

International Exhibition

# INVENTCOR

## Catalogue

5<sup>th</sup> edition

Editor: Corneliu BIRTOK BĂNEASĂ

4-6 April 2024

Deva, Romania



SCAN ME



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# Catalogue 5<sup>th</sup> International Exhibition INVENTCOR

4-6 April 2024 – Deva, Romania



## International Exhibition INVENTCOR 5<sup>rd</sup> edition


**CORNELIUGROUP research-innovation Association** in collaboration with **Faculty of Engineering Hunedoara - Politehnica University of Timisoara** organizes in a hybrid format, the **International Exhibition INVENTCOR**, 5<sup>th</sup> edition, 04-06 April 2024, at the **Cultural Center „Drăgan Muntean”** from Deva city, Romania.

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

**Objective:** The main objective of **INVENTCOR 2024** 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.

**Site:** CORNELIUGROUP association <https://www.corneliugroup.ro/inventcor.html>

**FB event page:** INVENTCOR 2024 <https://www.facebook.com/share/T8AtrsYcdHeaRkKv/>

 **Period & Location:** 04-06.04.2024 - Cultural Center „Drăgan Muntean”

**Motto:** Creation Opportunity Realization

**Promo:** <https://youtu.be/WyJQzS0YnnU>

**Hashtag:** #InventCOR2024 #CorneliuGroup #PutereaMintiiCreative



**Origin:** Deva City



**INVENTCOR President:** Corneliu Birtok Baneasa

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

<https://www.linkedin.com/in/corneliu-birtok-baneasa-547765240>



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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 5<sup>th</sup> edition of **INVENTCOR 2024** is quantified in more than 300 registrations from 31 countries.

**Participating Countries:** Australia, Brazil, Canada, Cambodia, Cameroon, China, Egypt, England, Germany, Greece, Hungary, India, Indonesia, Iraq, Israel, Italy, Lebanon, Malaysia, Moldova, Philippines, Portugal, Romania, Saudi Arabia, Serbia, Spain, Sweden, Switzerland, Thailand, Turkey, Vietnam and Zanzibar.

## *Co-organizers*

### **Politehnica University of Timișoara**

[https://www.upt.ro/Universitatea-Politehnica-Timisoara\\_en.html](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/>



## *Educational partners*

### **County Library "Ovid Densusianu" Hunedoara-Deva**

<https://www.bibliotecadeva.ro/desprenoi.html>





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**General Directorate of Monuments Administration and  
Tourist Promotion of Hunedoara County – DGAMPT**  
[https://www.dgampt.ro/?page\\_id=5592](https://www.dgampt.ro/?page_id=5592)



**Museum of Dacian and Roman Civilization**  
<https://mcd.r.ro/index.php/en/home-5>



**The House of Science Deva**  
[https://www.facebook.com/Casa-Stiintei-112843810370259/?ref=page\\_internal](https://www.facebook.com/Casa-Stiintei-112843810370259/?ref=page_internal)



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



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



**Technical College TRANSILVANIA Deva**  
<https://cttdeva.ro/>



**COLEGIUL TEHNIC  
„TRANSILVANIA” DEVA**

**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](https://www.facebook.com/AeroclubulDeva/?locale=ro_RO)

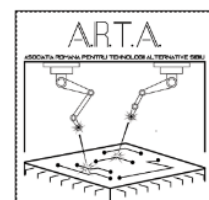


## *Research and innovation partners*

**State Office for Inventions and Trademarks**  
<https://www.osim.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](mailto:mihail.titu@yahoo.com)





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**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/>



**Al Amaan Al Mutahida Company - Bagdad, Iraq**

[www.alamaan-iq.com](http://www.alamaan-iq.com)



**Indonesian Young Scientist Association (IYSA)**

<https://iysa.or.id/>



**Macedonian Association Doza Srekja**

<https://www.facebook.com/djovanov24>



**NWERA Association**

<https://nwera.org/our-team/>



**Bliss Education Center**

[https://www.facebook.com/blisseducationcenter?locale=ro\\_RO](https://www.facebook.com/blisseducationcenter?locale=ro_RO)

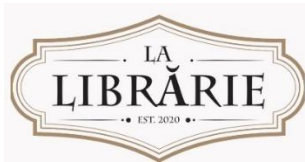




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## Business partners



## Media partners





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## INVENTCOR

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### INVENTCOR Jury

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*Prof. Eng. & Ec. Aurel Mihail ȚÎȚU, Sc.D. & Ph.D., Dr. Habil., Dr.h.c.  
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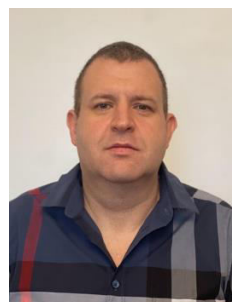
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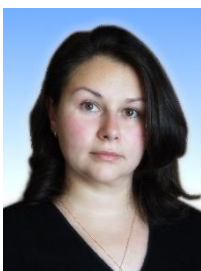
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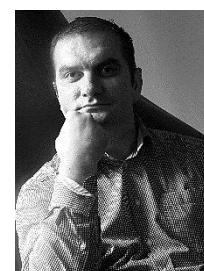
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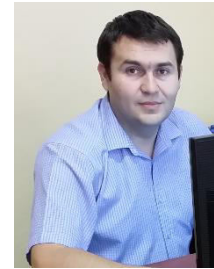
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## INVENTCOR

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Calapan City, Philippines*



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**INVENTCOR**

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## 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



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



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## INVENTCOR

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### Organizing committee

**Corneliu BIRTOK BĂNEASĂ - Politehnica University of Timisoara**

**Aurel Mihail ȚÎȚU - "Lucian Blaga" University of Sibiu**

**Erika KOLLMANN - CorneliuGroup Association**

**Ana Virginia SOCALICI - Politehnica University of Timisoara**

**Diana STOICA - Politehnica University of Timisoara**

**Adina BUDIUL-BERGHIAN - Politehnica University of Timisoara**

**Oana GĂIANU-LUCA - Politehnica University of Timisoara**

**Leonard-Nicolas MARARU - Politehnica University of Timisoara**

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

**Marius-Alexandru IȘTOC - Politehnica University of Timisoara**

**Sorin-Mihai BOBARU - Politehnica University of Timisoara**

**Lucian HENȚIU - Politehnica University of Timisoara**

**Paul Andrei Constantin MACARIE - CorneliuGroup Association**

**Miruna ARMIONI - Politehnica University of Timisoara**

**Aniela Iulia CRIȘAN - CorneliuGroup Association**

**Răzvan Dorian MĂGDUȚ - Politehnica University of Timisoara**

**Paul Sorin MUNTEAN - CorneliuGroup Association**

**Eugen BIRTOK - Politehnica University of Timisoara**

**Cristian ABRUDEAN - Politehnica University of Timisoara**



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## Guests and speakers



**Călin-Petru MARIAN**  
*Prefect of Hunedoara  
County*



**Prof. Eng. Florin  
DRĂGAN Sc.D.**  
*Rector of Politehnica  
University of Timisoara*



**Laurențiu NISTOR**  
*President of Hunedoara  
County Council*



**A/Prof. Ovidiu Gelu  
TIRIAN Sc.D.**  
*Dean of Faculty of  
Engineering Hunedoara,  
Politehnica University of  
Timisoara*



**Florin Nicolae  
OANCEA**  
*Mayor of Deva*



**Dan BOBOUTANU**  
*Mayor of Hunedoara*



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**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  
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**Daniela DRAGOMIR**

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



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Ph.D.**

*Gheorghe Asachi Technical  
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Department of Engineering  
and Management*



**Herdiana Dewi  
NURFIKA**

*Bliss Education Center,  
Indonesia*



**Dr. Luy MITHONA**

*Department of Computer  
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Norton University,  
Cambodia*



**Chef Ioana BOGDAN**

*Owner of  
Ritual by Iona Bogdan*



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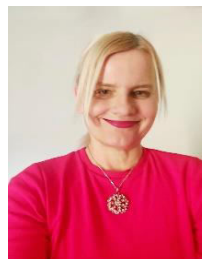
## INVENTCOR

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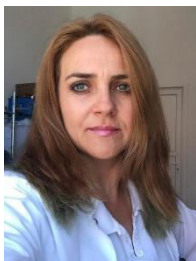
**Prof. Dr. Anuja MALIK**

*New era group of science  
and technology  
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**Prof. Nada RATKOVIĆ**  
Croatia

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*Founder of the "House of  
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Inventors Associations  
IFIA*



**Dr. Ciprian NICOLAE**

*Expert in nutrition  
and health*



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## InventCor Categories

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## A - Energy, Protection of the environment, Biotechnology

1.

**Title:** PROCESS FOR OBTAINING A FUNCTIONAL DRINK WITH HIGH BIOAVAILABILITY BASED ON THE FERMENTATION OF KOMBUCHA CULTURE

**Patent number:** CBI A/00076/27.02.2024

**Author/s:** Teodora-Otilia ALEXIU, Emanuel VAMANU

**Institution:** University of Agronomic Sciences and Veterinary Medicine of Bucharest

**Category:** A

**Description:** Probiotic beverage with high bioavailability, produced through a new fermentation method based on Kombucha culture and flavored apple juice substrate. In comparison to traditional ones exclusively using tea substrate, the resulting product has a more consumer friendly taste and aroma, along with antioxidant properties.

**State of development:** Product

**Contact:** [otialexiu@gmail.com](mailto:otialexiu@gmail.com)

**Presentation link:** <https://www.usamv.ro/index.php/en/home-eng>

2.

**Title:** INO-SEN-INNOvative Technology for achievement SENsors for greenhouse gases

**Project number:** 156350 / 2023

**Author:** Paula SFIRLOAGA

**Institution:** National Institute for Research and Development in Electrochemistry and Condensed Matter, Timisoara

**Category:** A

**Description:** The general objective of the project refers to the founding of an innovative spin-off aimed at commercializing the scientific results achieved in the basis of a patent obtained within a public research institute, namely a sensor for the purpose of detecting greenhouse gases. The project aims to create a sensitive platform based on surface acoustic wave sensors (SUAS) that uses perovskite materials of the ABO<sub>3</sub> type (where A is a rare earth - La, and B is a transition metal - Mn) for the detection of gases with greenhouse (eg: CO, CO<sub>2</sub>) from the Western Region of Romania. The newly established spin-off is of SRL type and will have CAEN code 2790 - Manufacture of other electrical equipment.

**State of development:** academic spin-off

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**Presentation link:** <https://incemc.ro/en/>



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3.

**Title:** EVALUATION OF UNIVERSITY SUSTAINABILITY THROUGH THE SUny SYSTEM

**Patent/project number:** PhD Thesis

**Author/s:** Delia ROZOVLEAN, Laura-Crina COCA, Larisa IVAȘCU

**Institution:** Politehnica University of Timisoara, Research Center for Engineering and Management

**Category:** A

**Description:** This innovative system is considered to be unique for evaluating the sustainability of universities. It is based on 150 indicators covering a wide range of issues, including policy, campus, financial resources, facilities management, curriculum, sustainability literacy, smart labs, community research, ecosystem, land use, energy, water, community services, concepts for disaster prevention and others. The established indicators fall under the three responsibilities of sustainability (economic, social, and environmental). The indicators are applied to the institutional system which is designed on 5 entities: education, research, campus (operations and experiences), international entity, and cultural entity. The purpose of the platform is to improve social responsibility and environmental performance through a whole institution approach.

This system will help with the design, planning, delivery, and control of your strategic sustainability activities.

The output of the system will be a report that measures progress towards sustainability and be recognized for sustainability leadership. The system will have direct impacts (management, brand, reputation, cultural dialogue, qualified workforce, GHG emissions caused by operations, and education) and indirect impacts (economic growth, change of societal practices, contribution to climate change, sustainability, entity development, business practices, and well-being of the population).

**State of development:** Doctoral research project

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**Presentation link:** <http://www.mpt.upt.ro/eng/research/research-center/members.html>

4.

**Title:** EFFICIENT INDOOR DYE-SENSITIZED SOLAR CELLS BASED ON TiO<sub>2</sub> HOLLOW SPHERE

**Patent/project number:** PN-III-P2-2.1-PED-2021-0624

**Author/s:** Daniel URSU, Marinela MİCLĂU, Corneliu BİRTOK-BANEASA, Melinda VAJDA

**Institution:** National Institute for Research and Development in Electrochemistry and Condensed Matter; Politehnica University of Timisoara

**Category:** A

**Description:** The upcoming successful commercialization of dye-sensitized solar cells as is conditioned by the improvement of the device performance and durability. One of promising strategies exploited so far is co-sensitization, which involved the development of the dyes with high light absorption together with high expensive photovoltage redox mediators. Here, we propose a different strategy to improve ambient light harvesting capacity and durability using the three-dimensional hollow sphere architecture of the photoanode, commercial XY1b dye, and common iodide/triiodide redox electrolyte. Under 1000 lux



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illumination, TiO<sub>2</sub> hollow spheres obtained by nearsupercritical solvothermal synthesis with tuning shell thickness provided a power conversion efficiency of 25.25%, which is a 56.6% increase comparable to dispersed nanoparticles used in classical dye-sensitized solar cells. Together with the dye loading capacity and light scattering efficiency, the TiO<sub>2</sub> hollow spheres improved the long-term stability of the cell under indoor lighting conditions. Thus, even after 720 h of operation, the DSSC continued to provide a stable short-circuit current with a moderate increase, approximately 10% from the initial value.

**State of development:** Research project

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**Presentation link:** <https://incemc.ro/en/>

5.

**Title:** ENHANCED INDOOR CONVERSION EFFICIENCY OF DYE-SENSITIZED SOLAR CELLS BY OPTIMIZING BALL-MILLING PROCESS OF TiO<sub>2</sub> PASTE

**Patent/project number:** PN 23 27 01 03

**Author/s:** Marinela MICLĂU, Melinda VAJDA, Daniel URSU

**Institution:** National Institute for Research and Development in Electrochemistry and Condensed Matter, Timișoara, Romania

**Category:** A

**Description:** 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 photovoltaics. In this paper, we propose a simple and economically feasible solution that can improve the efficiency of dyesensitized solar cells (DSSCs) under indoor light conditions by ~112%, without requiring a complex TiO<sub>2</sub> photoanode architecture or the design of new dyes. The ball milling process of the TiO<sub>2</sub> 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<sub>2</sub> surface responsible for the improvement of energy conversion efficiency.

**State of development:** Research project

**Contact:** [danielhoratiu@yahoo.com](mailto:danielhoratiu@yahoo.com)

**Presentation link:** <https://incemc.ro/en/>

6.

**Title:** DYNAMICS DETERMINING OF EXPLOSIVE ATMOSPHERES FORMATION METHOD

**Patent/project number:** CBI A 00534/31.08.2022

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

**Institution:** NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN MINE SAFETY AND PROTECTION TO EXPLOSION - INSEMEX

**Category:** A



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**Description:** Dynamics determining of explosive atmospheres formation method is based on the analysis of dispersion dynamics in the accumulation phase, with the highlighting of areas with low concentrations as well as the reaction capacity of the ventilation system in the dilution and evacuation phase, through:

- the choice of the closed enclosure where the dynamics of the formation of the explosive atmosphere are to be established;
- determining the total free volume of the closed enclosure;
- establishes the shape and layout of the measuring equipment;
- the methane concentration measurement system is located;
- the ventilation system is configured for the evacuation of the dangerous atmosphere;
- the gas flow control system is installed at the measurement site;
- the system for continuous determination of gas concentrations is connected;
- data resulting from continuous measurements are collected;
- the airing time is set;
- the gradient of dispersion and progressive dilution of the gas at the level of the closed enclosure is determined, which determines the dynamics of the formation of the explosive atmosphere.

Dynamics determining of explosive atmospheres formation method can be applied to any closed, semi-closed or open industrial premises where there is a risk of explosive atmospheres. The method for dynamics determining of explosive atmospheres formation method was designed within INCD INSEMEX Petroșani and can be used for any combustible gas with explosive properties and for any closed, semi-closed or open premises. The method for dynamics determining of explosive atmospheres formation method was tested with good results in the closed premises of the experimental laboratory, regarding the study of industrial ventilation systems.

The application of the method for dynamics determining of explosive atmospheres formation method resulted as a necessity for the efficiency of the management of networks or industrial ventilation systems, as well as for increasing the degree of safety and health at work at the level of industrial premises with the risk of formation of explosive atmospheres.

**State of development:** research project

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**Presentation link:** <https://insemex.ro/home-en/>

7.

**Title:** FAST SEALING SYSTEM FOR UNDERGROUND MINING WORKS

**Patent/project number:** BI 129843/30.12.2019

**Author/s:** Emilian Ghicioi, Constantin Lupu, Doru Cioclea, Ion Toth, Sorin Constantin Burian, Artur George Găman, Mihaela Părăian, Maria Prodan, Jeana Ionescu

**Institution:** NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN MINE SAFETY AND PROTECTION TO EXPLOSION - INSEMEX

**Category:** A

**Description:** The invention relates to the development of a system for fast sealing underground mining works in order to guide air into those underground mining works located in the proximity of areas in which occurred explosion or fire type events and which have to be insulated with priority and celerity in order to minimize the risk for the initiation of a new explosion or of new coal self-ignition processes (in the insulated area) or against the input of toxic/flammable gases released within the insulated perimeter/mining work



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*into mining works which have to dispose of uncontaminated fresh air. This system can be used temporarily to ensure worker safety during the construction of permanent containment dams. It can also be used for longer periods of time after an explosion has occurred, with proper instrumentation and a device to compensate for air/nitrogen leakage in the containment area. The invention is useful for quickly isolating parts or areas of an underground mining network where explosions or fires have occurred. It also facilitates the rapid restoration of critical mining ventilation routes, as well as providing a controllable level of safety for mine rescue teams who need to intervene to rescue victims caught in the event. This ensures that the flow of toxic and/or explosive gases from the affected area is restricted to the fresh air mining workings, while preventing fresh air from penetrating the underground mining workings that need to remain active. This helps prevent the formation of new explosive atmospheres or the continuation of the original combustion process.*

**State of development:** *prototype*

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**Presentation link:** <https://insemex.ro/home-en/>

8.

**Title:** EXPERIMENTAL SET-UP FOR THE DETERMINATION OF THE EXPLOSION LIMITS OF FLAMMABLE LIQUIDS VAPOURS

**Patent/project number:** BI 131748/28.04.2023

**Author/s:** Maria Prodan, Găman George Artur, Ghicioi Emilian, Lupu Constantin, Cioclea Doru, Păsculescu Vlad, Gabor Dan, Vlasin Nicolae, Jurca Adrian, Szollosi Mota Andrei, Nălboc Irina, Șuvar Marius

**Institution:** NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN MINE SAFETY AND PROTECTION TO EXPLOSION - INSEMEX

**Category:** A

**Description:** *The invention relates to an experimental set-up for the determination of the explosion limits of flammable liquids vapors, namely the lower explosion limit (LEL) and the upper limit of explosion (LSE). The equipments from the experimental set-up allow the recording of several processes: the explosion pressure, the vaporization of the liquid, the homogeneous air-vapor mixture and the combustion, that take place in a controlled temperature vessel at the boiling point of the liquid. The stand, according to the invention, consists of an assembly consisting of a thermostated explosion vessel, equipped with temperature and pressure transducers, an optical sight, metal electrodes for the electric ignition spark (alternatively, an incandescent wire can be mounted), external device for making of the balance of the explosion vessel to achieve internal homogenization of the air-vapor mixture, digital manometer, taps for flammable liquid sample intake, to achieve the initial pressure conditions, to evacuate reaction products, to purge the explosion vessel, as well as related devices: source for supplying electricity to the thermal envelope of the explosion vessel, source for spark generation, video camera for recording explosion phenomena, digital oscilloscope amplifier connected to PC for recording explosion pressure, vacuum/compressed air pump, determined explosion limits providing the technical-scientific basis for the development of technical-organizational explosion protection measures for industrial activities that process, store or use flammable liquids, substances that can create potentially explosive atmospheres.*



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*State of development: prototype*

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9.

**Title:** STAND FOR IGNITION TEST OF SMALL COMPONENTS THAT ARE PART OF THE EQUIPMENT INTENDED FOR USE IN EXPLOSIVE ATMOSPHERES

**Patent/project number:** BI 132397/30.01.2023

**Author/s:** Adriana Andriș, George Artur Găman, Constantin Lupu, Emilian Ghicioi, Constantin Sorin Burian, Marius Darie, Tiberiu Atila Csaszar, Iosif Lucian Moldovan, Ioan Cosmin Colda, Botar Daniela, Dănuț Nicolae Grecea, Dan Gabor, Pupăzan Gabriela

**Institution:** NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN MINE SAFETY AND PROTECTION TO EXPLOSION - INSEMEX

**Category:** A

**Description:** The invention relates to a stand for ignition test of small components that are part of the equipment intended for use in explosive atmospheres, a stand in which an explosive test mixture consisting of air and flammable gas is used, whose concentration must fall between the lower flammable limit and the upper flammable limit, a mixture that may be ignited by the hot surface of the small components subjected to the test, either during their normal operation or in fault conditions.

**State of development:** research project

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**Presentation link:** <https://insemex.ro/home-en/>

10.

**Title:** METHOD FOR DETERMINING AERODYNAMIC PARAMETERS HSE AND RSE, SPECIFIC TO THE EXPLOITED SPACE

**Patent/project number:** BI 128521/30.03.2020

**Author/s:** Cioclea Doru, Constantin Lupu, Toth Ion, Ion Gherghe, Cristian Tomescu, Corneliu Boantă, Florin Rădoi

**Institution:** NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN MINE SAFETY AND PROTECTION TO EXPLOSION - INSEMEX

**Category:** A

**Description:** The invention relates to a method for determining aerodynamic parameters Hse and Rse, specific to the exploited space by using the banded flows, namely the depression exerted on the exploited space. The method for determining aerodynamic parameters Hse and Rse, specific to the exploited space, proposed by the invention is based on the use of lost air flow through the exploited space, namely the determination of the pressure loss in the active works level related to a hewing. The technical problem that the invention solves consists in determining the aerodynamic parameters Hse and Rse, specific to the exploited space. The method of determining the aerodynamic parameters by using the air flow lost through the exploited space, respectively the determination of the pressure losses at the level of the active works related to an mining front, offers the opportunity to determine in real time the aerodynamic parameters Hse and Rse, specific to the exploited space. By applying the method of determining the aerodynamic parameters



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*Hse and Rse, specific to the exploited space, the possibility of choosing and sizing the measures to prevent and combat spontaneous combustion phenomena is ensured. The present invention is based on the use of the air flow lost through the exploited space, respectively of the pressure loss at the level of the active works related to an abattoir, through the direct or indirect measurement of these parameters. With the help of the air flow lost through the exploited space, respectively the depression exerted on it, the specific resistance of the exploited space is determined. The method of determining the aerodynamic parameters Hse and Rse, specific to the exploited space, proposed by the invention lends itself to any underground mining of useful mineral substances.*

**State of development:** research project

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11.

**Title:** METHOD FOR PREVENTING SPONTANEOUS COMBUSTION IN THE EXPLOITATION OF COAL AREAS WITH UNDERMINED LAYER

**Patent/project number:** BI 127905/30.07.2020

**Author/s:** Ion Toth, Constantin Lupu, Doru Cioclea, Cristian Tomescu, Emeric Chiuzan

**Institution:** NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN MINE SAFETY AND PROTECTION TO EXPLOSION - INSEMEX

**Category:** A

**Description:** *The invention relates to a method for preventing spontaneous combustion in the exploitation of coal areas with undermined layer through inerting. The technical problem solved by the invention consists of preventing spontaneous combustion by creating in the area of coal exploitation with undermined benches an atmosphere that inhibits coal auto-oxidation, low in oxygen and with a high nitrogen content, exceeding the value of 79% nitrogen, characteristic of atmospheric air, in order to achieve efficient inerting that eliminates the danger of spontaneous combustion with optimal nitrogen consumption. The method solves this problem by inerting the exploited space with nitrogen sent through pipes connected to the nitrogen main pipeline and introduced in a controlled manner into the area of the goaf through deep holes, the inerting holes of the goaf space being made in the area of the field entries, the introduction of nitrogen being initiated when the free end of the inerting hole(s) is at least 30 m away from the working face line. The use of nitrogen in the inerting process requires its transport to the inerting installation, located on the surface, to the place of use underground, through a network of permanent pipes specially designed for this gas.*

**State of development:** *The method for preventing spontaneous combustion in the exploitation of coal areas with undermined layer through inerting is successfully applied in the coal mines of the Jiu Valley.*

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**Presentation link:** <https://insemex.ro/home-en/>



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12.

**Title:** STAND FOR CONDITIONING ELECTRICAL / NON-ELECTRICAL DETONATORS TO HYDROSTATIC PRESSURE AND TEMPERATURE

**Patent/project number:** BI 131064/30.09.2020

**Author/s:** Edward Jan Gheorghiosu, Emilian Ghicioi, Dragoș Vasilescu, Attila Kovacs, Ilici Ștrefan, Ilie – Ciprian Jitea

**Institution:** NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN MINE SAFETY AND PROTECTION TO EXPLOSION - INSEMEX

**Category:** A

**Description:** The invention relates to the realization of a stand where the means of initiating explosives for civil use, namely electric / nonelectric detonators be subjected for 48 hours, water pressure and temperature at preset values, according to the regulations. The test conditions are established depending on the temperature range in which electric / non-electric detonators can be used, as follows:

- the detonators that are used in the blast holes, used up to max. 400C, it is conditioned by maintaining a temperature of  $20 \pm 20C$  and a pressure of  $0.3 \pm 0.01MPa$ ;
- the detonators used in blast holes, used at temperatures  $>400C$ , conditioning starts from the upper limit of the temperature range declared by the manufacturer and the pressure of  $0.3 \pm 0.01MPa$ .

The manifestation of hydrostatic pressure is combined with the thermal expansion / contraction of the materials from which they are made or which ensure the tightness of the detonators clips. Keeping the electric / non-electric detonators for 48 hours, under the mentioned conditions, can lead to the penetration of water inside the detonators up to the explosive substances and electrical devices that enter their structure, thus affecting the operating parameters.

**State of development:** prototype

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13.

**Title:** METHOD FOR DETERMINATION OF AIR FLOW THROUGH THE GOAF

**Patent/project number:** BI 128645/29.04.2021

**Author/s:** Cioclea Doru, Constantin Lupu, Toth Ion, Ion Gherghe, Dorel Tamaș, Corneliu Boantă, Florin Rădoi

**Institution:** NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN MINE SAFETY AND PROTECTION TO EXPLOSION - INSEMEX

**Category:** A

**Description:** The method for quantitative determination of the lost air flow, proposed through the invention, is based on the velocity measurement of air exiting the goaf through the insulation construction at the level of an active mining work. In order to determine air velocity, there is required the development of a diaphragm made of impermeable material, located in front of the insulation construction in a convenient area where the profile of the mining work is regular and allows sealing on the outline. The diaphragm is fitted with a circular or rectangular opening in the middle and which is properly sized. The technical problem that the invention solves consists in the quantitative determination of air losses through the goaf.



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*The method of determining air losses by using a diaphragm offers the opportunity to determine directly, in real time, the air flows lost through the goaf. The present invention is based on the use of a diaphragm for the quantitative determination of the air flow through the goaf, by directly measuring the speed of the air current coming from a mining work closed with an isolation dam, and is discharged on one or more mining works. With the help of the speed of air circulation through the opening made in the diaphragm, the air flow rate lost through the goaf and entering the polluted air current penetrating the insulation construction is directly calculated. Using the air circulation velocity, there is precisely determined the air flow lost through the goaf, in order to properly choose and size the methods for preventing spontaneous combustions in coal mines.*

**State of development:** research project

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14.

**Title:** METHOD FOR QUANTITATIVE DETERMINATION OF AIR FLOW LOSSES THROUGH GOAFS

**Patent/project number:** BI 128646/29.04.2021

**Author/s:** Cioclea Doru, Constantin Lupu, Toth Ion, Ion Gherghe, Cristian Tomescu, Emeric Chiuzan

**Institution:** NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN MINE SAFETY AND PROTECTION TO EXPLOSION - INSEMEX

**Category:** A

**Description:** *The invention relates to a method for quantitative determination of air flow lost through goafs, by using a diaphragm. The technical issue which is solved by the invention consists in the quantitative determination of air losses through the goaf. The method for determining air losses by using a diaphragm provides the opportunity of real-time and direct determination of air flows which are lost through the goaf. The method of quantitative determination of the flow of air lost through the goaf by using the absolute flow of carbon oxide is based on the use of the absolute flow of carbon monoxide for the quantitative determination of the flow of air through the goaf, by directly measuring the concentration of carbon monoxide in the air stream coming from one or more mining works with a free or closed section and is discharged on one or more mining works. With the help of the carbon monoxide concentration, the absolute flow of carbon monoxide and then the air flow lost through the goaf are determined. By applying the method of quantitative determination of the flow of air lost through the goaf, the possibility of choosing and sizing the measures to prevent and combat spontaneous combustion phenomena is ensured. The method of quantitative determination of the air flow lost through the goaf, proposed by the invention, lends itself to any underground coal mining.*

**State of development:** research project

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15.

**Title:** A METHOD FOR DETERMINING THE DISPERSION OF THE GAS IN THE WORKINGS AFTER AN EXPLOSION PHENOMENON

**Patent/project number:** BI 130264/2021

**Author/s:** Doru Cioclea, George Artur Găman, Constantin Lupu, Emilian Ghicioi, Ion Gherghe, Corneliu Boantă, Emeric Chiuzan, Dorel Tamas

**Institution:** NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN MINE SAFETY AND PROTECTION TO EXPLOSION - INSEMEX

**Category:** A

**Description:** The invention relates to a method for determining the dispersion of the gas in the workings after an explosion phenomenon. The exploitation of underground coal systems are used for mining vertical, inclined and horizontal part of the opening, preparation and exploitation of deposits, which make up the network of workings of a mine and showing a high degree of complexity and can reach lengths cumulative tens of kilometers. For this, first, the ventilation network is solved and the functional parameters are established, under normal working conditions, the method of determining the variation of gas concentrations after an explosion is established, the average values of the explosive, toxic and asphyxiating concentrations are determined, in during the normal working period and during the rest period, the dispersion of explosive, toxic and asphyxiating gases is determined under normal working conditions, the vulnerable areas at the level of the ventilation network are determined in the event of explosion-type phenomena. The pressure loss manifested radially on the alignment of the mining works in relation to the epicenter is established and thus the area affected by the ventilation network is determined by comparing the explosion pressure at the level of a branch with the minimum pressure necessary to destroy the ventilation constructions. The functional parameters, the developed depression and the circulated flow rate at the level of the main aeration station after the occurrence of an explosion are determined. The ventilation constructions are removed from the vent network modeled and solved under normal working conditions, and the functional parameters of the post-event active fan are entered. The ventilation network is solved in the new conditions after the event, the variation of gas concentrations after the event is determined. Finally, the dispersion of explosive, toxic and asphyxiating gases at the level of the ventilation network after an explosion is determined.

**State of development:** research project

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16.

**Title:** APRIORI SOLVING METHOD FOR A VENTILATION NETWORK AFFECTED BY AN EXPLOSION PHENOMENON

**Patent/project number:** BI 130265/28.05.2021

**Author/s:** Doru Cioclea, George Artur Găman, Constantin Lupu, Emilian Ghicioi, Ion Gherghe, Florin Rădoi, Cristian Tomescu, Vlad Păsculecu, Marius Morar

**Institution:** NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN MINE SAFETY AND PROTECTION TO EXPLOSION - INSEMEX



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**Category:** A

**Description:** *The apriori method for solving a ventilation network affected by an explosion phenomenon, proposed through invention, is based on determining the air flow distribution on the ventilation network, after the occurrence an explosion.*

**State of development:** research project

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**Presentation link:** <https://insemex.ro/home-en/>

17.

**Title:** SOURCE AND METHOD FOR TESTING SAFETY BARRIER COMPONENTS IN LOW-CURRENT INSTALLATIONS IN POTENTIALLY EXPLOSIVE ATMOSPHERES.

**Patent/project number:** BI 130444/30.06.2022

**Author/s:** *Darie Marius, Sorin Constantin Burian, Jeana Ionescu, Tiberiu Csaszar, Lucian Moldovan, Ioan Cosmin Colda, Adriana Andriș, Daniela Botar*

**Institution:** NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN MINE SAFETY AND PROTECTION TO EXPLOSION - INSEMEX

**Category:** A

**Description:** *The invention relates to the development of a programmable, rectangular, short-pulse current source for testing safety barrier components in low-current installations in premises at risk of explosive atmospheres and to the method of calculating its operating parameters. The technical problem which the invention solves consists in verifying the suitability of components for use in safety barriers in low-current installations in potentially explosive atmospheres. The solution to this problem is a programmable rectangular short pulse current source and a method for testing the components of safety barriers in low current installations in hazardous areas.*

**State of development:** research project

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18.

**Title:** METHOD OF CORROSION PROTECTION OF STEEL IN WATER USING A GREEN INHIBITOR

**Patent number:** MD 1726 Y/2023.11.30

**Author/s:** *Vasile LOZAN, Vladimir PARSHUTIN, Alexandr COVALI, Tudor JOVMIR*

**Institution:** *Moldova State University, Institute of Chemistry & Institute of Applied Physics*

**Category:** A

**Description:** *The method provides the introduction of two synergistically acted inhibitors into the aqueous medium that contacts the steel surfaces (e.g. of thermal power distribution pipes), namely succinic acid dihydrazide at concentrations of 0.10...0.75 g/L and an aqueous extract, obtained from dry walnut leaves, at concentrations of 10...30 mL/L. Inhibitors can be introduced into the aqueous medium in admixture or sequentially. The aqueous extract of walnut leaves is obtained by heating the raw material in water on a*



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water bath, at a temperature of 70...100 °C for 1...3 hours at a solid mass/water ratio of (2... 4):10, followed by separation of the resulting solution.

**State of development:** At the laboratory scale.

**ACKNOWLEDGMENTS:** This research was supported by the research subprogram: # 010602.

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**Presentation link:** <http://www.db.agepi.md/Inventions/details/s%202022%200093>

19.

**Title:** INHIBITORS OF THE PROLIFERATION OF FUNGI OF THE SPECIES *Cryptococcus Neoformans*

**Patent number:** MD 4712 C1/2020.09.30, MD 4742 C1/2021.02.28

**Author/s:** Viorina GORINCHOY, Vasile LOZAN, Olga BURDUNIUC, Greta BALAN, Victor TSAPCOV, Aurelian GULEA

**Institution:** Moldova State University

**Category:** A

**Description:** The described compounds manifests antifungal properties against *Cryptococcus neoformans* CECT 1043. These agents exceed 200-160 times the analogous characteristics of Fluconazole that is used in medical practice, and 1.5-1.2 times analogous characteristics of proximal analog. They can be used in medicine and veterinary medicine for the prevention and treatment of mycoses.

**ADVANTAGES:** The described compounds manifest antifungal properties against *Cryptococcus neoformans* CECT 1043. These agents exceed 200-160 times the analogous characteristics of Fluconazole that is used in medical practice and 1.5-1.2 times the analogous characteristics of closest prior art. They can be used in medicine and veterinary medicine for the prevention and treatment of mycoses.

**State of development:** At the laboratory scale.

**Contact:** [oviorina@gmail.com](mailto:oviorina@gmail.com)

**Presentation link:** <https://usm.md/?lang=en>

20.

**Title:** ADVANCED PHYSICAL METHODS AND UAV-BASED TECHNOLOGIES FOR COMPLEX MONITORING, ASSESSMENT AND MODELING

**Project number:** # 011210

**Author/s:** Veaceslav SPRINCEAN, Marianna SAVVA, Marian JALENCU, Mihail CARAMAN, Alexandr A. BARSUK, Arcadi CHIRITA, Florentin PALADI

**Institution:** MOLDOVA STATE UNIVERSITY, Institute of Applied Physics, Scientific Research Laboratory Environmental Physics and Modeling Complex Systems

**Category:** A

**Description:** UAV-based monitoring: Optical and Atomic Force Microscopy (AFM):

Systemic approach inspired by the interdisciplinary applications, computational modeling of environmental factors, UAV-based 3D mapping through Pix4Dmapper photogram-metry allow formulation of scientifically based recommendations regarding the adjustment of technological processes with the aim of reducing the effects of atmospheric pollution, soil surface degradation and the instability of urban and



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natural ecosystems, e.g., solid pollutant particles are collected from diesel exhaust and examined directly by means of optical microscopy and AFM: MD patent no. 1706 on 2023.07.31.

**State of development:** Actual system is proven in operational environment.

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**Presentation link:** <https://usm.md/?lang=en>

21.

**Title:** DEVICE FOR DECONTAMINATION LIQUID

**Patent number:** MD s 2023 0031 / 02.08.2023

**Author/s:** Ion MUNTEANU and Nicolae ENAKI

**Institution:** Moldova State University, Institute of Applied Physics, Quantum Optics and Kinetic Processes Lab

**Category:** A

**Description:** We pay attention to equipment for liquid decontamination. The main idea of the proposed device is related to the rotation of contaminated liquids and gases under the action of UV-C through the screw channels, prepared from the quartz rod in the torsion configuration, where the contaminated liquids are rotated along the flow direction. The particularity of the proposed device is the introduction of a quartz spiral inside the decontaminating tube, which increases the efficiency of the disinfection rate of the infected liquid.

**ADVANTAGES:** The advantages of this device is the manipulation of pathogens with the help of the quartz coil inserted in the decontamination tube, therefore, the pathogens are directed to the evanescence zones with increased radiation intensity that appear around the coil, and thus the pathogens are subjected to higher doses of radiation with inactivation them.

**State of development:** At the laboratory level

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**Presentation link:** <https://usm.md/?lang=en>

**ACKNOWLEDGMENTS:** This research was supported by the research project: # 011206; NATO G 4890, No. 15.817.02.07F, No. 18.80012.50.33A and STCU 6140

**Presentation link:** <https://usm.md/?lang=en>

22.

**Title:** NEW POSSIBILITIES OF DISINFECTION AND PROTECTION SURFACE IMPLANT BY ULTRAVIOLET C RADIATION USING PERIODICAL OPTICAL STRUCTURE

**Project number:** # 011206

**Author/s:** Ion MUNTEANU, Marina ȚURCAN, Elena STARODUB, Sergiu BAZGAN, Tatiana PÂSLARI, Podoleanu DIANA, I. COSTIȘIN and Nicolae ENAKI

**Institution:** Quantum Optics and Kinetic Processes Lab, Institute of Applied Physics, Moldova State University

**Category:** A

**Description:** The development of new implementation methods in use of implant treatments, open up new possibilities for decontamination and adhesion of the implant surface to the organic tissue. New aspects of



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*the interaction of ultraviolet C radiation with implant surfaces for disinfection and protection are proposed. Using metamaterials such as periodical optical structures (photonic crystals and photonic crystal fibers), we have the possibility to channel UV-C radiation in the affected area of the implant surfaces, to treat the infection on the surface formed at the interface between the implant and the cellular tissue in the process of poor adhesion.*

**State of development:** *At the laboratory level*

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**ACKNOWLEDGMENTS:** *This research was supported by the research project: # 011206; NATO G 4890; No. 15.817.02.07F; No. 18.80012.50.33A and STCU 6140.*

**Presentation link:** <https://usm.md/?lang=en>

23.

**Title:** APPLICATION OF THE CONCEPT OF IHYAU MAWAT AS A WONOSANTRI ECONOMIC JIHAD IN THE CONSERVATION OF DEGRADED FOREST LAND

**Patent/project number:** 11903205

**Author/s:** Aretha Puspa Indriani, Jasmine Ahnafiah Tunggadewi, Efendi Bagus Rahman Adhipramana, Nafeeza Putri Niza

**Institution:** Madrasah Tsanawiyah Negeri 3 Malang - Indonesia

**Category:** A

**Description:** *This concept, namely the terms of ihyaul mawat, consists of land management, objects and land management processes by maximizing the benefits of forest land; al-mawat criteria, namely abandoned land and not harim land; mandatory with permission from the government; and consequently get land use rights, not as absolute owners. The ihyaul mawat concepts applied by Wonosantri in the conservation of degraded forest land on the slopes of Mount Arjuno are the ihyaul mawat concept as Munif's 2018 concept which is adapted to the social forestry program. Economic jihad through ihyaul mawat has vertical and horizontal economic implications. Ihyaul mawat carried out by Wonosantri in conserving degraded forest land on the slopes of Mount Arjuno have had good economic implications for the Wonosantri themselves, coffee farmers, and even for the surrounding community.*

**State of development:** Concept

**Contact:** +62 8177091 4129

**Presentation link:**

[https://drive.google.com/drive/folders/14IYnUNPFoGqbgnddiSJrisBwORGb\\_Imm](https://drive.google.com/drive/folders/14IYnUNPFoGqbgnddiSJrisBwORGb_Imm)

24.

**Title:** ECO-DECO: GLITTERING DECORATION SAND FROM WASTE GREEN MUSSEL SHELLS NANOPARTICLES

**Patent/project number:** ECO-DECO project

**Author/s:** Jeerasak Jitrotjanarak, Soamshine Boonyananta, Churiparn Lertvachirapaiboon, Namphueng Taweepornpathomgul, Robert Armstrong, Parinton Jangtawee, Suchart Imsamraan

**Institution:** Chulalongkorn University, Bangkok, Thailand



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## Category: A

**Description:** ECO-Deco is a high-value product which was made of mussel shell waste, by extracting calcium carbonate and processing it with other materials such as titanium dioxide to increase air purification, adding color or scent to create a feeling of relaxation. The processed calcium carbonate is used to coat products to decorate the surface. It involves taking mussel shells through a process of extracting unwanted organic substances through a chemical process. Calcium carbonate crystals are left as the main ingredient, ground, and graded to the desired size. It is then mixed with various substances to coat the product, such as titanium dioxide, color, odor, etc., causing the product to have properties that change according to the context of use.

**State of development:** Product

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**Presentation link:** <https://www.chula.ac.th/en/>

25.

**Title:** FoldMAX

**Patent/project number:** Student Project

**Author/s:** Zgardan Maxim

**Institution:** „Petru Rareș” Theoretical High School, Soroca, Republic of Moldova

**Category:** A

**Description:** We demonstrated the possibility of the act of paper recycling in domestic conditions, which represents a solution to the global ecological problem. At the same time, we built a modern and robotic device, which reuses recycled paper in the field of bureaucracy, the final product representing universal use envelopes. The problem of paper waste is not a new problem for us today. The ecological problem of paper began to be seriously recognized from the 1960s and 1970s, with the growing awareness of the negative impact of deforestation and pollution on the environment. In this context, my teacher and I thought to find a solution to this problem, and we came up with the paper recycling method, and I thought why not make a machine that reuses this paper. Textile waste is fragmented into small pieces and soaked in water for two hours. After this, they're mixed in a laboratory mixer with a water solution for 1-2 minutes. The resulting consistency is transferred to a larger container and mixed again. Square cloth pieces are soaked, extracted, and dried, resulting in beautiful creations.

**State of development:** Prototype

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**Presentation link:**

[https://drive.google.com/file/d/1LIPKGfGbu92u\\_6PtoH-b0mfcB4J4CoCR/view?t=1](https://drive.google.com/file/d/1LIPKGfGbu92u_6PtoH-b0mfcB4J4CoCR/view?t=1)

26.

**Title:** USE OF ECOLOGICAL/RENEWABLE ENERGY SOURCES: THE STIRLING ENGINE

**Patent/project number:** Student project

**Author/s:** Deșan Dumitru

**Institution:** High School "Constantin Stere", Soroca, Republic of Moldova



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## Category: A

**Description:** Our project aims to enhance the efficiency of Stirling engines by replacing air cooling with water cooling. This transition is expected to significantly boost the engine's performance and overall efficiency. By implementing water cooling, we anticipate better heat dissipation from the engine, allowing it to operate at optimal temperatures and minimize energy loss due to overheating. One of the key advantages of Stirling engines is their versatility in utilizing various heat sources. Unlike traditional internal combustion engines, Stirling engines can efficiently harness heat from a wide range of sources, including biomass and solar energy. This flexibility makes them an attractive option for sustainable energy solutions, especially in areas where access to conventional fuels is limited or environmentally undesirable. By integrating water cooling into Stirling engines, we aim to further enhance their suitability for diverse applications, including power generation, heating, and refrigeration. The improved efficiency resulting from water cooling not only increases the engine's power output but also reduces emissions and operating costs. In conclusion, our project seeks to optimize Stirling engine performance through the adoption of water cooling technology. By capitalizing on the engine's ability to utilize a variety of heat sources, we aim to promote sustainable energy solutions and contribute to a greener future.

State of development: research project

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Presentation link:

[https://docs.google.com/presentation/d/1DU2Hf0h5fmzfUFudNJHMwFWjIvO1920xapc\\_oNoO85Q/edit?usp=sharing](https://docs.google.com/presentation/d/1DU2Hf0h5fmzfUFudNJHMwFWjIvO1920xapc_oNoO85Q/edit?usp=sharing)

27.

**Title:** THE BIODEGRADABLE PLASTIC

**Patent/project number:** Student project

**Author/s:** Starîş Mădălina

**Institution:** „Petru Rareş” Theoretical High School, Republic of Moldova

**Category:** A

**Description:** We started from the idea that one of the major issues threatening the integrity of our environment is plastic pollution, with far-reaching repercussions on terrestrial and aquatic ecosystems, human health and global environmental stability. So we decided to create biodegradable plastic. This was created from 2 teaspoons of corn and potato starch, one teaspoon of vinegar and glycerin and 2-3 teaspoons of water. I continuously stirred the obtained mixture in the spirit flame until it thickened and changed its color a little. I leveled the mass of plastic obtained and I waited for it to dry 3 days.

**State of development:** We decided to make toys for kids from biodegradable plastic, because they do not pose any risk to their health, since the ingredients are ecological and do not present any bugs, at the same time, the costs of raw materials are low.

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Presentation link: <https://youtu.be/nwe8iqIJSN0?si=gE1dEY4N-Yt4dtfU>

28.



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**Title:** DETERMINING GROUNDWATER TRANSMISSIVITY THROUGH THE ANALYSES OF PHYSICAL PROPERTIES AND CHEMICAL COMPOSITION FROM SVALBARD FJORD SEDIMENTS

**Patent/project number:** Student Project

**Author/s:** Zaga Trišović

**Institution:** The Academy of Technical Applied Studies Belgrade, Katarine Ambrozic 3, Serbia 11000, Belgrade

**Category:** A

**Description:** 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.

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.

**State of development:** Research project

**ACKNOWLEDGMENTS:** This work is based upon work from COST Action CA21112 - Offshore freshened groundwater: An unconventional water resource in coastal regions? (OFF-SOURCE), supported by COST (European Cooperation in Science and Technology).

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**Presentation link:** <https://atssb.edu.rs/en/>

29.

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

**Patent/project number:** Research project

**Author/s:** Valentin-Paul TUDORACHE

**Institution:** University PETROLEUM-GAS of Ploiesti, Romania

**Category:** A



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**Description:** In a new era where organizations in the oil and natural gas industry are increasingly focusing - in their business - on reducing expenses and increasing productivity, digital transformation is one of the key solutions in terms of streamlining technological processes in this sector very important for humanity. Digitization not only improves efficiency, but plays a key role in the safety and security of exploration, exploitation and development in this field and beyond - it helps both to address other fundamental operational areas and to achieve the goal of reducing carbon dioxide emissions.

The authors, under the auspices of the Romanian Academy of Scientists (AOȘR,) the General Association of Romanian Engineers (AGIR) and the Romanian Academy of Technical Sciences (ASTR), through this scientific paper highlight the fact that oil and gas organizations must understand that digital transformation is an important part of where this industry is headed. Organizations also have to deal with this big change, first of all they have to effectively manage the organizational change that digital transformation inevitably brings.

**State of development:** Scientific Paper

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**Presentation link:** <https://aos.ro/wp-content/anale/TVol15Nr2Art.8.pdf>

30.

**Title:** POWER PLANT SAND

**Patent/project number:** Student Research Project

**Author/s:** Cloțan Antonio; **Coordinator:** Professor Aurel Mihail ȚÎȚU

**Institution:** Lucian Blaga University of Sibiu, Faculty of Engineering

**Category:** A

**Description:** This type of Power plant sand is intended for use in dry areas of the Earth. The water in a hydropower plant is replaced with sand, the operating principle remaining the same. From an ecological point of view, it is very sustainable, the same amount of sand can be reintroduced into the circuit a large number of times, almost infinitely, because sand does not evaporate like water.

**ADVANTAGES:**

- Sand is very cheap and easily accessible.
- The operating technology is not complicated.
- Is a source of renewable energy.
- After repeated use, it does not present significant physical-chemical changes.

**State of development:** Scientific Student Project

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**Presentation link:** <https://inginerie.ulbsibiu.ro/>

31.



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**Title:** AUTONOMOUS MOBILE PLATFORM WITH UV RAY DISINFECTION SYSTEM, A MODULAR AND AFFORDABLE SOLUTION FOR VIRUS ELIMINATION

**Patent/project number:** Ph.D. Student Research Project

**Author/s:** Aurel Mihail ȚÎȚU, Daniel BÂLC, Emanuel BÂLC

**Institution:** Lucian Blaga University of Sibiu, Faculty of Engineering

**Category:** A

**Description:** In the post-COVID era, there has been a growing emphasis on the significance of disinfecting objects individuals come into contact with. Mobile disinfection robots have emerged as a definitive solution to meet this demand. However, inherent issues in their current design may pose challenges leading to: continuous virus contamination (there is a risk that mobile UV robots may fail to reach all areas or fully eliminate pathogens, which could allow viruses to survive and subsequently spread infections); increase in the number of disease cases (incomplete disinfection may lead to the persistence of viruses in the environment, thereby increasing the likelihood of disease transmission and the emergence of a greater number of infection cases); illness among medical staff (if the environment in which medical staff operate is not fully disinfected, they may be exposed to the risk of infection with various pathogens, jeopardizing their health and ability to provide adequate medical care); the loss of human lives (inefficiency in disinfection can contribute to the spread of infectious diseases, leading to a higher number of deaths among the population, underscoring the need to address and resolve these issues). This scientific endeavor aims to outline the primary challenges associated with conventional mobile disinfection robots and introduce a solution through the implementation of an Autonomous Mobile Platform equipped with a UV Ray Disinfection System. A critical issue identified in conventional mobile disinfection robots pertains to their inability to ensure maximum efficiency in preventing the spread of viruses. This limitation is often linked to their static structure and the incapacity to efficiently cover the entire space. Furthermore, the risk of continuous contamination is reduced with the introduction of an Autonomous Mobile Platform integrated with a UV Ray Disinfection System. This innovative approach effectively addresses existing limitations in conventional robots. The autonomous mobile platform enables comprehensive spatial coverage, eliminating the risk of blind spots and ensuring uniform disinfection. The UV Ray Disinfection System adds an additional layer of efficacy by molecularly destroying viruses and bacteria, thereby reducing the risk of contamination. In summary, this research introduces a technologically advanced and innovative solution to the challenges encountered with conventional mobile disinfection robots. The integration of an Autonomous Mobile Platform with a UV Ray Disinfection System opens opportunities for more efficient and secure disinfection of spaces, contributing to the mitigation of the risk of virus spread in the post-COVID period.

**State of development:** Prototype, Ph.D. Student Research Project

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**Presentation link:** <https://inginerie.ulbsibiu.ro/>



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**Title:** INTELLIGENT WASTE SORTING SYSTEM

**Patent/project number:** Scientific Student Project

**Author/s:** Costea Marius-Ionuț, Doară Mihai Alexandru, Popa Ioan Alin; **Coordinator:** Professor Aurel Mihail ȚÎȚU

**Institution:** Lucian Blaga University of Sibiu, Faculty of Engineering

**Category:** A

**Description:** Our project is about an intelligent waste sorting system. Through this system, we aim to assist people who have difficulties in disposing and correctly sorting waste. This system is equipped with cameras and AI algorithms to automatically identify the types of waste being thrown into a container. The algorithm can be trained to recognize various materials such as plastic, metal, paper, glass, biodegradable waste, and many more. The system is equipped with two small-sized cameras and four waste compartments for various materials. This system can be implemented in homes, restaurants, cafes, and even on the streets.

**State of development:** Scientific Student Project

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**Presentation link:** <https://inginerie.ulbsibiu.ro/>

33.

**Title:** BLACK SOLAR - INNOVATIVE GREEN ENERGY SOLUTIONS FOR A HEALTHIER FUTURE

**Patent/project number:** Green Energy Project

**Author/s:** Razvan MARCUS, Nicoleta MARCUS

**Institution:** S.C. Bio Green Power Solutions S.R.L.

**Category:** A

**Description:** 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.

Our vision is to be the global leader in renewable energy solutions, revolutionizing the industry by leveraging the latest technological advancements to create a sustainable future. We envision a world where every home, business, and community has access to clean, efficient, and sustainable energy, made possible through our innovative approach and dedication to advancing renewable energy technologies. Black Solar



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*aims to set new standards in the energy sector, using drone technology, solar systems and other cutting-edge tools to deliver unparalleled service and performance, making renewable energy more accessible, efficient, and impactful than ever before. Services*

*Customized Photovoltaic Solar Systems: Tailored solar solutions that fit the unique requirements of each customer, from residential to large-scale commercial installations.*

*Electric Vehicle Charging Stations: Advanced charging solutions for electric vehicles, enhancing the transition to green mobility with convenient, fast-charging infrastructure.*

*Heat Pump Systems: Efficient heating and cooling solutions that leverage renewable energy, reducing energy costs and environmental impact.*

*Smart Lighting Systems: Innovative lighting solutions with remote management capabilities, optimizing energy use and enhancing safety in urban and residential areas.*

*Surveillance Systems: State-of-the-art security systems that offer peace of mind through high-quality surveillance technology.*

*Electrical Installations and Automation: Comprehensive electrical services, from installation to automation, ensuring modern, energy-efficient, and smart homes and businesses.*

*Energy Audits and Optimization: Professional assessments to identify energy-saving opportunities, improving efficiency and reducing expenses.*

*Solution and Feasibility Studies: In-depth analysis and planning services for renewable energy projects, ensuring viability and sustainability.*

*Technical Design and Documentation: Expert design and drafting services for photovoltaic systems, electric vehicle charging stations, and more, backed by detailed technical documentation for seamless implementation.*

*Drone Thermal Scanning for Energy Audits: Utilizing advanced drone technology, we offer thermal imaging scans to identify heat loss and inefficiencies in buildings and infrastructure. This service enhances our energy audits by providing precise data on thermal performance, helping clients to pinpoint areas for improvement and achieve greater energy savings.*

*Drone 3D Scanning for Technical Design: Our cutting-edge drone 3D scanning technology revolutionizes the way we approach technical design. By creating detailed 3D models of project sites and structures, we can enhance the accuracy of our designs, reduce planning time, and address potential issues before they arise. This technology supports our commitment to delivering efficient, innovative, and sustainable energy solutions tailored to the specific needs of each project.*

**State of development: Products**

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**Presentation link:** <https://www.blacksolar.ro/>  
<https://www.facebook.com/black.solar.solutions/about>

34.

**Title: ENVIRONMENTAL COST ANALYSIS IN THE ELECTRICAL LIGHTING EQUIPMENT INDUSTRY**



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**Patent/project number:**

**Authors:** Gabor Antonio, Petruț Adriana, Basarabă Andra, Szekely Ioana; **Coordinators:** Ștefan Mihaela, Fărcean Ioana

**Institution:** Politehnica University of Timisoara, Engineering Faculty of Hunedoara

**Category:** A

**Description:** The environment is an essential element of human existence, being the result of the interaction between material elements: soil, air, water, climate, biosphere, with the elements resulting from human activity. All this influences the living conditions and future development prospects of society, so environmental protection is a priority both in Romania and globally Environmental Fund, and the duties of the Environmental Fund Administration with regard to the declaration and settlement of the amounts due for waste resulting from the production process in the production of electrical lighting equipment and reported to the Environmental Fund. Given the fact that we are talking about an economic-financial body aimed at solving and carrying out processes for the protection of the environment", for the subject we wish to address in this paper, we find of interest the field of production of electrical and electronic equipment (EEE), because these products are indispensable for everyday activities. As users of these types of equipment, not all of us are aware of the environmental obligations, but as manufacturers or importers of electrical and electronic equipment things are different - there are a number of legal obligations and European directives that must be respected by all legal entities producing or importing electrical and electronic equipment. The aim is to highlight the obligation of legal entities producing and importing electrical and electronic equipment (EEE) to report to the Environmental Fund and the impact of environmental costs on this field of activity.

**State of development:** Student Project

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**Presentation link:** <https://www.fih.upt.ro/v6/>

35.

**Title:** ANALYSIS OF ENVIRONMENTAL COSTS IN THE LIGHTING EQUIPMENT INDUSTRY WITH THE HELP OF ENVIRONMENTAL MANAGEMENT ACCOUNTING

**Patent/project number:**

**Author/s:** Ștefan Mihaela, Fărcean Ioana

**Institution:** Politehnica University of Timisoara, Faculty of Engineering Hunedoara

**Category:** A

**Description:** The implementation of environmental management accounting can give us an insight into the efficiency of activity in different fields of activity. As the main objective for this study, we intend to analyze both the evolution of EMA based on results analyzed by specialists, but also the benefits brought by the implementation of EMA within economic entities with production activity in the field of lighting fixtures. Thus, we try to prove the importance of the benefits that EMA / statistical model offers us on the example of the impact of environmental costs both for the studied economic entity and in order to extend this study to other economic entities with other fields of activity, this being the subject of future research.



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*The need to prevent pollution by economic entities is the result of two main factors: 1 - the market of industrial products follows the rapid pace of development of technologies, shaping and adapting to the requirements of the moment; 2 - in order to achieve managerial performance, economic entities must establish an efficient reporting system to internal and external environmental regulations.*

*If companies realized that treating and disposing of waste is less expensive than producing waste, then those companies would commit to reducing costs by minimizing waste. This would motivate companies to strive for continuous improvement of their efficiency and profit levels.*

**State of development:** Research project

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**Presentation link:** <https://www.fih.upt.ro/v6/>

36.

