HEALTH

Patent/project number: CBI A 2022 00606

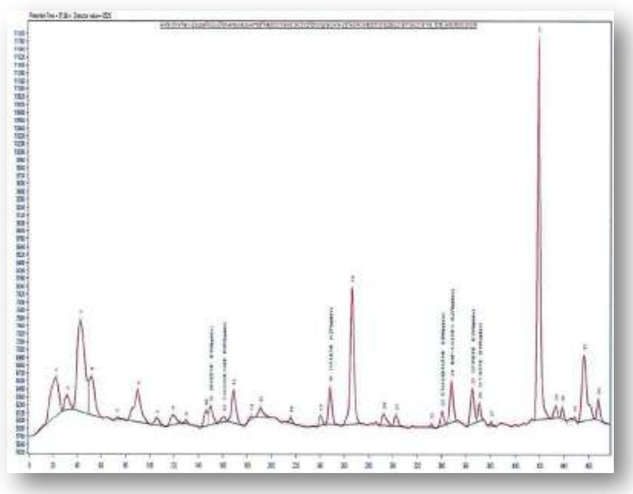
Authors: Găman Angelica Nicoleta, *Găman George Artur, Ghicioi Emilian, Pupazan Daniel, Toth Lorand, Prodan Maria, Kovacs Marius, Simion Sorin, Simion Alexandru, Șuvar Niculina Sonia*

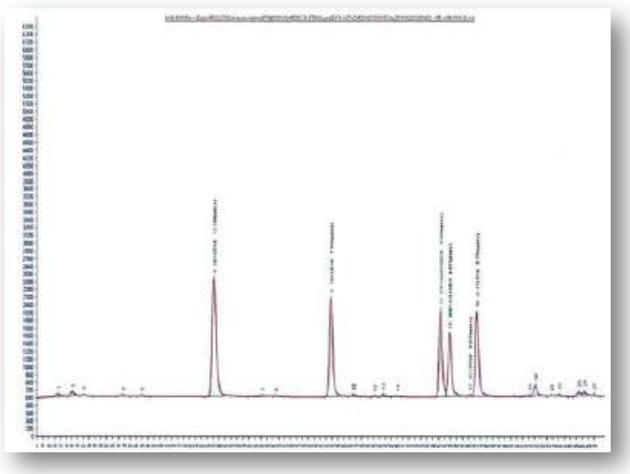
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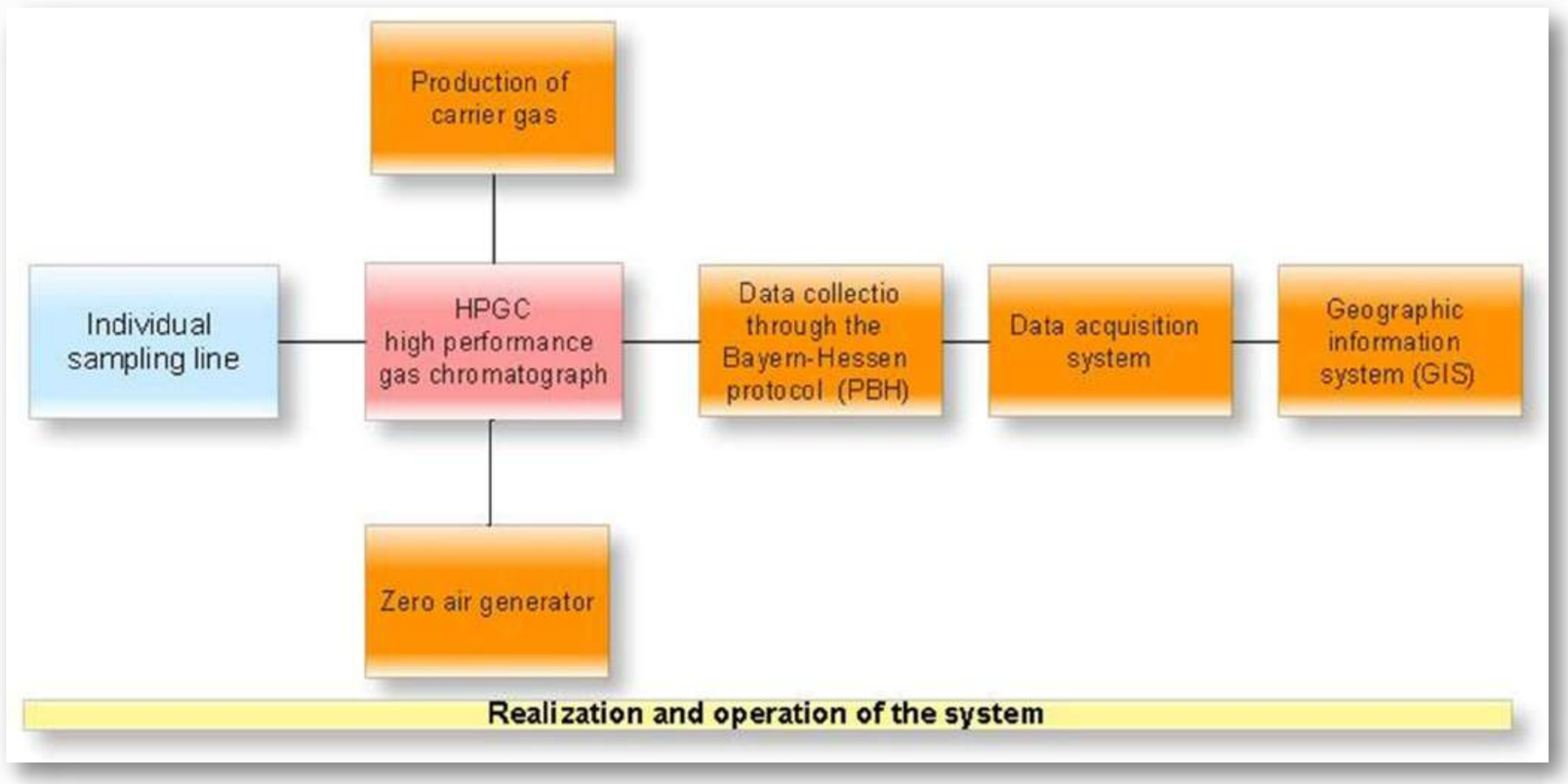
The mobile real-time measurement system of volatile organic compounds (BTEX) consists of applying a method to determine the concentration of benzene and organic compounds (BTEX) in the surrounding environment (emissions) using high-performance gas chromatography with FID detector in ambient air from areas classified as rural and urban zones, traffic locations, and locations influenced by industrial sources, through a mobile unit that allows continuous measurements during movement.

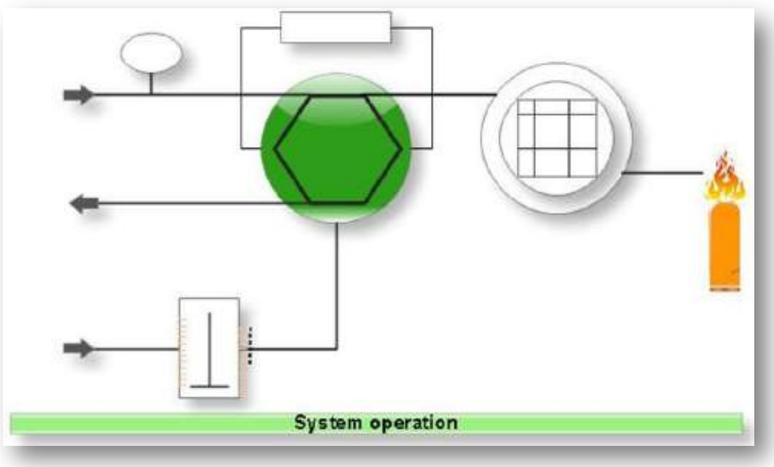












Understanding the concentrations of volatile organic compounds in a triaxial system of coordinates (concentrations / space / time) makes it possible to characterize / quantify the impact generated by BTEX pollutants on human health by measuring the pollution level, managing / processing data, and integrating them into an active mapping system using GIS computational environment.

Contact: angela.gaman@insemex.ro

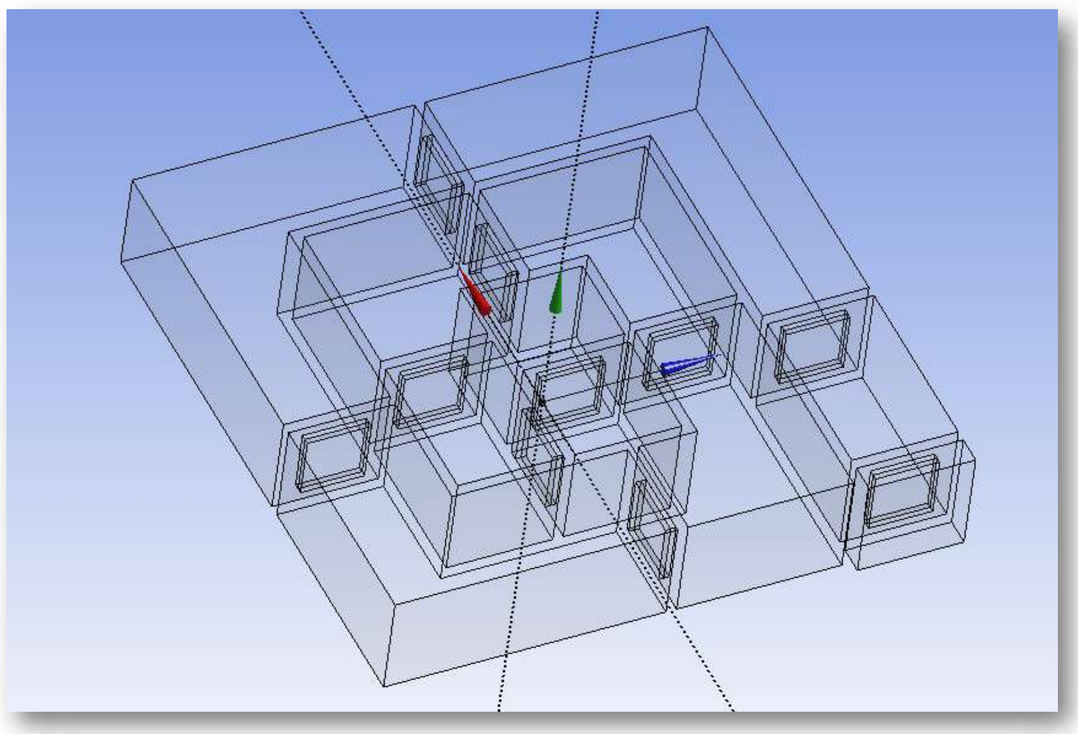
STAND FOR DETERMINING PRESSURE VARIATIONS WHEN CHANGING THE DIRECTION OF PROPAGATION OF GASEOUS EXPLOSIONS IN INTERCONNECTED SPACES.

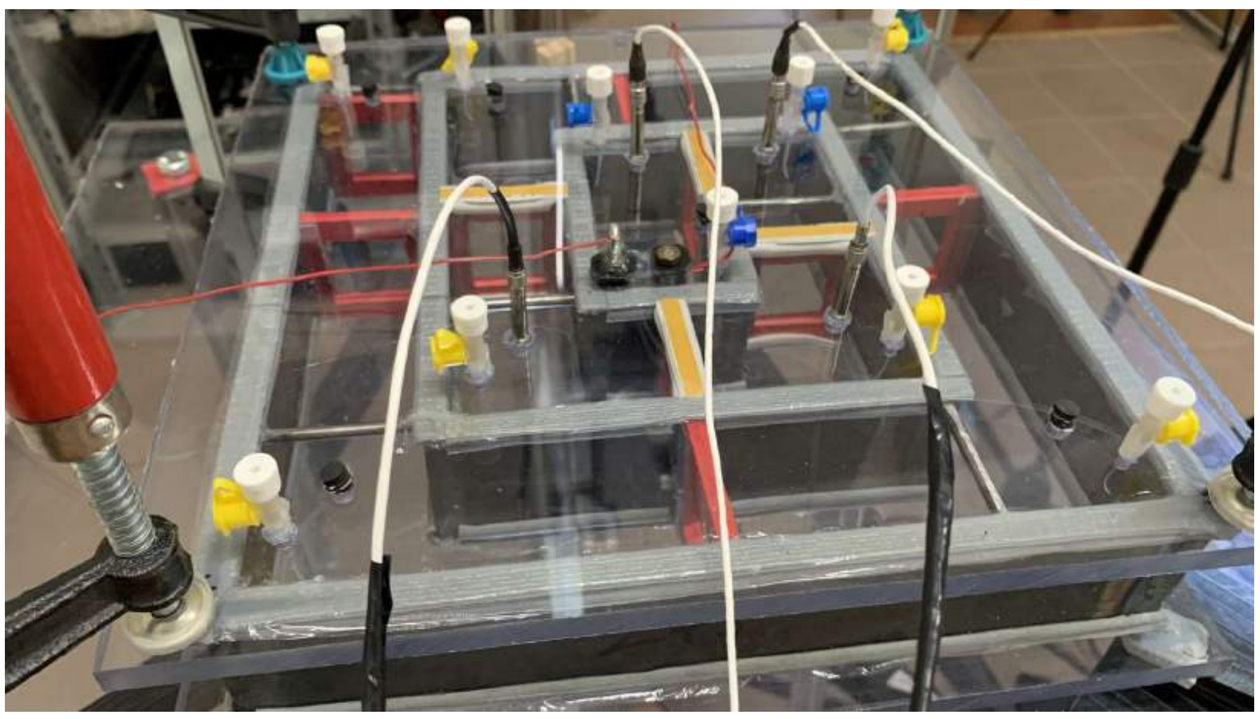
Patent/project number: CBI A 2022 00705

Author/s: Vlasin Nicolae Ioan, *Găman George Artur, Ghicioi Emilian, Pupăzan Gheorghe Daniel, Găman Angelica Nicoleta, Păsculescu Vlad Mihai, Simon-Marinică Adrian Bogdan, Florea Gheorghe Daniel, Tuhuț Ioan Ligia, Prodan Maria, Șuvar Marius Cornel, Vass Zoltan, Munteanu Laurentiu, Chiuzan Emeric, Nicolescu Cristian, Manea Florin*

A

The invention provides the possibility of recording and complex analysis of gas explosion phenomena on geometries with interconnected and volumetrically individualized spaces through different configurations of obstacle arrangements with membrane openings, the analysis of pressure and velocity variations with the modification of the direction of gas explosion propagation, and the study of chain explosions in atmospheres containing the same combustible gas or different combustible gases at different concentrations. The obtained data are useful both for explaining the phenomenon of rapid combustion in interconnected spaces and as a basis for validating computer simulations conducted on the same topic.





The advantages of the system are as follows:

- ✓ - allows the configuration of the volumes of the rectangular spiral through the number and placement of obstacles with membrane openings;
- ✓ - allows the use of membranous obstacles with openings of different shapes (circular, square, rectangular, elliptical, etc.) and with membranes of different thicknesses;
- ✓ - through Schlieren techniques, it ensures continuous monitoring and recording of the rapid combustion process, from the appearance of the effective ignition source of the explosive atmosphere, the evolution of the explosion process through the consumption of fuel/oxidizer, to the retraction movement of the expanded gases as a result of their cooling;
- ✓ - ensures a higher degree of precision in measuring local/global speeds and accelerations;
- ✓ - ensures the recording of pressure values from each interconnected space;
- ✓ - allows the analysis of pressure variations when changing the direction of gaseous explosions and when breaching obstacles with different resistances;
- ✓ - allows the analysis of chain gas explosions;
- ✓ - allows the use of multiple types of combustible gases/fuels vapors within the same physical experiment;
- ✓ - allows testing of explosion effect suppression curtains (using nitrogen, water, etc.);
- ✓ - allows modification of the initiation source location.

Contact: nicolae.vlasin@insemex.ro

SMALL-SCALE EXPERIMENTAL STAND FOR RESEARCHING EXPLOSIONS OF FLAMMABLE GAS-IN-AIR MIXTURES

Patent/project number: CBI A 2022 00731

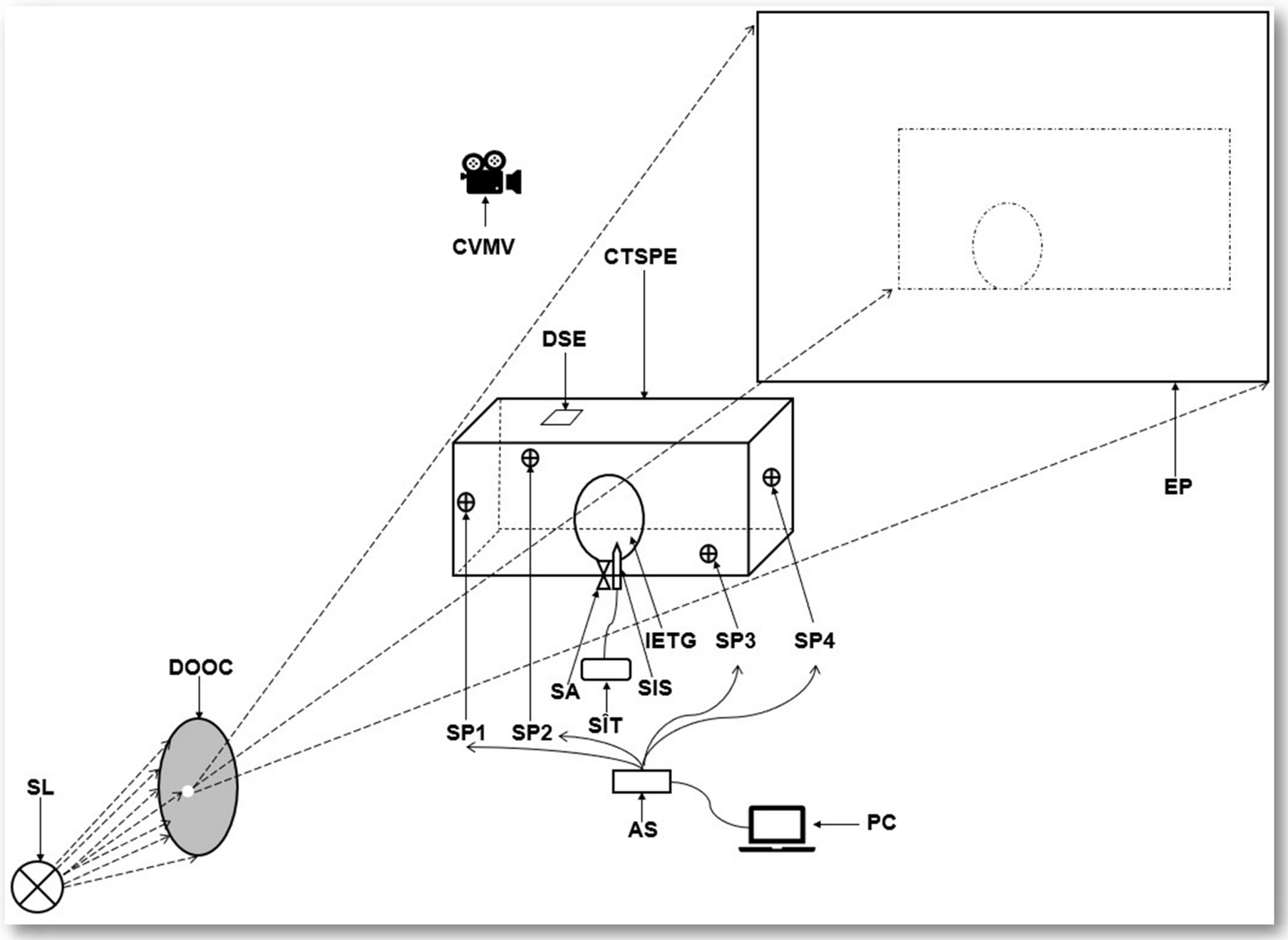
Author/s: Păsculescu Vlad Mihai, *Ghicioi Emilian, Găman George Artur, Pupăzan Gheorghe Daniel, Vlasin Nicolae Ioan, Șuvar Marius Cornel, Prodan Maria, Șuvar Niculina Sonia, Florea Gheorghe Daniel, Tuhuț Ligia Ioana, Șimon – Marinică Adrian Bogdan, Vass Zoltan*

A

The invention refers to a small-scale experimental stand for researching explosions of flammable gas-in-air mixtures, consisting of a transparent, inflatable explosion chamber equipped with an intake valve for volumes of flammable gas-in-air mixtures at pre-established concentrations within the explosive range of the substance.

It includes a spark ignition system, with the chamber enclosed inside a transparent case for studying explosion pressures and their propagation using shadowgraph techniques with a light source. An obturator disc with a central orifice allows the divergent conical light beam to pass through the transparent chamber for study, and the resulting projection is captured on a projection screen. The system is equipped with a recording system for the generated explosion pressure values.

The problem that the invention solves consists of using shadowgraph visualization techniques for laboratory research of flammable gas-in-air mixture explosions, with the purpose of analyzing the shock wave and the flame front of the explosion, from the point of initiation in the inflatable transparent explosion chamber, the propagation in the transparent chamber for studying explosion pressures and their propagation, and up to the release into the atmosphere.



The recording of the pressures developed by the explosion provides data that are useful for understanding explosion phenomena in flammable gas-in-air mixtures, contributing to the elucidation of the causes that generate such events and to the development of measures to prevent the occurrence of similar gas explosion phenomena

Contact: vlad.pasculescu@insemex.ro

ADVANTAGES

- Uses shadowgraph techniques for visualization and analysis of explosions.
- The transparent, inflatable, and consumable chamber allows easy replacement after each test.
- Accommodates flammable gas-in-air mixture volumes between 0.25 and 0.75 liters at preset concentrations.
- The transparent chamber features a pressure relief valve for safety and repeatability.
- The top part of the chamber is detachable for quick adjustments.
- Pressures are monitored by 4 sensors, connected to a computer through a charge amplifier.

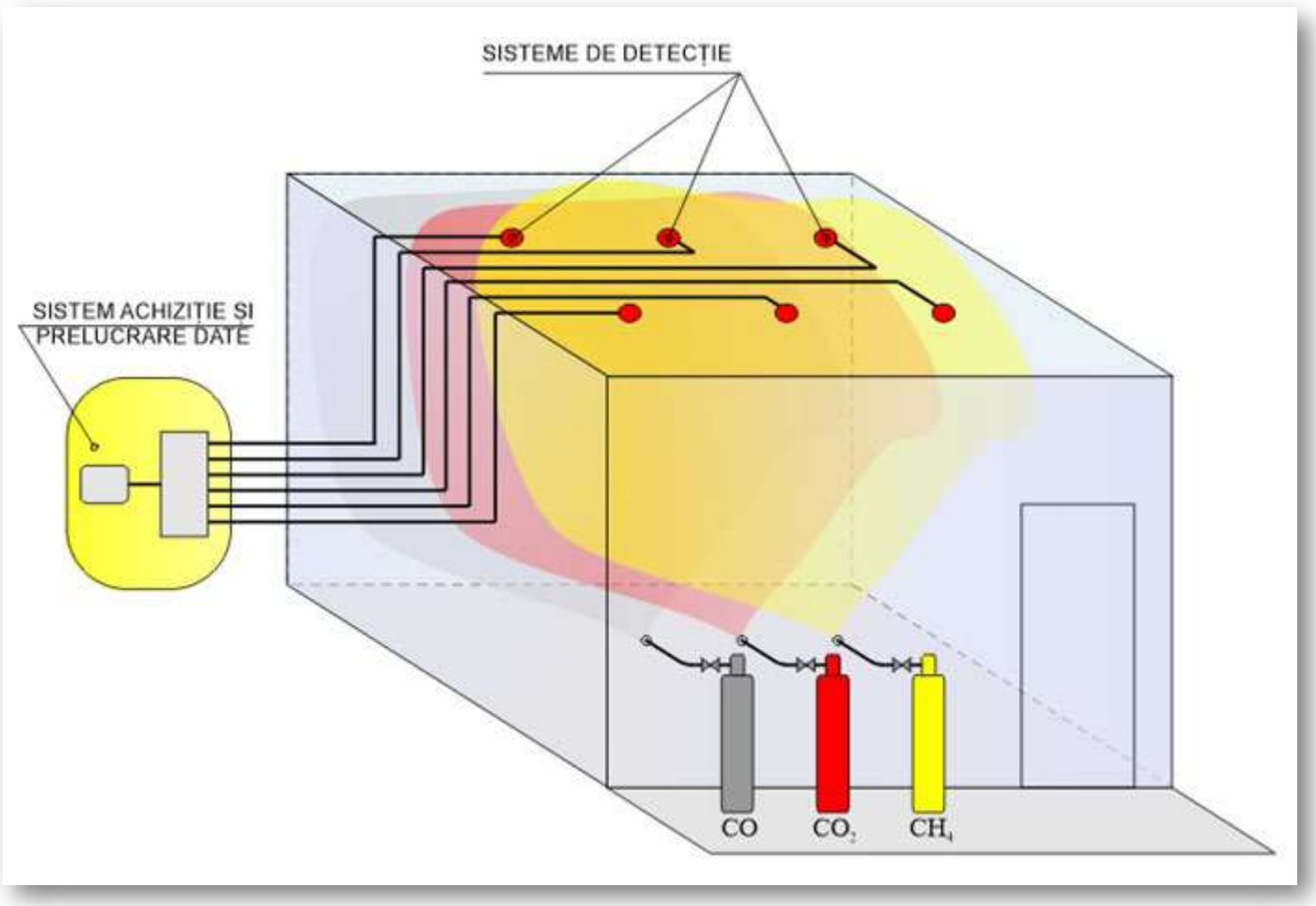
SYSTEM FOR DETERMINING THE DYNAMICS OF EXPLOSIVE ATMOSPHERE FORMATION

Patent/project number: CBI A 2023 00336

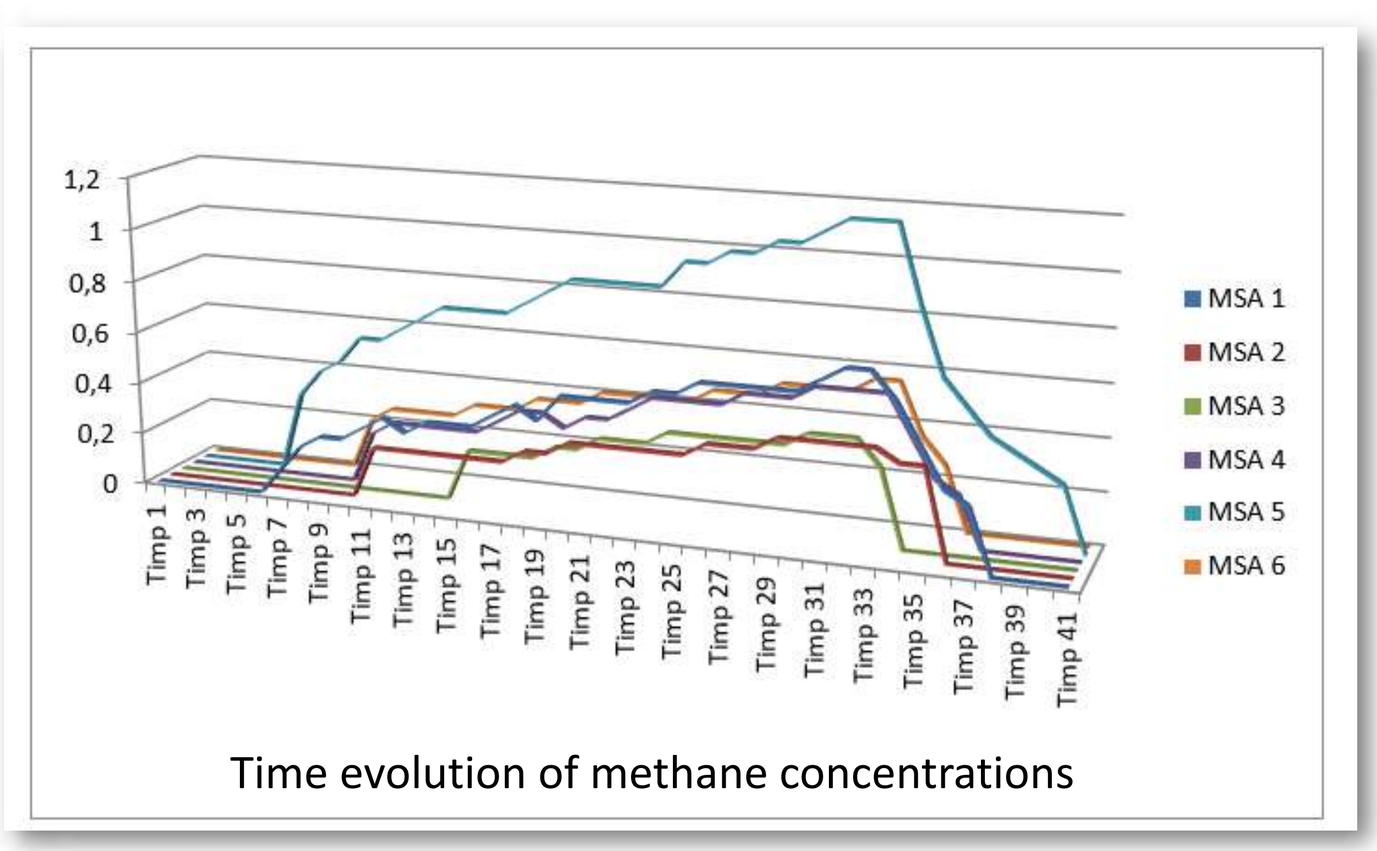
Author/s: Cioclea Doru, *George Artur Găman, Ghicioi Emilian, Gherghe Ion, Ianc Nicolae, Rădoi Florin, Boantă Corneliu, Chiuzan Emeric, Tomescu Cristian, Matei Adrian, Drăgoescu Răzvan, Cămărășescu Alexandru, Vlasin Nicolae-Ioan, Șimon Marinică Adrian*

A

The invention is based on a system that allows the determination of the dynamics of the formation of explosive atmospheres, respectively that takes into account the variation of gas concentrations in relation to time, by choosing a closed enclosure that meets the safety conditions, several pulleys with supporting role, more equipment for measuring gas concentrations, an explosive gas source, a pressure reducer, a rotameter-type explosive gas flow control system, a hose for introducing explosive gas into the enclosure closed, a directed gas purge system, a ventilation system for the evacuation of the created atmosphere, the data resulting from the measurements are collected, finally the dynamics of the formation of explosive atmospheres are determined graphically and numerically.



Equipment used to determine the dynamics of formation of explosive atmospheres



Time evolution of methane concentrations

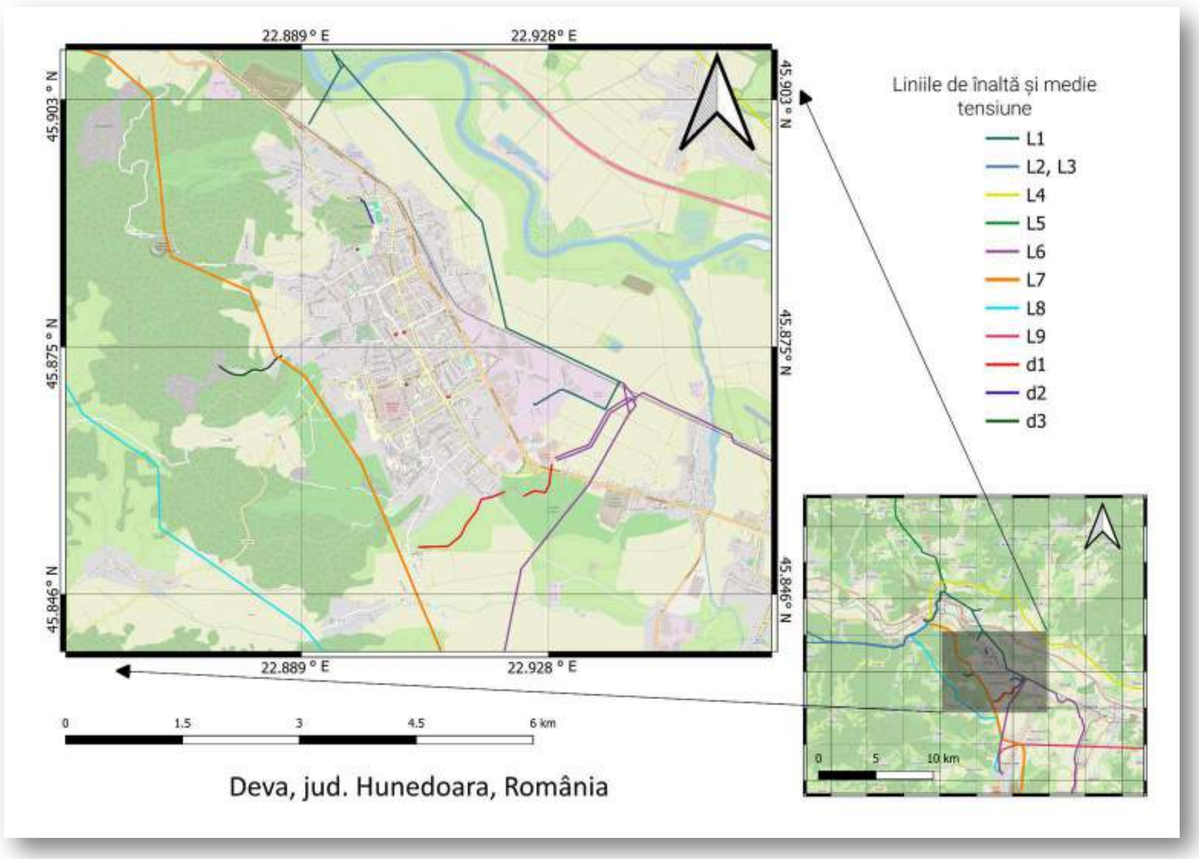
Contact: doru.cioclea@insemex.ro

Electromagnetic Radiation in Everyday Life

Measurements and Analyses

Author: Ana-Maria IORDACHE

A



Exposure to low-level electromagnetic radiation is considered safe, but it can have negative health effects such as oxidative stress and cellular changes. **IARC classified radiofrequency fields as „possible carcinogen" (Group 2B)**, with a possible link to glioma. Prolonged exposure can influence neural activity, hormonal regulation, and immune responses. Although research is ongoing, it is recommended to reduce direct exposure to sources of electromagnetic radiation.

Thus, through this study I set out to create a map of electromagnetic radiation in the city of Deva, in order to identify risk areas or areas that do not comply with the rules imposed by the World Health Organization and to test different materials to identify a potential insulating material of electromagnetic radiation.

The results of the research reveal a significant correlation between the presence of high and medium voltage lines and electromagnetic radiation levels in certain areas of Deva and its surroundings.

Measurements made at various locations indicated that the intensity of electromagnetic radiation exceeds the safety threshold (**being higher than 2000 V/m**) in several areas, signalling a potential health risk to the inhabitants of those regions.

To evaluate the insulation properties of electromagnetic radiation of aluminum, I used a cardboard box with dimensions 30 cm x 18.5 cm x 10 cm, which I covered inside with two layers of aluminum foil. The test was carried out on Orizontului Street in Deva, Hunedoara County, in the area where it intersects with a high voltage line.

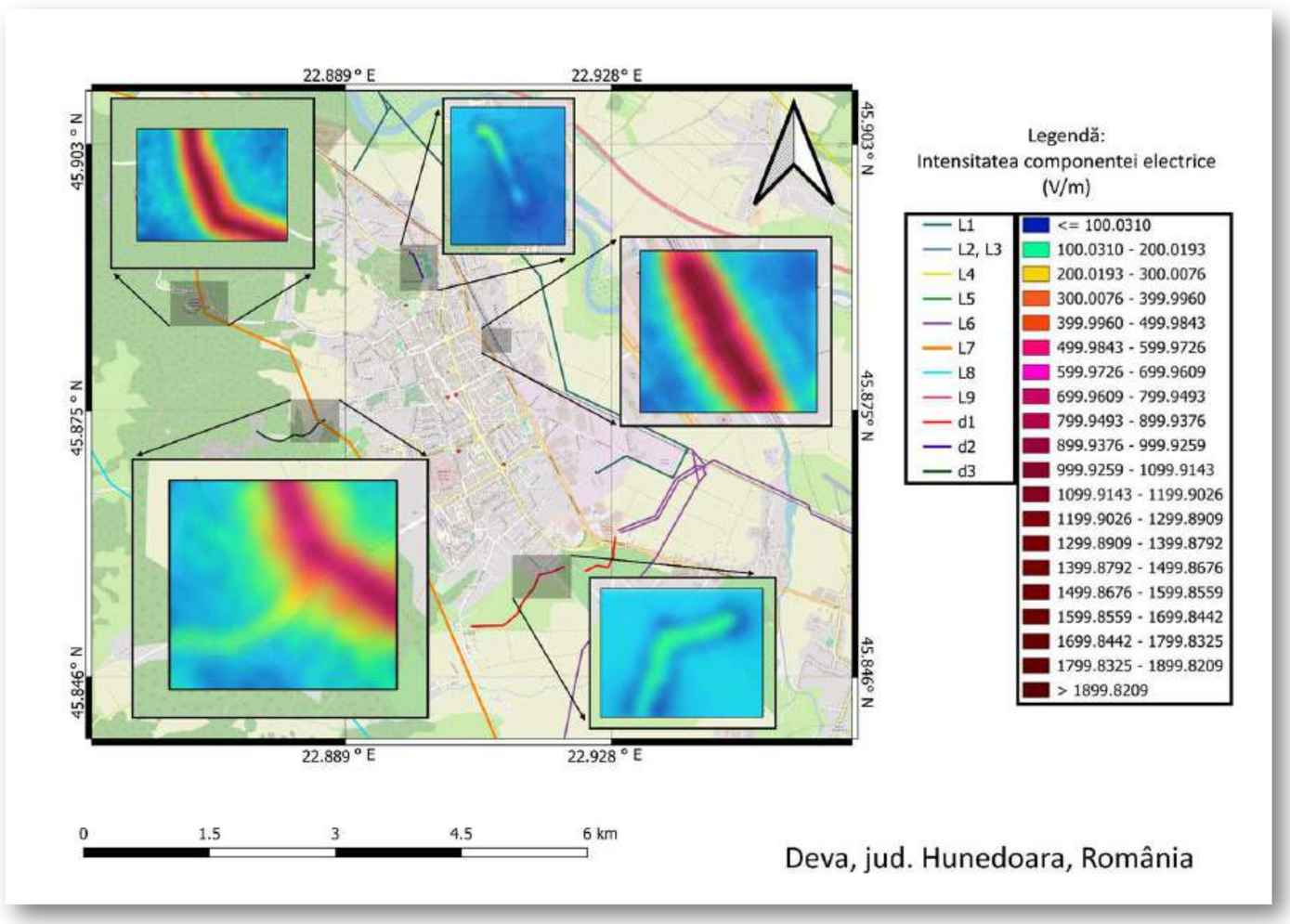
In the first stage of the experiment, I measured the electric field strength generated by the high-voltage line, recording an **initial value of 965 V/m.** In the next step, I placed the box lined with aluminum foil above the measuring device and observed a significant decrease in the value of the electric field intensity, **up to 0 V/m.** The experiment was repeated several times, and the results obtained were consistent, confirming the observed effect.

The experiment was a success due to the high electrical conductivity of aluminum, the Faraday cage effect and the high coefficient of reflection for a wide range of electromagnetic radiation, including radio waves, radio waves, microwaves and infrared radiation.

Identified risk areas:

1. **Recreational area Căprioara (>2000 V/m)**
2. **Stadion Street (~180 V/m)**
3. **Area through which the railway passes (>2000 V/m)**
4. **Mihail Sadoveanu Street (~165 V/m)**
5. **Călugăreni Street (~1030 V/m)**

Further, it is important to conduct further studies to assess the long-term effects of exposure to electromagnetic radiation in these areas and to develop recommendations for protecting public health.



Contact: ana.iordache.28122007@gmail.com

Enhanced Indoor Conversion Efficiency of Dye-Sensitized Solar Cells by Optimizing Ball- Milling Process of TiO_2 Paste

Project number: *PN 23 27 01 03*

Daniel Ursu, Cristian Casut, Melinda Vajda, Marinela Miclau

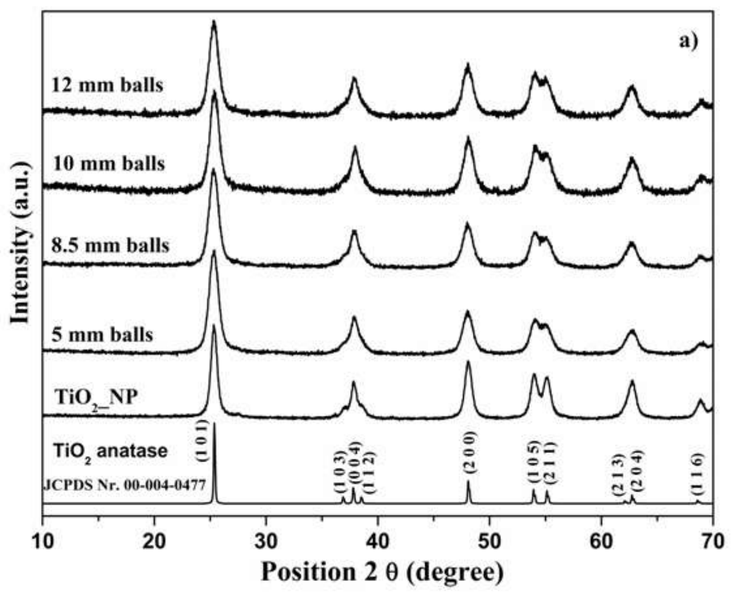
A

The rapid spread of the Internet of Things (IoT) along with the development of innovative low-power electronic devices has also driven the development of indoor photovoltaic. In this paper, we propose a simple and economically feasible solution that can improve the efficiency of dye-sensitized solar cells (DSSCs) under indoor light conditions by ~112%, without requiring a complex TiO_2 photoanode architecture or the design of new dyes.

Therefore, the obtained results revealed that the DSSC obtained from the TiO_2 paste mortared for 3 h with 12 mm balls highlighted an efficiency increase of ~37.5% (21.15% PCE) compared to the paste obtained with 5 mm balls (15.38% PCE) and 112.3% compared to the untreated paste (9.96% PCE), respectively, at 1000 lux.

The ball milling process of the TiO_2 paste was optimized for indoor light conditions for the first time, both in terms of efficiency and production costs, by developing a rapid preparation method that can be used industrially for the application of DSSCs.

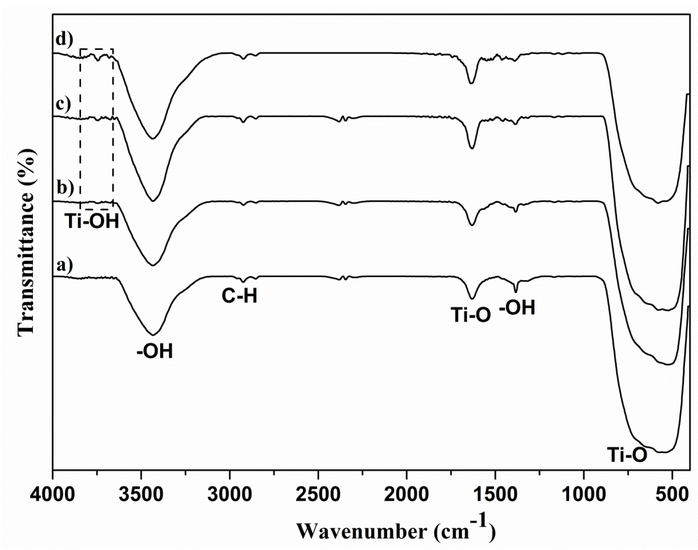
A simple use of 12 mm diameter balls caused beneficial structural modifications, decreasing the size of the crystallites, and leading to a high OH generation on the TiO_2 surface responsible for the improvement of energy conversion efficiency.



X-Ray diffraction patterns for Ti_NP and pasta using 5mm, 8.5 mm, 10 mm and 12 mm balls at 3h rotation time

Peak (101) intensity and crystallite size for Ti_NP and pasta using 5mm, 8.5 mm, 10 mm and 12 mm of balls

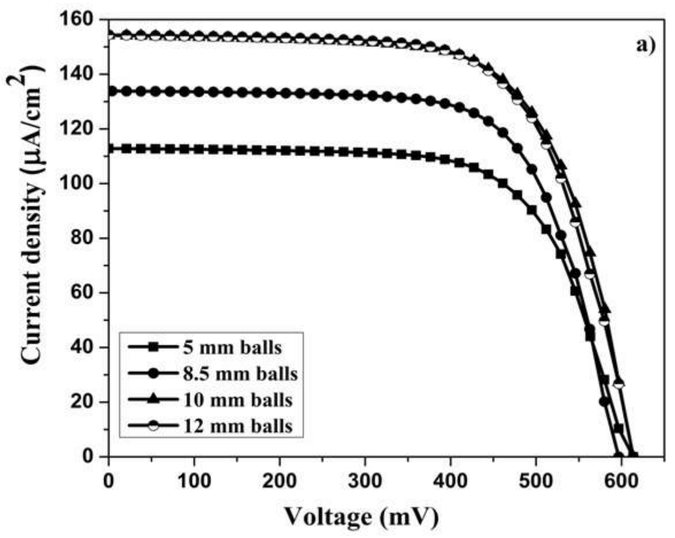
Sample	Peak (101) intensity 3h [%]	Crystallite size 3h [nm]
Ti_NP	100	16.3
5 mm balls	89	13.4
8.5 mm balls	77	11.7
10 mm balls	45	11.3
12 mm balls	45	10.3



FT – IR spectra of pasta using a) 5mm balls, 8.5 mm balls, 10 mm balls and 12 mm balls at 3h rotation time

Photovoltaic performances of DSSC using different size of ball (5mm, 8.5 mm, 10 mm and 12 mm) to preparation of pasta under 1000 lux illumination conditions

Nr. crt	Time	Materials	Isc [μA]	Voc [mV]	FF	η [%]
1		5 mm balls	112	613	62.7	15.36
2	3h	8.5 mm balls	133	596	68.6	18.13
3		10 mm balls	154	613	67.3	21.00
4		12 mm balls	154	613	66.7	21.19



The J-V measurements of DSSCs obtained from pasta using 5mm, 8.5 mm, 10 mm and 12 mm balls at 3h rotation time, under illumination of 1000 lux

Contact: Daniel Ursu danielhoratiu@yahoo.com

National Institute for Research and Development
in Electrochemistry and Condensed Matter, Timisoara, Romania

Selective resource recovery from kitchen waste by integrated dark fermentation-microbial electrolysis cell and ion substitution electrodialysis

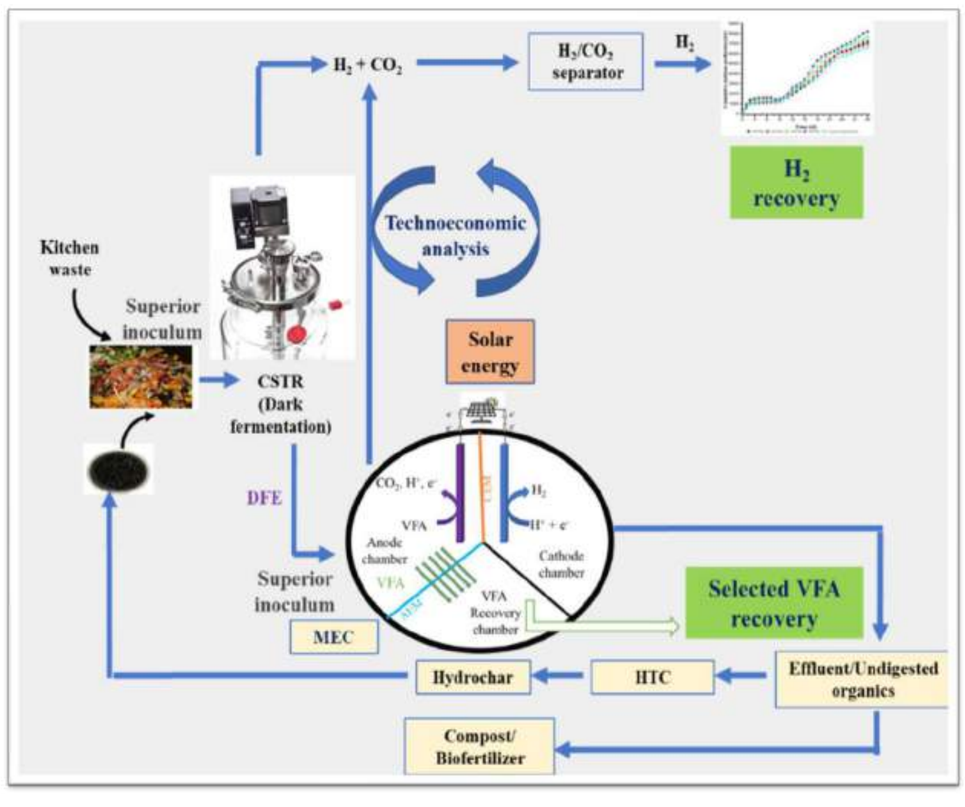
A

Project number: CF 39/28.07.2023, PNRR-III-C9-2023 I8
Authors: *Debkumar Chakraborty, Narcis Duteanu, Ionel Balcu, Gorakhanath Jadhav, Corina Macarie, Anil Dhanda, Doru Buzatu, Paula Sfirloaga, Makarand Ghangrekar*

In current project, technological constraints, such as pretreatment requirement of kitchen waste, inoculum preparation, and low H_2 generation efficiency will be addressed. Further, volatile fatty acid (VFA) recovery from fermentation media during acidogenesis and process optimization for a cost-effective zero discharge technology implementation will be carried out. Finally, the project aims to demonstrate H_2 production and VFA recovery from kitchen waste over a pilot-scale (100 L) reactor.

Microorganisms that are known to be capable of producing hydrogen through anaerobic fermentation processes include species from the classes: Enterobacter, Bacillus and Clostridium. The preferred raw material of these hydrogen-producing bacteria is represented by the different carbohydrates – glucose, the different isomers of hexose, bio-polymers such as starch and cellulose respectively.

The amount of hydrogen produced following these fermentation processes is dependent on the fermentation process. Thus, in the process of producing hydrogen through anaerobic fermentation it is desirable that the final product is acetate. However, a real progress would be represented by the possibility that the acetate produced in this stage can be used as a carbon source for further hydrogen production. Considering the fact that the waste resulting from the food preparation process in the kitchen has a complex, but also seasonally variable structure, it is necessary to prepare a microbial consortium that is capable of producing hydrogen by using these varied carbon sources.



Schematic illustration of integrated zero discharge model (DF-MEC-ED) for enhanced hydrogen production and VFA recovery

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PILOT-BASED INNOVATION ECOSYSTEMS FOR SMART CITIES (PilotInnCities)

Project number: DRP0200367

Authors: Florin BALTARETU, Ancuta NEAGU

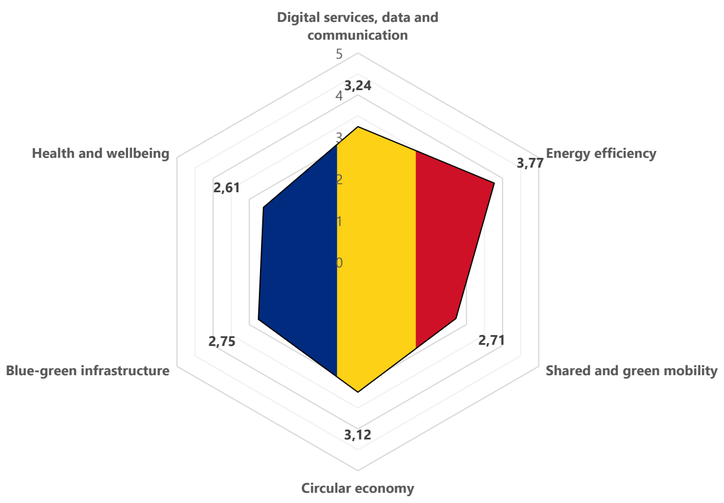
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Pilot-based Innovation Ecosystems for Smart Cities is an innovative project led by the Ministry of Industry and Trade of the Czech Republic, participated in by an 11-member consortium from six countries of the Danube Region (Czech Republic, Germany, Hungary, Romania, Serbia, Slovak Republic).

The PilotInnCities consortium's answer to this problem is the agile piloting method made available by Policy Learning Platform of the Interreg Europe program from Forum Virium Helsinki Finland.

Main Activities

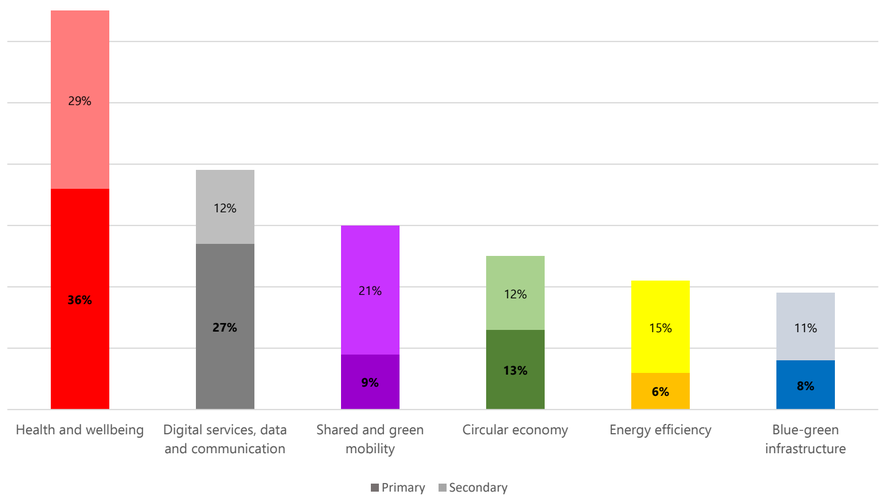
- Quadruple-helix analysis of national Smart City stakeholders and activities (digital services, data and communication, energy efficiency, shared and green mobility, circular economy, blue-green infrastructure, health and well-being)
- Summoning of national Smart City working/expert groups for a joint development and implementation of agile piloting for the Danube Region
- Designing of a Smart City agile-piloting methodology for the Danube Region
- Open competition of Smart City innovations
- Experimental implementation of agile pilots in Municipalities
- Pilot project reports for best/bad practice sharing
- Development of an action plan for the adoption of agile piloting methodology by public authorities
- Roadshow promotion of agile piloting in the Danube Region



ROMANIA: THE SIX SMART CITY DIMENSIONS



SCAN ME



Main Results (deliverables)

- Report from the quadruple helix analysis
- Workshops for quadruple helix stakeholders
- Smart City agile piloting methodology
- Project proposals selected for implementation
- Innovative Smart City solutions implemented as agile pilots in municipalities
- Action plan for the adoption of agile piloting of Smart City innovative solutions

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HR EXCELLENCE IN RESEARCH

PROCESS FOR CORROSION PROTECTION OF STEEL IN WATER

PATENT: MD 1754 Z / 2024.05.31

AUTHORS: Viorina GORINCHOY, Vladimir PARSHUTIN, Alexander COVALI, Vasile LOZAN

A

APPLICATION FIELDS: Thermal power steel pipes protection against corrosion in water.

AIM: To provide a method of protection of steel pipes contacted with water based on combination compound of salicylic acid.

SOLUTION: The invention relates to the field of corrosin protection of metals in water and can be used as corrosion inhibitior in closed steel pipeline systems.

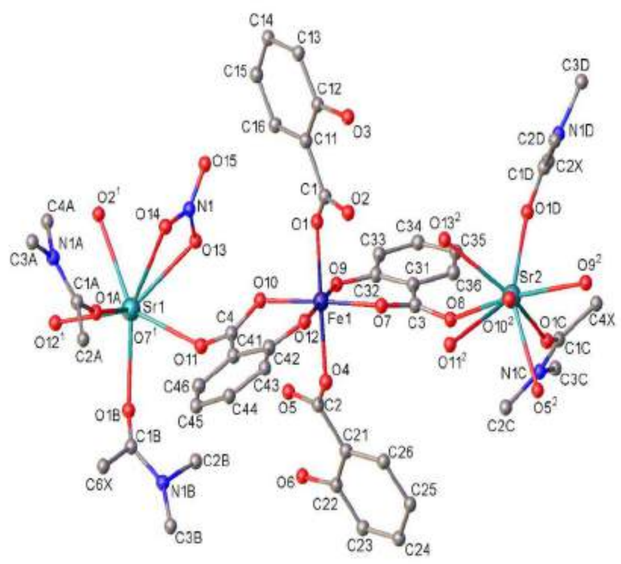


Fig. 1 Crystallographic structure of $\{[FeSr_2(SalH)_2(Sal)_2(NO_3)(DMA)_4]\}_n$ (1).

Concentration of 1, g/L	Concentration of 2, g/L	Time, h	Corrosion rate, k, g/m²·24 h	Inhibition, γ
0.75	0.2	8	1.364	15.4
		24	0.715	16.8
		72	0.388	17.0
		240	0.239	16.7

ADVANTAGES: The process for corrosion protection of steel in water consists in the combined or sequential introduction into the aqueous medium in contact with steel surfaces of a coordination compound $\{[FeSr_2(SalH)_2(Sal)_2(NO_3)(DMA)_4]\}_n$ (1) and furacilin (2), respectively in concentrations of 0.05…0.75 and 0.05…0.2 g/L. The technical result consists in a significant reduction in corrosion losses up to 17 times and uniform suppression of corrosion over time.

IMPLEMENTATION STAGE: At laboratory level.

ACKNOWLEDGMENTS: We thank the research subprogram SSMCCLP (code 010602) for the financial support of this work.

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NITRATE OF 2,6-DIACETYLPYRIDINE-BIS(PICOLINOYLHYDRAZONE)-BIS(AQUA)IRON(III)–HYDRATE (1/2.5) WITH STIMULATING PROPERTIES ON EXOCELLULAR LIPASE SYNTHESIS FOR THE RHIZOPUS ARRHIZUS CNMN FD 03 FUNGAL STRAIN AND NUTRIENT MEDIUM FOR CULTIVATION

A

Danilescu Olga[1], Bulhac Ion[1], Cocu Maria[1], Bourosh Pavlina[2], Ciloci Alexandra[3], Clapco Steliana[3], Labliuc Svetlana[3], Matroi Alexandra[3]

Moldova State University

[1] Institute of Chemistry, [2] Institute of Applied Physics, Chisinau, R. Moldova

Technical University of Moldova

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MD 4827

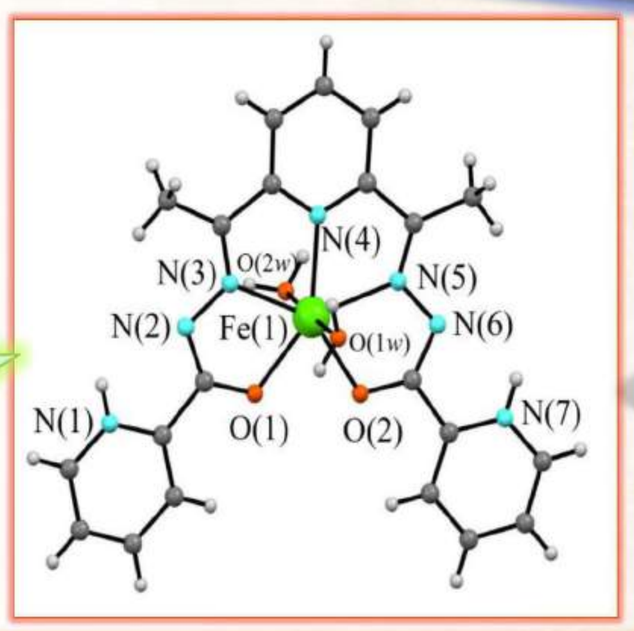
Coordination compounds derived from 2,6-diacetylpyridine (*dap*) hydrazones and transition metal ions have yielded a surprisingly rich chemistry. The *dap* ligands, due to their multicoordination sites, are capable of efficiently stabilizing the metal center by forming unique geometries.

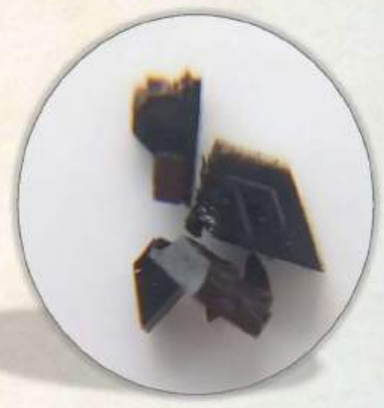
As a result of interaction $Fe(NO_3)_3 \cdot 9H_2O$ with 2,6-diacetylpyridine bis(picolinoylhydrazone) (H_2L) (molar ratio of 1:1) in methanol under refluxing (4 h), mononuclear coordination compound ***$[Fe(H_2L)(H_2O)_2](NO_3)_3 \cdot 2.5H_2O$*** was synthesized.

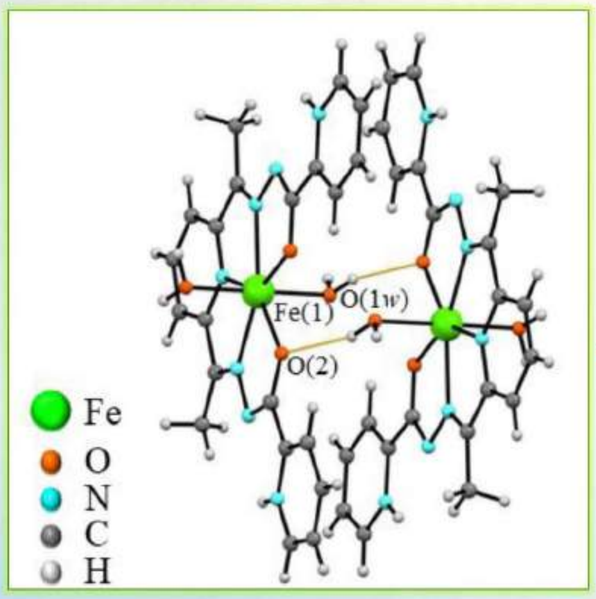
The coordination polyhedron of the metal cation represents pentagonal bipyramid formed by N_3O_4 set of donor atoms going from the pentadentate Schiff base ligand and two oxygen atoms of the coordinated H_2O molecules.

FeN_3O_4

Fe(1)–N(3) = 2.186(2) Å; Fe(1)–O(1) = 2.0717(19) Å;
Fe(1)–N(4) = 2.196(2) Å; Fe(1)–O(2) = 2.0842(19) Å;
Fe(1)–N(5) = 2.185(2) Å; Fe(1)–O(1*w*) = 1.9979(19) Å;
Fe(1)–O(2*w*) = 2.0393(19) Å.







The compound $[Fe(H_2L)(H_2O)_2](NO_3)_3 \cdot 2.5H_2O$ was investigated by X-ray diffraction. It was established, that crystals consists from complex mononuclear cations $[Fe(H_2L)(H_2O)_2]^{3+}$, NO_3^- anions and solvated water molecules.

The complex is highly soluble in water, which ensures a practical use as a component of nutrient mediums.



Rhizopus arrhizus
CNMN FD 03

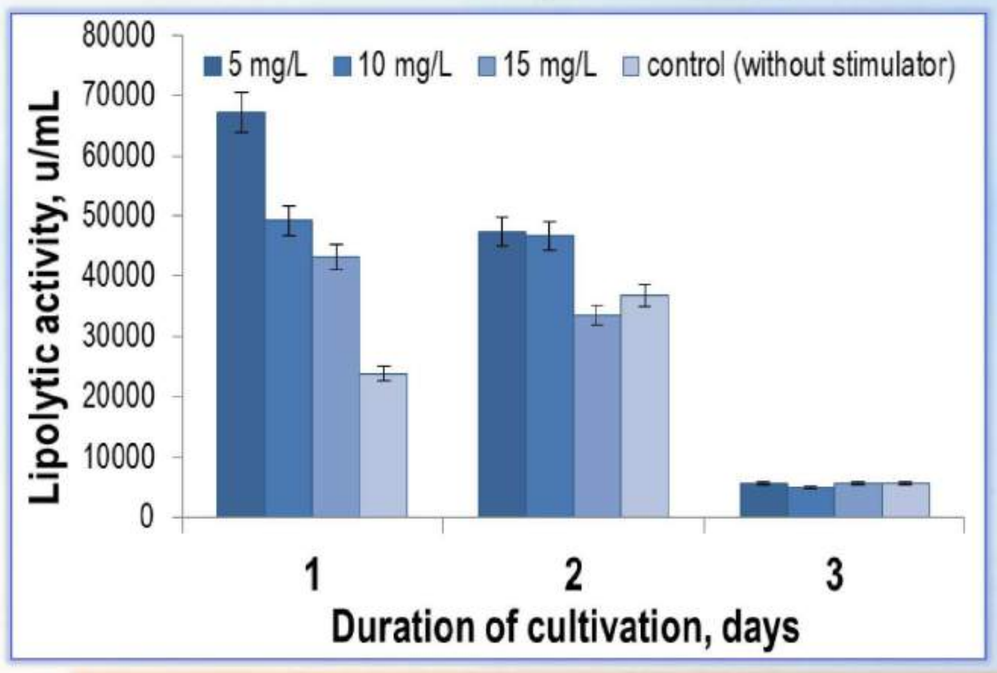


ADVANTAGE

The addition of coordination compound $[Fe(H_2L)(H_2O)_2](NO_3)_3 \cdot 2.5H_2O$ to the nutrient medium of *Rhizopus arrhizus* CNMN FD 03 fungal strain, in concentration of 5.0…15.0 mg/L increases biosynthesis of lipases with 17.4 – 82.7%, depending on the concentration and reduces the producer`s cycle of cultivation by 24 h. Thus, the highest values of lipase activity were found at the first day of growth, while in the control (without stimulator) the maxim of activity was revealed on the second day. The most effective concentration for enzyme production was 5.0 mg/L.

APPLICATION

Industrial microbiology



Acknowledgments

The authors are grateful for the subprograms financed by the Ministry of Education and Research of R. Moldova **010602**, **011202** and **020101**.

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HR EXCELLENCE IN RESEARCH

NEW POSSIBILITIES FOR PATHOGEN INACTIVATION USING QUASI PERIODIC OPTICAL STRUCTURES PACKED IN THE FORM OF SCREW-SHAPED ROTATION CHANNELS UPON PROPAGATION OF UV-C RADIATION THROUGH THEM

PROJECT NUMBER: # 011206

A

AUTHORS: Ion MUNTEANU, Marina ŢURCAN, Nellu CIOBANU, Elena STARODUB and Nicolae ENACHI

APPLICATION FIELDS: Medicine – Food – Health – Hygiene.

AIM: Our investigation focuses on the application of different geometries of the packing elements that create the screw channels for pathogen acceleration through the elements of this metamaterial. The decontamination efficiency is related to the rotation of contaminated liquids and gases through the screw channels of the metamaterials, prepared from quartz optical fibers (or spherical elements tightly packed by the metamaterial) in the torsion configuration.

SOLUTION: Expanding the range of devices designed to inactivate pathogens using of different geometries of the packing elements (quartz balls and fibers) that create screw channels for pathogen acceleration through the elements of this metamaterial leads to an increase in the efficiency of the decontamination rate of the infected fluid.

Viruses and bacteria can enter the body not only through traditional transmission mechanisms (direct contact with other people), but recently a positive correlation has been observed between the spread of the virus and the pollution of fluids (water or air). The main idea is related to the rotation of contaminated liquids and gases through screw channels prepared from optical quartz fibres in the torsion configuration represented in fig. 1. Contaminated liquids are rotated along the flow direction. Given that the density of viruses and bacteria (or droplets, aerosols they contain) is higher than the density of liquids, the adhesion of pathogenic carriers to the rotation channels increases depending on the degree of torsion of the channels. Since the relative number of such channels in the proposed meta-material is large, the total surface area consists of the sum of the flow channel area between the fibres.

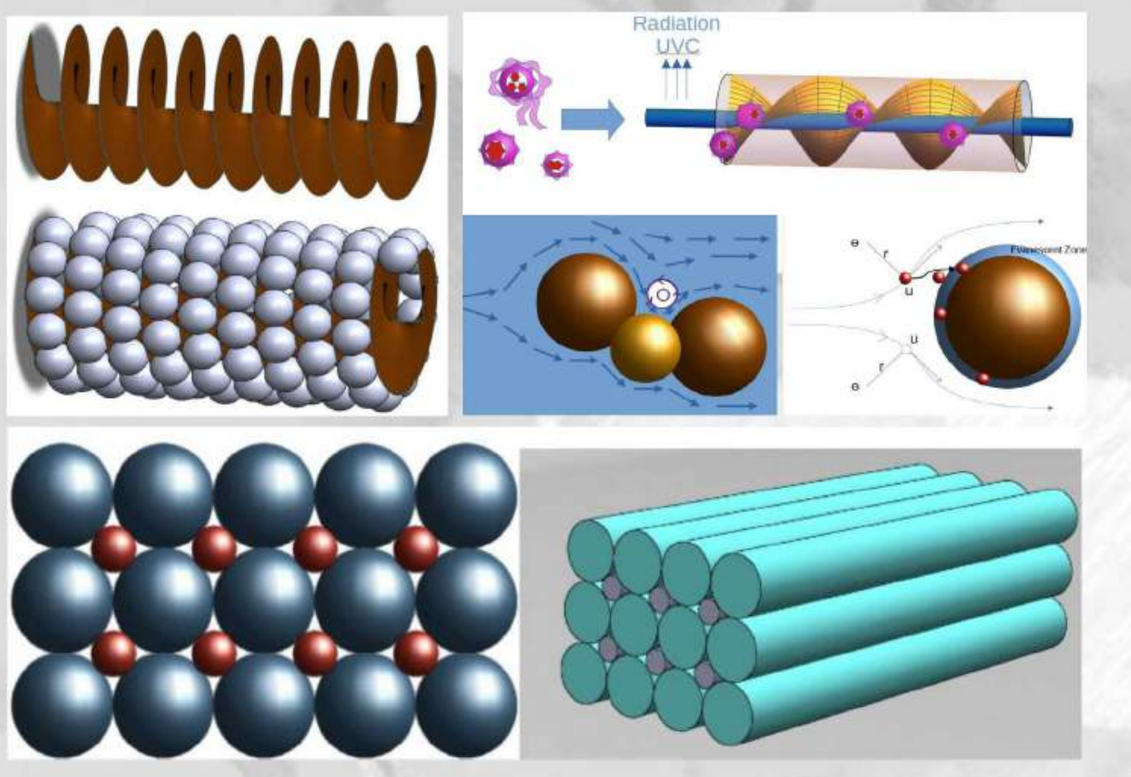


Figure 1. *Shows a new method of decontamination using spheres and quartz fibers. Acceleration of pathogens around the metamaterial elements and possible turbulent flow with acceleration of pathogens in circle or screw channels in the three-dimensional case. Achieving the evanescent zone of UVC radiation of each fiber or sphere, the pathogens can be effectively inactivated.*

ADVANTAGES: The advantages of this procedure consist in manipulating pathogens in the area of increased intensity of UV-C radiation which is due to the quasi-periodic optical structure packaged in the form of screw-shaped rotation channels where pathogens fall into areas of increased evanescence, therefore high doses of radiation received lead to their efficient inactivation.

IMPLEMENTATION STAGE: At the laboratory level.

ACKNOWLEDGMENTS: This research was supported by the *research project,* Subprogram code 011206 and 24.80012.5007.26SE

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HR EXCELLENCE IN RESEARCH

UV-C STERILIZING DEVICE

PATENT APPLICATION: Patent granted by decision10562 / 2025.01.10; MD s 2024 0049 / 2024.05.07

A

AUTHORS: Ion MUNTEANU, Marina ŢURCAN

APPLICATION FIELDS: Medicine – Food – Health – Hygiene.

AIM: The invention refers to the decontamination and annihilation of pathogens, frequently present on objects with irregular surfaces (for example: laboratory instruments, dental, surgical instruments and equipment, measuring devices, various devices), as a result of the action of ultraviolet radiation type C applied, which can be applied in the disinfection of various objects with irregular surfaces within medical, secondary and higher education institutions, the food industry, public health, etc...

SOLUTION: The particularity of the proposed device is the introduction of a set of quartz rods of different diameters that play an essential role of radiation diffusion to increase the decontamination rate of shaded areas of bodies with uneven surfaces.

The main idea of the proposed device are the increase in the radiation dose in the shaded areas of objects with irregular surfaces where direct radiation does not reach, and as a result of the physical effects obtained such as the reflection/refraction of UV-C radiation due to the quartz rods inserted inside the decontamination chamber, the dispersion of these radiations takes place to the entire surface of bodies with irregular shapes, as a result of which the pathogens are subjected to these high doses of radiation and effectively inactivated. At the same time, around these quartz rods the so-called evanescence zone appears which is a very effective area for decontamination of pathogens that are found at the contact between the object and the rod.

So, a bactericidal device is proposed, simple in construction, but which allows the disinfection of the surfaces of various irregular objects much more effectively compared to other devices, and due to the appearance of a microwave oven, it is very convenient to use.

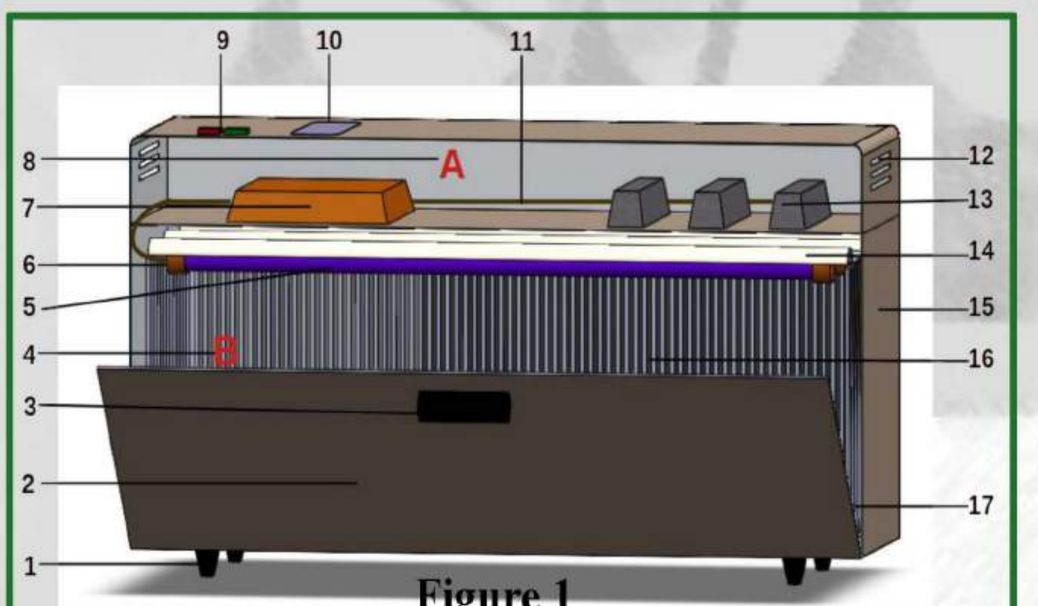


Figure 1

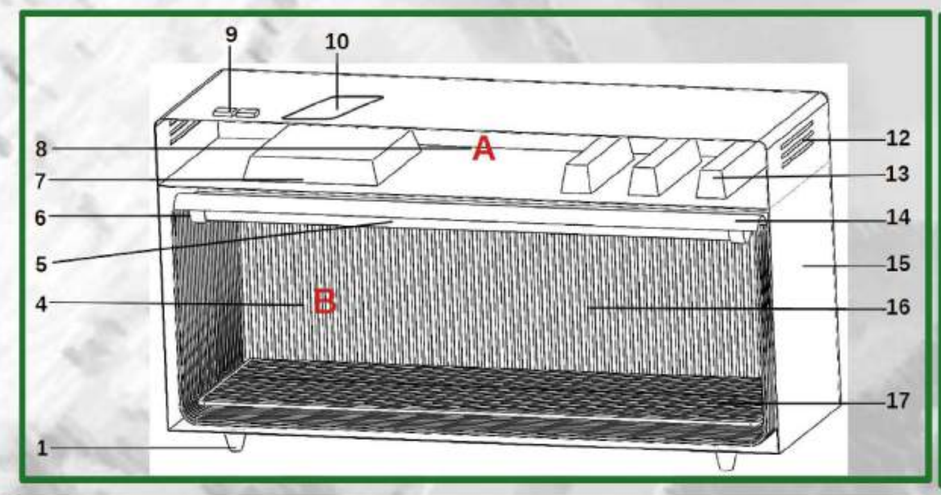


Figure 1. The UV-C sterilizing device includes the housing (15), the legs (1), the door (2), respectively the handle (3), the objects subject to decontamination are placed on the support (17) in compartment B (4), where the internal walls of this compartment are covered with reflective material, i.e. quartz rods (16) with diameters of 3 mm and 5 mm are regularly placed over the cover, and compartment A (8) is protected by the reflective screen (14) from ultraviolet radiation, it contains the electrical part such as: the switch (9), ballasts (13), the electric wire (11), to the connector (6), provides the UV-C source (5) with the necessary current, the control module (7) provides information to the screen (10), the ventilation of compartment A takes place through the holes (12).

ADVANTAGES: The advantages of this device are the significant reduction in the exposure time under the action of UV-C radiation of various objects with irregular surfaces by increasing the efficiency of the disinfection rate due to the dispersion of radiation in the decontamination chamber.

IMPLEMENTATION STAGE: : At the laboratory level.

ACKNOWLEDGMENTS: This research was supported by the *research project:* Subprogram code **011206** and **24.80012.5007.26SE.**

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HR EXCELLENCE IN RESEARCH

THE MATRIX OF INDICATORS FOR RECOGNIZING THE AGRIBUSINESSES ECOSYSTEM ASSETS: CONVERGENCE OF SYSTEM OF ENVIRONMENTAL-ECONOMIC ACCOUNTING (SEEA) AND INTERNATIONAL FINANCIAL REPORTING STANDARDS (IFRS)

OBJECT OF COPYRIGHT AND NEIGHBORING RIGHTS: OŞ No. 8026 / 07.10.2024

A

AUTHORS: Irina GOLOCHALOVA, Maria COJOCARU

APPLICATION FIELDS: A - Energy, Protection of the environment, Biotechnology.

AIM: Development of an accounting matrix for agribusiness based on modern trends such as SEEA and IFRS to support sustainable accounting and reporting, and demonstration of its effectiveness.

SOLUTION: Developing a three-stage algorithm for matrix formation, which includes: analyzing the provisions of each studied concept, determining criteria for comparison, and formulating clarifying questions to refine the comparison indicator. Additionally, proposing a set of indicators that facilitate obtaining the necessary information on changes in the state of ecosystem assets.

Table 1. Convergence Matrix of Accounting Indicators of the Republic of Moldova and International Practices for Disclosing Information on the State of Ecosystems (abridged version)

Criteria	NAS IFRS SEEA (CF, EA, AFF)
The role in ensuring sustainability	The degree of alignment with the principles of the SDC?
Information users	Who are the users of information about the state of ecosystems and natural capital, the source of their origin?
Methodological approach	What methodology is provided for solving the problem?
Classifications for accounting ecosystem assets:	What classification groupings are proposed to address this issue?
Methods for quantitative measurement of ecosystem assets	Are quantitative measurement methods provided?
Measurement concept	What valuation concept is accepted as the basic methodology of the research?
Method for measuring ecosystem assets and their changes	What methods for measuring value are recommended?
A method for measuring ecosystem services and their changes	What methods are recommended for measuring the value of ecosystem services?
Change in the quantitative state of ecosystems	Are changes in the quantitative status of ecosystems taken into account?
Change in the value status of ecosystems	What are the reasons for changes in value?
Recognition of natural capital	Should natural capital be recognized as part of the elements of financial reporting as a component of business capital?
Disclosure of information	What is the purpose of the information disclosure process?

Originality

1	The criteria for comparison and the "drivers" for the formation of the Matrix have been identified.
2	Development of key indicators related to climate change resulting from the interaction of agribusiness and environmental ecosystems

Table 2. Set of Statistical Indicators for Assessing the Condition of the Ecosystem and the Contribution of Agribusiness to its Maintenance

Indicator	Qualification of ecosystem condition indicators					Base of calculation
	factors	emissions	impacts	consequences	adaptation	
Loss of land covered by natural vegetation	v					SEEA: Earth as an ecosystem
Total greenhouse gas emissions (CO2) resulting from agribusiness	v	v				SEEA: Emissions into the atmosphere
Greenhouse gas (CO2) emission intensity resulting from production: ▪ from fuel combustion ▪ from land use changes	v	v				SEEA: Emissions into the atmosphere (monetary valuation is difficult)
Carbon stocks in soil			v			SEEA: Complexity of carbon accounting (monetary valuation is difficult)
The ratio of degraded land area to total land area			v			SEEA: Earth as an ecosystem
Direct losses in agribusiness caused by ecosystem degradation (natural climate disasters)			v			SEEA: Secondary ecosystem resources
Share of expenditures on disaster risk reduction				v		IFRS: Accounting data
Share of expenditures on resource and transportation taxes in the total volume of taxes and social security contributions				v		IFRS: Accounting data
Total volume of subsidies and similar transfers related to ecosystem degradation				v		IFRS: Accounting data
Net emissions (absorption of dioxide by soil)				v		SEEA: Complexity of carbon accounting (monetary valuation is difficult)
Share of agricultural land area where productive and sustainable farming methods are used					v	SEEA: Earth as an ecosystem

ADVANTAGES: The application of IFRS methodology has been justified as a promising approach that does not contradict the use of statistical information characterizing agribusiness. The convergence between IFRS and SEEA has been proven, as well as the divergence between national accounting standards (NAS) and SEEA. A set of indicators based on statistical data has been proposed to facilitate obtaining the necessary information on changes in the state of ecosystem assets, as well as climate change in general. It contributes to businesses' understanding of the modern approach to forming an information base for reporting, particularly regarding the recognition of ecosystem assets and natural capital, thereby enabling investors to assess risks when making environmental decisions.

IMPLEMENTATION STAGE: At the level of research by a functioning enterprise in the Republic of Moldova.

ACKNOWLEDGMENTS: This research is supported by the scientific project "The Model of Accounting and Reporting Changes in Agribusiness Ecosystem Assets in the Context of an Environmental Crisis", registered under number 24.80013.0807.1TR in the State Register of Projects in the field of science and innovation of the Republic of Moldova.

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CONSERVGERM

THE SAFE CONSERVATION OF THE GERMPLASM OF RARE PLANTS FROM THE REPUBLIC OF MOLDOVA (CONSERVGERM)

A

RESEARCH PROJECT NUMBER: 24.80012.7007.08TC

AUTHORS: Irina SFECLĂ, Vasilii SLIVCA, Doina ȘABAROV, Maria TABĂRĂ

APPLICATION FIELDS: *Biodiversity conservation*

AIM: The general objective of the project (2024-2025) refers to the short and medium-term conservation of the germplasm of some rare species from the native flora of the Republic of Moldova. The initiation of the collection "*Rare Plants of the Republic of Moldova*" within the germplasm collection of the "Al. Ciubotaru" National Botanical Garden (Institute) (NBGI) of the State University of Moldova.

SOLUTION: Rare species have a restricted distribution area and, as a rule, a low fruiting productivity. The collecting, storing and conservating process of the germplasm is an additional chance for the rescue and perpetuation of these species. It is imperative to research the process of fruiting and preservation of the seeds' viability, and to subsequently develop practical recommendations regarding the collection period and the storage time characteristics of the species.



Collecting process



Data on the fructification biology



Specie		Puncte de colectare
Fritillaria montana Hoppe ex W.D.J.Koch	Soldănești	Glodeni (Păd. Dom)
Cephalanthera damasonium (Mill.) Druce	GBNI	Strășeni (Căpriana)
Aconitum lasiostomum Spreng.	Chișinău (Pînzaru)	Ungheni (Rez. Plaiul Fagului)
Allium montanum F.W.Schmidt.	Ocnița (Naslavcea)	
Alnus glutinosa (L.) Gaertn.	GBNI	Ungheni
Alnus incana (L.) Moench	GBNI	
Asparagus offi cinal	GBNI	Ungheni (Bumbăta)
Aspara uifoli	GBNI	Cimișlia (Zloti)
Aurinia s Desv	GBNI	

Sample registration and data record keeping



Conditionering process







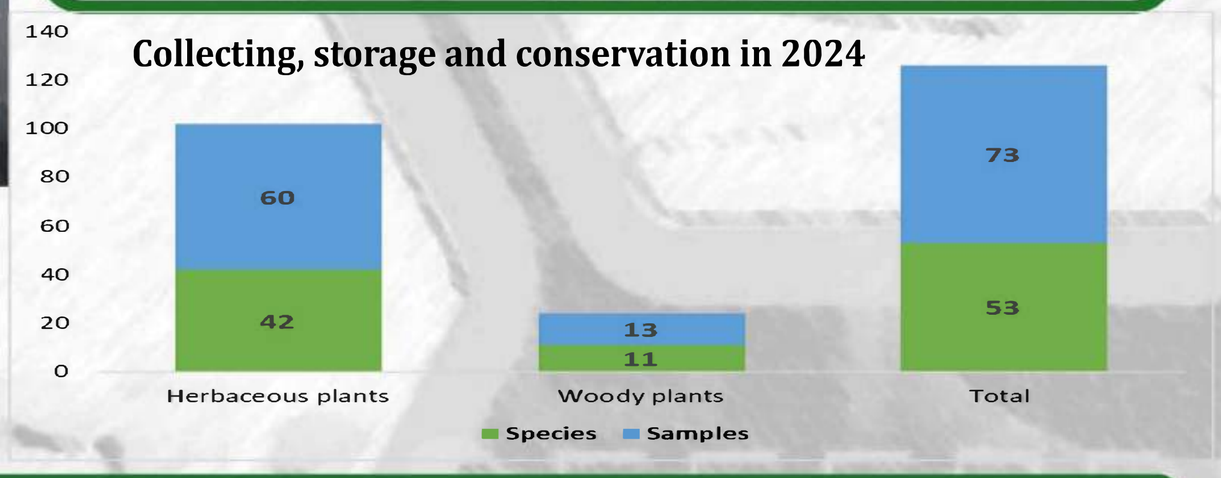
Evaluation and conservation

Results in the first year of research:

In 2024, 74 seed samples of 53 rare plant species were collected, conditioned, taxonomic affiliation was specified, cataloged and preserved.

The collecting methods were sustainable and conscious, aligned with the principles of nature conservation. The full collection of fruits of an individual or population was avoided. This practice is essential for the conservation of biodiversity and for the perpetuation of rare species in natural habitats. Data on the fructification biology of rare species was collected and systematized.

In order to maintain collaboration with the international scientific community, a list of 18 species (seeds collected in 2024) was provided. These are proposed to be included in the International Seed Exchange "*Index seminum*" of NBGI.



ADVANTAGES: The results obtained within this project have both theoretical impact, through taxonomic research, biological peculiarities and scientific publications, and practical, by collecting germplasm.

IMPLEMENTATION STAGE: "*Young Researchers*" project 2024-2025

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HR EXCELLENCE IN RESEARCH

Resilience Assessment of Critical Energy Infrastructure using LiDAR Technology

RESEARCH PROJECT NUMBER: 011210 and NATO SPS G6140

A

AUTHORS: Veaceslav SPRINCEAN, Marianna SAVVA, Liviu DONTU, Mihail CARAMAN, Florentin PALADI

APPLICATION FIELDS: A. Energy, Protection of the Environment, Biotechnology

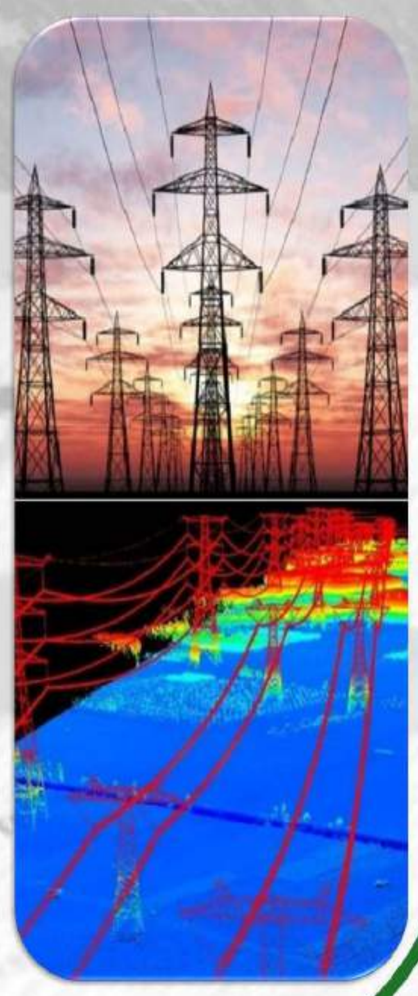
AIM: Development of LiDAR-based methodologies for rapid evaluation, assessment and analysis, as well as forecasting risks to enhance the resilience of critical energy infrastructure against biotic and abiotic factors.



SOLUTION: This research proposes the integration of a UAV-based LiDAR system to enhance the resilience assessment of critical energy infrastructure. The approach involves deploying advanced LiDAR-equipped drones for real-time monitoring and risk analysis of power grids and other vital energy assets. The collected data is used to create high-resolution 3D models for structural analysis, environmental risk assessment, and early hazard detection.

A key aspect of the solution is the enhancement of the ***eALERT*** **monitoring system**, incorporating LiDAR technology for improved precision in detecting vulnerabilities caused by biotic (e.g., vegetation encroachment) and abiotic (e.g., extreme weather, structural degradation) factors. The methodology includes **preflight planning, airspace assessment, UAV operation safety protocols, and real-time data processing** to ensure accurate and reliable inspections.

The implementation focuses on **developing computational models** for predictive maintenance and risk forecasting, allowing operators to proactively mitigate threats to energy infrastructure. By employing **geospatial data, flight path optimization, and AI-driven anomaly detection**, this research provides a **scalable and efficient solution for infrastructure resilience assessment.** The results contribute to strengthening energy security and optimizing maintenance strategies.



ADVANTAGES: Real-time monitoring, high-precision risk assessment, early hazard detection, improved infrastructure resilience, predictive maintenance, reduced operational costs, automated data processing, enhanced energy security, optimized resource allocation, and efficient vegetation and structural analysis.

IMPLEMENTATION STAGE: Actual system is proven in operational environment.

ACKNOWLEDGMENTS: Ministry of Education and Research through the grant number 011210 and NATO SPS G6140 APRIORI.

Method for automating the take-off and landing phase of a collapsible textile wing

Patent application: A/00540/03.10.2023
Core Program TEX-PEL-CHALLENGE 2026, PN 23 26 02 01 (THORR)
Author: Adrian Sălişteanu

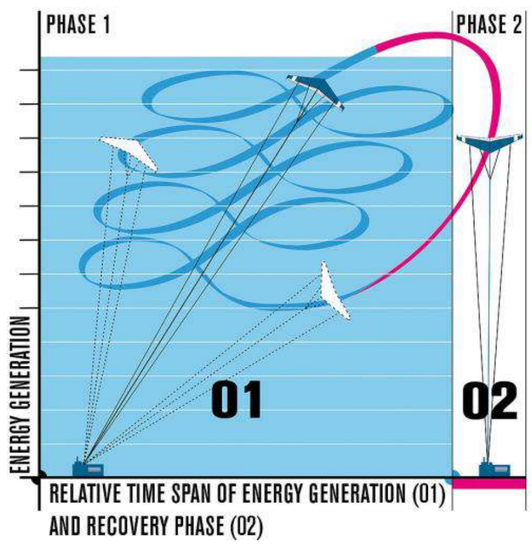
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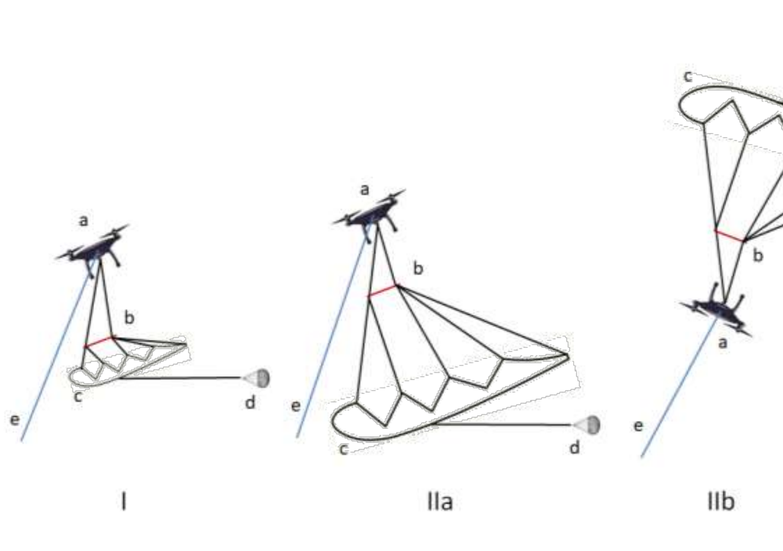
The invention relates to a method for the automatic control of the take-off and landing phase of a collapsible/inflatable textile wing or to put it simply and airfoil kite. The control method is applicable in the context of an automatic control system for a high-altitude wind power generator of the ground-gen type, which uses a textile wing to capture wind energy at high altitudes. Thus, the control of the captive wind wing is achieved through a self-propelled WCU (Wing Control Unit) module attached to the cable near the wing. The module integrates active control elements to automate the launch/retraction of the captive wind textile wing when wind conditions are unfavourable, such as when the wind is too weak, too strong, or during high-intensity storms.

As per invention description, the WCU is a small, remote-controlled quad-copter drone suspended a few meters below the kite and is integral part of the launch/landing system. The WCU have propeller guards to prevent accidental collision of the propellers with the kite risers or the kite tether. The picture bellowexplains the launch/landing sequence, were the kite (c) in collapsed/flaked position hangs bellow the WCU (a), a drogue chute (d) is used to position the kite canopy into wind and maintain the wind facing direction. The slider (b) is used to smooth line deployment and prevent line entanglements. A drum inside the WCU starts to un-reel the kite lines (stage I) causing the kite to catch more wind and consequently inflate until the actual drag cause by the kite equals the WCU lift (stage IIa). At this moment the WCU initiates a roll motion until the system positions upside down (stage IIb). From this time forward the WCU start to depower completely in order to permit the kite to fully inflate and slider to get in the lowest positon just above WCU (stage III).

The landing phase will be done in reverse, starting with the lines reeling by the WCU; this will cause a decrease in kite surface area till it reaches the size were the reverse rolling action can be achieved followed by further reeling of the lines inside WCU until the kite is fully flaked bellow and thus the airborne unit can park in a specially designed area next to the ground station.

The novelty of the system, and author's contribution, resides in this WCU unit concept and its ability to automatically launch and land the kite if so required.









This patent in part of an ongoing research project, a digital model was developed that reflects the behaviour of the torque, speed and power of the transmission designed for the ground station as expected from the claim. In the current stage a small scale experimental model was developed to test and refine the control method described in this patent application. The experimental model uses a small 500w motor/generator and is towed by a 7.5m^2 inflatable kite. The demonstrator model of the kite power unit will be scaled up for a nominal power of 20 kVA using separated retract motor and generator with a full-size 25m^2 kite.

Contact: adrian.salistean@incdtp.ro - ***National R&D Institute for Textile and Leather - INCDTP***

Presentation link: https://incdtp.ro/THORR/

Future of mycelium-based materials in construction industry

A

Project number: PN 23 26 01 02. Innovative, resilient digital solutions for the recovery and sustainable growth of terrestrial and aquatic natural resources, as well as for harnessing unconventional aerial energy resources (THORR).

Authors: Cazan Bogdan, Iordache Ovidiu

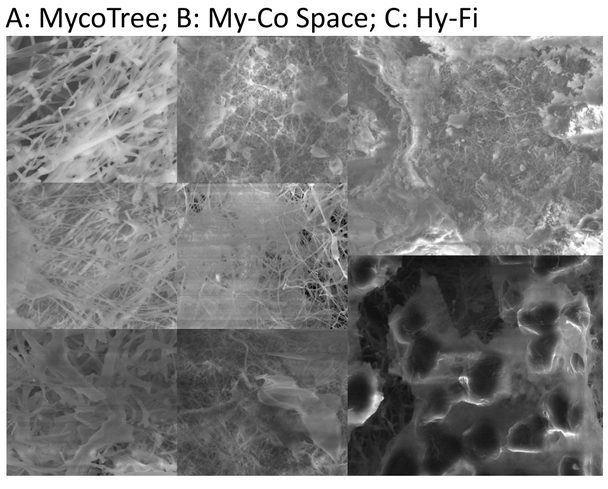
Myco-materials are a novel class of materials that get attention due to their low production costs, properties, biodegradability and low environmental impact. Depending on the production process they can be used in different industries, including constructions. Fungi-based foams, panels and bricks are just a few examples of products that can be obtained from agro-industrial waste and fungal mycelium.

Although mycelium materials have low structural strength when compared to other traditional materials such as concrete or steel, large architectural projects can be built by achieving stability through geometry or reinforcements. The benefits of mycelium construction materials lays in their production costs (e.g. starting from 4$USD for a mycelium brick), low density, fireproofing and insulating properties.

This study presents prototypes of mycelium materials obtained from agro-industrial byproducts and waste such as paper, sawdust, wheat bran and straws combined with different fungal mycelium strains. Three fungal strains were tested to obtain foam-like panels; resulted materials being assessed through microscopic and macroscopic analysis.



A: MycoTree; B: My-Co Space; C: Hy-Fi



SEM images of myco-material prototypes



Mycelium brick
produced by Ecovative



Macroscopic analysis of myco-materials: A – *G. lucidum*; B – *T. versicolor*; C – *P. ostreatus*

Further developments of mycelium materials will solve their low structural strength problem. A solution to this is reinforcing myco-materials with natural or textile fibers. Current studies and products from companies shows the feasibility to create an all-purpose type of material to replace traditional materials.

Contact: bogdan.cazan@incdtp.ro +40756751639

RENEWABLE MATERIAL FOR LEATHER DELIMING AND APPLICATION PROCESS

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Patent number: A/200728 from 21.11.2024

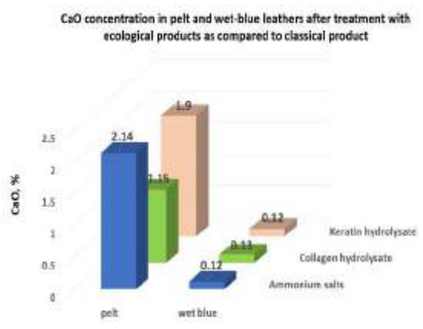
Authors: Gaidău C. Carmen, Simion Demetra,
Berechet D. Mariana, and Alexe A. Cosmin

Description: The renewable material is made from hydrolysates of collagen or keratin with medium or low molecular weights, conditioned with organic acids, with complexing properties of calcium ions from leathers processed for hair removal and allows the replacement of ammonium salts. The materials made capitalize on leather waste or lower quality wool and ensure an efficient and ecological process of removing calcium ions from natural leathers, with beneficial ecological effects for the environment.

Innovation:

From leather waste (a, b) and low-quality wool (c) to protein hydrolysate (d, e) and ecological deliming products (f) for replacing ammonium salts in hide and skin processing (g, h), with the same efficiency of calcium ions releasing (i):

a)  b)  c)  d)  e)  f) 

g)  h)  i) 

Advantages:

♦ Ammonium pollution elimination; ♦ cleaner workplaces; ♦ reduction of wastewater eutrophication; ♦ protein-based waste recovery-reuse-recirculation; ♦ organic waste reduction; ♦ new added-value products made from waste; ♦ creation of potential new jobs; ♦ improved carbon footprint of leather products; ♦ reduction of organic waste in leather industry and zootechnics; ♦ products complying with circular economy needs.

Acknowledgement:
The works were funded by the Ministry of Research, Innovation and Digitalization through Core Program Project 23.26, TEX-PEL-CHALLENGE 2026, project PN 23260302, BIO-LEATHER.

Contact: carmen.gaidau@incdtp.ro

National Research and Development Institute for Textile and Leather- Leather and Footwear Research Institute

Composition for polymer biocomposites based on butadiene-styrene block copolymer, polypropylene and coffee grounds

A

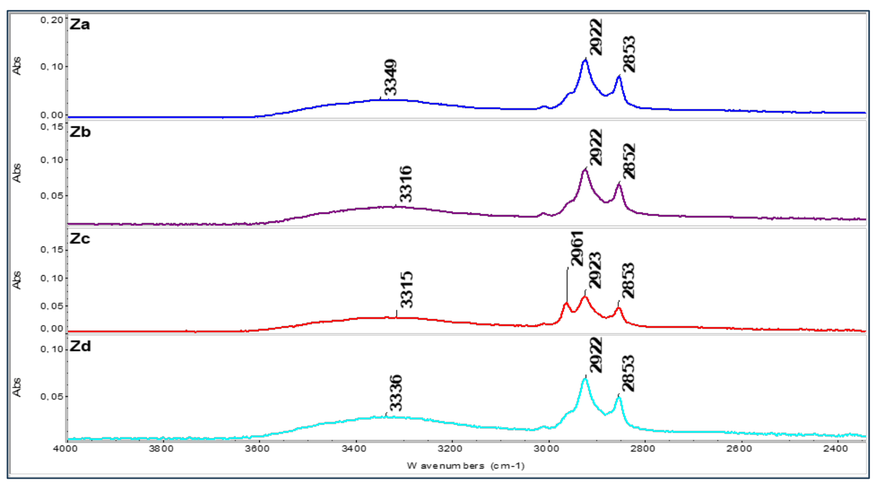
Patent A – 00726 / 2024

Project number: PN 23-26- 03-01 AVANS-COMP-POLYMER, Contract 6N/2023

Authors: Stelescu Maria Daniela, Berechet Mariana Daniela, Sonmez Maria, Georgescu Mihai

The invention refers to the production of polymer biocomposites based on butadiene-styrene block copolymer, polypropylene, coffee grounds and other ingredients, which are intended to obtain products with applications in: the footwear industry, the automotive industry, additive technologies, etc.

In the polymer biocomposites that are the subject of the present invention, a mixture based on butadiene-styrene block copolymer and polypropylene is used as the polymer matrix, and coffee grounds obtained as waste from coffee consumption are used as the filler. They are obtained by the dynamic vulcanization technique and melt mixing, using internal mixers or an extruder-granulator. To improve the compatibility between the phases of the biocomposite, polypropylene grafted with maleic anhydride (PP-g-AM) is used, and for dynamic vulcanization, an alkylphenolic resin and tin chloride dihydrate are introduced into the mixture, which can lead to the formation of a cross-linked structure through methylene/chromium ring bridges between macromolecules. In the process of obtaining the new materials, an additional pre-operation of processing the coffee grounds is required (Figure 1), to improve the compatibility between the polymer matrix which is hydrophobic and the organic filler (coffee grounds) which is hydrophilic. The obtained polymer biocomposites can be processed into finished products by methods specific to plastics (such as: extrusion, injection, compression).





Za coffee ground boiled in water, 20 min. ultrasonic 100Hz, 80°C

Zb coffee ground boiled in water for 4 hours

Zc coffee ground boiled in water + PDMS, 60 min ultrasonic 100Hz, 80°C

Zd coffee ground boiled in water + Si69, 60 min ultrasonic 100Hz, 80°C

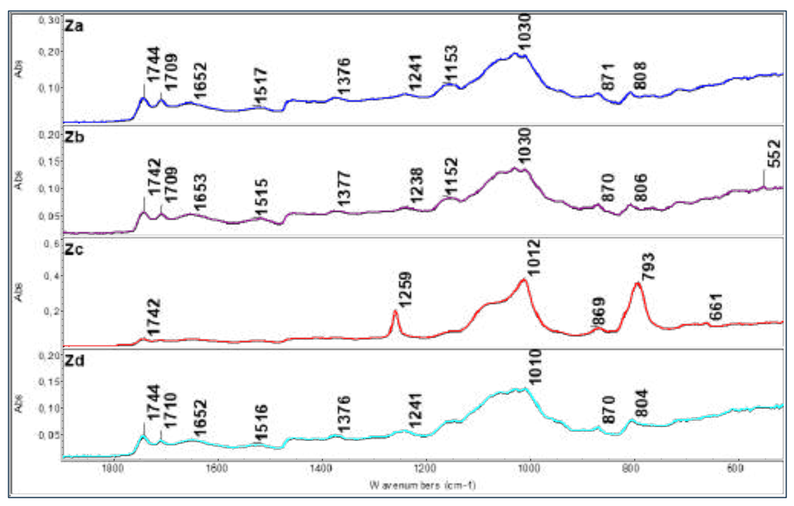


Figure 1. FTIR spectra of coffee grounds: in the range of 2400-4000 cm^{-1} and in the range of 550-1800 cm^{-1}

The new elasto-plastic materials have a pleasant smell of coffee, which persists over time, and a natural color, which no longer requires the addition of dyes. In addition, the products have good physical and mechanical properties (Figure 2), and no waste is produced in the technological process.

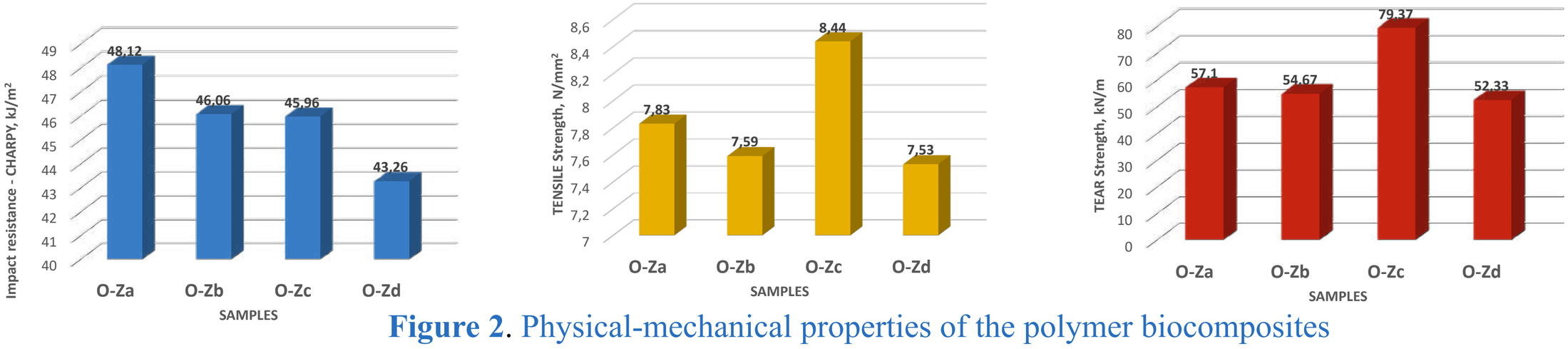


Figure 2. Physical-mechanical properties of the polymer biocomposites

Contact: maria.stelescu@icpi.ro

NATIONAL RESEARCH AND DEVELOPMENT
INSTITUTE FOR TEXTILE AND LEATHER

Antibacterial expanded thermoplastic polymer composite resistant to high temperature, based on styrene-butadiene-styrene elastomer, functionalized calcium carbonate waste and thermo-microcapsules

Patent/project number: *A/200176/12.04.2024*

Authors: Alexandrescu L., Sonmez M., Stelescu M. D., Georgescu M.,

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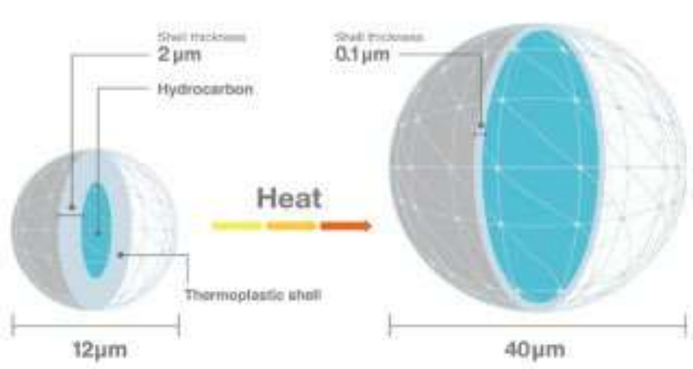
The invention relates to an antibacterial expanded thermoplastic polymer composite resistant to temperatures above 250^{0}C, based on styrene-butadiene-styrene elastomer, calcium carbonate waste from shells, marble and dolomite, functionalized with 3-aminopropyltrimethoxysilane, expanded with thermo-microcapsules. Waste is ground to sizes of 300-500 nm in a cryogenic mill at 10.000 rpm and compounded with polymer by mixing in a Brabender mixer, then tested in terms of melt flow indexes to establish optimal parameters of injection and extrusion, in order to obtain products with necessary characteristics for use in the food, medical, consumer goods and footwear industries.

High-performance characteristics:

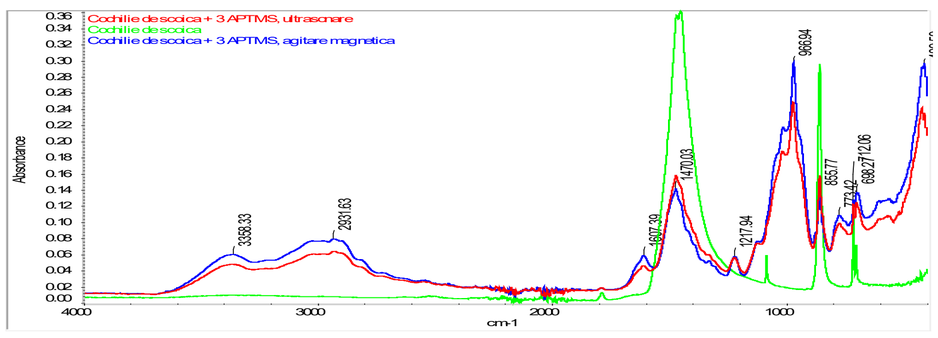
- High melt flow index (MFI).
- High flexibility to high hardness.
- High resistance to immersion in acids, bases and petroleum products at temperatures in the range 0-100˚C.
- High resistance to thermo-oxidative ageing (-40°C…..+250°C) over time under static and dynamic conditions, over a long period (168 hours).
- High resistance to impact, breaking, tearing and repeated deformations.



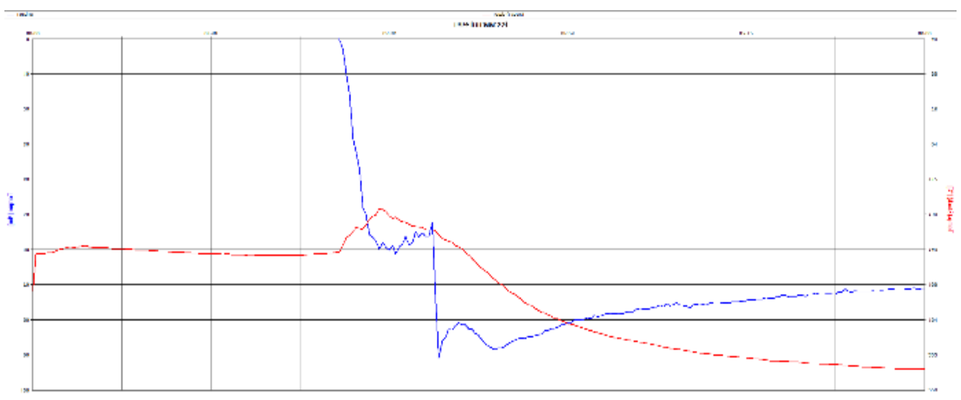
Waste from seashells



Aspect of a thermo-microcapsule (According to the Unicell technical specification by Akzo Nobel



FTIR spectra of seashell functionalized with 3-APTMS using the two methods and unfunctionalized seashell



Torque and temperature variations over time recorded on the Brabender Plasticorder for the copolymer based on styrene-butadiene-styrene and natural calcium carbonate waste (seashells, marble, dolomite) functionalized with 3-aminopropyltrimethoxysilane and 8% thermo-microcapsules.



Antibacterial composite granules

Products obtained according to the invention have the following advantages:

- **Environmental protection by recycling, reusing and converting waste from the footwear industry into new added value products;**
- **Protection of the human factor by reducing toxicity in the work environment;**
- **Less toxic finished products;**
- **Less pollution due to functionalization of waste;**
- **Optimal processability due to compatibilization with polyethylene-graft-maleic anhydride;**
- **Physical-mechanical properties are according to standards in force: resistance to abrasion, elasticity, hardness, etc.**
- **Increased turnover for the economic operator.**

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Development and validation of a combined tri-component integrated system for wastewater treatment (3treat)

Project: The publication of the scientific paper is funded by the Ministry of Research and Innovation, within National Project PN-IV-P7-7.1-PED-2024-1337, contract 62PED/2025 (*3treat*).

Author/s: Ovidiu Iordache, Ioana Corina Moga, Bogdan Cazan

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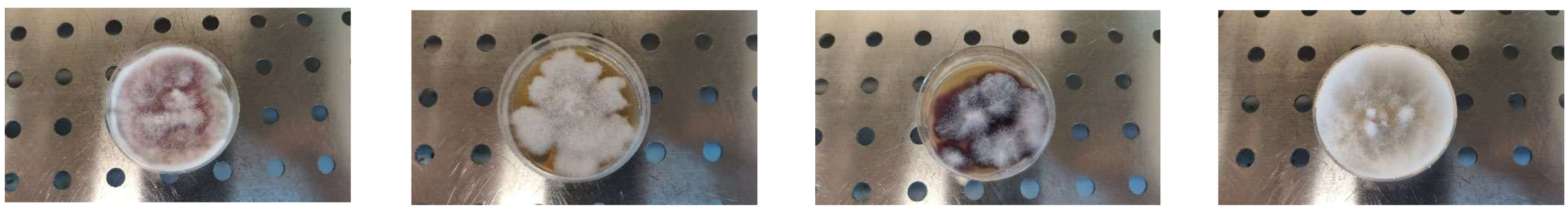
Context

Textile and leather industrial activities are responsible with the generation of large quantities of process waters that are characterized by high industrial chemicals content, that when discharged into public waters or refluxed into environment components, lead to ecosystemic hazards. The treatment of tannins containing wastewater is difficult, due to their high solubility in water, which is a limiting factor in conventional biological treatment methods, as it inhibits microbial growth in activated sludge.

Project scope

The development of a combined wastewater (specific to textile and leather industry) treatment method, coupled with the execution of a customized treatment installation, with high efficiency and versatility, overcoming the disadvantages of currently used physical-chemical treatment. The technology relies on complementarity between three key components for reduction and breaking down of main pollutants in the treated wastewater volume. The three components refer to macromycetes strains, MBBR specific HDPE carriers and sonication treatment.

Macromycetes strains will be immobilized on biofilm carriers, for mechanical biomass fixation. High yields of biomass will be targeted, by macronutrients enhancement of growth rates. Several strains will be taken into consideration, such as: *Trametes versicolor, Pleurotus pulmonarius, Pleurotus ostreatus, Morchella importuna, Pleurotus eryngii, Pleurotus djamor, Pholiota nameko, Pholiota adiposa, Lentinula edodes, Ganoderma lucidum,Ganoderma lingzhi, Flammulina velutipes, Fusarium oxysporum, Cerioporus squamosus* etc.



The **MBBR** technology utilizes free-moving biofilm carriers, which represents a future evolution of the activated sludge process that allows a greater pollutant removal degree in smaller systems (i.e., bioreactors). The biofilm grows protected within small plastic carriers, which are carefully designed with high internal surface area. These biofilm carriers are suspended and mixed throughout the water phase.

Biotreatment will be closely followed by **sonication process** that beside the effluent sterilization role (due to pressure variation and cavitation), will disrupt microbial cell walls, and release iso-enzymes, that will further act as biocatalysts, mediating hydrolytic reactions. Sonication treatment stage will be used for destruction of both microbial load in the treated wastewater, yielding a post-sterilizing effect after the first treatment stage, and disruption of organic matrixes that are difficult to degrade.



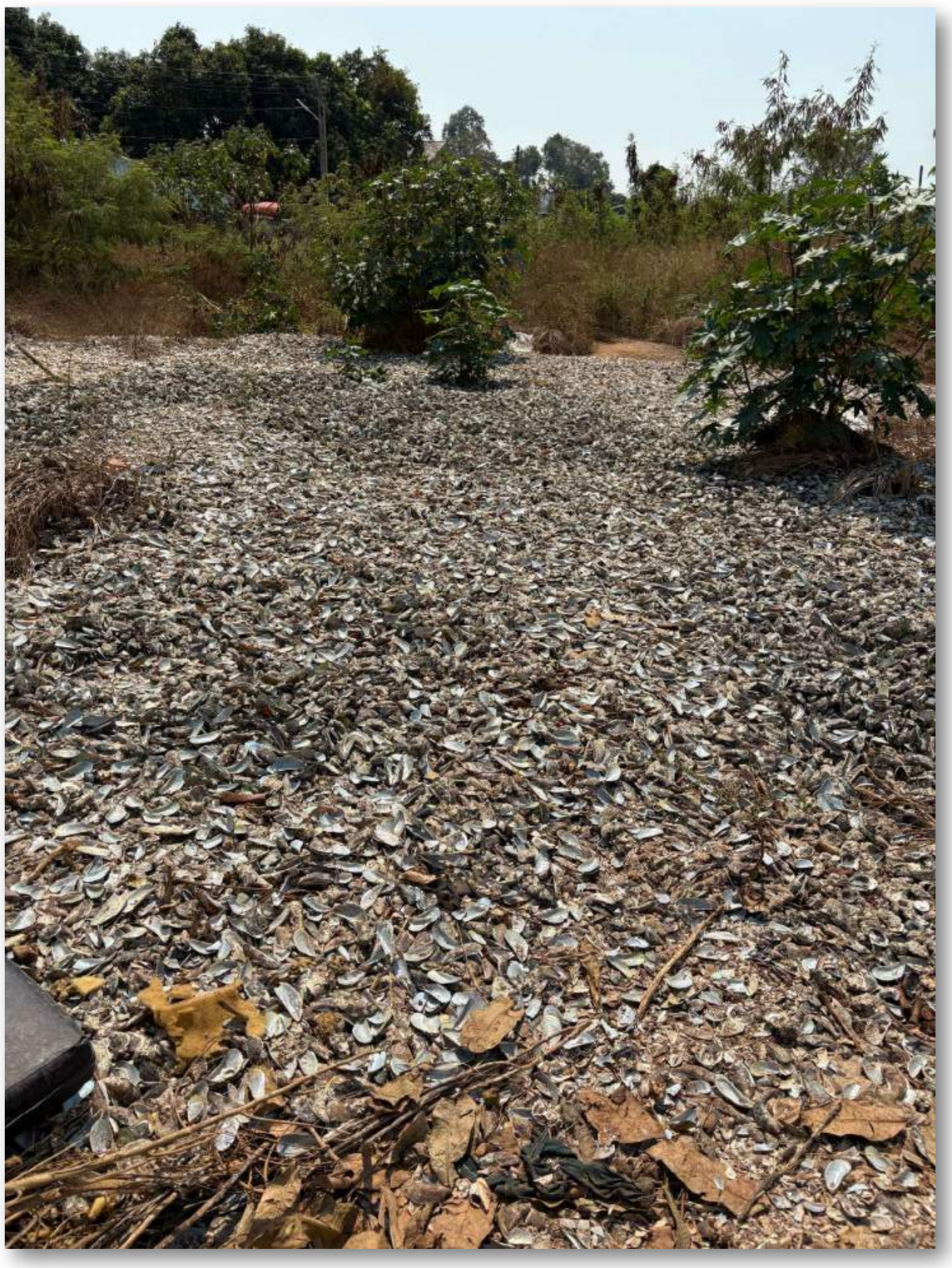
Contact: Ovidiu Iordache, iordacheovidiu.g@gmail.com, 0762171440

BeeFriend

Sirinda Chalermthiralert, Parinda Chalermthiralert
Advisors: Jeerasak Jitrotjanarak, Chutiparn Lertvachirapaiboon

A

This project develops a bee-friendly insecticide using waste from mussel shells and eggshells, addressing both agricultural and environmental challenges. The key ingredient, calcium carbonate ($CaCO_3$), acts as a natural pest deterrent by forming a physical barrier, altering pH, and creating a drying effect that disrupts pests without harming beneficial pollinators like bees. Unlike conventional insecticides, our solution is sustainable, reducing chemical pesticide use while repurposing problematic waste. By promoting pollinator-safe farming, this innovation enhances crop yields, supports biodiversity, and offers an eco-friendly alternative for pest control.







Contact: j_jerasak@hotmail.com

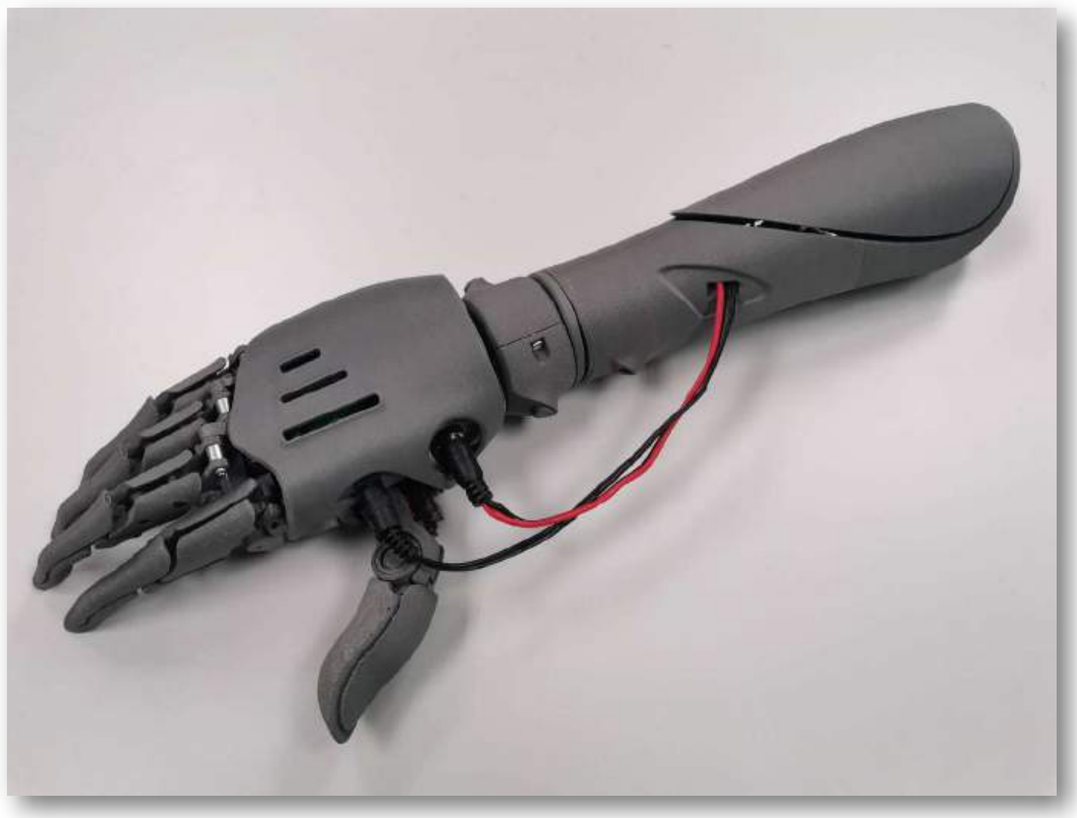
Wearable Muscle Control System for Open-Source Bionic Arms

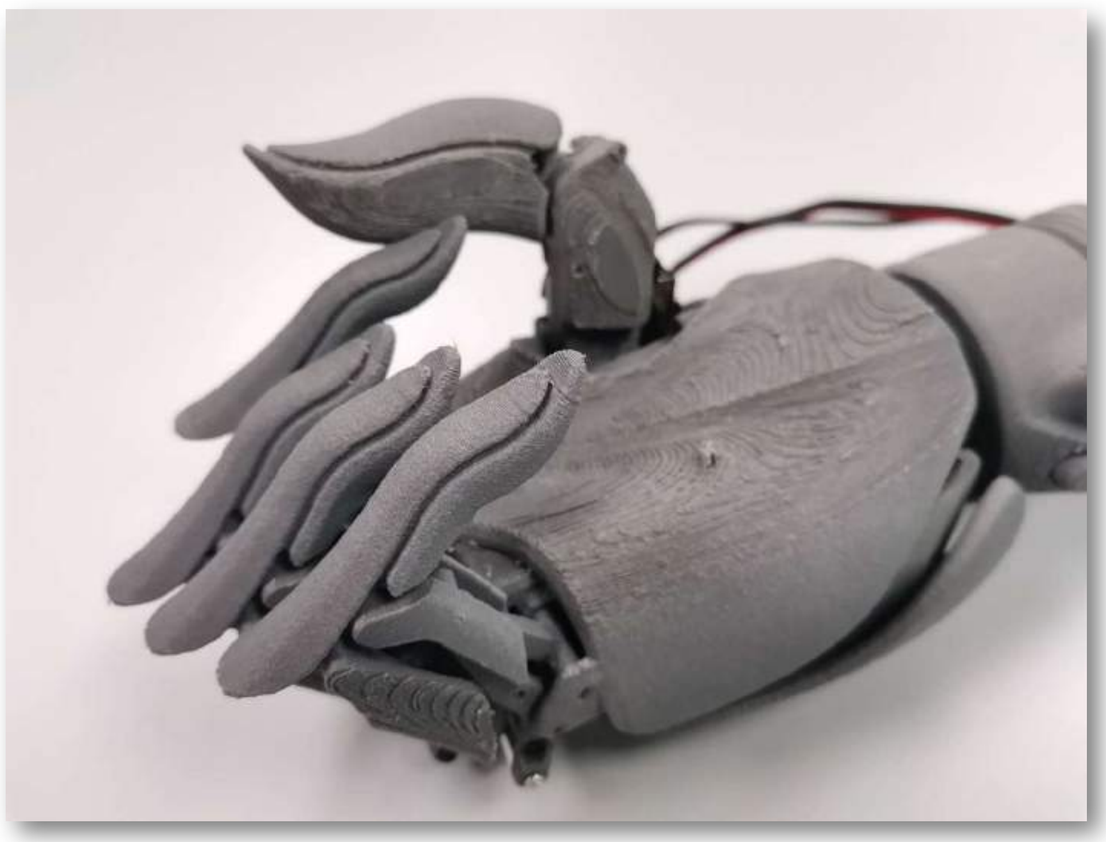
Thanaporn Pongphaew

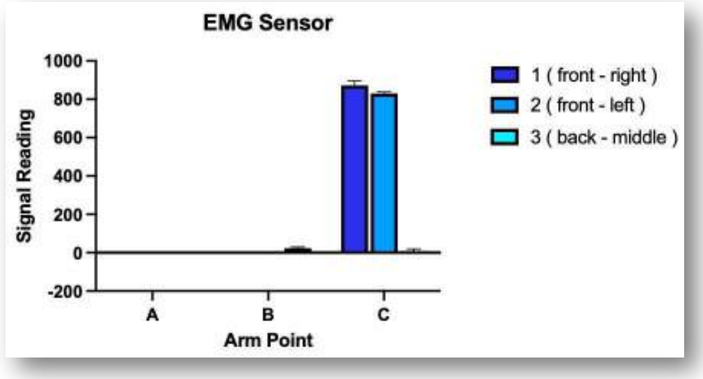
Advisors: Parinton Jangtawee, Kaewkan Yambangyang, Jeerasak Jitrotjanarak

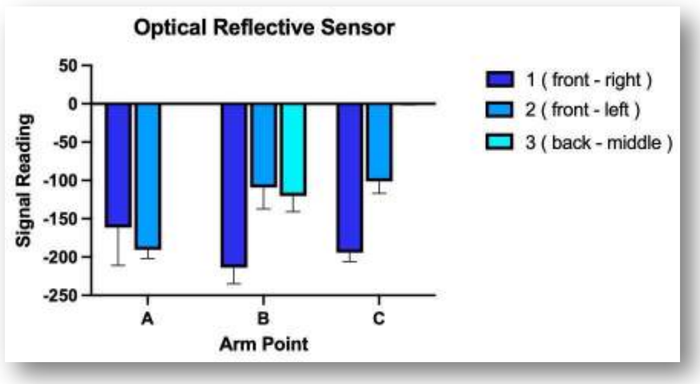
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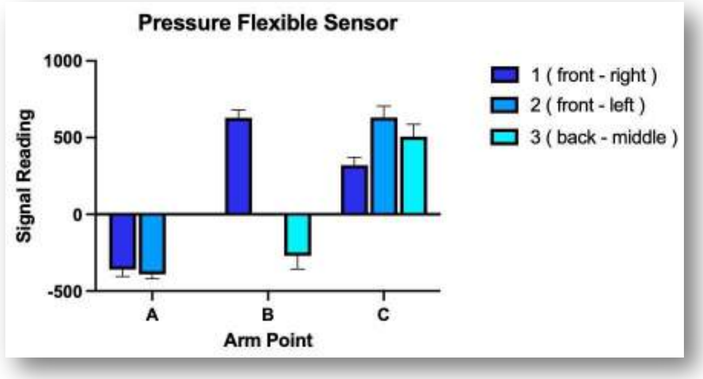
This project explores the effectiveness of EMG, optical reflective pressure, and pressure sensors in detecting muscle activity for bionic arm control. Sensors were tested at nine positions along the forearm muscles responsible for hand opening and closing. A healthy subject performed repeated gestures while signals were collected at 5ms intervals using an ESP32 microcontroller with 12-bit resolution (4096 levels). Data analysis focused on signal stability, gesture differentiation, and efficiency to identify the best sensor-position combination. The findings aim to enhance sensor selection and placement, improving the accuracy and responsiveness of prosthetic limb control.











Contact: j_jerasak@hotmail.com

WASEN

100% bio-waste-to-coal energy for Environment Sustainability

Patent number: TH2403003955

Ms.Piriya Vongpivat, Ms.Pirada Vongpivat,
Mr.Supphanat Koolhiran, Mr.Jade Koolhiran
Mentor : Mr. Jeerasak Jitrotjanarak

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Food waste is a pressing global challenge, with approximately 1.3 billion tons discarded annually, contributing significantly to environmental harm. During our research at snack factories, we discovered that most food waste could be repurposed for animal feed or fertilizers. However, one particular food production line—popcorn waste—presented a unique challenge, as it could not be sold or reused in this way. In response, we developed WASEN Coals, a groundbreaking solution based on the waste-to-energy principle. WASEN Coals are created by grinding leftover popcorn, compacting it, and sun-drying it to preserve its natural qualities. We then enhance its efficiency by adding used vegetable oil, resulting in a sustainable, biodegradable product perfect for outdoor activities like barbecues and camping.



The benefits of WASEN Coals are manifold: they help reduce greenhouse gas emissions, offer lightweight portability, and provide a convenient solution for eco-conscious outdoor enthusiasts. More importantly, they contribute to reducing food waste in communities, turning what would be discarded into a valuable resource. Made from safe, eco-friendly ingredients, WASEN Coals not only serve the environment but also create an opportunity for additional revenue through sales.

By transforming food waste into a practical and sustainable product, WASEN Coals make a positive impact on both the planet and our communities.



Contact: scis.cud@gmail.com, j_jerasak@hotmail.com I +66846396363, +66959351062

The Cyclone Skimmer (Aerator and Water Mixer)

Patent/project number: 2503000677

Nattarin Ouicharoen , Phichphanita Mathasuriyapong, Thunthita Padetpai

Mentor:Jeeasak Jitrotjanarak

A

The Cyclone Skimmer (air-water mixer) system to create an oxygen- or nitrogen-rich liquid fertilizer. This approach can reduce reliance on chemical fertilizers, help maintain cleaner water, and potentially enhance the growth rates of algae, aquatic plants, and aquatic animals. Adjust each phase to match your local conditions, resources, and the specific species you are cultivating.

A surface aerator works by drawing water up from the basin, spiraling it through a volute, and then breaking it into droplets via a diffusion head. Oxygen enters the water in two primary ways: first, as droplets form and contact air, and second, when those droplets rejoin the main body of water, creating turbulence and further mixing. This dual-stage process boosts dissolved oxygen levels and promotes better mixing—vital for wastewater treatment, aquaculture, and general water quality management.



Example: To enrich water with oxygen or nitrogen for cultivating algae, aquatic plants, or aquatic animals.

2. Research and Design

1.Review Existing Equipment

1. *Identify pumps, nozzles, or piping that are readily available.*
2. *Compare different designs of cyclone or swirl chambers that maximize gas-liquid contact.*

2.Preliminary Calculations

1. *Estimate flow rates (liters per minute or cubic meters per hour).*
2. *Determine the power requirements for your pump and/or compressor.*
3. *Consider the desired gas saturation level (dissolved oxygen or dissolved nitrogen).*

3. Equipment

1.Main tools

1. ***Pump (submersible or external): provide sufficient flow and pressure.***
2. ***Cyclone or swirl chamber (PVC pipes, fittings, or a mixing vessel)***
3. ***Air/nitrogen supply (air compressor, oxygen concentrator, nitrogen tank, or ambient air intake).***
4. ***Tubing and valves: control gas flow rate.***
5. ***Tank or reservoir: hold and circulate water.***

2.Additional Tools

1. *Dissolved Nitrogen (DN) meter or test kits: measure nitrogen levels.*
2. *pH and temperature meters: monitor water conditions.*
3. *Basic hand tools (drills, saws, sealants): assemble all the components .*

CONTACT :
Mr. Jeerasak Jitrotjanarak
Satit Chula Innovation Society

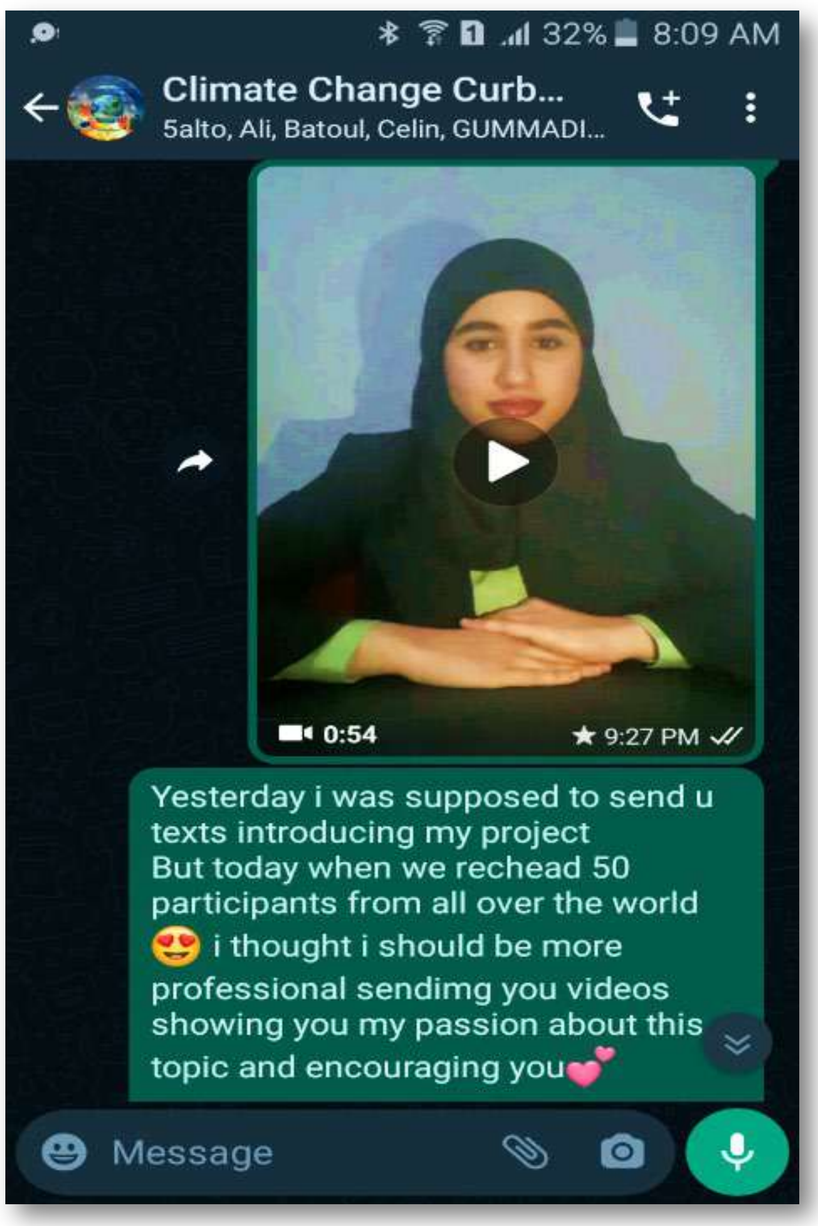
Climate Change Curb

Student Project

Author: Zainab Arzouni

A

I was always passionate about protecting and saving nature, and when I joined some online webinars about Climate Change I was shocked with the threat our environment is exposed to. Then, I wanted to make a change, to make actions, not just to spread awareness by talking or writing. I knew that trees is the only cure for Climate Change as one tree can absorb 22KG of Carbon dioxide a year which is huge, since as we know that carbon dioxide is one of the poisonous gasses causing climate change. So, since I was a known international student, I took the advantage of making a whatsapp group and invited people from around the globe, when i had 70 people from more than 9 countries, I started sending them videos of me talking introducing them to Climate Change and spread awareness, then i planted lots of trees in my country and sent them the videos, this way they were encouraged and sent their contributions, so mision was accomplished.

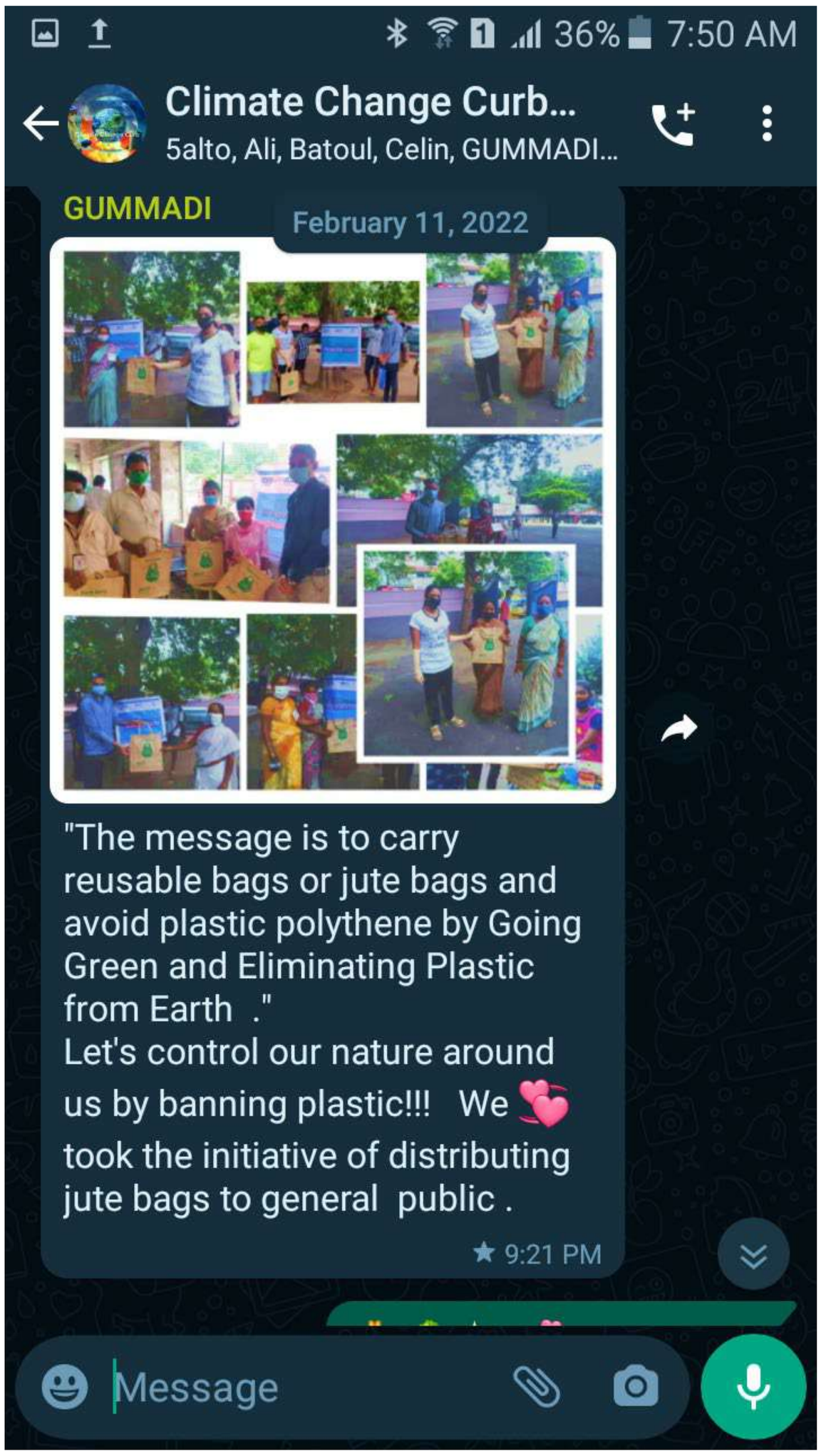


Climate Change Curb

VIDEO







Contact: zeinabarzouni94@gmail.com

Worldwide Perspective on the Lighting Market

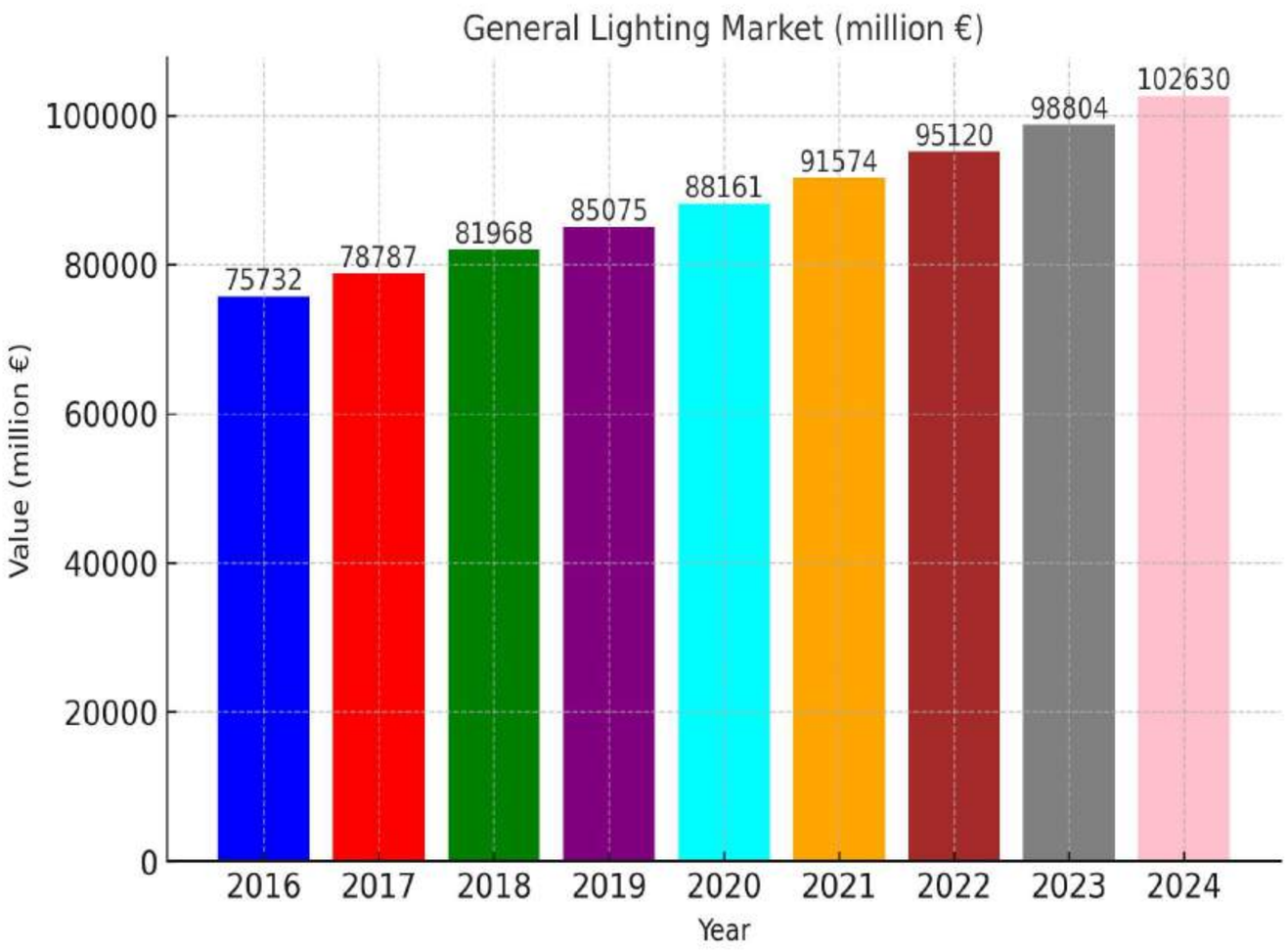
Research project

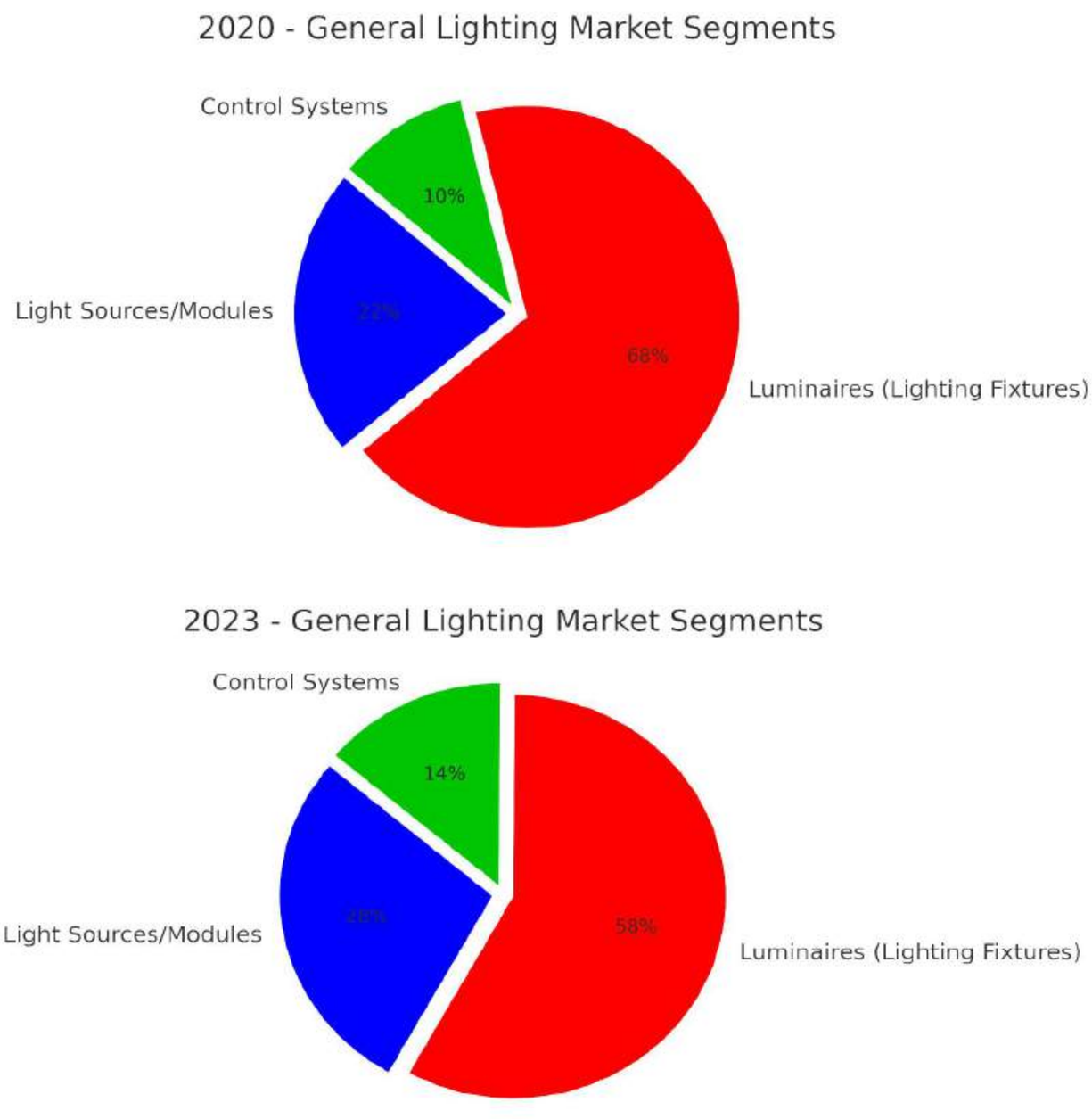
Authors: Mihaela ŞTEFAN, Ioana FĂRCEAN

A

Currently, the lighting industry is undergoing a true revolution, marked by profound transformations at all analyzed levels. We are witnessing the emergence of new market segments, such as lighting control devices and backlight illumination, which are redefining the landscape of this industry. Phenomena are emerging that could lead to the disappearance of the traditional lighting industry, as it undergoes increasing reconfiguration and transformation towards the electronics sector.

The general lighting market has experienced steady growth between 2016 and 2024, increasing from 75,732 million EUR to an estimated 102,630 million EUR, marking a 35% expansion. The acceleration of this trend after 2020 is driven by the transition to LED technology, the rising demand for smart control systems, and regulations on energy efficiency.





Between 2020 and 2023, the general lighting market has undergone a shift in segment distribution. The share of luminaires (lighting fixtures) has decreased from 68% in 2020 to 58% in 2023, indicating a relative decline in dominance.

Meanwhile, light sources/modules have increased from 22% to 28%, and control systems have grown from 10% to 14%. This suggests a market trend toward more efficient and advanced lighting technologies, with a greater emphasis on modular solutions and smart control systems, likely driven by the demand for energy efficiency and automation.

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ST. PATRICK SCHOOL
of Quezon City

The Over -Well: An Energy -Efficient Solution for Water Debris Collection

A

-

This paper was personally funded by the authors below, in addition to the project being completely self funded by the authors

Authors: Anne TIU, Cristina CACHO, Janelle ESCASA, Joaquin NICHOLAS PEREJA, John David Reginald Sta Cruz ACEDILLO, Krister SERRANO, Paul TAN, Zack TEJEDOR

Mentors: Sir. Dary DACANAY, Sir. Raymundo Carlo HERNANDEZ

The Over -Well is an and energy -efficient device designed for the collection and sampling of plastic debris and microplastics in water bodies .

Inspired by the Seabin , this device aims to improve upon existing solutions by minimizing energy consumption and utilizing a simple yet effective construction . The Over -Well operates using a pulley system powered by a motor, allowing it to submerge into the water and passively collect floating waste . Its use of a mosquito net as a catch bag ensures that even microplastics , which are less than 5mm in size, can be effectively gathered for research and waste management efforts .

The significance of the Over -Well lies in its contribution to environmental sustainability and research on plastic pollution . Given the increasing concerns about microplastic contamination, consistent and accurate sampling is crucial to understanding the extent of pollution in different water bodies . The device addresses the need for an energy -efficient solution, as current alternatives, such as the Seabin , require a constant power supply, making them less viable in regions with energy limitations . The Over -Well operates more efficiently, with its motor active only 66 .1% of the time, reducing overall energy consumption by 33 .9% compared to similar devices .







The Over -Well functions through a three -phase cycle : submersion, collection, and drainage . As the device is lowered into the water, a vortex is temporarily created, drawing in floating plastics and debris . Side holes allow water to enter a separate chamber, preventing it from toppling over while maintaining stability . One -way valves at the bottom facilitate drainage without requiring an additional motor, further enhancing energy efficiency .

Overall, the Over -Well provides a cost -effective and sustainable approach to tackling plastic pollution, aligning with global efforts to improve waste management and promote cleaner aquatic environments .

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Determining groundwater transmissivity through the analyses of physical properties and chemical composition from Svalbard fjord sediments

A

Research project

Author: Zaga Trišović

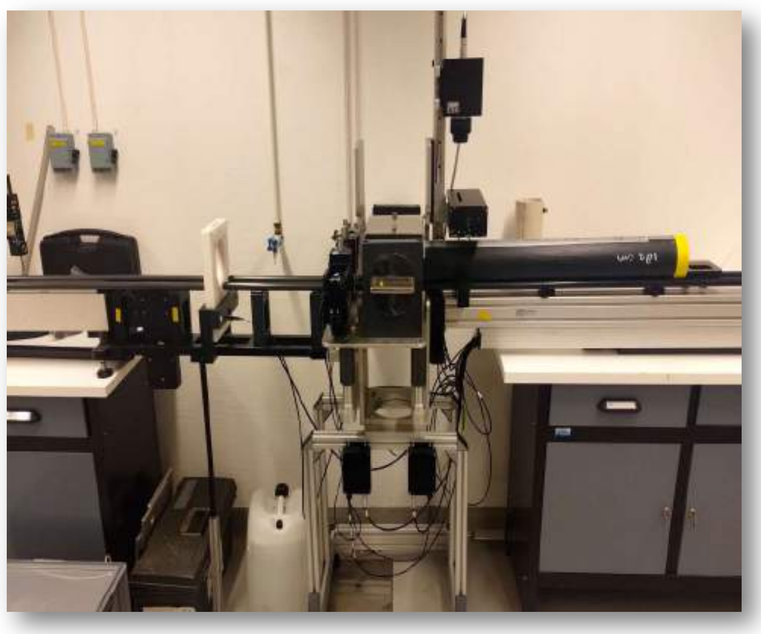
Throughout the two-week Short-Term Scientific Mission (STSM), a thorough evaluation of the physical and mechanical properties of soil and sediment cores from Svalbard was diligently carried out. These cores underwent meticulous measurements, analysis, and processing as outlined in the predetermined work plan, considering practical constraints and the available timeframe.

The culmination of these efforts resulted in meticulously examined and refined datasets and imagery derived from comprehensive analysis of the sediment cores. These valuable resources are set to be openly accessible to the public via esteemed Open Access data repositories. This deliberate transparency not only promotes scientific openness but also lays the groundwork for future research endeavors in the realm of Offshore Freshened Groundwater (OFG).

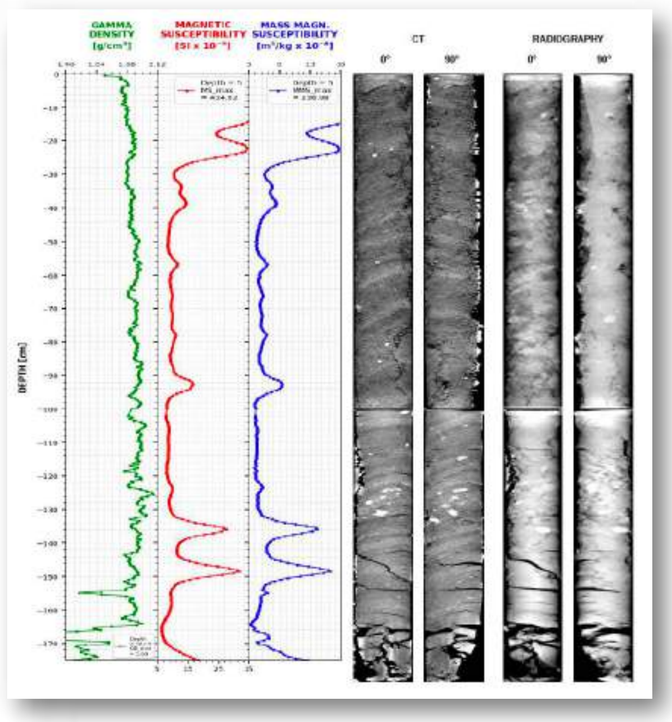
The next step involves further exploration and analysis of the amassed data and imagery, to be presented either at an academic conference or as part of a forthcoming scientific paper. This forthcoming documentation will detail the laboratory procedures, data analyses, and resulting insights, significantly contributing to ongoing discussions within this scientific field.



Rotating X-ray CT system - RXCT



The Multi-Sensor Core Logger - MSCL



Visual representation of the data obtained from RXCT and MSCL.

Although time constraints prevented examinations of split cores, collaborative efforts in the future are expected to facilitate additional analyses of these samples. Potential future endeavors may include further measurements of split cores, allowing for deeper characterization of groundwater transmissivity within Svalbard's fjords. Additionally, the prospect of developing numerical models and fostering collaborations within the COST Action network holds promise for future project undertakings within the broader framework of the COST Action.

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Plastic Recycler

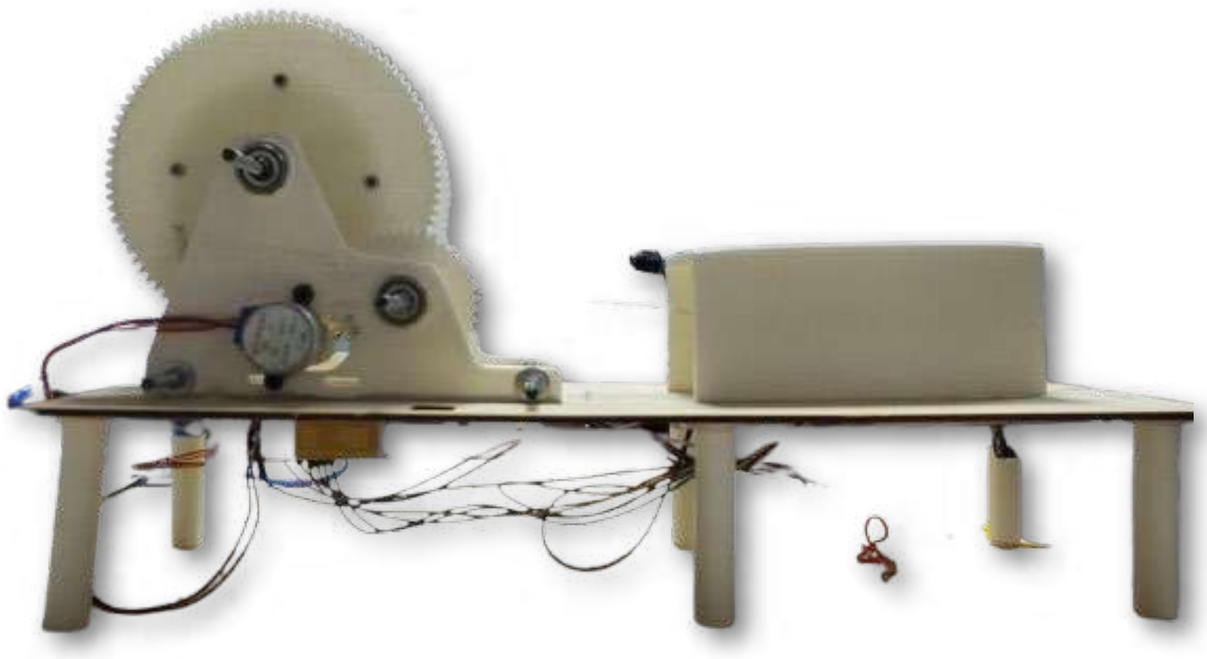
Author: Plop Iulian
Mentor: Victor Ciuvaga

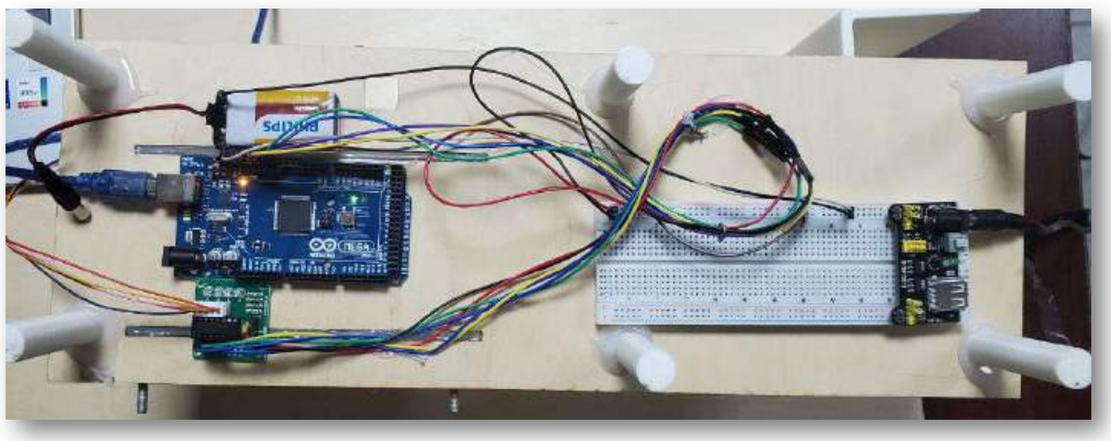
A

The PET Bottle Recycler is an innovative device designed to convert discarded plastic bottles into **high-quality 3D printing filament**. This project addresses the growing issue of **plastic pollution** by providing an **efficient and sustainable** way to recycle PET waste into a **valuable resource** for 3D printing applications.

This study explores the efficiency of the recycling process by analyzing the quality and consistency of the filament produced. The system consists of a **cutting mechanism**, an **extrusion unit**, and a **cooling system**, ensuring a uniform filament diameter. The integration of **Arduino-based automation** allows for precise control of temperature and extrusion speed, optimizing the quality of the output.

Experiments were conducted using **various types of PET bottles** to evaluate the mechanical properties of the produced filament. The results show that the recycled filament can be successfully used for **functional and educational 3D printing applications**, reducing dependency on commercial filaments and promoting a **circular economy**.





A significant challenge in the process was maintaining **a consistent filament diameter**, as variations can impact print quality. To address this, the project includes **real-time monitoring** and **automated adjustments** to ensure stability.

The proposed system represents a step towards **accessible, eco-friendly filament production**, with applications in **education, prototyping, and sustainable manufacturing**. Further research will explore scalability, additional plastic types, and enhanced automation for improved efficiency.







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CHEMIRESISTIVE ETHANOL SENSOR BASED ON GRAPHENE AND METAL OXIDE NANOCOMPOSITES AND A PROCESS FOR OBTAINING IT

A

Patent: RO 134143 B1

Authors: COBIANU CORNEL, ȘERBAN BOGDAN-CĂTĂLIN, BUIU OCTAVIAN, DUMBRĂVESCU NICULAE, MARINESCU MARIA-ROXANA, IONESCU OCTAVIAN-NARCIS, AVRAMESCU VIOREL MARIAN

The patent **RO 134143 B1** describes an **innovative sensor** that presents a **technical solution** aimed at improving efficiency, functionality, or performance. The invention likely includes **specific components or processes** that differentiate it from existing solutions.**The novelty** of the sensor results from the original synthesis process of the sensitive layer and the innovative way of nanostructuring the sensitive material, without using surfactants to orient the direction of material growth, but by choosing the basic pH of the synthesis solution.

Chemiresistive sensor with sensitive layer of ZnO and graphene pH=14 solution

- $Zn(NO_3)_2$ x 6 H_2O was weighed to obtain 0.8940 g and then the measured amount was dissolved in 5 ml DI H_2O;
- NaOH: 1,59 g and dissolved in 4 ml H_2O DI;
- 71,4 ml aqueous graphene solution was measured;
- The solution with the Zn salt was gradually poured into the measured graphene solution, stirring continuously;
- Drops of the basic NaOH solution were poured into the synthesis beaker, stirring continuously;
- The pH of the solution was measured with litmus paper after each small addition of NaOH solution until reaching the pH=14 value;
- The ultrasound installation was used (200 W / 1.5 h / 64-67 ^oC);
- The pH was measured again, which was maintained at 14;
- The solution was kept in the refrigerator for sedimentation for 24h;
- The water was replaced and the pH was measured again, which became 12;
- The process was repeated several times until reaching a pH = 7;
- The powder was dried in a microwave oven;
- Treatment of ZnO-graphene nanocomposite powder from solution at pH=14 – heat treatment at 450 ^oC in nitrogen;
- After calcination in nitrogen, the powder was dispersed in deionized water to form a sufficiently consistent paste that could be positioned in a controlled manner over the platinum interdigitated electrodes of the sensor. After thermal consolidation of the deposited layer, the sensor is ready for functional tests.


ROMÂNIA

OSIM

OFICIUL DE STAT PENTRU INVENȚII ȘI MĂRCI

Brevet de invenție

DUPLICAT

ELIBERAT INVENTATORULUI
în baza Art.34 alin.(2)
din Legea nr.64/1991 republicată

Nr. 134143

Acordat în temeiul Legii nr.64/1991 privind brevetele de invenție, republicată în Monitorul Oficial al României, Partea I, nr.613, din 19 august 2014.

Titular: INSTITUTUL NAȚIONAL DE CERCETARE-DEZVOLTARE PENTRU MICROTEHNOLOGIE-IMT BUCUREȘTI, VOLUNTARI, IF, RO

Titlul invenției: SENZOR CHEMIREZISTIV DE ETANOL PE BAZĂ DE NANOCOMPOZITE DE GRAFENĂ ȘI OXID METALIC ȘI UN PROCEDEU DE OBȚINERE A ACESTUIA

Inventatori: COBIANU CORNEL, BUCUREȘTI, B, RO; ȘERBAN BOGDAN CĂTĂLIN, BUCUREȘTI, B, RO; BUIU OCTAVIAN, BUCUREȘTI, B, RO; DUMBRĂVESCU NICULAE, BUCUREȘTI, B, RO; MARINESCU MARIA ROXANA, BUCUREȘTI, B, RO; IONESCU OCTAVIAN-NARCIS, PLOIEȘTI, PH, RO; AVRAMESCU VIOREL MARIAN, BUCUREȘTI, B, RO

Descrierea invenției, revendicările și desenele la care se face referință în acestea, fac parte integrantă din prezentul brevet de invenție.
Durata brevetului de invenție este de 20 ani, cu începere de la data de 06/11/2018, cu condiția plății taxelor anuale de menținere în vigoare a brevetului.

Confirm cele de mai sus prin semnarea și aplicarea sigiliului
Director General

OFICIUL DE STAT PENTRU INVENȚII ȘI MĂRCI ROMÂNIA

București, Data eliberării 30/01/2025

Contact: octavian.buiu@imt.ro

CARBON DIOXIDE SENSOR

Patent application A/00473, 28.01.2022

Authors: ȘERBAN Bogdan-Cătălin , BUIU Octavian, COBIANU Cornel, MARINESCU Maria-Roxana

A

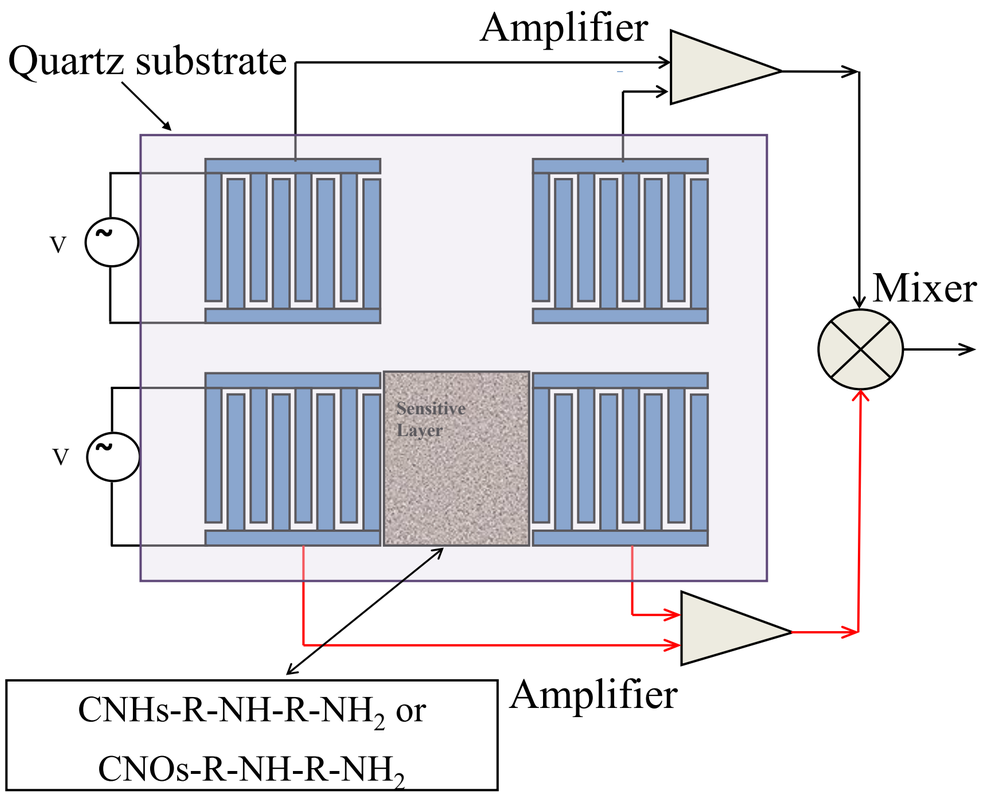
DESCRIPTION

Carbon dioxide (CO_2) detection is important in various sectors of domestic and industrial activity, such as indoor air quality control (air conditioning and ventilation systems), healthcare (monitoring of respiration, anaesthesia), agriculture (monitoring of CO_2 flow in soil), food technology (packaging processes, transport), alcoholic beverage industry.

The invention includes the design and manufacturing processes for a surface acoustic wave (SAW) CO_2 sensor, employing **carbon nanohorns** and **carbon nanoonions** functionalized with groups such as -CO-NH-CH_2-CH_2-NH-CH_2-CH_2-NH_2, (abbreviated as CNHs-R-NH-R-NH_2 and CNOs-R-NH-R-NH2) as sensing layer, a quartz piezoelectric substrate and interdigital transducers.

SYNTHESIS OF THE SENSING LAYER

• Oxidized carbon nanoborns (10 mg), purchased from Sigma Aldrich, and 1 mL of (*N*-[(dimetilamino)-1*H*-1,2,3-triazolo[4,5,6]piridin-1-ylmetilen]-*N*-metillmetanaminium hexafluorofosfat *N*-oxide-HATU)are dispersed in 5 mL diethylenetriamine and subjected to ultra sonication for 3 hours.
• The reaction mixture was diluted with 100 mL methanol and then filtered.
• The solid product is dried in the oven at 100 °C for 1 hour, under vacuum.
• A solution of CNHs-R-NH-R-NH_2 (5 mg) in 50 mL dimethylformamide is ultrasonicated at RT for 10 hours.
• The obtained solution is deposited by the spin coating method on the quartz substrate (3000 rpm, for 60 s).
• The film is heated to 100 °C for 90 mins. The obtained film is subject to a final heat treatment, at 100 °C, for 60 mins.



The sensing structure

ADVANTAGES OF THE PROPOSED SENSING LAYERS

• Improved mechanical properties, better processability, fast response, detection at RT, increased selectivity;
• High specific area / volume ratio, affinity for CO_2 molecules through HSAB-type interactions ("mass loading"), as well as a variation of its resistance in contact with CO_2 molecules ("electric loading").

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"Alexandru Ioan Cuza" University of Iași

Faculty of Biology

THE IMPACT OF PESTICIDES ON OXIDATIVE STRESS AND ANTIOXIDANT RESPONSE OF LENTIL PLANTS

Student Project

A

Authors: Elena-Iuliana FODOR

Mentor: Șef lucr. dr. Todirașcu Ciornea-Elena

Introduction

This work aimed to determine and evaluate the effects of applying pesticides to Lens culinaris through the activity of oxido-reductases that are involved in counteracting the effects produced by oxidative stress.

Materials and method

Oxidative stress is a subject that is being intensively studied nowadays, especially when it comes to its negative effects on plants. Therefore, oxidative stress represents a real imbalance between the production and storage of reactive oxygen species, visible both at the cellular and histological levels. The enzymes that were determined in this study were superoxide dismutase and peroxidase, which are oxido-reductases involved in the first line of defense against oxidative stress. Lentil seeds were sown in soil specifically intended for vegetable crops, the plants being grown in two conditions, namely: in laboratory conditions and in garden conditions, with three pesticides being applied to the ones in the garden: Pictor® Active, Faster 10 CE and Trika Expert.

Results

Following the determination of the activity of the two enzymes, a significant increase in the activity of superoxide dismutase, peroxidase and implicitly the accumulation of reactive oxygen species was observed. Therefore, in Figures 1 and 2 below, significant increases in the two oxido-reductases can be observed, compared to the reference batch, both in the lentil variants grown in laboratory conditions and in those that were grown in the garden under the influence of the three pesticides and harsh environmental conditions.

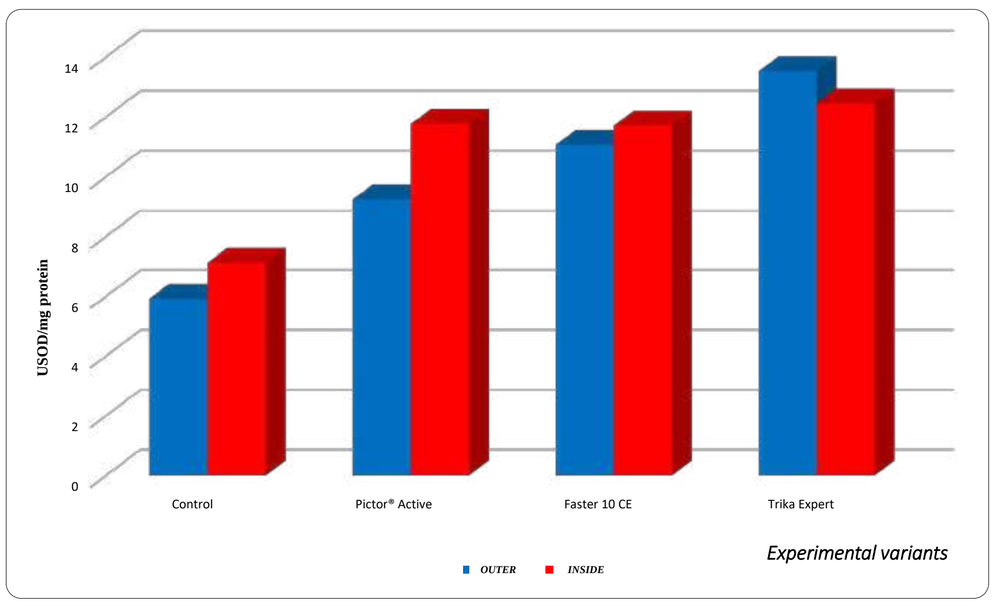


Fig. 1. Superoxide dismutase activity in lentils

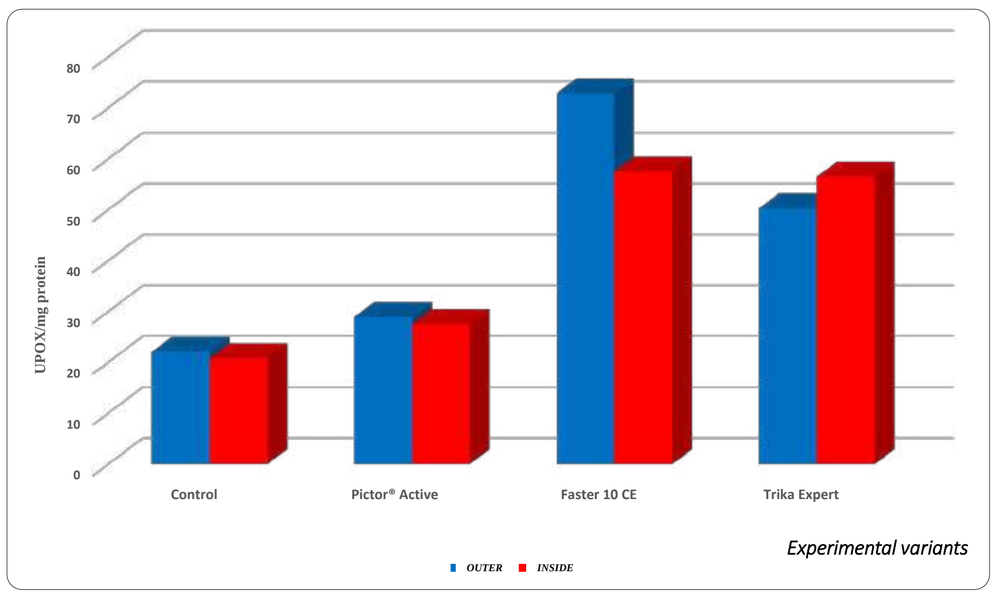


Fig. 2. Peroxidase activity in lentils

Conclusions

The intensive use of pesticides, even in the doses recommended by the manufacturer, affects agricultural crops, contributes to soil pollution, and causes major imbalances in ecosystems, impacting flora, fauna, and animal organisms.

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TECHNOLOGY FOR PURIFYING INDUSTRIAL ODORS

Patent/project number: BR 202015011823-1

A

Camilo Freddy Mendoza Morejon

Andy Avimael Saavedra Mendoza and Jeferson Alexandre dos Santos Bosa

The patent refers to a modular filter consisting of a set of elements, whose unique shape and arrangement of components have resulted in a functional improvement of equipment that, through the adsorption of gaseous pollutants in a removable filtering medium, enables the treatment of gaseous effluents from various sources, particularly industries.

The main distinguishing features of the equipment include:

- A continuous feeding system for gaseous effluents from industrial processes;
- Elements that make up the gas filtration system;
- A device that allows the periodic replacement of the filtering medium after saturation;
- A device that ensures uniform porosity of the filtering medium to prevent pressure losses;
- A modular shape and arrangement that allow flexible sizing to meet various capacities;
- An operating method that ensures maximum and continuous efficiency in the treatment of industrial gaseous effluents by purifying gaseous pollutants in the filtering medium.



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Project funded by:

CNPq

Conselho Nacional de Desenvolvimento Científico e Tecnológico

Partnership:

unioeste Universidade Estadual do Oeste do Paraná X Faricon AGROINDUSTRIAL COMPANY

Research Group on Technological Innovations for Innovative Territorial Development

Renewable Energy Sources and Circular Economy Applied in an Academic Community as an Example for Smart Sustainable Development

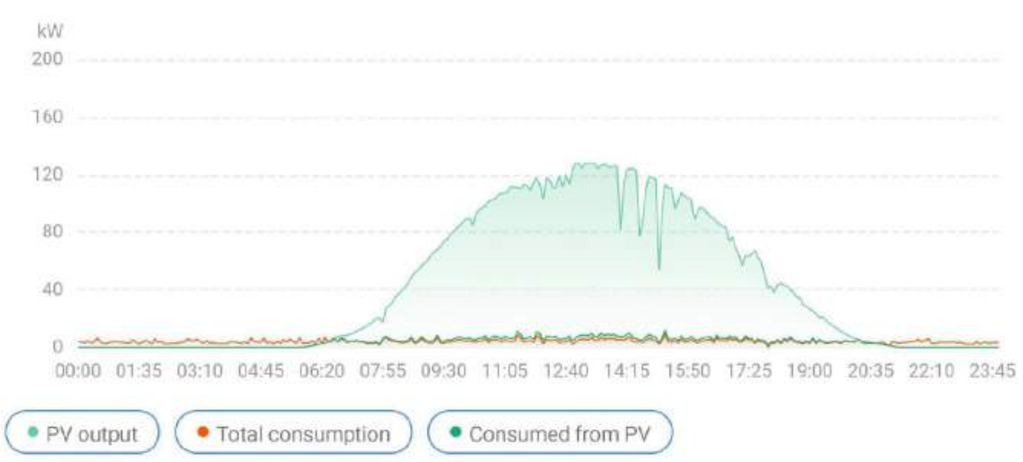
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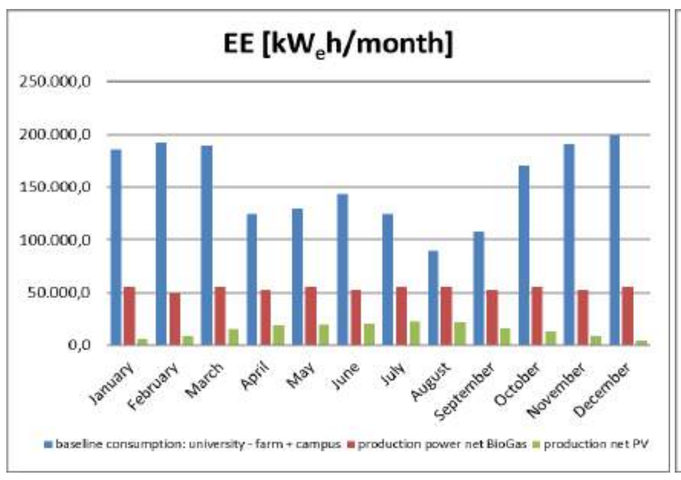
Project number: 2020/554215

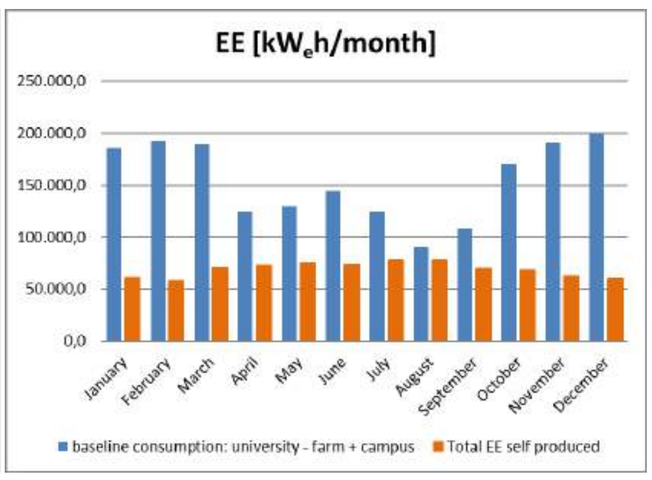
Authors: Vintilă Teodor, Popescu Cosmin Alin, Radulov Isidora, Horablaga Adina, Marco Di Stanislao

Description

The energy system consists of a photovoltaic plant of 150 kWe and a biogas plant containing a CHP unit of 100 kWe installed capacity. The total electricity production capacity of the system is predicted at approx. 825 MWh/year, which can cover up to 50% of the total electricity consumption of the USV Regele Mihai I campus in Timișoara. Total savings of CO2 equivalent are evaluated at 2400 tons / year. State of development: Project, energy system in function



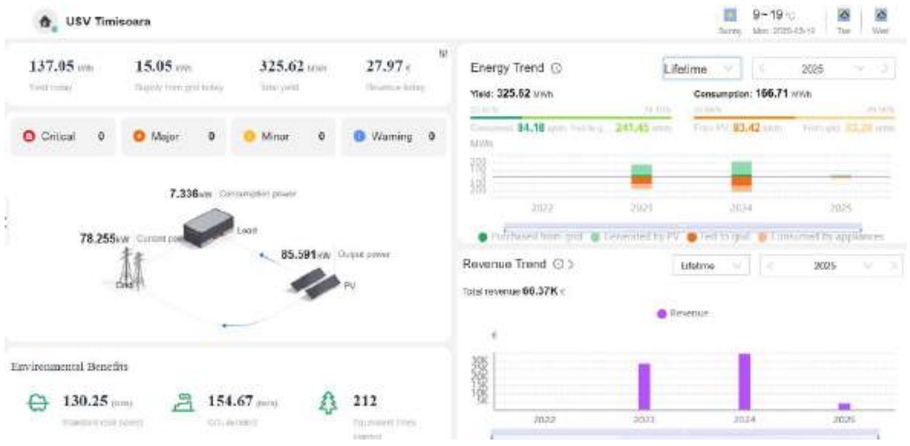




University campus will save up to 50% of electric energy from fossil fuel and 10% of thermal energy from fossil fuel



The time for renewable energy and circular bioeconomy has arrived. Replication of **RES-CIRCULAR project powered by Norway through the Norway Grants**, will help to achieve energy security in România and in Europe and to reduce negative impact of human activity on the climate and environment





University can connect renewable energy technologies with a large number fields: agriculture, animal sector, forestry, horticulture, rural development, circular economy, food industry, clean environment.

Transfer of knowledge through training of tomorrow's generation

Total budget: 1,122,514 Euro, of which 954,000 Euro are offered as a grant by Norway through EEA and Norwegian Financial Mechanisms. The rest of the total eligible expenses are foreseen in the budget of USV Timișoara. Project period: December 2020 - April 2025

Contact & info: Dr. Teodor Vintila, Department of Biotechnology, +40256277086, tvintila@animalsci-tm.ro, www.biocombustibil-tm.ro

Proiect finanțat cu sprijinul granturilor acordate prin mecanismul financiar Norvegian 2014-2021, în cadrul „Programului de Energie din România„

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MEMBER OF EUT+ EUROPEAN UNIVERSITY OF TECHNOLOGY

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Title

PROCEDURE AND INSTALLATION FOR TRIBOELECTROSTATIC SEPARATION OF NON-CONDUCTIVE GRANULAR MATERIAL MIXTURES

Inventor/s - Contact

Călin Florentin-Laur, Bilici Mihai-Alexandru, Samuilă Adrian-Păun

Patent/ Application number

Patent application OSIM no.: A/00035/06.02.2024

Short presentation

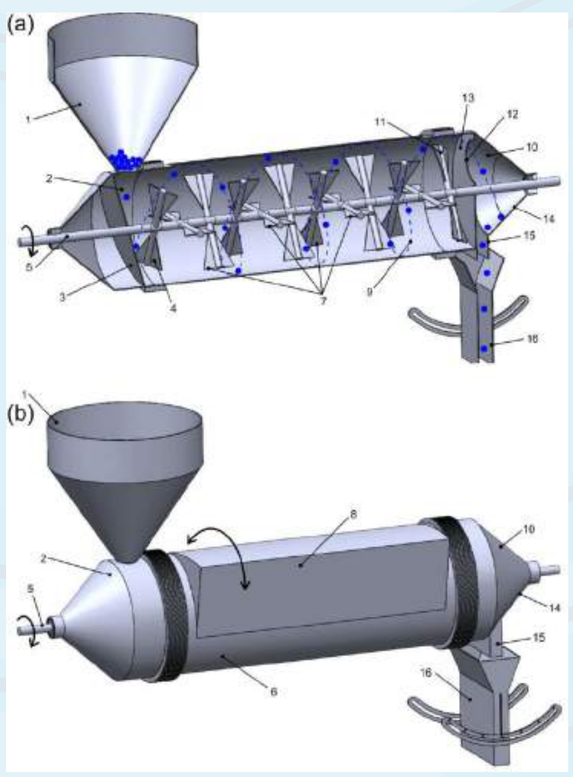
The invention relates to a process and an installation for the triboelectrostatic separation of the components of non-conductive mixtures of granular materials, such as: plastic waste, mineral substances, food products, etc. The triboelectrization process achieves high-efficiency charging with opposite polarity electric charges on the components A and B of a granular mixture. This is achieved through repeated collisions of controlled intensity between granules and between the granules and the walls of the specially shaped triboelectrization device. The electrostatic separation of the components of the mixture is accomplished by deflecting the granules that are charged with opposite polarity electric charges on distinct trajectories in an electrostatic field area.

The triboelectrization device has a feeding zone that facilitates the transfer of granular material into the triboelectrization zone, a specially shaped triboelectrization zone, and an evacuation zone that disposes the charged granular mixture in a monogranular layer towards the feeding device of the electrostatic separator. This device introduces the charged granular mixture into the electrostatic field area of the separator and promotes the deflection of granules (charged with electric charges of opposite polarity) on distinct trajectories and their collection of as separated fractions.

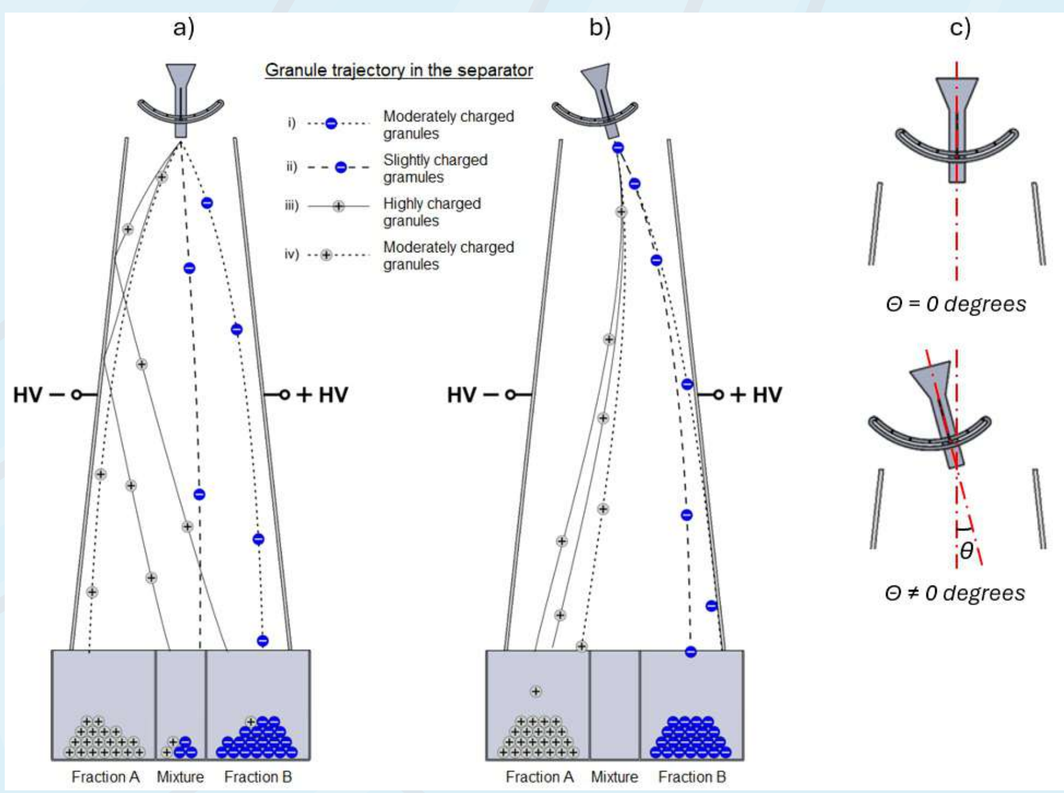
Applicability

The invention will be applied in the field of plastic recycling to increase the purity and recovery of products obtained by triboelectrostatic separation.

Images



3D isometric representation of the device for triboelectric charging of a mixture from non-conductive materials in cross-sectional view (a) and overall view (b).



Control of the electrically charged granule trajectories in the electrostatic field through the edjustment of the entry angle into the separator θ from a zero-degree angle (a) to a non-zero degree angle (b); detail on the entry angle adjustment (c).

LOGISTIC SUPPORT CONTAINER MOBILE POWER PLANT FOR EMERGENCY

Author/s: Popescu Emil, Stroe Danut, Guiman Daniela, Jurba Mihai

Category: A

***MOBILE POWER PLANT FOR EMERGENCY** with a power of 500 kVA is designed to be used in emergency situations.*

The product is designed in a versatile, independent version with a whole range of distinct applications from : industry , telecom, oil&gas , emergency situation and can work as island power plant, back up , peak load for national grid etc.

Logistic Support Container allows the installation of a wide range of generator groups chosen and sized according to the energy supply needs of th evarious facilities.

It contains the fuel tank for a long time operation, command and control panel, cables and distribution boxes which can be used in various configurations.







Contact:www.electro-optic.ro; office@elop.ro, +40723242145

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NATIONAL PUBLIC HEALTH AGENCY
NATIONAL RESEARCH AND DEVELOPMENT INSTITUTE FOR
NUCLEAR PHYSICS AND ENGINEERING "HORIA HULUBEI" – IFIN-HH

RHIZOPUS STOLONIFER FUNGI STRAIN FOR BIODEGRADATION OF COBALT AND NICKEL COMPOUNDS

CORETCHI Liuba, PLAVAN Irina, Bahnarel Ion

A


REPUBLICA MOLDOVA
Agenția de Stat pentru Proprietatea Intelectuală

BREVET DE INVENȚIE

Nr. 4486

Eliberat în temeiul Legii nr. 50/2008 privind protecția invențiilor

Titlul: Tulpină de fungi *Rhizopus stolonifer* pentru biodegradarea compușilor cobaltului și nichelului

Titular: CENTRUL NAȚIONAL DE SĂNĂTATE PUBLICĂ AL MINISTERULUI SĂNĂTĂȚII AL REPUBLICII MOLDOVA, MD

Data depozit: 2016.01.21

Descrierea invenției, revendicările și desenele constituie parte integrantă a prezentului brevet de invenție

Director General

CHIȘINĂU

Patent no. 4486

The invention relates to Biotechnology and Environmental protection. The novelty consists in developing a new biotechnological process to reduce the risk of environmental pollution, based on the use of non-pathogenic microorganisms. It is proposed **fungi *Rhizopus stolonifer* 67 CNMN-FD18**, which possesses the biodegradation of toxic compounds (cobalt and nickel) in the soil.

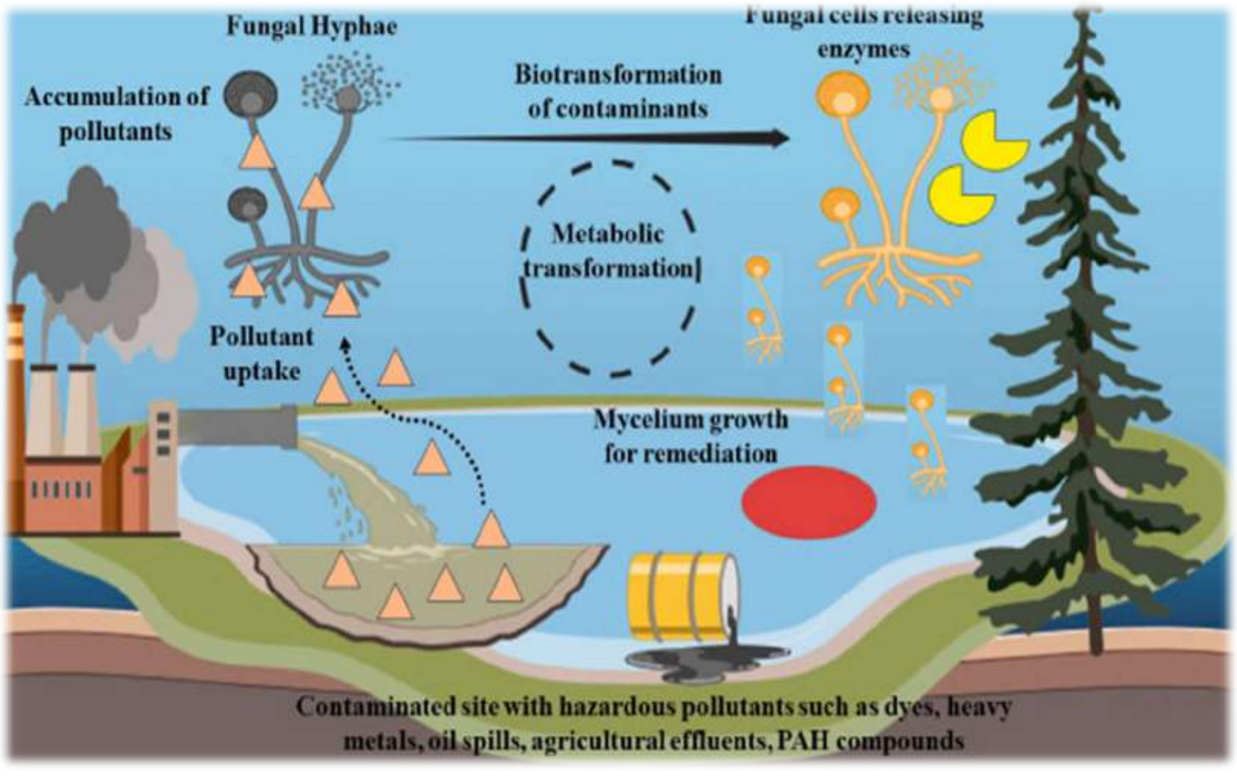
The problem of the invention consists in increasing the efficiency of biodegradation of cobalt and nickel compounds in the soil. The invention solves the problem by proposing the fungal strain ***Rhizopus stolonifer CNMN-FD-18*** for the biodegradation of cobalt and nickel compounds, namely cobalt phosphate and nickel nitrate.

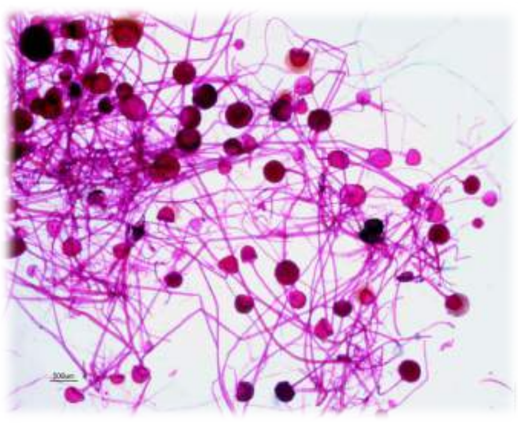
The strain ***Rhizopus stolonifer CNMN-FD-18*** synthesizes extracellular proteolytic enzymes, organic acids, which contribute to the biodegradation of heavy metal compounds, for example cobalt phosphate and nickel nitrate with their transformation into hydroxides, oxides or other compounds with low solubilization, expressed by the formation of the solubilization zone around the strain colony under laboratory conditions and established by changing the color of the medium, in the case of cobalt phosphate from pink to colorless, and in the case of nickel nitrate from white to transparent.

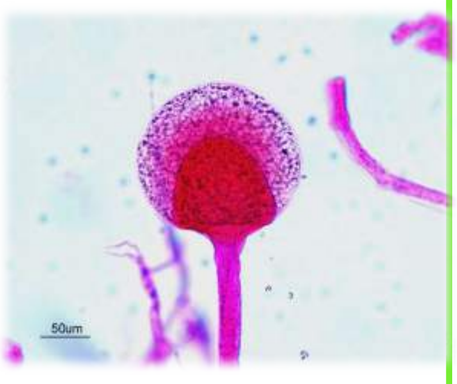
The biodegradation of cobalt phosphate and nickel nitrate occurs under the action of organic acids produced by the ***Rhizopus stolonifer strain CNMN-FD-18*** with subsequent reprecipitation in the form of oxalates, which present organic compounds and are further biodegraded by associated microorganisms, spread in contaminated areas.

The isolation of the fungal strain was carried out from the soils of the Republic of Moldova.

Applications: *Environment – ecology, ecological management, environmental protection and monitoring*







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Determination of radon concentrations in the air inside buildings (homes, workplaces), soil and water

CORETCHI Liuba, ABABII Aurelia, APOSTOL Ion,
ROMANCIUC Parascovia, BAHNAREL Ion, BOGDAN Marina,
ȘARGU Valentin, CAPAȚÎNA Angela, RĂDULESCU Ileana,
CALIN Romeo, LINCA Bianca, BORSOS Andrei

A

The research is supported by the Ministry of Health and the Ministry of Education and Research of the Republic of Moldova in the framework of the sub-project *"Monitoring the ionizing radiation exposure to the professionally exposed personnel and the public with the development of radioprotection measures" (2024-2027)*, no. 13.01.02 and the Bilateral project with Romania 2024-2026 *„Increasing the digital capacity of data flow between Romania and the Republic of Moldova regarding the monitoring of soil radioactivity and radon",* Project code: PN-IV-P8-8.3-ROMD-2023-0241.

According to the EURATOM Directive No. 2013/59/ each country develops a national plan for the control of radon exposure, which stipulates the reference level of radon and the measures (actions) to be taken in case these values are exceeded. The requirements for measuring the concentration of radon activity in the air in homes, at workplaces, in soil and water are carried out in accordance with the elaborations of national (ANSP) and international bodies (IAEA, WHO, EU (Joint Research Center).

In this regard, it is necessary to know and implement several activities that are described in the paper:

- methods for measuring radon concentration in rooms and the main environmental factors;
- requirements for measuring radon activity concentration in workplaces;
- requirements for placing radon detectors;
- principles of radon measuring in homes and factors that influence the radon concentration when exhaled from the soil;
- recruitment of participants;
- communication with potential study participants;
- conducting an investigation into indoor radon levels;
- distribution and collection of detectors.

The paper is intended for laboratories that monitor radon in indoor air (homes and workplaces), water and soil. Methods and equipment for detecting radon concentrations in indoor air (homes and workplaces), water and soil are presented. The methodology for rapid detection of the named radioactive gas is proposed, as well as modern technologies for reducing the population's exposure to the health risk caused by radon.

- ✓ National radon measurement laboratories are accredited at the national level by the regulatory body for nuclear and radiological activities and develop methods for measuring radon concentrations in accordance with the national law in the field, the requirements of the EURATOM Directive 2014/53 and the WHO.
- ✓ Specialists in the field from the Ministry of Health, the Ministry of Environment, the Ministry of Infrastructure and Regional Development (Office of Territorial Development, Urbanism, Construction and Housing) will map radon concentrations based on the measurement results obtained in the national laboratory to identify localities with increased risk of exposure to radon are identified.

Certificate of registration of the object of copyright or related rights Serial OŞ no. 8118 of 11.02.2025 issued by State Agency for Intellectual Property of the Republic of Moldova

RadonEye Plus2



AlphaGUARD





MARKUS 10



Contact: liuba.koretski@ansp.gov.md

© Coreţchi Liuba; Ababii Aurelia; Capaţîna Angela; Bogdan Marina, Radulescu Ileana, 2025

National Agency for Public Health webpage:
https://ansp.md/control_radon/

FaceBook page:
https://www.facebook.com/profile.php?d=100082203806764

OCCUPATIONAL HEALTH AND SAFETY STUDY FOR THE WORK ENVIRONMENT OF AN EQUIPMENT DISTRIBUTION OPERATOR

A

Scientific Research Project

Authors: Oana Roxana CHIVU, Claudia BORDA, Marilena GHEORGHE

DESCRIPTION

The study presents the occupational risks within SC AC BONT TOOLS SRL, a company specialized in the distribution of industrial equipment.
The main hazards associated with the activity are identified, such as handling heavy equipment, ergonomic risks, exposure to chemicals and transport safety.
Solutions are proposed for the findings, creating work safety, highlighting the importance of periodic training, equipment modernization and optimization.





THE PROPOSED SOLUTION

- IDENTIFICATION AND REDUCTIONMOF OCCUPATIONAL RISKS
- OPTIMIZATION OF WORK PROCESSES
- IMPROVEMENT OF LEGAL COMPLIANCE
- INCREASE IN EMPLOYEE SATISFACTION AND PRODUCTIVITY

RESULTS AND DISCUSSIONS:

The conclusions of this study highlighted that SC AC BONT TOOLS SRL had a solid infrastructure in terms of occupational health and safety, but the challenges identified imposed the need for a proactive approach and strategies to optimize internal processes.

In addition, the analysis showed that implementing modern ergonomic solutions could have significantly contributed to reducing musculoskeletal disorders associated with repetitive activities or prolonged work positions. In this regard, the company was recommended to invest in adjustable furniture, anti-fatigue mats and auxiliary equipment that would help evenly distribute weight during cargo handling.
Thus, it was concluded that occupational health and safety were not only legal obligations for SC AC BONT TOOLS SRL, but also essential factors in ensuring an efficient and sustainable activity in the long term. Through a proactive approach and by implementing continuous improvement strategies, the company could have significantly reduced the risks associated with the activity carried out and would have contributed to the general well-being of its employees.

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Internal

Environmentally friendly recovery of use vegetable oil

Student project

Authors: **Ariana SÂRBU, Alexandru RUSU, Raluca PLĂINICEANU**

Coordinator: **Ioana FĂRCEAN, Laura STRUGARIU**

A

Used vegetable oil recovery is the process by which this waste is collected, treated and transformed into reusable products, reducing the negative impact on the environment. The stages in the process of used vegetable oil recovery are: collection and storage, filtration and purification, transformation and reuse. The recovery of waste vegetable oil has a significant impact on environmental protection, circular economy and energy sustainability, offering solutions to reduce pollution and use resources more efficiently.

This project presents the application of the cold process method for the transformation and valorization of used vegetable oil into homemade soap. A method based on the saponification reaction, in which oils or fats (usually vegetable oils) react with a strong base (sodium hydroxide) to produce soap and glycerin. In addition to this method, we note that soap can also be made using the hot process, which is accelerated by heat, or through reprocessing, which revitalizes old soap. For the practical, there is the melt and pour method, and in the world of mass production, the industrial method reigns supreme with its repetitive perfection.



Experimental aspects during the process of waste oil recovery

During the experiments, various recipes were tested by adjusting the specific quantities of the main components (used oil, NaOH, and glycerin). The recipe quantities were accurately calculated using specialized platforms that ensure precise measurements (e.g., SoapCalc and Savvy Homemade Soap Calculator). Accurate quantity calculation is essential in the recovery process, as an excess of sodium hydroxide can produce an overly alkaline, irritating soap that is unsuitable for use. In the recipes we incorporated essential oils (vanilla, pine, lavender, rose) for their aromatic and therapeutic benefits, along with non-toxic colorants to improve aesthetics while maintaining skin safety.



Final by-product obtained after 3 days

Thus, through this student project we want to contribute to raising awareness on the reuse of used vegetable oil by applying a simple method of recovery that can be carried out in the comfort of your home and has beneficial results on the environment

Contact: arusu3871@yahoo.com

COMPOSITE MATERIAL FOR DENTAL RESTORATION BASED ON METAL OXIDE NANOPARTICLES AND PHOSPHATE MATERIAL WITH IMPROVED ANTIMICROBIAL PROPERTIES AND METHOD OF OBTAINING IT

B

Patent/project number: A00727/2024

Radu Claudiu Fierascu, Roxana Ioana Brazdis (Matei), Irina Fierascu, Toma Fistos, Anda Maria Baroi, Lia Mara Ditu

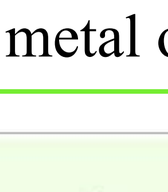
The present invention relates to a composite material with improved antimicrobial properties, compared to the base material (glass ionomer cement) without negatively affecting the physical and mechanical properties, intended for use in dental applications, consisting of the solid phase - aluminofluorosilicate glass with particle size below 25 μm and a material with strong antimicrobial character, namely phosphate material of the hydroxyapatite type in which calcium is substituted with copper or zinc (in ratios Ca : substituted metal 1..5:0..4) previously decorated with phytosynthesized metal oxide nanoparticles using plant extracts from the *Lamiaceae* family.

The process of obtaining the composite material consists of 5 steps

I. Otaining apatitic material



II. Phytosynthesis of metallic oxide nanoparticles, from plants extracts of the *Lamiaceae* family



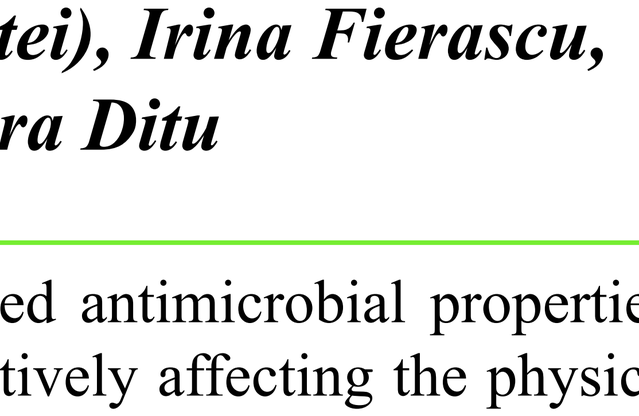


III. Decoration of apatitic material with metal oxide nanoparticle solutions

IV. Mixing with aluminofluorosilicate

V. The liquid component of the glass ionomer cement is added

Obtaining obturation material, intended for use in the direct restoration of dental cavities







ADVANTAGES OF THE INVENTION

Obtained by known processes, without requiring high production costs

Does not use reagents hazardous for the environment or human health for synthesis

Has superior antimicrobial properties

Has mechanical properties (compressive strength) similar to or superior to the unimproved material

Reproducible – considering the physical-structural properties

Has the potential to increase the lifespan of dental treatments, through the presence of superior antimicrobial effect and improved mechanical properties.

ACKNOWLEDGEMENTS

This work was supported by the Ministry of Research, Innovation and Digitization, CCCDI—UEFISCDI, project number PN-III-P4-PCE-2021-0292, within PNCDI III.

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Technical manager: *PhD Habil Radu Claudiu Fierascu*

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BLACK SOLAR

INNOVATIVE GREEN ENERGY SOLUTIONS FOR A HEALTIER FUTURE

Green Energy Project

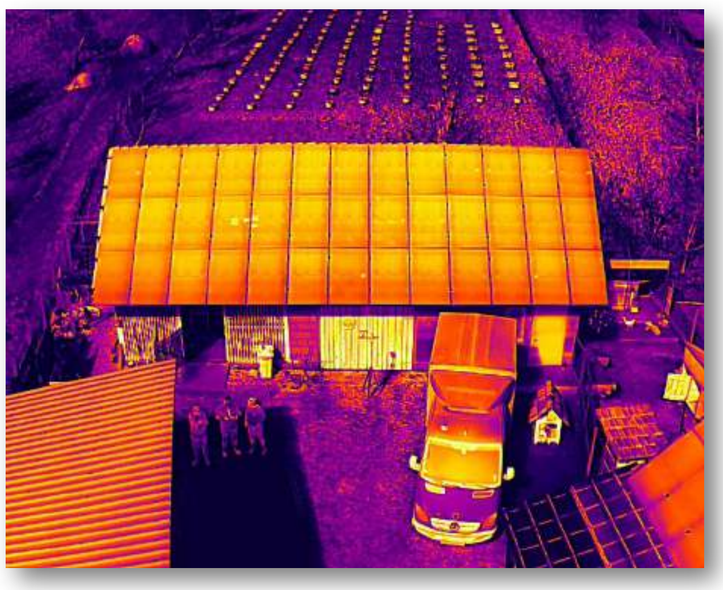
Authors: Razvan MARCUS, Nicoleta MARCUS

Black Solar is dedicated to pioneering the future of renewable energy through cutting-edge technology and innovation. Our mission is to harness the power of advanced technologies, including drone thermal imaging and 3D scanning, to provide our clients with the most efficient, reliable, and sustainable energy solutions available.

By integrating these innovative tools into our services, we aim to optimize energy consumption, reduce environmental impact, and lead the transition towards a more sustainable and energy-efficient world. Our commitment to excellence and innovation drives us to continuously explore new horizons in renewable energy, ensuring that we offer the best solutions that meet and exceed the evolving needs of our clients and the planet. We strive to lead by example in the transition towards a greener planet, ensuring reliability, efficiency, and excellence in all our projects.















Contact: ***office@blacksolar.ro*** ***+40 757 351 141*** ***https://www.blacksolar.ro/***

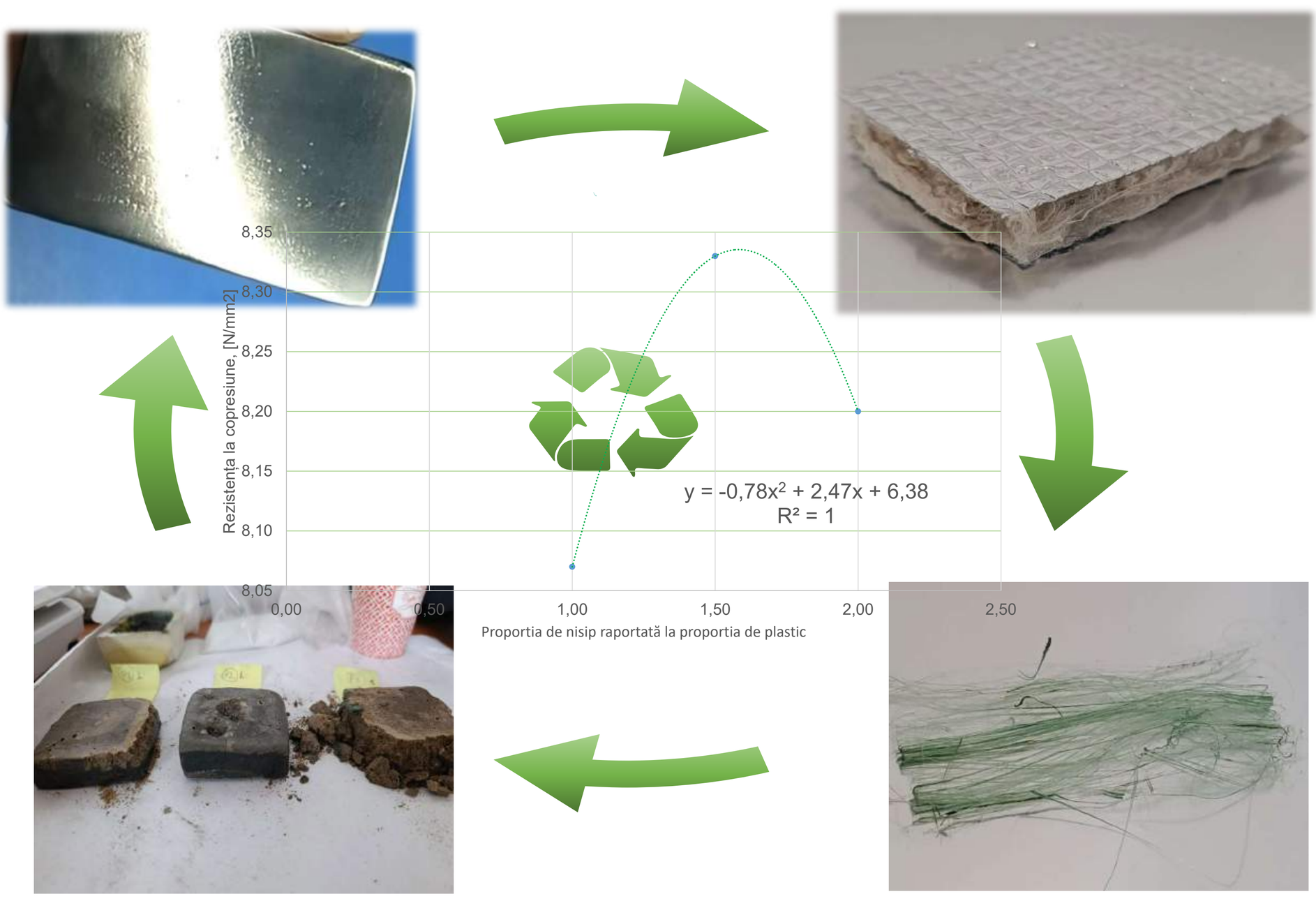
PRACTICAL SOLUTIONS FOR INCORPORATING LOW-VALUE PLASTICS INTO BUILDING SYSTEMS

Student Project

Author: Andreea-Ioana CIURAR

A

In the context of the circular economy, practical and economical solutions are being explored for the reuse of plastics as a potential material. The valorization of plastics in construction is based on several practical applications with potential for development in the transition to the green economy.



The experimental determinations examine: bricks made from molten plastic and sand as a low-cost construction material; PET fibres used as reinforcement in concrete/cement structures; galvanization of plastic for decorative chrome-type finishes; and RPET synthetic fibres as a thermal insulation material in temporary construction.

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B

Nanotechnology

Advanced materials

Metallurgy

Civil engineering

THE USE OF THE PHASED ARRAY METHOD IN NON-DESTRUCTIVE CONTROL

Ion Florin Mocioiu[1], Gabriel Valeriu Ghica[2]

[1]National University of Science and Technology Politehnica Bucharest, Doctoral School of the Materials Science and Engineering Faculty, [2]National University of Science and Technology Politehnica Bucharest, Dep. of Eng. and Management of Metallic Materials Production

B

Phased Arrow Ultrasonic Testing (PAUT) or phased array represents an advanced technique of non-destructive control that will replace probes with a single element (non-phased array) known as monolithic probes. The method is based on the principles of probe physics that have found applications in optics and electromagnetic antennas.

Monolithic probes emit an ultrasonic beam in a fixed direction, so in order to sweep (scan) the beam through the area of interest and to cover larger surfaces, the probe must be moved sideways. Phased Array Ultrasonic Testing (PAUT) uses a set of ultrasonic test probes made up of numerous small elements, each of which is pulsed individually (synchronization is computerized). The number of active elements and the delay of the emitted pulse determine the profile of the emitted ultrasonic beam. By applying appropriate delays, Phased Array technology allows the generation of an ultrasonic beam, shaping it according to the desired characteristics: aperture, angle and focus (electronic beam forming). In this way, the beam from a phased array probe can be moved and scanned electronically on an inspected part, without moving the probe.

The Phased Array method is an ultrasonic method based on a multi-element transducer (consisting of several piezoelectric crystals, separated from each other, which transmit / receive signals, independently at different times) also known as a matrix transducer (Array) fig.1.

The multi-element structure makes possible: the realization of transducers in a wide range of configurations with shapes, number of elements and dimensions that can be easily adapted to specific requirements; control of each individual element with the possibility to program if and when each element must be part of the pulse emission or reception process.

Electronic beamforming and scanning, combined, allow fast and highly accurate inspections and also allow the display of ultrasonic data in a multitude of graphic formats Scan data acquired by the Phased Array system can be displayed in real time in all conventional formats used by digital defectoscopes: A-Scan, B-Scan, C-Scan, etc. (fig. 2).

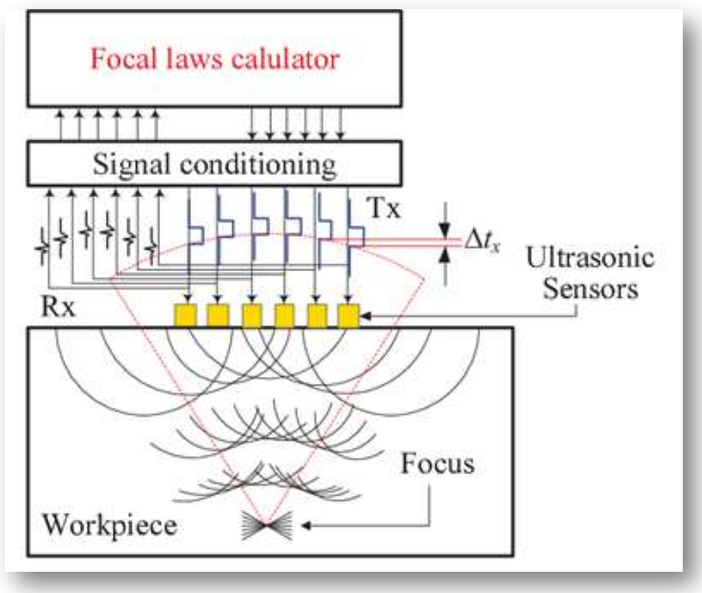


Fig. 1. Multi-element transducer.

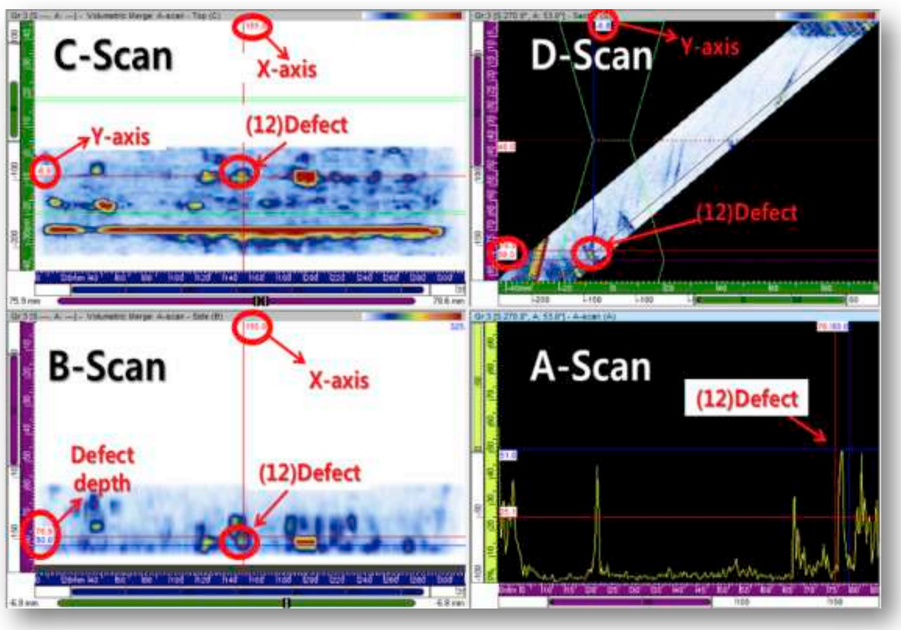


Fig. 2. Graphics obtained by electronic beam forming and scanning.



Fig. 3.Thick weld control using the Phased Arrow Ultrasonic Testing (PAUT) method.

The advantages of the Phased Array method over the conventional UT method are based on the ability to dynamically shape and sweep the ultrasonic beam.The advantages of the method are numerous:- Speed: the execution time of an electronic scan is much shorter than that required for a mechanical scan, and this results in a drastic reduction of the duration of the inspection;- Ease of inspection: the ability to focus and direct the beam without moving the transducer simplifies the mechanical manipulation operations of the transducer during the inspection and reduces the number of scanning lines;- Inspection of complex geometries: dynamic beam orientation allows different scanning angles and makes it possible to scan components with complex shapes or parts with difficult access for mechanical scanning- Better dimensioning of discontinuities: electronic focusing makes it possible to optimize the focus at different depths, thus increasing the ability to detect and dimension discontinuities;- Advanced imaging: the data obtained during the inspection can be represented in all important formats (A-Scan, B-Scan, C-Scan, D-Scan, S-Scan) and displayed in real time.- The method is effective for determining corrosion and inspecting composite materials and thick welds;- The method is ideal for controlling welds, measuring thicknesses, inspecting wheels, axles of rolling stock, pressure vessels, etc.

The disadvantages of the Phased Array method compared to the conventional UT method refer in particular to:- Higher equipment costs;- Greater complexity in the operation and calibration of the equipment, requiring qualified personnel with good training;- The method is not preferred for the detection of surface cracks, material fatigue, the control of bolt holes and the inspection of tubes (in these cases, eddy current testing is preferred.

We **can conclude** that the advantages of phased array ultrasound testing are: simplified inspection and interpretation; increased detection of defects; faster inspection speeds; more reliable results.

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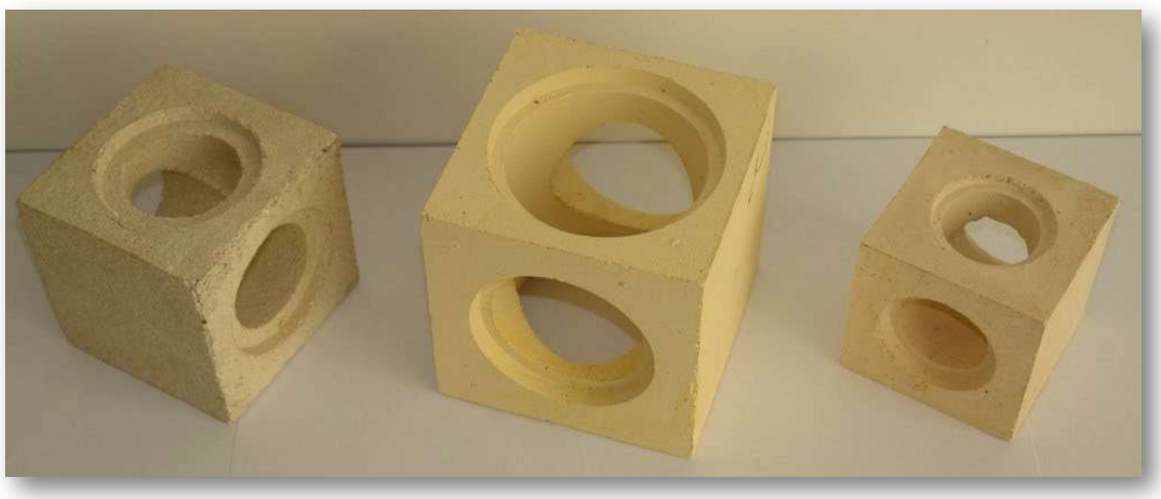
PRODUCTION METHODS OF REFRACTORY COMPONENTS

Refractory products

Author: *Radu BUZDUGA*

B

The sharp development of the economy in our country imposed an increase in the industry of refractory products, a fact that led to the need to establish a research and design unit specific to this field, which had the mission of ensuring the modernization of the refractory industry and the assimilation of products necessary for the steel industry taking into account all the changes along the way, through own research efforts without the contribution of a license, know-how, etc. This is how the Design Research Center for Refractory Products Braşov came into existence in 1973, and in 1974 a branch of it was established in Alba Iulia.



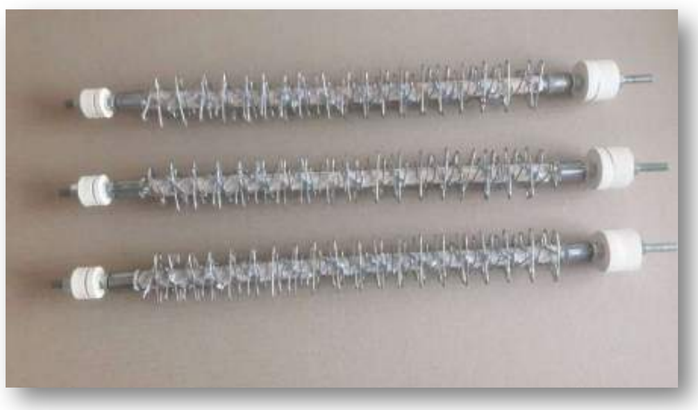












In 1999, the Alba Iulia Branch became, through division, an independent company, under the name Refractory Research, Design and Production Center (CCPPR SA), having diversified micro-production activities in two workshops (a refractory production workshop and a mechanic workshop). With a rich experience in applied research, the research team of CCPPR SA Alba Iulia is the author or co-author of numerous scientific works, a number of 130 inventions, 300 research works realized through the assimilation of over 140 refractory products.

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AUTONOMOUS HEATING SYSTEM FOR RESIDENTIAL SPACES

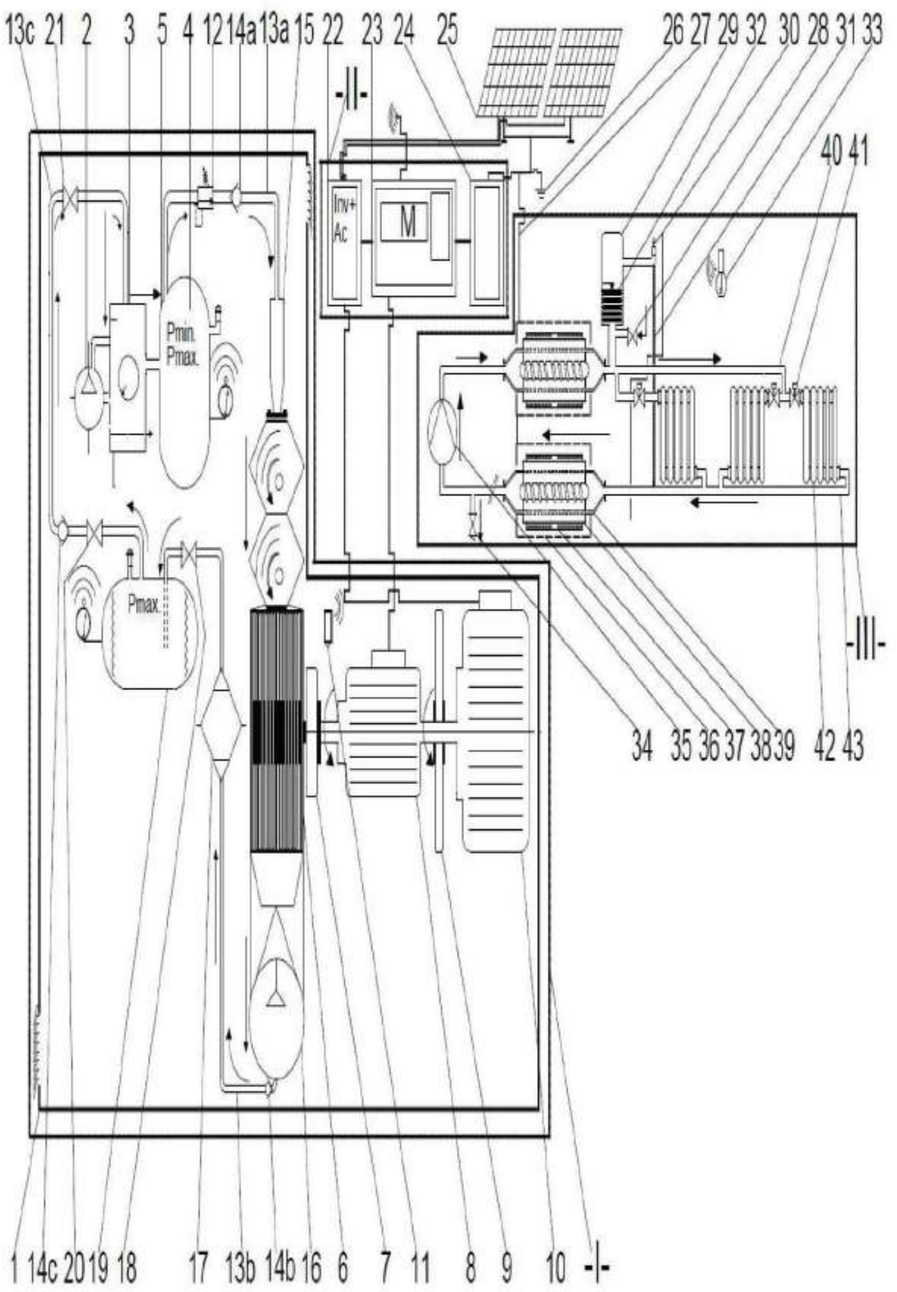
A/000356/06.07.2023

authors: Pavel Ștefan, Ungureanu Daniel-Viorel, Stan Daniel-Voicu

B

Description of the Invention

The invention relates to an autonomous heating system for residential spaces consisting of a water heating system as a heat transfer agent and at least one induction heating recipient, an electric power generation system, and a management and distribution system for electric energy composed of a current generator for powering the induction coil of the heating system's recipient, an inverter with an accumulator, a group of photovoltaic panels, and an electric panel with a microprocessor.



ADVANTAGES

- **The installation does not use substances or chemicals that can affect the environment or human health.**
- **The operation of the installation is not dependent on the availability, storage, and consumption of fuel materials (gas, liquid, or solid), and therefore does not release pollutants into the environment.**
- **For heating the thermal agent, it uses an electromagnetic induction container (boiler/tank) with higher energy efficiency compared to fuel combustion heating methods.**
- **The main source of electrical energy required to power the induction coil of the boiler used for heating the thermal agent is a motor-generator group.**
- **The incorporated photovoltaic system is dimensioned in such a way that, depending on the location of use and the availability of seasonal solar energy, it can cover the energy needs for operating the electrical automation components and the inherent energy losses due to subunitary conversion efficiencies in the motor-generator group.**
- **It uses a programmable microprocessor-based command and control system to manage installation operation and the available energy from the electric generator and photovoltaic panels.**
- **During the installation startup and temporarily, for short periods of time, the operation of the electric current generator is ensured by a Tesla turbine set into motion by decompressing compressed air in a closed circuit, after which the command and control system manages the reestablishment of pressure in the main compressed air reservoir.**
- **The operating parameters of the installation are recorded in real time in the microprocessor's memory, and its connection to a local Ethernet network allows monitoring of its operation by the user or their interventions.**

Contact: pavelstefanel@gmail.com

RECIPIENT FOR INDUCTION HEATING ELECTRIC CENTRAL HEATING SYSTEM AND CONTROL SYSTEM FOR OPTIMIZING ITS OPERATION

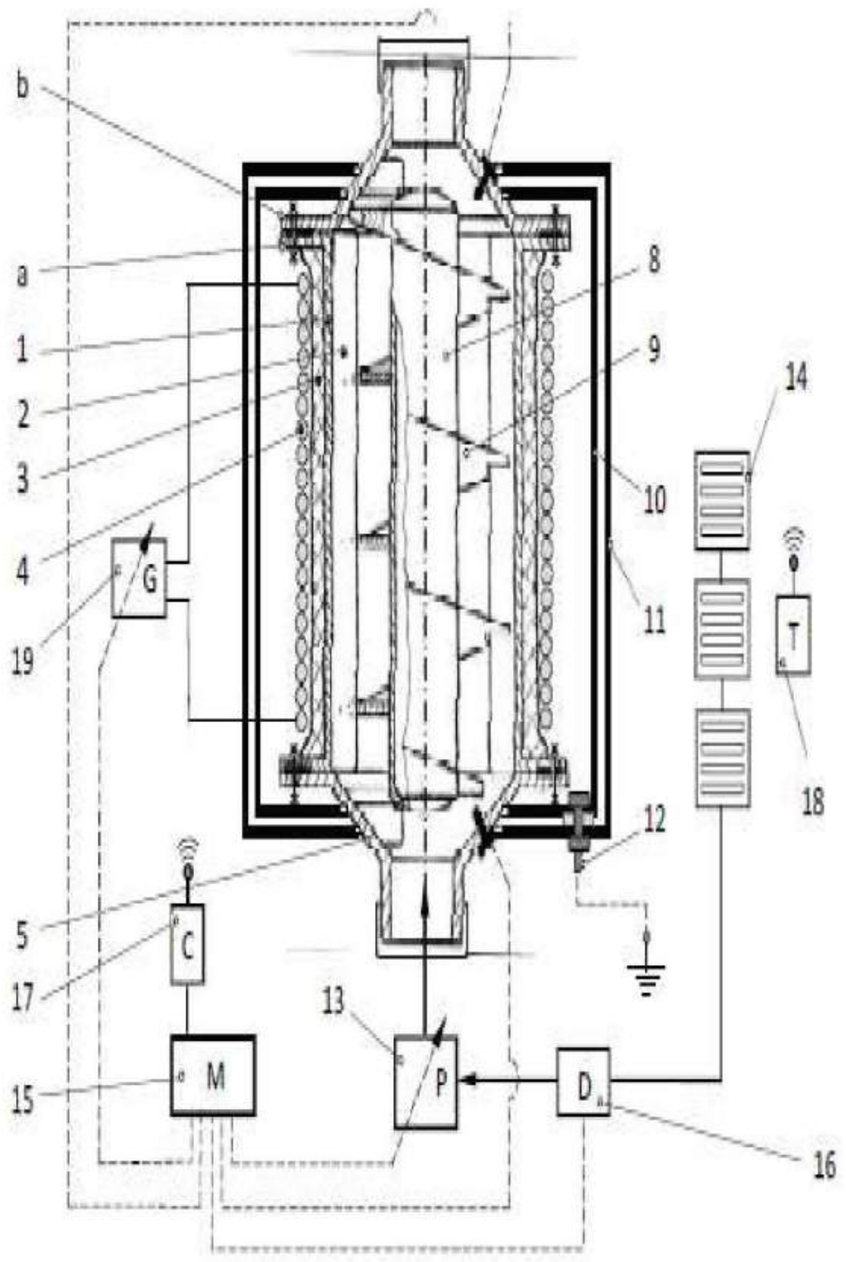
A/000234/10.07.2023

authors: Pavel Ștefan, Ungureanu Daniel-Viorel, Stan Daniel-Voicu

B

DESCRIPTION

The recipient of induction heating central heating systems, as per the invention, consists of a metallic body open at both ends, electrically connected to the grounding system, with mounting flanges and four to six baffles, in the form of steel bands, welded inside the body along its internal surface. Ceramic material with reinforced glass fibre fabric is poured on the exterior of the metallic body, and a coil of induction is placed inside the space formed by it through winding.



ADVANTAGES

- **The installation does not utilise substances or chemicals that can have adverse effects on the environment or human health.**
- **Higher energy efficiency through local production of the electrical energy required to heat the thermal agent in the heating system.**
- **Real-time monitoring of the operating parameters of the installation through connection to a local Ethernet network.**
- **Greater ecological efficiency, as the installation does not store or consume conventional fuels, thereby avoiding the release of pollutants into the atmosphere or the environment.**
- **Enhanced operational safety through included electromagnetic protection measures.**

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EXPANDING THE RAW MATERIAL BASE IN STEEL INDUSTRY

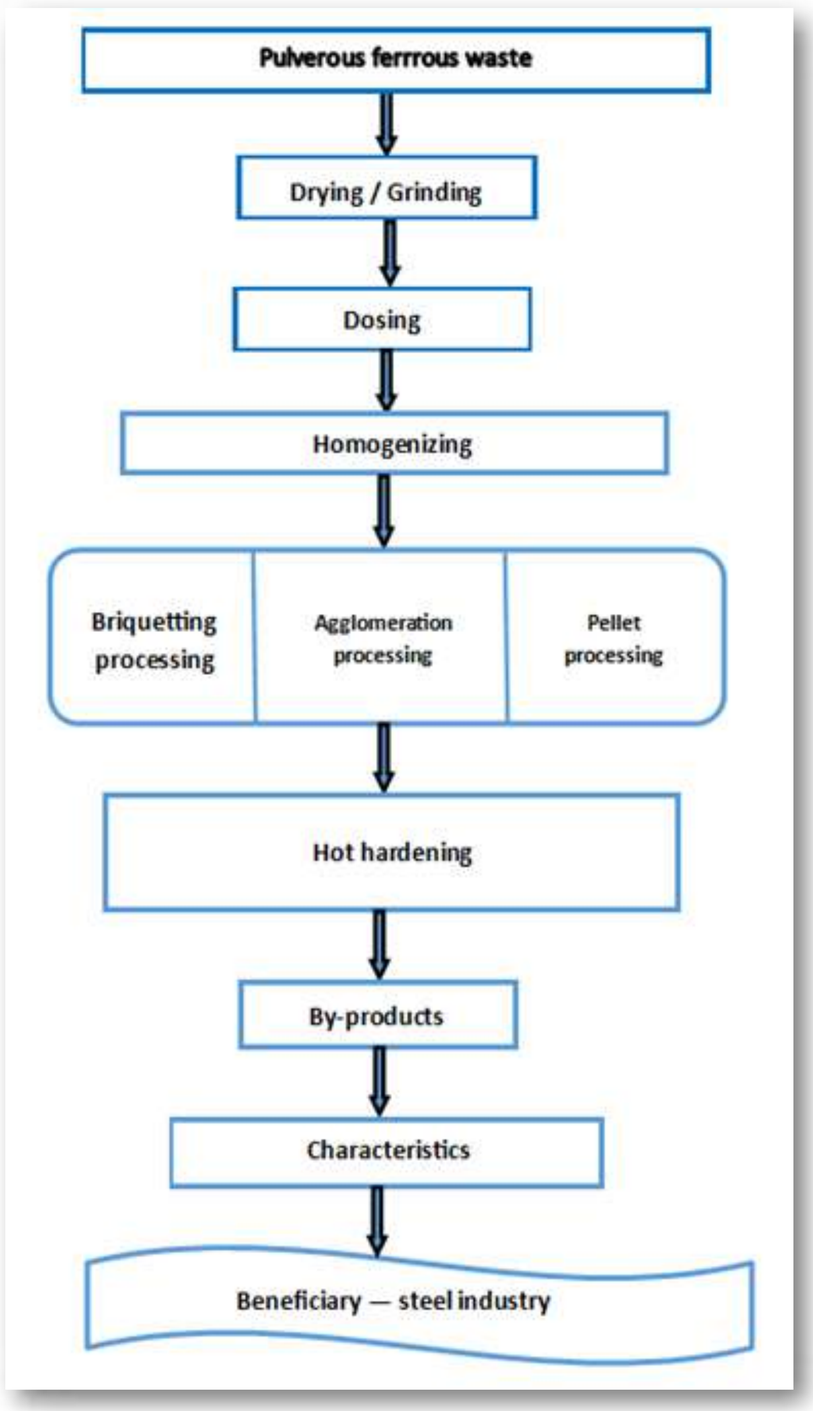
Student Project

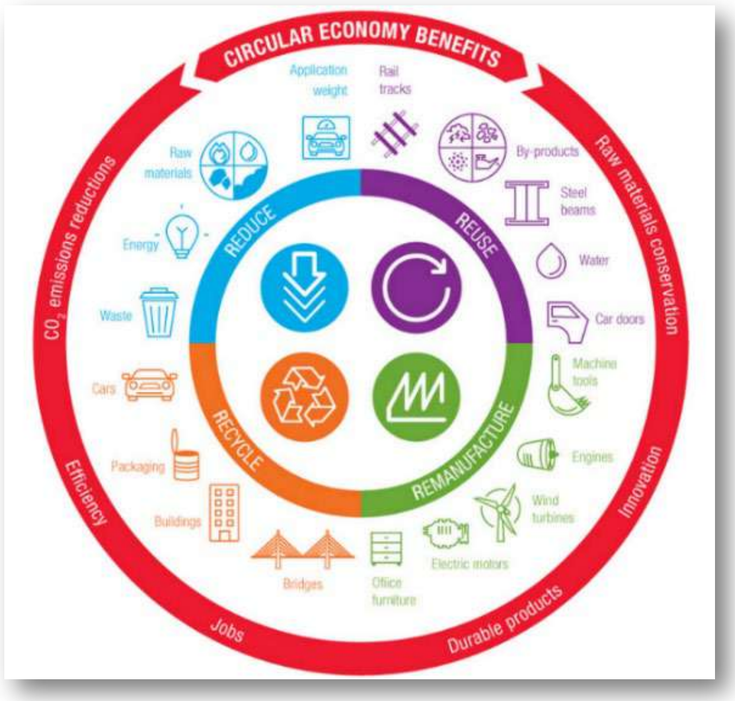
Authors: Vasile Bulea, Mentor Ana Socalici

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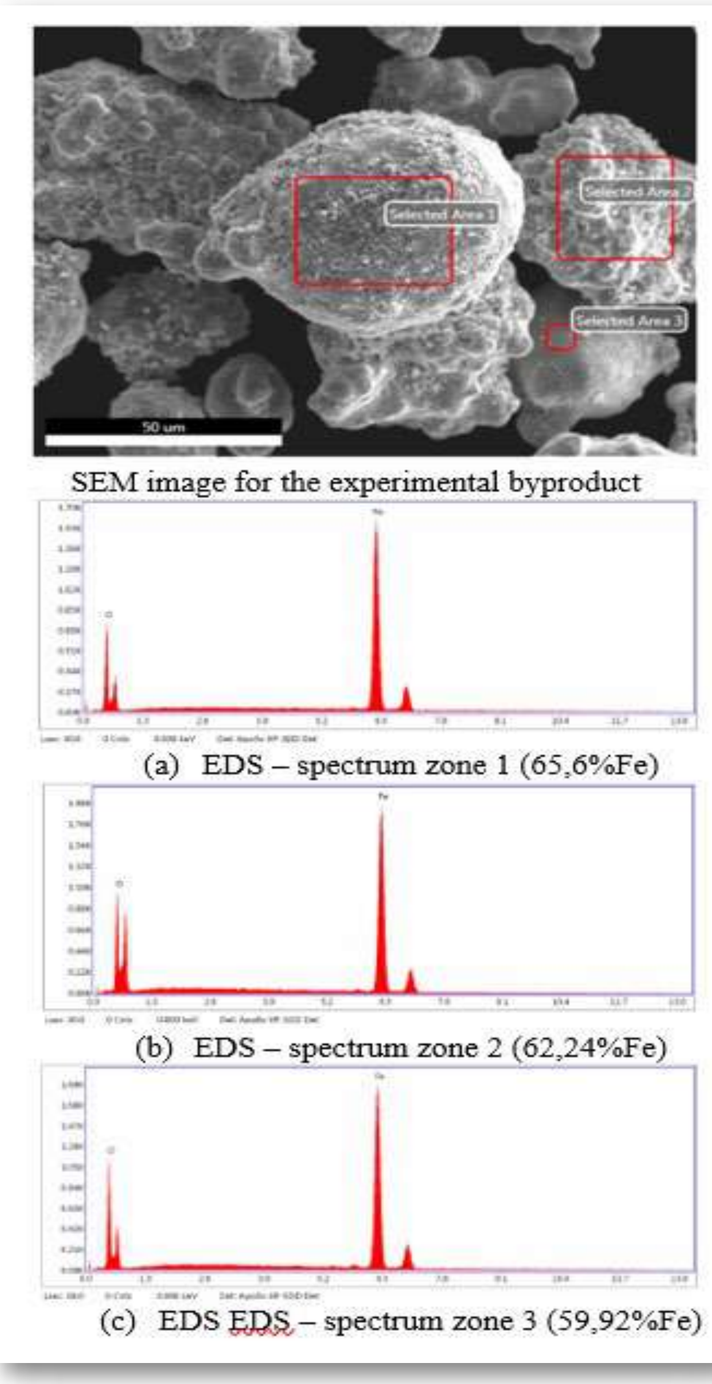
In order to apply the concepts of sustainable development, a balance must be established between the volume of raw materials used and the volume of waste that can be recovered, with positive effects on reducing the degree of pollution. It is necessary to pay particular attention to the technologies for processing recoverable waste, resulting from the current manufacturing flows and those deposited. The issue of waste management through recovery is an environmental and economic priority. The circular economy stimulates the growth of economic value while decreasing the consumption of natural resources.

A particular interest is represented by the unconventional processes of recycling of powdered ferrous waste in order to obtain a product with a high content of metallic iron. The work presents the results obtained from the processing of powdered ferrous waste by briquetting / agglomeration / pelletization as well as the possibility of valorization of the by-products obtained in the steel industry.









SEM image for the experimental byproduct

(a) EDS – spectrum zone 1 (65,6%Fe)

(b) EDS – spectrum zone 2 (62,24%Fe)

(c) EDS EDS – spectrum zone 3 (59,92%Fe)

The by-products obtained are intended for use as a raw material in the elaboration of steel in electric arc furnaces and have an iron content of 52-78%. It is necessary to intensify the process of recovering this waste for economic, technological and environmental reasons.

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COMPLEX SYSTEM FOR DETERMINING THE IGNITION AND BURNING BEHAVIOR OF SOLID MATERIALS IN ATMOSPHERES WITH HIGH OXYGEN CONCENTRATIONS

Patent/project number: CBI A 2022 00607

Authors: Ghicioi Emilian, *Gaman George Artur, Suvar Marius Cornel, Daniel Pupazan, Florea Daniel, Simon- Bogdan Marinica, Prodan Maria, Vass Zoltan, Burian Sorin, Nicolescu Cristian, Șuvar Niculina Sonia Gabor Dan, Nalboc Irina, Jurca Adrian, Colda Cosmin, Vlasin Nicolae, Pasculescu Vlad, Manea Florin, Pupăzan Gabriela, Păun Florin, Tuhut Ligia, Munteanu Laurentiu*

B

The complex system for determining the ignition and burning behavior of solid materials in atmospheres with high oxygen concentrations is provided with a closed enclosure, gas sensors, temperature transducers, analytical balance, video recording cameras, for studying samples similar to those involved in fires, in order to study the combustion characteristics, ignition capacity, burning speed, mass loss, developed temperatures, self-extinguishment, depending on the value of the oxygen concentration. Through this complex system it is possible to obtain valid data on the ignition and burning behavior of solid materials in atmospheres with initial oxygen concentrations between 21%vol. and 100% vol., these being useful both for establishing the causes of fires in the intensive care rooms of hospitals where oxygen treatment is carried out for patients with respiratory deficiencies, as well as for selecting the types of materials used to equip the production, storage, transport facilities and use of oxygen, either industrially or medically, the results highlighting the possibility that some materials that do not ignite or burn in normal atmosphere, with 21%vol. oxygen, become flammable and burn violently at higher oxygen concentrations.

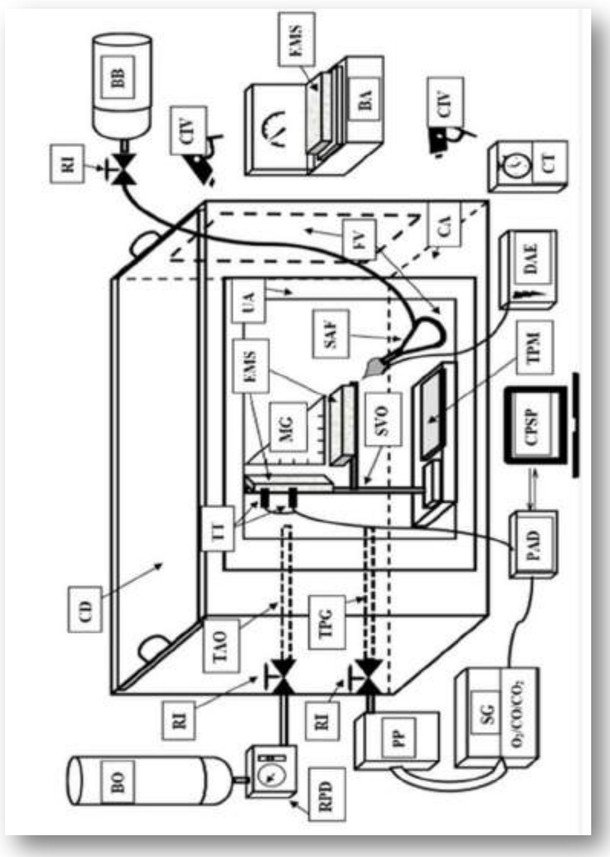
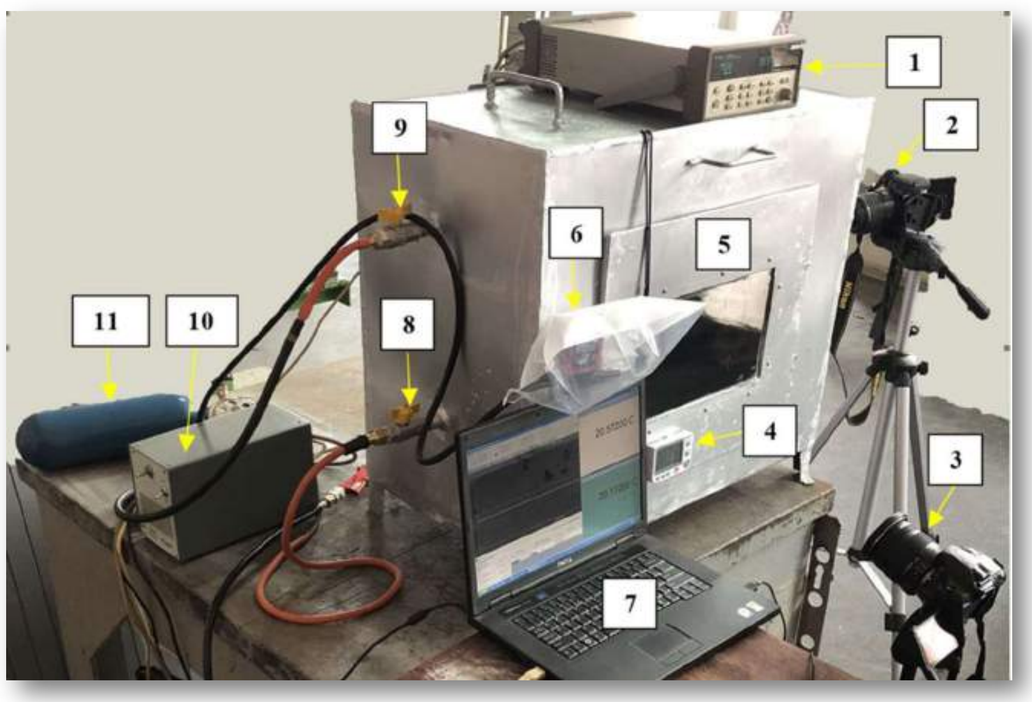


Fig 1 – Complex system for determining the ignition and combustion behavior of solid materials in atmospheres with high oxygen concentrations.



1. AGILENT system for measuring and recording temperature;
2 .-3. Video cameras;
4. Stopwatch,
5. Sealed enclosure with controlled atmosphere
6. Laptop for data recording,
7. Gas sampling pipeline,
8. Oxygen intake pipeline,
9. Gas sampling pump,
10. Oxygen cylinder with flow regulator preset at 1.4 l/min







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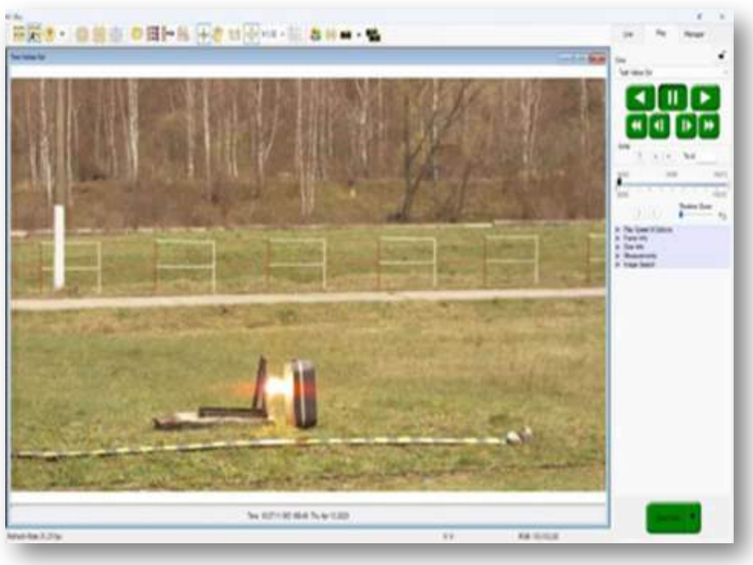
NEUTRALIZATION DEVICE WITH LIQUID JET OF IMPROVISED EXPLOSIVE DEVICE (DNJLDEI)

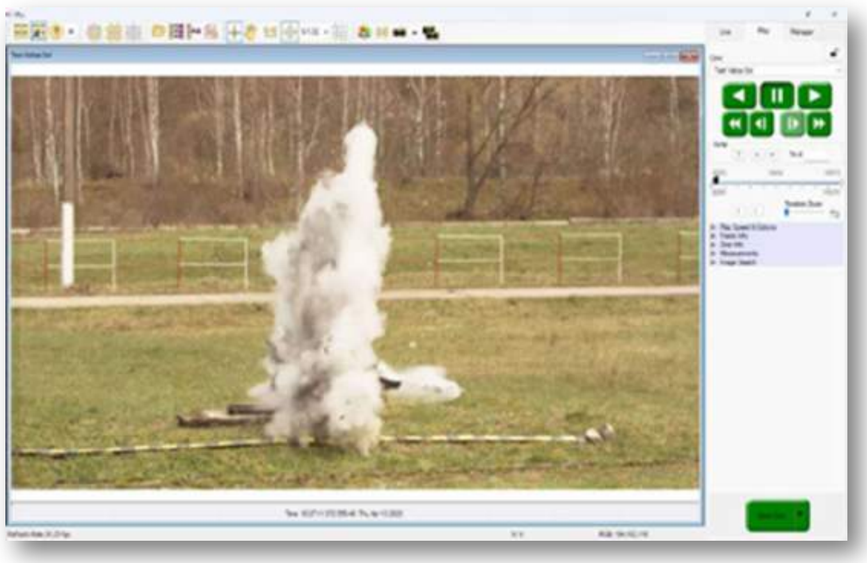
Patent/project number: CBI A 2023 00178

Authors: Emilian Ghicioi, *Artur George Găman, Daniel Pupăzan, Robert Laszlo, Sorin Burian, Adrian Jurca, Dan Gabor, Angelica Nicoleta Găman, Alexandru Simion, Alin Irimia, Doru Cioclea, Maria Prodan Emeric Chiuzan, Irina Vasilica Nalboc, Andrei Szollosi, Sonia Șuvar, Edward Jan Gheorghiosu, Gabriel Dragoș Vasilescu, Attila Kovacs, Daniela Carmen Rus, Cristian Rădeanu, Ilie- Ciprian Jitea, Vlad Păsculescu, Marius Șuvar, Nicolae Vlasin, Bușoi Bogdan Garaliu, Daniel Florea, Adrian Șimon Bogdan, Ligia Tuhuț*

B

The invention relates to a neutralization device with liquid jet of improvised explosive device (DNJLDEI), by propelling a quantity of liquid at high speeds, over 500 m/s, in the direction of the target, DEI explosive device with the help of low-explosive charges, detonated remotely. The device, consists of an assembly consisting of a reinforced metal base (mortar), provided with a carrying handle, a base that has an adjustable frame, with perforated arms and fixing screws to various degrees of inclination (from horizontal to vertical working position), having a centrally positioned cylindrical plug (reinforced around the perimeter and at the bottom) for mounting the specially shaped plastic container (cylinder equipped with legs and fixing disc with both flat closing surfaces or with one flat end and one hemispherical end), removable container, with a threaded cap, in which there is a volume of liquid, as well as a reduced charge of plastic explosive, moulded on the lower surface of the dry compartment intended for it, into which an electric detonating staple is inserted for initiation, connected to a detonator operated by an operator from a safe distance.













