

International Exhibition

INVENTCOR

Catalogue

4th edition

Editor: Corneliu BIRTOK BĂNEASĂ

14-16 September 2023

Deva, Romania



www.corneliugroup.ro inventcordeva@gmail.com

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Editura POLITEHNICA



Catalogue 4th International Exhibition InventCor 14-16.09.2023 – Deva, Romania



International Exhibition InventCor 4rd edition


CORNELIUGROUP research-innovation Association in collaboration with **Faculty of Engineering Hunedoara - Politehnica University of Timisoara** organizes in a hybrid format, the **International Exhibition INVENTCOR**, 4th edition, 14-16.09.2023, at the **Cultural Center „Drăgan Muntean”** from Deva city.

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

Objective: The main objective of **INVENTCOR 2023** is the importance of developing the creative-innovative spirit, through the involvement of young people and the promotion of Hunedoara County.

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

FB event page: INVENTCOR 2023 <https://fb.me/e/HsV4uQj4>

 **Period & Location:** 14-16.09.2023 - Cultural Center „Drăgan Muntean”



Motto: Creation Opportunity Realization

Promo: <https://youtu.be/d9kepE5K6yA>

Hashtag: #InventCOR2023 #CorneliuGroup #PutereaMintiiCreative

Origin: Deva City



INVENTCOR President: Corneliu Birtok Baneasa

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

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



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

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

The interest shown for the 4th edition of **INVENTCOR 2023** is quantified in more than 300 registrations from 29 countries.

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

Co-organizer

Politehnica University of Timișoara

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

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



Educational partners

County Library "Ovid Densusianu" Hunedoara-Deva

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



General Directorate of Monuments Administration and Tourist Promotion of Hunedoara County – DGAMPT

https://www.dgampt.ro/?page_id=5592



MUSEUM OF DACIAN AND ROMAN CIVILIZATION

<https://mcd.r.ro/index.php/en/home-5>





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The House of Science Deva

https://www.facebook.com/Casa-Stiintei-112843810370259/?ref=page_internal



Hunedoara County Center of Excellence

<https://cexhd.ro/despre/>



Research and innovation partners

State Office for Inventions and Trademarks

<https://www.osim.ro/en/>



World Invention Intellectual Property associations

<https://wiipa.org/about-us/>



UPT Center for Innovation and Technology Transfer

<https://citt.upt.ro/en/>



The General Association of the Engineers in Romania

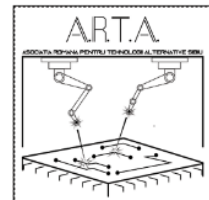
Hunedoara Branch <https://www.hunedoara.agir.ro/>



Romanian Association for Alternative Technologies Sibiu - A.R.T.A. Sibiu

<http://artasibiu.ro>

<https://www.facebook.com/mihail.titu/>
mihail.titu@yahoo.com



The Patent - International Magazine of World Inventions

<https://www.thepatent.news/>



Research Center for Engineering and Management

<http://www.mpt.upt.ro/eng/research/research-center.html>



Romanian Inventors Forum

<http://www.afir.org.ro/>





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



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



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



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



Media partners



Other partners





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"Lucian Blaga" University of Sibiu,
Romanian Association for Alternative Technologies Sibiu – A.R.T.A. Sibiu
mihail.titu@ulbsibiu.ro*

Members of the Jury



*Prof. Eng. Liviu MARȘAVINA, Sc.D.
Vice-rector of Scientific research, innovation, and
technology transfer
Politehnica University of Timisoara
liviu.marsavina@upt.ro*



*A/Prof. Teodora MOCAN, Ph.D., Dr. Habil.,
"Iuliu Hațieganu" University of Medicine and Pharmacy
Cluj Napoca
"Prof. Dr. Octavian Fodor" Regional Institute of
Gastroenterology and Hepatology Cluj Napoca
teodora_mocan@yahoo.com*



*Prof. Emeritus Eng. Constantin OPREAN, Sc.D.,
Dr.h.c.
"Lucian Blaga" University of Sibiu
constantin.oprean@ulbsibiu.ro*



*Prof. Phan Quoc NGUYEN, Ph.D.
Technical Vietnam National University, Hanoi, Vietnam
pqnguyen77@yahoo.com*



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*A/Prof. Eng. Andrei Victor SANDU, Sc.D.
"Gheorghe Asachi" Technical University of Iasi
Romanian Inventors Forum
sav@tuiasi.ro*



*Prof. Eng. Nicolae Eugen SEGHEdin, Sc.D.
Gheorghe Asachi Technical University of Iasi
National Institute of Inventions Iasi
neulai.seghedin@tuiasi.ro*



*Mr. Jeerasak JITROTJANARAK
Director of Satit Chula Innovation Society
Chulalongkorn University in Bangkok, Thailand*



*Mr. Robert ARMSTRONG
Deputy Director of Satit Chula Innovation Society
Chulalongkorn University in Bangkok, Thailand*



*Augustin SEMENESCU
Professor Habilitated Doctor M.Sc., B.Sc.
Politehnica University of Bucharest
augustin.semenescu@upb.ro*



*Prof. Eng. Alexandru MARIN, Sc.D., Dr. Habil.
Mentor at UPBizz Entrepreneurship Center
Politehnica University of Bucharest
alexandru.marin@upb.ro*



*Prof. Eng. Viorel NICOLAE, Sc.D.
Vice-rector of Education Quality
University of Pitesti
viorel.nicolae@upit.ro*



*Prof. Eng. Cătălin FETECĂU, Sc.D., Dr.h.c.
"Dunarea de Jos" University of Galați
catalin.fetecau@ugal.ro*



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*Prof. Eng. Cornel CIUPAN, Sc.D.
Technical University of Cluj Napoca
cornel.ciupan@muri.utcluj.ro*



*Prof. Dr. Nataša TRIŠOVIĆ
University of Belgrade, Faculty of Mechanical
Engineering, Serbia*



*Prof. Eng. Camilo Freddy Mendoza Morejon, Sc.D.
Universidade Estadual do Oeste do Paraná Brazil
camilo_freddy@hotmail.com*



*Prof. MD. Daniel COCHIOR, Ph.D., Dr. Habil.,
Rector of Titu Maiorescu University, Bucharest
rector@univ.utm.ro*



*Prof. Dr. Tatjana LAZOVIĆ
University of Belgrade, Faculty of Mechanical
Engineering, Serbia
tlazovic@mas.bg.ac.rs*



*Prof. Eng. Radu Adrian MUNTEANU, Sc.D., Dr. Habil.
Technical University of Cluj Napoca
Radu.A.Munteanu@ethm.utcluj.ro*



*A/Prof. MD Gabriel Petre GORECKI, Ph.D.
Titu Maiorescu University, Bucharest
gabygo2006@yahoo.com*



*MD Ștefan ȚÎȚU
"Iuliu Hațieganu" University of Medicine and Pharmacy
Cluj Napoca,
The Oncology Institute "Prof. Dr. Ion Chiricuță" Cluj-
Napoca
stefan.titu@ymail.com*



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Prof. Eng. Dumitru MNERIE, Sc.D.
Politehnica University of Timisoara
dumitru_mnerie@yahoo.com



Prof. MD. Dan TARNIȚĂ, Ph.D.
Faculty of Medicine and Pharmacy of Craiova
dan_tarnita@yahoo.com



Prof. Eng. Ovidiu NEMEȘ, Sc.D., Dr. Habil.
Technical University of Cluj Napoca
ovidiu.nemes@imadd.utcluj.ro



Dipl. Eng. Adrian BOGORIN-PREDESCU
Continental Automotive Systems Sibiu
Lucian Blaga University of Sibiu
adrian_bogorin@yahoo.com



**PROF. DR. MOHD MUSTAFA AL BAKRI
ABDULLAH**
Dean
Faculty of Chemical Engineering Technology
Universiti Malaysia Perlis (UniMAP)
Perlis, Malaysia
mustafa_albakri@unimap.edu.my



DR. Neyara RADWAN
Associate Professor
Mechanical Dept., Faculty of Engineering,
Suez Canal University, Egypt
Associate Professor
& the Quality Assurance Officer, PhD Program,
King Abdulaziz University, Jeddah, Saudi Arabia



A/Prof. Eng. Adrian SACHELARIÉ, Sc.D.
"Gheorghe Asachi" Technical University of Iasi
asachelarie@yahoo.com



A/Prof. Eng. Adina BUDIUL-BERGHIAN, Sc.D.
Politehnica University of Timișoara
adina.budiul@fih.upt.ro



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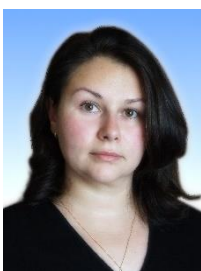
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Dr. Habil. Irina FIERASCU
Scientific Researcher I
National Institute for Research & Development in
Chemistry and Petrochemistry ICECHIM Bucharest



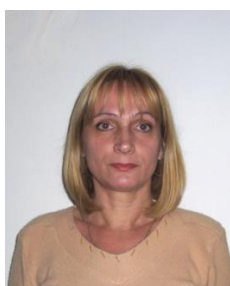
Deni IRAWAN
President of Indonesian Young Scientist
Association (IYSA)
youngscientist.iysa@gmail.com



Edwina KASLER
Photography specialist
Founder of Kasler Studio
edwinakasler@yahoo.com



Dr. eng. Alina VLADESCU (Dragomir)
National Institute of R&D for Optoelectronics-INOE2000
alinava@inoe.ro



Gherghina BODA, Dr. Habil.
Scientific researcher I
Museum of Dacian and Roman Civilization Deva
ginaboda15@gmail.com



Scientific researcher III
Dumitru-Cătălin ROGOJANU, Dr. Habil.
Museum of Dacian and Roman Civilization Deva
rogojanucatalindumitru@yahoo.com



Assist. Prof. Mohd Helmy Abd WAHAB, Sc.D.
University Tun Hussein Onn, Malaysia
helmy.uthm@gmail.com



Prof. Eng. Daniel GHICULESCU, Sc.D., Dr. Habil.
National University of Science and Technology
POLITEHNICA Bucharest
daniel.ghiculescu@upb.ro



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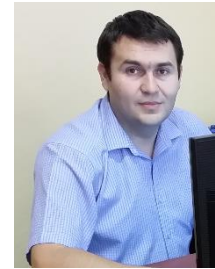
*Prof. Eng. Dan MILICI, Sc.D.
"Stefan cel Mare" University of Suceava
dam@usm.ro*



*Prof. Eng. Tihomir LATINOVIC Sc.D.
Member of BHAAAS Bosnia and Herzegovina American
Academi Arts and Science
University Vitez, Faculty of Information technology*



*Anda VLAD, trademark attorney
Intellectual Property Office
consilier.marca@gmail.com*



*Prof. Eng. Anton FICAI, Ph.D., Dr. Habil.
Politehnica University of Bucharest
anton.ficai@upb.ro*



*Prof. Eng. Daniela TARNIȚĂ, Sc.D.
Craiova University
tarnita.daniela@gmail.com*



*Prof. Habil. Dr. Narcisa MEDERLE
Vice Dean, Faculty of Veterinary Medicine, Timișoara
"KING MIHAI I" UNIVERSITY OF LIFE SCIENCES
FROM TIMISOARA
Member of the Academy
Academy of Agricultural and Forestry Sciences Gheorghe
Ionescu-Sisești*



*Arlan Escal BOLASCO, LPT, MAEd
Oriental Mindoro National High School,
Calapan City, Philippines*



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InventCor Awards

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



- **INVENTCOR GRAND AWARD**
- **JURY AWARD**
- **MEDICINE AWARD**
- **CORNELIUGROUP AWARD**
- **A.R.T.A. Sibiu AWARD**
- **EDUCATION AWARD**
- **A.G.I.R. AWARD**
- **BEST INNOVATION AWARD**
- **MEDIA AWARD**
- **BUSINESS AWARD**
- **CREATIVE AWARD**
- **POPULARITY AWARD**
- **Categories Awards**
- **Special Awards of the participating institutions**

Following the international judging, **gold**, silver and **bronze** medals will be awarded.





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Guests and speakers



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RATIU, Sc.D.**

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*Politehnica University of
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Dimitrie-Cristian FODOR

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



Daniela DRAGOMIR

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



**Prof. Marius PÎSLARU
Ph.D.**

*Gheorghe Asachi Technical
University of Iasi
Department of Engineering
and Management*



**Herdiana Dewi
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Indonesia*



Dr. Luy MITHONA

*Department of Computer
Studies
Norton University,
Cambodia*



Chef Ioana BOGDAN

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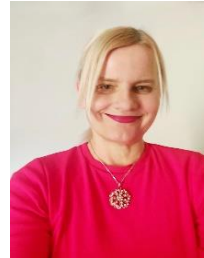
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*New era group of science
and technology
New Delhi, India*



Prof. Nada RATKOVIĆ
Croatia
*Assistant Professor on
Faculty of Economics,
Business and Tourism Split.
Quantitative Department,
Professor mentor in High VET
School, President of IIIU
Research Centre, Co-founder
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Magdalena Bianca TONE

*PHD Student
"Titu Maiorescu"
University,
Faculty of Medicine,
Bucharest*



**A/Prof. MD Gabriel
Petre GORECKI, Ph.D.**
*"Titu Maiorescu"
University
Faculty of Medicine
Bucharest*



Mariana HAHUE

*IP Expert
State Office for
Inventions and
Trademarks*



Đorđe ŠTANGL

*UPI ČIB – Serbia Center
for Development and
Application of
Innovations*



A/Prof. Vlad MIHĂESCU

*Director of "Politehnica
2020" Innovation and
Technological Transfer
Office
Politehnica University of
Timisoara*



Tiberiu STROIA

*Founder of the "House of
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*Member of the Executive
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International Federation of
Inventors Associations
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*Expert in nutrition
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International Exhibition INVENTCOR

Location: Cultural Center „Drăgan Muntean”

The 4th International Exhibition IN VENTCOR will be organized in a hybrid format (on site & online) at the Cultural Center „Drăgan Muntean” from Deva city, in the period **14-16 of September 2023**.

The Cultural Center „Drăgan Muntean” was designed to host a wide range of cultural activities, the building become a landmark for the city of Deva due to its architecture and position.

**Address: DEVA City, VICTORIA Square, No.7
HUNEDOARA County, ROMANIA**

Site: <https://www.centrulculturaldeva.ro/contact/>



Accommodation: Sarmis Hotel



Located on the main street of the city of Deva, the Sarmis hotel is only 100 meters from Cultural Center „Drăgan Muntean” and 700 meters from the train station and the bus station. The property offers free parking.

All rooms and apartments have a balcony, cable TV, Wi-Fi, a bathroom and a minibar. Some also offer a separate living room with a seating area.

Guests can enjoy Romanian and international cuisine in the Sarmis restaurant, indoors or on the terrace.

Site:

<https://www.unita-turism.ro/en/hotel/deva/sarmis.html>





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A - Energy, Protection of the environment, Biotechnology

1.

Title: REDUCING THE IMPACT ON THE ENVIRONMENT BY NEUTRALIZING EXPIRED DRUGS

Patent/project number: Research project

Author/s: Erika Ardelean, Valentin Ordodi, Marius Ardelean, Ana Socalici

Institution: University Politehnica of Timisoara

Category: A

Description: Used medicines can have a significant impact on the environment when disposed of improperly, as they may contain chemicals and active substances that can be harmful to living organisms and ecosystems.

In general, used drugs enter the environment in two main ways: through direct disposal into wastewater and through storage in mixed waste and landfills/landfills, where they can reach groundwater or surface volatilization.

Medicines that are disposed of in wastewater can affect water quality as well as the health of animals and plants that live in and around these water sources. For example, active substances in medicines can suppress the growth and reproduction of fish and other aquatic life.

In addition, used drugs that are disposed of in landfills can harm the soil and wildlife around them. For example, active substances in medicines can affect beneficial insects such as bees and ground beetles, which are essential for pollination and maintaining soil health.

The substances selected for the experiments were ephedrine, acetaminophen, caffeine and methylene blue. These substances are active in the composition of many commercial pharmaceutical preparations, used in the treatment of a wide range of conditions.

Our method is based on two processes: oxidation of hazardous waste considered in the study by reactive species of chlorine (sodium hypochlorite, hypo-chloric acid and physically dissolved chlorine); direct anode electro-oxidation of these wastes.

It was concluded that: the combination of the 4 compounds has a favorable effect with regard to the purification of acetaminophen and methylene, but it is significantly unfavorable in the case of ephedrine and to a lesser extent in the case of caffeine.

State of development: Research in the laboratory phase

Contact: erika.ardelean@fih.upt.ro

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



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2.

Title: INNOVATIVE SYSTEM FOR EVALUATING THE SUSTAINABILITY OF THE UNIVERSITY (SU_{ny})

Patent/project number: PhD Thesis

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

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

Category: A

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

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

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

State of development: Doctoral research project

Contact: +40745986846

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

3.

Title: METHOD OF PLATINUM RECOVERY AND CAPITALIZATION FROM RESIDUAL AQUEOUS SOLUTIONS

Patent/project number: OSIM - A/00056/08.02.2023

Author/s: Lupa Lavinia, Coheci Laura, Țolea Nick Samuel, Lazău Radu

Institution: Politehnica University of Timișoara

Category: A

Description: The invention relates to a method of platinum recovering from residual aqueous solutions by adsorption on new and efficient adsorbent materials, followed by their reutilization in the form of photocatalysts in the treatment process of waters containing undesirable organic compounds. The layered double hydroxides (LDH) of Mg₃Al, respectively Zn₃Al functionalized with ionic liquid, trihexyl tetradecyl phosphonium chloride (IL) are used as adsorbent materials. Functionalization of LDH with IL is done by ultrasonication or co-synthesis. The recovery of platinum from aqueous solutions is carried out by



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adsorption on the newly synthesized materials. The adsorption process proceeds in dynamic mode at a solid:liquid=1:1 ratio, stirring time 60 min, ambient temperature, using aqueous solutions with an initial concentration of platinum ions up to 500 mg/L. The recovery of platinum ions is carried out by using exhausted adsorbent materials with a content of up to 250 mg Pt/g in the form of photocatalysts in the treatment process of waters containing emergent compounds (Ci, dyes ≤ 50 mg/L, Ci, drugs ≤ 250 mg/L and Ci, phenolic compounds ≤ 200 mg/L). The photocatalysis processes take place at a ratio of aqueous solution: photocatalyst = 1 g/L, irradiation time 180 minutes, and ambient temperature. The proposed method is in accordance with the European "green" agreement (European Green Deal: "Clean environment and zero pollution"), proposing a solution that falls within the closed cycle technologies of platinum recovery and revalorization.

State of development: Developed

Contact: lavinia.lupa@upt.ro

Presentation link: Acknowledgement: This work was supported by a grant of the Romanian Ministry of Education and Research, CNCS - UEFISCDI, project number PN-III-P1-1.1-TE-2019-1555, within PNCDI III

4.

Title: ASSESSMENT OF WATER RESOURCES USING LANDSAT SATELLITE IMAGERY

Patent/project number: Research project

Author/s: Codruta Badaluta-Minda, Mihai Valentin Herbei

Institution: Politehnica University of Timisoara, University of Life Sciences "KING MIHAI I"

Category: A

Description: Observation of surface water is very important for studying hydrological processes and last advances in satellite-based optical remote sensors have promoted the field of sensing surface water of a certain area or from a catchment area. GIS techniques were used to extract data NDWI, MNDWI, and AWEI indices from Landsat-8 satellite in images to evaluate their performances for the extraction of surface water.

The objective of this research was to extract these surface water bodies from the hydrographic basin of river Barzava based on the indices resulting from the processing of satellite images after that, the obtained data are used for the purpose of finding correlation and regression equations between the reflectance of satellite image and the measured parameters of the water.

Automatic water extraction index, introduced by addition and subtraction of bands with the coefficients. AWEInsh and AWEIsh can visually extract a large portion of the water pixels, eliminating most of the classification errors for shadows and other non-water surfaces, whereas AWEIsh is for removing shaded pixels and AWEInsh for the urban areas.

The study highlights the coverage of areas with surface water bodies in the river basin, using high-resolution images, and the coefficient of correlation between NDWI, MNDWI, AWIR, and WIR was used as a statistical measure of successful the regression model to explain the variation of the observed data.

State of development: Statistical measurement

Contact: codruta.badaluta-minda@upt.ro

Presentation link: <https://scholar.google.ro/citations?user=Y744d7IAAAAJ&hl=en>



5.

Title: SILVER RECOVERY FROM RADIOGRAPHIC FILMS

Patent/project number: Research project

Author/s: Marius Ardelean, Erika Ardelean, Corina Galfi, Ana Socalici, Ana Josan

Institution: University Politehnica of Timisoara

Category: A

Description: X-ray films are used in the medical field to obtain radiological images of the internal structures of the human body. They consist of a plastic or cardboard backing coated with a thin layer of radiation-sensitive emulsion.

The process of making an X-ray involves exposing the film to X-rays or gamma rays that pass through the patient's body. During the exposure, the radiation is absorbed to varying degrees by the tissues and bones in the body, allowing a detailed image of them to be obtained on the X-ray film.

After exposure, the film is developed in a chemical process similar to that used to develop traditional photographic film. This chemical process causes the image to become visible on the x-ray film.

After development, the film can be viewed by radiologists to diagnose conditions and identify any abnormalities or fractures in the patient's body.

In the context of the global PANDEMIC of COVID 19, the amount of radiographic films generated has increased, using the classic variant when the moderns investigative devices was no longer available. The legislation requires hospitals and clinics to follow certain rules regarding the management of X-rays films. These project presents a relatively simple technology of recycling the radiographic films starting from laboratory studies, by leaching them in sodium hydroxide solution. From a batch of 7.68 kg of radiographic films, leached in 4M NaOH solution - at a temperature that varied between 80-100oC, a solution of about 12 l resulted, which was filtered on quantitative filter paper. The residual filtrates were melted in a small-capacity silica bar furnace in the presence of borax, at temperatures of maximum 1050oC, obtaining after melting a quantity of 55.7g of Ag.

State of development: Research in the laboratory phase

Contact: marius.ardelean@fih.upt.ro

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

6.

Title: SOLID WASTE MANAGEMENT MODEL WITH TECHNOLOGICAL INNOVATIONS

Patent/project number: Set of Patents

Author/s: Camilo Freddy Mendoza Morejon, Andy Avimael Saavedra Mendoza and Jeferson Alexandre dos Santos Bosa

Institution: Western Paraná State University - Unioeste, BRAZIL

Category: A

Description: With the technological innovations developed at universities, organic waste from different sources ceases to be a problem and becomes raw material for industrialization processes of this waste. Even though these wastes contain heavy metal contaminants, they can be transformed into various value-added products. For this purpose, a management model for organic solid waste was developed, based on the use of innovative technologies with intellectual protection, which, after implementation, eliminate the need for



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landfills and other forms of improper disposal of this waste. This model is in line with the 17 goals of sustainable development.

State of development: Implemented on a pilot scale

Contact: camilo_freddy@hotmail.com

Presentation link: <https://www.unioeste.br>

7.

Title: METHOD FOR DETERMINATION OF THE CHERENKOV CONE IN SALINE ENVIRONMENT OUTSIDE THE CHERENKOV DETECTOR VOLUME

Patent/project number: A/00354/2019

Author/s: Madalin Ion RUSU, Valeriu SAVU, Dan SAVASTRU

Institution: National Institute of Research and Development for Optoelectronics

Category: A

Description: The method for determination of the Cherenkov Cone of electromagnetic radiation in saline environment outside the Cherenkov detector volume is used to determine the positions of the optimal points for placing the detection elements outside the detector volume on flat surfaces determined by the next iteration, determining energy levels measured by external detection elements provided that they are higher than the energy levels measured by the detection elements inside the Cherenkov detector. This method is a novelty in the field of Cherenkov detectors and minimizes as much as possible the number of detection elements thus reducing costs. This method is a novelty in the field of Cherenkov detectors and minimizes as much as possible the number of detection elements thus reducing costs.

Novelty: The invention relates to a method for determining the Cherenkov Cone of electromagnetic radiation in the saline environment outside the volume of the Cherenkov detector by placing in optimal points detection elements outside its volume in all x , y , z positive and negative directions.

The invention has the following advantages:

- determination of the Cherenkov Cone generated outside the Cherenkov detector;
- determining the placement surfaces of the detection elements outside the volume of the Cherenkov detector obtained by an iteration superior to the determination of the detector volume;
- minimizing the number of external detection elements;
- minimizing the measuring chain;
- minimizing the data processing time with the help of the dedicated software;
- determination of the Cherenkov Cone generated outside the detector in real conditions;
- increases the probability of detecting the events in which Con Cherenkov is generated outside the detector;
- involves minimizing the number of wells required outside the detector;
- this method can be used for any type of environment as long as the environmental attenuation footprint in the field in which the Cherenkov detector works in that environment does not change during the determination period;
- increases the detection accuracy of the Cherenkov cone in drastic situations.

Applications: Astrophysics, to enrich the knowledge of the very distant Universe. This method is applied to achieve and extend the detection range of a well-defined volume of a Cherenkov detector in saline and other environments.

State of development: concept

Contact: madalin@inoe.ro

Presentation link: <https://www.inoe.ro/en/>



8.

Title: METHOD OF OPTIMIZING THE CHERENKOV DETECTOR OF ELECTROMAGNETIC RADIATION IN THE SALINE ENVIRONMENT

Patent/project number: A00404/07.06.2018; RO133796-A2

Author/s: Valeriu SAVU, Madalin Ion RUSU, Roxana SAVASTRU, Dan SAVASTRU

Institution: National Institute of Research and Development for Optoelectronics

Category: A

Description: This method minimizes the number of detection elements, simplifies the measurement chain and reduces costs, using dedicated software and thus leading to the enrichment of knowledge about the distant universe, being a quick method by using a footprint of the saline environment. The method of optimizing the Cherenkov detector of electromagnetic radiation in the saline environment is used to determine the positions of the optimal placement points of the detection elements for measuring the electromagnetic radiation generated by the Cherenkov cone and also to determine the optimal position of the future Cherenkov detector in saline environment. This method minimizes the number of detection elements, simplifies the measurement chain and reduces costs, using dedicated software and thus leading to the enrichment of knowledge about the distant universe, being a quick method by using a footprint of the saline environment.

State of development: concept

Contact: madalin@inoe.ro

Presentation link: <https://www.inoe.ro/en/>

9.

Title: ECO-FRIENDLY-HELMET

Patent/project number: No Patent need to do patent

Author/s: Venkatesh Penumarthi

Institution: Andhra University, India

Category: A

Description: Our project is eco friendly helmet: Here we are using solar energy (Renewable Resources). This solar energy will be Stored and can be used to recharge of mobile, torch light etc. It is helpful to traffic police, students and people who travel especially at night etc. Our eco friendly helmet is environmentally friendly and energy-saving, significantly reducing electricity bills. It is perfect for construction workers, sanitation workers, and anyone looking to contribute to a greener environment. The helmet is made up of waste materials from the industry, making it low cost and completely free from pollution. With a battery backup of up to 3 hours, it ensures prolonged usage. Eco-friendly helmets should meet the same safety standards as traditional helmets. Extensive research and testing should be conducted to ensure that they offer adequate protection. An eco-friendly helmet is a helmet designed to have a minimal negative impact on the environment throughout its lifecycle. It can be made from sustainable materials, be recyclable or biodegradable, and employ energy-efficient manufacturing processes. These helmets are increasingly gaining popularity as people become more conscious of the environmental impact of their choices.

OTHER ADVANTAGES: It is made up of waste materials from the industry & Low cost

State of development: Prototype

Contact: +917386185111 penumarthivenkatesh05@gmail.com

Presentation link: <https://www.instagram.com/p/B0zeCL8laaL/?igshid=MzRIODBiNWF1ZA>



10.

Title: DEVELOPMENT OF NEW MATERIALS FOR THE INTEGRATED APPROACH OF WATER RESOURCES PROTECTION: FROM DETECTION TO DEPOLLUTION - AquaMat

Project number: PN 23.06.01.01

Authors: Radu Claudiu Fierascu, Ana Maria Gurban, Irina Fierascu, Teodor Sandu, Valentin Raditoiu, Cristina Enascuta, Irina Elena Chican, Mihaela Doni

Institution: National Institute for Research & Development in Chemistry and Petrochemistry - ICECHIM Bucharest

Category: A

Description: The aim of the project is to develop monitoring systems, innovative nanomaterials and depollution technologies, through multi- and trans-disciplinary research, at the border between chemistry and other fields, such as environmental protection, chemical engineering, materials science, etc., with applications in the integrated management of the environment and its monitoring, respecting the concept of eco-innovation.

Acknowledgements: This work was carried out through the PN 23.06 Core Program - ChemNewDeal within the National Plan for Research, Development and Innovation 2022-2027, developed with the support of Ministry of Research, Innovation, and Digitization, project no. PN 23.06.01.01, AQUAMAT. The support provided by the Ministry of Research, Innovation and Digitization through Program 1-Development of the national research and development system, Subprogram 1.2-Institutional performance-Projects to finance excellence in RDI, Contract no. 15PFE/2021 is also gratefully acknowledged.

State of development: Research project implemented in the period 2023-2026

Contact: fierascu.radu@icechim.ro

Presentation link: <https://icechim.ro/ro/institut/chemnewdeal/chemnewdeal-pc1/>

11.

Title: ORGANIC/INORGANIC COMPOSITE MATERIAL FOR THE ADSORPTION OF HEAVY METALS FROM AQUEOUS SOLUTIONS AND PROCEDURE FOR OBTAINING IT

Patent number: Patent application A00444/2023

Authors: Roxana Ioana Brazdis (Matei), Radu Claudiu Fierascu, Anda Maria Baroi, Toma Fistos, Irina Fierascu, Irina Elena Chican, Ioana Silvia Hosu

Institution: National Institute for Research & Development in Chemistry and Petrochemistry - ICECHIM Bucharest

Category: A

Description: The present invention refers to a composite material formed from an organic phase, namely pectin obtained from vegetable waste (apple peels, citrus peels) and an inorganic phase formed from apatitic material of the hydroxyapatite type, in which calcium is partially displaced by magnesium, in the ratio Ca:Mg 1:0.1:1, the composite material being used for the adsorption of heavy metals from aqueous solutions.

The obtaining process consists of two stages, in the first stage pectin is obtained from vegetable waste, and in the second stage the apatitic material is obtained in the presence of pectin.



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Acknowledgements: This work was carried out through the PN 23.06 Core Program - ChemNewDeal within the National Plan for Research, Development and Innovation 2022-2027, developed with the support of Ministry of Research, Innovation, and Digitization, project no. PN 23.06.01.01 AquaMat. It is also acknowledged the support of Ministry of Research, Innovation and Digitization through Program 1 - Development of the national research-development system, Subprogram 1.2-Institutional performance-Projects to finance excellence in RDI, Contract no. 15PFE/2021

State of development: Laboratory level

Contact: fierascu.radu@icechim.ro

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

12.

Title: BIOMATERIALS WITH SILVER NANOPARTICLES AND GANODERMA LUCIDUM METABOLITES AND PROCEDURE FOR THEIR OBTAINING

Patent: Patent application A/00123/2023

Author/s: Mariana Constantin, Iuliana Răut, Raluca Suica-Bunghez, Ana-Maria Gurban, Cristina Firincă, Lucian-Gabriel Zamfir, Gelu Vasilescu, Nicoleta Radu, Maria-Luiza Jecu

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

Category: A

Description: The invention is related to the obtainment of metallic nanoparticles through green synthesis, a safe and nontoxic method for environment as compared to conventional chemical and physical ones. The biosynthesis occurs using *Ganoderma lucidum*, a commonly used medicinal Basidiomycete with distinctive biological properties.

The patent application claims the cultivation of *Ganoderma lucidum* on suitable culture medium, preparation of aqueous mycelium extract, and biosynthesis of AgNPs in presence of silver precursor.

The potential impact of AgNPs on health safety and control was proved by the antimicrobial activity expressed against representative pathogenic bacteria, such as *Escherichia coli*, *Pseudomonas aeruginosa* and *Staphylococcus aureus*.

Acknowledgements: This work was carried out through the PN 23.06 Core Program - ChemNewDeal within the National Plan for Research, Development and Innovation 2022-2027, developed with the support of Ministry of Research, Innovation, and Digitization, project no. PN 23.06.01.01-AQUAMAT. This work was supported by a grant of the Ministry of Research, Innovation and Digitization, CCCDI - UEFISCDI, project number PN-III-P2-2.1-PED-2021-1942, within PNCDI III. It is also acknowledged the support of Ministry of Research, Innovation and Digitization through Program 1 - Development of the national research-development system, Subprogram 1.2-Institutional performance- Projects to finance excellence in RDI, Contract no. 15PFE/2021.

State of development: Laboratory level

Contact: jecu.luiza@icechim.ro

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



13.

Title: CATALYTIC SYSTEM WITH THE STRUCTURE OF METAL OXIDES FOR THE TREATMENT OF TRACES OF WASTE WATER RESIDUES

Patent number: Patent application A0339/2023

Author/s: Cristina-Emanuela Enăscuță, Elena-Emilia Sîrbu, Radu Claudiu Fierăscu, Mihaela Ganciarov, Grigore Pșenovschi, Alexandru Vlaicu

Institution: National Institute for Research & Development in Chemistry and Petrochemistry - ICECHIM Bucharest

Category: A

Description: The invention refers to a process for obtaining in the ultrasound field a catalytic system with the structure of metal oxides used in the advanced treatment of waste water resulting from the pharmaceutical and agriculture industry. The invention belongs to the technical field of wastewater treatment by photocatalytic oxidation. The magnetic photocatalyst containing oxide components of Fe₂O₃, TiO₂ and La₂O₃ is obtained by the co-precipitation-calcination method. Mixed titanium and lanthanum dioxide is used as an intermediate coating, over which a layer of Fe₂O₃ is deposited. The magnetic photocatalyst can be activated in the presence of sunlight, being used to treat water impure with organic compounds from the pharmaceutical industry or agricultural water.

This work was carried out through the PN 23.06 Core Program - ChemNewDeal within the National Plan for Research, Development and Innovation 2022-2027, developed with the support of Ministry of Research, Innovation, and Digitization, project no. PN 23.06.01.01-AQUAMAT. It is also acknowledged the support of Ministry of Research, Innovation and Digitization through Program 1 - Development of the national research-development system, Subprogram 1.2-Institutional performance- Projects to finance excellence in RDI, Contract no. 15PFE/2021.

State of development: Laboratory level

Contact: cristina.enascuta@icechim.ro

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

14.

Title: FABRICATION OF WO₃ THIN FILMS WITH ENHANCED PHOTOELECTROCHEMICAL EFFICIENCIES IN ALKALINE SOLUTION

Patent/project number: A/00583/27.09.2021

Author/s: Nicu Doinel Scarisoreanu, Florin Andrei, Andreea Andrei, Nicoleta Enea, Valentin Ion

Institution: National Institute for Laser, Plasma and Radiation Physics

Category: A

Description: The invention is related to an original procedure for obtaining WO₃ thin films with excellent photoelectrochemical efficiencies and stability for water-splitting reaction ($J_{photo} = 14 \text{ mA/cm}^2$). Polycrystalline WO₃ thin films were grown on PtSi substrates via pulsed laser deposition technique (PLD). The photoelectrochemical activity of thin films was tested in a three-electrode system coupled to a quartz cell. A concentrated NaOH solution (pH=13.7) was used as an electrolyte. All samples were irradiated using a laser diode emitting at 405 nm. The results confirm the great photoelectrochemical activity and stability of WO₃ thin films in strong alkaline experimental conditions.



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State of development: patent

Contact: florin.andrei@inflpr.ro

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

15.

Title: HETEROSTRUCTURES BASED ON INORGANIC PEROVSKITES FOR PHOTOELECTROCHEMICAL APPLICATIONS

Patent/project number: A00830/02.12.2019

Author/s: Florin Andrei, Valentin Ion, Maria Dinescu, Nicu Scarisoreanu

Institution: National Institute for Laser, Plasma and Radiation Physics

Category: A

Description: The invention is related to an original procedure for the obtaining of heterostructures based on LaFeO_3 and BiFeO_3 perovskites with enhanced photoelectrochemical stability. The heterostructures were manufactured via pulsed laser deposition technique on Nb doped SrTiO_3 conductive substrates. The functionality of these devices was tested in a three-electrode system coupled to a photoelectrochemical cell. The electrolyte in which the samples were tested is a strongly alkaline NaOH solution ($\text{pH} = 13.7$). The irradiation was performed using a laser diode emitting at 405 nm. The results confirm the great photoelectrochemical stability of heterostructures based on $\text{LaFeO}_3/\text{BiFeO}_3$ in strong alkaline experimental conditions.

State of development: patent

Contact: florin.andrei@inflpr.ro

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

16.

Title: ELECTROCHEMICAL SENSORS BASED ON MICRO AND NANOSTRUCTURED CERIA LAYERS OBTAINED BY LASER METHODS FOR NADH DETECTION AND BIOSENSORS

Patent/project number: A/00717/26.11.2021

Author/s: V. Dinca, A. Bonciu, M. Filipescu, A. Vasilescu

Institution: National Institute for Laser, Plasma and Radiation Physics

Category: A

Description: The invention refers to obtaining new electrochemical sensors based on modified carbon electrodes with micro and nanostructured active layers of cerium oxide (ceria) used for the detection of NADH, with direct applications in biosensors based on NAD^+ dehydrogenases - additions. The new sensors are obtained by deposition of ceria pyramidal structures with a base side of about 150-350 nm and a height of over 150 nm, obtained at a temperature $T_s=500$ °C on carbon electrodes, by pulsed laser deposition method using a excimer laser ($\lambda=193$ nm, number of laser pulses =108,000, $T_s=500$ °C).

State of development: product

Contact: mihaela.filipescu@inflpr.ro

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



17.

Title: VITREOUS POTASSIUM-PHOSPHATE FERTILIZERS AND METHOD FOR PREPARING THE SAME

Patent/project number: RO 128736 B1/28.09.2018

Author/s: Bogdan Alexandru Sava, Lucica Boroica, Mihai Sava, Mihai Elisa

Institution: National Institute for Laser, Plasma and Radiation Physics

Category: A

Description: The invention relates to vitrified phosphorus-type fertilizers for agriculture and to the process for their preparation, characterized in that they are used oxides, salts or complex combinations thereof which introduce phosphorus oxide as a glass network formers, potassium oxide as a glass network modifier, magnesium and calcium oxides as stabilizers, as well as small additions of boron, iron, zinc, molybdenum, manganese oxides and very small amounts of vanadium, copper and / or cobalt, for plant-friendly properties. These raw materials are granulated, milled, sieved by conventional operations of this type, then homogenized by conventional operation in the ball mill, heat treated to temperatures above the melting temperature of the mixture of raw materials, usually between 900 and 1200 °C, after which they are subjected to the rapid cooling in water or matrix plate, drying, grinding and size sorting to grains specific to the type of culture for which they will be used and to the desired time of solubility.

State of development: patent

Contact: savabogdanalexandru@yahoo.com

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

18.

Title: PROCESS FOR THE PRODUCTION OF MEMBRANE-ELECTRODE-GAS DIFFUSION LAYER ASSEMBLIES BASED ON PLASMA-ASSISTED GRAPHENE NANOWALLS FOR HIGH PERFORMANCE FUEL CELLS

Patent/project number: A/00635/13.10.2020

Author/s: Alexandra Maria Isabel Trefilov, Sorin Vizireanu, Bogdan Ionuț Biță, Ioan Stamatina, Gheorghe Dinescu

Institution: National Institute for Laser, Plasma and Radiation Physics

Category: A

Description: The invention relates to a process for producing membrane-electrode-microporous layer (MEA) assemblies based on graphene nanowall films with optimised key properties: specific area, hydrophobicity, electrical conductivity, stability and gas permeability. The process proposed in this patent application aims to produce an MEA assembly that eliminates the drawbacks of current preparation methods and incorporates materials with favourable microporous layer properties. Assemblies prepared by this process, using undeteriorated graphene nanowall films as components, exhibit improved performance over conventional assemblies.

This work was financially supported by grants of the Romanian National Authority for Scientific Research (UEFISCDI), framework PN-III-P1-1.2-PCCDI-2017-0387/2018 project 80PCCDI/2018

State of development: prototype



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Contact: alexandra.trefilov@inflpr.ro

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

19.

Title: DEVELOPING HIGH-EFFICIENCY, SMALL-SIZED PUMPING UNITS CAPABLE OF GENERATING HIGH PRESSURES AT LOW FLOW RATES

Patent/project number: PN 23 05 - The Core Program within the National Research, Development and Innovation Plan 2022-2027

Author/s: Teodor Costinel Popescu, Alexandru-Polifron Chiriță, Ana-Maria Carla Popescu, Alina Iolanda Popescu

Institution: INCDO INOE 2000, Subsidiary Hydraulics and Pneumatics Research Institute INOE 2000-IHP

Category: A

Description: High-pressure pumping units consisting of low-pressure pumping units and oscillating minibooster-type pressure intensifiers are an efficient solution for generating high pressures in hydraulic drive systems. Such pumping units are typically used in static applications (burst tests for pipelines and tanks) and mobile applications with high loads on small strokes of hydraulic cylinders (hydraulic tools and presses).

Through experimental research, carried out on a test stand that can load a high-pressure hydraulic cylinder with heavy, high-magnitude loads, the authors demonstrated the possibility of expanding the range of technical applications of these pumping units to mobile applications with high loads over the entire stroke of the hydraulic cylinders. A low-pressure pumping unit was used, 4 kW, 1500 rpm, 0...200 bar, which was successively equipped with three types of miniboosters with different gain factors (i) ($i=5.0$; $i=6.6$; $i=7.6$).

State of development: research project - experimental model (TRL 4)

Contact: PhD. Eng. Teodor Costinel Popescu <https://ihp.ro/popescu.htm>
popescu.ihp@fluidas.ro +40721.626.543

Presentation link: <https://smgp.ihp.ro>

20.

Title: THYMOL-BASED DEEP EUTECTIC SOLVENTS AS NEW EXTRACTANTS FOR TEXTILE DYES FROM AQUEOUS ENVIRONMENT

Patent/project number: exploratory research

Author/s: MINOLII KARTHIGESAN, DR SITI KAHLIJAH MAHMAD ROZI, NAQIBAH BINTI SALIM

Institution: University Malaysia Perlis

Category: A

Description: Organic solvents, also known as traditional solvents, have been used in a wide variety of science and technology applications such as varnishes, inks, iodine solution, and perfume. The usage of these traditional solvents had posed dangers to their users and environment as well because it emits harmful toxic chemicals such as benzene, carbon tetrachloride, trichloroethylene, methyl chloride, 2-ethoxyethanol,



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and 2- methoxyethanol. As a result, an alternate solvent was sought to replace the organic solvent. Due to their advantages such as fast preparation time, low costs, biodegradability, and low toxicity, deep eutectic solvents (DESs) have been discovered and demonstrated to be an excellent solvent for replacing these hazardous organic solvents. Thymol-based DESs were synthesized by combining thymol as hydrogens bond acceptor (HBA) and menthol as well as phenol as hydrogen bond donor (HBD).

State of development: Degree Thesis Research Project

Contact: minolii44@gmail.com

Presentation link: <https://www.unimap.edu.my/index.php/en/>

21.

Title: ROMANIA AND GEOTHERMAL ENERGY: An unconventional, clean and renewable energy source

Patent/project number: scientific paper

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

Institution: University PETROLEUM-GAS of Ploiesti, Romania

Category: A

Description: The authors, under the auspices of the General Association of Romanian Engineers (AGIR), the Academy of Romanian Scientists (AOȘR) and the Romanian Academy of Technical Sciences (ASTR), through this scientific work highlight the fact that Romania has a remarkable potential in the field of geothermal energy, being considered the third country in Europe. Geothermal energy is one of the alternatives that can satisfy man's need for energy, minimizing the impact on the environment. Unfortunately, today, only a small part of the geothermal potential is used (greenhouses, balneology and leisure), the main cause being determined by the lack of appropriate financial support, which does not favor the development of this energy sector with superior economic-financial effects.

State of development: scientific paper

Contact: valentin.tudorache@yahoo.com

Presentation link: <https://aos.ro/wp-content/anale/TVol14Nr1Art.1.pdf>

22.

Title: SEAVENTURE (Marine Conservation Society App)

Patent/project number: Student project

Author/s: Nutvarit Manorotchaturong

Institution: Ruamrudee International School - Thailand

Category: A

Description: SeaVenture is an app that aims to help marine life by addressing the problem of ghost gear, which refers to abandoned fishing equipment, such as nets, lobster traps, and lines. Ghost gear poses a significant threat as it can trap marine animals, pollute beaches, and destroy habitats. SeaVenture allows divers to not only form a community but to also help the ocean. It allows users to report any ghost gear they find that is too big or dangerous to clean up themselves. Once a report is submitted, volunteers will be able to join the effort to go out and collect that ghost gear. While its main function is to report ghost gear, it also functions as a logbook and a blog where people can share pictures of their dives.



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State of development: concept

Contact: Mr. Robert Armstrong, Mr. Jeerasak Jitrotjanarak

Telephone: +66 95 935 1062, +66 84 639 6363

Email: scis.cud@gmail.com j_jerasak@hotmail.com

Presentation link: <https://drive.google.com/file/d/1XiVkg7evuJaSansAUd5CWzmg31zdD-R2/view?usp=sharing>

23.

Title: KINETICS RESEARCH OF THE REACTION OF COPPER WITH NITRIC ACID IN VARIOUS CONDITIONS OF ACID CONCENTRATION AND TEMPERATURE OF THE PROCESS

Patent/project number:

Author/s: Patryk Olejniczak, Emilia Basiura, Anna Leśny, Stanislaw Wozniak, Adam Kruczkowski; **Tutors:** Jerzy Maduzia, Maciej Sowa, Barbara Halska

Institution: The Complex of School No 6 in Jastrzebie-Zdroj/Edison International School in Warsaw - Poland

Category: A

Description: During our chemistry classes, we carried out lesson topics related to acid reactions. Our teacher told us that the kinetics of their reaction is more complicated than described in most chemistry textbooks, where we can only find basic information about the reaction, for example copper with dilute and concentrated nitric acid. It was the moment when we decided that we wanted to check it thoroughly, to learn the reaction mechanism of copper in contact with nitric acid of various concentrations and in various temperature conditions. What gases will be produced during the reaction, in what volume proportions? We wanted to answer this question in our research. The aim of the project is to investigate the behaviour of copper in relation to nitric acid (V) in more detail, as the subject is not described exhaustively in secondary school textbooks. We research the effect of acid concentration, mixing or temperature increase on the rate of the reaction. To this end, we implement our project in cooperation with the Faculty of Inorganic, Analytical and Electrochemistry of the Silesian University of Technology in Gliwice, where we have the opportunity to use scientific laboratories or high-class equipment. At the beginning of the experiments, the first colorless bubbles of nitrogen oxide (II) were observed during the reaction between copper and 2,9-M nitric acid (V). As the concentration of the acid increased, the reaction proceeded faster, and the amount of gas bubbles released also increased. During the reaction with 5-M acid, the solution started changing color to blue, and during the reaction with 9-M nitric acid (V), a brown gas, namely nitrogen oxide (IV), began to precipitate. Regarding the studies on the effect of mixing, the first signs of the reaction were observed only at a concentration of 5.4 M, and the reaction with the release of nitrogen oxide (IV) began at an 8-M acid concentration. The research is still ongoing, and we are striving to expand it with new ideas. Currently, we are delving into the topic of copper structure before and after the reaction using a scanning microscope. In the near future, we would like to apply our acquired knowledge to work on copper recovery from electronic waste, which would contribute to environmental protection.

State of development: in progress

Contact: +48 692553770, jerzy.maduzia@szkola-edison.pl

Presentation link: <https://www.youtube.com/watch?v=NJP5RBeajR8&t=6s>



24.

Title: STAND FOR TESTING THE TEMPERATURE AND FLAMMABILITY PROOF OF SELF-CONTAINED BREATHING APPARATUS, BASED ON COMPRESSED AIR

Patent/project number: patent no A 2018 00892

Author/s: Irimia Alin, Găman George Artur, Ghicioi Emilian, Pupăzan Daniel, Darie Marius, Moldovan Iosif Lucian, Gabor Dan Sorin, Vătavu Niculina, Părăian Mihaela, Magyari Mihai, Grecea Dănuț Nicolae, Csaszar Tiberiu Attila, Jurca Adrian Marius, Păun Florin Adrian, Colda Ioan Cosmin

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

Category: A

Description: The invention relates to the construction of a stand for testing the resistance of open circuit insulating devices upon exposure to high temperature. According to the invention, is ensured a stable operation of the elements involved in producing the required temperatures during the tests. The displacement is made on a track with chain. The carriage starts from an adjustable thermostatic enclosure, then passes through the battery of high-temperature burners and flames, and at the end of the 3000 mm stroke, it provides a free fall from a height of 150 mm. To achieve the functional purpose, the temperature will be monitored at two points inside the oven, located at the bottom and at the shoulders of the dummy and using a pyrometer for the burner battery. Throughout the test, the respirator apparatus is connected to the breathing machine that has been set at a rate of 25 breath cycles/minute with 2 liters of air/cycle and breathing resistance is monitored.

State of development: prototype

Contact: alin.irimia@insemex.ro +40731390813

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

25.

Title: STAND FOR DETERMINING THE SELF-IGNITION TEMPERATURE TI OF FLAMMABLE LIQUIDS WITH HIGH VISCOSITY

Patent/project number: patent no A 2018 00910

Author/s: Ghicioi Emilian, Găman George Artur, Pupăzan Gheorghe Daniel, Găman Angelica-Nicoleta, Vlasin Nicolae Ioan, Păsculescu Vlad Mihai, Nicolescu Cristian, Laszlo Robert, Burian Constantin Sorin, Manea Florin, Florea Gheorghe-Daniel, Nălboc Vasilica Irina, Szollosi-Moța Andrei, Șuvar Marius Cornel, Gheorghiosu Edward-Jan, Kovacs Attila, Simion Alexandru Florin, Morar Marius Simion

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

Category: A

Description: The invention relates to a stand for determining the self-ignition temperature of flammable liquids with high viscosity, which at ambient temperature are in solid phase.



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The invention provides the material basis for knowing the self-ignition temperature T_i of highly flammable liquids, which are in solid form at ambient temperatures, allowing the establishment of maximum safe process temperatures, which provide explosion / fire protection for industrial activities where flammable liquids are processed, either as primary or intermediate products, obtained in the distillation processes of residues resulting from the refining of crude oil.

The stand allows the liquid phase to gravitationally reach the metal collector after the melting stage by controlled tilting of the container, monitoring the ignition or not of the mixture of air and pre-heated liquid vapors in direct contact with the hot surface of the trough, and setting the auto-ignition temperature T_i (the lowest temperature at which auto-ignition occurs) for a wide range between +150 and +800 degrees Celsius.

State of development: prototype

Contact: emilian.ghicioi@insemex.ro +407022526396

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

26.

Title: METHOD FOR PREVENTING SPONTANEOUS COMBUSTIONS IN COAL MINES AND SURFACE STORAGES, BY THERMOGRAPHY APPLIED IN THE EXTRACTIVE INDUSTRY

Patent/project number: patent no A 2018 00932

Author/s: Tomescu Ion-Cristian, Cioclea Doru, Găman George Artur, Ghicioi Emilian, Gherghe Ion, Emeric Chiuzan, Toth Lorand, Szollosi-Moța Andrei, Rădoi Gheorghe Florin, Boantă Corneliu Dănuț, Morar Marius Simion, Ianc Nicolae, Matei Adrian, Drăgoescu Răzvan

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

Category: A

Description: The invention relates to a method for preventing spontaneous combustions which occur in open underground coal deposits, in exploitation or in surface storages.

In accordance with the invention, it is ensured: the development of a smart method for preventing spontaneous combustions by thermographic monitoring of temperature fields and reducing risks generated by the occurrence of special situations in coal beds or within a surface storage, in order to ensure the safety of workers.

The invention is a result of industrial research in the field of endogenous fires or of coal self-ignition risks or of surface coal storages.

State of development: prototype

Contact: cristian.tomescu@insemex.ro +40 731 390 804

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

27.

Title: CONTINUOUS MONITORING AND RECORDING SYSTEM OF GAS EXPLOSION PARAMETERS

Patent/project number: patent no A 2018 00933



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14-16.09.2023 – Deva, Romania



Author/s: Vlasin Nicolae-Ioan, Găman George Artur, Ghicioi Emilian, Pupăzan Gheorghe Daniel, Găman Angelica-Nicoleta, Păsculescu Vlad Mihai, Nicolescu Cristian, Laszlo Robert, Burian Constantin Sorin, Manea Florin, Florea Gheorghe-Daniel, Nălboc Vasilica Irina, Szollosi-Moța Andrei, Șuvar Marius Cornel, Vass Zoltan, Tuhuț Ligia – Ioana, Simion Alexandru Florin, Morar Marius Simion

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

Category: A

Description: *The invention relates to a system for monitoring and continuously recording the parameters of gas explosions.*

The system is capable of analyzing the explosion phenomena of air-combustible gas mixtures at higher recording speeds of the parameters.

The invention provides the material basis for understanding the mechanisms of ignition and propagation of gas explosions in controlled environments (at various gas concentrations, in a quiet or turbulent state of the explosive mixture), as well as for calibrating computational simulations of flammable gas explosions.

State of development: *prototype*

Contact: nicolae.vlasin@insemex.ro +40 731 390 802

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

28.

Title: CONTINUOUS INVASIVE DETERMINATION METHOD OF AIR VELOCITY

Patent/project number: patent no A 2020 00338

Author/s: Cioclea Doru, Emeric Chiuзан, Găman George Artur, Ghicioi Emilian, Gherghe Ion, Rădoi Gheorghe Florin, Boantă Corneliu Dănuț, Ianc Nicolae, Tomescu Cristian, Morar Marius Simion, Matei Adrian, Drăgoescu Răzvan

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

Category: A

Description: *The continuous invasive determination method of air velocity shall take into account the entire measuring section, the location and the measuring surface are chosen and the air parameters, the equivalent surfaces and centers of gravity within the measuring surface are determined, the system for the continuous determination of the static, dynamic, and total average air pressure is set up and installed at the measuring point, and the system for continuous determination of the mean pressure is connected, the data resulting from the continuous measurements are collected, finally the average speed at the level of the measuring surface is established indirectly.*

State of development: *prototype*

Contact: doru.cioclea@insemex.ro +40 722 526 396

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



29.

Title: CONTINUOUS AIR SPEED DETERMINATION SYSTEM

Patent/project number: patent no A 2020 00369

Author/s: Cioclea Doru, Emeric Chiuzan, Găman George Artur, Ghicioi Emilian, Gherghe Ion, Boantă Corneliu Dănuț, Ianc Nicolae, Tomescu Cristian, Morar Marius Simion, Matei Adrian, Drăgoescu Răzvan

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

Category: A

Description: The system for the continuous determination of the air speed, uses rectangular profiles that can be structured from cross type components, with connecting elements made of linear rectangular profiles, screw-type stiffening elements, Pitot-Prandtl tubes, primary connecting hoses connected to the pressure sockets, two barrels equipped with several connecting elements, each connecting element is provided with a shut-off valve / opening, secondary connecting hoses connected to the barrels, respectively a pressure measuring device, the data resulting from the continuous measurements are collected, finally the average speed at the level of the measuring surface is established indirectly.

State of development: prototype

Contact: doru.cioclea@insemex.ro +40 722 526 396

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

30.

Title: SPECIALIZED SCALABLE SYSTEM FOR CHECKING THE OPERATING PARAMETERS FOR PYROTECHNIC ARTICLES FOR PROFESSIONAL USE - CATEGORY F4

Patent/project number: patent no A 2020 00687

Author/s: Vasilescu Gabriel-Dragoș, Ghicioi Emilian, Găman George-Artur, Laszlo Robert, Kovacs Attila, Gheorghiosu Edward-Jan, Rus Daniela-Carmen, Rădeanu Cristian, Garaliu Bușoi Bogdan, Ilici Ștefan, Miron Claudia

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

Category: A

Description: The invention relates to a specialized scalable system, intended for determining the operating parameters for pyrotechnic articles for professional use - category F4, which allows the processing of images for the purpose of scalable determination, based on the assignment of a known size, expressed in the unit of measurement - the meter, a reference mark with a certain number of pixels, as well as by using a calculation algorithm, for determining and monitoring the main specific functional parameters, such as: trajectory - ascending height, deviation from the vertical in two perpendicular planes, the dimensions of the main and side effects. The specialized scalable system is realized as a complex assembly, equipped with dual optical system with high frequency frame recording, which allows image processing for scalable determination,



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based on the assignment of a known size, expressed in the unit of measurement – the meter, to a reference landmark with a certain number of pixels, as well as by using a calculation algorithm, for determining and monitoring the main spatial functional parameters, specific to pyrotechnic articles for professional use - category F4, such as: trajectory- ascending height, deviation from the vertical in two perpendicular planes, the dimensions of the main and side effects, the height of fall, the safety distance. Thus, the system allows the determination of the explosion height and the ascending angle, the determination of the dimensions of the light effects: burst height, effect height, effect width, fall height, deviation angle from the vertical, based on them can be established, both compliance of these products with the security quality requirements that they must meet, as well as their classification in the related category -F4.

State of development: prototype

Contact: dragos.vasilescu@insemex.ro +40 722 526 396

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

31.

Title: VENTILATION CRITICAL CONSTRUCTIONS RECOGNITION METHOD

Patent/project number: patent no A 2021 00358

Author/s: Cioclea Doru, Găman George Artur, Ghicioi Emilian, Gherghe Ion, Rădoi Gheorghe Florin, Boantă Corneliu Dănuț, Chiuзан Emeric, Tomescu Cristian, Matei Adrian, Drăgoescu Răzvan, Cămărășescu Alexandru

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

Category: A

Description: The method of recognition of critical ventilation constructions is based on the identification of critical ventilation constructions at the level of a complex ventilation network, by establishing the degree of instability induced at the level of active fans.

For this, first, the complex ventilation network is solved and the functional parameters related to the active fans are established, under normal working conditions, the influence zones specific to each main ventilation station are established.

After this stage, the type and position of the ventilation constructions is determined. The influence of ventilation constructions on the operating stability of active fans is established.

At the level of the complex ventilation network, the ventilation constructions that do not produce effects on the operation mode of the active fans are identified.

At the level of the complex ventilation network, the ventilation constructions that produce minor effects on the functioning of the active fans are identified.

Through successive simulations, the ventilation constructions that produce significant but harmless effects on the operation mode of the active fans are identified.

It is identified at the level of the complex ventilation network, those ventilation constructions that produce major effects on the operation mode of the active fans and therefore determine the instability of the ventilation network. Thus these identified ventilation constructions are considered critical.



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The method of recognition of critical ventilation constructions was applied to the ventilation networks related to the Vulcan and Uricani Mines, but it can be applied to any underground mining of useful mineral substances as a necessity to improve the management of the ventilation networks as well as to increase the degree of security and occupational health.

State of development: prototype

Contact: doru.cioclea@insemex.ro +40 722 526 396

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

32.

Title: REPLACEMENT OF CRITICAL VENTILATION STRUCTURES METHOD

Patent/project number: patent no A 2021 00359

Author/s: Cioclea Doru, Găman George Artur, Ghicioi Emilian, Gherghe Ion, Ianc Nicolae, Rădoi Gheorghe Florin, Boantă Corneliu Dănuț, Chiuzan Emeric, Tomescu Cristian, Matei Adrian, Drăgoescu Răzvan, Cămărășescu Alexandru

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

Category: A

Description: The method of replacing the critical ventilation constructions is based on the solution of the ventilation network and the establishment of the functional parameters, under normal working conditions, the establishment of the degree of instability induced at the level of the active fans by the critical ventilation constructions and the elimination of the critical character associated with the ventilation constructions at the level of a complex ventilation network.

For this, the functional parameters related to the active fan are established. The specific influence zones of each main ventilation station are established.

After this stage, the influence of the ventilation constructions on the operating stability of the active fans is established and the critical ventilation constructions are identified.

The critical nature of the ventilation structure is eliminated by eliminating the critical ventilation structure and the dispersion of the total resistance related to the critical ventilation structure, on parallel links, located downstream or upstream of the branch on which the critical ventilation structure is located, links parallels on which ventilation constructions are located with resistances equivalent to that of the critical ventilation construction.

The functional parameters specific to the active main fan are obtained in the new configuration of the ventilation network. The method of replacing critical ventilation structures was applied to the ventilation networks related to the Vulcan and Uricani Mines, but it lends itself to any underground mining operation of useful mineral substances, as a necessity to improve the management of the ventilation networks as well as to increase the degree of security and occupational health.

State of development: prototype

Contact: doru.cioclea@insemex.ro +40 722 526 396

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



33.

Title: VENTILATION MANAGEMENT METHOD

Patent/project number: patent no A 2021 00641

Author/s: Cioclea Doru, Găman George Artur, Ghicioi Emilian, Gherghe Ion, Ianc Nicolae, Rădoi Gheorghe Florin, Boantă Corneliu Dănuț, Chiuzan Emeric, Tomescu Cristian, Matei Adrian, Drăgoescu Răzvan, Cămărășescu Alexandru

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

Category: A

Description: The ventilation management method is based on the use of a modeling, solving and simulation program for several complex ventilation networks and the creation of an interactive ventilation management system that allows the operative solution, from an expert center, of technical problems arising in the networks of ventilation related to mining units.

For this, first, the modeling and successive solving of the complex ventilation networks is done with the help of the specialized program 3D CANVENT. After this, the successive optimization of the complex ventilation networks is carried out.

An expert management center of ventilation networks is achieved by mounting an administrator server in a specially designated location.

After this, virtual machines are created for each complex ventilation network and installed on the administrator server using VMware workstation 7 Software.

Correspondence between the virtual machine and the served air network is ensured by using the Real VNC Enterprise Edition program that is installed on the administrator server.

The mining unit is then granted access to the distributed virtual machine by using the Real VNC Enterprise Edition program that is installed on designated computers within the mining units.

The connection between the expert center and the mining unit is secured by using authentication data and access passwords.

Finally, the technical problems that arise at the level of any calling ventilation network that has been modeled, solved, optimized and installed on the dedicated virtual machine on the administrator server are solved operatively and in real time.

State of development: research project

Contact: doru.cioclea@insemex.ro +40 722 526 396

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

34.

Title: REPLACEMENT OF CRITICAL VENTILATION STRUCTURES METHOD

Patent/project number: patent no A 2021 00642



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Author/s: Cioclea Doru, Ianc Nicolae, Găman George Artur, Ghicioi Emilian, Gherghe Ion, Rădoi Gheorghe Florin, Boantă Corneliu Dănuț, Chiuzan Emeric, Tomescu Cristian, Matei Adrian, Drăgoescu Răzvan, Cămărășescu Alexandru

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

Category: A

Description: The method of replacing the critical ventilation constructions is based on the solution of the ventilation network and the establishment of the functional parameters, under normal working conditions, the establishment of the degree of instability induced at the level of the active fans by the critical ventilation constructions and the elimination of the critical character associated with the ventilation constructions at the level of a complex ventilation network.

For this, the functional parameters related to the active fan are established. The specific influence zones of each main ventilation station are established.

After this stage, the influence of the ventilation constructions on the operating stability of the active fans is established and the critical ventilation constructions are identified.

The critical nature of the ventilation structure is eliminated by eliminating the critical ventilation structure and the dispersion of the total resistance related to the critical ventilation structure, on parallel links, located downstream or upstream of the branch on which the critical ventilation structure is located, links parallels on which ventilation constructions are located with resistances equivalent to that of the critical ventilation construction.

The functional parameters specific to the active main fan are obtained in the new configuration of the ventilation network.

The method of replacing critical ventilation constructions is suitable for any underground mining of useful mineral substances.

The method of replacing the critical ventilation constructions was applied to the ventilation networks related to the Vulcan and Uricani Mines in the Valea Jiului mine basin. Also, the method of replacing critical ventilation constructions was applied as a necessity to improve the management of ventilation networks as well as to increase the degree of safety and health at work when mining useful mineral substances underground.

State of development: prototype

Contact: doru.cioclea@insemex.ro +40 722 526 396

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

35.

Title: STAND FOR IMAGING RECORDING OF THE FORMATION OF EXPLOSIVE ATMOSPHERES AND OF THE INITIATION AND DEVELOPMENT OF RAPID COMBUSTION PROCESSES

Patent/project number: patent no A 2021 00692



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Author/s: Vlasin Nicolae-Ioan, Găman George Artur, Ghicioi Emilian, Pupăzan Gheorghe Daniel, Morar Marius Simion, Păsculescu Vlad Mihai, Şimon Marinică Adrian Bogdan, Tuhuţ Ioana Ligia, Florea Gheorghe Daniel, Şuvar Marius Cornel, Vass Zoltan, Muntean Laurenţiu, Gherghe Ion

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

Category: A

Description: The stand simultaneously uses two modes of visualizing fluid movements in the transparent medium under analysis:

- the first mode is intended for recording, by highlighting some particles in suspension with the help of a laser source, of the regime of low speeds under which the diffusion of combustible gases takes place, and the formation of explosive atmospheres mixed with air;
- the second mode offers the recording capabilities at higher speeds, of the moment of initiation and, subsequently, of the density gradients generated by the flame front at the boundary between the burned and unburned gases during the explosion process.

The stand for imaging recording of the formation of explosive atmospheres and of the initiation and development of rapid combustion processes includes a construction with transparent walls and interconnected spaces (the environment under analysis), inside which the combustible gas is introduced and the explosive mixture is created in combination with air.

The first recording system – arranged horizontally – based on the PIV (Particle Image Velocimetry) technique, consists of a pulsed laser source correlated in frequency with a CMOS video camera, a particle generator and a computer. This system highlights the formation of the explosive atmosphere, through the movement of suspended particles.

The second recording system – arranged vertically – uses Schlieren techniques and consists of a point light source, two parabolic mirrors, a shutter, a high-speed video camera and a computer. The role of this system is to highlight the initiation of the explosive atmosphere inside the transparent construction and the development and behavior of the flame front during the explosion process.