**Title:** RECYCLING OF LITHIUM ION BATTERIES

**Patent/project number:** Research project

**Author/s:** Iulian NISTOR; **Coordinators:** Ana SOCALICI, Corneliu BIRTOK-BANEASA

**Institution:** Politehnica University of Timisoara, Faculty of Engineering Hunedoara

**Category:** A

**Description:** A Li-ion battery is a group of interconnected cells capable of charging and discharging. Common end uses for Li-ion batteries include consumer electronics, electric vehicles, and energy storage. A Li-ion battery cell is made up of several components: a negative electrode or anode (usually made of graphite with a copper collector), a positive electrode or cathode (made of a transition metal oxide that can vary in chemical composition with an aluminum collector), a separator and an electrolyte. The chemical composition of the cathode defines the specific type of Li-ion battery. The type or composition of the Li-ion battery determines the mineral requirements below, with the mineral proportions for the LMO, NMC 111, NMC 811 and NCA battery types shown below. For the recovery of metals from used Li-ion batteries, LiCoO<sub>2</sub>/LCO batteries from mobile phones (Huawei and Samsung) were used in the direct recycling. For our own experiments, the technological flow of the recovery of the cathodic active paste by ultrasound was used, and organic solution (lactic acid) was used as the leaching medium.

**State of development:** Laboratory

**Contact:** [nistoriulian71@yahoo.com](mailto:nistoriulian71@yahoo.com)

**Presentation link:** <https://www.fih.upt.ro/v6/>

37.

**Title:** MODELLING THE SURFACE RUNOFF IN THE BARZAVA BASIN BASED ON GEOGRAPHIC INFORMATION SYSTEMS AND HEC GeoHMS

**Patent/project number:** May 2022, Vol. 21, No. 5, 869-877

**Author/s:** Codruta Badaluta – Minda, Mihai Valentin Herbei



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**Institution:** Department of Hydro technical, Faculty of Civil Engineering, Polytechnic University of Timisoara, G. Enescu Street, Romania / Department of Sustainable Development and Environmental Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timișoara, C. Aradului Street, Romania

**Category:** A

**Description:** In the last decades, the floods are more and more present and of high intensity, both in Romania and worldwide. The process of estimating leaks in a river basin is extremely complicated and depends on several factors including the meteorological and physical characteristics of the river basin. HEC-HMS hydrological simulation model is used to determine precipitation runoff from the river basin, using remote sensing and GIS tools. The results from the land pre-processing were used in HEC-GeoHMS to extract the hydrological parameters of the river basin. In this paper, based on the precipitation recorded in the river basin of the Barzava River, the hydrographic method of the soil conservation unit was used to simulate the runoff rate. After calibrating the hydrological model, the simulated discharge in the outlet section were close to the observed values.

**State of development:** final state

**Contact:** Codruta Badaluta – Minda

**Presentation link:** <http://www.eemj.icpm.tuiasi.ro/issues/vol21/vol21no5.htm>

38.

**Title:** QUALITATIVE CHARACTERISATION OF THE SIDERITIC WASTE

**Patent/project number:** Student Project

**Author/s:** stud. Brumar Alexandra-Maria; **Coordinators:** Daniela Miloștean; Erika Ardelean

**Institution:** University Politehnica of Timisoara, Engineering Faculty of Hunedoara

**Category:** A

**Description:** In the conditions of the sustainable development concepts implementation, assumed worldwide, the industrial waste generators have the obligation to identify those technological options that make possible to transform this waste into secondary materials and to replace the deficient raw materials. In addition, there are a large number of historically generated waste, stored more or less controlled, which can be recovered and reintroduced into the economic circuit. But, in order to establish an adequate management is necessary to determine the quantitative and qualitative characteristics of this waste. In the present research, qualitative determinations were made on the sideritic sterile resulted from the concentration operation of iron ores, exploited from the Ghelari mine and currently stored in three tailing ponds. The following characteristics were determined: chemical composition, grain size, the angle of repose, magnetic concentration, humidity, apparent density and flow capacity. Based on the results obtained, different experiments can be proposed and carried out, in the first phase in laboratory conditions, leading to the obtaining of secondary material that can be reused in the steel industry.

**State of development:** Research study

**Contact:** [ma.brumar@yahoo.com](mailto:ma.brumar@yahoo.com)

**Presentation link:** <https://www.fih.upt.ro/v6/>



39.

**Title:** AUTOMATIC DEVICE FOR PRODUCTION OF HYBRID COMPOSITE COMPOUNDS FOR WATER DISINFECTION

**Patent/project number:** P-2011/0518

**Author/s:** Tomislav Trišović

**Institution:** Aqua Crystal, Belgrade

**Category:** A

**Description:** Chemical compounds with pronounced oxidizing or reducing properties, typically obtained through electrochemical reactions, are highly unstable and require special storage conditions. Besides the ideal storage conditions (temperature, UV radiation, humidity, etc.), their half-life ranges from a few seconds to several months. Extended storage can lead to spontaneous decomposition of the product obtained (reducing the concentration of the active component), posing challenges for its use or recycling. Therefore, before using such substances, the concentration of the active material must be determined, further increasing the costs of processes in which these compounds are used. Another serious issue with storage is the potential danger of uncontrolled decomposition, explosion, leakage, and evaporation, which can cause significant environmental pollution. In industrial processes involving the synthesis of hazardous substances, it is necessary for such material to be produced at the site of its application and stored in appropriate containers. In cases where smaller quantities of such substances are required, they can be purchased and transported with all necessary security measures to the end-user. The purchase of hazardous materials (including all strong oxidizers) involves transportation with specialized vehicles and trained personnel, ensuring appropriate transportation security accompanying the procurement of hazardous materials. For the storage of larger quantities, the facility must be secured 24/7, and appropriate sensors should be installed to alert in case of leakage of stored hazardous materials. To prevent excessive situations, sensors are installed that are linked to appropriate automation systems that activate the spraying of a neutralizing substance (stored nearby), which forms a stable - less hazardous compound with the leaked substance.

**State of development:** applied

**Contact:** Tomislav Trišović, +381637200083 Email: [trisatrisatrisatrisa@gmail.com](mailto:trisatrisatrisatrisa@gmail.com)

**Presentation link:** <https://vode.rs/>

40.

**Title:** DEVICE FOR MEASURING GAS AND AIR QUALITY

**Patent/project number:** laboratory project

**Author/s:** Gabriel Nicolae Popa, Corina Maria Dinis

**Institution:** Politehnica University of Timișoara, Faculty of Engineering Hunedoara

**Category:** A



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**Description:** A device has been designed and built for measuring gases (LPG gas, methane, carbon monoxide, hydrogen, ammonia) concentration in the air, as well as measuring air temperature and humidity. The device uses four electrochemical gas sensors, an electrochemical sensor for measuring air quality, a sensor for measuring temperature and humidity that are connected to an Arduino development board that is connected to a 2x16 LCD display with six buttons and one electromagnetic relay. Each sensor (MQ types) usually measures more than two types of gas. The sensors also have a digital output that becomes 1 logic when a preset value has been exceeded, set from a potentiometer located on the sensor board. The analogue outputs from each sensor are connected to the analog inputs (A1, A2, A3, A4, A5) from an Arduino Uno development board. A 2x16 character LCD shield is connected to the Arduino Uno development board. Arduino Uno's A0 analogue port is connected to the the LCD screen with six buttons. In addition, the device also uses a digital temperature and humidity sensor (DHT 11) which is powered between +5V and ground which has a pin through which the information (regarding temperature and humidity) is digital transmitted (serially) to the digital port 7 of Arduino Uno.

**State of development:** laboratory project

**Contact:** Gabriel Nicolae Popa; Telephone: 0040254207541 Email: [gabriel.popa@fih.upt.ro](mailto:gabriel.popa@fih.upt.ro)

**Presentation link:** <https://www.fih.upt.ro/v6/>

41.

**Title:** RECOVERY OF SILVER FROM X-RAYS FILMS WITH NITRIC ACID

**Patent/project number:** Research study

**Author/s:** Cînda Letiția-Roma, Ardelean Erika

**Institution:** Economic College "Emanuil Gojdu" Hunedoara; Politehnica University of Timisoara, Faculty of Engineering Hunedoara

**Category:** A

**Description:** Solutions containing silver react with nitric acid, if its concentrations are high enough. The reaction results in silver nitrate and other chemical compounds, depending on the type of solution, and in some cases, silver can be recovered from this mixture either by chemical reduction with one or more reducing agents, or by cementation, a method also used in silver purification. During the research, results were obtained by cementation of silver with copper from silver nitrate. Following the silver-based study of exposed radiographs using nitric acid, the following conclusions are reached:

- The optimal stripping temperature is 55-65°C, which leads to a percolation time of radiographic films of approx. 30s.
- The optimum nitric acid concentration in the aqueous solution is 20% (higher values resulting in higher cost price of the process, and lower values in increasing the stripping time of the silver from the radiographic emulsion, respectively the decrease of the process yield).
- The optimal recommended dilution ratio before cementation is 1:1.
- The shape and dimensions of the obtained silver particles differ for each stage of cementation, at first the particles are of smaller size, later they grow and can be visualized with the naked eye.



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- The idea of perpetual reuse of solutions in the following processes, without being dispersed in the environment, makes this new method a possibility of large scale application for the recovery of silver from the radiographs, finding one of the main deficiencies of the hydrometallurgical methods.
- When the concentration of copper in the solution reaches a too high concentration, it can be subjected to an electrolysis process with copper anode, a classic method of copper recovery and refining. Considering that this happens after a large number of re-use, and the amount of solution is not high because it evaporates, the costs of this remediation process are low.
- The purity proven by the results of laboratory tests shows that silver recovery through cementation is a viable method of recovering it from radiographs.

**State of development:** Method

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**Presentation link:** <https://licecohhd.eu>    <https://www.fih.upt.ro>

42.

**Title:** HYBRID SYSTEM FOR IMPROVING THE ENERGY EFFICIENCY OF PHOTOVOLTAIC PANELS

**Patent/project number:** CBI A 2023 00576

**Author/s:** Milici Laurențiu Dan, Paval Mihaela, Atănăsoae Pavel, Nițan Ilie, Ungureanu Constantin, Iavorschi Eugen, Alisavetei Irina, Tudurii Constantin Cornel

**Institution:** Stefan cel Mare University of Suceava

**Category:** A

**Description:** The solution involves a panel placed on the back of the photovoltaic panel and which has a system of channels, of variable section through which the cooling fluid circulates, which can be water for the preparation of hot water or air for heating a room.

**ADVANTAGES**

- Increasing the efficiency of photovoltaic panels by cooling them with fluid knowing that the efficiency of the panels increases with the decrease of their temperature.
- Improved thermal comfort by using solar heat to heat water and/or spaces without relying excessively on traditional heating or air conditioning systems, reducing the carbon footprint by reducing pollution and conserving natural resources.
- Simultaneous generation of electricity and domestic hot water or hot air. The electricity produced by the solar panels can power electrical appliances, and the heat from the cooling fluid can be used to heat water or heat indoor spaces.

**State of development:** Laboratory prototype

**Contact:** [dam@usm.ro](mailto:dam@usm.ro)

**Presentation link:** <https://usv.ro/en/homepage-2021/>



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43.

**Title:** METHOD FOR ACTUATING SPRINGS MADE OF SHAPE MEMORY MATERIALS

**Patent/project number:** CBI A 2023 00079

**Author/s:** Bejenar Ciprian, Bejenar Marian, Popa Valentin, Dimian Mihai, Milici Laurențiu Dan, Rață Mihai, Afanasov Ciprian, Ungureanu Constantin

**Institution:** Stefan cel Mare University of Suceava

**Category:** A

**Description:** The method for actuating shape memory material springs according to the invention features a distinctive three-phase, implementable and parameterizable power supply sequence that can be modeled, integrated, adjusted and generated by programmable electronic systems as needed, so as to cause a reaction of additional speed and force, both by thermal and electromagnetic effect, simultaneously developed on the actuation spring coils within an actuator.

**ADVANTAGES**

- The method introduces new possibilities for electric actuation of springs made of materials with shape memory, with efficient energy consumption;
- The method improves the performance of actuators that use actuation springs made of materials with shape memory, in that it increases the reaction speed and the force developed by them at the time of electrical actuation;
- The method allows adjusting the speed and actuation force, developed by an actuator at the moment of the electric actuation of the springs made of materials with memory of the shape of the component;
- The method leads to an increase in the period of use of actuation springs made of materials with shape memory, because they are not subject to excessive thermal regimes;
- The method is compatible with actuation methods that compensate with electricity different disturbing factors on the controlled phenomena during actuation.

**State of development:** Laboratory prototype

**Contact:** [dam@usm.ro](mailto:dam@usm.ro)

**Presentation link:** <https://usv.ro/en/homepage-2021/>

44.

**Title:** HYBRID COMPOSITE MATERIAL FOR THE RECOVERY OF CHROMIUM FROM WASTE WATER

**Patent/project number:** A100011

**Author/s:** Adina Segneanu, Gabriela Vlase, Titus Vlase, Ionela-Amalia Bradu

**Institution:** West University of Timisoara

**Category:** A

**Description:** The invention refers to a hybrid composite material composed of the magnetite/power plant ash/potato peel complex in a mass ratio of 1/1/1, elements with different properties, simple or dual, such as magnetite, and a process for recovering Chromium from waste water. The capsules containing the adsorbent hybrid composite material are inserted into the waste water that is mechanically stirred for 2 to 4 hours at



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ambient temperature, after which the capsules containing the chrome-loaded hybrid composite material are recovered in a magnetic field.

**State of development: method**

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**Presentation link: <https://www.uvt.ro/en/>**

45.

**Title: STATIC ELECTRICITY GENERATOR**

**Patent/project number: Electricity project**

**Author/s: Marian PĂRĂU GRIGORESCU**

**Institution: Rheeal Energy Core SRL**

**Category: A**

**Description:** Source of electricity for general use - domestic and industrial, with high autonomy (3-6 years), very simple to install and easy to use. Static Electricity Generators are an autonomous power sources, based on electrical accumulators (as the primary source of energy) and which benefits from the technological contribution of some of variants of applications from the range of Power Amplifier in magnetic field with double magnetic field, applications that offer an electrical performance coefficient up to 1:3.5. By means of such an application model, it is possible to obtain an additional supply of energy that allows the supply of an external consumer, but also a small reserve necessary to maintain the energy level in the accumulators.

**State of development: MVP, products series in preparation for series production**

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**Presentation link: <https://rhealenergycore.ro/>**

46.

**Title: EX-SITU BIOREMEDIATION SYSTEM AND PROCESS OF HYDROCARBON POLLUTED SOILS USING PSEUDOMONAS AND BACILLUS MICROORGANISMS**

**Patent/project number: Patent OSIM nr.: RO132554- B1/30.08.2023**

**Author/s: Micle Valer, Sur Ioana Monica, Mitrea Mihai**

**Institution: Technical University of Cluj-Napoca**

**Category: A**

**Description:** The ex-situ bioremediation system of hydrocarbon-polluted soils using Pseudomonas and Bacillus microorganisms is composed of the concrete platform, the plastic foil on which a draining layer of gravel and the polluted soil is deposited, an aeration system consisting of a blower and a network of air distribution provided with five perforated PVC pipes, three being placed horizontally in the gravel layer at the base of the pile and two in the middle of the pile and a system for introducing water and the solution with nutrients and microorganisms consisting of a tank, hydraulic pump and corrugated suction and discharge hoses. By using the soil treatment system at a temperature of 24–26°C, pH 7.5–8, humidity of



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28–30%, and an increase in the total number of microorganisms from 151x10<sup>5</sup> to 213x10<sup>7</sup> CFU/gram of soil, after 12 weeks of treatment the achieved depollution yield is 83%.

**State of development:** patent, scientific paper, research project

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**Presentation link:** <https://www.utcluj.ro/en/>

47.

**Title:** ENERGY MANAGEMENT METHOD IN SMART MICROGRIDS, BASED ON PREDICTION, OPTIMIZATION, AND CORRECTION ALGORITHMS

**Patent/project number:** Patent application OSIM nr.: A/10011/09.03.2023

**Author/s:** Petreuş Dorin, Pătăraş Toma, Szilagyi Eniko, Paulescu Marius, Stroia Nicoleta

**Institution:** Technical University of Cluj-Napoca

**Category:** A

**Description:** The invention relates to a method of controlling an intelligent microgrid for supplying the loads using several types of renewable energy generators, by combining prediction algorithms with correction algorithms that use real-time data and optimization algorithms, to reduce the cost of electricity. The method involves going through the following steps: measuring the irradiance and temperature from a pyranometer mounted in the proximity of the photovoltaic panels and saving them in a first local file; estimating the next day's irradiance and temperature based on a prediction algorithm using data from the file above or using satellite data and writing the resulting data to a second file; determination of generator operation data (of the type: power, time) and cost optimization with an optimization algorithm; correcting generator operating data with a correction algorithm running on the external computing system or cloud.

**State of development:** patent, scientific paper, research project

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**Presentation link:** <https://www.utcluj.ro/en/>

48.

**Title:** LUBRICANTS FOR INTERNAL COMBUSTION ENGINES AND TRANSMISSION OILS FOR HYBRID VEHICLES: AN OVERVIEW

**Patent/project number:** Doctoral Research Project

**Author/s:** Diana Miruna Armioni, Ioana Ionel, Sorin Aurel Raţiu and Adrian Gidali

**Institution:** Politehnica University of Timisoara, Faculty of Engineering Hunedoara

**Category:** A

**Description:** In the coming decades, the automotive industry will undergo significant transformation, driven by the rapid proliferation of electric mobility solutions, including hybrid and electric vehicles. These innovative transportation systems introduce unique challenges pertaining to lubrication and cooling due to their unconventional design. Notably, hybrid vehicle heat engines operate within a lower temperature spectrum compared to traditional combustion engines. This variance poses distinct hurdles for engine oils,



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*which are traditionally engineered for sustained operation at higher temperatures with minimal temperature fluctuations. This article conducts a comparative analysis of lubricant specifications tailored to internal combustion engines and transmission oils specifically designed for hybrid vehicles. The aim is to underscore the distinctive characteristics of these lubricants and emphasize their critical role in ensuring the efficient operation of the engine.*

**State of development:** *scientific paper*

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**Presentation link:** [https://www.upt.ro/Informatii\\_doctoral-school\\_310\\_en.html](https://www.upt.ro/Informatii_doctoral-school_310_en.html)



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## B - Nanotechnology, Advanced materials, Metallurgy, Civil engineering

1.

**Title:** PRODUCTION METHODS OF REFRACTORY COMPONENTS

**Patent/project number:** ISO 9001 : 2015 / SR EN ISO 9001 : 2015

**Author/s:** Radu BUZDUGA

**Institution:** Refractory Design and Production Research Center

**Category:** B

**Description:** 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. CCPPR offers services for the following works:

assimilation of new products

utilization of raw materials

utilization of technological waste of various industrial processes

improving the quality of current production

technical assistance to users of refractory products

technical assistance to manufacturers of refractory products

provision of services to third parties by performing laboratory determinations:

classical chemical and roentgenographic analyses

special thermal analyses

mineralogical analyses

physical-mechanical determinations

**State of development:** refractory products

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**Presentation link:** <https://www.ccppr.ro/>



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2.

**Title:** SLAG RECYCLING

**Patent/project number:**

**Author/s:** Ana SOCALICI

**Institution:** University Politehnica of Timisoara, Faculty of Engineering Hunedoara

**Category:** Research project

**Description:** During the production of steel, in addition to the secondary product, there is also a waste, metallurgical slag. Currently, a special emphasis is placed on the sustainable management of the environment. The ferrous fraction of the metallurgical slag can be reused in the steel industry and the non-ferrous fraction is used as recycled aggregate in the building materials industry, construction, agriculture, etc. Experiments in the laboratory phase focused on the identification of solutions for valorization of the ferrous fraction of the steel mill slag with a grain size of 0-10 mm. This, in most cases, is stored and not introduced into the economic circuit. The chosen technology - briquetting. Briquettes were made which have in their composition 30% ferrous fraction of steel mill slag, 60% ferrous sludge, 5% furnace agglomeration sludge and 5% bentonite. The experimental briquettes obtained have an iron content of 45-58% Fe. Iron recovery rate 70%. The target of the current metallurgical industry is to recycle and utilize all their by-products, so as to close the sustainable production loop. Due to the large amounts of slag still stored and the strict environmental regulations, the recycling and use of slag is an attractive alternative to reduce and possibly to eliminate the disposal cost, to minimize associated environmental pollution and to save raw materials

**State of development:** Research in the laboratory and industrial phase

**Contact:** [virginia.socalici@fih.upt.ro](mailto:virginia.socalici@fih.upt.ro)

**Presentation link:** <https://scholar.google.com/citations?user=id6KUxYAAAAJ&hl=en>

3.

**Title:** METALLURGICAL ANALYSIS OF PHOSPHOROUS CAST IRON BRAKE SHOES

**Patent number:** PhD thesis

**Author/s:** Flavius BUCUR, Ana SOCALICI

**Institution:** Politehnica University of Timisoara, Faculty of Engineering Hunedoara

**Category:** B

**Description:** The researches were carried out in a specialized factory for casting brake blocks. The study focused on metallurgical characterisation of phosphorous cast iron and consisted of a study of microstructural analysis of samples taken from phosphorous cast iron intended for the manufacture of brake blocks. Microscopic analysis was performed by determinations made with and without attack with reagents of the samples:

- graphite highlighting for both samples (form of graphite separations, graphite distribution, length of graphite separations and area occupied by it) was obtained on unattacked samples;
- Highlighting the basic metal mass, perlite and phosphorous eutectic was obtained by determinations on samples attacked with 5% natal.



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Brake blocks are part of the braking system of rolling stock. Cast iron is the most widely used metal cast into shapes and phases of cast iron graphite develop together with the metal matrix during solidification and understanding and control of its structure, density and morphology is essential for cast iron properties.

**State of development: Doctoral research project**

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**Presentation link:** <https://www.fih.upt.ro/v4/eng/>

4.

**Title:** NOZZLE SYSTEM USED FOR THERMAL SPRAYING IN ELECTRIC ARC

**Patent/project number:** RO134208 B1

**Author/s:** TOMA Ștefan Lucian, SAVIN Gabi, TOMA Bogdan Florin, BEJINARIU Costica, IONIȚĂ Iulian, VIZUREANU Petrică, BĂDĂRĂU Gheorghe, SANDU Andrei Victor, CAZAC Alin, BURDUHOS – NERGIȘ Diana – Petronela

**Institution:** Gheorghe Asachi Technical University of Iasi

**Category:** B

**Description:** The invention belongs to the field of Thermal spraying in electric arc of wire drawn metallic materials. The technical problem that is solved by the invention is the directed constrain of the electric arc without modifying the velocity and the flow of the compressed air that divides the droplets of molten metal into fine particles in order to increase the temperature and the velocity of the sprayed particles. The technical solution to solve this problem consists in the creating a compressed air circuit through a concentric nozzle system composed of a body, a cap, a conical nozzle, a conical nozzle and a constraint frontal nozzle.

**State of development:** prototype

**Contact:** [stl\\_toma@yahoo.com](mailto:stl_toma@yahoo.com)

**Presentation link:** <https://www.tuiasi.ro/?lang=en>

5.

**Title:** ADDITIVATED MORTAR COMPOSITION FOR FINISHING WORKS IN OLD MONUMENTS AND PROCESS FOR PREPARING AND APPLYING THE SAME

**Patent/project number:** RO135116 B1

**Author/s:** SANDU Ion, DEAK Gyorgy, SANDU Irina Crina Anca, MONCEA Mihaela-Andreea, SANDU Ioan Gabriel, DUMITRU Florina Diana, SANDU Andrei Victor, MATEI Monica, PANAITE Sorin, BOBOC Mădălina Georgiana

**Institution:** National Institute for Research and Development in Environmental Protection - INCDPM

**Category:** B

**Description:** The invention relates to an additivated mortar composition for finishing works to be used in restoration of old monuments and to a process for preparing and applying the same. The claimed composition comprises 15% parts of mineral binder consisting of fly ash resulting from the burning of sunflower husks, Portland cement and calcium oxide ground to a fineness between 6...10% residue on a sieve with 4900 meshes/cm<sup>2</sup>, in gravimetric ratio ash : Portland cement : Ca oxide = 1: 2: 2 and 10 parts of a mixture of expanded perlite and fine eggshell powder, both with a granulation <0.1 mm and additivated



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with ZnO and TiO<sub>2</sub> and three ceramics of burnt clay, colored differently in scarlet, brown and black, in perlite : eggshell : ZnO : TiO<sub>2</sub> : colored ceramics gravimetric ratio = 6: 3.6: 0.16: 0.04: 0.2, the parts being expressed by weight.

**State of development:** laboratory

**Contact:** [euroinvent@yahoo.com](mailto:euroinvent@yahoo.com)

**Presentation link:** [www.afir.org.ro](http://www.afir.org.ro)

6.

**Title:** *New PVP–Ag or Pd-Doped Perovskite Oxide Hybrid Structures for Water Splitting Electrocatalysis*

**Patent/project number:** *Appl. Sci. 2024, 14, 1179*

**Author:** *Paula Sfirloaga, Adina Cata, Bogdan-Ovidiu Taranu, Ioana Maria Ienascu*

**Institution:** *National Institute for Research and Development in Electrochemistry and Condensed Matter, Timisoara*

**Category:** *B*

**Description:** *Global warming and the global energy crisis are two major challenges humanity is currently confronting that are pressuring the scientific community to find efficient, low cost and environ-mentally sustainable solutions. Within this context, hydrogen has emerged as a clean and efficient energy carrier promising to replace the environmentally hazardous fossil fuels. The present study, of relevance to the water splitting domain, concerns the synthesis of two novel hybrid structures, namely polyvinylpyrrolidone (PVP) functionalized with Ag-doped LaMnO<sub>3</sub> and Pd-doped LaMnO<sub>3</sub>, respectively. The water electrolysis catalytic activity of these new materials was evaluated in a strongly alkaline medium.*

**Acknowledgments:** *This work was supported by the Experimental Demonstrative Project 683 PED/2022*

**State of development:** *scientific paper*

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**Presentation link:** <https://incemc.ro/en/>

7.

**Title:** *PROCESS FOR OBTAINING OF YMnO<sub>3</sub> PEROVSKITE TYPE MATERIALS*

**Patent applicocation:** *A/00500/13.09.2023*

**Author:** *Paula Sfirloaga, Ionel Balcu, Corina Macarie, Paulina Vlazan*

**Institution:** *National Institute for Research and Development in Electrochemistry and Condensed Matter, Timisoara*

**Category:** *B*

**Description:** *The invention refers to an efficient process for obtaining perovskite nanomaterials based on YMnO<sub>3</sub>, using the following precursors: Y(NO<sub>3</sub>)<sub>3</sub> · 6H<sub>2</sub>O; Mn(NO<sub>3</sub>)<sub>2</sub> · 4H<sub>2</sub>O; C<sub>6</sub>H<sub>8</sub>O<sub>7</sub> (citric acid); ethylene glycol; 25% NH<sub>4</sub>OH solution, synthesized by the ultrasonic method with the sonotrode immersed in the reaction medium. The process according to the invention consists in obtaining nanomaterials based on yttrium manganite by the ultrasonic method with the sonotrode immersed in the reaction medium at the developed power of 750W, the frequency of 20 KHz, and the ultrasonication process for 40 minutes, at*



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pulsations 10 ON - 5 OFF, amplitude – 80%, working temperature – 80 °C. The precipitate obtained by ultrasonic synthesis with an immersed sonotrode was dried in an oven at 80 °C for 4 hours and finally it was thermally treated at a temperature of 800 °C for 6 hours.

**Acknowledgments:** This work was supported by the Experimental Demonstrative Project 683 PED/2022

**State of development:** patent application

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**Presentation link:** <https://incemc.ro/en/>

8.

**Title:** PROCESS FOR OBTAINING MODIFIED ELECTRODES WITH PEROVSKITE MATERIALS WITH APPLICATION IN WATER ELECTROLYSIS

**Patent application:** A/00552/05.10.2023

**Author:** Paula Sfirloaga, Bogdan Taranu

**Institution:** National Institute for Research and Development in Electrochemistry and Condensed Matter, Timisoara

**Category:** B

**Description:** The invention refers to a process for obtaining modified electrodes, by the drop-casting method, on a glassy carbon conductive substrate, using an ethanol-based suspension containing perovskite material and Nafion or perovskite material, Nafion and Carbon Black, at room's temperature. The advantages of this method are: obtaining of modified electrodes with perovskite materials in a short real time and the simplicity of the method of depositing the suspension on the substrate. Also, the use of ultrasound inhibits the formation of conglomerates or separates those resulting from the synthesis process. Moreover, the main advantages of the method are the obtaining of electrodes with a relatively uniform surface and the low manufacturing cost.

**State of development:** patent application

**Acknowledgments:** This work was supported by the Experimental Demonstrative Project 683 PED/2022

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**Presentation link:** <https://incemc.ro/en/>

9.

**Title:** CHEMISTRY FOR SUSTAINABILITY: EXPLORING ENVIRONMENTAL SOLUTIONS

**Patent/project number:** Experimental Demonstrative Project

**Author/s:** Prima Yugala, Parinton Jangtawee, Supakorn Boonyuen, Jeerasak Jitrotjanarak

**Institution:** Shrewsbury International School, Bangkok, Thailand

**Category:** B

**Description:** "Chemistry for Sustainability: Exploring Environmental Solutions" revolutionizes education with hands-on experiments designed to address pressing global challenges like climate change and air pollution. Our innovative project emphasizes equity by using locally available equipment and simple chemicals, ensuring accessibility in underserved communities. Through interactive learning



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experiences, students gain a deep understanding of carbon capture, renewable energy, and other critical sustainability concepts. By empowering educators and students alike, our project inspires a new generation of environmentally conscious leaders ready to tackle real-world issues. Join us in fostering positive change and building a more sustainable future for all.

**State of development: Prototype**

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**Presentation link:** <https://www.shrewsbury.ac.th/>

10.

**Title:** PAVLOV'S CAT

**Patent/project number:** Student project

**Author/s:** Tartus Mădălina; **Mentor:** Prof. Ciuvaga Victor

**Institution:** „Petru Rareș” Theoretical High School, Republic of Moldova

**Category:** B

**Description:** An intelligent device that has the main function to develop on of the conditioned reflexes to pets and to animals from a farmland. In addition, this modern mechanism is able to enhance the quality of some animals products, such as meat and milk. Moreover, this invention was built on Arduino software.

**State of development:** I made a deep research about the space where is kept fodder for animals. As result , I understand that when the food is stored in this box it stays fresher than if it were left in an airy environment. In addition to all this, we found that like domestic quadrupeds, horned animals on farms that are predisposed to a certain type of production could also be trained in this way. Thus, we carried out a study on the influence of the storage time of fodder under normal conditions, where it is manually served to the animals by a worker for 2-3 hours, and its quality if it will be kept in a closed space. So we concluded that it is more beneficial to use such a robotic system in the process of feeding cattle or pigs in the livestock industry. By developing these conditioned reflexes, the animals will initiate the salivation process and the food will be more easily assimilated, contributing to the increase in the quality of the animals' milk or meat.

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**Presentation link:** <https://youtu.be/ugxJTGyUHBA?si=O4OAJvS7ZbljMwYA>

11.

**Title:** ORGANIC/INORGANIC COMPOSITE MATERIAL WITH ANTIMICROBIAL EFFECT FOR CONSOLIDATING ARCHAEOLOGICAL WOOD WITH EXCESS OF MOISTURE AND METHOD OF OBTAINING IT

**Patent/project number:** Patent application No. A-00070/2024

**Author/s:** Toma Fistos, Sorin-Viorel Dolana, Radu Claudiu Fierascu, Irina Fierascu, Anda Maria Baroi, Roxana Ioana Brazdis (Matei), Andrei Sarbu, Tanta-Verona Iordache, Anamaria Zaharia

**Institution:** INCDP-ICECHIM Bucharest

**Category:** B

**Description:** The present invention refers to a nanocomposite coating material with antimicrobial and consolidant properties (demonstrated by the improvement of the mechanical properties) for archaeological wood with excess moisture (known in the specialized literature as waterlogged wood), material constructed



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of two components: an antimicrobial component (substituted apatitic material with various heavy metals) that gives protection against biodeteriogens and a polymeric component that gives the compound compatibility with the support material on which it is applied (archaeological wood) and improves the mechanical properties (consolidation) and to a method of obtaining it.

**State of development:** laboratory

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**Presentation link:** <https://icechim.ro/en/>

12.

**Title:** COATING WITH PHOTOCATALYTIC AND ANTIMICROBIAL EFFECT FOR THE PROTECTION OF NATURAL LIMESTONE ELEMENTS OF VERNACULAR BUILDINGS AND PROCEDURE FOR OBTAINING IT

**Patent/project number:** Patent application No. A0558/2023

**Author/s:** Toma Fistos, Radu Claudiu Fierascu, Irina Fierascu, Mihaela-Alina Melinescu, Anton Ficai, Denisa Ficai, Lia Mara Ditu, Irina Gheorghe-Barbu, Roxana Ioana Brazdis (Matei), Anda Maria Baroi

**Institution:** INCDCP-ICECHIM Bucharest

**Category:** B

**Description:** The present invention refers to a nanocomposite coating material with photodegradation and antimicrobial properties, which provides protection (consolidation) for natural stone elements in the composition of vernacular constructions (materials with high calcium content), represented by an alcoholic dispersion, made in a mixture ethanol: isobutyl alcohol, containing a composite material consisting of two phases: a phase based on a double-layered hydroxide mixture (hydrotalcite)/metal oxide nanoparticles (Ti, Zn) of commercial origin and a phase consisting of a mixture of hydroxide calcium and hydroxyapatite in which calcium has or has not been partially dislocated with zinc. The formulation, due to the inorganic composition, presents an improved stability in relation to other formulations based on organic polymers and organic antimicrobial substances.

**State of development:** Laboratory

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**Presentation link:** <https://icechim.ro/en/>

13.

**Title:** RECIPE FOR OBTAINING COMPOSITE SYSTEMS BASED ON RENEWABLE, CHEAP MATERIALS, USED TO FUNCTIONALIZE THE SURFACES OF MEDICAL DEVICES

**Patent/project number:** Patent application A/00483 of 09/04/2023

**Author/s:** Anita Ioana VIȘAN, George STAN, Carmen Georgeta RISTOSCU, Gianina Florentina POPESCU-PELIN, Luiza Izabela TODERAȘCU, Consuela Elena MATEI, Valentin Paul ARANGHEL, Gabriel SOCOL, Rodica CRISTESCU

**Institution:** National Institute for Laser, Plasma and Radiation Physics

**Category:** B



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**Description:** In order to reduce the increased incidence of postoperative infections, sometimes doubled by an increased resistance to synthetic antibiotics, the work proposes an improved method of covering titanium implants by functionalizing the surface through laser techniques and integrating an original recipe based on apatite and natural, cheap and easily renewable substances. Thus, the new composite material can stimulate the viability and healing capacity of the affected bone (thanks to apatite) and can simultaneously prevent localized infections, by releasing natural agents with antimicrobial properties (lignin, frankincense, myrrh), for several days, with precise control of the released concentration /release speed.

**State of development:** The fabrication method is implemented at laboratory level and the new material was tested in-vitro

**Acknowledgments:** The authors are grateful for the financial support provided within the project PN-III-P4-ID-PCE-2020-2273 (PCE 11/2021), Romanian Ministry of Education and Research, CNCS-UEFISCDI

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**Presentation link:** <https://www.inflpr.ro/en>

14.

**Title:** BIO-BORATE GLASS DOPED WITH CERIUM OXIDE IN THE FORM OF A THIN FILM FOR IMPROVING SURFACES OF MEDICAL INTEREST AND OBTAINING METHOD

**Patent number:** A/00615

**Author/s:** Gabriela- Irina UNGUREANU (NEGUȚ), Bogdan SAVA, GrațIELA GRĂDIȘTEANU, Bogdan BIȚĂ

**Institution:** National Institute for Laser, Plasma and Radiation Physics

**Category:** B

**Description:** The invention relates to bio-borate glasses doped with cerium oxide (BBGi) in the form of thin films for the improvement of Titanium (Ti) surfaces of medical interest and to a method of obtaining them. The doped BBGi according to the invention is composed of: vitreous network formers - 40...65% B<sub>2</sub>O<sub>3</sub> and 2.5...10% P<sub>2</sub>O<sub>5</sub>, vitreous network modifiers - 15... 30% Na<sub>2</sub>O and 20...30% CaO, as well as dopants with special properties - 1...3% CeO<sub>2</sub> and 0...1% SrO<sub>2</sub>, in molar percentages. The production process involves the following stages: volumetric and gravimetric dosing of raw materials, homogenization, mixture of raw materials dried in the oven, melting, glass annealing, glass mortaring, mixing with dimethyl sulfoxide (DMSO), freezing in liquid nitrogen and deposition on Ti substrates by matrix assisted pulsed laser evaporation technique (MAPLE), with the help of a KrF\* excimer laser source, the substrates being placed plane-parallel in the deposition chamber.

**State of development:** patent

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**Presentation link:** <https://www.inflpr.ro/en>

15.

**Title:** A FIBER GLASS REINFORCED COMPOSITE FOR CAD/CAM APPLICATIONS IN DENTISTRY

**Patent/project number:** A201801062 / 2020



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**Institution:** Department of Prosthodontics and Dental Materials, Faculty of Dental Medicine, University of Medicine and Pharmacy "Iuliu Haieganu" Cluj Napoca, Romania; Institute of Research in Chemistry "Raluca Ripan", Babes- Bolyai University, Cluj Napoca, Romania  
**Category:** B

**Description:** The invention relates to a composition of fiber glass reinforced composite material based on thermo-baro-photopolymerizable composite resin and fiber glass fabric type E in the form of a veil and / or Stratimat, being indicated for obtaining a materials to be used for obtaining for prosthetic restorations using CAD / CAM technology. The material has superior mechanical properties and corresponding radiopacity. The dental product is presented in the form of a composite disc reinforced with solid fiberglass, with a diameter of 98.5 mm and a height of 10 mm, dimensions specific to dental CAD/CAM technology.

**Acknowledgement:** This work was supported by the Romanian National Authority for Scientific Research and Innovation, UEFISCDI, project PN-III-P2-2.1-PED-2016-1936

**State of development:** TRL4

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**Presentation link:** <http://old.umfcluj.ro/en/universitate-uk/despre-uk/prezentare-uk>

16.

**Title:** CONSTRUCTION BRICK MANUFACTURING PROCESS USING INDUSTRIAL WASTE  
**Patent/project number:** 13077/30.10.2020

**Author/s:** Popescu Georgeta Luminița, Marica Mădălina Mirabela, Abagiu Traian Alexandru, Predeanu Georgeta, Racoceanu Cristinel, Cruceru Mihai, Diaconu Bogdan Marian, Dițescu Corneliu Laviniu, Dondoe Valentin, Angheliescu Lucica

**Institution:** University „Constantin Brâncuși” from Târgu-Jiu

**Category:** B

**Description:** The invention refers to a process for the manufacture of heat-insulating concrete, using as light granular The invention refers to a process for manufacturing construction bricks using industrial waste, in which raw materials are exclusively used materials considered waste in the energy and extractive industries: heavy ash from thermal power plants, clay from lignite mining quarries in the area Carboniferous Gorj, drilling mud. The advantages of this process are represented by the fact that power plant ash successfully replaces the sand used as an additive to correct the plasticity of the Rovinari clay, under conditions of reducing the density of the finished products by (8-12) %, increasing the thermal insulation capacity by ( 10-15)% and the reduction of the sintering temperature by (30-50)% in the final stage of heat treatment.

**State of development:** product

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**Presentation link:** <https://icdi.utgjiu.ro/wp-content/uploads/2024/02/Brevet-de-inventie-nr.-1307730.10.2020.pdf>



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17.

**Title:** PROCESS FOR OBTAINING HEAT-INSULATING CONCRETE BASED ON HEAVY ASH OF POWER PLANT

**Patent/project number:** 129872/27.04.2018

**Author/s:** Popescu Georgeta Luminița, Marica Mădălina Mirabela, Abagiu Traian Alexandru, Predeanu Georgeta, Racoceanu Cristinel, Cruceru Mihai, Popescu Cristinel, Diaconu Bogdan Marian, Ciofu Florin Cristian, Cazalbașu Ramona, Anghelescu Lucica

**Institution:** University „Constantin Brâncuși” from Târgu-Jiu

**Category:** B

**Description:** The invention refers to a process for the manufacture of heat-insulating concrete, using as light granular aggregate the hearth ash resulting from the burning of coal in thermoelectric power plants. It is known that for the manufacture of heat-insulating concrete with maximum usage temperatures of up to (1000-1100)OC, light aggregates are currently used, such as calcined diatomite and granulated blast furnace slag, raw materials that are currently in short supply in Romania. The technical problem that the invention solves consists in obtaining concrete with thermal power plant ash, through a cheap, economical and easy to apply process in production. The process of obtaining heat-insulating concretes, based on thermal power plant heavy ash and cement, assumes that in the composition of these concretes, ash represents (25-80)%, either as a single granular aggregate or in combination with other types of heat-resistant, lightweight granular aggregates, usual, such as, for example, expanded perlite. Heat-insulating concretes based on thermal power plant ash, obtained according to the invention patent, can be put into operation by known technical processes, of casting-vibration or shotcrete.

**State of development:** product

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**Presentation link:** <https://icdi.utgjiu.ro/wp-content/uploads/2024/02/Brevet-de-inventie-nr.-12987227.04.2018.pdf>

18.

**Title:** PROCESS FOR OBTAINING COMPACTION MASSES WITH REINFORCEMENT BASED ON HYDRAULIC BINDER

**Patent/project number:** 129783/30.03.2018

**Author/s:** Popescu Georgeta Luminița, Marica Mădălina Mirabela, Abagiu Traian Alexandru, Predeanu Georgeta, Racoceanu Cristinel, Cruceru Mihai, Popescu Cristinel, Diaconu Bogdan Marian, Ciofu Florin Cristian, Cazalbașu Ramona, Anghelescu Lucica

**Institution:** University „Constantin Brâncuși” from Târgu-Jiu

**Category:** B

**Description:** The invention refers to a process for obtaining quick-hardening masses, based on hydraulic binder, used in the execution of reinforced form, leveling or filling layers, in construction works. The process according to the invention capitalizes on the specificity of the oxidic and mineralogical chemical composition of the secondary steel treatment slag, in that, after grinding to an appropriate fineness for a rest of a maximum of 10% on the sieve with the meshes of 0.09mm, is used as a hydraulic binder in the



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composition of the compacting masses. The process according to the invention uses industrial waste with a relatively low degree of recovery as granular aggregates, to obtain the compaction masses with rapid hydraulic hardening: steel making slag in an electric furnace and ash of power plant.

**State of development: product**

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**Presentation link:** <https://icdi.utgjiu.ro/wp-content/uploads/2024/02/Brevet-de-inventie-nr.-12978330.03.2018.pdf>

19.

**Title: NANOSTRUCTURED SURFACES USED IN THE BIOMEDICAL FIELD**

**Patent/project number: Student Project**

**Author/s: Avrămoiu Roxana; Coordinators: Associate PhD professor Tătar Adina, Lecturer PhD eng. Rădulescu Constanța**

**Institution University „Constantin Brâncuși” from Târgu-Jiu**

**Category: B**

**Description:** The main subject of the work is the obtaining of nanostructured surfaces based on magnetite (Fe<sub>3</sub>O<sub>4</sub>) functionalized with carboxymethylcellulose and loaded with ceftriaxone, with the aim of combating the microbial biofilm. The nanostructured films were deposited on a silicon support, in order to evaluate the antimicrobial effect. In order to obtain a more uniform and complex surface, advanced laser processing was chosen, through the MAPLE technique, and the surfaces were investigated by means of infrared microscopy. In order to obtain the films formed from Fe<sub>3</sub>O<sub>4</sub>@CMC/CEFT, the fluence of the laser beam was modified, and the infrared mapping carried out later allowed obtaining qualitative information on the composition and chemical distribution of the surface layer formed, at laser fluence values of 300, 400, respectively 500 mJ / cm<sup>2</sup>. Analyzing the infrared absorption spectra associated with the three experimental variants, it can be noted that the lowest degree of degradation of the functional groups is recorded in the case of using a laser beam fluence value of 400 mJ / cm<sup>2</sup>, this value being considered optimal for deposition MAPLE related to the application targeted in the work. The newly synthesized thin film showed high antimicrobial activity. Its surface inhibited the formation of biofilms formed following bacterial colonization. Fe<sub>3</sub>O<sub>4</sub>@CMC/CEFT nanostructured surfaces, in the form of thin films, deposited by the MAPLE technique, interfere with the formation of biofilms both in the initial phase and during biofilm maturation, both in the case of E. coli and in the case of P. aeruginosa when biofilms were significantly affected at all time points tested. Although the results in terms of UFC / mL values were not as high in the case of S. aureus, we can consider that time was an impediment in obtaining these values, the effect decreasing quite a lot in the period 24-48- 72 hours after incubation.

**State of development: educational model for the laboratory**

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**Presentation link:** <https://icdi.utgjiu.ro>

20.

**Title: SEMIPRECIOUS RROCK COLLECTION**



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**Patent/project number:** *Student Project*

**Author/s:** *Mihaita Sergiu Nicolae; Mentor: Corneliu BIRTOK BANEASA*

**Institution:** *Politehnica University of Timisoara, Faculty of Engineering Hunedoara*

**Category:** *K*

**Description:** *In this project I study and presenting a collection of semiprecious rocks that were maintained for years with love and care. Besides the other two semiprecious rock cases with plastic cubes and a safety sponge, there will be featured some more rocks in addition. For example: A sheet of gold incased in plastic to protect it, a piece of green glass that got eroded by the water into a rock, which was found in a river, a tiger s eye pendant, a red jasper pyramid and much more. Why is the knowledge about geology so important? Well Geology is the primary Earth science and looks at how the earth formed, its structure and composition, and the types of processes acting on it. It is very important for the understanding of Earth's Processes, Resource Exploration, Environmental Management, Infrastructure Development, Climate Change Study and Water Resource Management. Geology is also tied to many industries across the world like Construction Companies, Agriculture, and much more.*

**State of development:** *A semiprecious rock collection well preserved and put on display*

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**Presentation link:** <https://www.fih.upt.ro/v6/>

21.

**Title:** *ASPECTS REGARDING THE PROCESS OF REDUCING STEEL BY-PRODUCTS UNDER LABORATORY CONDITIONS*

**Patent/project number:** *Doctoral research project*

**Author/s:** *Ioana FĂRCEAN, Erika ARDELEAN, Ana SOCALICI, Marius ARDELEAN*

**Institution:** *Politehnica University of Timisoara, Faculty of Engineering Hunedoara*

**Category:** *B*

**Description:** *The reduction process is an unconventional process for recovering small and powdery waste containing iron, predominantly from the steel industry. This process has become increasingly applied due to the growing need for by-products (secondary raw materials), which is caused by the depletion of material resources within the steel industry. The research carried out took into account the pelletization processing of a wide range of small and powdery waste containing iron from industries such as steel, mining, and energy. The by-products obtained were reduced/hardened in a laboratory installation (oven equipped with a fume gas capture and purification hood), with the aim of reducing the amount of oxygen in the pellets and reducing the Zn content present in the waste that was processed.*

**State of development:** *Research project*

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22.

**Title:** *DIRECT REDUCED IRON A VALUABLE BY-PRODUCT FOR THE STEEL INDUSTRY*

**Patent/project number:** *Doctoral research project*

**Author/s:** *Ioana FĂRCEAN*



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**Institution:** Politehnica University of Timisoara, Faculty of Engineering Hunedoara

**Category:** B

**Description:** Direct reduced iron (DRI) is the product of the process of direct reduction of iron ore to solid state, which aims to reduce the amount of oxygen in the ore. Direct reduced iron is produced in various forms (CDRI, HDRI, HBI) and can be fed into the load of electric arc furnace, induction furnace, oxygen converter, blast furnace, as a secondary raw material, if certain specific quality characteristics are met, mainly regarding chemical composition. DRI should not be seen as a substitute for scrap metal but rather as a source of clean iron that can contribute to the development of the raw material base needed by the steel industry. Worldwide the production of iron sponge is increasing, most of the production being obtained by Midrex process technology, according to existing statistics and data that have been processed and plotted.

**State of development:** PhD Thesis

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**Presentation link:** <https://www.fih.upt.ro/v6/>

23.

**Title:** DEVELOPMENT ON ALUMINIUMMETAL MATRIX COMPOSITES

**Patent/project number:** Doctoral Research Project

**Author/s:** Ciprian BULEI, Mihai-Paul TODOR, Imre KISS

**Institution:** Politehnica University of Timisoara, Engineering Faculty of Hunedoara

**Category:** B

**Description:** ALUMINIUMMETAL MATRIX COMPOSITE Sare light in weight, highly resistive to corrosion and very hard. Due to these properties, aluminum metal matrix composites lead to have various applications. The reinforcements considered are Al<sub>2</sub>O<sub>3</sub>, silicon carbide, fly ash, zircon, boron carbide etc. improves the mechanical and tribological properties of the metal matrix composite. A metal matrix composite is a combined product of matrix phase and reinforcement phase. The combination of matrix phase of aluminiumand reinforcements phase denotes aluminium MMC. Because of different properties like low density, better corrosion resistance, high abrasion and wear resistance, high thermal conductivity, high specific modulus aluminium metal matrix composites are applied in various fields such as aeronautical, automobile and in marine fields. The properties of the metals can be improved by the addition of more elements to the parent metal. The alloys of metals reinforced with particulate ceramics or fibers to achieve combined properties and formed as metal matrix composites. The properties of these materials have an excellent applications in various areas.

**State of development:** laboratory

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24.

**Title:** DEVELOPMENT OF TEXTILE-REINFORCED COMPOSITE MATERIALS

**Patent/project number:** Doctoral Research Project

**Author/s:** Mihai-Paul TODOR, Ciprian BULEI, Imre KISS

**Institution:** Politehnica University of Timisoara, Engineering Faculty of Hunedoara



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## Category: B

**Description:** TEXTILE COMPOSITES are FIBER-REINFORCED COMPOSITE MATERIALS. The form of TEXTILE FABRIC being used as reinforcement are: woven, knitted, braided. TEXTILE-REINFORCED COMPOSITE MATERIALS are part of the general class of engineering materials called COMPOSITE MATERIALS. Two or more chemically distinct material which when combined have improved properties over the individual material. TEXTILE COMPOSITES, which are a combination of POLYMER MATRIX and TEXTILE REINFORCEMENTS, provide an attractive alternative to unidirectional (UD) composites as they enable easier and automated manufacturing of complex component shapes. Ease of draping results in lower overall manufacturing costs. The large variety of available textile reinforcements, which includes woven, braided and knitted fabrics, offers a large choice of engineering solutions.

**State of development:** laboratory

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**Presentation link:** <https://www.fih.upt.ro/v6/>

25.

**Title:** REINFORCING CONCRETE WITH RECYCLED PLASTIC WASTES

**Patent/project number:** Doctoral Research Project

**Author/s:** Andrei-Mihai BACIU, Imre KISS

**Institution:** Politehnica University of Timisoara, Engineering Faculty of Hunedoara

**Category:** B

**Description:** Solid waste is one of the many factors that negatively affect the environment. The plastic is an important type of solid waste with a strong environmental impact, all types of plastic used in daily life becoming, sooner or later, waste. Therefore, increasing consumption of various types of plastic products is one of the most important challenges in environmental protection. From different perspectives, waste reuse is important because it helps to recycle in the production process, reduces environmental pollution, and helps sustain and conserve non-renewable natural resources. On another hand, many constructions require precise techniques and technologies that can utilize a number of new materials. Also, the lightweight building material industry is considered useful in promoting reused materials. In this context, the use of simple concrete and reinforced concrete is somewhat restricted by specific phenomena such as: cracking, fire resistance, shrinkage, shock resistance, wear resistance, durability, etc. For this reason, an improvement in the performance of the concrete can be obtained by adding in their mass of reinforcements dispersed in the form of fibres from different materials.

**State of development:** laboratory

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**Presentation link:** <https://www.fih.upt.ro/v6/>

26.

**Title:** VALORIZATION OF POWDERY WASTE IN STEEL INDUSTRY

**Patent/project number:** PhD Thesis

**Author/s:** Adriana BOBORA, Ana SOCALICI



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**Institution:** Politehnica University of Timisoara, Engineering Faculty of Hunedoara

**Category:** B

**Description:** The steel industry is looking for sustainable solutions to produce high-quality steel while minimizing environmental impact. Steelmakers are exploring ways to maximize the use of waste or switch to new waste-based steelmaking processes. At the same time, the waste industry continues to invest in waste processing facilities to ensure the qualities and quantities of waste required by the steel industry. The use of dusty waste in the production of steel in the form of a Carbofer-type by-product used as a slag foaming agent represents the optimal technological solution for the recycling of this waste. Experiments in the laboratory phase have in mind the valorization of dusty waste through the Carbofer process with the obtaining of a powdery mechanical mixture. In the composition of the recipes were used: sideritic waste, agglomeration-furnace sludge, tunder sludge, ferrous sludge, electrode residues and lime dust. The processed materials contain the elements - Fe, C, Ca - useful for the processes taking place in the steel aggregates. The obtained product is used in steelmaking in the electric arc furnace as a slag foaming agent. The applied procedure has the advantage of flexibility, it offers the possibility of choosing some recipes that may contain one or more powdery wastes.

**State of development:** Laboratory

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**Presentation link:** <https://www.fih.upt.ro/v6/>

27.

**Title:** INNOVATIVE SUSTAINABLE SOLUTIONS TO SUPPORT THE IMPLEMENTATION OF EMERGING TECHNOLOGIES THROUGH THE DEVELOPMENT OF ADVANCED, ECO-SMART COMPOSITE MATERIALS

**Patent/project number:** PN 23 35 05 01

**Author/s:** LĂZĂRESCU Adrian-Victor, CSAPAI Alexandra, IONESCU Brăduț-Alexandru, CHIRA Mihail, RUS Mircea-Iosif

**Institution:** INCD URBAN-INCERC Cluj-Napoca Branch

**Category:** B

**Description:** The novelty of the solutions proposed in the project derives on the one hand from the multi and transdisciplinary approach of a research field still in the avant-garde phase at the non-interaction level, and on the other hand from the ambitious design of the combination of two characteristics, one of the "smart" type - self-maintenance and self-cleaning capacity, and the other of the "eco-friendly" type - cement-free material with low environmental impact, obtained by alkaline activation of industrial wastes and by-products, and last but not least, by targeting high durability performance (especially in terms of resistance to microbiological corrosion), all with an impact both on increasing national skills and visibility and on creating the right framework for mobilising entrepreneurship towards innovation and providing products of excellence.

**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



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*development of advanced, eco-smart composite materials in the context of sustainable development of the built environment"*

*State of development: research project*

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*Presentation link: <https://incd.ro/sucursala-cluj-napoca/>*

28.

**Title:** THE INFLUENCE OF AGGREGATES ON THE PHYSICO-MECHANICAL PERFORMANCE OF ALKALI ACTIVATED FLY ASH GEOPOLYMER COMPOSITES

**Patent/project number:** PN 23 35 05 01

**Author/s:** LĂZĂRESCU Adrian-Victor, HEGYI Andreea, CSAPAI Alexandra, POPA Florin

**Institution:** INCD URBAN-INCERC Cluj-Napoca Branch

**Category:** B

**Description:** *The aim of this study is to explore the effects of mixing different aggregates with an alkali activated fly ash geopolymer binder in composite materials. These aggregates are sourced from either recycled waste (glass waste, spent garnet) or quartz aggregates, each being characterized by a different granulation that influences the basic physico-mechanical properties of the material.*

**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"*

*State of development: research project*

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29.

**Title:** THE IMPACT OF ARTIFICIAL INTELLIGENCE IN THE CONSTRUCTION INDUSTRY

**Patent/project number:** PN 23 35 05 01

**Author/s:** RUS Mircea-Iosif, AIVAZ Kamer Ainur

**Institution:** INCD URBAN-INCERC Cluj-Napoca Branch

**Category:** B

**Description:** *Artificial Intelligence (AI) is having a significant impact in the construction industry, bringing several important benefits and changes. Overall, the implementation of artificial intelligence in construction can bring several benefits, such as reduced costs, improved efficiency and sustainability, and increased safety on the construction site. However, it is also important to consider the challenges and risks associated with the use of AI in this field, such as data security and the impact on traditional workplaces. Thus, the use of AI in construction brings with it certain risks and concerns that need to be considered during implementation. To manage these risks it is crucial that construction companies take a proactive*



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*approach to data security, ethics and legal compliance, invest in staff training and promote a culture of transparency and accountability in the use of AI technologies in construction.*

**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*

*State of development: research project*

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*Presentation link: <https://incd.ro/sucursala-cluj-napoca/>*

30.

**Title:** **ULTRASONIC ACTIVATION OF THE MOLDS USED FOR WIRE DRAWING TO REDUCE THE FRICTIONAL FORCES AND OBTAIN SUBSTANTIAL REDUCTIONS IN THE ENERGY CONSUMED**

**Patent/project number:** TCHU ID 520235560

**Author/s:** Gheorghe Marilena, Nițoi Dan Florin, Chivu Oana Roxana, Borda Claudia, Crangureanu Anda

**Institution:** National University of Science and Technology POLITEHNICA Bucharest

**Category:** B

**Description:** *Wire drawing and optical fiber are in an exponential evolution taking into account the transition to green energy where the recording of wind parks, photovoltaic parks and the transport of electricity become critical especially since all of these are arranged in certain favorable geographical areas and the electricity obtained must be transported. The presented project proposes the ultrasonic activation of the metal molds used for drawing by putting them in contact with the concentrator of an ultrasonic system. The ultrasonic field is currently recognized by its active or passive applications that have proven effective in medicine, engineering, the aerospace or military industry. As is known, the production of vibrations with an amplitude of about 0.1  $\mu\text{m}$  is sufficient for the significant reduction of friction. According to studies, an amplitude between 20...60 nm leads to a drastic decrease in frictional forces, by approximately 30...40%, at vibration frequencies in the range of 40...70 Khz. Wire drawing in the classic system involves passing the semi-finished product 1 through the inside of mold 2 resulting in the finished product 3, after several such passes as can be seen in Figure 1.*

*Starting from this well-known process, the ultrasonic activation of mold 2 is followed, so that the energy consumption resulting from the substantial reduction of the frictional force decreases by approximately 30%. For the ultrasonic activation of a mold like the one shown in Figure 2. A piezoceramic transducer of the type in Figure 2b fed from a voltage source like the one in Figure 2c will be used.*



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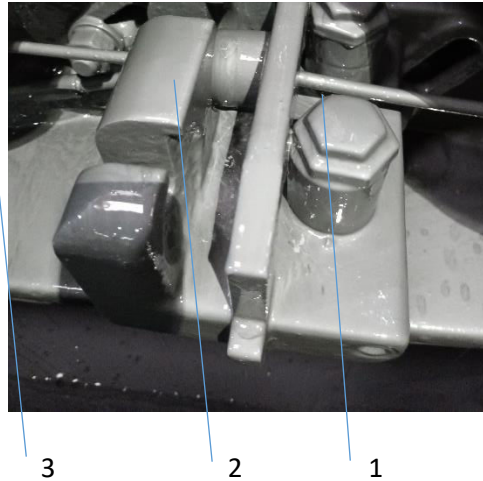


Fig. 1. Functional diagram of the wire drawing installation



Fig. 2. The ultrasonic system used to reduce the drawing force  
a. - drawing die; b.- piezoceramic transducer; c. - ultrasound generator

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Presentation link: No

31.

