CORNELIUGROUP
research-innovation
association

INVENTCOR

Power of Creative Mind

INTERNATIONAL EXHIBITION INVENTCOR

FIRST EDITION

Catalog

17 - 19 DECEMBER 2020

ONLINE

DEVA

Catalog I[st] international exhibition InventCor
17-19.12.2020 – Deva

General information

Name & Edition: International Exhibition InventCor, I[st] edition

Description: Non-formal educational event for all ages. **INVENTCOR** presents inventions, research projects, products, educational programs, experimental teaching stands of universities, research institutes, multinational companies and private inventors. The exhibition will also include the **KidsCorner** (children's category), **InnovativeART** (graphics exhibitions, drawing, painting, portraiture and classic cars) as well as extensive presentations from various fields: innovation, ecology, health, people's safety, community, intellectual property, automotive and travel.

Objective: The main objective of the International Exhibition INVENTCOR is the importance of developing the creative – innovative spirit, through the involvement of young people.

Organizer: CORNELIUGROUP association https://www.facebook.com/CorneliuGroup/

Event page: INVENTCOR 2020 https://fb.me/e/3Hney6oFD

Period & Location: 17-19.12.2020 Online

Motto: **C**reation **O**pportunity **R**ealization

Promo: https://youtu.be/AIC1OuFVrig

Hashtag: #InventCOR2020 #CorneliuGroup #PutereaMintiiCreative

Origin: Deva City

INVENTCOR President: Corneliu Birtok Baneasa
https://www.facebook.com/corneliu.birtokbaneasa

Participating Countries: Bolivia, Brazil, Canada, Germany, Hungary, Italy, Korea, Malaysia, Moldova, Morocco, Philippines, Romania, Sweden and USA.

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Educational partner:

Polytechnic University Timișoara https://www.facebook.com/UPTimisoara

Faculty of Engineering Hunedoara https://www.facebook.com/fih.upt.ro

Research and innovation partners:

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Romanian Inventors Forum
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https://www.tisias.org/

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

The House of Science Deva
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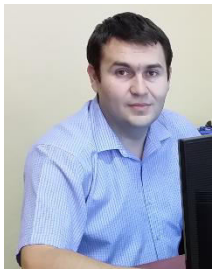

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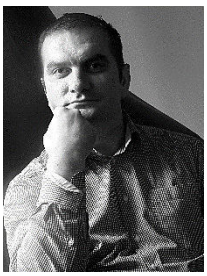

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InventCor Categories

A - Energy, Protection of the environment

1.

Title: Antik "Energy Tree"
Patent/project number: student project
Author/s: SAPTA DORU IOAN, MARINUT GABRIEL PAUL, OBRENOVICI LAVINIA IOANA, CHIRA SORINA MIHAIELA, MÂNDRU GABRIEL DANIEL
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: A
Description: *The Antik "Energy Tree" charging station is a multifunctional device. Based on renewable energy in order to fix the problem of the modern citizen who often when is in the public space ends up in the situation of having to charge his mobile device, but has no power source. It is made of durable materials regardless of weather conditions, with various modern technologies to offer its user a pleasant experience. Antik Energy Tree aims to increase the autonomy of mobile devices.*
State of development: product

2.

Title: METHOD FOR TREATMENT OF MUNICIPAL SOLID WASTE INCINERATION RESIDUES BY STABILIZATION/SOLIDIFICATION INTO FLY ASH ROCK
Patent/project number: RO131486B1
Author/s: Reinhold WÄCHTER, Ioana IONEL, Adina NEGREA
Institution: Polytechnic University of Timisoara
Category: A
Description: *The pattent focuses on inertization of municipal solid waste incineration residues, trough stabilization into ash rock matrix resulted from coal power plants. The method is used to encapsulate harmful chemical compounds by absorption, hydration or precipitation reactions, using a binder matrix. The aim of the process is to create new compounds, in a stabilized form, which retain the harmful elements that are non-hazardous or less hazardous than the raw (initial) material.*
State of development: research project

3.

Title: MODULAR SOLAR PANELS FOR A SOLAR HEATING INSTALLATION
Patent/project number: student project
Author/s: Cornea DRAGOS, Ciprian BULEI, Mihai-Paul TODOR, Imre KISS
Institution: UNIVERSITY POLITEHNICA TIMISOARA
Category: A
Description: *This research shows an experimental heating system that uses entirely solar energy. With further research we can add many improvements to the installation.*

This paper shows a DIY (Do it yourself) project. Do it yourself (DIY) is the method of building, modifying, or repairing something without the aid of experts or professionals.
State of development: EXPLORATORY RESEARCH

4.

Title: Study on the recycling methods of used engine oil
Patent/project number: student project
Author/s: DIANA MIRUNA ARMIONI
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: A
Description: *The study presents an overview of the main technologies for recycling used engine oil, as well as a comparative analysis of the impact of these technologies on the properties of recycled oil. The aim of this research is to highlight the importance of proper management of this type of hazardous waste.*
State of development: research project

5.

Title: Novel modular stack design for high PREssure PEM water elecTrolyZer tEchnoLogy with wide operation range and reduced cost (PRETZEL)
Patent/project number: HORIZON 2020 / 779478
Author/s: German Aerospace Center, Stuttgart, Germany Westphalian University of Applied Sciences, Gelsenkirchen, Germany Armines, France Politehnica University Timisoara, Romania Adamant Composites Ltd., Greece GKN Sinter Metals Engineering GmbH, Germany Centre for Research and Technology Hellas, Thessaloniki, Greece Soluciones Catalíticas IBERCAT S. L., Madrid, Spain iGas energy GmbH, Germany
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: A
Description: *The overall objective of PRETZEL project is to develop a new polymer electrolyte membrane electrolyzer (PEMEL) based on the novel principle of hydraulic compression. To achieve this goal, innovative components that can operate at high temperature and current density are manufactured. Finally the stack with the new components will be integrated into a high pressure PEMEL test facility to validate the overall performance and operational criteria. PRETZEL consortium will develop a 25 kW water electrolysis system, with a production capacity of 4.5 m3 H2 / h at rated power, at a pressure of 100 bar and water temperature of 90°C.*
State of development: research project

6.

Title: Automatic siphon installation
Patent number: A/00492/04.08.2020
Author/s: Popa Gabriel Nicolae, Popa Iosif
Institution: Politehnica University Timişoara, Faculty of Engineering Hunedoara
Category: A

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

7.

Title: Dry cylindrical type electrostatic precipitator with parallelepiped housing
Patent number: A/00399/20.06.2017
Author/s: Popa Gabriel Nicolae
Institution: Politehnica University Timişoara, Faculty of Engineering Hunedoara
Category: A
Description: *The invention relates to a dry cylindrical type electrostatic precipitator with a parallelepiped housing, according to the invention, for low power plants tahe used fossil fuels or dry wood. The first two sections work on the electrostatic principle. The precipitator consists at the bottom, a gas distributor, two electric sections connected in series (without changing the gas flow), used to collect dust particles with larger diameters, which can be supplied from two high voltage sources, which can operate at different voltage levels, and even with different forms of voltage. The collecting electrodes are cylindrical type and the discharge electrodes can be uninsulated or insulated. The third collection section consists of an electrostatically charged fiber filter for collecting small particles.*
State of development: laboratory prototype

8.

Title: Low lying valence band edge materials based on copper oxide for tandem dye-sensitized solar cells
Patent/project number: PhD thesis
Author/s: Melinda VAJDA, Daniel URSU, Narcis DUTEANU, Marinela MICLĂU
Institution: Polytechnic University of Timisoara, National Institute of Research and Development for Electrochemistry and Condensed Matter
Category: A
Description: *For enhancing the photovoltaic performance of tandem dye-sensitized solar cell (DSSC), a new perspective is proposed to develop a novel material with a lower valence band edge in alternative to the lowperforming p-type semiconductor oxides. Copper oxide (Cu2O/CuO) materials were synthesized by a facile and near room-temperature wet chemical precipitation synthesis. The lowest reported lying valence band edge along with 2.10 V of the open circuit voltage (VOC) in a hypothetical tandem-DSSC certainly had demonstrated the suitability of these materials for the design of highly efficient photocathodes in tandem architecture.*
State of development: Scientific paper.

9.

Title: Innovative solutions for minimizing plastic waste
Patent/project number: Student project
Author/s: Chivu Iulian Cosmin
Institution: Politehnica University of Timisoara, Faculty of Engineering Hunedoara, Cristmar Plast Orăştie
Category: A
Description: *The aim of this project is to present an activity focused on minimizing waste quantities, through recycling, recovery and treatment methods and final disposal. Separation of waste at source is an important measure to reduce the amount of waste that requires storage with a direct effect on the quality and quantity of waste, allowing the process to meet environmental requirements. The project presents the design and realization of the technological flow, implemented within the Cristmar Plast Company, for the separation, grinding, granulation and recovery of plastic waste from the automotive industry. The innovative solutions applied involve the development of closed loop production technology flows with zero waste, in which all by-products are reused continuously and no waste is disposed of in the environment.*
State of development: product

10.

Title: Integrated device for testing of perovskite solar cells in a controllable environment
Patent/project number: Registered patent OSIM nr. A00014/14.01.2019
Author/s: Daniel URSU, Marinela MICLĂU, Radu BĂNICĂ, Radu GURGU
Institution: National Institute of Research and Development for Electrochemistry and Condensed Matter
Category: A
Description: *The proposed device is a modular device, composed of two parts, the fixed part provided with a flange, which is connected with a manometer and a vacuum valve with the role of constantly visualizing and maintaining the vacuum inside the device, as well as a movable part formed from the perovskite solar cell fastener and the connecting part with the fixed part. The technical problem solved by the invention is to make an integrable device for testing perovskite-based solar cells in a controllable environment, both in the dark and under lighting, simulating various external factors (atmosphere, temperature, humidity).*
State of development: Concept

11.

Title: Electrochemical Reactor and Method for Metal Ions Removal from Solution
Patent/project number: Patent no. 127174 / 29.01.2016
Author/s: Iorga Mirela Ioana, Mirica Marius Constantin, Mirica Nicolae, Balcu Ionel
Institution: National Institute for Research and Development in Electrochemistry and Condensed Matter –INCEMC- Timişoara
Category: A

Description: *An original electrochemical reactor is proposed for advanced removal of metal ions from solution used in environmental protection, for the treatment of water containing metals, with the possibility of metal recovery (may apply to copper, silver, zinc, gallium ions, etc.). The reactor contain several compartments, each one for every electrolysis stage, disposed circular, concentric, where the electrolyte flows gravitationally.*
State of development: concept

12.

Title: Vibration system for static elements/electrodes with applications in chemical and electrochemical processes
Patent/project number: Patent no. 128016 / 30.01.2020
Author/s: Buzatu Doru, Iorga Mirela Ioana, Mirica Marius Constantin, Urmosi Zoltan, Pop Raluca, Balcu Ionel, Nicolae Mirica
Institution: National Institute for Research and Development in Electrochemistry and Condensed Matter –INCEMC- Timişoara
Category: A
Description: *The system presented can be used for the vibration of static elements, with applicability in chemical and electrochemical processes, with the possibility of using in the particular case of electrode vibration in electrochemical processes to remove metal ions from solutions. By using the vibration system of the static elements/electrodes, the intensification of the electrode processes is ensured, by using the highest possible current densities and implicitly obtaining the best possible current efficiencies.*
State of development: concept

13.

Title: Process for obtaining a sensitive platform based on sensors with surface acoustic waves for the detection of greenhouse gases
Patent Application: a 2019 00355
Author/s: Sfirloaga Paula, Mitrea Cristina, Vlazan Paulina, Poienar Maria, Baracu Angela
Institution: National Institute for Research and Development in Electrochemistry and Condensed Matter, Timisoara
Category: A
Description: *The invention relates to the realization of a sensitive platform based on surface acoustic wave sensors (SUAS) that use ABO3 perovskitic for the detection of gases with greenhouse effect (CO, CO2).*
State of development: prototype.

14.

Title: VERTICAL SENSOR FOR ABSORPTION AND CONCENTRATION OF SOLAR RADIATION
Patent/project number: brevet 128153
Author/s: Rădulescu Remi,
Institution: Societatea Inventatorilor din Banat

Category: A
Description: Used for preparing hot water. It consists of a tube of steel, copper, aluminum, vertical fins, two plates through which the greenhouse effect is achieved, a semicircular mirror through which the solar radiation is focused at several points of the collector in vertical plane. By associating the two mentioned solutions, which influence each other, new amplified effects appear, as a result of which superior technical performances are obtained.
State of development: prototype

15.

Title: Adsorbent with magnetic properties based on apatitic material for treatment of impurified waters with organic and inorganic compounds and method of obtaining it
Patent/project number: A00380/2019
Author/s: Radu Claudiu Fierascu1, Irina Fierascu1, Valentin Raditoiu1
Institution: 1National Institute for Research & Development in Chemistry and Petrochemistry – ICECHIM Bucharest
Category: A
Description: *Multiple sources pollute the environment, such as the textile industry, mining activities, the use of pesticide, liquid waste discharges, etc. Inorganic and organic pollutants present in water can cause dysfunctions of the circulatory system; they can alter the DNA structure etc. The present invention relates to an adsorbent material composed of an active phase (apatitic material) and a magnetic phase, for the adsorption of organic and inorganic pollutants present in aqueous media, at ambient temperature and atmospheric pressure. This work was supported by Romanian Ministry of Research and Innovation (MCI) through INCDCP-ICECHIM Bucharest 2019-2022 Core Program PN.19.23 - Chem-Ergent, Project No.19.23.03.*
State of development: laboratory

16.

Title: Cyanophite microalgal strain Nostoc punctiforme (Kützing) - source of protein
Patent/project number: MD 4669/2019.12.31
Author/s: Victor ŞALARU, Sergiu DOBROJAN, Mihai COSTICA, Evgheni SEMENIUC, Eugeniu CIOBANU.
Institution: MOLDOVA STATE UNIVERSITY
Category: A
Description: *Cyanophyte microalga Nostoc punctiforme (Kützing) was selected in pure culture from the soils of the Republic of Moldova, it is part of the collection of the Scientific Research Laboratory "Algology Vasile Salaru" of the State University of Moldova and can be cultivated industrially. The biomass of the algal strain contains: proteins -18.50% -24.00%; lipids - 5.00% -10.00%; carbohydrates - 10.00% -13.00% and can be used in pharmacology, in animal and human nutrition, as a biofertilizer (with the ability to biologically fix atmospheric nitrogen in the soil) and as a biofilter for wastewater treatment.*
State of development: Product.

17.

Title: Redox self-purification processes of natural waters
Patent/project number: 15.817.02.35A
Author/s: Elena BUNDUCHI, Viorica GLADCHI, Vladislav BLONSCHI, Gheorghe DUCA
Institution: MOLDOVA STATE UNIVERSITY
Category: A
Description: *The monitored objects were Nistru River, its tributaries, Raut and Ichel, and the Ghidighici and Danceni lakes. Both the individual and the annual average values shows low concentration (about 10 μg/L) or lack of H2O2, proving a constant H2O2 consumption in self-purification processes of the in natural waters, the oxidized substances content by H2O2 was frequently high.*
State of development: Research project.

18.

Title: The influence of the Raut river on the capacity of chemical self-purification of the Dniester river in the period of 2015-2019
Patent/project number: 15.817.02.35A
Author/s: Vladislav BLONSCHI, Viorica GLADCHI, Elena BUNDUCHI
Institution: MOLDOVA STATE UNIVERSITY
Category: A
Description: *For the complex estimation of the intensity of the chemical self-purification processes, we study not only the specific kinetic parameters – inhibition capacity, redox state, stationary concentration of the OH radicals, but also the tendency to change the concentration of certain classes of compounds, which directly participate in redox reactions, either as an oxidizing substrate or as a reducing substrate, such as thiol substances (R-SH). During 2015-2019 years thiols content in waters of the Dniester and Raut Rivers was monitored, selecting 3 catchments, in order to follow the tendency of composition changes in Dniester waters. The concentrations of thiols detected in both rivers fall within the limits of orders 10^{-5}-10^{-6}M. There was a slight increase in thiols concentration during the Dniester, with the exception of 2015 and 2019. Therefore, according to the thiols concentrations, the Raut River does not significantly influence the chemical self-purification capacity of Dniester River. Although according to the multiannual media, there is a slight increase in thiols content in Dniester after Raut discharge, these concentrations don't disturb the natural seasonal variation of these reducers, excepting spring, a phenomenon that can be explained by the low speeds of biological processes.*
State of development: Research project.

19.

Title: The interaction of glutathione with copper (II) ions in aquatic environment
Patent/project number: 20.80009.5007.27
Author/s: Maxim CISTEACOV, Vladislav BLONSCHI, Viorica GLADCHI
Institution: MOLDOVA STATE UNIVERSITY
Category: A

Description: *The result of research showed that under aerobic conditions, at pH=7, complex substances with the ratio [GSH]:[Cu(II)]= 1:1; 2:1 and 4:1 are formed, and this indicates that the same complexes can form under natural conditions, in natural waters, and that glutathione will form complex compounds with them at high concentrations of copper ions in water, thereby contributing to the process of self-purification of natural waters and detoxification of hydrobionts by eliminating heavy metal ions from the aquatic environment. However, taking into consideration the fact that the copper ions play the role of catalysts in chemical and biochemical processes, and that they are part of various enzyme systems, the elimination of the copper ions from the aquatic environment can have negative consequences for hydrobionts, and this is going to be the subject of our further research.*
State of development: Research project.

20.

Title: Dynamics of different sulfur forms in the waters of the Dniester river during the years 2015-2019
Patent/project number: 15.817.02.35A
Author/s: Vladislav BLONSCHI, Viorica GLADCHI, Elena BUNDUCHI, Gheorghe DUCA
Institution: MOLDOVA STATE UNIVERSITY
Category: A
Description: *During 2015-2019, the content of thiols and sulfates in Dniester River's waters was monitored. Seasonal variation of thiol content was found, which indicates their natural origin. The Pearson coefficient was calculated to elucidate the seasonal dynamics of sulfur forms in the Dniester waters. The calculated values indicated a moderate positive correlation during the summer, which indicates that sulfate ions are the main source of sulfur for autotrophic hydrobionts. Negative, weak and moderate correlations, spring and autumn indicate on the development of chemical processes of decomposition of thiols into sulfate ions, a period in which biological activity is minimal.*
State of development: Research project.

21.

Title: Wavelength-selective Greenhouse 4.1– Towards Energy Independent and Combined Fully Automated Arboretum
Project number: PN-III-P2-2.1-PED-2019-2091
Author/s: Marinela MICLĂU, Daniel URSU,Melinda VAJDA, Aurel GONTEAN, Szilard BULARKA
Institution: National Institute of Research and Development for Electrochemistry and Condensed Matter
Category: A
Description: *In this context, the project is aimed to design, build, test and the energy independent and combined fully automated greenhouse standalone prototype based on wavelength-selective solar cells (DSSC), as a technically and economically credible alternative concept to present day conventional greenhouses.*

The greenhouse prototype (fig. 1) uses an aluminum frame, 6 interchangeable hatches that enclose the studied DSSCs, 1 underground rain water reservoir, 3 small diameter water pipes for plant irrigation, 2 larger diameter air pipes for heating / cooling, 2 air blowers and 2 short air pipes near the air blowers. Two PWM controlled fans are used for microclimate control.
State of development: Research project

22.

Title of Invention: ENERGY PRODUCTION DEVICE WITH CAPILLARY CHARACTERISTIC AND GRAVITY FORCE
Patent/project number: WO 2019/012338 A1 (PCT)
Author/s: SAJAD SHABANPOURHAGHIGHI
Institution: None
Category: A
Description: *The Invention of "Energy Production Device with capillary tubes and gravity force" which includes several capillary tubes helps the fluid reach a specific height in the opposite direction of gravity & gravitational force by the help of surface adhesive energy after which it directs the fluid towards the turbine by the help of gravity and in the same direction. By moving the turbine blades by the help of gravitational force on the fluid, rotational energy of the turbine is converted to electricity energy. The whole system is comprised of lower storage tank and an upper storage tank and two units of A and B, a penstock, turbine, and generator. Capillary tubes transfer the fluid from lower tank to upper tank. The system has a bleeder valve to mitigate against the air pressure. Later, the fluid is directed by one-way valve towards the upper tank Fluid is directed from the upper tank by the gravity force towards the turbine through penstock and the cycle recurs repetitively.*
State of development: prototype

23.

Title of Invention: Paco's Custom Solar Bike - PCSB
Patent/project number: Student Project
Author/s: Mircea Moldovan
Institution: Paco's Custom Bikes
Category: A
Description: *Paco's Custom Solar Bike (PCSB) is a standalone electric bicycle that uses solar energy as its main power source. Within the PCSB are integrated solar panels with the role of capturing solar energy. A controller manages the battery charge, it also has the role of extending the battery life of the photovoltaic system. The PCSB motor has the function of energy recovery when the brake is applied or when a slope is lowered in order to increase traffic autonomy. The lighting system (headlight, stop) are adaptive depending on the period of day / night, they are turned on and off automatically by the management unit of the PCSB bicycle. Against the background of increasing traffic safety, some elements of the PCSB are painted using a phosphorescent paint which gives a better visibility in traffic at night. All PCSB components are made according to the desired specifications and characteristics, each project being unique.*
State of development: prototype

24.

Title: Heat pump for the Hunedoara's swimming pool
Patent/project number: student project
Author/s: Robot y Hd
Institution: Theoretical Highschool "Traian Lalescu" Hunedoara
Category: A
Description: *Heat production without costs for homes, but also for our swimming pool in Hunedoara, because heat costs are high and they must be borne by the entire community. Heat is necessary for both sports performance and leisure, and as a solution to this problem, we propose: heat pump.*
State of development: student project

B - Architecture, Civil Engineering, Interior architecture, Materials

1.

Title: Recovery of small waste resulting from the process of obtaining steel
Patent/project number: PhD thesis
Author/s: Lupu Oana
Institution: Politehnica University of Timisoara, Faculty of Engineering Hunedoara
Category: B
Description: *For the capitalization and reintroduction of ferrous pulverous wastes in the economic circuit, simple technologies are proposed that do not involve high costs for processing. The experimental technologies, in the laboratory phase, for establishing the material solutions, compatible with the recovery of ferrous, powdery and small waste, are: the production of pellets, briquettes or agglomerate (discontinuous agglomeration installations). The main small and powdery waste resulting from steelmaking are: sinter sludge, aglomerated dust, steel slag, blast furnace dust and sludge, electro-filter dust and sludge, mill scale and sludge mill scale. Small and powdery waste from the steel industry, due to its high content of iron, manganese, carbon and various oxides (elements useful in the production process of cast iron or steel) are called by-products and are considered components of natural capital because they are used in the steel industry.*
State of development: PhD thesis

2.

Title: WOVEN AND STRAND OF RECYCLED POLYETHYLENE TEREPHTHALATE (PET) REINFORCED CONCRETE
Patent/project number: PhD thesis
Author/s: Andrei Mihai BACIU, Imre KISS
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: B
Description: *The experimental program was aimed at constructing some samples of woven fiber reinforced concrete from recycled material coming from PET packaging wastes, their testing to the compression demands and the comparison of results with the characteristics of the standardized samples of concrete (class C30/37). Based on a sufficient number of determinations, certain correlations can be established between the compressive strength of the concrete at 28 days depending on the dosage of components (aggregate, binder, and reinforcement), water / cement ratio, reinforcement volume, etc., essential parameters from a compositional point of view.*
State of development: Exploratory research

3.

Title: STRIPES AND FLAKES OF RECYCLED POLYETHYLENE TEREPHTHALATE (PET) ADDED CONCRETE
Patent/project number: PhD thesis
Author/s: Andrei Mihai BACIU, Imre KISS
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: B
Description: *The wastes from polyethylene terephthalate (PET) packaging can be turned into armatures for concrete used in the transports infrastructure (roads with rigid concrete structure, pedestrian and concrete pavements and borders), as well as in the construction of safety elements (support walls, bulwark foundations). This experimental research was meant to create dispersed reinforced concrete with armatures from polyethylene waste, originated from the recycling programmes of PET–type packaging. The experimental programme was aimed at constructing some samples of dispersed reinforced concrete from recycled material coming from polyethylene terephthalate (PET) packaging wastes, their testing to the compressive strength and the comparison of results with the characteristics of the standardised samples of concrete (class C30/37).*
State of development: Exploratory research

4.

Title: Multifunctional Heating system
Patent/project number: 3119 U05 00239
Author/s: Vásárhelyi Lajos (Szigliget)
Institution: Ötlet Club 13 Egyesület, Hungary
Category: B
Description: *Description of the invention: It is energy-saving and high-impact. It can be heated with any kind of combustible materials. It is suitable for central heating, underfloor heating, baking, cooking, and hot air production. It can be shaped into any form, and is suitable for serial production.*
State of development: product

5.

Title: PHONOABSORBANT STRUCTURE FROM POLYURETHANE WASTES
Patent number: A 2020-00057/07.02.2020
Author/s: Rodica – Mariana Ion, Laurentiu Marin, Nelu Ion
Institution: ICECHIM, Bucharest, Romania
Category: B
Description: *The invention relates to a stratified type structure, consisting of gypsum panels between them fiberglass mesh bonded together with a polyurethane binder and a sound-absorbing layer made up of mills of polyurethane foam and polyurethane binder in 50:50 gravimetric proportion, used in civil or industrial constructions.*
State of development: Product, prototype

6.