Through the computerized combination of the recordings made by the two techniques, the continuity of the combustion analysis is ensured, from the laminar to the turbulent regime.

State of development: prototype

Contact: nicolae.vlasin@insemex.ro +40 731 390 802

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

36.

Title: SCALABLE APPLICABLE SYSTEM TO OPTIMIZE BLASTING PARAMETERS SPECIFIC TO SAFE EXPLOITATION TECHNOLOGIES IN SURFACE MINING OPERATIONS.

Patent/project number: patent no A 2021 00702



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Author/s: Laszlo Robert, Găman George-Artur, Ghicioi Emilian, Pupăzan Gheorghe Daniel, Vasilescu Gabriel-Dragoș, Gheorghiosu Edward-Jan, Kovacs Attila, Rus Daniela-Carmen, Rădeanu Cristian, Jitea Ilie Ciprian, Ilici Ștefan, Manea Florin, Garaliu Bușoi Bogdan

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

Category: A

Description: The invention refers to the development of a scalable applicative system that allows the determination and choice in real time of the optimal parameters of the blasting activities in correlation with the specificity of each rock deposit, of the types of explosives used and in close dependence with the established seismic restrictions regarding the quantities of explosives that can be used in such a way as to ensure the performance of the blasting activity in conditions of efficiency and security.

In order to be able to include all the blasting procedures used in surface operations, the application system deals with the problem of establishing the blasting parameters according to the position of the holes - vertical or inclined, allowing to establish the real value of the burden, the length of the borehole and the explosive column structure. Depending on the amount of explosive required to detonate the volume of rock related to a hole, the possibility of maintaining the geometry of the explosive charge in the hole is analyzed and the spacing between the holes placed in a row is determined.

If the seismic protection of the objectives in the area is necessary, the application system also ensures the processing of seismic measurement data and allows the calculation of the reduced distance and then of the quantities of explosives that are not dangerous from a seismic point of view. Depending on this amount of explosive determines the number of holes that can be blasted instantly or on per delay.

In conclusion, achieving the desired results of the mining activity is conditioned by establishing the the blasting parameters in such a way as to ensure the detachment of the rock from the massif, reduce the degree of back fissuration, the obtaining of an desired granulometry, a reduced scattering of the blasted mining mass, respectively a reduced seismic effect.

State of development: research project

State of development: prototype

Contact: robert.laszlo@insemex.ro +40 722 305 573

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

37.

Title: STUDY CONCERNING METHODS FOR MANAGING USED ENGINE OIL. ANALYSIS OF A QUESTIONNAIRE-BASED SURVEY

Patent/project number: PhD Thesis

Author/s: Diana Miruna Armioni, Ioana Ionel, Sorin Aurel Rațiu

Institution: Politehnica University of Timisoara

Category: A

Description: This paper focuses on methods of managing used engine oil by presenting an analysis of the results of a survey based on a questionnaire designed by the authors, which aims to illustrate the real,



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objective situation of the management of used engine oil generated by vehicles powered by internal combustion engines. The answers are analyzed for each question separately and both conclusions and implementable objectives that could improve the current situation are highlighted. In order to facilitate the understanding of the current framework, general aspects regarding the management of used engine oil are also presented, with an emphasis on the legislative perspective.

State of development: scientific paper

Contact: armionimiruna@yahoo.com

Presentation link: https://www.upt.ro/Informatii_doctoral-school_310_en.html

38.

Title: SOLAR HEATING SYSTEM TO MAINTAIN BATTERIES CHARGED

Patent/project number: CBI A 2022 00748

Author/s: Laurențiu-Dan MILICI, Ciprian BEJENAR, Ilie NIȚAN, Mihai DIMIAN, Mahmoud ABU-BANDORA, Irina ALISAVETEI, Visarion-Cătălin IFRIM, Constantin UNGUREANU

Institution: Stefan cel Mare University of Suceava

Category: A

Description: The invention relates to a solar heating system, integrable in the constructive structure of a vehicle, intended to maintain the temperature and/or charge level of the batteries. It disposes of, so that the phenomenon is controlled through the specific constructive form that facilitates the conversion of solar energy, both in thermal energy as well as in electrical energy and because the system involves thermo-mechanical actuators with autonomous operation, suitable in the automatic regulation of this process.

State of development: Laboratory prototype

Contact: dam@usm.ro

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

39.

Title: ESTIMATION OF THE ECOLOGICAL STATUS OF SOME NATURAL LENTIC WATERS BY THIOL CONTENT

Project number: 20.80009.5007.27

Author/s: Maxim CISTEACOV, Vladislav BLONSCHI, Viorica GLADCHI

Institution: Moldova State University

Category: A.

Description: Nowadays the assessment of the ecological state of natural waters is an important task in ecological chemistry. It has been proven that the biological value of waters is provided by the predominance of oxidizing agents in the aquatic environment. Thiols, being reducing agents, consume oxidizing equivalents, which negatively affects the chemical self-purification of waters. Thus, monitoring of the content of thiols in natural waters can be used to quickly assess the ecological state of natural waters in an



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indirect way. The content of thiols is determined by the Ellman spectrophotometric method and does not require sophisticated equipment. Sources of pollution by substances of protein origin can also be identified. State of development: Application of the method in assessing the ecological state of waters in the Ghidighici and Danceni lakes.

Contact: tel.: Maxim CISTEACOV, + 373 67557620; E-mail: cisteacov.maxim@usm.md

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

40.

Title: CONVERGENCE MATRIX OF IFRS METHODOLOGY AND SEEA CONCEPT AND ITS EFFECTIVENESS FOR RECOGNIZING MINERAL RESERVES IN THE CONTEXT OF THE TRANSITION TO A SOCIO-ECONOMIC REPORTING MODEL

Project number: 22.00208.0807.09/PD

Author/s: Irina GOLOCHALOVA

Institution: Moldova State University

Category: A

Description: *The modern technological order is characterized by a deep ecological crisis due to the egoistic goal of business - infinite accumulation of financial capital. To achieve this, businesses: 1) implements a policy of large-scale environmental expansion; 2) minimizes its internal environmental costs by using its position as a state-supported taxpayer and shifting them to other social actors (partners, society); 3) ignores the imperative of natural capital as one of the "drivers" of the creation of associated property of a business, and therefore the growth of its equity as a whole.*

In doing so, the environment is damaged and natural capital is depreciated.

The Sustainable Development Concept (SDC) is intended to level out the effect of treating business capital solely as financial capital. It established as basic principles the three-component structure of capital: financial, natural and social. A conceptual platform is needed to present information in business reporting about natural capital and the resources it originates from.

It is determined by the convergence of the theory of financial reporting, the modern version of which is recognized as the IFRS methodology, and the concept of the System of Environmental-Economic Accounting (Central Framework (SEEA-CF) and Ecosystem Accounting (SEEA-EA)), integrated into the SDC. In order to assess the possibility of forming a conceptual platform for recognizing mineral reserves and natural capital as a source of their origin: the composition of indicators of convergence of the designated concepts was determined (Stage 1 of the study); their Matrix was developed (Stage 2 of the study). The content of the Matrix indicates the convergence of IFRS and SEEA.

The Balance model demonstrates the effectiveness of the developed Matrix and translates at the reporting date information on the state of mineral reserves, changes in the value of natural capital as a contribution of non-financial business participants, on the fulfillment of the En-obligation of the business for the purposes of sustainable development (Stage 3 of the study).

This research is supported by the scientific project "The methodology of accounting and financial reporting in the conditions of the innovation vector of the economy", registered under number



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_22.00208.0807.09/PD in the State Register of Projects in Science and Innovation of the Republic of Moldova.

State of development: At the level of research by a functioning enterprise in the Republic of Moldova and drawing up an act of implementation

Contact: tel.: +373 60287573; e-mail: irina.golocialova@usm.md

Presentation link: https://docs.google.com/presentation/d/1DJfl39mfAUI0t8R-F91r_2aawvFIYyQx/edit?usp=sharing&oid=104853798801309411826&rtpof=true&sd=true

41.

Title: ADVANCED METHODOLOGY FOR EXTRACTING FUNCTIONAL FRACTIONS FROM BREWER SPENT GRAINS

Patent/project number: PN-III-P4-ID-PCE-2020-2306, Contract no 210 PCE / 2021

Author/s: Anca Corina Farcas, Silvia Amalia Nemes, Dan Vodnar, Loredana Leopold, Sonia Socaci

Institution: University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca

Category: A

Description: *The project was designed to investigate the application and optimization of eco-friendly innovative technologies for the efficient recovery of bioactive fractions from combined spent grains resulting from beer production. Additionally, the project aimed to convert these fractions into microencapsulated formulations with broad applicability in the food, pharmaceutical, and cosmetic industries. The primary activities were centered on obtaining antioxidant concentrates through advanced extraction, followed by microencapsulation using different compatible substrates. Furthermore, the project involved conducting bioactivity and structural characterization studies on the resulting products.*

This study was supported by a grant of the Romanian Ministry of Education and Research, CNCSIS-UEFISCDI, project number PN-III-P4-ID-PCE-2020-2306, contract no. PCE 210, within PNCDI III.

State of development: research project and prototype

Contact: anca.farcas@usamvcluj.ro

Presentation link: <https://cercetare.usamvcluj.ro/>

42.

Title: AN INTEGRATED MODEL OF BIOACTIVE COMPOUNDS PRODUCTION FROM CEREAL BRAN

Patent/project number: PN-III-P4-ID-PCE-2020-2306, Contract no 210 PCE / 2021

Author/s: Silvia Amalia Nemes, Anca Corina Farcas, Dan Cristian Vodnar

Institution: University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca

Category: A

Description: *An integrated model of bioactive compounds production from cereal bran, incorporating acid pretreatments followed by solid-state fermentation, represents a comprehensive approach to harnessing the*



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hidden potential of this abundant agricultural by-product. The integration of acid pretreatment and solid-state fermentation allows for enhanced bioconversion efficiency and improved yield of bioactive compounds compared to individual processes. The integrated model of bioactive compounds production from cereal bran offers significant advantages, including sustainable utilization of agricultural waste, cost-effective production of value-added compounds, and the potential to develop novel functional food ingredients or nutraceuticals. Moreover, this model contributes to the circular economy by transforming a discarded by-product into a valuable resource, thus promoting environmental management principles and economic viability in the food industry.

State of development: research project and PhD thesis

Contact: amalia.nemes@usamvcluj.ro

Presentation link: <https://cercetare.usamvcluj.ro/>

43.

Title: GREEN BUILDINGS: economic aspects and efficiency

Patent/project number: research project

Author/s: Rus Mircea-Iosif

Institution: NIRD URBAN-INCERC Cluj-Napoca Branch

Category: A

Description: Green building. What is a green building? A green building is a building that is built and used in such a way as to protect the environment throughout its life cycle, starting with design, construction, use, maintenance, renovation and demolition.

The Green Building is an environmentally friendly building, and this means, first, that such a building has no or very low heat loss, which means very good insulation from this point of view. Secondly, all the materials used to construct this type of building are recyclable.

Although the costs of this type of building are higher than a normal building, any investment can be recouped by substantially reducing energy costs. Another thing to bear in mind about green buildings is that they have an extremely low heat transfer with the environment.

The number of green buildings is increasing, especially as, at European level, it is desired that in the future each building should "consume" only the energy it "produces".

The main indicators of the economic efficiency of a green building are the payback period of an additional investment and the cost per unit of energy saved (RON/kwh). The shorter the payback period and the higher the consumption saved, the more cost-effective a green building is. The aim of this research is to present aspects regarding the benefits of building green and to establish efficiency indicators regarding buildings and the impact on the environment.

State of development: concept

Contact: mircea.rus@incerc-cluj.ro +40744478270

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



44.

Title: *SILICOSIO BIN: An Environmental Fused Silica Granulator*

Patent/project number: *Student project*

Author/s: *Ashley May L. Macarandang, Ysabelle Mignonette D. Lopez, Ark Angel D. Alfante*

Institution: *Oriental Mindoro National High School - Philippines*

Category: *A*

Description: *SilicoSio Bin, is an environmental revolutionary glass crushing machine that creates a more compact and convenient way of dealing with excessive glass waste. By providing an alternative to the need of raw sand, SilicoSio creates its product by a cyclical reinstating process of sand. The SilicoSio bin was created with the vision of addressing environmental problems as a revolutionary glass-crushing machine that is specifically built to granulate glass bottles. With a startling 75% of glass bottles ending up in landfills, improper glass bottle disposal creates a serious environmental issue that requires immediate attention. It utilizes a unique process of breaking down glass bottles and creating artificial sand from the glass.*

This artificial sand can be utilized in a variety of building and manufacturing processes, lessening the impact of glass waste on the environment and the demand for virgin sand while also promoting resource conservation.

This study is aimed to assess SilicoSio Bin's effectiveness in the granulation of glass bottles, with a focus on factors such as time taken, weight maintenance, and the amount of weight of the resulting artificial sand produced within. An hour. The experiment was divided into three parts, each testing the device with three different types of bottles - 1L Glass Bottle A, 350 ml Glass Bottle B, and 330 Glass Bottle C - and using trials A, B, and C.

The results showed that the average time taken by SilicoSio Bin to granulate a bottle was 5.77 seconds, with the device able to granulate Glass Bottle B within an average of 5.12 seconds, Glass Bottle C in 5.48 seconds, and Glass Bottle A in 6.71 seconds. Furthermore, the weight of all bottles as maintained post-granulation, indicating that SilicoSio Bin can effectively granulate glass bottles without any significant loss of mass.

State of development: *product*

Contact: ashmacarandang@gmail.com +639193791485

Presentation link:

<https://drive.google.com/file/d/1QDn8dXoL8VHKEaCqOnPP8CyGEkB71srU/view?usp=sharing>

45.

Title: *INCANDESCENT LAMP REPELLENT: Comparative study between processed Ocimum basilicum and processed Thymus vulgaris*

Patent/project number: *Student project*

Author/s: *Rawls Roche Hadraniel D. Villaruel*

Institution: *Oriental Mindoro National High School - Philippines*

Category: *A*



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Description: A tropical illness spread by mosquitoes called dengue fever is brought on by the dengue virus. Thyme is the dried aerial portions of a particular herbaceous plant. Leafy plants of the Lamiaceae family of mints. Laboratory testing reveal that topical applications of the components included in thyme essential oil will deliver 89.0-97.3% protection for up to 82 minutes against the common house mosquito. Basil, commonly known as (*Ocimum basilicum*), appears to be a nourishing herb.

All members of the mint family, Lamiaceae. This investigation mainly focuses on creating and comparing insect repellents to protect people from mosquitoes. Malaria-carrying mosquitoes are repelled by bites that might spread infections, and Identify the duration of the extract. Researcher have established that the *Thymus vulgaris* and *Ocimum basilicum*, two processed herbs, contain an ingredient.

Which is *aedes aegypti*-repellent. The lifespan of *thymus vulgaris*'s fragrance was about two weeks longer than *Ocimum basilicum*. With reference to death, The percentage rate for both of the processed herbs is 50%.

Contact: +63 960 899 4231

Presentation link: <https://omnhscalapancity.com/>

46.

Title: ZEA MAYS HUSK, AN ECO-FRIENDLY PAPER BAG

Patent/project number: Student project

Author/s: Sophia Katherine C. Onofre

Institution: Oriental Mindoro National High School - Philippines

Category: A

Description: PLASTIC BAG are thin, waterproof, and strong but harms the environment and takes 10 years to decompose.

PAPER BAG are more environmentally friendly than other materials, much safer for animals, can be repulped without any chemicals, takes about 1 month to decompose.

CORN HUSK - Outer green leaves on corn cob, Fibrous, Considered as agricultural waste by some.

STATEMENT OF THE PROBLEM

What is the effectiveness of zea mays husk paper bag and commercial paper bag in terms of tensile index?

What is the effectiveness of zea mays husk paper bag and commercial paper bag in terms of burst index?

What is the effectiveness of zea mays husk paper bag and commercial paper bag in terms of how long the paper bag can hold something wet before breaking?

MATERIALS: corn husk, baking soda, cornstarch,

Since the zea mays husk paper bag is made of corn husk, and corn husk is a great source of nutrients for soil, the researcher recommends using it as organic fertilizer when it is already broken.

CONCLUSION

Zea mays husk paper bags have a tensile index of 2250 g on average, while commercial paper bags have a tensile index of 600 g.

Zea mays husk paper bags have a burst index of 2850 g on average, while commercial paper bags have a burst index of 2600 g.



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The Zea mays husk paper bag can hold ice or something wet for 2 hours, 45 minutes, and 5 seconds on average, compared to 56 minutes and 28 seconds of the commercial paper bag.

State of development: prototype

Contact: 09517399424

Presentation link: <https://1drv.ms/p/s!AprCDwJMaerchDMauWDZkxFqTcuu>

47.

Title: PROCESS FOR SUBMERGED CULTIVATION OF STRAIN LENTINUS EDODES (BERK.) SING. CNMN-FB-01

Patent/project number: Patent no. MD 4843, 2023.01.31

Author/s: CILOCI Alexandra, DVORNINA Elena, RUDIC Valeriu, BULHAC Ion, URECHE Dumitru, COCU Maria

Institution: Technical University of Moldova, Institute of Microbiology and Biotechnology; Moldova State University, Institute of Chemistry

Category: A

Description: The invention relates to biotechnology, namely to the submerged cultivation of *Lentinus edodes* (Berk.) Sing. CNMNF-01 fungi strain, producer of biomass. The method for submerged cultivation of *Lentinus edodes* (Berk.) Sing. CNMN-FB-01 fungi strain includes the inoculation of seed material in the amount of 10% v/v into a nutrient medium, containing, g/L: NH_4NO_3 - 0.20, KH_2PO_4 - 1.30, $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ - 0.35 and supplementary, as a biostimulator, the heterometallic compound tris(2,6-dimethylpyridinedicarboxylate-1kONO)-di- μ -(isothiocyanato-1.2kN)-(diisocyanato-2kN)barium(II)cobalt(II) - 0.005-0.015, beer wort 5°Balling the rest, and cultivation with continuous stirring at a temperature of 28-30°C for 144 hours.

The technical result of the invention consists in reducing the duration of cultivation by 48 hours and increasing the production of biomass by 35.7-38.2%.

The invention can be used for producing medicinal preparations with curative and nutraceutical properties. The inventions were created based on scientific results obtained within the project 20.80009.5007.28 "Development of new multifunctional materials and effective technologies for agriculture, medicine, technique and the educational system based on "s" and "d" metal complexes with polydentate ligands" funded by NARD, Republic of Moldova.

State of development: laboratory

Contact: Ciloci Alexandra, 079253061; 079976175, E-mail: alexandra.ciloci@imb.utm.md

Presentation link: <https://utm.md/en/>

48.

Title: PROCESS FOR SUBMERGED CULTIVATION OF FUNGAL STRAIN RHIZOPUS ARRHZUS CNMN FD 03, PRODUCER OF LIPASES

Patent/project number: Patent no. MD 4828, 2022.10.31



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Author/s: CILOCI Alexandra, BULHAC Ion, CLAPCO Steliana, DANILESCU Olga, DVORNINA Elena, LABLIUC Svetlana, MATROI Alexandra, URECHE Dumitru

Institution: Technical University of Moldova, Institute of Microbiology and Biotechnology; Moldova State University, Institute of Chemistry

Category: A Biotechnology

Description: The invention relates to biotechnology, and in particular to a process for submerged cultivation of *Rhizopus arrhizus* CNMN FD 03 fungal strain, producer of lipases. The process includes the preparation of a spore suspension of the strain grown for 30 days on a malt-agar medium, inoculation of the suspension in an amount of 5 vol.% in a nutrient aqueous medium containing, g/L: soy flour – 35.0, (NH₄)₂SO₄ – 1.0, KH₂PO₄ – 5.0, with the simultaneous addition, as a biostimulator, of 0.005-0.015 g/L of heterometallic compound [Ca(L)₃][Co(NCS)₄], where L – dimethylpyridine-2,6-dicarboxylate, and cultivation with continuous stirring at 180- 200 rpm at the temperature of 28-30°C for 24 hours.

The result of the invention consists in increasing the biosynthesis of lipolytic enzymes by 34.0...78.4% compared to the control, and reducing the duration of cultivation of the strain by 24 hours.

The invention can be used in the microbiological industry for obtaining lipolytic enzymes with wide application in the food industry, production and processing of fats and vegetable oils, in medicine as a therapeutic and diagnostic agent.

The inventions were created based on scientific results obtained within the project 20.80009.5007.28 "Development of new multifunctional materials and effective technologies for agriculture, medicine, technique and the educational system based on "s" and "d" metal complexes with polydentate ligands" funded by NARD, Republic of Moldova.

State of development: laboratory

Contact: Ciloci Alexandra, 079253061; 079976175, E-mail: alexandra.ciloci@imb.utm.md

Presentation link: <https://utm.md/en/>

49.

Title: PROCESS FOR OBTAINING OF THE ANTIOXIDANT EXTRACTS BASED ON NATURAL PIGMENTS

Patent/project number: a20220058 from 29.12.2022

Author/s: Beșliu Alina; Chiselîța Natalia; Chiselîța Oleg; Efremova Nadejda; Tofan Elena; Rudic Valeriu

Institution: The Institute of Microbiology and Biotechnology of Technical University of Moldova

Category: A

Description: The invention relates to the elaboration of a new process for obtaining of the new antioxidant extracts based on pigments from *Arthrospira platensis* biomass, remaining from the production of the BioR remedy. The process according to the invention consists in the following steps: the dried at the temperature of +50±5°C remaining biomass of *Arthrospira platensis* is supposed to grinding and then mixed with 96% ethyl alcohol in the 1:10 v/v ratio. The suspension is supposed to sonication (50 W) for 5 minutes or placed



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in a water bath at the temperature of +45°C for 30 minutes with periodic stirring. The pigment preparation is separated from the biomass by centrifugation. Technical result consists in the obtaining of the extracts with a content of β -carotene of $0.645 \pm 0.001 - 0.6875 \pm 0.010$ mg/100g.

The results were obtained in the framework of project 20.80009.5107.16. "New biologically active microbial preparations for increasing the reproductive and productive potential of animals of zootechnical interest", financed by NARD.

State of development: The preparation is used in the research laboratories of the Scientific and Practical Institute of Biotechnology in Animal Husbandry and Veterinary Medicine. The preparation is tested at the enterprises for swine and sheep production.

Contact: Oleg Chiselita email: oleg.chiselita@imb.utm.md

Presentation link: <https://imb.utm.md/>

50.

Title: STUDIES AND DETERMINATIONS QUANTITATIVE AND QUALITATIVE OF AIR POLLUTION IN HUNEDOARA

Patent/project number: Student project

Author/s: Stud. Pricopi Anamaria-Alina, Coordinators: Erika Ardelean, Marius Ardelean

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

Category: A

Description: Air quality measurements were carried out in Hunedoara, over a period of 5 days, in 9 points marked on the map in the image. Dust content, PM2.5 and PM10 were measured.

The measurements were carried out with the equipment of the Integrated Environmental Protection Laboratory of the Faculty of Engineering in Hunedoara, and the data are presented in the form of comparative histograms.

From the analysis of the collected data, relative to PM2.5 and PM10 powders in suspension, a high level of them can be found in areas with heavy traffic: in the intersection of a large shopping center, Kaufland and the street that connects Hunedoara with Călan, Hațeg.

State of development: Research study

Contact: alinapricopi507@gmail.com

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

51.

Title: POSSIBILITIES OF VALORIZATION OF THE TAILINGS RESULTING FROM THE TECHNOLOGICAL PROCESSES OF ORE PREPARATION

Patent/project number: PhD Thesis

Author/s: Adriana BOBORA, Ana SOCALICI, Erika ARDELEAN, Corneliu BIRTOK-BANEASA, Adina BUDIUL BERGHIAN



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

Category: A

Description: The elimination of "historical" waste still remains a problem that will be solved in a longer period depending on the financial resources and technical solutions that will be available. Considering the high potential given by extensive industrially polluted surfaces as a result of the mining and steel industry in the western area of Romania, and not only, a series of measures must be taken for a modern industrial waste management. The small and pulverulent waste, mainly from the steel industry but also from the mining and energy industries, due to the high content of metals and various oxides, are called by-products and are considered components of natural capital because they can be exploited in the metallurgical industry or in other industrial branches.

In the Hunedoara area, following the preparation of the sideritic ore used in the agglomerate processing, there are three sideritic waste settling ponds at Teliuc. The sterile can be subjected to preparation operations and the resulting product can be used to obtain by-products that can be used in industry (example - used in the technological process in steelmaking by briquetting or agglomeration together with other waste with a high iron content).

State of development: Doctoral research project

Contact: gulasadriana@gmail.com

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

52.

Title: RESEARCH REGARDING THE INFLUENCE OF THE METALLIC CHARGE UPON REDUCING THE SPECIFIC CONSUMPTION AND THE DEGREE OF POLLUTION AT ELECTRIC MILLS

Patent/project number: PhD Thesis

Author/s: Cristina PACURAR (DIMPU), Ana SOCALICI

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

Category: A

Description: The European steel industry is faced with the simultaneous effects of reduced demand and overcapacity in a globalized steel market, as well as high electricity prices and the need to transition to energy from renewable sources, which means that the steel industry must invest in new technologies to adapt to the green economy and to manufacture innovative products at competitive costs. Taking into account the current data that show us that the steel industry has a major impact on the environment producing approximately 4% of carbon dioxide emissions in Europe and approximately 9% worldwide, research has been carried out to optimize specific consumptions, the quality of steel developed in the electric arc furnace as well as the possibility of reducing the impact on environmental factors and the health of the population by reducing carbon emissions, dust propagating in the atmosphere as well as noise produced during technological processes, due to the complexity of the installations and raw materials used on the



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technological flow. Industrial research has focused on the analysis of the EBT type electric arc furnace charge structure, from the point of view of the ferrous types, the ferroalloys used, the fuel and the oxygen used.

Following the analysis carried out, based on the processing of industrial data in the MATLAB program, the optimal structure of the metal load (depending on the supply conditions) was established in order to increase the metal removal.

International organizations predict a decrease in the price of electricity obtained from renewable sources until 2030, and the transition to green energy of the steel industry would allow the impact on the environment to decrease considerably and improve the quality of the steel obtained due to the use of hydrogen in the chemical composition of the metal load used by the new high-performance technologies. The assortment structure of the optimal load: assortment E100 -4-6%; commercial ferrous barks 10-20%; inner barks 10-20%; internal recycling 8-10%; scraps 4-6%.

State of development: Doctoral research project

Contact: daniellela2020@yahoo.com

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

53.

Title: CONCEPTUAL DESIGN OF A PLANT FOR ANAEROBIC BIOLOGICAL TREATMENT OF SLUDGE FROM THE PROCESS OF SANITARY WASTEWATER TREATMENT

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

Author/s: Zaga Trišović

Institution: The Academy of Technical Applied Studies Belgrade - Serbia

Category: A

Description: Greenhouse gas emissions and climate change are global problems. Solution is to reduce fossil fuel use and increase the use of renewable energy. One of those renewable energy sources is biogas which is a flammable mixture of gases that consists mainly of methane (CH₄) and carbon dioxide (CO₂). Anaerobic digestion (AD) is an ecological, naturally occurring process where, in the absence of oxygen (anaerobic), organic matter decomposes to form a mixture of gases known as biogas.

In this project a conceptual design of a plant for biogas production using sludge separated from the primary and secondary sedimentation from the wastewater treatment for a city with 50,000 equivalent inhabitants (EI) is shown.

The production and use of biogas has multiple positive effects, from the point of view of environmental protection, the use of renewable energy sources, and support for the national economy.

Key words: biogas, wastewater treatment, renewable energy

State of development: Doctoral research project

Contact: Zaga Trišović, Phone: +38162295270 E-mail: zaga.trisovic@gmail.com

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



54.

Title: AIRBORNE WIND POWER SYSTEM

Patent/project number: Patent OSIM: RO133886- B1/29.04.2022

Author/s: Ștefan Breban, Marius Alexandru Drancă, Ion Mălăeș

Institution: Technical University of Cluj-Napoca

Category: A

Description: The airborne wind system is raised and maintained in the air with the help of balloons filled with a gas lighter than air, and/or using the lift force of elements with an aerodynamic profile; it consists of one or more wind turbines that drive electric generators; the orientation of the turbine/s, in the direction of the wind, is done with one or more tail vanes mounted on a horizontal support or on the sides of the wing with an aerodynamic profile; it is anchored to the ground by one or more cables that also ensure the transfer of electrical energy to the ground; is equipped with an assembly composed of an axial-radial bearing and an element with sliding contacts that allows the rotation of the anchored assembly according to the wind direction and at the same time ensures the electrical connection with the electrical conductors in the cable/cables.

State of development: patent, scientific paper, research project

Contact: Liliana.Pop@staff.utcluj.ro

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

55.

Title: DESULFATIZATION, OPTIMIZATION AND APPLICATION TECHNIQUE OF THE SPENT PLATES PROVIDED FROM CAR BATTERY

Patent/project number: Patent OSIM: RO134764- B1/30.12.2022

Author/s: Simona Rada, Răzvan Opre, Andrei Pinteș, Eugen Culeș

Institution: Technical University of Cluj-Napoca

Category: A

Description: The invention relates to a efficient desulfatization technique of the spent plates from a car battery in order to obtain optimized materials which can be used to make new electrodes for batteries. According to the invention, the recycling process is based on the melt-queching method, uses plates with high wear from a spent car battery and allows the conversion of sulfated phases into metal oxides.

The process of regeneration and optimization of recycled electrode materials for the applications on batteries is realized by the adding of the suitable contents of nickel (II) oxide or cobalt (II, III) oxide.

State of development: patent, scientific paper, research project

Contact: Liliana.Pop@staff.utcluj.ro

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



56.

Title: DIODE TYPE MULTILAYER ORGANIC DEVICE, TRANSPARENT AND FLEXIBLE BASED ON ELECTROSPUN POLYMERIC FIBERS AND ORGANOMETALLIC COMPOUNDS AND ITS MANUFACTURING PROCESS

Patent/project number: A 2022 00626/12.10.2022

Author/s: Iulia Corina Ciobotaru, Constantin Claudiu Ciobotaru, Alexandru Evanghelidis, Silviu Polosan, Ionut Enculescu, Angela Casarica

Institution: National Institute of Materials Physics

Category: A

Description: The present invention describes a multilayer organic device, together with the manufacturing process, consisting of a polymer fiber network covered with a metal layer acting as an anode, a hole carrier layer based on conductive polymers, an emissive layer based on organometallic compounds, a buffer layer based on lithium fluoride and a metal layer acting as a cathode. All layers adjacent to the polymer fiber network have a well-defined geometric configuration to avoid short-circuiting in the final device. Integrating the structure into a transparent and flexible multilayer organic device and applying a voltage allows obtaining a diode characteristic, an aspect that is fundamental in a wide range of applications using electronic display technology.

This work was supported by a grant of the Romanian Ministry of Education and Research, CCDI - UEFISCDI project number PN-III-P2-2.1-PED2019-1459, within PNCDI III

State of development: prototype

Contact: polosan@inifm.ro

Presentation link: <https://inifm.ro/en/home/>

57.

Title: COPPER AND GALLIUM CO-SUBSTITUTED PHOSPHATE-BASED BIOACTIVE GLASS COATED ENDO-OSSEOUS IMPLANTS WITH EXTENDED ANTIMICROBIAL ACTIVITY, CONDITIONED IN INTENSITY AND DURATION BY THE THICKNESS OF THE BIORESORBABLE COATING LAYER

Patent/project number: Patent No. RO 134819 B1 (published in BOPI No. 9/2022)

Author/s: George STAN, Adrian-Claudiu POPA, Cristina BEȘLEAGĂ

Institution: National Institute of Materials Physics

Category: A

Description: The invention refers to a bio-functionalisation protocol of a metallic, orthopaedic or dental endosseous, implants, with phosphate-based bioactive glass (PBG) thin-films, deposited by the radio-frequency magnetron sputtering (RF-MS) technique, possessing extensive antimicrobial activity, which can be conditioned as intensity and duration by the thickness of the sacrificial bioresorbable layer of PBG. The process according to the invention consists in the deposition on the outer surface of a metal endosseous implant of a PBG layer by RF-MS from a cathode target of mild-pressed glass powder with a



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predefined composition (i.e., $P2O5-CaO-Na2O-Fe2O3$ with additives of CuO and $Ga2O3$ in the range of 2...4 mol%), at a working argon gas pressures in the range 0.2...1.0 Pa (which allows the control over the composition of the PBG films), a target-to-substrate separation distance of 35 mm and a deposition temperature $<100^{\circ}C$; the resulting deposited thin PBG layers are continuous, porous, uniform, and well-adhered to the metallic substrate. The engineered thickness modification of the PBG implant-type coatings (in the range of min. 100 nm – max. 1500 nm) enables a strong antibacterial activity (against the *Staphylococcus aureus* and/or *Escherichia coli* strains) which can be tailored as intensity and duration, fostering the path towards a reduced incidence of post-surgery infections.

State of development: prototype

Contact: george_stan@infim.ro

Presentation link: <https://infim.ro/en/home/>

57.

Title: ASSESSING THE IMPACT OF ADOPTING A CIRCULAR ECONOMY APPROACH ON ACHIEVING SAUDI ARABIA'S VISION 2030 WASTE MANAGEMENT GOALS

Patent/project number: Research project

Author/s: Dr. Neyara Radwan

Institution: Industrial Engineering Dept., College of Applied Sciences, ALMaarefa University, KSA - Saudi Arabia

Category: A

Description: The Saudi Vision 'Vision 2030' and the Saudi National Transformation Program (NTP)2020 The Saudi population and actual Gross Domestic Product (GDP) over the last five years based on the World Bank data, Table 1. The Saudi oil reserves are the second largest in the world and the country is the world's leading oil exporter. Historically, the oil sector accounts for roughly 90% of Saudi budget revenues, 97% of export earnings, and 55% of GDP. Another 40% of GDP comes from the private sector. This situation calls for a new approach to diversify the country's economy, accordingly, the KSA's government announced a very comprehensive development vision "Vision 2030" in April 2016. The Vision is a strategic framework to reduce Saudi Arabia's dependence on oil, diversify its economy, and develop public service sectors such as health, education, infrastructure, recreation, and tourism.

State of development: prototype

Contact: nradwan@um.edu.sa

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



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

1.

Title: METHOD FOR OBTAINING A REINFORCED ALVEOLAR STRUCTURE

Patent/project number: A / 00078 / 20.02.2023

Author/s: Emilia Dobrin, Sorin Muşuroi, G.-V. Mnerie, C.M. Matei

Institution: Politehnica University of Timisoara, National R & D Institute for Welding and Material Testing

Category: B

Description: The process for producing reinforced alveolar structures according to the invention solves the technical problem presented and eliminates the disadvantages mentioned in that the structure obtained, with components produced by 3D printing, can be configured from the design phase according to the material used for printing, the intensity and orientation of the anticipated mechanical stresses and the mechanical strength imposed on the final product. The structure is composed of a 3D-printed semi-finished product and metal fabric reinforcement, the joining of the structure components is done by ultrasonic welding equipment after the printing material, polymer or polymer with reinforcing agent (composite) is deposited layer by layer in a cellular volume structure with a configuration (cell size and orientation) determined by the mechanical strength requirements of the final product.

State of development: patent application

Contact: PhD Stud. Emilia Dobrin edobrin@isim.ro

Presentation link: https://www.isim.ro/isim_eng.htm

2.

Title: RECOVERY OF IRON-CONTAINING WASTE IN THE STEEL INDUSTRY

Patent/project number:

Author/s: Ana Socalici, Erika Ardelean, Marius Ardelean, Vasile Puţan

Institution: University Politehnica of Timisoara, Faculty of Engineering Hunedoara

Category: Research project

Description: In the context of sustainable development, the resource efficiency, reuse and recycling of the steel in question of ferrous waste is very important for the steel industry. The efficiency and quality of raw materials and auxiliary materials is an integral part of the steelmaking process.

The research project presents the results obtained from the processing of sludge (sintering sludge, sludge mill scale and ferrous sludge) resulting from the steel industry. From the point of view of the chemical and particle composition, the waste can be recovered by recycling, the choice of technology having to take into account all its qualitative characteristics.



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Experimental results lead to the conclusion that the waste analyzed can be processed by briquetting /pelletizing / agglomeration, which allows the recovery of waste with large particle size variation limits (desirable below 2 mm). The composition of the recipes is determined according to the availability of small and powdery waste and the destination of the resulting by-products - steel industry.

State of development: Research in the laboratory and industrial phase

Contact: virginia.socalici@fih.upt.ro

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

3.

Title: COLLAGEN NANOFIBERS FROM FISH SCALE AND PROCEDURE FOR OBTAINING

Patent number: OSIM A/00782/29.11.2022 Published in BOPI no 3/2023. Pg23

Author/s: Gaidau Carmen Cornelia, Rapa Maria, Stanca Maria, Predescu Cristian, Alexe Cosmin-Andrei

Institution: R&D National Institute for Textiles and Leather

Category: B

Description: The invention refers to obtaining collagen nanofibers with an average size diameter of 110-178 nm by using collagen from fish scales following two innovative methods for extraction.

The high surface area to volume ratio and porosity as compared to gelatine or collagen membranes as well as the origin of collagen make the fish scale collagen nanofibers an advanced biomaterial for wound healing dressings manufacture.

Novelty

Extraction methods for collagen with spinnable properties from fish scales ►for collagen nanofibers electrospinning

Collagen from fish scales as alternative to mammalian collagen ►less immunogenic risks

Collagen from fish scales as alternative to native collagen ►cheaper

Collagen from fish scales as alternative to native collagen ►richer composition with bioactive components: Ca, P, chitin

Collagen nanofibers from fish scales collagen ►resistant to sterilization with gamma irradiation.

Advantages

The high surface area to volume ratio and porosity as compared to gelatin or collagen membranes as well as the origin of collagen make the fish scale collagen nanofibers an advanced biomaterial for manufacturing wound healing dressings.

Acknowledgments: This research was funded by a grant from the Romanian Ministry for Research, Innovation, and Digitalization, CCCDI-UEFISCDI, project number PN-III-P3-3.5-EUK-2019-0237, Contract 219/2020 (NonActioPans), in the frame of Eureka project E!13429.

State of development: prototype, research project

Contact: carmen.gaidau@icpi.ro

Presentation link: <https://spdgroupp.ro/non-active-pans-2-2/>



4.

Title: BIODEGRADABLE POLYMERIC COMPOSITE BASED ON NATURAL RUBBER AND FUNCTIONALIZED WOOD WASTE

Patent number: OSIM A 00539/27.08.2020

Authors: Laurenția Alexandrescu, Maria Sonmez, Mihai Georgescu, Daniela Stelescu, Mihaela Nituica

Institution: R&D National Institute for Textiles and Leather

Category: B

Description: Biodegradable polymer composite based on natural rubber and wood waste ground to nanometric dimensions and functionalized with potassium oleate, intended for obtaining products for the food, medical, consumer goods and footwear industries. The obtaining of composites has also been achieved through more efficient and easier to process technologies. For obtaining products for the food, medical, consumer goods and footwear industries. Products that could be manufactured: caps, gaskets and O-Rings, products for footwear, soles, soleplates, insoles etc. These product's properties will comply with specific product standards and will be biodegradable.

Benefits

- Resistance to high temperatures ranges (-40 - +200°C);
- Hardnesses from 50-70° Sh;
- Long time thermo-oxidative aging resistance;
- Resistance to atmospheric weather, ozone and UV rays;
- Optimal processability of ingredients for mixing due to the functionalization of wood waste with potassium oleate;
- Abrasion resistance below 200 mm³.

Acknowledgments: This patent application was supported within the PN 19- 17 01 03 Nucleu project - MCID

State of development: prototype patent applications, scientific papers

Contact: laurentia.alexandrescu@icpi.ro

Presentation link: www.incdtp.ro

5.

Title: PROCESS FOR PREPARING A POLYCRYSTALLINE MATERIAL OF THE TYPE $MnGe_xSb_y$ DOPED WITH Co or Fe.

Patent/project number: RO130250-B1/2018

Author/s: Madalin Ion RUSU, Cristiana Eugenia Ana GRIGORESCU

Institution: National Institute of Research and Development for Optoelectronics

Category: B

Description: The process for preparing polycrystalline $MnGe_xSb_y$ ($x=0.5-1.0$; $y=1.5-2.2$) doped with Co or Fe, with reproducible properties, for applications in diluted magnetic semiconductor (DMS) technology, spintronics, optoelectronics and information technology consists in: 1) Solid state alloying of element powders in corresponding ratios, pellet preparation and their thermal annealing in Ar gas following a regime with various temperature ramp~ and slope speeds and a single temperature plateau. 2) Optimizing



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the alloy homogeneity through re-milling, melting and recrystallization in alumina crucibles under Ar, using a thermal regime with three plateaus on the ramp and one slope.

According to the invention the process for producing polycrystalline MnGexSby ($x = 0.5-1.0$; $y = 1.5-2.2$) doped with Co or Fe solves the technical problem of homogeneity in that it is achieved by the steps of: making a mixture of powders composed of: 5 ... 10 g of Mn powder, 10 ... 15 g of Ge powder, 30 ... 35 g of Sb powder, 0.1 ... 0.3 g of Co or Fe powder, mixing of powders in a ball mill for 100 ... 300 minutes at a speed of 400-500 rpm, the resulting mixture being then pressed into pellets of 10 ... 30 mm diameter and 2 ... 4 mm thickness at a pressure of 8 ... 10 tf, thermal treatment of pellets in argon gas at $T_1 = 1100-1200$ ° C for up to 150 minutes, grounding the heat treated pellets in the ball mill, pressing the resulting powder into new pellets, melting the final pellets in a capped alumina crucible in argon flow at a temperature $T_2 = 1100-1350$ ° C for up to 400 minutes and recrystallization of the melt.

State of development: concept

Contact: madalin@inoe.ro

Presentation link: <https://www.inoe.ro/en/>

6.

Title: MULTILAYERED COATINGS FOR PROTECTING OF CUTTING TOOLS WHICH WORK IN SERVER WEAR REGIMES USED IN WOODWORKING TOOLS

Patent/project number: A/00093/28.02.2023

Author/s: Alina Vladescu (Dragomir), Anca C.Parau, Diana M.Vranceanu, Mihaela Dinu, Lidia R.Constantin, Catalin Vitelaru

Institution: National Institute of RD for Optoelectronics INOE2000

Category: B

Description: The patent application relates to a solution to obtain multilayered coatings consisting of alternate layers of metal, nitrides and binary or ternary carbonitrides of some transition metals (Ti, Cr, W, Fe), to be used as protective layers of cutting tools subjected to a severe regime abrasion, erosion and corrosion wear used in the woodworking industry. The multilayer coatings, according to the invention, are made of alternating thin individual layers, with total thicknesses between 1 and 4 μm , having high adhesion to the substrate, the critical normal forces in the "scratch test" being in the range of 24 ... 42 N, with hardness between 18 ... 55 GPa, a corrosion rate $< 4 \times 10^{-4}$ mm/year, having friction coefficients in dry mode of 0.1...0.4 and in solution saline 3.5% NaCl of 0.10...0.22, and the wear rate in the dry ball-on-disc test of $0.6...2.6 \times 10^{-6}$ mm³N⁻¹m⁻¹ and in 3.5% NaCl saline solution of $1.5...5.5 \times 10^{-6}$ mm³N⁻¹m⁻¹, with corrosion current densities and polarization resistances in electrochemical tests in 3.5% NaCl saline solution of 0.4...1.4 $\mu\text{A}/\text{cm}^2$ and 10...110 k Ω , respectively.

Acknowledgement: This work was supported by the Romanian Ministry of Education and Research, CNCS - UEFISCDI, project number COFUND-M-ERANET-3-HardCoat-1 (311/2022) and COFUND-M-ERANET-3-HardCoat-2 (312/2022), within PNCDI III, within PNCDI III, as well as Core Program, Project no: PN11N-03-01-2023.

State of development: prototypes

Contact: alinava@inoe.ro

Presentation link: <https://www.inoe.ro/en/>



7.

Title: NEW GENERATION OF BIOCOMPATIBLE THIN FILM METALLIC GLASSES

Project number: PCE 95/2021 (PN-III-P4-ID-PCE-2020-1264)

Author/s: Alina Vladescu (Dragomir)

Institution: National Institute of RD for Optoelectronics INOE2000

Category: B

Description: The project relates to preparation of ternary biocompatible thin films metallic glasses based on ZrCu-X, where C can be one of the elements Ca, Mg, Mo, Si, Sr, by cathodic arc evaporation method used for coating of orthopaedic implants.

Thin films are amorphous with 2 μm thickness, adherent to substrates and hard (10 -20GPa), with contact angle ranged from 115° to 134°. Thin films are resistant to corrosion in SBF at 37 °C, with a high protection efficiency (>58%) and good biomineralization abilities in SBF and DMEM solutions, having the adsorption of bovine serum albumin (BSA) higher than the uncoated surfaces.

Acknowledgement: This work was supported by grants of the Romanian Ministry of Education and Research, CNCS - UEFISCDI, project PN-III-P4-ID-PCE-2020-1264 (PCE95/2021), within PNCDI III, and Romanian National Core Program no. no. PN 23 05 (id: PN11N-03-01-2023) and contract no. 18PFE/30.12.2021.

State of development: experimental models

Contact: Alina Vladescu (Dragomir): alinava@inoe.ro

Presentation link: <https://coatbio.inoe.ro>

8.

Title: COMPOSITE MATERIAL BASED ON GLASS IONOMER CEMENT AND PHYTOSYNTHESIZED METALLIC NANOPARTICLES WITH IMPROVED ANTIMICROBIAL PROPERTIES AND PROCEDURE FOR OBTAINING IT

Patent number: Patent application A00104/2023

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

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

Category: B

Description: The present invention refers to a composite material with improved antimicrobial properties, without negatively affecting the physical and mechanical properties, intended for use in dental applications, consisting of aluminofluorosilicate glass with a particle size below 45 μm , the liquid component of the glass ionomer cement and a solution of phytosynthesized metallic nanoparticles in extracts of plants from the Lamiaceae family with crystallite size below 25 nm, the process of obtaining the composite material consisting of three stages, the phytosynthesis of metallic nanoparticles, followed by mixing with aluminofluorosilicate glass until complete homogenization, and in that of in the third stage, the liquid component of the glass ionomer cement is added.

Acknowledgements: This work was supported by a grant of the Ministry of Research, Innovation, and Digitization, CCCDI-UEFISCDI, project number PN-III-P4-PCE-2021-0292, contract 92PCE/2022,



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within PNCDI III. It is also acknowledged the support of Ministry of Research, Innovation and Digitization through Program 1 - Development of the national research-development system, Subprogram 1.2- Institutional performance- Projects to finance excellence in RDI, Contract no. 15PFE/2021.

State of development: Laboratory level

Contact: fierascu.radu@icechim.ro

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

9.

Title: COMPOSITE MATERIAL FOR DENTAL RESTORATION WITH STRENGTH TO IMPROVED COMPRESSION AND ANTIMICROBIAL PROPERTIES AND METHOD OF PRODUCING IT

Patent number: Patent application A0425/2023

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

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

Category: B

Description: The present invention refers to a composite material with improved mechanical properties and antimicrobial effect, intended for use in dental applications, consisting of aluminofluorosilicate glass with a particle size below 45 μm , the liquid component of the glass ionomer cement and an antimicrobial component with a role in improving the properties mechanical, consisting of apatite material (of the hydroxyapatite type - $\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$ in which the calcium:magnesium ratio is 10:0..1:1) decorated with silver nanoparticles having a crystallite size below 15 nm, phytosynthesized using extracts of plants from the Lamiaceae family, such as hyssop (*Hyssopus officinalis* L.), white horehound (*Marrubium vulgare* L.), oregano (*Origanum vulgare* L.) or white dead nettle (*Lamium album* L.) and phenolic compound (eugenol) in concentration 7..14% in alcoholic solution, the procedure for obtaining the composite material consisting of five stages, obtaining the apatite material (in which calcium may or may not be partially substituted with magnesium) by the sol-gel method, the phytosynthesis of silver nanoparticles, the decoration the apatite material with metallic nanoparticles and the phenolic compound (eugenol) followed by mixing with the aluminofluorosilicate glass until complete homogenization, and in the fifth stage the liquid component of the glass ionomer cement is added.

Acknowledgements: This work was supported by a grant of the Ministry of Research, Innovation, and Digitization, CCCDI-UEFISCDI, project number PN-III-P4-PCE-2021-0292, contract 92PCE/2022, within PNCDI III. It is also acknowledged the support of Ministry of Research, Innovation and Digitization through Program 1 - Development of the national research-development system, Subprogram 1.2- Institutional performance- Projects to finance excellence in RDI, Contract no. 15PFE/2021.

State of development: Laboratory level

Contact: fierascu.radu@icechim.ro

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



10.

Title: PROCESSES FOR PREPARING PEROXYNITRITE ELECTROSENSITIVE DEPOSITIONS AND METHODS OF SELECTIVE DETECTION

Patent number: Patent application A00445/2023

Author: Ioana Silvia Hosu

Institution: National Institute for Research & Development in Chemistry and Petrochemistry - ICECHIM Bucharest

Category: B

Description: Peroxynitrite is one of the most toxic and powerful anionic oxidants, that is associated to diseases such as Alzheimer, arthrosis, cancer etc. As selective, rapid, sensitive and direct methods for the detection of peroxynitrite are still scarce, the present invention refers to processes of preparing different peroxynitrite electro-sensitive depositions through electro-polymerization and/or drop-casting, using metal phthalocyanines/tetra-amino phthalocyanines (with different transitional metals coordinated to pyrrole groups, metals such as Mn, Co, Zn, Fe or metal-free), as well as to the methods for selective determination using these peroxynitrite electro-sensitive depositions. The claimed selective peroxynitrite determination methods consists of different electrochemical techniques using the following steps: stabilization of the probe at pH 9, inserting the electrodeposited/drop-casted sensors into the analyzed probe (that may also include interfering species, beside peroxynitrite) and quantification of peroxynitrite, depending on the nature and concentrations of peroxynitrite (cyclic voltammetry between -0.2 V to 0.6 V for concentrations between 20-100 μ M and chronoamperometry at -0.03 V for concentrations between 5-40 μ M).

Acknowledgements: This work was supported by a grant of the Ministry of Research, Innovation and Digitization, CNCS - UEFISCDI, project number PN-III-P1-1.1-PD-2021-0798, within PNCDI III, contract number PD116/2022. It is also acknowledged the support of Ministry of Research, Innovation and Digitization through Program 1 - Development of the national research-development system, Subprogram 1.2-Institutional performance- Projects to finance excellence in RDI, Contract no. 15PFE/2021.

State of development: Laboratory level

Contact: ioana.hosu@icechim.ro

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

11.

Title: PROCESS FOR FUNCTIONALIZATION OF NATURAL CELLULOSIC FIBERS WITH ANTIMICROBIAL COMPOSITIONS WITH SELENIUM NANOPARTICLES

Patent number: Patent application No. A00645/2022

Author/s: Florentina Monica Raduly, Valentin Rădițoiu, Alina Rădițoiu, Violeta Purcar, Andreea-Mălina Bivolaru, Iuliana Răut, Mariana Constantin

Institution: National Institute for Research & Development in Chemistry and Petrochemistry - ICECHIM Bucharest

Category: B

Description: The invention refers to a process for functionalizing natural cellulosic fabrics with eco-friendly compositions with antimicrobial activity, consisting in the fact that natural textile materials are subjected to printing with a composition containing a polymeric binder of natural origin, an organic-



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inorganic hybrid of - a natural extract of phytocomponents obtained from plants of the Ginger family and selenium nanoparticles generated in situ, which can be used as antimicrobial textiles for common clothing or in the medical field.

Acknowledgements: *This work was supported by a grant of the Ministry of Research, Innovation and Digitization, CCCDI - UEFISCDI, project number PN-III-P2-2.1-PED-2019-1471, within PNCDI III. It is also acknowledged the support of Ministry of Research, Innovation and Digitization through Program 1 - Development of the national research-development system, Subprogram 1.2-Institutional performance-Projects to finance excellence in RDI, Contract no. 15PFE/2021.*

State of development: *Laboratory level*

Contact: monica.raduly@icechim.ro

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

12.

Title: *PROCEDURE FOR OBTAINING HOLOGRAPHIC MARKS USING EMBOSSING SUBSTRATE FROM BIOPOLYESTERS THAT CAN BE RECYCLED AND REUSED FOR THE SAME PURPOSE*

Patent number: *Patent Application No. A00271/2023*

Authors: *Denis Mihaela Panaitescu, Adriana Nicoleta Frone, Gabriela Madalina Oprica, Cristian Andi Nicolae, Augusta Raluca Gabor, Valentin Raditoiu, Dorian Radu, George Bostan, Melu Vlad, Mona Mihailescu*

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

Category: *B*

Description: *The Patent Application A00271/29.05.2023 refers to an environmentally friendly process for manufacturing holographic marks using a biopolymer substrate for embossing a nanostructure in the form of an optical diffraction grating, for transferring it to various metal or polymer supports.*

The obtained holographic marks are useful for verifying authenticity and for securing against forgeries. The novelty brought by this patent consists in obtaining holographic marks with a high level of security through a process that uses recyclable and biodegradable biopolymers as embossing substrate.

The biopolymeric substrate can be recycled of a minimum of six times using environmentally friendly melt processing processes and can be composted as a biodegradable and environmentally friendly material.

Acknowledgement: *This work was supported by a grant of the Ministry of Research, Innovation and Digitization, UEFISCDI, project number PN-III-P2-2.1-PTE-2021-0339 (HOLTERM), within PNCDI III. It is also acknowledged the support of Ministry of Research, Innovation and Digitization through Program 1 - Development of the national research-development system, Subprogram 1.2-Institutional performance- Projects to finance excellence in RDI, Contract no. 15PFE/2021.*

State of development: *Laboratory level, demonstrator*

Contact: panaitescu@icechim.ro

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



13.

Title: VANADO-BORON-PHOSPHATE GLASSES WITH ELECTRICAL PROPERTIES AND PROCESS FOR OBTAINING THEM

Patent/project number: A00484/ 2023

Author/s: Ana Violeta Filip, Bogdan Alexandru Sava, Mihai Eftimie, Valentin Craciun

Institution: National Institute for Laser, Plasma and Radiation Physics

Category: B

Description: The invention relates to the production of vanado-boron-phosphate glasses, which have increased chemical homogeneity due to the method of manufacturing under conditions of improved mechanical, thermal, and chemical stability as well as electrical conduction properties beyond the range of insulators at room temperature and to the process for their production. The vanado-boro-phosphate glasses, according to the invention, contain only three vitreous network formers: 40 - 65 molar % V₂O₅, 30 molar % P₂O₅, and 5 - 30 molar % B₂O₃, and the method of obtaining these glasses, the wet melt-quenching technique is characterized in that the raw material mixture is prepared wet, followed by the stages of pre-melting, melting, refining, conditioning, molding, shaping, annealing and processing of the obtained glass for analysis. The invention can be industrially applied to the production of temperature sensor glasses, the product according to the invention being prepared with low energy consumption and low price from raw materials which are non-toxic and have improved mechanical, thermal, and chemical resistance compared to classical phosphate glasses, exhibiting a maximum transmission in the infrared range between 2 and 2.9 microns, as well as conductivity above 10⁻⁸ S/cm at room temperature.

State of development: product

Contact: ANA FILIP ana_filip@ymail.com

Presentation link: <https://phototco.taf.inflpr.ro/>

14.

Title: LASER TRANSFER OF GRAPHENE SHEETS FOR THE FABRICATION OF SENSORS: PROCESS OPTIMIZATION VIA TIME-RESOLVED IMAGING

Patent/project number: PN-III-P1-1.1-TE-2019-1093 / TE 116

Author/s: Alexandra Palla-Papavlu, Mihaela Filipescu, Cristian Viespe, Anca Bonciu

Institution: National Institute for Laser, Plasma and Radiation Physics

Category: B

Description: In recent years there has been a growing interest for two-dimensional nanomaterials such as graphene, for applications in the electronic and optoelectronic industries. Graphene has many advantages; however, its main disadvantage for application in devices remains the need to use special growth /synthesis and handling conditions. In the field of sensors, most of the research work is focused on reducing the size of the sensors and identifying and quantifying several species. Also, fast response, minimum hardware requirement, good reversibility, sensitivity, and selectivity are also qualities of an excellent sensor. The main problem related to the new generation of miniaturized sensors is the complexity of the manufacturing processes, i.e., the integration of many functions on the same device through a single manufacturing process. Thus, the "Laser transfer of graphene sheets for the fabrication of sensors: process optimization via time-resolved imaging" project has as main objective the optimization of the laser induced forward transfer



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process (LIFT) by imaging techniques (shadowgraphy) that allows the deposition of two-dimensional atomic layers of graphene with high spatial resolution for the subsequent realization of sensors.

State of development: research project

Contact: alexandra.papavlu@inflpr.ro

Presentation link: <https://alexandrapalla.wixsite.com/lasting>

15.

Title: TUNGSTEN OXIDE/POLYMER COMPOSITES FOR SENSOR APPLICATIONS (CO-POLYSENS)

Patent/project number: PN-III-P1-1_1-TE-2021-0219 / TE 1

Author/s: Mihaela Filipescu, Adrian Bercea, Alexandra Palla Papavlu

Institution: National Institute for Laser, Plasma and Radiation Physics

Category: B

Description: Permanent, rigorous, and efficient monitoring of the environmental pollution involves the use of efficient devices, namely highly sensitive and reproducible sensors that work at room temperature. The most important part of such a sensor is the active membrane that detects these pollutants, based on chemical or physical phenomena. In the case of chemoresistive sensors, the use of new composite material obtained by mixing organic and inorganic compounds appears to be a promising alternative. Materials used in this project are: WO₃, polyaniline and polypyrrole. The project aims to use alternative technologies based on laser deposition for obtaining nanostructured composites (WO₃/polymer) with high sensitivity to ammonia and low working temperature. Nanostructures are obtained by pulsed laser deposition and matrix assisted pulsed laser evaporation. Following detailed parametric studies, the first part of the project is based on identifying the optimal method for processing WO₃/polymer composites as thin films having high specific area, good adhesion to the substrate and high conductivity. The second part is dedicated to sensors based on the optimized nanostructures: design, processing, and testing.

State of development: research project

Contact: Mihaela Filipescu, mihaela.filipescu@inflpr.ro

Presentation link: <https://mihaelafilepescu.wixsite.com/co-polysens>

16.

Title: PHOSPHATE-TELLURITE VITREOUS MATERIALS WITH MAGNETIC AND MAGNETO-OPTICAL PROPERTIES, FOR FARADAY ROTATORS AND THE PROCESS FOR OBTAINING THEM

Patent/project number: A/00752/19.11.2020

Author/s: Mihail Elisa, Stefan Marian Iordache, Bogdan Alexandru Sava, Lucica Boroica, Victor Kuncser, Aurelian Catalin Galca

Institution: National Institute for Laser, Plasma and Radiation Physics

Category: B

Description: Aluminum-phosphate-tellurite glasses containing lithium oxide and titanium dioxide and, respectively, zinc oxide, used as Faraday rotators were prepared by using as raw materials oxides and salts. The unconventional obtaining method used ensures a high chemical and optical homogeneity of the obtained



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materials and lower melting and annealing temperatures as compared to the conventional glass. Optical transmission was higher than 88%.

State of development: patent

Contact: savabogdanalexandru@yahoo.com

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

17.

Title: BOROSILICATE GLASSES DOPED WITH GADOLINIUM OXIDE AND/OR DYSPROSIUM OXIDE FOR NEUTRON GUIDES AND PROCESS FOR OBTAINING THEM

Patent/project number: A/00797/21.12.2021

Author/s: Bogdan Alexandru Sava, Marius-Catalin Dinca, Bogdan Ionut Bita, Lucica Boroica, Aurelian Catalin Galca

Institution: National Institute for Laser, Plasma and Radiation Physics

Category: B

Description: The invention relates to a novel product, boron-silicate glasses doped with gadolinium oxide and/or dysprosium oxide for neutron guides and a process for obtaining them.

The advantages of these glasses refer to their use as thermal and cold neutron guides, with superior performance to existing ones, in terms of resistance to the effect of prolonged radiation exposure.

State of development: patent

Contact: savabogdanalexandru@yahoo.com

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

18.

Title: FILMS BASED ON TITANIUM (TiO₂) AND PHOSPHORUS (P₂O₅) OXIDES MODIFIED WITH REDUCED GRAPHENE OXIDE (RGO) WITH CONTROLLABLE PHOTOCATALYTIC PROPERTIES AND PROCESS TO OBTAIN THEM

Patent/project number: A/00342/17.06.2021

Author/s: Ileana Cristina Vasiliu, Ana Maria Iordache, Mihail Elisa, Iulian Pana, Bogdan Alexandru Sava, Lucica Boroica, Ana Violeta Filip

Institution: National Institute for Laser, Plasma and Radiation Physics

Category: B

Description: The invention refers to a technology using the sol-gel method to obtain with reduced costs, vitreous films with photocatalytic properties based on TiO₂-P₂O₅ modified with reduced graphene oxide (rGO) to be used as anodes in dye-sensitized solar cell (DSSC).

The prepared composite films exhibit the photocatalytic properties of titanium dioxide, the phosphorus characteristics to form vitreous structures, transparent, homogenous, with large active surface and large pore volume and the attributes of graphene oxide that improves the photocatalytic properties of titanium oxide.

The TiO₂-P₂O₅-rGO vitreous composite usable in DSSC cells as a photoanode offers outstanding transparency functions to allow maximum light absorption transfer along the photovoltaic cell.



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State of development: patent

Contact: savabogdanalexandru@yahoo.com

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

19.

Title: DOPED BORO-LEAD-PHOSPHATE GLASS AND NANOCARBON COMPOSITES AND METHOD FOR OBTAINING THEM

Patent/project number: A/00379/30.06.2021

Author/s: Bogdan Alexandru Sava, Lucica Boroica, Ana Violeta Filip, Ileana Cristina Vasiliu, Mihail Elisa, Ana Maria Iordache

Institution: National Institute for Laser, Plasma and Radiation Physics

Category: B

Description: The technical problem solved by the invention consists in obtaining doped boron-lead-phosphate glass composites - nanocarbon, which have increased chemical homogeneity, while maintaining the other nanocarbon-induced properties, namely electrical and mechanical properties, and dopants add new optical properties and magnetic, amplified by phosphorus oxide in the glass matrix (nanocarbon introduced directly into the melt).

State of development: patent

Contact: savabogdanalexandru@yahoo.com

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

20.

Title: ALUMINOPHOSPHATE GLASSES CONTAINING RARE-EARTH IONS, APPLIED AS OPTICAL SENSORS AND THE PROCESSING METHOD

Patent/project number: RO 130686 B1/30.07.2019

Author/s: Mihail Elisa, Bogdan Alexandru Sava, Lucica Boroica, Raluca Iordanescu, Ionut Feraru, Mihai Eftimie, Anca Beldiceanu

Institution: National Institute for Laser, Plasma and Radiation Physics

Category: B

Description: The invention is related to aluminophosphate-type glassware products containing rare-earth (RE) ions (Eu^{3+} , Sm^{3+} , Tb^{3+}), used as optical sensors and to the technological process for the preparation of these vitreous materials.

The wet process of doped aluminophosphate glasses preparation offers the advantage of a better homogenization of the raw materials from the first stages of the processing and also allows the formation of intermediate chemical compounds, precursors of the final chemical compounds in the glass. This process guarantees the achievement of a high chemical homogeneity of the initial batch glass, leading to the achievement of high optical homogeneity of doped aluminophosphate glasses, finally obtained.

State of development: patent

Contact: savabogdanalexandru@yahoo.com

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



21.

Title: BORO-PHOSPHATE GLASSES WITH MAGNETO-OPTICAL PROPERTIES AND PROCESS FOR PREPARING THEM

Patent/project number: RO 132655 B1/30.08.2021

Author/s: Bogdan Alexandru Sava, Lucica Boroica, Mihail Elisa, Dumitru Ulieru, Doina Craciun

Institution: National Institute for Laser, Plasma and Radiation Physics

Category: B

Description: The novelty of the invention is that new vitreous materials for magneto-optical uses have been obtained, combining the properties of phosphate glasses with the advantages and novelty of the introduction of B₂O₃ and ZnO. Stabilization of phosphate glasses was achieved with B₂O₃ combined with ZnO and /or PbO. The dopants, transition metal, post-transition metals and rare earths oxides provide high magneto-optic properties for these glasses, which have the advantages of combining these properties with high chemical and mechanical stability.

State of development: patent

Contact: savabogdanalexandru@yahoo.com

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

22.

Title: COMPOSITE CARBON XEROGELS WITH GRAPHENE OXIDE AND THEIR MANUFACTURING PROCESS

Patent/project number: RO 130237/2018

Author/s: Ioan Stamatin, Alexandra-Maria-Isabel Trefilov, Adriana-Elena Balan, Cornelia Nichita, Stefan-Marian Iordache

Institution: National Institute for Laser, Plasma and Radiation Physics

Category: B

Description: The invention relates to the production process of high-quality composite carbon xerogels based on reduced graphene with improved properties: increased carbon purity, low resistivity, low density and high retention capacity.

The process according to the invention consists in the sol-gel synthesis of resorcinol and formaldehyde solution in the presence of graphene oxide, which simultaneously plays the role of reaction catalyst and active component. After the pyrolysis step, the graphene-containing carbon xerogel obtained is studied by morphological, structural and electrical measurements, which highlights the possibility of application in energy devices.

State of development: product

Contact: alexandra.trefilov@inflpr.ro

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

23.