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AUTOMATED TEST STAND FOR EVALUATING OXIDATION RESISTANCE AND THERMAL SHOCK OF THERMAL BARRIER COATINGS

Patent A/00129

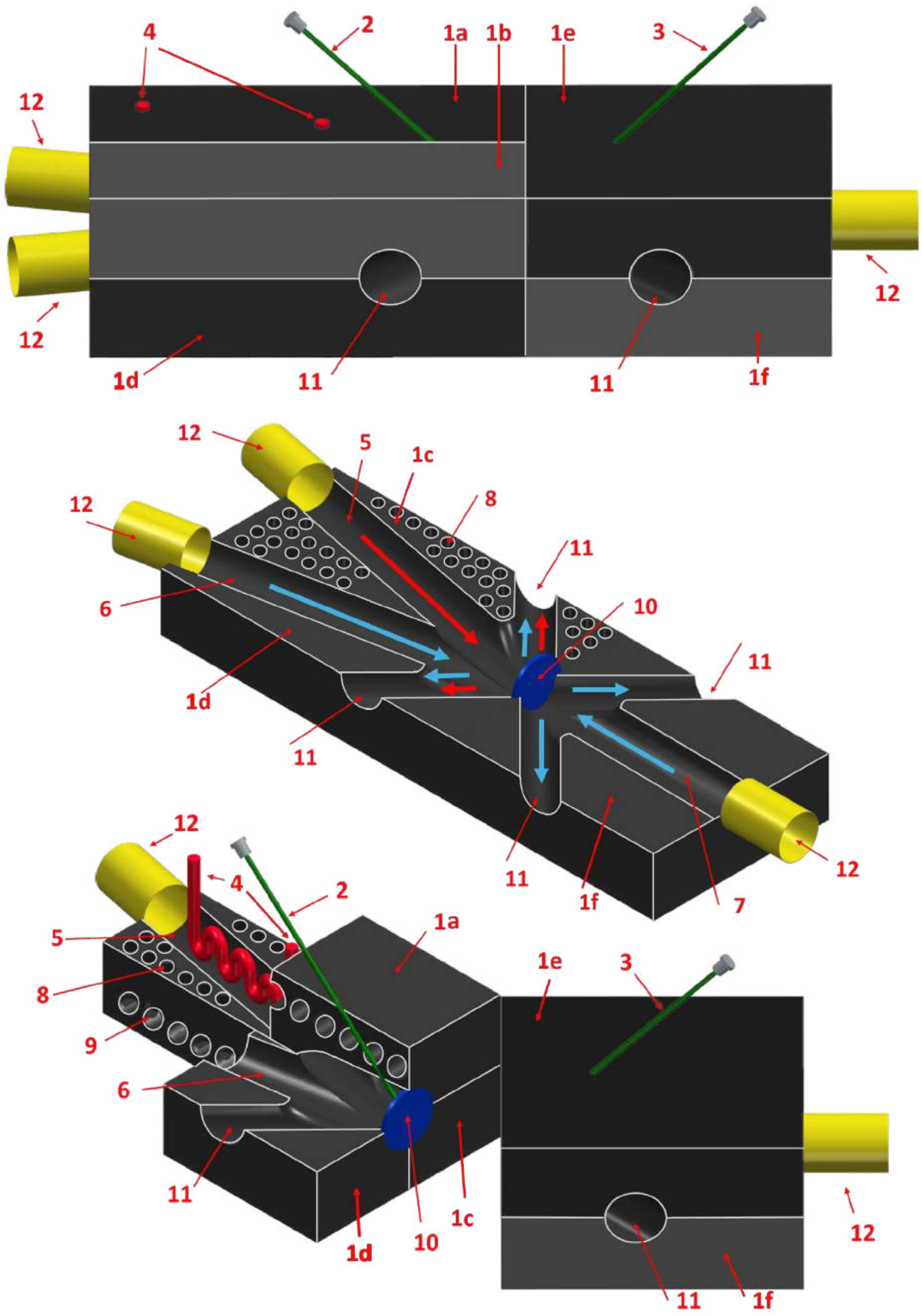
Authors: Teodor-Adrian BADEA[1], Dan Nicolae BATALU[2]

B

An automated stand for oxidation and thermal shock testing of thermal barrier coatings is built using six graphite blocks (1 a-f). It includes a heating channel (5) with an electric heating element (4) and cooling channels for both the sample (6) and substrate (7). The design also incorporates hot/cold exhaust channels (11), contact thermocouple holes for monitoring sample (2) and substrate (3) temperatures, and a sample positioning slot (10). Additionally, energy recovery channels (8-9) and three ventilation systems (12) ensure adequate hot and cold air flow.

Advantages

- ✓ The automated stand allows thermal barrier coatings to undergo thermal shock and oxidation testing across a wide temperature range, from 23°C to 1600°C. It simulates realistic operating conditions while providing substrate cooling.
- ✓ The stand's long lifespan is ensured by the absence of mechanical or heat-sensitive components.
- ✓ The stand offers high energy efficiency thanks to the vertical and horizontal heat recovery channels located around the electric heating element.
- ✓ Allows for determining coating efficiency by tracking temperature changes on the substrate throughout the process, in correlation with the initial temperature.
- ✓ The automated stand provides precise and controlled cooling of the layer and substrate by adjusting airflow based on the temperature readings from the thermocouple.
- ✓ The permanent contact thermocouples allow for precise temperature measurements of both the sample layer and the substrate.
- ✓ The system provides automated precision testing along with remote control features. In a safe remote testing mode, the test can be halted by simply disconnecting the power source.



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[2] **Dan Nicolae BATALU**: dan_batalu@yahoo.com. Department of Metallic Materials Science, Physical Metallurgy, National University of Science and Technology POLITEHNICA Bucharest, 313 Splaiul Independentei, J Building, District 6, 060042 Bucharest, Romania

PROCEDURE FOR MAKING GEOPOLIMERS BASED ON RED MUD, FLY ASH AND POWER PLANT DESULPHURATION PRODUCT FOR APPLICATIONS IN THE FIELD OF CONSTRUCTION

Authors:

Dumitru Doru BURDUHOS NERGIȘ [1], Andrei Victor SANDU [1], Madalina-Simona BALTATU [1], Dragos-Cristian ACHITEI [1], Manuela-Cristina PERJU [1], Diana-Petronela BURDUHOS-NERGIS[1], Andriana SURLEVA [2], Petrica VIZUREANU [1]

Affiliation:

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Patent application: A00156/04.04.2024 in ROMANIA

B

The invention relates to a preparation method of geopolymers based on red mud, fly ash and flue gas fly ash (fly ash from the desulphurization process of thermoelectric power plants) by alkaline activation with the capacity to cure fast at room temperature.

The process according to the invention for making the environmentally friendly geopolymer consists of mixing two components, one solid and one liquid, whose composition is as follows: the solid component consists of 30-35% class F fly ash, 10-15% thermal power plant desulphurization product, 45-50% red mud, and the liquid component consists of Na_2SiO_3 solution and NaOH solution in a mass ratio of between 1.25 and 1.5; the mass ratio between the liquid and solid components is between 0.65 and 0.75, and the concentration of the NaOH solution is 10M or 3M. In the case of 10M concentration, the final set time is about 30 minutes, and in the case of 3M concentration it is about 100 minutes, making it also suitable for 3D printing.

GEOPOLYMERS

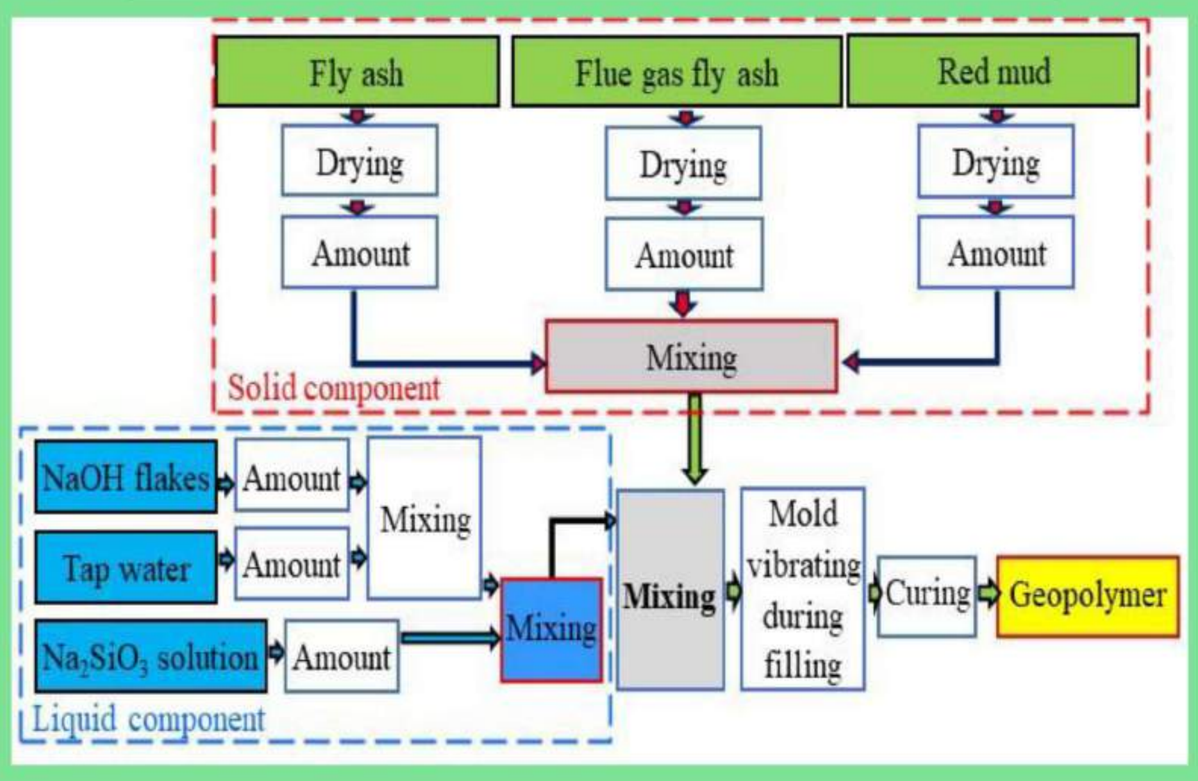
Bricks

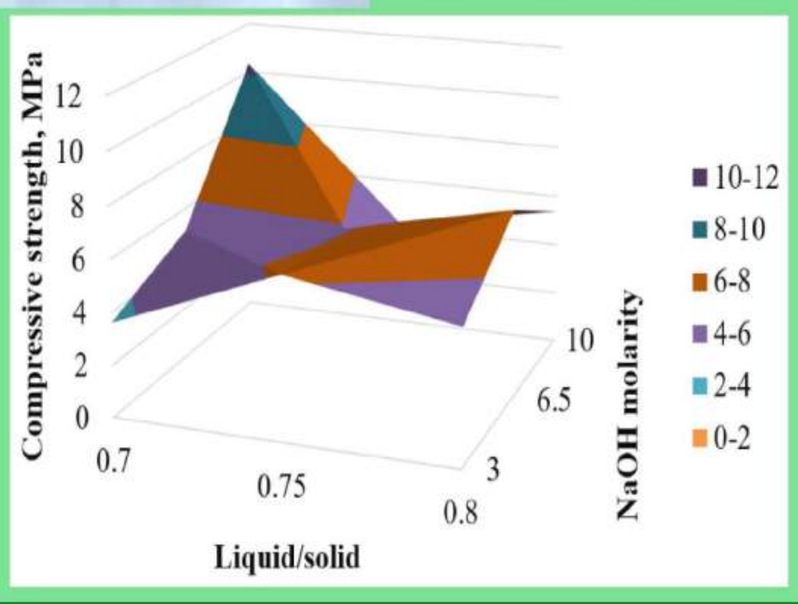


Samples



Schematic representation of the preparation method





Industrial validation



Advantages

- Raw materials: •Red mud; •Fly ash from the desulphurization process; •Fly ash;
- The raw materials used **are** industrial wastes;
- Easy to prepare, by mixing components with minimal energy consumption;
- Low carbon footprint.
- Can be used for multiple applications: building facades, floors, decorative panels, bricks, insulating bricks, garden furniture etc.

The novelty of this invention is related to the exploitation of local materials through the development of new compositions of alkaline activated materials using a mixture of three mineral wastes and the specific design (optimization) of suitable compositions for the realization of prefabricated paving elements with physico-mechanical characteristics suitable for the intended field of use.

EXPERIMENTAL CAMPAIGN ON BIO-BASED BUILDING MATERIALS

R. Erbașu [1], I. Teodorescu [1], D. Țăpuși [1], A.D. Sabău [1]

[1]Technical University of Civil Engineering Bucharest, Department of Civil Engineering

B

In the context of climate change, reducing gas emissions while developing new bio-based materials is crucial for establishing a sustainable economy. Following these directions, wood, in the form of glued laminated timber, together with the adhesives used, have lower global warming potential due to their ability to absorb carbon from the atmosphere making them a viable alternative for more environmentally friendly solutions.

The experimental campaign has been made on samples of glued laminated timber elements formed by wood elements and commonly used adhesives for this composite material such as Melamine Urea Formaldehyde (MUF). The scope of the research is to find the best glue for a structure that responds to the conditions mentioned above.

The dimensions of the elements (b x h – l) considered for the experimental campaign are parallelepiped in shape, with dimensions of 600x600x20 mm (Fig.1).

Preliminary tests The experimental campaign has been carried out in the Geotechnics Laboratory of UTCB - Technical University of Civil Engineering Bucharest where the bio-based materials have been subjected to shear testing in an equipment created for the current research. In order to have a good system of applying the force, multiple shear boxes have been designed.

For the first box, an aluminum frame was considered adequate. In contrast, the second box was designed and constructed using steel profiles to endure the required stresses for shearing the wood sample (shear force = 5000 kPa and axial pressure = 2500 kPa).

Both systems failed because the oversizing factor was inadequate to account for the nonlinearities of the wood material. This led to the shear system's failure when encountering knots in the wood samples. The configuration of the boxes is illustrated in Fig. 2.

Second phase of the research – final shear box. For the current experimental campaign, the final shear box configuration shown in Fig. 3, which successfully withstood the applied force, was created. The tests were conducted using direct shearing equipment, with the glued laminated timber with MUF adhesive section positioned in the center of the shear box. The wooden element placed in the shear box was subjected to thermal energy from a heating device, reaching temperatures between 40°C and 120°C, facilitated by the embedded NiCr device that was analyzed in a future article. Ultimately, force was applied to the element until it reached its breaking point to determine which component—either the wooden piece or the adhesive—failed under this combination of force and high temperature (Fig. 4).

We **can conclude** that this experiment has shown great qualities for some new configurations of bio-based composite materials (more specific glued laminated timber and adhesives) and the success of the system developed for testing their mechanical behavior. The application of this composite wooden element in sustainable structures can replace materials whose production is energy-intensive such as cement or steel.

ACKNOWLEDGMENTS: This study was financially supported by *GNaC*_2023_*ARUT* "UTCB − 25"



Fig. 1. Samples of glued laminated timber with adhesives.



Fig. 2. The first two wood sample shear boxes: a) first box; b) second box.

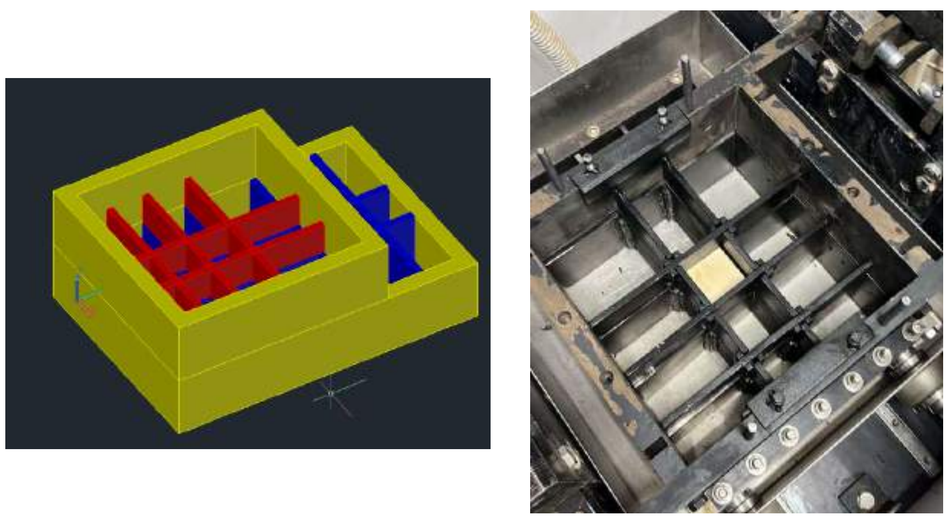


Fig. 3. Final box configuration used for the experimental campaign

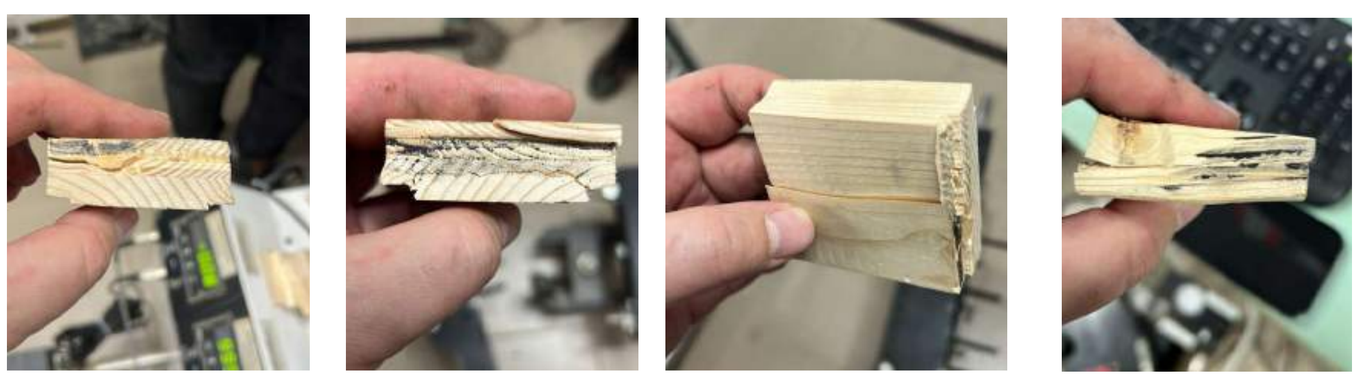


Fig. 4. Images of the wooden samples after the application of the force

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TIMBER ELEMENTS REINFORCED WITH POLYMER MATERIALS

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[1]Technical University of Civil Engineering Bucharest, Department of Civil Engineering

B

Timber elements have seen an increase in their use as building material due to their high strength properties that make them perfect for the use in buildings with great heights. For this reason, new solutions have been developed that have been analyzed in this research where glued laminated timber elements (glulam) reinforced with FRP polymer fibers have been tested in order to see the increase in strength and duration in time until final failure of the element.

The aim of the experiment was to analyze the contribution of the polymer strengthening materials in the best solution for the combination of wood (glued laminated timber) + FRP polymer materials (Sika CarboDur S1012, Sika Wrap 230C), using various types of adhesive (SikaDur 330, SikaDur 30 and MUF).

The dimensions of the elements (b x h – l) were the same for all the elements considered in the experiments (120 x 200 – 300 mm) for the first phase of the experimental campaign (Fig. 1)

Preliminary tests The experiments were carried out at the Technical University of Civil Engineering Bucharest where a combination of timber elements reinforced with polymer materials have been subjected to HECKERT 262/6 press with a force applied on the middle element until the moment of failure of the element (Fig. 2 and Fig. 3). The polymer materials have been situated between the three wooden elements. From the preliminary tests, the best combination of the materials (glulam, adhesive and polymer fibers) has been used for further experiments.

Second phase of the research – bending tests The research campaign continued with the second phase of the experiments where the best solution found in the first stage was used for beams with a opening of 4,00 m and reinforced with polymer fibers in order to analyze the behavior under tension up to the moment of failure (Fig. 4). The tests were carried out in a large press in the form of a steel reaction frame with a numerically controlled hydraulic loading system and a digital data acquisition system.

The results obtained on reinforced glued laminated timber beams with polymer fibers were compared with a standard glued laminated timber beam, without reinforcement in order to see how the polymeric materials increase the resistance time and maximum breaking force applied on the element.

We **can conclude** that the creation of the new materials formed by the glued laminated timber (glulam), the adhesives and the polymer fibers with all their combinations have positive results in terms of resistance.

Together with the team of professors and doctoral students of the Technical University of Civil Engineering Bucharest and with the 2 companies that helped in the realization of the composite materials (Glulam Romania and Sika Romania) we found qualitative results.

The main result of the experimental campaign was that the strength capacity of the beams increased together with the failure time of the element when compared with the beam without FRP reinforcement.

ACKNOWLEDGMENTS; The authors gratefully thank the research support fund of the UTCB CDI 2022 internal competition.

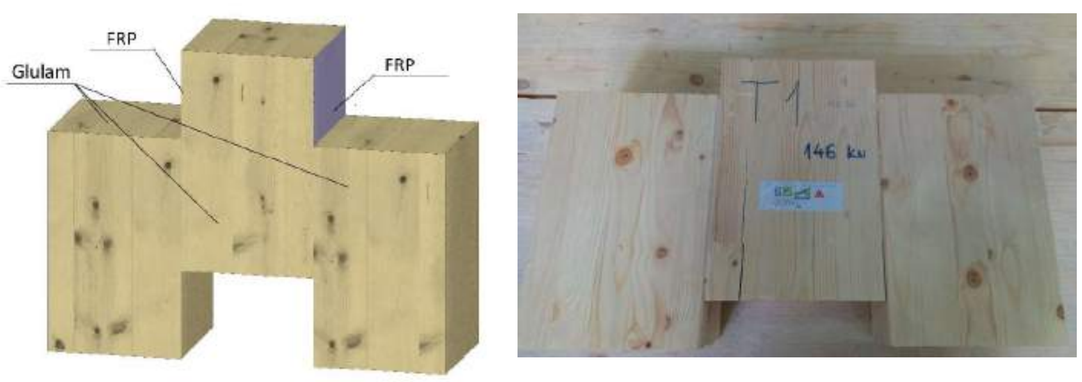


Fig. 1. Schematic of the composite elements and image after the experiments with the breaking line in the central element

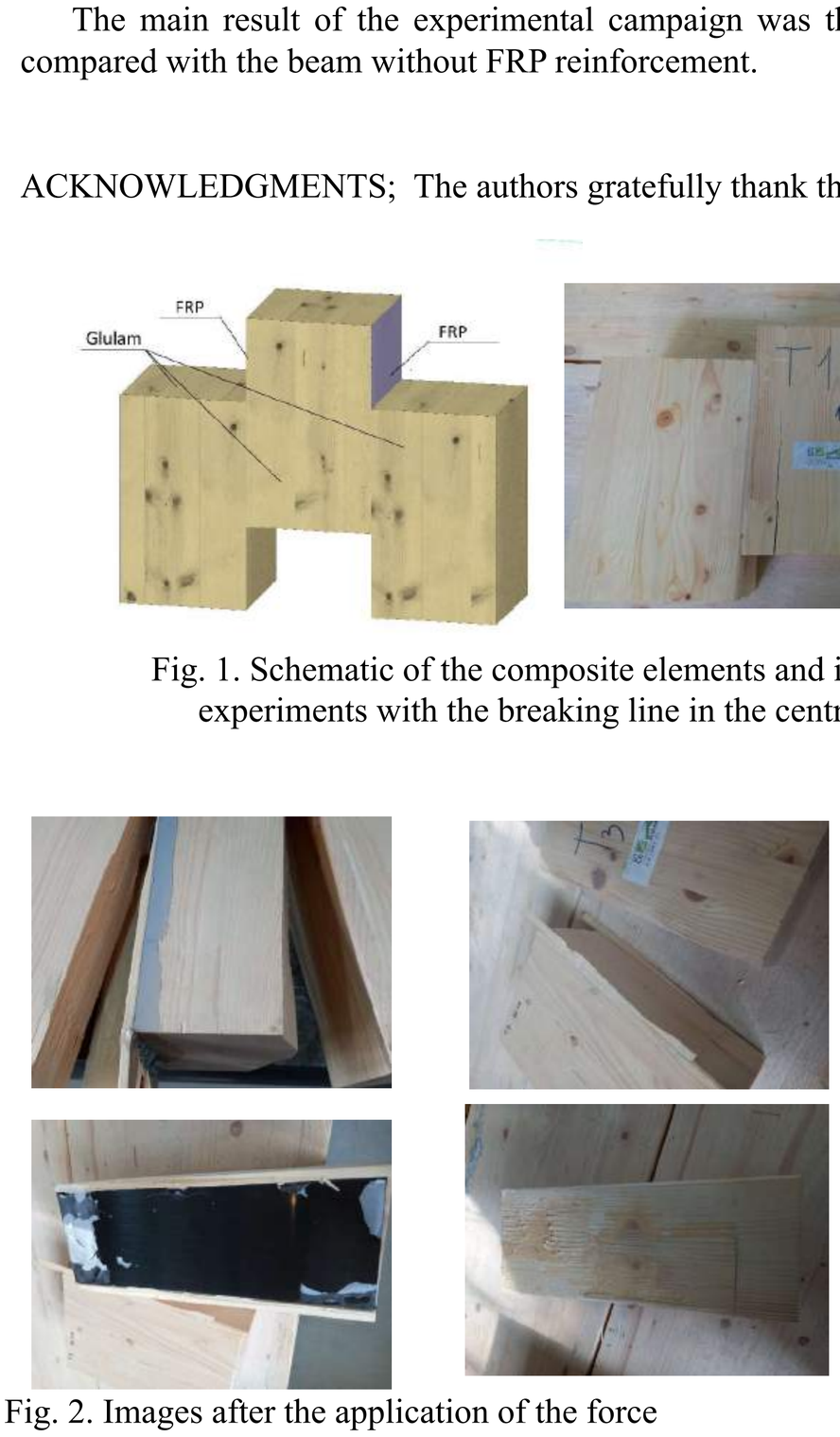


Fig. 2. Images after the application of the force on the elements

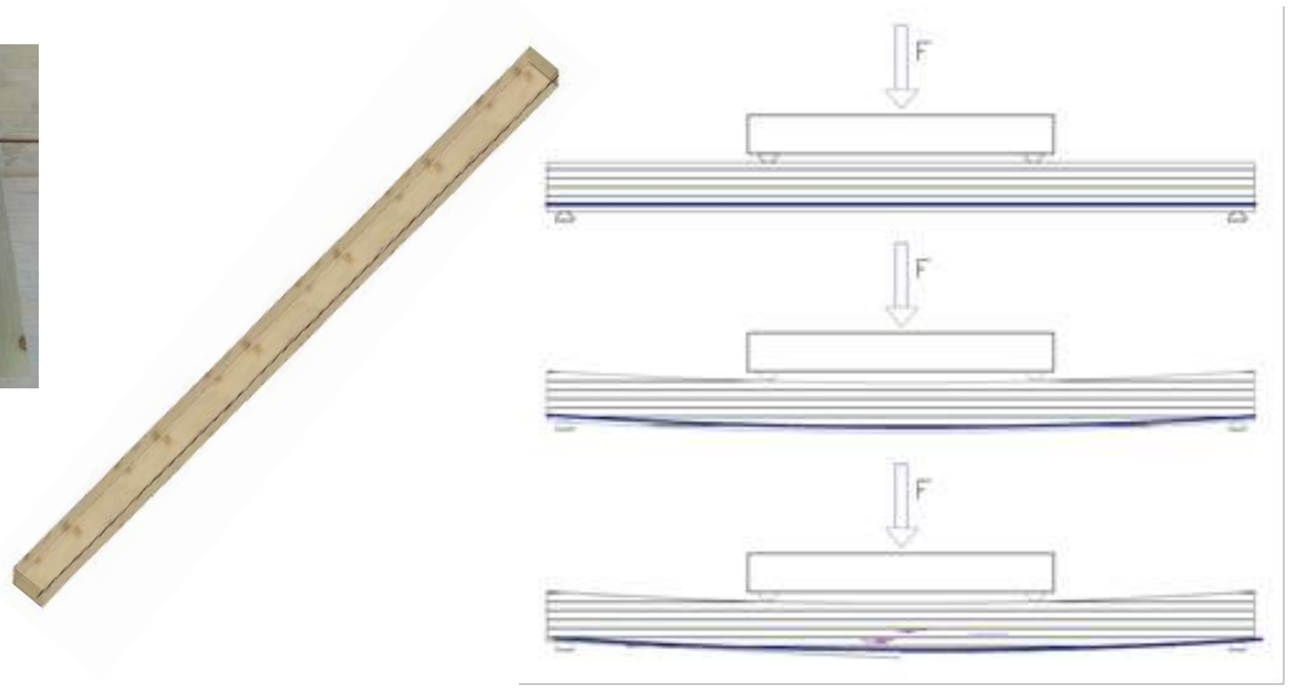


Fig. 3. Deformation of the glued laminated timber beam under the action of force



Fig. 4. Images of the glued laminated timber beam under the action of force

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Enhancing Climate Resilience and Sustainability Through Modularity and Flexibility in Architectural Design

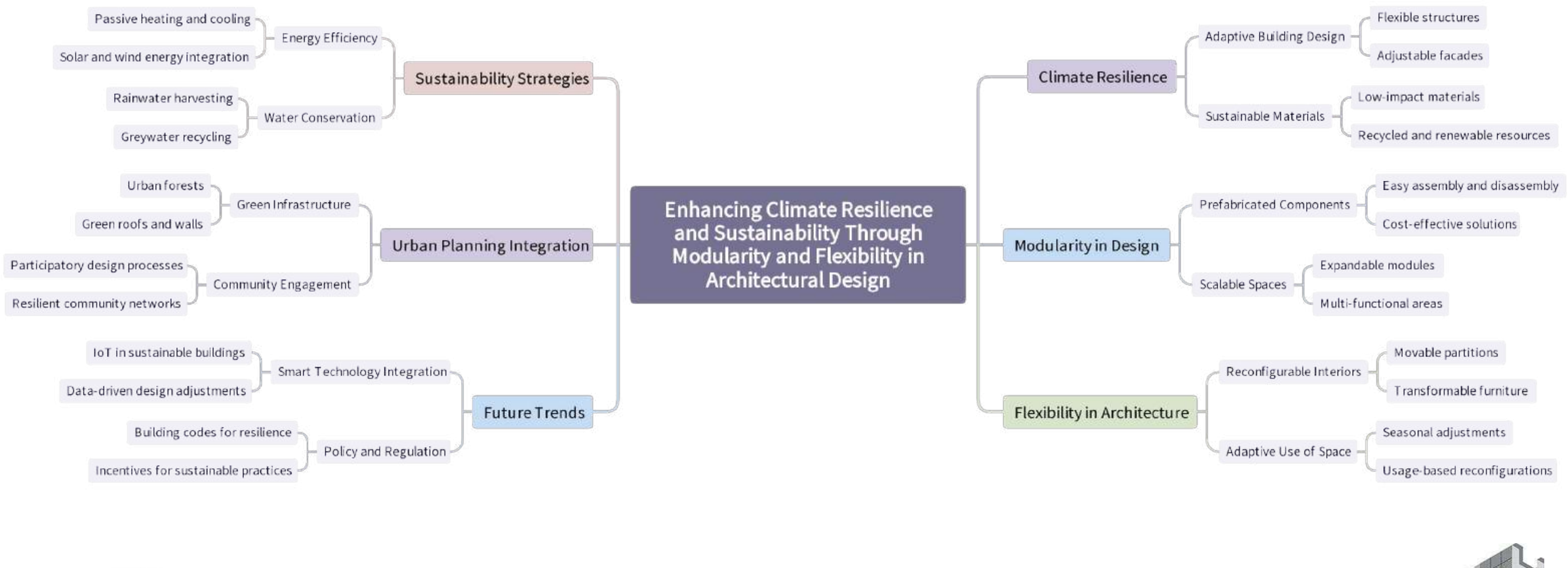
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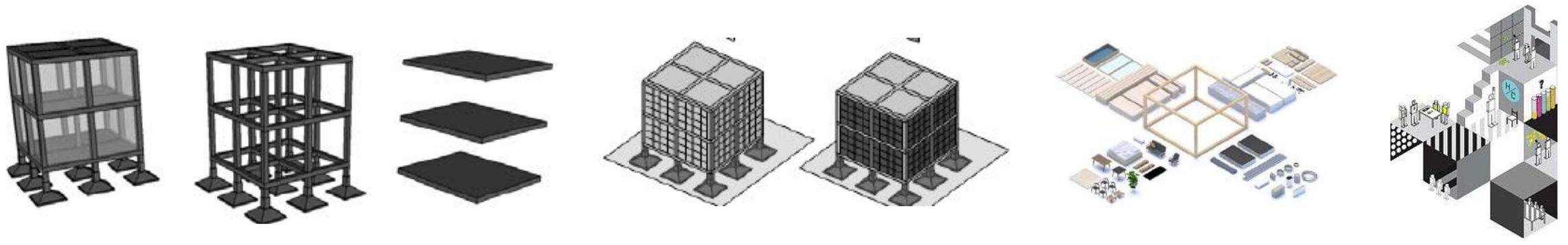
Author: Kenza Belkhiri

Mentor: Daniel-Viorel Ungureanu

B

The climate crisis has been ranked with some of the most pressing challenges of the 21st century and calls for very creative architectural responses, if a significantly different built environment is to be achieved. Extreme weather changes, depletion of resources and high temperatures would increasingly result in changes that architecture would need to make in order to better address sustainability and resilience. Modularity is based on prefabrication and standardization, which has very great benefits concerning material waste reduction, simplification of construction processes, and Circular Economy principles by means of scalability and reuse. Flexibility refers to how much a building can adapt to changing functional, environmental, and spatial requirements and lengthens the life of structures as well as reduces their chances of obsolescence. Together, these strategies direct architecture to the dual commands of climate adaptation and mitigation. Inquiry into such concepts advances transformative strategies supportive of environmental stewardship and the goals related to global resilience, thus adding to the broader discourse on sustainable architecture. This paper discusses the merits of combining flexibility and modularity by architectural practices into a strong argument for sustainable design.





Modular construction diminishes the risk of threats and hazards because innovations brought about the flexibility towards joining, allowing for flexible adjustment or updating of architecture when playing varying climate change scenarios, subject to the vagaries of sea-level rise, extreme meteorological activities, and changing environmental requirements. Adaptive building envelope materials like green roofs for passive cooling, natural ventilation units, local energy use, and PV, strategically balancing 'energy efficiency' and 'piece of the planet,' generate a clear reduction in operational carbon emissions. In addition, the precast structure has substantially reduced wood end wastage by almost 50% and yielded means that reduce environmental impact.

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RECOVERY OF USEFUL METALS FROM USED LI-ION TYPE BATTERIES

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[1]National University of Science and Technology Politehnica Bucharest, Doctoral School of the Materials Science and Engineering Faculty, [2]National University of Science and Technology Politehnica Bucharest, Dep. of Eng. and Management of Metallic Materials Production

B

Li-ion batteries are familiar to us, because we find them in computers, mobile phones, electric or electrified cars, etc. The abbreviation Li-ion signifies the presence of lithium (Li) in the battery along with other chemical compounds. So far, six types of Li-ion batteries have been developed: LCO/$LiCoO_2$, NMC/$LiNIMnCoO_2$, LMO/$LiMn_2O_4$, LFP/$LiFePO_4$, NCA/$LiNiCoAlO_2$, LTO/$Li_4Ti_5O_{12}$. The first batteries launched on the market were of the LCO/$LiCoO_2$ type, and obviously they were the first to reach the collection and recycling centers. Until 2020, the recycling and recovery of useful metals from used Li-ion batteries is carried out in an overwhelming proportion in Asia. The European Union mobilized (2020) to catch up with the Asian markets (China, Japan and South Korea) in the field of Li-ion battery recycling, establishing the European Battery Alliance (EBA).

Materials and methods

The research confirmed that the paste of LCO batteries contains Co (78.114%), while in the case of the other types of batteries, the cobalt content decreases (in NMC type batteries the cobalt content decreases to 54.174%, but Ni (12.9%) appears and Mn (7.56%). The spent Lithium-ion batteries used in this study come from mobile phones and were dismantled manually in order to extract the cathode material. The spent LIBs were discharged completely in a salt solution for 1h and dismantled manually to separate the cathode materials coated on the Aluminum foil. The ultrasonic cleaning machine (Emmi12-HC) used has the following technical specifications: housing – stainless steel, cleaning frequency = 45 kHz; cleaning time = 1–60 min; volume = 1.2 l; heating temperature = 20–80 ºC; ultrasonic power = 50/75/100 W. The ultrasonic cleaning process is based on the phenomenon of ultrasonic cavitations.

Conclusions

The paper proposes a method for separating the active paste with cobalt content from the cathode aluminum foil, by ultrasonication in a lactic acid environment and transforming it into a salable product – the cobalt blue pigment.

LCO battery paste was found to contain Co (78.114%), while in NMC battery paste, the cobalt content decreases to 54.174%, but Ni (12.936%) and Mn (7.569%) appear.

Spent Li-ion/LCO battery paste, containing cobalt, can be efficiently recovered and recovered through a salable product – cobalt blue ($CoAl_2O_4$); Considering the high price of the pigment (~27 USD/100g), the material costs of the cathode paste from used Li-ion batteries, plus alumina, lactic acid and the reduced consumption of the ultrasonic process open favorable prospects for the recovery of cobalt from used LCO batteries

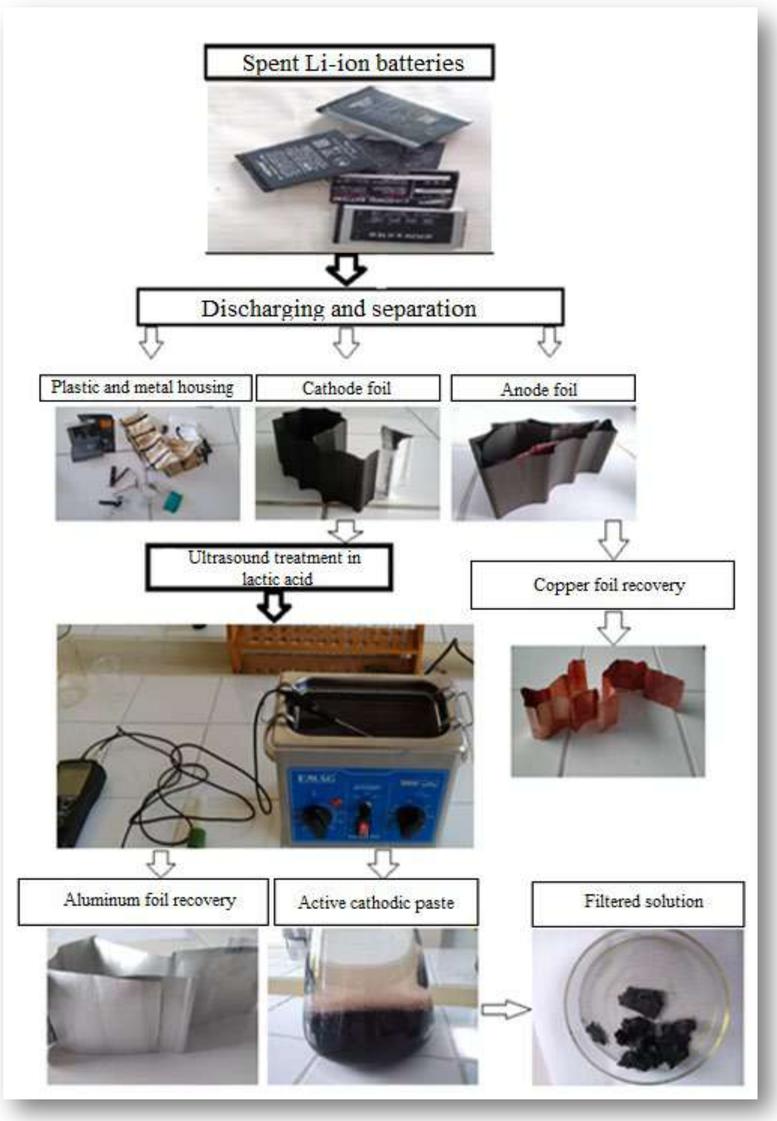


Fig. 1. The method for recovering the active paste from the cathodes of spent Li-ion batteries by ultrasound in acid medium

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Fig. 2. Used battery cathode: (a) aluminum foil coated with MnO_2+$LiCoO_2$ active paste; (b) aluminum foil cleaned following the ultrasonication process in 1.5 M lactic acid medium – high purity aluminum foil is obtained

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Fig. Active paste cleaned and recovered following the ultrasonication process in lactic acid medium

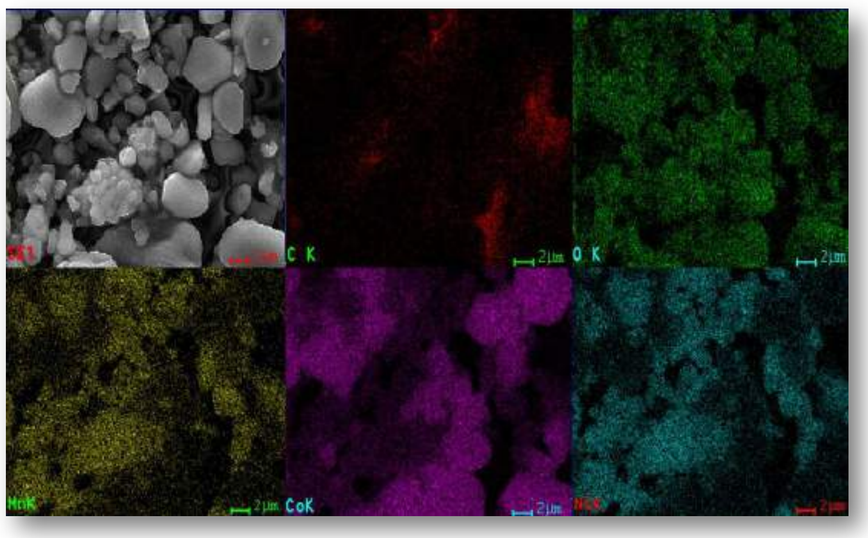


Fig. 4. Distribution on the analyzed surface of the elements Mn, Co, Ni

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Process for obtaining organic-inorganic hybrid perovskite materials

Patent application: A/00545/03.10.2023

B

Authors: P. Sfirloaga, I. Balcu, D. Buzatu, C. Macarie, L. Cernescu

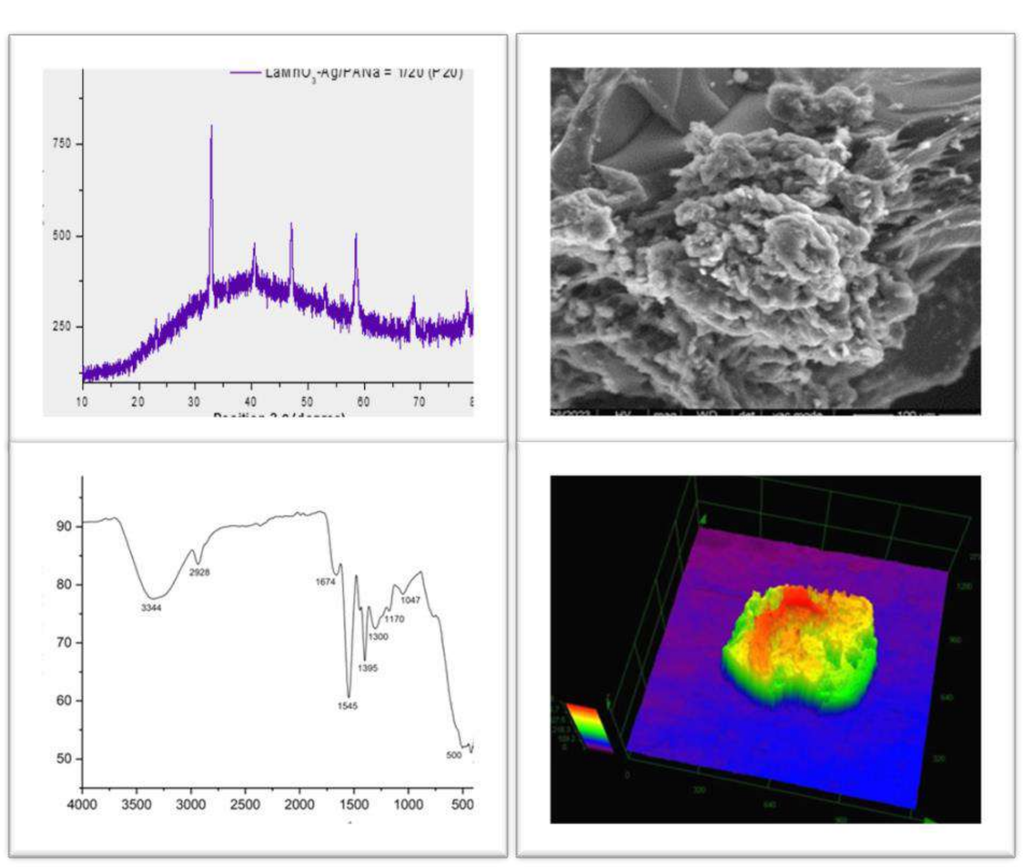
The invention refers to a process for obtaining organic-inorganic hybrid materials based on sodium polyacrylate $(C_3H_3NaO_2)n$ functionalized with perovskite materials of the $LaMnO_3$ type, doped with 1% Ag, by the wet trituration method at room temperature.

The technical problem solved by the invention is to obtain organic-inorganic hybrid materials in a very short time, by the wet trituration method at room temperature. Moreover, the obtained hybrid materials can integrate the advantages of organic and inorganic components.

The invention has the following advantages: homogeneous materials, low production costs and easy preparation process. The most obvious advantage of inorganic-organic hybrid materials is that they can favorably combine the often different properties of organic and inorganic components in a single material.

The process for obtaining hybrid materials consists of mixing the precursors in a mass ratio of 80:1, 40:1, and 20:1 (Sodium polyacrylate: Perovskite) in the presence of distilled water. Over the three samples, 20 ml of distilled water were gradually added under continuous trituration for 30 minutes until hydrogels were obtained. The resulting hydrogels were dried in a forced convection oven at 60 °C for 12 hours. After the first drying stage, the polymer-perovskite hybrid materials were mortared until a homogeneous mixture with small grain size (up to 1 mm) was obtained and subsequently subjected to another drying stage at 60 °C for 4 hours.

The FT-IR spectrum shows a strong band around 3370 cm^{-1} due to the stretching vibration of the hydroxyl groups. The two bands at 1540 and 1400 cm^{-1} correspond to the asymmetric and symmetric stretching vibrations of the carboxylate anion (–COO−), respectively. The bands at 2928, 1447 cm^{-1} are due to aliphatic vertebrates (stretching and bending vibrations of (CH_2 and CH). The band at 1653 cm^{-1} corresponds to the deformation vibrations of C-OH. At 1051 and 848 cm^{-1} there are C-O (carbon) bond vibrations which may correspond to residues due to the method.



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Process for obtaining hybrid materials based on polyvinylpyrrolidone functionalized with perovskite structures

Patent application: A/00577/19.10.2023.

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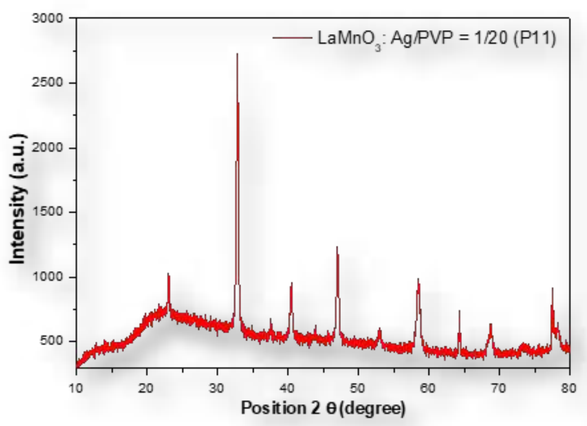
Authors: *P. Sfirloaga, A. E. Cata, I. M. C. Ienascu, A.-E. Lazar, N.-S. Tolea*

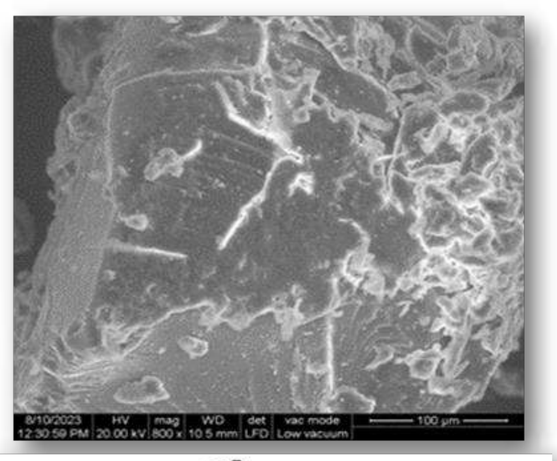
The invention relates to a process for obtaining hybrid materials based on polymer (polyvinylpyrrolidone) functionalized with perovskite structures of the LaMnO3 type doped with Pd, in aqueous medium at a temperature of 80 °C by magnetic stirring. The technical problem solved by the invention consists in obtaining hybrid materials based on polymer (polyvinylpyrrolidone) and perovskite structures of the lanthanum manganate type doped with 1% Pd, in a relatively short time and without energy consumption.

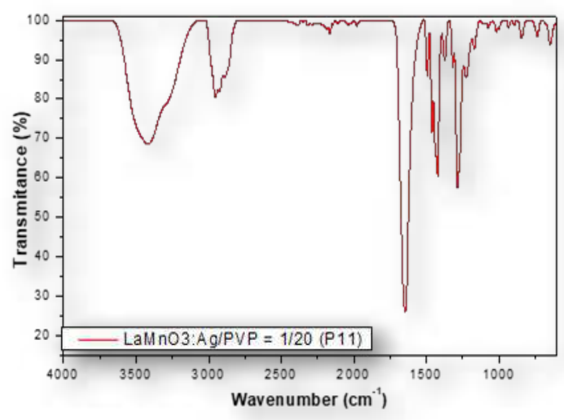
The major advantage presented by the invention is that the obtained hybrid materials combine the advantageous characteristics of both organic polymers and inorganic ceramics. Moreover, the advantages of using polymers as stabilizers refer both to improving long-term stability or adjusting solubility, and to functionalizing inorganic materials with polymers to obtain a higher surface density, to adapt the properties of inorganic materials and to promote their compatibility and processability.

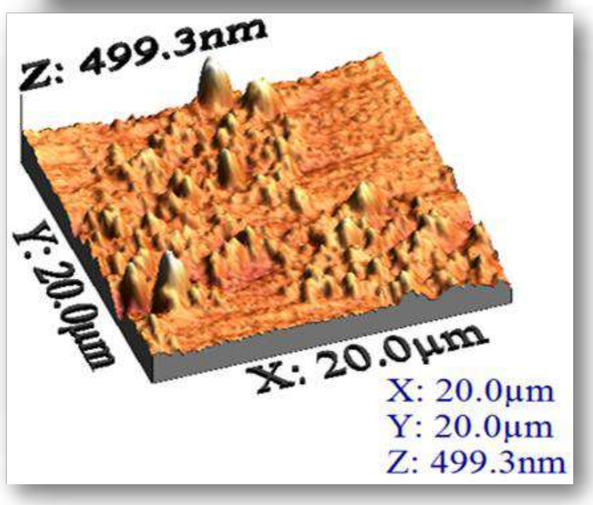
The obtained hybrid materials present well defined peaks, mainly corresponding to the perovskite phase, which leads to the conclusion that the polymer did not mask the perovskite material.

The band shifting and their variation in intensities in the FT-IR spectrum indicate the formation of new hybrid materials. The bands of both perovskites are not visible in the spectra of the hybrid materials in the 4000–600 cm−1 range, probably due to the large amount of PVP used compared to the amount of perovskite materials.
Surface morphology revealed that the obtained hybrid materials present agglomerations in asymmetric formations.









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Root Cause Analysis of a Heat Exchanger Failure

Authors: Lucas Jacoby, Jona Weiblen, Maximilian Hülsewede
Mentors: **Dr. rer. nat. Gabriela Marginean, Prof. Dr.-Ing. Klaus Mecking, M. Eng. Dino Woelk**

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1. Problem & Investigation Methods:

A heat exchanger showed leakage at the fixed bearing shortly after commissioning. A transverse crack, propagating from the outside inward, was identified. To determine the root cause, we conducted dye penetrant inspection, laser scanning microscopy, microstructural analysis (SEM), hardness testing, and mechanical design evaluation on the sample shown in Figure 1.

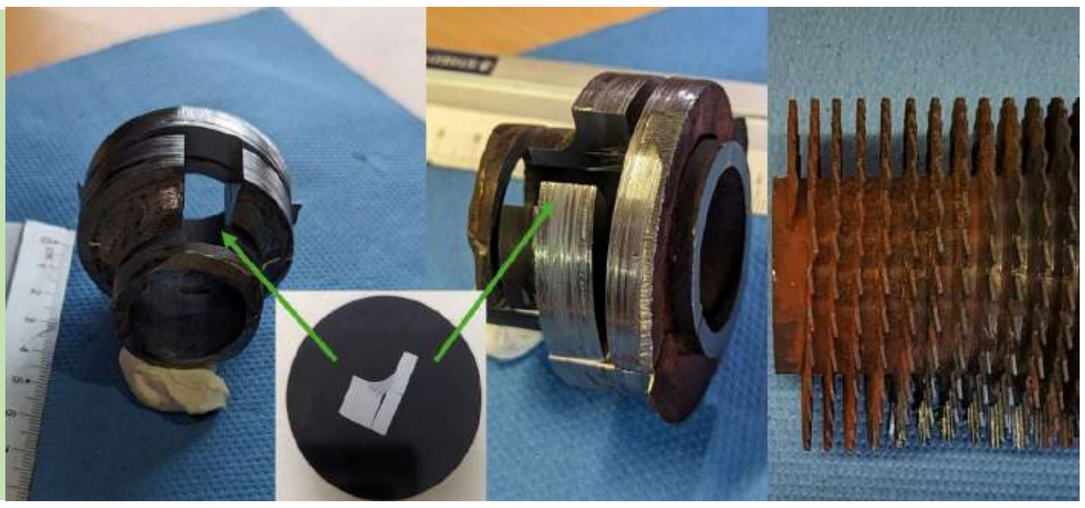


Fig. 1: Sample from the broken pipe



Fig. 2: CLSM image showing a transgranular fracture

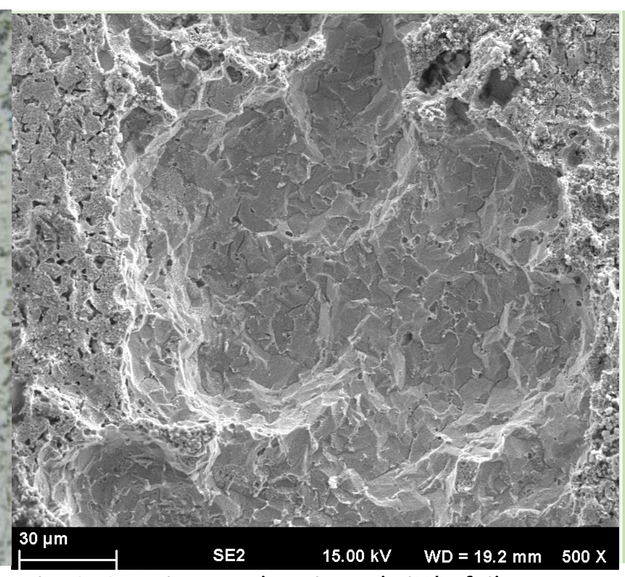


Fig. 3: SEM image showing a brittle failure

2. Crack Characteristics & Material Analysis

The crack exhibited a transgranular fracture (Fig. 2) with intergranular components, indicating a brittle failure. SEM analysis confirmed these characteristics (Fig. 3). This is unusual for the pipe material, which suggested that increased hardness played a significant role in the crack formation.

3. Hardness & Welding Impact

Vickers hardness testing (Fig. 4) confirmed significantly higher hardness in the weld's heat-affected zone (HAZ). This excessive hardness increased brittleness, accelerating crack propagation despite not being the primary cause.

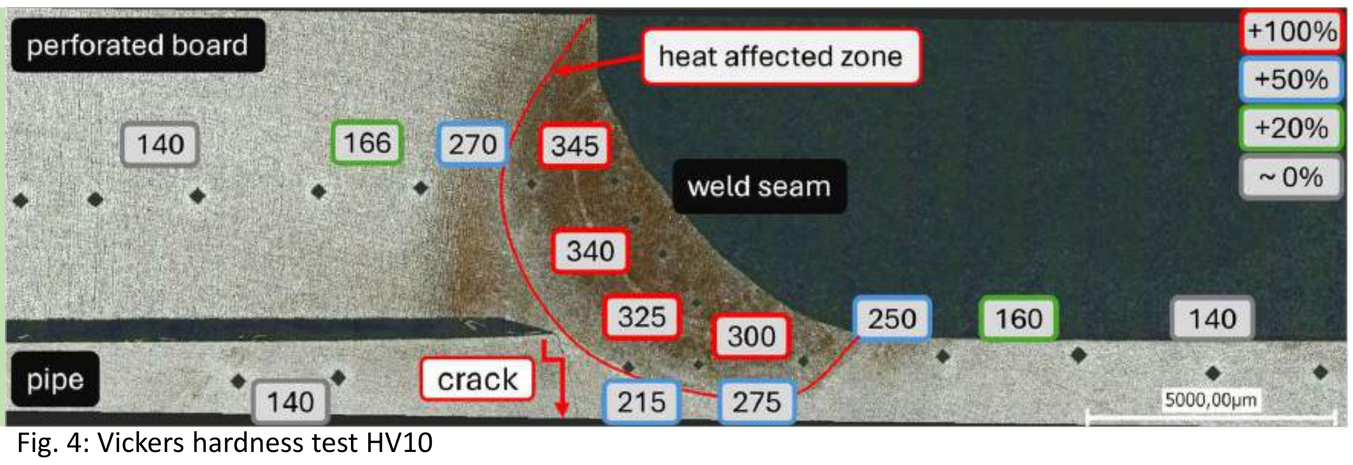


Fig. 4: Vickers hardness test HV10

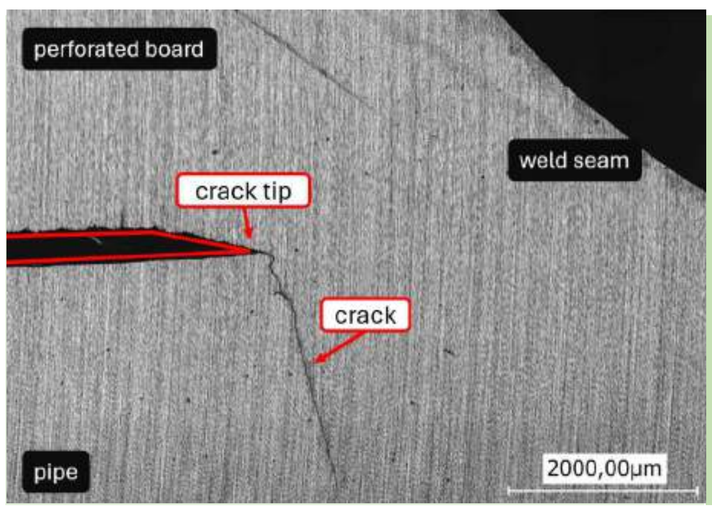


Fig. 5: Construction of the crack tip

4. Mechanical & Design Weaknesses

The investigation of the design revealed two major structural flaws. First, the pipe was welded off-center to the tube sheet, causing uneven stress distribution and localized overloads. Second, the crack originated at the sharpest point of the structure, where stress was highly concentrated (Fig. 5). This suggests that the extreme stress at this location was the primary factor in the crack initiation and subsequent failure.

5. Conclusion & Prevention

The crack likely originated from extreme stress concentration at the sharpest point of the structure, making it the most vulnerable to failure. While excessive weld hardness and misalignment may have contributed, they are not the primary cause. To reduce risks, minimizing sharp geometries and optimizing welding processes to lower hardness could improve structural integrity.

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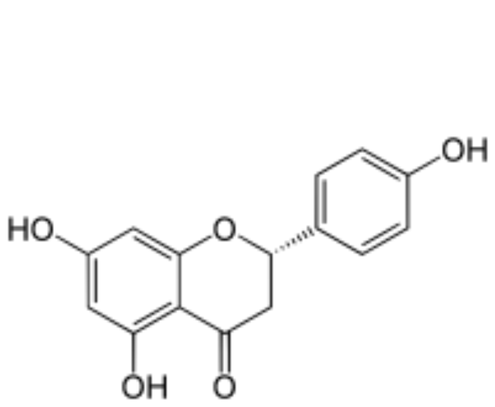
Green method for obtaining silver nanoparticles-based dispersion using naringenin as reducing agent

Patent A/00635/31.10.2023 Core Program TEX-PEL-CHALLENGE 2026, Project number PN 23 26 01 04, acronym Tex4Age

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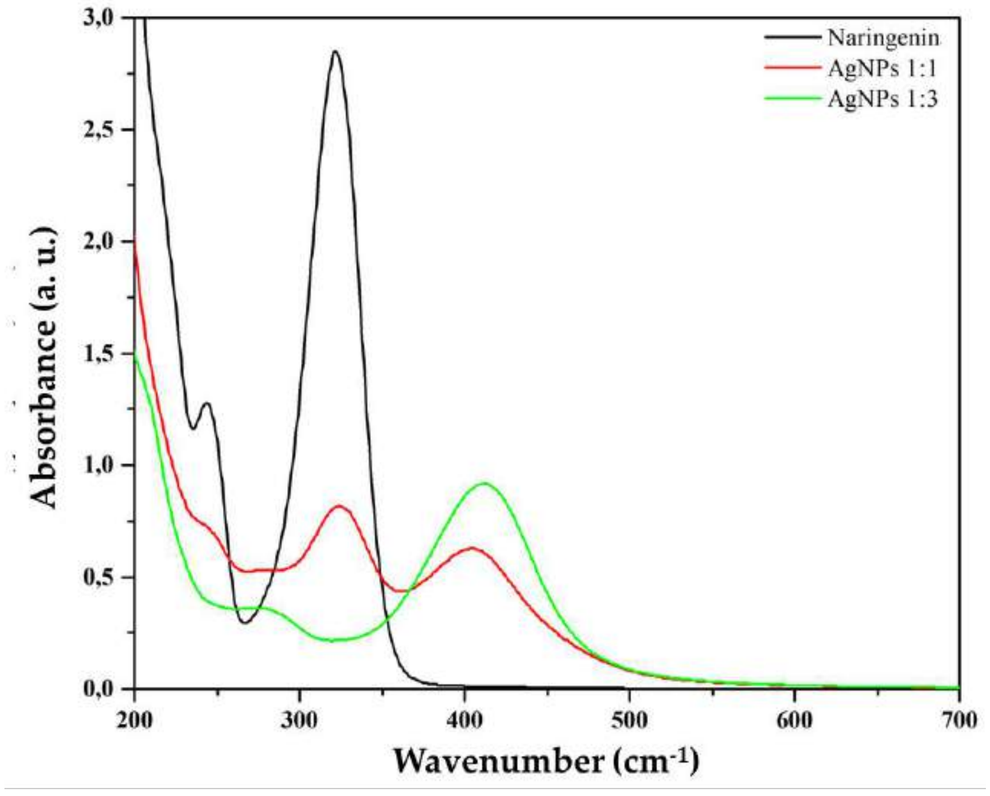
Authors: Lite Mihaela-Cristina, Chirilă Laura, Popescu Alina

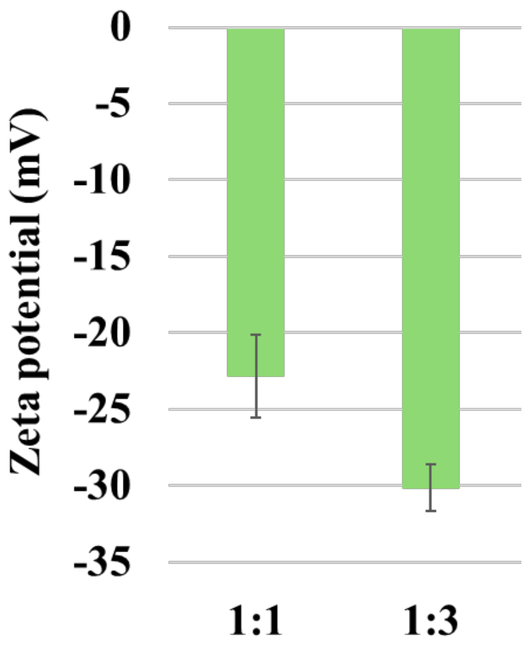
The method refers to an ecological process for producing silver nanoparticles in a stable dispersion, using the flavonoid compound called naringenin. The obtained dispersion exhibits antibacterial properties, demonstrated when deposited on textile fabrics (cotton and wool). The advantages of the invention include reduction of toxicity, environmental-friendly reducing agent, constant chemical composition, reproducibility of the synthesis, accessibility, ecological raw materials, without toxic potential for human or animal health, simple technological process, without additional stages of purification, extraction or filtration of the raw material.

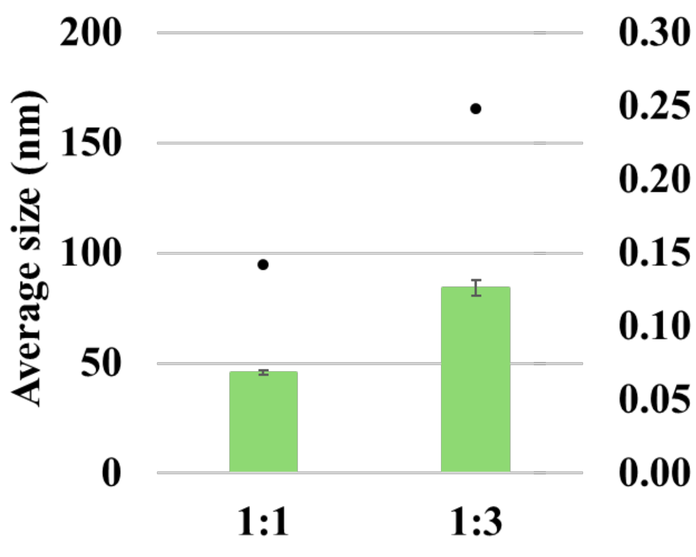


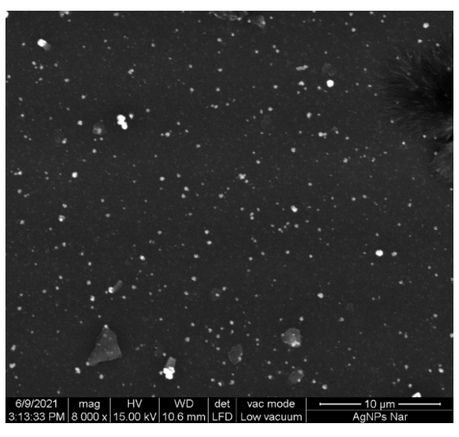


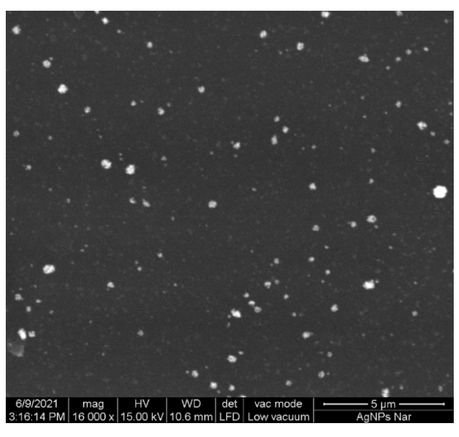












Bacterial strain	*S. aureus*		*E. coli*		*B. subtilis*	
Textile material	Initial inoculum concentration T_0=1x10^5 [CFU/mL]					
	CUF/mL after 24 h	R (%)	CUF/mL after 24 h	R (%)	CUF /mL after 24 h	R (%)
Cotton	6	99,87	9	99,84	4	99,93
Wool	15	99,67	18	99,68	0	100,00

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Comparison of Wear Resistance of Thermally Sprayed WC-Co-Cr Coatings from Recycled Powders and Conventional WC-Co-Cr Coatings

Patent/project number: Master's thesis

Author/s: Dino Woelk and Dr. Gabriela Marginean

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In addition to the ever-increasing demands in the industry, environmental aspects and human health are coming to the forefront. Not only in Germany but also at the European level, regulations are being enacted that industrial companies must adhere to. For instance, primary energy consumption is expected to be reduced by 80–95% by 2050 to achieve the desired climate goals [1], [2].

Various strategies are being pursued in the field of thermal coating. Among them is the recycling of filter dust. By using these materials, less new raw material is required (conserving resources), and transport routes are eliminated, reducing overall energy consumption [3].

Figure 1 presents a comparison between a coating made from filtered cermet material (GC), which primarily consists of WC-Co-Cr, and a conventional WC-Co-Cr coating, which appears significantly more homogeneous. The high-velocity oxy-fuel (HVOF) spraying process was used for coating. The EDX mapping in Figure 2 shows that the chemical composition of the GC coating is diverse and, in addition to carbides, also contains oxides.

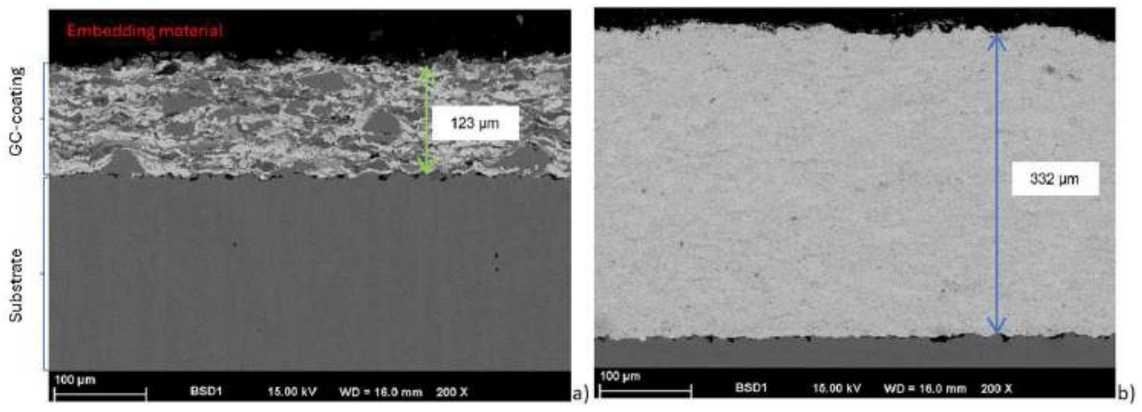


Figure 1: SEM cross-sectional images at 200x magnification in BSE mode: (a) GC coating and (b) WC-Co-Cr coating for overview purposes.

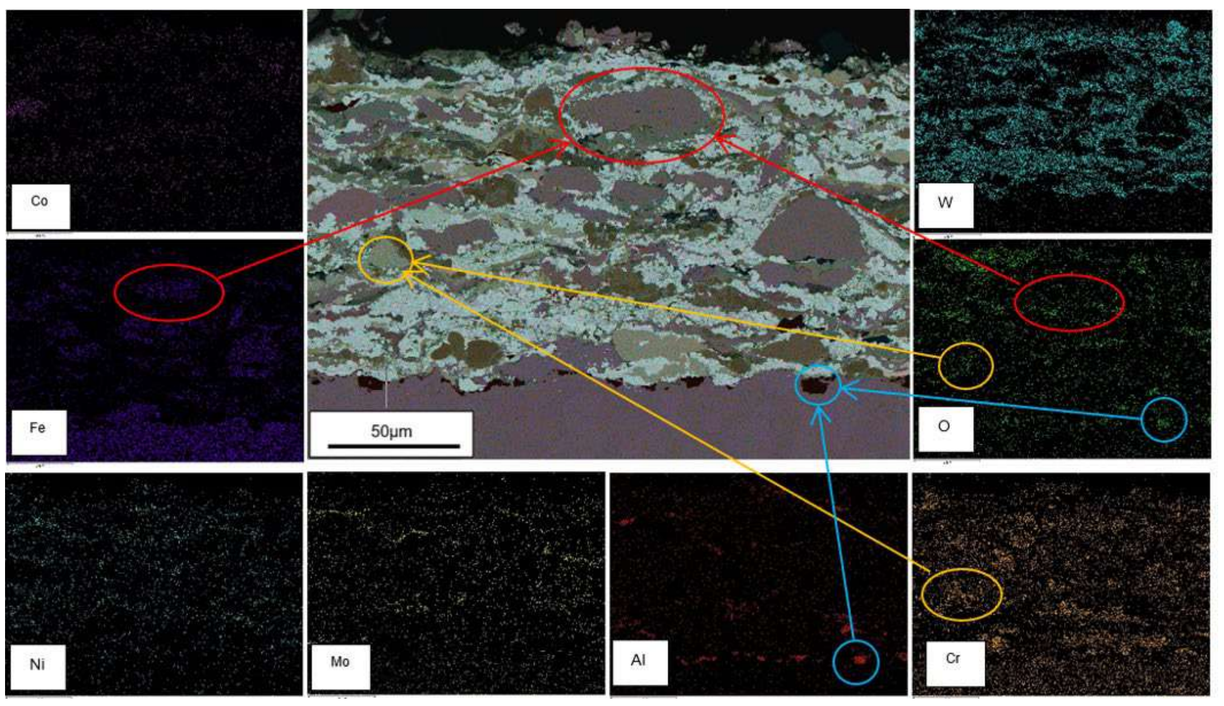


Figure 2: SEM cross-sectional image of a GC coating at 500x magnification; EDX mapping with individual electron images.

Hardness measurements were conducted using both nanoindentation (with loads in the mN range) and the Vickers method. The results are compared in Figure 3. Due to the higher applied load in the Vickers method, an average hardness value for the coatings is determined, leading to a lower standard deviation.

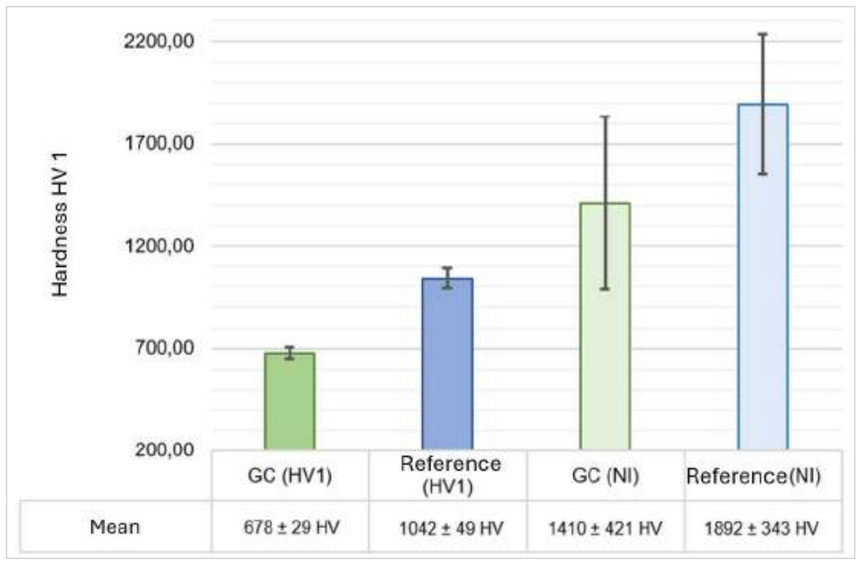


Figure 3: Bar chart of mean values and standard deviations for HV1 and NI converted to HV.

In addition, nanoindentation allowed for the determination of the elastic modulus, as shown in Figure 4. The elastic modulus of the GC coatings is significantly lower, which also indicates a higher tendency for crack formation. This tendency is markedly greater in the GC coatings compared to the reference coatings. However, the test did not result in the delamination of the GC coatings.

Figure 5 reveals that the friction coefficient of the GC coatings is significantly higher than that of the reference coatings and has a longer run-in phase. However, both coatings reached a steady-state condition within the measurement interval.

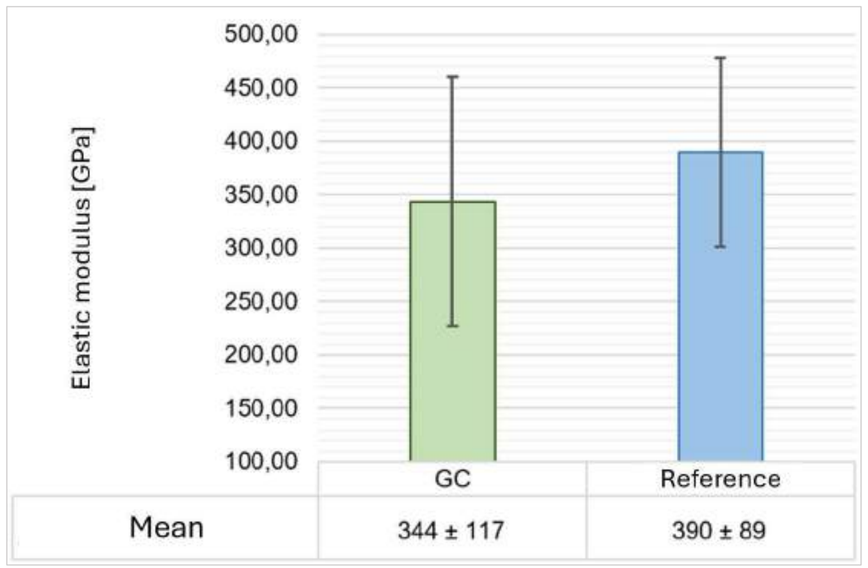


Figure 4: Bar chart of the averaged elastic modulus for the GC and reference coatings.

Conclusion:

The GC coatings exhibit significantly lower performance compared to the reference coatings in terms of mechanical and tribological properties. However, due to their hardness and stability against crack propagation, GC coatings provide sufficient wear protection for standard applications.

References:

[1] Xi Tan, Jungui Zhang, Huichao Zhu, Zhongcheng Zhang, Xiagao Zhu, Weibang Ni, Tongyi Li, Tongchun Kuang, Hongliang Dai, Xiaofeng Zhang, "Double layer HVAF-sprayed WC-CoCr coatings for optimal properties," Ceramics International, 2022, doi: 10.1016/j.ceramint.2022.07.349.

[2] Tobias Schmeja et al., "Klimaschutzplan 2050 - Klimaschutzpolitische Grundsätze und Ziele der Bundesregierung - Diskussionsbeitrag des Umweltbundesamtes," Umweltbundesamt, 2016.

[3] European Commission, Directorate-General for Environment, "Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions," Document 52020DC0474, 2020.

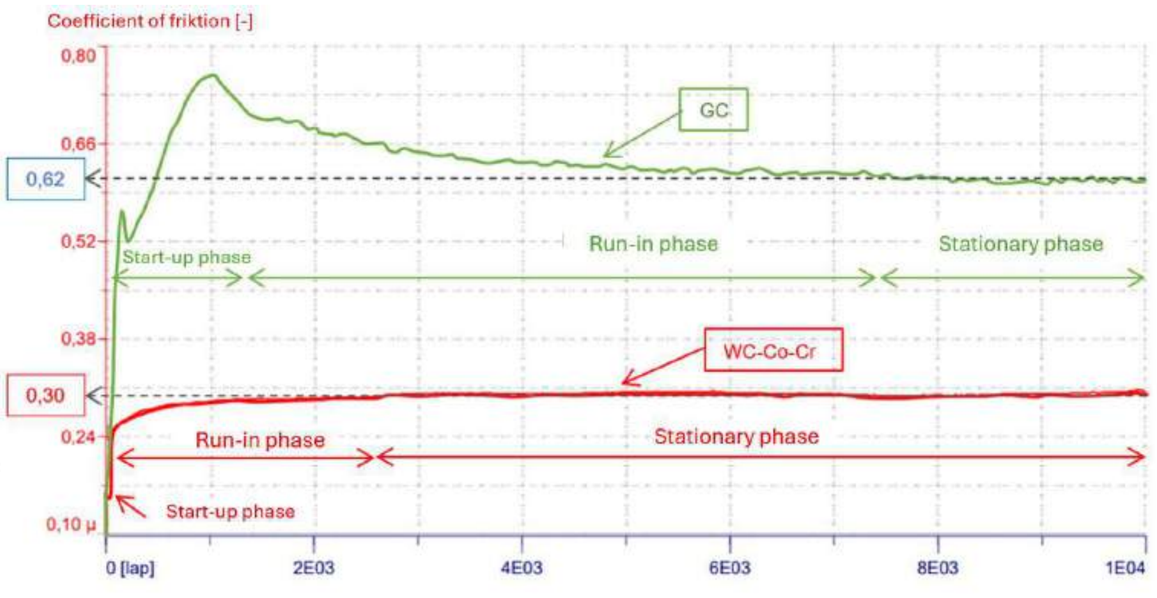


Figure 5: CLSM image at 50x magnification, crack tendency test of a GC coating (Brinell indenter Ø 2.5 mm; test load 31.625 kp).

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BERD: Bio Eco Rock Development

ThipokTungsiripat, AlisaTriwitayakorn, Pataraphol Vanichvatana, Napapim Yugala, Anyaporn Boonmahitthisud, Jeerasak Jitrotjanarak and Komed Nachaeng***

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ABSTRACT

Bio-Eco Rock Development (BERD) is an innovative upcycled green composite material developed using agro-waste, including coffee chaff, tea leaves, rice husks, macadamia nutshells, and scrap wood as fillers. BERD offers distinctive aesthetics and patterns while maintaining a lightweight and durable composition, making it suitable for a wide range of material applications. The processing of agro-waste for BERD requires specific adjustments of moisture conditions and particle size to ensure uniformity during mixing. BERD's formulation consists of 40 wt% agro-waste combined with 50 wt% polyester resin, 10 wt% calcium carbonate, and a reaction catalyst. Extensive material properties testing, including tensile strength, impact strength, flexural strength and flammability, revealed that scrap wood provides superior toughness and strength compared to macadamia nutshells, coffee chaff, rice husks, and tea leaves. Furthermore, macadamia nutshells and tea leaves exhibited resistance to flame spread, whereas scrap wood, coffee chaff, and rice husks did not. This innovative upcycled green composite material has the potential to advance sustainable production and consumption while driving the growth of a sustainable materials industry.

INTRODUCTION

Agricultural waste (agro-waste) accounts for a significant portion of the waste generated worldwide. The disposal of agro-waste through incineration and landfills poses adverse effects on ecosystems. Furthermore, pollution generated by natural stone mining operations also raises global concern over environmental issues.

METHODOLOGY

Part 1: Develop the green composite (BERD)

Key idea: Replacing natural stone mineral fillers with agro-waste such as coffee chaff, tea leaves, rice husks, macadamia nutshell, and scrap wood as fillers by applying synthetic stone production technology.

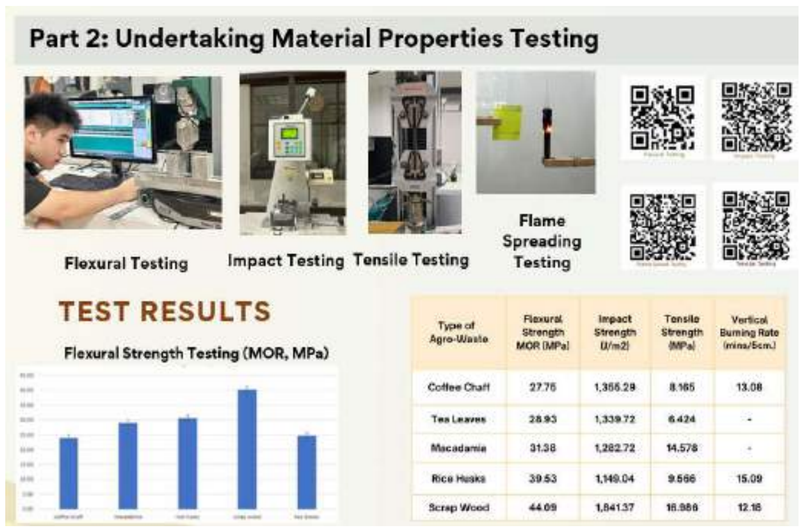
Procedure :

1. Preparing the raw materials

- Moisture condition adjustment (sun-dried method)
- Sizing adjustment

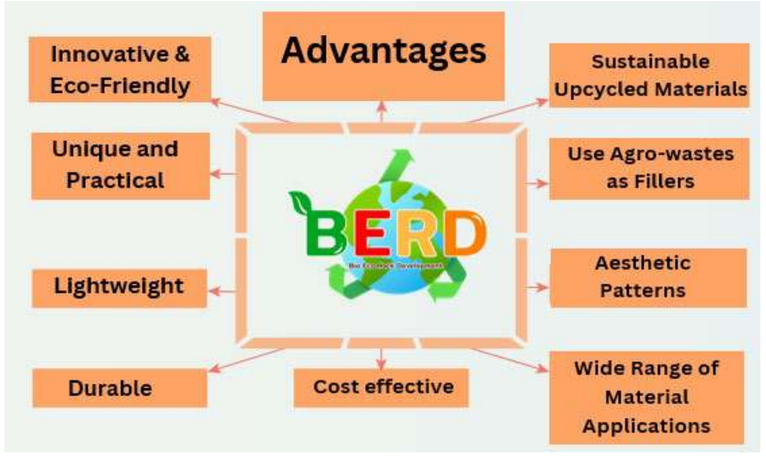














ACKNOWLEDGEMENTS

This research was supported by Chulalongkorn University Demonstration Secondary School and the Upcycle Materials from Industrial and Agricultural Wastes Research Unit, Department of Materials Science, Faculty of Science, Chulalongkorn University, Thailand. The authors would like to thank the Doi Tung Development Project under The Mae Fah Luang Foundation for generously providing macadamia nutshells.

Contact: *gaothipok@gmail.com,**komed.na@gmail.com

For more information SCAN ME

PRELIMINARY RESEARCH ON THE REDUCTION OF Zn CONTENT IN ELECTRIC STEEL DUST

B

Research project

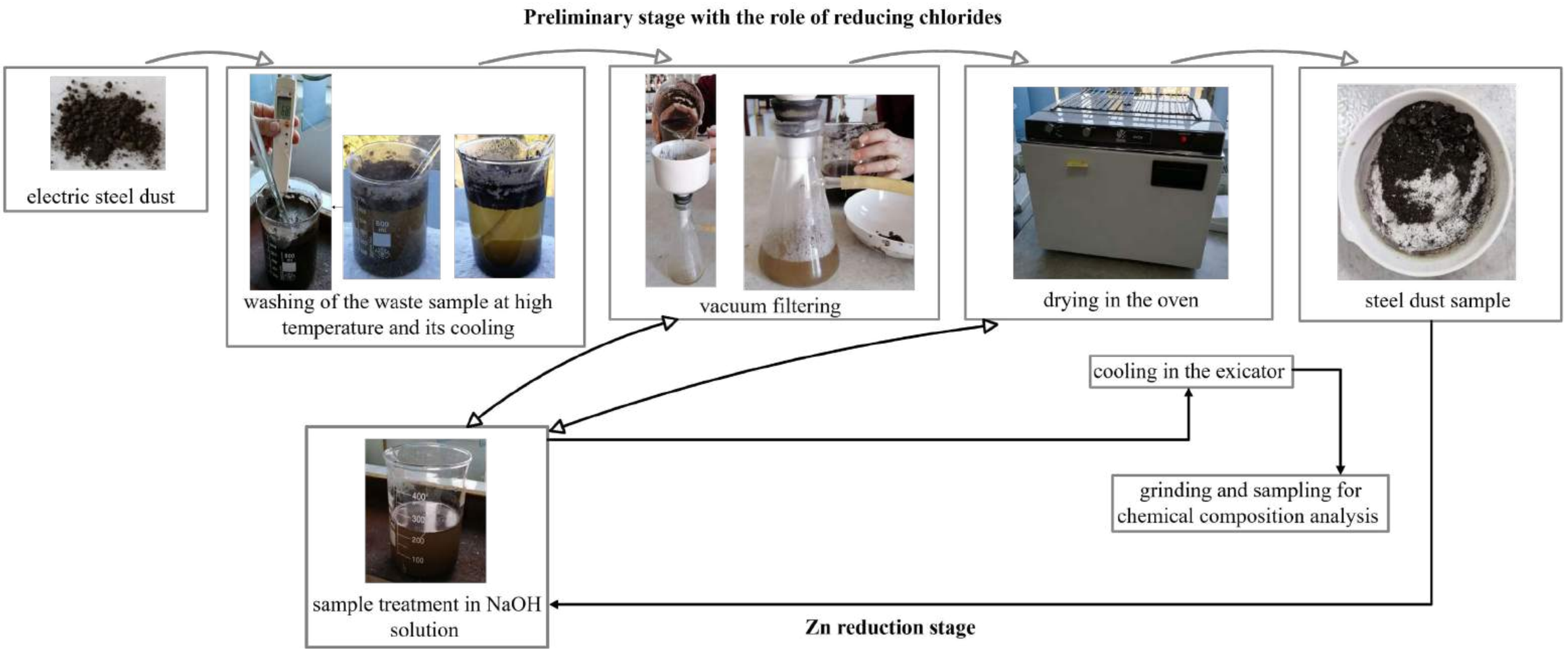
Author/s: Ioana FĂRCEAN, Erika ARDELEAN, Laura STRUGARIU

Steel dust is among the main steel waste frequently generated by the steel processing stream in electric arc furnaces. This waste results from the process of dedusting the gas emissions generated during processing, so that, at the level of the steel industry, the quantities generated are significant (10-25kg per ton of processed steel). Therefore, it is essential to find solutions to harness its intrinsic value, given its useful element content, while also reducing industrial pollution.

The importance of this type of waste lies in its high Zn content, which is of interest to the non-ferrous industry, and its Fe content, which makes it suitable for use in the steelmaking process.

The difficulties encountered in the process of recovering steel dust in the steel industry are represented by the high degree of fineness and the high Zn content (exceeding 15%), a characteristic that makes it unsuitable for recovery within the respective industry.

Due to its high Zn content, the chemical composition of steel dust poses challenges for recovery in the steel industry. To address this, experiments were conducted to reduce or eliminate Zn content by treating the dust with a 5M NaOH solution, making it suitable for reuse in the metallurgical industry.



The results obtained from the preliminary research showed a 4% decrease in the Zn content in the treated sample and an increase in the Fe content of approximately 2%. Considering the preliminary results, the series of experiments will be continued, emphasizing the variation of the main influencing factors (solution concentration, temperature influence, the possibility of treating with another basic or even acidic solution, etc.).

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INVESTIGATIONS ON CELLULOSIC FIBERS FOAMS CAPABILITY TO BE USED IN SOUNDPROOFING LARGE-SCALE APPLICATIONS

This project was supported by following UDJG Research Grants: GI_RF_2475/2024, GI_RF_9418/2023 and GI_RF_3646/2021

B

Authors: Silviu Marian NASTAC[1,2], Petronela NECHITA[1], Maria Violeta GUIMAN[2], Mirela IANA ROMAN[1]

[1]Dunarea de Jos University of Galati, Research Centre for Mechanics of Machines and Technological Equipment
[2]Transilvania University of Brasov / Romania

Description: This study presents an innovative highly porous materials based on cellulose fibers, using foam forming technique, and intended to soundproofing applications. Being from renewable resources, biodegradable and recyclable in the paper waste value chain, this type of materials provides a competitive alternative to actual petroleum-based foam materials/composites, currently and widely used in sound insulation. The results indicate that bio-composite materials based on foam and cellulose fibers provide acoustics insulation performances at comparative or higher level to the commercial products large scale used nowadays.

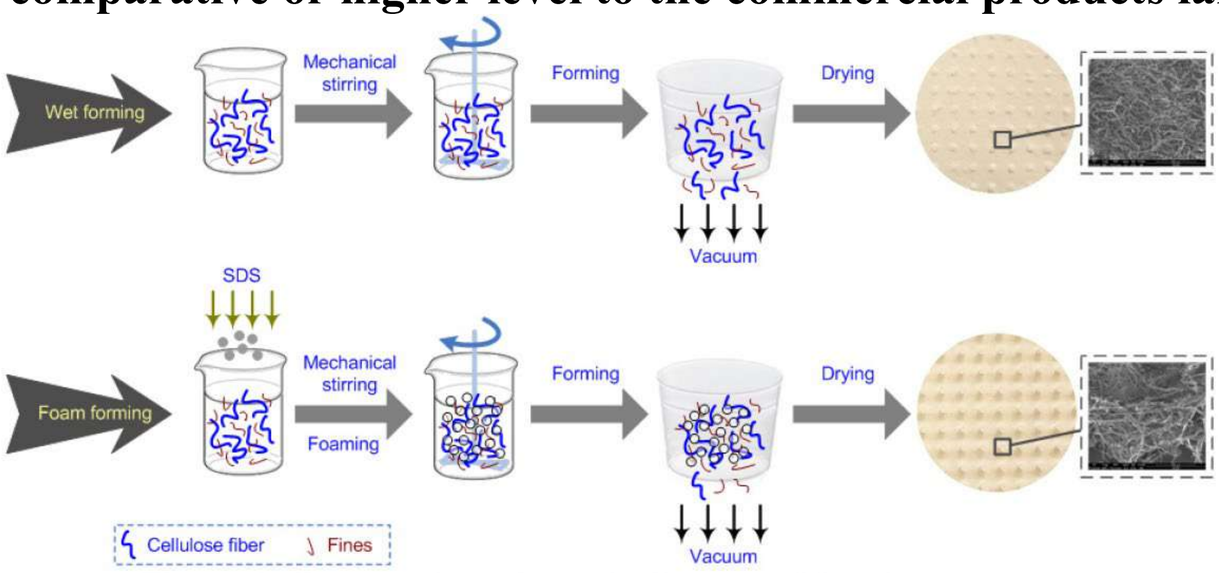


Figure 1. Comparative schematic diagram of forming processes



Figure 6. Set of samples used for investigation of soundproofing characteristics

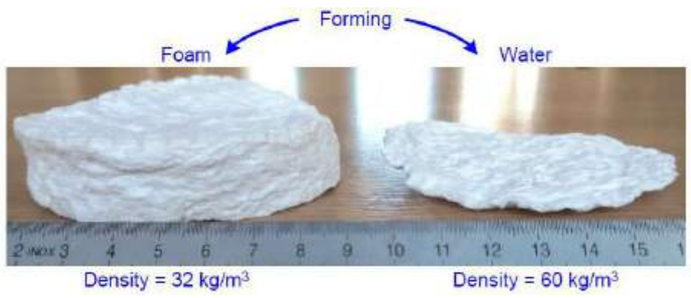


Figure 2. Foaming versus water forming processes

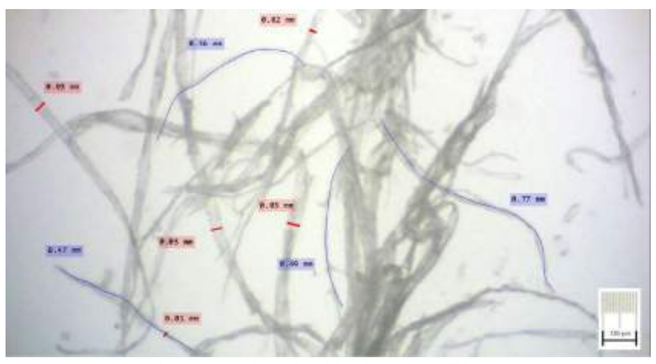


Figure 3. Cellulosic fibers

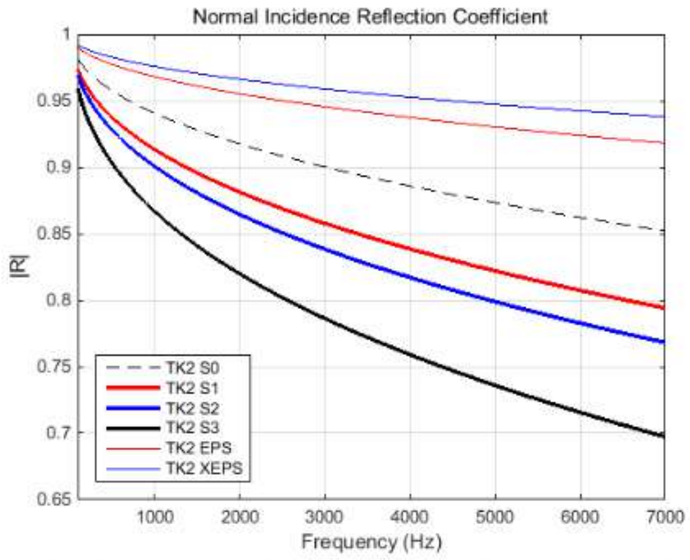


Figure 7. Normal incidence sound reflection coefficients

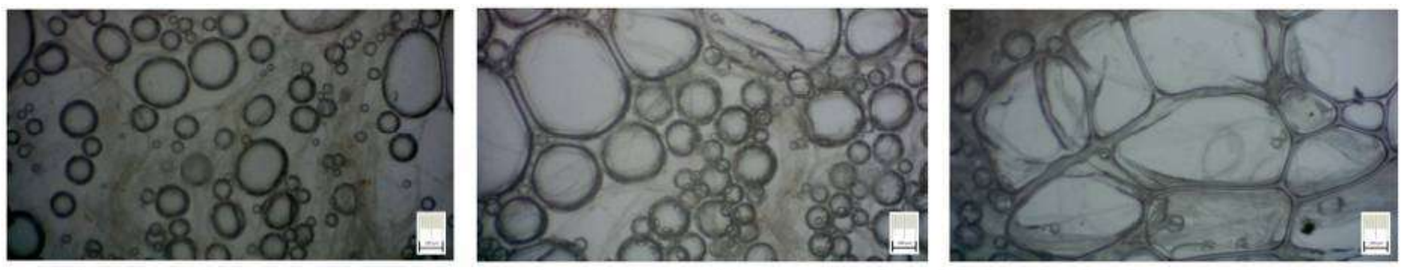


Figure 4. Micrographs of foamed cellulosic fibers with 2% SDS, 4% SDS, and 6% SDS

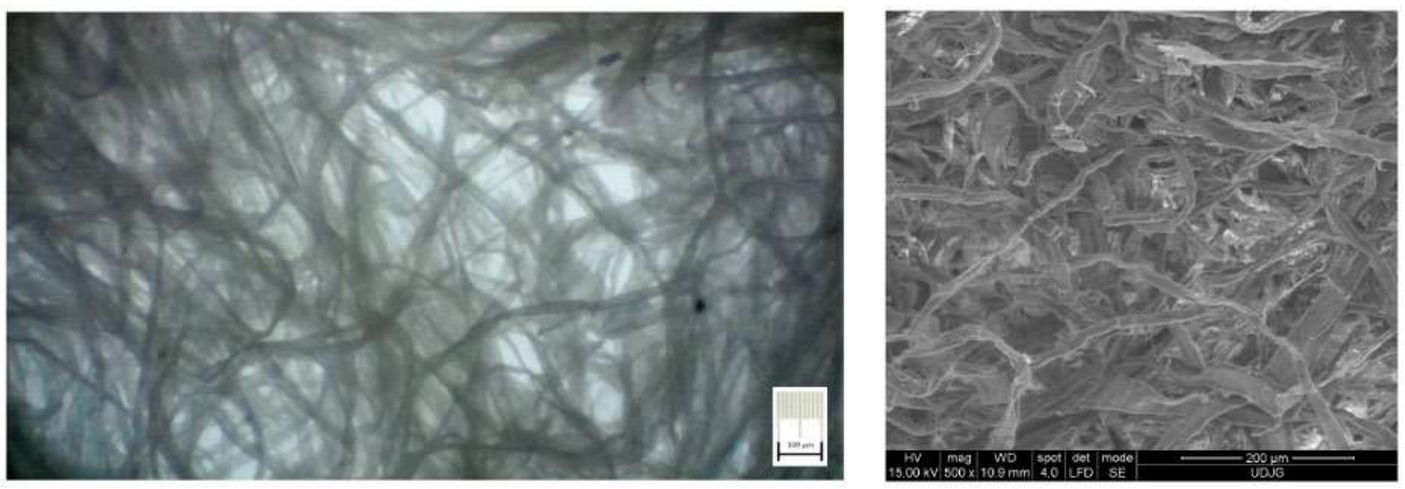


Figure 5. Internal fibrous structure of material: optical and SEM micrographs

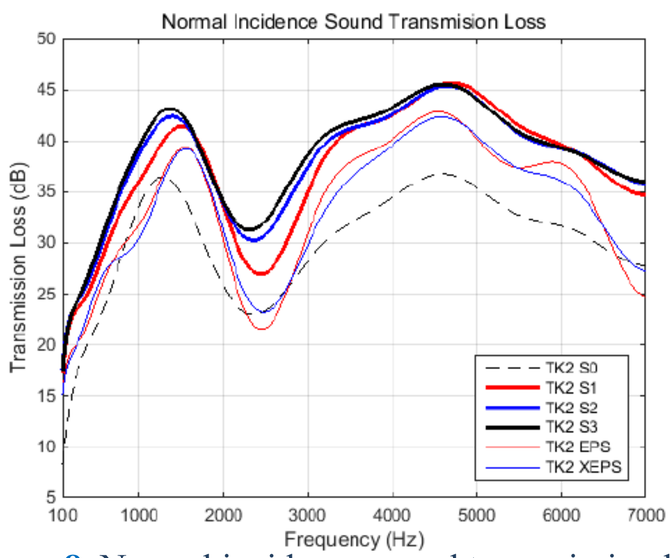


Figure 8. Normal incidence sound transmission loss

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CUTTING-EDGE ENGINEERING SOLUTIONS FOR SUSTAINABLE CONSTRUCTION THROUGH EFFICIENT USE OF LOCAL INDUSTRIAL BYPRODUCTS

B

~~Patent~~/project number: PN 23 35 04 01

Author/s: Baeră Cornelia, Gruin Aurelian, Vasile Ana-Cristina, Bolborea Bogdan, Ion Alexandru, Varga Luiza, Barbu Alexandra Marina

This study aims to provide a comprehensive perspective on developing innovative engineering solutions for eco-intelligent construction products with advanced functionality—encompassing materials, structural elements, models, and technologies.

The focus is on efficiently and strategically utilizing by-products and waste generated by local industries, aligning with the National Strategy for Research, Innovation, and Smart Specialization 2022-2027, which supports the transition to a Circular Economy (EC).

The entrepreneurial sector within the construction industry and related fields plays a key role in this research, demonstrating direct interest in two main areas:

1. ***Integrating developed construction products into future production processes through the technological transfer of research outcomes.***
2. ***Implementing efficient recycling solutions for industrial waste and by-products (such as mineral powders, sludge, and artificial aggregates) to promote ecological production cycles and close the sustainability loop.***

Additionally, policymakers, administrative bodies, and academic institutions are actively engaged in the research process, supported by national and European strategies advocating for environmental protection and sustainability.



Garnet waste slurry after AWJ processing

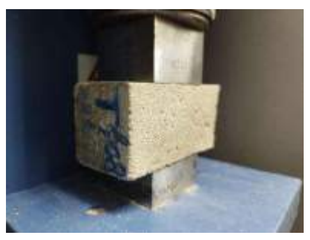


Raw Garnet sand as abrasive for AWJ





AWJ equipment









Dry raw state of Garnet wastes

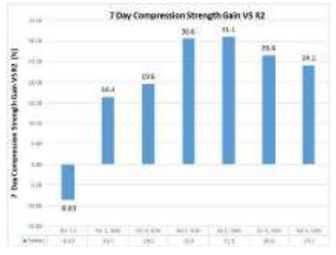


Waterjet sludge

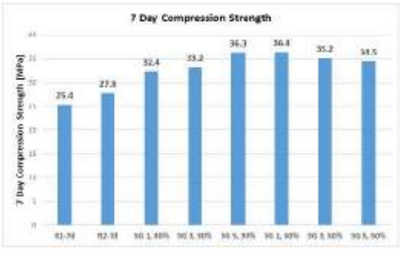














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ADVANCING SUSTAINABLE CONSTRUCTION: OPTIMIZING POURED EARTH MATERIALS FOR STRUCTURAL PERFORMANCE AND DURABILITY

~~Patent~~/project number: PN 23 35 04 01

Author/s: Gruin Aurelian, Baeră Cornelia, Bolborea Bogdan, Vasile Ana-Cristina, Ion Alexandru, Barbu Alexandra Marina

This research explores poured earth construction as a sustainable alternative to cement-based materials. By using earth materials bonded with clay, it mimics concrete while offering environmental benefits like recyclability, reduced carbon footprint, and better hygrothermal regulation.

The method leverages local resources, promoting efficiency and sustainability in construction. The construction process involves pouring a controlled mix of local earth, sand, gravel, and potential stabilizers such as Portland cement or alternative additives into formworks to create both load-bearing and non-load-bearing structures.

This reduces reliance on high-energy industrial materials. However, challenges like shrinkage, durability, and mechanical performance still need further investigation. One promising solution is using dispersants, which improve settlement control and mechanical strength, though the optimal water-to-dispersant ratio requires more study.

Additionally, lignin, a natural polymer, shows potential as a stabilizer, enhancing material strength.

Further research on lignin concentrations and combinations with other additives could improve durability and performance.

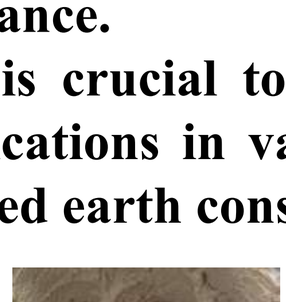
Continued research is crucial to optimize earth-based materials, test long-term durability, and assess large-scale applications in various environments. These efforts will determine the feasibility and integration of poured earth construction in sustainable building practices.

RAW MATERIALS

Clayey Soil – local sorces (Timisoara)



















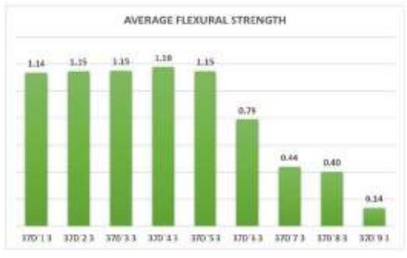


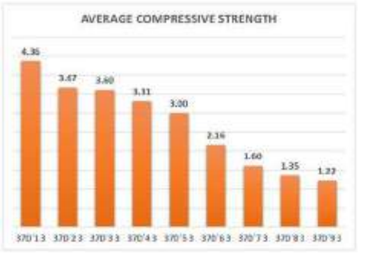














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THE INFLUENCE OF CERTAIN ADDITIVES ON THE STRENGTH OF CONCRETE IN SALINE ENVIRONMENTS

Laboratory research
Mihail Chira, Carmen Teodora Florean, Brăduț-Alexandru Ionescu, Tudor Panfil Toader

B

INTRODUCTION

The sea is the main source of saline water with a salt concentration of about 3.5%. Sodium chloride causes corrosion of concrete steel reinforcement and surface efflorescence. At low concentrations the chloride ion has little effect on the stability of the concrete structure, but causes corrosion of the reinforcing steel. At high concentrations and low temperature, chlorine ion ingress causes expansion and cracking of the concrete. Degradation is usually accompanied by the formation of calcium oxychloride salts. The mechanism of this destruction is due to the thermal transformation of calcium oxychloride salts: $3CaOCaCl\cdot 15H_2O$ to $CaOCaCl\cdot 2H_2O$.

MATERIALS AND METHODS

Raw materials used for the samples:

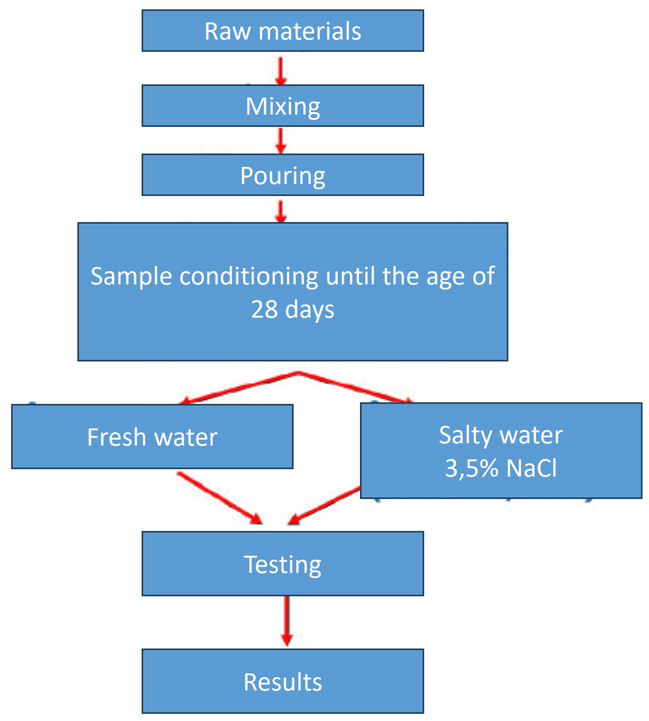
- Portland cement
- Natural aggregates - grain sizes 0-4 mm and 0-8 mm
- Silicon dioxide
- Coal
- Ascorbic acid
- Water



Samples conditioned 28 days in fresh water



Samples conditioned 28 days in salty water

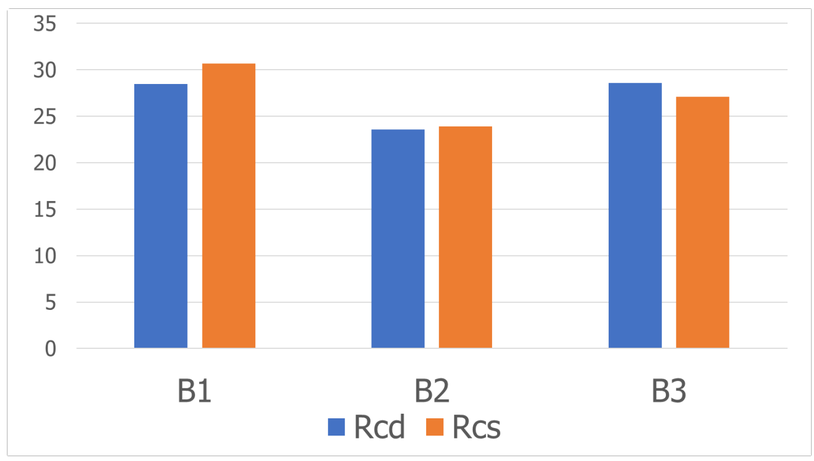


RESULTS

Cementitious composite mixtures

Mixture	Cement	Aggregates		Water	SiO_2	Coal (C)	Ascorbic acid ($C_6H_8O_6$)
		0 – 4 mm	4 – 8 mm				
	(g)	(g)	(g)	(g)	(g)	(g)	(g)
B1	366	1103,9	473,1	218,4	-	-	1
B2	366	1058,8	473,1	300,0	44	-	-
B3	366	1058,8	473,1	260,8	22	22	-

Compressive strength of cementitious composites with added ascorbic acid, silicon dioxide and charcoal at 28 days of age.



Mixture	28 days – fresh water		28 days – salty water	
	F_{med}	$R_{c,med}$	F_{med}	$R_{c,med}$
-	(kN)	(N/mm^2)	(kN)	(N/mm^2)
B1	45,7	28,5	49,0	30,7
B2	37,8	23,6	38,2	23,9
B3	45,8	28,6	43,7	27,1

Graphical representation of the compressive strengths of samples at 28 days of age, conditioned in fresh water (R_{cd}) and 3.5% salty water (R_{cs})

CONCLUSIONS

The addition of ascorbic acid in small quantities and of silicon dioxide to the concrete mass leads to an increase in the compressive strengths of specimens maintained in 3.5% salt water. The use of additions of silicon dioxide and ascorbic acid in reduced quantities influences the compressive strength.

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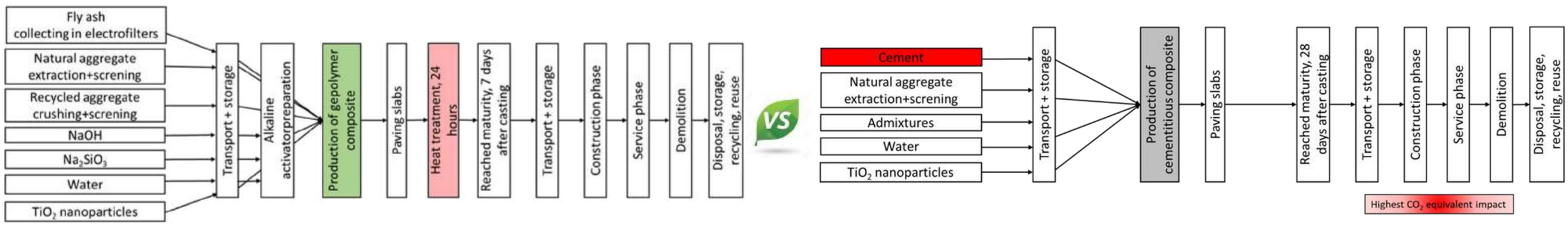
SMART AND ECO-INNOVATIVE COMPOSITE MATERIALS: INTEGRATING SELF-CLEANING CAPABILITIES AND ADVANCED RESISTANCE TO MICROORGANISMS FOR SUSTAINABLE APPLICATIONS

Project no. PN 23 35 05 01

Alexandra Csapai, Adrian-Victor Lăzărescu, Andreea Hegyi

B

AIM? Production of paving block elements produced using the concept of alkaline activation of fly ash and to present results on specific physical and mechanical characteristics. At the same time, to maximize the potential of generating smart-eco-innovative character, different types of aggregates were used to produce these elements, as well as the use of TiO_2 nano-particles into the geopolymer matrix. Finally, the present work aims to highlight an LCA calculation of the resulting CO_2 equivalent emissions by comparison with similar elements produced using traditional materials (cement) and a cost-benefit analysis of the results obtained.



EN 1388:2004 / AC:2006: Concrete paving blocks. Requirements and test methods



(1) Apparent density

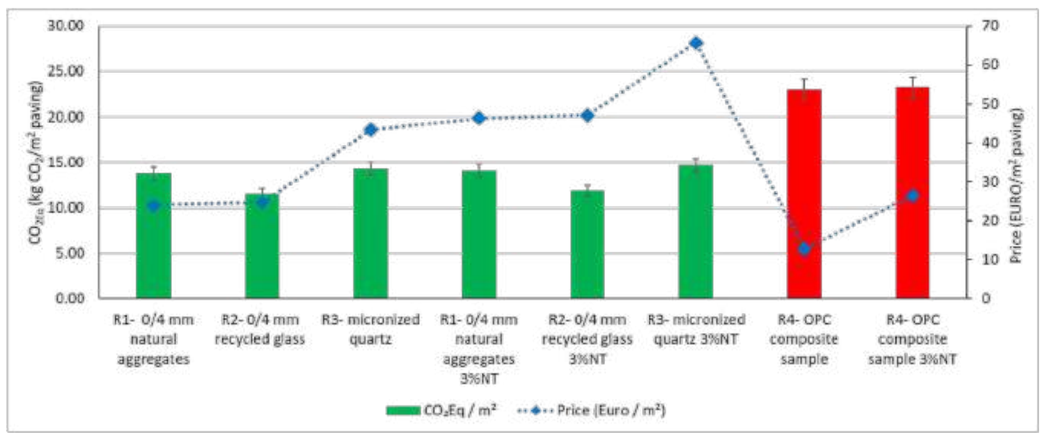
(2) Weathering resistance – total water absorption

(3) Weathering resistance – freeze-thaw resistance with de-icing salt

(4) Tensile splitting strength

(5) Abrasion resistance

(6) Slip/skid resistance



Life Cycle Assessment of geopolymer paving blocks underscores their potential as a sustainable alternative in the construction industry. While they show positive environmental attributes, ongoing research, standardization, and collaboration within the industry are necessary to optimize their production processes and further enhance their overall sustainability. Additionally, collaboration between researchers, industry professionals, and policymakers is vital to promoting the widespread adoption of geopolymer paving blocks as a sustainable construction solution.

ACKNOWLEDGEMENTS:

This work was carried out within Nucleu Programme of the National Research Development and Innovation Plan 2022-2027, supported by the Romanian Ministry of Research, Innovation and Digitalization - MCID, "ECODIGICONS"

project no. PN 23 35 05 01: "Innovative sustainable solutions to implement emerging technologies with cross-cutting impact on local industries and the environment, and to facilitate technology transfer through the development of advanced, eco-smart composite materials in the context of sustainable development of the built environment"

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RE-USE OF BLAST FURNACE SLAG WASTE AND THE INFLUENCE ON MECHANICAL STRENGTH

B

Doctoral research project
Carmen Teodora FLOREAN,
Mihail CHIRA, Brăduț Alexandru IONESCU, Adrian-Victor LĂZĂRESCU

Blast furnace slag waste is composed of silicates, aluminosilicates and calcium-aluminate silicates resulting from smelting, welding or other metallurgical processes resulting from the burning of impurities from treated metals or minerals. The resulting slag originates from iron production in blast furnaces involving coke and limestone. The slag floats on the surface of the molten metal, keeping it clean, then cools to a solid form.

- is deposited in large waste dumps, which occupy significant areas and have a negative impact on the environment.
- to reduce the environmental impact; slag can be used as a powder to partially replace cement and as a substitute for natural aggregates.

Portland Cement R 52,5



Natural aggregates
Granular class 0/4 and 4/8 mm



Blast furnace slag
Granular class 0/2 mm



Water



Superplasticizer



FRESH CEMENTITIOUS COMPOSITE

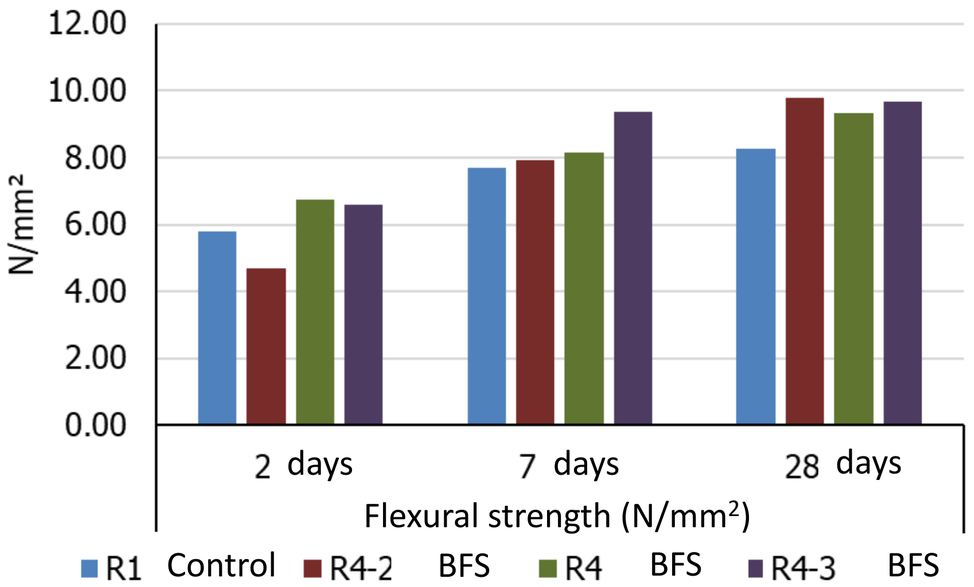
HARDENED CEMENTITIOUS COMPOSITE

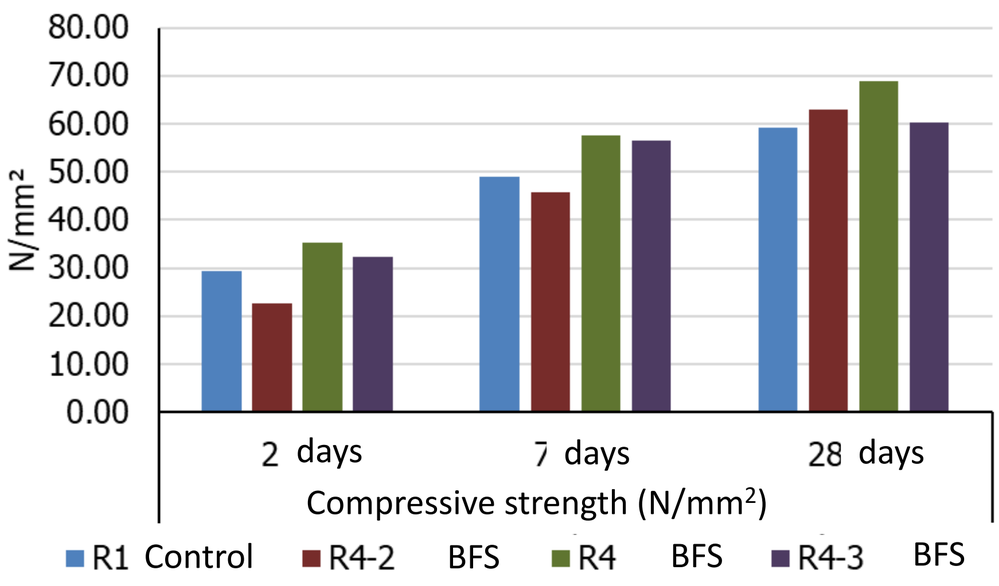
CEMENTITIOUS COMPOSITE SECTION











Research results showed that:

- In case of using aggregates from recycled slag waste it is observed that the highest amount of slag leads to the lowest bulk density, as this slag was introduced both as a substitute for natural 0/4 mm and 4/8 mm sort aggregates.
- Tailings ponds near steel mills can be reduced through intensive exploitation and the environmental impact reduced.
- Recycled slag waste, used in the design and realization of cementitious composites for the construction industry, can contribute significantly to reducing pollution and stimulating eco-innovation.

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WALL CONSTRUCTION SYSTEM BASED ON UNFIRED CLAY

PATTENT NO. RO 134241 B1

Gabriela CĂLĂTAN, Andreea HEGYI, Henriette SZILAGYI, Vasile MEIȚĂ

B

The building system for the walls based on unfired clay is composed of the following elements: bricks, masonry mortar and plaster, respectively finishing tiles, being realized of a mixture of clayey soil, sand and hydrated lime. The purpose of this invention is to provide a complete and environmentally friendly solution for making unfired clay-based walls. The novelty of this invention consists in reducing, until eliminated, the risk of poor jointing between bricks, masonry mortars, plastering or finishing, while also providing the advantage of reducing the environmental impact of pollutants.

House made of natural materials, comfortable, economic, in harmony with nature

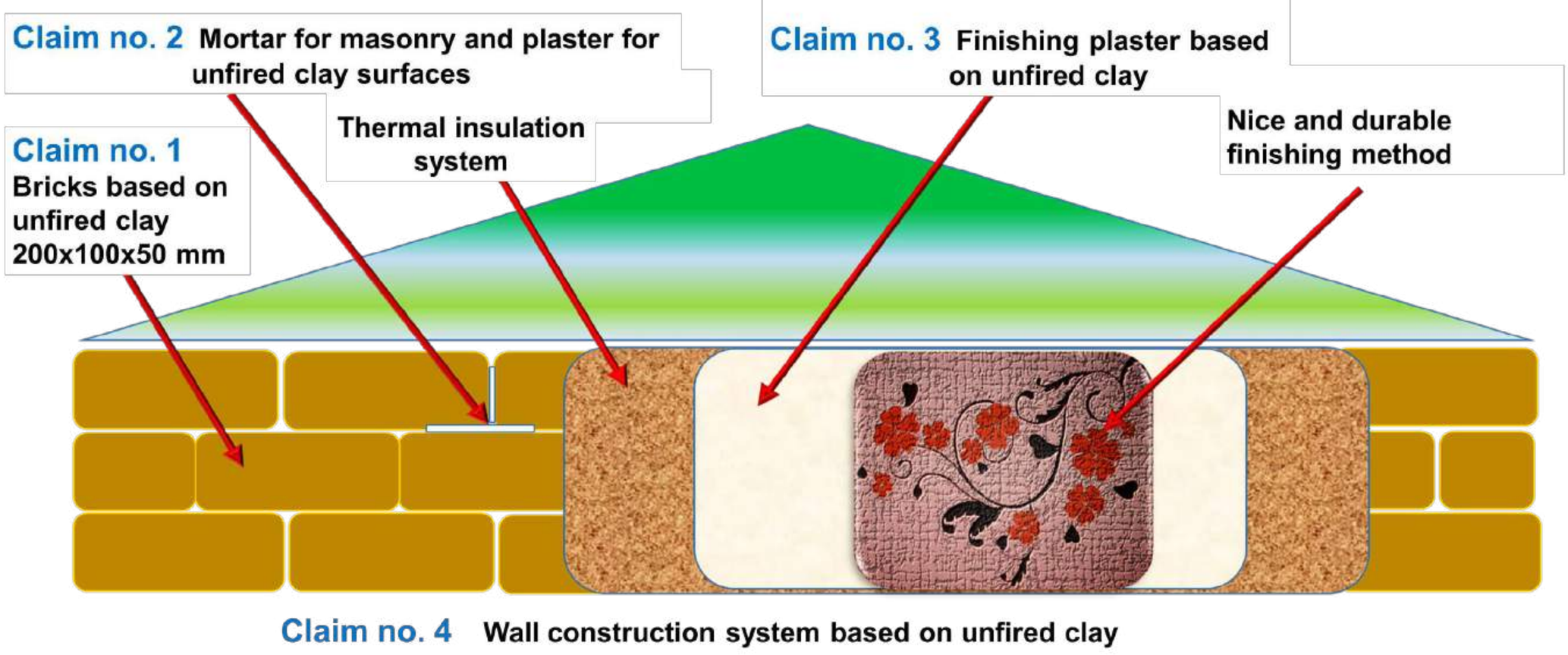
ISSUES

The aim is to ident ify opportunities to reduce environmental pollution by building system for the walls based on unfired clay. The objectives were to identify the optimal mixtures for: elements of full brick and



AREAS OF USE

The building system based on unfired clay is used for wall construction with low environmental impact.



Claim no. 4 Wall construction system based on unfired clay

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COMPOSITE THERMAL INSULATION PANELS WITH SHEEP WOOL CORE, PRODUCTION METHODS AND EXECUTION

PATTENT NO. RO 133842 B1

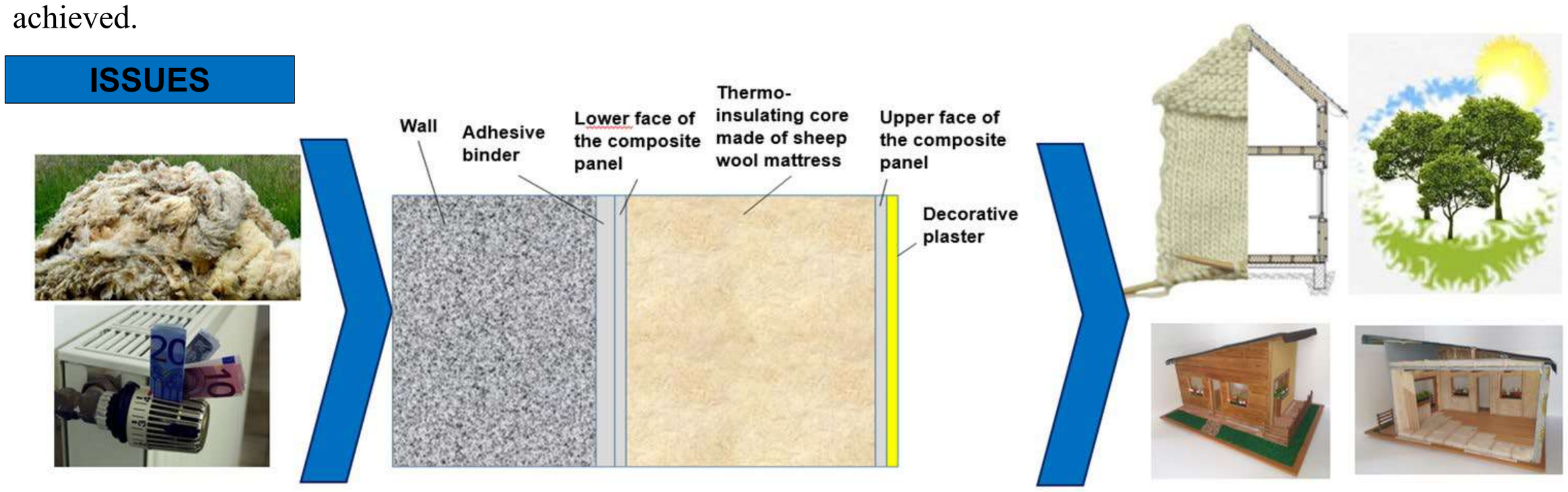
Andreea HEGYI, Henriette SZILAGYI, Carmen DICO, Vasile MEIȚĂ

B

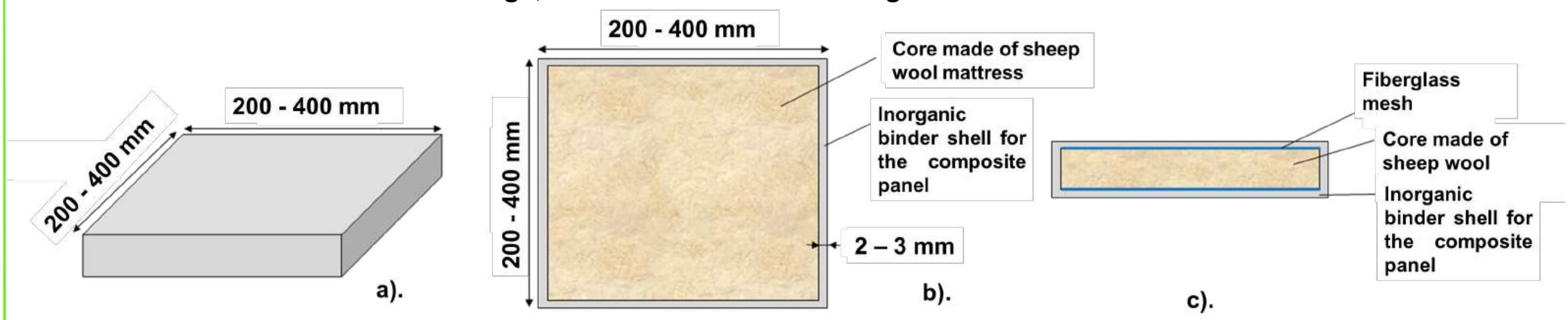
The invention refers to composite thermo-insulating panels with sheep wool core, including production methods and execution.

The innovative nature of this invention derives from the removal of mattress type products disadvantages, through a principle of embodying the mattress sheep wool core in a composite shell based on inorganic binder. In addition, following the execution process, which provides the arrangement of mineral wool strips between two adjacent panels, the re-use of mineral wool waste - a product that is not biodegradable, with a positive impact on the environment - is achieved.

ISSUES

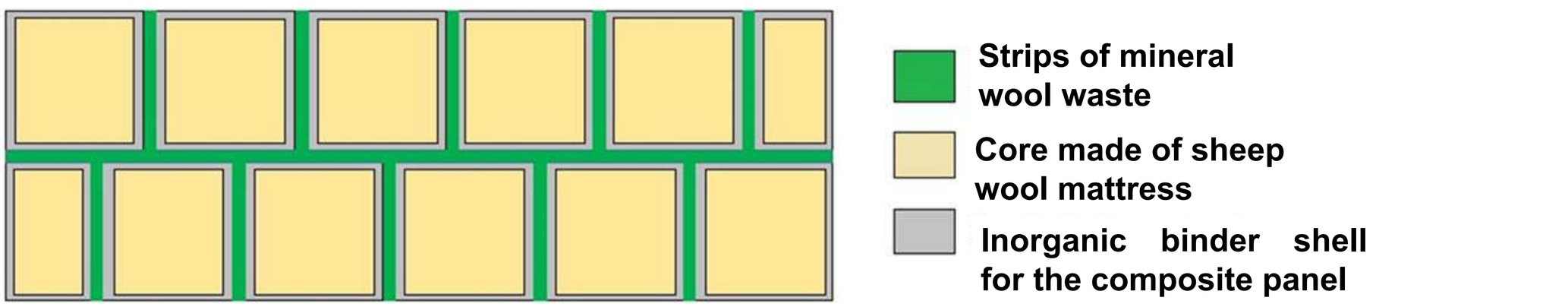


Composite insulating panels with sheep wool core and the method of execution are designed to increase the thermal insulation and thermal comfort in the living space, office buildings, indoors for industrial or agrotechnical activities.



Claim no. 1 Composite thermal insulation panels with sheep wool core Basic Scheme (a), Horizontal Section (b) Cross Section (c)

Claim no. 2 Production methods of the composite thermal insulation composite panels



Claim no. 3 Execution of composite insulating panels with sheep wool core, with insulating material (mineral wool) waste strips insertions, in order to reduce the risk of thermal bridges

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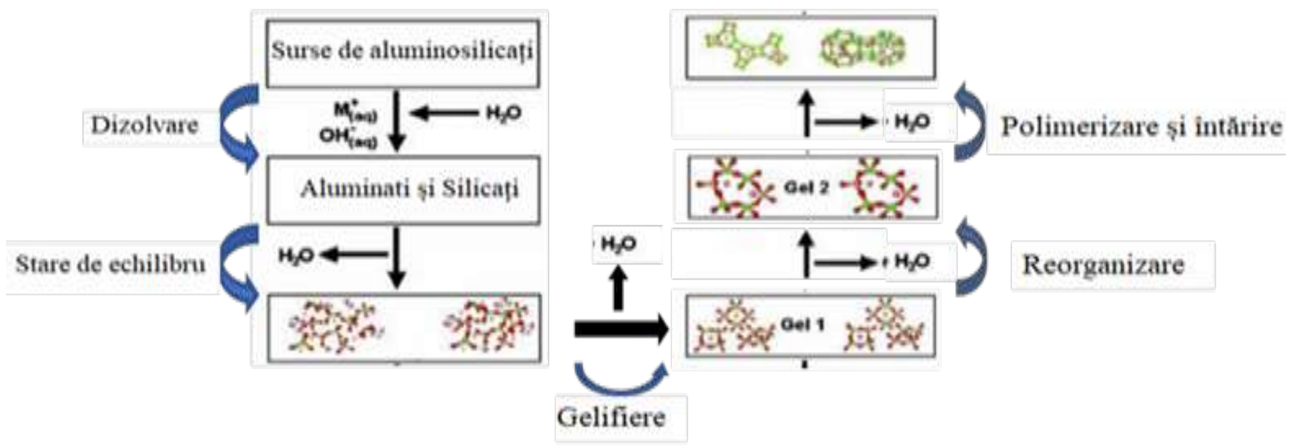
COMPRESSIVE STRENGTH OF GEOPOLYMER PASTE WITH ADDITIONS AT DIFFERENT TEST AGES

Project no. PN 23 35 05 01

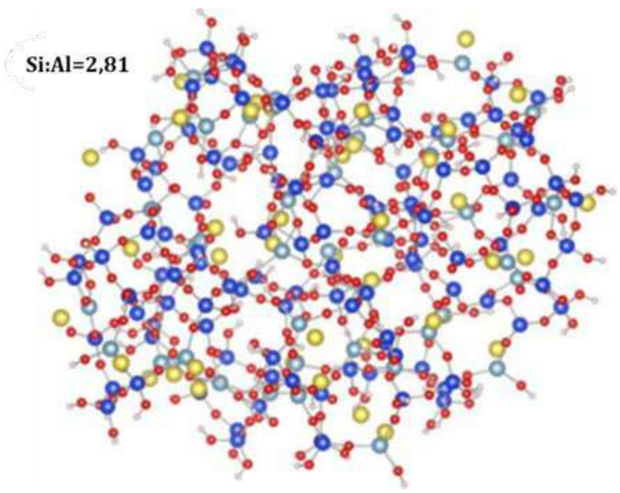
Brăduț-Alexandru Ionescu, Carmen Teodora Florean, Mihail Chira, Tudor Panfil Toader, Adrian-Victor Lăzărescu

B

INTRODUCTION



Schematic representation of the different steps of the geopolymerization process



Example of a structural geopolymer model including more than 800 atoms

MATERIALS AND METHODS



Flz ash



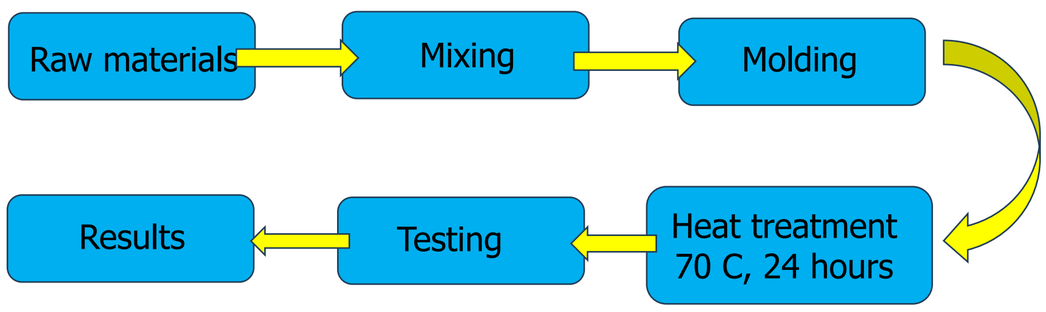
Fe_2O_3



SiO_2



MgO



RESULTS

Geopolymer mixtures with different admixtures

Mixture	NaOH	Na_2SiO_3/NaOH=2	F.A.	Fe_2O_3	SiO_2	MgO
-	M	-	%	%	%	%
R40	6	2	100	1,1	24,34	10,1
R38	6	2	100	2,2	24,34	20,2

Compressive strength of geopolymer pastes with additions of iron trioxide, silicon dioxide and magnesium oxide at different test ages.



Mixture	7 days		14 days		28 days		1188 days	
	F_{med}	$R_{c,med}$	F_{med}	$R_{c,med}$	F_{med}	$R_{c,med}$	F_{med}	$R_{c,med}$
-	(kN)	(N/mm^2)	(kN)	(N/mm^2)	(kN)	(N/mm^2)	(kN)	(N/mm^2)
R40	13,4	8,4	13,92	8,7	16,64	10,4	16,93	10,58
R38	11,52	7,2	12,48	7,8	15,68	9,8	18,29	11,43

CONCLUSIONS

Increasing the percentage additions of iron trioxide and magnesium oxide lead to an increase in compressive strengths over time. The use of iron trioxide, silicon dioxide and magnesium oxide additions influences the compressive strength..

ACKNOWLEDGEMENTS:
This work was carried out within Nucleu Programme of the National Research Development and Innovation Plan 2022-2027, supported by the Romanian Ministry of Research, Innovation and Digitalization - MCID, "ECODIGICONS" project no. PN 23 35 05 01: "Innovative sustainable solutions to implement emerging technologies with cross-cutting impact on local industries and the environment, and to facilitate technology transfer through the development of advanced, eco-smart composite materials in the context of sustainable development of the built environment"

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Institutul Naţional de Cercetare-Dezvoltare în Construcţii Urbanism şi Dezvoltare Teritorială Durabilă URBAN-INCERC
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THE INFLUENCE OF EXTERNAL RISKS IN THE SENSITIVITY ANALYSIS OF CONSTRUCTION WORKS

B

Project no. PN 23 35 05 01

Mircea-Iosif Rus

Sensitivity analysis in construction activity is an essential process for assessing the impact of different variables or factors on a construction project. This analysis is important in order to understand how changes in key parameters can influence the final results of the works such as costs, delivery times or construction quality. The assessment of external risks in construction sensitivity analysis is a crucial aspect of the construction planning and management process. External risks are factors which cannot be directly controlled by the project team but which can significantly influence the success of a construction works. These risks need to be identified and assessed in order to understand how they may affect the cost, schedule and quality of the works.

Identification of external risks
It is essential to identify all external risks relevant to the works project. These risks can be derived from historical analysis, case studies of similar projects or by consulting experts

Impact assessment of external risks
Once the risks have been identified each risk must be assessed in terms of probability and impact on the project. For example, economic risks, such as inflation, may have a significant impact on the budget, while weather risks may affect delivery times

Simulating scenarios
Using a simulation model, different scenarios can be created based on the external risks identified, i.e. one scenario may involve an increase in material prices due to an economic crisis, another may include a delay due to extreme weather events

Assessment of external risks in the sensitivity analysis

Analysis of the impact on key parameters
At this stage an analysis is made of the impact of each external risk on the key parameters of the project, and the key parameters are costs, delivery times, quality of works and workers' health and safety;

Continuous monitoring of external risks
External risks need to be monitored throughout the construction works as changes in the economic, political or social environment may occur frequently and may require rapid adjustments to the initial project plans.

Planning of mitigation measures
After the impact assessment, measures to minimize the effects of external risks will be determined, e.g. for weather-related risks more flexible working strategies can be adopted, or an additional budget can be planned for possible damages, or protective measures can be taken to reduce the impact of economic risks, such as fixed price contracts or insurance against currency fluctuations

Types of external risks in construction

- Economic factors
- Political and regulatory factors
- Meteorological and environmental factors
- Social factors
- Technological factors
- Health and safety factors



The assessment of external risks in the sensitivity analysis is essential to ensure the success of a construction project because by correctly identifying, assessing and managing these risks, project teams can reduce their impact and ensure that the project is delivered on time, on budget and to quality requirements. This approach contributes to a minimization of uncertainty and improved decision-making in construction project management

ACKNOWLEDGEMENTS:
This work was carried out within Nucleu Programme of the National Research Development and Innovation Plan 2022-2027, supported by the Romanian Ministry of Research, Innovation and Digitalization - MCID, "ECODIGICONS"
project no. PN 23 35 05 01: "Innovative sustainable solutions to implement emerging technologies with cross-cutting impact on local industries and the environment, and to facilitate technology transfer through the development of advanced, eco-smart composite materials in the context of sustainable development of the built environment"

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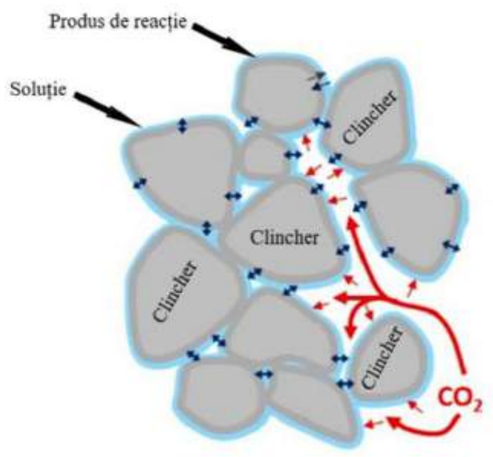
IMPACT OF CARBON DIOXIDE ON THE PROCESS OF MAKING DURABLE CONCRETE ELEMENTS

Laboratory reserach
Tudor Panfil Toader, Ioan Nicolae Scurtu, Călin Grigore Radu Mircea, Marta-Ioana Moldoveanu, Aurelia Bradu

B

INTRODUCTION

The construction industry is a significant contributor to carbon dioxide (CO_2) emissions, and through the carbonation reaction, achieved by the reaction of CO_2 with alkaline reactants (calcium hydroxide ($Ca(OH)_2$) leading to the formation of stable carbonates, namely calcium carbonates ($CaCO_3$), which are used in the CO_2 exposure conditioning stage of precast plain concrete elements. This promising method to capture carbon from the atmosphere has a global economic market potential of more than $350 billion and has the potential to reduce annual CO_2 emissions by up to 3x109 tons by 2030.



The unhydrated C_3S and β-C_2S and their hydrated products (e.g., portlandite/calcium hydroxide ($Ca(OH)_2$) and calcium silicate gel hydrate (C-S-H) react with CO_2 and water to generate $CaCO_3$ and is shown in equations (1) - (3)

$$\beta - Ca_2SiO_4 + 2CO_2 + nH_2O \rightarrow 2CaCO_3 + SiO_2 \bullet nH_2O \quad (1)$$
$$\gamma - Ca_2SiO_4 + 2CO_2 + nH_2O \rightarrow 2CaCO_3 + SiO_2 \bullet nH_2O \quad (2)$$
$$CaSiO_3 + CO_2 + nH_2O \rightarrow CaCO_3 + SiO_2 \bullet nH_2O \quad (3)$$

MATERIALS AND METHODS

Direct carbonation reaction

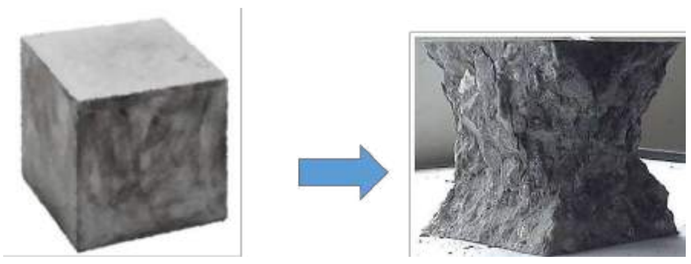
$$Ca(OH)_2 + CO_2 \rightarrow CaCO_3 + H_2O$$

1. the diffusion of CO_2 through the pore network is influenced by pressure and temperature - essential parameters influencing the carbonation by immersion of materials in water;
2. Aggregate particle size and moisture content - with decreasing diameter, there is an exponential increase in CO_2 adsorption capacity at relative humidity (RH) between 50% and 70%;
3. CO_2 concentration - over-intensified carbonation at early ages compromises the performance of the final product.

RESULTS

Cement + AGGREGATES + $CO_2 + H_2O$ → **DURABLE PREFABRICATES + IMPOROVED PERFROMANCE**

CO_2 CAPTURED FROM INDUSTRIAL GAS EMISSIONS → TREATMENT OF PREFABRICATED CARBONIZATION → SMALLER FOOTPRINT → IMPROVED PERFORMANCE



The reaction between the cementitious matrix and CO_2 occurs within the first 15 minutes, with a rapid exothermic process. The conditioning mode, including the water/cement ratio, has the greatest influence on the amount of CO_2 retained in plain concrete elements at an optimum water/cement ratio of 0.36-0.43

CO_2 binding capacity is temperature dependent, followed by pressure and calcium content.

CONCLUSIONS

The realization of accelerated carbonation of precast elements highlights the mechanisms, the factors influencing this process, the industrial benefits, the applicability of accelerated carbonation and solutions for large-scale implementation. The need for further research is indicated in order to achieve theoretical maximum carbonation maxima and to improve the reaction kinetics in the production of sustainable and cost-effective building materials.

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SUSTAINABLE SOLUTIONS FOR GARDEN FURNITURE

Patent/project number: Student Project
Author: Cerasela Liţică, Mentor Ana Socalici

B

Using recycled materials in landscape design contributes to waste reduction by repurposing resources that would otherwise be discarded. This approach aligns with the principles of a circular economy, in which materials are continuously reused and recycled, thereby minimizing reliance on new raw materials and reducing overall waste generation.

The integration of recycled rubber into landscaping projects represents a strategic effort towards reducing rubber waste and promoting a circular economy. This approach repurposes materials that would otherwise contribute to landfill overcrowding, assigning them a new function in urban spaces. Recycling used rubber for household items and outdoor applications presents a sustainable solution that reduces waste. For instance, discarded tires can be processed into durable furniture, such as chairs and tables, offering an environmentally friendly alternative to conventional materials.





By incorporating recycled rubber into functional everyday objects, environmental impact is reduced, and the use of reusable materials is promoted. This approach provides both aesthetic and practical solutions for homes and outdoor spaces. Furthermore, it underscores the significance of innovation in recycling and sustainability by transforming a problematic material into a valuable resource.

Using recycled materials decreases the demand for extracting and processing new resources, activities that often contribute to environmental degradation. Recycling and repurposing rubber in landscaping projects help lower the ecological footprint associated with the production of new construction materials. Integrating recycled materials into landscape design exemplifies the principles of a circular economy, in which products and materials remain in use for as long as possible. This strategy not only reduces waste by extending resource lifespans but also encourages sustainable production and consumption systems.

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Additive technologies using high power laser sources

Patent/project number: Doctoral research project
Author/s: Andrei Cosmin RUSU
Mentor: Prof. Dr. Ing. Liviu Daniel GHICULESCU

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DED is a laser processing technique that allows to manufacture complex geometries using Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM). During DED process, figure 1, a laser induces melt-pool is created. Then, a stream of powder is directed into the melt-pool and followed by a succession of melting-solidification effects combined with trajectory made by CAM, a new layer is created. The powders fed into the melt-pool must have particular characteristics like specific size and chemical composition and can be metallic or nonmetallic materials, alloys and MMC (Metal Matrix Composites). Depending on the application and how complex it is we can use for printing 3D parts different powders like the ones described early.

For obtain faster results, are used numerical simulation softwares with the aim of finding the optimal parameters by implying reduced amount of resources. Finite element simulation software COMSOL MULTIPHYSICS was used to define DED process characteristics. Using build in modules, Heat Transfer and Deformed Geometry combined with Time Dependent study was created a model (figure 3), which helps with finding starting values for process parameters. Physico-thermal properties for the solid phase material were taken into consideration when modeling this simulation. With the numerical model created we can observe influences of different parameters on the temperature field (figures 4) and cladding height (figures 5).

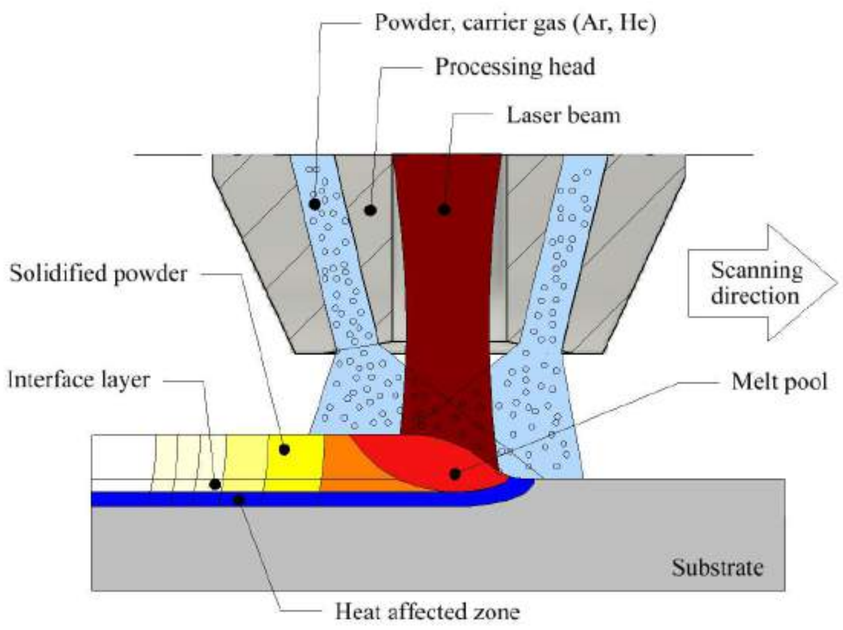


Figure 1. DED process principle

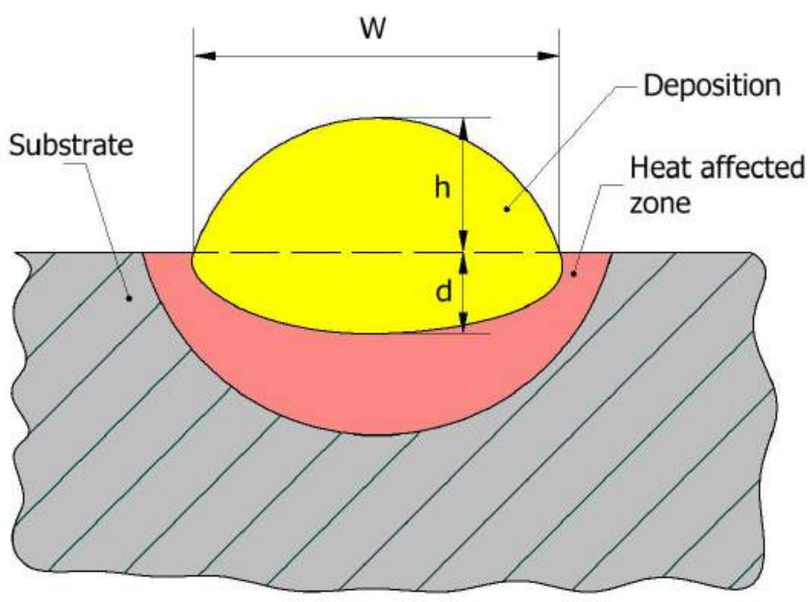


Figure 2. Deposition during DED process

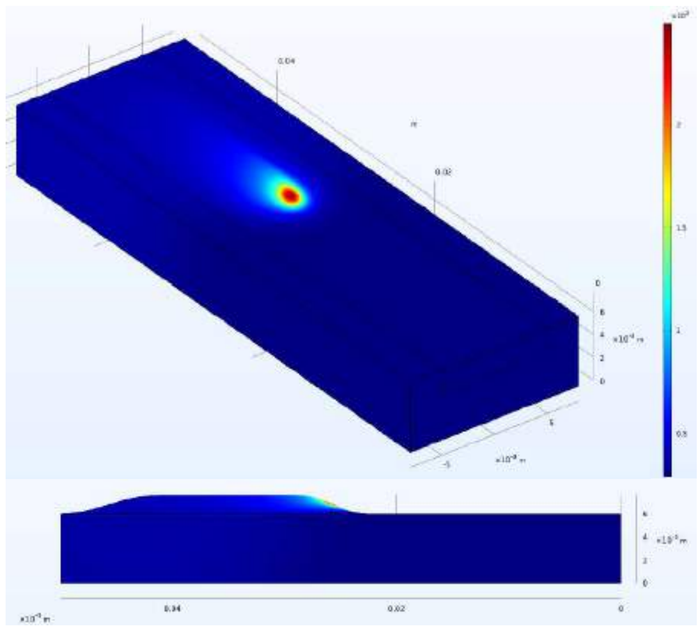


Figure 3. Modeled DED process in COMSOL MULTIPHYSICS

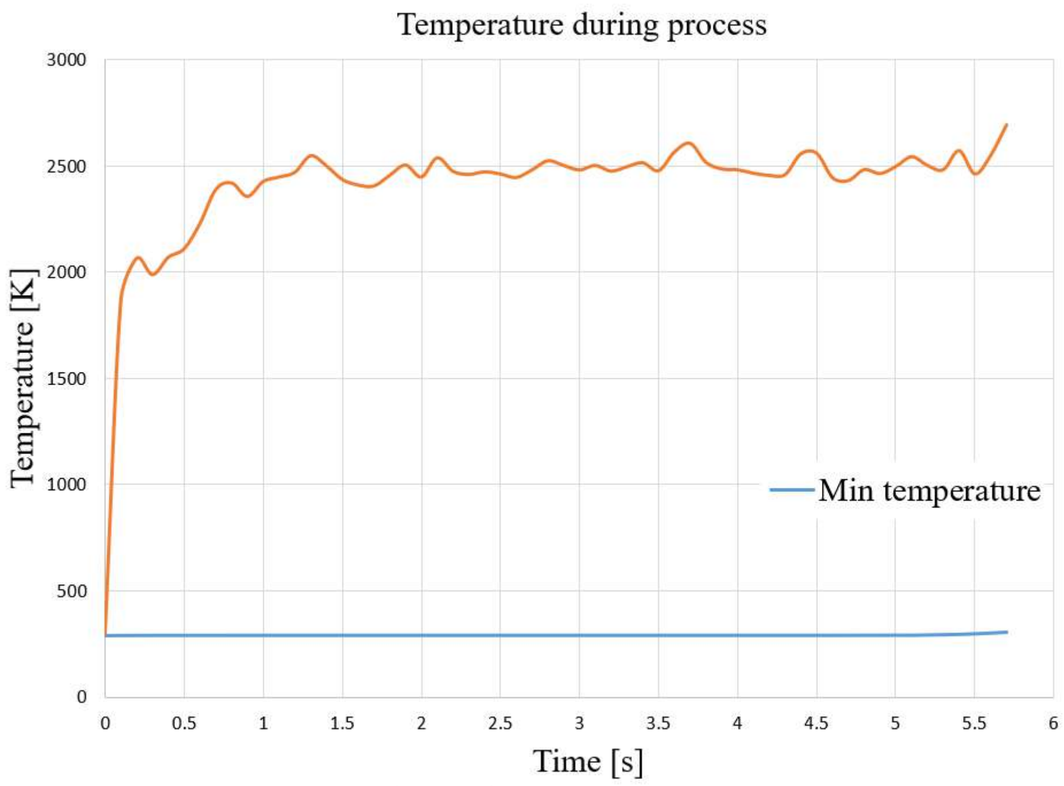


Figure 4. Chart of min and max temperatures

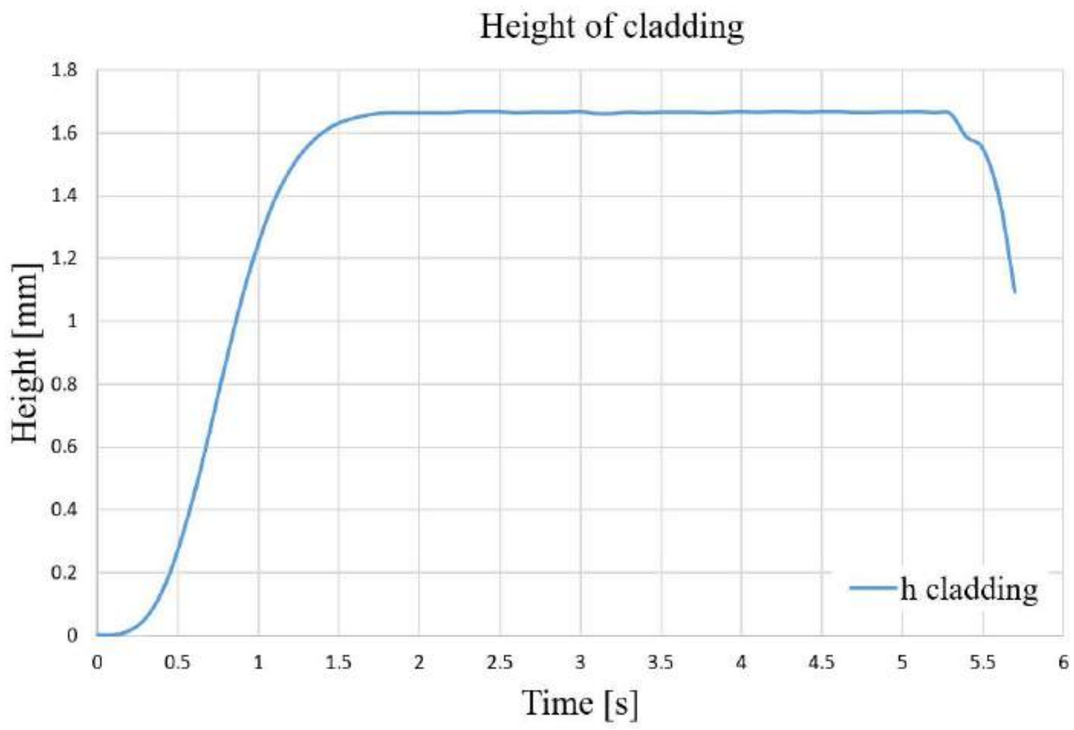


Figure 5. Chart of cladding height

The innovation within my research consist in studying mechanical and physical properties of parts created with laser DED technique using metal matrix composites powders or other metal alloys materials. By optimizing the manufacturing process parameters and using a specific combination of materials (metallic and ceramic particles), can obtain new parts with specific properties like increased electric conductivity, thermal conductivity and higher corrosion resistance. With the help of simulation softwares we can find starting parameters in an easy way, by saving a lot of time and resources, in comparison with the trial-and-error methods by performing the experiments.

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PHASE CHANGE MATERIALS COMPOSITE PANEL WITH HIGH THERMAL EFFICIENCY

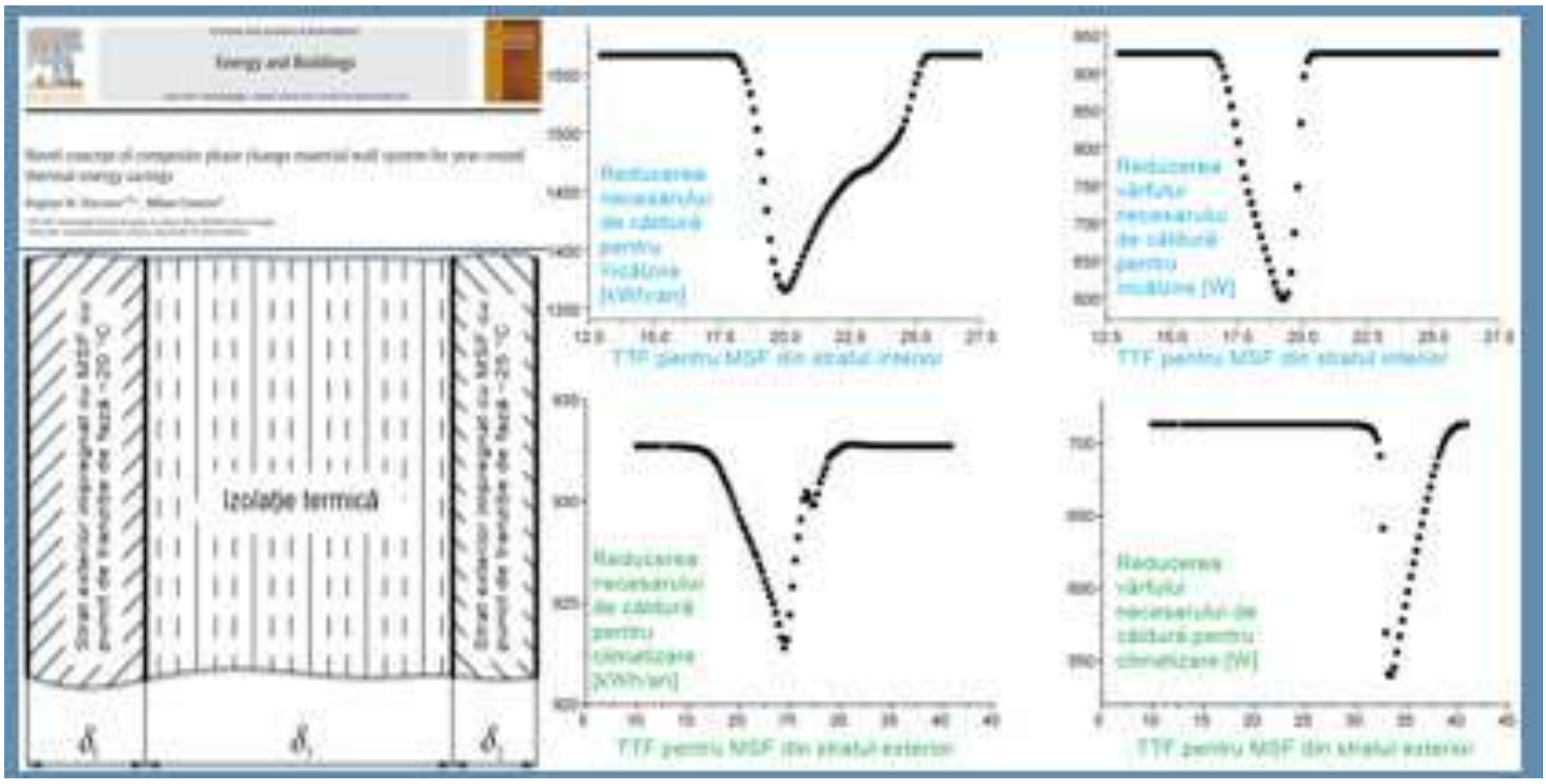
Patent : **RO 126853 B1/ 30.07.2013**

B

Authors: Diaconu Bogdan Marian, Cruceru Mihai, Gorun Adrian, Popescu Georgeta Luminița

The invention relates to an exterior wall construction element that ensures more efficient energy management for heating and air conditioning, compared to conventional (Sandwich-type) walls for modular constructions.

The novel feature of the invention lies in the integration of two layers impregnated with phase change materials (PCM) with different phase transition temperatures (PTT) into its structure. The exterior layer – exposed to the ambient environment – is impregnated with a phase change material with a PTT around 20 °C, while the interior layer – exposed to the living space – is impregnated with a different type of PCM, with a PTT of approximately 25 °C. The exterior layer is active during the heating season, while the interior layer is active during the season requiring energy for air conditioning.



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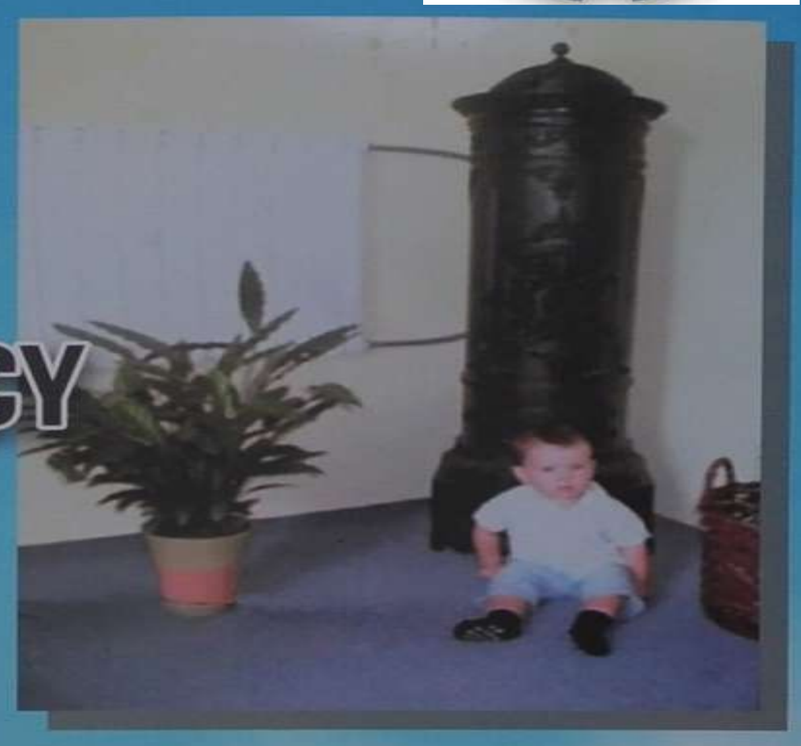
MULTIFUNCTIONAL FURNACE

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13
IDEA
HÓDMEZŐVÁSÁRHELY

Author:
Lajos Vásárhelyi





AESTHETIC
GREAT EFFICIENCY

3 IN 1
STOVE &
CENTRAL HEATING &
WATER HEATER

B

ECONOMICAL

STORE THE HEAT
UP TO 6 HOURS

FOR MASS PRODUCTION





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RESISTIVE SENSOR FOR RELATIVE HUMIDITY

B

Patent application OSIM no. A/00476/28.01.2022
Authors: ȘERBAN BOGDAN-CĂTĂLIN, BUIU OCTAVIAN, COBIANU CORNEL

RH sensors have received increasing attention in the last years due to their importance in a large variety of residential, industrial, and commercial applications. One can mention some of those: controlling and sensing humidity in offices and homes, medical field (gas supply infrastructure, incubators, sterilizers), food/beverage processing, chemical industry (dehumidifiers, smelting furnaces, dryers), pharmaceutical processing, electronics (semiconductor fabrication plants, clean room controls) agriculture (drip irrigation), weather station, textile, and paper industry, automotive industry (engine tests beds).

This patent application refers to the development of resistive relative humidity (RH) sensor, employing a sensing layer based on a binary nanocomposite comprising oxidized carbon nanohorns (CNHox) (Fig.1) –tannic acid (Fig. 2), oxidized carbon nanoonions (CNOox - Fig.3) - tannic acid or ternary nanocomposite comprising oxidized carbon nanohorns (CNHox), oxidized carbon nanoonions (CNOox) and tannic acid. The RH sensor includes a Si/SiO_2 substrate, interdigitated electrodes and a sensing layer obtained via spin coating method. The RH monitoring capability of the sensing layers was investigated by applying a current between the two electrodes and measuring the voltage at different values of the oxygen concentration at which the sensing layer was exposed. The resistance of the sensitive layer varies with RH level.

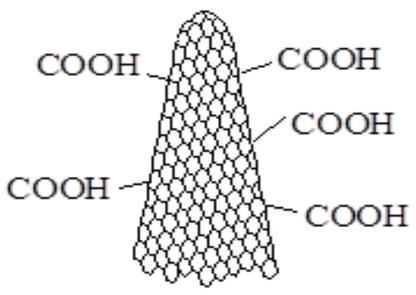


Fig. 1 – Structure of oxidized carbon nanohorns (CNH_{OX})

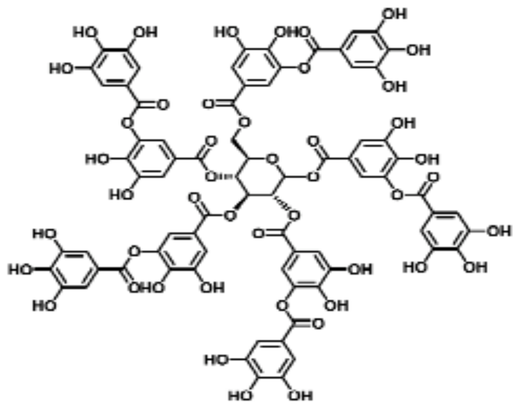


Fig. 2 – Tannic acid

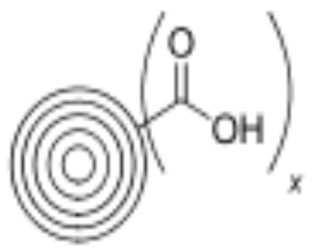


Fig. 3 – Oxidized carbon nanoonions

Synthesis of the sensing layer

The raw materials necessary for the synthesis of the sensitive layer are, in the first case, tannic acid (Sigma Aldrich), oxidized carbon nanohorns (Sigma Aldrich), deionized water, acetone, ethanol.

1) The Si/SiO_2 substrate is cleaned for 10 minutes in the ultrasonic bath using sequentially equal volumes of acetone, ethanol and finally deionized water.

2) The solution of tannic acid in water is prepared by dissolving 20 mg of biopolymer in 100 mL of deionized water, under magnetic stirring (10 minutes, at room temperature).

3) Subsequently, 80 mg of oxidized carbon nanohorns are added to the previously prepared solution and the magnetic stirring is continued for 60 minutes at room temperature.

4) The solution obtained is deposited by the "drop casting" method, using a Si / SiO_2 substrate with linear electrodes or interdigitated electrodes (after previously masking the contact area).

5) The obtained sensitive layer, deposited on the substrate, is dried in an oven at 50 °C in a vacuum for 30 minutes.

Advantages

The new synthesized sensing layer used in the manufacturing of resistive RH sensor have several significant advantages: • the presence of CNHs-ox and CNOox ensures a high specific surface area / volume ratio as well as a substantial affinity for water molecules; • tannic acid can form hydrogen bonds with both the hydrophilized substrate (Si/SiO_2) and oxidized carbon nanohorns • detection at room temperature; • rapid response.

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Title

INNOVATIVE USE OF SHEEP WOOL AND POLYURETHANE FOAM FOR OBTAINING MATERIALS WITH SOUND-ABSORBING PROPERTIES

Inventor/s - Contact

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Patent/ Application number

Patent OSIM no.: RO136050- B1/30.05.2024

Short presentation

The aim of this work was to obtain materials with sound-absorbing properties using sheep wool and rigid bicomponent polyurethane foam. Four materials with three layers were obtained. A layer of sheep wool previously processed by hot pressing at 80°C and 5 MPa, with final thicknesses of 2, 4, 6 and 12 mm; a layer of polyurethane foam, with a thickness of 8....37 mm and a transition layer, 1...20 mm thick, resulting from the migration of polyurethane foam during the multilayer panel manufacturing process into the wool layer and/or the migration of wool into the polyurethane foam layer. Wool and polyurethane foam are the combination of sound insulation and sound absorption - wool absorbs sound and reduces it, and due to the rigid structure of polyurethane foam (closed pore structure), it does not allow sound to travel further, resulting in sound insulation.
The obtained materials have very good sound absorption properties with acoustic absorption coefficient values over 0.7 for the frequency range 800 ÷ 3150 Hz; the results prove that the sheep wool has a comparable sound absorption performance to that of mineral wool.

Applicability

The study explores alternative usage of sheep wool as a construction material with improved sound absorbing properties beyond its traditional application as a sound absorber in textile industry or using of waste wool in the textile industry as a raw material. Sound absorbing materials can be used to reduce noise and to obtain an adequate acoustic for enclosed spaces. They can have many uses, both outdoors and indoors: in industry, commercial areas, relaxation and leisure areas, in areas used for education, in constructions, on building sites, highways, roads and streets, airports, ports, railways, etc. Materials studied in this research can be used to reduce noise impact, as decorative panels with sound absorbing role, to improve acoustic conditions, and to reduce or stop reverberations.

Images



A



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Fig.1. Processing phases:
A: Phase I - Wool plate hot formed ;
B: Phase II - Finale structure of the plate

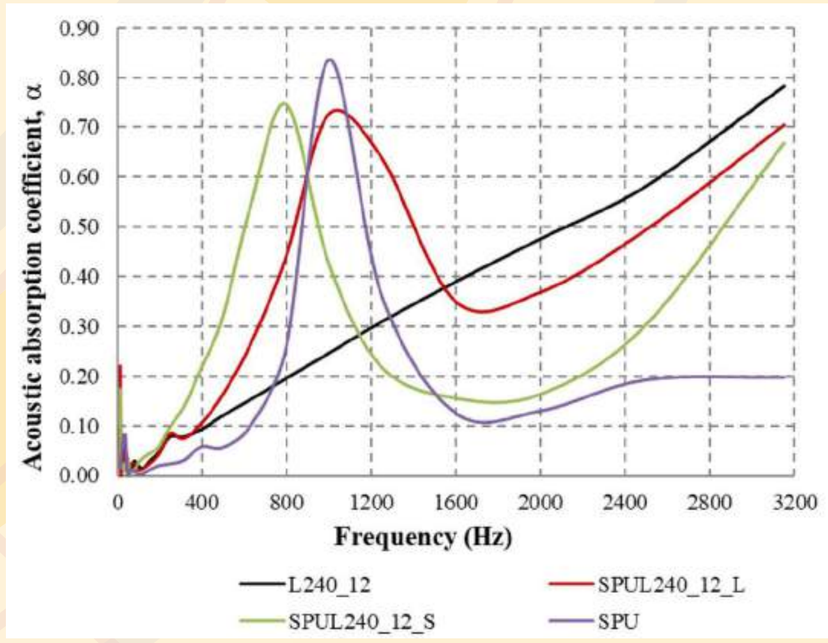


Fig. 2. Variation in the acoustic absorption coefficient with frequency for multi-layer materials in comparison with rigid polyurethane foam (SPU) and the layer made of pressed sheep's wool (L240_12).

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Title

PROCESS OF MANUFACTURING CUSTOMIZED MULTI-STRUCTURE MEDICAL IMPLANTS BY ADDITIVE MANUFACTURING TECHNOLOGIES

Inventor/s - Contact

Leordean Vasile Dănuț [a,*], Radu Sever-Adrian [b,*], Cosma Sorin-Cosmin [c,*], Cuc Stanca [d], Vilău Cristian [e,*], Rusu Mircea-Aurelian-Antoniu [f,*]
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Patent/ Application number

Patent OSIM no.: RO132908- B1/28.02.2024

Short presentation

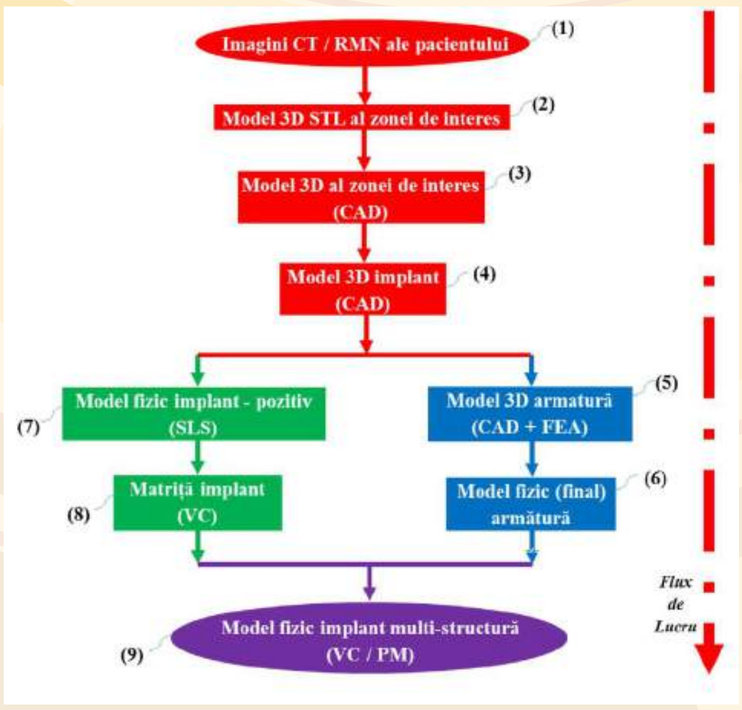
The invention is related to the development of a process (technology) for manufacturing customized implants made of biocomposite material, reinforced with metallic structures produced by SLM. The resulting multi-structure implants (metal/biocomposite) are tailored to individual patients and can be used to prosthesis any area of the human bone system. The process is based on CT data from which the 3D model of the affected area is extracted. The final shape and resistance structure (metal reinforcement) of the future implant will be designed using CAD and FEA programs.

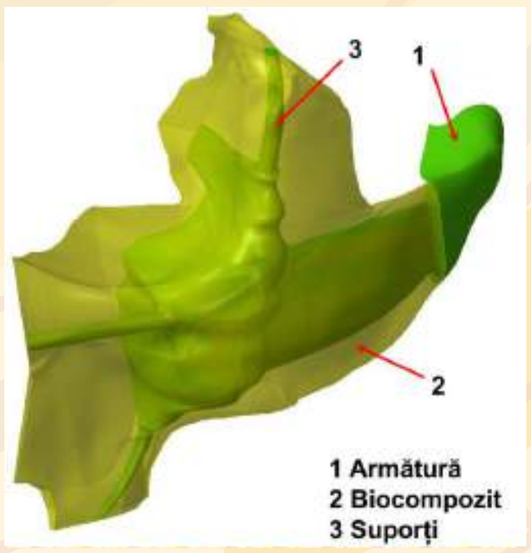
The manufacturing process consists of two stages. In the first stage, two AM technologies are used: SLM is employed to create the metal reinforcement, while SLS and Vacuum Casting are used to produce the silicone rubber mold that will shape the final implant. In the second stage, the reinforcement is placed into the silicone mold, and the final customized implant is created through casting or injection, depending on the material composition.

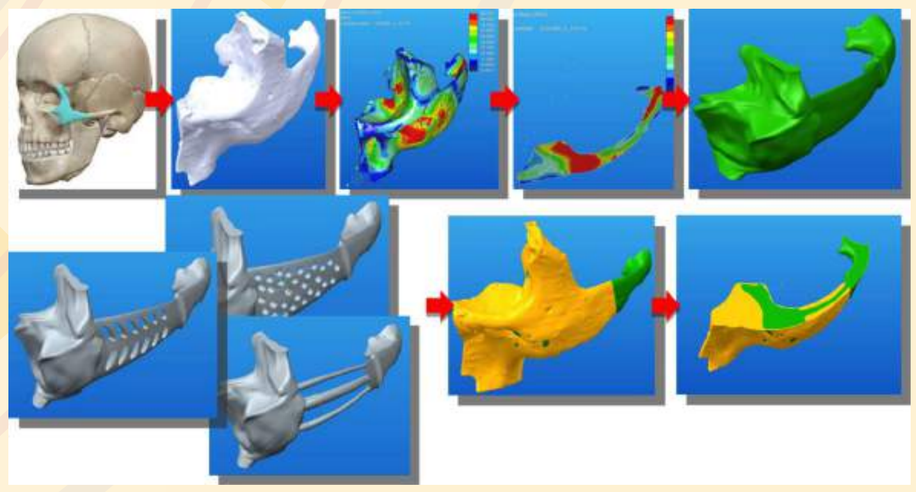
Applicability

Medical applications, Medicine

Images







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Title

SHEEP WOOL BASED MODULAR PANEL AND THE METHOD USED FOR OBTAINING IT

Inventor/s - Contact

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Patent/ Application number

Patent OSIM no.: RO135991- B1/30.05.2024

Short presentation

The invention relates to a modular panel based on sheep wool fibers, and the method of obtaining it, in order to meet the requirements of quality in construction regarding noise protection and the sustainable use of natural resources. Each module consists of a triple layered panel, having a composition similar to that of sandwich panels. The structure of the layered panel is made of two outer layers of hydrated lime-based plates, which delimit a mattress made of sheep wool fibers placed between them.
The weighted sound reduction index of the modular panel is Rw (C;Ctr) = 38 (-2, -8) dB.
The layered panels have high sound absorption coefficient values at low frequencies. The maximum value is 0.90 at the frequency of 524 Hz.

Applicability

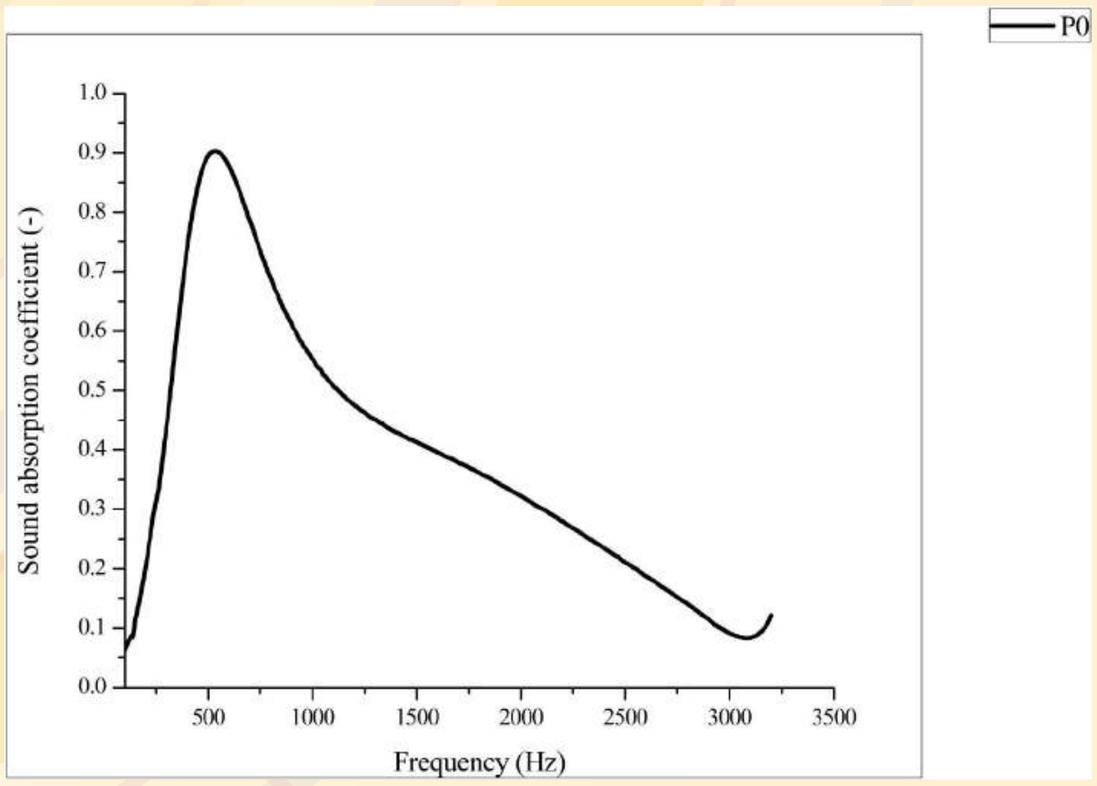
The invention consists in obtaining of a modular panel for vertical partition walls in buildings, with acoustic and thermal properties comparable to the existing sound insulating, sound absorbing and thermal insulating composites by using sheep wool, which is a viable natural alternative to synthetic fibers.

Images



Modular panel





Variation of sound absorption coefficient

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Title

SOFA SIDE MADE BY THERMOFORMING PROCESS AND ITS ACCOMPLISHING PROCESS

Inventor/s - Contact

Ciupan Cornel, Filip Ioan, Cionca Ioan, Ciupan Emilia

Patent/ Application number

Patent OSIM no.: RO133392 -B1/29.03.2024

Short presentation

The invention relates to the structure of a sofa side made of composite material based on natural fibers (hemp 50-60%) mixed with polypropylene (40-50%). The material is obtained by interweaving. The sofa side has the shape of a box and is made up of an inner shell, an outer shell and a rib that is mounted between the two shells. It replaces a classic side made mainly of wood which was made up of 21 pieces. The process presents the phases and parameters of thermoforming of the three components and the way of assembling them.
The thermoforming process consists of the following phases: tailoring, heating to 210-220ºC, transfer to the core mold and calibration by pressing with the cavity mold. After cooling, the piece is extracted from the mold and it is finished on the contour.

Applicability

The invention was developed in collaboration with specialists from the Technical University of Cluj-Napoca and TAPOARO SA from Targu Lapus and is applied in the upholstered furniture industry. The main advantages: replacing wood with environmental protection effects, reducing the weight of the product, significantly reducing the number of parts and using a single material (composite), simplifying the manufacturing process and increasing productivity, resulting in a reliable product at a low cost.

Images

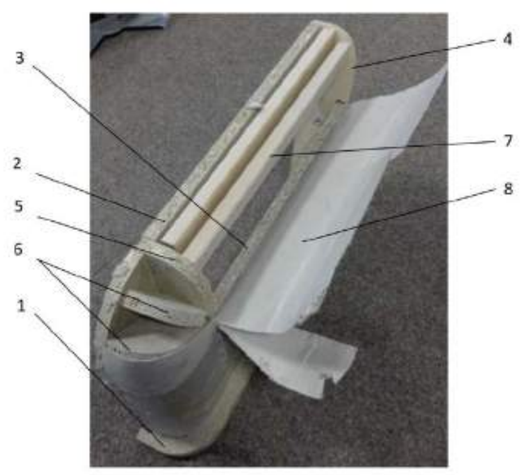


Fig. 1 Old version of the sofa side

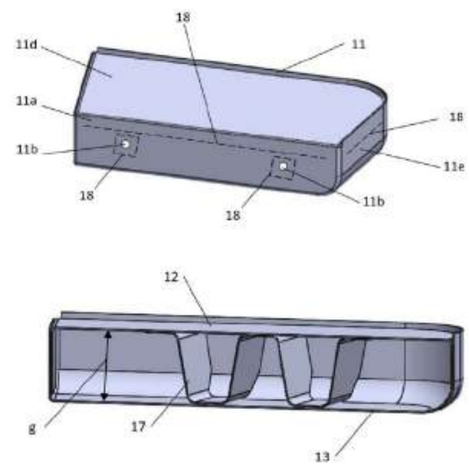


Fig. 2 New version of the sofa side



Fig. 3 Sofa sides on the production flow



Fig. 4 Sofa sides – laboratory tests

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Title

ECOLOGICAL ROAD CONCRETE BASED ON CEMENT, GLASS POWDER AND AGGREGATES FROM RECYCLED CONCRETE WASTE FOR APPLICATIONS IN THE FIELD OF CONSTRUCTIONS "BcR_G"

Inventor/s - Contact

CORBU Ofelia-Cornelia; PUSKAS Attila

Patent/ Application number

Patent OSIM no.: RO137345- B1/30.07.2024

Short presentation

The road concrete of the invention is an environmentally friendly concrete composed of natural aggregates (NA), recycled concrete aggregates (RCA) and waste glass powder form (WGP) that replaces part of Portland cement, RCA and WGP as an alternative to conventional materials. The concrete design was carried out so that, in addition to other durability characteristics, a remarkable resistance to abrasion was obtained. It falls into the resistance class BcR5. The microstructure and compositional characteristics of the concrete were also investigated, to confirm the efficiency of WGP. This new composite offers several advantages in terms of reducing existing and potential volumes of mineral waste both economically and visually, reducing pollution and minimizing the consumption of natural resources and energy. By applying it in the construction industry, it makes it possible to move from a linear economy to a circular economy.

Applicability

Application in the construction field with applicability for roads, sidewalks, pavements, alleys, etc

Images





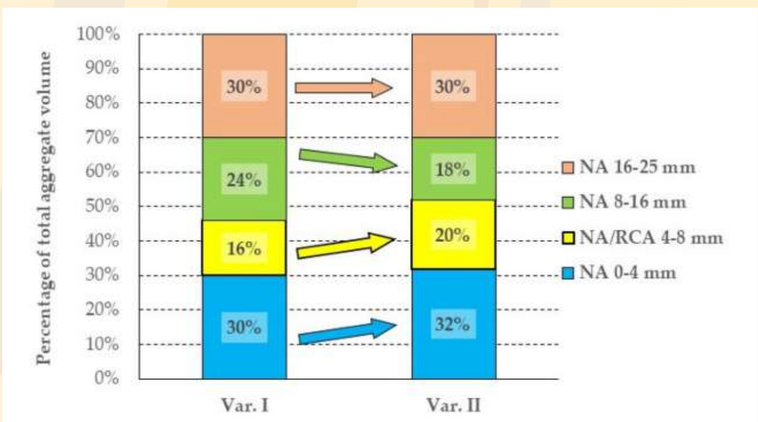


Figure 4. Aggregate percentages in Var. II.

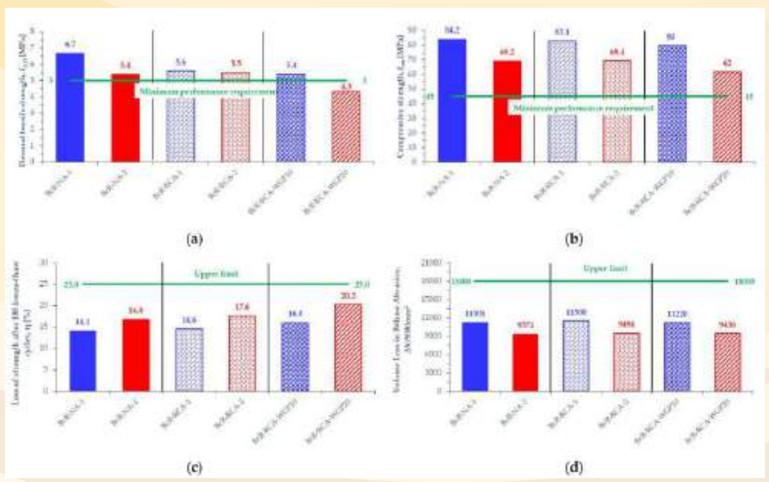


Figure 23. Hardened BcR composites' properties (both variants);
(a) flexural strength, (b) compressive strength;
(c) loss of strength after 100 freeze–thaw cycles;
(d) volume loss in Böhme abrasion.

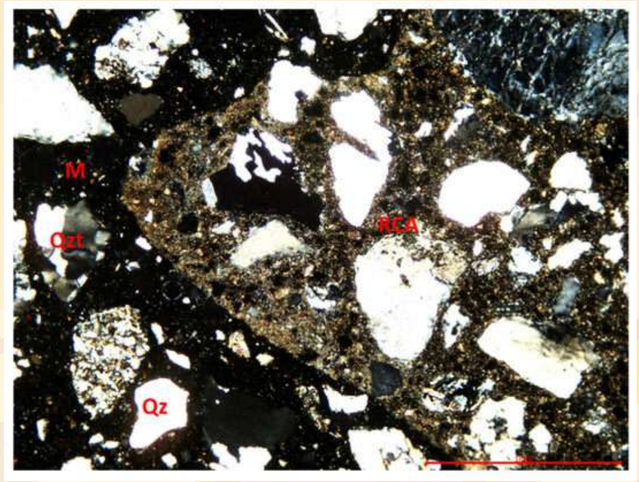


Figure 15. Microscopic image of the sample BcR-RCA-WGP10 at crossed pollars with porphyroclastic texture. The clasts consist of recycled concrete (RCA), quartzite (Qzt), fragments of quartz, etc. embedded into the matrix, black in color. The scale bar is 1 mm.

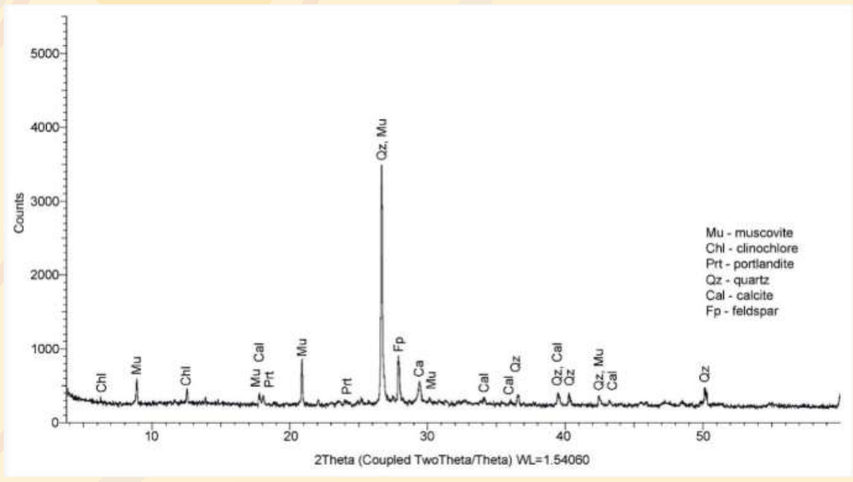


Figure 18. The X-ray spectra of the sample BcR-NA-1 with the typical line for quartz, muscovite, calcite, albite, clinochlore, gypsum, portlandite, and orthoclase.

[1] Coatings 2023, 13(10), 1710; https://doi.org/10.3390/coatings13101710

Ultrasonic weldability of composites created through additive manufacturing

B

Authors: ***Emilia DOBRIN, Gabriela-Victoria MNERIE, Ileana Lavinia SÎRBU***

Ultrasonic welding is a sustainable and non-toxic joining process widely utilized by leading industrial manufacturers and aligned with European circular economy regulations. This study investigates the ultrasonic welding behavior of additively manufactured composites reinforced with materials such as glass fiber, Kevlar (K), and copper wire. These composites are structured in a sandwich configuration with varying reinforcement types and welded using ultrasonic technology. The welded samples were analyzed and compared to the base material through non-destructive (NDT) and destructive testing, including visual inspection, microscopic and macroscopic analysis, tensile testing, hardness testing, and bending tests. The results provide insights into the mechanical performance and structural integrity of ultrasonic-welded, additively manufactured composites.



Test specimens resulting from PETG deposition



Kevlar fabric



Reinforced specimens while being welded with US

Results:

Specimen	E_t [MPa]		σ_m [Mpa]		ε_m [%]		ε_b [%]		b [mm]		h [mm]		A_0 [mm²]	
	No Kev	**No** Kev	**No** Kev	**No** Kev	**No** Kev	**No** Kev	**No** Kev	**No** Kev	**No** Kev	**No** Kev	**No** Kev	**No** Kev	**No** Kev	**No** Kev
No. 1	3620	3440	37.2	46.1	0.98	1.3	0.98	1.3	10.25	10.44	4.08	4.25	41.8	44.4
No. 2	3580	3590	41.5	46.5	1.2	1.2	1.2	1.2	10.16	10.25	4.09	4.14	41.6	42.4
No. 3	3320	3450	38.4	48.9	1.2	1.4	1.2	1.4	10.38	10.34	4.2	4.27	43.6	44.2
No. 4	3560	3690	36.5	54.0	0.98	1.4	0.98	1.4	10.25	10.3	4.15	4.52	42.5	46.6

Advantages of the process:

Reduces human involvement in the 3D printing production process. Eliminates certain production steps, as they are integrated into the 3D printing workflow. Ultrasonic treatment enhances the mechanical properties of the final parts without altering the 3D-printed material.

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TIMIȘOARA
National Research & Development Institute for Welding and Material Testing - ISIM Timișoara

Research on submerged friction stir processing of rolled and cast aluminum alloys

Project no. PN 23 37 01 02 (part 1/2023-2024), Program Nucleu 2023-2026

Authors: Lia-Nicoleta Boțilă, Ion-Aurel Perianu, Iuliana Duma

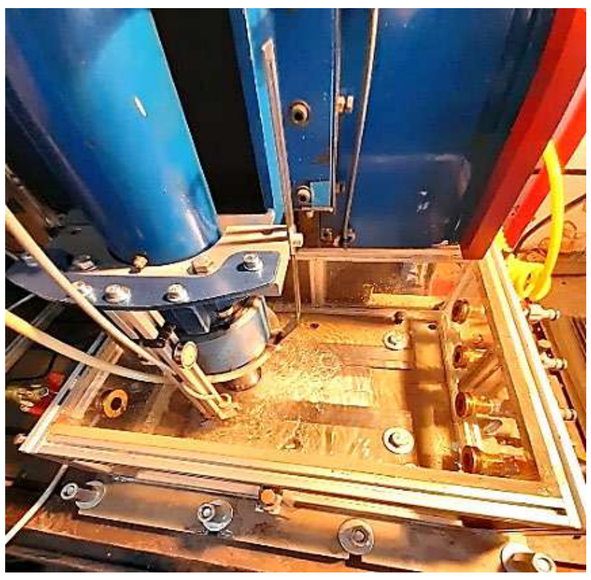
B

Objective: research on the possibilities to change the mechanical properties of the rolled and cast aluminum alloys sheets, on a limited area, using the ecological and innovative method of submerged friction stir processing SFSP

Experimental research:
SFSP processing in a single pass or in multiple passes for:
- rolled aluminum alloys EN AW 1200, EN AW 5754, EN AW 6082 and EN AW 7075, 3-5 mm thickness
- cast aluminum alloy EN AC 5083, 5-6 mm thickness

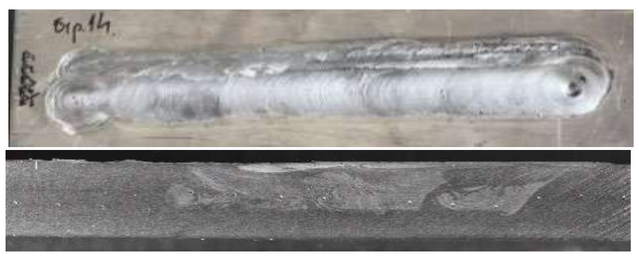


Friction stir welding and processing system FSW/FSP equipped with module for submerged friction stir welding and processing SFSW/SFSP





EN AW 1200 (5 mm), SFSP multiple passes

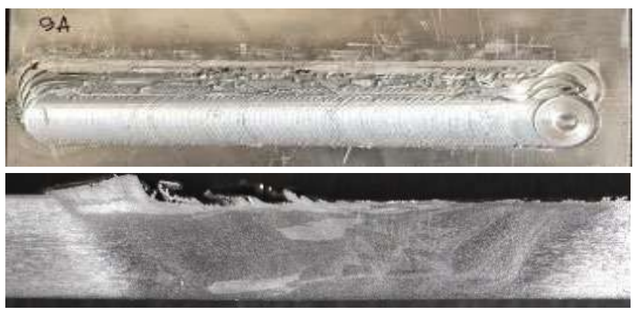


EN AW 5754 (3 mm), SFSP multiple passes

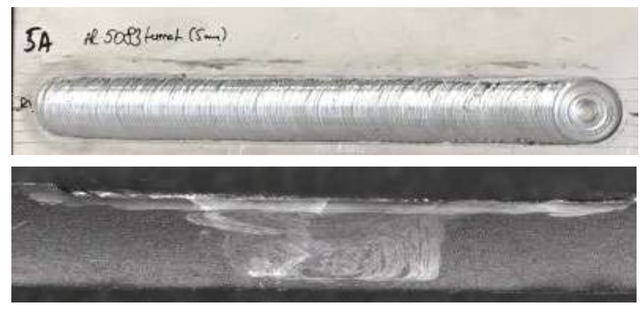


EN AW 7075 (5 mm), SFSP multiple passes

SFSP processed samples and macroscopic appearance, for rolled and cast aluminum alloys



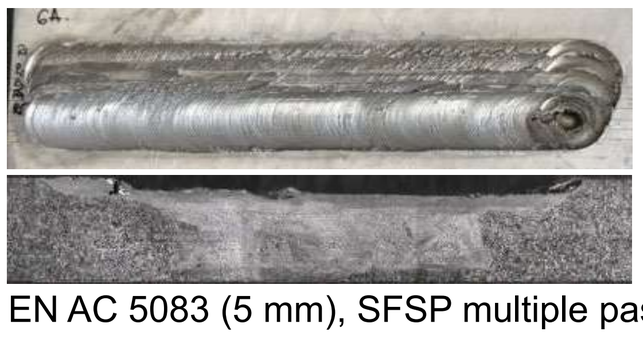
EN AW 6082 (5 mm), SFSP multiple passes



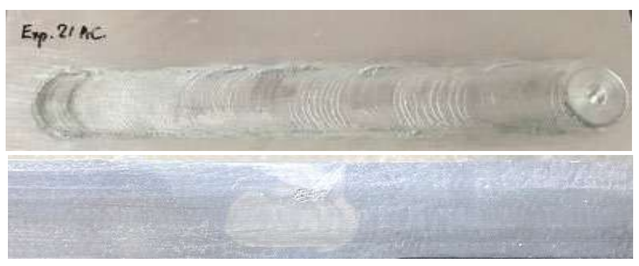
EN AC 5083 (5 mm), SFSP single pass



EN AW 7075 (5 mm), SFSP single pass



EN AC 5083 (5 mm), SFSP multiple passes



EN AC 5083 (6 mm), SFSP single pass

Effects of SFSP processing applied on aluminum alloys sheets:
- improvement of the microstructure and mechanical properties of the processed materials;
- microstructure refinement of rolled and cast aluminum alloys;
- increase of the material deformability degree by SFSP processing in multiple passes, on a limited area;
- change in hardness values in the processed areas.

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TIMIȘOARA

National Research & Development Institute for Welding and Material Testing - ISIM Timișoara

PROCESS FOR SINTERING POWDERS USED IN THE MANUFACTURE OF ELECTRICAL CONTACTS

B

Patent application **No. A2024 00448 / 30.07.2024**

***Authors:* Sorin Vasile SAVU, Ionel Dănuț SAVU and Nicușor-Alin SÎRBU**

It is known that sintering of composite materials can be achieved by various processes. In switchgear systems in the energy industry, the active elements of electrical contacts are subjected to particular thermal and electrical actions. Microwave sintering of composite materials is an innovative process because of the way in which the heat required to reach the sintering temperature is developed inside the materials. The phenomenon known as dipole rotation under the action of the high-frequency microwave electromagnetic field leads to mechanical friction within the materials and hence to heat development. Specific to microwave sintering is the rapidity with which heat is developed in the materials.

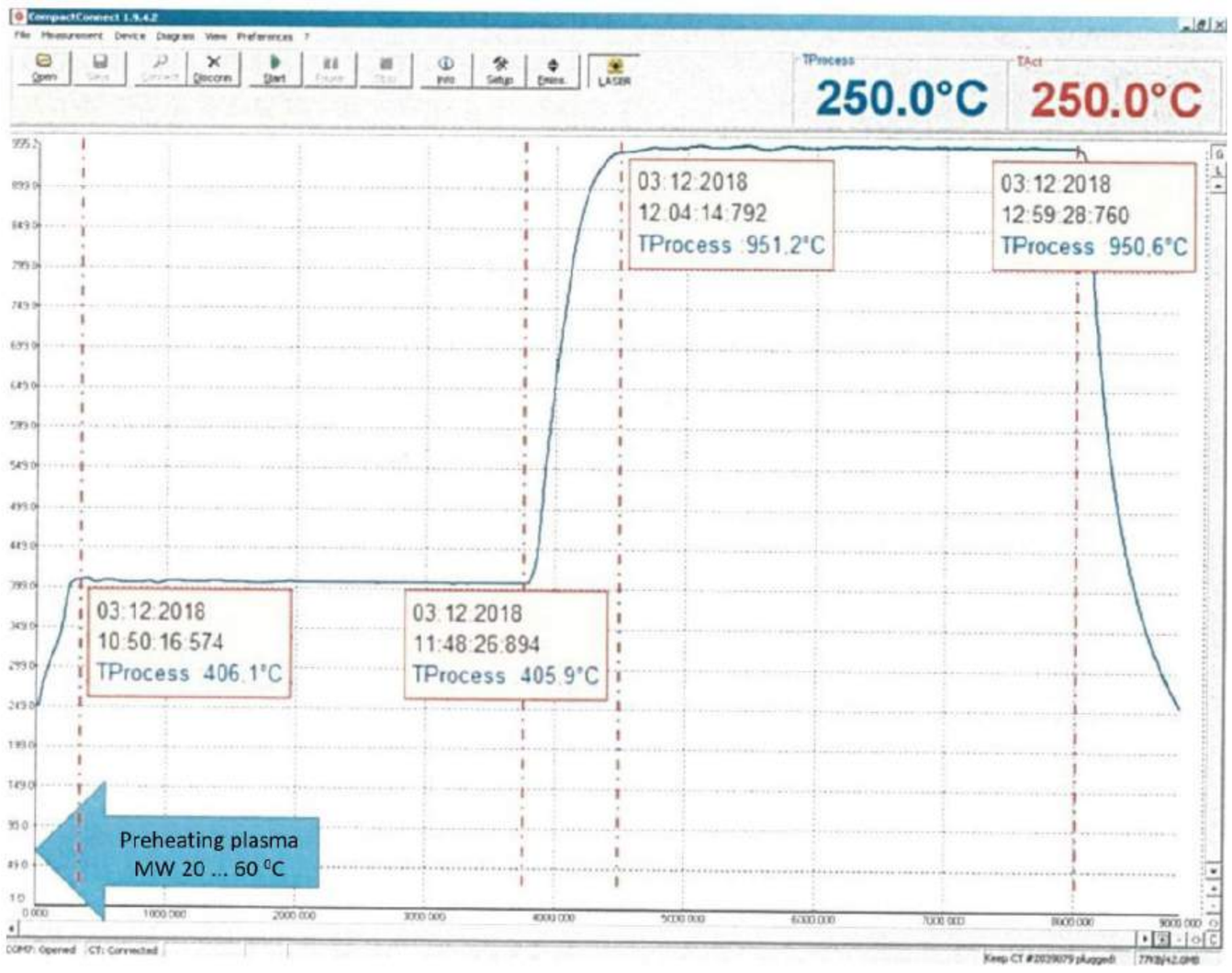
Another aspect of the microwave sintering process is energy efficiency.

Object of the invention:

A process for sintering powders used for making electrical contacts in which a W-Cu-Cr based composite material, obtained by mechanical alloying in a planetary ball mill and compacted in a cylindrical mold, is subjected to a sintering process characterized in that in order to increase the process reliability, reduce time and energy consumption the sintering is done in a microwave field conditioned by preheating in microwave activated argon plasma using a microwave generator.

The technical problem solved by invention:

- The technical problem of the invention consists in the realization of a process for manufacturing electrical contacts by sintering, whereby to obtain a reduction in manufacturing time, energy consumption and reduced risk of cracking of the composite material.



Cyclogram of the microwave field sintering process assisted by microwave activated argon plasma thermal conditioning of the composite material

Advantages:

- Maximum simultaneous power consumption from the mains supply reduced by 70% compared to conventional electric calciners, which represents a significant reduction in investment costs in the plant's power supply circuits;
- The electrical energy consumed is reduced by 78% due to the high heating rate in the microwave field, which means a much lower production cost;
- The total sintering time is reduced by 36% due to the high heating rate, resulting in much lower labor costs and higher productivity;
- The sintered material has similar physical and mechanical properties to those obtained by conventional sintering.

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COMPOSITE MATERIAL FOR ORGANIC POLLUTANTS REMOVAL USING MATERIALS BASED ON FOOD WASTE AND METHOD OF OBTAINING IT

A

Patent number: A00673/2024

Authors: Roxana Ioana Matei (Brazdis), Irina Fierascu, Toma Fistos, Anda Maria Baroi, Ioana Silvia Hosu, Radu Claudiu Fierascu, Valentin Raditoiu, Monica Florentina Raduly, Maria Grapin

The present invention refers to a material and procedure for the removal of organic pollutants. The procedure is based on the use of a phosphatic material (obtained from the valorization of food wastes-shells of *Mya arenaria* Linnaeus, 1758 - the most encountered edible clam on the Black Sea shore), decorated with metallic oxides (Cu or Ni) developed using a rapid approach, further formulated as an active coating. The material proved to be effective at low concentrations against the model organic pollutant (dye) Methylene Blue.

Synthesis



Mya arenaria Linnaeus, 1758
(Clams - *Food waste*)

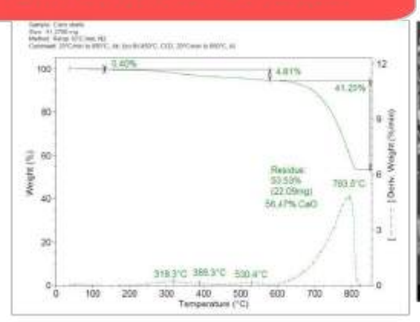
Grinding

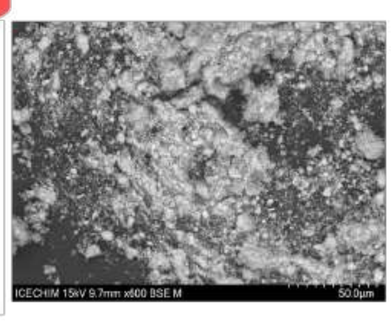


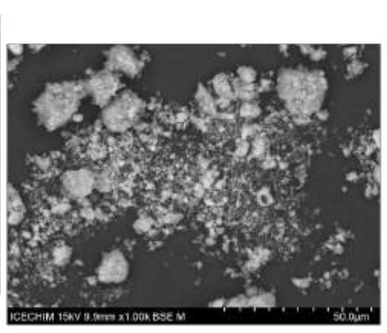
Used as CaO precursor in phosphatic material synthesis

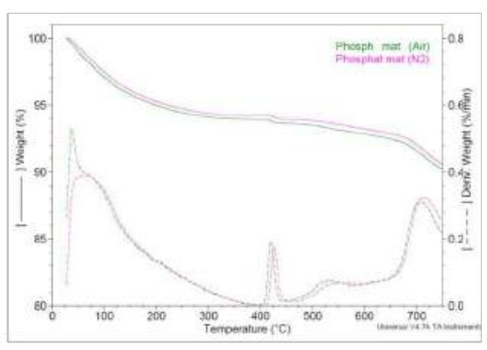
Obtained materials:
- Bio-derived phosphatic material/Cu
- Bio-derived phosphatic material/Co

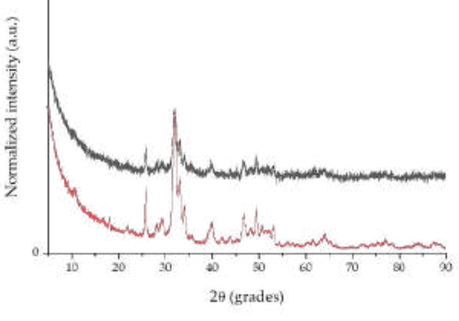
Characterization



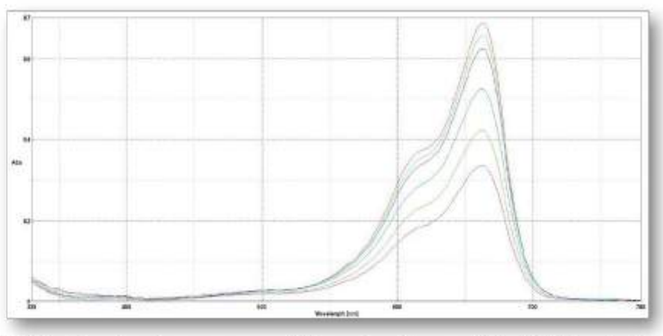




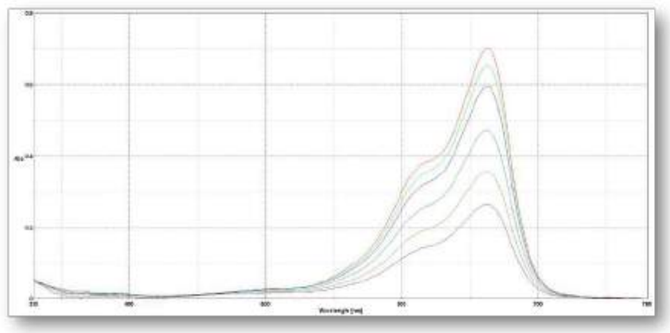




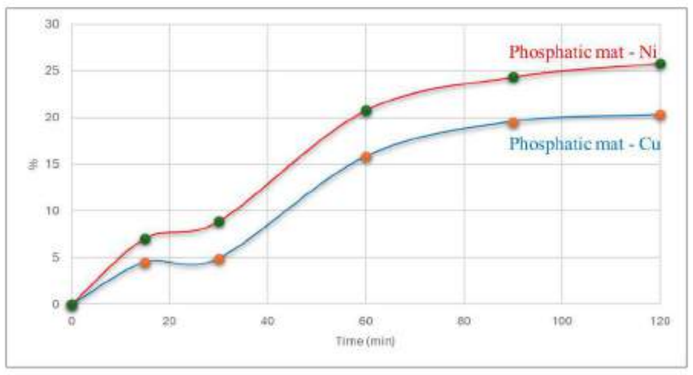
Applications



MB photodecomposition in time (0–120 min) using coatings containing: Phosphatic material-Cu



MB photodecomposition in time (0–120 min) using coatings containing: Phosphatic material - Ni



Photodecomposition degree of methylene blue using coatings containing phosphatic materials

-

ADVANTAGES

- **A method to capitalize food (clams) wastes into value-added compounds**
- **A rapid method for decorating the phosphatic material**
- **Efficient in the removal of organic pollutants**
- **An easy method to practically use the decorated materials**
- **Easy scalable to industrial production**

Acknowledgements: The authors gratefully acknowledge the support of the Ministry of Research, Innovation and Digitization through the PN 23.06 Core Program - ChemNewDeal within the National Plan for Research, Development and Innovation 2022-2027, developed with the support of Ministry of Research, Innovation, and Digitization, project no. PN 23.06.01.01 AquaMat.

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SUSTAINABLE SOLUTIONS FOR GARDEN FURNITURE

Patent/project number: Student Project
Author: Cerasela Lițică, Mentor Ana Socalici

B

Using recycled materials in landscape design contributes to waste reduction by repurposing resources that would otherwise be discarded. This approach aligns with the principles of a circular economy, in which materials are continuously reused and recycled, thereby minimizing reliance on new raw materials and reducing overall waste generation.

The integration of recycled rubber into landscaping projects represents a strategic effort towards reducing rubber waste and promoting a circular economy. This approach repurposes materials that would otherwise contribute to landfill overcrowding, assigning them a new function in urban spaces. Recycling used rubber for household items and outdoor applications presents a sustainable solution that reduces waste. For instance, discarded tires can be processed into durable furniture, such as chairs and tables, offering an environmentally friendly alternative to conventional materials.





By incorporating recycled rubber into functional everyday objects, environmental impact is reduced, and the use of reusable materials is promoted. This approach provides both aesthetic and practical solutions for homes and outdoor spaces. Furthermore, it underscores the significance of innovation in recycling and sustainability by transforming a problematic material into a valuable resource.

Using recycled materials decreases the demand for extracting and processing new resources, activities that often contribute to environmental degradation. Recycling and repurposing rubber in landscaping projects help lower the ecological footprint associated with the production of new construction materials. Integrating recycled materials into landscape design exemplifies the principles of a circular economy, in which products and materials remain in use for as long as possible. This strategy not only reduces waste by extending resource lifespans but also encourages sustainable production and consumption systems.

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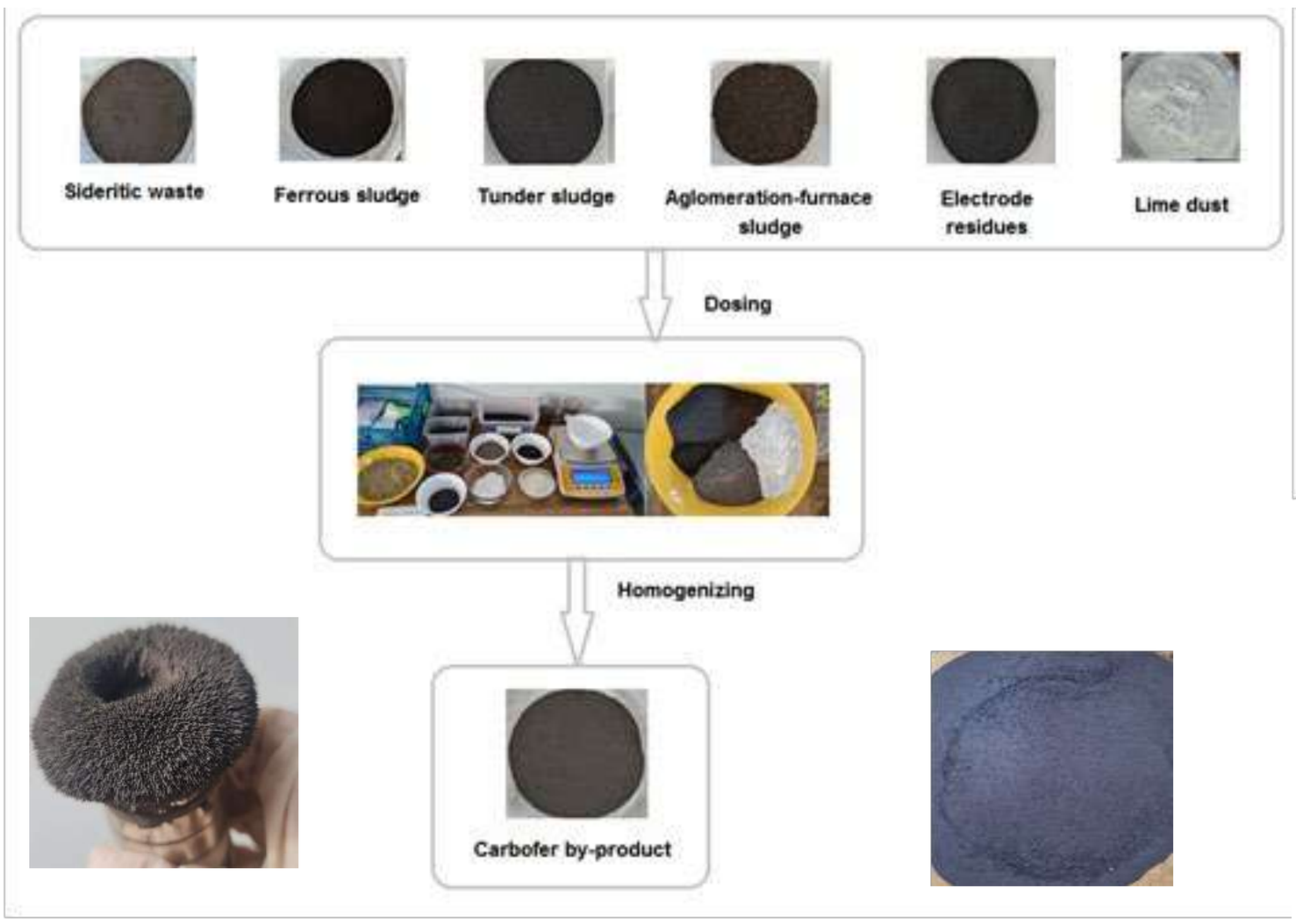
POSSIBILITIES FOR VALORIZATION OF IRON ORE WASTE IN INDUSTRY

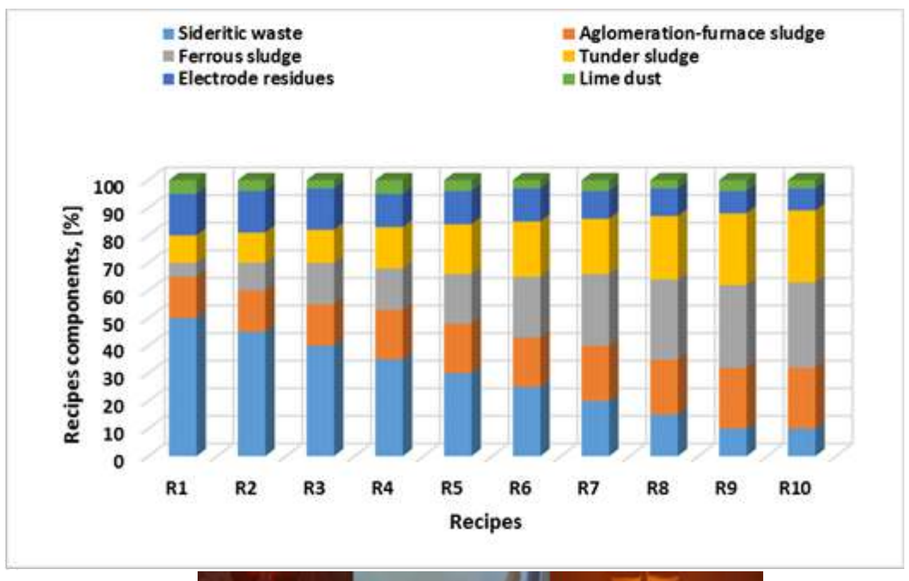
PhD Thesis

Author/s:Adriana Bobora, Ana Socalici

B

The Carbofer process represents a viable solution for utilizing powdery wastes (tailings from the mining industry, sludges and dust from the steel industry, slags resulting from secondary steel treatment, etc.) generated by the steel and mining industries. The steel industry produces significant quantities of powdery wastes rich in iron and carbon, a substantial portion of which is still being landfilled. Some of these wastes can be successfully used to produce the Carbofer by-product. This product is used as a foaming agent for slag in steel production, thereby recycling the waste in a manner that is environmentally, technically, and economically sustainable. The Carbofer product is also effectively used in blast furnaces for pig iron production.







The experiments and tests were conducted in the laboratories of the Faculty of Engineering in Hunedoara. The resulting Carbofer by-product is a material used for slag foaming in the steelmaking process within electric arc furnaces. Working with foaming slag is a common practice in electric furnaces.

To produce the Carbofer by-product, a series of wastes are used. By reusing these wastes in the steel production flow, economic, technological, and ecological advantages are obtained (reducing the quantities of waste landfilled). In industrial practice, in steelmaking aggregates, the use of the Carbofer by-product, which has a high content of C and Fe, ensures a good dissolution of FeO in the slag. This results in a good oxidation of carbon in the molten bath and an intense foaming of the slag, thus ensuring the operation with a covered arc. The laboratory results regarding the production of the Carbofer mechanical mixture support its viability as an optimal recycling solution for the analyzed powdery wastes in the steel industry.

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C

Computer sciences

Electronics

Electrical engineering

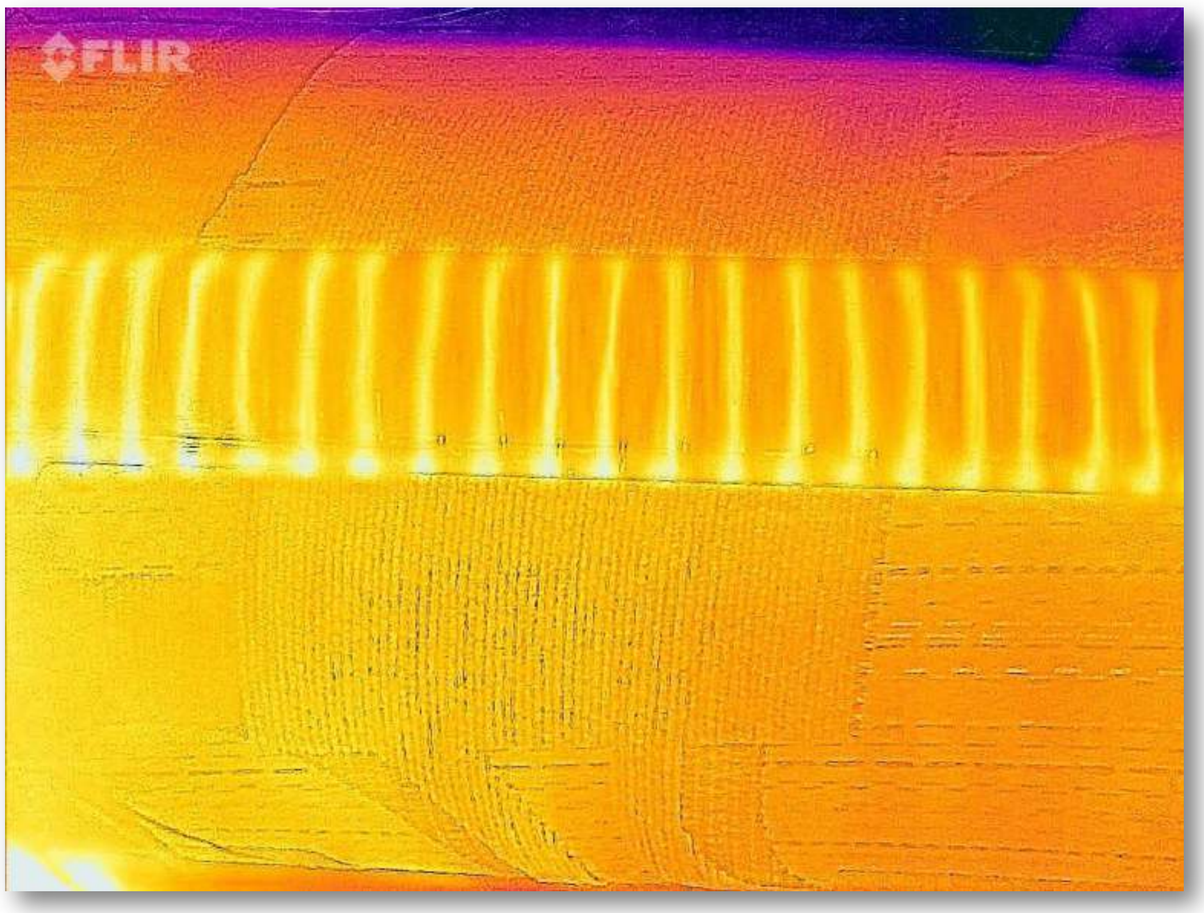
INFRARED RULER

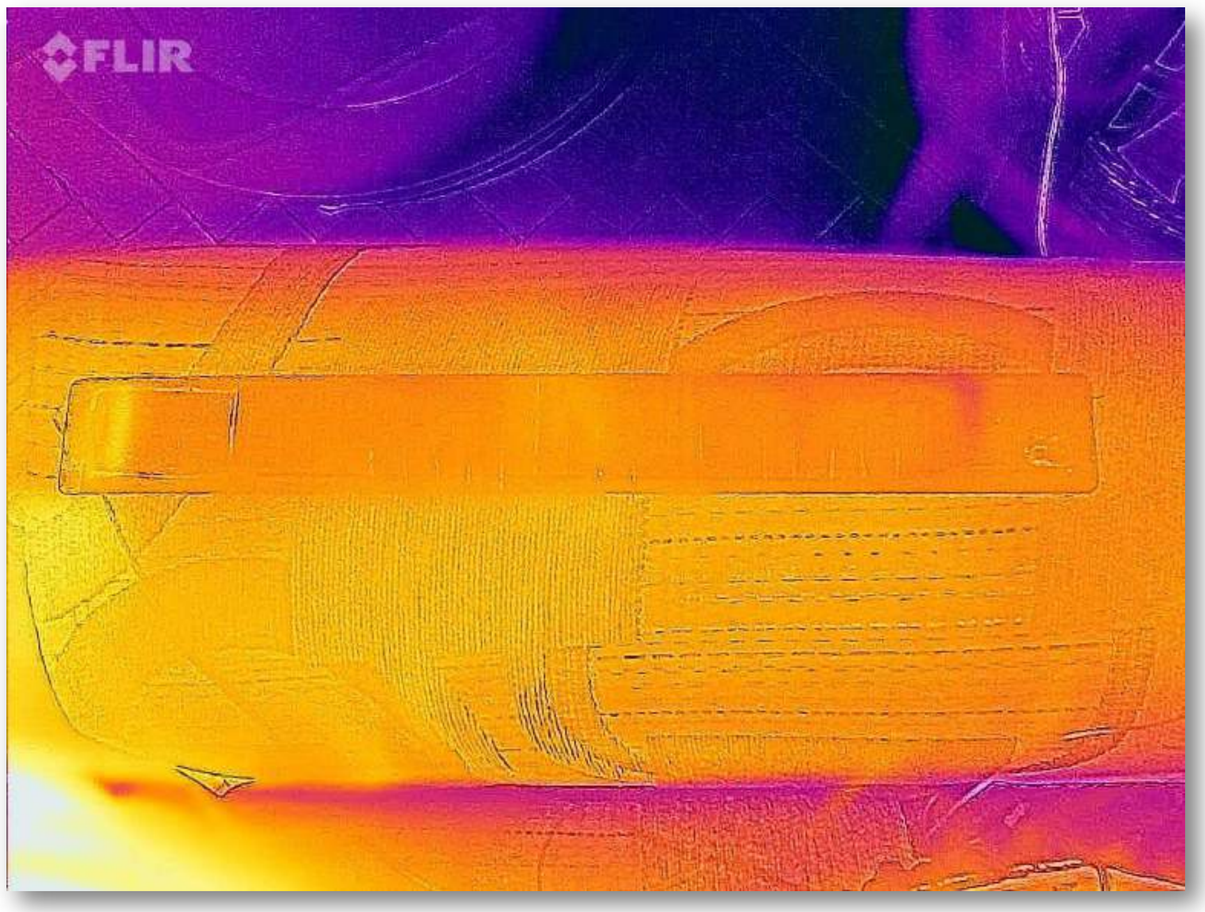
Patent/project number: A/00388/2024
Author/s: Șaptebani Neta Ionelia, Mocan Liviu Marian, Dragan Florin, Ivascu Larisa, Pislaru Marius

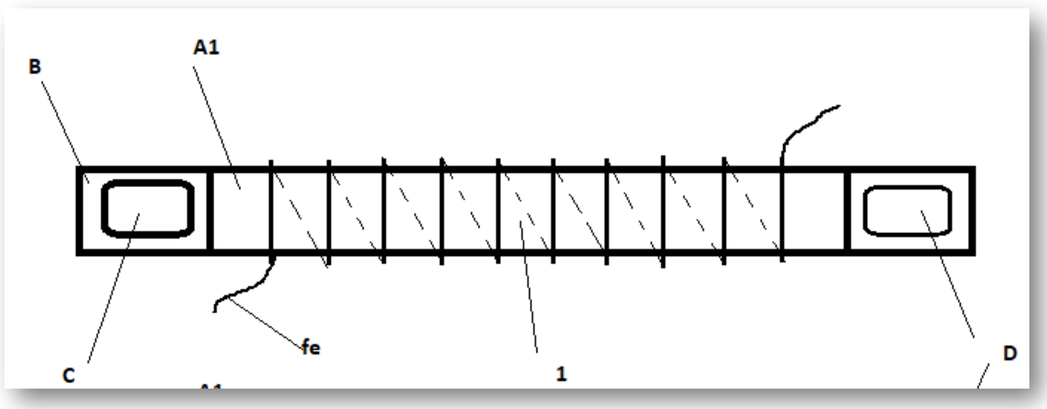
C

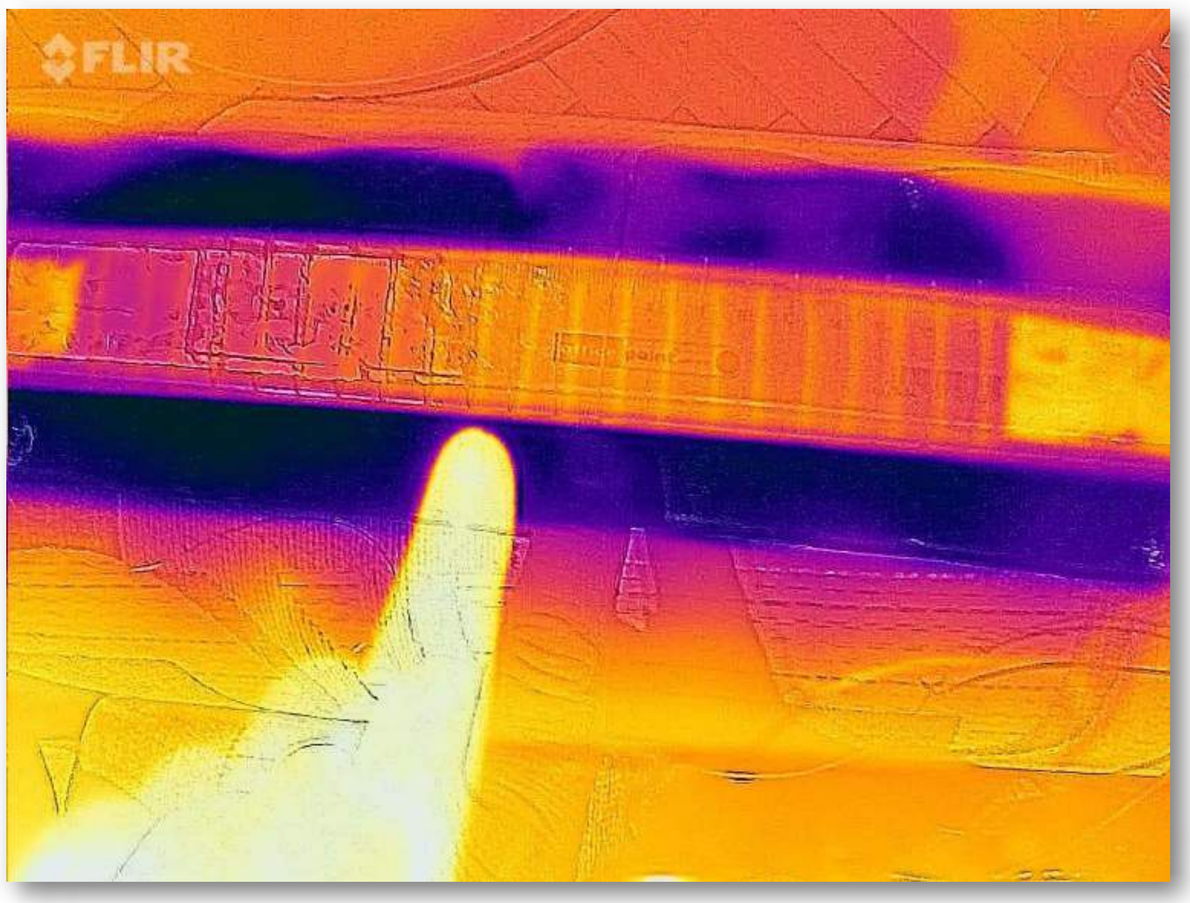
The invention relates to an infrared ruler used for measuring linear dimensions. This is achieved by wrapping an electrically heated conductor wire around an assembly of insulating plates, with a centrally located metal plate cooled by forced ventilation or cooling elements. Alternatively, the wire can be arranged on an insulating structure with compartments through which a cooling fluid circulates, either in a single compartment or in systems with opposing or multiple flows, ensuring the uniformization of the thermal field.

The ruler is useful in research and design, allowing measurements of thermal zones in heating-cooling systems, optimizing air flows, designing and thermally optimizing electrical and electronic circuits, as well as other equipment that requires temperature management.









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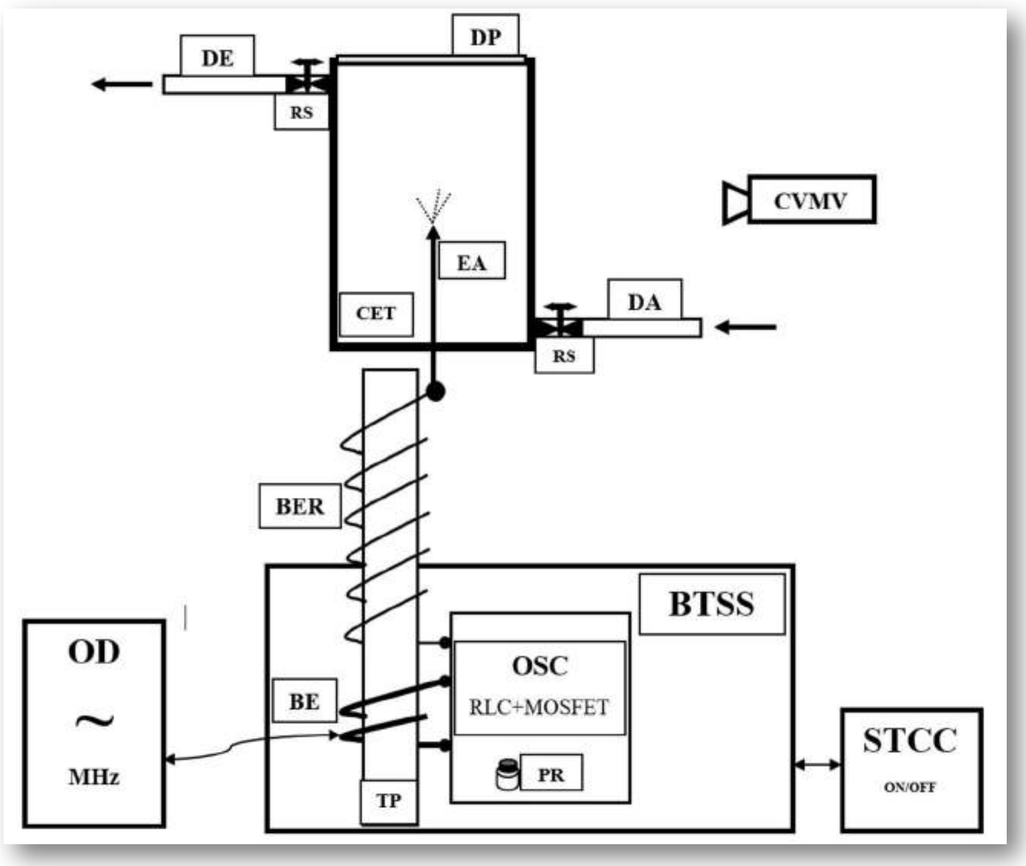
STAND FOR STUDYING THE IGNITION OF EXPLOSIVE GASEOUS MIXTURES BY THE CORONA EFFECT

Patent/project number: CBI A 2022 00706

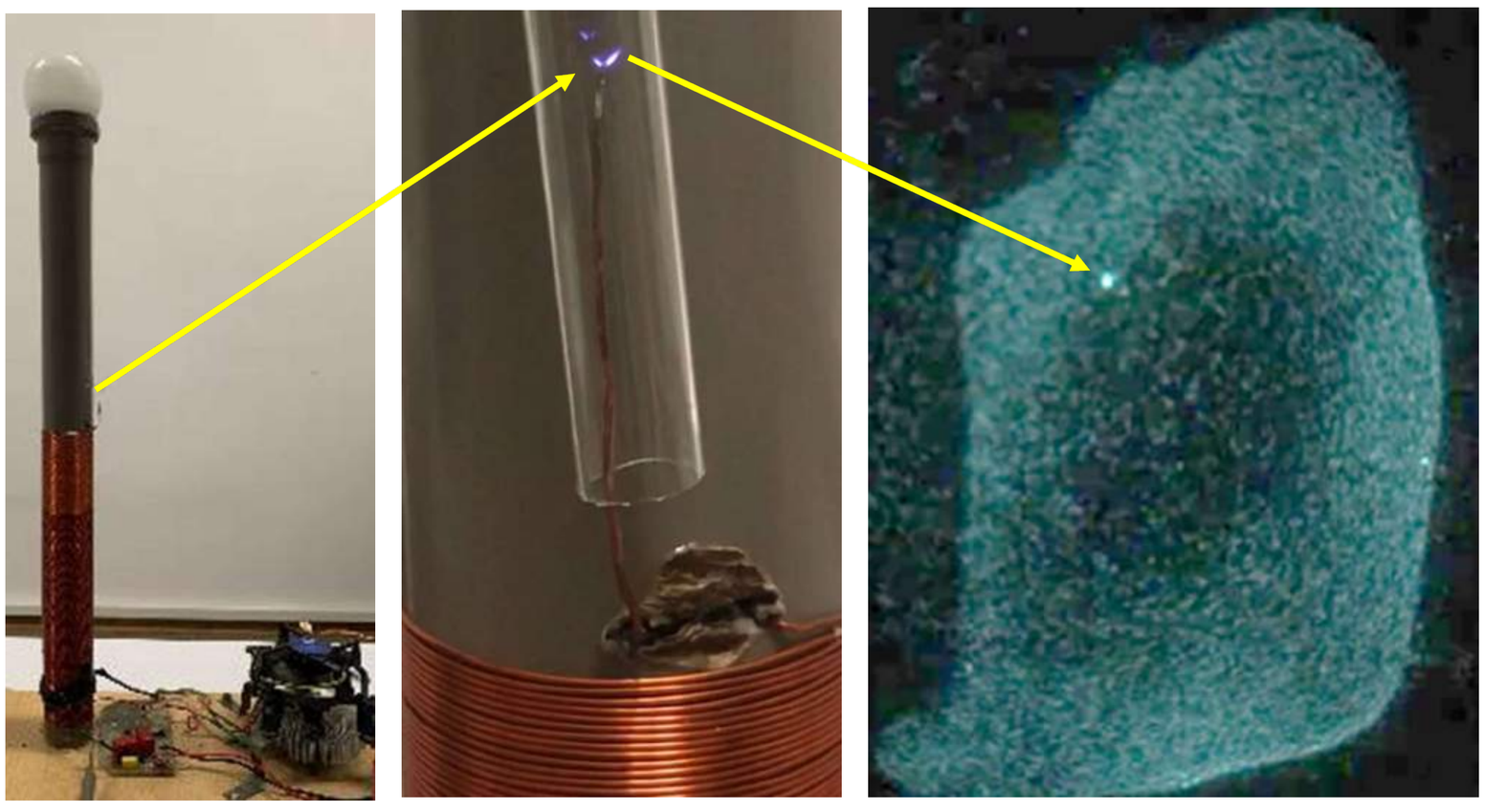
Author/s: Emilian Ghicioi, *Irina Nalboc, Artur George Gaman, Daniel Pupazan, Maria Prodan, Nicolae Vlasin, Doru Cioclea, Sorin Burian, Robert Laszlo, Cristian Nicolescu, Daniel Florea, Adrian Jurca, Adrian Simon-Marinica, Dan Gabor, Vlad Pasculescu, Sonia Suvar, Andrei Szollosi, Florin Manea, Ligia Tuhut, Cosmin Colda, Marius Suvar, Emeric Chiuzan, Zoltan Vass*

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This invention presents a stand for investigating the ignition of explosive gas mixtures using the corona effect. It features a transparent explosion chamber with a single sharp electrode, connected to a solid-state Tesla coil, for generating the corona effect. Equipped with gas inlet/outlet nozzles, a pressure relief membrane, and a high-speed camera, the stand captures critical data such as ION channel formation, ignition induction time, and flame front propagation. The results are vital for assessing explosion risks in industries handling flammable gases.



The stand for studying the ignition of explosive gas mixtures by the corona effect is characterized by consisting of a transparent explosion chamber, into which a single sharp electrode is introduced. This electrode generates the ION channel, the corona effect and is connected to the free end of the resonant-excited coil, of the solid-state Testa coil assembly. The transparent explosion chamber is also equipped with an intake nozzle with a separation valve for introducing the pre-mixed flammable gas at concentrations within the explosive range, an exhaust nozzle with separation valve for evacuating the reaction products, as well as for pre-purging with a gaseous mixture. It also features a pressure-relief membrane for explosion overpressure, and a high-speed camera to record the physical and chemical phenomena, and for obtaining specific information about the explosive mixture: the formation of the ION channel, the introduction time for ignition, and the propagation of the flame front through the unburnt mixture.



Less common in unwanted gas explosion events, this phenomenon must nevertheless be considered as an effective source of ignition of combustible mixtures. The data obtained using the stand, are useful in evaluating the hazards and explosion risk posed by industrial installations where flammable gases are processed, stored, or used under pressure. This information can be used to develop preventive measures against corona effect ignitions in case of accidental gas leaks.

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KOATEEN: A Gamified Mobile Health App to Promote Balanced Nutrition and Healthy Habits in Teenager

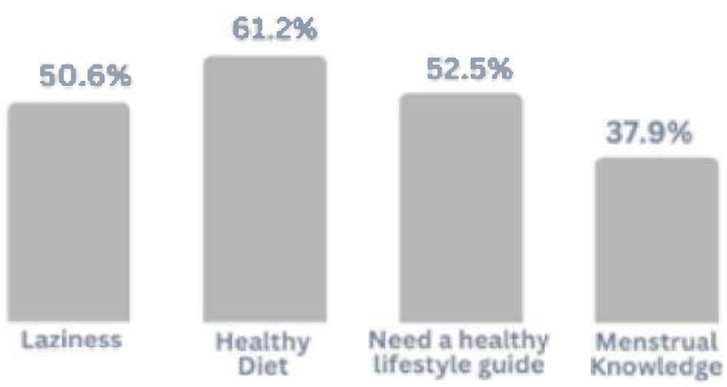
Patent APPLICATION: No. 000825052/2024

Authors: Arefa Fiskiawan - Audrey Syafa - Alyssa Wahyudi - Naura Ramaditya - Neysa Maulida (SMA Thursina IIBS)
Mentors : Risa Nur Fitriyana, S.Psi and Ali Akbar, S.Pd

Adolescence is a critical developmental stage where teens undergo significant physical and psychological changes. They often face insecurities due to unrealistic beauty standards, leading to unhealthy diets and habits. A balanced diet is essential for overall health, but many teenagers do not monitor their intake, prefer lazing around over exercise, and engage in less physical activity. Our study found that 62.9% of teenagers desire a platform to help them adopt healthier habits, prompting the creation of the Koateen app. The Koateen app aims to assist users in developing new habits and leading a healthier lifestyle by providing features like KoaJournal, KoaFit, KoaChef, KoaFacts, KoaSleep, and KoaLander. Koateen's goal is to increase the stability of the unstable generation by encouraging healthier lifestyles and fostering a more conscious generation with the help of technology.

ANALYSIS

Based on the surveys we've conducted with a total of 103 respondents around the world, an overall result was given:



DESIGN

The Koateen app is designed to help teenagers easily lead healthy lifestyles. Its notifications remind users of aspects of their food, physical, or sleep patterns. The app is measured according to BMI and BMR to adjust to the needs of each teen's body.

Our Memberships

Super Koa
Rp. 25.000/Month
All Features

Koateeners
Rp. 250.000/Year
Unlimited Access & All Features

Baby Koa
2 Weeks Free Trial
Limited Access

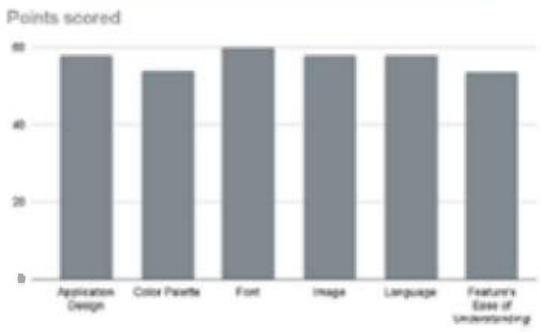
DEVELOPMENT

Wireframe
↓
Mockup
↓
Feedback regarding UI/UX and customer preference
↓



KOATEEN

IMPLEMENTATION



A UI/UX evaluation survey was conducted to evaluate KOATEEN's application design and feature focusing on the application design, color palette, font, image, language and feature's ease of understanding.

EVALUATION

Strengths
Menstrual Tracker & Eye friendly color pallete

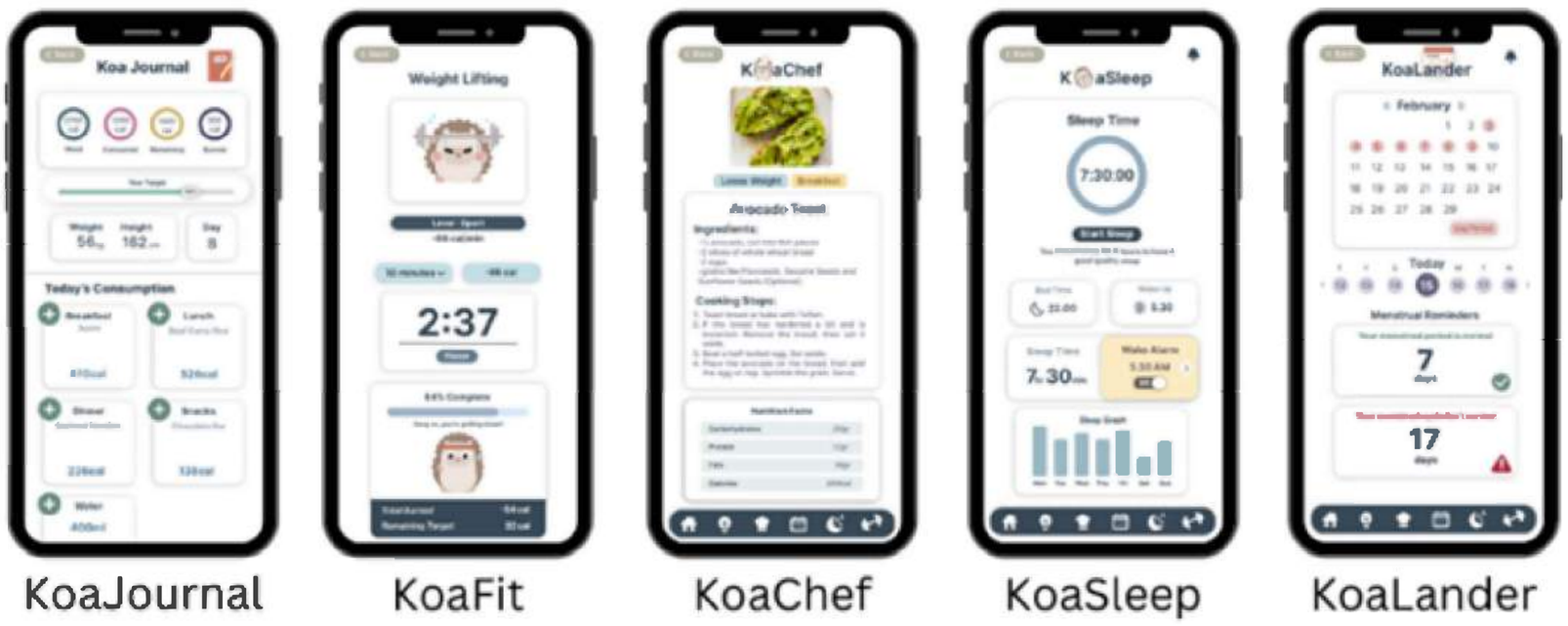
Weaknesses
Still in beta-prototype

Opportunities
Helping teens to have a healthy lifestyle

Threats
Has many competitors

- Validated by Nutritionist
- Validated by Media Expert
- Copyright © Koateen

PROTOTYPE OVERVIEW



KoaJournal | KoaFit | KoaChef | KoaSleep | KoaLander

CONCLUSION

Adolescents aged 13 to 18 face health challenges influenced by diet, physical activity, and lifestyle choices. **KOATEEN** addresses these issues by empowering teenagers with knowledge and resources to **manage their lifestyles, focusing on balanced dietary practices for improved overall well-being.**

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REFERENCES

"Sea Bedder" Innovative Mapping Tool To Mitigate Coral Reef Damage From Ship Anchoring Practices Using AIS Data For Effective Conservation Strategies

Patent no. EC002024250700, patent officially issued by the Directorate General of Intellectual Property (DGIP), Ministry of Law, Republic of Indonesia on 12 December 2024

C

Author/s: Risala Sujat Swara, Novi Istiyani, Nikken Permata Rahmasari

Description

Sea Bedder is an innovative solution designed to protect coral reefs from physical damage caused by unregulated ship anchoring. Coral reefs, often referred to as the "rainforests of the sea," are critical ecosystems for biodiversity, coastal protection, and economic activity. Indonesia, home to 750 coral species across a total reef area of 2.53 million hectares, holds the largest coral reef system in the world. However, 30.4% of Indonesia's coral reefs are in damaged or poor condition due to human activities such as anchoring, reef walking, and chemical pollution from tourism. For example, in Gili Trawangan, 55% of coral reefs are severely degraded due to anchor drops in ecologically sensitive areas.

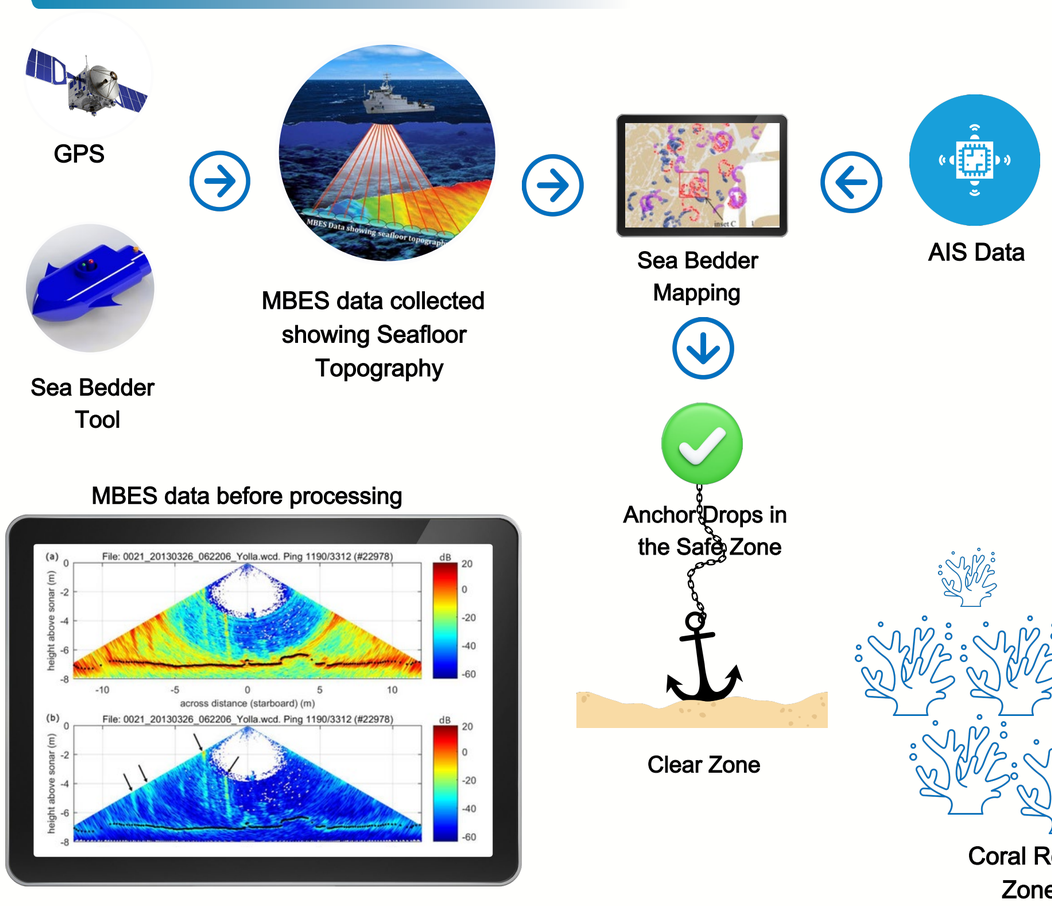
Sea Bedder uses AIS-based technology and real-time mapping systems to guide vessels to safe anchoring zones, ensuring ships avoid fragile coral ecosystems. By minimizing the impact of anchoring activities, Sea Bedder supports sustainable tourism, preserves marine biodiversity, and helps restore balance to fragile marine ecosystems. Its pilot project in Gili Trawangan demonstrated significant potential for reducing reef damage and creating a scalable conservation solution.





The anchors of tourist ship cause severe damage to coral reefs, turning vibrant ecosystems into lifeless structures. This destruction disrupts marine biodiversity and can take hundreds to millions of years for coral reefs to naturally recover to their original state.

How it works?



1. Data Collection:

- **Sea Bedder integrates AIS (Automatic Identification System) data to track the real-time location of ships in high-traffic areas.**

2. Coral Mapping:

- **A detailed map of coral reef zones is created, identifying protected areas and safe anchoring zones.**

3. Data Processing:

- **The system processes AIS data to determine a ship's position relative to coral reefs and overlays it on the mapped zones.**

4. Real-Time Guidance:

- **Sea Bedder provides real-time alerts and guidance to ship operators, directing them to safe anchoring zones away from coral reefs.**

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ECONOMICAL SYSTEM FOR AUTOMATIC ADJUSTMENT OF THE POWER FACTOR, WITH CAPACITOR BANKS, IN THREE-PHASE LOW-VOLTAGE INSTALLATIONS

Patent no. A 00491, 04.08.2020

Authors: Gabriel Nicolae Popa, Corina Maria Diniș, Iosif Popa

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Description: The invention relates to an economical system for automatic regulation of the power factor with capacitor banks in three-phase low-voltage installations. The technical problem is the design of an economical system of automatic regulation of the power factor, with capacitor banks, for three-phase low voltage installations, which uses a three-phase static electronic power relay common to all stages of capacitor banks, to improve the power factor in three-phase low-voltage installations. It consists of a current transformer (which measures current in a phase), a VAR-metric controller with microprocessor, two small capacity PLCs, a three-phase static electronic power relay, twelve electromagnetic contactors and six capacitor banks (Figs.1,2).

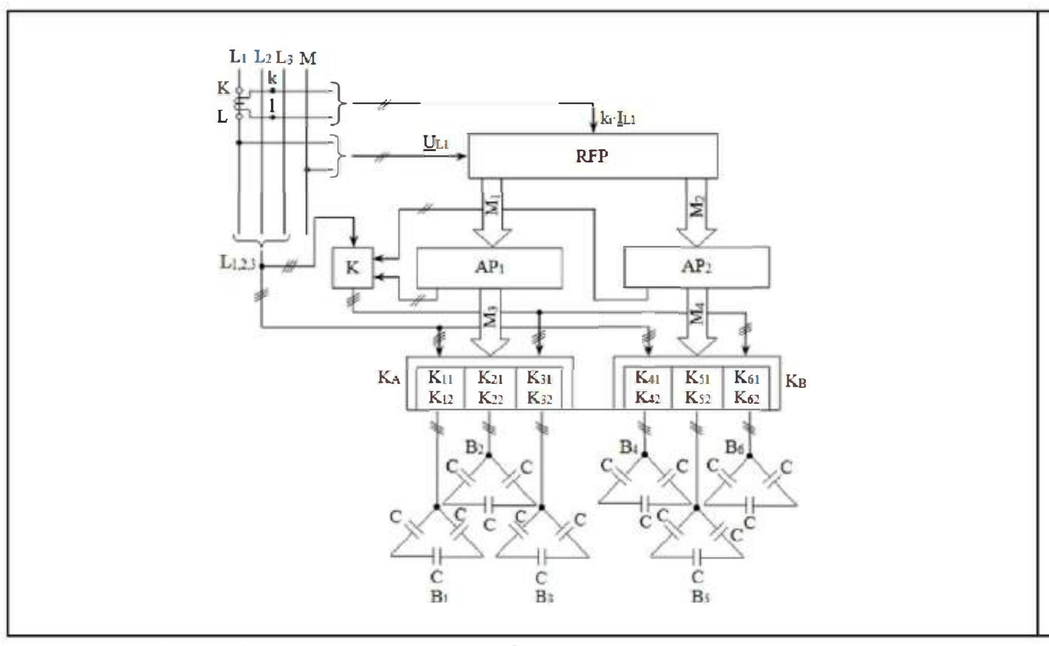


Fig.1. Block diagram of the economical system for automatic adjustment of the power factor.