Title: Research on the influence of moulding-casting technology on the quality of castings
Patent/project number: research project
Author/s: Josan Ana, Pinca Bretotean Camelia, Raţiu Sorin, Ardelean Erika, Ardelean Marius
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: B
Description: *The quality of castings has a particularly role in the Romanian foundries. In this context, quality assurance is the overall objective of the foundries. The paper presents the critical analysis performed on moulding-casting technology of the type Lifting mechanism. This casting is a subset of the lifting and rotating mechanism of the furnace vault. The casting analysed is a medium size, with weight of 114 kg. The current moulding-casting technology involves moulding into three mould-parts leading to the occurrence of defects (decentering of the core, displacement of the lower mould and the middle mould and occurrence of burrs in area separated. Thus, to reduce the percentage of defects registered in industrial practice is necessary to change the moulding-casting technology. Thus, to reduce the percentage of defects registered in industrial practice is necessary to change the moulding-casting technology. This requires the use of two mould-parts, re-dimensioning of the core and the core box and dimensioning of the runner network. The adoption of these changes in industrial practice has direct implications on the cost of casting and foundry costs default.*
State of development: scientific paper

7.

Title: Ecologic polymer based on thermoelectric powerplant ash and glass powder from recycled wastes for applications in the field of buildings materials and procedure of obtaining it (Geopolimer ecologic pe bază de cenuşă de termocentrală şi pulbere de sticlă din deşeuri reciclate pentru aplicaţii in domeniul construcţiilor şi procedeu de obţinere a acestuia)
Patent/project number: Patent Application RO 00038/25.01.2019
Author/s: Dumitru Doru BURDUHOS NERGIŞ, Petrică VIZUREANU, Ofelia-Cornelia CORBU, Mohd Mustafa Al Bakri ABDULLAH, Andrei Victor SANDU
Institution: SIMTIT Engineering (Universitatea Tehnica "Gheorghe Asachi" din Iasi)
Category: B
Description: *The invention refer to an ecologic polymer based on thermoelectric powerplant ash and glass powder from recycled wastes for applications in the field of contructions and procedure of obtaining it, which is activated alkaline with a solution of sodium silicate and hydroxide, by geopolymerisation. The obtained material is obtained from a mixture of ash from a powerplant (36±1%), glass powder (15±1%), alkaline activated with a solution of sodium silicate (28±1%) and sodium hydroxide 10M (20±1%), and poured in a mold, vibrated and than dryed at room temperature for minimum 24h. The resulted material has an original chemical composition and is used for application in the field of building materials: facades, screeds, bricks, refractory insulation, etc.*
State of development: laboratory/prototype

8.

Title: ***Graphene oxide/TiO2 Thin film As a Self-Cleaning Glass***
Patent/project number: MY-172024-A
Author/s: Azliza Azani, Dewi Suriyani Che Halin, Mohd Mustafa Al Bakri Abdullah, Mohd Arif Anuar Mohd Salleh, Kamrosni Abdul Razak, Varistha Chobpattana, Lukasz Kaczmareck
Institution: Universiti Malaysia Perlis (UniMAP)
Category: B
Description: *This invention is to produce a thin layer coating on for a glass that exhibits a self-cleaning property. In particular, the sol-gel method was used followed by spin coating technique to produce an environmental friendly thin film. TiO2 was modified with graphene oxide to further enhance the self-cleaning properties of the coating.*
State of development: laboratory/prototype

C - Computer sciences, Electronics, Electricity, Communication, Security

1.

Title: Intelligent control system for continuous casting based on water flow control in the secondary cooling
Patent/project number: research project
Author/s: Gelu-Ovidiu TIRIAN
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: C
Description: *It was realised developed and implemented, meant to control the casting process by an intelligent fuzzy-type system, allowing the control of the water flow rate in the secondary cooling, by appropriate distribution along the cooling area. This necessity is imposed by the fact that actual control systems do not correlate in real time the variations of the multiple variables related to the continuous casting process and stick to a rigid distribution of the water flow rate on each cooling area. The intelligent system is capable of eliminating this shortcoming, by controlling in real time the distribution of the water flow rate according to the real situation in the installation, working as an adaptive system.*
State of development: research project

2.

Title: Development of Experimental Laboratory of Applied Ergonomics
Patent/project number: 13118/23.12.2019
Author/s: Popa Mihaela, Topor Marcel, Dascăl Amalia
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: C
Description: *The applied Ergonomics laboratory was made with the support of Philips Orăştie, the first university in Romania, which has this high-performance equipment for measuring human behavior, in interaction with the environment. Combining the complementarity of sensors and systems with current software solutions, synchronizing and collecting data from multiple sources, can provide students, teachers, researchers interested in information about the psychomotor level, the intensity of people's cognitive, emotional and behavioral reactions to various stimuli, in real time or in a virtual situation.*
State of development: laboratory

3.

Title: RoboFIH Team
Patent/project number: Educational Program
Author/s: Ovidiu Gelu Tirian
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: C
Description: *RoboFIH - The robotics team of the Faculty of Engineering Hunedoara. The main purpose of the team is for the study and construction of autonomous robots (light trackers, obstacles detection sensors, etc.) and flexible production lines under laboratory conditions.*
State of development: laboratory

4.

Title: Application for generating the 3D models of linear hydraulic motors
Patent/project number: PhD thesis
Author/s: CIOROAGĂ Bogdan-Dorel, CIOATĂ Vasile George, ALEXA Vasile
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: C
Description: *A computer application is presented that allows the generation, in the Autodesk Inventor environment, of 3D models of linear hydraulic motors, based on the technical and dimensional characteristics entered or chosen by the user in an Excel file. In addition, the 2D drawings required in the manufacturing and / or design phase of systems containing linear hydraulic motors are automatically generated.*
State of development: laboratory

5.

Title: DC linear voltage-sinusoidal signal variable frequency converter
Patent number: A/00795/01.11 2013
Author/s: Popa Gabriel Nicolae, Popa Iosif, Deaconu Sorin Ioan
Institution: Politehnica University Timişoara, Faculty of Engineering Hunedoara
Category: C
Description: *The DC linear voltage-sinusoidal signal variable frequency converter 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 variable frequency converter comprises seven functional blocks: two analog multiplication circuits, two analog difference circuits, one non-inverting amplifier and two integration circuits.*
State of development: prototype

6.

Title: Economical system for automatic adjustment of the power factor, with capacitor banks, in three-phase low-voltage installations
Patent number: A/00491/04.08.2020
Author/s: Popa Gabriel Nicolae, Diniş Corina Maria, Popa Iosif
Institution: Politehnica University Timişoara, Faculty of Engineering Hunedoara
Category: C
Description: *The invention relates to an economical system for automatic regulation of the power factor with capacitor banks in three-phase low-voltage installations. The technical problem is the realization of an economical system of automatic regulation of the power factor, with capacitor banks, from three-phase low voltage installations, which uses a three-phase static electronic power relay common to all stages of capacitor banks to improve the power factor in three-phase low-voltage installations. It consists of a current transformer (which measures current in a phase), a VAR-metric controller with microprocessor, two small capacity PLCs, a three-phase static electronic power relay, twelve electromagnetic contactors and six capacitor banks.*
State of development: laboratory prototype

7.

Title: Metal gland for large diameter electrical cables
Patent number: A/00303/30.07.2018
Author/s: Ciortea Dan, Popa Gabriel Nicolae
Institution: Politehnica University Timişoara, Faculty of Engineering Hunedoara
Category: C
Descriptio): *The invention relates to a single-body metal gland intended for sealing large diameter cables or metal pipes, when passing them through the wall of an enclosure. The gland consists of the metal body, the toroidal chamber with filling - emptying valve, the rubber gasket and the locking nut. In the body of the gland is a rubber chamber with valve. The rubber chamber with the valve is the sealing element between the outer surface of the electric cable and the inner surface of the gland body. An inert gel is inserted under pressure into the rubber chamber which inflates the toroidal chamber to its maximum contact with the outer surface of the cable or pipe. The deformation of the toroidal chamber allows the perfect sealing regardless of the geometry of the large section electric cable.*
State of development: laboratory prototype

8.

Title: AIR COOLING VS WATER COOLING
Patent/project number: student project
Author/s: OBRENOVICI LAVINIA IOANA, GOLCEA JULIA DAIANA, SAPTA DORU IOAN, MARINUT GABRIEL PAUL
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: C

Description: *Every computer generates heat during use, this can cause a lot of damage to your PC if you're not careful. This can be a problem especially if you're building your own computer, so in this case you have to choose between air cooling and liquid cooling. Air cooling works by increasing the air flow over the object that needs to be cooled. The biggest advantage of this method is that you really don't need to do anything to create a decent cooling system. Liquid cooling is a method that is based on a basic principle of thermodynamics, that heat moves from warmer objects to cooler objects, which allows the warmer object to become cooler while the cooler object gets warmer. The biggest advantages here are that it has a higher level of efficiency than air cooling and it doesn't make a lot of noise.*
State of development: student project

9.

Title: Case Study air cooling at processors
Patent/project number: student project
Author/s: Golcea Julia Daiana, Obrenovici Lavinia Ioana, Marinut Gabriel Paul, Sapta Doru Ioan
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: C
Description: *A case study was performed on the ryzen 5 3600 processor in order to demonstrate the differences between the 2 air coolers, the stock Wraith stealth and the aftermarket Cooler Master Hyper 212 RGB. We measured the temperatures using the Core Temp application for a certain time interval for different requests (Benchmark, Gaming, Rendering). Maximum temperatures in pregnancy decreased by up to 15%, and overall cooling improved by 14%. In conclusion, cooling with the new cooler can extend the life of the processor due to lower temperatures and can eliminate the problem of throttling.*
State of development: student project

10.

Title: SAFETY FIRST BY ROMANATUL SRL
Patent/project number: student project
Author/s: SAPTA DORU IOAN, MARINUT GABRIEL PAUL, OBRENOVICI LAVINIA IOANA, GOLCEA JULIA DAIANA, SPECHEA MARIUS
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: C
Description: *Risk analysis has become a necessity for all private and state-owned enterprises that own securities or assets and must ensure their protection. This should be done during the construction process, as it can relieve customers of additional work and expenses to change the structure of the space or change the surveillance and safety equipment. The wishing client must contact a risk assessor who is able to perform the analysis, he inspects the space and decides what is the level of security of the space and what security measures need to be imposed, the client is obliged to implement these measures within 30 days from the submission of the evaluation. The advantages of this risk analysis are that you can decrease potential risks by anticipating their vulnerabilities and implementing space-appropriate security measures, such as surveillance cameras, motion sensors, or the panic button for emergencies.*
State of development: student project

11.

Title: AUTOMATIC CONTROL SYSTEM
Patent/project number: Patent application A/00581/2019
Author/s: Anna Sabadaş, Alexei Pianîh, Mihaela Pavăl, Marcel Pocriş
Institution: Ştefan cel Mare University of Suceava
Category: C
Description: *The invention relates to an automatic command control system, given by a user to a lever, made based on the evaluation of the electrodermal electrical resistance and the contact force. The automatic command control system according to the invention consists mainly of a lever system, provided with a microcontroller acquisition of the electrodermal signal, taken over by two electroconductive sensors from a biocompatible material, an adapter circuit and a force sensor, through which it is determined whether the commands given by the user are valid or the lever was actuated by mistake.*
State of development: prototype

12.

Title: Transmission Medium data transport with restructurable effects
Patent/project number: MD 2201 G2 from 2003.06.30
Author/s: Ţurcanu Dinu, Nistiriuc Pavel, Nistiriuc Ana, Chihai Andrei
Institution: Technical University of Moldova
Category: C
Description: *The invention relates to the field of optoelectronics in optical systems and communications, in particular to optical fiber with restructurable autofocus, which can be used in optical communication networks and systems for digital storage and processing of optical signals and images. The fiber optic substitution of the solid quartz core with an electroreological liquid core consisting of a colloidal suspension of PbTiO3 and SrTiO3 powders in polyethylsiloxane oil allows through selective form of force lines and electric field strength values to obtain a more reversible restructuring efficient refractive index profile and as a result, we obtain the transformation of the multimode mode of optical signal propagation into single mode at a distance of 8 ... 10 times smaller than for optical fiber with quartz core autofocus and at which autofocus is not restructurable.*
State of development: concept

13.

Title: ZnO:Eu FILMS FUNCTIONALIZED WITH Pd FOR ROOM TEMPERATURE H2 SENSORS
Patent/project number: MD 1974 from 05.11.2019
Author/s: Lupan Cristian, Trofim Viorel
Institution: Technical University of Moldova
Category: C
Description: *The invention relates to the technology for deposition of semiconductor oxide films, in particular to the process of obtaining of ZnO:Eu3+ films, with application of rapid thermal annealing (T=650 °C, t=60s), with can be applied to the manufacture of gas sensors obtaining sensibility S=I_gas/I_air =1.3 for 100 ppm H2 gas at room temperature and S=I_gas/I_air =118 at operating temperature of 250 °C.*
State of development: concept

14.

Title: Switch type chemoresistive humidity sensor
Patent/project number: Patent Application No. A/00442, 28.03.2018, OSIM, ROMANIA
Author/s: Bogdan-Catalin Serban, Octavian Buiu, Cornel Cobianu, Roxana Marinescu, Viorel Avramescu, Nicolae Dumbravescu
Institution: National Institute for Research and Development in Microtechnologies - IMT Bucharest
Category : C
Description: *This patent application does address the development of innovative sensing layers to be used in the development of resistive relative humidity sensors. The sensitive layers described in this patent application are hydrophilic polymer / hydrophilic nanocarbonic material such as PEG-PPG-PEG (polyethylene glycol-polypropylene glycol – polyethylene glycol)/oxidised carbon nanohorns.Oxidized carbon nanohorns can be synthesized by oxidizing pristine carbon nanohorns with hydrogen peroxide, nitric acid, oxygen plasma and water plasma treatment. For testing, an interdigitated (IDT) structure was manufactured on Si (470 µm) covered withSiO2. IDT's metal stripes have been made by successive deposition of Cr (10 nm) and Au (100 nm) .The use of the PEG-PPG-PEG/ oxidised carbon nanohorns as sensing layer will provide a series of significant advantages:*
a. a high ratio between specific surface and volume;
b. the hydrophilic character of the sensing layer can be easily tuned by adjusting the specific parameters of each functionalization approach (plasma power, nitric acid concentration, reflux time;
c. Due to the "swelling" effect, generated by the expansion of triblock- copolymer for RH values higher than 75%, a "switch" type of transfer characteristic is recorded.
State of development: scientific paper

15.

Title: Liquids mixing station simulation.Functional programming
Patent/project number: student project
Author/s: Josan Diana
Institution: Techincal University of Cluj-Napoca
Category: C
Description: *The project simulates a mixing station of two liquids. I chose a tank with one type of blue liquid (for example, water), in witch I added one drop of red liquid and one drop of blue liquid. The 3D real-time simulation was made in Open GL, witch is a functional programming tool. Functional programming (often abbreviated FP) is the process of building software by composing pure functions, avoiding shared state, mutable data, and side-effects. The simulation is based on creating the needed figures using functional programming, matrices, vectors and color codes in order to atribute to our figures the characteristics that they need to look as realistic as they can, and placing them on the right coordinates of the window.*
State of development: virtual idea

16.

Title: Arduino Bluetooth Car with Aandroid application
Patent/project number: student project
Author/s: Birtok Eugen, Rob Raluca
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: C
Description: *This project describes the programming and construction of a 4x4 traction machine that is driven and controlled by an Android application and programmed on the open-source MIT App Inventor platform. Direction and acceleration control is allowed by an application loaded into the development board microcontroller. Arduino Uno, fixed to the chassis. Communication with the phone is made via bluetooth, possible up to a distance of 10m.*
State of development: *laboratory*

17.

Title: METHOD AND SYSTEM FOR ANONYMOUSLY COLLECTING POSITION AND MOBILITY INFORMATION IN PUBLIC PASSENGER TRANSPORT, BASED ON BLUETOOTH AND ARTIFICIAL INTELLIGENCE
Patent/project number: OSIM A00493/2019
Author/s: MINEA Marius, DUMITRESCU Cătălin, CHIVA Ionuț-Cosmin, MINEA Viviana - Laetitia, SEMENESCU Augustin
Institution: University POLITEHNICA of Bucharest
Category: C
Description: *The invention relates to a method and system for the anonymous collection of position and mobility information in public passenger transport, based on Bluetooth and Artificial Intelligence, for improving public transport management systems by supplementing the information required by them, providing a simple method of collecting. anonymously (without the possibility of associating the persons with the detected devices) the data on the flows of passengers transported or waiting in the passenger stations, information regarding the position of the public transport vehicles on the route, as well as the density of the private traffic of vehicles on the the route of the means of public transport.*
State of development: prototype

18.

Title: SYSTEM AND METHOD FOR DETECTING ACTIVE AIRCRAFT (DRONE) VEHICLES BY DEEP LEARNING ANALYSIS OF SOUND AND CAPTURE IMAGES
Patent/project number: OSIM A 00331/2019
Author/s: Cătălin DUMITRESCU, Marius MINEA, Ilona-Mădălinea COSTEA, Ionut-Cosmin CHIVA, Viviana-Letiția MINEA, Augustin SEMENESCU
Institution: University POLITEHNICA of Bucharest
Category: C

Description: *The invention relates to a system and a method for detecting, identifying and classifying drones (UAV), based on the concept of competition at the level of a collection of artificial neural networks with performance in identifying acoustic signals, by means of a computing unit for processing, analysis and classification of drones based on associated acoustic fingerprints. The system consists of the following components: the area of microphones arranged in a spiral with a built-in video camera with adaptive weights of multi-channel type, for the detection of acoustic signals specific to drones; computational architecture for processing acoustic signals and extracting the characteristic features of drone (UAV) - specific acoustic fingerprint and their classification.*
State of development: prototype

19.

Title: Control method for an automatic capacitive compensator meant to improve the power factor and to load balancing in three-phase four-wire electrical networks
Patent/project number: RO 131297 B1 / 30.09.2020
Author/s: Pană Adrian
Institution: Polytechnic University of Timisoara
Category: C
Description: *The method is meant to be implemented through the medium of a specialized software in the control system of a three-phase capacitive compensator, consisting of single-phase power capacitor banks, included in two three-phase circuits, one in triangle connection, the other in star connection, to allow a variable unbalanced three-phase capacitive compensation, in order to fulfill, in addition to the "classic" function of power factor improvement, that of balancing the load of the three-phase network.*
State of development: The method is implemented in a functional experimental model and being implemented, on an industrial scale, in a range of prototypes.

20.

Title: PERSONAL USER-FRIENDLY CUSTOM NAVIGATION
Patent/project number: None
Author/s: SIWOO LEE
Institution: Korea University
Category: C
Description: *The driver can select the route of his/her own preference and reduce the number of accidents caused by careless driving or bad driving habit through advantageous recommendations of route indicated by this customized navigation matched for the driver. For preference setting, the driver can select up to 3 user-rank settings. In addition user settings, recommended routes can also be shared by mutual users of the navigation app helping to expand their own knowledge base of roads. The app also allows drivers to be aware of advanced information such as weather, road surface condition, school hours, etc. which allows the driver to fully focus on his/her driving only.*
State of development: prototype

21.

Title: FREE FORM 3D
Patent/project number: 3D printing
Author/s: Diaconescu Bogdan Cristian, Ilie Anton
Institution: SC FREE FORM 3D SRL
Category: C
Description: *The field of activity is the production of raw material for 3D printers, respectively the plastic filament which can have different compositions depending on the specifications of the part to be made. We can also execute through the 3D printing process a very varied range of products from artistic shapes to technical parts (gears and subassemblies)*
State of development: product

D - Agriculture, Machines and accessories

1.

Title: MOBILE APPLICATION FOR DETECTING SOME WHEAT PATHOGENS USING AI
Patent/project number: 01_UDTA/2020
Author/s: Raluca Incicas, Otilia Cotuna, Florin Sala
Institution: Banat University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timişoara
Category: D
Description: *The present study aimed to develop an application for the recognition of five pathogens in wheat culture based on artificial intelligence (AI). Machine learning (ML), an important branch of AI, was the basis for the application of the pathogens recognition in wheat culture. Five pathogens in wheat cultivation were studied, Blumeria graminis, Pyrenophora tritici repentis, Puccinia recondita, Puccinia striiformis and Puccinia graminis. A data set of 323 images with pathogens studied in wheat culture was used. The first step in building the data set to train the ML model was data augmentation, in order to increase the number of data through known changes. Google Colaboratory was used to build the ML model. The React Native framework was used to have an application available on both iOS and Android. Heroku and Flask were used to integrate the systems. In order to evaluate the model the "Class Activation Map visualization" (CAM) was used. Another method used in evaluating the model was the confusion matrix which shows for each label how many times it was correctly predicted. The model correctly predicted in a percentage of 88.4% for Puccinia striiformis, 72.03% for Puccinia recondita and 94.67% for Blumeria graminis*
State of development: student project – prototype

2.

Title: Chemoresistive humidity sensor based on carbonic nanocomposites
Patent/project number: Patent Application No. A/01005, 29.11.2018, OSIM, ROMANIA
Author/s: Bogdan-Catalin Serban, Octavian Buiu, Cornel Cobianu, Viorel Avramescu, Octavian-Narcis Ionescu, Roxana Marinescu, Cristina Pachiu
Institution: National Institute for Research and Development in Microtechnologies - IMT Bucharest
Category : D
Description: *This patent application refers to the development of new chemoresistive humidity sensors, using nanocomposites based on oxidised carbon nanohorns (CNHox) and a hydrophilic polymer. The selected hydrophilic polymers are polyvinylpyrrolidone (PVP) and polyvinyl alcohol (PVA). The synthesis of CNHox is performed by two different methods, using nitric acid treatment and oxidation with hydrogen peroxide at 1000C, respectively. The sensor structure includes a dielectric layer (glass, Kapton), a series of metal electrodes (aluminum, chrome, copper) and the humidity sensing film.*

The carbonaceous nanocomposite layer is deposited on the electrodes by using one of the following methods: electrospinning, spin coating or drop-casting. The humidity detection capability was investigated by applying a current between the two electrodes and measuring the voltage at different values of the relative humidity level at which the sensing film was exposed. The electrical resistance of these layers will change proportional to the relative humidity level. Using PVP – CNHox- based nanocomposite, the structure exhibits linear and good RH sensitivity when varying RH from 0% up to 90% in humid nitrogen. The sensor has a comparable behaviour to Honeywell' s commercial sensor, fast response time, and good stability over time.

State of development: scientific paper

3.

Title: New data on entomofauna harmful to rapeseed crops and the establishment of measures to prevent and reduce attacks

Author: Elena Trotuş1, Carmen Mincea2, Paula – Lucelia Pintilie1, Georgiana – Roxana Amarghioalei1

Institution: 1Agricultural Research and Development Station Secuieni, Neamț

2Research and Development Institute for Plant Protection, Bucharest

Category: D

Description: *This paper presents data on the entomofauna harmful to rapeseed crops and the influence of measures to prevent and combat attacks, under specific conditions in the Central area of Moldova. The results obtained between 2017 and 2020 showed that the harmful entomofauna of rapeseed was composed of 23 species of insects, classified in five systematic orders: Coleoptera, Lepidoptera, Heteroptera, Hymenoptera and Homoptera. Of the total entomofauna collected, it was found that 30% affect rapeseed crops in the period between seed germination - plant emergence - leaf rosette formation, 9.1% in budding phase, 38% in flowering and 1.8% up to 2.8% in the phenophases of siliquae formation and seed. Prevention of attacks for soil pests was achieved by chemical treatment of the seed with Imidacloprid, Clothianidin and Thiamethoxam. By banning the use of products from the neonicotinoid group, the product Lumiposa 625 FS - 11.4 l/t seed was experimented with good results in seed treatment. The reduction of attacks caused by pests affecting rapeseed crops during the flowering period was achieved by applying three treatments on vegetation as follows: Decis Mega - 0.075 l/ha; Biscaya - 0.3 l/ha; Mavrik - 0.2 l/ha.*

State of development: scientific paper

4.

Title: The influence of chemical treatments application on the Ostrinia nubilalis Hbn. attack to maize sowed in different epochs in the conditions of central Moldova

Author: URSACHE Paula – Lucelia1,2, TĂLMACIU Mihai1, TROTUŞ Elena2, AMARGHIOALEI Roxana – Georgiana2, ISTICIOAIA Simona – Florina2, LEONTE Alexandra2

Institution: 1University of Agricultural Sciences and Veterinary Medicine Iasi, Romania; 2Agricultural Reseach and Development Station Secuieni, Neamț

Category: D

Description: *To prevent the Ostrinia nubilalis Hbn larvae attack, a series of vegetation treatments on maize sown at different epochs were experimented. These applications reduced the attack frequency, the holes number and the galleries length.*
State of development: Phd thesis

5.

Title: Ecological antifungal solution for controlling phytopathogenic strains affecting apple crops and method of obtaining it
Patent/project number: A00159/2019
Author/s: Cristina Liliana Soare1, Irina Fierascu2, Radu Claudiu Fierascu2, Camelia Ungureanu3, Mirela Florina Calinescu4, Codruta Mihaela Dobrescu1, Anca Nicoleta Sutan1
Institution: 1University of Pitesti/ 2National Institute for Research & Development in Chemistry and Petrochemistry – ICECHIM Bucharest/ 3University Politehnica of Bucharest/ 4Research Institute for Fruit Growing Pitesti – Maracineni
Category: D
Description: *The present invention relates to an ecological solution for controlling the pathogenic strains affecting apple crops (Podosphaera leucotricha responsible for the powdery mildew, respectively Venturia inaequalis, the microorganism responsible for the occurrence of apple scab), based on natural extracts obtained using spontaneous flora. This solution does not require toxic and / or dangerous substances and solvents, and has no negative effect on the environment and human health. This work was supported by a grant of the Romanian National Authority for Scientific Research and Innovation, CNCS/CCCDI – UEFISCDI, project number PN-III-P1-1.2-PCCDI-2017-0332, contract 6 PCCDI/2018, within PNCDI III.*
State of development: laboratory

6.