Title: PHOSPHATING PROCESS FOR TITANIUM ALLOY WITH ZN-ZR PHOSPHATE SOLUTION



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14-16.09.2023 – Deva, Romania



Patent/project number: Pending 2023

Author/s: Diana Petronela BURDUHOS NERGIS, Costica BEJINARIU, Andrei Victor SANDU, Petrica VIZUREANU, Nicanor CIMPOESU, Dumitru-Doru BURDUHOS-NERGIS

Institution: Gheorghe Asachi Technical University of Iasi

Category: B

Description: The procedure described in the invention involves phosphating titanium alloys with phosphating solutions based on Zr and Zn to create porous thin coatings that can enhance the biological response of titanium implants by boosting osseointegration and enhancing corrosion and wear resistance. Through a phosphating process that includes grinding, degreasing, pickling, surface activation and phosphating phases, a coating of phosphate based on Zr and Zn is deposited. Also, the phosphating process parameters were changed to produce a homogenous layer that could enhance the titanium alloy's characteristics and lower the likelihood of implant rejection. The invention's applications have the following benefits: it can be applied quickly by immersion without using extra energy; it allows for the formation of layers with high adhesion to the substrate; the formed layers exhibit stability over time; and it enhances osseointegration due to the substrate's increased resistance to corrosion and wear as well as its morphological features that encourage cell adhesion.

State of development: laboratory

Presentation link: Poster attached

24.

Title: PROCESS FOR OBTAINING A TRANSDERMAL TRANSPORTER OF ACYCLOVIR

Patent/project number: Patent no. RO 134816 / 2023

Author/s: Borcan Florin, Dehelean Cristina Adriana, Soica Codruta Marinela

Institution: "Victor Babes" University of Medicine and Pharmacy Timisoara

Category: B

Description: The invention refers to a process for obtaining a polyurethane composition with increased solubility used as a delivery system for Acyclovir. The process, according to the invention, consists in the interphase polyaddition reaction combined with a spontaneous emulsification using an aqueous solution of a mixture of polyethylene glycol, poly(ethylene oxide), monoethylene glycol, 1,4-butanediol, 1,6-hexanediol, eventually, agents as 1,2-propanol 2-acetate or glycerol 1,2-diacetate, to increase solubility, an organic solution as well as a usual emulsifier, in a discontinuous microreactor at a temperature of 30 oC, with homogenization of the final suspension for 6 hours at 300 rpm, resulting in a stabilized hydrogel composition with reduced skin irritation level, non-toxic, thermally stable in the range of 20...280 oC, with polyurethane structures having dimensions of 144...229 nm and increased solubility in water which facilitates the transmembrane transfer of the antiviral drug Acyclovir.

State of development: concept – PhD thesis – laboratory

Contact: Borcan Florin fborcan@umft.ro

Presentation link:

https://ro.espacenet.com/maximizedOriginalDocument?ND=6&flavour=maximizedPlainPage&locale=ro_RO&FT=D&date=20230630&CC=RO&NR=134816B1&KC=B1

25.



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Title: POLYURETHANE NANOGEL APPLICABLE IN GENE THERAPY OF RARE SKIN DISEASES

Patent/project number: Patent appl. no. a 2022 00718

Author/s: Borcan Florin, Popescu Roxana, Szuhanek Camelia Alexandrina, Soica Codruta Marinela, Dehelean Cristina Adriana

Institution: "Victor Babes" University of Medicine and Pharmacy Timisoara

Category: B

Description: The invention refers to a pharmaceutical formulation product, with cutaneous administration, being used as a delivery system for a mixture of deoxyribonucleic acid (DNA), betamethasone dipropionate and vitamin E. The product according to the invention contains polyurethane nano-structures obtained in a complex synthesis process, in which an interphase polyaddition reaction takes place, using only aliphatic compounds, which do not present a potential carcinogenic risk. The evaluation of the product highlighted the obtaining of a gel with a neutral pH, with relatively homogeneous structures, showing a low tendency of self-agglomeration, thermally stable in a wide temperature range, respectively its non-irritating character in skin tests.

State of development: laboratory – product

Contact: Borcan Florin fborcan@umft.ro

Presentation link: <http://www.borcan.ro/PUBioMatDNA>

26.

Title: GERM GUARD GOO (G.G.G.)

Patent/project number: Patent Pending

Author/s: Pimbisa Bisalputra, Thantham Jittham, Warinsaya Sereepapong, Phichphanita Mathasuriyapong

Institution: Chulalongkorn University Demonstration Secondary School, CATS Academy Boston

Category: B

Description: The G.G.G. is a versatile and convenient cleaning tool in the form of a slime. Its uniquely sticky surface allows it to effectively pick up dust particles and small debris. Moreover, its distinct chemical composition of Silver Nanoparticles (AgNP) adds another functionality of creating a germ-prevention barrier, further protecting the already dustless surfaces. It can be used on a wide range of surfaces such as keyboards, electronics, car interiors, furniture, and more. With its fun and practical nature, the slime provides a simple and efficient way to keep your surroundings sanitized. lity, eco-friendliness, and versatility.

One of the many features of G.G.G. is its exceptional dust-cleaning abilities. The slime's sticky texture attracts dust particles and debris, making it an effective tool for removing dirt or grime from various surfaces. A simple rolling or pressing of the product allows for effortless and thorough cleaning. Its moldable nature enables it to reach even the most intricate corners, ensuring no dust is left behind. This flexibility not only saves time and effort but also enhances the overall cleanliness of any surroundings. In addition to its outstanding cleaning properties, the G.G.G. acts as a germ-preventing agent. It contains antibacterial properties that inhibit the growth and prevent the spread of harmful microorganisms. The slime's



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composition creates an inhabitable environment for germs, simultaneously reducing the risk of infections and illnesses. Whether you're cleaning a keyboard, smartphone, or other high-touch surfaces, using this slime provides an extra layer of protection, maintaining a hygienic environment.

Unlike single-use cleaning products that contribute to waste accumulation, this slime is reusable, making it an eco-friendly alternative. After cleaning or collecting dust from surfaces with the product, it can be stored in a sealed container for future use. When the slime becomes visibly dirty or loses its stickiness, a simple cleaning process can restore its effectiveness. This factor not only saves money in the long run but also promotes the reduction of generated waste.

State of development: Product

Contact: Mr. Robert Armstrong , Mr. Jeerasak Jitrotjanarak

Telephone: +66 95 935 1062 , +66 84 639 6363

Email: scis.cud@gmail.com j_jerasak@hotmail.com

Presentation link: <https://youtu.be/EHmzUG9wbGs>

27.

Title: OxyRock

Patent/project number: on-process

Author/s: Jeerasak Jitrotjanarak , Nattadanai Pinthanon

Institution: Satit Chula Innovation Society - Thailand, Rugby school - UK

Category: B

Description: Innovatively repurposing waste green mussel shells, this project converts them into valuable high-value products, notably decorative stone made from calcium carbonate. These shells, typically discarded in landfills, contribute to environmental degradation. Through a unique process, pure calcium carbonate is extracted from these shells, finding applications in industries like cosmetics and agriculture, reducing environmental burdens. Additionally, the project introduces a novel air-purifying function to the stone using titanium dioxide, enhancing both aesthetics and environmental impact. The innovative use of 3D printing allows for custom designs, adding a new dimension to the decorative stone fabrication process. By transforming waste into valuable resources and integrating cutting-edge techniques, the project aligns with circular economy principles, fostering sustainability and economic growth while addressing UN Sustainable Development Goals.

State of development: Product

Contact: Mr. Robert Armstrong , Mr. Jeerasak Jitrotjanarak

Telephone: +66 95 935 1062 , +66 84639 6363

Email: scis.cud@gmail.com j_jerasak@hotmail.com

Presentation link:

https://drive.google.com/file/d/1wbxn6RMrQi2mHWx9We9PQI9j_zKTpWGY/view?usp=sharing

28.

Title: FROM SYMMETRIC GROUPS TO ROAD DESING

Patent/project number: Student Project

Author/s: Remzi AKTAY



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14-16.09.2023 – Deva, Romania



Institution: Ankara Çubuk Bilim Sanat Merkezi - TURKEY

Category: B

Description: Today, especially in metropolitan cities, there is a traffic problem caused by roads and the number of vehicles. Especially since the construction in the city is over, there are measures such as building bridges and opening roads from below are taken to solve this problem. This solution is only an artificial solution to reduce traffic for a certain period of time. Based on this problem, it is aimed to make road design at the beginning of urbanization and to analyze the situation of two-way one-way roads in the name of not to encounter such a problem in the new settlements to be established or to change the routes of the roads in certain cities if they can be arranged. In this study were used quantitative research method and experimental design. Within the scope of the study, symmetric groups, permutation function and its combination were utilized. Let n be the length of a permutation function written as a circle. The symmetric group in which this function is located is S_n , and a method has been developed that can be written as the composite of functions of the same length and less than this length in this group. Thanks to this method, a permutation function was created for the roads to be determined according to the important centers in a settlement, the circular software and length of the permutation function were found, and the road routes between these centers could be written as a composite of permutation functions with less length in circular representation, and accordingly, road designs could be made. For each road design, cost calculation, accessibility to other centers, one-way and two-way road conditions were examined and alternatives were revealed. Based on this study, algorithms and software of the road designs developed can be developed and new urbanization and settlement planning can be made accordingly.

State of development: Research project

Contact: aktayremzi@outlook.com

Presentation link: https://drive.google.com/file/d/1Wop4XEDgPtr_QExTH7L8KIsitnHH-Qsr/view?usp=sharing

29.

Title: COLLAGEN AND COLLAGEN-KERATIN NANOFIBERS FROM DONKEY BY-PRODUCTS. PROCESS FOR THEIR OBTAINING

Patent number: A 2022 00770

Authors: Maria Râpă, Carmen Gaidau, Ecaterina Matei, Maria Stanca, Daniela Mariana Berechet

Institution: National University of Science and Technology POLITEHNICA Bucharest

Category: B

Description: The invention refers to a composition for making nanofibers based on collagen and keratin obtained from hides and hair of donkey and to a method of obtaining them. The nanofibers obtained could be utilized for non-active medical dressings.

The composition according to the invention comprises the following elements expressed as a percentage by weight: 12% collagen or collagen-keratin mixture and 88% acetic acid solution in water, with a volume ratio of 9:1 for acetic acid and water. The process according to the invention involves obtaining a working solution from the above elements. This is achieved by stirring them for 6 hours at room temperature and a speed of 600 rpm. The resulting solution is then introduced into a syringe fixed in a pump and electrospun with a flow rate between 0.6 to 0.8 mL/h. The needle used for electrospinning has an inner diameter of 0.168



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mm and is connected to a high voltage source ranging from 22.71 to 25.59 kV. The distance between the end of the needle and the collector is set between 9 to 14 cm, resulting in nanofibers with a variable diameter between 73.15 to 133.33 nm.

The technical problem that the invention solves is the obtaining of nanofibers compositions based on collagen and keratin extracted from hides and hair donkey by-products, natural polymers, which show biocompatibility, biodegradability, nontoxicity and similarity to the extracellular matrix (ECM). The purpose of obtaining nanofibers with the smallest diameter and the finest pores is to enable rapid absorption of exudate and prevent bacteria penetration into the wound area.

Funding: This research was funded by a grant of the Romanian Ministry of Research Innovation and Digitalization, project number PN-III-P3-3.5-EUK-2019-0237 within PNCDI III (NonActivPans), Contract 219/23.12.2020.

State of development: Research

Contact: maria.rapa@upb.ro

Presentation link: <https://spdgroup.ro/non-active-pans-2-2/>

30.

Title: HETEROJUNCTION BASED ON InP AND GaN NANO/MICROMETRIC THIN FILMS FOR PHOTODETECTOR APPLICATIONS

Patent/project number: MD 4686/2020.12.31; MD 4772/2022.05.31; s 2023 0010/2023.02.02

Author/s: Vasile BOTNARIUC, Leonid GORCEAC, Simion RAEVSCHI, Sergiu VATAVU

Institution: Moldova State University

Category: B

Description: 1. Fotodetectors based on nCdS-pInP heterojunctions with intermediate epitaxial poInP layer and SiO₂ antireflective coating for VIS spectral range applications (maximum spectral response 0,510 A/W; external quantum efficiency (EQE) of 75-80 %, 600-900 nm range).

2. nZnO-pInP, nITO-TiO₂-pInP, nGaN-pSi heterojunctions with wide spectral range photosensitivity.

ADVANTAGES: HVPE, MOCVD, magnetron sputtering, spray pyrolysis technologies use for InP and GaN heterojunction based photodetectors preparation; Photodetectors with wide spectral range photosensitivity combined with increased resistance to corpuscular radiation.

State of development: Laboratory development state.

Contact: Sergiu VATAVU, sergiu.vatavu@usm.md + 373 67560052

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

31.

Title: STUDY ON THE POSSIBILITIES OF DEVELOPING CEMENTITIOUS OR GEOPOLYMER COMPOSITE MATERIALS WITH SPECIFIC PERFORMANCES BY EXPLOITING THE PHOTOCATALYTIC PROPERTIES OF TiO₂ NANOPARTICLES

Patent/project number: PN 23 35 05 01

Author/s: Adrian-Victor LĂZĂRESCU, Andreea HEGYI, Adrian Alexandru CIOBANU, Brăduț Alexandru IONESCU, Mihail CHIRA, Carmen FLOREAN, Horațiu VERMEȘAN, Vlad STOIAN

Institution: NIRD URBAN-INCERC Cluj-Napoca Branch



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Category: B

Description: Starting from the context of the principles of Sustainable Development and Circular Economy concepts, the paper presents a synthesis of research in the field of the development of materials of interest, such as cementitious composites or alkali-activated geopolymers. Based on the reviewed literature, the influence of compositional or technological factors on the physical-mechanical performance, self-healing capacity and biocidal capacity obtained was analyzed. The inclusion of TiO₂ nanoparticles in the matrix increase the performance of cementitious composites, producing a self-cleaning capacity and an anti-microbial biocidal mechanism. As an alternative, the self-cleaning capacity can be achieved through geopolymerisation which provide a similar biocidal mechanism. The results of the research carried out indicate the real and growing interest for the development of these materials but also the existence of some elements still controversial or insufficiently analyzed, therefore concluding the need for further research in these areas.

Acknowledgements:

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

State of development: Research project

Contact: adrian.lazarescu@incerc-cluj.ro +40758327156

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

32.

Title: CAPITALIZING ON SUSTAINABLE MATERIAL RESOURCES IN THE CONTEXT OF EXTREME ENVIRONMENTAL, SEISMIC AND CLIMATIC ACTIONS

Patent/project number: PN 23 35 03 01

Author/s: Adrian-Alexandru CIOBANU, Andreea Cristina Hegyi, Cristian PETCU, Ioana ALEXE, Marius MĂRȚ

Institution: NIRD URBAN-INCERC Iași Branch

Category: B

Description: The general objective of the project aims to open new directions of research and development of studies dedicated to achieving a goal of major interest for society, namely increasing community resilience to extreme environmental, seismic and climatic actions. The purpose of the project comes as a response to society's need regarding the decarbonization of the construction sector, in the context of severe climate change, by proposing the development of an integrated system of scientific research in order to capitalize on sustainable resources of traditional, local materials (e.g. natural lime, different types of clay, vegetable waste, wood derivatives, etc.) that can be used in constructions and vital complementary fields, exposed to extreme environmental, seismic and climatic phenomena.

The research focuses on the design - execution - testing and validation of innovative and sustainable products, as well as the development of new experimental research methods regarding the evaluation of their sustainability through exposure to extreme environmental actions (climatic and seismic) specific to



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Romania, in order to increase community resilience and limiting the impact of extreme weather phenomena on civil society.

Acknowledgements:

This work was carried out within Nucleu Programme of the National Research Development and Innovation Plan 2022-2027, supported by MCID, "ECODIGICONS" project no. PN 23 35 03 01: "Integrated system of development and scientific research of constructions and vital infrastructures exposed to extreme seismic and climatic environmental actions and the exploitation of sustainable resources of materials and energy", financed by the Romanian Government.

State of development: Research project

Contact: ciobanuadrianalexandru@yahoo.com +40724052488

Presentation link: <https://incd.ro/sucursala-iasi/>

33.

Title: CLIMATE RESILIENT LOCALITIES – from classic materials to traditional sustainable building materials

Patent/project number: PN 23 35 03 01

Author/s: Ioana-Mihaela ALEXE, Adrian-Alexandru CIOBANU, Alexandrina-Maria MUREȘANU

Institution: NIRD URBAN-INCERC Iași Branch

Category: B

Description: The present project aims to bring Romania closer to the global requirements regarding adaptation to climate change, by creating new products, using local resources, sustainable traditional materials to be used in construction and which can successfully replace classic materials used today .

Climate change is mainly caused by human intervention. Extreme temperatures, drought, floods, landslides have drawn people's attention to the need to adapt to these consequences of climate change, this means adapting housing/buildings, which entails significant costs.

In the last year the building and construction sector has made a major contribution to climate change, registering an all-time high. The "National Strategy on Education for the Environment and Climate Change 2023-2030" elaborated in January 2023 in Romania shows the need to adapt the inhabited/built space to these climate changes. This can be achieved through proper urban planning and development.

The construction materials specified in the design or used in the construction are generally the classic ones (concrete, brick, ACC etc.). To reduce costs, construction materials should be chosen, as far as possible, from those available locally.

The development and adaptation of the built environment means the development of new techniques and markets for materials, products and constructive systems for sustainable constructions that are resistant and adapted to the effects of climate change.

One of the research directions of this project aims to create new sustainable products using traditional materials that meet the requirements imposed by climate change in Romania.

State of development: Research project

Contact: ciobanuadrianalexandru@yahoo.com +40724052488

Presentation link: <https://incd.ro/sucursala-iasi/>



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34.

Title: SYNTHESIS PROCESS UNDER MICROWAVE-ASSISTED HYDROTHERMAL CONDITIONS OF AN rGO/Zn-ZnO HYBRID ELECTRODE

Patent/project number: Registered patent application OSIM A/00164/03.04.2023

Author/s: Cornelia Bandas, Mircea Nicolaescu, Carmen Lazau, Corina Orha, Cristian Casut

Institution: National Institute of Research and Development for Electrochemistry and Condensed Matter Timisoara

Category: B

Description: The invention refers to a synthesis procedure of a hybrid electrode type on rGO/Zn-ZnO under hydrothermal conditions, which supposes two main experimental stages: A) synthesis of an ZnO crystalline layer directly on zinc foil by thermal oxidation obtaining the structure Zn-ZnO; and B) graphene oxide reduction in hydrothermal conditions and "in-situ" deposition of rGO film on the Zn-ZnO structure by microwave-assisted hydrothermal method, obtaining the hybrid electrode type on rGO/Zn-ZnO. Based on structural and functional properties, the as-synthesized hybrid electrodes type on rGO/Zn-ZnO could be used in development of the electrochemical sensors, gas sensors, supercapacitors, etc.

Acknowledgment: This research was funded by a grant of the Ministry of Research, Innovation and Digitization, CNCS -UEFISCDI, project number PN-III-P1-1.1-TE-2021-0963, within PNCDI III, with contract number TE13/2022 (DD-CyT) and project code PN 23 27 01 02 INOMAT, 23-27 29N/2023.

State of development: Concept

Contact: cornelia.bandas@gmail.com

Presentation link: INVENTCOR 2023.pptx

35.

Title: MULTI-PURPOSE HEAT GENERATING EQUIPMENT WITH HEAT STORAGE

Patent/project number: PhD thesis

Author/s: Lajos Vásárhelyi (Szigliget)

Institution: Idea Club 13 Association, Hódmezővásárhely - HUNGARY

Category: B

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

State of development: product

Contact: otletclub.idea@freemail.hu

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

36.

Title: EXPLORATION OF OOBLECK MATERIAL FOR UNDERSTANDING ITS BEHAVIOUR WHEN SUBJECTED TO COMPRESSIVE STRESS

Patent/project number: Student project

Author/s: Mihail Cordasco, Larisa Păcurar, Claudiu Strîmbu

Institution: Lucian Blaga University of Sibiu, Faculty of Engineering



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Category: B

Description: Considering the high production and marketing costs of protective packaging required for material goods, as well as the complexity of the process through which they are obtained, this paper aims to highlight a more cost-effective and sustainable alternative to replace the massive production of plastics and cardboard packaging used for the transportation and protection of various goods. Thus, our attention has turned to Oobleck - a material that is simple to create in just a few easy steps and has the potential to replace traditional materials used in packaging. This study aims to investigate the mechanical properties of this material, which has been achieved through compression testing.

State of development: scientific paper

Contact: robert.bleotu@ulbsibiu.ro +40761012110

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

37.

Title: MORPHOLOGY OF NON-METALLIC INCLUSIONS IN CONTINUOUSLY CAST STEEL SEMI-FINISHED PRODUCTS FOR THE AUTOMOTIVE INDUSTRY

Patent/project number: PhD thesis

Author/s: Iulia POENARU, Ana SOCALICI, Adina BUDIUL BERGHIAN, Corneliu BIRTOK BANEASA

Institution: Politehnica University Timișoara, Faculty of Engineering Hunedoara

Category: B

Description: Non-Metallic Inclusions are chemical compounds consisting of a combination of a metallic element (Fe, Mn, Si, Al, Ca, etc.) and a non-metallic one (O, S, N, C, etc.). The most common inclusions include oxides, sulphides, oxy-sulphides, phosphates, nitrides, carbides and carbo-nitrides. One of the essential points in steelmaking is the control of non-metallic inclusions from the morphological point of view, their composition, size, quantity and distribution. Reducing the occurrence of defects is a point of major importance as their correction or removal requires time and high costs. The purity of steel in non-metallic inclusions depends on the genesis (origin-source, formation, birth, therefore also the moment of appearance) and on the morphology of the inclusions (physico-chemical changes, structure and chemical composition). Industrial research focused on steel S 355 J2, according to EN 10025:2004. The developed steel is cast continuously in the form of billets with a diameter of 177 mm, semi-finished products intended for the manufacture of hydraulic cylinders in the automotive industry. The macrostructure, depending on the requirements for the continuously cast semi-finished product, is thus highlighted by highlighting the segregation of sulfur. Samples were analyzed by scanning electron microscopy (SEM) and energy dispersive X-ray microanalysis (EDAX) on a Quanta Inspect scanning electron microscope. The purity of the metal charge is an important factor that influences the chemical composition and which affects the quality of the steel. Nonmetallic inclusions can be controlled during pot treatments by controlling their addition materials and techniques.

State of development: Doctoral research project

Contact: iulia.poenaru@student.upt.ro

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



38.

Title: THE DEVELOPMENT OF ENVIRONMENTAL MONITORING SENSORS BASED ON $n\text{-TiO}_2/p\text{-CuMnO}_2$ OXIDE HETEROJUNCTIONS

Patent/project number: Doctoral research project

Author/s: Mircea Nicolaescu^{1,2}, Cornelia Bandas², Corina Orha², Carmen Lazău², Viorel Serban¹

Institution: ¹Politehnica University of Timisoara, Piata Victoriei, no. 2, Timisoara 300006, Romania; ²National Institute for Research and Development in Electrochemistry and Condensed Matter, A. Paunescu 7 Podeanu Street, no. 144, Timisoara 300569, Romania

Category: B

Description: In this scientific research, we investigated the use of an $n\text{-TiO}_2/p\text{-CuMnO}_2$ semiconductor oxide heterojunction for the development of sensors aimed at environmental monitoring, specifically in the detection of UV radiation and CO_2 in the gas state. Various designs of sensitive modules were tested depending on the intended application. For UV detection, two distinct designs were employed. A simple and cost-effective device was developed by directly growing titanium oxide on a titanium support, followed by the deposition of a layer of CuMnO_2 . Additionally, we utilized an FTO conductive glass substrate to create a transparent and self-powered sensor based on the oxide heterojunction, enabling the development of self-powered UV sensors. For gas sensing, we grew zinc oxide nanowires on a zinc substrate, and then deposited a layer of CuMnO_2 to achieve the behavior of the heterojunctions. Furthermore, the gas testing was conducted at 400 PPM CO_2 in an Ar carrier gas with varying testing temperatures.

State of development: Prototype

Contact: mircea.nicolaescu@student.upt.ro

Presentation link: <https://citt.upt.ro/en/>

39.

Title: LIFE CYCLE OF STEEL

Patent/project number: PhD Thesis

Author/s: Ioana FĂRCEAN, Gabriela PROȘTEAN, Erika ARDELEAN, Ana SOCALICI

Institution: University Politehnica Timisoara, Faculty of Management in Production and Transportation, Faculty of Engineering Hunedoara

Category: B

Description: Steel is one of the few materials that can be recycled without the new product showing inferior quality characteristics, being a 100% recyclable material. Steel scrap has a significant economic value, which is why the demand for recycled materials in the aftermarket is well established. Steel is recycled in a closed loop so that the properties of the primary product made from primary resources (iron ore, limestone, coal) and the secondary product made from waste are equivalent. By using waste as secondary resources of raw materials, primary natural resources are replaced without generating changes in production flows or the quality of finished products.

State of development: Doctoral research project

Contact: farceanioana@yahoo.com

Presentation link: <http://www.mpt.upt.ro/eng/home.html>



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14-16.09.2023 – Deva, Romania



40.

Title: POSSIBILITIES TO MINIMIZE EMISSIONS IN STEELMAKING

Patent/project number: PhD Thesis

Author/s: Ioana FĂRCEAN, Gabriela PROȘTEAN, Ana SOCALICI, Erika ARDELEAN

Institution: University Politehnica Timisoara, Faculty of Management in Production and Transportation, Faculty of Engineering Hunedoara

Category: B

Description: The steel industry is one of the largest industries in the world that generates large amounts of CO₂ emissions. The most popular steelmaking route, which uses pig iron and steel scrap, accounts for almost 70% of crude steel production in the EU is the blast furnace – oxygen converter (BF/BOF) route. The great challenge for the steel industry is to find a replacement for fossil fuels or to capture and store the generated emissions, the research carried out in the field leading to the development of the Hybrid Project in Sweden. The aim of the Hybrid project is to contribute to the decarbonization of the steel industry, by using hydrogen produced with electricity through the electrolysis of water.

State of development: Doctoral research project

Contact: farceanioana@yahoo.com

Presentation link: <http://www.mpt.upt.ro/eng/home.html>

41.

Title: METHOD OF ELECTRODEPOSITION OF ZINC-NICKEL ALLOY ON STAINLESS STEEL SUBSTRATE

Patent/project number: Patent OSIM: RO134133- B1/29.04.2022

Author/s: Horațiu Vermeșan, Mihail Chira

Institution: Technical University of Cluj-Napoca

Category: B

Description: The invention relates to a method of zinc-nickel alloy electrodeposition on the stainless steel parts through several stages. Electrodeposition of zinc-nickel alloy on stainless steel is important in applications where stainless steel is in contact with a less noble metal. Electrodeposition of zinc-nickel alloy on stainless steel is used especially in the automotive industry. The method of electrodeposition of the zinc-nickel alloy on a stainless steel substrate according to the invention consists of: chemical degreasing (only if the parts are dirty, oily); washing in water; surface preparation in alkaline solution; washing in water and electrolytic zinc in alkaline Zn-Ni solution.

State of development: patent, scientific paper, research project

Contact: Liliana.Pop@staff.utcluj.ro

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

42.

Title: COMPOSITE PLATES OF NATURAL FIBERS AND PROCESS USED FOR OBTAINING IT

Patent/project number: Patent OSIM: RO134330- B1/30.06.2022

Author/s: Iacob Florea, Daniela Lucia Manea



Institution: Technical University of Cluj-Napoca

Category: B

Description: The invention relates to obtaining composite plates made from natural fibers of sheep's wool intended for the thermal insulation of building constructions that meet the defining regulations for a thermal insulation material, and the process for obtaining them.

Composite boards are made from a mixture of sheep wool fibers, mixed with glue (adhesive) and various binders (clay, Portland cement, plaster, hydrated lime, hydraulic lime NHL 3.5, lime, washable lime, starch, bone glue, and rosin).

By removing the disadvantages of the wool-based insulation products, which come in different forms (mattresses or rollers), the innovative character of this invention consists in ensuring dimensional stability of the insulating material. The process of obtaining the plates consists in wool fiber loosening, wool dosing, hydrating it by spraying water into wool mass in an equal amount to wool mass, dosing the adhesive and binder, water, spraying the mixture into wool mass, pouring the mixture in-mold, the compression of the composite plate for 24 hours, its stripping and the compression interval of 48-72 h.

State of development: patent, scientific paper, research project

Contact: Liliana.Pop@staff.utcluj.ro

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

43.

Title: PROCESS FOR OBTAINING NANOCOMPOSITE FOOD PACKAGES

Patent/project number: Patent OSIM: RO130496- B1/30.08.2022

Author/s: Anca Peter, Camelia Nicula, Anca Mihaly Cozmuta, Leonard Mihaly Cozmuta, Virginia Danciu, Gheorghe Lucian Baia, Gabor Kovacs, Alexandru Ciric, Mihaela Begea, Liliana Craciun, Grigore Craciun, Gheorghe Dutuc, Anca Falup, Wanda Ziemkowska, Agnieszka Jastrzebska, Patrycja Kurtycz, Ewa Karwowska, Ewa Miaskiewicz-Peska, Monika Zaleska Radziwill, Andrzej Olszyna, Antoni Kunicki, Karolina Sitarz, Magdalena Roslon

Institution: Technical University of Cluj-Napoca

Category: B

Description: This invention relates to processes for obtaining intelligent food packaging which ensure the food preservation extend its shelf life. It is proposed a process of obtaining active packaging that ensures the preservation of as many types of food as possible, for a longer duration, both at the ambient temperature of 10-30° C and at refrigeration (0-10° C). The used raw materials were paper and polypropylene, respectively modified with nano-structured materials, such as:

1. Mixed composite titanium dioxide - silicon dioxide modified with silver nanoparticles
2. Titanium dioxide modified with gold nanoparticles
3. Titanium dioxide modified with nitrogen and silver nanoparticles.

The advantages of obtaining smart food packaging are:

- it prolongs the shelf life of food products;
- ensures the preservation of the properties of food throughout its storage in smart packaging;

State of development: patent, scientific paper, research project

Contact: Liliana.Pop@staff.utcluj.ro

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



44.

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

Patent/project number: Patent application OSIM: A/00320/10.06.2022

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

Institution: Technical University of Cluj-Napoca

Category: B

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

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

Contact: Liliana.Pop@staff.utcluj.ro

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

45.

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

Patent/project number: Patent application OSIM: A/00176/05.04.2022

Author/s: Tünde-Orsolya Dénes, Daniela-Roxana Tămaş-Gavrea, Raluca Iştoan, Ancuţa Elena Tiuc, Daniela Lucia Manea, Ovidiu Vasile

Institution: Technical University of Cluj-Napoca

Category: B

Description: The invention relates to a modular panel based on sheep wool fibers, and the method of obtaining it, in order to meet the requirements of quality in construction regarding noise protection and the sustainable use of natural resources. Each module consists of a triple layered panel, having a composition similar to that of sandwich panels. The structure of the layered panel is made of two outer layers of hydrated lime-based plates, which delimit a mattress made of sheep wool fibers placed between them. The weighted sound reduction index of the modular panel is $R_w(C;Ctr) = 38(-2, -8)$ dB. The layered panels have high sound absorption coefficient values at low frequencies. The maximum value is 0.90 at the frequency of 524 Hz. The coefficient of thermal conductivity of the layered panels is 0.077 W/mK.

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

Contact: Liliana.Pop@staff.utcluj.ro **Presentation link:** <https://www.utcluj.ro/en/>



46.

Title: COMPLEX COMPOSITE POWDER COMPRISES IRON COATED WITH LAYER OF IRON OXIDE AND THEN COATED WITH FINE PARTICLES OF IRON-SILICON-ALUMINUM OR IRON-ALUMINUM OR IRON-SILICON ALLOY

Patent/project number: Patent application OSIM: A/00413/14.07.2022

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

Institution: Technical University of Cluj-Napoca

Category: B

Description: A complex composite powder comprises iron with particle size of 10-200 μ m, coated with a layer of iron oxide, and then coated with composite layer (L2) of fine particles of iron-silicon-aluminum or iron-aluminum or iron-silicon alloy. The ratio of iron and iron-silicon-aluminum alloy is 0.1-99.9%, and the amount of silicon and aluminum in the alloy is 0.1-30 wt.% and large areas of iron being embedded in a complex matrix based on aluminum oxide and silicon oxide which has areas/particles of iron-silicon-aluminum dispersed.

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

Contact: Liliana.Pop@staff.utcluj.ro

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

47.

Title: ECO-INOVATIVE ROAD CONCRETE BASED ON CEMENT, GLASS FRIT AND AGGREGATE FROM RECYCLED CONCRETE WASTE FOR CONSTRUCTION APPLICATIONS

Patent/project number: Patent application OSIM: A/00618/10.10.2022

Author/s: Ofelia-Cornelia Corbu, Attila Puskas

Institution: Technical University of Cluj-Napoca

Category: B

Description: The invention refers to a new eco-innovative and sustainable "BcR_G" Road Concrete based on high quality Portland cement with recycled waste from: 1) uncontaminated concrete in the form of alternative aggregate successfully replacing non-renewable natural aggregates, derived from the recycling of concrete waste, collected, sorted, washed, ground/sorted into 4/8 mm particle size fractions and 2) glass in the form of under-100 μ m powder, as a secondary raw material (1.39 \pm 2.8)% of the cement quantity, solving an environmental pollution problem by reducing landfill waste and the exploitation of natural aggregate, with various applications in the field of construction, i.e. infrastructure, roads, platforms, pavements, etc. , becoming a composite material with high abbrasion resistance and high mechanical strength, for improving the quality of life through sustainable design.

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

Contact: Liliana.Pop@staff.utcluj.ro

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



48.

Title: DIOXIMIC COORDINATION COMPOUNDS AS CORROSION INHIBITORS OF STEELS

Patents: MD 4330, MD 1257

Authors: Eduard Coropceanu¹, Vladimir Parşutin²

Institution: ¹Institute for Research, Innovation and Technology Transfer of "Ion Creangă" State Pedagogical University of Chişinău; ²Institute of Applied Physics of Moldova State University

Category: B

Description: In the water from the Chisinau aqueduct, which contains, mg/L: Ca²⁺ - 42.5, Mg²⁺ - 19.5, HCO₃⁻ - 97.6, SO₄²⁻ - 203.7, Cl⁻ - 56.7, with a total salt content of 0.457 g/L, the speed of steel corrosion for 8 hours is high, reaching 21 g/m²·day. One of the ways to inhibit corrosion processes is the use of chemical compounds with the aim of increasing the stability of steels against corrosion.

The complex [Zn₂(CH₃COO)₄(NioxH₂)₂(bpy)(H₂O)₂] (NioxH₂ - 1,2-cyclohexanedionedioxime; bpy - bipyridyl) was tested as a steel corrosion inhibitor in closed aqueduct systems. Testing under corrosion conditions of samples with dimensions 50x25x3 mm is performed by completely immersing them in the solution at the same depth as the air access.

The effect of the action of the inhibitor is qualitatively evaluated according to the speed k , g/m²·day and the value of the braking coefficient $\gamma = k/k_1$, where k_1 , k - the metal corrosion speeds with and without the use of the inhibitor. This coefficient shows how many times the corrosion speed is reduced as a result of the action of the inhibitor.

According to the recorded data, the greatest effect is obtained when using the inhibitor at a concentration of 0.05-1.0 g/L. Thus, at the inhibitor concentration of 0.25 g/L and the duration of the experiment of 72 hours, the losses caused by corrosion are reduced by 7.1 times. At the inhibitor concentration of 0.5 g/L and the same duration of the experiment, the losses caused by corrosion are reduced by 9.4 times.

State of development: research project

Contact: ecoropceanu@gmail.com

Presentation link: <https://icitt.upsc.md/> <https://upsc.md/en/main-page/>

49.

Title: INNOVATIVE SOLUTIONS FOR THE TECHNICAL SEPARATION OF MEASURING COLD WATER CONSUMPTION AT APARTMENT LEVEL

Patent/project number: Practical applicability

Author/s: Darius ANCA, Ştefan ANCA

Institution: SC DARICOMFANE SRL Deva

Category: B

Description: Innovative solutions refer to a technical separation at branch level for each apartment (individual metering for cold water).

Variant 1 refers to the individual metering of cold water consumption in apartments with cost distributors and their installation in a common space (staircase) and the appropriate modification of the internal installation, conditions in which the consumption registration for each apartment will be done through a metrologically registered class C branch meter.



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Variant 2 refers to the individual metering of cold water consumption in apartments by installing the branch and the individual branch meters in a common home located in the public domain for which the owners have given their written agreement of servitude for interventions in favour of the operator. Modifying the internal installation involves making the connection between the output from the individual branch meter and the installation inside the apartment through the masking of the block. The design and execution of the works are carried out in accordance with the provisions of Law 50 /1991; Law 241/2006 and ANRSC Order 88/2006. Although this process generates investment costs for both users and the operator, upon completion of this action a number of advantages are obtained: the service's objectives regarding the correlation of real consumption with the billed one, reduction of water losses and unbilled water, increase of user satisfaction and operator efficiency.

State of development: Product

Contact: +40723513447 dariusanca@gmail.com

50.

Title: BINDER-FREE VANADIUM DIOXIDE VO₂(B) THIN FILMS DIRECTLY GROWN ON ALUMINUM FOIL BY PULSED LASER DEPOSITION AS BATTERY CATHODE AND PREPARATION METHOD THEREOF

Patent/project number: Patent application No. A00665/2022

Author/s: Teddy TITE, Mihaela Buga

Institution: National Institute of Materials Physics

Category: B

Description: Binder-free vanadium dioxide thin films with B polymorph phase (VO₂(B)) deposited on aluminium as advanced cathodes for battery are provided; a method for their preparation by pulsed laser deposition and their characterization by electrochemistry. Laboratory design working electrode for the investigation of electrochemical properties using three-electrodes configuration in different electrolytes. The said designed working electrode holder aimed to compare with an accurate similar working area different working electrode. Exploratory development of CR2032 coin cells devices for lithium-ion battery energy storage comprising the integration of the vanadium oxide active material as cathode, a Li plate as anode, LiPF₆ in ethylene carbonate: dimethyl carbonate, as electrolyte; glass Microfiber filters were used as separator or description of your invention.

State of development: prototype

Contact: teddy.tite@infim.ro

Presentation link: <https://infim.ro/en/home/>

51.

Title: NOVEL SILICATE VITROCERAMIC PHOSPHOR WITH CaF₂-Eu²⁺ NANOCRYSTALS HOMOGENOUSLY DISPERSED AND REMARKABLE FLUORESCENCE AND TRANSPARENCY PROPERTIES

Patent/project number: Patent application No. A100129/16.03.2022

Author/s: Mihail Secu, Corina Secu

Institution: National Institute of Materials Physics



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Category: B

Description: We produced a novel silicate vitroc ceramic phosphor with $\text{CaF}_2\text{-Eu}^{2+}$ nanocrystals homogeneously dispersed within a silica glass matrix, by using sol-gel chemistry method.

The vitroc ceramic phosphor, shows remarkable properties: blue fluorescence with high efficiency ($\cong 76\%$) under ultraviolet irradiation due to the Eu^{2+} ions and good optical transparency ($\cong 70\%$) due to the nanocrystals smallness. The remarkable fluorescence properties of the nanophosphors doped with Eu^{2+} ions are widely applied in various fields: lighting and display areas, scintillator detectors, X-ray storage phosphors for digital imaging applications, and persistent phosphors.

State of development: prototype

Contact: Mihai.secu@infim.ro

Presentation link: <https://infim.ro/en/home/>

52.

Title: ENERGY EFFICIENT MEMRISTOR BASED ON ORTHORHOMBIC TIN SELENIDE FLAKES AND METHOD OF MAKING THE SAME

Patent/project number: Patent application No. A/0776/2022

Author/s: Angel-Theodor Buruiana, Amelia Elena Bocirnea, Andrei Kuncser, Teddy Tite, Elena Matei, Claudia Mihai, Aurelian Cătălin Gâlcă, Alin Velea

Institution: National Institute of Materials Physics

Category: B

Description: This patent application claims an energy-efficient memristor based on orthorhombic tin selenide flakes and the method of obtaining it. The energy-efficient memristor consists, in one variant, from a nanometric thin crystalline tin selenide plate, which has a lateral size between $20\ \mu\text{m}$ and $100\ \mu\text{m}$ and a thickness of less than $100\ \text{nm}$, transferred between two metallic contacts. The elemental composition of the orthorhombic plate is formed of Sn with a concentration between 45% and 55% and Se with a concentration between 45% and 55%. The threshold voltage for switching from a high electrical resistance state to a low electrical resistance state is $3\ \text{V}$ with an operating current of $10^{-4}\ \text{A}$. The switching mechanism between these two states is migration of charged defects towards grain boundaries or local phase change in the TMD channel. The method for producing memristors from tin selenide is a simple one consisting of two steps: obtaining nanometric orthorhombic tin selenide flakes on a substrate, which can be Si/SiO₂, quartz, or sapphire, by physical vapor transport at atmospheric pressure and transferring them between two metallic contacts using a dry method involving the use of an adhesive material, which can be PDMS or GelPak. The tin selenide flakes are obtained at a temperature between 600°C and 800°C from high-purity SnSe powder. During the synthesis, which takes between 10 and 30 minutes, the gas flow, which can be N₂, Ar, or a mixture of H₂ and Ar, transports the vapors of SnSe, formed by sublimation of the powder, in a manner that favors their condensation on the substrate in the form of monocrystalline orthorhombic flakes. It can be implemented in neuromorphic computing systems as it can mimic a synapse in the neural network of the human brain or it can be used as a storage cell in memory devices.

State of development: prototype

Contact: alin.velea@infim.ro

Presentation link: <https://infim.ro/en/home/>



53.

Title: LAMINATED COMPOSITES BASED ON RECYCLED PLASTIC FOILS FROM PACKAGING

Patent/project number: Patent application No. A100516/25.08.2022

Author/s: BADICĂ Petre, BURDUŞEL Mihail, GRIGOROŞCUŢĂ Mihai Alexandru, COSTESCU Ruxandra

Institution: National Institute of Materials Physics

Category: B

Description: The present invention refers to the recycling of plastic (example: PET) by the SPS electric field assisted sintering method, for the manufacture of layered composite materials formed from plastic foils cut from packaging, between which are inserted intermediate layers of reinforcement which can be foils, fibers or powders from organic or inorganic materials.

The invention solves the problem of direct 'gluing' of some polymers from packaging with the formation of chemical bonds on various material surfaces, at the interface between the layers, without using adhesives and without melting the component materials. The patent offers new possibilities in the realization of composites with matrixes of polymer foils, multilayered.

State of development: prototype

Contact: mihai.burdusel@infim.ro

Presentation link: <https://infim.ro/en/home/>

54.

Title: VIS-SWIR photosensitive nanocrystalline SiGeSn thin film and fabrication method

Patent/project number: RO134049-B1

Author/s: Magdalena Lidia Ciurea, Ionel Stavarache, Ana-Maria Lepadatu, Sorina Lazanu, Toma Stoica

Institution: National Institute of Materials Physics

Category: B

Description: Thin films of semiconductor group IV alloy SiGeSn NCs with photosensitivity in the range of 0.6 – 1.35 μm from VIS-SWIR are fabricated. The films play the role of photoactive components in optoelectronic devices such as VIS-SWIR optical sensors. The films fabrication is complementary metal oxide silicon (CMOS)- compatible, and the magnetron sputtering technology used for the films deposition is cost-effective, versatile and suitable for industry, providing high quality and uniform films under much more relaxed growth / deposition conditions than CVD and MBE. The fabrication steps are: 1) standard processing of Si wafers in cleanroom for cleaning and removal of native SiO₂; 2) deposition of Si₆Ge_{1-x}Sn_y films ($\approx 9\%$ Sn in the alloy) by magnetron co-sputtering from separate targets of SiGe and Sn; 3) rapid thermal annealing in RTP processor for films nanostructuring, i.e. formation of SiGeSn NCs. The spectral photoresponsivity measurements performed on photosensors based on SiGeSn NCs films with top ITO transparent electrode and bottom Al contact evidenced their high performance in a broad spectral range from 0.6 μm in visible to 1.35 μm in short-wave infrared.

Thus, the proposed films have applications in Si optoelectronics/photronics to be used as VIS-NIR-SWIR photoactive components in cheap market photosensor/photodetector devices



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instead of the toxic and expensive InGaAs, HgCdTe, PbS and PbSe-based devices. Applications: monitoring of slippery (wet, icy) road conditions for traffic safety, internet of things, biomedical applications.

State of development: *prototype*

Contact: lepadatu@infim.ro

Presentation link: <https://infim.ro/en/home/>

55.

Title: PREPARATION METHOD OF NI THIN FILMS

Patent/project number: A/00715 2019

Author/s: Huşanu Marius-Adrian, Popescu Dana Georgeta

Institution: National Institute of Materials Physics

Category: B

Description: *The invention refers to a process for preparing crystalline layers of nickel by evaporating the metal (Ni) onto a substrate maintained at a temperature of 250°C - 300°C. The strontium titanate or barium titanate substrates, previously cleaned by successive heating in a vacuum at a temperature of approximately 300°C, stabilize at the interface with the deposited metal a buffer layer of Ni in an oxidized state that initiates and directs the crystalline growth. The subsequent layers of Ni grow in an orderly manner with a structure similar to that of Ni single crystals obtained through conventional crystal growth methods.*

State of development: *Method*

Contact: dana.popescu@infim.ro

Presentation link: <https://infim.ro/en/home/>



C - Computer sciences, Electronics and Electrical engineering

1.

Title: INTEGRATED INTELLIGENT SYSTEM FOR ENVIRONMENTAL SUSTAINABILITY ASSESSMENT - INTEL-GREEN

Patent/project number: Research project

Author/s: Florin DRĂGAN, Marius PÎSLARU, Larisa IVAȘCU

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

Category: C

Description: The research is focused to develop an integrated neuro-fuzzy based framework in order to generate and evaluate ecological scenarios based on data provided by environmental institutions, proposing concerted actions for improving ecological resilience at local, regional or national level and maximizing the benefits provided by the environmental policies to society and economy, respecting the ecological limits of the ecosystem.

As a consequence, the goal of this research is to develop an integrated framework for using fuzzy logic and neural networks with the purpose of determining the specific integrated system design parameters, and also of ensuring an increased adaptability of the environmental policies to the continuously changing environment.

In this field, the neuro-fuzzy modelling approach is very new and involves defining, delineating, and analysing the system which will perform the pre-defined functions. These functions will result from the architecture of the proposed system of design support variant indicators.

The research originality consists in developing an integrated intelligent system that combines the advantages provided by different computational techniques (fuzzy techniques and neural networks) to develop specific solutions to support innovative policies for environmental sustainability assessment.

The proposed research theme represents a premiere at national level and it's addressing an up-to-date issue for the scientific community worldwide. The digital model (INTEL-GREEN) is the result of a collective effort of multiple interdisciplinary research activities which will encompass the systematization, association, analysis and adaptation of existing knowledge applied in various scientific areas such as computational science, chemistry, engineering, environmental economics, and environmental management.

State of development: developed

Contact: +40744263797

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



2.

Title: EduFinUPT - MOBILE APPLICATION FOR ACQUIRING FINANCIAL SKILLS

Patent/project number:

Author/s: Daniela-Nicolia Pătruț, Larisa Ivașcu, Mădălin-Dorin Pop, Matei Tămășilă, Alin Artene, Alexandra Coroian, Timea Cisma, Andrei Agache

Institution: Politehnica University of Timisoara

Category: C

Description: This mobile application aims to provide the theoretical basis in the financial domain for engineering students and the appropriate mechanisms to keep them engaged throughout this learning process. The EduFinUPT application represents a tool through which the transition to a digital educational regime will be made in favor of students by creating a dynamic context, which would stimulate their interest in accumulating new knowledge, regarding a field with a rather large impact on their further development, namely, the financial field. This application offers the possibility of learning beyond the contexts already existing in classical education, therefore, learning in a mobile environment, where users use mobile phones as a method of convenience. The possibility of individual management of their free time for cognitive development may be an advantage. Compared to other learning applications, it provides evaluation tests that can help students verify their knowledge status at any time. This application includes a learning guide and a learning dynamic based on continuous assessment.

State of development: prototype

Contact: larisa.ivascu@upt.ro

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

3.

Title: EXPERIMENTAL STAND WITH VAR REGULATOR FOR LOW VOLTAGE INSTALLATIONS

Patent/project number: Research project

Author/s: Gabriel Nicolae Popa, Corina Maria Diniș, Angela Iagăr

Institution: Politehnica University of Timisoara, Faculty of Engineering Hunedoara

Category: C

Description: The receivers of reactive energy are three-phase induction motors, power transformers and under-excited three-phase synchronous motors. Generators of reactive energy in electrical installations are overexcited synchronous motors, capacitors and no-load electrical cables. The load power lines have an inductive character. The experimental stand can be used to study on the improvement of the power factor, during deforming regime, in low voltage electrical installations with the specialized VAR-metric regulator. The ESTAmat RPR 12 regulator, which uses three-phase low voltage capacitor batteries, is specially designed to improve the power factor in electrical installations. When conducting the experimental measurements, a power quality analyser type CA 8334 B was used.

An ESTAmat RPR reactive power regulator with 12 steps from VISHAY is used in the experimental installation in the laboratory. In the realized application, the first six stages of the regulator were used.



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The VAR regulator permanently measures the phase shift between the current on phase L1 and the voltage on phase L1 and null. The scheme consists of six relays K1.....K6 - power relays, RI 13, and a TC - current transformer with a transformation ratio of 15/5 connected to phase L1 and null.

State of development: Prototype

Contact: Popa Gabriel Nicolae gabriel.popa@fih.upt.ro 0040254207541

Presentation link: <https://www.fih.upt.ro/ccmti/index.php>

4.

Title: EXPERIMENTAL STAND WITH PLC, DC MOTOR AND INCREMENTAL ENCODER

Patent/project number: Research project

Author/s: Gabriel Nicolae Popa, Corina Maria Dinis

Institution: Politehnica University of Timisoara, Faculty of Engineering Hunedoara

Category: C

Description: The PLC (programmable logic controller) is an electronic equipment used to automation of industrial processes. With the help of this device, combinational and sequential control installations can be realized in programmed logic (usually, using LAD or FBD). Sensors and transducers provide the information from the process, necessary to manage the industrial process. Depending on the specifics of the industrial process, in addition to the PLCs, actuation elements such as: electric, pneumatic and hydraulic are used. Contactors are electrical devices used to supply electrical consumers.

The experimental stand the speed regulation of a direct current motor, using a Zelio SR2 A201FU PLC, an TS 5213 incremental encoder and AC/DC converters (230 V, 50 Hz / 5V, 1A) and DC/DC step-up converters MT 3608 (3 pcs., 5V / 7.5 V, 5V / 10 V, 5V / 12.5 V). At the experimental stand it is used the DC motor and switches. The PLC has 12 digital inputs and 8 outputs (contacts), the sources are connected to the first four outputs, and the outputs Q5, Q8 are connected to the motor for direct operation, and to Q6, Q7 for reverse operation of the motor. A mechanical coupling between the encoder and the motor shaft is used. The PLC is powered at a voltage of 230V, 50Hz.

State of development: Prototype

Contact: Popa Gabriel Nicolae gabriel.popa@fih.upt.ro 0040254207541

Presentation link: <https://www.fih.upt.ro/ccmti/index.php>

5.

Title: DISTRIBUTED SYSTEM AND METHOD FOR REMOTE TECHNICAL ASSISTANCE TO FLEXIBLE MANUFACTURING CELLS

Patent/project number: A/2022/00047

Author/s: Ioan Silea, Romina Druta

Institution: Politehnica University of Timisoara

Category: C

Description: The invention refers to a distributed collaboration system, which allows efficient communication between one or more experts remote technicians (usually in different locations of the



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manufacturer/supplier of a flexible manufacturing cell) and a operator located in the operating location of the flexible manufacturing cell.

In particular, flexible cells with machine tools, manipulators and robots are targeted.

The system is made up of intelligent devices that are the basis of the exchange of information between those who collaborate, video-indicator devices for guiding and visibly indicating, in real time to the assisted person, the various actions that must be performed, a device (similar to a joystick) through which the expert autonomously changes the position of the cameras remote video-indicators (ie located in the area of the flexible manufacturing cell).

Through the 4G/5G mobile network, the data package is transmitted from the specialist to the platform where it is found the operator who requires help (assistance, collaboration). This data package contains commands related to the real-time selection of any of the installed video-indicator assemblies, changing the video camera characteristics of the selected assembly (at/at in the area of the flexible cell for which assistance is provided), as well as commands related to the change the angle at which the video camera takes the flow of information.

State of development: prototype

Contact: ioan.silea@upt.ro romina.druta@student.upt.ro

Presentation link: <https://www.researchgate.net/scientific-contributions/Ioan-Silea-81501299>

6.

Title: DEVICE FOR MEASURING GAS AND AIR QUALITY

Patent/project number: Research project

Author/s: Gabriel Nicolae Popa, Corina Maria Dinis

Institution: Politehnica University of Timișoara, Faculty of Engineering Hunedoara

Category: C

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

The digital outputs of the sensors together with the diodes D1, D5 form a logic gate OR with 5 inputs and one output, being connected to an electromagnetic relay that has the normally open contact (NO) connected to the outside of the device. If any of the sensors detect a value that is exceeded a certain value the output



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D0 will be 1 logic. If any of the outputs D0 will be 1 logic the electromagnetic relay, the relay will expand and the contact will close (to start a fan). The whole assembly is supplied from a switching voltage source 230V 50 Hz / 5V 2A DC voltage. The program was made to display the information from sensors, at a certain moment, on the LCD display, with the possibility to display information by using the buttons in the menu.

State of development: experimental prototype

Contact: Popa Gabriel Nicolae gabriel.popa@fih.upt.ro 0040254207541

Presentation link: <https://www.fih.upt.ro/ccmti/index.php>

7.

Title: INNOVATION OF ELIMINATE TOXIC GASES IN INDUSTRIAL FACTORY BY APPLYING HIGH INTENSITY OZONATION ELECTRICAL SYSTEM

Patent/project number: research project

Author/s: Siseerot Ketkaew

Institution: Faculty of Engineering, Ramkhamhaeng University, Thailand

Category: C

Description: This innovative research project presents Innovation of Eliminate Toxic Gases in Industrial Factory by Applying High Intensity Ozonation Electrical System consisting of 3 parts : Part 1, high-intensity electric field cell with corona discharge process for trapping small dust and eliminating odors by using a switching frequency modulation technique to control high voltage. Part 2 pre-filter and high-efficiency HEPA filter set, and Part 3 high-intensity plasma set for use in eliminating toxic gases in the air, which part 1 has introduced a high-voltage switching power supply circuit which has adopted the flyback converter principle, It consists of a high-frequency pulse generator using IC No. SG3525 for adjusting high-voltage voltages of 1.26 kV, 2.53 kV, 3.27 kV, 4.69 and 5.78 kV under the switching frequency of 10 kHz, 11 kHz, 15 kHz, 22 kHz and 32 kHz respectively, and using the IC as a signal amplifier for the power motor. Footer IRFP460 that controls the operation of the flyback transformer. to produce high voltage For supplying electrical energy to high-intensity electric field cell sets. The test results in part 1, when measuring ozone gas, it was found that at a high voltage of 1.25 kV, it was able to produce 1.5 ppm of ozone gas; at a high voltage of 2.63 kV, it was able to produce ozone gas 1.8 ppm; at a high voltage of 3.27 kV can produce 2.6 ppm of ozone gas, at a high voltage of 4.39 kV can produce 3.5 ppm of ozone gas and at a high voltage of 5.78 kV can produce 3.9 ppm of ozone gas by testing with a room with an area of 200 square meters in 60 minutes, it will be found that when testing the amount of ozone gas 3.9 ppm will result in a reduction in the amount of odors. Part 2 : The HEPA high-efficiency air filter set can capture PM2.5 dust particles with an efficiency of about 98 percent as measured by the dust meter. Standardized and Part 3: high-intensity plasma series. For use in eliminating toxic gases in the air, the result is that it can reduce carbon monoxide gas, carbon dioxide and alcohol gas. This innovation of Eliminate Toxic Gases has passed the analysis of total power consumption (Power Consumption), the leakage safety standard analysis test (IEC 60335-1), the preparation test for grounding and the electric strength test is completed. At the testing room of the Electrical and Electronic Products Testing Center (NSTDA), therefore, this research project received funding from the state budget: the Science Promotion Fund. Research and Innovation : Research plan for developing technology and innovation to reduce environmental problems



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from industry Fiscal Year 2023 Agency/PMU: National Research Council of Thailand (NRCT) and can be used to develop Thai innovation accounts and extend them into commercial innovations in the future.

State of development: *The innovation has already been used to reduce bad smells and toxic gases in industrial plants and works very well.*

Contact: Siseerot Ketkaew siseerot@hotmail.com

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

8.

Title: *The Ultrasonic Sonar “AudioEye”*

Patent/project number:

Author/s: VLĂDESCU MIHAI ALBERT

Institution: National College Mihai Viteazul Ploiesti, 7th grade

Category: C

Description: *The device is dedicated to ultrasonic scanning, in real time, of the operating environment, being able to provide, in the form of an audio or video map, the footprint of obstacles at a predefined distance, determined by the applied presets. Concretely, it can constitute an audio visualization of the vicinity, of nearby obstacles, as well as the exposure, in the visible spectrum, of properly camouflaged objects (in conditions of fog, darkness, smoke, etc.). The digital signal extracted by the specific program can be converted into warning / avoidance / trajectory correction commands for a wide range of users.*

State of development: *prototype*

Contact: albertvladescu6@gmail.com +40729928575

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

9.

Title: *THE SWITCHING POWER SUPPLY WITH REGULATION AND TOTAL CONTROL OF THE OUTPUTS*

Patent/project number: A/00729/12.11.2019

Author/s: Valeriu SAVU, Madalin Ion RUSU, Dan SAVASTRU

Institution: National Institute of Research and Development for Optoelectronics

Category: C

Description: *The switching power supply with the regulation and total control of the outputs, is used for the regulation and control of all the voltages from the outputs, eliminating the interdependence between them and the control of the current output limitation. The characteristics of the source lead to the improvement of the stability of the output voltages for any output at the level of the parameters of a switching source with a single output and feedback, by using a dedicated software, can be used to power computers, for systems requiring multiple voltages stabilized, for industrial and professional systems, etc.*

Novelty: *The invention relates to a switching power supply with the regulation and total control of the outputs which allows the regulation and control of the output voltages and currents for a switching power supply with several outputs. The power supply control element is controlled by a programmable microcontroller that has in the internal non-volatile memory a dedicated software with which the voltage*



and current error information is extracted. The microcontroller acts on the regulating element in order to maintain the voltage and current on each output, in identical minimum variations on each output obtaining output parameters as in the case of a switching power supply with the control of a safe output.

State of development: concept

Contact: madalin@inoe.ro

Presentation link: <https://www.inoe.ro/en/>

10.

Title: PROCEDURE FOR DETERMINING AND MEASURING HIGH AND VERY HIGH PULSATING VOLTAGES

Patent/project number: A/00278/2020

Author/s: Madalin Ion RUSU, Valeriu SAVU, Dan SAVASTRU

Institution: National Institute of Research and Development for Optoelectronics

Category: C

Description: This invention is used to determine the amplitude and waveform of high voltages used in installations (particle accelerators, etc.), using external measuring devices and the electrical parameters of high voltage power cables, determining a delimited area, in accordance with the use of a fixed capacitor. It is very simple, no electric discharge, measurement errors are minimized by using a repeater inserted in the measuring chain, no parasitic inductors, allows working with non-hazardous voltages and completely eliminates temperature measurement errors, if the dielectric permittivity of the fixed capacitor is the same with the power cable.

Novelty: The procedure does not use extra elements, but only using the dielectric parameters of the cable and a fixed capacitor at low working voltage, with which the pulse shape and amplitude are read.

State of development: concept

Contact: madalin@inoe.ro

Presentation link: <https://www.inoe.ro/en/>

11.

Title: DeltaHealth - A UNIFIED CONTROLLER FOR SMART HEALTHCARE APPLICATIONS

Patent/project number: Prototype

Author/s: Souvik GANGULI, Larisa IVAȘCU, Lucian-Ionel CIOCA

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

Category: C

Description: The delta domain is a framework for analysing and designing control systems that was developed by Middleton and Goodwin in the 1980s. The basic idea behind the delta domain is to unify the analysis of continuous-time and discrete-time systems at high sampling frequencies. The delta operator modelling is thus a powerful tool for system and control theory and has been widely used in a variety of applications, including robotics, aerospace, and process control. In this work, DeltaHealth is conceptualized as a unified controller in a combined framework, which is designed for medical devices and healthcare



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applications. The controller is designed to optimize the performance of medical devices and healthcare systems by balancing the input and output signals in real-time.

The working of DeltaHealth involves several key components, including sensors, a data acquisition system, a mathematical model of the medical device or healthcare system, and a control algorithm. The sensors are used to measure various factors such as vital signs, like blood pressure, and oxygen levels, which are then fed into the data acquisition system. The data acquisition system processes the data and sends it to the control algorithm, which uses the mathematical model of the medical device or healthcare system to predict its response to changes in the input signals. Based on these predictions, the control algorithm makes decisions about how to balance the input and output signals by adjusting the medical device or healthcare system. The control algorithm uses a combination of feedback and feed forward control to ensure the stability and reliability of the system.

The design of DeltaHealth is flexible and scalable, allowing it to be used in a wide range of applications, including medical devices, healthcare systems, and patient monitoring. It can also be used to manage different types of medical devices, such as ventilators, infusion pumps, and patient monitors as well. Overall, DeltaHealth represents a significant advance in medical devices and healthcare, allowing healthcare professionals to optimize the performance of medical devices, improve patient outcomes, and reduce the risk of medical errors and adverse events.

State of development: Completed

Contact: +40744263797 (Larisa Ivaşcu)

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

12.

Title: FOOD ELECTRONICPROCESSING DRYER

Patent/project number: 1201800384(18952)

Author/s: WAM ELVIS MBVIUGEH

Institution: HOLY CENTER FOR RESEARCH AND PRACTICAL SCIENCES HCRPS, COOP-BOD - CAMEROON

Category: C

Description: "The Food electronic processing dryer" unlike, other dryers is a scientific contribution which is purely African; in that it is made out of local materials such as: metal, bricks, wood, chemical composition of clay soil and electronic components. It uses electrical energy which is transformed into thermal energy; in the presence of a catalyst (ecological coal), that helps to facilitate the process for work done. This creation will help farmers in Cameroon, to better preserve cocoa in order to improve on their economic conditions and social lives.

What is premium to this concept is that, the cost of running this machine is cheaper; because the induction motor is connected through a rectification circuit which drops the consumption rate of the motor with the possibilities of mounting the engine with a D.C (Direct current) motor of 12V-24V. A careful study and research has been carried out by the Author through print journals (Cameroon business for today, the wood workers pocket book by Charles Hay-ward for the selection of good wood to build-up the engine of this invention. The study of thermodynamics, Observation and experimental nature influence this creation in that; I grew up and meet my father as a cocoa producer.



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State of development: Prototype and search for investors and funding.

Contact: wamelvis@gmail.com

Presentation link: <https://youtu.be/UsHSusZr2oE?si=devggBANePqZIrZh>

Bibliografie <https://www.WamElvisMbviugeh>

13.

Title: TEST STAND FOR IGNITING THE EXPLOSIVE DUST/AIR ATMOSPHERE BY CAPACITIVE ELECTROSTATIC DISCHARGES

Patent/project number: patent no A 2018 00934

Author/s: Gabor Dan Sorin, Găman George Artur, Ghicioi Emilian, Pupăzan Daniel, Darie Marius, Lucian Moldovan, Irimia Alin, Vătavu Niculina, Părăian Mihaela, Magyari Mihai, Grecea Dănuț Nicolae, Csaszar Tiberiu Atila, Jurca Adrian Marius, Păun Florin Adrian, Colda Ioan Cosmin

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

Category: C

Description: *The invention relates to the production of a test stand for igniting the explosive dust/air atmosphere by capacitive electrostatic discharges, a stand in which an explosive test mixture consisting of air and flammable dust with a concentration that must fall between the lower explosion limit and the upper explosion limit is being used. The mixture can be ignited by a electrostatic discharge. The realized stand ensures the optimization of the initiation process of the explosive dust/air atmosphere by precisely establishing the delay between the moment when the dust turbulence begins and the moment of the appearance of the electrostatic discharge. The stand optimises the initiation process of the dust/air explosive atmosphere by accurately determining the delay between the start of dust clouding and the moment of electrostatic discharge and by providing test conditions similar to those in industrial environments. The solution to optimise the dust/air explosive atmosphere initiation process is to mount a high-speed video camera capable of recording 1000 frames per second and transferring the images to a PC. The camera is mounted at the discharge electrodes on one side of the vertical glass tube. On the other side is positioned a screen, white or black depending on the colour of the powder used.*

The camera is turned on with the opening of the electrovalve that releases air into the glass tube, air that wraps the dust from the base of the tube, and is turned off after 1000 frames, i.e. after a period of 1000 ms.

State of development: prototype

Contact: dan.gabor@insemex.ro +40 729 499 080

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

14.

Title: COMPUTERIZED STAND FOR THE PREPARATION OF A MIXTURE OF FLAMMABLE/TOXIC/ASPHYXIATING GASES

Patent/project number: patent no A 2019 00807



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Author/s: Şimon Marinică Adrian Bogdan, Găman George Artur, Ghicioi Emilian, Pupăzan Gheorghe Daniel, Găman Angelica-Nicoleta, Păsculescu Vlad Mihai, Vlasin Nicolae-Ioan, Laszlo Robert, Burian Constantin Sorin, Florea Gheorghe-Daniel, Prodan Maria, Cioclea Doru, Şuvar Marius Cornel, Vass Zoltan, Moldovan Lucian, Simion Alexandru Florin

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

Category: C

Description: *The invention relates to a computerized stand for the preparation of a mixture of flammable/toxic/asphyxiating gases, with the purpose of obtaining gas mixtures at concentrations in the explosive range, the operating principle of the stand is based on mixing two volumetric flows, controlled by programmable microprocessors, at which the gases are stored and circulated at atmospheric pressure with the aid of cylindrical injectors, driven by stepper motors so that the gas circuit does not require valves and at the outlet there is a homogenization chamber with agitator and dedicated flammable/toxic/asphyxiating sensor to confirm the programmed concentration.*

State of development: prototype

Contact: bogdan.simon@insemex.ro +40 722 526 396

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

15.