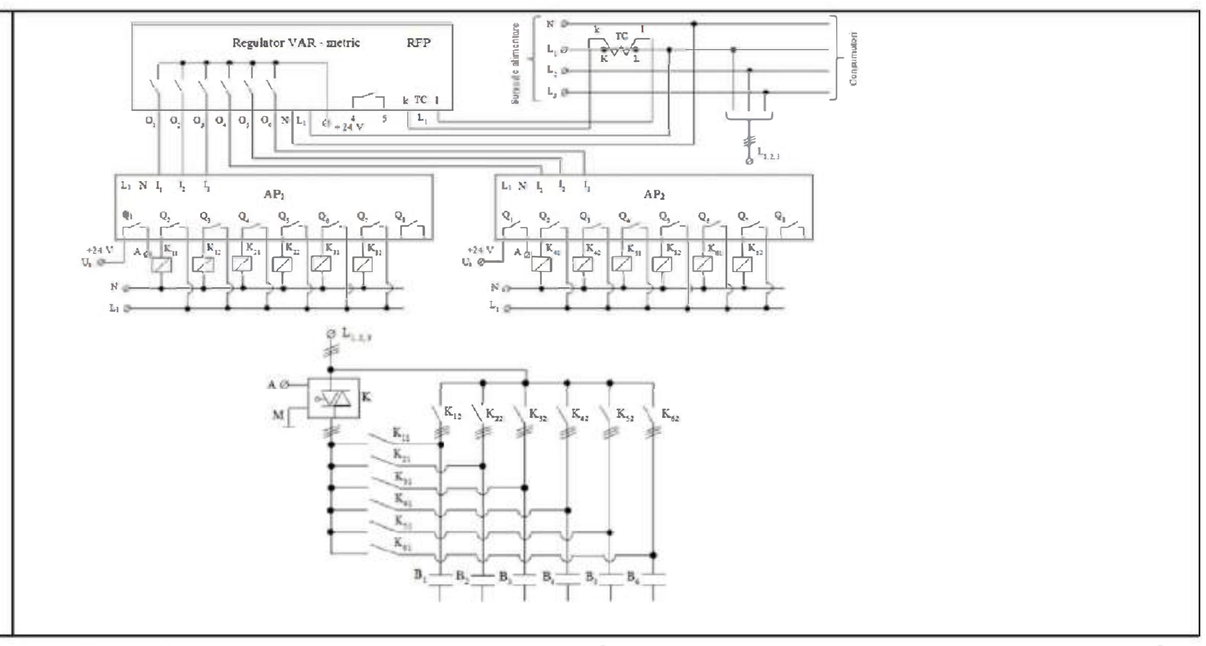


Fig.2. Wiring diagram of the economical system for automatic adjustment of the power factor.

The advantages of the invention are the following: the currents at the connection of the capacitors are much diminished, from (20-50) xIn to In; switching is done at zero voltage; no electric discharge occurs at switching; high reliability; lower costs than when using a three-phase solid state relay for each capacitor bank; very high input/output isolation voltage; does not generate disturbing electromagnetic fields; superior service life compared to systems where the connection of capacitor banks is made with conventional contactors.

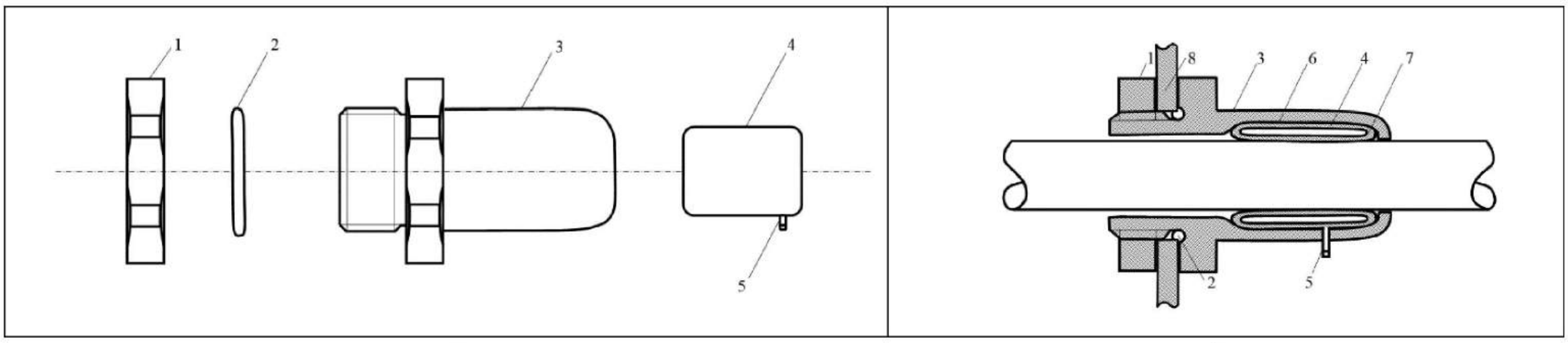
Contact: Gabriel Nicolae Popa, e-mail: gabriel.popa@fih.upt.ro tel. 0040254207541

METAL GLAND FOR LARGE DIAMETER ELECTRICAL CABLES

Patent no. 133730, 30.04.2024

Authors: Dan Ciortea, Gabriel Nicolae Popa

Description: The invention relates to a single-body metal gland intended for sealing large diameter cables or metal pipes, when passing them through the wall of an enclosure. The gland consists of the metal body, the toroidal chamber with filling - emptying valve, the rubber gasket and the locking nut. In the body of the gland is a rubber chamber with valve (Fig.1.a). The rubber chamber with the valve is the sealing element between the outer surface of the electric cable and the inner surface of the gland body. An inert gel is inserted under pressure into the rubber chamber which inflates the toroidal chamber to its maximum contact with the outer surface of the cable or pipe. The deformation of the toroidal chamber allows the perfect sealing regardless of the geometry of the large section electric cable (Fig.1.b).



a. b.

Fig.1. a. The gland components for large diameter electrical cables or metal pipes; b. Longitudinal section by gland after sealing a large diameter electric cable or metal pipes.

The metalic gland can have various areas of use:
-transmission, distribution and use of electricity;
-machine and plant manufacturing industry;
-metal drive cabinets.

The single-body metalic gland has the following advantages: it is simple, having only four component elements; it has a low-cost price; adapts well to irregular surfaces of large diameter reinforced electrical cables; can be used for a wide range of electrical cables of different diameters, compared to other types of glands; the sealing process of the cable / pipe is performed in a very short time, on the order of seconds, it does not require a torque wrench or special technical skills; the amount of air initially existing in the toroidal chamber acts as a buffer element and allows maintaining the contact pressure between the toroidal chamber and the external insulation of the cable; it is reliable in operation.

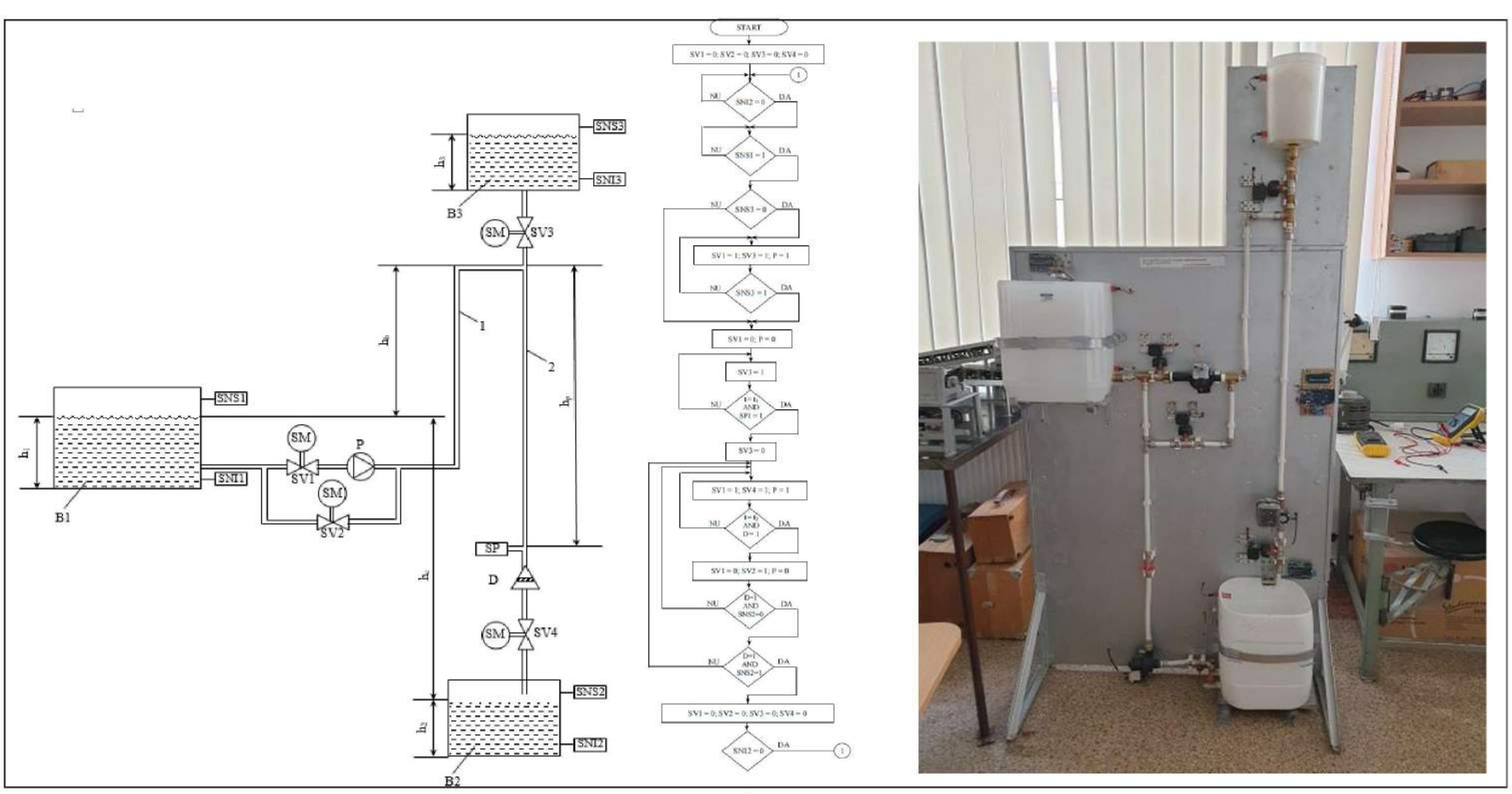
Contact: Gabriel Nicolae Popa, e-mail: gabriel.popa@fih.upt.ro tel. 0040254207541

AUTOMATIC SIPHON INSTALLATION

Patent no. A 00492, 04.08.2020

Authors: Gabriel Nicolae Popa, Iosif Popa

Description: The invention relates to a hydraulic installation which can be used to transfer a liquid between two basins, the first for storage and the second for feeding consumers, located at different levels at which the route of the supply pipe must pass, due to natural causes, over the water level in the accumulation basin. The hydraulic flow pump is used for a short time, and the principle of the siphon is used to transfer the liquid. The proposed installation has the role of transferring the liquid between two basins by achieving a significant saving of electricity. The hydraulic installation is connected between three basins: two main basins and one for filling and aeration with small capacity (Fig.1.a). The control of the siphon system can be done with microcontroller or PLC (Figs.1.b,c).



a. b. c.

Fig.1. a. Block diagram of the automatic siphon system can have various fields of use; b. The flowchart of the program; c. Picture of the laboratory stand.

The automatic siphon system can have various fields of use:
-at the drinking water supply installations of the localities;
-in mining operations;
-other industrial branches;
-in agriculture.

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DRY CYLINDRICAL-TYPE ELECTROSTATIC PRECIPITATOR WITH PARALLELEPIPED HOUSING

Patent no. 132976, 30.04.2024

Author: Gabriel Nicolae Popa

Description: The invention relates to a dry cylindrical-type electrostatic precipitator with a parallelepiped housing, according to the invention, for low power plants that used fossil fuels or dry wood. The first two sections work on the electrostatic principle. The precipitator consists at the bottom, a gas distributor, two electric sections connected in series (without changing the gas flow), used to collect dust particles with larger diameters, which can be supplied from two high-voltage sources, which can operate at different voltage levels, and even with different forms of voltage. The collecting electrodes are cylindrical-type and the discharge electrodes can be uninsulated or insulated. The third collection section consists of an electrostatically charged fiber filter for collecting small particles (Figs.1,2).

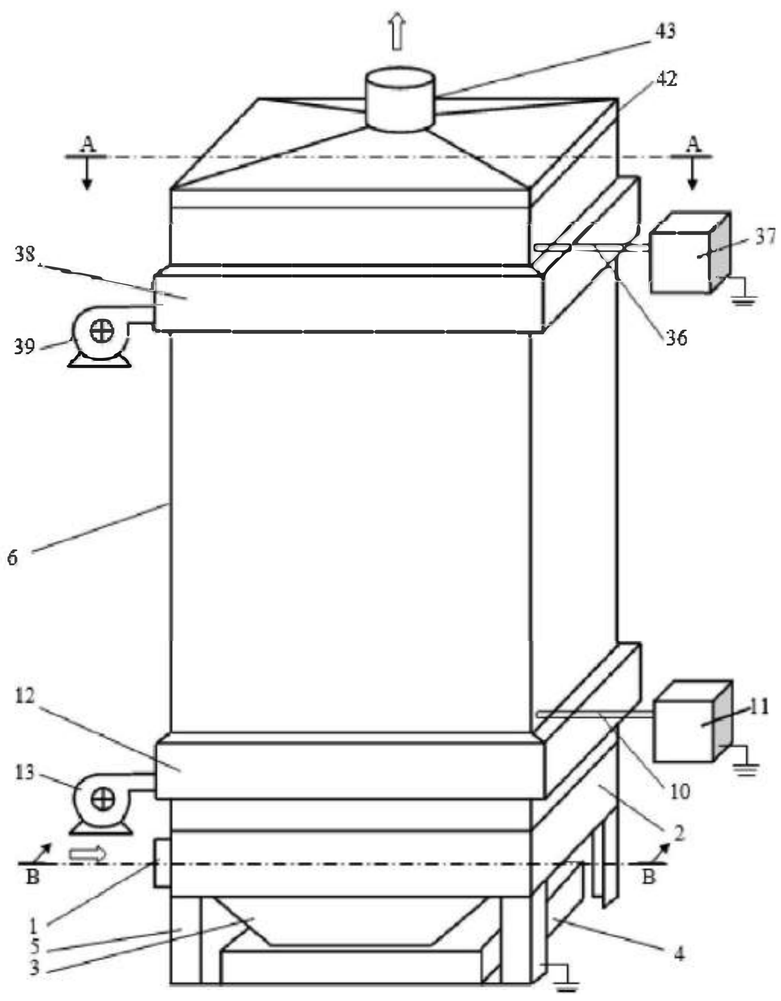


Fig.1. Dry cylindrical-type electrostatic precipitator with parallelepiped housing.

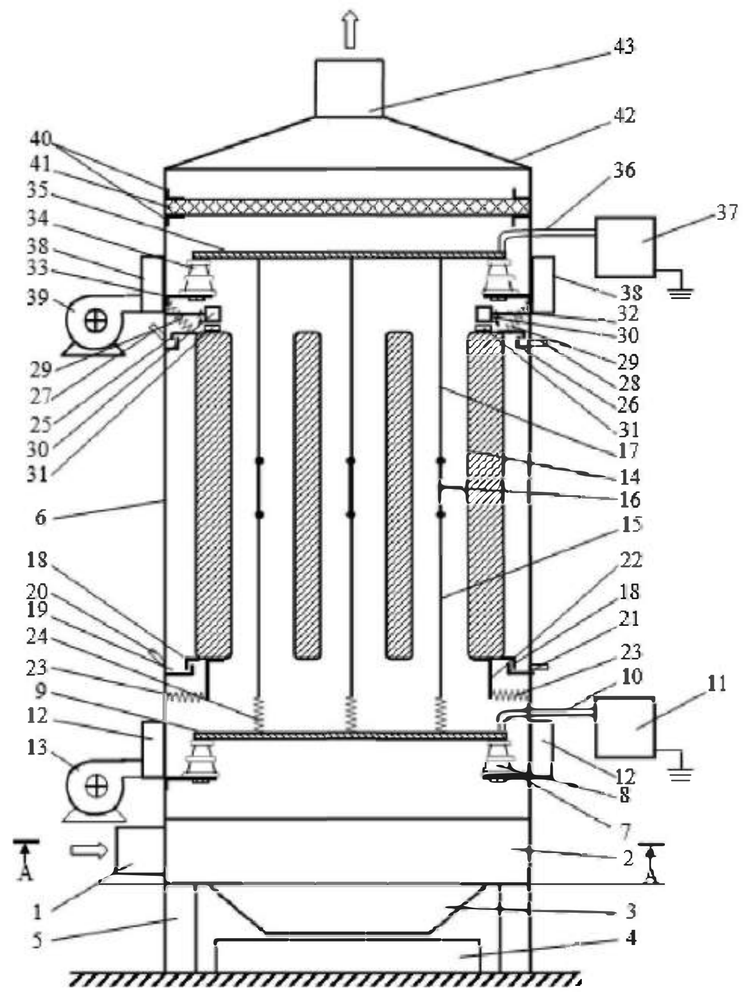


Fig.2. Cross section A-A from Fig.1.

The precipitator has the following advantages: has three filtering areas; can be used in small thermal power plants (fossil fuels and dry wood); only the collecting electrodes can be shaken; the inlet distributor ensures constant gas flows; cleaning with pressurized air directed to high-voltage electrical insulators is ensured; the footprint is small.

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HEARTBEAT SMARTPHONE AUDIO CLASSIFICATION USING DEEP LEARNING

Research project

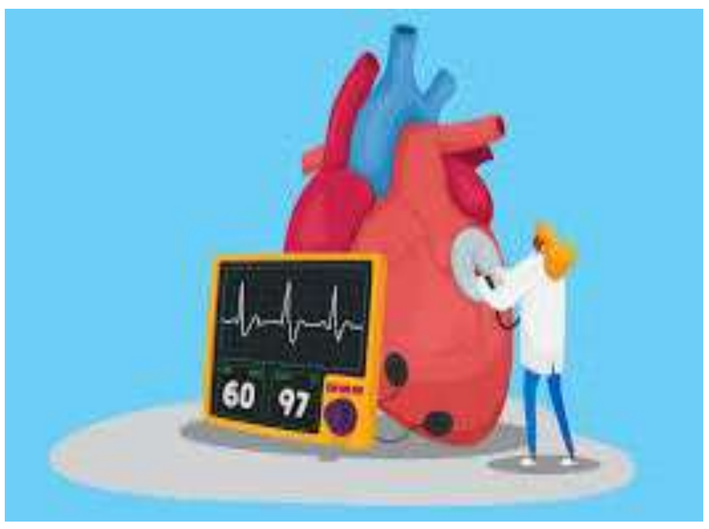
Authors: Mohamed Omer, Musab Alosaimi

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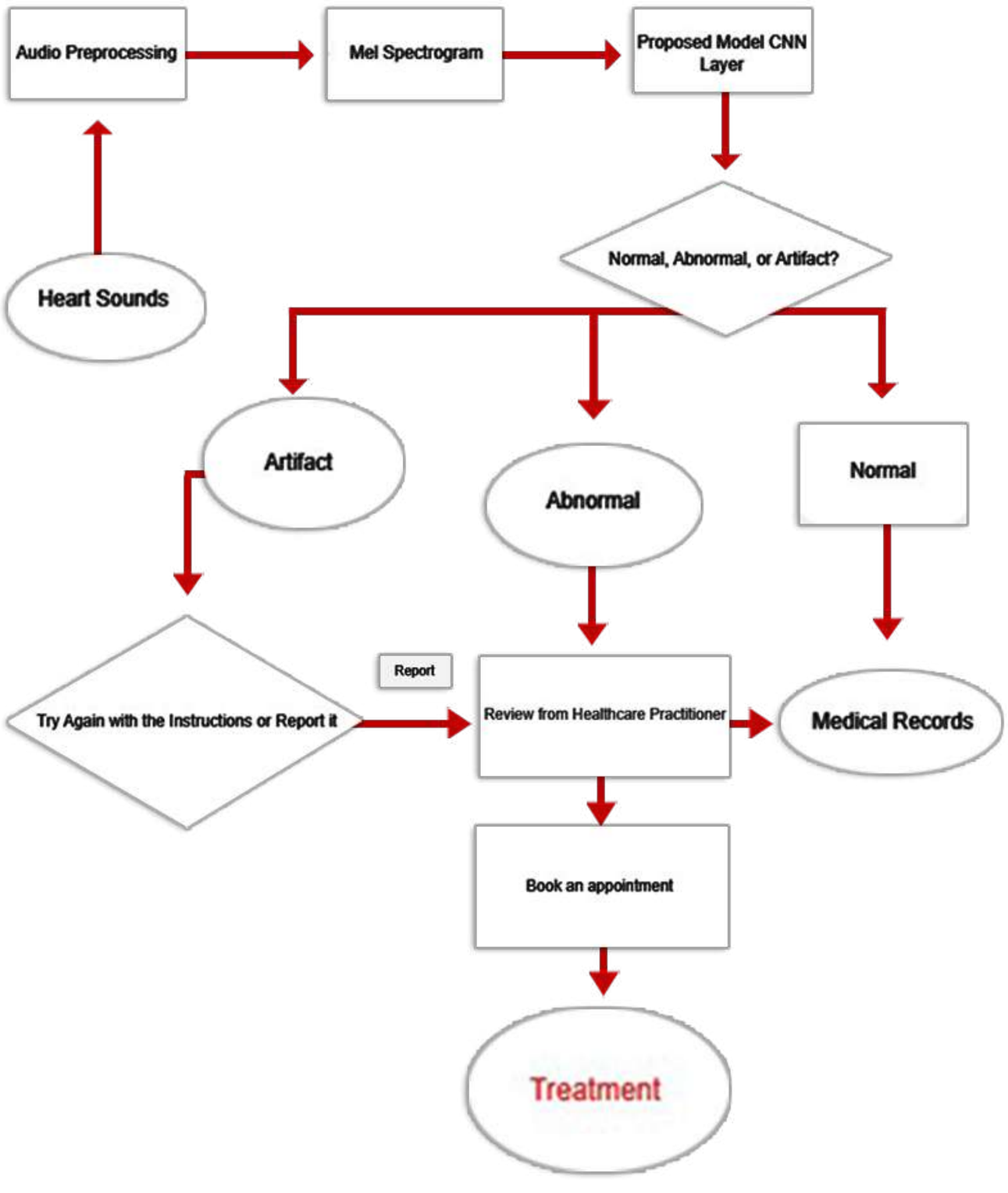
- KSA faces serious health challenges due to the high death rates from heart diseases, where it ranks 24th globally in this context.
- This necessitates enhancing health care and community awareness.
- In addition, the country is witnessing a spread of respiratory and obstructive pulmonary diseases, which requires enhancing awareness and taking preventive measures to address these ongoing health challenges.

The core Concept of Utilizing Deep Learning for Smartphone Audio Classification of Heartbeat Signals

- ✓ A mobile App designed to listen to and analyze heart and lung sounds aims to detect health changes early, offering immediate reassurance to users.
- ✓ By facilitating communication with medical professionals, it fosters early detection, thereby streamlining healthcare and enhancing overall well-being effortlessly.



The proposed Mobile App's Flow Chart Diagram





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DIGITAL TRANSFORMATION - AN APPROACH IN THE OIL AND GAS INDUSTRY IN A LOCAL, REGIONAL AND GLOBAL CONTEXT

C

Scientific paper

Author/s: Valentin-Paul TUDORACHE[1], Niculae-Napoleon ANTONESCU

In a global context where governments are setting increasingly ambitious targets to reduce carbon dioxide emissions while also addressing a greater presence of renewables in their local energy mix, the oil and gas industry needs to turn to new clean technologies - to find the best strategies to re-establish itself in the new era of the energy sector and beyond. It is estimated that in the new era of the oil industry - despite a price boom - oil and gas will provide more than 50% of the world's energy needs by 2050. As organisations in the oil industry accelerate the pace of their economic diversification strategies, this is driving an even greater and faster adoption of sustainability measures across the industry. Optimism, in terms of resource abundance in a new era of major social, technological and political trends, must be that of adapting to the current demands in which oil industry organisations operate.

In a complex world, nobody can do everything. In the quest for cost reduction and profitability in the short to medium term, both operators and organisations in their field need to collaborate more, exploring multiple strategies to succeed in this digital transformation. Clearly, more and more oil and gas organisations are testing - often successfully - a growing range of technologies and solutions to help them become more sustainable, reduce costs and, at the same time, reduce carbon dioxide emissions into the atmosphere.

There are many different components of digital transformation, but some common examples include the use of data analytics for production optimization, the use of drones and robots for exploration and maintenance, and specifically the use of virtual reality for training and simulations. An offshore platforms approach to better use of data, specifically properly implemented data analysis systems and tools can overcome the operational complexity of offshore platforms, quickly delivering returns of up to 40-50 times the initial investment and thus reducing environmental impact by reducing costs, accidents and bottlenecks. Advances in technologies, falling cost through digitisation and exponential growth in device connectivity offer not only a real opportunity to beat supply chain competition, but also potential material externalities for society at large. The use of digital technologies and how they are transforming the oil industry, such as: Big data; AI (Artificial Intelligence); IoT (Internet of Things/Things); RPA and AI (Robotic Process Automation and Intelligent Automation); AR and VR (Augmented Reality and Virtual Reality); Blockchain (Data Integrity) place a strong emphasis on Cyber Security (CS) and Industrial Control Systems (ICS) security, but also on worker protection and security, industrial assets, i.e. critical infrastructure and physical security; (*see Figures below*). Of course, it is no coincidence that the focus on Industry 5.0 is accelerating. Today, Industry 5.0 is a complement to Industry 4.0 and focuses mainly on a sustainable, human-centred and resilient industry.



Source: www.google.com (processed)

Overview: Offshore platform
(use of data analysis systems and tools with digital technology)



Source: www.google.com (processed)

Digitisation of the oil sector (*Upstream, Midstream and Downstream*)



Source: www.google.com (processed)

Overview: Using digital technologies

Today – ***in the DIGITAL ERA*** – several modern orientation technologies are established that can answer these problems, such as: *Rotary Steerable System; Reel Well Drilling; Geosteering Drilling; Autonomous Directional Drilling*.

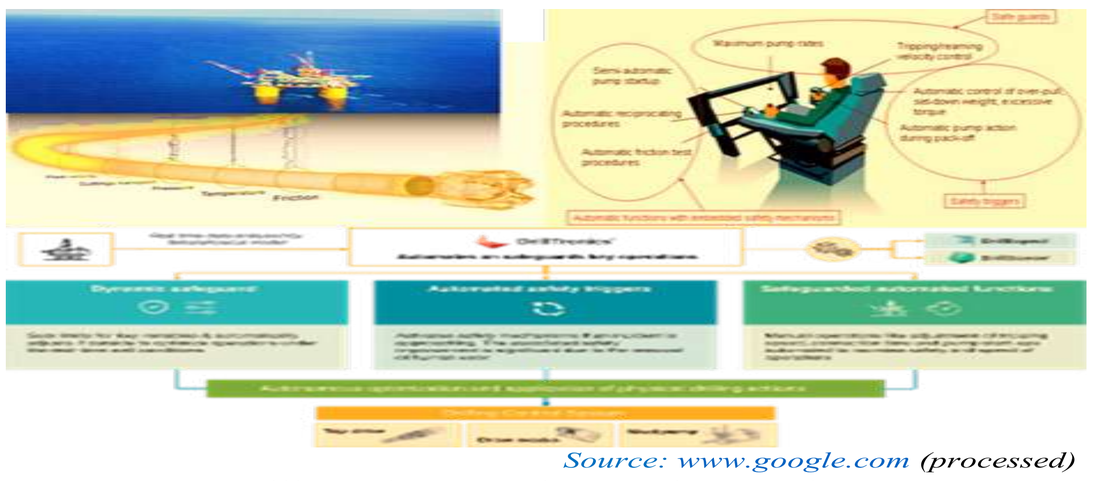
and which, use bottom motors and measurement devices while drilling (MWD), providing access to real-time data.

For example, **Autonomous Directional Drilling (***see Figure below***)** is a significant step forward for the industry's digital transformation, helping organizations achieve new levels of well construction efficiency, consistency and sustainability. This technology allows - within the drill string - a self-steering bottom assembly (BHA) capable of drilling through any section of the wellbore. As one of the four pillars of autonomous directional drilling, downhole automation capabilities drive directional adjustments as conditions are encountered to significantly increase penetration rates (POR) and improve well quality, leading to a potential for higher production and lower emissions.



Source: www.google.com

Overview: Autonomous Directional Drilling



Source: www.google.com (processed)

DrillTronics Functions and Data Flow

In terms of the offshore digitization initiative, today's drilling operations on offshore platforms range from DrillTronics (Drilling Automation), DrillScene (Real-time Well Transient Monitoring), DrillExpect (Drilling Simulation) to implementation integrated project Drill Well on Simulator, providing the oil industry with advanced modeling and analysis, respectively leading global services. For example, **DrillTronic** (*see Figure above*) reduces risk and ensure maximum drilling efficiency through automatic functions: automatic tripping; automatic friction tests; automatic reciprocation; automatic start of mud pump.

Advantages , recommendations and conclusion:

As advantages: Based on the recent World Economic Forum White Paper, new technologies are expected to support the oil industry by: 20% reduction in drilling-extraction costs; 25% reduction in maintenance costs (inspection and maintenance); 20% reduction in labour costs.

Is recommended: The digital transformation of the oil and gas industry needs to address all elements of the operating model (so from strategy and capabilities to organisational structure). Therefore, organisations in the oil and gas industry need to approach digitalisation from the perspective of building new capabilities and leveraging technology in all key aspects of the value chain.

As a general conclusion: It is already a recognised fact that every organisation that benefits from this trend where operations and relationships are fully digitised, or at least improved in this respect, will generate growth far beyond traditional operating models. So, digital transformation means progress and growth, although -in the present- with trillions of dollars already being spent globally on the digital shift.

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ASPECTS REGARDING OF OIL SLUDGE CLEANING FROM CRUDE STORAGE TANKS USING ROBOTS

C

Scientific paper

Author/s: Valentin-Paul TUDORACHE[1], Niculae-Napoleon ANTONESCU

It is known that crude oil extracted from the deposit contains, along with hydrocarbons, variable amounts of water with organic salts, but also mineral impurities from rock, such as: sand, clays, crushed rock. Also, crude oil contains components with high freezing temperatures and limited solubility in the mass of liquid hydrocarbons (for example: heavy paraffins, asphaltenes, carbenes, carbohydrates, asphaltogenic acids etc.) which tend to separate from the liquid mass and encompass mineral impurities. Thus, over time, a semi-solid layer is formed at the bottom of the tank that can no longer be drained, and crusts consisting of mineral impurities embedded in paraffin and other similar products are formed on the pipes of the heating coil inside the tank that copolymerize under the influence of temperature, strongly adhering to the surface of the metal. These deposits that can no longer be drained from the tank are called oil sludge. Through definition oil sludge is a hazardous waste of organic and inorganic nature that separates from crude oil and settles on the bottom of the tank following the technological storage process. Regarding the methods or techniques of oil sludge cleaning, obviously, several techniques for cleaning crude oil tanks are known, such as: manual cleaning, mechanized cleaning, or automated cleaning. [1],[2],[5],[6].

In the petroleum industry, there are different types of tanks that store or process fluids. Currently, the most widespread tanks are metal ones.

Metal tanks for storing liquid hydrocarbons are containers with capacities greater than 3 m.c. of different shapes and sizes, made of a wide range of materials, all working at atmospheric pressure.

However, due to their simple and inexpensive construction, vertical cylindrical tanks are the most widespread. Figure 1 shows a tank storage with capacities between 1,500 m3 and 50,000 m3, of metallic construction, cylindrical, located vertically, aboveground, with fixed or floating lid, with automatic measurement system of the quantity of crude oil stored and with fire extinguishing system, respectively. The vertical cylindrical tanks with floating lid (see Fig. 2.) have a floating roof, provided with floats on the surface of the stored liquid (thus, when increasing the volume rises, and when decreasing the volume decreases), being a response to the need to diminish, as much as possible, the leakage of volatiles during storage (losses by evaporation of light fractions).

One of these is the crude oil reservoir, which can be seen in Figure 3. (for example: the tank has a capacity of 50,000 m3, is equipped with a floating metal lid, has a height of 18 m, a diameter of 60 m and a bowl of 10,000 m.p).



Fig. 1. Tank storage for storage of crude oil [11]

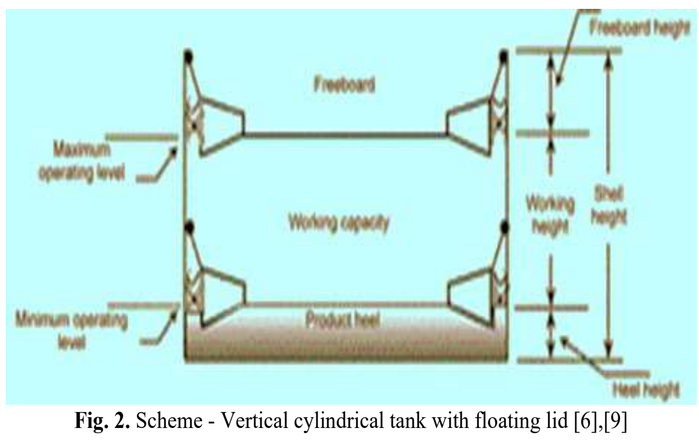


Fig. 2. Scheme - Vertical cylindrical tank with floating lid [6],[9]

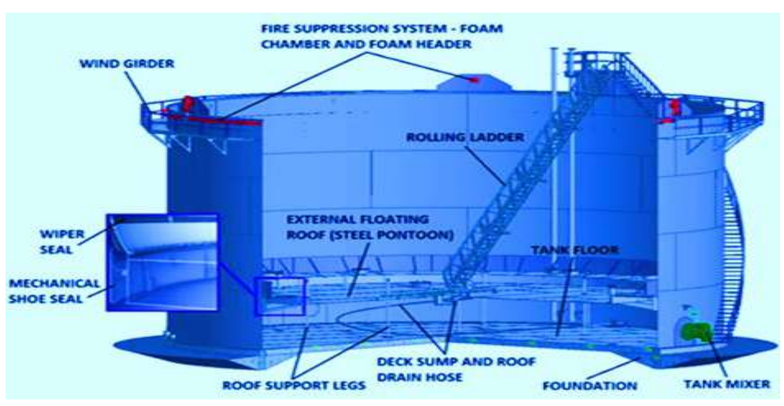


Fig. 3. Overview - Vertical cylindrical tank with floating lid [1],[10],[11]

It is worth mentioning that the type of tank, dimensions and material vary depending on the storage conditions of the crude oil (pressure, temperature), the properties of the crude oil (composition, toxicity) and, obviously, the amount of storage required (operating volume).

Its main parts, are: housing, bottom, roof (fixed or floating), nozzles, pipes and tools, double sealing system, fire protection system, cathodic protection system and steel structures for personnel service. [1],[4],[6],[8]

Currently, sludge extraction from crude oil tanks is done manually and/or mechanized using an appropriate pump. Otherwise, if the sludge has various characteristics that make it non-pumpable (for example: high viscosity), manual intervention is required - qualified human intervention (see Fig. 4) - which, obviously, involves high costs and a series of risks, both from the point of view of labor protection for the working personnel and for the equipment.



Fig. 4. Manual intervention - Oil sludge at the bottom of the crude oil tank [6],[8]

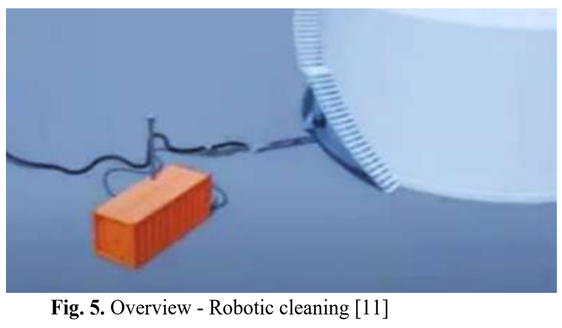


Fig. 5. Overview - Robotic cleaning [11]



Fig. 6. Photo image - Cleaning process preparation



Fig. 7. Photo image - Execution and monitoring of cleaning process

The robotic cleaning system is usually removable and houses the necessary equipment in containers (three semi-trailers). Thus, all equipment is easy to transport by truck and therefore the robot is maneuvered to enter the tank by performing the cleaning operation – so, it is used to break and remove oil sludge from the bottom of the tank (see Fig. 5). As for the basic components of the robot, these are as follows: hydraulic motor, cylinder, gas detector, explosion-proof junction box, solenoid flow control valve, explosion-proof infrared lamp, explosion-resistant/dust ignition chamber, explosion-proof fuel, wipers, water jet, video camera and vat. After installation, the robot is prepared on a ramp to enter through the manhole into the tank, moves to the bottom of the tank to begin the operation of cleaning the oil sludge (see Fig. 6). The system is fully automated. Thus, from the outside, from a control remote panel existing in the first container, the entire cleaning operation is performed and monitored by a specialized and experienced operator (see Fig. 7). Everything is done in a closed circuit, and residues are collected in a tank located in the second container.

Conclusion:

Regular cleaning of crude oil storage tanks is essential to maintain the absolute quality of the product inside, namely health and safety standards. Cleaning oil sludge from crude oil storage tanks using robots (robotic cleaning) is less expensive than manual and automatic cleaning. The equipment is installed in three semi-trailers and transported by truck. It can be installed on any terrain thanks to its flexible hydraulic system. The installation takes place in a very short time (3–5 hours) and does not require the use of other machines, such as cranes. Systems and robots operate in extreme conditions, are resistant to hazardous waste and chemicals.

As a general conclusion, robotic cleaning, in addition to being a modern technology, is so effective that even the most difficult parts inside the tank can be cleaned, eliminates the need for human penetration into confined spaces, reduces the cost of transportation and the risk for working personnel, and increases overall safety. It is a very environmentally friendly technology.

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6th International Exhibition, INVENTCOR
3-5 April 2025, Deva, Romania

UPCYCLING PLASTIC FOR 3D PRINTING TO CREATE BRAILLE LANGUAGE RESOURCES

C

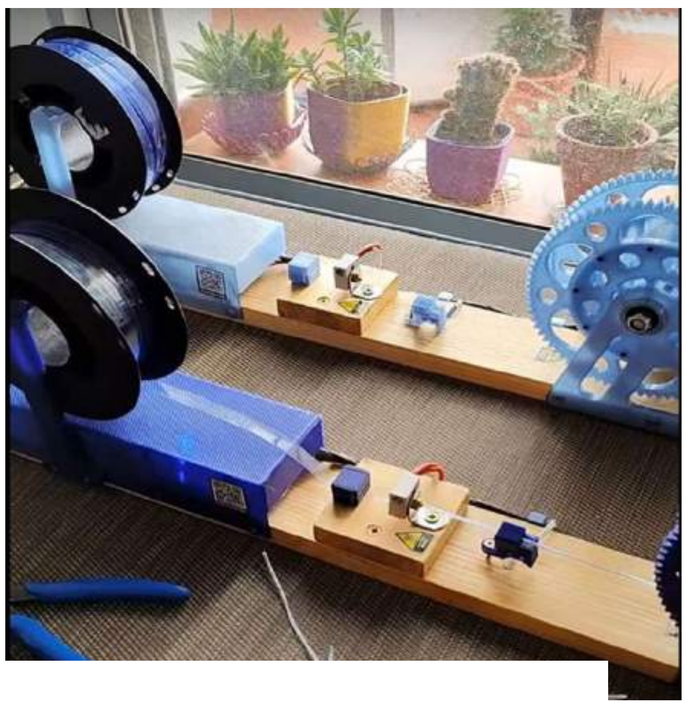
Authors: **Nicoleta VARTOLOMEI, Simina TĂNASĂ*, Andrei PÎRVU**

The Braille is an incredibly important accessibility aid, and yet it is left out of our home projects simply because of a lack of knowledge. With the help of 3D printers, we can create different shapes, puzzles, objects and much more. But we can also use them for much better purposes. This project supports and gives blind children the chance to learn to read the "Braille" alphabet much easier, and not only, geometric shapes and much more. They are made with a tactile Braille system on the front surface, allowing blind people to read and interpret information by touch.

3D printers – initially only available to science labs and a small number of privileged designers – are becoming more affordable and useful for the general public, with one problem: the printing material is far too expensive.

The overall objective of the project is the creative use of collected unwanted plastic materials and reintroducing them into a new cycle, beneficial in protecting the environment by making filament for 3D printers and creating accessible resources for those who use Braille language.









All electronic components are easily accessible and all structural parts can be 3D printed or purchased from hardware stores. Plastic bottles have found a new use: raw material for 3D printers.

Increasing involvement in environmental protection through the implementation of an experimental station for the recycling of plastic materials in order to produce filament for 3D printing, proposes an integrated approach in the management of plastic waste and recycling them into filament for 3D printing.

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6th International Exhibition, INVENTCOR
3-5 April 2025, Deva, Romania

WASTE MATERIALS SUSTAINABLE IN A NEW TEXTILE CONCEPT AND 3D TEHNOLOGY

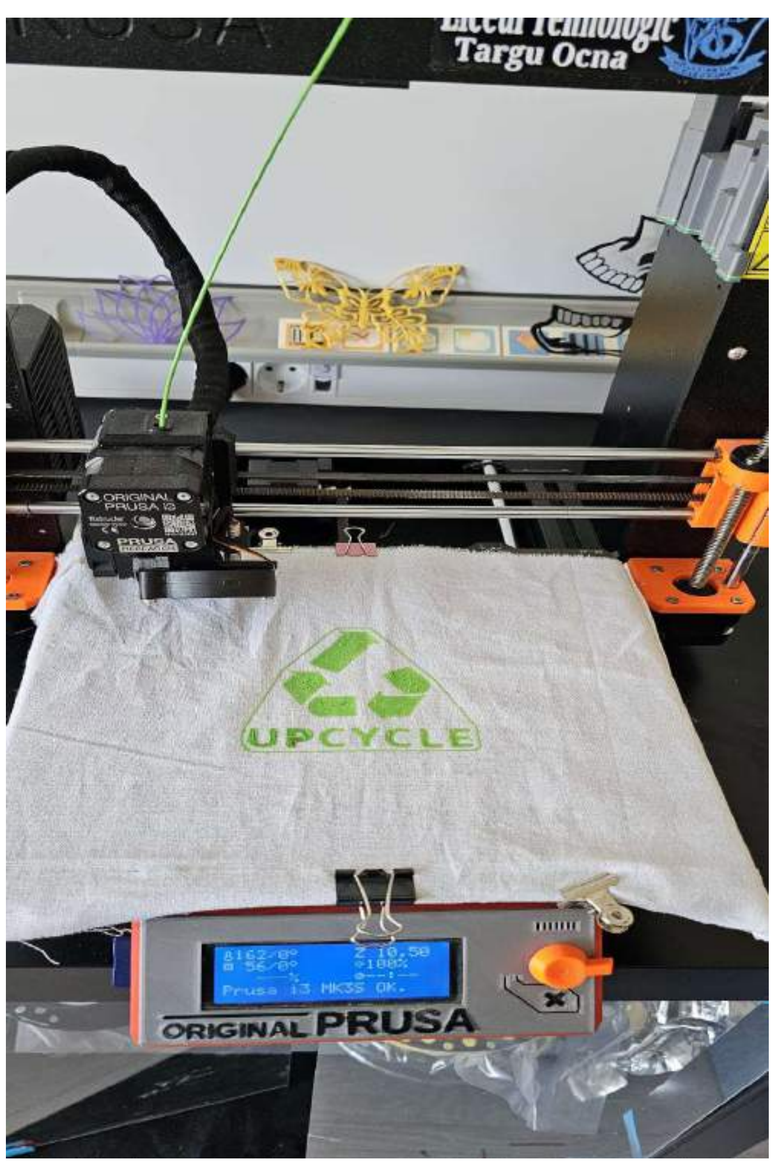
D

Author: Andrei PÎRVU
Mentors: Prof.ing.dipl. Simina TĂNASĂ& Prof.dr.ing. Nicoleta VARTOLOMEI

The main problem comes when the products reach the end of their life, that is, when they leave the wardrobe and end up, most of the time, in the landfills. Sustainability in the fashion industry is the commitment to practices that minimize the negative impact on the environment and society. It means using recycled or sustainable materials, reducing production and waste, ethical working conditions and social responsibility, all for the benefit of future generations.

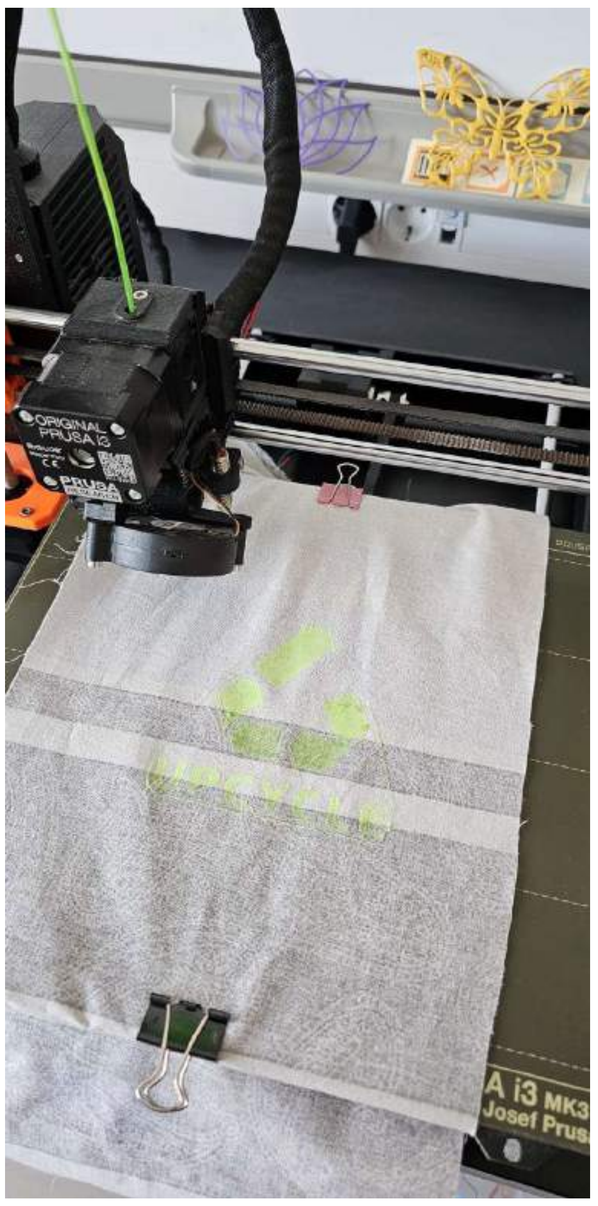
Sustainable consumption does not, implicitly, imply giving up consumption, but rather implies a change in consumer behavior, it emphasizes the concerns regarding qualitative aspects at the expense of quantitative ones.

The aim of the research is the recycling of textile materials giving them a new life and their customization with the help of a 3D printer using a recycled pet filament with the motivation to adopt more circular practices all with the aim of reducing the impact on the environment.









This type of materials are in an overwhelming proportion, over 90%, reusable in the same form, or as raw material for other clothing elements. Through the 3D printing technique, they can be easily transformed into ideal elements for future clothing elements, depending on the nature of the material and its degree of use.

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ELECTRICAL DISCHARGE DEPOSITION TECHNOLOGY AND EQUIPMENT

Author: Ana – Cristina IUGA
Mentor: Prof. dr. ing. Liviu – Daniel GHICULESCU

C

Electrical Discharge Deposition (EDD) represents an advanced coating methodology that employs electrical discharges to apply metallic layers onto a workpiece. In contrast to Electrical Discharge Machining (EDM), which removes material from a surface through electrical sparks, Electrical Discharge Deposition (EDD) functions as the inverse process, transferring material from the tool-electrode to the workpiece. This method is particularly cost-effective because it allows the use of standard EDM machines (Figure 1), eliminating the need for specialized coating equipment. In recent years, EDD has gained considerable attention for its ability to improve surface properties, such as increasing wear resistance, enhancing corrosion protection, and improving high-temperature performance. Industries such as automotive, aerospace, medical and electronics can significantly benefit from this technology as it improves wear resistance, friction reduction, corrosion protection and biocompatibility.

A numerical simulation of the EDD process was conducted using Comsol Multiphysics (Figure 2), applying two connected modules: Magnetic Fields – Figure 3 (to generate the magnetic forces influencing ion movement) and Charged Particle Tracing – Figure 4 (to analyze particle distribution using Poincaré maps – Figure 5 and 6).

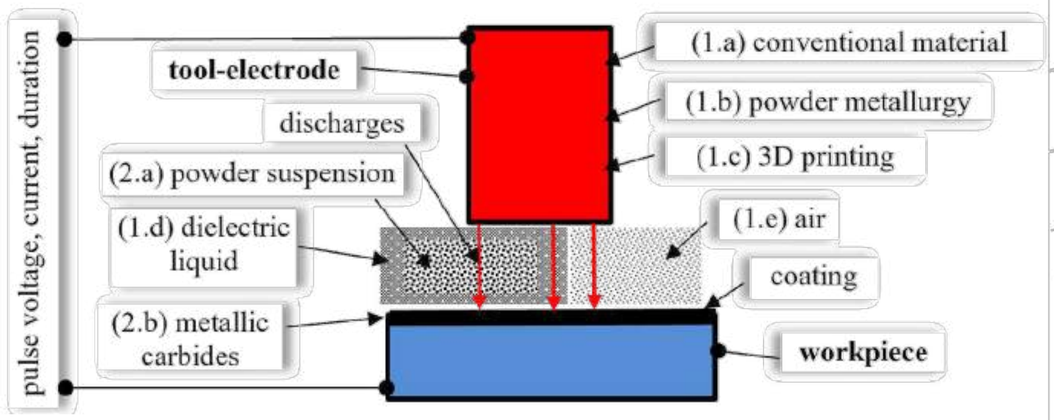


Figure 1. Block diagram EDD process

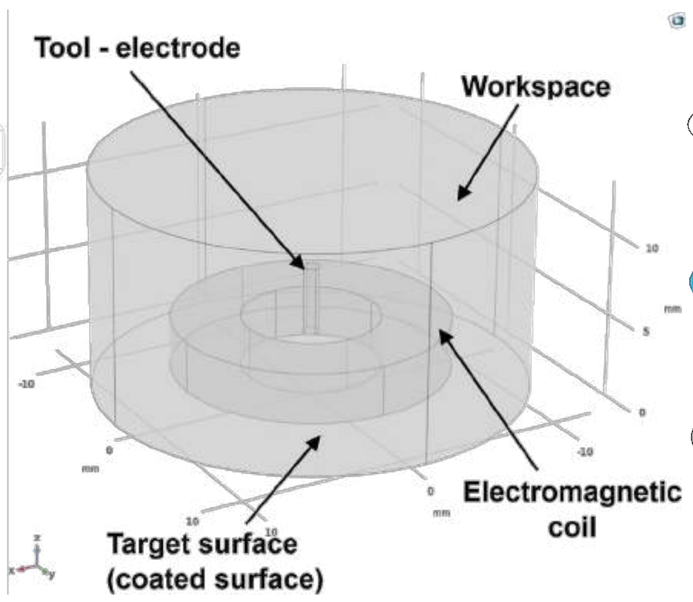


Figure 2. Geometry of the model

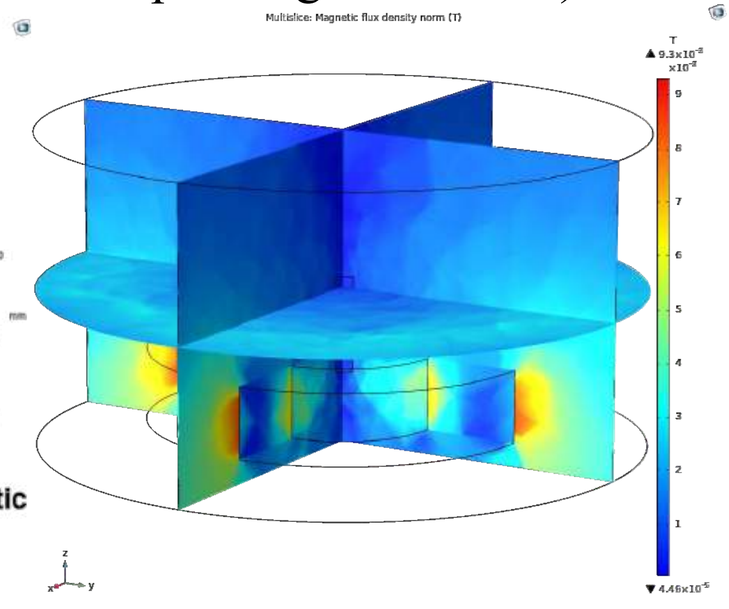


Figure 3. Magnetic flux density

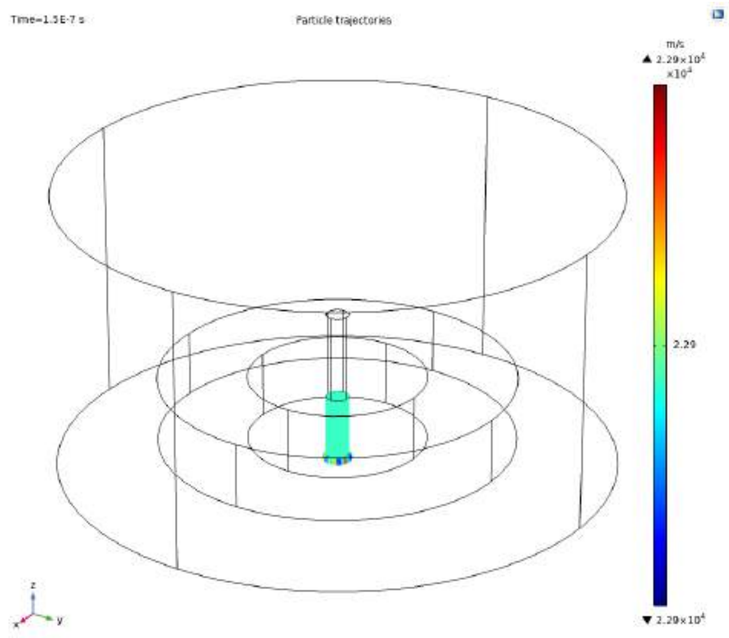


Figure 4. Particle trajectory simulation

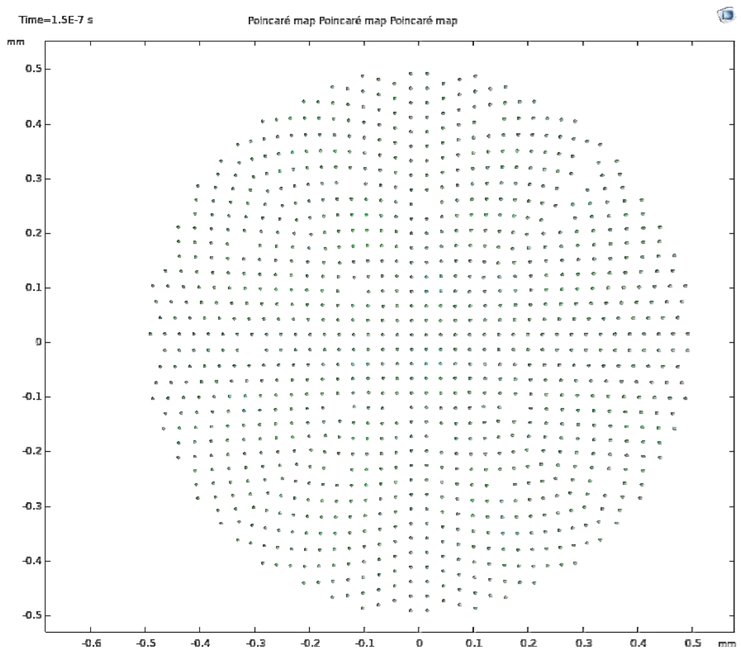


Figure 5. Poincaré map

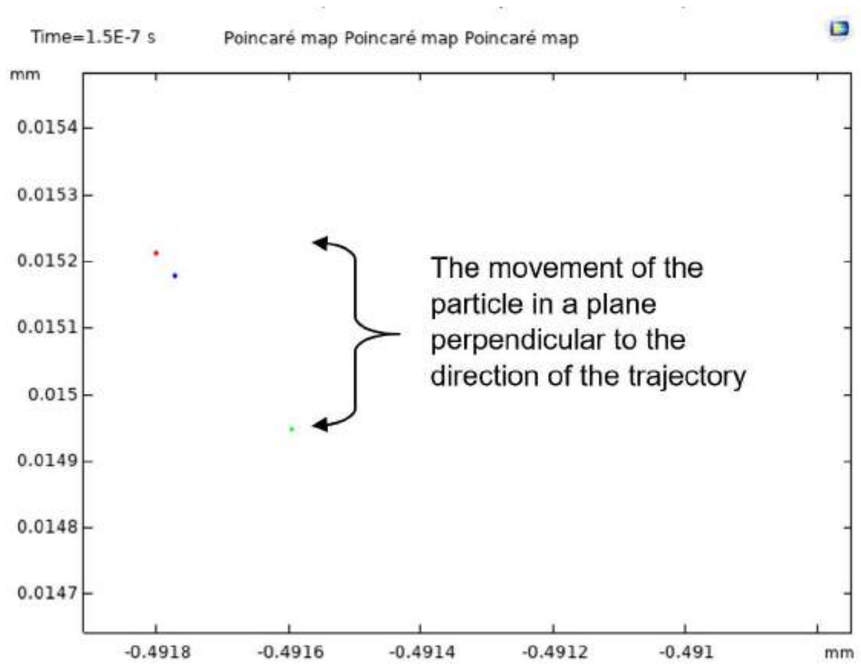


Figure 6. The focus of a particle

Electrical Discharge Deposition (EDD) represents a promising technology for high-performance coatings, with broad applications across various industries. As research advances, EDD has the potential to become a leading method for surface engineering, offering enhanced durability, efficiency, and cost savings in modern manufacturing.

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RESEARCH AND CONSTRUCTION OF INNOVATION TO REDUCE AIR HUMIDITY BY APPLING ELECTRIC FIELD INTENSITY ENERGY

Research project

Siseerot Ketkaew

C

This research project presents research and construction of innovation to reduce air humidity by appling electric field intensity energy consists of 2 parts: Part 1, a set of high-intensity non-uniform electric field cells with the corona discharge process to cause ionization to break the bonds of water molecules for use in reducing the relative humidity in the air using the technique of adjusting the high voltage voltage in the high voltage circuit to control the intensity of the electric field, and Part 2 is a set to reduce the amount of ozone gas using an ultraviolet light with a wavelength of 253.7 nm. Part 1 has designed and construction a set of electric field cells consisting of a corona wire placed between two aluminum plates and High voltage flyback converter circuit consists of a high frequency pulse generator using IC number 555 for adjusting the electric field intensity from 5 kV/cm to 25 kV/cm under the adjustment of a high voltage of 1 kilovolt to 5 kilovolts, respectively, by using a pulse signal to stimulate the work of the IGBT to control the operation of high-frequency high-voltage transformers to produce high voltage electricity for supplying electrical energy to a set of electric field cells.







The test results were that when measuring the relative humidity in the air, it was found that the electric field intensity was 25 kV/cm at a wind speed of 1 m/s able to reduce the amount of relative humidity in the air by 50%RH and produce 1 ppm of ozone gas in the electrical laboratory, area size 20 square meters, in 60 minutes, and in the set to reduce the amount of ozone gas, it will be found the amount of ozone gas produced by the electric field set will be reduced to 0.01 ppm. This research has passed the overall power consumption analysis test and analyze safety standards regarding electrical leakage for the safety of users, It is already completed and in the future it can be further developed into a commercial innovation.

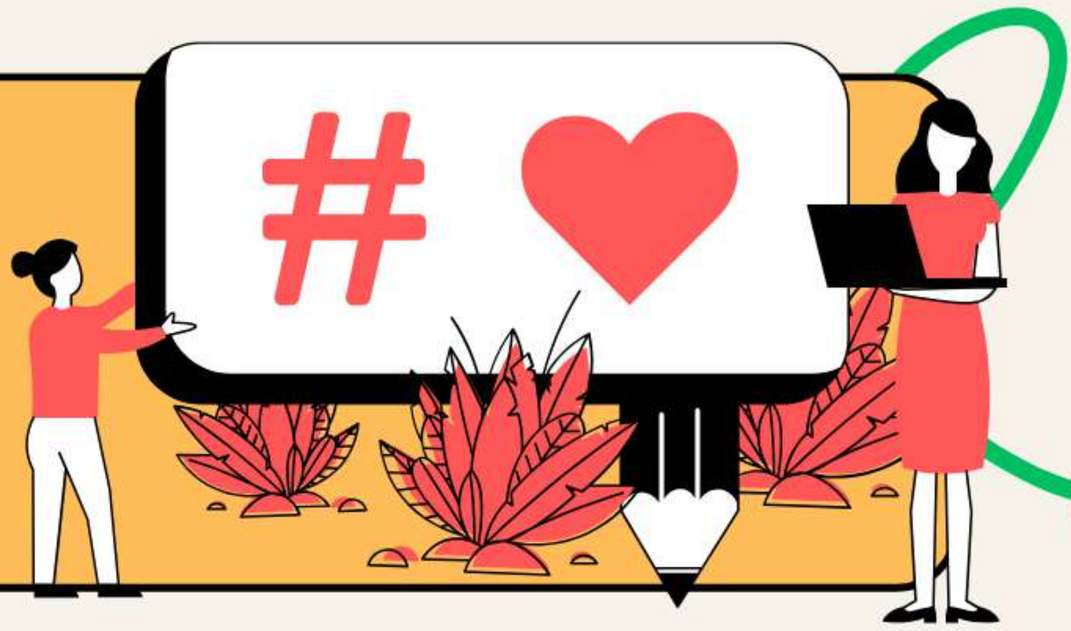
Contact: Siseerot Ketkaew, E-mail : siseerot@hotmail.com

The impact of international regulations on the lighting and energy efficiency market

-Student Project-

Authors: Gabor Antonio, Petruț Adriana
Coordinators: Mihaela Ştefan, Ioana Fărcean

Category C



In addition to macro-economic developments, regulations affecting lighting products are a key determinant of the future of the lighting market. One regulation is to ban inefficient technologies, the other is to adopt stricter laws on high energy efficiency requirements and provide incentives for the development of a comprehensive infrastructure. Bans on certain technologies are increasingly being adopted by various countries, including residential lighting and commercial lighting products. For example, China has updated the Proclamation on Banning Incandescent Light Bulbs, backed by the Energy Conservation Law. Europe is also further accelerating the shift to more green lighting sources by extending its regulations to ban the use of low-voltage halogen lamps.

International regulations on lighting products aim to set clear standards for their energy efficiency, safety and environmental impact, thereby helping to reduce energy consumption and protect the global environment. This study aims to analyze the impact of international regulations on the lighting market, in particular in terms of banning inefficient technologies and adopting stricter energy efficiency laws. It also explores how switching to green technologies such as LEDs can make a significant contribution to reducing energy consumption and protecting the environment.

Adopting LED lighting can significantly reduce global electricity consumption equivalent to the output of nuclear power plants. However, LEDs are not a direct solution to eliminating nuclear power, but just one component of a broader plan that must include renewables and energy efficiency in other areas.

LED versus nuclear energy comparison

Factor	Traditional lighting	LEDs	Nuclear energy
Global energy consumption for lighting [TWh]	around 4.000	around 2.000	around 2.700
LED energy savings [TWh]	-	around 2.000	-
Contribution to energy demand reduction [%]	-	5-7% of global consumption	10% of total production
CO2 emissions	raised	low	zero
Sustainability	1-2 years (incandescent)	10-20 years	30-60 years



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Sign Translator

Author/s: Deșan Dumitru
Mentor: physics teacher Ciuvaga Victor

C

The **Sign Language Translator** is a **wearable assistive device** designed to help individuals with hearing impairments communicate more effectively with those who do not understand sign language. By translating **hand gestures into text in real-time**, this system eliminates communication barriers and promotes inclusivity in social, educational, and professional settings.

How It Works

The system consists of a **glove embedded with flex sensors**, an **Arduino microcontroller**, an **OLED display**, and **Bluetooth connectivity**. As the user performs gestures, the sensors detect the **bending and positioning of fingers**, sending signals to the microcontroller, which translates them into **letters, words, or phrases**. The interpreted text is then displayed on the OLED screen or sent to a smartphone via Bluetooth.

Key Features:

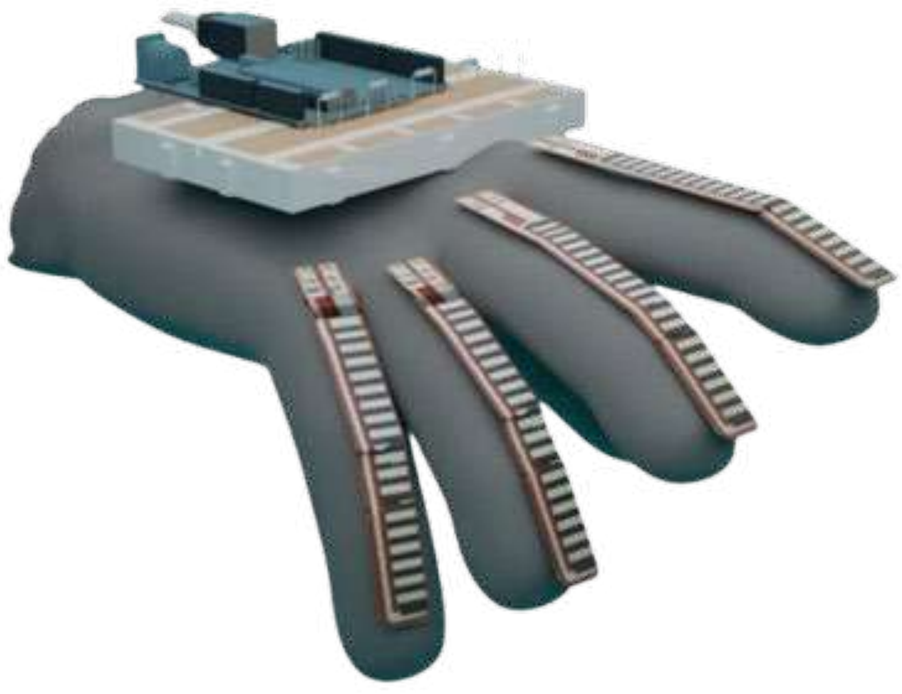
•**Real-time Gesture Recognition** – The system instantly translates hand movements into text for immediate communication.

•**OLED Display** – Provides instant visual feedback on the glove, ensuring the user sees the translation without needing an external device.

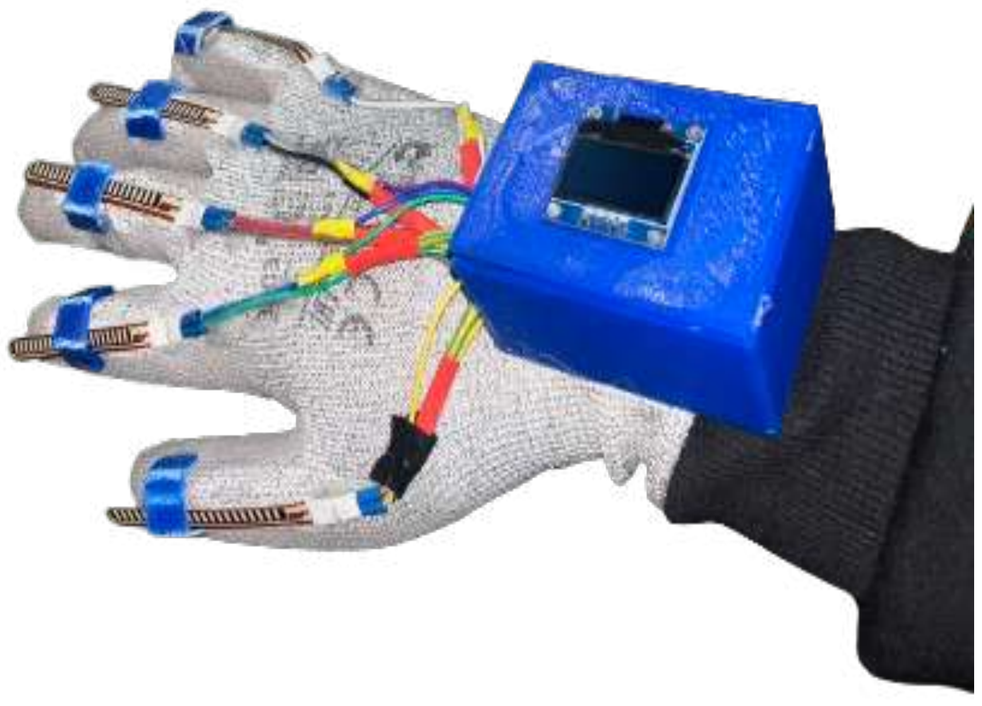
•**Bluetooth Connectivity** – Allows the translated text to be sent to a smartphone for further processing, storage, or conversion to speech.

•**Compact and Portable Design** – Unlike camera-based systems, this glove is lightweight, standalone, and does not require an internet connection.

•**User-Friendly Interface** – Simple to operate, making it accessible for people of all ages.







Technical Components

•**Flex Sensors** – Detect finger movement and bending angles.

•**Arduino Microcontroller** – Processes sensor input and converts it into corresponding text.

•**OLED Display** – Shows translated text in real-time.

•**Bluetooth Module** – Enables wireless transmission of text to mobile devices.

Future Developments

To improve functionality, the **Sign Language Translator** could be enhanced with:

•**Machine Learning Integration** – AI-based recognition for dynamic gestures.

•**Text-to-Speech Output** – Converting translated text into spoken words.

•**Multi-Language Support** – Adapting to various sign languages worldwide.

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THE INTELLIGENT INTERSECTION

C

Author/s: Tofan Cezar
Mentor: physics teacher
Ciuvaga Victor

Objective:
Develop an intelligent intersection management system using AI and real-time sensor data to improve traffic flow and enhance road safety.

Innovative Features:
- **AI-Driven Control:** Adaptive traffic signals based on real-time conditions.
- **Advanced Sensor Integration:** Automatic detection of vehicles and pedestrians.
- **Energy Efficiency:** Optimized traffic light operation to reduce consumption.
- **Scalability:** Compatibility with smart city infrastructure for future integration.

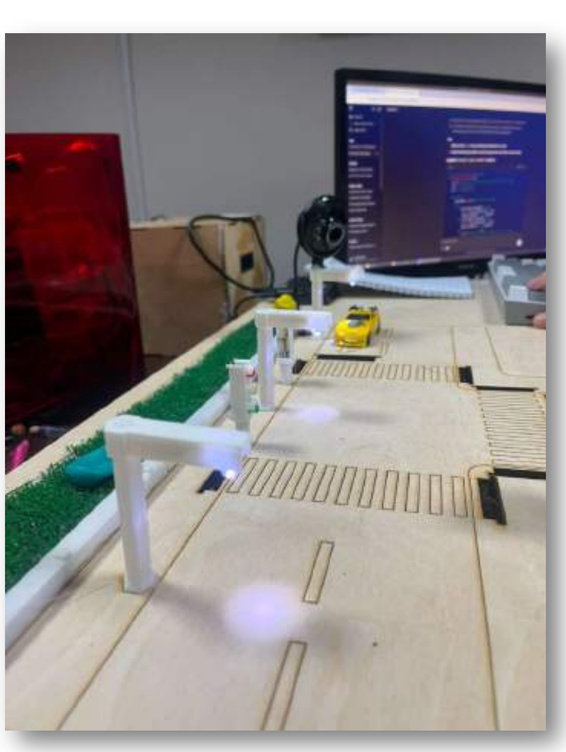
Key Benefits:
- **Traffic Congestion Reduction:** Over 30% reduction in waiting times.
- **Increased Safety:** Adaptive signaling reduces accidents.
- **Resource Optimization:** Automatic real-time adjustments for energy savings.

Project Phases:
1. **Research & Analysis:** Studied traditional intersections to identify issues.
2. **Concept Development:** Designed system architecture and selected technologies.
3. **Technical Implementation:** Developed AI algorithms and integrated sensors.
4. **Testing & Optimization:** Simulated and fine-tuned system performance.
5. **Conclusions & Proposals:** Evaluated results and proposed future improvements.

Next Steps:
- Integrate vehicle-to-infrastructure (V2I) communication.
- Expand real-world testing at intersections.
- Develop a mobile app for real-time traffic updates.

Impact:
The Smart Intersection system offers a sustainable, scalable solution to optimize urban mobility, improve safety, and enhance traffic efficiency.







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qSI - Quick Sound Interface

Authors: Larisa-Maria GÎDEI, Alexandru David BUȘOI, Eduard Raul GRĂDINARU

Mentor: Prof. Mihaela SOPINCEAN

C

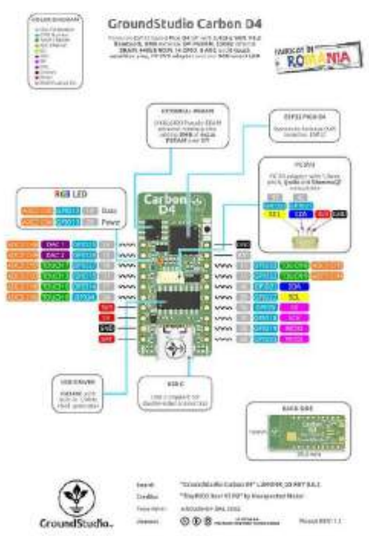
qSi is an appliance for rapid recording of sound intensity, used to measure the sound power in a classroom. To build the device, we used:

- an ESP 32 microcontroller from Groundstudio;
- a KY audio sensor, and
- a 128×64 OLED display that operates via SPI.

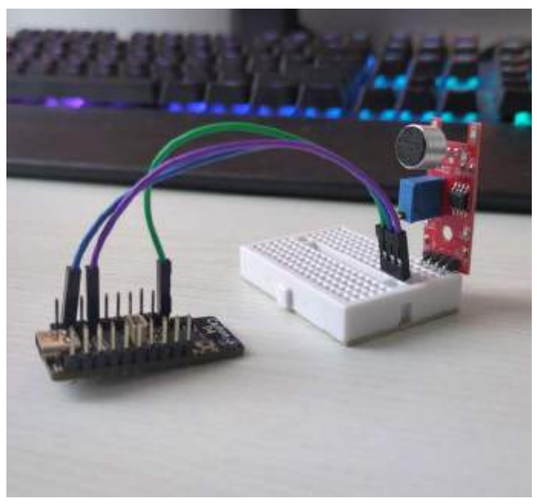
For programming, we used:

- Arduino and for data storage;
- a Python script that monitors Serial outputs and then writes them to a CSV file.

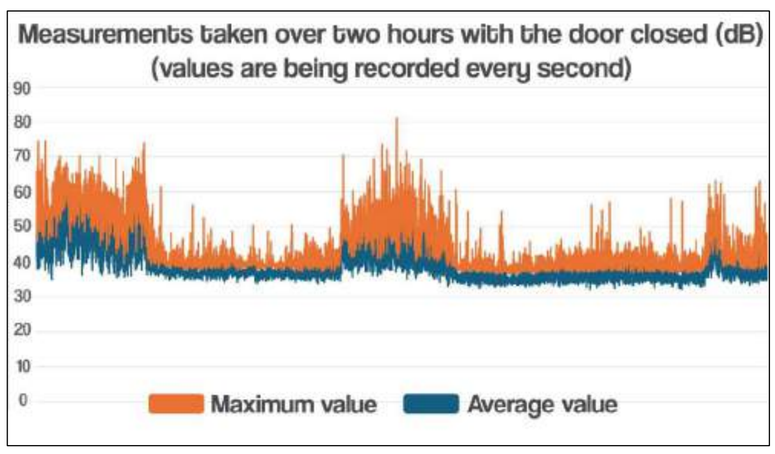


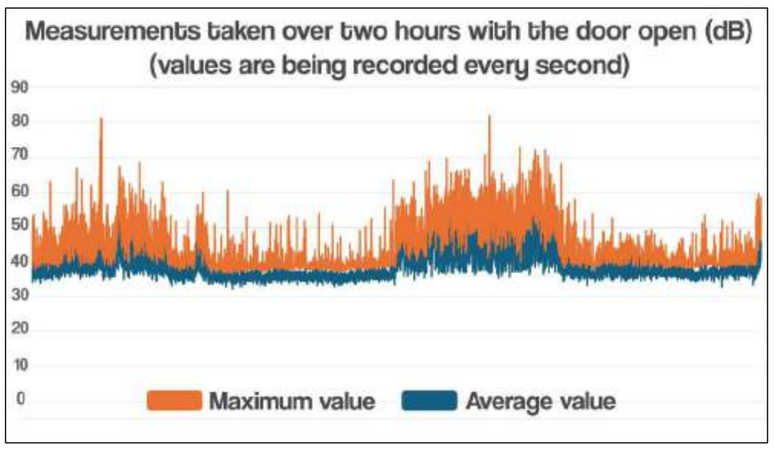


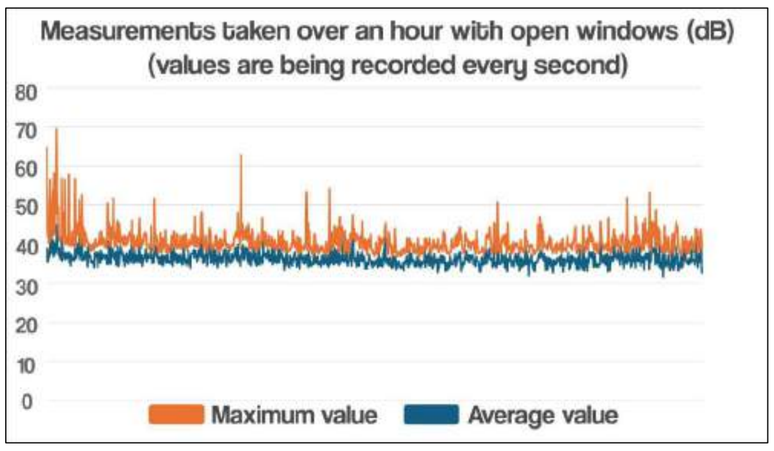




This study presents three different measurements take throughout a school day, considering, in turn, two external factors that affect the average sound intensity in a classroom: the sound power from the institution's hallways and the sound power from the schoolyard.







When the door or window is open, we can observe a decrease in sound intensity. This is due to the fact that sound intensity is inversely proportional to the surface area that sound can cover: $I = pv$, where p is the acoustic pressure and v is the particle velocity. Additionally, the difference between the values recorded during the study with the window open versus the door open is due to the difference in intensity between the two environments, with the sound intensity inside the building being higher than that in the external courtyard.

The results obtained from the recordings helps classify and study the factors considered as sound pollutants, allowing for measures to be taken to improve the acoustic environment in educational institutions.

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MOBILE INTEGRATED SURVEILLANCE SYSTEM/RO 2023 00039

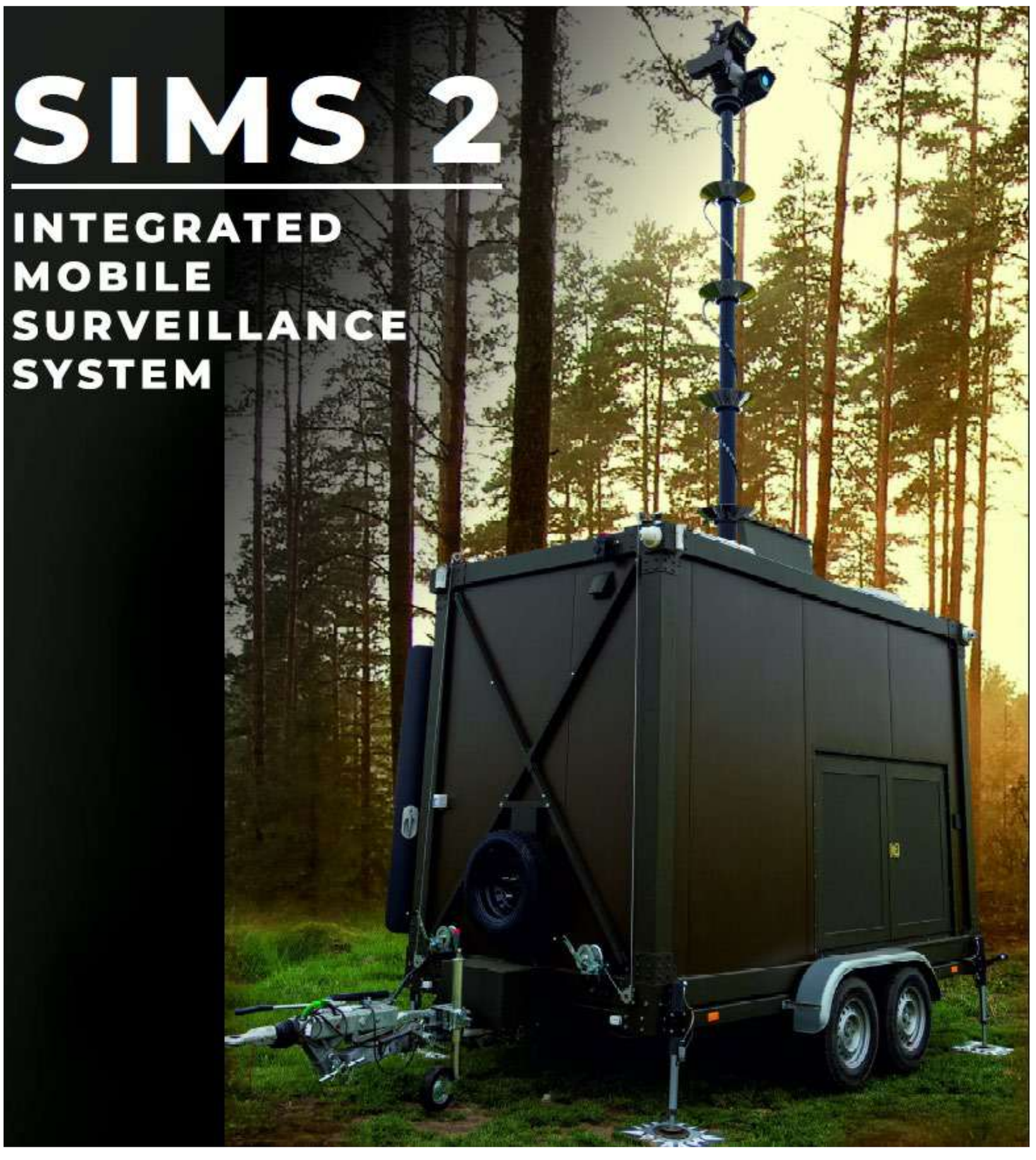
Author/s: Cojocaru Sorin, Jurba Mihai, Popescu Emil, Stroe Danut, Guiman Daniela, Jurba Andrei

C

The product is a multispectral surveillance system which allows to detect recognize and identify different type of threats in various atmospheric conditions using visible, short wave infrared and medium wave infrared cameras.

The product performs the following tasks:

- ***Gathering information from different type of sensors: optical, distance measurement, positioning, recognition;***
- ***Processing and integrating obtained information into the GIS application running on a ruggedized PC;***
- ***Transmitting and receiving information to / from other structures;***
- ***Monitoring the response activities and their results.***
- ***Storing the data and images needed to prove the identified activities***



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Application for Supporting the Design of Vertical Axis Wind Turbines

PhD. Stud. Emilia DOBRIN, prof. Nuno Calcada Loureiro, prof. José Carlos Martins

C

This study presents a software application designed to assist in the design and optimization of vertical axis wind turbines (VAWTs), offering advantages such as lower complexity, reduced maintenance, and suitability for small-scale applications. The tool allows users to dimension VAWTs based on power output, rotor size, and wind speed, featuring 2D and 3D visualization tools for performance simulation. To validate its effectiveness, physical prototypes were tested under various wind conditions using non-destructive and destructive evaluations. Results confirmed the application's accuracy in predicting turbine performance and optimizing design parameters. This software provides a valuable tool for engineers and researchers, supporting the broader adoption of renewable energy solutions. Future enhancements will integrate advanced computational models and real-time wind data analysis for improved accuracy.



Three blades Darrieus VWT prototype			
Data (m/s)		The power coefficient of VWT	
V1	10,7		
V2	4,1		
Cp	0,5900	Procent	59%



H type Giromill VWT prototype			
Data (m/s)		The power coefficient of VWT	
V1	10,7		
V2	2,7		
Cp	0,5863	Procent	58,63 %



Two cons Savonius VWT VWT prototype			
Data (m/s)		The power coefficient of VWT	
V1	10,7		
V2	1,5		
Cp	0,5589	Procent	55,89%

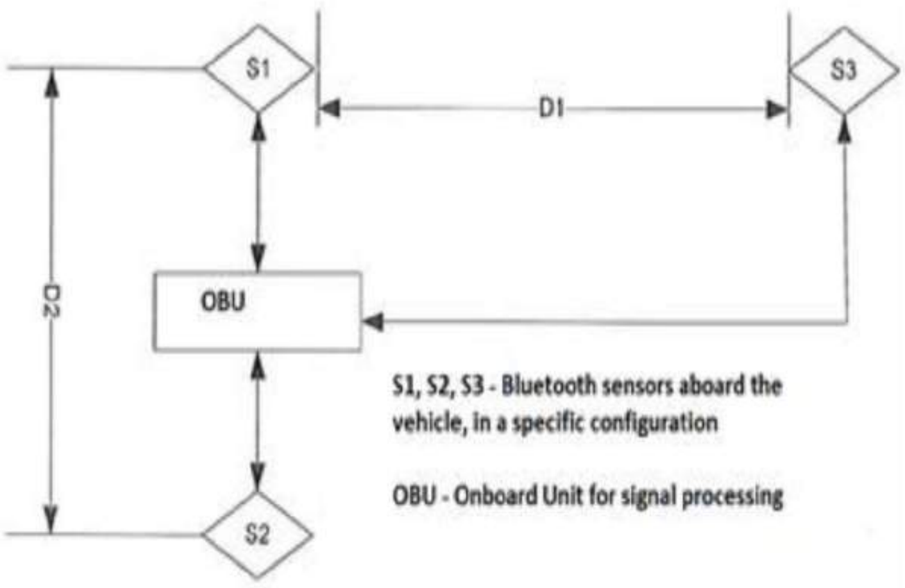
Contact: emilia.dobrin@student.upt.ro

METHOD AND SYSTEM FOR ANONYMOUS COLLECTION OF POSITION AND MOBILITY INFORMATION EMPLOYING BLUETOOTH AND ARTIFICIAL INTELLIGENCE

MINEA Marius, DUMITRESCU Cătălin Marian, CHIVA Cosmin Ionuț, MINEA Viviana Laetitia, SEMENESCU Augustin

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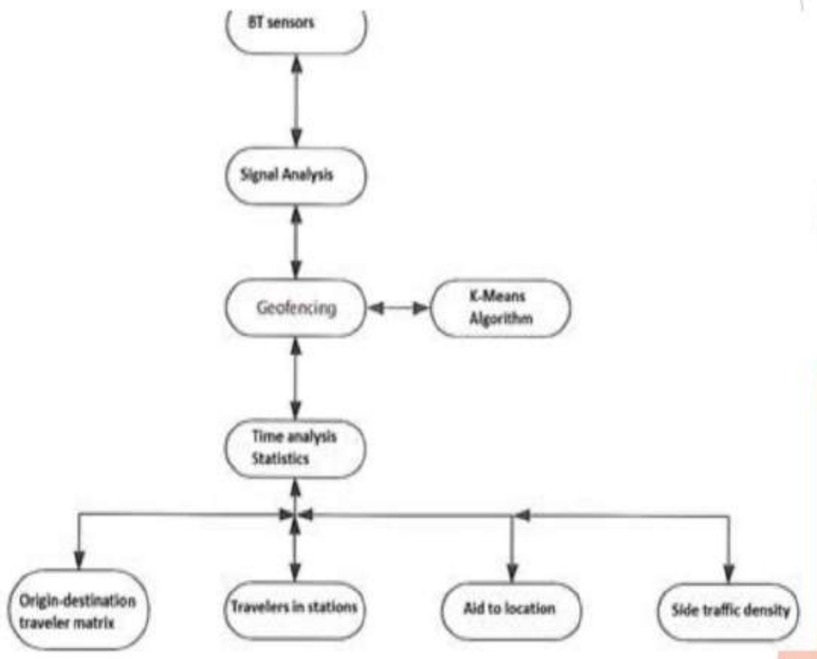
PRESENTATION



The invention relates to a method and system for anonymously collection of information regarding position, mobility of travelers in a public transport system and collateral traffic density. It employs a dedicated configuration of Bluetooth sensors installed in a public transport vehicle, an onboard unit for signal processing and a specific software employing artificial intelligence module for time and space classification of detected bluetooth nodes.

ADVANTAGES

- Provides an aid for public transport management: dynamic allocation of vehicles, location of vehicles, re-routing, estimating the number of transported travelers and detection of collateral traffic density;
- It is modular and can be adapted to the public transport vehicle structure, it has low energy consumption and zero emissions;
- Does not need any infrastructure device or network; adaptable for the future Internet of things;
- All modules are low energy and can be supplied from the vehicle's power supply



PROBLEM SOLVED

- The solution delivers economy in infrastructure complexity; does not interfere with any of the existing equipment and is safe and secure,
- It is adaptable in accordance to the public transport company requirements;
- Ensures proper visualisation of the recorded information and improves in accuracy in time.

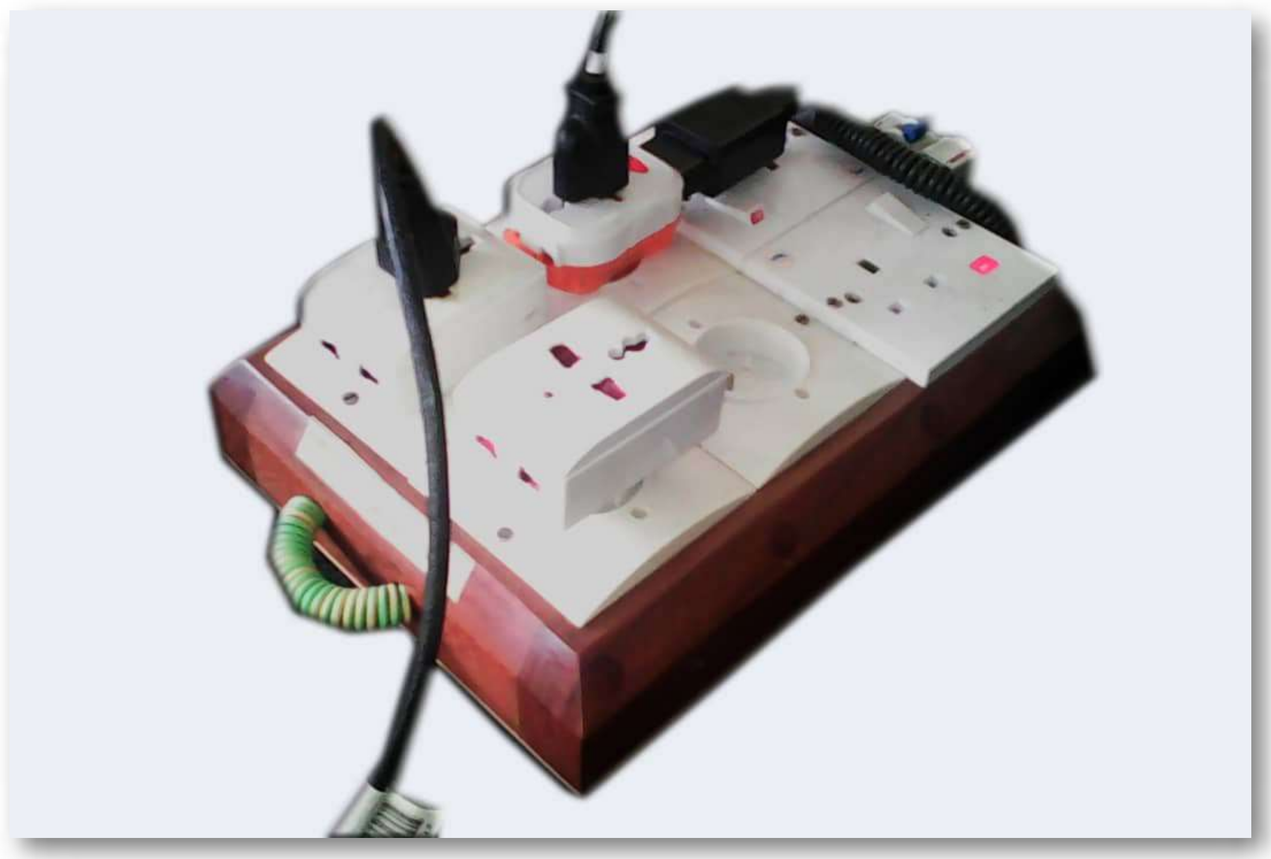
MULTIFUNCTIONAL SURGE PROTECTOR

Patent/project number: 1201800385(18953)

C

Author/s: WAM ELVIS MBVIUGEH

This invention relates to multifunctional surge protector, innovated and designed to play multifunction; to supply a stable current and even voltage on general electronics and machines. To protect electronics from unforeseen conditions like excessive heat, overload, lightning and thunder, excessive current and voltage. This apparatus is also used as a maintenance tool in the electronic and electrical industries.







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wamelvis@gmail.com

Autonomous robot for collecting, sorting and relocating objects

"Traian Lalescu" Theoretical High School

Category: C

Authors: *Nistor Mircea (coordinator), Achim Luca Petru, Pașolea Lucian, Borbely Richard, Galfi Rareș Cristian, Vladu Bianca Teodora, Budiul Alexandru Vasile, Alexa Maria Gabriela, Socoteanu Paul Daniel, Nitzu Gloria Eleni*

Who are we?

We are the RobotX Hunedoara team from the "Traian Lalescu" Theoretical High School in Hunedoara, and this is our ninth year of activity.
We are united by our common goal: to solve some of the world's problems using science and technology.

Introducing our project

Our robot collects, sorts, and relocates objects of various colors in both autonomous and teleoperated modes.
It is designed to be reliable, fast, and easy to control, with a compact size and reduced weight. Its modular systems allow for easy replacement and repair, ensuring efficient maintenance. Additionally, the robot operates with minimal chassis movement, optimizing performance and energy efficiency.

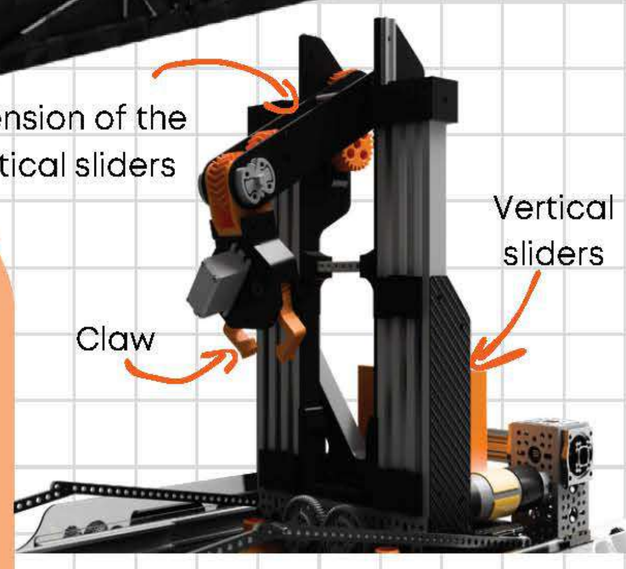


Chassis:

The chassis is modular, allowing for easy attachment of various systems. It features a Miter Gear transmission and an integrated odometry system. The electronics are compactly integrated to maximize space efficiency. The chassis measures 440 mm in length and 410 mm in width.

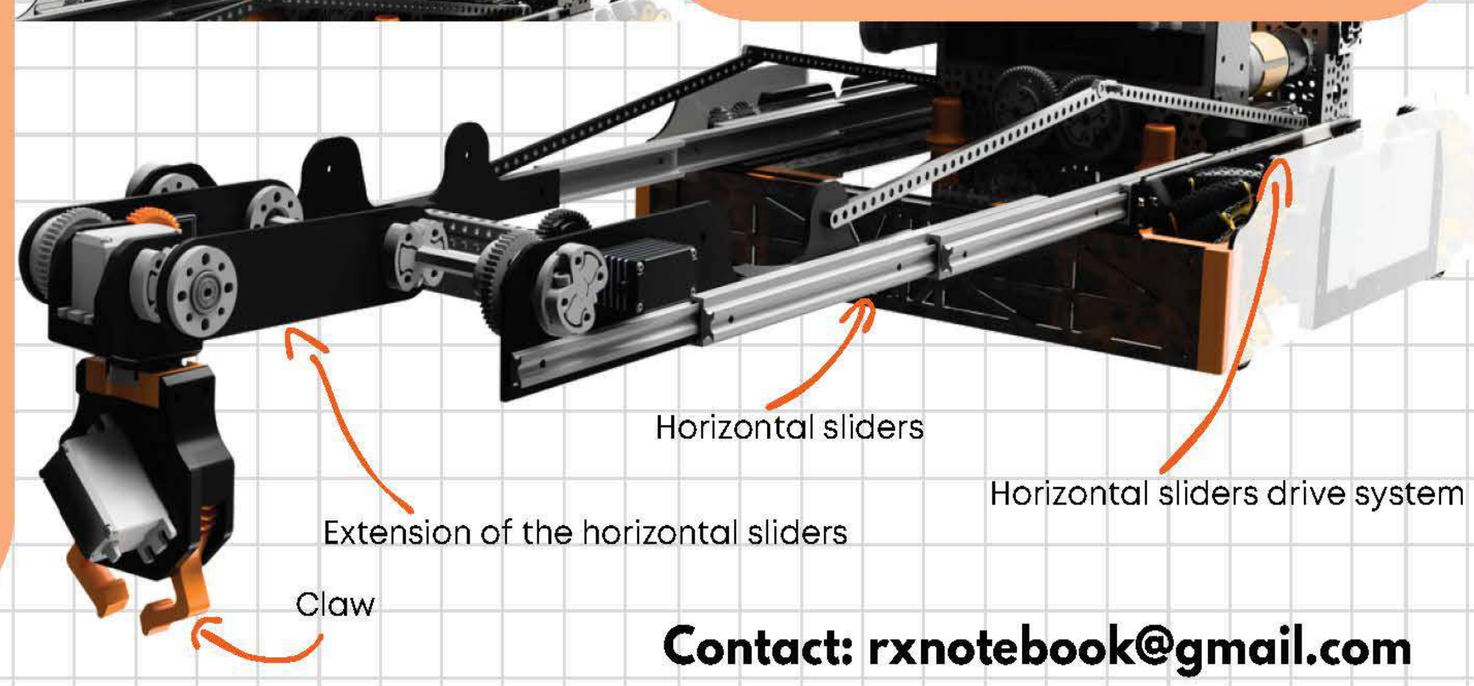
Delivery system

The vertical sliders enable precise placement of objects at elevated levels (up to 135 cm), thanks to the extension of the sliders which is equipped with a claw at the top. Additionally, they operate at high speed due to the 1150 RPM motors that drive them, ensuring both efficiency and smooth performance during operation.



Collecting system

The collecting system enables efficient retrieval of different color objects from various spaces. It has a reduced mass and dimensions for enhanced agility. With five degrees of freedom, it allows collection from any position. Additionally, it facilitates the smooth transfer of the collected objects to the delivery sistem.



Contact: rxnotebook@gmail.com

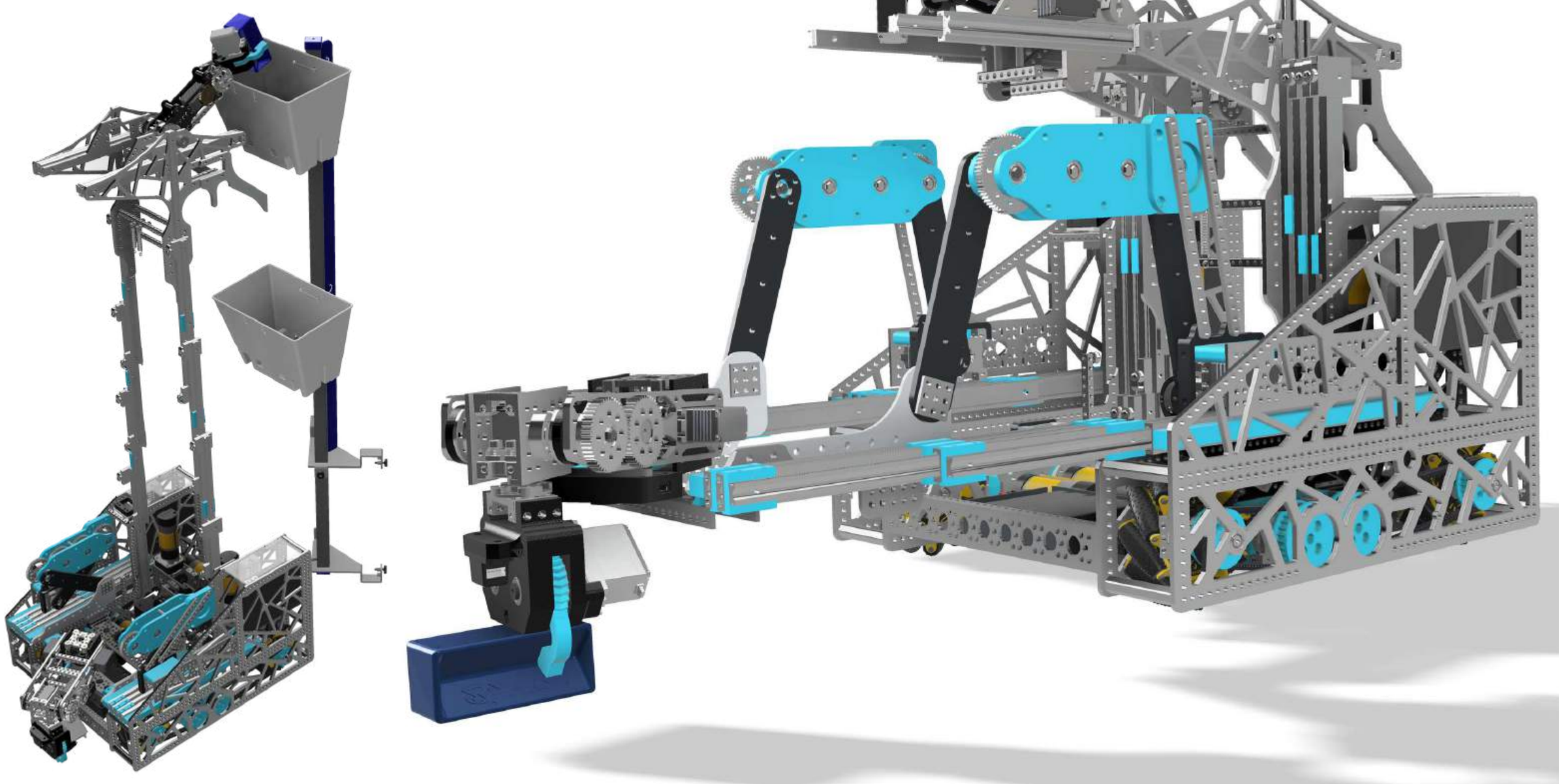
Competition robot for FIRST Tech Challenge

Patent/project number:

Author/s: Adrian Carol Budiul (coordinator), Stratulat Bogdan Ioan, Zală Andreea Maria, Miklos David Krisztian, Varvaroi Andrei, Mitican Andrei, Cerișeri Robert Octavian, Șunda Tudor Marian, Truță Andrei Rareș, Manole Iulia Nicoleta, Titianu Ștefan, Zanef Alexandra

C

The outtake system features an arm with two servos and a joint, enabling sample retrieval from the intake, placement in the Basket and Chamber, and specimen collection. A 3D-printed claw ensures a secure grip. The system is mounted on a linear support, allowing for remote specimen placement, saving time, and reducing chassis movement. The vertical linear system underwent several iterations to achieve optimal weight and speed, with custom parts for strength and reliability. For Level 2 Ascend, a hooking system on Misumi slides, powered by four motors, was implemented. Aluminum hooks guide the bar to the robot's center of gravity. The intake was designed for efficient sample collection, improving performance with each iteration. The pivot allows precision during both autonomous and teleoperated modes. A differential system provides extra freedom for the front arm, moving in any direction with just two servos, offering enough force and speed. The balanced center of gravity and compact design allow easy system changes without chassis modification, simplifying maintenance. The linear extension system extends up to 50 cm for remote sample collection, reducing collection time. The minimalist design ensures space for additional systems and easy upkeep, avoiding unreliable counter springing systems.



Contact: Adrian Carol Budiul, tel: +40728913967, email: adrianb1313@yahoo.com

Ministry of Education and Research

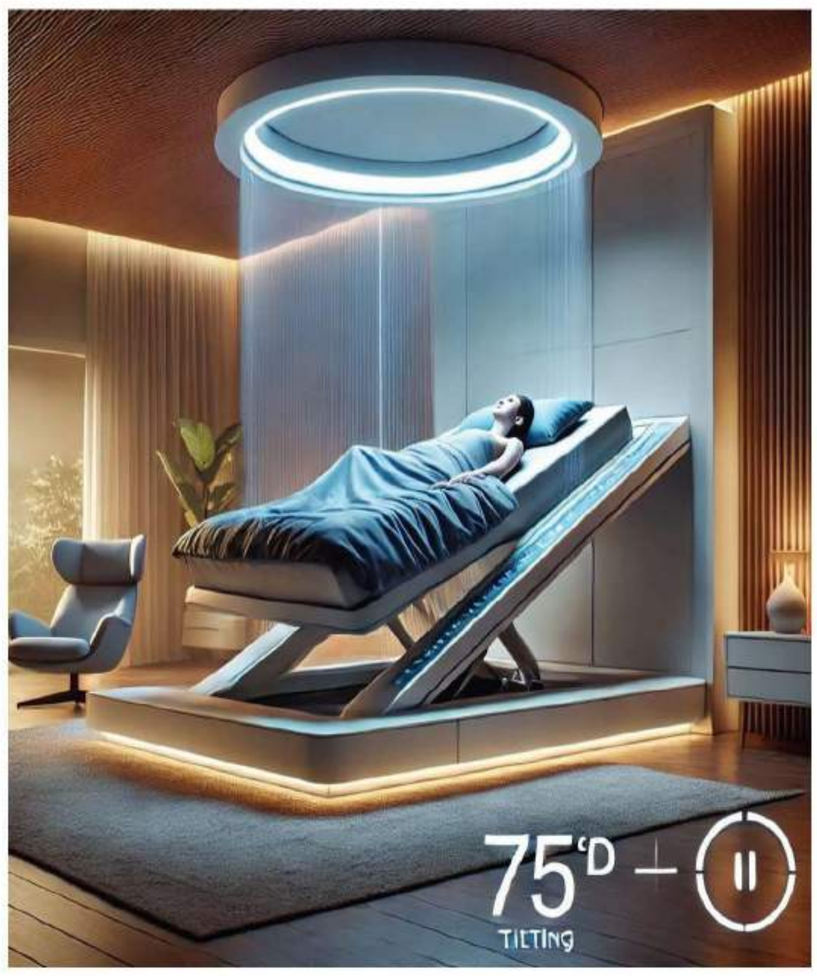
UNIVERSITATEA LUCIAN BLAGA DIN SIBIU

The wake-up bed

Scientific Research Project

Authors: Student Lotreanu Cristian Andrei
Student Mocofanu Ionut Madalin
Student Nanulescu Andrei Dumitru

Coordinator: Professor Aurel Mihail ȚÎȚU,



DESCRIPTION:

The alarm clock bed is an innovative project for people who have trouble waking up and sleep without hearing repeated alarms. This can have negative effects both from a health point of view but also greatly influences other points of view: you are late for college, for work, you don't get to drop your children off at school on time and so on. This bed is made to get rid of such unpleasant situations.

ADVANTAGES:

-Waking up in the morning is efficient and at an exact time;

-Increase in energy levels in the morning;

-Connectivity with other Smart devices;

-Alarm setting can be done both from the digitized screen of the bed and from the application on the phone;

-The certainty that you can't go back to sleep after 2-3 hours;

-Maintenance of the folding mechanism is cheap;

-Avoids the shock of the classic alarm.

The operating mechanism

This mechanism is very simple, consisting of a gear wheel attached to the shaft of an electric motor (220V), which is fixed and a half gear wheel attached to the base plate of the bed (that plate on which the mattress is placed). The small wheel on the motor shaft meshes with the half gear wheel on the base plate so that the bed can tilt up to 75 degrees. The electric motor has two directions of rotation so that it can also return to the normal position of 0 degrees. It is a simple automated mechanism that does not cost much.

RESULTS AND DISCUSSIONS:

The wake-up bed is an innovative solution for all people who have problems waking up and because of this it affects them in their daily life. Even though the bed has a more "aggressive" wake-up system, it also has results from the first use. It changes people's lives, makes them more energetic and productive all day long. Think about it, in a very short time a person forms an extremely productive routine and sleep will be more pleasant.



CONTACT:

Prof. Eng.& Ec. **Aurel Mihail TITU**, Sc.D. & Ph.D., Dr. Habil., Dr.h.c.
Academy of Romanian Scientists Corresponding Member;
PATLIB Expert at European Patent Office;
Director of Regional Centre OSIM-EPO for Intellectual Property Protection (PatLib Sibiu);
President of Romanian Association for Alternative Technologies Sibiu (A.R.T.A. Sibiu);
Vice-President of Romanian Association for Nonconventional Technologies Romania;
Editor-in-Chief Nonconventional Technologies Review;
Executive Editor Journal of Knowledge Dynamics – Academy of Romanian Scientist;
Associate Editor Management of Sustainable Development Journal – "Lucian Blaga" University of Sibiu;
Associate Editor The International Journal of Mechatronics and Applied Mechanics;
"Lucian Blaga" University of Sibiu,
Faculty of Engineering, Industrial Engineering and Management Department,
4 Emil Cioran Street, 101-100 Room, code 550025, Sibiu, ROMANIA
Mobile Phone: +40 744 390 290
E-mail: mihail.titu@ulbsibiu.ro

DARK ENERGY ROBOT

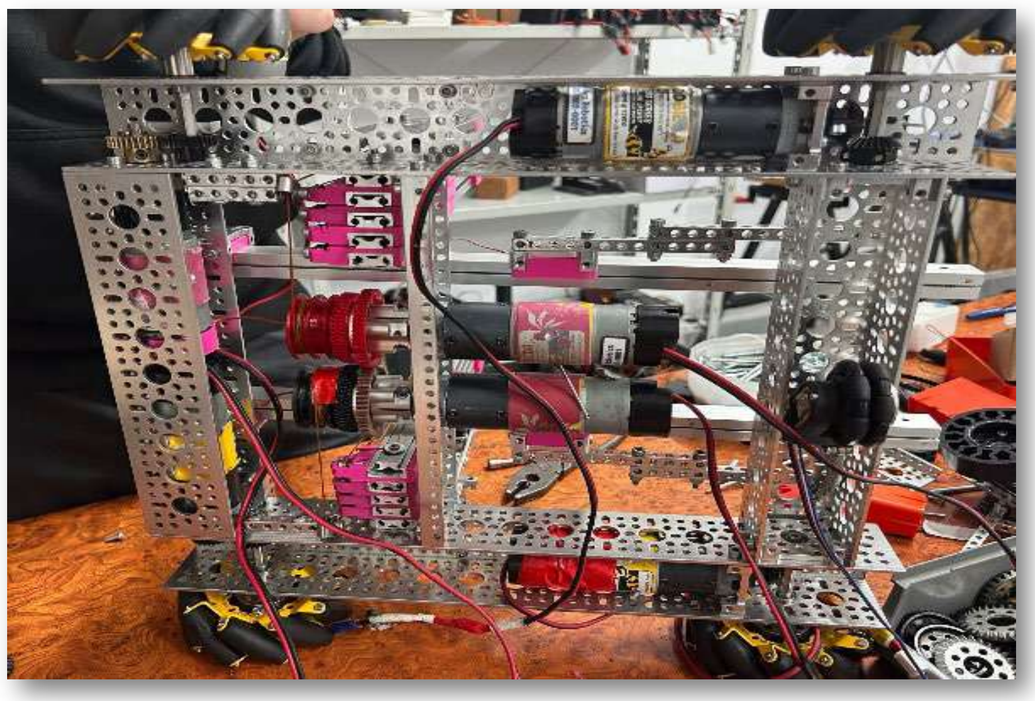
Authors: Visirin Alexandru, Irimie Breban, Crețu Matei, Cosma Iulia, Șindea Adrian, Stancovici Sara, Bălășoiu Alexandru, Balea Ioan, Hurdubeu Ioana, Covaci Elena, Glava Alexandra, Băluș Dari, Rotari Mădălina, Gașpar Dragoș, Gorneanu David, Crăciun Sofia, Coza Dragoș, Șchiopu Alexandra, Bozdog Alexandra, Iosif Roxana, Someșan Rareș; Mentor: Sorin Stănculescu

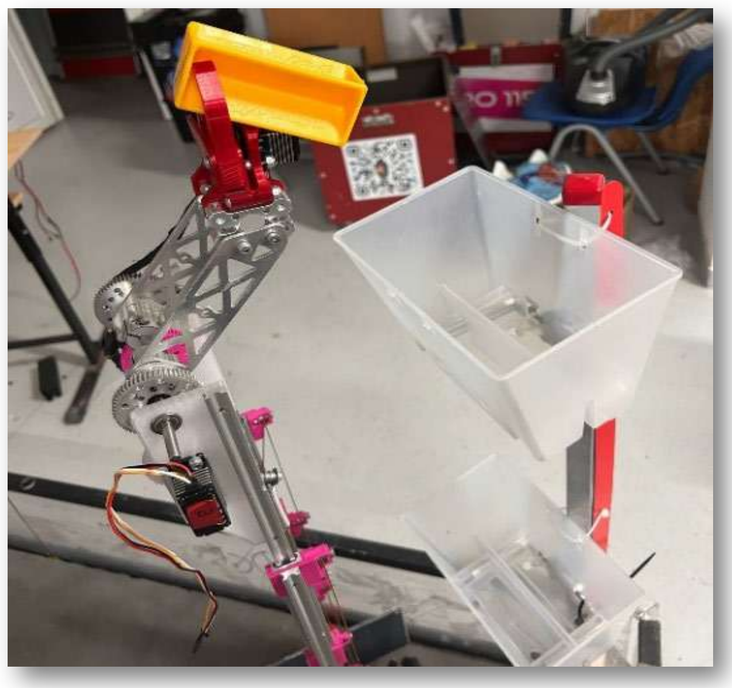
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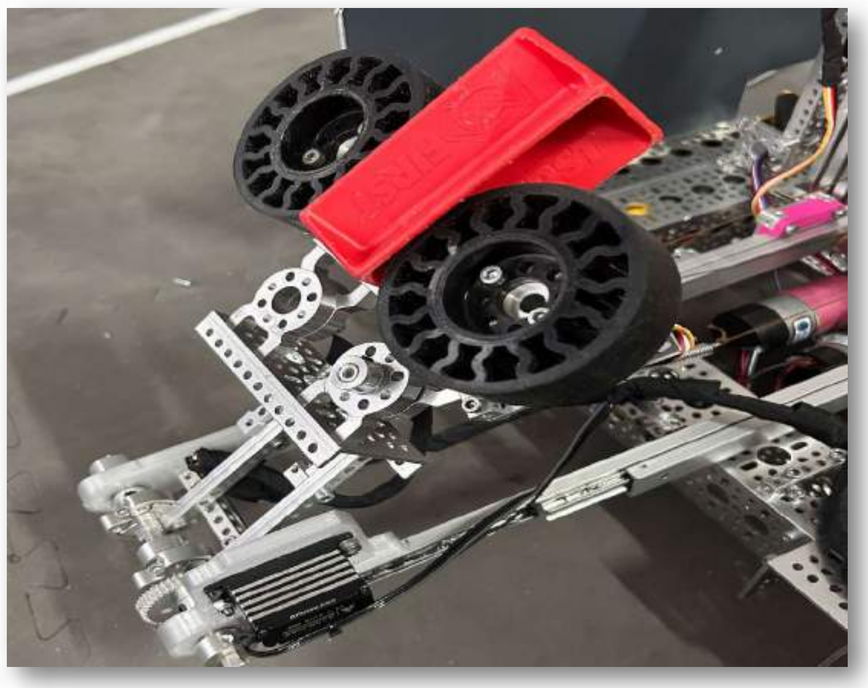
Our robot consists of: • Chassis • Intake system • Outtake system • Transfer

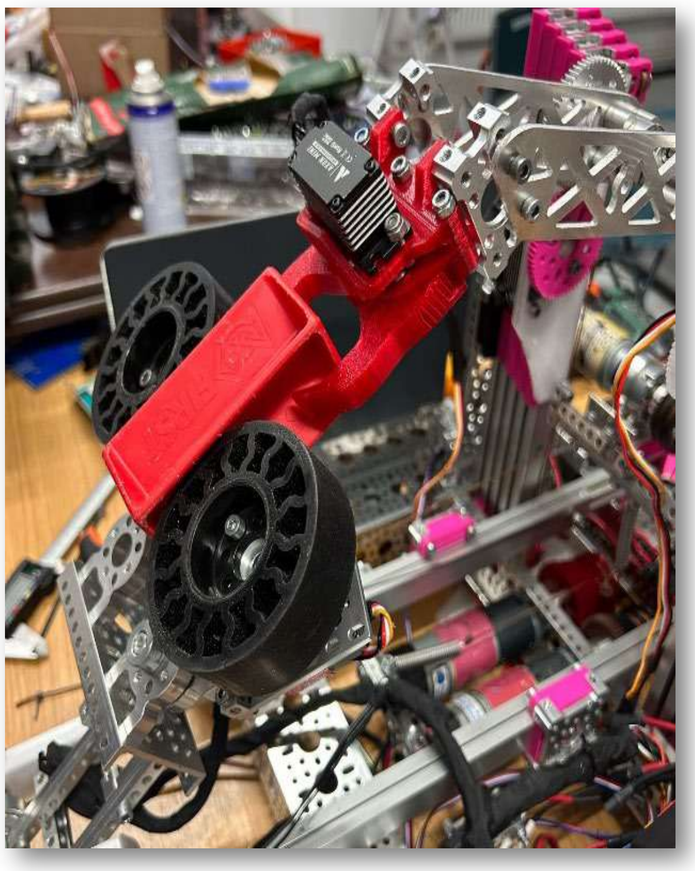
The chassis consists of 4 435 RPM motors, the front ones driving the wheels with pyramidal reductions, and the rear ones using normal gears. The wheels used are mecanum wheels that allow movement in any direction.

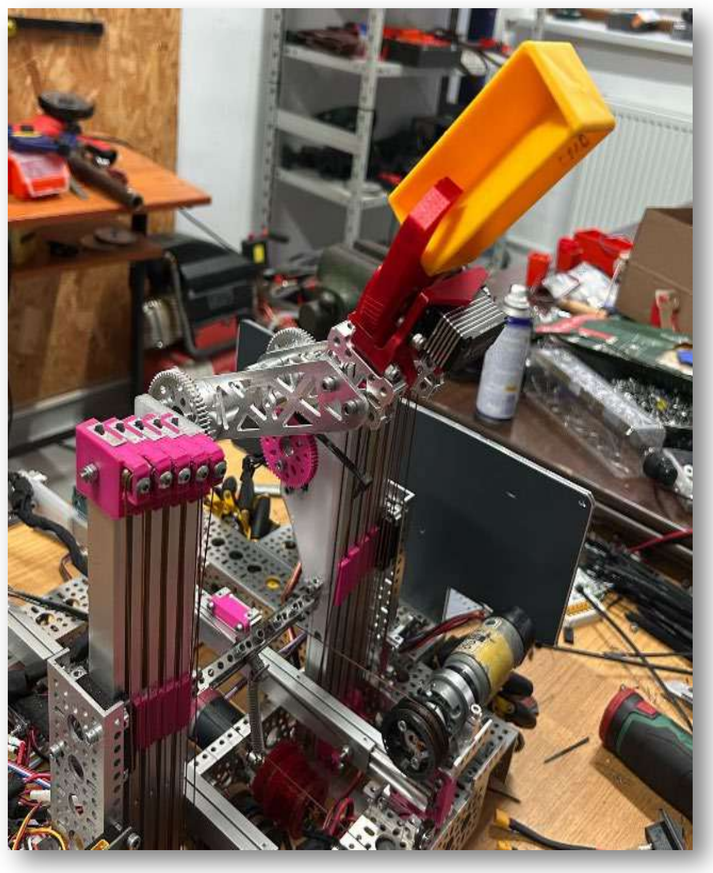
The intake system consists of two misumi-type sliders that extend forward using a thread that is driven by a 1150 RPM motor. Between these sliders is the intake, which is attached using two 3D printed parts. The intake consists of two rubber wheels that rotate using two mini axles, in order to be able to take the sample, the axles are attached to each other with a spring, in order to take the right samples, a color sensor is used behind the wheels, which stops the axles when it detects the correct color.











SCAN ME

The outtake system consists of two sets of misumi type slides driven by two 435 RPM motors connected by gears for consistent lift. Between these slides is the outtake which is a 3D printed tongs driven by a mini axon. Sample transfer is achieved by moving the intake arms to the back, and the wheels pull the sample out until the distance sensor on the tongs sees it, at which point the tongs close and prepare to score.

Contact: *roboticacnd@gmail.com*
https://www.youtube.com/@cndrobotics1794

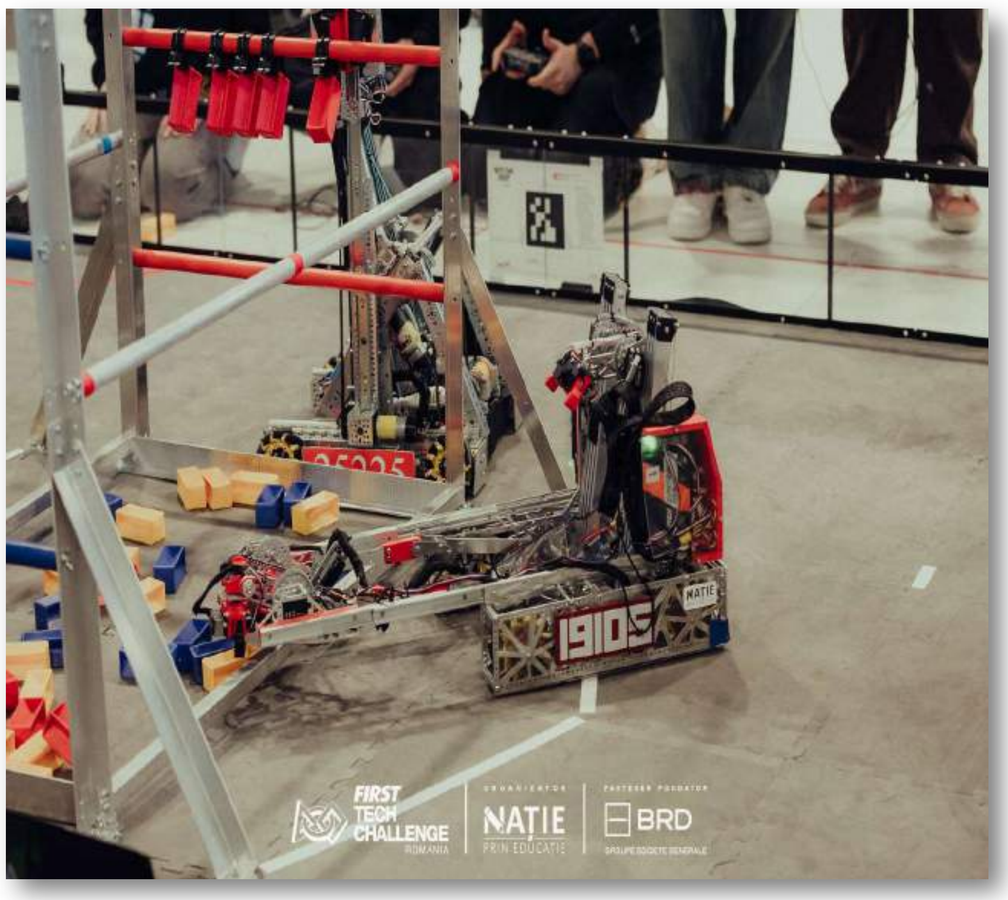
COMPETITION ROBOT INTO THE DEEP

Authors: Armie Andrei, Tomuș Vlad, Chirilă Tudor, Popovici Bogdan, Runcan Cristian, Hariton Vlad, El Haj Sleiman, Călinescu Adrian, Nagy Luca, Petruse Rareș, Popa Sebastian, Adascălului Sebastian, Cătană Irina, Colcea Carina, Ilca Ana, Sicoe Georgiana, Belea Alexandra, Morar Irina;
Mentor: Sorin Stănculescu

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The competition in which our team participates, entitled "First Tech Challenge" - FTC, has reached its ninth season. The theme of this competitive season, "Into the Deep", involves collecting game elements in the shape of rectangular plastic parallelepipeds, either from the playing field or from inside a submersible – a structure made of metal bars. Scoring is done by entering the elements in a basket or by hanging them on one of the bars of the submersible. The competition robot was designed and built by our team to perform the missions of the theme of the 9th season of the FTC Romania competition.









SCAN ME

The robot includes a chassis with four 435 RPM motors that control mecanum wheels for multidirectional movement. An intake system with a gripping claw and extension with horizontal slides for collecting "sample" or "specimens" game elements controlled by servomotors. The gripping claw has several degrees of freedom and with a recognition system can identify the position of the game pieces. Scoring is done by a tong mounted on an arm, also having the possibility of extending, the entire scoring assembly (outtake) being raised to the level of the baskets or the bar with the help of slides driven by 1150 RPM motors located on a common axis.

Contact: *roboticacnd@gmail.com* *ttps://www.youtube.com/@cndrobotics1794*

Arduino for autonomous car

C

Research project
Author/s: Eugen BIRTOK , Raluca ROB

This paper presents the construction of an autonomous car and its programming in order to accomplish various abilities. The car is constructed on a chassis with four dc motors. The car controller is an Arduino Uno development board which is programmed in order the car is able to manage itself, avoiding the encountered obstacles. The distance to the obstacles can be modified by the user. An ultrasonic distance sensor is used for acquire the distance measurement. Like any autonomous car, the manual command options when required are mandatory. Therefore, an application on mobile phone is programmed. This application permits the motors controls on forward, backward, left and right turn,parking, using bluetooth transmission.

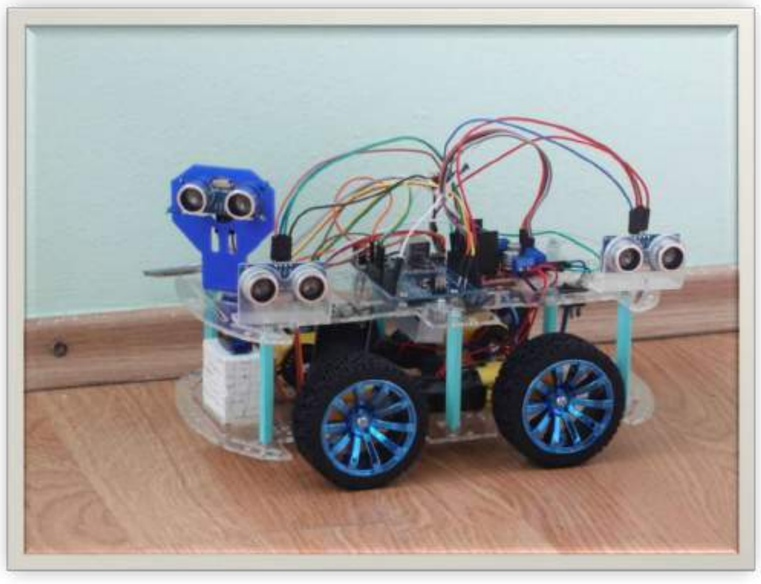
In the construction of this car were necesary the following parts:
Arduino Uno development board
Driver for L298N integrated circuit motors connects to Arduino digital pins.
HC-05 bluetooth module
Ultrasonic sensor HC-SR04 (to avoid obstacles and parking)
SG90 servomotor (for sensor movement at a certain angle)
DC 12V Battery Pack 3000mAh Rechargeable Lithium Battery Pack
65 mm Rubber Wheel RC Model Tires

Description of the Arduino program
A function has been programmed for each order. Thus, the *Forward () function* sends appropriate logic levels to the input pins in the driver, so that the wheels allow forward movement. To enable communication with the bluetooth module . The novelty consists in the implementation of two functions of modifying the engine speed. For parking I make a function Parking, a function for Autonomy.

Android app description
MIT App Inventor is an open-source web application developed by Google that allows you to create programs for two types of operating systems: Android and iOS. The platform uses a graphical user interface similar to the Scratch programming language, in which the programmer can create objects by drag-and-drop. Following the compilation, an application is created that can be transferred to the mobile device.

```
void Stanga(){
digitalWrite(A0, LOW);  //setare 0 la In1
digitalWrite(A1, HIGH);  //setare 1 la In2
analogWrite(EnA, 120);  //reglaj viteza intre 0-255  de preferat 100
digitalWrite(A2, LOW);  //analog pentru motorul 2
digitalWrite(In4, LOW);
analogWrite(EnB, 120);
}

void Inapoi(){
digitalWrite(A0, HIGH);  //setare 1 la In1
digitalWrite(A1, LOW);  //setare 0 la In2
analogWrite(EnA, 120);  //reglaj viteza intre 0-255  de preferat 100
digitalWrite(A2, HIGH);  //analog pentru motorul 2
digitalWrite(In4, LOW);
analogWrite(EnB, 120);
}
```





Contact: eugene_birtok@yahoo.com

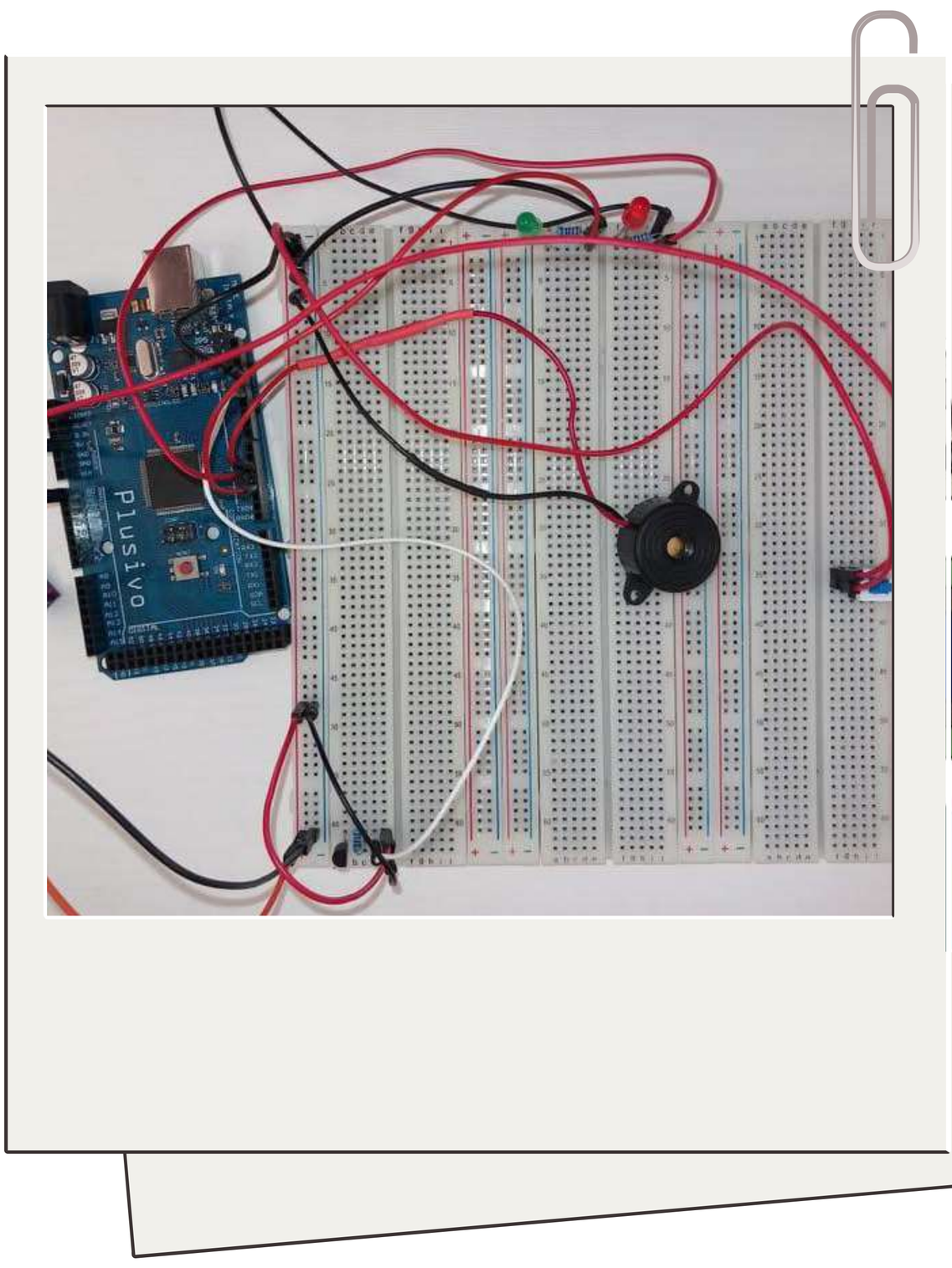
Centrul Judetean de Excelenta Hunedoara

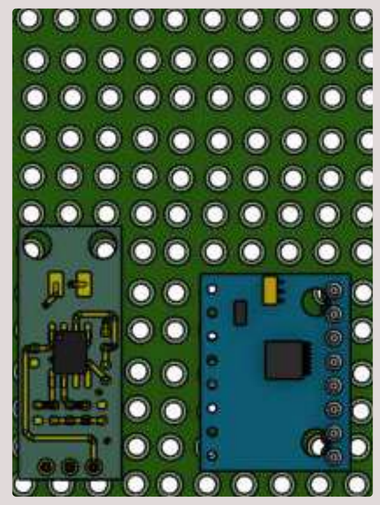
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BlackBox

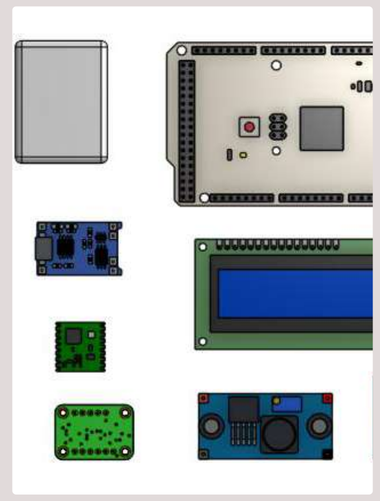
Authors: Madaras Levente
Moldovan Maia Emilia
Coordinator: Paul Țoța

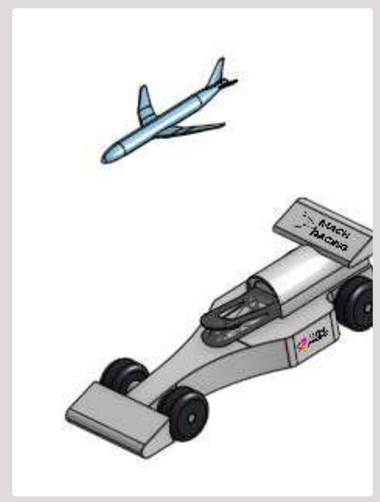
This project brings together science and passion, creating a device that can be used both in general aviation and in Formula 1 racing. Essentially, it is a kind of "flight recorder" built from scratch with simple electronic components capable of collecting and storing essential data regarding the performance of the vehicle or aircraft. This probe can provide a time evolution of the elements surrounding the aircraft/vehicle, such as temperature, atmospheric pressure, UV radiation and even spatial displacement along with the recorded accelerations and speeds. It can even function as a calibrated altimeter in various modes and is useful for quickly calculating the distance traveled, along with the various types of aviation speeds (GS, IAS, TAS, CAS) without any input from the pilot, reducing the workload . This "flight recorder" is programmable and can be easily modified to perform different readings and calculations as needed.











- **Contact: contact@cexhd.ro**

MOBILE TRAINING GROUND FOR THE PRACTICAL TRAINING OF INTERVENTION AND RESCUE PERSONNEL IN TOXIC / EXPLOSIVE / FLAMMABLE ENVIRONMENTS

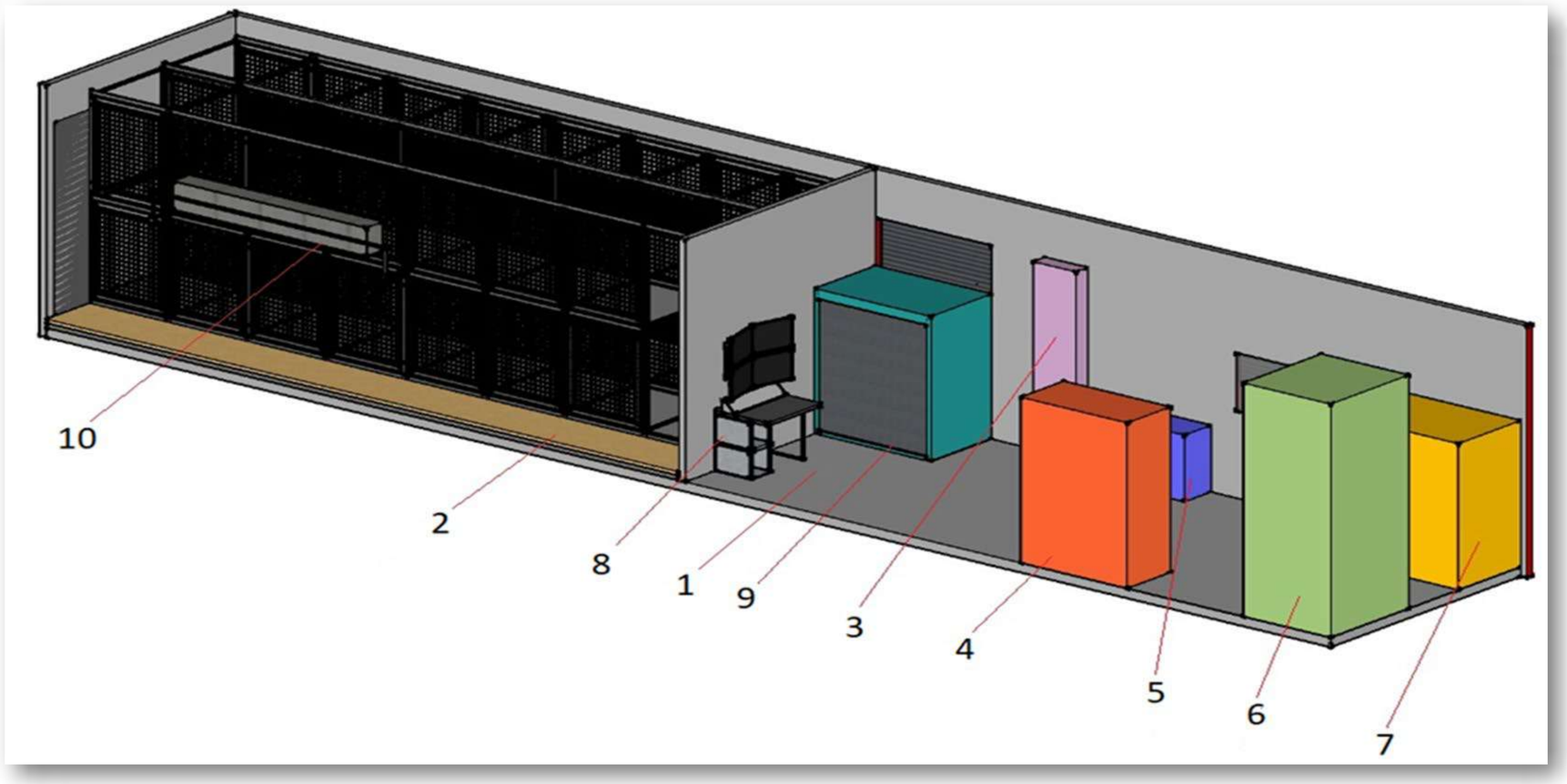
Patent/project number: CBI A 2022 00640

Author/s: Nicolescu Cristian, *Găman George Artur, Ghicioi Emilian, Pupăzan Daniel, Găman Angelica Nicoleta, Ilie Cosmin, Irimia Alin, Gireadă Andrei, Toth Lorand, Kovacs Marius*

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In order to carry out the activity of intervention and rescue personnel in toxic / explosive / flammable environments in conditions of safety and health at work, and for the efficiency of the actions taken, a good physical training of the rescuers is necessary, which can be achieved by using a modern training infrastructure (mobile polygon) that can be made available to any economic agent regardless of the place and nature of the activity they carry out.

The mobile training polygon of rescuers allows the realization of a training route of rescuers in closed spaces with different degrees of difficulty, high temperature, low visibility, high humidity, as well as the training of rescuers in the fitness equipment area with the monitoring of the physiological parameters of the rescuers. All these factors lead to the selection of rescuers in order to form rescue teams that can intervene in the event of fires / explosions / releases of toxic gases, etc.



1-fitness equipment area with the monitoring of the rescuers' physiological parameters
2-the area of narrow spaces that make up a labyrinth that the rescuers go through
3-the scale of infinity
4-ergometer type bicycle
5-treadmill
6-impact device
7-stepper
8- computer control system with the necessary applications for training
9-cabinet for breathing protective devices
10-high temperature zone

Figure 1: 3D representation of the location of the equipment in the mobile training ground

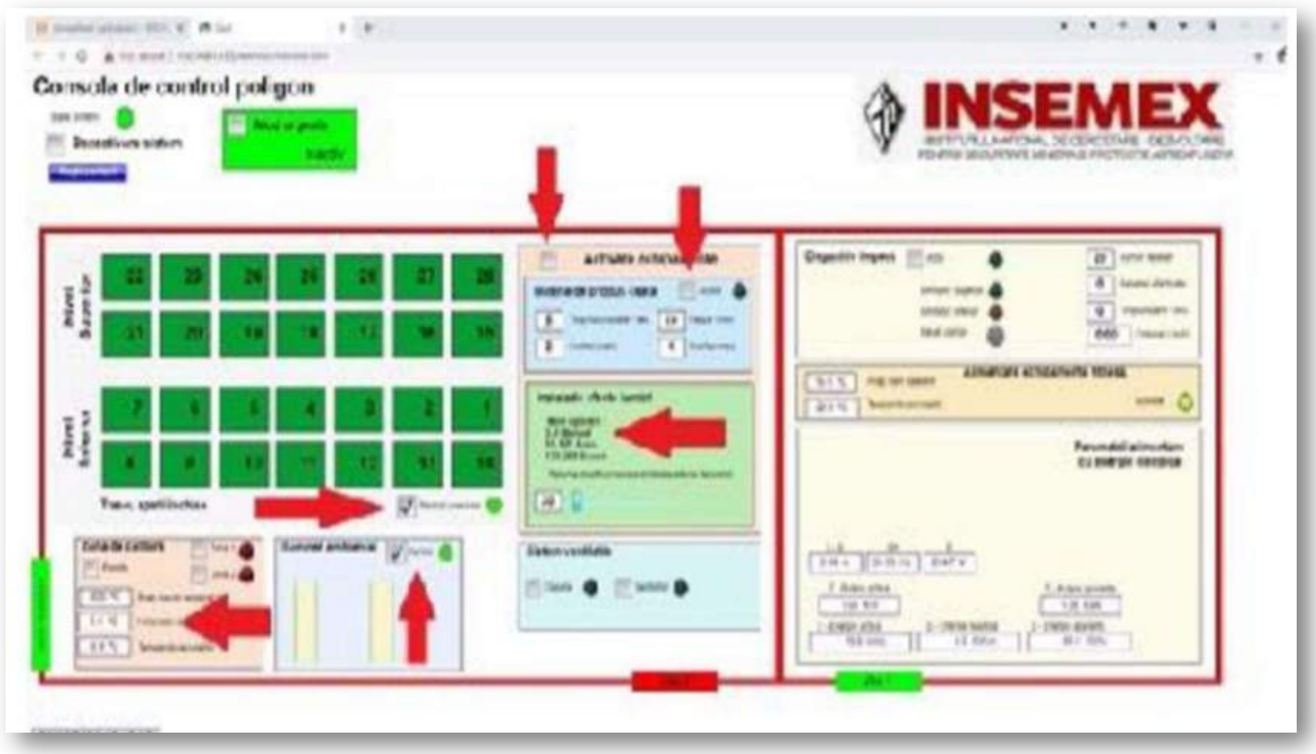


Figure 3: Control interface for activities in the narrow spaces area



Figure 2: Screenshot of monitored parameters

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Developing a Sustainable and Intelligent Digital Platform for Academic & Administrative Quality Enhancement at Onaizah Colleges, Saudi Arabia

Dr. Bandar Al-Humaidi Al-Mutairi
Dean of College of Humanities and Administrative, Onaizah Colleges, Saudi Arabia

Dr. Maged Farouk
Business Administration Department, College of Humanities and Administrative, Onaizah Colleges, Saudi Arabia

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The main Idea of the Developed Digital Platform

Developing an intelligent digital platform that leverages artificial intelligence (AI) to support academic and administrative quality programs at Unaizah Private Colleges in alignment with international accreditation standards. This platform aims to cultivate an innovative and advanced educational ecosystem by enhancing curriculum quality, fostering faculty development, optimizing administrative processes, and creating an enriched learning environment for students.



The Main Suggested Steps

1. Define Goals & Vision

To enhance the quality of university education, this program focuses on integrating Artificial Intelligence (AI) into teaching and assessment. AI-powered tools can personalize learning experiences, provide real-time feedback, and improve educational outcomes. By embracing innovative methodologies, universities can ensure continuous improvement and alignment with global academic standards.

2. Form the Team

A multidisciplinary team is essential for successful implementation. Academics contribute expertise in pedagogy, AI specialists provide technical support, and administrators ensure smooth integration into existing educational frameworks. Collaboration between these stakeholders fosters a holistic approach to quality education.

3 .Feasibility Study & Analysis

A comprehensive feasibility study evaluates the financial and technological requirements for AI-driven education. This includes assessing costs, potential benefits, infrastructure needs, and scalability. Identifying key challenges and opportunities at this stage ensures a well-informed and efficient implementation process.

4. Select Tools & Technologies

Choosing the right AI tools is crucial for optimizing teaching and assessment methods. AI-powered platforms can facilitate adaptive learning, automate grading, and generate data-driven insights into student performance. These technologies enhance engagement and make education more accessible and efficient.

5. Develop an Implementation Plan

A phased approach ensures structured execution. The project is divided into four stages:

- Research: Identify best practices and AI applications in education.
- Development: Customize AI tools to fit the university's needs.
- Testing: Conduct pilot programs and refine methodologies.
- Implementation: Integrate AI into the broader educational system.

6. Measure Student Performance Using AI Systems

To enhance the quality of university education, this program focuses on integrating Artificial Intelligence (AI) into teaching and assessment. AI-powered tools can personalize learning experiences, provide real-time feedback, and improve educational outcomes. By embracing innovative methodologies, universities can ensure continuous improvement and alignment with global academic standards.

7. Sustainability

Ensuring long-term success requires continuous training for educators, regular updates to AI systems, and proactive maintenance. Universities must develop policies for AI ethics, data security, and ongoing improvement. By fostering a culture of adaptability and innovation, the program remains relevant and impactful in the evolving educational landscape.

Benefits of Applying the Developed Digital Platform

- **Enhanced Education Quality**
  AI-driven teaching methods improve engagement, adaptability, and effectiveness.
- **Personalized Learning**
  AI tailors educational content to individual student needs, improving comprehension and retention.
- **Efficient Assessment & Feedback**
  Automated grading and real-time feedback streamline evaluations and ensure continuous improvement.
- **Data-Driven Decision-Making**
  AI analytics provide insights into student performance, helping educators refine teaching strategies.
- **Cost & Resource Optimization**
  AI reduces administrative workload, minimizes manual processes, and optimizes resource allocation.
- **Increased Accessibility**
  AI-powered tools support diverse learning needs, making education more inclusive.
- **Continuous Improvement & Sustainability**
  Ongoing training, system updates, and AI advancements ensure long-term success.
- **Alignment with Global Standards**
  AI integration keeps universities competitive and aligned with international accreditation requirements..

Contact

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Smart Academic Management: Leveraging AI for a Data-Driven Future in Education: Implementation at Onaizah Colleges, Saudi Arabia

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Project Overview

The project aims to enhance and streamline the management of academic processes within the college by leveraging artificial intelligence and advanced technological tools. It is designed to facilitate student tracking, data collection, and the generation of highly accurate and efficient reports.
Additionally, the system offers several key advantages, including:

- Improved decision-making through data-driven insights.
- Enhanced communication between faculty and students.
- Reduced administrative workload by automating routine tasks.
- Increased efficiency and accuracy in report generation.
- Better data security and integrity to protect sensitive information.
- Seamless integration with existing academic systems.
- More focus on academic development and student support for educators.



Recommended Steps for Implementation

1. Define Goals and Vision

The first step is to set clear goals and a strong vision. The goal is to enhance academic process management through advanced technology, streamlining tasks, improving efficiency, and ensuring accuracy.

2. Form the Team

- A well-structured team is crucial for successful implementation.
- It should include academic administrators, IT specialists, AI experts, and data analysts, each contributing based on expertise. Effective collaboration ensures a robust system that meets academic and technological needs.

3. Feasibility Study

Before implementation, a feasibility study assesses technical and financial aspects. The technical study identifies required tools, AI solutions, and software, while the financial study evaluates costs, savings, and long-term benefits. This ensures project viability and sustainability.

4. Choose the Right Tools and Technologies

Choosing the right AI tools and platforms is key to meeting project goals. They must integrate with existing systems for seamless data transfer. This step evaluates AI solutions for attendance tracking, grading, and assessments to match institutional needs.

5. Design and Develop the System

System design prioritizes user-friendly interfaces for faculty and administrators. The development phase includes features for attendance tracking, grade management, and automated assessments, with flexibility for scalability and future upgrades. An intuitive user experience is essential for successful adoption.

6. System Testing

Before full implementation, the system undergoes thorough testing in a controlled environment to assess functionality and effectiveness. Simulated academic scenarios identify technical issues, while security measures are verified to protect sensitive academic data from cyber threats.

7. Train the Staff

To maximize benefits, faculty and administrators receive comprehensive training on navigating the system, inputting data, and using AI features effectively. Training is hands-on and includes troubleshooting to build confidence.

8. Deploy the System

Once testing and training are complete, the system is deployed across all departments. The process is closely monitored to address technical challenges and ensure a smooth transition, with ongoing support for troubleshooting and optimization.

9. Continuous Evaluation

Regular feedback from faculty, administrators, and students helps improve system performance, ensuring ongoing updates and alignment with academic needs.

10. Ensure Sustainability

A maintenance plan is established for routine updates, performance monitoring, and ongoing training. This ensures long-term success and uninterrupted benefits of AI-driven academic management.

11. Ensure Data Security and Privacy

Protecting academic data is a priority. Security measures like encryption, access control, and backups safeguard sensitive information, while compliance with data protection regulations ensures privacy and trust.

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AI-Driven Supply Chain Optimization: Revolutionizing Sustainable Logistics and Operations in the UAE

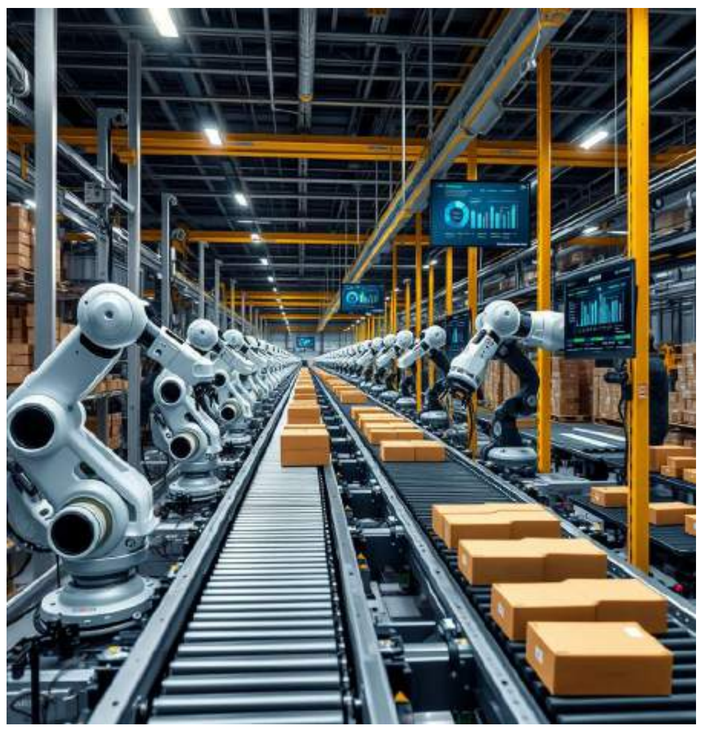
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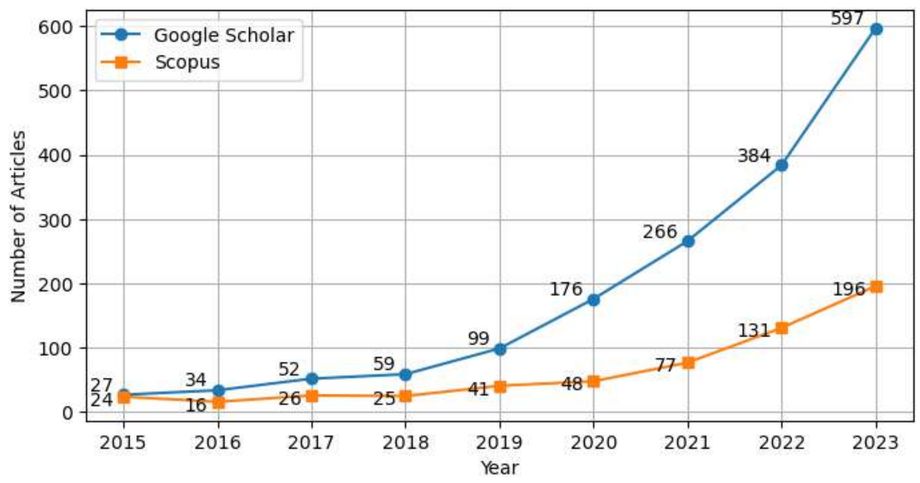
The Integration of AI and Supply Chain Management

The integration of artificial intelligence (AI) into supply chain management (SCM) is revolutionizing how businesses operate, enhancing efficiency, and reducing costs. Companies like Amazon are heavily investing in AI-driven automation to optimize their logistics networks, with plans to allocate up to $25 billion towards robotics-led warehouses, anticipating annual savings of about $10 billion over the next decade [1]. Similarly, FedEx has partnered with AI robotics firm Nimble to automate order fulfillment and inventory management, aiming to bolster its supply chain capabilities across North America [2]. In the fashion industry, AI-powered demand forecasting tools are addressing inventory challenges by analyzing complex data to predict consumer behavior more accurately, thereby reducing waste and enhancing profitability [3]. These developments underscore AI's pivotal role in transforming SCM, enabling companies to navigate complexities with greater agility and precision.



The Intersection of AI, Logistics, and Sustainability

Optimizing supply chains is essential for business success, allowing companies to meet customer demands and remain competitive. Logistics networks also play a key role in economic and social development. The World Bank's Logistics Performance Index (LPI) assesses logistics efficiency, reflecting the impact of policies on trade and growth. Given the importance of logistics in sustainability, integrating sustainable practices is crucial. AI in logistics can enhance efficiency, reduce emissions, and support sustainability goals, as demonstrated by the increasing research in AI and



AI-Powered Supply Chain Innovations by Pioneering UAE Companies

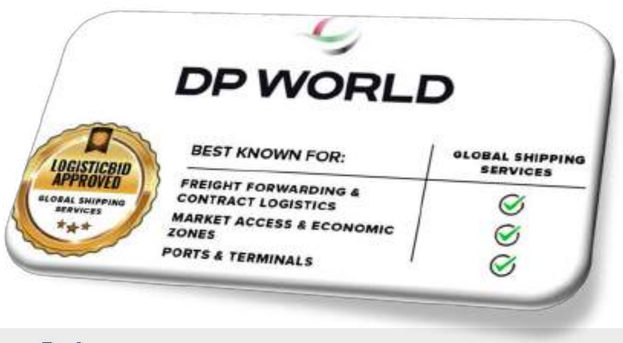


Emirates SkyCargo

the air freight division of Emirates Airlines, has adopted AI solutions to streamline its operations. They use AI to optimize flight and cargo capacity, predicting demand for air freight services. Additionally, AI-powered systems monitor environmental conditions during transportation to ensure that sensitive cargo, like pharmaceuticals and perishables, is handled properly, thereby improving reliability and reducing waste.

Al-Futtaim Group

has integrated AI in its supply chain processes to improve operational efficiency. By utilizing AI algorithms to analyze customer purchasing patterns, the group can better forecast demand and optimize its supply chain operations across various sectors, including automotive, retail, and electronics.



DP World,

a leading global logistics company based in Dubai, is leveraging AI and machine learning to optimize its operations. The company uses predictive analytics to forecast container traffic, improving resource allocation and reducing congestion at ports. By analyzing historical data and trends, DP World enhances its supply chain efficiency and minimizes delays in shipping and logistics.[5]



Noon

an e-commerce platform in the UAE, employs AI to enhance its logistics and warehousing operations. The platform uses AI algorithms to predict demand for products, allowing for better inventory management and distribution. Additionally, Noon has implemented AI-driven automated warehouses that use robotics for sorting and packing orders, increasing efficiency and reducing fulfillment times.

Dubai Customs

has implemented AI-driven solutions to enhance its supply chain security and efficiency. The department uses AI algorithms to analyze customs data and identify potential risks, improving inspection processes and reducing clearance times for goods. This integration of AI contributes to a smoother flow of goods through the UAE's ports and borders.

Etisalat

a major telecommunications provider in the UAE, uses AI to enhance its supply chain management. The company employs predictive analytics to manage its inventory and streamline the procurement process for network equipment. By analyzing data from various sources, Etisalat can optimize its supply chain operations, reduce costs, and improve service delivery.

Majid Al Futtaim,

a leading retail and leisure conglomerate in the UAE, has implemented AI-driven inventory management systems. The company uses machine learning algorithms to analyze sales data and predict customer demand. This enables Majid Al Futtaim to optimize stock levels in its Carrefour supermarkets, reducing excess inventory and ensuring product availability while minimizing costs.

References

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UAE In-Country Value (ICV) Certificate: A Framework for Sustainable Economic Growth

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What is " In-Country Value (ICV) Certificate"

ICV is a groundbreaking initiative by the United Arab Emirates (UAE) aimed at enhancing economic resilience, fostering industrial diversification, and advancing workforce development.

Launched by the Ministry of Industry and Advanced Technology (MoIAT) in collaboration with ADNOC and other local entities.





How Companies Obtain the ICV Certificate

companies must follow a structured process:

- ❑ *Engage an Approved Certifying Body*
  Register under the Ministry of Industry and Advanced Technology (MoIAT).
- ❑ *Submit Audited Financial Statements*
  Assessed to determine the company's local value contribution.
- ❑ *Provide Local Economic Data*
  Includes details on Emirati employment, local procurement, and investments.
- ❑ *Receive ICV Score*
  Valid for 14 months and essential for gov. tenders and contracts.

The Role of the ICV Program in Strengthening Local Industries and Workforce Development

The ICV program incentivizes businesses to strengthen their economic contributions within the UAE by focusing on:

- Prioritizing local procurement of goods and services.
- Increasing employment opportunities for Emirati nationals.
- Investing in research, development, and rial expansion.





Implementing Similar Programs: A Global Blueprint

Countries looking to enhance economic resilience and local industry growth can adopt strategies inspired by the UAE's ICV program:

- ➢ `Establish Local Value Assessment Models`
  Develop structured frameworks to assess local economic contributions in government contracts, ensuring alignment with national growth objectives.
- ➢ `Encourage Local Employment`
  Introduce incentives for businesses that prioritize hiring and upskilling local talent, strengthening the national workforce.
- ➢ `Harness Technology for Efficiency`
  Leverage digital tools to simplify compliance, enhance transparency & optimize program administration.

ICV's Economic Impact

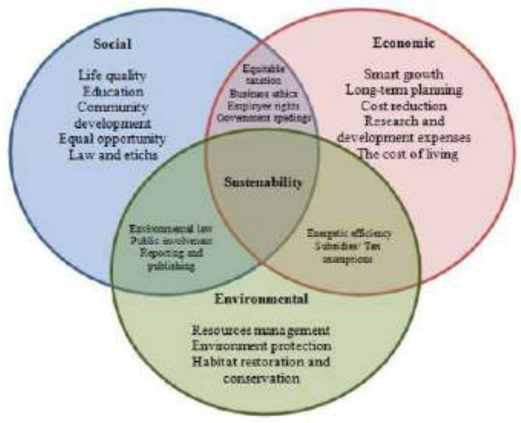
The ICV program is a key driver of the UAE's economic strategy, fostering a thriving business ecosystem for local and foreign investors.

- *Strengthening Local Businesses,* Supports SMEs and startups with preferential access to government contracts, enhancing supply chain resilience.
- *Job Creation for UAE Nationals* – Rewards companies with higher Emirati employment; in 2024, over 19,000 Emiratis were hired: a 40% increase from 2023.
- *Boosting Industrial Growth:* Encourages local manufacturing investment, reducing import dependency and enhancing self-sufficiency.

By promoting economic diversification and sustainability, the ICV program strengthens the UAE's long-term

ICV & Sustainability: Economic, Social & Environmental Impact

ICV supports the UAE's sustainable development goals by fostering a balanced economic ecosystem:



Conclusion: A Global Blueprint for Economic Growth

- ✓ The UAE's ICV model stands as an inspiring blueprint for nations around the world, offering valuable insights into how governments can stimulate local economic growth while maintaining global competitiveness.
- ✓ Through its structured and sustainable approach, the ICV model demonstrates that fostering local industry, empowering the workforce, and encouraging strategic investment are essential drivers of economic prosperity and innovation.
- ✓ The UAE's ICV initiative transcends traditional economic policies, it represents a visionary strategy for the future.
- ✓ By empowering businesses, nurturing innovation, and setting a benchmark for sustainable national development, it offers a powerful model for countries seeking long-term success on the global stage.

References

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Automotive

Space science

Aviation

Ships

Mechanics

TERRITORIAL AEROCLUB "Constantin Manolache" DEVA

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Author: *Gheorghe ȚINEGHE & Team*

Founded in 1975, the Deva Aeroclub is located east-southeast of the municipality of Deva, at a distance of 7 km. Its entire length is between the Simeria - Deva railway and the shore of Mureș. At the beginning of its operation, it was called the "Dacia" Deva Aeroclub, then the name changed, becoming the "Constantin Manolache" Deva Aeroclub, and then the Deva Territorial Aeroclub.

The Săuleşti field, which later became an airfield, not too far from the one in Bintiți where Aurel Vlaicu had flown with his "beetle" in 1909, is a place that has become an important airfield among the "airfields" in our country . On October 1, 1935, the decision was made to establish a flying school without a motor in the field of Săuleşti, and within the school of arts and crafts in Deva, a section to build gliders.











In 1975, the decision was made to reorganize the Deva aeroclub, using the former airport base and the AVIASAN station. in the latter part of 1975, preparations began and the Central Aeroclub established the personnel that will serve this aeroclub.

The Aeroclub organizes theoretical and practical courses for obtaining the licenses of parachutist, glider pilot, ultralight pilot and PPL(A) pilot.

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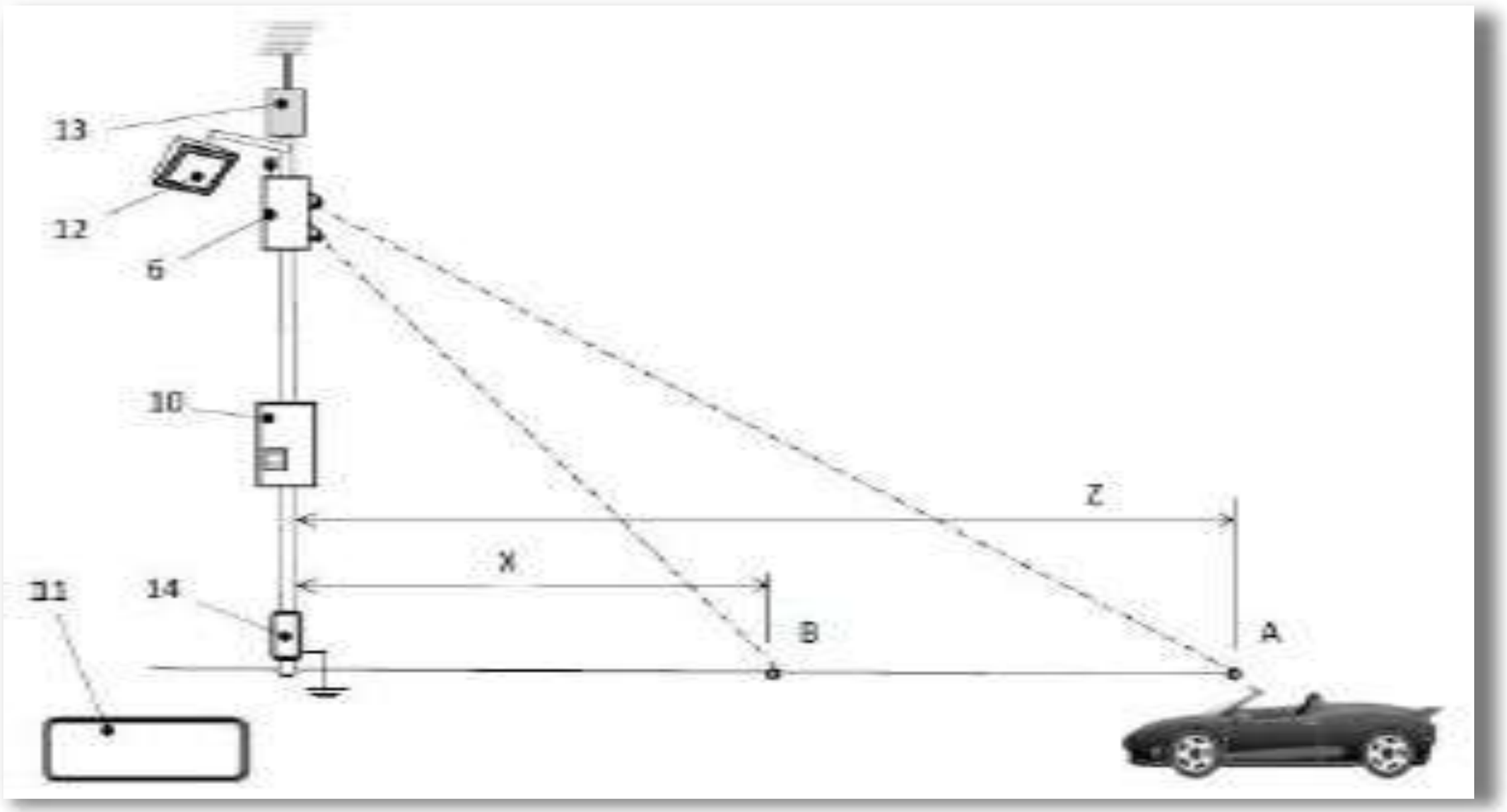
MONITORING SYSTEM FOR CONTROL OF VEHICLE SPEED LIMITS ON PUBLIC ROADS

Patent:*No. O.S.I.M.-A/00001/03.01.2024*

Authors: **Pavel Ştefan, Ungureanu Daniel-Viorel**

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The invention refers to a fixed electrical system for preventing accidents caused by excessive speed on public road segments with vehicle speed restrictions.



ADVANTAGES:

Detects when a vehicle exceeds the allowed speed limit on a designated road segment and determines its actual speed.

It prevents the driver from exceeding the legal speed limit.

Verifies compliance with speed adjustment requests.

In case of noncompliance, it neutralises the vehicle's control system through an electromagnetic pulse, causing it to come to a stop.

It records, archives and transmits data via an internet connection to authorised authorities responsible for managing such situations.

The installation is energy self-sufficient.

The installation does not pollute the environment.

The generation of the electromagnetic pulse is automatically disabled when emergency vehicles (police, rescue, firefighters, military, government officials, etc.) pass through the designated area and are reactivated after their passage

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CNC TRAINING CENTER IMPLEMENTATION IN POLITEHNICA UNIVERSITY OF TIMISOARA

Authors: coordinator: Assoc. Prof. Ph.D. Adrian BUT
student: Marius CIOBANU

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This Young people need to be motivated by demonstrating the relevance of manufacturing technology and in direct connection to the “Hi-Tech” systems, products and services which are essential to their way of life. In the paper is present the CNC(Computer Numerical Control) TRAINIG CENTER concepts concept and the results of the implementation in “POLITEHNICA” University of Timisoara, Romania. CNC Technology is the key technology which makes today’s manufacturing possible. Raise awareness of opportunities in manufacturing and motivate young people to become hi-technologists are the CNC trainig center concept who was develop in our technical education center, to operate and program the CNC machine tools.

Base on the collaboration between manufacturing department and automation and computer department of our university was possible to make the implementation of the CNC technology , who represent one application at the border between this two directions of specialization.

Using the competitive CNC training center, who was develop in our university, compose by one CAD/CAM laboratory, one simulator room where is made the CNC program simulation on CNC simulators equipments and one shop flour who is equip with the last generation of CNC machine tools, the students and the peoples from industrial companies who want to up great their skills, can project, program and execute high technological parts.

Using this “close system” is possible to learn, to optimize, to research every steps of the “technological life” of any product: projecting-programming-manufacturing, all this, assisted by the computer.

In the paper are present too, the results and the new directions what we intend to develop in academic area but in the same time, the collaboration with the industrial companies .



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CONCEPT OF A CNC PLASMA CUTTING MACHINE

Authors: coordinator: Assoc. Prof. Ph.D. Adrian BUT
student: Darius BUZATU

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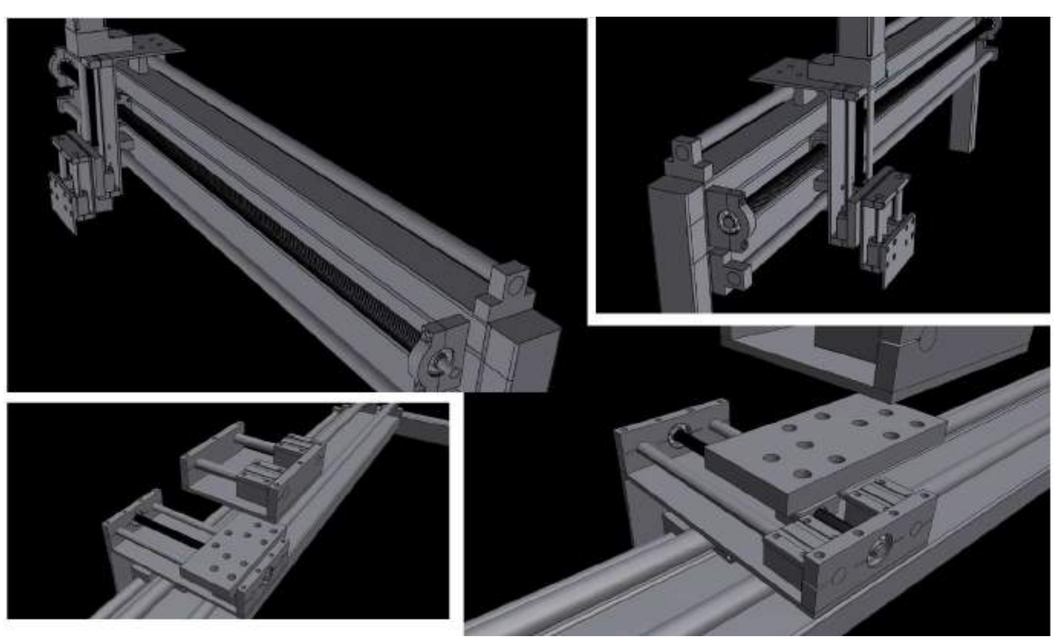
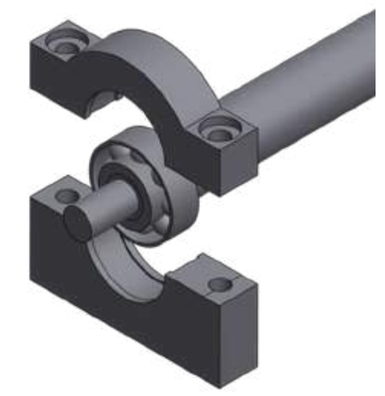
This project aimed to develop and implement a low-cost CNC system for precise plasma cutting, utilizing accessible components and DIY methods to create a practical solution for various machining tasks.

The CNC machine was built using sturdy rectangular tubing, designed and welded for optimal durability. Precision and stability were achieved with SBR 20 linear guides and SFU 2005 ball screws. Electronic components, including a BSMCE04U control board and Nema 42 stepper motors, were carefully integrated and calibrated to ensure smooth operation, with additional relays and limit switches for safety and functionality.

A key feature of this CNC is its compatibility with a 2.2 kW spindle, which expands its capabilities to include milling and other machining operations in various materials, adding versatility for a wide range of applications.

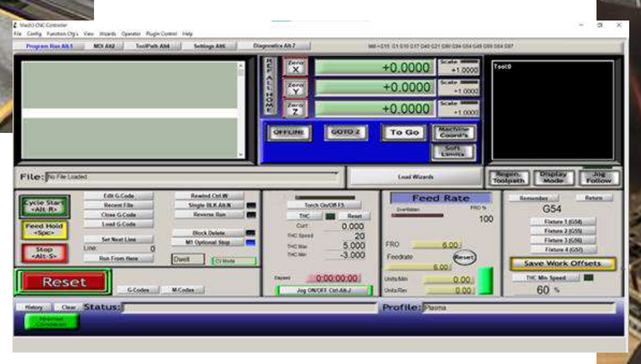
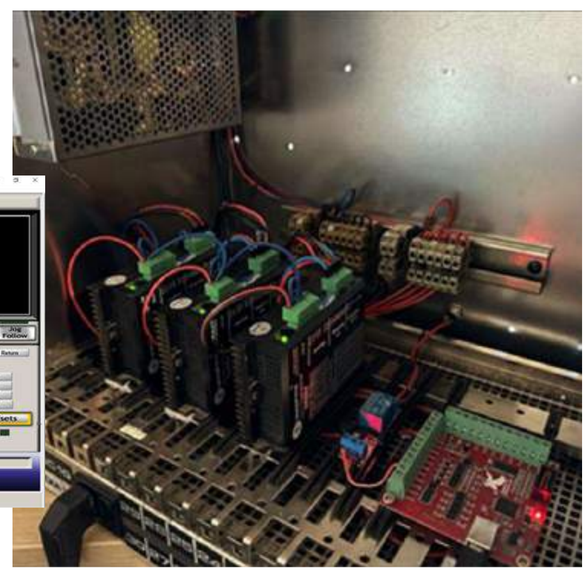
The construction process involved initial design, sourcing essential components, welding and assembling the frame, installing guides and screws, connecting electronic parts, and calibrating the system for accuracy and repeatability. Testing confirmed the machine's full functionality, with precise and efficient cuts that met project expectations, validating the feasibility and practicality of the approach.

Overall, this project illustrates that a precise and economical CNC plasma cutting machine can be achieved with accessible materials and DIY methods. Future enhancements will include advanced technologies like servo motors and Festo portals to elevate the machine to a professional level of precision and performance.





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EVALUATION OF THE FLANK WEAR OF CUTTING TOOLS WITH A CUTTING EDGE

Project number: Student Project
Author: PINCA-BRETOTEAN ALEXANDRU MIHAI

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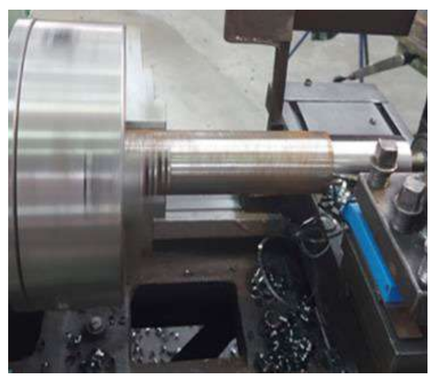
In the course of machining processes, a significant segment of time is dedicated to interrupting the activity for changing or reconditioning the cutting tool. The main reason for these interruptions is their wear. The criterion used to determine the right time to stop the machining process is the cutting tool life, which represents the actual cutting time until allowable wear occurs. The main objective of the project is to determine flank wear for a single-edged cutting tool performing longitudinal roughing turns on the surface of a workpiece using different cutting regime parameters. The experimental strategy consists of performing four roughing turns performed on the same machine tool, with the same type of cutting tool and under the same cutting conditions (without cooling), maintaining the same feed rate and the same depth of cut for four different cutting speeds. The experiments were carried out on a SNB 400 x 2000 mm universal lathe, with a power of 7.5 KW, and the semi-finished product subjected to processing is made of steel, grade 40 Cr10, with a diameter of Ø50 and a length of 300 mm. Each machining was performed with a new lathe knife, made of high-speed steel, with dimensions of 20x20 mm and a P30 insert, with each machining, the turned length being 150 mm. The four turnings were performed successively on the same blank using different speeds, the peripheral cutting speed being determined with the relationship:

$$v = \frac{\pi \cdot d \cdot n}{1000}$$

In order to determine the flank wear, the methodology presented in the specialized literature was adopted, which proposes an incremental measurement of it on the seating face of the cutting edge. The wear profile was drawn based on the measurement results.

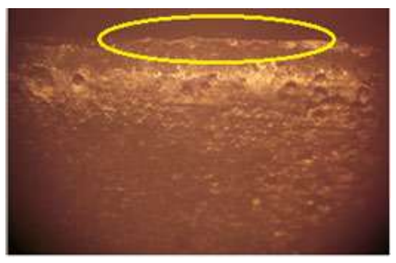
Cutting parameters

No. crt.	Cutting depth t [mm]	Feed rate [mm/rot]	Spindle speed [rot/min]	Machined diameter d [mm]	Cutting speed v [mm/min]
Lathe tool 1	3,5	0,075	31,5	50	4,948
Lathe tool 2			63	43,98	8,704
Lathe tool 3			125	37,01	14,533
Lathe tool 4			250	30,11	23,648





Flank wear



Lathe tool 1



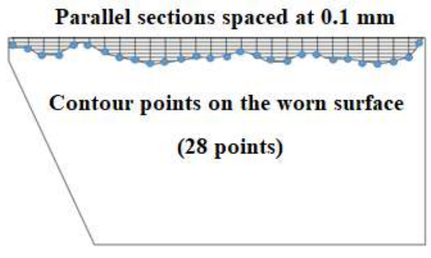
Lathe tool 2

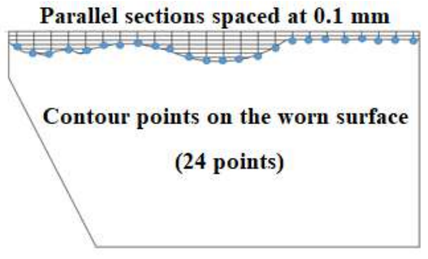


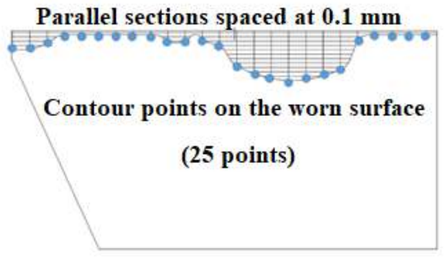
Lathe tool 3

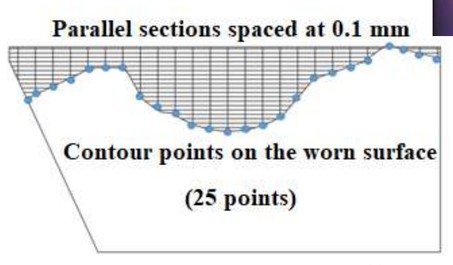


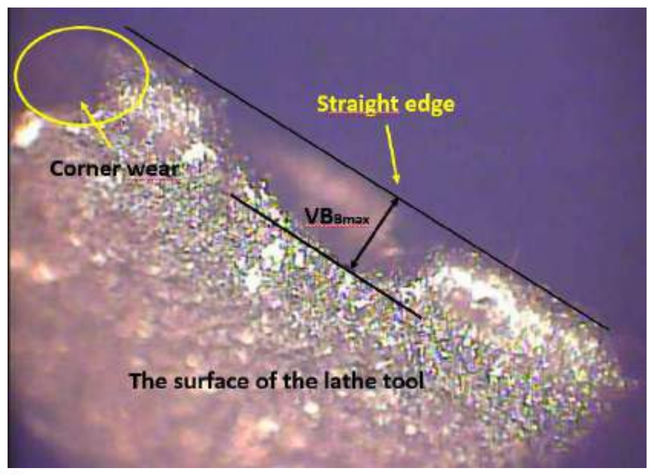
Lathe tool 4











Flank wear characteristics for lathe tool 3

Flank wear values measured

No. crt.	Measured wear values [mm]	Maximum wear VB_{BMAX} [mm]	Average wear VB_B [mm]
Lathe tool 1	0,15; 0,17; 0,14; 0,13; 0,17; 0,18; 0,20; 0,25; 0,23; 0,21; 0,19; 0,16; 0,12; 0,11;0,14; 0,16; 0,11; 0,13; 0,15; 0,15; 0,14; 0,15; 0,15; 0,19; 0,18; 0,17; 0,18; 0,15	0,25	0,1628
Lathe tool 2	0,17; 0,25; 0,26; 0,18; 0,15; 0,13; 0,12; 0,16, 0,17; 0,18; 0,25; 0,35; 0,33; 0,32; 0,28; 0,22; 0,13; 0,12; 0,11; 0,12; 0,11; 0,12; 0,10; 0,11	0,35	0,1841
Lathe tool 3	0,33; 0,33; 0,30; 0,12; 0,11; 0,13; 0,12; 0,12; 0,12; 0,26, 0,27; 0,25; 0,30; 0,50; 0,55; 0,57; 0,59; 0,57; 0,55; 0,54; 0,26; 0,15; 0,16; 0,15; 0,13	0,59	0,2992
Lathe tool 4	0,49; 0,47, 0,45; 0,43; 0,40; 0,39; 0,40; 0,51; 0,53; 0,55; 0,61; 0,63; 0,65; 0,63; 0,61; 0,58; 0,50; 0,33; 0,40; 0,35; 0,25; 0,20; 0,23; 0,25; 0,27	0,65	0,4444

Conclusions:

- Flank wear was present for all cutting speeds analyzed, even at low speeds, and increases as the speed increases.
- For lathe tools 1 and 2 the maximum and average wear values are much lower than the admissible values which means that they can be resharpened for further use.
- For lathe tool 3 both wear values are at the limit of the admissible values.
- The highest wear value was obtained at the highest cutting speed, where the maximum and average wear values exceed the permissible values (VBMax > 0.6 mm and VBB > 0.3 mm). In this case, the lathe tool cannot be resharpened, so it has exceeded its service life.

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AUTOMOTIVE DIAGNOSTICS by Will's GARAGE

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Author: ***Daniel Gabriel IORDACHI & Team***

Will's Total Garage, your trusted partner for leading diagnostic services in the automotive industry. With a team of experts passionate about technology and innovation, we are committed to providing accurate and efficient diagnostic solutions for your vehicle. Whether it's diagnosing mechanical, electronic or software issues, our experienced team uses the latest OBD diagnostic technology and equipment to quickly and accurately identify your vehicle's problems. From passenger cars to commercial vehicles and entire fleets, we offer a full range of diagnostic services tailored to your specific needs. With access to the latest software updates and diagnostic databases, we are able to provide customized solutions and efficient repair solutions. Transparency and open communication are fundamental to us. That's why our team will always thoroughly explain the diagnostic results and available repair options so you can make informed decisions about your vehicle.









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ADAM'S SERVICE

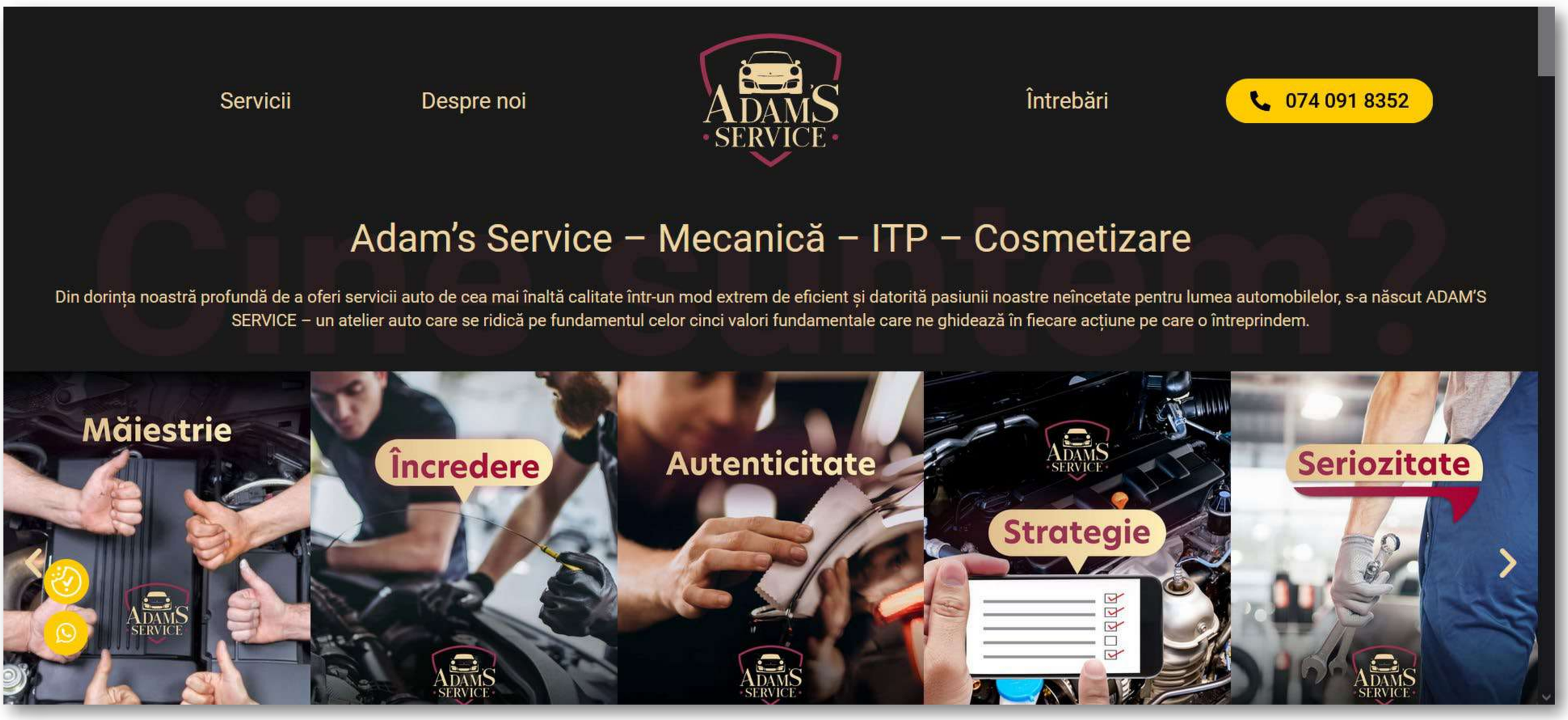
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D

Author: Florin ADAM & Team

With an undeniable passion for the world of automobiles, Florin, the CEO of Adam's Service, wanted to create a company that would offer high quality solutions and services, exceeding the expectations of customers in Alba Iulia and always being up to date with the latest technologies and industry trends.

Thus, in an attempt to satisfy the increasingly complex needs and requirements of car owners, ADAM'S SERVICE was born.





SCAN ME

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Presentation link: https://adamservice.ro/servicii-auto/

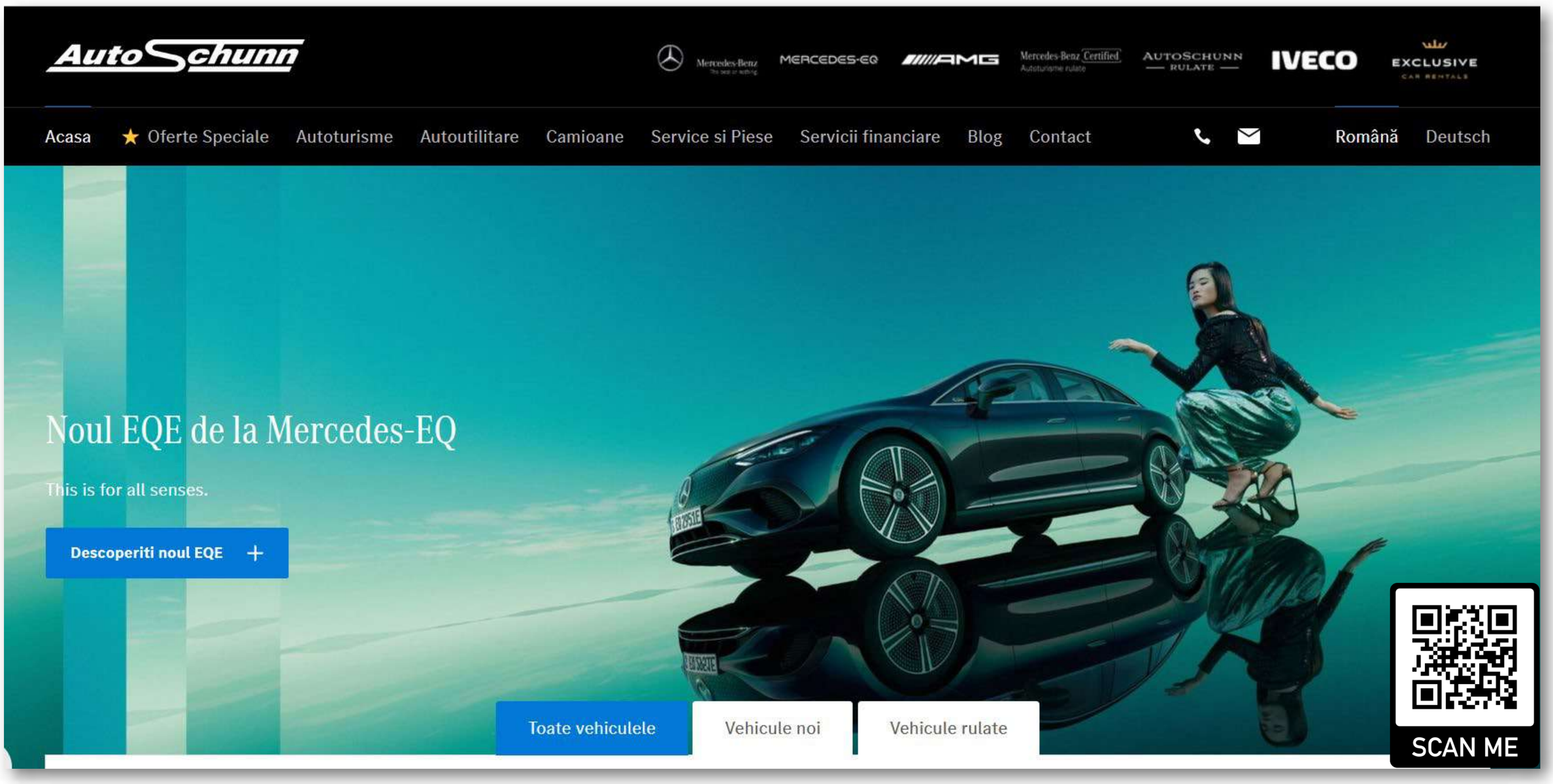
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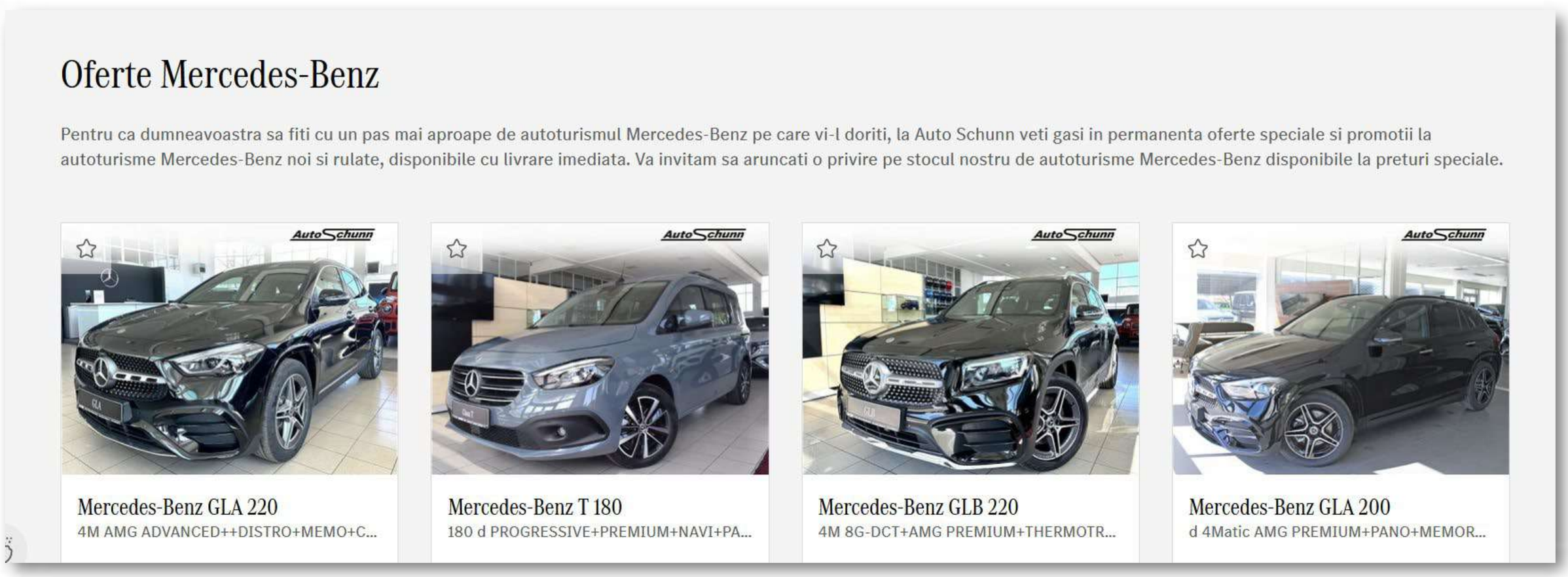
Author: Jürgen Schunn & Team

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ALUMINUM ALLOYS FOR CAR RIMS

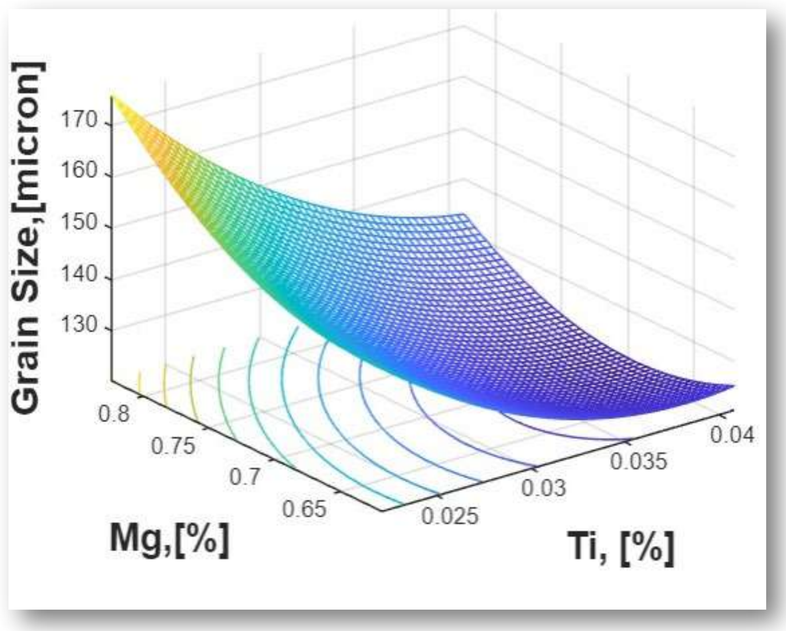
PhD Thesis

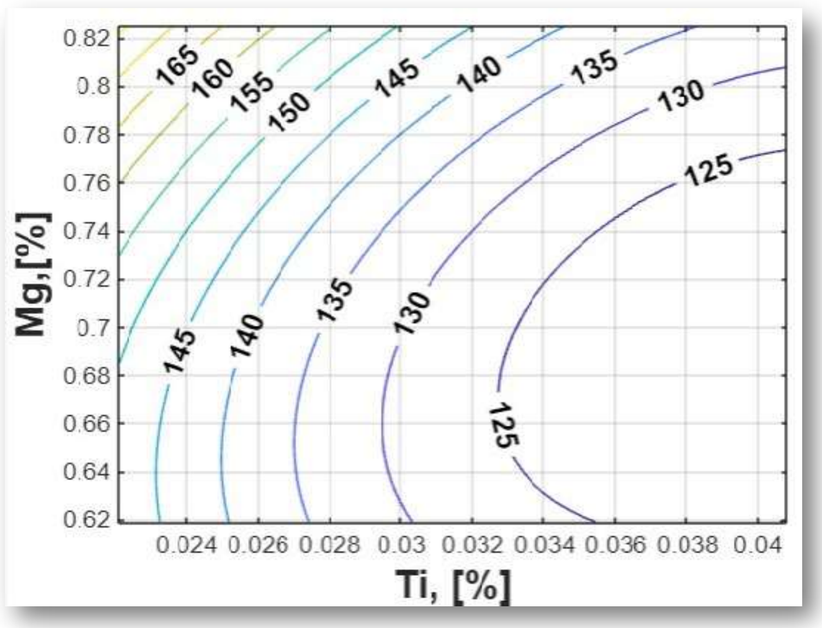
Authors: Doru SAPTA, Ana SOCALICI, Vasile PUTAN, Corneliu BIRTOK BANEASA

D

Aluminum alloy 6082 is used in various applications in the automotive industry, construction, and the transportation sector. It is widely used and has replaced alloy 6061 in many applications. It has high corrosion resistance and high hardness. It is very difficult to achieve fine-grained structures in aluminum alloys through various processes. In the case of aluminum alloy 6082, the hardening phase is Mg2Si. Its size is determined by the presence of iron and silicon. These alloys use magnesium and silicon in their composition, can be heat-treated, have good forgeability, and high corrosion resistance. Globally, the manufacturing of automotive wheels is carried out using aluminum alloys through casting and/or plastic deformation.







The experimental data were collected and processed statistically. The goal was to establish correlations between grain size (considered a dependent parameter) and the chemical composition elements that influence grain refinement. It is observed that the alloying elements Si, Mg, Mn, as well as Ti, used for grain refinement, positively influence the mechanical properties within the limits of these elements. Specifically, an increase in Ti leads to finer grain size, which also results in higher values for mechanical characteristics.

Using high-quality charge materials leads to minimal variations in the chemical composition elements, and following alloying, only small differences in chemical composition are observed from one batch to another. The narrow variation limits for chemical elements resulted in acceptable variations in the alloy's qualitative characteristics.

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Automotive tuning evolution

Student Project

Author: GROSU Denisa Valentina

Coordinator: BIRTOK-BANEASA Corneliu

D

Tuning is basically as old as the automotive industry, if you consider the various decorations on horse saddles and the improvement of carriages, you can risk the statement that he is even older than the automotive industry. However, it was only the popularization of the car as a means of transport that influenced the development of this industry.





Car tuning appeared almost immediately and went through many stages. Tuning was associated with adapting cars to individual needs or it met the owners' aesthetic needs. Hot rods are one of the more characteristic examples. These types of light and tuned vehicles come from cars modified by American alcohol smugglers of the Prohibition era. They needed vehicles to transport contraband that would enable them to escape from law enforcement. Their impact on the automotive industry was twofold.

On the one hand, he laid the foundations for the style that is still popular today, and on the other, the smugglers' races have become the starting point for the birth of the Nascar series and oval races.

The next stage of tuning were lowriders, which also in the United States began to appear at the turn of the 1940s and 1950s. Reduced to the limit, popular cars among Latin American youth gained even more interest in the late 1980s and early 1990s when they appeared in American rap music videos.



A car leaving the factory will usually be a relatively convenient tool to move from point A to points B and C. However, this can be done faster and more efficiently. Series production forces producers to make certain concessions. Rally and racing teams know this. By preparing their vehicles for winning they improve the factory, and we can later apply some of their experience and knowledge to our cars.



Engineers, competing with other teams, are developing increasingly better ways of extracting power from engines. The tuning also changes according to these advances. Several revolutionary solutions have emerged over the years. An example would be turbochargers or injection systems commonly used today. Although this has not always been the case, today hardly anyone except enthusiasts plays in the adjustment of carburetor or ignition angle. Because the engine's operation has been controlled by increasingly advanced computers for years, tuners also use advanced technologies in their work. Today, the use of chiptuning has at least two aspects. In the advanced version, it is the next stage of work on engine modifications.

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Sorin Mihai BOBARU
Mentor: Prof. Corneliu BIRTOK BANEASA

D

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AutoVest Service

Author: Mararu Leonard Nicolas

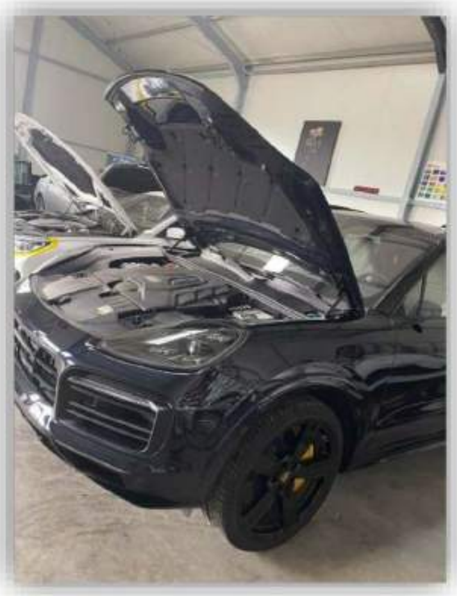
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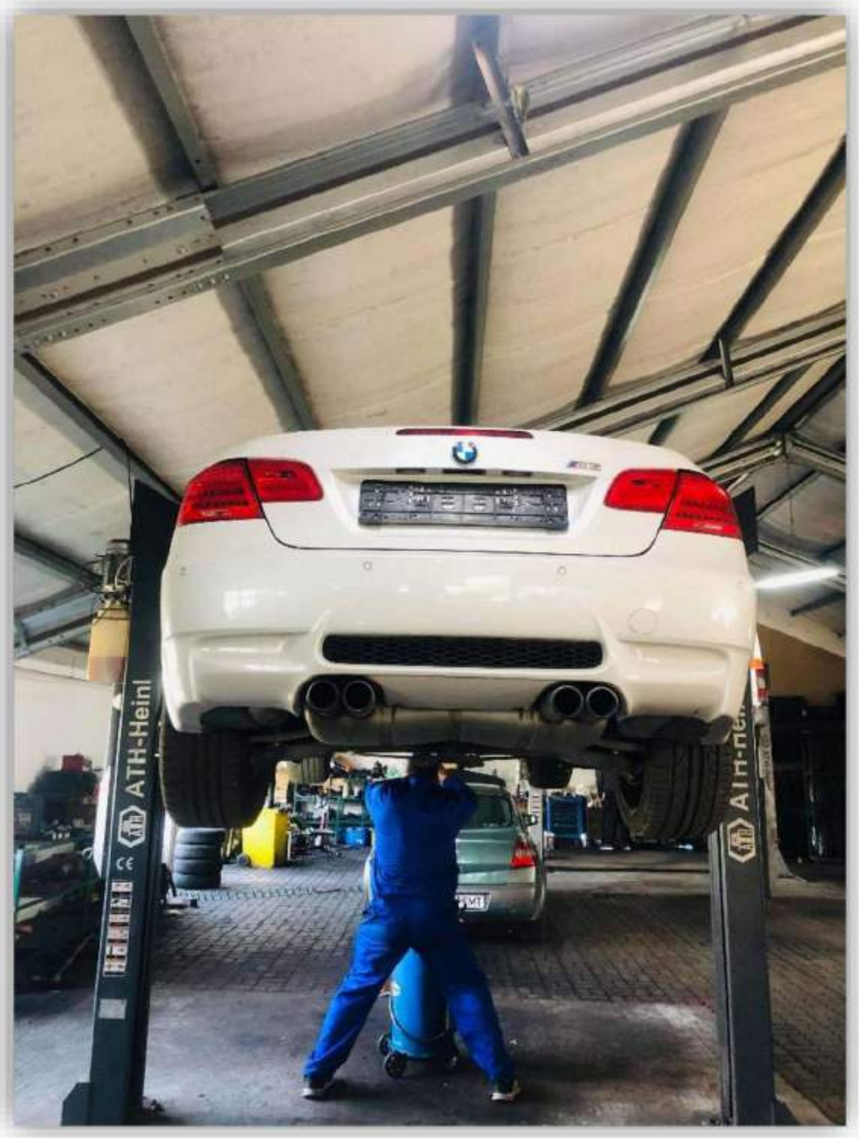
Our main activity is the maintenance and repair of motor vehicles, offering a wide range of services (diagnostics, testing, checks, adjustments, maintenance and mechanical and electrical repairs, etc.).













SCAN ME

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TRACTION CALCULATION FOR VOLSWAGEN SCIROCCO

Student Project

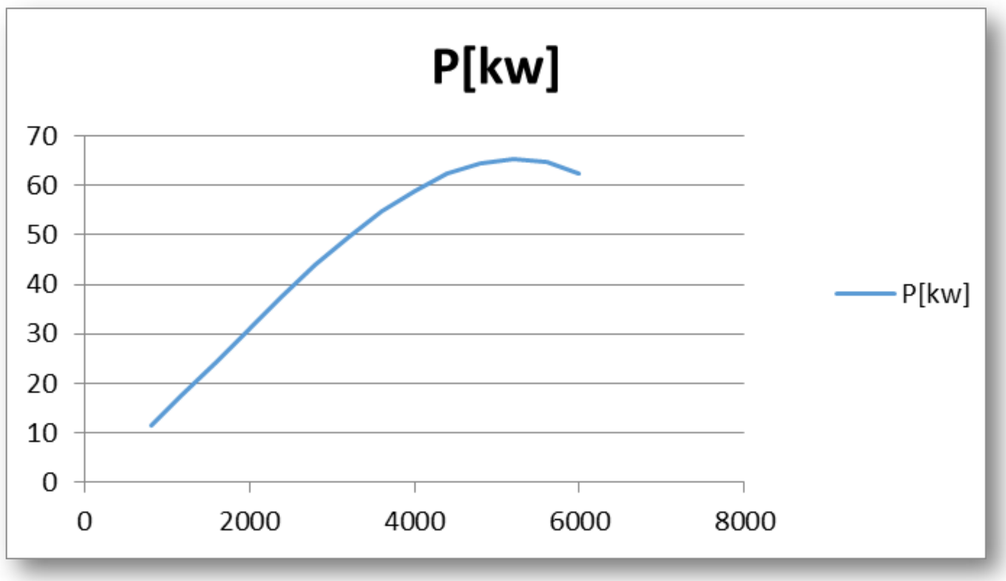
Authors: Alin-Andrei POPESCU
Mentor: Prof. Corneliu BIRTOK BANEASA

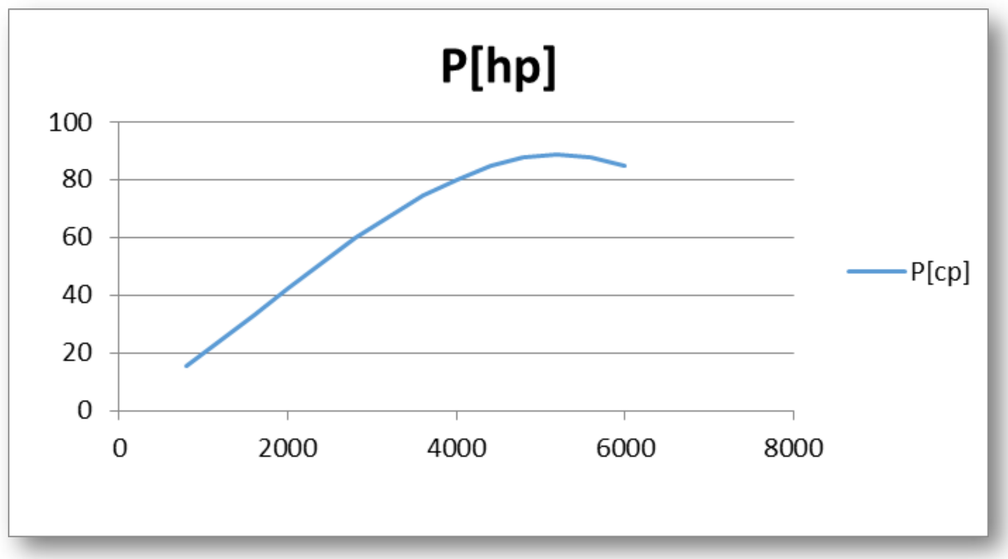
D

The traction calculation of a vehicle such as Volkswagen Scirocco refers to the determination of the force required to set the vehicle in motion and maintain optimal grip on the road. This depends on several factors, including the vehicle's weight, engine power, type of drive (eg front or all-wheel drive) and road conditions.



n[rot/min]	ω[rad/s]	v[km/h]	P[kw]	P[hp]
800	83.73333333	24.92423147	11.49164128	15.62863215
1200	125.6	37.3863472	17.86146192	24.29158822
1600	167.4666667	49.84846293	24.4254159	33.21856562
2000	209.3333333	62.31057867	31.2	42.432
2400	251.2	74.7726944	37.6896	51.257856
2800	293.0666667	87.23481013	43.87413333	59.66882133
3200	334.9333333	99.69692587	49.5872	67.438592
3600	376.8	112.1590416	54.6624	74.340864
4000	418.6666667	124.6211573	58.93333333	80.14933333
4400	460.5333333	137.0832731	62.2336	84.637696
4800	502.4	149.5453888	64.3968	87.579648
5200	544.2666667	162.0075045	65.25653333	88.74888533
5600	586.1333333	174.4696203	64.6464	87.919104
6000	628	186.931736	62.4	84.864





For the Scirocco, traction is provided by a front-wheel drive system, which means that the front wheels are the ones that transmit the engine's power to the road. The calculation includes the evaluation of the friction force between the tires and the road surface, as well as the analysis of the weight distribution on each wheel. The result determines the performance of the vehicle in terms of acceleration and stability, depending on the technical parameters specific to the model.

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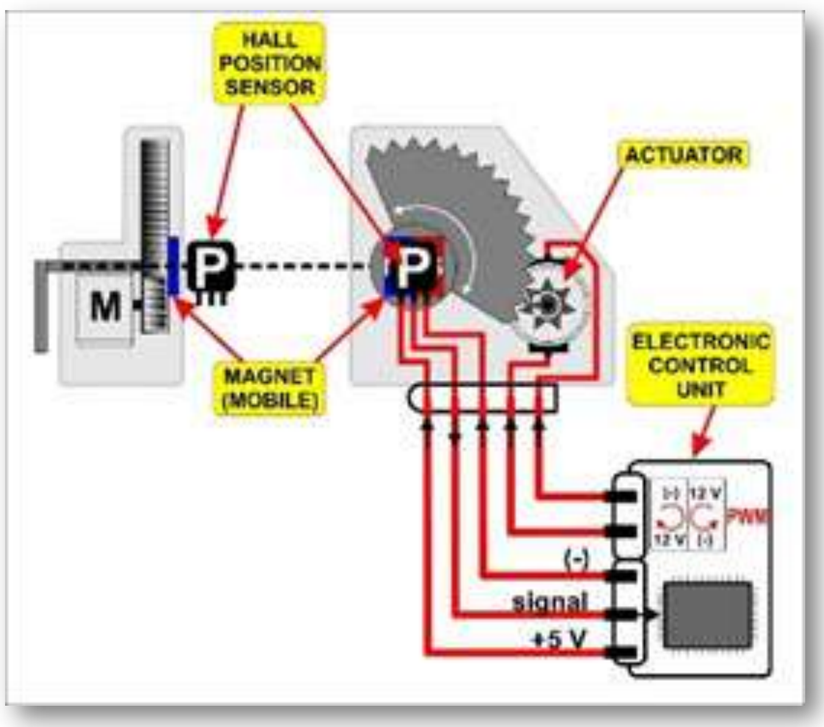
The influence of the exhaust gas recirculation (EGR) system on the quality of fuel combustion in diesel engines

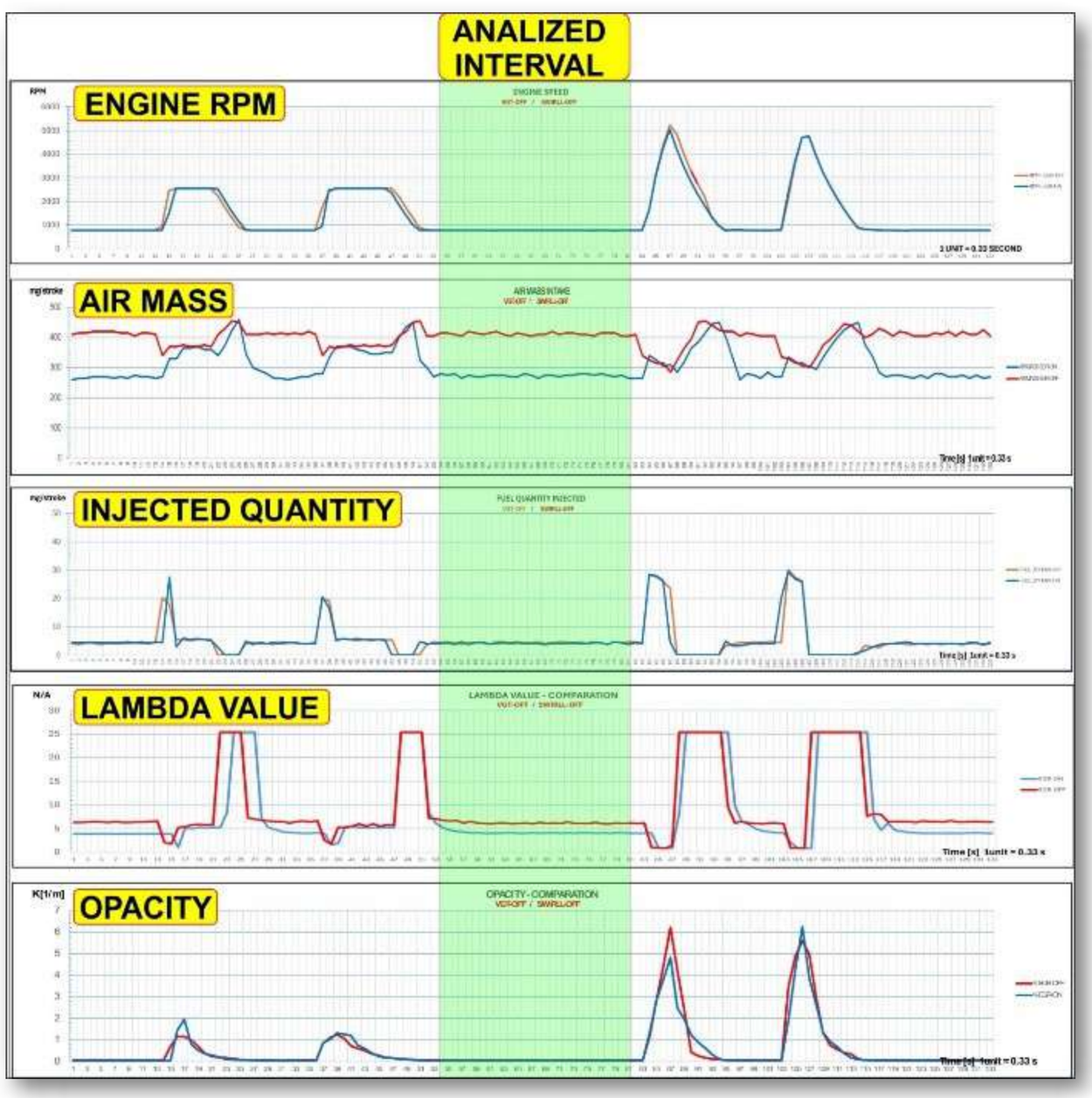
D

Scientific paper/PhD

Authors: Sorin Aurel Rațiu, Adrian Gidali, Diana Miruna Armioni

The study aims to establish the real influence and the complementary role of the exhaust gas recirculation system on the quality of hydrocarbon combustion in diesel engines. For this purpose, the practical determination of the influence of the EGR system on the combustion quality of the injected fuel was proposed, by directly measuring the emissions of particles (PM) resulting from the combustion, in different speed regimes of the diesel engine. The successive use of the opacimeter and the indication from the oxygen sensor, read digitally from the Electronic Control Unit of the injection system, will significantly reduce the margin of error for the measured values. In order to establish the direct relationship between the quality of fuel combustion and the operation of the EGR system, the air swirl system in the intake manifold was canceled (without the activation of the breakdown mode triggered by the electronic engine control unit (engine-ECU). The combustion gas samples for analysis were taken upstream of the specialized combustion gas treatment systems: the catalytic ceramic element (DOC – diesel oxidation catalyst), the diesel particle filter (DPF – diesel particle filter) and the selective catalytic reduction system (SCR – selective catalytic reduction).





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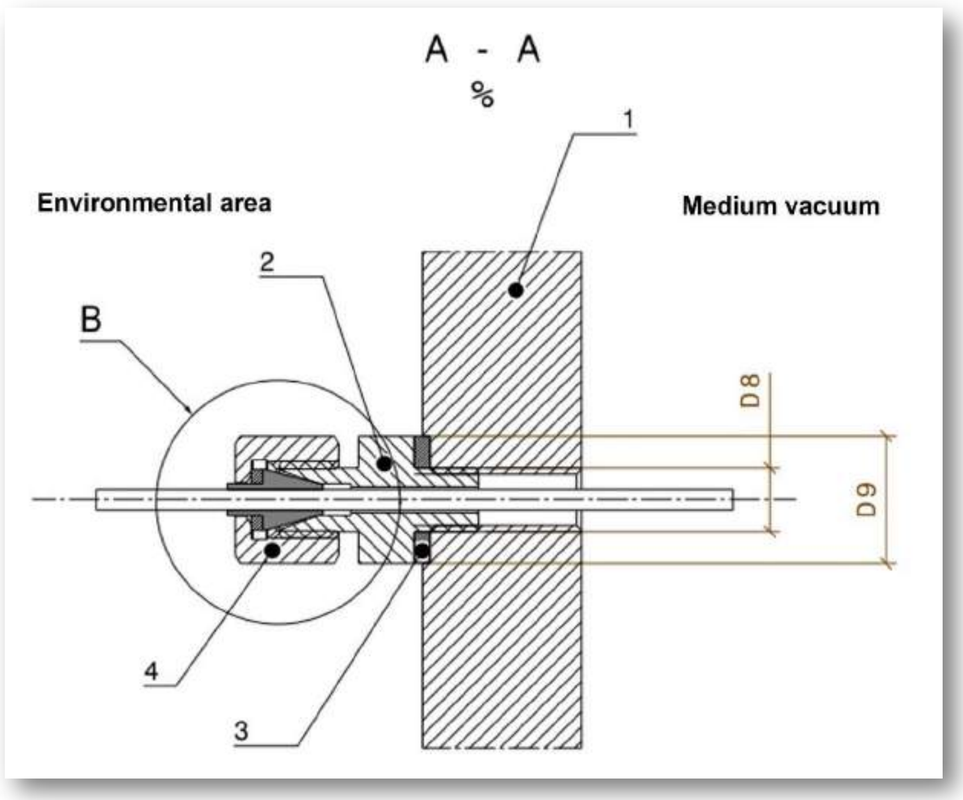
SYSTEM OF NON-METALLIC FERRULE WITH A METAL WASHER, FOR SEALING HYDRAULIC, PNEUMATIC OR ELECTRICAL CABLES, WHICH MAY ALSO BE UNINSULATED CONDUCTORS, INTENDED FOR ENTERING IN MEDIUM VACUUM CHAMBERS

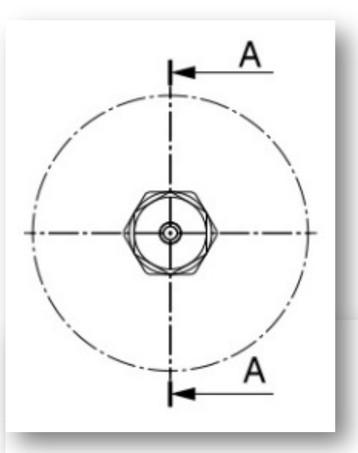
A2024 00451

Jeni-Alina VILAG, Valeriu Alexandru VILAG, Nicolae MĂCRIŞOIU, Cosmin Petru SUCIU, Răzvan Edmond NICOARĂ, Iulian VLĂDUCĂ

D

The invention relates to a sealing system using a non-metallic ferrule, with good resistance to temperature and chemical agents and with electrical insulation properties, cylindrical, in two stages, with a beveled upper cylindrical end, called the working diameter, and a lower cylindrical part, with a diameter smaller than the working diameter of the upper cylindrical end, of the non-metallic ferrule, on which a metal washer made of stainless steel or other metallic materials is placed, which is guided on the smaller diameter of the non-metallic ferrule, so that the outer diameter of the metal washer is equal to the upper working diameter of the non-metallic ferrule, for sealing hydraulic, pneumatic and electrical pipes intended for access to medium vacuum chambers, for testing phenomena associated with space propulsion through exothermic chemical reactions, or cold and/or electrical space propulsion.





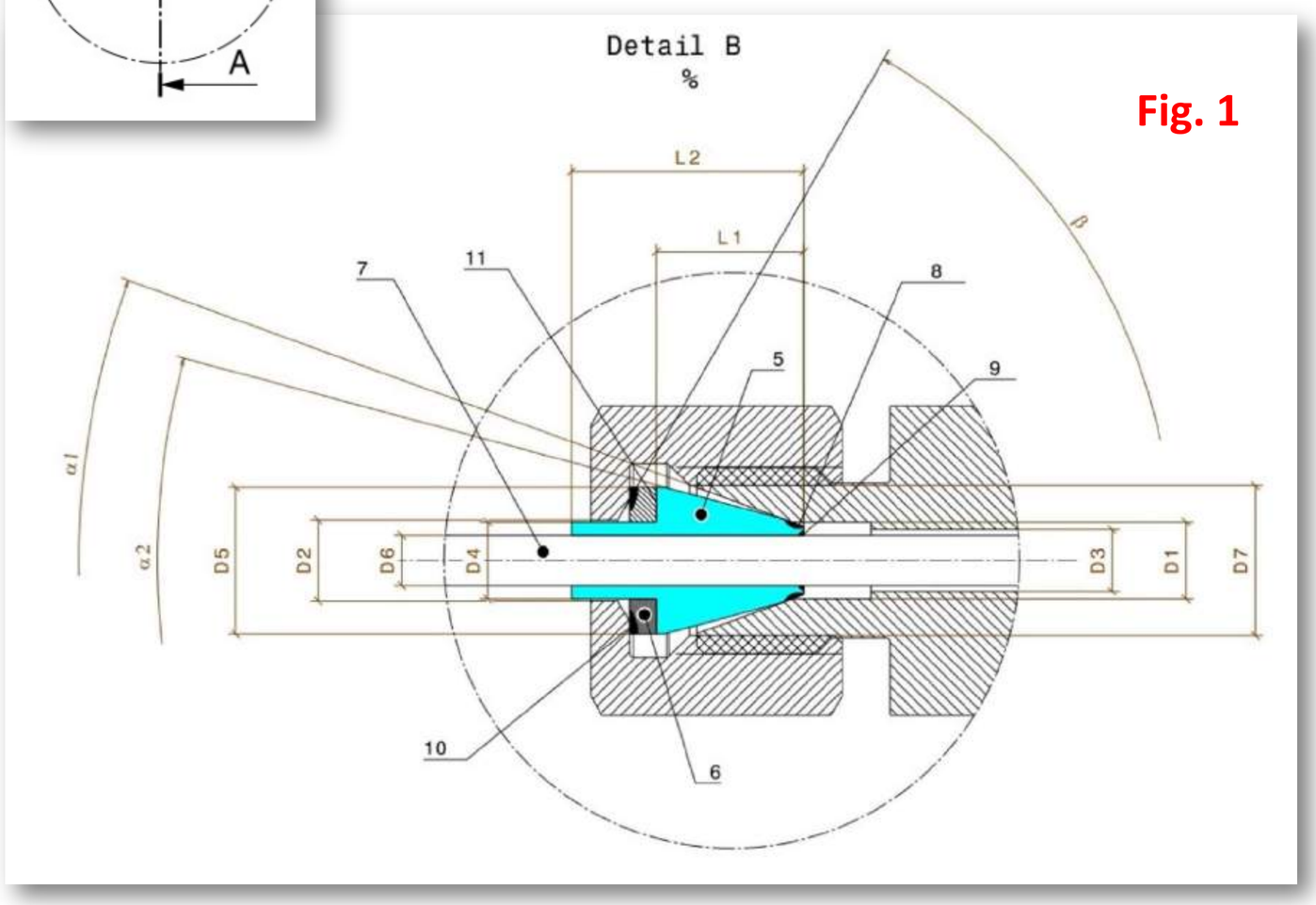


Fig. 1

The technical problem solved by the invention consists in using a sealing assembly that includes elements made of different materials, with different degrees of deformation, which allows the sealing between two environments with different chemical composition and gas-dynamic parameters (pressure, temperature) and which allows access of pneumatic, hydraulic pipes and electrical cables, which can also be uninsulated conductors, from one environment to another, by the fact that the non-metallic ferrule and metallic washer system allows a very good seal in the medium vacuum range, and can also be used in the medium pressure range above atmospheric, up to 2Mpa (20 bar), by using a cylindrical ferrule with a non-metallic, frustoconical end, which partially deforms in a non-destructive manner, so as to allow disassembly and reuse for the same purpose, allowing adhesion to the pipe surface in the angular contact area with the nipple on the frustoconical sealing surface, an area elastically deformed by the pressure exerted by the washer behind it, pushed by a flare nut, by screwing onto the nipple, with a certain screwing moment, determined by the design. The nipple in turn is screwed onto the body of the vacuum vessel, the sealing being achieved with respect to the external environment by a deformable gasket made of a soft metal such as annealed copper, aluminum or flexible thermoplastic material, with good resistance to temperature and chemical agents.

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COLOR FILTER CALIBRATION SYSTEM FOR SCHLIEREN VISUALIZATION SYSTEMS INTENDED FOR FLUID FLOWS, WITH RECTANGULAR LIGHT SOURCE

A2024 00596

Emilia Georgiana PRISĂCARIU, Iulian VLĂDUCĂ

D

The invention relates to a calibration system for schlieren visualization systems, which use rectangular light sources intended for color filters with the help of which it is possible to determine, from the color gradient introduced into the schlieren images by them, the density gradients of the studied flows, which can be flows given by chemical reactions, supersonic / hypersonic flows, flows with convective and turbulent effects with temperature gradients. To investigate flows with density gradients different from those existing in the environment in which the flow propagates, several quantitative schlieren visualization methods can be implemented, which generally provide details about the existing density gradient fields of them. Such a color filter is designed so that its properties highlight the studied character of the flow. A color filter is characterized by the level of sensitivity it offers to the implemented schlieren system (the most accurate representation of the smallest and largest density gradients) and the ease with which it can be implemented, directly influenced by the type of color distribution on the filter image (colors with gradual distribution in the RGB spectrum, filter with segmented color distribution, etc.). The system is made up of six subassemblies, A, B, C, D, E and F and individual elements different from those contained in the subassemblies, connected to each other and individual elements different from those contained in the subassemblies, arranged at the heights H1 mobile and H2 fixed with the distances between them defined by L1,...,L6, which is presented in the form of a schlieren system in Z configuration, and which presents a white light source, a biconvex converging lens with a diameter of 2 inches ~50mm for focusing the white light beam, fixed by an optical mass, a square diaphragm that ensures rectangular collimation in dimensions 0.5x0.5...1.0x1.0mm of the white light beam, fixed by the optical mass, large diameter parabolic mirrors, 10 inches ~254mm, the phenomenon analyzed, the X-Y robotic system fixed to a fixed support, to which the film holder plate is fixed on which the by gluing with Loctite the 35mm films cut to a maximum length of 38mm, by means of a pressing plate and a high-speed CMOS camera operated by means of a trigger cable in connection with the control module dedicated to the X-Y robotic arm system.

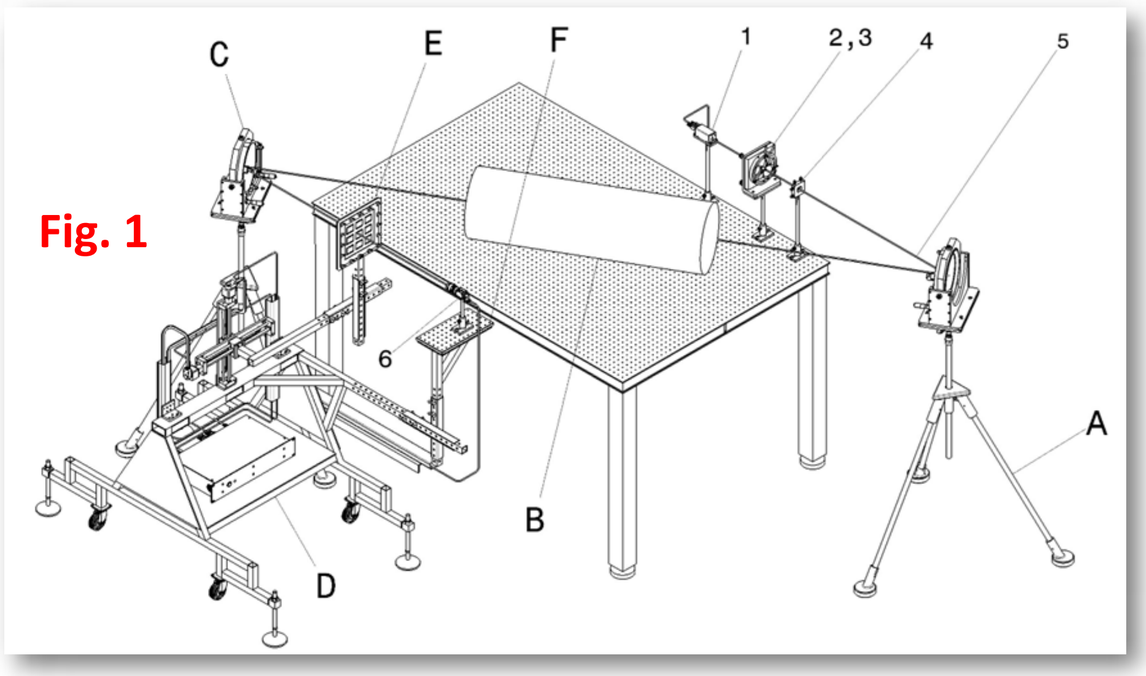


Fig. 1

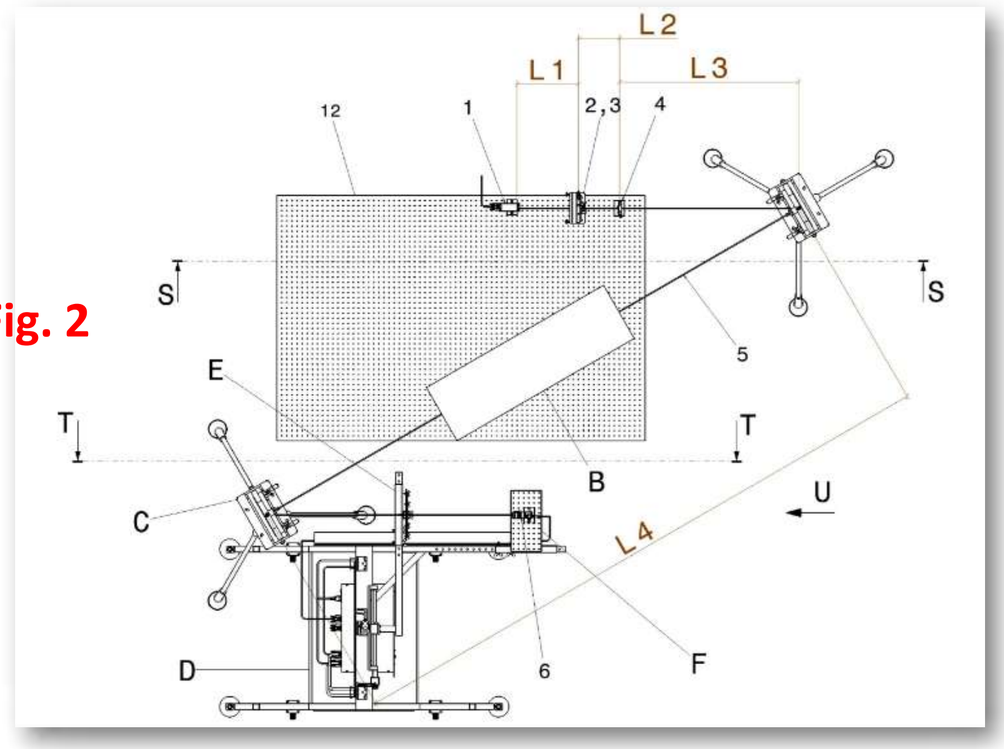


Fig. 2

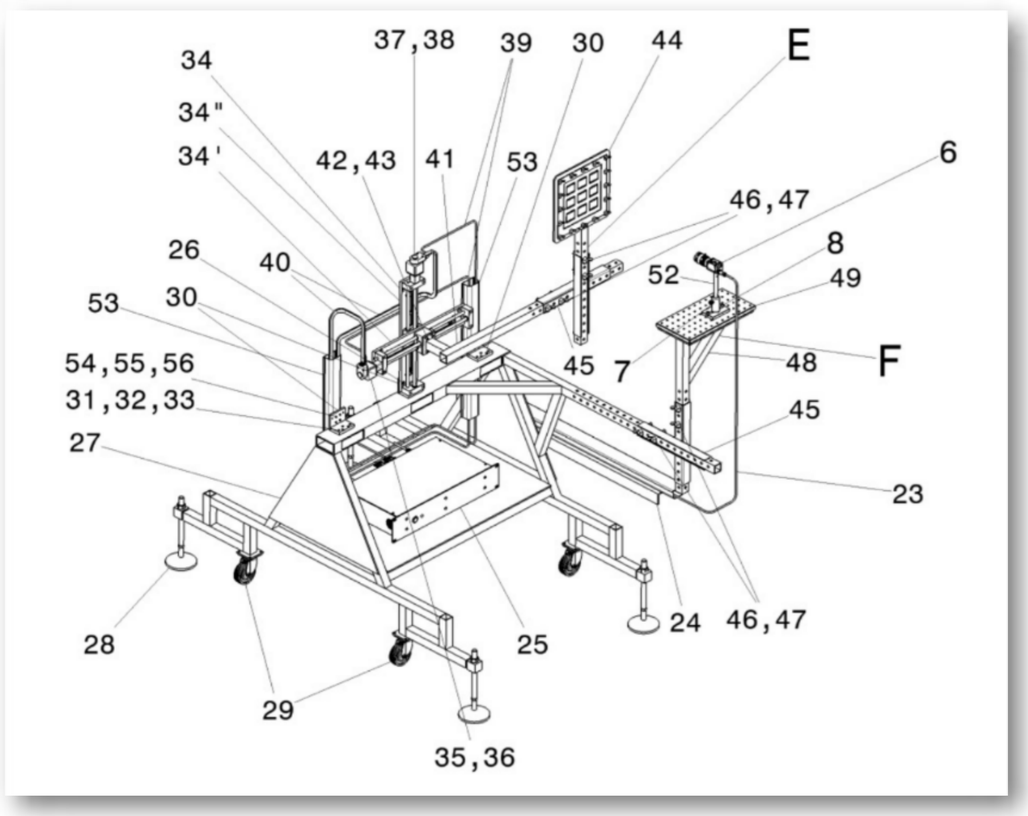


Fig. 3

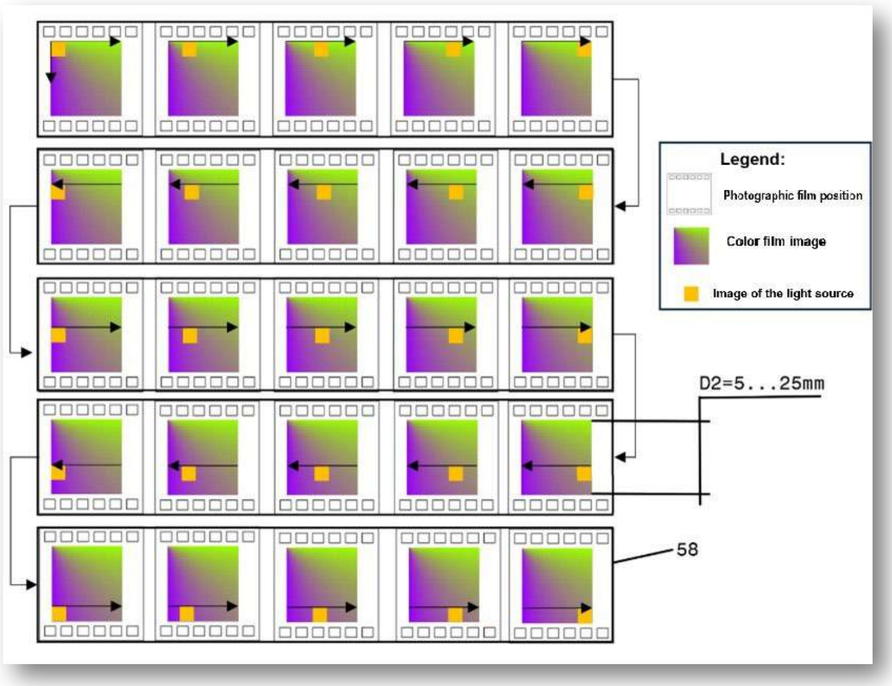


Fig. 4

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CENTRIFUGAL EXPERIMENTAL TESTING FACILITY FOR SUPERSONIC AND HYPERSONIC PROPULSION SYSTEMS

A2024 00730

Răzvan Edmond NICOARĂ, Iulian VLĂDUCĂ, Jeni-Alina VILAG, Cosmin Petru SUCIU, Alexandru HANK, Bogdan NĂVLIGU

D

The invention relates to a test facility for high and very high-speed propulsion systems, operating at supersonic and hypersonic (Mach 5) regimes (5 times the speed of sound), capable of reproducing the operating conditions specific to high altitudes (low temperatures and pressures). The facility has the role of testing supersonic and hypersonic propulsion systems in real conditions, using a controlled environment that allows the characterization and optimization of the respective systems. The facility consists of an electro-mechanical system that allows the driving of an arm at high speeds, the arm at the end of which the experimental assembly is mounted.

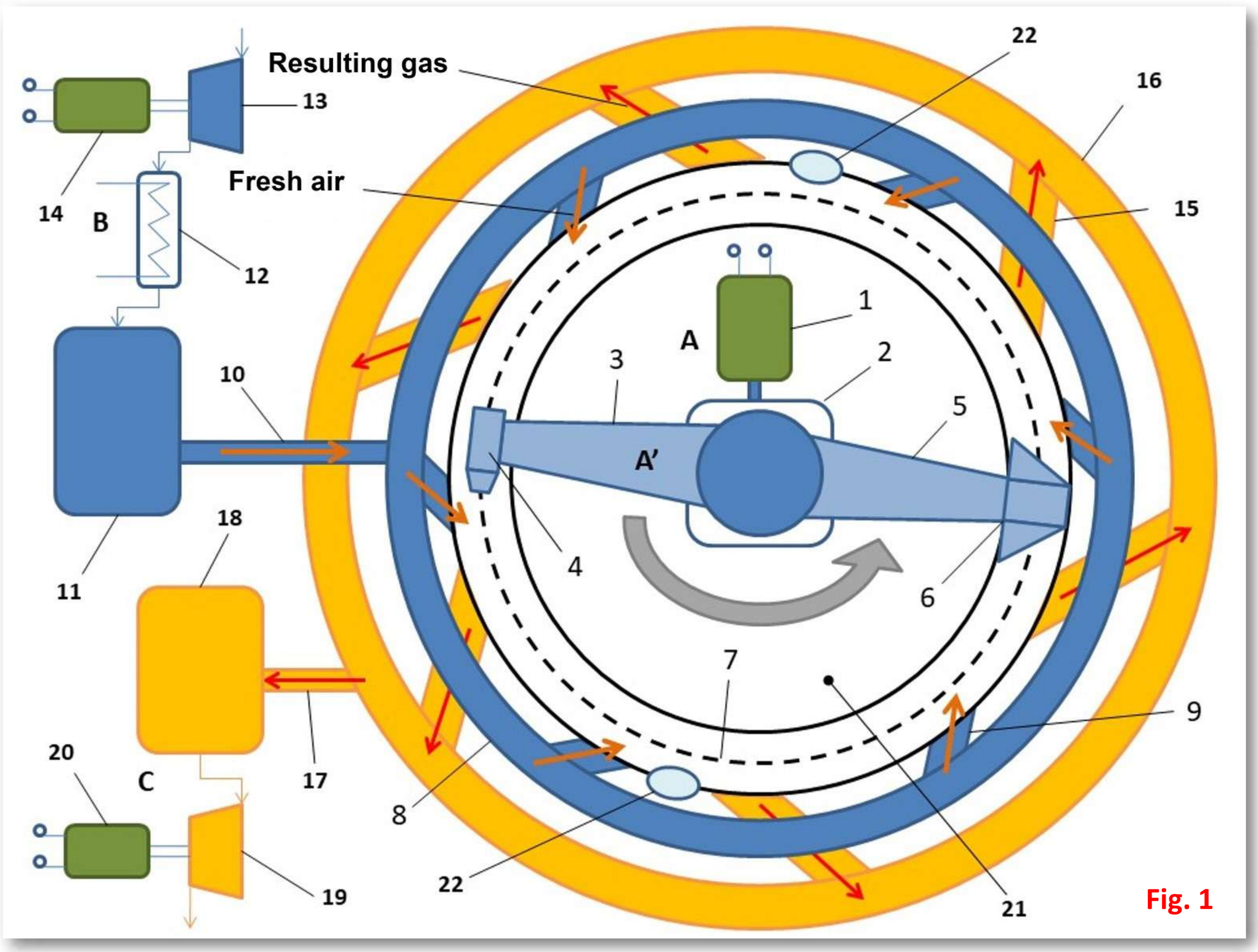


Fig. 1

Thus, the experimental model moves at very high speeds through a controlled environment, allowing specific measurements to be performed and relevant data to be collected regarding the operation of the respective system, consisting of three main subassemblies and individual components, namely a centrifugal system (A) consisting of a variable speed electric motor (1), engaged by means of a mechanical transmission (2) which in turn drives a rigid system (A') consisting of an arm (3) on which the experimental model (4) is fixed and an arm (5) to which the pusher (6) is fixed, for the evacuation of the gas resulting from the supersonic/hypersonic movement of the experimental model (4) through the working channel (7), the system (A') being placed in a vacuum chamber (21), to reduce friction losses of the rotational movement, a compressed air intake system (B) consisting of: the aerodynamic compressor (13) driven by the electric motor (14) which provides a flow rate of air with high pressures and temperatures, the air thus supplied being cooled using the cooler (12) and stored in the buffer tank (11), for supplying air at the simulated altitude parameters, via the connection ports (9) and (10) and the fresh air distribution ring (8), an exhaust system (C) consisting of: the exhaust buffer tank (18), connected to the blower (19), driven by the electric motor (20) and which allows the collection of the gas resulting from the supersonic/hypersonic movement of the experimental model (4) through the working channel (7), via the connection ports (15) and (17) and the collection ring (16) and viewing windows (22) through which, using a high-speed CCD camera not shown, the flow and parameters around the experimental model (4) can be determined as it passes through the viewing windows (22).

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CALCULATION OF THE BRAKING SYSTEM FOR THE TOYOTA COROLLA VERSO II

Author: CERTEJAN VLAD-NICOLAE-COSMIN

Mentors: Associate Prof. Dr. Eng. BIRTOK-BĂNEASĂ Corneliu
Associate Prof. Dr. Eng. BUDIUL-BERGHIAN Adina

D

This project includes a part of the project for the subject "Calculation and construction of road vehicles 2" carried out in the 1st semester of the 4th year at the "Faculty of engineering Hunedoara". The vehicle subject to these calculations was Toyota Corolla Verso II.

In the first photo is showed the vehicle Toyota Corolla Verso II and in the second photo are the forces that push the friction seals (N - normal force, μ - coefficient of friction between the disc and the pad = 0.4, μ' - coefficient of friction between the jaw and the body of the actuating cylinder = 0.1, S - actuating force of the piston)

Below are the informations that we need to know about the vehicle.

G_1 – Load on the front axle at maximum load; **G_1 = 1032 daN**; **G_2** – Load on the rear axle at maximum load; **G_2 = 989.8 daN**; **a** – Distance from the front wheel center to the center of mass at maximum load; **a = 1347.5 mm**; **G_2 = 989.8 daN** ;

a – Distance from the front wheel center to the center of mass at maximum load; **a = 1347.5 mm**; **b** – Distance from the rear wheel center to the center of mass at maximum load; **b = 1402.5 mm**;**G_a** – Vehicle weight; **G_a = 2020 daN**; **r_r** – Rolling radius; **r_r = 0.304 m**; **μ** – Coefficient of friction between the disc and the pad; **μ = 0.4**; **μ'** – Coefficient of friction between the shoe and the actuator body; **μ' = 0.1**; **nf** – Number of friction surface pairs in the rear brake; **nf = 4**; **rm** – Mean radius of the friction surface for the rear brake disc; **rm = 100 mm**; **η_h** – Efficiency of the hydraulic transmission; **η_h = 0.93**;

i_p – Pedal transmission ratio; **i_p = 5.0**

Assumptions: The aerodynamic effects, wheel inertia torques, and rolling resistance are neglected.

Calculations:

Static weight distribution on the axles. Considering braking up to the adhesion limit:

$F_i = \Phi_0 G_a = F_f = F_{f1} + F_{f2}$

Fi= 2,087.39

Dynamic normal reactions.

Ga=2020 daN; hg/L= 0.18; a/L=0.49; b/L=0.51; Φ0 = 1 (for the ideal braking)

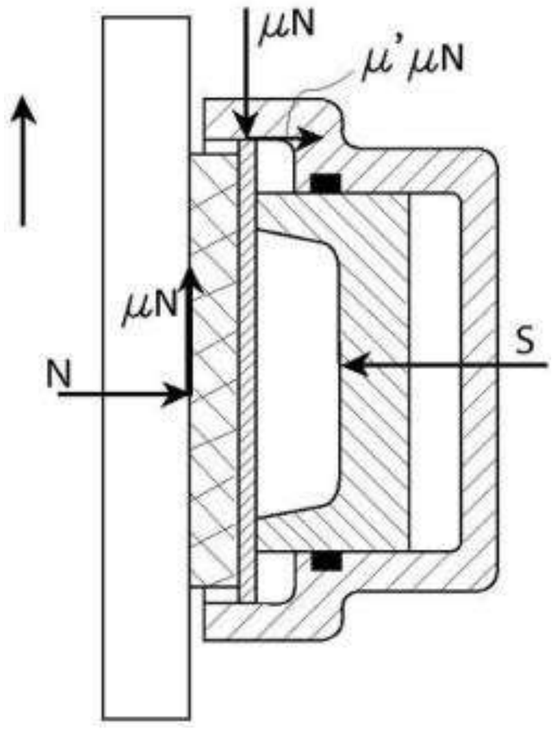
$$Z_1 = \frac{b}{L} G_a + \emptyset_0 G_a \frac{h_g}{L}$$

$$Z_2 = \frac{a}{L} G_a + \emptyset_0 G_a \frac{h_g}{L}$$

Z1=1324.01 daN

Z2=763.38 daN





Braking forces at the wheel lock limit

Ff1=1324.01 daN

Ff2=763.38 daN

Braking force ratio between axles

$$\lambda = \frac{Z1}{Z2} = 1.73$$

Braking force distribution on the vehicle axle

$$\nu_1 = \frac{F_{f_1}}{F_f} = 0.63$$

$$\nu_2 = \frac{F_{f_2}}{F_f} = 0.37$$

Calculation of total braking torque and axle-specific braking torque

$$M_f = M_{f_1} + M_{f_2} = \phi_0 G_a r_r = 6345.63\ Nm$$

$$M_{f_1} = F_{f_1} r_r = \phi_0 Z_1 r_r = 4024.96\ \text{Nm}$$

$$M_{f_2} = F_{f_2} r_r = \phi_0 Z_2 r_r = 2320.67\ \text{Nm}$$

The specific braking power for the two axles, considering the maximum deceleration afmax=9,13m/s², vmax = 58.33m/s.

$$P_{s_1} = 0{,}63 \frac{2020}{9{,}81 \cdot 90}\ 9{,}13 \cdot 58.33 \cdot \frac{1}{1000} = 0.767 \frac{kW}{cm^2}$$

$$P_{s_2} = 0{,}37 \frac{2020}{9{,}81 \cdot 90}\ 9{,}13 \cdot 58.33 \cdot \frac{1}{1000} = 0.45 \frac{kW}{cm^2}$$

Bibliography: https://ro.autodata24.com/toyota/corolla/corolla-verso-ii/details
https://cv.upt.ro/mod/resource/view.php?id=378370

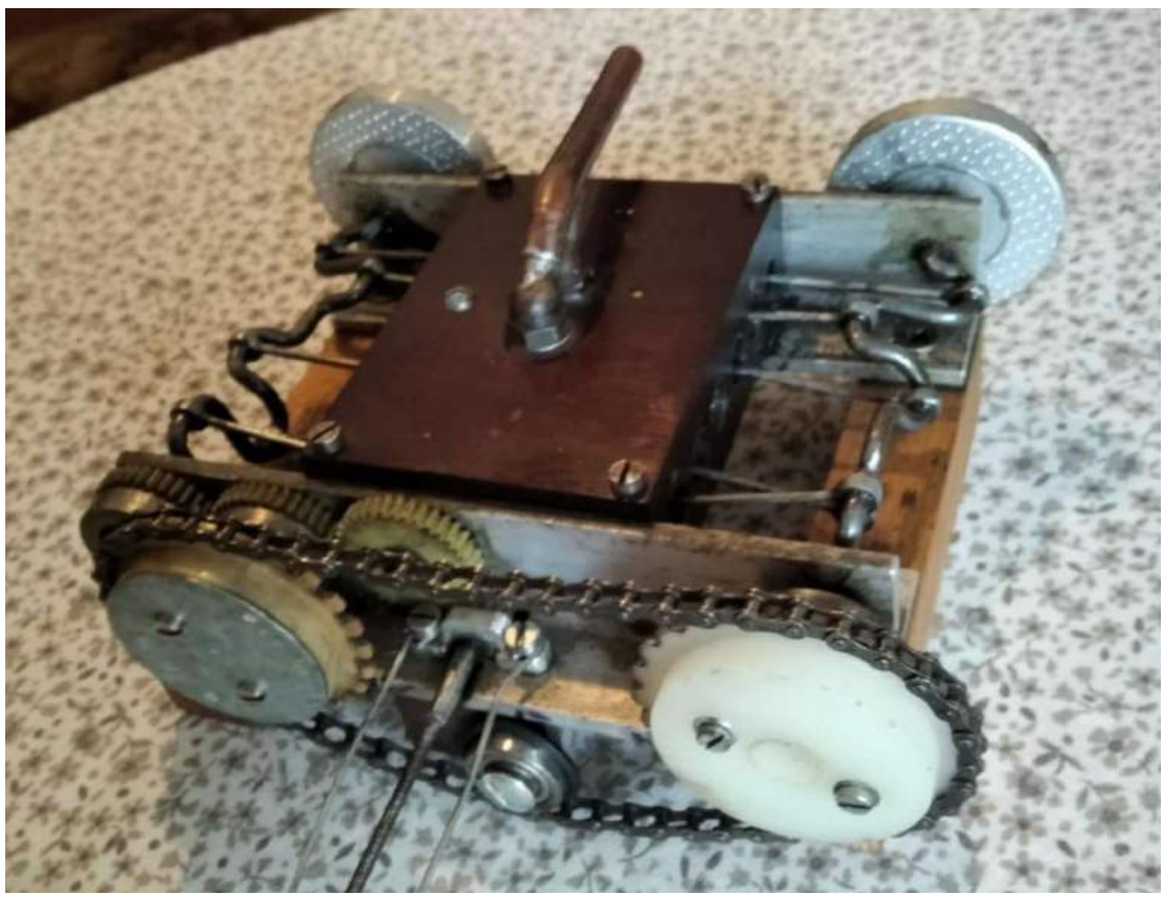
Contact: (+40) 740228413
vlad.certejan@gmail.com

WORKING STEAM ENGINE

Author: Gyula Török (Hódmezővásárhely)

Model ship powered by a steam engine. A steamship, often referred to as a steamer, is a type of steam-powered vessel, typically ocean-faring and seaworthy, that is propelled by one or more steam engines that typically move (turn) propellers or paddlewheels. The first steamships came into practical usage during the early 19th century; however, there were exceptions that came before. Steamships usually use the prefix designations of "PS" for paddle steamer or "SS" for screw steamer (using a propeller or screw). As paddle steamers became less common, "SS" is incorrectly assumed by many to stand for "steamship". Ships powered by internal combustion engines use a prefix such as "MV" for motor vessel, so it is not correct to use "SS" for most modern vessels.





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Presentation link: https://otletclub.5mp.eu/web.php?a=otletclub

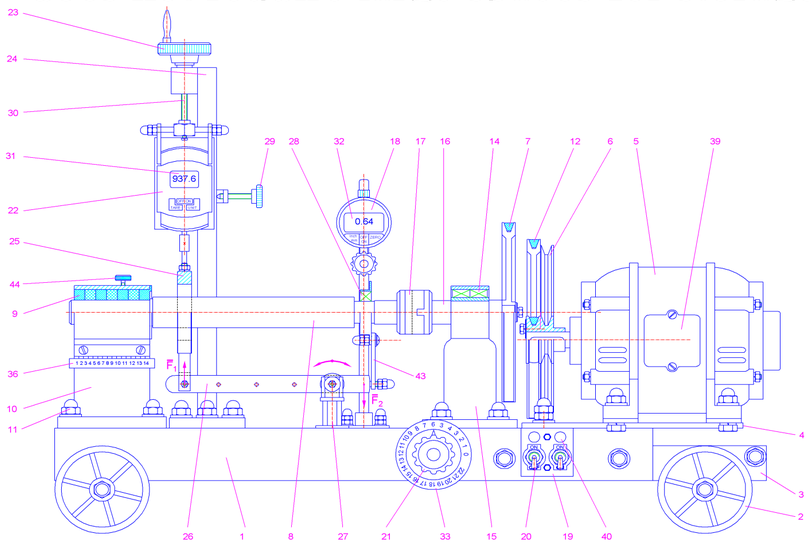
TEST STAND FOR DETERMINING MECHANICAL AND TRIBOLOGICAL CHARACTERISTICS IN STATIC AND DYNAMIC CONDITIONS USING THE RESISTIVE STRAIN GAUGE METHOD FOR SLIDING BEARINGS MADE OF PLASTIC MATERIALS, DESIGNED FOR OPERATION WITH CANTILEVER SHAFTS, FEATURING AN INTEGRATED LOADING SYSTEM AND DIGITAL FORCE AND DEFLECTION READING

A/ 00189/2024

Authors: Bogdan – Roth Mihail, Romanet Mirela, Zisopol Dragos-Gabriel, Dinita Alin, Minescu Mihail, Ripeanu Razvan -George

D

The invention relates to a stand for the determination of mechanical and tribological characteristics in static and dynamic mode by the method of resistive tensometry of plastic sliding bearings intended for operation with cantilever shafts with their own system of loading and digital reading of force and arrow. The sectioned experimental bearing with tensometric marks glued on these sections fig. 8 is located in the stand housing together with the conjugated experimental shaft. At the free end of the shaft, the force is applied, F_2 and by means of a digital dynamometer that generates the force that acts on a system of levers that amplifies the force, and the arrow is read on the screen of the digital comparator. The stand designed and executed in this way was made with a minimum consumption of materials, does not require large spaces for storage, has its own system for generating and measuring force and arrow.$F_1 F_1$



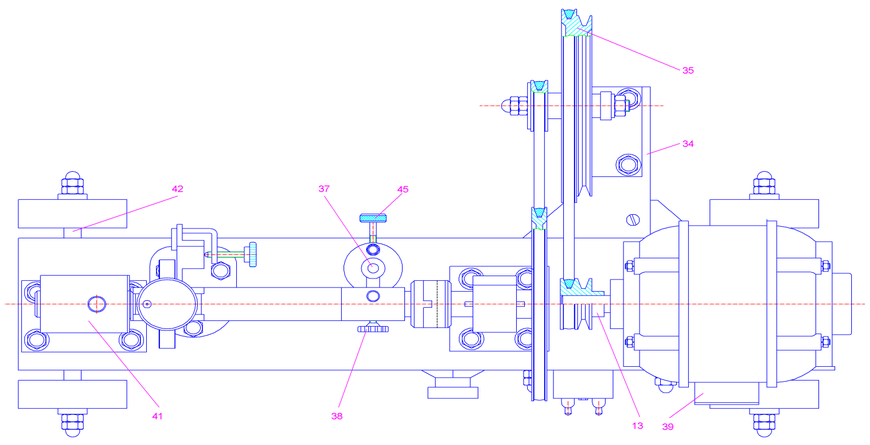


Fig. 1 . General drawing of the stand for testing sliding bearings (side view)





Fig. 4. The sliding bearing mounted in the housing (front view).



Fig. 3. Sliding bearing (sectioned) with applied strain gauge marks.