Title: Comprehensive Approach to support Precision Agriculture and environmental management through satellite technologies and classic methods of investigation
Patent/project number: project 259 PED/2020
Author/s: Irina Fierascu1, Radu Claudiu Fierascu1, Anca Nemuc2, Bogdan Antonescu2, Alina Ortan3, Cristi Moise3
Institution: 1National Institute for Research & Development in Chemistry and Petrochemistry – ICECHIM Bucharest, 2National R&D Institute for Optoelectronics – INOE 2000, 3University of Agronomic Sciences and Veterinary Medicine of Bucharest
Category: D
Description: *The overall project objective is the development and implementation of an alert system for precision agriculture and environmental management related to identification of air pollution and extreme weather events. The project will have as final product a near real-time alerting system for precision agriculture using a comprehensive integrated online platform where near real time satellite-based products and ready to use information for farming will be available for decision-making. This work was supported by a grant of the Romanian National Authority for Scientific Research and Innovation, CNCS/CCCDI – UEFISCDI, project number proiect PN-III-P2-2.1-PED-2019-3495, contract 259 PED/2020, within PNCDI III.*
State of development: laboratory

7.

Title: MULTIPLE POST-PRESS FOR OIL EXTRACTION FROM OILSEEDS
Patent number: RO 133159A2
Authors: Mironeasa Silvia, Mironeasa Costel, Iuga Mădălina
Institution: Ştefan cel Mare University of Suceava
Category: D
Description: *The press consists of a lower plate in which are mounted two columns. On the plate is arranged the actuating part which transmit the movement to a shaft. In the plate is fit a bearing that support the central shaft and the axial cam. On the shaft is fixed a rotating plate with the bores in which the bushes are fixed, a plate that support the three-mobile pressing equipment's, each formed of a rod with springs, and a punches-plates. The number of punches is determined by the condition to obtain the same pressure on each contact area within the range of 25 ... 30 MPa. To ensure rapid drainage of oil from the cavities, the bores in the bushings are inclined.*
State of development: prototype

8.

Title: DAVTON
Patent/project number: student project
Author/s: David Galer
Institution: Scoala Eco Europeana "Andrei Saguna" Deva – Clasa a 5-a D
Category:D
Description: *This project presents a device of my own design called DAVTON. The purpose of this device is to determine the mass of vehicles equipped with coil springs or air bellow. DAVTON is integrated in the vehicle and monitors the suspension system as follows: in the case of the coil spring, the distance between the turns is measured; in the case of the air bellow, its height is determined. The advantage of using the DAVTON device is that the mass of the vehicle is determined continuously in real time, so the weighing procedure is eliminated.*
State of development: concept

9.

Title: Autonomous Compressor Grinder (ACG)
Patent/project number: student project
Author/s: TOMESC IULIAN MARIAN
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: D
Description: *In order to increase autonomy and labor productivity in the case of outdoor activities, we considered it necessary to develop an autonomous multifunctional device called Autonomous Compressor Grinder (ACG). The ACG is intended for maintenance operations applied to work points that are unable to connect to electricity sources. The ACG device provides a wide range of possibilities in terms of reconditioning and restoring the operation of various machines and units used in the outdoor environment.*

The device has the following functions: it provides the compressed air necessary for the operation of the pneumatic devices; allows operations to polish the active parts of the tools.
State of development: product

10.

Title: Process for treating wheat seeds before sowing
Patent/project number: MD 4662/2019.12.31
Author/s: Sergiu DOBROJAN, Victor ŞALARU, Galina DOBROJAN, Gheorghe JIGĂU, Mihai COSTICA, Eugeniu CIOBANU, Tatiana TĂRÎȚA, Evgheni SEMENIUC.
Institution: MOLDOVA STATE UNIVERSITY
Category: D.
Description: *The process consists in treating wheat seeds before sowing with a solution (in a concentration of 10.00% -15.00%) obtained from the combined live biomass of the cyanophyte algae species Nostoc gelatinosum Schousboe ex Bornet & Flahault and Anabaena variabilis Kützing ex Bornet & Flahault. After treatment, wheat seeds are inoculated into the soil according to traditional agricultural techniques. The application of this method ensures the germination of 97.00% -98.00% of wheat seeds.*
State of development: Product

11.

Title: INTEGRATED SYSTEM AND PROCESS FOR OBTAINING SUBSTANCES BIOACTIVE FROM MEDICINAL PLANTS
Patent / project number: Project Sectorial Programme MADR – ADER 25.4.1.: TECHNOLOGY FOR OBTAINING BIOFERTILIZERS AND / BIOINSECTICIDES FOR ECOLOGICAL PRODUCTION SYSTEMS, CONTRACT ADER 25.4.1 / 24.09.2020
Author/s: Voicea Iulian, Matache Mihai, Nae Gheorghe
Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry
Category: D
Description: *The design of the biofertilized extractor/ bioinsecticides with the pressure extraction chamber and ultrasonic system involved the design of a system that integrates 2 simultaneous extraction processes.*
State of development: Experimental Model

12

Title: BIOREACTOR FOR PROCESSING SLUDGE FROM WASTEWATER PRETREATMENT PLANTS
Patent / project number: Patent Application No.A–00397 / 2020
Author/s: Găgeanu Iuliana, Marin Eugen, Voicea Iulian
Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry
Category: D

Description: *The invention relates to a bioreactor for processing sludge from wastewater pretreatment plants intended for anaerobic treatment by homogeneous cold mixing in different proportions of components of sewage sludge, compost and soil to obtain a composition with agronomic properties useful for recovery in agriculture.*
State of development: Research Project

13.

Title: EQUIPMENT FOR DETACHING FROZEN SEA-BUCKTHORN FRUITS FROM BRANCHES
Patent / project number: Patent Application No.A-00398 / 2020
Author/s: Milea Dumitru, Ciupercă Radu, Vișan Alexandra
Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry
Category: D
Description: *The invention relates to the equipment that can function integrated within a technological flow of sea buckthorn processing, but also as independent equipment for detaching sea buckthorn fruit from previously harvested and frozen branches, separating and evacuating the two resulting fractions - branches and leaves, respectively fruit and small impurities.*
State of development: Concept

14.

Title: EQUIPMENT WITH INTERCHANGEABLE ACTIVE PARTS FOR HARVESTING MEDICINAL PLANTS
Patent / project number: Patent Application No. A-00415 / 2020
Author/s: Muscalu Adriana, Tudora Cătălina, Bîrsan Mariana, Ganea-Christu Ioan
Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry
Category: D
Description: *The invention relates to a trailed equipment intended for harvesting medicinal plants with different types of inflorescences using active parts such as mowers with straight or curved blades, respectively, with interchangeability possibilities.*
State of development: Concept

15.

Title: SYSTEM FOR QUICK REPLACEMENT OF FURROW OPENING WORKING PART TO BURY DRIP IRRIGATION TUBING / TAPES
Patent / project number: Patent Application No. A – 00577 / 2019 Project number PN-III-P1-1.2- PCCDI-2017-0254, Contract no. 27PCCDI / 2018
Author/s: Dumitrașcu Andrei, Marin Eugen, Manea Dragoș, Ganea-Christu Ioan, Popa Vlad
Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry

Category: D
Description: *The invention relates to a system of rapid replacement of the active part, knife assembly type, and the support blade for furrow opening, intended for the equipment to bury continuous tubing or tapes for underground drip irrigation in agricultural crops.*
State of development: Concept

16.

Title: MOBILE PUMPING GROUP FOR WATER SUPPLY OF IRRIGATION INSTALLATIONS
Patent / project number: Patent Application No. A – 00586 / 2019 Project number PN-III-P1-1.2-PCCDI-2017-0254, Contract no. 27PCCDI / 2018
Author/s: Manea Dragoș, Murgescu Ion, Șovăială Gheorghe, Tociu Carmen, Ungureanu Nicoleta, Manole Emilia Sofia, Gîdea Mihai
Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry
Category: D
Description: *The invention relates to a mobile pumping group intended for the supply of pressurized water and liquid fertilizers for irrigation and fertilization of agricultural crops.*
State of development: Prototype

17.

Title: PROTEIC HYDROLYZATE FROM KERATIN PROTEIN MATERIALS AND PREPARATION PROCESS BY ALCALINE METHOD
Patent / project number: Patent Application No. A-00602/2019
Author/s: Coța Constantin, Nagy Elena Mihaela, Cioica Nicolae, Jurcă Mihnea, Drăgan Simion, Miclăuș Vasile, Miclăuș Adina
Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry
Category: D
Description: *The invention relates to the composition of a protein hydrolyzate from keratin protein materials, intended for use as an additive for inorganic fertilizers for agriculture. The protein hydrolyzate composition with improved biological activity contains, besides free aminoacids, peptides and polypeptides, and microelements indispensable for the development of plants (Cu2 +, Co2 +, Mn7 +, Fe3 +, Zn2 +) in the form of water-soluble organometallic compounds and easily assimilable by plants. The invention relates to the elaboration of the preparation process of the hydrolyzate by processing the keratinous protein materials, in this case wool waste from sheep, using the alkaline method of destructuring the protein macromolecules.*
State of development: Concept

18.

Title: METHOD FOR IMPROVING AGRICULTURAL SOILS CONTAMINATED WITH HEAVY METALS
Patent / project number: Patent Application No. A-00677 / 2019
Author/s: PRUTEANU Augustina, VLĂDUȚ Valentin, VOICEA Iulian, BORDEAN Despina
Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry
Category: D
Description: *The invention relates to a method for improving agricultural soils contaminated with heavy metals (copper, lead and zinc) for rapid improvement through chelating agent-induced phytoremediation. The invention combines soil remediation with mustard plant (Brassica juncea) and rapidly improved with chelating agent - Ethylenediaminetetraacetic acid (EDTA) in multiple doses, easily achieving in a short time soil bioremediation without causing its secondary pollution.*
State of development: Concept

19.

Title: DEVICE FOR MANAGING SOIL PROPERTY SCANNING PLATFORMS
Patent / project number: Patent Application No. A-00734 / 2019
Author/s: Muraru Sebastian Lucian, Constantinescu Oana-Mihaela
Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry
Category: D
Description: *The invention refers to an intelligent electronic command and control device intended for the management of optoelectronic soil property scanning platforms (DEC).*
State of development: Concept

20.

Title: TECHNOLOGIES FOR AGRICULTURAL WORKS USING ECO-FRIENDLY EQUIPMENT: ELECTRIC TRACTOR PROTOTYPE
Patent / project number: PROGRAMUL: SECTORIAL, contract 1PS/2019
Author/s: drd. ing. Cristea Mario1), dr. ing. Matache Mihai-Gabriel1), dr. ing. Zapciu A.2), dr. ing. Tudor E.3), prof. dr.ing. Carpus E.4), dr. ing. Laslo L.5); 1) INMA Bucureşti / Romania; 2) INCDMTM / Romania; 3) INCDIE ICPE-CA / Romania; 4) INCDTP / Romania, 5) INCDPM / Romania
Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry
Category: D
Description: *The Electric Tractor Prototype for eco-friendly agricultural works is designed for agricultural farms, manufacturers, that are interested to upgrade their equipment for a bio-eco agriculture. The prototype may be used for works on small / medium land plots.*
State of development: Prototype

21.

Title: REACTIV EXTRUSION PROCESSING OF NUTRIENT ENRICHED BIOSOLIDS
Patent / project number: Project Sectorial Programe MADR – ADER 7.3.10.
Author/s: Cioica G. Nicolae, Coța V. Constantin, Nagy Elena-Mihaela, Gyorgy Zoltan
Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry
Category: D
Description: *Biosolids are organic solids obtained by digestion and stabilization of raw sewage sludge and contain organic matter and nutrients. The low content of nutrients in biosolids means that for production of high-performance organo-mineral fertilizers it is necessary to introduce in their manufacturing formula, in addition to biosolids, fertilizers and mineral compounds.*
State of development: Research Project

22.

Title: DEVELOPMENT OF INNOVATIVE TECHNOLOGIES INSIDE OF SMART FARMS
Patent / project number: Research Project
Author/s: Marin Eugen, Manea Dragoș, Mateescu Marinela, Gheorghe Gabriel-Valentin
Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry
Category: D
Description: *The project develops the following:*
- Innovative system for conservation work of the soil,
- Technology for field crop protection according to "Agriculture 4.0",
- Intelligent system of ecological heating of a farm based on solar energy,
- Innovative system of irrigation to make use of the humidity in the air.
State of development: Research Project

23.

Title: NOVEL TECHNOLOGIES FOR OBTAINING BIOETHANOL FROM ENERGY PLANTS AND FRUIT WASTES
Patent / project number: Project: PN-III-P1-1.2-PCCDI-2017-0566 /Contract nr.: 9 PCCDI / 09.03.2018
Author/s: Nenciu Florin (INMA), Nae Gabriel (INMA), Vladut Valentin (INMA), Voicea Iulian (INMA), Dumitru Iulian (INMA), Mircea Costin (INMA), Matei Gheorghe (Univ. Craiova), Popa Diana (SCDA Secuieni), Isticioaia Simona (SCDA Caracal), Apostol Livia (IBA București), Ungureanu Nicoleta (UPB-ISB)
Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry
Category: D
Description: *Medium and long term international objectives aim to produce high-quality biofuels, but to minimize as much as possible the cultivated areas and to avoid depleting the soil of nutrients.*

There are several technical plants that have the capacity to produce bioethanol, such as Jerusalem artichoke or Sweet sorghum, which are known to produce smaller negative effects on soils.
State of development: Research Project

24.

Title: NOVEL TECHNOLOGIES USED FOR INCREASING THE PERFORMANCES OF COMPOSTING WASTES AND BY-PRODUCTS RESULTED FROM AGRICULTURE
Patent / project number: Project: PN-III-P1-1.2-PCCDI-2017-0566 /Contract nr.: 9PCCDI / 09.03.2018
Author/s: Nenciu Florin (INMA), Nae Gabriel (INMA), Vlăduț Valentin (INMA), Voicea Iulian (INMA), Vrînceanu Nicoleta (ICPA), Ungureanu Nicoleta (UPB-ISB)
Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry
Category: D
Description: *Biomass, generated as waste from agricultural activities and from food consumption is a difficult problem. It not only contributes to soil and air pollution, but also contaminates with organic substances the other recyclable wastes, reducing the level of recycling up to 40%. This paper presents a novel technology, that may be used for composting agricultural wastes, residues and by-products at a higher efficiency.*
State of development: Research Project

25.

Title: DETERMINATION OF WEAR OF THE ACTIVE ORGANS OF A SCARIFIER, IN ACCELERATED REGIME, DEPENDING ON THE TYPE OF MATERIAL USED
Patent / project number: Research project
Author/s: PhD. Stud. Eng. VLĂDUȚOIU Laurențiu Constantin (INMA), TUDOR Andrei (UPB), FECHETE-TUTUNARU Lucian (UT Cluj), GRIGORE Andreea-Iulia (INMA), SORICĂ Elena (INMA)
Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry
Category: D
Description: *With the help of a test stand developed by INMA Bucharest, different types of tillage knives can be tested in laboratory conditions, by modifying their functional parameters: working depth, angle of the tillage knives, working speed, granulation and humidity of the test environment.*
State of development: Research project

E - Handmade, Jewellery

1.

Title: Patricia's Handmade Accesories
Patent/project number: Handmade creations
Author/s: Patricia Nelega
Institution: SC MOFT STUDIO SRL
Category: E
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

2.

Title: HANDMADE with SOUL
Patent/project number: Handmade creations
Author/s: NELEGA MIHAELA RALUCA
Institution: Nelega Mihaela Raluca P.F.A.
Category: E
Description: *An older passion of mine, materialized in a small business in which the soul and care are the key elements. I do everything with a lot of love and a lot of patience! I create semi-precious stone trees to bring joy and hope to people's homes. I make jewelry from semiprecious stones and other elements to make any woman aware of how beautiful she is. I make unique handmade greeting cards, with various messages to help people who find it harder to express their feelings to spread their thoughts for their loved ones there, on that piece of paper.*
Their realization requires a lot of work, quality materials, time, energy and especially, original ideas. The presentation of these products is often accompanied by a story of theirs, namely a suggestive title, the idea from which I started when I created it and what inspires me. Thus, when someone buys a handmade product, buys more than an accessory, buys a story.
State of development: products

3.

Title: ATELIERUL LUI BUTONEL
Patent/project number: Handmade creations
Author/s: SOLDAN ROXANA
Institution: ATELIERUL LUI BUTONEL
Category: E
Description: *It is all about polymer clay, personalized and unique gifts decorated by hand with patience and love. From little pieces of clay to portraits, name tags, movie and cartoons characters, cute animals, appreciation and love messages and so much more. The limit is your imagination!*
It takes time, a lot of clay, a good cutter blade, sometimes some pastel colours and a lot of creativity to create the perfect gift, and that makes worth it ☺.
You can see some of my creations in the attached photos and, also, you can see my activity on my Facebook Page : Atelierul lui Butonel and follow me on instagram @atelierulluibutonel.
State of development: products

F - Teaching methods and material, Sport, Music

1.

Title: CP4 experimental stand - "DEXTER" Laboratory
Patent/project number: student project
Author/s: Tudor Dinu Ioniță, Adina Budiul Berghian, Gabriel Daniel Iordachi
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: F
Description: *The experimental stand CP4 is intended for the maintenance and repair in laboratory conditions of the injection pumps CP4, respectively to determine the degree of wear of the component elements: the drive shaft; injection pistons; injection cylinders; follower etc.*
The CP4 stand is designed and realized with the support of the CorneliuGroup Association research-innovation through the educational program "DEXTER" Laboratory.
State of development: laboratory

2.

Title: Engine cylinder head experimental stand - "DEXTER" Laboratory
Patent/project number: student project
Author/s: Adina Budiul Berghian, Robert Popa, Strugaru Dragos, Truta Bogdan
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: F
Description: *Engine cylinder head experimental stand is intended for the maintenance and repair in laboratory conditions of the cylinder heads, respectively to establish the degree of wear of the component elements: valves; guides; valve seats; tappets; knobs etc. The engine cylinder head experimental stand is designed and realized with the support of the CorneliuGroup Association research-innovation through the educational program "DEXTER" Laboratory.*
State of development: laboratory

3.

Title: Power Steering - "DEXTER" Laboratory
Patent/project number: laboratory
Author/s: Amalia Dascăl
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: F
Description: *Experimental stand intended for the study in laboratory conditions of the respective steering system of the electric power steering module within the cars.*

The stand is designed and realized with the support of the CorneliuGroup Association research-innovation through the educational program "DEXTER" Laboratory.
State of development: laboratory

4.

Title: Experimental didactic stand for the study of road vehicle transmissions
Patent/project number: laboratory
Author/s: Amalia Ana DASCĂL
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: F
Description: *The didactic stand consists of all the elements of a vehicle transmission being intended for the study in laboratory conditions of the way of transmitting the movement from the crankshaft to the drive wheels. The stand offers the possibility of studying the transmission of road vehicles, being able to work in 4x2 and 4x4 respectively.*
State of development: laboratory

5.

Title: Double table flywheel clutch and hydrotransformer - "DEXTER" Laboratory
Patent/project number: laboratory
Author/s: Camelia Pinca Bretotean, Stanciu Andrei Marius
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: F
Description: *Teaching stand for the study in laboratory conditions of the clutch with double flywheel and the hydrotransformer four internal combustion engine. The stand is designed and realized with the support of the CorneliuGroup Association research-innovation through the educational program "DEXTER" Laboratory.*
State of development: laboratory

6.

Title: LPG fueling system for the car - "DEXTER" Laboratory
Patent/project number: laboratory
Author/s: Sorin Aurel Raţiu
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: F
Description: *Teaching stand for the laboratory study of the LPG gas fueling plant of internal combustion engines. The stand is designed and realized with the support of the CorneliuGroup Association research-innovation through the educational program "DEXTER" Laboratory.*
State of development: laboratory

7.

Title: Safety measures in extreme sports
Patent/project number: student project
Author/s: Budiul-Berghian Dragos, Dinca Georgiana Nicoleta
Institution: "Iancu de Hunedoara" National College, Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: F
Description: *The purpose of the project entitled "Safety measures in extreme sports" is to inform the people about the importance of the protective equipment when practicing an extreme sport, such as Mountain Biking and Drift. Despite the fact that the project is mostly based on the importance of the safety measures when practicing the two sports, the presentation shows the joy of performing them. Also, the project brings up some informative materials about the two sports. As far as the plot is concerned, many of the people would find it interesting when the informative material about one of the Romanian's Greatest drift pilot, Sorin Ene, will show up.*
State of development: student project

8.

Title: Construction logic game
Patent/project number: M1401535, Y1500821, D1600004, Y1700243
Author/s: Poczók Lajos (Budapest)
Institution: Ötlet Club 13 Egyesület, Hungary
Category: F
Description: *This is a logic game based mathematics, spatial geometry, solid shapes and dimensions. The rule is simple put together polyhedrons according to instructions.*
State of development: prototype

9.

Title: Development and implementation of an interdisciplinary virtual laboratory-classroom
Patent/project number: virtual idea
Author/s: ALIC Daniela Delia1) , RACKOV Milan 2)
Institution: 1)Politehnica University of Timisoara, Faculty of Engineering Hunedoara, Romania 2) University of Novi Sad, Faculty of Technical Sciences, Serbia
Category: F
Description: *The project is concerned on the development of an interdisciplinary virtual laboratory-classroom, on the base of multimedia potential as learning and teaching tool. Currently operational in our faculty, the laboratory is dedicated our students, future mechanical engineers, who have the opportunity to use, via internet or face-to-face, innovative and advanced educational software solutions.*
State of development: laboratory

10.

Title: Simulated enterprise e_FIH
Patent/project number: 1210014400
Author/s: Marius Calin Benea, Madalina Bianca Bistrian, Iulia Maria Sipos, Cosmina Maria Turdean, Marius Ghiuruțan, Sandra Stefanescu, Andreea Mitulescu, Lorand Molnar, Anda Rusalinescu
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: F
Description: *We are a simulated enterprise that offers business consulting to commercial companies http://e-fih.fih.upt.ro/index.html .*
Objectives:

- *familiarizing students with the market economy system, with the mechanisms associated with the economic processes carried out within the free competition of entrepreneurs;*
- *training entrepreneurial skills to act effectively in the market economy and to have the ability to develop their own career;*
- *improving the training offer of higher education units.*

We carry out our activity in a real productive atmosphere and we learn to fulfill the received tasks. At the end of the training period within the simultaneous enterprise, we will know the functioning of different departments such as: production, commercial, finance-accounting, human resources, public relations.
State of development: virtual idea / laboratory

11.

Title: Educational program DEXTER'S laboratory
Patent/project number: Educational program
Author/s: Aniela Crisan, Adina Berghian Budiul, Diana Stoica, Oana Gaianu
Institution: CorneliuGroup Association research-innovation; Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: F
Description: *Creative projects, teaching materials, experimental stands for the construction of road vehicles designed and made by students, teenagers, students for the laboratory study.*
The idea is to transform the theoretical knowledge into practical applications through the creation of personalized projects destined to the study of the functioning principles of the componets, mecanism and the systems of vehicles.
State of development: laboratory

G - Medicine, Veterinary medicine

1.

Title: Device for reducing the microbiological load of air exhaled by mechanically ventilated patients
Patent/project number: A/00280 din 22.05.2020
Author/s: Ordodi Laurenţiu Valentin, Dumitrel Gabriela Alina, Pană Ana-Maria, Todea Anamaria, Mâţiu-Iovan Liliana, Ionel Raul Ciprian, Săndesc Dorel, Bedreag Ovidiu Horea, Păpurică Marius, Rogobete Alexandru Florin, Simion Ion, Motica Alin, Groapă Dan Sergiu, Păunescu Virgil, Bojin Maria Florina, Gavriliuc Oana Isabela
Institution: Polytechnic University of Timisoara
Category: G
Description: *The present invention is a device which is directly connected to the evacuation of the artificial respiration apparatus and which allows the reduction of the microbiological load of the exhaled air by mechanically ventilated patients before it evacuated in intensive care unit. The device is cylindrical, contains the UVC radiation tube. Exhausted air enters the bottom of the device. At the top is a copper subassembly that neutralizes the ozon and completes the sterilization of the air through the biocidal effect of copper. The lid of the device allows the evacuation of purified air and protects against ultraviolet radiation.*
State of development: prototype

2.

Title: DEVICE FOR CONTINUOUS SKELETAL TRACTION
Patent/project number: Patent application A/ A/00579 /2019
Author/s: Mihai Cenuşă, Anna Sabadaş, Alexei Pianîh, Oana Vasilica Grosu
Institution: Ştefan cel Mare University of Suceava
Categor): G
Description: *The invention relates to a device for continuous skeletal traction in the case of fractures of the femur, tibia or fibula. The device for continuous skeletal traction, according to the invention, is mainly composed of an electromagnet, an adjustable voltage source controlled by voltage, a potentiometer, a programmable automatic with a display panel, a distance sensor a support and guide system and a towed element, the tensile strength of which is determined according to the instructions of the specialist doctor for the correct positioning of the limb.*
State of development: laboratory

3.