Title: DECIMAL SOFTWARE

Patent/project number: Student Project

Author/s: Muhammed Tunahan BOŞDURMAZ

Institution: Ankara Çubuk Bilim Sanat Merkezi - Turkey

Category: C

Description: *In this study, it is aimed to develop a method that enables to find the digit in any digit after the comma in the decimal form of the number $1/n$ for a natural number n whose prime factors are not 2 and 5, and based on this method, the fraction a/n , a being a natural number greater than one, is followed by the decimal point. It is aimed to generalize the method to give the number in any of its digits. It started with a question of my advisor for the study asked, "What is the digit in the 2021th digit after the comma in the decimal form of the number $1/2021$?" As a method, modular arithmetic rules, Euler Function, Euler Theorem, Chinese Remainder Theorem were used. As a result of the studies, since finding the digit in k . digits from the beginning after the comma of the number $1/n$ actually means finding the digit in the first digit of the number $10^{k-1} \cdot 1/n$ after the comma, the form of the number $10^{k-1} \cdot 1/n$ as $n \cdot p + q$, $0 < q < n$ has been found. When the number of $n \cdot p + q$ found is multiplied by the number $1/n$, the number $p + q/n$ will be formed, and the first digit after the comma in the decimal form of the number q/n will be the result we are looking for.*

State of development: product

Contact: +905413033614

Presentation link: <https://drive.google.com/file/d/1djhyflr-YoaNevznwr3bK-XDqWr6MH0n/view?usp=sharing>



16.

Title: RESCUE LAUNCHER - "LIFE GUN"

Patent/project number: Design pending patent

Author/s: Patryk Górski, Gabriela Rutkiewicz, Kamil Leonik

Institution: Leopold Staff LXXX High School in Warsaw - Poland

Category: C

Description: „Life Gun ” is an invention designed to help over the water, allowing you to save a drowning person without risking your own life and health. It throws buoys inflated with CO₂ cartridges attached to the gun with a rope. In Poland, the death rate from drowning accidents is over 95%. Surprisingly over 80% of people weren't under the influence of alcohol. It leads us to the conclusion that more dangerous is a lack of rescue equipment on Polish beaches than alcohol. Traditional rescue equipment is also unintuitive and dangerous. And there is no effective and safe substitute for our device on the market. This enables the drowning person to easily and safely lift out of the water. The gun itself is very intuitive. Another advantage of this launcher is that it is equipped with replaceable modules.

State of development: prototype

Contact: lifegun.kontakt@gmail.com

Presentation link: <https://www.youtube.com/watch?v=-qkNZWbhQNQ>

17.

Title: SELF-GUIDING UNMANNED RESCUE VEHICLE

Patent/project number: Student project

Author/s: Seweryn Komuda, Franciszek Józwiak

Institution: Technikum Mechatronics Nr 1 in Warsaw - Poland

Category: C

Description: Main goal of this project is the development of a flying unmanned aerial vehicle used to rescue drowning people, aimed at increasing safety on the oceans and seas. The solution will consist of a hand-held launcher and a homing unmanned aerial vehicle. The unmanned aerial vehicle will be propelled by a solid fuel rocket engine (paraffin/N₂O), and guided by a thermal imaging camera located in the front gimbal. Using this camera, the device will find drowning people and then deliver to them a self-inflating life raft, inflated by a chemical gas generator providing warmth to protect against hypothermia.

State of development: prototype

Contact: sew-kom@wp.pl

Presentation link: <https://tm1.edu.pl/>

18.

Title: MPS - SERIAL MEASUREMENTS METER

Patent/project number: Student project

Author/s: Paweł Orlik, Maciej Warloch, Jakub Warloch, Sebastian Kura



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Institution: *The King John III Sobieski Complex School no 6 in Jastrzebie-Zdroj, Center for Practical Education in Jastrzębie-Zdrój - Poland*

Category: *C*

Description: *The serial measurements meter is an innovative device that facilitates work in many industries that require periodic measurements. Its simple design with an intuitive interface allows for use by untrained peoples. Measurements are saved to a database. An application has also been designed to generate reports from the measurements taken. Thanks to the use of NFC tags, the device assigns measurements to the correct module. This solution is very simple and does not require the user to enter the module name. This shortens measurement time and reduces the risk of error when transcribing the identification number. The Li-ion battery along with the OLED display allows for long battery life, which is very important when taking a large number of measurements. Interchangeable tips allow the device to be adapted for performing various measurements. Future plans: We are working on implementing a GSM module and data storage on an SD card, so that connection to a database is not necessary all the time.*

State of development: *Product*

Contact: +48 667 446 942 tcs10.contact@gmail.com <https://zs6sobieski.pl>

Presentation link: <https://docs.google.com/presentation/d/e/2PACX-1vSXCjnI3-1-ii5DIpy4wtYgMPobVYeAm3CeCx9yO68B9n9FS-nNYzjmpilCZiuWC2hwYoUSpwxzGfL9/pub?start=false&loop=false&delayms=3000#slide=id.p>

p

19.

Title: *THE NATIONAL eALERT PLATFORM FOR INSTANT WARNING OF THE POPULATION IN CASE OF NATURAL HAZARDS BASED ON LoRaWAN TECHNOLOGY*

Patent/project number: *Research project no. 20.80009.7007.05: Advanced physical technologies with the UVS application in monitoring and modelling of environmental factors / Innovation and technology transfer project no. 22.80015.7007.262T: Creation of the eALERT platform for real-time environmental monitoring and instant warning of the population of Chisinau in case of dangerous natural and anthropogenic hazards.*

Author/s: *Veaceslav SPRINCEAN, Alexei LEU, Roman BUIMESTRU, Marianna SAVVA, Vasili ANDRUH, Marian JALENCU, Mihail CARAMAN, Alexandr A. BARSUK, Florentin PALADI*

Institution: *Moldova State University*

Category: *C*

Description: *The Waspote Plug & Sense! line allows you to easily deploy Internet of Things networks in an easy and scalable way, ensuring minimum maintenance costs. The platform consists of a robust waterproof enclosure with specific external sockets to connect the sensors, the solar panel, the antenna and even the USB cable in order to reprogram the node. It has been specially designed to be scalable, easy to deploy and maintain. The battery can be recharged using the waterproof USB cable but also the external solar panel option. The external solar panel is mounted on a 45° holder*

which ensures the maximum performance of each outdoor installation. The External Battery Module (EBM) is an accessory to extend the battery life of Plug & Sense!. The extension period may be from months to years depending on the sleep cycle and radio activity. The daily charging period is selectable among 5,



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15 and 30 minutes with a selector switch and it can be combined with a solar panel to extend even more the node's battery lifetime.

For the modeling of natural hazards, in our case we use the data collected from our air quality monitoring stations. This model is based on knowledge of the characteristics and behavior of these phenomena, as well as available data on the affected areas and their intensity. Mathematical and statistical models are used to estimate the probability and severity of the hazard, as well as to identify the areas most at risk.

State of development: Actual system proven in operational environment, <https://ealert.md>

Contact: e-mail: veaceslav.sprincean@usm.md

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

20.

Title: EXPERIMENTAL DEVICE FOR MONITORING CLIMATOGENIC PARAMETERS AND THE ELECTROMAGNETIC FIELD; OML MULTI-GAUSSIAN MODEL

Patent/project number: Student Project

Author/s: student Bora Bogdan; prof. Teodorescu Gabriel

Institution: National College "George Cosbuc" - Cluj-Napoca

Category: C

Description: This project aims to develop a versatile instrument capable of simultaneously measuring key environmental factors and electromagnetic phenomena. In doing so, it seeks to contribute to a comprehensive understanding of the complicated interplay between climate conditions and electromagnetic phenomena. The device integrates advanced sensors to capture essential climate data, including temperature, humidity, atmospheric pressure, wind speed and wind direction. Simultaneously, it uses an electromagnetic field sensor to detect and monitor electromagnetic phenomena, such as lightning, in the environment. This device enables environmental monitoring, exploring potential correlations and dependencies between climatogenic parameters and electromagnetic activity. The device can warn the user in case of imminent storms through a special platform or SMS. The data will also be sent to IoT clouds and will be able to be visible on a website.

State of development: research project

Contact: bogdanboraalex@gmail.com gabrielteodorescu48@gmail.com

Presentation link: <https://docs.google.com/presentation/d/19dT7gqIJYNOEy-E7BJelmq9iAj7pE5Hb/edit?usp=sharing&oid=111197595398086044657&rtpof=true&sd=true>

21.

Title: AI - PSS AI - Powered Safety System

Patent/project number: Student project

Author/s: Mihail Cimpoiasu, David Luca Mosu, Denisa Maria Cristea, Andrei Bazavan

Institution: Nichita Stanescu National College Ploiesti, Ion Luca Caragiale National College Ploiesti, Mihai Viteazul National College Ploiesti

Category: C



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Description: AI-PSS (short for 'AI-Powered Safety System') is a new, experimental security system designed to combat the increasing rate of criminal activity in Europe and the United States. It achieves this by enhancing the existing CCTV surveillance infrastructure in high-traffic buildings such as public institutions and educational facilities. This innovative system utilizes highly accurate and fast-processing artificial intelligence to detect potential threats.

To achieve its impressive results, the AI-PSS system was trained on a large dataset of 3087 labeled images of different types of lethal and non-lethal weapons, including small knives and full-sized rifles. In just ~60 hours of training using the YOLO version 4 (short for 'You Only Look Once') network architecture, the system achieved an impressive overall detection accuracy of 94.12%. The AI-PSS system is also equipped with an open-source facial recognition library that can detect dangerous individuals based on CCTV footage.

The system is designed to be implemented as a third-party software tool on existing security infrastructure. It works by analyzing frames taken from network cameras installed throughout the building, using a multi-step process. Firstly, it searches for familiar weapon patterns, then it analyzes all faces recognized in the frames and compares them with a database of known criminals, such as the Romanian National Police Force's Wanted List database. The system then makes critical decisions if it is highly confident that a threat has infiltrated the building, by alerting building personnel via message alerts on their mobile devices or other communication methods notifying local authorities, and engaging the building's safety features, if possible. This process is repeated approximately 10-15 times per second with system performance dependent on the building's security infrastructure.

Although still in the development phase, the AI-PSS system has shown promising results in simulations and scenarios. We are currently developing a version for institutions looking to enhance their security infrastructure with a cost-effective and reliable solution. While the AI-PSS system is currently developed as a software tool, we plan to develop an embedded device in the near future that can replace a network camera with a high-quality, powerful all-in-one camera, eliminating the need for external systems such as computers or NVR systems.

State of development: Prototype

Contact: mihail.cimpoiasu@gmail.com +40 720 251 122

Presentation link: Google Drive Folder – CV's

22.

Title: SECURITY USING A GHOST NETWORK

Patent/project number: student project

Authors: Gabriel-Alexandru Păduraru, Ioana-Adelina Duca, Theodor Ștefan Stoica

Institution: Nichita Stănescu National College Ploiesti

Category: C

Description: With the subject of online privacy being at its apogee, one of the most important aspects we have to consider is our security while navigating the Internet, either from a mobile device or from the comfort of our own personal home network. The security in networking is a current domain, because it is responsible for the data privacy of every person that has a device connected to a network, either a simple local network or the entire Internet. Our idea implies a LAN that is divided in two: a network that has



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people operating the devices and a ghost network, which is similar or identical in configuration with the real network. The reason for this similarity is that we are trying to convince the hackers that they breached the real network, where humans operate and hold their data. Also, in the ghost center we generated fake traffic, for a better way to distract the attackers. Therefore, we will use a packet sniffer (a program or device that detects the data flowing through a cable) to capture the packets that attackers send to our ghost network, trying to gain access to it. The real network is hidden, thus the hackers will only see the fake network. By capturing the signals sent by the attackers, we will be able to see their physical address and the methods they are using to breach the security, which will help us locate them and take fast action in case of an attack. We can also analyze the way the hackers are attacking and use this information to reinforce the security of the main network. We see this method of protection as a great way for high-level institutions to upgrade their security one more step and to make sure none of their confidential data gets out of the system. This method is a very effective way of fighting against the lack of people in the cyber security field, considering the fact that in case of an attack we can remotely see the hackers and take action before they enter the real network and steal precious data.

State of development: research project

Contact: paduraruaalex70@gmail.com +40733802348

Presentation link:

https://drive.google.com/drive/folders/1eEjceXCFCDZxh_Q4b3hoR3ieiBnxXuWA?usp=drive_link

23.

Title: PYTHON AUTOMATION FOR A NETWORK STRUCTURE

Patent/project number: student project

Author/s: David-Gabriel Păun, Luca-Albert Ceban, Yanni-Andrei Negrescu, Tiana-Maria Tiprigan

Mentors: Mariana-Oana Farcaș, Cosmin-Alexandru Florea

Institution: Nichita Stanescu National College, Ploiesti, Romania, NWERA Association

Category: C

Description: In the context of the accelerated rise of the Internet, the technologies that support its development quickly become outdated. Given this, the network engineers have to keep up with these new network infrastructures, giving them a hard time to adapt. It is also a known fact that the process of configuring and assigning addresses takes a lot of time, slowing down the general development of more modern technologies in the networks. Our project implies the automation of the processes needed for administrations of a computer network. We intend on coming up with a revolutionary way of resolving problems in a cost-efficient, reliable and fast way.

Simply put, we prepared a configured topology which represents a university campus network. We have to configure six new campus buildings, but, instead of using traditional configuration methods, we will automate the process using a virtual robot and a Python algorithm. We separated it in 3 main areas, which are: The "Internet" Area, The "Main Building" Area and The "Campus Building" Area.

Moreover, our method also implies the automation of the configuration tasks, this action being performed by a virtual robot built in a specific software called UiPath Studio. The idea behind this concept is



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represented by the connection of the virtual robot, the python program and the packet tracer, the coding language being used for calculating the subnet ranges and the IP addresses, the data being transferred to the virtual robot, which automatically configures the devices and the interfaces of the routers in a network simulator called Packet Tracer. The involved process is shown by the following diagram

In addition, we came up with an improvement which consists of utilizing the “enable secret” command on the router command line. It enhances security by employing a non-reversible cryptographic function to store the enable secret password.

This type of innovation is very easy to implement, mostly because we are not selling a physical product that needs to be produced in a factory, we are installing an automation system using the python program and the virtual robot. We could have a very powerful marketing power given the fact that our concept aims to cater to a wide range of networks, being an excellent administrator solution for all types of connections.

In order to demonstrate the applicability and usefulness of the project in real life, we made a case study in which we included 2 comparisons, one being a topology with a number of 32 devices and the other being a small enterprise network with only 100 devices. The times, in which a network engineer configures the two networks, considering that it takes about 2 minutes for a device, are 64 minutes and the second one in 200 minutes.

State of development: Research Project

Contact: +40 0771 279 417

Presentation link: https://drive.google.com/drive/folders/1p_rlZepRDzorodhAcHbV2zliDjQm-rAw

24.

Title: IPv6 SUBNETTING 3.0 – NEW MATHEMATICAL APPROACH

Author/s: Students David-Gabriel Păun, Felicia-Cristina Dumitru, Maria-Alexandra Ivan, Mihai-Samuel Savu

Mentors: Mariana-Oana Farcaș, Cosmin-Alexandru Florea, Valentina-Roxana Soare

Institution: Nichita Stănescu National College Ploiești Romania, NWERA Association

Category: C

Description: The current methods of subnetting IPv6 addresses are inefficient and unreliable, demanding significant time and resources for development and troubleshooting. In response, a new approach to subnetting has been introduced. This method optimizes the process while retaining its essential structure, resulting in improved accessibility, user-friendliness, and time efficiency. The project's primary goal is to enhance the traditional approach to calculating and segmenting IPv6 subnetworks. The aim is to implement a more dependable and user-friendly method that benefits network engineers and serves as an educational resource for students and those interested in the domain. IPv6, designed as the successor to IPv4, boasts a 128-bit address space, accommodating an immense 340 undecillion addresses. This shift was necessitated by the growing number of devices requiring Internet connectivity, which led to the exhaustion of IPv4 addresses on January 31st, 2011. The introduced method simplifies numerical conversions to decimal and hexadecimal values using powers of 2, streamlining binary and hexadecimal operations for efficiency and accuracy, ultimately saving users time and effort. The hexadecimal system, operating on a base 16 framework, offers a practical representation for binary values, similar to the decimal and binary systems.



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Its 16 unique combinations for each four-bit group, represented by numbers 0 to 9 and letters A to F, make it ideal for compact representation. IPv6 subnetting differs from IPv4 due to its extensive address space. IPv6 subnetting aims to support logical and hierarchical network design, in contrast to IPv4's focus on address conservation.

The first method involves an IPv6 address block with a /48 prefix and a 16-bit subnet ID, generating around 65,000 subnets with a prefix of /64. The second method, IPv6 subnetting on a nibble, involves borrowing bits from the interface ID, creating extra subnets for enhanced security with fewer hosts per subnet. The recommended practice is to subnet by borrowing 4 bits aligned with a nibble boundary. The third method, the project's approach, explains subnetting for IPv6 addresses in detail. It involves converting the first group after the 64-bit prefix into binary, segmenting it into 4 bits. The nearest power of 2 is then identified for the desired subnet size, and adjustments are made to the prefix. This method simplifies the subnetting process for efficient IPv6 network configuration.

State of development: Research Project

Contact: Mariana-Oana Farcaș email: ofarcas76@yahoo.com phone number: +40771279417

Presentation link: https://drive.google.com/drive/folders/1p_rlZepRDzorodhAcHbV2zliDjQm-rAw

25.

Title: MALWARE DETECTION BASED ON PERFORMANCE COUNTERS USING DEEP LEARNING CLASSIFICATION MODELS

Patent/project number:

Author/s: Ciprian-Bogdan CHIRILA, Omar MOHAMED

Institution: University Politehnica Timisoara

Category: C

Description: Security exploits and subsequent malware is a challenge for computing systems. For detecting anomalies and discovering vulnerabilities in computing systems several methods are used: i) malware aware processors; ii) static program analysis; iii) dynamic program analysis. Malware aware processors require online hardware which is not always a practical and scalable solution.

Static analysis methods imply automated static analysis tools that have a limited performance with a detection capability that not always meets the requirements of the project regarding the criticality of the application.

Dynamic analysis on the other hand overcame static analysis in latest trends. In this trend performance counters analysis are used in several approaches. Operating system performance counters are collected and stored as time series in two contexts: i) in the presence and ii) in the absence of malware. Ten deep learning models are used for time series classification. From the experiments we learned that 2 models are able to detect accurately the presence of malware in an infested operating system, while the rest of the models tend to overfit the data.

State of development: TRL 2-3

Contact: chirila@cs.upt.ro

Presentation link: <https://ac.upt.ro/en/>



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26.

Title: INTERLEAVED VOLTAGE STEP-UP/STEP-DOWN ELECTRONIC CONVERTER

Patent/project number: Patent OSIM: RO134350- B1/ 28.01.2022

Author/s: Petre Dorel Teodosescu, Vasile Mihai Suciu, Norbert Csaba Szekely, Alexandru Mădălin Păcuraru, Mircea Bojan, Zsolt Mathe

Institution: Technical University of Cluj-Napoca

Category: C

Description: The invention relates to an electronic converter with an interleaved structure intended for applications with electrical energy storage, renewable sources, electronic consumers, and electric vehicles, in which:

- the voltage value from the power supply is too low for the intended application, with operation in the input voltage amplification mode - voltage raising converter (Boost);
- the voltage value from the power supply is too high for the intended application, with operation in the input voltage attenuation mode - voltage step-down converter (Buck);
- energy circulation is bidirectional – voltage raising/lowering converter (Boost/Buck).

State of development: patent, scientific paper, research project

Contact: Liliana.Pop@staff.utcluj.ro

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

27.

Title: METHOD AND SYSTEM FOR ATTENUATING THE FAULTS THAT APPEAR IN DATA PROCESSING UNITS IMPLEMENTED USING DIGITAL CIRCUITS

Patent/project number: Patent OSIM: RO134587- B1/28.10.2022

Author/s: Zsofia Lendek, Alexandru Amăricăi-Boncalo, Oana Amăricăi-Boncalo

Institution: Technical University of Cluj-Napoca

Category: C

Description: The patent refers to a method and system for mitigating probabilistic errors that occur in digital circuit implementations where the data processing is based on addition, multiplication, and accumulation operations or can be decomposed into such operations.

The system consists of two instances of the data processor connected in parallel, each consisting of the one hand of the block that implements the procedure, usually a mathematical rule, and on the other hand of the block for calculating the correction input, each having access and using the results produced by the other circuit.

The method, according to the invention, involves the creation of a dynamic model that describes the current state of the circuit and the calculation of correction factors based on this model.

State of development: patent, scientific paper, research project

Contact: Liliana.Pop@staff.utcluj.ro

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



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28.

Title: INTELLIGENT AUTOMATION SYSTEM BASED ON A DISTRIBUTED, RECONFIGURABLE AND ADAPTIVE ARCHITECTURE

Patent/project number: Patent OSIM: RO129401- B1/30.08.2022

Author/s: Mircea Murar, Stelian Brad

Institution: Technical University of Cluj-Napoca

Category: C

Description: The invention represents an enhanced system used to control and configure the functionalities of intelligent equipment and of the overall process. It is characterized by a rapid reconfigurable, adaptive and dynamic architecture which is capable to respond, using its resources, to any process or change in order to quickly and efficiently react to meet the requirements. Equipment's are endowed with a minimum level of distributed intelligence and communication options.

State of development: patent, scientific paper, research project

Contact: Liliana.Pop@staff.utcluj.ro

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

29.

Title: REACTIVE ENERGY COMPENSATION METHOD AT THE POINT OF COMMON COUPLING AS SECONDARY ELECTRONIC FUNCTION

Patent/project number: Patent application OSIM: A/00528/30.08.2022

Author/s: Sorin Ionut Salcu, Mircea Bojan, Mihai Adrian Iuoraş, Lucian Nicolae Pintilie, Petre Dorel Teodosescu

Institution: Technical University of Cluj-Napoca

Category: C

Description: The invention is related to an alternating current supply grid, which serves electric consumers that may present reactive behavior. The main objective of the invention concerns the algorithm and method of managing the reactive energy in the mentioned grid type and their use for the control of an electronic converter that can compensate reactive energy.

Oreover, the purpose of the invention is to increase the exploitation level of the total installed power of electronic AC-DC converters that mainly supply their own consumers, and to serve some secondary electronic functionalities for reactive energy compensation at the point of common coupling to the supply grid, by observing and modifying their behavior level.

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

Contact: Liliana.Pop@staff.utcluj.ro

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



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30.

Title: ELECTRONIC MICRO-INVERTER FOR ENERGY CONVERSION FROM PHOTOVOLTAIC PANELS

Patent/project number: Patent application OSIM: A/00527/30.08.2022

Author/s: Petre Dorel Teodosescu, Vasile Mihai Suciu, Norbert Csaba Szekely, Alexandru Madalin Păcuraru, Mircea Bojan

Institution: Technical University of Cluj-Napoca

Category: C

Description: The invention relates to an electronic microinverter structure, composed of a boost converter and a conversion stage from DC to AC, intended for electrical energy harvesting from renewable energy sources, such as the photovoltaic panels and its injection into the local or public alternating voltage grids. The electronic microinverter according to the invention uses a reduced string of photovoltaic panels with a maximum power tracking system, thus reducing losses due to partial shading, respectively by increasing the conversion efficiency from direct voltage to alternating voltage by using a three-level voltage converter and a half-bridge inverter.

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

Contact: Liliana.Pop@staff.utcluj.ro

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

31.

Title: ToF NORMAL ESTIMATION FOR PULSE BASED ToF CAMERA USING CNN

Patent/project number: Patent application OSIM: A/00292/30.05.2022

Author/s: Szilard Molnar, Levente Tamas

Institution: Technical University of Cluj-Napoca

Category: C

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

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

Contact: Liliana.Pop@staff.utcluj.ro

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



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32.

Title: LOV-E

Patent/project number: Student project

Author: Dawid Kaczmarzyk **Promotor/s:** Katarzyna Błaszczyk, Przemysław Błaszczyk

Institution: Techniczne Zakłady Naukowe im. gen. Władysława Sikorskiego w Częstochowie - Poland

Category: C

Description: The presented solution is an innovative, educational mobile game designed for teaching programming in primary and secondary schools. The use of augmented reality technology allows to acquire knowledge in an engaging and interactive way.

The application contains various exercises that introduce fundamental programming concepts. The exercises are designed with different levels of difficulty to adapt to the needs and abilities of students across a wide scope of education. Additionally, it can be used by individuals seeking an accessible way to learn the basics of programming.

The educational aspect of this game undoubtedly contributes to increasing the interest in learning programming. It also facilitates and enhances the teaching of this field of knowledge. A field which is not easy but highly attractive among young people and on the labor market.

By participating in the gameplay, users strive to complete successive levels of the game by creating algorithms to control a virtual robot in the real world. Visual blocks representing textual instructions of programming languages are used to create programs. The application offers increasing levels of difficulty, encouraging players to come up with newer solutions to the presented problems and deepening their logical thinking abilities.

The game is available on various platforms, including mobile (Android and iOS) and desktop operating systems.

The project's development will involve:

- Adding new features and content for users.
- Enabling multiplayer gameplay.
- Creating additional teaching materials.

State of development: application tests

Contact: Dawid Kaczmarzyk: kaczmarzykdawid4@gmail.com +48 697966528

Presentation link: <https://www.youtube.com/watch?v=AtQO6ZpwwuU>

33.

Title: DOIT

Patent/project number: Student Project

Author/s: Piotr Orzechowski, Jacek Szczypior **Promotor/s:** Katarzyna Błaszczyk, Przemysław Błaszczyk

Institution: Techniczne Zakłady Naukowe im. gen. Władysława Sikorskiego w Częstochowie - Poland

Category: C



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Description: DOIT is a platform designed to improve the organization and communication when working in groups. A simple and modernistic interface of this application makes it easy to use. As a result, it can be quite easily operated by any person without any major problems. It provides support for the management of group work through a distribution of tasks between people involved, a possibility of having a common conversation between these people, as well as a collection of data from many people in a quick and easy way. When working in a group and when creating any project, it may happen that we forget about solutions we wanted to implement earlier, or problems may occur with the distribution of tasks between people involved in the job. The application enables the elimination of these problems. Moreover, it provides additional functions such as e.g. a chat or a possibility of a quick collection of data (a survey). It helps in finding the most suitable people for the particular project and further cooperation. The platform was originally designed to support the organization of work for school projects, the application tools, however, turned out to be very useful also at universities and in work environments.

Project implementation method:

1. Creation of a first version of the application containing: projects, surveys, posts.
2. Beta testing within a specified group of recipients.
3. The Registration of an own domain name.
4. The purchase of a server to store the application on it.
5. Beta testing for all interested users.
6. Advertising of the application.
7. The development of the application- adding new and improving existing functions.

Originally, the authors' proposition was to create a platform for students due to which they could easily manage school projects.

We noticed a growing demand for this type of application among our peers and the lack of such a solution on the market. After creating the first version of the application, we decided to design a platform containing many integrated and cooperating functions. As a result, we introduced the option to create surveys due to which we can collect information e.g. about solutions in the project. Finally, we improved communication between users by adding an optional chat.

State of development: application tests

Contact: Piotr Orzechowski: p.orzechowski0405@gmail.com +48 695121942

Jacek Szczypior: jszczypior008@gmail.com +48 601994195

Presentation link: https://www.youtube.com/watch?v=VsCY_esOexg

34.

Title: SCANNING DEVICE IN MULTIPLE SPECTRA

Patent/project number: 0071/2023

Author/s: Șaptebani Neta-Ionelia, Luca Flavia, Jurcuțu Corina, Mocan Marian, Coroian Alexandra, Delia Rozovlean

Institution: Politehnica University of Timișoara

Category: C



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Description: It is a device designed for non-destructive physical customs control that can also be utilized in other areas of interest. Its major methods of operation include electromagnetic spectrum analyses in multiple bands and information gathering from other sensors.

The module has the ability to interface with a special computer network, which enables it to carry out prompt comparison analyses to find any potential attempts to avoid customs clearance.

This equipment's claimed goals are to enhance physical customs control, prevent human trafficking, economic crime, and other legal violations.

By transmitting the pertinent data on a specialized computer network, the device can be utilized both singly and in groups.

State of development: In development

Contact: Şaptebani Neta-Ionelia neta-ionelia.saptebani@student.upt.ro

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

35.

Title: WEARABLE SAUDI SIGN LANGUAGE RECOGNITION DEVICE BASED ON NEURAL NETWORK

Patent/project number: Student project

Author/s: Shouq Algahtani, Rana Zuhairy, Olla Almarghalani, Mawadda Aljohani;

Supervisor: Dr. Rania Elmanfaloty

Institution: Faculty of Engineering, King Abdulaziz University - Saudi Arabia

Category: C

Description: There are 750,000 deaf and mute individuals in Saudi Arabia which utilize sign language as a main form of communication. As most of the hearing community are unfamiliar with sign language, there is a huge communication barrier between deaf individuals and the hearing community in Saudi Arabia. This makes the communication difficult especially with the lack of sign language interpreters. This is the senior design project for the Electrical Engineering faculty at King Abdulaziz University (KAU), which aims to develop a wearable device capable of recognizing Saudi Sign Language using neural networks.

The primary goal of this project is to facilitate communication for individuals who use Saudi Sign Language as their primary means of communication.

The developed device utilizes both hands to recognize the signs, where the non-dominant hand data is sent to the dominant hand to be processed along with the dominant hand data. The implementation consists of three stages:

1- Data Acquisition:

To collect the data, electromyography (EMG) and inertial measurement unit (IMU) sensors were used, along with the Arduino IDE. Moreover, two Arduino Nano 33 BLE microcontrollers with headers were used to collect and transmit the data. The dataset includes 25 signs performed by four subjects, with 80 repetition for each sign.

2- Machine Learning:

The model was constructed using Python programming language. The model consists of two Convolutional Neural Networks (CNNs) to extract features from the readings of the two sensors, as well as dense neural networks for training.



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3- Real-Time Sign Language Recognition

Sign recognition was achieved by converting the model into TensorFlow Lite (TFL) and then uploading the TFL model into the Arduino.

State of development: In development

Contact: relmanfaloty@kau.edu.sa

Presentation link: <https://engineering.kau.edu.sa/Default-135-EN>

36.

Title: DEFENDING AGAINST ARP POISONING

Patent/project number: Student project

Authors: Lorena-Maria Constantin, Theodor-Iulian Badea, Andrei-Cosmin Mazîlu, Gabriel-Alexandru Păduraru

Institution: Nichita Stanescu National College Ploiesti

Category: C

Description: The selected subject is relevant and captivating in the realm of information technology, which provides protection against ARP Poisoning attacks for individuals seeking to connect to a public Wi-Fi network. ARP Poisoning occurs when an attacker successfully links their device's MAC address with the IP address of another device on a local area network. Thus, the hackers will fool the switch that he is the end device, and will convince the end device that he is the switch, which results in all the data that flows through the network to reach the attackers first, also known as a Man in the Middle attack. The concept we thought of is about creating a security layer as an algorithm which can verify the correspondence between a device and a switch so that no one could intervene in the communication of the ARP request and the ARP response. Our method has three steps: the detection of the ARP spoofing attack, the interrupting of the communication, and warning the victim. Then, the connection will be reestablished as fast as possible, assuring the safety of the end users. Compared to other existing programs, the security layer is a more efficient and cost-effective way to ensure the safety of individuals who connect to public Wi-Fi networks, because this algorithm will be implemented in the software of the switch from the factory. Therefore, people can connect to Wi-Fi in public spaces with confidence due to our concept.

State of development: virtual idea, concept, research project

Contact: constantinlorenamaria@gmail.com +40787433840

Presentation link: https://drive.google.com/drive/folders/1hNVfD5aV01X47xj9crsv-tResJ3nUEQC?usp=drive_link



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

1.

Title: EQUIPMENT FOR REDUCING OF HYDRAULIC INSTABILITIES GENERATED BY THE SWIRLING FLOW FROM THE CONICAL DIFFUSER OF HYDRAULIC TURBINES.

Patent/project number: Patent a 2022 00182, BOPI nr. 8/2022

Author/s: Susan-Resiga Romeo Florin, Bosioc Ilie Alin, Tanasa Constantin, Stuparu Adrian Ciprian, Szakal Raul Alexandru

Institution: Politehnica University of Timisoara, Faculty of Mechanical Engineering, Hydraulic Machinery Laboratory.

Category: D

Description: The invention refers to a new equipment for eliminating/reducing the pressure fluctuations associated with the vortex rope, which appear at partial discharge in the conical diffuser of hydraulic turbines, especially those with fixed blades (ex: Francis turbines). The new equipment can be applied both in new hydropower plant constructions and in the case of existing ones. The main element of the invention is the so-called free runner, which connected to a shaft passing through the turbine rotor, eliminates the rope vortex and the pressure fluctuations associated with it, which are very harmful to the hydraulic turbines. The major advantages of the invention are: simple construction and implementation as well as low maintenance costs. Furthermore, it does not produce any other negative effects on the flow in the conical diffuser or on the turbine.

State of development: Patent Application, Model Tested in Laboratory, Research project: TE 179/2020: Free Runner for Swirling Flow Control at the Outlet of Hydraulic Turbines, PN-III-P1-1.1-TE-2019-1594

Contact: Lecturer Dr.Eng. Alin BOSIOC alin.bosioc@upt.ro +40727988895

Presentation link: <http://mh.mec.upt.ro/freerunnerflow/#/page/view/home>

2.

Title: MODELING AN INNOVATIVE INFRASTRUCTURAL FRAMEWORK FOR AUTONOMOUS CARS

Patent/project number: PhD thesis

Author/s: Ciprian Sorin Vlad, Larisa Ivaşcu, Iulia-Ioana Mircea, Eugen Roşca

Institution: Politehnica University of Timisoara, Politehnica University of Bucharest

Category: D

Description: The opportunity for dynamic testing, research, and development of level 3, 4 and 5 technologies in the field of autonomous mobility, road safety and smart infrastructure by modeling an



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innovative infrastructure framework, which, by replicating real-scale traffic conditions, will facilitate the advance technologically, positioning Romania in the role of regional leader.

With 98% of road accidents linked to human error, the widespread use of autonomous cars with level 5 technology is expected to help meet the EU's target of approaching 0 deaths by 2050.

Modelling such an infrastructure will start with the building of the simulation and the proposed driving scenario. Afterwards, the proposed driving scenario will be moved to the virtual testing stage. The assumptions and success ratings achieved in the virtual environment will then be tested in real-world conditions on the infrastructure modelled with the aim of validating them. Following these steps, autonomous driving can be included on public roads in Romania.

It is imperative that Romania starts testing autonomous cars. This research project aims to outline the concept of modelling an infrastructure segment to enable such testing. The expected results directly influence the possibilities of developing level 3,4,5 technology in the field of autonomous cars, The identification of new smart infrastructure and connectivity solutions and the determination of road safety improvement parameters.

State of development: Doctoral research project

Contact: larisa.ivascu@upt.ro

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

3.

Title: ELECTRIC ASSISTED SELF-ADAPTIVE HYBRID TRANSMISSION

Patent/project number: 00889/12.12.2019

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

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

Category: D

Description: The proposed solution refers to an implementation of patent application no. 00889/12.12.2019 and consists of a gearbox intended to equip vehicles with pedals. The gearbox is a mechanical reducer characterized by the fact that it provides assistance when pedaling through an electric motor, assistance that can be achieved in three modes: low, medium and high, self-adaptive depending on the value of the load torque that must be overcome. The major advantage is that changing gears becomes unnecessary.

State of development: prototype

Contact: catalinoiuromeo@gmail.com sorin.ratiu@fih.upt.ro

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

4.

Title: POSSIBILITIES OF RECYCLING Lithium-ion ELECTRIC VEHICLES BATTERIES

Patent/project number: PhD thesis

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

Institution: University of Pitesti, Faculty of Mechanics and Technology; Politehnica University of Timisoara, Faculty of Engineering Hunedoara



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Category: D

Description: Energy storage systems, usually batteries, are essential for all-electric vehicles, plug-in hybrid electric vehicles (PHEVs), and hybrid electric vehicles (HEVs). Lithium-ion batteries are currently used in most portable consumer electronics such as cell phones and laptops because of their high energy per unit mass relative to other electrical energy storage systems. Most components of lithium-ion batteries can be recycled, but the cost of material recovery remains a challenge for the industry. Most of today's all-electric vehicles and PHEVs use lithium-ion batteries, though the exact chemistry often varies from that of consumer electronics batteries. Research and development are ongoing to reduce their relatively high cost, extend their useful life, and address safety concerns in regard to overheating.

The recycling of used Li-ion batteries from vehicles goes through a series of stages: collection, sorting, handling, processing, metal recovery, and valorization. Recycling of used batteries is an increasingly important step in alleviating both waste management and environmental concerns regarding the materials used in Li-ion batteries. Recycling allows to reduce the costs of production by recovering valuable recovered raw materials such as cobalt, nickel and lithium from end-of-life batteries. The recovery of the raw materials used in the manufacture of batteries is essential if we consider their scarcity and high cost.

State of development: Doctoral research project

Contact: alecsandru.rus@yahoo.com

Presentation link: <https://www.upit.ro/ro/academia-reorganizata/facultatea-de-mecanica-si-tehnologie-2>

5.

Title: ANALYSIS AND DEVELOPMENT OF THE EXPERIMENTAL MANUFACTURING PROCESS OF POROUS CERAMIC FILTERS FOR AUTOMOTIVE INDUSTRY

Patent/project number: PhD thesis

Author/s: Robert BUCEVSCHI, Ana SOCALICI, Adina BUDIUL-BERGHIAN, Corneliu BIRTOK-BĂNEASĂ

Institution: Politehnica University of Timisoara, Faculty of Engineering Hunedoara

Category: D

Description: The study presents the results obtained from research activities in the field of material engineering, activities focused on obtaining methods for porous ceramic materials intended for air filtration. The purpose of the experimental studies is the development and improvement of the manufacturing process for the filter element made by porous ceramic. The innovation presented by this concept of filter element is the exclusive use as a filtration medium of a porous ceramic mixture. The disseminated results also show the influence of the obtaining process on the density and mechanical strength of the filter element.

Among the advantages offered by the use of ceramic materials in gas filtration is their ability to retain gases at the molecular level. porous ceramic filter elements could be a viable environmentally friendly alternative to conventional microfiber filters. Following the analysis of the obtained results, we can conclude that the ceramic filtration material obtained through the process presented in this paper can be structurally an alternative to the classic paper filters. a number of critical steps in the production method were also identified, such as the need to improve the homogeneity at the immersion process of the aqueous ceramic solution in the volume of the polymeric sponge, as well as the need to carry out an analysis of the influence of granulometric classes properties for the materials used in the preparation of the aqueous ceramic solution.



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State of development: Doctoral research project

Contact: robert.bucevschi@yahoo.ro

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

6.

Title: AIRCRAFT ENGINE WITH HORIZONTALLY ARRANGED CYLINDERS

Patent/project number: Patent Application RO 137511 A0

Author/s: Panaitescu Costin, Dediu Gabriel, Catana Razvan Marius

Institution: National Research and Development Institute for Gas Turbines COMOTI

Category: D

Description: The invention is referring to a new design of an internal combustion engine with horizontal arrangement of cylinders, an aeronautical piston engine type equipped with a propeller for aviation application, with six horizontal cylinders, a reduction gear and with a specific oscillating system for conversing the translational movement of the pistons into the rotational movement of the propeller shaft. The invention is defined by a specific design and technical solution of horizontally arranged cylinders, a specific oscillating system for conversing the translational motion into rotation motion by removing the classical crankshaft and a specific rotary cam distribution system. By design concept and technical solution of the invention it results certain main advantages such as: reducing the frontal section of the engine by reducing the engine diameter, engine lower drag force due the fact of reducing the engine frontal section, higher working area of the propeller due the fact of reducing the engine frontal section, increasing the propeller thrust by providing an increasing of propeller working area, and possibility to use new propeller concept which provide a higher mass air flow for thrust.

State of development: technical concept

Contact: costin.pan@gmail.com +40731207154 contact@comoti.ro gabriel.dediu@comoti.ro
razvan.catana@comoti.ro

Presentation link: www.comoti.ro

7.

Title: ACCELEROMETRIC SYSTEM FOR AUTOMATIC TRIGGERING OF CONTROL EQUIPMENT MOUNTED ON VEHICLES AT PREDETERMINED INTERVALS OF THE DISTANCE TRAVELED

Patent/project number: RO130784/2022

Author/s: M. Tautan, S. Miclos, A. Stoica, D. Savastru, R. Savastru

Institution: National Institute of Research and Development for Optoelectronics

Category: D

Description: The invention relates to an accelerometric system for automatic external triggering of control equipment, video cameras and radar scanners, mounted on vehicles that perform the testing of the asphalt layers of road arteries by automatically triggering this equipment at intervals of the distance predetermined by the operator in accordance with the regulations in force. To achieve this goal, it is necessary for the odometrical transducer to consist of a rotary transducer capable of converting angular motion into digital



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pulses. Such a transducer, usually called an encoder, usually consists of a cylindrical body a flange, a shaft and an output connector.

Novelty: It transforms the acceleration of a vehicle, through successive integrations, in the distances that can be set by an operator in accordance with the standards in force, for the characterization of road arteries.

State of development: concept

Contact: madalin@inoe.ro

Presentation link: <https://www.inoe.ro/en/>

8.

Title: PROCESS AND DEVICE FOR DETECTING ICE ON ROADS

Patent/project number: RO 130626

Author/s: D. Savastru, S. Miclos, A. Popescu, R. Savastru

Institution: National Institute of Research and Development for Optoelectronics

Category: D

Description: The procedure is based on Raman spectroscopy of an area of the roadway in front of the vehicle. Water gives complex Raman spectra. Their analysis, together with changes caused by variations in temperature and / or pressure or the presence of solutions, is considered to be able to provide detailed information on the structure of liquid water. Raman spectroscopy is a promising method for remote sensing of ice, water and even its temperature.

Novelty: Sensing the presence of ice on the road arteries on board a moving vehicle at a sufficient distance from it to ensure an adequate response time.

The invention has the following advantages:

- ① Senses the presence of ice on the road artery;
- ② The area where the presence of ice is sought is 100 m in front of the vehicle;
- ③ Can provide information on the temperature and thickness of the ice sheet;

The major drawback of the known method is that it does not detect the presence of ice or icing on the road artery but only signals the existence of a temperature low enough to allow the appearance of frost. However, the existence of favorable conditions for the appearance of ice or icing does not mean that the phenomenon actually occurred, much less its magnitude.

State of development: concept

Contact: madalin@inoe.ro

Presentation link: <https://www.inoe.ro/en/>

9.

Title: TOYOTA ALTERNATIVE PROPULSION SYSTEMS

Patent/project number: Student Project

Author/s: Leonard Nicolas MARARU; coordinator Prof. Corneliu BIRTOK BANEASA



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

Category: *D*

Description: *Hydrogen will not only change the future of transport, it will also change many other things. From the propulsion of cars, trains and ships to the heating of apartments - we are slowly migrating towards a hydrogen-based community. Because, unlike other energy sources, its only by-product is water. Additionally, hydrogen is easy to store and transport in large quantities. Sustainable systems are needed to replace fossil fuels, whose extraction and burning have a negative impact on the environment. Hydrogen promises the greatest impact in the process of eliminating carbon emissions. It is an important alternative that brings us closer to the goal of a cleaner environment. Easy to refuel, offering an autonomy of over 500 km and without emitting anything but water. TOYOTA electric vehicles with hydrogen fuel cells have the potential to revolutionize the way we drive. After launching the world's first hydrogen-powered car in 2014, it takes zero-emission fuel cell technology to new heights in the second-generation Mirai, with a new vision for clean mobility, which is on the road today. A fuel cell does not produce a large amount of electricity, so the Mirai combines several cells to power the electric propulsion motor. The process is extremely efficient, over 80% of the hydrogen energy being converted into electricity, more than double the performance of a heat engine that wastes a good part of the fuel's energy in combustion. As elementary as the working principle of hydrogen fuel cells is, as complex is the technology used to implement the solution in a vehicle, from the development and construction of the fuel cell unit to the design and realization of capable hydrogen tanks to withstand extremely high pressures (700 bars), having a high degree of impermeability. From the very beginning, Mirai was not an experimental vehicle, but a coherent proposal for alternative mobility, with a distinct design, with a high level of comfort and performance. The maximum power of 154 HP and the torque of 335 Nm supported an acceleration from 0 to 100 km/h in 9.6 seconds, and the pleasant dynamic behavior benefits from the optimal distribution of the masses and the center of gravity close to the ground: the electric motor and the electronic unit control were placed on the front deck, fuel cells and a hydrogen tank under the seats, the second tank and the additional battery for storing renewable energy on the rear deck. The dynamic and comfort characteristics, the specificity of the propulsion solution, the possibility of refueling with hydrogen in an interval close to a conventional car (3-5 minutes) and the autonomy of about 500 km have attracted the attention of public institutions and companies interested in "green" mobility.*

State of development: *exploratory research*

Contact: leonard.mararu@gmail.com

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

10.

Title: *FIXED-WING U.A.V WITH VERTICAL TAKEOFF/LANDING SYSTEM, WITH TRI-ROTOR PROPULSION SYSTEM AND METHOD OF INTERCEPTING THE SPECIFIC SOUND EMITTED BY THERMAL ENGINE-POWERED CHAINSAW*

Patent/project number: *A/00305*

Author/s: *Tiberius-Florian FRIGIOESCU, Petre-Gabriel BADEA, Victoras-Florentin ANGHEL, Grigore CICAN, Mihaela-Raluca CONDRUZ, Marius-Adrian DIMA*

Institution: *National Research and Development Institute for Gas Turbines COMOTI*



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Category: D

Description: The invention refers to a vertically take-off and landing (VTOL) fixed-wing unmanned aerial vehicle featuring a tri-rotor propulsion arrangement. Additionally, the invention encompasses a methodology for detecting the distinctive acoustic emissions produced by thermal engine chainsaws. The fixed-wing unmanned aerial vehicle, along with its VTOL configuration and tri-rotor propulsion system, is constructed through the integration of several components. These include a fuselage constituting a central region, a tri-rotor propulsion system composed of three rotor-containing regions, and two distinct zones accommodating fixed wings housing control surfaces known as elevons. Notably, each fixed wing incorporates an appended winglet at its extremity. The aircraft's design deliberately excludes a conventional tail, thereby enhancing flight efficiency. The tri-rotor propulsion configuration is characterized by the incorporation of two forward-mounted engines and one dorsal engine situated within the fuselage, supplanting the traditional tail section. The device is further equipped with an acoustic system comprising four microphones, as well as a data processing computer housing an AI program meticulously trained to discern the precise auditory signatures of chainsaw operations. This AI program facilitates the identification of the chainsaw's acoustic profile and the subsequent determination of the source's spatial orientation. Consequently, aided by the autopilot system, the aircraft is autonomously directed towards the origin of the detected acoustic emissions.

This invention was funded by Romanian Ministry of Research, Innovation and Digitization, within PTE program ENFORCING PN-II-P2-2.1-PTE-2021-0369

State of development: Prototype

Contact: tiberius.frigioescu@comoti.ro

Presentation link: www.comoti.ro

11.

Title: SHAFT INTENDED FOR THE TRANSMISSION OF ATVs

Patent/project number: student project

Author/s: Ludvic Kasler

Institution: Politehnica University of Timisoara, Faculty of Engineering Hunedoara

Category: D

Description: This study present aspects of the tree processing technological itinerary RITZELWELLE made of steel brand 17CrNiMo6. A lot of operations were performed: cutting, turning, milling, marking, heat treatment, rectification and final control. Consumer satisfaction depends on a multitude of factors: his personality and culture, his habits, his standard of living, his physical abilities and intellectual, health status and a multitude of other factors that depend on the individual individual. In other words, product quality is ensured in the production process, but manifested in the sphere of consumption. As such, there is a noticeable difference in quality production (manufacturing) and product quality. Human resources constitute an active factor, unlike the other factors that acts passively, in the achievement of quality, with attributions in the fields of management, research and design, production, logistics, marketing and service provision. Raw materials and materials must meet the specifications in point of qualitatively, to be ensured rhythmically and properly stored. Equipment and installations must work within the limits of precision and to technically corresponds. In order not to negatively affect the quality of the benchmarks and products, these machines have fixed tolerances that



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cannot be exceeded. The quality of the machines is given by technical, economic and functional characteristics.

State of development: *exploratory research*

Contact: albertelectronics@yahoo.com

Presentation link: <https://www.facebook.com/ludvik-kasler>

12

Title: WELDING DEVICE FOR UNDERWATER FRICTION STIR WELDING METHOD

Patent/project number: Patent application No. A/00696 / 19.11.2021 OSIM Bucharest, RO137449 (A2), RO-BOPI 5/2023 (din 30.05.2023).

Author/s: Lia-Nicoleta Boțilă, Radu Cojocar

Institution: National Research & Development Institute for Welding and Material Testing – ISIM Timisoara

Category: D

Description: The patent application relates to the development of a welding device usable for the submerged friction stir welding (SFSW) method, whose constructive form allows a better cooling of the welding tool to avoid its overheating during the welding process.

The technical problem solved by invention:

- welding device made of non-corrosion materials, that can be integrated on the FSW welding machine (by Morse taper clamping, on the main shaft of the welding machine) and allowing the welding tool to be fixed in the device body;
- ensuring the technical conditions necessary for underwater FSW welding of ferrous and non-ferrous metal alloys, regarding the device, which represents the interface between the welding machine and the FSW welding tool;
- the shape of the device and the liquid working environment allow limiting the overheating of the welding tool and the materials to be welded, compared to the classic FSW process carried out in the ambient environment (air).

State of development: *concept*

Contact: ISIM Timisoara www.isim.ro isim@isim.ro +40256491831

Presentation link:

https://www.osim.ro/images/Publicatii/Inventii/2023/inv_05_2023.pdf

https://ro.espacenet.com/publicationDetails/biblio?FT=D&date=20230530&DB=&locale=ro_R O&CC=RO&NR=137449A2&KC=A2&ND=5

13.

Title: ESTABLISHING A MOBILE CAR WASH BUSINESS AT ONAIZAH IN 2023

Patent: *Student project*

Authors: Ziyad Mohammed Al Mazyad, Bader Abdullah Alaqeel; Supervisor: Dr. Majed Farouk

Institution: Onaizah Colleges, Saudi Arabia & Workers University - Egypt

Category: D



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Description: *Mobile Car Wash Business* - Mobile car wash business offers convenience by providing car washing and detailing services at the customer's chosen location. It is a flexible business model that requires mobile equipment and a comprehensive understanding of car care practices.

State of development: *Research project*

Contact: magedfarouk5@gmail.com

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

14.

Title: SYSTEM FOR THE APPLICATION OF THE FRICTION STIR WELDING IN LIQUID ENVIRONMENT

Patent/project number: Patent application No. A/00697/19.11.2021 OSIM Bucharest, RO137450 (A2), RO-BOPI 5/2023 (din 30.05.2023).

Author/s: Radu Cojocaru, Lia-Nicoleta Boțilă

Institution: National Research & Development Institute for Welding and Material Testing – ISIM Timisoara

Category: D

Description: The patent application refers to the development of a system that ensures the cooling of the tool, the welding device and the materials to be joined in the area of action of the welding tool, by continuous or intermittent spraying of water in directions oriented towards to the welding tool.

The cooling system is usable for submerged friction stir welding (SFSW) of various metal materials and can be easily integrated on the FSW welding machine.

Technical problem solved by invention:

- making a system of special construction that ensures the controlled cooling of the FSW tool, of the welding device and of the joining materials (in the area of the welding tool action) during the welding process;
- ensuring the technical conditions necessary to protect the SFSW welding tool and the materials to be joined (in the area of action of the welding tool) during the welding process from overheating by forcibly cooling them by spraying with water;
- the constructive form of the cooling system allows for easy integration on a FSW welding machine and can provide continuous or intermittent water spray in several directions oriented towards the welding tool.

State of development: *concept*

Contact: ISIM Timisoara www.isim.ro isim@isim.ro +40256491831

Presentation link:

https://www.osim.ro/images/Publicatii/Inventii/2023/inv_05_2023.pdf

https://ro.espacenet.com/publicationDetails/biblio?FT=D&date=20230530&DB=&locale=ro_R O&CC=RO&NR=137450A2&KC=A2&ND=5



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15.

Title: REAL-TIME EVACUATION SYSTEM FOR ABRASIVE MATERIAL SLUGE

Patent/project number: Patent application No. A/00586/17.09.2020 OSIM Bucharest, RO135579 (A2), RO-BOPI 3/2022 (din 30.03.2022).

Author/s: Ion-Aurel Perianu, Emilia-Florina Binchiciu, Gabriela-Victoria Mnerie

Institution: National Research & Development Institute for Welding and Material Testing - ISIM Timisoara

Category: D

Description: The invention refers to a real-time evacuation system for used abrasive material equipped in a waterjet cutting installation used in the machine construction industry. The system according to the invention consists of a tank in which a water pipe is mounted, connected to a pump, which in turn is connected to the network water source. As a safety measure, the pump is also connected to a water buffer tank for unforeseen situations.

The invention proposes an abrasive sludge material evacuation system, as follows:

- A predetermined high pressure water pipe circuit with eductor nozzle is positioned in the tank of a n abrasive waterjet cutting installation, connected to the water network and additionally to a water buffer tank for high flow rate;
- The system is positioned inside the cutting tank and is equipped with a number of connection eductor nozzle outlets through which pressurized water is pumped having a powerful mixing effect for the collector tank contents;
- The suspension water sludge mixture is then pumped into a decanter sludge tank for storage and distribution

State of development: concept

Contact: ISIM Timisoara www.isim.ro isim@isim.ro +40256491831

Presentation link:

https://www.osim.ro/images/Publicatii/Inventii/2022/bopi_inv_03_2022.pdf

https://ro.espacenet.com/publicationDetails/biblio?II=0&ND=3&adjacent=true&locale=ro_RO&FT=D&date=20220330&CC=RO&NR=135579A2&KC=A2#

16.

Title: RESEARCH ON THE DEVELOPMENT OF 3D PRINTED HIGH ENTROPY ALLOYS FOR THE CONSTRUCTION OF SEVERELY WEAR AND VIBRATION STRESSED COMPONENTS

Project number: Nucleu Program Inno-SIM 2023-2026, PN 23 37 01 03.

Author/s: Nicușor-Alin Sîrbu

Institution: National Research & Development Institute for Welding and Material Testing - ISIM Timisoara

Category: D

Description: The project aims to increase the capacity of the National Institute for Research and Development in Welding and Material Testing - ISIM Timișoara, to address the specific economic and social problems related to the institute's field of activity, namely scientific research and technological development in the field of welding and material testing, using the top 10 most innovative technologies



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globally, namely additive manufacturing - 3D printing. The project will focus on developing innovative products, new high-entropy alloys printed with 3D technology, and 3D printing manufacturing technologies for components subjected to severe wear and vibration, experiencing wear through contact in the active zone and vibrations up to 80µm and frequencies ranging from 20 to 50 kHz. These technologies will find applications in welding, cutting, cavitation, homogenization, etc., catering to industries such as textiles, leather, machinery manufacturing, food, toys, packaging, and extending to pharmaceutical and energy industries, thereby replacing traditional methods of manufacturing high-entropy alloys.

The objectives of the project are:

- Development of 3D printed high-entropy alloys for the construction of components subjected to severe wear and vibrations.
- Development of manufacturing technologies and innovative products using 3D printing.

Acknowledgements: The paper was elaborated in the frame of the project PN PN 23 37 01 03 entitled "Research concerning the development of 3D printed high entropy alloys for the construction of components subject to severe wear and vibration" financed by the Ministry of Research and Innovation, in the frame of Nucleu Program of ISIM Timisoara (Advanced research on the industry of the future, Inno-SIM 2023-2026, contract 16 N/2023).

State of development: research project

Contact: ISIM Timisoara, www.isim.ro isim@isim.ro +40256491831

Presentation link: <https://www.isim.ro/nucleu23-37/23370103/index.htm>

17.

Title: THE STUDY AND OPTIMIZATION OF THE BEHAVIOR AND ENERGY ABSORBED IN THE FRONTAL IMPACT BY A RECTANGULAR METAL WORKPIECE WITH AN ORIGAMI CORE

Patent/project number: PhD thesis

Author/s: Bleotu Robert-Marian, Preda Cosmin

Institution: Lucian Blaga University of Sibiu

Category: D

Description: The bumper systems (beams and face bars) are parts of the car body structure, one of the most important components of an auto vehicle because of its role in absorbing the energy of an impact by deformation. The main objective of this paper is to study, optimize the built shape of the frontal members beams used in the endurance structure of motor vehicles in terms of their ability to absorb internal energy resulting from a frontal impact under the principles of sustainability. The study combines the classical technology used in the construction of vehicles with „the Origami Engineering” technique, which is generally used by NASA, but also by engineers in other fields: aeronautics, nanotechnology or medical technique. Simulation analyses were performed using the finite element on different types of thin-walled metal tubes, but also an origami structure.

State of development: scientific research project

Contact: Lucian Blaga University of Sibiu, PATLIB Centre of Sibiu, 4 Emil Cioran Street, Room IM 100

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



18.

Title: SEMI-AUTOMATIC CLEANING DEVICE UNIT

Patent/project number: Student project

Author/s: Cisteian Silvana Denisa, Cornea Gabriela, Bitea Alexandru Paul

Institution: Lucian Blaga University of Sibiu

Category: D

Description: The device is powered by two Li-ion batteries, with a maximum capacity of 20000mA, mounted on the lower part of the support. It is equipped with a tank supplied with clean water and cleaning solution plus an electric pump that serves to create the necessary pressure and the water is sprayed through ten nozzles. The method of taking up the carpet is made by a system of rollers arranged all around, actuated by an electric motor, and the release of water is done through a process similar to rolling with the help of two cylinders positioned horizontally, the released water being taken over by a concave tray up to the gray water tank. To clean the press, there is a button built into the upper part of the device that can be easily operated. To create this product, we started from the idea of the conventional process of cleaning the presses and arrived at a semi-automated cleaning process. Using the conventional process, the time for cleaning and drying the press is about an hour and a half, while choosing a semi-automatic cleaning process will reduce the time considerably and this process takes about 40 minutes

State of development: scientific research project

Contact: Lucian Blaga University of Sibiu, PATLIB Centre of Sibiu, 4 Emil Cioran Street, Room IM 100

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

19.

Title: ELECTRIC ENGINE

Patent/project number: Student project

Author/s: Ciuntu Sebastian-Gabriel

Institution: Lucian Blaga University of Sibiu

Category: D

Description: Our project is about an electric engine with coil, also known as an induction motor, is a common type of electric motor used for a wide range of applications.

Induction motors work on the principle of electromagnetic induction, where the current flowing through the stator coil generates a magnetic field that induces a current in the rotor coil. This creates a rotating magnetic field that drives the motor shaft.

The electric engine operate through the interaction between the motor's magnetic field and electric current in a wire winding to generate force in the form of torque applied on the motor's shaft. The applications of electric engine primarily include fans, blowers, machine tools, turbines, pumps, power tools, compressors, alternators, rolling mills, movers, ships, and paper mills.

One of the most significant advantages of induction motors is their reliability, durability, and low maintenance requirements.



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Is it also highly efficient, with low losses and high-power output. Moreover, it is easy to control and are widely used in various industrial and commercial applications. However, it does require an external power source to operate, and its speed is dependent on the frequency of the input power.

State of development: scientific research project

Contact: Lucian Blaga University of Sibiu, PATLIB Centre of Sibiu, 4 Emil Cioran Street, Room IM 100

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

20.

Title: NUMERICAL ANALYSIS OF THE EFFECT OF VENTILATION SLOTS ON THE BRAKING SYSTEM

Patent/project number: PhD thesis

Author/s: Preda Cosmin, Bleotu Robert-Marian

Institution: Lucian Blaga University of Sibiu

Category: D

Description: The purpose of this work is to create a thermally efficient design for ventilated brake discs by adopting three different designs from a constructive point of view. A special importance was also for the brake disc material, initially a semi-metallic material was chosen, being the most used for discs, later the ceramic material was also chosen. The design variant for the brake disc, to which the disc material and the thermal shield are added, lead to a significant improvement from a thermal point of view, which was also the main objective of this work. If we want to achieve reliability over time and have a medium-performance car, then regular ventilated discs are sufficient. In the case of a performance car, perforated and ventilated discs will be used, for extra cooling. If we want to achieve a supreme performance, where reliability does not matter but only optimal braking, then we will turn to ventilated and ribbed discs. Overheating of the brake disc-pad assembly can have serious consequences, reducing the safety of the braking system.

State of development: scientific research project

Contact: Lucian Blaga University of Sibiu, PATLIB Centre of Sibiu, 4 Emil Cioran Street, Room IM 100

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

21.

Title: HEIGHT-ADJUSTABLE ELECTRIC DESK

Patent/project number: Student project

Author/s: Florea-Toader Denisa-Gabriela, Cernea Daniela-Elena, Paul Gliga, Gresoiu Nicolae-Claudiu

Institution: Lucian Blaga University of Sibiu

Category: D

Description: The desk has quality aluminum legs, electrically adjustable in height. To make the work easier, it includes 2 sliding rulers that can be used for sketching, painting, and many others activities. There are also storage spaces and containers for used utensils, such as pens, sticky notes, paper clips, compass. USB ports are there to help you charge your phone and cable organizers will be of service with your cords.



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Working with smart devices more and more nowadays, the desk has a scanner attached to it, that allows the user to convert the work documents into electronic files. At the base of the aluminum legs there are wheels, which allows the workplace to be moved quickly. We can use it especially in spaces where we don't have much space. Suitable for several fields of activity. On table is a scanner that can be connected via Bluetooth to the laptop in order to be able to scan documents quickly. There are several usb ports in the table that facilitate the speed of receiving/sending documents

State of development: scientific research project

Contact: Lucian Blaga University of Sibiu, PATLIB Centre of Sibiu, 4 Emil Cioran Street, Room IM 100

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

22.

Title: THE THERMAL STUDY FOR BRAKE DISCS AND THE INFLUENCE OF THE MATERIAL
Patent/project number: Student Project

Author/s: Buduşan Lucian, Matieş Bogdan, Popa Marian-Cristian, Muntean Ana-Maria

Institution: Lucian Blaga University of Sibiu, Faculty of Engineering

Category: D

Description: The purpose of this work is to create a thermally efficient design for ventilated brake discs by adopting two different designs from a constructive point of view. A special importance was also for the brake disc material, initially a semi-metallic material was chosen, being the most used for discs, later the ceramic material was also chosen. The design variant for the brake disc, to which the disc material and the thermal shield are added, lead to a significant improvement from a thermal point of view, which was also the main objective of this work.

State of development: scientific paper

Contact: cosmin.preda@ulbsibiu.ro +40736646553.

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

23.

Title: MX-13 Engine of US Trucks

Patent/project number: Student project

Authors: Marius Alexandru ISTOC; Coordinator: Corneliu BIRTOK-BANEASA

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

Category: D

Description: Seattle Car Mfg. Co. was established in 1905 by William Pigott, Sr., to manufacture logging and railroad equipment at its West Seattle facility. Later on, the Company combined with Twohy Brothers of Portland to become Pacific Car and Foundry Company, which it kept for the following 55 years. William Pigott transferred the company's ownership to the American Car and Foundry Company in 1924.

In 1945, the company made its first significant acquisition, Seattle's Kenworth Motor Truck Company, and entered the heavy-duty truck market. When Pacific Car and Foundry acquired Peterbilt Motors Company in 1958, it significantly increased its capacity for heavy-duty trucks. The acquisition of Dart Truck Company in the same year allowed it to enter the brand-new market for mining trucks. The steel for the 1962 Seattle World's Fair's Space



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Needle was manufactured by the company's structural steel division. Later, it was crucial to the building of the World Trade Centre in New York City as well as the third powerhouse of the Grand Coulee Dam.

MX-13 engines are built for durability, with multi-million-mile endurance testing. Every MX-13 comes standard with remote diagnostics to deliver focused uptime support. Fuel savings is one reason the MX-13 continues to gain popularity in the heavy-duty market.

An MX-13 engine has broad torque curves, so it requires less shifting, and the quiet operation improves the driving experience.

State of development: *exploratory research*

Contact: mariusalexistoc@gmail.com

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

24.

Title: NUMERICAL ANALYSIS AND DYNAMIC STUDY FOR THE MACPHERSON TYPE SUSPENSION

Patent/project number: *Student Project*

Author/s: *Sircu Alexandru-Ionel, Szőke Laurențiu-Ilie, Mihăilescu Flavia-Maria*

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

Category: *D*

Description: *The purpose of this dynamic study by numerical simulations of the MacPherson strut suspension is to highlight the dynamic differences between the stock and heavy MacPherson suspension duty for the Volkswagen Jetta.*

One of the specific objectives of the paper is to compare the two types of springs, the stock with which the car is equipped at the factory and the modified one, the heavy duty variant.

The second specific objective is to compare the two types of springs in relation to the two heights of the speed limiter and the two types of tires. The third objective of this paper is to perform a comparative analysis of the main components of a shock absorber assembly, statically through tests.

State of development: *scientific paper*

Contact: cosmin.preda@ulbsibiu.ro +40736646553.

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

25.

Title: PROCEDURE FOR OBTAINING A COMPOSITE COATING WITH INCREASED DURABILITY ON A METAL SURFACE

Patent number: *RO A00150/2023*

Authors: *Vili Pasăre, Dan Florin Nițoi, Augustin Semenescu, Mihnea Cosmin Costoiu, Oana Roxana Chivu, Dragos-Florin Marcu, Radu Claudiu Fierăscu, Irina Fierăscu, Raluca Somoghi*

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

Category: *D*

Description: *The invention refers to a procedure for obtaining a composite coating with increased durability on a metal surface, especially on a brake roller, by successively depositing of layers of liquid epoxy*



resin mixed with sand granules on a metal surface, supported and rotated by using some bearings assembled in a casing which in turn is mounted on a support plate.