Fig. 2. Experimental sliding bearing made of Necuron 1050 material



Fig. 5. The sliding bearing mounted in the housing (rear view

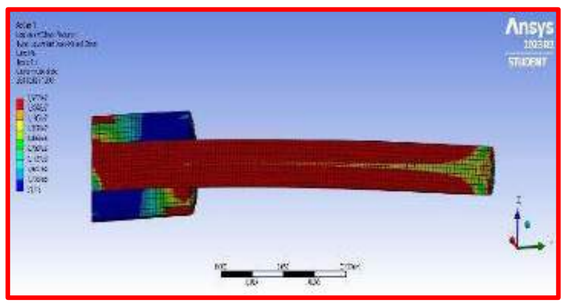


Fig. 6 Bushing-spindle assembly

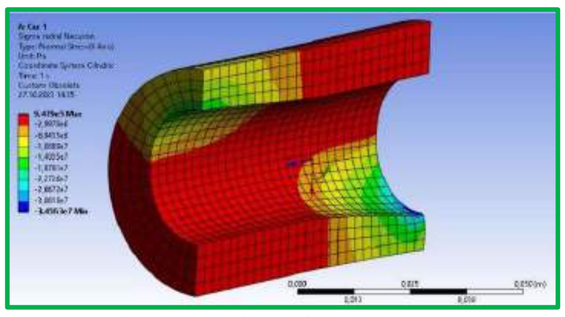


Fig. 7. The distribution of stresses in the bushing

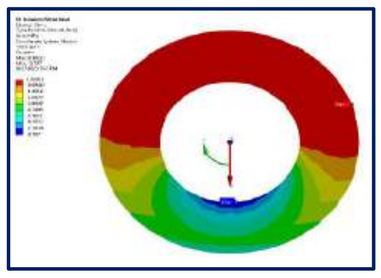


Fig. 8. MEF modeling of plain bearing without clearance μ =0.3

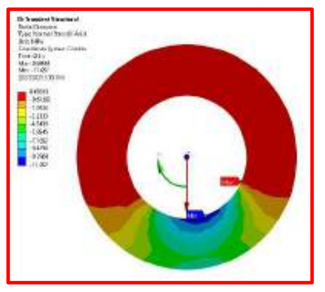


Fig. 10. MEF modeling of plain bearing with clearance 0.2 mm μ =0.3

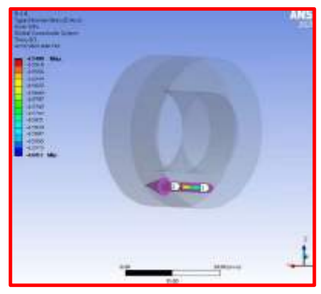


Fig.11.. Capture of the MEF machining of the cantilever bearing for the first two sections of the bearing showing the position of strain gauge marks 1 and 2 for force $F_2 = 235.2\ N$

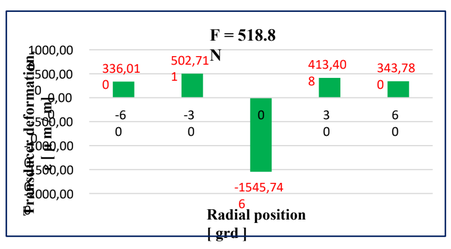


Fig. 12. Variation of deformations for mark 1, located on the lower generator and strain gauge marks 9,11 located radially at 30 degrees, left - right from the vertical axis of the bearing, respectively strain gauge marks 10,12 located radially at 60 degrees, left - right to the vertical axis of the bearing.

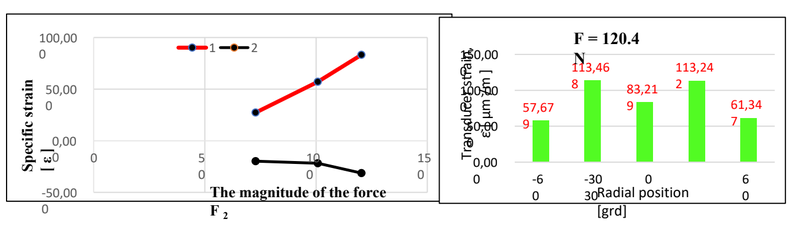


Fig. 13. shows the variation of the average specific deformations corresponding to the 3 forces applied to the free end of the shaft **(16)** for tensometric marks 1 and 2 located on the lower generator.

Fig. 14. Variation of deformations for mark 1, located on the lower generator and strain gauge marks 9,11 located radially at 30 degrees, left - right from the vertical axis of the bearing, respectively strain gauge marks 10,12 located radially at 60 degrees, left - right to the vertical axis of the bearing.

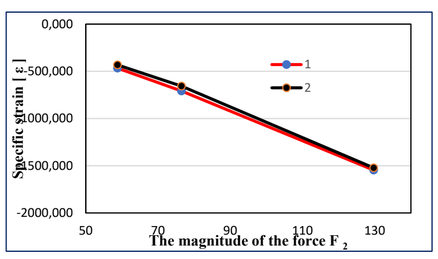
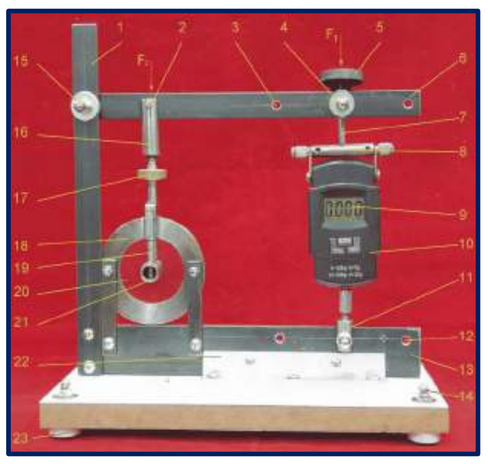
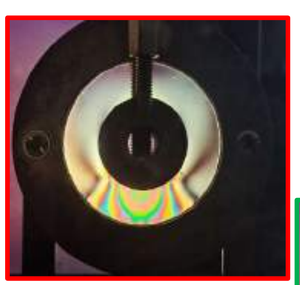
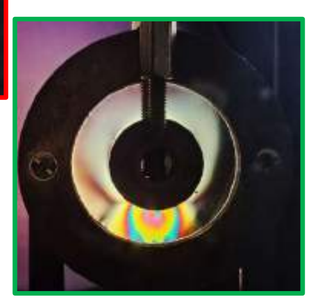


Fig. 15. The variation of the average specific deformations for tensometric marks 1 and 2 corresponding to the 3 forces applied to the free end of the shaft.

Comparison of the radial stresses of the results obtained experimentally and by the MEF method for $F_2 = 235.2\ N$	
Tensometric mark 1	Tensometric mark 2
$\sigma_{exp.} = -0.584\ MPa$	$\sigma_{exp.} = -0.541\ MPa$
$\sigma_{MEF.} = -0.601\ MPa$	$\sigma_{MEF.} = -0.548\ MPa$







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Device for determining the coefficient of friction when sliding in static mode with digital dynamometer

RO-BOPI 135282 A0

Authors: Bogdan – Roth Mihail, Romanet Mirela

D

The invention relates to a device for determining the coefficient of friction in static conditions.

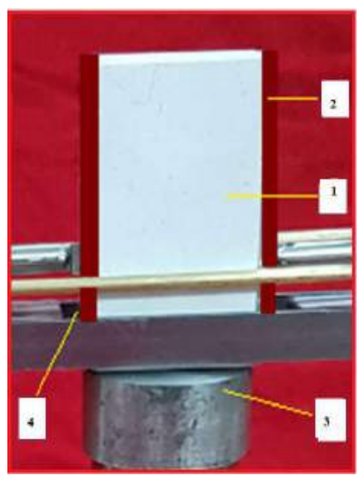
The device is designed to measure the coefficient of friction between different materials. It has been specifically developed to maintain a constant friction force. In this device, the test body (14) is held in equilibrium by two jaws (12) that apply pressure to it (Fig. 1). By adjusting the clamping force of the jaws (12), the system reaches the limit state.

The pressing force at the limit state is measured by the dynamometer (5). The magnitude of this force represents the reaction force NNN in the limit conditions. Consequently, the static friction coefficient is determined. The assembly drawings of the device, illustrating its components and operation, are shown in Fig. 1.

The main component of the device, the test body, is depicted in Fig. 2. This piece consists of a rectangular plastic body (1) with a steel cylinder (3) attached to the bottom to increase its mass. This design eliminates potential errors that could arise if a lower-mass body were used. On the lateral sides of the rectangular body (1), two rails (2) made of the first test material are attached using adhesive.



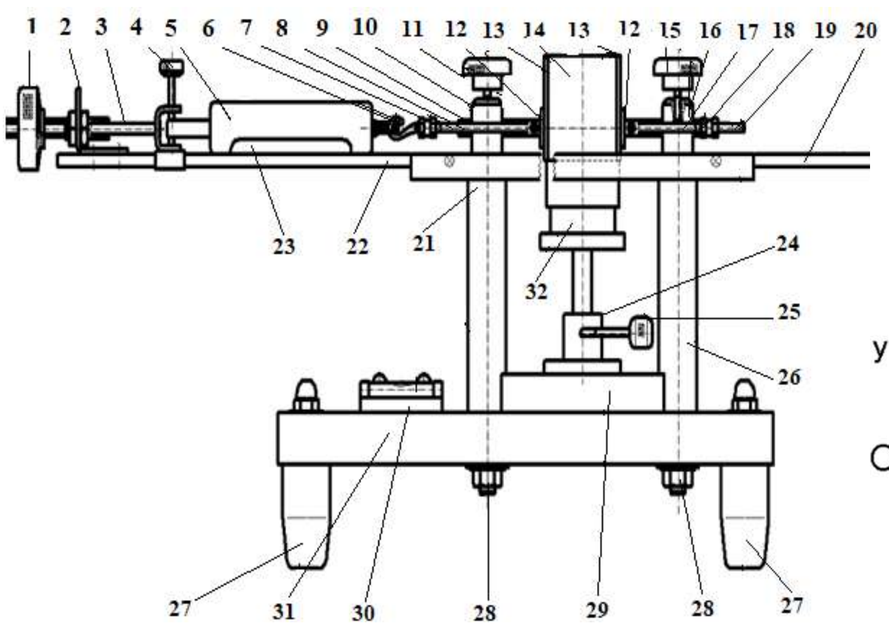
Fig. 1(a) See front

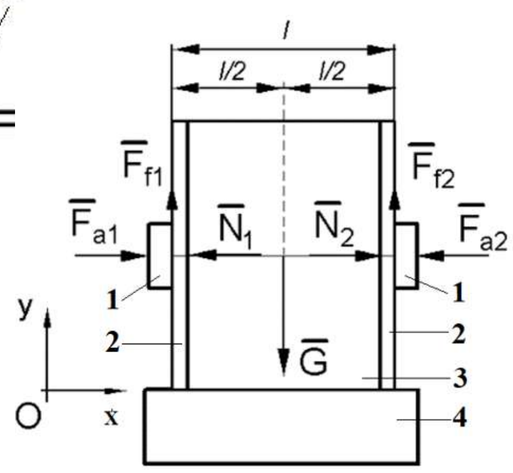


The assembled test piece is weighted using the digital dynamometer (5). The sliding friction force remains constant, as derived from equation (7.5). The above-described assembly is fixed in a specific position using jaws (4), which have a layer of the second test material applied at the contact surface.

The jaw system (4) in Fig. 1 ensures the application of two pressing forces $\bar{F}_{a1}$ și $\bar{F}_{a2}$. The two forces have the same magnitude, which is indicated by the digital dynamometer (5) in Fig. 1.

Fig. 1(b) Vedere of his





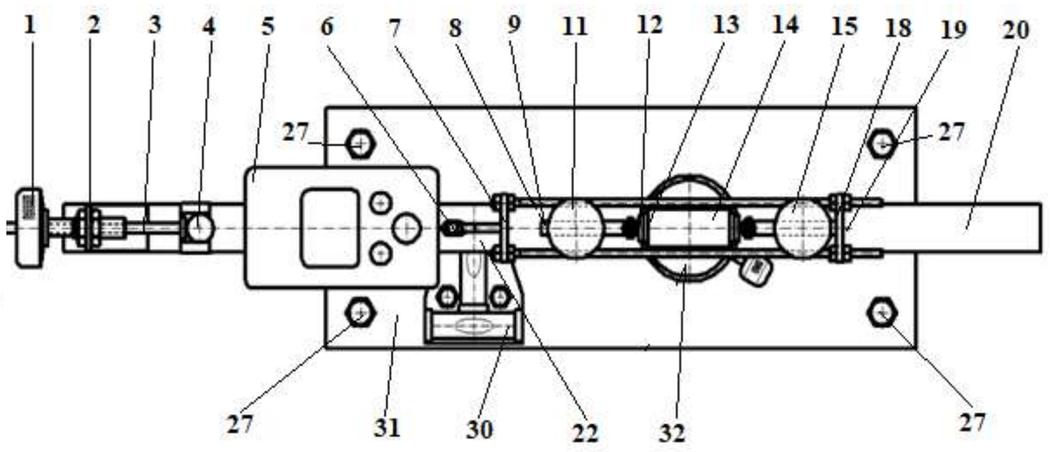


Fig. 2 illustrates the mechanical modeling of the main test piece.
To determine the coefficient of friction, we will write the equilibrium equations for the forces acting on the main test piece.

To determine the friction coefficient, we will write the equilibrium equations for the forces acting on the main part.

$$\sum_x = 0 \quad N_1 - N_2 = 0 \rightarrow N_1 = N_2 = N \tag{1}$$

$$\sum_y = 0 \quad F_{f1} + F_{f2} - G = 0 \tag{2}$$

$$\Sigma_{Mo} = 0 \text{ (punctul de intersecție al forțelor } N_1, N_2, G \tag{3}$$

$$\sum_{Mo} = 0 \quad F_{f1} \cdot \frac{l}{2} - F_{f2} \cdot \frac{l}{2} = 0 \rightarrow F_{f1} = F_{f2} = F_f \tag{4}$$

$$2F_f - G = 0 \rightarrow F_f = \frac{G}{2} \tag{5}$$

The coefficient of friction during sliding in static mode is determined using the **classical limit equation** given by the **laws of friction**:

The device is independent (it does not rely on an external power source or a mechanical testing machine). To generate the pressing force $\boldsymbol{F_{a1} = F_{a2}}$ (the normal reaction N), the device is equipped with its own loading system. The magnitude of this force is read on the dial of a high-precision electronic dynamometer (5).

The two materials for which the coefficient of friction needs to be determined are distributed as follows: One material is fixed on the clamping jaws (12).

The second material, in the form of rails (13), is attached to the movable piece (test body) (14) using adhesive. Before starting the experiments, the device, placed on a table, must be leveled by adjusting the height of the support legs (27). A bubble level (30) will indicate horizontality in both directions (X, Y). The sequence of operations for determining the coefficient of sliding friction is as follows:The movable piece (test body) (14) is positioned for testing using a telescopic mobile support (24), equipped with a height adjustment screw (25).The test body is clamped by a fixed jaw on the left side and a movable jaw on the right side. The movable jaw is actuated by a screw (3) mounted on the subassembly consisting of a slide and the dynamometer fixing screw (5) (see Fig. 1).The dynamometer measures the magnitudes of the pressing forces applied to the test body, ensuring $\boldsymbol{F_{a1} = F_{a2}}$. Before starting the pressing operation, the digital dynamometer (5) is activated and zero. A clamping force is applied by adjusting the screw (3).By loosening the screw (25), the telescopic support can be removed. The test body remains suspended in the clamping jaws (12).The pressing force on the test body (14) is gradually reduced until sliding occurs. At this moment, the dynamometer records the pressing force $\boldsymbol{N_1 = N_2 = N}$ at the limit state. This force value N is recorded in the experimental data collection table.

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Non-circular gear with continuous variation of the distance between axles (with a slide and sliding stone) with automatic adjustment

RO-BOPI 135847 A0

Authors: Bogdan – Bogdan –Roth Mihail, Romanet Mirela, Ripeanu George -Razvan

D

The invention relates to a gear wheel with variable misalignment, driven by a sliding-block mechanism operated by a DC electric motor. The use of this device allows for a wide range of variable gear ratios. It has a broad application range and can replace a crank-slider mechanism.

The device consists of a circular gear wheel (3) that can be misaligned using a slide and a sliding block, along with an electric motor that controls the misalignment variation. The sliding-block mechanism ensures the system's self-locking during operation, eliminating the need for additional securing elements.

This device can be used in drive mechanisms for agricultural and textile machinery or in automated packaging processes. Practical applications demonstrate that there are many situations where a variable gear ratio is necessary for controlling assembly or machining processes.

Variable gear ratios can convert rotary motion into linear or oscillating movements with variable speeds. The implementation of such variable gear ratios or variable displacement between axes can also be achieved using these non-circular eccentrically misaligned gears, remotely controlled during operation.

The mathematical expression of the gear ratio considers the engagement between two gears: one centered and the other eccentric. Additionally, as a functional requirement, the rotation center of the eccentric gear must remain on a fixed line.

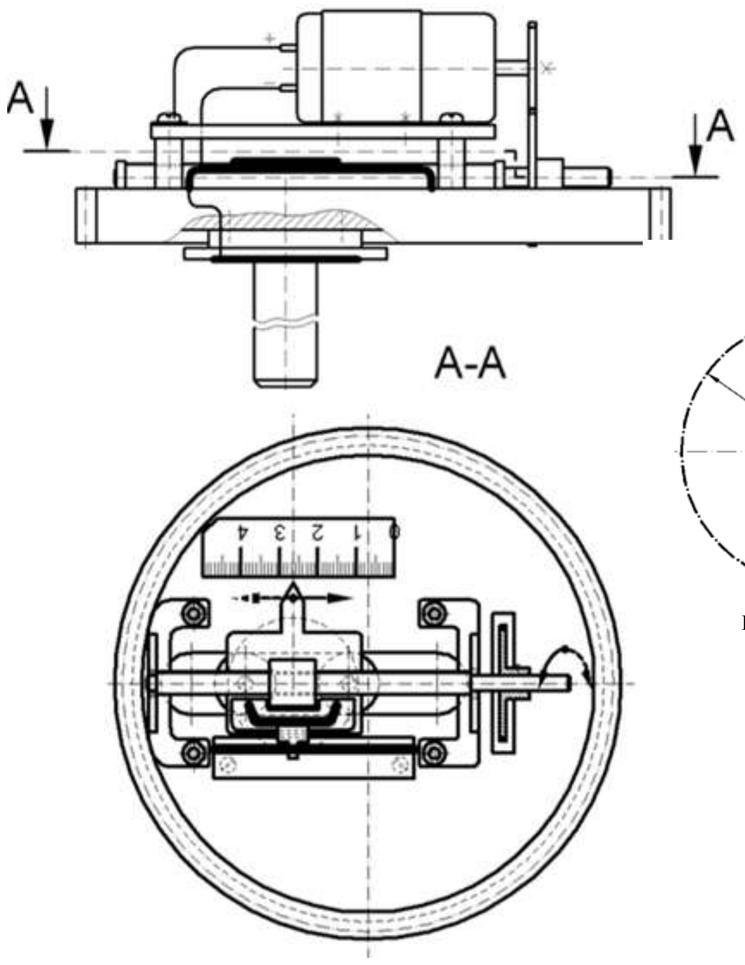


Fig.1. Variant for misalignment with sliding mechanism and sliding stone.

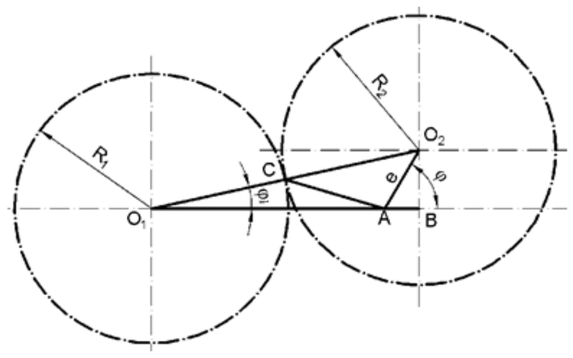


Fig. 3. Gear ratio calculation scheme.

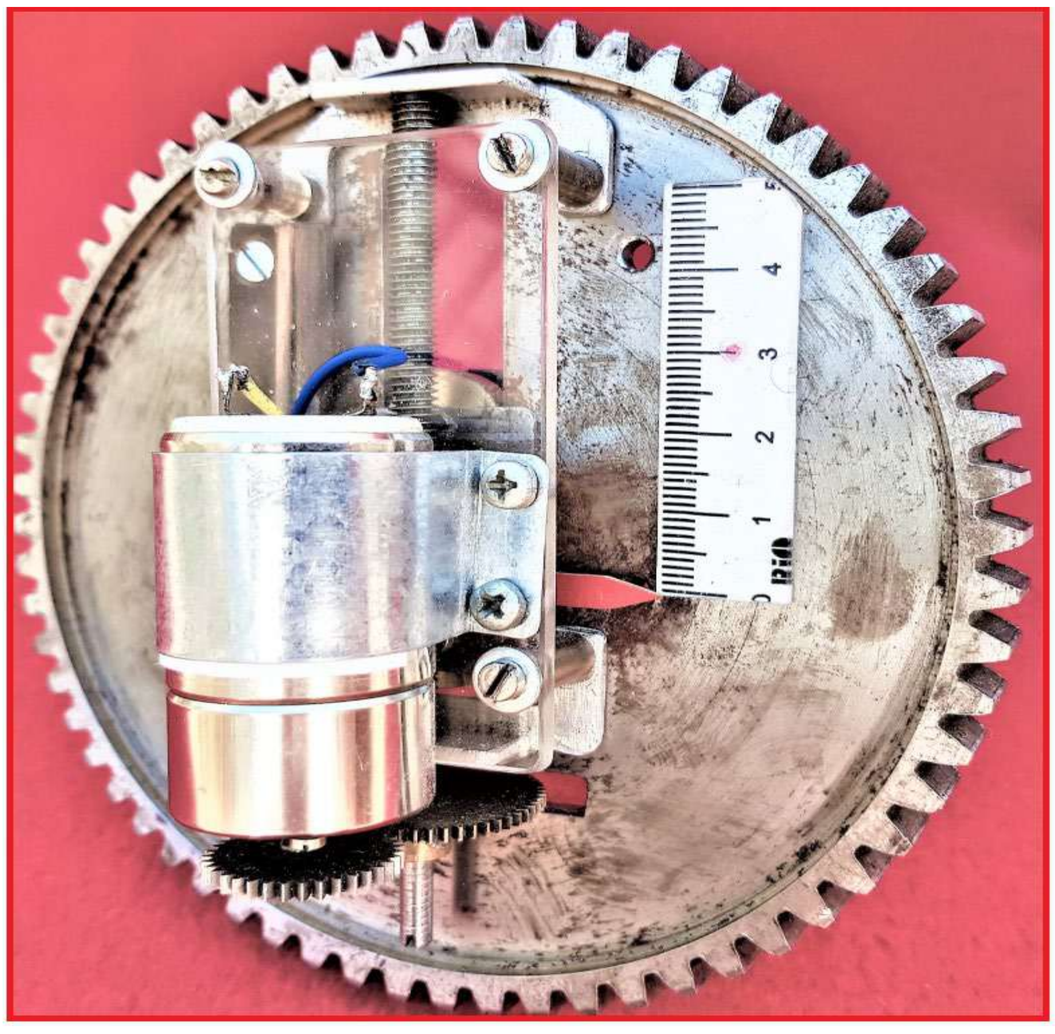


Fig. 2. Overview, misalignment with sliding mechanism and sliding stone.

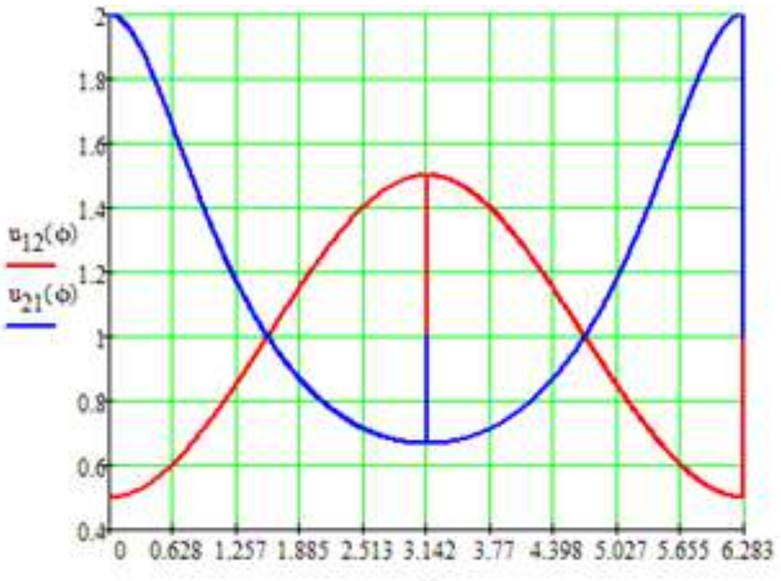


Fig. 4. Gear ratios between the two wheels.

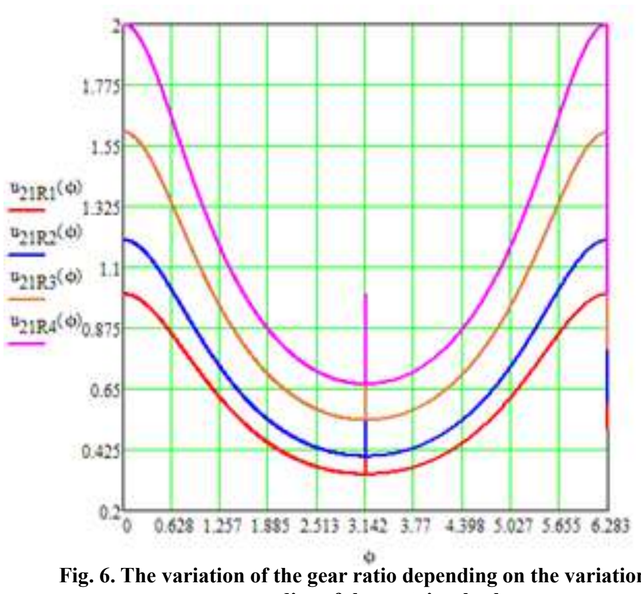


Fig. 6. The variation of the gear ratio depending on the variation of the radius of the centric wheel.

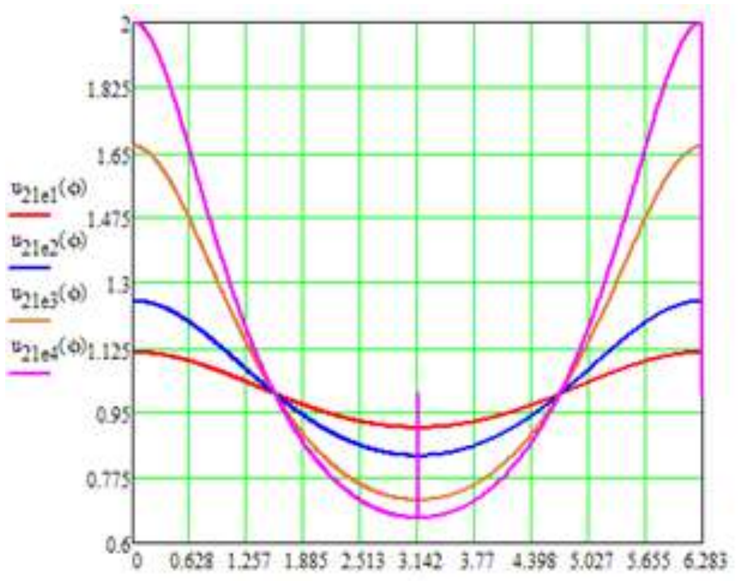


Fig. 5 Variation of the gear ratio as a function of eccentricity.

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TUGBOAT “NEREO”, 1: 43 SCALE, FAST ATTACK BOAT S-100, 1:35 SCALE

Modelships Project

D

Author: George POPA – Emerit Master of sport

Scratchbuild modelships according to original shipyard plans and documentation. The modeltugboat “Nereo” is a true to scale replica of a WW 2 italian armed tugboat used by the italian navy to defend against aircrafts during the war. The model is fully functionaland can complete the following functions: forward / backward, left / right, anchor maneouvering, smoke and sound generator, navigation lights.

All these functions can be activated using a 10CH proportional remote control. The model has won the Gold medal in following international competions: World Chamionship NS class, Ornetta, Poland, 2017; european championship Burgas, Bulgaria, 2019; World championship C class, Rijeka, Croatia,2021, World champion ship C class, Jablonec, Czech Republic, 2023.













Fast attack S100 built by Kriegsmarine in WW2 and widely used on all naval operations aroun Europe. The model represents one of the ships used in Black Sea. RC model capable of launching electric torpedoes and also all basic running functions. Model has been awarded with the gold medal in C6 class at World championship in Jablonec, Czech Republic.

SCAN ME

Presentation link: ***https://www.facebook.com/gemarmodelships***

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Eccentric circular geared wheel with gearmotor attached for continuous variation between the axes of a gear with remote control operation of the motor during operation

RO-BOPI 135849 A0

Authors: Bogdan – Roth Mihail, Romanet Mirela, Ripeanu Razvan -George

D

The invention relates to a gear wheel with variable misalignment, driven by a remotely controlled electric motor.

The use of this device allows for a wide range of variable gear ratios. It has a broad application scope and can replace a crank-slider mechanism.

The device consists of a circular gear wheel that can be misaligned using a worm gear mechanism and a motor to adjust the misalignment. The worm gear mechanism ensures the system's self-locking during operation, eliminating the need for additional securing elements.

This device can be used in drive mechanisms for agricultural and textile machinery or in automated packaging processes. Practical applications demonstrate that there are many situations where a variable gear ratio is necessary for controlling assembly or machining processes.

Variable gear ratios can convert rotary motion into linear or oscillating movements with variable speeds. The implementation of such variable gear ratios or variable displacement between axes can also be achieved using these non-circular eccentrically misaligned gears, remotely controlled even during operation.

To determine the mathematical expression of the gear ratio, the case of engagement between two gears—one centered and the other eccentric—is considered. Additionally, as a functional requirement, the rotation center of the eccentric gear must remain on a fixed line.

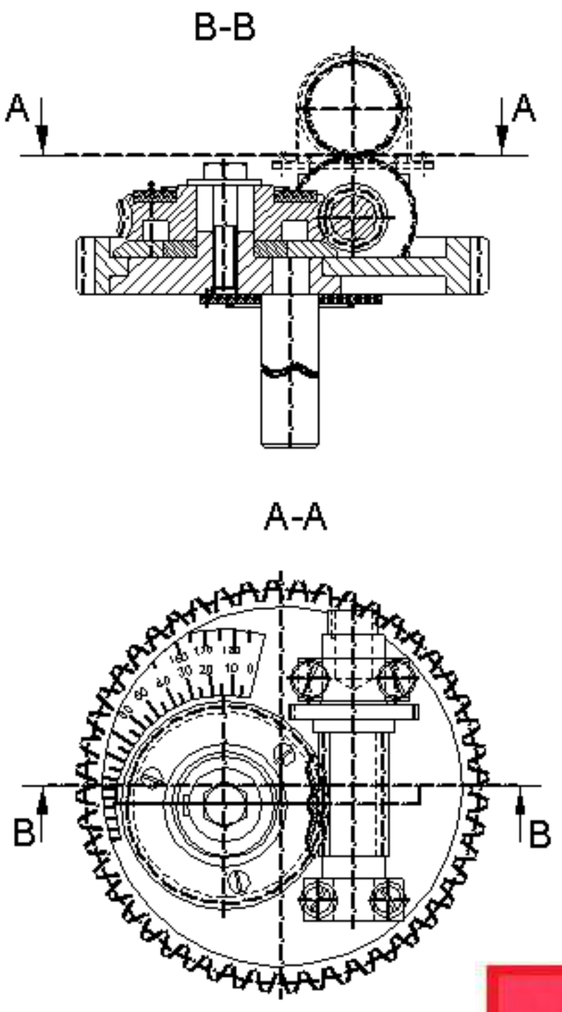


Fig. 1. Variant for screw misalignment – worm wheel

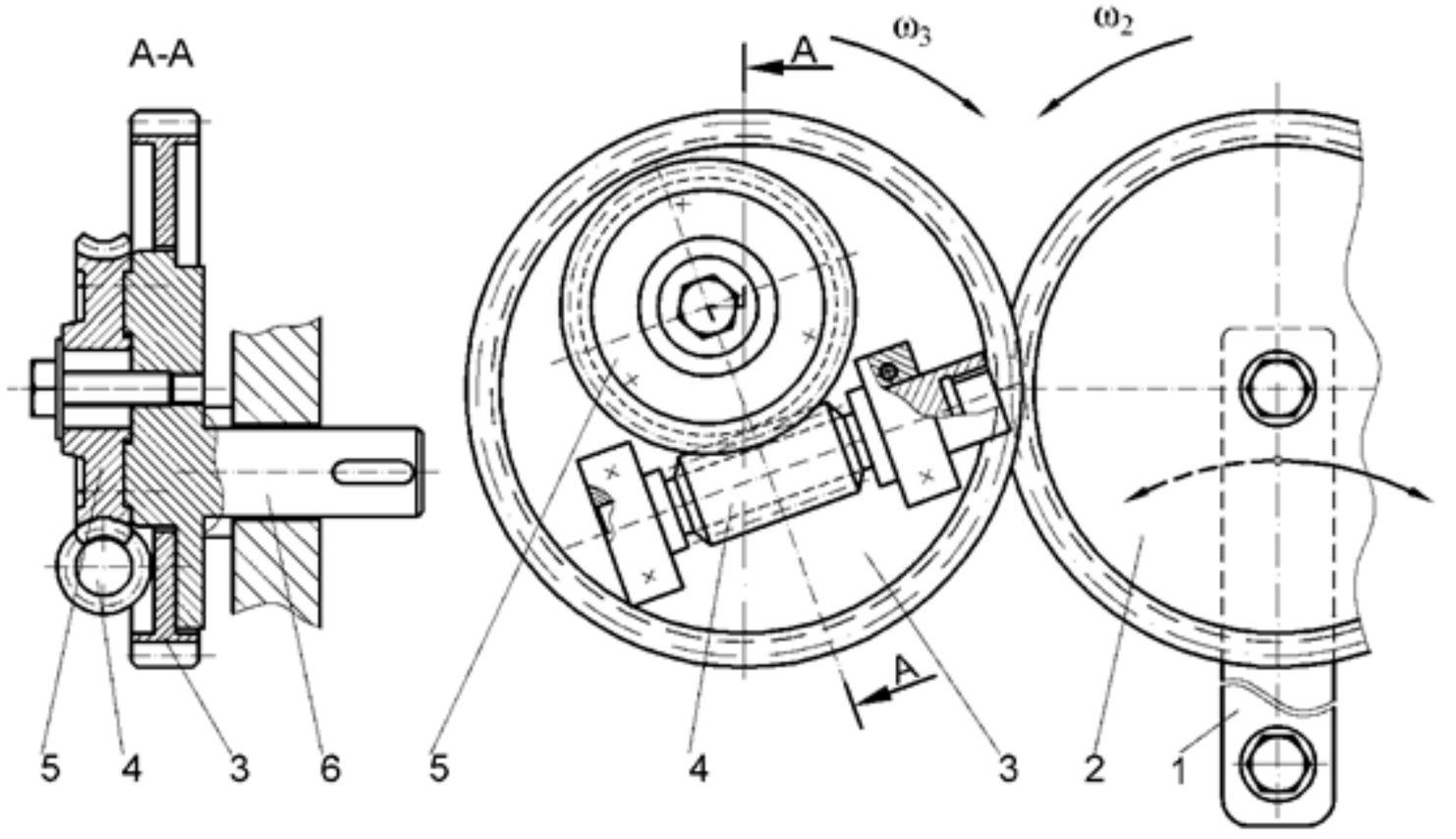


Fig. 3. Screw and worm wheel eccentric device

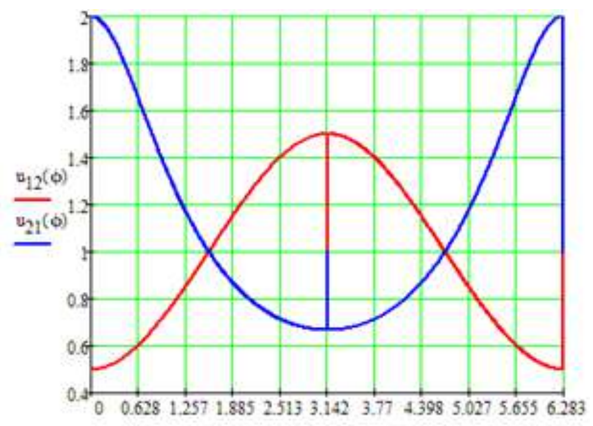


Fig. 4. Gear Ratios Between the Two Wheels



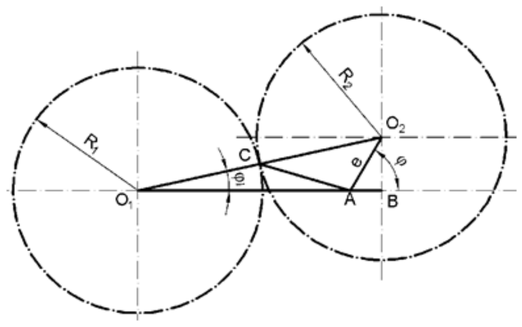


Fig. 2. Overview with screw misalignment – worm wheel

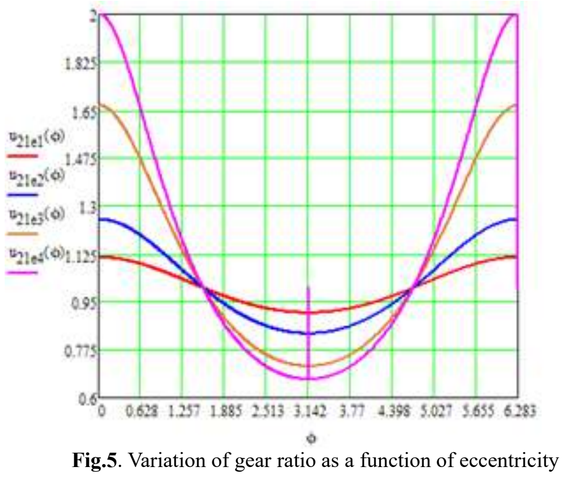


Fig.5. Variation of gear ratio as a function of eccentricity

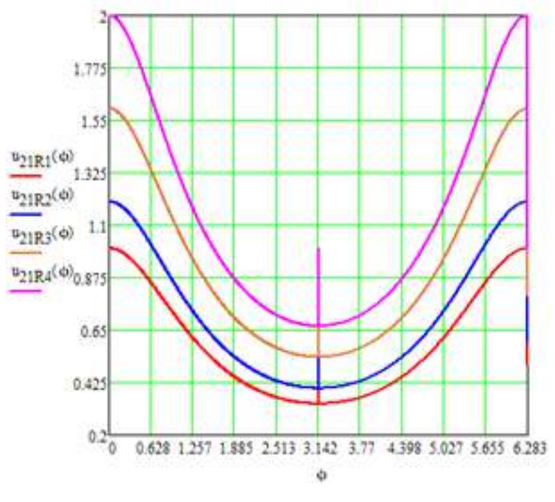


Fig.6 Variation of gear ratio depending on the variation of the radius of the centric wheel

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Device for bending a recessed console with digital measurement of its own actuation force

RO-BOPI 135999 A0

Authors: Bogdan – Roth Mihail, Romanet Mirela, Ripeanu George -Razvan

D

The invention relates to a device for bending test recessed bars driven by a force at the free end with the possibility of applying the force itself with a digital dynamometer. To measure the force, it is read on the digital display of the dynamometer. The device is intended for the investigation of plastic specimens subjected to bending in brackets. Due to the small size of the device, it can be inserted between the polarization filters of a photoelasticimeter, where the state of tensions in the specimen can be visualized in polarized light, depending on the load achieved by operating the operating wheel. The self-pressure force can be precisely adjusted, as the force value is read on the display of the digital dynamometer with an accuracy of three decimal places. Fig.10 *Shows the isochromates* ***for the recessed bar driven at the free end by a concentrated force F***.

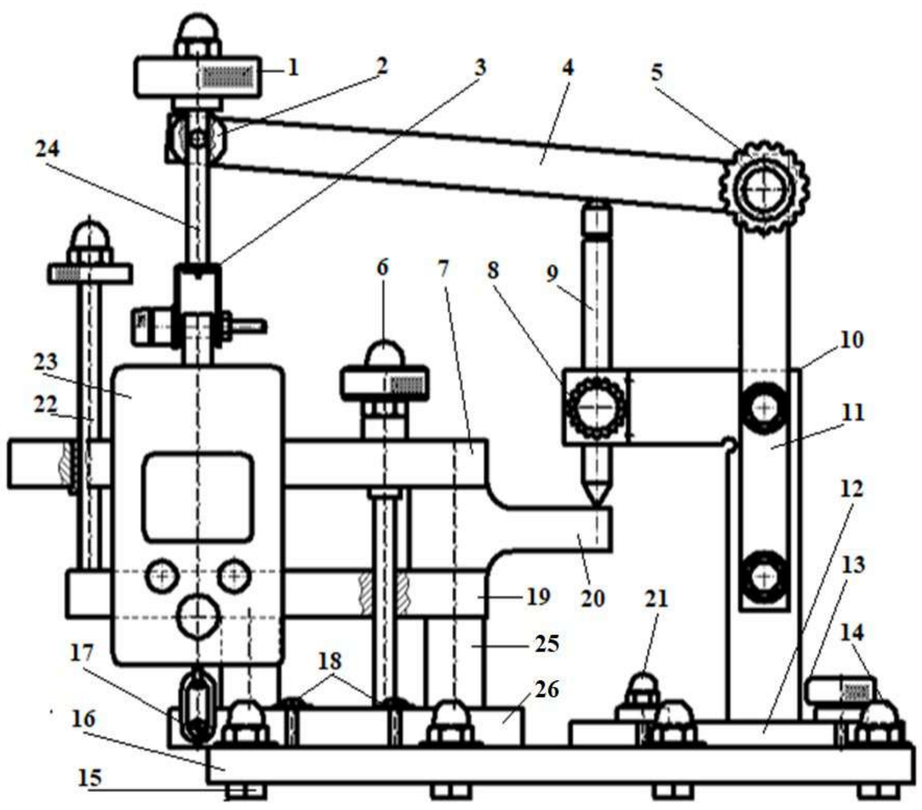


Fig. 1. Device with digital dynamometer for bending test of recessed bars

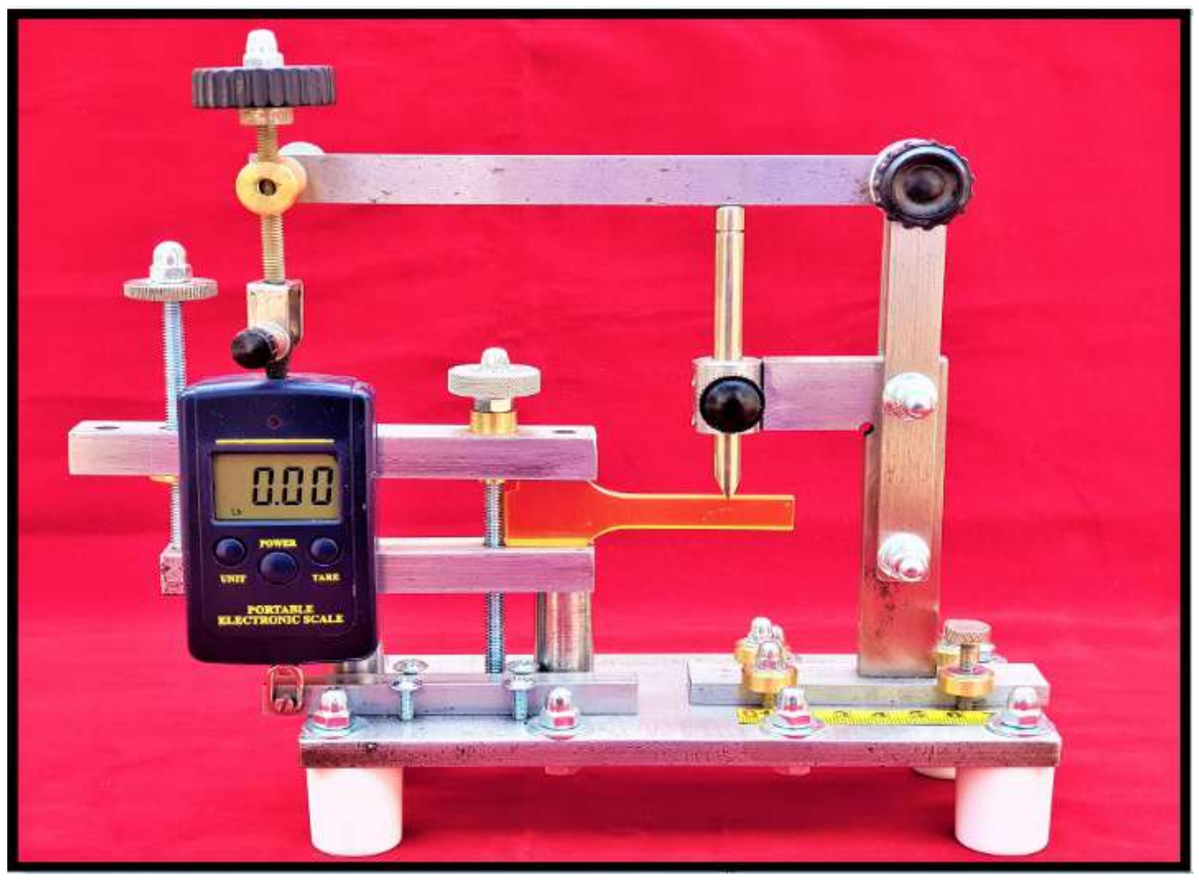


Fig. 2. Photo of the device with the digital bending test dynamometer of recessed bars



Fig. 5. Photo of the photoelasticimeter and the device during the request of the test tube **(2)**



Fig.6. Variation of contour stresses



Fig. 3. Photo of the photoelasticimeter and the device during the request of the test tube **(1)**



Fig.4. Variation of contour stresses



Fig. 9 Photo of the photoelasticimeter and the device during the request



Fig.10 Variation of contour stresses



Fig. 7. Photo of the photoelasticimeter and the device during the test tube request **(3)**



Fig.8. Variation of contour stresses

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Straight-toothed circular tooth-testing device

RO-BOPI 135898 A0

Authors: Bogdan – Roth Mihail, Romanet Mirela, Ripeanu George-Razvan

D

The invention relates to a device for testing the teeth of circular tooths with straight plastic teeth. The device conforming to the invention comprises a partially toothed metal wheel which can rotate around a fixed shaft engaged in the rotational movement by means of a movable rack operated by a testing machine. On the partially toothed wheel is mounted a metal piece of rack-and-pinion tooth type that acts on a plastic toothed wheel with the role of test specimen, mounted on the same horizontal shaft fixed on a support. The proposed device was designed and manufactured as a result of the need to test the strength of the teeth of the gears with straight teeth, made of plastics. The device has a compact construction. It can be attached to a classic machine for mechanical tensile and compressive strength tests.

With this device, toothed specimens with straight teeth made of Necuron 1300 material were tried, until a tooth broke. Two circular gear specimens were made and tested with module 2 and module 4.5 respectively.

The device presented in the RO128055B1 Patent[69], shapes the tooth to be broken as a rigid recessed beam, driven at the free end by a concentrated force transmitted by the testing machine. In this way, the interaction between the teeth of the gears during operation is not reproduced.

As we have seen from previous mechanical tests, the Necuron 1300 material has a very high bending capacity. In this situation, it was necessary to make the test device to reproduce the actual stress mode from the operation of the gears. The description of the components of the said device is shown in fig.1.

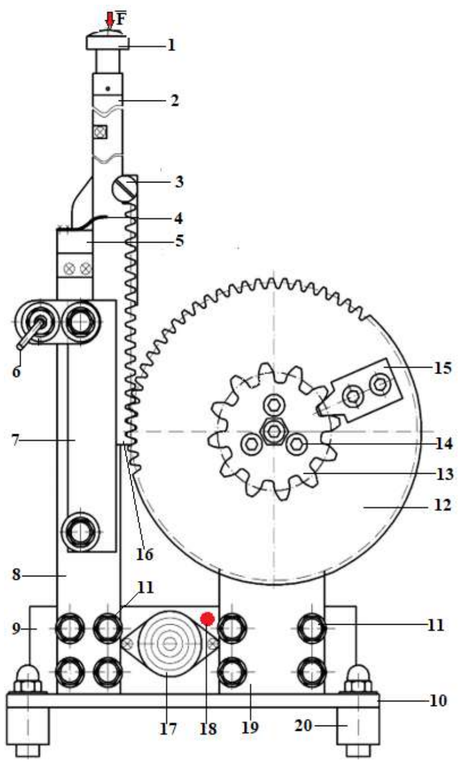


Fig. 1 Sketch of the device for testing the teeth of circular gears with straight teeth

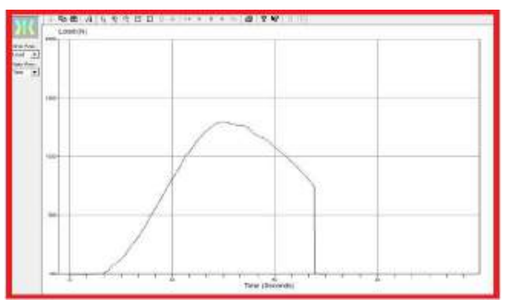


Fig. 6. Force variation curve - time for breaking the second tooth

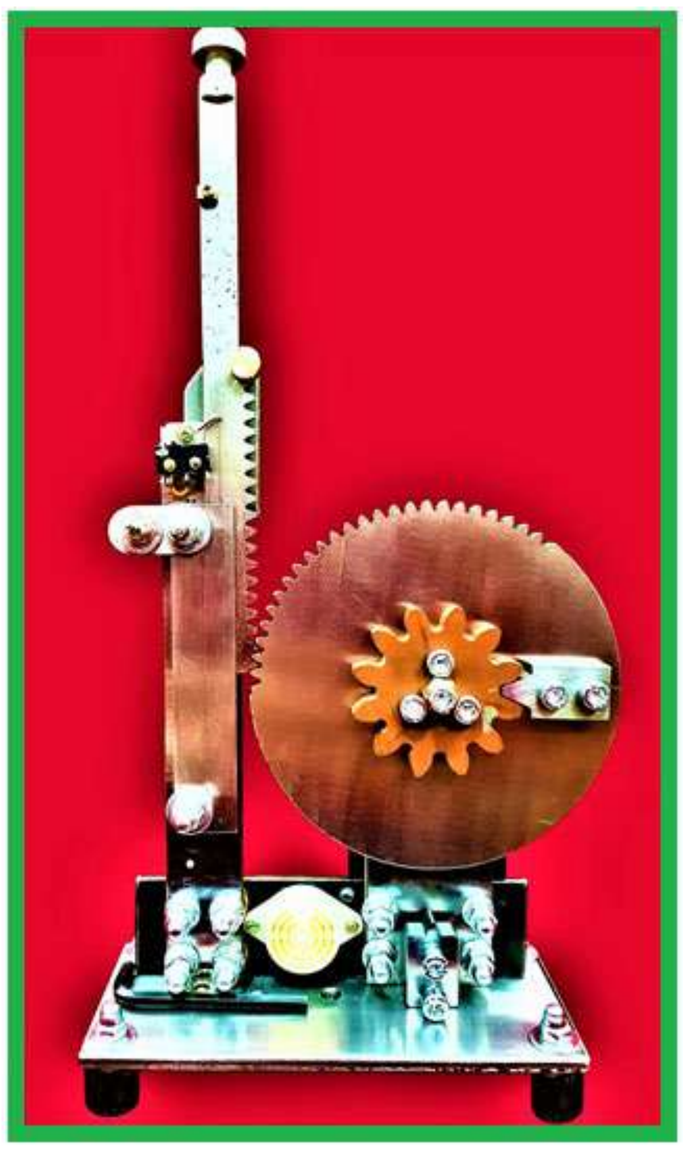


Fig.2. Photographic image of the device taken with the 4.5 mm module gear specimen

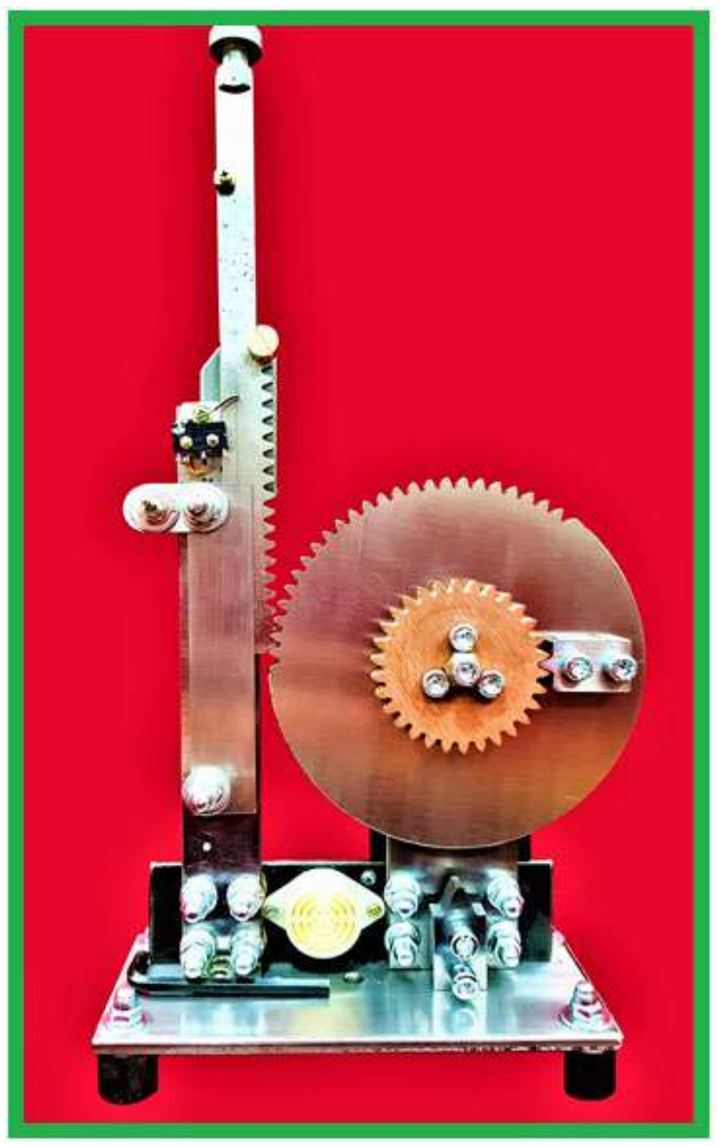


Fig.3. Photographic image of the device taken with the 2 mm module gear specimen



Fig.4. Gear specimens and rack and pinion tooth stress parts

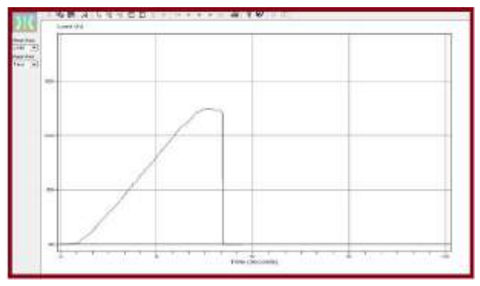
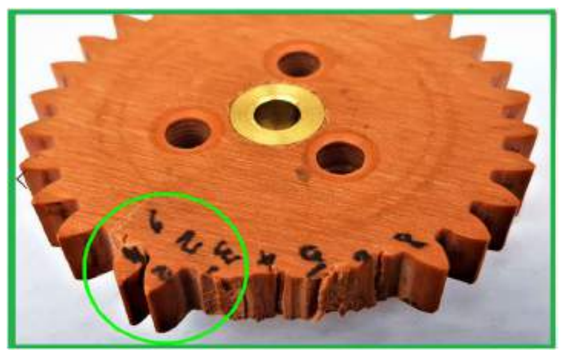


Fig.5. Force-time variation curve at breakage of the first tooth





Fig. 8. Gear Tube
(a) Toothed and detached teeth specimen; (b) Tooth-wheel specimen with tooth break shape highlighting





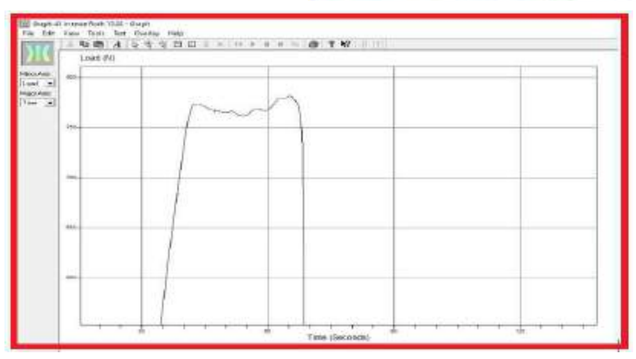


Fig. 11. Force variation curve - time for breaking the second tooth of the module 2 mm

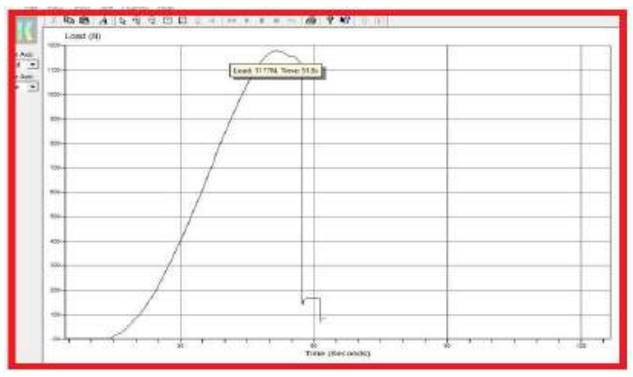


Fig.7. Gear wheel specimen device after breaking the third tooth

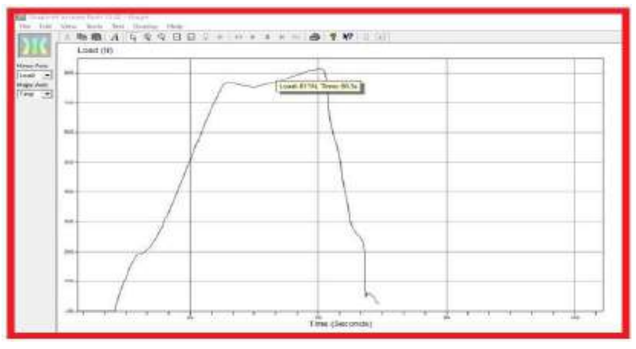


Fig. 12. Force variation curve - time for breaking the third tooth of the modulus 2 mm



Fig. 9. Trying to break the first tooth

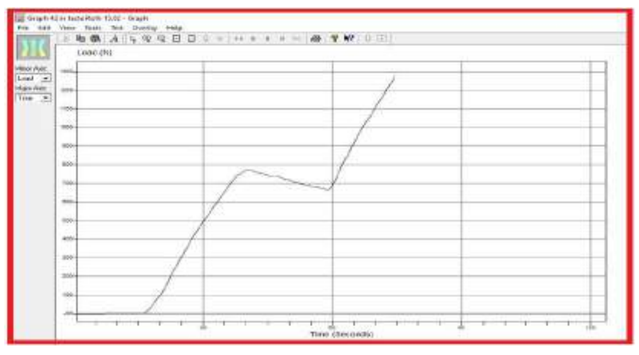


Fig.13. Force variation curve - time for breaking the first tooth of the 2 mm module

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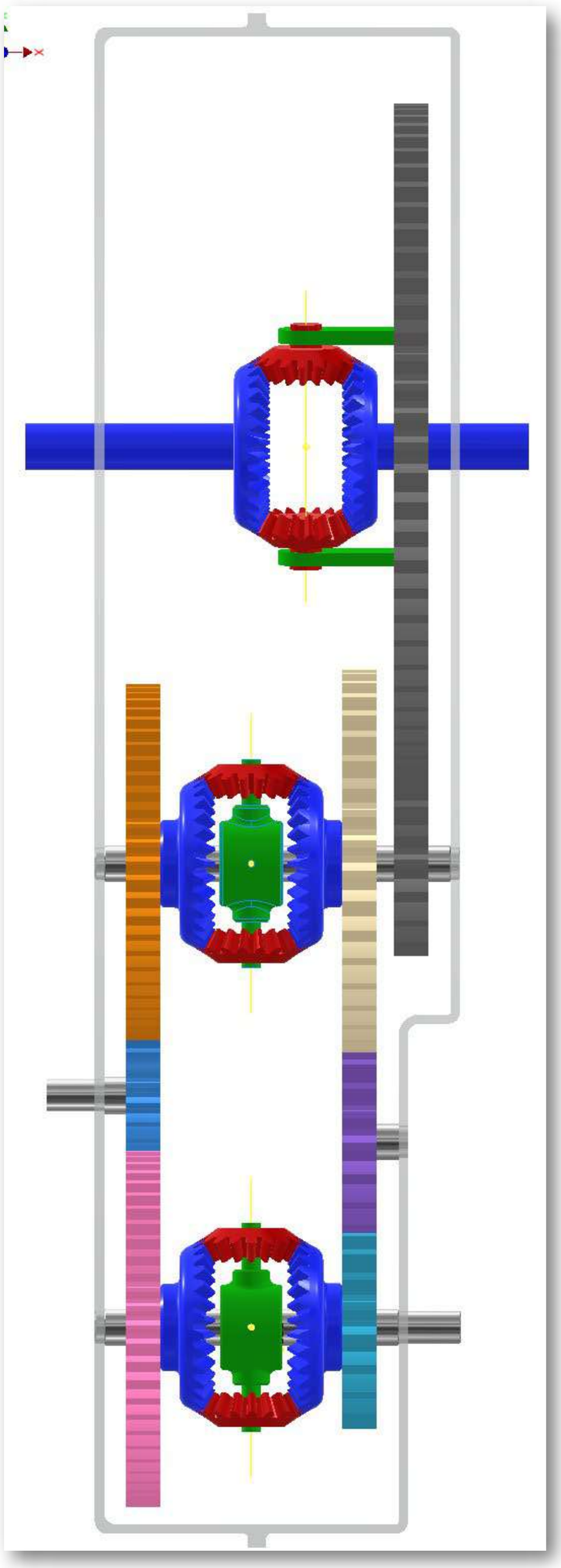
SELF-ADAPTIVE DIFFERENTIAL GROUP

Patent RO134406 / 30.03.2023

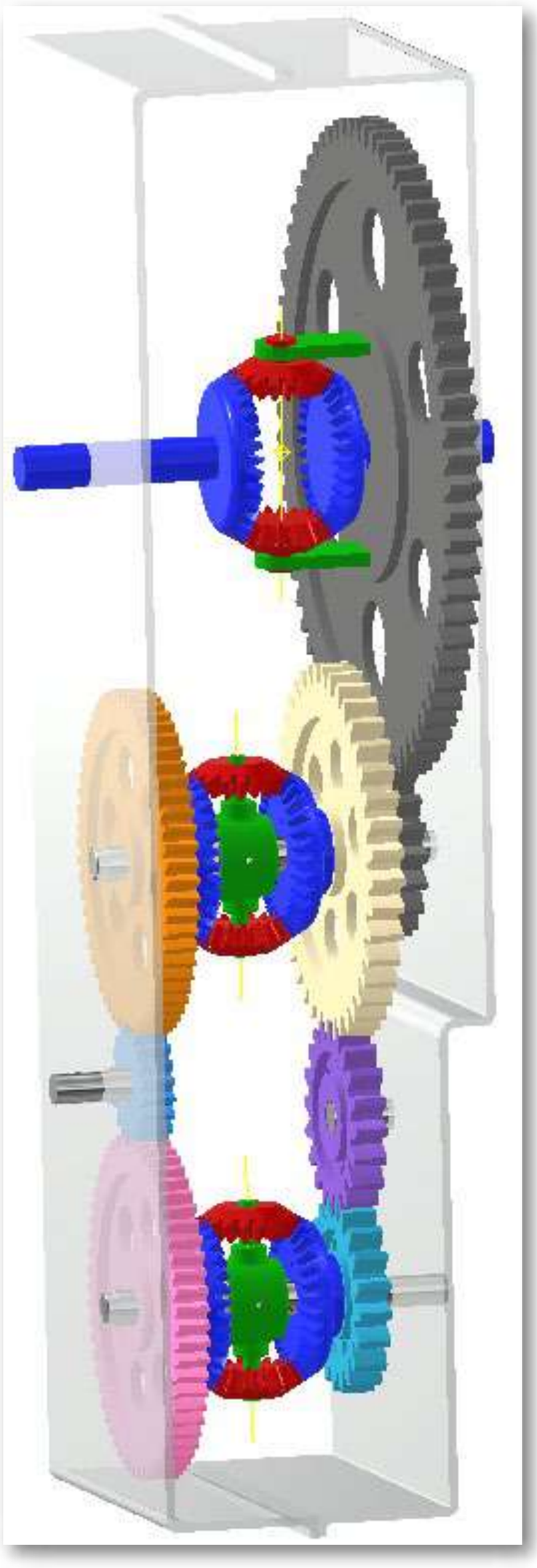
Authors: ROMEO CĂTĂLINOIU, SORIN AUREL RAȚIU, IMRE ZSOLT MIKLOS

The invention is an application of Patent RO134406 dated 30.03.2023 and refers to a gearbox intended to ensure the transmission of electrically powered automobiles with the aim of reducing energy consumption and increasing energy autonomy.

The gearbox is characterized by the fact that it continuously varies the value of the transmission ratio, by varying the revolutions of the two electric motors, which can work individually or in tandem.



SCAN ME



The gearbox is a mechanical reducer characterized by the fact that it provides assistance when pedaling through an electric motor, assistance that can be achieved in three modes: low, medium and high, self-adaptive depending on the value of the load torque that must be overcome.

Contact: *catalinoiuromeo@gmail.com* *sorin.ratiu@fih.upt.ro*

Fig. 4. Gear ratios between the two wheels.

Stand for the determination of stresses and deformations along and at the height of the tooth for gears with inclined teeth and large widths by the method of resistive tensometry

A00095/12-03-2025

Authors: Bogdan –Roth Mihail, Romanet Mirela, Bucur Mihai – Tiberiu, Cananau Sorin, Ripeanu George –Razvan, Dinita Alin

D

The invention relates to a stand for the determination of stresses and deformations in the length and height of the tooth for gears with inclined teeth and large widths by the method of resistive tensometry. With the original design stand, it is possible to simulate the operating behavior of gears with long, inclined, bent teeth, from the moment they enter the gear until they exit the gear. The variant of the stand designed by the author differs a lot from a constructive point of view compared to other stands. The stand is designed to operate attached to a universal laboratory machine for compression, which generates the force applied tangentially to the tooth, a force that determines the bending moment of the tooth along its length and height.

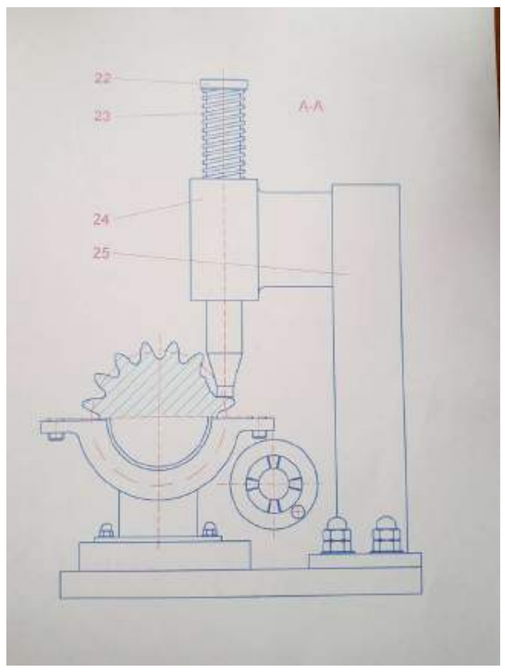


Fig.1 Stand sketch (front view)

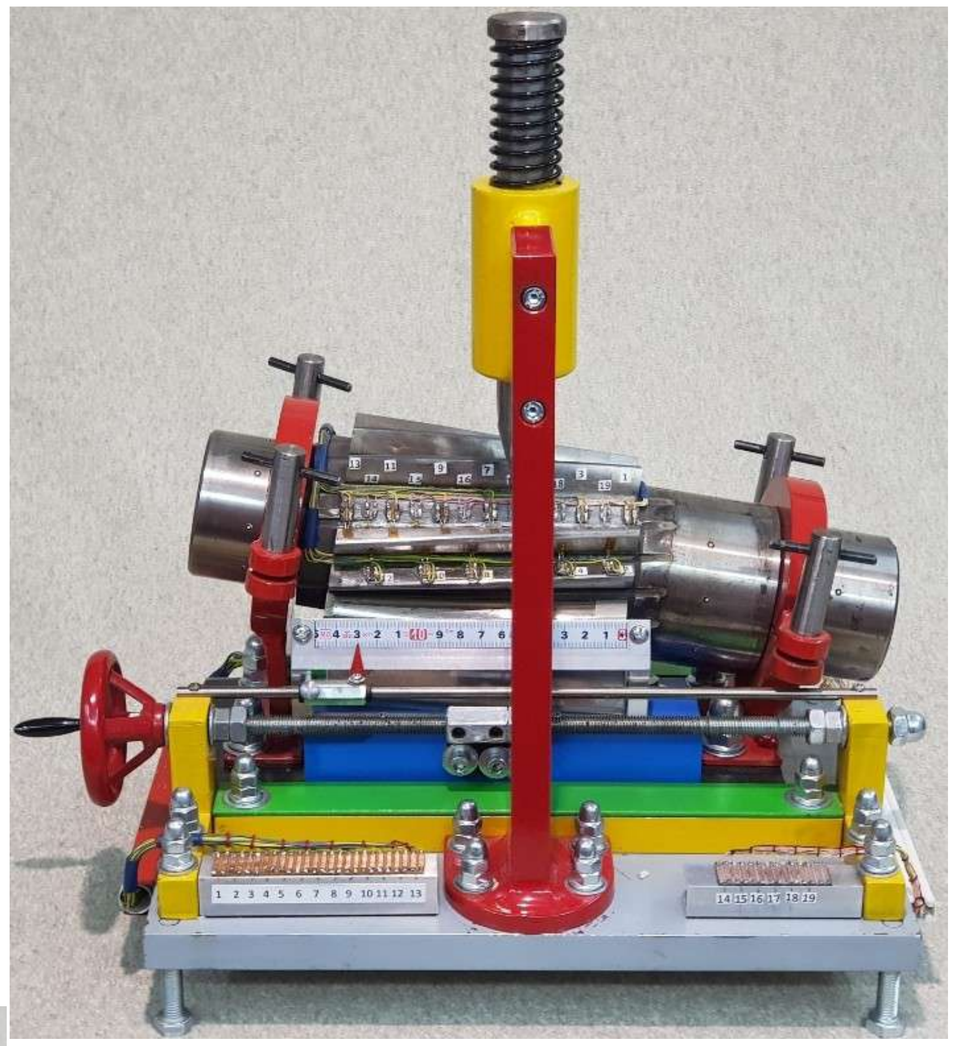


Fig. 4. Image of the stand (top view).

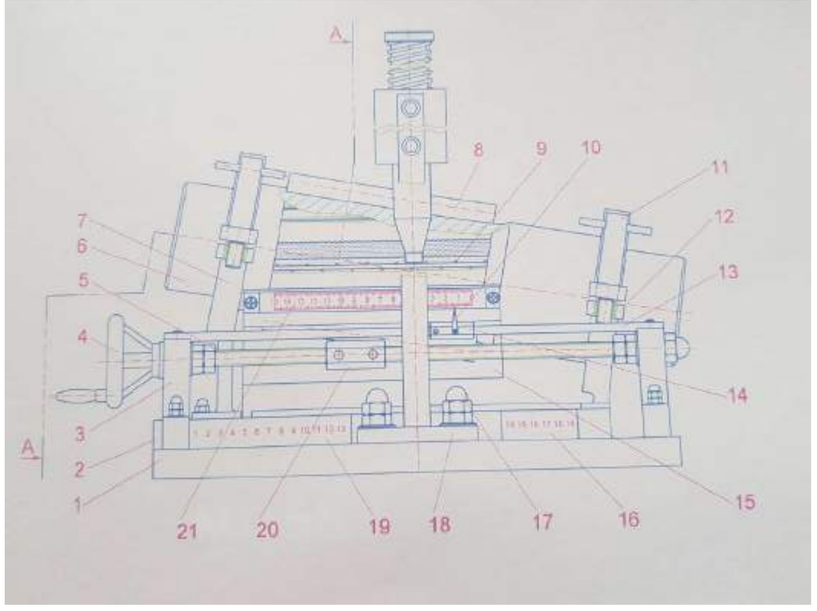


Fig.2 Stand Sketch (Side View)

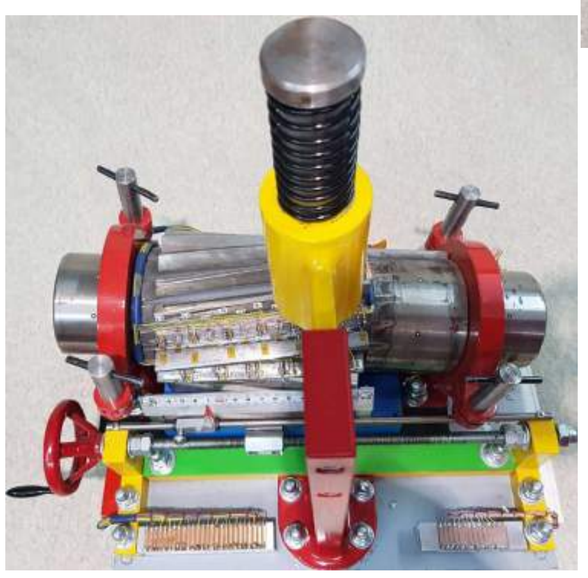


Fig. 3. Picture of the stand (front view).

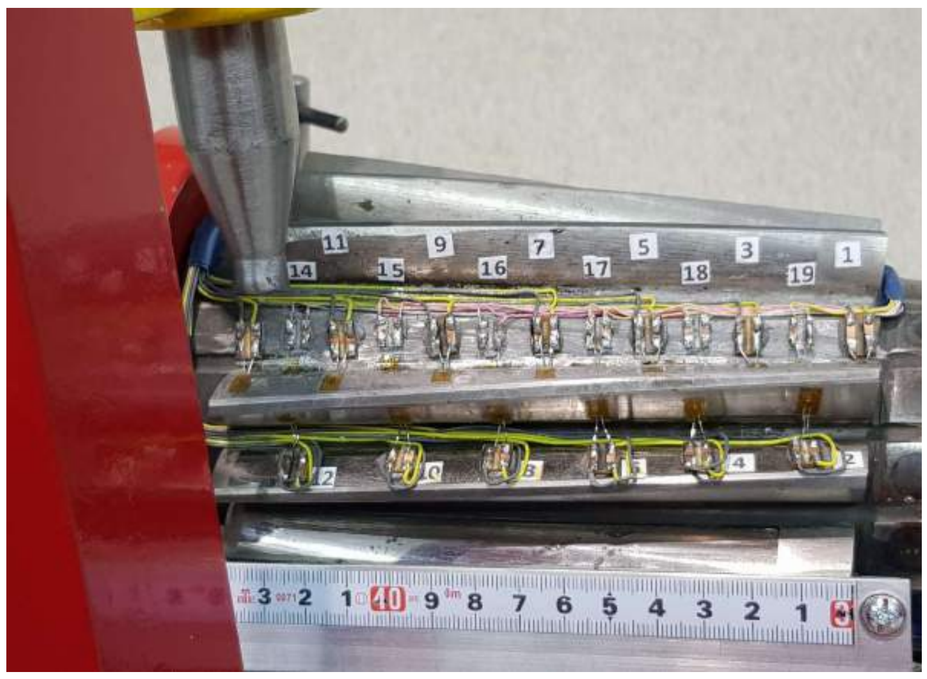
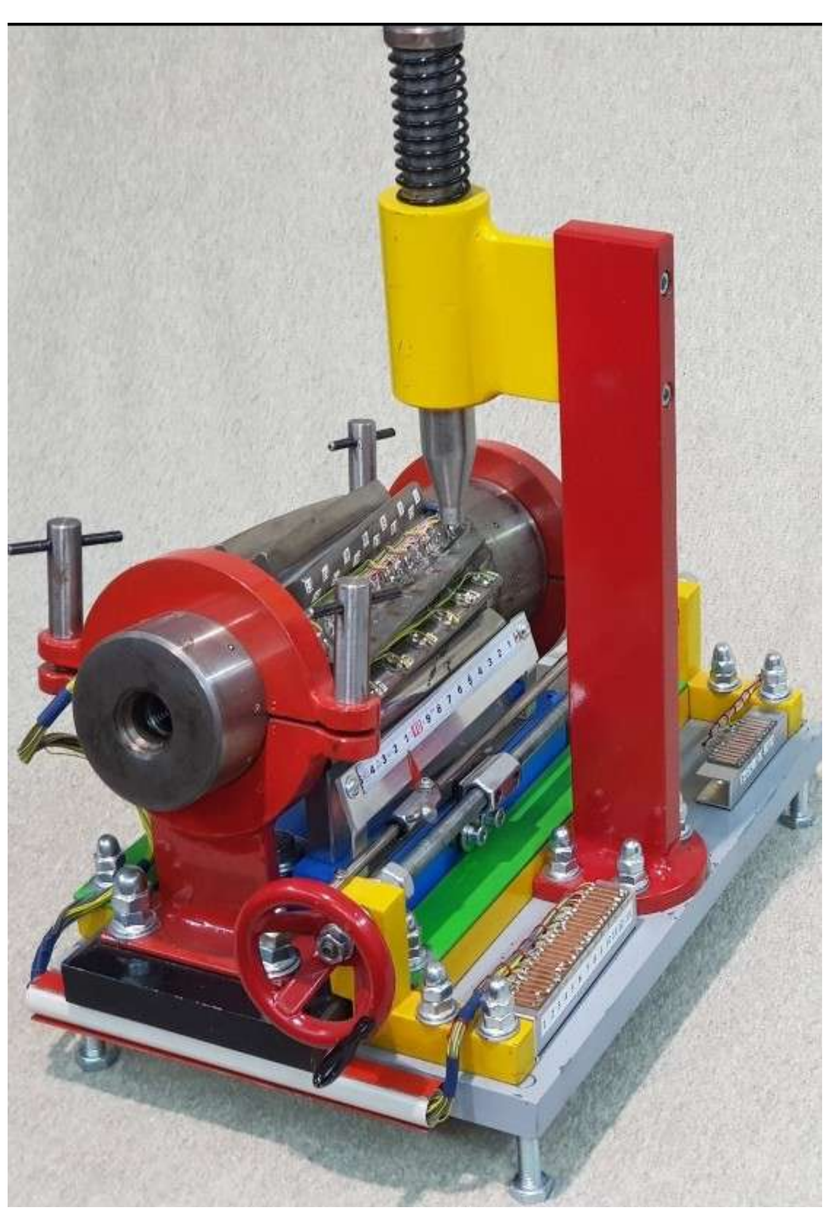
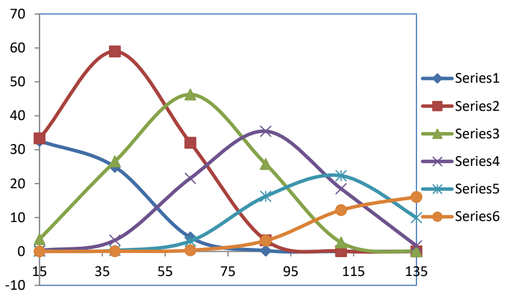
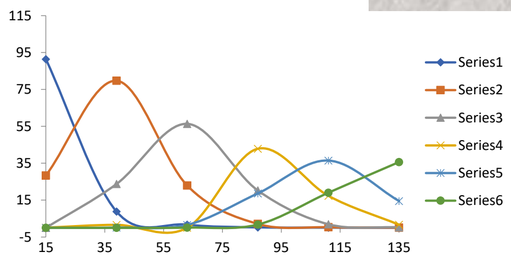


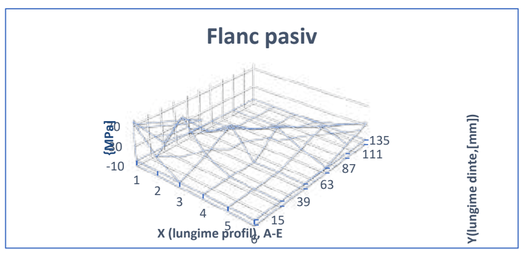
Fig.6. Image of the stand (detail of tensometric marks on the experimental tooth – top on the active flank and down on the passive flank)

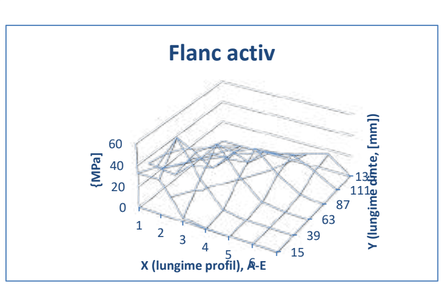


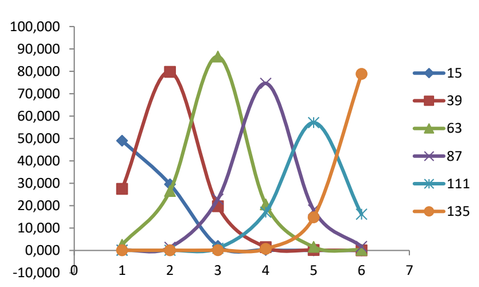


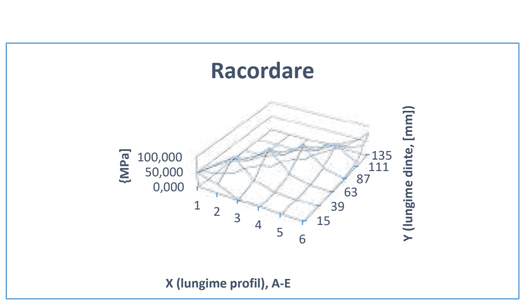












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Title

MONO-BLOCK BODY FOR LOW-MASS VEHICLES

Inventor/s - Contact

Bere Petru Paul; Neamţu Călin Gheorghe Dan; Dudescu Cristian; Krolczyk Grzegorz;
paul.bere@tcm.utcluj.ro

Patent/ Application number

Patent OSIM no.: RO133971- B1/30.12.2024

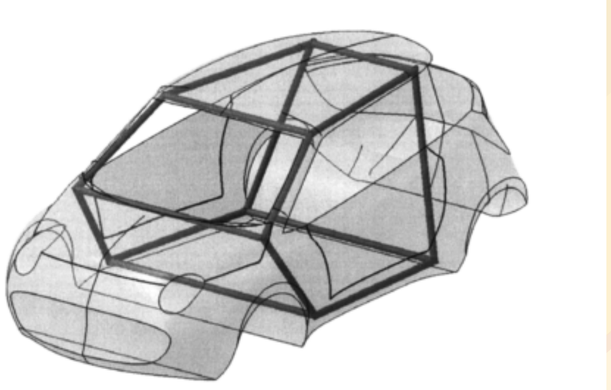
Short presentation

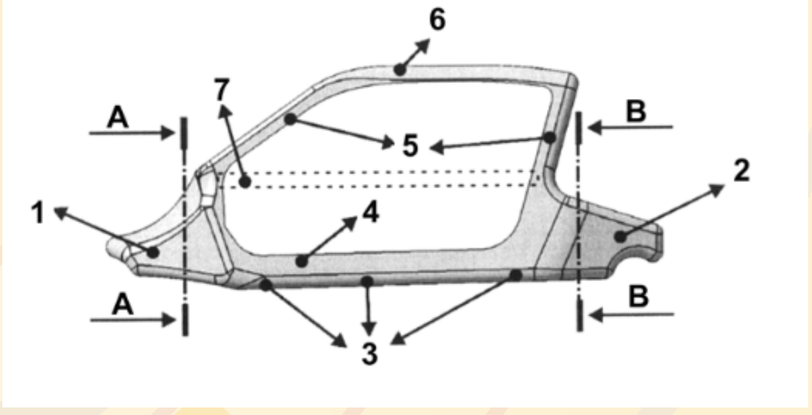
The invention relates to a monoblock body for motor vehicles and to a sandwich-type fiber-reinforced composite material for making the body, the composite structure exhibiting high mechanical resistance and low mass. According to the invention, the body is made of a sandwich-type composite structure consisting of a honeycomb-like aluminium core (10) placed between an exterior layer (9) and an interior layer (11) made of a glass-fiber-, carbon-fiber- or Kevlar-reinforced composite material, the body consisting of two cones (1 and 2), a front one and a back one, for impact, continued with a floor (3) provided, on the edges, with two sills (4) made of composite material, onto which four pillars (5) supporting the ceiling (6), are connected, on the edge they having a resistance structure (19), with a reinforcing element (7) placed inside the door with the role of protecting the passengers in case of lateral impact, all the mentioned elements being obtained in a mould with multiple separation planes inter-connected during the process of composite lamination, the operation being performed simultaneously, to finally result in a complete monoblock body.

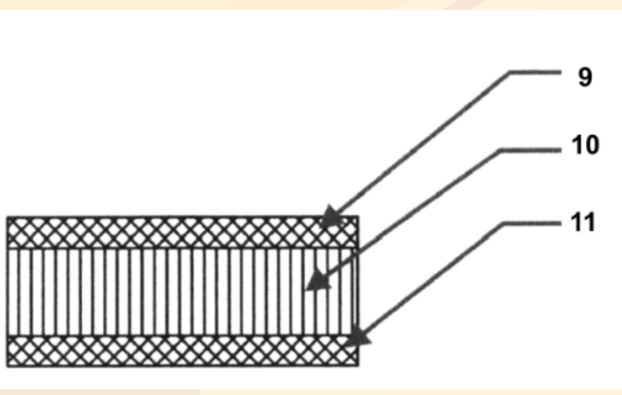
Applicability

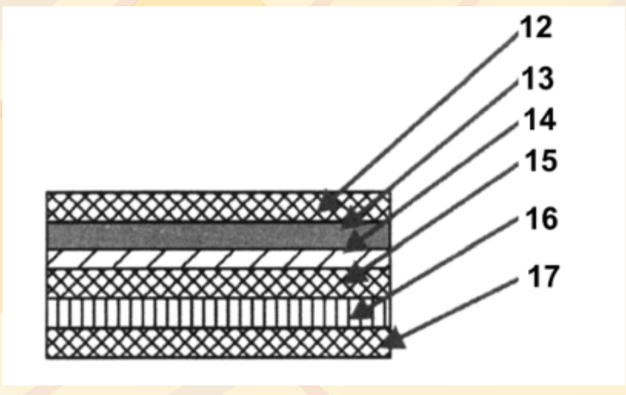
The patent applies to a body in white composite structure for automotive industry

Images









UNIVERSITATEA TEHNICĂ DIN CLUJ-NAPOCA
MEMBER OF EUT+ EUROPEAN UNIVERSITY OF TECHNOLOGY

Department for Research, Development and Innovation Management
Knowledge and Technological Transfer Center

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Title

BRAKING MECHANISM WITH S CAM

Inventor/s - Contact

Laze Daniel / danut.laze@yahoo.com; syntiumsm@yahoo.com

Patent/ Application number

Patent OSIM no.: RO133631- B1/29.11.2024

Short presentation

The invention relates to an "S" cam braking mechanism having an actuating system (1) consisting of a body (8) supporting a shaft (10), and an axial movable assembly formed by the pusher shaft (14) and the spindle (15) with balls (16) sliding in the grooves (10c) and causing the cam (2) to rotate. Wear compensation and holding of the shoes (4) in the immediate vicinity of the drum (5) is made with a mechanical reaction loop formed by the sawtooth coupling (10a / 11a) and the threaded assembly (14c / 15c). Figure 1.

Applicability

The camshaft brake mechanism S is applicable to the wheel brake mechanism with drums and inner shoes.

Images

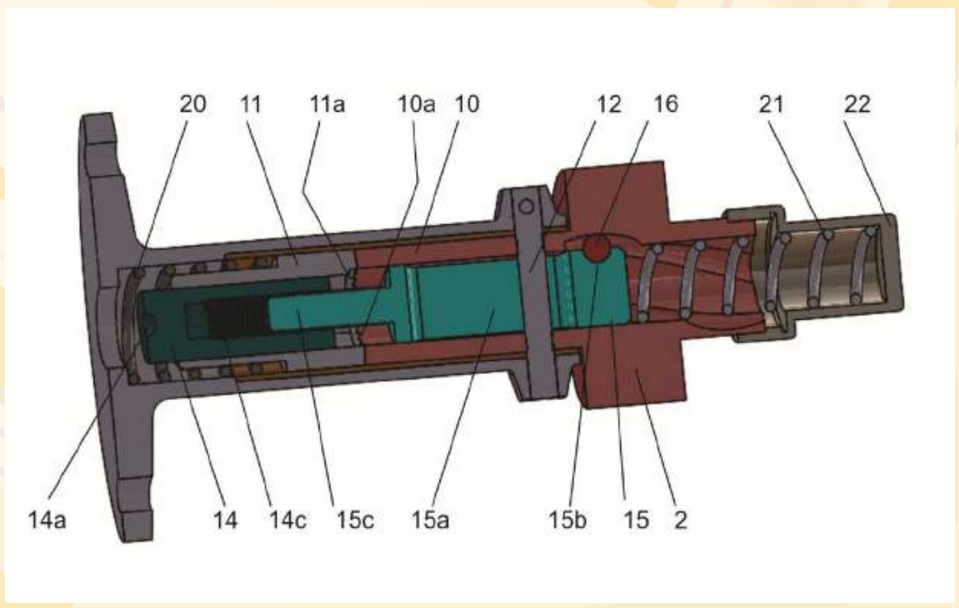


Fig.1

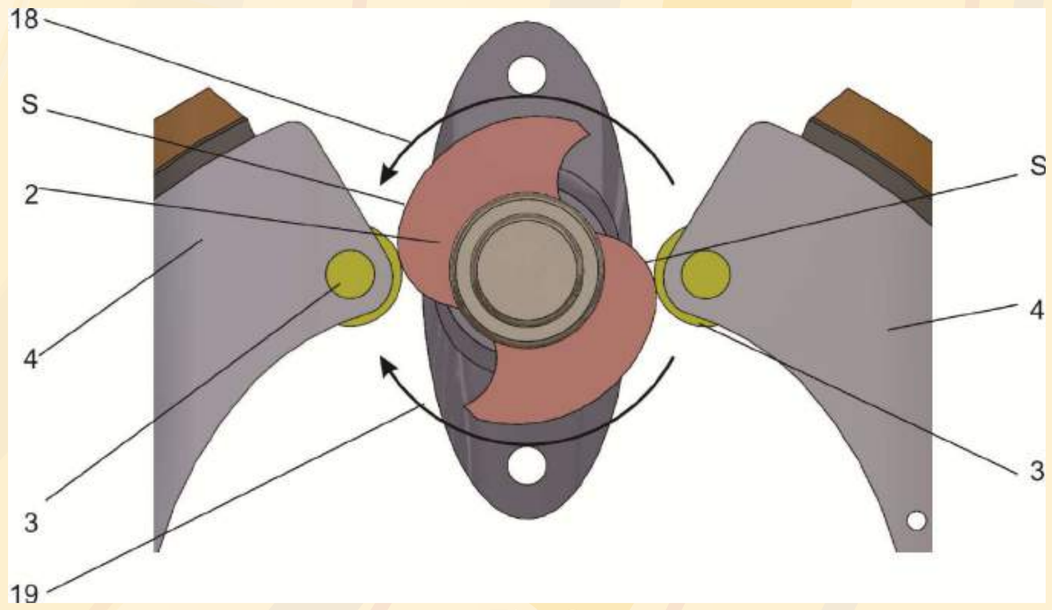


Fig.2

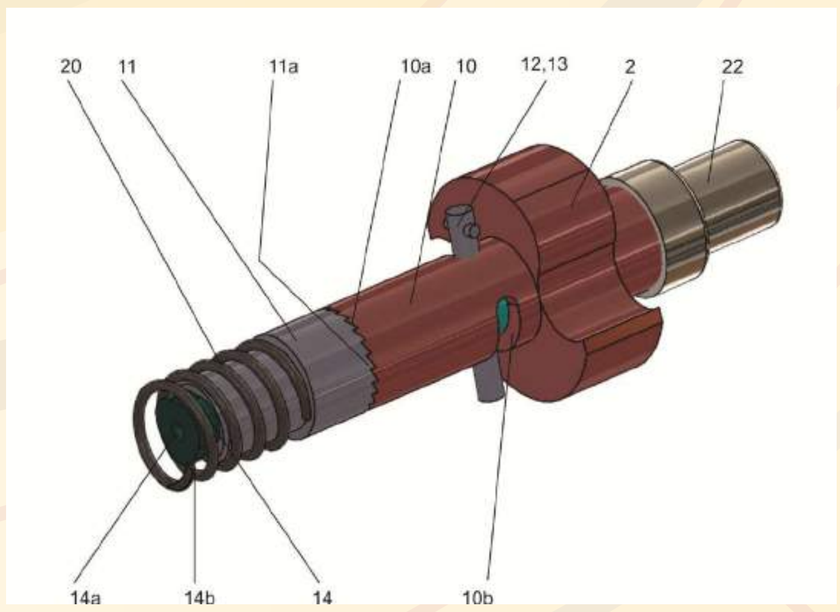


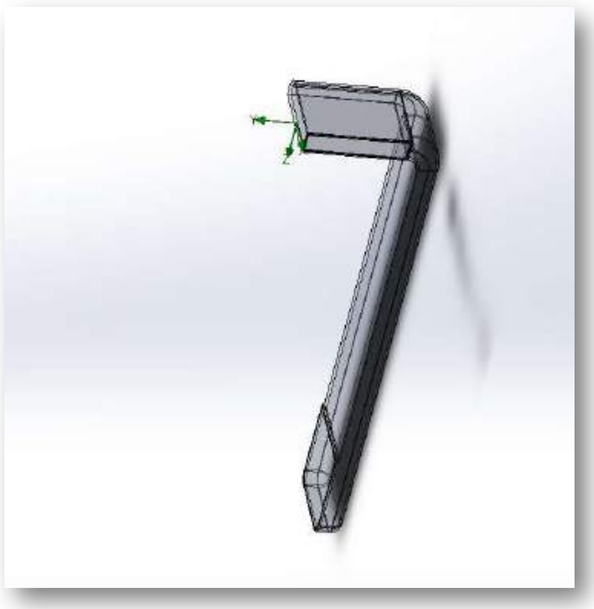
Fig.3

SIMULATION OF THE DYNAMIC AIR TRANSFER SYSTEM FOR SETRA BUS

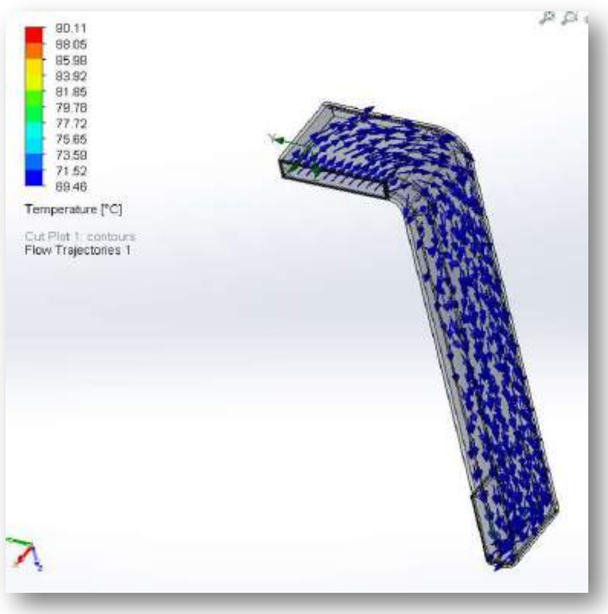
Research Project
Author: Flavius Bucur
Metors: Corneliu Birtok Baneasa, Ana Socalici

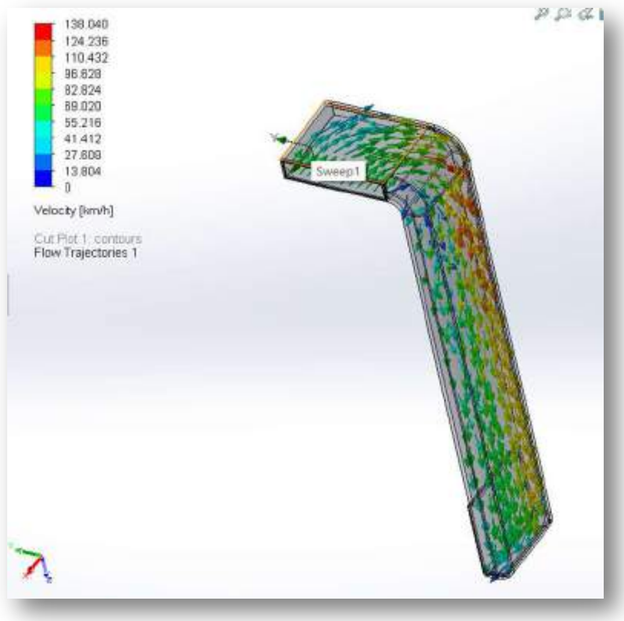
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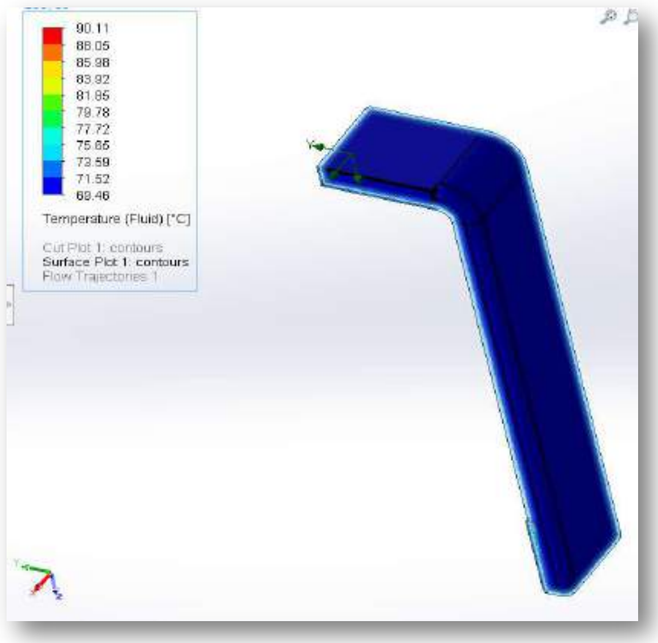
This study is carried out in order to optimize the intake route in the case of buses. In this regard, a new external route was modeled and designed with the role of capturing and directing the air flow towards the intake route and towards the suction area of the air filter. This route is located on the outside of the bus in the region of the propulsion group.

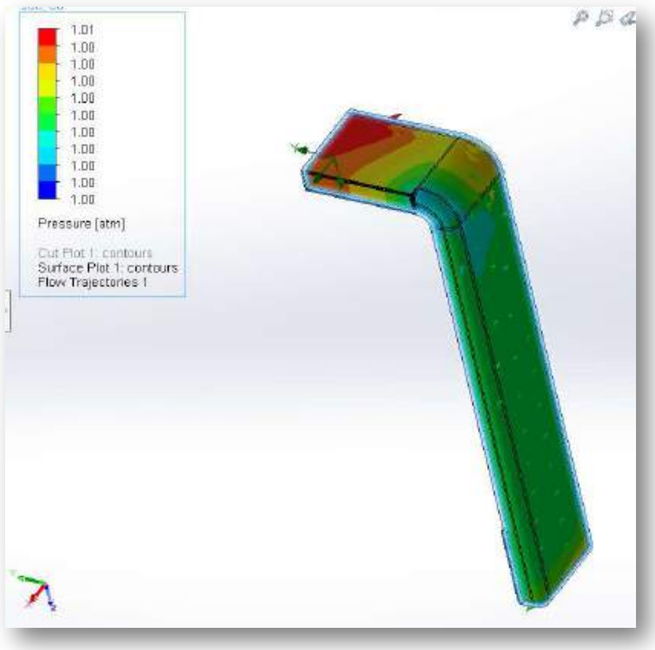












The efficiency of the collector consists of modeling and simulating the external collection region by implementing a diffuser shape customized according to the body architecture but taking into account the manufacturer's regulations regarding the bus's overall dimensions.

The experiments and tests were conducted in the laboratories of the Faculty of Engineering in Hunedoara.

Contact: flavius_bucur@yahoo.com

TIMIȘOARA

National Research & Development Institute for Welding and Material Testing - ISIM Timișoara

Friction stir welding device with air cooling of the welding tool and the materials to be joined

Patent application No. RO 137552 A2 (A/00028/27.01.2022)

Authors: Radu Cojocaru and Lia-Nicoleta Boțilă

D

Friction stir welding (FSW) is an innovative and environmentally friendly solid-state joining process, based on frictional heating and plastic deformation of the materials to be welded, produced by the interaction of a non-consumable rotating welding tool with the surfaces to be joined. The process temperature is lower than the melting temperature of the materials to be welded.

Object of the invention:

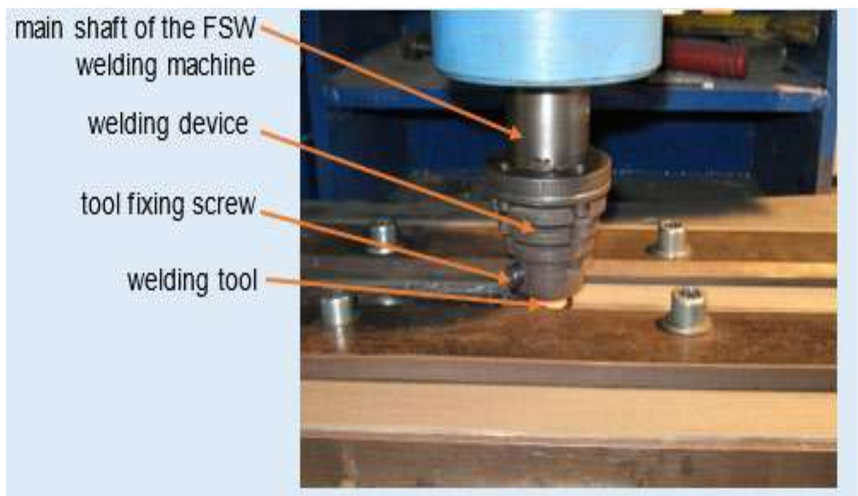
The development of a specialized welding device for friction stir welding FSW, whose constructive solution ensures an additional air-controlled cooling of the FSW tool and the materials to be joined, in the welding area and in adjacent areas.



FSW air-cooled device

Current technical situation:

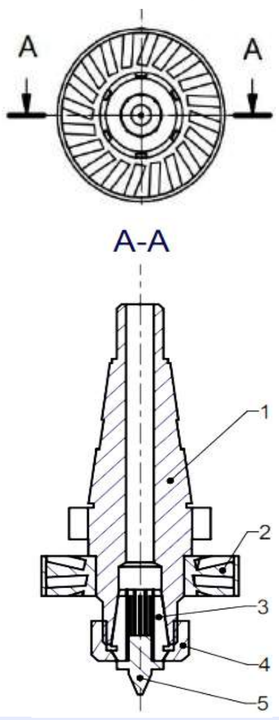
The welding device currently used on the FSW welding machine has a constructive form that does not provide effective cooling of the welding tool, and (depending on the welding application) excessive overheating of the tool may occur, which may lead to its damage.



Initial welding device integrated on the FSW machine

The technical problem solved by invention:

- propose a welding device with a constructive solution that allows integration on a specialized FSW welding machine (by Morse taper clamping, on the main shaft of the welding machine) and allows the welding tool to be fixed in the device body;
- ensure the technical conditions to protect the FSW welding tool and the materials to be joined from overheating, in the welding tool action area during the actual welding process, by additionally cooling them with an additional air flow;
- possibility to use FSW welding for couples of ferrous and non-ferrous metallic materials with high plasticizing temperature.



Description of the ne device :

The device body (1) - allows clamping on the main shaft of the welding machine by means of a Morse taper, in correlation with the type of FSW welding machine;

The air-cooling module (2) – is fixed on the device body, being equipped with inclined slots that constantly directs a flow of air in the welding area, ensuring the local reduction of the temperatures of the welding tool and the materials to be joined;

The elastic bushing (3) - has the role of positioning, fast and secure fix of the FSW tool in the optimal working position;

Clamping element (4) - is a threaded bushing with the role of controlled tightening of the welding tool by means of the elastic bushing;

The welding tool (5) - is a one-piece construction, made of steel (heat treated to 45-55HRC) or of sintered tungsten carbides, stable at high temperatures (>1200^0 C).

Advantages:

- the possibility of easy integration on the specialized welding machines;
- the constructive solution of the device reduces the effect of the welding tool overheating, ensuring an increase of its service life and protecting the bearings of the main shaft of the FSW welding machine;
- the overheating effect of the materials to be joined by welding is reduced;
- allows FSW welding of a wide range of couples of similar and dissimilar materials (2-10 mm thickness): e.g. metallic materials with high plasticizing temperatures, light alloys, steels, copper and copper alloys.

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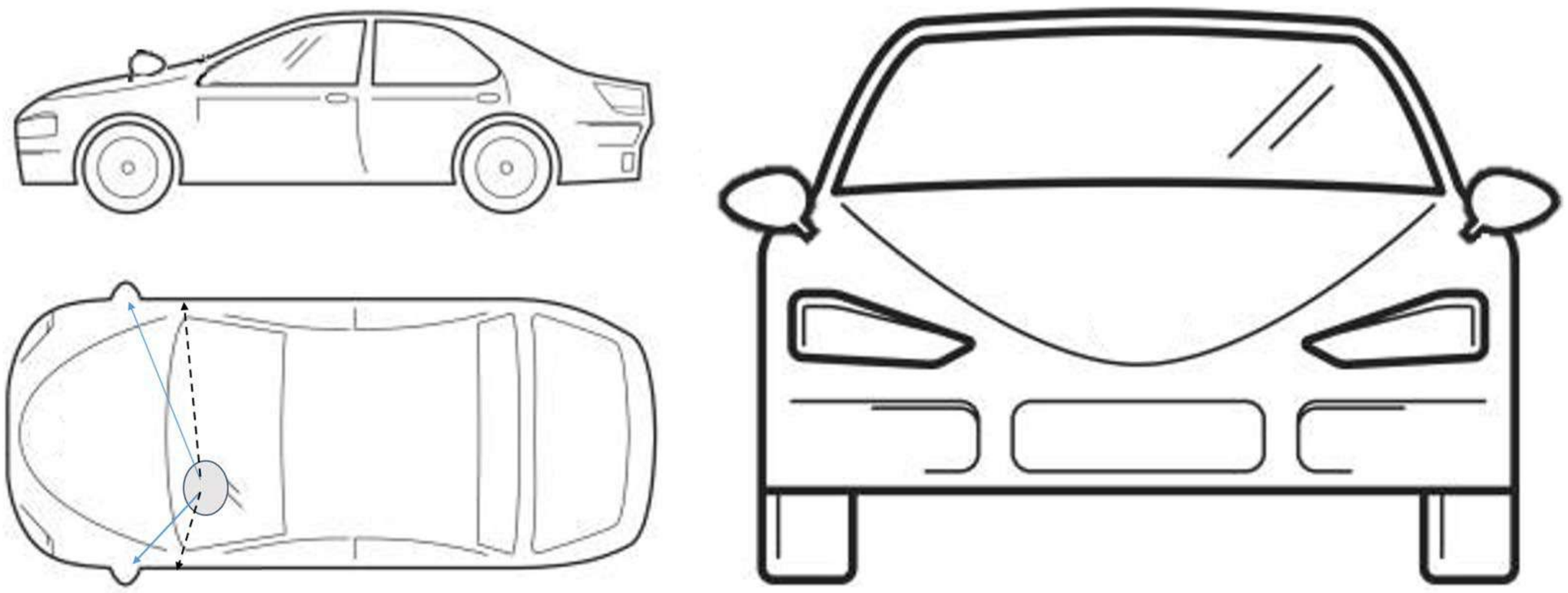
TIMIȘOARA
National Research & Development Institute for Welding and Material Testing - ISIM Timișoara

RETRACTABLE AND PIVOTING CAR REARVIEW MIRROR

D

Patent application **No. A2024 00484 / 21.08.2024**
Authors: **Nicușor-Alin SÎRBU and Gabriela-Victoria MNERIE**

At present, cars are fitted with two exterior rear-view mirrors, left-right, in most cases arranged sideways on the front doors. This arrangement ensures that traffic behind or in the immediate vicinity of the car can be seen quickly enough, even if the driver has to turn his head and briefly loses the field of vision in front of the car, and the instantaneous view ahead is often interrupted. Putting rear-view mirrors on the front doors has not always been the only option. In the past, in particular, there have been cars that have had rear-view mirrors mounted on the front wings of cars in the driver's normal field of vision. Refinements in the construction of rear-view mirrors nowadays include ergonomic mirror positioning mechanisms, folding and downsizing, and the adoption of shapes related to the general aesthetics of the bodywork.



Schematic diagram of the orientation of the view when rear-view mirrors are placed on the bonnet and doors

The technical problem solved by invention:

The technical problem of the invention consists in realizing a constructive and functional solution on which can be integrated a rear-view mirror of ordinary deconstruction which provides an immediate visibility of the traffic behind and immediate vicinity in the driver's instantaneous field of view while driving and which is retractable, and protectable inside the car body during parking.

Advantages:

- Improved ergonomics of visualizing traffic behind the car while driving without affecting the instant visibility ahead;
- Increased road safety;
- Elimination of the inconvenience of accidental or vandalized damage to the rear-view mirror while stationary.

Disadvantages:

- Positioning the rear-view mirror outside the driver's instantaneous field of vision while driving;
- Vulnerability to accidental impact;
- Vulnerability to vandalism.

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TELESCOPIC RETRACTABLE CAR REARVIEW MIRROR

D

Patent application **No. A2024 00485 / 21.08.2024**

Authors: **Nicușor-Alin SÎRBU and Gabriela-Victoria MNERIE**

The invention relates to a mandatory accessory related to traffic safety, namely side mirrors that provide visibility of traffic behind the automobile together with the main rearview mirror in the passenger compartment.

The telescopic retractable automobile rear-view mirror according to the invention is a construction-functional assembly mounted on the left-right front edges of the hood of an automobile incorporating a rear-view mirror of ordinary construction retracted under the hood during parking and expanded outwardly during running of the automobile. The construction-functional assembly consists of a protective body which:

- in the running state of the motor vehicle is raised so as to permit telescopic displacement outwards of the protective body of a support plate to which the rear-view mirror is attached. The displacement is provided by a mechanism, attached to the protective body, which operates a lead screw driving in translation a lead nut attached to a support plate and by which the support plate is translated in one direction or the other on two telescopic guide rods attached to the protective body;
- when the car is stationary, the protective body is withdrawn under the bonnet of the car, having inside it the rear-view mirror and an assembly of parts enabling it to be moved telescopically.

Scope:

The invention is based on the inventive concept according to which the rear-view mirrors of the automobile placed on the edges of the front bonnet provide a direct and quasi-permanent visibility being placed in the normal field of view of the driver (Fig. 1 and 2). As such they eliminate the need to turn the head to the left or to the right and therefore reduce the risk of a dangerous situation occurring without it being quickly detected (Fig. 2). Traffic safety is improved. On the other hand, this arrangement allows the rear-view mirror to be integrated into the vehicle's construction and function so that when stationary the rear-view mirror is completely retracted, hidden and protected under the bonnet, eliminating accidental knocking or damage through vandalism. Placing rear-view mirrors on the front wings of cars, next to the bonnet, is a technical solution which has been used before, except that it was not possible to retract and mask them, as they were fixed in position.

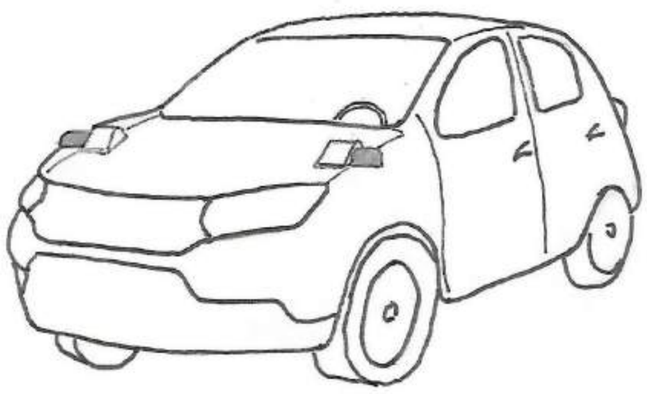


Figure 1

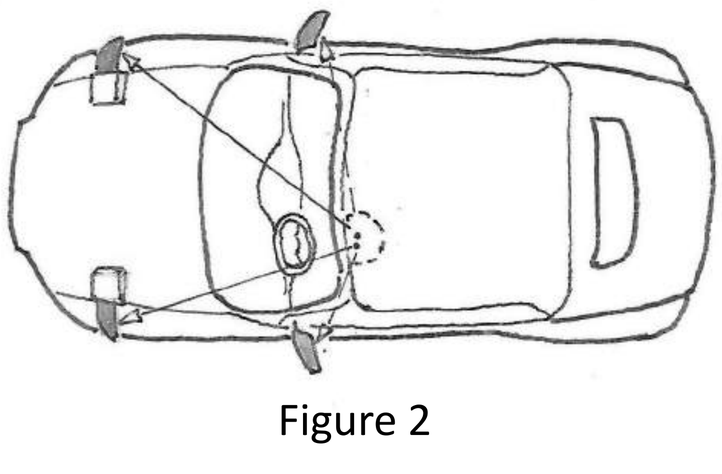


Figure 2

Advantages:

- improved ergonomics of the traffic view in front and behind the car while driving
- increased road safety;
- eliminating the inconvenience of accidental damage or vandalism to the rear-view mirror while stationary.

The technical problem solved by invention:

The technical problem of the invention consists in the realization of a constructive and functional structure on which a rear-view mirror of ordinary construction can be integrated, which provides an immediate view of the traffic behind and immediate vicinity in the driver's instantaneous field of view while driving and which is retractable, and protectable inside the car body while stationary.

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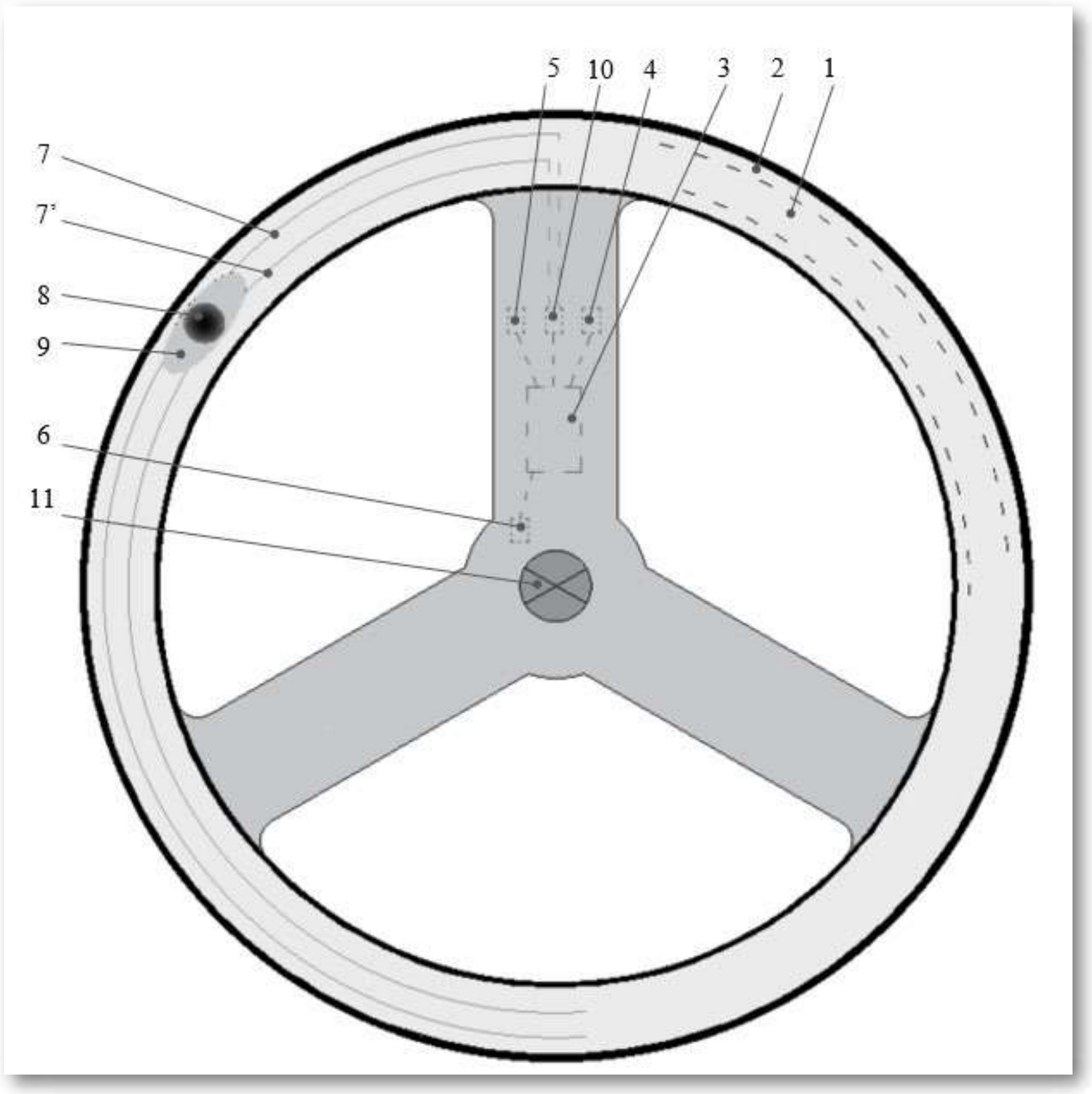
Automatic system for monitoring drivers' attention

Patent Application

Author/s: TOADER Eusebiu, PAVĂL Mihaela, MILICI Dan Laurenţiu, BOBRIC Crenguţa Elena, IRIMIA Daniela, VLAD Valentin, NIȚAN Ilie, GRAUR Adrian

D

The automatic system for monitoring the attention of drivers according to the invention consists of a system of two sensors for evaluating the electrodermal resistance (7) and (7 ') at the driver's hand, pulse (9), hand contact force and the steering wheel (8), the acceleration of the vehicle (4), the angular displacement of the steering wheel (5) and its vibrations (6), place on the steering wheel by means of a cover. The retrieved data is processed using a microcontroller procurement system that will determine if the position of the hands on the steering wheel is correct and if the driver's condition allows him to drive.



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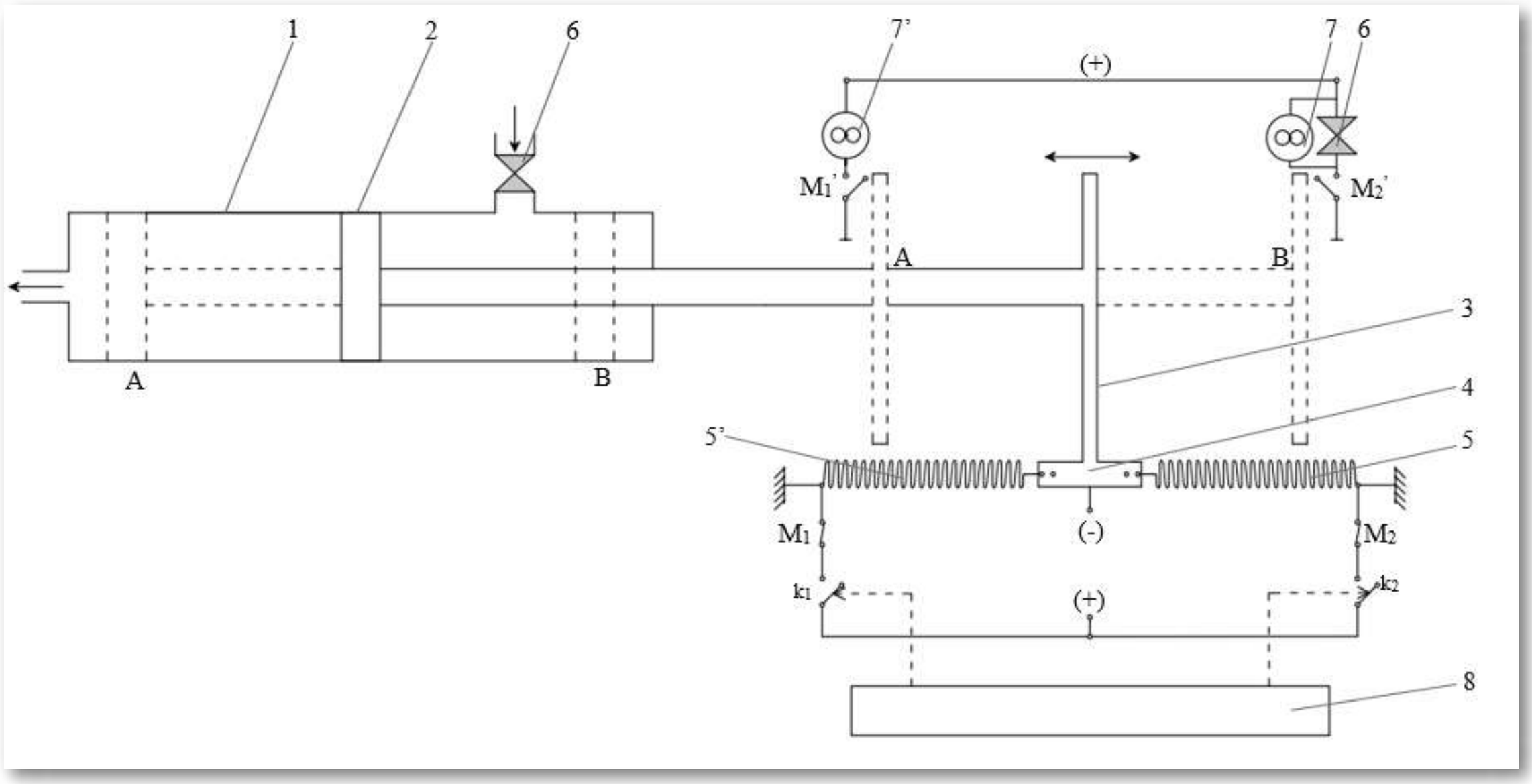
PUMPING SYSTEM

D

Patent Application

Author/s: TOADER Eusebiu, NIȚAN Ilie, PAVĂL Mihaela, MILICI Dan Laurenţiu, CERNUȘCĂ Dumitru, MILICI Mariana Rodica, GRAUR Adrian, DIMIAN Mihai, UNGUREANU Constantin

The pumping system according to the invention consists of a cylindrical container (1), provided with a piston (2) which is moved by means of a rod (3) terminated with a T-shaped profile, provided at the lower end with a support (4) fixing two nitinol springs (5) and (5 '), and the upper part of the rod profile (3) acts at the ends of the stroke the double microcontacts (M1), (M1') and (M2) respectively , (M2'), which controls the closing and opening of the electrovalve (6), the fans (7) and (7') and disconnects the heating circuits of the nitinol springs (5) and (5') controlled alternately by the relay contacts (k1) and (k2) by means of a microcontroller (8).



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WASTE PLASTIC RECYCLING PLANT

Patent/project number: 19215(1201800492)

Author/s: WAM ELVIS MBVIUGEH

D

This invention is aimed at cleaning the environment and the ecosystem for sustainable agriculture and used for the production of construction materials like tar oils, (asphalt and Bitumen) roofing tiles, insulators for floors and walls, damp proof course materials, electric poles, culverts, gutters, road sign posts and steam with Improvements of using the steam to generate electrical energy and to recover bio fuel.

The main aim is transforming waste plastics and metals into useful products and used as an apparatus for fast cooking and to facilitate the cracking of stones for masonry works. This creation will greatly help Africans for the protection of the environment for other generations, substantial agriculture and improve on soil fertility against famine. The author laid down some principles which richly increased the performance of the invention. The study of the thermodynamics, observation and experiments with the ancient style forging apparatus which in my mother's tongue is called ALAM.

The study of electronic components and tele-mechanique control systems helped the Author to deign a ***rectifier circuit*** *on the* ***control panel****, which is the magical power to cut down the consumption of the machine during operation; that is from 220v to 12v-24v and permits the plant to be able to operate with solar plant and less consumption.*







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ALEX's MOTORCYCLES

D

Author: Alex SZEKELY

Classic motorcycles are an exciting hobby for many enthusiasts, this activity involves the search, restoration and preservation of old and rare motorcycles, often for display in private collections or at specialist events. For enthusiasts, every motorcycle is a story and a piece of motoring history, and the restoration process is a way to bring those stories to life and preserve them for future generations.

Hunedoara Classic Car Club is a passionate and dedicated group of classic car collectors and enthusiasts from Hunedoara County, Romania. Founded with the aim of promoting and preserving the historic automotive heritage, this club gathers around it lovers of vintage cars from different eras and brands. Club members are actively involved in the restoration and maintenance of their cars, attending local, national and international events to share their passion with other enthusiasts and promote classic car culture. The club serves as a meeting place to exchange ideas, experiences and advice related to restoration and maintenance, and encourages socialization and friendship among its members, thereby strengthening the community of classic car enthusiasts in the region.



SCAN ME

Contact: *classiccarhunedoara@yahoo.com*

Motorsports my passion

Student project

Author: Ovidiu Tudor Ioan OPREA

Mentor: Prof. Corneliu BIRTOK-BANEASA

D

This study presents the evolution of my racecar project, a 1997 Bmw 3 Series Saloon, that started its life as a basic 4 cylinder 1.6 sedan. I got this specific chassis thanks to its results in the Super Touring races back in 1993 to 1995 – Super Touring, Class II or Class 2 was a motor racing Touring Cars category defined by the Federation Internationale de l'Automobile (FIA) for national touring car racing in 1993. It was based on the "2 litre Touring Car Formula " created for the British Touring Car Championship (BTCC) in 1990. The FIA organised a World Cup for the category each year from 1993 to 1995,and adopted the term "Super Tourer" from 1995. The car in cause was running a stroked M42 2.0 that used to be a 1.8 from the factory , running 320 naturally aspirated horsepower on a 1250kg chassis.

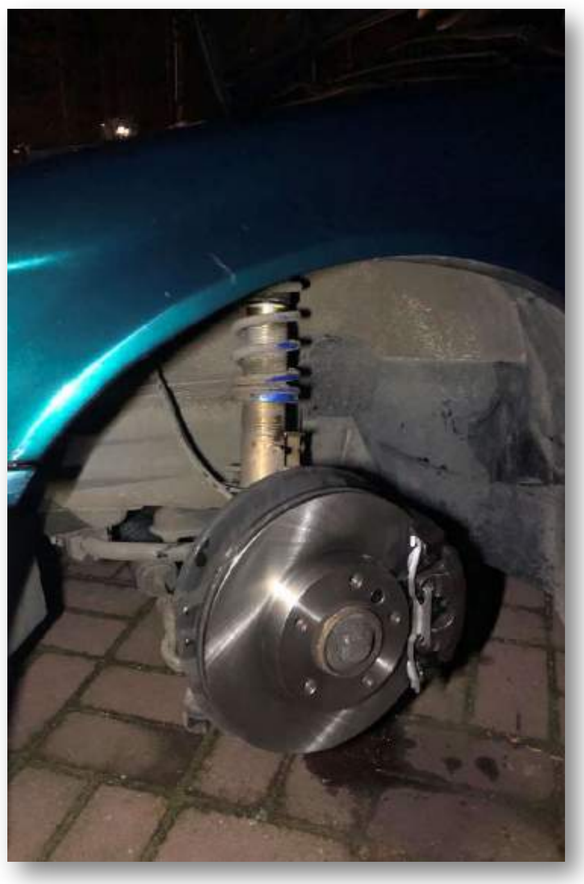












My project is using the same suspension setup like the Super Touring E36, received a M42 swap, lighter flywheel , 286 mm braking setup from the 328i E36, lighter 17-inch Oz Racing Superturismo Rims , front and rear strut bars , 3 spoke RRS Racing Wheel, Sparco Bucket Seat and a Short Shifter.

Future plans with my project? As the title says, I want it to look like a Racing car that was used 30 years ago in the Super Touring races and perform like one.

How do I intend to use my project and where? Currently I have been to few open trackdays to learn my car better and learn to perform better as a driver, my latest and first competition was a local one named Cupa Caprioara II this autumn, where I was able to secure the first place on the podium, there is more competitions to come in the future!

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Octavian's MOTORCYCLES

Author: Orz Octavian

D

Classic motorcycles are an exciting hobby for many enthusiasts, this activity involves the search, restoration and preservation of old and rare motorcycles, often for display in private collections or at specialist events. For enthusiasts, every motorcycle is a story and a piece of motoring history, and the restoration process is a way to bring those stories to life and preserve them for future generations.

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SCAN ME

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HYBRID-ARCHITECTURE MECANUM WHEEL WITH INDEPENDENTLY ACTUATED ROLLERS

Category D

Scientific Research Project

Authors:

Student Emanuel BALC, Professor Aurel Mihail TITU, Ph.D Student Daniel BALC

DESCRIPTION

In practice, we encounter the following problems:

Lack of Active Traction Control at Roller Level
Conventional Mecanum wheels rely on passive rollers that rotate freely without any independent actuation. While this allows for omnidirectional movement, it also limits the ability to manage traction dynamically at each contact point with the ground. In environments with uneven grip — such as mixed surfaces (e.g., one wheel on asphalt, another on sand or wet tiles) — the inability to modulate traction per roller leads to inconsistent motion, slippage, or loss of directional control. Active control at the roller level would allow the system to respond more intelligently to such variations, improving overall traction and stability.

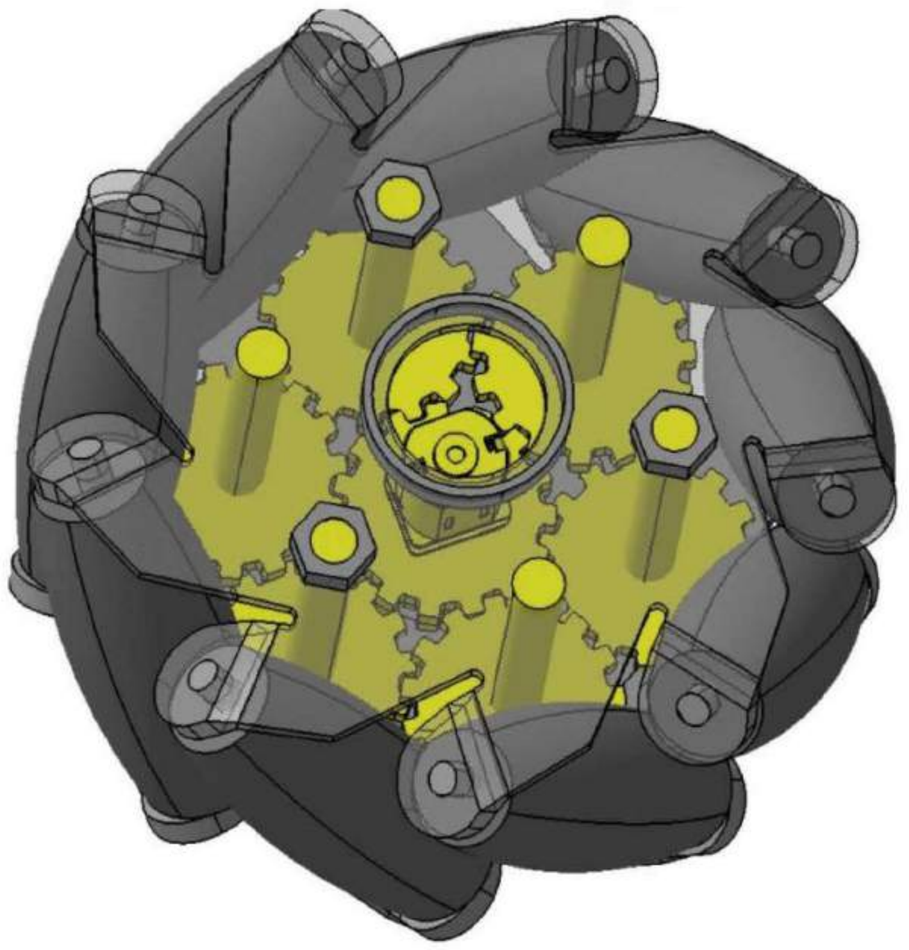
Limitations in Precision Maneuvers and Active Stabilization
Without active roller control, Mecanum wheels cannot perform complex maneuvers such as automatic slip compensation, platform stabilization, or dynamic adaptation to local obstacles.

Energy Inefficiency Under Variable Loads
Passive rollers only serve as intermediaries for movement; they do not actively contribute to propulsion. This puts the full burden on the main drive motors, especially when navigating terrain with resistance variations or when carrying uneven loads. As a result, the motors must exert more effort to maintain motion, leading to higher energy consumption and increased mechanical stress. Over time, this not only reduces operational efficiency but also accelerates wear on the drivetrain and decreases the overall lifespan of the system. Introducing actuated rollers would distribute effort more evenly and allow for energy optimization based on real-time load conditions.



THE PROPOSED SOLUTION

This Mecanum wheel represents a significant technological advancement by integrating an independent actuation system for the peripheral rollers. In traditional configurations, Mecanum wheel rollers are passive, rotating freely as the main wheel spins. In this hybrid wheel, each roller is equipped with its own actuation system, powered by a dedicated DC micro-motor capable of independently controlling the roller's speed and direction of rotation.



RESULTS AND DISCUSSIONS:

Active Traction Control at Each Roller
Enables real-time adjustment of traction force based on local surface conditions, improving stability and preventing slippage.

Advanced Maneuverability and Increased Precision
The platform can perform fine adjustments during motion, including active stabilization, slip compensation, and precise movements in complex environments.

Improved Energy Efficiency
Sharing the load between the actuated rollers and main drive motors reduces system strain, lowers energy consumption, and optimizes overall performance.

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Internal

MECANUM WHEEL WITH INDIVIDUAL FLEXRING-EQUIPPED ROLLERS FOR VIBRATION DAMPING AND ENHANCED STABILITY

Category D

Scientific Research Project

Authors:

Ph.D. Student Daniel BALC, Professor Aurel Mihail TITU, Student Emanuel BALC

DESCRIPTION

In practice, we encounter the following problems:

Excessive Vibrations During Movement
On hard surfaces (such as concrete or metal) and uneven terrain, Mecanum wheels make intermittent contact with the ground, as each roller touches the surface one at a time. This discontinuous interaction generates constant vibrations that propagate throughout the entire mobile platform. In applications that require smooth motion

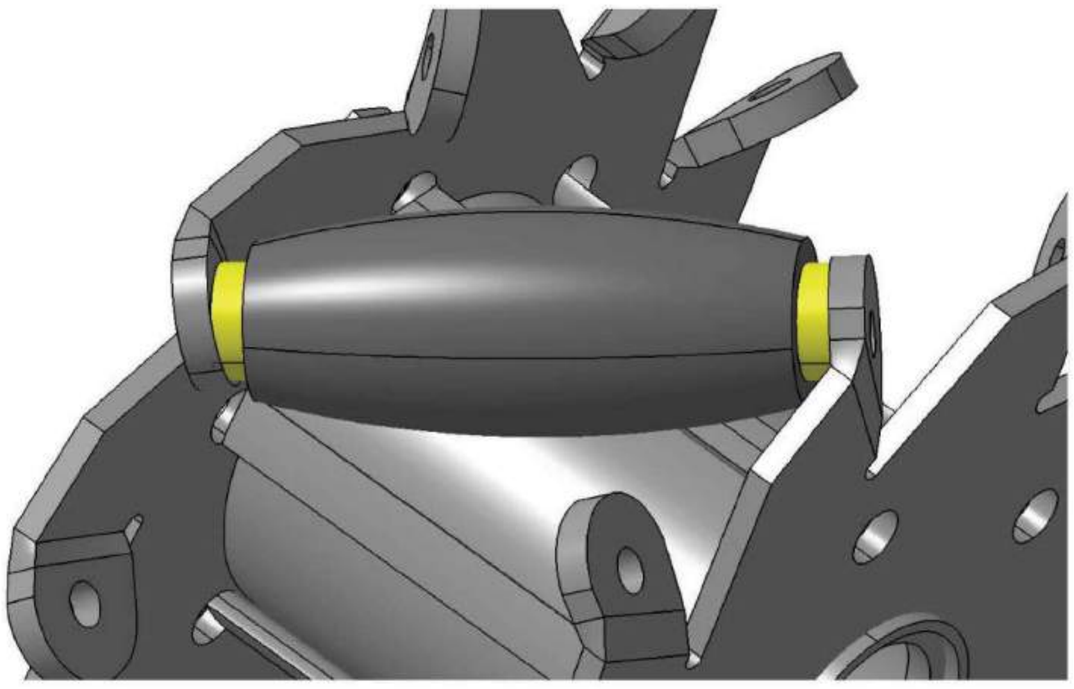
Direct Transmission of Shocks to the Structure and Electronics
Without a damping system at the roller level, mechanical shocks and vibrations caused by ground contact are transmitted directly to the vehicle's supporting structure. This can negatively impact the lifespan of electronic components (such as motherboards, microcontrollers, or sensors) and may lead to malfunctions caused by high-frequency vibrations. In autonomous systems, these shocks can destabilize control and navigation algorithms.

Accelerated Wear of Components
Constant exposure to vibrations, shocks, and irregular dynamic loads has a cumulative effect on the mechanical components of the wheel. The rollers, bearings, and mounting points experience premature wear, especially when operating frequently on hard or uneven surfaces. This results in more frequent repairs or replacements, increased maintenance time, and higher operating costs. In industrial or commercial environments where reliability is critical, this becomes a major concern.



THE PROPOSED SOLUTION

This Mecanum wheel incorporates a damping component, based on the use of flexrings mounted on each individual roller. Flexrings are flexible structures that absorb vibrations generated by the rollers' contact with the rolling surface. This adaptation brings multiple benefits, especially for precision applications such as industrial robots or autonomous vehicles operating in vibration-prone environments or on uneven surfaces.



RESULTS AND DISCUSSIONS:

Significant Vibration Reduction
Rollers equipped with flexible rings (Flexring) absorb localized shocks upon ground contact, resulting in smoother and quieter movement.

Extended Lifespan of Wheels and Components
By reducing mechanical shocks, wear on rollers, bearings, and mounting systems is minimized, lowering the frequency of repairs.

Reduced Operational Noise
The more elastic contact with the ground leads to quieter operation — a key advantage in indoor environments, public spaces, or low-noise applications.

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Internal

MODULAR MECANUM WHEEL ASSEMBLY OPTIMIZED FOR TRACTION ON SANDY AND UNSTABLE SURFACES

Category D

Scientific Research Project

Authors:

Professor Aurel Mihail TITU, Ph.D. Student Daniel BALC, Student Emanuel BALC

DESCRIPTION

In practice, we encounter the following problems:

Difficulties in moving on unstable surfaces
Vehicles equipped with Mecanum wheels face significant challenges on surfaces such as sand, gravel, or soft soil. These terrains do not provide firm support, leading to traction loss and difficulties in maintaining the desired direction. Omnidirectional mobility, a major advantage of Mecanum wheels on hard surfaces, becomes inefficient when ground contact is unstable.

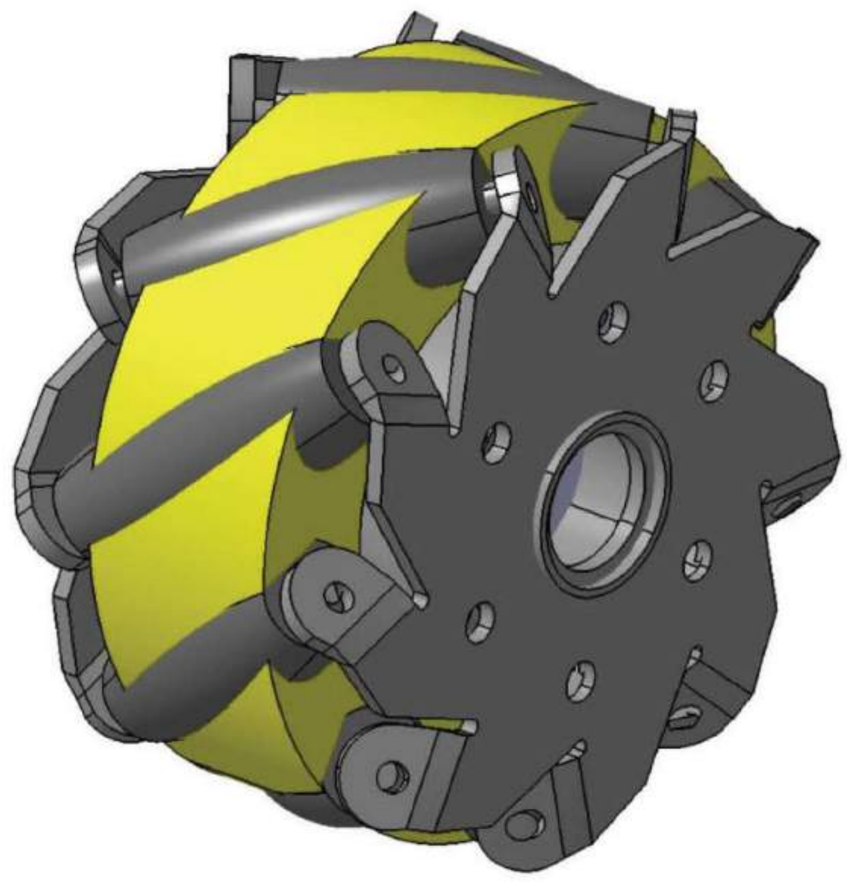
Sinking and slipping
Traditional Mecanum wheels do not distribute weight efficiently on soft surfaces, causing them to sink into sand or unstable soil. Additionally, standard rollers do not maintain optimal contact with the terrain, leading to slipping and significantly reducing traction. These issues affect the vehicle's ability to move forward and require greater energy consumption to compensate for the loss of grip.

Limited mobility in off-road environments
Mecanum wheels are designed for flat and hard surfaces, and their performance decreases drastically on rough terrain. Movement becomes unpredictable, and vehicle control is challenging, especially when turning or making lateral movements. This limitation reduces the applicability of Mecanum wheels in off-road applications, autonomous exploration, or intervention vehicles operating in difficult environments.



THE PROPOSED SOLUTION

This modular Mecanum wheel is specifically designed to ensure advanced mobility on low-traction surfaces or terrains that are traditionally challenging for this type of wheels, such as sand, gravel, or soft surfaces. Its modular design allows for rapid configuration and adaptation of individual components, providing a flexible solution for off-road applications or operations in difficult environments. Each roller is built using materials optimized for effective contact with sandy surfaces, featuring a profile that maximizes the contact area while minimizing sinking.



RESULTS AND DISCUSSIONS:

Improved Traction – Less slipping on sand, gravel, and soft soil, ensuring stable and efficient movement.

Reduced Sinking – Optimized weight distribution and roller design prevent sinking and traction loss.

Energy Efficiency – Better traction reduces energy consumption and optimizes directional control.

Adaptability & Durability – Modular design for various terrains, durable materials for long-term use.

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Internal

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Ministry of Education and Research

UNIVERSITATEA LUCIAN BLAGA DIN SIBIU

Autonomous parking drone

Scientific Research Project

Authors: Student Armăsăreanu Adrian
Student Graur Robert-Vasile
Student Șerb Radu Ioan
Coordinator: Professor Aurel Mihail ȚÎȚU



DESCRIPTION:

The project aims to develop a car-integrated robotic system capable of automatically identifying and occupying a parking space, reducing time and stress for drivers in congested areas. The idea started from the fact that in crowded cities it can be difficult to find a parking space. The autonomous parking drone is a small and efficient robotic system that can be integrated into a car and is automatically activated when the driver arrives in a high-traffic area or a large parking lot.

Components:

Technical components include LIDAR sensors, GPS, 3D cameras, artificial intelligence algorithms for navigation and an efficient power system. The operating mechanism involves launching the drone from the car, searching for an empty space, assisting the car to park autonomously and returning to the vehicle.

Advantages and Disadvantages:

Advantages include reducing pollution and optimizing parking space, but there are technical challenges such as safety, battery range and weather conditions.
Implementation involves three phases: hardware design, software development, prototype testing and improvements based on the results.
Disadvantages include high costs, legal limits and autonomy, but these can be addressed in future versions of the product. In the future we also want to collaborate with shopping malls or airports to make it easier to find parking spaces in their parking lots.

Implementation Plan:

Phase 1: Research and development
Identification of the required technological components. Develop an algorithm for parking space recognition.

Phase 2: Prototyping
Build the drone prototype and test functionality. Integration of the drone with the vehicle.

Phase 3: Testing
Validation of effectiveness under real conditions.





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President of Romanian Association for Alternative Technologies Sibiu (A.R.T.A. Sibiu);
Vice-President of Romanian Association for Nonconventional Technologies Romania;
Editor-in-Chief Nonconventional Technologies Review;
Executive Editor Journal of Knowledge Dynamics – Academy of Romanian Scientist;
Associate Editor Management of Sustainable Development Journal – "Lucian Blaga" University of Sibiu;
Associate Editor The International Journal of Mechatronics and Applied Mechanics;
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Ministry of Education and Research

UNIVERSITATEA LUCIAN BLAGA DIN SIBIU

Rim-integrated sensors for curb detection

Scientific Research Project

Authors: Student Bălan Cătălin, Student Croitoru Bogdan, Student Mesia Radu
Coordinator: Professor Aurel Mihail ȚÎȚU,

DESCRIPTION:



Sensors integrated into a car's wheels to detect curbs are an innovation designed to help drivers avoid accidental collisions with the edge of the sidewalk or other obstacles. These sensors are placed on the wheels, providing more efficient coverage of the lower area, where curbs are harder to detect with traditional sensors in the bumper or side cameras.

They work using various technologies, such as ultrasound, radar, or optical cameras. Ultrasonic sensors emit signals that reflect off objects, helping measure the distance to curbs. Radar, on the other hand, uses electromagnetic waves to detect obstacles over greater distances and in unfavorable weather conditions. Optical sensors use cameras to analyze the surrounding environment and identify the edge of the road.

This technology helps prevent accidents by providing the driver with precise, timely information about objects near the wheels..



ADVANTAGES:

1. Improved Safety: Sensors provide real-time feedback to the driver, helping to prevent collisions with curbs, especially in tight parking spaces or when maneuvering in narrow areas.

2. Increased Convenience: By reducing the risk of scraping the wheels or damaging the car, the system saves time and money on repairs. It also reduces the stress of parking or driving in tricky situations.

3. Weather Resistance: Technologies like radar and ultrasound work well in various weather conditions (such as rain, fog, or snow), where optical sensors might struggle.

4. Integration with Other Systems: These sensors can be combined with other vehicle systems, like automatic braking or parking assist, to provide a comprehensive safety solution.

DISADVANTAGE:

1. Increased Cost: Adding additional sensors to the wheels may increase the overall cost of the vehicle, both in terms of initial purchase price and potential repair costs if the sensors are damaged.

2. Requires calibration and maintenance: May require reconfiguration after changing tires or after replacement.

3. Limited battery life: Most sensors operate on batteries that have a lifespan of about 5-10 years, after which they need to be replaced.

4. Risk of damage – When mounting and dismounting tires, the sensors can be accidentally damaged or even destroyed.

RESULTS AND DISCUSSIONS:

Sensors integrated into a car's wheels represent a significant step towards state-of-the-art automotive technology, having a major impact on driver safety and comfort.

They offer an innovative solution for preventing accidents in parking lots and maneuvering in confined spaces, by constantly monitoring the distance to obstacles and signaling them in a discreet and effective way.



CONTACT:
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PATLIB Expert at European Patent Office;
Director of Regional Centre OSIM-EPO for Intellectual Property Protection (PatLib Sibiu);
President of Romanian Association for Alternative Technologies Sibiu (A.R.T.A. Sibiu);
Vice-President of Romanian Association for Nonconventional Technologies Romania;
Editor-in-Chief Nonconventional Technologies Review;
Executive Editor Journal of Knowledge Dynamics – Academy of Romanian Scientist;
Associate Editor Management of Sustainable Development Journal – "Lucian Blaga" University of Sibiu;
Associate Editor The International Journal of Mechatronics and Applied Mechanics;
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Internal

Opportunity
CORNELIUGROUP Research-Innovation Association
Creation
Realization
INVENTCOR
Power of Creative Mind
Deva ROMANIA

Ministry of Education and Research

UNIVERSITATEA LUCIAN BLAGA DIN SIBIU

FingerPay

Scientific Research Project

Authors: Student Bănățeanu Ion-Dumitru,
Student Banu Constantin Gabriel,
Student Carstica Sebastian Alexandru,
Student Doda Gabriel-Horațiu
Student Badiu Dumitru
Coordinator: Professor Aurel Mihail ȚÎȚU,

DESCRIPTION:



FingerPay is an advanced and innovative payment method based on fingerprint recognition technology, offering a fast and highly secure way to authorize financial transactions. Essentially, this system eliminates the need for bank cards, passwords, or other traditional authentication methods, replacing them with a biometric method unique to each user: the fingerprint.



ADVANTAGES:

Increased Security – Using fingerprint authentication adds an extra layer of security since fingerprints are unique to each individual.

Speed – Transactions are completed quickly without the need to enter a PIN or other details.

Convenience – Users no longer need to remember passwords or carry physical cards.

FingerPay is used in various industries, from retail to financial services, and is becoming increasingly popular as technology advances. If you need more details or specific information, feel free to ask!

FIELDS OF APPLICATION:

Retail & Commerce – Fast payments in supermarkets, stores, and gas stations without cash or cards.
Restaurants & Cafés – Direct POS payments without a wallet or phone.
Public Transport – Quick access to buses, trains, or subways without physical tickets.
Events & Festivals – Authentication and payment at booths without long queues.
Healthcare & Pharmacies – Secure authentication and medication purchases without a bank card.
Corporate & Secure Access – Payments in company cafeterias or controlled access to buildings.

RESULTS AND DISCUSSIONS:

FingerPay, as an innovative biometric payment solution, holds great potential in enhancing both security and user experience in the digital payment ecosystem. However, challenges such as infrastructure limitations, adoption barriers, and privacy concerns need to be addressed in order to ensure its widespread success. Future research and development will play a crucial role in refining the system and expanding its applicability across various demographics and regions.



CONTACT:
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PATLIB Expert at European Patent Office;
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President of Romanian Association for Alternative Technologies Sibiu (A.R.T.A. Sibiu);
Vice-President of Romanian Association for Nonconventional Technologies Romania;
Editor-in-Chief Nonconventional Technologies Review;
Executive Editor Journal of Knowledge Dynamics – Academy of Romanian Scientist;
Associate Editor Management of Sustainable Development Journal – "Lucian Blaga" University of Sibiu;
Associate Editor The International Journal of Mechatronics and Applied Mechanics;
"Lucian Blaga" University of Sibiu,
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Internal

Compressed air engine

Authors: Trușcă Darius Ciprian, Vida Andrei Valentin,
Cărăban Robert Fabian, Lup Lucian, Dumitras Alina Lucretia

D

A homemade air engine is a device that uses the energy of compressed air to generate mechanical motion. This type of engine can be made from readily available materials, using recycled parts, or hand-crafted components.

Operating Principle

The engine operates on the basis of the expansion of compressed air, which is stored in a tank and released in a controlled manner to drive a piston or rotor. The energy of the compressed air is converted into mechanical work, similar to heat engines, but without the combustion of fuel.







Contact: luplucian@yahoo.com

ELECTRIC CAR MODEL

Authors: Lup Lucian, Dumitras Alina Lucretia

D

It is a small-scale reproduction of an electric vehicle, made for educational purposes. It is constructed from various materials and includes a functional electric propulsion system.

Main components of the model

Chassis and body – Made of plastic, wood, metal or composite materials, providing support and structure.

Electric motor – A small direct current (DC) motor, taken from electric toys or similar devices.

Transmission system – Includes gears or belts to transmit the motor's motion to the wheels.

Battery – The power source, a Li-ion battery.

Speed controller – The module that regulates the power to the motor.





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ELECTRIC VEHICLE CHARGING NETWORK AND ADMINISTRATION

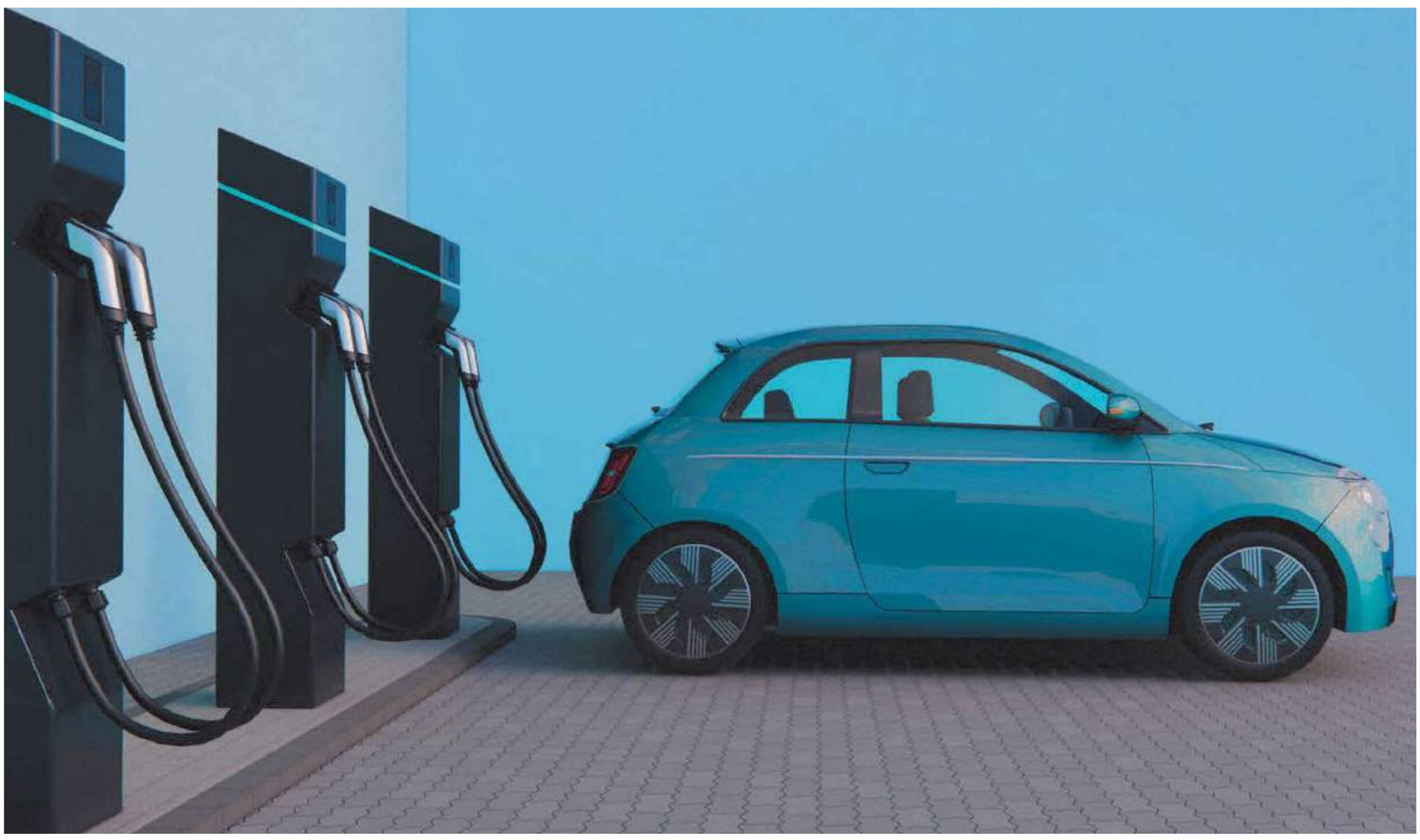
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Author: Smart Business & Technologies Solutions SRL

The complete solution for electric charging infrastructure. We are pioneers in electric charging infrastructure, with over 10 years of experience. Since 2014, we have built an extensive network of charging stations, serving over 50,000 users and facilitating the charging of over 20 GWh of energy, of which over 70% comes from renewable sources." Focus on sustainable and environmental growth Pioneers in the field, VOL TRELLI, powered by EV connect is a Romanian company with experience in developing and implementing complete charging solutions for electric vehicles. With an active presence on the Romanian market since 2014, we offer innovative and scalable solutions.

Since the first stations installed in 2014, VOLTRELLI, powered by EVconnect has experienced impressive growth, reaching over 50,000 users who have charged over 20 GWh of renewable energy.

Today, we are a global leader in electric charging solutions, with a significant presence in Europe, the Middle East and Latin America: Romania, the United Arab Emirates, Jordan, Saudi Arabia, Montenegro, Germany, Spain, France, Hungary, Bulgaria, Slovenia, the Netherlands, LATAM (Peru, Chile, Colombia).



SCAN ME





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OPTIMIZATION OF TECHNOLOGICAL PROCESSING BY CUTTING THROUGH USING THE GPS WALTER APPLICATION: ANALYSIS AND IMPLEMENTATION IN THE CONTEXT OF MECHANICAL PROCESSING

Scientific research contract: no.9 /04.06.2024

Author/s: Constanța Rădulescu, Ștefan Sorinel Ghimișî, Alin Stăncioiu, Nicoleta-Maria Mihuț, Aurora Cătălina Ianăși, Alin Nioață, Elena Loredana Stăncioiu

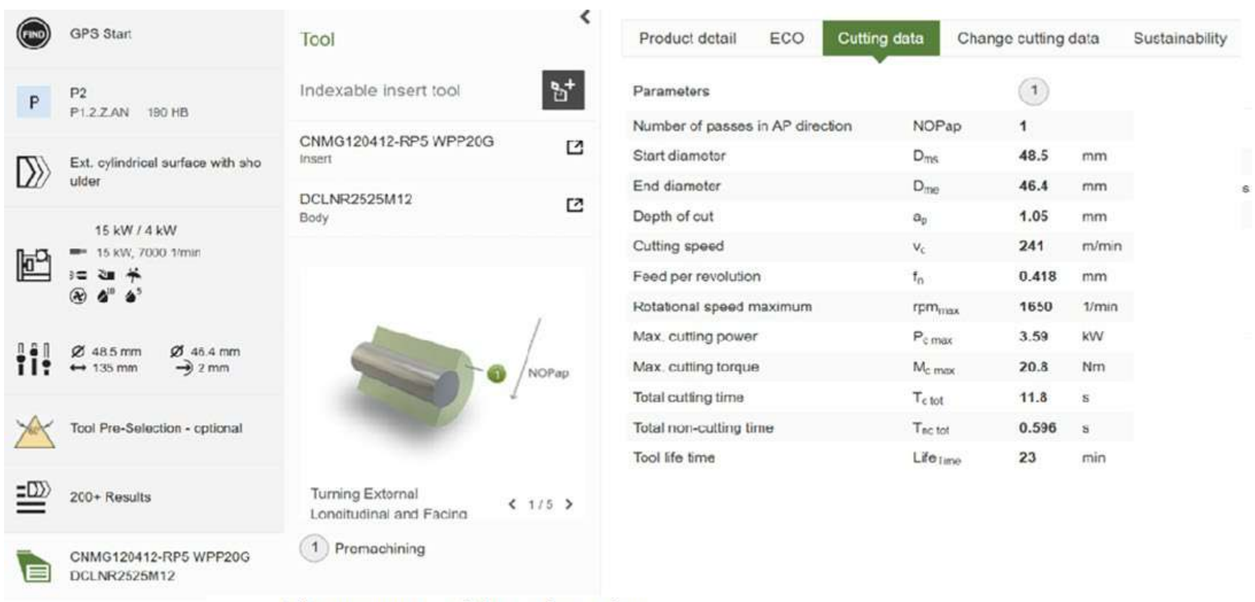
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The general objective of the research project was to analyze and implement the Walter GPS application in machining processes, in order to increase their efficiency and productivity. The project aimed to identify and apply the most efficient technological solutions for optimizing work parameters, such as: cutting speed, feed and depth of cut, reducing production time and tool wear. It also aimed to improve the quality of machined parts and reduce operating costs. As a case study of the use of the Walter GPS platform, in order to determine the cutting regimes, a "distribution shaft" type part was chosen for the mass production variant, the operations: roughing turning and finishing turning.

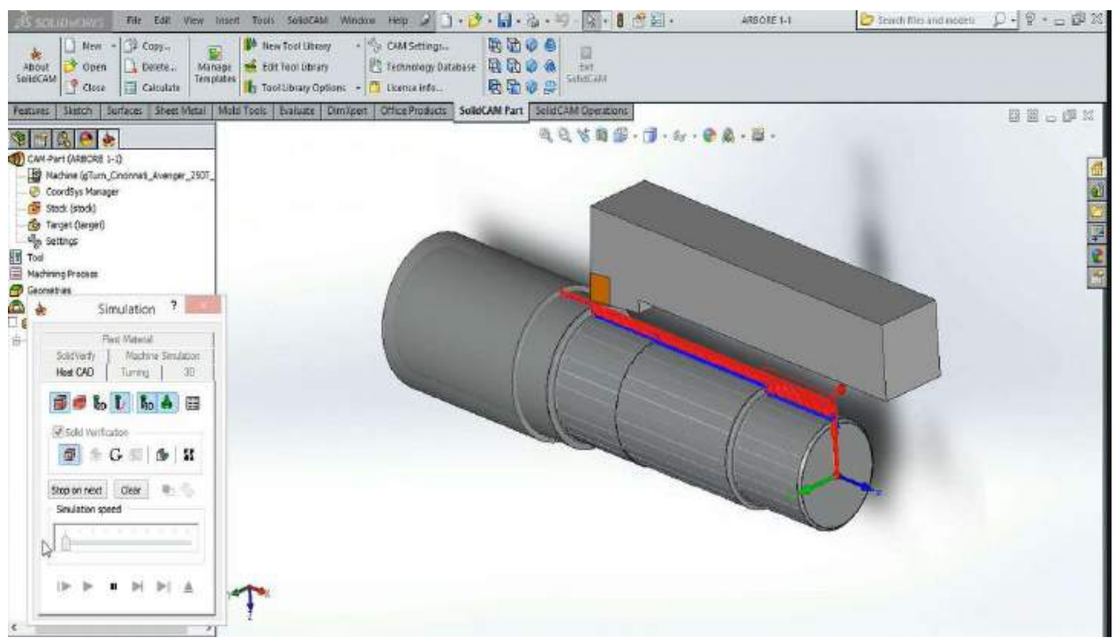
As a case study of the use of the Walter GPS platform, in order to determine the cutting modes, a "distribution shaft" type part was chosen for the mass production variant, the operations: roughing turning and finishing turning. The values obtained regarding the cutting modes were compared with the values obtained through the classical determination of the cutting modes (analytical method). Also, the part was drawn in SOLIDWORK, and then in SOLIDCAM the part processing simulation and the cutting tool trajectory tracking were performed, for a single variant.

In conclusion, the optimization of the machining process encompasses a wide range of aspects aimed not only at increasing productivity and reducing costs, but also at increasing the quality of the markets, safety, sustainability and durability of the machining process. The use of advanced technologies (e.g. simulation software, real-time monitoring, and applications for optimizing machining regimes) includes a crucial element in achieving these objectives.

Pictures & graphics

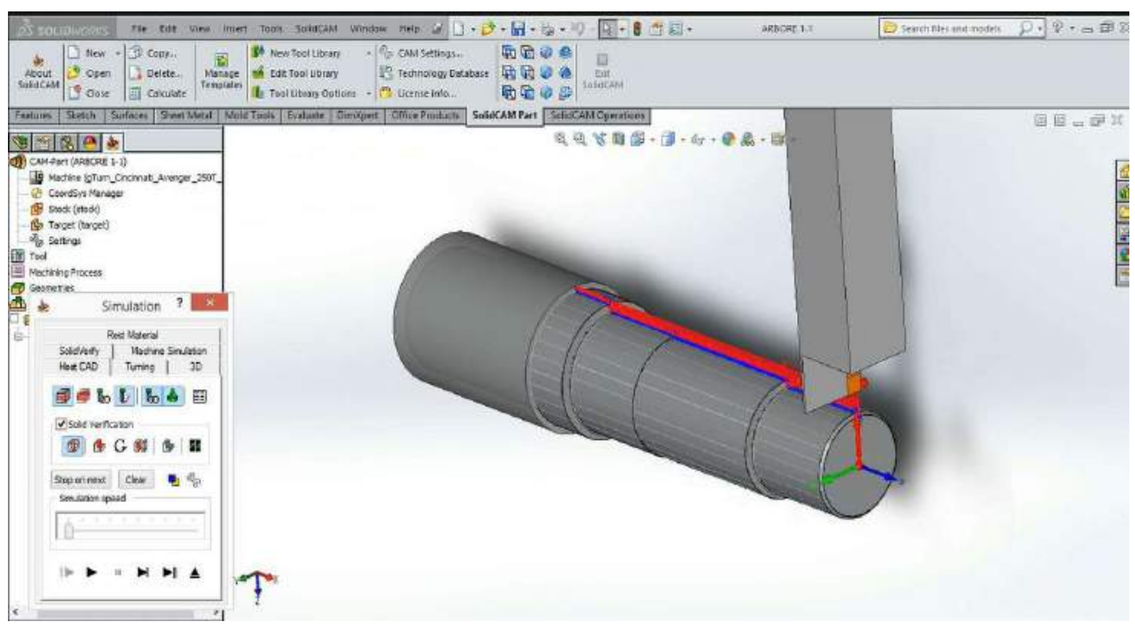


The parameters of the cutting regime





Possibility of changing cutting parameters feed and speed with influence on insert durability



Contact: ctt.ucb@gmail.com

OPTIMIZATION OF THE CNC PLASMA CUTTING PROCESS FOR COST REDUCTION AND IMPROVEMENT OF PERFORMANCE AND QUALITY

Scientific research contract: no.8 /04.06.2024

Author/s: Alin Stăncioiu, Ștefan Sorinel Ghimișı, Constanța Rădulescu, Nicoleta-Maria Mihuț, Aurora Cătălina Ianăși, Alin Nioață, Elena Loredana Stăncioiu

D

The paper analyzes the optimization of the CNC plasma cutting process to reduce costs, improve performance, and enhance the quality of machined parts. This technology enables fast and precise cuts on conductive materials such as steel and aluminum, but its efficiency depends on process parameters and proper equipment configuration. The selection and adjustment of cutting current, arc voltage, and gas type influence the thickness, speed, and quality of the cut. The distance between the nozzle and the material also plays a crucial role, determining the precision and final appearance of the piece. The plasma cutting process requires careful configuration and calibration of the CNC equipment, with each component directly impacting overall performance. Monitoring the wear of consumables such as nozzles and electrodes helps maintain cutting quality and extend the equipment's lifespan. Implementing advanced technologies for automatic parameter adjustment aids in process optimization and reduces material waste. Cost reduction is achievable by adjusting cutting speed and current, using alternative gases, and adopting more energy-efficient solutions. These measures not only lower operational expenses but also contribute to reducing environmental impact. Continuous equipment monitoring through predictive maintenance systems allows for defect prevention and minimizes downtime.Optimizing the CNC plasma cutting process is essential for achieving high-quality products, reducing costs, and increasing sustainability. By precisely adjusting parameters and utilizing modern equipment, an efficient, cost-effective, and environmentally friendly process can be ensured, meeting the demands of the modern industry.

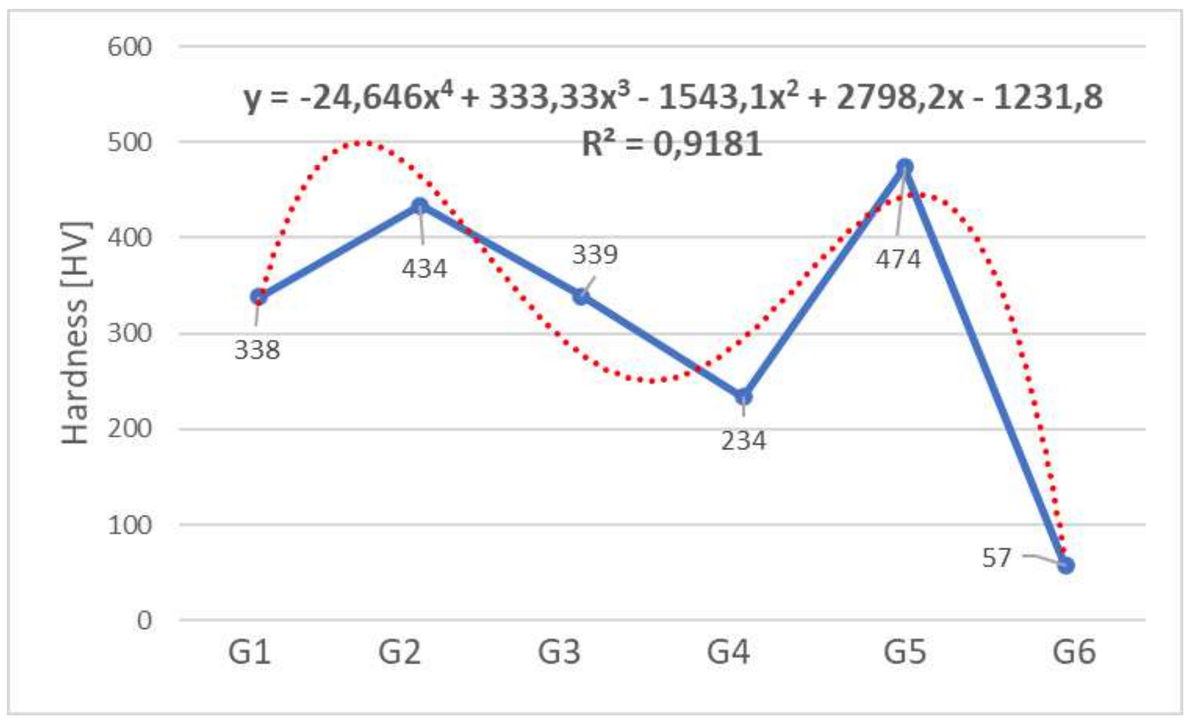
Pictures & graphics

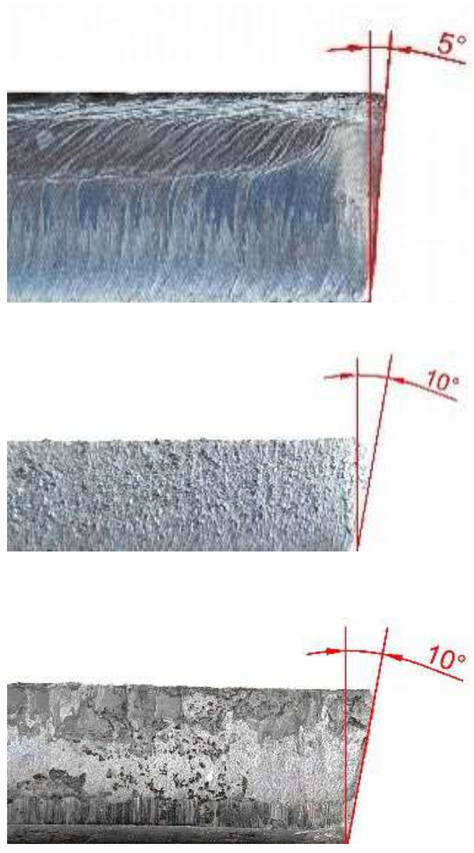


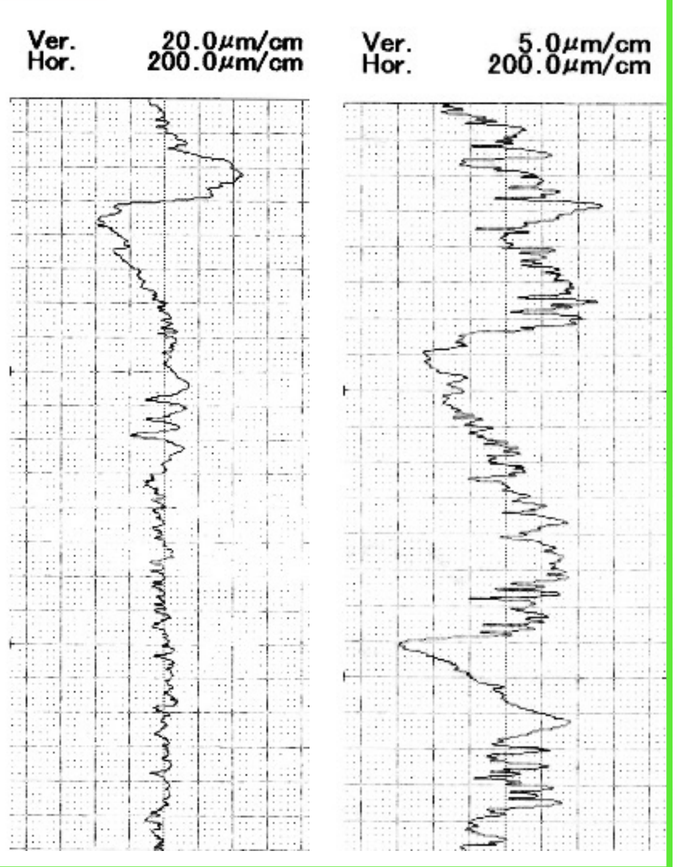












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EXPERIMENTAL STAND
BATTERY CHARGE DISCHARGE
VOLTAGE MONITOR

Student Project

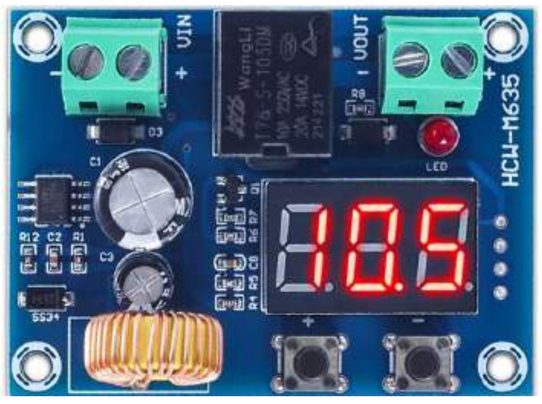
Authors: Iulian Nistor, Alexandru Rus

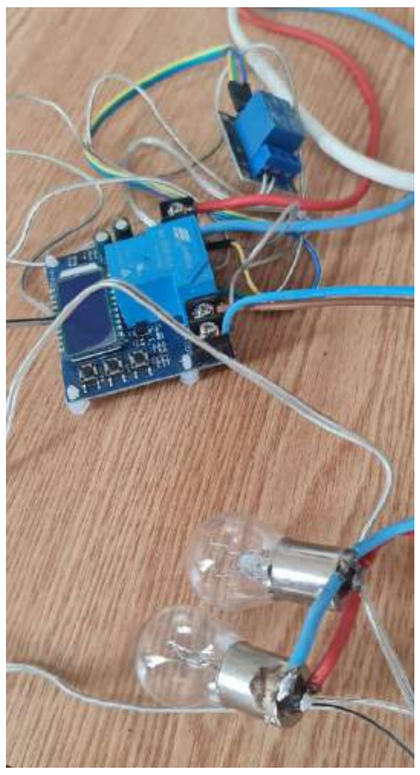
Mentor Corneliu Birtok Baneasa

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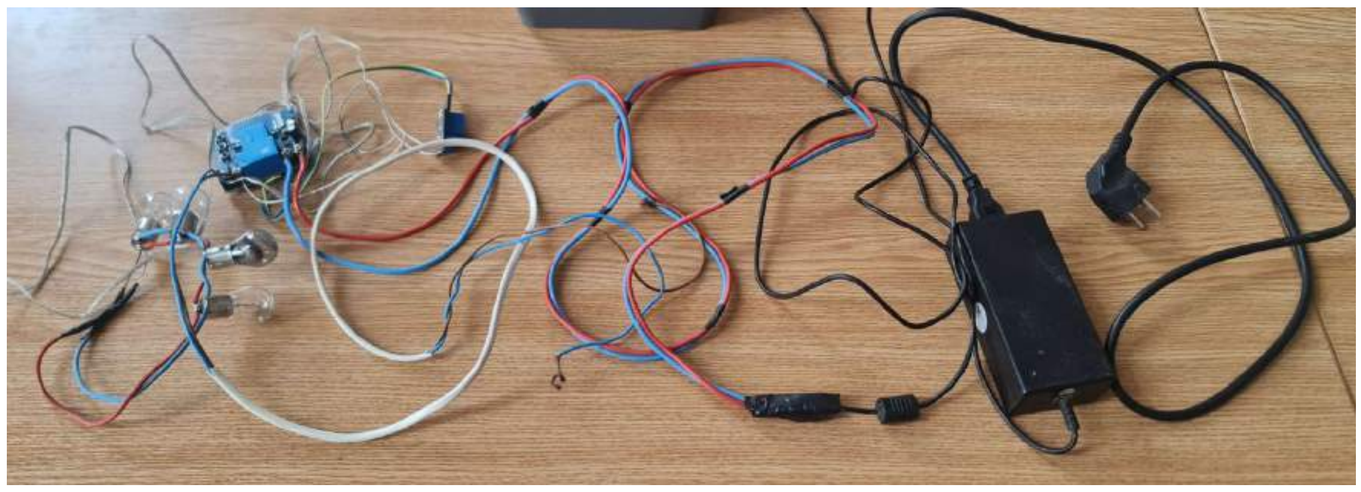
XY-CD63L is a DC 6V-60V 30A Battery Charge Discharge Voltage Monitor. It is a discharge protector when the battery is connected to the input terminals. It is a charge protector when the battery is connected to the output terminals. It can connect voltage from DC 6V-60V Battery and the input/output voltage are same. It can set battery discharge/charge voltage to prevent the battery from over-discharging/over-charging and causing damage. The output voltage can continue to provide voltage to the load when the battery charging voltage rises to the allowable discharge value. Therefore, it can effectively protect the service life of the battery and make the use of the battery safer and more reliable.











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E

Management

Teaching methods

Books

History and Cultural studies

"Tudor Iclănzan"
Industrial Property Office

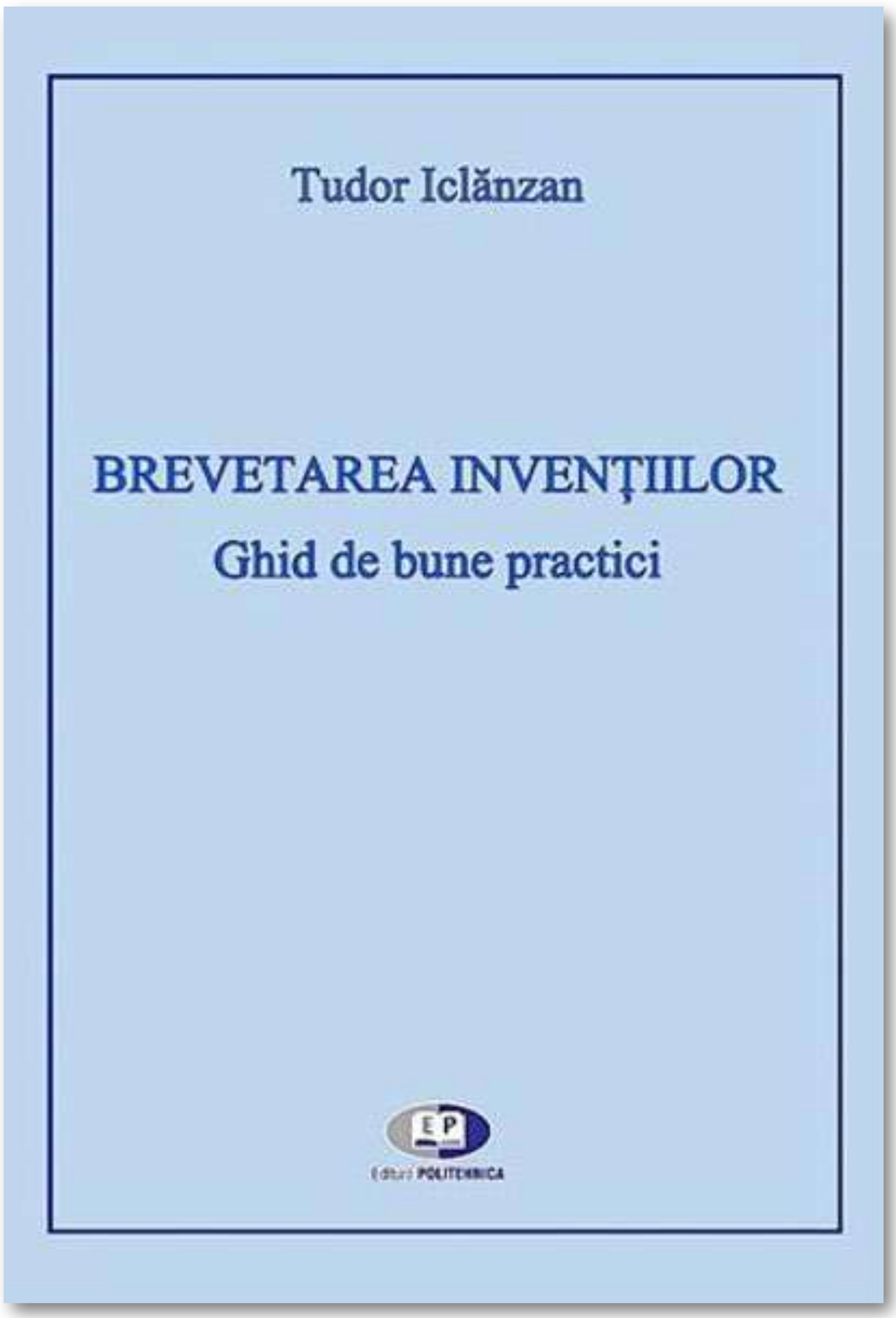
PATENTING OF INVENTIONS
GOOD PRACTICE GUIDE

BREVETAREA INVENTIILOR
GHID DE BUNE PRACTICI

Patent/project number: 978-606-35-0405-1

Author: Tudor Iclanzan

E



The book meets justified expectations both from the inventors and from many specialists in the field. It is written with the main objective of developing quality patents on the conceptual platform that aims to facilitate technology transfer.

Fundamental notions of patenting inventions that over the years have often suffered from inadequate interpretations are now clarified. The book really has the valences of a true guide of good practices by explaining some mistakes that frequently appear in the practice of patenting, by analyzing the evoked cases and especially by offering some solutions by the author.

The main objective of each patenting or certification approach has always been the quality of the works performed so that the property titles obtained (patents, trademarks, designs/models) are viable and comply with the expectations of the clients.

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+40 744 647875 ***www.iclanzan.ro***

EDUROD Association
for Digital and Environmental Education

I have knowledge! I know! / Ba Cunosc! Ba Stiu!

Discovering Professions

E

Author: Sarah LASCU HARVAT

The EDUROD Association aims to bring together three important directions: **digital education, environmental education, and cultural education**, in order to help and support educators, youth, parents, and individuals from disadvantaged groups in education and art therapy.

The main project **“I have knowledge! I know!”** / **,,Ba Cunosc! Ba Stiu!"** aims to document as many professions from various locations as possible in order to make known to the general public their products and services, the people behind the professions, and the main activities required to carry out these professions.

The documented professions so far:

Providing document copying, spiral binding, and laminating services are key activities of a **printing & copying shop**.

A space **where fashion meets sustainability**, and individual style blends with environmental responsibility.

Behind the profession of ,,**Veterinarian**" lies a lot of dedication, knowledge, passion, and extensive practice. Discover the exceptional people who dedicate themselves to caring for and healing animals.

Where do the **vegetables and fruits** we find at our **local producers** come from, how are they cultivated, watered, and cared for.

Solar panels convert solar energy into electricity, contributing to reducing electricity costs and protecting the environment.

The **connection with objects where history is found** and how we can integrate them into the desired decor.

How to manage a **real estate agency** and what are the main activities of the profession of ,,**real estate agent”**.

We discover the mastery with which metal is treated. The profession of ,,**blacksmith”** is being related to us.

The importance of caring for pets and the discovery of a lesser-known profession, that of a ,,**pet groomer**”



















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Science Labs & Camps

E

Science workshops

Author: Tiberiu Stroia & Team

CASA STIINTEI (The House of Science) has been carrying out, for almost three years, a series of activities in which students passionate about natural sciences are invited to participate. Science camps, astronomical observation nights, zoom classes, science workshops held in the Association's laboratory and, starting this summer, scientific expeditions.

SCIENCE IS MAGIC THAT WORKS!



The study of gases

Children will obtain in the laboratory Oxygen, Hydrogen, Iodine, Acetylene, AMMONIA, HYDROGEN SULPHIDE, and Carbon Dioxide. They will learn the story of the discovery of each gas and will be able to observe, through experiment, the properties of these gases. Experiments carried out by the teacher: obtaining chlorine and ozone.







Contact: contact@casastiintiei.ro +40735 370 327

SCAN ME

Grapevine genotypes in the context of climate change

ISBN 978-9975-165-49-5. 2023

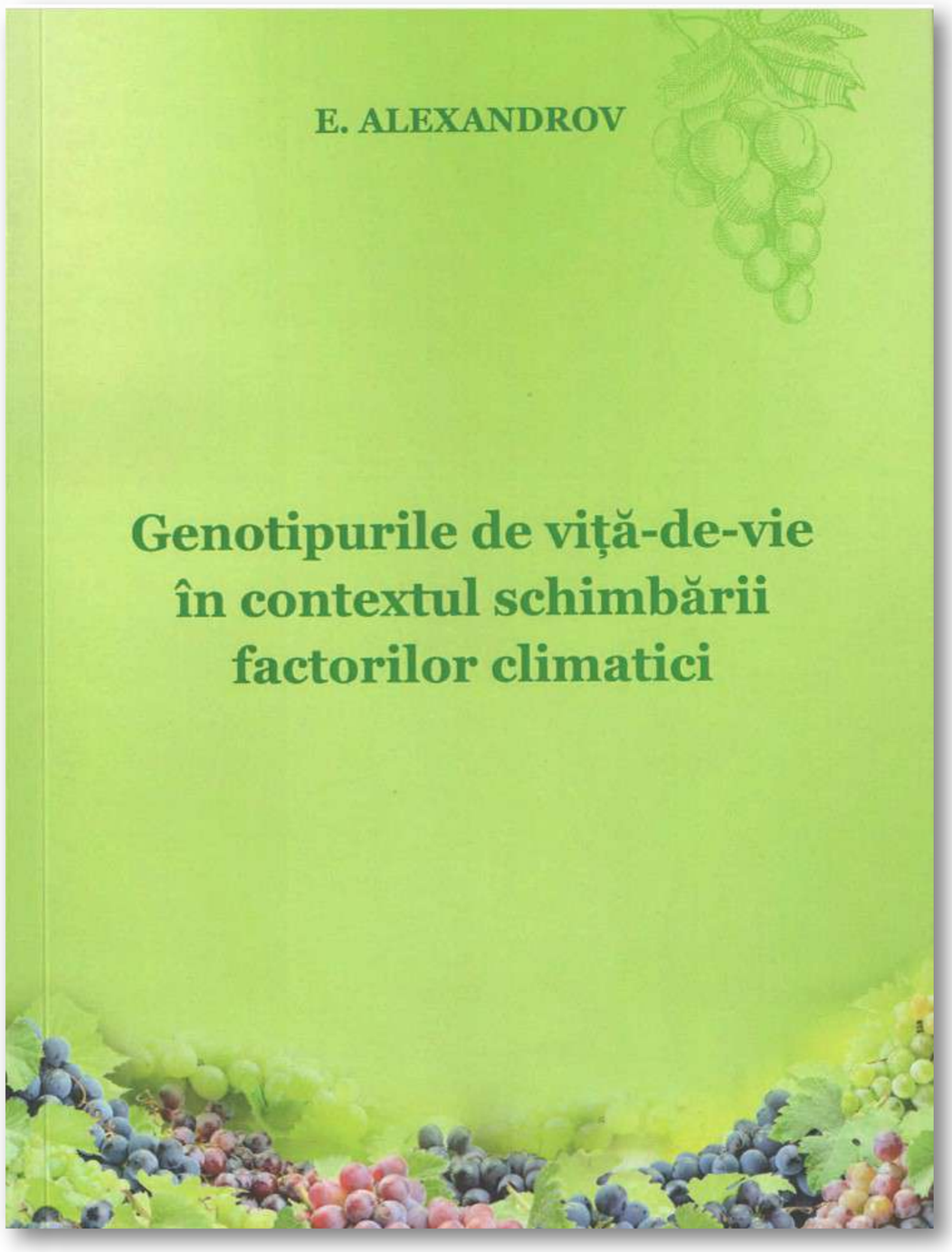
Alexandrov Eugeniu

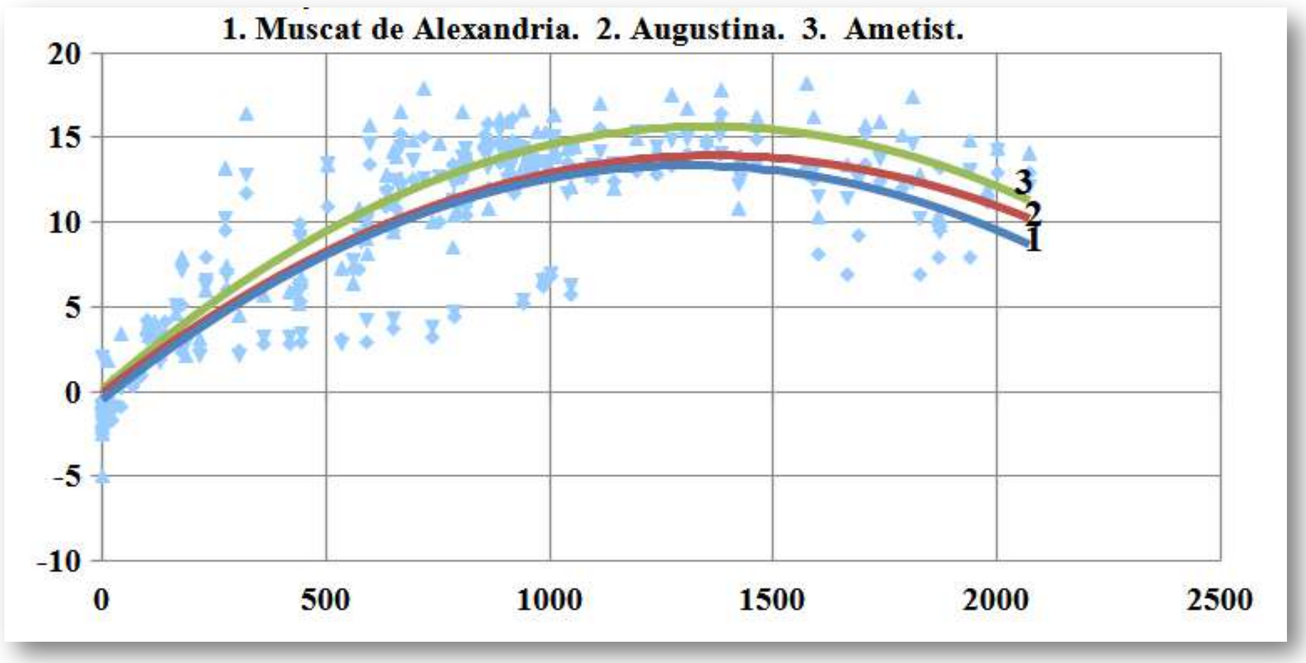
Institute of Genetics, Physiology and Plant Protection of the State University of Moldova

E

The photosynthesis irradiance curve makes it possible to understand the eco-physiological characteristics of a species, and in turn, these indices give us the opportunity to compare different plant genotypes in more or less similar conditions, thus determining the productive capacity and resistance to environmental factors. Studies have shown that the interspecific grapevine genotypes are characterized by much better adaptive features than intraspecific genotypes in relation to climate change.

Taking into account the effectiveness of physiological processes, such as: photosynthesis, respiration, transpiration, stomatal conductance, assimilation etc., in the process of plant breeding, it is possible to identify plant genotypes with an increased potential for capturing carbon dioxide from the atmosphere, thus helping to maintain the global average temperature within limits that would not lead to an intensification of the greenhouse effect and climate change. This method can also be applied in the process of breeding different plant crops. In this case, it is necessary to apply techniques and methods of plant breeding to create plant genotypes that will be used to expand the forest areas, to stop desertification processes, to create protective forest belts, for the sustainable use of agricultural and other types of land etc., and which will be characterized by a high efficiency of the photosynthesis process under the new climatic conditions.







Fitomonitor PTM-48A.

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THE CREATION OF OWN-ROOTED INTERSPECIFIC GENOTYPES OF GRAPEVINE

ISBN 978-9975-3161-5-6. 2020

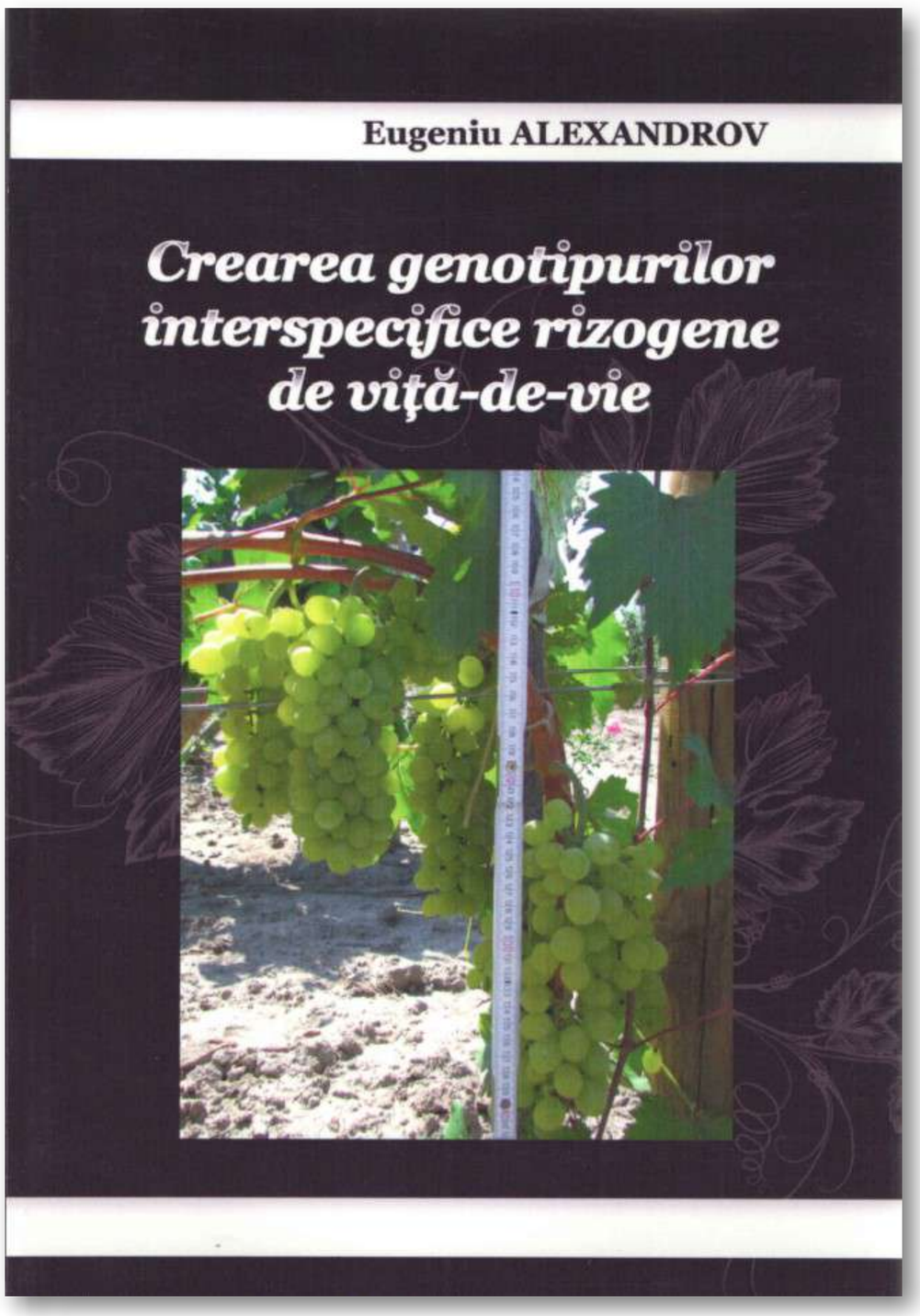
Alexandrov Eugeniu

Institute of Genetics, Physiology and Plant Protection
of the State University of Moldova

E

As a result of the development of the methodology for creating interspecific rhizogenic genotypes, which consists in elucidating the functionality of genetically related taxonomic entities Vitis vinifera L. and Muscadinia rotundifolia Michx. with diminished combinative capacity, which can be overcome by involving two determining genetic factors: parental as a hybridization component - Vitis vinifera maternal parent, and Muscadinia rotundifolia - paternal and additive - through backcrossing.

Finally, a wide induction of recombinant varieties takes place, which provides opportunities for streamlining distant hybridization in the process of improving valuable characters. By crossing the genotypes of V. vinifera L. with M. rotundifolia Michx., interspecific rhizogenic grapevine genotypes were obtained and selected in BC3, with valuable characters, which allows to expand the grapevine cultivation area to the northern limit, on own roots and reduce the number of chemical treatments. Rhizogenic interspecific genotypes:















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E-mail: institut.gfpp@gmail.com; alexandrov.egugeniu@gmail.com; Web: www.igfpp.md

A.D.O.R.

Human rights support project

E

Author: *Anca Maria Dorina & ADOR team*

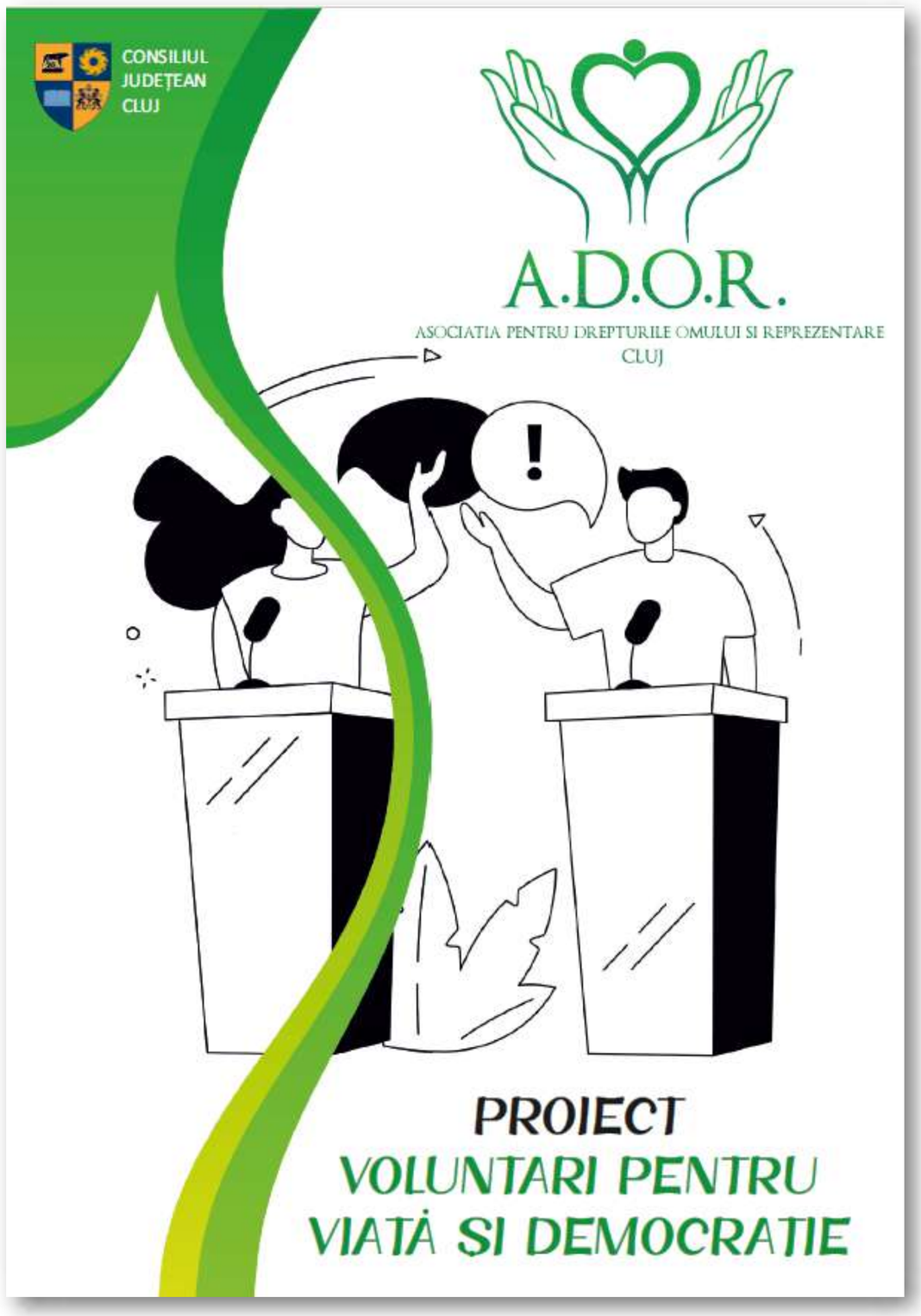
*The purpose of the **ASSOCIATION FOR HUMAN RIGHTS AND REPRESENTATION – ADOR** is in mainly, the support of human rights, and to increase it, it proposes a series of objectives, including:*

- monitoring local, parliamentary, European parliamentary, presidential elections and referenda local and national, through accredited observers and through any other legal means;

- creation of information centers and legal advice in the matter of human rights and social protection;

- carrying out studies, analyses, researches, opinion polls on different topics;

- promoting volunteerism, especially among young people.



*Through the **VOLUNTEERS FOR LIFE AND DEMOCRACY** project we propose to initiate and introduce the practice of dialogue with the all actors can contribute ideas, to promote structured dialogue between decision-makers at political level and civil society, in order to ensure the effective participation of employees in the electoral process. Also, through active involvement of our non-governmental organization in non-formal and informal education activities, we will lay the foundations the process of introduction into the formal curriculum of political education.*



SCAN ME

Contact: *asociatie.ador@gmail.com*

MECHANICAL VIBRATIONS
THEORY AND APPLICATIONS

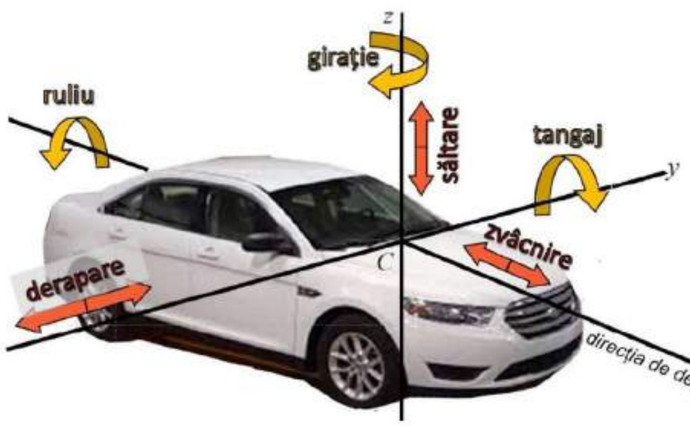
Book number: ISBN: 978-606-35-0597-3

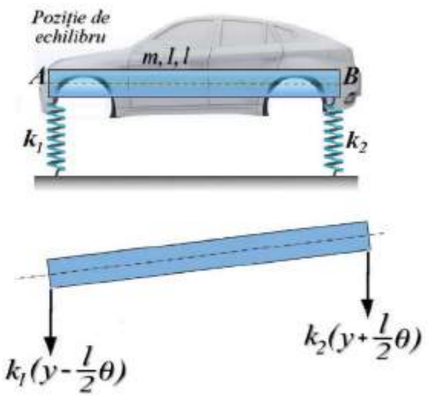
Author: Daniela-Delia ALIC

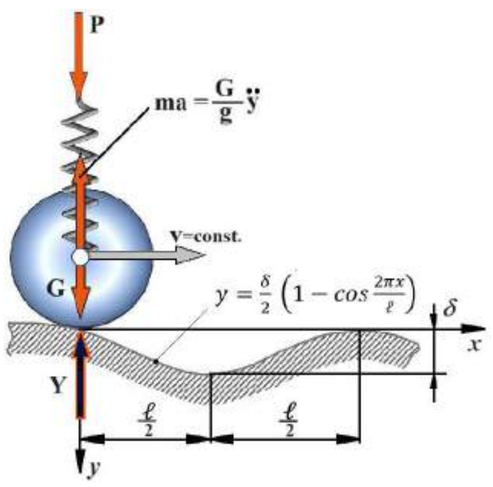
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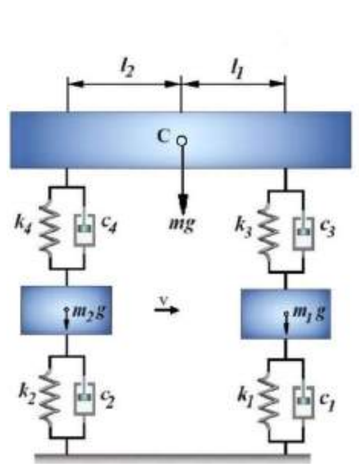
Centered on Automotive applications of mechanical vibration theory, this book explains physical phenomena with examples, images, and real system models using open resources and simulation tools. It explores system responses to disturbances through physical and mathematical modeling, derives motion laws, and solves equations using analytical or numerical methods. The results are then analyzed and interpreted within the framework of vibration theory.

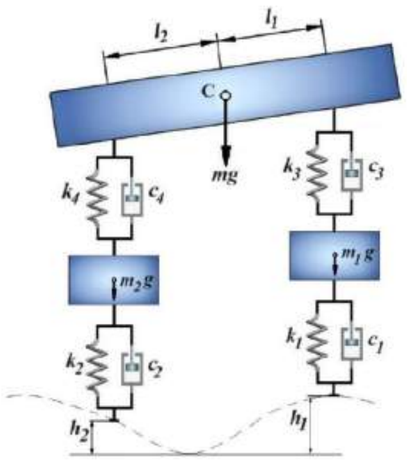
Aiming to develop problem-solving skills for students, teachers, and researchers, the seven chapters of the book presents theoretical concepts and practical applications in science, engineering, and everyday life.

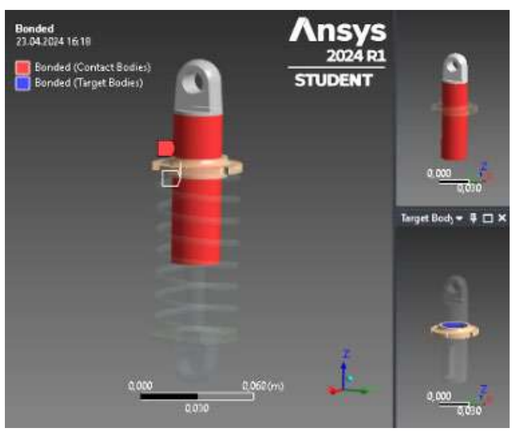


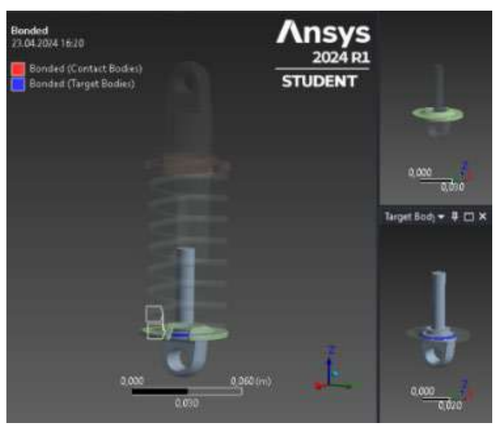


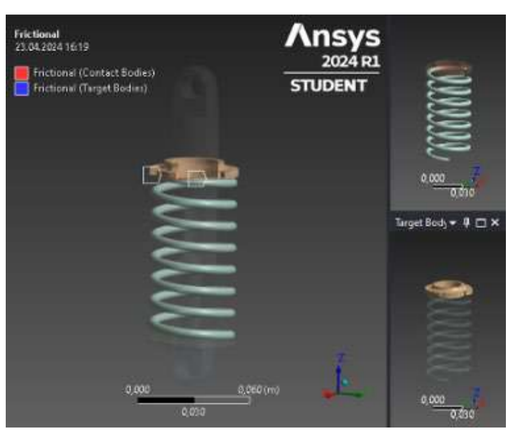


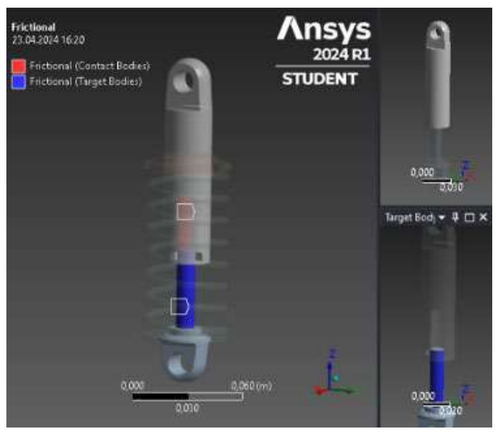




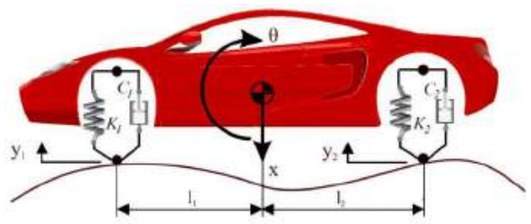


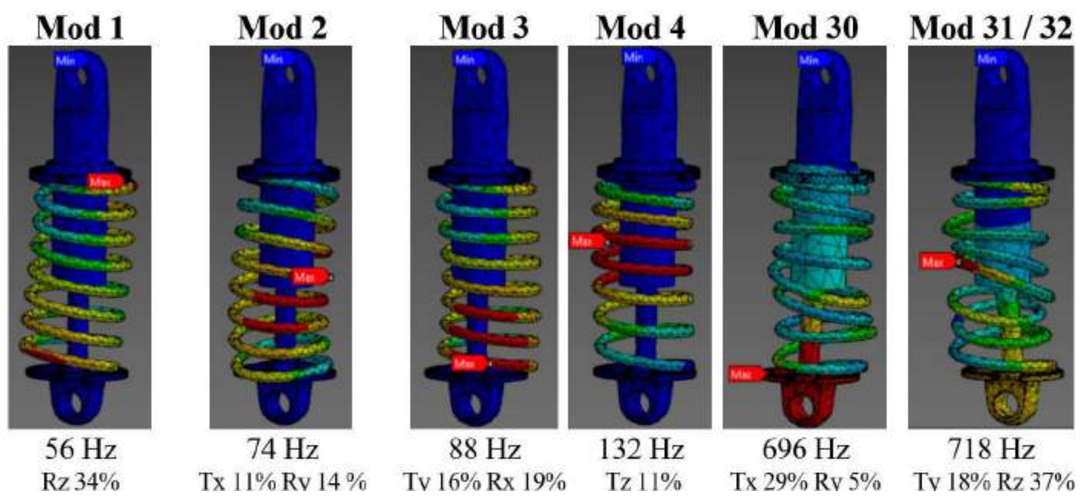












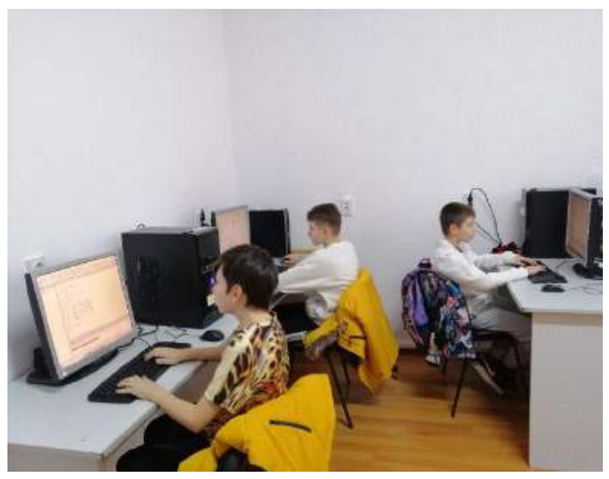
Contact: daniela.alic@upt.ro +40770823588

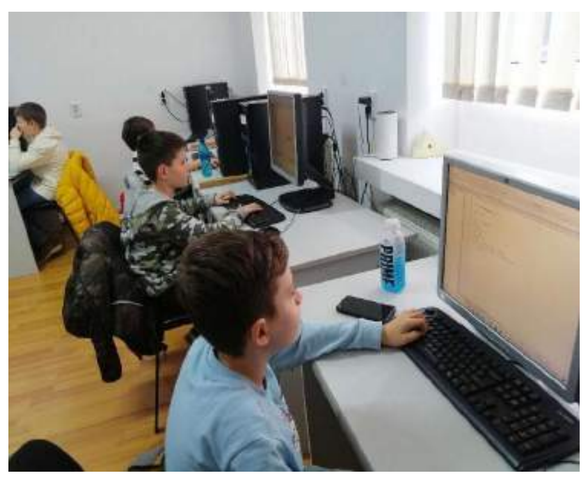
Initiation in the C++ programming language at the Informatics circle at the Deva Children's Palace

Author: Bianca Claudia POPESCU

E

At the IT circle at Palatul Copiilor Deva, students are introduced to the C++ programming language, a language used to develop complex software applications, games and even operating systems, but also in programming applications such as simulations, scientific calculations, engineering, financial applications. This language was developed in the 1980s as an extension of the C language, but adding object-oriented programming (OOP) functionality. C++ is a compiled language, which means that the source code written by the programmer is translated into machine code that the computer can execute. In the computer science circle, students learn to download and use the CodeBlocks programming environment for writing and running programs in C++. The beginner groups study some basic concepts of the language: the structure of a program in C++, the meaning of the instructions used, the data types in C++, the declaration and initialization of variables, simple operations with variables. In C++ there are many types of structures and concepts that students learn in order to write correct and efficient programs. Students in advanced groups are introduced to the use of control structures, namely: if-else-which allows a decision to be made, switch-case-used to choose between several options based on a value, for-used to repeat a block of code a given number of times, while-which is an instruction that is executed while the set condition is met, do-while – similar to while, but the condition is checked at the end of each iteration, so that the little once Performance group students learn one-dimensional (vectors) and two-dimensional (matrices) text files and arrays in C++, used in a variety of applications. Text files are an essential part of programming because they are used to store and retrieve data in the form of text (characters), that is, information that can be read and processed by humans or programs. Text files are used to save data to disk, which means that even after the program has ended, the data can be accessed later. Working with arrays in C++ requires knowledge of the following basic concepts and functionality: declaring and initializing arrays, accessing array elements, searching, sorting array elements. In the spring of each school year, my students, as well as the students of the computer science circles in Hunedoara county, can check their knowledge and skills acquired in the circle, in the "INFO-PC-DEVA" county computer contest, approved in the extracurricular activities calendar of Hunedoara county, whose project initiator and coordinator I am.



It is very important for students to learn programming for the significant contribution to the development of logical and organized thinking. The knowledge and skills learned through programming will be of great use to them in an increasingly digitized world.

Contact: popescu_bianca7@yahoo.com

TECHNICAL TRANSLATION
A COMPLEX JOURNEY

Research project

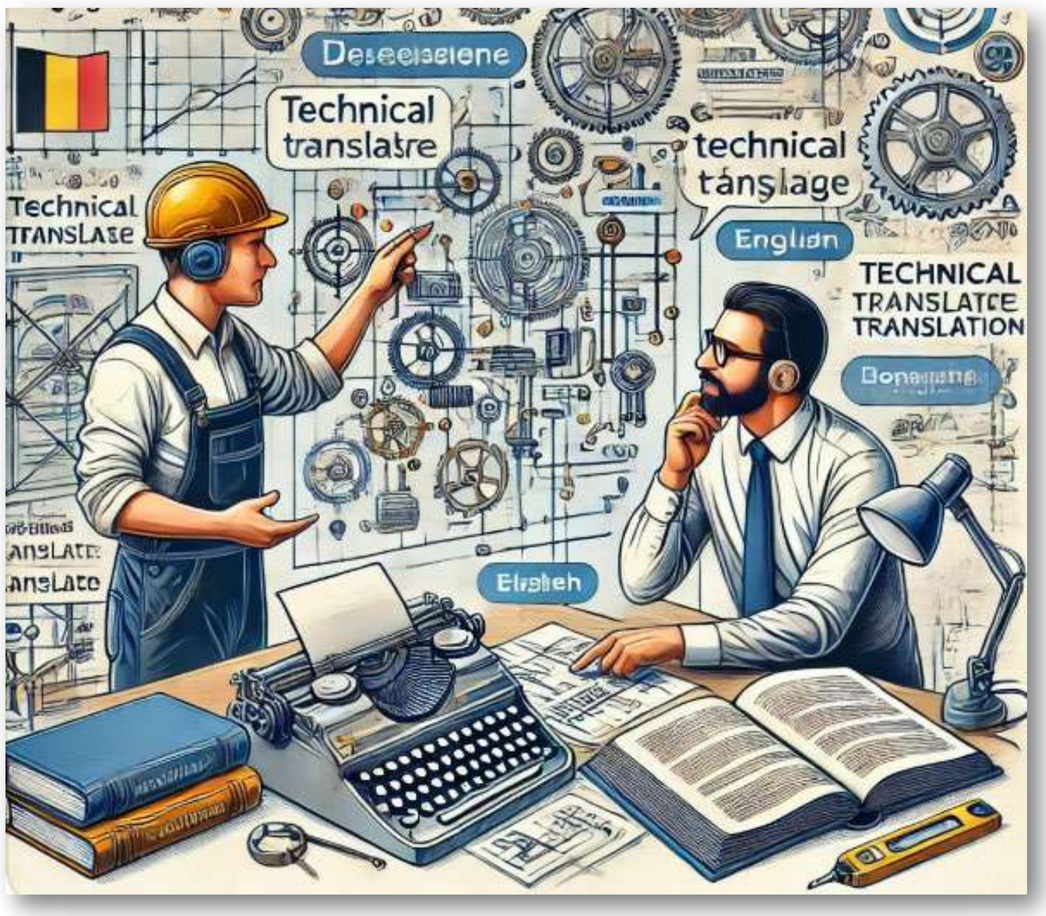
Author: Oana GĂIANU-LUCA

E

Translation is an intricate process that requires linguistic proficiency, cultural awareness, and technical expertise, particularly when dealing with specialized fields. Translating technical language from Romanian to English presents unique challenges, as it involves industry-specific terminology, context-sensitive phrases, and structural differences between the two languages. One of the main difficulties in translating technical texts from Romanian to English is the precision required for specialized terminology. Based on research, it is observed that terminology is defined as the discipline that deals with the study of terms, analyzing their creation, meaning, evolution, and usage. It represents a collective body of terms, offering an alternative approach to studying the lexicon by utilizing analytical techniques and methods for an object formed through the entirety of terminologies. From the perspective of specialists, terminological science involves the strict standardization of terms through codes established by international authorities. Technical language often relies on precise, standardized terms that do not always have direct equivalents in the target language. For example, Romanian technical documents in engineering or medicine may use terminology rooted in Latin or French, which must be adapted to fit English conventions.

Another challenge is the structural differences between the two languages. Romanian, a Romance language, has a more flexible word order than English, which follows a stricter subject-verb-object structure. This means that a direct translation might sound unnatural in English and may require rephrasing for clarity and readability.





Furthermore, technical documents often contain abbreviations, acronyms, and units of measurement that may differ between languages and regions. A translator must be familiar with the standard English equivalents to ensure accuracy and consistency. For instance, measurements such as kilograms and meters are commonly used in Romania but may need to be converted to imperial units (pounds, feet) depending on the target audience. To achieve high-quality technical translation, professionals should follow several best practices: 1. Understanding the Subject Matter, 2. Using Specialized Dictionaries and Resources, 3. Adapting to the Target Audience, 4. Maintaining Clarity and Conciseness, 5. Proofreading and Quality Assurance. Translating technical language from Romanian to English requires more than just linguistic skills; it demands a deep understanding of the subject matter, industry standards, and cultural nuances. By adhering to best practices, translators can produce accurate and effective technical translations that meet the needs of international audiences. Whether in engineering, medicine, IT, or other technical fields, a well-executed translation ensures clarity, consistency, and professional quality in cross-language communication.

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SUSANYI HARALD-ALEXANDRU

DISCOVER TRANSYLVANIA
GUIDED BY A MEDIEVAL KNIGHT

K

Author: Harald-Alexandru SUSANYI

I'm Harald from Hunedoara and I guide in the beautiful province of Transylvania dressed in a knight templar suit. I'm studying history at the „1 December 1918" University of Alba Iulia and I'm fond of history of Transylvania and of the Corvin's family from Hunedoara.









Since 2019, I offer to my tourist groups some unique experiences, let's say „medieval experiences", managing to make history interact with them. I will not mention them here, but I invite you to discover them together.

My tours are based on emotions, because information can be easily forgotten, but emotions remains alive in our hearts for years.

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www.Ghidtransilvania.ro

SCAN ME

ACTA TECHNICA CORVINIENSIS – Bulletin of Engineering

Research project
Author: Assoc. Prof. eng. Imre KISS, PhD

E

ACTA TECHNICA CORVINIENSIS – Bulletin of Engineering is an international and interdisciplinary journal which reports on scientific and technical contributions and publishes invited review papers covering the full spectrum of engineering.

Every year, in four online issues (fascicules 1 - 4), ACTA TECHNICA CORVINIENSIS – Bulletin of Engineering [e-ISSN: 2067-3809] publishes a series of reviews covering the most exciting and developing areas of engineering. Each issue contains papers reviewed by international researchers who are experts in their fields.

The result is a journal that gives the scientists and engineers the opportunity to keep informed of all the current developments in their own, and related, areas of research, ensuring the new ideas across an increasingly the interdisciplinary field.





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The journal's coverage will reflect the increasingly interdisciplinary nature of engineering, recognizing wide-ranging contributions to the development of methods, tools and evaluation strategies relevant to the field. Numerical modelling or simulation, as well as theoretical and experimental approaches to engineering will form the core of ACTA TECHNICA CORVINIENSIS – Bulletin of Engineering's content, however approaches from a range of environmental science and economics are strongly encouraged.

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ANNALS of Faculty Engineering Hunedoara – International Journal of Engineering

Research project
Author: Assoc. Prof. eng. Imre KISS, PhD

ANNALS of Faculty Engineering Hunedoara – International Journal of Engineering is a free-access international and multidisciplinary publication of the Faculty of Engineering Hunedoara, which reports on scientific and technical contributions.

ISSN: 1584-2665 (printed editions, in two fascicules)
ISSN: 1584-2673 (CD-ROM edition, in two fascicules)
ISSN: 2601-2332 (online, all four fascicules)
ISSN-L: 1584-2665

The development of the international dimension of higher education and scientific research, have lead to the strengthening of direct relations with researchers from the neighboring countries and to the extension of the scientific collaborations in elsewhere in the World.
Within this context, the achievement and functioning of an interactive partnership, corresponding to the exigencies of the modernization process and connection to the European space required a re-evaluation of the contents and layout of our JOURNAL, both by adopting stricter criteria maintaining the contents of the scientific materials we publish and by changing its title, which was made in order to insure the universal accessibility of the ANNALS of Faculty Engineering Hunedoara – International Journal of Engineering.

Publishing in ANNALS of Faculty Engineering Hunedoara – International Journal of Engineering is free of charge. There are no author fees. All services including peer review, copy editing, typesetting, production of web pages and reproduction of color images are included. The journal is free of charge to access, read and download.

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CHEMISTRY IN TWO VERSE
CHIMIE ÎN DOUĂ VERSURI

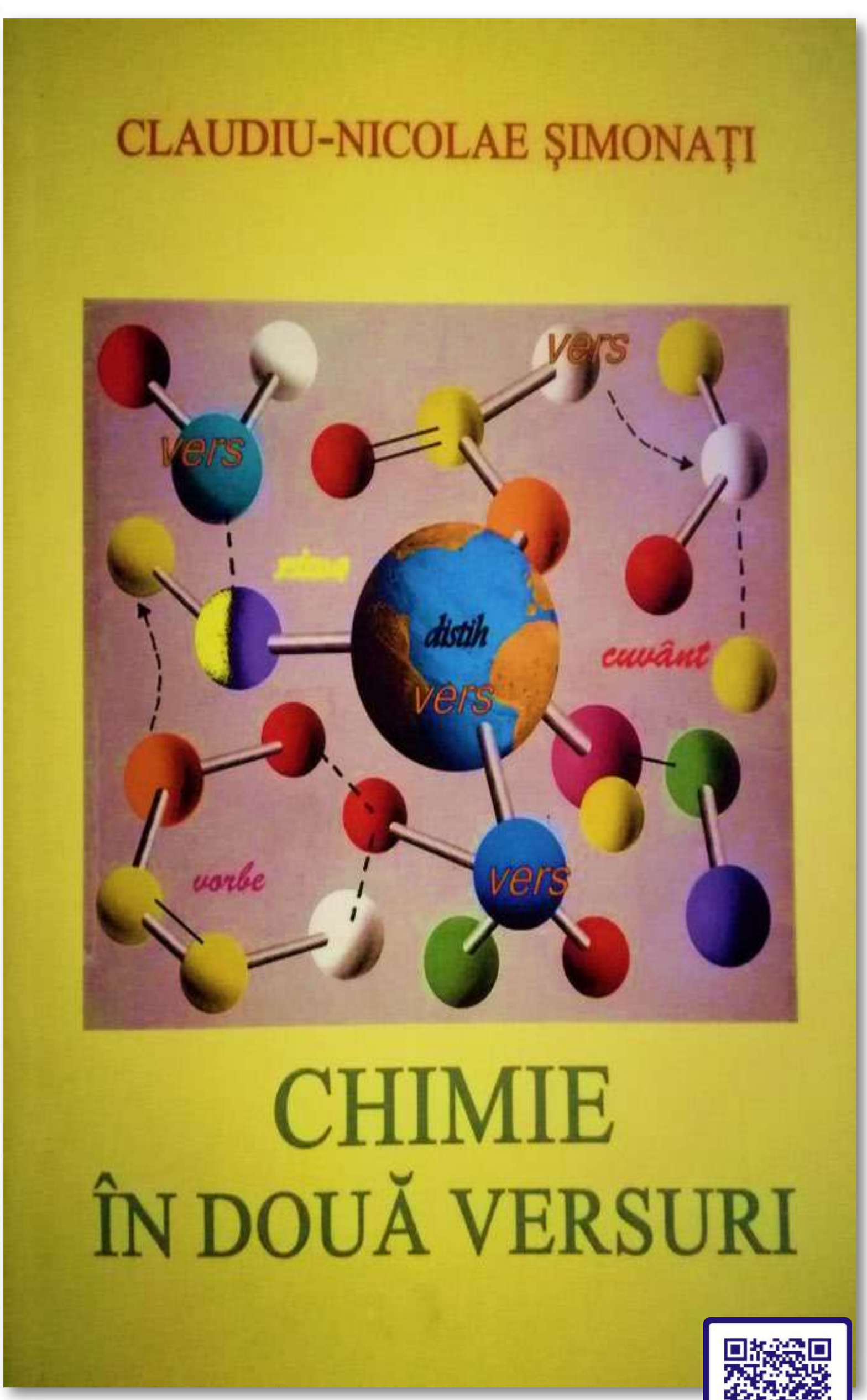
978-606-93427-4-9

Author: Claudiu Nicolae ȘIMONAȚI

E

The book combines two great passions of the author: Literature and Chemistry. This book of poems in two lines, with a humorous tone (distihurs), I wanted it to be an original work also due to the fact that, in fact, everything that surrounds us is CHEMISTRY.

Despite the small proportions, these comic poems are full of substance, they can be grouped into: medical poems, love poems, hedonic poems, kitchen poems, household poems. As in the case of all humorous writings, beyond the form intended to provoke laughter, there is a deep background, which expresses universally valid human truths. Also through this work, I wanted to come to the aid of students and enthusiasts of this field, to be able to more easily remember different chemical formulas, of substances that we face all the time in our everyday life, chemical formulas, which if you put them in rhymes form these short micro poems, which also teach you what to use these chemical compounds for.



Contact: *claudiu.simonati@yahoo.com*

SCAN ME

TECHNOLOGICAL TRANSFER CENTER CTT-UCB

Author/s: Rădulescu Constanța, Bălăcescu Aniela, Călina Denis, Boncea Adrian, Anghelescu Lucica, Borcoși Corina

E

The CTT-UCB Technological Transfer Center aims to become an important structure of the regional innovation ecosystem in South-West Oltenia, acting both as a connecting element between the people/entities working in the CDI sector, the business environment and end users, but also as an accelerator of innovative products and services developed either by exploiting research results or by covering the specific needs of companies to develop/improve/test/validate/transfer a new product or technology to the market that responds to consumer problems.

CTT-UCB aims to increase the technology transfer capacity and achieve a unitary process for the development of management and the monitoring of the technology transfer activity through the need to professionalize the human resource within UCB as well as through the need to develop a culture of collaboration between the human resource from the different departments of the university, but also with public entities and economic entities.

The areas of activity of CTT-UCB are:

1. The field of Industrial Engineering and Materials, with the subfields: Systems, installations,equipment, machines/equipment for construction and other industries; Systems, processes, installations, equipment, environmental technologies/Environmental protection; Systems, equipment, technologies for the agri-food, aeronautical, sanitary sector; Advanced materials, composites; Recovered materials, materials from bioresources;

2. The field of ICT and Digitization with the subfields: Smart city, smart village; Productsinnovative in the IT field, with an emphasis on medium fields, energy, heritage, tourism; Digitization of the economy;

3. The Bioeconomy domain with the sub-domains: Safe and sustainable food, Agriculture 4.0, Technologies for organic farming, agroecology, Seed and breed improvement.









Contact: https://icdi.utgjiu.ro

NATURAL THERAPEUTIC FACTORS AND TOURIST ATTRACTIONS IN THE GEOAGIU BAI

FACTORI TERAPEUTICI NATURALI ȘI OBIECTIVE TURISTICE DIN STAȚIUNEA GEOAGIU BĂI

978-630-325-045-8

Author: Claudiu Nicolae ȘIMONAȚI

E

In this small paper about the presentation of the Geoagiu Băi resort (Ancient "GERMISARA"), as it was known in ancient times, I wanted to highlight some aspects of what this area blessed by the Good God, at the foot of the Metaliferous Mountains, means from a geographical, therapeutic, touristic and, last but not least, historical point of view, because here, practically at every step taken, the place in ancient history and not only "MUSTESTE".

I wanted to design this tourist guide also for the fact that many of the tourists who arrived in the area wanted to have the related information somewhere in writing, in order to retain it better, but at the same time I wanted what I conveyed here not to be lost over the years, to remain in the mind of the reader and the future guest who wants to learn about what this place means and what they could do if they come here for a few days.



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TehnoART

Author: Demeter Sorin & TTC Team

E

Techno-ART is a national competition for high school students and more.
The aim of Techno-ART is technical creativity in this sense students are invited to present their ingenious projects.
The Techno-ART competition focuses on environmental protection so we encourage students to use recycled components from scrap yard.
The participating students transform these scrap into robots, cars, statues, lighting fixtures, figurines or various installations, which leads to the development of the practical skills so necessary for their future careers.



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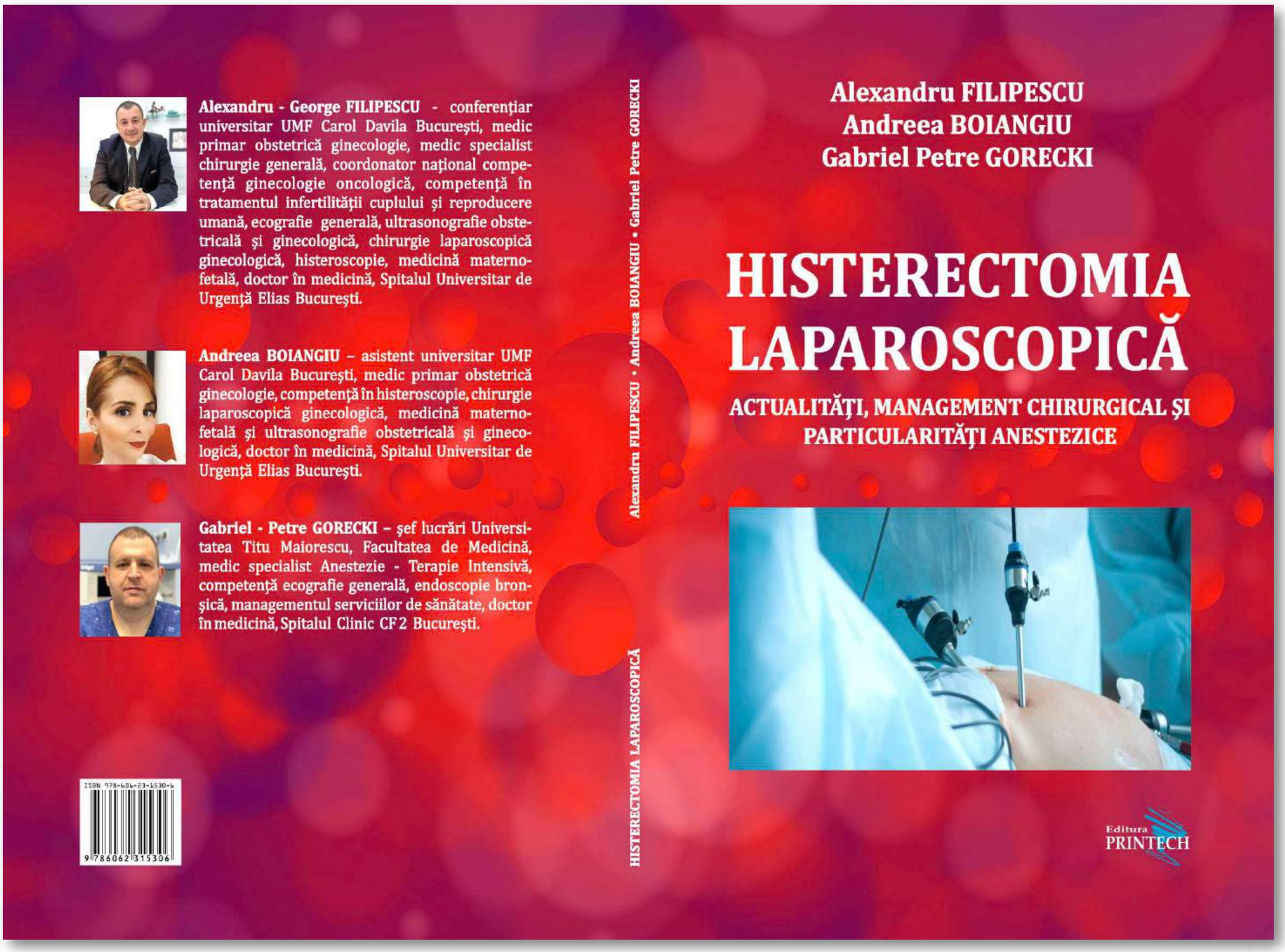
Histerectomia laparoscopică

Actualități, management chirurgical și particularități anestezice

Authors: Alexandru-George FILIPESCU, Andreea BOIANGIU, Gabriel-Petre GORECKI

ISBN 978-606-23-1530-6
Printech Publishing House, 2024

Monografia „Histerectomia laparoscopică. Actualități, management chirurgical și particularități anestezice” analizează atât problemele legate de actul chirurgical propriu-zis cât și întregul management perioperator al pacientei propusă pentru histerectomie laparoscopică. Lucrarea începe cu prezemtarea modificărilor fiziologice survenite de la naștere și până o dată cu instalarea menopauzei, trecând prin toate etapele dezvoltării femeii: perioada perinatală, pubertate, menarhă, perioada de procreație.



În continuare este realizat un scurt istoric al histerectomiei laparoscopice pe plan mondial, iar ulterior sunt prezentate clar și explicit noțiuni de anatomie chirurgicală, urmate de o descriere a instrumentarului și echipamentului chirurgical necesar pentru desfășurarea în condiții optime a intervenției chirurgicale, indicațiile operatorii și impactul acestei intervenții asupra calității vieții femeii, tehnica histerectomiei și a miomectomiei laparoscopice și principalele incidente și complicații postoperatorii. În încheiere un amplu capitol este dedicat anesteziei, managementului perioperator și analgeziei postoperatorii prezentând toate etapele pe care le parcurge o pacientă în timpul spitalizării începând cu examenul preanestezic, inducția anestezică, menținerea, trezirea din anestezie, modurile de ventilație mecanică intraoperatorie și foarte important pentru evoluția pacientei, analgezia postoperatorie adecvată.

Contact: gabriel.gorecki@prof.utm.ro

PROGRAM-YOUTH FUTURE FOR COUNTRY

E

Educational program

Author: Silvia SCORTESCU

JAM Company Program® empowers high school students (Grades 5-18) we are fill a need or solve a problem in their community and teaches them practical skills required to conceptualize, capitalize, and manage their own business venture. ***Community volunteers and mentors provide real-world guidance and experience to the student-led-startup.***

Throughout the process of building their own company, students will be able to:

Collaborate with team members.
Make crucial business decisions.
Communicate with multiple stakeholders.
Develop entrepreneurial knowledge and skills.





JAM Company Program is part of the JA Entrepreneurship Pathway and is recommended for high school students (Grades 9-12). This learning experience can be volunteer or educator led and is available in classroom based, remote live, or after school implementation. It may be completed during one semester or throughout an entire-school-year. JAM teachers and volunteers are encouraged, as part of this program, to utilize the resources available in JAM Connect® Learning Pathways, located at connect.ja.org.europe.

This self-guided experience includes interactives, JAM Here to Career, and games and apps for student use. JAM Learning Experiences support national and state standards in reading, mathematics, social studies, and work and career readiness.

Contact: silvia.scortescu@yahoo.com

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VITAE DISCIMUS
HR EXCELLENCE IN RESEARCH

TRACES AND SPURS. MIGRATION OF PEOPLES IN THE REFLECTION OF SPECTROMETRY

RESEARCH PROJECT NUMBER: 011210

AUTHORS: Sergiu Matveev, Veaceslav Sprincean, Vlad Vornic

E

APPLICATION FIELDS: E - Management, Teaching methods, Books, History and Cultural studies

AIM: determining the place of production of the 3rd-4th century iron spur discovered in Lipoveni (Cimișlia district, Republic of Moldova)

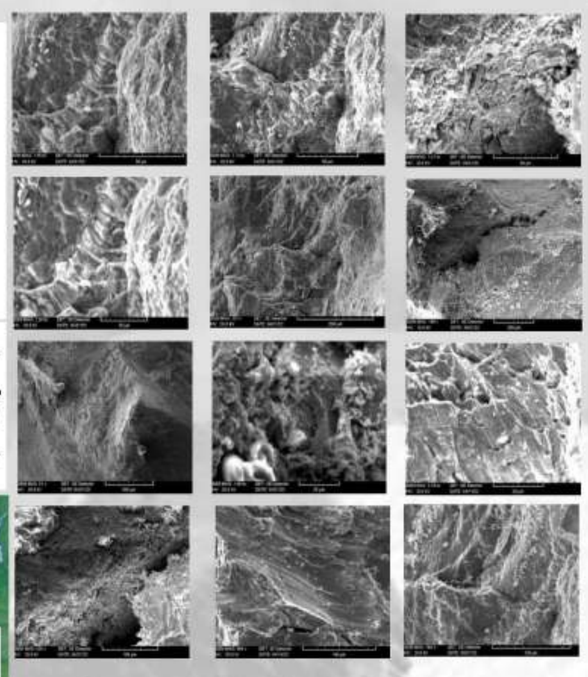
SOLUTION: EDS analysis was performed on an iron spur from the Lipoveni site (Cimișlia district), dated to the Great Migration period (3rd-4th century AD) and considered to be culturally related to the Goth community. The results obtained allowed the determination of the granulometry, the structure of the material, the texture of the matrix, as well as the degree of porosity. The most valuable result was the identification of wollastonite in the metal composition. A mineral widespread in the world, the places where it appears in massive quantities in Europe are in the region of Mount Vesuvius and Monte Somma (Italy), Banat (Romania), Saxony (Germany). Only the latter location could have served as a source of metal for the equipment of the Gothic knights in the 3rd-4th centuries AD.



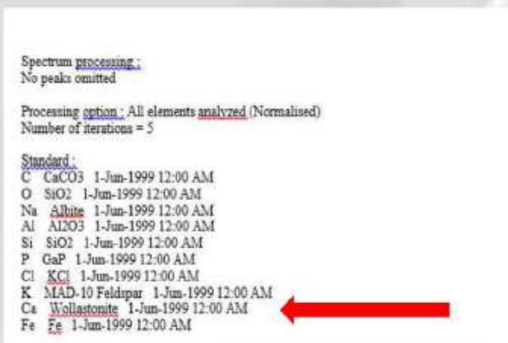
The Lipoveni spur and the place of discovery



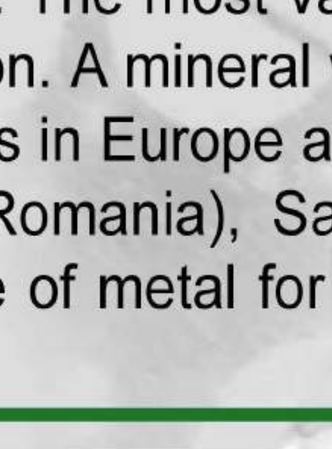
Map of similar discoveries in Germany



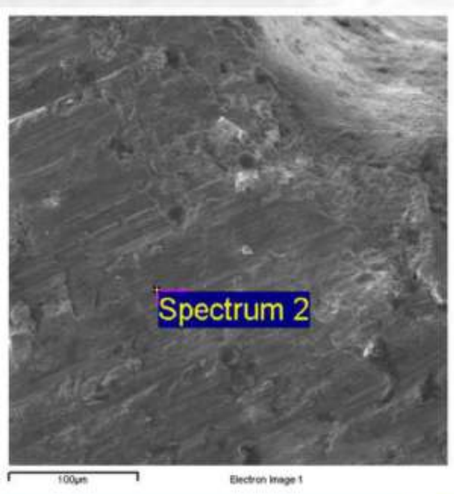
SEM microscope images illustrating the morphology of the spur

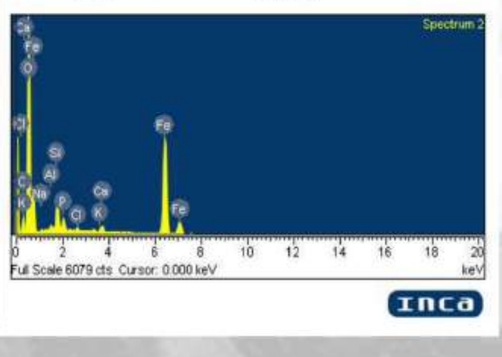


Element	Weight%	Atomic%
C K	10.45	19.15
O K	44.14	60.69
Na K	0.40	0.38
Al K	0.54	0.44
Si K	2.97	2.32
P K	1.43	1.02
Cl K	0.25	0.15
K K	0.24	0.13
Ca K	0.77	0.42
Fe K	38.82	15.29
Totals	100.00	



William Hyde Wollaston





ADVANTAGES: the methods are non-invasive and repeatable; initiates a new database that can be expanded with evidence from other archaeological sites.

IMPLEMENTATION STAGE: At the laboratory level and preparing the publication.

ACKNOWLEDGMENTS: This research was supported by the *research project:* # 011210

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BALANCED FOOD - VITAL FACTOR OF BIODIVERSITY ZOOS

BOOK: ISBN 978-9975-180-16-0.

AUTHORS: BALACCI Sergiu, BALAN Ion, CRETU Roman

E

APLICATION RFIELDS: E – Management, Teaching methods, Books, History and Cultural studies.

SOLUTION: Rations are developed in accordance with the nutritional needs of the species at various stages of development and according to the seasonal activity of the animals. In particular, rations for the many species for which information on nutritional requirements is limited or non-existent are presented. The exposed food rations contain, in quantitative and qualitative balance, the substances necessary for the vital functions of the organism. Rations are also adapted to metabolic particularities depending on the species, size and age of the animals, as well as according to the environmental conditions and physiological status of individuals, in particular, those in various periods of the reproduction and hibernation process. The main purpose of this paper is to adjust the accessible recommendations and guidelines confirmed in modern zoo animal feeding practices.



ACKNOWLEDGMENTS: This research was supported by the research projects: 20.8000.7007.25 and 011001.

COLEGIUL ECONOMIC
"DIONISIE POP MARȚIAN"
ALBA IULIA

SOCIAL MEDIA IN TOURISM

Student Project

Author: Carla PARPUCEA

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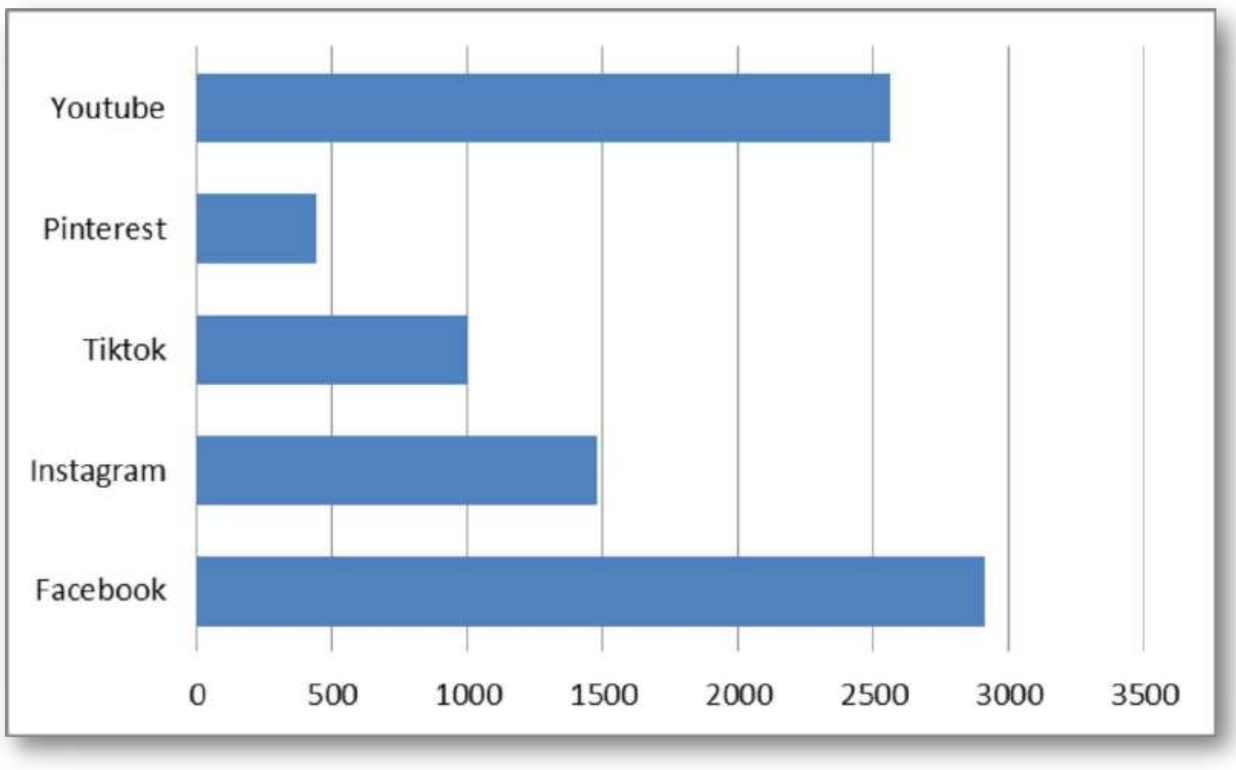
Social media platforms have become key channels for informing and influencing consumers in the tourism sector. More and more travelers choose their destinations and services based on online recommendations and reviews. In this context, the study aims to highlight the importance and impact of digital promotion on tourist behavior and on the marketing strategies of tourism agencies and operators.

Analysis of how social media networks influence travel decisions. Identification of the main platforms used in tourism marketing. Evaluation of the impact of online reviews and recommendations on the reputation of destinations. Proposal of strategies and recommendations for operators in the field.

Social networks have evolved from simple communication platforms into a real sales channel for tourist accommodation units. Consumers spend more and more time on these platforms while browsing the internet, as they offer them the opportunity to interact directly with tourist reception structures.







The evolution of social media requires a paradigm shift in tourism marketing. To remain competitive, operators in the field must develop effective digital strategies, use social platforms to build trusting relationships with customers and capitalize on the power of user-generated content.

Integrating digital technologies in tourism promotion is no longer just an option, but a necessity for long-term success.

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КУЛТУРНИ ЦЕНТАР
БАЧКА ПАЛАНКА

BAČKA PALANKA CULTURAL CENTER

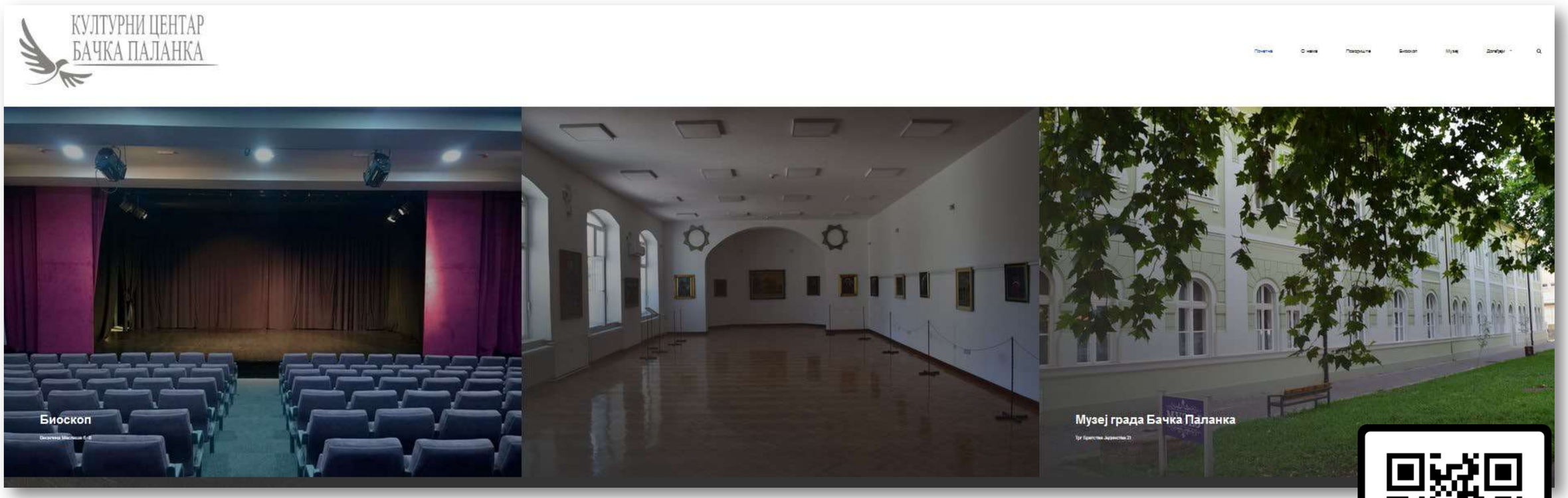
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Olja Na & Team

The Bačka Palanka Cultural Center was founded as a cultural institution by the decision of the Bačka Palanka Municipal Assembly in 1990 as a professional institution in the field of culture of special importance and interest. From the very beginning, this institution occupied a prominent place in the cultural life of our municipality.

The Bačka Palanka Cultural Center launched a series of events, activities and manifestations that contributed to the affirmation and better quality of life in our environment: we will only mention the traditional manifestations Blues-Jazz-Rock, Theater Autumn and Theater Spring, as well as participation in the Night of the Museum event.

The cultural center in Bačka Palanka provides its citizens with a variety of content. Within it, there is a city cinema where film screenings of recent films and performances by theater troupes are held. Also, the Gallery of the Cultural Center exhibits the works of renowned painters every day, and concerts are held.



SCAN ME



Presentation link: https://kcbp.rs/

Contact: kulturnicentarbp@gmail.com

THE IMPORTANCE OF EDUCATION AND CREATIVITY FOR YOUNG STUDENTS

Author: Prof. Dr. Anuja Malik

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THE IMPORTANCE OF EDUCATION AND CREATIVITY FOR YOUNG STUDENTS

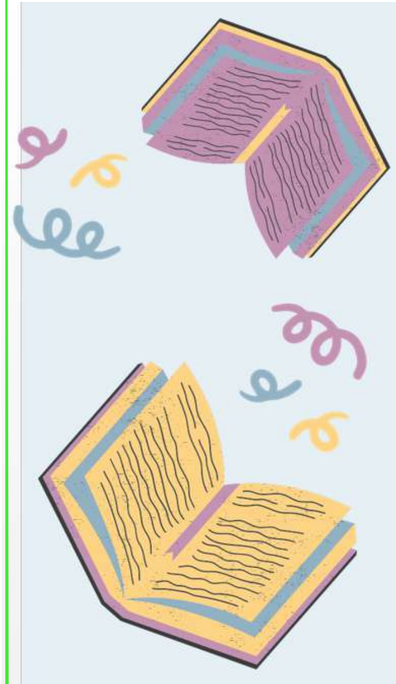
Knowing and understanding the importance of education and creativity in young students has a profound effect on their adulthood. The benefits of instilling a love for learning and creative endeavors early in life are numerous, and the sooner we recognize this, the better our children's futures will be.



IMPORTANCE OF EDUCATION: OPENING NEW HORIZONS



- *Allows youngsters to gain knowledge, develop critical thinking skills, and become aware of the world around them.*
- *Alleviates socioeconomic barriers, offering a level playing field where anyone can learn and grow.*
- *Provides the flexibility to learn at one's own pace, irregardless of location or time constraints.*



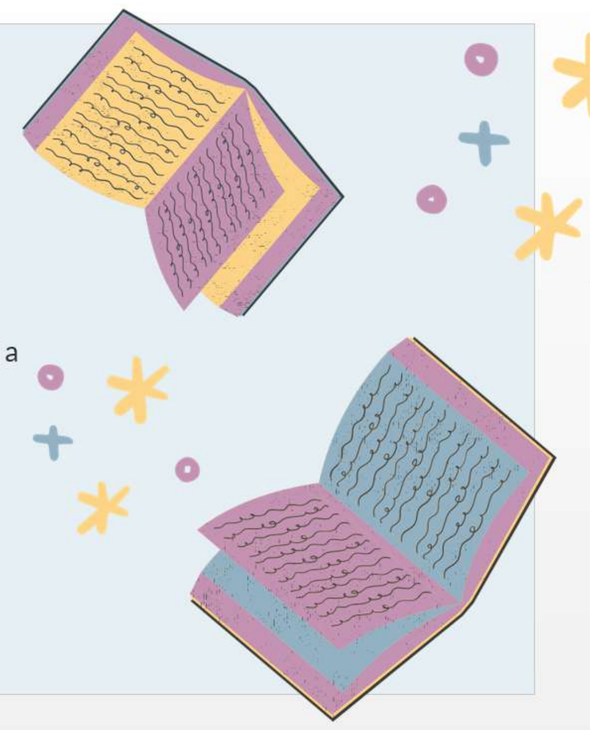
THE HARMONY OF EDUCATION AND CREATIVITY: UNLEASHING POTENTIALS

The education system should aim to foster creativity, elevating students' potential. Creativity empowers students to think out of the box, enabling them to approach problems from novel perspectives. It enhances their flexibility, adaptability, and resilience, thereby preparing them for the rapidly changing world.

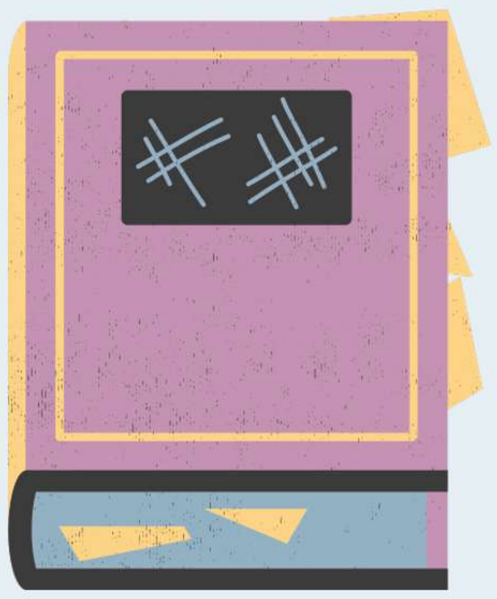
THE POWER DUO: EDUCATION AND CREATIVITY

What happens when education meets creativity? Here's the product - a versatile, resilient, and innovative young student.
When creativity is combined with a quality education, students learn how to adapt, innovate, and tackle challenges strategically. They experience the joy of learning, are more driven to explore new areas, and develop a continuous thirst for knowledge and understanding, certainly the perfect recipe for success.

FOSTERING SELF-EXPRESSION AND CONFIDENCE



Creativity and education go hand-in-hand to build a child's self-expression. Teaching kids to articulate their thoughts, feelings, and ideas confidently is integral to their development.
A system that values creativity promotes risk-taking and curiosity, which leads to confidence in their abilities.



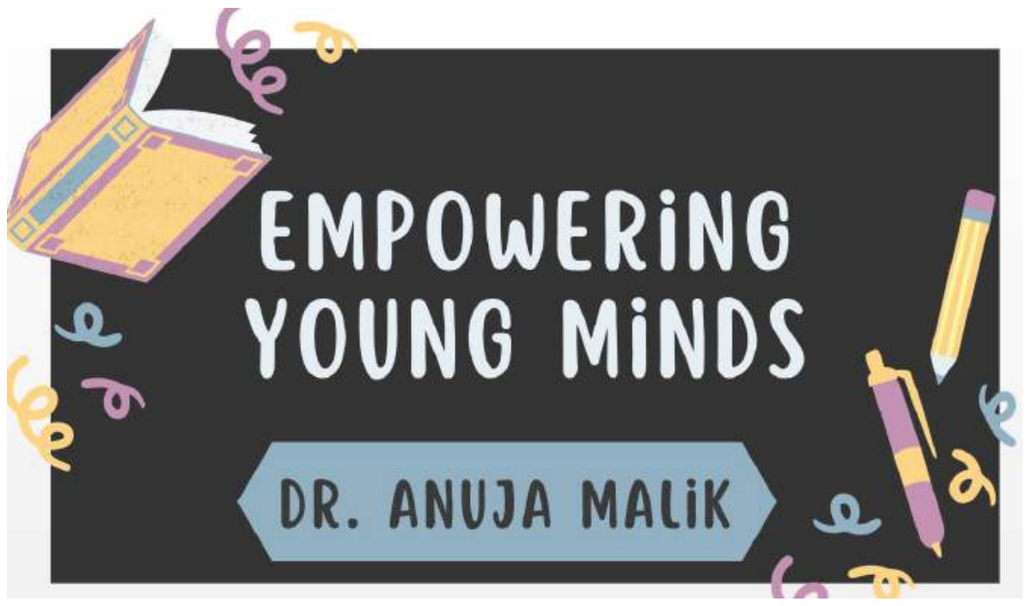
THE SOCIAL IMPACT

How can creativity in education influence the broader social fabric, you ask?
Well, it enhances cooperation, tolerance, and empathy among students. It paves the way for better interpersonal relationships and an inclusive society.
To sum up, the importance of education and creativity for young students cannot be overstated. It's crucial for their personal growth and helps prepare them to succeed in today's dynamic, interconnected world.