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

**Patent/project number: Patent OSIM nr.: RO136050- B1/30.05.2024**

**Author/s: Nemeş Ovidiu, Borlea (Mureşan) Simona Ioana, Tiuc Ancuţa-Elena, Deak Gyorgy**



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**Institution:** Technical University of Cluj-Napoca

**Category:** B

**Description:** The aim of this work was to obtain materials with sound-absorbing properties using sheep wool and rigid bicomponent polyurethane foam. Were obtained four materials composed of three layers, 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 rigid bi-component 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.

**State of development:** patent, scientific paper, research project

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**Presentation link:** <https://www.utcluj.ro/en/>

32.

**Title:** METHOD FOR MAKING SUPPORTS TO BE USED IN SELECTIVE LASER MELTING BY DIFFERENTIAL SCANNING

**Patent/project number:** Patent OSIM nr.: RO134105- B1/ 30.06.2023

**Author/s:** Cosma Sorin Cosmin, Bâlc Nicolae Octavian, Popan Alina Ioana, Hendea Radu Emil

**Institution:** Technical University of Cluj-Napoca

**Category:** B

**Description:** The invention relates to a method for making supports to be used in selective laser melting (SLM) by differential scanning, more exactly to anchor the parts during the SLM process. The purpose is to improve the quality of support structures by having better adhesion with SLM platform and fabricated parts. According to the invention, the method comprises the stages of initialization of process parameters corresponding to the scanning of the lower zone of the supports, material deposition layer-by-layer and laser scanning of 2D sections of the support for consolidation purposes, the support being divided into a lower zone which is the contact zone with a working platform, an upper zone on which the piece is fixed and a medial zone, where the scanning of the support is differentiated on the three zones.

**State of development:** patent, scientific paper, research project

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**Presentation link:** <https://www.utcluj.ro/en/>

33.

**Title:** PVA FIBER REINFORCED CEMENTITIOUS COMPOSITE WITH FLY ASH AS A REPLACEMENT FOR NATURAL AGGREGATE AND PROCESS OF OBTAINING

**Patent/project number:** Patent application OSIM nr.: A/00832/13.12.2023



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*Author/s: Negruțiu Camelia Maria, Șoșa Pavel Ioan, Câmpian Cristina Mihaela, Pop Maria Ileana*

*Institution: Technical University of Cluj-Napoca*

*Category: B*

*Description: This invention relates to the composition and process of obtaining a fiber reinforced cementitious composite with 2% Polyvinyl Alcohol (PVA) fibers and fly ash as a substitute for natural aggregates. The innovation involves the complete replacement of aggregates specific to conventional concrete with thermal power plants waste, such as fly ash, to obtain a new eco-friendly material with compressive and tensile strengths comparable to those of traditional concrete but with significant improvements in deformability properties.*

*State of development: patent, scientific paper, research project*

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34.

**Title: COMPOSITE MAGNETIC CORES BASED ON FERROMAGNETIC FIBERS AND PROCESS FOR PREPARING THE SAME**

**Patent/project number: Patent application OSIM nr.: A/00052/07.02.2023**

**Author/s: Neamțu Bogdan Viorel, Marinca Traian Florin, Chicinaș Ionel**

**Institution: Technical University of Cluj-Napoca**

**Category: B**

**Description:** The invention relates to composite magnetic cores based on ferromagnetic fibers and to the method of obtaining these cores. The proposed process can be applied to obtain magnetic composite cores from a varied range of ferromagnetic fibers. The proposed process is a process with increased productivity compared to the classic processes of pressing fibers in a mold. It facilitates the obtaining of composites compact with superior magnetic characteristics because it allows a better preservation of the integrity of the dielectric layer and does not induce mechanical stresses and crystallographic defects in ferromagnetic fibers. Also, the innovative cold sintering method proposed in the patent brings a significant improvement in terms of the productivity of the conventional cold sintering operation.

**State of development: patent, scientific paper, research project**

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35.

**Title: MULTI-PURPOSE HEAT GENERATING EQUIPMENT WITH HEAT STORAGE**

**Patent/project number: PhD thesis**

**Author/s: Lajos Vásárhelyi (Szigliget)**

**Institution: Idea Club 13 Association, Hódmezővásárhely - HUNGARY**

**Category: B**

**Description:** A tube spiral built into a closed system boiler, in which liquid flows and heats it up, delivering the heat to the heating elements. Although this solution can also be used for hot air production and heating



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*State of development: product*

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*Presentation link: <https://otletclub.5mp.eu/web.php?a=otletclub>*

36.

**Title:** AUTOMATIC LINE AND THERMOFORMING PROCESS OF THE PARTS FROM THERMOPLASTIC COMPOSITE MATERIAL

**Patent/project number:** Patent application OSIM nr.: A/00574/18.10.2023

**Author/s:** Ciupan Cornel, Ciupan Mihai, Filip Ioan, Ciupan Emilia

**Institution:** Technical University of Cluj-Napoca

**Category:** B

**Description:** The invention refers to an automatic thermoforming line for parts made of thermoplastic composite materials reinforced with plant fibers. The line consists of a heating system formed by a conduction heating zone where two strips of composite material are heated in parallel by pressing between the plates of a hot press and a roller heating zone. The material is kept in the hot press for a time  $t_1$ , after which it passes through the hot rollers in the second zone forming a single strip which is further heated by conduction and convection for a time  $t_2$ , until the thermoplastic matrix melts. The strip of plasticized material passes from the heating zone to the forming zone with cold rollers, resulting in a profiled board.

**State of development:** patent, scientific paper, research project

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37.

**Title:** CONTINUOUS THERMOFORMING LINE FOR PROFILED BOARDS

**Patent/project number:** Patent application OSIM nr.: A/00575/18.10.2023

**Author/s:** Ciupan Cornel, Ciupan Mihai, Filip Ioan, Ciupan Emilia

**Institution:** Technical University of Cluj-Napoca

**Category:** B

**Description:** The invention refers to an automatic thermoforming line for parts made of thermoplastic composite materials consisting of a reinforcing element (hemp fibers, flax, willow, poplar etc.) and a thermoplastic matrix (polypropylene).

The line consists of a material feeding system in the form of two strips of fibrous layer, a heating furnace with two successions of rollers that lead the strips of material in separate zig-zag paths, and finally, at the terminal part of the furnace, the strips come together in a single strip with the help of two pairs of rollers and pass into the forming system with rollers in order to obtain a profiled board.

**State of development:** patent, scientific paper, research project

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## C - Computer sciences, Electronics and Electrical engineering

1.

**Title:** PROCESS FOR OBTAINING SPATIAL FORMATIONS MADE OF CARBON ATOMS OF THE FULLERENE TYPE BY ELECTRICAL IMPULSE DISCHARGES IN UNDEREXCITATION MODE, USING PYROLYTIC GRAPHITE CATHODE

**Patent/project number:** 133558/09.02.2018

**Author/s:** Laurentiu MARIN

**Institution:** National Institute for Research and Development in Chemistry and Petrochemistry – ICECHIM Bucharest

**Category:** C

**Description:** The presented invention resulted from the research works related to the doctoral thesis with the theme: “Omitting the grip effects between metallic and non-metallic surfaces by means of the graphite films deposited by the impulse electric discharge process” supported by Dr. Eng. Marin Laurentiu. On a metal surface connected to a device for generating electrical impulses at the anode pole, a graphite film is applied following electrical discharges that occur between this surface and a pyrolytic graphite electrode connected to the cathode pole. working parameters were the following: discharge capacitor capacity 600 microFarads, the charging voltage of the capacitor bank 250 V, the cathode/anode interface 1,5 mm. after specific analyzes it was found that on the surface of the metal anode, outside the graphite film, a series of formations made up of carbon atoms of the fullerene type were obtained

**State of development:** PhD Thesis

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**Presentation link:** <https://icechim.ro/en/>

2.

**Title:** INTEGRATED SYSTEM FOR SIMULTANEOUS MEASUREMENT OF FLAME FRONT PROPAGATION AND PRESSURE WAVE VELOCITIES IN CASE OF EXPLOSIONS.

**Patent/project number:** BI 131464/26.02.2021

**Author/s:** Emilian Ghicioi, George Artur Găman, Lupu Constantin, Sorin Burian, Mihaela Părăian, Maria Prodan, Dan Sorin Gabor, Vlad Păsculescu, Nicolae Vlasin, Andrei Szollosi – Mota, Marius Șuvar, Irina Vasilica Nălboc



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**Institution:** NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN MINE SAFETY AND PROTECTION TO EXPLOSION - INSEMEX

**Category:** C

**Description:** The invention relates to an integrated system for simultaneous measurement of flame front propagation and pressure wave velocities in case of air-flammable gas explosions triggered in the cylindrical shock tube, equipped with optical and pressure transducers, in order to study their behavior depending on the concentration, on the ignition sources and on the propagation distance, respectively for establishing the deflagration or detonation characteristics.

**State of development:** prototype

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**Presentation link:** <https://insemex.ro/home-en/>

3.

**Title:** TEST BENCH FOR IMAGERY RESEARCH OF GAS EXPLOSIONS

**Patent/project number:** BI 131735/30.03.2023

**Author/s:** Vlasin Nicolae, Găman George Artur, Ghicioi Emilian, Lupu Constantin, Păsculescu Vlad, Pupăzan Gheorghe Daniel, Prodan Maria, Călămar Angelica Nicoleta, Cioclea Doru, Nălboc Irina, Șuvar Marius, Florea Gheorghe-Daniel

**Institution:** NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN MINE SAFETY AND PROTECTION TO EXPLOSION - INSEMEX

**Category:** C

**Description:** The invention refers to a stand for the imaging research of explosions of flammable air-gas mixtures, which allows recording the phenomena of ignition and evolution of combustion (development of the flame front) with the help of a high-speed camera (more than 30000 frames per second). The system uses a transparent parallelepiped explosion chamber, interspersed in a special montage of planar mirrors, mechanically deformed in a controlled horizontal and vertical plane, respectively, to obtain the focal distances required for the use of the Schlieren technique. The system uses a cylindrical incandescent light source, internal pressures are monitored, and the explosion is initiated by an electrical spark (inductive or capacitive).

The advantages of using the stand are as follows:

- ensures the complete imaging research of gas explosions, from the ignition initiation phase, during the evolution of combustion, until the exhaust in the atmosphere;
- easy achievement of optical effects similar to fixed parabolic mirrors, by using plane mirrors, deformable mechanically controlled, with the possibility of adjusting the focal distances;
- the use of a cylindrical light source with filament, with the possibility of adjusting the light intensity by means of an autotransformer, for the visualization of the Schlieren effect at speeds higher than 30000 frames per second of the video camera;
- monitoring the pressure developed by the explosion.

**State of development:** research project

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**Presentation link:** <https://insemex.ro/home-en/>



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4.

**Title:** STAND FOR DETERMINING REACTION PRODUCTS GENERATED BY SOLID COMBUSTIBLE MATERIALS

**Patent/project number:** BI 132612/30.08.2023

**Author/s:** Ghicioi Emilian, Găman George Artur, Maria Prodan, Szollosi Mota Andrei, Lupu Constantin, Burian Sorin Constantin, Păsculescu Vlad, Cioclea Doru, Nălboc Irina, Șuvar Niculina Sonia, Vlasin Nicolae, Șuvar Marius, Rădoi Florin, Chiuзан Emeric, Florea Gheorghe Daniel, Drăgoescu Răzvan

**Institution:** NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN MINE SAFETY AND PROTECTION TO EXPLOSION - INSEMEX

**Category:** C

**Description:** The invention relates to a stand for determining reaction products generated by combustible solid materials subject to a controlled combustion/thermal decomposition process (pyrogenic process), providing the possibility for setting up the temperature, the air flow for combustion, the air flow for diluting effluents, the speed of inputting the sample into the furnace, in order to study the behaviour to exposure to the thermal radiation, the loss of mass, the clouding degree, of solid sample deposition and of the fuel-oxidant ratio. According to the invention, the stand provides the performance of research, in safety conditions, on the pyrogenic behaviour of solid combustible materials, both in standard conditions, as well as in extended range required for experimental studies. By the adjustable pump for the air supply of the PSAATPP furnace and by the adjustable pump for dilution of gases PPAACG within the mixing chamber, the stand ensures a large range of air flow-rates, required for obtaining combustion/thermal decomposition within the electric horizontal furnace, controllable and monitored by the temperature unit and transducers SACT-MTIC-MTCT. Inserting or extracting the sample-holder into or out of the furnace is performed by means of a mechanism driven by an electric motor, controlled by a unit SRTMEAPP, and having an adjustable feed rate within an extended range, disposing also of a spring capable of quickly withdrawing the sample from the furnace, upon actuation of an articulated pusher fitted with a hinge that releases the rod stop.

**State of development:** prototype

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**Presentation link:** <https://insemex.ro/home-en/>

5.

**Title:** METRIC SPACES FOR ASSESSING SIMILARITIES BETWEEN MENTAL AND BEHAVIORAL DISTURBANCES IN EPILEPSY

**Patent number:** O № 6819 / 04.02.2021 & Seria OȘ № 5771 / 12.12.2017

**Author/s:** Mariana BUTNARU, Ana CĂPĂȚĂNĂ, Gheorghe CĂPĂȚĂNĂ, Alexandru POPOV

**Institution:** Moldova State University

**Category:** C



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**Description:** *Metric Spaces for Assessing Similarities Between Mental and Behavioral Disturbances in Epilepsy. Definition. The similarity space is a couple  $(X, sim)$ , where  $X$  is a non-empty set whose elements are called points, and  $sim: X \times X \rightarrow N$  an application called similarity-function with properties:*

*Sim<sub>1</sub>:  $0 \leq sim(x, y) \leq 100, \forall x, y \in X$*

*Sim<sub>2</sub>:  $sim(x, y) = sim(y, x), \forall x, y \in X$  (\* symmetry \*)*

*Sim<sub>3</sub>:  $sim(x, y) = 100, \forall x, y \in X$  (\* if and only if  $x = y$  \*)*

*The similarity tables of MBDE diagnoses allow a deeper understanding of the mechanisms of manifestation of these diseases. The respective mathematical and informatics tools allowed the construction of similarity tables of MBDE diagnoses.*

**State of development:** *Used in: medical practice at the Medical Sanitary Institution, the Public Clinical Hospital of Psychiatry; medical practice at the Republican Clinical Center „Constructorul“; development of intelligent support systems for the MBDE; training of doctoral students.*

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6.

**Title:** WEIGHTWATCH: BED SENSOR SYSTEM

**Patent/project number:** Healthcare project

**Author/s:** Gaweevat Thanasitnaphitkul, Parinton Jangtawee, Gaewgan Yambangyang, Jeerasak Jitrotjanarak

**Institution:** Satit Prasarnmit International Programme, Bangkok, Thailand

**Category:** C

**Description:** *Revolutionizing patient care, our innovative project utilizes Hall effect sensors integrated into standard hospital beds to provide real-time weight monitoring. By measuring the current drawn by the lifting motor, our system accurately estimates patient weight without the need for additional equipment. This breakthrough technology enhances healthcare efficiency, enabling healthcare professionals to track patient weight seamlessly and non-invasively. With precise calibration and advanced sensor technology, our solution ensures accuracy and reliability in diverse clinical settings. Join us in redefining patient care with our cutting-edge bed weight monitoring system.*

**State of development:** Prototype

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**Presentation link:** <https://www.spip.in.th/>

7.

**Title:** COSTUME FOR BLIND PEOPLE

**Patent/project number:** Student Project

**Author/s:** Deşan Dumitru



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**Institution:** High School "Constantin Stere", Soroca, Republic of Moldova

**Category:** C

**Description:** The costume for the visually impaired is a specialized garment designed to provide additional assistance and independence to individuals navigating through unfamiliar environments. It consists of three main components: the suit itself, a cane, and a cap. The suit incorporates four sensors, with an additional two installed on the cap and cane, covering a total of 180 degrees. This innovative project aims to enhance the mobility and safety of visually impaired individuals by integrating intelligent systems directly into the urban environment.

Key features of the costume include:

**Sensors:** The suit is equipped with sensors that detect obstacles and environmental cues, providing feedback to the wearer to assist in navigation. **Integration with Urban Infrastructure:** A groundbreaking aspect of the project is the implementation of an intelligent system embedded in the sidewalk. When detected by the cane, this system announces nearby landmarks or points of interest, such as stores or pharmacies, aiding in orientation and mobility.

**Innovative Technology:** The use of NFC sensors with magnetic inductors allows for seamless integration into the pavement without the need for external signage, enhancing the accessibility and usability of the system.

Modern equipment and technologies, along with their applications, play a vital role in improving human activity and long-term development. The development of this system will contribute to reducing inequalities and creating a more comfortable environment for visually impaired individuals. Recommendations for future enhancements include the implementation of LiDAR sensors for improved distance sensing and consideration of integrating the project into educational activities to promote student engagement and stimulate further research and development.

**State of development:** Prototype

**Contact:** Telephone: +37369584872 Email: [dumitrurmd@gmail.com](mailto:dumitrurmd@gmail.com)

**Presentation link:**

<https://docs.google.com/presentation/d/18jv0xHD8CqwBf009ShLO4rIIjXM7Rym5WvqoWouVZUg/edit?usp=sharing>

8.

**Title:** THE ROBOTIC ARM

**Patent/project number:** Student Project

**Author/s:** Onilov Artiom

**Institution:** High School "Constantin Stere", Soroca, Republic of Moldova

**Category:** C

**Description:** The robotic arm is a prototype created for people with disabilities, like those suffering from the lack of one or both arms. With the help of this model, they can lead a normal way of life and carry out any activity with the help of this alternative arm. The mechanical arm can activate any of its fingers when the opposite finger contacts a solid surface using the glove controller. To perform the activities where it is necessary to move the hands individually, we can use the voice commands incorporated in the system, with the help of an application. To perform the activities where it is necessary to move the hands individually,



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*we can use the voice commands incorporated in the system, with the help of an application. The application can be installed on any phone. By recording our voice commands, it can send all the necessary information to the arm, through a Bluetooth module, from where it could be executed.*

**State of development: Prototype**

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**Presentation link:**

<https://drive.google.com/file/d/1-xDMpZvqbgqKAWq0Q3VcEUnHA06mzLkw/view?usp=sharing>

9.

**Title:** HEARTBEAT SMARTPHONE AUDIO CLASSIFICATION USING DEEP LEARNING, SAUDI ARABIA 2024

**Patent/project number:** Student Project

**Author/s:** Mohamed Omer, Musab Alosaimi

**Institution:** College of Applied Sciences, Al Maarefa University, Saudi Arabia

**Category:** C

**Description:** Kingdom of Saudi Arabia faces serious health challenges due to the high death rates from heart diseases, where it ranks 24<sup>th</sup> 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 is 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.

**State of development:** concept

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**Presentation link:** <https://www.um.edu.sa/en>

10.

**Title:** LIGHTING TECHNOLOGY MARKET ANALYSIS

**Patent/project number:** Student Project

**Author/s:** Diana – Maria Niculcea, Cristina – Mălina Moconi, Miana – Minela Visarinesc, Cristian – Andrei Neștian, Adrian – Amadeus Oprea; **Coordinators:** Ștefan Mihaela, Fărcean Ioana

**Institution:** Politehnica University of Timisoara, Engineering Faculty of Hunedoara

**Category:** C

**Description:** At market level, there is a continuous growth in the need for LED lighting systems in the "lighting" segment, based on increasing customer interest, decreasing electricity consumption and



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increasing product lifetime. European Commission officials predict that in the future, LED lights will become a viable alternative to both incandescent bulbs and CFL lighting solutions, which include mercury vapour in the production process.

Therefore, taking into account the strong growth trends of the electrical equipment market, and in particular the LED lighting market, their electricity consumption, and the orientation towards "eco-friendly" behaviour of consumers, we consider this area to be of interest. In addition to macro-economic developments, regulations affecting lighting products are a key determinant of the future lighting market. Governments around the world are accelerating initiatives in this area. Banning inefficient technologies is one such regulation. The other is to adopt stricter laws on high energy efficiency requirements, and provide incentives to build a whole infrastructure. This approach will further promote energy-efficient lighting technologies such as LED technology. In fact, from the analyses carried out, it appears that the emphasis is increasingly placed on environmental protection actions, with clear trends towards the reduction of all technologies present in the general lighting sector and the monopolisation of the entire market by LED lighting devices (LLDs). At the same time, we are witnessing a gradual disappearance of the lighting industry, at least in the form we have known until now, and its increasing migration towards the electronics industry.

**State of development:** Student Project

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**Presentation link:** <https://www.fih.upt.ro/v6/>

11.

**Title:** BLUETOOTH SYSTEM USED FOR PARKING AND CONTROL OF AN AUTONOMOUS CAR

**Patent/project number:** Student Project

**Author/s:** Eugen BIRTOK, Raluca ROB

**Institution:** Politehnica University of Timisoara, Faculty of Engineering Hunedoara; CITT Politehnica 2020

**Category:** C

**Description:** This project 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 necessary 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)



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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

HC-05 module is an easy to use Bluetooth SPP (Serial Port Protocol) module, designed for transparent wireless serial connection setup. Serial port Bluetooth module is fully qualified Bluetooth V2.0+EDR (Enhanced Data Rate) 3Mbps. Modulation with complete 2.4GHz radio transceiver and baseband. It uses CSR Bluecore 04-External single chip Bluetooth system with CMOS technology and with AFH (Adaptive Frequency Hopping Feature). It has the footprint as small as 12.7mmx27mm. Hope it will simplify your overall design/development cycle.

**State of development: Prototype**

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**Presentation link:** <https://www.fih.upt.ro/v6/>

12.

**Title:** THE TOOL FOR IDENTIFYING AND ASSESSING THE RISKS OF OCCUPATIONAL INJURY AND ILLNESS - SAFETYSFERE

**Patent/project number:** Doctoral Research Project

**Author/s:** Adriana MILEA (PÂRVU), Prof. Dr. Eng. Lucian-Ionel CIOCA

**Institution:** Lucian Blaga University of Sibiu, Faculty of Engineering

**Category:** C

**Description:** The research project consists in the development of a tool for identifying and assessing the risks of occupational injury and illness – SafetySphere, applicable to enterprises in the manufacturing industry of paper and corrugated cardboard and paper and cardboard packaging (method adapted to current legislative and management requirements). The method addresses the limitations and disadvantages identified following the rigorous analysis and practical application of the occupational injury and disease risk assessment method developed by the "Alexandru Darabonț" National Research and Development Institute for Labor Protection in Bucharest, Romania (INCDPM method) - the most frequently used method, at national level, in most fields of activity. In order to maintain or improve the safety and health of workers in the context of the transition to Industry 4.0, it is essential that organizations adopt a sociotechnical approach to the organization of workers' activity, an approach that facilitates the integration of digital technologies. Identifying and assessing the risks of occupational injury and illness from the design and implementation phase of technology, products and processes is essential to establish appropriate preventive measures, to promote a culture of risk prevention and to improve the working conditions of workers.

**State of development:** Research project

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**Presentation link:** <https://www.ulbsibiu.ro/en/>



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13.

**Title:** MULTISPECTRAL MODULE AND EQUIPMENT FOR PHYSICAL NON-DESTRUCTIVE CONTROL

**Patent/project number:** PCT/RO2024/000003/14.02.2024 - Doctoral Research project

**Author/s:** Șaptebani Neta Ionelia, Jurcutiu Corina Elena, Luca Flavia; **Mentors:** Marian Liviu Mocan, Larisa Victoria Ivașcu, Alin Emanuel Artene

**Institution:** Politehnica University of Timișoara

**Category:** C

**Description:** It is a device designed for non-destructive physical customs control that can also be utilized in other areas of interest. Its major methods of operation include electromagnetic spectrum analyses in multiple bands and information gathering from other sensors. The module has the ability to interface with a special computer network, which enables it to carry out prompt comparison analyses to find any potential attempts to avoid customs clearance. This equipment's claimed goals are to enhance physical customs control, prevent human trafficking, economic crime, and other legal violations. By transmitting the pertinent data on a specialized computer network, the device can be utilized both singly and in groups.

**State of development:** prototype

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**Presentation link:** [https://www.upt.ro/Universitatea-Politehnica-Timisoara\\_en.html](https://www.upt.ro/Universitatea-Politehnica-Timisoara_en.html)

14.

**Title:** HIGH VOLTAGE PLASMA FLAME GENERATOR

**Patent/project number:** Student Project

**Author/s:** VLĂDESCU MIHAI ALBERT

**Institution:** National College Mihai Viteazul Ploiesti, 7<sup>th</sup> grade

**Category:** C

**Description:** The plasma generator incorporates components that generate and manipulate high voltage, producing ions that it ohmically superheats. The highly energized ionic agglomeration thus created can heat, burn, melt or cause sublimation of a multitude of materials. The terrestrial applications are multiple (according to the previously listed physical phenomena), but the most interesting are those of outer space, where gravitational, atmospheric and energetic limits cease to produce effects.

**State of development:** prototype

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**Presentation link:** <http://cnmv.ploiesti.roedu.net/>

15.

**Title:** RESEARCH AND CONSTRUCTION OF INNOVATION TO REDUCE AIR HUMIDITY BY APPLING ELECTRIC FIELD INTENSITY ENERGY

**Patent/project number:** Research project



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**Author/s:** Siseerot Ketkaew

**Institution:** Faculty of Engineering, Ramkhamhaeng University, Thailand

**Category:** C

**Description:** This research project presents research and construction of innovation to reduce air humidity by applying 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.

**State of development:** Developing innovations towards commercialization

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**Presentation link:** <http://www.eng.ru.ac.th/>

16.

**Title:** METAL GLAND FOR LARGE DIAMETER ELECTRICAL CABLES

**Patent/project number:** A/00303/30.07.2018 (patent application accepted)

**Author/s:** Dan Ciortea, Gabriel Nicolae Popa

**Institution:** Politehnica University of Timișoara, Faculty of Engineering Hunedoara

**Category:** C

**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 a filling-emptying valve, the rubber gasket and the locking nut. In the body of the gland is a rubber chamber with a valve. 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 perfect sealing regardless of the geometry of the large section of electric cable. The gland can have various fields of use:

- transport, distribution and use of electricity;



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- the electrical machine and plant construction industry;
- metal drive cabinets.

The metal gland for electrical cables or large-diameter pipes has the following advantages:

- it is simple from a constructive point of view, having only four components;
- it has a low-cost price compared to existing glands on the market;
- it adapts well to the irregular surfaces of large-diameter armoured electric cables;
- a gland with a given inner diameter can be used for a wide range of electrical cables of different diameters;
- it is reliable in operation;
- 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 outer insulation of the cable even under the conditions of a temperature variation.

State of development: technical concept

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Presentation link: <https://www.fih.upt.ro/v6/>

17.

**Title:** DC LINEAR VOLTAGE-SINUSOIDAL SIGNAL CONVERTER WITH ADJUSTABLE FREQUENCY

**Patent/project number:** 130458/30.05.2022

**Author/s:** Gabriel Nicolae Popa, Iosif Popa, Sorin Ioan Deaconu

**Institution:** Politehnica University Timișoara, Faculty of Engineering Hunedoara

**Category:** C

**Description:** The DC linear voltage-sinusoidal signal converter with adjustable frequency provides a periodic sinusoidal signal at the output that depends on the DC voltages applied on two inputs: a DC voltage is applied to one of the inputs, which linearly modifies the frequency of the output signal, and on the other of the inputs applies a DC voltage which linearly changes the amplitude of the signal from the output of the converter. The DC linear voltage-sinusoidal signal converter with variable frequency comprises seven functional blocks: two analogue multiplication circuits, two analogue difference circuits, one non-inverting amplifier and two integrated circuits.

The linear DC voltage-variable frequency sinusoidal signal converter has the following advantages:

- it has a simple construction (requires only three integrated circuits and a few resistors and capacitors);
- it has two active continuous voltage inputs and one output;
- the outputs a sinusoidal signal whose frequency depends linearly on the DC voltage applied to one of the inputs;
- the amplitude of the output signal can change linearly depending on the DC voltage applied to the other input;
- the response time is very low due to the realization of the converter only with analogue components;



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- the frequency of the output signal is in the range of kHz, the operating range can be tens of kHz, and the amplitude of the output signal is of the order of volts, this circuit can be used for transmitting signals at a distance with a high resolution with harmonic pollution diminished.

**State of development:** experimental prototype

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**Presentation link:**

[https://uptro29158-my.sharepoint.com/:v/g/personal/gabriel\\_popa\\_upt\\_ro/EaTTBW3-aH9Pi2jCzUOtrOIBjQi0pLBZjc6UQTIj0yH2tA?e=WCgipl](https://uptro29158-my.sharepoint.com/:v/g/personal/gabriel_popa_upt_ro/EaTTBW3-aH9Pi2jCzUOtrOIBjQi0pLBZjc6UQTIj0yH2tA?e=WCgipl)

18.

**Title:** DecisionHarborAI

**Patent/project number:** MPT

**Author/s:** Alin Artene, Larisa Ivascu, Aura Domil, Bogdan Laza

**Institution:** Politehnica University of Timișoara

**Category:** C

**Description:** DecisionHarborAI App is a tool designed to enhance financial decision-making processes while offering versatility for application across various domains. Leveraging sophisticated neural network technology, it provides predictive financial analytics with accuracy and efficiency. The app employs a three-layer neural network architecture, trained through iterative forward propagation, loss calculation, and backpropagation methods. This training approach ensures optimal model performance, allowing for precise predictions on new financial data. The first step is providing a picture or a PDF file of a balance sheet to our API. This will be done from a mobile app or a web application. As soon as a picture or PDF is received, it is converted to a TXT file. A parser takes the TXT gained from the OCR and converts it into structured JSON using machine learning. The JSON is then returned as output from the API. From here, data from the balance sheet can be processed further. The app's primary function is to enhance decision-making in financial reporting tasks by seamlessly integrating input data representing the balance sheet structure with the hidden layer, ultimately predicting key financial performance indicators (KPIs) in the output layer. Custom adjustments can be made to adapt the model to specific data characteristics and task requirements, ensuring versatility and effectiveness.

**State of development:** In development

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**Presentation link:** <https://www.upt.ro/>

19.

**Title:** PROJECT STREAMFLOW GUARDIAN: ROBOTICS FOR FAST-FLOWING RIVER CONSERVATION

**Patent/project number:** Student Project

**Author/s:** Ma. Alexa Nichole M. Cadiz, Matthew David U. Catibog, Miguel Alfonso D. Mujar, Paulyana Caballero

**Institution:** Oriental Mindoro National High School, Calapan, Philippines



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## Category: C

**Description:** In recent years the conservation of fast-flowing rivers has become a pressing issue due to the increasing pollution and waste accumulation. Fast-flowing rivers play a vital role in maintaining the ecological balance of aquatic environments. However these rivers often face significant challenges such as the accumulation of garbage and pollutants. Traditional manual cleaning methods are not only time-consuming and labor-intensive but also pose risks to human operators. Additionally the decomposition of garbage releases harmful pollutants into the water further deteriorating the water quality. Therefore an immediate solution is needed to resolve this issue. To combat this issue, the researchers proposes the development of a robotic system called Project StreamFlow Guardian. This machine is a rotating device that collects and eliminates garbage from the river systems that would otherwise remain uncleared. This rotating device is paired with a robovehicle programmed to bring the collected garbage from the rotating cylinder device to the assigned garbage disposal area. Insuring that the garbage collected from the rivers will be disposed properly and accordingly. This would not only result in a cleaner environment but also a safer and healthier marine ecosystem.

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**Presentation link:**

[https://www.canva.com/design/DAF\\_kzNKiic/8jN0D1YYcljn\\_Tihq5I0bg/edit?fbclid=IwAR1M\\_WiTjIwqbSH1\\_VriN5fgI3-At3PTLK464skrd9TrtXM97D0rZjXJGOVE](https://www.canva.com/design/DAF_kzNKiic/8jN0D1YYcljn_Tihq5I0bg/edit?fbclid=IwAR1M_WiTjIwqbSH1_VriN5fgI3-At3PTLK464skrd9TrtXM97D0rZjXJGOVE)

20.

**Title:** METHOD FOR CORRECTING PLANE SURFACES IN IMAGES FROM CAMERAS EQUIPPED WITH TIME-OF-FLIGHT (TOF) SENSORS, USING CONVOLUTIONAL NEURAL NETWORKS

**Patent/project number:** Patent OSIM nr.: RO135782- B1/30.08.2023

**Author/s:** Pop Marian-Leontin, Tamas Levente

**Institution:** Technical University of Cluj-Napoca

**Category:** C

**Description:** A system and method for automatically eliminating the multi-path interference on planar surfaces caused artifacts for the pulse based Time-of-Flight (ToF) cameras is provided. Moreover, the system comprises a component which is using convolutional neural network (CNN) for the elimination of the artifacts sensed and returned from the ToF camera depth images. The CNN is based on the 3 channel composition of information which is trained on a large real and synthetic dataset, for which an automatic 3D point processing chain is extracting and marking the correct ground planar information. During the evaluation mode, the CNN is able to correct in a seamless manner the artifacts on the planar patches from the ToF camera, ensuring a reduced MPI.

**State of development:** patent, scientific paper, research project

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**Presentation link:** <https://www.utcluj.ro/en/>



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21.

**Title:** METHOD FOR AUTOMATICALLY CALCULATING NORMALS FROM SURFACES ON THREE-DIMENSIONAL (3D) SCANS, INVOLVES USING CONVOLUTIONAL NEURAL NETWORKS

**Patent/project number:** Patent OSIM nr.: RO135781- B1/30.08.2023

**Author/s:** Molnar Szilard, Tamas Levente

**Institution:** Technical University of Cluj-Napoca

**Category:** C

**Description:** A system and method for automatically computing spatial surface normals in 3D data from the pulse based Time-of-Flight(ToF) cameras is provided. Moreover, the system comprises a component which is using convolutional neural network (CNN) for computing the normals of a 3D pointcloud sensed and returned from the ToF camera depth images. The CNN is based on the 3 channel composition of information which is trained on a large real and synthetic dataset, for which an automatic 3D point processing chain is used to determine the normals. During the evaluation mode, the CNN is able to compute the normals of the pointcloud from the ToF camera, ensuring a fast and robust normal estimation for the pointclouds.

**State of development:** patent, scientific paper, research project

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

1.

**Title:** COMBUSTION CHAMBER WITH PREMIX, SWIRL AND PRIMARY DILUTION

**Patent/project number:** RO137923

**Author/s:** ENACHE MARIUS ȘTEFAN; PRISECARU TUDOR; SILIVESTRU VALENTIN; CÂRLĂNESCU RĂZVAN; MANGRA ANDREEA CRISTINA; FLOREAN FLORIN GABRIEL; KUNCSEK RADU EUGEN

**Institution:** COMOTI - Romanian Research & Development Institute for Gas Turbines

**Category:** D

**Description:** The present invention relates to a premix, swirl and primary dilution combustion chamber used in the field of gas turbines that are using gaseous fuels, in particular hydrogen, in which the fuels are represented by gas mixtures with high burning rates. It also represents research conducted for a PhD thesis. The study is realized through a functional prototype that can use a mixture of natural gas and hydrogen in volumetric proportions from 0% to 100% H<sub>2</sub>. Current levels reported in the literature are up to 60% H<sub>2</sub> volumetric proportion.

**State of development:** Prototype, PhD thesis.

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**Presentation link:** <https://www.youtube.com/watch?v=hwyWmi4a2CQ>

2.

**Title:** RECYCLING OF AUTOMOTIVE LITHIUM ION BATTERIES

**Patent/project number:** PhD thesis

**Author/s:** RUS Ioan Alexandru; Mentors: NICOLAE Eugen-Viorel, BIRTOK-BANEASA Corneliu

**Institution:** National University of Science and Technology Politehnica Bucharest, Pitesti University Center; Politehnica University of Timisoara, Faculty of Engineering Hunedoara

**Category:** D

**Description:** Li-ion batteries have become the most widely used power source for electric vehicles due to their environmental protection, long life, high capacity, and high safety in charging and discharging. By 2025, used Li-ion batteries withdrawn worldwide are expected to exceed 600,000 tonnes. Battery manufacturing and end-of-life recycling has become a priority and strategic goal for many regions of the world, especially China and the EU. Although there are currently different types of batteries, Li-ion batteries are expected to dominate the electric vehicle market for at least another decade. The recycling of used Li-ion batteries must be carried out in accordance with the 4R principle (recycle, reuse, reduce and



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recover). Battery recycling has two objectives: reducing the negative impact of waste on the environment and reusing the materials that make up the batteries to promote both sustainable production and the circular economy. Materials from battery recycling can also be a valuable resource. The recycling process can be defined as the process, which starts after the collection and possible sorting and/or preparation for recycling of waste batteries and accumulators obtained by a recycling facility and which is completed when the output fractions are produced for use in their original purpose or for other purposes, without being subjected to further treatment and which have ceased to be waste.

**State of development:** Doctoral research project

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**Presentation link:** <https://www.upit.ro/ro/academia-reorganizata/studii-de-doctorat>

3.

**Title:** TECHNOLOGIES FOR PROCESSING ROAD VEHICLE RIMS

**Patent/project number:** PhD thesis

**Author/s:** Doru Ioan SAPTA; **Mentors:** Ana SOCALICI, Corneliu BIRTOK BANEASA

**Institution:** Politehnica University of Timisoara, Faculty of Engineering Hunedoara

**Category:** D

**Description:** For alloy rims, the important thing is the quality of the alloy and the manufacturing technology, in the case of manufacturing rims by casting, their quality also depends on the casting technology: sand casting, gravity casting, centrifugal and low pressure casting. The first two technologies are less controllable operations, which can lead to the appearance of puffs and retouches. Gradually, the production of alloy wheels by casting is replaced by the production by plastic deformation, which leads to lower weight, physical-mechanical characteristics and improved performance.

Forging is a technique for producing rims from metal alloys, by which the material is heated in a well-established area, the maximum heating temperature being below the solidus temperature. For forging, cylindrical alloy blocks are used, with diameter and height varying depending on the destination of the rim, its dimensions and weight respectively. Once forged, the rims are heat treated to maximize overall mechanical strength. To obtain the final configuration, lathes with computerized numerical control (CNC) are used. The final finishing takes place through careful processing, which involves extraordinarily fine equipment, all details being finished and precisely adjusted to the required dimensions, according to the specifications and design of the design team. Then, the rim is sanded by hand inside and out and a protective acrylic layer is applied. One of the current trends is the increasing demand for large diameter rims, which can be difficult due to their weight, which leads to increased weight on the car's suspension, compromising comfort and safety behind the wheel, however, this problem has been solved by introducing flow technology forming. "Flow Forming" is a procedure for increasing the width of the rim, which uses 3 hydraulic rollers and very high speeds and forces, which lead to very low weights and high resistances. Through this process, hydraulic rollers force the cast material to follow the profile given by the solid steel tools. During the process the entire diameter of the rim is created.

**State of development:** Doctoral research project

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**Presentation link:** [https://www.fih.upt.ro/ccmti/domenii\\_cercetare.php](https://www.fih.upt.ro/ccmti/domenii_cercetare.php)



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4.

**Title:** DUAL TANDEM TRANSMISSION

**Patent/project number:** RO134406 / 30.03.2023

**Authors:** ROMEO CĂTĂLINOIU, SORIN AUREL RAȚIU, IMRE ZSOLT MIKLOS

**Institution:** Coramex by Service Automobile SA, Politehnica University of Timisoara, Faculty of Engineering Hunedoara

**Category:** D

**Description:** 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.

**State of development:** prototype

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**Presentation link:** <https://www.youtube.com/@romeocatalinoiu5758/videos>

5.

**Title:** SUPER TOURING REPLICA

**Patent/project number:** Student Project

**Author/s:** Ovidiu Tudor Ioan OPREA; **Mentor:** Prof. Corneliu BIRTOK-BANEASA

**Institution:** Politehnica University of Timisoara, Faculty of Engineering Hunedoara

**Category:** D

**Description:** 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!

**State of development:** Prototype

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6.

**Title:** GAUSSIAN RBFNN METHOD FOR SOLVING FPK AND BK EQUATIONS IN STOCHASTIC DYNAMICAL SYSTEM WITH FOPID CONTROLLER

**Patent/project number:** <https://doi.org/10.1016/j.ijnonlinmec.2023.104403>

**Author/s:** Wei Li, Guan Yu, Huang Dongmei, Trisovic Natasa

**Institution:** School of Mathematics and Statistics, Xidian University, Xi'an 710071, PR China; Faculty of Mechanical Engineering, Department of Mechanics, University of Belgrade, Belgrade 11000, Serbia

**Category:** D

**Description:** Addressing the Fokker–Planck–Kolmogorov (FPK) equation and its counterpart, the Backward-Kolmogorov (BK) equation, stands as a pivotal endeavor in capturing the transient behavior of stochastic dynamical systems. The advent of Fractional order PID (FOPID) controllers heralds a new era in effectively modulating system responses to meet desired criteria. In this study, we propose the utilization of Gaussian Radial Basis Functions Neural Network (RBFNN) for tackling the FPK and BK equations, thereby deriving transient probability density functions and reliability functions for a generalized Van der Pol system under the influence of a FOPID controller. Through meticulous examination of various fractional orders, we delve into the efficacy of the FOPID controller in steering system dynamics. Our methodology incorporates a strategic data collection approach to address boundary conditions, leveraging a singular Monte-Carlo simulation coupled with uniform distribution within the Gaussian RBFNN framework. This approach ingeniously transforms the solution process of FPK and BK equations into solving algebraic equations, streamlining computational complexity. Numerical analyses of transient system responses substantiate the efficiency and accuracy of the Gaussian RBFNN in solving FPK and BK equations. Notably, we highlight the pivotal role played by fractional integration and differentiation orders as critical parameters influencing system response control. Furthermore, our findings underscore the capacity of fractional order parameters within FOPID controllers to augment system responsiveness and induce bifurcation phenomena, thereby enriching our understanding of system dynamics.

**State of development:** Published, International Journal of Non-Linear Mechanics, Volume 153, July 2023, 104403

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**Presentation link:** <https://www.sciencedirect.com/science/article/abs/pii/S0020746223000550>

7.

**Title:** TUGBOAT “NEREO”, 1: 43 SCALE, FAST ATTACK BOAT S-100, 1:35 SCALE

**Patent/project number:** Modelships Project

**Author/s:** George POPA

**Institution:** GEMAR MODELSHIPS

**Category:** D

**Description:** 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



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to defend against aircrafts during the war. The model is fully functional and can complete the following functions: forward / backward, left / right, anchor maneuvering, 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 competitions: World Championship NS class, Ornetta, Poland, 2017; European Championship Burgas, Bulgaria, 2019; World Championship C class, Rijeka, Croatia, 2021, World Championship C class, Jablonec, Czech Republic, 2023. Fast attack S100 built by Kriegsmarine in WW2 and widely used on all naval operations around 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 Rep.

**State of development:** Modelships

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**Presentation link:** <https://www.facebook.com/gemarmodelships>

8.

**Title:** WE ARE SAVING THE PLANET! SUSTAINABILITY THROUGH RECYCLING IN 3D PRINTING

**Author/s:** Simina TĂNASĂ, Andrei PÎRVU, Nicoleta VARTOLOMEI

**Institution:** Technological High School of Targu Ocna

**Category:** K

**Description:** An experimental station for recycling plastic materials to produce filament for 3D printing. 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 (especially PET). ) and recycling them into filament for 3D printing. The general objective of the project is to increase the degree of involvement in environmental protection by implementing an experimental station for the recycling of plastic materials in order to produce filament for 3D printing.

**Acknowledgements:** This study was performed with the support material by Technological High School of Targu Ocna

**State of development:** Research Project

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**Presentation link:** <http://liceultehnologicgtgocna.ro/>

9.

**Title:** ANALYZING THERMOELECTRIC BRAKE DISC HEAT RECOVERY THROUGH FINITE ELEMENT ANALYSIS

**Patent/project number:** Ph.D. Student Research Project

**Author/s:** Preda Cosmin, Bleotu Robert-Marian; **Coordinator:** Professor Aurel Mihail ȚÎȚU

**Institution:** Lucian Blaga University of Sibiu, Faculty of Engineering

**Category:** D

**Description:** This project presents the development of a calculation model for the braking system equipped with a thermoelectric generator to correlate the temperature of the brake disc with the performance of the



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generator. The variant with solid or ventilated brake disc is compared. The thermal analysis of the system temperature using finite elements was used to evaluate the potential energy that can be reused in the form of heat after braking. This research focused on the analysis of the conversion of thermal energy lost during the braking process into electrical energy, necessary for the operation of many auxiliary components of motor vehicles. The conversion of the heat generated in the braking process by means of thermoelectric generators was explored. The resulting electrical energy is fed back into the system to assist the electric motor or other auxiliary components fed directly from the heat engine. The potential benefit of using this electrical energy recovery system for vehicles is an important step in the automotive industry and the study of this topic within the work constitutes a step forward towards the current trend.

**State of development:** Ph.D. Student Research Project

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**Presentation link:** <https://inginerie.ulbsibiu.ro/>

10.

**Title:** ADVANCEMENTS IN DRONE TECHNOLOGY FOR ENHANCED SURVEILLANCE CAPABILITIES

**Patent/project number:** Ph.D. Student Research Project

**Author/s:** Bleotu Robert-Marian, Preda Cosmin; **Coordinator:** Professor Aurel Mihail ȚÎȚU

**Institution:** Lucian Blaga University of Sibiu

**Category:** D

**Description:** The proliferation of unmanned aerial vehicles (UAVs) has revolutionized various fields, including surveillance. In this paper, we present the design, implementation, and performance analysis of an advanced surveilling drone system. Our system leverages state-of-the-art technologies in drone hardware, sensor integration, communication protocols, and data processing algorithms to achieve efficient and effective surveillance capabilities. We presented the key components of the drone system, including the hardware architecture, sensor suite, communication infrastructure, and software algorithms. The end of the research is based on the performance of our system in real-world surveillance scenarios.

**State of development:** Ph.D. Student Research Project

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11.

**Title:** AUTOMATIC PROTECTION SYSTEM IN THE WINDSHIELD

**Patent/project number:** Ph.D. Student Research Project

**Author/s:** Spircu Alexandru-Ionel, Szoke Laurentiu-Ilie; **Coordinator:** Professor Aurel Mihail ȚÎȚU

**Institution:** Lucian Blaga University of Sibiu, Faculty of Engineering



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## Category: D

**Description:** This system is designed for the safety of car passengers. Therefore, in the event of a frontal impact, the aim is to prevent hard objects from penetrating from the outside environment into the car cabin, as well as to prevent passengers who are not wearing seat belts from being thrown through the windshield. This project will be implemented by fully covering the windshield with an airbag system within the first second of impact.

**State of development:** Scientific Student Project

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12

**Title:** MECHANICAL PENCIL WITH HUB FOR PENCIL LEADS

**Patent/project number:** Student Research Project

**Author/s:** Todor Vlad Vasile; Chitoiu Darius; **Coordinator:** Professor Aurel Mihail ȚÎȚU

**Institution:** Lucian Blaga University of Sibiu, Faculty of Engineering

**Category:** Romania

**Description:** A new and simpler way to insert lead into the mechanical pencil and for a longer duration of its use. This project presents an improvement on mechanical pencils. This improvement refers to a hub inside the mechanical pencil where we will insert the pencil leads, to be used when the previous lead runs out. The mines are inserted through a hole in the upper part of the pencil, placing one after the other in a semi-circle shape, guided by a groove to indicate the direction in which they must slide to reach the center of the pencil, the slide will be made with the help of a simple hand gesture. An advantage of this improvement is the fact that we no longer have to worry about the moment when we unexpectedly run out of lead and the fact that we no longer have to carry additional leads, they are inserted directly inside the pencil immediately after their purchase. Another advantage would be that we have a writing instrument that is easier to use in the sense that once the pen is filled it would have a longer use, provided the pencil is refilled periodically, it also eliminates the time to insert the leads into the pencil.

**State of development:** Scientific Student Project

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13.

**Title:** WIRELESS PARKING SENSOR SYSTEM

**Patent/project number:** Student Research Project

**Author/s:** Flisc Adelina-Maria, Florea Ionut-Alexandru, Dumitru Alexandru-Nicolae;

**Coordinator:** Professor Aurel Mihail ȚÎȚU

**Institution:** Lucian Blaga University of Sibiu, Faculty of Engineering



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## Category: D

**Description:** The Wireless parking sensor system is meant to ease the process of installing an aftermarket parking sensor kit to a car that is not equipped with it from the factory. It does not require any cable or a long period of time to install it on the car, facilitating the user. The main advantage is the portability and the compatibility with any kind of vehicle, the system consisting of two sets of four sensors that have to be stuck to the car bumper and the main control unit that displays the signal from the sensors. The mounting bracket facilitates the removal of the sensors when the battery is running low, this being another great advantage, backing up the simplicity of use.

**State of development:** Scientific Student Project

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14.

**Title:** ELECTRIC CAR WITH SOLAR ENERGY

**Patent/project number:** Scientific Student Project

**Author/s:** Dan Teodora, Zidaru Patricia; **Coordinator:** Professor Aurel Mihail ȚÎȚU

**Institution:** Lucian Blaga University of Sibiu, Faculty of Engineering

**Category:** D

**Description:** We want to make a little car that uses solar energy and in case of anything the car will be incorporated with a battery. The car will be able to move front-back and sideways because of the special wheels. It will be driven by a special remote control, which will actually be every phone that has download de car app and has the chassis number of the car. So that means you can control the car from not only one but multiple remotes. The vehicle we are currently in the process of designing and manufacturing harnesses the power of solar energy as its primary source of propulsion. This innovative mode of transportation is not only environmentally friendly but also showcases our commitment to sustainable technology. In the event of any unforeseen circumstances or periods of insufficient sunlight, the car seamlessly transitions to using a built-in battery system, ensuring continuous functionality and uninterrupted operation. One of the standout features of this remarkable vehicle is its versatility in movement. Equipped with specially designed wheels, our creation boasts the ability to maneuver not only in the conventional forward and backward directions but also laterally, offering unparalleled flexibility in navigation. This multidirectional mobility opens up a myriad of possibilities for various applications, whether it be in urban settings with tight spaces or for specialized tasks requiring precise positioning.

**State of development:** Scientific Student Project

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15.

**Title:** AUDI'S QUATTRO HISTORY

**Patent/project number:** Student project

**Author/s:** Sorin Mihai BOBARU; **Mentor:** Prof. Corneliu BIRTOK BANEASA

**Institution:** Politehnica University of Timisoara, CITT Politehnica 2020, Faculty of Engineering Hunedoara

**Category:** D

**Description:** This study presents the evolution of the Audi car brand in the field of Motor Sport with the Audi Quattro model and the performances achieved in the world rally championship, being a pioneer in this field. The headquarters of German luxury car manufacturer Audi AG are located in Ingolstadt, Bavaria. Operating as a division of the Volkswagen Group, Audi manufactures automobiles across nine global production sites. The company's complicated beginnings may be traced to August Horch, an engineer who founded the Audiwerke and Horch in the early 20th century (1868–1951). Auto Union was founded in 1932 with further contributions from two firms, DKW and Wanderer. When VW bought Auto Union from Daimler-Benz in the 1960s, the current Audi era officially began. Following the 1965 release of the Audi F103 series, which revitalized the Audi brand, Volkswagen merged Auto Union with NSU Motorenwerke in 1969 to become the firm that exists today.

**State of development:** exploratory research

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**Presentation link:** <https://www.fih.upt.ro/v4/eng/>

16.

**Title:** THREE-DIMENSIONAL PRINTING OF A VENTILATION VALVE

**project number:** Student Project

**Author/s:** Păsătoiu Ciprian; **Coordinators:** Associate PhD professor Cristina Ionici; Lecturer PhD eng. Rădulescu Constanța

**Institution:** University „Constantin Brâncuși” from Târgu-Jiu

**Category:** D

**Description:** The project presents a case study for printing a ventilation valve. It started with information about modeling the part in FreeCad software, starting from sketches available online. After designing the part, I presented information about preparing the model in the CURA slicer for a print using FDM technology, positioning it, generating support, and generating a support layer on the print bed. In the printing process, a lot of information is needed related to the initial layers, the final shape of the part and its surfaces. It was also considered the possibility of being able to print more or more or model of different sizes for an increased oxygen fraction and also tried to make a mask that could be connected to this valve. The paper also presents information about printing a ventilation valve using SLA technology, the necessary steps of this process and what raw materials were used.

**State of development:** product obtained in the laboratory by 3D printing

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**Presentation link:** <https://icdi.utgjiu.ro>



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17.

**Title:** CALCULATION AND CONSTRUCTION OF AMERICAN TRUCKS

**Patent/project number:** Student project

**Authors:** Marius Alexandru ISTOC; **Mentor:** Prof. Corneliu BIRTOK-BANEASA

**Institution:** Politehnica University of Timisoara, CITT Politehnica 2020, Faculty of Engineering Hunedoara

**Category:** D

**Description:** The study presents an analysis of the design and construction dynamics of American trucks, taking into account their evolution over time and technological progress. American trucks are renowned for their ruggedness and strength, distinctly reflecting the characteristics of the US auto industry. With imposing designs and powerful engines, these vehicles are designed to handle heavy loads and varied road conditions. Built with attention to durability and performance, American trucks are often associated with impressive size, advanced technologies and the ability to handle diverse tasks, from hauling freight to towing in challenging conditions. From the point of view of the constructive characteristics in the case of American trucks, two different architectures can be distinguished as follows: Flat face and Long-nose. Flat face trucks have the following advantages: cab positioning, visibility and greater turning radius in smaller spaces compared to long nose trucks. Long-nose trucks have the following differences: The cab is positioned behind the engine, an easier way to access the engine for maintenance and repairs, have a more traditional and iconic design for each truck.

**State of development:** exploratory research

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**Presentation link:** <https://www.fih.upt.ro/v4/eng/>

18.

**Title:** EXPERIMENTAL STAND FOR AUTOMOTIVE CAN NETWORK

**Patent/project number:** laboratory project

**Author/s:** Gabriel Nicolae Popa, Corina Maria Dinis

**Institution:** Politehnica University of Timișoara, Faculty of Engineering Hunedoara

**Category:** D

**Description:** The introduction of automotive data transmission networks (which replaced the wiring with many conductors), reduced the cost, increased the reliability, and reduced the complexity and weight of the wiring. CAN is a high-integrity serial bus system for networking intelligent devices, it emerged as a networking standard in automobiles in 1993 (it became the international standard known as ISO 11898). The benefits of using CAN networks are: it is a simple network (two conductors, it does not use the ground for data transmission - the car body), it ensures communication between several (different) equipment, and each message has a priority. An experimental laboratory stand has been created for simulations and study of car CAN networks. The stand contains a simulation block with digital and analogue inputs (which simulates a normally open switch - kick down acceleration and normally closed switch for the door; lighting measurement for light control; fuel level measurement; ambient temperature measurement; car battery voltage measurement) connected to an Arduino Uno (simulates an ECU 1), which is connected to a MCP 2515 CAN, which is a node for the CAN network that connects via two wires (CAN-L, CAN-H) to another



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MCP 2515 CAN node in connection with an Arduino Nano (simulates ECU 2). A laptop is connected to the Arduino Nano (ECU 2, to display the information on several lines of information), through the serial port, to analyze the data transmitted from the Arduino Uno (ECU 1). To achieve communication, different programs have been implemented for the two Arduinos. With the help of the experimental stand, studies (related to data integrity) can be carried out on the speed of data transmission (which can be changed through Arduino programs), the length of the CAN cable (short and long), the importance of the resistors (120 W) at the ends the cable when transmitting the information.

**State of development:** experimental laboratory prototype

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**Presentation link:**

[https://uptro29158-my.sharepoint.com/:v/g/personal/gabriel\\_popa\\_upt\\_ro/EVQtugTMIYIDuEsrZsxGBHUBO-MDcycWOLOUBv8NxUqgUQ?e=w6lisO](https://uptro29158-my.sharepoint.com/:v/g/personal/gabriel_popa_upt_ro/EVQtugTMIYIDuEsrZsxGBHUBO-MDcycWOLOUBv8NxUqgUQ?e=w6lisO)

19.

**Title:** TERRITORIAL AEROCLUB "Constantin Manolache" DEVA

**Patent/project number:** Aeroclub

**Author/s:** Gheorghe ȚINEGHE & Team

**Institution:** Aeroclub of Romania

**Category:** D

**Description:** 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 Săulești 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 Săulești, 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. As infrastructure, the known and remaining from the last flight period is maintained, to which is added the construction of a building for the security of the airfield. The air club was equipped with a Zlin 226 (YR-ZLA) aircraft, which arrived here at the beginning of May 1976. The flying material was brought from Tg. Mureș, Brașov and Cluj in a short period of time thanks to the care of the staff. On the date when the school was supposed to start, there were: a Zlin 226 plane, two Blanick gliders for dual command instruction and an ISd3 glider for training and performance. At the stage shown above, after a number of 25 trainees out of the 60 who had participated in the theoretical courses, the long-awaited training begins. Parachuting section established as a section within the aeroclub, in addition to the motorized and non-motorized flight section, parachuting within this aeroclub is urgently gaining priority among the young people of the county and the country, some of the young people rising in the field and on other higher levels. It is obvious that during 15 years of existence, through the care and tactics of the instructors, 2376 16-18 year old students were prepared, trained and then certified within this aero club. During the activity of the 15 years, the



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paratroopers of the Deva Aeroclub performed numerous demonstration launch activities, which highlighted the high degree of training in flight and launch on stadiums, markets, places not specially designed, at festivities, commemorations, etc. in the cities: Deva, Brad, Aurel Vlaicu, Petroșani, Caransebeș, Sibiu, Arad, Baia-Mare, Timisoara and other localities in the country.

The Aeroclub organizes theoretical and practical courses for obtaining the licenses of parachutist, glider pilot, ultralight pilot and PPL(A) pilot.

State of development: Aeroclub

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Presentation link: <https://www.facebook.com/AeroclubulDeva/>

20.