State of development: Prototype

Contact: Professor Habilitatus Augustin SEMENESCU augustin.semenescu@upb.ro

Presentation link: <https://upb.ro/en/>

26.

Title: COMPOSITE COATING MATERIAL WITH ANTI-CORROSIVE AND ANTI-SCRATCH PROPERTIES

Patent number: RO A00151/2023

Authors: Radu Claudiu Fierăscu, Vili Pasăre, Augustin Semenescu, Mihnea Cosmin Costoiu, Dan Florin Nițoi, Oana Roxana Chivu, Dragos-Florin Marcu, Irina Fierăscu, Raluca Somoghi

Institution: National University of Science and Technology POLITEHNICA Bucharest & ICECHIM Bucharest

Category: D

Description: The present invention refers to a composite coating material, which simultaneously presents high cohesion and a high degree of scratch resistance, dedicated to the steel-carbon type support materials, offering at the same time anti-corrosion protection.

ADVANTAGES OF THE PROPOSED INVENTION

- filler materials with anti-corrosive effect (zinc oxide and magnetite)
- does not affect the structure of the treated material
- high cohesion and scratch resistance
- can be applied on different types of metal materials

State of development: Prototype

Contact: Professor Habilitatus Augustin SEMENESCU augustin.semenescu@upb.ro

Presentation link: <https://upb.ro/en/>

27.

Title: DETERMINING THE INTERNAL FORCES WITHIN A TRUSS BEAM USING ANALYTICAL CALCULATION AND FINITE ELEMENT SIMULATION METHOD

Patent/project number: Student project

Author/s: Gabriel Ghișoiu, Liviu Baboi, Andrei-Nicolae Chirilă

Institution: Lucian Blaga University of Sibiu, Faculty of Engineering

Category: D

Description: Lattice girders represent an interesting subject for engineers. They are predominantly used in the field of bridge construction or load-bearing structures. The design of bridges has advanced significantly in the past decades, but in order to ensure the safety of those who use them, it is crucial for these structures to be designed and tested beforehand. This paper deals with the analytical calculation and finite element simulation of a lattice girder prototype, aiming to determine the stresses that arise at the level of the girders and joints.

State of development: scientific paper



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Contact: robert.bleotu@ulbsibiu.ro +0761012110

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

28.

Title: INSTALLATION USED FOR THE COLLECTION AND STORAGE OF THE MICROPARTICLES RESULTED FROM THE WEAR OF THE CAR BRAKES

Patent/project number: A/000805/09.12.2022

Author/s: Pavel Ștefan, Ungureanu Daniel-Viorel, Pascu Ioan-Bogdan

Institution: Politehnica University of Timisoara

Category: D

Description: The invention refers to an installation intended for the collection and storage of the microparticles generated by the wear of the brake pads of autovehicles, in order to reduce the pollution and limit various respiratory ailments for humans.

Advantages:

- The installations does not use substances or chemical products that can affect the environment;
- The installation requires a simple maintenange, which is done by replacing the water container, when the vehicle computer signals it;

State of development: Prototype

Contact: pavelstefanel@gmail.com

Presentation link: https://www.upt.ro/Universitatea-Politehnica-Timisoara_en.html

29.

Title: INSTALLATION FOR CLEANING LIGHTING FIXTURES WITH DIFFUSER, AND FLUORESCENT TUBES OR LEDs, MOUNTED ON THE CEILING

Patent/project number: A/000806/09.12.2022

Author/s: Pavel Ștefan, Ungureanu Daniel-Viorel

Institution: Politehnica University of Timisoara

Category: D

Description: The invention refers to an installation intended for the cleaning operation of lighting fixtures equipped with a light diffuser and fluorescent tubes or LED ubes, fixed/mounted on the ceiling.

Advantages

- The presented installtion does not use substances or chemical products, which can affect the environment; Greater energy efficiency through reduced electricity consumption;
- Monitoring and archiving/storing the specific data of lighting parameters (lux) before and after the operation of cleaning the diffuser of the lighting fixtures and, if necessary, changing the lamps related to the lighting fixtures;
- Work accidents of the maintenance personnel of the lighting fixtures with diffuser mounted/fixed on the ceiling, are significantly reduced;

State of development: Prototype

Contact: pavelstefanel@gmail.com

Presentation link: https://www.upt.ro/Universitatea-Politehnica-Timisoara_en.html



30.

Title: AUTONOMOUS CAR WITH OBSTACLE AVOIDANCE AND PARKING OPTIONS WITH ARDUINO

Patent number: Research project

Author/s: Eugen BIRTOK, Raluca ROB

Institution: Politehnica University of Timisoara; Faculty of Engineering Hunedoara

Category: D

Description: This project presents the construction of an autonomous car and its programming in order to accomplish various abilities. The car is constructed on a chassis with four dc motors. The car controller is an Arduino Uno development board which is programmed in order the car is able to manage itself, avoiding the encountered obstacles. The distance to the obstacles can be modified by the user.

An ultrasonic distance sensor is used for acquire the distance measurement. Like any autonomous car, the manual command options when required are mandatory. Therefore, an application on mobile phone is programmed. This application permits the motors controls on forward, backward, left and right turn, parking, using bluetooth transmission.

In the construction of this car were necessary the following parts:

Arduino Uno development board

Driver for L298N integrated circuit motors connects to Arduino digital pins.

HC-05 bluetooth module

Ultrasonic sensor HC-SR04 (to avoid obstacles and parking)

SG90 servomotor (for sensor movement at a certain angle)

DC 12V Battery Pack 3000mAh Rechargeable Lithium Battery Pack

65 mm Rubber Wheel RC Model Tires

Description of the Arduino program

A function has been programmed for each order. Thus, the Forward () function sends appropriate logic levels to the input pins in the driver, so that the wheels allow forward movement. To enable communication with the bluetooth module, the #include <SoftwareSerial.h> directive in the source code includes retrieving information about the bluetooth transmission in a switch () structure. The novelty consists in the implementation of two functions of modifying the engine speed. For parking I make a function Parking, and a function for Autonomy.

State of development: prototype

Contact: eugene_birtok@yahoo.com

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

31.

Title: CUSTOMIZED SPRINTER 311cdi Doka

Patent/project number: student project

Author/s: Călin Rareș TEODORESCU; coordinator Corneliu BIRTOK-BANEASA

Institution: Politehnica University of Timisoara, Faculty of Engineering Hunedoara

Category: D



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Description: The project presents a method of increasing the performance of the Mercedes van, model Sprinter 311cdi Doka, by implementing solutions to optimize the main functional systems, respectively the stages of the RAR approval procedure. Mercedes is a successful German brand, the Sprinter model launched on the market in 1995 and which established itself through performance, reliability/cost in the automotive industry, being among the most used vans worldwide.

The project started with the purchase of a second-hand van manufactured in 2001 with the following characteristics:

Manufacturer: Mercedes-Benz

Model: Sprinter 311 Doka flatbed trailer DPF

Year: 2001

Category: Van or truck up to 7.5t / Stake body

Engine Power: 80 kW (109 PS)

Fuel Type: Diesel

Gearbox: Manual transmission

Permissible Gross Vehicle Weight(GVWR): 3,500 kg

Cab Type: Double Cabin

Emission Class: Euro4

Length: 5,715 mm

Hight: 2,631 mm

Wheelbase: 3,556 mm

The Sprinter 311cdi Doka model was originally designed with a fixed integrated flatbed, without the possibility of tipping, the disadvantage of this feature is that it requires a relatively increased time to unload the load. The main change consisted in the implementation of a tipping kit, respectively the installation of a mobile flatbed with the aim of facilitating the faster unloading operation of the transported load.

State of development: Product

Contact: trarescalin@icloud.com

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

32.

Title: IN-WHEEL DIRECT DRIVE ELECTRIC MACHINE FOR RAILWAY TRANSPORTATION VEHICLES

Patent/project number: Patent OSIM: RO134496- B1/30.06.2022

Author/s: Ștefan Breban, Marius Alexandru Drancă, Marius Fărtan

Institution: Technical University of Cluj-Napoca

Category: D

Description: The invention presents an electric propulsion machine, with permanent magnets and axial flux, consisting of a stator mounted on a fixed shaft and a rotor consisting of permanent magnets mounted on a ferromagnetic part attached to the vehicle wheel. The ferromagnetic piece has a dual functional role: mechanical and rotor yoke. The wheel consists of a main steel piece, an elastic element (rubber), a steel wheel rim and a clamping ring. The wheel is mounted on a fixed axle by means of a radial-axial bearing intended for the railway field, in classic construction, with spacer rings and mechanically fixed caps with screws, which allows rotational movement and radial-axial fixation of metal wheel.



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State of development: patent, scientific paper, research project

Contact: Liliana.Pop@staff.utcluj.ro

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

33.

Title: HIGH THROUGHPUT SPACEWIRE TO - IEEE 802.11 BRIDGE FOR ON-BOARD COMMUNICATIONS OF SPACE VEHICLES

Patent/project number: Patent application OSIM: A/00200/19.04.2022

Author/s: Emanuel Dumitru Pușchiță, Sandor Botond Kirei, Tudor Palade, Andra Elena Iulia Păstrăv, Rareș Călin Buta, Cristian Codău, Adrian Călin Fărcaș

Institution: Technical University of Cluj-Napoca

Category: D

Description: The invention refers to a spacecraft radio communication bridge that allows the replacement of SpaceWire cable communication links between spacecraft equipment/systems with IEEE 802.11 radio communication links. The bridge is composed of the following major components : level translator, control unit, radio transceiver and an antenna array, the components being integrated on a PCB. The control unit is implemented on an FPGA and comprises a subsystem for managing the Space Wire cable link and a programmable system, respectively. The programmable system allows the subsystem to manage the cable link, control the radio transceiver, and coordinate two-way data transfer.

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

Contact: Liliana.Pop@staff.utcluj.ro

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

34.

Title: MODULAR AND RECONFIGURABLE STRUCTURE FOR A ROUTER GANTRY CNC MACHINE

Patent/project number: Patent application OSIM: A/10073/02.12.2022

Author/s: Cornel Ciupan, Claudiu-Ioan Rusan, Mihai Ciupan

Institution: Technical University of Cluj-Napoca

Category: D

Description: The invention relates to a mechanical structure for a router gantry machine. The structure of the machine, made of extruded aluminum profiles, consists of two upright beds (M) connected by connecting elements (5) and a table (B) that can be placed at different heights, the uprights (M) having the guides placed at the top on which the gantry (G) moves, in the shape of a straight beam, which provides increased rigidity compared to a "U" shaped gantry.

By applying the invention, the following advantages are obtained:

- modular mechanical structure, simple and reliable, at a low production cost;
- increased rigidity in relation to the weight of the structure;
- reconfigurable structure in relation to the dimensions of the parts and the type of operation (milling, laser or AWJ cutting).

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



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Contact: Liliana.Pop@staff.utcluj.ro

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

35.

Title: APPLICATIONS OF ASSISTED PROGRAMMING ON MILLING MACHINING CENTERS

Patent/project number: Student Project

Author/s: Pinca-Bretotean Alexandru Mihai

Institution: Politehnica University of Timisoara, Faculty of Engineering Hunedoara

Category: D

Description: The main objective of the project is the study, programming, and computer-assisted manufacturing on milling machines for a prismatic component with an aesthetic role. The component within the project is an interpretation of the logo of Politehnica University of Timisoara, an idea that emerged on the occasion of its 100th anniversary in 2020 and has since remained an emblem of the technical university of Timisoara. In recent years, this emblem has undergone various aesthetic modifications. The originality of this project lies both in terms of design and the technological manufacturing process. The prismatic component in the form of an anniversary plaque is made of aluminum, with starting semi-finished dimensions of 150 x 100 mm and a thickness of 10 mm. Computer-aided programming of prismatic parts was carried out using the CAD/CAM program, KELLER CNC Milling. The completed program will be implemented on a CNC with three-axis. The chosen machining strategy for generating tool paths had a significant influence on the machining time of the component. Thus, the project requirement of a machining time below 15 minutes was met, as the actual machining time of the component was 13 minutes and 44 seconds. Achieving this time was due to optimizing the cutting parameters, the sequence of tool path generation, and eliminating idle time. The actual machining time influences the manufacturing cost and, consequently, the final product price. The original contributions of this project include interpretation of the logo of the Politehnica University of Timisoara in terms of design and the technological process of creation, designing the piece by determining dimensions, defining geometric details, necessary tolerances, and technical specifications of the logo, material selection, choosing the machining strategy and method for generating cutting tool trajectories, selecting milling tools and parameters, creating the CNC program, setting up the milling machine, correctly mounting and securing the work-piece, and ensuring proper system stability for machining, monitoring and controlling the machining process.

State of development: Accomplished, monitoring and controlling the machining process

Contact: alexandru.pinca@yahoo.com

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

36.

Title: SOLAR DRONE

Patent/project number: RO132245 B1

Author/s: Arghirescu Marius

Institution: Asoc. 'Iustin Capra'



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Category: D

Description: The invention relates to a solar drone having a skeletal frame (1) on which there are fixed thin photovoltaic batteries (2) made on plastic support, of the body part, (3), of the wings (4) and of the tail (12), some vertical propellers (7, 8, 9) with electric motor (c) and mini-turbine (b), a charge (15) with a control system (15'), a battery (k), some legs and two horizontal propellers (10) having a tubular body (l) and a funnel-shaped aperture in which a mini-turbine (b) is fastened to the shaft of an electric motor (c) fixed to the tubular body (l), at least one vertical thruster (9) having a mixed propeller (b'), of axial-radial suction, for generating also Coandă effect.

State of development: prototype

Contact: maris3a@yahoo.com

Presentation link:

37.

Title: METHOD AND SYSTEM FOR ACCELERATED ARTIFICIAL AGING OF THERMOPLASTIC OR COMPOSITE MATERIALS

Patent/project number: Patent No. RO 131897 B1 / 29.04.2022 OSIM Bucharest.

Author/s: Alin Constantin Murariu, Lorand Kun

Institution: National Research & Development Institute for Welding and Material Testing – ISIM Timisoara

Category: D

Description: The method is based on the accelerated degradation of samples using ultraviolet (UV) lamps and comparing their physical-mechanical characteristics before and after the artificial ageing process. The accelerated artificial ageing system use UV radiation to age thermoplastic or composite materials. The system presented in figures designed to achieve accelerated materials degradation under controlled conditions, to estimate their behavior over time in industrial working conditions.

Advantages:

- eliminates the effect of heat on samples, degradation being achieved exclusively by exposure to UV radiation and not by the cumulative effect of UV and IR radiations;
- provides high flexibility, as the method can be applied to different sizes of thermoplastic components, i.e. the system can be set to operate in different irradiation / temperature / time regimes, according to the requirements;

State of development: concept

Contact: ISIM Timisoara, isim@isim.ro +40256491831

Presentation link: www.isim.ro

38.

Title: DEVICE FOR TRANSVERSE PROCESSING THROUGH THE WATER JET CUTTING PROCESS

Patent/project number: Patent No. RO 131032 B2 / 30.03.2020 OSIM Bucharest.

Author/s: Nicuşor-Alin Sîrbu, Ion Aurel Perianu, Dan Ionescu



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Institution: National Research & Development Institute for Welding and Material Testing – ISIM Timisoara

Category: D

Description: The device for transverse processing by the water jet cutting process, in which the workpiece is fixed, can be positioned in a horizontal plane or inclined to the horizontal plane of the work surface. It is possible for the workpiece to be mechanically inclined by means of transmissions (stepper motor-reducer) which have the effect of providing the inclination angles of the workpiece in the vertical and/or horizontal plane, so this possibility can be used either in ordinary processing operations, either to be included in the aforementioned program, i.e. the automatic operating program.

State of development: concept

Contact: ISIM Timisoara, isim@isim.ro +40256491831

Presentation link: www.isim.ro

39.

Title: MeASURING SYSTEM AND METHOD OF ABRASIVE WATER JET DIAMETER, TO CONTROL THE CUTTING PROCESS

Patent/project number: Patent No. RO 130944 B2 / 30.03.2020 OSIM Bucharest.

Author/s: Ion Aurel Perianu, Victor Verbițchi, Dan Ionescu

Institution: National Research & Development Institute for Welding and Material Testing – ISIM Timisoara

Category: D

Description: The invention relates to a system and method for measuring the diameter of an abrasive waterjet, intended for industrial cutting applications. The system according to the invention comprises a video camera (6) positioned on a displacement system of a cutting machine (7) controlled by a numerical control unit (11), which communicates, via a data bus (14), with a computer (13) equipped with specialized software for recognizing the image of an abrasive waterjet (5) from a cutting head (3), processing the image, and transmitting real-time correction signals through a data bus (16) to an abrasive feeder (4) and, through another data bus (17), to an actuator (18), for adjusting certain cutting process parameters. The method according to the invention involves capturing the image of an abrasive waterjet using a video camera, processing the jet's image by a specialized computer, processing the data, and adjusting cutting process parameters through an actuator.

State of development: concept

Contact: ISIM Timisoara, isim@isim.ro +40256491831

Presentation link: www.isim.ro

40.

Title: DEVICE FOR OPERATING A WATER JET CUTTING HEAD

Patent/project number: Patent No. RO 130835 B1 / 30.04.2019 OSIM Bucharest.

Author/s: Nicușor-Alin Sîrbu, Dan Ionescu

Institution: National Research & Development Institute for Welding and Material Testing – ISIM Timisoara



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Category: D

Description: The invention relates to a device for operating a waterjet cutting head, with the aim of correctly positioning it in relation to the working surface, used in the machine construction industry. The device according to the invention consists of a carriage (13) driven by a drive unit composed of an electric motor (14) and a speed reducer (15) to achieve vertical movement. A waterjet cutting head is mounted on the carriage (13), and the carriage (13) has a set of four rollers (11) that provide vertical movement along two guide rails (2). The four rollers (11) are mounted on the carriage (13) through supports (10) equipped with rods (12) and spiral springs (6) and execute horizontal movements that can compensate for any inaccuracies in the assembly or execution of the guide columns (2) or the rollers (11) or wear and tear.

State of development: concept

Contact: ISIM Timisoara, isim@isim.ro +40256491831

Presentation link: www.isim.ro

41.

Title: DEVICE FOR WATER JET CUTTING PROCESSES

Patent/project number: Patent No. RO 130329 B1 / 29.11.2018 OSIM Bucharest.

Author/s: Ion Aurel Perianu, Nicușor-Alin Sîrbu

Institution: National Research & Development Institute for Welding and Material Testing - ISIM Timisoara

Category: D

Description: The invention pertains to a device for waterjet cutting or abrasive waterjet cutting processes, used in the machine construction industry. The device according to the invention consists of a metal frame (1) with a height of 100 mm, which has two faces (A and B), some support elements (2) with a height of 100 mm, made in a welded construction, adjustable legs (9) that allow for the leveling of the device, guiding elements (5), a slide (6), and a rail (7), all necessary for positioning the workpiece to be processed with a waterjet on the surface of the metal frame (1).

State of development: concept

Contact: ISIM Timisoara, isim@isim.ro +40256491831

Presentation link: www.isim.ro

42.

Title: WATER QUALITY VERIFICATION SYSTEM ADAPTED TO TELEPRESENCE ROBOTICS

Patent/project number: Student project

Author/s: Petrariu Sebastian Daniel (student - L.T.E. „D. Hurmuzescu” Deva); Paul Țoța (coordinator)

Institution: Hunedoara County Center of Excellence

Category: D

Description: The project consists in adapting the method of water testing with the help of colored strips to be used with telepresence robots in the field or in laboratory conditions. Basically, the telepresence robot is



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attached to color sensors that make it possible to read the colors from the strips in commercial water analysis kits.

State of development: *Experimental prototype*

Contact: paultota79@yahoo.com

Presentation link: <https://cexhd.ro/despre/>

43.

Title: SIMULATION OF CASTING AND SOLIDIFICATION OF BRAKE SHOES FROM PHOSPHOROUS CAST IRON

Patent/project number: *PhD thesis*

Author/s: *Flavius Bucur, Ana Socalici, Vasile Putan, Ana Josan, Marius Ardelean*

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

Category: *D*

Description: *The solidification of cast metal alloys in parts greatly influences the quality of the cast parts. The solidification process influences the micro and macrostructure of the parts, their compactness, mechanical strength, dimensional accuracy and surface quality. When making brake shoes intended for rolling stock, P10 phosphorous cast iron is the most widely used. Solidification modeling and simulation was done using SolidWorks and Altair Inspire Cast. The solidification process of brake shoes is influenced by constructive and technological factors.*

ACKNOWLEDGMENT: *This paper was financially supported by the Project "Network of excellence in applied research and innovation for doctoral and postdoctoral programs" / InoHubDoc, project co-funded by the European Social Fund financing agreement no. POCU/993/6/13/153437.*

State of development: *Doctoral research project*

Contact: flavius_bucur@yahoo.com

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

44.

Title: SOFTWARE FOR THE AUTOMOTIVE INDUSTRY

Patent/project number: *Student project*

Author/s: *Raluca DĂNILĂ; Coordinator: Corneliu BIRTOK-BĂNEASĂ*

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

Category: *D*

Description: *The study presents the standards in software development and the security requirements of the associated solutions for the automotive industry. Automakers have opted to outsource non-essential activities and prefer to purchase off-the-shelf components or services at low cost rather than produce them in-house. This consideration applies to software and hardware embedded in a motor vehicle. The development of integrated technologies facilitates access to data and the management of remote things increases the level of complexity. The possibility of remote management creates the possibility of connection interception, fraudulent data collection and even manipulation of the "object". It is thus necessary to implement standards in software development for the automotive industry. The best-known examples of*



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mandatory standards related to software development are those related to information security and, more recently, to the protection of personal data. Specific requirements for these purposes are covered by the ISO/IEC 27000 and GDPR family of standards.

Contact: dani.raluca2002@gmail.com

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



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E - Teaching methods, Books, History and Cultural studies

1.

Title: *PERPSECTIVES IN EARLY DIAGNOSIS OF SEPSIS AND SEPTIC SHOCK /
PERSPECTIVE ÎN DIAGNOSTICUL PRECOCE AL SEPSISULUI ȘI ȘOCULUI SEPTIC*

Patent/project number: ISBN 978-606-27-2246-3

Author/s: Gabriel-Petre GORECKI, Daniel COCHIOR, Cosmin MOLDOVAN

Institution: Titu Maiorescu University, Faculty of Medicine

Category: E

Description: Sepsis and septic shock represents major health issues affecting millions people around the world, raising a high mortality and morbidity for patients. The morphologic study of microcirculation is of paramount importance due to microvascularization that is directly involved in the ethiopathology of the acute inflammatory states. Oral videocapillaroscopy in our study was made with a prototype of device called „ Digital videocapillaroscope” (patent application A/00285/2018) which allow an early diagnosis of sepsis and septic shock.

State of development: Book

Contact: gabygo2006@yahoo.com

Presentation link: <https://www.hamangiu.ro/gabriel-petre-gorecki>

2.

Title: *THE 6 STEPS TOWARD FULFILLMENT / CELE 6 TREPTE CATRE IMPLINIRE*

Patent/project number: Book

Author/s: Marius Ciprian Nicolae

Institution: Nicolae Marius Ciprian I.I.

Category: E

Description: I am a physician, I worked for several years as a manager in a multinational pharmaceutical company, then I became an entrepreneur, being a partner in several companies. For 25 years I have been reading self-help books, written by great authors, Napoleon Hill, Dale Carnegie, Bob Proctor, Jack Canfield, Joe Dispenza, Robin Sharma, Tony Robbins, etc. I am really passionate about this field and all this reading combined with my experience lead me to writing books.

The book represents the spiritualization of my experiences and lessons that I will be presenting in the six chapters of the book, which correspond to the six steps I believe we must climb in order to reach fulfillment: Vision, Visualization, Commitment, Perseverance, Balance, and Gratitude.



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The way I see things, fulfillment is much more important than success, whether it is a financial, professional, scientific, or notoriety success.

Someone can have success and yet not feel fulfilled, and vice versa, can be unsuccessful by generally accepted standards and yet feel fulfilled. I tried to be direct and use plain speech, more specific to oral expression than written as if we were having a discussion among friends.

The book has many real examples, with notorious people, as well as ordinary people, whom I know personally, all of them being proofs that these things work in real life and are not just theories.

I wrote the book thinking it would be useful for young people as well as for mature because it is never too early or too late to apply these principles, as Colonel Sanders proved by founding KFC when he was over 60 years old.

State of development: Book

Contact: doctorcip@doctorcip.eu

Presentation link: Youtube: <https://www.youtube.com/c/DoctorCip>

Facebook: <https://www.facebook.com/ciprian.nicolae.98/>

Instagram: [ciprian.nicolae.98](https://www.instagram.com/ciprian.nicolae.98/)

3.

Title: A.D.O.R.

Patent/project number: Human rights support project

Author/s: Anca Maria Dorina & ADOR team

Institution: Association for Human Rights and Representation

Category: E

Description: The purpose of the ASSOCIATION FOR HUMAN RIGHTS AND REPRESENTATION – ADOR is in mainly, the support of human rights, and to increase it, it proposes a series of objectives, including:

- monitoring local, parliamentary, European parliamentary, presidential elections and referenda local and national, through accredited observers and through any other legal means;
- creation of information centers and legal advice in the matter of human rights and social protection;
- carrying out studies, analyses, researches, opinion polls on different topics;
- promoting volunteerism, especially among young people.

Through the VOLUNTEERS FOR LIFE AND DEMOCRACY project we propose to initiate and introduce the practice of dialogue with the all actors can contribute ideas, to promote structured dialogue between decision-makers at political level and civil society, in order to ensure the effective participation of employees in the electoral process. Also, through active involvement of our non-governmental organization in non-formal and informal education activities, we will lay the foundations the process of introduction into the formal curriculum of political education.

Activities carried out:

- attracting/training volunteers;
- electoral information/education of students from colleges and high schools in Cluj-Napoca and Dej.

State of development: attracting and training volunteers

Contact: asociatie.ador@gmail.com

Presentation link: <https://asociatia-ador.ro/>



4.

Title: COLPOSCOPY AND CYTODIAGNOSIS / COLPOSCOPIE SI CITODIAGNOSTIC

Patent/project number: ISBN 978-606-011-136-8

Author/s: Liana Ples, Anca Daniela Stanescu, Octavian-Gabriel Olaru, Mircea-Octavian Poenaru, Romina-Marina Sima

Institution: University of Medicine and Pharmacy "Carol Davila" Bucharest

Category: E

Description: A comprehensive book about cervical pathology and efficient methods of diagnosis. Colposcopy was first introduced into the arsenal of gynecological investigations in the last century by Hinselman (Germany 1925). Although the term colposcopy refers to the examination of the vagina, the original intention of the inventor of this investigation was to detect cervical cancer. The initially described work method had as its starting point the idea that epithelial lesions of the cervix are precursors of cervical cancer and can be highlighted by magnifying under a magnifying glass. The first working protocols were difficult and they were abandoned, especially since they do not represent an acceptable method of cervical cancer screening. Another important stage in the detection of cervical cancer, although initially it was not correlated with colposcopy, is the introduction in 1927 by Babeş and in 1928 by George Papanicolau of the cervical desquamative cytology. This method quickly became preferred by gynecologists in the detection of cervical cancer in the USA where colposcopy was an almost unknown method until 1960. From this moment colposcopy became a way of monitoring abnormal cytology results here as well. Colposcopy was thus validated as an intermediate method for following up abnormal cytology to avoid the unnecessary practice of cervical biopsy, an expensive, invasive and often unnecessary method. Cervical cancer is the main cause of neoplastic death among the women. In developed countries, thanks to the introduction of cytological screening, the incidence of cancer has decreased appreciably. This is due to the detection and treatment of precancerous lesions. In developing countries, however, cervical cancer remains a public health problem.

State of development: Book

Contact: liana.ples@umfcd.ro

Presentation link: Editura Universitară, Carol Davila, Bucuresti, 2020

5.

Title: CUTTING MECHANISMS METALLURGY PRODUCTS KINEMATIC AND KINETOSTATIC ANALYSIS

Project number: ISBN 978-9975-47-199-2.

Authors: ADINA BUDIUL BERGHIAN

Institution: Politehnica University of Timisoara, Faculty of Engineering Hunedoara

Category: E

Description: Scissors for cutting metal products play an important role in steel industry. Due to the specificity of their operation, these machines are relatively difficult to study in depth their structure because any stops non-technological means blocking the lamination process. Once put in function, the scissors acquire a "closed box" character that can be observed only the action mode of the knives. As a result, most studies on these machines are experimental. Such a study tries to be also developed in the present work that proposes the use of empirical models and phenomenological characteristics of a scissor with parallel blades of 8000 kN. In the fifth chapter, the kinematic analysis for the model was carried out laboratory with the



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help of a specialized software, Turbo C++. Also within of this chapter, an experimental kinematic study was carried out by measuring accelerations with the help of a bi-axial accelerometer built on the basis of a miniaturized integrated circuit. The results obtained by analytical calculation a the kinematic parameters of the laboratory model of the 8000kN scissor, validates both the simulation with the specialized program and the one obtained by using the built-in accelerometer.

State of development: Book - monograph, Polytechnica publication

Contact: adina.budiul@fih.upt.ro

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

6.

Title: EDUCATIONAL EQUIPMENT FOR SIMULATING INVOLUTE GEARING GENERATION

Patent/project number: ---

Author/s: Milan Stojanović, Pavle Ljubojević, Tatjana Lazović

Institution: Faculty of Mechanical Engineering, University of Belgrade - Serbia

Category: E

Description: The innovation is an improved design variant of educational equipment for the simulation of involute gearing generation, enhancing technical reliability and precision, as well as enabling the simulation of diverse geometric tooth shapes (multivariate system).

In engineering education within the field of machine design and machine elements, a detailed understanding of the theory of gear pairs remains crucial. Students learn about gear geometry, the kinematics of gear meshing, the strength, the calculation of load-carrying capacity, service life, and the reliability of gear pairs in various applications. Despite the presence of modern information technologies, modelling, and computer simulations, the classic traditional approach to learning (or potentially a hybrid approach combining conventional and modern methods) remains the most prevalent in teaching. In this process, laboratory exercises hold significant importance. The training system for simulating the shaping of involute gear tooth profiles is used for several decades in laboratory work within the course "Machine Elements" at the Faculty of Mechanical Engineering, University of Belgrade.

State of development: Prototype documentation (3D model and completed drawings for assembly and single parts)

Contact: pljubojevic@mas.bg.ac.rs

Presentation link: <https://www.en.mas.bg.ac.rs/>

7.

Title: MACHINE ELEMENTS 1 – Problems with Solution

Patent/project number: Book

Author/s: Tatjana Lazović

Institution: Faculty of Mechanical Engineering, University of Belgrade -Serbia

Category: E

Description: The book of tasks and complex problems covering the following chapters from Machine Elements theory: tolerances and fits, load, deformation, stress, safety factor, shafts, axles, keys, rolling and



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sliding bearings, and bolted and screw joints. The book contains 102 small tasks with solutions, 15 combined complex problems solved in detail, and 25 tables with data needed to solve tasks. There are 175 illustrations and 21 references in the book. The book has 212 pages.

The book is methodologically organized into four parts:

I - "small" tasks (102 tasks on 52 pages), grouped in chapters: Standard numbers and standard dimensions - 1 task; Tolerances and fits - 11 tasks; Load, deformation, stress, safety factor - 20 tasks; Shafts, axles, keys - 21 tasks; Rolling and sliding bearings - 20 tasks; Bolted and screw joints - 29 tasks), tasks are arranged from simpler to more complex

II - Tasks solution (30 pages). In the case of simpler problems, only the final solutions are given. In the case of more complex tasks, the solution procedure, solutions of individual steps of the solution procedure are partially given, and the data took from the corresponding tables are also shown. Some solutions are illustrated in detail.

III - Combined complex problem. Each of them partially or fully covers the Mechanical Elements 1 course (15 solved problems on 100 pages). The solving procedures with the results are shown in detail, with reference to the tables from which the data were taken, with illustrations and the necessary explanations.

IV - Tables with the data needed to solve the tasks (25 tables on 17 pages)

State of development: Published, four editions (2013, 2016, 2020, 2022)

Contact: tlazovic@mas.bg.ac.rs

Presentation link: <https://www.mas.bg.ac.rs/biblioteka/izdanja/22>

8.

Title: ENVIRONMENTAL FACTORS AND THE INCIDENCE OF RABIES IN THE ANIMAL BIODIVERSITY OF THE REPUBLIC OF MOLDOVA

Patent/project number: ISBN 978-9975-164-99-3

Author/s: Sergiu BALACCI, Ion BALAN

Institution: Moldova State University, Institute of Physiology and Sanocreatology

Category: E

Description: In this monograph, a descriptive analysis of the data was carried out on the epidemiological situation and incidence of rabies in the world and on the territory of the Republic of Moldova according to the intensity of abiotic factors environmental. The geographic location database of the cases was created of rabies in all species of animals positively identified with the rabies virus, including persons registered on the national territory over the years 2021-2012. At the same time, the chronological distribution database was created monthly number of rabies cases in all infected animal species with the rabies virus during the reference years. The monograph includes a system of monitoring, combating, eradication and prophylaxis measures a rabies in the sylvatic and urban environment. Results and analytical review se addressed to a wide range of specialists in the field of veterinary medicine and human, scientific researchers, PhD students, students and the whole societies aware of the existence of the concept of "One health - man, animal, environment".

State of development: Book.

Contact: Balan Ion, e-mail: balanion@rambler.ru (+373 22) 069124702.

Presentation link: <https://ifs.md/despre>



9.

Title: UAV CONTRIBUTION TO PALEOENVIRONMENTAL MODELING (LIPOVENI II ARCHAEOLOGICAL SITE, REPUBLIC OF MOLDOVA)

Project number: 20.80009.1606.14

Author/s: Sergiu MATVEEV, Veaceslav SPRINCEAN, Vlad VORNIC

Institution: Moldova State University

Category: E

Description: AIM: Capturing aerial photographs with the UAVs for researching the complexity of the landscape, site mapping, as well as the evidence of archaeological complexes. SOLUTION: The application of photogrammetry of aerial images in order to reconstruct them geometrically and their position in space in order to measure them and to represent them graphically and cartographically as accurately as possible based on the Structure for Motion technique offered new research possibilities, the images were processed with two softwares: Pix4D and AgiSoft, succeeding in locating archaeological complexes and water sources, developing the 3D terrain model, the digital terrain model, the digital elevation model, the digital surface model, as well as the reflectance, orthomosaic and thermal map.

State of development: At the laboratory level and preparing the publication.

Contact: sergiu.matveev@usm.md veaceslav.sprincean@usm.md vlad.vornic@usm.md

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

10.

Title: DRONE ARCHAEOLOGY AND IRON AGE LANDSCAPE OF THE MIDDLE DNIESTER BASIN

Patent/project number: 20.80009.1606.14 „The archeological heritage of the Iron Age in the Middle Dniester region and the Cogâlnic River basin: interdisciplinary research and scientific development”

Author/s: Aurel ZANOCI, Veaceslav SPRINCEAN, Mihail BĂȚ

Institution: Moldova State University

Category: E

Description: Using a non-destructive and non-invasive approach, the repeatable documentation of landscape with UAV platform allow to establishing the evolution of the impact of the anthropic factors on the environment.

Oblique aerial photos outlined the layout of the defensive features and how the inhabitants controlled their habitation area. Using Pix4Dmapper and Agisoft Metashape software, the workflow allowed to perform digital elevation models (DEMs), extracted from vertical imagery.

These clearly show the topographic details of the areas where the iron ages fortifications were located, as well micro-relief features of potential underground archaeological structures.

State of development: Laboratory research and publishing process.

Contact: e-mail: veaceslav.sprincean@usm.md

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



11.

Title: SPIRITUALITY: HUMAN-NETWORK CORRESPONDENCE

Patent/project number: research project

Author/s: Mihail-Alexandru Stanescu^[1], Ioana-Adelina Duca^[2], Denisa Maria Cristea^[3]

Mentors: Mariana-Oana Farcas^[2], Carmen Argesanu^[2]

Institution: UNIVERSITY POLITEHNICA OF BUCHAREST^[1], "NICHITA STANESCU" NATIONAL COLLEGE PLOIESTI^[2], "MIHAI VITEAZUL" NATIONAL COLLEGE PLOIESTI^[3], NWERA ASSOCIATION

Category: E

Description: The primary objective of this research is to explore the intriguing correlation between the spiritual evolution of human beings and the progression of network topology. This study seeks to investigate whether parallels can be drawn between an individual's personal journey, particularly in the realm of career development, and the quality of information flow within a software network through various protocols.

A distinctive aspect of this research is the introduction of a novel concept: the "personal growth algorithm." This algorithm is rooted in a meticulously designed network topology, intricately modeled after the complexities of life itself. The crux of achieving success according to this algorithm lies in the seamless integration of information acquisition, practical application, personal development, and career advancement. These four crucial components must be traversed akin to interconnected pathways, each dependent on the other for a holistic approach to personal progression. It is imperative to acknowledge that failure along one path need not spell the end; the principle of network redundancy applies, offering alternative avenues to explore.

Central to the algorithm's efficacy is the "Quality and Quantity of Information" department. This facet centers on amassing the necessary resources to effect change, thereby initiating a trajectory toward success. Drawing a parallel, projects like Erasmus, aimed at individual development, serve as platforms for delving into specific subjects through non-formal education. In this context, the research undertook a case study by analyzing feedback from individuals engaged in Erasmus projects such as Youth Exchange and Training Courses. The intent was to evaluate the algorithm's effectiveness in the practical application department. The ensuing analysis, thus, illuminates the social and career influences of participating in such projects from a personal vantage point.

However, this research isn't merely a conjectural endeavor. It is underpinned by the real-life experiences of accomplished individuals who have burgeoned culturally and technically through their involvement in Erasmus initiatives. Their testimonies paint a vivid picture of how such projects catalyzed personal development and career advancement. Their narratives substantiate the proposed algorithm's potential to steer individuals toward multifaceted growth.

In essence, this research serves as a beacon of insight, shedding light on the entwined journey of self-discovery and technological evolution. By meticulously examining the parallels and correlations between the growth of the human spirit and the evolution of network topology, it contributes to a more comprehensive understanding of the interconnectedness of these two realms. Through its multifaceted analysis, encompassing both theoretical exploration and real-world applications, this study invites contemplation on the shared threads that underpin personal and technological advancement alike. In the process, it offers not only a new lens through which to view human progress but also potential avenues for



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harmonizing our personal journeys with the intricate symphony of network dynamics. In this way, the research sparks a dialogue between the spiritual and the digital, inviting us to reimagine our paths to success in light of the complex interplay between human experience and technological innovation.

State of development: research project

Contact: +40721520080 mihailstanescu.24@gmail.com

Presentation link:

https://drive.google.com/drive/folders/1evwo43BeF1IFxi_zBwpGLfCqTVNTUjxZ?usp=sharing

12.

Title: FLEXIBLE PRODUCTION LINE - experimental teaching stand

Patent/project number: Research project

Author/s: Gelu-Ovidiu TIRIAN

Institution: Politehnica University Timișoara, Faculty of Engineering Hunedoara

Category: E

Description: One of the ways to achieve the goals of Industry 4.0 to produce products customized in one-piece batches is to have machines, equipment, and assembly cells designed so that the entire assembly system is flexible, which is also defined by the reference architecture. Production resources must therefore be modularized.

The entire assembly system is created in a decentralized manner, where the individual modules are designed as a separate cyber-physical system, a mechatronic system with its own control system and connectivity. The module should include a standardized interface so that the module can be connected to the assembly system and manufactured. Industry 4.0 defines this concept as "Plug & Produce".

Modularity is important not only at the level of local automated equipment, but also at the level of machines, stations, assembly cells, or lines.

State of development: experimental teaching stand

Contact: ovidiu.tirian@fih.upt.ro

Presentation link: <https://www.fih.upt.ro/personal/ovidiu.tirian/>

13.

Title: CONTINUOUS CASTING PROCESS OPTIMIZATION THROUGH THE INTELLIGENT WATER FLOW REGULATION SYSTEM FOR SECONDARY COOLING - experimental teaching stand

Patent/project number: Research project

Author/s: Gelu-Ovidiu TIRIAN

Institution: Politehnica University of Timișoara, Faculty of Engineering Hunedoara

Category: E

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: experimental teaching stand

Contact: ovidiu.tirian@fih.upt.ro

Presentation link: <https://www.fih.upt.ro/personal/ovidiu.tirian/>

14.

Title: FORMATION OF THE CHEMISTRY RESEARCH COMPETENCE IN THE INTERDISCIPLINARY UNIVERSITY CONTEXT

Book: ISBN 978-606-11-8277-0

Author: Eduard Coropceanu, Sergiu Codreanu

Institution: Institute for Research, Innovation and Technology Transfer of "Ion Creangă" State Pedagogical University of Chişinău

Category: E

Description The monograph "Formation of the chemistry research competence in the interdisciplinary university context" (ISBN 978-606-11-8277-0, 232 pages) highlights a series of problems in the didactics of natural sciences and proposes solutions effective in the context of contemporary realities.

Concrete models for the synthesis of new coordination compounds are described, the analysis of their composition and structure based on physical methods of investigation, the deciphering of the molecular structure based on X-ray diffraction on a single crystal, in order to identify at the next stage the useful properties and potential fields of practical use.

Thus, the described algorithm focuses not only on carrying out research, but on a series of actions, which orient the process starting from the initial stages - the development of research objectives, the selection of research methods - towards the solution of practical problems (social, economic, etc.) would be the development of new biostimulators of physiological processes in plants, fungi and algae, the enhancement of enzymogenesis processes that would allow obtaining the increased amounts of enzymes needed for the pharmaceutical, food industry, etc.

The didactic technology for training research competence in chemistry students is described. The research activities organized with the students of the faculty, including the optional course Chemistry for life - integrated research contributed significantly to the formation of the students' conception of research and the unity of the picture of the material world, the fundamental laws of nature of the transformation of matter and energy from a form in another, but also of research technologies based on specialized equipment for the study of various compound phenomena.

The curriculum of the optional course aims to develop the skills necessary for professional training: investigative skills, communication skills, digital skills, environmental protection skills, continuous professional training skills, which are very necessary in the context of social integration, but also in the perspective of preparing chemical students for the configuration and development of their own career project.

State of development: Book

Contact: ecoropceanu@gmail.com

Presentation link: <https://icitt.upsc.md/> <https://upsc.md/en/main-page/>



15.

Title: THEORY AND METHODOLOGY OF THE FORMATION OF VALUE ORIENTATION OF ADOLESCENTS AND YOUNG PEOPLE

Book: ISBN 978-9975-56-811-1

Author: Diana Antoci

Institution: "Ion Creangă" State Pedagogical University of Chişinău

Category: E

Description: The monograph "THEORY AND METHODOLOGY OF THE FORMATION OF VALUE ORIENTATION OF ADOLESCENTS AND YOUNG PEOPLE" (ISBN 978-9975-56-811-1, 220 pages, "Print-Caro" Typography, Chisinau, Republic of Moldova) highlights the multiple scientific points of view from a theoretical and applied perspective and notes confusing, contradictory and synonymous interpretations.

The content of the monograph represents various scientific positions from the philosophical, pedagogical, psychological perspectives with reference to the definition of the concepts of value, value orientation, value system; emphasizes the particularities of the manifestation of the contents of value orientations in adolescents and young people.

An important aspect in the work is given to the tendencies to approach and promote values and value orientations in the education system from the perspective of educational policy documents.

The analysis of different scientific positions regarding the process of the formation of value orientations allowed the identification of the structural components of value orientations (behaviors, moods, attitudes, convictions, values) and the determination of the mechanism of value formation and the constitution of value orientation, which, therefore, was researched and verified within the experimental study organized by using 9 psychological instruments and with the involvement of adolescents and young people.

The experimental results obtained highlighted the significant correlations between the structurally established components and constituted the basis for the development and validation of the Questionnaire for the evaluation of value orientations in adolescents and young people and the theoretical foundation and development of the Pedagogical Model for the formation of value orientation in adolescents and young people, through which new results of holding values, beliefs, attitudes and behaviours and maintaining the correlations between them in contemporary teenagers and young people are shown.

The monograph is intended for pedagogues and psychologists, with the intention of changing the interpretation of radically important and significant concepts for society and personality, it contributes to personal and professional training and self-training, focused on achieving and promoting axiological education in society as a whole.

The content of the work synthesizes and valorizes philosophical, pedagogical, psychological, sociological ideas, theories, concepts, principles and paradigms, converting them into significant and substantial contents for the field of Educational Sciences, valuable for the entire educational system and society.

State of development: Book

Contact: antoci.diana@upsc.md

Presentation link: <https://upsc.md/en/main-page/>



16.

Title: CLIMATE CHANGE CURB

Patent/project number: student project

Author/s: Zainab Arzouni

Institution: Shohour Public High School, Lebanon

Category: A

Description: I'm a 18 year old lebanese student joining Shohour public high school in the last year. I launched my own initiative entitled Climate Change Curb, by creating a whatsapp group where I invited people from all over the world, (Lebanon, Egypt, Romania, Malaysia, Indonesia, India, UAE, Zimbabwe...) to join in this initiative. I sent to them videos of me introducing climate change for them to increase awareness of this problem, also I sent them video of me planting trees and they started planting and sent me videos of their plants. I knew that trees is the only cure for Climate Change as one tree can absorb 22KG of Carbon dioxide a year which is huge, since as we know that carbon dioxide is one of the poisonous gasses causing climate change.

State of development: educational environmental project

Contact: zeinabarzouni94@gmail.com

Presentation link: <https://www.youtube.com/shorts/rfG6RfAWXzw>

17.

Title: SCIENCE CAMPS

Patent/project number: Science workshops

Author/s: Tiberiu Stroia & Team

Institution: CASA STIINTEI ASSOCIATION

Category: E

Description: Started three years ago, the project of the ASSOCIATION OF THE HOUSE OF SCIENCE is structured in two main directions. The first is to promote science among students through laboratory activities, science presentations and science camps. The second direction involves the training and preparation of students for Olympiads and other types of competitions with a scientific theme that require in-depth knowledge of mathematics or chemistry.

There is already a SCIENCE HOUSE team, made up of students, teachers and instructors who carry out a series of activities. Some of these take place in the specially designed laboratory and the other scientific activities are carried out in the field.

The House of Science has been carrying out, for almost three years, a series of activities in which students passionate about natural sciences are invited to participate. Science camps, astronomical observation nights, zoom classes, science workshops held in the Association's laboratory and, starting this summer, scientific expeditions.

The study of gases

Children will obtain in the laboratory Oxygen, Hydrogen, Iodine, Acetylene, AMMONIA, HYDROGEN SULPHIDE, and Carbon Dioxide. They will learn the story of the discovery of each gas and will be able to observe, through experiment, the properties of these gases. Experiments carried out by the teacher: obtaining chlorine and ozone.



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SCIENCE IS MAGIC THAT WORKS!

State of development: scientific activities

Contact: contact@casastiintiei.ro +40735 370 327

Presentation link: <https://casastiintei.ro/> <https://www.youtube.com/@casastiintei7098/featured>

18.

Title: CONSTRUCTION AND DIAGNOSTICS OF MULTIPLEXED VEHICLE COMMUNICATION NETWORKS (CAN-bus)

Patent/project number: Didactic simulator

Author/s: Gidali Adrian, Simon Florin

Institution: Sc Garage Training SRL

Category: E

Description: In order to study and verify functionality for different types of multiplexed networks or hardware analysis of frames (messages) related to different types of serial communication protocols, it is necessary to use specific measurement and control equipment (oscilloscope, voltmeter, ohmmeter, ammeter, frequency meter, dwell meter), as well as the use of serial diagnostic testers. Since the use of these communication, measurement and control devices involves basic-medium level knowledge regarding the concepts of electricity, with an emphasis on car electricity, and since the complete CAN-bus course involves time, the support of this course is carried out in two stages, the first part is dedicated to the study and understanding of the introductory notions of automotive electricity and the way in which different sub-systems are mechatronic from the composition of modern vehicles, and the second part being exclusively dedicated to the study of the multiplexed communication networks of motor vehicles.

State of development: experimental teaching stand

Contact: cursuri.garagetraining@gmail.com

Presentation link: <https://www.facebook.com/adrian.gidali>

19.

Title: EMPOWERING YOUNG MINDS

Patent/project number: Educational Project

Author/s: Prof. Dr. Anuja Malik

Institution: New era group of science and technology, New Delhi, India

Category: E

Description: *The Importance of Education and Creativity for Young Students* Knowing and understanding the importance of education and creativity in young students has a profound effect on their adulthood. The benefits of instilling a love for learning and creative endeavors early in life are numerous, and the sooner we recognize this, the better our children's futures will be.

Importance of Education: *Opening New Horizons*

- Allows youngsters to gain knowledge, develop critical thinking skills, and become aware of the world around them.
- Alleviates socioeconomic barriers, offering a level playing field where anyone can learn and grow.
- Provides the flexibility to learn at one's own pace, regardless of location or time constraints.



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The Harmony of Education and Creativity: Unleashing Potentials

The education system should aim to foster creativity, elevating students' potential. Creativity empowers students to think out of the box, enabling them to approach problems from novel perspectives. It enhances their flexibility, adaptability, and resilience, thereby preparing them for the rapidly changing world.

Education and Creativity - A Step Towards a Brighter Future

The significance of both education and creativity for young students cannot be overstated. Not only does it equip young minds with necessary life skills, but it also harnesses their unique potentials. The amalgamation of online or free education and creativity is a window for immeasurable opportunities that young students ought to embrace.

Meta-description: Discover the pivotal role of education and creativity in the lives of young students. Uncover how their intersection can shape a brighter future for our young generation.

State of development: technical teaching

Contact: anujamalik777@gmail.com

20.

Title: TehnoART

Patent/project number: competition of technical creativity

Author/s: Demeter Sorin & LTTD Team

Institution: Liceul Tehnologic "Transilvania" Deva

Category: E

Description: Techno-ART is a national competition for high school students and more. The aim of Techno-ART is technical creativity in this sense students are invited to present their ingenious projects.

The Techno-ART competition focuses on environmental protection so we encourage students to use recycled components from scrap yard.

The participating students transform these scrap into robots, cars, statues, lighting fixtures, figurines or various installations, which leads to the development of the practical skills so necessary for their future careers.

State of development: competition for high school students

Contact: secretariat@cttdeva.ro

Presentation link: <https://cttdeva.ro/>

21.

Title: THE GUIDING LIGHT OF SHARP EDUCATION

Patent/project number: Project student

Authors: Lorena-Maria Constantin

Institution: Nichita Stanescu National College Ploiesti

Category: E

Description: The chosen topic contains complex methods of teaching, is current and of interest in the field of education, the project being especially focused on modern and non-formal methods of teaching, which help pupils and students grow and develop new passions for different areas (Mathematics, IT, History,



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Biology etc.). In this project I focused on Networking, as the main subject because my mentor is Certified in Cisco and Computer Science and I am also learning CCNA R&S (Cisco Certified Network Associate Routing & Switching), but the methods can be used in any domain. The most effective way to put in practice our suggested procedures is by combining non-formal methods with modern methods for teaching: Games/Society games combined with The Star-bursting method, The Coffee Shop combined with Brainstorming, The Storytelling Method with The Cluster Method, The heuristic conversation combined with Debate. The basic requirement of progressive education is to ensure the union individual work with collaborative learning group study activities and interdependent. Therefore, we have created an innovative technique: The Sharp Method. It is designed to maximize the potential of the preexistent methods, in order to help the students grow and develop through their own strength, in a way that fits their unique character and needs. The purpose of the Sharp Method is to promote the interaction of the participants, of their personalities, the accomplishment being a more active learning and with obvious results. This project shows a way to develop your networking skills as a teacher, as a student and as an employee. This concept helps children and teens into developing their minds and their emotional intelligence as well, by persuading them to speak freely in a safe environment. Questions stay at the base of our human beings and so our method encourage students to learn by smartly asking questions.

State of development: PhD thesis, product, research project

Contact: constantinlorenamaria@gmail.com +40787433840

Presentation link:

https://drive.google.com/drive/folders/1uf9PzGA7b74XFTL9OrMti_r7QqA_Xueq?usp=sharing



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F - Medicine, Paramedical, Pharmacy, Cosmetics, Hygiene

1.

Title: EXPERIMENTAL MODEL FOR CANCER TREATMENT

Patent/project number: PhD thesis

Author/s: Stefan TITU, Romelia POP, Teodora MOCAN, Flaviu-Alexandru TABARAN, Alexandru IRIMIE

Institution: University of Medicine and Pharmacy Iuliu Hatieganu Cluj-Napoca, Regional Institute of Gastroenterology and Hepatology Prof. Dr. Octavian Fodor Cluj-Napoca

Category: F

Description: Matrix metalloproteinase -1 has been demonstrated to interfere with cell migration, invasiveness and collagen destruction in cancer patients. In particular, the hemopexin domain of MMP-1 regulates cell behaviour and the concentration upregulation has been known to increase rate of tumor local and metastatic growth.

Also, gold nanoparticles represent FDA-approved solutions for cancer imaging and treatment, due to their high level of biocompatibility. We hereby propose an experimental model that starts with the synthesis of gold nanoparticles (modified Turkevich method). The next step of our concept is represented by binding of the anti-MMP1 hemopexin domain antibody onto the surface of nanoparticles. The newly designed construct has a significant potential for targeting applications (photothermal treatment, tumor imaging) in cancer field.

State of development: experimental model

Contact: dr.teodora.mocan@gmail.com

Presentation link: <http://www.umfcluj.ro/en/>

2.

Title: TECHNOLOGY FOR OBTAINING AN INNOVATIVE ANTIMICROBIAL, NON-ACTIVE MEDICAL DRESSING THROUGH THE USE OF INDIGENOUS BIORESOURCES, NONACTIVPANS

Project number: E!13429, PN-III-P3-3.5-EUK-2019-0237, contract 219/2020-2023

Author/s: Gaidau Carmen Cornelia, Rapa Maria, Stanca Maria, Predescu Cristian, Alexe Cosmin-Andrei

Institution: R&D National Institute for Textiles and Leather

Category: F



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Description: The purpose of the NonActivPans project is to develop new medical dressings based on protein extracts and non-active antimicrobials (without antibiotics) with advanced regenerative properties for the healing of acute and chronic wounds as a result of collaboration between SPD STAR SRL, UPB, and INCDTP, for commercial exploitation. The project aims to exploit proteins extracted from the by-products obtained from processing skins of mammals (rabbit, etc.) and sheep's wool keratin in order to make medical dressings additives with antibacterial and non-active antimicrobial agents (antibiotic-free), with advanced regenerative properties for the healing of acute and chronic wounds through electrospinning technology.

Novelty

- Development of new protein nanofibers with natural or smart antimicrobials with efficiency in hard-to-heal wound healing.
- The use of new collagen sources extracted from donkey hides, rabbit skins, fish scales with improved bioactivity as compared to bovine/pork native collagen.
- The use of wool keratin as bioactive wound healing material.
- Encapsulation of efficient antimicrobials (essential oils, Zn/Ag nanoparticles) into protein nanofibers through co-axial electrospinning.

Acknowledgments: This research was funded by a grant from the Romanian Ministry for Research, Innovation, and Digitalization, CCCDI-UEFISCDI, project number PN-III-P3-3.5-EUK-2019-0237, Contract 219/2020 (NonActivPans), in the frame of Eureka project E!13429

State of development: prototype, patent applications, scientific papers

Contact: carmen.gaidau@icpi.ro

Presentation link: <https://spdgroup.ro/non-active-pans-2-2/>

3.

Title: OPTIMIZATION OF HUMAN MESENCHYMAL STEM CELLS INTERACTION WITH INNOVATIVE BIOMIMETIC STRUCTURES FOR TISSUE ENGINEERING APPLICATIONS

Project number: 621PED/2022 (ID proposal: PN-III-P2-2.1-PED-2021-4275)

Author/s: Alina Vladescu (Dragomir), Anca C. Parau, Irina Titorencu, Catalin Vitelaru, Vasile Pruna, Cosmin M. Cotrut, Diana M. Vranceanu

Institution: National Institute of RD for Optoelectronics INOE2000; University Politehnica of Bucharest; Institute of Cellular Biology and Pathology "Nicolae Simionescu"

Category: F

Description: The project proposes the optimization of human mesenchymal stem cells (MSC) interaction with innovative biomimetic structures in order to create and provide a better environment for osteointegration. The proposed biomimetic HAp structures with different morphologies are obtained by electrochemical means on Ti substrate and are characterized by tailored in vitro behaviour, contact angles smaller than 20°, modified through adequate and optimized manufacturing strategies which provides superior osseointegration abilities.



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Acknowledgement: This work was supported by the Romanian Ministry of Education and Research, CNCS - UEFISCDI, project number PN-III-P2-2.1-PED-2021-4275 (BioMimCells), within PNCDI III (project No. 621PED/2022).

State of development: experimental models

Contact: alinava@inoe.ro

Presentation link: www.biomimcells.eu

4.

Title: ATTITUDES OF NURSES IN ISRAEL TOWARDS WELFARE ISSUES AND JOB SATISFACTION

Patent/project number: PhD thesis

Author/s: ¹Milana Mazal Mazor, ²Luca Florin-Alexandru

Institution: ¹UAIC Doctoral School - Alexandru Ioan Cuza University, ²"Gheorghe Asachi" Technical University of Iasi

Category: F

Description: Research Problem: How can hospitals retain nursing staff and improve their satisfaction through the development of an optimal welfare system?

Purpose of the Study: Developing a model of an optimal welfare system for nursing staff in a hospital.

Research Method: Qualitative research - In the first part of the research, a quantitative research method was used (a method suitable for researching "quantity of data"). After the data was collected, statistical tools were used for their analysis. Using them, the research hypotheses were tested. At the same time, this method was used to check data from existing databases. All data were processed with statistical tools (Descriptive statistics, hypothesis testing, regression, analysis statistical variance, recommendation systems, data mining, etc.). As part of the quantitative research, a questionnaire was delivered to 240 nurses in 3 hospitals in Israel.

The Study Population

The study population divided into three main groups:

Group 1: a team of 20 nurses from 3 hospitals. In each hospital, questionnaires will be distributed in 4 departments Number of participants: 80 nurses in each hospital, a total of 240 nurses.

Group 2: HR managers, employees of welfare departments from 3 hospitals. In every hospital there is one position in the human resources and welfare department that includes: Welfare manager, and a total of 3 participants in this group.

Group 3: department managers, nursing team managers from 3 hospitals. A total of 12 managers/nurses in charge.

Research Tool

Several tools were used in this study. Some of the tools were developed for this study, and some are based on existing questionnaires developed in previous studies in the field.

Tool 1 - for group 1: A questionnaire for nurses consisting of 4 main parts:

Part A - Personal/demographic data

Part B - The existing welfare system in the hospital (according to the nurses' perception)

Part C - The nurses' satisfaction with their work today



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Part D - What is the most important welfare component for nurses

State of development: Doctoral research project

Contact: mazalr44@gmail.com

Presentation link: <https://www.uaic.ro/en/studies/doctoral-schools/>

5.

Title: DESMO-761: A NOVEL DRUG FOR TREATING THROMBOSIS

Patent/project number: PhD thesis

Author/s: Sara SHEIKHLARY

Institution: The University of Arizona, USA

Category: F

Description: Desmo-761, is a novel drug that can treat/prevent thrombosis (blood clot) formation by preventing the platelet activation and removing the already formed thrombus. It is composed of EGB 761 (the major compound in Ginkgo Biloba with anti-thrombotic effects) and Desmolaris (the major anti-coagulant agent in vampire bat's saliva). These compounds have been loaded in niosome lipid nanoparticles at specific concentrations (such nano system can deliver both hydrophilic and hydrophobic drugs together and can improve the oral bioavailability of the drug).

Compositions:

- EGB 761 (Ginkgo Biloba leaf extract) in the inner layer + Desmolaris (the major anti-coagulant agent in vampire bat's saliva) in the outer layer. Niosome is made up of DPPC lipids which can reduce platelet activation by themselves.

Mechanism of action:

- Removing the already formed thrombus
- Preventing platelet activation and thus thrombus regeneration
- Maintaining the homeostasis by not inducing excessive bleeding.

State of development: Idea and a newly started research project

Contact: Sara Sheikhlary sheikhlary@arizona.edu

Presentation link:

https://drive.google.com/file/d/1MqI0n8PQmnmf54eqxqAtdtXfBeBeyyByZ/view?usp=share_link

6.

Title: THE IMPORTANCE OF PREIMPLANTATION DIAGNOSIS IN GENODERMATOSES

Patent/project number: PhD thesis

Authors: Silvia Popescu ¹, Zoltan Janos Kövér ¹, Călin Giurcăneanu ^{2,3}, Gabriel Gorecki ^{1,4}

Institution: 1) CF2 Clinical Hospital, Marasti Bd, no 63, sector 1, Bucharest, Romania; 2) Elias Emergency University Hospital, Marasti Bd, no 17, sector 1, Bucharest, Romania; 3) "Carol Davila" University of Medicine and Pharmacy, Dionisie Lupu Str, no 37, sector 2, Bucharest Romania; 4) "Titu Maiorescu" University of Medicine, Dambovnicul Tineretului Str, no 22, sector 4, Bucharest, Romania

Category: F



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Description: Genodermatoses represent relatively rare chronic conditions with multiorganic and multisystemic involvement that leads to major psychosocial impact. Prenatal screening and diagnostic techniques are of particular importance in the early detection of severe conditions associated with increased morbidity and mortality, thus allowing competent counseling and the possibility of making informed decisions that take into account the implications of these diseases without omitting complex ethical considerations. Preimplantation diagnostic techniques may give future parents the opportunity to prevent psycho-emotional traumas and at the same time, the chance to have healthy pregnancies and offspring.

Introduction and objectives. Genodermatoses represent relatively rare chronic conditions, but with major psychosocial impact. The incidence of these diseases varies between 1:6000 and 1:500.000 and is constantly increasing, possibly due to the development of more effective diagnostic methods. The severity of genodermatoses varies, in some cases presenting as severe diseases which significantly alter the quality of life, reduce life expectancy and have a major impact on the patients' families. Also, these afflictions are associated with an increased risk of malignant degeneration and disabling complications, which often lack concrete therapeutic solutions and require a complex multidisciplinary regimen, so that they constitute important public health problems in terms of consumed resources.

Materials and Methods. Prenatal screening and diagnostic techniques are of particular importance in the early detection of severe conditions associated with increased morbidity and mortality, thus allowing competent counseling and the possibility of making informed decisions that take into account the above mentioned implications of these diseases without omitting complex ethical considerations. Pre-implantation diagnosis is possible by means of PCR techniques and DNA haplotyping and can be carried out in various evolutionary stages (pre- or post-fertilization). Should the results of these test exclude genetic abnormalities, implantation is possible 2-3 days after the tests.

Results and Conclusions. Although these tests are not foolproof (2-11% risk of failure), are extremely expensive and are not yet widely available, they hold a great potential for the future approach of genodermatoses. The diagnostic and therapeutic approach to genodermatoses requires the coordination and collaboration between members of a multidisciplinary team that includes specialists with a wide range of complementary skills united in a common effort with the main goals including diagnostic accuracy, improvement of medical services offered to the patients and at the same time, improving the cost-benefit ratio, which brings unequivocal benefits to both the patient and the medical system.

State of development: Doctoral research project

Contact: Silvia Popescu eclarer_mon_ame@yahoo.com +40731623309

Presentation link: non-applicable

7.

Title: COSMETIC FORMULATION FOR SUN PROTECTION WITH ANTIMICROBIAL EFFECT BASED ON SILVER NANOPARTICLES AND NATURAL EXTRACTS AND PROCEDURE FOR OBTAINING IT

Patent number: Patent application 0375/2023

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



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

Category: F

Description: The present invention relates a cosmetic formulation for sun protection, based on silver nanoparticles and natural extracts from viticulture waste and the method of obtaining it. The proposed material is obtained in the form of a hydrogel (with the composition: carbopol 0.5...1.5%; the active substance silver nanoparticles 4...8% in dispersion, natural extract from vine shoots wastes 4%.. .8%, obtained by microwave extraction, glycerin 10...14%), for its emollient properties, non-greasy texture, ease of handling, compatibility with various excipients and miscibility in water, isopropyl alcohol (9...11%) and water (58..72%).

Acknowledgements. This work was supported by a grant of the Ministry of Research, Innovation, and Digitization, CCCDI-UEFISCDI, project number PN-III-P2-2.1-PED-2021-0273, contract 644PED/2022, within PNCDI III. It is also acknowledged the support of Ministry of Research, Innovation and Digitization through Program 1 - Development of the national research-development system, Subprogram 1.2-Institutional performance- Projects to finance excellence in RDI, Contract no. 15PFE/2021.

State of development: Laboratory level

Contact: irina.fierascu@icechim.ro

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

8.

Title: BREAST IMPLANTS SILICON OUTSHELL BIOINSTRUCTIVE ENGINEERING FOR PREVENTING MICROBIAL AND FIBROSIS DEVELOPMENT

Patent/project number: PCE 208/2021

Author/s: Valentina Dinca, Nicoleta Dumitrescu, Anca Bonciu, Simona Nistorescu, Laurentiu Rusen

Institution: National Institute for Laser, Plasma and Radiation Physics

Category: F

Description: Breast cancer is a significant public health issue for women, and it is currently targeted by the national strategies for health outcomes. Considering both physical and psychological impacts on health-related quality of life, a large percentage of women with a mastectomy will choose breast reconstruction by implants. One inevitable consequence of silicone breast implantation and foreign body response is the capsular contracture, which often leads to health complications, need for revision surgery, etc. Hence, the main objective of the project is to design, develop, and obtain new silicone out shell bioinstructive interfaces of breast implant with specific modulated characteristics (in terms of surface topography, chemistry, wear-resistant) for a final antibacterial and low inflammatory response that could lead to a reduced capsular contracture.

State of development: research project, product

Contact: valentina.dinca@inflpr.ro

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



9.