EDUCATION AND CREATIVITY - A STEP TOWARDS A BRIGHTER FUTURE

The significance of both education and creativity for young students cannot be overstated. Not only does it equip young minds with necessary life skills, but it also harnesses their unique potentials. The amalgamation of online or free education and creativity is a window for immeasurable opportunities that young students ought to embrace.
Meta-description: Discover the pivotal role of education and creativity in the lives of young students. Uncover how their intersection can shape a brighter future for our young generation.





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ANALYSIS OF ENVIRONMENTAL COSTS IN THE ELECTRICAL EQUIPMENT INDUSTRY

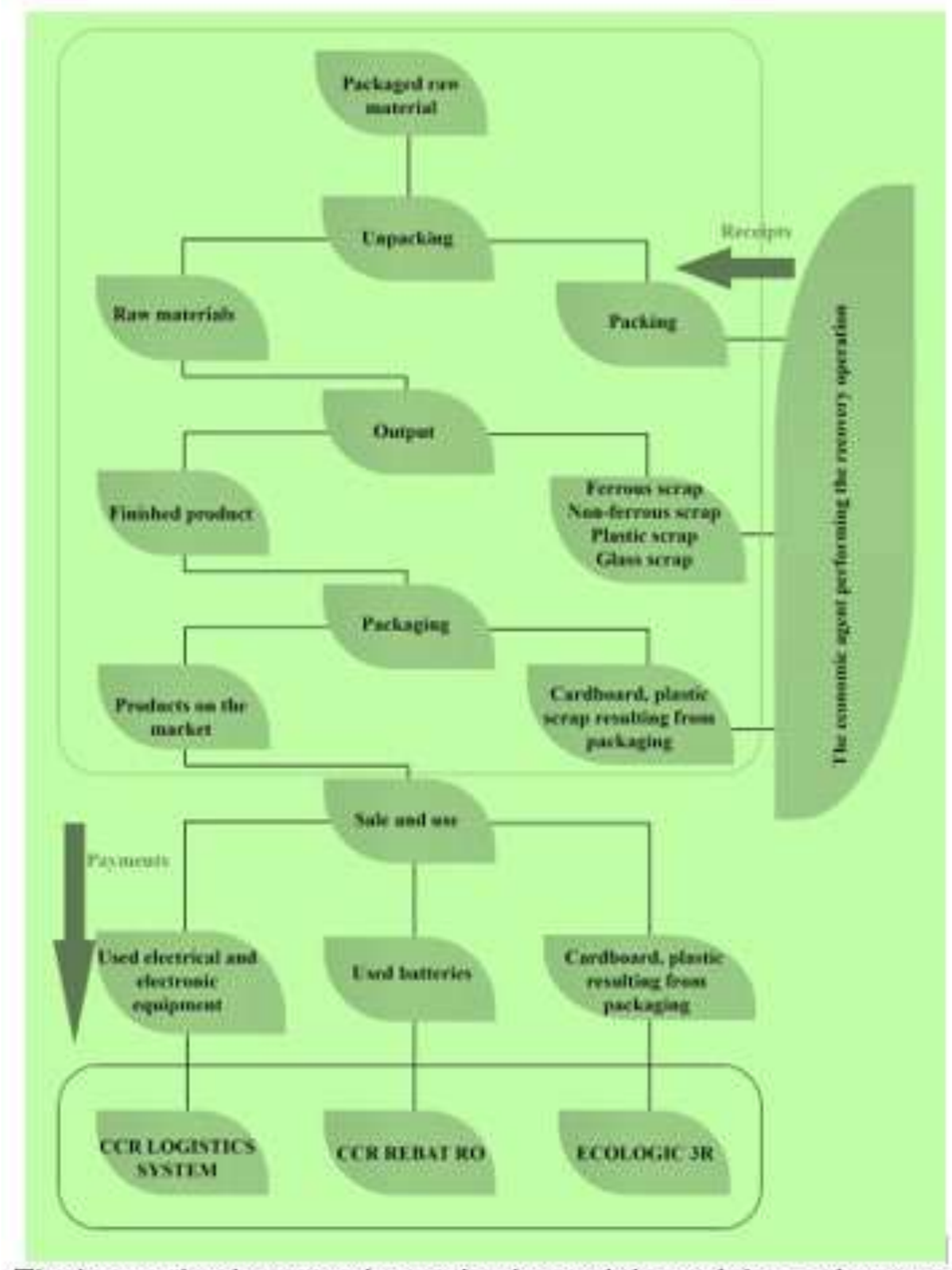
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Student project

Authors: Iulia NISTORA, Gavriela RĂDUȚIU, Lavinia TÎRNĂVEAN, Flavia VIERU
Menthors: Mihaela ȘTEFAN, Ioana FĂRCEAN



The environmental costs represent those costs with the actions taken by an economic entity and by third parties on behalf of an economic entity include prevent, reduce or repair the damage caused to the environment resulting from operational activities. These costs include: waste storage and disposal, soil protection, underground and surface water protection, clean air and climate protection, noise reduction, biodiversity and landscape protection Another international organization, UNCTAD, states that these costs encompass expenses related to measures necessary for managing the environmental impact of a company's activities responsibly, along with other costs driven by the company's environmental goals and regulatory requirements. The research analyzes the dependence between the resulting waste and the volume of production by category. The usefulness of determining these dependencies leads to the identification of product categories with significant influence on environmental expenses.



The interaction between the production activity and the environment

According to a dataset on waste types and fees paid to the main processors over a 24-month period, of which only a part is presented in tabular form, the average costs related to electrical and electronic equipment placed on the market have been calculated. Thus, the average cost for batteries and accumulators placed on the market was obtained to be 0.10 EUR/kg and 1.52 EUR/kg.

Waste generating categories

Interval [month]	Electrical and electronic equipment introduced to the market [kg]	Batteries and accumulators placed on the market [kg]	Cardboard, plastic introduced on the market [kg]	The amount paid to CCR Logistic [euro]	Amount paid CCR rebate [euro]	Amount paid Ecologic 3R [euro]	Total amount paid [euro]
1	947.00	240.00	14.00	908.32	0.00	6.55	914.87
2	1,379.00	0.00	24.00	0.00	0.00	11.45	11.45
3	2,123.00	0.00	11.20	0.00	0.00	17.81	17.81
4	1,513.00	170.00	4.30	908.73	0.00	9.67	918.41
5	1,450.00	0.00	6.00	0.00	0.00	0.00	0.00
6	1,211.00	0.00	13.00	0.00	0.00	8.20	8.20
7	1,017.00	0.00	13.00	852.56	0.00	10.82	863.38
8	816.00	0.00	13.00	0.00	0.00	17.46	17.46
9	912.00	0.00	12.80	0.00	0.00	17.46	17.46
10	1,299.00	0.00	11.00	560.68	0.00	17.23	577.91
11	1,532.00	0.00	11.00	0.00	0.00	14.91	14.91
12	1,937.00	0.00	8.40	0.00	382.98	2.55	385.53

Within the entity, there are waste materials that are recovered (aluminum scraps, shavings, scrap iron) through a contract concluded with the main recyclers. Thus, for part of the analyzed period, the situation of these waste materials, as well as the recovered amounts, is presented in tabular form.

Waste situation and recovered amounts

Month	Electrical and electronic equipment introduced on the market [kg]	Aluminum scrap		Aluminum chip waste		Scrap metal		Total amount recovered [euro]
		[kg]	[eur]	[kg]	[eur]	[kg]	[eur]	
1	947.00	160.00	156.60	30.00	12.77	140.00	13.40	182.77
2	1,379.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	2,123.00	0.00	0.00	55.00	25.74	0.00	0.00	25.74
4	1,513.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	1,450.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	1,211.00	325.00	331.91	100.00	46.81	35.00	2.23	380.96
7	1,017.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	816.00	0.00	0.00	100.00	53.19	0.00	0.00	53.19
9	912.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	1,299.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	1,532.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	1,937.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

This project analyzes environmental costs in the electrical equipment industry, highlighting the role of environmental accounting as a strategic tool for the effective management of economic entities. This allows the outline of managerial strategies for improving production technologies, optimizing products and reducing the impact on the environment.

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Negocieri transatlantice. Cooperarea româno – americană în educație, cultură și arte
Transatlantic Negotiations. Romanian - American Cooperation in Education, Culture, and Arts

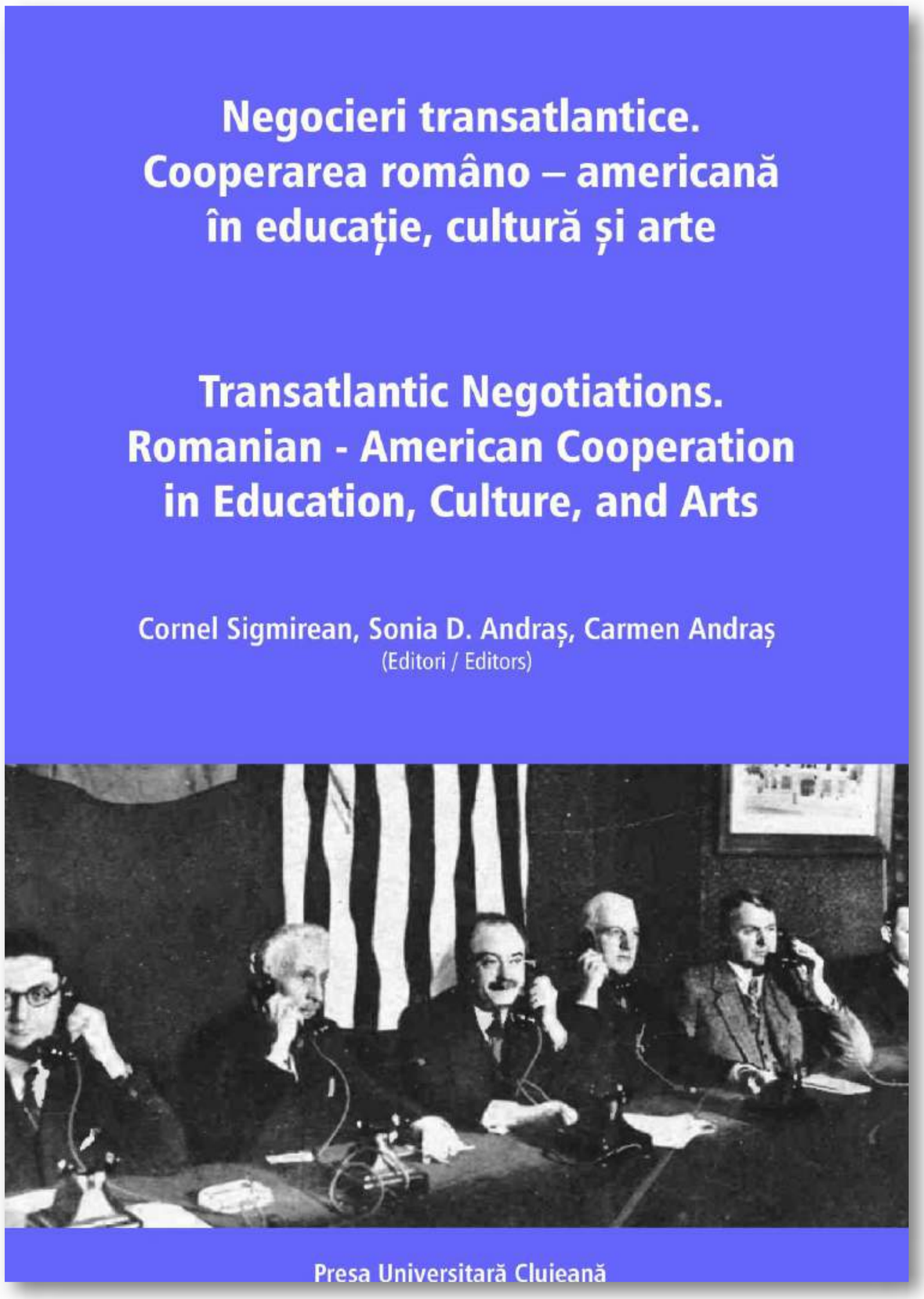
Editors: Cornel Sigmirean, Sonia D. Andraș, Carmen Andraș
Cluj Napoca: Editura Presa Universitară Clujeană, 2024, 284 pp.
ISBN 978-606-37-2356-8. CNCS A.

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The volume **Negocieri transatlantice. Cooperarea româno – americană în educație, cultură și arte / Transatlantic Negotiations: Romanian-American Cooperation in Education, Culture, and Arts** explores the intricate intellectual, scientific, and cultural pathways that have influenced Romanian-American relations.

It highlights foundational elements fostered through scholarships, academic exchanges, initiatives of philanthropic institutions and humanitarian organizations in America, the impact of the American War correspondents' representations on mutual knowledge, Romanian personalities in American archives, museums and libraries, the portrayal of the American automotive industry in Romanian press, the relations between the YMCA/ACT and the National Legionary State, emphasizing the complexity of these relations.

The approach delves into the complex cultural and artistic interactions between Romania and the United States, shedding light on significant individuals, impactful initiatives, noteworthy events, and various organizations instrumental in nurturing this dialogue.



The authors have explored how American cultural frameworks, identity constructs, and gender paradigms influence perceptions and interactions with Romania. Transatlantic Negotiations studies the dynamic flow of ideas and the intricate cultural exchanges that have given rise to various mutual representations.

It describes the political and identity implications of Romanian-American relations. It underscores the exchange of ideas, ideologies, and policies between the two nations, accentuating the significance of Romanian scholarly, cultural, and artistic contributions within the United States.

It recognizes the influential individuals involved in these interactions and the noteworthy literary and artistic movements they inspired. The multi-perspectival, interdisciplinary and comparative methodology thus highlights the continuity and discontinuity in Romanian-American relations from the birth of Greater Romania to the present day.

It encourages cultivating intercultural and international dialogue, enhancing openness in Romanian-American relations. Emphasizing a dedication to diverse methodologies that span disciplines, cultures, and perspectives, this work invites a comprehensive exploration of the intricate relationships between these two nations.

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The analysis of the "Japanese Yen" currency in relation to the Special Drawing Rights (SDR) basket

Student project

Authors: **Cristina SELEA**

Coordinator: **Ioana FĂRCEAN**

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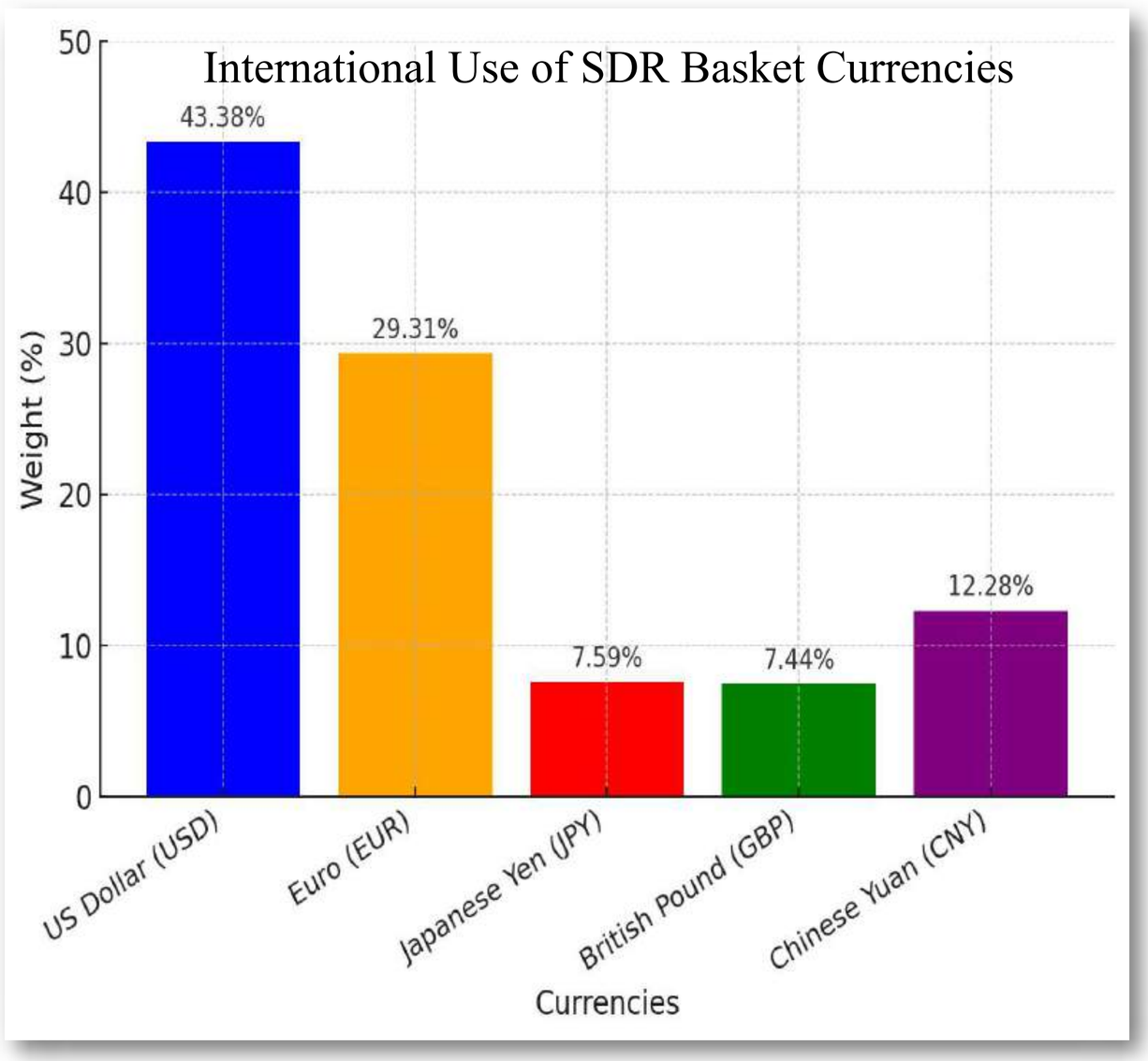
The Special Drawing Rights (SDR) basket is a set of currencies used by the International Monetary Fund (IMF) as a global unit of account. The Special Drawing Rights (SDR) basket includes five key currencies, chosen for their significance in global trade and finance: the US dollar (USD), Euro (EUR), Chinese Yuan (CNY), Japanese Yen (JPY), and British Pound (GBP).

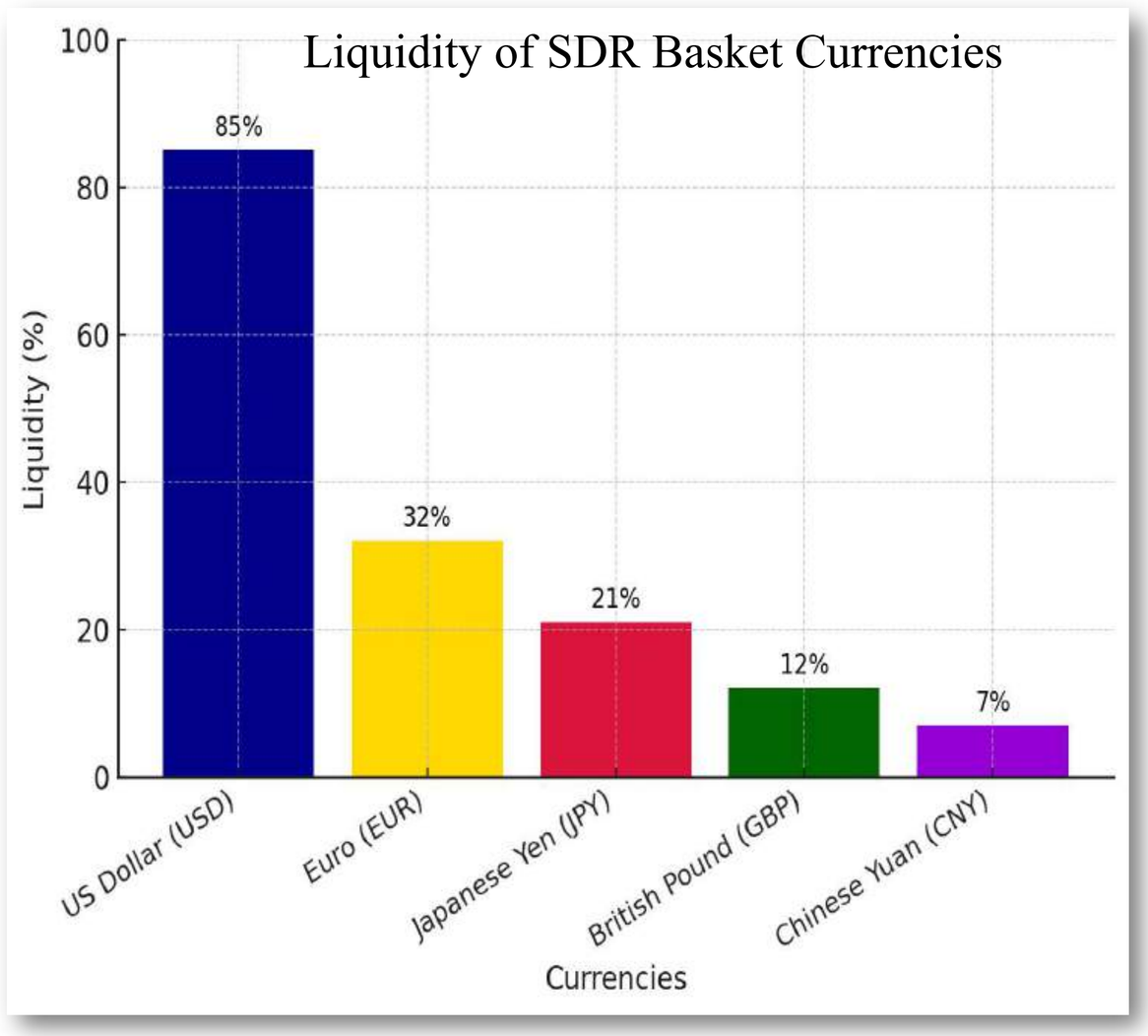
The Yen (¥), Japan's official currency, was introduced during the Meiji Restoration and has evolved significantly with the country's rapid modernization. According to the most recent data provided to the general public by the IMF, the Japanese Yen has a weight of 7.59% in the Special Drawing Rights (SDR) basket, which reflects his importance in the global economy, its use in international transactions and its high degree of liquidity.



The Yen ranks third in terms of liquidity in global financial markets (21%), after the USD and EUR, but is more liquid than the GBP and CNY.

The fluctuations of the Japanese Yen have significant implications for the global economy and international trade, influencing economic stability and the dynamics of trade transactions. So that currency came to be considered a currency of refuge in times of global economic uncertainty.





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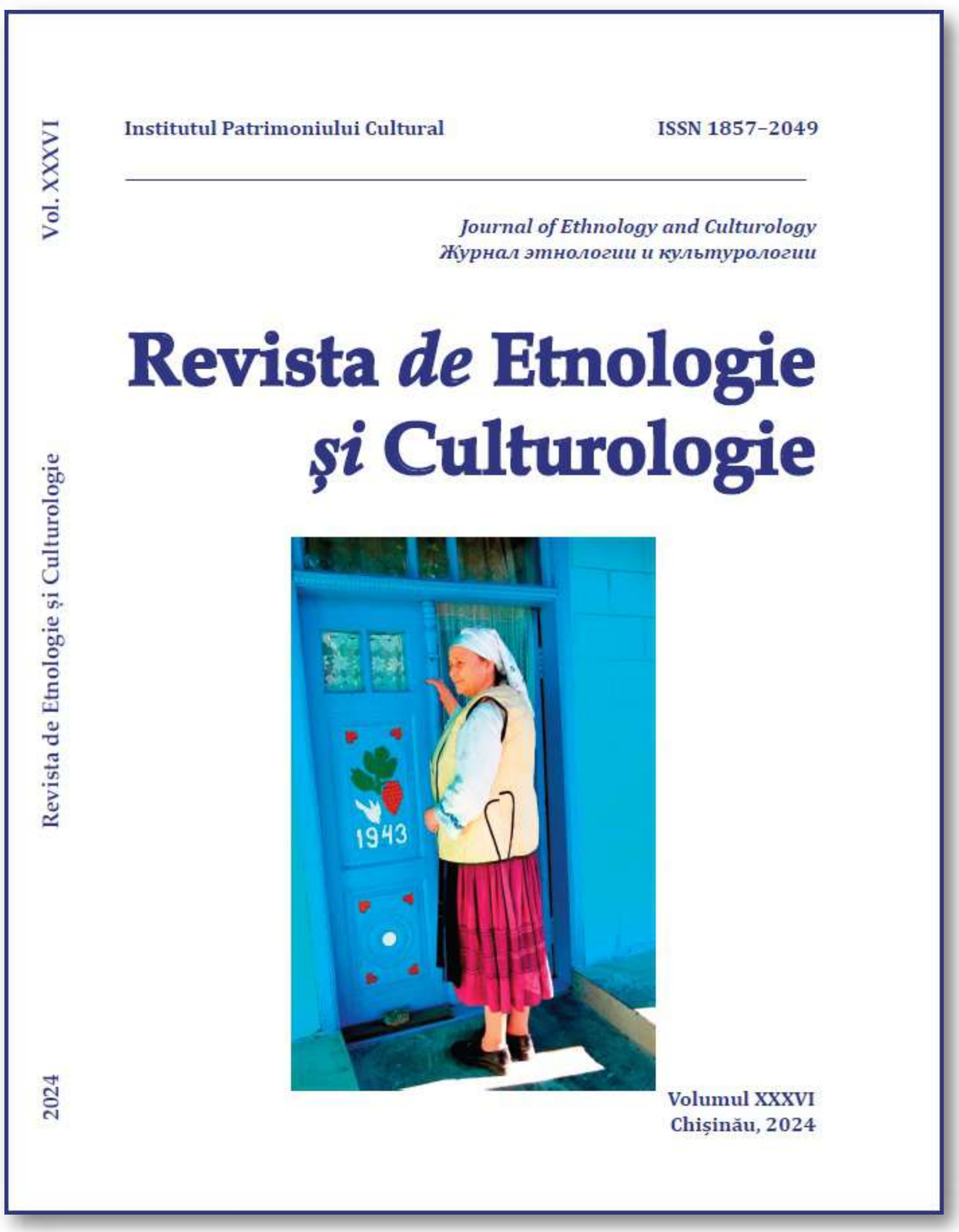
„Travelers and Travels – Historical-Cultural and Spiritual Forces„

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Scientific Article published in a Journal indexed in International Databases

Authors:
Gherghina BODA, Dumitru-Cătălin ROGOJANU

Revista de Etnologie i Culturologie
Journal of Ethnology and Culturologhy
vol. XXXVI/2024, Chişinău, pp. 13-18
ISSN: 1857-2049, E-ISSN: 2537-6152
https://doi.org/10.52603/rec.2024.36.02
https://ibn.idsi.md/vizualizare_articol/218719



Description

Ever since his appearance, man has been driven by various needs to move beyond his comfort zone, his actions and activities often requiring him to travel around. Thus, he becomes a traveler in search of food, living space, conquest of new territories, curiosity, pilgrimages, pleasure, relaxation, and entertainment. If the testimonies from Antiquity about journeys and travelers are quite brief and sporadic, over time they have multiplied and become valuable historical sources, especially through travel diaries or descriptions of events, such as armed confrontations and their movement around different areas of the world. Thus, people have obtained information about spaces other than their homelands, about cultures, traditions, customs, rites and rituals, religions, monuments and works of art, etc. of Others, compared to their own. The individual is excited to travel, to make direct contact with other peoples and communities, with their famous monuments, which he assimilates in a subjective way, psychologizes them and reinvests them with new values, thus bringing his own contribution to the process of heritagization of some special objects, outstanding products of human creativity.

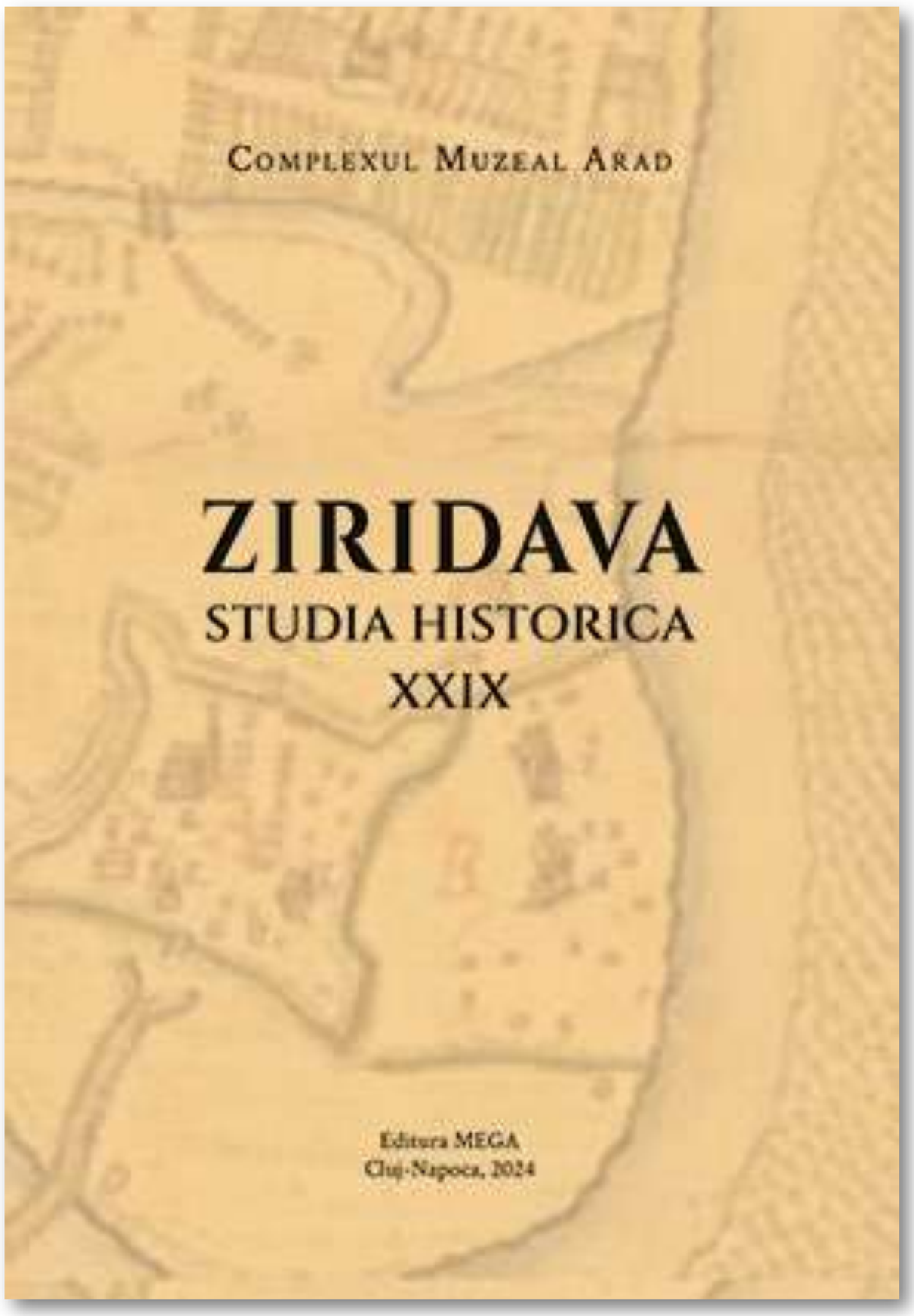
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Tel: +40736950204/+40762579100

”Istoricul Baroulului Hunedoara”
”History of the Hunedoara Bar”

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Scientific Article published in a Journal indexed in International Databases

Author: **Gherghina BODA**



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https://www.doi.org/10.70654/ZIRIDAVA.2024.11
https://www.ceeol.com/search/journal-detail?id=2938

Description

The legal phenomenon has accompanied human society at all stages of its development, which has required the establishment of specific bodies to regulate people’s misconduct, as well as punitive means associated with each violation of social rules. Each historical period is characterized by a legal system that met the requirements of the time and that, like society, has been constantly perfected and improved. Bars appeared in the second period of the 19th century, first in Bucharest, then in Iași, Dolj-Jiu, and in Deva in 1923. The lawyers' contribution to the Hunedoara society was not limited only to the field of justice, but also to participate in some events of a national nature, such as the Great Union. They have become true symbols in which there are "values and hopes, ideals and faith, unity and dignity", common struggle with the other citizens of the country, demonstrating a mentality professional life, solid traditions of the legal profession and the enlightened spirit of the times that strongly demanded the ideal of national unification.

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„The symbiosis between the contemporary museum, emotional and experiential tourism”

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Scientific Article published in a Journal indexed in International Databases

Author:

Dumitru-Cătălin ROGOJANU

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Description

The extremely rapid transformations that human society has experienced in recent decades have entailed changes in all fields and institutions, which have been forced to accept them in order to ensure their own survival. The museum, as a cultural institution preserving the national heritage, has entered this whirlwind of paradigm changes precisely to face an increasingly fierce competition in the cultural field. It has expanded its characteristics by also adopting methods of tourism, particularly from the experiential tourism and the emotional tourism, that are traveler/visitor-oriented so as to meet their cultural needs through the most sophisticated means of cultural mediation that incite curiosity and emotions, as well as to involve him/her in actions that will transform him/ her from spectator to actor. The relationship between the museum and tourism is relevant for the post-modern period, characterized by great mobility both nationally and especially internationally. The contemporary museum permanently adopts and creates means of heritage mediation. If tourism provides the traveler with a wide range of cultural destinations, the museum, through its events, tries to absorb as many tourists as possible. In this case the relationship between these two institutions becoming a symbiotic one, with benefits on both sides, but the main winner remains the traveler/visitor, who, if the museum has achieved its goal, leaves more cognitively and emotionally enriched, with the desire to. return

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MANFACTURING PROCESSES OF MICRO-ELECTRO-MECHANICAL-SYSTEMS WITH APPLICATIONS IN MEDICINE

Book / ISBN *978-973-720-903-0*

Author: Dr. ing. MARINESCU MARIA-ROXANA

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Technology represents the processes, methods and operations used to obtain a particular product. Microelectronics and nanoelectronics are two areas with a significant contribution to technological progress.

The research-development-innovation activities within the two fields, have produced valuable results of reference for the current work: micro-electro-mechanical systems (MEMS).

MEMS are miniaturised systems with small dimensions and weights that can be easily integrated into various commercial applications. These small aids with high technology are increasingly present in our daily lives. Innovative structures allow us to control the environment better and help us increase the energy efficiency of devices. All the applications in the current era, Industry 4.0 (the fourth industrial revolution), integrate sensing devices, data processing and transmission, and actuation devices.



Dr. ing. Maria-Roxana MARINESCU este absolventă a Facultății Ingineria și Managementul Sistemelor Tehnologice a Universității Politehnica București în anul 2012. A urmat apoi două programe de masterat (2012-2014):

- Master în domeniul „Inginerie și Management", Programul de studii: „Calitate în Inginerie și Managementul Afacerilor", Universitatea Politehnica din București, Facultatea Ingineria și Managementul Sistemelor Tehnologice;
- Master în domeniul „Științe Administrative", Programul de studii: „Administrație Publică Europeană", Universitatea Lucian Blaga din Sibiu, Facultatea de Drept.

În anul 2021 a obținut titlul de doctor (*distincția Summa Cum Laude*) în domeniul Inginerie Industrială, la Facultatea Inginerie Industrială și Robotică, Universitatea Politehnica din București.

În prezent este cercetător științific în cadrul Institutului Național de Cercetare-Dezvoltare pentru Microtehnologie – IMT București.

Activitatea profesională s-a concretizat până în prezent prin realizarea și publicarea a 20 de lucrări, dintre care 10 ca prim autor, patru lucrări publicate în volumele unor conferințe indexate ISI, cinci în reviste indexate ISI, două în volumele unor conferințe și nouă în reviste indexate în alte baze de date (EBSCO, ProQuest, Google Scholar etc.). De asemenea, în calitate de coautor, a publicat trei tratate de specialitate.

Sunt de menționat mai mult de 20 de participări la conferințe internaționale la secțiunea de postere sau lucrări apărute în publicații sub forma *Book of abstracts*.

Prin participarea la conferințe și saloane de invenții în țară și străinătate, a obținut în calitate de autor principal sau coautor un număr impresionant de peste 60 de premii.

Expertiza autoarei acoperă experiența în fabricarea senzorilor de umiditate – prototipuri: pregătirea materialului nanocompozit pentru straturi sensibile; măsurători de rezistență electrică; măsurători ale depunerilor de strat sensibil și ale senzorului de umiditate; caracterizarea mecanică a senzorilor. Aceste cunoștințe au fost dezvoltate prin participarea în cadrul diverselor proiecte de cercetare-dezvoltare. În cadrul acestor cercetări, a depus 40 cereri de brevet în calitate de coautor.

ISBN 978-973-720-903-0

PROCESE DE FABRICAȚIE A SISTEMELOR MICRO-ELECTRO-MECANICE CU APLICAȚII ÎN MEDICINĂ

Maria-Roxana MARINESCU

Editura AGIR

Studii și cercetări

Within the work entitled "Manufacturing processes of micro-electro-mechanical systems with applications in medicine", a "lab-on-a-chip" type device was designed, modelled, simulated and manufactured, with the help of which it can be identified and measured blood T lymphocyte concentrations.

Therefore, the work can be included in the field of bioengineering. In this branch of science, concepts are developed from the molecular level to the systemic level, with the role of developing new biological products, materials and medical devices for the diagnosis, prevention and treatment of diseases, as is the case of the device resulting from this work. The field of medical engineering is closely related to the following subfields: biomechanics, biomaterials, electronics, mechatronics, biophysics, medical imaging, telemedicine, nanotechnology, cellular engineering and genetics; therefore, it is a field with evident multidisciplinary character.

The micro-electro-mechanical devices in the present work were made within the National Institute for Research and Development in Microtechnologies – IMT Bucharest.

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Tehnici de cercetare și scriere academică

Authors: **Angela Solcan, Monica Vlad**

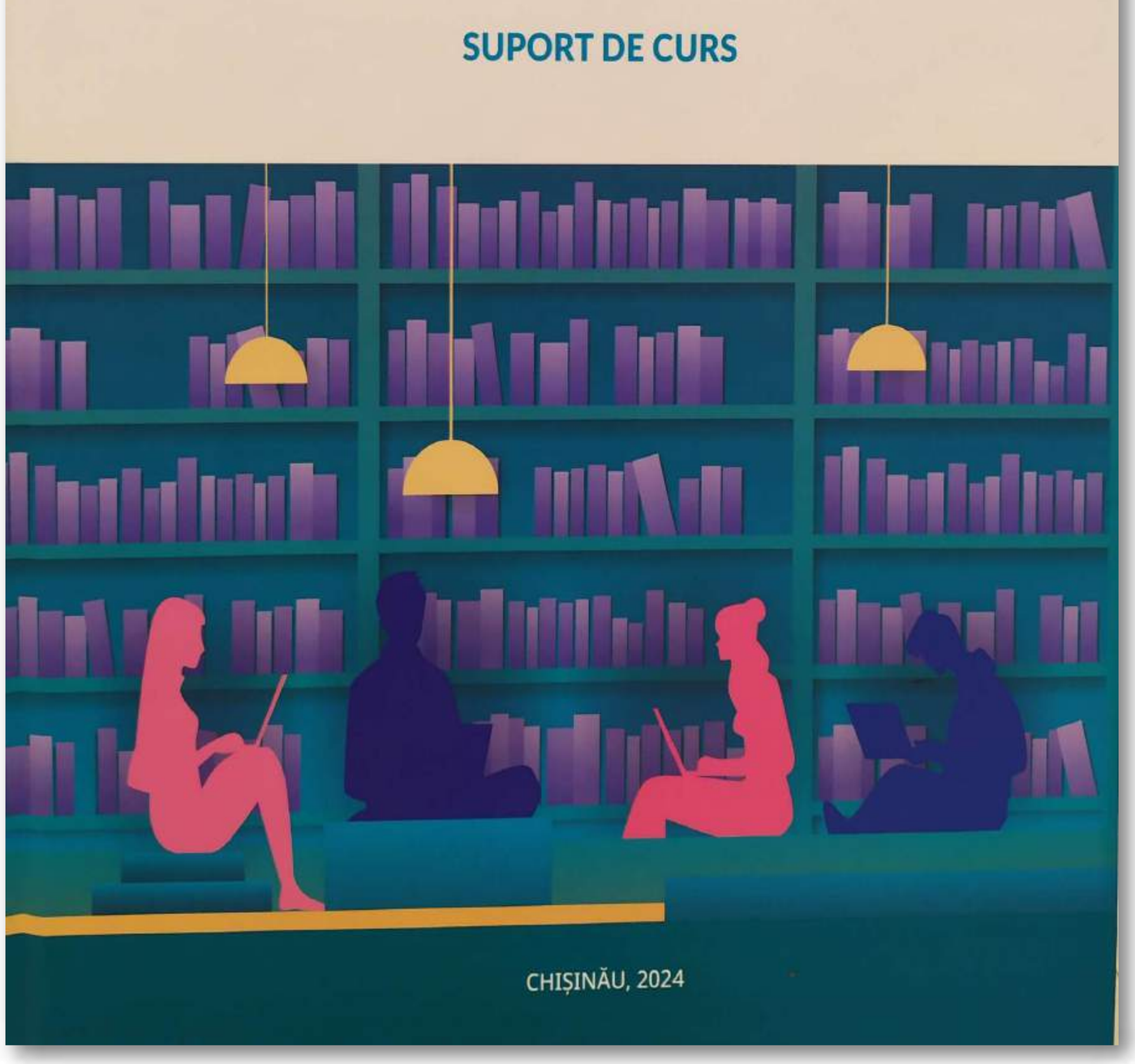
E

Research Techniques and Academic Writing, authored by Angela Solcan and Monica Vlad, is a comprehensive course guide designed for master's students specializing in the didactics of non-linguistic disciplines in English, French, or Romanian. This book provides essential guidance on conducting academic research and writing a well-structured dissertation while adhering to scholarly standards.

The book systematically covers key aspects of academic writing, including formulating research problems, developing hypotheses, and identifying and operationalizing the research corpus. It offers practical insights into selecting and structuring research material effectively to support a coherent argument.

A significant focus is placed on dissertation writing, with detailed explanations on crafting introductions and conclusions, structuring theoretical chapters, and employing proper citation techniques. Students will find valuable strategies for quoting, paraphrasing, and referencing sources while ensuring clarity and academic integrity. The book also discusses bibliographic formatting, citation styles, and typographic constraints.

.



To promote ethical research practices, the authors explore issues related to plagiarism and introduce anti-plagiarism software, offering practical solutions for maintaining originality in academic work. Additionally, a dedicated section on dissertation defense provides guidelines on structuring PowerPoint presentations and mastering oral presentation techniques.

By blending theoretical principles with practical applications, *Research Techniques and Academic Writing* serves as an essential resource for students seeking to develop strong research and academic writing skills while meeting scholarly and ethical requirements.

Contact: solcan.angela@upsc.md

Valori postmoderne în învățământul primar: dezvoltarea profesională a învățătorilor în raport cu educația lingvistică a elevilor / Postmodern values in primary education: teachers' professional development in relation to students' language education

E

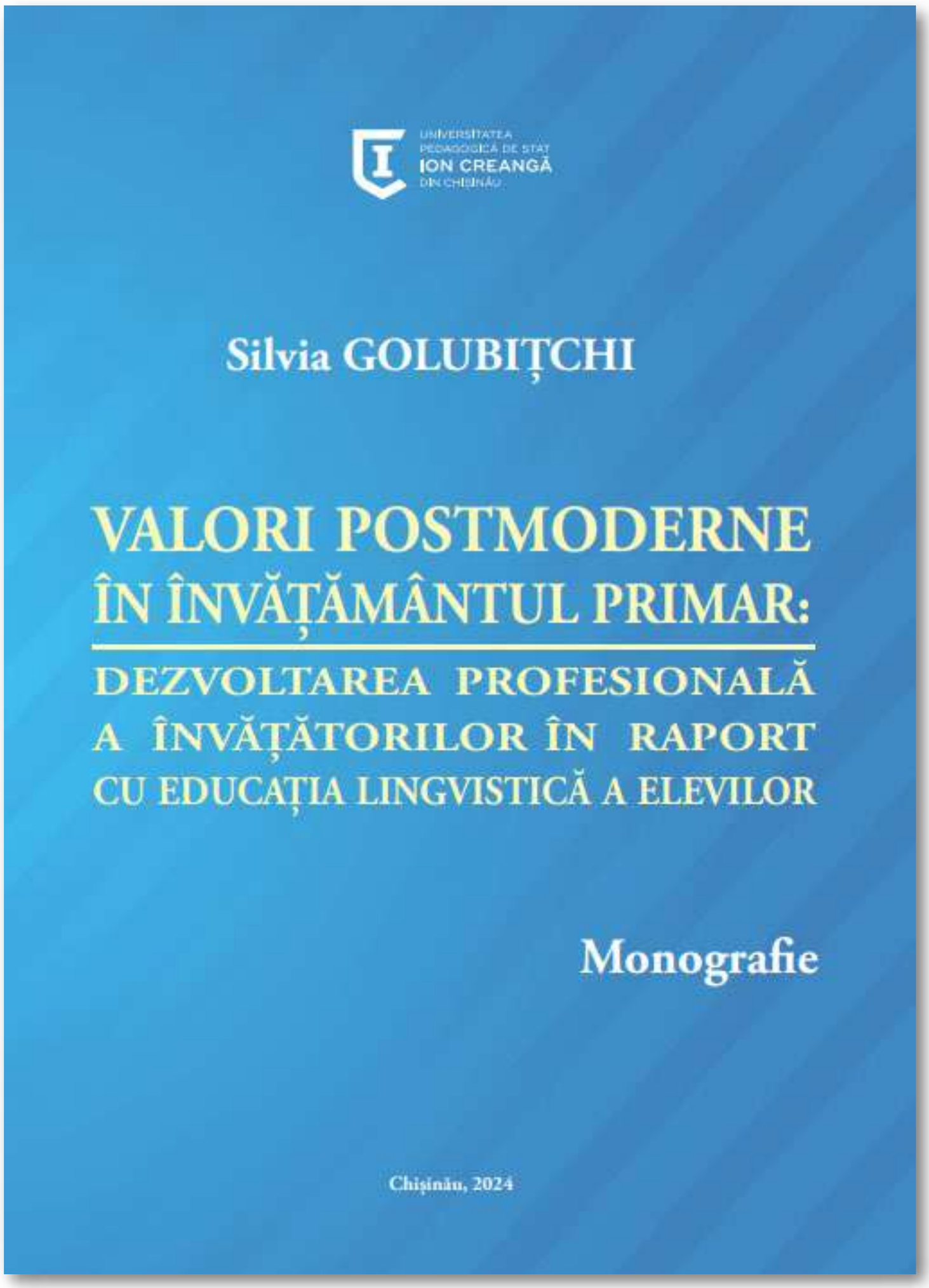
Author: Silvia Golubițchi

This monograph presents an analysis of how postmodern approaches influence the training and professional development of teachers, particularly in the context of students' linguistic education. It is structured around the following key concepts: postmodern values, primary education, professional development, students' linguistic education, relationships, practical wisdom and the cultivation of phronesis.

In this study, we aim to identify, within the general framework of pedagogical mentality and the specific framework of primary education, the phenomenon that characterizes and determines the essence of teachers' professional development from a postmodern perspective-namely, their practical wisdom in their professional activity. To achieve this, we have engaged in discussions about the specificities of primary education in light of changes in dimensions, processes, criteria, connections, reconfigurations, content, integration, and more. Additionally, we have addressed the pragmatic and communicative dimensions of linguistic education, as well as multifunctional learning and professionalization from the perspective of its components, its polysemic nature, its effects in the classroom and its guiding principles.

A special focus is given to the issue of postmodern values and postmodernism as a factor of evolution and as one of the determining conditions. Differentiating between modernism and postmodernism requires identifying their defining features based on a comparative approach that highlights their general points of reference.

These theoretical approaches, alongside other similar perspectives from various branches of educational sciences, seek to highlight the demands of the new educational orientation in the evolving landscape of professional activity. The interpretation is examined from multiple perspectives-philosophical, psychological, anthropological, praxeological, relational, logical, etc. Equally important is the exploration of the pedagogical characteristics of postmodernism, which are described in the paper.



The vision we propose, through the lens of postmodern values in the process of professional development, aims to recover, at least in part, the real complexity of the pedagogical phenomenon of teachers' practical wisdom within the real context of their attitudes.

Bringing together multiple domains within the same study, as is actually recommended in educational sciences, even when addressing issues from a specific field, might initially seem risky. However, from our chosen perspective the one of postmodern values a number of highly significant correlations are absolutely necessary.

We express our belief that this monograph can serve as a valuable resource for both core and elective courses for students, master and doctoral candidates, as well as students from pedagogical colleges. Additionally, it can support practitioners teaching staff and school administrators in their continuous professional development.

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ANIMALS, ILLUSTRATED ENCYCLOPAEDIA, 3 VOLUMES

Authors: Tudor Cozari , Mihai Cîrlig

E

Aim:
Study at local, regional and European level on about diversity, ecological and conservation status of animals was carried out.

Solution:
Expeditions to collect the original material and a photographic study of the animals (habitat, life cycle, degree of rarity, conservation status, ecology at local (Republic of Moldova), regional level (Ukraine, Romania) and partly European level (Bulgaria, Italy, Austria) have been

Advantages:
For the first time the illustrated encyclopedia – **ANIMALS. ILLUSTRATED ENCICLOPEDIA** (Vol. 3) was edited. This one contains data about 25 ANIMAL species from Europe, presented in over 1,200 original color images. During 5 years the author traveled across 20 000 km crossing Republic of Moldova, Ukraine, Romania, Bulgaria, Austria and Italy.

Impact:
Investigated and presented animals in the encyclopedia are protected species at European level, see the sources:

- **IUCN Red List** (Red List of International Union for Conservation of Nature)
- Concil Directive 79/409/EEC on the Conservation of Wild Birds; 1979/1981;
- **SPEC** (Species of European Conservation Concern);
- ConventionontheConservationofEuropeanWildlifeand natural habitats, **BERN 1979/1982**;
- Convention on the Conservation of Migratory Species of Wild Animals; **BONN, 1979/1983**







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Geografie, Republica Moldova și lumea contemporană

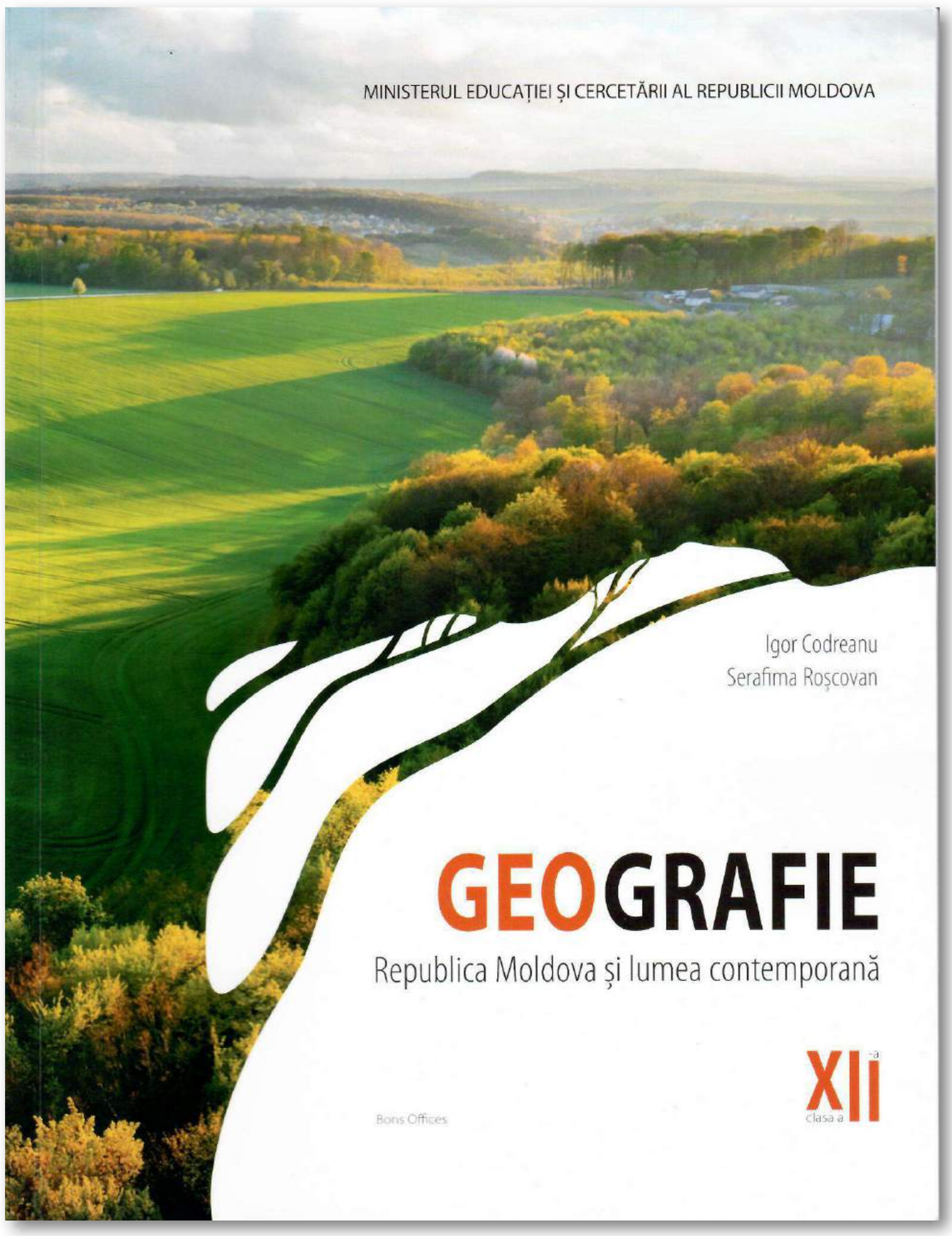
Geography, the Republic of Moldova and the contemporary world

Authors: Igor CODREANU, Serafima ROȘCOVAN

E

The school manual, developed for students studying in the twelfth grade, has the title „ Geography, the Republic of Moldova and the contemporary world”,
ISBN 978-5-36241-357-6, "Bons Offices" publishing-printing house, 2024.

The work includes extensive information about the problems of the Geographical Environment in the world and in the Republic of Moldova (Geografie, Republica Moldova și lumea contemporană), including about the quality, valorization and protection of the environment at the global, regional and local level, including about the social problems of the contemporary world. The manual includes contents related to the peculiarities and legalities of the Geographical Environment as an integrated system, the mutual relations between its components, the negative human impact and the consequences on the environment.



The competencies that form and deepen this work will prepare the future generation will be based on the accumulation of knowledge, the formation of skills and constructive attitudes to solve the most pressing problems of the environment and the contemporary world, with a view to a sustainable future.

Contact: **State Pedagogical University "Ion Creanga" from Chisinau, Republic of Moldova, Faculty of Geography, Department of Geography and Tourism, Igor Codreanu, Tel. +373-079538908, Email: codreanu.igor@upsc.md**

ELEMENTE DE bionică

Author: Eugenia Chiriac, coordonator științific - Liubomir Chiriac

E

Currently, both natural and real sciences have experienced an impetuous development that has materialized through transfers of ideas, concepts, applications from the field of biology to that of technique and technology. At the same time, some interference sciences have also emerged, such as: biochemistry, biophysics, bioengineering, biochemistry, biocybernetics, biomathematics, etc. These sciences also include bionics, a relatively young discipline that draws inspiration from the structures, functions and processes characteristic of living organisms, in order to transpose them into practice, as technical or technological solutions. This requires learning strategies that integrate knowledge and research skills from biology, along with other disciplines, which complement each other and are based on rediscovery and reinvention, originality and creativity in thinking, aiming at the conscious and efficient acquisition of notions from the disciplines studied, and the practical application of modeling skills of structures and processes characteristic of living beings.



The manual contains examples of bionic research of flora and fauna from the most renowned research centers and universities in the world that have had and continue to have an impact on the progress of human development. At the same time, the work aims to: familiarize students with the achievements in the field of bionics, based on the interaction of biological disciplines and modern technologies, as well as with the achievements of bionics that are increasingly used in various fields of human activity.

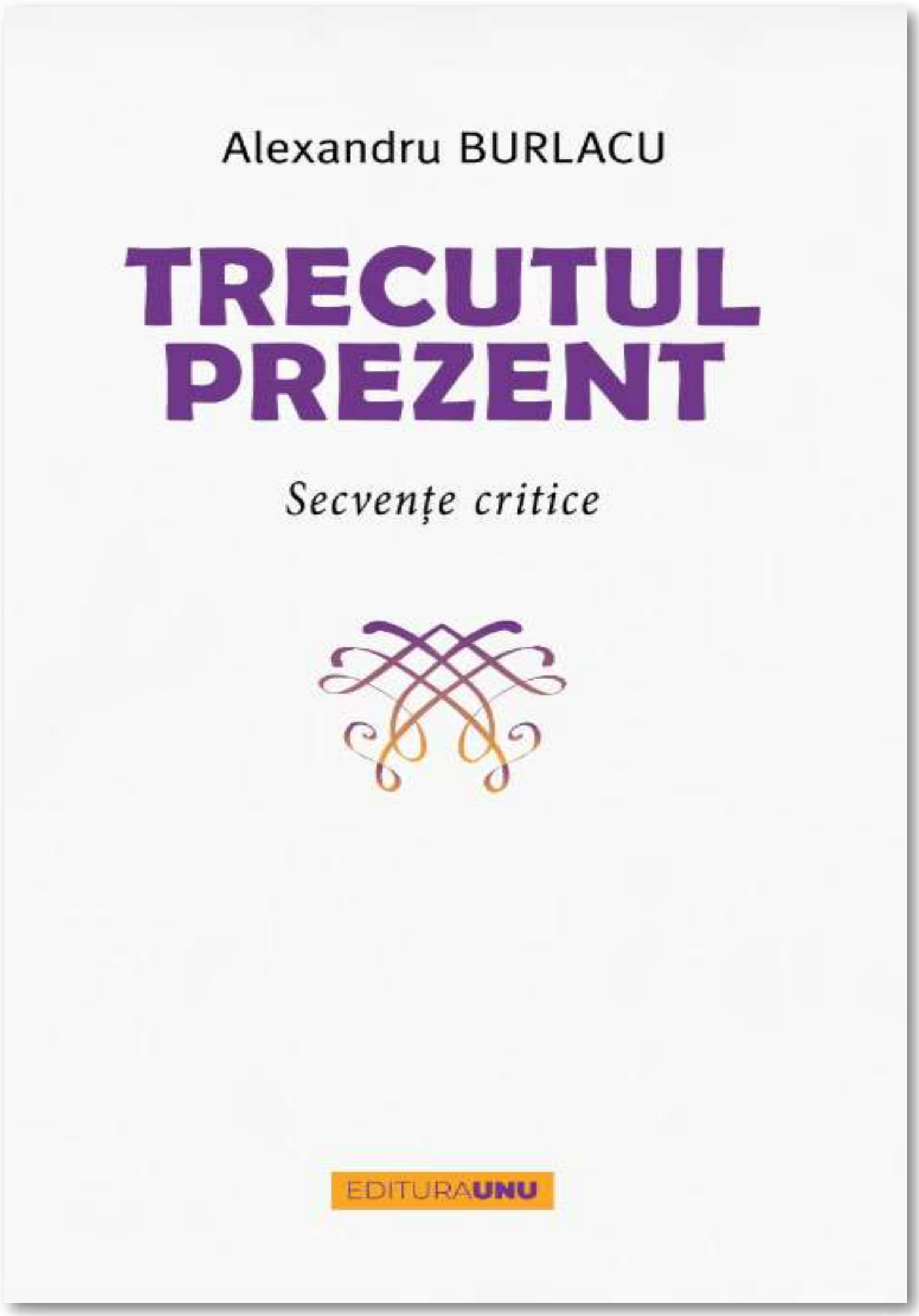
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UNIVERSITATEA PEDAGOGICĂ DE STAT ION CREANGĂ DIN CHIȘINĂU

TRECUTUL PREZENT SECVENȚE CRITICE

E

BURLACU ALEXANDRU



Trecutul prezent însumează aproape patru decenii de preocupări literare ale profesorului de teorie și istorie literară și criticului Alexandru Burlacu. Ambele paliere ale activității sale se revăd, într-o interdependență benefică, în textele incluse în această carte. Criticul literar, sistematizator și catalogator de perioade, procese, fenomene și nume literare, găsește în teorie și istoria literaturii instrumente care îi oferă perspective inedite și sprijinul pentru o argumentare solidă a punctelor sale de vedere. Este o cale pentru realizarea unor „texistențe" memorabile.

The past and present sum up almost four decades of literary preoccupations of the professor of literary theory and history and critic Alexandru Burlacu. Both levels of his activity are seen again, in a beneficial interdependence, in the texts included in this book. The literary critic, systematizer and cataloger of periods, processes, phenomena and literary names, finds in the theory and history of literature tools that offer him new perspectives and the support for a solid argumentation of his points of view. It is a path to achieving memorable "textistences".

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MDIR Constructor 3.0

(software for creating interactive textbooks)

Certificate of Copyright and Related Rights, AGEPI Moldova *(*Series: PC (computer program),

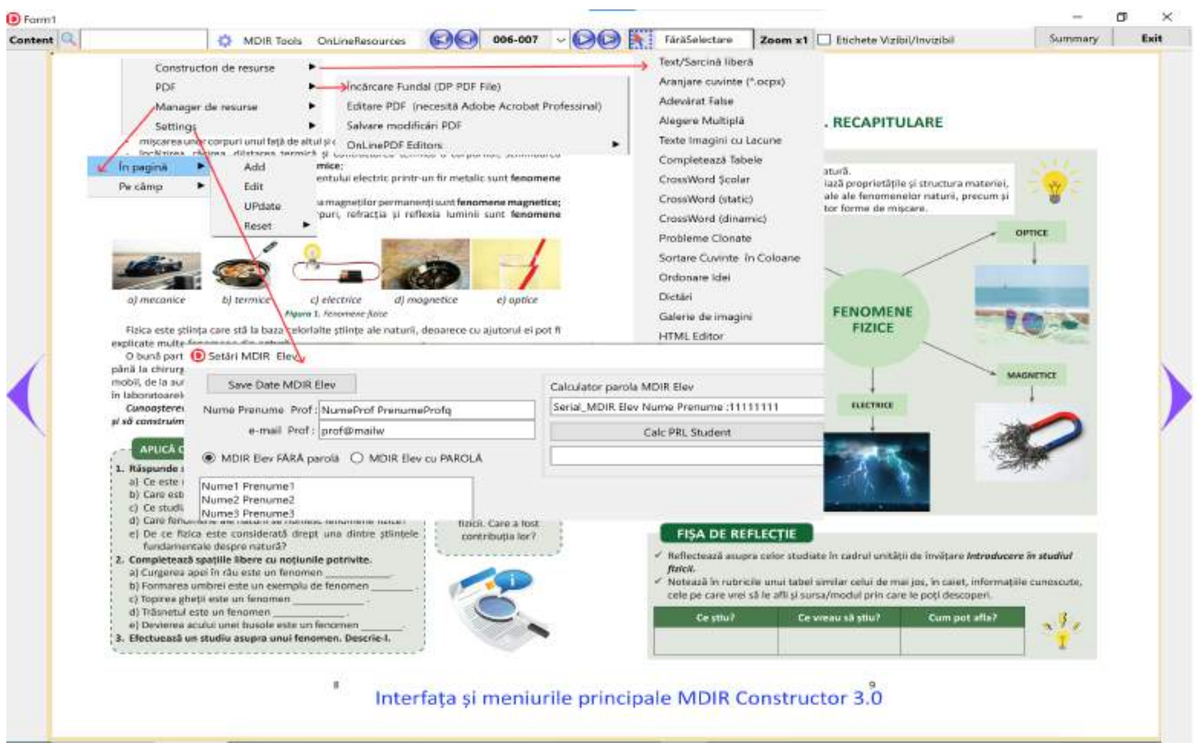
Nr**: 7906,** *registration date 27.03.2024)*

Autori: Nicolae Balmuș, Tatiana Croitor

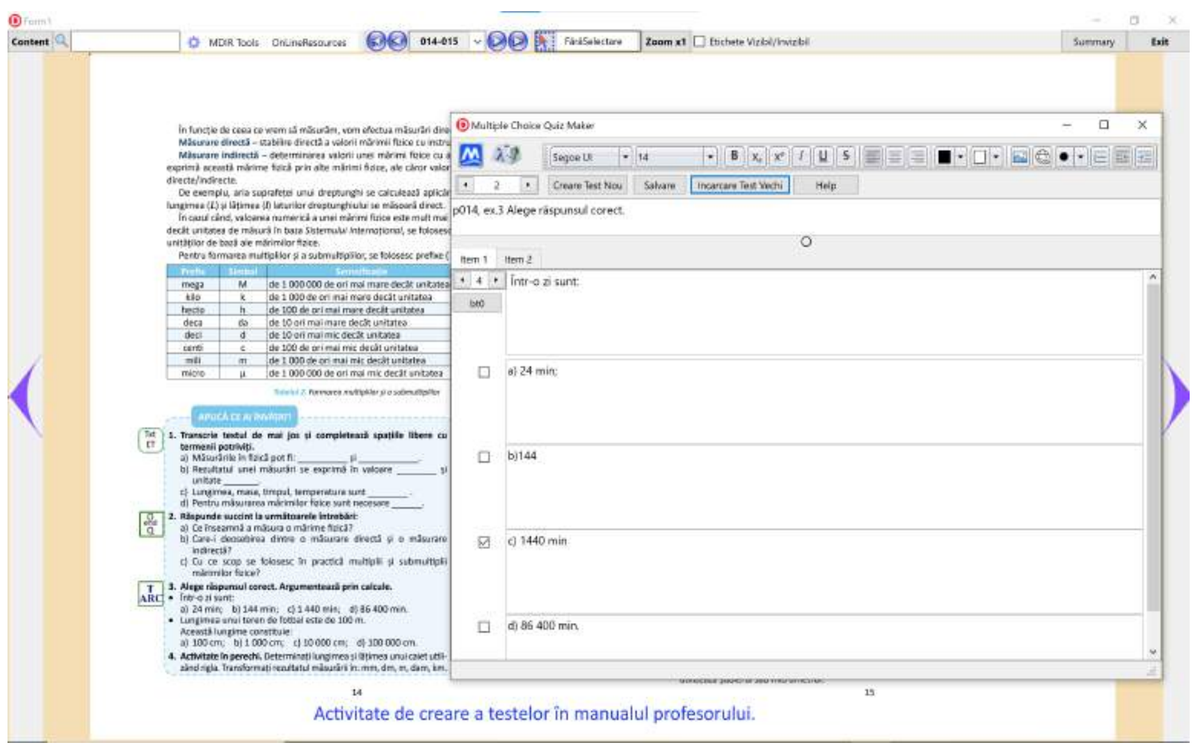
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MDIR Constructor 3.00 is an upgraded version of MDIR Constructor 2.00 software, which was created in the Delphi 11 (FMX) integrated development environment using TMS SOFTWARE and WinSOFT tools. This software allows users to create interactive digital textbooks of their own design for a variety of academic subjects based on a *.pdf file.

Version 3.00 of the application includes new features like improved design, new learning and knowledge testing activities, multilingual interface translation options, an integrated robot for voice reading, a new algorithm for placing resources on textbook pages and fields, and a new algorithm for creating student textbooks that teachers can password protect. Version 3.00 of the student textbook allows for the addition of student-designed resources to the fields of the manual. These resources can include audio/video sequences, images, documents, notes, and programming activities created in a variety of programming languages, including Pascal, Delphi, C++, Python, and Scratch



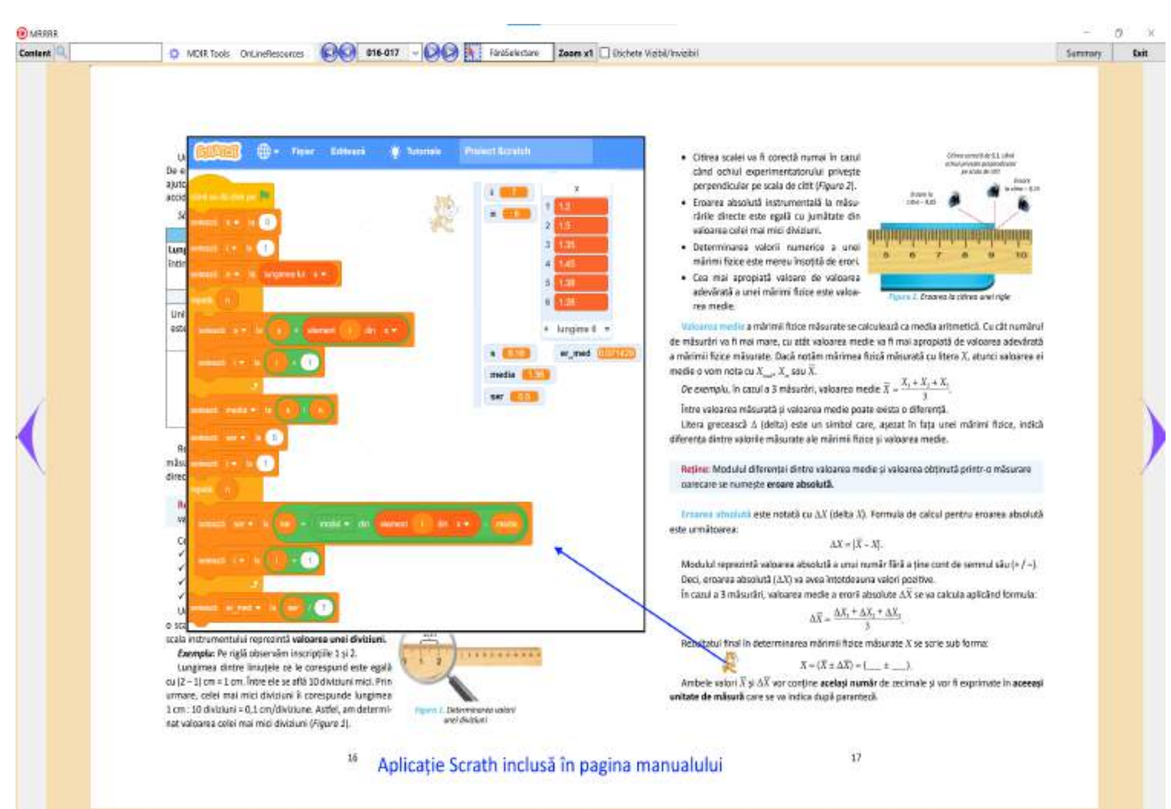
Interfața și meniurile principale MDIR Constructor 3.0



Activitate de creare a testelor în manualul profesorului.



Activitate de rezolvare a testului în manualul elevului



Aplicație Scrath inclusă în pagina manualului

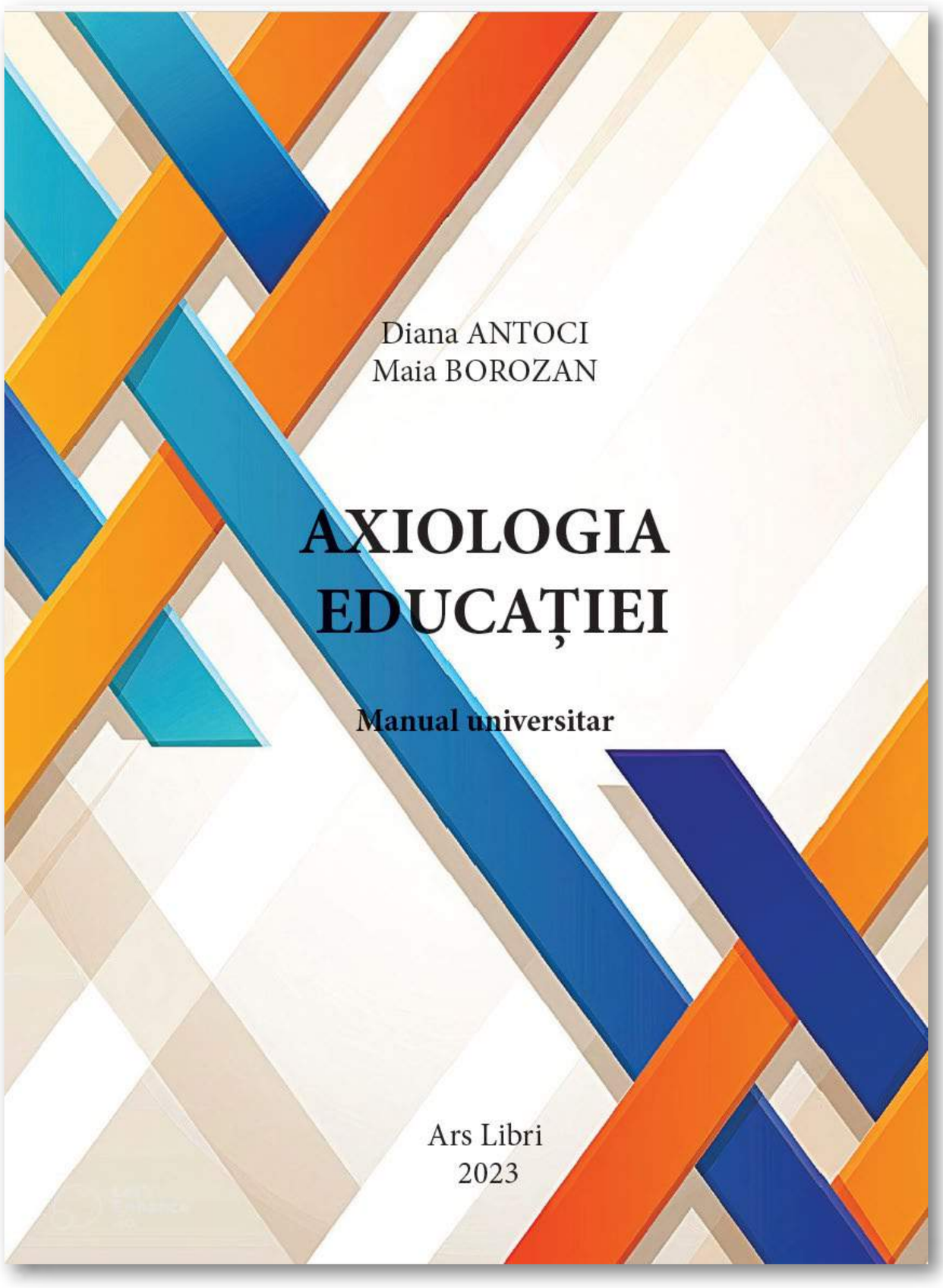
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AXIOLOGY OF EDUCATION
(AXIOLOGIA EDUCAȚIEI)

Patent/project number: ISBN 978-606-36-2430-8
Author/s: Diana ANTOCI, Maia BOROZAN

E

The university textbook is provided for the study discipline "Axiology of education" being a fundamental course in the professional training of teaching staff, which contributes to the formation of a general vision on the philosophical evolution of pedagogical thinking regarding the complex issue of values. "Axiology" ensures the in-depth foray into the knowledge of the theory of values necessary for the understanding of pedagogical values and educational innovation processes from an axiological perspective. The practical importance of the Axiology of education results from the fact that in a constantly changing society, understanding the meaning and internalizing the fundamental values become essential in education. The strategic approaches designed in the course will favor the promotion of professional responsibilities and respect in the educational environment.



The university textbook, a didactic work developed in accordance with the principles of the philosophy of pedagogical science, is made up of 4 chapters and provides informative support regarding the fundamental elements of the axiology of education as a university study discipline, addresses the specific basic notions, includes autonomous learning activities and self-assessment, assignments for independent study, glossary of terms, bibliographic references and annexes corresponding to the 4 course units. own professional referential.

The university textbook "Axiology of education" is intended for university teaching staff for use in the process of initial professional training of future pedagogues in higher education, constituting a benchmark for students, master's students, doctoral students and researchers in the field of education sciences. The theoretical content and practical activities can serve as support in the continuous professional training of teachers, concerned with the development of the axiological referential of the students and their own professional referential.

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STUDY OF USEFUL PROPERTIES OF SOME COORDINATION COMPOUNDS CONTAINING OXIME LIGANDS

ISBN 978-3-9402237-24-8

Authors: **COROPCEANU Eduard, CILOCI Alexandra, ȘTEFÎRȚĂ Anastasia, BULHAC Ion**

E

The synthesis of a series of coordination compounds of Co(III), Cu(II), Zn(II) with various organic ligands containing oxime, carboxylic, pyridine, amine functional groups was carried out, which exhibit stimulating effects on physiological processes in crop plants, fungi, algae, etc. The composition and structure of the new compounds were studied using contemporary physical analysis methods (IR, UV-Vis, NMR spectroscopy, X-ray diffraction, etc.). The use of organic molecules with various electron-donating atoms (N, O, S) and with a wide variety of geometric configurations has allowed the assembly of coordination compounds with novel structures and properties.

When introducing synthesized coordination compounds into the nutrient media of fungi from the genera *Aspergillus, Alternaria, Botrytis, Fusarium, Penicillium, Rhizopus, Mucor, Sporotrichum, Trichothecium, Sclerotinia, Chaetomium* and *Trichoderma,* positive results were obtained in increasing biomass productivity, enhancing enzymogenetic processes, shortening the technological cycle period, etc.



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SERBIAN-HUNGARIAN BILATERAL COOPERATION FOR THE YEARS 2025-2026:

"Structural optimization of additively manufactured cellular titanium implant using artificial intelligence"

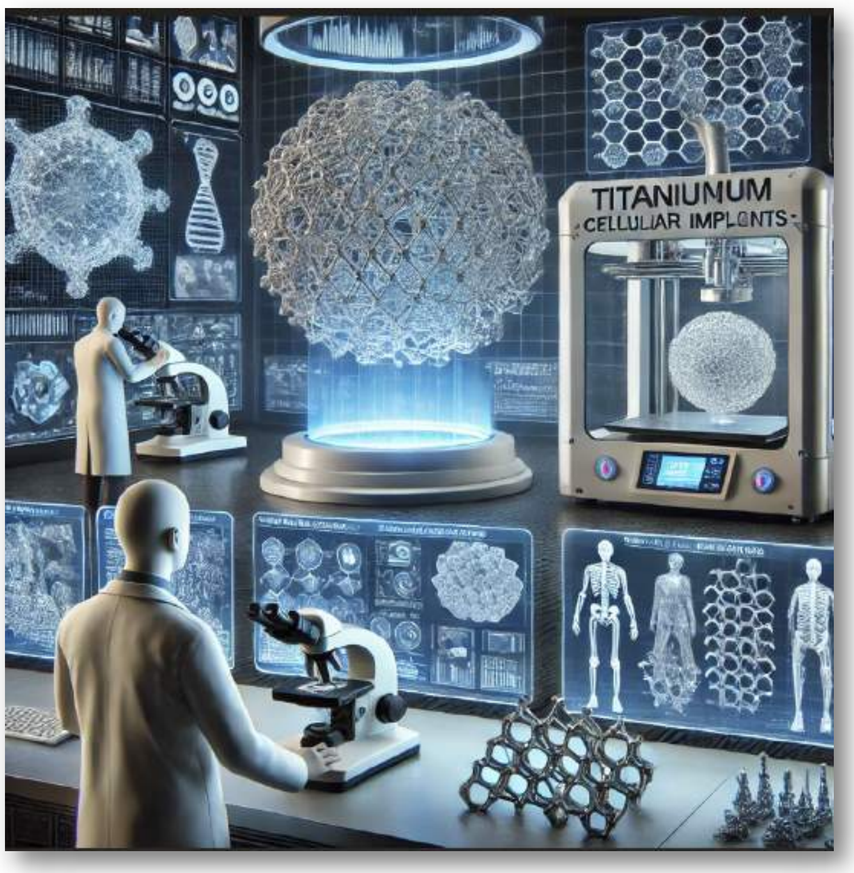
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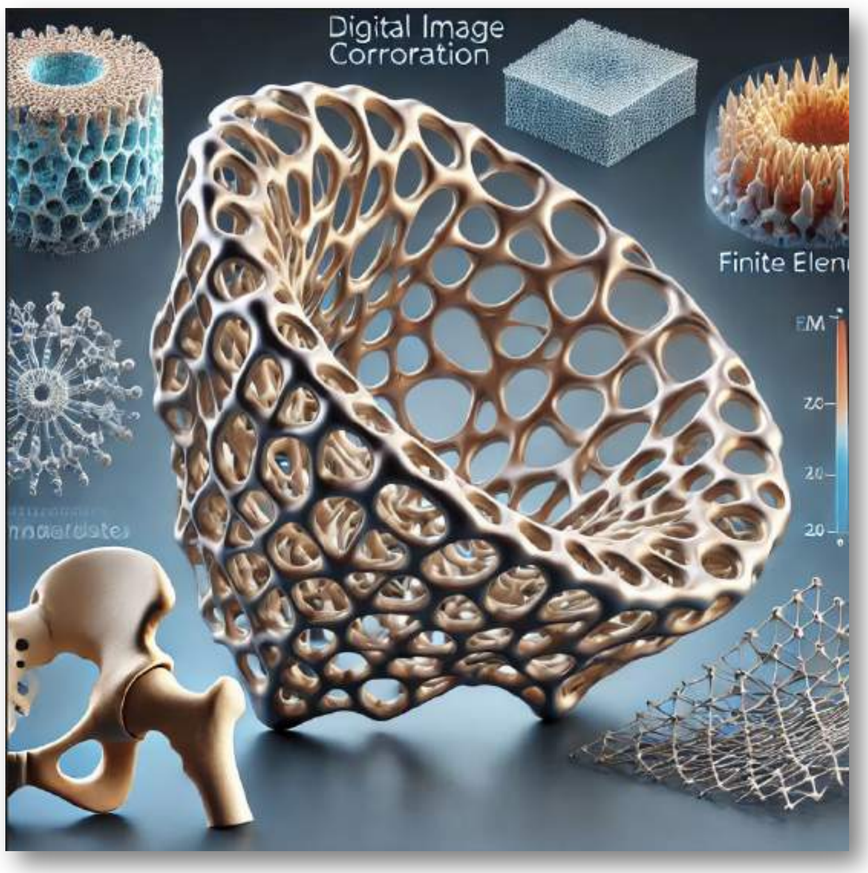
Author/s: Principal Investigators:

Nataša Trišović, Serbia; Tamas Mankovits, Hungary

Institution/Country: University of Belgrade, Serbia, University of Debrecen, Hungary

The artificial development of cellular structures has been a subject of research for decades, drawing inspiration from naturally occurring structures such as bone, wood, and sea sponges. These structures continue to attract significant interest due to their exceptional physical and mechanical properties. While metallic cellular structures have been produced for a long time, the advent of additive manufacturing has introduced new possibilities for their design and fabrication. Despite the technological advancements, several challenges remain, particularly in characterizing these structures and determining their mechanical behavior under different loading conditions, both experimentally and numerically. One of the key areas of interest is the development of patient-specific implants, which offer significant advantages over standard implants. Titanium implants, produced via 3D printing and designed with strategically open cellular structures based on medical considerations, can improve osseointegration and better match the mechanical properties of bone. Currently, titanium 3D printing technology is available, but the integration of cellular structures into human implants is still in progress. A major obstacle is the lack of comprehensive knowledge regarding the mechanical properties of these structures and the complexities of finite element modeling due to their intricate geometries. For the past four years, a research team from the University of Debrecen has been actively engaged in titanium 3D printing, developing various cellular structures for biomedical applications. Within the framework of the successful GINOP project "Research on Implant Osteosynthesis and Development of Trabecular Structures Using Additive Manufacturing", they have optimized their 3D printing process to achieve high precision manufacturing. On the Serbian side, researchers have conducted a comprehensive analysis of titanium alloys used in biomedical applications, focusing on artificial joint implants and fixation plates.





Their study emphasizes fracture mechanics, specifically fatigue crack initiation and propagation. The research includes both experimental and numerical investigations, examining the mechanical behavior of fixation plates and hip replacement implants. Experimental studies utilized standard mechanical testing methods combined with Digital Image Correlation (DIC), while Finite Element Method (FEM) simulations were employed to enhance predictive modeling.

A key challenge in this research is the difficulty of 3D printing small cell sizes, which leads to geometric discrepancies between the printed samples and their CAD models, complicating numerical simulations. Addressing these challenges is essential for advancing the field and bringing titanium cellular implants closer to clinical application.

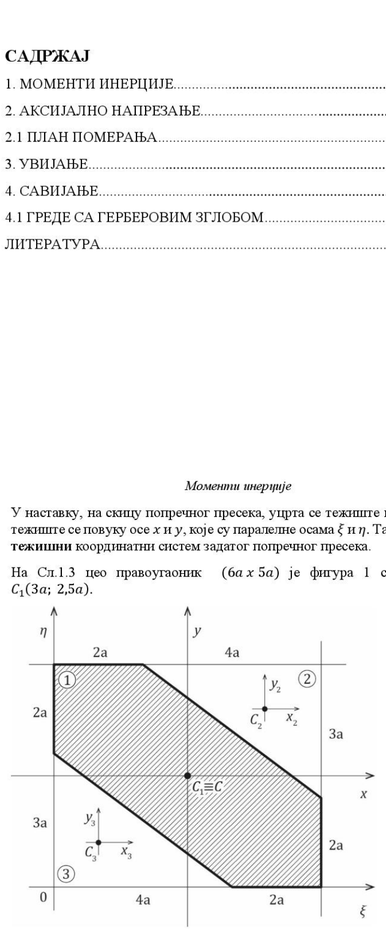
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Strength of Materials – Comprehensive Workbook

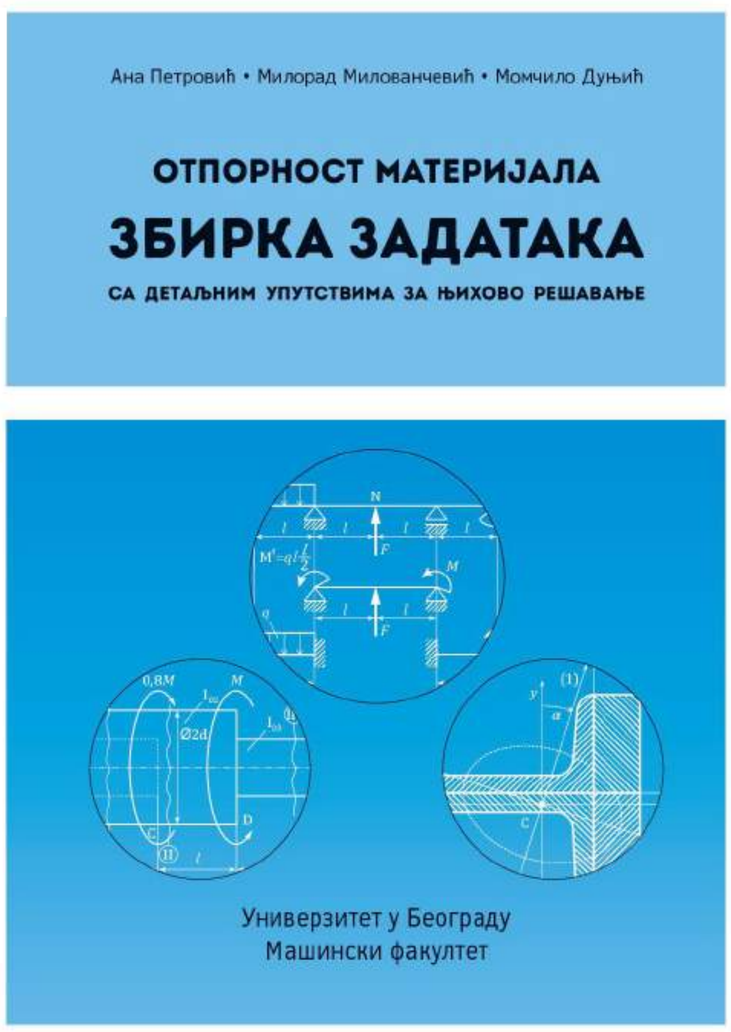
Patent/project number: ISBN 978-86-6060-074-7

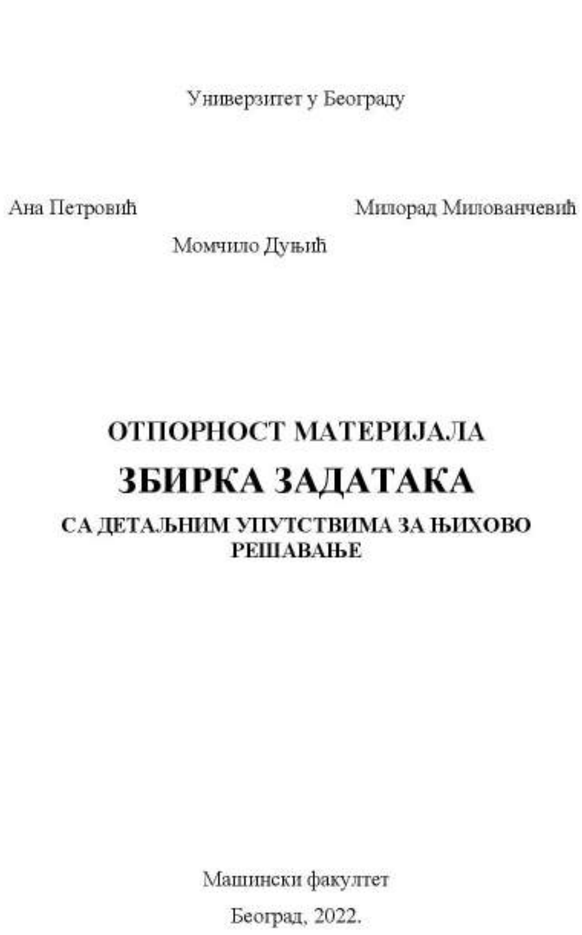
Authors: Ana Petrović, Milorad Milovančević, Momčilo Dunjić

It's a comprehensive workbook written to be used by students attending course of a Strength of Materials (1st year of Bachelor Studies at the Faculty of Mechanical Engineering, University of Belgrade). It contains over 50 problems solved in detail, using over 200 sketches to illustrate the problem and its solutions, and uncountable number of equations. It is divided in four main Chapters: Moments of Inertia, Axial Loading, Torsion, and Bending.


САДРЖАЈ

1. МОМЕНТИ ИНЕРЦИЈЕ....1
2. АКСИЈАЛНО НАПРЕЗАЊЕ....58
2.1 ПЛАН ПОМЕРАЊА....82
3. УВИЈАЊЕ....95
4. САВИЈАЊЕ....128
4.1 ГРЕДЕ СА ГЕРБЕРОВИМ ЗГЛОБОМ....176
ЛИТЕРАТУРА....192

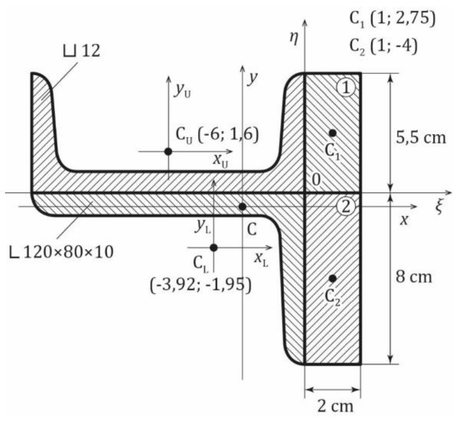




У наставку, на скицу попречног пресека, уцрта се тежиште пресека, кроз тежиште се повуку осе x и y, које су паралелне осама ξ и η. Тако је добијен **тежишни** координатни систем задатог попречног пресека.

На Сл.1.3 цео правоугаоник $(6a \times 5a)$ је фигура 1 са тежиштем $C_1(3a; 2{,}5a)$.

Слика 1.3 Замишљени попречни пресек неког гредног носача



Слика 1.34 Замишљени попречни пресек неког гредног носача

$$A = 17|_U + 19{,}1|_L + 2 \cdot 13{,}5|_{1,2} = 63{,}1 \text{ cm}^2$$

$$\xi_C = \frac{\sum(A_i \xi_{Ci})}{\sum A_i} = \frac{17(-6)|_U + 19{,}1 \cdot (-3{,}92)|_L + 27 \cdot (1)|_{1,2}}{63{,}1} = -2{,}37 \text{ cm}$$

$$\eta_C = \frac{\sum(A_i \eta_{Ci})}{\sum A_i} = \frac{17(1{,}6)|_U + 19{,}1 \cdot (-1{,}95)|_L + (55{,}2) \cdot (2{,}75)|_1 + (8 \cdot 2) \cdot (-4)|_2}{63{,}1} = -0{,}695 \text{ cm}$$

Приликом уцртавања тежишта попречног пресека, треба водити рачуна о томе да је дебљина ребра L профила 1 cm, а η координата тежишта целог попречног пресека је $-0{,}695$ cm, па треба пажљиво уцртати тачку која означава тежиште „унутар" ребра L профила.

У наставку прорачуна се „локално" примењује Штајнерова теорема, као и таблични подаци:

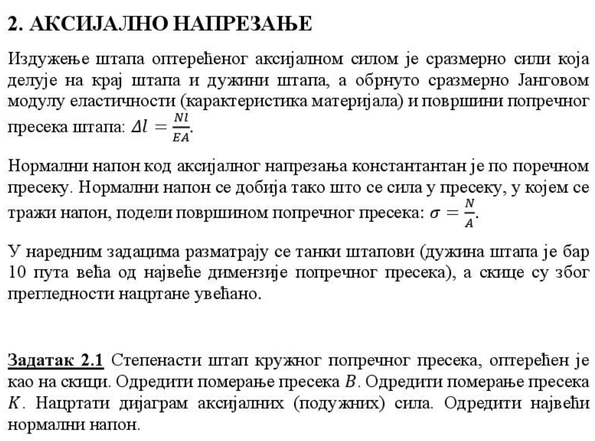
2. АКСИЈАЛНО НАПРЕЗАЊЕ

Издужење штапа оптерећеног аксијалном силом је сразмерно сили која делује на крај штапа и дужини штапа, а обрнуто сразмерно Јанговом модулу еластичности (карактеристика материјала) и површини попречног пресека штапа: $\Delta l = \frac{Nl}{EA}$.

Нормални напон код аксијалног напрезања константантан је по поречном пресеку. Нормални напон се добија тако што се сила у пресеку, у којем се тражи напон, подели површином попречног пресека: $\sigma = \frac{N}{A}$.

У наредним задацима разматрају се танки штапови (дужина штапа је бар 10 пута већа од највеће димензије попречног пресека), а скице су због прегледности нацртане увећано.

Задатак 2.1 Степенасти штап кружног попречног пресека, оптерећен је као на скици. Одредити померање пресека B. Одредити померање пресека K. Нацртати дијаграм аксијалних (подужних) сила. Одредити највећи нормални напон.



Слика 2.1 Поставка задатка, аксијално напрегнут степенасти штап

3. УВИЈАЊЕ

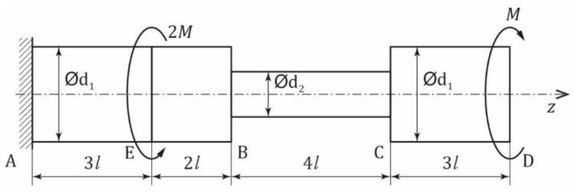
Постоји одређена аналогија између израза за напон и деформацију код аксијалног (подужног) напрезања и увијања (торзије). Код аксијалног напрезања нападна величина у пресеку је аксијална сила N, а код увијања то је момент увијања (момент торзије) M_t. Код аксијалног напрезања је утицајна физичка карактеристика материјала била Јангов модул елеастичности E, а код увијања је то модул клизања G. Значајна карактеристика попречног пресека код аксијалног напрезања је површина попречног пресека A, а код увијања **штапова кружног и прстенастог попречног пресека** су то поларни момент инерције I_0 и поларни отпорни момент W_0:

$$\Delta l = \frac{Nl}{EA} \qquad \theta = \frac{M_t \cdot l}{G \cdot I_0}$$

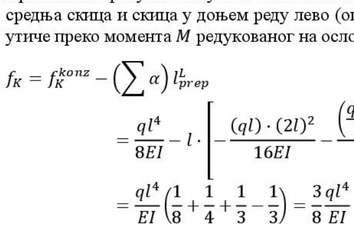
$$\sigma = \frac{N}{A} \qquad \tau = \frac{M_t}{W_0} = \frac{M_t}{I_0} \cdot \rho_{max}$$

Расподела напона код увијања по попречном пресеку зависи линеарно од потега-променљивог полупречника ρ кружног пресека, који је у распону $0 \le \rho \le r$, $2r = d$ (односно, $2R = D$). Тако је у тежишту пресека напон једнак нули, а на ободу пресека је највећи.

Задатак 3.1 Нацртати дијаграм момента увијања. Одредити потребне пречнике вратила на основу вредности допуштеног тангенцијалног (смичућег) напона τ_d. Одредити углове увијања пресека E и D (θ_E и θ_D). Дато је: $\frac{d_1}{d_2} = 2$, $l = 20$ cm, $\tau_d = 5 \frac{\text{kN}}{\text{cm}^2}$, $M = 50$ kNcm, $G = 8080 \frac{\text{kN}}{\text{cm}^2}$.



Слика 3.1 Поставка задатка, челично вратило оптерећено моментима увијања



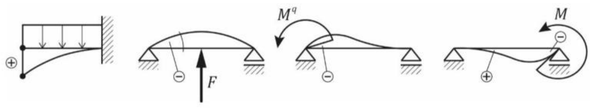
Слика 4.36 Греда са препустима оптерећена моментом, силом и континуалним оптерећењем, припрема за израчунавање угиба

Приликом израчунавања угиба тачке K на левом препусту посматрају се средња скица и скица у доњем реду лево (оптерећење са десног препуста утиче преко момента M редукованог на ослонац B):

$$f_K = f_K^{konz} - \left(\sum \alpha\right) l^L_{prep}$$

$$= \frac{ql^4}{8EI} - l \cdot \left[-\frac{(ql) \cdot (2l)^2}{16EI} - \frac{\left(\frac{ql^2}{2}\right) \cdot (2l)}{3EI} + \frac{(ql^2)(2l)}{6EI} \right]$$

$$= \frac{ql^4}{EI}\left(\frac{1}{8} + \frac{1}{4} + \frac{1}{3} - \frac{1}{3}\right) = \frac{3}{8}\frac{ql^4}{EI}$$



Слика 4.37 Еластична линија савијене греде под дејством задатог оптерећења

Први члан претходног израза је угиб тачке на крају конзоле на коју делује континуално оптерећење целом дужином конзоле.

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University of Belgrade

Faculty of Mechanical Engineering

MECHANICAL POWER TRANSMISSIONS

Problems with Solution

Book, Publisher: Faculty of Mechanical Engineering, University of Belgrade, Serbia

Authors: Tatjana Lazović, Aleksandar Marinković

E

Mechanical Elements 2 is a mandatory subject in the curriculum of the Mechanical Engineering study program of Bachelor Academic Studies at the Faculty of Mechanical Engineering, University of Belgrade. The subject is attended by all students of the second year of bachelor academic studies, in the fourth semester. The fields of machine elements theory covered by the course of Machine Elements 2 are **MECHANICAL POWER TRANSMISSIONS**: spur and helical gears, bevel gears, worm gears, belt and chain drives, couplings.

Solving practical problems is the primary method for assessing the theoretical knowledge acquired in elements of Mechanical Power Transmissions. At FME Belgrade, the final exam consists of solving tasks—original, realistic problems. To successfully complete the exam, students need to practice throughout the semester. They can solve tasks independently only if they use a collection of exercises for training. Therefore, in addition to textbooks and manuals for project realization, it is essential that students also have a book of solved problems.

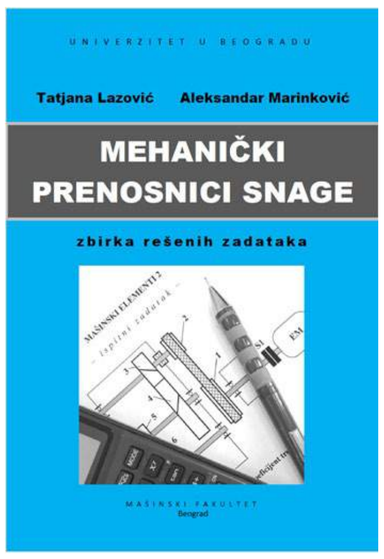
The book (206 pages) is methodologically organized into four parts:

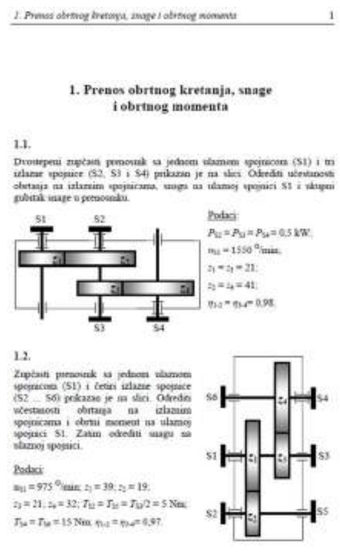
I - "small" tasks (23 tasks on 42 pages), grouped in chapters: Power, torque and rotation transmission - 3 tasks; Cylindrical geaRs - 7 tasks; Bevel gears - 3 tasks; Worm gears – 3 tasks; Belt drives - 5 tasks; Chain drives - 1 task; Couplings – 1 task.

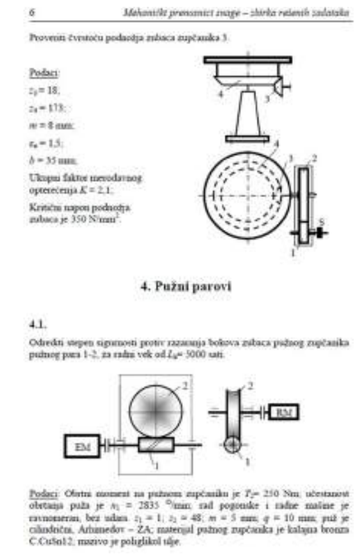
II – Tasks solution (30 pages): the solution procedure, solutions of individual steps of the solution procedure are partially given, and the data took from the corresponding tables are also shown.

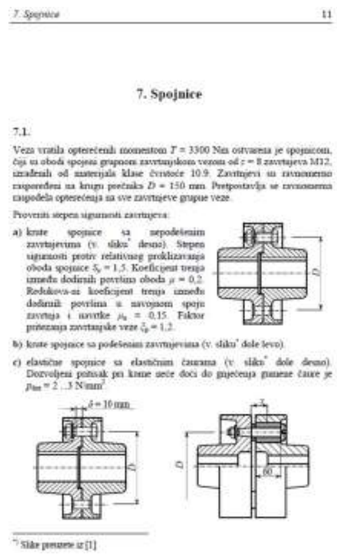
III - Combined complex problem. Each of them partially or fully covers the Mechanical Elements 2 course (19 solved problems on 137 pages). The solving procedures with the results are shown in detail, with reference to the tables from which the data were taken, with illustrations and the necessary explanations.

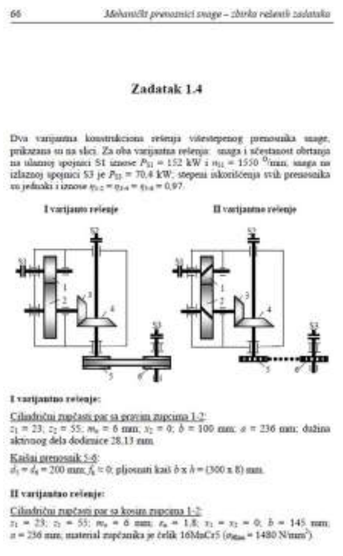
IV - 24 tables, and 9 pictures with data and diagrams needed to solve the tasks (20 pages)



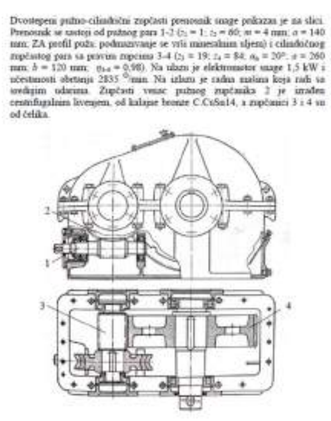


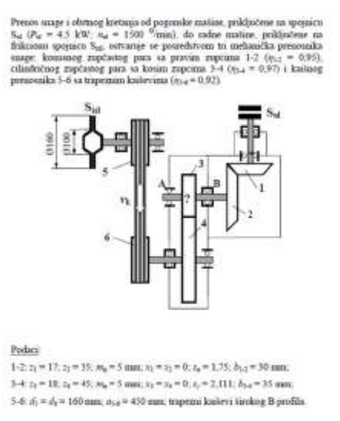


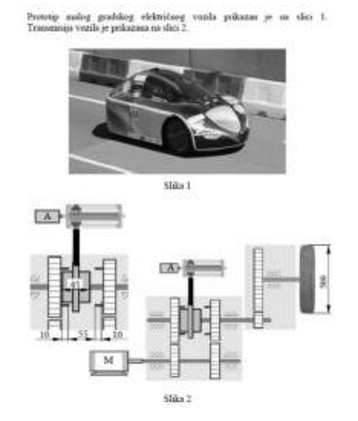


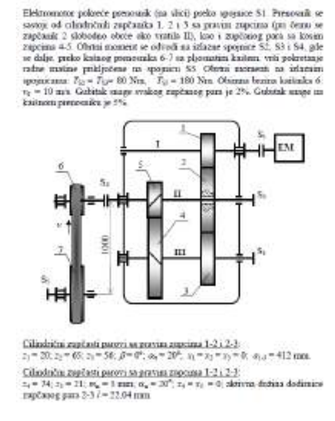


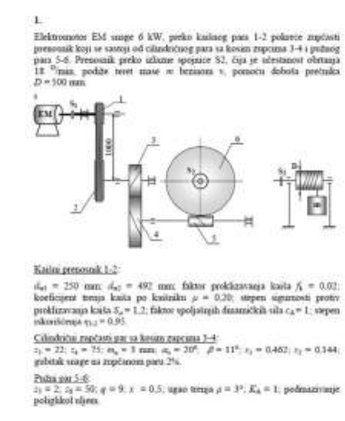


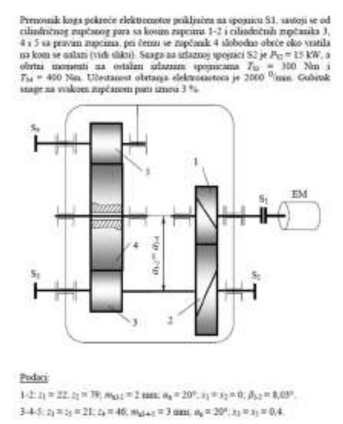












The Book of tasks has 44 illustrations and 17 references. The tasks can be used for exercises in classes, homework and projects, and exam preparation. In addition, some of the presented tasks can be used by engineers from the industry to solve real problems in their field of activity. The book Mechanical Power Transmissions - Problems with Solution was published in 2022, 300 examples). Almost all copies have been sold so far and a new edition is ready.

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Julia's Books

My Books

Carte de teste pentru Evaluarea Nationala – Limba si literature Romana

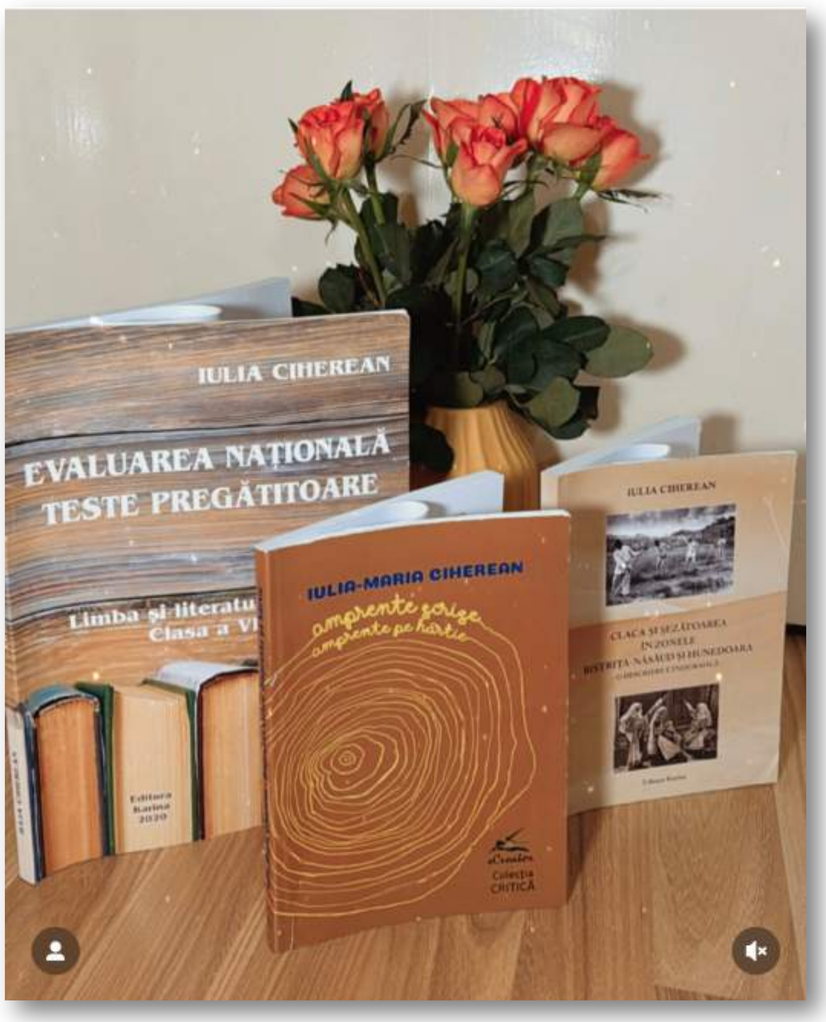
Claca si sezatoarea in zonele Bistrita-Nasaud si Hunedoara

Amprente scrise. Amprente pe hartie

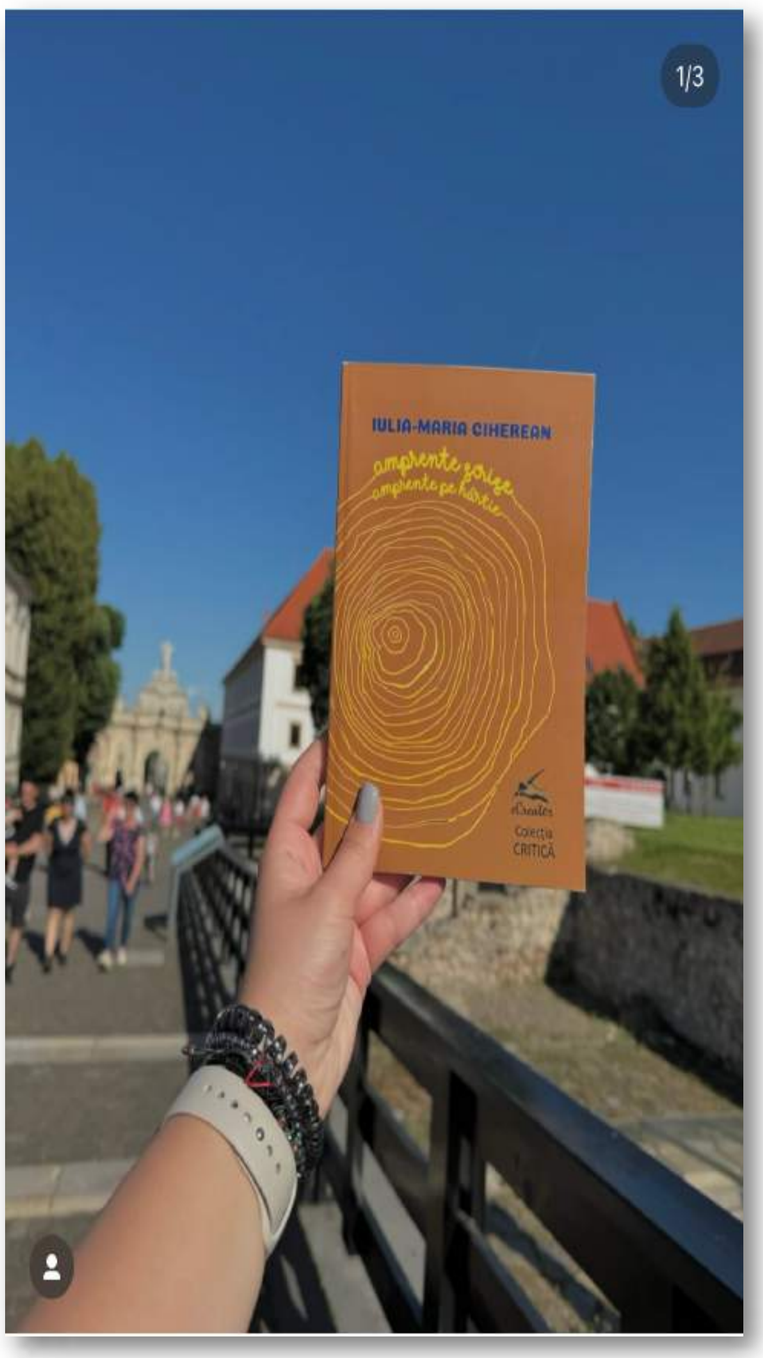
Iulia-Maria Ciherean

E

My 3 books are written in the few 5 years, since 2020 to 2023. My first book is dedicated to students; the second is about two traditions: claca si sezatoarea in Bistrita-Nasaud and Hunedoara; the third is about different authors and studies from romanian literature.







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https://www.facebook.com/share/18rdv4fwvA/?mibextid=wwXIfr

Photon and the Lost Treasure

Educational Program

Authors: Friendship Team

Mentors: Stanca Maria Anca, Ionescu Adriana

E

„Photon and the Lost Treasure” is an interactive educational project designed for students to enhance their English language skills while navigating a thrilling adventure.

Using the Photon robot, students journey through a series of stations, solving language challenges to uncover the "lost treasure." The journey starts with basic commands to control Photon, followed by tasks that involve colors, actions, sentence construction, and storytelling.

Each station presents a different challenge, such as describing objects by color or arranging words into a correct sentence. As students progress, they build essential vocabulary, improve grammar, and develop collaboration and problem-solving skills. The project encourages teamwork and creativity, turning learning into an engaging game. The final goal is for Photon to reach the treasure, rewarding students with a sense of achievement.











SCAN ME

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Innovative Learning with VR: Exploring the Future of Education

Educational Program

Authors: Friendship Team

Mentors: Stanca Maria Anca, Ionescu Adriana,

E

This project explores the transformative potential of Virtual Reality (VR) in education, aiming to make learning more engaging and interactive. By integrating VR headsets into various subjects, students can experience immersive environments that enhance their understanding of complex topics.

The project includes five key initiatives: "Explorers of the Universe," where students explore the solar system; "Anatomy in Virtual Reality," allowing an interactive exploration of the human body; "Time Travels with Us," offering historical experiences like Ancient Rome and the Industrial Revolution; "VR Architect: Build Your Own World," where students design cities and structures; and "Safe Chemistry Lessons," enabling students to conduct chemical experiments in a risk-free environment. Currently at the concept stage, the project is set for testing with students to evaluate its impact on learning.







SCAN ME



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- Silent Protocol -
The Unspoken Power of English in Modern Warfare and Tech

Research project

Authors: MIHAIL-ALEXANDRU STANESCU & MIHAI FLORIAN MIU

Effective communication is essential in military operations, where accuracy can significantly influence mission outcomes. Over time, English has established itself as the global standard for military communication, being widely utilized by entities such as NATO, the United Nations (UN), and various multinational defense alliances.



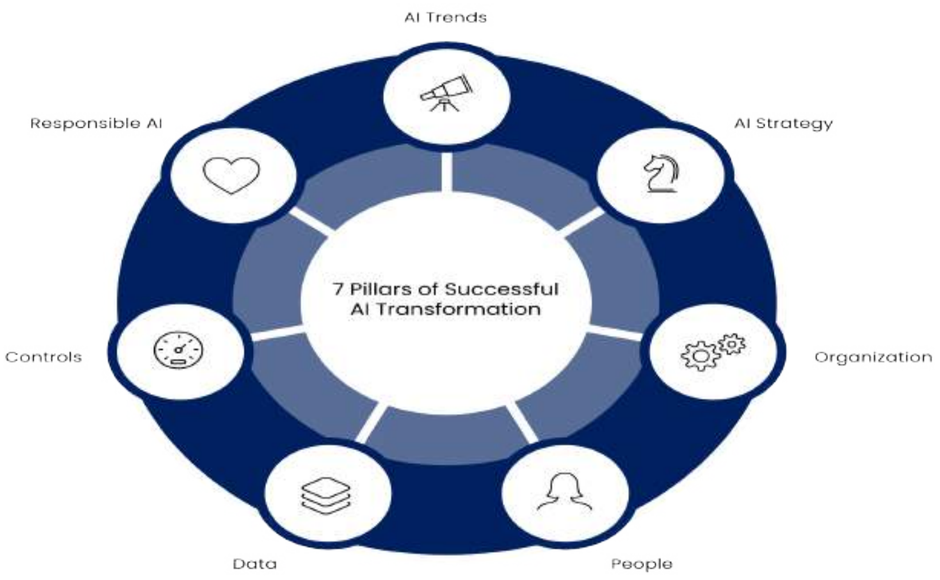


In cybersecurity, English dominates (99%) in several key areas:

- ***Ethical Hacking: Tools, documentation, and certifications are primarily in English.***
- ***Red Teaming / Blue Teaming: Collaboration and resources are almost all in English.***
- ***Malware Analysis & Reverse Engineering: Research papers, tools, and forums use English.***
- ***Security Research: Most academic papers and technical reports are in English.***
- ***DevSecOps: Most tools and documentation are in English.***

Some statistics from the point of view of innovation in the technology trend:

- ***Over 70% of defense-related AI technologies are programmed using English-based coding languages.***
- ***Approximately 80% of military cybersecurity protocols use English-language algorithms for data analysis and threat detection.***
- ***Over 85% of cybersecurity protocols used by multinational defense organizations rely on English-based encryption and communication systems.***
- ***Real-time operational communication for military autonomous systems is 95% in English, even in multinational missions involving non-English speaking countries.***



KEY POINTS ABOUT THE CRUCIAL ROLE OF ENGLISH

Technological Progress and Military Development

A substantial portion of cybersecurity tools, research, and threat intelligence is available in English, rendering it essential for practitioners in this domain. Essential scientific studies, military documentation, and development guidelines are predominantly released in English, rendering it an indispensable resource for experts in defense technology and research.

Global Alliances and Diplomacy

Proficiency in English is crucial within the realms of diplomacy and international relations, particularly in military alliances like NATO and numerous bilateral agreements that necessitate precise and effective communication.

Cybersecurity and Information Warfare

With the increasing significance of cyber warfare in contemporary conflicts, English continues to be the primary language for both cyber defense and offensive strategies

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6th International Exhibition InventCor
03-05 April 2025 – Deva, Romania
Universitatea de Stat de Medicină și Farmacie „Nicolae Testemițanu” din Republica Moldova
Nicolae Testemițanu State University of Medicine and Pharmacy of the Republic of Moldova

METHOD OF USE OF AUGMENTED REALITY IN ONCOLOGY THROUGH 3D-PRINTING TECHNOLOGIES FOR DIDACTICAL AND PRACTICAL PURPOSES

Certificate of Innovator Nr.6264 / 25 June 2024

Authors: Valic Eugeniu, Valic Vladimir, Ciobanu Daniela, Șchiopu Victor

The innovation consists in combining augmented reality (AR) with 3D-printing technologies (3D-PT), which allows viewing objects in an interactive and innovative three-dimensional format.

This principle facilitates the studying process of the anatomical structures of healthy and pathological organs, tissues and cells in much more details, with a better understanding of morphology, topographical localization and subsequently treatment tactics. Also, it would allow the study of molecules models, from open-source databases, especially their complex quaternary structure, in a didactic, research and curative role.

The 3D virtual models developed could be used in workshops and open lessons for didactic-scientific purposes for medical workers in the oncology field or for the general population, in order to inform and raise awareness of oncological screening and the prevention of certain types of cancer, with the ability to quickly scan, redirect and save the anatomical model over a long period of time on s specialized platform, saving the memory on the user’s device.

The results of implementation

Following the testing of the models during the courses and practical lessons at Oncology Department, the collaborators and students were impressed and motivated by the innovative approach in the practical-educational process and visualization in real time of the tumors and p53 molecule.

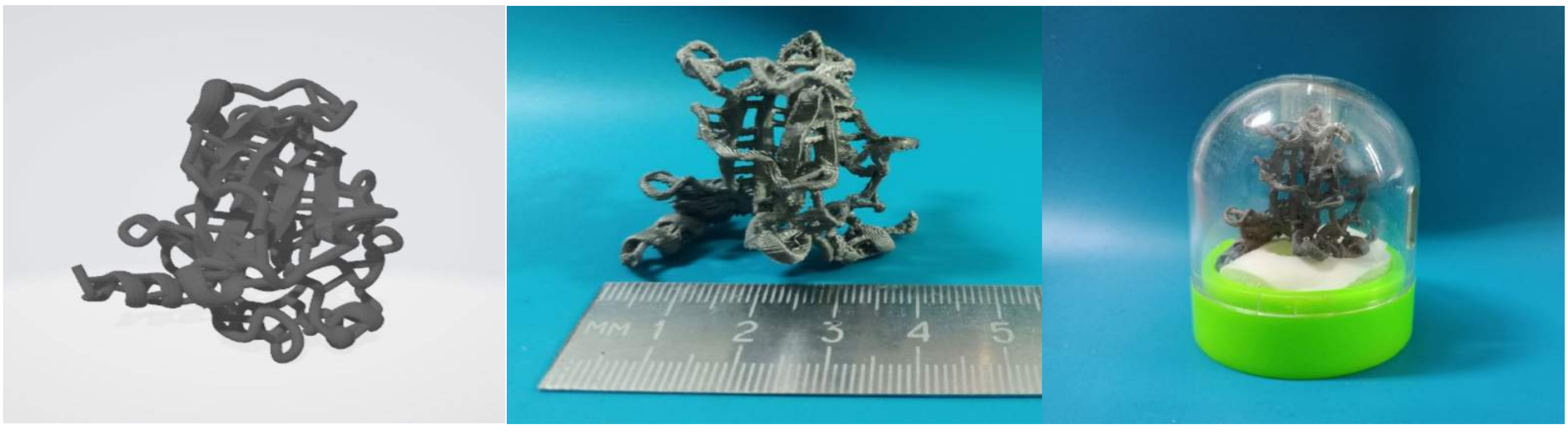


Fig. 1. Representation of p53 protein molecule in AR (A) and 3D-printed (B, C) formats.

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6th International Exhibition InventCor
03-05 April 2025 – Deva, Romania
Universitatea de Stat de Medicină și Farmacie „Nicolae Testemițanu” din Republica Moldova
Nicolae Testemițanu State University of Medicine and Pharmacy of the Republic of Moldova

INTERACTIVE MODEL OF CHILDREN PLAYGROUND FOR EDUCATIONAL-INSTRUCTIONAL PURPOSES

Certificate of Innovator Nr.6266 / 27 June 2024

E

Authors: Ciobanu Daniela, Valic Eugeniu, Valic Vladimir, Cociu Svetlana, Cazacu-Stratu Angela, Cebanu Serghei

This innnovation represents an interactive model of a children playground. It consists of a landscape represented by a terrain arranged with models of playhouses with slides, houses with bridges and climbing nets, a carousel equipped with support bars, a playground arranged with a swing, a model of a lantern that illuminates the terrain, representing a faithful copy of the real elements of a playground according to EN 1176 safety standards.

The working principle is based on the interactive representation of a children's playground model, equipped with appropriate elements. Also, the materials used in the creation of this model were environmentally friendly, durable, and pleasant and resistant during their demonstration for children, parents and the general population.

As of advantages, The given model of the children's playground would constitute a theoretical, methodical and practical support within open lessons intended for the category of preschool children, parents and the general population regarding information, awareness and training about children's traumas at playgrounds, rules of behavior and preventive measures. The ergonomic design, small dimensions, ecological and accessible materials allow for maintenance and use with minimal costs, with the possibility of transportation and demonstration both in closed rooms and open spaces.

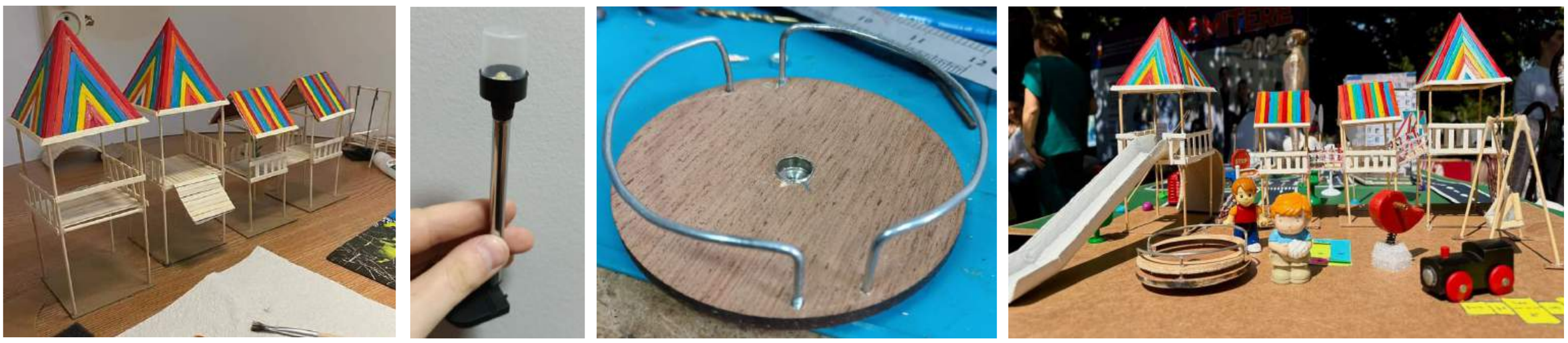


Fig.1. Viewing the models of the houses (A), lantern (B), carousel (C) and finished playground (D).

The results of implementation

The innovation and model were implemented at Hygiene Discipline from Preventive Medicine Department of Nicolae Testemițanu SUMPh for use in the instructional-didactic process during the study of the characteristics of trauma in children within the Child Hygiene Module, as well as in open lessons intended for preschool children, parents, and the general population regarding information, awareness-raising, and training about children's trauma on playgrounds, rules of behavior, and their preventive measures.

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Ziene Sanzienee

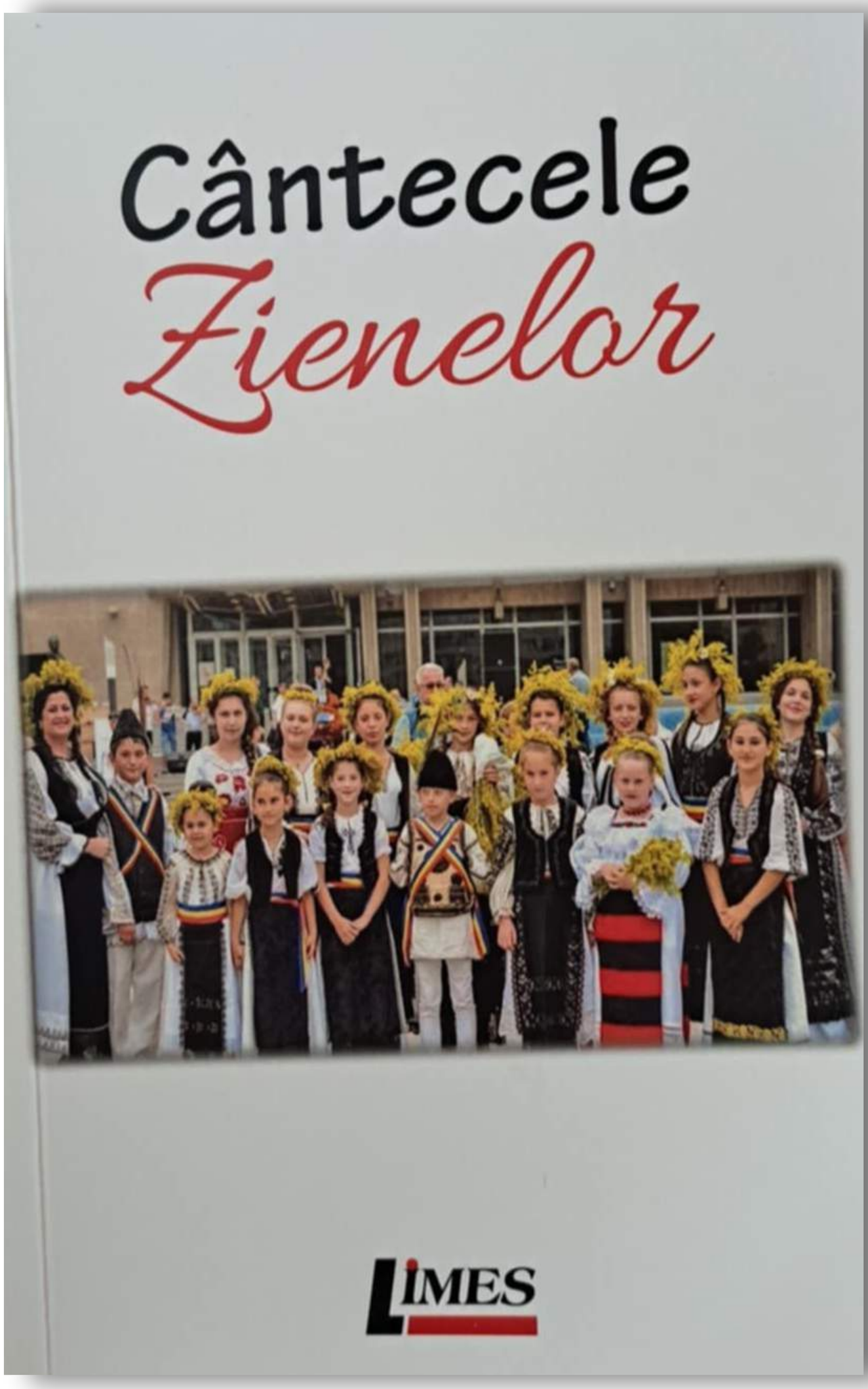
CANTECELE ZIENELOR
THE SONGS OF THE ZIENES

ISBN 978-606-799-790-3

Author: Asociatia Culturala ,,Ziene Sanziene”

E

The folk group "Ziene Sânziene" was founded in 2012 by teacher Violeta Deminescu, inspired by the desire of her students to become folk music soloists. This group continued the activity of a previous folk ensemble, "Îngerașii", and quickly distinguished itself by participating in shows and competitions. Under the patronage of Saint Arsenie Boca, the group became a vibrant community of young folk music performers. Over time, the group collaborated with teachers, musicians and composers to create and record folk songs, which led to its recognition at the local and national level. Many of the group members pursued musical careers, and "Ziene Sânziene" turned into a true nursery of future artists of the folk tradition. To support the activities, a cultural association was also established, which obtained funding and carried out cultural projects. Professor Violeta Deminescu, also a folk music soloist, has produced and presented folklore shows on local television, promoting young artists. She expresses her gratitude to all those who contributed to the group's success and to her "Sanțian ancestors."



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Opportunity
CORNELIUGROUP
Research-Innovation Association
Creation
Realization
INVENTCOR
Power of Creative Mind
Deva ROMANIA

NEBUNUL DIN TAROT THE TAROT MADMAN

Ziene Sanzienee

ISBN 978-606-799-791-0

Author: Violeta Deminescu

E

This is a book of poetry written by Violeta Deminescu, published by Mirabilia Publishing House. It contains three reviews signed by Silviu Guga, Ioan Barb and Ottilia Ardeleanu, which highlight the author's talent and poetic maturity. Silviu Guga describes her as an authentic poet, who makes her editorial debut with a profound volume, "The Fool in the Tarot". Ioan Barb emphasizes that her debut, although belated, is a gain for poetry, and her verses confirm its literary value. Ottilia Ardeleanu notes the author's special lyricism, characterized by tenderness and spirituality, emphasizing that Violeta Deminescu sees the supreme poet in God.



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ADVANCED AUTOMOTIVE DIAGNOSTICS TRAINING

advanced training courses

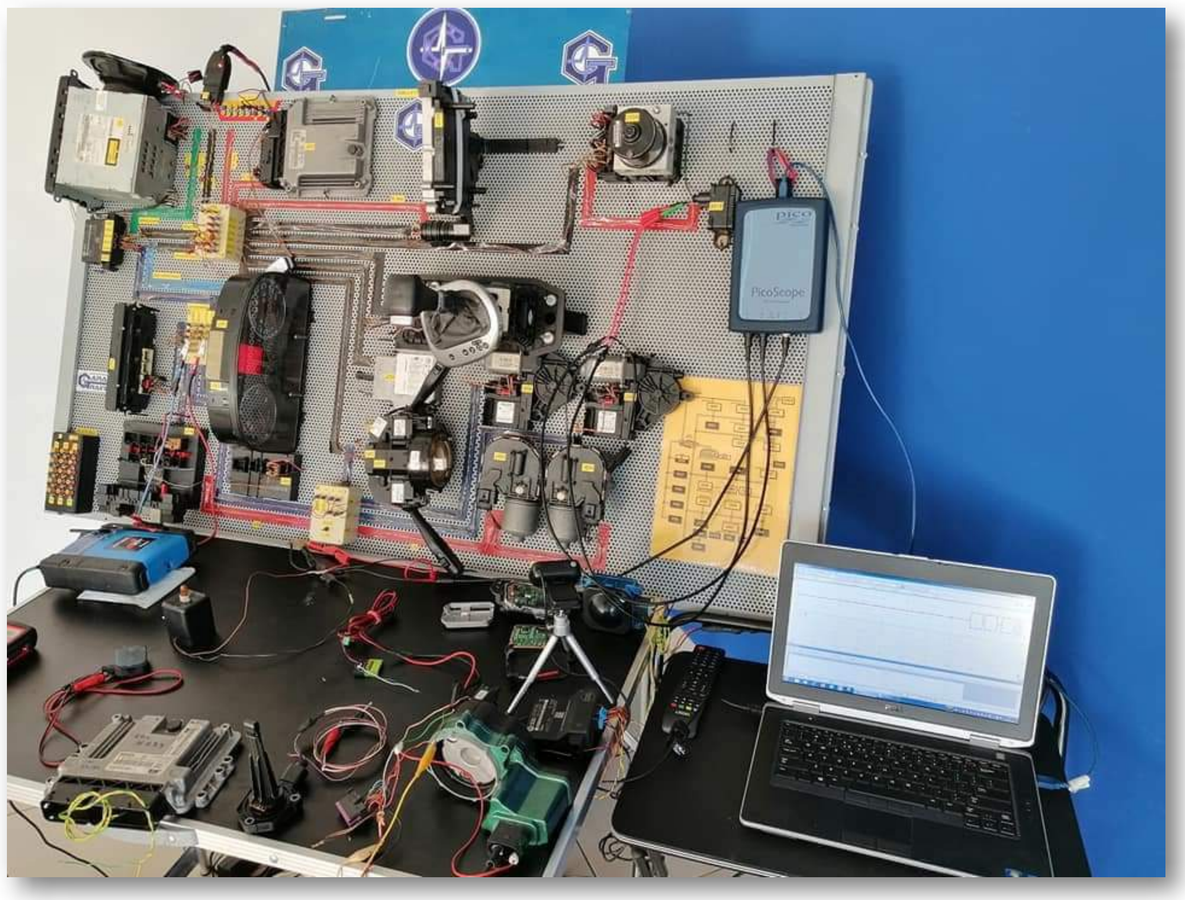
Authors: *Gidali Adrian, Simon Florin*

E

GARAGE TRAINING's field of activity is the development and support of advanced training courses for automotive diagnosticians and qualified technical personnel in automotive repair workshops (mechatronics, electricians and car mechanics). The courses focus on the application of practical diagnostic methods, on detailed knowledge of the systems and components of the proposed topic, on the optimal use of specific measuring and testing equipment (diagnostic tester-oscilloscope-multimeter-specific equipment), as well as on compliance with the maintenance and repair standards imposed by automotive manufacturers. The initial segment of the course structure represents a series of introductory training sessions, developed specifically to understand the functioning of AUTOMOTIVE MECHATRONIC SYSTEMS. The course schedule is from 9:00 AM to 5:00 PM, with a lunch break from 1:00 PM to 2:00 PM and coffee breaks at 11:00 AM and 3:00 PM.









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EDUCATION AND INNOVATION
IN THE HATEG COUNTRY UNESCO GLOBAL GEOPARK

Authors: Alexandru Andrășanu, Cristian Ciobanu, Adina Popa, Dan Horațiu Popa, Maria Tănăsescu, Cristina Toma

E

The Country Hațegului UNESCO Global Geopark is the first territory in the country recognized by UNESCO for the creative way of touristic, educational and scientific valorization of a special geological and cultural heritage. You can find us in the southwest of Transylvania, in Țara Hațegului in Hunedoara County. Practically, wherever you walk through Țara Hațegului, you are in the Geopark and in a UNESCO site. The University of Bucharest is the one that ensures the administration of this UNESCO site, coordinating and carrying out research, education, interpretation and promotion activities of the Geopark. The Geopark is a space for multidisciplinary scientific studies, covering fields such as paleontology, geology, education, biology, sociology, philosophy, art, etc. These studies contribute to a better understanding of the relationship between man and planet Earth.











SCAN ME



The projects carried out in these areas facilitate collaboration between researchers, teachers and local communities, supporting sustainable development and the active involvement of residents in protecting and valorizing the natural and cultural heritage of Țara Hațegului.

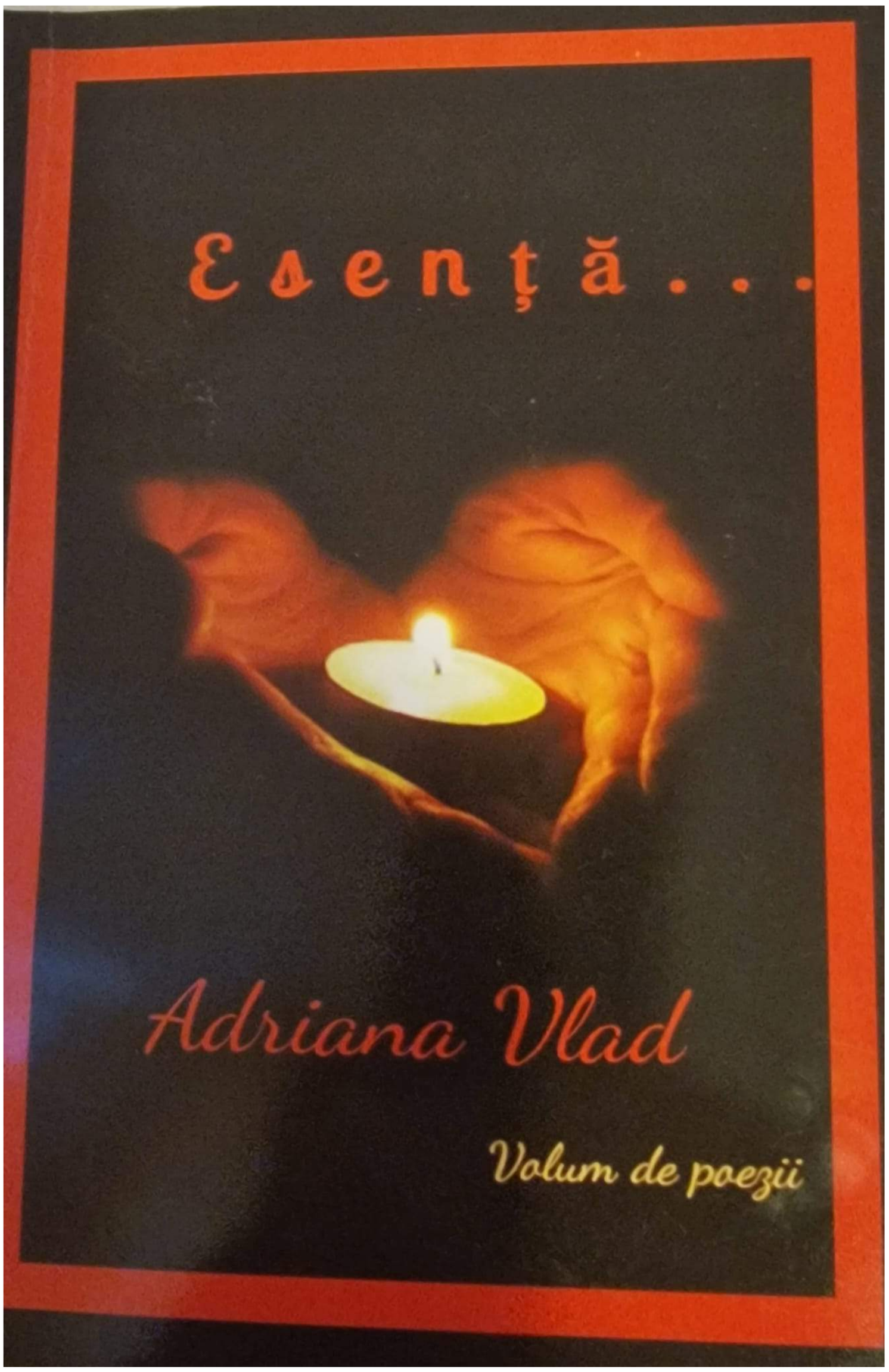
Contact: *cristian.ciobanu@unibuc.ro*
https://www.hateggeoparc.ro/new/index.php/en/home/

ESSENCE VOLUME OF POEMS
ESENTA VOLUM DE POEZII

ISBN: 987 606 9224113

Author: Adriana VLAD

E



Adriana Vlad's debut volume highlights a special poetic sensitivity, a spirit concerned with dressing in lyrical form the numerous spiritual turmoils and questions that the poet asks herself. Each poem has a quote from great writers or philosophers attached at the end, which emphasizes the deeply meditative nature of the poems. The book launch will end with an autograph session offered by the poet to poetry lovers who will come to this event",
County Library,
Ioan Sebastian Bara.

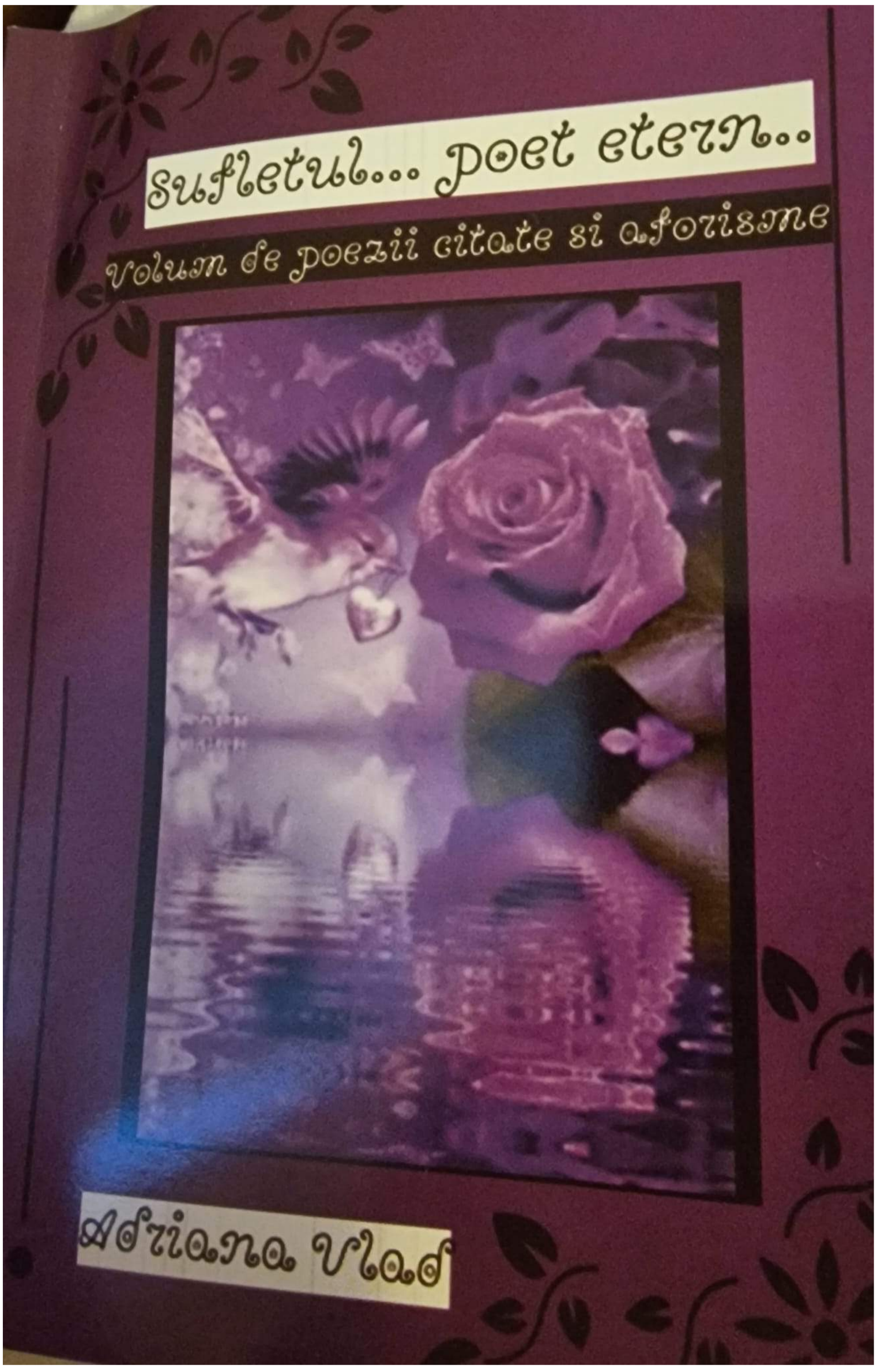
Contact: vladadriana11@gmail.com

THE ETERNAL POET SOUL / SUFLETUL POET ETERN

ISBN: 978-606-517-101-5

Author: Adriana VLAD

E



For man, refuge in art is the chance to heal from the wounds suffered throughout life, it is a form of overcoming trials and overcoming. Of all the arts, the metaphorizing word, in a process of infinite germination, is the only one that can encompass the complexity of the soul of the being, the intense experiences throughout existence, the aspirations, the tragedy of life and the joy of fulfillment.

The new volume of poems signed by professor Adriana Vlad is a poetic exercise in converting life into metaphor, wishing for a condensation of suffering and happiness in the word, the supreme gift that man received through Creation from God.

Contact: vladadriana11@gmail.com

MECANISME PENTRU DEBITAT PRODUSE METALURGICE ANALIZA CINEMATICĂ ŞI CINETOSTATICĂ
MECHANISMS FOR FLOWING METALLURGICAL PRODUCTS KINEMATIC AND KINETOSTATIC ANALYSIS

E

ISBN 978-606-35-0533-1

Authors:. Adina BUDIUL BERGHIAN

Shears for cutting metal products play an important role in the steel industry. Due to the specificity of their operation, these machines are relatively difficult to study in depth their structure because any non-technological stops imply blockages of the rolling process. Once put into operation, the shears acquire a “closed box” character, being able to observe only the mode of action of the knives. As a result, most studies regarding these machines are of an experimental type. Such a study is also attempted to be developed in the present work which proposes the use of empirical and phenomenological models of a shear with 8000 kN parallel knives.

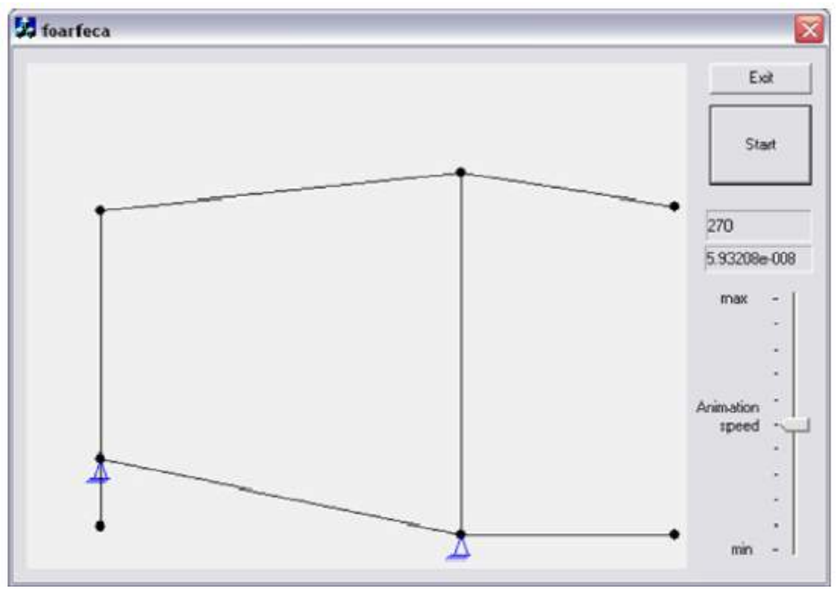
ADINA BUDIUL BERGHIAN

MECANISME PENTRU DEBITAT PRODUSE METALURGICE

ANALIZA CINEMATICĂ ŞI CINETOSTATICĂ

Colecţia "MANUALUL STUDENTULUI"





EDITURA POLITEHNICA
TIMIŞOARA – 2023

Contact*: E-mail: adina.budiul@fih.upt.ro*

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Medicine

Paramedical

Pharmacy

Cosmetics

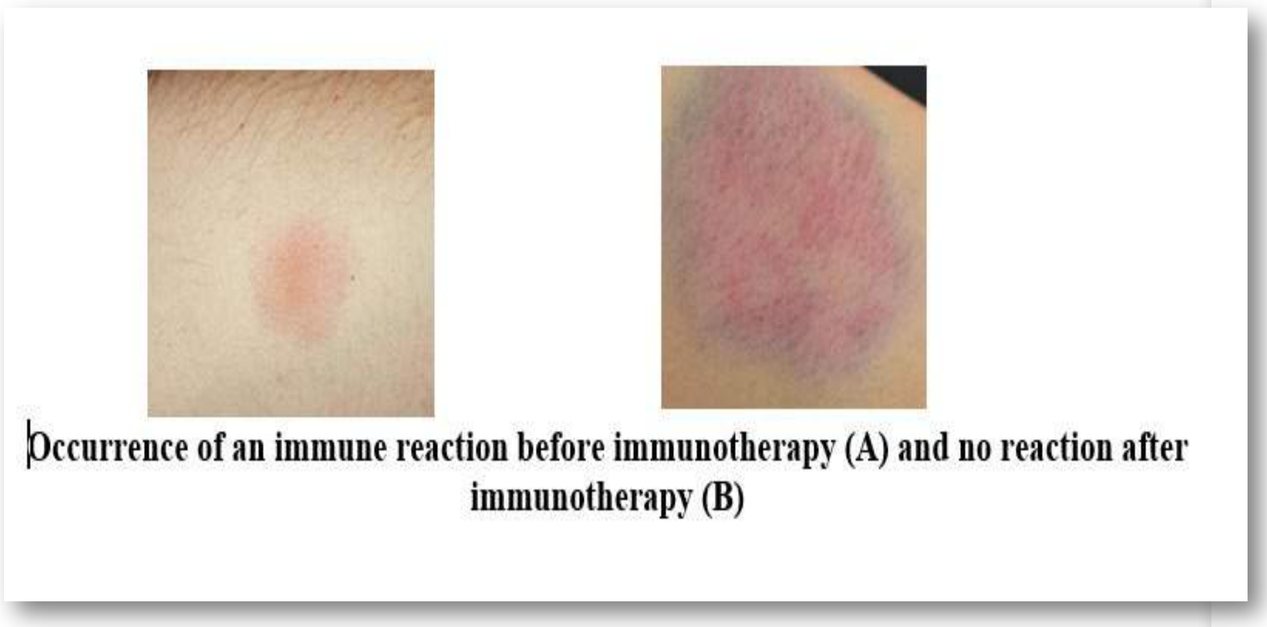
Hygiene

New technique to Conversion of Blood Group(Rh) from Positive to Negative by Immuno-coated Method

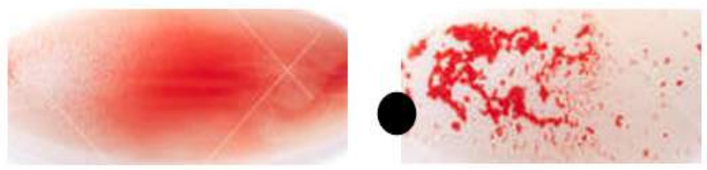
Prof.Dr . Ali Abdulhussein Mahdi
Dr.Abdulameer Jasm Mohammed
College of Health and Medical Techniques , Middle Technical University-Iraq

Through this innovation, any Positive blood type is converted into a Negative blood type regardless of the type of blood type (O or A or B or AB) through the encapsulation of Rh (D) antigens on the red blood cell surface, In the blood of people with the positive category of the blood type, the idea is based on the cracking of laboratory-produced antibodies against the Rh antigen (D). The antibody is broken through a site dedicated to cracking, which is usually found on these antibiotics.

It is universally known as the "papain cleavage site", (papain enzyme) to crack the antibody and uses the fab part of the antigen to encapsulate the surface of the Ag "Rh (D)" and is completely blocked from the immune definition The body, which converts the blood type from Rh (+ ve) to Rh (-ve)

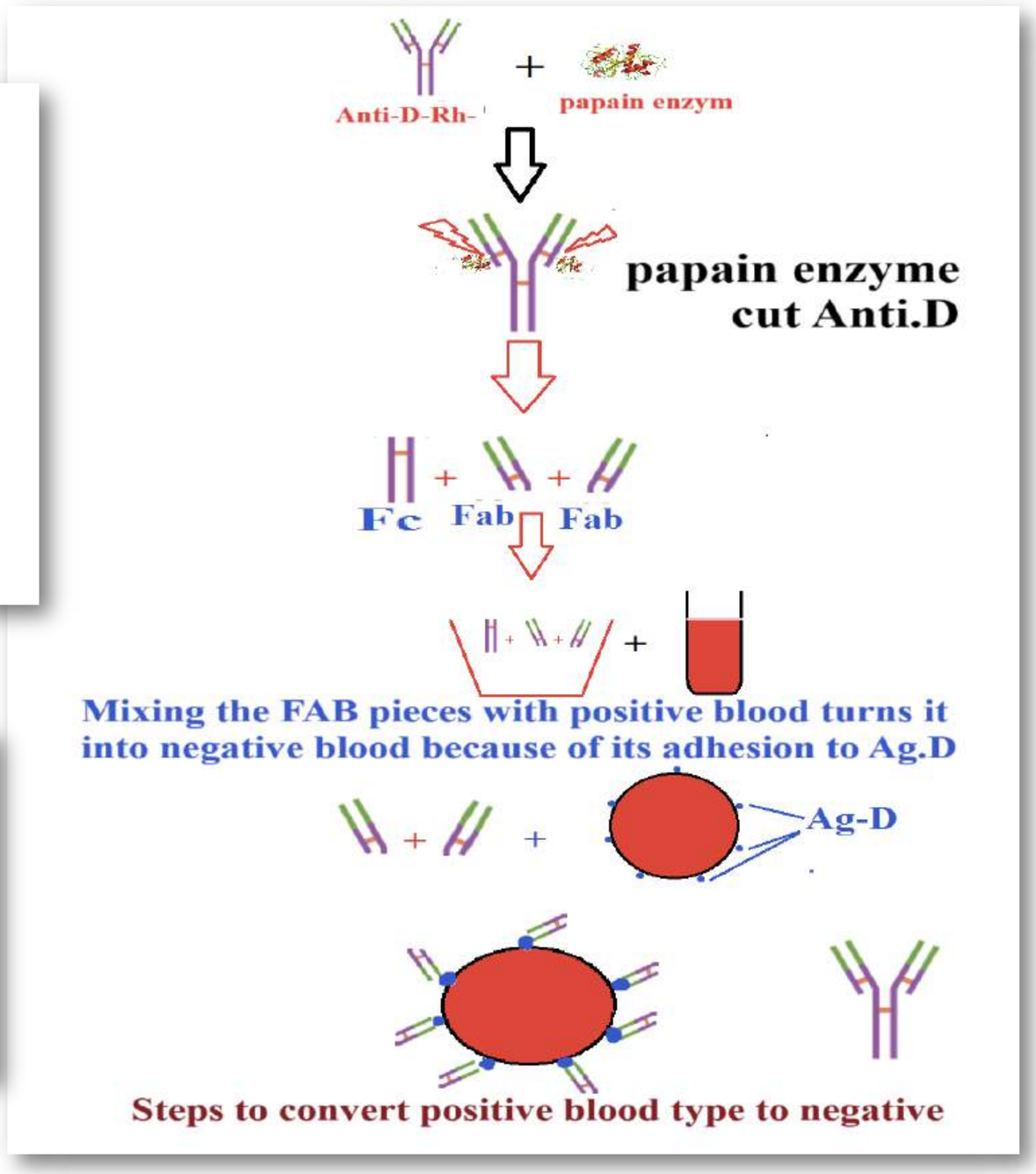


Occurrence of an immune reaction before immunotherapy (A) and no reaction after immunotherapy (B)



(b) (a)

Shows the transformation of the positive blood type in the form of (A) and negative after treatment in the form (B) of the same sample



Steps to convert positive blood type to negative

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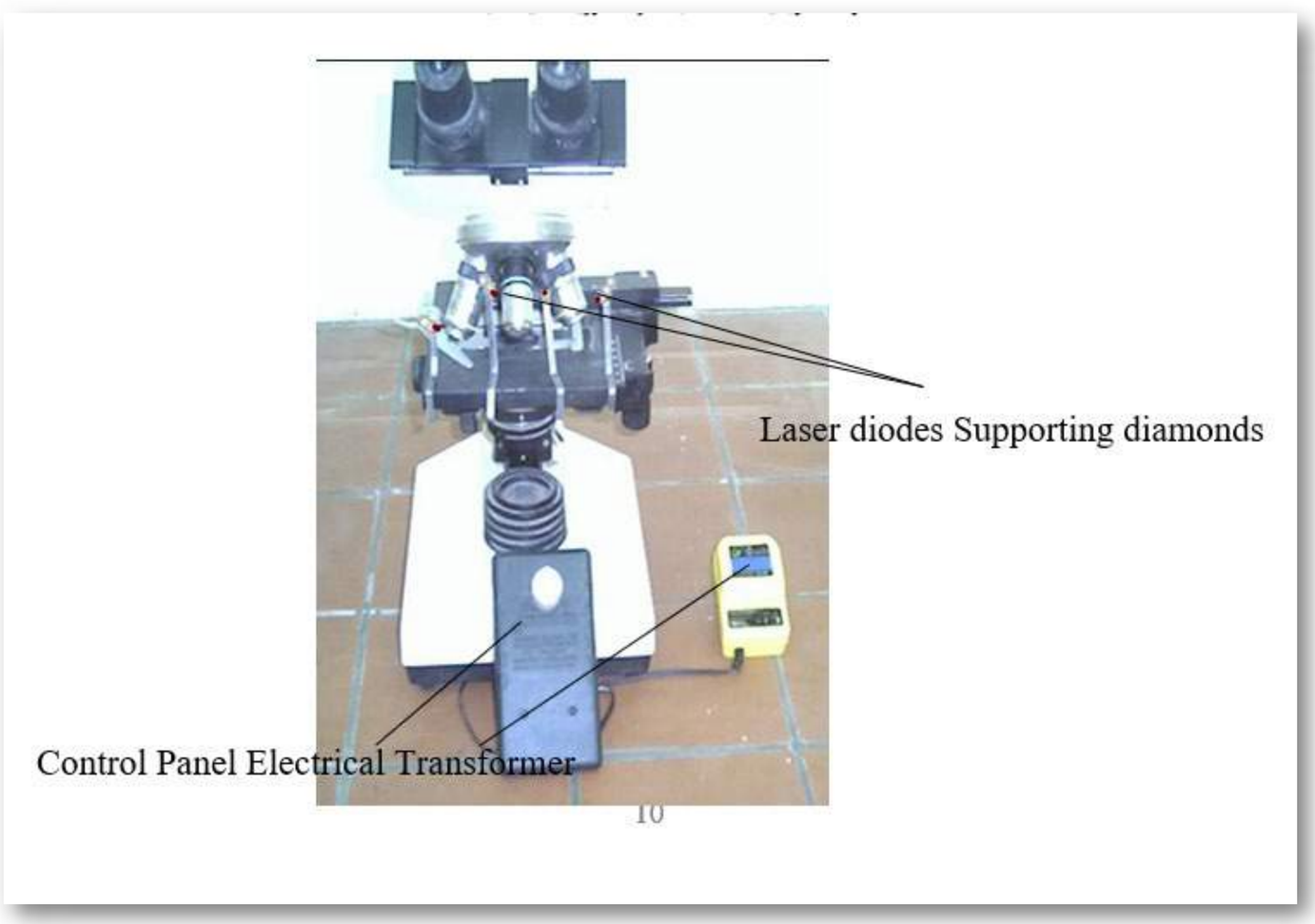
Developing a microscope to a three-dimensional microscope

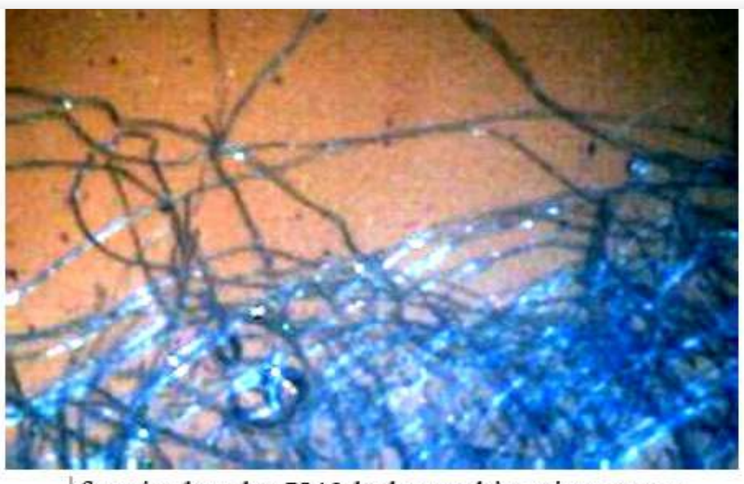
Prof.Dr . Ali Abdulhussein Mahdi*
Dr.HASHIM ABED ABBAS / **
***College of Health and Medical Techniques , Middle Technical University-Iraq**
****University Diyala / college of medicine.**

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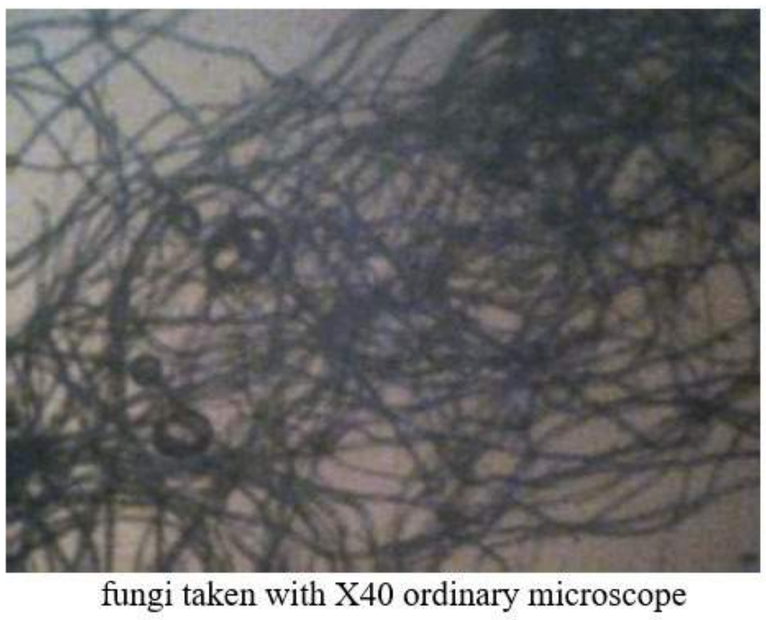
The image that we see in the ordinary light microscope is in fact a false image with dimensions greater than the real size that the model under the microscope looks like because it represents the shadow of the model and not the image of the original model and this image has only two dimensions; and since some laboratory diagnoses depend in their diagnosis on the shape and dimensions of cells, there was a need to manufacture a three-dimensional vision microscope system, which shows us the true image of the model and its three dimensions by placing a laser diodes system that is installed on the ordinary optical microscope simply and easily.

Through this microscope, our concept of the images taken by the ordinary microscope will change from the images taken by the three-dimensional vision microscope.





fungi taken by X40 holographic microscope



fungi taken with X40 ordinary microscope

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A new technique to estimate the phagocytic activity of cells

F

Dr. Omar Sadik Shalal
Dr. Ali Abdulhussain Mahdi
College of Health and Medical Techniques, Middle Technical University - Iraq

This innovative technique involves utilizing bacteria labeled with fluorescent nanoparticles as bait to evaluate the phagocytic activity of cells, including mononuclear and neutrophil cells. The procedure entails mixing labeled bacteria with a drop of blood on a glass slide, incubating the slide at 37°C for three hours, and examining it under a fluorescent microscope. Labeled bacteria appear as fluorescent entities inside or outside the cells.

The phagocytic activity rate is calculated by counting the number of cells containing fluorescent bacteria, dividing it by the total cell count, and multiplying the result by 100%. This method boasts a low error margin (less than 0%), as it relies on fluorescence-based detection rather than traditional staining methods, overcoming issues of dye crystallization and incomplete bacterial staining.

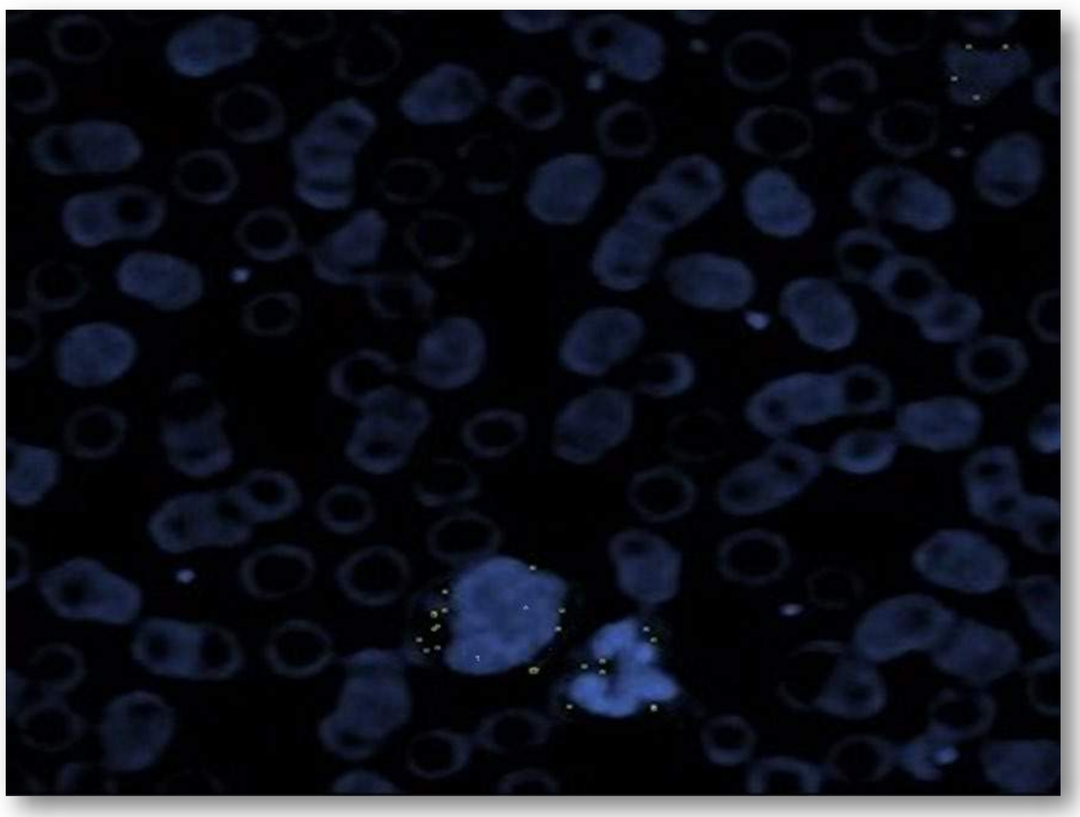


Figure 1: Demonstrates phagocytosis of fluorescent-labelled bacteria observed under a fluorescent microscope.

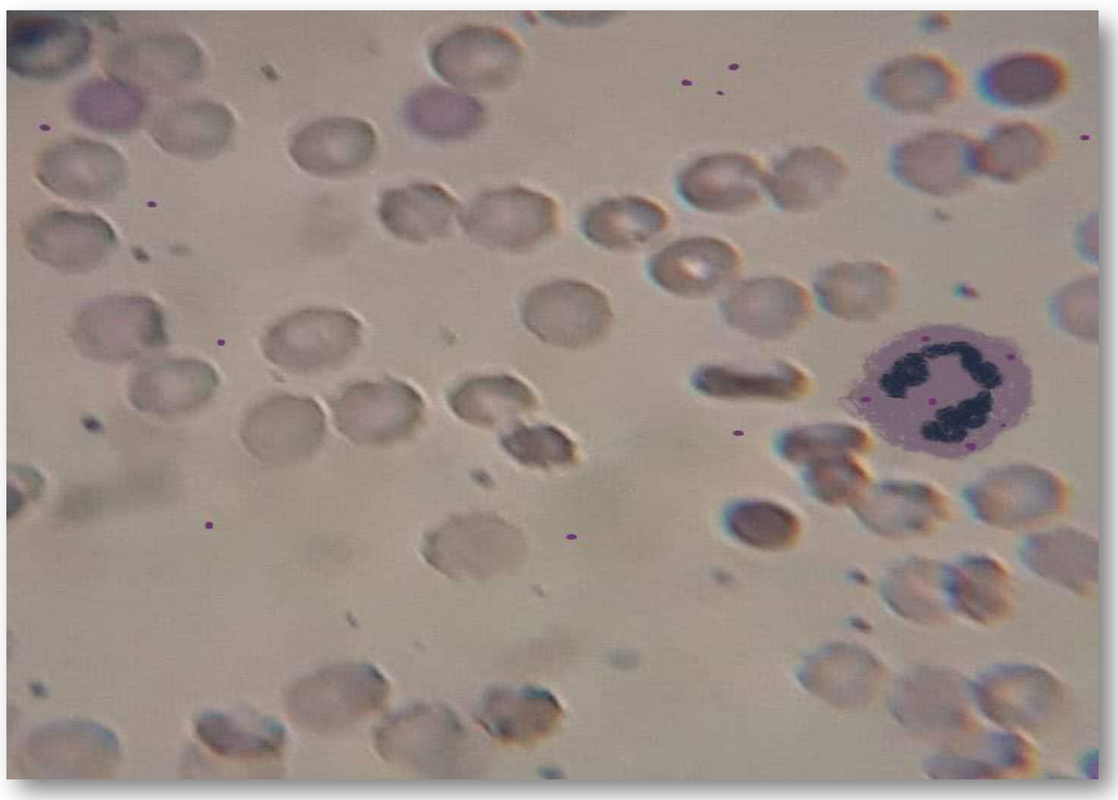


Figure 2: Illustrates traditional staining methods and their limitations, such as misidentification of dye crystals as bacteria.

Advantages:

Ease of Use: Simple and cost-effective.

High Accuracy: Overcomes limitations of traditional staining methods.

User-Friendly: Easily interpretable by researchers without extensive experience due to clear bacterial fluorescence.

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Purification of black carrot dye and its use as a color reagent

Dr. Rabab Mohammed Abood
Azhar Mousa Mohammed

F

A paper industry was reached that reveals acidic, basic and neutral solutions through the color change occurring in it, where the acid has a red color and when the neutral is purple and when the base is green, and the color guide used in this experiment is extracted from the carrot plant Daucus carota after the extraction process on it.

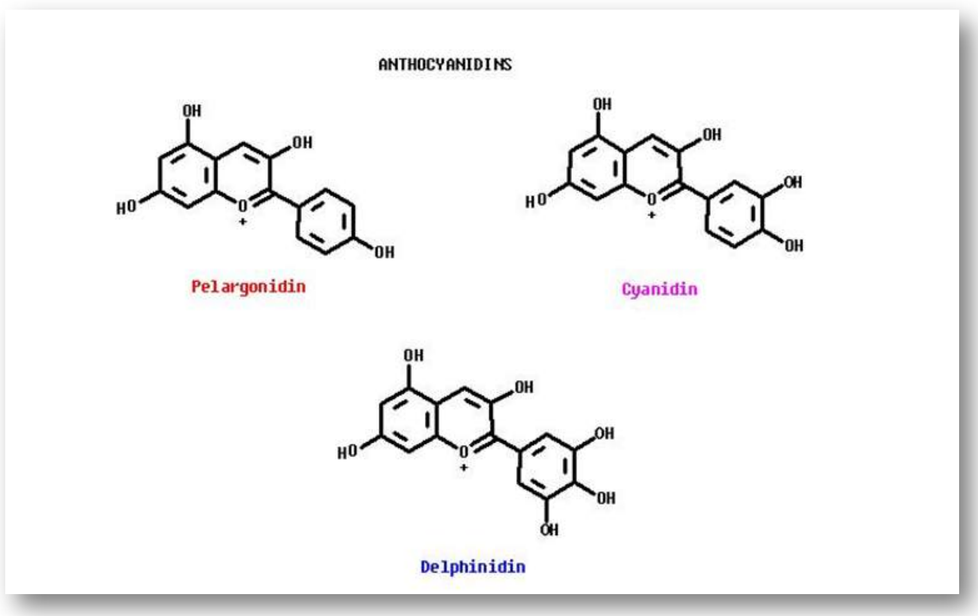
This method is distinguished from the method of sunflower paper by the following:

1- It's made of non-toxic natural materials while sunflower paper is made of toxic chemicals.

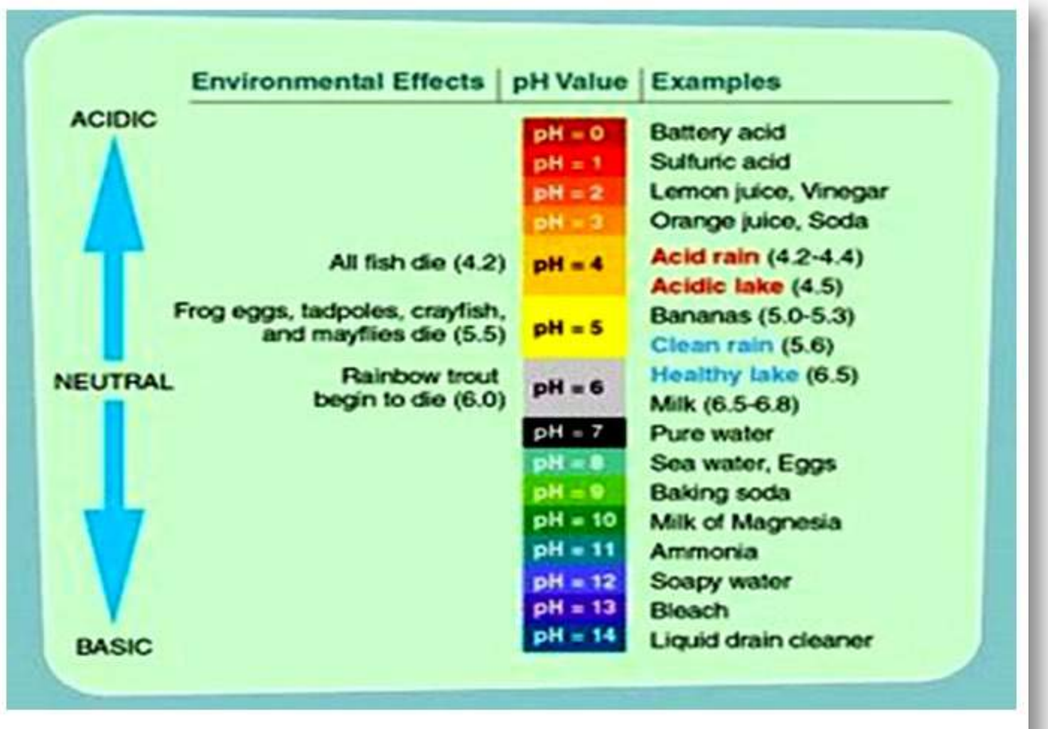
2- Made of materials available in nature and inexhaustible.

3- It is characterized by the fact that the new method has three points of color change: red, green and purple, while the sunflower leaf has two points of color change, which are red-blue.

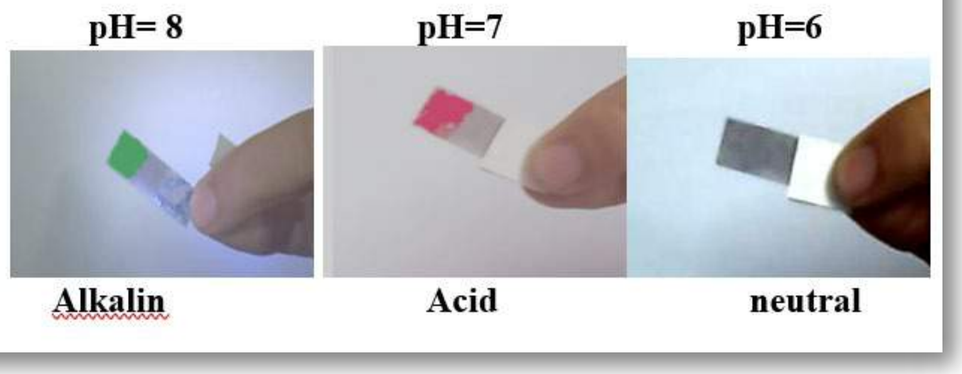
4- Color stability chemically, as they do not disintegrate and do not interact with the materials used with them, which gives them color stability.







Represents the color change of xanthinin pigment



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METHOD FOR IDENTIFYING THE ANTI-HEV IGG MARKER IN THE BLOOD SERUM

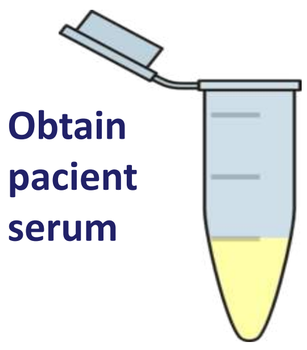
F

MD 1258 Z 2019.02.28

Authors: Sajin Octavian, Iziumov Nina, Pinzaru Iurie, Guțu Veaceslav, Țurcanu Adela, Blaj Valentina

The essence of the invention involves the examination of blood serum using enzyme immunoassay on a microplate containing adsorbed AgHVE. This process entails determining the optical density values of the samples through photometric analysis at a wavelength range of 450 to 620 nm. Subsequently, the average optical density value of the samples with negative control is calculated using the formula: the average optical densities of the samples with negative control + 0.350. The ratio between the average optical density value of the patient's serum and the average optical density value of the samples with negative control is then computed. A ratio of up to 0.9 indicates a negative result, while a ratio exceeding 1.1 indicates a positive result. Samples yielding a ratio within the range of 0.9 to 1.1 undergo treatment with a 20% slurry of kaolin (Al2O3·2SiO2·2H2O). Following this treatment, the enzyme immunoassay is repeated, and the ratio of the average optical density value of the patient's serum to the average optical density values with negative control + 0.350 is determined. A ratio of up to 0.9 indicates a negative result, whereas a ratio exceeding 1.1 suggests a positive result.

Representation of the invention



Obtain pacient serum

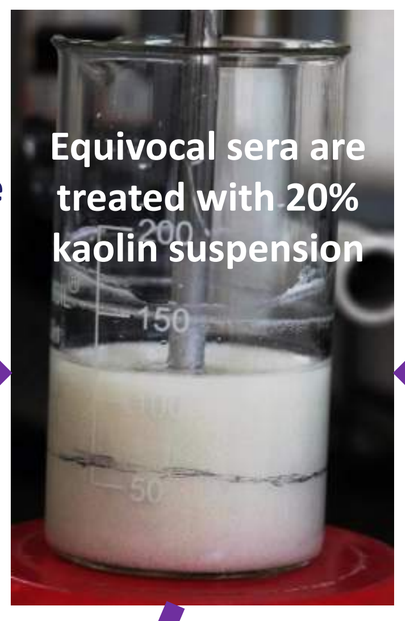
Testing for the presence of anti-HEV IgG antibodies in serum using the ELISA





Kaolinite ($Al_2Si_2O_5(OH)_4$)

Obtaining kaolinite 20% supension



Equivocal sera are treated with 20% kaolin suspension

Reading the results:
SO/CO < 0.9 - negative
SO/CO = 0.9 → 1.1 - equivocal
SO/CO >1.1 - positive



The result is that there are no more equivocal samples, as they have determined their status

Repeated testing of the kaolin-treated serum using the ELISA method





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THE BEAUTY ROOM

THE WORLD OF NAILS

The nail is a thin plate that grows on the top of the last phalanx of the fingers and covers the top of the fingertips.



The most important methods to style a nail is **semi-permanent nail polish**, and to give it length you can use the **construction on the template** or the **construction from smart shapes tips.** There is also the old **tips** that are no longer used.







- The construction of the nail can be done with:

Gel



Acryl



Poly-gel



- The construction of gel nails is recommended for people who want a flawless manicure for a long time but it is very effective and for women whose natural nails are not very resistant, they break quickly or exfoliate immediately.

SCAN ME



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  Str.Mihai Viteazu , nr.5, bl. W, sc.A, Ap.1, Hunedoara

OPTOELECTRIC STIMULATED SELF-DISINFECTION MEMBRANE

F

Patent/project number: **A/00081/01.03.2024**

Author/s: Bănică Radu Nicolae, Ursu Daniel Horațiu, Moșoarcă Cristina, Eftimie Mihai Alexandru, Panaitescu Paul-Ștefan, Șchiopu Pavel, Costache Carmen-Anca, Melinescu Mihaela-Alina, Colosi Ioana-Alina

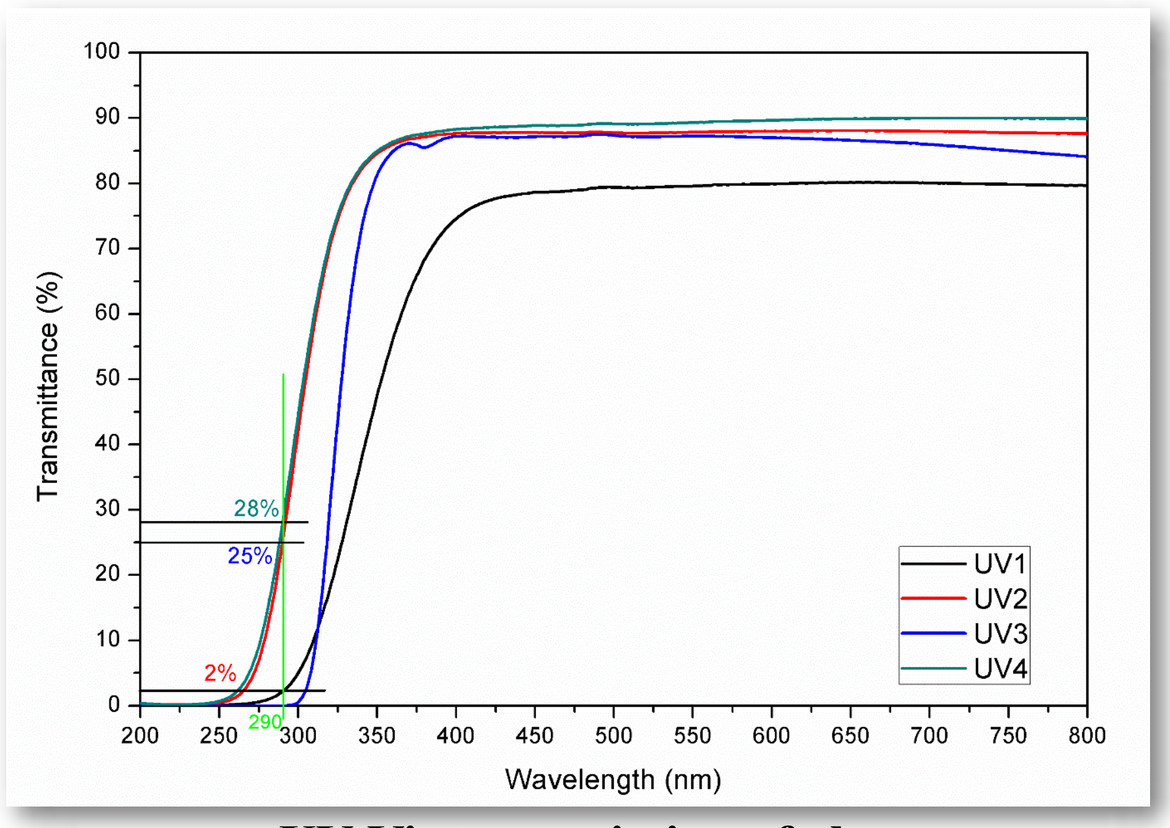
The invention relates to an optoelectrical stimulated self-disinfecting membrane based on the action of ultraviolet light and silver ions on bacteria on septic surfaces, and to the process for obtaining the same.

The demonstrative experimental model of UV glass enhanced antibacterial membranes synthesis method implies the design, synthesis and complex characterization of the developed glass compositions and of Ag nanowires on the polymer. Subsequently, the layered material is obtained and currently optimized, followed by demonstration of the experimental model and evaluation of the antibacterial parameters of material. All of these are based on correlation between experimental model characteristics of synthesis method, glass' UV transmittance and antibacterial applications.

Self-disinfecting membrane made from a polymer with good transparency in the UVB and UVC range on a transparent glass surface and with silver nanowire electrodes applied, separated by an ion-exchange layer. The whole assembly is illuminated through the glass by germicidal UVB-UVC emitting diodes.



Molten glass image



UV-Vis transmission of glasses



Thermovision image of layers



Optical profilometry image

Contact: mihai.eftimie@upb.ro

QVibe frequency generating therapeutic device- used in a psoriasis case

Patent/project number: No 009015340-0001, 06/05/2022

OSIM: 301241/29.12.2023

F

Author/s: Senior Lecturer Dr. Oana Codruta Bacean Miloicov

Institution: SC Holistic Lounge SRL

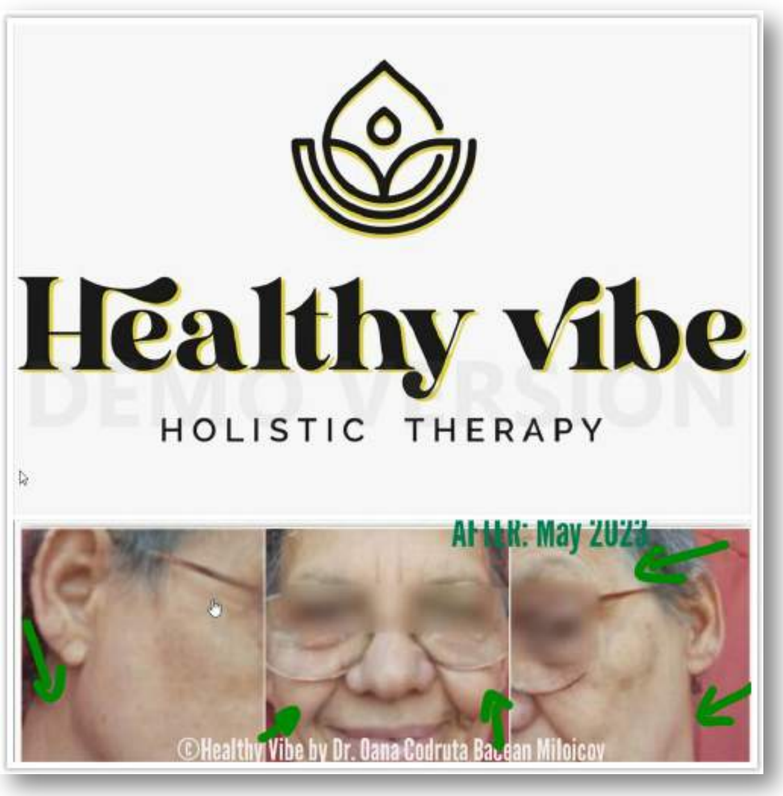
Psoriasis is a chronic autoimmune skin condition characterized by the rapid overproduction of skin cells. This results in the formation of red, scaly patches on the skin's surface. The exact cause of psoriasis is unclear, but it is believed to involve a combination of genetic and environmental factors. Psoriasis can cause discomfort and itchiness, on face, neck, arms, in this case.

Q Vibe is a therapeutic frequency generating device, an inovative concept made out of requencies that are imprinted on it, the final result is a special, unique algorithm, modified according to the pathologies of the patients. We applied the device as a therapy(local external application) for this case. The subject used the QVibe deviece everyday, the frequency recipie is a unique registered algoritm imprinted on the device that generates the frequencies as therapy; we can clearly see the difference in the pictures(BEFORE- on 23rd of april 2023) and the result in the pictures named: (AFTER- on may 2023, followup: 25 IAN 2024).

BEFORE- 23rd of april 2023



AFTER- may 2023



25 IAN 2024



It is successfully used in balancing other pathologies as (allergies/digestive problems/renal diseases/melanoma/nervous system lessions/viral or bacteriological infections/parasitic infestations/bone diseases, etc.), it optimises the state of health, according to the improvement of the clinical and paraclinical paramethers.

Contact: baceano@gmail.com +40745170879 www.healthyvibe.ro

SCAN ME

Solutie Virala ”SV”

Viral solution ”SV”

Patent/project number: OSIM 301242/29.12.2023

Author/s: Senior Lecturer Dr. Oana Codruta Bacean Miloicov

Institution: SC Holistic Lounge SRL

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Substance composition - BASE: 5 ml Swedish Bitter, 25 ml ozonated pure water

The product is obtained by energetic imprinting with specific frequencies of known viruses; according to scientific studies, any energetically imprinted liquid generates those frequencies for a duration of approximately one month, after which the liquid no longer retains the energetic imprint. I used this aspect and reprinted another solution after the deadline.

I have used the product in hundreds of cases of viral infections, with spectacular results even from the first days; method of administration: the first two days: 7pic x 5/day, then: 7pic x 3/day, until the bottle is used up.

It is interesting that the base consists of a tincture of plants, natural and without adverse effects, but the therapy is actually made from the energetically imprinted frequencies on the solution. We started from the premise that digestion begins in the oral cavity, where absorption is very good (ex.: Nitroglycerin that is administered sublingually), as a result: statistics, kinesiological tests and the clinical evolution of the cases have shown us that the product is efficient reducing the occurrence of the symptoms, increasing immunity - much improved clinical condition after administration, significant reduction of inflammation and nasal congestion.

The remedy is energetically imprinted with the help of the only device of this type in RO, the recipie concept being registered with copyright.

Other benefits:

- adjuvant in upper respiratory infections (rhinitis, sinusitis, tonsillitis, laryngitis)
- adjuvant in lower respiratory infections
- anti-inflammatory
- antiviral
- can be anywhere administered
- does not require travel to get the solution, it can be send anywhere

SCAN ME

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www.healthyvibe.ro



CO-TECH- test, measure, balance

(innovative concept of Automated Software Process for evaluation and therapy through biofeedback)

Patent/project number: OSIM 301240/29.12.2023

Author/s: Senior Lecturer Dr. Oana Codruta Bacean Miloicov

Institution: SC Holistic Lounge SRL

F

CO-TECH software process automation is an innovative and copyright-protected concept that brings a new perspective to patient evaluation and therapy. By using biofeedback, this system allows for the optimization of evaluation processes, improvement of therapies, and reduction of execution times, resulting in an optimized therapeutic approach with accelerated efficiency.

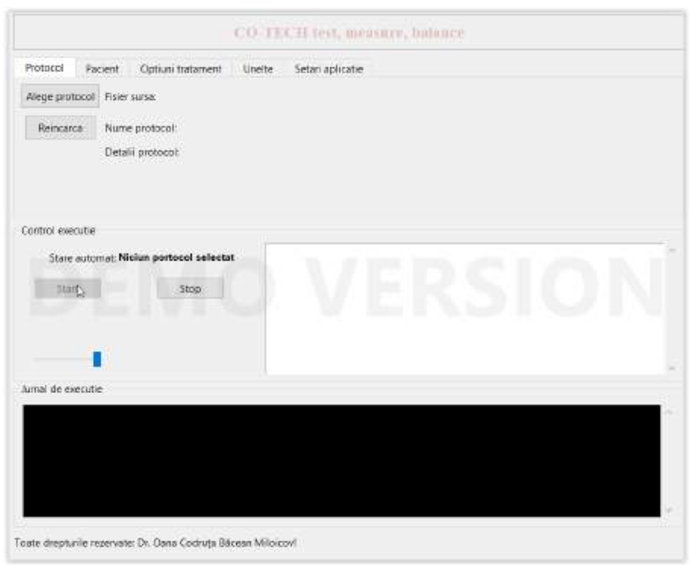
One of the core features of CO-TECH is its ability to obtain precise and detailed data about patients through biofeedback. This process involves measuring and monitoring the physiological responses of the patient in real-time. As a result, therapists can have access to essential information about the patient's health status and can adapt the treatment based on these data.

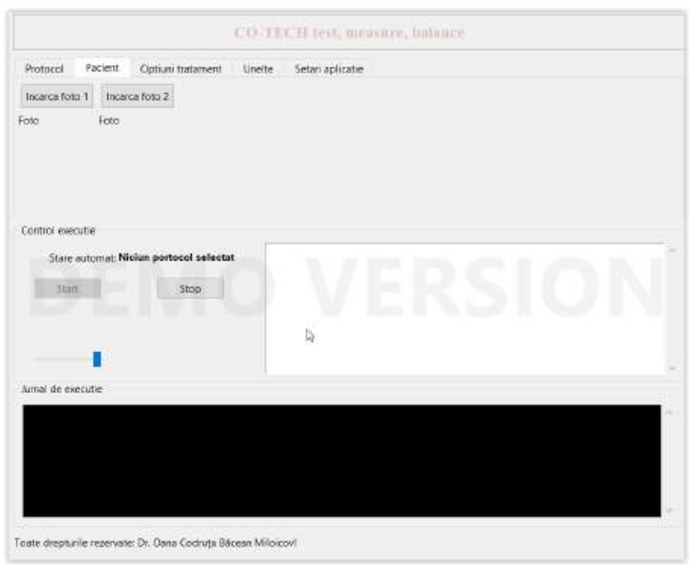
By applying CO-TECH software process automation in therapies, specialists can more accurately evaluate the patient's health condition and rapidly identify problems or difficulties they may face. Additionally, this system enables continuous monitoring of therapeutic progress, facilitating real-time adjustment and optimization of the therapy.

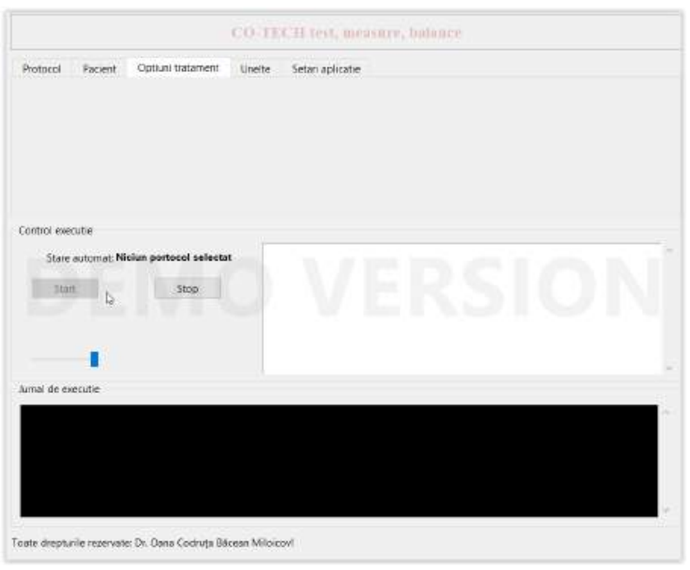
Moreover, CO-TECH software process automation brings a significant change in terms of the time required for therapies. By utilizing this innovation, therapists can considerably reduce the overall duration of therapies as they can quickly identify and eliminate inefficient or unnecessary methods. Consequently, patients will benefit from more time dedicated to other types of therapies without compromising the effectiveness of the main treatment.

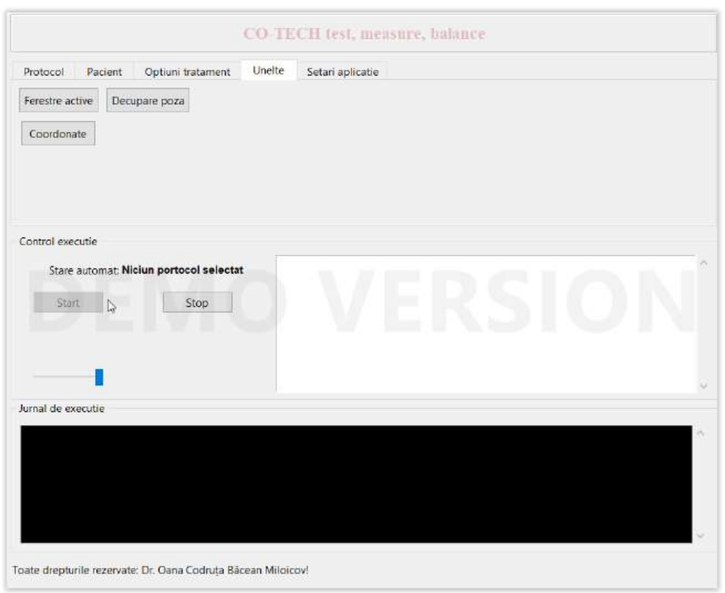
Another significant value brought by CO-TECH is its capacity to provide an optimized, personalized, and tailored therapeutic approach to each patient's needs. Through efficient resource utilization, therapists can develop specific strategies for each patient and track their evolution and health status in real-time. Through the use of CO-TECH software process automation, therapies become more efficient, faster, and personalized. This revolutionary concept offers the possibility to evaluate and treat patients more accurately, reducing therapy periods and maximizing therapeutic outcomes. CO-TECH brings benefits to the field of biofeedback evaluation, therapy improvement, and streamlining of therapeutic approaches, thus transforming the way patients are treated and cared for.

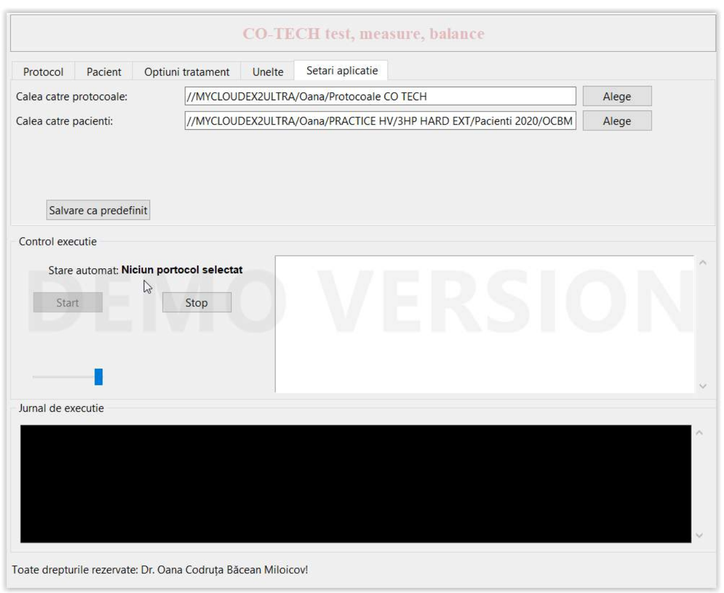
Affections that we have already used the CO-TECH- test, measure, balance concept for: depression, neoplasms, burnout, vitiligo, neurological diseases.











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SCAN ME

QVibe frequency generating therapeutic device-used against parasitic infections

Patent/project number: OSIM 301243/29.12.2023

Author/s: Senior Lecturer Dr. Oana Codruta Bacean Miloicov

Institution: SC Holistic Lounge SRL

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Intestinal parasites in children are organisms that develop and live in their intestinal tract, causing various symptoms and health problems. The causes of parasitic infestation can be varied, including consuming contaminated food or water, contact with infected animals, or lack of proper hygiene.

The effects of intestinal parasites on children's health can be quite severe. These parasites can affect nutrient absorption, causing nutritional deficiencies and delays in growth and development. They can also cause abdominal pain, diarrhea, nausea, weight loss, fatigue, and irritability. Persistent parasite infestation can compromise the child's immune system and lead to the development of other serious conditions.

To combat intestinal parasite infestation in children, an effective and non-invasive device is the Q Vibe - a therapeutic anti-parasitic frequency generator. This device provides a natural and gentle solution, eliminating the need for aggressive or invasive chemical substances in treatment.

Q Vibe works by generating and transmitting specific frequencies that are highly unpleasant and harmful to parasites. These frequencies disrupt and destroy the parasitic organisms, eliminating them from the child's body. The use of the Q Vibe device is easy and convenient, so it can be used at home or in a clinic setting.

Another advantage of using Q Vibe is its immediate effectiveness. After applying the therapeutic frequencies, the child will experience rapid relief of symptoms and an improvement in overall health. Treatment with Q Vibe is completely non-invasive and does not cause any negative side effects.







In short, the Q Vibe device provides a non-invasive, natural, and effective solution for combating intestinal parasite infestation in children. By using therapeutic anti-parasitic frequencies, this technology offers immediate benefits and completely eliminates the harmful effects of chemical substances.

Q Vibe is a therapeutic frequency generating device, an inovative concept made out of frequencies that are imprinted on it, the final result is a special, unique algorithm, modified according to the pathologies of the patients. We applied the device as a therapy(local external application) for these cases on the right hand on the radial arthery, where we can feel the pulse.
It is recomanded to use QVibe deviece everyday, all the time, especially during the night, the frequency recipie is a unique registered algoritm imprinted on the device that generates the frequencies as therapy. In cases of abdominal discomfort caused by colics, inflammation, abdominal bloating, intestinal parasites or imbalance of intestinal flora.

SCAN ME

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ANTISTRESS PROTOCOL used in a vitiligo case

Patent/project number: OSIM 301240/29.12.2023

Author/s: Senior Lecturer Dr. Oana Codruta Bacean Miloicov

Institution: SC Holistic Lounge SRL

F

The results obtained, including physical outcomes, clinical appearance, and psycho-emotional levels, demonstrate the effectiveness of this innovative copyrighted protocol. Its non-invasive nature, combined with optimized clinical parameters, enhances skin appearance and mental equilibrium, as confirmed by the results.

The therapeutic ANTISTRESS PROTOCOL has shown significant benefits in the treatment of vitiligo. Beyond its impact on the physical manifestations of the condition, it also addresses the psycho-emotional aspects that can accompany the disease.

By promoting psycho-emotional balance, this protocol helps individuals cope with the psychological impact of vitiligo. It addresses the underlying traumas stored in the subconscious, aiding in their release and healing.

Furthermore, the therapeutic ANTISTRESS PROTOCOL protocol focuses on CHACKRA balancing, which plays a vital role in overall well-being. Through this process, the energy centers of the body are harmonized, resulting in improved physical and mental health.

The protocol also includes AURA correction, which helps restore the energetic field surrounding the body. By addressing imbalances and blockages within the aura, the therapy promotes healing on multiple levels.

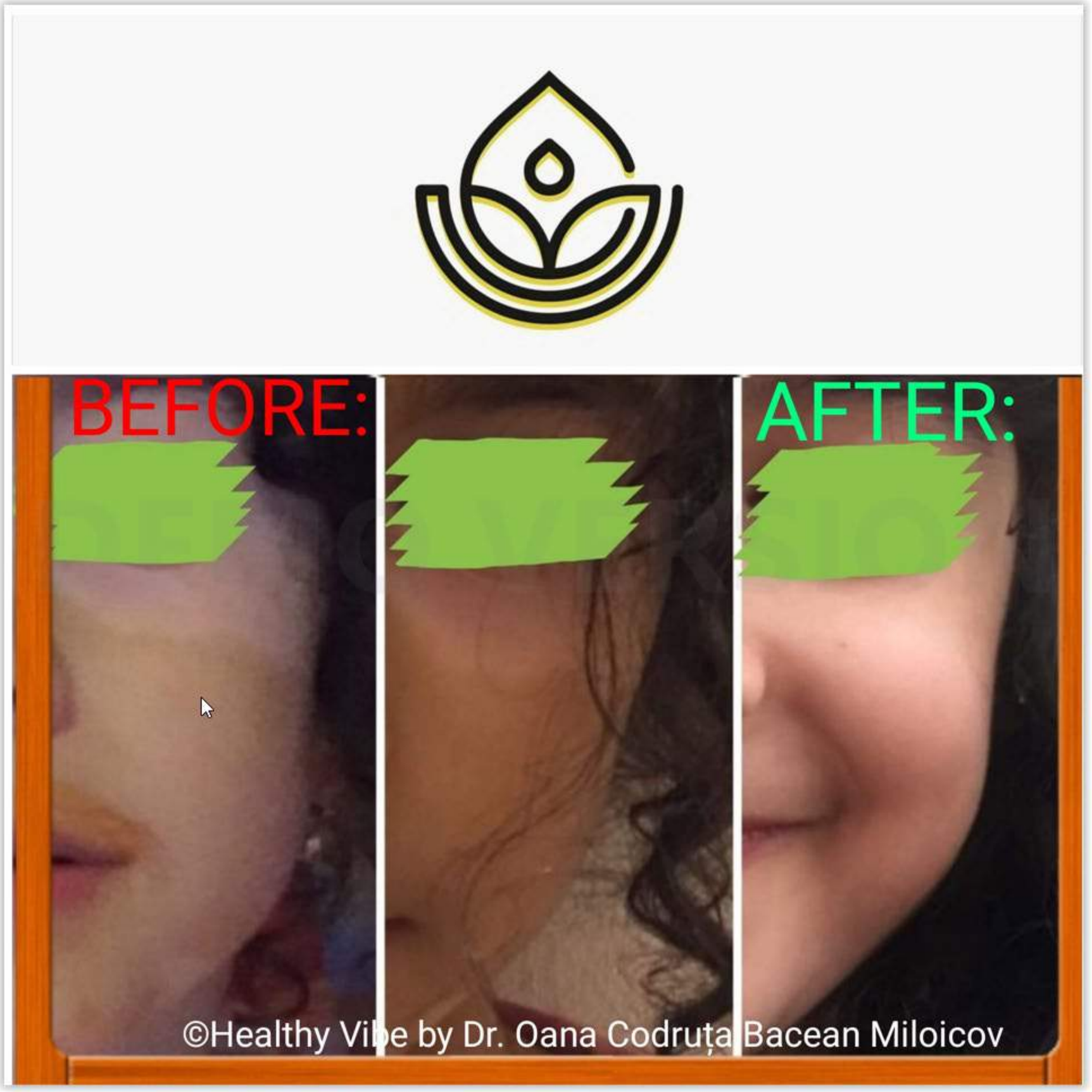
By targeting the imbalances caused by stress factors, this protocol aids in restoring the body's equilibrium. It addresses the impact of external stressors and supports the body's ability to withstand and recover from them.

The use of this innovative ANTISTRESS PROTOCOL has shown remarkable clinical and psycho-emotional improvements. It offers a non-invasive approach to treating vitiligo, enhancing both physical appearance and mental well-being. With the support of copyright protection, this protocol stands as a testament to its effectiveness and results.

The image on the LEFT- **BEFORE** represents the photo taken at the initiation of the therapy.

The image in the middle, intermediate stage.

The image on the right, the RESULT- **AFTER** obtained after three months from the initiation of the therapy.



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QVibe frequency generating therapeutic device - used in fibrillation

Patent/project number: No 009015340-0001, 06/05/2022

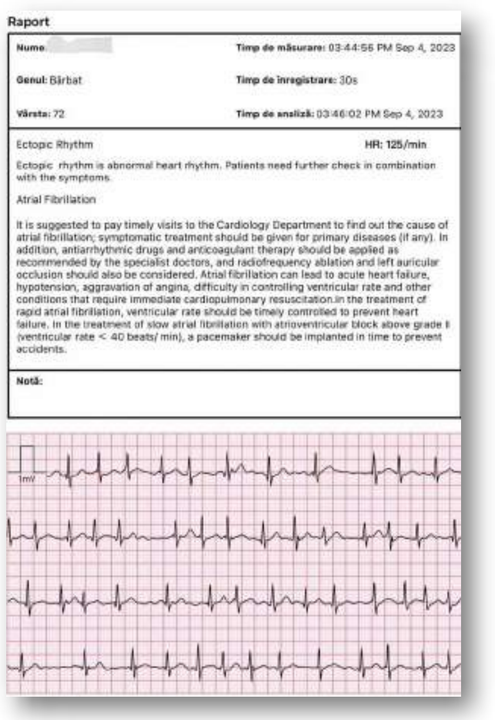
Author/s: Senior Lecturer Dr. Oana Codruta Bacean Miloicov

Institution: SC Holistic Lounge SRL

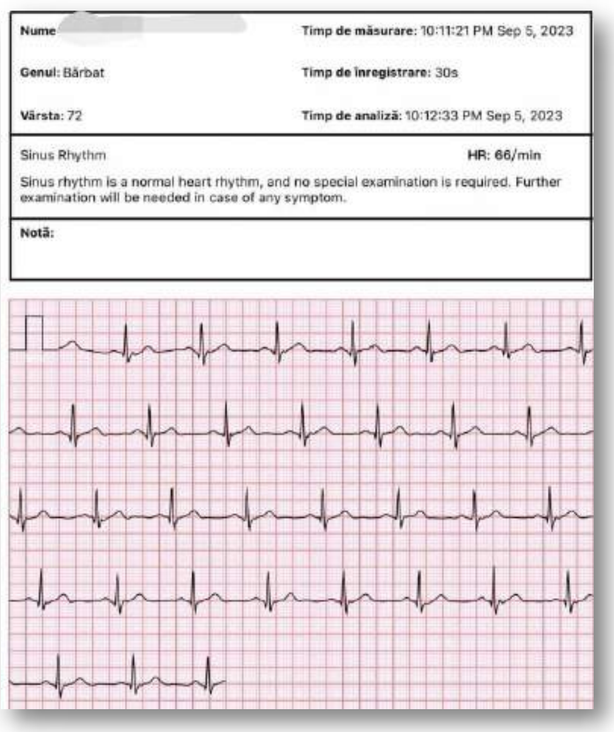
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Fibrillation represents a cardiac arrhythmia characterized by rapid, irregular contractions of myocardial fibers, resulting in ineffective cardiac output. This condition poses a significant risk of complications including cerebrovascular accidents, congestive heart failure, and sudden cardiac death.
Traditional therapeutic modalities have primarily involved pharmacological interventions, such as antiarrhythmic agents, aimed at restoring normal sinus rhythm. In refractory cases, interventional approaches such as catheter ablation or implantation of cardiac rhythm management devices may be necessary to achieve rhythm control.
The innovative QVibe device offers a novel approach to fibrillation management, utilizing therapeutic frequencies to modulate myocardial activity. Unlike conventional therapies, QVibe provides a non-invasive and physiologically harmonious intervention.
Mechanism of Action: QVibe operates by emitting targeted frequencies tailored to counteract the pathophysiological mechanisms underlying fibrillation. Its unique formulation integrates anti-inflammatory agents to mitigate myocardial inflammation, optimize coronary perfusion, and enhance myocardial contractility and conduction. Patients can conveniently integrate QVibe into their daily regimen, benefiting from its therapeutic effects irrespective of their location. Fig- Fibrillation episode and Fig.- After using QVibe device, sinusal rhythm- NORMAL
Synergistic Effects of Dual Device Deployment: For enhanced efficacy, simultaneous usage of two QVibe devices is recommended. By wearing one device as a wristband on the right wrist and another as a necklace close to the cardiac region, direct transmission of therapeutic frequencies into the circulation is achieved, augmenting therapeutic outcomes. Fig.3 – After 10 days of using QVibe device, sinusal rhythm- NORMAL AND Fig. 4- – After aprox one MONTHS of using QVibe device, sinusal rhythm- NORMAL
Immediate Symptomatic Relief and Prophylactic Benefits: QVibe offered in this case immediate relief from fibrillation symptoms while also exerting prophylactic effects, reducing the likelihood of recurrent episodes and promoting sustained cardiovascular wellness.
Personalized Therapeutic Approach: QVibe embodies a tailored therapeutic paradigm, customized to accommodate the unique pathophysiological profiles of individual patients. Its innovative algorithmic design ensures precise modulation of frequencies, optimizing therapeutic efficacy for fibrillation management.
In summary, the advent of the QVibe device heralds a transformative era in fibrillation management. By furnishing a gentle, natural, and patient-centric therapeutic modality, QVibe empowers individuals to proactively engage in the preservation of cardiac health and enhance their quality of life.

Fibrillation episode:



After using QVibe device, sinusal rhythm- NORMAL:



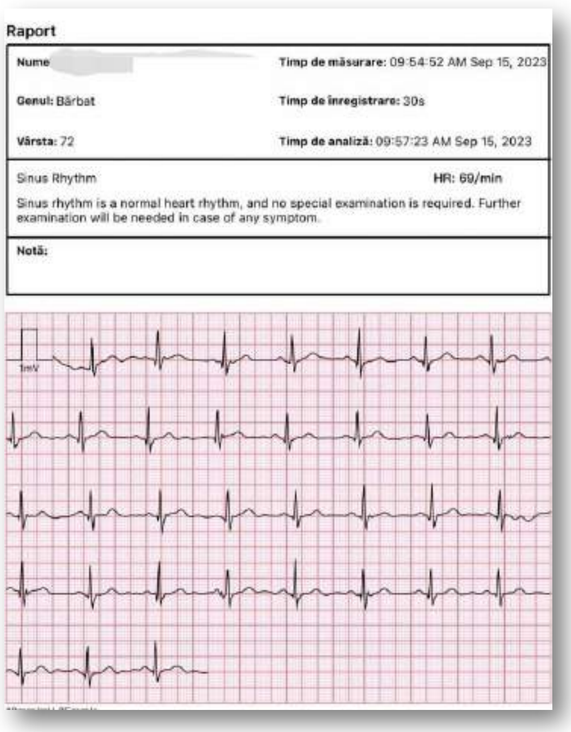


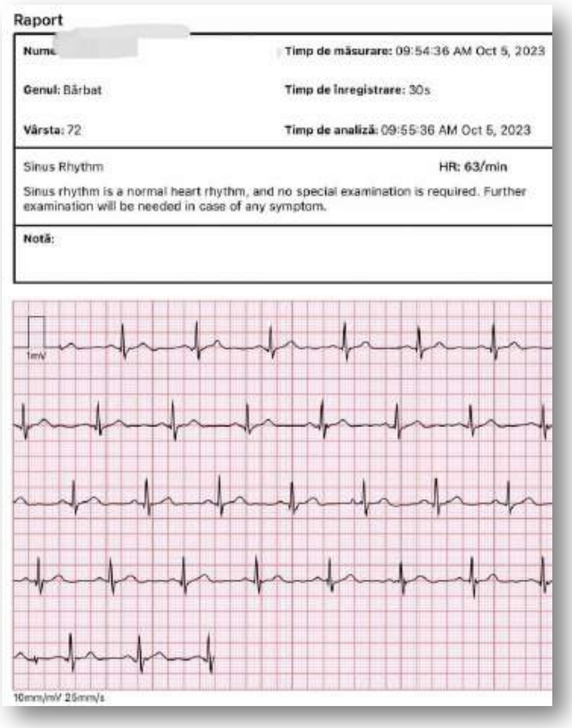






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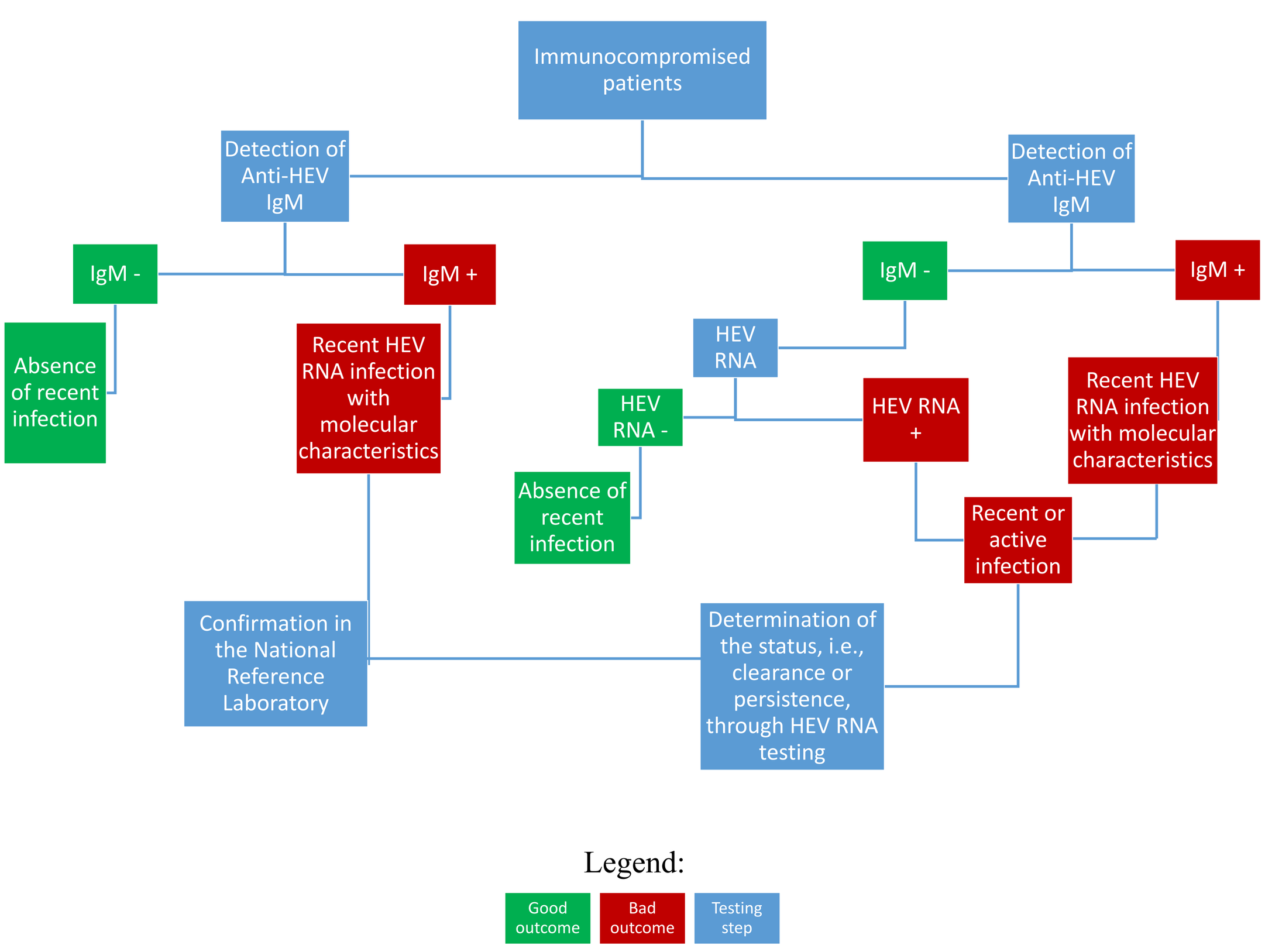
+40745170879 https://www.healthyvibe.ro/product/incarcare-dispozitiv-q-vibe-medium-circulatie/ www.healthyvibe.ro

Method of testing blood in immunocompromised people for viral hepatitis E markers

Patent deposit nr. S 2024 0087 dated 06.09.2024
Authors: Sajin Octavian, Iziumov Nina, Paraschiv Angela, Țurcanu Adela, Holban Tiberiu, Blaj Valentina

F

The invention relates to medicine and can be used to test the blood of immunocompromised persons for viral hepatitis E markers with the goal to prevent infection with viral hepatitis E virus. The essence of invention is that the presence of anti-HEV IgG marker is determined in the blood of immunocompromised persons, including in hemodialysis patients using the „ELISA" immunological assay, and also anti-HEV IgM, with changes in the sequences of investigations in the process of performing the immunoenzymatic reaction and in addition, the PCR test (polymerization chain reaction) for HEV RNA is carried out in nominated persons tested positive for anti-HEV IgM, and in the case of a positive RNA test, the diagnosis of viral hepatitis E is established in immunocompromised persons, including hemodialysis patients.



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Assessment of the prevalence and risks associated with hepatitis E virus infection in pregnant women (2024-2027)

Authors: Sajin Octavian, Iziumov Nina, Blaj Valentina

F

The project evaluating the seroprevalence of hepatitis E virus (HEV) in pregnant women in the Republic of Moldova is a pioneering research effort, marking the first large-scale national investigation in this field. The study objectives include assessing the prevalence of HEV infection, analyzing its impact on maternal and fetal health, identifying associated risk factors, and evaluating the effectiveness of prevention and control measures.

The project's significance is substantial, addressing an important gap in HEV research and providing essential information for adapting control measures and improving public health. The study will utilize ELISA immunoassay methods for determining HEV markers, along with questionnaires and medical record analysis, with statistical analysis supporting data interpretation. The anticipated results aim to provide precise data on infection prevalence, identify relevant risk factors, and highlight clinical characteristics, thereby contributing to the optimization of preventive measures and the enhancement of the healthcare system.

Study design:

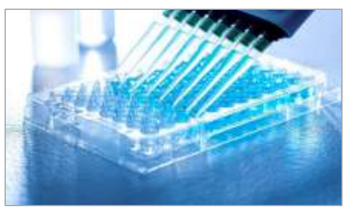
Step 1: Identification of Pregnant Women and Serum Collection

3 perinatal Medical Centers — **~500 Women**



Step 2: Testing

Testing:
anti-HEV IgG
anti-HEV IgM
and HEV RNA markers



Step 3: Processing results and identifying positive pregnant women

Pregnant women with positive results



Step 4: Evaluation of clinical impact and risk factors for hepatitis E

Clinical impact of HEV in ~100 pregnant women

Risk factors, case-control study ~200 pregnant women



Step 5: Final results with developed practical recommendations

Development of optimized recommendations and control measures against hepatitis E for pregnant women based on the study findings.



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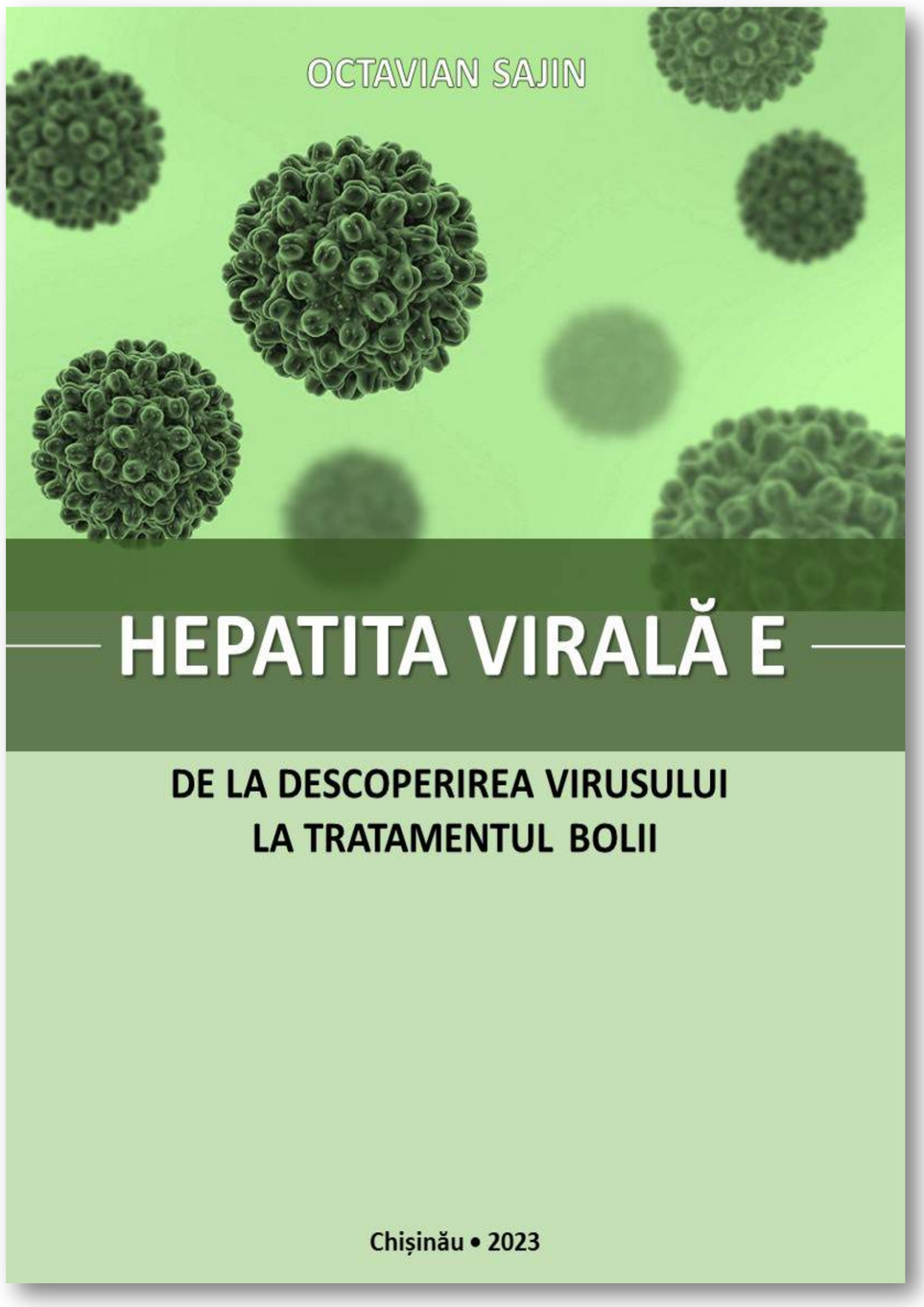
Viral hepatitis E: from virus discovery to disease treatment

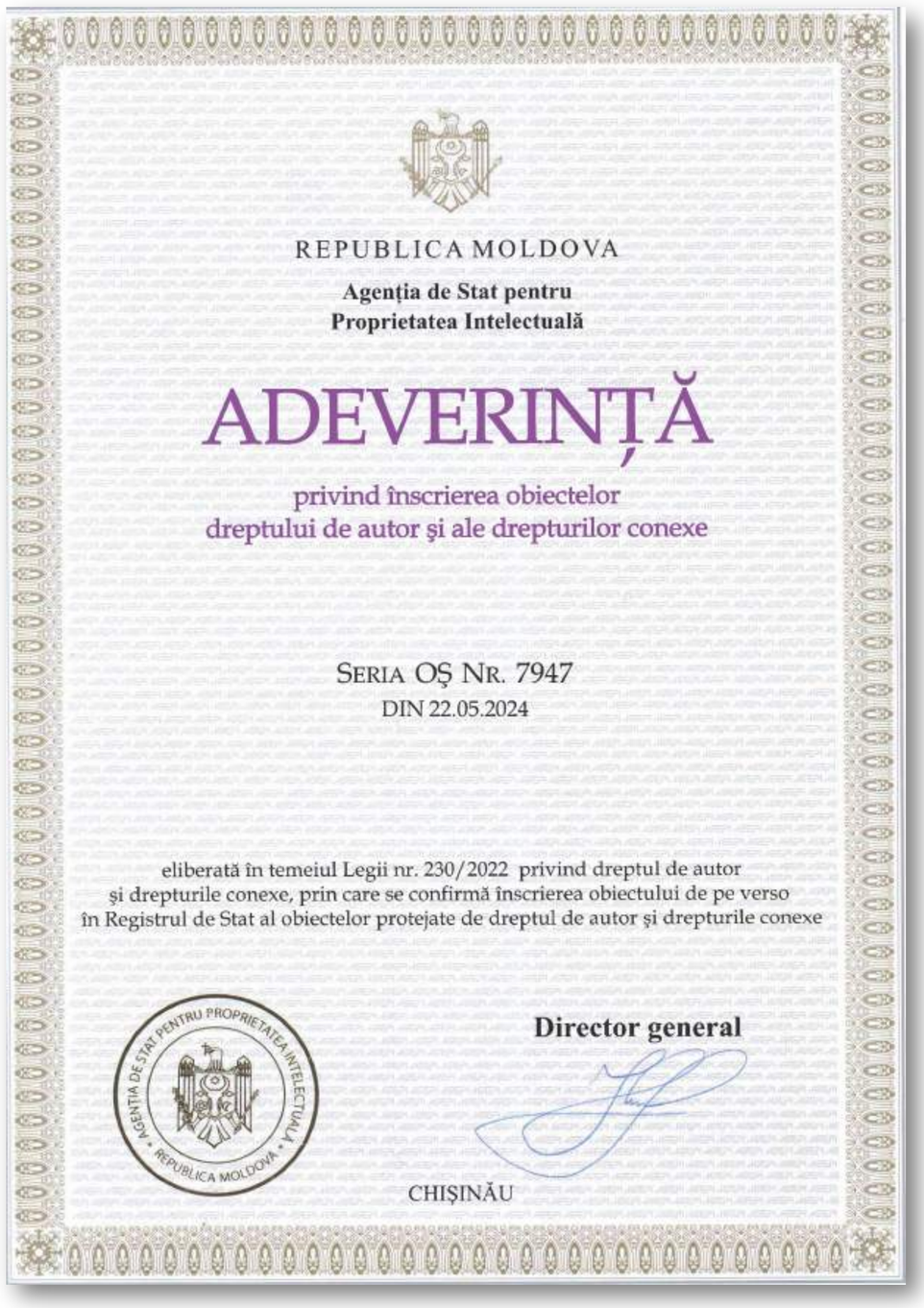
Scientific Work No. 7947, May 22, 2024
Authors: Sajin Octavian, Iziumov Nina, Blaj Valentina, Guțu Veaceslav

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This monograph serves as an essential resource for understanding hepatitis E, providing a detailed analysis of aspects related to the virus. Beginning with the discovery of the etiological agent, it addresses epidemiology, pathogenesis, clinical manifestations, diagnosis, and treatment of hepatitis E. The authors, recognized experts, have compiled data from numerous studies, presenting information on the virus's properties, transmission routes, at-risk populations, and epidemic intensity.

A key chapter is dedicated to clinical manifestations, including acute and chronic forms of the disease, with a thorough discussion on diagnostic methods used. The monograph also emphasizes the importance of prophylaxis, outlining both specific and non-specific prevention measures. The aim of the work is to facilitate a deeper understanding of hepatitis E and to provide practical guidance for diagnosis, treatment, and prevention. The authors hope this monograph will significantly contribute to research development in the field, opening new avenues for investigation and promoting innovative discoveries in addressing hepatitis E.




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Director general

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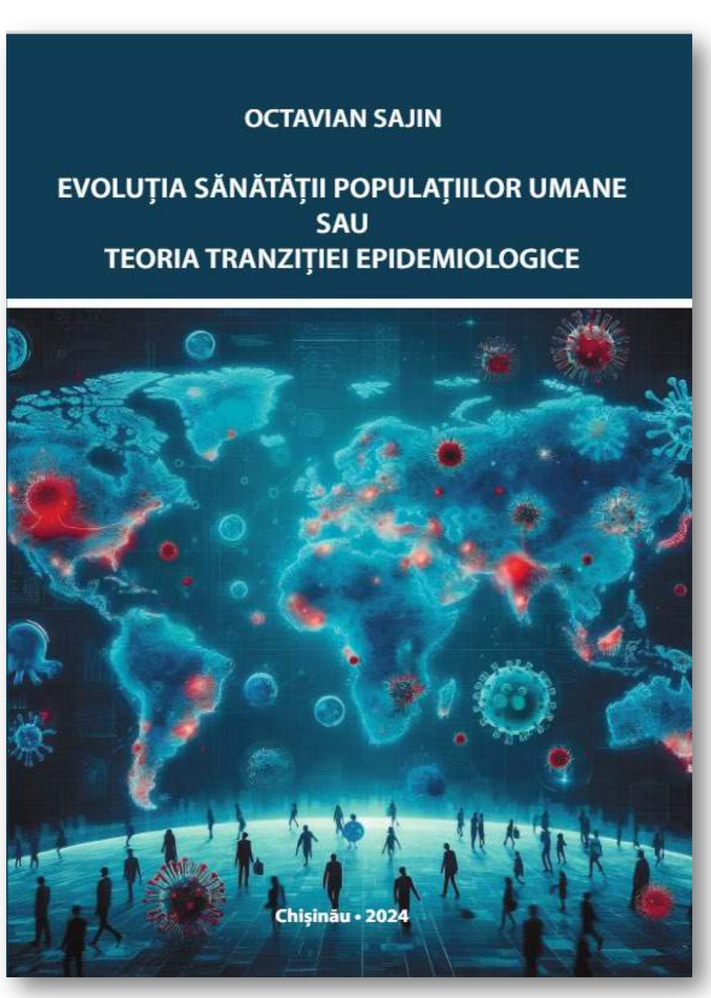
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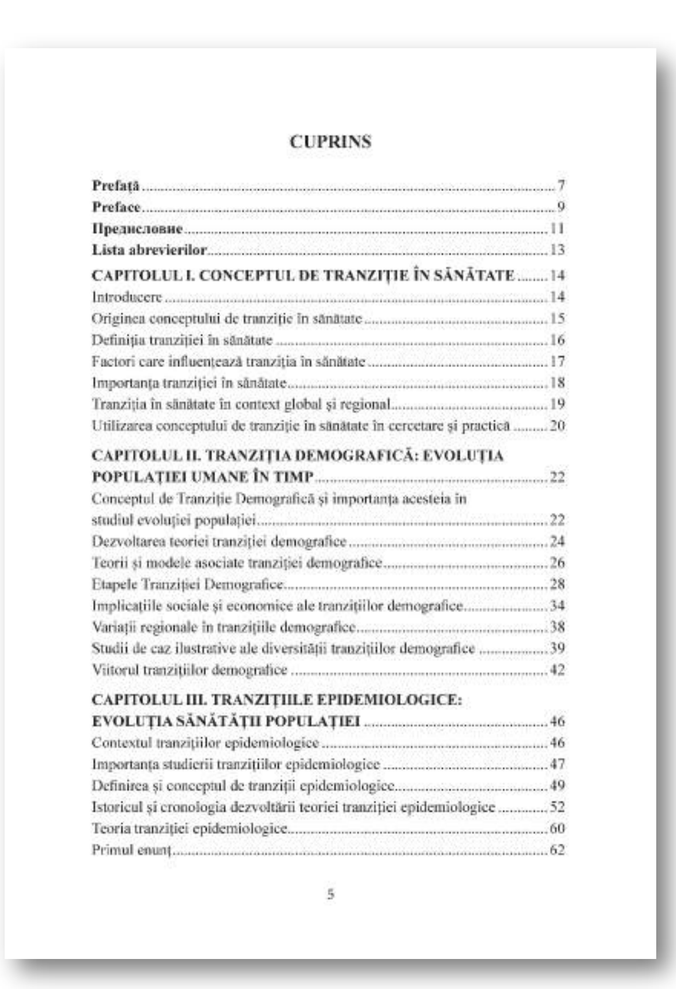
The Evolution of Human Populations' Health or The Theory of Epidemiological Transition

F

Author: Sajin Octavian

This book delves into the concept of epidemiologic transition, a fundamental shift in the causes of diseases and deaths within populations. Health, a basic human right, has been challenged throughout history by infectious diseases and malnutrition, which have significantly impacted life expectancy and quality of life. However, in recent decades, advancements in medicine, technology, and lifestyle have dramatically altered this reality. The concept of epidemiologic transition emerges as a result of these changes, highlighting the shift from infectious diseases and malnutrition to chronic non-communicable diseases such as cardiovascular diseases, diabetes, and cancer, which are now the leading global causes of morbidity and mortality. Through this book, the reader will explore the evolution of disease causes and mortality trends over time, analyzing the factors that have contributed to these transitions, including medical and technological innovations, changes in lifestyle, increased education, and economic progress. The book also examines the consequences of these transitions for population health and addresses how health systems must adapt to meet the challenges posed by the rise of chronic non-communicable diseases. through approaches tailored to the specific needs of the current stage of epidemiologic transition.





CUPRINS

Prefață 7
Preface 9
Предисловие 11
Lista abrevierilor 13
CAPITOLUL I. CONCEPTUL DE TRANZIȚIE ÎN SĂNĂTATE 14
Introducere 14
Originea conceptului de tranziție în sănătate 15
Definiția tranziției în sănătate 16
Factori care influențează tranziția în sănătate 17
Importanța tranziției în sănătate 18
Tranziția în sănătate în context global și regional 19
Utilizarea conceptului de tranziție în sănătate în cercetare și practică 20
CAPITOLUL II. TRANZIȚIA DEMOGRAFICĂ: EVOLUȚIA POPULAȚIEI UMANE ÎN TIMP 22
Conceptul de Tranziție Demografică și importanța acesteia în studiul evoluției populației 22
Dezvoltarea teoriei tranziției demografice 24
Teorii și modele asociate tranziției demografice 26
Etapele Tranziției Demografice 28
Implicațiile sociale și economice ale tranzițiilor demografice 34
Variații regionale în tranzițiile demografice 38
Studii de caz ilustrative ale diversității tranzițiilor demografice 39
Viitorul tranzițiilor demografice 42
CAPITOLUL III. TRANZIȚIILE EPIDEMIOLOGICE: EVOLUȚIA SĂNĂTĂȚII POPULAȚIEI 46
Contextul tranzițiilor epidemiologice 46
Importanța studierii tranzițiilor epidemiologice 47
Definirea și conceptul de tranziții epidemiologice 49
Istoricul și cronologia dezvoltării teoriei tranziției epidemiologice 52
Teoria tranziției epidemiologice 60
Primul enunț 62

5

Al doilea enunț 64
Epocile tranziției epidemiologice 65
Perioada preistorică 65
Epoca ciumei și foametei 67
Epoca reducerii pandemiilor 81
Epoca bolilor cronice 89
Epoca insolenței 96
Etapele viitoare ale tranziției epidemiologice 97
Epoca bolilor infecțioase emergente și re-emergente 98
Epoca tehnologiilor medicale 106
Epoca sănătății durabile 114
Tranziția epidemiologică și sănătatea umană în contextul schimbărilor climatice 116
Al treilea enunț 119
Impactul vaccinării și intervențiilor medicale 121
Al patrulea enunț 123
Tranziția epidemiologică în țările dezvoltate 125
Tranziția epidemiologică în țările în curs de dezvoltare 127
Al cincilea enunț 128
Modele ale tranzițiilor demografice 129
Modelul clasic al tranziției epidemiologice 130
Modelul accelerat al tranziției epidemiologice 131
Modelul tranziției epidemiologice întârziate 132
Modelul polarizat de durată al tranziției epidemiologice 133
Tranzițiile epidemiologice și sănătatea publică 133
Critici ale teoriei tranziției epidemiologice 136
Implicațiile teoriei tranziției epidemiologice 142
Implicațiile pentru metodele epidemiologice 143
Importanța teoriei tranziției epidemiologice în educația epidemiologilor 145
Adaptarea teoriei tranziției epidemiologice la noile provocări globale 145
Abordări educaționale pentru epidemiologi în formare 146
Concluzii 147
Cuvânt de încheiere 148
Bibliografie 149

6

The book provides an in-depth look at the patterns of epidemiologic transition across various regions of the world, comparing the evolution of disease causes and death rates in different countries. It also identifies the obstacles faced in controlling and preventing chronic diseases, offering solutions to address these growing concerns. This book is designed for a broad audience, including health professionals, students, researchers, and decision-makers. It serves both as an informative resource and a practical guide to understanding epidemiologic transitions. The book provides a comprehensive exploration of how the causes of diseases and deaths have evolved over time and the factors that have contributed to these changes. It offers deep insights into how society can adapt its health systems and policies to address the challenges presented by the rise of chronic non-communicable diseases. Whether used as a training resource or a strategic tool for disease prevention, this book aims to contribute to improving public health through approaches tailored to the specific needs of the current stage of epidemiologic transition.

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GHEORGHE ASACHI TECHNICAL UNIVERSITY OF IASI

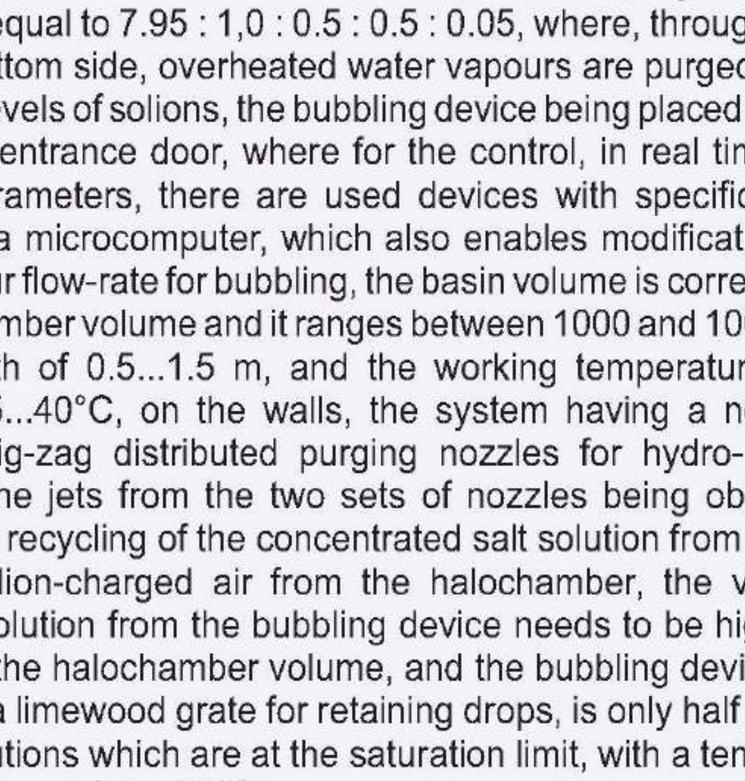
Jacuzzi system for thermalism with hydro-/air-massage and halochamber treatments with solions

Patent RO134023 (B1)

Authors:

I.G. SANDU, A.V. SANDU, I. SANDU, K. EARAR, V. VASILACHE, C.M. ŞTIRBU, R.A. CRIŞAN DABIJA, M. CHIRAZI, A. VLADESCU, M.C. COTRUT, M.D. VRANCEANU

The invention relates to a jacuzzi system for thermalism with hydro-/air-massage and halochamber treatments with solions, to be used for the prevention and treatment of cardio-respiratory, osteo-muscular and neuro-motor diseases as well as for improving performance in children, elderly and sportsmen or persons performing intense physical activity. The system consists of a parallelepipedal or circular tight chamber, with ionized windows, with UV filters, having, in central position, a round-, oval- or lagune-shaped basin made of glass fibers and photo-thermal resistive polymer, an aerosol-generating bubbling device with concentrated solution of NaCl, KCl, CaCl, MgCl and KI in a mass ratio equal to 7.95 : 1,0 : 0.5 : 0.5 : 0.05, where, through the frits from the bottom side, overheated water vapours are purged to reach the preset levels of solions, the bubbling device being placed in a niche next to the entrance door, where for the control, in real time, of the working parameters, there are used devices with specific sensors coupled to a microcomputer, which also enables modification of the water vapour flow-rate for bubbling, the basin volume is correlated with the halochamber volume and it ranges between 1000 and 10000 liters, with a depth of 0.5...1.5 m, and the working temperature ranges between 35...40°C, on the walls, the system having a network of uniformly zig-zag distributed purging nozzles for hydro- and air-massage, the jets from the two sets of nozzles being obtained by pressurized recycling of the concentrated salt solution from the basin and the solion-charged air from the halochamber, the volume of saturated solution from the bubbling device needs to be higher than 1/20000 of the halochamber volume, and the bubbling device, which has above a limewood grate for retaining drops, is only half filled with the salt solutions which are at the saturation limit, with a temperature within the range of 75...80°C.



Used for artificial hallochambers - for respiratory and cardio- health related issues.



The invention is based on a series of principles of operation of the system with jacuzzi and halocamera, involving for body harmonization the process of thermalism (hydrotherapy), which uses two sets of jets by nozzles arranged uniformly in the network on the walls of the pool, one by recirculating the pool. saturated solution of salts with regulated reheating and the other by injecting air loaded with solutions taken from the halochamber and heated to a temperature of 30-35 ° C, and for the prevention and treatment of cardio-respiratory, osteo-muscular, neuro-motor diseases with solions bioactive (halotherapy) in the halocamera. The latter are continuously generated from Aitken-type saline nanoaerosols (low-packing nanopolyhedra) by concentric superstructuring with water pentahydrols formed in situ by semicoordinative aquatemplar in the anionic vertices of the salt polyhedra resulting in concentrically movable spherical nanoglomerular clusters.

ADVANTAGES

-allows the use of a larger number of applicants (2-10);
-allows the co-assistance of hydrotherapy and halotherapy necessary to improve certain ailments or to improve human performance;
- optimal levels of concentrations with constant activity in solions and hydroanions can be obtained for very long periods of time (life span of several days);
- has a high reliability in operation, providing a self-regulating environment of optimal levels of solions and hydroanions, for various procedures for prevention, therapy and improving the human performance of children, the elderly and people with activities that require intense effort or sports performance.
- allows to reduce by half the time of application of the therapy procedures compared to the case of using only the halocamera.

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Manager: Eng.PhD. Andrei Victor SANDU

BIOMECHANICAL HAND PROSTHESIS

A00590/2024

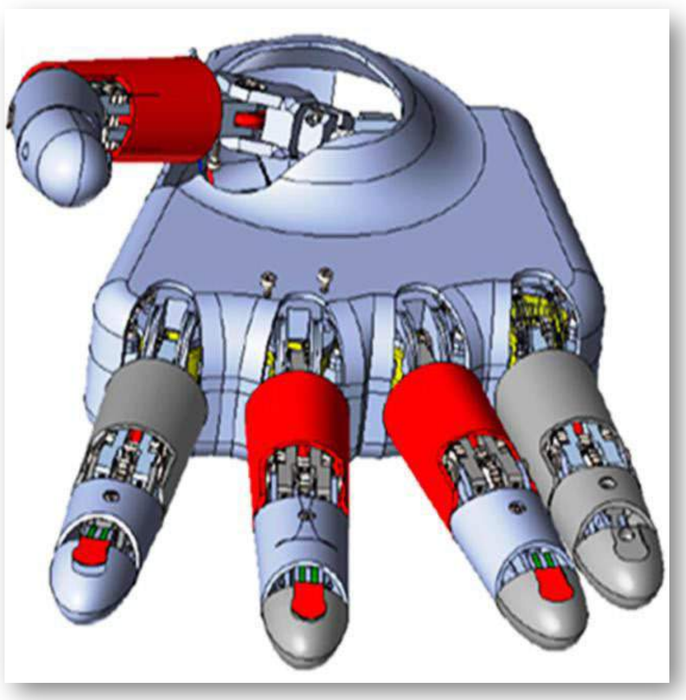
Mihaiela ILIESCU, Emilia FURDU-LUNGUŢ, Gabriel-Petre GORECKI,
Gabriela-Corina RADU, Dan-Gabriel COSTEA, Vitalie COBZAC,
Ionuţ-Simion COMAN, Valentin-Titus GRIGOREAN, Horaţiu MOLDOVAN

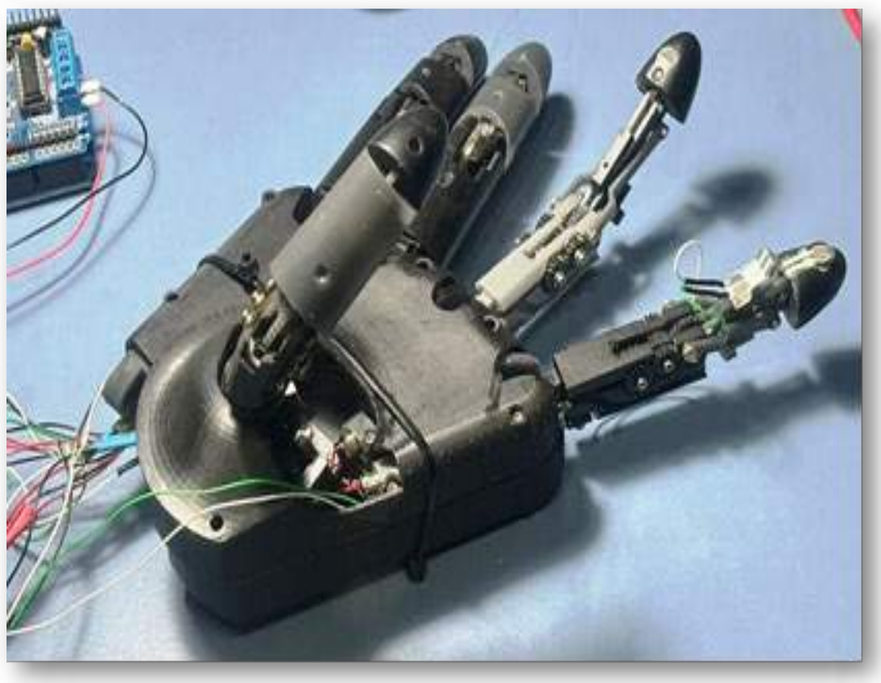
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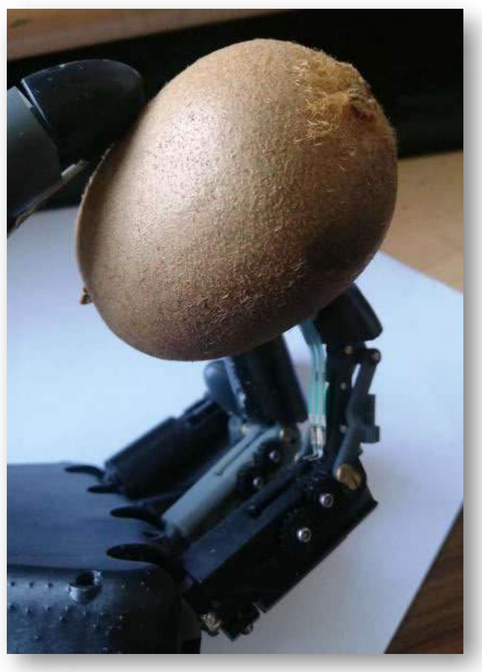
Designing and manufacturing friendly users and affordable prostheses for the upper limb is a challenging topic for doctors and researches, all having the target to enable good active assistive living for people with missing or upper limb amputation.

The invention refers to bimechanical hand prostehsis, wearable by people with upper limb amputation. The prosthesis enables rotational motions of both the phalanges and the whole finger. The rotational motions of each finger are independent ones.

The hand prosthesis prototype has been manufactured using Digital Light Processing (DLP) technology.







Material and methods:

The methodology involved the steps that follow next.

Detailed study on the state of the art in the field of upper limb prostheses has been done. Based on the information gathered, there has been decided on the concept and design of the new hand prosthesis.

The finger has three phalanges with rotational motions for each of the phalanx and there is an additional, innovative rotational motion for the whole finger, around the vertical axis. Basically, there are four rotational motions driven independently by three micro-motors, for each of the five fingers of the prosthesis.

Attention is focused on the finger's mechanism that has been conceived as an open kinematic chain with quadrilateral mechanism. The motion is transmitted only by a system of levers and gears (cylindrical, worm types) with no cables / wires, pulleys, rollers and elastic elements. Kinematic and kinetostatic analyses of this mechanism have been used in motion simulation.

Digital Light Processing technology has been used for prototyping the mechanical components of the hand prosthesis. Electronics (micromotors, sensors, boards) has been selected in correlation to the mechanics and the designed embedded command and control system, all fit for the specific movements that can be performed by the fingers.

The prototype was tested in real conditions of operation (e.g. catching a fruit).

Novelty/Advantages:

1.Customization of the prosthesis' esthetics and dimensions, depending on patients physical features;

2. Complex movements of the fingers with the innovative rotational motions around the vertical axis;

3. Independent movement for each of the prosthesis fingers;

4. Friendly user by the embedded command and control system;

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Scientific Research Laboratory
Advanced Materials for Biopharmaceuticals and Technics

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HR EXCELLENCE IN RESEARCH

NEW MOLECULAR INHIBITOR AS ANTICANCER AGENT

PATENT: MD 4899 / 2024.08.31

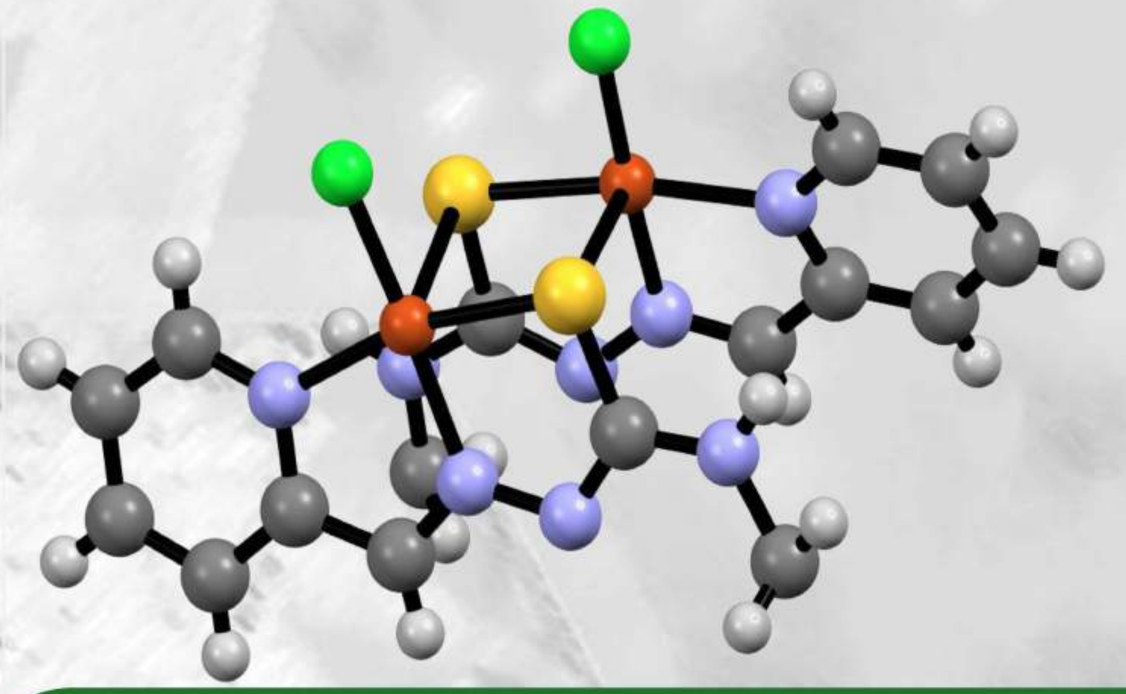
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AUTHORS: Aurelian GULEA, Victor ŢAPCOV, Dorin ISTRATI, Donald POIRIER

APPLICATION FIELDS: F - Medicine, Paramedical, Pharmacy, Cosmetics, Hygiene.

AIM: Chemical synthesis, characterization of new synthetic inhibitor of human hepatocellular carcinoma HepG2 cells that may find application in medicine.

SOLUTION: New copper(II) coordination compound with thiocarbamide ligand has been obtained using the directed synthesis method.



The IC_{50} values towards HepG2 cells

Compound	IC_{50}, μmol/L
Prototype	2,8
Structural analog	10,4
Claimed substance	0,7

ADVANTAGES: The described copper coordination compound inhibits the growth and multiplication of human hepatocellular carcinoma HepG2 cells. This agent exceeds 4 times the analogous characteristics of the prototype that is used in medical practice, and 15 times analogous characteristics of the structural analog. The discovered properties of this substance are of interest for medical practice for enhancement of the arsenal of inhibitors of liver cancer cells.

IMPLEMENTATION STAGE: At the laboratory level.

ACKNOWLEDGMENTS: This research was supported by the institutional project # 010602.

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HR EXCELLENCE IN RESEARCH

NEW INHIBITORS OF THE PROLIFERATION OF FUNGI OF THE SPECIES *Candida albicans*

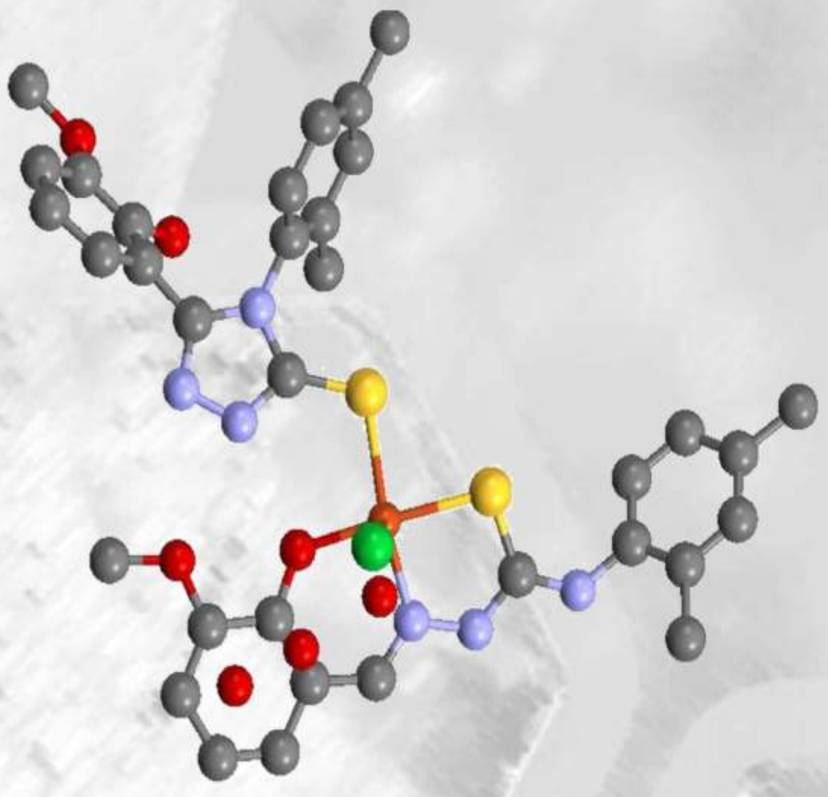
PATENT: MD 4886 / 2024.09.30,
Request for patent MD a 2024 0021 / 2024.06.17

AUTHORS: Aurelian GULEA, Ianina GRAUR, Vasilii GRAUR, Diana CEBOTARI, Sébastien FLOQUE, Victor ŢAPCOV, Greta BĂLAN, Carolina LOZAN-TÎRŞU

APPLICATION FIELDS: Medicine, Paramedical, Pharmacy, Cosmetics, Hygiene. **F**

AIM: Chemical synthesis, characterization of new synthetic antifungal agents that may find application in medicine.