**Title:** UNIVERSAL TEST BENCH FOR GAS TURBINE ENGINES

**Patent/project number:** Patent Application RO 137713 A0

**Author/s:** Catană Răzvan Marius, Dediu Gabriel, Șerbescu Horațiu Mihai

**Institution:** National Research and Development Institute for Gas Turbines COMOTI

**Category:** D

**Description:** The invention refers to a gas turbines test bench, for testing different engine types as turboshafts and turboprops, with shaft powers of up to 3000 kW, using an aerodynamic dynamometer such as an aviation propeller with variable pitch. The propeller dynamometer measures the torque and power of the shaft power turbine, during the engine run, by adjusting the angular pitch of the propeller, which modify the aerodynamic load on propeller to perform the required torque and speed. Also, the technical solution of the test bench allows to test experimental aviation propellers and turbojet engines, without modifications of constructive configuration of test bench but with minor replacement of particular component assemblies, reported to the testing application.

**State of development:** concept and research project

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Presentation link: <https://www.youtube.com/watch?v=hwyWmi4a2CQ>

21.

**Title:** SYSTEM AND METHOD FOR COLLECTING, ANALYZING, AND CLASSIFYING INCIDENTS THAT OCCUR IN AN OPERATIONAL AREA, BASED ON ARTIFICIAL INTELLIGENCE ALGORITHMS FOR THE PROCESSING AND ANALYSIS OF AERIAL INFORMATION ACQUIRED WITH LIDAR AND VIDEO CAMERAS IN THE VISIBLE AND THERMAL SPECTRUM, FOR THE PROTECTION OF CRITICAL INFRASTRUCTURES

**Patent/project number:** CBI A / 00719/22.11.2023

**Author/s:** Catalin-Marian DUMITRESCU, Ionut-Cosmin CHIVA, Horia NECULA, Bogdan FLOREA, Augustin SEMENESCU

**Institution:** National University of Science and Technology POLITEHNICA Bucharest

**Category:** D

**Description:** In this invention, we propose an innovative class D imposed structure detector model for generating classifiers used for training the Machine Learning architecture and simultaneous analysis of



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SAR and aerial images from the visible and thermal spectrum. The proposed invention represents an innovative system for the protection of Critical Infrastructures, with applicability also for the cross-border fight against terrorism, organized crime, and illegal trafficking of goods and people, especially in the current regional and international context.

The novel contributions of the invention are:

- Realization of an integrated solution of acquisition, analysis, classification, recognition and prediction of incidents in an operational area for the protection of Critical Infrastructures, based on the acquisition of radar signals (LIDAR) and video streams received from the fleet of drones with a system integrated by radar and optical sensors on board the drone and software analysis made with high-performance Artificial Intelligence algorithms;
- Use of an analysis block of GNSS coordinates and meta-data from radar information and video frames that uses an algorithm to extract frames from video streams, extract meta-data and determine geo-reference information for the operational area;
- The use of a module for the processing and analysis of SAR and static images from video frames, which according to the invention is based on the combination of wavelet decomposition and the Local Binary Pattern (LBP) algorithm;
- Using a module to define and generate training classifier vectors for the aggregation convolutional neural network that classifies and predicts incidents and their occurrence. This module according to the invention introduces an algorithm with an innovative character - the detector with imposed structure from class D;
- The use of a module for the classification of incidents that is based according to the invention on an algorithm made with convolutional neural networks of aggregation that classifies and predicts incidents and their occurrence based on the classifiers generated by the detector with imposed structure;
- The software module for the multi-source fusion of SAR images and visible and thermal spectrum images, based according to the invention, on dense networks composed of interconnected layers. With the introduction of convolutional layers in the aggregation network, according to the invention, an innovative method was created that can process the similarities between the classifiers. We propose with this invention, the creation of a new type of DNN layer, which we call "Cross-Space-Fusion", or CSF layer. The implementation of the CSF layer is based on creating a new input decoding method as a new layer in the aggregation architecture;
- The solution proposed according to the invention has minimal impact on the environment.

State of development: Laboratory demonstrator (TRL4)

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Presentation link: <https://upb.ro/en/>

22.

**Title:** HYBRID TECHNOLOGY FOR OBTAINING COMPOSITE STRUCTURES IN THE ULTRASONIC FIELD

**Patent/project number:** GNAC 108-04.12.2023

**Author/s:** Bogdan FLOREA, Augustin SEMENESCU, Chivu Oana Roxana, Nițoi Dan Florin, Marcu Dragoș-Florin, Pasăre Vili

**Institution:** National University of Science and Technology POLITEHNICA Bucharest

**Category:** D



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**Description:** The purpose of the project is to obtain a new composite structure embodied in the brake cylinders of the brake stands in the automotive field, but not only. Currently, brake cylinders are made by manually depositing two layers of base material (epoxy resin) reinforced with sand grains (Fig. 1a). This technology will be substantially improved by applying an ultrasonic field at the end of each deposition step. Through the phenomenon of ultrasonic dispersion, but not only, it will be obtained: - a much superior adhesion of the first layer of resin on the metal surface of the cylinder; - a much more effective incorporation of reinforcing materials: sand particles and glass fibers. Compared to the current, classic technology, the proposed one will allow reticulation in the ultrasonic field and will be used as reinforcement material, in addition to sand particles and glass fibers. Under the current conditions, the brake cylinders are obtained by alternate successive deposition of several layers of: - base material consisting of an epoxy resin; - reinforcing material that consists of stone granules with different granulations that aim to quickly achieve the braking process between car tires and brake cylinders.



a.

b.

c.

**Fig. 1** Presentation of the composite structure of a brake cylinder; a - current technology; b - defects caused by premature wear; c - exfoliation of composite material layers.

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Presentation link: <https://upb.ro/en/>

23.

**Title:** RECONFIGURABLE GEARBOX

**Patent/project number:** Patent OSIM nr.: RO132365- B1/ 30.06.2023

**Author/s:** Ciupan Cornel, Steopan Mihai, Pop Emanuela

**Institution:** Technical University of Cluj-Napoca

**Category:** D

**Description:** The invention presents a reconfigurable gearbox designed for the skills development of students in the field of mechanical engineering. The solution offers students the opportunity to build over 20 different types of gearboxes, depending on the structure and the speeds selected by the workload of the machine tool. Reconfigurability of the box is provided by a modularized concept, by using interchangeable



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shafts and gears and by creating an optimized set of gears. The invention will help the students to understand important aspects related to the design, construction and operation of the gearbox and, in addition, contributes to the development of their creative abilities.

**State of development:** patent, scientific paper, research project

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**Presentation link:** <https://www.utcluj.ro/en/>

24.

**Title:** DEVICE AND METHOD FOR PRECISE REMOTE SYNCHRONIZATION OF SYSTEMS FOR ASTRONOMICAL OBSERVATION

**Patent/project number:** Patent OSIM nr.: RO131751- B1/ 28.04.2023

**Author/s:** Dănescu Radu Gabriel

**Institution:** Technical University of Cluj-Napoca

**Category:** D

**Description:** The invention describes a system and method for remote synchronization of optical systems for sky observation, used for detecting objects in low, medium, or high Earth orbits. According to the invention, the system comprises a triggering device, which consists of a GPS receiver with two channels, one for reading global time and a very high-precision Pulse Per Second (1PPS) synchronization signal, a microcontroller board, a matrix keyboard for user input, and an LCD screen for display. A telescope equipped with a camera is connected to this device, which will be triggered by the device according to a preloaded exposure program.

**State of development:** patent, scientific paper, research project

**Contact:** [Liliana.Pop@staff.utcluj.ro](mailto:Liliana.Pop@staff.utcluj.ro)

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25.

**Title:** HYBRID FUNICULAR WITH ENERGY RECOVERY

**Patent/project number:** Patent application OSIM nr.: A/00858/21.12.2023

**Author/s:** Oprea Claudiu-Alexandru, Breban Ștefan, Lateș Daniel

**Institution:** Technical University of Cluj-Napoca

**Category:** D

**Description:** Hybrid funicular, with energy recovery, that has a hydraulic system (motor/pump) to drive the carrier drum, driven by two other hydraulic machines which are connected to the shafts of an electric machine or diesel engine. The hydraulic machine is mechanically linked to the electric one and reversible, to allow the recovery of the potential energy available during the upstream to downstream transport of the material, so that the electric machine will operate in motor mode when lifting the transported material under the trolley and at returning the trolley to the material pick-up area and in generator mode when the material is transported downhill.

**State of development:** patent, scientific paper, research project

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26.

**Title:** ELECTRIC FUNICULAR WITH ENERGY RECOVERY

**Patent/project number:** Patent application OSIM nr.: A/00859/21.12.2023

**Author/s:** Breban Ștefan, Oprea Claudiu-Alexandru, Lateș Daniel

**Institution:** Technical University of Cluj-Napoca

**Category:** D

**Description:** Electric funicular, with energy recovery, in which the drive of the carrier drum is done by one or two electric machines, which operate in motor mode when lifting the transported material under the trolley, when returning the trolley to the pickup area and when transferring it from downstream to upstream (if applicable) and in generator mode when transporting the load from upstream to downstream. In this way, the potential energy of the descending transported load is converted into electrical energy and stored in the battery, being later consumed for the return, on the way up, of the anchoring elements related to the transported loads.

**State of development:** patent, scientific paper, research project

**Contact:** [Liliana.Pop@staff.utcluj.ro](mailto:Liliana.Pop@staff.utcluj.ro)

**Presentation link:** <https://www.utcluj.ro/en/>

27.

**Title:** THERMAL MANAGEMENT DEVICE OF A CATALYTIC SYSTEM TO REDUCE POLLUTION CAUSED BY INTERNAL COMBUSTION ENGINES

**Patent/project number:** Patent application OSIM nr.: A/00831/13.12.2023

**Author/s:** Mariașiu Florin Emil

**Institution:** Technical University of Cluj-Napoca

**Category:** D

**Description:** The invention refers to a thermal management device of a catalytic system to reduce pollution caused by internal combustion engines, which achieves, through construction and operation, bringing the catalytic system to the temperatures required by the operation of the internal combustion engine that equips a vehicle in a time very short, at stratified mixture operation, at cold start and operation. The problem that the invention solves is to reach an internal temperature of the catalytic pollution reduction system in a short time, which makes it possible to operate in the optimal pollution reduction parameters during the cold start of internal combustion engines.

**State of development:** patent, scientific paper, research project

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**Presentation link:** <https://www.utcluj.ro/en/>

28.

**Title:** ADAM'S SERVICE

**Patent/project number:** Automotive Project

**Author/s:** Florin ADAM & Team



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**Institution:** SC Adam's Services SRL

**Category:** D

**Description:** 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. Over the years, we have constantly invested in the development and improvement of our workshop, bringing advanced technologies and state-of-the-art equipment to ensure we can offer the best automotive solutions and services. We have formed and trained a team of talented specialists who share the same passion and dedication for the automotive field, ensuring that we always live up to the expectations and needs of our customers. As we've expanded and developed our reputation in the automotive community, we've earned the loyalty and appreciation of our customers, who have referred us and helped us grow. We are proud to say that ADAM'S SERVICE has become a trusted name in the automotive industry, being recognized for our services in: auto mechanics, auto vulcanization, auto air conditioning, ITP and car wash.

**State of development:** Automotive Services

**Contact:** [office@adamservice.ro](mailto:office@adamservice.ro)

**Presentation link:** <https://adamservice.ro/servicii-auto/>

29.

**Title:** AUTOMOTIVE DIAGNOSTICS by Will's GARAGE

**Patent/project number:** Automotive Project

**Author/s:** Daniel Gabriel IORDACHI & Team

**Institution:** Will's Total Garage SRL

**Category:** D

**Description:** 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. At Will's Total Garage, we strive to provide not only reliable diagnostic services, but also an excellent customer experience. With a focus on professionalism, quality and customer satisfaction, we're here to keep your vehicle moving and give you peace of mind on your travels.

**State of development:** Method

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**Presentation link:** <https://www.facebook.com/loran.buss>



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30.

**Title:** ALEX's MOTORCYCLES

**Patent number:** Research project

**Author/s:** Alex SZEKELY

**Institution:** Classic Car Hunedoara

**Category:** D

**Description:** 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.

**State of development:** Classic motorcycles

**Contact:** [classiccarhunedoara@yahoo.com](mailto:classiccarhunedoara@yahoo.com)

**Presentation link:** <https://www.facebook.com/ClassicCarHunedoara/>

31.

**Title:** THE PROCEDURE FOR IMPLEMENTATION / HOMOLOGATION OF THE TIPPING SYSTEM IN THE CASE SPRINTER 311CDI DOKA

**Patent/project number:** student project

**Author/s:** Călin Rareș TEODORESCU; coordinator Corneliu BIRTOK-BANEASA

**Institution:** Politehnica University of Timisoara, Faculty of Engineering Hunedoara

**Category:** D

**Description:** The project presents a method of increasing the performance of the Mercedes van, model Sprinter 311cdi Doka, by implementing solutions to optimize the main functional systems, respectively the stages of the RAR approval procedure. Mercedes is a successful German brand, the Sprinter model launched on the market in 1995 and which established itself through performance, reliability/cost in the automotive industry, being among the most used vans worldwide.

The Sprinter 311cdi Doka model was originally designed with a fixed integrated flatbed, without the possibility of tipping, the disadvantage of this feature is that it requires a relatively increased time to unload the load. The main change consisted in the implementation of a tipping kit, respectively the installation of a mobile flatbed with the aim of facilitating the faster unloading operation of the transported load.

**State of development:** Product

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**Presentation link:** [www.corneliugroup.ro](http://www.corneliugroup.ro) <https://www.fih.upt.ro/v4/eng/>



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32.

**Title:** AUTO SCHUNN

**Patent/project number:** Mercedes-Benz dealer

**Author/s:** Jürgen Schunn & Team

**Institution:** SC Auto Schunn SRL

**Category:** D

**Description:** Auto Schunn has been an authorized Mercedes-Benz partner car dealer in Romania for over 29 years. We are waiting for you at the Auto Schunn representatives in Arad, Deva and Suceava with a diverse portfolio of new and used Mercedes-Benz vehicles of the highest quality, available with immediate delivery directly from the showroom, and at the Auto Schunn centers in Sibiu and Timisoara to benefit used car sales and after-sales services to the highest German standards. In order for you to be one step closer to the Mercedes-Benz car you want, at Auto Schunn you will always find special offers and promotions on new and used Mercedes-Benz cars, available with immediate delivery. We invite you to take a look at our stock of Mercedes-Benz cars available at special prices.

**State of development:** Products

**Contact:** <https://www.auto-schunn.ro/contact/>

**Presentation link:** <https://www.auto-schunn.ro/>



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## E - Teaching methods, Books, History and Cultural studies

1.

**Title:** *I have knowledge! I know! / Ba Cunosc! Ba Stiu!*

**Patent/project number:** Educational Project

**Author/s:** Sarah LASCU HARVAT

**Institution:** EDUROD Association for Digital and Environmental Education

**Category:** K

**Description:** 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.

**State of development:** Discovering and presentation of the professions in the form of a video

**Contact:** Sarah LASCU HARVAT [sarah@bacunosc.ro](mailto:sarah@bacunosc.ro) +40728772758

**Presentation link:** <https://bacunosc.ro/>

2.

**Title:** INTERACTIVE MODEL OF SIMULATION OF TECTONIC EARTHQUAKES VEN-GP V.1.0

**Patent/project number:** Certificate of innovator No. 6169 from 11 January 2024

**Author/s:** Valic Eugeniu, Valic Vladimir, Ciobanu Daniela, Bulgac Anatolie

**Institution:** Nicolae Testemițanu State University of Medicine and Pharmacy from Republic of Moldova

**Category:** E

**Description:** The innovation consists of an interactive tectonic earthquake simulation model. It is composed of a landscape represented by a model of a household consisting of a two-level building, lamp post with electric LED bulb, fenced yard placed on a mobile platform suspended on 4 springs. The platform is connected to a system consisting of crank connected to a DC motor and reducer. This system is powered by a DC power supply (Li-Po 18650 12V batteries, connected in series). The magnitude of the tectonic earthquakes is regulated by a DC controller with a potentiometer, being equated to the voltage in volts



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transmitted to the motor and reducer system. Its value is recorded by a voltmeter, whose display indicates the voltage transmitted to the system with motor and reducer.

**State of development:** Working prototype at Department of Military and Disaster Medicine, Nicolae Testemițanu State University of Medicine and Pharmacy from Republic of Moldova

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**Presentation link:** <https://youtu.be/YmWMgbv3Ams?si=yX5pNxdhUx5v7vQT>

3.

**Title:** A.D.O.R.

**Patent/project number:** Human rights support project

**Author/s:** Anca Maria Dorina & ADOR team

**Institution:** Association for Human Rights and Representation

**Category:** E

**Description:** 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.

Activities carried out:

- attracting/training volunteers;
- electoral information/education of students from colleges and high schools in Cluj-Napoca and Dej.

**State of development:** attracting and training volunteers

**Contact:** [asociatie.ador@gmail.com](mailto:asociatie.ador@gmail.com)

**Presentation link:** <https://asociatia-ador.ro/>

4.

**Title:** EDX ANALYSIS OF TILE MATERIAL FROM THE NORTH-WEST OF THE BLACK SEA (1ST-4TH CENTURIES AD)

**Project number:** # 011210

**Author/s:** Sergiu MATVEEV, Veaceslav SPRINCEAN

**Institution:** Moldova State University

**Category:** E



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**Description:** AIM: Identification of the place of production of the tile material from the Sobari archaeological site (Soroca district).

**SOLUTION:** The EDS spectral analysis was performed on a batch of tiled materials (tile and brick) from several archaeological sites representative of the barbarian world: Sobari (Republic of Moldova), Komariv (Ukraine) and for settlements from the Roman Empire: Cartal, Tyras (Ukraine) and Barboși (Romania). The obtained results allowed the establishment of the granulometry, the structure of the material, the texture of the matrix, as well as the degree of porosity for each studied group. The comparative statistical analysis of the elements demonstrated the similarity of the tile material from Sobari with those from the localities of the Roman Empire. We can state that the tile material from Sobari was brought from one of the Roman centers, most recently from Tyras, conquered by the Goths around 280 AD.

**State of development:** At the laboratory level and preparing the publication.

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**Presentation link:** Editura Universitară, Carol Davila, Bucuresti, 2020

5.

**Title:** REMEDIES FOR THE LEGAL CRISIS IN THE REPUBLIC OF MOLDOVA

**Project number:** # 010502

**Author/s:** Rodica CIOBANU, Elena ARAMA, Ion GUCEAC

**Institution:** MOLDOVA STATE UNIVERSITY

**Category:** E

**Description:** The research analyses the impact of the legal crisis on the process of implementing reforms in Moldova. The methodology adopted used quantitative and qualitative methods as well as multiple evaluation methods.

Stage 1. Investigating the effectiveness of law, targeting reforms initiated by the government in 2019 after the adoption of the Declaration of Captured State, hindered by pandemics, the war in Ukraine and the systemic crisis of law.

Stage 2. Gathering citizens' opinion with reference to the crisis of law. Law and crisis were placed in a joint conceptual framework and law and rights were placed under the heading of crisis.

Stage 3. Data analysis and preparation of conclusions: it confirms the crisis of law, determines its causes, impact and mode of manifestation.

Step 4 Testing of results and peer review. (academia). Shows impact on citizen-authority interactions; non-effective and inapplicable legal standards.

Step 5. Assessment of public and civil society perspectives. Notes similar problems and need for urgent solutions.

Step 6. Data analysis, generalisation and framing the solutions. Conclusion: - modernisation requires consistency, institutional reform and addressing the crisis of law in its various manifestations; - solutions drafted and put forward for action.

**State of development:** Published.

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**Presentation link:** <https://usm.md/?lang=en>



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6.

**Title:** AN INTEGRATED METHODOLOGY TO MEASURE THE RELEVANCE OF GOVERNANCE MODERNISATION INDICATORS IN LINE WITH GOOD GOVERNANCE STANDARDS

**Patent number:** OȘ No. 7728 / 14.12.2023

**Author/s:** Rodica CIOBANU, Mariana ROȘCA

**Institution:** MOLDOVA STATE UNIVERSITY

**Category:** E

**Description:** Research has shown that indicators of good governance have distinct relevance from one context to another, therefore it is necessary to benchmark the importance of indicators by looking at specific contexts. This requires specific methodologies that set the algorithm for assessing the relevance of indicators at national level, in order to provide policy makers and authorities with scientifically sound and structured models based on country needs and priorities.

The methodology developed is flexible and offers a plurality of tools that can easily be used at sectoral, industry or multidisciplinary level.

From a scientific point of view, the Methodology is innovative and is built on the application of consolidated methods; it offers a model of an integrated approach to increase the level of institutional and professional performance of the mechanisms for the individual's protection, in the context of the modernisation processes of the Republic of Moldova and in the context of the EU accession status. From a practical point of view, the Methodology is presented as a standard assessment with a set of basic criteria/indicators, necessary to be measured and monitored in practice to ensure progress towards good governance.

**State of development:** Scientific work with copyright ownership, issued by the State Agency for Intellectual Property.

**Contact:** [rod.ciobanu@gmail.com](mailto:rod.ciobanu@gmail.com)

**Presentation link:** <https://usm.md/?lang=en>

7.

**Title:** CU-Dough: ANTI-BACTERIAL DOUGH Cu NANOPARTICLES

**Patent/project number:** Educational project

**Author/s:** Namphueng Taweepornpathomgul, Jeerasak Jitrotjanarak, Soamshine Boonyananta, Robert Armstrong, Parinton Jangtawee, Suchart Imsamraan

**Institution:** Chulalongkorn Demonstration School, Bangkok, Thailand

**Category:** E

**Description:** "Cu-Dough" dough for early childhood with copper nano technology synthesised using green chemistry in the right amount. Therefore, it can stop the spread of bacteria. Safe for children and extends shelf life for up to 4 times longer than before, ensuring it remains fresh and ready to use. Reduces waste and reduces resource use. There are many bright colors to help stimulate creativity. It is the use of copper nano particles synthesized using green chemistry in the appropriate amount making it safe for children. It is mixed with playdough to inhibit the growth of bacteria and viruses. This makes the dough last longer, reduces costs, and reduces waste.

**State of development:** Product



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Presentation link: <https://satitm.chula.ac.th/>

8.

**Title:** "STEAM Story" BOARD GAME STEAM COLLABORATIVE LEARNING AND LESSON PLAN CO-CREATION TOOLS

**Patent/project number:** Research and innovation activity is funded by National Research Council of Thailand (NRCT) Contract no. N41A650594

**Author/s:** Nutcha Charoenchanakit

**Institution:** Chulalongkorn University, Bangkok, Thailand

**Category:** E

**Description:** The "STEAM Story" board game is designed for collaborative learning and STEAM lesson plan co-creation through cooperative play, knowledge exploration, idea exchange, and STEAM lesson planning. The game accommodates 4-6 players in a semi cooperative gameplay format, with an estimated duration of 60 minutes or more. The outcome is a one-page STEAM lesson plan. The innovation highlight can be summarized as the "CHILD Model": C: Collaboration (promoting co-creation); H: Harmony (create mutual understanding); I: Importance (acknowledge STEAM values); L: Learning (impart knowledge); D: Doing (practice practical skills).

**State of development:** Research Project

**Contact:** [nutcha.c@chula.ac.th](mailto:nutcha.c@chula.ac.th)

**Presentation link:**

[https://drive.google.com/file/d/1EUceIEpp\\_wuRKTliFofYNnutJAVI9Ook/view?usp=sharing](https://drive.google.com/file/d/1EUceIEpp_wuRKTliFofYNnutJAVI9Ook/view?usp=sharing)

9.

**Title:** TECHNOLOGICAL TRANSFER CENTER CTT-UCB

**Patent/project number:** CTT-UCB

**Author/s:** Rădulescu Constanța, Bălăcescu Aniela, Călina Denis, Boncea Adrian, Anghelescu Lucica, Borcoși Corina

**Institution:** University „Constantin Brâncuși” from Târgu-Jiu

**Category:** E

**Description:** 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:



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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; Products innovative 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.

**State of development: Technological Transfer Center**

**Contact: +40728028116 [constanta.radulescu@e-ucb.ro](mailto:constanta.radulescu@e-ucb.ro) [ctt.ucb@gmail.com](mailto:ctt.ucb@gmail.com)**

**Presentation link: <https://icdi.utgjiu.ro>**

10.

**Title: ANNALS of Faculty Engineering Hunedoara–International Journal of Engineering**

**Patent/project number: Research project**

**Author/s: Imre KISS**

**Institution: Politehnica University of Timisoara, Engineering Faculty of Hunedoara**

**Category: E**

**Description:** 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. 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.

**State of development: 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**

**Contact: e-mail: [redactie@fih.upt.ro](mailto:redactie@fih.upt.ro)**

**Presentation link: <http://annals.fih.upt.ro/>**



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11.

**Title:** ACTA TECHNICA CORVINIENSIS–Bulletin of Engineering

**Patent/project number:** Research project

**Author/s:** Imre KISS

**Institution:** Politehnica University of Timisoara, Engineering Faculty of Hunedoara

**Category:** E

**Description:** 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. We are looking forward to a fruitful collaboration and we welcome you to publish in our ACTA TECHNICA CORVINIENSIS –Bulletin of Engineering. 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.

**State of development:** ACTA TECHNICA CORVINIENSIS –Bulletin of Engineering [e-ISSN: 2067-3809]

**Contact:** [redactie@fih.upt.ro](mailto:redactie@fih.upt.ro)

**Presentation link:** <http://acta.fih.upt.ro/>

12.

**Title:** THE BACKGROUND OF A LANGUAGE

**Patent/project number:** Research Project

**Author:** Oana GĂIANU-LUCA

**Institution:** Politehnica University of Timisoara, Engineering Faculty of Hunedoara

**Category:** E

**Description:** Cicero said that „we are obliged to create new words and designate new ideas with them. Any foreign domain of common interest implies a rich and new terminology, since there are terms proper to the ideas circulated by each domain in part”. The human capacity for awareness and abstract thinking is facilitated by language, often even depending on language. The ability to convey complex information, discuss the essence of events, share feelings and ideas depends on language. Language is one of the most powerful tools of communication. Very flexible, it has demonstrated over the centuries an impressive capacity for evolution and adaptation. The language contains several mechanisms that distinguish it from other forms of communication, such as communication systems developed by animals or insects. To understand people, the phenomenon of language must be understood; the nineteenth century played an



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important role in the evolution of philosophy and linguistics, raising numerous questions about language, language and communication.

**State of development:** This project is a study upon the origin of the language

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**Presentation link:** <http://acta.fih.upt.ro/>

13.

**Title:** Exhibition catalogue. *The Polish-Romanian alliance in the interwar period*

**Patent/project number:** ISBN 978-606-537-687-8 (Cetatea de Scaun Publishing House, Târgoviște, 2024)

**Authors:** I. Dumitru-Cătălin Rogojanu (curator), II. Natalia Mosor (coord.), III. Pawel Rutkowski (coord.); **Concept, imagini și text:** Prof. dr. hab. Henryk Walczak, Dr.ing. Valentin Locota, **Referent științific:** C.Ș.I dr. habil. Gherghina Boda-Ghena

**Institution:** Museum of Dacian and Roman Civilization / Polish Institute in Bucharest

**Category:** E

**Description:** The catalog of the exhibition entitled *The Polish-Romanian alliance in the interwar period* has been published in 2024 by the Cetatea de Scaun publishing house in Târgoviște and consists of 41 black-and-white pages, following exactly the graphics of the photographs of that period.

It includes several suggestive images from the press of that period, taken from the collections of the Digital Library of Bucharest, from the National Digital Archives of Poland (Narodowe Archiwum Cyfrowe) and from the US Library of Congress. These images reflect, in a diachronic and summary manner, the Polish-Romanian political alliance in the interwar period.

Some misunderstandings inherent in the diplomatic relations between Poland and Romania notwithstanding, we consider that the political, military, economic, commercial, cultural or any other kind of relations established between the two states in the period between 1918 and 1939 were good, considering their geopolitical and geostrategic interests in Central and Eastern Europe in the aftermath of the First World War. Placed between the two great world powers, Germany and Russia, after 1918, both the Second Polish Republic and the Kingdom of Romania followed a permanent policy to establish stable political-diplomatic contacts, which would strengthen their mutual trust within the Central-European space.

The cornerstone of the consolidation of Romanian-Polish relations was the signing in Bucharest, on March 3, 1921 of the Defensive Alliance Convention between the Kingdom of Romania and the Republic of Poland by the two foreign ministers, Prince Eustachy Sapieha and Take Ionescu.

Besides mutual help and assistance, the Polish-Romanian alliance in the interwar period was based on old traditions of political-diplomatic collaboration, on cultural affinities, common economic and commercial interests and on a deep sense of friendship between the political elites in Poland and Romania. In addition, the Romanian people showed altruism and hospitality towards Poland when it was attacked by Germany and the U.S.S.R., and in response to the request of the Polish government, the Presidency of the Council of Ministers issued a statement outlining the measures for the reception of Polish refugees.

Even if Romania could not provide military aid to Poland in those dramatic circumstances, as it could find itself in real danger, we cannot fail to note the moral contribution and humanitarian aid given by the Romanian government and population to the Polish state. More than a political alliance, the Polish-Romanian relationship in the interwar period acquired a symbolic significance with a deep historical substantiality.



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*Mutual respect, seriousness, courtesy and the strict application of diplomatic protocol during the numerous visits to both states are relevant aspects in the development of an alliance, which, beyond its political-military features, has become, as Marshal Józef Piłsudski adequately said, an „alliance of Polish-Romanian hearts” in this tumultuous part of Europe.*

**State of development: Published book**

**Contact: E-mail:** [rogojanucatalindumitru@yahoo.com](mailto:rogojanucatalindumitru@yahoo.com) Tel: +40762579100

**Presentation link:** <https://www.mcdr.ro/index.php/ro/expozitii-si-evenimente/expozitii-permanente/evenimentesarmizegetusa/126-vernisaajul-expozitiei-aliana-polono-romana-in-perioada-interbelica/2024-03-13-11-00>

14.

**Title:** NAVIGATING EDUCATION'S EVOLUTION: THE FORESIGHT STRATEGY IN THE 21ST CENTURY **Patent/project number:** research project

**Author/s:** MIHAIL-ALEXANDRU STANESCU

**Institution:** NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY POLITEHNICA BUCHAREST, ROMANIA

**Category:** E

**Description:** Education represents one of the branches of a person's development in society. Since ancient times, emphasis has been placed on this branch, always trying to optimize itself. At the same time, it tried to adapt to the technological evolution of the times, since the educational area implies and the scientific area generating benefits for society. In the 21st century, we are living the 4th industrial revolution, of the weightless economy - the age of digitalization. Therefore, the development pillars at the global level focus on this element. The current project wants to achieve a correspondence between the digitization level allocated to the different training levels and one of the main problems in education - student anxiety. A variant developed to solve this problem is non-formal education. Thus, using the 2\*2 matrix analysis method of scenarios, derived from the foresight strategy specific to large companies for process efficiency, the current project analyzes the possible evolution of the digitization process parameterized in a non-formal education environment, which would offer an opportunity for students to develop their skills in the fields of activity in a healthier environment.

**State of development:** research project

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**Presentation link:**

[https://drive.google.com/drive/folders/1brzxqua\\_iQZM3DILcxjxEwLOy9URzfh?usp=sharing](https://drive.google.com/drive/folders/1brzxqua_iQZM3DILcxjxEwLOy9URzfh?usp=sharing)

15.

**Title:** STIHURI

**Book:** ISBN 978-606-079-050-1

**Author:** Marian Ioan Ciprian, Elena Cocârlă, Gheorghe Cornea, Simion Corneliu Cozmescu, Nicolae Bela Farcaș, Nikolaus Rudolf Pilly, Corina Gianina Popa, Constantin Ștefănescu, Eugen Teodorescu; **Illustrations:** Corina Gianina Popa; **Volume Coordinator:** Nikolaus Rudolf Pilly

**Institution:** KARINA publishing house



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## Category: E

**Description:** In this anthology of poems, we try to keep alive the flame of the cultural torch, ignited more than four decades ago, by a little book titled after the title of the poem to Emil Duțu, "Under arches of lights". It contains the first anthological bundle of poems, a multicolored bouquet of thoughts, images, given to the reader to ponder and enjoy of beauty, of life. The "Călanul Cultural" circle continues this tradition. Even if the flame of the mountain torch, of its cultural activists, fueled by books, own magazines, contributions to many publications, to cultural actions, - not only in language Romanian - sometimes it was flickering ready to go out, in recent years it managed to light up even its glimpses more distant, here and abroad. The pen for the verses does not write evenly, because this time too, it is so handled to those versed - even in other fields - as well as to those whose fingers trembled, of the emotion of a journey that has only recently begun. We want this volume to get wings so that it can fly to the heart to the reader, accompanied by a desire to be, more or less, benevolent and indulgent.

**State of development:** Book

**Contact:** [popa.corina@hotmail.com](mailto:popa.corina@hotmail.com)

**Presentation link:** <https://www.facebook.com/corina.gianina.p>

16.

**Title:** TehnoART

**Patent/project number:** competition of technical creativity

**Author/s:** Demeter Sorin & LTTD Team

**Institution:** Liceul Tehnologic "Transilvania" Deva

**Category:** E

**Description:** 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.

**State of development:** competition for high school students

**Contact:** [secretariat@cttdeva.ro](mailto:secretariat@cttdeva.ro)

**Presentation link:** <https://cttdeva.ro/>

17.

**Title:** SCIENCE CAMPS

**Patent/project number:** Science workshops

**Author/s:** Tiberiu Stroia & Team

**Institution:** CASA STIINTEI ASSOCIATION

**Category:** E

**Description:** Started three years ago, the project of the ASSOCIATION OF THE HOUSE OF SCIENCE is structured in two main directions. The first is to promote science among students through laboratory



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activities, science presentations and science camps. The second direction involves the training and preparation of students for Olympiads and other types of competitions with a scientific theme that require in-depth knowledge of mathematics or chemistry.

There is already a SCIENCE HOUSE team, made up of students, teachers and instructors who carry out a series of activities. Some of these take place in the specially designed laboratory and the other scientific activities are carried out in the field.

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.

### **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.

SCIENCE IS MAGIC THAT WORKS!

**State of development:** scientific activities

**Contact:** [contact@casastiintiei.ro](mailto:contact@casastiintiei.ro) +40735 370 327

**Presentation link:** <https://casastiintei.ro/> <https://www.youtube.com/@casastiintei7098/featured>

18.

**Title:** CONSTRUCTION AND DIAGNOSTICS OF MULTIPLEXED VEHICLE COMMUNICATION NETWORKS (CAN-bus)

**Patent/project number:** Didactic simulator

**Author/s:** Gidali Adrian, Simon Florin

**Institution:** Sc Garage Training SRL

**Category:** E

**Description:** In order to study and verify functionality for different types of multiplexed networks or hardware analysis of frames (messages) related to different types of serial communication protocols, it is necessary to use specific measurement and control equipment (oscilloscope, voltmeter, ohmmeter, ammeter, frequency meter, dwell meter), as well as the use of serial diagnostic testers. Since the use of these communication, measurement and control devices involves basic-medium level knowledge regarding the concepts of electricity, with an emphasis on car electricity, and since the complete CAN-bus course involves time, the support of this course is carried out in two stages, the first part is dedicated to the study and understanding of the introductory notions of automotive electricity and the way in which different sub-systems are mechatronic from the composition of modern vehicles, and the second part being exclusively dedicated to the study of the multiplexed communication networks of motor vehicles.

**State of development:** experimental teaching stand

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**Presentation link:** <https://www.facebook.com/adrian.gidali>

19.



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**Title:** EMPOWERING YOUNG MINDS

**Patent/project number:** Educational Project

**Author/s:** Prof. Dr. Anuja Malik

**Institution:** New era group of science and technology, New Delhi, India

**Category:** E

**Description:** *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, regardless 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.

**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.

**State of development:** technical teaching

**Contact:** [anujamalik777@gmail.com](mailto:anujamalik777@gmail.com)

20.

**Title:** CLIMATE CHANGE CURB

**Patent/project number:** student project

**Author/s:** Zainab Arzouni

**Institution:** Shohour Public High School, Lebanon

**Category:** A

**Description:** I'm a 18 year old lebanese student joining Shohour public high school in the last year. I launched my own initiative entitled Climate Change Curb, by creating a whatsapp group where I invited people from all over the world, (Lebanon, Egypt, Romania, Malaysia, Indonesia, India, UAE, Zimbabwe...) to join in this initiative. I sent to them videos of me introducing climate change for them to increase awareness of this problem, also I sent them video of me planting trees and they started planting and sent me videos of their plants. I knew that trees is the only cure for Climate Change as one tree can absorb 22KG



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of Carbon dioxide a year which is huge, since as we know that carbon dioxide is one of the poisonous gasses causing climate change.

**State of development:** educational environmental project

**Contact:** [zeinabarzouni94@gmail.com](mailto:zeinabarzouni94@gmail.com)

**Presentation link:** <https://www.youtube.com/shorts/rfG6RfAWXzw>

21.

**Title:** BAČKA PALANKA CULTURAL CENTER

**Patent/project number:** Cultural Center

**Authors:** Olja Nađ & Team

**Institution:** Bačka Palanka Cultural Center

**Category:** E

**Description:** 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.

**State of development:** Cultural Center

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**Presentation link:** <https://kcbp.rs/>

22.

**Title:** INTERNAL COMBUSTION ENGINES FOR ROAD VEHICLES. CONSTRUCTION AND CALCULATION. PRACTICAL APPROACH

**Patent/project number:** ISBN 978-606-35-0553-9

**Author/s:** Sorin Aurel Rațiu

**Institution:** Politehnica University of Timisoara, Faculty of Engineering Hunedoara

**Category:** E

**Description:** Starting from the curriculum corresponding to the discipline "Construction and calculation of internal combustion engines", the present work was conceived as a practical approach, to serve as a tool for training the engineering skills necessary to understand the currently existing constructive solutions and the functionality of the components of modern internal combustion engines. The material is mainly addressed to students who attend the Road Vehicles specialization courses within the Faculty of Engineering Hunedoara and not only, and represents a collection of practical activities aimed at completing and clarifying the constructive and functional particularities of the components of internal combustion



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*engines presented in the same discipline, within the course. Each practical approach contains a brief introduction to the issue addressed, a presentation of the experimental equipment used, the objective, the methodology for carrying out the practical activity, results and conclusions and finally, a small section dedicated to the self-evaluation of the knowledge acquired during the performance of the respective work. The paper contains seven practical laboratory works. Practical problems related to the constructive and functional typology of the mobile and fixed organs of the engine mechanism are reviewed: piston, wrist pin, piston rings, connecting rod, crankshaft, engine block, cylinder, cylinder head, as well as the valve train mechanism. The practical methodology for mounting and dismounting these components is also presented, based on the equipment from the Internal Combustion Engines laboratory of the Faculty of Engineering Hunedoara.*

**State of development:** book/laboratory guide

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**Presentation link:** <https://www.fih.upt.ro/personal/sorin.ratiu/>



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## F - Medicine, Paramedical, Pharmacy, Cosmetics, Hygiene

1.

**Title:** PERCEPTIONS OF DECISION MAKERS IN HEALTH INSTITUTIONS REGARDING WELFARE CONDITIONS IN THE ORGANIZATION

**Patent/project number:** PhD thesis

**Author/s:** Milana MAZAL MAZOR, Supervisor: Prof. Constantin SASU

**Institution:** Alexandru Ioan Cuza University, Faculty of Economics and Business Administration, Romania; Israel

**Category:** F

**Description:** The qualitative study was designed to examine the perceptions of decision-makers in health institutions in Israel regarding welfare conditions in the organization. As part of the study, 9 in-depth interviews were conducted, in which 18 issues dealing with employee welfare and the functioning of the organization's welfare department were examined. The findings of the study indicate that most of the participants believe that the welfare department should take care of the employee's welfare, address the employee's social, economic, social, and family problems, as well as professional advancement and development. The participants expressed satisfaction with the welfare conditions of the employees in the organization and noted the need to improve the relationship between the welfare department and the organization's employees, develop mechanisms for examining the department's success, develop open channels of communication, and make the welfare department accessible to employees. It seems that there would be benefit in expanding the number of participants from additional hospitals in Israel and the health insurance funds since only 9 inductees participated in this study. In addition, the study raises the need for the organization's welfare services to be accessible to employees. It is recommended that future research in this field will deal with practical aspects of accessibility and improvement of welfare department services in health institutions.

**State of development:** Doctoral research project

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**Presentation link:** <https://www.uaic.ro/en/studies/doctoral-schools/>

2.

**Title:** METHOD FOR IDENTIFYING THE ANTI-HEV IGG MARKER IN THE BLOOD SERUM

**Patent/project number:** MD 1258 Z 2019.02.28



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**Author/s:** Sajin Octavian, Iziumov Nina, Pinzaru Iurie, Guțu Veaceslav, Țurcanu Adela, Blaj Valentina

**Institution:** National Agency for Public Health, Republic of Moldova

**Category:** F

**Description:** The essence of the invention involves the examination of blood serum using enzyme immunoassay on a microplate containing adsorbed AgHEV. 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 ( $Al_2O_3 \cdot 2SiO_2 \cdot 2H_2O$ ). 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.

**State of development:** The testing method for the anti-HEV IgG marker is patented and currently implemented in the reference microbiology laboratory of the national public health agency and in blood transfusion service laboratories.

**Contact:** Octavian Sajin [octavian.sajin@ansp.gov.md](mailto:octavian.sajin@ansp.gov.md) +373 69815023

**Presentation link:**

<http://www.db.agepi.md/inventions/PdfHandler.ashx?id=s%202017%200125&linkPdf=LinkTitluElib.pdf>

3.

**Title:** IDENTIFYING METHOD OF THE ANTI-HEV IGG MARKER IN BLOOD SERUM IN PEOPLE AT HIGH RISK OF INFECTION

**Patent/project number:** MD 1291 Z 2019.06.30

**Author/s:** Sajin Octavian, Pinzaru Iurie, Iziumov Nina, Guțu Veaceslav, Stratulat Silvia, Blaj Valentina

**Institution:** National Agency for Public Health, Republic of Moldova

**Category:** F

**Description:** The essence of the invention lies in the analysis of blood serum using enzyme immunoassay conducted on a microplate featuring adsorbed AgHEV. Optical density values are determined within the wavelength range of 450 to 620 nm to identify serum samples as positive or negative for IgG anti-HEV, with thresholds set at over 1,000 and less than 0.100, respectively. In cases where samples yield undetermined results, the serum undergoes treatment at a temperature of 56°C for 30 minutes and is then mixed in equal volumes with a 0.05 M sodium periodate solution. Following a 2-hour incubation period, a 5% glucose solution is added in a 1:1 ratio. Subsequently, the enzyme immunoassay is repeated for the treated serum samples, which are diluted in a 1:4 ratio using a standard reagent check serum sample that tests negative for IgG anti-HEV (with an optical density of less than 0.100) and a neutralizing check serum



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sample that tests positive for IgG anti-HEV (with an optical density of more than 1,000). The optical density values are calculated using the formula: optical density of the reagent check sample divided by the optical density of the neutralizing check sample. If the resulting ratio is less than 2, the sample for IgG anti-HEV is deemed negative; if it exceeds 2, it is considered positive.

**State of development:** The testing method for the anti-HEV IgG marker in blood serum in people at high risk of infection is patented and currently implemented in the reference microbiology laboratory of the national public health agency and in blood transfusion service laboratories.

**Contact:** Octavian Sajin [octavian.sajin@ansp.gov.md](mailto:octavian.sajin@ansp.gov.md) +373 69815023

**Presentation link:** <http://www.db.agepi.md/inventions/Details.aspx?id=s%202018%200008>

4.

**Title:** METHOD FOR THE IDENTIFICATION OF ANTI-HCV MARKER IN HUMAN BLOOD SERUM

**Patent/project number:** MD 1352 Z 2020.02.29

**Author/s:** Sajin Octavian, Paraschiv Angela, Turcanu Adela, Iziumov Nina, Stratulat Siliva, Blaj Valentina

**Institution:** National Agency for Public Health, Republic of Moldova

**Category:** F

**Description:** The essence of the invention lies in the treatment of blood serum samples with a 20% suspension of bentonite in a 1:1 ratio. Subsequently, the blood serum undergoes examination in an immune-enzyme test utilizing a microplate adsorbed with AgHCV. Optical density values of the samples are determined via the photometric method at a wavelength of 450 nm. Following this, the average optical density value of the negative control samples is calculated using the formula: the average of the optical densities of the negative control samples + 0.350. Subsequently, the ratio of the average optical density value of the patient's serum to that of the negative control samples is determined. A ratio up to 0.9 indicates a negative result, while a ratio greater than 1.1 indicates a positive result.

**State of development:** The testing method for the anti-HCV marker in human blood serum is patented and currently implemented in the reference microbiology laboratory of the national public health agency and in blood transfusion service laboratories.

**Contact:** Octavian Sajin [octavian.sajin@ansp.gov.md](mailto:octavian.sajin@ansp.gov.md) +373 69815023

**Presentation link:** <http://www.db.agepi.md/inventions/Details.aspx?id=s%202018%200108>

5.

**Title:** METHOD FOR DIAGNOSIS OF VIRAL HEPATITIS B IN PERSONS WITH ACCIDENTAL EXPOSURE

**Patent/project number:** MD 1245 Z 2018.12.31

**Author/s:** Sajin Octavian, Iziumov Nina, Turcanu Adela, Blaj Valentina, Cebanu Ecaterina

**Institution:** National Agency for Public Health, Republic of Moldova

**Category:** F



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**Description:** The essence of the invention lies in the utilization of two strips, each containing wells, wherein different types of sera are employed for the detection of AgHBs antibodies. In the first strip, human serum free of AgHBs, negative human serum to AgHBs antibodies, serum with antibodies to AgHBs with a titer exceeding 100 IU/ml, and serum from the individual being tested are utilized. Conversely, in the second strip, human serum free of AgHBs, fetal bovine serum for calibration, inactivated human serum containing calibrated AgHBs, and serum from the individual being tested are used. Following a 30-minute incubation period at a temperature range of 18 to 24°C, a diluted conjugate (1:20) of rabbit or mouse anti-species globulin and horseradish peroxidase is added to all samples. Subsequently, the samples are further incubated at 37°C for 120 minutes. Then, a chromogen solution comprising 0.02% hydrogen peroxide, 4% dimethyl sulfoxide, and 0.03% tetramethylbenzidine is added and incubated at a temperature range of 18 to 24°C for 30 minutes. Finally, optical density values are determined using the photometric method at a wavelength range of 450 to 620 nm.

**State of development:** The testing method for diagnosis of viral hepatitis B in persons with accidental exposure is patented and currently implemented in the reference microbiology laboratory of the national public health agency and in blood transfusion service laboratories.

**Contact:** Octavian Sajin [octavian.sajin@ansp.gov.md](mailto:octavian.sajin@ansp.gov.md) +373 69815023

**Presentation link:** <http://www.db.agepi.md/inventions/Details.aspx?id=s%202017%200096>

6.

**Title:** QVIBE FREQUENCY GENERATING THERAPEUTIC DEVICE- USED IN A PSORIASIS CASE

**Patent/project number:** No 009015340-0001, 06/05/2022; OSIM: 301241/29.12.2023

**Author/s:** Senior Lecturer Dr. Oana Codruta Bacean Miloicov

**Institution:** SC Holistic Lounge SRL

**Category:** F

**Description:** 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 that we present. Q Vibe is a therapeutic frequency generating device, an innovative 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 this case. The subject used the QVibe device everyday, the frequency recipe is a unique registered algorithm imprinted on the device that generates the frequencies as therapy; we can clearly see the difference. It is successfully used as well in balancing other pathologies as( allergies/digestive problems/renal diseases/melanoma/nervous system lesions/viral or bacteriological infections/parasitic infestations/bone diseases, etc.), it optimises the state of health, according to the improvement of the clinical and paraclinical parameters.

**State of development:** Inregistrat / Registered 06/05/2022, No 009015340-0001

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Presentation link: <https://www.healthyvibe.ro/psoriazis-m-r/> ©Healthy Vibe by Dr. Oana Codruța Bacean Miloicov

7.

**Title:** *Solutie Virala "SV" / Viral solution "SV"*

**Patent/project number:** *1/20.03.2020; OSIM 301242/29.12.2023*

**Author/s:** *Senior Lecturer Dr. Oana Codruta Bacean Miloicov*

**Institution:** *SC Holistic Lounge SRL*

**Category:** *F*

**Description:** *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, edema and nasal congestion. The remedy is energetically imprinted with the help of the only device of this type in RO, the recipe 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*

**State of development:** *(concept): product, copyright-protected concept*

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**Presentation link:**

[https://m.facebook.com/story.php?story\\_fbid=414014857486649&substory\\_index=414014857486649&id=100063593891341](https://m.facebook.com/story.php?story_fbid=414014857486649&substory_index=414014857486649&id=100063593891341)



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8.

**Title:** 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

**Category:** F

**Description:** 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.

**State of development:** product

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**Presentation link:** <https://www.healthyvibe.ro/product/evaluare-energetica-si-terapie-cu-aparatul-scio-o-sedinta/>



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9.

**Title:** 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

**Category:** F

**Description:** 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 innovative 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 artery, where we can feel the pulse. It is recommended to use QVibe device everyday, all the time, especially during the night, the frequency recipe is a unique registered algorithm 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.

**State of development:** Inregistrat / Registered 06/05/2022, No 009015340-0001

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Presentation link: <https://www.healthyvibe.ro/product/incarcare-dispozitiv-q-vibe-basic-antiparazitar/>

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10.

**Title:** 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

**Category:** F

**Description:** 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 this case 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 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!

**State of development: (concept):** product, copyright-protected concept

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**Presentation link:**

<https://www.facebook.com/heathyvibeholistictherapy/photos/pb.100063593891341.-2207520000./127958042188746/?type=3>



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11.

**Title:** 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

**Category:** F

**Description:** 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.

**State of development:** product, copyright-protected concept

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**Presentation link:** <https://www.healthyvibe.ro/product/incarcare-dispozitiv-q-vibe-medium-circulatie/>

12.

**Title:** COLONX: A METABIOTIC SOLUTION FOR DYSBIOTIC GUT MICROBIOTA

**Patent/project number:** 662/2023

**Author/s:** Emanuel Vamanu

**Institution:** SC Anoom Laboratories SRL

**Category:** F

**Description:** A novel product line called GreenBiom was created to target the human microbiota in chronic disorders. This was achieved by using a new extraction process derived from mushrooms. The primary product will be ColonX, derived from Boletus edulis mushrooms sourced from Romania. ColonX is a viable substitute for probiotic products and is specifically formulated to regulate the imbalanced microbiota resulting from antibiotic treatment. ColonX is a MetaBiotic product that includes polysaccharides and



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other natural chemicals broken down by the intestinal microbiota. This promotes the synthesis of short-chain fatty acids essential for maintaining a healthy colon.

**State of development:** The product is available on the market

**Contact:** [www.greenbiom.ro](http://www.greenbiom.ro)

**Presentation link:** <https://www.youtube.com/@GreenbiomRo>

13.

**Title:** 3D TEXTILE STRUCTURE FOR SURGICAL INTERVENTION

**Patent/project number:** A/00059/17.02.2021

**Author/s:** Visileanu Emilia, Chiriac Laura, Memecica Maria, Scarlat Razvan, Vladu Alina Florentina

**Institution:** The National Research & Development Institute for Textiles and Leather – INCDTP

**Category:** F

**Description:** The invention refers to a knitted textile material with a three-dimensional structure, with the specific geometry of the preformed meshes, bio-absorbable, functionalized with substances with antimicrobial and biocompatible properties, for temporary support, intended for abdominal implantation, for the repair of parietal defects and to the procedures for its fabrication. The functional 3D model, according to the invention, is characterized by the fact that it has a mass between 80-100 g/m<sup>2</sup>, falling into the standard weight category, thickness of 0.5 mm, resistance to deformation 141 kPa, resistance at break in the horizontal direction 26 N and in the vertical direction 244 N, the elongation at break in the horizontal direction 312 % and in the vertical direction 55 %, combines the physical-mechanical requirements and the dimensional stability conferred by the 3D structure of the knitted mesh, with the ability to reduce the risks of complications and favor the activity of postoperative fibroblasts, conferred by the biodegradability and biocompatibility of the polylactic acid fiber.

**State of development:** Demonstrative model

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**Presentation link:** [www.incদtp.ro](http://www.incদtp.ro) <https://www.incদtp.ro/index.html>

14.

**Title:** NEW SYNTHETIC INHIBITORS OF SUPEROXIDE ANION RADICALS

**Patent number:** MD 4755 / 2021.12.31

**Author/s:** Aurelian GULEA, Valentin GUDUMAC, Victor ȚAPCOV, Valeriana PANTEA, Vasilii GRAUR, Lilia ANDRONACHE, Inna ȘVET, Maria BOTNARU

**Institution:** Moldova State University

**Category:** F

**Description:** The invention relates to chemistry and medicine, in particular to biologically active coordination compounds with high inhibitory activity towards superoxide anion radicals that exceed 167-310 times the analogous characteristics of quercetin that is used in medicine. **ADVANTAGES:** The described compounds inhibit superoxide anion radicals. These agents exceed 167-310 times the analogous



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characteristics of quercetin that is used in medical practice, and 2.7-5.0 times analogous characteristics of the prototype. The discovered properties of these substances are of interest for medical practice for enhancement of the arsenal of superoxide anion radical inhibitors.

**State of development:** Laboratory

**ACKNOWLEDGMENTS:** This research was supported by the research project: # 010602.

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**Presentation link:** <https://usm.md/?lang=en>

15.

**Title:** NEW ANTIBACTERIAL AGENTS

**Patent number:** MD 4883/2024.01.31; MD 4842/2023.08.31

**Author/s:** Aurelian GULEA, Emil CEBAN, Roman RUSNAC, Vasiliu GRAUR, Greta BĂLAN, Carolina LOZAN-TÎRȘU, Victor ȚAPCOV, Ion TODERAȘ, Vasile LOZAN

**Institution:** Moldova State University

**Category:** F

**Description:** The invention relates to chemistry and medicine, namely to the biologically active coordination compounds that manifests high antibacterial activity against the species *Streptococcus pneumoniae*. The claimed substances exceed by 66-263 times analogous characteristics of the Ampicillin and 8-16 times the characteristics of the structural analog. The discovered properties of these substance are of interest for medical practice in terms of expanding the arsenal of antibacterial remedies.

**State of development:** Laboratory.

**Contact:** Tel.: +373 69127593; E-mail: guleaurelian@gmail.com **Presentation link:** <https://youtu.be/L4m0XnVKXxs>

16.

**Title:** THE EFFECTIVENESS OF ACTIVE COMPOUNDS IN TEKI AND ANTING-ANTING GRASS EXTRACTS AS CANDIDATE DRUGS FOR BREAST CANCER TREATMENT: A PHYTOCHEMICAL, IN VITRO, AND IN SILICO STUDY

**Patent/project number:** 000580631

**Author:** GHANIYYA PUTRI LUSENDRA

**Institution:** SMAN 1 SEMARANG - INDONESIA

**Category:** F

**Description:** *dfv* Cancer is still a global problem, especially in developing countries, including Indonesia. Based on the type of disease, breast cancer is most prevalent in Indonesia. This is because certain strains such as *Escherichia coli* have become drug-resistant. Ethanol extracts of teki grass (*Cyperus rotundus* L.) and anting-anting (*Acalypha indica* L.), which are commonly found in Indonesia, have often been used as anti-cancer drugs because they have substances including flavonoids, saponins, essential oils, alkaloids, and tannins. Extracts of these two plants have been found to inhibit bacterial and parasitic populations. This study aims to evaluate the antioxidant and anti-elastase properties of extracts *in vitro* and *in silico* as



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*breast cancer drug candidates with an in silico molecular docking study using the elastase protein target (1BOF). Teki grass and anting grass extracts showed strong antioxidant activity in antioxidant testing. In anti-elastase assays, it was found that the extracts of teki grass and anting grass leaves provided strong inhibition of elastase activity. In in vitro experimental study, the antibacterial effectiveness of the two extracts against E. coli with one factor is the variation of extract concentration with a combination composition of 1:1, 1:2, and 2:1, distilled water as a negative control and antibiotic chloramphenicol as a positive control. This study concluded that teki and anting-anting grass extracts have the potential as a source of breast cancer drug candidates.*

**Keywords :** *teki and anting-anting grass, in vitro, in silico, E.coli, breast cancer*

**State of development:** *patent and products*

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**Presentation link:** [\(217\) BIO 11252690 | Ghaniyya Putri Lusendra & Marsha Faradhiani Nadyara | BIOLOGI | ISPO 2024 - YouTube](#)

17.

**Title:** LEVITRON

**Patent/project number:** Student project

**Author/s:** Babără Alexandru

**Institution:** High School "Constantin Stere", Soroca, Republic of Moldova

**Category:** F

**Description:** *The prototype itself shows the example of a magnetic levitation which can be used in medicine in different purposes, an example is the levitation of medical instruments, which can make more sterile interventions.*

**State of development:** Prototype

**Contact:** [xierele@gmail.com](mailto:xierele@gmail.com) +37379760288

**Presentation link:**

<https://drive.google.com/file/d/11HH89dMR5jboAEFgVmVkgFIRYS5rwe9w/view?usp=sharing>

18.

**Title:** E'S IN FOOD. A HEALTHY TEETH- A HEALTHY SMILE

**Patent/project number:** Student project

**Author/s:** Tartus Mădălina; **Mentor:** Prof. Dorogan Elena

**Institution:** „Petru Rareș” Theoretical High School, Republic of Moldova

**Category:** F

**Description:** *We started from the idea that there are many harmful e-s present in mouthwash and we created an eco mouthwash in home conditions. This was created from 200 ml of distilled water, 15 g of honey, 5 g of cinnamon and 5 g of sodium bicarbonate and 6 ml of 0.05% chlorhexidine. In this project, we studied 4 ingredients that are practically in everyone's home, namely honey, cinnamon, sodium bicarbonate and chlorhexidine. I opted for the addition of certain of these because, honey, in addition to having a*



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wonderful taste, also possesses antibacterial properties, cinnamon eliminates the source of the odor, the causative oral bacteria, ensuring long-term results, sodium bicarbonate is an antibacterial, prevents dental caries, maintains an optimal pH level in the oral cavity, neutralizes acidity and chlorhexidine being a strong antiseptic, reduces bacteria in the oral cavity and prevents infections.

Then I made the mouthwash by the following procedure: I distilled 200 ml of water. I dissolved 15 g of honey in water, then mixed the rest of the components - 5 g of cinnamon, 5 g of sodium bicarbonate, 6 ml of 0.05% chlorhexidine. Baking soda can also be replaced with lemon. Then I stored them in the refrigerator overnight, and the next day I filtered the solution and bottled it.