Title: CRENELATED VENEERS – A NEW CONCEPT IN AESTHETIC DENTISTRY
Patent/project number: Patent pending no. A 2017 00028
Author/s: MĂROIU ALEXANDRA-CRISTINA, ROMÎNU MIHAI, SINESCU COSMIN, NEGRUȚIU MEDA-LAVINIA, RUSU LAURA-CRISTINA, LEVAI CODRINA-MIHAELA
Institution: "Victor Babes" University of Medicine and Pharmacy Timisoara
Category: G
Description: *The invention relates to a new marginal contour of dental veneers, that consists of several sinusoidal lines which form peripheric junctions, thus increasing the surface contact with the enamel. As a result, they augment both the adhesion and retention forces of the restoration to the dental support.*
In order to create the crenelated veneer, it is necessary to perform a specific dental preparation, namely: reduction of the vestibular face by 0.5-0.8 mm, reduction of incisal margin by 1 mm and contouring 3 marginal sinusoidal lines with the following characteristics: 2.5-3 mm height and variable depth: 0.6-0.8 mm (cervical), 0.4-0.6 (middle) and 0.3-0.4 mm (incisal).
Accordingly to one of our recent experimental studies, crenelated veneers increase the adhesive forces by more than 60%, thus decreasing the probability of veneer detachment. Moreover, they provide higher retention forces due to the peripheral micro-retentions that form an intricated joint between the veneer and the substrate. Last, but not least, the new design assures a more accurate positioning of the veneers in situ during the luting procedure. The crenelated veneers seem to represent a successful long-term treatment option in esthetic dentistry.
State of development: research project, PhD thesis

4.

Title: DEVICE AND METHOD FOR CRYOINCLUSION OF TISSUE MATERIAL FOR MICROSCOPIC EXAMINATION
Patent/project number: Patent no 130705 / 28.06.2019
Author/s: VADUVA ADRIAN OVIDIU
Institution: "Victor Babes" University of Medicine and Pharmacy Timisoara
Category: G
Description: *The invention describes a portable device and method for cryoinclusion of biological tissues, for microscopic evaluation purposes, used especially in hospitals and research laboratories. The advantages of the device are: extended autonomy, low weight, short training time, passive device, equipped with an element for monitoring its functionality.*
State of development: prototype

5.

Title: ORTHODONTIC MULTIFUNCTIONAL IMPLANT WITH ELASTIC HEAD
Patent/project number: Patent no 126632 / 2012
Author/s: SZUHANEK CAMELIA, FLESER TRAIAN
Institution: "Victor Babes" University of Medicine and Pharmacy Timisoara
Category: G

Description: *The invention relates to a screw-type orthodontic implant, with several functions of use due to the configuration and elasticity of the head, in order to ensure the locking of orthodontic springs with rectangular or square section, respectively, for anchoring in order to take over the demands of tension, compression, bending, related orthodontic treatment. The object of the invention is to provide an orthodontic implant which allows the therapeutic effect to be obtained by incorporating a minimum number of teeth into a segmentar fixed appliance and avoiding bracket bonding of the entire arch.*
State of development: concept

6.

Title: DIGITAL POSITIONING DEVICE FOR VESTIBULAR AND LINGUAL BRACKETS
Patent/project number: Patent no 126631 / 2012
Author/s: SZUHANEK CAMELIA, FLESER TRAIAN
Institution: "Victor Babes" University of Medicine and Pharmacy Timisoara
Category: G
Description: *The invention relates to a digital device for positioning fixed bracket type devices, on the internal (lingual) and external (vestibular) surface of the teeth, during the orthodontic treatment. The object of the invention is to provide a device for the exact, personalized positioning of brackets during orthodontic treatment, correlated with the technique used and with the possibility of adapting to the type of device (vestibular or lingual).*
State of development: concept

7.

Title: ORTHODONTIC DEVICE FOR MANDIBLE EXPANSION
Patent/project number: Patent no 128597 / 2015
Author/s: SZUHANEK CAMELIA
Institution: "Victor Babes" University of Medicine and Pharmacy Timisoara
Category: G
Description: *The invention relates to a device for the expansion of the mandible during orthodontic treatment, by applying personalized asymmetrical mechanical stresses to the individual teeth of the patient, using the implant anchorage.*
The object of the invention is to provide an appliance which ensures the induction of asymmetrically distributed stresses, customized for each tooth, correlated with the clinical orthodontic therapy.
State of development: concept

8.

Title: Fibrous support material from oily plants with antioxidant properties, enriched with biologically active compounds obtained from aromatic and medicinal plants waste resulted after extraction and method of obtaining it
Patent number: A0026/22.01.2020
Author/s: Alina Ortan, Narcisa Babeanu, Sorin Marius Avramescu, Simona Spinu, Manuel Drugulescu, Milen Georgiev

Institution: UNIVERSITY OF AGRONOMIC SCIENCES AND VETERINARY MEDICINE OF BUCHAREST
Category: G
Description: *This invention refers to a fibrous support material from oil plants (Silybum Marianum L., Helianthus Annuus L., Linum usitatissimum L., Carthamus tinctorius, enriched with biologically active compounds obtained from waste extracts of Origanum vulgare L. from aqueous extractions, from different industries or research activities, in order to increase its antioxidant activity and the method of obtaining it. The proposed solution uses cheap materials that result as residues from different industries (food, pharmaceutical, etc.), does not require toxic and/or dangerous substances and solvents, and has no negative action on the environment and human health. The authors gratefully acknowledge the support obtained through the project SusMAPWaste, SMIS 104323, Contract No. 89/09.09.2016, from the Operational Program Competitiveness 2014-2020, project co-financed from the European Regional Development Fund.*
State of development: research project

9.

Title: Titanium-based alloy (Aliaj pe baza de titan)
Patent/project number: Patent Application MD short term no. 1981/ 2.12.2019, Deposit s 2019 0120
Author/s: Petrica VIZUREANU, Madalina Simona BALTATU, Andrei Victor SANDU, Mircea BERNIC, Mihail BALAN
Institution: SIMTIT Engineering (Universitatea Tehnica "Gheorghe Asachi" din Iasi si Universitatea Tehnica a Moldovei)
Category: G
Description: *The invention relates to the metallurgy of the alloys, namely to a titanium alloy. The titanium alloy, according to the invention, contains molybdenum and silicon. The problem solved by the proposed invention consists in the development of an alloy with high corrosion resistance in SBF solution, with a low elasticity mode, close to that of the human bone, high biocompatibility, ensuring the possibility of manufacturing from this alloy implants for medical applications.*
State of development: laboratory /prototype

10.

Title: Bone Grafts based on Collagen, Calcium Phosphate and Zinc and Process for their Manufacturing
Patent/project number: RO129822
Author/s: Anton FICAI, Ecaterina ANDRONESCU, Denisa FICAI, Maria SONMEZ, Ioan Avram NEDELCU, Madalina Georgiana ALBU
Institution: University POLITEHNICA of Bucharest
Category: G
Description: *The invention discloses the technology for obtaining improved bone grafts mainly based on collagen (Coll) and Calcium Phosphates (especially hydroxyapatite (HA)) but also containing 1 – 10% Zn2+.*

The ratio between the collagen and hydroxyapatite should be in the range of 1:1 to 1:4, being similar with the composition of the substituted/augmented bony tissue. The presence of Zn2+ is important because it can appear as ZnO or as doping element for HA.
State of development: product

11.

Title: Vertical (electro)magnetic separator of isomagnetic nanoparticles
Patent/project number: A 01055/05.12.2018
Author/s: Denisa Ficai, Ioana Lavinia Ardelean, Cornalia Ioana Ilie, Manuela Calin, Elena-Valeria Fuior, Adrian Fifere, Mariana Pinteala, Gheorghe Constantin Fundeanu, Anton Ficai, Maya Simionescu, Ecaterina Andronescu
Institution: University POLITEHNICA of Bucharest
Category: G
Description: *The invention of "Vertical (electro)magnetic separator of isomagnetic nanoparticles" refers to the obtaining of a (electro)magnetic device which allows separation of the magnetic particles from the non-magnetic ones and the separation of the isomagnetic particles by class. The separation technology assumes the passing the magnetic fluid / magnetic suspension through a predefined / controllable magnetic field. From a constructive point of view, the magnetic separator implies one or more magnetic zones in which the isomagnetic particles are separated. In this sense, it is possible to optimize the flow parameters and the magnetic field for the separation zones.*
State of development: product

12.

Title: Polymer vesicles and tubes and related technology of manufacturing
Patent/project number: A01054/05.12.2018
Author/s: Denisa Ficai, Andreea Iliev, Anton Ficai, Violeta Georgeta Trusca, Anca Violeta Gafencu, Sanda-Maria Bucatariu, Gheorghe Constantin Fundeanu, Maya Simionescu, Ecaterina Andronescu
Institution: University POLITEHNICA of Bucharest
Category: G
Description: *The patent application "Polymer vesicles and tubes and related technology of manufacturing" refers to a process for obtaining micro and macrovesicles (hollow capsules) or polymer tubes with predefined characteristics. Among the predefined traceability features can be mentioned; inner and outer diameter; porosity and wall exchange capacity, etc. These systems are made of polymers or composites (alginate, chitosan, collagen, ...) in admixture with biologically active substances using coaxial spinnerets with preset diameters. In the case of micro- and macrovesicles, the technology allows the loading of the biological active substance inside the cavity or wall.*
State of development: product

13.

Title: ORTHOPEDIC DEVICE FOR CORRECTION OF THE TALIPES CALCANEUS / TALIPES CALCANEOVALGUS DEFECT
Patent/project number: RO 133750 / 2019-12-30
Author/s: COSTOIU Mihnea Cosmin, SEMENESCU Augustin, DOICIN Vasile Cristian, ULMEANU Mihaela Elena, CÎRSTOIU Cătălin, DOICIN Ioana Cristina, MATEŞ Ileana Mariana
Institution: University POLITEHNICA of Bucharest
Category: G
Description: *The invention relates to an orthopedic device for the correction of a malposition of the foot expressed by the defects talipes calcaneus and talipes calcaneovalgus, particular variants of Talus valgus, and to the process for obtaining it. The orthopedic device for Talipes calcaneus / Talipes calcaneovalgus defect correction, is composed of a fixed subassembly, which is fixed to the leg of the foot, a movable subassembly, which is attached to the foot of the defective foot, a snail-snail gear and a graduated cap, which is fixed with the help of screws with clogged head.*
State of development: product

14.

Title: BIOCOMPATIBLE MEDICAL DEVICE AND METHOD OF MAKING SAME
Patent/project number: patent appl. US 38170047/2019
Author/s: Ruxandra VIDU, Augustin SEMENESCU, Ileana Mariana MATES, Cristian Dragos VIDU
Institution: University POLITEHNICA of Bucharest
Category: G
Description: *The patent application describes a biocompatible medical device that include two supported meshes for providing mechanical strength and osseointegration properties of implant, and a multilayer porous material in between them loaded with antibacterial compound to promote controlled release of pharmaceutical agents at the site of surgical intervention. The composition gradient in the multilayer porous material is attained by loading successive layers of porous material with different amounts of bioactive materials and then stacking them to create a gradient of composition across the porous material. The present invention describes method(s) to place and fasten the medical device to the bone structure.*
State of development: prototype

15.

Title: MULTIFUNCTIONAL MEDICAL DEVICE FOR THE TREATMENT OF ANORECTAL PATHOLOGY
Patent/project number: OSIM A00725 2019
Author/s: SUCIU Alexandru, SEMENESCU Augustin, FICAI Anton, SUCIU Ioan Alexandru
Institution: University POLITEHNICA of Bucharest
Category: G

Description: *The invention relates to a multifunctional medical device, reusable, which allows the effective treatment, in safe conditions of the anorectal pathology, with the prevention of its evolution to advanced stages. The medical device is designed as a multi-component assembly with easy use both in medical clinics and by patients for the purpose of increased compliance. The use of the invention allows a complex therapeutic action, by mechanical effect of compression, by the optional application of the therapeutic cold and by the exact dosage and the application in the intra- and perianal area of a suitable pharmaceutical preparation formulated for the topical therapy of anorectal pathology.*
State of development: product

16.

Title: SEMISOLID PHARMACEUTICAL PREPARATION FOR COMBINED TOPIC THERAPY OF ANORECTAL PATHOLOGY
Patent/project number: OSIM A00726 2019
Author/s: SUCIU Alexandru, SEMENESCU Augustin, FICAI Anton, SUCIU Ioan Alexandru
Institution: University POLITEHNICA of Bucharest
Category: G
Description: *The invention relates to a semi-solid pharmaceutical preparation, which allows the effective treatment of anorectal pathology by combined topical therapy. To enhance the effectiveness and avoid side effects, the preparation is formulated using the principle of addition synergy between its ingredients. The use of the invention allows a complex therapeutic action, the result being the remission of the symptoms and the prevention of the evolution of the anorectal pathology towards advanced stages.*
State of development: product

17.

Title: 3D deposing (printing) device for vascularized tissues
Patent/project acronim: 3DPIVOT
Author/s: Călin BRANDABUR, Bogdan CIOBOTEA, Cristian RAITA, Adrian BUMB, Cristian MOLDOVEAN, Liviu MIHON
Institution: LTHD Corporation SRL Timişoara
Category: G
Description: *Thousands of people require organ donors every day. The concept of using 3D printing with live donor stem-cells to meet this demand has been under research for the last two decades, with little to no advancement in practical terms. Thus, we will focus on one particular target group, pancreatic cancer patients, that undergo partial or complete pancreatectomy, as recipients of a 3D printed artificial pancreas. We will improve current technology in three levels: by developing software for defining 3D models of vascularised organs and blood slow simulation, by developing a dedicated bio-printer for beta-cell organoids with integrated incubator and by streamlining the cell acquisition and proliferation process, to successfully create the organoids, vascular tree and finally the artificial pancreas. The output of 3D PIVOT project are the software and hardware basis for continued research and progress towards viable organ bio-printing. The complete system represents a scientific advancement towards the goal of streamlining biological organ formation (virtual) and creation (3D printing), as well as procedural with a potentially large economic impact.*

The LTHD research team conceived and developed a functional 3D deposing (printing) device, with included incubator, able to offer the whole conditions for "born and grow" a vascularized tissue.
State of development: Under development prototype of a 3D bio-printer

18.

Title: Device for correcting vicious positions, especially in the case of persons immobilized in a wheelchair, with the possibility of making a statistic of their evolution and early detection of bedsores
Patent/project number: A 00930/2020
Author/s: Ver Alina-Elena, Ver Istvan
Institution: private
Category: G
Description: *The invention is especially useful for people immobilized in a wheelchair, but can be applied to any person who wants to correct their posture. The device involves a combined action, to help maintain a correct position using 4 ultrasonic / laser distance sensors, and using 3 temperature-humidity sensors, aims to detect early bedsores in the sitting area, providing feedback on 2 interfaces: one led for the patient and one web for the doctor / therapist.*
The LED interface is represented by the led plate fixed to the forearm support, so she can provide feedback to the patient, regarding the position adopted, the deficient region and reaching the correct position following the change of posture. It is also possible to visualize possible problems related to temperature and humidity in the sitting area. The web interface offers the possibility that in real time, from a distance, the doctor / therapist has the possibility to visualize the patient's posture, to introduce corrections in the treatment program and to collect the recorded data for their interpretation through a smart device. (smartphone, laptop, computer, etc.). The data on which each sensor is collected and recorded in separate files, and the change of the measurement intervals can be done individually. Also, it can be observed from the interpretation of these data and the tendency of self-correction, as well as the time in which the patient managed to maintain a correct posture.
State of development: prototype

H - Mechanics, Engines, Machinery, Tools

1.

Title: Bar rolling device
Patent/project number: PhD thesis
Author/s: CIOROAGĂ Bogdan-Dorel, CIOATĂ Vasile George, ALEXA Vasile
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: H
Description: *The bar rolling device is used for the controlled bending of straight bars, regardless of their profile. Overall dimensions: 1365 x 824 x 948 mm. The operation is manual. Body with rigid construction, made of laminated profiles, joined by welding. Usable in metal workshops. The device has 3 main mechanisms: (1)The mechanism for adjusting the degree of deformation operated by the hydraulic jack; (2)The mechanism for adjusting the position on the vertical axis of the drive roller; (3)The drive mechanism of the drive roller.*
State of development: prototype

2.

Title: Experimental stand for the study of mandrels with bilateral chuck collets
Patent/project number: PhD thesis
Author/s: CIOATĂ Vasile George, ALEXA Vasile, DECE Lidia Simona
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: H
Description: *The experimental stand allows the constructive and functional study of the mandrels with bilateral chuck collets with direct cone, used to hold the semi-finished products for processing or control. With its help, some dependence relations can be determined between the energetic parameters of cutting (axial force, tangential force) and the clamping force of a self-centered mandrel with bilateral chuck collet with direct cone mechanism.*
State of development: laboratory

3.

Title: PORTABLE DETECTOR-EXHAUST SYSTEM FOR GASES
Patent/project number: brevet 126605
Author/s: Rădulescu Remi, Rădulescu Hortensia, Rădulescu Raul, Rădulescu Alin Răzvan
Institution: Societatea Inventatorilor din Banat
Category: H

Description: *Detects harmful gases natural gas, butane, propane, carbon monoxide, carbon dioxide, hydrogen sulfide, etc. from an enclosed space.*
It consists of a gas detector with optical and acoustic signaling elements, an extractor that absorbs and repels harmful gases controlled by an automatic block. The gases are removed by a flexible tube of variable length depending on the length and depth of the detected space.
State of development: prototype

4.

Title: Device for measuring the large inner or outer diameters
Patent number: A/00543/27.10.2015
Author/s: Popa Gabriel Nicolae, Diniş Corina Maria, Popa Iosif
Institution: Politehnica University Timişoara, Faculty of Engineering Hunedoara
Category: H
Description: *The device for measuring parts of large inner or outer diameters is formed by a rectangular metal frame, four metal arms having the same height, a comparator, which can be mechanical or with digital display, with the non-linear scale dial (for the mechanical comparator), from a movable rod with a ball contact piece at the end. The contact areas of the four arms of the measuring device are chosen in such a way as to allow the measurement of both large inner and outer diameter parts. The comparator is mounted in the center of the rectangle of the measuring device holder. The mechanical comparator has a non-linear scale with two areas: for measuring the inner (concave) and outer (convex) diameters.*
State of development: laboratory prototype

5.

Title: Flexible modular system for fixing workpieces for the incremental forming process
Patent/project number: Patent request no. A 2019 00712
Author/s: RACZ Sever-Gabriel, BREAZ Radu-Eugen, OLEKSIK Valentin Ştefan, PASCU Adrian Marius, POPP Ilie Octavian, GÎRJOB Claudia Emilia, TERA Melania, CHICEA Anca Lucia, BIRIŞ Cristina Maria, CRENGANIŞ Mihai
Institution: "Lucian Blaga" University of Sibiu
Category: H
Description: *The incremental forming process is a flexible alternative to conventional cold metal forming processes. One of the main disadvantages of the process is that it allows the processing of a single type of workpiece size, because the working area and implicitly the size of the workpiece sheet that can be processed is fixed. To eliminate this disadvantage, a flexible modular system for fixing the workpiece is proposed, which allows the user to adjust the size of the workspace and implicitly the size of the workpiece.*
State of development: concept

6.

Title: METHODS TO DETERMINE THE PREVENTIVE MAINTENANCE CYCLES OF ROLLING MILLS
Patent/project number: scientific paper
Author/s: Budiul Berghian Adina
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: H
Description: *This survey presents two mathematical models of preventive maintenance that take into account stochastic factors which influence the failure rates and working life of an entity. The models are hybrid so that they combine the reduction of proper operation time with failure rate. The starty point consists in idea that preventive maintenance is done with imperfections: it is not reduced the proper operation only but it is increased the probability of entity failure as much as the number of maintenance is increased. The target of this survey is to determine the optimal graphic of planned maintenance activities either to reduce the related costs or to maintain the reliability above a prescribed minimum level.*
State of development: scientific paper

7.

Title: ATKINSON engine
Patent/project number: concept project
Author/s: Ursinyi János (Budapest)
Institution: Ötlet Club 13 Egyesület, Hungary
Category: H
Description: *The motor of the best efficiency, which is also capable of operating with the Atkinson-Miller cycle. Its simple structure and operation principle ensure the following: high performance, low specific fuel consumption and less CO2 emission. The large flow cross-section ensures a fast "charge" replacement even in the case of small pressure difference. The advantage of this cycle is the following: the piston travels a longer distance in the working phase than during compression, and therefore the efficiency of the unit is better. If a higher performance is needed, the cylinder has to be charged fully /or with overpressure/!*
State of development: virtual idea

8.

Title: CLUTCH-TYPE THERMOCOUPLE
Patent/project number: Patent application A/00519/9.07.2018
Author/s: Dumitru Cernuşcă, Oana Vasilica Grosu, Eusebiu Vasile Toader, Ciprian Bejinariu
Institution: Ştefan cel Mare University of Suceava
Category: H
Description: *The invention relates to a clutch type thermocouple made on the basis of Nitinol elements (shape memory material) intended for coupling or disconnecting rotating motion systems.*
The clutch-type thermocouple according to the invention consists essentially of a drum, which has an independent rotating system and which is constituted by the skids fixed by the shaft by some springs memorized in arched form, attached at one end to the flange which forms a common body with the shaft.

The clutch type thermocouple is designed for coupling/ decoupling independentl rotating systems, depending on speed and / or temperature.
State of development: prototype

9.

Title: VIBROMOTOR
Patent/project number: Patent application A00518/9.07.2018
Author/s: Oana Vasilica Grosu, Eusebiu Vasile Toader, Dumitru Cernuşcă, Ciprian Bejinariu
Institution: Ştefan cel Mare University of Suceava
Category: H
Description: *The invention relates to a polymer-based electric vibromotor for converting the vibration motion into a continuous linear or rotational motion.*
The vibromotor consists of a disc-shaped rotor and a vibrating module, consisting of several copper plates with a thickness of 0.1 mm supplied from an alternating frequency voltage source. industrial and which have interposed plates of plexiglass with a thickness of 1 mm, which under the action of an electrostatic field dilates vertically, movement highlighted by the frictional spindle that makes it possible to drive the rotor in the form disk.
State of development: prototype

10.

Title: Precessional transmissions with floating satellites
Patent/project number: 6592, a2019 0101, 2019.12.31
Author/s: Bostan Viorel, Bostan Ion, Vaculenco Maxim
Institution: Technical University of Moldova
Category: H
Description: *The invention relates to the mechanical engineering, namely to mechanical transmissions. The teeth of the gear rings (3) and (4) of the satellite wheel (2) have a circular arc flank profile, and of the central bevel wheels (6) and (7) variable curvilinear, depending on the angles θand δ, on the number of Z teeth and the ratio of the numbers of teeth of the mating wheels in the gears (Z1-Z2) and (Z3-Z4), as well as the radius r of the circular arc of the teeth profile of the gear rings (3) and (4).*
The technical result consists in increasing the load-bearing capacity and mechanical efficiency of the precessional gear by creating the multipair and convex-concave teeth contact with the minimum difference of curvatures of the flank profiles and with reduced relative frictional sliding between the flanks of the teeth, as well as in extending the kinematic possibilities and functionalities of the transmission.
State of development: product

11.

Title: Vertical shaft wind turbine with double rotor.
Patent/project number: Patent MD 1261 Y MD, din 30.06.2018; brevet nr. 934 Y MD, din 31.07.2015.

Author/s: BOSTAN Viorel (MD); DULGHERU Valeriu (MD); CIOCĂNEA Adrian (RO); DUMITRESCU Cătălin (RO); CIOBANU Oleg (MD); CIOBANU Radu (MD); RABEI Ivan (MD); GUȚU Marin (MD); MAICAN Edmond (RO); RĂDOI Radu(RO); ȘEFU Ștefan (RO);
Institution: Technical University of Moldova
Category: H
Description: *The invention relates to energy, namely to hybrid wind turbines with vertical axis and can be used to transform wind energy into electricity. The hybrid wind turbine with vertical axis contains a fixed vertical tower, on which is coaxially placed a basic rotating shaft with the Darreus helical rotor with blades with aerodynamic profile. An additional rotating Savonius rotor is coaxially placed on the tower, with at least two full helical blades. The rotor also contains an electric generator, with the stator to which the basic rotating shaft is rigidly connected, and with its rotor the additional rotating shaft is rigidly connected. The rotor is connected to the tower by a one-way coupling. The basic and the additional rotating shaft are kinematically connected to each other with the possibility of rotating in opposite directions.*
State of development: prototype

12.

Title: WE GET INVOLVED FOR THE FUTURE
Patent/project number: student project
Author/s: Team Robomoon
Institution: Liceul Teoretic Traian Lalescu Hunedoara
Category: H
Description: *The project aims to introduce children to the fascinating world of science and technology. Children will create their own robot based on the LEGO Mindstorms® system. The robot designed and programmed by the team must be able to solve, autonomously, a set of missions.*
State of development: PROTOTYPE

13.