Title: POLYMER FILMS WITH ZWITTERIONIC CHARACTERISTICS OBTAINED BY LASER EVAPORATION FOR APPLICATIONS IN THE BIOMEDICAL FIELD

Patent/project number: A16704, 25.11.2022

Author/s: Valentina Dinca, Nicoleta Dumitrescu, Anca Bonciu, Simona Nistorescu, Laurentiu Rusen

Institution: National Institute for Laser, Plasma and Radiation Physics

Category: F

Description: Implantable functionalized pMPC-PDMS interfaces for interacting with human cells and bacteria, targeting a mitigation of bacteria response and macrophages adhesion.

New interfaces with hydrophilic profile to be used for improving the silicone elastomer shell of breast implants were obtained by Matrix assisted Pulsed Laser Evaporation. The physical-chemical characteristics of the newly proposed Poly(2-methacryloyloxyethyl phosphorylcholine) (pMPC) functionalized scaffold obtained by Matrix-Assisted Laser Evaporation (MAPLE) The assessment of adhesion, proliferation and morphology of cells grown on the functionalized Polydimethylsiloxane (PDMS) surfaces was performed in vitro, using human macrophages and fibroblasts, cells involved in foreign body reaction.

State of development: patent

Contact: valentina.dinca@inflpr.ro

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

10.

Title: DEVICE FOR CONTINUOUS GENERATION OF BIOACTIVE SOLIONS

Patent/project number: Pending Dec. 2021

Author/s: SANDU I.G., SANDU I., SANDU A.V., VASILACHE V., VIZUREANU P., EARAR K., STIRBU C.M., CRISAN D.R.A., CHIRAZI M., STIRBU C., DROB A., BALAN G., HONCERIU C.

Institution: Gheorghe Asachi Technical University of Iasi

Category: F

Description: The invention refers to a device for the continuous generation of saline nanoaerosols of the Aitken type, which is based on the principle of operation of the filter with a wide conveyor belt in a closed circuit, framing three sectors in the form of an equilateral triangle, with sequentially differentiated distribution on three processes distinct: impregnation by light sorption from the supersaturated solution of halo-salts, extraction by vacuuming, with suction of dry air from the halochamber, dispersion by purging with hot and humid air in the halochamber. This device allows the achievement of optimal levels of bioactive solions (hydrated saline aerosols) for halocameras with multiple uses, such as: eliminating or stopping the formation of biofilms through microbiological contamination (virotic, bacterial, fungal, etc.) of prostheses during the manufacturing period, storage and implantation of bones and teeth, prevention and treatment of cardio-respiratory, osteo-muscular and psycho-motor conditions, as well as for improving the physical performance of children, the elderly and people who work under conditions of high effort or performance athletes.

State of development: prototype **Presentation link:** Poster attached



11.

Title: SYNERGIC ANTIDIABETIC COMPOSITION AND OPTIMUM PROCESSING PROCEDURE OF DRY MEDICINAL PLANTS

Patent/project number: Pending 2023

Author/s: Kamel EARAR, Ion SANDU, Ecaterina ANDRONESCU, Aurel NECHITA, Silvia FOTEA, Irina Cristina PASVANTU, Ioan Gabriel SANDU, Diana Andreea CIORTEA, Andrei Victor SANDU, Oleg SOLOMON, Simona PÂRVU

Institution: Dunarea de Jos University of Galati & Nicolae Testemițanu State University of Medicine and Pharmacy

Category: F

Description: The invention refers to a synergistic antidiabetic composition and optimal process for processing dry medicinal plants in the form of fine powders, in order to obtain by homogenization, agglomeration and monolithization in the form of micro-encapsulated granules, pills or thin films used as a food supplement under antidiabetic tea form.

Fine powder blend contains: 24% blueberry leaves, 24% dry white bean pod sheath, 24% dandelion flower, leaf and rhizome blend, 12% nettle leaf and stem, 12% 1/1 leaf blend and young white mulberry bark and 4% fine cinnamon powder.

The powders were mixed with a viscous leachable liquid in a powder gravimetric ratio: leachable liquid dispersion = 4:1, using as dispersion medium a semi-viscous mixture consisting of 5% enzymatically hydrolyzed collagen, 30% bitter cucumber juice and 65% juice of lemon. The process can be used to obtain other medicinal teas, which depending on the purpose (comforting drinks, those with a preventive and/or therapeutic effect), the raw materials subjected to processing are dosed through an experimental protocol for formulating combination reports and establishment of processing conditions in three working phases.

State of development: laboratory

Presentation link: Poster attached

12.

Title: CAR AIR PURIFIER BOTTLE

Patent/project number: Project No. AUT:0012023

Author/s: Miss Aunthara Saroth, G.4 student

Institution: Rajinibon School, THAILAND

Category: F

Description: Humans need clean air to breathe, but today the problem of PM2.5 and microbes in the air is affecting health and quality of life. Even sitting in the car during traffic in Bangkok, Thailand, PM2.5 and microbes can be inside exceeding safety standards. To solve this problem, car air purifier bottle has been developed for cars by using easily available and cheap materials. This could probably be developed into a health product in the future.



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This study present the Car Air Purifier Bottle which is assembled from a 3-layers filter: 1. Pre-filters, 2. HEPA-Filters and 3. Carbon-Filters can reduce the amount of PM2.5 dust efficiently

1. A pre-filter is a filtering device that removes large particles from the air including dust, hair, insects, pollen, and various fibers. Air purifying equipment outfitted with pre-filters are used in buildings, transports, public areas, and in various workplaces. Pre-filters are also used in respirators.

2. HEPA is a type of pleated mechanical air filter. It is an acronym for "high efficiency particulate air". This type of air filter can theoretically remove at least 99.97% of dust, pollen, mold, bacteria, and any airborne particles with a size of 0.3 μm . The diameter specification of 0.3 microns corresponds to the worst case; the most penetrating particle size (MPPS). Particles that are larger or smaller are trapped with even higher efficiency. Using the worst case particle size results in the worst case efficiency rating. All air cleaners require periodic cleaning and filter replacement to function properly.

3. Carbon-filters are the filters most commonly used to remove gases. They are designed to filter gases through a bed of activated carbon (also called activated charcoal) and are usually used to combat volatile organic compounds (VOCs) released from common household products. They are also often used to remove odors from the air, such as the smell of tobacco smoke.

State of development: Prototype

Contact: tossapn03@gmail.com Tel: +6696 915 3525

Presentation link: <https://youtu.be/2hSjoniZdTM>

13.

Title: MINDCONNECT - EMPOWERING MENTAL WELL-BEING THROUGH AI-POWERED SUPPORT

Patent/project number: 003/BEC/INVNTR/VIII/2023

Author/s: Herdiana Dewi Nurfika

Institution: Bliss Education Center, Indonesia

Category: F

Description: My name is Herdiana Dewi Nurfika, Founder & CEO of Bliss Education Center, Brancy Firm, HDN STUFF and besides that I'm certified NLP Master Practitioner, ACT & REBT Therapist and Mental Health Advocate. That's why my innovation focused on mental well-being as I have unwavering commitment to reshaping the narrative surrounding mental health. My core aspirations lies an ardent dedication to alleviating the struggles that individuals face in their mental health journeys. With my expertise it has led me to conceptualize and actualize a groundbreaking initiative known as MindConnect. MindConnect is a comprehensive mental health platform that utilizes AI and data analytics to provide timely and personalized support to individuals struggling with mental health issues. This platform aims to bridge the gap between individuals, mental health professionals, and accessible resources.

State of development: Mental Health

Contact: herdianadewinurfika@gmail.com +6289692272737

Presentation link: <https://youtu.be/wVpttSEmxzo/>



14.

Title: NURSING DIAGNOSIS IN THE PATIENT WITH THE ACUTE PANCREATITIS TREATED SURGICALLY

Patent/project number: PHD Thesis

Author/s: Magdalena Bianca TONE; Coordinator: Daniel COCHIOR

Institution: "Titu Maiorescu" University, Faculty of Medicine, Bucharest

Category: F

Description: Success in treating patients with pancreatic pathology is determined by effective management in their detection, diagnosis, and treatment. The evolution of pancreatitis and its prognosis, a few years ago, did not receive much attention because it was difficult to track the progression of the condition from the outset. Advances in imaging and biological investigations, therapeutic concepts correlated with cellular-level analyses, have led to a sustained interest with up-to-date information from specialized literature. A correct and comprehensive diagnosis of acute pancreatitis will lead to establishing therapeutic approaches. The natural course of the disease is characterized by 2 phases: the first, from the onset of acute pancreatitis, which is specific for releasing mediators and toxic substances that lead to Systemic Inflammatory Response Syndrome (SIRS), and the second, after 14 days, dominated by the infection of pancreatic necrosis and septic sequelae. Despite numerous ongoing research projects, pancreatitis remains a severe disease that requires continuous monitoring and significant clinical and therapeutic interventions over an extended period.

State of development: Doctoral research project

Contact: magda.tone@spcf2.ro

Presentation link: <https://www.utm.ro/en/faculty-of-medicine/>

15.

Title: HAPPY PILL DISPENSER

Patent/project number: Patent Pending

Author/s: Master Nathan Chalokepunrat , Master Nagan Chalokepunrat and Mr. Jeerasak Jitrotjanarak

Institution: Satit Chula Innovation Society, Chulalongkorn University Demonstration Elementary School - Thailand

Category: F

Description: The "Happy Pill Dispenser" is an Eco-Smart Medication System for Independent Elderly Living. This invention that aims to revolutionize the medication-taking process. Its purpose is to simplify and enhance patient compliance, making it easy, effortless, enjoyable, engaging, and effective, particularly for the elderly. This automatic dispenser operates on a pre-set schedule, controlled through a mobile application. It includes an alarm and display function, providing visual and auditory notifications when capsules are dispensed. The accompanying mobile app allows users to set medication schedules and receive notifications for missed capsules and low supply. Additionally, doctors and caregivers can easily monitor how patients take their medicine through the app.

Main Machine & Capsules



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- Spiral holder – could hold the capsules up to 50 capsules or 3-4weeks' worth of medication.
- Capsule return bucket – collect the empty capsule, subsequently the capsules are returned for reuse/recycling.
- Retrieval plate – has infrared sensor detects when deploy capsule for starting display & music alarm and notifications.
- Display monitor – In ready status, the monitor will display the time, date, battery and Wi-Fi status, as well as the next scheduled time. After capsule is deployed the monitor will show message “ Please take your medicine”. Moreover, after the patient retrieves the capsule, uplifting messages will appear, such as "Great!", "Good job!", and "Way to go!" These messages aim to provide encouragement and motivation to the patient.
- Capsules – the Gachapong-liked capsules contained set of medication for each specific time. These capsules can be managed and organized in sequences by the caregiver or hospital staff. The empty capsules will be collected and returned for either reuse or recycling.

Using Blynk application : could control by patient themselves or supervised by caregiver.

- The mobile app allows for the pre-setting of medication schedules up to 8 times per day.
- It displays the number of remaining capsules from the maximum amount.
- Users can set a "Low capsule notification" which will notify them via the app.
- The app includes a "Deploy now" button for situations when patients need to take their medication outside of their home. After pressing "Deploy now," they can press "RESET" to return to the main schedule time.
- If a capsule is not picked up within 15 minutes, the app sends a notification. The notification will repeat until the capsule is taken. After 1 hour without picking up the capsule, the app will display a message saying, "Please reset the schedule." Then patient needs to take the capsule and press "RESET." In this process, caregiver could help when observing the problem.

State of development: Prototype

Contact: Mr. Robert Armstrong , Mr. Jeerasak Jitrotjanarak

Telephone: +66 95 935 1062 , +66 84639 6363

Email: scis.cud@gmail.com j_jerasak@hotmail.com

Presentation link: <https://youtu.be/L4m0XnVKXxs>

16.

Title: O-NE CASE air purifier

Patent/project number: TH1100401535212

Author/s: Thaninkit Prasitdumrong, Pran Udomsawaengsup, Sirarin Prasitdumrong and Jeerasak Jitrotjanarak

Institution: Patumwan Demonstration School - Thailand

Category: F

Description: O-NE CASE is an air purifier with the combination of HEPA/Carbon filters (to filtrate particles including dust, undesirable odors, PM10, PM2.5 and etc.) and UVC lamps (for germicidal function to eliminate bacteria, virus and fungus). The machine is compact in size, light weight, easy to



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move and has a luxurious design. It comes with the multifunction display which also has an air quality and PM2.5 reader.

The machine was firstly designed as the standing type air purifier and the second version was changed to be the ceiling type to avoid UVC leakage which could damage human DNA. The later version became more luxurious; however, it has some disadvantages, for instance; inconvenient installation and immobilization. This current O-NE CASE air purifier is modified back to be a standing machine but add metal case to entrap and prevent UVC from harming people.

The machine is compact in size (50 cm. X 25 cm. X 6 cm.) and light weight which is easy to move. It can purify air with 16 minutes for 30 sq.m. sized room. The machine is controlled by the display buttons and remote control. There are 4 modes; Automatic, Manual, Comfort and Sleep. The fan speed can be adjusted of the fans when the machine is in manual mode while the UVC button turns the UVC function on or off.

State of development: On market

Contact: Mr. Robert Armstrong , Mr. Jeerasak Jitrotjanarak

Telephone: +66 95 935 1062 , +66 84639 6363

Email: scis.cud@gmail.com j_jerasak@hotmail.com

Presentation link: <https://m.youtube.com/watch?v=atPVemf6uQg&feature=youtu.be>

17.

Title: SPECIALIZED CLEANING AND RESIDUE UNVEILING BOT (S.C.R.U.B.)

Patent/project number: Patent Pending

Author/s: Phichphanita Mathasuriyapong, Thantham Jittham, Warinsaya Sereepapong, Pimbisa Bisalputra

Institution: CATS Academy Boston, Chulalongkorn University Demonstration Secondary School - Thailand

Category: F

Description: The S.C.R.U.B. at its core is a minimalized version of a washing machine that also contains within itself a cloth dryer. The innovation is a vibrator-installed, cleaning substance-loaded cloth stain cleaner that also includes a drying vacuum. This product combines the power of vibration technology with an all-in-one cleaning solution, providing simple and efficient stain removal. The device dislodges particles deeply embedded in clothes and other fabrics by vibrating at ultrasonic frequencies, ensuring a thorough cleaning process. The strong suction power of the mechanical vacuum cleaner swiftly captures the dislodged debris, leaving surfaces clean and fresh, its drying function then utilizes airflow to expedite moisture evaporation. The rapid drying capability also prevents the growth of mold and enhances the longevity of fabrics, making it ideal for all kinds of carpets and clothing.

State of development: Prototype

Contact: Mr. Robert Armstrong , Mr. Jeerasak Jitrotjanarak

Telephone: +66 95 935 1062 , +66 84 639 6363

Email: scis.cud@gmail.com j_jerasak@hotmail.com

Presentation link: https://youtu.be/s1JurH_XEW8



18.

Title: CARECAMERA

Patent/project number: on-process

Author/s: Chavarat Wangweera , Gaewgan Yambangyang, Parinton Jangtawee and Jeerasak Jitrotjanarak

Institution: Northfield Mount Hermon School (USA)

Category: F

Description: CareCamera is an innovative platform connecting bedridden patients with medical personnel through EKG, temperature, and SPO2 sensors for real-time vital sign monitoring. Data is remotely accessible via a cloud-based platform, triggering alerts during emergencies. The platform also includes a camera for real-time monitoring and video conferencing. CareCamera improves patient quality of life, reduces transportation costs, and empowers medical personnel to care for more patients efficiently.

Accessing specialized medical care for bedridden patients can be a costly and challenging endeavor, often leaving them without the essential medical devices and staff they require. In response to this pressing issue, we present CareCamera, an innovative platform designed to connect bedridden patients with medical personnel through an array of cutting-edge medical devices. CareCamera incorporates state-of-the-art technology, including EKG sensors, temperature sensors, and SPO2 sensors, to continuously monitor vital signs in real-time.

This comprehensive suite of devices empowers medical personnel to closely observe patients' health conditions remotely, ensuring prompt and efficient care delivery. Through a cloud-based platform, medical personnel can securely access and monitor the collected data from any location. In emergency situations, CareCamera promptly triggers alerts, enabling swift responses and potentially life-saving interventions. Furthermore, the platform is equipped with a camera that facilitates real-time monitoring and video conferencing capabilities, enabling effective communication between patients and medical professionals.

State of development: Product

Contact: Mr. Robert Armstrong , Mr. Jeerasak Jitrotjanarak

Telephone: +66 95 935 1062 , +66 84 639 6363

Email: scis.cud@gmail.com j_jerasak@hotmail.com

Presentation link: CareCamera-Vid-1.mov

19.

Title: GUIDANCE SYSTEM IN ECCs WITH CORRECTIVE FEEDBACK THROUGH FUNCTIONAL ELECTRICAL STIMULATION

Patent/project number: Patent application OSIM, no. a 2020 00529

Author/s: Dimitrie-Cristian FODOR

Institution: Doctoral School of the "Gheorghe Asachi" Technical University of Iasi, „Dr. Iacob Czihaç" Military Emergency Clinical Hospital of Iasi

Category: F



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Description: A new device was developed with applicability in the paramedical field, for training beginners in first aid. The device is suitable for use in real conditions, for monitoring the biomechanics of the resuscitator's arms during the execution of external chest compressions (ECCs) to a victim in cardiorespiratory arrest (CA). By applying the invention, there are several advantages and progress found compared to the current state of the art in the field of medical devices for assistance and training in resuscitation. The most important advantage is that the device ensures the maintenance of maximum extension of the humeroulnar and humeroradial joints during ECCs. The device provides corrective feedback through functional electrical stimulation (FES), thus ensuring the return to maximum extension of the elbow joints by contracting the muscles corresponding to the extension of the forearm on the arm, in the event that the resuscitator adopts a clinically ineffective position of the upper limbs. Neuromuscular electrostimulation is done transcutaneously by means of dedicated electrodes included in the system that come into firm contact with the skin of the resuscitator. The device ensures a personalized calibration for each user and a prediction of adopting an incorrect position of the resuscitator during ECCs, which makes this device innovative and useful for emergency medicine.

State of development: Patent application

Contact: +40758944223 crisfodorbim@gmail.com

Presentation link: www.linkedin.com/in/cristian-fodor-bim

20.

Title: DETERMINATION OF THE PRESENCE OF STREPTOCOCCUS VIRIDANS BACTERIA IN PHARYNGEAL EXUDATE UNDER DIFFERENT GROWTH CONDITIONS

Patent/project number: student project

Author/s: Elena-Iuliana FODOR, Cristian Cucolea, Valentina Cucolea

Institution: "Alexandru Ioan Cuza" University of Iași, Faculty of Biology

Category: F

Description: Culture media have a particularly important role in supporting the growth of microorganisms, such as bacteria and fungi, which growth is favored by the presence of certain nutrients in the composition of the medium. They are also used in various research environments, but especially in the medical field where the aim is to identify and determine the occurrence of diseases caused by numerous microorganisms.

In this work, it was wanted to identify a species of bacteria present in the oral cavity, namely a bacterium belonging to the genus *Streptococcus*. Bacteria belonging to the genus *Streptococcus* are the first bacteria that appear in the oral cavity, they can appear immediately after birth, after which the oral microbiota is formed. They are Gram-positive bacteria of great importance in industry and especially in medicine. Streptococcal infections are very common, and manifest differently depending on the affected areas: red tissue, sore throat, rash. The areas most exposed to infection with this bacterium are: tonsils, middle ear, sinuses, lungs, skin. There are several groups of streptococci, but the ones that most often cause infections in humans are group A, group B, and Viridans.



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Streptococcus Viridans, which will be discussed further in this paper, is a bacterium that most commonly causes tooth decay and heart valve infections. To determine the growth of this bacterium, pharyngeal exudate was taken from 3 different subjects and seeded on blood agar culture medium. The agar was melted at 37°C to which 5% ram blood was added. Then, the blood agar was placed in the 3 Petri dishes, thus obtaining an environment that allows the establishment of some useful properties in the identification of bacteria, through their hemolytic action, this environment being in favor of the growth of several types of bacteria: *Escherichia coli*, *Staphylococci*. Then, the 3 pharyngeal exudates were seeded on the culture medium and allowed to grow overnight. The 3 plates were placed in 3 different growth conditions, one of them was placed in normal conditions, thermostated at 37°C, the second was left at laboratory temperature, about 26°C, and the third it was also placed in the thermostat, but in anaerobic conditions, the desiccator being used.

Thus, the following differences were observed: in the first sample left in normal growth conditions (thermostat, 37°C) aerobic colonies grew normally, compared to the plate that remained at laboratory temperature where the *Streptococcus Viridans* colonies grew weakly, because they did not have a favorable temperature, also the colonies in the third plate that remained in anaerobic conditions grew normally, their growth being favored by the temperature optimal.

So, for results that attest to the presence or absence of a bacterium in certain areas of the body, it is necessary to respect their normal growth conditions. For most bacteria, leaving the thermostat overnight at a temperature of 37°C represents the optimal growth conditions.

State of development: Laboratory experiment

Contact: +4 0749630541 elenaifodor@gmail.com

Presentation link: <https://www.linkedin.com/in/iuliana-fodor>

21.

Title: BUBBLE - PEDIATRICIAN'S DESK

Patent/project number: PHD Thesis

Author/s: Eng. Izabela Kapuśniak, Mentor: Dr. Teija Gumilar

Institution: Bydgoszcz University of Science and Technology - Poland

Category: F

Description: *The project was created as part of an engineering thesis. It was created to improve the work of pediatricians. In the design process, the ergonomic data of the child and the adult were analyzed. There is also a shelf for the printer and drawers for the most necessary items. „Bubble” is a desk for a pediatrician with a pull-out couch for babies. In addition to the designer look, it has space for a printer and drawers for the most necessary items! Perfect for small doctor's offices. A pediatrician works in a small office with children up to the age of eighteen. Thanks to the possibility of hiding the couch for infants, there is more space in the doctor's office when treating older children. We will be able to sell a desk, a couch for babies and a scale for babies as one piece of furniture, which saves the buyer time and the need to select other items.*



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Ability to change colors and graphics. The project is being redesigned, but the current model shows the basic idea of the whole work.

State of development: student project

Contact: kapusniak.iza@gmail.com +48 571 029 574

Presentation link:

https://docs.google.com/presentation/d/1pyvou8BfmGi2E6cxSNbPaCvXXdVOP-b8TWEb4EMMn4bQ/edit?usp=drive_link

22.

Title: MECHANO-ELECTRIC LAUNDRY DRYER

Patent number: RO131500-2017

Authors: MICULESCU Florin, MICULESCU Marian, COSTOIU Cosmin-Mihnea, CHIVU Oana-Roxana, BARBU Catalin-Alexandru, SEMENESCU Augustin

Institution: National University of Science and Technology POLITEHNICA Bucharest

Category: F

Description: The patent relates to a mechano-electrical laundry dryer which can be used in households or hotels, for smaller or larger, coloured or white clothes or towels. The laundry dryer is characterised by autogenerating air streams which dry the clothes hanged on any type of holder by its horizontal translation motions, at rights angle with clothes or towels' positioning plane. The invention relates to a dryer for laundry, towels and bed linen, which can be used in households, hotels or other public lodging establishments. According to the invention, the dryer comprises a translation table in the shape of a hollow parallelepipedal box made up of fireproof plastics, perforated on its whole surface for ensuring ventilation and avoiding overheating, provided with a rectangular opening, on whose edges there are some metal slides placed longitudinally, by means of which it rests on a protective box inside which the drive mechanism is located, the drive mechanism consisting of a variable speed gearmotor connected to a transformer, at the output of the gearmotor there being a gin continued with a mobile joint on which a connecting rod is fixed with a mobile joint, attached to a horizontal reinforcing gusset, welded to the vertical reinforcing gussets fixed to the guides and the guiding plate, which, in their turn, are fixed to the mobile table on which the laundry support is located, the motor being driven by means of a control module.

State of development: Prototype

Contact: Professor Habilitatus Augustin SEMENESCU augustin.semenescu@upb.ro

Presentation link: <https://upb.ro/en/>

23.

Title: BIOCOMPOSITE MEDICAL DEVICE FOR EXTENSIVE RECONSTRUCTION OF SOFT TISSUE

Patent number: RO 133123 B1



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14-16.09.2023 – Deva, Romania



Authors: ULMEANU Mihaela-Elena, DOICIN Cristian-Vasile, DAVIȚOIU Dragoș, TUNSOIU Daniela, Tunsoiu Nicolae, MURZAC Roman, PARASCHIV Alexandru, DOICIN Irina-Elena, SEMENESCU Augustin, COSTOIU Mihnea, MATEȘ Ileana Mariana

Institution: National University of Science and Technology POLITEHNICA Bucharest

Category: F

Description: The invention refers to a biocomposite medical device used for extensive reconstruction of soft tissues in surgical procedures such as pelvic exenterations or hernias.

The biocomposite medical device consists of a silk fibre reinforcement layer and a composite material sheet made of a mixture between RTV silicone and silk and polyester ground fibres.

Has a three step manufacturing procedure, which can be tailored in correlation with the patients' medical condition.

State of development: Prototype

Contact: Professor Habilitatus Augustin SEMENESCU augustin.semenescu@upb.ro

Presentation link: <https://upb.ro/en/>

24.

Title: COMPOSITION FOR WHITENING AND REGENERATION OF DENTAL ENAMEL, WITH SPECIFIC PROPERTIES FOR ITS USE IN DENTAL COSMETICS

Patent/project number: nr. A/00900/24.11.2016

Author/s: Moldovan Marioara, Prejmerean Cristina, Prodan Doina, Saroși Codruța, Silaghi-Dumitrescu Laura, Dudea Diana, Gasparik Cristina, Popescu George, Agapescu Camelia

Institution: University of Medicine and Pharmacy Cluj-Napoca; Babes-Bolyai University, Institute of Chemistry Raluca Ripan- Cluj-Napoca

Category: F

Description: The current patent's objective is to develop a composition intended for the whitening and regeneration of dental structures with optimal properties for their use in dental cosmetics.

The objective of the current patent is the development of a composition intended for the whitening and regeneration of dental structures with optimal properties for their use in dental cosmetics.

Areas of application - minimally invasive cosmetic dentistry, extrinsically caused dental dyschromia (determined by dyes from food, colored beverages, oral rinse solutions) or internalized in the dental structure, dyschromia caused by age

The removal of pigment molecules from dental structures is based on oxidative mechanisms, and until now, it is carried out by substances based on peroxides. Substances that act through an oxidative mechanism are included in different concentrations in pharmaceutical forms of gel or solutions, which explains the varied treatment protocols associated with whitening treatments.

Improving the appearance of teeth by bleaching with whitening systems based on natural agents has the following advantages:

- efficiency, through detectable whitening effect, highlighted on extracted teeth and samples of composite materials



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-biocompatibility

-does not alter the surface roughness

The whitening gel, according to the present invention, consists of a mixture consisting of active ingredients, namely:

- A combination of natural organic acids of plant origin*
- Hydroxyapatite - with remineralizing effect*
- Simvastatin - stimulation of dentine formation, anti-inflammatory effect - possible prevention of post-whitening sensitivity*

State of development: Patent application

Contact: mmarioara2004@yahoo.com ddudea@umfcluj.ro

Presentation link: <http://old.umfcluj.ro/en/>

25.

Title: CREAM WITH PHOTOCHEMOPROTECTIVE EFFECT AND THE PROCEDURE FOR ITS OBTAINING (CREMA CU EFECT FOTOCHEMOPROTECTOR ȘI PROCEDEU DE OBȚINERE)

Patent/project number: Brevet Number /127719/2016 – Project PN – II 42--104/2008

Authors: Gabriela Adriana Filip, Postescu Ion Dan, Maria Perde-Schrepler, Marcela Achim, Simona Clichici, Șoimita Suciu, Piroska Virag, Eva Fischer Fodor, Corina Tatomir, Gabriela Cherecheș, Olga Sorîțău, Doina Daicovicu, Ioana Brie, Otilia Barbos, Remus Moldovan, Tiberiu Dicu, Adriana Mureșan

Institution: Iuliu Hațieganu University of Medicine and Pharmacy Cluj-Napoca; Oncology Institute „Prof. Dr. Ion Chiricuță” Cluj-Napoca

Category: F

Description: *The inventions refer to the content of a cream, oil-in water emulsion, for topical application with photochemoprotective properties, in the cosmetic field, designed to protect the skin against the noxious effects of ultraviolet radiation and also to two procedures of its obtaining. The inventions combine a natural extract obtained from Vitis Vinifera grape seeds, the Burgund Mare variety, and simple and cheap ingredients for the cream, which assure a good penetration of the extract in the skin and also improve the texture of dry/normal skin, are noncomedogenic and maintain their moisturisation.*

State of development: applied to patients, for photochemopreventive purposes, in the clinical study carried out within the project PN II 42104/2008

Contact: Gabriela Adriana Filip, str. Antim Ivireanu nr 36, Cluj Napoca; 0745268704; adrianafilip33@yahoo.com gabriela.filip@umfcluj.com

Presentation link: <http://old.umfcluj.ro/en/>



26.

Title: CHEWABLE TABLETS WITH POLLEN AND NATURAL VITAMIN C

Patent/project number: RO 135449 A2

Author/s: Tomuță Ioan, Hales Dana

Institution: University of Medicine and Pharmacy "Iuliu Hatieganu" Cluj-Napoca

Category: F

Description: The invention relates to chewable tablets, which contain a combination of natural components, namely pollen, honey, glucose and standardized extracts in the content of vitamin C and/or β -carotene, as well as to the process of obtaining the tablets. In this invention, vitamin C, originating from natural sources, is associated with honey, a beekeeping product that complements the properties of pollen. Also, the method of preparing the chewable tablets involves the use of honey as a binding agent in the wet granulation stage of the technological process. The obtained tablets have a shape and size characteristic to the punches used for compression and appropriate organoleptic properties to be pleasant and easily accepted by users: sweet taste due to honey and glucose, yellow-brown color with marbled appearance characteristic for pollen and natural aroma specific to bee products and natural extracts. They also exhibit low mechanical strength and rapid disintegration, characteristics that allow the tablets to be chewed without effort and to obtain a mass with a soft and uniform texture that can be easily swallowed.

State of development: chewable tablets

Contact: grant.umfcluj@gmail.com dudas.dana@umfcluj.ro

Presentation link: <http://old.umfcluj.ro/en/>

27.

Title: NEW ANTIBACTERIAL AGENT

Patent/project number: MD 4842/2023.01.31

Author/s: Aurelian GULEA, Vasiliu GRAUR, Greta BĂLAN, Carolina LOZAN-TÎRȘU, Victor ȚAPCOV, Ion TODERAȘ, Vasile LOZAN

Institution: Moldova State University

Category: F

Description: The invention relates to chemistry and medicine, namely to the biologically active coordination compounds that manifests high antibacterial activity against the species *Streptococcus pneumoniae*. The claimed substance exceeds by 66-132 times analogous characteristics of the Ampicillin and 7.9 times the characteristics of the structural analog. The discovered properties of this substance are of interest for medical practice in terms of expanding the arsenal of antibacterial remedies.

State of development: Laboratory

Contact: Tel.: +373 69127593; E-mail: guleaaurelian@gmail.com

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



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28.

Title: BIOTHERAPY MAGNET – BiTeM

Patent/project number: Copyright and related law (in process)

Author/s: Đorđe Štangl, Anka Štangl

Institution: UPI ČIB – Čelarevo – R.Srbija

Category: F

Description: The latest technological solution for the treatment of diseases and injuries of muscles, ligaments and bones, as well as the peripheral nervous system. BiTeM eliminates pain in a short time in various conditions, whether acute or chronic. BiTeM is widely used to regulate blood and lymph circulation and accelerate the regeneration process. BiTeM activates electrochemical processes in the tissue and improves the functioning of the cell and cell membrane.

State of development: R.Srbija

Contact: Đorđe Štangl tel. +381(0)641276126 Email: upicib@gmail.com

Presentation link: <https://rs.linkedin.com/in/%C4%91or%C4%91e-%C5%A1tangl-b0087b2b>

29.

Title: NATURAL HERBAL PREPARATIONS

Patent/project number: Copyright and related law (in process)

Author/s: Đorđe Štangl, Anka Štangl

Institution: UPI ČIB – Čelarevo – R.Srbija

Category: F

Description: Preparations made according to the original recipe and procedure from raw materials of plant and mineral origin, intended for the treatment of the consequences of mechanical and sports injuries. In addition, they successfully relieve pain, not only in injuries, but also in rheumatic ailments.

State of development: R.Srbija

Contact: Đorđe Štangl tel. +381(0)641276126 Email: upicib@gmail.com

Presentation link: <https://rs.linkedin.com/in/%C4%91or%C4%91e-%C5%A1tangl-b0087b2b>

30.

Title: QVIBE FREQUENCY GENERATING THERAPEUTIC DEVICE- USED IN A PSORIASIS CASE

Patent/project number: No 009015340-0001, 06/05/2022

Author/s: Senior Lecturer Dr. Oana Codruta Bacean Miloicov

Institution: SC Holistic Lounge SRL

Category: F - Medicine, Paramedical, Pharmacy, Cosmetics, Hygiene



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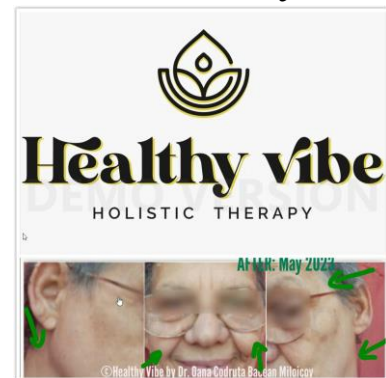


Description: Psoriasis is a chronic autoimmune skin condition characterized by the rapid overproduction of skin cells. This results in the formation of red, scaly patches on the skin's surface. The exact cause of psoriasis is unclear, but it is believed to involve a combination of genetic and environmental factors. Psoriasis can cause discomfort and itchiness, on face, neck, arms, in this case that we present. Q Vibe is a therapeutic frequency generating device, an innovative concept made out of frequencies that are imprinted on it, the final result is a special, unique algorithm, modified according to the pathologies of the patients. We applied the device as a therapy(local external application) for this case. The subject used the QVibe device everyday, the frequency recipe is a unique registered algorithm imprinted on the device that generates the frequencies as therapy; we can clearly see the difference in the pictures(BEFORE- on 23rd of april 2023) and the result in the pictures named: (AFTER- on may 2023).

BEFORE- 23rd of april 2023



AFTER- may 2023



It is successfully used as well in balancing other pathologies as(allergies/digestive problems/renal diseases/melanoma/nervous system lesions/viral or bacteriological infections/parasitic infestations/bone diseases, etc.), it optimises the state of health, according to the improvement of the clinical and paraclinical parameters.

State of development: Inregistrat / Registered 06/05/2022, No 009015340-0001

Contact: baceano@gmail.com +40745170879 www.healthyvibe.ro

Presentation link: <https://www.healthyvibe.ro/psoriazis-m-r/> ©Healthy Vibe by Dr. Oana Codruța Bacean Miloicov

31.

Title: Solutie Virala "SV" / Viral solution "SV"

Patent/project number: 1/20.03.2020

Author/s: Senior Lecturer Dr. Oana Codruta Bacean Miloicov

Institution: SC Holistic Lounge SRL

Category: F

Description: Substance composition - BASE: 5 ml Swedish Bitter, 25 ml ozonated pure water



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The product is obtained by energetic imprinting with specific frequencies of known viruses; according to scientific studies, any energetically imprinted liquid generates those frequencies for a duration of approximately one month, after which the liquid no longer retains the energetic imprint. I used this aspect and reprinted another solution after the deadline. I have used the product in hundreds of cases of viral infections, with spectacular results even from the first days; method of administration: the first two days: 7pic x 5/day, then: 7pic x 3/day, until the bottle is used up. It is interesting that the base consists of a tincture of plants, natural and without adverse effects, but the therapy is actually made from the energetically imprinted frequencies on the solution. We started from the premise that digestion begins in the oral cavity, where absorption is very good (ex.: Nitroglycerin that is administered sublingually), as a result, statistics, kinesiological tests and the clinical evolution of the cases have shown us that the product is efficient reducing the occurrence of the symptoms, increasing immunity - much improved clinical condition after administration, significant reduction of inflammation, edema and nasal congestion. The remedy is energetically imprinted with the help of the only device of this type in RO, the recipe concept being registered with copyright.

Other benefits:

- adjuvant in upper respiratory infections (rhinitis, sinusitis, tonsillitis, laryngitis)
- adjuvant in lower respiratory infections
- anti-inflammatory
- antiviral
- can be anywhere administered
- does not require travel to get the solution, it can be send anywhere

State of development: (concept): product, copyright-protected concept

Contact: baceano@gmail.com +40745170879 www.healthyvibe.ro

Presentation link:

https://m.facebook.com/story.php?story_fbid=414014857486649&substory_index=414014857486649&id=100063593891341

32.

Title: CO-TECH- TEST, MEASURE, BALANCE(INNOVATIVE CONCEPT OF AUTOMATED SOFTWARE PROCESS FOR EVALUATION AND THERAPY THROUGH BIOFEEDBACK)

Patent/project number: 10/20.03.2020, copyright-protected concept

Author/s: Senior Lecturer Dr. Oana Codruta Bacean Miloicov

Institution: SC Holistic Lounge SRL

Category: F

Description: CO-TECH software process automation is an innovative and copyright-protected concept that brings a new perspective to patient evaluation and therapy. By using biofeedback, this system allows for the optimization of evaluation processes, improvement of therapies, and reduction of execution times, resulting in an optimized therapeutic approach with accelerated efficiency. One of the core features of CO-



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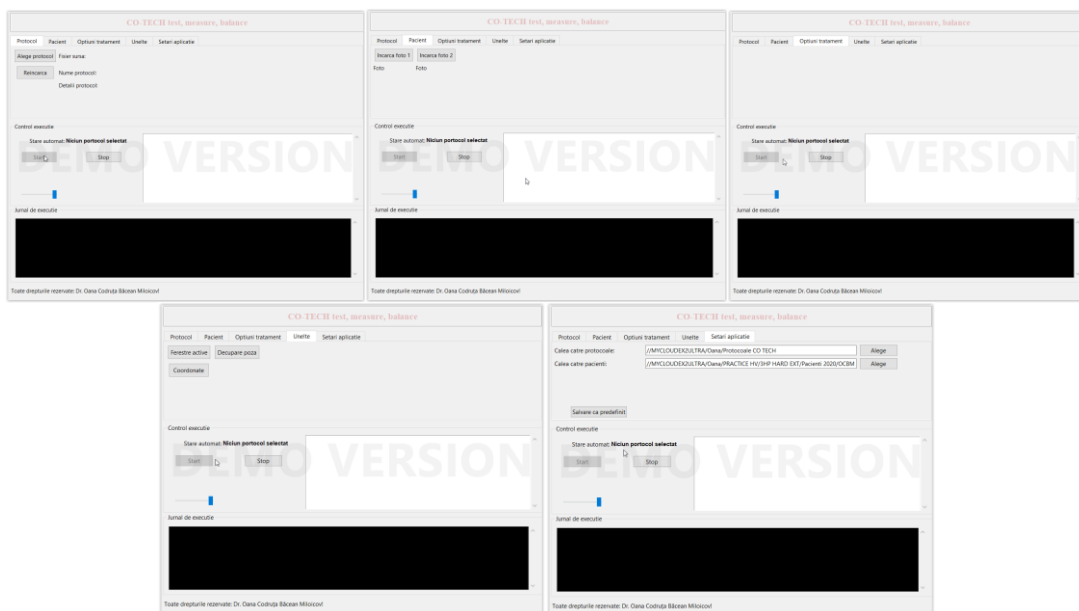


TECH is its ability to obtain precise and detailed data about patients through biofeedback. This process involves measuring and monitoring the physiological responses of the patient in real-time. As a result, therapists can have access to essential information about the patient's health status and can adapt the treatment based on these data. By applying CO-TECH software process automation in therapies, specialists can more accurately evaluate the patient's health condition and rapidly identify problems or difficulties they may face. Additionally, this system enables continuous monitoring of therapeutic progress, facilitating real-time adjustment and optimization of the therapy.

Moreover, CO-TECH software process automation brings a significant change in terms of the time required for therapies. By utilizing this innovation, therapists can considerably reduce the overall duration of therapies as they can quickly identify and eliminate inefficient or unnecessary methods. Consequently, patients will benefit from more time dedicated to other types of therapies without compromising the effectiveness of the main treatment.

Another significant value brought by CO-TECH is its capacity to provide an optimized, personalized, and tailored therapeutic approach to each patient's needs. Through efficient resource utilization, therapists can develop specific strategies for each patient and track their evolution and health status in real-time. Through the use of CO-TECH software process automation, therapies become more efficient, faster, and personalized. This revolutionary concept offers the possibility to evaluate and treat patients more accurately, reducing therapy periods and maximizing therapeutic outcomes. CO-TECH brings benefits to the field of biofeedback evaluation, therapy improvement, and streamlining of therapeutic approaches, thus transforming the way patients are treated and cared for.

Affections that we have already used the CO-TECH- test, measure, balance concept for: depression, neoplasms, burnout, vitiligo, neurological diseases.





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State of development: product

Contact: baceano@gmail.com +40745170879 www.healthyvibe.ro

Presentation link: <https://www.healthyvibe.ro/product/evaluare-energetica-si-terapie-cu-aparatul-scio-o-sedinta/>

33.

Title: QVIBE FREQUENCY GENERATING THERAPEUTIC DEVICE- USED AGAINST PARASITIC INFECTIONS

Patent/project number: No 009015340-0001, 06/05/2022

Author/s: Senior Lecturer Dr. Oana Codruta Bacean Miloicov

Institution: SC Holistic Lounge SRL

Category: F

Description: *Intestinal parasites in children are organisms that develop and live in their intestinal tract, causing various symptoms and health problems. The causes of parasitic infestation can be varied, including consuming contaminated food or water, contact with infected animals, or lack of proper hygiene.*

The effects of intestinal parasites on children's health can be quite severe. These parasites can affect nutrient absorption, causing nutritional deficiencies and delays in growth and development. They can also cause abdominal pain, diarrhea, nausea, weight loss, fatigue, and irritability. Persistent parasite infestation can compromise the child's immune system and lead to the development of other serious conditions.

To combat intestinal parasite infestation in children, an effective and non-invasive device is the Q Vibe - a therapeutic anti-parasitic frequency generator. This device provides a natural and gentle solution, eliminating the need for aggressive or invasive chemical substances in treatment.

Q Vibe works by generating and transmitting specific frequencies that are highly unpleasant and harmful to parasites. These frequencies disrupt and destroy the parasitic organisms, eliminating them from the child's body. The use of the Q Vibe device is easy and convenient, so it can be used at home or in a clinic setting.

Another advantage of using Q Vibe is its immediate effectiveness. After applying the therapeutic frequencies, the child will experience rapid relief of symptoms and an improvement in overall health. Treatment with Q Vibe is completely non-invasive and does not cause any negative side effects.

In short, the Q Vibe device provides a non-invasive, natural, and effective solution for combating intestinal parasite infestation in children. By using therapeutic anti-parasitic frequencies, this technology offers immediate benefits and completely eliminates the harmful effects of chemical substances.

Q Vibe is a therapeutic frequency generating device, an innovative concept made out of frequencies that are imprinted on it, the final result is a special, unique algorithm, modified according to the pathologies of the patients. We applied the device as a therapy(local external application) for these cases on the right hand on the radial artery, where we can feel the pulse. It is recommended to use QVibe device everyday, all the time, especially during the night, the frequency recipe is a unique registered algorithm imprinted on the device that generates the frequencies as therapy.



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In cases of abdominal discomfort caused by colics, inflammation, abdominal bloating, intestinal parasites or imbalance of intestinal flora.



State of development: Inregistrat / Registered 06/05/2022, No 009015340-0001

Contact: baceano@gmail.com +40745170879 www.healthyvibe.ro

Presentation link: <https://www.healthyvibe.ro/product/incarcare-dispozitiv-q-vibe-basic-antiparazitar/>

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34.

Title: ANTISTRESS PROTOCOL used in a vitiligo case

Patent/project number: 11/20.03.2020, copyright-protected concept

Author/s: Senior Lecturer Dr. Oana Codruta Bacean Miloicov

Institution: SC Holistic Lounge SRL

Category: F

Description: The results obtained, including physical outcomes, clinical appearance, and psycho-emotional levels, demonstrate the effectiveness of this innovative copyrighted protocol. Its non-invasive nature, combined with optimized clinical parameters, enhances skin appearance and mental equilibrium, as confirmed by the results.

The therapeutic ANTISTRESS PROTOCOL has shown significant benefits in the treatment of this case of vitiligo. Beyond its impact on the physical manifestations of the condition, it also addresses the psycho-emotional aspects that can accompany the disease.

By promoting psycho-emotional balance, this protocol helps individuals cope with the psychological impact of vitiligo. It addresses the underlying traumas stored in the subconscious, aiding in their release and healing.

Furthermore, the therapeutic ANTISTRESS PROTOCOL focuses on CHACKRA balancing, which plays a vital role in overall well-being. Through this process, the energy centers of the body are harmonized, resulting in improved physical and mental health.

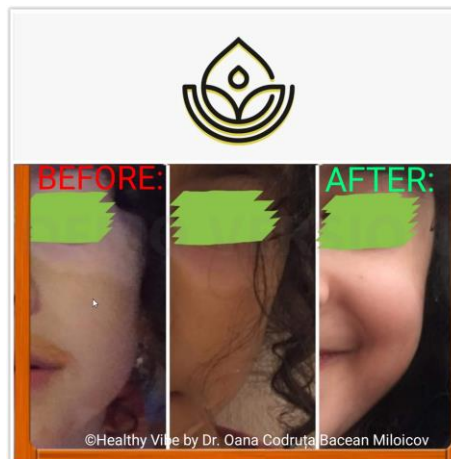
The protocol also includes AURA correction, which helps restore the energetic field surrounding the body. By addressing imbalances and blockages within the aura, the therapy promotes healing on multiple levels.



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By targeting the imbalances caused by stress factors, this protocol aids in restoring the body's equilibrium. It addresses the impact of external stressors and supports the body's ability to withstand and recover from them.



The use of this innovative ANTISTRESS PROTOCOL has shown remarkable clinical and psycho-emotional improvements. It offers a non-invasive approach to treating vitiligo, enhancing both physical appearance and mental well-being. With the support of copyright protection, this protocol stands as a testament to its effectiveness and results. The image on the LEFT- BEFORE represents the photo taken at the initiation of the therapy. The image in the middle, intermediate stage. The image on the right, the RESULT- AFTER obtained after three months from the initiation of the therapy!

State of development: (concept): product, copyright-protected concept

Contact: baceano@gmail.com +40745170879 www.healthyvibe.ro

Presentation link:

<https://www.facebook.com/heathyvibeholistictherapy/photos/pb.100063593891341.-2207520000./127958042188746/?type=3>

35.

Title: SEROTONIN - the binding messenger neurotransmitter of happiness

Patent/project number: Student project

Author/s: Victor ILIE, Giulia MARTIN, Alexandru MEREUTA; **Mentors:** Carmen ARGESANU, Mariana-Oana FARCAȘ, Andra ILIE

Institution: Nichita Stanescu National College Ploiesti, Romania, NWER Association

Category: F

Description: We believe that everyone has his own happiness in his hands, yet, neuroscience proved that it depends on how a neurotransmitter succeeds to carry out its duties. Serotonin is the binding messenger of our happiness, that helps us deal with everyday stress. Medicine proves that low serotonin is linked to depression. The novelty that we bring is the development of an application to help depressed people to



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automatically dictate the production of serotonin to balance the system. Studies have shown that the medication used to treat patients with depression also have many side effects. Therefore, the medical device along with the digital application that we have conceived can ensure a safer and non-invasive solution.

As methods of research, we used a case study (a real-life situation, a patient who benefited from our invention) and a survey on adolescents (to discover the real mental mood that they have connected to the risk of depression). Mrs. T found out that serotonin syndrome is worse than her low levelled one after spending 4 years of hospitalization and experimental treatments. She felt fatigue, rapid heart-rate and tremors, but after treatment with Paroxetine, Sertraline, blood biochemistry and heat CT, only ketamine intravenous injection was successful. After being released, when all the symptoms reappeared, she chose to use our app and she observed beneficial effects. Analyzing the survey on teenagers, we discovered a huge rate of depression symptoms that we need to take care before it is installed.

Our team proposes to create an implantable medical device whose operation is based on the energy of the human body, which works by changing the density, converting this energy. The device is intended to be inserted through a clinical intervention and will remain in the body, as active. It is an in vitro diagnostic type, containing a reagent, a calibrator and software for sample examination. Whenever the level of serotonin in the blood drops below the alert level, a signal is sent as radio wave to a related electronic device connected to the base in order to dictate the brain to increase the production of serotonin.

As a future plan, we have already started working to create the app SeroUp+, available on iOS and Android, free to download. The app will have multiple options to re-establish a normal mood whether you are a person with low level of serotonin or not. The home screen consists of 5 main topics (with subdivisions): Photos, Music, Audio books, Quotes, Exercise. The home screen has an emergency call, a profile section and a settings button. Here, we noted a special section that counts the number of low serotonin crises, a list with clinics nearby for emergency.

In conclusion, considering that happiness is the personal goal of each of us and that the road is always more important than the destination, in the case of serotonin we have all the ingredients to find the successful path. For this, the creation of the medical device and the application became from a possibility, a necessity.

State of development: Prototype

Contact: victorilie3015@gmail.com +40 (771) 459 417

Presentation link: https://drive.google.com/drive/folders/1tJ4Zt9g-uaFHjjXJcqKrOzI-faa8jexG?usp=drive_link

36.

Title: PARALLEL ROBOTIC SYSTEM FOR BILATERAL SHOULDER MEDICAL REHABILITATION

Patent/project number: Patent application OSIM: A/00683/12.11.2021

Author/s: Paul-George-Mihai Tucan, Doina Liana Pîslă, Liviu-Călin Vaida, Adrian Pîslă, Bogdan George Gherman, Iosif Bîrlescu

Institution: Technical University of Cluj-Napoca



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Category: F

Description: The invention describes a robotic system based on end-effector configuration for bilateral recovery of shoulder joint movements. The robot has 3 active joints needed to achieve flexion/extension, adduction/abduction of the shoulder and pronation/ supination movement of the forearm. The system is intended for patients with brachial monoparesis resulting from an injury to the central nervous system or peripheral nervous system. The robotic system is suitable for rehabilitation of both upper limbs. The robotic system works with the help of three degrees of mobility achieved with the help of three active rotation joints whose axes intersect at the same point, which is materialized in the form of the center of rotation of the patient's shoulder undergoing robotic assisted medical rehabilitation.

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

Contact: Liliana.Pop@staff.utcluj.ro

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

37.

Title: WORKBENCH FOR AUTOMATIC CONTROL OF ANESTHESIA

Patent/project number: Patent application OSIM: A/00185/11.04.2022

Author/s: Clara Mihaela Ionescu, Cristina Ioana Muresan, Eva-Henrietta Dulf, Isabela-Roxana Birș, Radu Adrian Munteanu

Institution: Technical University of Cluj-Napoca

Category: F

Description: The workbench allows the testing of different automatic control strategies in anesthesia. It consists of two main components: a patient simulator, respectively a control system to monitor the patient's vital signs, respectively to adjust the dosage of drugs automatically based on a control algorithm. The patient simulator is an application that simulates the effects of drugs (analgesics, sedatives, muscle relaxants) on the state of hypnosis, analgesia and neuromuscular blockade of a patient under anesthesia. The measured variables are transmitted to the control system, represented by a microcontroller. The advantages of the workbench consist in providing the analysis, optimization, testing and validation of a closed-loop control system to assist the anesthesiologist in the phases of induction, maintenance and recovery from anesthesia.

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

Contact: Liliana.Pop@staff.utcluj.ro

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

38.

Title: "HEMO BLOCK- FOAMES" LOCAL RESOURCES UTILIZATION PROJECT

Patent/project number: product

Author: Ionut Moraru



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Institution: *Laboratoarele Medica*

Category: F

Description: *Fomes Fomentarius* (<https://pro-natura.ro/shop/fomes-fomentarius>)

Mushroom ubiquitous in our country, rich in vitamins (D, complex B), trace elements (K, Se, Cu, Fe), but also b-glucans, has similar effects to Chinese medicinal mushrooms (*Ganoderma*, etc.), namely:

1. antiviral/2. antibacterial/3. antioxidant/4. immunomodulation/5. antitumor/6. regulating blood sugar and cholesterol

In addition, it has an activity to promote neuronal proliferation through the protein NGF (nerve growth factor), which recommends it in neurodegenerative diseases (dementia), anxiety and insomnia. Another specific activity of this mushroom is the antihemorrhagic one, being useful in menstrual disorders, epistaxis, skin wounds, this property of stopping bleeding giving it the name "surgeon's mushroom".

State of development: *products for market*

Contact: DoctorTech2000@yahoo.com

Presentation link: www.DoctorTech.ro

39.

Title: *"SURVIVAL THERAPY KIT" - Kit for the treatment of ailments, through therapies based on classical acupuncture (TCM - Traditional Chinese Therapy), applied with the help of passive resonant devices "EMCOPAD Doctor Tech"*

Based on Patent number: RO132423A2/WO2018037379

Authors: *Velcea Marian, Moldovan Ion Corneliu, Plotog Ioan, Hideg Catalin, Curta Ioan, Mihailescu Bogdan, Caracas Eugen, Chetan Mihai, Ene Ciprian, Mandrea Lucian*

Category: F

Description: *The "Survival Therapy Kit" contains a "Practical Guide" for recommending therapeutic procedures (organized alphabetically for more than 100 common conditions), a set of 200 pieces of QI-Polino, EMCOPAD devices (Doctor Tech passive resonant electromagnetic patches) and adhesive rolls for attaching the devices to the body of the treated person. The devices are applied periodically on the acupuncture points recommended in the therapy of the diagnosed condition. The application period is 21 days and is followed by a 10-day break. (TCM is officially approved by the WHO)*

State of development: *patent application, production for market*

Contact: DoctorTech2000@yahoo.com

Presentation link: www.DoctorTech.ro

40.

Title: *"CERVICAL BELT"*

Patent number: WO2018037379-PAMPH-568



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Authors: *Velcea Marian, Mandrea Lucian, Moldovan Ion Corneliu, Plotog Ioan, Hideg Catalin, Curta Ioan, Mihailescu Bogdan, Caracas Eugen, Chetan Mihai, Ene Ciprian*

Category: *F*

Description: *The device consists of a medical support dedicated to the cervical area on which Qi-Polino Doctor Tech passive resonant devices (EMCOPAD) have been assembled in the positions corresponding to the C7 vertebra and acupuncture points BL-10, VB-20, VG-15 and VG- 16. These points are activated independently or simultaneously in groups formed by the therapist, depending on the patient's condition and his immediate needs. The interaction at the energy level takes place through the acupuncture points placed in electromagnetic contact with the Qi-Polino device, which transmits impulses with a harmonic frequency of the note LA, located in the radio band. This interaction is only possible during the period when paired acupuncture points are in relative imbalance (one to the other), characterized by the presence of a local electric potential, with an effect on the power supply of the electronic circuit; once the energetic balancing of the corresponding points is achieved, the electronic device cuts off its power supply for the entire period of balance, resuming the operating cycle when a new imbalance between the corresponding acupuncture points occurs.*

State of development: *patent application, production for market*

Contact: DoctorTech2000@yahoo.com

Presentation link: www.DoctorTech.ro

41.

Title: *SUPERFORTE SUPOZIN & SUPERFORTE APICOPLANT*

Patent: *Natural therapies*

Author/s: *Adriana Vlad*

Institution: *S.c. E Lite Nutritia S.r.l.*

Category: *F*

Description: *Superforte Ovulin - Solid Cream it is a 100% natural product that helps alleviate the manifestations of prostate, colon, and female genital dysfunction. It has a strong anti-inflammatory, cicatrizing, antirheumatic, antiseptic, antitumor, antihemorrhagic action. It prevents and acts beneficially on the early symptoms of colon and prostate damage, has positive effects in cases of tumors in the colon and the female genital area. The product is beneficial in prostate disorders, cystitis, nephritis, urethritis, internal and/or external hemorrhoids, inflammation, wounds, eczema and tumors on the colon, rheumatic diseases, but also in gynecological diseases, administered together with "Superforte Ovulin - Solid Cream".*
Ingredients: *honey, propolis, pollen, royal jelly, mummy, clay, cocoa butter, sea buckthorn oil extract, chamomile, thyme, St. John's wort, marigold, juniper essential oil, sage, pine, fennel, geranium, lavender.*

SUPERFORTE APICOPLANT it is a natural product that acts beneficially in conditions of the colon, rectum and intestine. Action: colon detoxifier, decongestant, alkalizing, antimicrobial, regulates digestion (diarrhea, constipation), antitumor, regenerates the digestive mucosa and intestine, antihemorrhoidal (in



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combination with Superforte Supozin), intestinal soothing (indigestion, gas, irritable colon, biliary colic etc.), slimming cures. In chronic conditions, a natural and homeopathic treatment is recommended - internally for a period of 3-6 months for greater treatment efficiency. Ingredients: Argilla (clay), Theobroma cacao (cocoa butter), Melem (honey), Cera (wax) Carbo (coal), Argentum colloidal (colloidal silver), Probiotic, Calamus aromaticus (obligean), Mentha essential oils), Feaniculi (fennel), Camelia sinensis (tea tree), Caryophyllis (clove), nipagin, nipasol.

State of development: 100% natural products

Contact: elite.nutritia@yahoo.com +40726 761 557

Presentation link: <https://elitenutritia.ro/categorie-produs/creme/>

42.

Title: DEVELOPING MED SHARE AT FUTURE ACADEMY, EGYPT

Patent number: Student Project

Author/s: Rokia Darwish; **Supervisor:** Dr.Radwa Radwan

Institution: Future Academy - Egypt

Category: F

Description: MED Share endeavors to tackle healthcare challenges by bridging the divide between surplus medical resources and those who require them. It offers a platform for individuals to contribute unused medications and repurpose medical equipment, thereby curbing waste. This initiative guarantees affordable healthcare by providing medications at reduced prices or free of charge and addresses scarcity issues by distributing surplus medications to regions with limited access. Through its commitment to responsible resource management, MED Share not only widens healthcare access but also contributes to a healthier global community.

State of development: research project

Contact: radwan.Mohamed@fa-hists.edu.eg

Presentation link: <https://www.futureacademyegypt.com/en/home>

43.

Title: SINTER LASER MELTING

Patent/project number: dental medicine project

Author/s: Manolin Mita

Institution: HD LaserDent - Deva

Category: F

Description: Being in the field related to dental medicine with vast experience and because there was no center specialized in laser printing using Sinter Laser Melting technology in Hunedoara county, I decided to take this step. 3D printing or additive manufacturing is a manufacturing process of solid objects tri-dimensionally adding layer after layer. Physical objects are produced using data a digital model, a 3D model or others sources such as an AMF* file. By using 3D printing they can be created products of almost



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any shape. Selective laser melting (SLM) is the leading metal 3D printing technology revolutionizing the additive manufacturing of metal parts. This digitized technology gives dental laboratories the opportunity to benefit from creating work of an exceptional quality, far beyond what humans can achieve with classic melting and casting technologies.

State of development: products

Contact: laserprintdeva@gmail.com

Presentation link: <https://www.facebook.com/profile.php?id=100063674163614>



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G - Agriculture, Veterinary medicine

1.

Title: METHOD FOR DETERMINING THE SEEDING ACCURACY OF GRASS PLANT SEEDERS

Patent / project number: National Patent Application No. U-00029 / 2023

Author/s: Dan CUJBESCU, Iulian VOICEA, Cătălin PERSU, Alexandru IONESCU, Ana-Maria TĂBĂRAȘU, Valentin-Nicolae VLĂDUȚ

Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry

Category: G

Description: The invention refers to a method for determining the quality indices of the distribution devices (seeding accuracy) of the precision seeders, which carry out the sowing of one or more seeds (grains) of grass plants in equally spaced nests on equidistant rows.

The technical problem that the invention solves consists in the simultaneous determination of the sowing accuracy of the seed distribution devices from the seeders of creeping plants, both for the distributors (seed distribution devices) with centralized transmission and for the distribution devices with transmission individual (where they are actuated by means of the seeding wheel) and outside the optimal agricultural periods.

The method for determining the sowing precision of the seeders of creeping plants, according to the invention, solves these technical problems and removes the mentioned disadvantages, allowing the determination of the quality indices of the sowing work (sowing precision), on a stand, simultaneously for distribution devices with centralized or individual actuation, not only of some types of seed distribution devices.

State of development: Concept

Contact: +40-21-269.32.55 icsit@inma.ro

Presentation link: www.inma.ro

2.

Title: ECO-INNOVATIVE TECHNOLOGY THAT PERFORMS THE BASIC SOIL WORK IN VEGETABLE CROPS WITH TECHNICAL EQUIPMENT PROVIDED WITH CURVED PROFILED SLITTERS

Financing contract: C16100000011884200003 / 20.04.2021

Author/s: Valentin VLĂDUȚ, Eugen MARIN, Dragoș MANEA, Gabriel GHEORGHE, Carmen VASILACHI, Laurențiu VLĂDUȚOIU



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Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry

Category: G

Description: This innovative technology has been developed for two farmers from Călărași County (Romania) that, by means of new technical equipment provided with curved profiled slitters, achieves the following benefits on the soil: decompaction and aeration; greater incorporation of plant residues; better soil structuring; efficient water management; intensification of soil work; low compaction; soil homogenization; the possibility of incorporating ecological fertilizers.

State of development: Experimental Model

Contact: www.inma.ro +40-21-269.32.55 icsit@inma.ro

Presentation link: <https://tehnosol.inma.ro/>

3.

Title: MULTIFUNCTIONAL QUICK-FREEZING EQUIPMENT

Patent / project number: National Patent Application No. A-00054 / 2023; European Patent Application No. 23020352.3 / 2023

Author/s: Cristian SORICĂ, Adriana MUSCALU, Elena SORICĂ, Laurențiu VLĂDUȚOIU, Andreea GRIGORE, Mihai CONSTANTINESCU

Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry

Category: G

Description: The invention refers to a fast-freezing equipment, of cabinet type, with discontinuous operation, using the method of freezing by contact with liquid nitrogen, in order to reduce the temperature of the products to the frozen state storage temperature.

The use of artificial cold in the two classic methods of refrigeration and freezing methods, offers the guarantee of preserving the taste as close to the original of perishable food, as opposed to other conservation procedures. The freezing, as a method of conservation, increases the permissible duration of food storage of more than 5...50 times compared to the preservation by refrigeration.

The technical problem, solved by this invention, consists in carrying out rapid freezing equipment, cabinet type, with discontinuous operation, using the method of freezing with liquid nitrogen, which ensures a low liquid nitrogen consumption, allows the optimal use of its refrigeration capacity, ensures a low energy consumption, improves the uniformity of the rapid freezing process and increases the quality of frozen products.

ACKNOWLEDGEMENT: This work was financed by the Ministry of Research and Innovation through Program 1 - Development of the National Research-Development System, sub-programme: 1.2 - Institutional Performance, the project "Institutional development of INMA Bucharest in order to increase its performance in the field of bioeconomy", contract No. 1PFE / 30.12.2021 - (PFE 1296 / 17.12.2021)

State of: Experimental Model

Contact: +40-21-269.32.55 icsit@inma.ro

Presentation link: www.inma.ro



4.

Title: AUTOMATED INSTALLATION FOR THE COLLECTION OF ATMOSPHERIC HUMIDITY

Patent / project number: National Patent Application No. A-00713 / 2022

Author/s: Dragoş MANEA, Eugen MARIN, Marinela MATEESCU, Gabriel GHEORGHE, Carmen VASILACHI, Florin DUMITRU

Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry

Category: G

Description: The invention refers to an automated installation for the collection of atmospheric humidity, intended to obtain an additional amount of water for the irrigation of vegetable crops grown in greenhouses or solariums, monitoring and controlling the process of collecting atmospheric humidity in real time and with a low energy consumption.

ADVANTAGES:

- the installation ensures real-time monitoring and control of the atmospheric moisture collection process;
- uses equipment with low electricity consumption (e.g. recirculation pumps, duct fan, servo motor);
- uses chilled water in a coil of copper pipes located underground to cool the surface of the condensing elements (collector walls);
- it is simple from a constructive point of view.

ACKNOWLEDGEMENT: This work was financed by a subsidy of the Ministry of Research, Innovation and Digitization from Romania, through the NUCLEU Program, contract no. 5N/07.02.2019, project no. PN 19 10 02 01: "Development of innovative technologies within smart farms".

State of development: Experimental Model

Contact: +40-21-269.32.55 icsit@inma.ro

Presentation link: www.inma.ro

5.

Title: METHOD FOR THE PRODUCTION STIMULATION IN ORGANIC FARMS THROUGH ORGANO-MINERAL FERTILIZATION OF THE AGRICULTURAL CROPS

Patent / project number: National Patent Application No. A-00707 / 2022

Author/s: Eugen MARIN, Marinela MATEESCU, Dragoş MANEA, Gabriel GHEORGHE, Carmen BĂLȚATU

Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry

Category: G

Description: The invention refers to a method for the production stimulation in organic farms through organo-mineral fertilization of agricultural crops, used in agriculture for the distribution and incorporation of diatomite microgranules in the soil at the level of the root system to provide a balanced and sufficient nutrition with substances based on silicon, through which production increases compared to the classic cultivation variant are obtained between 15...20% as well as a sustainable improvement of soil fertility. Thus, cereal plants will be supplied with nutrients from unpolluted materials, in order to obtain products of good nutritional quality adapted to the requirements of ecological agriculture.



The technical problem of applying diatomite microgranules that the invention solves consists in the development of a method which, in the technological itinerary, uses a technical equipment that performs in a single pass the application, the incorporation of diatomite microgranules into the soil and the mechanical aeration of the soil.

State of development: *Experimental Model*

Contact: +40-21-269.32.55 icsit@inma.ro

Presentation link: www.inma.ro

6.