By means of the potentiometric method I determined the neutral pH, which is beneficial and does not dry the oral cavity, I used the strips and the potentiometric device.

**State of development:** The purpose of the prototype is to introduce it to the shelves of the pharmacy and to recommend it to kindergarten children, because it has many benefits, a low cost and is healthy. I studied about their pH, and it has a neutral pH so it does not dry the epithelium of the oral cavity.

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Presentation link: [https://youtu.be/7D-psikF\\_Ko?si=vgFTpaY9rFVIuOP](https://youtu.be/7D-psikF_Ko?si=vgFTpaY9rFVIuOP)

19.

**Title:** FROM SMART ELECTROCONDUCTIVE INK TO SELF-DISINFECTING ELECTRONIC SURFACES

**Patent/project number:** 628 PED/2022

**Author/s:** Radu BANICA, Mihai EFTIMIE

**Institution:** National University of Science and Technology Politehnica Bucharest

**Category:** F

**Description:** Thin glass strips coated by a polymer-based electroconductive flexible skin, activated or not by UV radiation, with antimicrobial and antibacterial self-disinfecting properties. 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 optimised, followed by demonstration of the experimental model, 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. The project will end with final laboratory validation of the demonstrative experimental model.

**State of development:** Research project

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Presentation link: <https://upb.ro/en/>



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20.

**Title:** A NEW ORTHOSIS CONCEPT FOR THE REMOTE TREATMENT OF KYPHOSIS

**Patent/project number:** RO133697 / 29.09.2023

**Author/s:** PhD Student Dimitrie-Cristian FODOR

**Institution:** Doctoral School of the “Gheorghe Asachi” Technical University of Iași, „Dr. Iacob Czihaç” Military Emergency Clinical Hospital of Iasi

**Category:** F

**Description:** The human spine has four physiological curves in the sagittal plane, but over time, it can deform under the influence of negative factors. One such pathology is cervical kyphosis (CK) which is a pathological curvature of the spine, in the sagittal plane (4-8% of the general population). The orthosis is fixed on the cervical area in order to correct and ensure the stability of the spine. It also provides permanent and precise feedback on the evolution of medical recovery (specific, local), the medical specialist being able to intervene during the treatment with adjustments appropriate to the needs. Technology Readiness Level is appreciated as TLR 5, given the fact that the technology is validated in a relevant environment by specialists in the field of medical recovery within the Clinical Rehabilitation Hospital Iasi, Romania.

**State of development:** Experimental prototype

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**Presentation link:** [linkedin.com/in/cristian-fodor-bim](https://www.linkedin.com/in/cristian-fodor-bim)

21.

**Title:** ACTIVE COMPOSITE MATERIAL WITH ANTIMICROBIAL AND SUN PROTECTION PROPERTIES WITH THE POTENTIAL FOR USE IN COSMETIC FORMULATIONS AND PROCEDURE FOR OBTAINING

**Patent/project number:** Patent application No. A-00069/2024

**Author/s:** Irina Fierascu, Anda Maria Baroi, Radu Claudiu Fierascu, Roxana Ioana Brazdis (Matei), Toma Fistos, Ioana Silvia Hosu, Florentina Monica Raduly

**Institution:** INCDCP-ICECHIM Bucharest

**Category:** F

**Description:** The present invention refers to a composite material with antimicrobial and sun protection effect, intended for use in cosmetic applications, consisting of an apatitic material, used as an active ingredient and natural bioactive compounds (such as quercetin or rutin). The procedure for obtaining the composite material consisting of two stages, obtaining the apatitic material by the sol-gel method, respectively obtaining the composite material.

**State of development:** Laboratory

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**Presentation link:** INCDCP-ICECHIM Bucharest



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22.

**Title:** METHOD FOR OBTAINING A NOVEL DESIGN FOR PANCREATIC CANCER APPLICATIONS

**Patent/project number:** Patent no. 131850 / 2020

**Author/s:** Iancu Cornel, Matea Cristian, Mocan Lucian, Mocan Teodora

**Institution:** Regional Institute of Gastroenterology and Hepatology Cluj-Napoca, Romania

**Category:** F

**Description:** The invention relates to a process for preparing a carcinoembryonic product to be applied in pancreatic and colonic cancer immunoprophylaxis. According to the invention, the process consists in that, in the first stage carboxylated carbon nanotubes of MWCNT type are obtained, after which they are functionalized by covalent binding with the carcinoembryonic antigen, the so-functionalized nanostructures are subjected to successive stages of centrifugation and redispersion by ultrasound treatment in double distilled water, for removing the secondary reaction products. 50mg MWCNT (Sigma-Aldrich 724769) are dispersed by ultrasonicator in 5mL of sulfonic acid mixture for 10 minutes. Then add an additional volume of 45 mL of a sulfonitic mixture and the solution is brought to 95 ° C for 15 minutes, after which the solution is added over 150 g of ice. Carbonated carbon nanotubes obtained are subjected to a centrifugation step (3000 RPM / 10 min.). Supernatant removed, redispersed in 50 mL H<sub>2</sub>O dist. and adjust the pH to ~ 8.5. For functionalization of CEA protein carboxylated nanotubes on 9mL sol. MWCNT is added 2mL of sol. EDC/NHS [30mg: 30mg / mL] and allowed to stir for 10 minutes at room temperature, then 150µl of mercaptoethanol and 3mL of CEA 5u.M. The reaction is left to completion for 120 minutes under stirring and at room temperature. The CEA protein-functionalized carbon nanotubes (MWCNT-CEA) are subjected to centrifugation steps (15,000 RPM / 20 min.) And redispersion by ultrasonography in a H<sub>2</sub>O bidist. in order to remove secondary reaction products. The MWCNT-CEA solution is subjected to atomic force (AFM) microscopy methods. The size of nanoparticles was calculated based on profiles extracted from images, MWCNT-CEA ranging from 33 to 61nm.

**State of development:** Laboratory prototype

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**Presentation link:** <https://www.irgh.ro/ro/>

23.

**Title:** PROCESS FOR SYNTHESIS OF BIOFUNCTIONALIZED NANOOBJECTS WITH APPLICABILITY IN TUMORAL PHOTOTHERMAL THERAPY

**Patent/project number:** Patent no. 130737 / 2020

**Author/s:** Mocan Lucian-Constantin, Iancu Cornel, Matea Cristian-Tudor, Ilie Ioana-Rada, Mocan Teodora



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**Institution:** Regional Institute of Gastroenterology and Hepatology „Prof. Dr. O. Fodor”, Cluj-Napoca, Romania; „Iuliu Hatieganu” University of Medicine and Pharmacy , Cluj-Napoca, Romania

**Category:** F

**Description:** The invention relates to a process for preparing a product to be applied in the photothermal therapy of hepatic tumours. According to the invention, the process consists in that the gold nanoparticles - GNP - are prepared in an aqueous medium and stabilized with citrate, after which they are functionalized with beta-mercaptoethanol, at a neutral pH, at the room temperature, for 15 min. The thus functionalized gold nanoparticles are then subjected to successive stages of centrifugation and redispersion by ultrasonication in bidistilled water, for removing the secondary reaction products. The known solutions have the following disadvantages: they have a low degree of biocompatibility and selectivity for liver tumors. The problem solved by the invention is to increase the biocompatibility of gold nanoparticles used in the photothermal therapy of hepatic tumors. The purpose of the invention is to use gold-functional nanoparticles with  $\beta$ ME in optimized phototherapy of hepatic tumors

**State of development:** Laboratory prototype

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24.

**Title:** NANOTARGETING PROTOTYPE FOR ANTI-CANCER CURATIVE APPLICATIONS

**Patent/project number:** Ph.D. Project

**Authors:** Ștefan Țițu, Mocan Lucian, Romelia Pop, Teodora Mocan, Flaviu-Alexandru Tabaran, Iancu Cornel, Alexandru Irimie

**Institution:** „Iuliu Hațieganu” University of Medicine and Pharmacy , Cluj-Napoca, Romania; Regional Institute of Gastroenterology and Hepatology „Prof. Dr. O. Fodor”, Cluj-Napoca, Romania

**Category:** F

**Description:** Matrix metalloproteinase -1 has been demonstrated to interfere with cell migration, invasiveness and collagen destruction 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 Turkevich 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 significant potential for targeting applications (photothermal treatment, tumor imaging) in cancer field.

**State of development:** Experimental prototype

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25.

**Title:** PROCEDURE FOR OBTAINING BIOCAPSULES INTENDED FOR COLON ADENOCARCINOMA IMMUNOPROPHYLAXIS

**Patent/project number:** Patent no. 132630/30.03.2023

**Author/s:** Agoston Vas Coldea Lucia, Mocan Teodora, Iancu Cornel, Mocan Lucian, Tăbăran Flaviu, Matea Cristian

**Institution:** Iuliu Hațieganu University of Medicine and Pharmacy Cluj-Napoca

**Category:** F

**Description:** The invention relates to a process for preparing biocapsules meant for immunoprophylaxis of colon adenocarcinoma. According to the invention, the process consists in that, in the first stage, gold nano particles stabilized with mercaptosuccinic acid and functionalized with protein MUC-1 are prepared, after which they are encapsulated together with an *Allium ursinum* alcoholic extract, to result in alginate biocapsules which are subjected to characterization using atomic force microscopy and dynamic light scattering methods.

**State of development:** Laboratory prototype

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**Presentation link:** <http://old.umfcluj.ro/en/universitate-uk/despre-uk/prezentare-uk>

26.

**Title:** CUSTOMIZED DIETARY SUPPLEMENT DEVELOPMENT FOR BARIATRIC PATIENTS

**Patent/project number:** a 2022 00373

**Author/s:** Daniela Ciobârcă, Gianina Crișan, Florinela Cătoi, Doina Miere, Dan Vodnar, Andrei Mocan, Ana-Maria Vlase, Mihai Babotă

**Institution:** "Iuliu Hațieganu" University of Medicine and Pharmacy Cluj-Napoca

**Category:** F

**Description:** Multivitamins with probiotics and vegetal bioactive compounds with prebiotic properties, customized for bariatric patients nutritional needs. Background: Patients with obesity undergoing laparoscopic sleeve gastrectomy (LSG) are prone to develop micronutrient deficiencies (MNDs). Postoperative MNDs are often caused by a wide array of surgery- or patient-related factors as well as by potential preoperative deficiencies frequently observed in patients with obesity. Moreover, obesity is accompanied by an imbalance of the gut microbiota (GM), termed dysbiosis. MNDs can worsen dysbiosis, while also being aggravated by intestinal bacterial imbalance. Studies have shown that bariatric surgery (BS) enables a partial reverse of the preoperative dysbiosis. However, BS alone is not able to fully restore GM of bariatric patients, such that administration of probiotics following surgery might seem a promising approach to contribute to this process. Restoring of microbial balance might as well enhance the micronutrient status of bariatric patients. Objective: To develop a dietary supplement specifically designed to prevent or correct MNDs in patients undergoing SGL by promoting the restoration of intestinal bacterial



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balance. Our customized multivitamin supplement is a unique formula, containing multiple micronutrients and a pre- and probiotic component, aimed at improving the postoperative micronutrient status of patients submitted to LSG and the bioavailability of micronutrients by contributing to GM restoration to a health-associated composition.

**State of development:** fully developed

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**Presentation link:** <http://old.umfcluj.ro/en/universitate-uk/despre-uk/prezentare-uk>

27.

**Title:** PROCESS FOR OBTAINING A DEVICE FOR PROLONGED AND CONTROLLED DELIVERY OF RUXOLITINIB IN GLIOBLASTOMA

**Patent/project number:** Patent no. A/00444/25.07.2022

**Author/s:** Florian Ioan-Ștefan, Șuşman Valeriu-Sergiu, Ede Bodoki, Sorițău Olga, Peștean Petru-Cosmin, Florian Ioan-Alexandru, Iacob Bogdan-Cezar, Băraian Alexandra-Iulia, Buruiiană Andrei

**Institution:** "Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj County Emergency Clinical Hospital, Institute of Oncology "Prof dr. Ion Chiricuta" Cluj-Napoca

**Category:** F

**Description:** Glioblastoma (GBM) is one of the most complex and aggressive central nervous system tumors, mainly because of its highly invasive properties (1), and is still considered incurable to this day (2). A complete surgical resection is virtually impossible due to the tumor's diffuse nature, so the median survival time is limited to 12-15 months despite any treatment. Within this study, our objective was to address the existing limitations of chemotherapy in treating GBM by designing a molecularly imprinted drug reservoir. The aim was to achieve sustained release of the antitumor agent ruxolitinib (RUX) within the tumor post-resection cavity, targeting residual infiltrative cancer cells while minimizing toxic effects. Several studies have demonstrated its efficacy on GBM cell cultures, with data suggesting that RUX is an ideal candidate for GBM chemotherapy (3). However, RUX does not cross the blood-brain barrier, so its systemic administration cannot ensure effective brain concentrations (4). In pursuit of this goal, we successfully developed and characterized four distinct molecularly imprinted polymers (MIPs), one of which progressed to the *in vivo* assessment stage. The synthesis of MIPs involved precipitation polymerization, using acrylamide, trifluoromethacrylic acid (TFMAA), methacrylic acid, and styrene as functional monomers. To assess the cytotoxic efficacy of the polymers, an *in vitro* evaluation was conducted using the Alamar Blue cell viability assay. Additionally, an *in vivo* assessment was performed using an orthotropic model in Wistar rats. The polymer based on TFMAA (MIP 2) revealed the most favorable risk-benefit profile over the course of 96 hours. MIP 2 exhibited superior efficacy against GBM cells, while its non-imprinted counterpart showed low toxicity. Within the *in vivo* evaluation, animals treated with MIP 2 experienced a significant increase in survival time, extending from 20 to 50 days. This study focused on the development and characterization of four distinct MIPs to create a drug reservoir for localized



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administration of RUX in GBM. MIP 2 emerged as the most effective, significantly extending the survival time of animals by 30 days.

**Acknowledgements:** The research was supported by a grant of the Romanian Ministry of Education and Research, CCCDI-UEFISCDI, project number PN-III-P2-2.1-PED-2019-1387 within PNCDI III, as well as by an internal grant of Iuliu Hațieganu University of Medicine & Pharmacy no. 882/4/12.01.2022.

**State of development:** research paper, research project

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**Presentation link:** <https://5fc932293b45f.site123.me>

28.

**Title:** MUCOADHESIVE SYSTEM COMPOSITION FOR TOPICAL RELEASE OF DOXYCYCLINE IN THE ORAL CAVITY

**Patent Number:** A/00445/25.07.2022

**Authors:** Elena Dinte, Dana Maria Muntean, Aranka Ilea, Adina-Bianca Boșca, Reka Barabas, Liliana-Antonela Bizo, Oana-Alina Cadar

**Institution:** Iuliu Hațieganu University of Medicine and Pharmacy, Cluj-Napoca; Babeș-Bolyai University, Clu-Napoca; INCDO-INOE 2000, Research Institute for Analytical Instrumentation, Cluj-Napoca

**Category:** F

**Description:** The invention refers to a mucoadhesive system easily applicable in different areas of the oral mucosa, capable of forming a protective film that ensures the prolonged release of Doxycycline, having a bactericidal effect, with a role in eradicating infections from the oral cavity, including periodontitis. The developed system adds benefits public health, as it is well tolerated, allows the topical application of the antibiotic, reducing risk of side effects following systemic administration, and increases patient compliance by offering the possibility of self-administration.

**Acknowledgements:** This project was financially supported by the Project CNCS-UEFISCDI, PN-III-P2-2.1-PED-2019-3664 "Personalized intelligent matrices for tissue regeneration and meta-inflammation control" (PRIM\_TISS), No. 348PED/03.08.2020.

**State of development:** Application registered to OSIM

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**Presentation link:** <http://old.umfcluj.ro/en/universitate-uk/despre-uk/prezentare-uk>

29.

**Title:** ENZYME-BASED GEL FOR TOOTH WHITENING AND ENAMEL REGENERATION

**Patent/project number:** A/00453/28.07.2022



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*Institution: Babeș-Bolyai University, "Raluca Ripan" Research Institute in Chemistry, Cluj-Napoca; Technical University Cluj-Napoca, Faculty of Material Science and Engineering; SC REMED PRODIMPEX SRL, Bucharest; "Iuliu Hațieganu" University of Medicine and Pharmacy Cluj-Napoca, Faculty of Dental Medicine*

**Category: F**

**Description:** *The present invention refers to the composition of gels made from nanocapsules with enzymes (bromelain), remineralization agents (hydroxyapatite), essential oils as antimicrobial agents, together with lubrizole as a gelling agent. The product is intended for dental whitening treatments. According to this patent, the mixture includes lubrisol 3-6%, quince juice 35-57%, hydroxyapatite 2-3%, polyethylene glycol 400 8-17%, nanocapsules with enzymes (bromelain, papain) 6-8% and water.*

**Acknowledgements:** *This work was supported by a grant of the Romanian Ministry of Education and Research, CCCDI-UEFISCDI, project number PN-III-P2-2.1-PED-2019-2953, 334 PED/2020.*

**State of development:** *Patent requested*

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**Presentation link:** <http://disdent.granturi.ubbcluj.ro/>

30.

**Title:** *ELECTROCHEMICAL PROCEDURE FOR OBTAINING BISMUTH NANOWIRES FROM CHOLINE CHLORIDE BASED IONIC LIQUIDS*

**Patent/project number:** *A 2020 00807*

**Author/s:** *Anicai Liana, Petica Aurora, Enachescu Marian, Anastasoae Veronica, Lazar Oana Andreia, Cristea Victoria Cecilia, Cernat Andreea, Poteca Teodor Dan*

**Institution:** *University Politehnica Bucharest, Iuliu Hatieganu University of Medicine and Pharmacy Cluj-Napoca, Carol Davila University of Medicine and Pharmacy, Bucharest*

**Category: F**

**Description:** *The invention refers to an electrochemical process of obtaining Bi nanowires using straight electrolyte ionic liquids based on choline chloride, with minimal impact on the environment, the nanowires having applications in the construction of electrochemical detection of the different analytes by using modified electrodes. The Bi nanowires according to the invention are presented in the form of bundles of uniform threads, with lengths between 1.5 to 3.6  $\mu$ m, with diameters between 70 and 120 nm, with which it is achieved homogeneous mixtures in hydroalcoholic solutions of Nafion 5 to 10% from which modified electrodes are obtained suitable for the electrochemical detection of acid folic acid and oxygenated water.*

**State of development:** *Application registered to OSIM*

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Presentation link: <http://old.umfcluj.ro/en/universitate-uk/despre-uk/prezentare-uk>

31.

**Title:** PREVASC VASCULAR PREVENTION VIRTUAL PLATFORM

**Patent/project number:** Medical platform

**Authors:** Mircea Ionut POPITIU, Miruna Georgiana ION, Gloria GAVRILA-ARDELEAN

**Institution:** "Victor Babes" University of Medicine and Pharmacy, Timisoara

**Category:** F

**Description:** PreVasc is a unique and modern Romanian platform for vascular prevention that connects patients, doctors, clinics, and pharmaceutical companies. It is an innovative online database that forms the basis of medical research in the field of vascular pathology, as well as a professional information system designed for use by specialists in the vascular field. PreVasc is the sole online platform for vascular prevention, integrating medical information, patient data, and clinic resources to reduce the number of amputations and deaths from vascular causes in Romania, alongside featuring a research database enabling data export, patient selection based on various diagnostic and clinical criteria, and cohort comparisons. The platform provides valuable information, integrates all relevant websites, and creates a conducive environment for vascular screening activities: arterial disease, carotid disease, aortic aneurysms, venous disease. The PreVasc platform is constantly being developed and updated, in collaboration with international specialists in the field of Vascular Surgery and scientific research, to bring together all specialist doctors, all vascular patients, develop the first profile virtual library, and create a conducive environment through which everyone can interact for the purpose of vascular prevention and optimal medical and surgical treatment.

**State of development:** Virtual Platform

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**Presentation link:** [www.prevasc.ro](http://www.prevasc.ro)

32.

**Title:** CAD DESIGNED CUSTOM ORTHODONTIC DEVICE AND MANUFACTURING PROCEDURE

**Patent/project number:** Patent appl. No a2023 00582

**Authors:** Riham NAGIB, Florin BORCAN, Camelia SZUHANEK

**Institution:** "Victor Babes" University of Medicine and Pharmacy, Timisoara

**Category:** F

**Description:** Treatment of impacted teeth often implies placing a bonded attachment and using orthodontic forces to move the tooth into occlusion. The aim of the invention is to describe a novel methodology of manufacturing orthodontic attachments for impacted teeth using the latest CAD software and 3D printing technology. A biocompatible acrylic based resin was used to print a custom-made attachment designed based on the volumetric data acquired through cone beam computer tomography. Custom design of the



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attachment simplified clinical insertion and treatment planning and 3D printing made its manufacturing easier.

**State of development:** product

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**Presentation link:** <https://www.umft.ro/en/acasa-english/>

33.

**Title:** VITALFLOW TRACKER

**Patent/project number:** Scientific Student Project

**Author/s:** Mihăilescu Flavia-Maria, Popa Marian-Cristian, Leon Gabriel-Ilie; **Coordinator:**

**Professor Aurel Mihail ȚÎȚU**

**Institution:** Lucian Blaga University of Sibiu, Faculty of Engineering

**Category:** F

**Description:** The VitalFlow Tracker monitors real-time health by measuring hormones and chemicals from the body. Precise data, accessible through a simple interface, provides users with an immediate understanding of their physiological balance. A perfect combination of advanced technology and practical utility for personal health care. The VitalFlow Tracker wristband is not only a valuable tool for individual use, but can also be integrated into the healthcare environment, helping physicians provide more personalized and efficient care to their patients. In hospitals and clinics, physicians can use the VitalFlow Tracker to continuously monitor their patients' hormone and chemical levels, providing a more complete and accurate picture of their health. This can be particularly useful for patients with chronic or complex conditions, where constant management of these levels is crucial for treatment and disease management. By using the VitalFlow Tracker bracelet in hospitals, doctors can obtain real-time information about patients' changing health status, allowing them to tailor treatment accordingly and provide prompt interventions when needed.

**State of development:** Scientific Student Project

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**Presentation link:** <https://inginerie.ulbsibiu.ro/>

34.

**Title:** MAKING A NON-INVASIVE MEDICAL DEVICE FOR MEASURING BLOOD OXYGEN AND PULSE OF PATIENTS

**Patent/project number:** Student Project

**Author/s:** Tudorescu V. Vasilica Diana; **Coordinator:** Lecturer PhD eng. Rădulescu Constanța

**Institution:** University „Constantin Brâncuși” from Târgu-Jiu



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## Category: F

**Description:** This project was carried out in several stages, including the construction of the initial pulse oximeter prototype, its calibration and finally the proof of concept regarding the possibility of measuring CO<sub>2</sub> in the blood. The prototype made was made up of an Arduino Uno microcontroller, a Max 30100 sensor, an I2C communication protocol, a display, LEDs with red light and infrared light. The source program code for interfacing the Max30100 pulse oximeter with Arduino was written in C for the Arduino IDE. The device was implemented and tested and gave an acceptable performance in measuring and monitoring the patient's SpO<sub>2</sub>, heart rate and temperature, therefore this device can be considered as an important device to reduce decision-making time in medical engineering. This project can be extended to more specialists and different patients because this project is only for one patient.

**State of development:** educational model for the laboratory

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35.

**Title:** EMOLLIENT CREAM FOR DRY SKIN WITH GRAPES SKIN/SEED EXTRACT (*organic culture of Vitis vinifera L., Fetească Neagră variety*)

**Patent:** RO 135101 B1 – 29/11/2022

**Authors:** Cristiana Radulescu, Cristina Mihaela Nicolescu, Marius Bumbac, Radu Lucian Olteanu, Claudia Lavinia Buruleanu, Laura Monica Gorghiu, Carmen Georgeta Holban

**Assignees:** "Valahia" University of Targoviste; SC Hyperici Farm SRL Târgoviște

## Category: F

**Description:** The invention relates to an emollient cream for dry skin and its preparation procedure, with applicability in the cosmetic or dermatological field, mainly for anti-wrinkle purposes. The cream consists of 7% (volume/mass) hydroalcoholic extract from skin/seed of *Vitis vinifera L., Fetească Neagră variety* grapes, in a cream base consisting of a mixture of lanolin, cetyl alcohol and sodium lauryl sulfate. The autochthonous variety of *Vitis vinifera L., Fetească Neagră*, is the grape variety from Romania with the highest qualitative potential, with a special aroma and a content of fine tannins. Representative for this variety is that it is self-fertile (early variety), thus being cultivated in pure, organic culture, without changing the phytochemical profile of the grape. The patent states that the use of synthetic products for phytosanitary treatments is prohibited and that plant health is ensured in a preventive manner, allowing only products based on simple mineral salts (copper, sulfur, sodium silicate) or plant extracts, within the limits of the rules established by the relevant legislation (EC Regulations no. 834/2007 and no. 889/2008). Hydroalcoholic extracts of grape skin / seeds (*Fetească Neagră variety*) were investigated in terms of pH and electrical conductivity, total content of polyphenolic compounds, total content of flavonoids, antioxidant activity, antimicrobial activity and bioactive compound (i.e., resveratrol). Comparative tests were carried out between the extracts used, the base cream and the creams that are the subject of the invention. Comparative tests were carried out between the extracts used, the base cream and the creams



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that are the subject of the invention. Through these experimental investigations, it was aimed to identify some changes in structure, but also to highlight the incorporation of bioactive compounds from the extracts, in the skin/seed cream - extract.

**State of development:** Patent

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**Presentation link:** <https://www.valahia.ro/en/>

36.

**Title:** INNOVATIVE HERBAL TREATMENT FOR ANAL FISSURES

**Patent/project number:** A 00198 / 2023

**Author/s:** Irina Mihaela Matran, Dan Lucian Dumitrascu

**Institution:** Private Inventors

**Category:** F

**Description:** The invention relates to a natural healing agent for the treatment of anal fissures, used in medicine and pharmacy. The invention has the following advantages: reduction of discomfort occurring on the skin and combating the risk of bleeding, reduction of discomfort occurring on the level of hemorrhoidal veins and anal mucosa, toning action of venous circulation (venotonic) and capillary-protective, anti-inflammatory for the large intestine and internal hemorrhoids, astringent, antioxidant and antiedematous, treatment (healing) of wounds, ulcers, stimulation of peripheral circulation, with sedative and comforting action, emollient and muscle relaxant, skin revitalization, stimulator of increased membrane permeability (due to sterols), carminative, antispasmodic, astringent, antiseptic, antibacterial, fungistatic, antipruginous, antioxidant and regenerative (regenerates epithelia, endothelium and connective tissue), can be conditioned both in glass packaging, sanitary approved plastic vials, or as suppositories, it is 100% natural and does not contain any substances of synthesis. The natural healing agent for the treatment of anal fissures is a hydrophobic ointment. The route of administration is external, transmucosal - rectal. The verification of the effectiveness of the new natural cicatrizer for anal fissures was carried out with the help of the prospective randomized double-blind clinical trial versus placebo.

**State of development:** Laboratory and clinical evaluation, double blind randomized

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37.

**Title:** DIETARY SUPPLEMENTS RECOMMENDED FOR ALLEVIATING OF UNPLEASANT SYMPTOMS OF MENOPAUSE, METHOD OF PRODUCTION AND PROCEDURES FOR ESTABLISHING BIO-SAFETY AND BIOLOGICAL EFFICACY

**Patent/project number:** Patent application OSIM: a/2022/00228



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**Author/s:** Mihaela NEAGU, Cristina-Mihaela LUNTRARU, Alexandru SUCIU, Justinia-Andrei TOMESCU, Sevinci POP, Emilia MANOLE, Lucian ALBULESCU, Cristina TĂNASE

**Institution:** HOFIGAL Export Import SA, National Institute of Pathology Victor Babeş – Bucharest

**Category:** F

**Description:** The invention refers to obtaining of two dietary supplements, as capsules, one for daytime administration and the other for nighttime administration, to alleviate the unpleasant symptoms of menopause. The novelty lies in the active principles of extracts from the medicinal plants Red Clover, Goosefoot, Sage and Hops, rich in phytoestrogens with estrogenic action and maximum efficiency, with no undesirable effects on the woman's body. The formulations were tested *in vitro* to evaluate the estrogenic effect using the method of assessing breast adenocarcinoma cell proliferation (ATCC-MCF7). Both formulations showed estrogenic activity being able to stimulate proliferation of MCF-7 cells in the absence of estrogen receptor inhibitor.

**State of development:** Product

**Contact:** [online@hofigal.eu](mailto:online@hofigal.eu)

**Presentation link:** <https://hofigal.eu/content/4-despre-noi>

38.

**Title:** FOOD SUPPLEMENTARY BASED ON EUPATORIA CANNABIUM / GOLD AND ALGINATE

**Patent/project number:** A100012

**Author/s:** Adina Segneanu, Gabriela Vlase, Titus Vlase, Ionela-Amalia Bradu

**Institution:** West University of Timisoara

**Category:** F

**Description:** The invention refers to a complex food supplement with beneficial effects on the human body, obtained by functionalizing the medicinal plant hemp-agrimony micronized, with gold nanoparticles, the obtained composite being inserted into a biodegradable alginate capsule. Due to the complementarity and synergy of the individual effects of the three components, the new food supplement has high curative and therapeutic properties, with increased efficiency in the treatment of several ailments.

**State of development:** method

**Contact:** Adina Segneanu, email: [adina.segneanu@e-uvt.ro](mailto:adina.segneanu@e-uvt.ro) +40721072589; Ionela Amalia

Bradou [ionela.bradu@e-uvt.ro](mailto:ionela.bradu@e-uvt.ro) +40741676471

**Presentation link:** <https://www.uvt.ro/en/>

39.

**Title:** DEVICE FOR PERFORMING ARTERY PUNCTURE WITH VIEW TO SAMPLING BLOOD FROM RADIAL ARTERY



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**Patent/project number:** Patent OSIM nr.: RO133031- B1/30.06.2023

**Author/s:** Mocan Bogdan, Universitatea Tehnică din Cluj-Napoca

Mocan Mihaela, Universitatea de Medicină și Farmacie „Iuliu Hațieganu” Cluj-Napoca

**Institution:** Technical University of Cluj-Napoca

**Category:** F

**Description:** The invention relates to a device for effectively performing arterial puncture to collect a blood sample from the radial artery. The device for performing the arterial puncture in order to collect a blood sample from the radial artery allows proper immobilisation of the patient's forearm, facilitates precise identification of the radial artery position even in the case of a reduced peripheral pulse, allows visualization of the subcutaneous area of the vein plane from the area under consideration to avoid their puncture, and maintain the needle orientation at a precise angle to the central horizontal plane of the patient's forearm.

**State of development:** patent, scientific paper, research project

**Contact:** [Liliana.Pop@staff.utcluj.ro](mailto:Liliana.Pop@staff.utcluj.ro)

**Presentation link:** <https://www.utcluj.ro/en/>

40.

**Title:** THE ACTIVE COMPONENTS OF HERBAL PLANTS FROM APHTHOCHTONOUS LOCALITIES WITH CHARACTERISTIC SOIL AND RELIEF CONDITIONS AS ADJUVANT THERAPY FOR PEOPLE WITH SKIN CANCER

**Patent number:** Clinical study

**Authors:** Viktorija BLAZOVSKA & Team; Mentor: Dragan JOVANOVA

**Institution:** EDUCATIONAL SCHOOL DAY CENTER „DOZA SREKJA,, MACEDONIA

**Category:** F

**Description:** The goal of research in this paper is to determine the antimicrobial activity of essential oils from plants: Green tea, Turmeric, Corn silk, Red John's wort, Ginger and their use as adjuvant therapy for the treatment of people with skin cancer. Antibacterial activity and examination are conducted survey of 150 people. Studies on antimicrobial activity of essential oils extracted from plants and their use in the treatment of people with skin cancer were examined 3 years. Essential oils from plants Green tea, Turmeric, Corn silk, Red John's wort, Ginger manifested different antimicrobial activity in their use depending on the used concentration of essential oil. The achievement of the aforementioned objectives in this study, were been researched with these herbs and their essential oils as adjuvant treatments of people with skin cancer of 150 respondents aged 20 years, 20-40 years and respondents over 60 years:

- Green tea,
- Turmeric,
- Corn silk,
- Red John's wort,
- Ginger.

**State of development:** Method



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Presentation link: <https://www.facebook.com/djovanov24>

41.

**Title:** Dum-Lab-Product

**Patent:** Student Project

**Author/s:** Stroici Dumitrița; Mentor Silvia Scortescu

**Institution:** "Universul" Theoretical High School Chisinau

**Category:** F

**Description:** The invention is a quilted hoodie that is intended to be used as a coat and as a treatment, it is made of cotton clip, it is stapled with medicinal magnets, those it also treats back pain. Invention is recommended for all ages. The economic advantage, this new product reduce also muscle pains, at list young people after sports had bone system pains.

**State of development:** Prototype

**Contact:** Silvia Scortescu + 373 798 97 247 [silvia.scortescu@yahoo.com](mailto:silvia.scortescu@yahoo.com)

**Presentation link:** <https://www.liceul-universul.md/>

42.

**Title:** BRO-Recuping-Product

**Patent number:** Student Project

**Author/s:** Bostan Radu, Bostan Bogdan; Mentor Silvia Scortescu

**Institution:** "Universul" Theoretical High School Chisinau

**Category:** F

**Description:** The invention is a belt that holds the pants but also treats the spine, it is created only for men and boys in the process of growth, because the bones are growing and the pain is colossal and unbearable, sometimes. The whole body hurts when the bone system grows. RECOMMEND for young boys.

**State of development:** Prototype

**Contact:** Silvia Scortescu + 373 798 97 247 [silvia.scortescu@yahoo.com](mailto:silvia.scortescu@yahoo.com)

**Presentation link:** <https://www.liceul-universul.md/>

43.

**Title:** SINTER LASER MELTING

**Patent/project number:** dental medicine project

**Author/s:** Manolin Mita

**Institution:** HD LaserDent - Deva

**Category:** F



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**Description:** 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 decided 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.

**State of development:** products

**Contact:** [laserprintdeva@gmail.com](mailto:laserprintdeva@gmail.com)

**Presentation link:** <https://www.facebook.com/profile.php?id=100063674163614>

44.

**Title:** ILZSU Hair Repair Serum Product

**Author/s:** Péterné Varga (Kiskőrös)

**Institution:** Idea Club 13 Association, Hódmezővásárhely, Hungary

**Category:** F

**Description:** Hair grower, cholesterol cleaner and cell stimulator. Face creams: argan oil, hyaluronic acid and silicone, the latter is recommended for people over 40 years old.

**State of development:** product

**Contact:** [otletclub.idea@freemail.hu](mailto:otletclub.idea@freemail.hu)

**Presentation link:** <https://otletclub.5mp.eu/web.php?a=otletclub>



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## G - Agriculture, Veterinary medicine

1.

**Title:** ROMANIAN POTATO VARIETY: SECUIANA

**Patent / project number:** 00722 / 12.12.2023

**Author/s:** Anca - Mihaela BACIU, Luiza MIKE

**Institution:** RESEARCH AND DEVELOPMENT STATION FOR POTATO TARGU SECUIESC

**Category:** G

**Description:** Potato variety obtained by sexual hybridization between Collete x Laura, followed by individual clonal selection. The plant is tall, has stem-like foliage structure and erect habit. The flower corolla is large in size and shows medium intensity of anthocyanin coloration on the inner face. The tubercle is short-oval in shape and the eye depth is shallow. The color of the skin is medium red and that of the flesh medium yellow. It belongs to the group of semi-early varieties with an average yield of 38 t/ha, good culinary quality, classifying it in quality group B. Resistant to cyst nematodes, black worm and virus diseases.

**State of development:** Product

**Contact:** Anca Baciu / +40751045873 [anca.mihab@gmail.com](mailto:anca.mihab@gmail.com)

**Presentation link:** <https://www.scdctargusecuiesc.ro/>

2.

**Title:** ROMANIAN POTATO VARIETY: NEMIRA

**Patent / project number:** 00723 / 12.12.2023

**Author/s:** Anca - Mihaela BACIU, Luiza MIKE

**Institution:** RESEARCH AND DEVELOPMENT STATION FOR POTATO TARGU SECUIESC

**Category:** G

**Description:** Potato variety obtained by sexual hybridization between Almera x Victoria, followed by individual clonal selection. The plant has medium height, stem-like foliage structure and erect habit. The flower corolla is small in size and shows a faint intensity of anthocyanin coloration on the inner side. The tubercle is oval in shape and has medium eye depth. The color of the shell is yellow and that of the flesh medium yellow. It belongs to the group of semi-hardy varieties with an average yield of 42.5 t/ha, good culinary quality, classifying it in quality group B.

Resistant to cyst nematodes, black worm and virus diseases.

**State of development:** Product

**Contact:** Anca Baciu / +40751045873 [anca.mihab@gmail.com](mailto:anca.mihab@gmail.com)

**Presentation link:** <https://www.scdctargusecuiesc.ro/>



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3.

**Title:** MECHANISM OF PLANTING WITH CONTROLLED TIGHTENING OF FOREST SEEDLINGS ON SANDY LAND SUBJECT TO DESERTIFICATION

**Patent / project number:** National Patent Application No. A-00765 / 2023

**Author/s:** MIRCEA Costin, NENCIU Florin

**Institution:** National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry

**Category:** G

**Description:** The invention refers to a component part of a mechanized equipment for planting forest saplings, which improves the control of the clamping force of the saplings, as well as the precision of planting in arid sandy environments. Planting seedlings in sandy soils affected by desertification requires increased control, considering the challenges of low water holding capacity and winds that can dislodge these soils. The technical problem that the invention solves is to create an improved mechanism for planting forest saplings on sandy lands affected by desertification, which provides more precise control over compaction during planting, ensuring a more efficient positioning of the sapling, without damaging the stem and its roots. The mechanism is part of a specialized machine for the mechanized planting of forest saplings. This mechanism is equipped with a controlled seedling gripper, which consists of a plunger that actuates two sets of gripping jaws for separate handling of seedling roots and stems during the planting process. These gripper jaws operate with different strokes for root and stem, and have springs with different tensions that automatically adapt to the size and woody condition of the sapling, as well as its size.

**ACKNOWLEDGEMENT:** This work was financed by the Ministry of Research and Innovation through Nucleu Program: "Multidisciplinary research in digital agriculture for economic competitiveness and sustainable development, in the context of climate change". (SUSTAIN-DIGI-AGRI code PN 23 04), contract No. 9N / 01.01.2023 (nr.451623 / 30.12.2022)

**State of development:** Experimental Model

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**Presentation link:** [www.inma.ro](http://www.inma.ro)

4.

**Title:** MOWING EQUIPMENT IN ORCHARD PLANTATIONS WITH TRUNK DETECTION WITH LASER SENSOR

**Patent / project number:** National Patent Application No. A-00764 / 2023

**Author/s:** POPA Lucretia, CIUPERCĂ Radu, ZAICA Ana, ȘTEFAN Vasilica

**Institution:** National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry

**Category:** G

**Description:** The invention relates to an orchard mowing equipment with laser sensor for trunk detection for mowing in maintained orchards, capable of mowing both between rows of trees and between trees in a row, capable to ensure the protection of trunks with the help of artificial intelligence, integrating laser technology. The current equipment intended for mowing between trees in a row which, in general, have



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similar constructions, performing vegetation mowing on the same principles, with the help of a rotor with radially arranged articulated knives, mechanically operated rotor, from the tractor's PTO shaft, or hydrostatically, from the hydraulic installation of the tractor, as well as the movement of the rotor in the horizontal plane when mowing between trees in a row, being equipped with a feeler, which commands the withdrawal of the mower arm when the feeler contacts the tree.

**ACKNOWLEDGEMENT:** This work was financed by the Ministry of Research and Innovation through Financing Contract no.650PED/2022 –"Demonstrative model of intelligent equipment for the management of orchard floor vegetation", Programme #2 from PN III Program: "Increasing the competitiveness of the Romanian economy through research, development and innovation", Sub-programme: 2.1 – Competitiveness through research, development and innovation.

**State of development:** Prototype

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**Presentation link:** [www.inma.ro](http://www.inma.ro)

5.

**Title:** CHISEL TYPE ACTIVE ORGAN FOR SOIL WORKS

**Patent / project number:** National Patent Application No. A-00763 / 2023

**Author/s:** MARIN Eugen, MANEA Dragoş

**Institution:** National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry

**Category:** G

**Description:** The invention refers to a chisel-type active body for tilling the soil intended for equipment provided with active body supports for tilling the soil without turning the layers, such as scarifiers, chisels, cultivators, etc. In the state of the art, various active organs used on soil processing equipment are known, which have various constructive forms. However, the disadvantages of most of these solutions consist in the fact that during the work they increase the forward resistance force to cut the soil to a certain depth and raise the soil to a small distance, especially in the case of a massive cohesive and/or wetter soil structure, from because the working organs are composed of side wings with straight edges. The technical problem that the proposed solution solves, according to the invention, is to create an active chisel-type organ for working the soil, which, when in contact with the soil, contains elements with curved profiled edges that become the most likely areas of progressive fracturing in during tillage to produce tensile yielding of the soil, which keeps most of the tillage energy concentrated in the direction of travel and in the vertical planes, in order to increase the stability of the work and reduce the drag force to advance.

**ADVANTAGES:**

- Reduction of the traction force simultaneously with the reduction of fuel consumption with positive consequences and for the high-speed operation of the tillage equipment;
- substantial reduction of soil compaction and elimination of hardpan;
- increasing the working stability of the tillage equipment;
- improving soil aeration and the ability to retain water in the soil.

**State of development:** Concept



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Presentation link: [www.inma.ro](http://www.inma.ro)

6.

**Title:** EQUIPMENT FOR THE PRODUCTION OF LIQUID BIOFERTILIZER FROM COMPOST

**Patent / project number:** National Patent Application No. A-00625 / 2023

**Author/s:** NENCIU Florin, DUMITRU Dragoş, OLAN Mihai

**Institution:** National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry

**Category:** G

**Description:** The invention refers to an equipment intended for the production of microbiologically enriched biofertilizer solutions, using compost as an inoculating agent, together with nutrients and water, with the aim of obtaining a stable concentrate with a high content of microorganisms beneficial to agricultural crops. The bioreactor consists of a food grade stainless steel basin, equipped with an automated system for monitoring and controlling internal parameters, controlled by sensors (pH, dissolved oxygen, temperature, carbon dioxide, etc.) and a programmable logic controller (PLC), used for industrial automation. The automation system coordinates the aeration subsystem (used for supplying oxygen to aerobic microorganisms), the system for adding chemicals (consisting of enzymes and food for microorganisms), the one for maintaining the pH in the optimal ranges, or determining the preparation time of the fertilizing solutions. The obtained concentrate is a biofertilizer solution enriched with microorganisms and microelements and is obtained by mixing composted / digested sources, mineral fertilizers and water. The resulting fertilizer solution can be used in domestic and commercial agricultural and horticultural environments, for the purpose of improving the growth rate of plants grown in greenhouses and in field crops, combating pathogens in the soil or on plants, use in hydroponic systems, as well as in technologies to restore degraded soils following desertification. In simpler terms, the biofertilizer concentrate is a liquid solution that contains a wide variety of nutrients and microorganisms, which favours the creation of a favourable environment for the development of symbiotic relationships between biological elements and plants.

**ACKNOWLEDGEMENT:** This work was financed by the Ministry of Research and Innovation through Financing Contract no. 1PFE / 30.12.2021 - (PFE 1296 / 17.12.2021) -Financing by the contracting authority of the project "Institutional development of INMA Bucharest in order to increase performance in the field of bioeconomy", Program 1 - Development of the National Research-Development System, Sub-programme: 1.2 - Institutional Performance, PROJECT

**Type:** Institutional Development Projects - CDI Excellence Financing Projects

**State of development:** Experimental Model

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Presentation link: [www.inma.ro](http://www.inma.ro)



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7.

**Title:** DIGITAL SYSTEM AND METHOD FOR MONITORING PESTS IN FRUIT CROPS USING SMART PHEROMONE TRAPS AND WEATHER STATIONS

**Patent / project number:** National Patent Application No. A-00624 / 2023

**Author/s:** PERSU Cătălin, CUJBESCU Dan, MATACHE Mihai-Gabriel, GĂGEANU Iuliana, VLĂDUȚ Nicolae-Valentin, GHEORGHE Gabriel, VOICEA Iulian, ANGHELACHE Dragoș

**Institution:** National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry

**Category:** G

**Description:** The invention refers to an intelligent equipment intended for the monitoring of pests in fruit crops using a pest capture equipment (pheromone trap) equipped with an intelligent system for their quantification (smart camera) and a weather station to facilitate the correlation of the data obtained with climatic conditions (wind, precipitation, temperature, day/night, season) in order to identify and understand the evolution and behaviour of pests in relation to the monitored parameters. The main disadvantage of the currently existing equipment and methods in the field is that they are focused on the identification of pests (insects) and do not focus on external climatic factors, which can influence the evolution of pests. Another disadvantage consists in the fact that they do not refer to the monitoring of the day and night activity of the pests, as well as the correlation of the data obtained from their identification related to a certain season or to a certain period of the day (day/night). The digital fruit crop pest monitoring system is an advanced solution that uses pheromone traps and photo technology to identify, quantify and monitor them, providing real-time detailed data on fruit crop pest populations. Integrating a weather station into this system adds an additional level of complexity and precision, allowing for more effective environmental and pest monitoring and management.

**ACKNOWLEDGEMENT:** This work was financed by the Ministry of Research and Innovation through Financing Contract no. 1PFE / 30.12.2021 - (PFE 1296 / 17.12.2021) -Financing by the contracting authority of the project "Institutional development of INMA Bucharest in order to increase performance in the field of bioeconomy", Program 1 - Development of the National Research-Development System, Sub-programme: 1.2 - Institutional Performance, PROJECT Type: Institutional Development Projects - CDI Excellence Financing Projects

**State of development:** Experimental Model

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**Presentation link:** [www.inma.ro](http://www.inma.ro)

8.

**Title:** INTELLIGENT SYSTEM FOR APPLICATION OF PHYTOSANITARY TREATMENTS AND MONITORING OF PRODUCTION IN GREENHOUSES

**Patent / project number:** National Patent Application No. A-00623 / 2023



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**Author/s:** PERSU Cătălin, CUJBESCU Dan, MATACHE Mihai, GĂGEANU Iuliana, VLĂDUȚ Valentin, CONSTANTINESCU Mihai, GHEORGHE Gabriel, VOICEA Iulian Florin, ANGHELACHE Dragoș

**Institution:** National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry

**Category:** G

**Description:** The invention refers to an intelligent system intended for the monitoring and maintenance of vegetable crops, in order to optimize the process of applying phytosanitary treatments between crop rows and to achieve a monitoring from the point of view of the vegetation study of vegetable products in closed protected spaces. In recent years, both at national and worldwide level, there has been a considerable intensification of research on the introduction of intelligent systems intended for the targeted application of phytosanitary treatments as well as the monitoring of crops with vision systems (intelligent cameras for image acquisition and analysis), different solutions being approached with the aim of increasing productivity, greening crops, reducing crop maintenance costs and, at the same time, optimizing farm management. The main disadvantage of the presented equipment and methods consists in the fact that they do not offer the possibility of targeted application of phytosanitary treatments, relative to the size of the plants of interest, monitored by vision systems for evaluating the stage of vegetation, application which, depending on the stage of development of the plant of interest, it can be done both above the plant, vertically and horizontally, between the crop rows. The technical problem that the invention solves consists in the integration of an intelligent system intended for the application of phytosanitary treatments and the monitoring of production in greenhouses. The intelligent equipment intended for the targeted application of phytosanitary treatments in closed protected spaces and the monitoring of the vegetation stage of the crops of interest in order to optimize the amount of phytosanitary treatment applied and to estimate the productivity.

**ACKNOWLEDGEMENT:** This work was financed by the Ministry of Research and Innovation through Financing Contract no. 1PFE / 30.12.2021 - (PFE 1296 / 17.12.2021) -Financing by the contracting authority of the project "Institutional development of INMA Bucharest in order to increase performance in the field of bioeconomy", Program 1 - Development of the National Research-Development System, Sub-programme: 1.2 - Institutional Performance, PROJECT Type: Institutional Development Projects - CDI Excellence Financing Projects

**State of development:** Research Project

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**Presentation link:** [www.inma.ro](http://www.inma.ro)

9.

**Title:** EQUIPMENT FOR MONITORING COLLECTION, CROPPING AND PACKAGING OF MARINE AND LAKE SURFACE PLASTIC WASTE

**Patent / project number:** National Patent Application No. A-00603 / 2023

**Author/s:** VOICEA Iulian, VLĂDUȚ Valentin, MATACHE Mihai, PERSU Cătălin, CUJBESCU Dan, OLAN Mihai

**Institution:** National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry



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## Category: G

**Description:** The invention refers to a mobile equipment with active monitoring of the working area and hydraulic actuation for the collection of plastic waste from the marine environment and from the surface of lakes, its compaction, chopping and packaging. The general disadvantages of the solutions existing on the market at the present time to solve the collection of waste from aquatic surfaces, consist in the lack of both a mechanical system for capturing plastic waste from the outer space of the two arms and the collection belt, as well as an efficient system for shredding plastic waste. The technical problem that the proposed solution solves consists in making an autonomous mobile equipment, with active monitoring, which contains two pairs of arms, where each arm in the set can be adjustable with respect to the other as an angular position with the help of a tensioner and a cylindrical joints and each pair of arms to be able to have a continuous movement at a certain angle, to create the necessary currents on the surface of the water to attract waste from outside them. For the efficient shredding of plastic waste, the shredder housing is equipped with a spur, which limits the movement of the waste during the shredding operation, and the shredder drum has two sets of knives on the same axis, the first set of profiled knives has the role of breaking the plastic waste and the knives in the second set have the role of cutting the pieces of plastic into smaller elements.

**ACKNOWLEDGEMENT:** This work was financed by the Ministry of Research and Innovation through Financing Contract no. 1PFE / 30.12.2021 - (PFE 1296 / 17.12.2021) -Financing by the contracting authority of the project "Institutional development of INMA Bucharest in order to increase performance in the field of bioeconomy", Program 1 - Development of the National Research-Development System, Sub-programme: 1.2 - Institutional Performance, Project Type: Institutional Development Projects - CDI Excellence Financing Projects

**State of development:** Concept

**Contact:** +40-21-269.32.55 [icsit@inma.ro](mailto:icsit@inma.ro)

**Presentation link:** [www.inma.ro](http://www.inma.ro)

10.

**Title:** MOBILE EQUIPMENT FOR PELLETING AGRICULTURAL BIOMASS

**Patent / project number:** National Patent Application No. A-00601 / 2023

**Author/s:** OLAN Mihai, VOICEA Iulian, VLĂDUȚ Valentin, MATACHE Mihai, VLĂDUȚOIU Laurențiu

**Institution:** National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry

**Category:** G

**Description:** The invention presents a mobile equipment that is used for pelletizing agricultural biomass with an uneven structure: corn cobs, sunflower stalks, rape straw etc., which are found in agriculture in much larger quantities than wheat straw and have a superior caloric power. The equipment can produce pellets from this agricultural waste directly on agricultural land. The main disadvantages of similar equipment existing on the market, consist in the fact that the respective equipment is only used for processing wheat or rape straw, which have a uniform structure, but the existing quantities compared to the quantities of corn cobs are much smaller and the equipment is complex and expensive compared to the applied field, the humidity of the processed products is limited to a maximum of 12-15%.The technical



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*problem that the invention solves consists in the design of an equipment that has a wider range of use for several types of raw materials, allows the use of raw materials with higher humidity, but up to 15-20%, and use the mechanical energy of an already existing tractor in agricultural farms.*

**ACKNOWLEDGEMENT:** *This work was financed by the Ministry of Research and Innovation through Financing Contract no. 1PFE / 30.12.2021 - (PFE 1296 / 17.12.2021) -Financing by the contracting authority of the project "Institutional development of INMA Bucharest in order to increase performance in the field of bioeconomy", Program 1 - Development of the National Research-Development System, Sub-programme: 1.2 - Institutional Performance, PROJECT Type: Institutional Development Projects - CDI Excellence Financing Projects*

**State of development:** *Concept*

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**Presentation link:** [www.inma.ro](http://www.inma.ro)

11.

**Title:** MODULAR URBAN FARM CONTAINER MODULE

**Patent / project number:** National Patent Application No. A-00593 / 2023

**Author/s:** SORICĂ Elena, VLĂDUȚ Nicolae-Valentin, SORICĂ Cristian, VLĂDUȚOIU Laurențiu, MUSCALU Adriana, IONESCU Alexandru, CONSTANTINESCU Mihai

**Institution:** National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry

**Category:** G

**Description:** *The invention refers to a containerized module of a modular urban farm, designed for the growth of plants in a controlled environment, in order to obtain increased yields in the production of plant material. The idea of growing plants without using the soil as a growing medium and as a means of supplying water and nutrients, has been known since antiquity and appeared in Europe in the 17th century, evolving spectacularly until today. The technical problem, solved by the invention, consists in the creation of a modular urban farm containerized module, designed for the growth of plants in a controlled environment, which ensures a low consumption of electricity needed to maintain a constant temperature in the premises, allows the use of means of usual transport for the transport of goods, ensures the achievement of increased yields in the production of plant material, allows to reduce the costs of acquisition, maintenance and operation of the containerized module, reduces the consumption of electricity for the recirculation and filtration of nutrient solutions and reduces the premature wear of technical equipment that perform these operations.*

**ACKNOWLEDGEMENT:** *This work was financed by the Ministry of Research and Innovation through Financing Contract no. 1PFE / 30.12.2021 - (PFE 1296 / 17.12.2021) -Financing by the contracting authority of the project "Institutional development of INMA Bucharest in order to increase performance in the field of bioeconomy", Program 1 - Development of the National Research-Development System, Sub-programme: 1.2 - Institutional Performance, Project Type: Institutional Development Projects - CDI Excellence Financing Projects*

**State of development:** *Experimental Model*

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**Presentation link:** [www.inma.ro](http://www.inma.ro)



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12.

**Title:** METHOD FOR OPTIMIZING THE GERMINATION OF MICROGREENS

**Patent / project number:** National Patent Application No. A-00592 / 2023

**Author/s:** GĂGEANU Iuliana, PERSU Cătălin, TĂBĂRAȘU Ana-Maria, CUJBESCU Dan, GHEORGHE Gabriel

**Institution:** National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry

**Category:** G

**Description:** The invention refers to a method for optimizing the germination of plant seeds for their consumption as microgreens (seedlings in the early growth stage), taking into account the type and density of seeds, the substrate and its temperature and humidity, air and ventilation of the germination space and determining their optimal values. The idea of growing plants without using the soil as a growing medium and as a means of supplying water and nutrients, has been known since antiquity and appeared in Europe in the 17th century, evolving spectacularly until today.

The Seed Germination Optimization Method for obtaining microplants (microgreens):

- ensures the determination of the influence of the size of the seeds and the number of seeds sown on the percentage of germination and the density of seedlings per space used;
- ensures the determination of the influence of the type of environment / substrate used on the germination percentage;
- ensures the determination of the influence of ambient temperature on the germination process;
- ensures the determination of the influence of substrate humidity and air on the germination process;
- ensures the determination of the influence of ventilation on the germination process;
- allows the determination of optimal values for the number of seeds (seed density per used space), substrate, environmental parameters in order to obtain microgreens type plants with adequate nutritional and organoleptic qualities.

**ACKNOWLEDGEMENT:** This work was financed by the Ministry of Research and Innovation through Financing Contract no. 1PFE / 30.12.2021 - (PFE 1296 / 17.12.2021) -Financing by the contracting authority of the project "Institutional development of INMA Bucharest in order to increase performance in the field of bioeconomy", Program 1 - Development of the National Research-Development System, Sub-programme: 1.2 - Institutional Performance, Project Type: Institutional Development Projects - CDI Excellence Financing Projects

**State of development :** Concept

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**Presentation link:** [www.inma.ro](http://www.inma.ro)

13.

**Title:** LABORATORY EQUIPMENT FOR BIOCHAR PRODUCTION FROM VEGETABLE REMAINS



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*Patent / project number: National Patent Application No. A-00472 / 2023; European Patent Application No. EP23020420.8 / 2023*

*Author/s: VLĂDUȚ Nicolae-Valentin, VOICEA Iulian, OLAN Mihai, VLĂDUȚOIU Laurențiu, NIȚU Mihaela*

*Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry*

*Category: G*

*Description: The invention presents an equipment for the laboratory that will produce biochar and synthesis gas from plant residues, the equipment being equipped with temperature and pressure control sensors that provide the information for a process computer that ensures the operation of the system. The general disadvantages of similar inventions on the market consist in the fact that they represent specific technical solutions for the purpose achieved and which are not suitable for a small equipment, for the laboratory, but with a high degree of automation, which allows the adjustment of parameters for the purpose of production research of biochar from various vegetable residue recipes. The technical problem that the invention solves consists in the design of a lab equipment that allows establishing the optimal values for the production of biochar, from various plant residue recipes, equipment equipped with a process computer for the automatic control of the system.*

*ACKNOWLEDGEMENT: This work was financed by the Ministry of Research and Innovation through Financing Contract no. 1PFE / 30.12.2021 - (PFE 1296 / 17.12.2021) - project:*

*"Institutional development of INMA Bucharest in order to increase performance in the field of bioeconomy", Program 1 - Development of the National Research-Development System, Sub-programme: 1.2 - Institutional Performance, Project Type: Institutional Development Projects - CDI Excellence Financing Projects*

*State of development: Experimental Model*

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*Presentation link: [www.inma.ro](http://www.inma.ro)*

14.

*Title: METHOD FOR SIMULATING BIOMASS COMPACTION IN THE FORM OF PELLETS*

*Patent / project number: National Patent Application No. A-00413 / 2023*

*Author/s: GĂGEANU Iuliana, GHEORGHE Gabriel, NIȚU Mihaela, TĂBĂRAȘU Ana-Maria, VLĂDUȚ Nicolae-Valentin*

*Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry*

*Category: G*

*Description: The invention relates to a method of simulating the compaction of biomass in the form of pellets on a specialized device, which takes into account the parameters of the material to be pelletized and the process parameters and the determination of the optimal values for these parameters in order to mass produce pellets of adequate quality.*

*The method for simulating the compaction of biomass in the form of pellets:*

ensures the determination of the influence of the moisture of the material on the density and durability of the obtained pellets;



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- ensures the determination of the influence of the compaction speed on the density and durability of the obtained pellets;
- ensures the determination of the influence of temperature on the density and durability of the obtained pellets;
- ensures the determination of the influence of the compaction pressure on the density and durability of the obtained pellets;
- ensures the determination of the influence of the size (diameter and length) of the pressing holes on the density and durability of the obtained pellets;
- allows the determination of optimal values for material and process parameters for the mass production of pellets.