Title: Modular Process for the Recovery of Crystals of NaCl, KCl, Lithium Compounds and Others in the Concentration Phase of Salt Brine
Patent/project number: 2017000089/25.04.2017
Author/s: Camilo Freddy Mendoza Morejon, Andy A. Saavedra Mendoza, José L. Zamorano Escalante, Alejandro Chavez
Institution: .West Paraná State University (UNIOESTE - BRAZIL) and University Technical of Oruro (UTO-BOLIVIA).
Category: H
Description: *Patent of a modular and matrix process formed by "n" lines and "m" columns for the recovery of sodium chloride (NaCl), potassium chloride (KCl) crystals, lithium compounds and other components found in solutions of the salt flats. The differentials of the process are: a) it is not affected by rainfall; b) maximizes forced natural convection; c) operates day and night; d) it has control systems for evaporation/crystal formation; e) maximizes the activation of Van Der Waals forces; f) has continuous removal of crystals; g) achieves a higher concentration of lithium in the resulting solution;*

h) has accelerated evaporation; i) operates continuously; j) practical in feeding, removing the concentrated solution and separating the crystals; and k) the capacity sizing is flexible.
State of development: Prototype

14.

Title: Modular Equipment for the Recovery of Crystals of NaCl, KCl, Lithium Compounds and Others in the Concentration Phase of Salt Brine
Patent/project number: 2017000090/25.04.2017
Author/s: Camilo F. Mendoza Morejon, Andy A. Saavedra Mendoza, José L. Zamorano Escalante, Alejandro Chavez
Institution: West Paraná State University (UNIOESTE - BRAZIL) and University Technical of Oruro (UTO - BOLIVIA)
Category: H
Description: *Patent of an equipment for the recovery of crystals of sodium chloride (NaCl), potassium chloride (KCl), lithium compounds and other components found in salt flats. The equipment comprises: a differentiated device for feeding the brine; a modular tank to condition the brine in the separation phase; a mobile module for the formation, collection, evaporation and separation of the crystals; modular electromechanical devices; scrapers for recovering crystals; supports, accumulators, transport device for separated crystalline components; and transparent coverage.*
State of development: Prototype

15.

Title: Rotational-speed controller with internal counter-electro-motive force feedback
Patent: RO 128560 B1 / 29th.03.2019, Int. Cl.: G05B 13/02; H02P 7/28; H02P 7/29
Authors: Verbiţchi Victor, Timişoara, România; Roşu Radu-Alexandru, Târgu-Jiu, România; Murariu Alin-Constantin, Timişoara, România; Sîrbu Nicuşor-Alin, Timişoara, România
Institution: National Research & Development Institute for Welding and Material Testing – ISIM Timisoara
Category: H
Description: *The rotational-speed controller with internal counter-electro-motive force feedback, taken from the terminals of a direct current (DC) motor, in the pauses following the supply pulses, by an original transistor-based switch, is applied by drive systems of 0.1 to 2.2 kW.*
State of development: laboratory

16.

Title: Ultrasonic processing center
Patent application: A 2019 00242 / 17th. 04.2019
Authors: Sîrbu Nicuşor-Alin; Verbiţchi Victor
Institution: National Research & Development Institute for Welding and Material Testing – ISIM Timisoara
Category: H

Description: *The ultrasonic processing center has the following functions: movements of sonotrodes, semi-finished products and welded parts; point-to-point contact of the sonotrode with the semi-finished product; robotic welding cycles for several types of parts.*
State of development: concept

17.

Title: Method and device for FSW joining and FSP processing, with tilted parent metals
Patent application: A 2020 00291 of the 27th of May 2020
Authors: Verbițchi Victor; Daşcău Horia-Florin; Boţilă Lia-Nicoleta; Cojocaru Radu
Institution: National Research & Development Institute for Welding and Material Testing – ISIM Timisoara
Category: H
Description: *The base plate of the positioning jig is tilted by an angle a = 1 - 3 º to the table of a FSW (FSP) machine; the processing tool performs movements with both speeds v(z) = v(x) tg a, correlated by software; the tool shoulder progressively penetrates the sheets; burrs decrease and productivity increases.*
State of development: laboratory

18.

Title: Method for generating of the welding procedures specifications
Patent application number: A/00044 of the 03.02.2020
Author/s: Alin-Constantin Murariu, Aurel-Valentin Bîrdeanu
Institution: National Research & Development Institute for Welding and Material Testing – ISIM Timisoara
Category: H
Description: *The patent proposal refers to a method for generating of the welding procedures specifications, mandatory technical documents in an industrial technological process involving welding operations. It can be used in the field of welding structures and in the machine building industry. The patent can be used in the field of welding structures and in the machine building industry.*
State of development: demonstrator

19.

Title: Pistons
Patent/project number: student project
Author/s: Birtoc Iulia Andreea
Institution: National College Decebal Deva
Category: H
Description: *A piston is a component of reciprocating engines, reciprocating pumps, gas compressors, hydraulic cylinders and pneumatic cylinders, among other similar mechanisms. It is the moving component that is contained by a cylinder and is made gas-tight by piston rings. In an engine, its purpose is to transfer force from expanding gas in the cylinder to the crankshaft via a piston rod and/or connecting rod.*

In a pump, the function is reversed and force is transferred from the crankshaft to the piston for the purpose of compressing or ejecting the fluid in the cylinder. In some engines, the piston also acts as a valve by covering and uncovering ports in the cylinder.
State of development: bibliographic scientific paper

20.

Title: Didactic model for the study of buoyancy
Patent/project number: student project
Author/s: Pinca-Bretotean Alexandru Mihai
Institution: Polytechnic University of Timisoara
Category: H
Description: *The model allows the demonstration of the principle of buoyancy. Buoyancy is the ability of a body to float on the surface of a liquid or at a certain depth. This is due to the difference between the archimedean force and the body weight. If the archimedean force is less than the weight the body has a downward movement in the liquid and if the archimedean force is greater than the weight, the body rises to the surface of the liquid. Once the body reaches the surface, it will come out of the water until the volume of water displaced leads to an archimedean force equal to the weight of the body. If the two forces are equal, the body is in balance in the water.*
State of development: student project

I – Metallurgy, Industrial processes

1.

Title: *CYLINDRICAL MULTI-HOLLOW BRIQUETTE PRODUCED OF FERROUS PULVEROUS WASTE*
Patent/project number: *127756 / 30.08.2019*
Author/s: *HEPUȚ TEODOR, CRIȘAN EUGEN, ARDELEAN ERIKA, SOCALICI ANA, ARDELEAN MARIUS*
Institution: *Polytechnic University of Timisoara, Faculty of Engineering Hunedoara*
Category: *I*
Description: *The invention relates to a cylindrical multi-hollow briquette obtained from ferrous pulverous and small waste with a grain size of less than 2 mm, said briquette being used in ferrous metallurgy in the wind furnaces producing the refining iron or in the installations for direct reduction of iron in order to produce iron sponge. The multi-hollow cylindrical shape of the lighter ensures the growth of the reaction surfaces, respectively of the speed of reduction of iron oxides, compared to conventional lighters, with positive effects on productivity, energy consumption and on the degree of usage of the reductant. Ferrous waste in the composition: steel plant dust, furnace dust, furnace agglomeration sludge and iron scale sludge.*
State of development: *product*

2.

Title: *Tubular briquette from powdery ferrous wastes*
Patent/project number: *126946/30.01.2014*
Author/s: *Hepuț Teodor, Socalici Ana, Ardelean Erika, Ardelean Marius, Constantin Nicolae, Buzduga Miron, Buzduga Radu*
Institution: *Polytechnic University of Timisoara, Faculty of Engineering Hunedoara*
Category: *I*
Description: *The technical problem solved by the tubular briquette obtained from powdery ferrous wastes consists in increasing of speed reduction for materials component, with effects on increasing of productivity, reducing of energy consumption and increasing of the reductant use.*
State of development: *product*

3.

Title: High quality cast iron used in rolling stock braking systems
Patent/project number: PhD Thesis
Author/s: Bucur Flavius, Socalici Ana, Josan Ana, Putan Vasile, Radu Mihai
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: I
Description: *The braking process is influenced by a number of factors, an important role having the qualitative characteristics of the shoes as well as the material used for their construction. The researches took into account the obtaining of simple and multiple correlation equations between the qualitative characteristics of the shoes and respectively of the materials used in their manufacture. The results obtained have applicability in research and in the practice of making cast iron for the manufacture of brake shoes. High quality cast iron used in rolling stock braking systems.*
State of development: PhD thesis

4.

Title: RESEARCH STAND FOR MEASUREMENT OF FORCE PARAMETERS AND CONTACT ARC LENGTH FOR SYMMETRIC AND ASYMMETRIC LONGITUDINAL
Patent/project number: PhD thesis
Author/s: Alexa Vasile
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: I
Description: *The research for this theme purpose have been made on a 170 mm reversing two-high rolling mill, created and installed in the no conventional technologies and plastic deformation laboratory of the Engineering Faculty from Hunedoara. An experimental installation formed of: special construction rollers, bearings, punctiform captors for lamination pressure, lamination forces captors and lateral pressure captors it was created for research in condition of technological similitude symmetrical and asymmetrical process.*
State of development: PhD thesis

5.

Title: The use of metal powders to save matter and energy
Patent/project number: part of PhD thesis
Author/s: Vasile-Andrei Fodor
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: I
Description: *Powder metallurgy in general and the production of alloys (between two components that by classical methods can't be combined - wolfram and silver) by powder metallurgy in particular is one of those cutting-edge technologies in the industry that meets the two basic imperatives: material saving and energy saving. The advantages that appear in the elaboration of different parts through this technology are very great, reason for which the powder metallurgy is an industrial field in full technological advancement.*
State of development: part of PhD thesis

6.

Title: Researches regarding titanium microalloying of steels for pipes manufacturing
Patent/project number: PhD thesis
Author/s: Poenaru Iulia Olivia, Popa Alina-Maria
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: I
Description: *Outstanding performance in development of microalloyed steels with titanium, vanadium or niobium are determinated by the chemical composition, advanced purity and small additions of alloying elements in order to finish the granulation and to improve the mechanical properties, but also by modern laminations technologies and heat treatments. In the scientific paper, are presented the results of the industrial researches regarding the titanium microalloying of steels that are destinated to manufacturing of thick-walled pipes.*
State of development: PhD thesis

7.

Title: The influence of steel intake on the reduction of hydrogen content
Patent/project number: PhD thesis
Author/s: Mihai Radu, Robert Bucevschi, Flavius Bucur
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: I
Description: *Under the current technological development, steel consumers are increasingly demanding high quality steels, one of the conditions imposed is the content of gases (hydrogen and nitrogen). In the researches and experiments carried out the possibilities of the advanced reduction of the hydrogen content, respectively the increase of the elimination level, were considered. As a factor of influence on the aforementioned parameters were chosen: the total duration of the vacuum, the duration of deep vacuum, the vacuum pressure, the inlet-outlet temperatures in the vacuum degassing installation and the distributor.*
State of development: PhD thesis

8.

Title: Increase of weld strength by micro alloying for HSLA steel
Patent/project number: PhD thesis
Author/s: ZGRIPCEA LAURENTIU
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: I
Description: *High strength weld is used for assembly of high strength low alloyed steel (HSLA) where the same or greater mechanical properties must be obtained in weld line. The method presented in this project is based on micro alloying inside the root of the weld, with minimum supplementary cost and keeping the same productivity for welding process. The applications of this method are realizations of storage pressure vessels, shields, crane arms and generally, all applications where high strength at a low weight are required.*
State of development: Product

9.

Title: Research on quality determination of some landmarks obtained by powder metallurgy
Patent/project number: student project
Author/s: Fărcean Ioana-Lucica, Ardelean Erika, Ardelean Marius
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: I
Description: *Processing by powders aggregation it is a dimensional processing process who knew a wide development in all branches of industry. Compared to classical metallurgy (based on melting and casting), this processing consists in obtaining and using metal powders like as such or in the form of sintered products. In the research are presented the tests performed, in laboratory conditions, on the determination of quality of some landmarks before the sintering step. The pressing technology is also presented and the mold used but also the problems encountered when pressing the bronze powder. The powder metallurgy method allows the obtaining sintered parts at the final dimensions and geometric shape without further processing. After determining the hardness and landmarks density we came to useful conclusions for the industry.*
State of development: scientific paper

10.

Title: Nozzle system used for thermal spraying in electric arc (Sistem de duze utilizat la metalizarea prin pulverizare termică în arc electric)
Patent/project number: Patent Application RO 01133/21.12.2018
Author/s: Ştefan Lucian TOMA, Gabi SAVIN, Bogdan Florin TOMA, Costica BEJINARIU, Iulian IONIŢĂ, Petrică VIZUREANU, Gheorghe BĂDĂRĂU, Andrei Victor SANDU, Alin CAZAC, Diana – Petronela BURDUHOS – NERGIŞ
Institution: Universitatea Tehnica "Gheorghe Asachi" din Iasi
Category: I
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: laboratory/prototype

11.

Title: Method for applying the Pulsed LASER-TIG welding process
Patent application number: A / 00633/ 08.10.2019
Author/s: Aurel Valentin Bîrdeanu, Sorin Savu
Institution: National Research & Development Institute for Welding and Material Testing – ISIM Timisoara
Category: I

Description: *The patent application refers to a method for applying the PULSE LASER-TIG welding process, one of the hybrid welding processes that combines two pulsed energy sources, pulsed laser beam and pulsed TIG, which can be used in various industrial domains.*
State of development: demonstrator

12.

Title: Real-time exhaust system for used abrasive material
Patent application number: A/00586 from 17.09.2020
Author/s: Perianu Ion Aurel, Binchiciu Emilia and Mnerie Gabriela
Institution: National Research & Development Institute for Welding and Material Testing – ISIM Timisoara
Category: I
Description: *Evacuation of the used abrasive from abrasive water jet cutting machines is made with difficulty; it is hardened and difficult to dislodge. The proposed system which solves this technical problem.*
State of development: concept

J - Kids Corner, Games, Toys, Outdoor

1.

Title: Communication module with visible light
Patent/project number: student project
Author/s: Bodea Rafael, Paul Ţoţa
Institution: Liceul Tehnologic Energetic "Dragomir Hurmuzescu" Deva
Category: J
Description: *The project is a wireless communication module via visible light, which makes it possible to transmit data remotely to/from toys without radio communications.*
State of development: research project.

2.

Title: Crafts and paints
Patent/project number: Kids project
Author/s: Miklos Rebeka
Institution: privat
Category: J
Description*: I presented paintings and crafts that represent me. I paint what I feel.*
State of development: concept

3.

Title: 4x4 car concept
Patent/project number: student project
Author/s: Miklos David Krisztian
Institution: privat
Category: J
Description: *It's a car made of LEGO pieces. To start the car, I used 2 LEGO PowerFunction engines: 1 M engine for the steering system and 1 XL engine for 4x4 traction. In front, I also put a pair of LEGO PowerFunction LEDs.*
State of development: prototype

4.

Title: *"TRACK3R" mobile robot made with Lego pieces*
Patent/project number: *Kids project*
Author/s: *Matei-Octavian TIRIAN*
Institution: *Colegiul tehnic "Matei Corvin" Hunedoara - Scoala generala nr. 6, Class 0*
Category: *J*
Description: *The robot is made with Lego pieces and can be controlled remotely via a remote control that has an infrared transmitter.*
State of development: *prototype*

5.

Title: *TOPOalex Team*
Patent/project number: *Kids project*
Author/s: *Sebastian Rotea, Alexandru Rotea*
Institution: *Schillerschule Dettingen an der Erms Germany 3th class / kindergarten, Germany*
Category: *J*
Description: *Creative projects made by the TOPOalex team, two innovative talented kids, from Lego pieces, natural materials and recyclable materials.*
State of development: *prototype*

6.

Title: *Alessia handmade*
Patent/project number: *Kids project*
Author/s: *Alessia Mihalache*
Institution: *Instituto Comprensivo Statale "D. Zuretti" Italy 6th class, Italy*
Category: *J*
Description: *Drawings, 3D paintings, collages, paper exhibits made by various techniques.*
State of development: *prototype*

7.

Title: *BIONIC HAND IN MY VISION*
Patent/project number: *Kids project*
Author/s: *Alessia IACOMI*
Institution: *Şcoala Generală nr. 4, Hunedoara, Clasa 1-a B, Romania*
Category: *J*
Description: *BIONIC HAND IN MY VISION is made of recyclable materials (glued cardboard strips).*
Video: **https://fb.watch/2GpKjYSGpL/**
State of development: *prototype*

K - Automotive, Ships, Aviation, Accessories

1.

Title: The attempt to traction of the insulation of the cable lay-ups from cars
Patent/project number: scientific paper
Author/s: Teodor VASIU, Adina BUDIUL BERGHIAN
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: K
Description: *The correct operation of the cars is the result of correctness output of the execution and the fitting ensembles, building blocks and the marks components. After make, each among these are submissive of a specific testing which have the fate to confers them a certainty of good operation in exploitation. The cable lay-ups, as components of the electric plant, are submissive of attempts which visa the workstations and the insulation. In this work are analyzed the insulations of a cable lay-ups. The results, obtained abaft their attempts to traction, are processed with specialized software Weibull+ + 7, who permits the determination of reliability parameters of the cable lay-ups and therewith we can do appreciations about material quality used to the manufacture of the coatings and the correctness they were made.*
State of development: scientific paper

2.

Title: Analysis of the fluid dynamic behaviour through the air collector following the installation of pressure outlets.
Patent/project number: PhD Thesis
Author/s: Robert Bucevschi, Ana Socalici, Adina Budiul Berghian, Radu Mihai
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: K
Description: *On the intake route of internal combustion engines there are two categories of losses: gas-dynamic and thermal. In order to increase the fresh air flow, each element of the intake must be analyzed from this perspective. This study is based on the results of CFD simulations and aims to analyze the influence of two pressure sockets mounted on the inner surface of the air filter inlet diffuser.*
State of development: laboratory

3.

Title: Experimental plant for resistance to thermal fatigue
Patent/project number: 126966/30.03.2016
Author/s: Camelia PINCA BRETOTEAN
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara

Category: K
Description: *The invention relates to an experimental plant for laboratory research of thermal fatigue. The facility allows experimental research on thermal fatigue on common metal samples whose section has different shape and sizes. Those samples are approximately equal in size and are mounted tangentially on the generator disk. The facility provides cyclic variations in temperature of samples during intervals ordered according to the samples' material features. it is providing the experimental determination of thermal fatigue on several samples different in shape and size and who are simultaneously subject to different heat stress regimes.*
State of development: laboratory

4.

Title: Self-Adaptive Mechanical Reducer with Variable Gear Ratio
Patent/project number: A/00889/12.12.2019
Author/s: Romeo CĂTĂLINOIU, Sorin Aurel RAȚIU, Imre Zsolt MIKLOS
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: K
Description: *The invention relates to a mechanical reducer integrated in the transmission of a full electric car or hybrid one, in order to reduce the electricity consumption required by the motors, during running under real road conditions and to improve Dynamics. The reducer allows the continuous, self-adaptive variation of the total gear ratio, between two limit values, depending on the load torque, ensuring the operation of the motors on a restricted range of speeds and with minimum electricity consumption.*
State of development: concept

5.

Title: Semi-automatic stand for determining the defects in the assembly phase of the rear seat belt buckle element.
Patent/project number: student project
Author/s: Alexa Vasile, Cioată Vasile George, Buta Ioan Daniel
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: K
Description: *The most modern production technologies are used in the automotive industry. Perfectly harmonized systems, consisting of processing centers, transport systems and industrial robots, allow a series production with low costs, while meeting the individual desires of customers in terms of quality and equipment. A correct characterization of the quality must take into account the provisions of the normative acts but also the need to elaborate as accurately as possible the documents that certify the quality level. This stand was designed and made in order to test the elementary semi-automatic rear seat belt buckle, in order to provide the final beneficiary with a product with zero defects.*
State of development: laboratory

6.

Title: Optimization of an internal combustion engine filtration module design using CDF method
Patent/project number: PhD thesis
Author/s: Robert Bucevschi
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: K
Description: *The study presented in the paper aims to analyse the fluid flow inside the adduction elements of a filtration module. The purpose of the analysis is to optimize the design of the analysed elements in order to improve the system performance. The study is based on the results obtained from the Computational fluid dynamics numerical analysis performed using Ansys 19.0 software. The optimization measures aim to reduce the pressure drop, uniform zing the air flow on the surface of the filtration element as well as increasing the absorption efficiency, optimization measures that increase engine performance and at the same time improve the efficiency of the filtration process.*
State of development: PhD thesis

7.

Title: Adaptive exhaust cover Air by Corneliu
Patent/project number: student project
Author/s: Marinuț Gabriel Paul, Sapta Doru Ioan, Birtok Baneasa Corneliu, Golcea Julia Daiana, Budiul Berghian Adina, Obrenovici Lavinia Ioana
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: K
Description: *Adaptive exhaust cover (AEC) is a device for competition engines equipped with dynamic exhaust systems, especially the Air by Corneliu type. The implementation of AEC prevents the entry into the dynamic exhaust system of solid particles (dust, sand, leaves) or water when the engine is stopped. AEC has a smart control unit that allows it to operate according to the following parameters: temperature, humidity, wind speed, light intensity etc.*
State of development: prototype

8.

Title: Off road tuning My Passion
Patent/project number: student project
Author/s: Deoanca Antonio Claudiu
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: K
Description: *This project is intended for my off-road passion and is materialized by the modifications made to a Jeep off-road vehicle. In order to increase the dynamic performance of the Jeep, I resorted to the implementation of an innovative suspension system, it allows the superior improvement of the passage capacity by around 150mm, a positive factor in case of an accidental terrain route. Another important feature for off road is grip for this purpose I chose to mount wheels equipped with special tires size 35/12,5 R15.*
State of development: prototype

9.

Title: Experimental determination of filtration efficiency for porous ceramic cabin filter prototype
Patent/project number: PhD thesis
Author/s: Bucevschi Robert
Institution: Polytechnic University of Timişoara; Faculty of Engineering Hunedoara
Category: K
Description: *This project presents the results obtained from the experimental analysis of the filtration efficiency for two prototypes of full ceramic cabin filters. The innovation presented by these concepts is the exclusive use as a filtration medium of a combination of porous ceramic materials. The project also presents the influence of the granulation of the ceramic filtration medium on the pressure drop and the filtration efficiency. The analysis presented is part of the development process carried out within the doctoral research supported by the author.*
State of development: prototype

10.

Title: Puma Air by Corneliu front axle conversion
Patent/project number: student project
Author/s: Adelin-Florinel Suba
Institution: Polytechnic University of Timisoaea, Faculty of Engineering Hunedoara
Category: K
Description: *This project is intended for the conversion of the front axle of the Puma 1.4i model, Ford brand by implementing an axle of the superior Puma 1.7i model in order to improve the dynamics, increase the maintainability and reliability in order to achieve a competition car named Puma Air by Corneliu. In conclusion we can say that due to the conversion and implementation of a superior braking system (brake discs, Puma 1.7i calipers) the braking efficiency increased by up to 6%.*
State of development: prototype

11.

Title: Didactic model for the study of the synchronism of the bicardane transmission
Patent/project number: student project
Author/s: Pinca-Bretotean Camelia, Ungur Răzvan
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: K
Description: *The didactic model aims to study the kinematics of the bicardane transmission of road vehicles. Its main element is two-wheel drive shaft that comes from the steering system of a Volkswagen Golf V Plus. Experimental determinations can highlight the uniformity of the movement of the driven shaft with compared to the driving shaft in the case of the bicardan joint, depending on the angles between the intermediate forks. The stand allows a double determination: the demonstration of the asynchronism of the movement of the simple cardan joint; the demonstration of the synchronism of the movement of the double cardan joint.*
State of development: student project

12.

Title: Water-based paint VS Thinner-based paint
Patent/project number: student project
Author/s: Stoianov Alin Ioan
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: K
Description: *The paint is a suspension of pigments, organic and mineral dyes, finely dispersed in a binder (varnish, drying oil, water, etc.), which after drying has a film of resistance, elasticity and gloss. They have the property of coloring the surface on which they are applied, so that its original appearance is no longer visible. Water-based paint has become one of the most widely used materials in vehicle painting. Good coating power, easy to apply, bearable odor and is more environmentally friendly. The drying time is longer compared to the thinner-based paint.*
State of development: research project

13.

Title: Fake Low Weight Light - F.LW.L
Patent/project number: student project
Author/s: MUNTEAN ILIE CĂTĂLIN, ILIE ANTON, BURZ IONUT-VASILE, MUNTEAN PAUL SORIN
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: K
Description: *In order to reduce the mass of the Puma Air by Corneliu competition car, it was decided to build Fake Low Weight Light - F.LW.L headlights from composite materials. F.LW.L components are made of fiberglass or carbon fiber. Due to the complex architecture of the headlight, the HandySCAN 3D scanning device was used to create the 3D model. In order to materialize the Fake Low Weight Light headlights, the specialized software CATIA V5 was used. By implementing Fake Low Weight Light headlights made of composite materials we reduce the weight of the headlights by 6 kg, and the volume of the engine compartment was expanded by approximately 12000cm3. F.L.W.L. are realized through the educational program "DEXTER" Laboratory with the support of the CorneliuGroup Research-Innovation Association.*
State of development: prototype

14.