Title: METHOD FOR MONITORING AND COMBATING AGRICULTURAL LAND COMPACTNESS

Patent / project number: National Patent Application No. A-00691 / 2022

Author/s: Eugen MARIN, Dragoş MANEA, Marinela MATEESCU, Gabriel GHEORGHE, Carmen BĂLŢATU

Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry

Category: G

Description: *The invention refers to a method for monitoring and combating the compaction state used in agriculture to improve the fertility and soil production capacity. The method leads to achieving rapid indications on the state of soil compaction, to establish the optimal variant regarding the measures taken in order to restore the structural architecture of the soil within the normal limits throughout its profile and to ensure a precise movement of the equipment on the ground for in-depth decompaction of the soil, thus eliminating overlapping errors.*

ADVANTAGES:

By applying the invention the following advantages are obtained:

- fast monitoring of soil compaction;
- reducing traction resistance and, implicitly, the fuel consumption;
- improve soil decompaction by:
 - increasing the ability to storage and keep water in the soil;
 - facilitating the roots of the plants to the nutrients needed in the soil, so that they can absorb them adequately;
 - increased organic matter and nutrients in the soil.

State of development: *Experimental Model*

Contact: +40-21-269.32.55 icsit@inma.ro

Presentation link: www.inma.ro

7.

Title: METHOD FOR COMPACTING BIOMASS IN A CLOSED CYLINDRICAL MOLD

Patent / project number: National Patent Application No. A-00511 / 2022

Author/s: Iuliana GĂGEANU, Cătălin PERSU, Dan CUJBESCU, Gabriel GHEORGHE, Dragoş DUMITRU, Dragoş ANGHELACHE, Ana-Maria TĂBĂRAŞU



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Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry

Category: G

Description: The invention refers to a method for compacting the biomass in a closed cylindrical mold, with subsequent discharge of the compacted product at the bottom.

The existing methods have a major disadvantage, namely the need to pre-process the biomass before initiating the process (fine shredding, drying), the need to use binders, but also the high energy consumption needed to compact the biomass. Another major disadvantage of the current methods is that they are generally based on the need for a high temperature for the process and to maintain the integrity of the compacted products after the process is completed.

The technical problem solved by the invention consists in achieving a method for compacting the lignocellulosic and agricultural biomass, including biomass mixtures, thus producing solid biofuels, by compacting the minced biomass to predetermined values, having increased the control of the compaction mechanism, depending on the type of compacted material.

ACKNOWLEDGEMENT: This work was supported by a grant of the Ministry of Agriculture and Rural Development in Romania, through the ADER program, project "Technologies for the superior valorization of the lignocellulosic waste from horticulture" Contract no. ADER 25.4.2/27.09.2019, A.A. 2 / 20.04.2021 and by the Ministry of Research, Innovation and Digitalization through Program 1 - Development of the national research -development system, subprogram 1.2 - institutional performance - projects for financing excellence in the CDI, contract no. 1PFE/30.12.2021.

State of development: Experimental Model

Contact: +40-21-269.32.55 icsit@inma.ro

Presentation link: www.inma.ro

8.

Title: INTELLIGENT GREENHOUSE ENVIRONMENT MONITORING SYSTEM

Patent / project number: National Patent Application No. A-00238 / 2022

Author/s: Dan CUJBESCU, Iulian VOICEA, Cătălin PERSU, Iulia GĂGEANU, Mihai MATAACHE, Gabriel GHEORGHE, Dragoș DUMITRU

Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry

Category: G

Description: The invention refers to a system for monitoring environmental conditions in protected spaces of the smart greenhouse type, in order to make their management process more efficient, as well as to increase the quality of cultivated vegetables, through the strict control of the greenhouse microclimate. Changes in temperature, humidity, light and other microclimate conditions can have a profound effect on the productivity and quality of plant production.

By monitoring environmental conditions, smart greenhouses are able to self-regulate their microclimate, being able to send information via mobile phone regarding the status of the monitored parameters, which can be stored long-term in databases.



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The technical problem that the invention solves consists in creating a system for monitoring the environmental conditions in an intelligent greenhouse, without human intervention, and which can be used at any stage of plant development, by managing the microclimate factors in the greenhouses, being able to simultaneously maintain the main set of microclimate factors, i.e. temperature, relative humidity and carbon dioxide concentration, close to the preset reference values.

ACKNOWLEDGEMENT: This work was supported by the Ministry of Agriculture and Rural Development, through the project entitled: "Smart technologies and equipment to increase productivity in protected areas" - ADER 25.2.1 - Contract no. 25.2.1 / 27.09.2019.

State of development: Experimental Model

Contact: +40-21-269.32.55 icsit@inma.ro

Presentation link: www.inma.ro

9.

Title: INSTALLATION FOR TABLETING LIGNO-CELLULOSIC WASTE

Patent / project number: National Patent Application No. A-00206 / 2022

Author/s: Iuliana GĂGEANU⁽¹⁾, Mihai MATACHE⁽¹⁾, Cătălin PERSU⁽¹⁾, Dan CUJBESCU⁽¹⁾, Iulian VOICEA⁽¹⁾, Valentin VLĂDUȚ⁽¹⁾, Lucian-Ionel CIOCA⁽²⁾, Victoria-Larisa IVAȘCU⁽³⁾

Institution(s): ⁽¹⁾ National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry; ⁽²⁾ University "Lucian Blaga" Sibiu; ⁽³⁾ University "Politehnica" Timișoara

Category: G

Description: The invention relates to a plant for compacting and tableting ligno-cellulosic waste from horticulture, intended for their utilization as solid biofuel or as a raw material in the production of heat or smoke to protect vineyards and orchards against frosts or late spring frosts. The tableting process involves compacting the shredded biomass under high pressure inside a closed-end die and forcing it to greatly reduce its volume. The installation for tableting lignocellulosic waste is intended for the production of high quality solid biofuels, by compacting the grinded biomass to predetermined values, under the conditions of a control of the compaction mechanism appropriate to the characteristics of the biomass material used.

ADVANTAGES:

- ❑ high quality compaction, without the use of binders or the application of high temperatures;
- ❑ reduced costs of transporting, storing and handling lignocellulosic waste;
- ❑ low electricity consumption;
- ❑ easy operation and maintenance.

Acknowledgement: This work was supported by a grant from the Romanian Ministry of Agriculture and Rural Development, through the ADER Program, project "Technologies for the superior valorization of lignocellulosic waste from horticulture" contract no. ADER 25.4.2/27.09.2019, A.A. 2 / 20.04.2021 and by the Ministry of Research, Innovation and Digitization through Program 1 - Development of the national research and development system, Subprogram 1.2 - Institutional performance - Projects for financing excellence in R&D, Contract no. 1PFE/30.12.2021.



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State of development: **Experimental Model**

Contact: +40-21-269.32.55 icsit@inma.ro

Presentation link: www.inma.ro

10.

Title: INDOOR POLYCULTURE FISH FARMING SYSTEM

Patent / project number: National Patent Application No. A-00175 / 2022

Author/s: Iulian VOICEA, Mihai MATACHE, Cătălin PERSU, Dan CUJBESCU, Iuliana GĂGEANU

Institution: National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry

Category: G

Description: The invention relates to a system of indoor breeding of fish material in polyculture, in order to achieve the growth of fish for consumption in a controlled environment with a symbiosis between common carp and Asian carp such as bighead carp, silver carp, Grass carp, with higher growth yields compared to current growing systems made in tanks with permanent recirculation and a high technological water supply. The system consists of a concrete basin with a width of 14.4 m, a length of 57 m and a depth of 4.6 m. The waterproofing of the reinforced concrete was ensured by applying a binder specific for fish basins that do not affect the good growth and development of the fish species and aquatic plants. The feeding system consists of 4 feeders with auger and feed disperser for pelletized feed with a diameter between 2-10 mm, these feeders being able to ensure automated feeding by sequential programming of food dispersion on the surface of the basin. The aeration - oxygenation system of the fish water in the basin consists of 3 aerators with submersible motor and directed water jet. Also, a system for air diffusion in the water was made by means of a HDPE type pipe for water, connected to 2 aerators. The 3 surface aerators are of the floating type moving the water in the form of a jet, thus producing a good water circulation and an increased oxygenation. The water jet is directed, forming currents and thus achieving optimal oxygenation.

The monitoring of the quality of the water in the basin with polyculture fish farming system is done through specific temperature and pH sensors - Sensorex 8000 series, compact and stationary monitoring system for oxygen determination and control - Aqua Control One with Dryden probe plus mobile multiparameter probe HI9829.

Acknowledgement: This work is financed by Project no. PN 19 10 02 03 Contract no.: 5N/07.02.2019-AA NO. 8/2022: "Research on intensive fish farming in a polyculture system and complex utilization of aquatic bioresources (plants)".

State of development: **Experimental Model**

Contact: +40-21-269.32.55 icsit@inma.ro

Presentation link: www.inma.ro

11.

Title: HIGH CAPACITY AGRICULTURAL DRONE FOR PHYTOSANITARY TREATMENTS IN FIELD CROPS

Patent / project number: National Patent Application No. A-00687 / 2021



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14-16.09.2023 – Deva, Romania



Author/s: Mihai MATACHE⁽¹⁾, Iuliana GĂGEANU⁽¹⁾, Iulian VOICEA⁽¹⁾, Gabriel GHEORGHE⁽¹⁾, Cătălin PERSU⁽¹⁾, Dan CUJBESCU⁽¹⁾, Marian CHIRIȚESCU⁽¹⁾, Sorin-Ștefan BIRIȘ⁽²⁾
Institution(s): ⁽¹⁾ National Institute for Research - Development of Machines and Installations designed for Agriculture and Food Industry; ⁽²⁾ POLITEHNICA University of Bucharest - ROMANIA

Category: G

Description: The invention refers to a high-capacity agricultural drone for carrying out phytosanitary treatments in field crops, in order to precisely apply them and reduce the amount of phytosanitary substances applied. Currently, using classic spraying machines (self-propelled, trailed or carried) the application of phytosanitary treatments is done continuously, regardless of whether there are problems or not in the crop, thus dispersing large amounts of substances on the soil or on the crop plants.

The main disadvantage of the presented solutions lies in the fact that these installations have a reduced capacity of the pesticide tank, have a reduced number of motors, which reduces their lifting capacity and achieves an uneven spraying of the plants below them due to the conformation of their frame.

The technical problem that the proposed solution solves, according to the invention, consists in building a high-capacity agricultural drone for carrying out phytosanitary treatments in field crops, so as to allow the precise treatment of extensive areas of plants in the areas previously identified as needing phytosanitary treatment.

ACKNOWLEDGEMENT: This work was supported by a grant from the Ministry of Research, Development and Digitization, CCCDI-UEFISCDI, project no. PN-III-P2-2.1-PED-2029-4123, contract no. 380PED /2019.

State of development: Experimental Model

Contact: +40-21-269.32.55 icsit@inma.ro

Presentation link: www.inma.ro

12.

Title: NEW VARIETY OF CAMELINA SATIVA (L.) CRANTZ - BIOMASS FOR BIOKEROSEN PRODUCTION

Patent/project number: 3910/05.05.2017

Author/s: Sauca F., Jurcoane St., Dobre P., Matei F., Podgoreanu E., Moraru A, Cristea S, Cornea C.P

Institution: UNIVERSITY OF AGRONOMIC SCIENCES AND VETERINARY MEDICINE OF BUCHAREST

Category: G

Description: Methodology: use of the immature embryo rescue technique; hybridization, self-pollination, mass-selection and individual selection; starting material = Romanian camelina local variety; open field for randomized hybridization with other camelina variety (GP202). New variety description *Camelina sativa* (L.) Linicola ISTIS Certificate 3910/05.05.2017. Variety name: - in testing: FP-5-02 - for homologation: Mădălina. Characteristics: - Leaf pilosity: absent - Flowering moment: early (2 months after sowing) - Average gross seeds production: 2600 kg/ha (+ 9.5% against GP202) - Oil content : + 2.4 - 4% against parents - Resistance to frozen temperature: moderate to high (sensible to asphyxia under 50 cm of snow longer than 10 days) - Resistance to mildew: moderate to high - Resistance to fall: moderate to high

State of development: biomass for biokerosen production



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Contact: Stefana.jurcoane@biotehgen.eu

Presentation link: www.usamv.ro

13.

Title: MAGNETIC PROBE FOR EXTRACTING FERROMAGNETIC OBJECTS FROM THE CATTLE NETWORK

Patent/project number: 1644 (13) Y/2021.06.24

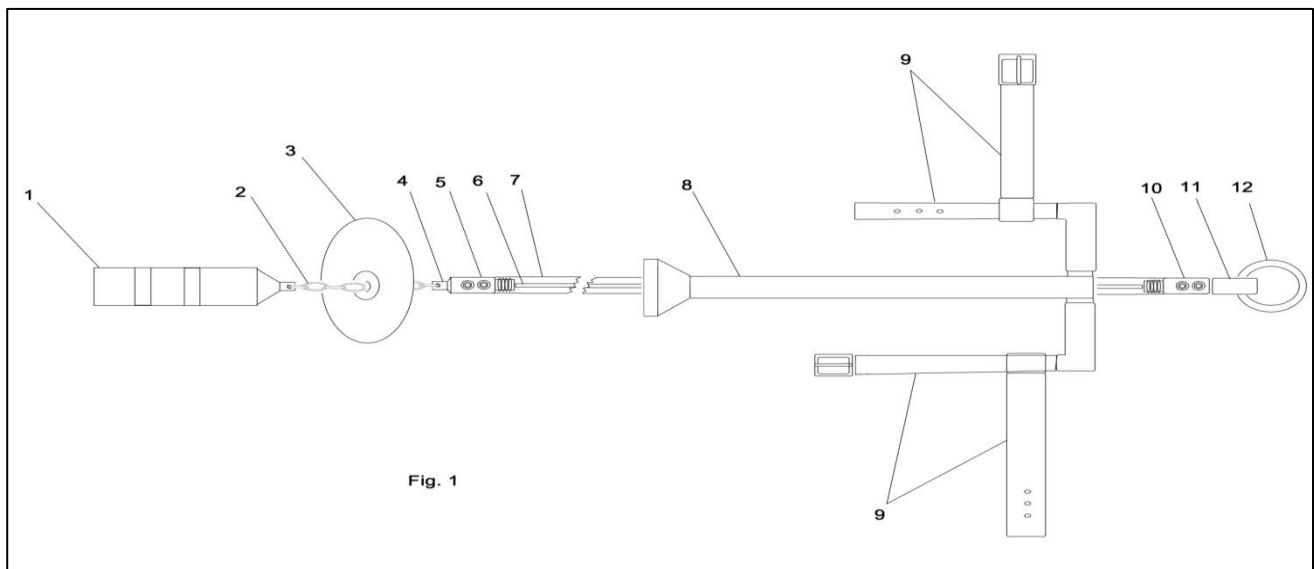
Author/s: Mereuță, I., Balan, I., Buzan, V., Cazacov, I., Roșca, N., Bucarciuc, M., Boronciuc, G.

Institution: Moldova State University, Institute of Physiology and Sanocreatology

Category: G

Description: The invention relates to veterinary medicine, in particular to magnetic probes for extracting ferromagnetic objects from the cattle network, and can be used for the prevention and treatment of feed traumatism. The probe, according to the invention, comprises a magnet (1), having one end connected to a metal chain (2), on which is placed a rubber cover (3), the other end of the chain (2) being connected by means of a fitting (4) to one end of a silicone hose (7), in which, from its two ends, by means of a tubular nut with hidden bolts (5), is fixed a plastic-coated metal cable (6), and at the other end of the silicone hose (7) is fixed a fixing ring (12) with a nut (11). The silicone hose (7) is placed in a tubular device (8), made with a conical extension and equipped with a holder (10) with fixing straps with buckles (9). Claims: 1.

Fig.: 1.



State of development: Patent application.

Contact: Balan Ion, e-mail: balanion@rambler.ru (+373 22) 069124702.

Presentation link: <https://ifs.md/despre>



14.

Title: DEVELOPMENT OF A SUSTAINABLE BIOSECURITY MANAGEMENT SYSTEM IN ANIMAL BREEDING IN ROMANIA/ENHANCED AND COST-EFFECTIVE BIOSECURITY IN LIVESTOCK PRODUCTION

Project number: HORIZON.2.6 / Grant agreement ID: 101083923 / 2023

Author/s: BĂRĂITĂREANU Stelian, VIDU Livia, BĂRBUCEANU Florica, FURNARIS Florin Ciprian, GORAN Gheorghe, CIOCÎRLIE Nicoleta, GURĂU Maria Rodica, GHIMPEȚEANU Oana-Mărgărita, CONSTANTIN Nicolae Tiberiu, DUȚULESCU Valentin Alexandru, IONESCU Teodor, FÎNTÎNERU Gina

Institution: University of Agronomic Sciences and Veterinary Medicine of Bucharest

Category: G

Description: The main objective of the project is to enable decision-makers in livestock farming to understand, prioritise and implement evidence-based, cost-effective, and sustainable biosecurity management systems. This will be carried out through various work packages and tasks that include quantification of the impact of biosecurity practices. Starting with 1 January 2023, a team of 12 researchers from the University of Agronomic Sciences and Veterinary Medicine of Bucharest are involved in a four-year project supported by the European Union with a budget of 5 million euros and 19 participating partners, from 12 European countries, coordinated by Ghent University.

The main objective is to enable decision-makers in livestock farming to understand, prioritise and implement evidence-based, cost-effective, and sustainable biosecurity management systems.

This will be carried out through various work packages and tasks that include:

- reviewing the current understanding of biosecurity throughout the livestock production chain;
- quantifying the impact of biosecurity practices on the prevention of infection and spread of disease;
- enhancing current biosecurity measures, as well as expanding on these by carrying out field studies and performing experiments.

State of development: research project

Contact: Băraităreanu Stelian, stelian.baraitareanu@gmail.com

Presentation link: <https://www.usamv.ro/index.php/en/>

15.

Title: GLASS-CLINOPTILOLITE ZEOLITE COMPOSITE FILTERS AND METHOD FOR OBTAINING THEM

Patent number: A/00267/29.05.2023

Author/s: SURMELI (SAVA) Steluța Camelia, SAVA Bogdan Alexandru, NICOLAE Carmen Georgeta

Institution: UNIVERSITY OF AGRONOMIC SCIENCES AND VETERINARY MEDICINE OF BUCHAREST

Category: G

Description: The invention relates to glass-zeolite clinoptilolite composite filters used for the removal of ammoniacal nitrogen in controlled aquaculture systems and to a process for obtaining them. The glass-zeolite clinoptilolite composite filters according to the invention comprise a porous glassy matrix made of



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common cheap silicate or borosilicate glass containing glass network-forming oxides: silicon dioxide - SiO₂ and boron oxide - B₂O₃, glass lattice modifiers: calcium oxide - CaO, magnesium oxide - MgO and sodium oxide - Na₂O, and glass sintering temperature lowering oxides: lead oxide - PbO, together with clinoptilolite-type zeolite.

The invention is addressed to economic agents or other interested entities (research institutes, universities, natural persons, etc.) that practice aquaculture. It can be used in recirculating aquaculture system with effective results in the fish breeding and the quality of effluent waters, ensuring a favorable environment for the fish population development.

By using the invention, it can be ensured the animal health standards, the health of the fish and fish products consumer, as well as the sustainability of the environment.

State of development: Patent deposition, laboratory level

Contact: SURMELI (SAVA) Steluța Camelia, e-mail: savacamelia64@yahoo.com

Presentation link: <https://www.usamv.ro/index.php/en/>

16.

Title: FIG CULTURE IN FRUIT BELT

Patent number: A/00457/16.08.2023

Authors: Stanica Florin, Asanica Adrian, Butcaru Ana Cornelia, Mihai Cosmin Alexandru, Moisescu Emilia, Velcea Marian

Institution: UNIVERSITY OF AGRONOMIC SCIENCES AND VETERINARY MEDICINE OF BUCHAREST

Category: G

Description: The present invention refers to an original and unitary method of fig culture (in an ecological system) in areas with a temperate climate. The method involves the preparation of the soil according to established agricultural technologies, followed by the cultivation of some medicinal and industrial plants on the entire surface that incorporate them at flowering, picketing the rows in the North-South direction at distances of 2.5-3.5 m between the axes of symmetry (b1), making planting trenches (a) 40-60 cm deep and 20-30 cm wide at the base and 40-50 cm at the top, filling these trenches with manure (c) and leveling them with soil at ground level, placing drip tubes (e) on the direction and position of the axes of symmetry (b1) of the planting trenches (a), watering and making planting pits (h) 20-30 cm deep at intervals of 0.7-1.0 m with the axis inclined at 30-45° from the horizontal, planting the figs (f) in pots with the tip towards the North, covering the planting pits (a), making the delimiting trenches (l) of the strips of culture 15-20 cm deep and 15-20 cm wide, which identify the ridges (m) between the fruit bands, 1.0-1.5 m wide.

The maintenance of the crop in the first year is done by periodic irrigation, application of fertilizers and weeding as appropriate, harvesting the ripe fruits once every two days and storing them in refrigerated spaces at 1-2 degrees Celsius until delivery or utilization, covering the plants for a period of between the fall of the leaves and the arrival of spring with a heat-insulating layer (l) 40-50 cm thick having the shape of a drum with a height of 40-50 cm from the ground, consisting of a mixture (k) of soil with chopped dry grass, chopped straw, sawdust, textile scraps of cotton or wool.

At the arrival of spring, the bin is opened and mechanized cuttings are carried out with the chopper adjusted to a height of 15-17 cm from the ground and/or manual cuttings in onions at 2-3 buds, simultaneously with the thinning of the vertical branches at a distance of 15-25 cm between them and maintaining the



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continuity of the vegetation by fixing some lateral branches to the ground with hooks (j), simultaneously with keeping the stems from the previous year at ground level with the help of fixing hooks; the crop cycle resumes similar to the previous year.

State of development: Patent deposition, four ages of testes, commercial level

Contact: Stanica Florin, e-mail: flstanica@yahoo.co.uk ctt@usamv.ro

Presentation link: <https://www.usamv.ro/index.php/en/>

17.

Title: TRI KULE, ADA KALEH AND NECTAR–THE NEWEST ROMANIAN FIG CULTIVARS HOMOLOGATED AT THE FACULTY OF HORTICULTURE IN BUCHAREST

Authors: Stănică Florin; Curici Nicolaie; Peev Otiman Paula Diana; Dobrescu Vera; Butcaru Ana Cornelia; Ancuța (Moiescu) Emilia; Mihai Cosmin Alexandru; Velcea Marian

Institution: UNIVERSITY OF AGRONOMIC SCIENCES AND VETERINARY MEDICINE OF BUCHAREST

Category: G

Description: Tri Kule, Ada Kaleh, and Nectar are the newest Romanian fig cultivars homologated at the Faculty of Horticulture in Bucharest. Tri Kule and Nectar have yellow fruit skin with exquisite aroma and taste, while Ada Kaleh fruits are dark brown. They are suitable for fresh consumption or processing. Nurseries worldwide have these three new fig (*Ficus carica* L.) cultivars suitable for new orchards or small gardens established in Romania with very good results in yield and fruit quality.

TRIKULE FIG: The plants forms erect bushes, and its vigor is average .If the winter is mild and low temperatures do not affect the flower buds ,the first crop occurs in July (breba), with one-year-old branches bearing the fruits. The main crop starts at the end of July–beginning of August ,the fruits (proper figs) grow at the leaf axil on the annual shoots. If the plant is vigorous, it can bear r fruits from the first year after planting in the field. Yield increases steadily with bush development. TriKule fig has a brownish-green fruit skin and an amber/pink pulp.

The fruit skin is quite thick. According to the location of the maximum width, the fruit has a long-pyriform shape, without a neck. The average weigh to breba fruit is around 118 g and for proper figs around 47g. In the case of the Romanian climate, TriKule figis a middle cultivar. Fruits are very aromatic and can be consumed fresh or dried (entire or sliced). They are also suitable for processing sweets such as jam or distilled beverages.

State of development: Patent deposition, Experimental culture

Contact: Stanica Florin, e-mail: flstanica@yahoo.co.uk ctt@usamv.ro

Presentation link: <https://www.usamv.ro/index.php/en/>

18.

Title: SILAGE STABILIZERS

Patent/project number: National Serbian patent application 2020/1040 and international WIPO PCT/RS 2020/000013

Author/s: Dr Aleksandra Ivetić

Institution: Institute for Science Application in Agriculture - Serbia



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Category: G

Description: Silage stabilizers present an inventive element in the process of plant ensiling in horizontal silos, silo bags and roll bags. Innovations have numerous beneficial effects on the ensiling process, providing a longer period of protection the nutritive value of silage.

The novelties are components of organic origin that are health safe for humans and animals. Silage stabilizer enables farmers to make a profit. Invention is aimed for improving the silage production, reduction of enteric methane (ECH₄) emission and silage effluent pollution. Silage stabilizer can adapt to the conditions of each farm individually, providing faster silo mass opening (15 days) or longer (400 days).

State of development: Technology Readiness Levels (define by European Commission EC)-TRL is 8, Silage stabilizers are complete and qualified

Contact: Dr Aleksandra Ivetić farmainova.aleksandra@gmail.com

Presentation link:

<https://farmainnova.rs/en/silage-stabilizers/>

<https://agrobiznis.finance.si/agro-hi-tech/stabilizatorji-silaze-so-revolucija-siliranja/a/8983771>

<https://www.britserbcham.com/en/interview-with-dr-aleksandra-ivetic-ceo-at-farma-inova/>

<https://dinkubator.rs/interovju-sa-aleksandrom-ivetic/>

<https://www.agro-hitech.si/team/dr-aleksandra-ivetic-university-of-belgrade/>

<https://informer.rs/to/emisije/649428/da-li-znate-sta-je-silaza-e-pa-prof-dr-aleksandra-ivetic-osmislila-je-kako-da-zivotinje-budu-i-zdrave-i-site-i-od-toga-napravila-sjajan-biznis>

19.

Title: INFLUENCE OF STREPTOMYCETE BIOMASS ON THE PHYSIOLOGICAL INDICATORS OF HOMEOTHERMIC ANIMALS

Patent number: Patent MD 1672 Y of 2022.09.08; Patent MD 1682 Y of 2022.09.08

Author/s: Bîrsa Maxim; Burţeva Svetlana; Sîrbu Tamara; Garbuzneac Anastasia; Şeptiţchi Vladimir

Institution: Institute of Microbiology and Biotechnology of Technical University of Moldova

Category: G

Description: The invention relates to agriculture and experimental physiology, to obtaining biomass of streptomycetes during cultivation on nutrient media containing 4-aminobenzoic acid and using it as an additive in a standard diet to increase the body weight of homeothermic animals (laboratory rats Wistar).

- Purpose

- The invention relates to agriculture and experimental physiology, to obtaining biomass of streptomycetes during cultivation on nutrient media containing 4-aminobenzoic acid and using it as an additive in a standard diet to increase the body weight of homeothermic animals (laboratory rats Wistar).

- Solution

- The essence of the invention consists in the fact that an optimized nutrient medium is proposed for the submerged cultivation of the strain *Streptomyces massaporeus* CNMN-Ac-06, which contains 4-aminobenzoic acid 1.37 g/l.



- In the following, a procedure for supplementing the diet of white rats Wistar with the biomass food additive of the strain *Streptomyces massaporeus* CNMN-Ac-06, cultivated on the same nutrient medium containing 4-aminobenzoic acid - 1.37 g/l, in a quantity of 250 mg/kg body weight per day for 5-10 weeks.

- Advantages

- The result of the invention is that the proposed medium increases the synthesis of lipids by 32.28%, phospholipids by 111.5% and sterols by 366.66% in comparison with the prototype medium. The amount of absolutely dry biomass in comparison with the prototype medium is increased by 212.76%, from 5th to 10th week in comparison with the prototype.
- An increase in body weight was also observed in experiments in the after stress condition (stressed with extremely high temperature 34 ... 36°C, without ventilation), weight gain was 127.56-466.67% in comparison with the control (standard diet + biomass of the strain).
- An increase in the weight gain of experimental animals occurs both under normal physiological conditions and under stress, especially in the after stress conditions, which indicates an increase in the resistance of the body of experimental animals to the effects of heat stress under the influence of the food additives used to the standard diet, as well as a more intensive restoration of physiological capabilities of the body after exposure to adverse environmental conditions.

The research was funded out within the project 20.80009.7007.09 (NARD).

State of development: scientific paper, research project, PhD thesis

Contact: maxim.birsa@imb.utm.md

Presentation link: <https://imb.utm.md/>

20.

Title: APPLICATION OF BIOPESTICIDES OF MICROBIAL ORIGIN AGAINST PHYTOPATOGENES

Patent number: nr. 7131 of 20.12.2022; nr. 7179 of 11.05.2023

Author/s: Sirbu Tamara; Moldovan Cristina; Ţurcan Olga; Bogdan-Golubi Nina; Slanina Valerina

Institution: Institute of Microbiology and Biotechnology of Technical University of Moldova

Category: G

Description: The use of exometabolites of *Bacillus velezensis* CNMN BB-12 and *Trichoderma atrobruneum* CNMN FD 25 strains contributes to the fight against phytopathogens of fungal and bacterial origin, exceeding the control by 25-50%.

- Purpose

- Use of *Bacillus velezensis* CNMN BB-12 and *Trichoderma atrobruneum* CNMN FD 25 strains as sources of bioactive substances with antimicrobial effect against phytopathogens.

- Solution

- The invention relates to agriculture; the use of *Bacillus velezensis* CNMN BB-12 and *Trichoderma atrobruneum* CNMN FD 25 strains as a source of bioactive substances for combat phytopathogens: *B. cinerea*, *Alt. alternata*, *A. niger*, *F. solani*, *F. oxysporum*, *C. michiganensis*, *E. carotovora*, *X. campestris*, *A. tumefaciens*. According to the invention, for combating phytopathogens,



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exometabolite solutions of the mentioned strains can be used for seeds treating before sowing, but also during the vegetative period of crop plants.

- Advantages

- *The use of exometabolites of *Bacillus velezensis* CNMN BB-12 and *Trichoderma atrovirens* CNMN FD 25 strains contributes to the fight against phytopathogens of fungal and bacterial origin, exceeding the control by 25-50%.*

The research was funded out within the project 20.80009.7007.09 (NARD).

State of development: research project, PhD thesis

Contact: tamara.sirbu@imb.utm.md

Presentation link: <https://imb.utm.md/>

21.

Title: PROCEDURE FOR OBTAINING THE PROTEOGLYCAN PREPARATION AND ITS TESTING IN THE ZOOTECHNICAL FIELD

Patent/project number: a20220059 from 29.12.2022

Author/s: Efremova Nadejda; Chiselita Natalia; Beșliu Alina; Chiselita Oleg; Tofan Elena; Rudic Valeriu.

Institution: The Institute of Microbiology and Biotechnology of Technical University of Moldova

Category: G

Description: *The invention relates to the elaboration of a new process for obtaining of proteoglycan preparation with high content of sulfated polysaccharides from the remaining from the production of bio remedy BioR biomass of *Arthrospira platensis*. Using biomass of cyanobacteria *Arthrospira platensis* as the source of proteoglycans which possess anti-inflammatory, antiviral activities for the application in zootechny and other fields.*

*The process according to the invention consists in the following steps: the dried at the temperature of $+50\pm 5^{\circ}\text{C}$ remaining biomass *Arthrospira platensis* was subjected to grinding, then it was mixed with 96% ethyl alcohol in a volume of 1:10, the obtained suspension was placed in a water bath at a temperature of $+45^{\circ}\text{C}$, for 30 minutes, centrifugation at 3500 rpm., the biomass was mixed with distilled water at a ratio of 1:3 v/v and placed under 50 W ultrasound for 5 minutes and heated at a temperature of $+45^{\circ}\text{C}$ for 30 minutes or subjected to autoclaving at a temperature of $+115^{\circ}\text{C}$ (0.5 atm.) for 30 minutes, centrifugation at 3500 rpm. and add EDTA to the final proteoglycan preparation. Technical result consists in obtaining the preparation with $661\pm 2.30 - 733\pm 1.55$ mg/L sulfated polysaccharides.*

The results were obtained in the framework of project 20.80009.5107.16. "New biologically active microbial preparations for increasing the reproductive and productive potential of animals of zootechnical interest", financed by NARD.

State of development: *The preparation is used in the research laboratories of the Scientific and Practical Institute of Biotechnology in Animal Husbandry and Veterinary Medicine. The preparation is tested at the enterprises for swine and sheep production.*

Contact: Oleg Chiselita email: oleg.chiselita@imb.utm.md

Presentation link: <https://imb.utm.md/>



22.

Title: MULTIPLIER-GEARBOX (CHANGER)

Patent number: Mechanical Designer

Authors: Brane MASLAR

Institution: Arilje - SERBIA

Category: G

Description: The multiplier (gearbox, reducer) is an additional device that can be installed on the existing platform of the motocultivator or a new platform (chassis) or can be used as a new platform for motocultivator. This device is intended to be installed in order to improve many performances where even modern machines cannot help people in agriculture due to the large slope of the land. It is primarily used for spraying fruits and vegetables, because the existing attachments are not adequately made. Thanks to this device farmers can mount a cyclone to disperse artificial fertilizer in a steep land slopes and successfully carry out fertilization.

Forest workers can by mounting a circular saw cut forest timber on inaccessible terrains. It is possible to extinguish the fire with water supply and in the absence of water in rural households that have poor road infrastructure, 250 litres of water can be delivered in one fetching water. With an additional pulley (an additional shoulder construction) workers where there is no electricity can mount a mixer for concrete and the desired facility do as well as many other possibilities. Briefly, this multiplier makes life much easier for all rural households living in difficult conditions.

State of development: product

Contact: branemaslar63@gmail.com

Presentation link: <https://rs.linkedin.com/in/brane-maslar-69b13b270>

23.

Title: CULTIVATION PROCEDURES OF CROP HIGHER PLANTS BASED ON COORDINATIVE COMPOUNDS

Patents: MD 510, MD 511, MD BSD 813

Author/s: Eduard Coropceanu¹, Anastaşia Ștefârță², Ion Bulhac²

Institution: ¹Institute for Research, Innovation and Technology Transfer of “Ion Creangă” State Pedagogical University of Chişinău; ²Institute of Chemistry of Moldova State University

Category: G

Description: The coordination compounds of transition metals with oxime ligands possess properties of bioactive substances with a positive impact on plant growth, development, resistance and productivity. Treating the seeds for sowing and the leaf apparatus during the growing season, with aqueous solutions of Difecoden, Difemanden, Coditiaz, Conimid, Cobamid conditions the optimization of the functional state, growth and development of corn, soybean, sugar beet, cucumber, tomato, beetroot, peanut plants, both in favorable humidity conditions and in a moderate water deficit. The coordinative compounds used have the property of activating vital processes already at the initial stages of individual plant development, stimulate the growth of the root system, ensure the homeostasis of the water status in conditions of suboptimal water regime, increase plant productivity, strengthen the body's protective functions, increasing tolerance to suboptimal factors.



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In conditions of low humidity, Difecoden, Cobamid, Conimid and Coditiaz have an influence of reducing the effect of drought on the formation of the assimilative apparatus, the accumulation of biomass and the harvest of plants. The use of coordinative compounds in combination with water-soluble polymers (PVP, coVP) ensures the reduction of water consumption in the transpiration process without negative consequences on the accumulation of plant biomass.

The coordinative compounds Difecoden, Conimid and Fludisec, possess antioxidant properties that are manifested in increasing the antioxidant protection capacity of the treated plant organs as a consequence of the intensification of antioxidant enzyme activity in them with a positive impact on plant productivity.

State of development: research project

Contact: ecoropceanu@gmail.com

Presentation link: <https://icitt.upsc.md/> <https://upsc.md/en/main-page/>

24.

Title: THE LOCAL CULTIVAR OF ELE CAMPANE, INULA HELENIUM „ILEANA”

Patent: no. 401 / 2023.02.28

Author: Dr. Victor ȚÎȚEI

Institution: "Alexandru Ciubotaru" National Botanical Garden (Institute) of Moldova State University, Republic of Moldova

Category: G

Description: *The local cultivar of elecampane, Inula helenium „ILEANA” registered in the Catalogue of Plant Varieties (no. 2594630 / 2021) and patented by the State Agency on Intellectual Property (AGEPI) of the Republic of Moldova is multi-purpose perennial crops with melliferous, ornamental, forage, medicinal, energy mass applications. The forage values of the ensiled plants: 124.9 g/kg protein, 33.3 g/kg fats, 305 g/kg raw cellulose, 398 g/kg nitrogen-free extractive substances, 139 g/kg ash, 18.1 g/kg lactic acid, 3.9 g/kg acetic acid, 104 g digestible protein/ nutritive units. This cultivar is a source of pollen and nectar available for 30-42 days (July-August), and makes it possible to obtain 70-130 kg/ha of honey. The cv. „ILEANA” green and ensiled mass substrates for anaerobic digestion were characterized by optimal C/N ratio and amount of hemicelluloses and moderate amount of lignin, the biomethane potential was 230-300 l/kg organic matter. The stalks biomass had moderate gross calorific value of 18.5 MJ/kg and the amount of ash 2.6%, the specific density of the densified biofuel reached 800 kg/m³. The elecampane rhizomes (Radix Inulae) contain 42% inulin and 9% other carbohydrates, as well as essential oils, which are necessary for the preparation of various pharmaceutical products, the aromatization of soft drinks, some wines and pastries.*

Financial support from National Agency for Research and Development of Republic of Moldova, project no. 20.80009.5107.02.

State of development: scientific product.

Contact: vic.titei@gmail.com gradinabotanicachisinou@gmail.com

Presentation link: https://gbni.usm.md/?page_id=1681&lang=en



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25.

Title: THE LOCAL CULTIVAR OF GIANT MISCANTHUS, MISCANTHUS × GIGANTEUS „TITAN”

Patent: no. 348 / 2020.04.30

Authors: Dr. Victor ȚÎȚEI, Dr. Alexandru TELEUȚĂ

Institution: “Alexandru Ciubotaru” National Botanical Garden (Institute) of Moldova State University, Republic of Moldova

Category: G – Agriculture, Veterinary medicine

Description:

The local cultivar of miscanthus „TITAN” registered in the Catalogue of Plant Varieties (no. 0394505 / 2021) and patented by the State Agency on Intellectual Property (AGEPI) of the Republic of Moldova reached 350-400 cm tall and annual productivity 60-100 t/ha of green mass or 16.2-28.0 t/ha dry matter. This cultivar may be used as ornamental plant, biomass feedstock for renewable energy, biomaterials and chemicals production. The miscanthus solid biofuel with specific density 882 kg/m³ of briquettes and 1262 kg/m³ of pellets, 1.73-2.51 % ash content, potential of energy production 325-500 GJ/ha/ year, equivalent to 11.1-20.1 t coal or 7.8- 12.2 t conventional oil. The biochemical methane yield varied from 259 to 355 L/kg organic dry matter, the potential of biomethane production: 4100-7000 m³/ha/ year. The miscanthus dry stalks mass was characterized by high content of cellulose (557 g/kg), hemicellulose (283 g/kg) and theoretical ethanol yield reached 610 l/t dry matter.

The miscanthus cultivar „TITAN” is useful in phyto-amelioration of eroded land and phytoremediation of contaminated land.

Financial support from National Agency for Research and Development of Republic of Moldova, project no. 20.80009.5107.02.

State of development: scientific product.

Contact: vic.titei@gmail.com gradinabotanichisinaiu@gmail.com

Presentation link: https://gbni.usm.md/?page_id=1681&lang=en

26.

Title: THE LOCAL CULTIVAR OF PERENNIAL SORGHUM, SORGHUM ALMUM „ARGENTINA”

Patent: no. 344 / 2020.04.30

Authors: Dr. Victor ȚÎȚEI, Dr. Alexandru TELEUȚĂ

Institution: “Alexandru Ciubotaru” National Botanical Garden (Institute) of Moldova State University, Republic of Moldova

Category: G – Agriculture, Veterinary medicine

The cultivar „ARGENTINA” of perennial sorghum (columbus grass) registered in the Catalogue of Plant Varieties (no. 2584624/2021) and patented by the State Agency on Intellectual Property (AGEPI) of the Republic of Moldova is perennial plant with numerous tillers 250-270 cm tall, annual productivity from three cuts reached 61 t/ha green mass or 14 t/ha dry matter. 60-100 t/ha of green mass or 16.2-28.0 t/ha dry matter. The biochemical composition, nutritive and energy values of forage significantly differed in dependence of the cut: 186-267 g/kg DM, 51.0-141.9 g/kg CP, 19.6-34.5 g/kg EE, 76.7.0-138.2 g/kg ash, 670-781 g/kg NDF, 440-493g/kg ADF, 45-62 g/kg ADL, 376-447 g/kg CEL, 249-315 g/kg HC, 5.2-5.3



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g/kg Ca and 1.8-3.2 g/kg P, 24.00-45.59 mg/kg carotene, 10.17-11.16 MJ/kg DE, 8.35-9.16 MJ/kg ME and 4.37-5.18 MJ/kg NEL. The ensiled mass was characterized by pH= 3.8-4.5, 24.7-45.5 g/kg lactic acid, 6.3-9.1 g/kg acetic acid, 0-0.2g/kg butyric acid, 7.58-9.52 % CP, 3.2-3.68 % EE, 7.72-10.76 % ash, 65.7-66.2 % NDF, 41.0-43.3 % ADF, 4.0-4.8 % ADL, 37.0-38.5% CEL, 22.9-24.7 % HC, 35.70-47.17 mg/kg carotene, 3.7-5.5 g/kg Ca and 1.8-2.7 g/kg P, 10.85-11.33 MJ/kg DE, 8.91-9.30 MJ/kg ME and 5.06-5.32 MJ/kg NEL. The grains nutrients content of the cultivar „ARGENTINA” was: 10.1 % CP, 4.5 % EE, 10.5 % CF, 70.2 % NFE and 4.7 % minerals. The gas forming potential of green and ensiled mass substrates from cultivar „ARGENTINA” was 546-680 l/kg; the methane yield was 279-350 l/kg; the annual methane productivity achieved 4198 m³/ha. The solid biofuel from cultivar „ARGENTINA” reached specific density of briquettes 783 kg/m³ and of pellets 1008 kg/m³, ash content 2.73-3.71 %, potential of energy production 190-270 GJ/ha, equivalent to 6.5-9.2 t coal or 4.6-6.4 t conventional oil. The theoretical cellulosic ethanol yield from perennial sorghum dry stalks mass achieved 560 l/t dry matter. The cultivar „ARGENTINA” is useful in phyto-amelioration of salt-affected land, eroded land and of contaminated land.

Financial support from National Agency for Research and Development of Republic of Moldova, project no. 20.80009.5107.02.

State of development: scientific product.

Contact: vic.titei@gmail.com gradinabotanicachisinou@gmail.com

Presentation link: https://gbni.usm.md/?page_id=1681&lang=en



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H - Foods, Drinks, Restaurants, Hotels & Spa

1.

Title: *BOBALICIOUS (Ice-seperated)*

Patent/project number: Patent Pending

Author/s: Chomchan Sittikit

Institution: Chulalongkorn University Demonstration Secondary School - Thailand

Category: H

Description: *My innovation is develop from my own problem with the boba tea. When I eat the boba tea, the pearl will usually get stuck with the ice. From this point, It make it harder to eat the pearl and I found it very annoying. Then I found a solution by creating something to separate the pearl. My innovation basically it works as a strainer and you just have to put it in the cup. Then you put the ice in to the strainer. Also my strainer have a holes for drink to get through it as usual. The drink will be cold. The most significant thing is, you can enjoy eating your pearl without the ice get in your way.*

State of development: Prototype

Contact: Mr. Robert Armstrong , Mr. Jeerasak Jitrotjanarak

Telephone: +66 95 935 1062 , +66 84 639 6363

Email: scis.cud@gmail.com j_jerasak@hotmail.com

Presentation link: <https://youtu.be/6UITxSGPB4k>

2.

Title: THE CHALLENGES OF THE COVID-19 PANDEMIC ON TOURISM DEVELOPMENT

Project number: 20.80009.7007.15

Author/s: Maria HĂMURARU, Veronica BULAT

Institution: Moldova State University

Category: H

Description: **AIM:** *identifying opportunities for tourism development as a consequence of the COVID-19 pandemic.*

SOLUTION: *Tourism potential is one of the main motivators for travel in the Republic of Moldova. There are more than 15 thousand man-made tourist attractions and more than 300 important natural areas in the Republic of Moldova that provide tourist offer. The COVID-19 pandemic has significantly increased the perception of travel risks, joining excursions, traveling to unknown places and other general hospitality hazards. This has radically fueled both the development and demand for virtual forms of tourism. Whether*



it is during times of isolation or because of fear of traveling after the epidemic, there is certainly a demand for a tourism product that, just a few months before, was unknown to most of the population.

State of development: At the research level and preparing the publication.

Contact: veronica.bulat@usm.md

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

3.

Title: "ZIPRIM - an earlier cultivar for jujube (*Ziziphus jujube* L.) homologated at the Faculty of Horticulture in Bucharest"

Patent number: patent application registered at ISTIS Romania

Authors: Asănică Constantin Adrian; Stănică Florin; Mihai Cosmin Alexandru

Institution: University of Agronomic Sciences and Veterinary Medicine of Bucharest

Category: H

Description: Jujube (*Ziziphus jujuba* L.) is a new fruit species for Romania with a high potential for valorizing areas exposed to desertification or salinization. At the same time, it is well known globally for its exceptional nutraceutical properties (for centuries, it has been used as a medicinal plant). Ziprim is the newest cultivar homologated by the Faculty of Horticulture in Bucharest, being one of the earliest in harvesting. The plants can be cultivated in the plum areas in Romania, with excellent results regarding yield and fruit qualities. Romanian consumers have a new option regarding fruit diversity in the yearly period.

State of development: patent application, experimental field

Contact: rektorat@usamv.ro ctt-agrobiolife@usamv.ro asanica@gmail.com

Presentation link: <https://www.usamv.ro/index.php/en/>

4.

Title: COMPOSITE FOOD PRODUCT AND TECHNOLOGY FOR MANUFACTURING THE COMPOSITE FOOD PRODUCT CONSISTING OF MICROPLANTS (SPROUTS/MICROGREENS) AND SUBSTRATE FOR FOOD USE

Patent number: patent application no. A / 00039 on 30.01.2023 registered at OSIM in Bucharest, Romania

Authors: Livadariu Oana, Băbeanu Narcisa Elena, Barbu Lavinia-Diana-Nicoleta, Boiu-Siculia Oana-Alina, Peticilă Adrian George, Constantin Carmen Gabriela, Dobrin Aurora, Ion Violeta-Alexandra, Venat Cosmina Oana Arabela, Nicolae Ioana Cătălina, Lagunovschi-Luchian Viorica, Badea Monica Luminița

Institution: University of Agronomic Sciences and Veterinary Medicine of Bucharest

Category: H

Description: The Patent Application no. A / 00039 on 30.01.2023 registered at OSIM in Bucharest - Romania, with title "Composite food product and technology for manufacturing the composite food product consisting of micro-plants (sprouts/microgreens) and substrate for food use", is a result of the Project with title "Production technology of aromatic microplants in an innovative cultivation system (MICROLED)"



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was funded by the University of Agronomic Sciences and Veterinary Medicine of Bucharest through Project no. 1067/15.06.2022.

This Patent inaugurates a new class of products for human use, both for ordinary consumers and for those in need of a personalized diet. Such a diet should be able to support the physiological needs of the human body and keep it functioning even when it is the site of a battle with an extreme medical diagnosis (e.g. cancer). It should also facilitate the patients' desire to restore their vitality and return to their previous lifestyle. There is on going research on manufacturing products according to the patent.

State of development: patent application

Contact: rectorat@usamv.ro ctt-agrobiolife@usamv.ro oana.livadariu@biotehnologii.usamv.ro

Presentation link: <https://www.usamv.ro/index.php/ro/cercetare/competitie-interna-proiecte-cercetare-2021#MICROLED>

5.

Title: DELICII RUSTICE / RUSTIC DELICIOUSNESS

Patent/project number: Tradition food project

Author/s: Adrian CHIRCULESCU, Raluca BALOS

Institution: Delicii Rustice

Category: H

Description: Welcome to our authentic culinary world, where tradition meets taste! At Delicii Rustice, we craft a range of exquisite products that capture the essence of Romanian heritage. Our lineup includes homemade delights such as eggplant, bean, mushroom, and tuna spread, called “zacusca”, along with fiery chili pepper, onion, blueberry, and raspberry jams.

What sets us apart? Every creation is a tribute to nature's finest, sourced from local organic producers. We take pride in preserving time-honored Romanian recipes, passed down through generations, ensuring that every jar holds the spirit of our culture.

“Delicii Rustice”: Taste the tradition, savor the future!

With each “zacusca” and jar of jam, you're savoring a piece of history, where flavors tell stories of old. As we grow, we remain dedicated to the same principles, supporting our community and embracing innovation. Our commitment to sustainable sourcing and traditional craftsmanship will remain unwavering, even as we expand into larger production.

State of development: product

Contact: deliciirustice@gmail.com +40767 111 660

Presentation link: <https://instagram.com/delicii.rustice?igshid=MmU2YjMzNjRlOQ>

6.

Title: NATURAL PRESERVATIVE WITH ANTIOXIDANT ACTIVITY FOR FOOD OILS, EXTRACTED FROM SEA BUCKTHORN FRUITS (HIPPOPHAE RHAMNOIDES)

Patent/project number: Patent no. 127155/26.02.2016

Author/s: Camelia Puia PAPUC, Gheorghe Valentin GORAN, Valentin Răzvan NICORESCU, Nicoleta Corina DURDUN

Institution: University of Agronomic Sciences and Veterinary Medicine of Bucharest, Romania



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Category: H

Description: The invention relates to a natural product as a solution with antioxidant properties indicated primarily for the preservation of edible oils as an alternative to tert-butyl-4-hydroxy-anisole (BHA) and 2,6-di-tert-butyl-p-cresol (BHT) synthetic antioxidants. The antioxidant activity of the product was tested in the laboratories of U.A.S.V.M. of Bucharest.

The results indicate the following antioxidant properties of the product: (1) it acts as a chelator of transition metal ions, especially Fe²⁺ ion, which is considered an initiator of lipid oxidation in the Fenton reaction; (2) it has the ability to neutralize reactive oxygen and nitrogen species (hydroxyl radical, superoxide anion, hydrogen peroxide, hypochlorite anion and nitric oxide); (3) it inhibits the lipid peroxidation of a linoleic acid emulsion; (4) it inhibits the peroxidation of phospholipids extracted from rat brain.

It is well known that sea buckthorn fruit is rich in vitamins A, C, E, K, flavonoids, lycopene, organic acids, kaempferol, triglycerides, phytosterols, polyphenolic compounds and minerals.

The high content of vitamins A, C, and E, flavonoids, polyphenols, carotenoids and selenium ensure the powerful antioxidant activity of sea buckthorn fruit. The natural product with antioxidant activity proposed by us has a beneficial effect on consumers because (1) the use of synthetic antioxidants can be avoided; (2) it inhibits the formation of trans-trans peroxide stereoisomers; (3) the product has a beneficial effect on the health of consumers due to high content in flavonoids, carotenoids, liposoluble vitamins and minerals.

The problem solved by the invention is that the natural product with antioxidant activity proposed by us is superior to synthetic antioxidants for the following reasons: (1) the introduction of the natural product in oils in the concentration of 100 ppm has the same effect as BHA and BHT synthetic antioxidants added in double concentration (200 ppm); (2) the product is non-toxic; (3) the product contains, besides polyphenols, other compounds with beneficial effects on consumer health (carotenoids, vitamins A, E and K, phytosterols, etc.); (4) unlike BHT and BHA synthetic antioxidants, which favour the formation of trans-trans peroxide stereoisomers, our product favours the formation of cis-trans peroxide stereoisomers; (5) the product has a low price and it is ecological; (6) adding this product to oils will inhibit oxidation (rancidity), increasing their validity and will have a beneficial effect on consumers health.

State of development: laboratory

Contact: Nicoleta Corina Predescu (Durdun) +04 0744867527

Presentation link: <https://www.usamv.ro/index.php/en/>

7.

Title: VORONSKAYA

Patent/project number: The nature created it, we just bottled it

Author/s: PRODALCOM team

Institution: SC PRODALCOM SA

Category: H

Description: SC PRODALCOM SA was born in the north of Moldova as a materialization and cementing of a lasting friendship between the company's shareholders. This friendship led further and contributed to the increase in the notoriety of Vorona, initially known for the monastery here and the secular woods that surround it.



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The year 2017 was THE YEAR OF GROWTH for PRODALCOM:

- Refurbishment of the Vorona bottling section
- Refurbishment of the Botoşani Factory
- Opening of Suceava warehouse

OUR WORLD

From the company's founding in 1993, to celebrating the moments that matter to us and our community. Here you can see images and video from events that bring people together.

State of development: Products

Contact: office@prodalcom.ro

Presentation link: <https://prodalcom.ro/premium-drinks-2/>

8.

Title: LA LIBRARIE

Patent/project number: *The nature created it, we just bottled it*

Author/s: Sergiu STANESCU & LA LIBRĂRIA Team

Institution: La Librarie

Category: H

Description: La Librarie is a wine, liquor and coffee shop that's offering a wide range of imported or niche Romanian products. Either to serve on site, in a chill-out atmosphere, or to take away, we are here to offer some piece of advice in order to help you choose what mostly suits your gourmet appetite. You can have a cigar too, and if in a lucky day, you may enjoy an evening of wine tasting.

State of development: Products

Contact: +40749 063 833

Presentation link: <https://www.facebook.com/profile.php?id=100063611648428>

9.

Title: ADRIANA's HONEY

Project number: producer manufacturer number HD 0231502

Author/s: Ignat-Matei Adriana, Ignat-Matei Adriana Daniela, Ignat-Matei Alexandra Roxana

Institution: Adriana's Honey Manufacturer

Category: H

Description: Bee products intended for a healthy diet. In order to produce organic honey, bees are relocated to pollution-free areas as far away as possible from inhabited areas such as mountains, plains, and hills.

Adriana's types of honey: polyflora, cherries, lime, chestnut, fir, sunflower, scallops.

In addition to honey, we also produce pollen, propolis, wax and a series of ENERGIN-like mixed products.

Capaceala is a beekeeping product that people don't really know, but it has great health benefits.

As everyone understands, this is the cover of the honeycomb, with which the bees "seal" the honey deposited in each cell of the honeycombs.

In the mixture, honey with sea buckthorn fruits represents a complete cure with numerous healing properties for the body. In honey with sea buckthorn we find Vitamin A, the complex of B vitamins (B1,



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B2, B6, B9), Vitamins E, K, P and F, beta-carotene (more concentrated than in carrots) and other microelements such as calcium, magnesium, phosphorus, iron, potassium and volatile oils.

State of development: products

Contact: +40720575824 danielaign9@yahoo.com

Presentation link: <https://www.facebook.com/adriana.ignat.313>

10.

Title: RECORD DONER by STAR DONER & PIZZA

Project number: Food Project

Author/s: Irimia Marius Ionut & Team

Institution: Star Doner & Pizza

Category: H

Description: We created the STAR Taste World just for you. STAR Doner&Pizza, a new, original concept based on quality and diversity adapted to any situation, with a portfolio of over 70 products. The service is provided directly from our location or based on the order with home delivery.

This year the Star Doner & Pizza team made the largest Doner in Romania with a diameter of 85 centimeters and over 50 kilograms. **Be different, choose STAR!**

State of development: products

Contact: +40731 588 801

Presentation link: <https://www.facebook.com/profile.php?id=100088256882595>

11.

Title: VBUNG® Technology

Patent/project number: AU 2018203047 / EP 3564354A1

Author/s: Vitalie POPA & Team

Institution: Vbung & Vdoor

Category: H

Description: VBUNG is a sustainable stainless steel bung that seals the custom wooden barrel while maintaining control over oxidation, contamination and evaporation during aerobic and /or anaerobic maceration, fermentation, malolactic fermentation and aging under continuous safe positive and /or negative pressure inside the custom wooden barrel.

VBUNG ® Technology : No Added Additives and Preservatives Aerobic and/or Anaerobic Maceration, Fermentation, Malolactic Fermentation and Aging under Continuous Positive and/or Negative Pressure with Sunlight in Custom Wooden Barrel

Advantages:

1. Sustainable Technology and Equipment without the use of Additives and Preservatives
2. Sustainable Mobile Winery in the vineyard with solar panels, sensors, and mobile data
3. Accelerated Winemaking and Aging technological process
4. Equipment Control over Oxidation, Contamination, and Evaporation
5. New or Old Wooden barrels can be used once custom modifications are done
6. Whole bunch, Juice, or Berries can be used



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7. No Juice clarification is needed (No flotation, cold settling, or centrifugation)
8. No temperature or humidity control is required (Fermentation at high temperatures for white winemaking is not a problem)
9. Direct Sunlight for the whole technological process
10. No need for topping the barrels
11. Taking out wine samples for laboratory or tasting without oxidation, contamination, evaporation
12. Barrel regeneration with compressed O2 or Air before vintage
13. Extended lifetime for wooden barrels due to custom construction
14. Can be applied to making and aging Wine, Beer, Cider, Vinegar, and aging Spirits.
15. Reduced labor, time, and cost.

State of development: Product

Contact: vitalie.popa@vbungvdoor.com <https://www.vbungvdoor.com/>

Presentation link: <https://youtu.be/plhgINNTYW0>

12.

TITLE: ESTABLISHING A VEGETABLE FREEZING PROJECT AT ONAIZAH, SAUDI ARABIA FOR THE YEAR 2023

Patent/project number: Student project

Author/s: Muhammad Othman Al-Shtewi, Abdulaziz Mohammed Al-Badi; Supervisor: Dr. Majed Farouk

Institution: Onaizah Colleges, Saudi Arabia & Workers University - Egypt

Category: H

Description: The Importance of the Vegetable freezing project - Vegetable freezing projects are of paramount importance in our efforts to build a more sustainable and resilient food system. They address issues related to food security, food waste, and nutritional value while supporting farmers and expanding global trade. As we face the challenges of a growing population and climate change, these projects will continue to be a crucial tool in ensuring that nutritious vegetables are available to all, regardless of season or location.

State of development: Research project

Contact: magedfarouk5@gmail.com

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

13.

Title: THE REFRESH CONCEPT

Project number: 30308550

Author/s: Florin Pirus & Team

Institution: S.C. COFFEE&BEVERAGE S.R.L

Category: H

Description: Our company has been on the market for more than 12 years and we are continuously expanding. Our activity is in the HoReCa field, we own 7 coffee shops, a coffee roaster and a restaurant. In our cafes we offer our own brand of specialty coffee, hot chocolate, smoothie bar, catering and delivery



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services, in addition we are expanded with an online store where we offer our customers a varied range of products and accessories for serving and preparing tea and coffee.

Vision

TheRefresh is more than a company or even a cafe. TheRefresh is a complex concept, which is based on the strong idea of refreshing, stimulating and educating the senses, to facilitate reaching the optimal level of energy and well-being.

TheRefresh is a concept aimed at offering customers a substitute for a healthy and balanced meal in the form of smoothies, teas and coffee.

TheRefresh is the place where the team is educated to serve all products in their finished form at the highest quality, honoring cultural factors and professional preparation methods. TheRefresh is more than a company or even a cafe. TheRefresh is a complex concept, which is based on the strong idea of refreshing, stimulating and educating the senses, to facilitate reaching the optimal level of energy and well-being.

TheRefresh is a concept aimed at offering customers a substitute for a healthy and balanced meal in the form of smoothies, teas and coffee.

TheRefresh is the place where the team is educated to serve all products in their finished form at the highest quality, honoring cultural factors and professional preparation methods.

TheRefresh is the place where you can really taste well-being!

State of development: products & hospitality culture

Contact: florin@therefresh.ro +40 721 726 116 www.therefresh.ro

Presentation link: <https://therefresh.ro/alege-cadoul-perfect-pentru-persoanele-dragi/>



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I - Textiles, Clothing, Fashion, Handmade

1.

Title: HACKTEX - Innovative smart textiles & entrepreneurship

Patent/project number: 2021-1-RO01-KA220-HED-000027527

Author/s: Luminita Ciobanu, Savin Dorin Ionesi, Lidia Alexa

Institution: Gheorghe Asachi Technical University of Iași

Category: I

Description: Smart textiles represent a large group of advanced textiles with new functions obtained using high-performance raw materials and specialized treatments. The HACKTEX project develops the tools necessary for skills enhancement targeted to higher education in relation to innovation in order to obtain its objectives: support higher education students to acquire skills in transdisciplinary innovation based on smart textiles; foster student cooperation multidisciplinary approach in hands-on projects; provide knowledge, skills and competences using virtual learning methodologies and tools; promote the application of good practices for the enhancement of innovative skills; strengthen collaboration between universities with the advanced textiles industry.

State of development: Research project - This is an EU-funded project, HACKTEX - Innovative smart textiles & entrepreneurship, no. 2021-1-RO01-KA220-HED-000027527. All information on the results of the project reflects the contributions of all partners - TUIASI - Romania, AEI Textils - Spain, CRE.THL.DEV. - Greece, CIAPE - Italy, Universitat Politecnica de Catalunya - Spain, University of West Attica - Greece, University of Borås - Sweden, TITERA - Germany.

Contact: luminita.ciobanu@academic.tuiasi.ro

Presentation link:

https://drive.google.com/drive/folders/163e_q8pBi-36ERD0ip4c4gIhMWHsqU_q

2.

Title: PROTECTIVE UNIFORM FOR EMERGENCY MEDICAL RESPONDERS

Patent/project number: Patent application no A00772/09.12.2021

Author/s: Toma Doina, Salistean Adrian, Popescu Georgeta, Popescu Alina, Badea Ionela, Popescu Adriana Iuliana

Institution: The National Research and Development Institute for Textile and Leather - INCDTP

Category: I

Description: The invention refers to a system of protective clothing in the modular structure for protecting emergency medical responders against the multiple hazards, specific to the intervention missions.



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The system according to the invention consists of three layers of different clothes, the first layer (1), worn in direct contact with the skin, is a costume made up of blouse, made of knitted fabric of 85% cotton fiber and 15% polypropylene yarns, with a mass of 200-230 g/m² and pants made of woven fabric from a mixture of fibers including approximately 30-60% aramid fibers, 20-50% flame retardant cellulose fibers, 10-20% polyamide fibers, 2% antistatic fibers with a mass of 190-220 g/m², the second layer (2), for protection against cutting /stinging, a jacket made of knitted fabric of high tenacity polyethylene fibers in combination with other technical fibers, with a mass of 440-450 g/m², and the third layer (3) on the outside, the protection layer specific to the intervention mission, a jacket made of a layered textile support, laminated in 3 layers (outer layer: 100% PES fabric + intermediate layer: PTFE film + inner layer: 100% PA knit) breathable, with a mass of 180 - 200 g/m². The protective clothing thus made has performances according to the specifications of the standards: SR EN ISO 11612:2015 Protective clothing. Clothing to protect against heat and flame. Minimum performance requirements and SR EN 388+A1:2019 Protective gloves against mechanical risks; providing: resistance to limited flame spread: the mean value of after-flame time: 0s; the mean value of after-glow time: 0s; abrasion resistance, number of cycles >2000 (level 3); cut resistance: index >20 (level 5).

The publication of the scientific paper is funded by the Ministry of Research, Innovation and Digitization within Program 1 - Development of the national R&D system, Subprogram 1.2 - Institutional Performance - RDI excellence funding projects, Contract no. 4 PFE/2021. The work was carried out through the Nucleu Program of the National Research Development and Innovation Plan 2019-2022, carried out with the support of MCID, project no. 4N/2019, PN 19 17 02 01, project title "Advanced multifunctional systems for logistics, communication and protection seeking to improve the safety, operability and effectiveness of emergency workers (SiMaLogPro)".

State of development: Prototype

Contact: doina.toma@incdtp.ro

Presentation link: www.incdtp.ro

3.

Title: ELECTROCONDUCTIVE COMPOSITE BASED ON NICKEL MICROPARTICLES FOR ELECTRODES, SENSORS AND ELECTROMAGNETIC SCREENS

Patent/project number: Patent application No. A/00527/21.08.2020

Author/s: Aileni Raluca Maria, Chiriac Laura, Toma Doina, Soare Vasile

Institution: National Research and Development Institute for Textile and Leather - INCDTP

Category: I

Description: The invention refers to a process used for the functionalization of a fabric, the development of the electroconductive composite and the chemical composition of the electroconductive polymer paste based on Ni microparticles used for the development of textile electrodes, sensors or screens for electromagnetic attenuation necessary in technical applications, electronics, medicine or intelligent textiles.

Advantages

- Due to the functionalization in oxygen plasma, the textile surface, initially hydrophobic, becomes hydrophilic and allows the polymer paste to adhere to the textile surface without the need for classic textile finishing procedures (e.g., alkaline boiling);
- Due to the thermal cross-linking, the electroconductive polymeric film is fixed on the fabric and allows obtaining textile electrodes with surface resistance having values between $10^1 \dots 10^3 \Omega$;



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- Due to the doping with nickel microparticles with sizes $< 150 \mu\text{m}$, the composite material can be used to make surface electrodes for flexible sensors or screens for electromagnetic attenuation because nickel does not generate electromagnetic compatibility (EMC) problems.

Acknowledgment: The Ministry of Research, Innovation and Digitalization funded this research through the Program Nucleu, Contract PN 19 17 01 01 (3D ELECTROTEX), and the participation in the International Salon INVENTCOR 2023 within Program 1 - Development of the national R&D system, Subprogram 1.2 - Institutional Performance - RDI excellence funding projects, Contract no. 4 PFE/2021.

State of development: Prototype

Contact: raluca.aileni@incdtp.ro

Presentation link: www.incdtp.ro

4.