**ACKNOWLEDGEMENT:** This work was financed by the Ministry of Research and Innovation through Financing Contract no. 1PFE / 30.12.2021 - (PFE 1296 / 17.12.2021) - project: "Institutional development of INMA Bucharest in order to increase performance in the field of bioeconomy", Program 1 - Development of the National Research-Development System, Sub-programme: 1.2 - Institutional Performance, Project Type: Institutional Development Projects - CDI Excellence Financing Projects  
State of development: Concept  
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Presentation link: [www.inma.ro](http://www.inma.ro)

15.

**Title:** METHOD FOR DETERMINING THE UNIFORMITY OF SOWING IN STRAW CEREAL SEEDERS

**Patent / project number:** National Patent Application No. A-00604 / 2023

**Author/s:** CUJBESCU Dan, VOICEA Iulian, PERSU Cătălin, MATACHE Mihai, ANGHELACHE Dragoş, CONSTANTINESCU Mihai

**Institution:** National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry

**Category:** G

**Description:** The invention relates to a method for determining the uniformity of sowing in sowing seeders, that distribute the seeds in equidistant rows, in a continuous flow. The technical problem that the invention solves consists in the automated determination of the uniformity of seeding in field seeders, outside the optimal agricultural periods, for all types of seeders in rows, without making constructive changes to them. The method for determining the accuracy of seeding of seeders of creeping plants allows the determination of the uniformity of seeding in grass seeders, on a specialized stand.

**ACKNOWLEDGEMENT:** This work was financed by the Ministry of Research and Innovation through Financing Contract no. 1PFE / 30.12.2021 - (PFE 1296 / 17.12.2021) - project: "Institutional development of INMA Bucharest in order to increase performance in the field of bioeconomy", Program 1 - Development of the National Research-Development System, Sub-programme: 1.2 - Institutional Performance, Project Type: Institutional Development Projects - CDI Excellence Financing Projects  
State of development: Concept



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16.

**Title:** FLOATING TECHNICAL EQUIPMENT ELECTRICALLY OPERATED, SELF-PROPELLED, FOR HARVESTING LAKE BIOMASS

**Patent / project number:** National Patent Application No. A-00752 / 2022

**Author/s:** Ștefan Vasilica, Matache Mihai, Ciupercă Radu, Popa Lucreția (INMA), Tudor Emil, Vasile Ionuț, Sburlan Ion-Cătălin, Mateescu Carmen (INCDIE ICPE-CA), Paraschiv Maria (UPB)

**Institution:** National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry

**Category:** G

**Description:** The invention refers to a floating technical equipment, self-propelled, electrically operated and remotely controlled, intended for cutting reed stalks or any other type of lake biomass, as well as loading / unloading it using a conveyor belt in / from a collecting bucket provided with the equipment.

**ADVANTAGES:**

- the equipment is ecological, the actuation is done by an electric motor that does not pollute the air or noise, being much quieter than diesel engines;
- the machine is controlled from the remote control, so the operator has a much wider field of vision and can perform all operations safely;
- the nominal voltage of the accumulator batteries is max. 60V, so the danger of electrocution is reduced;
- using three batteries for power supply and connecting them in parallel by means of a rectifier bridge and individual contactors allows redundant operation and balancing the load distributed between the three batteries;
- cutting of lake biomass is done on two floors, so it is easier to collect and store;
- the biomass collection and storage capacity is high, as it is not left on the surface of the water, at the mercy of the currents and the wind.

**ACKNOWLEDGEMENT:** The equipment was made within the sectoral project 1PS/2021 "Development of innovative technologies using artificial intelligence for the exploitation of biomass from lake areas for the sustainable support of green energy", financed by the Ministry of Research, Informatization and Digitization.

**Project partners:** INMA, UPB, INCDDD, ICECHIM, UDJG, INCEMC, ICPE-CA.

**State of development:** Experimental Model

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Presentation link: [www.inma.ro](http://www.inma.ro)

17.

**Title:** KIT FOR PRECISION FOLIAR FERTILIZATION OF VEGETABLES



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**Patent / project number:** National Patent Application No. A-00631 / 2021

**Author/s:** MATACHE Mihai, GĂGEANU Iuliana, VOICEA Iulian, GHEORGHE Gabriel, PERSU Cătălin, DUMITRU Cristinel

**Institution:** National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry

**Category:** G

**Description:** The invention refers to a kit for precision foliar fertilization of vegetables which can be installed on classic machines with ramp intended for fertilizing outdoor vegetable crops, to perform foliar fertilization of both the stem and the leaves of vegetables, in order to reduce the amount of fertilizer applied. Currently, using conventional spraying machines (self-propelled, towed or worn), foliar fertilization is done directly on the leaves, continuously, regardless of whether there are crops or not on the sprayed surface, thus wasting large amounts of fertilizer on the soil or on the weeds. The technical problem solved by the proposed solution, consists in the realization of an experimental model, electrically operated, that allows the individual control of each spraying nozzle separately, by means of electromagnetic microvalves controlled by a central computer, based on an algorithm that allows the identification of cultivated vegetables and weeds using real-time images taken by a smart RGB video camera and processed further using a neural network. After identifying the crop plants, the microvalves located above them are ordered to spray so that the foliar application of fertilizers and herbicides is done only on the respective plants.

**ACKNOWLEDGEMENT:** This project was supported by a grant from the Ministry of Agriculture and Rural Development, contract ADER 25.2.2: "RESEARCH ON THE DESIGN OF INTELLIGENT HORTICULTURE EQUIPMENT FOR BIODYNAMIC ANALYSIS, PREDICTION AND ACTION."

**State of development:** Experimental Model

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18.

**Title:** AUTOMATED INSTALLATION FOR THE ACCOMPLISH-MENT OF THERMAL CYCLES TO CONDITION CHEMICAL FERTILIZERS WITH A HIGH NITROGEN CONTENT

**Patent/project number:** BI 127875/28.06.2019

**Author/s:** Daniela Carmen Rus, Attila Kovacs, Edward Gheorghiosu, Cristian Cioară, Ilici Ștefan

**Institution:** NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN MINE SAFETY AND PROTECTION TO EXPLOSION - INSEMEX

**Category:** G

**Description:** The invention deals with an "Automated installation for the accomplishment of thermal cycles to condition chemical fertilizers with a high nitrogen content" for providing a thermal conditioned fertilizer test item. According to the invention, it meets the applicable requirements for the invention, it meets the applicable requirements for the carrying out of the detonability testing on a test item that has been previously sensitized by recrystallization thermal cycles. The automatic installation is characterized by the fact that it is made up of a water bath with an adequate volume in which a sealed box of parallelepipedal stainless steel that does not allow the sample to deteriorate through wetting or chemical reactions with other substances, a box containing the ammonium nitrate sample inside which is placed the



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probe for monitoring the temperature in the center of the sample connected to the temperature regulation system which is also connected a second probe for monitoring the temperature of the water, a system interconnected with the process computer which controls the temperature and time parameters specific to the water and the sample by means of specialized software. And it regulates both the operation of the water pump respectively the emptying and filling valves of the bathroom tub, as well as the homogenizer, the heat exchanger – the heating cycle and the cooling cycle respectively), and upon completion of conditioning the representative sample is subjected to a detonation test generated by a charge with a high intensity explosive impulse.

**State of development:** prototype

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**Presentation link:** <https://insemex.ro/home-en/>

19.

**Title:** SMART POT FOR MOISTURE ANALYSIS AND LIGHT EXPOSURE OF THE PLANT

**Patent/project number:** Scientific Student Project

**Author/s:** Ivan Razvan Alexandru, Popenta Raul Alexandru, Radu Raul Mihai, Tereblecea Ioan;

**Coordinator:** Professor Aurel Mihail ȚÎȚU

**Institution:** Lucian Blaga University of Sibiu, Faculty of Engineering

**Category:** D

**Description:** In this project, it is about a smart pot in which a probe is mounted, the purpose of which is to measure humidity, soil nutrients, as well as the light exposure of the plant, depending on the data received from the sensors mounted in this probe. This invention already exists, but we came up with an improvement to it. The probe analyzes these characteristics and depending on the type of plant. Based on the data read by the sensors, the client finds out the water requirement for the plant, the nutrients and the exposure to the sun. The data is provided in an application on the phone. The system is aimed at people who do not stay at home very much. Providing this information to a phone helps so that even a child can take care of a plant. Our innovation proposes a clever solution to facilitate plant care, especially targeting those with busy schedules or lacking experience in plant care. By harnessing modern technology, we are developing smart irrigation and plant monitoring systems that provide an optimal growth environment without requiring constant user intervention. These devices can be remotely controlled through a mobile application, allowing users to track plant status and receive personalized care tips. Thus, our innovation not only improves plant life but also streamlines and simplifies the user experience in caring for them, even under time constraints or lack of specialized knowledge.

**State of development:** Scientific Student Project

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**Presentation link:** <https://inginerie.ulbsibiu.ro/>

20.

**Title:** SILAGE STABILIZERS



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**Patent/project number:** National Serbian patent application 2020/1040 and international WIPO PCT/RS 2020/000013

**Author/s:** Dr Aleksandra Ivetić

**Institution:** Institute for Science Application in Agriculture - Serbia

**Category:** G

**Description:** Silage stabilizers present an inventive element in the process of plant ensiling in horizontal silos, silo bags and roll bags. Innovations have numerous beneficial effects on the ensiling process, providing a longer period of protection the nutritive value of silage.

The novelties are components of organic origin that are health safe for humans and animals. Silage stabilizer enables farmers to make a profit. Invention is aimed for improving the silage production, reduction of enteric methane (ECH<sub>4</sub>) emission and silage effluent pollution. Silage stabilizer can adapt to the conditions of each farm individually, providing faster silo mass opening (15 days) or longer (400 days).

**State of development:** Technology Readiness Levels (define by European Commission EC)-TRL is 8, Silage stabilizers are complete and qualified

**Contact:** Dr Aleksandra Ivetić [farmainova.aleksandra@gmail.com](mailto:farmainova.aleksandra@gmail.com)

**Presentation link:**

<https://farmainnova.rs/en/silage-stabilizers/>

<https://agrobiznis.finance.si/agro-hi-tech/stabilizatorji-silaze-so-revolucija-siliranja/a/8983771>

<https://www.britserbcham.com/en/interview-with-dr-aleksandra-ivetic-ceo-at-farma-inova/>

<https://dinkubator.rs/interovju-sa-aleksandrom-ivetic/>

<https://www.agro-hitech.si/team/dr-aleksandra-ivetic-university-of-belgrade/>

<https://informer.rs/to/emisije/649428/da-li-znate-sta-je-silaza-e-pa-prof-dr-aleksandra-ivetic-osmislila-je-kako-da-zivotinje-budu-i-zdrave-i-site-i-od-toga-napravila-sjajan-biznis>

21.

**Title:** SVETLANA A NEW VARIETY OF LAVANDULA ANGUSTIFOLIA MILL. (LAVENDER)

**Patent number:** MD 427/2023.12.31

**Authors:** Maria GONCEARIUC, Svetlana MASCOVTEVA, Violeta BUTNARAS, Pantelimon BOTNARENCO, Zinaida BALMUS, Ludmila COTELEA

**Institution:** Moldova State University, Institute of Genetics, Physiology and Plant Protection

**Category:** G

**Description:** Lavender variety Svetlana is a first-generation hybrid (F1), with a high heterosis effect on a number important quantitative characters, vegetative multiplied with average vegetation period. The Svetlana is a variety resistant to frost and winter, to diseases and drought resistant. Plant height is 68 cm. At the density of 12.5 – 20 thousand plants per hectare is forms up to 854–1500 floral stems per plant. Production of ram maternal inflorescences -7.7 t/ha. Essential oil content – 2.323 % (60 % humidity) and 5.721% (dry. matter). Productions of essential oil constitute 179.2 kg/ha, efficiency 23.4 kg/t of essential oil per ton of fresh inflorescences.

**State of development:** At the laboratory level.



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**ACKNOWLEDGMENTS:** *The research was carried out within the Subprogram # 011102, Increasing and conservation genetic diversity, agricultural crop breeding in the context of climate change.*

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Presentation link: <https://usm.md/?lang=en>

22.

**Title:** THYME WITH LEMON FLAVOR OF THYMUS X CITRIODORUS (PERS.) SCHREB.)  
THE NEW VARIETY - LILY ROZ

**Patent number:** MD 428 / 2024.01.31

**Authors:** Lilia CHISNICEAN, Zinaida VORNICU, Tamara JELEZNEAC, Natalia BARANOVA

**Institution:** Moldova State University, Institute of Genetics, Physiology and Plant Protection

**Category:** G

**Description:** *The variety Lily roz is part of the early maturity group. Perennial semi shrub with a height – 26.4 cm. The diameter of the plant is 64.8 cm. Spreads with 447.3 inflorescence stems. Tiny green oval leaves 5 – 6 mm. Pink flowers – intensely placed in a spiniform raceme. Quality indices: essential oil content 0.326%, (moisture 60%); 1.247% dry matter. Productivity indices: the average production of fresh raw material – 4.26 t/ha, pharmaceutical herba – 1.34 t/ha. Essential oil production – 13.9 kg/ha. Yield: 3.26 kg essential oil per 1 t raw material.*

**State of development:** At the laboratory level.

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Presentation link: <https://usm.md/?lang=en>

23.

**Title:** PROCESS FOR BREEDING RABBITS

**Patent/project number:** MD 1631

**Author/s:** MOSCALIC Roman, MD; CARAMAN Mariana, MD; CREMENEAC Larisa, MD;  
MAȘNER Oleg, MD; COJUȘNEANU Oleg, MD

**Institution:** Scientific and Practical Institute of Biotechnologies in Zootechny and Veterinary Medicine

**Category:** G

**Description:** *The process for breeding rabbits, according to the invention, provides for the administration of a preparation based on a mixture of effective microorganisms, comprising photosynthetic bacteria, lactic acid bacteria and yeast, in an amount of 1.5 mL/L of water, daily for watering females during the gestation-lactation period and rabbits from birth to slaughter, at the same time it is used a preparation obtained by fermentation of 1 L of mixture of effective microorganisms, 44 L of water and 5 L of molasses, at a temperature of 33°C for 7 days.*

**ADVANTAGES OF THE INVENTION:**

- ◀ increasing the fertility of female rabbit by 12.24%;
- ◀ the decrease of 10 percentage points in giving birth to young with less than 7 kittens in the litter;
- ◀ reducing the mortality of young rabbits by 6.97 percentage points;



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- ◀ the intensification of metabolic processes in the body of the young rabbits by increasing the number of red blood cells by 14.89%, the total amount of hemoglobin by 16.30% and the hematocrit by 20.95%;
- ◀ increasing the body mass of rabbits at slaughter by 8.81%;
- ◀ increasing the yield at slaughter by 2.3 percentage points;
- ◀ ensuring the net profit of 27.35 lei/head.

**State of development:** rabbit farm SRL "Sof Fest"

**ACKNOWLEDGMENTS:** The research was carried out within the project 20.80009.5107.12 Strengthening the "food-animalproduction" chain by using new feed resources, innovative methods and schemes of health care.

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**Presentation link:** <https://izmv.gov.md/sites/default/files/Poster%20brevet%20MD%201631.pdf>

24.

**Title:** PROCESS FOR BREEDING YOUNG CHICKENS

**Patent/project number:** MD 1656

**Author/s:** PETCU Igor, MD; MAȘNER Oleg, MD; SÎRBU Tamara, MD; STARCIUC Nicolaie, MD; CARAMAN Mariana, MD; DEMCENCO Boris, MD

**Institution:** Scientific and Practical Institute of Biotechnologies in Zootechny and Veterinary Medicine

**Category:** G

**Description:** The process for breeding young chickens, according to the invention, provides for the introduction of the culture liquid of the *Penicillium piceum* CNMN-FD-21 fungal strain, in the amount of 1 mL/L of water, daily, by watering in the age period of 1-49 days.

**ADVANTAGES OF THE INVENTION:**

- ◀ a 5.21% increase in daily weight gain;
- ◀ a 4.80% increase in body weight at 49 days of age;
- ◀ a 5.11% decrease in specific consumption;
- ◀ the economic efficiency of using the culture extract of *Penicillium piceum* CNMN-FD-21 fungal strains in the daily ration of the Argintie de Adler breed hens was 130.91 lei/100 chickens.

**State of development:** I.M. PB Nord" SRL, rl Edinet

**ACKNOWLEDGMENTS:** The research was carried out within the project 20.80009.5107.12 Strengthening the "food-animalproduction" chain by using new feed resources, innovative methods and schemes of health care.

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**Presentation link:** <https://izmv.gov.md/sites/default/files/Poster%20brevet%20MD%201656.pdf>

25.

**Title:** PROCESS FOR GROWING CORN FOR SILAGE

**Patent/project number:** MD 1668

**Author/s:** CARAMAN Mariana, MD; CREMENEAC Larisa, MD; MOSCALIC Roman, MD; COJUȘNEANU Oleg, MD; MAȘNER Oleg, MD; PETCU Igor, MD.



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**Institution:** *Scientific and Practical Institute of Biotechnologies in Zootechny and Veterinary Medicine*

**Category:** *G*

**Description:** *The invention relates to organic agriculture, crop production branch, in particular to a process for growing corn for silage. The process, according to the invention, comprises the uniform introduction into the soil before sowing of a biocompost in the amount of 10 t/ha, the biocompost being obtained by traditional fermentation, for at least 3 months, of rabbit droppings, which were daily given a preparation based on a mixture of effective microorganisms, including photosynthetic bacteria *Rhodospseudomonas ssp.*, acidolactobacteria *Lactobacillus ssp.*, and yeast *Saccharomyces ssp.*, in the amount of 1.5 mL per 1 L of drinking water.*

**ADVANTAGES OF THE INVENTION:**

◀ *the increase in plants height in the 4 phenological phases, respectively by 30.00%, 32.72%, 26.09%, 9.32%;*

◀ *the increase in plants of dry matter, total nitrogen and crude protein, respectively by 13.99%, 19.05% and 19.05%,*

*in the 3rd phenological phase (harvesting corn for silage). So the fodder has a higher protein value;*

◀ *the obtaining 46.73 % more green mass of corn during ensilaging.*

**State of development:** *STE „Maximovca”, rl Anenii Noi*

**ACKNOWLEDGMENTS:** *The research was carried out within the project 20.80009.5107.12 Strengthening the "food-animalproduction" chain by using new feed resources, innovative methods and schemes of health care.*

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**Presentation link:** <https://izmv.gov.md/sites/default/files/Poster%20brevet%20MD%201668.pdf>



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## H - Foods, Drinks, Restaurants, Hotels & Spa

1.

**Title:** NEXUS TRAVEL

**Patent/project number:** Travel agency

**Author/s:** Zenaida MOSNEAG & Team

**Institution:** S.C. NEXUS 2000 S.R.L

**Category:** H

**Description:** 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.

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.

We like to think that any holiday dream can come true with us. Nexus Travel is a member of ANAT.

"The best trip is always the next one" Live with us new unique experiences! We are waiting for you to put us to the test!

**State of development:** Tourism services

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**Presentation link:** <https://www.nexustravel.ro/>

2.

**Title:** THE INFLUENCE OF ROSEHIP POWDER ADDITION ON MUFFINS QUALITY

**Author/s:** Nicoleta VARTOLOMEI, Simina TĂNASĂ, Andrei PÎRVU

**Institution:** Technological High School of Targu Ocna

**Category:** H

**Description:** The purpose of this work was to study the influence of the rosehip powder addition on the muffins 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 muffins with rosehip powder in a ratio of 5 and 10%. 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



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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. 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. Following the estimation of the organoleptic indices, it was established that the muffins with the addition of 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.

**Acknowledgements:** This study was performed with the support material by Technological High School of Targu Ocna

**State of development:** Product

**Contact:** [vartolomeinicoleta28@yahoo.com](mailto:vartolomeinicoleta28@yahoo.com) 0748992827

**Presentation link:** <http://liceultechnologictgocna.ro/>

3.

**Title:** FAST METHOD FOR ISOLATION OF MICROPLASTICS FROM MILK, YOGURT, SOUR CREAM AND BUTTER

**Patent/project number:** RO 137927 A0

**Author/s:** Cristiana Radulescu, Ioana Daniela Dulama, Andreea Laura Banica, Ioan Alin Bucurica, Raluca Maria Stirbescu, Laura Monica Gorghiu

**Institution:** "Valahia" University of Targoviste

**Category:** H

**Description:** The invention refers to a method for isolating microplastics from milk and dairy products with applicability in the field of industry and food safety. The method is characterized by the fact that it requires a sequence of 3 steps: A. pretreatment of the samples with ultrapure reagents necessary for the digestion of the complex organic matrix and homogenization by stirring at 150 rpm, for 10 minutes; B. actual digestion by ultrasonication at 30°C, for 20 minutes; C. filtration under vacuum on filters with porosity 12-15 µm.

**State of development:** Patent application

**Contact:** [radulescucristiana@yahoo.com](mailto:radulescucristiana@yahoo.com)

**Presentation link:** <https://www.valahia.ro/en/>

4.

**Title:** Kuca za odmor Oblutak

**Patent number:** Tourist project

**Authors:** Dragan PUDA

**Institution:** Serbia

**Category:** H

**Description:** Do you want to explore the country area, enjoy nature, peace, take walks in the forest and experience the hospitality and food specific to Serbia and spend a a wonderful holiday with your loved ones? We cordially invite you to **Kuca za odmor Oblutak!** Holiday home Kuca za odmor Oblutak is located in



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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.

**State of development:** Holiday home

**Contact:** [kucazaodmoroblutak@gmail.com](mailto:kucazaodmoroblutak@gmail.com)

**Presentation link:**

<https://www.instagram.com/kucazaodmoroblutak?igsh=MW9qZ2J5eHg1eGhnYQ>

5.

**Title:** ROOTI Bistro

**Patent/project number:** Tradition food project

**Author/s:** Maria Angelica NOJA, Nicolaie NOJA

**Institution:** Sc PAIN AIGRE Srl

**Category:** H

**Description:** ROOTI Bistro an original concept centered around bakery and pastry production with origins of over 20 years in the field. Our specialty is the production of bread, initiated in the 90s, then we sought to diversify our activity and designed, developed and introduced in our range, pastry products intended for ROOTI Bistro. We are dedicated to the passion of creating authentic and memorable dining experiences. Rooti is your new location in the heart of the city, where every aroma, taste and texture is made with care and passion. We proudly present to you the art of making mayo bread and artisan pastries. Our goal is to bring back authenticity and tradition through every product in our location. With every piece of tender bread and every delicacy fresh out of the oven, we invite you to enjoy an honest taste journey.

**Today, ROOTI Bistro represents a landmark of ambition, personality and originality in the center of DEVA City!**

**State of development:** products

**Contact:** [rootibistro@gmail.com](mailto:rootibistro@gmail.com)

**Presentation link:** <https://www.facebook.com/profile.php?id=61551637361349>

6.

**Title:** La BISCUTERIE

**Patent/project number:** Desserts & Pastries project

**Author/s:** Ani MOCANU, Razvan POPA

**Institution:** SC Inodelisia SRL

**Category:** H

**Description:** 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.



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*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;*

**State of development: Products**

**Contact: +40 761 66 73 73**

**Presentation link: <https://labiscuiterie.ro/>**

7.

**Title: VORONSKAYA**

**Patent/project number: Beverage Company**

**Author/s: PRODALCOM team**

**Institution: SC PRODALCOM SA**

**Category: H**

**Description:** SC PRODALCOM SA was born in the north of Moldova as a materialization and cementing of a lasting friendship between the company's shareholders. This friendship led further and contributed to the increase in the notoriety of Vorona, initially known for the monastery here and the secular woods that surround it.

The year 2017 was THE YEAR OF GROWTH for PRODALCOM:

- Refurbishment of the Vorona bottling section
- Refurbishment of the Botoșani Factory
- Opening of Suceava warehouse

From the company's founding in 1993, to celebrating the moments that matter to us and our community.

**The nature created it, we just bottled it!**

**State of development: Products**

**Contact: [office@prodalcom.ro](mailto:office@prodalcom.ro) <https://prodalcom.ro/premium-drinks-2/>**

**Presentation link: <https://www.facebook.com/voronskaya>**

8.

**Title: LA LIBRARIE**

**Patent/project number: Beverage Company**

**Author/s: Sergiu STANESCU & LA LIBRĂRIA Team**

**Institution: La Librarie**

**Category: H**



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**Description:** *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.*

**State of development:** *Products*

**Contact:** +40749 063 833

**Presentation link:** <https://www.facebook.com/profile.php?id=100063611648428>

9.

**Title:** *LINDEN HOUSE / CASA TEI*

**Project number:** *Accommodation & Tourist Project*

**Author/s:** *Ioana Adina SCHWACHHOFER*

**Institution:** *Sibiu*

**Category:** *H*

**Description:** *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.*

**State of development:** *Cozy B&B services in Hermannstadt / Sibiu offering three rooms and an apartment with courtyard parking*

**Contact:** +40770599717 [casatei97@gmail.com](mailto:casatei97@gmail.com)

**Presentation link:** [https://www.instagram.com/casa\\_tei?igsh=N215ZXNpMXRlaHQ3](https://www.instagram.com/casa_tei?igsh=N215ZXNpMXRlaHQ3)

10.

**Title:** *STAR FAMILY PLATE*

**Project number:** *Food Project*

**Author/s:** *Irimia Marius Ionut & Team*

**Institution:** *Star Doner & Pizza*

**Category:** *H*

**Description:** *A special plate with delicious Star products for you and your loved ones in your family! The Star Plate is available for 2 or 4 people and of course it can be customized according to the wishes of our customers. 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 location or based on the order with home delivery.*

**Be different, choose STAR!**

**State of development:** *products*

**Contact:** +40731 588 801

**Presentation link:** <https://www.facebook.com/profile.php?id=100088256882595>



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11.

**Title:** VBUNG® Technology

**Patent/project number:** AU 2018203047 / EP 3564354A1

**Author/s:** Vitalie POPA & Team

**Institution:** Vbung & Vdoor

**Category:** H

**Description:** VBUNG is a sustainable stainless steel bung that seals the custom wooden barrel while maintaining control over oxidation, contamination and evaporation during aerobic and /or anaerobic maceration, fermentation, malolactic fermentation and aging under continuous safe positive and /or negative pressure inside the custom wooden barrel.

VBUNG ® Technology : No Added Additives and Preservatives Aerobic and/or Anaerobic Maceration, Fermentation, Malolactic Fermentation and Aging under Continuous Positive and/or Negative Pressure with Sunlight in Custom Wooden Barrel

**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.

**State of development:** Product

**Contact:** [vitalie.popa@vbungvdoor.com](mailto:vitalie.popa@vbungvdoor.com) <https://www.vbungvdoor.com/>

**Presentation link:** <https://youtu.be/plhgINNTYW0>

12.

**Title:** ADRIANA's HONEY

**Project number:** producer manufacturer number HD 0231502

**Author/s:** Ignat-Matei Adriana, Ignat-Matei Adriana Daniela, Ignat-Matei Alexandra Roxana

**Institution:** Adriana's Honey Manufacturer

**Category:** H



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**Description:** 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. Adriana's 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.

**State of development:** products

**Contact:** +40720575824 [danielaign9@yahoo.com](mailto:danielaign9@yahoo.com)

**Presentation link:** <https://www.facebook.com/adriana.ignat.313>

13.

**Title:** THEREFRESH CONCEPT

**Project number:** 30308550

**Author/s:** Florin Pirus & Team

**Institution:** S.C. COFFEE&BEVERAGE S.R.L

**Category:** H

**Description:** 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 coffee shops, 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 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.

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 the place where you can really taste well-being!**

**State of development:** products & hospitality culture

**Contact:** [florin@therefresh.ro](mailto:florin@therefresh.ro) +40 721 726 116 [www.therefresh.ro](http://www.therefresh.ro)



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Presentation link: <https://therefresh.ro/alege-cadoul-perfect-pentru-persoanele-dragi/>

14.

**Title:** R/M -Romanitza-help

**Patent/project number:** Student Project

**Author/s:** Brodețchi Ala, Raileanu Marilena, Mentor Silvia Scortescu

**Institution:** "Universul" Theoretical High School Chisinau

**Category:** I

**Description:** This project represents the healing benefits of romanita, the treatment flower is a gift from nature. In this project, I present the curative and treatment effect of gastro-intestinal diseases. I create a miracle pill with fortified wheat that is recommended in the morning on an empty stomach. This project also shows all the benefits of this miracle plant.

**State of development:** Prototype

**Contact:** Silvia Scortescu + 373 798 97 247 [silvia.scortescu@yahoo.com](mailto:silvia.scortescu@yahoo.com)

**Presentation link:** <https://www.liceul-universul.md/>

15.

**Title:** PIZZA SPEED

**Patent/project number:** Delivery & takeaway

**Author/s:** Nicolae Florin PURCEL & Team

**Institution:** S.C. Speed Yasmina S.R.L.

**Category:** I

**Description:** 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!

**State of development:** Pizza

**Contact:** +40744 88 99 66 [contact@pizzaspeed.ro](mailto:contact@pizzaspeed.ro)

**Presentation link:** <https://pizzaspeed.ro/shop/>



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**I - Textiles, Clothing, Fashion, Handmade**

1.

**Title:** SYSTEM FOR TRANSCUTANEOUS ELECTROSTIMULATION BASED ON TEXTILE ELECTRODES

**Patent/project number:** A/00491/11.08.2022

**Author/s:** Aileni Raluca Maria, Toma Doina, Popescu Adriana Iuliana

**Institution:** The National Research and Development Institute for Textiles and Leather

**Category:** I

**Description:** The invention refers to a system based on textile electrodes and the manufacturing process intended for electrotherapy through transcutaneous electrostimulation for the medical and sports fields. The proposed system is based on polymeric textile electrodes (based on Ag or Ni) coated on the RF plasma functionalized fabric support made of 100% cotton. The electrodes are fixed on knitted textile support using thermo-adhesive strips and metal staples through woven electrodes and knitted surface for connection to the electrostimulation device. The novelty of the invention consists in the fact that the textile electrodes obtained by depositing conductive pastes based on PVA polymer matrix and microparticles of Ag or Ni are adherent to the surface of the knitted sleeve (D) and have low surface electrical resistance values (103  $\Omega$ ), allowing the transmission of low-frequency currents (0 - 100 Hz) for transcutaneous electrostimulation.

**Acknowledgment:** The Ministry of Research, Innovation and Digitalization funded this research through the Program Nucleu, Contract PN 19 17 01 01 (3D ELECTROTEX), and the participation in the International Salon INVENTCOR 2024 within Program 1 - Development of the national R&D system, Subprogram 1.2 - Institutional Performance - RDI excellence funding projects, Contract no. 4 PFE/2021.

**State of development:** Demonstrative model

**Contact:** AILENI Raluca Maria [raluca.aileni@incdtp.ro](mailto:raluca.aileni@incdtp.ro)

**Presentation link:** [www.incdtp.ro](http://www.incdtp.ro)

2.

**Title:** PROCEDURE AND INSTALLATION FOR COATING YARNS WITH FERRIMAGNETIC SUBSTANCES

**Patent/project number:** RO 128302 B1 / 30.03.2021

**Author/s:** Marian Catalin GROSU

**Institution:** The National Research & Development Institute for Textiles and Leather – INCDTP



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## Category: I

**Description:** The invention relates to a process and installation for obtaining coated yarns with magnetic properties, by deposition, at room temperature, a variety of textile yarns with magnetizable admixtures obtained from binders miscible in aqueous solutions or solvents and ferromagnetic or other powders. The installation comprises five sub-systems: yarn supply system, feeding, transport, storage, coating and solution calibration system, magnetizing system; heating and fixing of coated yarn system, yarn winding system and a general electric operating system. Magnetic yarns are designed as components for smart textiles, with a wide range of envisaged applications in the field of medical treatment, electronic textiles, smart clothing, sportswear, biomedicine or protective clothing.

**State of development:** research project

**Contact:** [catalin.grosu@incdtp.ro](mailto:catalin.grosu@incdtp.ro)

**Presentation link:** <https://www.incntp.ro/index.html>

3.

**Title:** TECHNOLOGICAL LINE FOR CONDUCTIVE YARNS PROCESSING ON KNITTING MACHINES

**Patent/project number:** RO131130

**Author/s:** Visileanu Emilia, Constantin Stefan, Scarlat Razvan, Carpus Eftalea, Mihai Carmen, Pislaru Mariana, Enache Gheorghe

**Institution:** The National Research & Development Institute for Textiles and Leather – INCDTP

**Category:** I

**Description:** The invention refers to a feeding system for conductive yarns used to produce electrostatic protection equipment (ESD) on flatbed knitting machines. When human operators are met on the production line of devices sensible to electrostatic discharge, a different protection measure is taken into consideration, namely ESD garments, which reduce the risk of an ESD from the operator's normal clothing to the sensitive device.

An ESD garment must provide the following functionalities:

- shield against the electric fields of the insulating parts of the operator's normal clothing;
- prevent electrostatic discharges from normal clothing;
- the garment must not generate electrostatic fields or generate electrostatic discharges.

To reduce the risk of appearing failures caused by an electrostatic discharge, the garments must have properties that can minimize the amplitude of the discharge current and reduce the charge transferred to a device. In order to do that, the following factors should be taken into consideration: the resistivity of the fibres and of the whole material, the density and the structure of the material, the quantity of the charge found on the material and the surface of the discharged material.

**ACKNOWLEDGEMENT:** This work was supported by a grant of the Romanian National Authority for Scientific Research, CNDI- UEFISCDI, project PCCA 179 (2012) "Haine ESD realizate din fibre cu miez conductor tricotate bistrat".

**State of development:** Industrial application

**Contact:** Visileanu Emilia [e.visileau@incdtp.ro](mailto:e.visileau@incdtp.ro)

**Presentation link:** [www.incntp.ro](http://www.incntp.ro) <https://www.incntp.ro/index.html>



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4.

**Title:** MULTIFUNCTIONAL HARNESS - CONTAINER ASSEMBLY FOR SPORT PARACHUTES

**Patent/project number:** A/00862/24.10.2017

**Author/s:** Salistean Adrian, Niculescu Claudia, Popescu Georgeta, Olaru Sabina

**Institution:** The National Research & Development Institute for Textiles and Leather - INCDTP

**Category:** I

**Description:** The invention relates to a multifunctional container assembly for a sports parachute. The assembly according to the invention consists of two compartments, upper and lower, for the canopy of the reserve parachute and, respectively, for the canopy of the main parachute, having variable volumes; the variation of the volume of the first compartment for the reserve parachute is achieved by adjusting the length of a closing loop of the upper parachute compartment, the second compartment for the main parachute is made at the maximum volume, the volume variation of the lower compartment for the main parachute is made by using an additional filling, which completes the volume difference between the compartment and the parachute.

**State of development:** Demonstrative model

**Contact:** SALISTEAN Adrian [adrian.salistean@incdtp.ro](mailto:adrian.salistean@incdtp.ro)

**Presentation link:** [www.incdtp.ro](http://www.incdtp.ro)

5.

**Title:** HACKTEX - Innovative smart textiles & entrepreneurship

**Patent/project number:** 2021-1-RO01-KA220-HED-000027527

**Author/s:** Luminita Ciobanu, Savin Dorin Ionesi, Lidia Alexa

**Institution:** Gheorghe Asachi Technical University of Iași

**Category:** I

**Description:** 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.

**State of development:** Research project - 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 Politècnica de Catalunya - Spain, University of West Attica - Greece, University of Borås - Sweden, TITERA - Germany.

**Contact:** [luminita.ciobanu@academic.tuiasi.ro](mailto:luminita.ciobanu@academic.tuiasi.ro)

**Presentation link:** [https://drive.google.com/drive/folders/163e\\_q8pBi-36ERD0ip4c4gIhMWHsqU\\_q](https://drive.google.com/drive/folders/163e_q8pBi-36ERD0ip4c4gIhMWHsqU_q)



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6.

**Title:** DECORATIVE ACCESSORIES

**Patent/project number:** MD Nr. 1970; 1917

**Author/s:** Malcoci Marina, Malcoci Maria-Eudochia

**Institution:** Technological College of Chisinau, Republic of Moldova

**Category:** I

**Description:** Accessories are essential elements for completing and improving outfits. Being objects that are used to add beauty, style and personality to a person. How they are used may vary depending on individual preference and personal style. Currently, accessories are of a wide variety of models, shapes and can be made of different materials. The work shows some accessories, namely the bow tie, the collar and the martisorul. All the accessories were made by hand, applying decoration techniques such as: embroidery, perforation, gluing applications. In addition to their aesthetic appeal, accessories can also be a symbol of individuality and personal creativity, giving the wearer a way to express their personality and tastes through how they choose to incorporate them into their clothing.

**State of development:** Products

**Contact:** [marina.malcoci@gmail.com](mailto:marina.malcoci@gmail.com)

+37369062399

**Presentation link:** <https://www.facebook.com/marina.malcoci>

7.

**Title:** FLORET FASHION COLLECTION

**Patent/project number:** Fashion Project

**Author/s:** Nicoleta SOFRONOVICI

**Institution:** Floret Fashion

**Category:** I

**Description:** 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.

**State of development:** Fashion Collection Project

**Contact:** Nicoleta Sofronovici; [sofronovicinicoleta@gmail.com](mailto:sofronovicinicoleta@gmail.com) +373 69489315

**Presentation link:** <https://www.youtube.com/watch?v=X2ndDo0W0dw>

8.

**Title:** RERAT HELVETIA - EUROPEAN MANUFACTURER of LASHING & LIFTING SLINGS

**Patent/project number:**

**Author/s:** Larisa RERAT & Team

**Institution:** Rerat Helvetia Company



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## **Category: I**

**Description:** At Rerat Helvetia, we are pioneers in the manufacturing of lashing and webbing slings, committed to delivering unparalleled quality, innovation, and safety. With a legacy that spans 10 years, we have become a trusted name in the industry, synonymous with precision, durability, and advanced technology. Our products adhere to the highest international quality standards. Rigorous testing procedures ensure the reliability and strength of every lashing and webbing sling. We continuously push the boundaries of innovation, introducing cutting-edge designs and features. Pioneering advancements in safety technology to meet and exceed industry requirements. Rerat Helvetia's lashing and webbing slings find applications across diverse industries. From construction sites to logistics operations, our products cater to a wide range of needs. With a strong international presence, we serve clients worldwide. Our commitment to excellence transcends borders, making Rerat Helvetia a global leader in the field. Safety is at the forefront of our mission. Our products are equipped with features that prioritize accident prevention and workplace safety. We embrace sustainable manufacturing practices, minimizing our environmental footprint. Rerat Helvetia is committed to contributing to a greener, more eco-conscious industry. Compliance with global safety standards underscores our dedication to creating secure solutions. Our success is intertwined with the success of our clients. We offer personalized solutions tailored to meet specific industry and project requirements. Customer satisfaction is not just a goal; it's the driving force behind everything we do. Rerat Helvetia proudly holds industry certifications that reflect our unwavering commitment to quality, safety, and excellence. Our products comply with global standards, ensuring reliability and peace of mind for our clients. At Rerat Helvetia, we are not just manufacturers; we are architects of safety and reliability. Our lashing and webbing slings represent a commitment to excellence that has stood the test of time. Join us in a journey where innovation meets reliability, and safety takes center stage.

## **State of development: Products**

**Contact:** [office@rerathelvetia.ch](mailto:office@rerathelvetia.ch) 0040 749 090 725 [www.rerathelvetia.ch](http://www.rerathelvetia.ch) <https://rerat.eu/>

**Presentation link:** <https://youtu.be/2jNSjwjWyTI>

9.

**Title:** THE SAVING OF SHOES

**Patent/project number:** Student Research Project

**Author/s:** Benchea Iulia Maria, Blanga Nicoleta Andreea, Mutiu Robert Florin, Poplacean Bogdan Pavel; **Coordinator:** Professor Aurel Mihail ȚÎȚU

**Institution:** Lucian Blaga University of Sibiu, Faculty of Engineering

## **Category: I**

**Description:** This invention has the purpose to protect the washing machine tube from the shocks produced by the shoes, furthermore it helps maintain the integrity of the shoes during washing. The module will be demontable, easy to get inside the tube and made from an inoxidable alloy. This support allows a more efficient drying process by keeping the shoes fix after the washing process is finalised. In a constantly evolving world, comfort and efficiency in daily activities have become essential priorities. Innovation in the field of household appliances has brought ingenious solutions to the creation of our daily lives. Our project focuses on developing a revolutionary module for the washing machine that offers superior performance, prevents the shoe from any damage, and reduces environmental impact. This



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*invention is the result of a collective effort and passion for innovation and technology. Through this project, we aim to bring about a significant change in the experience of washing machine users by providing them with an efficient, practical and sustainable solution.*

**State of development: Scientific Student Project**

**Contact: Professor Aurel Mihail ȚÎȚU, Lucian Blaga University of Sibiu, Director of PATLIB Centre of Sibiu, 4 Emil Cioran Street, Room IM 101, Phone 0040744390290, E-mail [mihail.titu@ulbsibiu.ro](mailto:mihail.titu@ulbsibiu.ro)**

**Presentation link: <https://inginerie.ulbsibiu.ro/>**

10.

**Title: DENIM FABRIC REINFORCED COMPOSITE MATERIALS**

**Patent/project number: Research project**

**Author/s: Imre KISS, Vasile CIOATA, Mihai Paul TODOR, Ciprian BULEI**

**Institution: Politehnica University of Timisoara, Engineering Faculty of Hunedoara**

**Category: B**

**Description:** *The production methods of TEXTILE COMPOSITES are more attractive over conventional unidirectional laminate composite because of their high production rate. Yarn interlacing which improves structural stability and damage tolerance makes textile composite attractive. Textile composites are used typically because of their high strength-to-weight and stiffness-to-weight ratios. This family of materials, at the center of the cost and performance spectra, offers significant opportunities for new applications of polymer composites. They are manufactured from woven fabrics are formed of arrangement of fibers and matrix.*

**State of development: laboratory**

**Contact: [imre.kiss@fih.upt.ro](mailto:imre.kiss@fih.upt.ro)**

**Presentation link: <https://www.fih.upt.ro/v6/>**

11.

**Title: INDUSTRIAL SEWING MACHINES**

**Patent/project number: Trademark**

**Author/s: Mădălina Bianca BISTRIAN**

**Institution: Perlet by Madalina Bianca; Politehnica University of Timisoara, Faculty of Engineering Hunedoara**

**Category: I**

**Description:** *Industrial sewing machines are designed to provide fast, smooth, vibration-free sewing at any speed. The newest machines are completely 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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**State of development:** Products

**Contact:** [bismadalinabianca@gmail.com](mailto:bismadalinabianca@gmail.com) +40735299651

**Presentation link:** [https://www.facebook.com/perletbymadalinabianca/?locale=ro\\_RO](https://www.facebook.com/perletbymadalinabianca/?locale=ro_RO)

12.

**Title:** CHARMING MOMENT – Craft Art & Handmade

**Patent/project number:** Craft Art & Handmade

**Author/s:** Bartok Iulia Ramona

**Institution:** Bartok Iulia Ramona PFA

**Category:** I

**Description:** 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.

**State of development:** unique and personalized products

**Contact:** [iulia.bartok@gmail.com](mailto:iulia.bartok@gmail.com) +40733083553

**Presentation link:** <https://www.instagram.com/p/Cq5MqoeqnEA/?igsh=bHo2N2g5bThycTVk>

13.

**Title:** PATRICIA'S HANDMADE

**Patent/project number:** Handmade creations

**Author/s:** Patricia Nelega

**Institution:** SC MOFT STUDIO SRL

**Category:** I

**Description:** 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.

**State of development:** products

**Contact:** +40721 603 933

**Presentation link:** <https://www.facebook.com/moftstudio/>

14.

**Title:** MIHAELA'S WONDERFUL BEADS

**Patent/project number:** Bead Embroidery Project

**Author/s:** Mihaela MARARU

**Institution:** MIHAELA'S WONDERFUL BEADS

**Category:** I



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**Description:** *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.*

**State of development:** *products*

**Contact/Presentation link:** <https://www.facebook.com/profile.php?id=100063499954796>

15.

**Title:** *A CREATIVE APPROACH TO WASTE RECYCLING*

**Patent/project number:** *Student Project*

**Author/s:** *Denisa LALA*

**Institution:** *Politehnica University of Timisoara; Faculty of Engineering Hunedoara; CITT Politehnica 2020*

**Category:** *I*

**Description:** *With so much waste being produced every single day, our planet is suffering and if we can do anything to relief this „suffering”, it is taking some of the objects that we have already used and give them a new purpose. My proposal is taking used furniture, empty metal cans etc. that people were going to throw away, and transforming them into objects with a new life. Colourful chairs or shelves, bright plant pots, all created from what would have otherwise gone to the landfill. Many people complain that they don't make furniture as durable as they used to, in this age of consumerism and of fast fashion – even in the furniture industry. So why not take an old but still sturdy chair, give it a good sanding, a fresh coat of paint and change its upholstery? This will prevent the chair (made of wood, nails and fabric which may or may not get recycled) from ending up in a landfill and will help someone enjoy a sturdy, old piece of furniture in the colour of their choice, for years to come. The same can be applied to tables, closets, nightstands, shelves etc. Sky is the limit! As for empty metal cans, many restaurants buy their ingredients in bulk and sometimes these cans end up in the appropriate recycling bin (the yellow one), but many times they must end up in the black bin. Their „trip” to the landfill can be stopped if we give them a good wash, a fresh coat of paint and use them as creative pots for our plants.*

**State of development:** *innovative art project*

**Contact:** *+40723138329 [denisalala@gmail.com](mailto:denisalala@gmail.com)*

**Presentation link:** <https://www.denisuca.com/>

16.

**Title:** *LEMNĂRIA LUI RADU*

**Patent/project number:** *Woodcraft*

**Author/s:** *Fachin Radu Luigi*

**Institution:** *Lemnăria lui Radu*



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## **Category: I**

**Description:** *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.*

**State of development: Products**

**Contact: +40735966509**

**Presentation link:** <https://www.lemnarialuiradu.ro/category/despre-mine/>

**Website:** <https://www.lemnarialuiradu.ro/>

**Instagram:** <https://www.instagram.com/lemnarialuiradu/>

**Facebook:** <https://www.facebook.com/lemnarialuiradu/>

17.

**Title: HANDMADE CONCEPT**

**Patent/project number:**

**Author/s: Epure Oana-Roxana and Cherecheş Alexandra**

**Institution: Goodvibeshandmade**

**Category: I**

**Description:** *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. 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. 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.*

**State of development: concept**

**Contact: +40769075797 [ananaroxanaepure@gmail.com](mailto:ananaroxanaepure@gmail.com)**

**Presentation link:** <https://www.facebook.com/goodvibeshandmade>



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18.

**Title:** SILK THREADS BLENDING MACHINE

**Patent/project number:**

**Author/s:** Venkatesh Penumarthi

**Institution:** Andhra University, Andhra Pradesh, INDIA

**Category:** D

**Description:** 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.

**State of development:** Method

**Contact:** +917386185111 [penumarthivenkatesh05@gmail.com](mailto:penumarthivenkatesh05@gmail.com)

**Presentation link:**

[https://docs.google.com/presentation/d/1BmQJUeWermUA2KBdiBetMLYiiTYTG1qS/edit?usp=s\\_haring&oid=117405513031899406361&rtpof=true&sd=true](https://docs.google.com/presentation/d/1BmQJUeWermUA2KBdiBetMLYiiTYTG1qS/edit?usp=s_haring&oid=117405513031899406361&rtpof=true&sd=true)



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## J - Kids Corner, Games, Toys, Outdoor activities

1.

**Title:** THE KIDS GOT TALENT

**Patent/project number:** Kids project

**Author/s:** Corvina Lego Team - Ilyes Ianis, Gravuj Tiberiu, Cobîrzan Kaliopia, Patraş Andrei, Lupu Patrick, Rotaru Adelin; **Mentor:** Tiberiu DISCA

**Institution:** Matei Corvin Hunedoara Technological High School

**Category:** J

**Description:** With the help of Lego pieces and robots, the children recreate the talent show they participated in. From pianist, dancer, conductor to athletes, everyone wants to show their talent.

**State of development:** Lego

**Contact:** [disca.tiberiu@yahoo.com](mailto:disca.tiberiu@yahoo.com)

**Presentation link:**

[https://www.facebook.com/LiceulTehnologicMateiCorvinHunedoara?locale=ro\\_RO](https://www.facebook.com/LiceulTehnologicMateiCorvinHunedoara?locale=ro_RO)

2.

**Title:** CELEBRATING EMINESCU'S DAY

**Patent/project number:** Kids project

**Author/s:** Alphabot Junior Team - Tirian Matei, Artean Sara, Prodan Mădălina, Dragoş Albert, Baci Tudor, Şovioală Lucas; **Mentor:** Tiberiu DISCA

**Institution:** Matei Corvin Hunedoara Technological High School

**Category:** J

**Description:** From Lego pieces and robots, the children want to recreate the show for Eminescu's day. A librarian who will recite a poem, a patriotic writer, a mobile stage, an alternative source of electricity will try to recreate the atmosphere of culture.

**State of development:** Lego

**Contact:** [disca.tiberiu@yahoo.com](mailto:disca.tiberiu@yahoo.com)

**Presentation link:**

[https://www.facebook.com/LiceulTehnologicMateiCorvinHunedoara?locale=ro\\_RO](https://www.facebook.com/LiceulTehnologicMateiCorvinHunedoara?locale=ro_RO)



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3.

**Title:** STONE BLADE TRAILER OF VIDEO GAME

**Patent/project number:** Student Project

**Author/s:** Pavle Trišović

**Institution:** Faculty of Contemporary Arts, Belgrade, Serbia

**Category:** J

**Description:** SMASH into Stone Blade is 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 is 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.

**State of development:** video game graphic design

**Contact:** Pavle Trišović, +381631033990, Email: [pavle.trisovic@fsu.edu.rs](mailto:pavle.trisovic@fsu.edu.rs)

**Presentation link:** [https://youtu.be/UIvM\\_BmZzMw](https://youtu.be/UIvM_BmZzMw)

4.

**Title:** ALESSIA THE BALLERINA

**Patent/project number:** Kid Project

**Author/s:** Alessia Marie SALA

**Institution:** Kita Dreirad Regensburg, Germany

**Category:** J

**Description:** My name is Alessia Marie SALA, I'm five 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.

**State of development:** ballet class

5.

**Title:** PAINTED DECORATED AND CARVED EGGS

**Patent/project number:** Hand made

**Author/s:** Irén Szlávikné Buzás (Hódmezővásárhely)

**Institution:** Idea Club 13 Association, Hódmezővásárhely - Hungary

**Category:** J

**Description:** English teacher and art teacher, egg painter-carver and painter. I was always creative at work, and I created a lot of visual teaching materials, posters and games to teach children English from a young age,



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and I even organized craft creative camps. Since my retirement, I DECORATE AND CARVE HEN, TURKEY, GOOSE AND OSTRICH EGGS for exhibition purposes approx. With 300 own designs (original and modern) and works. The other branch of art is PAINTING, which I like (all kinds of subjects: landscapes, portraits of people and animals, buildings, plants and objects. I work with various materials and techniques (oil paint, acrylic, powder pastel, tempera, graphite and charcoal).

**State of development: product**

**Contact:** [otletclub.idea@freemail.hu](mailto:otletclub.idea@freemail.hu)

**Presentation link:** <https://otletclub.5mp.eu/web.php?a=otletclub>

6.

**Title:** HANDICRAFTS - TAPESTRY, NEEDLE PAINTING

**Patent/project number:** Hand made

**Author/s:** id. Sándorné Zsiros (Monor)

**Institution:** Idea Club 13 Association, Hódmezővásárhely - Hungary

**Category:** J

**Description:** Gobelin: It is made with half cross stitches. Half and quarter meshes in order to develop the finest details. It is made with split embroidery thread. Needle-dyeing: It is done with split embroidery thread from 2 threads. Stitched closer to each other, we embroider "painted with a needle".

**State of development: product**

**Contact:** [otletclub.idea@freemail.hu](mailto:otletclub.idea@freemail.hu)

**Presentation link:** <https://otletclub.5mp.eu/web.php?a=otletclub>

7.

**Title:** HAND-EMBROIDERED CREATIVE POSTCARDS WITH YARN GRAPHICS TECHNIQUE

**Patent/project number:** Hand made

**Author/s:** Dánielné Darázsi (Monor)

**Institution:** Idea Club 13 Association, Hódmezővásárhely - Hungary

**Category:** J

**Description:** The presented postcards were made using the String art technique. I work with cardboard (120-160g) and first choose a pattern. When I have the pattern, I place it on the cardstock and use a beading needle to poke holes in the paper every 1-2 mm (0.04-0.08 inches). After that, I start sewing with different stitch distances. I use 1mm thick Mettler Poly Sheen String. The seam should be tight, but make sure that the holes do not tear next to each other. After finishing the "sewing", I cover the back side of the stitches with another paper. Only the decoration remains with decorative stickers, beads and ribbons. I also make pictures and bookmarks using this technique.

**State of development: Product**

**Contact:** [otletclub.idea@freemail.hu](mailto:otletclub.idea@freemail.hu)

**Presentation link:** <https://otletclub.5mp.eu/web.php?a=otletclub>



8.

**Title:** DISCOVER ZANZIBAR with MUDI

**Project number:** Travel Guide

**Author/s:** Muhammed Suleiman Yussuf

**Institution:** Descopera Zanzibar cu Mudi - ZANZIBAR

**Category:** H

**Description:** 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.

**State of development:** Travel Guide

**Contact:** <https://www.facebook.com/ghidturisticdespre.zanzibar>  
[tshabalalajunior17@gmail.com](mailto:tshabalalajunior17@gmail.com) +255 783 396 944

**Presentation link:** <https://www.youtube.com/@descoperazanzibarcumudi3671>

9.

**Title:** CLUB EVOLUTII cu Alexandra Marcu

**Patent/project number:** Outdoor project

**Author/s:** Alexandra Marcu & Team

**Category:** J

**Description:** 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!**

Did you know that skiing offers a series of very important advantages?!

1. More calories burned

Skiing is an excellent cardiovascular exercise, which can help you burn serious calories and shed extra pounds.

The number of calories you burn per hour is based on your weight and fitness level, but according to the Harvard Medical School, a person who weighs 85 kg will burn 266 calories in 30 minutes of downhill skiing.



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Beginners can get extra calories burned by going up the slope, instead of using the ski lift. As for advanced skiers, the steeper the slope, the more calories they will burn, because the body has to work harder to maintain its balance.

### 2. Strengthens the muscles of the lower body area

*This winter, take the training from the gym directly to the game!*

*Skiing naturally keeps the body in a squatting position, which strengthens the quadriceps, hamstrings, calves and glutes.*

*Because you will be distracted by the beauty of the surrounding area or too focused on going down the slope, you will not notice how much your legs burn, but you will definitely feel the results the next day!*

### 3. Improve flexibility

*The very art of balancing and tensing the trunk and key muscle groups while skiing makes the body more flexible!*

*As in any sport, it is recommended that you have a stretching routine before going on the track. It is also welcome to do some stretching afterwards to avoid injuries. A regular stretching routine, which focuses on the basic muscle groups, will strengthen the abdominal muscles, obliques and hips, groups that you use in alpine skiing.*

### 4. Improves mood

*Movement in the open air promotes an increased production of endorphins, which leads to a feeling of liberation and happiness.*

*In addition, winter sports offer families time together in nature, extremely important moments in winter, when the days are shorter and the time spent with the family is reduced.*

*Regardless of the duration and frequency with which you do this activity, skiing is extremely beneficial not only for your physical health, but also for your mental health.*

**State of development: traveling education**

**Contact:** [alexandraflaviamarcu@gmail.com](mailto:alexandraflaviamarcu@gmail.com) +4 0723 219 655

**Presentation link:** <https://www.youtube.com/@ExploradoresVlog/featured>

10.

**Title:** ALEX'S 3D PAPER CRAFT

**Patent/project number:** Kid project

**Author/s:** Alexandru ROTEA

**Institution:** Juniorklasse Schillerschule - Dettingen an der Erms - Germany

**Category:** J

**Description:** Bandit Heeler is a fictional character who is one of the main protagonists of the Australian preschool animated television series *Bluey*, created by Joe Brumm. Employed as an archeologist, he enjoys playing with his daughters, Bluey and Bingo, and takes any role he plays in a game they devise seriously despite often being seen as reluctant and unwilling to partake in their games. He often teaches life lessons to his daughters while he plays with them, but this strains his public relationship with them in some episodes. I like to design and make the characters from my favorite cartoons out of cardboard, paper, stickers, aluminum foil and other recyclable materials. My project is the Bandit made according to the instructions from *Bluey* magazine.

**State of development:** 3D Paper Craft



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11.

**Title:** FOOTBALL MY PASSION

**Patent/project number:** Kid project

**Author/s:** Christian SALA

**Institution:** Kita Dreirad Regensburg, Germany

**Category:** C

**Description:** My name is Christian SALA, I am five 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.

**State of development:** football

12.

**Title:** SEBASTIAN'S CUSTOM LEGO CARS

**Patent/project number:** Kid project

**Author/s:** Sebastian ROTEA

**Institution:** Schillerschule - Dettingen an der Erms, Klasse 6c - Germany

**Category:** J

**Description:** My project features Custom Lego Cars, this means creating a new car model from an existing Lego Auto set using the same parts.

Thus I have the pleasure to present you 8 models:

- the first car is a Nissan Silvia with a modified engine with a supercharging group;
- the second car is a Mercedes AMG One;
- the third car is a McLaren F1 GTR;
- the fourth car is a Nissan GT-R from 2 fast 2 furios;
- the fifth car is a Lamborghini Countach;
- the sixth car is a McLaren F1 car;
- the seventh car is a Aston Martin Valkyrie;
- the eighth car is a Audi Quattro.

**State of development:** Lego project

13.

**Title:** FUNCTIONAL MODELSHIPS

**Patent/project number:** Students Project

**Author/s:** Calugar Sebastian, Calugar Damian, Popa Albert, Popa Robert; Mentor: Coach Popa George

**Institution:** CFR Sport Club Simeria

**Category:** J

**Description:** Modelships made from scratch, fully functional, remote controlled. Under the CS CFR Simeria sport club flag, since March 2023 is running a modelship building section. This sport raise juniors



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technique abilities and skills by transposing into technical practice what they are learning during classes. In 2023 the newly born section has brought very good results. Two of the juniors has won the National Champion titles in NS and C classes and one bronze medal at World Championship, class C at Jablonec, Czech Republic. The modelboats presented by them are remote controlled and they were built either from scratch or by using assembly kits.