Title: Chemoresistive humidity sensor based on oxidised carbon nanohorns
Patent/project number: Patent Application No. A/00443, 22.07.2019, OSIM, ROMANIA
Author/s: Bogdan-Catalin Serban, Octavian Buiu, Cornel Cobianu, Viorel Avramescu, Nicolae Dumbravescu, Roxana Marinescu,
Institution: National Institute for Research and Development in Microtechnologies - IMT Bucharest
Category : K

Description: *This patent application claims the design of new sensitive layer, to be used for the development of relative humidity resistive sensors. The sensitive layers proposed in this patent application are based on oxidised carbon nanohorns(holey carbon nanohorns).Holey carbon nanohorns can be obtained by three distinct synthetic procedures: 1) oxidation of pristine carbon nanohorns with nitric acid; 2) plasma oxygen treatment; 3) plasma water treatmentFor obtaining the holey carbon hanohorns - based sensing layer, the following synthesis route was followed: (i) 0.1 g of holey carbon nanohorns were dispersed in 20 mL DI water - ethanol (50:50%, v/v) and subjected to magnetic stirring for two hours at room temperature.*
(ii) The obtained solution is deposited by the "spin coating" method using a Si / SiO2 substrate with linear electrodes or with interdigitated electrodes (after previously masking the contact area
(iii) The obtained sensitive layer is subjected to a heat treatment at 1200C, 90 minutes, in vacuum.
The use of holey carbon nanohorns will provide a series of significant advantages: high sensitivity (commercial Sensirion RH sensor exhibits a comparable performance), fast response time, a high ratio between specific surface and volume, excellent thermal and chemical stability.
State of development: scientific paper

15.

Title: Experimental installation for testing brake pads for successive braking
Patent/project number: Laboratory
Author/s: Pinca-Bretotean Camelia
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: K
Description: *The experimental installation aims to carry out experimental research in order to test ecological friction materials designed to make brake pads for small and medium vehicles. The installation consists of the following components: electric motor with power of 2.2 kW and speed of 2950 rpm, gearbox, belt drive, vacuum pump with membrane, planetary shaft, hub, pivot, brake disk. Vacuum pump training is carried out by a trapezoidal belt transmission. The drive belt was fixed to the planetary shaft by a non-demountable mounting and the driven belt is fixed to the vacuum pump mechanism by a removable mounting with screws. Two couplings have been made for the mechanical transmission, one connecting the electric motor to the reducer and other linking the output shaft between the gearbox and the planetary shaft. The speed variation allows the speed to be changed from 0 to 200 rpm. The principle of experimental determinations implies ten successive brakes and the results obtained allow the evaluation of the behaviour of ecologic friction material tested.*
State of development: student project

16.

Title: Real time intuitive lamp - RTiL
Patent/project number: student project
Author/s: Macarie Paul Andrei Constantin
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: K
Description: *Real time intuitive lamp - RTiL is a device designed for road safety, the main purpose being the real-time warning of traffic participants on events and traffic conditions (works, diversions, unevenness, etc.). RTiL, the intuitive rear lamp, communicates with the vehicle's safety systems (video cameras, ABS, ESP, radar, etc.) and / or traffic control centers (in the case of highways) allowing the warning by displaying specific symbols in order to increase traffic safety.*

RTiL advantages: real-time warning of traffic participants; intuitive adaptation depending on the events and traffic conditions; increasing the degree of safety by adopting the preventive driving mode; avoiding accidents due to unforeseen situations (works, potholes, obstacles, etc.).
State of development: laboratory

17.

Title: Mobile luggage with wireless control for passengers of public transport
Patent/project number: student project
Author/s: Sebastian Mariș, Emilia Tibenschi, Eliza Țoța. Coordinator: prof. ing. Paul Țoța.
Institution: Fundația "Copil în Europa"
Category: K
Description: *The project is a smart luggage, a mechatronic system for passengers of public transport such as trains, planes or buses. The invention contains a wireless communication module and a microcontroller development board, with dedicated software, which makes possible both decision-making to allow the luggage to move autonomously, but also the wireless communication with the passenger's smartphone and through which he can have real-time control over luggage.*
State of development: laboratory

18.

Title: The Hexagon Rotor Rotary Engine
Patent/project number: Patent Application - Pending
Author/s: Mohamed Yalouh
Institution: OFEED Marocco
Category: K
Description: *This invention is a 6 stroke and multi-Power-stroke diesel automotive engine. This engine predominately relates to the Wankel Rotary Engine invented by Felix Wankel. The H.R.R.E or the Hexa-stroke engine stands unique with absolutely no model with similar features. Some of the features it possesses are low fuel consumption, powerful coordinated power strokes, lighter in weight, environmentally friendly, lower weight-to-power ratio, and so on. These qualities completely innovate and advance the old Rotary Engine conceptually going further and beyond its original capabilities.*
State of development: laboratory

19.

Title: Formula Easter IF81
Patent/project number: student project
Author/s: Ioan Victor
Institution: Fundatia Iancu de Hunedoara
Category: K
Description: *Restauration of an single seater Formula Easter built in Cluj Napoca by Ing. Ioan Filip. The single seater was built between 1978 and 1981 respectiv the homologation for Formula Easter (the equivalent of Formula 3 from that period).*
State of development: Prototype

20.

Title: Off-road Suzuki Grand Vitara by Lucian
Patent/project number: student project
Author/s: Henţiu Lucian Nicolae
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: K
Description: *Suzuki is a Japanese brand, which has established itself rigorously in the off-road world. The main factors that encouraged me to choose this brand are the quality and the low price. The specifications of the vehicle are: 2000cc engine, 129hp, 4X4, automatic transmission, 3 doors, year of manufacture 1999. The car currently benefits from a ground clearance increased by 5 cm, work done with the help of a teflon lifting kit for springs and metal extensions to telescopes. The extension of the cardan shaft on the back was made with a 20mm Teflon plate. The correction of the falling angle of the front wheels was made with the help of eccentric screws (camber-bolt). To improve stability, we used 30mm flanges for each wheel. Considering that the car also travels on the road, it benefits from a set of tires with Mud-Terain profile from Insa Turbo. Currently, the car runs in optimal parameters, with high performance in off-road mode.*
State of development: prototype

21.

Title: iARO CAMARAD
Patent/project number: research project
Author/s: Sachelarie Adrian, Calancea Gabriel, Ababei Ion, Pavalucă Petronela
Institution: Technical University "Gheorghe Asachi" of IASI
Category: K
Description: *iARO Camarad project has started thanks to the passion of some future mechanical engineers for what "ARO" was like a brand. This project has a goal, tying former strictly ARO brand, by making a new design of the body, and the redesign of the suspension of the legendary model ARO 324, it under a new concept. The aim is to develop a 4WD vehicle prototype, simple, efficient and robust to operate in normal traffic conditions on public roads, and also on off-roads and rough terrain.*
State of development: prototype

22.

Title: Formula Student
Patent/project number: Student Project
Author/s: UPT Racing Team
Institution: Politechnica University of Timişoara
Category: K
Description: *We are a team of students and master students at the Polytechnic University of Timisoara. Our goal is to create a Formula Student car and to participate in competitions for it around the world. So far we have managed to lay the foundations of a project that we can be proud of, with future engineers who can evolve, both personally and professionally.*
State of development: prototype

23.

Title: Electrical individual personal car
Patent/project number: Patent request no. A 2015 00552
Author/s: ȚÎȚU Aurel - Mihail, OPREAN Constantin, MĂRGINEAN Ioan, ȚÎȚU Ștefan, MOLDOVAN Alexandru, BOGORIN-PREDESCU Adrian
Institution: "Lucian Blaga" University of Sibiu
Category: K
Description: *The invention relates to a car intended for economic and non-polluting travel in the city in cases where it is necessary to move only his own person. The car is composed of a compact body in the form of a half-ovoid sectioned along the length, at the elliptical chassis being symmetrically arranged four wheels at the ends of an imaginary rhombus oriented so that the maximum diagonal coincides with the direction of travel.*
State of development: concept

24.

Title: LAND ROVER DEFENDER TARANTULA
Patent/project number: Off Road design
Author/s: Mihai Ionescu
Institution: private
Category: K
Description: *The car was built for extreme off road competitions, the tarantula project "sprouted" in May 2010 when we started designing and sizing the resistance structure.*
SIZE: length: = 3.43m; width: = 1.98m gauge; height: with 35 inch tires = 1.65 m; wheelbase: = 2.54m; weight: 1700 kg fully packed.
Characteristics:
-the roll bar is professionally welded from a 61 mm diameter pipe and 3.9 mm in the wall, the sheet used is 3 mm duralumin fixed in rivets.
-6mm anti-burglary windows (windshields and side windows)
-wrc pro limited edmon chairs with adjustable rail.
-spark safety belts, with 3-point fastening.
-the electrical installation was designed and made especially for this car (includes bi-xenon headlights, 5 LED floodlights, LED signal lamps.
-the cooling system was modified being mounted in the back using the chrome pipe and a new larger radiator with 2 range rover cooling fans with 4.2l petrol engine
-at home the car is a land rum. discovery 1 from which we used the following components:
-100 inch (2.54m) wheelbase chassis
-engine type 200 tdi (2.5l) turbo diesel
-lt77 5-speed gearbox and lt230 transfer case with manually lockable central differential (others have been completely rebuilt with internal heavy duty from ashcroft transmissions), ashcroft hd lightning plate disc clutch
-the axles are from nissan patrol y 61 manufacture 2003 we run offroad bought from the car 52000km (new discs and plates, mrl avm red ratio in differential 4,375, the rear axle has original lockable differential nissan

- terrafirma +2 inch suspension, all new original changed bushings
-new chrome rims import sua r15 83 et-30
-new tires 35x12.5x15
Steering wheel system:
-height and depth adjustable steering column
- stevi and torsion bar heavi dun 3.5 mm diameter 10 mm in the wall
-spermwinch husky 10 winch with plasma
-100l diesel tank
State of development: product

25.

Title: Service Auto ALL IN ONE
Patent/project number: Student Project
Author/s: David Mihalcea
Institution: SC ALLINONE SRL
Category: K
Description: *Do you have a car problem? At the ALL IN ONE car service you will find the solution. Professionalism, promptness and transparency are just some of the attributes that guide us in our daily work.*
State of development: service

26.

Title: Rulotika - camper box concept
Patent/project number: Outdoor research project
Author/s: Alexandru Barbu
Institution: Santech Logistic SRL Deva
Category: K
Description: *R u l o t i k a is a concept of tourist container for camping and traveling arranged on any trailer, detachable, used in static conditions but also offering mobility and multiple configuration possibilities.*
State of development: Prototype

27.

Title: Remba – Remorca Multifunctionala Accesorizata
Patent/project number: Outdoor research project
Author/s: Alexandru Barbu
Institution: Santech Logistic SRL Deva
Category: K
Description: *Remba is a platform trailer concept, with the possibility of modifying the utility by easily replacing the accessories intended for different types of subsequent applications.*
State of development: Prototype

L - Innovative ART, Photography, Publicity, Printing, Painting

1.

Title: Art Corner by Miruna
Patent/project number: student project
Author/s: DIANA MIRUNA ARMIONI
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: L
Description: *„Art Corner by Miruna" includes a variety of faces, from friends and colleagues to artists or other personalities, illustrated in a realistic, detailed style. The drawings were previously exhibited in several events, organized both by the Faculty of Engineering Hunedoara („Facultatea Altfel FIH" – European Researchers' Night), and by the CorneliuGroup Association („Inventions, inventors, passions at the Deva Fortress") or the Deva City Hall („Diamond Eyes", „Art Corner by Miruna" - held on Deva Fortress).*
State of development: product

2.

Title: ANNALS OF FACULTY ENGINEERING HUNEDOARA – International Journal of Engineering
Author/s: Imre KISS
Institution: UNIVERSITY POLITEHNICA TIMISOARA
Category: L
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. Every year, in four issues per year,* ***ANNALS of Faculty Engineering Hunedoara – International Journal of Engineering*** *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.*
State of development: SCIENTIFIC JOURNAL

3.

Title: ACTA TECHNICA CORVINIENSIS – Bulletin of Engineering
Author/s: Imre KISS
Institution: UNIVERSITY POLITEHNICA TIMISOARA
Category: L
Description: *ACTA TECHNICA CORVINIENSIS – Bulletin of Engineering is a free-access international and multidisciplinary publication of the Faculty of Engineering Hunedoara, which reports on scientific and technical contributions. Every year, in four issues per year,* ***ACTA TECHNICA CORVINIENSIS – Bulletin of Engineering*** *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.*
State of development: SCIENTIFIC JOURNAL

4.

Title: Between the lines
Patent/project number: student project
Author/s: Diana Plugar
Institution: România
Category: L
Description: *In my vision, no tool is needed to fill the gaps between the lines. These are the bursts of the unconscious, a reminiscence of the archaic. No pastel chalk required, no crayon - just the precise fingers which feel the paper vibrate underneath. Creation can only survive through the strenght and ferocity of its creator.*
State of development: Concept

5.

Title: Lemnăria lui Radu
Patent/project number: woodcraft
Author/s: Radu Luigi Fachin
Institution: Lemnăria lui Radu
Category: L
Description: *In "Lemnăria lui Radu" (Radu's Woodworking), old scrap wood pieces find a new purpose and receive a new life: miniature traditional houses, custom decorations, puzzle games and toys - everything is hand carved from recycled wood.*
State of development: product

6.

Title: The fate of the Earth
Patent/project number: Visual art Project
Author/s: N. Sebestyén Katalin (Monor)
Institution: Ötlet Club 13 Egyesület, Hungary
Category: L
Description: *My paintings are mainly characterized by the interaction between the Earth and the universe. I am inspired by the sunset, by the events mapped by astronomers, by the various attractions offered by nature, by the landscapes, the trees, the water, the flowers and the natural phenomena.*
State of development: painting

7.

Title: Analysis of the spirit's oscillation through images
Patent/project number: photography art
Author/s: Edwina Kasler
Institution: Kasler Studio
Category: L
Description: *The spirit project uses 13 abstract photos in order to show the materialization of an inner world marked by the real-virtual contrast.*
Why 13?
Rene Felix Allendy, French psychoanalyst, says that 13 is a mechanism that supports the Universe in constant oscillation and leads it to a specialization in nature.
Steps of the project:
1. *Identification of the studied element: spirit*
2. *Disturbance factors and their action*
3. *Observation of the changes*
4. *Finding a method of returning to the initial state*
5. *Application of the method observing the ability of returning to the initial state.*

The innovation consists in analyzing the spirit's evolution through another methods than the classic ones like those in medicine, psychology or spirituality.
The subject follows his own experiences and thoughts while watching the 13 images of the slide and became able to find his own method of returning to the original state of his spirit.
State of development: research project

8.

Title: 360 degree panoramic photography
Patent/project number: photography art
Author/s: Irina Fachin
Institution: Tururi Virtuale 360

Category: L
Description: *360 degree panoramic photography uses new technologies to allow visualizing an interior or exterior space from all angles, the viewer actually feeling right in that place.*
State of development: virtual concept

9.

Title: Sound of nature
Patent/project number: photography project
Author/s: Stoica Ilie Adrian, Stoica Amira Ioana
Institution: PhotoArt Studio
Category: L
Description: *"Sound of nature" it's an analogy that makes the viewer think about the ancestral connection between human and nature through our senses. This photography tells us that is not necessarily to see the nature with the eyes to sense it, it's enough to listen, barefoot. The long exposure represents indefinite passing of time.*
State of development: photography

10.

Title: Renascence
Patent/project number: photography project
Author/s: Stoica Ilie Adrian, Stoica Amira Ioana
Institution: PhotoArt Studio
Category: L
Description: *„Renascence" is an art project that refers to the metaphorical rebirth of human. We are all born naked of inhibitions, fear and despair. The bark of the tree and the fetal position of the model is a metaphorical representation of the mother nature that gives life. The chromatics and the contrast between raw and dry represented by the leaves, refer to the beginning and the end.*
State of development: photography

11.

Title: Viziune onirică
Patent/project number: Visual art Project
Author/s: Zăgrean Maria Liliana
Institution: None
Category: L
Description: *The work is consciously resigned dreamily in pastel on paper, representing the shamanic dream.*
State of development: painting

M - Textiles, Clothing, Fashion

1.

Title: Ternary nanocomposite for the relative humidity resistive sensor and method for its manufacture
Patent/project number: Patent Application No. A/00585, 23.09.2019, OSIM, ROMANIA
Author/s: Bogdan-Catalin Serban, Octavian Buiu, Viorel Avramescu Cornel Cobianu, Roxana Marinescu
Institution: National Institute for Research and Development in Microtechnologies - IMT Bucharest
Category : M
Description: *This patent application refers to the development of new chemoresistive humidity sensors, employing a sensing layer based on a ternary nanocomposite comprising single wall oxidized carbon nanohorns - graphene oxide – polyvinylpyrrolidone, at 1:1:1 w/w/w ratio. The interdigitated (IDT) sensing structure was manufactured on a Si substrate covered by a SiO2 layer The metal stripes of IDT comprised a Cr (10 nm thickness) and Au (100 nm thickness) stack, having 200 µm width. 6 mm was the distance between the electrodes. The RH detection capability of the structure was investigated by applying a current between two electrodes and measuring the resistance of the IDT, at different RH levels.*
The use of oxidized carbon nanohorns - graphene oxide – polyvinylpyrrolidone, at 1:1:1 w/w/w ratio as sensing layer will provide a series of significant advantages:
-both nanocarbonic materials provide a high specific surface area/volume ratio, affinity for water molecules as well as a rapid variation of the electrical resistance in contact with water molecules in the humidity range from 0%RH to 90%RH.
-polyvinylpyrrolidone (PVP) is a hydrophilic polymer with excellent binder properties for the nanocomposition of the present invention;
-detection at room temperature;
-fast response time;
-low cost, small size, simplicity in manufacture.
State of development: scientific paper

2.

Title: Innovative clothes solutions for children with special needs
Patent/project number: nr. 3888 WIPO85916, DM/203338
Author/s: Victoria Danila, Antonela Curteza, Stela Balan
Institution: Technical University „Gh. Asachi" Iasi, Technical University of Moldova
Category: M

Description: *The novelty of children's clothing consists in the development of original products that are adaptable with innovative solutions that meet their special requirements. Generalization of a number of constructive and technical solutions for which they provide functions in relation to specific needs: action on the provision of emergency medical care. The product is easy to dressed and undressed. The products of clothing are projected to small caps and are designed for ease of access to medical devices. Model overalls with long sleeves, for newborn girls and boys with weight up to 2 kg. The product is the straight silhouette, white. Access to medical devices is above the waist line, the hands, feet, the closure system is located on the top of the shoulder line, and on the trouser termination line. The materials are 100% cotton, non-allergic.*
State of development: prototype

3.

Title: Hybrid equipment for processing composite-polymeric materials
Patent/project number: A / 00792/11.10.2018
Author/s: O-V. Oancă, N-A. Sîrbu, G-V. Mnerie, E-F. Binchiciu
Institution: National Research & Development Institute for Welding and Material Testing – ISIM Timisoara
Category: M
Description: *The hybrid equipment for processing composite-polymeric materials, designed and developed by researchers from the National R&D Institute For Welding and Material Testing – ISIM Timisoara, combines two cutting edge technologies, namely ultrasonic micro-vibrations and thermal input, in order to perform high quality cutting and sealing operations on composite polymeric material strips used in the textile and food industry.*
State of development: product

4.

Title: CLOS DRESS
Patent/project number: 2020001R/
Author/s: Albescu Corina, Tîrnăvean Alexandru Adrian
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: M
Description: *The kirtle dress is a versatile fit with the club perfect for any form of silhouette and height, giving you freedom to move. The kirtle dress is made of ships, such as the veil, and the waist is exposed by a delicate strap. This three-quarter dress is closed behind with a pearl-type button, with a boat neck-neck. White and black never gets fashioned, you can always rely on the combination of these two colours.*
State of development: product

N - Foods, Drinks, Restaurants

1.

Title: Drying system in modified environment
Patent/project number: MD 4550 from 31.12.2018
Author/s: Bernic Mircea, Țislinscaia Natalia, Balan Mihail, Vișanu Vitali, Melenciuc Mihail
Institution: Technical University of Moldova
Category: N
Description: *The invention relates to the food industry, in particular to an installation for researching the kinetics of the drying process of fruits and vegetables. The innovation of the installation consists in the fact that it ensures the application of two drying methods both in part and in combination, namely – traditional convection drying and microwave drying. The installation allows to use as drying agent not only the air, but also other gases or gas mixtures, such as modified CO2 medium. In the case of using the modified medium as a drying agent, a condensing system for the accumulated moisture is provided. The installation is equipped with an automatic on-line recording system for all drying parameters (temperature and humidity of the drying agent at the inlet and outlet, temperature and humidity of the product, energy consumption, etc.).*
State of development: laboratory installation

2.

Title: Ritual healthy breakfast
Patent/project number: healthy products
Author/s: Ioana Octavia Bogdan
Institution: SC Giovis Delivery SRL
Category: N
Description: *Ritual is a healthy breakfast based on oats and fruit smoothies.*

Healthy products are not always the tastiest, but Ritual will surprise you with a delicious natural taste coming from natural ingredients. We are not using any additives, food colorant, or artificial aromas, and we decided to replace sugar with a healthier alternative. We created a premium product in which we carefully choose our ingredients, having in mind the health concerns our society is currently facing. Our brand includes varieties with almond milk for those who deal with lactose intolerance; we use agave syrups as a sweetener, which is also a preferred choice for vegans, and which also has a low glycemic index, being recommended for persons dealing with diabetes. Each portion of Ritual healthy breakfast includes a variety of flavours and aromas alternating the oats pudding with fruit smoothies. Between these layers we find a mix of four types of seeds for a crunchy texture, and for adding nutrients, vitamins, and essential oils. Ritual is served in a biodegradable container and it is the perfect choice for starting an efficient work day. Our mission is that our products become a ritual and of well-being and self-care for each consumer.
State of development: product

3.

Title: Yogurt with pumpkin seeds
Patent/project number: Published as RO133918 A2
Author/s: Adriana Dabija, Georgiana Gabriela Codină
Institution: Ştefan cel Mare University of Suceava
Category: N
Description: *The invention relates to a food product of the fermented dairy product type, with the role of a functional food, due to the multiple health benefits. The product, according to the invention, is obtained only from natural ingredients: cow's milk, cream, pumpkin seeds, cultures of lactic acid bacteria, without the addition of food additives. Pumpkin seeds, like other oilseeds, are in the attention of specialists because they are a very good source of proteins and dietary fibers. For the consumer, the increase in the protein content improves the degree of satiety, especially beneficial for those who consume fermented dairy products for health reasons, certain diets, etc. The proposed process for obtaining yogurt with pumpkin seeds, according to the invention, can be reproduced with the same characteristics and performances whenever necessary, which is an argument in order to comply with the criterion of industrial applicability.*
State of development: product

4.

Title: Inulin bread of refined wheat flour, fortified with mineral calcium and magnesium salts, and process for obtaining it
Patent/project number: Published as RO133913A2
Author/s: Georgiana Gabriela Codină, Dumitru Zaharia, Adriana Dabija
Institution: Ştefan cel Mare University of Suceava
Category: N
Description: *The invention relates to a white bread cereal product type made from wheat flour enriched in soluble fibers and fortified with calcium and magnesium mineral salts. The product, according to the invention, presented in a bread form is obtained from the following ingredients: white wheat flour of 550 type, inulin, calcium lactate, magnesium gluconate, water, salt and baking yeast of the Saccharomyces cerevisiae type. The dough was made through the indirect method. The dough made with fermented wheat flour is mixed for 10… 12 minutes and fermented for 30… 35 minutes at a temperature value of 30… 32 ° C, manually divided into large pieces of about 1.5-3.0 kg weight which are portioned in a press in small pieces to a 0.330-0.340 kg weight, moulded in an elongated shape and leavened for 50… 60 minutes in a fermentation chamber, to a 35… 38°C temperature and a relative humidity of 65… 70%. The leavened dough is baked in a steam medium to a 230…240oC temperature for 30-35 minutes.*
State of development: product

4.

Title: White bread with a low sodium content and process for obtaining it
Patent/project number: Patent application A/00449/2020
Author/s: Georgiana Gabriela Codină, Adriana Dabija, Andreea Voinea
Institution: Ştefan cel Mare University of Suceava

Category: N
Description: *The invention relates to a low-sodium dietetic white bread type recommended to be consumed by the persons which wish or are indicated to consume products with a low sodium content. The dietetic bakery product according to the invention is obtained only from natural ingredients: wheat flour 650 type, dry sourdough obtained from fermented wheat flour, Saccharomyces cerevisiae yeast of compressed type, sea salt from Dead Sea with a maximum level of NaCl of 7%, salty grass, (Salicornia ramosissima J. Woods), water. The production of the dietetic bakery product according to the invention consists in the following technological phases: dough mixing through the direct method in a mixer with a spiral arm in which all the ingredients from the bread receipe are dosed, fallowed by the dough division, shaping, fermentation, baking, cooling, packing and storing.*
State of development: product

5.

Title: HAWTHORN FRUITS PASTE WITH REDUCED SUGAR CONTENT AND MANUFACTURE METHOD THEREOF
Patent number: EP20464003.1-1105
Authors: Iuga Mădălina, Mironeasa Silvia
Institution: Ştefan cel Mare University of Suceava
Category: N
Description: *The inventiondiscloses a desert product type as a paste from hawthorn fruits with reduced sugar content and a manufacture method thereof. The product, according to the invention, is obtained from the following ingredients: hawthorn fruits pulp, inulin and Renet apple variety juice. Hawthorn paste preparation consist of conditioned fruits mechanical mincing, partial thermal processing in order to obtain hawthorn fruits pulp, filtering, boiling with inulin and apple juice until an homogeneous paste is obtained, cooling and dosing.*
State of development: prototype

6.