SOLUTION: New synthetic compounds of the thiocarbamide derivatives have been obtained using the directed synthesis methods.



Antifungal activity of the claimed compounds compared to the prototype (µg/mL)

Compound	*Candida albicans* ATCC 10231	
	MIC	MFC
Prototype	0.70	0.70
Claimed substance 1	0.008	0.031
Claimed substance 2	0.004	0.008

MIC – minimum inhibitory concentration
MFC – minimum fungicidal concentration

ADVANTAGES: The described compounds possess fungiostatic and fungicidal activity within the limits of concentrations 0.004-0.031 µg/mL against fungi of the species *Candida albicans*, which exceeds 23-175 times the activity of the prototype. The present inventions expand the arsenal of fungal inhibitors of the *Candida albicans* species with high antifungal activity.

IMPLEMENTATION STAGE: At the laboratory level.

ACKNOWLEDGMENTS: This research was supported by the institutional project # 010602.

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Phone: (+373) 69953854; E-mail: tpotlog@gmail.com

HR EXCELLENCE IN RESEARCH

SYNTHESIS OF PHOTOPOLYMER MATERIAL

PATENT: MD 4912 / 2025.01.31; a 2022 0046 / 2022.10.26

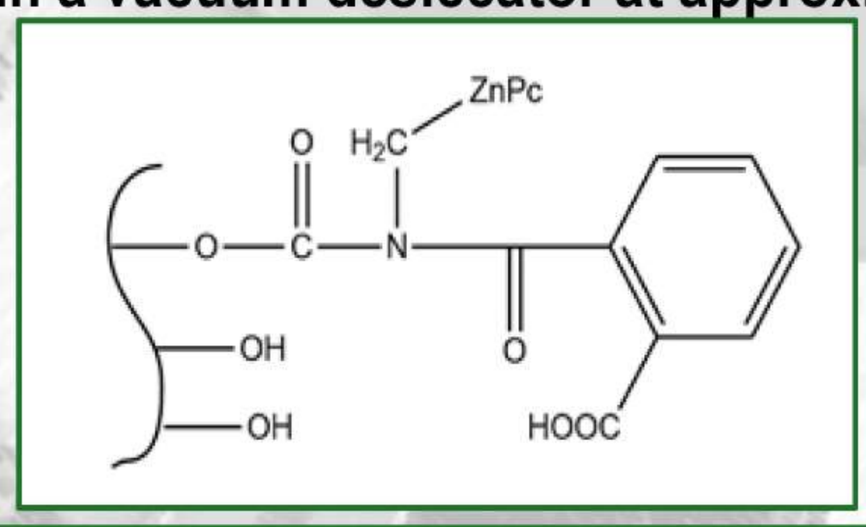
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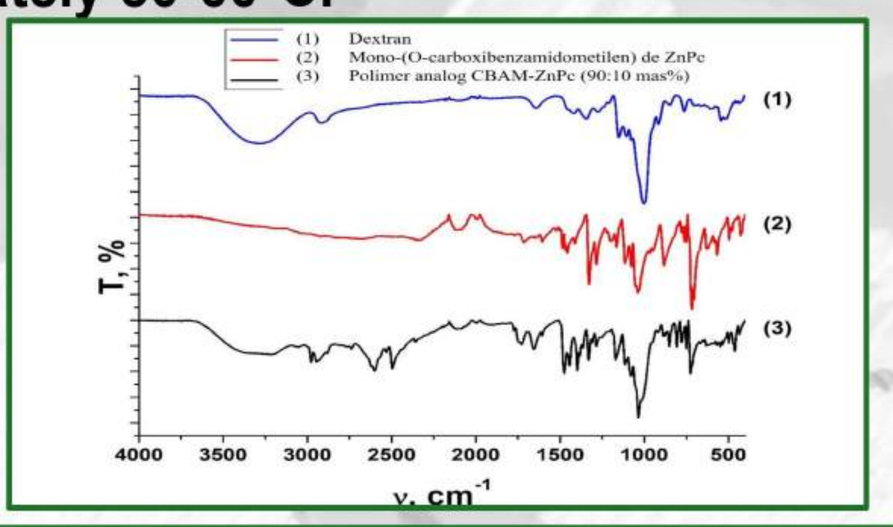
AUTHORS: Ştefan ROBU, Tamara POTLOG, Ion LUNGU, Ana POPUŞOI, Iacob GUŢU, Ion BULIMESTRU

APPLICATION FIELDS: F- Medicine, Pharmacy.

AIM: To synthesize a photoactive polymeric material composed of dextran grafted with mono-(O-carboxybenzamidomethylene)-ZnPc, where the content of mono-(O-carboxybenzamidomethylene)ZnPc ranges from 10% to 50% by weight.

SOLUTION: Mono-(O-carboxybenzamidomethylene)ZnPc is synthesized by treating 0.5 g of ZnPc with 4.0 ml of concentrated sulfuric acid, stirring the mixture and maintaining a temperature of 50-55 °C for 10-105 minutes. Next, 0.26 g of paraform is added, and after it dissolves, 0.85 g of phthalimide is introduced. The mixture is heated to 100 °C and maintained until the reaction is complete. The grafting of mono-(O-carboxybenzamidomethylene)ZnPc onto dextran is performed by dissolving 0.7 g of dextran in 40 ml of dimethylformamide (DMF) and 0.3 g of mono-(O-carboxybenzamidomethylene)ZnPc in 30 ml of DMF in a separate container, followed by mixing. The solution is cooled in an ice-salt bath to 0 °C, and 1.4 ml of triethylamine is added dropwise under stirring. After 20 minutes, 0.6 ml of ethyl chloroformate is added dropwise. The resulting photopolymer is then dried in air and in a vacuum desiccator at approximately 50-60°C.





ADVANTAGES: The photopolymer containing 10% CBAM-ZnPc exhibits high solubility (S = 0.1 g / 100 ml) in water and triplet excited state lifetimes of 5.35 μs.

IMPLEMENTATION STAGE: Laboratory Level.

ACKNOWLEDGMENTS: This patent application was financially supported by the Ministry of Education and Research of the Republic of Moldova, MSU, under the subprogram "Designing Supramolecular Architectures Based on Metal Phthalocyanine Derivatives and Functionalized Nanoparticles for Medical Applications" # 011209.

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HR EXCELLENCE IN RESEARCH

METHOD FOR SYNTHESIS OF ZINC PHTHALOCYANINE DERIVATIVE - ASPARTIC ACID COMPOSITE

PATENT APPLICATION: s 2024 0100 / 2024.10.23

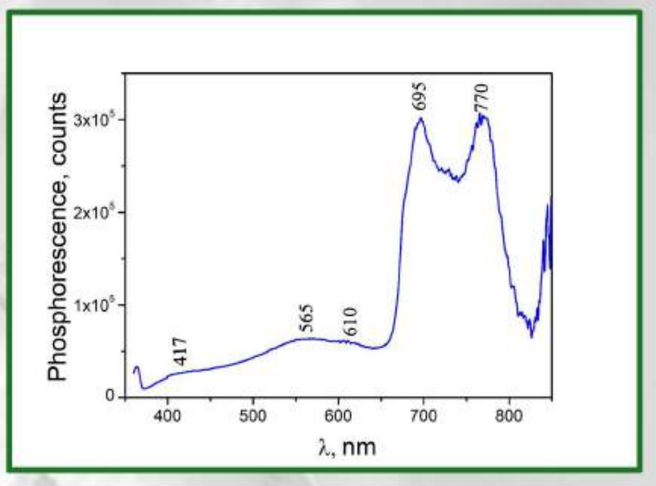
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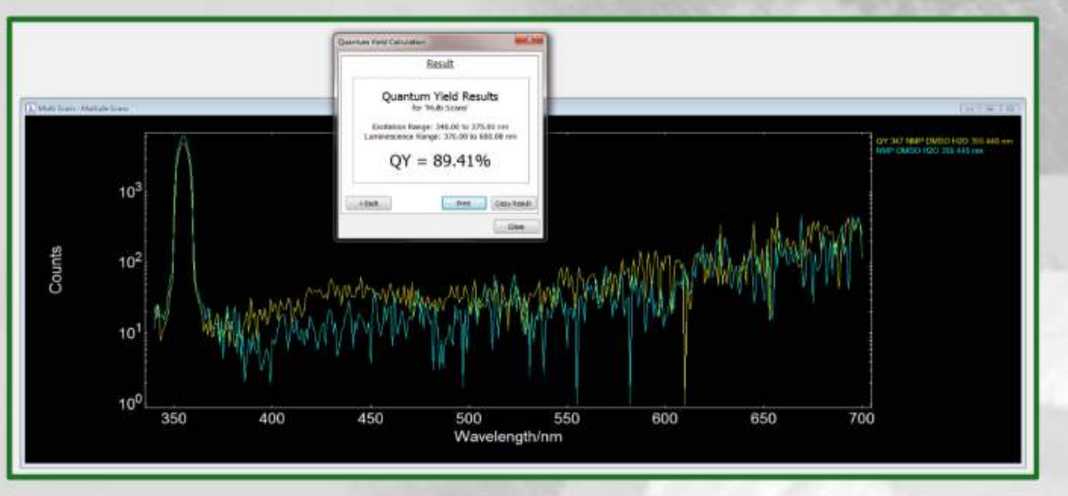
AUTHORS: Tamara POTLOG, Ana POPUȘOI, Ion LUNGU, Tatiana BULIMAGA

APPLICATION FIELDS: Medicine, Pharmacy.

AIM: The Synthesis of a Metal Phthalocyanine Derivative - Aspartic Acid Composite for Photodynamic Therapy.

SOLUTION: The $ZnPc(COOH)_4$ derivative was first synthesized using the melting point method and basic hydrolysis. In a $DMSO/H_2O$ mixture with a 1:3 ratio, $ZnPc(COOH)_4$ was dissolved, followed by the addition of aspartic acid. The solution was sonicated for 30 minutes at 50°C. Fluorescence and phosphorescence spectra were then analyzed, revealing emission in the range of 400-850 nm, with maxima at 695 nm and 770 nm, when excited with wavelengths ranging from 641 to 696 nm.





ADVANTAGES: The self-assembled $ZnPc(COOH)_4$:Asp.Ac. composite exhibits several advantageous properties for photodynamic therapy, including maximum absorption at 700 nm, which facilitates deeper tissue penetration, a triplet excited state lifetime on the order of $1.5 \cdot 10^{-6}$ seconds, a phosphorescence spectrum with a maximum wavelength ranging from 695 to 770 nm, and a high triplet quantum yield of 89.4%, outperforming commercial photosensitizers like Fotofrin II or Photosens.

IMPLEMENTATION STAGE: Laboratory level.

ACKNOWLEDGMENTS: This patent application was financially supported by the Ministry of Education and Research of the Republic of Moldova, MSU, under the subprogram "Designing Supramolecular Architectures Based on Metal Phthalocyanine Derivatives and Functionalized Nanoparticles for Medical Applications" #011209, and the National Agency for Research and Development's excellent project "Rare Element-Doped Nanoparticles for Biomedical Imaging and Cancer Cell Therapy" # 20.80012.5007.22SE.

CASE 1st AID DISTRIBUTOR

Thaninkit Prasitdumrong, Pran Udomsawaengsup, Sirarin Prasitdumrong, Lapas Udomsawaengsup
Mentor : Jeerasak Jitrotjanarak

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Accidents and injuries are common occurrences in various locations, such as tourist attractions, playgrounds, and parks, where first aid care may not always be readily available. To address this issue, the CASE 1st Aid Distributor has been invented as a vending machine designed to provide first aid care kits when needed. This innovative machine features three channels, each controlled by a sling mechanism, and each containing a different type of kit set box. The kits are tailored to specific types of injuries or medical situations and come equipped with essential supplies and detailed instructions.







How to use the machine:
1. Insect coin (or scan QR code for paying)
2. Choose the type of box set and press the corresponding button
3. Receive the kit set
4. Follow the instruction



1. **Wound Care Kit**: This kit is designed to treat abrasions and cut wounds. It includes sterile swabs, gauzes, a 0.9% NaCl solution, and antiseptic medication. An instruction leafle t is provided, along with QR codes that link to a PDF file and a video clip with instructions for mobile devices.

2. **Fainting Kit**: This kit is intended for use with conscious patients experiencing dizziness. It contains a glucose solution and an ammonium swab. An instruction leaflet guides users on what to do if they encounter a fainting person. It emphasizes that if the patient is unconscious, an initial evaluation for breathing and pulse must be conducted, and the kit should not be used—instead, CPR guidelines and calling for an ambulance should be considered. QR codes are available for accessing a PDF file and a video clip with instructions.

3. **Insect Bite Kit**: This kit provides relief from insect bites and includes an anti-inflammat ory medication tube. An instruction leaflet is included, as well as QR codes for a PDF file and a video clip with instructions for mobile devices.



Contact: j_jerasak@hotmail.com , +66846396363

Ankle Hero

Saving the Day for your feet

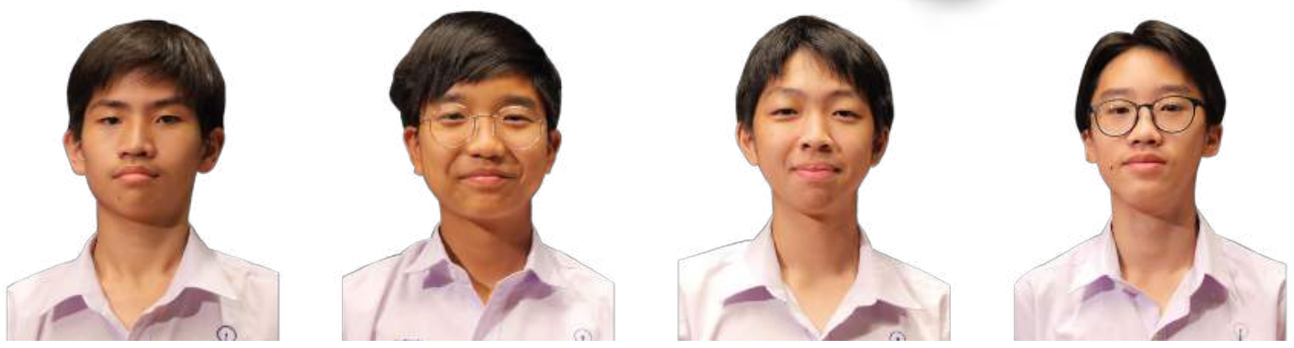
When someone hurts their ankle or foot, it can take a long time to heal and recover. This is because it’s hard to move the ankle, and the muscles and joints can get stiff. Traditionally, doctors will use fixed braces or casts and manual exercises to help, but these methods don’t always give the ankle the movement it needs to get better faster.

That’s why we created the “ Ankle Hero”. It’s a special machine that helps people move their ankles in a safe and controlled way. The “ Ankle Hero” has a motor and special mechanics to moves the ankle in a safety range and it can be adjusted to fit each person’s physical condition such as speed and frequent control. It’s like having a personal trainer for your ankle!

The advantages of our device is small, portable, easy to apply and can be used at home or in a hospital. It helps make the ankle stronger, more flexible, and helps people recover faster after prolonged casting or surgery of foot or ankle. We’re still working on making it even better by adding sensors or smart technology to make it super helpful and easier to use.

With the “ Ankle Hero” we hope to make healing faster with better functional outcome for everyone with ankle or foot injuries. It’s a fun and smart way to use “Ankle Hero” to help people feel better!





Baramate Charoenchaisombat

Kantapon Prasarnsuk

Supakorn Kittananun

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Wellness Armor ... *Innovations Against NCDs*

Master Waranyu Kittithawornkul
Chulalongkorn University Demonstration Secondary School

F

Currently, chronic diseases, or NCDs (e.g. heart disease, stroke, cancer, and diabetes, etc.) are a global health crisis, responsible for 70% of deaths worldwide. Half of those are on disability which being a family burden. Many countries face issues related to these problems.

"Wellness Armor" is a platform designed to effectively prevent diseases and reduce risk factors associated with NCDs by incorporating modern technology in the following ways:

1. Smart Wristband

Equipped with IoT devices to continuously monitor health data, including sensors for measuring blood pressure, blood sugar levels, heart rate, oxygen levels, sleep patterns, and appropriate exercise. It also features a GPS tracker to continuously monitor the location of individuals with health issues. All this data is collected and automatically stored on a cloud server.

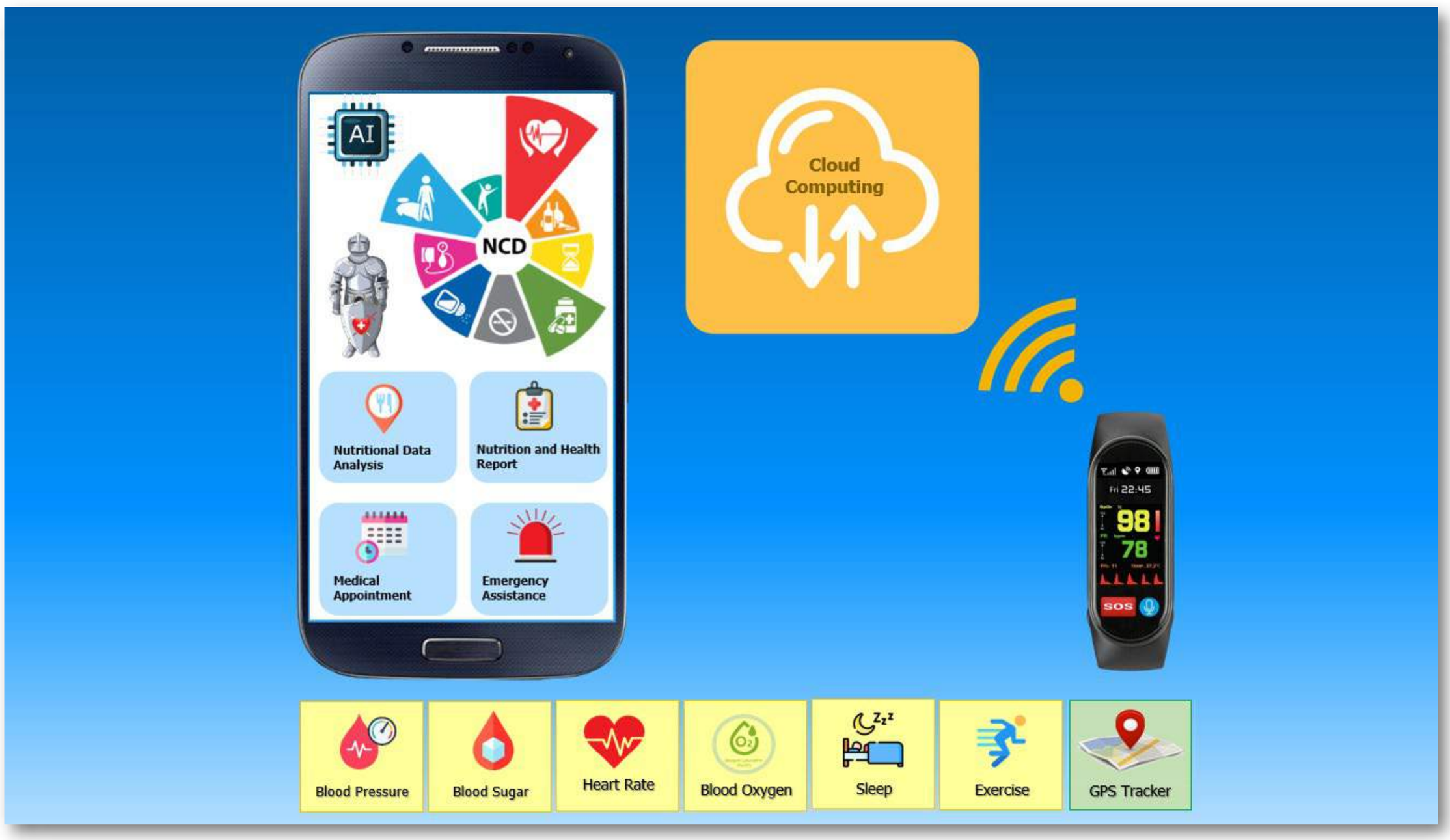
2. Smart Application

A mobile application that acts as a personal nutritionist and health advisor. It analyzes the food consumed in each meal and promptly alerts users of any abnormal symptoms. Utilizing Big Data and artificial intelligence (AI), it analyzes and evaluates nutritional information and health risk factors. This Smart Application includes 4 functions:

2.1 Nutritional Data Analysis　　2.2 Nutrition and Health Report

2.3 Medical Appointment　　2.4 Emergency Assistance

Remark: This invention achieved the award of Gold Medal and Special Prize at 9th annual edition of iCAN 2024.



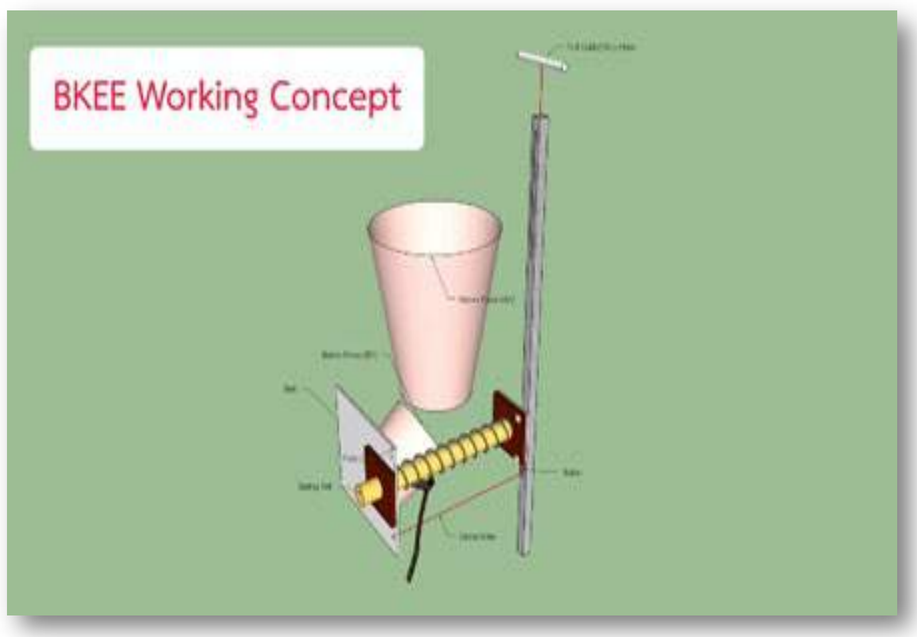
Contact: waranyu.arty@gmail.com, j_jerasak@hotmail.com

BEE KNEE

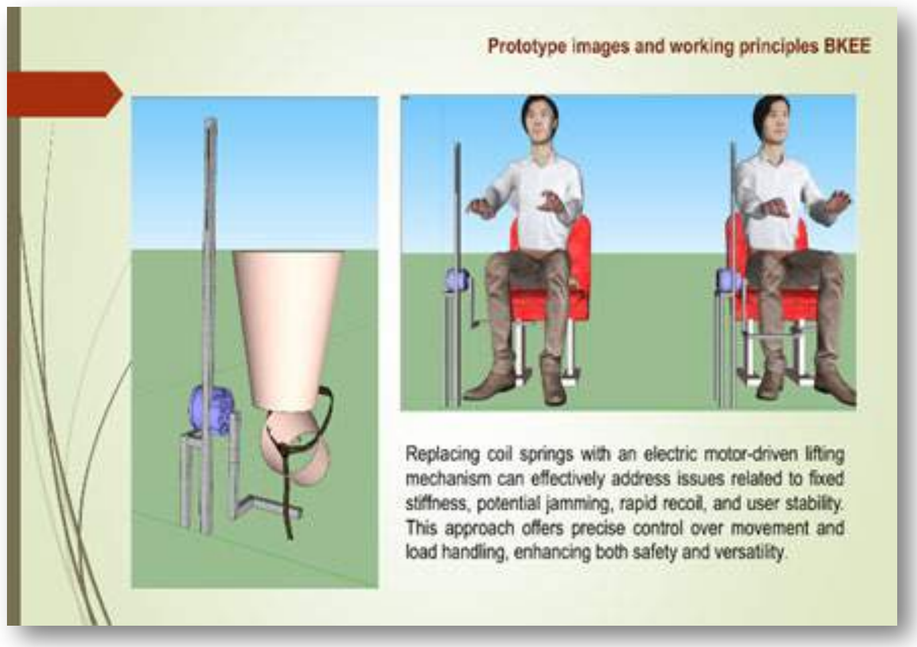
Jinnipa Jinwan, Ratchanon Adisakpirom,
and Phichphanita Mathasuriyapong

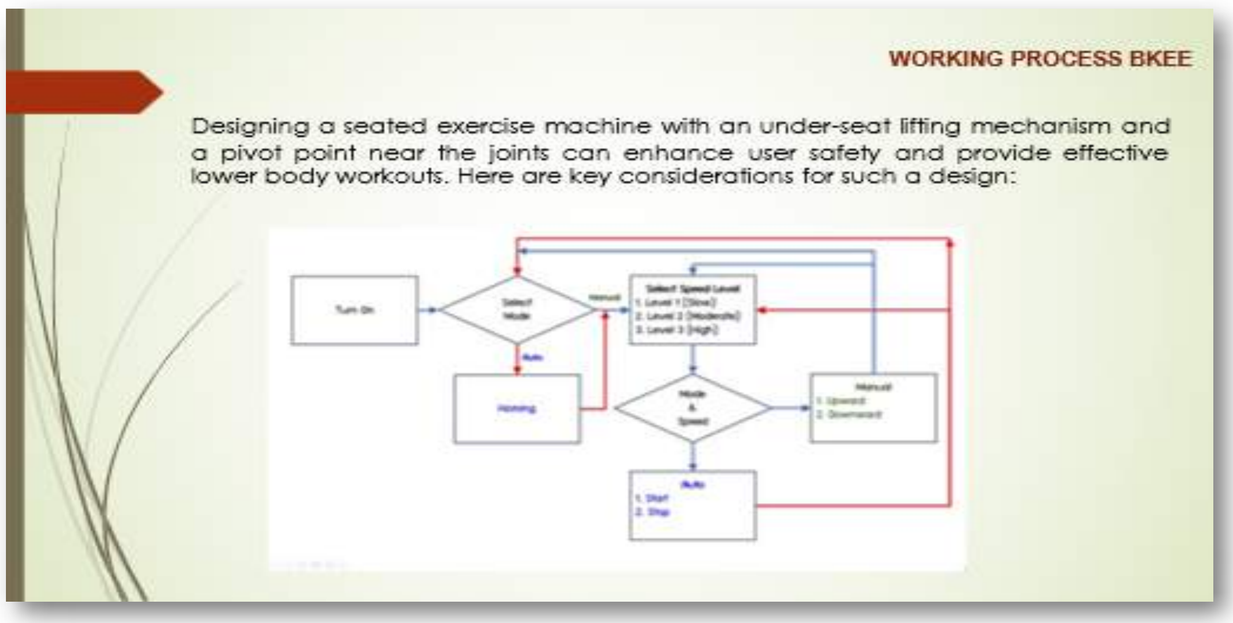
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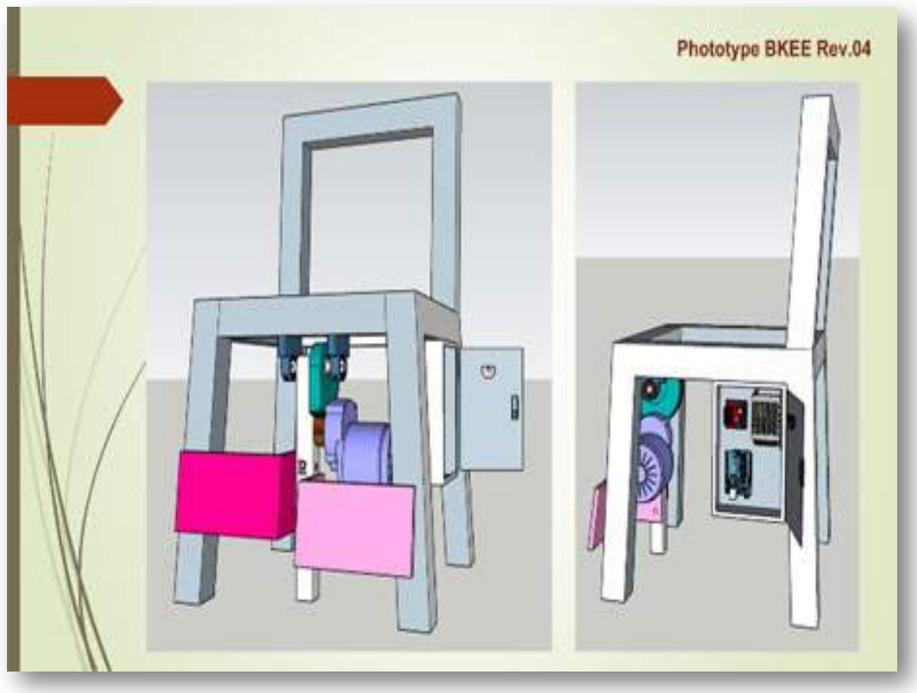
The design of the Below Knee Exercise Equipment (BKEE) using a coil spring as the main mechanism offers several advantages, but it also comes with certain limitations that need to be considered: Replacing coil springs with an electric motor-driven lifting mechanism can effectively address issues related to fixed stiffness, potential jamming, rapid recoil, and user stability. This approach offers precise control over movement and load handling, enhancing both safety and versatility.













CONTACT : **Mr. Jeerasak Jitrotjanarak**
Satit Chula Innovation Hub

CO-TECH- test, measure, balance

(innovative concept of Automated Software Process for evaluation and therapy through biofeedback)

The Importance of Prevention and Personalized Protocol in Complementary Stroke Therapy

Patent/project number: OSIM 301240/29.12.2023

Author/s: Senior Lecturer Dr. Oana Codruta Bacean Miloicov

Institution: SC Holistic Lounge SRL

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CO-TECH is an innovative and copyright-protected concept that brings a new perspective to patient evaluation and therapy. Using biofeedback, this system optimizes evaluation processes, improves therapies, and reduces execution times, resulting in a more efficient therapeutic approach.

The Role of Prevention in Hypertension and Reducing Major Stroke Risk

Stroke is one of the leading causes of mortality and disability. After the first stroke, the risk of recurrence increases significantly, worsening prognosis.

• A second stroke is frequently associated with severe neurological sequelae, including hemiparesis, aphasia, cognitive impairment, and vascular dementia.

• A third stroke, though theoretically possible, has an extremely low survival rate, with most patients not surviving.

In this context, prevention is crucial in managing hypertension (HTN) and reducing the risk of stroke.

Clinical Case Presentation

📌 Patient: Male, 68 years old, chronic hypertensive, no apparent neurological symptoms before January 2025.

📌 Remote Biofeedback Monitoring:

• Since February 2024, the patient was consistently evaluated for stroke risk using biofeedback remote sessions.

• Significant fluctuations in cardiovascular and cerebral circulation parameters were observed in the biofeedback remote sessions.

• Over 7 months, personalized therapies were conducted to improve cerebral circulation, promote neuronal regeneration, and reduce inflammation.

📌 Acute Event:

• In January 2025, the patient suddenly developed neurological symptoms (acute confusion).

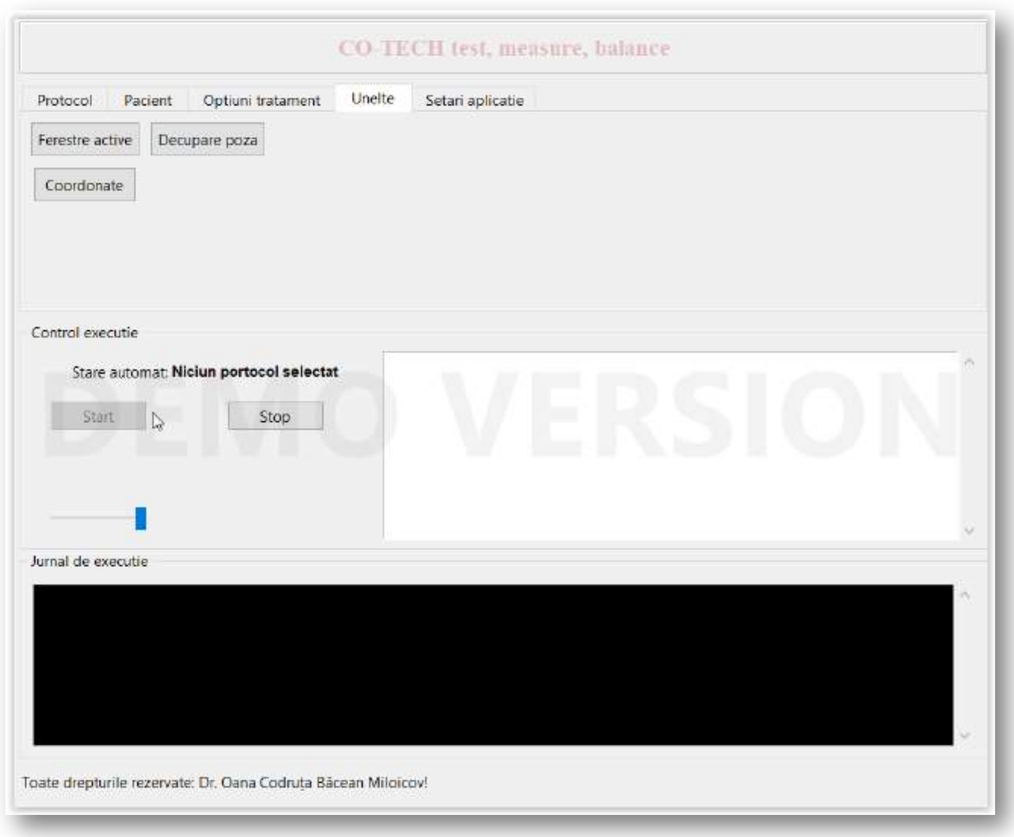
• Emergency department-confirmed diagnosis: Subacute ischemic stroke in the left middle cerebral artery territory.

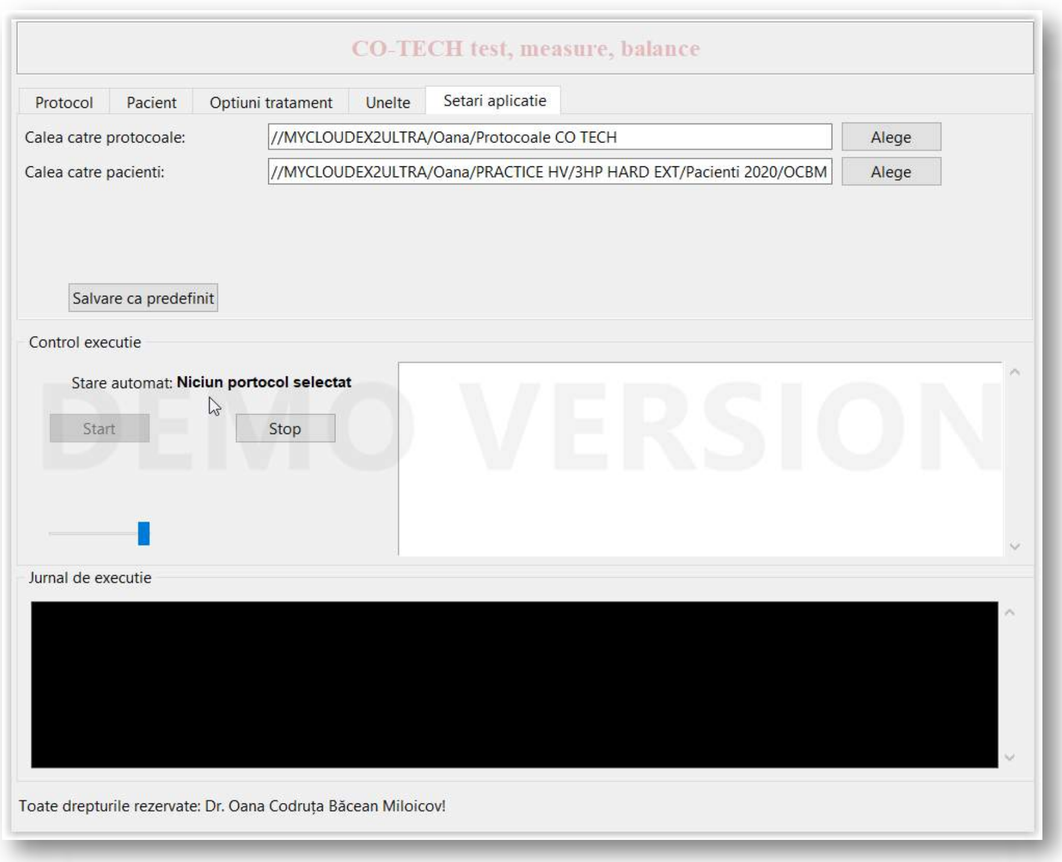
📌 Outcome:

• No neurological sequelae, thanks to prior therapies.

• Significantly shortened recovery time.

• Reduced risk of post-stroke complications.





Conclusions and the Importance of a Personalized, Non-Invasive Protocol

✓ Continuous monitoring through remote biofeedback allows early risk detection.

✓ Preventive intervention optimizes cerebral circulation and reduces the risk of severe strokes.

✓ Hypertensive patients benefit from a complementary approach that may prevent severe disabilities.

Confirmed diagnoses from the hospital discharge note:

✓ Subacute ischemic stroke in the left middle cerebral artery territory (temporal).

✓ Chronic ischemic stroke in the left posterior cerebral artery territory.

✓ Chronic ischemic stroke in the left middle cerebral artery territory (parietal left).

✓ Chronic supratentorial bilateral strokes.

⚠ **Prevention** is the key to longevity! By using a personalized protocol, patients at high cardiovascular risk can avoid severe complications and maintain an optimal quality of life.

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0745170879

https://www.healthyvibe.ro/transformarea-hipertensiunii-arteriale-prin-terapia-biofeedback-remote/?_gl=1*vhzs0z*_up*MQ..*_ga*MTc3Mzc5MDcxLjE3Mzk0MzgwMjA.*_ga_BZ5RWJGVXF*MTczOTQzODAxOS4xLjEuMTczOTQzODAyNi4wLjAuMA..

www.healthyvibe.ro

QVibe frequency generating therapeutic device

QVibe – Revolutionizing Complementary Therapy for Hashimoto's Thyroiditis and Thyroid Nodules

Patent/project number: OSIM 301243/29.12.2023
Author/s: Senior Lecturer Dr. Oana Codruta Bacean Miloicov
Institution: SC Holistic Lounge SRL

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Hashimoto's thyroiditis is an autoimmune condition affecting the thyroid gland, leading to fatigue, weight gain, and hormonal imbalances. Thyroid nodules, often associated with this condition, can severely impact thyroid function and overall health.

Innovative Solution – Q-Vibe Device

Q-Vibe is an innovative therapeutic frequency generator providing a natural, non-invasive, and side-effect-free solution for supporting thyroid health.

How Does Q-Vibe Work?

Q-Vibe emits therapeutic frequencies through a unique, registered algorithm tailored to the patient's pathology. The device is applied externally on the radial artery of the right hand, locally or as a necklace.

Recommended Protocol:

Daily use, especially during nighttime, ensures continuous energetic balance.





Case Study – July 17, 2024

Patient: 42-year-old female diagnosed with Hashimoto's thyroiditis and thyroid nodules.

Initial Observation:

- Presence of an imprecisely defined thyroid nodule.
- Significant hormonal imbalances.
- Chronic fatigue and heightened emotional sensitivity.

Intervention: Daily therapy with Q-Vibe for 3 months.



Results Obtained:

Reduction of nodule volume confirmed via imaging.

Restoration of hormonal balance, with improved TSH, T3, and T4 levels.

Increased energy levels and reduced chronic fatigue.

Improved emotional stability and reduced anxiety.

Advantages of Q-Vibe Therapy:

Non-invasive: No painful procedures or aggressive medications.

Natural: No chemicals or side effects.

Personalized: Unique algorithm tailored to patient pathology.

Effective: Rapid and visible improvements in overall health.

Easy to use: Suitable for daily wear, including nighttime.

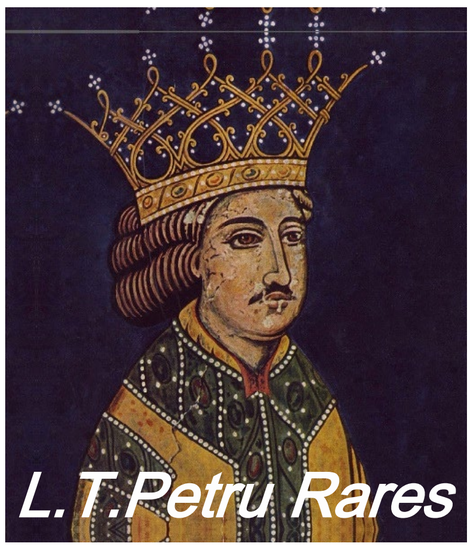
Conclusions:

The Q-Vibe device offers a groundbreaking complementary solution for Hashimoto's thyroiditis and thyroid nodules, restoring hormonal balance and enhancing patient quality of life.

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Humidity sense

Author: Ciubuc Vasile

Mentor: physics teacher

Ciuvaga Victor

F

The HumidiSens project is an innovative solution that combines Arduino technology with a smart humidifier system. This project utilizes sensors, a microcontroller, and intelligent algorithms to continuously monitor and control the humidity levels in a given space, ensuring that the environment remains at a comfortable and healthy humidity level.

The system is based on an Arduino platform, allowing for easy customization and programmability to suit a variety of needs. A humidity sensor (such as DHT11 or DHT22) provides real-time data, which the system uses to regulate the humidifier, turning it on or off as necessary to maintain optimal air quality.

The user interface can be designed to display current humidity levels and settings, making the system interactive and user-friendly. It may include features such as an LCD screen or a mobile app for remote control.

The intelligent design of the HumidiSens project ensures that the humidifier operates efficiently, reducing energy consumption by activating only when needed. The system can also be customized to include additional sensors or features like temperature measurement or Wi-Fi connectivity for further automation.

This project showcases the potential of Arduino-based systems in creating smart home solutions, offering an affordable and effective way to improve indoor air quality.





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PLACENTA PROCESSING DEVICE

Patent/project number: MD 2625

Author/s: Jian Mariana, Savca Ion, Balan Mihail, Nacu Viorel, Cobzac Vitalie, Mostovei Andrei, Solomon Oleg

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The invention relates to the medical technique, namely to a device for processing the placenta at the stage of blood removal in the process of extracting total collagen, which can be used in regenerative medicine and tissue engineering. The advantages of the device consist in creating a device that allows a wash effective of the placenta in the collagen extraction process, at the scheduled time and speed desired, avoiding the unexpected stoppage of the rotation of the material in the vessel, thus preventing distortion this one.

The result of the invention consists in processing the pieces of placenta and avoiding stopping

of the blood washing process, namely the elaborated device allows the exact control of the number of rotations of the vessel in which the material is located and the processing time, thus it is avoided the long process of washing and denaturing the protein needed to extract it from the placenta. The device is convenient, mobile, practical, compact, portable and has a relatively low price for manufacturing.

State of development: the invention is carried out within the project with the code 23.70105.8007.01T.

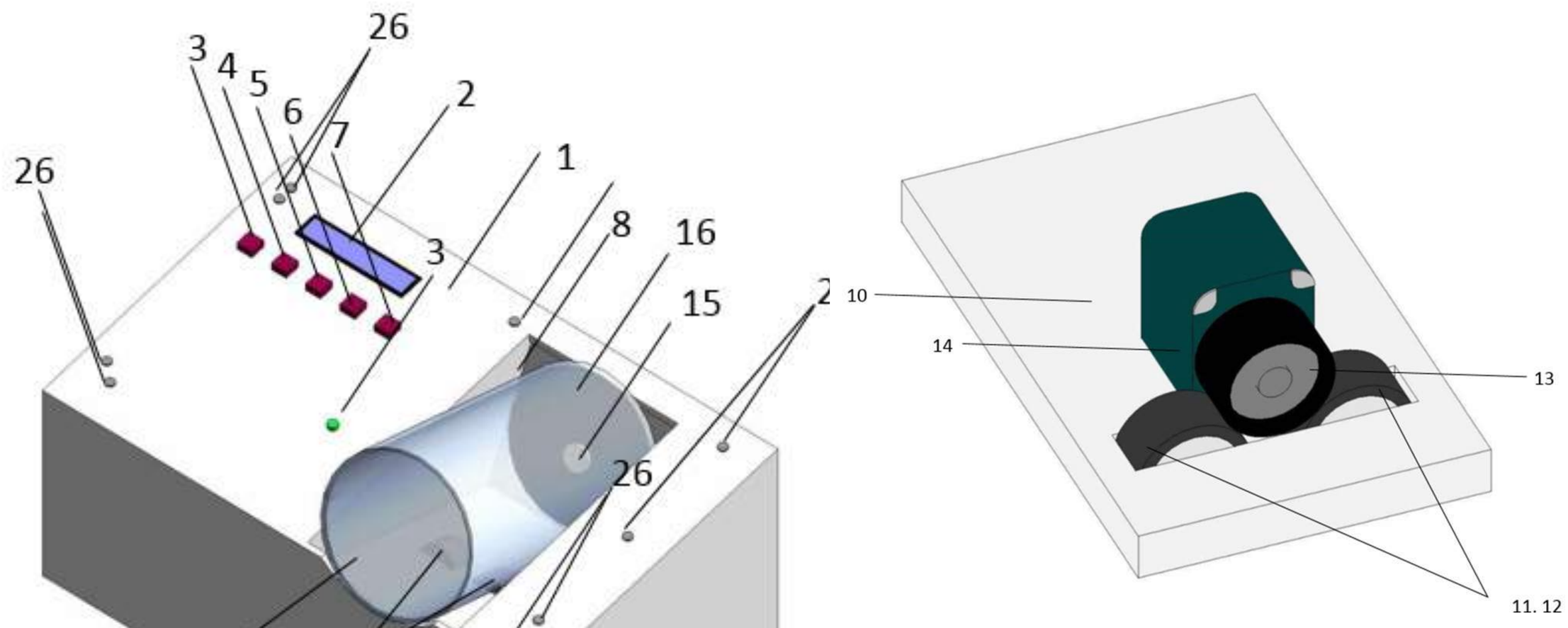


Figure 1.
The overall view of the device and the rotation system

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AI- Guided Ventilator Mangement:
Can Machine Learning Improves Outcomes?

Authors: EUGEN - ȘTEFAN NICOLESCU, ANDREI BODOR
Scientific coordinator: Assoc. Prof. GABRIEL-PETRE GORECKI

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STUDENT RESEARCH PROJECT

Artificial intelligence (AI) is revolutionizing the management of mechanical ventilation in intensive care, providing advanced solutions for optimizing the treatment of critically ill patients. This technology enables continuous monitoring and automatic adjustment of ventilator parameters, reducing human errors and improving the precision of medical interventions. By using machine learning algorithms, AI can analyze real-time physiological data of the patient, including respiratory rate, lung compliance and resistance, Tidal volume and airways pressure



Material and method:

Our study is based on an extensive review of recent studies, including randomized clinical trial, metanalyses and observational studies that were published in high impact medical journals that analyzed the application of AI in mechanical ventilation and optimizing ventilatory support for critical patients.

The reviewed studies highlight the need for large-scale, multicenter clinical trials to further validate AI's effectiveness in ICU patients. While further research is necessary to refine this technologies and establish standardized protocols, the current evidence strongly supports the integration of AI as a key component in the future of critical care medicine.

The implementation of artificial intelligence in mechanical ventilation represents a significant step toward more precise and efficient intensive care medicine, contributing to improved patient outcomes and survival rates.

Advantages/Novelty:

- Early detection of respiratory complications and improving patient outcomes
- AI can facilitate remote patient monitoring, enabling timely interventions even in ICU's with limited staff.
- Decreasing the duration of mechanical ventilation, thereby lowering the risk of nosocomial infections and ventilator associated pneumonia
- Significant reduction in the number of human errors
- Provide personalized care based on individual patients needs
- Shortening of the stay in the ICU and decreasing in healthcare costs

The implementation of artificial intelligence in mechanical ventilation represents a significant step toward more precise and efficient intensive care medicine, contributing to improved patient outcomes and survival rates

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Factors associated with MDR in *Helicobacter pylori* infection

F

Author: Andrei MITACHE
Scientific coordinator: Assoc. Prof. Gabriel Petre Gorecki, MD, PhD

INTRODUCTION

The widespread misuse of antibiotics contributes to multidrug resistance (MDR) in Helicobacter pylori, with outpatient antibiotic consumption linked to resistance to macrolides and fluoroquinolones. Efflux pumps, biofilms, and poor adherence to treatment guidelines further exacerbate MDR, making detection and eradication more challenging.

OBJECTIVES

The objectives of this student scientific review is to analyze and summarize the various factors contributing to multidrug resistance (MDR) in Helicobacter pylori infection, including the role of antibiotic overuse, efflux pumps, biofilms, genetic mutations, and treatment adherence, as well as to explore potential strategies for improving eradication therapies and addressing resistance in different geographical regions.

CONCLUSIONS

Global antibiotic resistance in Helicobacter pylori (Hp) is reducing treatment effectiveness, with about 10% of patients experiencing persistent infections, highlighting the need for new strategies. Bismuth-containing quadruple therapies (BQTs) remain a recommended first-line treatment, and adding bismuth to a 14-day triple therapy can improve eradication rates by up to 40%, particularly in regions with high resistance to clarithromycin and metronidazole.

Pylera, a combination of metronidazole, tetracycline, and bismuth subcitrate, has been FDA-approved and shows over 90% success in treating metronidazole-resistant Hp, even after clarithromycin-based therapies. Maintaining a gastric pH > 6 is key for Helicobacter pylori eradication, and second-generation PPIs like esomeprazole and rabeprazole are more effective in extensive metabolizers, especially in regions with many rapid metabolizers.

Vonoprazan offers superior efficacy for Helicobacter pylori eradication, particularly in clarithromycin-resistant cases, and, along with new treatments like probiotics, anti-biofilm strategies, and vaccines, could improve eradication outcomes, with strain susceptibility testing playing a key role in optimizing therapy.

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Resistance and virulence patterns in gram negative and gram positive rods isolated from the hospital environment

F

Author: Andra-Denisa Gorecki
Scientific coordinator: Assoc. Prof. Mihaela-Magdalena Mitache

INTRODUCTION

Antimicrobial resistance (AMR) is a growing public health issue, particularly in hospital settings, where multidrug-resistant (MDR) and virulent bacteria, such as those in the ESKAPE group, cause infections, with factors like excessive antibiotic use, genetic mutations, and horizontal gene transfer contributing to its spread and increasing mortality rates, especially in intensive care units (ICUs)..

OBJECTIVES

The objective of this student scientific review is to analyze and summarize the resistance and virulence patterns of Gram-negative and Gram-positive rods isolated from hospital environment in Bucharest, Romania, focuse on their antibiotic resistance mechanisms, virulence factors, and implications in hospital-acquired infections and treatment strategies.

CONCLUSIONS

The study investigated antibiotic resistance and virulence markers in Gram-negative and Gram-positive bacterial strains isolated from hospital environments and surgical wound infections, revealing significant resistance to beta-lactams, quinolones, aminoglycosides, and tetracyclines, as well as the presence of multiple virulence factors in strains like E. coli, A. baumannii, and S. aureus, with a notable prevalence of MRSA and carbapenemase producers, suggesting that these factors contribute to the nosocomial origin and pathogenic potential of these strains.

This data showed that the isolated strains possess multiple drug resistance and virulence factors, highlighting the need for screening and intervention measures to prevent infections caused by MDR and virulent strains in hospitalized patients.

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ADJUSTABLE PESSARY FOR GENITAL PROLAPSE

Romina-Marina Sima, Gabriel-Petre Gorecki, Liana Pleș

Patent application nr. A 00125/2023

Introduction:

Genital prolapse is a condition characterized by a descensus of the pelvic organs at the perineal level. It is found most frequently in patients with advanced age and associated medical or surgical pathologies. The surgical methods are multiple and often have a favorable result. However, there is a separate category of patients who can no longer benefit from surgical interventions for various medical reasons. In these patients, a non-invasive treatment such as cervical pessaries for genital prolapse is recommended

Description:

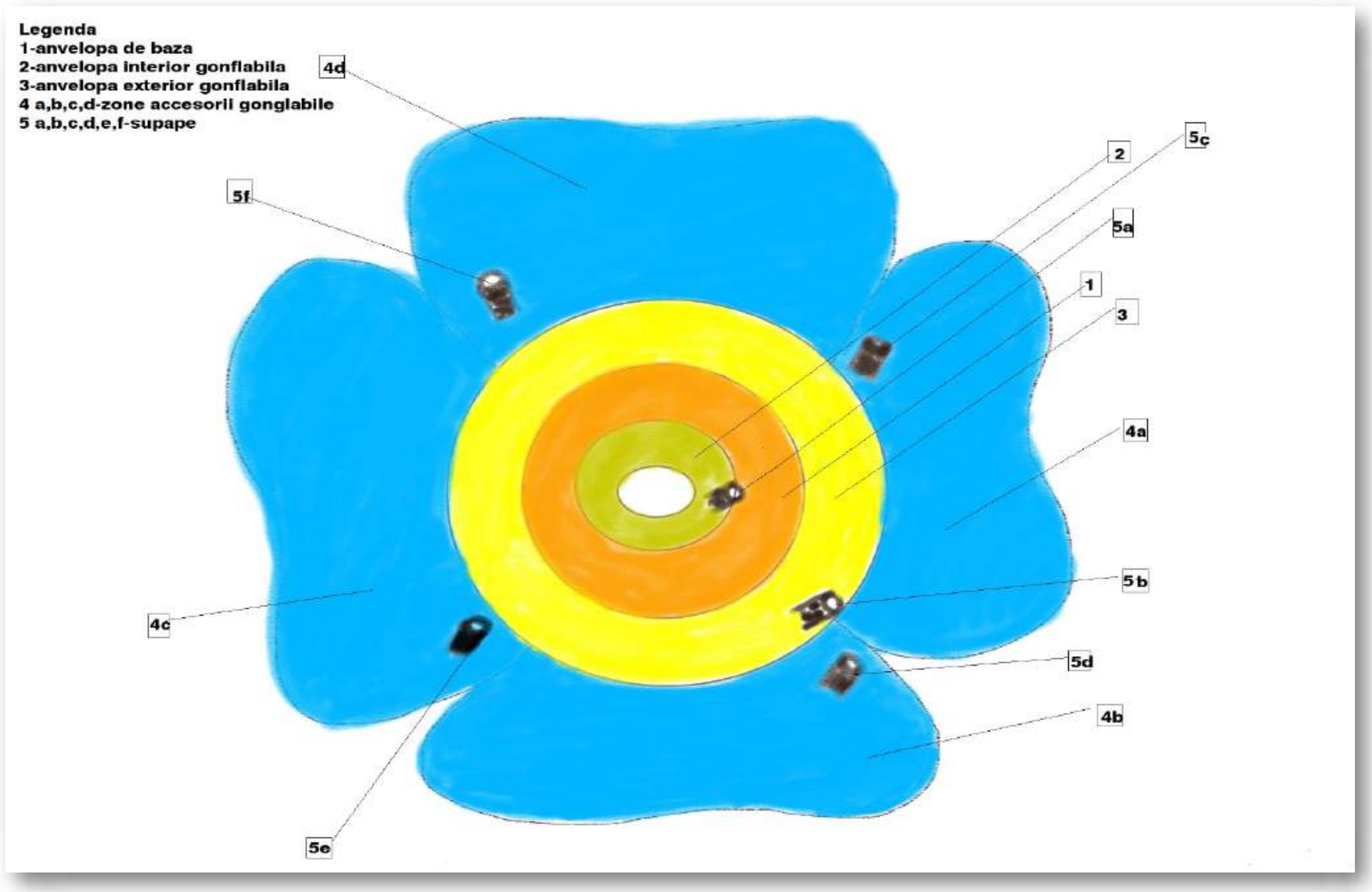
The adjustable pessary for genital prolapse, according to the invention, is a device made of silicone with different densities, consisting of a silicone anvelope - the basic anvelope, inside which is another smaller inflatable anvelope provided with a valve on the outside. On the outside of the basic anvelope there is an accessory anvelope and 4 additional side areas, all of these areas are inflatable and each has its own valve.

The peculiarity of the adjustable pessary for genital prolapse according to the invention compared to other devices is that it has the possibility of adjustment depending on the clinical and anatomical particularities of the patient.

The pessary is folded laterally and placed in the vagina with the dominant hand.

After placement in the vagina, it is adjusted according to the patient's characteristics as follows: inflate anvelopes or accessory areas as needed through the valves that connect to the empty syringe.

The accessory areas that are not needed are detached by manual traction (they are easily detached from the base tire).



Novelty/Advantages:

The invention refers to an adjustable, personalized cervical pessary for genital prolapse, which can be used in medicine, for therapeutic purposes in patients with genital prolapse who cannot be approached surgical

The adjustable pessary for genital prolapse (AP-GP) according to the invention has the following advantages:

- allows the therapeutic approach of patients who have a genital prolapse that cannot be surgically solved because of associated pathologies or surpased surgical therapeutic solutions. It can also be used in patients who have already used other pessary-type intravaginal devices, but with suboptimal results.
-it has a shape that can be modified and eliminates the inconvenience of therapeutic attempts through the purchase of multiple devices and reduces costs.
-offers the possibility of using it in optimal conditions by physicians from different surgical or medical specialties who treat chronically ill patients and who also have associated pathology such as genital prolapse, after an initial assessment and insertion of the device by the gynecologist

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RAPID FEEDBACK DEVICE FOR CARDIOPULMONARY RESUSCITATION

Patent/project number: A-2019/00155-OSIM
Author: PhD Student Dimitrie-Cristian FODOR

F

Description of the invention

Cardiopulmonary resuscitation (CPR) is an emergency procedure that combines chest compressions with artificial ventilation in an effort to preserve intact brain function until further measures are taken to restore spontaneous blood circulation and breathing in a person who is in cardiac arrest (CA). A device with fast feedback for CPR has been designed (Fig. 1.1, 1.2) to operate by a single rescuer (Fig. 2 - prepared or unprepared for first aid, even with low-grade physical disabilities), which can be used in combination with an automated external defibrillator (AED), (Fig. 3) to get the maximum benefit of the person in the cardiac arrest.

Novelty and originality

The rescuer, while performing chest compressions, receives continuous feedback from the device, with regard to the CPR maneuvers which he performs on the victim, also, the device measures and stores certain biomedical parameters of the victim, making out of this tool an innovative and necessary device for medical emergency.



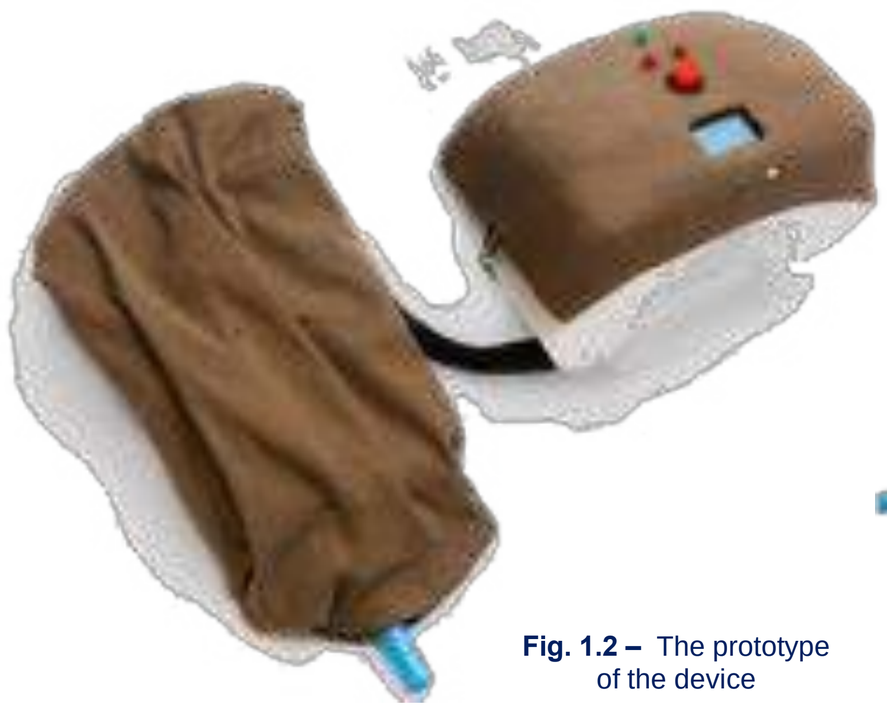


Fig. 1.1 – The concept of the device



Fig. 1.2 – The prototype of the device

Advantages

The device provides an optimal amount of respiratory medium in the victim's lungs, after automatic, personalized and customized airways unlocking (depending on the individual phenotype of the victims), at optimal parameters for the human body, to extend vital functions until the emergency medical crew arrives.

There are some CPR devices in the market, such as resuscitation balloons, requiring the action of two or three rescuers: a rescuer attaches the mask to the victim's face and manually unblocks the airways, the second rescuer administers the ventilation, and third performs cardiac massage. Also, it is only recommended to perform chest compressions by unprepared rescuers and not to perform artificial respiration by infusion.

Conclusions

The prototype of the device was successfully tested at the Romanian Red Cross (the Iasi Branch), in the presence and under the guidance of a physician in the field of emergency medicine. 23 volunteers from this institution attended the simulation of emergency cases and used the prototype in the victim's rescue procedure (also used in combination with AED) under the first aid protocols in force.



Fig. 2 – Performing cardiac massage by a volunteer (image during the **test**)



Fig. 3 – Using the device with an automatic external defibrillator (AED)



Fig. 4 – The resuscitation device used by a **single rescuer with one hand** (the other being injured)

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SPECIMEN FIXING RACK DEVICE FOR TESTING AT CYTOTOXICITY

F

Patent/project number: MD 2612

Author/s: Cobzac Vitalie, Jian Mariana, Nacu Viorel, Mariţoi Tatiana, Mostovei Andrei, Solomon Oleg

The invention relates to regenerative medicine and cell engineering. The problem that the invention solves is the creation of a device that allows the suspension of flat and large samples, in the nutrition medium, above the layer of adherent cells, thus avoiding the mechanical influence on them. The use of that device allows cytotoxicity tests to be performed on flat, heavy and large samples with high precision.

The result is that the said device can be used to neutralize any mechanical action of flat, heavy and large samples on the layer of adherent cells in the wells of cell culture plates in which cytotoxicity tests are performed, thus avoiding false negative results.

The advantages of the device are easy loading of the device shelf with flat, heavy and large samples, and thanks to the side wings that rest on the edges of the wells, there is no direct contact of the device and the required samples to be tested with the layer of adherent cells on the cell culture surface, however, the length of the wings can vary depending on the diameter of the plate wells, and the diameter of the cylinder can vary depending on the size of the sample and the plate wells.

State of development: the invention is carried out within the project with the code 24.80012.8007.02TC.

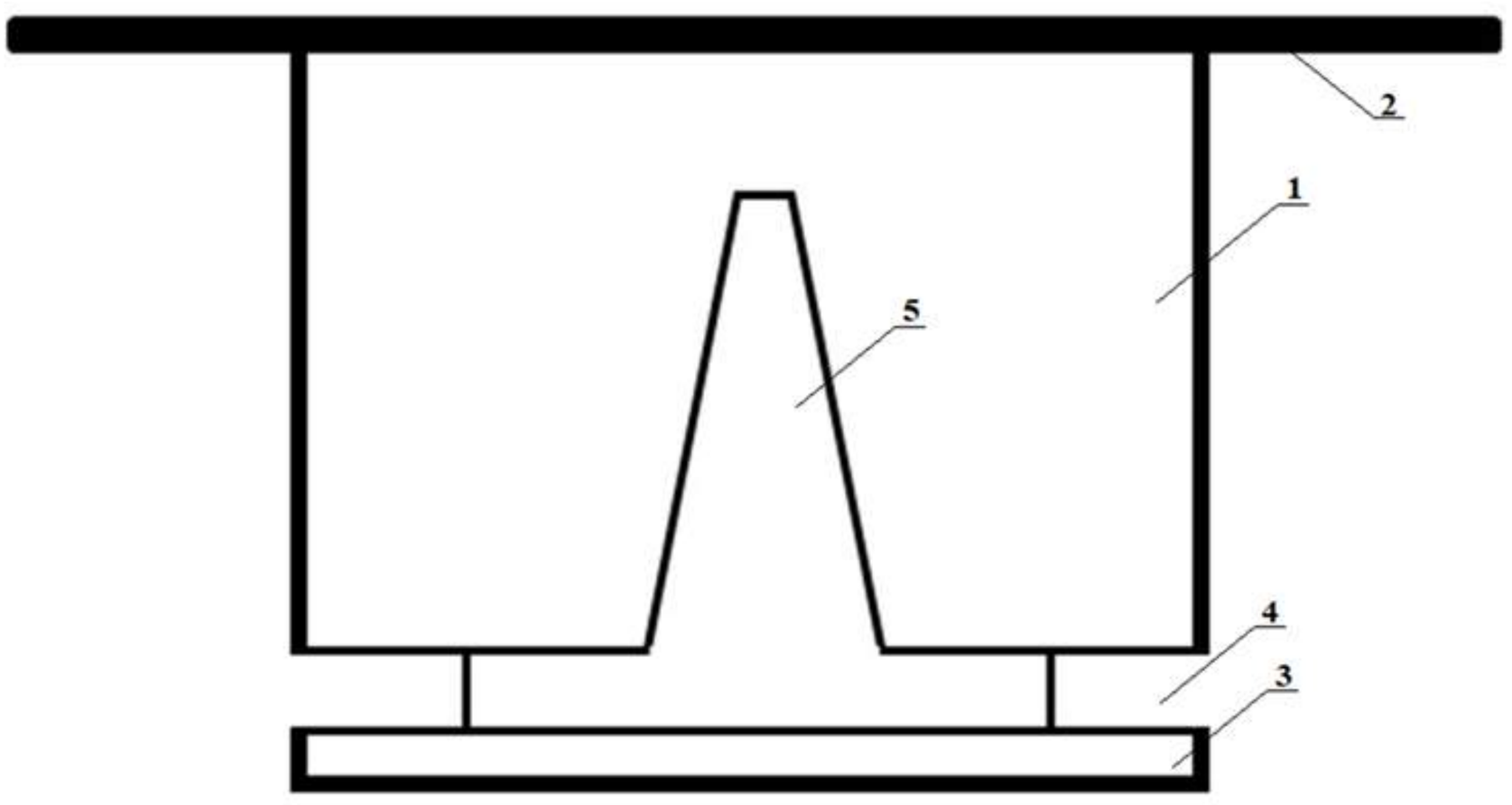


Figure 1. Schematic device structure
1 – device body; 2 – lateral support wing; 3 – shelf; 4 – shelf aperture; 5 – opening for nutrient medium circulation

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MODULAR-ADAPTIVE STEM FOR TOTAL HIP PROSTHESIS, USING SMART MATERIALS

Patent number: **RO 132628/ 30.01.2025**

F

Authors

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Tarnita Daniela, University of Craiova

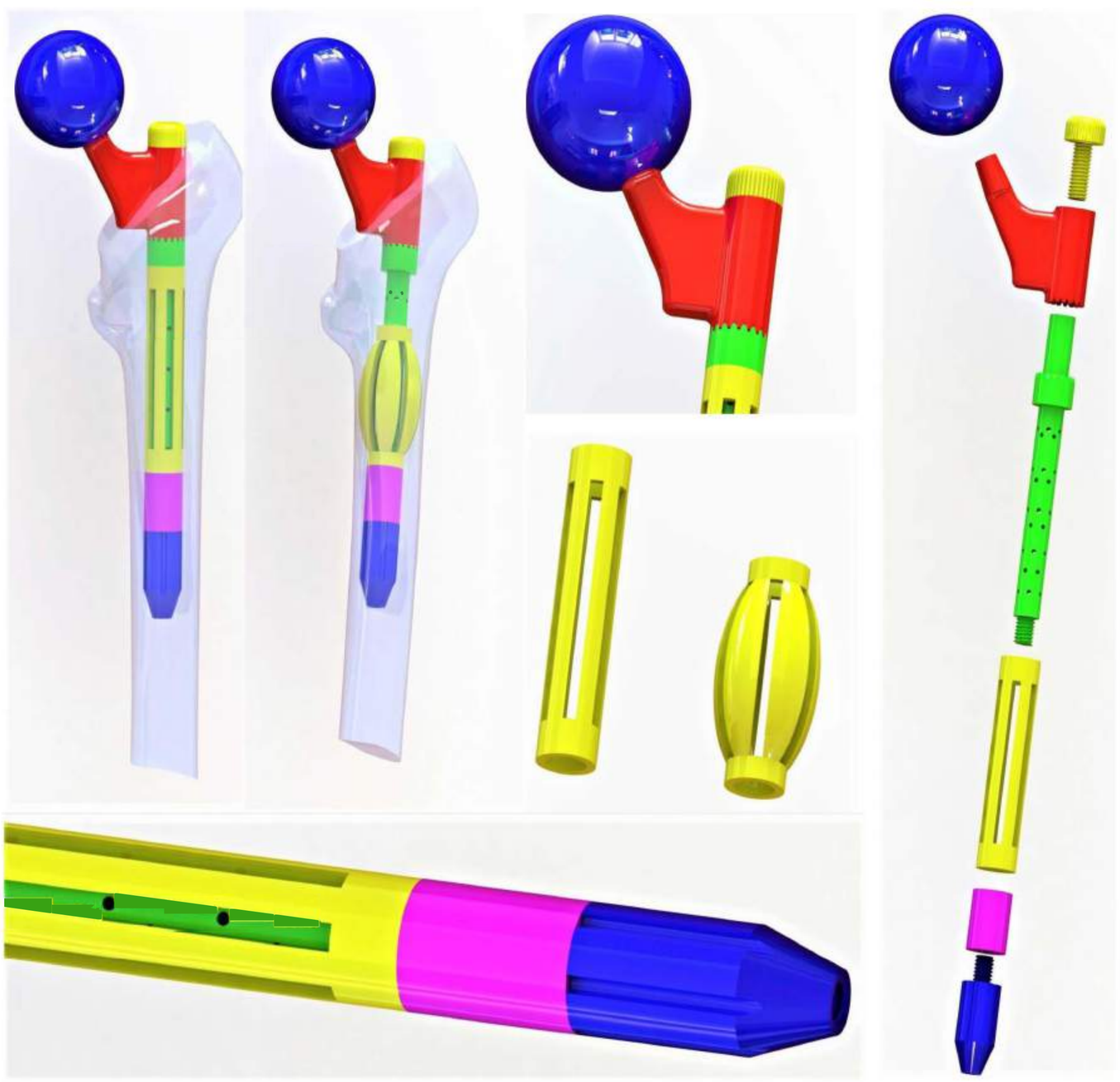
Description

The invention relates to a modular-adaptiv modular total hip prosthesis using smart materials. It is part of a hip prosthesis and it is placed in the femoral canal and serves to stabilize the hip prosthesis into the medullary canal of the femur. It consists of three modules: A, B and C.

The modular design of the stem allows more accurately adapt stem femur length that can vary from patient to patient.

Module B is dressed by a cylinder composed of Nitinol bars, a shape memory material, and it can achieve a more superior fixation of the stem in the femoral canal and a better adaptation to the femoral canal imperfections.

Module A is a cylinder that can rotate 360 degrees around the B module, and allows the femoral neck optimal anteversion in relation to the acetabular component.



Applications

Orthopaedics, Medicine.

Advantages

Module A is a cylinder that can rotate 360 degrees around the B module, and allows the femoral neck optimal anteversion in relation to the acetabular component.



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ORTHOTIC DEVICE USED FOR HUMAN KNEE JOINT AFFECTED BY GONARTHROSIS

RO 132075/ 30.09.2019
Patent Assignee: UNIV din CRAIOVA

F

Authors

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Dr.ing. Catană Marius
Prof.univ.dr. Tarniță Dănuț Nicolae, University of Medicine anc

Description

The invention relates to a mobile knee orthosis, provided with a lateral stabilization system, which, by actuation, corrects the varus or valgus of the knee affected by gonarthrosis and fixes it in the corrected position, preventing abnormal movements in the frontal plane, favored by gonarthrosis.The dimensional and mass characteristics of the device are optimal with the positioning and tightening on the right lower limb for people affected by gonarthrosis in the medial compartment, regardless of the stage of the condition. Also, the orthotic device presents on the lateral side of the knee a system consisting of two bars, two chain links and a central pulley being actuated by two screws that allow the movement of the pulley towards the medial, thus correcting the varus and stabilizing the knee with regard to the abnormal lateral movements occurring in gonarthrosis, but allowing, at the same time, flexion and extension movements.

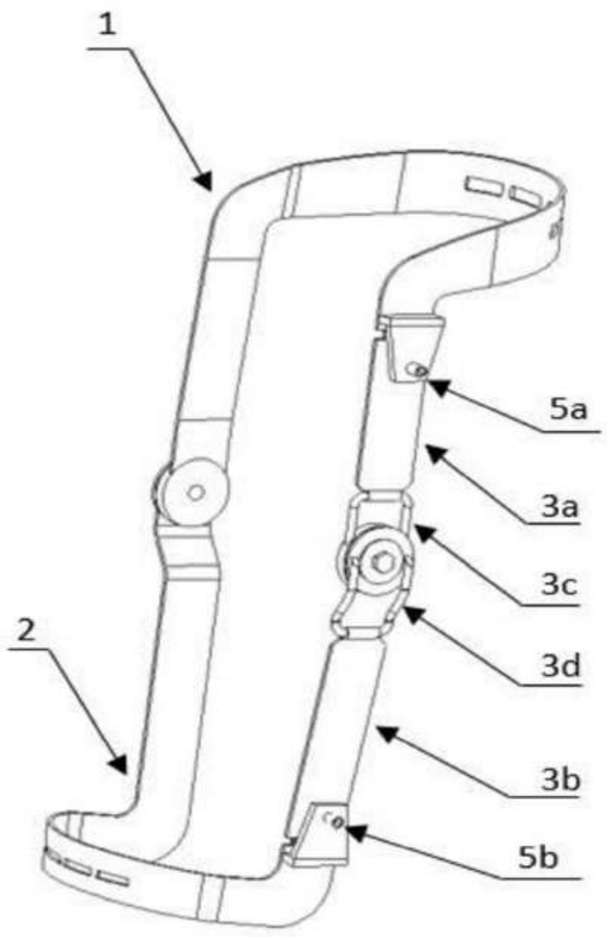


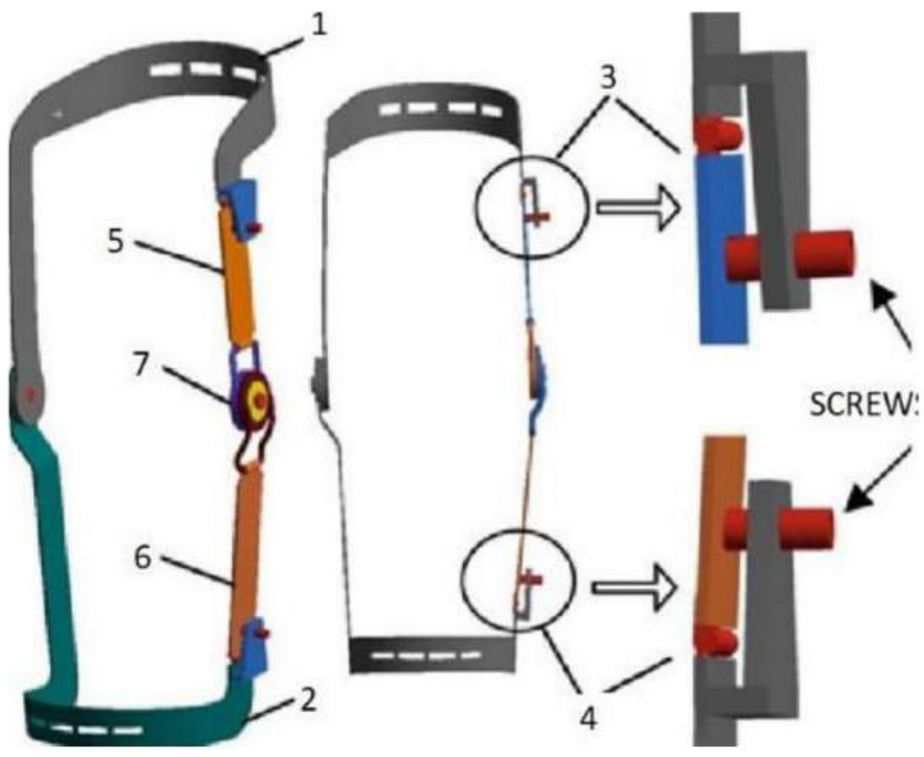
Fig.3

Applications

Rehabilitation

Advantages

This system has the advantage of being much simpler to make, has a much lower cost, is lighter, has no blunt elements that can damage tissues, is more flexible and adapts much more easily to the knee due to the multiple joints of the system which offer it much greater adaptability to the landmarks of the affected knee.





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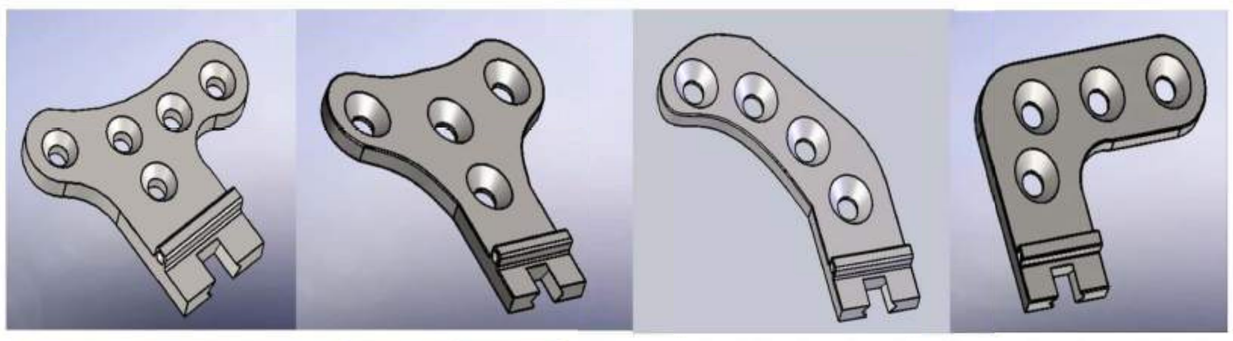
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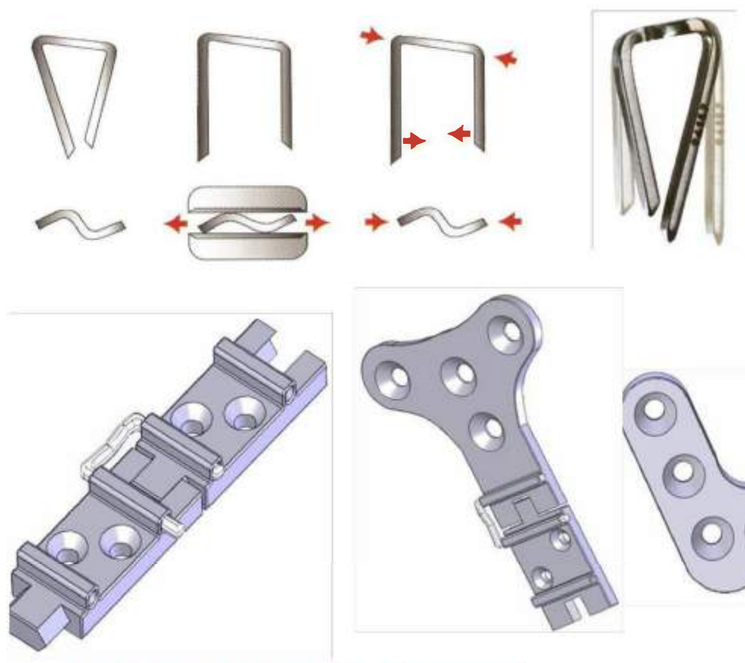
MODULAR PLATE SYSTEM FOR THE OSTHEOSYNTHESIS OF THE LONG BONES FRACTURES AND METHOD FOR THEIR USE

Patent Number: **RO126084-A2; RO126084-B1, 2013**

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Prof.dr. Tarnita Danut Nicolae, University of Medicine and Pharmacy, Craiova
Prof.dr.ing. Bizdoaca Nicu, Universitatea din Craiova

Description



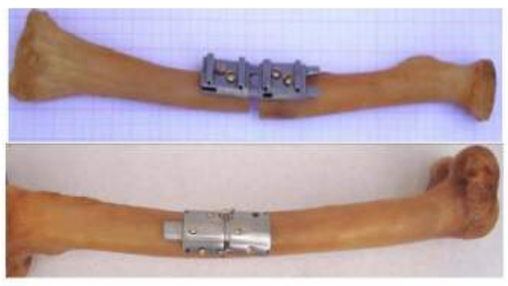


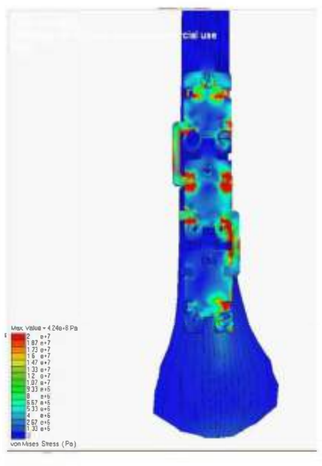
The patent's subject refers to the fabrication of modular orthopaedics implants for the ostheosynthesis of the long bone fractures which comprise a predefined number of modules which, by mechanical coupling, and forms various dimension plates adaptable to the fractured bones and to the tensions developed in the bone by muscular forces.

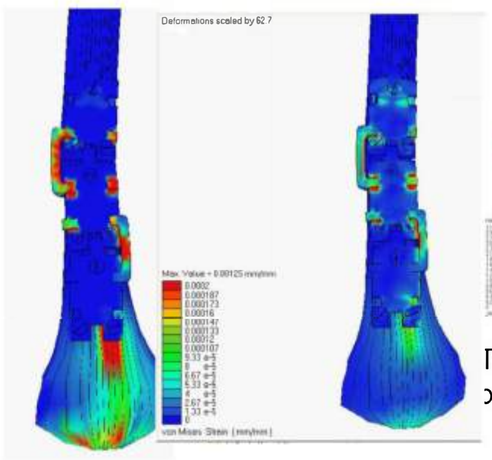
The coupling system of the adjacent modules with regard to the fracture place is made of Nitinol clips which act by the property of shape memory which enables the continues compression over the fracture fragments.

Aplicatii / *Applications*

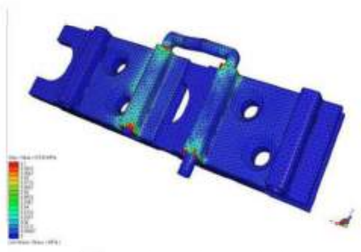
Oorthopedics implants for osteosynthesis of long bones









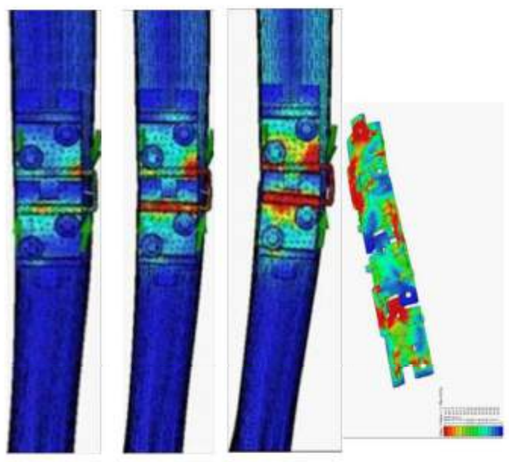


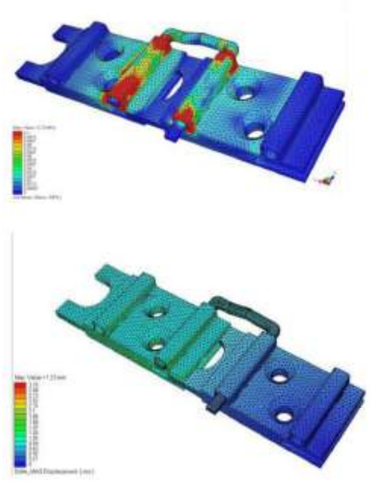
Two stages of the stress simulation of the virtual modular plate









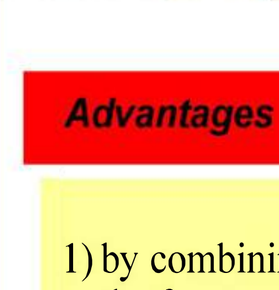


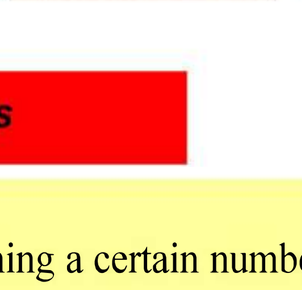


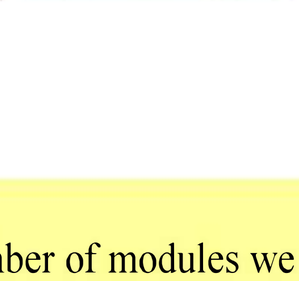












Advantages

1) by combining a certain number of modules we can obtain implants with various lengths depending of type, position or dimension of the fracture;
2) the use of Nitinol staple enables the stabilization of the implants and the good union of the bone fractures, a key element in the healing process;
3) the small sizes of the modules enable the surgeon to use minimally invasive surgical techniques, having the following advantages:

▪***reduction of soft tissues destruction;*** ▪ ***eliminating intra-operator infections***;▪
▪***reduction of blood losses***; ▪ ***the reduction of infection risk***;▪ the ***re- duction of the healing***
▪***time for the plagues***;▪ ***reduction of the scar (the aesthetic aspect).***

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ELBOW PROSTHESIS TYPE BALL JOINT

Patent Number: 129147/2018 Patent Assignee: UNIV din CRAIOVA

Authors

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Dr.Boborelu Cristian, University of Medicine and Pharmacy, Craiova
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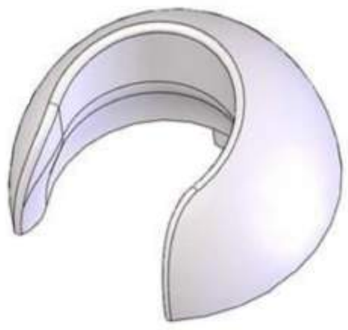
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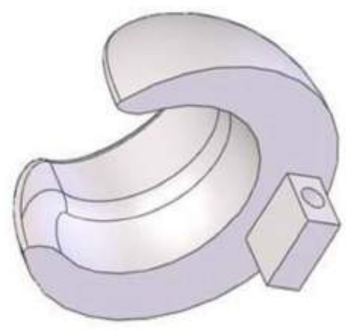
The invention relates to a new model of elbow prosthesis which has the operating principle hinge model, with a spherical shape.

The elbow prosthesis according to the invention has the following advantages:

. It has a simple construction, easy to perform;
. It consists of two components that are implanted separately easily;
. The destruction of bone for implantation is small;
. Intracapsular implantation is performed, which provides greater stability elbow prosthesis after implantation;
. The two components are coupled without using other devices.








ROMÂNIA

DUPLICAT
ELIBERAT INVENTATORULUI
în baza Art.34 alin.(2),
din Legea nr.64/1991 republicată

OFICIUL DE STAT PENTRU INVENŢII ŞI MĂRCI

BREVET DE INVENŢIE

Nr. 129147

Acordat în temeiul Legii nr.64/1991 privind brevetele de invenţie, republicată în Monitorul Oficial al României, Partea I, nr.613, din 19 august 2014.

Titular: ARTEGO S.A., TÂRGU JIU, GJ, RO

Titlul invenţiei: PROTEZĂ DE COT TIP CUPLĂ SFERICĂ

Inventatori: TARNIŢĂ DĂNUŢ NICOLAE, CRAIOVA, DJ, RO; TARNIŢĂ DANIELA, CRAIOVA, DJ, RO; BOBORELU CRISTIAN, CRAIOVA, DJ, RO; POPA DRAGOŞ-LAURENŢIU, CRAIOVA, DJ, RO

Descrierea invenţiei, revendicările şi desenele la care se face referinţă în acestea, fac parte integrantă din prezentul brevet de invenţie.
Durata brevetului de invenţie este de 20 ani, cu începere de la data de 11/07/2013, cu condiţia plăţii taxelor anuale de menţinere în vigoare a brevetului.

Director General

București, Data eliberării 30/08/2018

Applications

Orthopaedics, bone recovery

Advantages

Regarding the design and the insertion – the new prosthetic model, consisting of two components, abundantly fulfils the criterion of simplicity;

The simplicity of the prosthetic components allows them to be made with classical tools in small workshops with no special equipment;

Due to the simplicity of the components, the costs are much smaller than in the case of current prostheses;

Making the prosthesis from stainless steel, titanium or cobalt-chrome gives the prosthesis a high durability in terms of component wear and mechanical strength;

By increasing the options and reducing the technical barriers in the revision surgery of the damaged prosthetic components, the

service is easy to carry out due to the very simple manner of implantation which does not involve difficult and hard to conduct manoeuvres;

The implantation kit is simple and it does not use special tools.

Contact person

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Tel: +040.351.443561 http://umfcv.ro/

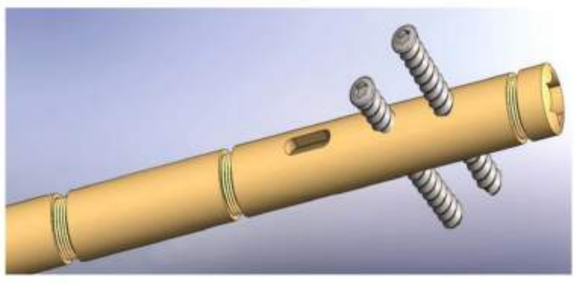
MODULAR-ADAPTIVE CENTROMDEULAR ROD USED FOR THE OSTHEOSYNTHESIS OF THE LONG BONES

PATENT NO RO127375-A2; RO127375-B1, 2013

Prof.dr.ing. Tarniță Daniela, University of Craiova, email: tarnita.daniela@gmail.com
Prof.dr. Tarniță Dănut Nicolae, University of Medicine and Pharmacy, Craiova
Dr.ing.Berceanu Cosmin
Ing. Cismaru Florin

Description



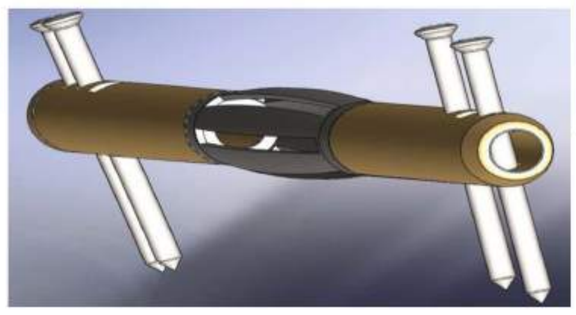


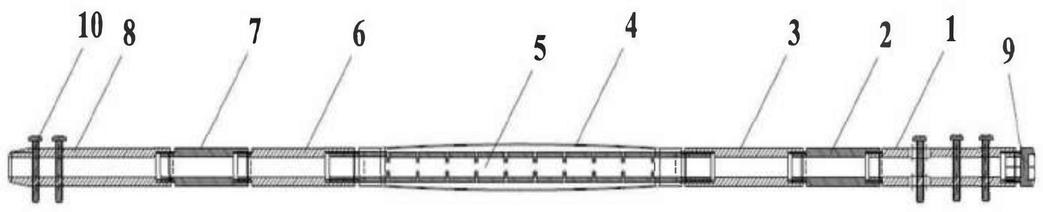
The patent's subject refers to a modular-adaptive centromedular rod (orthopaedic implant) used for the ostheosynthesis of the long bone fractures which incorporates in the structure intelligent materials like Nitinol, material with the property of shape memory.
The orthopaedic rod is an assembly made from 9 components divided in three zones: a epiphiseal zone (components 1, 2, 3 and 9), a diaphiseal zone (components 4 and 5) and a metaphiseal zone (components 6, 7, 8 and 9).

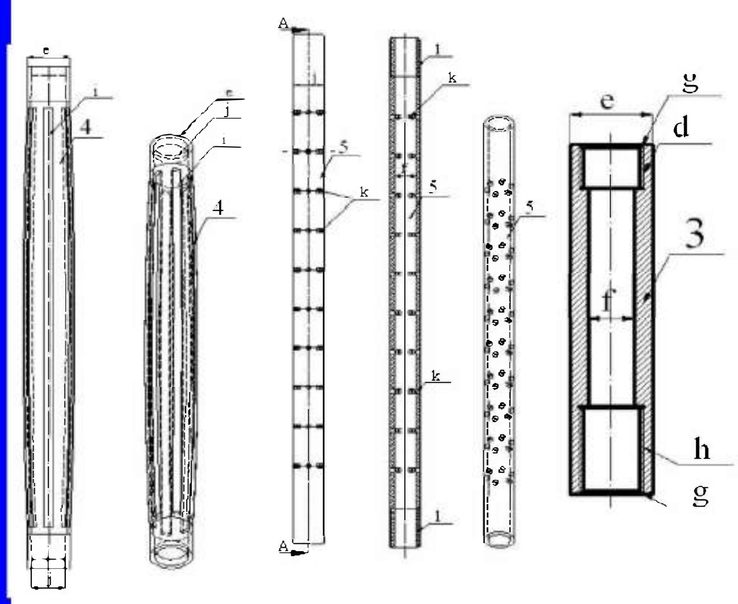


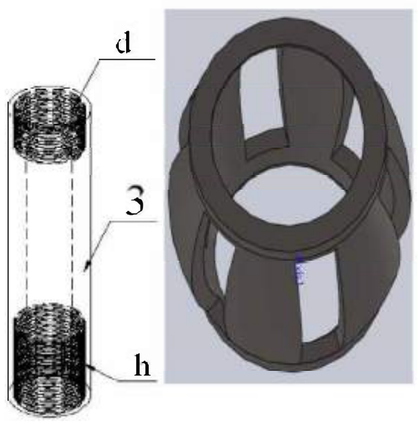
Applications

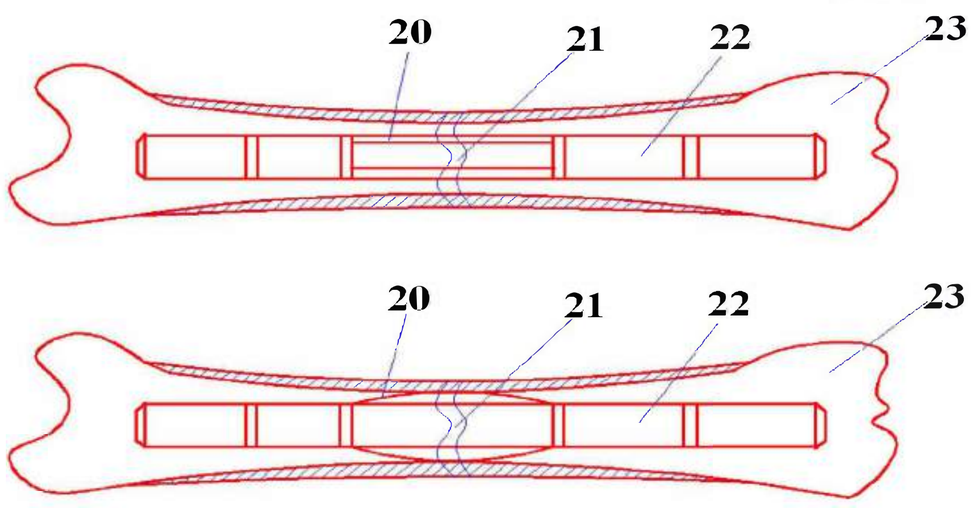
Modular-adaptive orthopaedic implants for the treatment of the long bones fractures.











Advantages

Advantages:
1.the rod is modular and adaptable to various long bones;
2.smart materials like Nitinol ensure a permanent pressure and a good cohesion between the orthopaedic rod and medular channel of the bone;
1.the rod doesn't allow micro-mouvements between the bone fragments
2.it avoids the occurrence of important degenerative-dystrophic lesions in the contact area of the focus of the fracture.
3.the components used are simple in shape thus the rod is easy to manufacture;
4.the rod is easy to implant and to extract by the surgeon by cooling the Nitinol component.
5.the healing period decreases, the infections risks decrease
6.the downtime decreases, faster integrations in the professional and domestic activities



ROMÂNIA
DUPLICAT
ELIBERAT INVENTATORULUI
în baza Art.35 alin.(2),
din Legea nr.64/1991 republicată
OFICIUL DE STAT PENTRU INVENȚII ȘI MĂRCI

Brevet de invenție
Nr. 127375

Acordat în temeiul Legii nr.64/1991 privind brevetele de invenție, republicată în Monitorul Oficial al României, Partea I, nr.541, din 08 august 2007.

Titular: UNIVERSITATEA DIN CRAIOVA, CRAIOVA, DJ, RO

Titlul invenției: TIJĂ ORTOPEDICĂ CENTROMEDULARĂ, MODULAR-ADAPTIVĂ, UTILIZATĂ LA TRATAREA FRACTURILOR DIAFIZARE ALE OASELOR LUNGI

[redacted] TARNIȚĂ DANIELA, CRAIOVA, DJ, RO; CISMARU FLORIN, CRAIOVA, DJ, RO; TARNIȚĂ DĂNUȚ NICOLAE, CRAIOVA, DJ, RO; BERCEANU COSMIN RĂZVAN, COMUNA BISTREȚ, DJ, RO

Descrierea invenției, revendicările și desenele la care se face referință în acestea, fac parte integrantă din prezentul brevet de invenție.
Durata brevetului de invenție este de 20 ani, cu începere de la data de 25.11.2010, cu condiția plății taxelor anuale de menținere în vigoare a brevetului.

Confirm cele de mai sus prin semnarea și aplicarea ștampilei
Director General

București, Data eliberării 30.05.2013

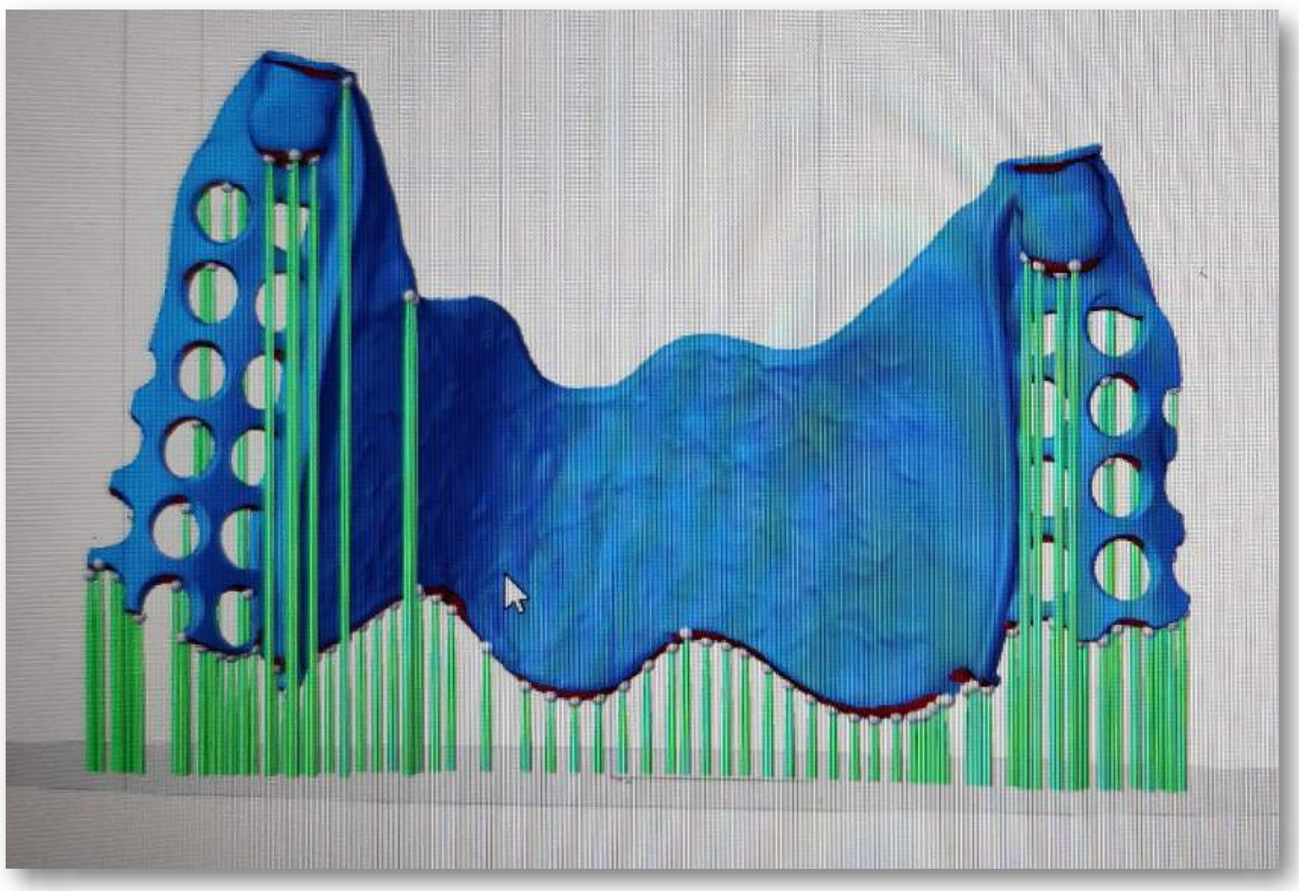
SINTER LASER MELTING

Dental medicine project

Author: Manolin Mita

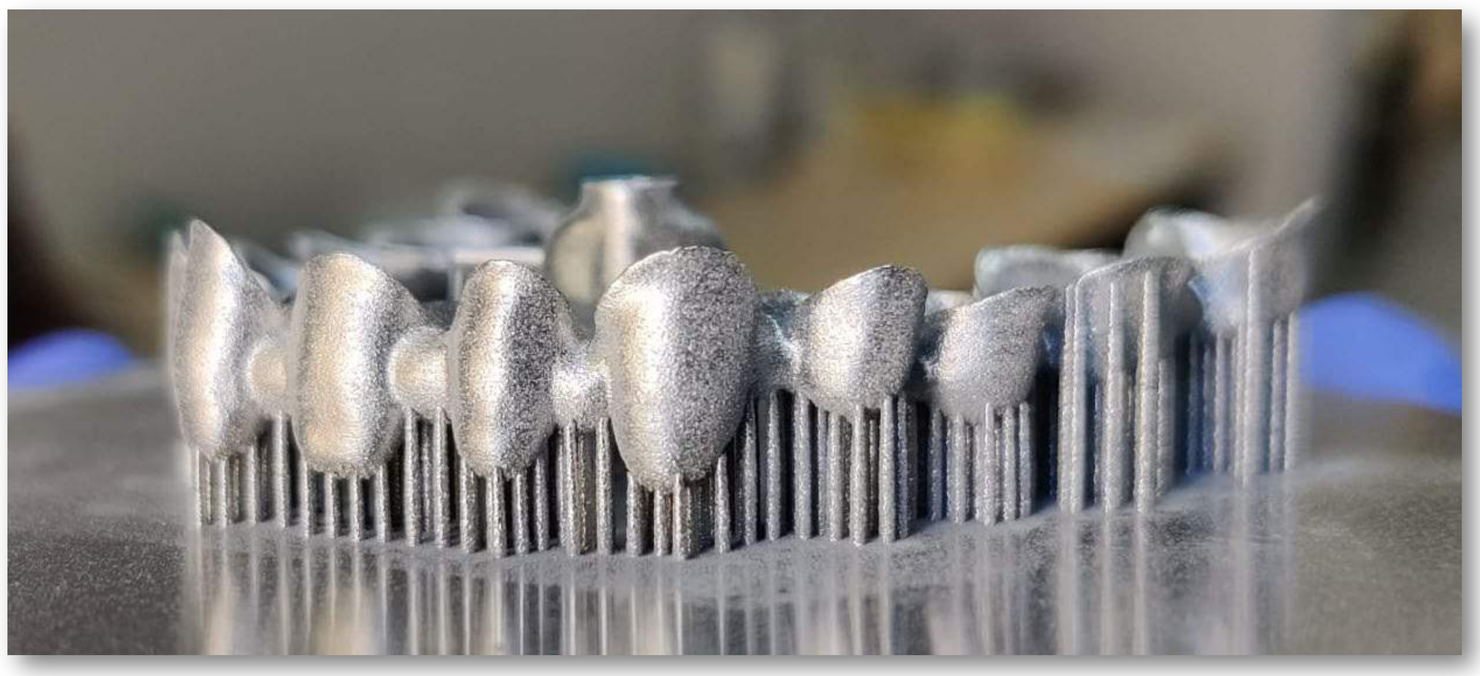
F

Being in the field related to dental medicine with vast experience and because there was no center specialized in laser printing using Sinter Laser Melting technology in Hunedoara county, I ecided to take this step. 3D printing or additive manufacturing is a manufacturing process of solid objects tri-dimensionally adding layer after layer. Physical objects are produced using data a digital model, a 3D model or others sources such as an AMF* file. By using 3D printing they can be created products of almost any shape. Selective laser melting (SLM) is the leading metal 3D printing technology revolutionizing the additive manufacturing of metal parts. This digitized technology gives dental laboratories the opportunity to benefit from creating work of an exceptional quality, far beyond what humans can achieve with classic melting and casting technologies.











SCAN ME

Contact: ***laserprintdeva@gmail.com***

ILZSU Hair Repair Serum

Product

Author/s: Varga Péterné

ILZSU®

HAIR REPAIR SERUM

Have wonderful tonsure! Stop the hair loss!

As we know the weak immune system has an effect on our body and firstly it can be seen on our look.

As soon as we realize any damages on the hair or on the scalp, such as alopecia areata, hair loss or baldness, it is important to start the treatment immediately.

There are several proofs of the good effects of the ILZSU hair repair serum cure in many cases.

How does it work?

The scalp can be stimulated by using the serum, the blood supply can be increased, **so the hair loss can be reduced and the hair will start growing.**

Naturally, we cannot grow a tonsure on the part of the scalp, where the hair roots are dead but where roots are still alive the regeneration can be started again.

"The power of nature for a healthy hair."



Start using it on time! It is worth using the serum in case of a slight hair loss or for prevention as well in order to

ILZSU HAIR REPAIR SERUM

- It consists of 10 special herbs and their powerful regenerating effect,
- It has 100% natural ingredients,
- It is produced without any preservatives, colorant or aroma,
- It is a Hungarian and original trade mark product of the Magic Skin Ltd.

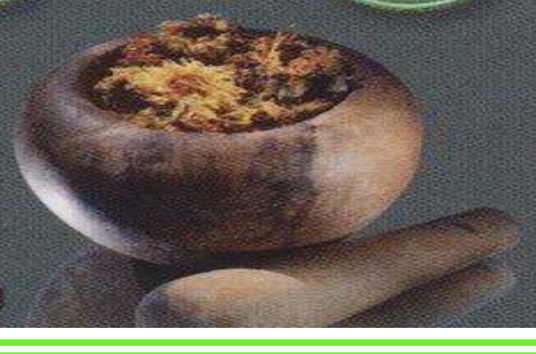


By using the ILZSU serum you can:

- stop the hair-loss
- promote an intensive hair growth
- make your scalp healthy
- make your hair shiny and beautiful, so you will be self-confident and satisfied.

HUN

100%



Skin-Magic

Cosmetic Manufacturing and Trading Ltd.

+36-70-276-4586 www.ilzsu.hu info@ilzsu.hu

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Knowledge and Technological Transfer Center

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Title

PRoHep-LCT- PARALLEL ROBOT FOR LAPAROSCOPIC TREATMENT OF HEPATIC TUMORS

Inventor/s - Contact

Plitea Nicolae, Pîslă Doina Liana, Vaida Liviu Călin, Gherman Bogdan George,
Tucan Paul George Mihai
E-mail: Doina.Pisla@mep.utcluj.ro

Patent/ Application number

Patent OSIM no.: RO134189- B1/30.10.2024

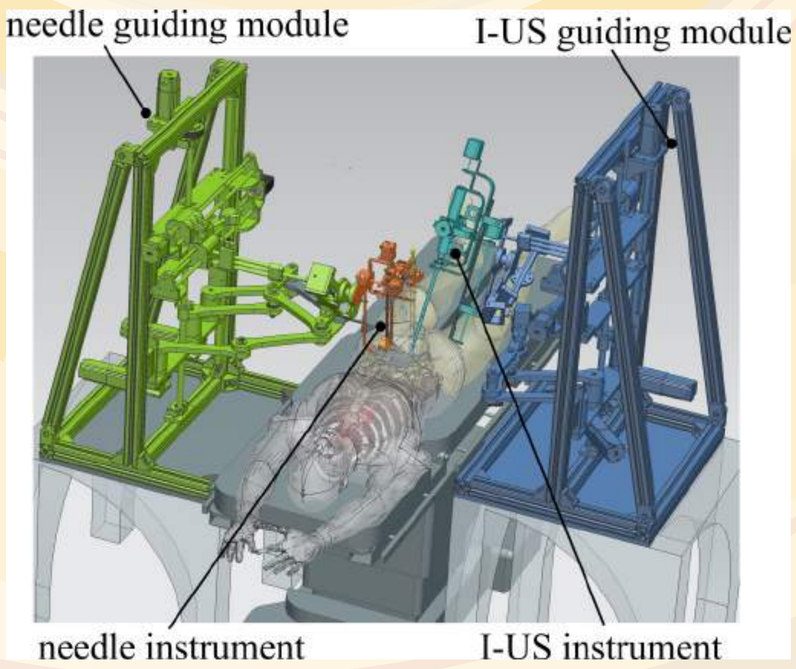
Short presentation

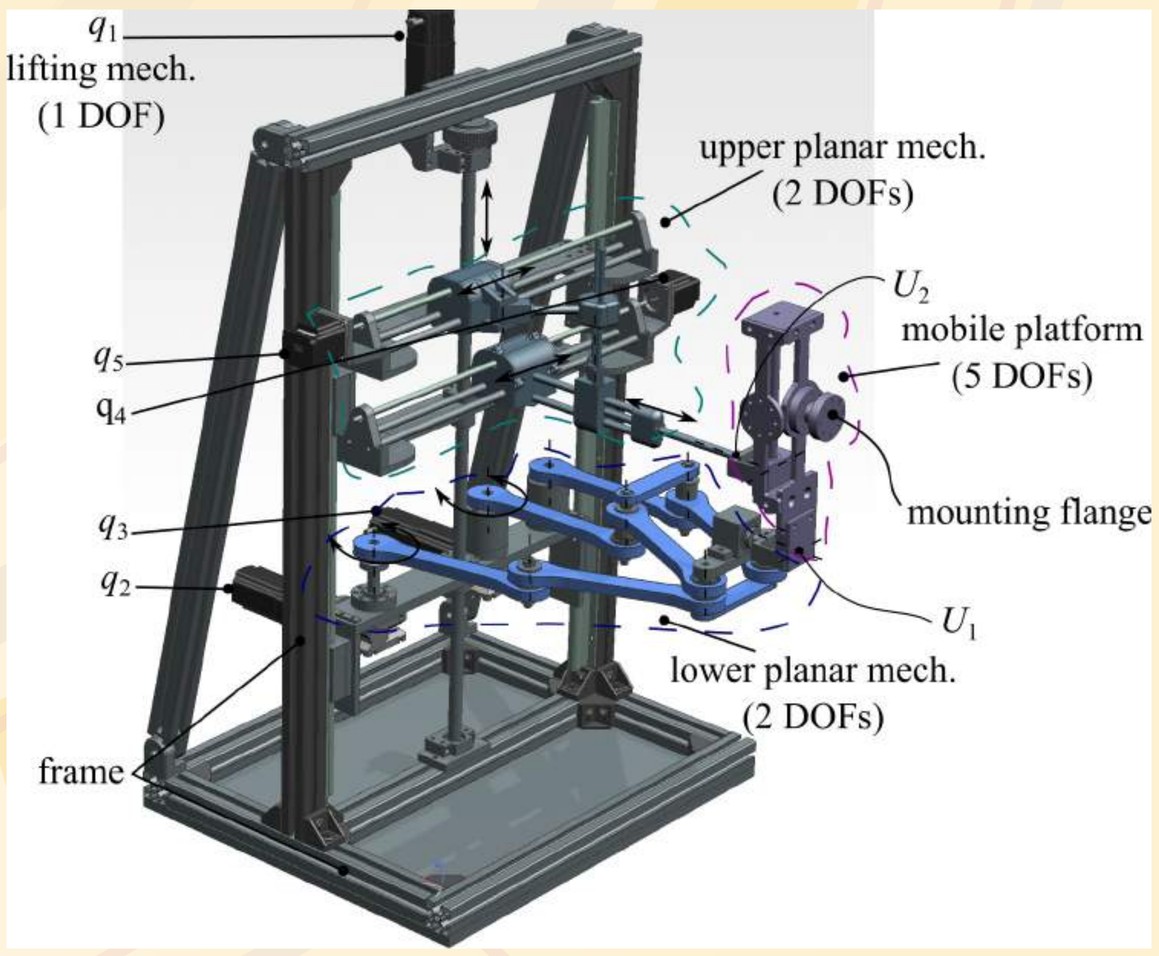
The invention relates to a parallel robot for laparoscopic treatment of unresectable liver tumors. According to the invention, the robot consists of two robotic modules: the intra-operatory ultrasound (I-US) guiding module is designed for guiding a hepatic ultrasound probe in the operating field; the needle guiding module is designed for guiding and inserting brachytherapy needles in hepatic tumors (which are localized using I-US). Each robotic module has five degrees of freedom and are placed on a common frame which is fixed on the patient's bed. Furthermore, both parallel robotic modules consist of two parallel mechanisms, one with three degrees of freedom and is used for positioning an automated medical instrument (to manipulate a hepatic ultrasound probe, or for brachytherapy needle insertion), and the second mechanism with two degrees of freedom for the automated instrument orientation. The parallel robotic system for hepatic cancer treatment is controlled by the surgical staff using a master console located in the operating room.

Applicability

Medical robotics, Cancer treatment, Brachytherapy, Intra-tumoral drug release.

Images





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Title

AUTOMATED MEDICAL INSTRUMENT FOR INSERTING MULTIPLE NEEDLES ON LINEAR AND PARALLEL TRAJECTORIES IN INTERSTITIAL BRACHYTHERAPY CANCER TREATMENT

Inventor/s - Contact

Gherman Bogdan, Bîrlescu Iosif, Burz Alin, Pisla Doina
E-mail: Doina.Pisla@mep.utcluj.ro

Patent/ Application number

Patent OSIM no.: RO134941- B1/30.10.2024

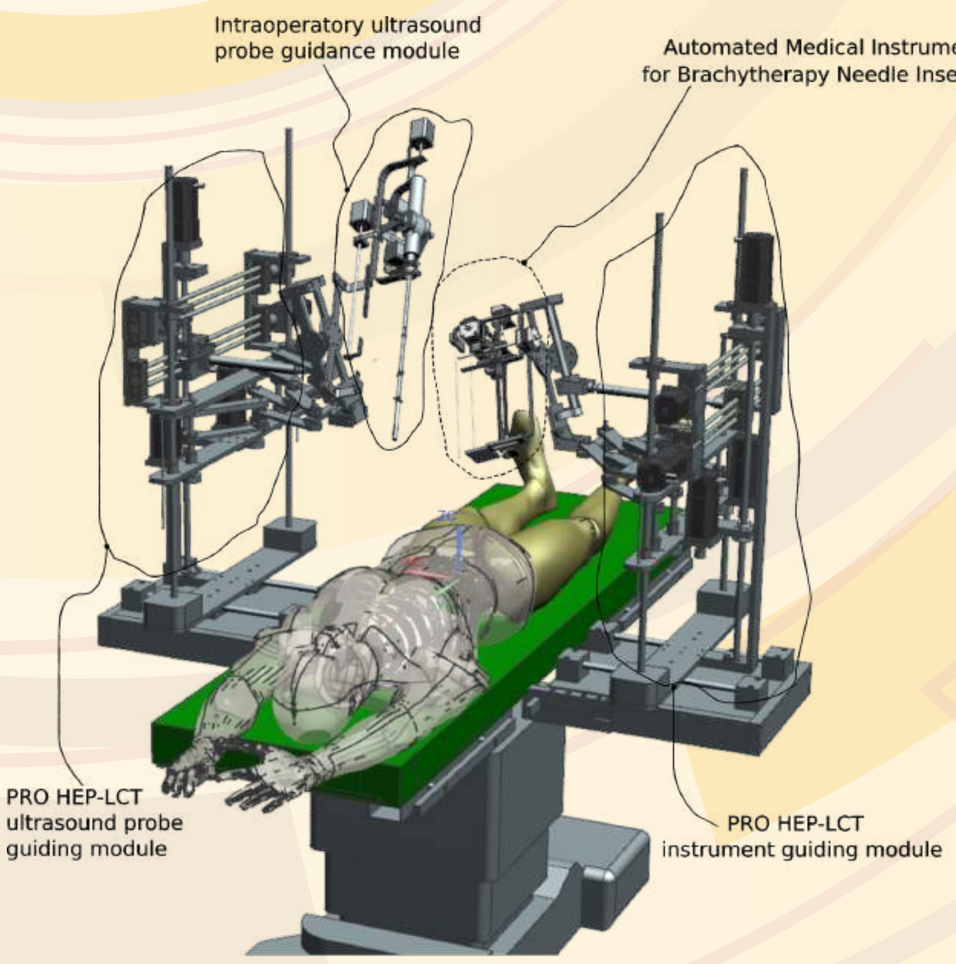
Short presentation

The present innovation is a medical robotic instrument designed to insert percutaneously multiple needles on a straight trajectory in brachytherapy procedures for liver cancer treatment. The instrument has 3 degrees of freedom, having a serial kinematic chain of type PPP and a specially designed gripper. It uses Gantry architecture to position the brachytherapy needle in the XOY plane, using the actuators 1 and 2. The brachytherapy procedure usually requires the precise placement of up to 6 brachytherapy straight needles inside the tumor in a matrix form (which helps avoiding needles collisions), using the actuator 3, at a distance of 10mm from each other (both on OX and OY axes). The size of the treated tumors determines directly the required number of the needles. These are taken from the needles rack, which is attached to the robotic instrument, one by one using the needle gripper, which is designed specifically for this application. The first needle is placed (approximately) in the middle of the tumor, followed by the others, using the pre-planned trajectories. The robotic instrument can also be used for intratumoral drug release.

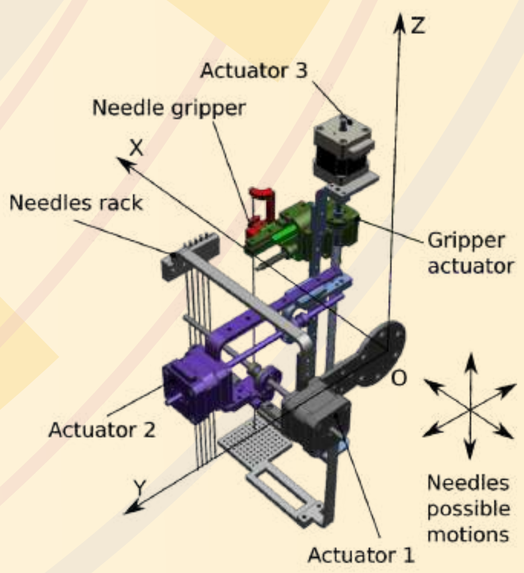
Applicability

Medical robotics, Cancer treatment, Brachytherapy, Intra-tumoral drug release.

Images



Robotic assisted brachytherapy for liver cancer treatment using the automated medical instrument



Automated Medical Instrument for Brachytherapy Needle Insertion

Department for Research, Development and Innovation Management
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Title

PARALLEL ROBOT FOR RECOVERY OF LOWER LIMB JOINTS IN TWO PLANES

Inventor/s - Contact

Pîslă Doina Liana, Bîrlescu Iosif, Vaida Liviu-Călin, Tucan Paul- George-Mihai, Gherman Bogdan George, Machado Jose.
Doina.Pisla@mep.utcluj.ro

Patent/ Application number

Patent application OSIM no.: A/00116/20.03.2024 & Portuguese Institute of Industrial Property (INPI) no.: 20252006789500

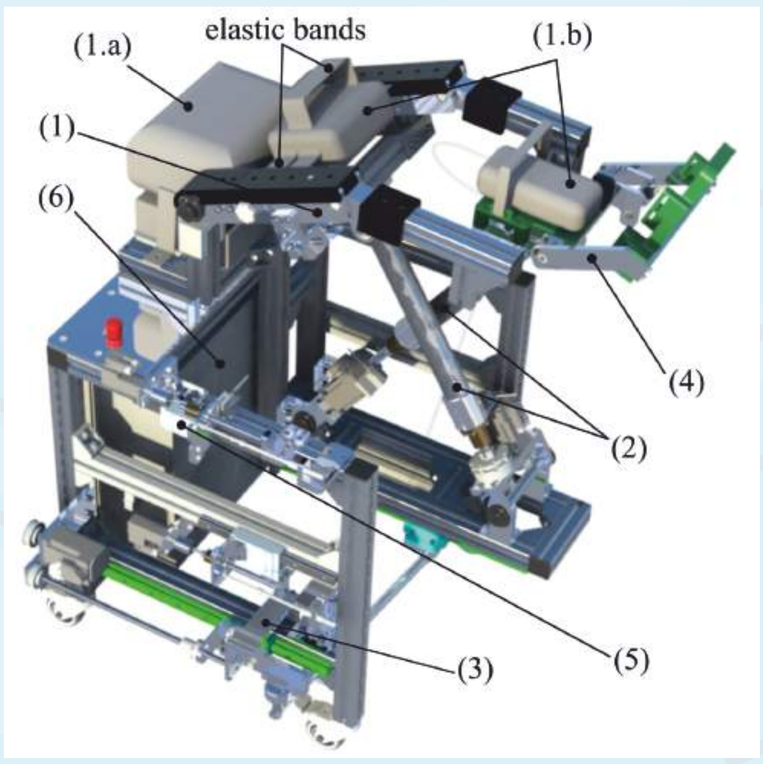
Short presentation

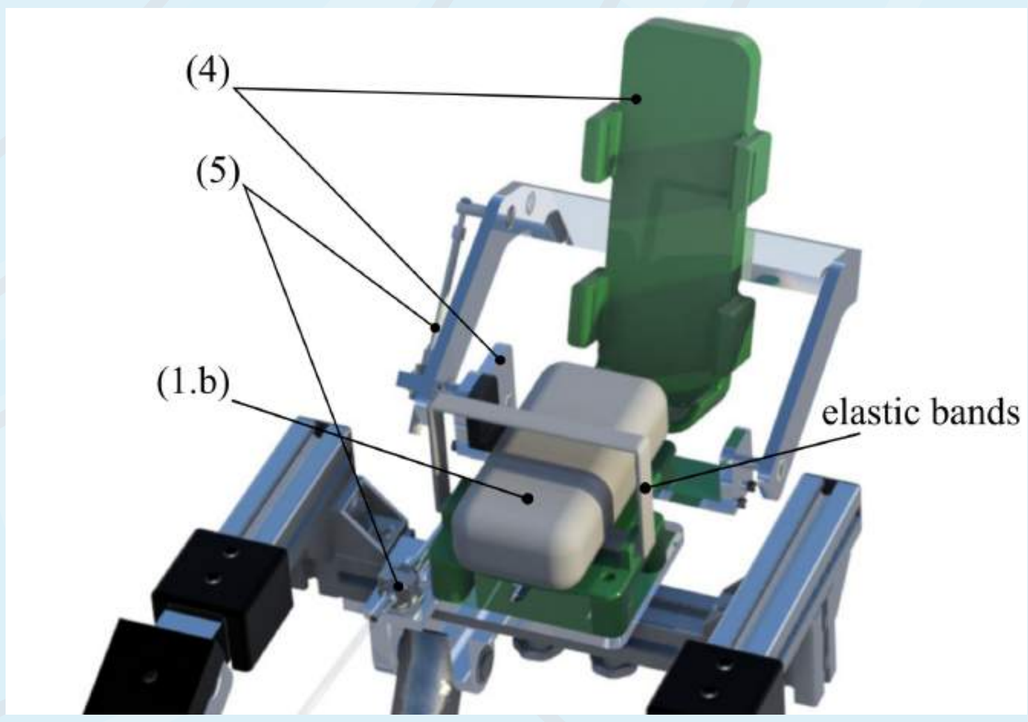
The invention relates to a parallel robot for the medical recovery of patients with neuromotor disorders of the lower limb. The robotic system (the subject of the invention) consists of two parallel, and coupled, robotic modules enabling the neuromotor rehabilitation of the lower limb in two planes. The first module (the hip and knee rehabilitation module HKM) is designed for the hip and knee neuromotor rehabilitation allowing the motions of flexion/extension of the hip and knee joints, and the abduction/adduction of the hip joint. The second module (the ankle rehabilitation module AKM) is designed for the ankle neuromotor rehabilitation allowing the motions of plantar flexion/extension and inversion/eversion. The HKM is composed of: a guiding kinematic chain (1), on which the lower limb is placed on pads (1.a, 1.b) and held using elastic bands; HKM is a serial kinematic chain with three passive revolute joints (RRR), which is guided by three input kinematic chains, two identical revolute-prismatic-revolute (RPR) chains (2), providing the flexion/extension motions for the hip and knee joints, and one prismatic-revolute-revolute-prismatic (PRRP) chain (3), providing the motions of abduction/adduction of the hip joint. The AKM is composed of: a guiding kinematic chain (4), where the foot is placed, which is a serial kinematic chain with two passive revolute joints (RR), and two identical input kinematic chains (5) of type revolute-prismatic-revolute (RPR) which provide the ankle motions.

Applicability

The invention domain of applicability refers to the neuromotor rehabilitation of the lower limb for patience suffering from different neuromotor afflictions such as: stroke, Parkinson disease, sclerosis (different forms), spinal cord injury. The robotic system from the present invention can be adopted in neuromotor rehabilitation centers, together with specialized patient-focused medical protocols, to help the medical personnel in rehabilitating the patients such that the patients can continue a normal life and be able to perform the daily life activities.

Images





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Title

AUTOMATED SURGICAL INSTRUMENT FOR ROBOTIC-ASSISTED MINIMALLY INVASIVE SURGERY

Inventor/s - Contact

Pîslă Doina Liana, Chablat Damien, Bîrlescu Iosif, Vaida Liviu-Călin, Pușcă Alexandru-Vasile, Tucan Paul-George-Mihai, Gherman Bogdan George.
Doina.Pisla@mep.utcluj.ro

Patent/ Application number

Patent application OSIM no.: A/00142/29.03.2024 & French Patent and Trademark Office (INPI-Institut national de la propriété industrielle) no.: FR2414038

Short presentation

The present invention refers to an automated surgical instrument with high dexterity for minimally invasive robotic assisted surgery. The surgical instrument has 5 Degrees of Freedom (DoFs) for the active head (end-effector) of the surgical instrument (e.g., clips, scissors, dissector, etc.) to ensure high dexterity and easy access in difficult areas of the operating field. High dexterity is ensured by integrating a rotation in the distal area, at the level of the active head and easy access to the operator field is ensured by the controlled curvature of the instrument rod in the distal portion. The flexible segment of the instrument rod is manufactured using 3D printing and elastic materials with special geometry. Moreover, the surgical instrument within the present invention has decoupled motions which leads to increased rigidity, necessary for the manipulation of tissues in the operating field and the conduct of the surgical procedure. The surgical instrument within the present invention is designed to be mounted on serial or parallel robotic surgical systems with 6 degrees of freedom capable of maintaining a fixed point of insertion of the instrument in operator field and containing a module with the motors to actuate the 5 degrees of freedom of the instrument. Consequently, the surgical instrument does not contain sensitive electronic elements and can be sterilized by various techniques (chemical or ionizing radiation), being also more efficient as cost of production and use.

Applicability

The domain of applicability of the present invention refers to the robotic assisted minimally invasive surgery. The automated instrument can be equipped with various surgical tools (e.g., clips, scissors, dissector, etc.) to perform the required surgical task. The present invention is designed to be manipulated by a surgical robotic system to facilitate ergonomics and surgical intervention precision, which in turn improve the outcome of the surgical act.

Images

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Title

PARALLEL ROBOTIC SYSTEM FOR MINIMALLY INVASIVE PANCREATIC SURGERY

Inventor/s - Contact

Vaida Liviu-Călin, Gherman Bogdan George, Tucan Paul- George-Mihai, Bîrlescu Iosif, Chablat Damien, Pîslă Doina Liana.
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Patent/ Application number

Patent application OSIM no.: A/00522/11.09.2024 & French Patent and Trademark Office (INPI-Institut national de la propriété industrielle) no.: FR2414265

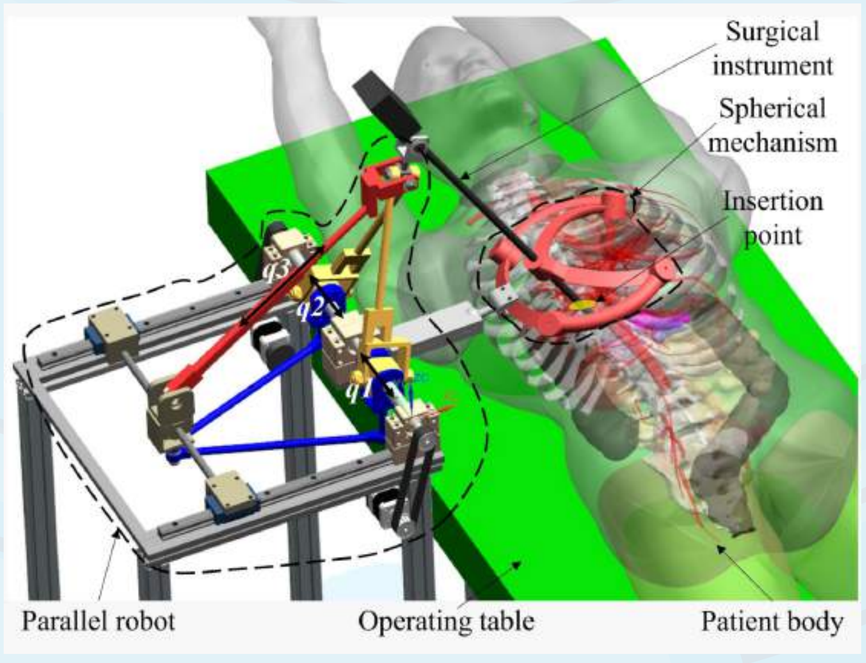
Short presentation

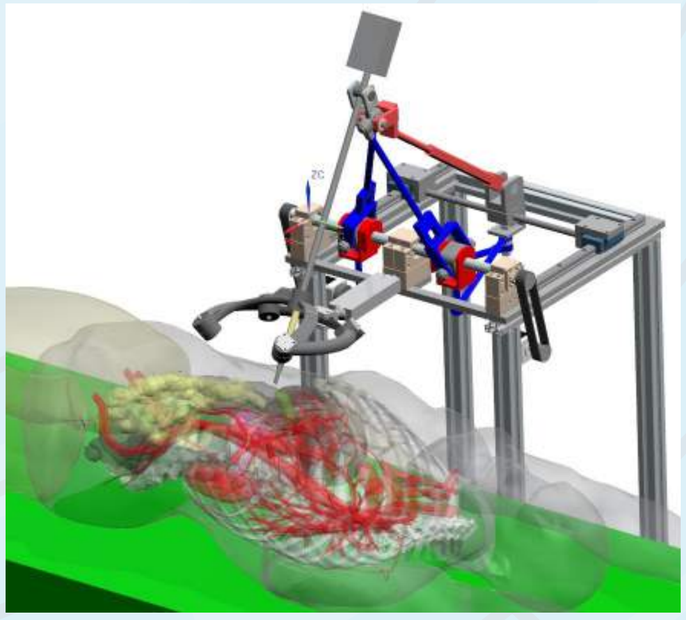
The present invention refers to a parallel and modular robotic system for minimally invasive surgery (MIS) of the pancreas. The robotic system is designed to assist the main surgeon in various MIS tasks and to replace the second surgeon in the operating room. The main surgical tasks of the modular parallel robotic system are manipulating active surgical instruments (staplers, scissors), manipulating the laparoscopic camera, manipulating retractors. The robotic system consists of three modules, namely: (1) an innovative parallel robot with 3 Degrees of Freedom (DOFs) that manipulates a surgical instrument; (2) a spherical parallel mechanism which constraints the surgical instrument in a Remote Center of Motion (RCM) type of motion (where the surgical instrument has three orientations with respect to the insertion point in the surgical field and one translation fir the instrument insertion/retraction); (3) the surgical instrument which is manipulated by the parallel robot (1) and constrained at the insertion point by the spherical mechanism (2) to avoid trauma. The specific advantages of the robotic system proposed for minimally invasive surgery of the pancreas are high accuracy and rigidity (characteristics of parallel robots that increase patient safety during the medical act), modularity, reduced footprint in the operating room and increased ergonomics (features that ease medical intervention for surgeons).

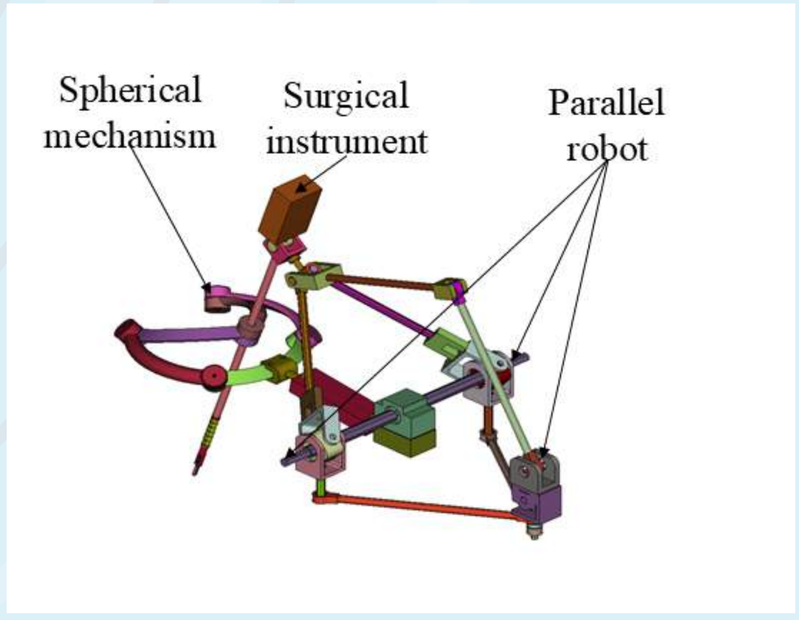
Applicability

The domain of applicability of the present invention refers to the robotic assisted minimally invasive pancreatic surgery and targets the accurate manipulation of various surgical instruments (staplers, scissors, laparoscopic camera, etc.). The present invention aims to replace the second surgeon in the operating room, to facilitate ergonomics and surgical intervention precision, which in turn improve the outcome of the surgical act.

Images







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Title

INTELLIGENT ROBOTIC SYSTEM WITH 3D NAVIGATION SYSTEM FOR ORAL SURGERY

Inventor/s - Contact

Doina-Liana Pîslă(UTCN), Cristian Mihail Dinu (UMFCJ), Paul-George-Mihai Tucan (UTCN), Rareș-Cristian Mocan (UMFCJ), Călin Liviu Vaida (UTCN), Vasile-Nicolae Bulbucan (UTCN), Daria Pîsla (UMFCJ), Mihaela-Carmen Hedesiu (UMFCJ)

Patent/ Application number

Patent application OSIM no.: A/00581/30.09.2024

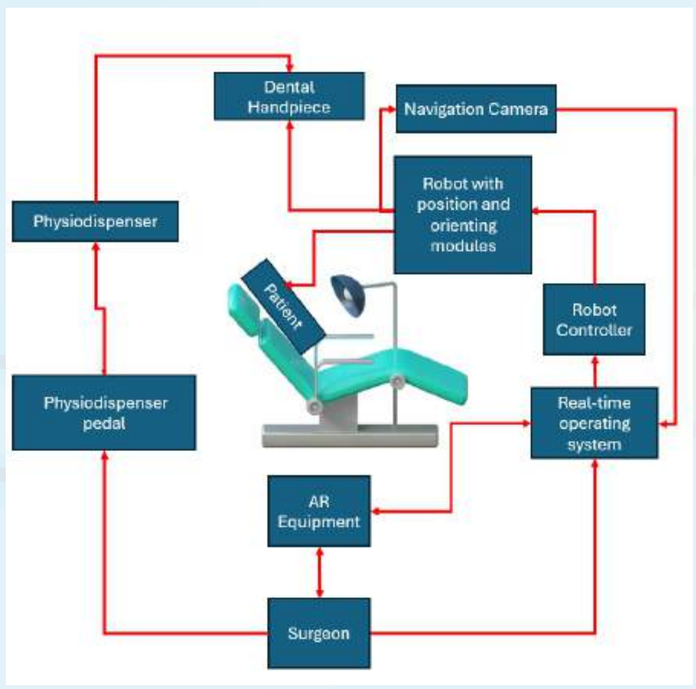
Short presentation

The present invention describes an intelligent robotic system that works together with an advanced 3D navigation system to perform oral surgery with increased precision and efficiency. The invention consists of an intelligent robot having at least six degrees of freedom, responsible for manipulating the dental handpiece during the procedure. This operation is based on commands from the process controller and a real-time operating system. The system also includes a stereo vision camera and 3D navigation system used to provide real-time three-dimensional imaging of the surgical site. These images enable the dynamic generation of trajectories for the robot's end effector that controls the dental handpiece. Additionally, the robot controller transmits the real-time motion parameters from the operating system ensuring continuous updates through the 3D navigation system. The surgeon oversees the entire procedure and can intervene as necessary. Using augmented reality equipment, the surgeon can simulate the surgical process, previewing the handpiece trajectory, receiving patient status updates, making fine trajectory adjustments, recording the procedure, and virtually placing the dynamic surgical guide. All these functions use the preoperative CBCT images and the real-time 3D navigation system, enabling active adjustments during the medical procedure, including compensating for the patient's head movements.

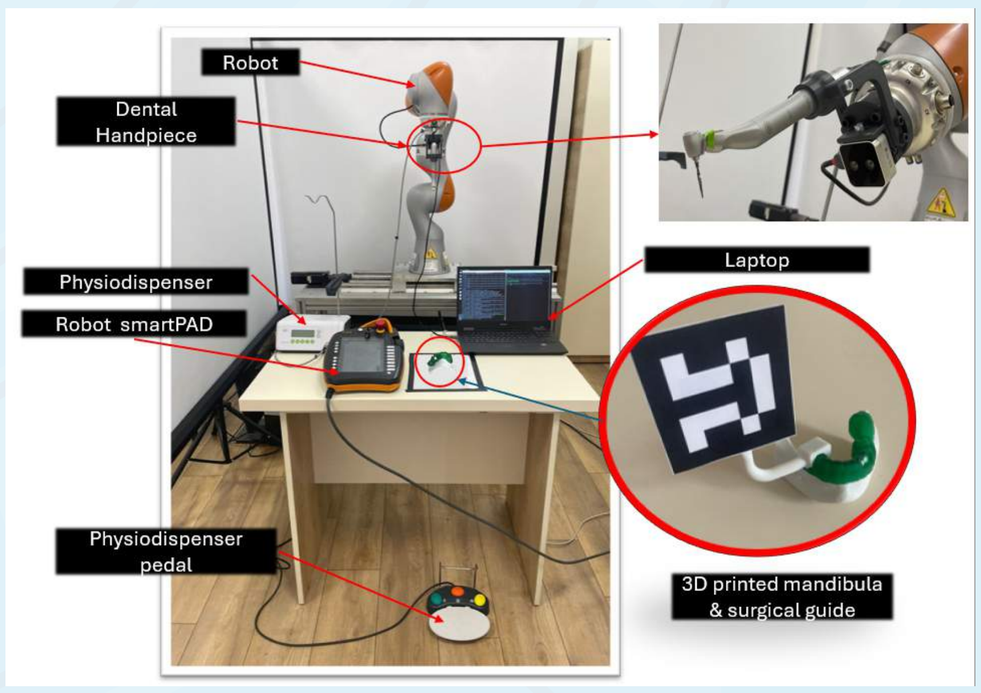
Applicability

The specific applicability of the intelligent robotic system with 3D navigation system for oral surgery from the present invention is robotic-assisted oral surgery, a medical procedure that has proven multiple advantages over classic, manual surgery such as: higher precision, ergonomics, reduced risk of damage to adjacent tissues, reduction of human errors, optimal post-operative evolution and maximization of the implant lifetime. The intelligent robotic system with 3D navigation for oral surgery represents a significant advancement in the field of oral surgery, combining cutting-edge technologies to provide more precise, safe, and effective treatments. This transforms the way oral surgical interventions are performed, bringing benefits for both doctors and patients.

Images



Concept



Prototype

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Title

METHOD FOR MAKING CUSTOMIZED IMPLANTS FROM TITANIUM-GRAPHENE COMPOSITE WITH CONTROLLABLE MECHANICAL CHARACTERISTICS VIA SELECTIVE LASER MELTING PROCESS

Inventor/s - Contact

Cosma Sorin Cosmin, Bâlc Nicolae Octavian, and Berce Petru

Patent/ Application number

Patent application OSIM no.: A/00109/18.03.2024

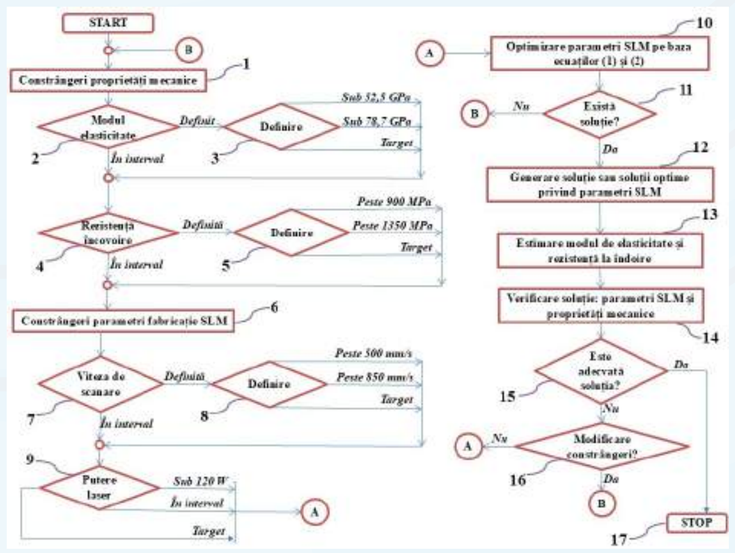
Short presentation

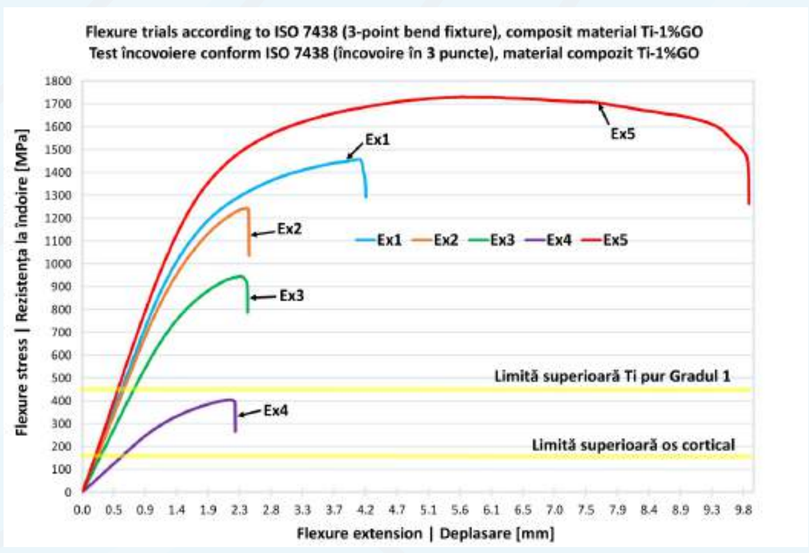
The present invention relates to a direct method of obtaining personalized medical implants used for bone reconstruction made of composite material developed from pure titanium (Ti) and graphene oxide (GO) powder. The implants developed in this manner will have controllable mechanical characteristics, antibacterial and anticancer properties, and they will be fabricated using the selective laser melting (SLM) process. The technology allows modifying the elastic modulus and flexural strength of Ti-1%GO implants according to the patient's needs, following the logic diagram shown in Figure 1. This invention involves defining the mechanical characteristics and constraints of the SLM process parameters, and using the mathematical equations (1) and (2), they will generate the optimal solution for implant manufacturing. Thus, Ti-1%GO implants can be obtained with a specific elastic modulus, 25-50% lower than that obtained from pure Ti and/or an increased flexural strength (over 900 MPa). The method allows the estimation of the mechanical properties that can be obtained depending on SLM parameters and can improve productivity by generating an optimal solution, considering an increased laser scanning speed. The following advantages will be achieved: The elasticity modulus of implants made from this composite can be controlled and reduced, diminishing the stress shielding effect between the implant and host bone;
The mechanical strength of implants can be improved (3 times higher than pure Ti) and the weight of them can be reduced via a design optimization procedure, respecting also the medical requirements; The proposed method does not have a negative impact on the environment.

Applicability

The method is intended for Additive Manufacturing (AM) technologies that use materials in the form of nanometric and micrometric powders and lasers for melting them together. This technology is feasible to produce implants with antibacterial properties by integrating graphene into the composite, which is uniformly distributed across the entire surface of the implant and within its structure, avoiding the typical delamination issue of coatings with graphene. The proposed invention did not have any limit regarding the implant shape complexity, and it can predict the influence of SLM parameters on the elasticity modulus and on the bending strength of implants made from Ti-GO.

Images





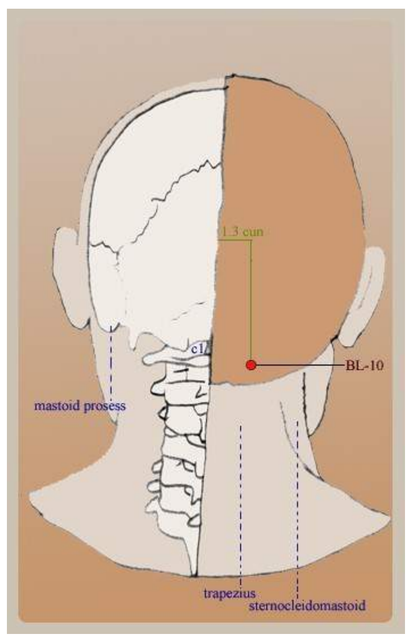
CERVICAL BIORESONANT BELT

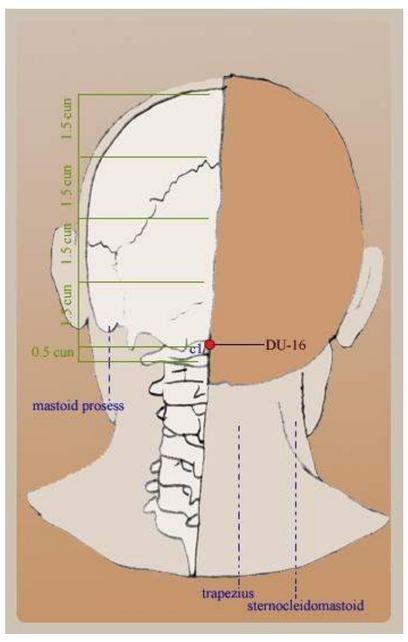
Project

Authors:

Velcea Marian, Mândrea Lucian, Moldovan Ion Corneliu, Plotog Ioan, Hideg Cătălin, Curta Ioan, Mihăilescu Bogdan, Caracaș Eugen, Chețan Mihai, Ene Ciprian

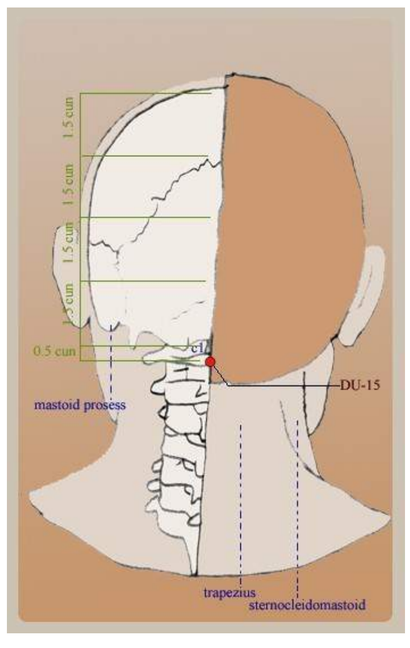
The device consists of a medical support dedicated to the cervical area on which Qi-Polino Doctor Tech passive resonant devices (EMCOPAD) have been assembled in the positions corresponding to the C7 vertebra and acupuncture points BL-10, VB-20, VG-15 and VG-16. These points are activated independently or simultaneously in groups formed by the therapist, depending on the patient's condition and his immediate needs. The interaction at the energy level takes place through the acupuncture points placed in electromagnetic contact with the Qi-Polino device, which transmits impulses with a harmonic frequency of the note LA, located in the radio band. This interaction is only possible during the period when paired acupuncture points are in relative imbalance (one to the other), characterized by the presence of a local electric potential, with an effect on the power supply of the electronic circuit; once the energetic balancing of the corresponding points is achieved, the electronic device cuts off its power supply for the entire balance period, resuming the operating cycle when a new imbalance between the corresponding acupuncture points occurs.

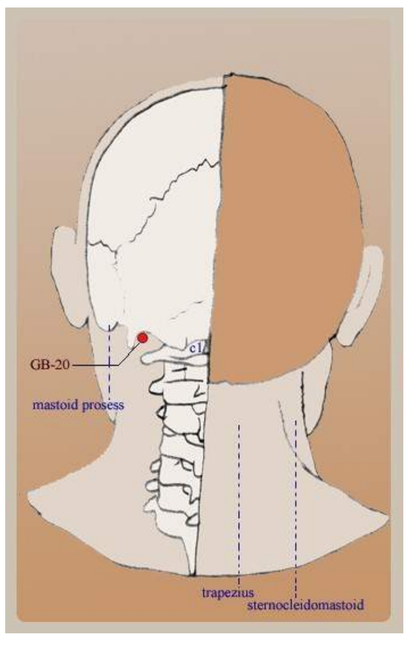












Contact: Marian VELCEA e-mail: marian.nicolae.velcea@gmail.com

www.DoctorTech.ro

"Survival Therapy Kit" – Kit for the treatment of ailments, through therapies based on classical acupuncture (TCM – Traditional Chinese Therapy), applied with the help of passive resonant devices "EMCOPAD Doctor Tech"

Authors: VELCEA Marian, MOLDOVAN Ion-Corneliu,
PLOTOG Ioan, MIHĂILESCU Bogdan, HIDEG Cătălin
E-mail: marian.nicolae.velcea@gmail.com

The "Survival Therapy Kit" contains a "Practical Guide" for recommending therapeutic procedures (organized alphabetically for more than 100 common conditions), a set of 200 pieces of EMCOPAD devices (Doctor Tech passive resonant electromagnetic patches) and adhesive rolls for attaching the devices to the body of the treated person.

The devices are applied periodically on the acupuncture points recommended in the therapy of the diagnosed condition. The application period is 21 days and is followed by a 10-day break.

The procedure is repeated, if necessary, twice more.

EMCOPAD Doctor Tech devices are used indefinitely. It is recommended to disinfect them with alcohol before each use.

The advice of a doctor or acupuncturist is recommended.

(TCM is officially approved by the WHO)





EMCOPAD devices
(Doctor Tech passive resonant electromagnetic patches)

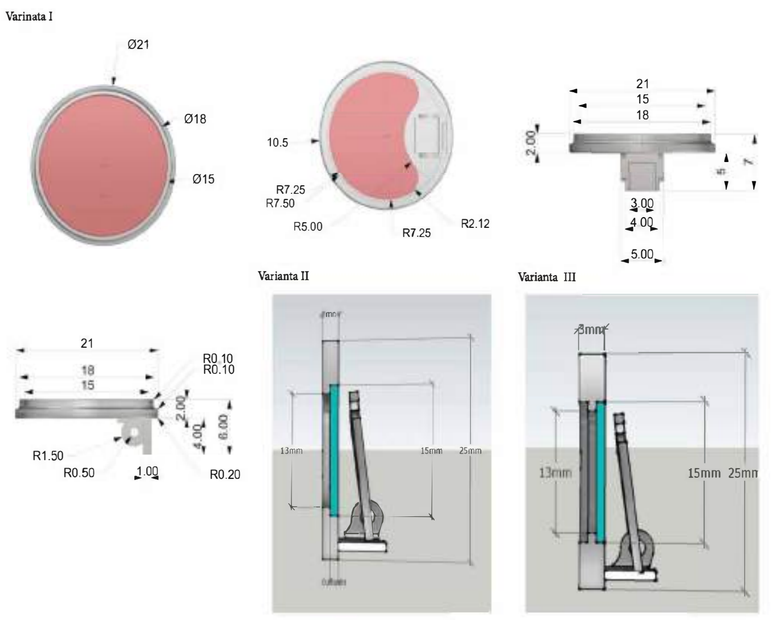
MEDICAL EARRINGS FOR ENERGY REBALANCING

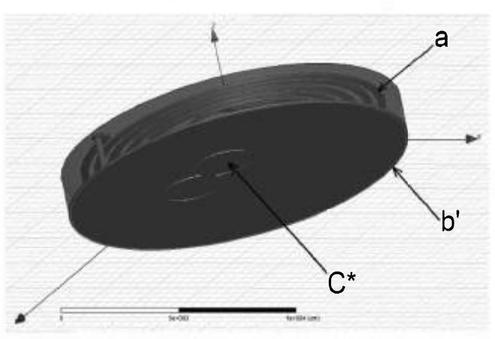
Authors: Marian VELCEA, Ion Cornel MOLDOVAN, Ioan PLOTOG, Cătălin Robertino HIDEG, Ioan CURTA, Etelka ANEBTAWI, Benjamin AVIDAN
Mandatar: INVEL - Intellectual Property Agency-Romania, +40.723.205.048, invel_agency@yahoo.com

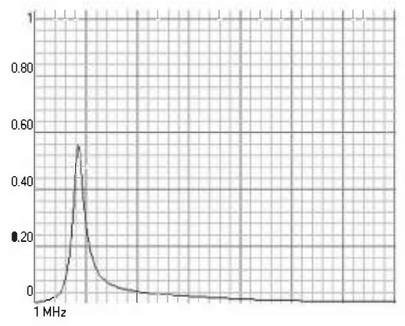
PCT Patent Pending WO 2018-A1

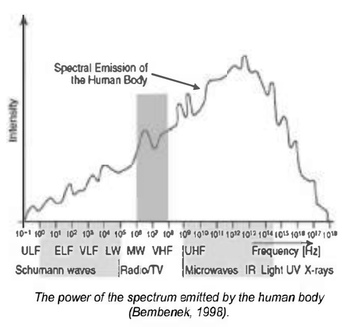
The invention relates to an ear-like medical device built to interact with acupuncture points located on the ear lobe and controlling the health of the eyes.

The device contains electromagnetic patches (PEMs) characterized by specific frequencies that are fixed above the active electrodermal points on the earlobe by means of screws or clips; the device acts as an intelligent acupuncture needle: their activation is ordered by their own biorhythm by the user's body. The device does not require a source of electrical power, being fed from the local electric field.







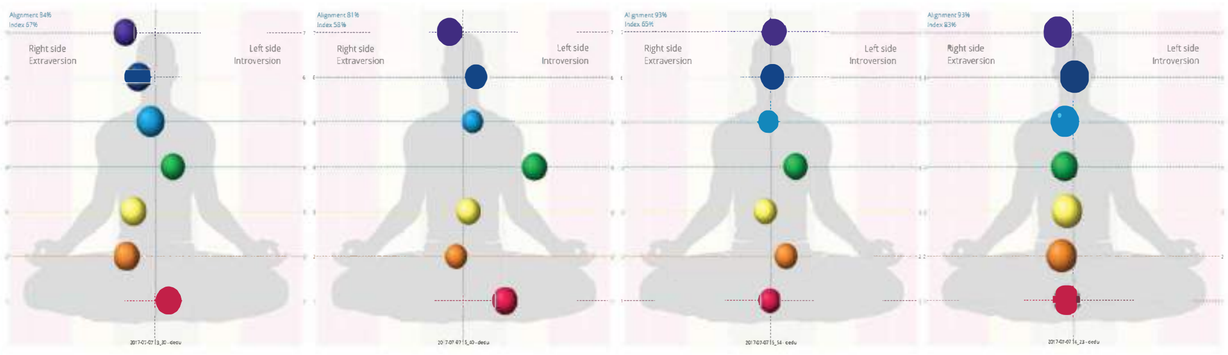


The power of the spectrum emitted by the human body (Bembenek, 1998).

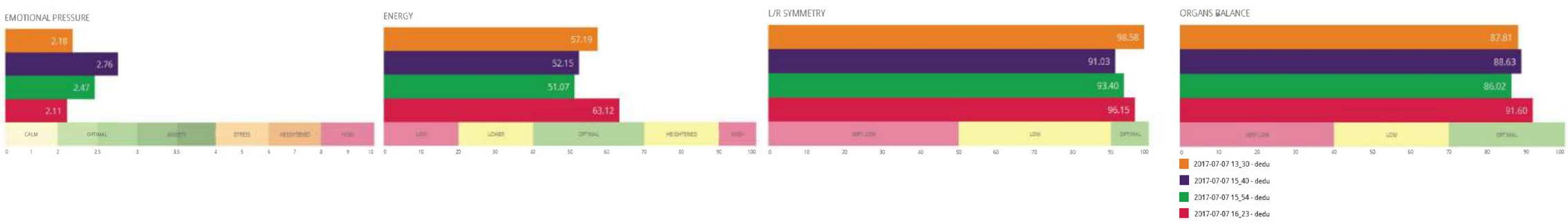








The measurements show the decrease of the stress level, the left-right energetic balancing, the increase of the energy of eyes and the increase of the energy of the internal organs, with the consequence of the improvement of the general immunity.





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Give a better chance to your health!

Bioresonant kneepad for functional recovery

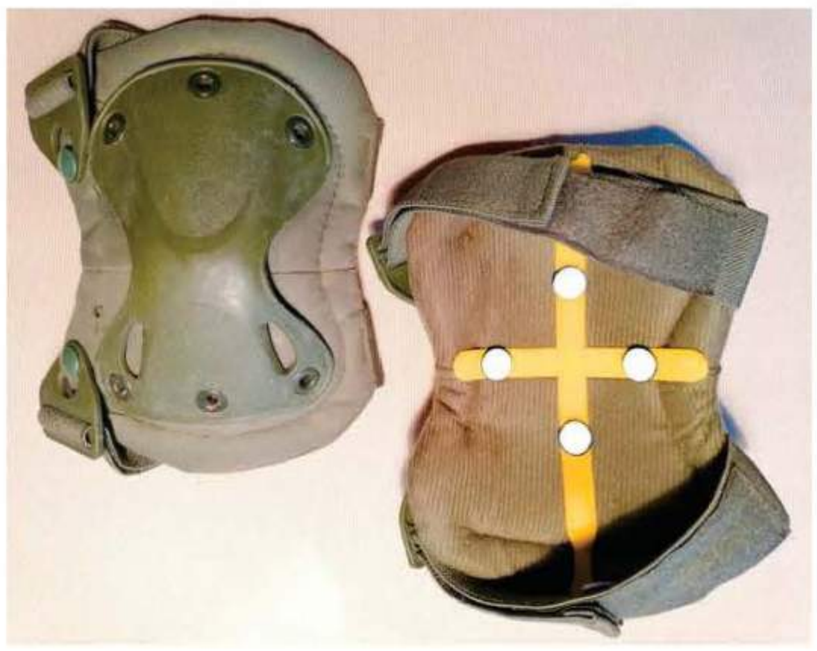
Authors: VELCEA Marian, MOLDOVAN Ion-Corneliu,
CARACAS Eugen, CURTA Ioan, MÂNDREA Lucian
E-mail: marian.nicolae.velcea@gmail.com

The bioresonant kneepad is a device designed for the functional recovery of the knee consisting of an elastic support that surrounds the knee, on which two groups of bioresonant devices EMCOPAD Doctor Tech are assembled.

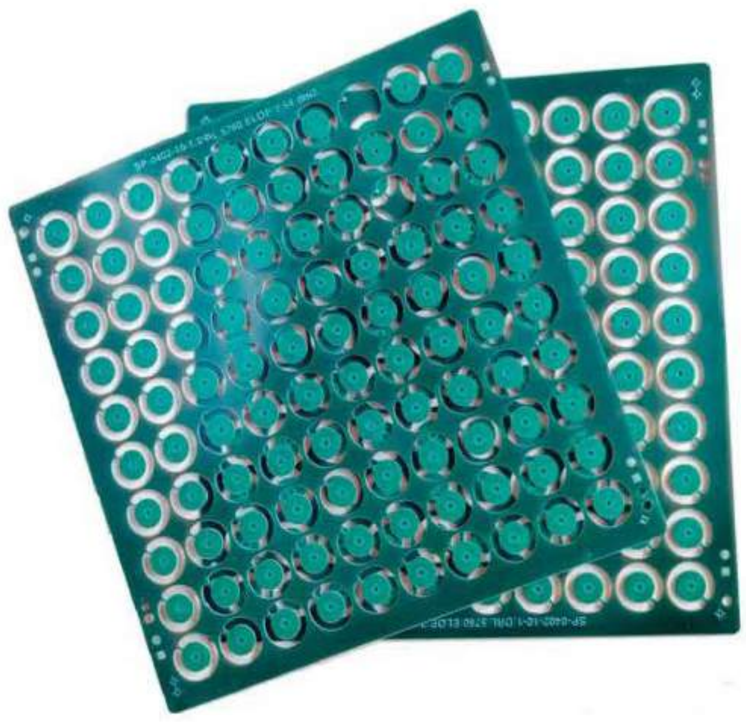
The first group of four devices is positioned on the inside of the elastic support for front contact with the ball joint - on its contour, both at the intersection with the axis of symmetry (vertical) up/down, and at the intersection with the horizontal drawn through the centre of the ball joint, outside/inside.

The second group of devices is located in the popliteal fossa, also on the axis of symmetry. Regular use of the device in a supervised recovery procedure ensures a faster return to previous performance.

Energy measurements performed with specialized equipment confirm the improvement of the state of the knee after the use of bioresonant knee.







EMCOPAD devices
(Doctor Tech passive resonant electromagnetic patches)

BIORESONANT WRIST BRACE FOR FUNCTIONAL RECOVERY

Project

Authors:

Velcea Marian, Mândrea Lucian, Moldovan Ion Corneliu, Plotog Ioan, Hideg Cătălin, Curta Ioan, Mihăilescu Bogdan, Caracaș Eugen, Chețan Mihai, Ene Ciprian

A medical device designed to protect the radiocarpal joint through an outer shell for functional recovery. It provides the following functions: stabilization and support of the radiocarpal joint, reduction of pain and inflammation; prevention of excessive or sudden movements, protection during physical activities or following an injury.

The bioresonant wrist brace is a flexible model for light physical support, intended for functional recovery of the wrist joint and consists of an elastic support surrounding the radiocarpal joint, on which a group of EMCOPAD Doctor Tech bioresonant devices is linearly assembled. The group of electronic devices consists of ten devices that are positioned inside the elastic support for direct contact with the wrist joint – along its entire contour, exposing it to a harmonic and polarized electromagnetic field. Regular use of the device as part of a supervised recovery procedure ensures a faster return to previous performance. Energy measurements performed with specialized equipment confirm the improvement of the condition of the wrist joint and the patient's general condition, through the use of the bioresonant wrist orthosis.





Contact: Marian VELCEA e-mail: marian.nicolae.velcea@gmail.com

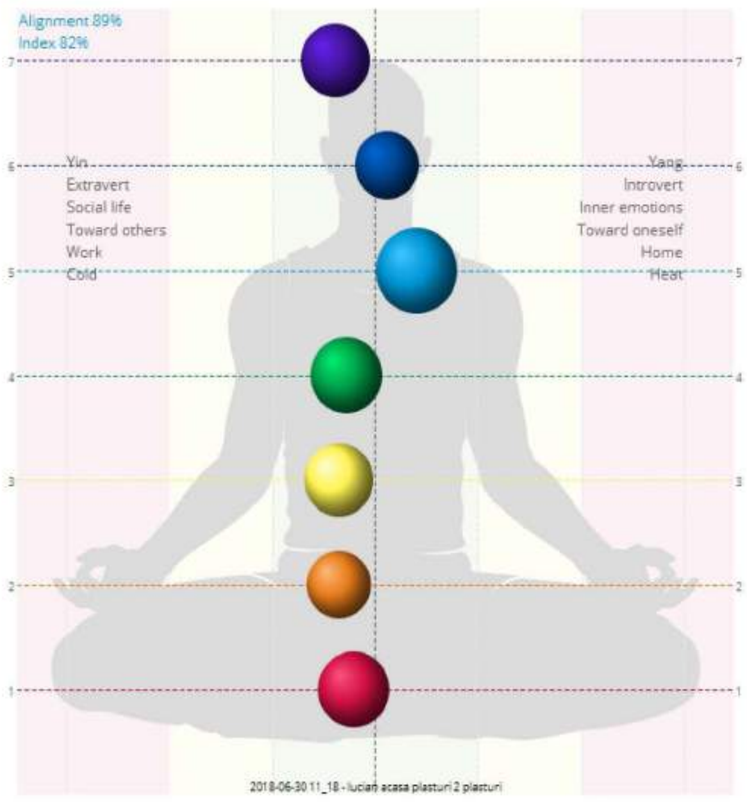
www.DoctorTech.ro

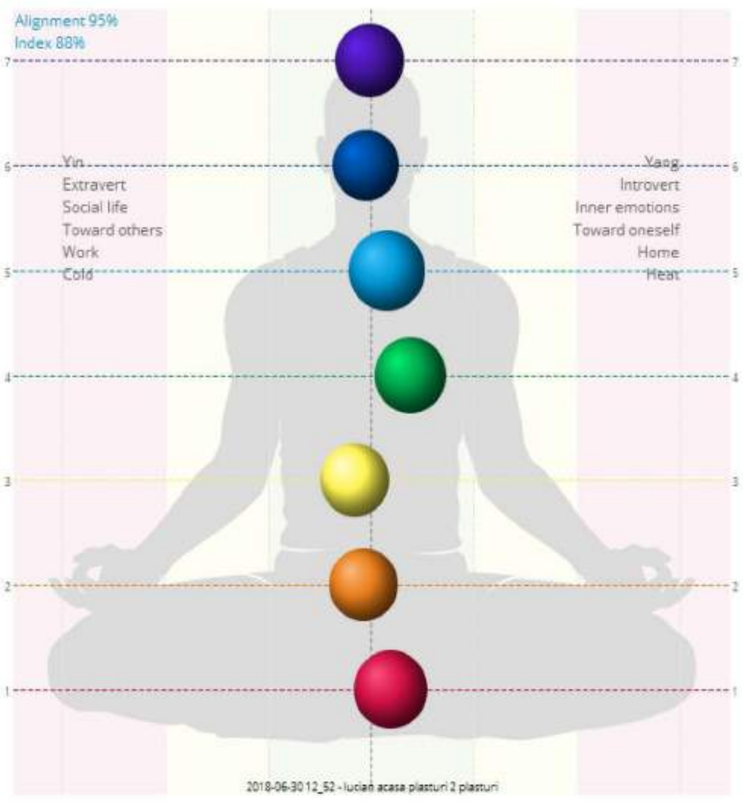
TRAVEL PILLOW WITH ENERGY REBALANCING EFFECT

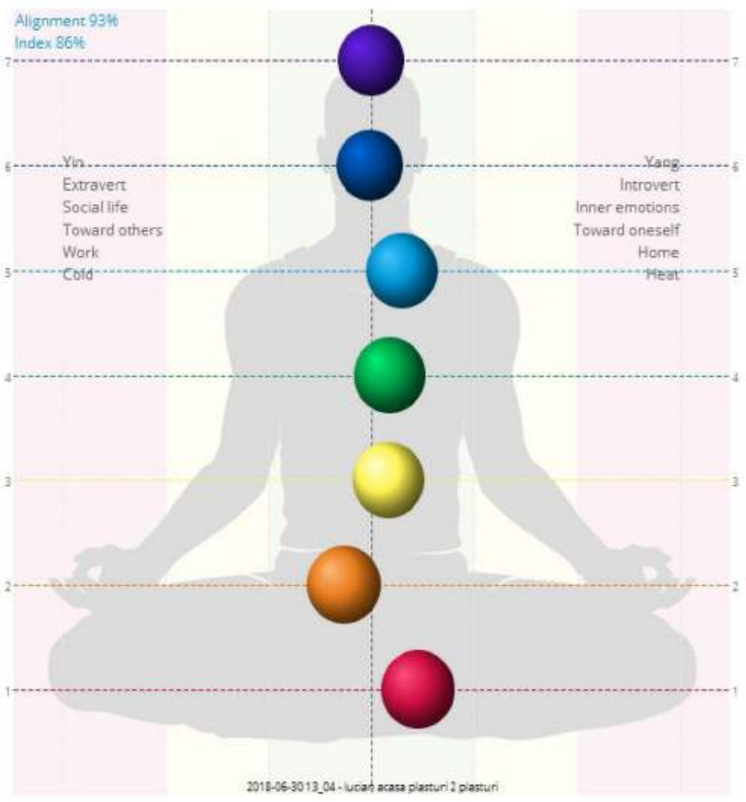
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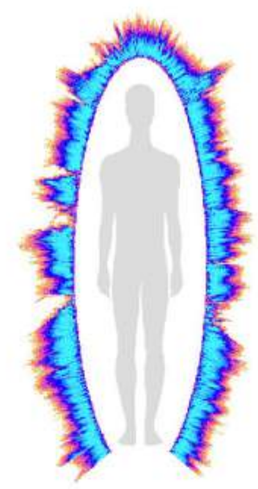
Un set de Bio-cipuri, dispozitive electronice pasive de tip plasture electro-magnetic Doctor Tech este utilizat pentru reechilibrarea energetică atât de necesară în timpul unor călătorii obositoare. Clasica pernă de călătorie care se așează în jurul gâtului este echipată cu dispozitive de tip Bio-cip , amplasate fie pe axa de simetrie, fie simetric față de aceasta. Punctele de acupunctură din zona cervicală ajung în contact cu dispozitivele fixate pe perna de călătorie și produc activarea dipozitivelor electronice. Se produce local o interacțiune similară unui tratament de acupunctură al cărui efect este o reechilibrare energetică și o îmbunătățire a stării generale prin creșterea tonusului și scăderea nivelului de stres. Ciclul de funcționare se reinițiază, periodic, atunci când dispozitivele sesizează un dezechilibru energetic. Astfel, Perna de călătorie Smarty transformă o călătorie obositoare într-o călătorie agreabilă.

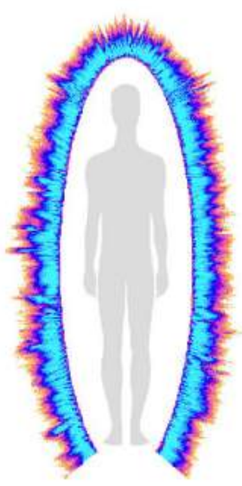
A set of Bio-chips, passive electronic electro-magnetic patch devices Doctor Tech is used for energy re-balancing so much needed during tedious journeys. The classic travel cushion that is placed around the neck is equipped with Bio-chip devices placed either on the symmetry axis. The acupuncture points in the cervical area come into contact with the devices attached to the travel cushion and produce activation of the electronic devices. There is a local interaction similar to acupuncture treatment, the effect of which is an energy rebalancing and an improvement of the general state by increasing the tone and decreasing the level of stress. The operating cycle is periodically restarted when devices notice an energy imbalance. This Smarty Travel Pillow turns a tiring journey into a fun trip.

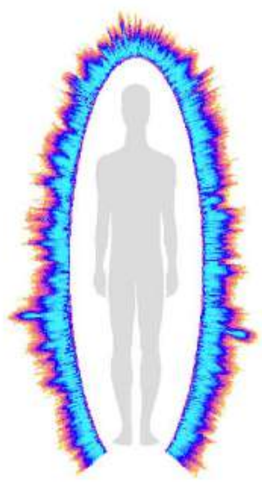














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E-LITE NUTRITIA TONIC RANGE

Natural therapies

F

Author: ***Adriana Vlad***

E-lite Nutriţia, the most recognized manufacturer in the field of apiphytotherapy, offers you unique preparations, with original recipes, created by Prof. Dr. Adriana Vlad – nutritionist, specialist in natural therapies.

The range of nutritional supplements includes tonics in bee honey and herbal extracts for all conditions: Gynecological tonic "E-lite", Glandular tonic "E-lite", Gastro tonic "E-lite", Sedative tonic "Sorina", Renal tonic "E-lite", Antitumor tonic "E-lite", and others, Superforte Ovulin, natural gynecological ovules for the treatment and prevention of gynecological conditions, Superforte Supozin, natural suppositories for the treatment and prevention of conditions of the colon, prostate, urinary tract and genital system.



TONIC POTENTA MAXIMA "E-LITE" | **TONIC GINECOLOGIC "E-LITE"** | **TONIC GASTRO "E-LITE"**



TONIC "E-LITE" 90-60-90 | **TONIC ANTIPARAZITAR "E-LITE"** | **TONIC GLANDULAR "E-LITE"**

SCAN ME



TONIC IMUNITAR "E-LITE" | **TONIC ANTITUM "E-LITE"** | **TONIC HEPATO "E-LITE"**

Contact: ***elite.nutritia@yahoo.com***

SUPERFORTE SUPOZIN & SUPERFORTE APICOPLANT

Natural therapies

F

Author: ***Adriana Vlad***



Superforte Ovulin - Solid Cream *it is a 100% natural product that helps alleviate the manifestations of prostate, colon, and female genital dysfunction. It has a strong anti-inflammatory, cicatrizing, antirheumatic, antiseptic, antitumor, antihemorrhagic action. It prevents and acts beneficially on the early symptoms of colon and prostate damage, has positive effects in cases of tumors in the colon and the female genital area. The product is beneficial in prostate disorders, cystitis, nephritis, urethritis, internal and/or external hemorrhoids, inflammation, wounds, eczema and tumors on the colon, rheumatic diseases, but also in gynecological diseases, administered together with "Superforte Ovulin - Solid Cream". Ingredients: honey, propolis, pollen, royal jelly, mummy, clay, cocoa butter, sea buckthorn oil extract, chamomile, thyme, St. John's wort, marigold, marigold, juniper essential oil, sage, pine, fennel, geranium, lavender.*

SUPERFORTE APICOPLANT *it is a natural product that acts beneficially in conditions of the colon, rectum and intestine. Action: colon detoxifier, decongestant, alkalizing, antimicrobial, regulates digestion (diarrhea, constipation), antitumor, regenerates the digestive mucosa and intestine, antihemorrhoidal (in combination with Superforte Supozin), intestinal soothing (indigestion, gas, irritable colon, biliary colic etc.), slimming cures. In chronic conditions, a natural and homeopathic treatment is recommended - internally for a period of 3-6 months for greater treatment efficiency. Ingredients: Argilla (clay), Theobroma cacao (cocoa butter), Melem (honey), Cera (wax) Carbo (coal), Argentum colloidal (colloidal silver), Probiotic, Calamus aromaticus (obligean), Mentha essential oils), Feaniculi (fennel), Camelia sinensis (tea tree), Caryophyllis (clove), nipagin, nipasol.*



SCAN ME

Contact: ***elite.nutritia@yahoo.com***

Proportional extrapolation of the data on the smokers number in the study of the radon x smoking interaction as a trigger factor in the onset of bronchopulmonary cancer in the Republic of Moldova

F

*CORE**Ț**CHI Liuba, OVERCENCO Ala, ABABII Aurelia*

The research is supported by the Ministry of Health and the Ministry of Education and Research of the Republic of Moldova in the framework of the sub-project "Monitoring the ionizing radiation exposure to the professionally exposed personnel and the public with the development of radioprotection measures" (2024-2027), no. 13.01.02

According to the WHO, radon causes lung cancer in between 3% and 14% of all the cases, depending on the average level of radon concentration in the country and the prevalence of smoking, and the risk of lung cancer for smokers is much higher than for non-smokers.

Radon exposure and tobacco smoking are the two leading risk factors for lung cancer, which is the second most common cancer in the Republic of Moldova. According to the National Population Study STEPS 2021, three out of 10 people were current tobacco smokers.

The number of tobacco smokers in the *radon x smoking x lung cancer* study is necessary, but difficult due to the different scale of the initial data and therefore requires the use of a special method of bringing them to values suitable for the study.

The number of tobacco smokers of the **National Population Study STEPS 2021** (4097 interviewees, age 18-69 y.o., both genders, urban/rural residence) and population data of the National Bureau of Statistics were used. Because of the STEPS 2021 data on number of smokers is available only for the whole country in order to fit these data with radon measurement data and the lung cancer morbidity rates a mathematical tool of proportional extrapolation of initial data on tobacco smokers has been developed.

The mathematical ratio (proportion) between the total population number in each age group, gender and place of residence with the number of the population in the same categories by regions has been calculated, using the population data of the National Bureau of Statistics during 2021.

Based on these links (rates), the number of smokers by region of the country has also been calculated.

The data obtained by extrapolation by regions allowed us to develop a spatial distribution of tobacco smokers, to asses them by statistical sense as well as to use them in *radon x smoking x lung cancer* study.

1. Proportion of population (ratio, %)
(nr of population in every region / nr of total population) * 100
by age, gender, residence, region

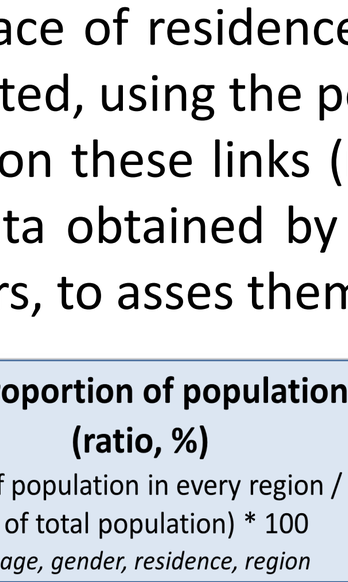
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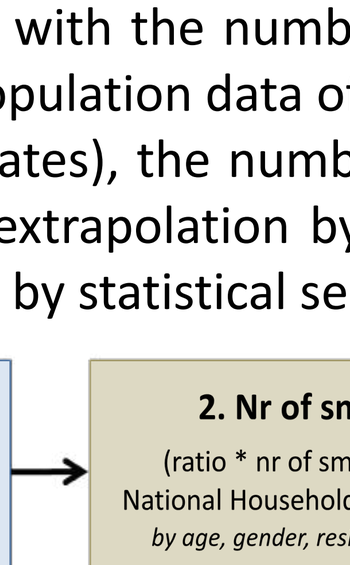
2. Nr of smokers
(ratio * nr of smokers from National Household Survey) / 100
by age, gender, residence, region

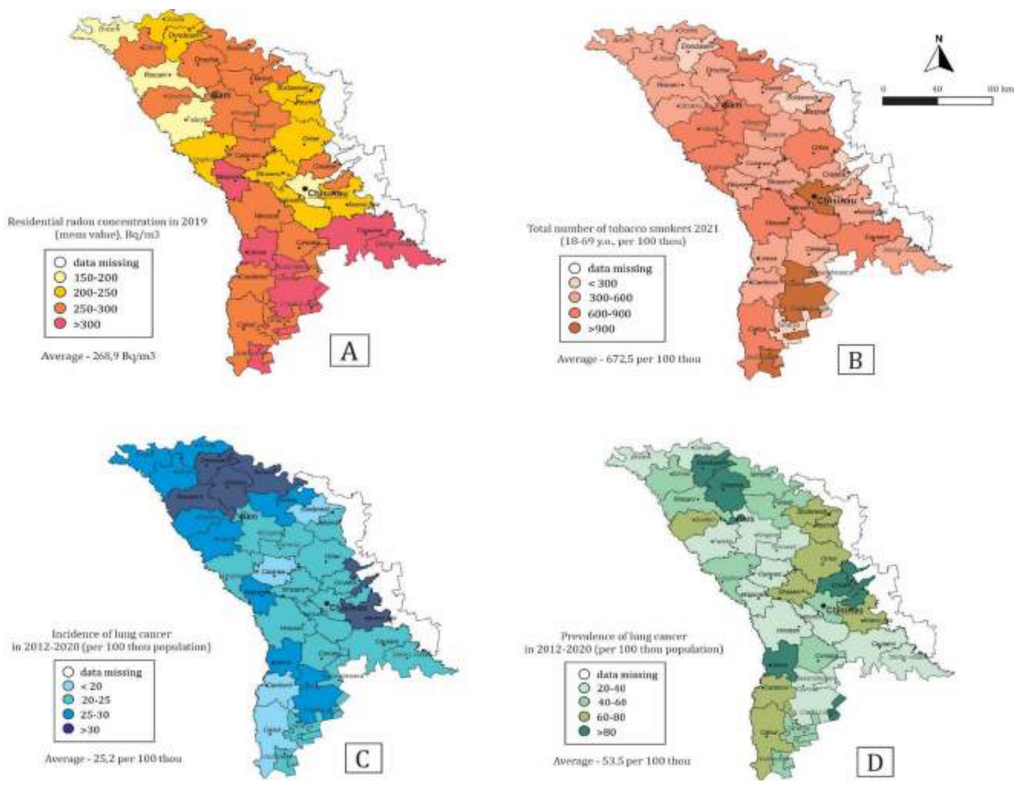
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3. Standardized nr of smokers per 100 thou of population
(nr of smokers * 100 000) / nr of total population
by age, gender, residence, region

The elaborated proportional extrapolation algorithm


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SERIA OȘ NR. 7836
DIN 20.03.2024
Director general
CHIȘINĂU


Seria: OȘ (seria și nr.)(7836)
Numărul de înscriere: 7836
Data înscrierii: 05.03.2024
Numărul cererii: 2654
Denumirea obiectului: „Extrapolarea proporțională a datelor privind numărul de fumători din Republica Moldova în analiză interacțiunii radon x fumat ca factor trigger în declanșarea concomitată bronhopulmonar"
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Titularii drepturilor patrimoniale:
Coreț chi Liuba IDNP:
Overcenco Ala IDNP:
Ababii Aurelia IDNP:
L.Ș. Șeful Oficiului Drept de Autor



Cartograms of spatial distribution of radon concentration (A), total tobacco smokers (B), lung cancer incidence (C) and lung cancer prevalence (D) in the Republic of Moldova

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ULTRASOUND ACTIVATION DEVICE FOR FLOWING OR LIMITED VOLUME LIQUID MEDIA

F

Patent application **No. A2024 00456 / 01.08.2024**

Author: **Nicușor-Alin SÎRBU**

Homogenization and dissolution of biological or solid components is used in various techniques for processing liquids in limited volumes or in flow state. It is often necessary to homogenize mixtures of different liquids or to emulsify them. To achieve these processes, mechanical stirring action is used, usually with rotating elements, stirring by vibration, but especially using ultrasound energy for cellular effects due to ultrasonic cavitation, or forcing liquids through the narrow and fragmented spaces of slits arranged in a labyrinth-like manner. In some applications the above procedures are complemented by controlled heating of liquids to accelerate processes due to thermal energy.

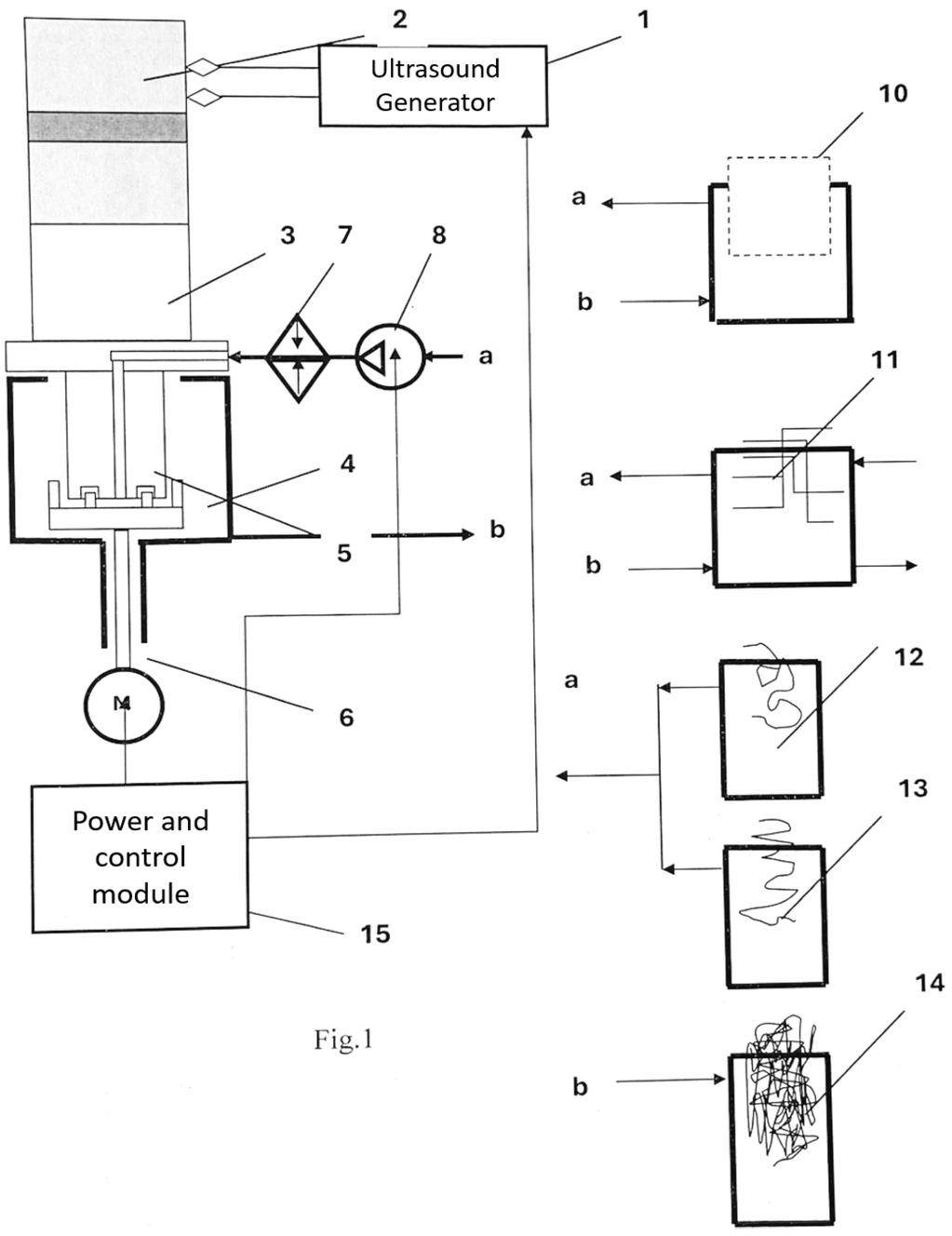


Fig.1

Scheme of the activation device and variants of use

Object of the invention:

The device according to the invention provides an efficient and rapid activation of liquids by the simultaneous superposition of the ultrasonic activation effect, the mechanical activation effect and the heating effect.

The technical problem solved by invention:

The technical problem of the invention is the realization of a device for the homogenizing, emulsifying and dispersing processing of a liquid in a limited volume or in a flowing state in continuous flow by combined ultrasonic, mechanical and thermal action in order to increase efficiency and reduce processing time.

1. Ultrasound generator
2. Ultrasonic transducer
3. Wave adaptor concentrator
4. Activation enclosure
5. Rotating agitator disk
6. Variable speed motor
7. Heater
8. Electric pump
9. Inlet
10. Collection container
11. Continuous-flow installations
12. Supply container
13. Supply container
14. Collection container
15. Power and control module

Advantages:

- Ensures an efficient and fast activation of liquids by superimposing the ultrasonic activation effect, the mechanical activation effect and the heating effect simultaneously;
- Provides the possibility to adjust activation parameters (ultrasonic intensity, rotation speed, heating temperature);
- Is simple in construction and easy to use.

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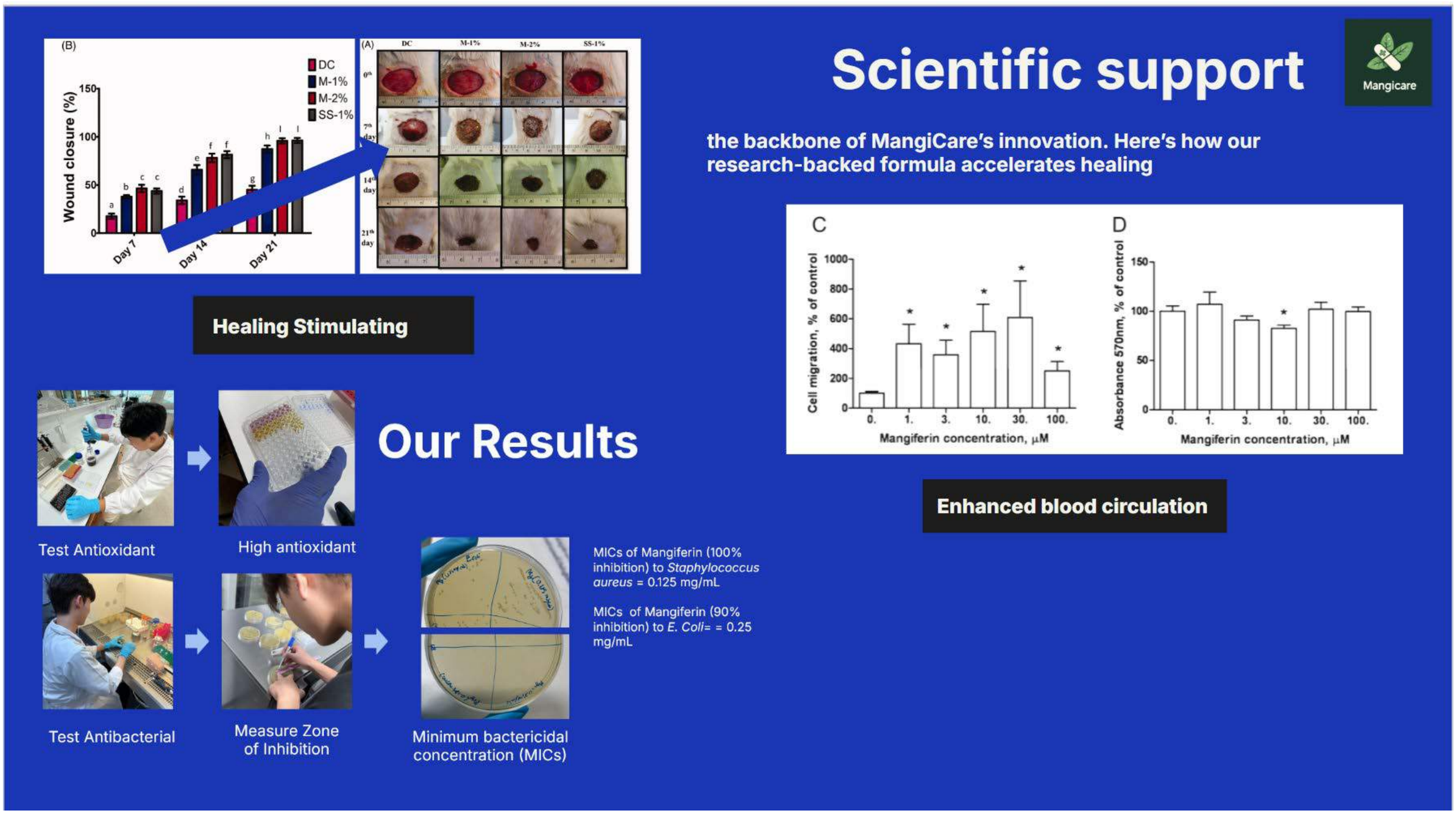
MangiCare

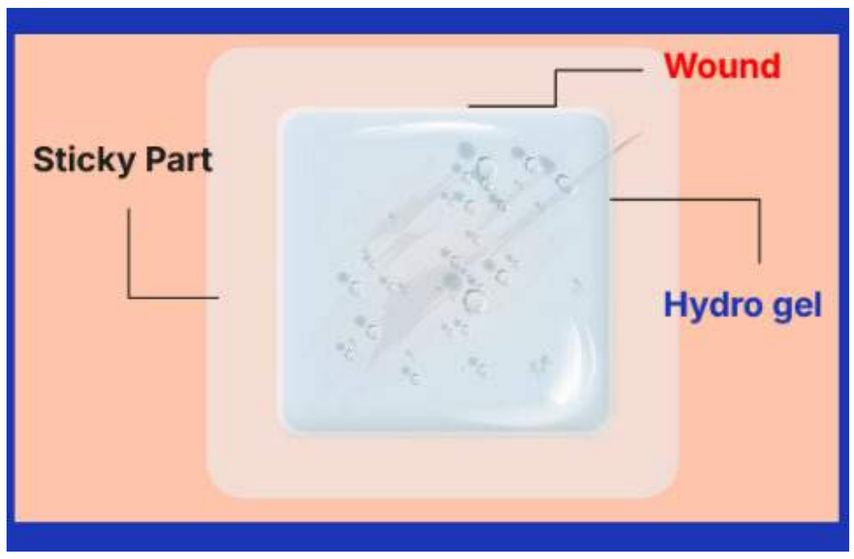
Patent/project number: 15

Nutvarit Manorotchaturong , Yujun Sung
Napamenee Kornthong PhD

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Description MangiCare is a revolutionary hydrogel-based bandage infused with encapsulated mangiferin extracts derived from mango leaves, offering a sustainable and cost-effective solution for diabetic foot ulcer (DFU) treatment. Designed to provide superior wound care, MangiCare's flexible hydrogel adapts to the wound's unique shape, ensuring full coverage and optimal healing conditions. Unlike conventional diabetic wound bandages that rely on burst-release mechanisms, MangiCare utilizes a chitosan-based hydrogel that delivers mangiferin's powerful antioxidant, antibacterial, and anti-inflammatory properties through a sustained-release mechanism. This controlled drug delivery system minimizes the risk of underdosing or overdosing, accelerates healing, reduces infection risk, and eliminates the need for frequent dressing changes, decreasing patient discomfort and healthcare costs. Additionally, MangiCare leverages discarded mango leaves, addressing both a critical medical need and an environmental challenge by reducing agricultural waste and carbon emissions. With its innovative, science-backed approach, MangiCare presents a breakthrough in DFU treatment, making quality wound care accessible to underserved communities while promoting sustainability in healthcare.







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Biocompatible Medical Device and Method of Making Same

US Patent Application 38170047/2019

Ruxandra Vidu, Augustin Semenescu, Ileana Mariana Mates, Cristian Dragos Vidu

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ABSTRACT:

Abstract. Traumatic brain injury is the leader in the ranking of mortality and invalidity. The surgical repair of a defect of the skull by cranioplasty has been practiced since ancient times, when materials of non-biological origin were used for this purpose. New materials and processes are sought to improve osseintegration of implants. Like any surgical procedure, cranioplasty involves complications that may be related to the surgical technique and/or to the patient's tolerance to the material used. This patent describes a biocompatible medical device that include two supported meshes for providing mechanical strength and osseointegration properties of the implant, and a multiplayer porous material in between them that is loaded with the required bioactive antibacterial compound to promote a controlled and sustained release of the pharmaceutical agents at the site of surgical intervention. To increase osseointegration, meshes are designed with an open structure and coated with biocompatible materials such as hydroxyapatite.

The composition gradient in the multilayer porous material is attained by loading successive layers of porous material with different amounts of bioactive materials and then stacking them to create a gradient of composition across the porous material.

The present invention describes method(s) to place, fix and fasten the medical device to the bone structure. More particularly, the present invention relates to a method for accelerating the transport of the incorporated drug from the inner layers to the outer edge of the outer layer. The present invention describes a clamping system that provides a fast attachment of the biocompatible medical device to the bone structure and a rapid placement of the three layers of material with different properties: i.e. the two meshes that promote osseo-integration of the implant and one multilayer porous material loaded with bioactive compounds having a gradient composition to control the release of the drugs incorporated in the porous material.

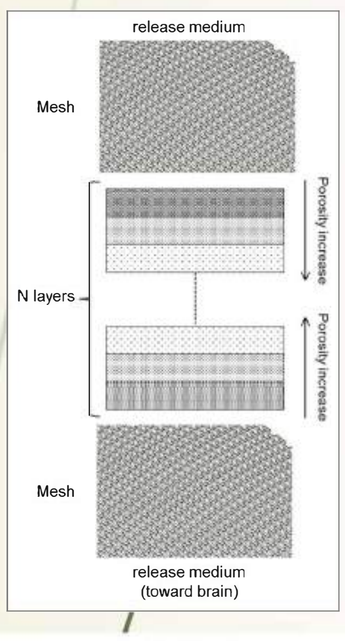


FIG. 1

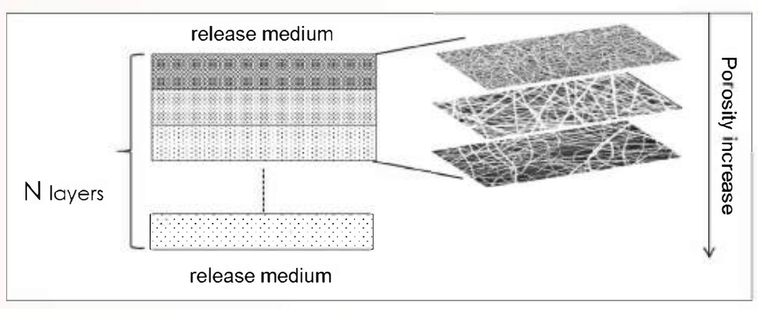


FIG. 2

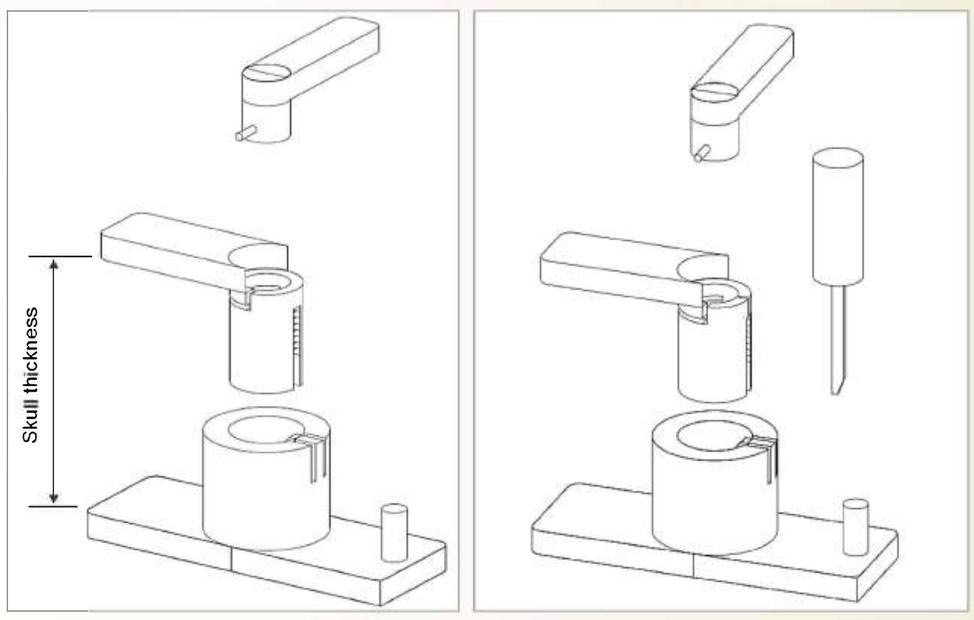


FIG. 3

BRIEF PRESENTATION OF THE INVENTION

This patent describes a biocompatible medical device (Figs. 1-2) and a clamping device (Fig.3) that sets and attach the implant to the bone. The medical device include two supported meshes for providing mechanical strength and osseointegration properties of the implant, and a multiplayer porous material in between them that is loaded with the required bioactive antibacterial compound to promote a controlled and sustained release of the pharmaceutical agents at the site of surgical intervention.

This invention presents a clamping device that allows fixing the biocompatible medical device to the defect (FIG.3). The clamps further allows fixation such that the biocompatible medical device is placed and remains in position when the holding force between the fastener and the implant is reduced. The biocompatible device may not be custom made pre-operatively; instead the meshes and the multilayered porous material may be cut on the spot to fit the anatomic shape of the defect. The clamp-like mounting piece is pre-assembled at the extended position in a fast and secure way to the bone, while the actual assemble of the successive layers is hold in place by the fastening mechanism. The main function of this system is to fix the medical device to the bone structure, and to support and connect the meshes used in the implant for remodeling and restoring bone tissue such as cranial implants. Mashes may have a flat or a convex/concave surface to fit the original shape of the skull. As illustrated in FIG 3, the clamping system consists of three pieces: the lower piece, the upper piece and the middle piece.

- **the lower piece** has a cylindrical part that sits on a support. The cylindrical part has a notch that corresponds to the exterior groove cut into the cylindrical part of the middle piece. The support of the middle piece has a knock on which the first mesh is placed.
- **the middle piece** helps adjust the height of the clamp to fit the thickness of the skull and supports the upper mesh. The middle piece has an external groove on the cylinder that helps adjust the height of the clamp. The bar that has the role to fasten the clamp to the bone structure.
- **the upper piece** fastens together the clamp to the bone structure and to the biocompatible medical device. The upper part has a lever and a knob that fix in place the clamp system. The upper lever comes over the upper mesh when the level is rotated to a closed position.

Assembling the device:

The attachment of the implant to the skull includes attaching the clamping system to the edge of the cranial orifice at different points, creating a base for attaching the lower mesh. First, the lower and the middle pieces are pre-assembled at the maximum extension length, and then mounted at the edge of the skull and then tightened up until it is secured at the edge of the skull. This is possible because both part have a gear rack-like system that allows the two parts to be tightened up but do not allow them to move so that the assembly remains fixedly attached to the edge of the skull orifice. Then the first mesh is placed and hooked to the knock. The lower piece has a hook on the side of the support that is oriented away from the skull, which has dual roles, i.e. to fasten the clamp to the skull and to attach the first mesh. After the lower mesh is placed, the multilayered porous material can be placed on the first mesh. This layer has anti-microbial properties with slow release of the drug. Then the top mesh is placed and the upper piece is inserted and rotated to the ideal position for gripping and immobilizing the mesh. n some embodiments, the attachment of the implant is reversible such that the implant may be removed if complications, such as bleeding, occur.

Advantages:

- it decreases the surgical craniotomy time by simply pressing the clips and insert the plates
- the two meshes doesn't have to be costumed made
- the surgical procedure is more efficient due to the easiness of mounting operations including attaching the clips, laying the bottom mesh, laying the intermediate material, laying the upper mesh and fixing the upper mesh
- the clamping system has a minimum height profile that helps to reduce the protrusions
- the clamping system does not involve any invasive procedure for clamping the implant, such as drilling and screw clamps
- easy placement of the gradient loaded multilayered porous material in between the meshes
- a good contact interface of the upper mesh at the surface of the skull.

"Method of making the treatment of oncological diseases more efficient using the latest generation modern technologies"

Authors:

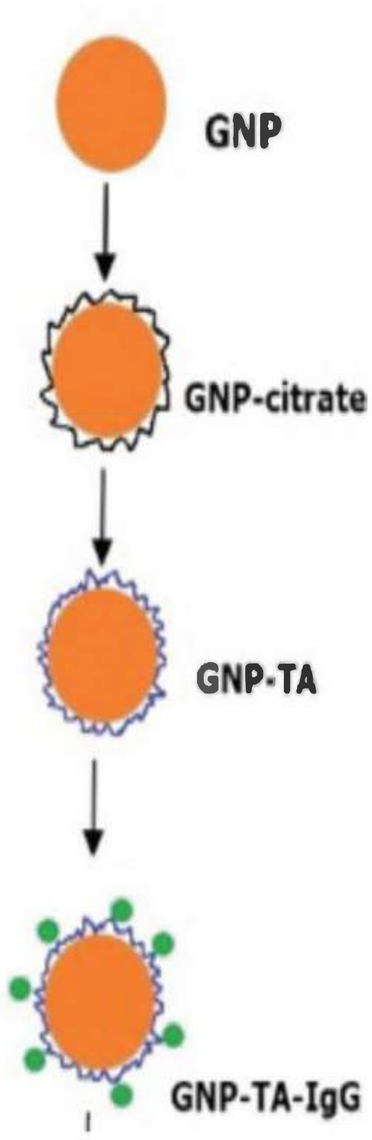
Ștefan TITU, Lucian MOCAN, Teodora MOCAN, Alexandru IRIMIE

Innovative research project with patent perspectives

F

Matrix metalloproteinase-1 has been demonstrated to interfere with cell migration, invasivenes and colagen distruction in cancer patients. In particular, the hemopexin domain of MMP-1 regulates cell behaviour and the concentration upregulation has been known to increase rate of tumor local and metastatic growth. Also, gold nanoparticles represent FDA-approved solutions for cancer imaging and treatment, due to their high level of biocompatibility. We hereby propose an experimental model that starts with the synthesis of gold nanoparticles (modified Turkewich method). The next step of our concept is represented by binding of the anti-MMP1 hemopexin domain antibody onto the surface of nanoparticles. The newly designed construct has a signifficant potential for targeting applications (photothermal treatment, tumor imaging) in cancer field.

Gold nanoparticles stabilized with citrate (GNP-cit.) are synthesized in aqueous medium, as follows: 29mg HAuCl4*3H2O are dissolved in 50mL H2O dist. under continuous stirring and the solution heated to 1000C. Add 5 mL of sodium citrate (20mg/mL) and the reaction is allowed to continue at 1000C under continuous stirring for 2h. In the next step, the citrate ions on the GNP surface are replaced with thioctic acid, as follows: the pH of a 9 mL volume of soil is adjusted. GNP-cit. 9.8nM at pH=11 with the help of a 0.1M NaOH solution. add 90µL of soil. ethanol TA 10mM and 40µL NaCl 2M under continuous stirring, and the reaction is completed for 90 minutes. The obtained GNP-TA solution is then subjected to a 15000RPM/10min centrifugation stage. followed by re-dispersion of the sediment in H2O dist. For the covalent coupling of immunoglobulin G (IgG): adjust the pH of a 3mL GNP 9.8nM solution to pH=8.5, using a 0.1M Na3PO4 solution, add 900 µL EDC (30mg/mL) and 900 µL NHS (30mg/mL), and then, after a 10-minute fermentation, add 4mL of soil. GNP-TA under continuous stirring. The bio-nanostructure obtained GNP-TA-IgG is subjected to an additional step of centrifugation (14000RPM/20min.) and re-dispersion in H2O dist. in order to remove secondary reaction products.



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ADJUVANT FOOD IN PREVENTION/ TREATMENT NON – ALCOHOLIC HEPATIC STEATOSIS

Patent/project number: a 2024 00412;

Author/s: Irina Matran, Rodica Talmaci, Claudia Bănescu

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• **Complementary research with an emphasis on interdisciplinarity:** market research, food technology and control, food safety and nutrivigilance/pharmacovigilance (adverse reactions, drug interactions and contraindications), physiology, histopathology, food biochemistry, medical biochemistry, laboratory medicine, experimental research, legislation and IP.

• **Innovative food – Ingredients:** *Grifola frondosa* (Maitake), *Cordicep sinensis*, inulin, psyllium, spices (parsley leaves, oregano powder), iodized salt, stevia.

• **Status and level of technology:** → **TRL 5:** laboratory samples, physico-chemical analyses, preclinical efficacy evaluation







• Opinion of the Scientific Research Ethics Commission, UMFST "G.E.Palade", no. 2711/ 27.12.2023

• Project authorization issued by the Official Animal Health and Welfare Control Service, within the Sanitary-Veterinary Directorate of Targu Mures, no. 70/ 17.01.2024

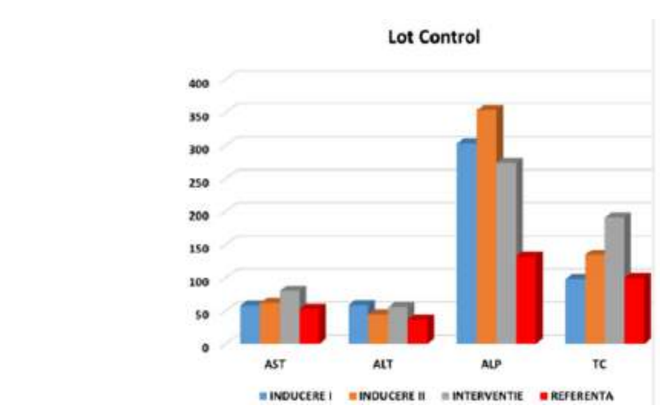
• Directive 2010/63/EU of the European Parliament and of the Council on the protection of animals used for scientific purposes

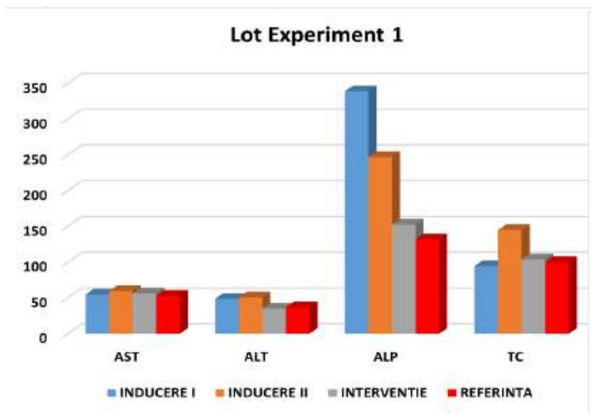
• Biobase Department belonging to the Experimental Research Center of the University of Medicine, Pharmacy, Sciences and Technology "George Emil Palade" from Targu Mures

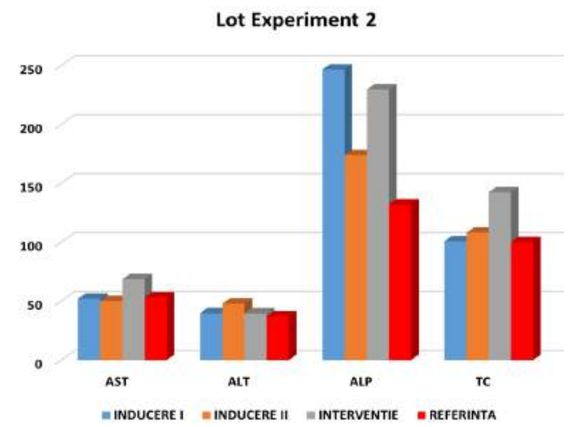
• 32 rat from the Sprague-Dawley line, females and males, aged 6 months, housed in individual cages (8 cpt/ lot, females : males = 1 : 1).

Batches	Induction I	Induction II	Nutritional intervention
Witness	Standard food	Standard food	Standard food
Control	Hyperlipidic 29%	Hyperlipidic 60%	Hyperlipidic 60%
Experiment 1	Hyperlipidic 29%	Hyperlipidic 60%	SP 0.1%
Experiment 2	50% Hyperlipidic 29% + 50% Innovative food 0.1%	50% Hyperlipidic 60% + 50% Innovative food 0.1%	50% Hyperlipidic 60% + 50% Innovative food 0.1%

Monitored parameters - at the end of each period: Body weight, Urinary parameters (URO, GLU, BIL, KET, SG, BLD, pH, PRO, NIT, LEU), Glucemia, Liver parameters (ALB, ALP, ALT, AST, CHOL, GGT, TBA, TBIL, TP, GLOBA/G), Histopathological analyzes – in the Histopathology Laboratory of UMFST «GeorgeEmilPalade». **Monitored parameters – weekly:** water and food consumption.







In group E1 (innovative special food) the values of liver parameters (AST, ALT, ALP, TC) decreased significantly with values close to normal.

• **Categories of economic agents that can manufacture and sell this food:**

1086 – Manufacture of homogenized food preparations and dietetic foods/ Foods for special nutritional conditions

1089 – Manufacture of other food products/ "ordinary" food

• **Effect and marketability:**

• **Complications of NAFLD ↓:** obesity, type 2 diabetes, hypertension, triglycerides ↓

• **Economic complications:** Health system costs ↓, Quality of life of patients and families ↑, Gini index↓, Gross Domestic Product (GDP) per capita ↑, Purchasing Power Parity (PPP) per capita ↑

• **Future prospective potentials:** Licensing or Assignment

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A HEALTHIER LIFESTYLE IN 2025

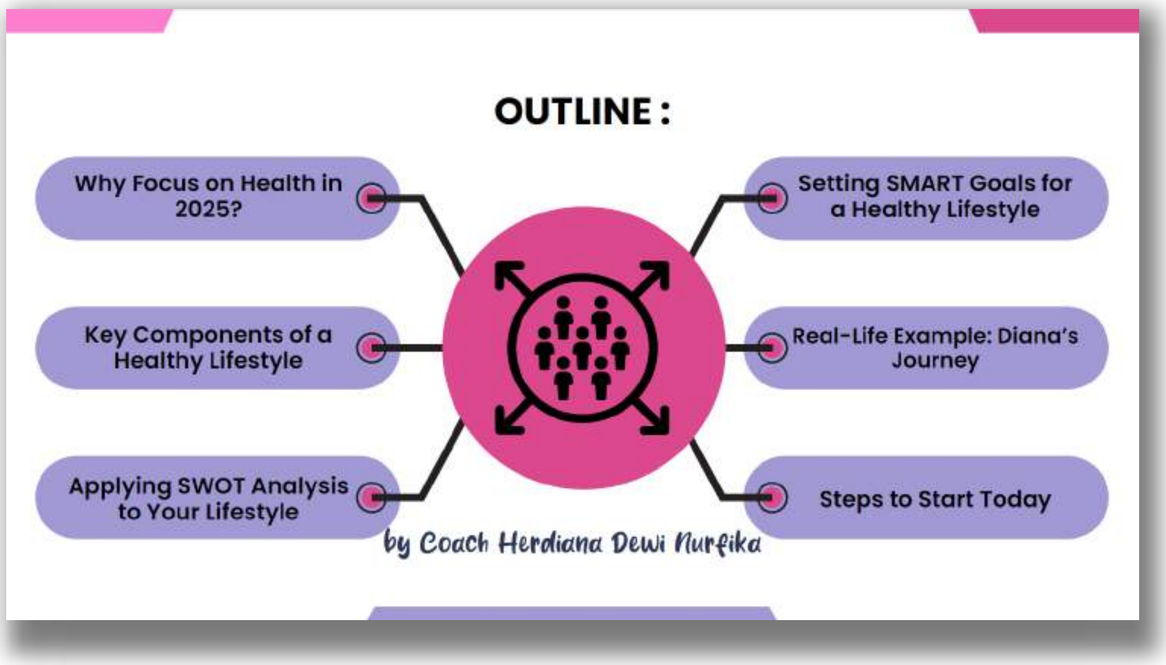
Mental Health

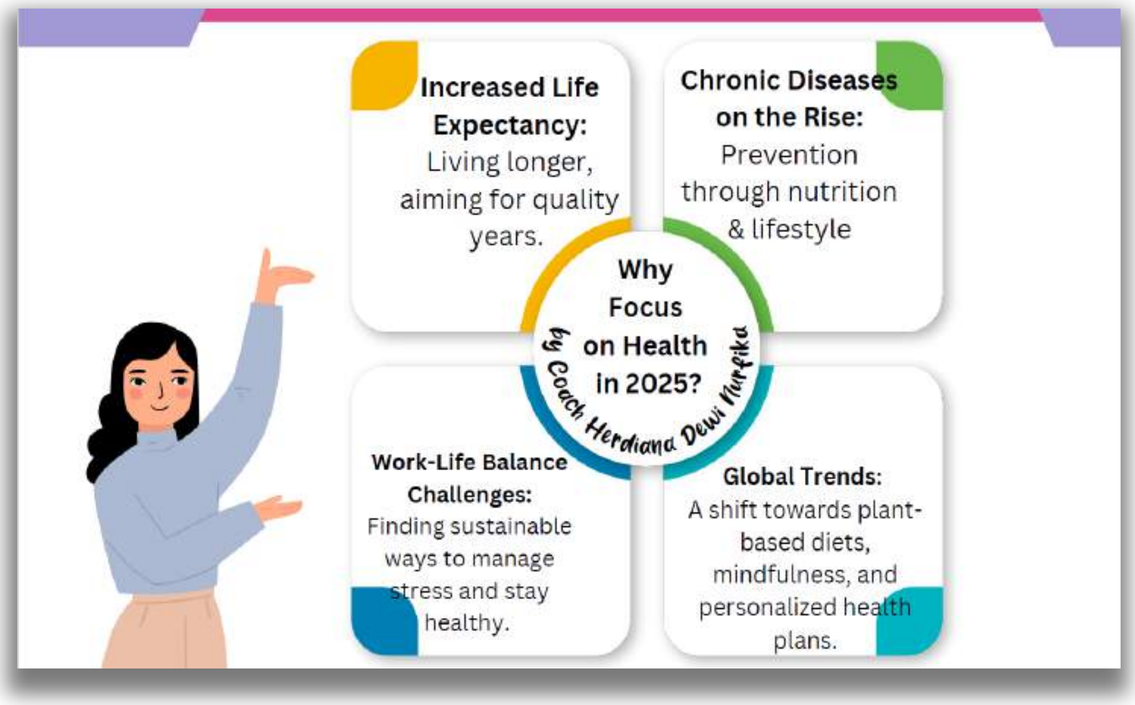
Author: Herdiana Dewi Nurfika

Bliss Education Center, Indonesia

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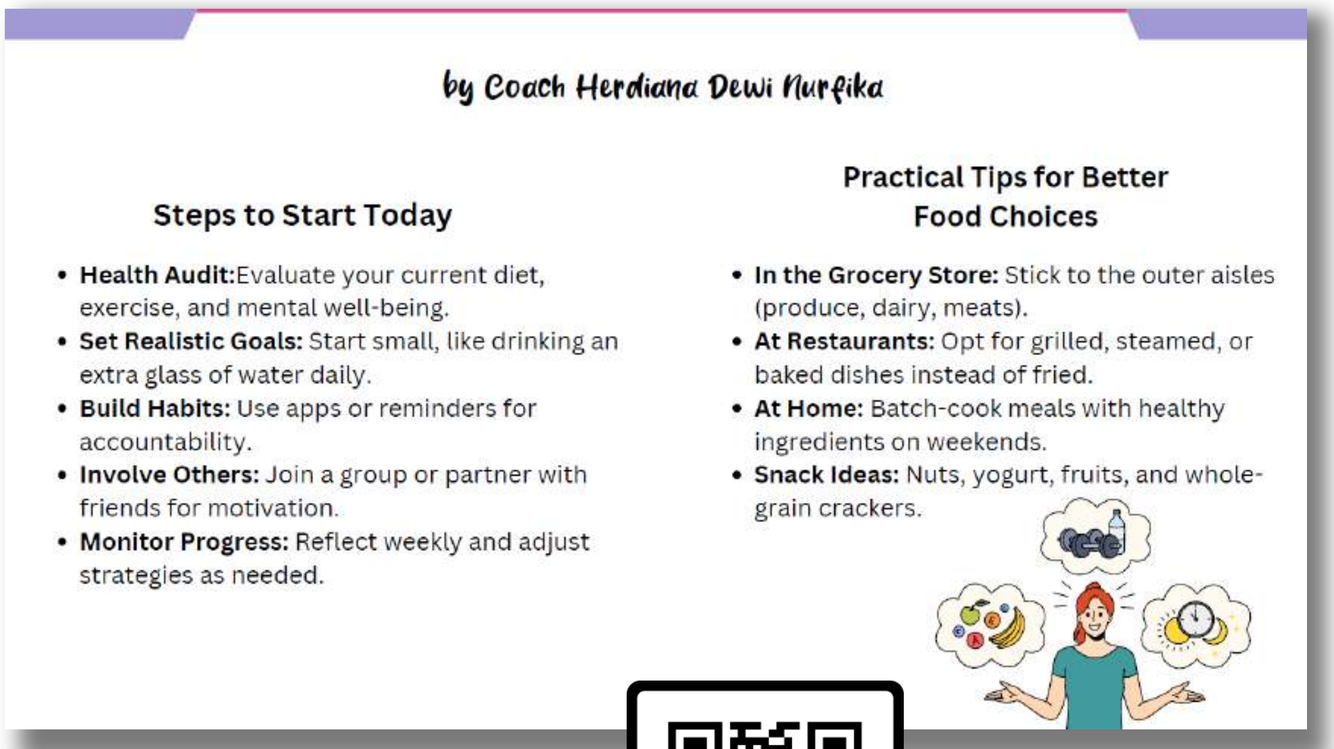












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SCAN ME

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G

Agriculture

Veterinary medicine

The local cultivar ‘MIHAI’

of Jerusalem artichoke, *Helianthus tuberosus* L.

„Alexandru Ciubotaru” National Botanical Garden (Institute) of Moldova State University, Republic of Moldova

Patent MD 0024/2024.11.19.

Author: Dr. Victor ŢÎŢEI

G

The local cultivar ‘MIHAI’ of Jerusalem artichoke, *Helianthus tuberosus* L has been created by individual breeding of local and introduced plant taxa of Jerusalem artichoke, can be used for several purposes: aerial parts as forage and energy biomass, tubers as feed and by-products of inulin extraction, also as ornamental and melliferous plant. The forage productivity of the local cultivar ‘MIHAI’ 68-70 t/ha green mass with 18-24% dry matter and 35-40% leaves content. The tubers productivity varied from 35 to 39 t/ha fresh mass.



The biochemical composition and the nutritive value of green mass 10.8-13.5% CP, 9.9-12.1% ash, 33.2-37.7%ADF, 45.4-52.2 % NDF, 5.0-5.5% ADL, 28.2-32.0%Cel, 12.2-14.5 %HC, 595-629 g/kg DDM, RFV=106-122, 11.78-12.39 MJ/kg DE, 9.67-10.18 MJ/kg ME and 5.69-6.21 MJ/kg NEl.





The ensiled mass was characterized by agreeable color with specific smell, pH 3.76, 12.36 % CP, 31.83 % CF, 2.24% EE, 39.22% NFE, 0.29% TSS, 1.47 % starch, 14.34%ash,1.47% Ca, 0.21% P, 12mg/kg carotene.

The harvested dry stems biomass at the end of autumn- winter period had 18.5 MJ/kg gross calorific value, and 2.1% ash and can be processed into briquettes and pellets as renewable energy.









The tubers contain 177g/kg dry matter with 9.71 % CP, 0.61% EE, 5.112% CF, 7.23 % ash, 0.20% Ca, 0.30% P, 77.34%NFE, 63.00% inulin and other carbohydrates, eligible for feed, forage and raw material, for the pharmaceutical and food industry.

The local cultivar ‘MIHAI’ of Jerusalem artichoke it suitable to be cultivated on marginal lands.

Financial support from Ministry of Education and Research, subprogram no. 01.01.02 *“Identification of valuable forms of plant resources with multiple uses for the circular economy".*

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The local cultivar ‘GIGANT’

of giant knotweed *Polygonum sachalinense* F. Schmidt

„Alexandru Ciubotaru” National Botanical Garden (Institute)
of Moldova State University, Republic of Moldova

Patent MD 207/ 2016.05.31

Author: Dr. Victor ŢÎŢEI

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The local cultivar ‘GIGANT’ of giant knotweed *Polygonum sachalinense* F. Schmidt ex Maxim, family *Polygonaceae* was created based on the activities of identification and mobilization of new giant knotweed taxa, individual selection and breeding of introduced plant taxa, registered in the Catalogue of Plant Varieties (no. 2492625/2012). Can be used as forage and energy biomass, tardive source of pollen and nectar for bees (August-September)- 30-60 kg/ha of honey.

For the founding of the plantation are necessary 20-28 thousand plants/ha; the established plantations are maintained for 15-20 years. The green mass yield after cutting the plants 2-3 times is 124-148 t/ha, may be use as forage for husbandry animals (natural fodder, silage, vitaminized flour), the potential fodder production – 14-18 t/ ha nutritive units and 1800-2000 kg/ha digestible protein.











Silage quality: pH= 3.80-4.10, 80-85 % lactic acid, 13.5-18.0 % CP, 2.3–2.6 % EE, 8.9-14 % ash, 54-58 % NDF, 34-45% ADF, 5.0-7.8 % ADL, 4.7-5.5 g/kg Ca and 2.3-2.5 g/kg P.

The green mass and silage also, may be used as feedstock in biogas plants with biomethane potential 4050-4300 m^3/ha/year.



The harvested dry stems biomass at the end of autumn- winter period had 19.3 MJ/kg gross calorific value, and 1.5% ash and can be processed into briquettes and pellets as renewable energy, potential of energy production 435 GJ/ha equivalent 16 t coal or 11 t conventional oil.

The dry stems biomass can be utilized as a substrate to obtain cellulosic ethanol with a potential 550-570 L/t organic matter.

The local cultivar ‘GIGANT’ of giant knotweed is useful in phyto-amelioration of eroded land and phytoremediation of contaminated land, it suitable to be cultivated on marginal lands.

Financial support from Ministry of Education and Research, subprogram no. 01.01.02 *“Identification of valuable forms of plant resources with multiple uses for the circular economy".*

https://gbni.usm.md/; vic.titei@gmail.com ; victor.titei@ gb.usm.md

The Innovative Technology for Cultivation and Use of Some Non-Traditional Forage Crops

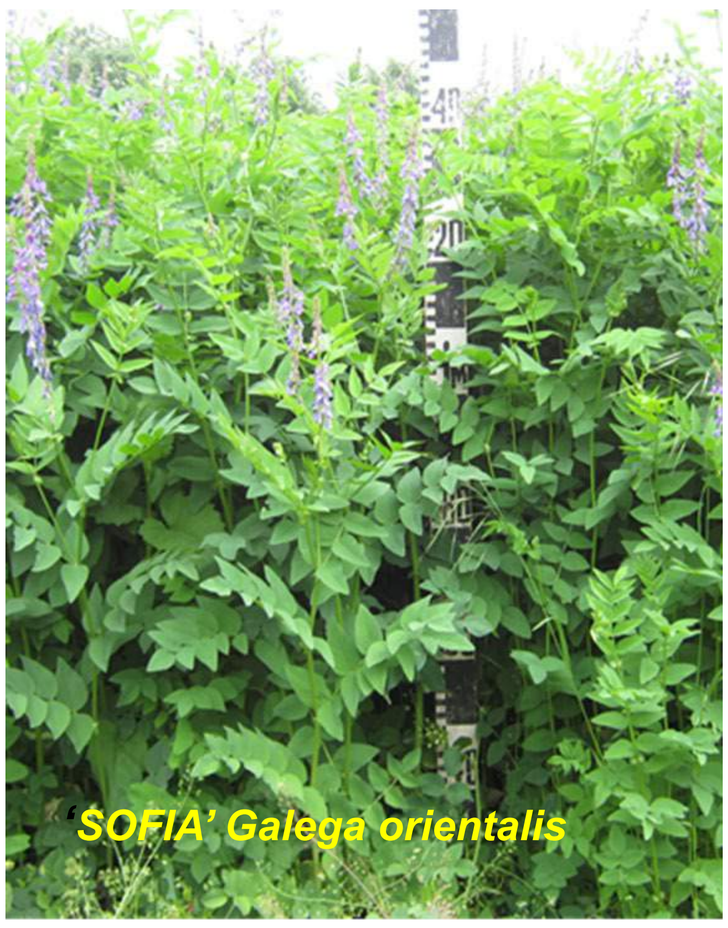
„Alexandru Ciubotaru" National Botanical Garden (Institute) of Moldova State University, Republic of Moldova

Patents MD 400 / 2023.02.28; MD 344 / 2020.04.30; MD 0013 / 2022.05.05.

Author: Dr. Victor ŢÎŢEI

G

Revitalization and development of the national livestock sector requires diversification and increased production of local vegetal feed, balanced in terms of quantity and quality throughout the year, according to the physiological needs of animals and their productivity indices. The foundation of plantations and the production of fresh and persevered feed (hay, silage, haylage) using cultivars of new and non-traditional forage plants created in the National Botanical Garden (Institute) of Moldova State University and registered in the Catalogue of Plant Varieties: *'SOFIA'* of fodder galega *Galega orientalis* Lam. (no.0475063/2024), *'ARGENTINA'* of perennial sorghum *Sorghum almum* Parodi (no. 2584624/2021), *'VIGOR'* of milkvetch *Astragalus galegiformis* L. (no. 2574504 /2021) will ensure an annual productivity of 9-22 t/ha nutritive units and 970-2800 kg/ha digestible protein, during 8-15 years.



The productivity from 3-4 cuts / season is 85-104 t/ha green mass or 18-21 t/ha dry matter.



The productivity from 2-3 cuts per season is 55-70 t/ha green mass with 49-57% leaves.



The productivity from three cuts reached 61 t/ha green mass or 14 t/ha dry matter.







The implementation of these innovative technology will help maintain the animal welfare, ensure national food security and sustainability in terms of reducing the import of food, improving the environmental situation, making use of degraded and eroded soils and unused land in traditional agriculture.

Financial support from Ministry of Education and Research,

subprogram no. 01.01.02 *"Identification of valuable forms of plant resources with multiple uses for the circular economy".*

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The Technology for Founding Biomass Energy Plantations

„Alexandru Ciubotaru" National Botanical Garden (Institute) of Moldova State University, Republic of Moldova

MD 402 / 2023.02.28; MD 348 / 2020.04.30; MD 205/ 2016.05.31

Author: Dr. Victor ŢÎŢEI

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The local cultivars of new crops created in the National Botanical Garden (Institute) of Moldova State University and registered in the Catalogue of Plant Varieties*: 'MARIA' of* Jerusalem artichoke, *Helianthus tuberosus (no. 0734840/2023); 'TITAN'* of giant miscanthus, *Miscanthus* × *giganteus* (no. 0394505/2021) and 'MIHAELA' of plume poppy *Macleaya cordata* (no.0745066/3024), are intended for the foundation of biomass energy plantations and the restoration of degraded, eroded and polluted lands that cannot be profitably cultivated with traditional crops. The local cultivars 'MARIA' and 'TITAN' achieved annual productivity 60-100 t/ha of green mass with biomethane potential 260 -355 l/kg organic dry matter or estimated biomethane production varied from 4100 to 7000 m3/ha/ year. The yield of stem biomass harvested in winter period of cultivars *'MARIA',* 'MIHAELA' and *'TITAN'* varied from 13.0 to 28.0 t/ha dry matter with gross calorific value 18.8-19.9 MJ/kg and 1.5-2.5% ash, can be processed into solid biofuels (bales, biomass chips, pellets and briquettes), as well as utilized as a substrate to obtain cellulosic ethanol with a potential of 533-610 l/t organic matter.



The productivity from 1-2cuts / season is 60-100 t/ha of green mass or 16.2-28.0 t/ha dry matter.



The productivity 35-47 t/ha green stem



The productivity from three cuts reached 68- 75t/ha green mass



















The implementation of these innovative technology will ensure the production of energy biomass for obtaining different types of biofuels, reducing illegal logging and preserving forests, creating new job opportunities in the rural area and ensuring the country's energy security.

Financial support from Ministry of Education and Research, subprogram no. 01.01.02 *"Identification of valuable forms of plant resources with multiple uses for the circular economy".*

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Potato variety AMURAL

Patent: 500/30.01.2025

Author: Hermeziu Radu

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Potato variety obtained by sexual hybridization between varieties Sarpo Mira x Charlotte, followed by individual clonal selection in the hybrid population. It is maintained through vegetative propagation, which ensures its homogeneity and stability.

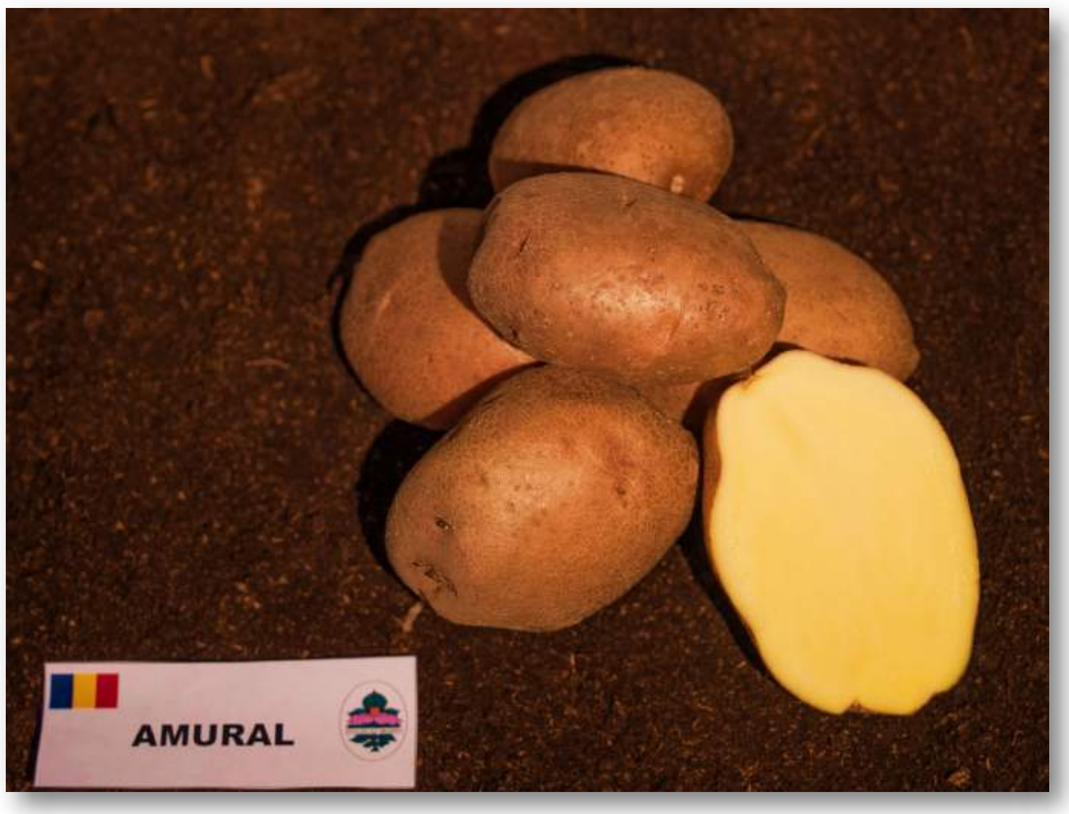
Plant description:

- The plant is tall, with up-right habit and high number of stems.
- The leaf is small-sized, green in color, and has a medium number of leaflets.
- The flowers have a large corolla opening, are purple red in color, and bloom is low.
- The tubers are oval in shape, with a medium depth of eyes. The skin is medium red, while the flesh is light yellow.

Resistance to diseases and pests:

- Medium resistant to potato Y virus (PVY) and to potato leaf roll virus (PLRV)
- Relatively resistant to late blight (*Phytophthora infestans*) on leaves and tubers
- Resistant to wart disease (*Synchitrium endobioticum*), biotype 1







Vegetation period: The variety belongs to the mid-early group, with a vegetation period of 90-100 days.

Dry substance content: 25,6%

Quality class: B. The Amural variety is suitable for autumn - winter consumption, for salads and various culinary dishes, industrial processing (chips, French fries)

Production capacity: High, with an average yield of 50 t/ha.

Economic efficiency: High productivity, ecological plasticity, and production stability.

Field of applicability: Agriculture, food industry.

Potential beneficiaries: Farmers, seed potato and consumption producers, consumers, and the entire commercial chain

Contact: www.potato.ro icpc@potato.ro +40746164185

Potato variety ERVANT

Patent: 00535/28.02.2019

Author: Hermeziu Radu

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The ERVANT potato variety was obtained through sexual hybridization between the Bellarosa and Laura varieties, followed by individual clonal selection in the hybrid population. It is maintained through vegetative propagation, which ensures its homogeneity and stability.

Plant description:

- The plant has a medium height, leaf type and a semi-upright habit.
- The leaf is medium-sized, green in color, and has a moderate number of leaflets.
- The flowers have a large corolla opening, are light pink in color, and bloom is low.
- The sprouts grown in light are small, ovoid in shape, with a medium intensity of anthocyanin coloration at the base and strong pubescence.
- The tubers are short-oval in shape, with shallow eyes. The skin is yellow, while the flesh is cream-colored.

Resistance to diseases and pests:

- Resistant to potato Y virus (PVY) and resistant to potato leaf roll virus (PLRV)
- Moderately resistant to late blight (*Phytophthora infestans*) on leaves and relatively resistant to late blight on tubers
- Resistant to wart disease (*Synchitrium endobioticum*), biotype 1















Vegetation period: The variety belongs to the mid-early group, with a vegetation period of 90-100 days.
Starch content: 13.00%
Quality class: A/B. The Ervant variety is suitable for a wide range of culinary uses, including chips and French fries.

Production capacity: High, with an average yield of 60 t/ha.

Economic efficiency: High productivity, ecological plasticity, and production stability.

Field of applicability: Agriculture, food industry.

Potential beneficiaries: Farmers, seed potato and consumption producers, consumers, and the entire commercial chain.

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BIOCOMPOSITE BASED ON AMINOCIDS FROM KERATINOUS PROTEIN MATERIALS AND THE PROCESS FOR ITS PRODUCTION

Patent A-00754 / 2024

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BOERU Adrian-Iosif, LUCA Leontina

[1)]INMA București – ROMÂNIA, [2)]SC CIG SRL -Câmpia Turzii / Cluj

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ABSTRACT:

The invention refers to a process for the preparation of keratinous protein materials through alkaline hydrolysis, in order to obtain amino acids, intended for agriculture use as plant biostimulants.

DESCRIPTION:

From various industries, especially the food industry (slaughterhouses, butchers), protein waste or manufacturing by-products that cannot be used in human or animal nutrition result, products with great economic potential, determined by the high content of amino acids. The valorization of these wastes and by-products is very topical both from an economic point of view and through the negative impact on the environment that derives from their storage. These wastes and by-products, in the form of hydrolysates, consisting of free amino acids, peptides and oligopeptides, soluble in water, are widely used in agriculture as fertilizers and biostimulants for plants.

In addition to the nutritional role that they play in the development of plants, protein hydrolysates fulfill an important physiological role by the fact that they quickly enter the metabolic processes that take place both in the soil and especially in plants. The amino acids in the composition of the hydrolyzates facilitate the absorption and integration of macro and microelements, thus stimulating the metabolic processes in plants.

The main sources of amino acids, peptides and oligopeptides of the hydrolysates intended for agriculture are both plant-based: residues of protein materials from soy, peas, sunflower, rapeseed, corn, etc. but also of animal origin: residues of wool, hair, hooves, feathers, residues from fish processing.

The objective of this invention refers to the development of a process for the manufacture of protein hydrolyzates from feathers from the slaughter of broiler chickens. Feathers represent a keratinous protein macromolecular complex with a high protein content (85-95%), complex insoluble in water and with great chemical stability.

The difficulties of the alkaline hydrolysis processes of keratinous protein materials derive from the high content of cystine (8-12%) which leads to a large number of disulfide groups that give a high chemical stability to the protein material.

The disadvantages of the existing processes of alkaline hydrolysis of keratinous protein materials are removed in this process by the fact that the hydrolysis process is carried out with a basic solution with a reducing character and complex composition containing a hard base soluble in water, KOH/NaOH or their mixture, with a concentration of 2.5 - 7% at pH = 10.5 - 11.5 with or without additions of alkaline earth metal bases Ca(OH)2/Mg(OH)2 or/and Zn(OH)2, their proportion in the reaction mass being 0.1 - 2.5%.

HOW IT WORKS:

According to the invention, the process of destructuring and hydrolysis of keratinous protein materials is carried out in three stages:

Stage I, in weak acid environment at pH=5-6.5, temperature of 60-80oC and atmospheric pressure;

Stage II, in an alkaline environment at pH=8-9.5, created by recirculating the coarse fraction resulting after centrifugation of the final hydrolysis mass. The process takes place at a temperature of 60-90oC and atmospheric pressure;

Stage III, in an alkaline medium pH=10.5-11.5, when the rest of the base is added so that the ratio of protein material/base = 3-7 at the temperature of 80-120oC and the pressure p = 1-2.5 bar and the overlap of the chemical effect with the mechanical effect is achieved under the action of the shear forces introduced into the reaction mass by means of a colloidal mill coupled to the chemical reactor, the destructuring of the complex taking place macromolecular.

The invention also presents three concrete embodiments, combining various chemical elements, to provide various protein hydrolysates in a wide range of concentrations.

ADVANTAGES:

- ❑ - The protein hydrolyzate obtained according to the invention has a complete composition in amino acids and other natural nutrients, which allows its use as a foliar fertilizer or adjuvant of a varied range of granular or liquid fertilizers specific for different crops.
- ❑ - The complex chemical composition of protein hydrolysates contributes to the intensification of the metabolic processes taking place in plants, such as the microbial activity of the soil with a positive effect on the quality and level of agricultural production.
- ❑ - The production of protein hydrolysates allows the superior utilization of some waste and by-products resulting from various industries, especially in the food industry.
- ❑ - The process, according to the invention, leads to the intensification of the processes after which the amino acids are obtained, with a direct effect on the size of the machinery and energy consumption.
- ❑ - By applying the proposed manufacturing process, secondary reactions are minimized, which leads to yields of 95-99% compared to the protein material.
- ❑ - The process, according to the invention, allows the production of protein hydrolysates in a wide range of concentrations, which determines work options with minimal expenses.

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EQUIPMENT FOR OPTIMIZING THE PROCESSING OF LOW-MOISTURE AGRICULTURAL LANDS

Patent Application No. A-00632 / 2024

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ABSTRACT:

The invention presents an innovative high-performance solution of a piece of equipment, called a scarifier, which is used to optimize the processing of agricultural land with low humidity. The scarifier is used for deep loosening of the soil up to a depth of 65 centimeters, obtaining a very well loosened soil structure that allows easy movement of air, water and nutrients.

DESCRIPTION:

Tillage using a scarifier can replace standard ploughing, with lower towing requirements, lower fuel consumption and higher yield. Deep tillage with scarifiers must be supplemented with soil fertilization. Through a single pass of the equipment, the layer under the plowing is scarified, plant residues are incorporated into the plowing, simultaneously applying biofertilizers.

Currently, in the global market, there is a growing demand for microbial inoculants, which can be used as biofertilizers or biostimulants in crop production. Bioinoculants contain one or more PGPM (bacteria, algae or fungi) embedded in a carrier liquid. Carrier fluid refers to the delivery "vehicle" in which the biofertilizer is enclosed to be transferred to the plant's rhizosphere. The carrier liquid must provide an optimal microenvironment (Ph, water and carbon content) for microorganisms, maintain a longer shelf life and microbial viability, without the need for a special storage facility. Also, the carrier liquid must be cost-effective, readily available, environmentally friendly, accept nutritional supplements and not be harmful to the user.

The disadvantages of these solutions consist in the fact that they represent specific technical solutions for the intended purpose and are not suitable for a research equipment to perform the scarification operation with low energy consumption.

The technical problem that the proposed solution solves, according to the invention, consists in the design of a technical equipment that optimizes the processing of agricultural land with low humidity through the differentiated action of some active elements in the composition of the equipment, depending on the level of effort, measured with the help of a strain sensor, having as characteristic values zero strain, when the equipment is above the ground, medium stress, in the situation where the active elements are in nominal working mode and, respectively, in the situation of maximum stress, when meeting a rigid obstacle that makes necessary to take appropriate measures to protect the active elements.

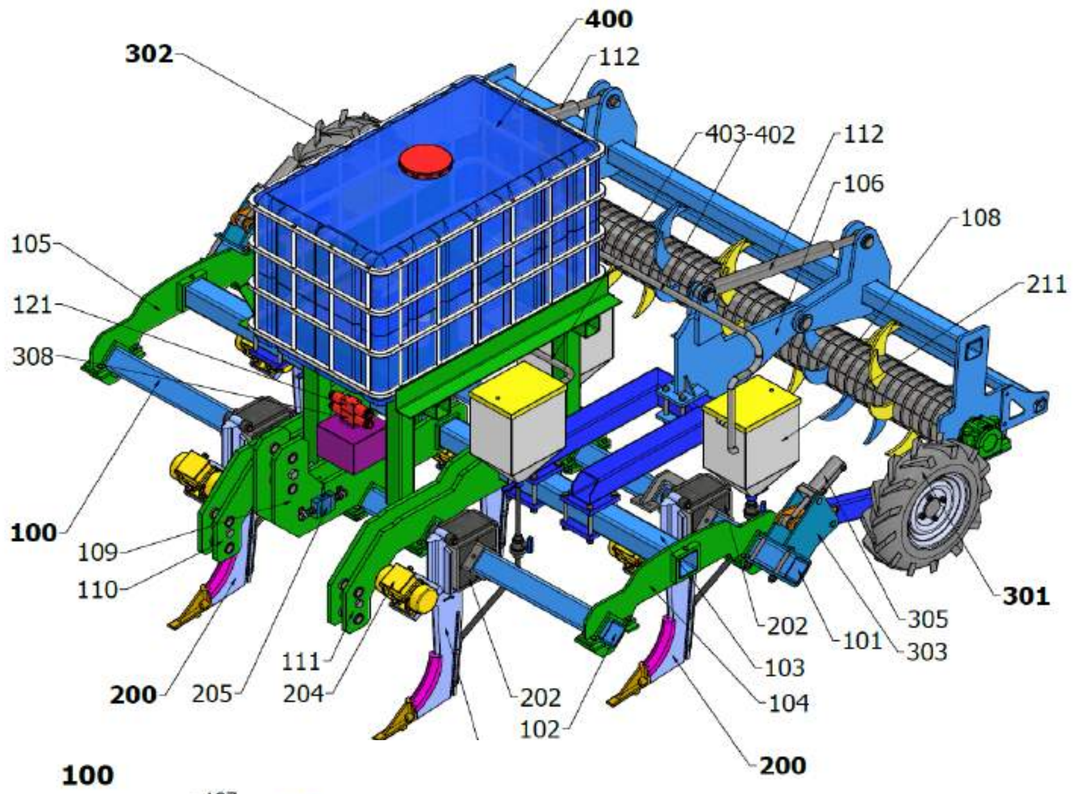


Fig.1 – front 3D view

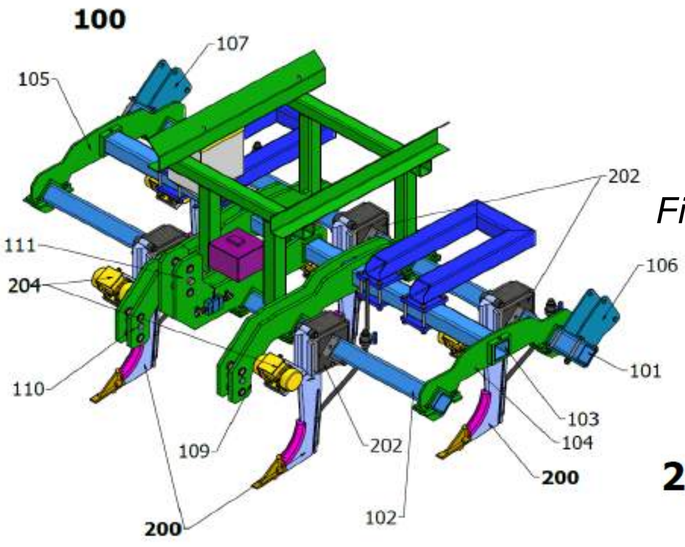


Fig.2 – Support subassembly

COMPONENTS:

The equipment has low energy consumption and is made on the basis of an electromechanical construction consisting of a support (**100**), made of rectangular pipes (**101**), (**102**) and (**103**) assembled with two end crossbars (**104**) and (**105**), on the support (**100**) being mounted some towing arms (**109**), (**110**), (**111**) and a central tank (400) for biofertilizers, which supply the equipment through some distribution pipes (**402**) and (403) , characterized in that, is configured so as to elaborate distinct processing commands, depending on the signal given by a mechanical stress sensor (**205**), mounted on one of the traction arms (**110**), so that at zero value, the equipment is above the ground, at an average value, when some active elements (**200**) of the equipment are in the ground during work, an electric vibrator (**204**), of very high speed, produces high-frequency but low-amplitude vibrations, used by a knife (201) of the active element (200) and, respectively, of maximum value, when the active elements (**200**) meet a rigid obstacle, in which case, to command the immediate lifting of the active elements from the ground, the equipment is provided on the sides of the support (**100**) with two wheels (**301**) and (**302**), mounted in some supports (**303**) and (304) and which are lowered or raised from the ground with the help of hydraulic cylinders (**305**) and (**306**), and the solenoid valve hydraulic (**307**).

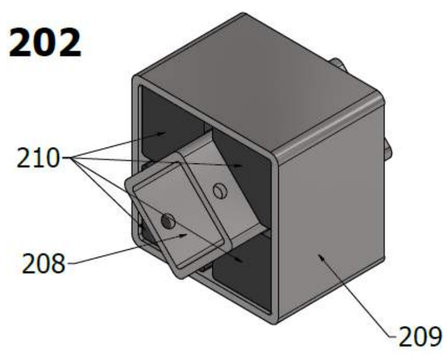


Fig.4 - the special damper

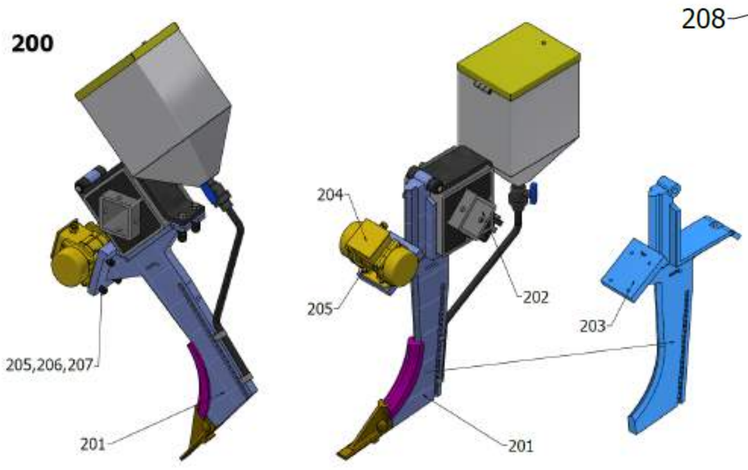


Fig.3 – construction of the Active Element

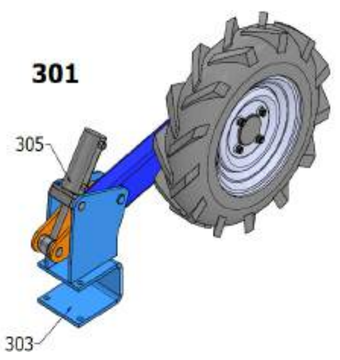


Fig.5 – side-wheel assembly

ADVANTAGES:

- ❑ drainage of the fertile layer (removal of excess rain);
- ❑ soil consolidation: improves water penetration into the soil by more than 20%, accumulating up to 300 tons of moisture per hectare more than normal;
- ❑ activates biological processes in the soil, which lead to the active development of the root system of crops and an increase in crop yields by 12-18%;
- ❑ it is a compact, reliable and high energy efficiency construction. Due to the use of a vibrating system mounted on the active elements, the power consumption of the tractor will decrease by approx. 30%;
- ❑ strengthening microbiological processes. This improves the nutritional regime of the arable layer and the circulation of substances;
- ❑ optimizing the processing of heavy soils: rollers with a lot of spurs break up boulders. The spurs sink the debris into the lower soil layers and mix it with the soil, displacing the root complex.

ACKNOWLEDGEMENT:

This project was supported by the Ministry of Agriculture and Rural Development through the ADER Project 25.1.2 / 2023: "INNOVATIVE TECHNOLOGY OF MINIMUM AGRICULTURAL LAND PROCESSING ADAPTED TO CURRENT CLIMATE CHANGES"

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MOBILE ROBOT FOR TOMATO LEAF PRUNING

Patent Application No. A-00627 / 2024

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ABSTRACT:

The invention refers to a mobile robot intended for the shaping and maintenance of tomato crops, being composed of a robotic arm equipped with a specialized gripper for cutting leaves and a mobile platform on rails for moving between rows of tomatoes. The gripper has an advanced mechanism to retain the tail of the leaves so that they are efficiently collected in a collection container. The gripper is also equipped with scissors for precise cuts.

DESCRIPTION:

Leaf pruning, also known as defoliation, is an essential agricultural process for optimizing tomato plant growth and maximizing the production of high-quality fruit. This practice is crucial at several stages of plant development and brings numerous benefits to crop health and productivity.

The main reasons why leaf shaping is necessary for tomatoes:

- **Improves air circulation:** By removing lower leaves and excess vegetation, shaping helps improve air circulation around the plant. This reduces the risk of fungal diseases, such as mold and mildew, which develop in high humidity conditions.
- **Increased exposure to light:** Shaping allows better exposure of the upper leaves and fruit to sunlight. Sunlight is essential for photosynthesis, a process that contributes to fruit development. By cutting off the excess leaves, the uniform and rapid ripening of the tomatoes is stimulated.
- **Redirecting energy to fruit:** By removing useless or diseased leaves, the plant can redirect resources and energy to fruit development instead of consuming them to maintain the vegetation. Thus, shaping contributes to increasing the size and quality of the fruit, favoring a richer harvest.
- **Disease and pest prevention:** Dense foliage can create an environment conducive to pest and disease development. Periodic removal of leaves reduces the places where they can shelter and reproduce, thus preventing infestations and plant health problems.
- **Facilitation of maintenance works:** By shaping the leaves, access to the base of the plant is facilitated for other maintenance works, such as irrigation, fertilization or the application of phytosanitary treatments. A well-shaped plant is easier to manage, reducing the time and effort required in crop maintenance.
- **Improving the quality of production:** Correct shaping of the leaves helps to increase the quantity and quality of tomato production. The fruits receive more light and air, which improves their taste, color and uniform ripening.
- **Extending the life of the plant:** By cutting off diseased or damaged leaves, the plant is protected from stress caused by infection, which helps to extend its life and achieve a constant production throughout the growing season.

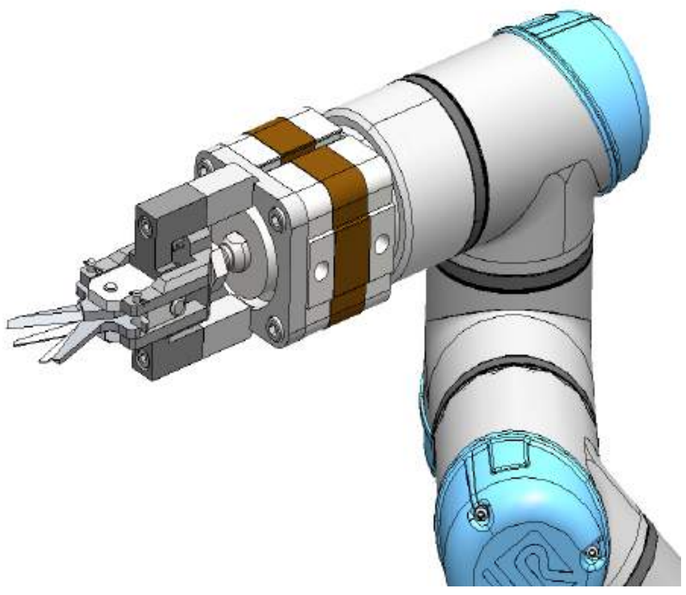


Fig.1 – Robot's specialized double blade ***gripper*** for tomato leaves pruning

The existing solutions in this field, are predominantly semi-automated and still require human intervention. They lack full cut leaf collection features and are not accurate enough to protect the delicate stems of tomato plants.

The main *disadvantage* of the existing technical solutions for pruning / shaping tomato leaves is that they do not include an automated leaf collection system, so the cut leaves are left to fall to the ground, which requires additional cleaning operations. Among **other disadvantages** we list: **High labor costs**, **low precision**, **lack of an efficient collection system to manage leaf scraps**, **increased operating time**, as the processes are not fully automated.

The technical problem that the proposed solution solves is the **selective automation** of the process of cutting tomato leaves, preventing damage to stems and healthy leaves, while ensuring efficient and clean cutting, after which they will be collected, thus eliminating the need for human intervention for cleaning after shaping. The invention completely automates the tomato leaf pruning process, reducing the time and costs associated with crop maintenance. By integrating an automatic leaf catcher and the collection mechanism, waste and the need for manual soil cleaning is eliminated.

COMPONENTS:

The mobile robot for tomato leaf pruning is equipped with a robotic arm (**1**) of the **UR5e** type, mounted on a mobile platform (**5**), which moves on modular rails (**8**) between the rows of tomatoes. The arm is controlled by a dedicated controller (**4**) and powered by a 48V Li-ion battery (**7**), which ensures the operation of the entire system. The **specialized gripper** (**2**) is equipped with a double mechanism, which grabs the petioles of the leaves and cuts them with the help of a precise blade. The **ZED X3** 3D camera and its controller play an essential role in the precise detection and identification of the leaves to be shaped. This camera uses stereo-vision technology to generate a **3D point cloud**, allowing the robot to assess distances and recognize obstacles around foliage, such as branches or other leaves. In addition, the robot's visual recognition system is powered by the **YOLOv9** (*You Only Look Once*) object classification algorithm, which uses artificial intelligence to analyze the images captured by the 3D camera. This deep-learning model is able to identify and classify leaves to be removed with high accuracy and in real time. **YOLOv9** is specially designed to recognize leaves even in complex environments, quickly adjusting the actions of the robotic arm based on the position of the leaves. The electric drive motor (**6**), commanded by a motor controller, allows the robot to move on the rails installed between the rows, ensuring efficiency and precision in the maintenance of tomato crops. The cut leaves are collected in a dedicated container (**9**), thus providing a fully automated and efficient solution for the maintenance of tomato crops.