**State of development:** Modelships

**Contact:** +40722284042 [office.cfrsimeria@gmail.com](mailto:office.cfrsimeria@gmail.com)

**Presentation link:** <https://www.facebook.com/geo.popa.754>

14.

**Title:** COLORS AND DRAWINGS BY LIVIA MARIA

**Patent/project number:** Kid Project

**Author/s:** Livia Maria MACARIE

**Institution:** 1<sup>st</sup> grade Grundschule Rotthalmünster, Germany

**Category:** J

**Description:** My name is Livia Maria MACARIE, I am 7 years old, I am in the 1<sup>st</sup> grade and I study at Grundschule Rotthalmünster, in Germany. In my spare time, I really like to draw, and below are some of my creations. When I draw, I feel like I'm traveling in my own magical world where I can be whatever I want and do whatever I like. It's an adventure full of color and fantasy!

**State of development:** Drawings

15.

**Title:** ANDI'S DRAWINGS

**Patent/project number:** Kid Project

**Author/s:** Andi BERBECE

**Institution:** Small group at Happy Bell Kindergarten, Deva

**Category:** J

**Description:** I am a little explorer, I have almost 2 years old and I love drawing and all animals. Together with the kindergarten teacher, I make drawings for my age, especially for festive events such as March 1, the spring celebration, the Martisor tradition, Mother's Day and others.

**State of development:** Drawings

16.

**Title:** PLAYING WITH COLORS

**Patent/project number:** Kid Project

**Author/s:** BARTOK ADAM ZOLTAN

**Institution:** Class 1 A, Economic College "Emanuil Gojdu" Hunedoara

**Category:** J

**Description:** 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



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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.

**State of development:** Drawings

**Contact:** [iulia.bartok@gmail.com](mailto:iulia.bartok@gmail.com) +40733083553

**Presentation link:** <https://www.facebook.com/share/p/wYjYxaZquVh8JyXr/>

17.

**Title:** ELECTRIC VEHICLE DRIVING SIMULATOR

**Patent/project number:** Method

**Author/s:** Macovei Marius, Lup Lucian, Dumitraş Alina-Lucreţie, Ştefan Daniela-Maria

**Institution:** "Transilvania" Technical College, Deva

**Category:** J

**Description:** The driving electric vehicles learning module is designed to provide participants with the knowledge and skills needed to drive electric vehicles safely and efficiently. From the basics of electric vehicle technology to advanced aspects of driving and maintenance, this comprehensive module provides a complete understanding of all aspects of the electric car.

**State of development:** prototype

**Contact:** [luplucian@yahoo.com](mailto:luplucian@yahoo.com) +40771558788

**Presentation link:** <https://cttdeva.ro/>

18.

**Title:** VALEA MORILOR PARK - Evolution and Perspectives in Promoting the Historical, Cultural, Sports and Touristic Potential of the Capital of the Republic of Moldova

**Patent/project number:** Student Project

**Author/s:** Muntean Sandu, Diulgherov Arina, Spivacenco Lavinia and History Teacher Muntean Angela

**Institution:** "Universul" Theoretical High School Chisinau

**Category:** I

**Description:** Schinoasa and Motocross is a tourist project area with fertile lands and green area, here you can identify new plants for research that you cannot find anywhere else, including more than 12 types of soil, we recommend the green area with the huge park that includes about 200 species of plants, the air is very clean and the picturesque area that takes you deep into the earth will attract maximum attention, we recommend to visit us. Nature's Gift Schinoasa and Motocross are visited by locals visitors, but every year here are organized most Enduro-moto events. This lands are very attractive.

**State of development:** Research project

**Contact:** [liceuluniversul@gmail.com](mailto:liceuluniversul@gmail.com)

**Presentation link:** <https://www.liceul-universul.md/>

19.

**Title:** Ialoveni-PaduR-Research



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**Patent/project number:** *Student Project*

**Author/s:** *Scortescu Marius-Silviu, Scortescu Silvia*

**Institution:** *"Universul" Theoretical High School Chisinau*

**Category:** *I*

**Description:** *The green forests of Ialoveni project research, it is so beautiful, in this project we talk about heaven on earth, you can admire from the beautiful hills, nature and green trees, the area is inlaid with flowers and rare plant species over 300 species, here the soils are clay, small rivers that flow downhill, the fauna and flora are amazing, the air is like in the mountain area. The Ialoveni forests are God's landscape on earth.*

**State of development:** *Prototype*

**Contact:** *Silvia Scortescu + 373 798 97 247 [silvia.scortescu@yahoo.com](mailto:silvia.scortescu@yahoo.com)*

**Presentation link:** <https://www.liceul-universul.md/>

12.

**Title:** *AIRSOFT BY WOLVES SPORTS CLUB*

**Patent/project number:** *Airsoft*

**Author/s:** *Florin TOPOR & Team*

**Institution:** *Deva Wolves Sports Club*

**Category:** *I*

**Description:** *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.*

**State of development:** *Airsoft*

**Contact:** *[axe\\_design@yahoo.com](mailto:axe_design@yahoo.com)*

**Presentation link:** <https://youtu.be/QYdjh3YGD4g?si=4zfVpus7tgjgvbWG>



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

1.

**Title:** THE CONCEPT OF SUSTAINABLE SYSTEMS MARKETING AND ARTIFICIAL INTELLIGENCE (AI) IN PHOTO AND VIDEO

**Patent/project number:** Student Project

**Authors:** Mădălina MIHOC, Iuliana-Teodora VĂDUVA

**Institution:** Politehnica University of Timisoara, Faculty of Engineering Hunedoara; Mihoc Studio

**Category:** K

**Description:** Mihoc Studio is a photo-video company that offers both digital and hard copy material. 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. Plasticised and contaminated paper it is harder to recycle. The equipment used is: shredder, shredder/blender, frames, mesh, paper, water pot. All these papers of different thicknesses, sizes and layouts become waste. Mihoc Studio has found the solution to recycle and use photo paper and documents that are defective or no longer used. In this way we created: scrapbook pages, letters, greeting cards, decorations that we can cut and paint as we like, bookmarks.

**State of development:** products

**Contact:** [www.mihocstudio.ro](http://www.mihocstudio.ro) [madalina@mihocstudio.eu](mailto:madalina@mihocstudio.eu) +40767333661

[vaduvaianateodora@gmail.com](mailto:vaduvaianateodora@gmail.com) +40724980731

**Presentation link:** <https://www.youtube.com/@MihocStudio>

<https://mihocstudio.ro/> <https://www.facebook.com/MihocStudio>

2.

**Title:** CONTEMPLATION IN SHADOWS

**Patent/project number:** photography project

**Author/s:** Adrian STOICA

**Institution:** Adrian Stoica PhotoArt

**Category:** K

**Description:** 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



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*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.*

**State of development: Photography**

**Contact:** [adistoica21@gmail.com](mailto:adistoica21@gmail.com)

**Presentation link:** <https://www.facebook.com/AdrianStoicaPhotoArt> [www.adistoica.ro](http://www.adistoica.ro)

3.

**Title:** DJ RobyX

**Patent/project number:** student project

**Author/s:** Robert SĂCUIU

**Institution:** Politehnica University of Timisoara, Faculty of Engineering Hunedoara

**Category:** K

**Description:** *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. 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 do it after I saw a Romanian friend doing mashups.*

**State of development:** music project

**Contact:** [robisacuiu@gmail.com](mailto:robisacuiu@gmail.com)

**Presentation link:** <https://www.youtube.com/@djrobyx>

4.

**Title:** BREAKING THROUGH THE CLOUDS: THE RISE OF CLOUD ADOPTION IN SAUDI ARABIA

**Patent/project number:** Research project

**Author/s:** Kifaa Alanazi; **Supervised By:** Dr. Neyara Radwan

**Institution:** Industrial Engineering Dept., College of Applied Sciences, ALMaarefa University, KSA - Saudi Arabia

**Category:** K

**Description:** *In 2019, the Saudi Arabian government launched the Saudi Cloud Strategy to promote the use of cloud computing. The strategy aims to expedite the adoption of cloud computing in both public and private sectors, enhance cybersecurity, and create new employment opportunities. The Saudi Cloud*



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Strategy aligns with Saudi Vision 2030 and the National Transformation Program 2020, aiming to revolutionize the Kingdom's economy and society.

### **Vision of Saudi Arabia in GCC:**

- To make Saudi Arabia a regional hub in advanced computing technologies and a growth engine for the ICT sector.
- The Cloud Computing Special Economic Zone embraces Saudi Vision 2030's objectives towards expanding and strengthening the ICT and innovation infrastructure in KSA.
- While turning the Kingdom into a regional tech hub by creating an appealing investment environment for leading global cloud computing companies to begin their commercial operations in Saudi Arabia, and promote the use of Cloud Computing across the Kingdom.

**State of development: student project**

**Contact:** [nradwan@um.edu.sa](mailto:nradwan@um.edu.sa)

**Presentation link:** <https://www.um.edu.sa/index.php/en>

5.

**Title:** IN LOVE

**Patent/project number:** Innovative ART Project

**Author/s:** Jamina RIEDEL

**Institution:** Jam's Art

**Category:** K

**Description:** 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! Me and my love, Hannes, started 10 years ago with an experiment, in folding plastic film and then, treat with pressure and heat. It takes nearly 4 years, to find the right way, to create a new art of sculpting of recycled plastic film. We used waterproof LED- stripes for lightening. Every sculpture is unique, it's impossible, to create these form again.

**Original One - of - a - kind Artwork**

**State of development:** Light sculpting

**Contact:** [jaminaa12@gmail.com](mailto:jaminaa12@gmail.com)

**Presentation link:** <https://www.saatchiart.com/account/artworks/1104419>

6.

**Title:** TRANSFIGURATION

**Patent/project number:** photography project

**Author/s:** Maria Liliana ZAGREAN

**Institution:** Caretta's Art

**Category:** K

**Description:** 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



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*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. From that moment, through the eye of the lens, everything changed. Looking to the raindrop, I realized that it also has its own lens. I don't create the abstract, nature creates it for me, and this is reflected in my works of art.*

**State of development:** *photography*

**Contact:** [caretta.foita@gmail.com](mailto:caretta.foita@gmail.com)

**Presentation link:** <https://www.facebook.com/zagrean.marialiliana.3>

7.

**Title:** *SPRING SYMPHONY*

**Patent/project number:** *Innovative art*

**Author/s:** *Diana Miruna Armioni*

**Institution:** *Art by Miruna*

**Category:** *K*

**Description:** *"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.*

**State of development:** *photography project*

**Contact:** [armionimiruna@yahoo.com](mailto:armionimiruna@yahoo.com)

**Presentation link:** <https://www.facebook.com/mirunaarmioniphoto>

8.

**Title:** *CREATING AN APPLICATION FOR AN INTERIOR DESIGN PROJECT IN THE KINGDOM OF SAUDI ARABIA, 2024*

**Patent/project number:** *Research Project*

**Author/s:** *Hassan Ahmed Bashammakh, Bader Ahmed Bashammakh*

**Institution:** *College of Applied Sciences, Al Maarefa University, Saudi Arabia*

**Description:** *Our mobile interior design business aims to enhance the lifestyle by integrating cutting-edge artificial intelligence into the latest designs. With our service, you gain access to a diverse selection of furniture shapes and paint options tailored to your room's dimensions. Additionally, our platform facilitates virtual meetings, allowing for seamless collaboration. For personalized consultations, we offer an optional feature within the App for a small additional fee. Thorough market analysis is conducted, keeping abreast of the latest developments and competitors' strategies to foster positive growth. Within the design application, designs are curated using AI, tailored to fit the shape and size of each room effectively. Offering comprehensive project information along with user-friendly supplies and technology facilitates ease of use. The design application offers a plethora of features and innovative design suggestions to help users achieve their desired designs effortlessly. The experience is intuitive and accessible, with the added benefit of being free to use.*

**State of development:** *Mobile Interior Design Business*



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Contact: [nradwan@um.edu.sa](mailto:nradwan@um.edu.sa)

Presentation link: <https://www.um.edu.sa/index.php/en>

9.

**Title:** GITURO - A GUIDED LIGHT-EMITTING DIODE GUITAR INSTRUMENT

**Patent/project number:** Student Project

**Author/s:** Robotics Students Team of ST. Patrick School; Mentor: Dr. Dary E. Dacanay

**Institution:** ST. PATRICK SCHOOL INC. - PHILIPPINES

**Category:** K

**Description:** The idea of the Gituro was made for the beginners who find online guides confusing and expensive, plus to give people with physical or mental challenges the ability to learn and play the guitar with less difficulty. Gituro is an attachment for the guitar that will guide you with the chords using LED lights on the Fretboard along a song. Gituro has an onboard computer and LED strips to put on the Fretboard, you will be able use your phone to connect it with a Bluetooth via an app and will be asked to choose a song to play and practice. Gituro is oriented towards beginners and physically troubled learn through Gituro's app is easily interface and individuals, that are incapable of hearing are able to Gituro. accessible and simple to learn. The apps user friendly language support makes it accessible to anyone. The app will run on community made content, which means you can make your own songs! We conducted survey to 100 students from our school about their experiences in playing the guitar and these are the results, 45% of student who considered playing the guitar but got intimidated, 28% of the students who attempted but gave up, 7% were successful at playing the guitar, and 20% who did not consider playing the guitar. The respondents are all students of St. Patrick School of Quezon City from Junior High to Senior High.

**State of development:** Prototype

**Contact:** [stpatrickschoolqc@gmail.com](mailto:stpatrickschoolqc@gmail.com) [www.stpatrickschoolqc.edu.ph](http://www.stpatrickschoolqc.edu.ph)

**Presentation link:** <https://youtu.be/ruSJV8AfMG0>

10.

**Title:** THE CONTRIBUTION OF A MECHATRONIC SYSTEM FOR WITHDRAWAL AND ARRANGEMENT OF MICROPHONE CABLES IN THE CONTEXT OF AUDIO SYSTEM OPTIMIZATION

**Patent/project number:** Ph.D. Student Research Project

**Author/s:** Aurel Mihail ȚÎȚU, Daniel BÂLC, Emanuel BÂLC

**Institution:** Lucian Blaga University of Sibiu, Faculty of Engineering

**Category:** K

**Description:** This paper explores the essential contribution of a Mechatronic System for the Withdrawal and Arrangement of Microphone Cables in optimizing audio systems. In the context of continuous technological advancement, efficient management of microphone cables becomes a crucial component for improving the quality and functionality of audio systems. The proposed system goes beyond the physical withdrawal of cables, incorporating strategic organization to maximize the performance and overall efficiency of the system. The primary function of this mechatronic system lies in facilitating the installation



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and maintenance of audio equipment, eliminating cable chaos, and reducing the risk of electromagnetic interference. Moreover, the system provides enhanced flexibility and mobility, facilitating the manipulation and adjustment of audio equipment according to the specific needs of the user. As the optimization of audio systems becomes increasingly important, this mechatronic system represents an innovative and efficient solution. The benefits include reducing the risk of failure due to disorganized cables, minimizing the time required for cable installation and maintenance, and increasing flexibility in managing audio equipment. The study thus highlights the importance of implementing this mechatronic system in the design and use of audio systems, significantly contributing to technological evolution and the overall performance of the audio industry.

**State of development:** Prototype, Ph.D. Student Research Project

**Contact:** Professor Aurel Mihail ȚÎȚU, Lucian Blaga University of Sibiu, Director of PATLIB Centre of Sibiu, 4 Emil Cioran Street, Room IM 101, Phone 0040744390290, E-mail [mihail.titu@ulbsibiu.ro](mailto:mihail.titu@ulbsibiu.ro)

**Presentation link:** <https://inginerie.ulbsibiu.ro/>

11.

**Title:** GAMING IS FUN

**Project number:** Game Project

**Author/s:** Paul BRADEAN

**Institution:** Bradean's Channel

**Category:** E

**Description:** 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.

**State of development:** Game presentation & Etiquette Lesson

**Contact:** [bradean\\_paul@yahoo.com](mailto:bradean_paul@yahoo.com) TikTok paulbradean1

**Presentation link:** <https://www.youtube.com/watch?v=RSiAxsAp67Q>

12.

**Title:** THE POETRY OF CREATION

**Patent/project number:** PhotoArt

**Author/s:** Corina Gianina Popa ( Uiet)

**Institution:** CORINA's Art

**Category:** K

**Description:** The miracles of everyday life in the battle against the elements. Water, sun, sky, earth, sunset, grace, the wonders of the Creator.

**State of development:** Photo collection & Paintings

**Contact:** [popa.corina@hotmail.com](mailto:popa.corina@hotmail.com)

**Presentation link:** <https://www.facebook.com/corina.gianina.p>



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13.

**Title:** "ORDINARY"

**Patent/project number:** Student Project

**Author/s:** Maksimović Milica

**Institution:** Faculty of Contemporary Arts, Belgrade

**Category:** K

**Description:** 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 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.

**State of development:** Photography project

**Contact:** +38162295510

**Presentation link:**

14.

**Title:** THE SYMPHONY OF COLORS Art & Painting

**Patent/project number:** Art & Painting

**Author/s:** BARTOK IULIA RAMONA

**Institution:** Bartok Iulia Ramona PFA

**Category:** K

**Description:** 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.

**State of development:** unique and personalized products

**Contact:** [iulia.bartok@gmail.com](mailto:iulia.bartok@gmail.com) +40733083553

**Presentation link:** [https://www.instagram.com/p/CqFUyRgKV\\_j/?igsh=bnBhbHdkeHpzOWVh](https://www.instagram.com/p/CqFUyRgKV_j/?igsh=bnBhbHdkeHpzOWVh)

15.

**Title:** ROMANIAN FOLK TALES

**Patent/project number:** AI Generated Art

**Author/s:** Irina FACHIN

**Institution:** Virtual Media Net

**Category:** K



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**Description:** "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, reenvisioned 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.

**State of development:** unique and personalized products

**Contact:** +40.770.212.357 [irina.motoc.devahd@gmail.com](mailto:irina.motoc.devahd@gmail.com)

**Presentation link:** <https://www.facebook.com/reel/978046580068652>

16.

**Title:** EM Art Gallery-Deva

**Patent/project number:** PhotoArt

**Author/s:** Mircea POPITIU

**Institution:** "POPITIU" Cultural Association

**Category:** K

**Description:** 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!

Out of the desire to do more, we have created a magazine of visual arts and cultural support entitled EM Art.

Artists from the main cities in Romania and artists from France, the USA and the Republic of Moldova exhibited on the EM Art Gallery!

**State of development:** Gallery

**Contact:** +40723355939 [popitiuart@yahoo.com](mailto:popitiuart@yahoo.com)

**Presentation link:** <https://www.facebook.com/profile.php?id=100064689549014>



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## Power of Creative Mind Symposium

### Program

Thursday 04<sup>th</sup> of April 2024 starting with 12:00 at Cultural Center „Drăgan Muntean”, Hall „Liviu Oros”.

12:00	<b>INDUSTRIAL PROPERTY POLICIES AND STRATEGIES AT LUCIAN BLAGA UNIVERSITY IN SIBIU</b> <i>Aurel-Mihail TITU</i>
12:15	
12:15	<b>EXCELLENCE IN AVIATION, SPACE AND UAV</b> <i>Valentin SILIVESTRU</i>
12:30	
12:30	<b>PERCEPTIONS OF DECISION MAKERS IN HEALTH INSTITUTIONS REGARDING WELFARE CONDITIONS IN THE ORGANIZATION</b> <i>Milana MAZAL MAZOR</i>
12:45	
12:45	<b>THE MILESTONES OF BUILDING PUBLIC HEALTH RESEARCH IN THE REPUBLIC OF MOLDOVA</b> <i>Octavian SAJIN</i>
13:00	
13:00	<b>LASHING &amp; LIFTING SLINGS by RERAT HELVETIA</b> <i>Larisa RERAT</i>
13:15	
13:15	<b>I HAVE KNOWLEDGE! I KNOW! / BA CUNOSC! BA STIU!</b> <i>Sarah LASCU HARVAT</i>
13:30	
13:30	<b>INNOVATION, THE PATH FOR FUTURE JOBS</b> <i>Augustin SEMENESCU</i>
13:45	
13:45	<b>RESEARCH ON THE RECOVERY OF SILVER FROM RADIOGRAPHIC FILMS AND EFFLUENTS</b> <i>Letiția-Roma CÂNDA</i>
14:00	



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14:00	<b>Symposium coffee break</b>	
14:30		
14:30	<b>THE CHALLENGE OF DIGITIZATION IN THE TEACHING PROCESS</b>	
14:45	<i>Flavius BUCUR</i>	
14:45	<b>THE LESSON - THE MAIN MEANS OF ORGANIZING THE TRAINING</b>	
15:00	<b>LESSON TYPOLOGY IN CONTEMPORARY EDUCATION</b>	
	<i>Emilia Victoria FELCIUC</i>	
15:00	<b>COMMUNICATION AND THE PURPOSE OF INTERNATIONAL NETWORKS</b>	
15:15	<i>Patricia KUMBAKISAKA</i>	
15:15	<b>THE DEVELOPMENT OF INNOVATIVE CREATIVE SPIRIT THROUGH THE</b>	
15:30	<b>POWER OF EXAMPLE AMONG YOUNG STUDENTS</b>	
	<i>Nada RATKOVIĆ</i>	
15:30	<b>THE IMPORTANCE OF PROTECTING INDUSTRIAL PROPERTY</b>	
15:45	<i>Mariana HAHUE</i>	
15:45	<b>DIFFERENTIATED TEACHING</b>	
16:00	<i>Monica Ana MIHET</i>	
16:00	<b>CULTIVATING INNOVATION THROUGH STEM EDUCATION</b>	
16:15	<i>Rania LAMPOU</i>	
16:15	<b>INCDTP IDENTITY, AVANT-GARDE RESEARCH IN THE TEXTILE AND</b>	
16:30	<b>LEATHER INDUSTRY</b>	
	<i>Alexandra Gabriela ENE</i>	
16:30	<b>HOLISTIC SOLUTIONS FOR HEALTH OPTIMIZATION</b>	
16:45	<i>Oana Codruta BACEAN MILOICOV</i>	
16:45	<b><i>SURPRISE SPEAKER</i></b>	
17:00		



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## Book of abstracts

1.

**Title:** INDUSTRIAL PROPERTY POLICIES AND STRATEGIES AT LUCIAN BLAGA UNIVERSITY IN SIBIU

**Speaker:** Aurel-Mihail TITU

**Scientific title:** Prof. Eng. & Ec. Sc.D. & Ph.D., Dr. Habil., Dr.h.c.

**Speaker:** PhD Student Eng. Adrian BOGORIN - PREDESCU

**Institution:** "Lucian Blaga" University of Sibiu

**Description:** The present paper presents the recent evolution of the innovative activity of the Regional Center for the Promotion of Intellectual Property PATLIB Sibiu, within the "Lucian Blaga" University in Sibiu. It all started with a beautiful multidisciplinary team made up of doctors, mechanical, electronic and computer engineers, from academia and the private sector, the team being united by the passion for the world of innovation. At the end of 2013, it applied for the patent entitled "Computer Chair with an Active Principle of Spine Relaxation". This chair is intended for people who work for a long time at the computer, and among the benefits of the chair is the reduction of the negative health effects of current spinal compression and the reduction and elimination of current spinal injuries.

After 7 years, the invention patent was issued by OSIM, but in less than a year, a functional mechanical prototype was built, electrically actuated and controlled from software. In 2018, it was the "star" of the international exhibition in Iasi, Euroinvent, where the "Lucian Blaga" University from Sibiu was rewarded for its innovative work with the grand prize. It went further, at the end of 2018, it applied for the second invention patent "Anti-sedentary office chair". In the second half of 2018, work begins on the second prototype version of the chair. The invention refers to a piece of furniture that replaces the long-term sitting of people while watching TV or working on the computer, with a sitting that ensures continuous mobility of the skeletal structure of the human body, because, the most general phenomenon that happening in the world is the transition of the human species to sedentarism. Similar to the first prototype, it has several moving mechanical elements to train the human torso, being electronically actuated and controlled from software using mobile phones and computers. The construction of the second prototype lasted 6 years, during this time, 2 more patent applications were issued, one of which was already issued by OSIM. Improvements to this prototype consist of more mechanical movements, complex electronic sensor systems for measuring forces, and stimuli applied to the human body in order to measure and conduct clinical trials



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in medical offices. In order to be a real success story, the involvement of the business environment is expected in order to commercialize the second version of the chair in series production.

2.

**Title:** EXCELLENCE IN AVIATION, SPACE AND UAV

**Speaker:** Valentin SILIVESTRU

**Scientific title:** President General Director, Doctor Engineer

**Institution:** COMOTI - Romanian Research & Development Institute for Gas Turbines

**Description:** Founded in 1985, under the name of Scientific Research and Technological Engineering for Aviation Engines within INCREST, former aviation institute, COMOTI becomes in 1996, as a result of institutional evaluation and certification, COMOTI - National Research and Development Institute for Gas Turbines. COMOTI - National Research and Development Institute for Gas Turbines is the only unit in Romania specialized in development and integration of scientific research, constructive and technological design, manufacturing, experimentation, testing, technological transfer and innovation in the field of aviation turbine engines, gas turbine industrial machines and high speed blade machines. Constant concern led to high reliability industrial products: power sets, electrical or turbine natural gas compressor sets and gas turbine cogenerative groups. The experience gathered in the field of high speed blade machines allowed development, in own conception, of series of electrical centrifugal natural gas or air compressors and electrical centrifugal air blowers in a large variety of flows and pressures, making COMOTI the only national producer for such complex equipments.

**Presentation link:** <https://www.youtube.com/watch?v=hwyWmi4a2CQ>

3.

**Title:** PERCEPTIONS OF DECISION MAKERS IN HEALTH INSTITUTIONS REGARDING WELFARE CONDITIONS IN THE ORGANIZATION

**Speaker:** Milana MAZAL MAZOR

**Scientific title:** Ph.D. student

**Institution:** Alexandru Ioan Cuza University, Faculty of Economics and Business Administration, Romania; Israel

**Description:** This study aims to provide information about the perspective of the decision-makers in the issues of the employee's welfare and the conditions of his employment. Three main goals were defined for the qualitative research:

1. To characterize the welfare conditions of nurses in Israel from the point of view of decision-makers in the hospitals and health funds in Israel.
2. Identify the areas of activity of welfare departments in organizations.
3. To rate the satisfaction of the decision makers with the welfare conditions for the employees in the organization where they work.



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*Qualitative research - the data was performed by sorting into subject categories and locating central themes. After that, identifying the perceptions and attitudes of the participants within the themes themselves, choosing the quotes in each sub-theme. The initial sorting into main categories and dates was carried out in accordance with the investigated fields.*

4.

**Title:** THE MILESTONES OF BUILDING PUBLIC HEALTH RESEARCH IN THE REPUBLIC OF MOLDOVA

**Speaker:** Octavian SAJIN

**Scientific title:** PhD in Epidemiology

**Institution:** National Agency for Public Health, Republic of Moldova

**Description:** The National Agency for Public Health (ANSP) in the Republic of Moldova is the main institution responsible for coordinating and managing the public health sector in the country. Regarding the scientific sector of ANSP, it focuses on research in various fields related to public health and promoting population well-being. The scientific sector of ANSP may involve epidemiological research, which includes monitoring and analyzing communicable and non-communicable diseases in Moldova, along with studying risk factors and prevention methods. Additionally, health assessment studies are conducted to assess the population's health status, analyzing socio-economic and behavioral factors influencing health. Public health research is also prioritized, encompassing studies on health policies, healthcare services, and other relevant aspects to improve the public healthcare system in Moldova. Furthermore, the sector monitors and evaluates public health programs and interventions to gauge their effectiveness and impact on the population. International collaboration and participation in research projects are encouraged, allowing ANSP to work with international organizations and public health agencies, accessing additional resources and contributing to global health research efforts. These activities represent the multifaceted approach of the scientific sector within ANSP, contributing to the advancement of public health knowledge and practices in Moldova.

**Contact:** [octavian.sajin@ansp.gov.md](mailto:octavian.sajin@ansp.gov.md) +373 69815023

**Presentation link:** <https://www.youtube.com/watch?v=JeCOTbshzQg>

5.

**Title:** LASHING & LIFTING SLINGS by RERAT HELVETIA

**Speaker:** Larisa RERAT

**Scientific title:** Chief Executive Officer

**Institution:** Rerat Helvetia Company

**Description:** Rerat Helvetia proudly holds industry certifications that reflect our unwavering commitment to quality, safety, and excellence. Our products comply with global standards, ensuring reliability and peace of mind for our clients. At Rerat Helvetia, we are not just manufacturers; we are architects of safety and reliability. Our lashing and webbing slings represent a commitment to excellence that has stood the test of time. Join us in a journey where innovation meets reliability, and safety takes center stage. Rerat Helvetia is committed to contributing to a greener, more eco-conscious industry.



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Compliance with global safety standards underscores our dedication to creating secure solutions. Our success is intertwined with the success of our clients. We offer personalized solutions tailored to meet specific industry and project requirements. Customer satisfaction is not just a goal; it's the driving force behind everything we do. Rerat Helvetia proudly holds industry certifications that reflect our unwavering commitment to quality, safety, and excellence.

Contact: [office@rerathelvetia.ch](mailto:office@rerathelvetia.ch) 0040 749 090 725 [www.rerathelvetia.ch](http://www.rerathelvetia.ch) <https://rerat.eu/>

Presentation link: <https://youtu.be/2jNSjwjWyTI>

6.

**Title:** I HAVE KNOWLEDGE! I KNOW! / BA CUNOSC! BA STIU!

**Speaker:** Sarah LASCU HARVAT

**Scientific title:** Chairman

**Institution:** EDUROD Association for Digital and Environmental Education

**Description:** 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.

**Contact:** 0728772758; [hello@edurod.org](mailto:hello@edurod.org)

**Presentation link:** <https://bacunosc.ro/meserii/>

7.

**Title:** INNOVATION, THE PATH FOR FUTURE JOBS

**Speaker:** Augustin SEMENESCU

**Scientific title:** Professor Habilitated Doctor, M.Sc., B.Sc. (Engineering, Mathematics, Economics), National University for Science & Technology POLITEHNICA of Bucharest, Romania, Vice Dean Materials Science & Engineering Faculty, Corresponding Member of the Academy of Romanian Scientists, FULL Member of the American Romanian Academy of Arts and Sciences, EU RFCS Programme Expert (TGS8)

**Institution:** National University of Science and Technology POLITEHNICA Bucharest and Academy of Romanian Scientists

**Description:** Dissemination of doctoral research results is a mandatory activity for completing studies and obtaining a doctorate in engineering fields. Thus, the mentor must guide the Ph.D. student in terms of scientific integrity in writing articles and choosing the appropriate journal, and thus model ethical behavior in publishing results. The challenges are diverse and either supply-side (harassment and invitations to publish, editorial process, etc.) or Ph.D. student-related (research reasoning, inadequate or misquoting, citation inaccuracy).

8.

**Title:** RESEARCH ON THE RECOVERY OF SILVER FROM RADIOGRAPHIC FILMS AND EFFLUENTS

**Speaker:** CÂNDA Letiția-Roma



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**Scientific title:** *Ph. Phys.*

**Institution:** ECONOMIC COLLEGE "EMANUIL GOJDU" HUNEDOARA

**Description:** *The study of silver recovery techniques from radiographic films and effluent involves: researching current processes, forecasting the amount of waste (radiographs and solutions) generated locally for a specified period (one quarter), efficient management and recording of data from radiographic films, collecting and processing them in order to optimize silver recovery processes through various technologies. The research objectives are: increasing the efficiency of silver recovery; reduction of costs and recovery time; mitigating the impact of these wastes and the resulting solutions on the environment. The experimental researches and the processing of the obtained data were carried out in the laboratories of the Hunedoara Engineering Faculty, and the radiographs were provided by the Municipal Hospital "Alexandru Simionescu", Hunedoara (archive). From the experiments carried out, and the cost, efficiency and recovery calculations, it can be concluded that effective silver recovery can be achieved from exposed X-ray films, with profit being spent on improving medical services in the radiology department.*

**Contact:** [letitia.canda@fig.upt.ro](mailto:letitia.canda@fig.upt.ro)

**Presentation link:** <https://licecohd.eu>

9.

**Title:** THE CHALLENGE OF DIGITIZATION IN THE TEACHING PROCESS

**Speaker:** Flavius BUCUR

**Scientific title:** Professor

**Institution:** Rail Transport Technological High School "Anghel Saligny" Simeria

**Description:** *Digitization is a process of transforming information from analog format to digital format, thus resulting in objects such as sound, image, video, etc. The student, developing in an increasingly technological society, is the one who will receive the information provided by the teacher. That is why the act of teaching must take into account the current needs of the student and be carried out through ICT tools. The great challenge of modern teaching is the transition to digitization by using current technologies and digitized educational resources. That is why there are two aspects that will have to be taken into account:*

- *the teacher's professional training in the sense of using technology and digital resources*
- *properly equipping the classrooms with equipment.*

10.

**Title:** THE LESSON - THE MAIN MEANS OF ORGANIZING THE TRAINING

**LESSON TYPOLOGY IN CONTEMPORARY EDUCATION**

**Speaker:** Emilia Victoria FELCIUC

**Scientific title:** Primary education teacher

**Institution:** Rail Transport Technological High School "Anghel Saligny" Simeria

**Description:** *The lesson is a fundamental way of organizing the didactic activity. In this context, it remains "the main, dominant basic form at the level of the educational process" (Cerghit Ioan). The curricular perspective orients this "student activity carried out under the guidance of the teacher" (Dictionary of pedagogy), at the level of the teacher-student correlation which highlights, on the one hand,*



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*the need for the teacher to "read the essentials", and, on the other hand, the possibility formative of the student, to "meditate effectively", before the lesson and as an effect of the lesson. The lesson can thus be interpreted as a didactic program, based on "a system of structured actions" according to the general and specific objectives of the educational process, adequately operationalized at the level of the entire group of students.*

*The form of organization of the educational process unifies its component elements into a whole and gives them a concrete educational purpose. Experimental pedagogy highlights a new principle of education: student activism, a principle that will lead to the shaping of a pedagogical trend called "Active School". It claims that the emphasis in education should lean towards the child's own activity and effort. The active school proposes the following fundamental principles of education: the principle of own activity, the principle of practical activity, the principle of intuition, the principle of respecting the individuality of the child.*

11.

**Title: COMMUNICATION AND THE PURPOSE OF INTERNATIONAL NETWORKS**

**Speaker: Patricia KUMBAKISAKA**

**Scientific title: Foreign Policy researcher & Global advocate Canada**

**Institution: Government of Canada/ Canada Ambassador UNYA, Canada**

**Description:** *I was born in Bucharest, Romania at the age of 3 we moved to Athens, Greece and lived there for 7 years. In 2000, my family and I immigrated to Canada. My family is originally from the Democratic Republic of Congo. I am a case processing officer with the Government of Canada where my area of expertise and understanding is in diplomacy, migration, foreign policy analysis and development and advocacy.*

*My work promotes Canada's international issues and I have represented Canada in bilateral and multilateral engagements with other states and international organizations, such as at the UN Youth Assembly in New York, Romania, Moldova, the Netherlands, Germany and many other countries.*

*Communication is the key to success within the international networks so important for maintaining balance at the global level.*

12.

**Title: THE DEVELOPMENT OF INNOVATIVE CREATIVE SPIRIT THROUGH THE POWER OF EXAMPLE AMONG YOUNG STUDENTS**

**Speaker: Nada RATKOVIĆ**

**Scientific title: Professor**

**Institution: Assistant Professor on Faculty of Economics, Business and Tourism Split. Quantitative Department, Professor mentor in High VET School, President of IIU Research Centre, Co-founder IIU Europe, Co-founder ICWP**

**Description:** *Founder and coordinator of many national and global projects: Erasmus+, eTwinning, Scientix, STEM, Entrepreneur, SDG... Write scientific articles in domestic and international journals and works reviews. Editor Board member in many Journals and an external peer reviewer. Author and co-author of many university and high school books and handbooks. Makes digital materials and books for cross-curricular topics and makes columns for evaluation on national and international levels organizes*



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conferences, training sessions, webinars, and workshops. For student mentors in national and international competitions: Statistic, STEM, SDG, etc. Works for humanity, peace, and gender equality in many organizations and organizes numerous humanitarian and volunteer actions all around the world. Works on women empowerment and women entrepreneurship on a national and global level.

As a multitasking global educationist for the work, she won many awards, recognitions, diplomas, certificates, and medals for national and international achievements. One of the greatest global educators who inspired the world and deserve a place in Golden Book. Many recognitions for humanitarian and volunteer action and work with students with special needs and gift students.

Stimulating the creative spirit is essential in the development of the new generation of young people. From childhood, imagination and creativity must be cultivated both in the institutional educational environment and outside it.

Communication paves the way for the stimulation and development of creativity. The extracurricular activity offers a favorable environment for the cultivation of imagination and creativity. Different methods can be applied such as brainstorming, meetings can be organized with scientists, artists and discussions will be generated about the difficulties and satisfactions of their work. Creativity has no limits, we just have to stimulate it, through didactic action implementing new methods and adopting a new vision of training the respective competencies of the performances.

13.

**Title:** THE IMPORTANCE OF PROTECTING INDUSTRIAL PROPERTY

**Speaker:** Mariana HAHUE

**Scientific title:** IP Expert

**Institution:** State Office for Inventions and Trademarks

**Description:** Through this presentation, the OSIM specialist brings to the attention of the audience, the basic notions regarding the fields of activity of the State Office for Inventions and Trademarks: invention patents, trademarks, designs and models.

The databases, information on taxes, as well as the validity of the protection titles, will be presented to the public, with the main objective of raising awareness of the importance of industrial property protection, so that those who own these rights obtain maximum benefits from their creative and innovative capacity.

14.

**Title:** DIFFERENTIATED TEACHING

**Speaker:** Monica Ana MIHET

**Scientific title:** Professor

**Institution:** 'Ovid Densusianu' Technological High School, Calan, Hunedoara, Department of Mathematics and Science

**Description:** The modernization requirements of contemporary education and the changes produced by the evolution of education and pedagogical objectives, determine the need to adopt ways of differentiated treatment of students. This ensures both the informative function of the educational process and especially its formative function. The primary task of the school is to teach the students to self-educate, to learn and to inform themselves permanently in order to become adaptable to the continuous transformations of today's society,



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and for this purpose the creative capacities and the spirit of exploration must be developed. Since students rank on different levels on the scale of interests and intellectual capacities, they must be treated differently, authentically and effectively, in terms of their instruction.

15.

**Title:** CULTIVATING INNOVATION THROUGH STEM EDUCATION

**Speaker:** Rania LAMPOU

**Scientific title:** Global educator

**Institution:** Greek Ministry of Education, Directorate of Educational Technology and Innovation

**Description:** STEM education is often associated with training in research, experimentation, computation, innovation, analysis, verification, and the like. Furthermore, STEM education nurtures creativity and curiosity. It encourages students to ask questions, seek solutions, and explore the uncharted territories of knowledge. It fosters a growth mindset, where failure is seen as a stepping stone to success. Cultivating the innovators of the future begins in the classroom.

16.

**Title:** INCDTP IDENTITY, AVANT-GARDE RESEARCH IN THE TEXTILE AND LEATHER INDUSTRY

**Speaker:** Alexandra Gabriela ENE

**Scientific title:** Dr. Eng.

**Institution:** Bucharest National Research and Development Institute for Textiles and Leather

**Description:** The Bucharest National Research and Development Institute for Textiles and Leather is the only national research and development institute for these industrial fields in Romania and operates on the basis of HG no. 1304/1996, amended and supplemented by HG no. 1463/2004 regarding the approval of the own Regulation of organization and operation, of Law no. 324 of 08.07.2003 for the approval of Government Ordinance no. 57/2002 on scientific research and technological development, amended and supplemented by OG 6/2011. The declared mission of INCDTP Bucharest is to develop as a competitive institute on a national and European/world level through high-level scientific and multidisciplinary research-development activities in the field of textiles - clothing and leather - footwear - rubber consumer goods, for economic agents in the sector and for other related fields.

17.

**Title:** HOLISTIC SOLUTIONS FOR HEALTH OPTIMIZATION

**Speaker:** Oana Codruta BACEAN MILOICOV

**Scientific title:** Senior Lecturer Dr.

**Institution:** SC Holistic Lounge SRL

**Description:** At Healthy Vibe we want people to connect to the needs of their own body and achieve the state of harmony between the functionality of the organs, AURA, Chakras, emotions and subconscious. The benefits of holistic medicine on overall health and prevention:

Comprehensive approach



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*Promoting natural healing*  
*Improving emotional and mental balance*  
*Customization and individualization*  
*Chronic disease prevention and management*  
*Supporting mental health, managing emotions*

18.

# *Surprise Speaker*



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## InventCor 2023

Promo: <https://youtu.be/d9kepE5K6yA>





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## InventCor

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## INVENTCOR 2023 – Deva, România



**Augustin SEMENESCU**

Profesor Doctor abilitat, M.Sc., B.Sc. (Inginerie, Matematică, Economie),  
Universitatea Națională de Știință și Tehnologie POLITEHNICA din București, România, UE  
Prodecan Facultatea de Știința și Ingineria Materialelor  
Membru corespondent al Academiei Oamenilor de Știință din România (<https://www.aosr.ro/membrii-sectiei-stiinte-tehnice/>)  
Membru Titular al Academiei Româno- Americane de Arte și Științe (<https://www.americanromanianacademy.org/copy-of-list-of-members>)

Invențiile și tehnologiile dezvoltate în baza lor au modelat civilizațiile și au transformat viața pe Pământ. De la invenția roții până la dezvoltarea roverului pentru planeta **Marte**, multe dintre aceste invenții au fost cu adevărat revoluționare, chiar dacă acest lucru nu a fost întotdeauna evident atunci.

Este cunoscut faptul ca cele mai importante invenții nu au un singur inventator, ele fiind dezvoltate separat de mulți oameni sau mulți oameni au contribuit la evoluția lor de la concepte de bază la invenții valoroase.

Trebuie precizat faptul ca invenția oțelului a fost de mare importanță - oțelul a schimbat modul în care construim multe lucruri și fiindcă suntem în județul **Hunedoara**, cea dintâi atestare referitoare la extragerea fierului în zona **Hunedoarei** aparține dramaturgului grec **Eschyl** care spunea: **“Între muntele Pharnax și Râul cel Mare și de netrecut se întinde Patria mamă a fierului”**.



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**Bronzul** a fost primul metal forjat pentru a fi folosit de oameni. Cu toate acestea, bronzul este relativ slab. Fierul a fost probabil topit pe tot parcursul epocii bronzului, deși a fost văzut ca un metal inferior, care nu era la fel de dur sau durabil ca bronzul. Folosirea fierului a devenit mai răspândită după ce oamenii au învățat să facă oțel, un metal mult mai dur obținut prin încălzirea fierului cu carbon. În jurul anului 1.800 î.Hr., un popor de-a lungul **Mării Negre**, numit „**Chalybes**”, a început să folosească minereu de fier pentru a crea arme robuste din fier forjat cu aproximativ 0,8% carbon. „**Chalybes**” a fost un termen grecesc generic pentru „oameni de pe coasta Mării Negre care fac comerț cu fier” sau „un grup de metalurgiști specializați”.

**Fonta**, cu aproximativ 2-4% carbon, a fost făcută pentru prima dată în **China** antică în jurul anului 500 î.Hr. Metalurgiștii chinezi au construit cuptoare mari pentru a topi minereu de fier într-un lichid și l-au turnat în forme sculptate. În jurul anului 400 î.Hr., metalurgii indieni au inventat o metodă de topire care folosea un recipient de lut numit creuzet pentru a ține metalul topit. Muncitorii au pus bare de fier forjat și bucăți de cărbune în creuzete, apoi au sigilat recipientele și le-au introdus într-un cuptor. Acest fier forjat s-a topit și a absorbit carbonul din cărbune. Când creuzetele s-au răcit, au conținut lingouri de **oțel pur** - un metal cu calitate superioară fierului. Dezvoltarea ulterioară a furnalului pentru producerea fontei și invenția inginerului britanic **Henry Bessemer**, care a dezvoltat un proces prin care a suflat aer prin fonta topită au permis crearea unui **oțel** cu procent redus de carbon, în 1856 d.Hr.

Celebra invenție a procesului **Bessemer** a deschis calea producției de masă a **oțelului**, făcându-l una dintre cele mai mari industrii din lume. Oțelul a avut o influență majoră asupra vieților noastre, oțelul fiind folosit în crearea a tot ce înseamnă omul modern, de la poduri la zgârie-nori, de la trenuri de mare viteză la drone și nave spațiale, de la turnurile de electricitate - linii electrice la conducte de gaz natural, de la mașini-unelte la arme militare, iar lista este nesfârșită.

Dar inventatorii de la **INVENTCOR** au o paletă largă de expunere a ideilor lor, nu numai ce ține de metale, ci de aproape tot ce ține de omul modern: Energie, Protecția mediului, Biotehnologie; Nanotehnologie, Materiale avansate, Metalurgie, Construcții civile; Informatica, Electronica și Inginerie electrică; Automobile, Științe spațiale, Aviație, Nave, Mecanică; Metode de predare, Cărți, Istorie și Studii Culturale; Medicina, Medicina Alternativa, Farmacie, Cosmetica, Igiena; Agricultură, Medicina veterinară; Alimente, Băuturi, Restaurante, Hoteluri și Spa, Textile, Îmbrăcăminte, modă; Colț pentru copii, Jocuri, Jucării, Sport, Activități în aer liber; Artă inovatoare, Muzică, Video, Fotografie, Publicitate.

## Deci INOVAȚI ȘI PARTICIPAȚI!

## INVENTCOR VĂ AȘTEAPTĂ CREAȚIILE!





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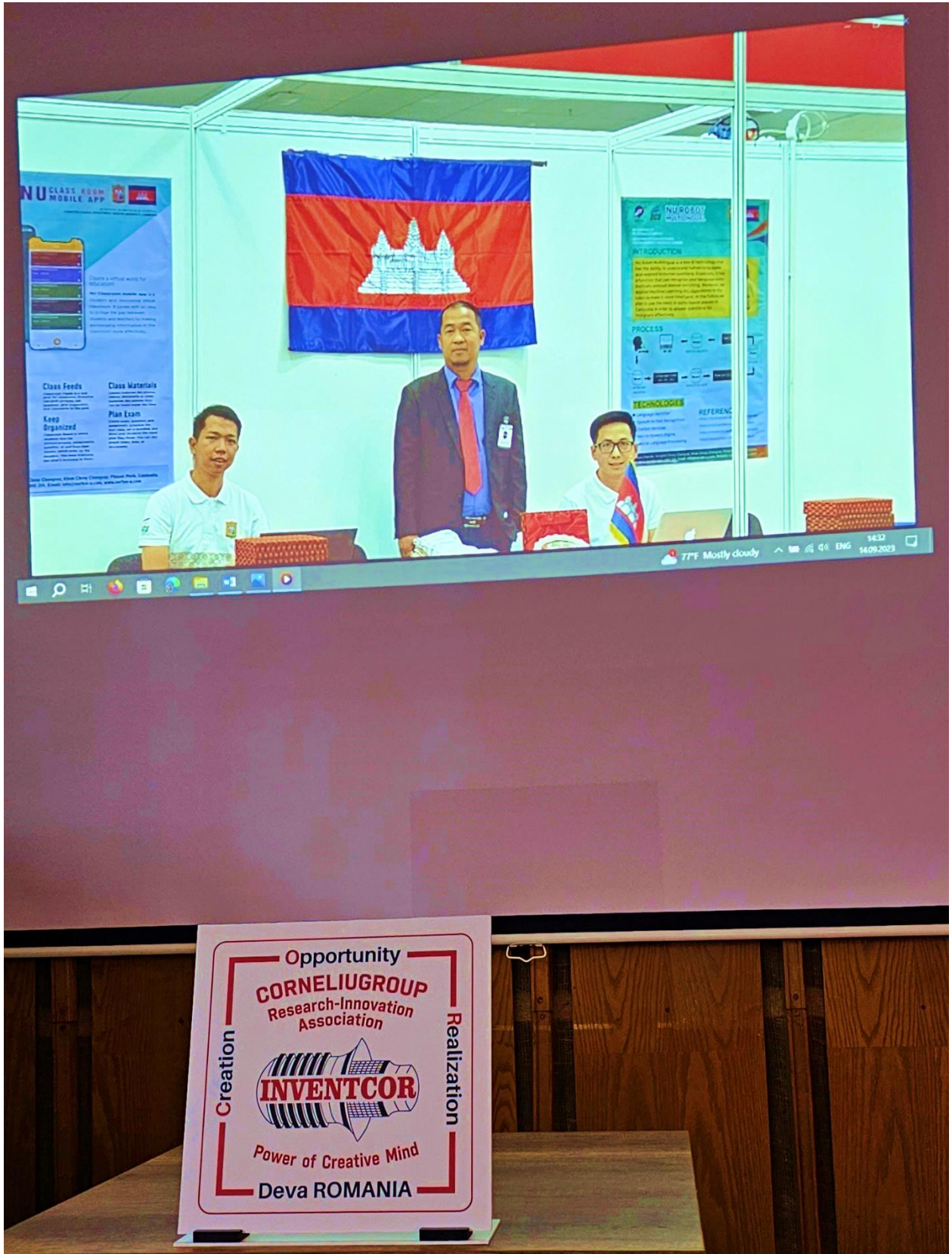


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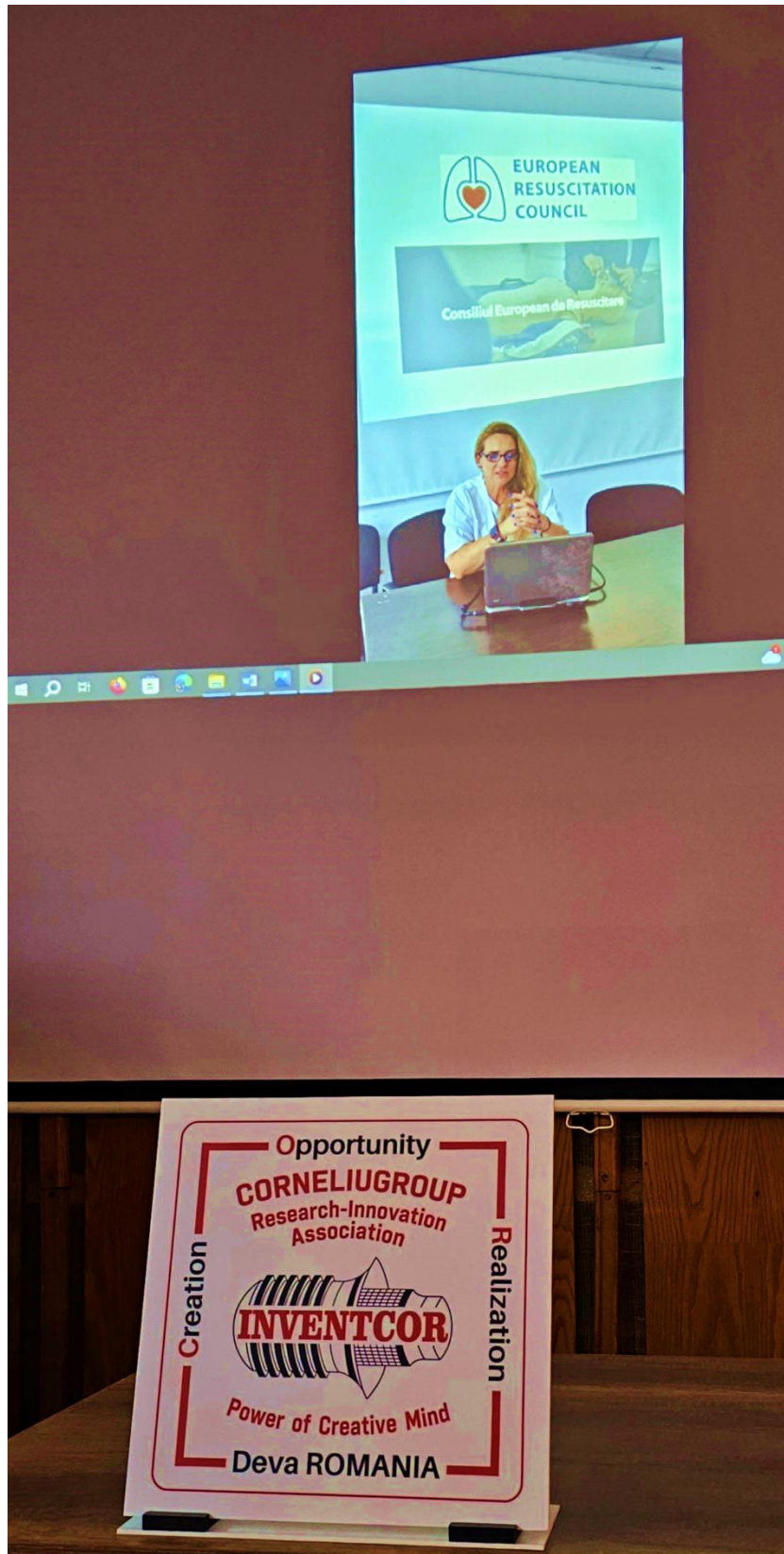


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### 4-5 April 2024 – Deva, Romania





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## InventCor 2022

Promo: <https://youtu.be/OLU406znO18>



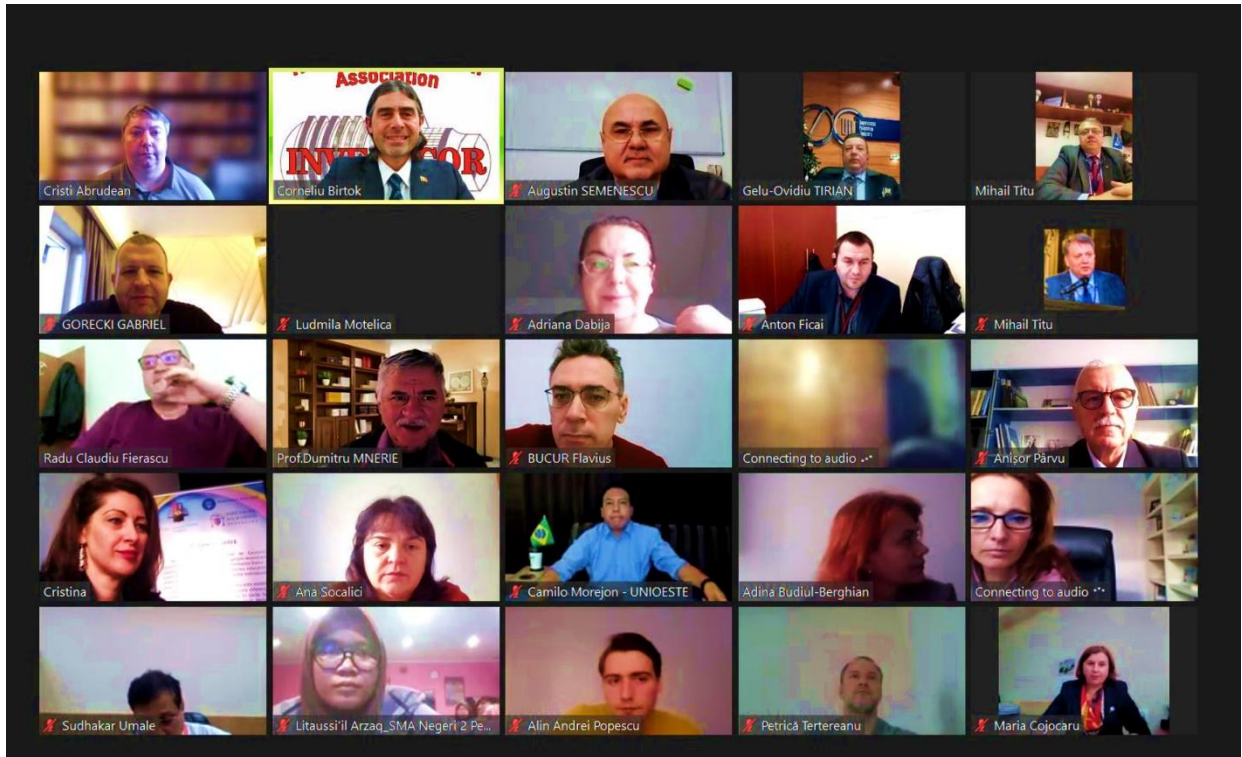


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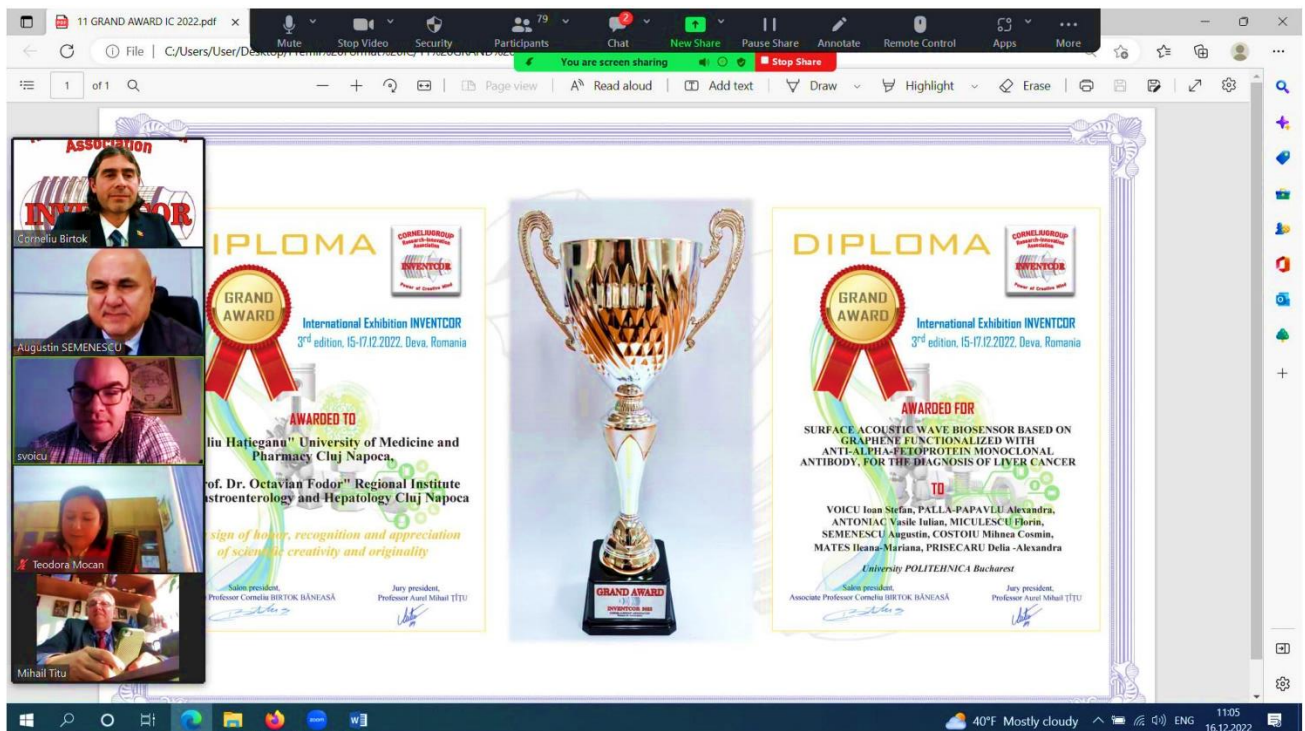