Title: NUTRITIONALLY IMPROVED BUN AND MANUFACTURE PROCESS THEREOF
Patent number: RO133917A2
Authors: Mironeasa Silvia, Iuga Mădălina, Mironeasa Costel
Institution: Ştefan cel Mare University of Suceava
Category: N
Description: *The invention relates to a cereal product in the form of a bun, nutritionally improved by substituting white wheat flour of 550 type with flour from grape skins resulted from the vinification of Fetească Regală grapes, and to the manufacture process thereof. The product, according to the invention, is obtained from the following ingredients: white wheat flour type 550, flour from grape skins of the Fetească Regală variety, water, compressed yeast and table salt. The preparation of the dough is done by the indirect method which comprises two technological phases, leaven preparation and dough preparation. The kneaded dough is fermented, divided, round pre-molded, intermediate leavened, final molded in a round shape, with a diameter of 8 … 8.5 cm, placed in trays, final leavened and baked in the tray.*
State of development: prototype

7.

Title: GLUTEN FREE FUSILLI PASTA NATURALLY COLORED WITH RED BEET FLOUR
Patent number: A/00912 din 19.12.2019
Authors: Codină Georgiana Gabriela, Mironeasa Silvia, Atudorei Denisa, Atudorei Olivia
Institution: Ştefan cel Mare University of Suceava
Category: N
Description: *The invention relates to a product in the category of gluten-free short pasta, which has fusilli form and dark orange colour, obtained using beet flour. The ingredients used are: vegetable flour (chickpea, green lentil, beetroot), artichoke powder, non-genetically modified potato starch, sea salt, water and grape seed oil. This pasta does not contain chemical additives and genetically modified organisms, has pleasant sensory characteristics and a high nutritional value. This product can be consumed by people suffering from celiac disease because does not contain gluten. The use of artichoke powder, which contains a significant amount of inulin, stimulates the beneficial intestinal flora in the digestive tract, which is desirable. The high amount of soluble and insoluble fibre in the product obtained helps to fight constipation by increasing intestinal mobility. This means that this pasta is a functional food.*
State of development: prototype

8.

Title: EDIBLE HOLY COMMUNION GEL CAPSULE
Patent/project number: No 248087 (State of Israel)
Author/s: THERESA MARYBETH LAY
Institution: Theresa Lay God's Pill - USA
Category: N
Description: *An edible communion gel capsule including a gel capsule having at least one interior cavity at least one of a liquid, alternately, a powder disposed within at least one interior cavity The liquid is one of wine, alternatively, grape juice, and the powder is an edible grape juice powder An edible solid material is disposed around one section of a medial section of the capsule, and entirely of an exterior surface area of the gel capsule one half of an exterior surface area of the gel capsule The solid material is bread.*
State of development: product

9.

Title: GLUTEN FREE BLACK BEER AND PROCESS FOR OBTAINING IT
Patent/project number: Patent application A/00456/2020
Author/s: Adriana Dabija, Marius-Eduard Ciocan, Georgiana Gabriela Codină
Institution: Ştefan cel Mare University of Suceava
Category: N
Description: *The invention relates to a new assortments gluten free black beer, an undistilled alcohol beverage, gluten-free consisting of only natural ingredients: water, acorn flour, Jerusalem artichoke flour, molasses, hops and yeast without the addition of any food additives. The uniqueness of the product consists in the use of acorn flour, Jerusalem artichoke flour and the use of molasses as a by-product of the sugar industry to obtain a gluten-free beer.*

The most varieties of beer on the market have the disadvantage that they are based on barley malt or wheat malt, and, according to current regulations, these two cereals, along with oats and rye, are considered gluten-generating cereals. The process according to the invention eliminates this disadvantage and expands the range of brown beer products, in that gluten-free brown beer is obtained on the basis of an original production recipe. The proposed technological process respects classical brewing technology, can be easily replicated at the industrial level as a distinct product unit, in profile companies, on existing technological lines.

State of development: product

10.

Title: Adriana's Honey
Patent/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: N
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. 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.*
State of development: product

O - Health, Cosmetics, Hygiene, Paramedical

1.

Title: Hypoglycemic and dietary supplement with antioxidant properties, and process for his obtaining
Patent/project number: Patent No. 128709 / 31.12.2015
Author/s: Ştefănuţ Mariana Nela, Căta Adina Elena, Pop Oana Raluca, Tănasie Dan Cristian, Balcu Ionel, Boc Ioan Daniel
Institution: National Institute R&D for Electrochemistry and Condensed Matter, INCEMC Timişoara
Category: O
Description (maximum 200 characters): *The patent discloses the obtaining of a natural dietary supplement, simple and effective. Indigenous berries: blueberries, raspberries and blackberries are processed and combined in a specific ratio to obtain a drinkable tincture, with hypoglycemic and antioxidant special effects. Food supplement is addressed to people with type II diabetes, but it can also be consumed by the insulin-dependent patients. The fruits are harvested by hand and come from wild areas; they are not contaminated with pollutants, pesticides, herbicides, etc. The metals determined in food supplement by atomic absorption spectrophotometry certify the absence of hazardous metals Cd, Pb, As, and confirms the presence of metals that act as micronutrient elements in the human body: Zn, Cu, Al, Mn, Cr, Co, Fe, in quantities accepted for standards health provided by the World Health Organization.*
State of development: laboratory

2.

Title: Decontamination reactor of aflatoxin M in milk
Patent/project number: Patent no. 130818 - 28.02.2020
Author/s: KETNEY Otto, ŢÎŢU Aurel - Mihail
Institution: "Lucian Blaga" University of Sibiu
Category: O
Description: Many dairy products may contain several compounds that have a toxic effect on human health, among these substances there are also listed as alfatoxin M. The invention is characterized in that it has the advantage of reducing aflatoxin M from milk in continuous flow to large volumes of milk, can be applied at industrial level and guarantees food safety.
State of development: concept

3.

Title: ILZSU Face Cream Family
Patent/project number: Health/Cosmetics Project
Author/s: Varga Péterné (Kiskőrös)
Institution: Ötlet Club 13 Egyesület, Hungary
Category: O
Description: *The Skin-Magic Ltd. was established in 2008, and it is a dynamically developing family company. The ILZSU Face Cream Family won an international price in 2008 and a golden reward in 2009. It is a Hungarian Product of 100% plant origin without preservatives, colours, perfume. Our goods are our own innovation; we buy the herbs from Hungarian wholesalers. Our primary partners are wholesalers, pharmacies, bio shops and web shops. "With the power of nature for the healthy skin!"*
State of development: product

4.

Title: CENTRIKAL
Patent/project number: N.SZ. 10796/ 2012r
Author/s: Kálmán Tamás (Barcs)
Institution: Ötlet Club 13 Egyesület, Hungary
Category: O
Description: *CENTRIKAL is a patented plant-based product made exclusively from natural substances, suitable for the substitution of antibiotics. It consists of carefully selected natural plant alkaloids that strengthen and regenerate the human immune system.*
State of development: product

5.

Title: ARTICULATED MEDICAL CHAIR
Patent/project number: Brevet O.S.I.M. National/National Patent No. 132966/30.10.2020 – BOPI No.10/2020-30.10.2020
Author/s: Florescu Virgil, Mocanu Ştefan, Savaniu Mihai, Rece Laurenţiu Liviu
Institution: Universitatea Tehnică de Construcţii Bucureşti
Category: O
Description: *The present concept is represented by a Multipurpose Articulated Medical Chair (with manual or mechanical-electro-pneumatic actuation), which is the subject of a PATENT OF INVENTION granted this year, (OSIM Patent no. 132966/30.10.2020). The project has been internationally registered in the Official Bulletin of Industrial Property of Romania (BOPI no. 10/2020-30.10.2020). The equipment is intended for servicing/transportation of immobilized, elderly or overweight patients. The novelty factor consists in the possibilities offered by this handling device for patients in the categories listed above, WITH A SIGNIFICANT DECREASED PHYSICAL EFFORT for auxiliary medical staff (nurses, stretcher-bearers). On the other hand, by equipping hospital wards with an adequate number of such equipment one can facilitate rapid simultaneous patient evacuation in earthquake, fire, major disruptions situations, also FLUIDIZATION OF FAST TRAFFIC FLOWS OF PATIENTS IN CURRENT PANDEMIC SITUATION.*

The design parameters are: modular articulated height adjustable medical chair with stretcher functionality; home or institutional oriented modular design; specific design in order to help and assist immobilized patient rapid evacuation in emergency situations; straightforward patient transition from bed to the medical chair with lateral sliding pelvic support element with locking hinge device; specific patient assisted transition from horizontal to standing position by manual or mechanical means.
State of development: Concept

6.

Title: MASSAGE AND RELAXATION BATHTUB
Patent/project number: OSIM No. 021336/2016 , international recorded in BOPI no. 4/2016
Author/s: Prof. Eng. RECE Laurenţiu PhD., Lecturer Eng.CALOTĂ Răzvan PhD., Eng. CALOTĂ Mihai
Institution: Technical University of Civil Engineering of Bucharest
Category: O
Description: *In the context of the current pandemic, the MASSAGE AND RELAXATION bathtub is a very useful device for revitalization both for people working from home and for the HORECA industry.The design patent consists in the realization of different configurations of bathtubs with massage system and other specific equipment intended for relaxation by implementing relaxation and bar elements. Within an existing hydromassage-mask bathtub system novelty elements are installed, with the role of drinks and food REFRIGERATION, underwater and supra-aquatic massage and the production of vibrations through water. The three bar compartments constitute the vaporization part of a refrigeration installation, they will be separated from each other, each being operated by a different door. The compressor, rolling device and condenser will be positioned on the opposite side of the tub. The pillow contains a mechanism similar to those existing inside the MASSAGE chairs, a system of balls or rollers that will move around an axis, in different directions. Opposite the cushion with mechanical massage, on the side with greater inclination, in the area of support of the user's feet, a VIBRATING MEMBRANE is mounted with the mechanical mechanical device for producing vibrations.*
State of development: Concept

7.

Title: Resistive sensor for monitoring the relative humidity and process for manufacturing it
Patent/project number: Patent Application No. A/00517/28.08.2019, OSIM, ROMANIA
Author/s: Bogdan-Catalin Serban, Octavian Buiu, Viorel Avramescu Cornel Cobianu, Roxana Marinescu
Institution: National Institute for Research and Development in Microtechnologies - IMT Bucharest
Category : O
Description: *This patent application refers to the development of new resistive humidity sensors, employing a sensing layer based on holey carbon nanohorns –fullerenol –poly(acrylamide-co-acrylic acid) partial sodium salt (Mw= 520,000) nanocomposite.The interdigitated (IDT) sensing structure was manufactured on a Si substrate (470 µm thickness), covered by a SiO2 layer (1 µm thickness).*

The RH detection capability of the structure was investigated by applying a current between two electrodes and measuring the resistance of the IDT, at different RH levels. The use of the ternary nanocomposite holey carbon nanohorns /fullerenol/poly(acrylamide-co-acrylic acid) partial sodium salt will provide a series of significant advantages and enhancements, in comparison with other chemoresistive humidity sensors:
a. holey carbon nanohorns exhibit a high ratio between specific surface and volume, hydrophilic character as well as a rapid variation of the electrical resistance in contact with water molecules in the humidity range from 0%RH to 90%RH; b. a very good detection over a wide range of temperature; c. Fullerenol has a pronounced antioxidant character,hydrophilic properties, good compatibility with holey carbon nanohorns; d. Poly (acrylamide-co-acrylic acid) - partial sodium salt, is a hydrophilic polymer that ensures the cohesion of the two nanocarbon materials, being an excellent binder.
State of development: concept

8.

Title: DENTAL IMPRESSION GUIDE AND THE METHOD OF USE
Patent/project number: Patent pending no A 2020 00523
Author/s: COJOCARIU ANDREEA CODRUȚA, SINESCU COSMIN, LASZLO KABAI, NEGRUȚIU MEDA LAVINIA, ROMÎNU MIHAI, LERETTER MARIUS, JIVĂNESCU ANCA, CRĂCIUNESCU EMANUELA LIDIA, NEAGU CARINA SONIA
Institution: "Victor Babes" University of Medicine and Pharmacy Timisoara
Category: O
Description: *The invention relates to a product used in dentistry in order to obtain fixed prosthetic restorations. The technical problem of the invention consists in the realization of a dental impression device that increases the fidelity of the impression and eliminates the defects in the area of the separation between the tooth and the restoration at the gingival finish line, and therefore the risk of caries formation at this level. The dental impression guide and the method of use according to the invention provide the following advantages:*
-increases the fidelity of the impression and the possibility of obtaining fixed prosthetic restoration, so as to eliminate defects in the area of the separation between the tooth and the restoration;
-ensures the possibility of achieving a more uniform distribution of the thickness of the cement layer at the junction of the dental structure with the prosthetic restoration;
-ensures the possibility of viewing and correcting the length and parallelism between the abutments.
State of development: prototype

9.

Title: Synthesis and characterization of new transition metal coordination compounds for applications in biology
Patent/project number: Project AUF-RM
Author/s: Roman RUSNAC1, Diana CEBOTARI1, Arcadie FUIOR2, Mohamed HAOUAS2, Jerôme MARROT2, Greta BALAN4, Olga GARBUZ5, Ionel HUMELNICU3, Sébastien FLOQUET2 and Aurelian GULEA1
Institution:
1Moldova State University, Republic of Moldova (coordonator)

2Lavoisier Institute à Versailles, University of Versailles, University Paris-Saclay, France
3"Alexandru Ioan Cuza" University of Iasi, Romania
4"Nicolae Testemiteanu" State University of Medicine and Pharmacy, Republic of Moldova
5Institute of Zoology, Republic of Moldova
Category: O
Description:
The cyclic polyoxothiomolybdate K2-x(NMe4)x[I2Mo10O10S10(OH)10(H2O)5]x20H2O acts as a source of cationic binuclear units [Mo2O2S2(H2O)6]2+ which can lead to the formation of many types of spectacular (supra)molecular structures with various dimensions and architectures.
One surprising application found for such [Mo2O2S2(H2O)6]2+ based inorganic substances is their use in different domains of biology such as biomass growing or antioxidant for instance.
On their side, thiosemicarbazone ligand (noted HnL) are widely recognized for their diverse range of biological activity, including anti-fungal, antibacterial and anti-cancer effects and it is also known that bonding them to cations of transition metals leads to molecules about 10 times more efficient.
Therefore, this motivated us to synthesize [Mo2O2S2(Hn-1L)2] complexes and to explore their potential biological properties. Here we report several new binuclear Mo(V) coordination compounds with various thiosemicarbazone ligands and their solid and liquid-state characterizations. The HL exibit the selective atimicrobial activity agains gram-pozitiv bacteria and Candida albicans.
State of development: Research project.

10.

Title: Ethyl-4-{2-[(pyridin-2-ylmethylidene)hydrazinocarbothioyl]amino benzoate monohydrate exhibiting properties of human myeloid leukemia HL-60 cell proliferation inhibitor.
Patent/project number: Patent MD 4613/2019.01.31
Author/s: Aurelian GULEA, Roman RUSNAC, Anna RUSNAC, Victor ȚAPCOV
Institution: MOLDOVA STATE UNIVERSITY
Category: O
Description:
The invention relates to chemistry and medicine, namely to the organic chemistry. Utilization an inhibitor of HL-60 cell proliferation of human myeloid cells on the basis of monohydrate of ethyl-4-{2-[(pyridin-2-ylmethylidene)hydrazinocarbothioyl]amino}benzoate (HL).
The experimental data obtained for the study of the anticancer properties of HL, which shows that at 10-5 M concentration it inhibits growth and multiplication of 100.0%, at 10-6 M - 85.1%, and at the concentration of 10-7 M - 78.2% of HL-60 cells of human myeloid leukemia and has an IC50 equal to 0.1 µmol/L.
The data obtained indicate that this compound is one hundred times more effective than Doxorubicin. Monohydrate of ethyl-4-{2-[(pyridin-2-ylmethylidene)hydrazinocarbothioyl]amino}benzoate
State of development: Prototype.

11.

Title: New inhibitor of proliferation of human promyelocytic leukemia cells HL-60 with increased solubility in water
Patent/project number: MD 4581/2019.02.28
Author/s: Aurelian GULEA, Vasilii GRAUR, Victor ȚAPCOV
Institution: MOLDOVA STATE UNIVERSITY
Category: O
Description: *The invention relates to chemistry and medicine, in particular to a molecular inhibitor of human myeloid leukemia HL-60 cells with an increased solubility in water. It can find application for preventing and treating leukemia.*
State of development: Laboratory.

12.

Title: New synthetic inhibitors of superoxide anion radicals
Patent/project number: MD 4668/2019.12.31; MD 4698/2020.05.31
Author/s: Aurelian GULEA, Valentin GUDUMAC, Dorin ISTRATI, Irina USATAIA, Vasilii GRAUR, Victor ȚAPCOV, Inna ŞVEȚ, Valeriana PANTEA, Veronica SARDARI.
Institution: MOLDOVA STATE UNIVERSITY
Category: O
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 115-71 times the analogous characteristics of quercetin that is used in medicine.*
State of development: Laboratory.

13.

Title: New antibacterial agent against Bacillus cereus and Bacillus subtilis
Patent/project number: MD 4707/2020.08.31
Author/s: Aurelian GULEA, Greta BĂLAN, Ianina ULCHINA, Vasilii GRAUR, Victor ȚAPCOV
Institution: MOLDOVA STATE UNIVERSITY
Category: O
Description: *The invention relates to chemistry and medicine, in particular to a biologically active coordination compound with high antibacterial activity towards Bacillus cereus and Bacillus subtilis.*
State of development: Laboratory.

14.

Title: Advances in photodynamic therapy based on (3R) -3-hydroxy-4- (trimethylamino) butanoic acid-conjugated metallophthalocyanine photosensitizer
Patent/project number: a 2020 0045/2020.05.25
Author/s: Tamara POTLOG, Vadim FURTUNA, Ion LUNGU
Institution: MOLDOVA STATE UNIVERSITY

Category: O
Description: *A near infrared absorbent band photosensitizer is proposed for photodynamic therapy, which includes: cosnolation of ZnPc in dimethylsulfoxide solution (DMSO) and water (H_2O), determination of the optimal composition of the solvent by absorbance study, synthesis of photosensitizer based on ZnPc 3R) -3-hydroxy-4- (trimethylamino) butanoic acid in a mixture with composition determined by DMSO / H_2O and highlighting the singlet oxygen generated by the fluorescence study.*
State of development: Laboratory.

15.

Titl: Chitosan functionalization process with ascorbic acid
Patent/project number: a 2019 0036/2019.04.22
Author/s: Maria GONȚA, Iacob GUȚU, Mihail CEACÎRU, Cristina CEACÎRU
Institution: MOLDOVA STATE UNIVERSITY
Category: O
Description: *The invention relates to the biotechnological domain, in particular to the synthesis of copolymers obtained by functionalizing chitosan with antioxidants, which can be used successfully in the field of pharmaceutical technology. Chitosan functionalized with natural antioxidants has reducing properties. These compounds can be applied in the inhibition of the process of formation of carcinogens (N-nitrosamines) that are synthesized as a result of nitrosation of the drugs with nitrites in vivo. FT-IR spectrophotometry was used to determine the structure of functionalized chitosan with ascorbic acid (AAs). The antioxidant activity (AAO) of the obtained product was determined by applying the ABTS • + and DPPH tests. The AAO of the developed copolymer was found to be higher, with 16,7 %, than that of Aas.*
State of development: Laboratory.

16.

Title: The method of grafting quercetin in copolymers of chitosan with maleic anhydride
Patent/project number: MD 9514/2020.05.07
Author/s: Ştefan ROBU, Maria GONȚA, Larisa MOCANU,Elena SÎRBU, Cristina CEACÎRU
Institution: MOLDOVA STATE UNIVERSITY
Category: O
Description: *The invention relates to a process for obtaining a polymeric material with antioxidant properties, synthesized from polyphenol (quercetin) functionalized chitosan copolymers, which can be used in the pharmaceutical field. The process of grafting quercetin to the chitosan copolymer with maleic anhydride, includes quercetin grafting with dimethylformamide and ethyl chlorformate. The problem that the present invention solves is the elaboration of a new process without the use of enzymes. The elaborated copolymer has antioxidant properties 2.5 times higher than free quercitin and a prolonging effect. It has been found that the prolongation effect of the quercetin functionalized copolymer is 5 times greater than that of the non-functionalized quercetin.*
State of development: Laboratory

17.

Title: ***Dynamic Artificial halochamber with autoregulation and multiple uses (Halocameră artificială în regim dinamic, cu autoreglare şi multiple utilizări)***
Patent/project number: Patent Application RO A00798, 12.10.2018
Author/s: Ioan Gabriel SANDU, Ion SANDU, Andrei-Victor SANDU, Kamel EARAR, Viorica VASILACHE, Cătălina – Mihaela ŞTIRBU, Radu Adrian CRIŞAN DABIJA, Marin CHIRAZI, Alina VLĂDESCU, Mihai Cosmin COTRUŢ
Institution: Universitatea Tehnica "Gheorghe Asachi" din Iasi
Category: O
Description: *The invention relates to a dynamic, autoregulating and multiple use artificial halochamber which allows the generation of saline aerosols for the prevention and treatment of cardio-respiratory and osteo-muscular, psychomotor disorders, as well as for improving the physical performance of children, the elderly and people working in high-stress and athletes performance.*
State of development: laboratory

18.

Title: VERSACRYL: HEAT-SENSITIVE MOLDABLE MULTI-PURPOSE DENTURE ACRYLIC "BITEM" (Biocompatible Intraoral Thermo-Elastic Acrylic Material)
Patent/project number: 2,111,789 (Canada)
Author/s: BOB HUYBRECHTS, RDT
Institution: Innovation Initiative Co-operative Inc.
Category: O
Description: *Acrylic adjustable by heat from warm water – a thermo-elastic acrylic has received regulatory approval from Health Canada and Health Australia, the FDA Approval, and CE Mark in Europe. BITEM can be used for any part of a dental appliance and it is adjustable simply by using warm water. It can be used by patients to adjust their own fit and control comfort level of their dentures.*
State of development: product

19.

Title: VIGORION
Patent/project number: None
Author/s: Iman Hadi Vincheh and Ma. Chat Donna V. Ofilas
Institution: Farin Technologies
Category: O
Description: *An energy efficient solution is provided to infiltrate the air through an innovative cyclone sweeper to infiltrate air and destroy airborne viruses and bacteria through an innovative, responsive negative ion dispenser that adjusts to the air stream dynamically to ensure the maximum and uniform ion delivery including an activated carbon filter which is replaceable and an Ultra Violet C light is used to kill the viruses and bacteria trapped in the filter. The system has a sound proof design and is consistent to all settings of the household usage to the hospital and classrooms through a scalable product design.*
State of development: prototype

P- History and Cultural Studies

1.

Title: COMPOSITION FOR PAPER DEACIDIFICATION – PROCESS TO OBTAIN IT AND METHOD FOR ITS APPLICATION
Patent/project number: EP 2 626 464 81
Author/s: Rodica-Mariana Ion, Sanda Maria Doncea
Institution: ICECHIM, Bucharest, Romania
Category: P
Description: *This invention relates to a new chemical composition comprising nanoparticles of hydroxyapatite, suspended in solution of carboxymethyl cellulose (50% : 50%) in isopropylic alcohol as solvent, this composition being used for paper deacidification purposes, by the annihilating the paper acidity from pH = 4.5 to alkaline range pH = 7.2.*
State of development: Product, prototype

2.

Title: Antimicrobial coating and with protective role for the natural stone surfaces with cultural value and method of obtaining it
Patent/project number: A00072/2020
Author/s: Radu Claudiu Fierascu1, Irina Fierascu1, Roxana-Ioana Brazdis1, Anda Maria Baroi1, Alina Ortan2
Institution: 1National Institute for Research & Development in Chemistry and Petrochemistry – ICECHIM Bucharest/2 University of Agronomic Sciences and Veterinary Medicine of Bucharest
Category: P
Description: *The present invention relates to a coating material with antimicrobial and protective properties, for natural stone objects (limestone or magmatic rocks) with cultural value, and not only, based on an antimicrobial component (consisting of a hydroxyapatite derivative) in a solution of organosiloxane oligomers (at different concentrations). The solution uses compounds whose synthesis is fast, economical, and without negative action on the environment and human health under normal conditions of use, having an antimicrobial component easily to synthesize. In addition, the influence on the treated objects is insignificant from an aesthetic point of view. This work was supported by a grant of the Romanian National Authority for Scientific Research and Innovation, CNCS/CCCDI – UEFISCDI, project number PN-III-P1-1.2-PCCDI-2017-0413, contract 50 PCCDI/2018, within PNCDI III.*
State of development: laboratory

3.

Title: Antimicrobial pulverisable solution for restoration / conservation of leather supports and method of obtaining it
Patent/project number: A00074/2020
Author/s: Radu Claudiu Fierascu1, Irina Fierascu1, Roxana-Ioana Brazdis1, Anda Maria Baroi1, Alexandru Stirban2, Ariana Codruta Leahu2, Alina Ortan3
Institution: 1National Institute for Research & Development in Chemistry and Petrochemistry – ICECHIM Bucharest/ 2National Museum of Union Alba Iulia (MNUAI)/ 3 University of Agronomic Sciences and Veterinary Medicine of Bucharest (USAMVB)
Category: P
Description: *The present invention relates to an antimicrobial pulverisable solution based on a mixture of hydroxyapatite, calcium oxalate and zinc apatite (composed from a hydroxyapatite derivative in which calcium has been completely dissociated from zinc), used for conservation/ restoration of heritage objects. on leather support. The solution uses compounds whose synthesis is fast, economical, and without negative action on the environment and human health under normal conditions of use, having an antimicrobial component easily to synthesize and nontoxic, and doesn't influence the treated objects from an aesthetic point of view. This work was supported by a grant of the Romanian National Authority for Scientific Research and Innovation, CNCS/CCCDI – UEFISCDI, project number PN-III-P1-1.2-PCCDI-2017-0413, contract 50 PCCDI/2018, within PNCDI III.*
State of development: laboratory

4.