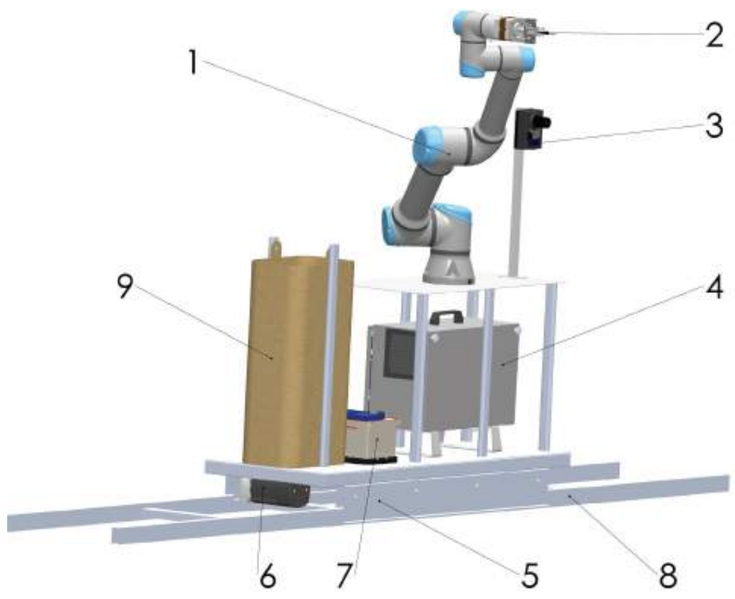


Fig.2 - Mobile robot for tomato leaves pruning

ADVANTAGES:

- **Precision Cuts:** Adjustable blades ensure precise cuts without damaging the plant.
- **Smart sensors:** RGB 3D camera ensures accurate identification of leaves to be cut.
- **Advanced automation:** The specialized gripper significantly reduces the need for manual intervention in the plant maintenance process.
- **Automatic collection system:** Cut leaves are transported to a collection container for efficient plant waste management.

ACKNOWLEDGEMENT:

This project was supported by the Ministry of Agriculture and Rural Development through the ADER Project no. 25.1.1 / 2023: "ROBOTIZED HARVESTING TECHNOLOGY OF VEGETABLES FROM THE SOLANACEAE FAMILY IN GREENHOUSES AND SOLARIUMS, USING ARTIFICIAL INTELLIGENCE".

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MECHANISM FOR INTENSIVE MIXING OF COMPOUNDS IN DENSE AND VISCOUS MEDIA IN BIOREACTORS FOR BIOFERTILIZER PRODUCTION

Patent Application No. A-00625 / 2024

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MATACHE Andreea, CONSTANTINESCU Mihai

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ABSTRACT:

The invention relates to a mixing mechanism designed for aerobic and anaerobic biofertilizer production facilities, offering high performance and versatile operation. Its optimized design amplifies agitation within the bioreactor, and the structure allows flexible adjustments of the configuration of the component subassemblies.

DESCRIPTION:

Effective mixing in bioreactors for biofertilizer production is essential to maximize biofertilizer quality and directly influences final product quality, process efficiency, and operational cost reduction.

In order for microorganisms to grow and function optimally, they must be evenly distributed throughout the volume of compounds in the bioreactor. They are fed nutrients and oxygen is added to them (in the case of aerobic processes) by pumping for respiration. An effective mixing facilitates the dissolution and uniform distribution of the compounds in the mass of compounds, preventing dead zones where unwanted processes could occur, which would affect the quality of the biofertilizer and produce toxic substances. In the absence of effective mixing, microorganisms tend to clump or form biofilms on the walls of the bioreactor or in areas of low circulation. This reduces the active surface area for the degradation process and inhibits the efficient transfer of oxygen and nutrients to the microorganisms. The microbial fermentation process generates heat, and large temperature variations within the bioreactor can lead to decreased process efficiency or even death of sensitive microorganisms. Efficient mixing contributes to uniform heat distribution throughout the reactor volume, avoiding hot or cold spots that can affect microbial activity.

An efficient design of mixing vanes or rotors can reduce flow resistance and thus energy consumption, while maintaining a high degree of homogenization.

The main disadvantage of known mechanisms for mixing biofertilizer solutions during processing in bioreactors is that they do not have a versatile construction that allows customizing the design according to specific operating conditions. This rigidity in design leads to inefficiency, especially in media with variable viscosity. Also, in bioreactors where the process materials have different viscosities, standard mechanisms cannot adjust the mixing parameters to ensure optimal mixing. This leads to the formation of clumps of material, where the compounds are not mixed effectively.

The technical problem that the invention solves consists in realizing a mechanism for intensive mixing of compounds in dense and viscous media in bioreactors for the production of aerobic and anaerobic biofertilizers. This mechanism optimizes mixing in difficult media (dense and viscous), ensuring a uniform distribution of materials and preventing the formation of dead zones or deposits. The adjustable paddle design allows for better circulation of oxygen and nutrients, increasing the efficiency of the fermentation process.

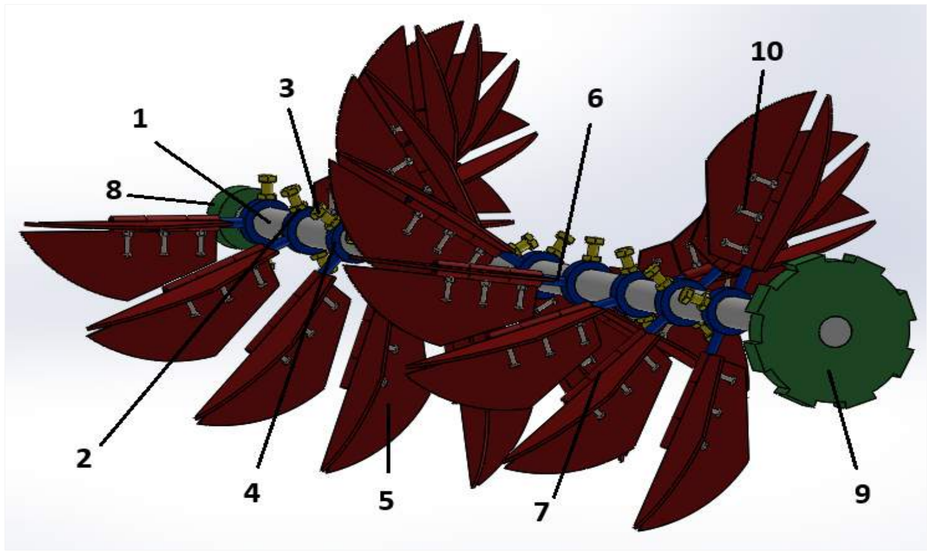


Fig.1 – Main View

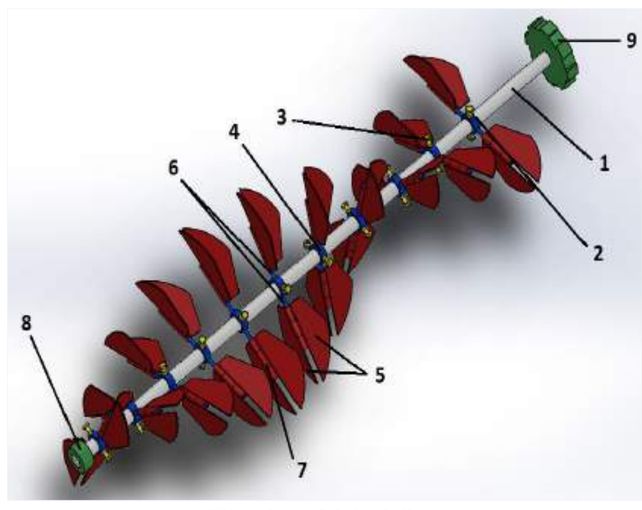


Fig.2 – Side View

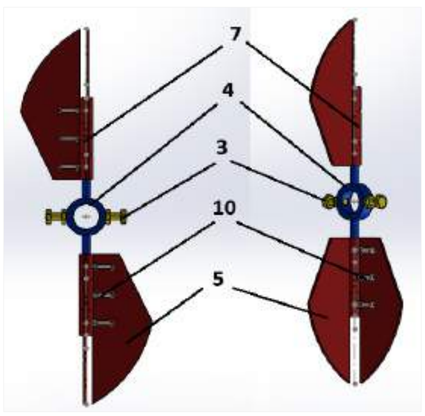


Fig.3 – Detail of the drive paddles

COMPONENTS:

The mechanism consists of the central axis (**1**) built from a cylindrical pipe, on which are mounted a variable number of drive vanes (**2**) with the role of mixing the component elements of the solution. The drive paddles are fixed along the central axis by the screw (**3**), being the components responsible for mixing the preparation. They consist of the bushing (**4**) and four mixing blades (**5**) which are fixed to the bushing by the support arms (**6**). The mixing blades are designed to ensure an easily customizable movement depending on the component compounds and the density of the mixture, thanks to the hinge type attachment (**7**). The slightly curved shape of the mixing blades ensures a uniform distribution of the components in the bioreactor. The attachment to the bottom of the technological vessel is made by the welded bushing (**8**), and the rotation movement of the shaft is made by driving the pinion (**9**) by a chain transmission. To firmly fix the angles and stiffen the blades during processing, they are fixed by screws (**10**) to their supporting arms.

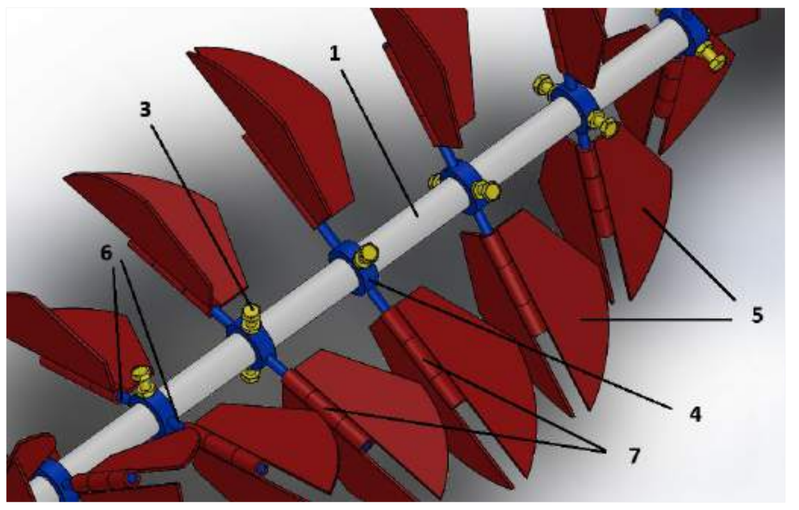


Fig.4 - Detail of mounting the drive paddles on the central axis

ADVANTAGES:

- The mechanism facilitates intensive mixing of compounds in dense and viscous media in bioreactors. Through the new constructive design, the mechanism significantly improves the homogenization of bioreactor products, which often have a viscous consistency. This improvement prevents the formation of "dead zones", where the material would not be processed efficiently.
- The adjustable angles of the blades allow adaptation to different levels of viscosity, guaranteeing a continuous and uniform movement of the material.
- The solution improves the transfer of oxygen and nutrients in aerobic bioreactors,
- The invention optimizes the mixing process, reducing the risk of inadequate aeration of the biofertilizer solution, which typically negatively affects efficiency due to lack of oxygen in certain areas. The design of the vanes and blades, as well as the distances between them, facilitate a better circulation of oxygen and nutrients inside the bioreactor. Thus, the agglomeration of the material is prevented and the uniform access of the microorganisms to oxygen and nutrients is ensured, increasing the efficiency of the aerobic fermentation process.

ACKNOWLEDGEMENT:

This project was supported by the Ministry of Research, Innovation and Digitization through Nucleus Project no. 9N / 01.01.2023: *"Multidisciplinary research in the field of digital agriculture for economic competitiveness and sustainable development, in the context of climate change SUSTAIN-DIGI-AGRI", Project PN 23 04 02 01: "Innovative technology for the production of biofertilizers in order to restore soil biodiversity and reduce the effects of drought on agricultural land".*

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MOBILE STATION FOR PRODUCING BIOFERTILIZERS THROUGH PYROLYSIS

Patent Application No. A-00575 / 2024

ȘTEFAN Vasilica, POPA Lucreția, CIUPERCĂ Radu, ZAICA Ana, CONSTANTINESCU Mihai

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ABSTRACT:

The invention refers to a mobile station for obtaining biofertilizers by pyrolysis intended for the processing of poultry droppings by pyrolysis (burning in the absence of oxygen) in order to obtain biofertilizers with a high phosphorus content.

DESCRIPTION:

Poultry waste can be managed through a variety of methods aimed at minimizing environmental impact and maximizing economic efficiency. It can be subjected to pyrolysis or gasification, processes that transform materials by heating in the absence or limited presence of oxygen. These techniques reduce the volume of waste and generate new products, such as biofertilizers and synthesis gas, which can be used in agriculture or industry.

Worldwide, there are a number of patented equipment and methods used to obtain biofertilizers through pyrolysis. However, ***the disadvantages*** of these inventions are that the equipment developed to date has much more complex systems for discharging the fertilizer material obtained from pyrolysis and which require the existence of other additional technical equipment (cranes, pulleys, screws, etc.) leading to an increased cost price. For small capacity installations, technological lines with several component equipment are not justified.

The technical problem that the invention aims to solve consists in creating a mobile station for obtaining biofertilizers through pyrolysis, which ensures - in addition to obtaining biofertilizers - a safe and low-effort unloading of the obtained material.

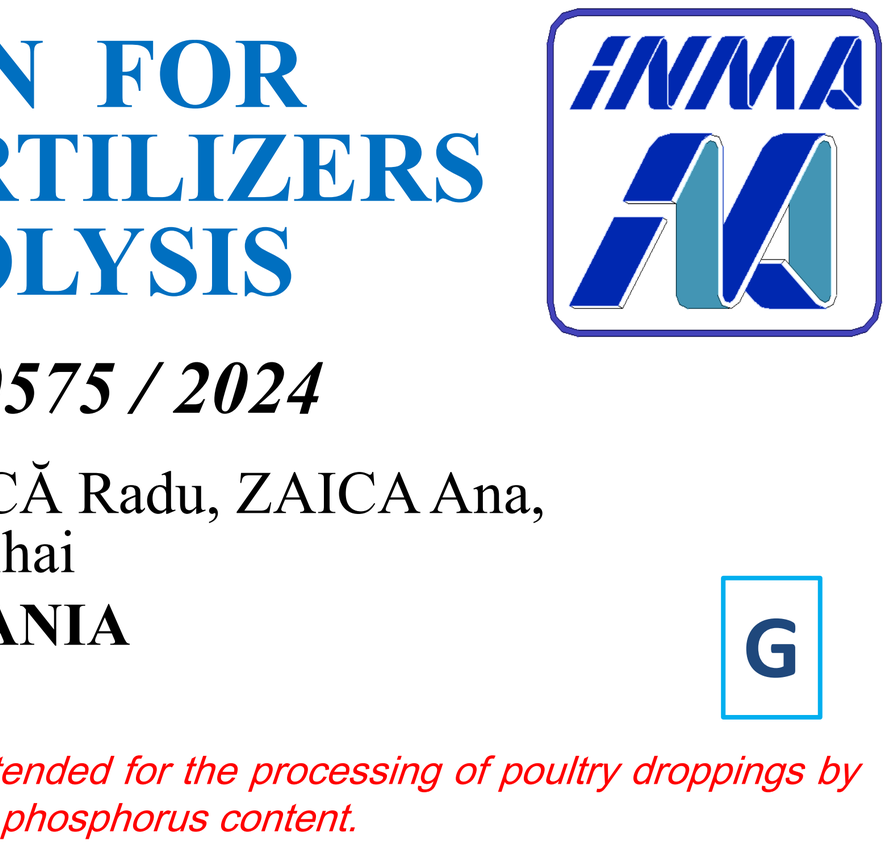


Fig.1 - isometric view

COMPONENTS:

The station is composed of a metal casing **(1)**, supported by legs **(2)**, with swivel wheels **(3)** that ensure the mobility of the equipment, provided with a cover **(4)**, inside which a reactor **(5)** is located, made of refractory steel, in which pyrolysis takes place, being fixed in a thermal chamber made of refractory bricks **(6)**, some electrical resistors **(7)** attached to some support pillars **(8)** and controlled from a programmable temperature regulator **(9)**, a thermocouple **(10)** for indicating the internal temperature, some ceramic thermal insulation plates **(11)** and some basalt mineral wool **(12)** that insulate the thermal chamber and prevent the transfer of heat to the outer casing and a discharge system made up of a boot **(13)** that slides on some guides **(14)**, at one end being connected to a lever **(15)** by means of a metal cable **(16)** that passes through a guide lug **(17)** and at the other end it is connected to a tension spring **(18)** which ensures the return of the shutter to the closed position, after the operator stops acting on the lever, a basket **(19)** for exhausting synthesis gases and a box **(20)** for collecting the material obtained through pyrolysis.

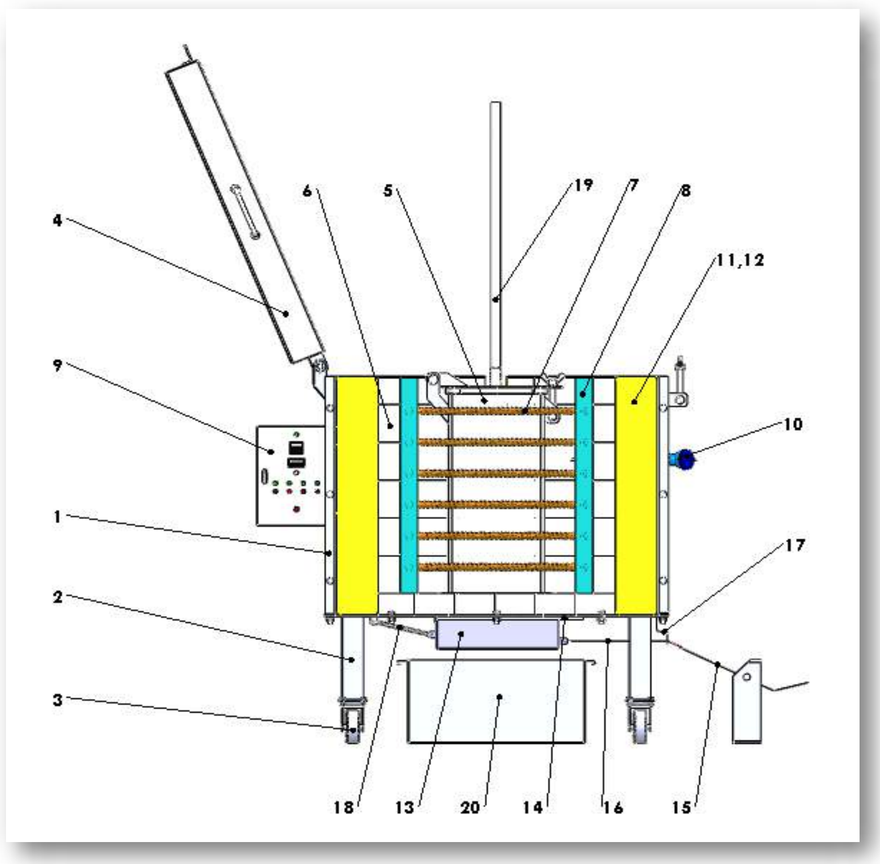


Fig.2 - right side view, in working position

OPERATION:

The mobile station operates as follows:

- the outer casing cover **(4)** and the reactor cover **(5)** are opened and the material subjected to the pyrolysis process is introduced. Both covers are closed and the installation is started by the command given from a programmable temperature controller **(9)**, setting the working parameters of the process (temperature, levels, working time). After the work process has ended, the lever **(15)** is actuated by pressing it with the foot and thus the cover **(13)** is opened, the material resulting from the pyrolysis being collected in the box **(20)**. After the action on the lever **(15)** ceases, the slide returns to its initial closed position, under the action of the tension spring **(18)**. The process is repeated for each charge.

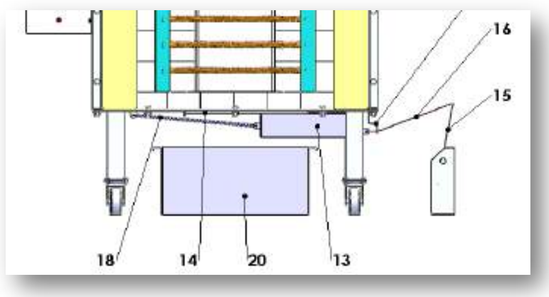


Fig.3 - partial view, right side, in material unloading position

ADVANTAGES:

- ❑ can be used to valorize poultry manure in the form of biofertilizers, manure resulting from small-sized poultry farms;
- ❑ the equipment has a single enclosure in which the entire process takes place (does not require a separate enclosure for the preliminary drying of the material), the process being automated, controlled by a programmable temperature regulator in steps;
- ❑ operational safety, by eliminating direct contact of the operator with components of the mobile station at high temperatures, which may constitute an accident hazard, by equipping it with a discharge system that can be operated remotely via a foot-operated lever;
- ❑ reduced complexity and affordable cost.

ACKNOWLEDGEMENT:

This project was supported by the Ministry of Agriculture and Rural Development through ADER Project no. 25.3.1 / 2023: *"Technology for valorization of poultry manure by obtaining phosphorus-rich biofertilizers"*

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ACTIVE SOLAR DRYER FOR FRUITS AND VEGETABLES, INTELLIGENTLY CONTROLLED

Patent Application No. A-00447 / 2024

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ABSTRACT:

The invention refers to a high-performance, ecological, energy-independent solution for drying food products (vegetables, fruits, pasta) to a higher level of quality and treating them against microbial load, ensuring sanitary safety.

DESCRIPTION:

Drying food increases the storage and consumption period of fruit and vegetable crops, leads to their higher value, increases the share of fruit and vegetable consumption in cold periods, with obvious effects on consumer health. The product is intended for use by small-medium producers of vegetables and fruits, with a productivity of approximately 20-30 kg per batch. For energy and economic efficiency, solar energy, ecological and free, is used for drying. The main source of thermal energy is a flat solar thermal panel. As a secondary source of thermal energy, in cases with low insolation and to power electrical drive and automation equipment, a solar photovoltaic system with batteries is used.

The disadvantages of the existing equipment in the state of the art consist of specific technical solutions for the topic described in these patents but which are not suitable for an equipment on which experimental research for drying fruits and vegetables can be carried out, which would subsequently lead to the creation of competitive equipment.

The technical problem solved by the proposed invention consists in creating an active solar dryer with intelligent control, powered primarily by a flat thermal solar panel, efficient even during periods of low insolation, thanks to the possibility of recovering and storing thermal energy. Additionally, a solar photovoltaic system with storage supports the operation of the automation, offering an ecological and economical drying solution. In addition, the proposed solution combines efficient drying based on solar energy with decontamination treatment based on ultraviolet rays - hereinafter abbreviated as UV - in a single equipment, thus reducing costs and energy consumption.

COMPONENTS:

The system is composed of a metal construction **(1)** made of food-grade stainless steel, inside which is the drying chamber **(2)** containing some guides **(3)** on which are placed some shelves **(4)**, made of stainless metal mesh, on which the slices of fruit and vegetables subjected to the controlled drying process will be placed. The metal construction **(1)** has a thermally insulating door **(5)** and wheels **(6)** for movement. The dryer is primarily powered by a flat thermal solar panel **(7)** and is equipped with a photovoltaic solar system **(8)**, with storage, which supports the operation of the system's automation, offering an ecological and economical drying solution. A fan **(9)** introduces air into the drying chamber **(2)**, additionally heated, if necessary, by an electric heater **(10)** which is automatically controlled depending on the energy requirements of the process and the efficiency of the solar panel.

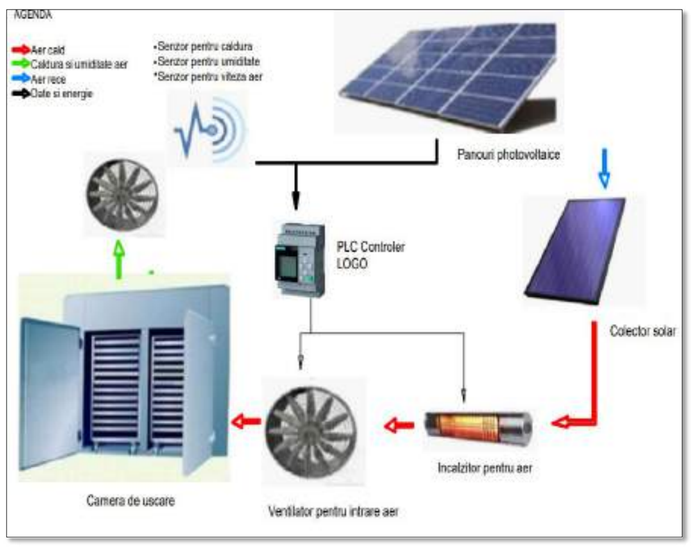


Fig.1 - system architecture

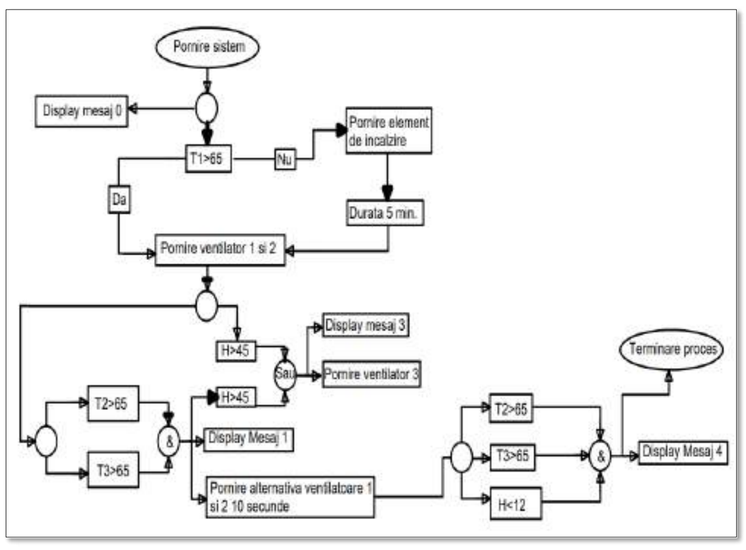


Fig.2 – system flowchart

The photovoltaic system **(8)** has accumulators that provide the necessary electrical energy, all operations being supervised by a programmable controller **(11)**, which adjusts the parameters based on data received from temperature sensors (**12, 13** and **14**) and a software program with parameters specific to the type of dried product. The process includes preliminary stages of product preparation (sorting, washing, preliminary drying, portioning) and ends with a UV treatment in the drying chamber, to eliminate microorganisms, molds or insect eggs, thus maintaining the organoleptic properties of the products without the use of chemicals. The solar thermal panel **(7)** is considered as the main source of thermal energy and is a flat solar thermal panel. Its body **(15)** is made of thermal insulating material, on the upper part a transparent cover **(16)** made of glass or a multilayer foil is mounted, which allows the passage of solar radiation and its preservation. The drying chamber is fitted with UV lamps **(23)** mounted on the side walls, used for the treatment of the products. Ventilation is provided by an exhaust fan **(24)** located on the upper wall, which removes humid air, while temperature **(25)** and humidity **(26)** sensors measure the drying conditions. A transducer **(27)** mounted in the drying chamber **(2)** measures the air velocity, all of which constitute vital information for controlling the drying process. All data collected by the sensors are transmitted to a control unit **(28)**, which automatically adjusts the heating by the resistor **(20)** and the fans (**21** and **24**) to optimize the drying process according to the product specifications (type of fruit or vegetable, size of the samples, desired degree of dryness, drying speed).

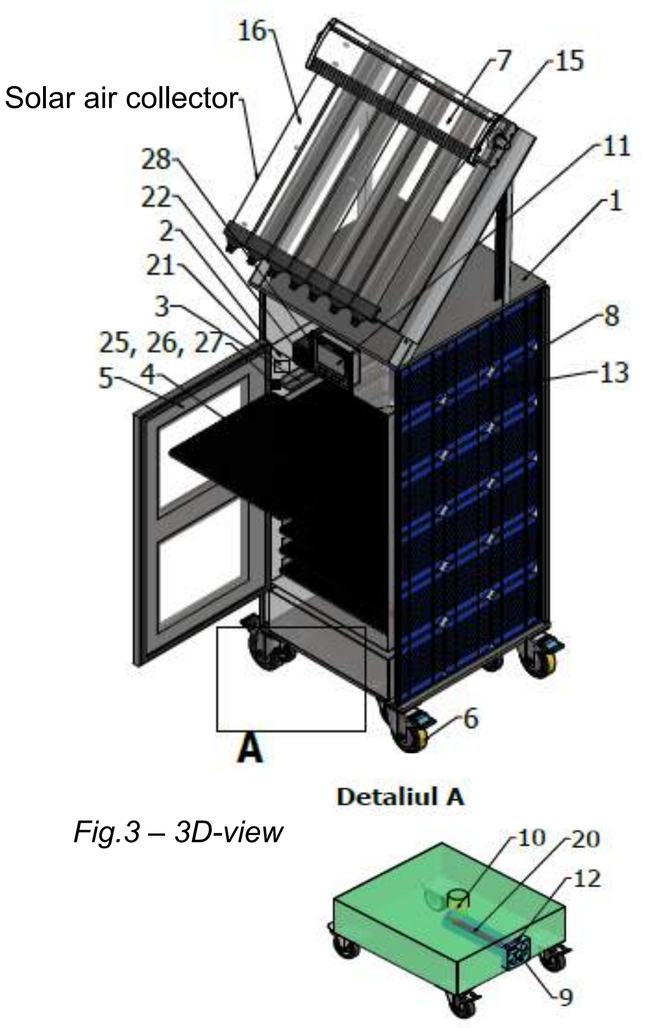


Fig.3 – 3D-view

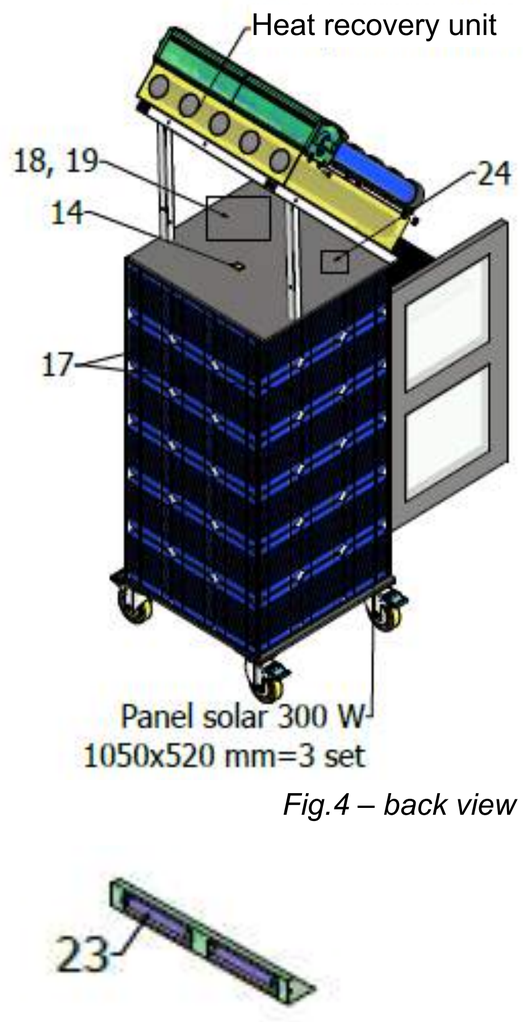


Fig.4 – back view

ADVANTAGES:

- improves the fruit and vegetable preservation processes by introducing UV treatments inside the equipment, preventing preservation problems and increasing the quality of dried fruits and vegetables over a longer period of time;
- the proposed system, with temperature control, humidity, forced convection of hot air and forced extraction of moisture, offers an improved solution compared to the methods already available. The improvements are in terms of reduced energy use, faster drying speed and quality preservation of dried fruits and vegetables.

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VERTICAL FARM WITH INTEGRATED AQUAPONIC SYSTEM

Patent Application No. A-00421 / 2024

VOICEA Iulian, VLĂDUȚ Valentin, MATACHE Mihai, PERSU Cătălin,
CUJBESCU Dan, OLAN Mihai

INMA Bucharest – ROMANIA

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ABSTRACT:

The invention refers to a vertical farm with integrated aquaponic system, which performs the automatic regulation and control of the working parameters - water flow and the duration of time during which the water supply and discharge takes place, the whole process being automated and controlled by a technological process computer.

DESCRIPTION:

Aquaponics combines hydroponics and elements of recirculating aquaculture. Conventional hydroponics requires mineral fertilizers to provide plants with the necessary nutrients, but aquaponics systems use the available water from the fish, rich in fish waste, as nutrients for plant growth. Another advantage of this combination is that excess nutrients do not have to be removed by periodically exchanging fish-enriched water with fresh water, as is practiced in aquaculture systems. The system results in a symbiosis between fish, microorganisms and plants and encourages the sustainable use of water and nutrients, including their recycling. Aquaponics systems are not dependent on the environment or climate, they are located in temperature-controlled spaces and are independent of soil.

The great benefit of aquaponic farms is that the production of vegetables can be up to 8 times higher than the amount of organic vegetables produced on the same surface, but on land (conventional agriculture) and their vegetables have a wonderful taste: they are sweet, tasty and full of aromas.

The disadvantages of the solutions currently on the market are that they represent specific technical solutions for the intended purpose and are not suitable for an equipment on which experimental research for the cultivation of various types of vegetables can be carried out.

The technical problem that the proposed solution solves consists in designing an equipment that allows the adjustment of the working parameters for the cultivation of vegetables in an aquaponic system and the control of these parameters, which can be done either manually (**variant 35A**) or with the help of a process computer (**variant 35B**). It was decided to present **variant 35B.**

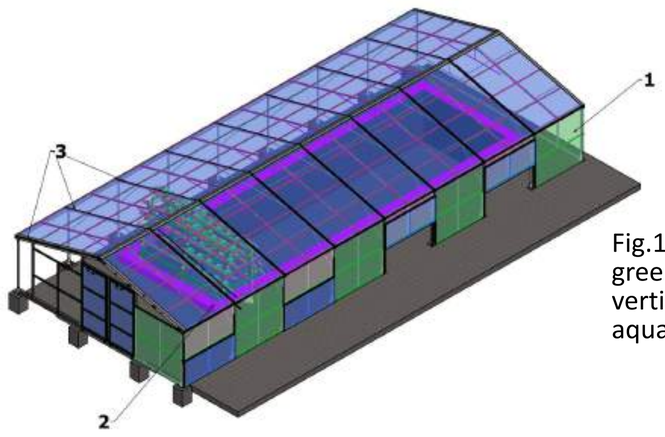


Fig.1 - assembly consisting of a greenhouse protecting a fish tank and a vertical farm with an integrated aquaponic system

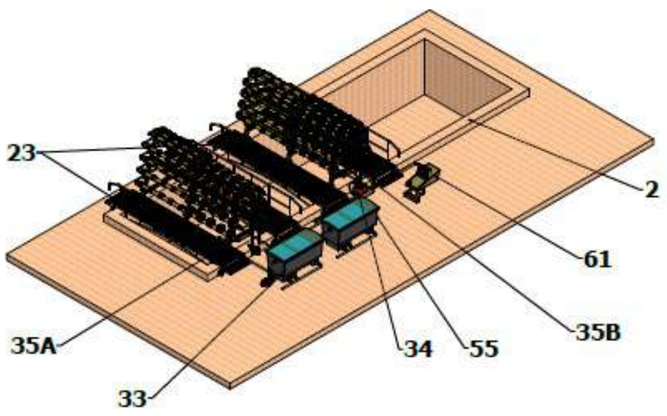


Fig.2 - aquaponics equipment mounted above the fish tank

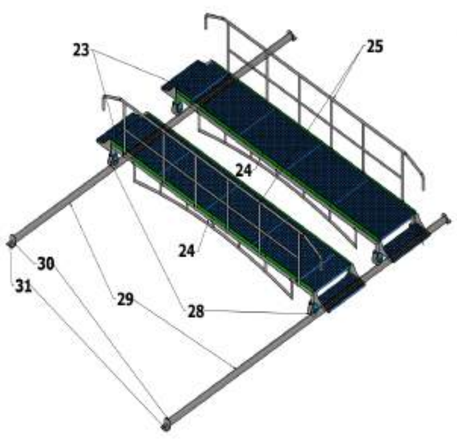


Fig.3 - pedestrian walkway that is mounted over the fish tank and supports the equipment used for aquaponics

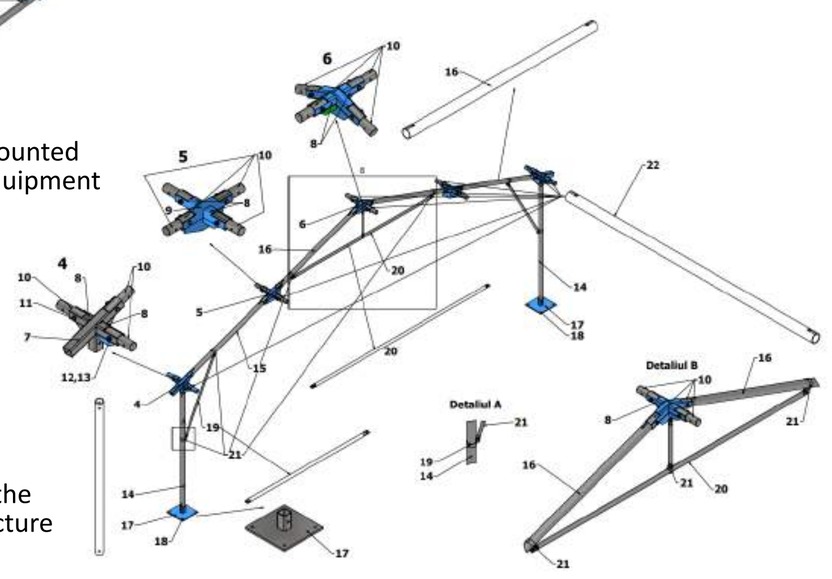


Fig.4 - transverse frame for the greenhouse's supporting structure

COMPONENTE:

The vertical farm consists of a metal structure **(1)** for a greenhouse with a rectangular section mounted above a basin **(2)** where certain species of fish are raised. The metal structure **(1)** contains several transverse frames **(3)** that are made by special joints **(4, 5, 6)** that are built from rectangular pipe elements welded together (**7, 8** and **9**) on which are mounted some cylindrical bolts **(10)** that have flattening on three sides for their assembly and which are fixed with a screw, washer and nut **(11, 12, 13).** The joints **(4, 5, 6)** are used for positioning some elements of round pipes (**14, 15** and **16**) with the help of screws, washers and nuts and will form the resistance structure of the greenhouse.

To automate the production system, this equipment is provided for supply with a liquid circulation pump (**56**) and a one-way valve (**57**) which are connected to the nipple (**58**) of each pair of pipes (**38**), which can separately supply a certain amount of water supplied by the water pump (**34**). For the discharge of each pair of pipes (**38**), a solenoid valve (**59**) is used. The automatic control of the height of the amount of water in the pipes (**38**) can be achieved using electronic sensors (**60**) for water level. To achieve the electronic control of the circulation pump (**56**), the control of the one-way valve (**57**) and the solenoid valve (**59**) an electrical panel (**61**) with a process computer is used, which allows an automatic cycle of water supply and discharge of the **model 35B.**

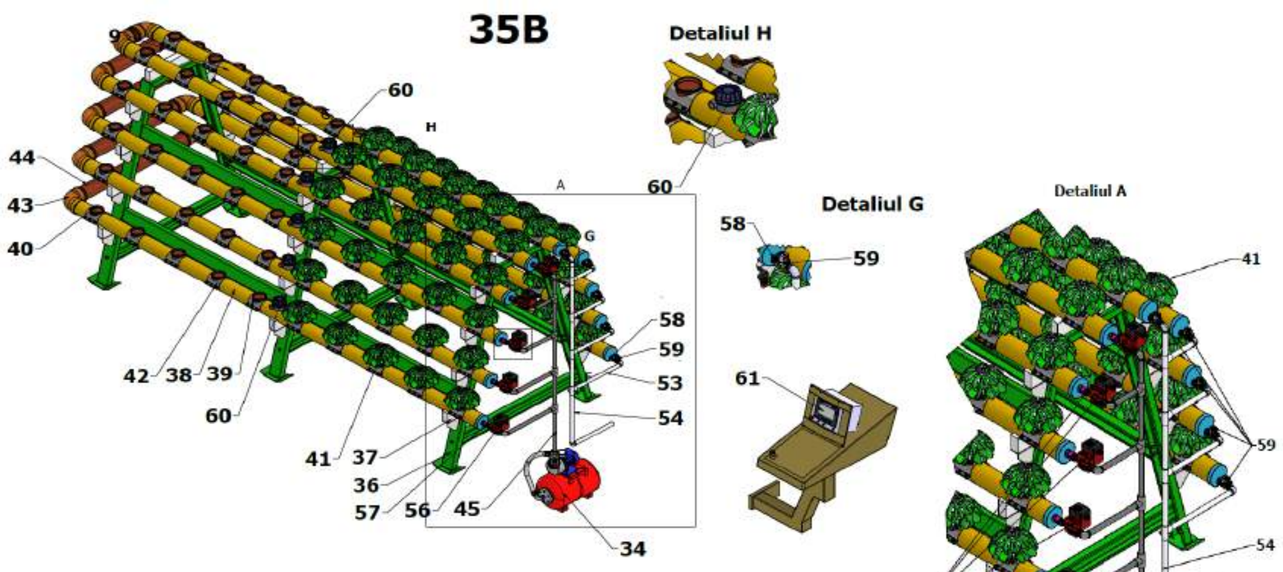


Fig.5 - Vertical farm variant with automatic water flow regulation system **(35B)**

CONCLUSIONS / ADVANTAGES:

- ❑ allows fine adjustments of the water flow and its programming at certain times;
- ❑ the water is filtered before reaching the aquaponics equipment;
- ❑ so that the water contains all the nutrients necessary for plant growth, the system allows the addition of bio fertilizers in a homogenization tank.

ACKNOWLEDGEMENT:

This work was supported by the Ministry of Agriculture and Rural Development of Romania, through the Financing Contract no.: **ADER 25.2.2 / 18.07.2023:** *"Vertical aquaponic farm adapted to current climate change"*

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ROBOTIC ARM FOR UNDERWATER DRONES

Patent Application No. A-00420 / 2024

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ABSTRACT:

The invention presents an innovative high-performance solution used for researching the environment for the development of aquatic resources and carrying out operations such as taking samples from the bottom of the water or removing toxic waste.

DESCRIPTION:

The disadvantages of the equipment available on the market are that they offer specific technical solutions for the intended purpose but are not suitable for equipment that can be used for experimental research on the development environment of aquaculture bioresources.

The technical problem that the proposed solution solves consists in the design of a robotic arm with high clamping force that is simple to construct but effective in various underwater activities, consisting of a mechanical construction that is mounted on the lower part of an underwater drone and has two clamping arms that are actuated by an electromagnet for the clamping phase and by a helical spring so that they are permanently unfastened.



Fig.1 - general view of the robotic arm mounted under an underwater drone

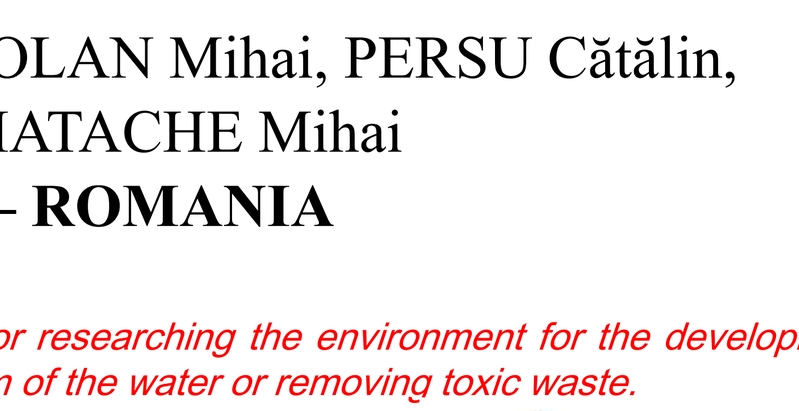


Fig.2 - three-dimensional view of the clamping module in the robotic arm construction

COMPONENTS:

The robotic arm for underwater drones is composed of a mechanical construction **(1)** that is mounted on the lower part of a drone **(2)**, known per se, using screws **(3)**. The robotic arm **(1)** contains a central axis **(4)**, provided with two ears **(5)** and **(6)**, in which clamping arms **(7)** and **(8)** are mounted and a cylindrical pin **(9)** with an elastic safety **(10)** that positions the clamping arms **(7)** and **(8)** on the central axis **(4)** that slides axially in a housing **(11)**. The housing **(11)** has two sets of clamping wings **(12)** and **(13)** in which cylindrical pins **(14)** and **(15)** are mounted for positioning the clamping arms **(7)** and **(8)** in the two guide channels **(16)** and **(17)**.

To achieve the permanent opening of the clamping arms **(7)** and **(8)**, a helical spring **(18)** is used which is appropriately sized and which is mounted on the central shaft **(4)** which is slidable and has a frontal support in the housing **(11)**. The central shaft **(4)** has a threaded portion on which a piston **(19)** is mounted which has a locking screw **(20)** and a sealing gasket **(21)**. The entire assembly is mounted in a support **(22)** which has a base **(23)** and, with the help of screws **(24)**, is mounted in the lower part of the underwater drone **(2)**, known per se. Inside the support **(22)** a polyamide bushing **(25)** and an electromagnet **(26)** are integrally mounted. The electromagnet **(26)** is of industrial quality, fully encapsulated, with a holding force of 25 kg/250 N, 5V output, dimensions 40x20x20 mm.

The support **(22)** has on the sides two wings **(25)** and **(26)** for the assembly of housings **(27)** and **(29)** containing a battery **(29)**. The battery **(29)** is of the Li-Ion type with a capacity of 5200 mAh / 74.9 Wh, maximum voltage 14.4 V.

To close the pulling arms **(7)** and **(8)**, when necessary for taking samples from the bottom of the water or removing toxic waste, the electromagnet **(26)** will be operated with an electric current, which will attract the cylindrical piston **(9)** mounted solidly on the central axis **(4)**, which will also determine the axial movement of this central axis **(4)** and, through the cylindrical bolts **(14)** and **(15)**, will act on the gripping arms **(7)** and **(8)** and thus their closure will occur.

The electrical control for the robotic arm will be carried out from the drone's control panel.

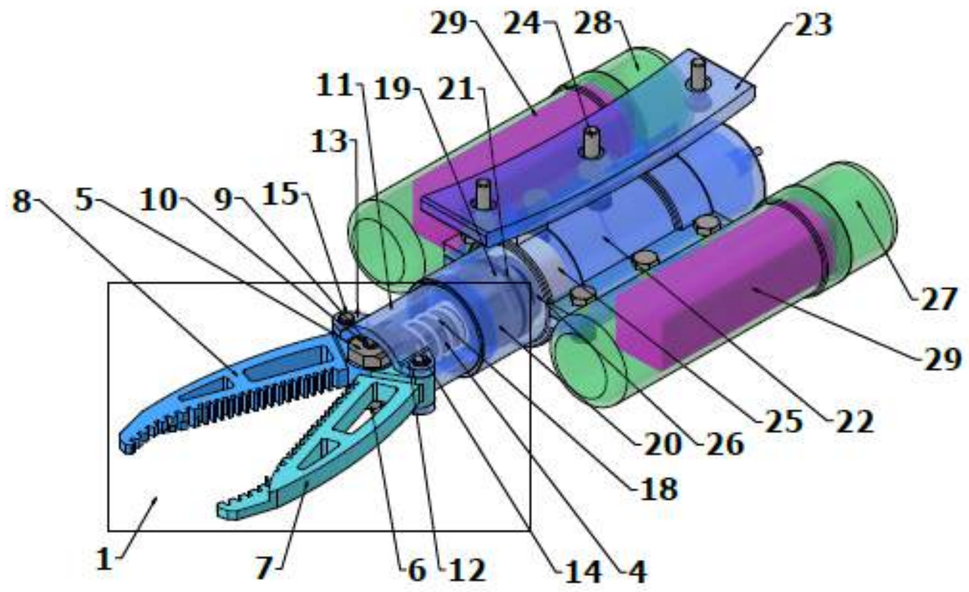


Fig.3 – 3 dimensional view of the robotic arm

Fig.4 - Effort Diagram – Main Effort

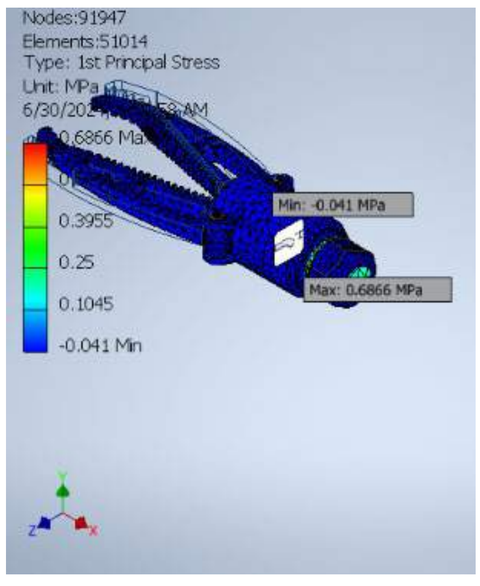
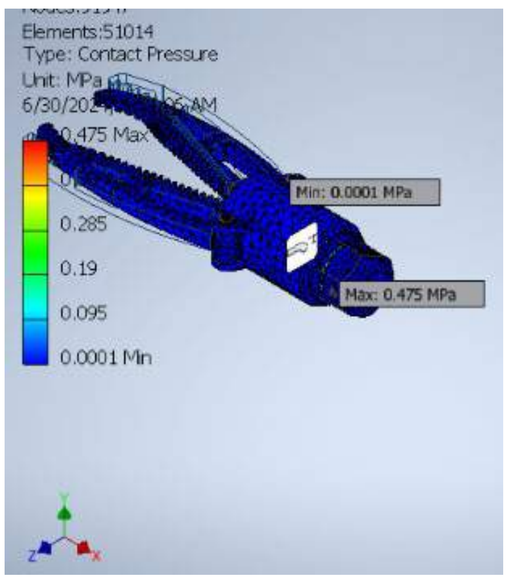


Fig.5 - Effort Diagram – Contact pressure



ADVANTAGES:

The robotic arm for underwater drones has the following advantages:

- ❑ it achieves a high clamping force, up to 100N;
- ❑ it has a high energy efficiency;
- ❑ it is a compact and highly reliable construction.

ACKNOWLEDGEMENT:

This project was supported by the Ministry of Research, Innovation and Digitalization, through the NUCLEU 2023-2026 Funding Program, PN 23 04 01 03 "Intelligent underwater system (robot) for the protection of life, health and the development environment", Contract no.: 9N/01.01.2023

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EQUIPMENT AND METHOD FOR SOIL TILLAGE AND GRASS SEEDING

Patent Application No. A-00313 / 2024

MARIN Eugen, ANGHELACHE Dragoș-Nicolae, DUMITRU Dragoș-Nicolae,
MANEA Dragoș, PRISACARIU Elisabeta, HARABAGIU Alin-Nicolae

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ABSTRACT:

The invention refers to an equipment and method for tilling the soil and sowing herbs, intended for fertilizing the intervals between rows in orchards, vineyards, nurseries and hop plantations in a single pass, or successive passes, depending on the agrotechnical requirements and the conditions pedoclimatic.

DESCRIPTION:

The weeding of the intervals between rows in orchards, vineyards, nurseries and hop plantations contributes to the conservation and enhancement of the biodiversity of plantations and the surrounding environment, as well as to the protection and reconstruction of habitats or species, the increase of water reserves in the soil, including the maintenance and creation of characteristics of the landscape or non-productive areas, in the context of climate change.

The known methods for weeding the intervals between rows in orchards, vineyards, nurseries and hop plantations and the equipment for their implementation are as follows:

- ***the plough-sow system through several operations***: first, the main soil work with the plow (ploughing) is carried out, then the pre-sowing cycle with disc harrows / seed bed preparation combines (surface levelling, cultivation, discus and soil compaction) and finally, sown in dense rows with commercial seeders;
- ***the system with minimum works***: it is executed in two operations: the main work of the soil with the plow (plowing) is executed separately, and the preparation of the germinal bed and sowing in thin rows are done with complex aggregates;
- ***the plowing-sowing system in one operation***: it is executed with an aggregate composed of organs for processing the soil, devices for sowing in thin rows that can also be equipped with devices for compacting the soil on the sown row.

The disadvantages of the equipment and methods existing in the state of the art, consist in the fact that they are characterized by the low efficiency of the quality of soil processing, the inability to achieve the sowing of grass seeds over the entire working width, followed by a lower coverage and a weaker contact of seeds with soil, which affects growth, development and reduces crop yield.

The technical problem that the proposed solution solves, consists in the creation of an equipment and a method of its use, which combines tillage, the transverse distribution of seeds along the entire working width, the uniform spreading of seeds close to the ground on the width work, incorporating the seeds into the soil, compacting and rolling the soil particles over the seeds for better contact between the soil and the seeds during germination, in order to improve the quality of the work of interrow spacing in orchards, vineyards, nurseries and plantations hop.

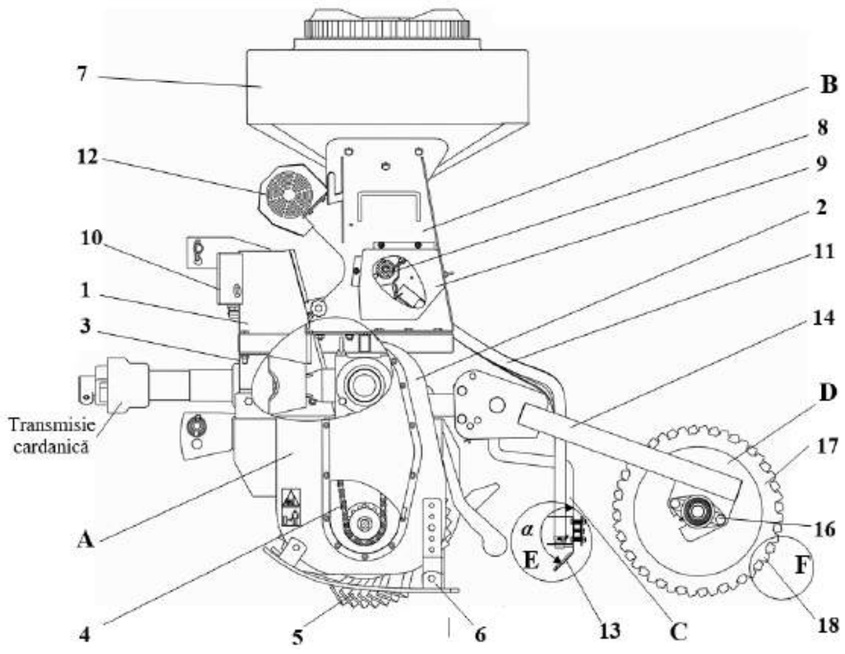


Fig.1 *–side view*

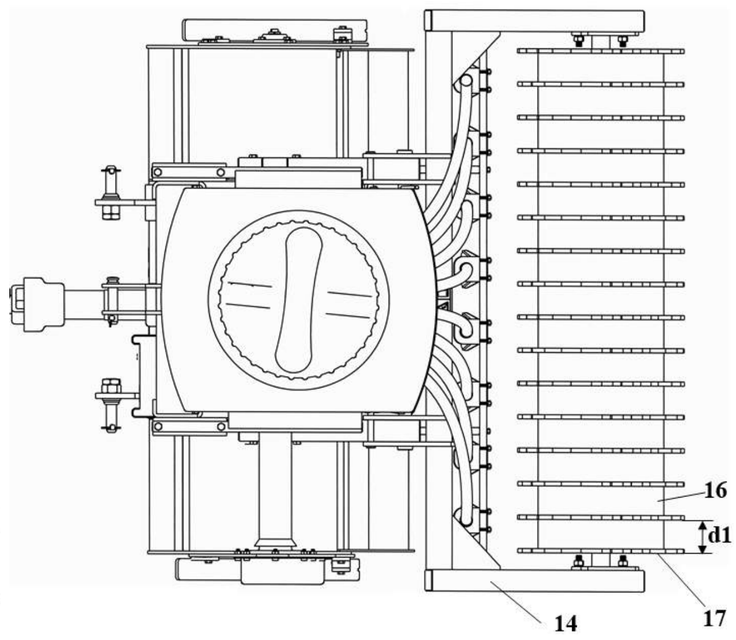


Fig.2 *– Top view*

COMPONENTS:

The soil tillage and grass seeding equipment, according to the invention, is made up of a machine (**A**), which includes a frame (**1**) for attachment to the tractor, for moving in work at speed (**vm**), followed by a casing (**2**) made of sheet metal, a conical reducer (**3**) operated from the power take-off of the tractor that generates a constant angular speed of ω = 540 rpm. through a known cardan transmission, a chain transmission (**4**) with a transmission ratio that achieves a constant angular velocity ω = 96 rpm. of a horizontal rotor with knives (**5**) and skids (**6**) for adjusting the working depth 4...6 cm greater than the sowing depth, another machine (**B**) for sowing grass seeds, which is composed of a hopper (**7**), a distribution device with a cylinder (**8**) electrically driven by a 12 Vdc electric motor (**9**), a control device (**10**) for making the sowing rules and some flexible tubes (**11**) for transporting the seeds in the air current created by a fan (**12**), a seed spreading system (**C**) made up of some deflectors (**13**) inclined in the working direction at an angle (**α**) provided with some ribs (**a**) arranged in the form of fans with an angle (**β**) creating some channels (**b**) for the transverse distribution and uniform scattering in the air current of the seeds and a system (**D**) for embedding the seeds and rolling the soil over the seeds, consisting of a frame (**14**), some bearing housings (**15**) and a rotating cylindrical drum (**16**) on which are mounted transversely at distances (**d1**) some plates (**17**) which have arranged radially in the direction of rotation some ribs (**18**) formed by a recess (**c**) of radius (***R***) for driving the seeds, a beak (**d**) for burying the seeds, followed by a semi-circular projection (**e**) of the same radius (***R***) for easy settling of soil particles above the seeds.

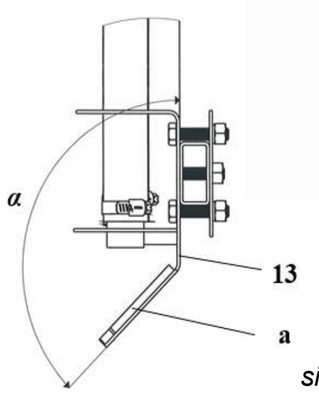


Fig.3 *- detail E, side view of the deflector*

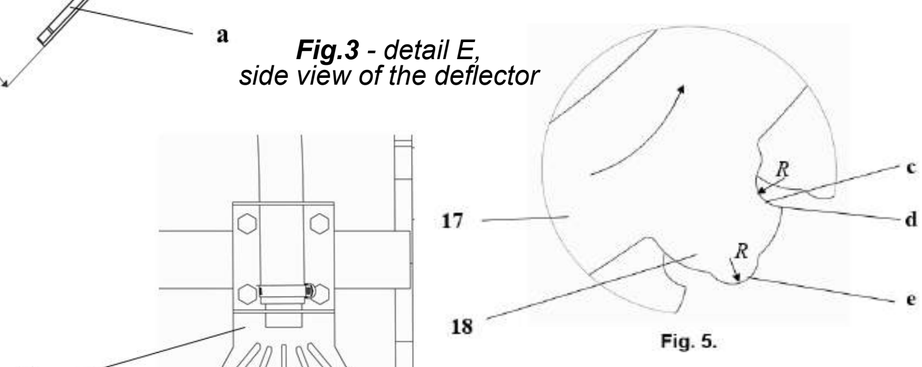


Fig. 5.

Fig.5 *– detail F*

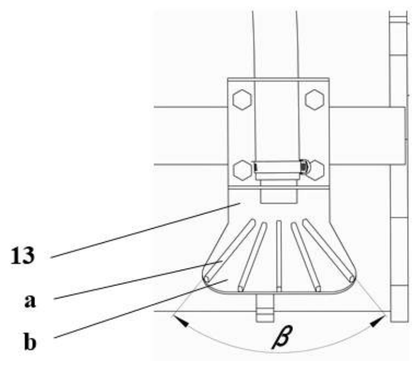


Fig.4 *– front view of the deflector*

OPERATION:

By moving the tillage and grass seeding equipment in the field, the tractor to which the machine (**A**) is attached, sets the power take-off in motion with a constant angular speed of ω=540 rpm, which, in connection with the known cardan transmission, the bevel reducer (**3**) and the chain transmission (**4**) rotate the horizontal rotor (**5**) with a constant angular speed of ω=96 rpm, so that the knives detach the slices of soil which they train in a rotational movement, projecting them into a casing (**2**) made of metal sheet, producing the shredding of the soil, which remains in a loose and levelled layer 4...6 cm greater than the depth of sowing regulated by the skids (**6**). Constant angular speed in the amount of ω=96rot./min. of the horizontal rotor with knives preserves the degree of shredding of the soil throughout the work, thus avoiding the achievement of an excessive shredding due to which the danger of diminishing the humus in the soil appears. The device (**B**) achieves uniform transverse distribution of the grass seeds in the air current created by the fan (**12**) through the flexible tubes (**11**), when the cylinder distribution device (**8**) is electrically driven by the electric motor (**9**) of 12 Vdc through the control device (**10**). The seeds arriving in the system (**C**) are spread evenly in the air stream, close to the ground, over the entire working width, by the deflectors (**13**), which are inclined at an angle (**α**) in the front, in the working direction, due to the existence of the channels (**b**) formed by the ribs (**a**) arranged in the form of fans with the angle (**β**). Once on the ground, the seeds are picked up by the system (**D**) which drives them and incorporates them into the soil, after which it rolls the soil above the seeds, because the plates (**17**) are mounted transversely on the rotating cylindrical drum (**16**) at distances (**d1**) which have the ribs (**18**) formed by the recess (**c**) of radius (***R***), the beak (**d**) and the semi-circular projection (**e**) of the same radius (**R**).





ADVANTAGES:

- a less aggressive tillage of the soil, so as not to reduce the content of humus and macroelements in the soil;
- greater accuracy and uniformity of close-to-ground seeding of grass seeds;
- better incorporation of grass seeds into the soil and rolling of the sown surface;
- a successful use in interrow work in orchards, vineyards, nurseries and hop plantations.

ACKNOWLEDGEMENT:

This work was supported by the Romanian Ministry of Research Innovation and Digitalization, through the **Funding Contract: No. 9N/01.01.2023** (no. 451623 / 30.12.2022) Object of the Core Program "*Multidisciplinary research in the field of digital agriculture for economic competitiveness and sustainable development, in the context of climate change*". (SUSTAIN-DIGI-AGRI code PN 23 04). **Project #: PN 23 04 02 03:** *"Innovative technology to fertilize the interval between rows of vines and fruit trees to avoid soil structure degradation"*

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INNOVATIVE EQUIPMENT FOR CUTTING TREE ROOTS

Patent Application No. A-00251 / 2024

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INMA Bucharest – ROMANIA

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ABSTRACT:

The invention refers to an innovative equipment for cutting the tree roots, provided with a system for monitoring and regulating the cutting resistance force.

DESCRIPTION:

Worldwide, there are various companies manufacturing different equipment for cutting tree roots which, in general, have similar constructions, these partially or fully performing the horizontal extension, tilting of the knife, adjusting the working depth of the cutting knife device, but not having control over the cutting resistance of the roots.

The main **disadvantages** of these pieces of equipment are:

- there is no control of the cutting resistance force, which can vary within quite wide limits due to the inhomogeneity of the terrain and the stage of development of the tree roots, with major implications for the failure of the tractor + equipment system within the limits of the tractor's optimal traction force work and the admissible resistance to damage of the equipment;
- if the equipment blade encounters areas of terrain with high cutting resistance, uncontrolled use may result in bending or breaking of the blade or other equipment components;
- as a result of the previously mentioned disadvantages, the work of cutting tree roots is not always carried out at optimal energy indices, fuel consumption and financial expenses can often be unreasonably high.

The technical problem that the proposed solution solves consists in creating an innovative equipment for cutting the roots of trees provided with a system for monitoring and regulating the force of resistance to cutting the roots.

COMPONENTS:

The equipment consists of a welded frame (**1**) composed mainly of pipes and resistance plates and a three-point system for coupling to the tractor, an arm (**2**) made of welded profiles, equipped with a joint, for coupling to the welded frame (**1**), a sliding pipe (**3**), equipped with elements for holding the cutting knife and a drive cylinder, an assembled cross member (**4**), made of welded profiles, which slides in the frame (**1**), a hydraulic installation (**5**), consisting of a distributor with three working sections with solenoid valves, three hydraulic cylinders for operating the arm (**2**), sliding pipe (**3**) and assembled crossbar (**4**), nipples, valves and connecting hoses, a bolt (**6**), for coupling the central tie rod from the tractor equipped with a safety element, a cutting knife (**7**), made of Hardox 500 manganese steel, which is fixed to the sliding pipe (**3**) by means of Grower screws, nuts and washers, not positioned, three support legs (**8**), for supporting the equipment at a stationary moment, mounted on the welded frame (**1**) by means of handle bolts (**9**), ballast plates (**10**), to achieve the necessary force to press the knife in the soil, a system for monitoring and regulating the resistance to cutting roots, consisting of a force transducer (**11**), mounted on the knife (**7**), a force amplifier (**12**), a PLC micro-controller (**13**), an operating terminal (**14**), the tractor's accumulator battery (**15**), a bipolar fuse (**16**) - positions (**12-16**) being mounted on the tractor from the aggregate - and electrical connecting cables (**17**).

ADVANTAGES:

- knowing in real time the values of the force of resistance to cutting tree roots and adjusting it within the limits imposed by the breaking resistance of the cutting knife and the traction force of the tractor;
- protecting the functional elements of the equipment against possible accidental degradation;
- achieving optimal fuel consumption and avoiding additional financial expenses for the repair of the equipment, in case of its accidental damage.

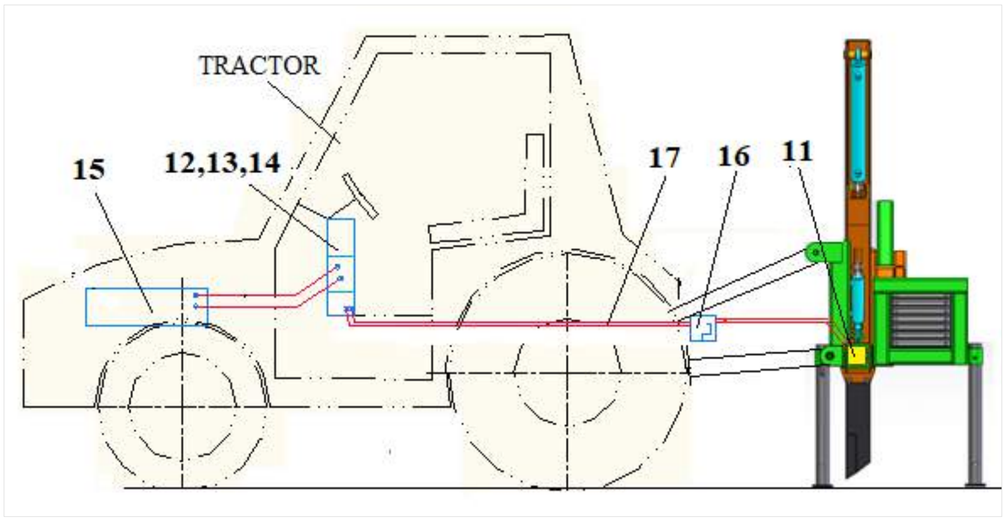


Fig.1. – *Innovative equipment for cutting tree roots – front view*

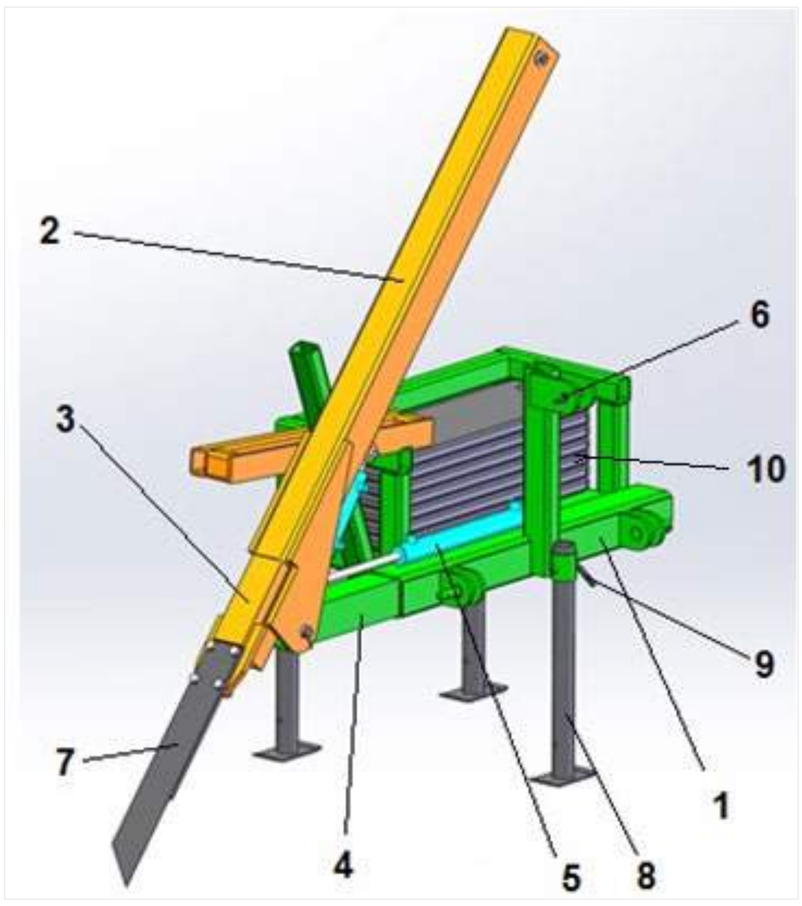


Fig.2. – *Innovative equipment for cutting tree roots – perspective view*



ACKNOWLEDGEMENT:

This work was financed by the Ministry of Research, Innovation and Digitalization, Financing Contract of *Nucleu* Program #9N/01.01.2023 (#451623/30.12.2022) "*Multidisciplinary research in digital agriculture for economic competitiveness and sustainable development in the context of climate change*". (SUSTAIN-DIGI-AGRI code PN 23 04) – Project #: PN 23 04 01 05 -"INNOVATIVE TECHNOLOGY FOR THE MAINTENANCE OF FRUIT PLANTATIONS"

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PLANT GROWTH SIMULATION SYSTEM

Patent Application No. A-00252 / 2024

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IONESCU Alexandru, TĂBĂRAȘU Ana-Maria
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ABSTRACT:

The invention relates to a plant growth simulation system, intended to simulate the growth of crop plants (vegetables, leafy plants, bulbous vegetables) under different conditions, from optimal to extreme, in order to open up new ways of crop management and growth of plants in the current and predicted climate conditions for the near future, taking into account the increase in the resilience of agriculture to climate change.

DESCRIPTION:

The plant growth simulation process involves creating and maintaining/modifying set growth conditions and monitoring and evaluating plant germination and development under the given conditions.

Worldwide, there is a series of patented equipment and methods used to simulate plant growth. However, a **major disadvantage of the existing equipment** on the market is both their lack of versatility to be used to simulate complex environmental conditions, as well as the lack of adequate control of all the factors that affect the growth of crop plants.

Another major disadvantage of the presented equipment/methods is that they do not offer the possibility of supervision throughout the simulation process, and in the simulation and control systems there is no total control over the entire process, from germination to maturity plants.

The technical problem, solved by the invention, consists in creating a system for simulating the growth of plants through which to simulate and vary the climatic conditions at predetermined values, under the conditions of an adequate control of the growth parameters and a continuous monitoring and supervision of the entire process - of at sowing / planting, germination, development and until maturity of the plants.

The growth simulation system is divided into **3 distinct sections (chambers)** as follows: the **aerial parts chamber,** where the plants develop, the **root chamber,** where the growth vessels are placed which are filled with growth substrate and where the plant roots develop connected to the aerial parts chamber through the plant development openings and the **collection chamber,** where the water / mixture of water and nutrients / plant protection that is not consumed by the plant is collected and washed from the soil into the collection tray under which the control part is located and system control, tanks and irrigation pump.

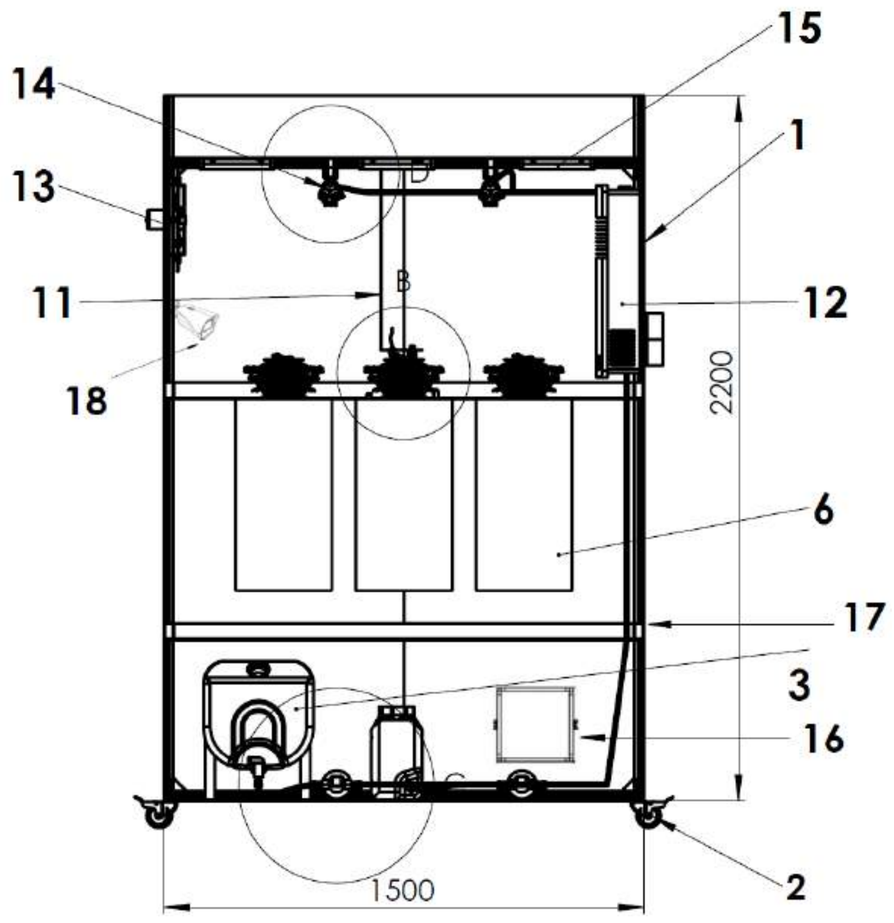


Fig.1. – *Plant Growth Simulation System – main view*

OPERATION:

The plant growth simulation system works as follows:

The growth vessels in the root chamber (**6**) are filled with substrate; the characteristics of the used substrate are determined; the characteristics of the water / water-nutrient mixture used are determined; the water tank in the irrigation system (**3**) is filled with water, the nutrient tank (**4**) is filled with nutrient solution / plant protection; the crops to be studied are sown / planted; the parameters for irrigation / fertigation, humidity, temperature, ventilation, lighting are set; the time-lapse camera is set; the simulation process is started; parameters and plant evolution are monitored daily; data during monitoring is recorded and analysed.

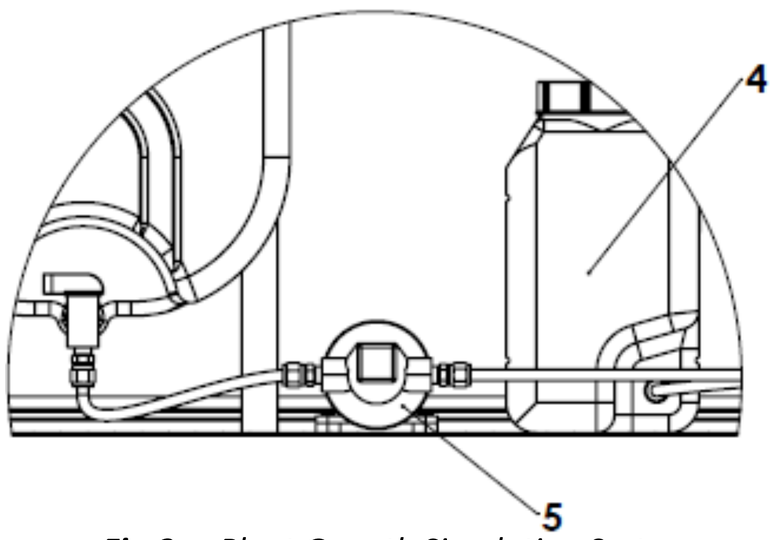


Fig.2. – *Plant Growth Simulation System - fertigation system detail*

COMPONENTS:

The system consists of the following main components: support frame (**1**), wheels for easy movement (**2**), water basin for irrigation (**3**), tank for nutrients/plant protection substances (**4**), pump for irrigation / fertigation (**5**), growth vessels (**6**), opened at the top to allow the plant to grow in the chamber of the aerial parts and having small openings at the bottom to evaluate the interaction between water / water-nutrient-substance mixture plant protection, soil temperature sensor (**7**), humidity sensors (**8**), air temperature sensor (**9**), opening for plant development (**10**), air sensor support (**11**), heating assembly (**12**), fan (**13**), irrigation / fertigation system (**14**), lighting system for simulating plant germination and growth in different periods and light intensities (**15**), control and monitoring system (**16**), collection tray (**17**), time-lapse camera (**18**).

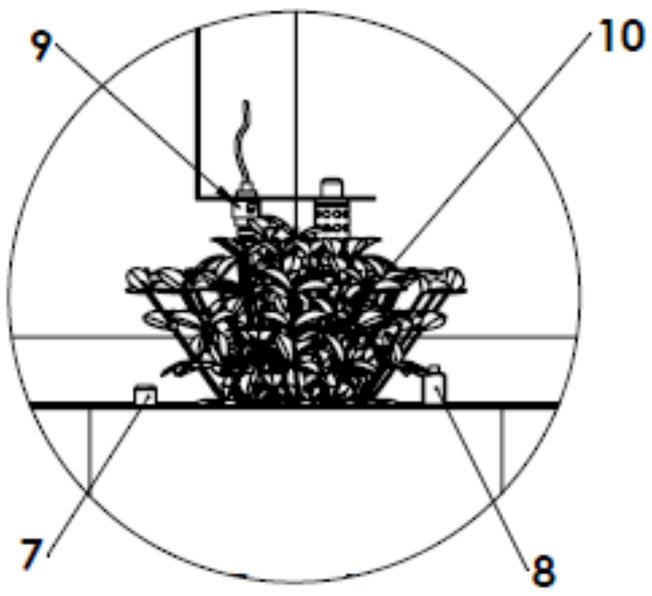


Fig.3. – *Plant Growth Simulation System - plant growth pot detail*

ADVANTAGES:

- ❑ the possibility of simulating the entire process from germination to plant maturity;
- ❑ simulation and monitoring of both aerial parts and plant roots and the interaction between the plant and the substrate used;
- ❑ easy mobility and high versatility, being able to simulate the growth of several types of plants, using several types of substrates;
- ❑ reduced electricity consumption.

ACKNOWLEDGEMENT:

This project was supported by the Romanian Ministry of Research Innovation and Digitalization, through the project: *"Intelligent plant growth systems under controlled environmental conditions"* – PN 23 04 01 04– Ctr. 9N/01.01.2023 and through Program 1 - Development of the national research-development system, Subprogram 1.2 - Institutional performance - Projects for financing excellence in RDI, Contract no. 1PFE/30.12.2021

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INTELLIGENT SYSTEM FOR HIGH PRECISION APPLICATION OF LIQUID PLANT PROTECTION PRODUCTS

Patent Application No. A-00212 / 2024

GHEORGHE Gabriel-Valentin, GĂGEANU Iuliana, PERSU Cătălin,
TĂBĂRAȘU Ana-Maria

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ABSTRACT:

The invention refers to a system for the high-precision application of plant protection liquid products, mounted on an agricultural drone for carrying out phytosanitary treatments in field crops, in order to precisely apply them and reduce the amount of phytosanitary substances applied.

DESCRIPTION:

Currently, in the case of classic drones, the application of the treatment is done continuously, regardless of whether there are problems in the crop or not, regardless of the nature of the phytosanitary product to be applied to the plant or the fact that it must be applied in a row, between plants, or between rows, thus wasting large quantities of substances on the soil or on the cultivated plants.

The main disadvantage of current equipment is that this equipment does not have an integrated intelligent system for detecting plants and applying liquid plant protection substances with precision, resulting in a huge waste of PPP (Plant Protection Products) and does not achieve uniform spraying of the plants below them due to the application over the entire surface and from a fairly high height above the plant because in all drones the nozzles are above the landing gear and not below.

The technical problem solved by the proposed solution, according to the invention, consists in creating an intelligent system for the high-precision application of liquid plant protection products mounted on an agricultural drone for carrying out phytosanitary treatments in field crops, so as to allow for the precise treatment of extensive plant surfaces in areas identified with problems.

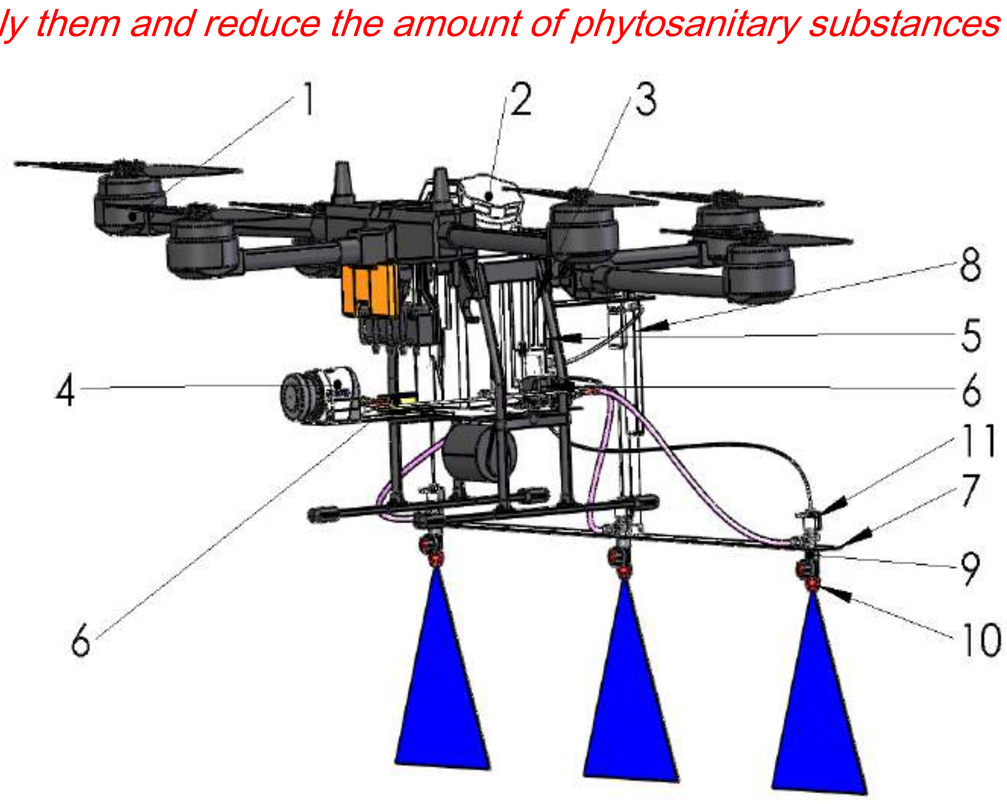


Fig.1. – *Aerial drone with intelligent system for high-precision application of liquid plant protection products.*

COMPONENTS:

The intelligent system for high-precision application of liquid plant protection products is mounted on an agricultural drone **(1)** equipped with a tank **(2)** for plant protection substances and a battery for driving the motors **(3)**. It is equipped with a radar system for precise positioning in the field and for maintaining ground guard. The intelligent system for high-precision application of liquid plant protection products consists of a Lidar sensor **(4)**, which can measure the distance from the sensor to the plant, an Arduino UNO board **(5)**, which will initiate the commands of all components. From the tank **(2)**, using a 12VDC electric pump **(6)**, the phytosanitary substances are pumped at a pressure of up to 5.5 bar to a spray ramp **(7)**, adjustable using an electric actuator **(8)** on which three nozzle holders **(9)** are mounted, equipped with calibrated spray nozzles **(10)**, and three solenoid valves **(11)**, all powered by two Tattu Plus 16000 mAh 44.4V 25C 12S1P LiPo batteries **(12)**.

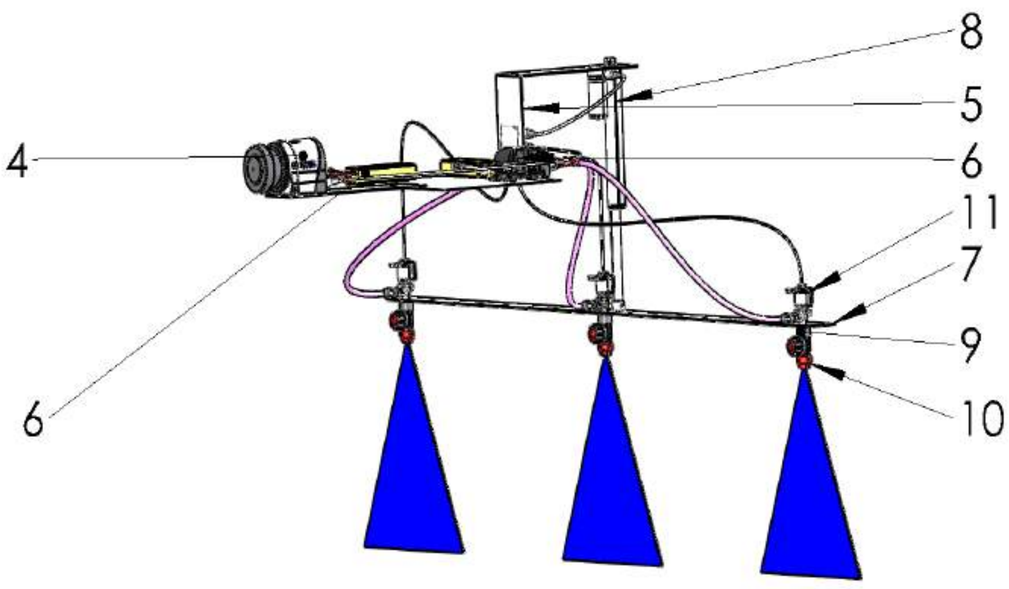


Fig.2. – *Intelligent system for high-precision application of liquid plant protection products.*

OPERATION:

The drone **(1)**, with the tank **(2)** loaded with liquid phytosanitary substances, with the battery **(3)** charged and the electric servomotor **(8)** closed, will take off operated by remote control and, in manual flight mode with the drone height set and displayed, will move over the targeted agricultural land with the camera turned on, to position it according to the applied substances, if they must be applied to the plant or to weeds. After the Lidar sensor **(4)** has detected a safe flight height, depending on the crop, the electric actuator **(8)** acts to move the ramp **(7)** under the landing gear and to bring the nozzles **(10)** together with the nozzle holder supports **(9)** closer to the intended target. The Lidar sensor **(4)** is set at a height lower than the flight height to detect the crop. When a plant is detected by the Lidar sensor, the Arduino Uno control system **(5)** activates the pump **(6)** and the solenoid valve **(11)**, depending on the area where the plant was detected by the Lidar sensor. All components are powered by batteries **(12)**.

Thanks to the Lidar sensor **(4)** and the Arduino Uno intelligent control system **(5)**, it will be able to detect crop plants by setting the reading distance of the Lidar sensor according to the height of the crop and will apply phytosanitary treatments with precision through the solenoid valves **(11)** mounted before the nozzles **(10)**.

ADVANTAGES:

- ❑ thanks to the system using a Lidar sensor and the intelligent control system, upon reaching a safe flight height, the electric actuator will act and position the spray boom closer to the target;
- ❑ thanks to the Lidar system and the intelligent control system, it will be possible to detect crops by setting the Lidar reading distance in the system according to the height of the crop;
- ❑ precise application of phytosanitary treatments through solenoid valves mounted before the nozzles operated by the Arduino Uno system, using the Lidar sensor;
- ❑ the possibility for farmers to treat targeted agricultural crops with phytosanitary substances only in areas identified as requiring phytosanitary treatment, without using ground machinery, which compacts the land and destroys part of the crops.

ACKNOWLEDGEMENT:

This project was supported by the Ministry of Research, Innovation and Digitalization of Romania, through the Financing Contract: No. 9N/01.01.2023 (no. 451623 / 30.12.2022). Object of the Basic Program: *"Multidisciplinary research in the field of digital agriculture for economic competitiveness and sustainable development, in the context of climate change"*. (SUSTAIN-DIGI-AGRI code PN 23 04) Project: PN 23 04 02 01: *"Innovative technology for the production of biofertilizers aimed at restoring soil biodiversity and mitigating the effects of drought on agricultural lands"*.

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METHOD FOR POND FARMING OF FISH PRODUCERS OF CYPRINIDS

PATENT NUMBER: MD 1646 / 2022.10.31

AUTHORS: Elena ZUBCOV, Natalia ZUBCOV, Laurenția UNGUREANU, Nina BAGRIN, Liviu-Dan MIRON, Denis BULAT, Petru CIORBA, Lucia BILEȚCHI, Nadejda ANDREEV

APPLICATION FIELDS: Fish farming.

AIM: Stimulate the development of producers (brooders) of cyprinids - carp and phytophagous fish - raised in fish ponds.

SOLUTION: administration of cobalt (II) chloride at a concentration of 15-25 µg/kg of fish feed in the feed of brooders during autumn and spring.



Adult carp.
Photo : Institute of Zoology

Improve the fish development by:

1) Increase in the percentage of viable and healthy larvae and fry by 15-25%;
2) Synchronize the gonadal development;
3) Increase in the percentage of hatchlings by 12-20%;
4) Raise the number, biomass and growth rate of viable summer fry by 20-30%;
5) Reduce the incidence of malformations in fish larvae.

ADVANTAGES: It is a simple procedure with minimal expenses that can be applied in both small private fish farms and enterprises with complex cycle including fish breeding at the industrial level.

IMPLEMENTATION: Fish farms Ghidrin LTD (act from 4 August 2022) and FISHER MAX LTD (act from 10 December 2024), Republic of Moldova.



Prepared solution of cobalt (II) chloride hexa-hydrate.
Photo: Institute of Zoology

ACKNOWLEDGMENTS:

The work was done within the project 20.80009.7007.06 (State Program 2020-2023, Republic of Moldova) and international project 2 SOFT/1.2/47 "Team up for healthy fish in aquaculture systems of the Prut river basin" – TeamUp HealthyFish, funded in the frame of the EU JOP Romania-Republic of Moldova 2014-2020. The beneficiaries of TeamUp HealthyFish – Institute of Zoology (Republic of Moldova) and Iasi University of Life Sciences (Romania), project website http://teamup-healthyfish.com/. Patent implementation was carried out in 2024 within the research subprogramme 010701 of the Moldova State University.

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HR EXCELLENCE IN RESEARCH

METHOD FOR ASSESSING THE SENSITIVITY OF CERVIDS TO STRESS FACTORS

PATENT: MD1667 Y / 2023.01.31

AUTHORS: RUSU Ştefan, ERHAN Dumitru, SAVIN Anatol, TODERAŞ Ion, ZAMORNEA Maria, CHIHAI Oleg, RUSU Viorelia, GOLOGAN Ion

APPLICATION FIELDS: Veterinary Medicine, Parasitology, Hunting wildlife. | **A**

AIM: The method for assessing the sensitivity of cervids to stress factors is recommended for selection of the cervids with the increased resistance to infestation.

SOLUTION: The invention refers to parasitology, describing a procedure for sampling and selecting cervids according to the type of stress-reactivity - a basic element in the formation of arasitlivestock with their high potential in the prophylaxis and treatment of posis, which can be used in various natural and man-made biotopes, zoos and hunting farms specialized in cervids rearing.

ADVANTAGES: The described procedure of sampling avoids traumatisation and excessive stressing out of the deer, through sedating the wild animals, and allowing selecting herds of stress-resistant deer which possess a high resistance to the parasite infestation, increased adaptation potential and survival in nature; it reveals a high therapeutic efficacy and leads to minimal deworming expenses. Applying this procedure allows avoiding supplementary anti-parasitic treatment of the stress-resistant deer so reducing negative impact on the animals and the environment.

IMPLEMENTATION STAGE: The procedure is being successfully applied in forestry by practitioners from the *Society of Hunters and Fishermen of the Republic of Moldova* (Implementation Acts: No. 05 from May 15, 2023; No. 05 from October 23, 2024).

ACKNOWLEDGMENTS: The research was carried out within the State Program 010701 "*Evaluation of the structure and functioning of biocenoses, aquatic and terrestrial habitats under the influence of biotic and abiotic factors in the context of ensuring ecological security and the well-being of the population*".

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HR EXCELLENCE IN RESEARCH

COMPOSITION AND PROCEDURE FOR DEHELMINTIZATION AND ADDITIONAL FEEDING OF COMMON CARP

PATENT: MD 1590 Y / 2022.01.31

AUTHORS: Ion TODERAȘ, Ion GOLOGAN, Ștefan RUSU, Dumitru ERHAN, Dumitru BULAT, Denis BULAT, Oleg CHIHAI, Maria ZAMORNEA, Elena GHERASIM, Viorelia RUSU

APPLICATION FIELDS: Ichthyology - Aquaculture, Veterinary medicine. **A**

AIM: Innovative method of dehelmintization and complementary feeding of common carp with the aim of reducing the level of helminth infestation.

SOLUTION: The process, according to the invention, provides for the introduction of the specified composition to common carp during April-May, at a water temperature of 16-22°C, in a dose of 35% of the body weight. At the same time, the corresponding dose is administered daily, in well-illuminated feeding places, divided into 5-6 portions, with an interval of 1-2 hours, within 10 days.

ADVANTAGES: The technical result of the invention consists in carrying out a complex and effective dehelmintization, as well as additional feeding with the use of nutritious briquettes rich in vitamins, trace elements, assimilable concentrated minerals, which allows to reduce the percentage of the extent of helminth invasions in common carp of different ages by 75- 80%, thus stimulating the reproduction process and effectiveness, increased weight gain, viability and resistance to environmental conditions and predators.

IMPLEMENTATION STAGE: The method is being successfully applied in fish farming by the Scientific Reserve ,,Codrii" from the Republic of Moldova (Act of Implementation nr.01 01.09.2019) and SRL ,,VIGI" (Act of implementation nr.05 23.03.2023).

ACKNOWLEDGMENTS: This research was supported by the research project: # 010701.

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HR EXCELLENCE IN RESEARCH

METHOD FOR TREATING OF SEED POTATOES AGAINST THE NEMATODE *Ditylenchus destructor* L.

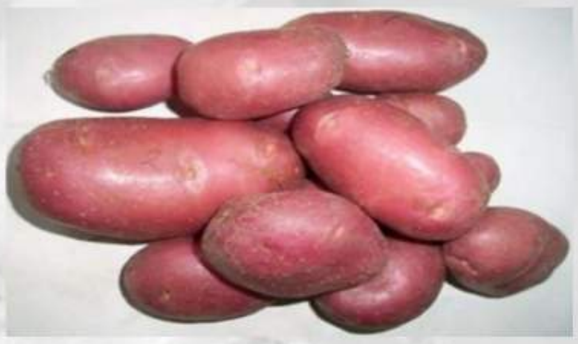
PATENT: MD 1658 (13) Y / 2023.08.31

AUTHORS: Maria MELNIC[1], Dumitru ERHAN[1], Olesea GLIGA[1], Ştefan RUSU [1], Ludmila BALAN [2], Valerina SLANINA [2], Leonid ONOFRAŞ [2], Vasile TODIRAŞ [2]

APPLICATION FIELDS: Agriculture.	A, G

AIM: Invention relates to parasitology, in special to a biological control method of the tuber nematode *Ditylenchus destructor L.* in seeds potatoes and can be used extensively in agriculture.

SOLUTION: Treating of seed potatoes, infested with parasitic nematode *Ditylenchus destructor*, with cultural liquid of bacterial strain of autohton origin - *Bacillus cereus* var. *fluorescens* CNMN-BB-07, causes the death of nematode *Ditylenchus destructor* in proportion of 95%.







The action of *Bacillus cereus* bacteria on the parasitic nematodes

ADVANTAGES: The invention's result consists in obtaining a nematicidal effect on seed potatoes in a proportion of 95%, and increasing the harvest up to 1.7 times. This procedure of biological control of ditylenchosis in potato seed, additionally manifests a stimulating action the sprouting seed potatoes, growth, development and productivity of potatoes. It also allows the effective and economical use of the nematicide preparation of biological origin, being highly effective in combating parasitic nematode *Ditylenchus destructor* and harmless to the environment and humans.

IMPLEMENTATION STAGE: The given method is successfully implemented in the Republic of Moldova.

ACKNOWLEDGMENTS: This research was supported by the research project: 010701: Evaluation of the structure and functioning of the animal world and aquatic ecosystems under the influence of biotic and abiotic factors in the context of ensuring ecological security and population well-being.

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HR EXCELLENCE IN RESEARCH

NEW TOMATO CULTIVAR – PETRAMAK

MD 424 / 2024.03.31

Milania MAKOVEI

Agriculture (cultivation in private associations farmers and households in individual *and* ***Food Industry*** **–** for fresh use, producing juice and other tomato products).

AIM: For cultivation in open field.

The *PETRAMAK* tomato cultivar of determinant type of growth (*sp*), The length of the main stem is 58...65 cm. Growing period from mass sprouting to the beginning of ripening – 114...117 days.

Simple inflorescence of 5...7 flowers. The first inflorescence appears after the 7th-8th node, the following ones after 2...1...1. Number of inflorescences on the main axis – 4...6. Pedicel of fruit, without geniculate joint.

The fruits are large, round, smooth, pink-intensive with thick pericarp (0.5-0.7cm). Fruit mass 120...150 g. Fruits have high taste properties due to high dry substance content – 5.4...6.1%; sugar – 4.9...5.3%; vitamin C – 33.1...34.8mg/% and total acidity – 0.48%. The presence of the *rin* gene in the genome of cultivar ensures high fruit density and their persistence on the bushes at the biological stage of maturity without signs of softening for 20...25 days. Total yielding capacity is of 58.6...62.7 t/ha, with fruit vendibility 92.4...96.7%.





ADVANTAGES: Highly productive. With excellent taste. Resistant to high temperatures at the sporophyte stage (seed germination – 93.5%); to heat – 71.7% and drought – 64.5% at the microgametophyte stage. It is resistant to a complex of diseases: *Verticillium, Fusarium, Cladosporium, Alternaria, r*elatively resistant to Phytophthora and Viral infections.

IMPLEMENTATION STAGE: Variety approved for cultivation in the Republic of Moldova in 2022 and grown on farmers and in private plots cultivation.

ACKNOWLEDGMENTS: The research was carried out within the Subprogram *011102 Increasing and conservation genetic diversity, agricultural crop breeding in the context of climate change*, financed by the Ministry of Education and Research.

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NATURAL PLANT GROWTH REGULATOR, METHOD OF APPLICATION THEREOF

Patent application number: MD s 2023 0055 / 2023.07.09

AUTHORS: Dina ELISOVETCAIA, Raisa IVANOVA, Elena LUTCAN

G

APLICATION: Agriculture and Forestry.

PURPOSE: Expanding the range of natural substances with a regulatory effect on plant growth by using a preparation based on an extract of the needles of *Juniperus sabina* L. with a high yield of biologically active substances, as well as to develop a procedure for using a juniper-based preparation that will ensure environmental safety and availability by reducing costs.

SOLUTION: Treatment of beech seeds (*Fagus sylvatica*) before sowing. Beech seeds from different localities and different years of collection, namely Humosu-2020 (Romania), Hîrjauca-2021 and Cioreşti-2021 (Republic of Moldova) were treated by immersion before sowing with the preparation based on the dry extract of *Juniperus sabina* L. Gibberellic acid was used as a classical growth regulator in a concentration of 0.01%, beech seeds treated with water served as a control. Treated beech seeds were sown in the solarium.

ADVANTAGES: The germination index of seeds treated with *Juniperus sabina* was 1.5-2.0 times higher than in seeds treated with gibberellic acid and the control (Fig. 1). The positive effect of the treatment is also maintained in the development of seedlings (Fig. 2, 3). The height of beech plants in variants treated with *J. sabina* preparation exceeded the height of control plants by 0.7-3.2 cm and was higher than in plants in the gibberellin variant (Fig. 3).



Figure 1. Beech seeds germinated by stratification in laboratory conditions



Figure 2. Beech seedlings of Humosu-2020 origin in solarium conditions

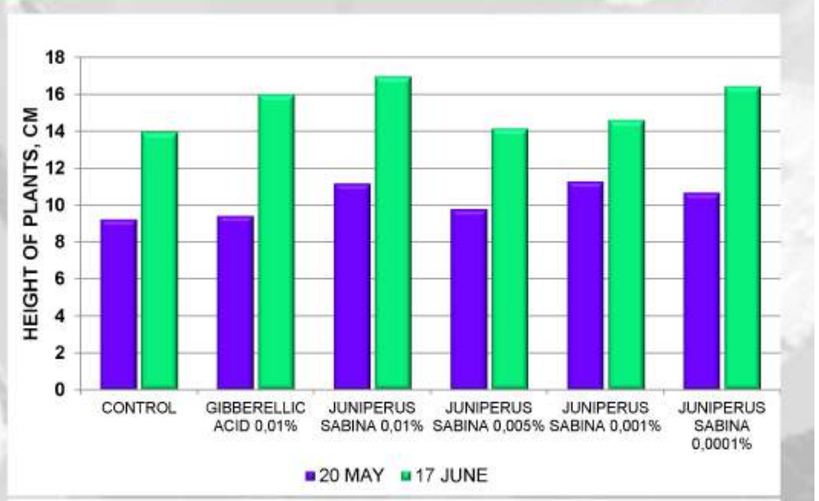


Figure 3. Growth dynamics of beech seedlings of Humosu-2020 origin (according to monitoring data)

DEGREE OF IMPLEMENTATION: Product, Greenhouse and field testing.

ACKNOWLEDGEMENTS: The research was carried out within the subprogram project 011101 "Genetic and biotechnological approaches to agroecosystem management under climate change", funded by the Ministry of Education and Research of the Republic of Moldova.

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HR EXCELLENCE IN RESEARCH

FAVOARE – NEW VARIETY OF *LAVANDULA ANGUSTIFOLIA* MILL. (LAVENDER)

PATENT: MD 426 / 2024.03.31

AUTHORS: Maria GONCEARIUC, Violeta BUTNARAS, Svetlana MASCOVTEVA, Pantelimon BOTNARENCO, Ludmila COTELEA, Zinaida BALMUS

APPLICATION FIELDS: G- Agriculture.

AIM: Creation of a new variety of *Lavandula angustifolia* Mill. with high quality essential oil content.

SOLUTION: The invention relates to the branch of agriculture.



Lavender variety *Favoare* is a first-generation hybrid (F_1), with a high heterosis effect on a number important quantitative characters, vegetative multiplied with average vegetation period. The Favoare is a variety resistant to frost and winter, to diseases and drought resistant. Plant height is 68 cm. The productivity of the variety is 7.4 t/ha of inflorescences containing 2.077 % (60 % humidity) and 5.157% (dry. matter) of essential oil. The productions of essential oil constitute 155.2 kg/ha. The yields of the variety are 20.7 kg/t (of essential oil from the of fresh inflorescences).

ADVANTAGES: Production of ram maternal inflorescences -7.4 t/ha. Essential oil content – 2.077 % (60 % humidity) and 5.157% (dry. matter). Productions of essential oil constitute 155.2 kg/ha, efficiency 20.7 kg/t of essential oil per ton of fresh inflorescences.

IMPLEMENTATION STAGE: Homologate in 2024.

ACKNOWLEDGMENTS: The research was carried out within the Subprogram # 011102 *Increasing and conservation genetic diversity, agricultural crop breeding in the context of climate change,* financed by the Ministry of Education and Research.

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HR EXCELLENCE IN RESEARCH

PANACEA – NEW VARIETY OF *Origanum vulgare* ssp. *vulgare*.

PATENT: MD 431 / 2024.04.30

AUTHORS: Maria GONCEARIUC, Violeta BUTNARAS, Pantelimon BOTNARENCO, Zinaida BALMUS, Ludmila COTELEA

APPLICATION FIELDS: G- Agriculture.

AIM: Creation of a new variety of *Origanum vulgare* ssp. *vulgare.* with high quality essential oil content.

SOLUTION: The invention relates to the branch of agriculture.



Panacea variety is distinctive by: *Physiological properties*: It has very good winter hardiness; high drought resistance; high diseases resistance. *Quality features:* Essential oil content in the raw material (humidity, 60%): 0.107% and 0.267% (dry substance); Major components in essential oil: Germacrene D, 31.13%; β–Caryophyllene, 15.785%; α–Farnesen – 11.41%. *Production capacity*: Fresh material production. 7.8 t/ha; Pharmaceutical *herba* production, humidity 13%, 1.51 t/ha; Essential oil production – 8.35 kg/ha; Yield – 1.1 kg/t.

ADVANTAGES: *Production capacity*: Fresh material production. 7.8 t/ha; Pharmaceutical *herba* production, humidity 13%, 1.51 t/ha; Essential oil production – 8.35 kg/ha; Yield – 1.1 kg/t. High productivity, high quality. Resistance to biotic and abiotic factors.

IMPLEMENTATION STAGE: Homologate in 2024.

ACKNOWLEDGMENTS: The research was carried out within the Subprogram # 011102, *Increasing and conservation genetic diversity, agricultural crop breeding in the context of climate change,* financed by the Ministry of Education and Research.

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HR EXCELLENCE IN RESEARCH

NEW TOMATO VARIETIES *Solanum lycopersicum* L. CERIDANI

PATENT: MD 239 / 2017.08.31

AUTHORS: Iulia SIROMEATNICOV, Vasile BOTNARI, Anatolie JACOTA, Nicolae BALAUR, Eugenia COTENCO, Renata CIOBANU, Eleonora CHIRILOV

APPLICATION FIELDS: AGRONOMY. | G

AIM: Creation of valuable tomato varieties resistant to extreme environmental factors, with high fruit qualities.

SOLUTION: New tomato varieties *Solanum lycopersicum* L. obtained by *in vitro* culture resistant to extreme environmental factors, with high fruit qualities.





ADVANTAGES: Tomato variety CeriDani was obtained as a result of hybridization between the *Solanum lycopersicum* Solearis x (v. Prizior x v. Nota). The vegetation period is 85-90 days, it is the early variety. The fruit is round and flat with the weigh 25-60 g, without the wrinkled peduncle, with fleshy pericarp and interior pulp. Fruits with high taste qualities, the dry matter content of the fruits 6.64 – 7.03%, sugars 4.4-5.7 %, ascorbic acid 27.5-39.5mg/%, titratable acidity 0.32-0.42mg/%. The total harvest of tomato is 38.6-42.0t/ha and commodities – 36.5-40.0t/ha. The share of commodities is 95,6%. The variety is productive, resistant to drought. It is recommended for fresh consumption and processing.

IMPLEMENTATION STAGE: Variety approved for cultivation in the Republic of Moldova in 2017.

ACKNOWLEDGMENTS: This research was supported by the Research Subprogram 011102 *Increasing and conservation genetic diversity, agricultural crop breeding in the context of climate change*, financed by the Ministry of Education and Research.

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HR EXCELLENCE IN RESEARCH

"Sarmis" - RHIZOGENIC INTERSPECIFIC VARIETY (*V. vinifera* L. x *M. rotundifolia* Michx.)

PATENT: MD 436 / 2024.06.30

AUTHORS: Eugeniu ALEXANDROV, Vasile BOTNARI, Boris GAINA

APPLICATION FIELDS: Agronomy. | G

AIM: Including genetically distant species in the grapevine breeding process and creating rhizogenic interspecific genotypes (*V.vinifera* L. x *M.rotundifolia* Mchx.) resistant to climatic factors.

SOLUTION: The created interspecific rhizogenic grapevine genotypes have a rich agrobiological and technological potential, thus offering opportunities in the development of research in the field of grapevine genetics and improvement, as well as allowing the development of organic viticulture.

ADVANTAGES: As a result of the development of the methodology for creating interspecific rhizogenic grapevine genotypes, using the species *Vitis vinifera* L. and *Muscadinia rotundifolia* Michx. Finally, rhizogenic interspecific grapevine genotypes were obtained and selected in BC3, with valuable characters, which allows to expand the grapevine cultivation area to the northern limit, on own roots and reduce the number of chemical treatments.

"Sarmis" - genotype with strong growth vigor. Berry ripening period – medium. Grapes – medium, uniaxial, compact. Berry – medium, globose, covered with a purine layer, uniform yellow-green (bronze) color, with 1-2 seeds, pulp with a crispy texture, difficult to separate from the pedicel. Skin – thick, muscat aroma. Grape weight – 400-500 g. Sum of sugars – 22-26 %. Acidity – 2.7 g/l H_2SO_4. Relative fertility coefficient – 1.72. Absolute fertility coefficient – 1.8. Relative productivity index – 0.68-0.86 kg and absolute productivity index – 0.72-0.9 kg. Productivity of one plant, depending on the cultivation technology – 6-7 kg, and the possible harvest – 12-14 t/ha.





IMPLEMENTATION STAGE: Variety approved for cultivation in the Republic of Moldova in 2024.

ACKNOWLEDGMENTS: This research was supported by the Research Subprogram 011102 *Increasing and conservation genetic diversity, agricultural crop breeding in the context of climate change*, financed by the Ministry of Education and Research.

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HR EXCELLENCE IN RESEARCH

NEW TOMATO VARIETIES
Solanum lycopersicum L. Desteptarea

MIHNEA Nadejda, GRATI Maria, LUPASCU Galina,
BOTNARI Vasile, GRIGORCEA Sofia

Plant variety patent: MD 279 / 2018.11.30

APPLICATION FIELDS: Agriculture. **G**

AIM: New variety of tomato, created by intraspecific hybridization, resistant to the factors of stressful temperature and *Alternaria alternata* fungus.

SOLUTION: The fruits of the variety *Deșteptarea* are of large size weighing – 110-130 g. The fruits contain 5.9-6.2% of dry matter, 5.3...5.9% – sugars, 22.0...26.0 mg/% – vitamin C, 0.45...0.55% – acidity. The variety is medium ripening, vegetation period is 114 days. In the transplant culture, the variety ensures a yield of 56.0...62.0 t/ha, while the standard fruit yield is high (93.0%).







ADVANTAGES: The variety *Desteptarea* harmoniously combines high productivity, good tasting qualities with the resistance to heat and *Alternaria alternata* fungus. The productivity is high at cultivation through both seeds and seedling transplants.

IMPLEMENTATION STAGE: Approved in the Republic of Moldova in 2017.

ACKNOWLEDGEMENTS: Research was carried out within the project # 23.70105.5107.04, funded by the National Agency for Research and Development of Republic of Moldova.

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Hemerocallis x hybrida. 'COSÂNZEANA' *(Day Lily)*- A NEW VARIETY OF ORNAMENTAL PLANTS

PATENT APPLICATION NUMBER: v 2024 0017 / 2024 08.19

AUTHORS: Svetlana MANOLE, Tatiana SÎRBU, Doina ȘABAROV

G

APPLICATION FIELDS: G - ENVIRONMENT , CONSERVATION OF BIODIVERSITY, PLANT BREEDING, AGRICULTURE.

AIM: Obtaining new more prolific and resistant varieties under native conditions.

DESCRIPTION: Rhizome perennial plant with abundant radical foliage: linear, light green, lines leaves about 50 cm. They grow about 80-100 cm tall in the flowering stage. It has simple funnel-shaped flowers, wide open, acuminate petal lobes. The diameter of the flower is about 14-17 cm. Internal tepals are intensely pink-reddish with cherry red spots at the base (173 CD; 178 BCD) and golden in the center (14 ABC). The external tepals are light brick-brown, tinged with burgundy (168 CD; 172 CD). The colors vary depending on the phase of flower development and light intensity. The inflorescence has 3-6 branches, each with 6-8 flowers. 5-7 year old plants form 12-18 flower stalks. The fragrant flowers. The flowering stage extends from June to July, sometimes into early August. It lasts about 60 days. The variety can grow in sunny and half-shaded areas. It is undemanding towards soil, but prefers rich, well-irrigated substrate. The plants are very resistant to pathogens and pests. Universal variety with multiple uses: for cut flowers in various floral decorations, in landscape planning: flower beds, mixed flower beds, solitary groups, on the banks of water basins; can be promoted as a container plant.



ADVANTAGES: The variety created under the local pedoclimatic conditions possesses valuable decorative indices, is resistant to pollution, pathogens and pests. Being a perennial, polycarpic plant, it has a viability of about 20 years, if the requirements are respected. It is a prolific cultivar and can be multiplied vegetatively. It also forms seeds, so it can also be used in selection works.

IMPLEMENTATION STAGE: At the laboratory level.

ACKNOWLEDGMENTS: The research was conducted within the project *010101 "Research and ex situ and in situ conservation of plant diversity in the Republic of Moldova"*

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Lycium barbarum L. (Goji Tibetan) 'LICURICI'

PATENT: MD 408 / 2023.12.31, v 2017 0006 / 2017.02.17

G

AUTHORS: Nina CIORCHINĂ, Maria TABĂRA, Mariana TROFIM

APPLICATION FIELDS: Agriculture – Pharmacy – Cosmetics.

AIM: Fruits contain multiple and diverse biologically active substances, which can be used in a processed state for health fortification, as well as as a raw material for the food industry and as a raw material.

SOLUTION: The variety created in pedoclimatic conditions of our countries possesses qualitative, highly productive, decorative indices, resistant to drought, frost, pollution, pathogens and pests.









ADVANTAGES: Shrub up to 2,0 m tall. Inflorescences solitary or grouped 3-7. Duration of the vegetationperiod April-November 230-240 days. The time of the beginning of flowering II decade of May.The color of the coral red fruit. The average diameter of the fruit is 0,5-0,7 cm, the oblong shapewith medium firmness. The seed of the fruit varies 0,02-0,03 cm small in spherical shape. Preferssunny places, prefers sandy, clayey or loamy soils, well drained.

IMPLEMENTATION STAGE: At the laboratory level.

ACKNOWLEDGMENTS: This research was supported by the *research project:* # 20.80009.7007.19 and # 010101.

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Chrysanthemum indicium L. "Gingășie" - IS A NEW LOCAL VARIETY

PATENT: MD 443 / 2024.09.30, v 2021 0013 / 2021.12.21

AUTHORS: Ina VOINEAC, Vitalie MÎȚU, Olesea PUGACEOVA

G

APPLICATION FIELDS: Environment, conservation of biodiversity, plant breeding, agriculture, landscaping design.

AIM: Obtaining new more prolific and resistant varieties under native conditions.

DESCRIPTION: "Gingășie"- belongs to the small-flowered chrysanthemum group. The bush is hemispherical, 30 to 55 cm high, densely foliated. The leaves are bright green, slightly pubescent, small, 2-5 cm long and 1-3 cm wide. The leaf blade is cut by 1/3, the edge is slightly pointed, the upper leaflets have an almost whole blade. The stem is thin, green with a reddish tint. On one bush there are 5-9 flower-bearing shoots, which in the upper part branch out into even smaller ones, bearing a large number of inflorescences. The inflorescences are located along the entire perimeter of the crown. On each flowering shoot there are from 5 to 12 half-terry inflorescences, 3-5 cm in diameter. The ligulate flowers are arranged in 3 rows around a disk with tubular flowers. At the beginning of blooming they are lilac-pink with a terracotta tint, and by the end of flowering they are noticeably lighter. The lower row of petals is larger than the upper one. The petals are elongated, much bifurcated at the ends, and lighter on the inside. The center (ligulate flowers) is bright yellow with a greenish protrusion, clearly defined and has a diameter of 0.5-0.7 cm. The variety is early flowering, flowering begins in the first ten days of October and continues for 45-50 days, depending on the air temperature. It is recommended for group plantings, mixborders, cut flowers, and container culture.





ADVANTAGES: The variety created under the local pedoclimatic conditions possesses valuable decorative indices, is resistant to pollution, pathogens and pests. Flowering earlier, abundant and long lasting. Can be used for creating flower beds various purposes, container culture.

IMPLEMENTATION STAGE: At the laboratory level.

ACKNOWLEDGMENTS: The research was conducted with the project 010101 Research and ex situ and in situ conservation of plant diversity in the Republic of Moldova.

Contact person: Ina VOINEAC , e-mail: inna0566@mail.ru

RESEARCH AND DEVELOPMENT STATION FOR POTATO TARGU SECUIESC

ROMANIAN POTATO VARIETY:

COVASEC

Patent *APPLICATION:* No. 00752 / 12.11.2024

Authors: Anca – Mihaela BACIU, Luiza MIKE

G

Potato variety obtained by sexual hybridization between Collete x Laura, followed by individual clonal selection.

The plant is tall, with intermediate foliage structure and semi-erect habit. Leaf color is medium green. The presence of secondary leaflets is strong.

The inflorescence is small in size. The flower corolla is medium in size and shows absent or low intensity of anthocyanin coloration on the inner surface.

The tubercle is oval-elongate in shape with medium eye depth. The skin color is light beige and the flesh color is light yellow. The tubercle has medium pulp gloss and the eye base color is white.

Physiological characteristics. The Covasec potato variety belongs to the group of semi-mature varieties.

Quality characteristics. The culinary quality of the variety is good, falling into quality group B.

Production capacity. The Covasec variety has a good production capacity, yielding on average 36.0 t/ha during the test period.

The Covasec variety can be cultivated in favorable potato-growing areas throughout the country.







MINISTERUL AGRICULTURII ŞI DEZVOLTĂRII RURALE
INSTITUTUL DE STAT PENTRU TESTAREA ŞI ÎNREGISTRAREA SOIURILOR

Nr. 5699 / 09.07.2023

CERTIFICAT

privind înregistrarea soiului de cartof
COVASEC,

creat de: Staţiunea de Cercetare-Dezvoltare pentru Cartof Târgu Secuiesc
autori: Anca Mihaela Baciu, Luiza Mike

În reţeaua Institutului de Stat pentru Testarea şi Înregistrarea Soiurilor, s-a efectuat examinarea tehnică a soiului de cartof TS 11-1467-1633, în perioada 2021-2023 .
La încheierea ciclului experimental acest soi a fost înregistrat, în Catalogul oficial al soiurilor de plante de cultură din România, sub denumirea de COVASEC.
Soiul se poate cultiva în zonele favorabile culturilor de cartof, începând cu anul 2024.

Director General,
Mihai POPESCU

F-7.5-06 Rev. 0

Contact: www.scdctargusecuiesc.ro;
e-mail: anca.mihab@gmail.com
Address: 15 Orban Balazs Street
Post code: 525400, Targu Secuiesc / Covasna / Romania

RESEARCH AND DEVELOPMENT STATION FOR POTATO TARGU SECUIESC

ROMANIAN POTATO VARIETY:

TRANSEC

Patent APPLICATION: **No. 00753 / 12.11.2024**

Authors: Anca – Mihaela BACIU, Luiza MIKE

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Potato variety obtained by sexual hybridization between ALMERA x Laura, followed by individual clonal selection.

The plant has medium height, intermediate foliage structure and erect habit. Leaf color is light green. The presence of secondary leaflets is medium.

The inflorescence is small in size. The flower corolla is small in size and shows a faint intensity of anthocyanin coloration on the inner surface.

The tubercle has an oval shape and shallow eye depth. The skin color is yellow and the flesh color is cream. The tubercle has a smooth pulp gloss and the eye base color is yellow.

Physiological characteristics. The Transec potato variety is classified in the group of semi-hardy varieties.

Quality characteristics. The eating quality of the variety is good, falling into quality group B.

Production capacity. The Transec variety has a good yield capacity, averaging 42.51 t/ha during the test period.

The Transec variety can be grown in favorable potato growing areas throughout the country.







MINISTERUL AGRICULTURII ŞI DEZVOLTĂRII RURALE
INSTITUTUL DE STAT PENTRU TESTAREA ŞI ÎNREGISTRAREA SOIURILOR

Nr. 5700 / 09.07.2023

CERTIFICAT

privind înregistrarea soiului de cartof
TRANSEC,

creat de: Staţiunea de Cercetare-Dezvoltare pentru Cartof Târgu Seculesc
autori: Anca Mihaela Baciu, Luiza Mike

În reţeaua Institutului de Stat pentru Testarea şi Înregistrarea Soiurilor, s-a efectuat examinarea tehnică a soiului de cartof TS 12-1497-1573, în perioada 2021-2023 .
La încheierea ciclului experimental acest soi a fost înregistrat, în Catalogul oficial al soiurilor de plante de cultură din România, sub denumirea de TRANSEC.
Soiul se poate cultiva în zonele favorabile culturilor de cartof, începând cu anul 2024.

Director General,
Mihai POPESCU

F-7.5-06 Rev. 0

Contact: www.scdctargusecuiesc.ro;
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PRACTICAL LABORATORY – DIGITAL TECHNOLOGIES IN FRUIT CULTURE: SMARTREE

Patent/project number: **CNFIS-FDI-2020-0580**
Author/s:**Pecingină Irina, Grofu Florin, Călinoiu Ion, Cosmin Zah, Gîlcă Gheorge**

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PURPOSE/OBJECTIVES OF THE PROJECT

- **accommodation with modern technologies in the horticultural sector to ensure the monitoring and optimization of the plant growth and development process by: getting real-time data on climate change and how it directly affects the horticultural sector; early warning about the conditions that favor the occurrence of diseases in plants; real-time measurement of the degree of development of trees, leaves and fruits and alerting if the parameters expected at various development thresholds are not compliant.**
- **the use of the measurement and analysis capabilities of the practical laboratory in the field of intelligent agriculture in fruit growing - the implementation of didactic activities, research activities, internships in the field, specialty and for the development of students' diploma projects, within the undergraduate study program Engineering and Management in Public Food and Agritourism**
- **increasing UCB's capacity for research, innovation and technology transfer, as well as expanding the partnership with relevant economic operators**

NOVELTY / BENEFITS: Adaptation and connection with the weather station; Remote control and monitoring of water resources, pH, temperature, fertilizer level, etc.; Solar radiation/temperature sensors: reduce evapotranspiration rate and potential soil water loss rate to anticipate water stress for plants; it gives a good estimate of plant development and therefore an estimate of the time of harvest; Temperature and humidity sensors: generate data on microclimate conditions that improve pest and disease analysis through algorithmic risk assessment, which informs spray composition, schedule and volume.



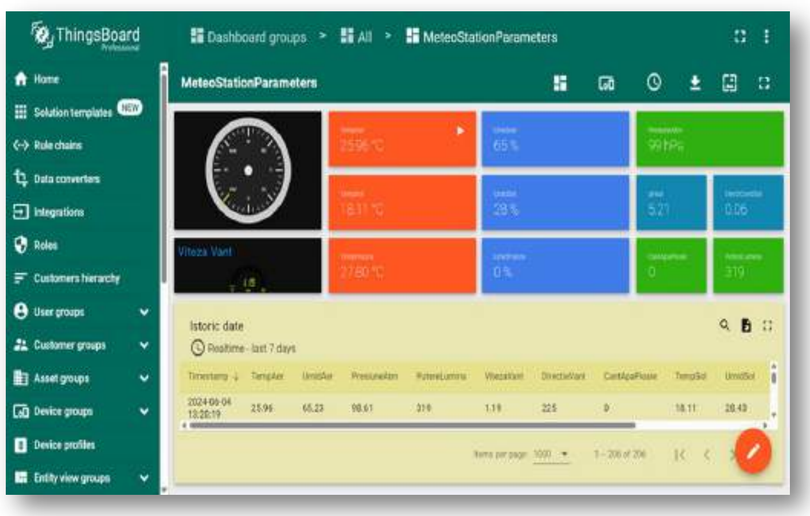
Weather station in the orchard

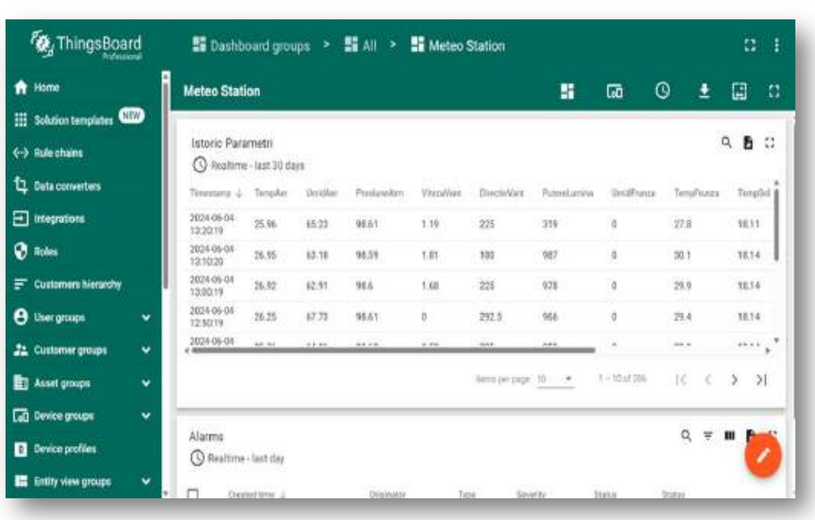


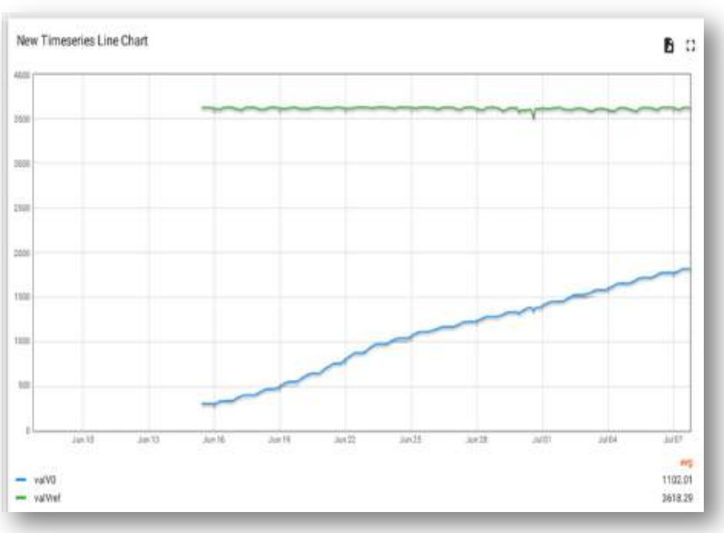




Radial dendrometers







Contact: ctt.ucb@gmail.com

Hand Seeder for Sowing Pelleted Seeds

Patent/project number: MP 0006/2025
Author/s: PhD Vojin Cvijanović, PhD Marija Bajagić

G

A manual seeder for pelleted seeds enables precise seed application without hand contact in containers designed for sowing. The use of this seeding tool reduces the risk of potential disease transmission during sowing while ensuring faster, more efficient, safe, and precise sowing in containers. This facilitates good, uniform, and high-quality germination of vegetable crops.

Previous solutions for sowing pelleted seeds have primarily relied on mechanical methods (such as seeding lines) or, in the absence of machinery, on manual sowing. Pelleted seeds are often sown without an adequate seeder that would facilitate the process.

In modern agricultural production, there are no similar manual seeders specialized for sowing pelleted seeds. This type of manual seeder is suitable for sowing pelleted seeds of various sizes, providing a fast, simple, efficient, and safe sowing method.

Also, one of the advantages of pelleted seeds is that the coating around the seed contains nutrients, fungicides, and insecticides, which improves germination and protects the seed from diseases and pests.

The material for manufacturing the manual seeder for sowing pelleted seeds is available on our market and can be produced and processed using existing machining techniques, as its production is simple.

The manual seeder for pelleted seeds comprises a reservoir with a funnel on one side for easy seed pouring, featuring a closure for controlled dispensing. The funnel is designed to enhance ease of use and operation. Inside the reservoir, an opening accommodates the seed ejection mechanism. The lower part of the reservoir includes a tapered extension that narrows upward, ending in an opening to maintain the mechanism's functionality. On the opposite end of the reservoir, a button is connected to the mechanism, enabling seed release.

Picture 1. Sowing by hand in containers



Picture 2. Difference Between Pelleted and Non-Pelleted Seeds



Contact: cvija91@yahoo.com tel: +381637277981

AGRICULTURAL BIOTECHNOLOGIES BASED ON COORDINATION COMPOUNDS OF BIOMETALS

Patents: MD 510, MD 511, MD BSD 813

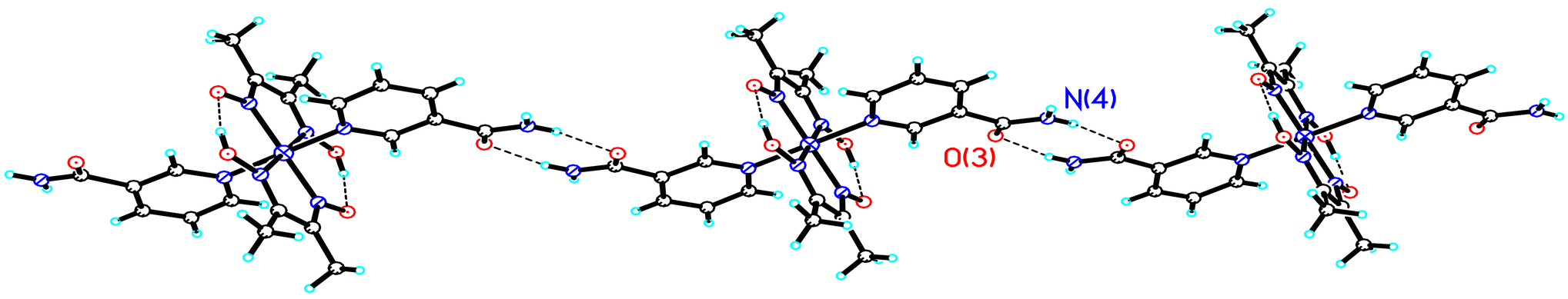
Authors: Eduard Coropceanu, Anastasia Ștefârță, Ion Bulhac

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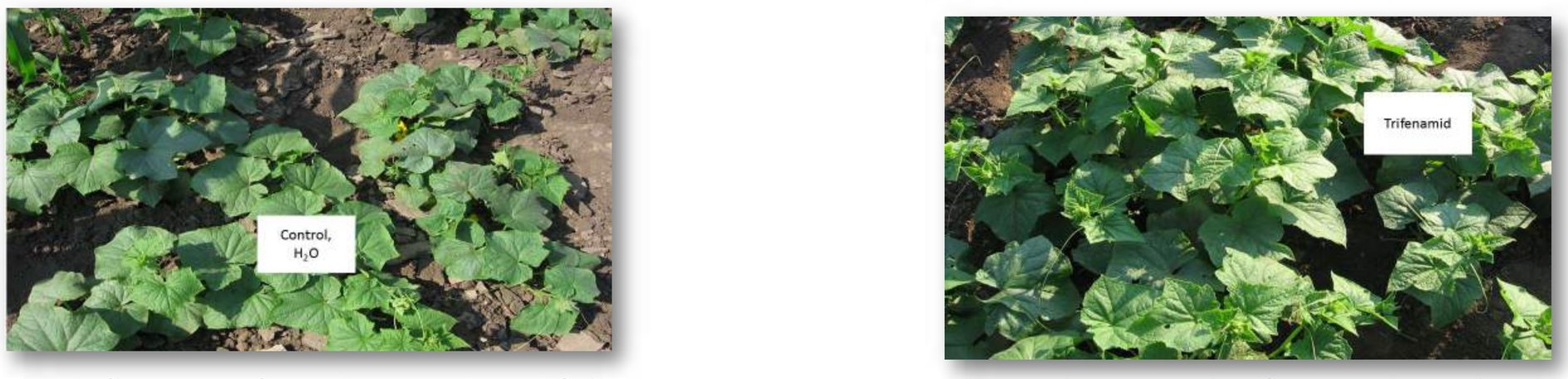
The coordination compounds of transition metals with oxime ligands possess properties of bioactive substances with a positive impact on plant growth, development, resistance and productivity. Treating the seeds for sowing and the leaf apparatus during the growing season, with aqueous solutions of Difecoden, Difemanden, Coditiaz, Conimid, Cobamid conditions the optimization of the functional state, growth and development of corn, soybean, sugar beet, cucumber, tomato, beetroot, peanut plants , both in favorable humidity conditions and in a moderate water deficit. The coordinative compounds used have the property of activating vital processes already at the initial stages of individual plant development, stimulate the growth of the root system, ensure the homeostasis of the water status in conditions of suboptimal water regime, increase plant productivity, strengthen the body's protective functions, increasing tolerance to suboptimal factors.

In conditions of low humidity, Difecoden, Cobamid, Conimid and Coditiaz have an influence of reducing the effect of drought on the formation of the assimilative apparatus, the accumulation of biomass and the harvest of plants. The use of coordinative compounds in combination with water-soluble polymers (PVP, coVP) ensures the reduction of water consumption in the transpiration process without negative consequences on the accumulation of plant biomass.

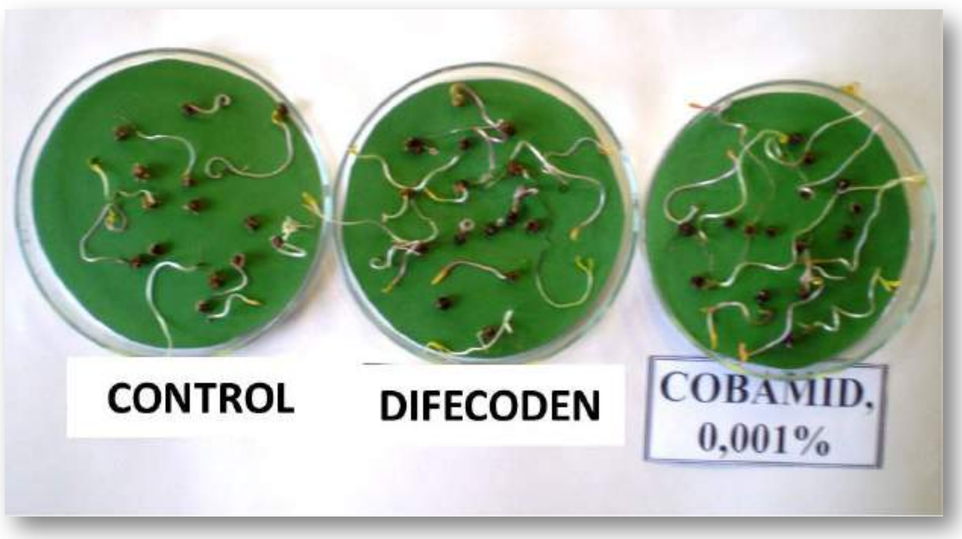
The coordinative compounds Difecoden, Conimid and Fludisec, possess antioxidant properties that are manifested in increasing the antioxidant protection capacity of the treated plant organs as a consequence of the intensification of antioxidant enzyme activity in them with a positive impact on plant productivity.



Formation of hydrogen bonds and of the unidimensional pseudo chain in $[Co(DH)_2(Nia)_2][BF_4]\cdot 2H_2O$



The influence of sowing seed and foliar apparatus treatment on the growth of cucumber plants



The effect of sugar beet treatment with physiologically active substances on seedlings growth and development at the initial stage of ontogenesis (9 days after treatment)

coropceanu.eduard@upsc.md

ASSESSMENT OF SOME TRADITIONAL APPLE (*Malus domestica* Borkh.) VARIETIES TO ENCOURAGE THEIR INTRODUCTION INTO CULTIVATION

TAMARA EDINA GAL, IONUȚ DASCĂLU, OLIMPIA ALINA IORDĂNESCU

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Description

The value of old apple varieties is given by their remarkable taste, productivity, longevity and resistance to extreme environmental circumstances. Although they possess the listed qualities, these varieties come with a series of deficiencies regarding the variability of their characters, high growth vigor, fruit appearance, or particular sensitivity to diseases and pests. However, many researchers believe that these deficiencies can be mitigated and, for this reason, the existing apple germplasm deserves increased attention and detailed study.

In the same time, apple is a rustic species with high ecological plasticity, which in superior agrotechnical conditions gives significantly higher crop than the other fruit species.

With the purpose of studying and preserving the local germoplasm, a small apple orchard was established at Pohalma Nursery in Lugoj, Timiș county, in 2017.

The aims of the research were: measuring the length of the annual growths, the growth vigour of the trees and the trunk's diameter, as well as establishing the production potential of each tree by counting the flowers and the fruits after the physiological fall, then analyzing the large and small diameter, height and mass of the fruits, their dry matter and sugar content, as well as their pH value.

The analyzed varieties are the following: *'Măr Țigănesc', 'Măr Domnesc', 'Pietros', 'Curcubătoase', 'Poinic', 'Carigate', 'Mustoase', 'Florănești', 'Botu Oii Alb', 'Măr mare', 'Pătul', 'Vițate', 'Jonathan de munte', 'Măr de Jupani', 'Mari de Berini', 'Măr dulce amar', 'Măr dulce', 'Măr plăcintă Berini', 'Șovare', 'Caslere', 'Jonathan', 'Pogace', 'Aore', 'Crețesc', 'Botu Oii de Caraș', 'Pătul de Vârciorova', 'Parmen auriu'.* The trees are all grafted on the M106 rootstock.

The data have been statistically processed and interpreted, then compared between the varieties.

'Botu Oii de Caraș', 'Pătul de Vârciorova' ,'Parmen auriu' and *'Măr dulce amar'* varieties stood out by production capacity. The biggest fruits were produced by *'Curcubătoase', 'Caslere', 'Jonathan'* and *'Pătul'* varieties. The highest sugar content was registered in case of *'Măr Domnesc', 'Parmen auriu'* and *'Vițate'* varieties and the most acidic fruits were obtained in case of *'Măr Țigănesc'* variety.

Further studies are ongoing in order to be able to strongly recommend a few varieties that have the maximum commercial potential, besides the well-used cosmopolitan varieties.



'Botu Oii de Caraș'



'Caslere'



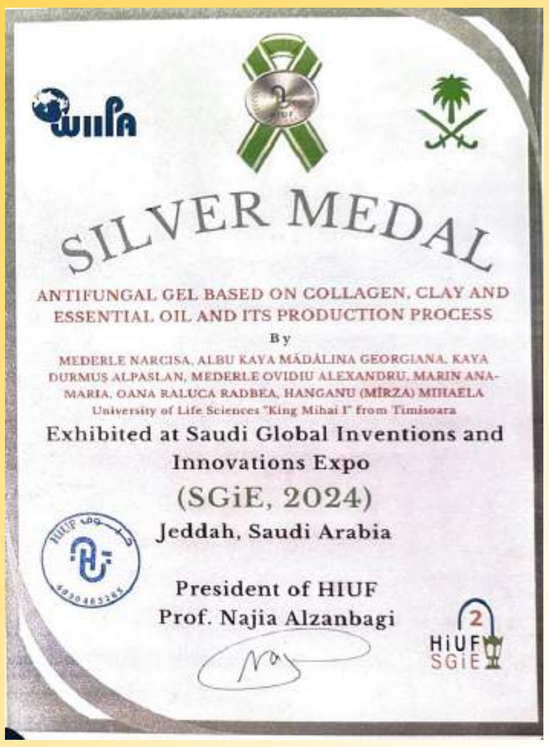
'Pătul'



'Jonathan'

Contact: Tamara-Edina.Gal.FITA@usvt.ro

ANTIFUNGAL GEL BASED ON COLLAGEN, CLAY AND ESSENTIAL OIL AND ITS PRODUCTION PROCESS



A/00776/2024

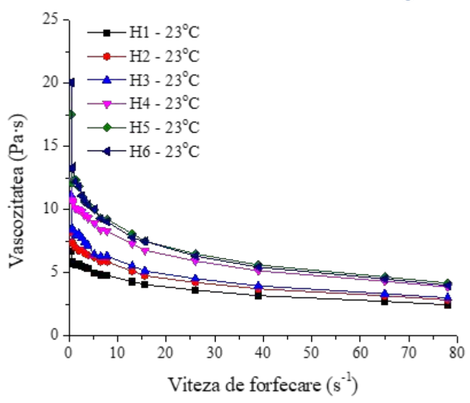
Category G

MEDERLE NARCISA, ALBU KAYA MĂDĂLINA GEORGIANA, KAYA DURMUŞ ALPASLAN, MEDERLE OVIDIU ALEXANDRU, MORARIU SORIN, MARIN ANA-MARIA, OANA RALUCA RADBEA, HANGANU (MÎRZA) MIHAELA

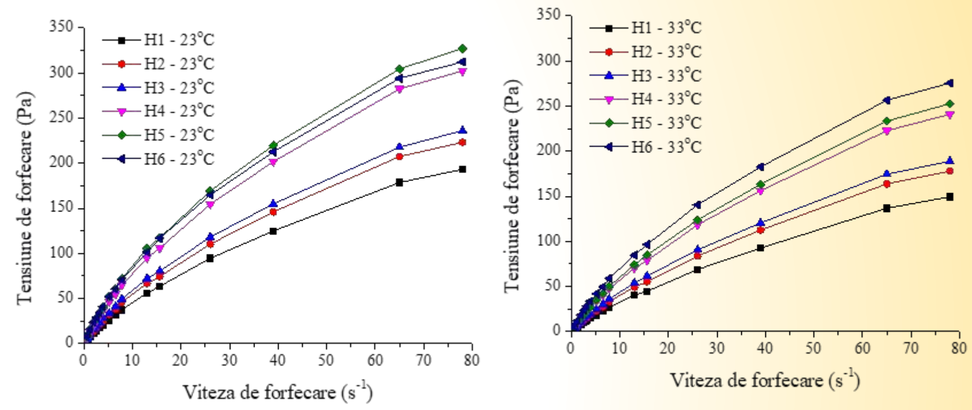
Technical field, novelty and applications

The hydrogel based on collagen hydrolyzate, methyl cellulose, yellow clay and *Thymbra spicata* essential oil with appropriate rheological properties was made as a treatment for skin affected by *Trychophyton verrucosum*, especially for calf. The hydrogel has antifungal property protecting or regenerating the skin and is recommended for veterinary use.

Physical-chemical and pharmaceutical characteristics



Viscosity rheological profiles as a function of shear rate for hydrogels analyzed at 23°C



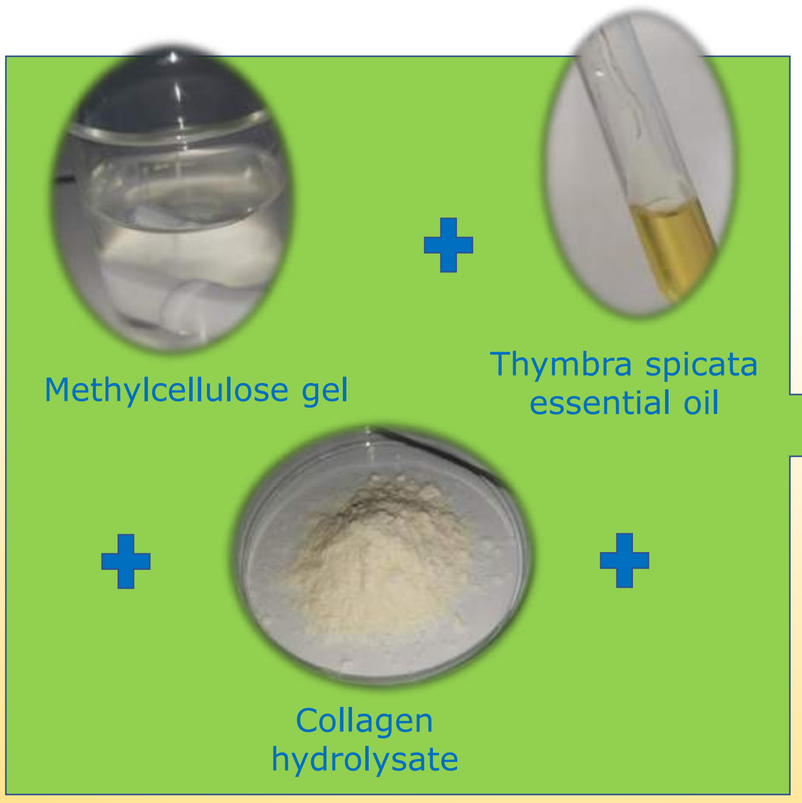
Shear stress function of shear rate H1-H6 hydrogels tested at 23 and 33°C

Composition and preparation of hydrogel

The hydrogel according to the invention is consisting in a natural polymer, 1...3% collagen hydrolysate in solution form, 3.0 ...3.5 % methylcellulose in gel form, 0.5 ...1.5% yellow clay and 0.1 ... % *Thymbra spicata* essential oil and up to 100% distilled water. The process, according to the invention, consists in mixing and homogenizing the components until a viscous hydrogel is obtained. They are rheologically tested and flow parameters are determined.

The gel has adequate rheological properties for easy application to the affected area due to its controlled viscosity; also, the essential oil with antifungal properties released from the yellow clay has the property to destroy the pathogenic fungus *Trychopyton verrucosum*, and the collagen to regenerate damaged skin and is recommended for veterinary use.







ANTIFUNGAL HYDROGEL



Advantages compared with similar products / treatments:

- ✓ **the achievement of a treatment with local/topical application for for bovine trichophytosis, a contagious skin condition caused by dermatophyte fungi or other types of animal skin infections;**
- ✓ **the use of a system in the form of a hydrogel allows it to be easily spread over the entire surface of the skin, and does not require adjuvant oral treatment;**
- ✓ **the hydrogels with collagen hydrolysates provide a proper environment for tissue regeneration, are biocompatible and have antiparasitic action.**

Contact: narcisamederle@usvt.ro

6th International Exhibition
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RESEARCH ON THE IDENTIFICATION OF INTESTINAL HELMINTHS IN JACKALS (*CANIS AUREUS*) AND FOXES (*VULPES VULPES*) IN TIMIS COUNTY, ROMANIA

MORARU MARIA MONICA FLORINA, MARIN ANA-MARIA, POPOVICI DAN CORNEL, MEDERLE NARCISA

Category G



The Golden Jackal (*Canis aureus*) and the Red Fox (*Vulpes vulpes*) are widespread throughout the world, and in Central Europe, they are the most representative wild species of the family Canidae. The epidemiological importance attributed to these species is relevant as *C. aureus* and *V. vulpes* play a definitive host role for intestinal parasites, including zoonotic helminths. *C. aureus* and *V. vulpes* cestode infections have been recorded throughout the distribution range of these canid species, with a relatively high species diversity.



The present project aimed to identify the parasitic fauna of *C. aureus* and *V. vulpes* in the hunting grounds of Timis County.

In this project, 41 intestines of *C. aureus* and 47 intestines of *V. vulpes* were analyzed.



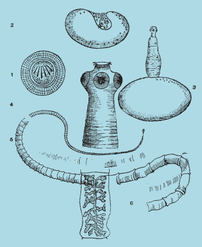


The results of necropsy examination of the intestines of *C. aureus* showed the presence of:



- *Taenia* spp. - 1/30 (3.33%)
- *Ancylostoma/ Uncinaria* - 18/30 (60%)
- Tapeworms and roundworms - 2/30 (6.66%)
- Tapeworms and *Ancylostoma/ Uncinaria* - 7/30 (23.33%)
- Tapeworms, roundworms and *Trichocephalus* spp. - 2/30 (6.66%)

The results of necropsy examination of the intestines of *V. vulpes* showed the presence of:



- *Taenia* spp. - 4/35 (11,42 %),
- Roundworms - 4/35 (11,42 %),
- *Ancylostoma/ Uncinaria* - 3/35 (8,57 %),
- Tapeworms and roundworms - 5/35 (14,28 %),
- Roundworms and *Trichocephalus* spp. 4/35 (11,42 %),
- Tapeworms and *Ancylostoma/ Uncinaria* - 5/35 (14,28 %),
- Roundworms and *Ancylostoma/ Uncinaria* - 10/35 (28,57 %)

The co-infections of cestodes with that of roundworms and other nematodes highlight the complexity of parasitic infections in these animals.

This study provides new information on the intestinal parasitic fauna of *C. aureus* and *V. vulpes* in Timis County and warns of the risk of human contamination with zoonotic species.

Contact: mariamoraru@usvt.ro

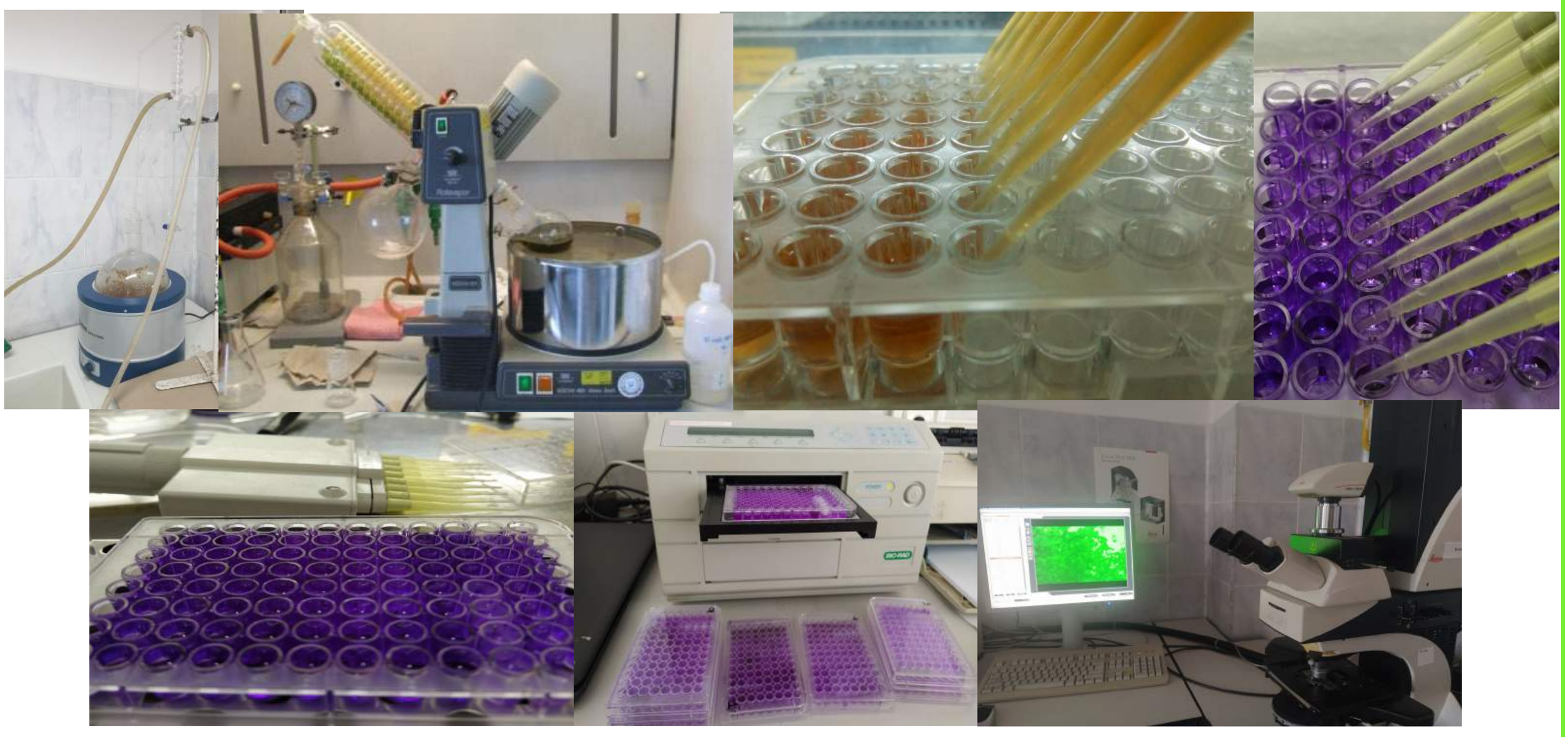
Liposomal Carrier Encapsulating *Lavandula angustifolia* Oil and Eugenol for Antifungal, Antibiofilm, and Anti-Inflammatory Activity Against *Candida albicans*

G

Patent/project number:LAV-EUG-LIPO-24-01
Author/s: OBIȘTIOIU MONICA DIANA, HULEA ANCA SOFIANA, BREZOVAN DIANA, FLOAREȘ (OARGA) DORIS, POPESCU IULIANA, IMBREA ILINCA MERIMA, HULEA CĂLIN, POPESCU COSMIN ALIN, IMBREA FLORIN

UNIVERSITY OF LIFE SCIENCES ”KING MIHAI I” FROM TIMISOARA

This research project focuses on developing a liposomal delivery system incorporating *Lavandula angustifolia* (Lavender) essential oil and eugenol as a natural antifungal, antibiofilm and anti-inflammatory formulation. The study aims to assess the efficacy of liposome-encapsulated bioactives against *Candida albicans* biofilm, particularly in the oral cavity, and its potential for reducing inflammation associated with fungal infections. Liposomes as drug carriers enhance stability, bioavailability, and control the release of active compounds. Their role is also to improve penetration in fungal biofilms, increasing antifungal efficiency. *Lavandula angustifolia* essential oil, also obtained in our laboratory, contains linalool and linalyl acetate, which are known for their antifungal, anti-inflammatory, and soothing properties. The presence in the liposome system, besides the antifungal effect, helps reduce irritation and discomfort caused by fungal infections. Eugenol (as a standard bioactive component) is a potent antifungal compound disrupting *Candida albicans* cell membranes. The bioactive standard synergises with lavender oil to enhance antifungal and anti-inflammatory activity. The system ensures controlled release, improved penetration, and prolonged antifungal activity. The Lipid Phase (Phospholipid Membrane) included 1% *Lavandula augustifolia* essential oil and 0.5% bioactive standard. Considering the enhanced efficacy observed with liposomal encapsulation, the MIC ranging from 125 µg/mL to 250 µg/mL proved to be lower than the MIC demonstrated by the free components (eugenol 800 µg/mL and *Lavandula* essential oil at 380 µg/mL).



Contact: dianaobistioiu@usvt.ro

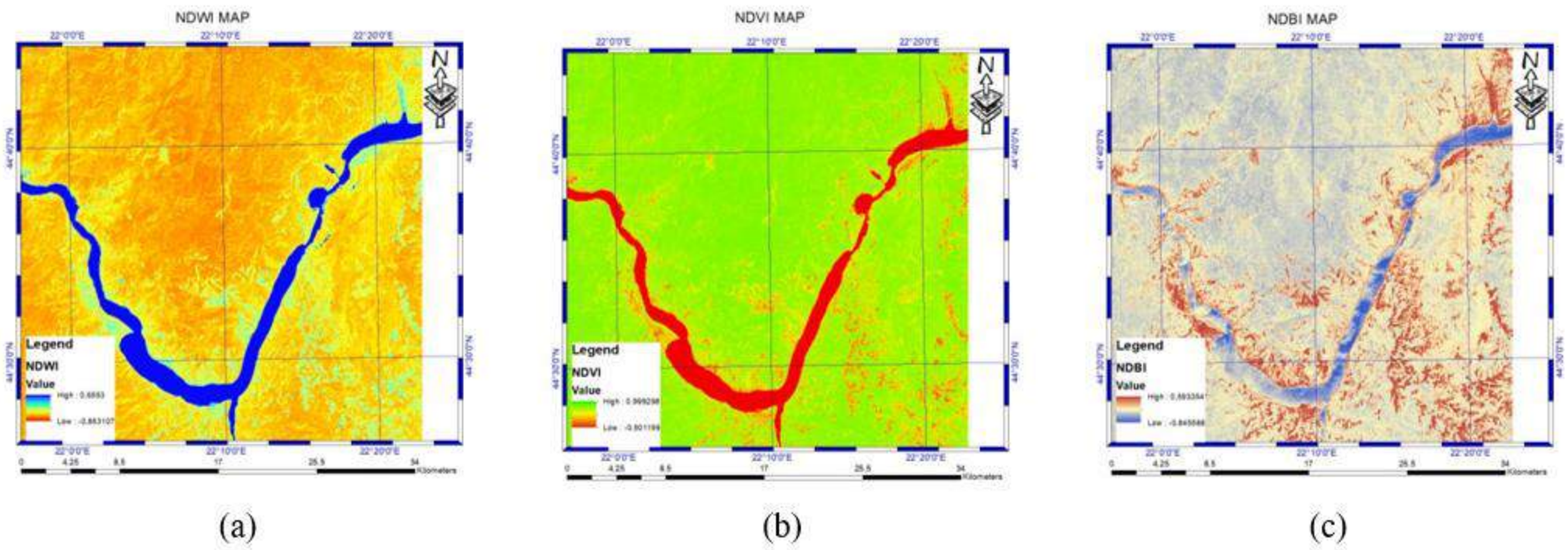
SUPERVISED AND UNSUPERVISED CLASSIFICATION BASED ON REMOTE SENSING FOR STUDY OF AN AREA

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Author/s: *Cosmin Alin Popescu, Adina Horablaga, Mihai Valentin Herbei*
Radu Bertici, Daniel Dicu, Florin Sala

Overview

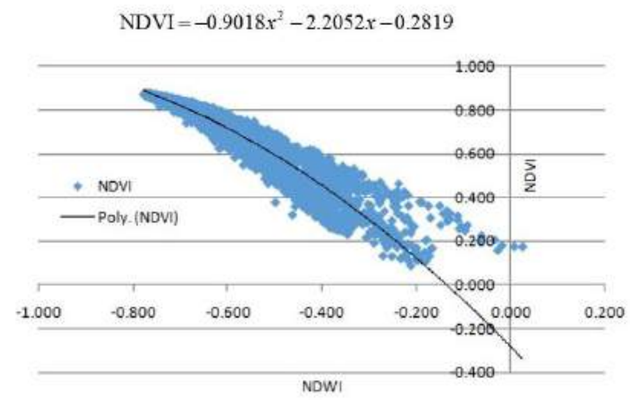
Supervised and unsupervised classification, based on remote sensing, was used to study a territorial perimeter. NDWI, NDVI and NDBI indices were calculated based on satellite imagery. The NDVI variation relative to NDWI was described by a polynomial equation of degree 2, in statistical safety conditions (R2 = 0.910, p <0.001). Unsupervised classification (U-class), based on the Iso Cluster algorithm (iterative process, which assigns each cell to a cluster based on Euclidean distances) and supervised classification (S-class), based on the Maximum likelihood algorithm (allocate each pixel to a class based on of maximum probability), led to the detection of three categories in the studied territory, with close values; water, vegetation, constructions (p <0.001 (95%). Remote sensing provides useful spectral information for the analysis of an area, and the operator can decide on one method or another of classification in relation to the additional information held in the territory under consideration.



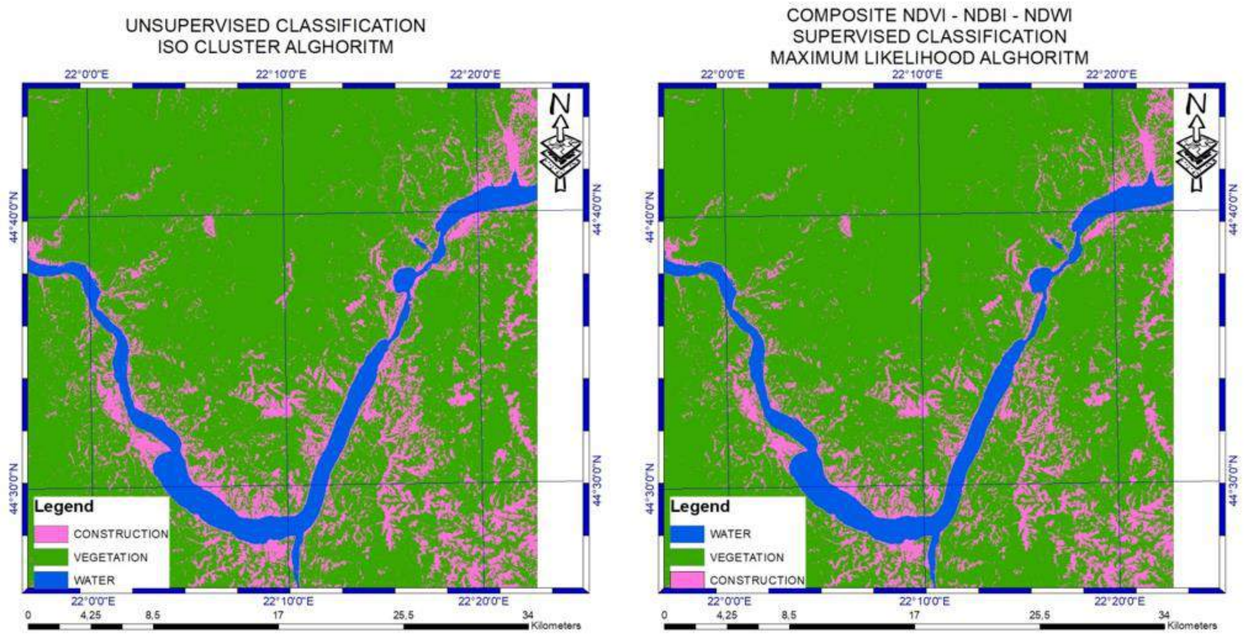
(a) (b) (c)

Graphical representation of the studied territory based on the maps of the NDWI (a), NDVI (b) and NDBI (c) indices

$$NDWI = (Band3 - Band8)/(Band3 + Band8)$$
$$NDVI = (Band8 - Band4)/(Band8 + Band4)$$
$$NDBI = (Band11 - Band8)/(Band11 + Band8)$$



Graphic distribution of NDVI values in relation to NDWI, in the conditions of the studied territory



(a) (b)

Comparative presentation of classes obtained by unsupervised classification, U-class (a) and supervised classification, S-class (b) for the studied territory

Supervised classification involves the user knowing the territory, the categories of elements in the territory that are considered for classification, and the conscious assignment of a reference element in each class, following that the software considers all elements (pixels) with the same properties in the same class. In case of unsupervised classification, the software uses databases with predefined elements, so updating them is important. Given that the beneficiary / operator know the reality of the studied territory, the supervised classification is easier.

Contact: : *cosmin_popescu@usvt.ro*

MANUFACTURING PROCESS AND ROOTING PRODUCT BASED ON WILLOW EXTRACT (SALIX GENUS)

Patent number: RO131178 (B1) — 2019-01-30

G

POŞTA DANIELA SABINA, HĂDĂRUGĂ NICOLETA GABRIELA, PEŢ ELENA, POŞTA GHEORGHE MARINEL, PEŢ IOAN, CAMEN DUMITRU, HĂDĂRUGĂ DANIEL IOAN

Description

The aim of this procedure was the development of a manufacturing process and a rooting product based on liquid willow extract, which has an effective biostimulant activity on the root system, with applications in horticulture, forestry, and agriculture…
For the purpose of root system biostimulation (rooting), the bioactive compounds from willow (especially salicin and auxin) are easily assimilated and promote the development of a very strong root system. This provides horticultural, forestry, and agricultural species with healthy growth and increased drought resistance. The most effective concentrations were obtained from willow extract at a mass ratio of 40-60% (relative to the plant material).

The manufacturing process and rooting product based on willow extract, according to the invention, offer the following advantages:
•Reduced rooting period (by approximately 25-30 days);
•A well-developed, vigorous root system, which ensures proper plant growth, with longer, denser, and stronger roots;
•The process and materials used in obtaining the product result in a low-cost rooting product;
•The application time of the product (by immersion) is only 2-3 seconds, significantly shorter than other products;
•A strong root system allows for faster and more efficient nutrient absorption, increasing drought resistance by storing essential nutrients in the root;
•Resistance against various pathogens;
•Absolutely no handling risks.



Roots of Tuja occidentalis L.

Control



Use of the rooting product (Variant II) – liquid form, with a plant material-to-water ratio of 40-60%. The root length is approximately six times larger and more branched



Roots of Ligustrum vulgare L.

Control



Use of the rooting product (Variant II) – liquid form, with a plant material-to-water ratio of 40-60%.

Contact: danielaposta@usvt.ro

6th International Exhibition INVENTCOR
3-5 April 2025 – Deva, Romania

MINERAL PREMIX USED FOR LAYING HENS REARED IN ECOLOGICAL SYSTEM

Patent No. RO 132411 B1/29.01.2021

ŞTEF LAVINIA, JULEAN CĂLIN, SIMIZ ELIZA, PEŢ IOAN
University of Life Sciences "King Mihai I" from Timisoara

G

Description

Organic poultry production in the EU is regulated by consolidated text Council Regulation (EC) No 834/2007 and Commission Regulation (EC) No 889/2008. These outline a number of general principles and they also detail various technical restrictions. The terms “organic poultry” are commonly used among both consumers and producers of eggs and poultry meat. In order to comply with the mineral requirements, it is necessary to use some microelements sources agreed by the specific legislation.

The invention refers to the design and testing of a mineral premix structure dedicated for laying hens reared in ecological systems, producing eggs for human consumption, applicable in the zoo-veterinary field.

The original formulation of structure of mineral premix specific for laying hens, according to this patent is based on:

-establishing through laboratory analyzes the content of microelements of main feeds used in the feed of laying hens maintained in an ecological system. The micromineral content values of the basic feed were established at 60 ppm Fe, 20 ppm Mn, 28 ppm Zn, 7 ppm Cu, 0.12 ppm Co, 0.06 ppm I and 0.26 ppm Se, which indicates a satisfaction of the mineral requirements in a proportion of 70-100% and the need to supplement them through premixes.

-through direct experiments, a mathematical equation was established with a high coefficient of multiple determination for each of the 7 microelements studied, resulting in the following values of micromineral supplementation: 10 ppm Fe, 20 ppm Mn, 20 ppm Zn, 1.5 ppm Cu, 0.125 ppm Co, 0.2 ppm I and 0.10 ppm Se.

-the structure of the specific mineral premix for laying hens maintained in an ecological system was developed, consisting of: 22.398% iron carbonate, 44.795% manganese carbonate, 26.451% zinc oxide heptahydrate, 5.567% basic copper carbonate, monohydrate 0.235% basic cobalt carbonate, monohydrate, 0.331% calcium iodate, anhydrous and 0.224% sodium selenate which is incorporated into a calcium carbonate support. The premix is introduced in a proportion of 0.5% in the structure of the concentrate mixture that is administered to this category of poultry.

It provides an optimum source of microelements preventing the deficiency states and the improvement of the bioproductive performances.

The inorganic salt mineral premix was testing on laying hens with successful preliminary results.


ROMÂNIA

DUPLICAT
ELIBERAT INVENTATORULUI
În baza Art.34 alin.(2),
din Legea nr.64/1991 republicată

OFICIUL DE STAT PENTRU INVENȚII ȘI MĂRCI

BREVET DE INVENȚIE

Nr. 132411

Acordat în temeiul Legii nr.64/1991 privind brevetele de invenție, republicată în Monitorul Oficial al României, Partea I, nr.613, din 19 august 2014.

Titular: UNIVERSITATEA DE ȘTIINȚE AGRICOLE ȘI MEDICINĂ VETERINARĂ A BANATULUI "REGELE MIHAI I AL ROMÂNIEI" DIN TIMIȘOARA, TIMIȘOARA, TM, RO

Titlul invenției: PREMIX MINERAL DESTINAT GĂINILOR OUĂTOARE CRESCUTE ÎN SISTEM ECOLOGIC

Inventatori: ȘTEF LAVINIA, TIMIȘOARA, TIM, RO; JULEAN CĂLIN, ARAD, AR, RO; SIMIZ ELIZA, TIMIȘOARA, TM, RO; PEȚ IOAN, COMUNA DUMBRAVIȚA, TM, RO

Descrierea invenției, revendicările și desenele la care se face referință în acestea, fac parte integrantă din prezentul brevet de invenție.
Durata brevetului de invenție este de 20 ani, cu începere de la data de 27/09/2016, cu condiția plății taxelor anuale de menținere în vigoare a brevetului.

Director General

București, Data eliberării 29/01/2021









Contact: laviniastef@usvt.ro calinjulean@usvt.ro

Technology for identifying biotypes of *Lycium chinense* resistant to the attack of the gall mite on goji plants

G

Patent number: 138158 A2

Authors: Roxana Ciceoi, Oana Venat, Cătălina Nicolae, Mihaela Iordăchescu, Minodora Gutue, Adrian Asanică, Florin Stănică, Ana Butcaru, Vasilica Luchian, Mala-Maria Stavrescu-Bedivan, Dan Popescu

Description: This invention presents an advanced molecular-assisted selection procedure aimed at identifying resistant biotypes of goji (Lycium chinense) against the gall mite (Aceria kuko). The methodology integrates molecular marker analysis into breeding programs, providing a precise and efficient tool for selecting resistant plants. The process is applied to in vitro-derived plant tissues obtained from seeds following hybridization or selection processes, facilitating the development of new and valuable goji biotypes. In its final phase, the procedure employs ISSR and SSR molecular markers, enabling direct testing of planting materials and existing plantations to confirm resistance traits, thus enhancing the resilience and productivity of goji cultivation.

The invention description

The preliminary selection procedure, assisted by molecular markers, on explants obtained in vitro, to identify goji biotypes resistant to gall mite (*Aceria kuko*) infestation consists of a sequence of steps including:

1. Seed preparation
   - Harvesting goji berries from selected plants.
   - Extracting and decontaminating the seeds by immersing them in a 0.5% systemic fungicide solution for 20 minutes, followed by repeated rinsing to remove the fungicide.
   - Disinfecting the seeds using sodium hypochlorite at concentrations of 10– 15%.
1. Culture media preparation and inoculation
   - Preparing Gamborg B5(-) culture medium without growth hormones. Inoculating seeds on the prepared medium.
1. Growth monitoring and marker analysis
   - Monitoring the growth of callus/explants and seedlings.
   - Performing analyses using two ISSR-type molecular markers and one SSR- type molecular marker.
   - Selecting plant material for a full analysis sequence using SSR and ISSR molecular markers to rapidly identify biotypes resistant to gall mite infestation.

The resistant biotypes can be differentiated from the susceptible ones using 10 bands, of which 6 indicate positive resistance characteristics, while 4 are specific to sensitive biotypes only.

Primers	Bands sizes in sensitive plants (bp – base pairs)	Band sizes in resistant plants (bp – base pairs)
ISSR Primers		
Ai2	-	1670
	-	1380
	-	1280
	376	-
Ai8	600	-
	-	360
SSR Primers		
P3-P4	-	1360
	440	-
	260	-
	-	230

The benefit

The invention leverages the advantages of in vitro propagation, ensuring genetically stable and virus-free plant material, essential for breeding programs. By integrating molecular marker analysis, it offers a rapid, efficient, and precise method for identifying resistant biotypes, supporting sustainable cultivation and advancing organic production systems



CS II dr. ing. Roxana Ciceoi, Email: roxana.ciceoi@qlab.usamv.ro, Mobile: +40 721 81 61 94

New Romanian kiwiberry cultivars - ARIANA and ANDROS

G

Patent/project number: 6407/31.07.2023; 6408/31.07.2023

Authors: Lavinia Mihaela UDREA (ILIESCU) [1, 4], Giuseppe ZUCCHERELLI [5], Constantin PĂUN [1], Marian Nicolae VELCEA [3], Liliana Aurelia BĂDULESCU [1, 2], Florin STĂNICĂ [1, 2]

[1] Faculty of Horticulture; [2] Research Center for Studies of Food Quality and Agricultural Products; [3] CTT-AGROBIOLIFE
University of Agronomic Sciences and Veterinary Medicine of Bucharest, Romania
[4] Research Institute for Fruit Growing Pitești – Mărăcineni, Romania
[5] Vitroplant Italia, Cesena, Italy



Some results of the Romanian breeding program after more than 25 years of research on *Actinidia* spp.



- medium-large fruit:
  - weight 12-14 g, length 40 mm,
  - diameter 60.97 mm;
- fruit composition at consumption maturity:
  - 13.71% soluble solids,
  - 70.15 mg ascorbic acid/100 gfw;
- 2-3 months storage capacity, in controlled atmosphere;



- abundant flowering;
- good pollen viability and germinability;
- long flowering period, which coincides with the female selections;

Contact: iliescu_lavinia@yahoo.com; flstanica@yahoo.co.uk; ctt-agrobiolife@usamv.ro; +40741181736

Universitatea de Științe Agronomice și Medicină Veterinară – București

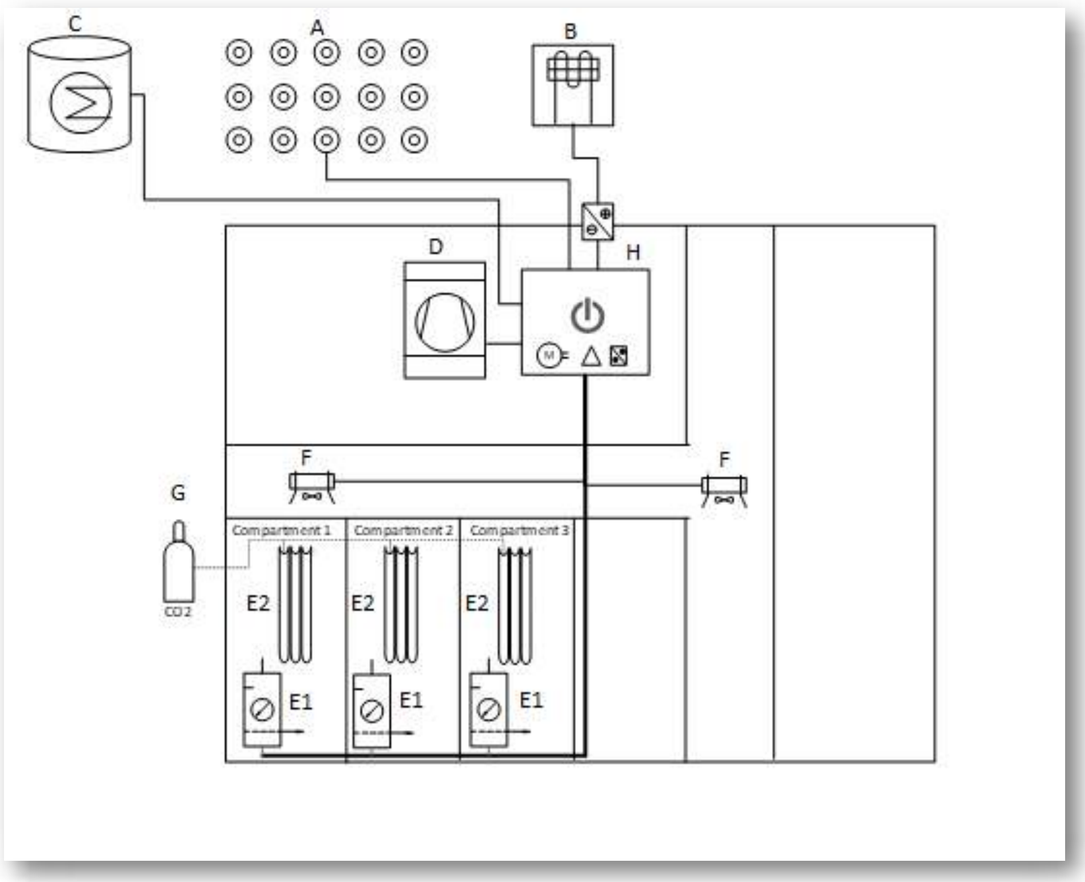
CLIMATE CONTROL ENERGY SYSTEM IN ORDER TO REDUCE ENERGY CONSUMPTION IN GREENHOUSES

G

Patent OSIM -U/0006/2025 Project nr:COD:RO-NO-2019-042
Author/s: Ionuţ Ovidiu Jerca, Liliana Aurelia Bădulescu, Sorin Mihai Cîmpeanu, Răzvan Ionuț Teodorescu, Mariana Postamentel, Sigurd Sanaan, Gether Harald

The energy system for controlling climatic factors in order to reduce energy consumption in greenhouses is intended to ensure superior energy efficiency of continuous tomato production in controlled spaces located in the temperate-continental climate zone, characterized by excessive heat in the summer.The system is based on the energy supplied by 3 water-water heat pumps that exchange heat with a ground-water heat exchanger consisting of 30 100 m deep wells and a water-air dry cooler.This heating/cooling heat supply unit allows energy modulation depending on the required needs according to an experimentation plan. The cooling capacity can have any value in the range of 25-150 kW.

The dry cooler is connected to the heat pump condenser and releases heat to the ambient space. The heat agent used is water with glycol additives.The cooling/heating agent produced by the heat pumps is transported through insulated pipes in each of the greenhouse compartments to the local distribution units - 2 in each compartment, consisting of water-to-air air heaters. These units distribute the air evenly through tubes located under the culture troughs and at the same time dehumidify the air in the greenhouse compartments.A suitable microclimate for plant growth requires an additional supply of CO2; this is ensured by a dedicated circuit supplied from cylinders.The uninterrupted operation of the entire installation is controlled by a computer, through procedures developed for summer day/night operation, winter day/night operation and spring/autumn day/night operation.



Energy system for controlling climate factorsto reduce energy consumption in greenhouses









ACKNOWLEDGMENTS:
„The researchleading to these results has received fundingfrom the NO Grants 2014-2021, under Project contractno. 40/2021”

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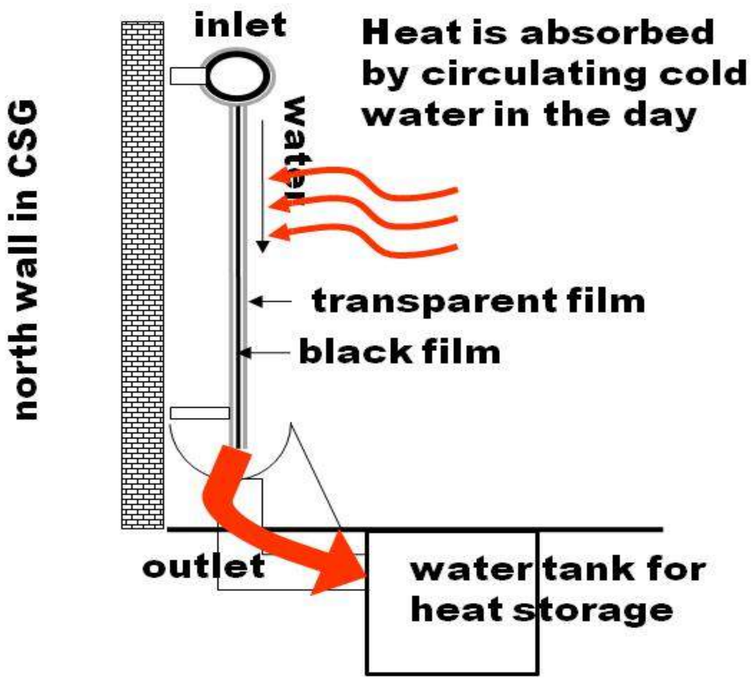
Energy input for the Personal Walipini smart greenhous

Project

Authors:

Members of Associations Justin Capra and SOS Tara Fagarasului





sustainable communities

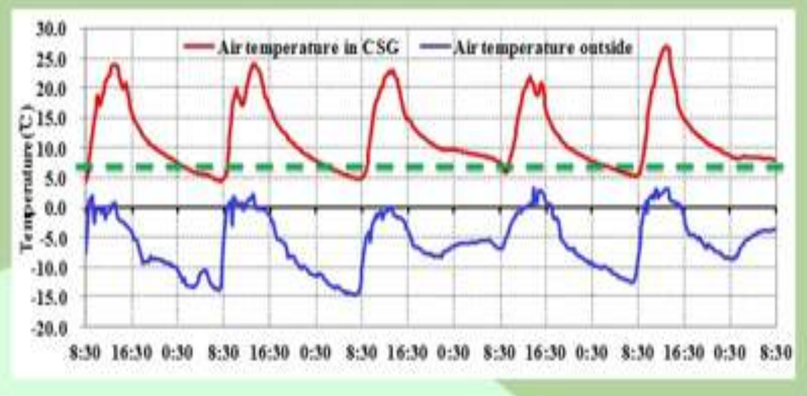
Energy input for the Walipini smart greenhous



The Chinese solarium within the Faculty of Horticulture Bucharest

A smart Walipini greenhouse





A good control of temperature, humidity and light

www.usamv.ro

www.sustainablecommunities.eu

Contact: Marian VELCEA e-mail: marian.nicolae.velcea@gmail.com

Ministry of Education and Research

UNIVERSITATEA LUCIAN BLAGA DIN SIBIU

Innovative solar

Scientific Research Project

Authors: Student Gogoloș Daniel, Student Nicorescu Ștefan, Student Lupu Nicoleta , Student Spinciu Ilariana
Coordinator: Professor Aurel Mihail ȚÎȚU

DESCRIPTION:



An **innovative greenhouse** is a modern agricultural structure equipped with advanced technologies to optimize plant growth conditions. It may include **smart climate control systems, humidity and temperature sensors, automated irrigation,** and **solar panels** for energy efficiency. Its structure can be made of **durable and thermally efficient materials**, such as polycarbonate or specialized film, to maximize heat retention and minimize energy consumption. By integrating **IoT technologies**, farmers can monitor and control parameters remotely, ensuring **increased productivity** and **reduced resource consumption**.



ADVANTAGES:

🌱 **Increased Production Efficiency**
•Enables year-round plant growth, regardless of weather conditions.
•Optimizes temperature, humidity, and light to ensure an ideal environment for crops.

💧 **Water and Resource Conservation**
•Uses automated irrigation systems and humidity sensors, reducing water consumption.
•Can include rainwater collection and reuse, minimizing waste.

🔋 **Energy Efficiency and Lower Costs**
•Integration of solar panels reduces electricity consumption.
•Thermal insulation systems maintain optimal temperature, reducing heating needs.

📲 **Smart Control and Remote Monitoring**
•Sensors and IoT devices allow real-time monitoring of greenhouse conditions.
•Farmers can adjust temperature, humidity, and irrigation directly from their phone or computer.

🦠 **Better Protection Against Pests and Diseases**
•Automated microclimate control prevents mold and other plant diseases.
•Can include air filtration systems or special nets for insect protection.

🍀 **Sustainability and Reduced Environmental Impact**
•Reduces pesticide use by maintaining a controlled environment.
•Lowers carbon footprint through efficient energy and water consumption.

DISADVANTAGE

💰 **High Initial Costs**
•The initial investment can be high due to advanced technologies (sensors, automation, solar panels, etc.).
•High-quality materials and control systems increase installation costs.

🔋 **Energy Dependence**
•Although solar panels can be used, a smart greenhouse requires electricity for sensors, ventilation, and automation systems.
•In case of a power outage, some functions may be affected (unless there is a backup power source).

⚙️ **Maintenance and Technical Knowledge Required**
•Smart systems require regular monitoring and maintenance to function optimally.
•Farmers need to be familiar with using technology, which may require training.

🏗️ **More Complex Installation**
•Compared to a traditional greenhouse, installing an innovative greenhouse can be more complicated and take longer.
•Specialists are needed to install sensors, irrigation systems, and climate control systems.

🌩️ **Sensitivity to Extreme Weather Conditions**
•Although durable, innovative greenhouses can suffer damage from extreme weather events (strong storms, hail, heavy snowfall).
•Repairing or replacing advanced components can be expensive.

RESULTS AND DISCUSSIONS:

🔍 **An innovative greenhouse is a modern and efficient solution for sustainable agriculture, offering advanced microclimate control, resource savings, and increased productivity.** Thanks to smart technologies, farmers can monitor and automatically adjust temperature, humidity, and irrigation, ensuring optimal conditions for crops throughout the year.
However, there are also challenges, such as high initial costs, maintenance requirements, and electricity dependence. Implementing such a system requires a significant investment and technical knowledge, but in the long run, the economic and ecological benefits can outweigh these disadvantages.
In the end, innovative greenhouses are an excellent option for farmers looking to improve production efficiency, reduce resource waste, and adopt a more sustainable approach to agriculture. 🌿🌞

CONTACT:
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Academy of Romanian Scientists Corresponding Member;
PATLIB Expert at European Patent Office;
Director of Regional Centre OSIM-EPO for Intellectual Property Protection (PatLib Sibiu);
President of Romanian Association for Alternative Technologies Sibiu (A.R.T.A. Sibiu);
Vice-President of Romanian Association for Nonconventional Technologies Romania;
Editor-in-Chief Nonconventional Technologies Review;
Executive Editor Journal of Knowledge Dynamics – Academy of Romanian Scientist;
Associate Editor Management of Sustainable Development Journal – "Lucian Blaga" University of Sibiu;
Associate Editor The International Journal of Mechatronics and Applied Mechanics;
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internal

PROCESS FOR RAISING YOUNG QUAILS

Patent application s2024 0093

G

The research was carried out within the projects 24.80012.5107.SE Diversification of feed aditives in poultry farming funded by NARD

Authors: Caraman Mariana, Chiselița Natalia, Chiselița Oleg

The invention relates to animal husbandry, in particular to the process for raising young quails for decrease morbidity rate, mortality and increase body mass by using the complex biologically active microbial preparation, obtained from yeast biomass from winemaking waste and biomass of spirulina in the proportion of 0.5 kg per 100 kg of feed (0.5%) as the part of the daily ration of quails during the period 1-30 days.

The procedure ensures 100% chick viability in the experimental group compared to 91% in the control group, a decrease of specific feed consumption in the experimental group by 10.13%, a decrease in the titer of conditionally pathogenic bacteria E. coli by 8.64% and Clostridium spp. by 3.08%, an increase in the titer of beneficial microorganisms Lactobacillus spp. by 9.07%, Bifidobacterium spp. by 5.83% and Bacillus spp. by 3.86% in the gastrointestinal tract of the chicks, an increase in the body mass of the chicks by 13.46% compared to the control and obtaining an additional profit of 4.34 lei/quail.



Young quails



Complex biologically active microbial preparation

Contact: oleg.chiselita@imb.utm.md

6th International Exhibition
INVENTCOR
3-5 April 2025 – Deva, Romania

UNIVERSITATEA TEHNICĂ A MOLDOVEI

Technical University of Moldova

QUAILS RAISING PROCESS

Patent application s2024 0092

The research was carried out within the projects 24.80012.5107.SE Diversification of feed aditives in poultry farming funded by NARD

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***Authors:**, Chiseliță Natalia, Chiseliță Oleg, Caraman Mariana*

The invention relates to animal husbandry, in particular to the process of raising quails for increase productivity and meat quality by using the complex biologically active microbial preparation, obtained from yeast biomass from winemaking waste and spirulina biomass, as the part of the daily ration of quails, in the ratio of 0.5% of the ration during the period of 1-44 days and 0.25% during the period of 45-60 days. The process ensures the viability of chickens of 98% in the experimental group compared to 83% in the control group, the decrease of the titer of conditionally pathogenic bacteria E. coli by 4.96%, the increase of the titer of beneficial microorganisms Lactobacillus spp. by 18.40%, Bifidobacterium spp. by 11.61% and Bacillus spp. by 4.56% in the gastrointestinal tract of the chickens, increasing the body mass of the chickens by 13.46% compared to the control, obtaining quail meat with the higher protein content by 3.92% and lower fat content by 3.02% compared to the control group and obtaining economic efficiency of 4.47 lei/quail.



Experimental Group

Control Group



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6th International Exhibition
INVENTCOR
3-5 April 2025 – Deva, Romania

UNIVERSITATEA TEHNICĂ A MOLDOVEI

Technical University of Moldova

PROCESS FOR INCREASING OF EGG PRODUCTIVITY OF QUAILS

Patent application s2024 0094

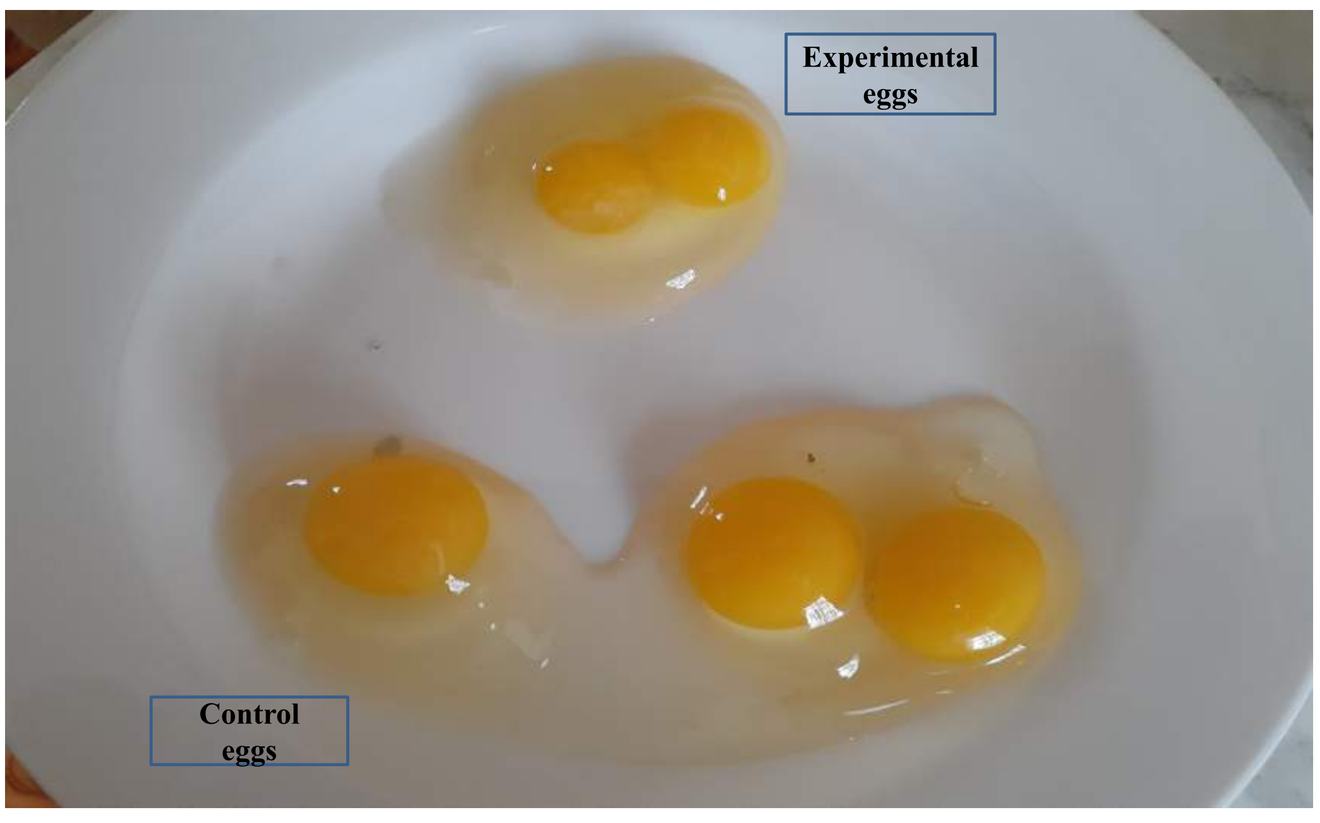
The research was carried out within the projects 24.80012.5107.SE
Diversification of feed aditives in poultry farming funded by NARD

G

Authors: *Chiseliță Oleg, Caraman Mariana, Chiseliță Natalia*

The invention relates to biotechnologies in animal husbandry, in particular to the process for increasing of egg productivity of quails by using the complex biologically active microbial preparation, obtained from yeast biomass from winemaking waste and spirulina biomass, in the composition of the daily ration of quails, in the ratio of 0.5% of the ration during the period of 1-44 days and 0.25% of the ration during the period of 45-60 days and the distribution of one month old quails of 30 heads in batteries, of which 22 females and 8 males. The process contributes to increasing the egg laying intensity of quails at the age of 60 days by 29.54%, increasing the weight, longitudinal and transverse diameter of eggs by 25.79%, 21.84% and 14.38% respectively, and obtaining of daily income of 0.53 lei/head of laying quail from egg production.





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H

Foods

Drinks

Restaurants

Hotels & Spa

La BISCUTERIE

Authors: ***Ani MOCANU, Razvan POPA***

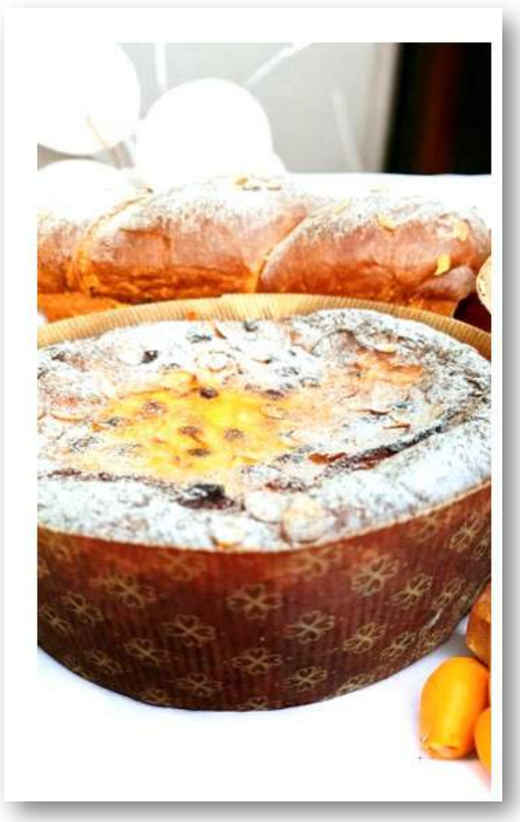
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Passion

We, the La Biscuterie team, have managed to weave imagination, seasoned with passion for colorful innovations. Our story begins with the essence of nature, thus, through its rich gifts, it challenged our inventiveness to skillfully combine natural ingredients without processing nature, thus creating products that bring more harmony and inner joy. The delicious snacks are designed and made to improve the lifestyle, using syrups and wholemeal flours, ennobled with flavors inspired by the bouquet of the four generous seasons.











SCAN ME



Skills

We co-opted into our team nutritionists who helped us to balance our healthy delights; we procure basic ingredients only from producers who put full passion into what they offer us and rigorously respect the principle of natural ingredients not industrially processed:

Whole wheat flour - natural enzymatic correction;

Whole rye flour;

Spelled wheat flour;

Natural sweeteners: BIO natural grape syrup, unheated, obtained by evaporation, BIO agave syrup with low glycemic index;

BIO cold-pressed coconut oils, sunflower oil and other oleaginous fruits;

Natural spices, without preservatives or additives, most of them from organic farming.

Contact: +40 761 66 73 73 ***Presentation link: https://labiscuiterie.ro/***



LINDEN HOUSE / CASA TEI

Authors: Ioana Adina SCHWACHHOFER

H

From the desire to do more, we created the original innovative concept Linden House / Casa Tei that combines the specific local tradition of the Sibiu area with the modern comfort of today's times. We are located in a residential area characterized by the original architecture of German houses with lots of greenery around and quiet near the Sibiu International Airport.

Linden House / Casa Tei is ideal for a holiday or business stay and you can quickly reach any part of our wonderful city of Sibiu by car or public transport.





Cozy B&B services in Hermannstadt / Sibiu offering three rooms and an apartment with courtyard parking!











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casatei97@gmail.com

Presentation link:

https://www.instagram.com/casa_tei?igsh=N215ZXNpMXRlaHQ3

NEXUS TRAVEL

Travel agency

Author: Zenaida MOSNEAG & Team

H

Nexus Travel was founded in 1998 out of a desire to build our own vacations and make others enjoy them too! Over time, we have proven that we know how to respect our tourists, who remain loyal to us and become our friends.

"The best trip is always the next one“ - Live with us new unique experiences!



We offer all tourism-related services with high professionalism, promptness and responsibility:

– holidays in the country and abroad;

– booking plane tickets for all airlines and all destinations;

– medical insurance for trips abroad.

Nexus Travel is a member of ANAT.



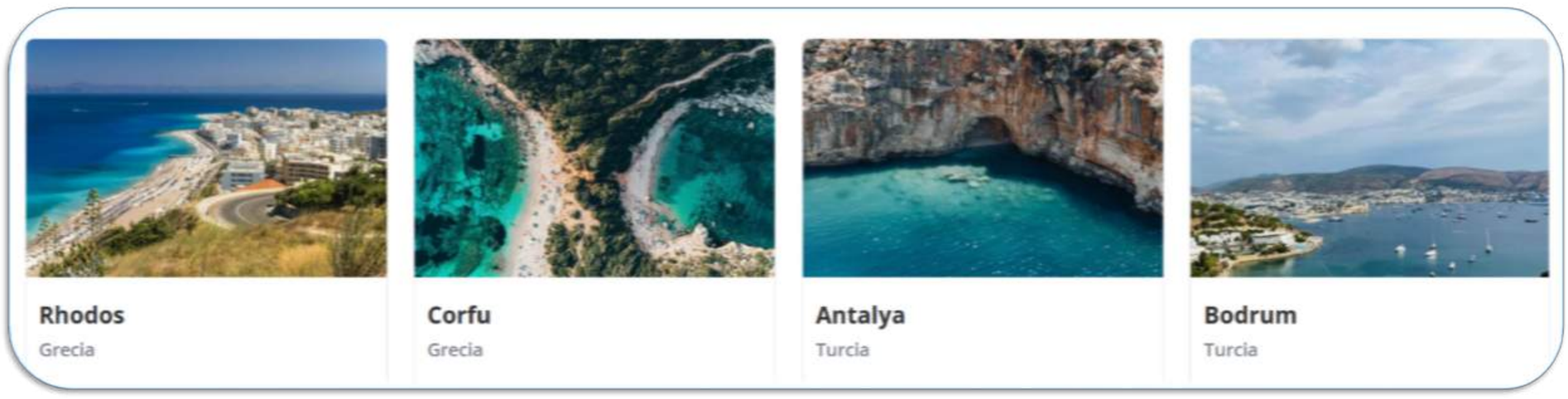
SCAN ME

Contact:

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+40744 636 446



We like to think that any holiday dream can come true with us!

THEREFRESH CONCEPT

PROJECT: HOSPITALITY CULTURE

Author: Florin Pirus & Team

H

Our company has been on the market for more than 12 years and we are continuously expanding.

Our activity is in the HoReCa field, we own 7 coffeeshops, a coffee roaster and a restaurant. In our cafes we offer our own brand of specialty coffee, hot chocolate, smoothie bar, catering and delivery services, in addition we are expanded with an online store where we offer our customers a varied range of products and accessories for serving and preparing tea and coffee.



Vision *TheRefresh is the place where you can really taste well-being!*

TheRefresh is more than a company or even a cafe. TheRefresh is a complex concept, which is based on the strong idea of refreshing, stimulating and educating the senses, to facilitate reaching the optimal level of energy and well-being.

TheRefresh is a concept aimed at offering customers a substitute for a healthy and balanced meal in the form of smoothies, teas and coffee.

TheRefresh is the place where the team is educated to serve all products in their finished form at the highest quality, honoring cultural factors and professional preparation methods. TheRefresh is more than a company or even a cafe. TheRefresh is a complex concept, which is based on the strong idea of refreshing, stimulating and educating the senses, to facilitate reaching the optimal level of energy and well-being.

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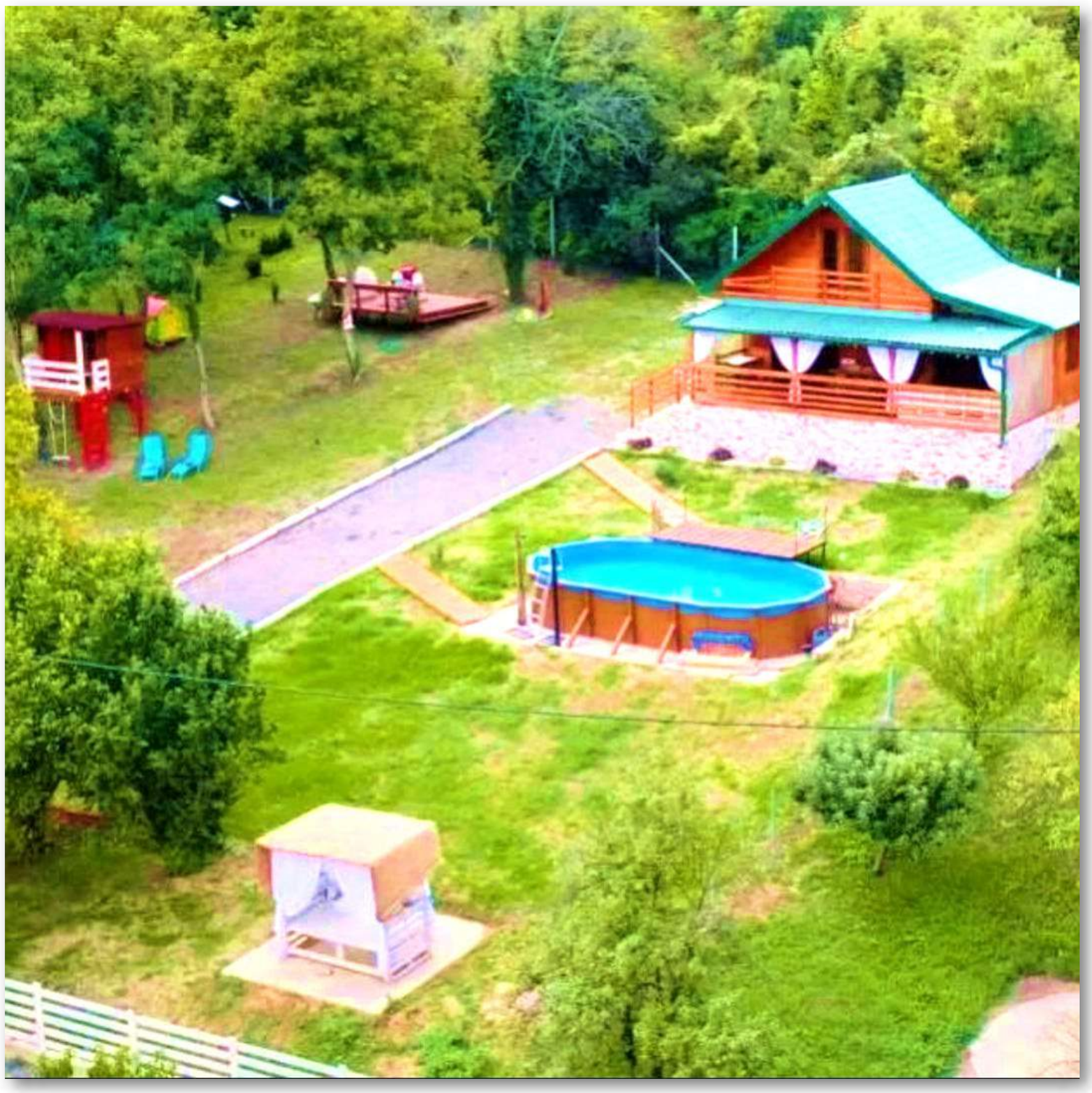
Contact: S.C. COFFEE&BEVERAGE S.R.L
E-mail: florin@therefresh.ro Tel.: +40 721 726 116 www.therefresh.ro

Kuca za odmor Oblutak

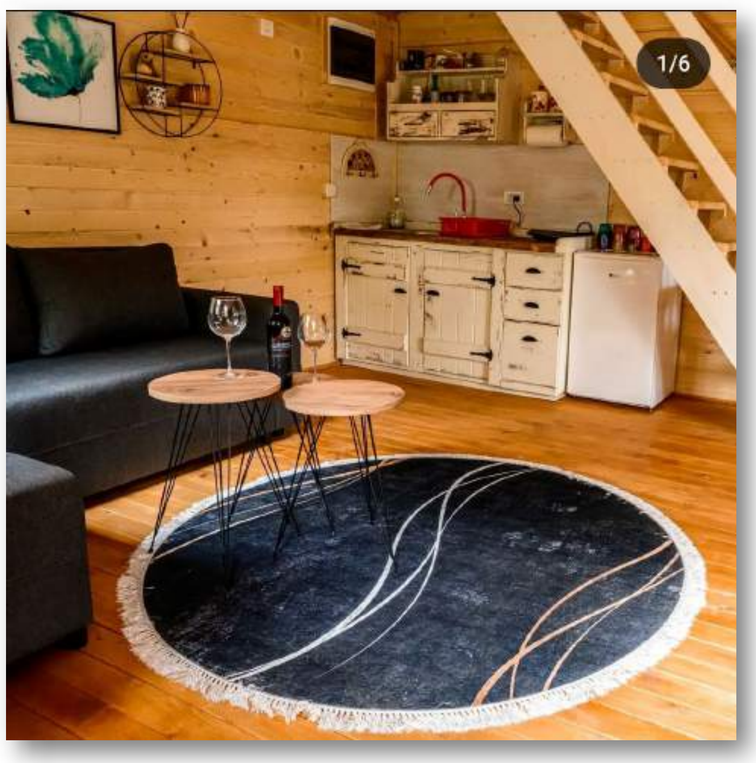
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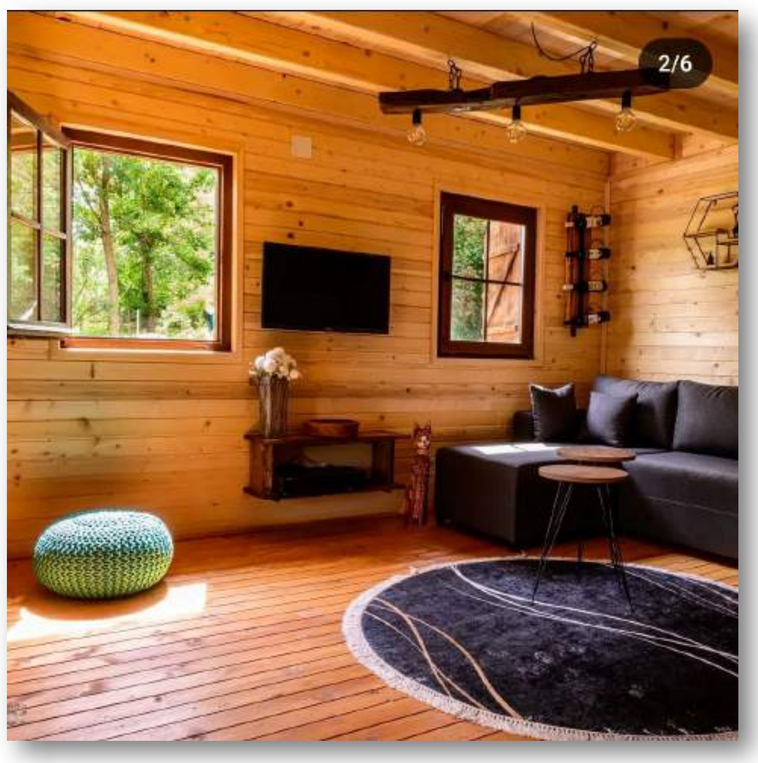
Author: Dragan PUDA

Holiday home Kuca za odmor Oblutak is located in Koruska-Duga Meda, Serbia, near Susek on the other side of the Danube river in a quiet area away from the hustle and bustle of the city, offering relaxation and refreshment for visitors.



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Author/s: Sergiu STANESCU & LA LIBRĂRIA Team

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La Librarie is a wine, liquor and coffee shop that's offering a wide range of imported or niche Romanian products. Either to serve on site, in a chill-out atmosphere, or to take away, we are here to offer some piece of advice in order to help you choose what mostly suits your gourmet appetite. You can have a cigar too, and if in a lucky day, you may enjoy an evening of wine tasting.







SCAN ME

Contact:
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BoRD13

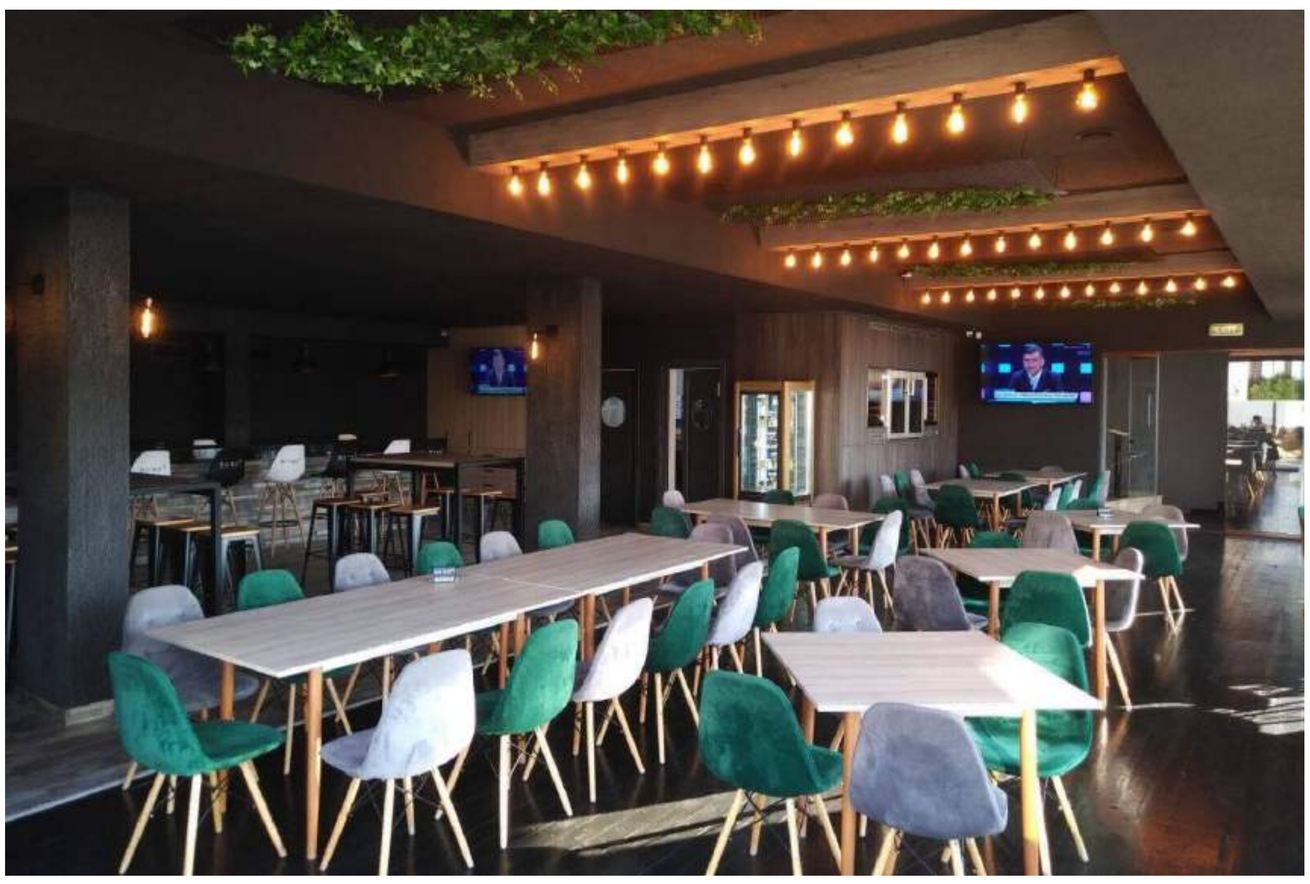
Gastro & Pub

Authors: Mirela STANCU & Team

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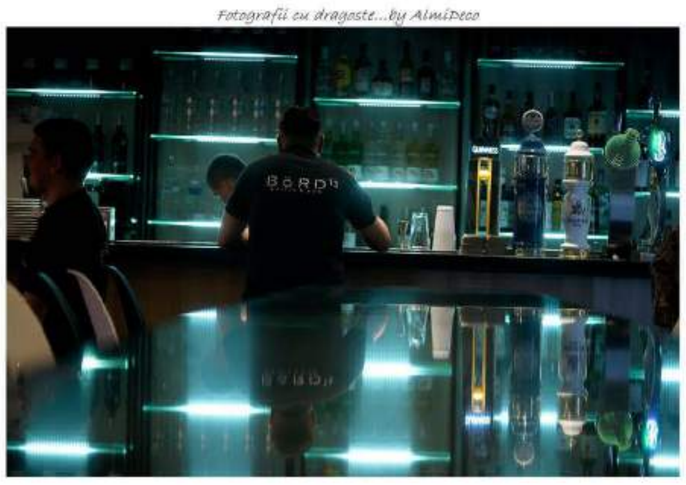
BoRD 13 one of a kind concept that brings closer the art of high-quality restaurant cuisine, with a new scenery. Enjoy a different culinary experience, where you will be impeccably served, with the most refined dishes, so that you and your loved ones can spend beautiful moments together.

A place created with soul, a unique BoRD13 concept!











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International Cuisine: Spain, Greece, Italy, France, luckily they are not so far away.

Romanian Cuisine: The finest tastes of Romanian cuisine are defined at BORD 13.

Wines: with the help of the most famous wineries and wine houses in Romania, we have the most select wines for our customers.

Contact:

http://www.bord13.ro/index.html **office@bord13.ro** **Tel.: +40786709709**

STAR Closed Doner

Food Project

Authors: Irimia Marius Ionut & Team

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At Star Doner & Pizza, creativity is at its highest, so through continuous innovation we create new products for our customers.

Through a unique Star brand process, we have developed a hot, juicy, crispy and full of surprises Closed Doner that amazes all your senses.

We created the STAR Taste World just for you. **STAR Doner & Pizza**, a new, original concept based on quality and diversity adapted to any situation, with a portfolio of over 70 products. The service is provided directly from our locations or based on the order with home delivery.










Contact: ***+40731 588 801*** ***https://www.facebook.com/profile.php?id=100088256882595***

PIZZA SPEED

Author: Nicolae Florin PURCEL & Team

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PIZZA SPEED DEVA is a concept based on quality, promptitude and perseverance! our team makes sure that all our customers remain satisfied with the quality of our products and that they intent to return with love anytime!

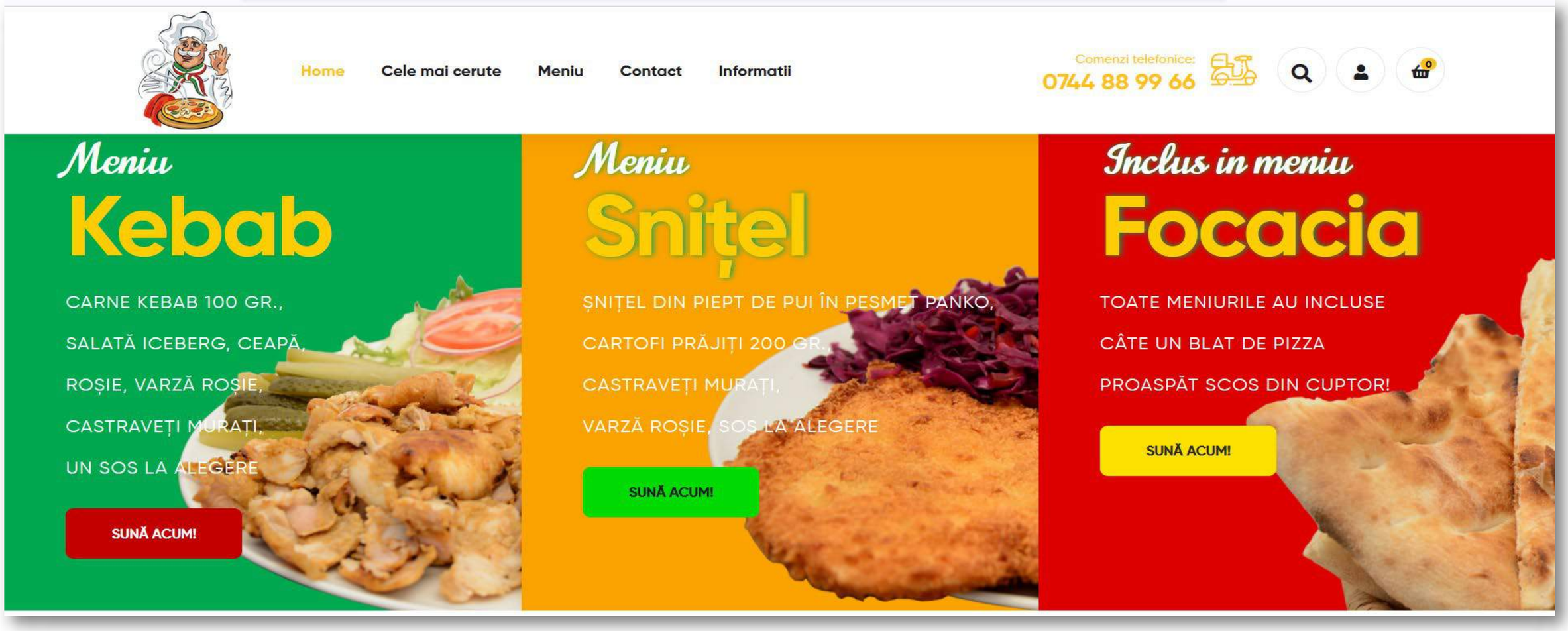








SCAN ME



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ABC ANAEROBIC BOTTLING CLOSURE FOR ANAEROBIC AND ACEPTIC FILLING

Patent: EP24183909.1

Authors: Alexander Gantenbrink, Vitalie Popa

H

ABC Anaerobic Bottling Closure

Revolutionizing Anaerobic and Aseptic Filling for Beverage and Pharmaceutical Industries

Product Summary:

The ABC Anaerobic Bottling Closure represents a cutting-edge advancement in the bottling industry, offering the first-ever reusable solution for anaerobic and aseptic filling. Designed to preserve product integrity and purity throughout the filling process, this closure maintains a stable anaerobic environment by utilizing inert gases such as argon, nitrogen, or CO2. It is an essential tool for industries requiring rigorous contamination control, including the beverage and pharmaceutical sectors.

Key Features:

- **Reusable Design:** Sustainable and efficient, significantly reducing waste and enhancing cost-effectiveness over time.
- **Anaerobic Environment Control:** This process utilizes inert gases (such as nitrogen or CO2) to maintain a controlled anaerobic atmosphere during filling, ensuring product quality.
- **Versatility:** Ideal for beverage bottling and pharmaceutical applications, with capabilities for aseptic conditions.
- **Sample Extraction:** This method facilitates sample collection without removing the closure, preserving the anaerobic environment throughout the process.

Operational Instructions:

The ABC Anaerobic Bottling Closure offers two primary filling options to meet diverse operational needs:

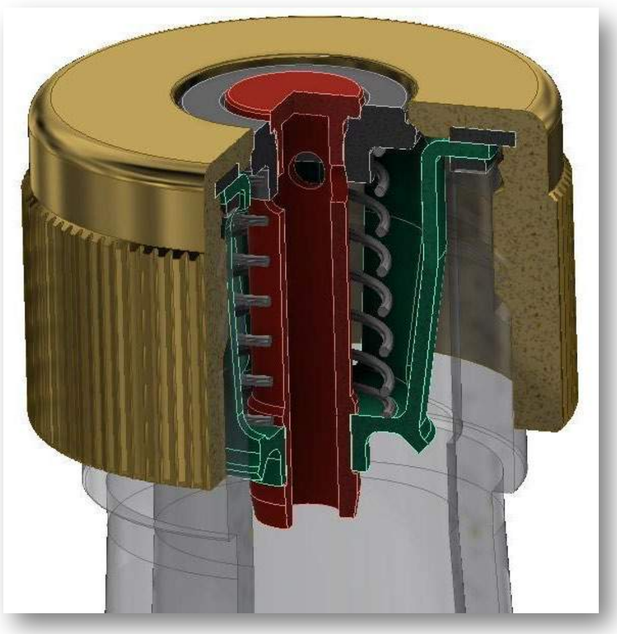
1. Option 1: Upright Bottle Position

- **Step 1:** Create a controlled anaerobic environment within the bottle by flushing it with nitrogen (N2) or carbon dioxide (CO2) in conjunction with a vacuum process.
- **Step 2:** Fill the bottle with the desired liquid, ensuring anaerobic conditions are maintained throughout the operation.

2. Option 2: Upside-Down Bottle Position

- **Step 1:** Fill the bottle with sterile water, then use nitrogen (N2) or carbon dioxide (CO2) to evacuate the water, thereby creating an anaerobic atmosphere.
- **Step 2:** After evacuating the water, reposition the bottle upright and fill it with the desired liquid while maintaining anaerobic conditions.







Applications:

- **Beverage Industry:** Ideal for preserving the quality and purity of beverages, particularly those sensitive to oxygen exposure.
- **Pharmaceutical Industry:** Ensures aseptic conditions and protects the integrity of sensitive pharmaceutical liquids or biologics during bottling.

Advantages:

- **Sustainability:** The reusable design minimizes waste, contributing to environmentally friendly manufacturing practices.
- **Cost-Effectiveness:** Reduces operational costs by eliminating the need for single-use closures while maintaining product integrity.
- **Contamination Control:** Ideal for industries where contamination control is critical, setting a new benchmark for anaerobic and aseptic filling systems.

Conclusion:

The ABC Anaerobic Bottling Closure sets a new standard for anaerobic and aseptic filling technologies, offering unparalleled flexibility and operational efficiency. It is the ideal solution for beverage and pharmaceutical manufacturers looking to ensure product quality, enhance sustainability, and streamline their bottling processes.

Contact: vpopa@auric-oak.com +385916067656

AURIC INFINITY HYBRID BIOREACTOR / BIO FERMENTOR (WOODEN / STAINLESS STEEL)

Patent: EP24174365.7

Authors: Alexander Gantenbrink, Vitalie Popa

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The **auric infinity HYBRID** is a cutting-edge bioreactor and bio fermentor that seamlessly integrates the natural benefits of various wooden pressure vessels (such as oak, acacia, and more) with the precision and durability of stainless steel pressure vessels. This combination accelerates fermentation and ageing processes for still and sparkling products, offering an advanced yet natural approach to fermentation. The system utilizes only yeast and bacteria for fermentation, ensuring a natural process free from added additives or preservatives.

Versatility: auric infinity HYBRID is highly adaptable and designed to support various fermentation applications. It functions effectively in aerobic and anaerobic conditions, with or without pressure, making it ideal for diverse industries such as winemaking, brewing, spirit ageing, biofuel production, pharmaceutical manufacturing, and more. This flexibility allows the system to accommodate various fermentation needs across multiple sectors.

Pure Fermentation: auric Infinity HYBRID exclusively relies on yeast and bacteria for fermentation, guaranteeing a natural process without added additives and preservatives. The system offers complete control over oxidation, contamination, and evaporation during primary and secondary fermentation and ageing stages, ensuring a consistent and pure outcome.

Wood's Natural Compounds: One of the standout features of the auric infinity HYBRID is its ability to enhance the fermentation process by infusing the **unoxidized chemical compounds** from wood into the fermenting medium. The unique sealed environment of the stainless-steel pressure vessel optimizes this natural infusion, accelerating fermentation and ageing.

Customization: With an integrated perforated cylindrical filter, the auric infinity HYBRID offers unmatched flexibility in fermentation. It supports the fermentation of liquid (e.g., juice) and solid materials (e.g., marc, such as berries or pomace), allowing a diverse range of products to ferment within the same system.



Uniqueness: The system can support dual fermentation processes simultaneously—one in the wooden barrel and the other in the stainless-steel pressure vessel. By simply opening two valves, the two fermentations can be combined at any stage, either before or after completion, providing enhanced control and the opportunity for innovative product development.

Continuous Fermentation: A key feature of the auric infinity HYBRID is its ability to facilitate continuous fermentation. The customizable temperature and pressure settings of the wooden and stainless-steel pressure vessels allow them to function independently or in tandem, providing unparalleled control and adaptability. Furthermore, different wooden barrels can be swapped during the continuous fermentation process, optimizing the system's efficiency and enhancing the overall product quality.

The **auric infinity HYBRID** represents a breakthrough in fermentation technology. It combines natural materials with modern precision to offer unparalleled flexibility, control, and innovation across a wide range of industries.

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RAPID SCREENING METHOD OF IMAZALIL AND THIABENDAZOLE FROM CITRUS

Inventors: Cristiana RADULESCU, Radu Lucian Olteanu, Ioana Daniela DULAMA, Ioan Alin BUCURICA, Toma GALAON, Raluca Maria STIRBESCU, Andreea Laura BANICA, Bogdan Bradut MINEA

Assignee: Valahia University of Targoviste

Patent Application RO 138394 A0 /30.09.2024

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Field of Applicability: Food Industry

The main advantage of the invention is the fact that it finds practical use in the food industry (complex analysis laboratories, quality control of raw materials, the consumer information department/National Authority for Consumer Protection), with the role of warning about the risk of contamination with residues of imazalil and thiabendazole and implicitly on the risk to human health, but also the role of warning and awareness of suppliers and processors.

Originality: Rapid screening method

The technical problem that the invention solves is to establish a rapid screening method for imazalil and thiabendazole in citrus fruits. Regardless of the product (i.e., grapefruits 0110010, oranges 0110020, lemons 0110030, limes 0110040 or mandarines 0110050 - as codified by Commission Regulation EU 2020/856 of 9 June 2020) the sample and reagent quantities are specified exactly, as and working parameters.

Importance of invention: Food safety

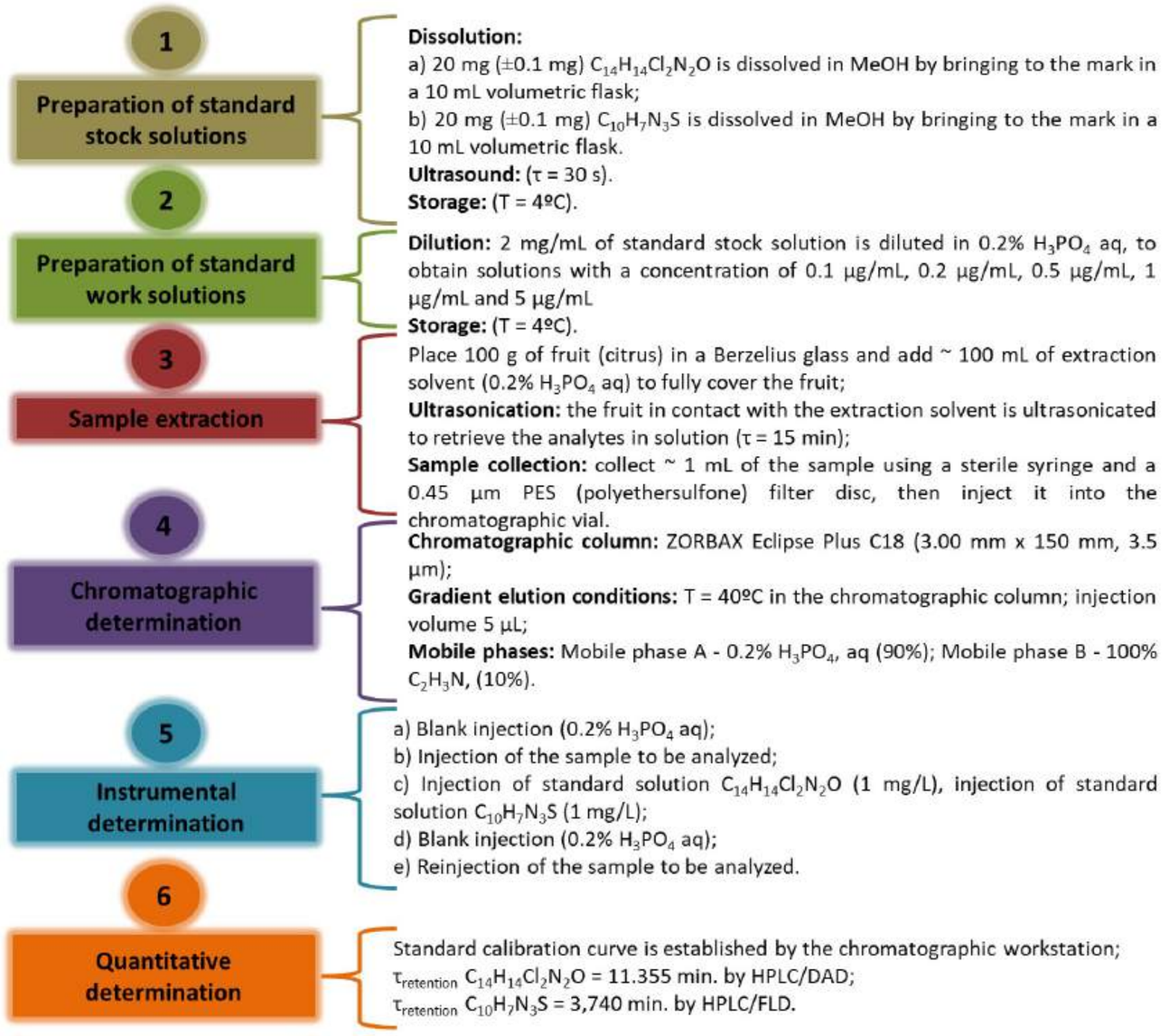
The invention relates to the rapid screening method of imazalil and thiabendazole from citrus fruits with applicability in the field of food safety. The method uses high-performance liquid chromatography (HPLC) coupled with ultraviolet-visible DAD (diode array detector) and FLD (fluorescence detector) detectors for the simultaneous detection of imazalil and thiabendazole residues on the surface of citrus fruits (lemons, mandarines, grapefruits, oranges, and limes).

The European Food Safety Authority (EFSA) in the technical report approved in March 2023, based on member countries' reports on official controls on pesticide residues in food products, stated among other things: citrus fruits, seed fruits and fresh herbs are the product groups with the higher detection frequency of pesticide residues. More than 90% of the samples analyzed contained one or more residues.

All these considerations are the basis of the concept of this invention which takes into account the need to determine the concentration of pesticide residue (imazalil and thiabendazole) on the surface of citrus fruits, fruits whose peel is used for human consumption. The developed method is based on a fast sample preparation/extraction step (20 minutes) and presents a high sensitivity considering the detection and quantification limits, especially for the determination of thiabendazole. Also, the analytical results indicate a very good degree of repeatability.

Analytical aspects

The method, according to the invention, consists of the following steps: (1) Preparation of standard stock solutions of imazalil and thiabendazole; (2) Preparation of working standard solutions; (3) Citrus sample extraction (i.e., grapefruit, oranges, lemons, limes and mandarines); (4) Chromatographic determination; (5) Instrumental determination; (6) Quantitative determination.



Conclusions: Technical problem solved by the invention & final thoughts

The proposed screening method is rapid (about 40 minutes), with a limit of detection (LOD) set at 0.003 mg/kg for imazalil and 0.00045 mg/kg for thiabendazole and a limit of quantification (LOQ) set at 0.01 mg/kg for imazalil and respectively 0.0015 mg/kg for thiabendazole, with high sensitivity regarding the simultaneous determination of the two pesticides from different categories of samples.

By applying the invention, the following advantages are obtained:

- reduced working time (aprox. 40 minutes);
- reduced amounts of reagents;
- effective application of the screening method regardless of the studied citrus category;
- no equipment or consumables are needed in the sample preparation stage that require high costs, utilities or special training of the operator;
- working parameters are identical for citrus fruits (i.e., lemons, mandarines, grapefruits, oranges, limes), which allows the simultaneous determination of imazalil and thiabendazole from different categories of samples;
- low degree of toxicity of the resulting products (residues).

https://www.osim.ro/images/Publicatii/Inventii/2024/bopi_inv_09_2024.pdf

Research Infrastructure: https:/ /eertis.eu/erio- 2300- OOOm-4240

Mihaela's
sweet & salty

INNOVATIVE SWEETS BY MIHAELA

Author: Mihaela SOLOMON

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My passion for sweets is based on native creativity and conceptual innovation in continuous development. In order to make the my innovative sweets, I use the best high quality ingredients such as flour, butter, sugar, cream, fruit, cocoa from the organic range and only natural flavors and food colorings. I create recipes that bear my personal mark in terms of quantity/quality and the unique manufacturing process. My range of sweets includes simple but also sophisticated products with a special taste, such as: cakes, macarons, roulades, cakes in multiple layers, muffins, Pavlova, creme brulee, homemade chocolate fudge, ice cream, entremets and many others. Nothing compares to Mihaela's sweets!







Nothing compares to Mihaela's sweets!









Contact: *ella1511@yahoo.com*

Adriana's Honey

Authors: Ignat-Matei Adriana
Ignat-Matei Adriana Daniela
Ignat-Matei Alexandra Roxana

H

Bee products intended for a healthy diet. In order to produce organic honey, bees are relocated to pollution-free areas as far away as possible from inhabited areas such as mountains, plains, and hills. **Types of honey: polyflora, cherries, lime, chestnut, fir, sunflower, scallops.**











In addition to honey, we also produce pollen, propolis, wax and a series of ENERGIN-like mixed products.

Capaceala is a beekeeping product that people don't really know, but it has great health benefits. As everyone understands, this is the cover of the honeycomb, with which the bees "seal" the honey deposited in each cell of the honeycombs.

In the mixture, honey with sea buckthorn fruits represents a complete cure with numerous healing properties for the body. In honey with sea buckthorn we find Vitamin A, the complex of B vitamins (B1, B2, B6, B9), Vitamins E, K, P and F, beta-carotene (more concentrated than in carrots) and other microelements such as calcium, magnesium, phosphorus, iron, potassium and volatile oils.

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Mihaela's
sweet & salty

SALTY BAKERY

Author: Mihaela SOLOMON

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The action of kneading the dough requires passion, patience, time and love to obtain wonderful products. Plastering salted dough for bread, pretzels, salted sticks, tarts and salted biscuits is an art. I try to rediscover old traditional Romanian recipes and more to reinterpret them in the current context.

I also approach certain recipes from the international cuisine, especially the French one, from which I make Quiche Lorraine, Tarte Flambee, Baguette. But I also want to realize various types of traditional Pida from Turkey.















SCAN ME



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PROCESS FOR OBTAINING THE RED DYE BETACYANIN FROM THE FRUITS OF AMERICAN POKEWEED (*Phytolacca americana* L.)

PATENT: MD 1817 / 2025.01.31, patent application: MD s 2024 0046 / 2024.04.30.

AUTHORS: Raisa IVANOVA, Igor CASIAN, Ana CASIAN

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APPLICATION FIELDS: The invention relates to the food industry and can be applied in agriculture, in the pharmaceutical and cosmetic industries.

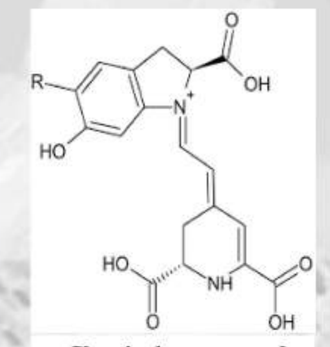
AIM: To obtain a natural red dye from inexpensive raw materials, beneficial use of invasive plants, particularly *Phytolacca americana* L.

SOLUTION:

By proposed scheme, a dark purple powder is obtained with a content of 14.0-18.0% betacyanin, which dissolves well in water. In the concentration range 0...0.10 g/L, the calibration curve of the absorption dependence on concentration has high linearity coefficient of 0.9999.

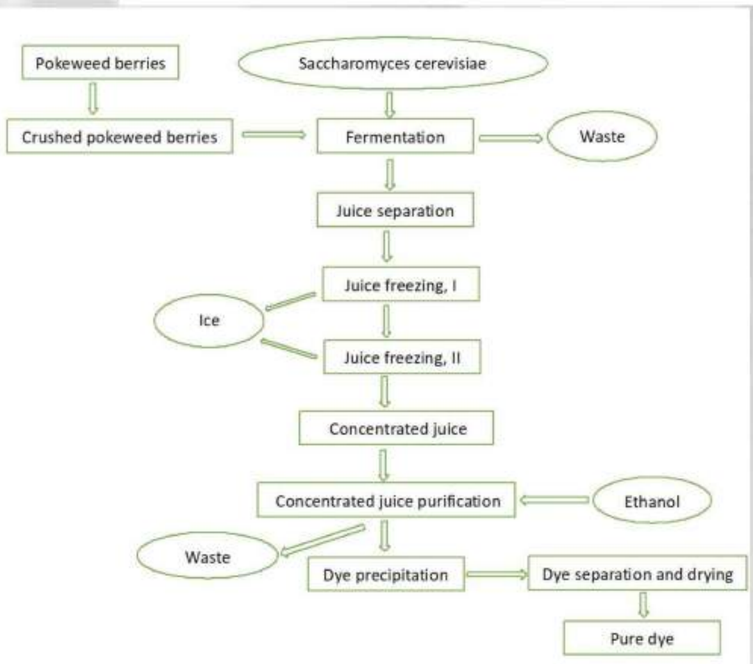


Pokeweed fruit

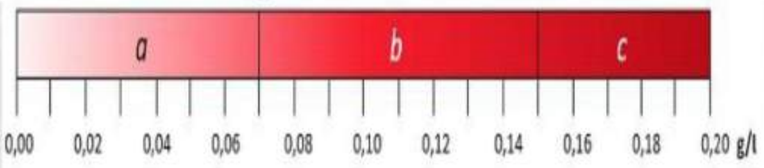


Chemical structure of betacyanin

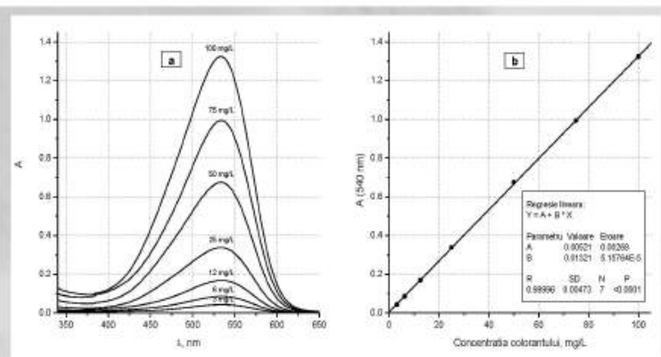




Scheme for betacyanin dye obtaining from pokeweed fruits



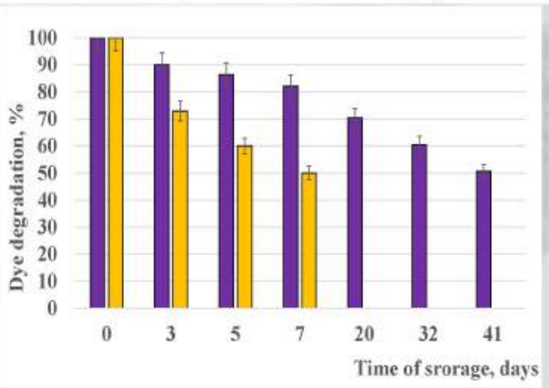
Color scale of aqueous solutions containing betacyanin red dye: a – insufficiently red (< 0.07 g/L); b – optimal red (0.07-0.15 g/L); c – intense red (> 0.15 g/L)



Specter of dyes (a) and dependence of absorption (at 540nm) on dye concentration in aqueous solutions (b).

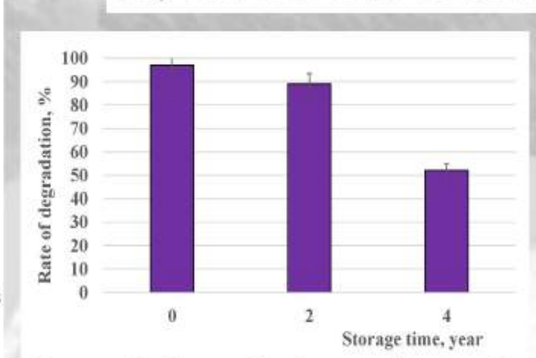
Aqueous solutions of dye with concentration 1.0-1.2 g/L at temperature of +4±2°C lost up to 50% of its initial content during 38-40 days, at 30±1°C - 6-7 days, but at a temperature of +40±1°C within 46-50 hours of storage.

The red dye powder is stabile at room temperature +18-20°C for 24 months; the dye lost only 10% of its initial content.



Dye degradation in aqueous solutions (1.0-1.2 g/L) at different storage temperatures:

■ – 4-6 °C: □ - 30 °C



Degradation of betacyanin dye in the powder form at temperature of 18-20°C.

ADVANTAGES:

- The sedimentation and purification of the dye by separating the ballast substances with the application of ethyl alcohol, which is approved for use in the food, cosmetic and pharmaceutical industries, allows obtaining the harmless finished product;
- this scheme is based on the use at different stages below freezing temperatures (-18...-25°C), low temperatures for sedimentation and purification (+4±2°C) and moderate positive temperatures in the dehydration process of the dye (40±2°C) which protected the betacyanin from thermal degradation and ensured the stability of the color during the dye storage;
- the developed technological scheme eliminates the need to use dye stabilizers.

IMPLEMENTATION STAGE: Product, laboratory research.

ACKNOWLEDGMENTS: Research was carried out within the Subprogramme 011101 "Genetic and biotechnological approaches to agroecosystem management under climate change conditions" for 2024-2027, financed by the Ministry of Education and Research of the Republic of Moldova. The authors would also like to thank the Ministry of Education, Science, Research and Sport of the Slovak Republic for supporting Raisa IVANOVA's project within the framework of the bilateral scholarship program for 2024-2025.

6th International Exhibition, INVENTCOR
3-5 April 2025

ARTISANAL BISCUITS WITH THE ORGANIC ROSEHIP POWDER ADDITION

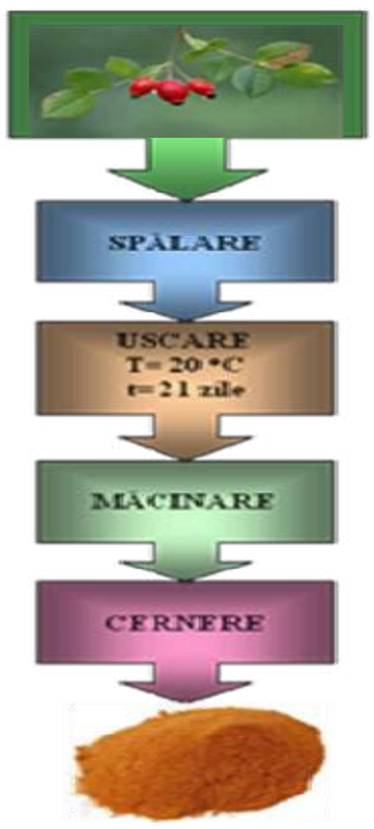
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*Authors:*Alina - Mihaela MOROI, Nicoleta VARTOLOMEI*, Simina TĂNASĂ, Ana-Maria ROSU, Diana-Carmen MIRILA, Claudia TOMOZEI, Mirela LEHADUS-PANAINTE

The purpose of this work was to study the influence of the organic rosehip powder addition on the artisanal biscuits quality. In order to estimate the physico-chemical and sensory characteristics of complex products with the addition of vegetable powder, it was proposed to obtain artisanal biscuits with rosehip powder in a ratio of 0.5%, 1.0%, 1.5%, 2% and 2.5%. The use of domestic raw materials represents a particular advantage to considerably reduce production prices, so that the market price of the finished product is also affordable.

Rosehip fruits (*Rosa canina L.*) are used in food due to their rich content in bioactive compounds such as polyphenols, essential fatty acids, galactolipids, folates, antioxidants, vitamins and minerals, especially for vitamin C (ascorbic acid), rosehips being recognized as plant source rich in vitamin C. The increased antioxidant potential of plant powder from native plant sources was argued theoretically and experimentally through the analysis of quality indicators, antioxidant activity and CIELab color parameters.

Following the estimation of the organoleptic indices, it was established that the artisanal biscuits-with the addition of 1.5% rosehip powder have a pleasant color and smell and favorably influenced the organoleptic indices of the obtained samples and can be proposed for consumption by potential consumers on the market.





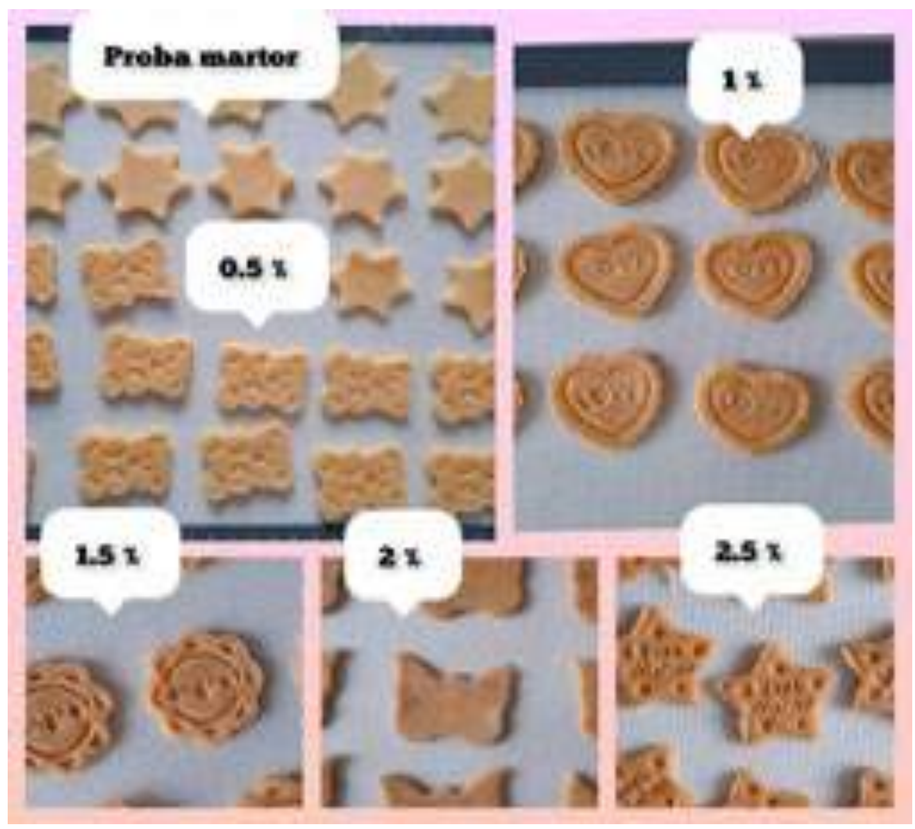


Table 1. *Physical-chemical properties of rosehip powder*

Moisture %	Carbohydrates %	Fibres %	Proteins %	Fats %	Ash %	Vitamin C mg/100 g
13.40	65.00	8.63	4.89	0.76	6.50	820

For the sensory analysis, 5 basic parameters were evaluated, namely: colour, taste, conscious, appearance, smell.

The evaluation of each index was appreciated with a score scale of 1-5 points.

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Opportunity
CORNELIUGROUP
Research-Innovation Association
Creation
Realization
INVENTCOR
Power of Creative Mind
Deva ROMANIA



VBUNG® Technology

No Added Additives and Preservatives

Maceration, Fermentation, Malolactic Fermentation and Aging under Continuous Pressure in Custom Wooden Barrels

WWW.VBUNGVDOOR.COM

Standard Patent AU 2018203047 from 4th of May 2017 / Application EP 3564354A1

The speed of oxidation during maceration, fermentation, malolactic fermentation and aging is much faster than the process of winemaking itself which is a huge disadvantage and requires control using manly Additives and Preservatives.

The invention refers to a Totally New ***VBUNG ® Technology*** by applying:

Isobaric Winemaking Process inside Custom Wooden Barrels
Giving Control Over Oxidation, Contamination, and Evaporation.

1. Positive pressure can be created naturally by CO2 during fermentation or artificially using any food-grade gasses allowed
2. Negative pressure can be created using a vacuum system

No added Additives and Preservatives Winemaking
=
Grapes + Custom Wooden Barrel + VBUNG ® Equipment

Custom Wooden Barrel :

1. Food Grade Silicone Rod Between Staves / Barrelhead
2. Reinforced Hoops With Bolts
3. Acrylic Barrel Head for Sunlight / Visual / Sensors

VBUNG Patented Equipment :

1. Safety Relief Valve / Spunding Valve
2. Adjustable Racking Filter / Sparger / Liquid Inlet and Outlet Port
3. O2/N2/CO2/Ar…etc. Food Grade Gasses Inlet and Outlet Port
4. Temperature / Pressure / Dissolved Oxygen …etc. Sensors/ Wireless Sensors

Advantages

1. Sustainable Technology and Equipment without the use of Additives and Preservatives
2. Sustainable Mobile Winery in the vineyard with solar panels, sensors, and mobile data
3. Accelerated Winemaking and Aging technological process
4. Equipment Control over Oxidation, Contamination, and Evaporation
5. New or Old Wooden barrels can be used once custom modifications are done
6. Whole bunch, Juice, or Berries can be used
7. No Juice clarification is needed (No flotation, cold settling, or centrifugation)
8. No temperature or humidity control is required (Fermentation at high temperatures for white winemaking is not a problem)
9. Direct Sunlight for the whole technological process
10. No need for topping the barrels
11. Taking out wine samples for laboratory or tasting without oxidation, contamination, evaporation
12. Barrel regeneration with compressed O2 or Air before vintage
13. Extended lifetime for wooden barrels due to custom construction
14. Can be applied to making and aging Wine, Beer, Cider, Vinegar, and aging Spirits.
15. Reduced labor, time, and cost.
16. Global potential













NEW ORGANIC DIGESTIVE BISCUITS WITH RARE BLACK MULBERRY ADDITION AND DELIGHTFUL JELLY

Project number: "Simulated Enterprises in Food Industry at the "Vasile Alecsandri" University of Bacau", 11183/18.07.2024

Ana-Maria GEORGESCU, Gabriela MUNTIANU, Ana-Maria ROSU, Diana-Carmen MIRILA, Alina Mihaela MOROI, Nicoleta VARTOLOMEI, Ileana-Denisa NISTOR, Mirela LEHADUS-PANAINTE*

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1. DESCRIPTION

AIM OF RESEARCH → **to obtain an innovative food product with a functional character, such as organic biscuits with the addition of black mulberry powder (*Morus rubra*).**

NOVELTY → **the addition of black mulberry powder (in different additions: 1%, 2.5%, and 5%) obtained by squeezing the mulberry fruits, followed by drying and grinding the mulberry pulp into a fine powder.** This powder can be used in various ways in the food industry due to its distinctive taste and numerous health benefits. The biscuits obtained under laboratory conditions were subjected to sensory and physico-chemical analyses.



MULBERRY FRUITS are small, sweet fruits that grow on the mulberry tree, a type of tree that is part of the *Moraceae* family. The mulberry tree is native to Asia but now grows in many parts of the world, including Europe and North America. These fruits have a soft, pulpy texture and are black, red, or white in color.

2. MULBERRY FRUITS PROCESSING



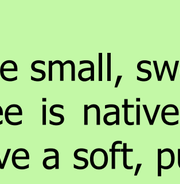
Defrosted mulberry fruits



MULBERRY PULP → Oven drying, 40 °C – constant weight → **MULBERRY POWDER**

MULBERRY JUICE → PREPARATION OF MULBERRY JELLY





3. BISCUITS OBTAINING

WHEAT FLOUR | *BUTTER* | *SUGAR* | *MULBERRY POWDER* | *HEN EGGS* | *SALT* | *BAKING SODA*



INGREDIENTS MIXING



DOUGH KNEADING

FORMING THE BISCUITS



OVEN BAKING, 180 °C



COVERING WITH BLACK MULBERRY JELLY



PACKAGING AND LABELING



DUD BISK NUTRITIVA



4. RESULTS AND DISCUSSION

A. Sensorial analysis

Organic biscuits with mulberry powder addition, obtained in laboratory conditions, were sensory analyzed through the *hedonic test*.

The purpose of the hedonic test method is to assess the taste quality of biscuits.

Grade	1	2	3	4	5	6	7	8	9
Assessment	Extremely unpleasant	Completely unpleasant	Semi-pleasant	Slightly unpleasant	Indifferent	Weakly pleasant	Pleasant	Very pleasant	Extremely pleasant
Final score	**8.5**								

B. Nutritional value

Proteins (g)	Lipids (g)	Carbohydrates (g)	Energetic value (Kcal)
4.65	16.69	55.96	403.72

5. COMPANY ESTABLISHMENT

CAEN code

- **1072** — Manufacture of biscuits and cookies; manufacture of cakes and preserved pastry products

6. PRODUCT FAIR



7. CONCLUSIONS

Due to the high content of antioxidants, vitamins and minerals, the addition in any form (syrup, powder or fruit itself) gives food products a functional character, often used in traditional medicine too for various ailments and symptoms.
This innovative food product is the first of its kind on the market, as there are no longer any biscuits that feature this new black mulberry addition.

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POMACES VALORIZATION FOR OBTAINING ENRICHED DEHYDRATED FRUIT ROLLS

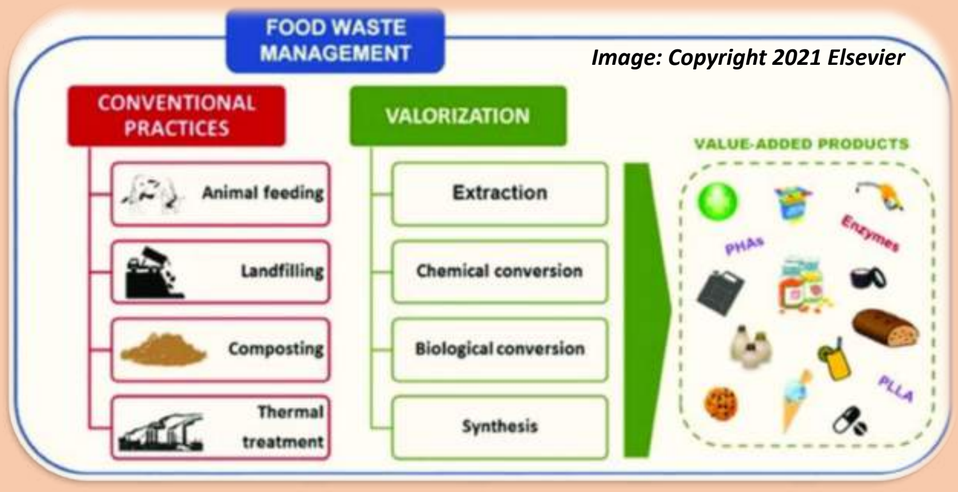
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Research project

Authors: Luminița GROSU, Oana-Irina PATRICIU, Irina-Claudia ALEXA

- Interest in investigations concerning the reuse of by-products and waste of agro-food origin is increasing, with the aim of finding innovative solutions to valorize them in different areas.





- An important quantity of bioactive compounds remains in the solid matter of pomace; therefore, it is rich in polyphenols, organic acids, and minerals, and having thus remarkable antioxidant capacity.
- The development of foods that provide additional health benefits beyond basic nutrients is a current and growing trend in the food industry.
- Research and development aim recovering the pomace resulting from wine and juice industries and valorized it as lyophilized powder to add value to the foods.

FRUIT ROLLS / FRUIT LEATHERS
dehydrated fruit-based products

often eaten as a snack or dessert, which can represent an interesting alternative to replace conventional candies or dried fruits



obtained by mixing fruit puree and other ingredients and then dehydrating its under specific conditions

Objectives

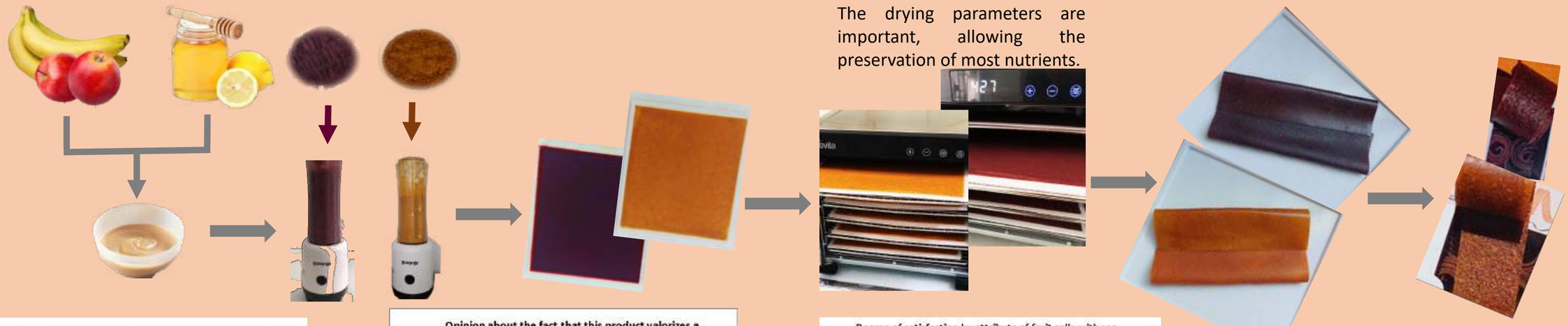
Valorization of grape and seabuckthorn pomaces by introducing it as a functional ingredient in powder form:

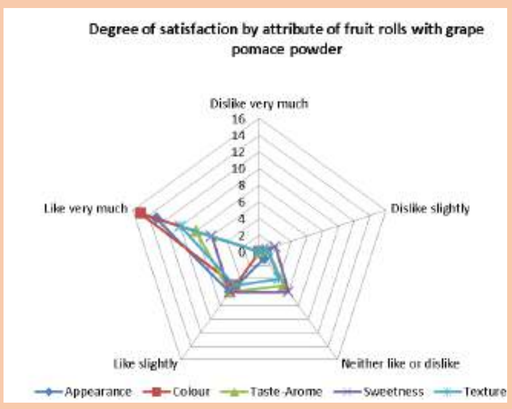
- ✓ developing an innovative food product: fruits rolls
- ✓ sensory evaluation and consumer acceptability

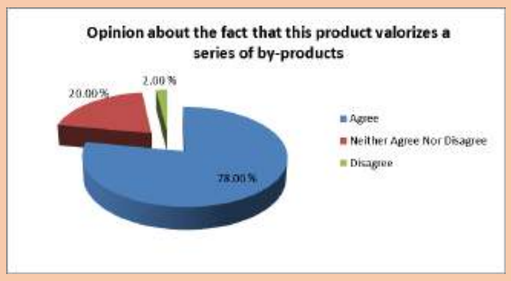
- ❖ The research consists in formulating of dehydrated fruit rolls enriched with adequate proportion of lyophilized pomace powder.
- ❖ The dehydrated fruit rolls were prepared using: apples, bananas, honey, lemon juice and grape pomace or sea buckthorn pomace powders.
- ❖ The innovation consists in adding lyophilized pomace powder to the fruits puree before drying process, which, to the best of our knowledge, has not been reported so far.