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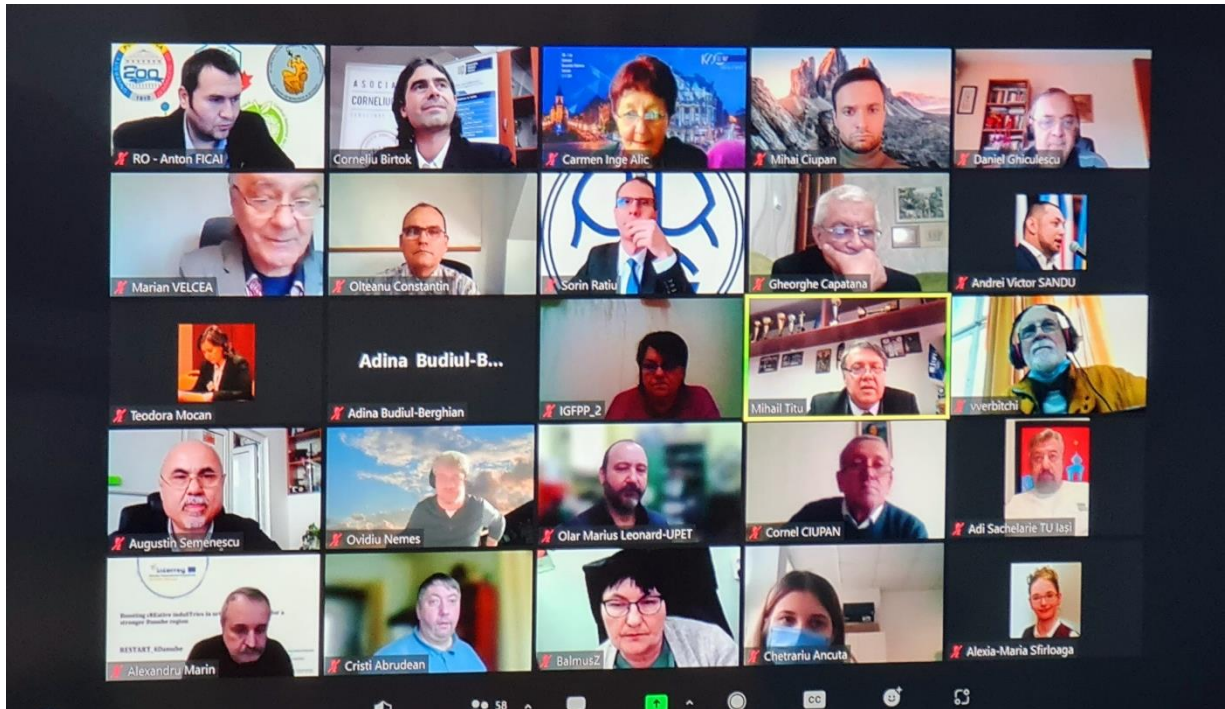
## InventCor 2021

Promo: <https://youtu.be/2M8KxCUqCaM>





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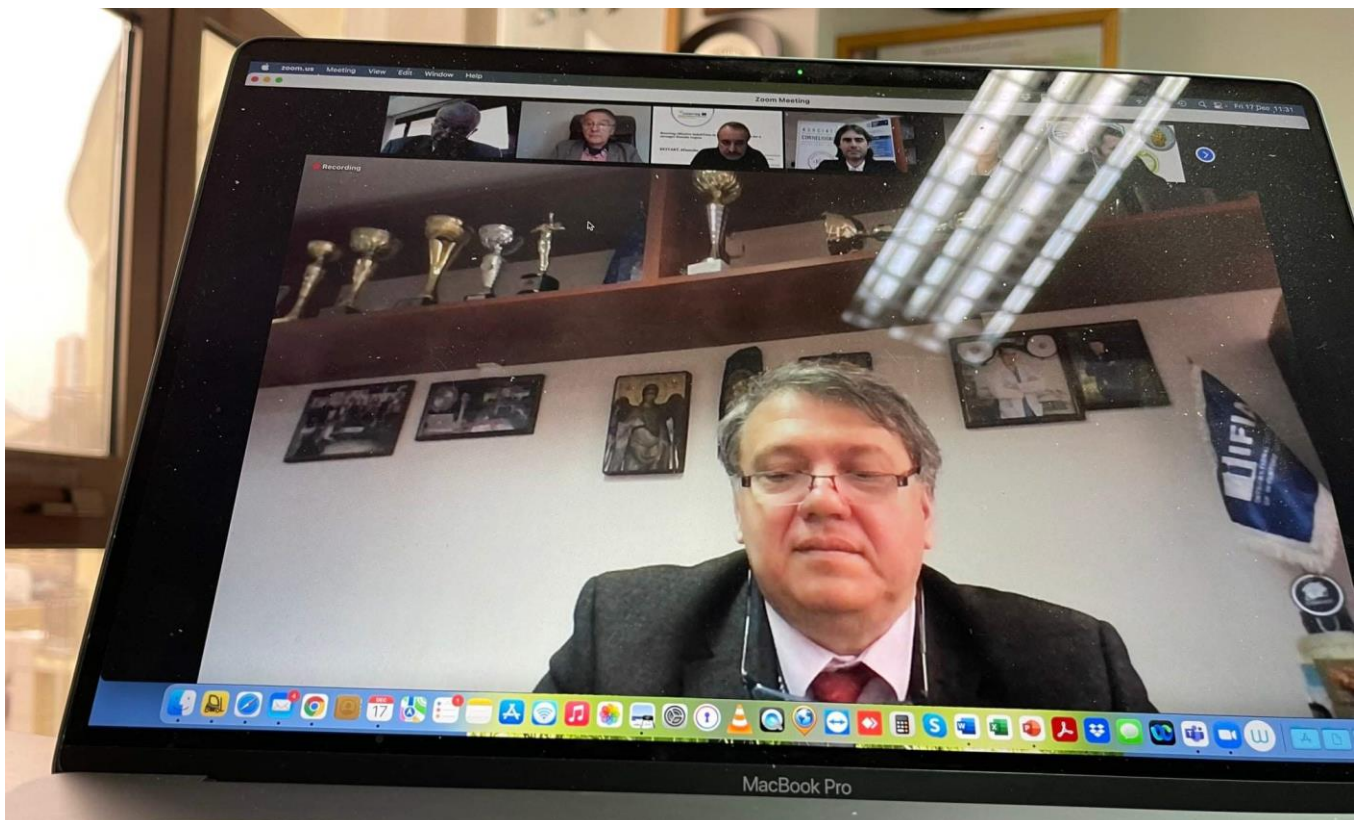


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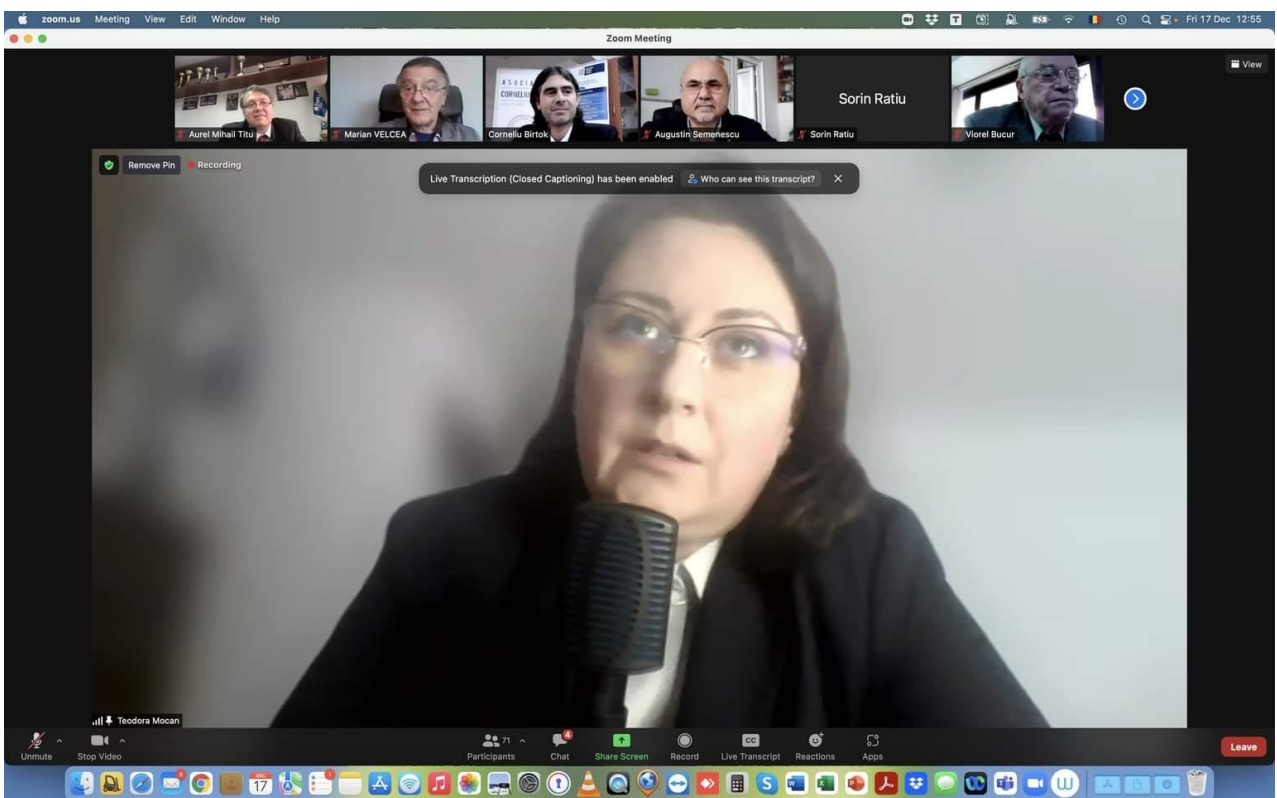


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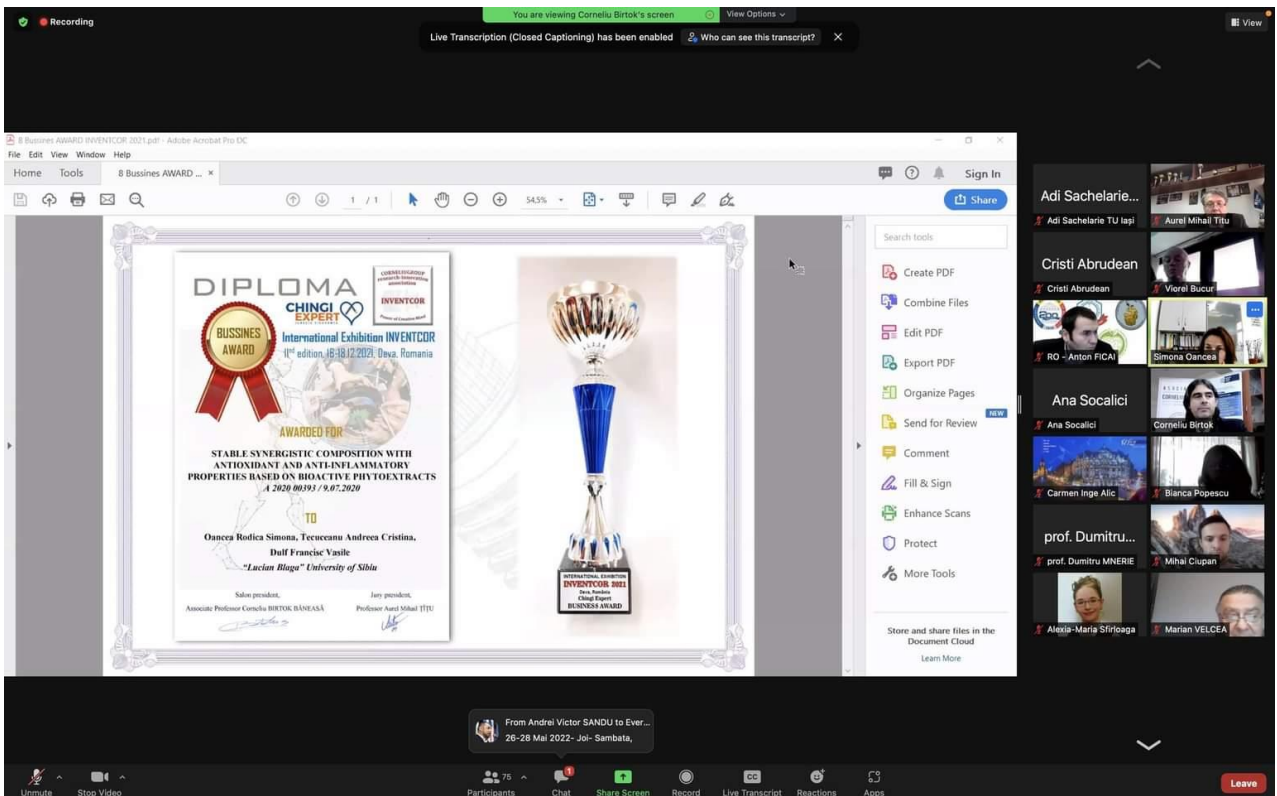


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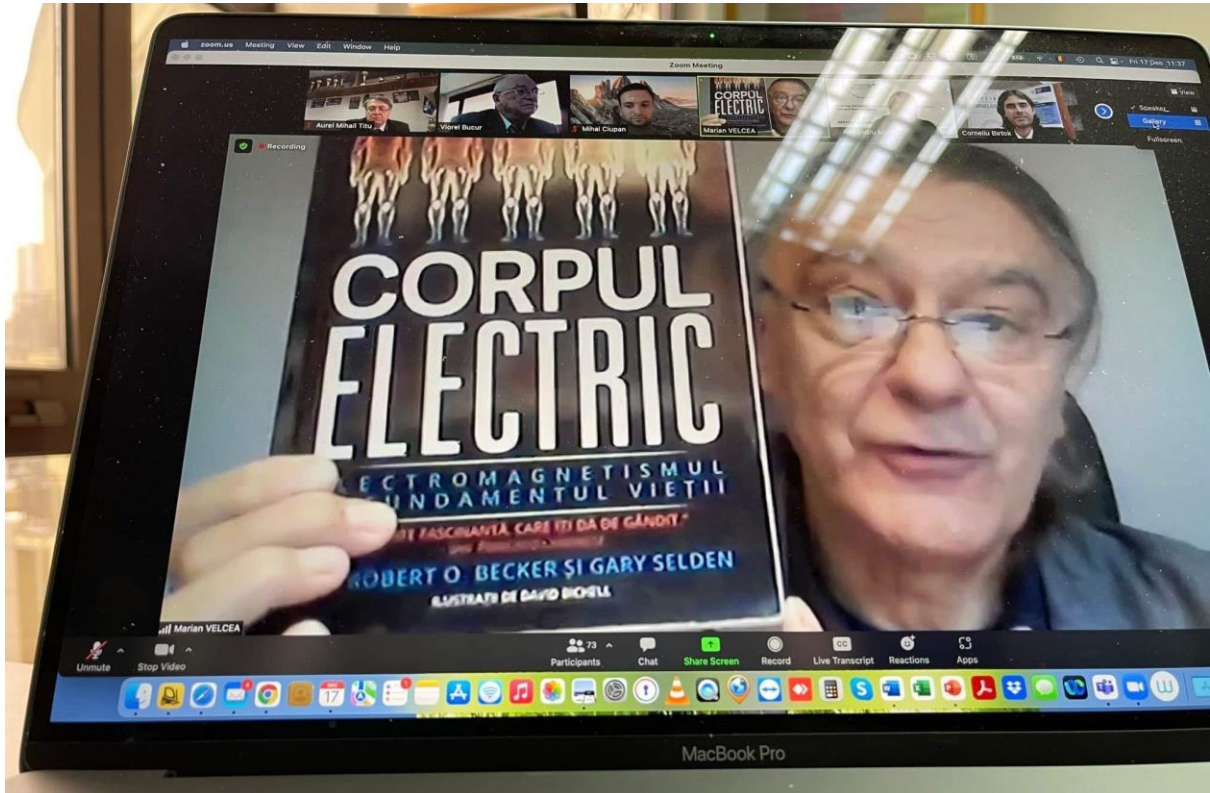


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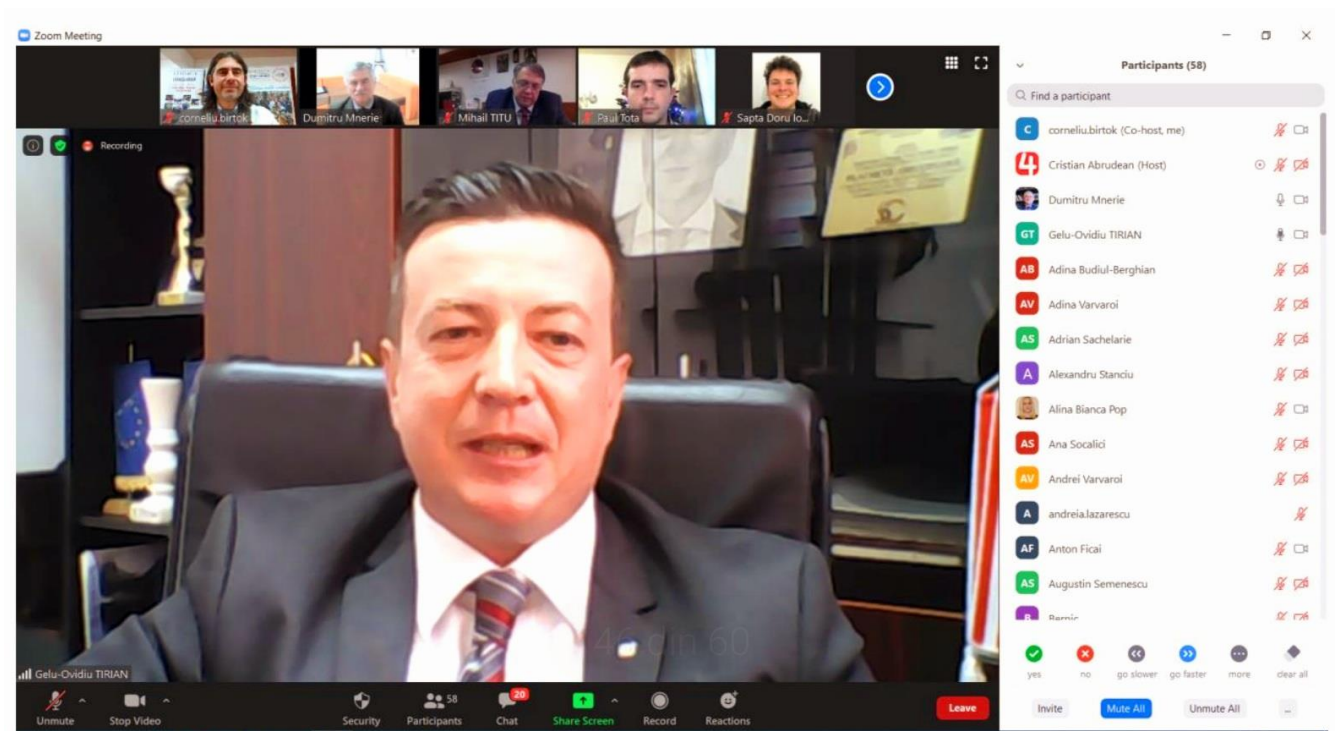
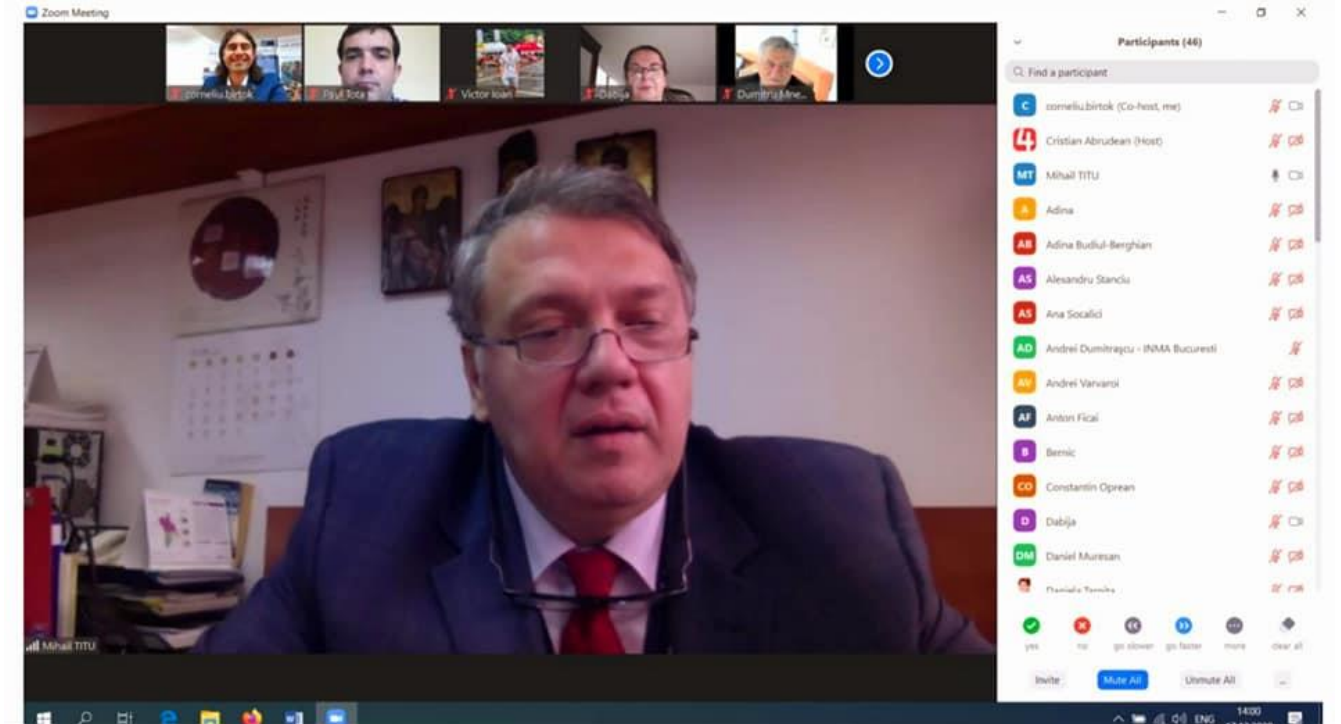
## InventCor 2020

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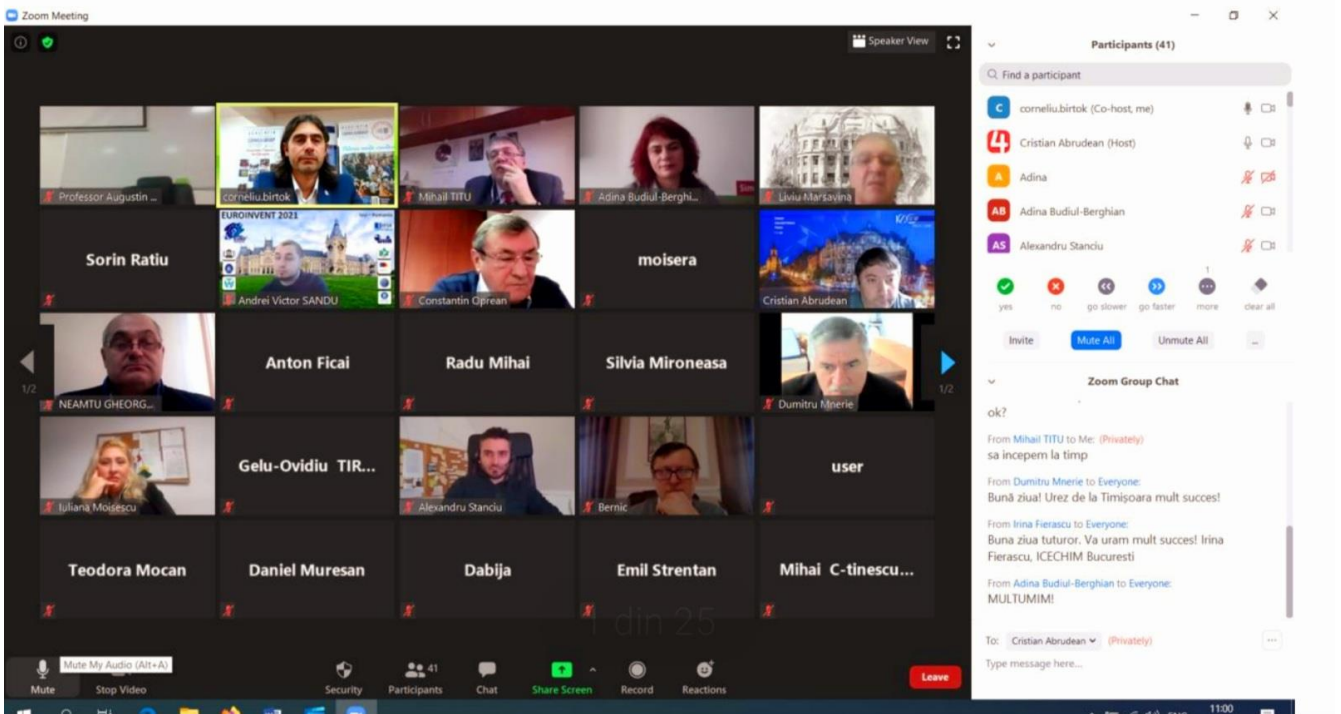


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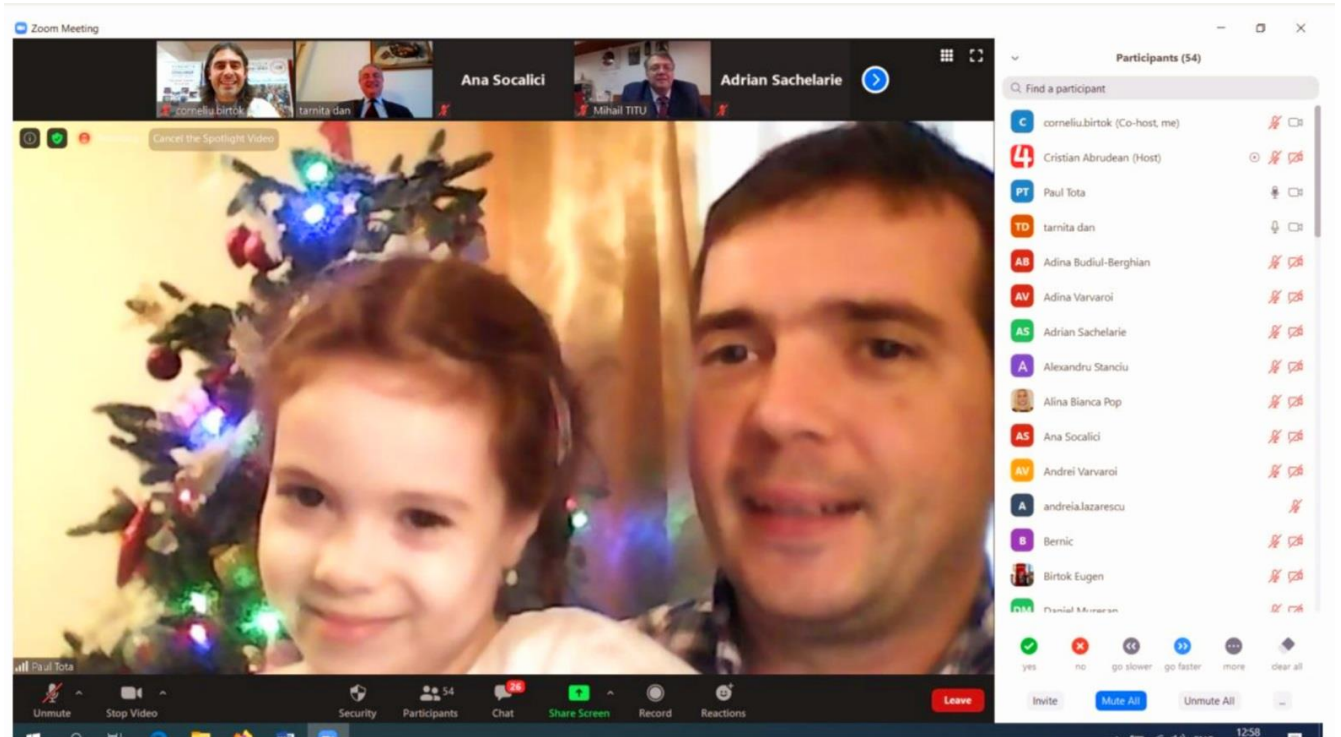


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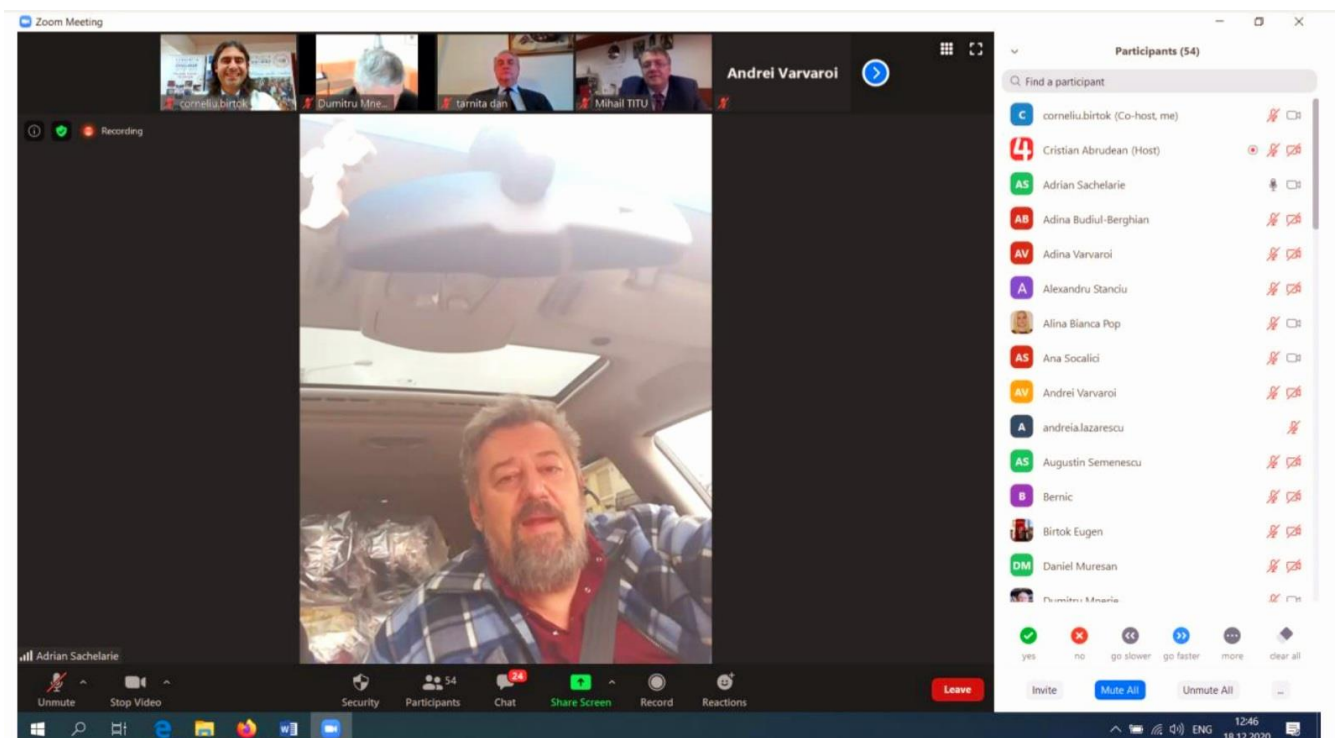


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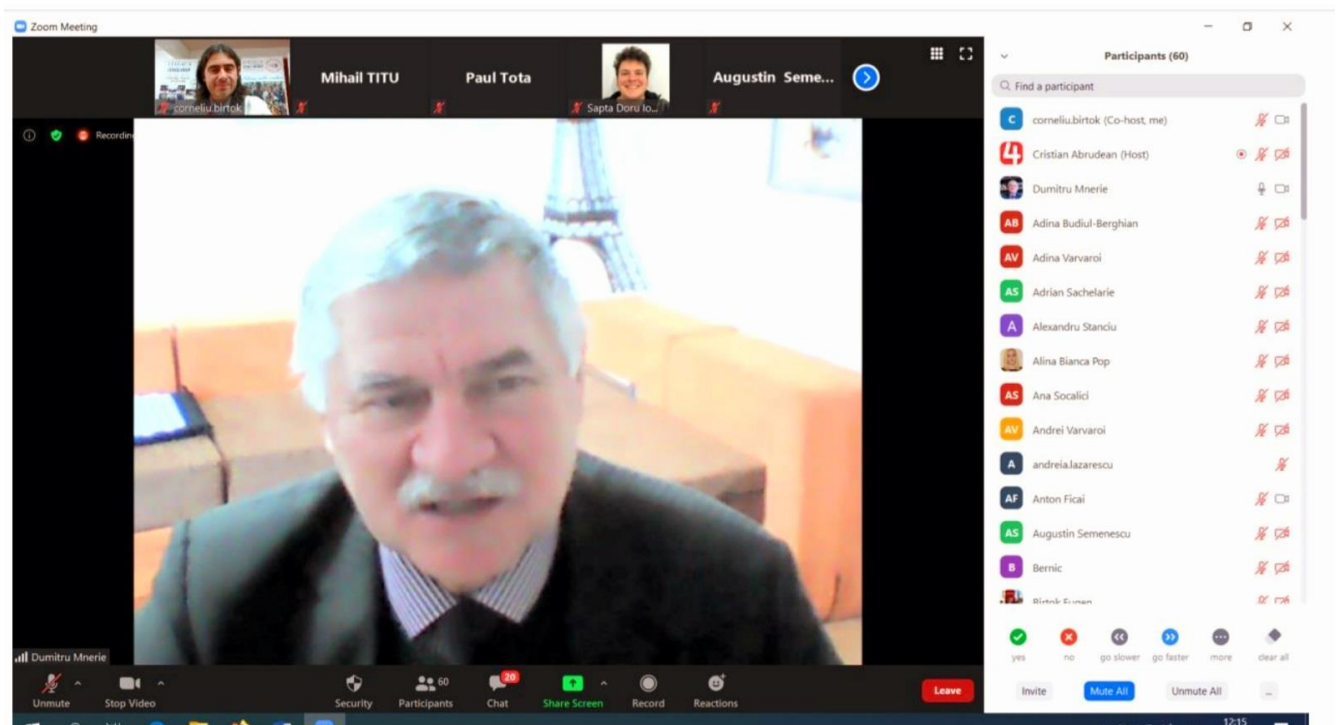
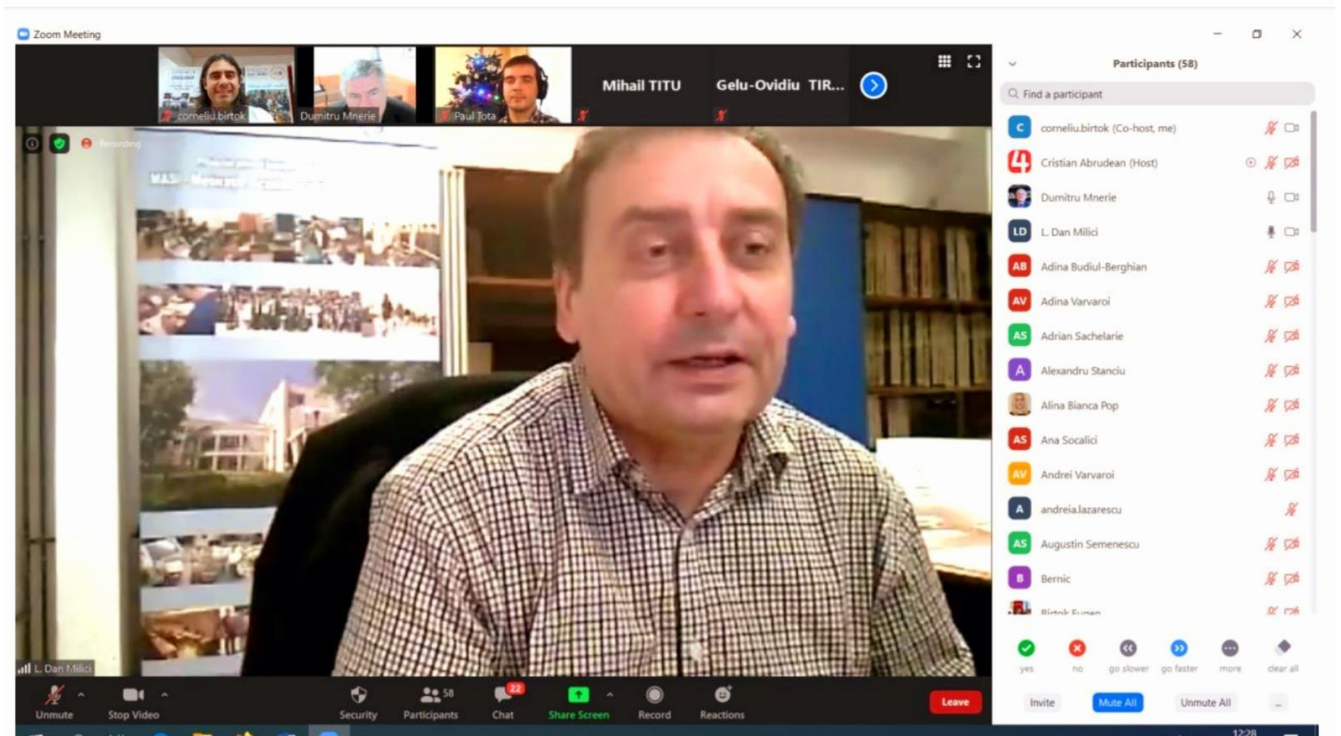


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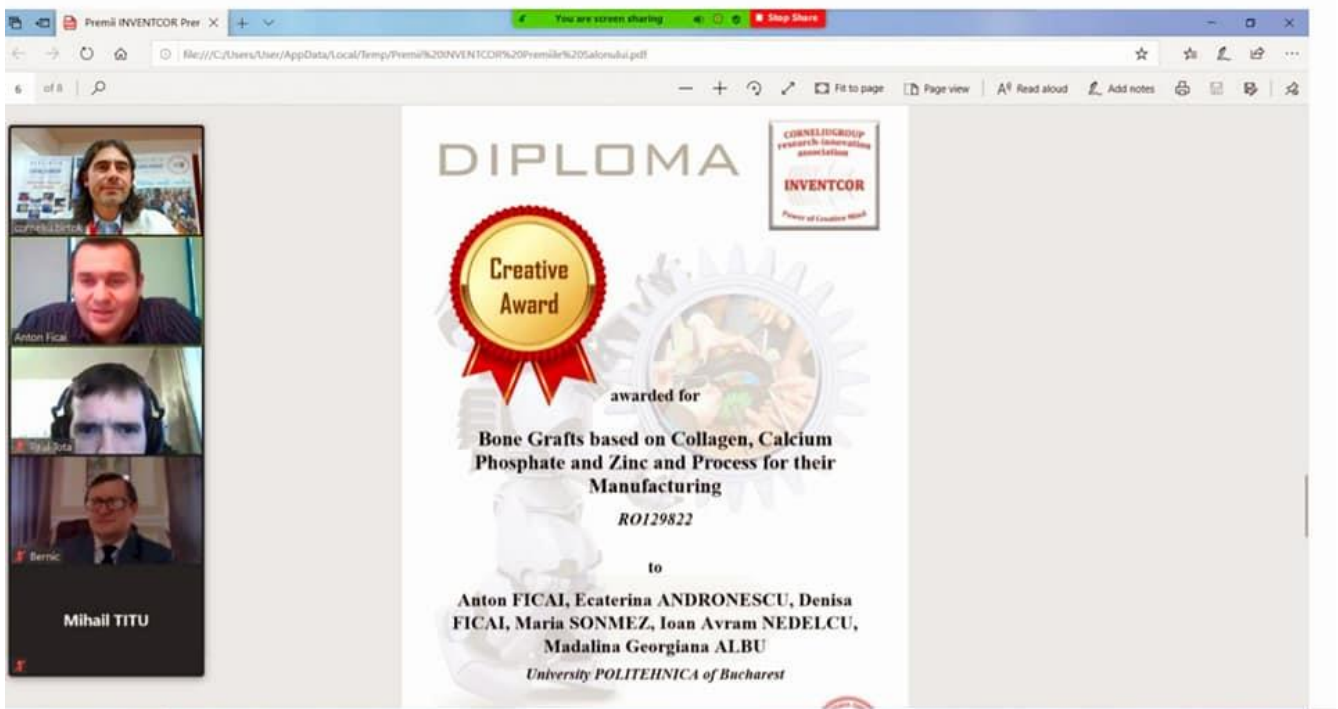
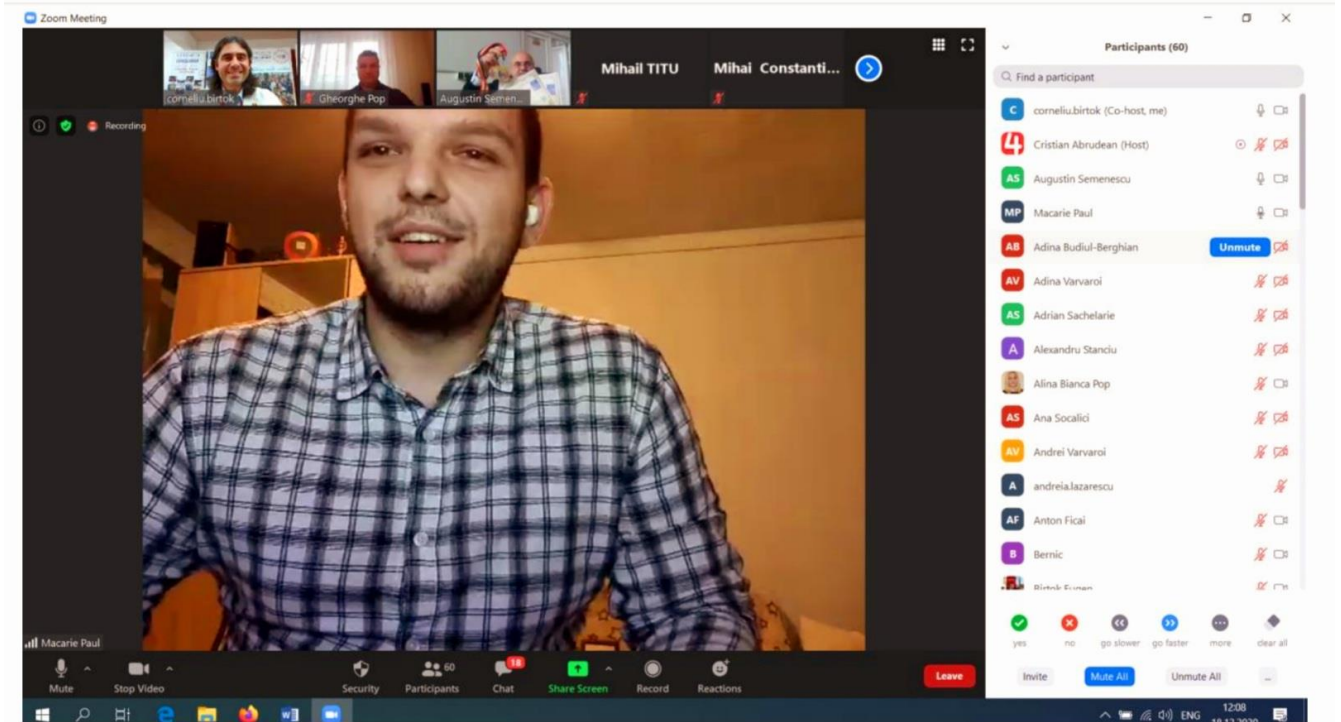


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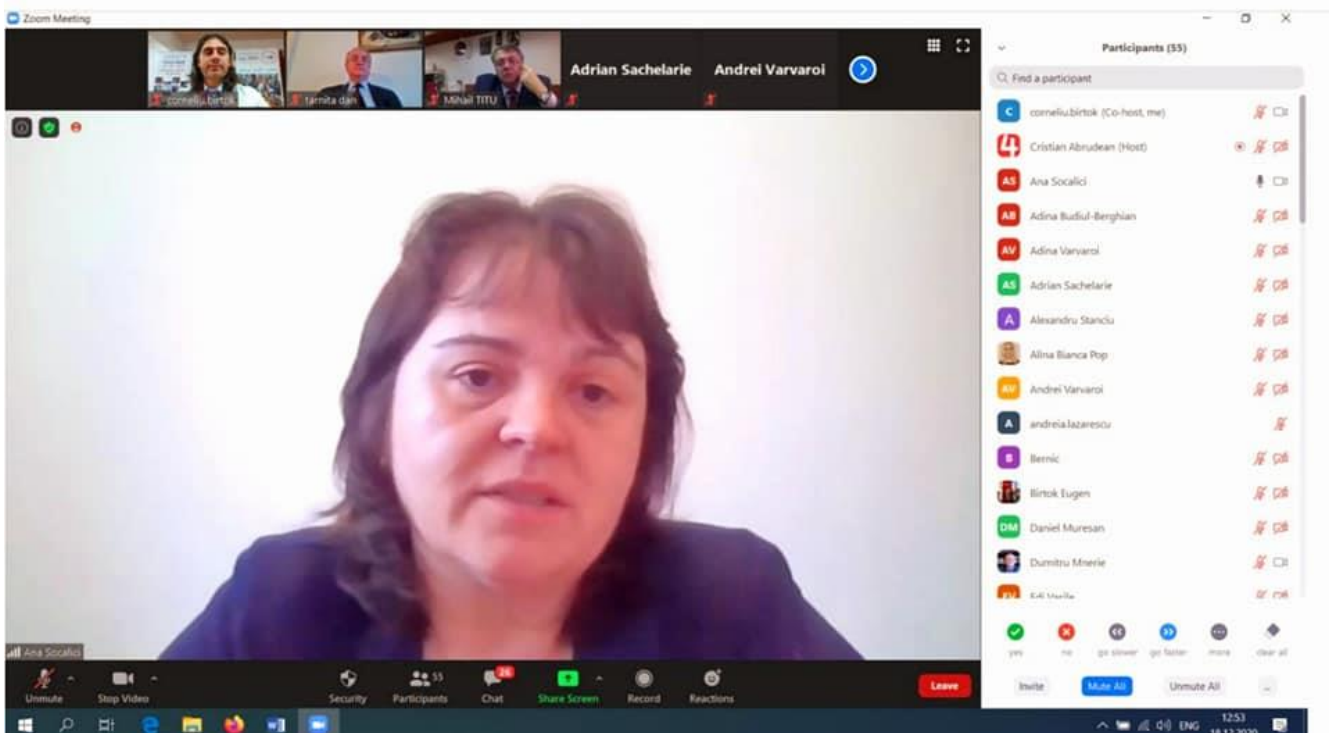
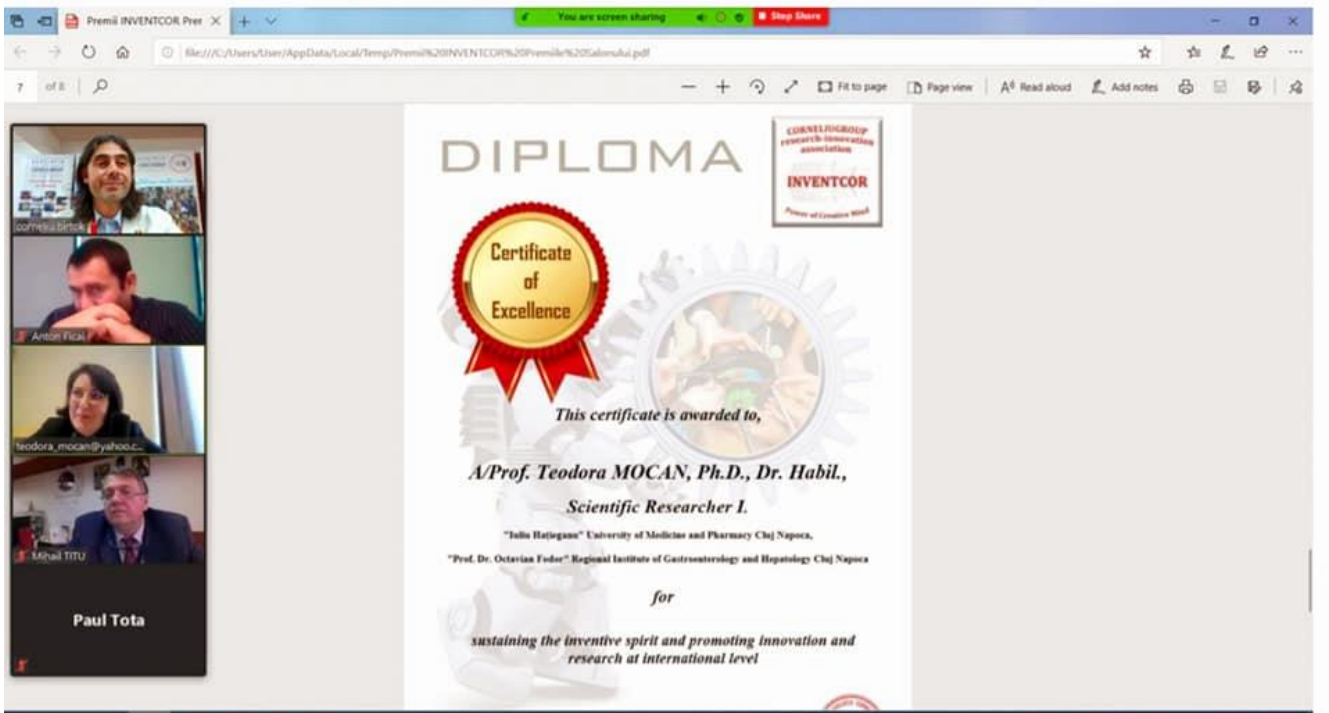


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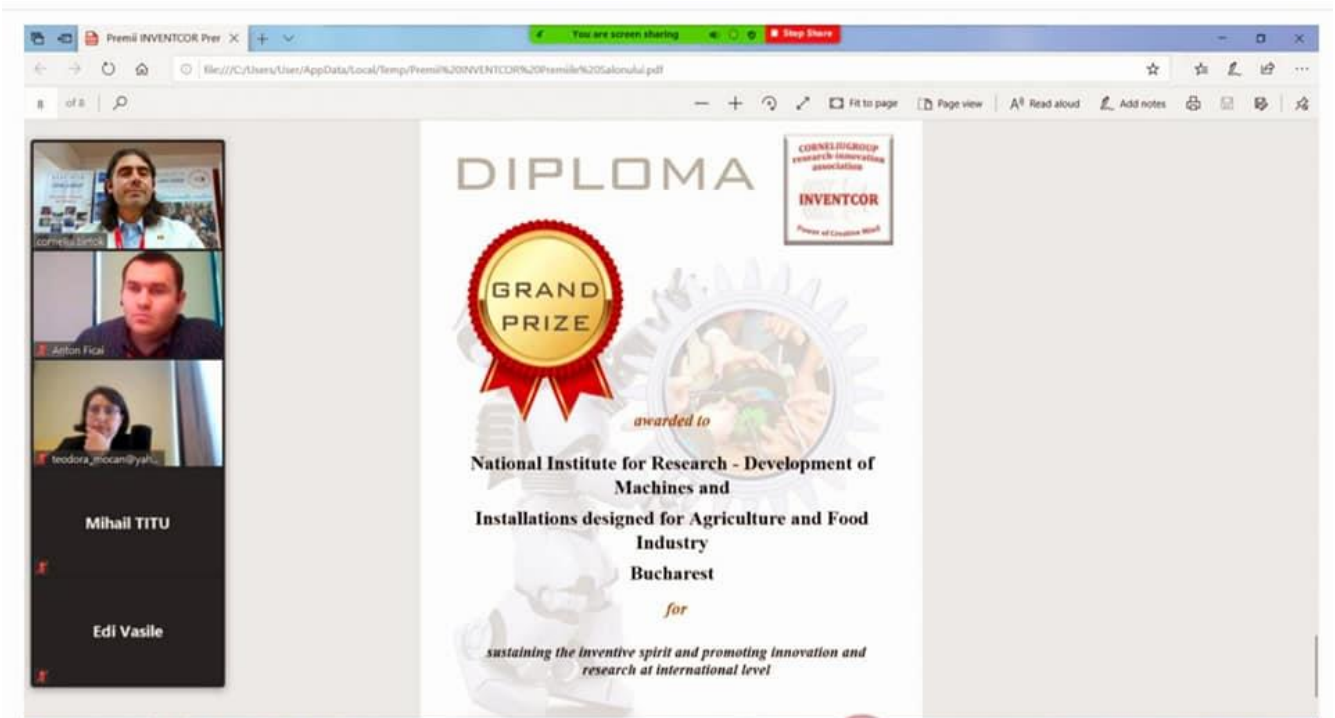


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# Catalogue 5<sup>th</sup> International Exhibition

## InventCor

4-5 April 2024 – Deva, Romania



### Glimpse of 2019

**Simeria**  
Parcul de Afaceri

**ASOCIATIA CORNELIUGROUP**  
CERCETARE - INOVARE

*Puterea minții creative*

EDIȚIA A II-A  
30.11 - 01.12. 2019

ÎNCEPÂND CU  
ORA 10:00

CLASSIC CAR HUNEDOARA

SIMERIA Inima Judetului Hunedoara

ATELIERUL LUI BUTONEL

CENTRUL CULTURAL SI DE CREATIE SIMERIA

100 UP

AIR by CORNELIU

SIMERIA PARCUL DE AFACERI

1970 2020 FII 50

Daco's Custom Zips

DE NISUCA

BIG

CONTINENTAL SINCE 1871

memory

axxe DESIGN

ROBOTI HUNEDOARA

LYNX

air power by corneba

PRIMĂRIA ORĂȘULUI SIMERIA

EVOLUTII

NRG



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2018 First

## ASOCIATIA CORNELIUGROUP CERCETARE-INOVARA



### Puterea minții creative

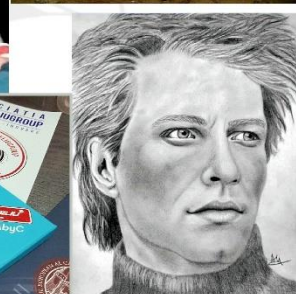
Cetatea Devei 09 iunie 2018, ora 10 (parcare telecabina)



TehnoART



Classic Car Hunedoara





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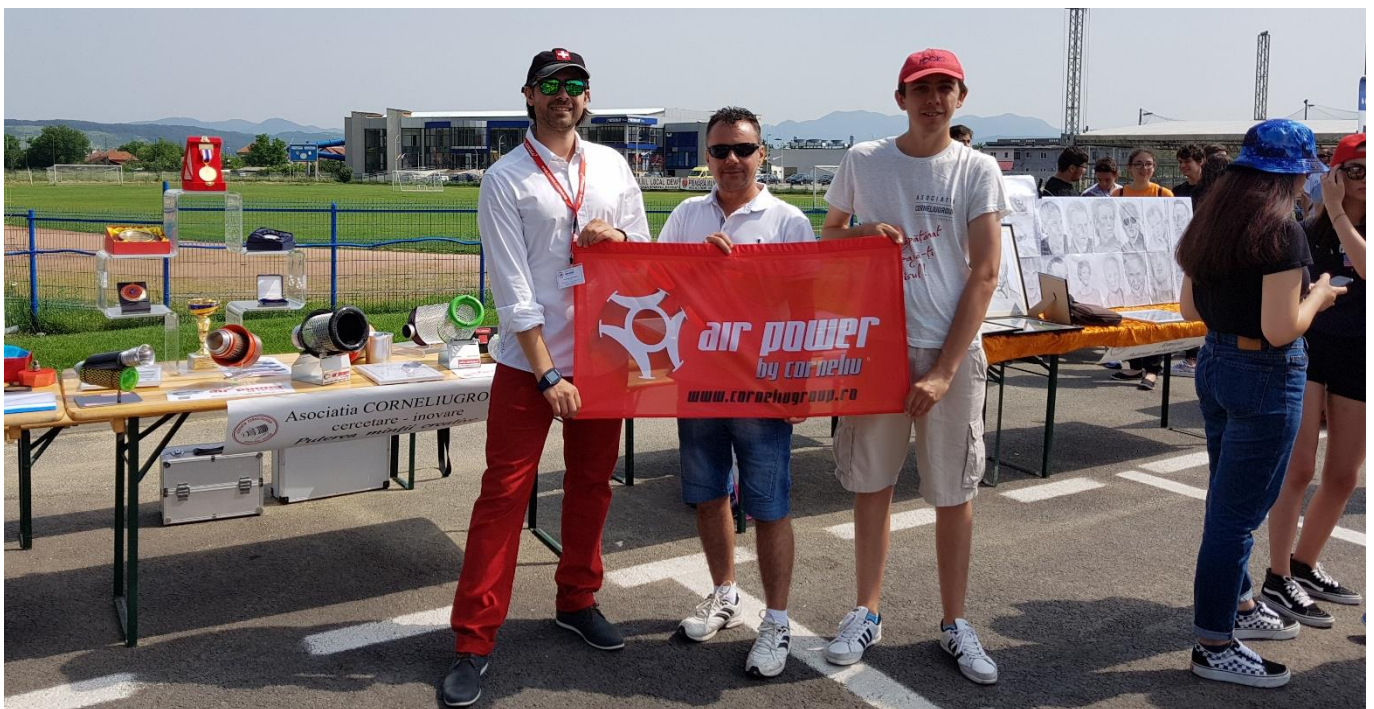


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International Exhibition

# INVENTCOR

6<sup>th</sup> edition

*See You Next Year!*

3-5 April 2025

Deva, ROMANIA



**Opportunity**

**CORNELIUGROUP**  
Research-Innovation  
Association

**Creation**

**Realization**



**INVENTCOR**

*Power of Creative Mind*

**Deva ROMANIA**



SCAN ME

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