Title: Adhesive material with antimicrobial properties for the restoration of ceramic artifacts belonging to the cultural heritage and method of obtaining it
Patent/project number: A00914/2018
Author/s: Radu Claudiu Fierascu1, Irina Fierascu1, Petronela Fotea1, Alina-Ruxandra-Eugenia Ortan2, Ioana Popitiu3, Mihaela Beceanu3
Institution: 1The National Institute for Research & Development in Chemistry and Petrochemistry – ICECHIM Bucharest, 2University of Agronomic Sciences and Veterinary Medicine of Bucharest, 3Museum of Dacian and Roman Civilization
Category: P
Description: *For heritage objects only adhesives that comply with the general principles of scientific restoration are used. In the restoration process only materials similar to the originals or, if this is not possible, materials with physico-mechanical properties as close as possible to the original materials are used. To comply with the rules and principles of restoration and low toxicity materials, the present invention relates to an antimicrobial adhesive material comprising on a polyvinyl- adhesive enriched with an antimicrobial mixture, for the restoration of clay cultural heritage artifacts, and other silica-based materials. This work was supported by a grant of the Romanian National Authority for Scientific Research and Innovation, CNCS/CCCDI – UEFISCDI, project number PN-III-P1-1.2-PCCDI-2017-0413, contract 50 PCCDI/2018, within PNCDI III.*
State of development: laboratory

5.

Title: Antimicrobial gluing agent for the restoration of paper-based artefacts belonging to the cultural heritage and the method of obtaining it
Patent number: A/00915/20.11.2018
Author/s: Alexandru Stirban1, Radu Claudiu Fierascu2, Irina Fierascu2, Petronela Fotea2, Alina-Ruxandra-Eugenia Ortan3, Maria-Similia Zgarciu1, Ioan Constantin Inel1
Institution: 1National Museum of Union Alba Iulia (MNUAI)/ 2National Institute for Research & Development in Chemistry and Petrochemistry – ICECHIM Bucharest/ 3University of Agronomic Sciences and Veterinary Medicine of Bucharest
Category: P
Description: *Biodegradation is the effect of the metabolic activity of living organisms that find optimal conditions for development on the support material. In the case of paper objects, the support is an environment favorable to the development of microorganisms that affect both their consistency and their aesthetic aspect. The present invention relates to an adhesive agent based on carboxymethylcellulose enriched with an antimicrobial mixture for the preservation / restoration of paper -based heritage artefacts.*
This work was supported by a grant of the Romanian National Authority for Scientific Research and Innovation, CNCS/CCCDI – UEFISCDI, project number PN-III-P1-1.2-PCCDI-2017-0413, contract 50 PCCDI/2018, within PNCDI III.
State of development: laboratory

6.

Title: The Corvins' Castle between scientific investigations and restoration
Patent/project number: No. 3/2017
Author/s: Sorin TINCU1, Rodica-Mariana ION2,3, Lorena IANCU2,3, Ramona GRIGORESCU2, Madalina DAVID2,3, Nelu ION2, Mihaela-Lucia ION4, Sofia TEODORESCU5, Raluca-Maria STIRBESCU5, Ioana Daniela DULAMĂ5, Ioan Alin BUCURICA5, Anca Irina GHEBOIANU5, Cristiana RADULESCU5, Daniela TURCANU-CARUTIU6
Institution: 1 Corvins Castle Museum, Hunedoara; 2 Research & Development National Institute of Chemistry and Petrochemistry - ICECHIM, ROMANIA; 3 Valahia University, Doctoral School, Târgoviște, Romania; 4 ONG Atelierul de Creație, Bucharest, Romania; 5 Valahia University, ICSTM, Târgoviște, Romania; 6 Ovidius University, Constanța
Category: P
Description: *Since October 2019, the Corvins' Castle is going through a new stage of restoration, thankfully to an European funding, obtained by the City Hall (the contract no 3/09.05.2017). The activities that will be carried out within this project, will have as impact the revitalization, respectively the conservation/rescue from the degradation of the cultural heritage objective – Corvins' Castle and, at the same time, the capitalization and sustainable promotion of the area and the objective itself.*
In parallel with this restoration works, an assotiation of different institutions and scientists carried out some multidisciplinary investigations, both, on the castle and on some artifacts discovered in it, in order to find out more information about the manufacturing and weathering/deterioration processes and to provide correct restoration solutions.
State of development: research project.

7.

Title: Compositions and process for treating leather objects for conferring antibacterial and antifungal activity
Patent/project number: A/00794/ 2019
Author/s: Ovidiu OPREA, Anton FICAI, Denisa FICAI, Ludmila MOTELICA, Roxana TRUŞCĂ, Ecaterina ANDRONESCU
Institution: University POLITEHNICA of Bucharest
Category: P
Description: *Composition with Ag nanoparticles protected with biocompatible polymers for the treatment of leather objects against microorganisms.*
State of development: product

8.

Title: Istorie, Cultură şi Cercetare /History, Culture and Research, no. IV
Patent/project number: ISBN 978-606-537-492-8
Author/s: Coordinators Dumitru-Cătălin Rogojanu, Gherghina Boda
Institution: Museum of Dacian and Roman Civilisation
Category: P
Description: *Volume IV of the International Scientific Conference "History, Culture and Research" is the result of the collaboration in recent years between Romanian and foreign specialists, who have succeeded in presenting in this volume important topics from their areas of scientific interests.*
Of the 25 articles, nine belong to foreign authors (from Serbia, Greece, Macedonia, the Republic of Moldova) and 16 to Romanian authors. The diversity of the subjects fits perfectly with the theme chosen by the coordinators, the scientific materials spanning a wide range of subjects such as history, ethnography, culture, sports, philosophy, history of journalism, security and environment, in a style specific to each author, but perfectly scientific due to the sources used, their quality and number.

Once more, the authors surprise the reader by the information presented in a scientific manner, some by their originality, others by personal interpretations yet strongly supported by historical and archival evidence. This volume too, although it includes rather different themes, has great unity, the introduction addressing the way history is written, from the perspective of a philosopher. The articles follow each other in their chronology and address topics such as Romanian national and local history, world history topics, sensitive topics of Moldovan history, topics of economy, culture and sports in both the Romanian and Macedonian or Moldovan areas, etc.
State of development: scientific paper

9.

Title: Composition and process for treating paper, parchment or other writing media, for removing pathogens such as fungi, mold or bacteria
Patent/project number: A/00798/ 2019
Author/s: Ovidiu OPREA, Anton FICAI, Denisa FICAI, Ludmila MOTELICA, Roxana TRUŞCĂ, Ecaterina ANDRONESCU

Institution: University POLITEHNICA of Bucharest
Category: P
Description: *The present invention relates to the production of innovative compositions consisting of ZnO nanoparticles loaded with natural extracts, for the treatment of cellulosic or parchment support of documents affected by pathogens.*
State of development: product

Q - Space science, Astronomy

1.

Title: New Nature-Inspired Cycloidal Propeller for Low-Reynolds-Number Hovering Flight
Patent/project number: Prototype/Research project.
Author/s: Francisc Bereczky, Ioan Silea
Institution: Echitron S.R.L. and Polytechnic University of Timisoara
Category: Q
Description: *A new type of pivoting-blade cycloidal propeller having the appearance of damselfly wings, which can equip aircraft with vertical take-off and landing capability was designed and tested. This propeller is emerging as an alternative solution for electrically powered Planetary Aerial Vehicles capable of operating in the rarefied atmosphere of Mars. The article and auxiliary materials (films, pictures) can be obtained for a fee by accessing: https://arc.aiaa.org/doi/abs/10.2514/1.J057270*
State of development: prototype

2.

Title: Rocket science experiment
Patent/project number: research project.
Author/s: Tiberiu Stroia
Institution: Casa Ştiinţei Deva
Category: Q
Description: *Multiple experiments explained for everyone's understanding with refinement and fun by Tiberiu Stroia, founder of Casa Ştiinţei Deva.*
Experiment for aerospace technology case study being the rocket. The components used in the construction of the experimental missiles are generally recyclable materials purchased from the scrap yard.
State of development: experimental learning project for students

3.

Title: Rocket fuel experiment
Patent/project number: research project.
Author/s: Tiberiu Stroia
Institution: Casa Ştiinţei Deva
Category: Q
Description: *Using a mixture of potassium nitrate, glucose and iron oxide, we can get the fuel needed to power a rocket engine. By ignition, it releases, at high speed, a large amount of gas which, according to the principle of reaction, will propel our experimental rocket.*
State of development: experimental learning project for students

R – Nanotechnology, Advanced materials

1.

Title: Process for the synthesis of silver nanowires coated with low-melting-point metal nanoparticles
Patent/project number: RO 132480 B1/30.04.2020
Author/s: Bănică Radu Nicolae, Kellenberger Andrea Rozalia, Ursu Daniel Horaţiu, Cseh Liliana, Linul Petrică Andrei, Vaszilcsin Nicolae
Institution: Polytechnic University of Timisoara
Category: R
Description: *The invention relates to a process for the synthesis of silver nanowires coated with low-melting-point metal nanoparticles, meant to be used as electroconductive tracks on flexible electrical insulator supports, with applicability in the construction of solar cells and optoelectronic devices, such as: flexible mobile phones, smart windows that modify their transparency when applying an electrical voltage, highly efficient thermal heaters for electronic components, smart clothing employing the Joule-heating effect, etc.*
State of development: PhD thesis

2.

Title: METAL MATRIX COMPOSITES USING RECYCLED SECONDARY RAW MATERIALS FROM ALUMINIUM WASTES
Patent/project number: PhD thesis
Author/s: Ciprian BULEI, Imre KISS
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: R
Description: *The purpose of this study is to highlight the most efficient methods of recycling aluminium alloys in order to be applied in the practice of composites. This research concerns the liquid mixing (Vortex method) processing of composite materials with metal matrix of aluminium alloys, reinforced with ceramic particles. This technology uses common and cheap raw materials, matrix alloys in the moulded state, from recycling. This process has general economic and technological advantages, consisting of a small number of operations, with low durations and low energy consumption. Also, liquid mixing can be obtained by composite materials with a homogeneous distribution of ceramic reinforcement particles in the metal matrix.*
State of development: Exploratory research

3.

Title: RECYCLING ALUMINIUM CANS IN REUSABLE BACKYARD FOUNDRY
Patent/project number: PhD thesis
Author/s: Ciprian BULEI, Imre KISS
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: R
Description: *The objective of the research is to develop some recycling facilities for re–smelt and re–cast of aluminium by using charcoal briquettes into a mini metal foundry, designed and manufactured in laboratory. In this research we experimented a reusable backyard foundry that melts aluminium cans (soda and beer) easily and safely. This study was carried out using laboratory installations designed and carried out within the Department of Engineering and Management of the Faculty of Engineering Hunedoara, University Politehnica Timisoara, within a doctoral program.*
State of development: Exploratory research

4.

Title: FABRIC–REINFORCED POLYMER MATRIX COMPOSITES USING BIO–BASED COMPONENTS FROM POST–CONSUMER TEXTILE WASTE
Patent/project number: PhD thesis
Author/s: Mihai–Paul TODOR, Imre KISS
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: R
Description: *In our research, polymer matrix based composite structures were studied by using different natural–reinforcements from eco–friendly, breathable, biodegradable and recyclable post–industrial and post–consumer waste (woven fabrics made of cotton fibers – like denim textile fabric and bast fibers – like jute hessian fabric bags).*
State of development: Exploratory research

5.

Title: COMPOSITE MATERIALS MANUFACTURING USING TEXTILE INSERTS WITH NATURAL ORIGINS FIBRES
Patent/project number: PhD thesis
Author/s: Mihai–Paul TODOR, Imre KISS
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: R
Description: *The objective of the research is to develop new fully or partially biodegradable composite materials by using new natural fibres and those recovered from various textile wastes. Thus, the research aims to obtain some composites with matrix of various types of polymeric materials and the reinforcement phase of textile materials so that the resulting products to be biodegradable. The textile inserts used as reinforcement are ecological, non–toxic and biodegradable and they contain bast fibres (flax, hemp, jute, divided or in combination), which can replace fibres of glass commonly used in polymeric composites.*
State of development: Exploratory research

6.

Title: Development of „n-p" heterojunctions based on n-type TiO2 and p-type CuMnO2, integrated in sensitive modules
Patent/project number: Registered patent OSIM no. A/00087/09.06.2020
Author/s: Lazau Carmen, Poienar Maria, Orha Corina-Ileana, Bandas Cornelia-Elena, Ursu Daniel-Horatiu, Vajda Melinda, Nicolaescu Mircea-Daniel
Institution: National Institute of Research and Development for Electrochemistry and Condensed Matter
Category: R
Description: *The invention relates to the development of "n-p" heterojunctions obtained by coupling two inorganic materials based on n-type semiconductor films based on TiO2 and p-type semiconductor films based on CuMnO2. The sensitive modules showed a reverse diode-type semiconductor heterojunction behavior. Obtaining 2D nanocomposite heterostructure that integrate metal oxides of the "p" or "n" type allows to combine the properties of the components in a single system leading to the improvement of electrical and optical properties and the rapid recombination of photogenerated holes and electrons.*
State of development: Concept

7.

Title: Synthesis process of materials based on SnTe in ultrasonic field with immersed sonotrode
Patent: 128140/19.08.2014
Author/s: Sfirloaga Paula, Lazau Carmen, Vlazan, Paulina, Novaconi Stefan Danica. Grozescu Ioan
Institution: National Institute for Research and Development in Electrochemistry and Condensed Matter, Timisoara
Category: R
Description: *The invention relates to a fast synthesis method of materials based on tin tellurium (SnTe) by the ultrasonically assisted hydrothermal method with the sonotrode immersed in the reaction medium.*
State of development: product

8.

Title: Investigation of physico-chemical features of lanthanum manganite with nitrogen addition
Patent/project number: Journal of Alloys and Compounds 843 (2020) 155854
Author/s: Paula Sfirloaga, Iuliana Sebarchievici, Bogdan Taranu, Maria Poienar, Gabriela Vlase, Titus Vlase, Paulina Vlazan
Institution: National Institute for Research and Development in Electrochemistry and Condensed Matter, Timisoara
Category: R
Description: *Experiments showed that the N-LaMnO3 perovskites exhibit electrocatalytic activity in the presence of the ferric/ferrous redox couple; addition of a high N-doping lead to a large capacitance value.*
State of development: scientific paper.

9.

Title: COMPOSITION FOR PAPER DEACIDIFICATION –PROCESS TO OBTAIN IT AND METHOD FOR ITS APPLICATION
Project number: 567 PED/2020
Author/s: Rodica-Mariana Ion, Maria Geba
Institution: ICECHIM, Bucharest, Romania
Category: R
Description: *The project responds to heritage preservation / restoration problems, offering solutions through a new multi-steps preservation process of cellulose-based documents, solving the current conservation treatments as mass deacidification, recreating alkaline reserve with a proper storage environment for the treated book objects.*
State of development: Research project

11.

Title: Ecological antifungal composition for controlling phytopathogenic strains affecting the grapevine and method of obtaining it
Patent/project number: A00158/2019
Author/s: Irina Fierascu1, Radu Claudiu Fierascu1, Toma Fistos1, Liliana Cristina Soare2, Camelia Ungureanu3, Diana Vizitiu4, Oana Alexandra Draghiceanu2, Alina Paunescu2
Institution: 1National Institute for Research & Development in Chemistry and Petrochemistry – ICECHIM Bucharest/ 2University of Pitesti/ 3University Politehnica of Bucharest/ 4The National Research and Development Institute for Biotechnologies in Horticulture Stefanesti
Category: R
Description: *There are known numerous plant diseases caused by pathogens such as fungi, molds, oomycete, bacteria and viruses. The present invention relates to an ecological composition for controlling pathogenic strains affecting vines (Plasmopara viticola), responsible for the appearance of grapevine downy mildew, based on phytosynthesized silver nanoparticles using natural extracts from spontaneous flora. This ecological composition has no adverse effects, is cheap, and has no negative effect on the environment and human health. This work was supported by a grant of the Romanian National Authority for Scientific Research and Innovation, CNCS/CCCDI – UEFISCDI, project number PN-III-P1-1.2-PCCDI-2017-0332, contract 6 PCCDI/2018, within PNCDI III.*
State of development: laboratory

12.

Title: Natural fungicidal composition for combating grapevine downy mildew and method of obtaining it
Patent/project number: A00073/2020
Author/s: Irina Fierascu1, Radu Claudiu Fierascu1, Toma Fistos1, Liliana Cristina Soare2, Camelia Ungureanu3, Diana Vizitiu4

Institution: *1National Institute for Research & Development in Chemistry and Petrochemistry – ICECHIM Bucharest/ 2University of Pitesti/ 3University Politehnica of Bucharest/ 4The National Research and Development Institute for Biotechnologies in Horticulture Stefanesti*
Category: *R*
Description: *The present invention relates to an ecological composition for combating pathogenic strains that affect grapevines (Plasmopara viticola (Berk. & MA Curtis) Berl. & De Toni, (1888), responsible for the grapevine downy mildew), based on phytosynthesized silver nanoparticles using alcoholic extracts of Dryopteris filix-mas (L.) Schott rhizomes. This environmentally friendly composition for combating pathogenic strains that affect crop uses non-toxic solvents, has no adverse reactions, is cheap, and has no adverse effect on the environment and human health, and has the property of direct application in culture without requirement of other chemicals as transport vectors. This work was supported by a grant of the Romanian National Authority for Scientific Research and Innovation, CNCS/CCCDI – UEFISCDI, project number PN-III-P1-1.2-PCCDI-2017-0332, contract 6 PCCDI/2018, within PNCDI III.*
State of development: laboratory

13.

Title: Green technology for pharmaceuticals removal from water using eco-friendly oxidation catalysts
Patent/project number: project 299 PED/2020
Author/s: Irina Fierascu1, Radu Claudiu Fierascu1, Sorin Marius Avramescu2, Sorin Claudiu Ulinici3
Institution: 1National Institute for Research & Development in Chemistry and Petrochemistry – ICECHIM Bucharest, 2University of Bucharest, 3 ICPE Bistrita S.A.
Category: R
Description: *The main goal of this project is to develop a green technology for the removal of pharmaceutical compounds from water, using catalytic systems for oxidation, consisting of phytosynthesized metal oxides. The choice of the use of plant extract in the preparation of the considered catalytic systems has advantages over the classical approaches, as it does not require environmentally harmful precursors, which can generally significantly reduce the "green" impact of catalytic processes. This work was supported by a grant of the Romanian National Authority for Scientific Research and Innovation, CNCS/CCCDI – UEFISCDI, project number PN-III-P2-2.1-PED2019-3166, contract 299 PED/2020, within PNCDI III.*
State of development: laboratory

14.

Title: The use of biomaterials in implantology and dental prosthetics.
Patent/project number: student project
Author/s: Popa Alina-Maria, Poenaru Iulia Olivia
Institution: Polytechnic University of Timisoara, Faculty of Engineering Hunedoara
Category: R
Description: *Biomaterials are substances or combinations of substances, of natural or synthetic origin, which can be used for a well-defined period of time, as a hole or as a component part of a system that treats, hurries, or replaces a tissue, an organ or a function of the human body.*

Dental prosthetics brings together all those subtitutes which restore lost functions by the absence of teeth. Implantology leads to extraordinary results in the treatment of missing teeth with dental implant, considering the precision, the accuracy and the speed of execution with which the treatment is performed. In the last 20 years, implantology has begun to play a very important role in dentistry, by having a innovative feature through which an edentulous breach can be closed without affecting the whole teeth.
State of development: Scientific paper

15.

Title: POLYETHER-URETHANE CARRIER FOR THE TRANSDERMAL TRANSPORT OF PHARMACEUTICAL COMPOUNDS USED IN DENTISTRY
Patent/project number: Patent no 128801 / 29.11.2017
Author/s: BORCAN FLORIN, ŞOICA CODRUȚA, FLORIȚA ŞERBAN, GĂLUŞCAN ATENA, JUMANCA DANIELA
Institution: "Victor Babes" University of Medicine and Pharmacy Timisoara
Category: R
Description: *Drug carriers represent the future of drugs because they confer a constant level of biologically active substance to the receptor without the risk of shock (occurring in injectable substances) or the risk of degradation (occurring on orally administered drugs).*
The patented invention relates to polymeric nano- and micro-structures (polyether-urethane type) whose size and stability may slightly vary by modifying the precursors' ratio (the hydroxyl component / isocyanate component).
State of development: scientific paper, research project

16.

Title: HYDROGEN SULFIDE ADSORBENT PRODUCT AND THE PROCEDURE FOR ITS OBTAINING
Patent/project number: Patent pending no A 2019 00040
Author/s: BORCAN LIVIA-CRISTINA, POPESCU FLORINA GEORGETA, BORCAN FLORIN, PĂUNCU ELENA ANA, TOMESCU MIRELA CLEOPATRA, DEHELEAN CRISTINA ADRIANA
Institution: "Victor Babes" University of Medicine and Pharmacy Timisoara
Category: R
Description: *The invention relates to a product based on a foam used as a personal protective equipment in the case of employees of thermal baths or waste water treatment plants and to the process for its obtaining. The product contains polyether-urethane microparticles comprising a mixture of active substances (zinc oxide, disodium salt of ethylene-diamine-tetraacetic acid and amorphous ferric oxide), capable to reduce the concentration of hydrogen sulfide from an air stream by converting it through chemical reactions as precipitation, complexation, redox.*
State of development: concept

17.

Title: Low temperature sintering of highly conductive ZnO ceramics for cost effective production of optoelectronic devices
Patent/project number: MD a 2018 0065/2018.08.27
Author/s: Dumitru RUSNAC, Gleb V. COLIBABA, Victor SUMAN.
Institution: MOLDOVA STATE UNIVERSITY
Category: R.
Description: *The novel approach for sintering of ZnO ceramics by means of chemical vapor transport using HCl+H2+C transport agent is proposed. The low sintering temperature of 1070 □C, 99% of the initial diameter of powder, 80% of single crystal hardness, 90-95% of ZnO crystal density, the high conductivity of 5 (□cm)-1, and a controllable stoichiometric deviation are achieved. HCl+H2+C is effective transport agent for many metal oxides, increasing the doping efficiency of ZnO ceramics by several orders of magnitude. This simplifies and reducing the price of manufacturing for uniformly doped ZnO magnetron targets, thin films and optoelectronic devices based on ZnO.*
State of development: Product.

18.

Title: Friction riveting procedure
Patent application number: A/00049/05.02.2020
Author/s: Radu Cojocaru, Lia-Nicoleta Boțilă, Cristian Ciucă
Institution: National Research & Development Institute for Welding and Material Testing – ISIM Timisoara
Category: R
Description: *The patent proposal refers to the development of a new, innovative and environmentally friendly riveting process of metallic materials, based on the use of an unconventional processing technique: - friction riveting process. It has applicability to join aluminum alloys with different properties and characteristics, difficult to join by using other processes.*
State of development: laboratory

19.

Title: Method of friction riveting with hybrid effect
Patent application number: A/00127/05.03.2020
Author/s: Radu Cojocaru, Lia-Nicoleta Boțilă, Cristian Ciucă
Institution: National Research & Development Institute for Welding and Material Testing – ISIM Timisoara
Category: R
Description: *The patent proposal refers to the development and proposal in industry of a new, innovative and environmentally friendly process for joining by riveting of metallic materials, based on the use of an unconventional processing technique: - joining process by riveting with hybrid effect (mechanical fastening - friction welding)*
State of development: laboratory

20.

Title: Informatized thermal and thermomechanical fatigue testing system of functional or protective layers
Patent application number: A/00339 din 06.06.2019
Author/s: Alin-Constantin Murariu, Radu Cojocaru, Ion-Aurel Perianu, Lia-Nicoleta Boţilă
Institution: National Research & Development Institute for Welding and Material Testing – ISIM Timisoara
Category: R
Description: *The patent proposal refers to an informatized thermal and thermomechanical fatigue testing system of functional layers or for the protection of various support materials, layers obtained by means of specific processes and coating technologies, to assess the mechanical and thermal fatigue characteristics thereof.*
State of development: demonstrator

21.

Title: Highly sensitive detection of water-quality contamination with drugs at trace levels based on liquid crystals/ nanostructured carbon electrodes (DRUWATSENS)
Patent/project number: PN-III-P1-1.1-PD-2019-0676/ PD 88/ 13/08/2020
Author/s: Sorina Ilieş (born Moţoc), and Florica Manea
Institution: "Coriolan Dragulescu" Institute of Chemistry, Romanian Academy
Category: R
Description: *The scope of the project is to obtain functionalized electrode based on liquid crystals and nanostructure carbon for the enhanced simultaneous/ selective detection of pharmaceuticals in real water for further development of real time sensing systems for water quality monitoring. Effective real-time monitoring is the key to understanding and tackling the issue of water quality assurance and in particular of water contamination with pharmaceuticals bioactive components. The project objectives will create scientific and technical premises for the making of an innovative, ultrasensitive sensors based on MOx nanoelectrodes array, and specific protocols for individual/simultaneous/selective detection of pharmaceuticals bioactive compounds which will bring advanced knowledge on the sensors functionality. The electrode composition and electrochemical techniques types and operating conditions will be reference basis for further development of wireless electronics-integrated portable ultrasensitive sensor for real-time monitoring of water quality and other applications in the field of pharmaceuticals industry, food, and health.*
State of development: research project

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