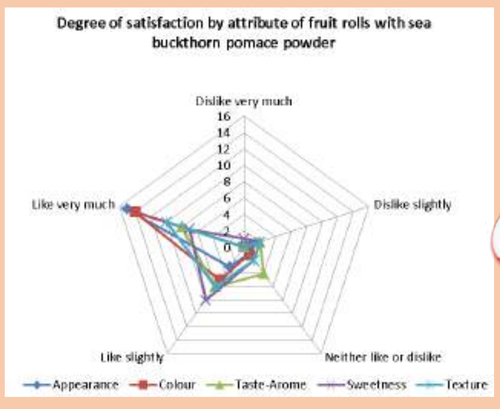
The drying parameters are important, allowing the preservation of most nutrients.







Following sensory analysis, the dehydrated fruit rolls with grape or sea buckthorn pomaces powders were well accepted by the participating panelists. In addition, almost 80 % of them agreed that these products valorize some by-products.





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FREEZE-DRIED POMACE POWDER WITH ACACIA HONEY

H

Authors: *Mihnea-Ștefan POPA, Ionela-Petronela TĂNASĂ, Alexandra-Lavinia PITIC; Adnana-Ana MITREA*

Mentors: *Elena-Mirela SUCEVEANU, Luminița GROSU, Oana-Irina PATRICIU, Irina-Claudia ALEXA*

Our project approach is reusing pomaces, either by obtaining new functional food products, through the pomace powder's incorporation.

For the present project, innovative products based on acacia honey and different freeze-dried pomaces powders were formulated.

The obtained products provides both energy and a series of health benefits in terms of nutrients, being easily assimilated.

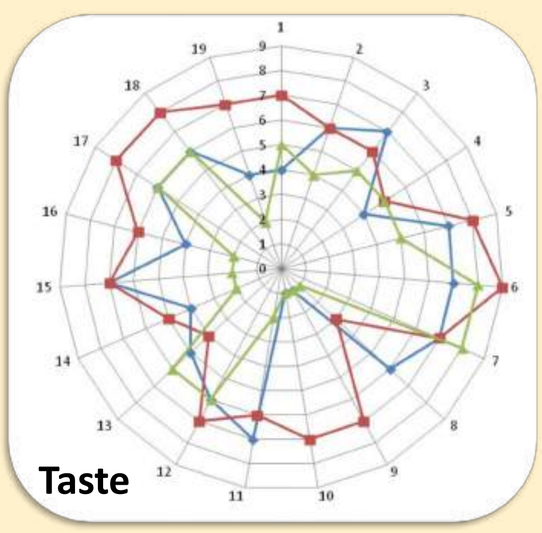


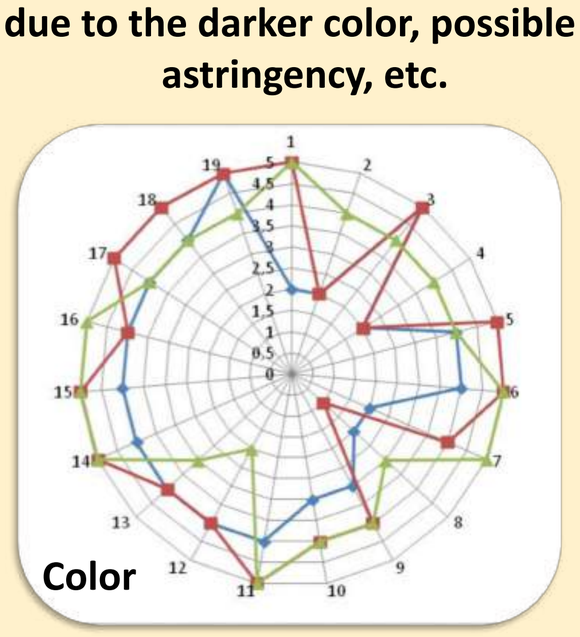


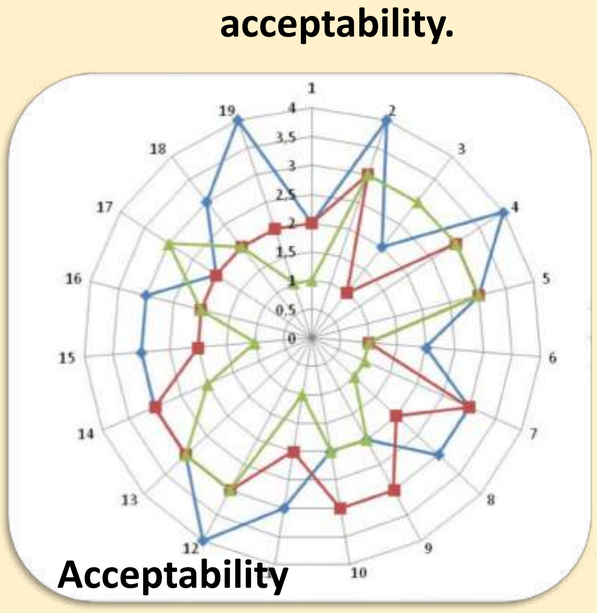
The addition of pomaces powders may impact the sensory characteristics of products, such as flavor, color, and texture.

It was essential to find the adequate proportion of pomace powder added to honey for good consumer acceptability, knowing that incorporating a higher level of pomace powder (> 15%) may lead to consumer rejection due to the darker color, possible bitterness, astringency, etc.

Following the formulation and sensory analysis of all products, the appropriate proportion of pomace powder was established based on the best consumer acceptability.







✓ **Due to the freeze-dried pomaces powders, the obtained products contain flavones, anthocyanins, tannins, vitamin C, etc., biomolecules possessing antioxidant and radical scavenging capacities.**

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REUSE REDUCE RECYCLE

6th International Exhibition, INVENTCOR
3-5 April 2025

YOGURT WITH THE ORGANIC ROSEHIP POWDER ADDITION

H

Authors: **Nicoleta VARTOLOMEI, Alisa Vasilica ARUS*, Simina TĂNASĂ, Nicoleta PLATON, Ana Maria GEORGESCU, Gabriela MUNTIANU, Ileana Denisa NISTOR, Maria TURTOI**

Yogurt largely reflects the nutritional value of milk, the raw material from which it is obtained. To make up for its deficiencies or to compensate for some of its bioactive properties, yogurt is often fortified by adding other ingredients, the most common being grains and fruits. Although fruit has been added to yogurt for a long time, recently studies have been reported that investigated the influence of addition fresh cut fruit and dried fruit in pieces or powder form on the physicochemical, sensory, and functional properties of yogurt.

The fruits of rosehip (*Rosa canina L.)* are used in food due to their content rich in antioxidant bioactive compounds, vitamins and minerals, especially for vitamin C (ascorbic acid), rosehip being recognized as a vegetable source rich in vitamin C.

The purpose of this work is to determine the influence of the organic rosehip powder addition on the yogurt quality. The rosehip powder was prepared by grinding the dried pulp of rosehip fruits by an ultra-centrifugal laboratory mill type ZM 200 Retsch (18.000 rpm, 4 min) and sieving the powder with sieves of different size to select the particles having around 180 μm size.



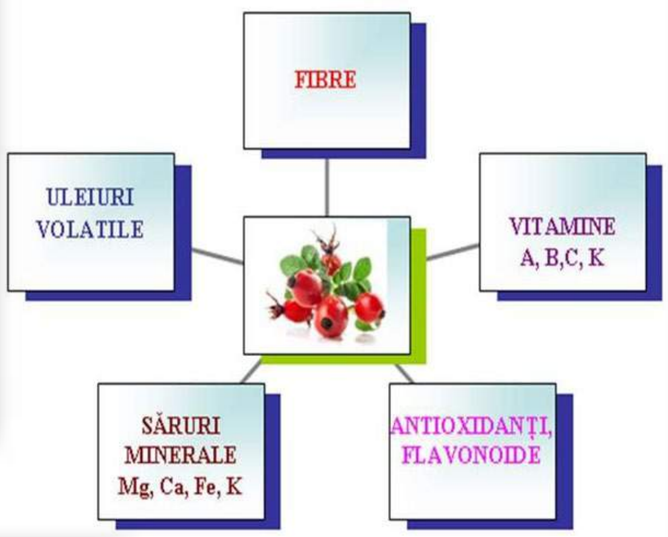


Table 1. *Physical-chemical properties of rosehip powder*

Moisture %	Carbohydrates %	Fibres %	Proteins %	Fats %	Ash %	Vitamin C mg/100 g
13.40	65.00	8.63	4.89	0.76	6.50	820

250 grame	Iaurt normal (2% grasime)	Iaurt grecesc (2% grasime)
Calorii	154	179
Carbohidrati	17 grame	10 grame
Zahar	17 grame	9 grame
Proteine	13 grame	24 grame
Grasime	4 grame	5 grame
Calciu	34% din Doza Dilnica (DZ)	22% din DZ
Sodium	7% din DZ	4% din DZ

Sensory analysis was performed with the 20-point test. Yoghurt with the organic addition rosehip powder has good sensory properties, appreciated when tasting. The most valued sensory attributes were appearance, smell and taste. Yogurts with organic rosehip powder scored higher than the control, which means they were accepted by the tasters.

Therefore, univariate statistical analysis are currently in progress in order to determine statistical differences between samples for the factors: rosehip powder concentration and storage time (days).

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BIOFUNCTIONAL PREMIXES (PMXBF) BASED ON SPELT WHEAT WITH APPLICABILITY IN THE FLOUR FOOD INDUSTRY

Patent application OSIM: A 00408/27.07.2023

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Keywords: sea buckthorn, grape pomace, lingonberries, MIXOLAB, phytonutrients

INTRODUCTION

Biofunctional premixes (PMXBF) are a mixture of flour-based ingredients/grain grinding products mixed with fruits, which can be used immediately, without requiring prior preparation, thus facilitating and accelerating the technological process. The very wide range of assortments includes both premixes and complex mixtures for bread, bakery specialties, pastries-confectionery, biscuits and pasta. Scientifically, these food concepts have made it possible to make flour products with improved nutritional properties, thanks to access to raw materials rich in bioactive principles.

Although common wheat is the basic cereal in our country, technical and scientific research are increasingly oriented towards expanding the range of assortments, the use of new cereals in the milling and bakery industry, as well as the implementation of new technologies, adapted to the requirements The present invention concerns to the development of premixes based on Triticum spelta wheat flour (PMXBF) with applications in the flour based food industry (bread, pasta, biscuits, pastry), with 5....25% meal ratio added flour from fruits of sea buckthorn (Hippophaë Rhamnoides L.), and/or lingonberries (Vaccinium vitis-idaea L.) and/or pomace resulting as a by-product of winemaking. The results obtained on the nutritional properties, phytonutrient content of premixes, as well as the rheological suitability of the dough, highlighted the possibility of implementing the technologies to obtain PMXBF-based products in the farinaceous food industry.

MATERIALS AND METHODS

4 variants of experimental models of PMXBF based on Spelta wheat flour (GS) and dried fruits were developed and characterized: red blueberries (AR), sea buckthorn (C), marc (T) and their mixture. The percentage of fruits added in fortified flours was: 5,10,15,20 and 25%

The experimental part of the claimed invention involved the following steps: A. Elaboration of experimental models of biofunctional premixes (PMXBF) based on Triticum spelta wheat flour, with the addition of valuable fruits from the autochthonous spontaneous flora, namely red blueberry fruits and sea buckthorn, as well as marc resulting from winemaking; B. Analysis of physicochemical, microbiological properties, nutritional value and active principles of functional premixes PMXBF obtained, C. Study of the influence of drying temperature of fruits in the composition of premixes on the constituent active principles; D. Testing the suitability of using functional models in obtaining flour food products; E. Characterisation of products obtained from a nutritional, sensory and active ingredient content.

In order to use functional premixes in the flour food industry with products such as biscuits, pasta, leavened dough bakery products and pastries, the suitability of premixes from a technological point of view in 4 assortments of dough was tested, and the products obtained were analyzed from a nutritional, sensory and active principles content.

RESULTS AND DISCUSSIONS



Figure 1. Biofunctional premix (PMBXF) based on Spelt wheat flour



Figure 2. PMBXF pasta based on Spelt wheat flour



Figure 3. PMBXF muffins based on Spelt wheat flour



Figure 4. PMBXF biscuits based on Spelt wheat flour



Figure 5. PMBXF bakery product based on Spelt wheat flour

Table 2. Nutritional value (minimum and maximum values) of PMXBF-based flour foods

Products	Proteins (%) Min.-max.	Lipids (%) Min.-max.	Glucids (%) Min.-max.	Mineral substances (%) Min.-max.	Energy value (kcal/100g) Min.-max.
Biscuits	6.24-8.67	21.79-29.57	54.57-62.65	1,84-2,29	477.00-513.89
Pasta	8.80-13.56	4.09-6.72	69.44-73.05	1.19-2.56	343.68-382.61
Muffins	6.10-6.83	16.67-28.00	37.40-60.88	0.96-1.20	378.00-475.47
Bakery product	8.54-10.46	9.86-13.05	47.35-52.56	2.21-2.95	340.00-429.00

Table 2. Content of fltonutrients (minimum and maximum values) of PMXBF-based flour foods

Products	Polyphenols (mg GAE/100g) min.-max.	Flavonoids (mg QUE/100g) min.-max.	FRAP value average (µM Fe2+/g) min.-max.	DPPH (%) min.-max
Biscuits	85.13-352.14	44.41-274.15	1.73-17.72	42.54-69.88
Pasta	99.52-371.38	64.23-214.14	3.86-27.57	39.46-74.54
Muffins	70.97-314.60	26,43-221.88	2.06-9.98	40.35-79.73
Bakery product	77.46-332.10	28.39-226.68	2.33-29.00	47.70-64.52

Figure 6. Rheological behavior and MIXOLAB profile of PMXBF

Rheological data highlight that an intake of 10-15% functional addition in flour premixes favors dough processing parameters and does not negatively influence the preservation and shelf life of products. Figure 6 shows Profiler Mixolab indices expressed on a scale of 0-9 (Mixolab Index) for a complete characterisation of flour (water absorption, mixing behaviour, gluten protein/strength, hot viscosity, amylase activity and retrograde).

The water absorption index (WAI) depends on the quantity and quality of flour components (protein, starch, fiber). The higher index ensures a higher water absorption capacity. The absorption index was maximum for samples of Spelt wheat premix with red blueberries, regardless of the percentage of red blueberries added. **Mixing index (MI)** provides information about the behaviour of flour when kneaded at 30°C and expresses the stability and softening of the dough. When this index increases, the dough becomes more stable when kneading. The mixing index was 4 for dough obtained only from Spelt wheat, respectively for dough with 5% addition and increased to 5 for a premix with 10% addition, respectively 6 for 15%, which indicates a higher stability of the dough when kneading for a premix with 15% addition. **The gluten index (GI)** measures the behavior of gluten during dough heating. Gluten resistance is maximum in the sample with 20% red blueberries (gluten index value 6), compared to 4 in the control (dough obtained only from Spelt wheat). **Viscosity index (VI).** The increase in viscosity is due to both amylase activity and starch quality. Minimum values were obtained in the blank sample and with 5% addition. **The amylolysis index (AmI)** depends on the dough's resistance to diastatic activity. This index registers a minimum value for all analyzed samples, which denotes an increased amylase activity with effect on fermentation processes in the dough.

CONCLUSIONS

In conclusion, the present invention refers to the development of premixes based on Triticum spelta wheat flour (PMXBF) with applicability in the flour food industry (bakery, pasta, biscuits, pastry), obtained in a mixture of 5...25% with fruits from the local spontaneous flora (red blueberries and sea buckthorn), as well as by-products from winemaking (marc). The results obtained regarding the nutritional properties, the phytonutrient content of the premixes, but also the suitability of the dough from a technological point of view to technological processing, they highlighted the functional importance of PMXBF in food, as well as the possibility of implementing technologies for obtaining PMXBF-based products in the flour food industry.

ACKNOWLEDGEMENTS

This study was financed by West Regional Development Agency, Romania, through the Project "Achieving technology transfer to obtain innovative functional foods enriched in bioactive compounds—CTTU 2020", SMIS Code: 140030, submitted in the competition Regional Operational Program 2014–2020, Priority Axis 1: Promoting technology transfer.

HOMOGENEOUS POLYOXYPROPYLENE SOAPS AND PROCESS FOR OBTAINING THEM

Patent/project number: RO134446(A0) RO134446(B1)

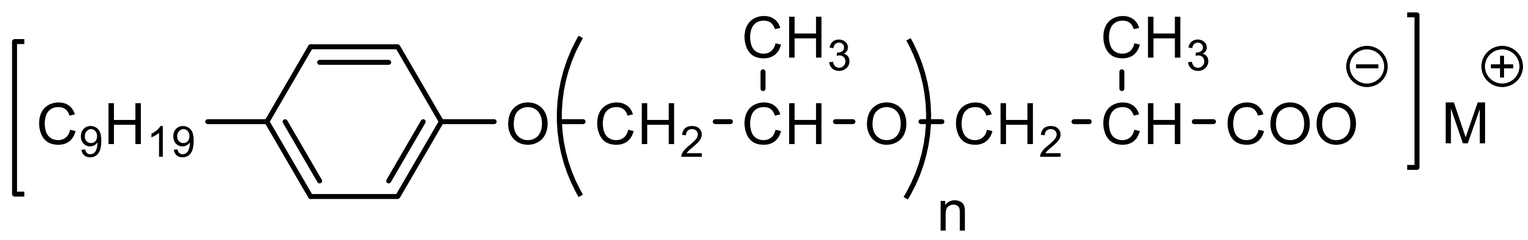
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Author/s:

Jianu I.C.; Jianu A.M.; Ilie A.C.; Radulescu M.; Berceanu V.D.M.; Rusu L.C.; Ardelean L C; Stanga L.C.; Velimirovici D.E.; Suciu O.; Stana L.G.; Stancu G.S.; Folescu R.

Description

The present patent application (CBI) relates to a process for obtaining homogeneous alkaline and/or ethanol ammonium ß-nonylphenyl polypropyleneoxy α-methylpropionates having the general formula:



where n represents the strictly determined homogeneous oligomerization degree of propene oxide (propylene) in the polyoxypropylene chain (n=0,3,6,9,12,18), and M+ is an alkali metal cation or mono-, di- and triethanolammonium cations.

Novelty

Preparation of polyoxypropylene soap, involves synthesis under phase transfer and/or micellar catalytic conditions, resulting in soaps of homogeneous beta -nonylphenylpolyoxy- alpha -methylpropionates of alkaline type and/or ethanol ammonium type, with nonionic-anionic structure.

Fields of potential application of the present patent. The potential application areas of the invention are: food processing, cosmetics, pharmaceuticals, textile post-processing or "preparative organic chemistry". The concept that suggested the diversification of these non-ionic-ionic architectures represents a new synergistic cumulation of homogeneous non-ionic colloidal competencies with anionic (carboxylate) competencies specific to traditional soaps. Original "niche" compounds not reported in the literature of the surfactant field have surfactant characteristics distributed over a wide HLB range.



ROMÂNIA

DUPLICAT

ELIBERAT COTITULARULUI BREVETULUI DE INVENȚIE NR. 134446

OFICIUL DE STAT PENTRU INVENȚII ȘI MĂRCI

BREVET DE INVENȚIE

Nr. 134446

Acordat în temeiul Legii nr.64/1991 privind brevetele de invenție, republicată în Monitorul Oficial al României, Partea I, nr.613, din 19 august 2014.

Titular: JIANU IONEL CĂLIN, TIMIȘOARA, TM, RO; JIANU ADELINA MARIA, TIMIȘOARA, TM, RO; ILIE ADRIAN COSMIN, TIMIȘOARA, TM, RO; RĂDULESCU MATILDA, TIMIȘOARA, TM, RO; BERCEANU VĂDUVA DELIA - MIRA, TIMIȘOARA, TM, RO; RUSU LAURA CRISTINA, TIMIȘOARA, TM, RO; ARDELEAN LAVINIA COSMINA, TIMIȘOARA, TM, RO; STÂNGĂ LIVIA CLAUDIA, BRAD, HD, RO; VELIMIROVICI DANA EMILIA, TIMIȘOARA, TM, RO; SUCIU OANA, TIMIȘOARA, TM, RO; STANA LOREDANA GABRIELA, TIMIȘOARA, TM, RO; STANCU GEORGE SILVIU, TIMIȘOARA, TM, RO; FOLESCU ROXANA, COMUNA COMLOȘU MARE, TM, RO

Titlul invenției: SĂPUNURI POLIOXIPROPILENICE OMOGENE ȘI PROCEDEU DE OBȚINERE AL ACESTORA

Inventatori: JIANU IONEL CĂLIN, TIMIȘOARA, TM, RO; JIANU ADELINA MARIA, TIMIȘOARA, TM, RO; ILIE ADRIAN COSMIN, TIMIȘOARA, TM, RO; RĂDULESCU MATILDA, TIMIȘOARA, TM, RO; BERCEANU VĂDUVA DELIA - MIRA, TIMIȘOARA, TM, RO; RUSU LAURA CRISTINA, TIMIȘOARA, TM, RO; ARDELEAN LAVINIA COSMINA, TIMIȘOARA, TM, RO; STÂNGĂ LIVIA CLAUDIA, BRAD, HD, RO; VELIMIROVICI DANA EMILIA, TIMIȘOARA, TM, RO; SUCIU OANA, TIMIȘOARA, TM, RO; STANA LOREDANA GABRIELA, TIMIȘOARA, TM, RO; STANCU GEORGE SILVIU, TIMIȘOARA, TM, RO; FOLESCU ROXANA, COMUNA COMLOȘU MARE, TM, RO

Descrierea invenției, revendicările și desenele la care se face referință în acestea, fac parte integrantă din prezentul brevet de invenție.
Durata brevetului de invenție este de 20 ani, cu începere de la data de 14/06/2019, cu condiția plății taxelor anuale de menținere în vigoare a brevetului.

Confirm cele de mai sus prin semnarea și aplicarea sigiliului
Director General
Marian - Cătălin BURCESCU

București, Data eliberării 30/12/2021

Contact: calinjianu@usvt.ro

DIETARY SUPPLEMENTS BASED ON BEE PRODUCTS AND OILS ESSENTIAL OILS, WITH OR WITHOUT ADDED HERBS AND PROCESS FOR THEIR PREPARATION

H

Patent application : A00406/27.07.2023

Authors:

Raba Diana Nicoleta, Dumbrava Delia Gabriela, Alexa Ersilia Calina, Poiana Mariana Atena, Cocan Ileana, Obistioiu Diana Monica, Iancu Tiberiu, Ciucur Radu Ioan, Stoia Sorin, Popa Viorica-Mirela, Moldovan Camelia

Description

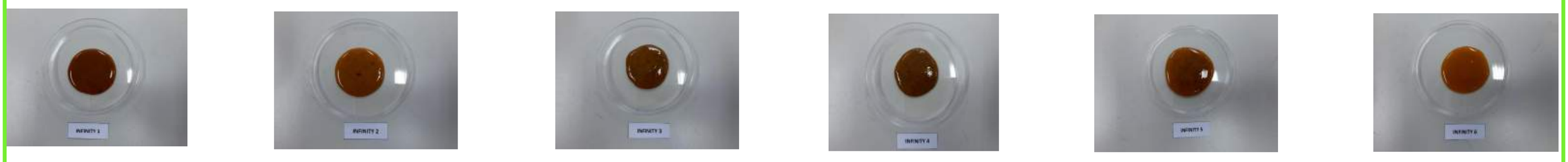
The present invention relates to a range of natural dietary supplements with high sanogenic potential and superior nutritional, antioxidant and sensory characteristics as well as to the process for obtaining them. The process according to the invention consists of the steps: mixing 91-93 parts by weight (w.w.) honey and 7-9 w.w. pollen granules, homogenizing in a blender, keeping the mixture for 10 days in the dark under thermostated conditions at a temperature of 25°C, adding in order to 85-94 w.w. pollen granules to the mixture. g. of this mixture to 2-3 p.g. soft propolis extract, 2-6 p.g. raw royal jelly, 0.05-2 p.g. various essential oils and 0-5.55 p.g. various herbal powders according to each recipe, homogenising the mixture well after each addition. To obtain the soft propolis extract, mix 1 part finely ground propolis with 2 parts 96° ethyl alcohol, shake well, leave to stand for 12 days at 25°C and then filter through Whatman grade 1 filter paper. The extract thus obtained is concentrated under vacuum (rotary evaporator) at 35°C to half its original volume. The dried herbs are finely ground and then the powders are passed through a sieve with 1.5 mm holes. The food supplements obtained are distinguished by a high content of bioactive compounds with very good antioxidant activity, high nutritional value and very good sensory scores.

The following effects were especially noted:

Creating new dietary supplements with a high sanogenic potential and superior nutritional, antioxidant and sensory characteristics, through a new technology, with optimized operating conditions and preparation of propolis extract, ensuring the functionality and bioavailability of the active ingredients used.

Ensuring a long shelf-life of the product (minimum 1 year), without requiring chemical or physical preservation processes, which will have a high social and economic impact on the food industry as well as on consumers.

The introduction on the market of a new range of food supplements made from hive products and essential oils, with or without the addition of herbal powders. The supplements are aimed both at people who want to improve their quality of life and at those who face various nutritional deficiencies.



Experimental models off innovative food supplements with superior bioavailability based on bee products and essential oils.

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TENTAȚII CULINARE MARINE
BY AKADEMIKA FOODS



TRADEMARK
M2021/002405

Authors:
Raba Diana Nicoleta, Misca Corina-Dana, Bordean Despina Maria, Dumbrava Delia-Gabriela, Moldovan Camelia, Popa Viorica Mirela, Mariana-Atena Poiana, Pirvulescu Luminita, Radulov Isidora

BANAT'S UNIVERSITY OF AGRICULTURAL SCIENCES AND VETERINARY MEDICINE "KING MICHAEL 1ST OF ROMANIA" FROM TIMIȘOARA

Marine culinary temptations include products from the category of meatballs and rolls, innovative by the facts that are prepared from seafood meat in varying proportions depending on the manufacturing recipe. The seafood used is: squid, mussels, shrimp, which can be used individually or combined. The products are both tasty and valuable from a nutritional point of view by the fact that they benefit both from the proteins with high biological value of seafood and from the vitamins, minerals and fiber from the vegetables used in the recipe: parsley leaves, peppers (only in rolls), green onions, green garlic and spices (salt, pepper, chili), both in rools and meatballs. The products are suitable for all categories of consumers over 3 years of age except those allergic to seafood.

Even if the seafood does not have a tradition of consumption in Romania, they have started to be more and more appreciated, and today they are also part of the diet of the consumer in our country.

Regardless of the species, seafood is highlighted by its high content of minerals (zinc, magnesium, phosphorus, calcium, iodine), vitamins (A, B, D, E) and protein. They are low in fat and are very rich in omega-3 and omega-6 fatty acids.

Compared to basic meat dishes, seafood dishes are characterized by:

- The diversified assortment determined by the variety of seafood, the technological processes applied for their preparation and the possibilities of association with different foods;
- Possibility of use in dietary nutrition;
- High nutritional value determined by complete protein, easily digestible fats, high content of vitamins A and B and minerals (fluorine, iodine);
- Special taste qualities and easy digestibility.

Mussels have the most impressive nutritional profile of all shellfish. They contain high levels of highly desirable long chain fatty acids EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid). Mussels are also a brilliant source of vitamins. They give you a shot of important minerals, such as zinc, which helps build immunity. Mussels even contain levels of iron and folic acid to rival red meats.

Squid is a mollusk belonging to the shellfish family, and they come in four varieties: black, white, hard shell and red. It is high in protein, minerals and low in calories. This makes squid or calamari a highly nutritious meal.

Shrimp is one of the most commonly consumed types of shellfish. Shrimp is very nutritious. It is fairly low in calories and provides a high amount of protein and healthy fats, in addition to a variety of vitamins and minerals.

"Tentatii Culinare Marine" Assortments	Seafood meatballs	Seafood rolls
Proteins (g)	18.5	20.1
Total fat (g)	2.5	2.3
- Saturated fat (g)	1.9	1.8
Total carbohydrates (g)	7.3	7.5
- Dietary fiber (g)	0.5	2.4
- Sugar (g)	0.2	0.5
Sodium (mg)	320	325
Energy value (kcal)	102	110
(kJ)	426	460

coresponding author: diana.raba@usab-tm.ro

UNIVERSITATEA DE ȘTIINȚE AGRONOMICE
ȘI MEDICINĂ VETERINARĂ DIN BUCUREȘTI

Obtaining active wine yeast biomass of *Saccharomyces cerevisiae*

Participating entity: Universitatea de Ştiinţe Agronomice şi Medicină Veterinară din Bucureşti (USAMVB)

TEODORESCU RAZVAN IONUT, BARBULESCU IULIANA DIANA, BEGEA MIHAELA, FRINCU MIHAI, DIGUȚĂ FILOFTEIA CAMELIA, MARCULESCU SIMONA IOANA, DUMITRACHE CORINA, CÎRÎC ALEXANDRU IONUŢ

Patent application: A00470/08.08.2024

Applicants
USAMV Bucuresti
Pharmacorp Innovation
ICA R&D

DESCRIPTION

- The invention refers to the production of an active yeast biomass of *S. cerevisiae* NCAIM (P) Y 001534 to be used in the winemaking of white wines and especially for Fetească regală.
- The active yeast biomass can be used for the inoculation of the Fetească regală grape must. Yeast biomass can be used in a ratio of 25g wet biomass / 25L wort vessel, as well as in co-inoculation with other yeasts, such as *Lachea thermotholerans* (20g wet biomass *S. cerevisiae* with 20g wet biomass of *L. thermotolerans*).
- *Saccharomyces* strain was isolated from Cabernet Sauvignon grape must from Pietroasa Research and Development Station and identified by applying molecular methods. Initially, the ITS-RFLP PCR method developed by Esteve-Zarzoso et al. 1999 was used. The enzyme profile obtained after individual digestion with three restriction enzymes (HhaI, HaeIII and HinfI) corresponded to the *S.cerevisiae* species. Subsequently, the results were validated by sequencing the 5.8S-ITS region, having an identity percentage of over 99% with numerous *S. cerevisiae* sequences existing in the NCBI database.
- The *S. cerevisiae* strain was deposited in the Collection of Microorganisms - National Collection of Agricultural and Industrial Microorganisms (NCAIM) , obtaining the deposit number NCAIM (P) Y 001534.
- This product represents a first step in exploiting the oenological potential of indigenous yeasts to produce wines of superior quality, with a characteristic sensory typicity.

NOVELTY

The technical problem solved by the invention is the creation of a product based on active wine yeast biomass obtained from a molecularly identified yeast strain *S. cerevisiae* with collection number NCAIM (P) Y 001534.

TECHNOLOGICAL FLOW FOR OBTAINING YEAST BIOMASS AT PILOT LEVEL

Preinoculum culture
↓
Liquid Inoculum 1
↓
Liquid Inoculum 2
↓
Fermentation at pilot level
Cultivation parameters: temperature 30ºC, stirring speed 120 rpm, duration of cultivation 12 h
↓
Downstream process
↓
Obtaining biomass of active wine yeast

APPLICATIONS

Through the fermentation of sterile diluted must Feteasca regala (30L) the Fetească regală wines acquires personality, in particular, the wines obtained at the Research And Development Station for Viticulture and Winemaking Pietroasa.



Biotechnological process for obtaining active wine yeast biomass

AVANTAGES

- The proposed process is economical, as the fermentation lasts a maximum of 14 h, due to the fact that it uses diluted sterile must with a content of soluble dry matter of 7 °Bx.
- The use of sterile diluted must of Fetească regală leads to obtaining an active yeast biomass with (WCW) 3006 g/82 L, 36.6 g/L with a cell viability of 1.7×10^{12} CFU/g;
- Inoculating white grape must with biomass obtained through the proposed process leads to the preservation of the typical character of Pietroasa wines.

ACKNOWLEDGEMENT
This work was supported by a grant of the Ministry of Research, Innovation and Digitization, CNCS/CCCDI - UEFISCDI, project number PN-III-P3-3.5-EUK-2019-0213, within PNCDI III. This paper has been partly financed by the Hungarian National Research, Development and Innovation Fund (2019-2.1.1-EUREKA-2020-00011) under the EUREKA network projects.

Contact person: Teodorescu Razvan, Email: razvan.teodorescu@gmail.com

RITUAL ACADEMY

cooking workshops for children and adults

Author: Ioana Octavia BOGDAN

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Ritual Academy is more than just a cooking school – it is a space of discovery, creativity and education, where children and adults learn to cook healthily, understand the principles of nutrition and discover the joy of preparing and enjoying delicious dishes. Our courses are taught by Chef Ioana Bogdan, winner of the Young Chef trophy in 2018, with extensive experience in gastronomy and a special passion for culinary education. She is the creator of the Ritual and Sufertas brands.





SCAN ME





The cooking workshops were created out of the desire to transform every meal into a ritual of self-care, to educate future generations about the importance of a balanced diet and to inspire people to rediscover their passion for gastronomy._In our cooking workshops for children, we teach children to cook healthy and tasty food, focusing on natural ingredients and balanced recipes. Through play and practice, children develop their creativity, patience and autonomy in the kitchen.

Contact: ***ioanacismasiu@gmail.com***



RESTAURANT CAPONE

Authors: Capone TEAM

H

Traditional restaurant in the landscape of the city of Deva, offers you in a special atmosphere: traditional Romanian food, from its own kitchen.

Organizing weddings, baptisms, name days, festive days, private parties, as well as memorials, funerals, etc., with a capacity of up to 200 seats.
Daily menu 11:00 – 16:00

Themed dance evenings on Friday and Saturday.







SCAN ME



Contact: restaurantcapone@yahoo.com
Presentation link: https://www.facebook.com/restaurantcapone/?locale=ro_RO

PĂDURENEȘTI PIES

1008905 / 15.05.2020 OSIM Trademark

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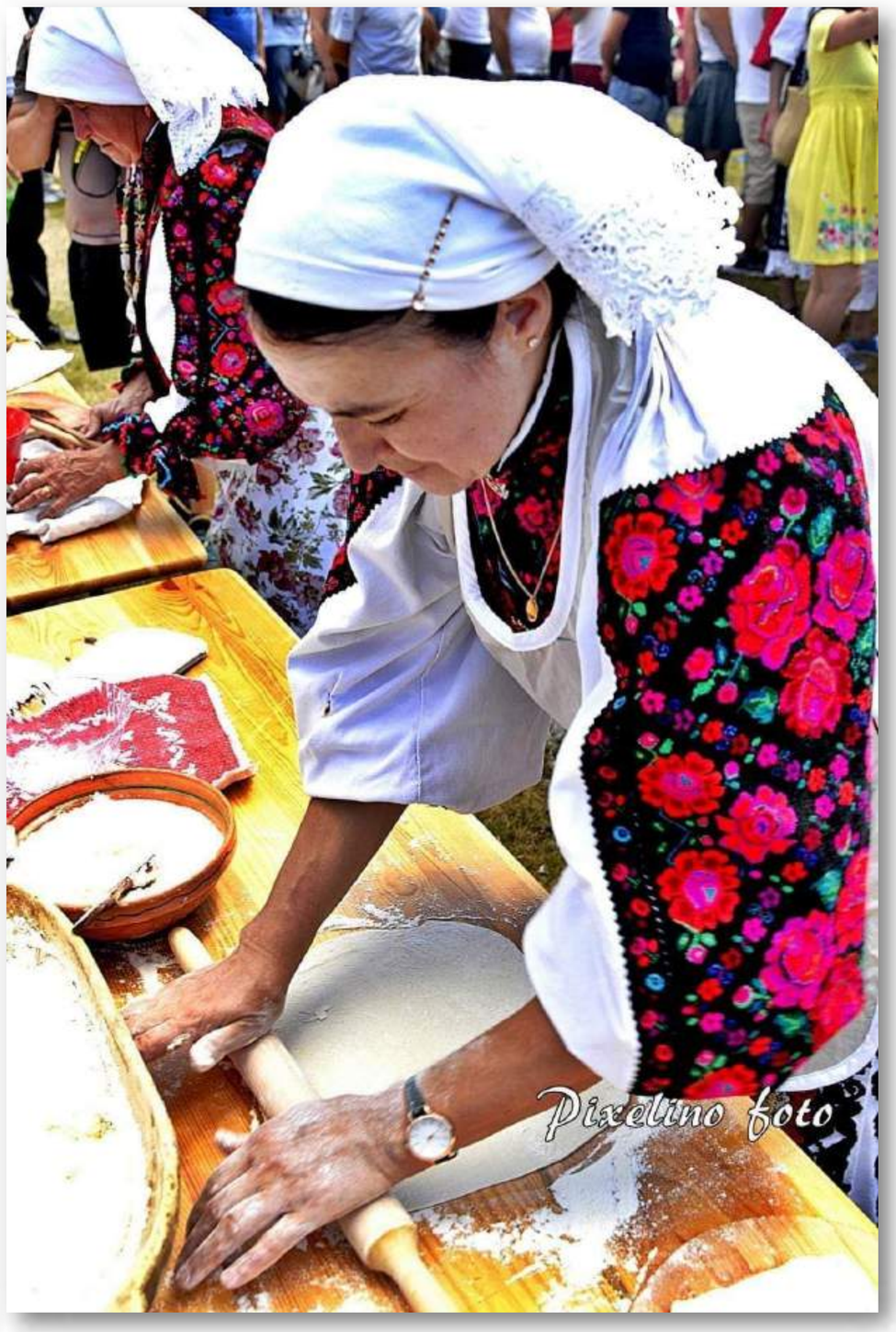
Author: Tămaș Adelina Bianca & Team

Pădurenești pies are a traditional specialty from the Pădureni Land, Hunedoara County. These are thin pies, with a simple dough of flour, water and salt, kneaded well and rolled out into very thin sheets. The filling varies, but the most popular ones are with cheese and herbs, sauerkraut or potatoes. They are baked directly on a hot pan, with oil, which gives them a slightly crispy crust and an authentic taste. They are served hot, plain or spread with butter, and are appreciated for their rustic flavor. In the past, they were prepared especially on holidays or at important community events. Today, Pădurenești pies are a symbol of traditional Hunedoara cuisine, preserving the authentic taste of old recipes.









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Textiles

Clothing

Fashion

Handmade

Opportunity
CORNELIUGROUP
Research-Innovation Association
Creation
INVENTCOR
Realization
Power of Creative Mind
Deva ROMANIA

RERAT
HELVETIA

EUROPEAN MANUFACTURER OF LASHING & LIFTING SLINGS

We believe that innovation is inseparable from quality. By continuously improving our manufacturing processes, materials, and technologies, we ensure that our lashing and webbing slings meet the highest standards of excellence.



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www.rerathelvetia.ch

Lemnaria lui Radu

Unique wooden creations

Author: Radu Fachin

I am a passionate woodworker, a dedicated artisan with 8 years of experience in the field of woodworking, and eager to learn new techniques and skills. My work reflects a passion for craftsmanship and meticulous attention to detail.

The Art of Wood Personalization - Creations with Soul. One of my specialties and significant challenges in every project is crafting personalized items for clients. Over time, I've honed my skills to create miniature houses, faithful replicas of grandparents' homes, meticulously crafted based on photos. These mini houses bring a piece of history and emotion into our clients' living rooms.

Recycled Wood for a Sustainable Future. I am a staunch advocate for the use of recycled wood. In my workshop, wood becomes more than just raw material; it's a valuable resource we handle responsibly, contributing to environmental preservation.

Transforming Wood into Art and Utility. Wood is my favorite material for crafting captivating games, charming decorative items, and personalized toolkits for businesses and trades. Each piece of wood is carefully and passionately transformed, adding utility and turning it into a unique work of art.

I look forward to contributing my creativity and extensive experience in the art of woodworking to future projects. Handcrafted wooden items are more than mere objects; they bring stories and emotions into the homes and lives of our clients. Thank you.







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Instagram: https://www.instagram.com/lemnarialuiradu/
Facebook: https://www.facebook.com/lemnarialuiradu/

PATRICIA'S HANDMADE

Handmade creations

Author:Patricia Nelega

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Patricia's Handmade is a concept based on creativity, sensitivity, passion for everything that art means. The products, unique, are designed for an avant-garde look. Diversity is the strong point of Patricia's Handmade creations from brooches, earrings, decorations to projects for special events: weddings, christenings, anniversaries etc.

All products are customized according to by the preferences of those for whom they are created.













Contact: ***+40721 603 933*** [***https://www.facebook.com/moftstudio/***](https://www.facebook.com/moftstudio/)

Mihaela Fashion's

Mihaela's Wonderful Beads

I

Bead Embroidery Project

Author: Mihaela MARARU

Bead embroidery has been my passion for more than 20 years, at first I embroidered simple things like bracelets, then I perfected my technique and made accessories for clothing items. Over time, I sewed icons, paintings, purses, bags, backpacks. The most spectacular creations of mine are the clothes sewn with embroidered beads, in some cases I used over 80,000 beads. The bead can be attached by a simple stitch of material, but a smaller bead can also be used to obtain a small column, for a more voluminous column, a column of two or more beads can be sewn.

The beads of different colours and sizes, sewn separately next to each other, look very nice, they can be placed inside a metallic outline, in the middle of an outline sewn with contrast beads or they can be scattered chaotically on the canvas, creating bright spots on the embroidery.







Contact: https://www.facebook.com/profile.php?id=100063499954796

HACKTEX - Innovative smart textiles & entrepreneurship

Research project

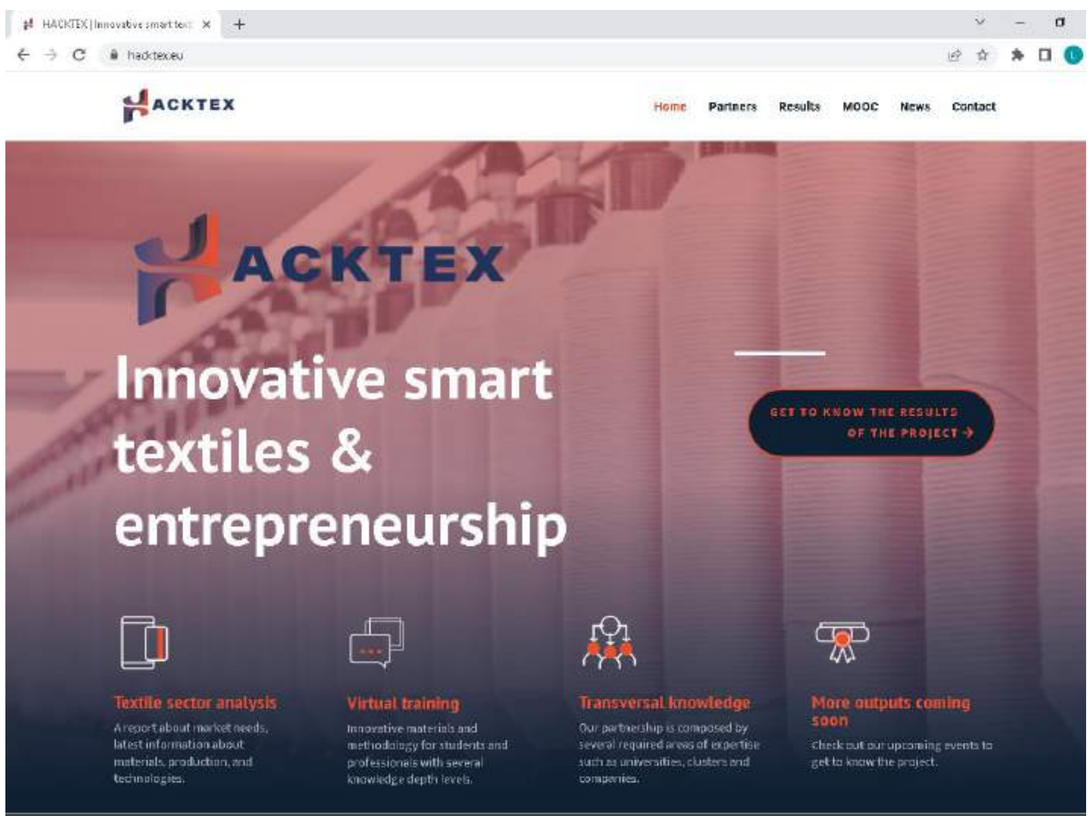
Authors: Luminița Ciobanu, Savin Dorin Ionesi, Lidia Alexa

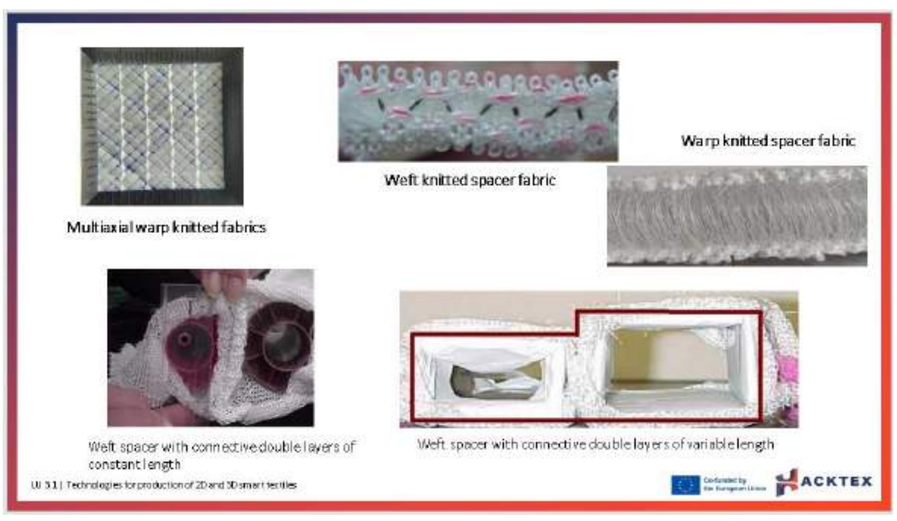
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This is an EU-funded project, HACKTEX - Innovative smart textiles & entrepreneurship, no. 2021-1-RO01-KA220-HED-000027527. All information on the results of the project reflects the contributions of all partners – TUIASI - Romania, AEI Textils - Spain, CRE.THI.DEV. - Greece, CIAPE - Italy, Universitat Politecnica de Catalunya - Spain, University of West Attica - Greece, University of Borås - Sweden, TITERA - Germany.

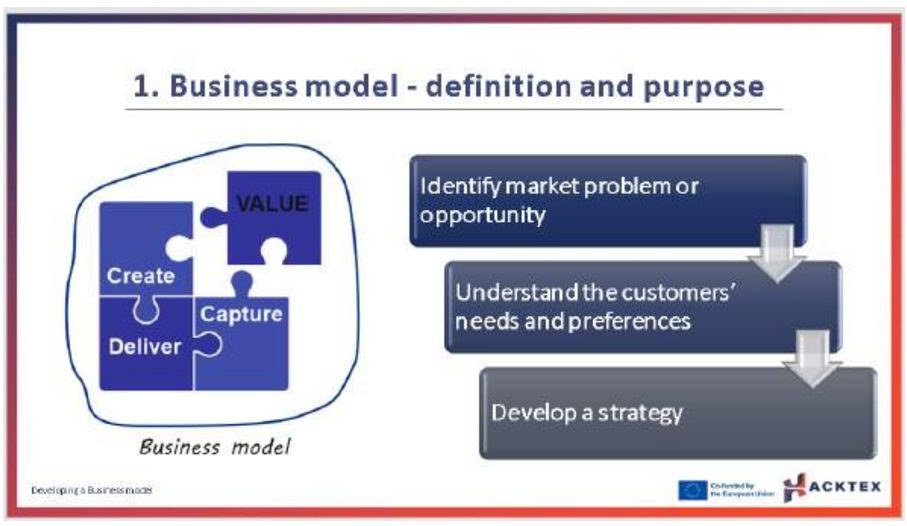
Smart textiles represent a large group of advanced textiles with new functions obtained using high-performance raw materials and specialized treatments. The HACKTEX project develops the tools necessary for skills enhancement targeted to higher education in relation to innovation in order to obtain its objectives: support higher education students to acquire skills in transdisciplinary innovation based on smart textiles; foster student cooperation multidisciplinary approach in hands-on projects; provide knowledge, skills, and competences using virtual learning methodologies and tools; promote the application of good practices for the enhancement of innovative skills; strengthen collaboration between universities with the advanced textiles industry.

Using videos and reading materials, the MOOC on smart textiles discusses the basics of this domain, specific raw materials, textile processes required to produce smart textiles, characteristics and specific standards, as well as issues related to sustainability.





SCAN ME



The guide on entrepreneurship covers the steps needed to develop a business model that will help research results transition toward the market. The virtual training materials are to be tested in a training session (Bootcamp), where 20 students from all 4 partner universities will participate in Boras, Sweden to classes, practical activities, visits to relevant companies, and a hackathon on developing business models adapted to smart textiles.

The MOOC on smart textiles and the virtual guide on entrepreneurship will be uploaded on a platform and are to be accessed for free by anyone interested in the field of smart textiles.

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

Contact: luminita.ciobanu@academic.tuiasi.ro, https://hacktex.eu/index.php/contact/

ECOCROMA

Sustainable Fashion Inspired by Nature

Innovative Fashion Collection

Author: Nicoleta Sofronovici

Fashion designer Chișinău, Republic of Moldova

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Ecocroma is a fashion collection that embraces sustainability by replacing synthetic dyes with natural pigments derived from plants, fruits, and roots. Using the eco-print technique, fabrics are uniquely decorated with organic imprints, creating one-of-a-kind, nature-inspired designs.

This collection promotes a conscious and responsible approach to fashion, advocating for slow and sustainable design that minimizes environmental impact.



By integrating natural dyeing methods, mordanting, and innovative textile techniques, Ecocroma highlights the beauty of eco-friendly craftsmanship. The name Ecocroma is a fusion of "*Eco*" (ecology, sustainability) and "*Croma*" (from Greek *chrṓma*, meaning color), symbolizing "*ecological color*" – a perfect representation of fashion that respects both nature and creativity.

Contact: e-mail: sofronovicinicoleta@gmail.com, tel.: +373069489315

The National Research and Development Institute for Textiles and Leather

STRUCTURED BIOEMULSIONS BASED ON A MIXTURE OF SURFACTANTS-VEGETABLE EXTRACTS CONCENTRATED THROUGH MEMBRANES AND PROCESS FOR OBTAINING THEM

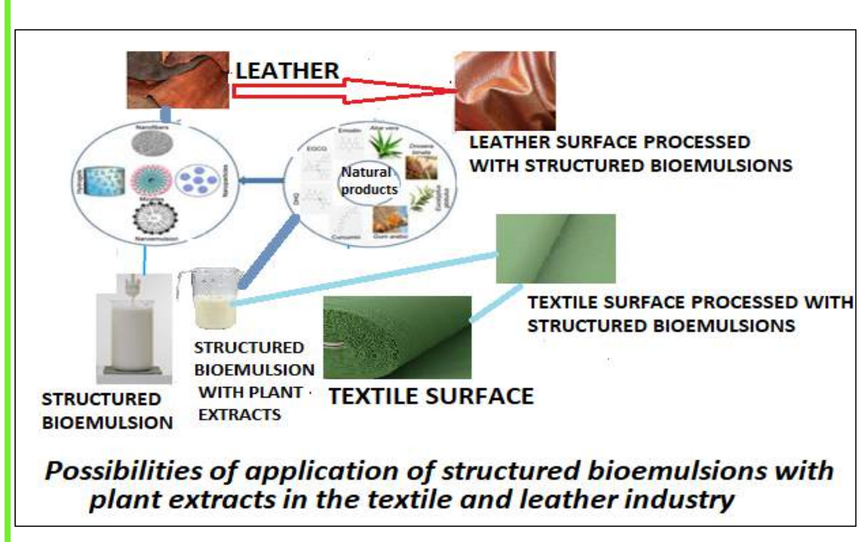
Patent/project number: A/00293 from 04.06.2024/ Core Program TEX-PEL-CHALLENGE 2026, Project number PN 23 26 01 04, acronym Tex4Age

Authors: Demetra SIMION, Alexandra Gabriela ENE, Alina POPESCU, Carmen GAIDAU, Laura CHIRILA, Cristina Mihaela LITE

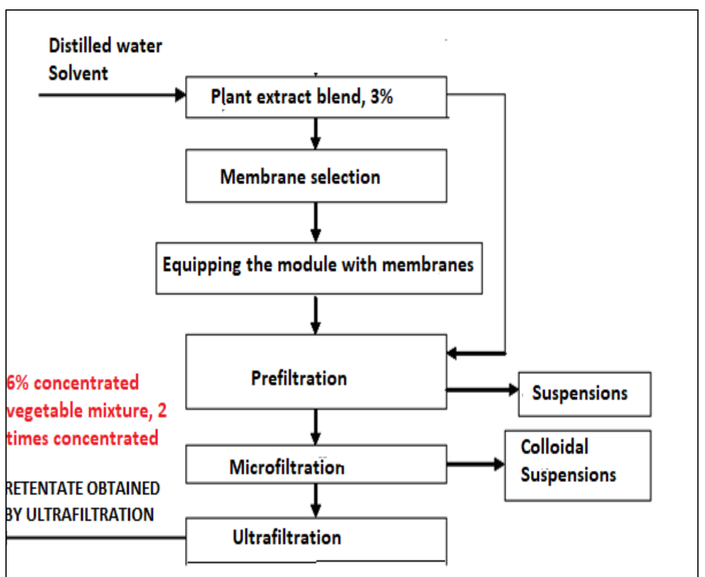
The structured bioemulsions were made through a process based on a mixture of surfactants Lauryl glucoside & Tween 20 & Tween 80 and one of plant extracts from: sage & geranium & lemon (or separate). The structured bioemulsions based on a mixture of surfactants-membrane concentrated plant extracts can be successfully used as new additives, non-polluting, non-toxic auxiliaries in the textile and leather industry, to improve antibacterial, antifungal, self-cleaning, color fastness properties.

Structured bioemulsions obtained for treating textile or leather surfaces are made up of surfactants in a proportion of 15% and plant extracts concentrated by membrane technology, from the mixture: sage & geranium & lemon of 6%, which contain 0.6-0.9% vitamin C, preferably 0.7-0.81%; conditioned in liquid form, in plastic containers. The solubilization (encapsulation) method of mixture from three plant extracts, concentrated by membrane technology in structured bioemulsions was compared. A mechanism for solubilization of plant extracts in a mixture of: sage, geranium, lemon, concentrated by membrane technology, in surfactant micelles: Tween 80, Tween 20 and Lauryl glucoside was proposed. The plant extracts in the mixture and concentrated by membrane technology are hydrophilic and attach to the hydrophilic groups of the surfactant chains. The influence of temperature and solubilization of the concentrated plant extracts by membrane technology, separately or in a mixture of the three: sage&geranium&lemon, in mixed micelles of surfactants: Lauryl glucoside&Tween 20&Tween 80, determined the different structuring of the obtained bioemulsions and was observed by optical microscopy. Structured bioemulsions created for different ratios of plant extracts and surfactant concentrations can improve the properties of the surface on which they are applied and can be successfully used in the textile or leather industry. In the finishing process of textiles or leathers treated with structured bioemulsions made in comparison with untreated samples, the aim was to obtain "smart" supports, to improve properties such as: antifungal, antimicrobial, softness, self-cleaning, color fastness to water (dynamic light diffusion, microbiological tests).

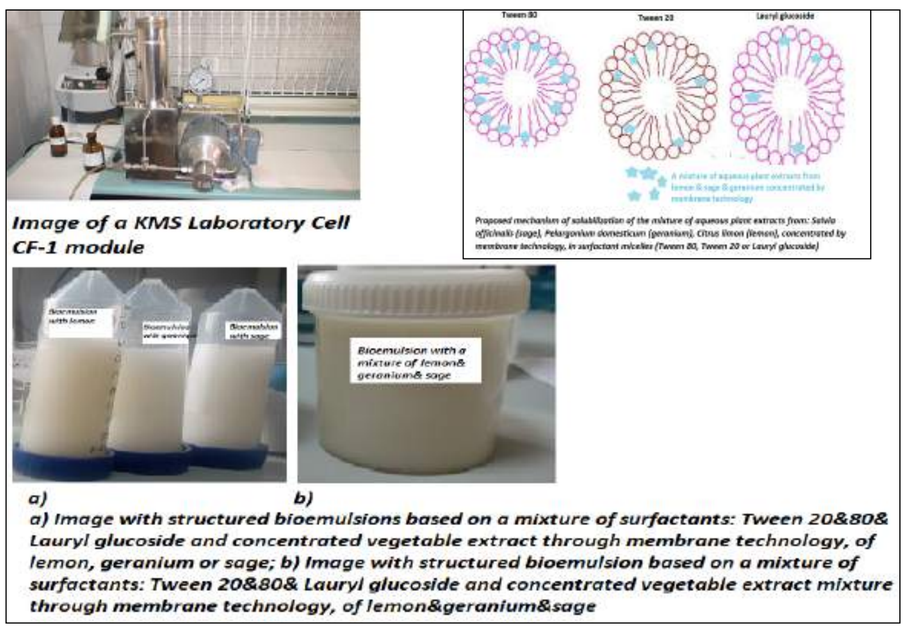
The invention capitalizes on the bioactive plant potential (sage, geranium, lemon) and non-toxic surfactants (based on sugar-lauryl glucoside) by making structured bioemulsions, achieving an important objective of creating bioproducts with a complex structure, with beneficial effects on the surfaces (textiles or leather) on which they are applied.



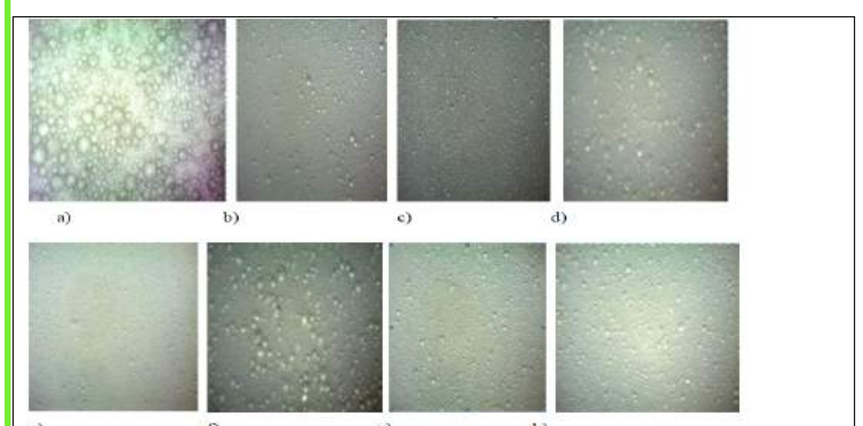
Possibilities of application of structured bioemulsions with plant extracts in the textile and leather industry



Technological flow for obtaining the mixture of vegetable extract from: lemon & sage & geranium (or separately), concentrated through membranes



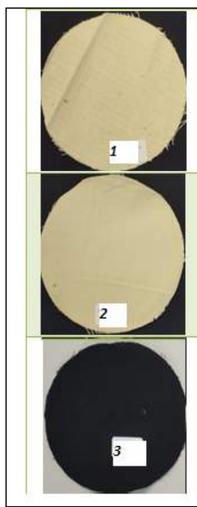
a) Image with structured bioemulsions based on a mixture of surfactants: Tween 20&80& Lauryl glucoside and concentrated vegetable extract through membrane technology, of lemon, geranium or sage; b) Image with structured bioemulsion based on a mixture of surfactants: Tween 20&80& Lauryl glucoside and concentrated vegetable extract mixture through membrane technology, of lemon&geranium&sage



Optical microscopy images taken on an ELTA 90 Medical Research S.R.L microscope, magnification x5000 for: a) Multiple emulsions based on a mixture of surfactants: Tween 20&80& Lauryl glucoside and a mixture of vegetable extracts from: sage&geranium&lemon concentrated through membranes, at room temperature; b) Multiple emulsions based on a mixture of surfactants: Tween20&80& Lauryl glucoside and a mixture of vegetable extracts from: sage&geranium&lemon concentrated through membranes, at 50oC; c) Multiple emulsions based on a mixture of surfactants: Tween 20&80& Lauryl glucoside and an aqueous vegetable extract from geranium concentrated through membranes, at room temperature; d) Multiple emulsions based on a mixture of surfactants: Tween 20&80& Lauryl glucoside and an aqueous vegetable extract from geranium concentrated through membranes, at 50oC; e) Multiple emulsions based on a mixture of surfactants: Tween 20&80& Lauryl glucoside and aqueous vegetable extract of lemon concentrated through membranes, at room temperature; f) Multiple emulsions based on a mixture of surfactants: Tween 20&80& Lauryl glucoside and aqueous vegetable extract of lemon concentrated through membranes, at 50oC; g) Multiple emulsions based on a mixture of surfactants: Tween 20&80& Lauryl glucoside and aqueous vegetable extract of sage concentrated through membranes, at room temperature; h) Multiple emulsions based on a mixture of surfactants: Tween 20&80& Lauryl glucoside and aqueous vegetable extract of sage concentrated through membranes, at 50oC

Sample	*Results*	*R%*	*$Log_{10}red$*
Concentration of inoculum	T_0=1,5x10^{6}UFC/ml		
Control	T_0=1,5x10^{6}UFC/ml T_{24}=6,58x10^{3}UFC/ml	93,48	1,18
Sample treated with bioemulsion based on a mixture of concentrated plant extracts from: geranium&lemon&sage	T_0=1,5x10^{6}UFC/ml T_{24}=4,18x10^{3}UFC/ml	95,00	1,20
Sample treated with bioemulsion based on a mixture of concentrated plant extracts from geranium	T_0=1,5x10^{6}UFC/ml T_{24}=3,78x10^{3}UFC	95,10	1,31
Sample treated with bioemulsion based on a mixture of concentrated plant extracts from lemon	T_0=1,5x10^{6}UFC/ml T_{24}=3,70x10^{3}UFC	95,00	1,30
Sample treated with bioemulsion based on a mixture of concentrated plant extracts from sage	T_0=1,5x10^{6}UFC/ml T_{24}=2,50x10^{3}UFC	97,40	1,59

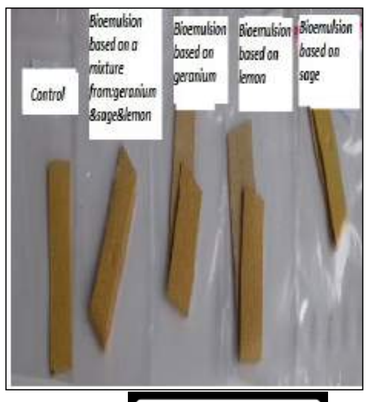
Results of microbiological tests on samples processed with the 4 types of bioemulsions, when attacked with Staphylococcus aureus ATCC 6538



Sample1-Treated 100% cotton sample with a bioemulsion based on a mixture of concentrated plant extracts from:geranium&lemon&sage

Sample2-which contains: 80% cotton fibers/ 20% functionalized regenerated cellulose fibers with Vitamin E content, treated with a bioemulsion based on a mixture of concentrated plant extracts from:geranium&lemon&sage

Sample 3- which contains: 53% polyester fibers / 43% wool fibers / 4% elastane treated with a bioemulsion based on a mixture of concentrated plant extracts from:geranium&lemon&sage



SCAN ME

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https://incdtp.ro/nucleu.html

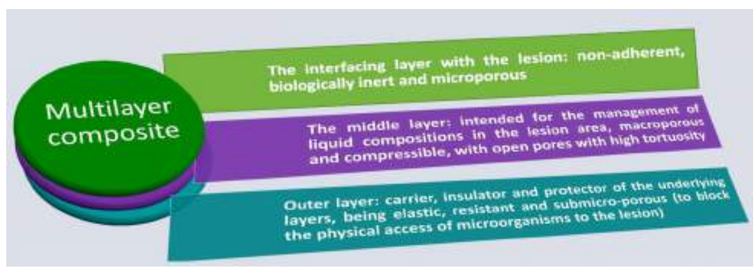
Procedure for obtaining layered dressings, usable for assisting medical interventions performed in emergencies

Authors: ***Visileanu*** *Emilia,* ***Ene*** *Alexandra Gabriela,* ***Popescu*** *Diana Mihaela,*
Maier *Stelian Sergiu,* ***Tihauan*** *Bianca Maria,* ***Marinas*** *Ioana Cristina*

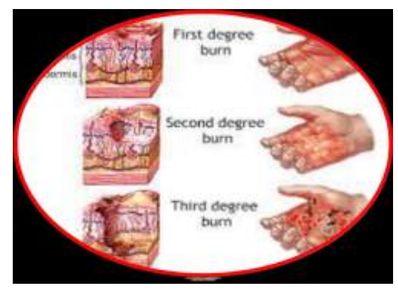
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Patent no. A/00612 / 06.10.2022

The invention refers to a process for obtaining layered dressings, usable for assisting medical interventions carried out in emergencies, characterised by the fact that they provide microorganism-free compresses or bandages, with temporary application, for the management of non-infected wounds, as well as minor burns, with thermal and chemical origin, and low and medium severity, occurring at the level of the integuments.







Technological stages:

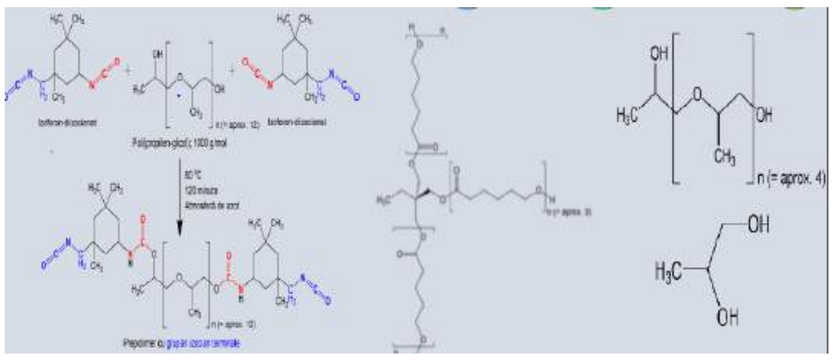
- preliminary decontamination of previously functionalised textile materials;
- cutting out the landmarks from textile materials according to the

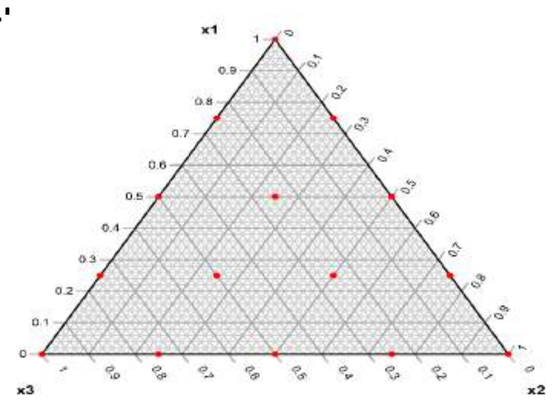
sort-type-dimensional requirements of the dressings or compresses to be manufactured;

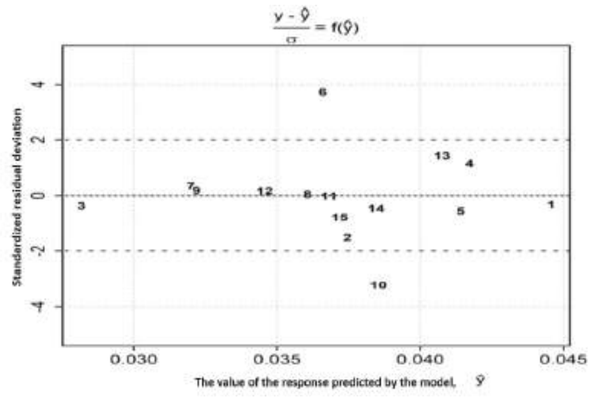


SECTION I

- dimensional stabilisation and conditioning of textile materials;
- cutting out landmarks from loosely cross-linked polyurethane hydrogel, previously manufactured in the form of a flat layer;
- post-processing of the landmarks of the polyurethane hydrogel layer to load them with pharmacologically active compounds;
- conditioning of polyurethane hydrogel landmar'

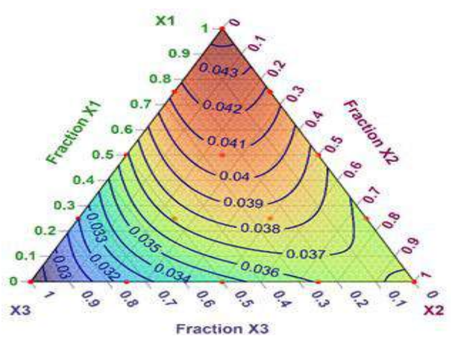


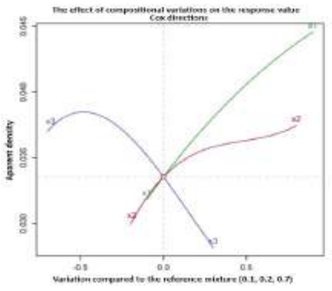


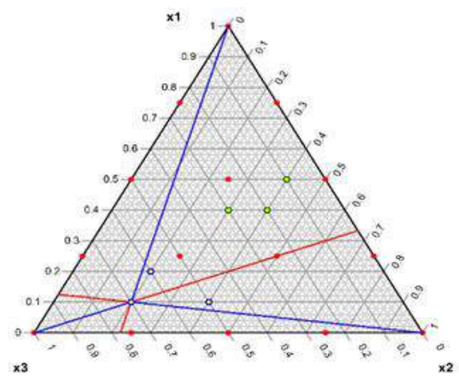


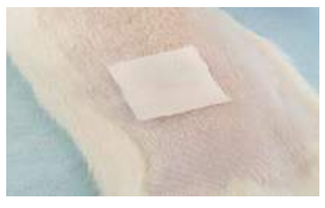
- assembling the dressing/compresses by flanking the polyurethane hydrogel landmarks with the textile landmarks;
- conditioning of assembled parts;
- dimensional adjustment of

manufactured dressings/compresses;











Results

The biocompatibility of the multilayer structure performed by in vivo studies showed a rate of rapid healing and at 7 days of treatment, it was observed the closure of the wound was approximately 60% with areas of tissue regeneration.

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The National R&D Institute for Textiles and Leather, Romania

ASSEMBLY PROCESS OF NARROW TEXTILE MATERIALS FROM THE COMPONENT OF THE ANCHORING SYSTEM OF THE MULTI-ROLE COLLAPSIBLE MODULE FOR PEDOLOGICAL DROUGHT

I

Patent application: A/00504/ 02.09.2024

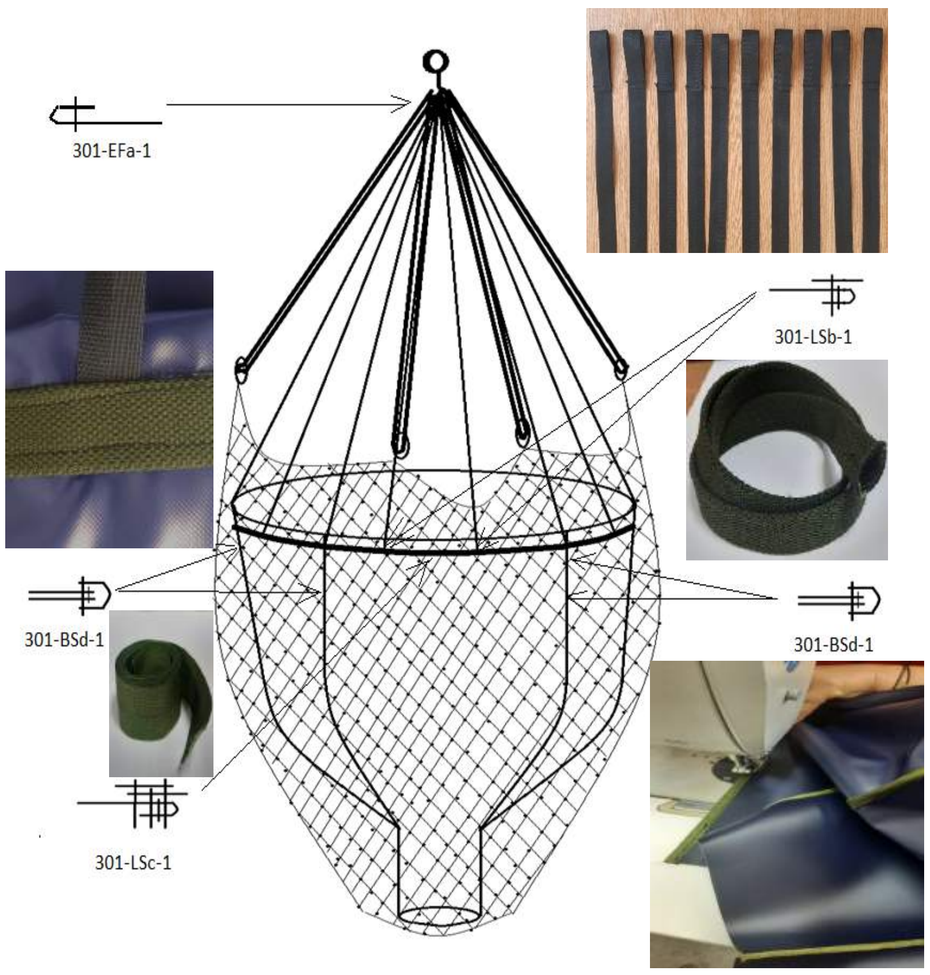
Core Program TEX-PEL-CHALLENGE 2026, PN 23 26 02 01 (THORR)

Authors: Cristina GROSU, Adrian SALISTEAN, Adriana-Iuliana POPESCU

The invention refers to a process for assembling narrow textile materials, a fundamental part of the anchoring system, by sewing technology, with: ***additional reinforcement elements*** on the upper part of the hexahedron with square faces (100% PES reinforcement tape, 30 mm width and 3.5 mm thick, with filming surface treatment) ***and an assembly of 12 straps***, for the suspension-attachment-detachment by the hook of the helicopter's transport system (100% PES strap, 25 mm width, 2 mm thick, 1500 mm length), so that the multi-role collapsible aerian module for pedological drought ensures the following operational requirements: long technical resource (min. 4 years), seam abrasion resistance (min. 10000 cycles) and working load of the entire modular system (min. 3500 daN).

Claim The assembly process of the anchoring system, part of the multi-role collapsible module for pedological drought, by using a triple transport sewing machine, with 100% PES sewing thread, 150 tex fineness, 301 stitch type (301-EFa-1, 301-BSd-1, 301-LSb-1, 301-LSc-1), 3.5-4 stitches/cm, by edging the joining seams of the hexahedron with a 100% PES woven tape, 25 mm width and fixing the suspension-attachment-detachment assembly, made of 12 100% PES straps, 25 mm width, 2 mm thick and 1500 mm long, the reinforcement of the entire anchoring system being achieved using a 100% PES tubular strap, 30 mm width, fixed on the front, 25 mm from the edge of the hexahedron.







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Presentation link: https://incdtp.ro/THORR/

Crafting Freedom

Phoonseeraah Tieanworn
Advisors: Jeerasak Jitrotjanarak, Chutiparn Lertvachirapaiboon

Crafting Freedom project empowers migrant women by providing training in crafting souvenirs, decorations, and jewelry using local materials like shells, marble, and stone. To enhance product value, her team supplies materials and knowledge to functionalize items with mosquito-repellent, antibacterial, and aromatherapy properties. The women assemble these products, which are then marketed and sold under the brand Ada through tourism networks and an online platform. This initiative not only offers sustainable income but also helps prevent vulnerable women from falling into human trafficking and illegal activities, giving them a path to independence and dignity.







Contact: j_jerasak@hotmail.com

CRYSTAL PICTURE

I

Tapestry

Author: Katalin Leléné Czeglédi (Hódmezővásárhely)

Glue the template carefully, then choose which colors you will use to create the picture.

After that, you just have to sprinkle the beads in the appropriate places. After the glue dries, your wonderful crystal picture is ready.



Contact: otletclub.idea@freemail.hu
Presentation link: https://otletclub.5mp.eu/web.php?a=otletclub

PATCHWORK

Tapestry

Author: Katalin Leléné Czeglédi (Hódmezővásárhely)

I

Patchwork was originally a type of needlework made by American farm women, mainly from the usable parts of worn-out clothing.

It is a more modern version of this, adapted for use today.





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Presentation link: https://otletclub.5mp.eu/web.php?a=otletclub

FLORET FASHION COLLECTION

Author: Nicoleta Sofronovici

I

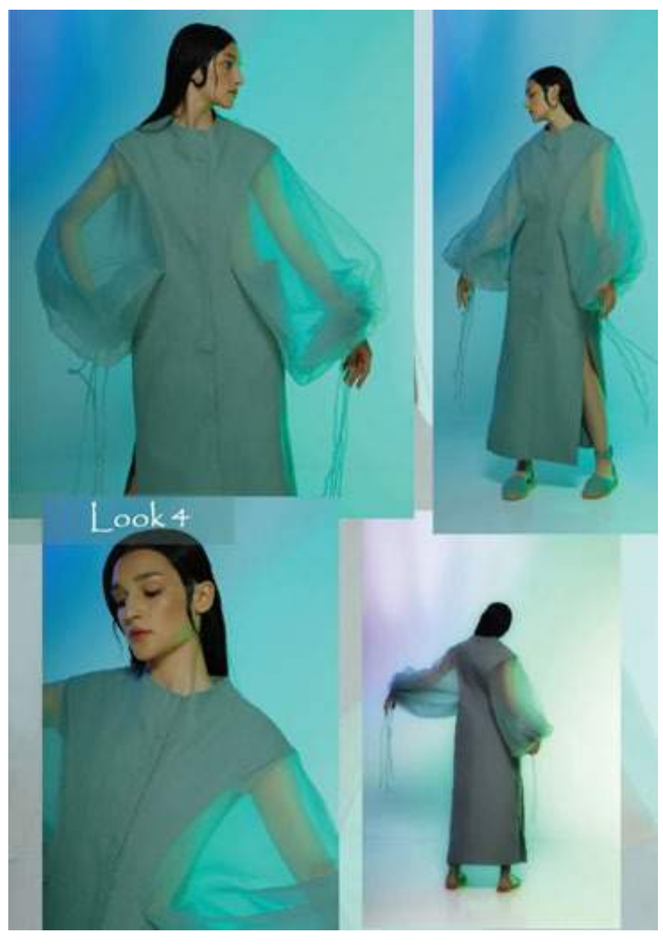
The women's fashion collection is based on a contemporary theme, presented through formal and decorative means with a message carrying activist undertones and advocating peaceful protest regarding the awareness and accountability of the population towards the disappearance of biodiversity and the plant world. Materials used include denim, knitwear, combinations of textures, and decorative-structural and plastic expressions to outline straight, oval, rectangular, and trapezoidal silhouettes. The color palette revolves around shades of mint green and grays, with closure systems featuring slits, buttons, and snaps. The clothing pieces include pinafores, pants, blouses, dresses, and ponchos.













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Presentation link: https://www.youtube.com/watch?v=X2ndDo0WOdw

PERLET FASHION COLLECTION

I

Author: Mădălina Bianca BISTRIAN

Industrial sewing machines are designed to provide fast, smooth, vibration-free sewing at any speed. The newest machines are completly sealed to eliminate oil stains from the materials. They have simplified control panels that allow the user to adjust the sewing speed to suit their experience level. They come equipped with an integrated Direct-Drive servo motor.

The servomotor is coupled to the machine head by its own coaxial shaft that reduces vibrations and noise; this allows the user to stitch at any speed powerful enough to sew from thin to thick materials. The passion to keep up with technology helped me to succeed in creating the most spectacular dresses in my own PERLET workshop.







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Presentation link: https://www.facebook.com/perletbymadalinabianca/?locale=ro_RO

SCAN ME

THE TRANSFORMATION OF WASTE INTO UNIQUE ACCESSORIES

Patent/project number: MD Nr. 1978
Author/s: Malcoci Marina, Malcoci Maria-Eudochia, Corolevschi Marcela

Nowadays, sustainability is becoming increasingly important, and the reuse of materials plays a key role in reducing waste and protecting the environment. The products in figures 2 and 3 are handmade from the waste left over from the natural leather cutting process. Instead of being thrown away, some pieces of leather (fig. 1) were transformed into unique accessories, demonstrating that traditional craftsmanship can go hand in hand with ecological practices.

In figure 2, the products are decorated with fine embroidery in the traditional style. The embroidery not only beautifies the accessories, but also enhances each piese of material, demonstrating special attention to preserving traditional elements.

Figure 3 shows a collection of unembroidered leather accessories, characterized by simple lines and natural colors. The minimalist style of these accessories suggests a contemporary approach, while preserving traditional hand-crafting techniques.

The creation of these products not only reduces the impact on the environment, but also gives new life to waste. This sustainable approach demonstrates that there can be harmony between tradition and innivation, inspiring new ways of capitalizing on available resources.





Fig. 1. Waste left after cutting natural leather

SCAN ME



Fig. 2. Embroidered products, MD 1978



Fig. 3. Unembroidered products

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SILK THREADS BLENDING MACHINE

Author/s: Venkatesh Penumarthi

ANDHRA PRADESH - INDIA

I

Introduction

The tradition of handloom in Andhra Pradesh is so ingrained in its culture that it serves as the state's identity. There are several villages in Andhra Pradesh, each of which has its own distinctive method of weaving and pattern.

Very often the handloom is given the same name as that of the village where it is weaved.Dharmavaram town located in sri satya sai district is the silk hub of the Andhra pradesh state . Here thousands of people are making a living by weaving silk cloths especially sarees . The process of weaving is quite a strenuous job. It is causing severe health hazards to weavers in the long run. Our project is to reduce the problems faced by weavers in our region. Usually when a saree is completely woven, new silk threads are blended onto the old ones in a frame just like shown here. This is done manually by specialist weavers using hands and gum. It is a tedious process. So, we are designing a simple blending for weavers to mould threads onto the weaving frame.

For many years, weavers have been doing this blending job manually. They need to continuously sit for 2 to 3 days to complete the work. It is a slow process and causes wrist and neck pain to workers . so , our machine can speed up this process by using electricity. This machine also reduces physical strain to workers.

TOOLS AND RESOURCES

In our setup , we are using components such as BO Motor , two pedal wheels , 9V battery and other mechanical tools such as drill bit, wrenches, soldering gun etc. we also visited the real time weaving set up to see if practically this machine can be useful for them or not . We had found some technical problems in implementation since the silk threads are very delicate. We can't use the rotating fan with longer wheels, because it may cut the neighbouring threads. So with the help of a 3D printer we specially designed the rotating wheel for the blending machine.

We interacted with some weavers locally and asked for their opinion. According to their opinion, the Government should provide the proper facilities and loans to the weavers under the schemes implemented. The raw materials should be supplied at an affordable cost.. Using their advice , we designed our blending wheel . This device consumes less electrical energy and has so many advantages.

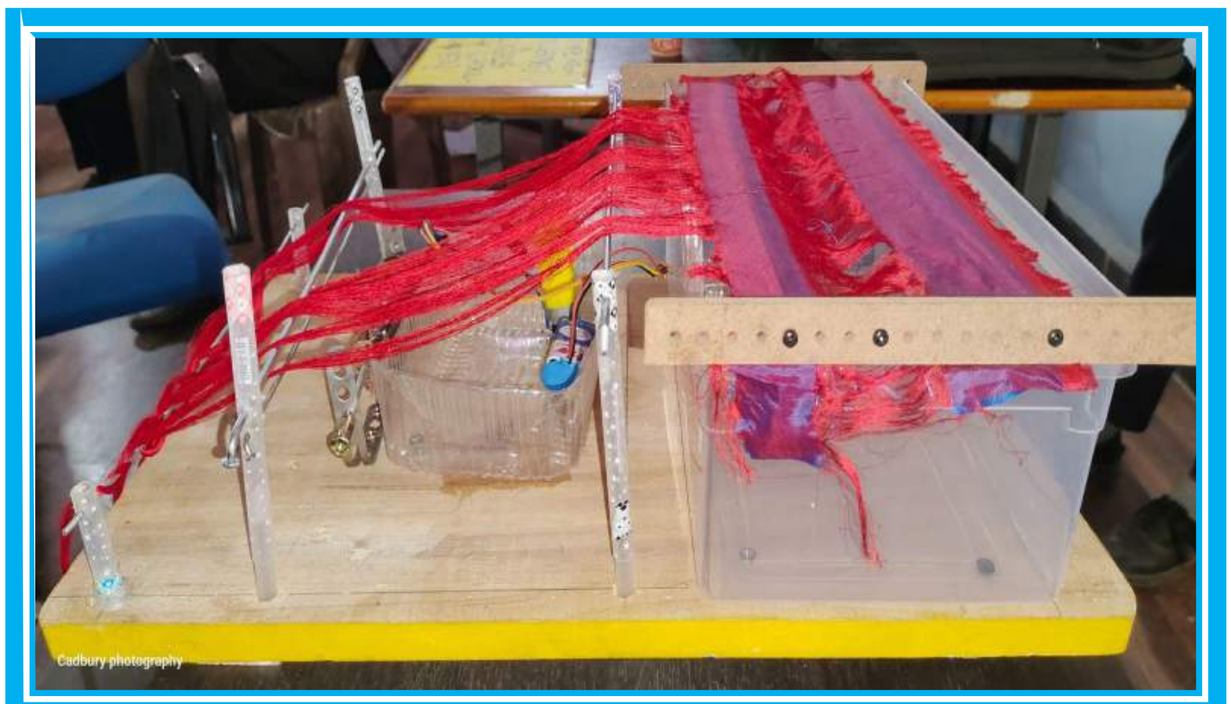
ADVANTAGES

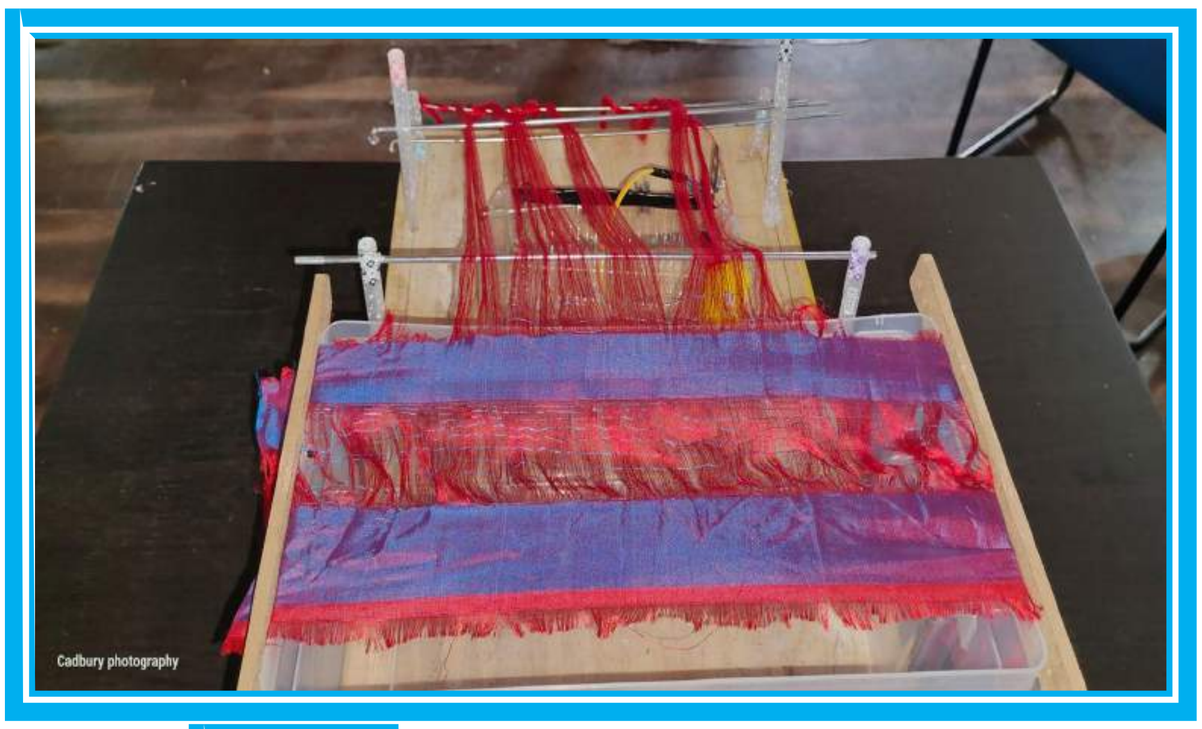
Reduces physical strain uniform blending of threads customised designs improved quality Maximum efficiency.











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Detail about Dharmavaram Silk Weaving, silk threads blending machine

https://en.wikipedia.org/wiki/Dharmavaram_handloom_pattu_sarees_and_paavadas

Artă Tradițională
Deva

WOOD ART AND TRADITIONS

Author: Mircea LAC

He is a complete teacher in a way that is increasingly rare – a man of character, an encyclopedia of peasant art, and a craftsman who transforms the crude into collectibles. Now, Professor Mircea Lac is officially named by UNESCO a Living Human Treasure. He was called the "teacher of traditions" and dozens of articles and even books have been written about him. Anyone who knows Mircea Lac has the blessing of heaven to step well-guided into the fantastic world of peasant art.

Once he opens the door of his workshop, the smell of refinished wood surrounds you. Thousands of pieces steal your soul and you don't know which one to admire first. The teacher smiles gently, a sign that he is used to such reactions. And it's no wonder: Mircea Lac has been harnessing talent in students since the year I was born. Children follow him, and artists marvel at his collection of pieces laboriously crafted by him or his students over the years.

The youth cares - the values of the past are the foundation of our future!









SCAN ME

"Since 1975. Since then, I've had 30, even 40 students every year. I don't know the exact number. What matters more is how talented they are. Almost everyone seeks me out, even those who have gone abroad. They come to talk, to see their work, to smell the wood and dust. I have many students who have continued what I did here. In this, I have great spiritual satisfaction that many of my students went to Sibiu, to the restoration.“ Mircea LAC

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https://www.facebook.com/artatraditionaladeva/

J

Kids Corner

Games

Toys

Outdoor activities

CLUB EVOLUŢII cu Alexandra Marcu

Outdoor project

Authors: Alexandra Marcu & Team

J

Club Evolutii *is an organisation from Romania, providing personal development activities based on mountain and traveling education.*

We organize mountain hikes, expeditions, camps and educational courses for children who want to become explorers and enjoy many experiences and adventures.













Why do we love the mountain?!

Because it's an escape between the blocks, an opportunity to socialize and although it often challenges us to get out of our comfort zone, it seems at the same time it gives us the feeling of well-being and safety!

Club Evolutions - Personal development through mountain education!

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AIRSOFT
BY WOLVES SPORTS CLUB

Airsoft project

Authors: *Florin TOPOR & Team*

The Deva Wolves Sports Club through the taekwon-do, archery and airsoft sections promotes movement and competitive spirit by participating and organizing games and competitions of these sports disciplines.

The Deva Wolves Sports Club organizes various demonstration events in which participants and visitors have the opportunity to witness a presentation of the combat tactics used in airsoft, of the equipment, but also of replicas of real military weapons and devices. Those who love this sport could sign up for the target shooting session in a controlled environment and in complete safety.

Airsoft is a sport that helps develop team spirit and fair play, building character!









Presentation link: https://youtu.be/QYdjh3YGD4g?si=4zfVpus7tgjgvbWG

DISCOVER ZANZIBAR with MUDI

J

Travel Guide

Author: Muhammed Suleiman Yussuf

I'm Mudi and I am a tour guide here in Zanzibar. I only learned Romanian on the internet and on youtube, and now I have a school where I also teach other friends of mine.
If you choose to spend your holiday here you will have the opportunity to discover Zanzibar and its beauty with me. This is my website and the place where I can be with you, my whole story in one place, along with information for tourists about Zanzibar.









Zanzibar is an archipelago located off the east coast of Africa and consists of the main island of the same name, Zanzibar or Unguja as the locals call it, and Pemba. The word Zanzibar comes from the Persian language and translates as "coast of black people" and Pemba translates as "green island".

Zanzibar is located approximately 6000 kilometers from Romania, the islands being sought after both for the wonderful beaches and reefs, and for the exotic destination.

Contact: https://www.facebook.com/ghidturisticdespre.zanzibar
tshabalalajunior17@gmail.com **+255 783 396 944**

SCAN ME

Kids Corner

My hobby BALLET



J

Kid Project

Author: Alessia Marie SALA

My name is Alessia Marie SALA, I'm 6 years old and one of my passions is dancing, that's why I'm taking the ballet class.

I like to do pirouettes and different positions together with my colleagues under the careful guidance of the ballet teacher. For five months I have been attending the ballet classes organized by the Regensburg ballet circle.









Kids Corner

My hobby FOOTBALL



J

Kid Project

Author: Christian SALA

My name is Christian SALA, I am 6 years old and football is my passion. I like this sport a lot and after kindergarten I play football with my friends in the park near our house. I am registered at the Football Club of the locality where I live. We practice twice a week and on weekends we have matches with teams from other towns.









Kids Corner

DELIA's LEGO CREATIONS

Author: Delia Ioana CINDEA

J

My name is Delia, I am 9 years old and I am a student at the "Matei Corvin" Technical College in Hunedoara, in the second grade, following the Step by Step program. One of my biggest passions is building LEGO models. I like this activity because it stimulates my imagination, creativity and patience. Through LEGO construction, I can create various structures and objects, explore new ideas and develop practical skills. It's a great way to learn and relax at the same time.

Each piece I add to the build helps me focus and enter a state of calm and relaxation. This activity gives me the opportunity to explore creativity, solve problems and see my ideas take shape.



LEGO teaches me to be patient and attentive to details, and the joy of completing a project gives me a special satisfaction.













SCAN ME

Kids Corner

LEGO
My Passion for Building Cars

Kid Project

Author: Ștefan PENA

J

Building LEGO cars is a passion that inspires and challenges me. By now, I have built 40 LEGO car models, and 5 of them are much more complex than my age level. Each project gave me a new challenge and helped me learn more about mechanics and design.

For this project, I created a remote-controlled car prototype, equipped with:

- ✓ **2 powerful motors for traction**
- ✓ **4x6 transmission for better stability and control**
- ✓ **Remote control for distance operation**
- ✓ **Steering control module**

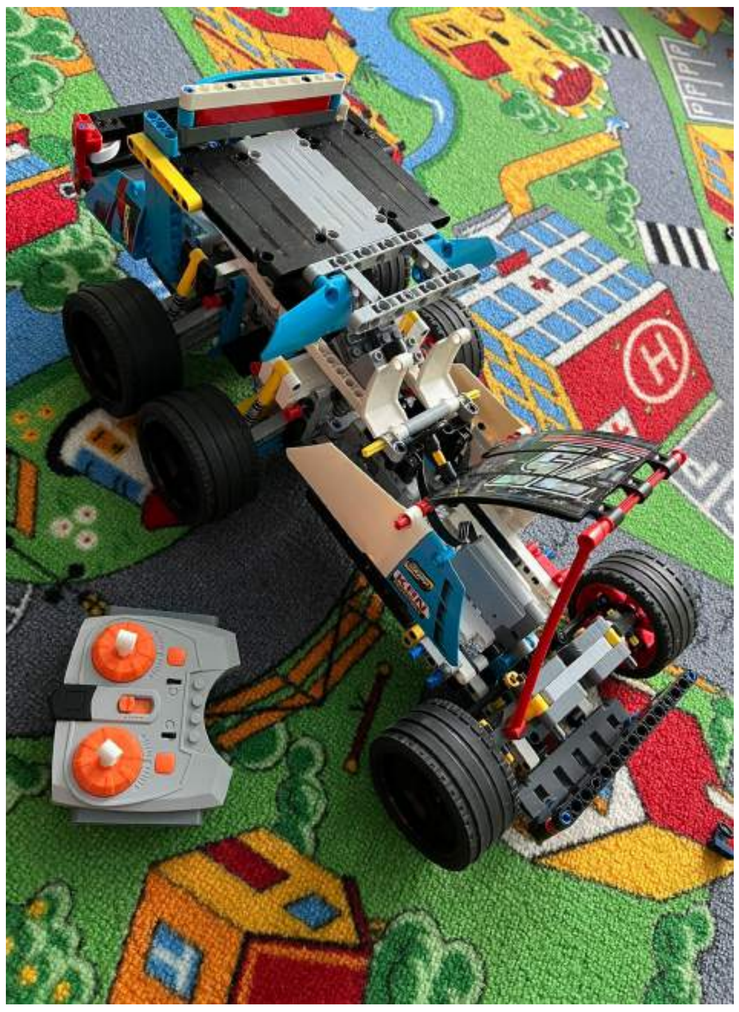
SCAN ME

In addition, I included Roby the robot in my project. I assembled and programmed it myself. It is controlled through a mobile app, giving it interactive and autonomous functions.

Building LEGO cars is not just fun, but a true passion.













Maria's Art

MY UNIVERSE

Kids project

Author: Maria Nectaria MOCANU

Maria Nectaria Mocanu is a student in the 4th grade of the "Sigismund Toduță" Secondary School, a structure belonging to the "Anghel Saligny" Railway Technological High School in Simeria. Each element has a clear and distinct message, each painting is a balanced puzzle of color and words. My works are deeply expressive and full of symbolism, demonstrating a special artistic sensibility. Each painting conveys an inner story and strong emotion, highlighted by vibrant colors and symbolic elements.







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Kids Corner

J

Alex's Lego Creations

Kid Project

Author: Alexandru *ROTEA*

I'm Alexandru passionate about Lego, I'm in the 1st grade at school Schillerschule Dettingen an der Erms. I really like to build models from Lego pieces, and after class and after doing my homework, my main activity is Lego construction.

In this project I present 3 of my creations based on Lego cubes and inspired by the Lego world. My project is made for creative and fun play.



This is a Monster Truck built on a partial technic lego – the part below and custom lego pieces - the top part, that it is composed of a truck cab and a big cheeseburger. Cheeseburger is one of my favourite foods.



In this creation I made a disco with Dj on wheels, in this way the Dj can move where someone wants to have a party with music in the open air.



The 3rd creation is part of the new generation of campers, this model involves an electric camper with solar panels on it. During the summer vacation the camper will always have the battery charged to be able to venture to places without battery charging stations.

Sebastian's Modified Lego Cars

Kids Corner

Kid Project

Author: *Sebastian ROTEA*

J

I am Sebastian, a 7th grade student at school "Schillerschule" Dettingen an der Erms I like mathematics and after completing the courses and homework, I relax by building Legos, especially cars.

My project features Custom Lego Cars, this means creating a new car model from an existing Lego Auto set using the same parts. This year I have the pleasure to present you the next models:





Nissan Silvia with a modified engine with a supercharging group.



Ford Mustang darkhorse customized to be a Time Attack car



This was a Nissan Skyline R34 from Fast 2 Furious. I modified it into a Nissan Stagea

Stone Blade Trailer of Video Game

Game Art Project

Pavle Trišović

J

SMASH into Stone Blade. An epic action-adventure game, where you'll fight monstrous enemies, befriend strange and otherworldly travelers, journey through a brilliant and ancient world, and discover it's secrets - all in a hand drawn pixel art-style.

You play as a Stone Warrior, once acting as sword and shield for the Five Kings - now seeking vengeance against them for sacrificing his kin to win their war. To succeed in his quest the Stone Warrior must absorb the powers of his enemies and use them as his own.













The dash is a power up that is a valuable resource for the player. They can use it to cross a level quickly or get out of enemy fire. It's upgraded version, the Wolf Cloak dash, allows the player to avoid all damage while dashing.

Wall jumping is essential in order to cross any level or discover hidden areas. It's upgrade - the Beast Claws - allows the player to stick to a wall.

The double jump will be obtained from the Grasshopper Legs - you gain the power of the elegant grasshopper and of course you can select any spell to use in combat.

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Presentation link: https://youtu.be/UIvM_BmZzMw

SCAN ME

Junior Achievement Moldova

Member of JA Worldwide

Epu-KAMi

J

Kid Project

Author: Bordan Kamelia; Mentor Silvia SCORTESCU

Epu-KAMi The innovative product, for bunnies made of natural fabric. Our family has a tradition of raising white bunnies, our grandparents inherited this business. Innovative is the slim, comfortable tank top.



Contact: silvia.scortescu@yahoo.com

KAPI-TANi

Kid Project

Author: ***Eșanu Tatiana; Mentor Silvia SCORTESCU***

J

KAPI-TANi children's pijamas based on storage and made of eco-friendly cloth, on the outside is with a pocket where the Kapibara toy sits in the pocket, in the toy is attached a medicinal magnet that treats blood pressure and headaches.





J

TouchA : Exploring Personal Boundaries and Safety with Fun

Patent Number: 000825060

Authors: Khansaa Mariska Dalis, Ladija Syifa Ichizuna, Hanahumaira Zafrani Hanan, Janita Lituhayu Rustono,
Indah Vintia Carissa (SMP Thursina IIBS)
Mentor : Risa Nur Fitriyana, S.Psi

TouchA is an inclusive multisensory memory-based game designed for children aged 4-8, with a special focus on teaching personal boundaries and safety. This wooden memory game integrates interactive activities with peg dolls, question cards, and colorful tokens to create a fun and engaging learning experience.

Developed using the ADDIE model, TouchA encourages children to explore safe and unsafe touch, personal space, consent, and trusted adults through hands-on play and structured discussions. The game is particularly beneficial for children, including those with Autism Spectrum Disorder (ASD), as it leverages tactile and visual learning to support comprehension and social interaction.

With a balance scale and reward system, TouchA reinforces positive learning behaviors while making education an enjoyable and meaningful experience. By combining playful learning with essential life skills, TouchA aims to empower children with knowledge and confidence to navigate social interactions safely.

Game Components



- 1 Wooden Box with 24 Peg Dolls
- 60 Cards in Six Categories:
  1. Personal Space Cards (Blue)
  2. Safe vs. Unsafe Touch Cards (Pink)
  3. Private Body Parts Cards (Yellow)
  4. Safety Rule Cards (Red)
  5. Consent Cards (Purple)
  6. Trusted Adults Cards (Turquoise)
- 24 Colorful Ring Tokens
- 1 Wooden Balance Scale
- 1 Sand Timer
- 1 Game Manual

4+

1 or 2

40min

Gameplay

- **Draw a Peg Doll :**
  The player draws a random peg doll from the box. The color of the peg doll determines the type of card they must draw (e.g., a blue peg doll corresponds to a Personal Space card).
- **Draw a Card :**
  The player picks a card from the matching deck and completes the activity.
- **Earn Tokens :**
  For correct answers, thoughtful participation, or completing the task, the player earns a colorful ring token.
- **Share and Learn :**
  After completing the challenge, the facilitator or other players discuss the lesson from the card.
- **Next Player :**
  Pass the turn to the next player.

strengths &limitations

- Multisensory learning
- Structured gameplay
- Reinforcement
- Engagement

- Small sample size
- Short-term observations
- Need for simplification
- Limited customization

Validated by Psychologyst

Validated by Table Game Expert

conclusion

TouchA is a promising educational tool for teaching personal boundaries and safety to children, especially children with ASD. It integrates play and sensory engagement, creating a positive learning environment.

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references

Dee Dough - “Clean, Safe, Creative Play”

Pornprapat Jirapojaporn
and Napisa Laipanya

DeeDough, clean, safe, creative-play is a unique, science-inspired modeling dough infused with benzalkonium chloride, making it both safe and innovative for creative play. The embedded benzalkonium chloride provides natural antimicrobial properties, helping to keep the playdough cleaner by reducing bacteria growth, making it a hygienic option for kids and adults alike.

Despite this infusion, the dough remains soft, malleable, and easy to shape, allowing for endless imaginative possibilities. Its antimicrobial nature also makes it ideal for educational activities, promoting a cleaner and safer play experience. Non-toxic, non-staining, and packaged for long-lasting freshness, Deedough is a perfect blend of creativity and safety, bringing a modern twist to a classic hands-on activity.









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Opportunity
CORNELIUGROUP Research-Innovation Association
Creation
INVENTCOR
Realization
Power of Creative Mind
Deva ROMANIA

SCIS
SATIT CHULA INNOVATION SOCIETY THAILAND

Clairevi Bee

Personalized Modular Lipstick for Beauty on the Go

Patent pending number: 01044

Authors: Avieka Khlaisang, Patsarun Rawangban, Jeerasak Jitrotjanarak

A **smart modular lipstick system** inspired by the **beehive**, designed for **on-the-go beauty lovers**. With **interchangeable, refillable packaging**, it enhances **organization, travel-friendliness, and sustainability**. Expanding to **eyeshadows and blushes**, it promotes **convenience, creativity, and eco-friendly** beauty routines.

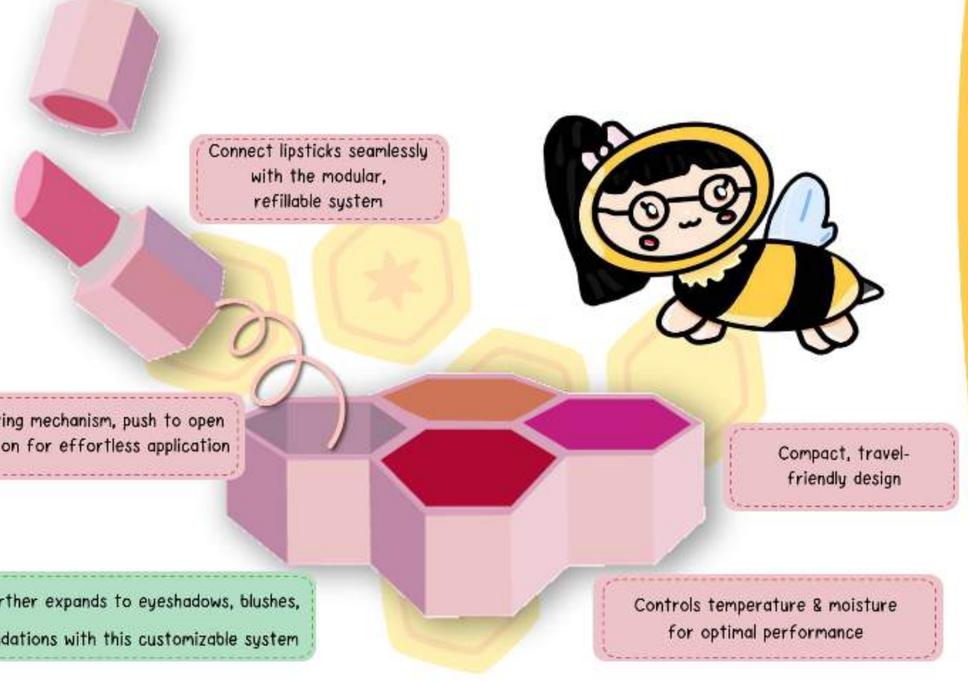
Problems

Lipstick boosts confidence and self-expression, with **70% of women using it daily and 65% feeling more confident at work.** The market will hit **$11 billion by 2025**, but managing multiple shades causes **messy storage and extra spending.** Women need a **practical, organized, and travel-friendly** solution.

Solutions

Clairevi Bee is a **smart, modular lipstick system** for **on-the-go beauty lovers.** Inspired by the **beehive**, it enables **mixing, matching, and refilling** shades effortlessly. With **eco-friendly packaging** and plans to expand to **eyeshadows and blushes**, it offers **personalized, convenient, and sustainable beauty.**





Easy 4-Step Beauty Routine



FUTURE POTENTIALS

- **AI Shade Matching** – Recommends colors based on **skin tone.**
- **Upcycling Program** – Recycles **used pods** for discounts.
- **Sustainable & Inclusive Beauty** – Promotes eco-friendly beauty (SDG 12), clean beauty, women empowerment, and innovation (SDG 3, 5, 9).

INVENTORS



Avieka Khlaisang



Patsarun Rawangban



Jeerasak Jitrotjanarak

SCAN ME

3 GOOD HEALTH AND WELL-BEING
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
5 GENDER EQUALITY
12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Contact: Satit Chula Innovation Society (SCIS)
Email: scis.cud@gmail.com

Passion through color

Kids Corner

Kid Project

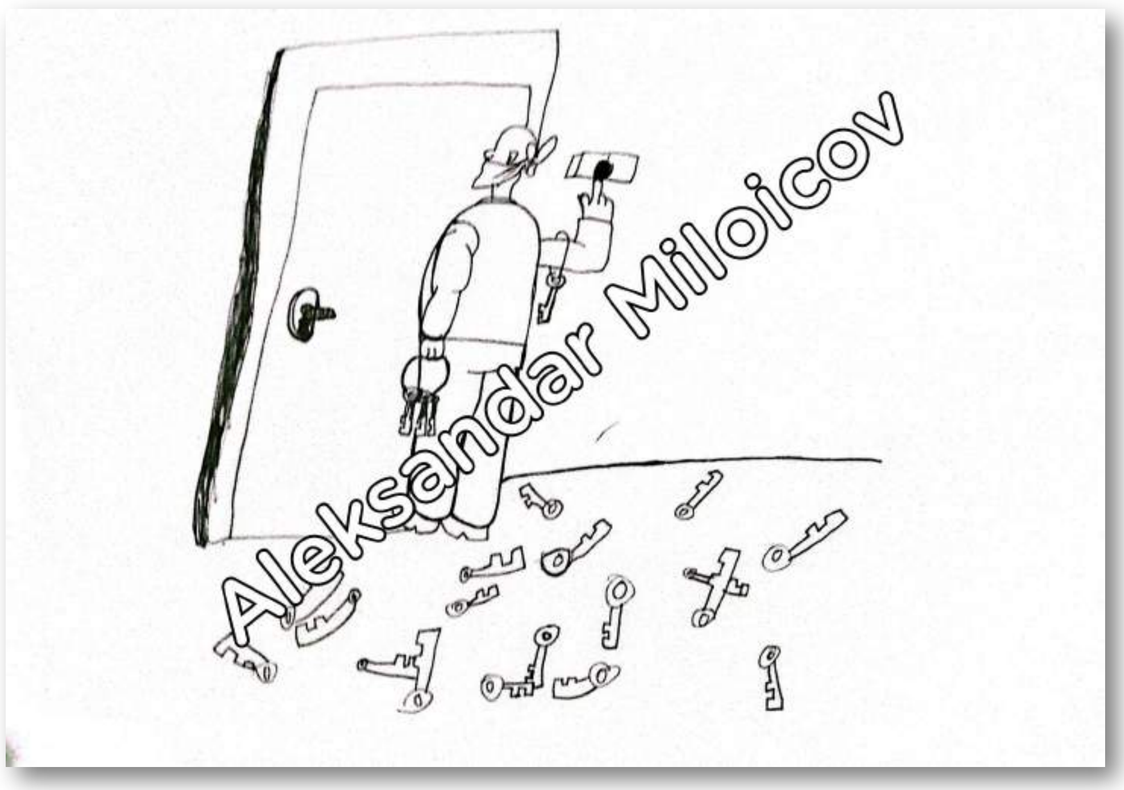
Author: *Aleksandar MILOICOV*

J

I am a first-grade student at the "Nikolaus Lenau" Theoretical High School in Timisoara, I express my creativity and imagination through drawing, transforming each work into a visual story full of emotion and color.
🎨 My passion for art was shaped under the guidance of the renowned master of caricature and graphic art, Professor/Mentor: Ștefan Popa Popa's, who inspires his love for detail and expressiveness.
💡 Talent, passion and vision - these are the words that define my artistic journey and imagination has no limits!

Techniques used:

- ***doodle-art/graffiti with thick outlines and intense colors. The techniques involve markers, watercolors or digital illustration with vibrant chromatic palettes.***
- ***black and white sketches, made in a minimalist style, with a fine-tipped pen or black ink. The composition plays on the idea of distorting shapes, inspiring surrealism and conceptual drawing.***
- ***markers or watercolors, using thick outline lines and bright colors, with a strong contrast between the background and the character.***
- ***surreal drawing, made with a fine liner or black ink pen. The unusual perspective suggests a conceptual game between reality and imagination.***
- ***made with markers and black ink, the thick outlines and the overlapping of elements creating an intense visual effect.***
- ***Illustration made with watercolors or markers, with a naive style and clearly delimited chromatically, probably symbolizing relaxation and nature.***









Kids Corner

HOME REPAIRS



J

Kid Project

Author: *Sebastian Andrei ANGHELONI*

Sebastian Andrei is a little boy who just turned two years old! From an early age, his parents discovered his immense passion for cars and the tools needed to repair them.

We can see in the following photos his interest in everything that has four wheels. He stands next to his father when he repairs cars.



We, his parents, already know the field we will train him to follow!







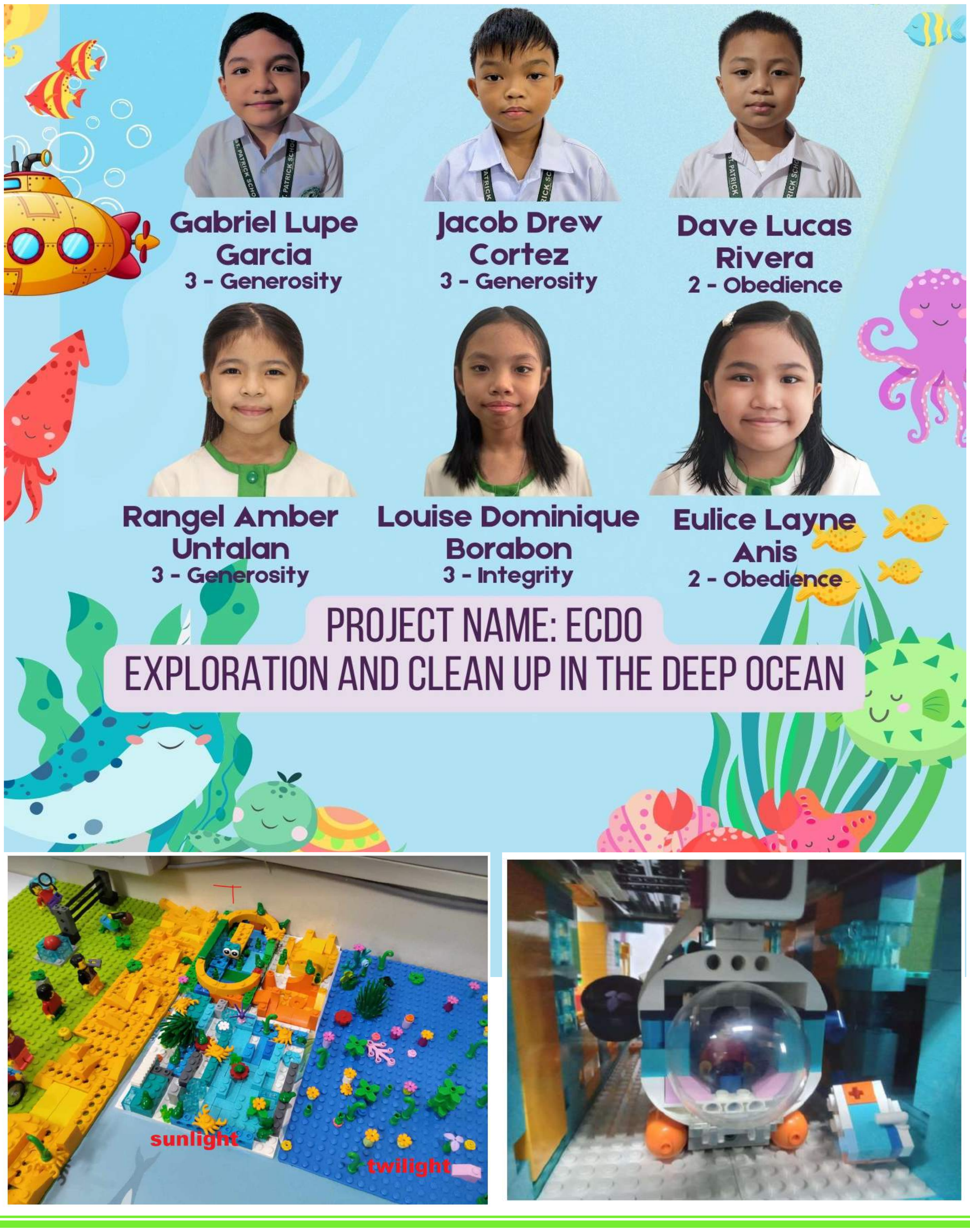


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Creation
INVENTCOR
Realization
Power of Creative Mind
Deva ROMANIA

ST. PATRICK SCHOOL
of Quezon City

ECDO

Exploration and Clean up in the Deep Ocean



CARIE the Marine Patroller
A Solar-Powered,
Autonomous Marine Tracker

Student Project

Authors: St. Patrick School of Quezon City Robotics Elite Team
Cristina Gabrielle R. Cacho, Maridette Drannel M. Baylon,
Kyoshiro B. Mata, Jin Kyle B. Ventura

J

The ocean is one of the most prominent sources of transport, trade, food, and energy, but fast growth in human activities has caused massive stress in the marine ecosystems, resulting in overexploitation of biodiversity. In order to face up to this challenge, the Solar Powered Submarine Championing Advocacies to Reinvent the Seas (SPS - CARES), named Carie, offers a sustainable solution to several oceanic issues. Carie uses LEGO Spike Prime parts to portray how she will detect and respond to marine pollution, coral degradation, and even discover endangered and new species.

Carie the Patroller is a multi-purpose submarine that aims to help the ocean bounce-back by reducing its stressors through advanced technology. Carie is equipped with LEGO Spike Prime color sensors that help show how she can adapt and respond to her environment with actual Artificial Intelligence.

The study highlighted that CARIE the Patroller has great potential to improve marine conservation through sustainability, stewardship, resilience and innovation. By using CARIE in environmental education, students become more engaged and develop a sense of sustainability**.**

Oil Vacuum is a vac that sucks in oil spills. Carie's Oil Vacuum operates without releasing any absorbent material externally. Instead, it internally uses hair nets to absorb the oil spill as it is suctioned in.

Coral Frames Carie has the ability to release coral frames; artificial structures in marine environments to support coral fragments for growth. They should be constructed from materials like metal or PVC, to ensure these frames provide a stable platform for the corals.

The **Sea Net** is made of beams attached to one another. Four beams were used to hold the *Nylon net* in place. The Sea Net functions as a waste collector; especially plastic waste. After the utilization of the Sea Net, the waste will go to the sorting facility. The waste will be sorted and delivered to organizations that will put them into better use.

In demonstration for the **sorting facility**, we used LEGO parts and color sensors to present the detection and segregation of various types of waste. Each category of waste is associated with a specific color, and the robot is programmed to recognize these colors and sort the waste accordingly.

Our CARIE video presentation

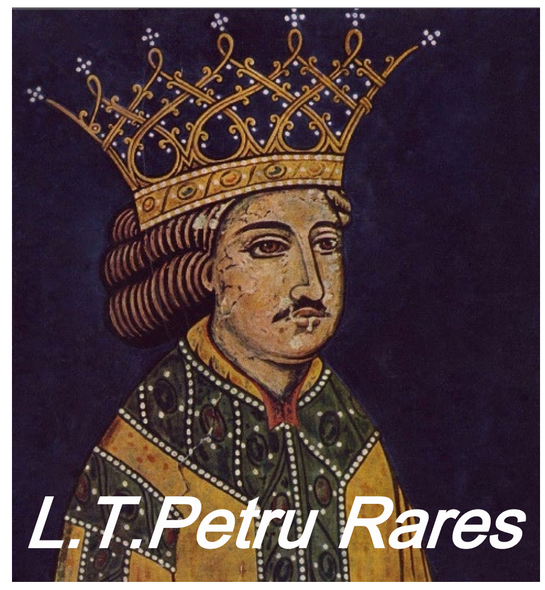
SCAN ME





Contact: *angelmatasps@gmail.com*

Recycling of polypropilene pipes and new technologies



Author/s: Damian Covali, Neamtu Lilian
Mentor: physics teacher Ciuvaga Victor

J

The project involves creating two innovative products: a bicycle and a smart lamp, both made from polypropylene (PVC) pipes. The material was chosen because it is durable and has a lower environmental impact. The main goal of the project is to improve cyclist safety and reduce electricity consumption using Arduino technology.

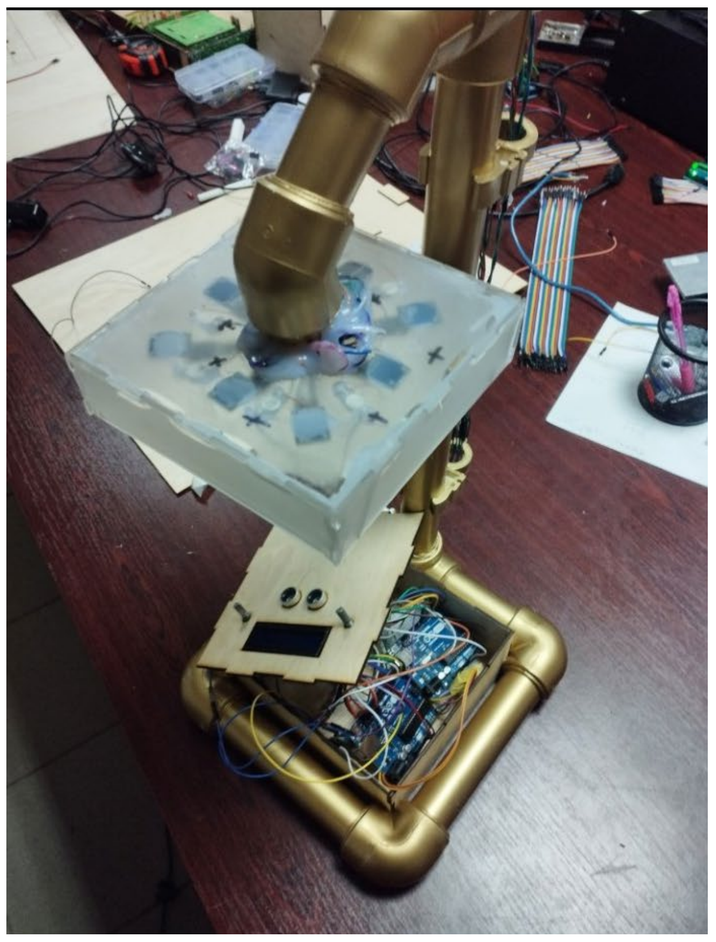
This project was chosen because of the high number of accidents involving cyclists. The bicycle will include 360° sensors and a smart lighting system to increase visibility. The smart lamp will adjust its light intensity based on the surroundings, optimizing energy consumption and providing a sustainable solution.

Welding the frames: The PVC pipes will be welded together to form the frame for both the bicycle and the lamp.
Cutting plywood boxes for the Arduino circuit: Plywood will be cut to create boxes for housing the Arduino circuit and components.
Focusing on aesthetics: The final step involves adding design elements to make the products look appealing.

Pipe welding machine: To join the PVC pipes securely.
Arduino circuit system: For controlling the sensors and smart lighting system.
CO2 CNC laser: For precise cutting of plywood boxes and other components.







Contact: damiancovali0@gmail.com +37362010528

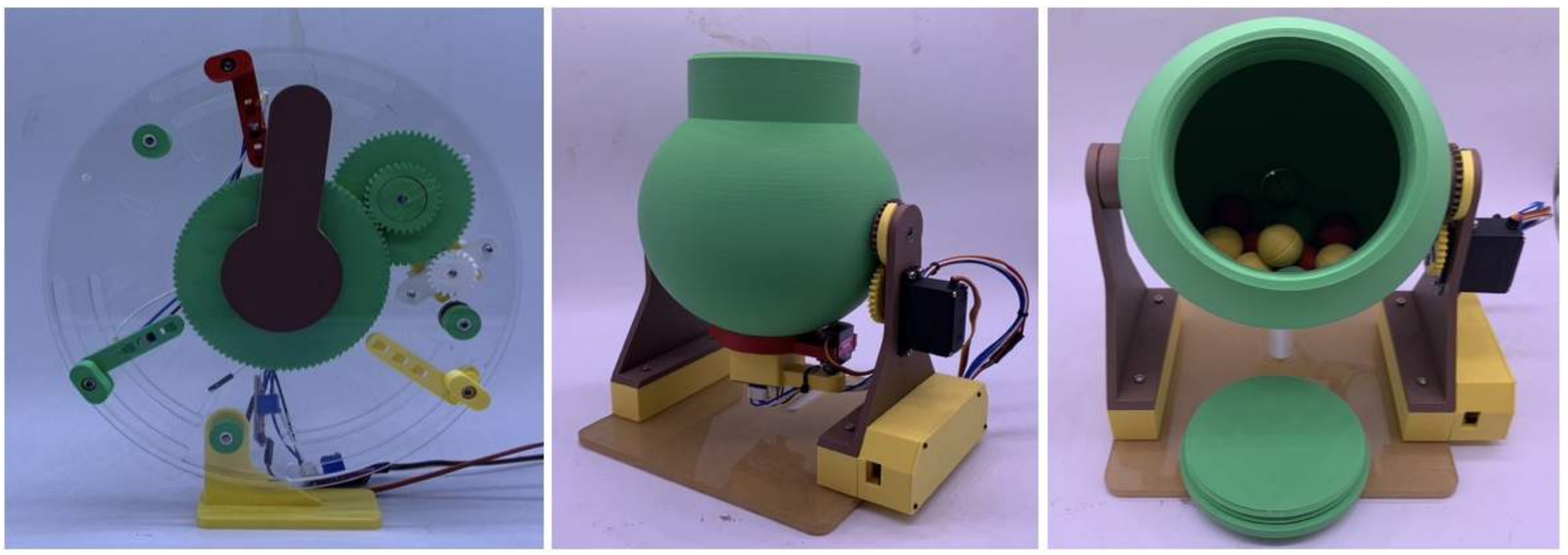


Automatic Pill Dispenser with Modular Time-Trigger System

project number: 5
Varanpat Chuaysuk
Advisors: Parinton Jangtawee, Kaewkan Yambangyang, Jeerasak Jitrotjanarak

J

This project introduces an automatic pill dispenser designed for elderly users, featuring a simple mechanical clock that triggers at set times. Users set the schedule by placing three pins on the clock, eliminating complex programming. At the scheduled time, a color-coded pill ball, representing a specific meal, is ejected for easy access. The modular design allows the clock to control other automated tasks, such as plant watering or pet feeding. This system enhances medication adherence while maintaining simplicity and adaptability for various time-based activities.



Contact: j_jerasak@hotmail.com

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ISIM
TIMIȘOARA
National Research & Development Institute for Welding and Material Testing - ISIM Timișoara

SIGNALING KIT FOR THE POSITION OF A LOST OR DISTRESSED PERSON IN NATURE

J

Patent application **No. A2024 00455 / 01.08.2024**

Authors: **Nicușor-Alin SÎRBU and Aurelia-Ioana BIHOLAR**

It is a known fact that while carrying out activities or traveling in the wild, in remote and inaccessible areas, by people alone or lost, situations may arise that endanger the health or even life of the person concerned. Identifying the position of the person in distress in such situations so that emergency assistance and the necessary help can be given is a first emergency.

Object of the invention:

The invention relates to a portable kit attached to the belt or to the shoulder strap of a rucksack, useful to a person who is lost or in difficulty in nature due to exhaustion, disorientation or injury (in the mountains, in valleys, in difficult-to-access ravines, in bush areas, in deltas, lakes, the sea or stretches of water) and who has to signal his position in order to be helped. The kit shall be of simple, lightweight, versatile, inexpensive construction and shall comprise at least one means of long-lasting visual signaling with an inflatable balloon, one means of short-lasting smoke visual signaling, one means of loud audible warning, one means of repetitive audible signaling and one means of night-time light signaling.

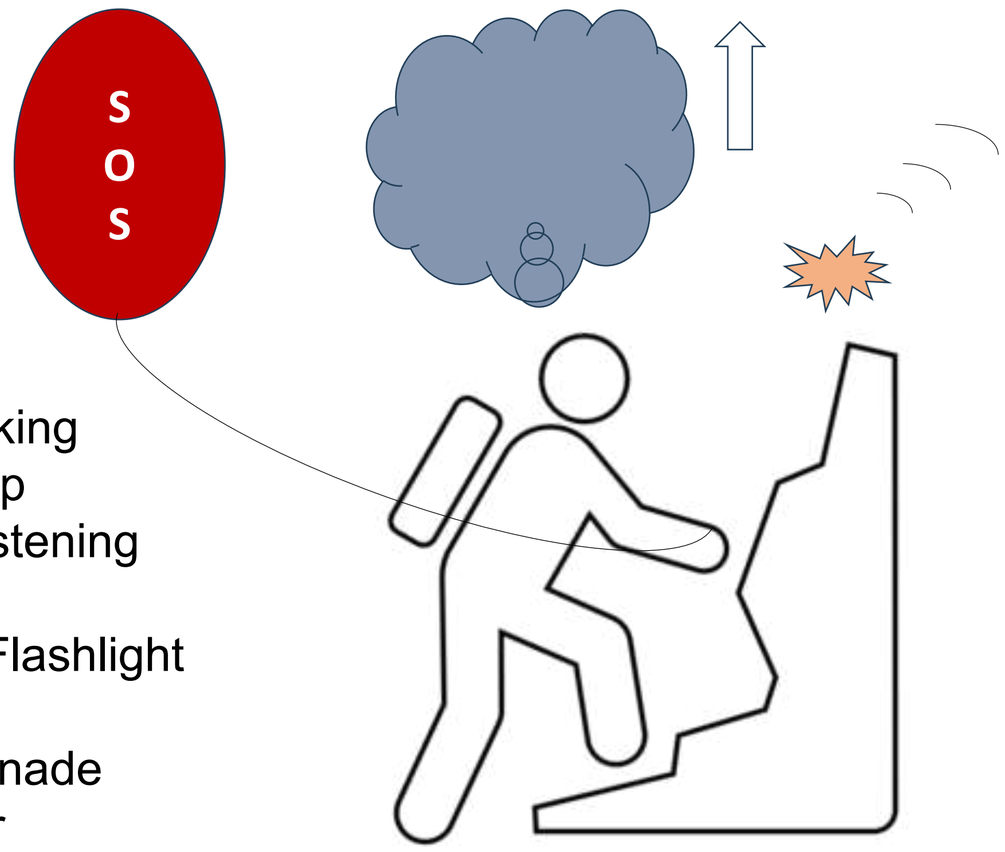
The technical problem solved by invention:

The technical problem of the invention is to make a kit for signaling the position of a person lost or in difficulty in nature which is lightweight, easily attachable to the wearer's equipment and without embarrassment, easily accessible and maneuverable, allowing various visual and acoustic signals both day and night, and very affordable in price.



Kit overview, composition and how to attach and wear

1. Textile backing
2. Elastic strap
3. Hole for fastening
4. Whistle
5. Launcher-Flashlight
6. Cartridge
7. Smoke grenade
8. Firecracker



Schematization of the use of the elements of the kit by a person in difficulty

Advantages:

- is of the utmost simplicity, easy to attach to the harness and easy to wear;
- it is very versatile and easy to use;
- it is very cheap.

Contact: ISIM Timişoara, 30 Mihai Viteazu Bv., 300222 Timişoara, România

• tel.: +40 256 491831 • www.isim.ro • isim@isim.ro • centa@isim.ro

Kids Corner

MODELSHIPS

Authors: Calugar Sebastian, Calugar Damian,
Popa Albert,Popa Robert
Mentor: Coach Popa George

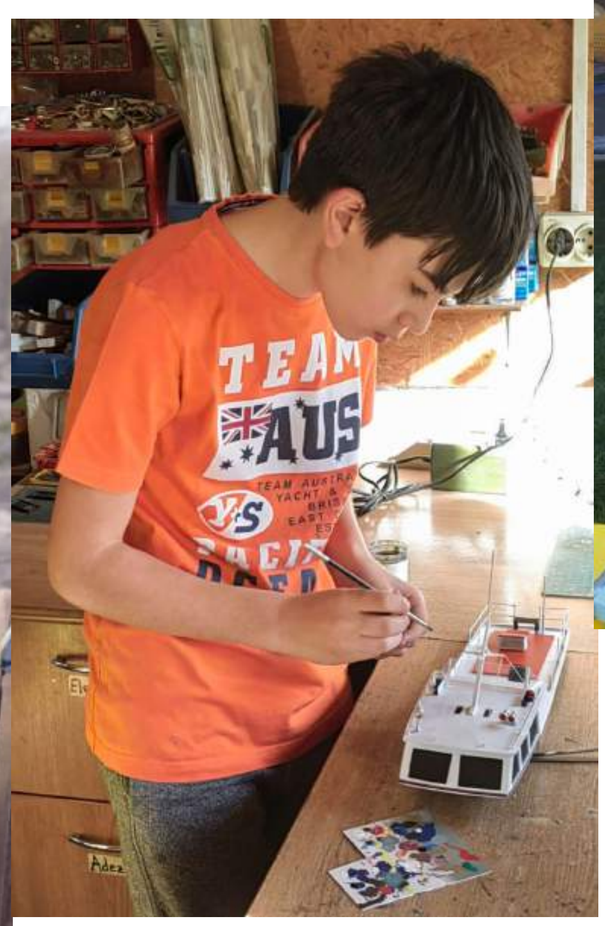
J

This sport raises juniors' technique abilities and skills by transposing into practice what they are learning during classes.

In 2023 the newly born section has brought very good results. Popa Albert and Popa Robert have won the National Champion titles in NS and C classes and one bronze medal at World Championship, class C at Jablonec, Czech Republic.

The model boats presented by them are remote controlled and they were built either from scratch or by using assembly kits, under the master's supervision, multiple national and world champion, Popa George.















Contact: https://www.facebook.com/geo.popa.754

ADAM's COLORS

ADAM BARTOK

Adam is a 7 year old child who loves to draw. He draws almost anything that arouses his interest, but he prefers to draw movie or cartoon characters. Some of the drawings are made after a model seated in front of him and others are made from his imagination. He prefers to work mostly with colored pencils and he spends at least 2 or 3 hours drawing every day.

Drawing with colored pencils / Drawing on paper / Children's drawing













Contact: iulia.bartok@gmail.com

Kids Corner

On the wings of music

Kid Project

Author: Mihai FODOR

J

My name is Mihai Fodor, I am 8 years old and I am a student at the "Decebal" National College in Deva. I really like dancing and singing. I consider music to be a way of expression, but also of relaxation. Although I spend a lot of time training, because I always try to be better, everything is a pleasure for me. Music brings me joy every time. I feel like a real artist on stage and I want to learn as much as possible about dance and music.









Mă numesc Mihai Fodor, am 8 ani și sunt elev la Colegiul Național „Decebal” din Deva. Îmi place foarte mult să dansez și să cânt. Consider că muzica este un mod de exprimare, dar și de relaxare. Deși petrec mult timp pentru a mă antrena, deoarece încerc mereu să fiu mai bun, totul este pentru mine o plăcere. Muzica îmi aduce bucurie de fiecare dată. Mă simt ca un adevărat artist pe scenă și vreau să nvăț cât mai multe despre dans și muzică.

Kids Corner

J

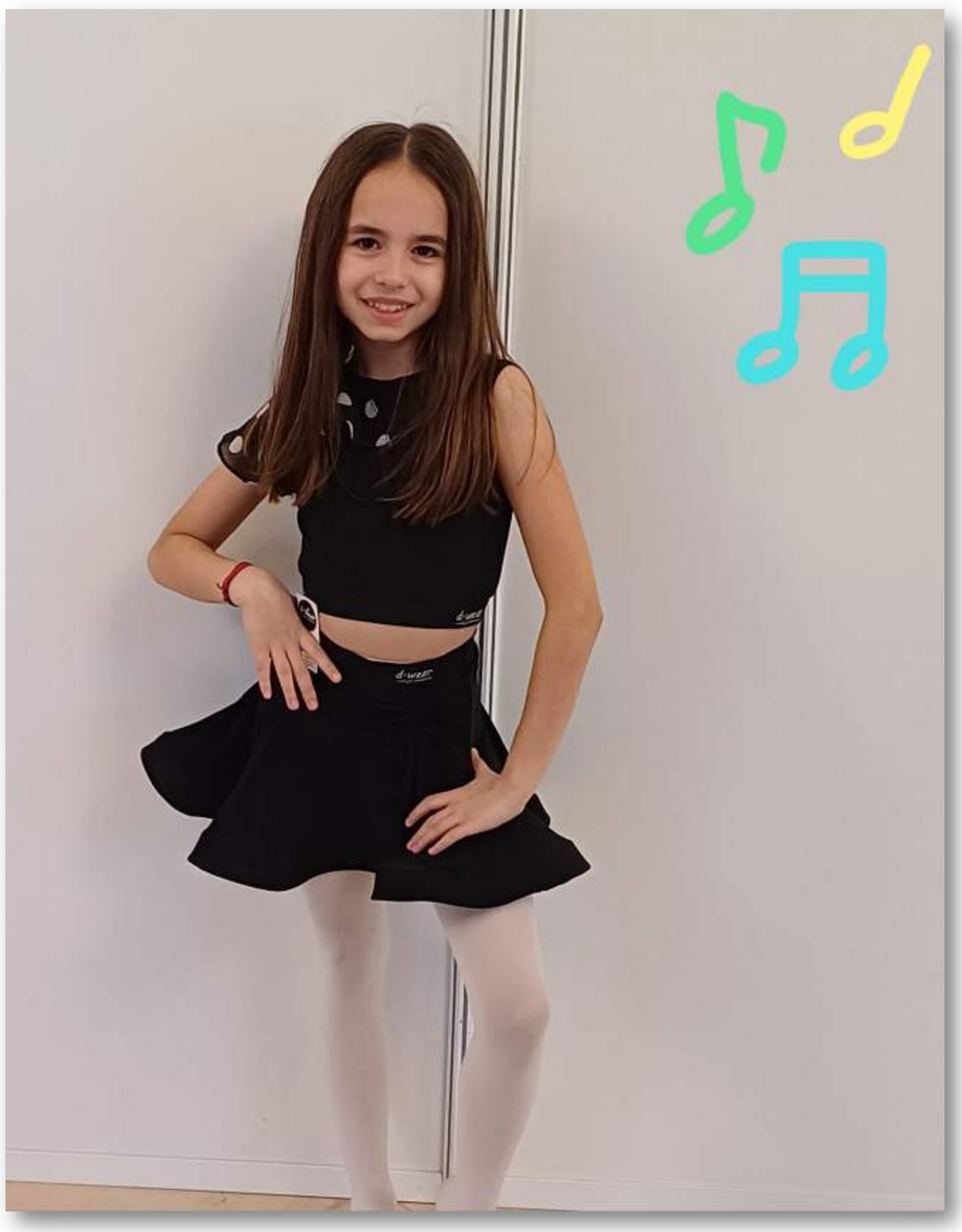
IN DANCE STEPS

Kid Project

Author: Maria FODOR

My name is Maria Fodor and I am 10 years old. I am a student at the "Decebal" National College in Deva and I am very passionate about dancing. I discovered the charm of dancing at the age of 5. With a lot of work and passion, I have evolved and I like to always improve myself. Alone or with other friends, on the dance floor I am always happy. I wish I could convey the same joy to those who watch me when I am on stage.









Mă numesc Mihai Fodor, am 8 ani și sunt elev la Colegiul Național „Decebal” din Deva. Îmi place foarte mult să dansez și să cânt. Consider că muzica este un mod de exprimare, dar și de relaxare. Deși petrec mult timp pentru a mă antrena, deoarece încerc mereu să fiu mai bun, totul este pentru mine o plăcere. Muzica îmi aduce bucurie de fiecare dată. Mă simt ca un adevărat artist pe scenă și vreau să nvăț cât mai multe despre dans și muzică.

MMAURA-PUU

Author: Colun Maura;
Mentor Silvia SCORTESCUT

J

MAURMAURA-PU coat duvet is a sleeping in the shape of a chick with wings in which we store sleeping pillows, the purpose of the innovative product is to create conditions for children at night when traveling with their parents. The product is of interest to both children and teenagers.



Contact: **silvia.scortescu@yahoo.com**
Presentation link: **https://jamoldova.org.md/index.php/en/**

ALEXMEOW SHOES

Author:
Moroz Alexandru;
Mentor Silvia SCORTESCUU

J

AAlexmeow shoes for dogs & cats. The innovative product offers comfort to the owners so that the quadruped is clean and well-groomed during walks. The clip from which it is made is a water-resistant one, it is very easy to use, it is practical, it is fixed to the legs so that it does not fall off easily during walks.



Contact: **silvia.scortescu@yahoo.com**
Presentation link: **https://jamoldova.org.md/index.php/en/**

ADY-DOOK PUPPY OUTFIT

J

Author: Miron Adelina;
Mentor Silvia SCORTESCUES

Ady-dook puppy outfit, the clothing is unique in its own way, it represents an outfit only for holidays, the purpose of this outfit is the unique special one with a hat and a bag. I have a purebred puppy that is always cared for and loved and I wanted a unique product so that it would not be copied. The outfit with the bag as the author is innovative.





Contact: silvia.scortescu@yahoo.com
Presentation link: https://jamoldova.org.md/index.php/en/

SPAT-LERA

Author: Gorincioi Laura;
Mentor Silvia SCORTESCU

Spat-Lera is a project that involves treating and relieving back pain, including preventing and relieving the incipient condition of scoliosis. The invented tool helps in practicing light sports and applying exercise.





Contact: silvia.scortescu@yahoo.com
Presentation link: https://jamoldova.org.md/index.php/en/

SABRI-LUP

Author: Lungu Sabrina;

Mentor Silvia SCORTESCU

J

Sabri-lup hosting pillow-duvet, aims to treat migraines because it has a magnet inside, including the duvet can serve as a cover, the pillow is made in the shape of a wolf's head, it is my favorite animal, it is unique and copyrighted.



Contact: **silvia.scortescu@yahoo.com**

Presentation link: **https://jamoldova.org.md/index.php/en/**

MOLD-LENN

J

Author: Gonța Elena;
Mentor Silvia SCORTESCU

MOLD-LENN this deep study project of our traditions and customs, aims to demonstrate the growth of the economy through hospitality and tourism. A new TOOM-Tourism is invented, timely, modern custom, invented term will assume the modern year 2025 in the activity of hosting and tourism regarding the growth of the state's economy of Moldova.



Contact: silvia.scortescu@yahoo.com
Presentation link: https://jamoldova.org.md/index.php/en/

COBM

Author: Cozac Olivia;
Mentor Silvia SCORTESCU

J

CObm- is a project that aims to research the science of mathematics in the economy, we study numbers, the logic of their application in the management of the economy. EBCC-quantitative and qualitative economics of money. Every person saves and then spends in a few seconds money, saved for 5-10 – 15-20 years. So we will demonstrate the logic of small 5-10-15-20 lei spending always this money just to keep all those valued up.



Contact: ***Silvia Scortescu + 373 798 97 247*** ***silvia.scortescu@yahoo.com***

Member of JA Worldwide

ANIMEX-MODULEX

Author: Țîu Emilia
Mentor Silvia SCORTESCU

J

Animex-modulex It's a new method for 7-10 years children , who try to explain those homework by cartoon. The goal it's the easiest. I capture children by audio-video , I invented this method to be attractive.



Contact: silvia.scortescu@yahoo.com
Presentation link: https://jamoldova.org.md/index.php/en/

MODELLING-HI-NOVA

Author: Ochișor Dionis
Mentor Silvia SCORTESCU

J

MODELLING-HI-NOVA its new blouse It is a new style for young people 10-14 years who love the mix of colors, especially neon colors. This blouse is aimed at self-opening and attracting attention in the surrounding, this colors capture attention on social environment.



Contact: **silvia.scortescu@yahoo.com**
Presentation link: **https://jamoldova.org.md/index.php/en/**

LEGO by ROBOMOON

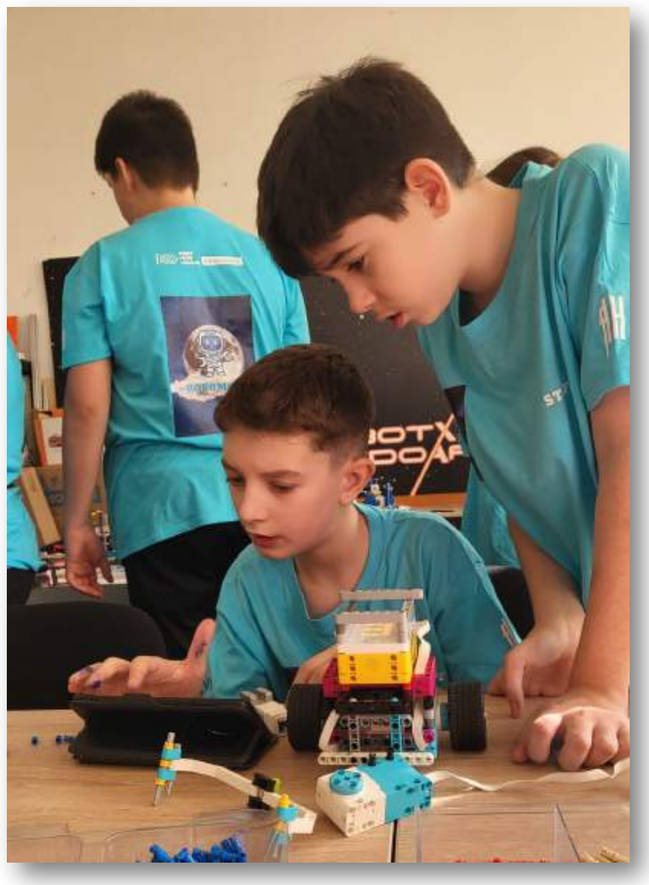
Authors: ROBOMOON Team

Mentors: Sîrba Corina Larisa, Tripa Andrea și Miklos Cristina

J

The ROBOMOON Team is the FIRST LEGO LEAGUE Team from the "Traian Lalescu" Theoretical High School - Hunedoara and is aimed at children aged 9 to 14. It was founded in 2019 and promotes learning through play. Children come into contact with the world of science through play... The ROBOMOON robotics club promotes collaboration, team spirit, performance, learning through play, all because these children are the passionate young people of tomorrow! Our motto is "Only the sky is the limit!"... we play and we learn.









SCAN ME

Contact: larisahd2004@gmail.com

Presentation link: https://www.facebook.com/people/Robomoon-Hunedoara/100057210319548/

STORY SHEETS

ȚINUTUL HUNEDOARA
FILE DE POVESTE

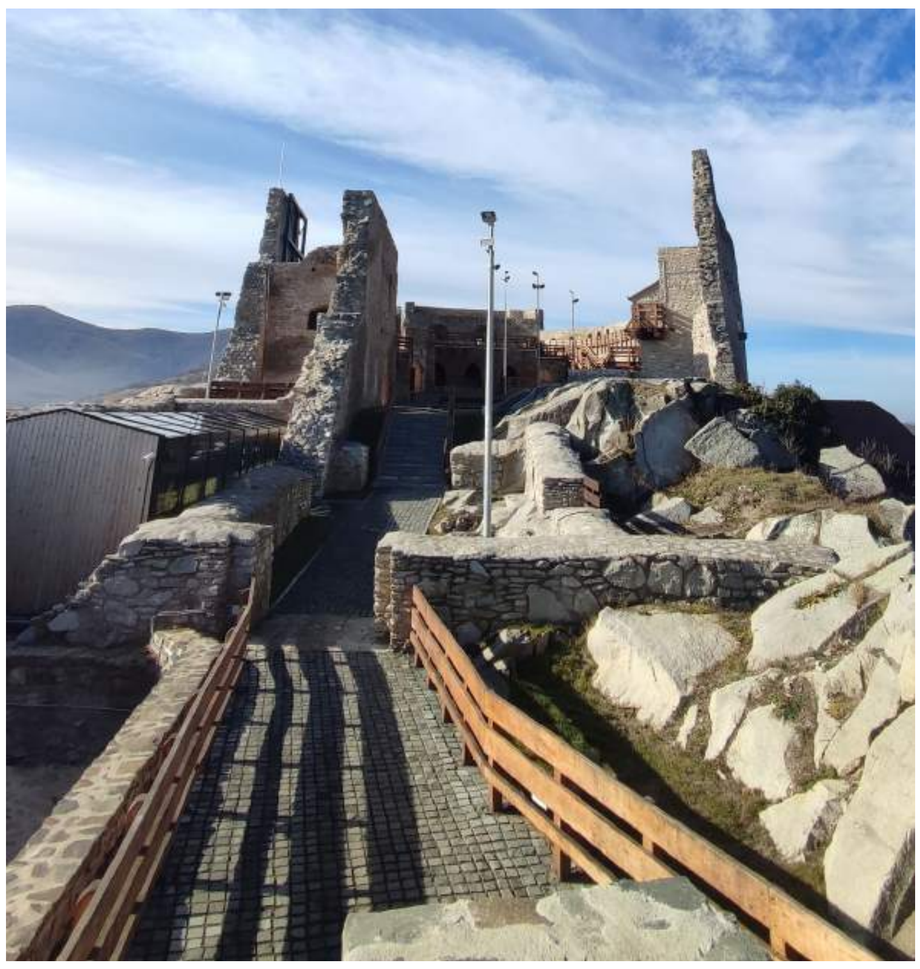
K

Author: Damiean Cristian

Association " ŢINUTUL HUNEDOARA - FILE DE POVESTE " The purpose of the Association is to promote and develop tourism activities, especially alternative tourism, while encouraging the conservation of natural, cultural, historical heritage and the harmonious interaction between the tourism sector and social and environmental factors, activities to protect traditions and customs, their support, their support.

By alternative tourism we understand any form of tourism that leads to harmonious cohabitation between the local population and their guests, protecting and enhancing the identity, cultural, historical and natural heritage of the host community.







SCAN ME

Contact: ***tinutulhunedoara@gmail.com***

Presentation link: ***https://www.facebook.com/profile.php?id=61556709704327***

Posters

6th International Exhibition INVENTCOR

3-5 April 2025 – Deva, Romania

K

Innovative ART

Music

Video

Photography

Publicity

EM Art Gallery-Deva

Gallery

Author: Mircea POPITIU

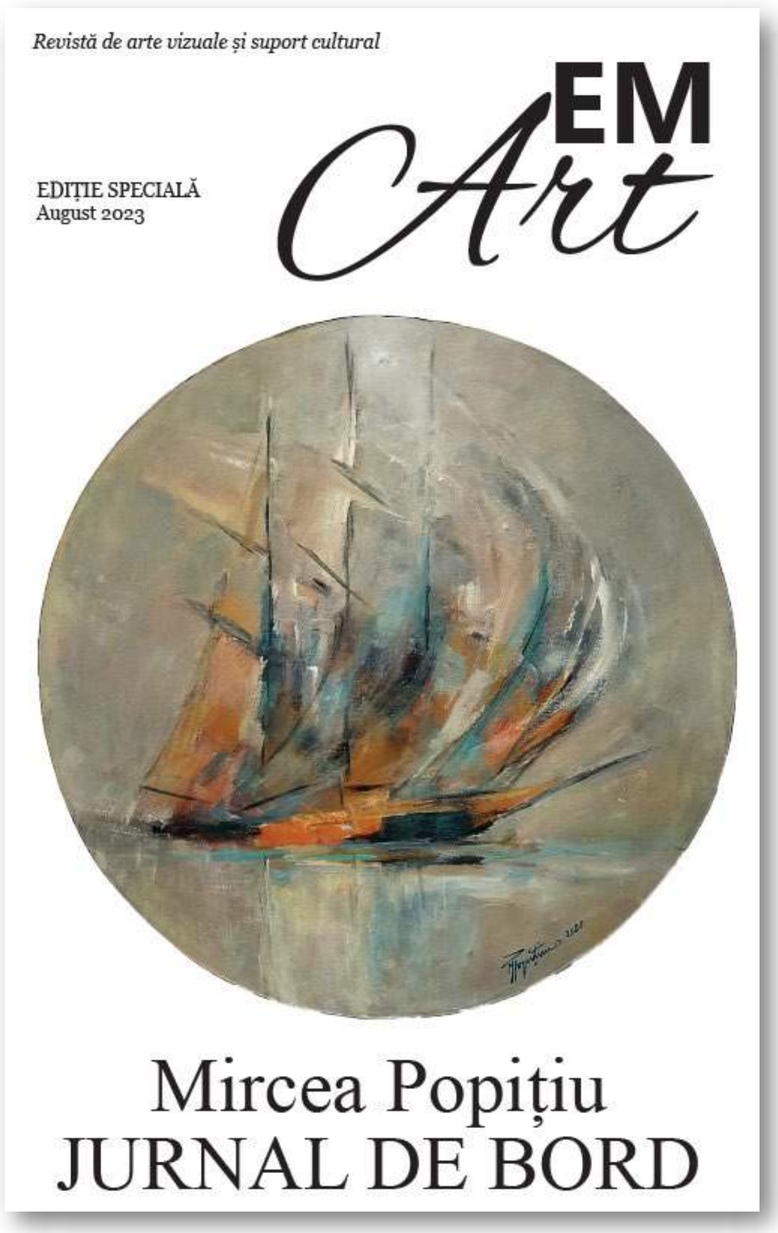
K

EM Art Gallery-Deva was born from the desire to promote contemporary visual artists, on December 5, 2018. From the beginning to the present, more than 50 contemporary professional artists have been exhibited, the gallery registering as the first private gallery in Hunedoara County!

Artists from the main cities in Romania and artists from France, the USA and the Republic of Moldova exhibited on the EM Art Gallery!

Out of the desire to do more, we have created a magazine of visual arts and cultural support entitled EM Art.









Contact: ***+40723355939*** ***popitiuart@yahoo.com***

SCAN ME

Bolbi's Comedy

JOKES AND CHEERS
GLUME ȘI VOIE BUNĂ

Stand up comedy

Adrian Alin BOLDI

K

I have always had a sense of humor and I am passionate about jokes, so I started making these pamphlets during the pandemic.

Because many people were scared by those unpleasant moments and I thought it would be good to laugh a little more and forget about the less unpleasant things. In my view, humor should not be neglected at all.

It is the thing that keeps us alive, unites us and strengthens our relationships!



Las să vină iarna. ...
671 de vizionări



Să audă vecinii. #boldialinmaka
13 K de vizionări



Ca la început.... #boldialinmaka
4,7 K de vizionări



Doar o glumă. #boldialinmaka
588 de vizionări



Asa scapai de nunti. ...
22 K de vizionări

Follow me on Inatagram

https://www.instagram.com/boldialin?igsh=MTIybWs3OGs3eXJubg

@BOLDIALIN

Boldi's Reels











SCAN ME

Contact: alin.boldi@yahoo.com https://www.facebook.com/boldi.alin/about

Corvinorum Ordo
Association

Pipers of Transylvania Rock

music project

Authors: Mircea Goian, Gerhard Stempel, Alin Bălescu, Stefan Milutinovici, Peter Moynahan

K

The first and only band in Romania that plays ROCK music with medieval instruments. The group was founded in 2008, by Mircea Goian together with Cornel Jitariu and approaches medieval and traditional music, in an original way, in a way designed especially for the performances that take place in the city squares or in the open spaces next to fortresses or castles.

The oldest songs in the repertoire are in Gaulish (Celtic language) most of the songs from the medieval period, in languages with limited circulation or extinct languages (Galeo-Portuguese, Breton, Sephardic, Tatar)



Gerhard Stempel – ***tobe medievale, tapan***

Alin Bălescu – ***cimpoaie, blockflöte, pocket clarinet***

Mircea Goian – ***manager grup - violoncel, hurdy gurdy, percuții***

Stefan Milutinovici – ***cimpoaie, fluiere, rauschpfeife, blockflöte voce, bouzuki***

Peter Moynahan – ***voce, chitară***

Judas Priest medley

In addition to the authenticity of the musical pieces, the group uses copies of historical instruments such as: bagpipes, hurdy gurdy, rauschpfeife, fidula, medieval drums, tapan, blockflöte, archaic percussion instruments - bolla. The costume is made taking into account specific elements from that period. Since the summer of 2019, the band has undergone several changes and presents itself in a new formula, with a richer, more dynamic "sound", a refreshed repertoire and new sets.

In 2020 a new project appears: Pipers of Transylvania Rock.







The newest record material "Minnesang" was released in August 2021 along with an impressive collection of promotional materials / souvenirs "merchandise". Medieval instruments used to play rock music reproduce sounds specific to the medieval period on melodic rock lines, thus showing that the music is universal and timeless. We are thus witnessing a project that unites the medieval culture of the VI - XV centuries with that of the XX - XXI centuries.

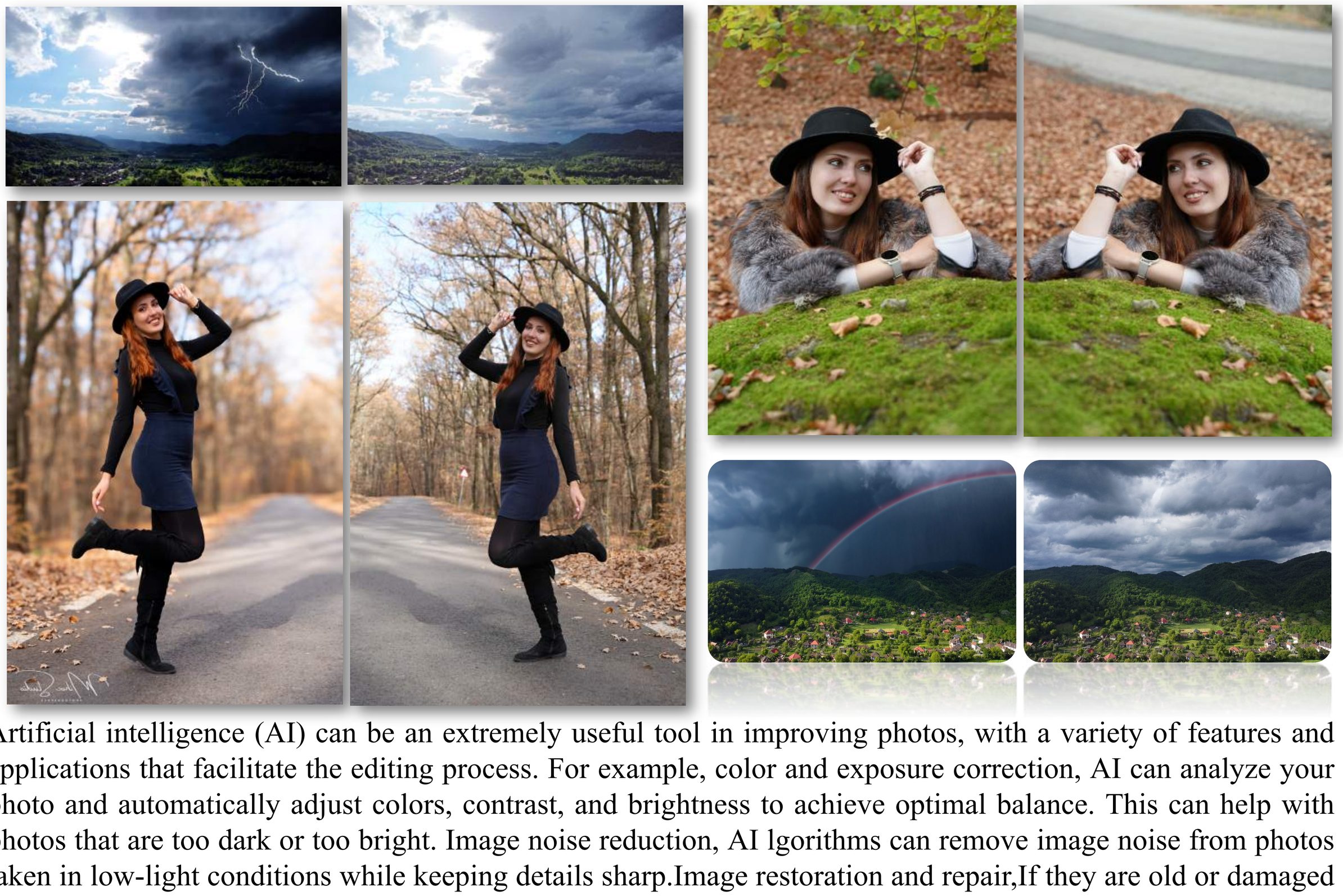
Contact: goianmircea@yahoo.com

Artificial intelligence (AI) in photo and video

Author/s: Mihoc Mădălina, Mihoc Mihai

K

Mihoc Studio is a company offering photo-video services for various events, both public and private. Due to today's technology, clients' desires to improve their photos have increased. In order to do everything in the shortest possible time, we use the help of artificial intelligence in various dedicated editing programs.
Artificial intelligence (AI) in the photo field has many advantages namely increased efficiency, AI can process and edit images and videos much faster than a human can. Improved quality, for example by reducing digital noise or improving sharpness. Automated content creation, such as editing videos or creating synthetic images. Personalization, AI enables customization of photo and video experiences, adapting to customer preferences.



Artificial intelligence (AI) can be an extremely useful tool in improving photos, with a variety of features and applications that facilitate the editing process. For example, color and exposure correction, AI can analyze your photo and automatically adjust colors, contrast, and brightness to achieve optimal balance. This can help with photos that are too dark or too bright. Image noise reduction, AI lgorithms can remove image noise from photos taken in low-light conditions while keeping details sharp.Image restoration and repair,If they are old or damaged photos, AI can help restore them by reconstructing lost details or removing scratches and other imperfections. Beautifying portraits, AI editing tools can enhance portraits by smoothing skin, adjusting facial lighting, correcting imperfections and even tweaking features to make them look more appealing. Improving resolution, AI can increase the size of an image without losing detail, using advanced upscaling techniques. Remove unwanted objects, AI can identify and remove unwanted objects or people from a photo, such as hairs, dust or other distracting imperfections. Creative effects and stylization, AI can transform the photo into an artistic style, like a painting or drawing, providing quick and exciting results for those who want to create unique images. Focus error detection and correction, in some cases, AI can help correct focus, especially when an important subject has gone out of focus.

Contact: madalina@mihocstudio.eu +40767333661

FLOART DECOR

K

Author: Florentina Livia SPANIOL

FloArt Decor passion for decoration! The FloArt Deco company makes floral decorations, birthday decorations from balloons for the most beautiful events in everyone's life, if you have scheduled a coming of age, baptism, wedding or you want to inaugurate a store with a decoration from balloons, I can help you.

Your story can be a special one with the most unique designs from flowers and balloons.









SCAN ME





Contact:

spaniolflo23@yahoo.com

https://www.facebook.com/share/157jspGfpP/

FACE PAINTING BY ANDREEA, A GLAMOROUS STORY

Author: Andreea Elena DRUTA

K

I'm Andreea and at the age of 22 I'm talented at drawing and painting, I've had this passion since childhood, and I've turned it into a job full of color and magic. It all started when I do face painting as a volunteer at events such as the Light Festival and Children's Day. My talent and dedication were quickly noticed and the referrals were not slow in coming. I am part of the wonderful Glamorous Story team, with whom we bring smiles and joy to events in Timișoara. What inspires me the most is the reaction of the children, the excitement and happiness on their faces when they see their paintings transformed into works of art.





We are waiting for you with the little ones to give them an unforgettable joy - face paintings made with love by Andreea!

SCAN ME

Contact: *andreeaaaelenaa@gmail.com*

Violeta Art

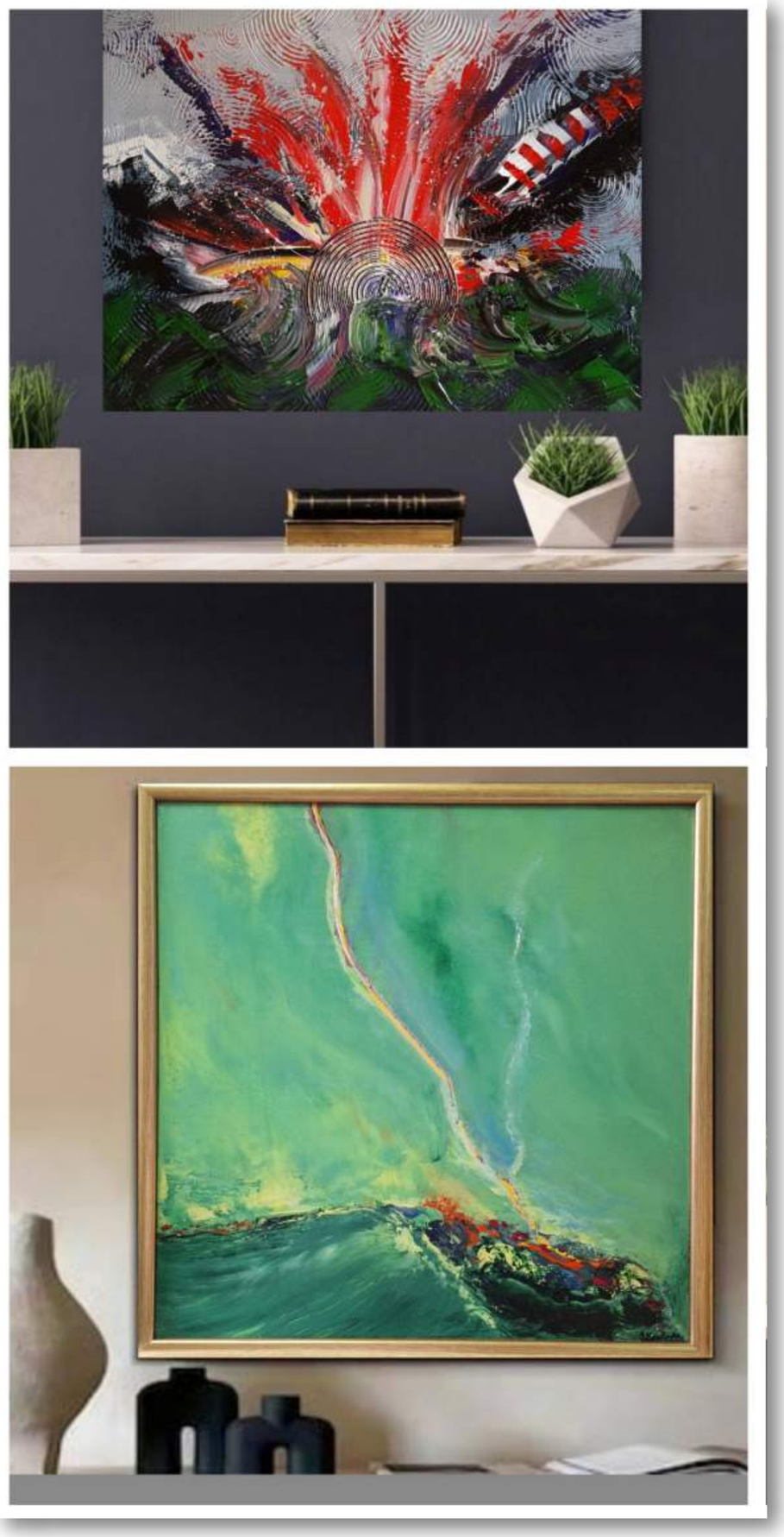
ART
ESCAPE IN AUTHENTIC

Author: Violeta COPROS

K

Art is, in essence, the deepest expression of human creativity. My passion for painting, above all else, means peace and relaxation. I was born with a love of art and I love it in all its manifestations. Although I work in medicine, my passion for painting, which came later, turned out to be very intertwined good with medicine, it being also an art, that of healing people. Great art is the outward expression of an inner life of the artist, and this inner life will lead to his personal worldview.









SCAN ME

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Opportunity
CORNELIUGROUP
Research-Innovation Association
Creation
Realization
INVENTCOR
Power of Creative Mind
Deva ROMANIA

Mariana Art

THE INTROSPECTION OF RECOVERY

Author: Mariana MAGLAS

K

A sensitive and emotional nature, I have been attracted to art since childhood, in its many forms: drawing, music, literature and theater. After a very long period of break and time dedicated to family and other aspects of life, I had a moment of introspection, an acute need to find myself, to know who I really am, what I most want to undertake, on short, what makes my soul vibrate. That's how I found painting and contemporary art, with which I fell irreparably in love.





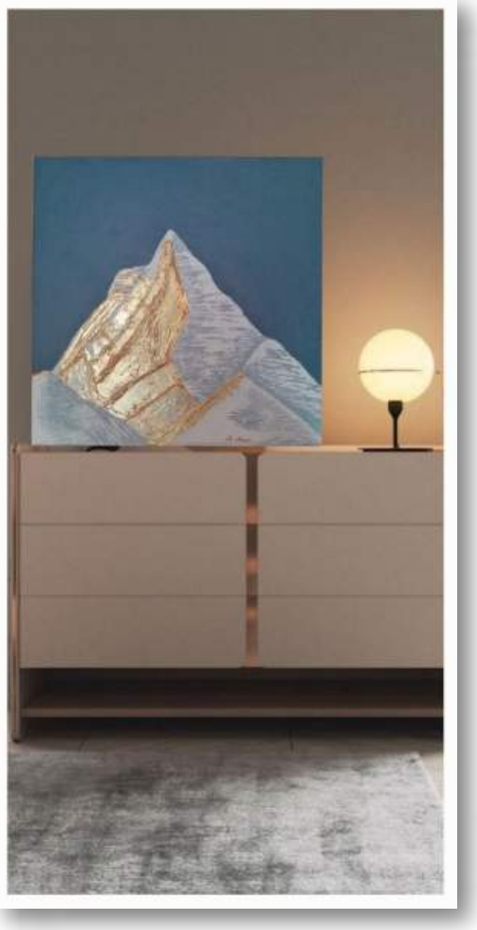






SCAN ME







Contact:
maglasmariana@gmail.com

FLORAL EMBRACE

Photography project

Author: Stoica Adrian

K

"Floral Embrace" captures the delicacy and elegance of femininity in a timeless artistic composition. The model, with a soft gaze and half-closed eyes lowered, gently embraces a few calla lilies-symbols of purity, refinement, and inner transformation. Set against an abstract background in warm brown tones, the subtle lighting delicately sculpts her features, creating a harmonious interplay of light and shadow that enhances the fragility of the moment.

The atmosphere is contemplative, almost dreamlike, inviting the viewer to immerse themselves in a state of deep serenity and to appreciate a beauty that is both fragile and full of inner strength. A vision of grace, emotion, and balance, transforming the ephemeral into an eternal visual expression.



SCAN ME

Contact: *adistoica21@gmail.com* *www.adistoica.ro*

imPerfection

Photography project/Innovative art

Author: Diana Miruna Armioni

K

"imPerfection" is a photographic exploration that challenges conventional notions of beauty by celebrating the imperfect, the fragile, and the vulnerable. It seeks to find elegance in the cracks, the weathered, and the transient, inviting viewers to reconsider their perspectives and appreciate the unique character and authenticity that imperfection brings. Through a curated collection of images, "imPerfection" delves into the profound beauty that resides within the fleeting nature of existence, the interplay of light and shadow, and the resilience of life. Inspired by the delicate details of a withering flower and the dramatic contrast of a blossom illuminated in darkness, the project aims to capture the hidden beauty that lies beneath the surface, inviting viewers to look beyond the obvious and appreciate the strength to find hope in the face of adversity. By embracing vulnerability and recognizing the beauty in decay, "imPerfection" seeks to inspire a deeper appreciation for the unique and imperfect moments that make life truly meaningful.









Contact: armionimiruna@yahoo.com

Handmade Concept

Author/s: Chereches Alexandra
Epure Cana-Roxana

"INSPIRED BY THE FEAR OF BEING AVERAGE"

Welcome to our world of creation, passion, and innovation! We are two energetic and creative girls who have turned our dream into reality - we have founded the Handmade Concept brand, where art and design come together in a symphony of color, textures, and unique ideas.

WHAT WE DO

1. ***Mural Paintings:*** **We transform the walls of your spaces into living works of art. From abstract landscapes to personalized illustrations, each wall becomes a story of its own.**






2. ***SoulfulArtwork*** **Our canvas artworks tell stories and evoke emotions. You can choose from our collection or we can create personalized paintings tailored to your tastes and dreams.**







3. ***Unique Fashion Pieces:*** **We provide personalized fashion options. From hand-painted jackets and sneakers to original print t-shirts and delicate embroideries, your wardrobe will become an authentic expression of your personality.**

WHATSETS US APART ✨

- Limitless Creativity- Meticulous Quality- Innovation in Every Project- Custom Creations

Join us on our artistic journey and discover the power of art and design to transform your world!

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Handmade concept
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Television News Discourse

Communication and Social

Bachelor's thesis

Author: Iziumov Maria-Magdalena

„Vasile Alecsandri" University of Bacau, Romania

The bachelor's thesis is the result of research and was written by the author at the Faculty of Letters, "Vasile Alecsandri" University of Bacau, Romania, in 2023. The thesis has never been presented, either partially or in full, at any other higher education institution in Romania or abroad. The thesis contains information and analysis on communication and social influence, news discourse, including news as information and communication, radio and television news, case studies, and more.

Television news discourse represents a form of mass communication with a significant impact on society. Every day, millions of people connect to their televisions to receive information about events in the surrounding world. This thesis outlines how television news discourse affects communication and social influence. Television news consistently constructs and promotes a social image of events, groups, or individuals. This can lead to stereotyping, discrimination, or even exaggeration of certain aspects.

Thus, the influence of television news discourse can contribute to the polarization and division of society, especially in the current digital era and the rise of media consumption. It is essential to educate ourselves and be aware of the power and responsibility of the media in shaping human perceptions and behavior.









Televiziunile Pro TV, Antena 1, Kanal D, România TV și Antena 3 CNN au avut cele mai mari audiențe la nivel național, în luna octombrie 2024. Citeşte întreaga ştire: Cinci televiziuni țin de zece ani în „prizonierat" mai mult de jumătate dintre telespectatorii români

By promoting responsible communication and through the active involvement of citizens, we can contribute to more balanced development and more truthful information in television news discourse.

In an era where information sources are numerous and access to information is easy, it is important to develop critical skills and be aware of media influence. It is necessary to be able to assess information, recognize manipulation, and form our own perspective on events and societal issues.

Thus, from the analysis of television news discourse in this thesis, we can conclude the importance, power, and responsibility of the media in contemporary society, as well as the need to develop critical skills in information consumption.

Contact: e-mail: maria11111133@gmail.com, tel.: +40771173153

Bradean's Channel

ALL IS GAMING

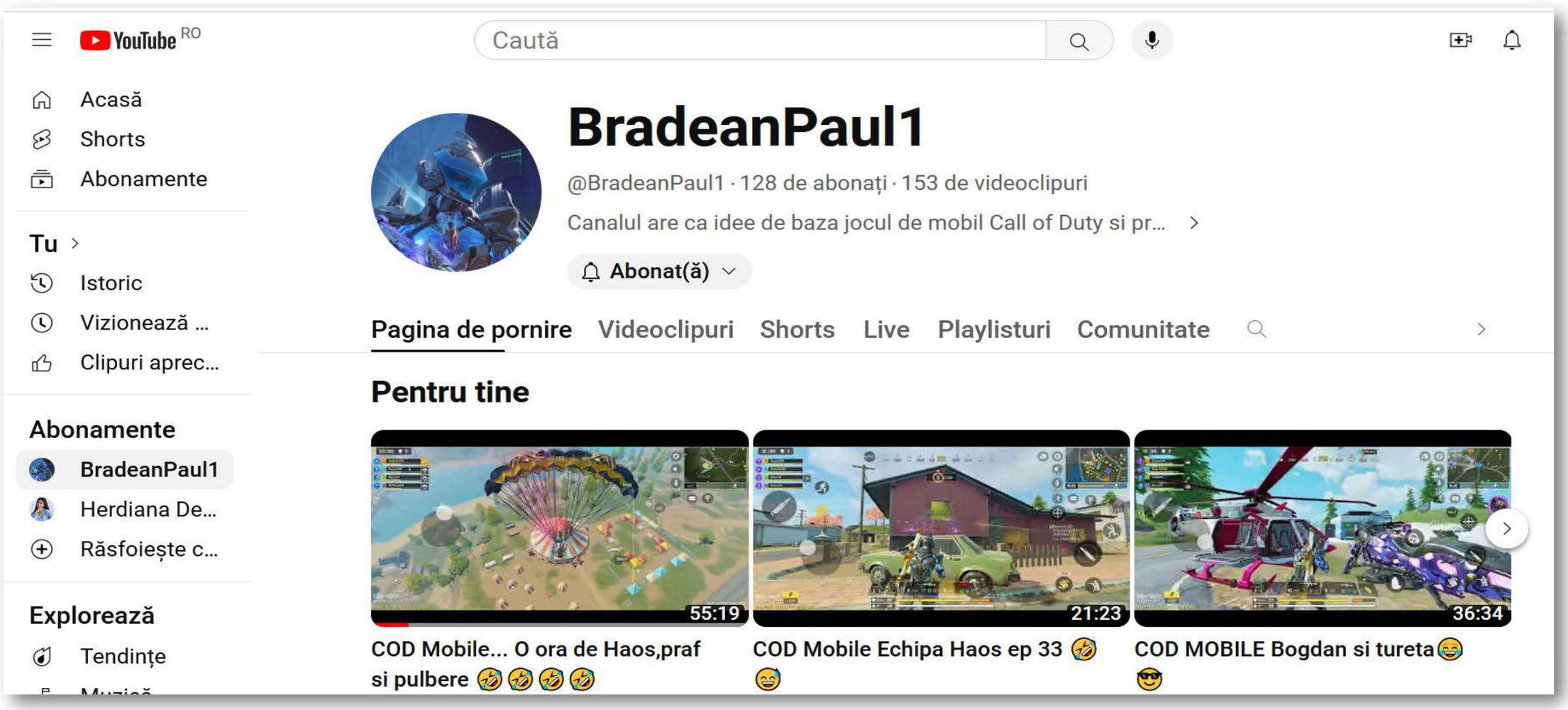
Game Project

Author: Paul BRADEAN

E

The channel has as its basic idea the mobile game Call of Duty and presents to the followers the head-to-head matches of the players from the clan, (Team Chaos), trying to remind the gamers that the games are made for fun and to take into account fair play.

At the same time, it will be gradually introduced (Etiquette Lesson) where we will present restaurant etiquette from both points of view, both of the employee and of the Horeca customers.





COD Mobile... O ora de Haos,praf si pulbere



Contact: *bradean_paul@yahoo.com* ***TikTok paulbradean1***

Presentation link: *https://www.youtube.com/watch?v=RSiAxsAp67Q*

SCAN ME

DANSANDRA DANCE STUDIO

Author: Andreea RUSAN-MOTIU

K

Dansandra Dance Studio dance club represents and is represented by a large dance community in Deva. Dance enthusiasts from young to seniors, Dansandra Dance Studio offers everyone who wants to learn and practice one or more dance styles a multitude of options in modern or ballroom dance!

Since 2011, we started on this path, always learning and perfecting ourselves, so that today our dance studio has prizes won at local and national dance competitions as well as participation in various events!

Free your mind and dance!











We are enthusiastically preparing two major annual events, each already in its fourth edition, namely: "Viennese Waltz Ball" and "Annual Christmas Show".

There are two events for which we prepare several months a year and for which we make every effort to celebrate dance, health, friendship!

Contact: ***+40 744 953 427*** ***andreea.florentina@gmail.com***

SCAN ME

MASHUPS by DJ RobyX

Student project

Author: Robert SĂCUIU

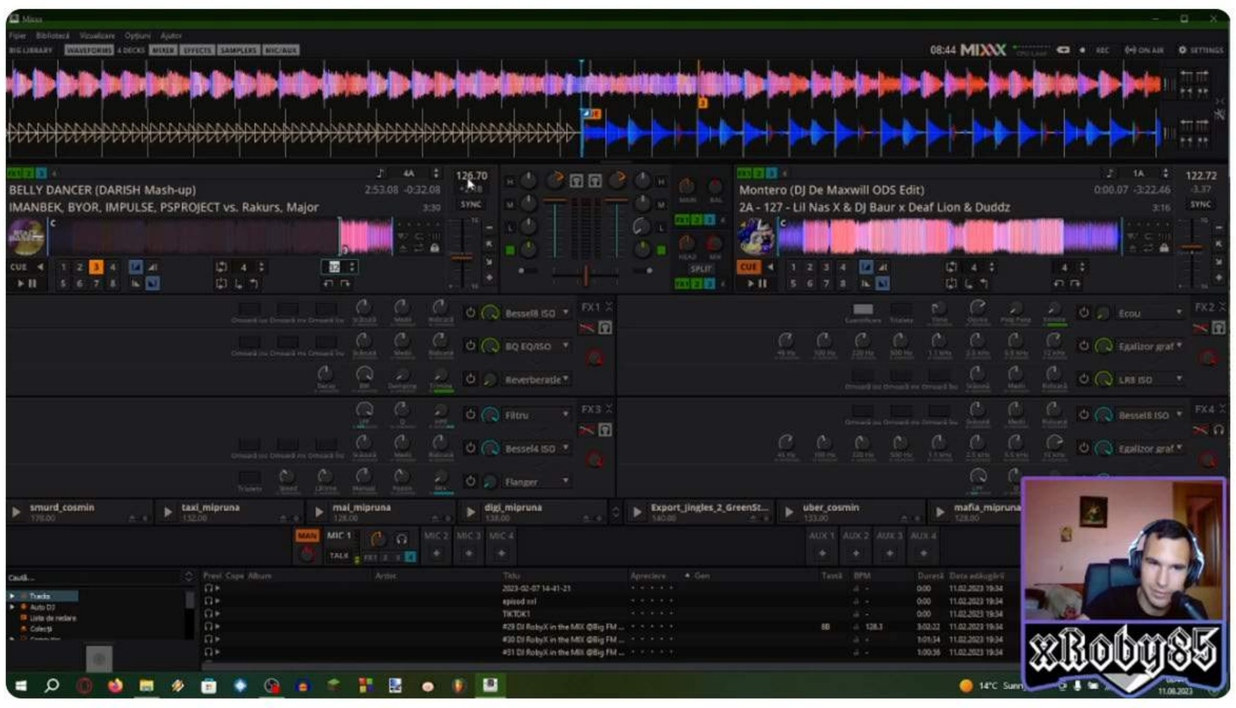
K

One of my passions, which is music, started when I discovered the radio. In general, I mix the commercial music that has become popular with us because I am otherwise tired of those songs compared to some underground (non-commercial) songs, because I grew up with them and because there are more people who listen and because otherwise you are more attracted. Besides that, since I also had a passion for video games, I'm thinking of mixing music and songs to make you think about what is related or appropriate to video games, and if you can feel like you're in a cool place. I generally mix tracks from the 90s to today and from the following other non-commercial genres in parts: Electro House, Future House, Big Room Techno, etc.





SCAN ME





@djrobyxro

DJ RobyX

At the moment I'm doing mixes for some shows on some radio stations that I post on Hearthis.at, I'm doing mashups (meaning a combination of two songs), mix shows (combination of 3 or more songs), I was motivated to I do it after I saw a Romanian friend doing mashups.

Contact: *robisacuiu@gmail.com*

ART & PAINTING OF COLORS

AUTHOR: IULIA BARTOK

Painting is my passion and I do it with great enthusiasm and seriousness. Through painting I can express my imaginative and creative side which offers me the chance to delight people's eyes.

Most of my paintings are personalized and made according to clients requirements, representing: favorite activities, pets, portraits, favorite locations, flowers, favorite music. I paint on textiles, ceramics, glass and leather using proper and quality materials.

Customized products: Glass painting / Ceramic painting / Leather painting / Canvas painting



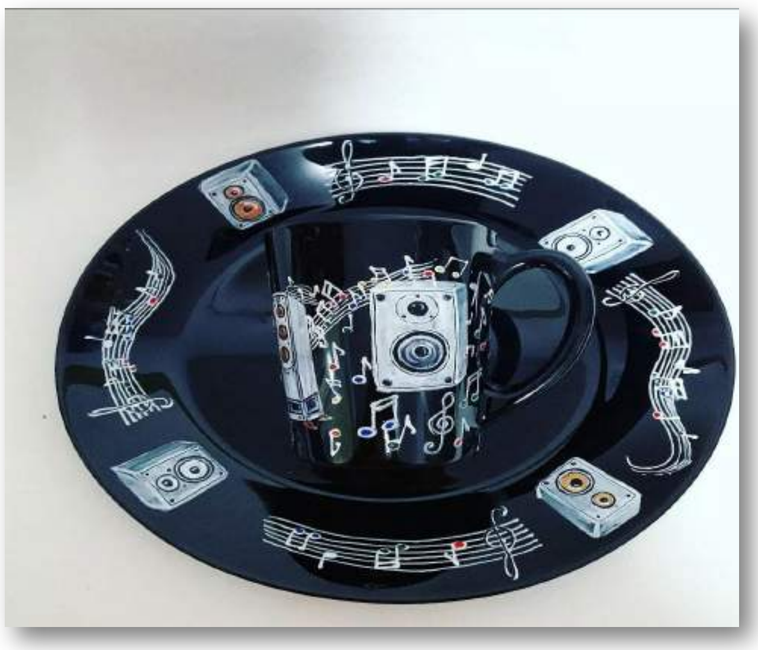












Contact:Instagram @iuliabartok iulia.bartok@gmail.com

MOMENTS
Craft Art

Author: IULIA BARTOK

K

This passion for making decorative products it started for me 10 years ago, from the desire to express my creativity and my abilities. Most of my inspiration comes from nature. To create the products I use different work techniques: decoupage technique, painting and handcrafting.

Some of the materials used to make handmade and handcraft products are: textiles, paper, rise paper, foam sheets, acrylic paints, varnishes, wood, candles and dried plants.

Creativity and inspiration in unique handmade and handcraft products made with love!









Contact: iulia.bartok@gmail.com

Caretta's Art

Angeles Made from organic Materials

Innovative ART Project

Author: Maria Liliana ZAGREAN

K

Mărțișor is Romanian tradition that marks the beginning of spring, celebrated on March 1st. Its origins are linked to ancient customs, associated with symbols of fertility and renewal. It believed that the mărțișor, a red and white string, brings luck and health. In the past, people would give mărțișoare to their loved ones as a sing of apreciation and to wish them a joiful spring.





Gifts from Nature!





With greate love and attention, we have handcrafted these mărțișoare in the shape of angels, each made from organic hemps. Each angel features a small tricolor flag, simbolizing our country's pride. The string is olso handcrafted from organic coton, adding an extra touch of autenticity and naturalness. Inspierd by the beauty of spring, these mărțișoare reflect the rebirth and joy that this season brings. We hope that each mărțișor wil bring happiness and remind us of our connections to nature and our traditions.

We invite you to discover the magic of spring through these unique creation.

Contact: caretta.foita@ gmail.com

SCAN ME

Caretta's Art

LAMPSHADES WITH SOUL

Innovative ART Project

Author: Maria Liliana ZAGREAN

K

I restore old lampshades and also create new ones, drawing inspiration from the beauty of our planet. During my walks in nature, I am captivated by the trees and diverse vegetation of the forest. Sunlight timidly filters through the dense woods, and the colors of the flowers are a soothing balm for the soul.

Wanting to bring the sunlight and the moon's shadow in to people's homes during quiet evenings and early mornings, I have created these small works of art. I hand-sew them using organic textile materials and handmade lace that is over 100 years old. These pieces not only provide light but also transform the space into an atmosphere full of mystery.



SCAN ME



,,Forest magic" is a lampshades inspired by the natural beauty of forest. With an elegant design and warm colors, it brings a touch of nature in to any room. Its delicate details evoke images of tall trees and light filtering through green leaves, creating a relaxing and mysterious atmosphere.

The ,,Marine Reflexions" lampshade brings a touch of the ocean in to any room. Inspired by the beauty and mystery of the deep sea, this lampshade combines shades of blue and green, evoking the waves and the light dancing on the water's surface. Its elegant design fit perfectly in to any decor, providing a relaxing and inspiring atmosphere.





Contact: caretta.foita@ gmail.com

Jam's Art

IN LOVE

Innovative ART Project

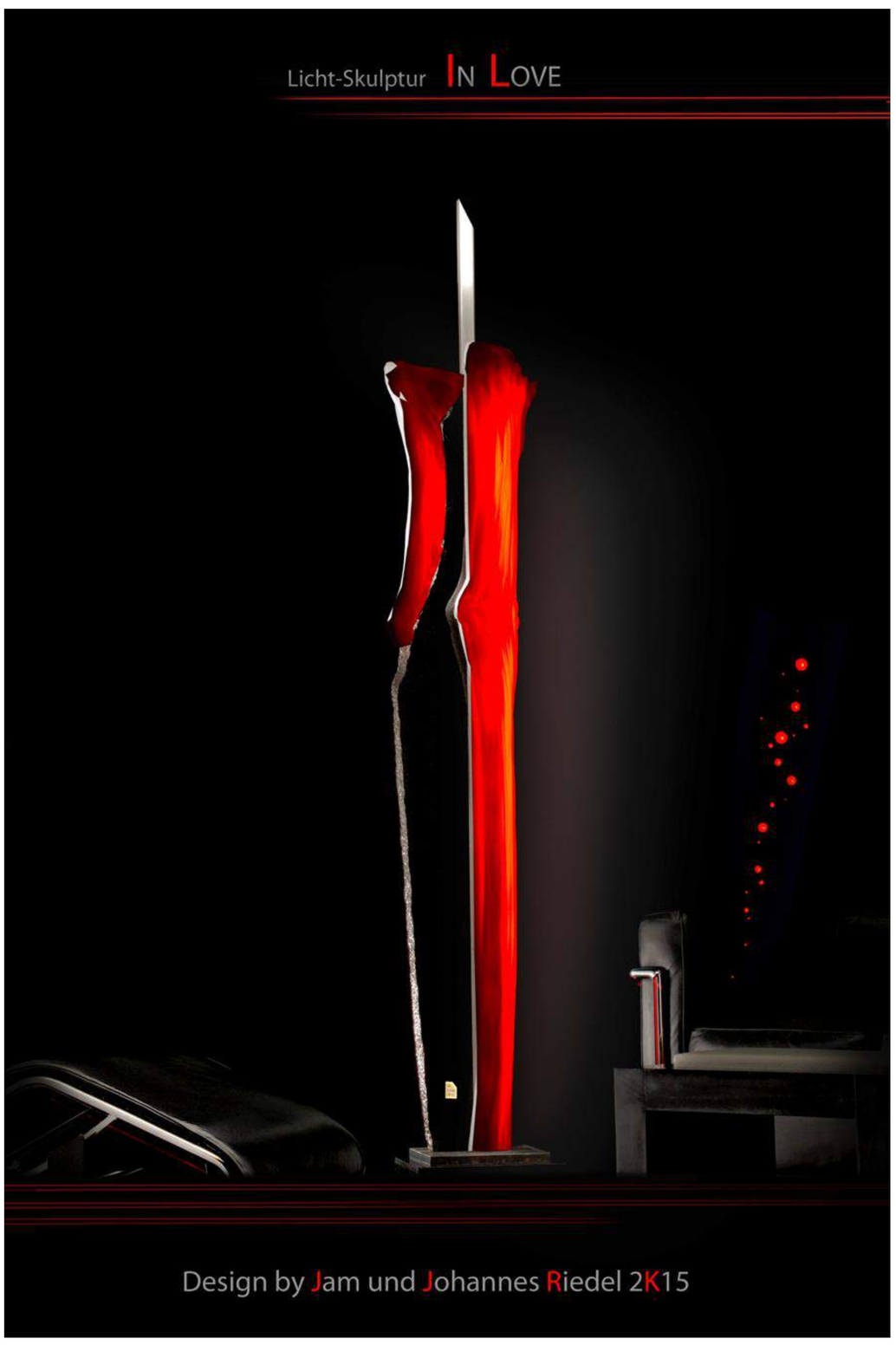
K

Author: Jamina RIEDEL

This is the story about two different pieces. They come together, late in their life. The black stone, beautyfull, shining, strong but broken. The plasticfilm, more than hundreds, heated and colded, pressed and bented but empty inside.

They met on an iron base, in intimate embrace, life is created in all colours of the rainbow!







Contact:
jaminaa12@gmail.com

Presentation link:
https://www.saatchiart.com/account/artworks/1104419

SCAN ME

Ema's Art

EQUILIBRIUM by EMA

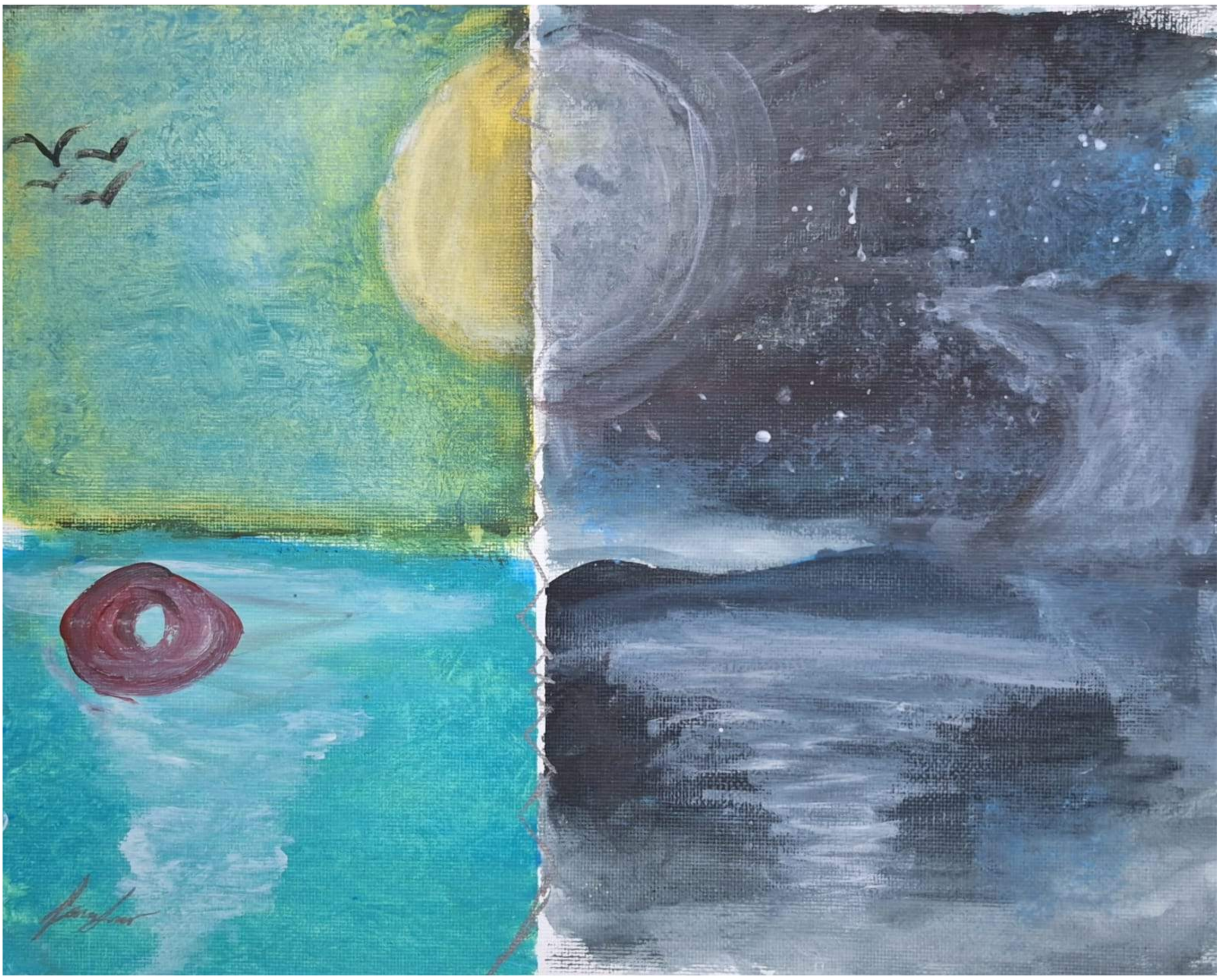
ART Project

Author: Emanuela Paula ENACHE

K

I am a student in the 4th grade of the "Sigismund Toduță" Secondary School, a structure that belongs to the "Anghel Saligny" Railway Transport Technological High School in Simeria.

This painting suggests the balance between light and dark, between day and night. Emanuela Enache explores the beauty of contrasts and the connection between two seemingly opposite but complementary realities.



The work can be interpreted as a reflection on the passage of time, the cyclicality of life or the inner duality of every human being.

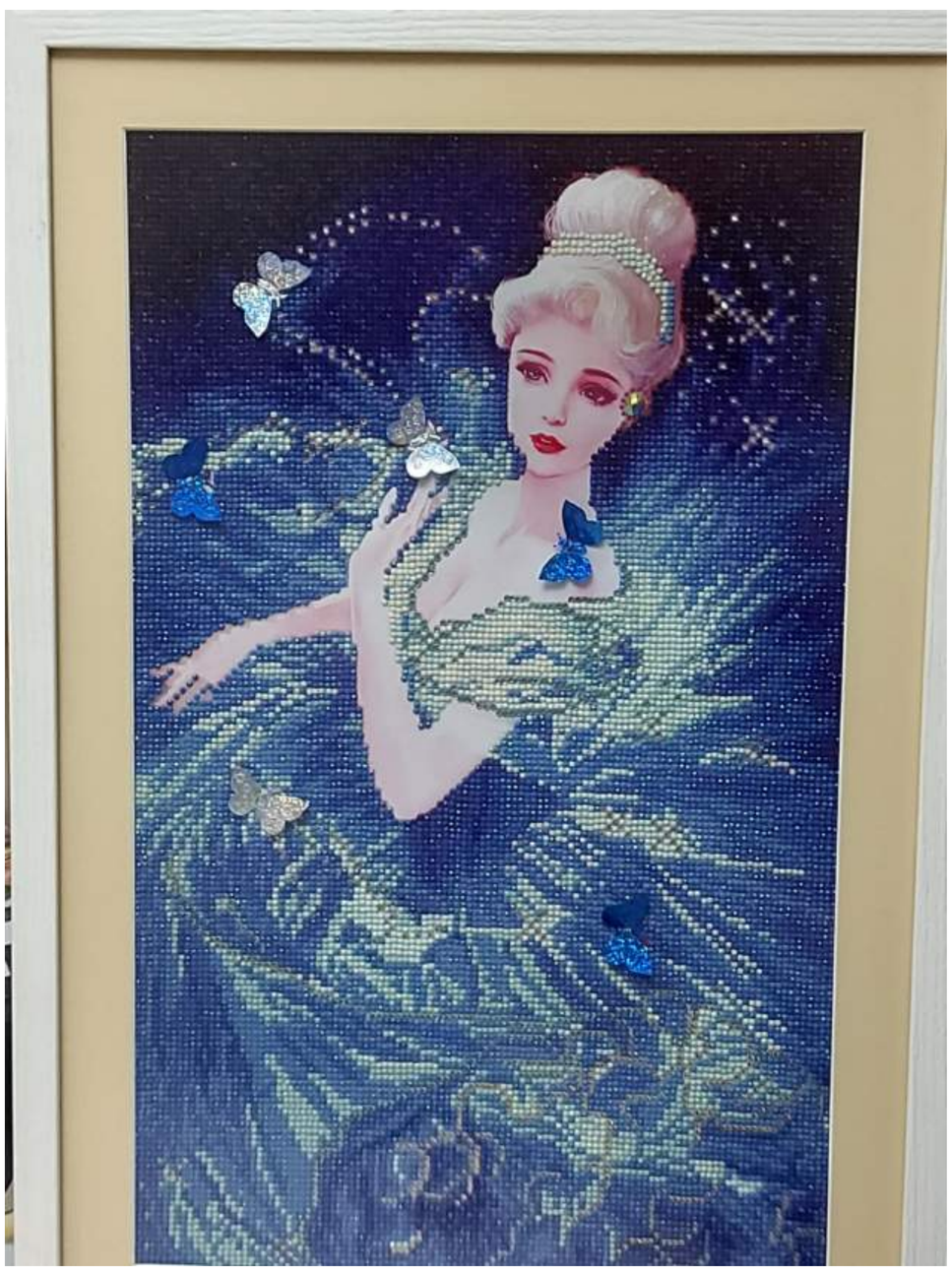
The painting impresses with the use of colors and the way the two parts merge, creating a strong visual effect and a harmonious composition. It is an invitation to introspection and to appreciate the beauty of every moment of the day and of life.

DIAMOND TAPESTRY

Author:
Zsiros Sándorné (Monor)

K

Diamond tapestry does not require a needle and thread. Examples include iron-on beads, pixel hobby, mosaic technique and the latest diamond puzzle. The essence of each is almost the same: the whole or parts of a picture are divided into small mosaics, and the pattern created in this way must be assembled from the small components. These novelties are modern versions of tapestry or cross-stitch embroidery.



Cinderella



Guardian Angel

Contact: otletclub.idea@freemail.hu
Presentation link: https://otletclub.5mp.eu/web.php?a=otletclub

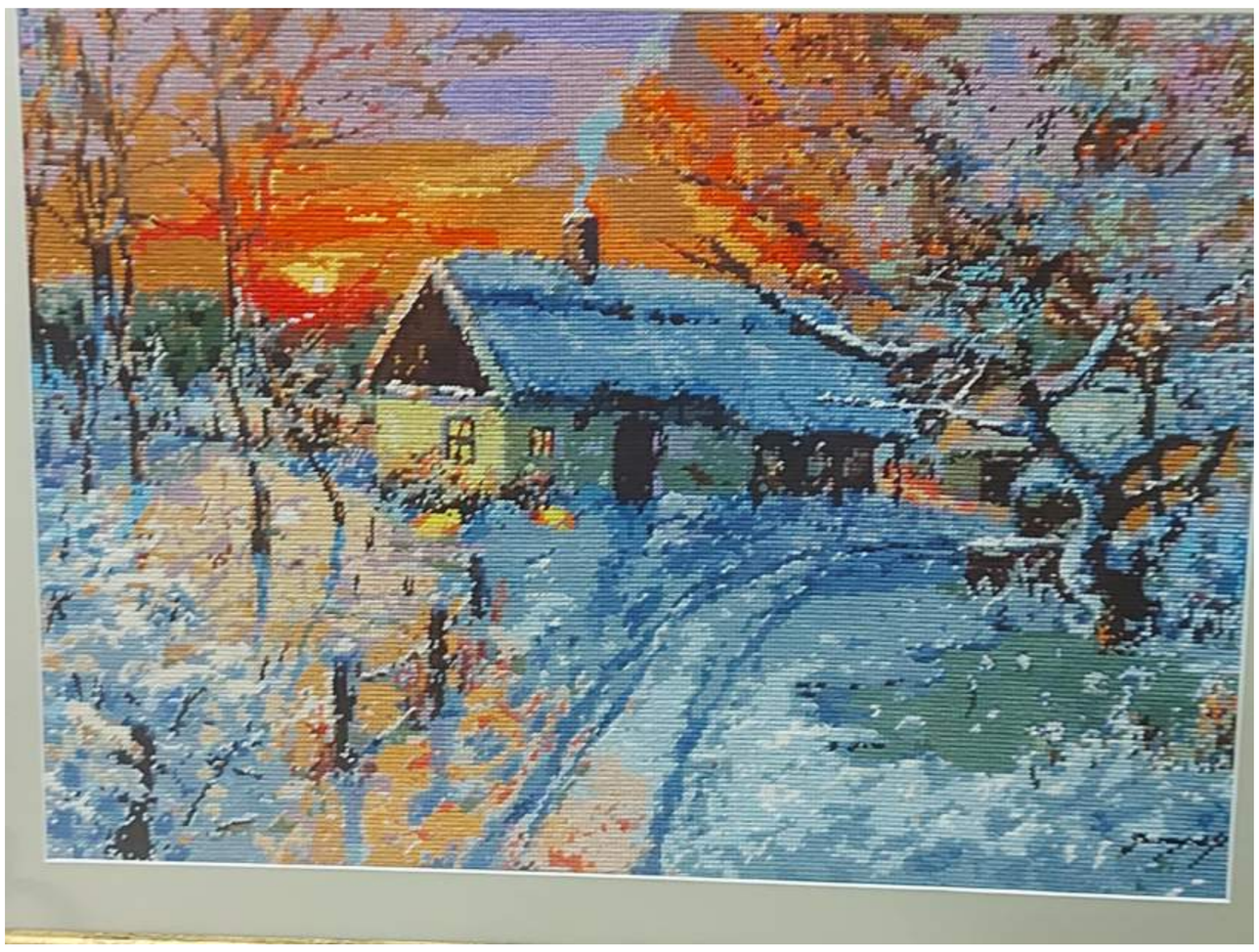
ORIGINAL PAINTING REPRODUCTION HAND-STITCHED TAPESTRY

Author:

Mária Zsiros-Bokros (Monor)

K

Tapestry is a form of textile art, traditionally woven by hand on a loom. Normally it is used to create images rather than patterns. Tapestry is relatively fragile, and difficult to make, so most historical pieces are intended to hang vertically on a wall (or sometimes in tents), or sometimes horizontally over a piece of furniture such as a table or bed. Some periods made smaller pieces, often long and narrow and used as borders for other textiles. Tapestry, made with half cross stitches. Half or quarter stitches for the finest details. Made with divided embroidery thread.



Winter Farm tapestry



Riverside tapestry

Contact: otletclub.idea@freemail.hu

Presentation link: https://otletclub.5mp.eu/web.php?a=otletclub

Caretta's Art

TRANSFIGURATION

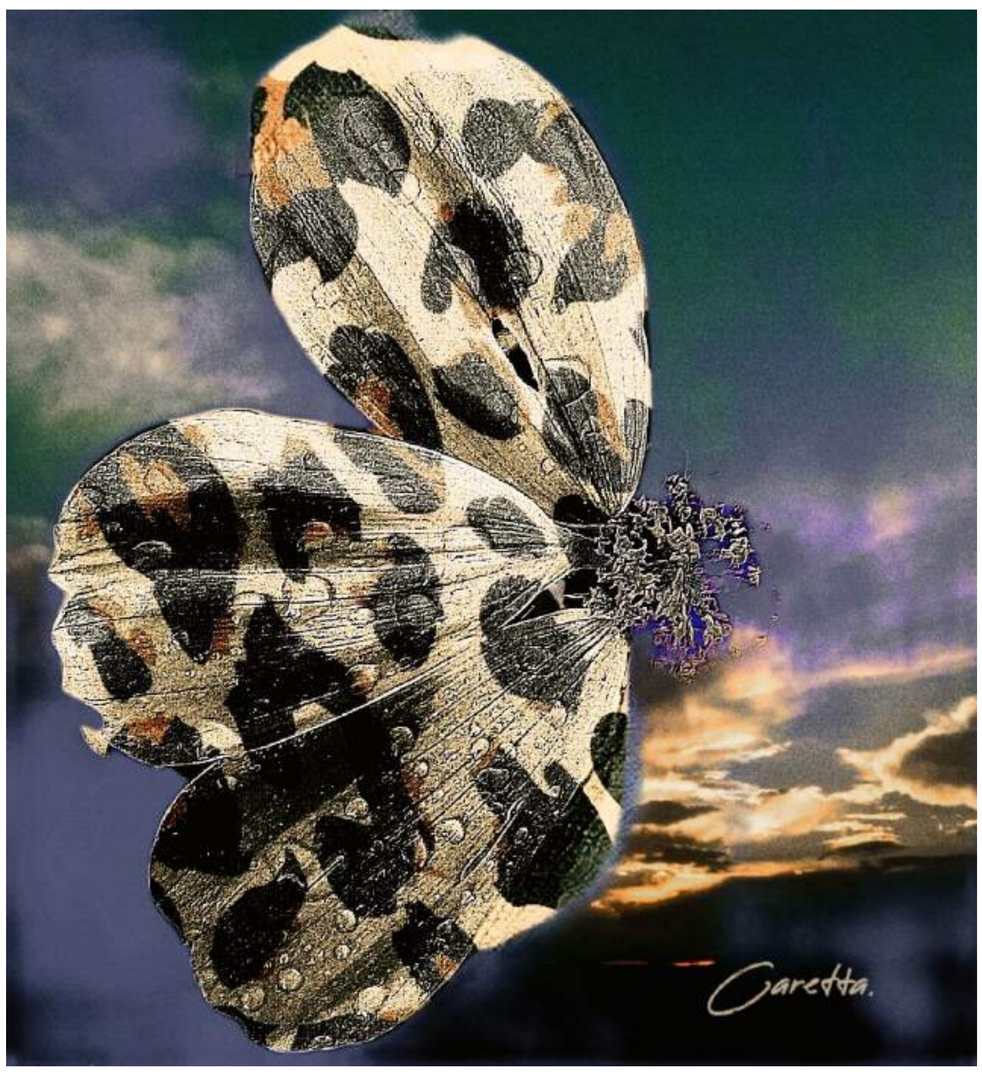
Innovative ART Project

Author: Maria Liliana ZAGREAN

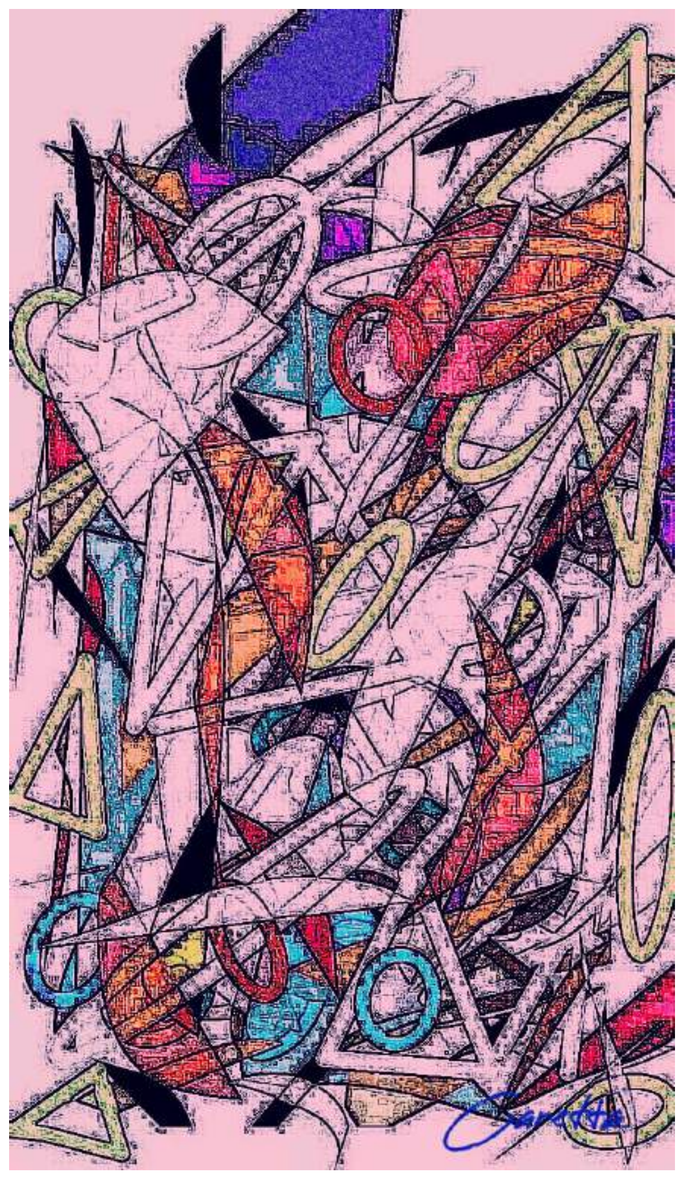
K

I don't create the abstract, nature create it for me, and this is reflected in my works of art. On an empty road with a shy point that easily tries to turn into lines that take on different shapes and color.

Since I was a child, I was fascinated about the wonder around us. The changing colors of the seasons, they make myself live a magic dream and as intensely live dreams become reality, 14 years ago, I had the opportunity to purchase a professional camera.



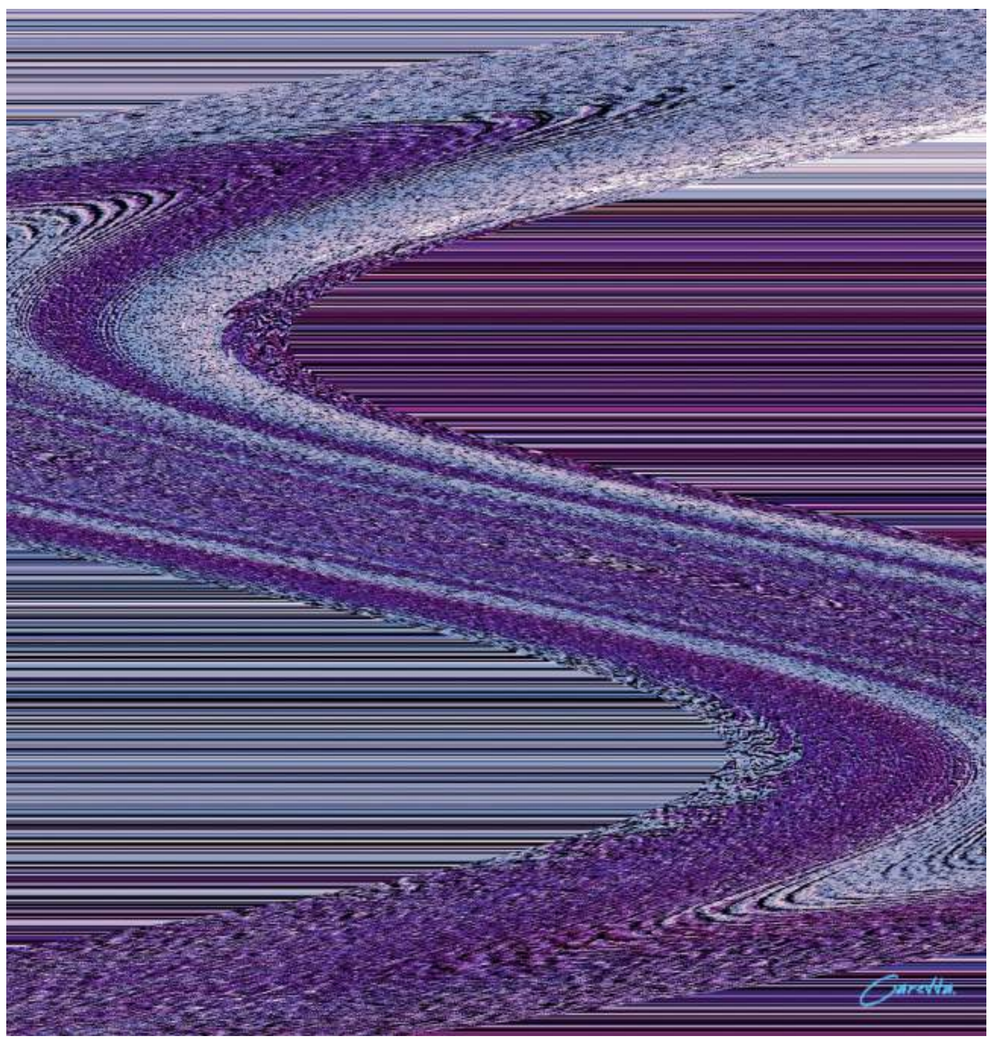
Fly to heaven



Inspired by Lissitzky
Running ahead of the bike



Opening the hard way



Waves of lavender

SCAN ME



The freedom of the sleepwalker

Contact: caretta.foita@ gmail.com



Romanian Folk Tales

AI Generated Art

Author: Irina Fachin

K

“Romanian Folk Tales” unveils a digital tapestry of Romania’s rich folklore through AI artistry. The exhibit features young Romanians adorned in traditional costumes, their garments rendered with striking detail against fantastical landscapes. Each artwork is a digital homage to the nation’s heritage, blending historical motifs with contemporary art techniques.

The gallery space becomes a bridge between eras, where AI interprets timeless stories in a visual format. The portraits are more than mere images; they are narratives that celebrate Romania’s cultural saga, re-envisioned with a touch of modernity. Visitors are invited to traverse this fusion of past and future, where each piece resonates with the echoes of folklore.

Expanding the narrative, the exhibition offers a unique perspective on tradition and technology. It’s a creative exploration that challenges the boundaries of art and storytelling. As viewers move from one piece to the next, they engage with a visual feast that redefines the essence of Romanian folk tales for a new generation.







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Instagram: https://www.instagram.com/virtualmedianet/
Facebook: https://www.facebook.com/virtualmedianet.eu/
X: https://twitter.com/v1rtualmed1anet

SCAN ME

CONTEMPLATION IN SHADOWS

Photography project

Author: Stoica Adrian

K

A photograph veiled in darkness and laden with significance, "Contemplation in Shadows" brings together the essence of mystery and the delicacy of a profound gaze. Wrapped in a jute veil that shrouds her head and shoulders, she creates an aura of mystery, hinting at an untold story. In her hand, a flower becomes a symbol of fragility and the ephemeral passage of time. The soft light highlights the textures of the jute and her skin, creating a contrast that underscores beauty in a unique form.

Gazing directly at the viewer, the woman exudes a deep sadness, and the dancing shadows on her face accentuate the contemplative expression.

It's a scene where each element seems to contribute to the whole, suggesting a search for deeper meaning and reflection on the unseen mysteries of existence.

"Contemplation in Shadows" is a dialogue between light and darkness, an introspection into human emotions, and an invitation for the viewer to unravel the hidden secrets and subtleties within the shadows of this artistic composition.



SCAN ME

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adistoica21@gmail.com

www.adistoica.ro

SPRING SYMPHONY

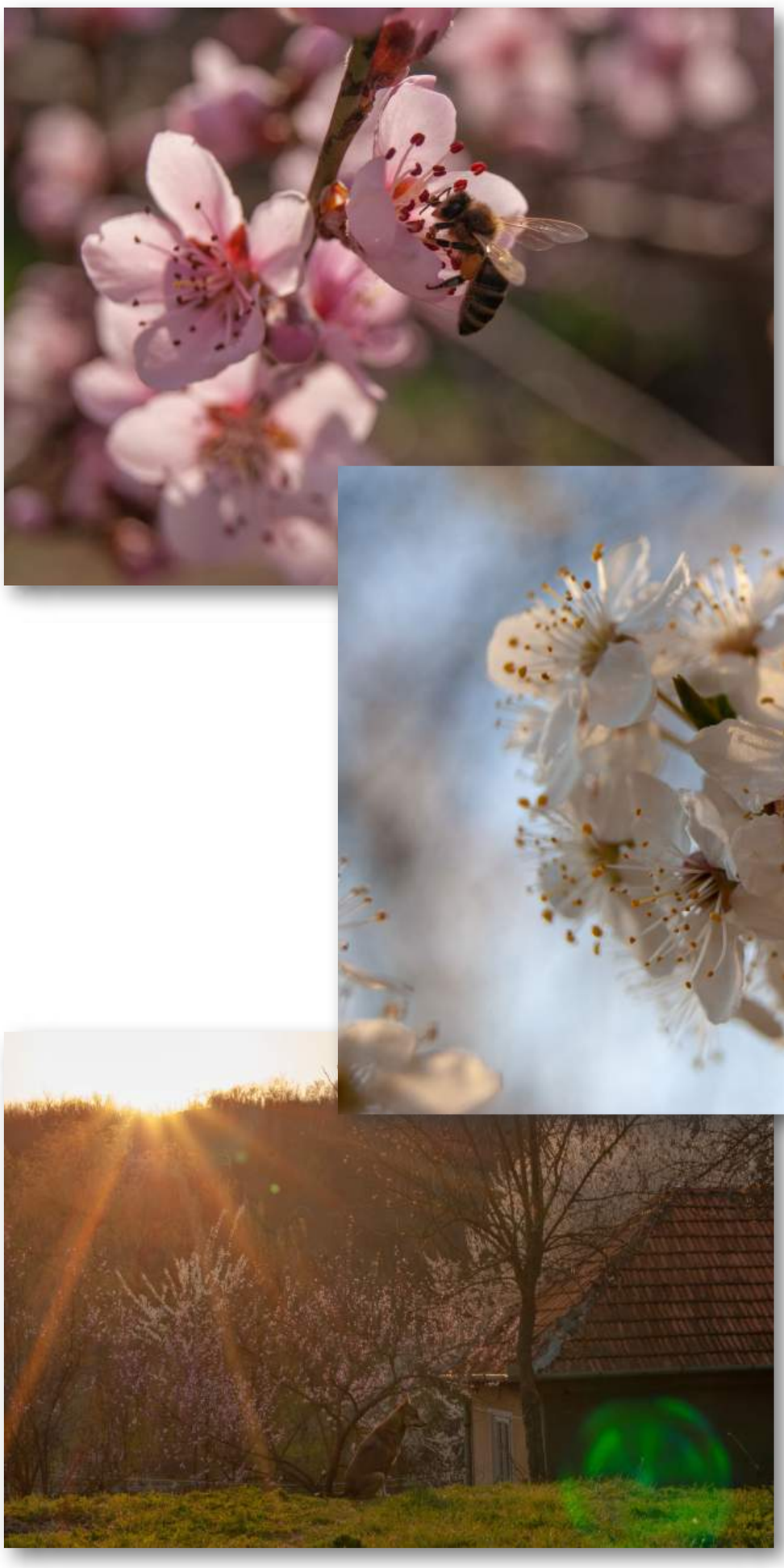
Photography project/Innovative art

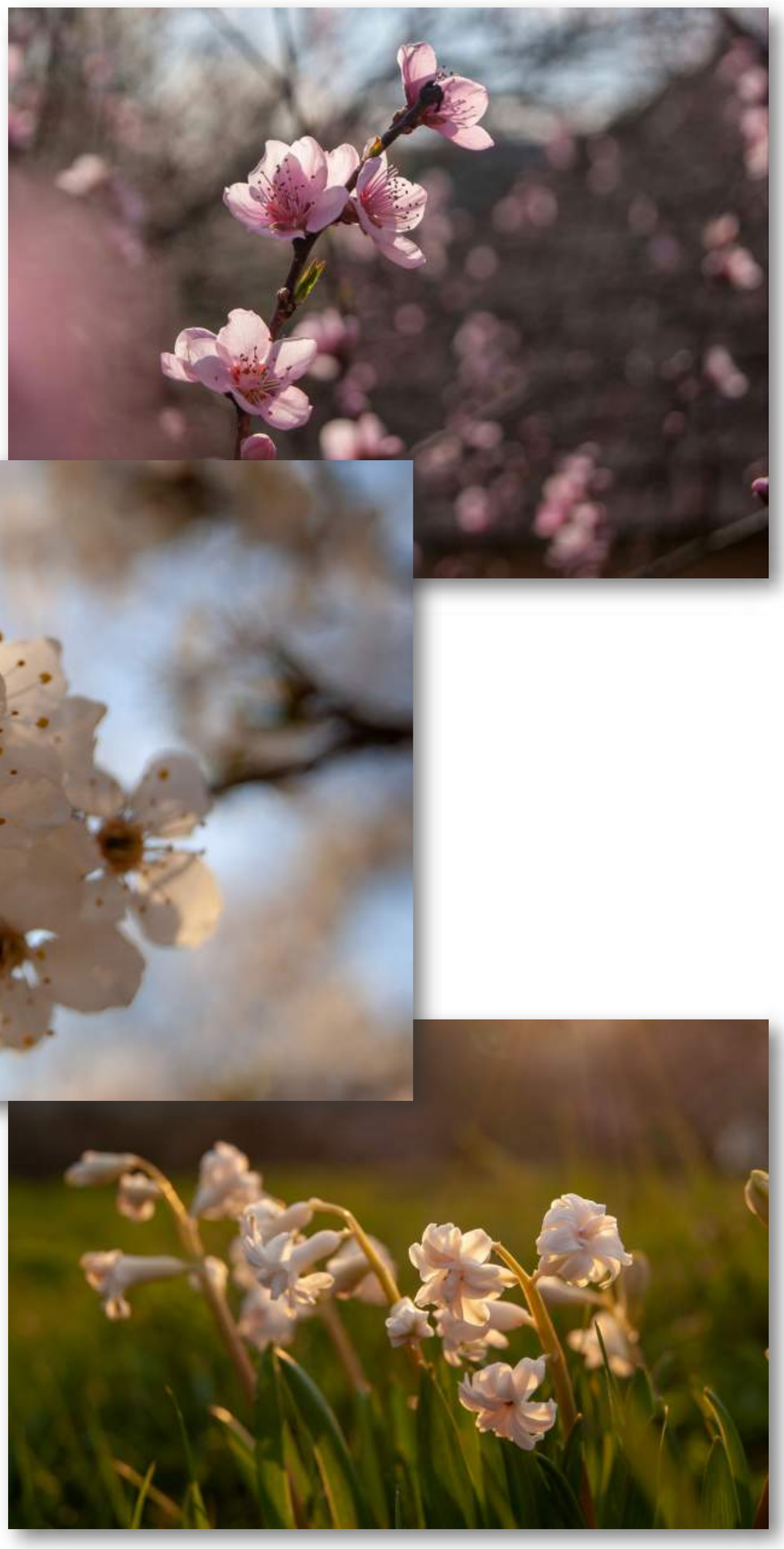
Author/s: Diana Miruna Armioni

K

"Spring Symphony" invites you to immerse yourself in the enchanting beauty of spring blossoms captured through the lens. Explore a kaleidoscope of colors, textures, and intricate details as nature orchestrates its annual symphony of renewal and vibrancy.

From delicate petals to lush landscapes, each photograph celebrates the ephemeral yet timeless grace of springtime blooms. Let these captivating images awaken your senses and inspire a deeper appreciation for the fleeting wonders of the season.







Contact: armionimiruna@yahoo.com

CORINA's Art

THE POETRY OF CREATION

Author: Corina Gianina Popa (Uieț)

K

The miracles of everyday life in the battle against the elements. Water, sun, sky, earth, sunset, grace, the wonders of the Creator.















Contact: popa.corina@hotmail.com

“Ordinary”

Student Project

Author: Maksimović Milica

K

I tried taking pictures of the beautiful scenery of my hometown. What I ended up with were pictures that inspire a dream-like sense of adventure, like anything’s possible. Rather than representing my hometown, it’s more of a look into how I view my surroundings.

Without capturing any important landmarks, I simply took my camera with me on a walk, taking pictures at odd angles and getting inspiration from the “ordinary” world around us.

I made shots that were interesting to me, and I hope you can enjoy them too and find some inspiration from them.











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THE CONCEPT OF SUSTAINABLE SYSTEMS MARKETING AND ARTIFICIAL INTELLIGENCE (AI) IN PHOTO AND VIDEO

Student project

Authors: Mădălina MIHOC, Mihai MIHOC

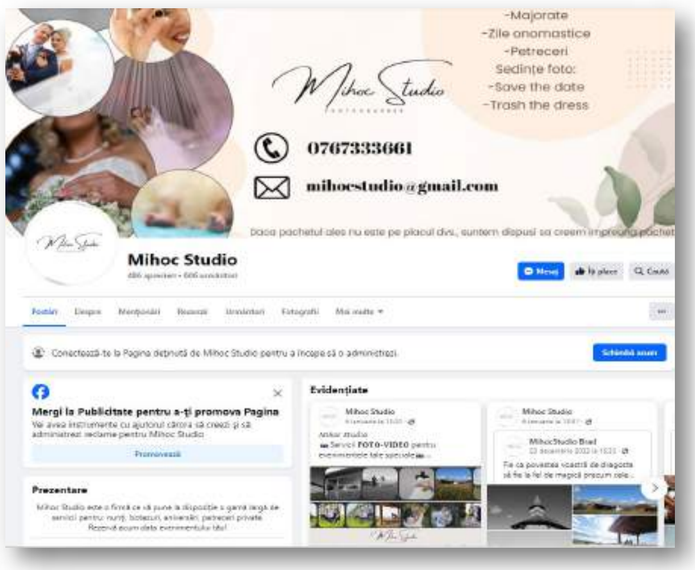
Mihoc Studio is a photo-video company that offers both digital and hard copy material.

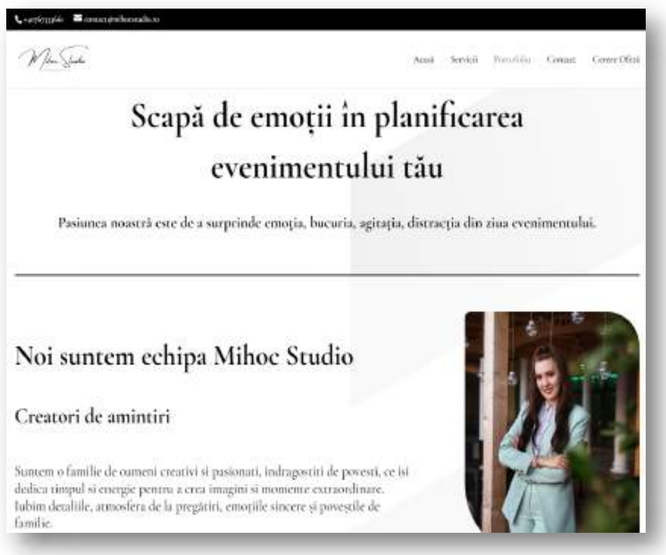
The description of the problem is very simple, because recycled paper is a scarce resource on the market, the demand for recycling paper is higher than the supply.

The collection of paper for recycling is poor in Romania, so that only a little more than half of this waste ends up being recovered and transformed into new products.

Our solution is to create sustainable products, services and experiences. One of the simplest decorative objects made from paper is origami. It is only necessary to follow a few steps and we will obtain various shapes from paper that will delight our customers. Origami can be made from coloured paper or from white paper, written paper or wrapping paper.









Mihoc Studio found a solution to this problem, so we decided to recycle and reuse paper. Printing can also result in defective pictures. These defects can be generated by the printer, but also in some cases where the brightness is not the desired one. In addition to photo paper, we also have documents that are no longer useful. The equipment used is: shredder, shredder/blender, frames, mesh, paper, water pot. All these papers of different thicknesses, sizes and layouts become waste.

With a shredder we shred the paper, and with a kitchen shredder we have ground the previous product, where we also added water to make the pulp.

The paper used is not plasticized. Plasticised and contaminated paper it is harder to recycle. With the help of a screen and a sponge I attached the ground paper, and after this process, I put everything to dry.

This way we created: pages for the album, letters, cards, decorations that we can cut and paint as we want, bookmarks.

In conclusion, the development of a strategy is influenced by the status of the business: where it is in the current market, what resource potential it has.

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Violeta Art

THE MIRACLE OF INTUITIVE PAINTING

Author: Violeta COPROS

K

I discovered intuitive painting recently, I wasn't necessarily looking for it, it came to me somehow naturally, being fascinated by how creative this practice can be. For me it was a new thing, and as C.G Yung said, "Creating something new is not done with the help of reason, but through the play of instinct, which acts from an inner necessity" I gave free rein to my imagination with the help of colors on the canvas.









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Liceul de Arte "Sigismund Toduță" Deva

MARIA'S MYSTERIES

ART Project

Author: Maria Gabriela HOLOBUȚ

K

I'm a student in the 9th grade of the "Sigismund Toduță" Art High School in Deva. I was born in Portugal, on September 22, 2009, and from an early age I manifested a special sensitivity towards art. I felt drawn to color, finding it useful to express my feelings on any material that could take on color and life. In addition to color and fine art, I like music, the guitar being an instrument in which I trained my curiosity to discover secrets, self-taught.

Ever since elementary school, painting has been a way to express my colorful universe.















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Universitatea Politehnica Timișoara

Peaceful Song

Piano concert

Adrian-Emanuel IUGA

K

Peaceful song is a piano concert performed in the F major chromatic scale, the F major chromatic scale includes all the musical notes starting from F to the next F (12 musical notes are used, compared to the standard F major scale consisting of 7 notes).

It is a concert that can be performed both on piano and in an orchestra composed of piano, violin and harp. For the best experience, the concert will be performed in the musical standard A432Hz, which means that the instrument will be tuned so that the A note in the 4th octave has a frequency of 432Hz.





YouTube

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The purpose of the concert is to give peace, healing, well-being, to refresh the soul!

Contact: adrian.iuga2@student.upt.ro



Before the Petals Scatter in the Wind

AI Generated Anime

Author: Irina Fachin / Virtual Media Net

This 3:30 minute animated short film was entirely created with AI generation tools (script, images, videos, music, voice) in the style of Japanese anime.

Inspired by the Japanese concepts of "mono no aware" (the awareness of the impermanence of things) and "ichi-go ichi-e" (treasuring the unrepeatable nature of a moment), this animated film follows a young Japanese girl as she contemplates deep philosophical questions about the passage of time and the beauty of life's small joys, inviting us to pause and reflect on how we can truly cherish the moments that matter most.

WATCH



VIRTUAL MEDIA NET specializes in immersive media (360 photos and videos, virtual tours) and AI generated content (images, videos, music)

WATCH

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AGRO BIOLOGICAL AND TECHNOLOGICAL PECULIARITIES OF ONION AND GARLIC CROPS

Book: ISBN 978-9975-165-35-8

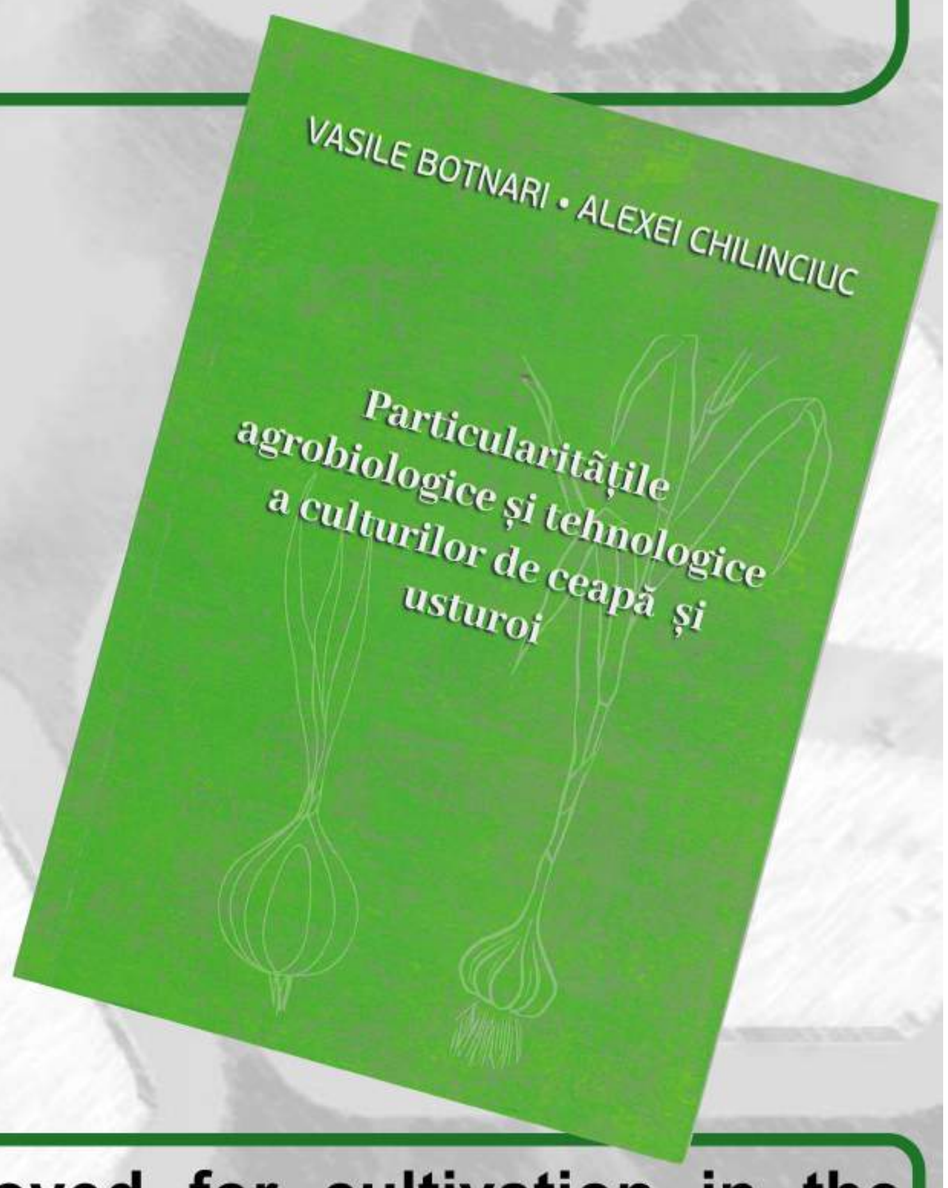
AUTHORS: Vasile BOTNARI, Alexei CHILINCIUC

APPLICATION FIELDS: Agronomy.

AIM: Dissemination of results and scientific implementation in the real sector of the economy.

SOLUTION: The work is intended for agricultural specialists, students, master's students, farmers and other categories of producers, as well as for all those interested in growing vegetables.

ADVANTAGES: The guide presents good practice information, accompanied by color illustrated images that facilitate the acquisition of knowledge regarding the agrobiological and technological peculiarities of onion and garlic crops.



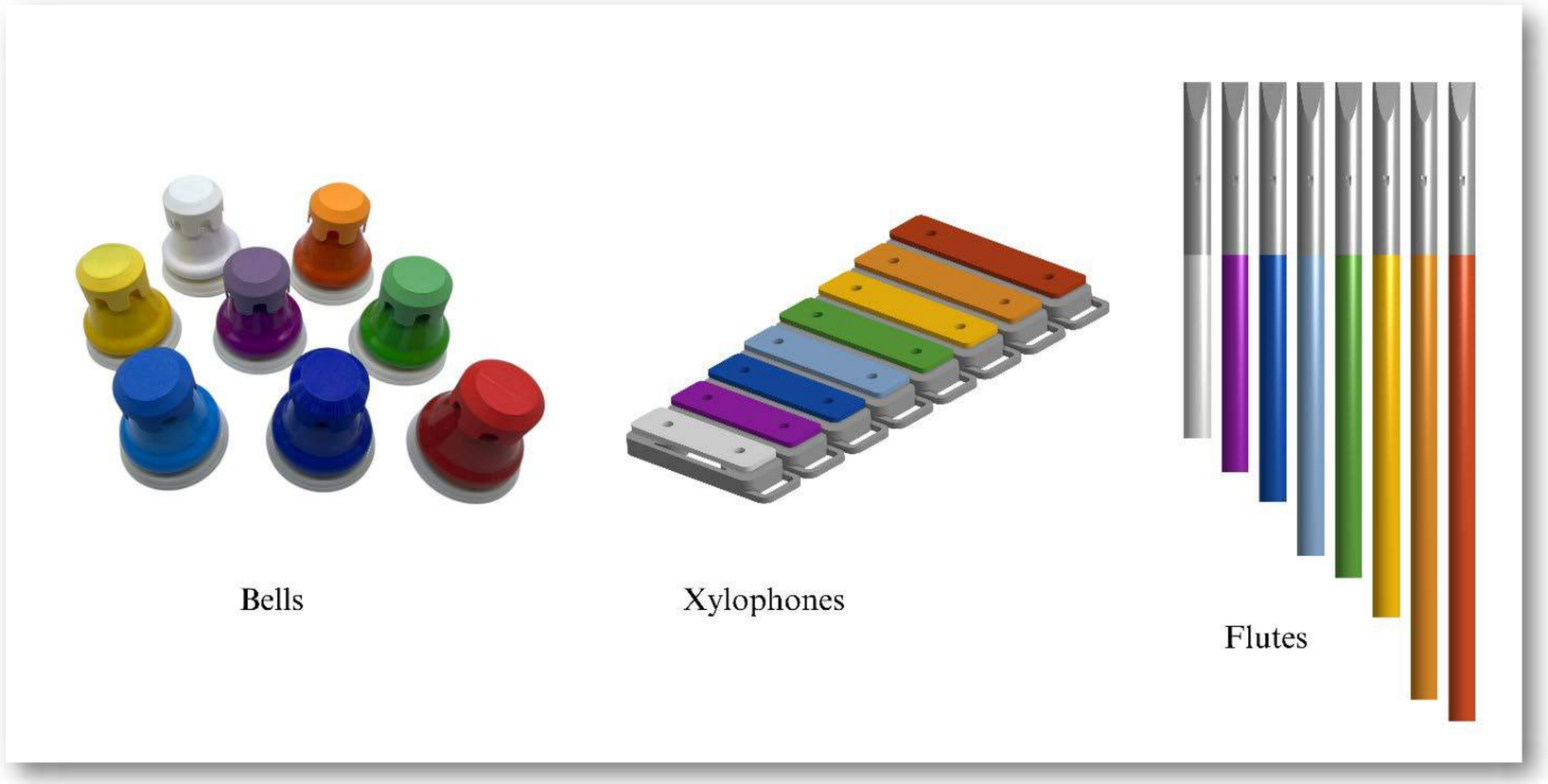
IMPLEMENTATION STAGE: Variety approved for cultivation in the Republic of Moldova.

ACKNOWLEDGMENTS: This research was supported by the Research Subprogram 011102. Increasing and conservation genetic diversity, agricultural crop breeding in the context of climate change, financed by the Ministry of Education and Research.

Music Without Barriers

Phongphol Damrongrat, Kornsiripatchara Damrongrat
Advisors: Kaewkan Yambangyang, Parinton Jangtawee,
Jeerasak Jitrotjanarak

Music Without Barriers is a social innovation that makes music accessible to everyone, including individuals with disabilities and mental health challenges. The project redesigns basic musical instruments—such as bells, xylophones, flutes, and guitars—into simplified one-note versions, making them easy to play. A color-coded system replaces traditional notation, enabling intuitive learning. The initiative includes an interactive digital platform, workshops, and community outreach programs. By combining music, technology, and inclusivity, the project fosters joy, creativity, and emotional well-being for all.





Contact: j_jerasak@hotmail.com



Cristian Fodor

O viață prin cântec

La vârsta de 13 ani, pe care o avea Cristian Fodor pe când câștiga premiul I la Festivalul "Să fim copii" din Orăștie, cariera sa de interpret de cântec popular se anunţa ca o promisiune.

Astăzi performanţele sale vocale îl situează cu certitudine pe drumul ascendent către galeria de frunte a cântăreţilor ardeleni.

Cristian Fodor s-a născut la 7 iunie 1981, la Cugir, judeţul Alba, beneficiind încă din primii ani de viaţă, în familie, de o ambianţă propice apropierii de cântecul popular românesc. Primul mare premiu câștigat în 1994, a fost urmat, pe parcursul unui întreg deceniu, de numeroase alte distincţii și titluri de laureat, cu precădere în concursurile din zona Transilvaniei, dar și la Concursul "Moștenitorii", al Televiziunii Române – premiul I în anul 2000, la prestigiosul festival "Toamna Buzoiană" al cărui trofeu îl cucerește în anul 2001, la "Festivalul Naţional studenţesc de Folclor – Premiul I – Iași 2002, și la Concursul Naţional "Floarea din Grădină", al cărui trofeu i se atribuie în anul 2003.

Trei albume personale și două albume colective, dintre care unul de colinde, completează un palmares artistic al lui Cristian Fodor, de acum consacrat unei cariere profesionale de cântăreţ popular, chiar dacă specializarea în marketing și studiile academice economice, pe care le-a urmat îi deschid și alte perspective.

Dragostea și dăruirea sa pentru cântecul strămoșesc, precum și nevoia cântăreţului de a se identifica cât mai mult cu stilul tradiţional al zonei, l-au îndreptat către o susţinută activitate de culegere a folclorului în satele din jurul Orăștiei : Căstău, Orăștioara de Jos, Orăștioara de Sus, Costești, Bucium, Beriu, Grădiște (Valea Costeștiului) și Geoagiu, Homorod, Renghet, Văleni, Bozeș (Valea Geoagiului) precum si în satele din vecinătatea zonei Apusenilor.

Este un interpret cu personalitate care îmbină remarcabile calităţi vocale, cultivate cu grijă, graţie unei tehnici dobândite și prin experienţa cântului și prin studii de canto popular.

Vocea sa plăcută de tenor, are o culoare personală, cu inflexiuni calde, valorificate cu generozitate în frazele de amplă respiraţie ale doinelor sud-ardelenești, pe care le recreează uneori, reașezând variaţiuni ale unor motive melodice tradiţionale în noi întruchipări strofice. Ambitusul de o întindere remarcabilă – îi permite să abordeze cu succes și melodiile instrumentale de joc, adaptate interpretării vocale.

Tehnica de care dispune se remarcă în numeroasele pasaje de virtuozitate pe care le atacă fără nici-o greutate, în pofida frecventelor salturi vocale dificile, a pasajelor și seriilor ritmice de agilitate și de factură instrumentală, reușind să pună în valoare, cu virtuozitate, – melodii crenelate de învârtite, ţarine, jiene, haţegane...

O respiraţie amplă și o susţinere vocală impecabilă a tonurilor prelungi ale doinelor sud - ardelenești, un vibrato îngrijit și cald, excelând în nobleţea unor finaluri cu nuanţe diminuate, completează acest profil vocal.

Contact: evenimente@cristianfodor.ro https://cristianfodor.ro/

Presentation link: https://cristianfodor.ro/video/

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LIVE STREAMING PRODUCTION

Authors: Multimedia Class LTE "Dragomir Hurmuzescu" Deva
mentor Marius DRAGOMIR

K

Our Multimedia class is passionate about technology, creativity, and innovation. We specialize in digital media, video production, and live broadcasting, gaining hands-on experience in modern communication technologies.

At **InventCor 2025**, we are proud to support innovation by providing **live streaming** of the event on the social media channels of **Corneliu Group Association**, the official organizer. Our goal is to bring the event closer to the public, ensuring that every moment of creativity and technological advancement reaches a wider audience.

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Contact: Marius Dragomir +40744636456 marius.dragomir@big-fm.ro

https://www.youtube.com/@energeticdeva5587/videos

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MANDALE

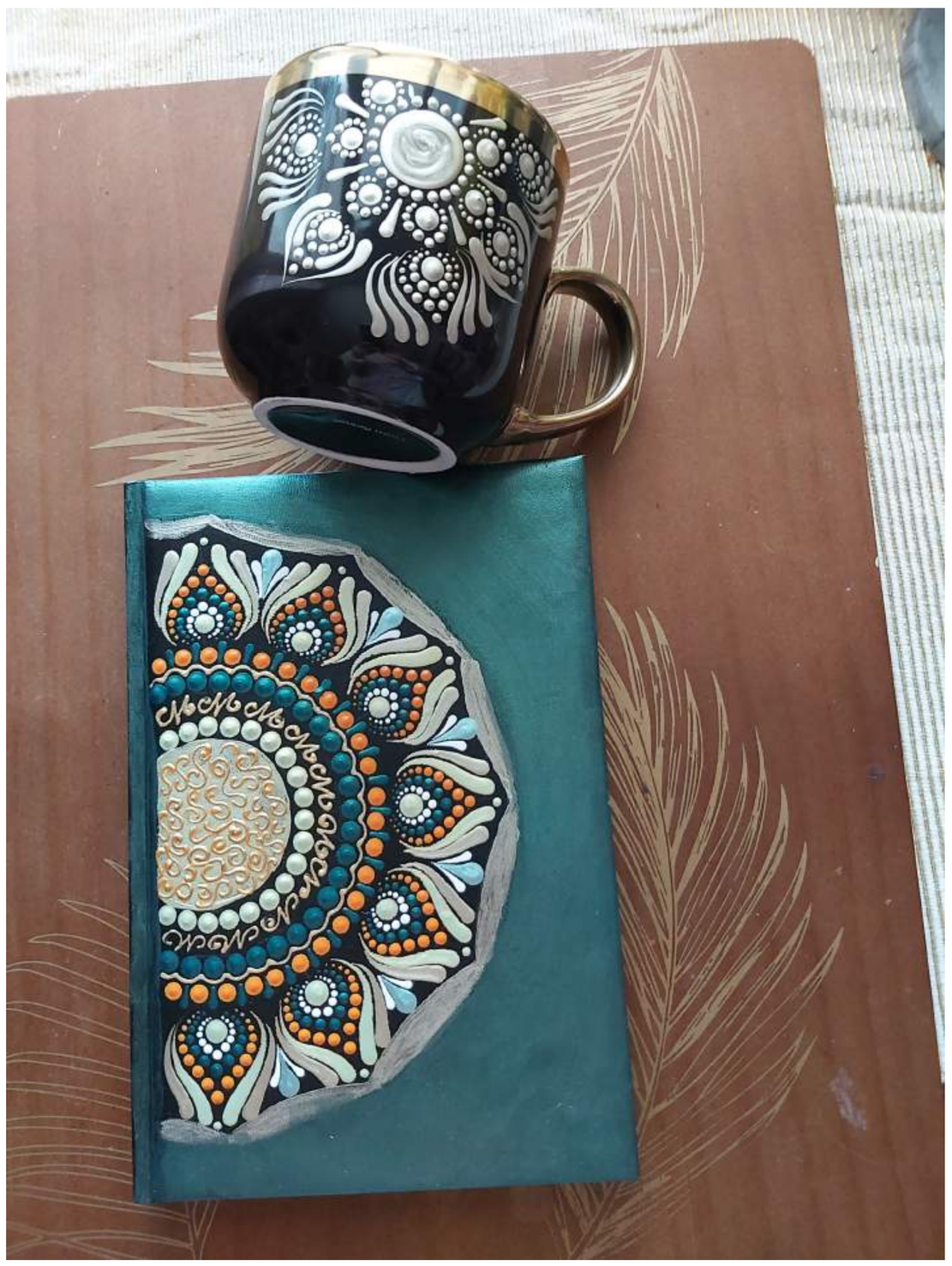
Gabriela BERGHIAN

K

A mandala is a complex abstract design that is usually circular in form. In fact, "mandala" is a Sanskrit word that means "circle". Mandalas generally have one identifiable center point, from which emanates an array of symbols, shapes and forms. Mandalas can contain both geometric and organic forms. They can also contain recognizable images that carry meaning for the person who is creating it. In essence, mandalas represent the connection between our inner worlds and outer reality. Designing your own mandalas can be both inspirational and therapeutic.

Mandalas, painted in the dot technique with acrylic paints. Handmade paintings on wood, glass, ceramics









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Presentation link: https://www.facebook.com/angelika.dakini/

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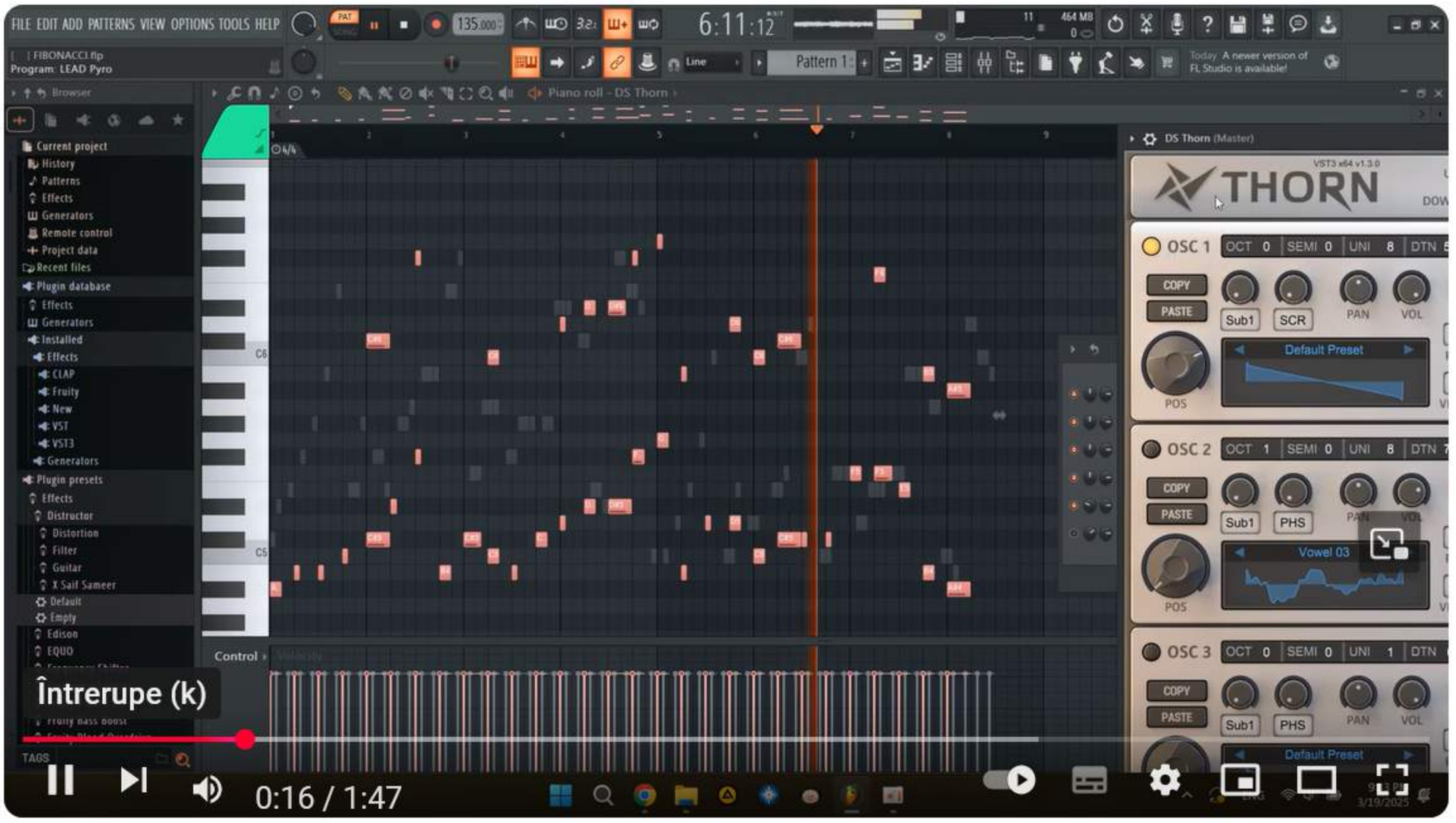
APPLICATIONS OF THE FIBONACCI NUMERICAL SERIES IN THE FIELD OF MUSIC PRODUCTION

Student Project

Author: Robert-Daniel SĂCUIU,
Mentor: Conf. Dr. Diana Alina BISTRIAN

This project investigates the application of the Fibonacci number series in the field of music production, for the construction of scores using the FL Studio application. The use of the Fibonacci series in music production, especially in FL Studio, can create pleasant rhythms, melodies and harmonies in a natural way, as this mathematical sequence frequently appears in nature and art. In this project, rhythmic patterns and several melodic compositions were created using the golden ratio to structure phrasing, placing key notes or chords at the points of the golden ratio.

By integrating the Fibonacci series-based structure into FL Studio, several compositions were created that are mathematically structured, but are musically organic.



Piano sounds using Fibonacci Sequance [more details in description]

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3D EXPAND PAINT PRINTING and MORE

Author: Cătălin Părăoan & Eurografics Team

With every print and customization, Eurografics fulfills its mission to turn ideas into reality and bring a smile to our customers' faces. Screen printing is a printing process on smooth surfaces that consists of applying a layer of ink to the material being printed on through a stencil with cutouts covered with a fine mesh. Turn your ideas into reality!

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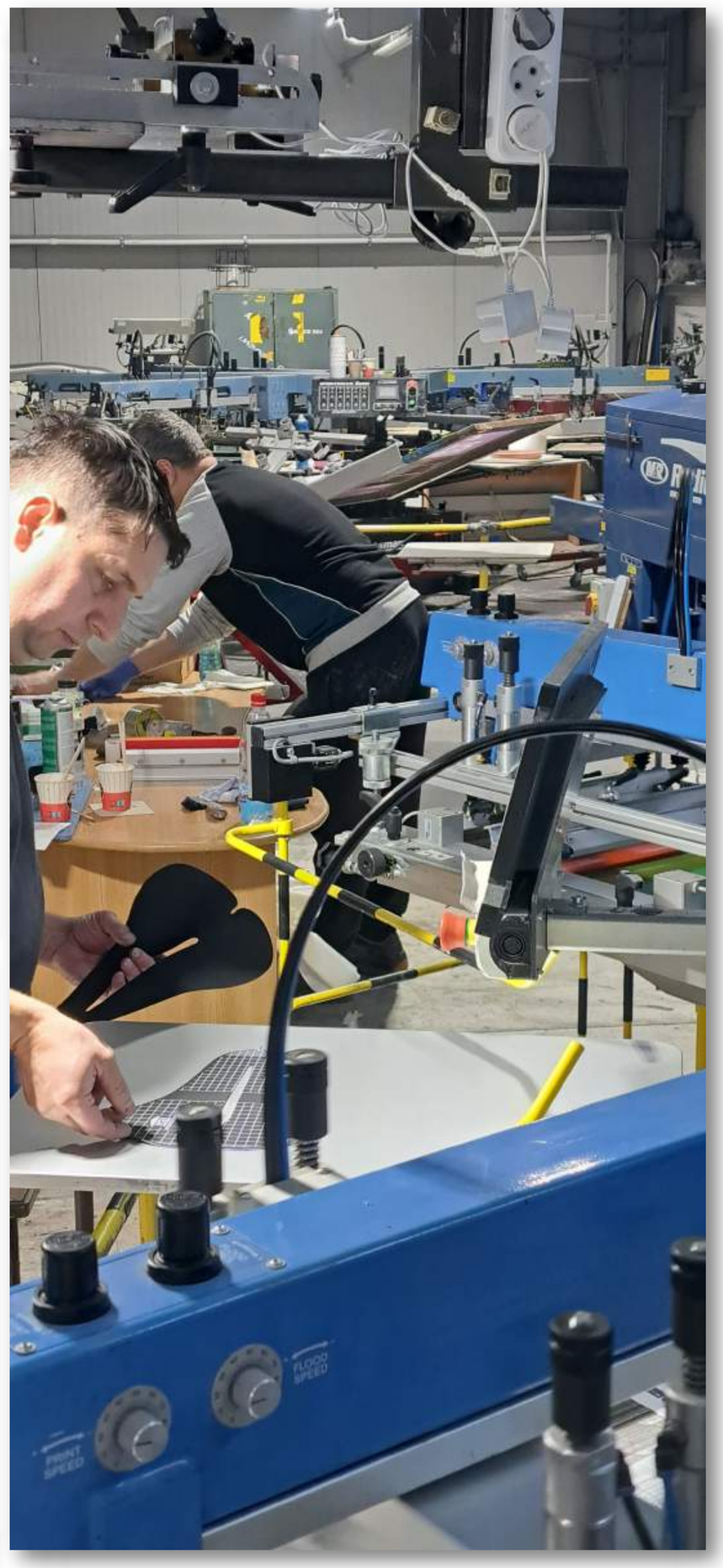
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