Title: ULTRA-LIGHT TEXTILE STRUCTURE USED FOR THE WING CONSTRUCTION OF A PARA-MOTOR UAV PLATFORM FOR LOGISTICS-OBSERVATION-MONITORING-COMMUNICATION

Patent/project number: Patent application no. A100672/27.10.2020

Author/s: Salistean Adrian, Carmen Mihai, Badea Ionela

Institution: The National Research and Development Institute for Textile and Leather - INCDTP
Category: I

Description: The problem that this invention solves consists in the choice of raw material and the bonding of the structure, so that the whole assembly ensures the following operating requirements: weight max. 30 g/sqm, air permeability of max. 30l/sqm/s, breaking strength of min. 25 daN, tear strength of min. 1.5 daN, 2 years technical resource, easy maintenance and low costs. Several weave variants were iterated, out of which the most performing was a double ripstop variant. Thus, the textile structure according to the invention is a fabric made of polyamide 6.6 yarns both in warp and in weft, with a length density of 30den/32fx1, ripstop binding made in 12 sts (10 for the ground yarns and 2 for the edge yarns), with 2 yarns each in the windings for the edge and warp yarns. The weaving process consists of: conditioning the yarns for 24 hours at a temperature of 22-25°C and a relative humidity of 65%; the warping - waxing performed on a strip warping machine with a yarn tension of 0.10 cN/dtex; the weaving performed on an unconventional weaving - machine with flexible rod weights and 12 threads; the weave-control performed on the control ramp.

The publication of the scientific paper is funded by the Ministry of Research, Innovation and Digitization within Program 1 - Development of the national R&D system, Subprogram 1.2 - Institutional Performance - RDI excellence funding projects, Contract no. 4 PFE/2021. The work was carried out through the Nucleu Program of the National Research Development and Innovation Plan 2019-2022, carried out with the support of MCID, project no. 4N/2019, PN 19 17 02 01, project title "Advanced multifunctional systems for logistics, communication and protection seeking to improve the safety, operability and effectiveness of emergency workers (SiMaLogPro)".

State of development: Prototype

Contact: adrian.salistean@incdtp.ro

Presentation link: www.incdtp.ro



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5.

Title: SYSTEM FOR MONITORING VITAL SIGNS IN PREMATURE BABIES

Patent/project number: 2023

Author/s: Victoria Danila, Irina Pavel, Rareş Pogoreanu, Cristian Ciobanu

Institution: Technical University Gh. Asachi Iasi

Category: I

Description: The vital signs monitoring system for premature babies is an innovative solution that allows real-time monitoring of heart rate, respiratory rate and body temperature. This system is designed to give parents and caregivers a safe and effective way to monitor their baby's health, especially in the first months of life when they are most vulnerable. The main components of the system include: (1) monitoring sensors (temperature sensor, pulse oximeter sensor): these sensors are strategically attached to the baby's clothing to provide accurate and continuous measurement of vital signs. (2) romper with integrated devices: the material of the romper is carefully chosen to be soft, non-allergenic and comfortable for baby's sensitive skin. (3) central processing unit: this unit takes the data received from the sensors and processes it to calculate and display vital parameters such as heart rate, respiratory rate and body temperature. It can also be equipped with connectivity features to transmit data to other devices, such as parents' smartphones or baby monitors. (4) software and mobile applications: parents monitor the baby's vital data in real time using an application. This application can provide notifications if vital signs are out of normal range or if significant variations occur.

State of development: prototype

Contact: victoriavasiledanila@gmail.com

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

6.

Title: SAVEOMATIC

Patent/project number: TH2202000070

Author/s: Pornprapat Jirapojaporn

Institution: Ruamrudee International School - Thailand

Category: I

Description: Saveomatic is an innovative and stylish portable solution designed to reduce the impact force from hitting the ground while falling. It incorporates cutting-edge technology such as a gyroscope and accelerometer to detect the onset of gravitational fall within a timeframe of 0.5 to 1 second. By swiftly responding to the fall, Saveomatic deploys a cushioning mechanism that utilizes gas to inflate an airbag, effectively safeguarding the body from injury.

This revolutionary capsule ensures the safety of individuals, irrespective of age or physical ability. It caters to a wide range of users, including children, the elderly, and those with mobility challenges. Additionally, Saveomatic was designed to be portable, fashionable, and effortless to wear. The capsule can be conveniently attached to any desired location on the body with magnet mechanism, offering personalized protection based on individual preferences.



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Furthermore, customization options are available for customers to personalize their Saveomatic experience. From a variety of vibrant colors and patterns to the option of adding names or personal touches, users can create a unique and tailored capsule that suits their individual style and preferences.

State of development: Prototype

Contact: Mr. Robert Armstrong , Mr. Jeerasak Jitrotjanarak

Telephone: +66 95 935 1062 , +66 84 639 6363

Email: scis.cud@gmail.com j_jerasak@hotmail.com

Presentation link:

https://docs.google.com/presentation/d/1uoaINDwL5_IrIej7pLPb4mUedKOQE8T1W-Ehey3VKUE/edit#slide=id.p

7.

Title: MIHAELA's WONDERFUL BEADS

Patent/project number: Bead Embroidery Project

Author/s: Mihaela MARARU

Institution: MIHAELA's WONDERFUL BEADS

Category: I

Description: Bead embroidery has been my passion for more than 20 years, at first I embroidered simple things like bracelets, then I perfected my technique and made accessories for clothing items. Over time, I sewed icons, paintings, purses, bags, backpacks. The most spectacular creations of mine are the clothes sewn with embroidered beads, in some cases I used over 80,000 beads. The bead can be attached by a simple stitch of material, but a smaller bead can also be used to obtain a small column, for a more voluminous column, a column of two or more beads can be sewn. The beads of different colours and sizes, sewn separately next to each other, look very nice, they can be placed inside a metallic outline, in the middle of an outline sewn with contrast beads or they can be scattered chaotically on the canvas, creating bright spots on the embroidery.

State of development: products

Contact/Presentation link: <https://www.facebook.com/profile.php?id=100063499954796>

8.

Title: EMLANIASHOP

Patent/project number: patented Agepi Moldova

Author/s: Emilia Cojocaru, Mentor Silvia Scortescu

Institution: "Universul" Theoretical High School Chisinau; Junior Achievement Moldova

Category: I

Description: Emlaniashop a rain hat that aims to treat head problems, also the hat is water resistant. It is intended for all ages. The hat is intended for all people, but especially for those with headaches and rheumatic problems and heart problems. There are people who often go to the doctor to take prescriptions, being acute in the headache department. This hat really treat hat and its original and unique one.

State of development: Prototype

Contact: Silvia Scortescu + 373 798 97 247 silvia.scortescu@yahoo.com

Presentation link: <https://www.liceul-universul.md/>



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9.

Title: FELIS PANDA

Patent/project number: patented Agepi Moldova

Author/s: Buca Felicia, Mentor Silvia Scortescu

Institution: "Universul" Theoretical High School Chisinau; Junior Achievement Moldova

Category: I

Description: I work on a coat for a cat, dove, horse, rabbit, the project continues with magneto-therapy that will treat birds and animals for migraines, locomotor pain. Animals are saved and protected from the actions of nature. The universe acts on them and considerably affects their living environment. I love animals and birds very much, as we have a collection of pet breeds at home including domestic birds.

State of development: Prototype

Contact: Silvia Scortescu + 373 798 97 247 silvia.scortescu@yahoo.com

Presentation link: <https://www.liceul-universul.md/>

10.

Title: BIFNY

Patent/project number: patented Agepi Moldova

Author/s: Lungu Alexandra, Mentor Silvia Scortescu

Institution: "Universul" Theoretical High School Chisinau; Junior Achievement Moldova

Category: I

Description: BIFNY-is a fridge bag that contains medical magnets in which you can keep products throughout the trip, or for going to the villa, camping or the beach. It is made of fluffy and ecological cloth. The purpose of the project is to heal the hands that hold weight and the back of the person who carries the heavy bag, including the food is always safe and fresh.

State of development: Prototype

Contact: Silvia Scortescu + 373 798 97 247 silvia.scortescu@yahoo.com

Presentation link: <https://www.liceul-universul.md/>

11.

Title: Dudu-Duda

Patent/project number: patented Agepi Moldova

Author/s: Scortescu Marius-Silviu, Mentor Silvia Scortescu

Institution: "Universul" Theoretical High School Chisinau; Junior Achievement Moldova

Category: I

Description: I made jacket- school bag with medical magnets, it is unisex for girls and boys, it has the role of treating the back and helps stable the nervous system, regulates the locomotor system.

State of development: Prototype

Contact: Silvia Scortescu + 373 798 97 247 silvia.scortescu@yahoo.com

Presentation link: <https://www.liceul-universul.md/>



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12.

Title: PATRICIA'S HANDMADE

Patent/project number: Handmade creations

Author/s: Patricia Nelega

Institution: SC MOFT STUDIO SRL

Category: I

Description: Patricia's Handmade is a concept based on creativity, sensitivity, passion for everything that art means. The products, unique, are designed for an avant-garde look. Diversity is the strong point of Patricia's Handmade creations from brooches, earrings, decorations to projects for special events: weddings, christenings, anniversaries etc. All products are customized according to by the preferences of those for whom they are created.

State of development: products

Contact: +40721 603 933

Presentation link: <https://www.facebook.com/moftstudio/>

13.

Title: APuN

Patent/project number: patented Agepi Moldova

Author/s: Griziuc Renata, Mentor Silvia Scortescu

Institution: "Universul" Theoretical High School Chisinau; Junior Achievement Moldova

Category: I

Description: I product sleeping glasses and purse-case for sunglasses with medicinal magnets that treat and help to treat the human body, head. Also I product water bottle cover that treats and keeps fresh water. They are made of ecological cloth intended for girls and boys with APUN character design. The product is original and accessible to everyone.

State of development: Prototype

Contact: Silvia Scortescu + 373 798 97 247 silvia.scortescu@yahoo.com

Presentation link: <https://www.liceul-universul.md/>

14.

Title: HANDMADE CONCEPT

Patent/project number:

Author/s: Epure Oana-Roxana and Cherecheş Alexandra

Institution: Goodvibeshandmade

Category: I

Description: We transform the walls of your spaces into living works of art. From abstract landscapes to personalized illustrations, each wall becomes a story of its own. Our canvas artworks tell stories and evoke emotions. You can choose from our collection or we can create personalized paintings tailored to your tastes and dreams. We provide personalized fashion options. From hand-painted jackets and sneakers to original



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print t-shirts and delicate embroideries, your wardrobe will become an authentic expression of your personality.

State of development: concept

Contact: +40769075797 oanaroxanaepure@gmail.com

Presentation link: <https://www.facebook.com/goodvibeshandmade>

15.

Title: RERAT HELVETIA - EUROPEAN MANUFACTURER of LASHING & LIFTING SLINGS

Patent/project number:

Author/s: Larisa Rerat & Team

Institution: Rerat Helvetia Company

Category: I

Description: European manufacturer of lashing & lifting slings. Established in 2014, RERAT HELVETIA / CHINGI EXPERT manufactures in Romania, premium customised solutions in cargo & lifting systems. Passion is at the heart of our company. We are continuously moving forward, innovating, and improving. Our lashings and webbing slings are products approved and certified in accordance with the European Standards and ISO 9001-2015. In our range you can find ratchet lifting slings, roundslings, eye webbing slings, lifting chaines, wire ropes and more.

Our new line of products are designed to solve the lack of diversity within the playground field. **Swing Hammock & Friendship Net**

The swing hammock offers both the fun of swinging and complete relaxation after a long day.

The benefits of climbing can be divided into five categories: physical, mental, sensory awareness, and health. Safety represents our top priority!

State of development: Products

Contact: office@chingi-expert.ro 0040 749 090 725

Presentation link: www.chingiexpert.ro

16.

Title: LEMNĂRIA LUI RADU

Patent/project number: Woodcraft

Author/s: Fachin Radu Luigi

Institution: Lemnăria lui Radu

Category: I

Description: I am a passionate woodworker, a dedicated artisan with 8 years of experience in the field of woodworking, and eager to learn new techniques and skills. My work reflects a passion for craftsmanship and meticulous attention to detail.

The Art of Wood Personalization - Creations with Soul. One of my specialties and significant challenges in every project is crafting personalized items for clients. Over time, I've honed my skills to create miniature houses, faithful replicas of grandparents' homes, meticulously crafted based on photos. These mini houses bring a piece of history and emotion into our clients' living rooms.



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Recycled Wood for a Sustainable Future. I am a staunch advocate for the use of recycled wood. In my workshop, wood becomes more than just raw material; it's a valuable resource we handle responsibly, contributing to environmental preservation.

Transforming Wood into Art and Utility. Wood is my favorite material for crafting captivating games, charming decorative items, and personalized toolkits for businesses and trades. Each piece of wood is carefully and passionately transformed, adding utility and turning it into a unique work of art.

I look forward to contributing my creativity and extensive experience in the art of woodworking to future projects. Handcrafted wooden items are more than mere objects; they bring stories and emotions into the homes and lives of our clients. Thank you.

State of development: Products

Contact: +40735966509

Presentation link: <https://www.lemnarialuiradu.ro/category/despre-mine/>

Website: <https://www.lemnarialuiradu.ro/>

Instagram: <https://www.instagram.com/lemnarialuiradu/>

Facebook: <https://www.facebook.com/lemnarialuiradu/>



J - Kids Corner, Games, Toys, Outdoor activities

1.

Title: MAGIC FLEXI: ENHANCING PRACTICALITY & HYGIENE IN PORTABLE DINING

Patent/project number: Patent Pending (Registered ref no. CUIP00861)

Author/s: Master Laypakorn Crueasom, Miss Avieka Khlaisang, Miss Sunattida Matavarakorn, Miss Wynmycha Chottirapong, Mr. Jeerasak Jitrotjanarak

Institution: Satit Chula Innovation Society, Chulalongkorn University Demonstration Elementary School – Thailand

Category: J

Description: Magic Flexi food tray is an innovative solution to the problem of unstable containers. Designed with convenience and practicality in mind, this innovative tray features specially designed holes that securely hold expandable containers, ensuring that they do not lose their shape. Not only is the magic Flexi food tray a handy companion for individuals, but it also offers a solution for group gatherings. Multiple trays can be easily snapped together to create a larger, shareable tray.

Key features:

Magic Flexi, a portable food tray, comprises of these key features:

- (1) Convenience and practicality by specially designed holes that securely hold expandable containers, ensuring that they do not lose their shape even when filled with hearty meals;
- (2) No more embarrassing spills or messy accidents – with your favorite foods on the go;
- (3) Solution for group gatherings -- multiple trays can be easily snapped together to create a larger, shareable tray for amazing party.

Contribution: With its features, Magic Flexi food tray improves cleanliness and hygiene. By eliminating the risk of spills, it prevents food from coming into contact with your clothes, reducing the chances of staining and the need for frequent washing. This means you can enjoy your meals, individually or for group gatherings, hassle-free and maintain a neat appearance while enjoying food on the go. Magic Flexi is poised to become a desirable product to improve dining experiences.

Problem, Solution, and its benefits:

Problem: Have you ever experienced the frustration of using flimsy containers that lose their shape when filled with food, resulting in spills and stains all over you? Well, say goodbye to those messy situations with the incredible magic Flexi food tray!



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Solution and it's benefits:

Convenience and practicality An innovative solution to the problem of unstable containers. With its' specially designed holes that securely hold expandable containers, it ensures to not lose their shape even when filled with hearty meals.

- 1. No more embarrassing spills or messy accidents! You can enjoy your favorite foods on the go. The sturdy hold provided by the tray's holes keeps your containers intact, allowing you to eat your meals without worrying about any unfortunate mishaps.*
- 2. Improves cleanliness and hygiene By eliminating the risk of spills, it reduces the chances of staining. This means you can enjoy your meals hassle-free and maintain a neat appearance throughout the day.*
- 3. Solution for group gatherings With its unique design, multiple trays can be easily snapped together to create a larger, shareable tray. No more searching for flimsy paper plates or struggling with bulky serving trays, the magic Flexi has got you covered.*

State of development: prototype

Contact: Mr. Robert Armstrong , Mr. Jeerasak Jitrotjanarak

Telephone: +66 95 935 1062 , +66 84639 6363

Email: scis.cud@gmail.com j_jerasak@hotmail.com

Presentation link: bit.ly/magicflexi_video

2.

Title: HANDY DANDY MAT

Patent/project number: Patent Pending

Author/s: Mrs. Passaya Rerkpitakpanich, Mrs. Supitchaya Pornvilassiri, Mrs. Orniticha Piboonratanakit, Mr. Jeerasak Jitrotjanarak

Institution: Satit Chula Innovation Society, Chulalongkorn University Demonstration Elementary School – Thailand

Category: J

Description: Handy Dandy Mat is the equipment, modified from the crawling mat by placing the force sensors and speaker inside the mat. The sound will be loud when sensors detect force or weight pressure. We developed a website for controlling the sound category and volume, which can connect with the mat via WI-FI. There are many categories of interesting sounds that can be selected such as alarming sound, cheer-up sound, natural sound, relaxing sound, music and sound effect. The main purposes of this equipment are to alert parents when the baby is climbing the stairs by placing the mat in front of the stair and to encourage the elderly to exercise by walking on the mats with cheering sound on each step. Moreover, it can be modified to use for other purposes such as playing games, learning activities, and relaxing.

State of development: Prototype

Contact: Mr. Robert Armstrong , Mr. Jeerasak Jitrotjanarak

Telephone: +66 95 935 1062 , +66 84639 6363

Email: scis.cud@gmail.com j_jerasak@hotmail.com

Presentation link: <https://youtu.be/Z0uHoh-4opg>



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3.

Title: 3D MODELS

Patent/project number: Student project

Author/s: Pavle Trišović

Institution: Faculty of contemporary arts, Belgrade - Serbia

Category: J

Description: 3D Max and ZBrush are popular tools in the field of 3D modeling and digital art. 3D Max is a comprehensive 3D modeling, animation, and rendering software developed by Autodesk. It's often used for creating detailed 3D models, animations, visual effects, and architectural visualizations. It's widely used in industries like gaming, film, architecture, and design. ZBrush, on the other hand, is a digital sculpting tool developed by Pixologic. It's particularly renowned for its ability to create highly detailed and intricate 3D sculptures. ZBrush uses a unique approach called "digital sculpting," where artists can manipulate a 3D model as if they were sculpting with real-world materials like clay.

When used in combination, 3D Max and ZBrush can provide a powerful workflow for creating complex 3D models. For example, artists might create a base model in 3D Max and then import it into ZBrush to add finer details and textures through sculpting. The final model can then be exported back to 3ds Max for rendering or animation.

These programs were used for student projects, it means that the students were working on 3D modeling assignments, possibly related to fields like animation, game design, or digital art. Using such advanced software can provide students with valuable skills and experience that are highly relevant in the creative and entertainment industries.

State of development: Animation

Contact: +381631033990, Email: pavle.trisovic@fsu.edu.rs

Presentation link: <https://instagram.com/woothrad?igshid=MzRIODBiNWFIZA>

4.

Title: INTELLIGENT SYSTEM FOR GRIP ENHANCEMENT

Patent/project number: CBI A 2022 00670

Author/s: Laurențiu-Dan MILICI, Ciprian BEJENAR, Ilie NIȚAN, Oana-Vasilica GROSU, Dragoș-Ionuț VICOVEANU, Laura-Cătălina DOSPINESCU, Mariana-Rodica MILICI, Artiom MOLDOVAN

Institution: Stefan cel Mare University of Suceava

Category: J

Description: The invention relates to an intelligent system for grip enhancement of the footwear sole, depending on the temperature of the movement surface and in relation to the environmental conditions, based on the temperature difference, in that it is equipped with a thermo-mechanical conversion mechanism with a specific constructive form.

The invention consists of a solution that is actuated thermomechanically in an automatic manner and under different conditions of temperature, as a response to variable natural phenomena, which adapts the sole of the footwear in which it is embedded according to the external temperature, of environmental factors and/or



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of season, so that it facilitates the movement in conditions of high temperature (e.g., dry, firm and grippy environment) and it enhances the grip at low temperature (e.g., moist, soft and slippery environment).

ADVANTAGES

- it introduces new possibilities for grip enhancement;
- it presents constructive simplicity and flexibility, but at the same time advantageous dimension, mass and shape, without negatively affecting the movement or the sole of the footwear that incorporates it in the purpose of grip enhancement;
- it reduces the impact that other solutions introduce on the efficiency of moving with footwears whose sole incorporates them in the purpose of grip enhancement;
- it facilitates grip enhancement, both depending on the environmental factors and season

State of development: Laboratory prototype

Contact: dam@usm.ro

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

5.

Title: PAINTED DECORATED AND CARVED EGGS

Patent/project number: Hand made

Author/s: Irén Szlávikné Buzás (Hódmezővásárhely)

Institution: Idea Club 13 Association, Hódmezővásárhely - Hungary

Category: J

Description: English teacher and art teacher, egg painter-carver and painter. I was always creative at work, and I created a lot of visual teaching materials, posters and games to teach children English from a young age, and I even organized craft creative camps.

Since my retirement, I DECORATE AND CARVE HEN, TURKEY, GOOSE AND OSTRICH EGGS for exhibition purposes approx. With 300 own designs (original and modern) and works. The other branch of art is PAINTING, which I like (all kinds of subjects: landscapes, portraits of people and animals, buildings, plants and objects. I work with various materials and techniques (oil paint, acrylic, powder pastel, tempera, graphite and charcoal).

State of development: product

Contact: otletclub.idea@freemail.hu

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

6.

Title: HANDICRAFTS - TAPESTRY, NEEDLE PAINTING

Patent/project number: Hand made

Author/s: id. Sándorné Zsiros (Monor)

Institution: Idea Club 13 Association, Hódmezővásárhely - Hungary

Category: J

Description: Gobelin: It is made with half cross stitches. Half and quarter meshes in order to develop the finest details. It is made with split embroidery thread. Needle-dyeing: It is done with split embroidery thread from 2 threads. Stitched closer to each other, we embroider "painted with a needle".



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State of development: product

Contact: otletclub.idea@freemail.hu

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

7.

Title: HAND-EMBROIDERED CREATIVE POSTCARDS WITH YARN GRAPHICS
TECHNIQUE

Patent/project number: Hand made

Author/s: Dánielné Darázsi (Monor)

Institution: Idea Club 13 Association, Hódmezővásárhely - Hungary

Category: J

Description: The presented postcards were made using the String art technique. I work with cardboard (120-160g) and first choose a pattern. When I have the pattern, I place it on the cardstock and use a beading needle to poke holes in the paper every 1-2 mm (0.04-0.08 inches). After that, I start sewing with different stitch distances. I use 1mm thick Mettler Poly Sheen String. The seam should be tight, but make sure that the holes do not tear next to each other. After finishing the "sewing", I cover the back side of the stitches with another paper. Only the decoration remains with decorative stickers, beads and ribbons. I also make pictures and bookmarks using this technique.

State of development: Product

Contact: otletclub.idea@freemail.hu

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

8.

Title: DISCOVER ZANZIBAR with MUDI

Project number: Travel Guide

Author/s: Muhammed Suleiman Yussuf

Institution: Descopera Zanzibar cu Mudi - ZANZIBAR

Category: H

Description: I'm Mudi and I am a tour guide here in Zanzibar. I only learned Romanian on the internet and on youtube, and now I have a school where I also teach other friends of mine.

If you choose to spend your holiday here you will have the opportunity to discover Zanzibar and its beauty with me. This is my website and the place where I can be with you, my whole story in one place, along with information for tourists about Zanzibar.

Zanzibar is an archipelago located off the east coast of Africa and consists of the main island of the same name, Zanzibar or Unguja as the locals call it, and Pemba. The word Zanzibar comes from the Persian language and translates as "coast of black people" and Pemba translates as "green island". Zanzibar is located approximately 6000 kilometers from Romania, the islands being sought after both for the wonderful beaches and reefs, and for the exotic destination.

State of development: Travel Guide

Contact: <https://www.facebook.com/ghidturisticdespre.zanzibar>



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tshabalalajunior17@gmail.com +255 783 396 944

Presentation link: <https://www.youtube.com/@descoperazanzibarcumudi3671>

9.

Title: CLUB EVOLUȚII cu Alexandra Marcu

Patent/project number: Outdoor project

Author/s: Alexandra Marcu & Team

Category: J

Description: Club Evolutii is an organisation from Romania, providing personal development activities based on mountain and traveling education.

We organize mountain hikes, expeditions, camps and educational courses for children who want to become explorers and enjoy many experiences and adventures.

Why do we love the mountain?! Because it's an escape between the blocks, an opportunity to socialize and although it often challenges us to get out of our comfort zone, it seems at the same time it gives us the feeling of well-being and safety!

Club Evolutions - Personal development through mountain education!

Did you know that skiing offers a series of very important advantages?!

1. More calories burned

Skiing is an excellent cardiovascular exercise, which can help you burn serious calories and shed extra pounds.

The number of calories you burn per hour is based on your weight and fitness level, but according to the Harvard Medical School, a person who weighs 85 kg will burn 266 calories in 30 minutes of downhill skiing.

Beginners can get extra calories burned by going up the slope, instead of using the ski lift. As for advanced skiers, the steeper the slope, the more calories they will burn, because the body has to work harder to maintain its balance.

2. Strengthens the muscles of the lower body area

This winter, take the training from the gym directly to the game!

Skiing naturally keeps the body in a squatting position, which strengthens the quadriceps, hamstrings, calves and glutes.

Because you will be distracted by the beauty of the surrounding area or too focused on going down the slope, you will not notice how much your legs burn, but you will definitely feel the results the next day!

3. Improve flexibility

The very art of balancing and tensing the trunk and key muscle groups while skiing makes the body more flexible!

As in any sport, it is recommended that you have a stretching routine before going on the track. It is also welcome to do some stretching afterwards to avoid injuries. A regular stretching routine, which focuses on the basic muscle groups, will strengthen the abdominal muscles, obliques and hips, groups that you use in alpine skiing.

4. Improves mood

Movement in the open air promotes an increased production of endorphins, which leads to a feeling of liberation and happiness.



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In addition, winter sports offer families time together in nature, extremely important moments in winter, when the days are shorter and the time spent with the family is reduced.

Regardless of the duration and frequency with which you do this activity, skiing is extremely beneficial not only for your physical health, but also for your mental health.

State of development: traveling education

Contact: alexandraflaviamarcu@gmail.com +4 0723 219 655

Presentation link: <https://www.youtube.com/@ExploradoresVlog/featured>

10.

Title: *Alex's Creative Painting*

Patent/project number: *Kid project*

Author/s: *Alexandru ROTEA*

Institution: *Kindergarten Kegelwassen - Dettingen an der Erms Fuchsen Gruppe - Germany*

Category: *J*

Description: *I chose this project because children love painting and are very creative when they start using the colors on the sheet. At the same time, the child develops his knowledge of colors, craftsmanship and why not, discovers his talent in painting.*

Creative painting can be done using watercolors and acrylic colors.

I'm Alexandru I have 5 years old, so I decided to present 5 painting techniques.

The first is the ear stick technique (I don't know how it is called in Romanian, the stick used to clean the ear). This technique involves the use of a stick soaked in watercolor and with it on the drawing sheet to make many dots, of course in various colors and as desired, with a pattern or simply randomly.

The second technique is that of compression, i.e. on half of the drawing sheet color is poured from the acrylic color tube, I used 3 contemporary colors for this technique, after which the other half of the sheet is folded over, and the result is often in the form a beautifully colored flyer or simply an artistic combination of colors.

The third technique is the Paper Tape Technique, that paper tape that sticks easily and can be easily peeled off.

On the drawing sheet, apply the adhesive tape horizontally and vertically forming squares, rhombuses or other patterns. Then with watercolors but with different colors it goes over. When the whole sheet is painted, this strip is peeled off, the result being very interesting, because the space where the strip was remains white as an outline.

The fourth technique is made using 2 caps from beer bottles, here you are probably smiling, you are right, they can also be from juice bottles.

Acrylic colors used: red, a little orange and a little black. I created fire with these colors. The red is first put on the sheet, the color is spread on the board with the cork, then the other two colors are put on top and these are also spread on the board, in this way a burning sheet is obtained. Of course, other colors can be used, keeping the rule of 3.

The fifth, last but most beloved by me is that of ball painting.

For this you need a box or a box with borders. Place the drawing board on the bottom of the box, put acrylic colors from the tubes on it (I used 3 colors again), now insert more marbles into the box, which as soon as



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the child starts moving the box from side to side leave traces and they will cover the board with shades of colors.

I hope I have attracted your attention with this project and we invite you and your children to try these painting techniques.

State of development: Drawings & lego project

11.

Title: NATURE PHOTOS by ALEXIA

Patent/project number: Kid project

Author/s: Maria Alexia POENARIU

Institution: Queen Maria National Pedagogical College, class IV C

Category: C

Description: My name is Alexia and I am a 4th grade student at the Regina Maria National Pedagogical College, Deva, Romania. After finishing my daily activities and completing my homework, I like to spend time in nature. Whenever I have the opportunity, I go for a walk admiring the wonders of nature, plants and animals. I am passionate about the fine arts, especially photography, of course, during my time outside I love to immortalize landscapes, plants and animals. In this collage I present to you photos taken on the occasion of my summer vacation that I spent with my parents in Italy. These pictures reflect scenes from Safari Park Natura, Gardaland and Lago di Garda, being beautiful memories for me that I can share with my friends from Romania.

State of development: pictures

12.

Title: Lego MOCs

Patent/project number: Kid project

Author/s: Sebastian ROTEA

Institution: Schillerschule - Dettingen an der Erms, Klasse 6c - Germany

Category: J

Description: My project features Lego Mocs, this means creating a new car model from an existing Lego Auto set using the same parts.

Thus I have the pleasure to present you 3 Mocs:

The first is a police car that becomes a Mazda MX5 Miata.

The second Moc is a Toyota GR Supra that I converted into a Nissan Silvia S15.

The third Moc is a Dodge Charger R/T, Fast&Furious, which I modified into a Toyota Supra also from the movie Fast & Furious 5.

Practically from a Lego set I made 2 cars and not just one.

Thank you for your attention and I suggest you try it yourself.

State of development: Lego project



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

1.

Title: ARTIFICIAL RENAISSANCE

Patent/project number: AI Generated Art

Author/s: Irina Fachin

Institution: Virtual Media Net

Category: K

Description: AI-generated art collection that places Renaissance characters in virtual landscapes. Step into the world of the “Artificial Renaissance”, an innovative AI-generated art exhibition that pushes the boundaries of imagination and technology. Witness the fusion of Renaissance beauty and mystery with the technological advances of the future, as classic characters are reimagined in dystopian virtual landscapes. This unique exhibition, brought to life through cutting-edge artificial intelligence artistry, showcases an era where humanity teeters on the brink of transformation. The unsettling shadow of technological wizardry and human-machine symbiosis lingers in every portrait, creating an enthralling experience that challenges our understanding of art, beauty, information, technology, and our very existence.

State of development: product - art collection

Contact: +40.770.212.357 irina.motoc.devahd@gmail.com

Presentation link: <https://www.facebook.com/reel/978046580068652>

2.

Title: UNIVERSE I AND II by JAMINA RIEDEL

Patent/project number: Innovative ART Project

Author/s: Jamina Riedel

Institution: Jam's Art

Category: K

Description: I love to make experiments with materials, colours, fluids, crystals, wood and metal. I love to make my hands dirty, with earth and grass, to feel the resonance with the nature and animals, to play with air and fire. I feel and I am abstract. I love Johannes, the creator of my creativity. Jam's abstract painting-acryl on glass, fluid and spray. Photographed by Johannes Riedel created in 2016, realized in 2021.

Original One - of - a - kind Artwork

State of development: Painting-acryl on glass, Size: 100w X 75h X 1,3d cm.

Contact: jaminaa12@gmail.com

Presentation link: <https://www.saatchiart.com/account/artworks/1104419>



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3.

Title: THE ENTROPY OF IMAGE

Patent/project number: research project

Author/s: Edwina Kasler

Institution: Kasler Studio

Category: K

Description: The research project analyzes the connection between the structure of the human body, the Ph of the water, the light and the transposition of the image in space.

Experiments done in the laboratory revealed the fact that obtaining images by other methods than with the help of the camera and using natural substances in random conditions of temperature and light allow obtaining unique and unrepeatable images but in close connection with the Ph of the water and the human body.

Each image obtained in this way is a proof that photography is an archive of the human existence.

State of development: photography project

Contact: edwinakasler@yahoo.com

Presentation link: <https://www.facebook.com/edwina.kasler>

4.

Title: METAMORPHOSIS

Patent/project number: photography project

Author/s: Maria Liliana ZAGREAN

Institution: Caretta's Art

Category: K

Description: Since I was a child, I was fascinated about the wonder around us. The changing colors of the seasons, they make myself live a magic dream and as intensely live dreams become reality, 14 years ago, I had the opportunity to purchase a professional camera. From that moment, through the eye of the lens, everything changed. Looking to the raindrop, I realized that it also has its own lens. I don't create the abstract, nature creates it for me, and this is reflected in my works of art.

State of development: photography

Contact: caretta.foita@gmail.com

Presentation link: <https://www.facebook.com/zagrean.marialiliana.3>

5.

Title: LIGHT SCULPTING "REMEMBER ME" by JAMINA RIEDEL

Patent/project number: Innovative ART Project

Author/s: Jamina Riedel

Institution: Jam's Art

Category: K

Description: Me and my love, Hannes, started 10 years ago with an experiment, in folding plastic film and then, treat with pressure and heat. It takes nearly 4 years, to find the right way, to create a new art of



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sculpting of recycled plastic film. We used waterproof LED- stripes for lightening. Every sculpture is unique, it's impossible, to create these form again. It takes 3 month for one object, because every step has to cool down. Plastic sculpture, lightening object, with LED, changing colours a wonderful night light, relax therapy with calming effect.

Original One - of - a - kind Artwork

State of development: Light sculpting, Size : 47h x 40w x 30d cm weight : ca 7 kg.

Contact: jaminaa12@gmail.com

Presentation link: <https://www.saatchiart.com/account/artworks/1104419>

6.

Title: Painting

Patent/project number: Student project

Author/s: Maksimović Milica

Institution: Faculty of Contemporary Arts, Belgrade - Serbia

Category: K

Description: Life - size model study that was painted over the course of two months and a half. It was made with the use of acrylics and specially prepared paper. I painted a life - size model study over the course of two months and a half using acrylics and specially prepared paper.

At first, I made a simple sketch – deciding the composition and the colors I'm going to use, as well as taking notice of the way those colors complemented each other.

After that, I kept working on my painting, trying to capture the scene in front of me.

From that initial foundation, I continued to build on, developing some things further, while letting go of others.

State of development: Student Project

Contact: +38162295510 Email: milica.maksimovic1@fsu.edu.rs

Presentation link: <https://www.fsu.edu.rs/en/about-us/>

7.

Title: REMNANTS

Patent/project number: Innovative art

Author/s: Diana Miruna Armioni

Institution: Art by Miruna

Category: K

Description: „Remnants” is a photography project that delves into the eerie beauty and poignant history of an abandoned mine through a series of evocative black and white photographs. This project aims to transport viewers into a world of forgotten industry, where the skeletal remains of once-thriving mining operations stand as silent witnesses to a bygone era. It means not just a collection of photographs; it's a journey into the past, a reflection on the present, and a meditation on the intricate relationship between humanity, nature, and the ruins of our industrial heritage. Through the power of visual storytelling, this project ignites the imagination and invites viewers to connect with the stories hidden within the shadows of this abandoned mine.



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State of development: photography project

Contact: armionimiruna@yahoo.com

Presentation link: <https://www.facebook.com/mirunaarmionipfoto>

8.

Title: Mircea JAN's caricatures

Patent/project number: caricatures

Author/s: Mircea CRISTEA

Institution: Mircea JAN Art

Description: Since I know myself, I have been passionate about everything that means art, especially visual art. Slowly I transferred my passion to paper, so I started making street/urban drawings since 2002 in seaside leisure locations, festivals, events. Initially drawing portraits and currently I focus on the caricature that I intend to reproduce as best as possible: as expression and realization time

My working technique: graphite charcoal and watercolor

State of development: visual art

Contact: +40765659183 stelianmircescu@yahoo.com

Presentation link: <https://www.facebook.com/profile.php?id=100066986083424>

9.

Title: NECKLACES & PAINTINGS by Gabriela

Patent/project number: craft art

Author/s: Gabriela STRNAD

Institution: Gabriela's Art

Category: K

Description: From NECKLACES to PAINTINGS the same technique on different works of art, both the necklaces and the paintings are made of strips of jeans. This idea is linked to „the art of rolling” – quilling, my first love, standing proof is the fact that for my paintings I mixed fabric and paper (for a splash of color) while the leaves are made of strips of paper. The play of colors depends on one's imagination and also preferences. On my Facebook page you can find photos and albums with almost all my work and creations from various fields – quilling, mediamixt (magnets, paintings, „mărțișoare”– the traditional romanian charms exchanged on 1st of March)

State of development: necklaces and paintings

Contact: gabriela.strnad@yahoo.com

Presentation link: <https://www.facebook.com/strnad.gabriela>

10.

Title: EM Art Gallery-Deva

Patent/project number: PhotoArt

Author/s: Mircea POPITIU

Institution: "POPITIU" Cultural Association



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Category: K

Description: EM Art Gallery-Deva was born from the desire to promote contemporary visual artists, on December 5, 2018. From the beginning to the present, more than 50 contemporary professional artists have been exhibited, the gallery registering as the first private gallery in Hunedoara County!

Out of the desire to do more, we have created a magazine of visual arts and cultural support entitled EM Art.

Artists from the main cities in Romania and artists from France, the USA and the Republic of Moldova exhibited on the EM Art Gallery!

State of development: Gallery

Contact: +40723355939 popitiu@art@yahoo.com

Presentation link: <https://www.facebook.com/profile.php?id=100064689549014>

11.

Title: ABSTRACT EXPERIENCES

Patent/project number: Artworks

Author/s: Irinel Daniela IACOB

Institution: Art By Irinel Daniela

Category: K

Description: My works are mainly abstract and less figurative paintings, abundant in color, in a surprising chromatic circle with different shades outline a style of my own with remarkable creative force. I am happy and honored to be an Honored Member of the prestigious UNOTA Organization THE UNITED NATIONS ARTS & SCIENCES.

State of development: Paintings

Contact: iacobirinedaniela@gmail.com

Presentation link: <http://artbyirinedaniela.com/>

12.

Title: PERPETUUM CLASSICUM

Patent/project number: Artworks

Author/s: Mugurel Emanuel MANEA

Institution: MANEA's Art

Category: K

Description: I'm a plastic artist, member of UAPR DEVA my works are part of a wider cycle of graphic wall installations. The first work entitled PERPETUUM CLASSICUM and the second AUDIO BOOK were exhibited in several galleries including EM ART GALLERY.

State of development: Paintings

Contact / Presentation link: <https://www.facebook.com/mugurelemanuel.manea>



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Power of Creative Mind Symposium

Program

Thursday 14th of September 2023 starting with 12:00 at Cultural Center „Drăgan Muntean”, Hall „Liviu Oros”.

12:00	TIPS FOR YOUNG RESEARCHERS AND Ph.D. STUDENTS
12:15	<i>Augustin SEMENESCU</i>
12:15	ETHICS IN MEDICAL RESEARCH AND PRACTICE
12:30	<i>Gabriel Petre GORECKI</i>
12:30	CREATIVITY OF THE ARTIFICIAL INVENTOR
12:45	<i>Dimitrie-Cristian FODOR, Neculai-Eugen SEGHEDIN</i>
12:45	THE 6 STEPS TOWARD FULFILLMENT
13:00	<i>Marius Ciprian NICOLAE</i>
13:00	INNOVATIONS IN NURSING AND REHABILITATION
13:15	<i>Dorđe ŠTANGL</i>
13:15	PROTECTION OF INDUSTRIAL PROPERTY IN ROMANIA - OSIM
13:30	<i>Mariana HAHUE</i>
13:30	REMNANTS
13:45	<i>Herdiana Dewi Nurfika</i>
13:45	HOW WE DEVELOP THE INNOVATIVE CREATIVE SPIRIT AMONG YOUNG STUDENTS
14:00	<i>Nada RATKOVIĆ</i>
14:00	Symposium coffee break
14:30	



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14:30 14:45	ATTITUDES OF NURSES IN ISRAEL TOWARDS WELFARE ISSUES AND JOB SATISFACTION <i>Milana Mazal Mazor</i>
14:45 15:00	FROM FOOD TO MARKETING. FOOD AS A SOURCE OF VITALITY, ENERGY, FLAVOR AND BALANCE <i>Ioana BOGDAN</i>
15:00 15:15	COMMUNICATION AND THE PURPOSE OF INTERNATIONAL NETWORKS <i>Patricia KUMBAKISAKA</i>
15:15 15:30	INNOVATION IN THE CURRENT GLOBAL CONTEXT <i>Luy MITHONA</i>
15:30 15:45	FIRST AID IN CASE OF CARDIORESPIRATORY ARREST <i>Magdalena Bianca TONE</i>
15:45 16:00	DESMO-761: A NOVEL DRUG FOR TREATING THROMBOSIS <i>Sara SHEIKHLARY</i>
16:00 16:15	SCHOOL - ADEQUATE FRAMEWORK FOR ACADEMIC SUCCESS <i>Emilia Victoria FELCIUC</i>
16:15 16:30	STUDENT - CENTERED LEARNING <i>Flavius BUCUR</i>
16:30 16:45	THE ROMANIAN NETWORK FOR NEW ENERGY SOLUTIONS - RONNES <i>Corneliu BIRTOK BANEASA</i>



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Book of abstracts

1.

Title: TIPS FOR YOUNG RESEARCHERS AND Ph.D. STUDENTS

Speaker: Augustin SEMENESCU

Scientific title: Professor Habilitated Doctor, M.Sc., B.Sc. (Engineering, Mathematics, Economics), National University for Science & Technology POLITEHNICA of Bucharest, Romania, Vice Dean Materials Science & Engineering Faculty, Corresponding Member of the Academy of Romanian Scientists, FULL Member of the American Romanian Academy of Arts and Sciences, EU RFCS Programme Expert (TGS8)

Institution: National University of Science and Technology POLITEHNICA Bucharest and Academy of Romanian Scientists

Description: Dissemination of doctoral research results is a mandatory activity for completing studies and obtaining a doctorate in engineering fields. Thus, the mentor must guide the Ph.D. student in terms of scientific integrity in writing articles and choosing the appropriate journal, and thus model ethical behavior in publishing results. The challenges are diverse and either supply-side (harassment and invitations to publish, editorial process, etc.) or Ph.D. student-related (research reasoning, inadequate or misquoting, citation inaccuracy).

2.

Title: ETHICS IN MEDICAL RESEARCH AND PRACTICE

Speaker: Gabriel Petre GORECKI

Scientific title: Associate Professor Doctor

Institution: TITU MAIORESCU University, Faculty of Medicine

Description: Ethics is the philosophical discipline that studies the difference between right and wrong and the evaluation of the moral consequences of human actions. Basically, ethics is the philosophical, critical study of morals and provides rational criteria for moral decisions. Medical ethics is the application of ethics to medical research and practice or the philosophical study of morals in medical research and practice. Ethics in medical research and practice generates a system of values and principles that allow the correct development of medical research and practice, of the doctor-patient relationship and regulates moral and professional choices at the patient's bedside. Basically, medical ethics was initiated with the Hippocratic oath that established the moral (professional) norms of medical practice.

In conclusion, everything starts in medical research on the human subject and in the practice of the clinician from the principle of "Primum non nocere"! (First of all, it doesn't hurt). Subsequently, the doctor confirms the meaning of his professional choice and the purpose of his training by trying to bring good to his fellow human beings and by contributing to the progress of medicine through innovation and research.



3.

Title: CREATIVITY OF THE ARTIFICIAL INVENTOR

Speaker: Dimitrie-Cristian FODOR, Neculai-Eugen SEGHDIN

Scientific title: Ph.D. student

Institution: Doctoral School of the “Gheorghe Asachi” Technical University of Iași

Description: A. D. Moore (inventor, engineer, doctor, and professor at the University of Michigan) said that comfortable and self-satisfied people do not create and accept things as they are.

The process of technical creation and writing an invention description is not a comfortable act; but involves a strain, a certain tension that must be assumed by the inventor.

A real escape for such comfortable people is the artificial intelligence (AI) that underlies the operation of the first tool for the autonomous generation of patent applications, which is called DABUS (Device for the Autonomous Bootstrapping of Unified Sentience).

Even though DABUS appeared nowadays, a machine for generating inventions was foreshadowed by the Romanian Ștefan Odobleja (1902-1978, author, military doctor, philosopher), who is considered the forerunner of cybernetics and artificial intelligence in Romania. This goal could be achieved through a rationalization of the creative process.

In this paper, a comparison was made between the creativity of the traditional inventor and the creativity of a patent application generating machine. Also, some elements related to the ethics of invention based on AI and the legislative challenges that were triggered with the submission to the World Intellectual Property Organization (WIPO) and the European Patent Office (EPO) of two invention patent applications were also written by a machine and not a human being.

Thus, because an invention-generating machine is not a human person who owns property, it cannot be considered an inventor. For now, that's where AI's power in industrial property seems to end.

4.

Title: THE 6 STEPS TOWARD FULFILLMENT

Speaker: Marius Ciprian NICOLAE

Scientific title: Doctor

Institution: Doctor CIP

Description my presentation is based on aspects of my book entitled *The 6 steps toward fulfillment* dedicated to the process of spiritualization of my experiences which correspond to the six steps I believe we must climb in order to reach fulfillment: Vision, Visualization, Commitment, Perseverance, Balance, and Gratitude.

The way I see things, fulfillment is much more important than success, whether it is a financial, professional, scientific, or notoriety success.

Someone can have success and yet not feel fulfilled, and vice versa, can be unsuccessful by generally accepted standards and yet feel fulfilled. I tried to be direct and use plain speech, more specific to oral expression than written as if we were having a discussion among friends.



5.

Title: INNOVATIONS IN NURSING AND REHABILITATION

Speaker: Đorđe ŠTANGL

Scientific title: Str. ms MEE (Profesional Master in Medical Ergonomics Education)

Institution: UPI ČIB – SERBIA CENTER FOR DEVELOPMENT AND APLICATION OF INNOVATIONS

Description: New practical solutions in nursing and rehabilitation. Concept and definition of innovation and innovativeness - Innovation, in essence, is the improvement of technology.

Innovation is a new product, service, process, technology created by applying own or others' results of scientific research work, discoveries and knowledge, through one's own concept, idea or method for its creation, which is placed on the market with an appropriate value.

In the 20th century, numerous therapeutic and diagnostic methods were developed:

- computed tomography,
- magnetic resonance imaging,
- endoscopic diagnostic and therapeutic procedures,
- percutaneous coronary interventions,
- electrostimulator implantation,
- application of magnetic laser surgery,
- teleconsultation,
- computer assisted surgery,
- telediagnosics.

6.

Title: PROTECTION OF INDUSTRIAL PROPERTY IN ROMANIA - OSIM

Speaker: Mariana HAHUE

Scientific title: IP Expert

Institution: State Office for Inventions and Trademarks

Description: Through this presentation, those present will be reminded of the mission, the powers of the State Office for Inventions and Trademarks, the definition of "Invention", what can and cannot be patented, as well as the advantages of registering an invention.

Also, statistical data will be presented regarding patent applications, by category of applicants in the period 2021-2022.

7.

Title: REMNANTS

Speaker: Herdiana Dewi Nurfika

Scientific title: Founder & CEO of Bliss Education Center

Institution: Bliss Education Center



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Description: My name is Herdiana Dewi Nurfika, Founder & CEO of Bliss Education Center, Brancy Firm, HDN STUFF and besides that I'm certified NLP Master Practitioner, ACT & REBT Therapist and Mental Health Advocate. That's why my innovation focused on mental well-being as I have unwavering commitment to reshaping the narrative surrounding mental health. My core aspirations lies an ardent dedication to alleviating the struggles that individuals face in their mental health journeys. With my expertise it has led me to conceptualize and actualize a groundbreaking initiative known as MindConnect. MindConnect is a comprehensive mental health platform that utilizes AI and data analytics to provide timely and personalized support to individuals struggling with mental health issues. This platform aims to bridge the gap between individuals, mental health professionals, and accessible resources.

8.

Title: HOW WE DEVELOP THE INNOVATIVE CREATIVE SPIRIT AMONG YOUNG STUDENTS

Speaker: Nada RATKOVIĆ

Scientific title: Professor

Institution: Assistant Professor on Faculty of Economics, Business and Tourism Split. Quantitative Department, Professor mentor in High VET School, President of IIU Research Centre, Co-founder IIU Europe, Co-founder ICWP

Description: Founder and coordinator of many national and global projects: Erasmus+, eTwinning, Scientix, STEM, Entrepreneur, SDG... Write scientific articles in domestic and international journals and works reviews. Editor Board member in many Journals and an external peer reviewer. Author and co-author of many university and high school books and handbooks. Makes digital materials and books for cross-curricular topics and makes columns for evaluation on national and international levels organizes conferences, training sessions, webinars, and workshops. For student mentors in national and international competitions: Statistic, STEM, SDG, etc. Works for humanity, peace, and gender equality in many organizations and organizes numerous humanitarian and volunteer actions all around the world. Works on women empowerment and women entrepreneurship on a national and global level.

As a multitasking global educationist for the work, she won many awards, recognitions, diplomas, certificates, and medals for national and international achievements. One of the greatest global educators who inspired the world and deserve a place in Golden Book. Many recognitions for humanitarian and volunteer action and work with students with special needs and gift students.

Stimulating the creative spirit is essential in the development of the new generation of young people. From childhood, imagination and creativity must be cultivated both in the institutional educational environment and outside it.

Communication paves the way for the stimulation and development of creativity. The extracurricular activity offers a favorable environment for the cultivation of imagination and creativity. Different methods can be applied such as brainstorming, meetings can be organized with scientists, artists and discussions will be generated about the difficulties and satisfactions of their work. Creativity has no limits, we just have to stimulate it, through didactic action implementing new methods and adopting a new vision of training the respective competencies of the performances.



9.

Title: ATTITUDES OF NURSES IN ISRAEL TOWARDS WELFARE ISSUES AND JOB SATISFACTION

Speaker: Milana Mazal Mazor

Scientific title: Ph.D. student

Institution: Alexandru Ioan Cuza University, Faculty of Economics and Business Administration

Description: Qualitative research - In the first part of the research, a quantitative research method was used (a method suitable for researching "quantity of data"). After the data was collected, statistical tools were used for their analysis. Using them, the research hypotheses were tested. At the same time, this method was used to check data from existing databases. All data were processed with statistical tools (Descriptive statistics, hypothesis testing, regression, analysis statistical variance, recommendation systems, data mining, etc.). As part of the quantitative research, a questionnaire was delivered to 240 nurses in 3 hospitals in Israel.

10.

Title: FROM FOOD TO MARKETING. FOOD AS A SOURCE OF VITALITY, ENERGY, FLAVOR AND BALANCE.

Speaker: Ioana BOGDAN

Scientific title: Chef

Institution: Ritual by Ioana Bogdan

Description: Food is vitality and energy, flavor and balance! We look towards a world full of color, vitality and positive energy. "Think from today what you will eat tomorrow." Any correct diet and healthy eating means concern and care for our food, not random food. Now you can enjoy oat pudding with fruit from the RITUAL range. The products are HANDMADE, 100% natural.

11.

Title: COMMUNICATION AND THE PURPOSE OF INTERNATIONAL NETWORKS

Speaker: Patricia KUMBAKISAKA

Scientific title: Foreign Policy researcher & Global advocate Canada

Institution: Government of Canada/ Canada Ambassador UNYA, Canada

Description: I was born in Bucharest, Romania at the age of 3 we moved to Athens, Greece and lived there for 7 years. In 2000, my family and I immigrated to Canada. My family is originally from the Democratic Republic of Congo. I am a case processing officer with the Government of Canada where my area of expertise and understanding is in diplomacy, migration, foreign policy analysis and development and advocacy.

My work promotes Canada's international issues and I have represented Canada in bilateral and multilateral engagements with other states and international organizations, such as at the UN Youth Assembly in New York, Romania, Moldova, the Netherlands, Germany and many other countries.

Communication is the key to success within the international networks so important for maintaining balance at the global level.



12.

Title: INNOVATION IN THE CURRENT GLOBAL CONTEXT

Speaker: Dr. Luy MITHONA

Scientific title: Lecturer

Institution: Department of Computer Studies, Norton University, Cambodia

Description: At the global level, innovation policy constitutes the interface between research and technological development policy and industrial policy, with the objective of creating a framework conducive to the introduction of ideas to the market. Innovation plays an increasingly important role in the global economy. In addition to the benefits to consumers, innovation is essential to create better jobs, build a greener society and improve our quality of life, being essential to maintaining competitiveness.

13.

Title: FIRST AID IN CASE OF CARDIORESPIRATORY ARREST

Speaker: Magdalena Bianca TONE

Scientific title: PhD student

Institution: Titu Maiorescu University, Faculty of Medicine

Description: Providing first aid is of crucial importance in emergency situations and can make the difference between life and death.

Here are a few reasons why first aid is so vital:

Saving lives: Swift and accurate administration of first aid can save lives. In cases of cardiac arrest, severe injuries, or other critical situations, prompt intervention can sustain vital functions until professional medical help arrives.

Preventing worsening of the condition: Proper first aid can prevent the deterioration of a person's condition and reduce the risk of further complications. For instance, immediate intervention in cases of injuries can minimize bleeding, the risk of infection, and tissue damage.

Reducing recovery time: In accidents or injuries, proper first aid can contribute to a faster and more efficient recovery. Appropriate techniques can help stabilize the person and prevent the spread of damage.

14.

Title: DESMO-761: A NOVEL DRUG FOR TREATING THROMBOSIS

Speaker: Sara SHEIKHLARY

Scientific title: PhD student

Institution: The University of Arizona, USA

Description: Desmo-761, is a novel drug that can treat/prevent thrombosis (blood clot) formation by preventing the platelet activation and removing the already formed thrombus. It is composed of EGB 761 (the major compound in Ginkgo Biloba with anti-thrombotic effects) and Desmolaris (the major anti-coagulant agent in vampire bat's saliva). These compounds have been loaded in niosome lipid nanoparticles at specific concentrations (such nano system can deliver both hydrophilic and hydrophobic drugs together and can improve the oral bioavailability of the drug).



15.

Title: SCHOOL - ADEQUATE FRAMEWORK FOR ACADEMIC SUCCESS

Speaker: Emilia Victoria FELCIUC

Scientific title: Primary education teacher

Institution: Rail Transport Technological High School "Anghel Saligny" Simeria

Description: The school system analysts came to the conclusion that the school as an institution meets all the characteristics to be included in the category of organizations. First of all, the institutional bases of school organization provide a well-structured framework, engaging and stimulating social actors (teachers, students) in achieving certain performances and obtaining personal satisfaction. Secondly, tending to achieve their established objectives, social actors propose institutional changes, thus making the organization evolve.

The school can be analyzed as an independent social organization, the emphasis being placed on the function of socialization, of transmitting the values promoted by society.

The prevention of school failure, school maladjustment, can only be done through the deepest possible knowledge of the student's personality, internal and external factors (family and school), so that certain dysfunctions intervened at the level of factors with an adaptive role can be prevented, avoided.

In order to maintain and improve the integrity and morpho-functional, psychomoral and social balance of the student, it is absolutely necessary to adapt him to the instructional-educational process, to the new living conditions, physical and social environment in the school.

An important role in avoiding failure is played by the class teacher and the school psychologist. They must be responsible for the good integration of the student in the group of students, in order to avoid his marginalization. He must get to know the student's family closely and persuade the parents to collaborate with the school, to have an objective attitude in collaboration with the students.

In other words, the child's adaptation to school life can be done successfully if some basic aspects of success are known and respected, and those of failure are avoided as much as possible, with the exception of endogenous causes. Even in the latter case, it is possible to achieve at least an improvement in adaptation, if there is goodwill and collaboration between the family, school, doctor, psychopedagogue.

16.

Title: STUDENT - CENTERED LEARNING

Speaker: Flavius BUCUR

Scientific title: Professor

Institution: Rail Transport Technological High School "Anghel Saligny" Simeria

Description: "The illiterate of tomorrow will no longer be the one who does not know how to read, but the one who has not learned how to learn" (Herbert Gerjuooy, apud. A.Toffler, 1973, page 402).

Gibbs (1992) provides a useful definition of student-centred learning. He states that student-centered learning "gives students greater autonomy and increased control over the subjects of study, the methods of learning, and the pace of study." This perspective emphasizes the fundamental characteristics of student-centered learning, promoting the idea that students should be given greater control over their learning by taking responsibility for: what is learned, how it is learned, and why; the moment when it is learned.



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An important consequence of this definition is the need for students to assume a high degree of responsibility in the learning context and to actively choose their goals and manage their learning. They can no longer rely on the fact that the teacher or the person teaching the class will tell them what, how, where and when to think. They are the ones who have to start doing it.

Student-centered learning has many advantages: it increases the student's motivation for the act of learning, he will be aware that he can directly influence his own learning process, it increases the efficiency of learning because learning is active, thirdly and perhaps most importantly the activity of learning makes sense because mastering means understanding.

The needs and requirements of the students "actors" on the educational scene demand a radical change in the way of approaching the didactic activity from the teachers.

The methods involve a lot of tact on the part of the teachers, because they have to adapt their teaching style according to the type of student: shy, pessimistic, aggressive, hoarder, impatient, for each one finding the gesture, mime, interjection, question, advice, orientation, praise, restraint, appreciation, enthusiasm in accordance with the existing situation.

The principles underlying effective student-centered learning are:

The focus of the learning activity must be on the learner and not on the teacher. The teacher's role is to administer the students' learning process.

Recognizing that the teaching process in the traditional sense of the word is only one of the tools that can be used to help students learn.

The understanding of the learning process should not belong only to the teacher - it should also be shared with the students. The lesson starts from the students' experiences and includes questions to involve them. Students are left to choose for themselves how to inform themselves on a certain topic and how to present the results of their study. The students' ability to find the information they are looking for is developed.

17.

Title: THE ROMANIAN NETWORK FOR NEW ENERGY SOLUTIONS - RONNES

Speaker: Corneliu BIRTOK BANEASA

Scientific title: Associate Professor

Institution: Politehnica University of Timisoara, Faculty of Engineering Hunedoara

Description: The project aims to encourage pupils and students from schools and universities, as well as the general public, respectively interested parties from the Western area of Romania in increasing interest in green energy and promoting the solutions available in the world.

In parallel, the development of competences in the field of green energy is pursued, with a focus on hydrogen-based energy through training and information actions.

Project objectives

The project aims to increase the awareness of the general public in Timiș and Hunedoara counties in the direction of renewable energy and energy efficiency, as well as the training and development of skills in the use of green energy.

It is also intended to generate a positive change towards the expansion of energy resources and the motivation to change lifestyles to save energy and to look for alternatives to the currently used solutions.



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Augustin SEMENESCU

Profesor Doctor abilitat, M.Sc., B.Sc. (Inginerie, Matematică, Economie),
Universitatea Națională de Știință și Tehnologie POLITEHNICA din București, România, UE
Prodecan Facultatea de Știința și Ingineria Materialelor
Membru corespondent al Academiei Oamenilor de Știință din România (<https://www.aosr.ro/membrii-sectiei-stiinte-tehnice/>)
Membru Titular al Academiei Româno- Americane de Arte și Științe (<https://www.americanromanianacademy.org/copy-of-list-of-members>)

Invențiile și tehnologiile dezvoltate în baza lor au modelat civilizațiile și au transformat viața pe Pământ. De la invenția roții până la dezvoltarea roverului pentru planeta **Marte**, multe dintre aceste invenții au fost cu adevărat revoluționare, chiar dacă acest lucru nu a fost întotdeauna evident atunci.

Este cunoscut faptul ca cele mai importante invenții nu au un singur inventator, ele fiind dezvoltate separat de mulți oameni sau mulți oameni au contribuit la evoluția lor de la concepte de bază la invenții valoroase.

Trebuie precizat faptul ca invenția oțelului a fost de mare importanță - oțelul a schimbat modul în care construim multe lucruri și fiindcă suntem în județul **Hunedoara**, cea dintâi atestare referitoare la extragerea fierului în zona **Hunedoarei** aparține dramaturgului grec **Eschyl** care spunea: **“Între muntele Pharnax și Râul cel Mare și de netrecut se întinde Patria mamă a fierului”**.



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Bronzul a fost primul metal forjat pentru a fi folosit de oameni. Cu toate acestea, bronzul este relativ slab. Fierul a fost probabil topit pe tot parcursul epocii bronzului, deși a fost văzut ca un metal inferior, care nu era la fel de dur sau durabil ca bronzul. Folosirea fierului a devenit mai răspândită după ce oamenii au învățat să facă oțel, un metal mult mai dur obținut prin încălzirea fierului cu carbon. În jurul anului 1.800 î.Hr., un popor de-a lungul **Mării Negre**, numit „**Chalybes**”, a început să folosească minereu de fier pentru a crea arme robuste din fier forjat cu aproximativ 0,8% carbon. „**Chalybes**” a fost un termen grecesc generic pentru „oameni de pe coasta Mării Negre care fac comerț cu fier” sau „un grup de metalurgiști specializați”.

Fonta, cu aproximativ 2-4% carbon, a fost făcută pentru prima dată în **China** antică în jurul anului 500 î.Hr. Metalurgiștii chinezi au construit cuptoare mari pentru a topi minereu de fier într-un lichid și l-au turnat în forme sculptate. În jurul anului 400 î.Hr., metalurgii indieni au inventat o metodă de topire care folosea un recipient de lut numit creuzet pentru a ține metalul topit. Muncitorii au pus bare de fier forjat și bucăți de cărbune în creuzete, apoi au sigilat recipientele și le-au introdus într-un cuptor. Acest fier forjat s-a topit și a absorbit carbonul din cărbune. Când creuzetele s-au răcit, au conținut lingouri de **oțel pur** - un metal cu calitate superioară fierului. Dezvoltarea ulterioară a furnalului pentru producerea fontei și invenția inginerului britanic **Henry Bessemer**, care a dezvoltat un proces prin care a suflat aer prin fonta topită au permis crearea unui **oțel** cu procent redus de carbon, în 1856 d.Hr.

Celebra invenție a procesului **Bessemer** a deschis calea producției de masă a **oțelului**, făcându-l una dintre cele mai mari industrii din lume. Oțelul a avut o influență majoră asupra vieților noastre, oțelul fiind folosit în crearea a tot ce înseamnă omul modern, de la poduri la zgârie-nori, de la trenuri de mare viteză la drone și nave spațiale, de la turnurile de electricitate - linii electrice la conducte de gaz natural, de la mașini-unelte la arme militare, iar lista este nesfârșită.

Dar inventatorii de la **INVENTCOR** au o paletă largă de expunere a ideilor lor, nu numai ce ține de metale, ci de aproape tot ce ține de omul modern: Energie, Protecția mediului, Biotehnologie; Nanotehnologie, Materiale avansate, Metalurgie, Construcții civile; Informatica, Electronica și Inginerie electrică; Automobile, Științe spațiale, Aviație, Nave, Mecanică; Metode de predare, Cărți, Istorie și Studii Culturale; Medicina, Medicina Alternativa, Farmacie, Cosmetica, Igiena; Agricultură, Medicina veterinară; Alimente, Băuturi, Restaurante, Hoteluri și Spa, Textile, Îmbrăcăminte, modă; Colț pentru copii, Jocuri, Jucării, Sport, Activități în aer liber; Artă inovatoare, Muzică, Video, Fotografie, Publicitate.

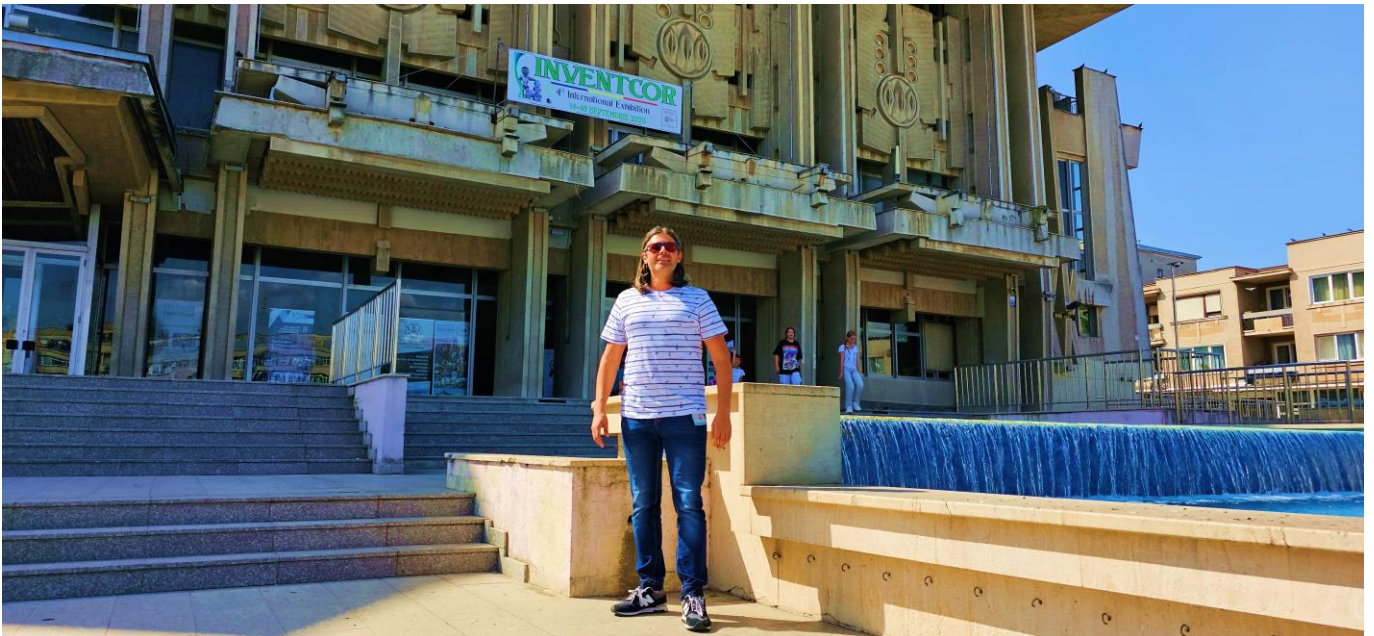
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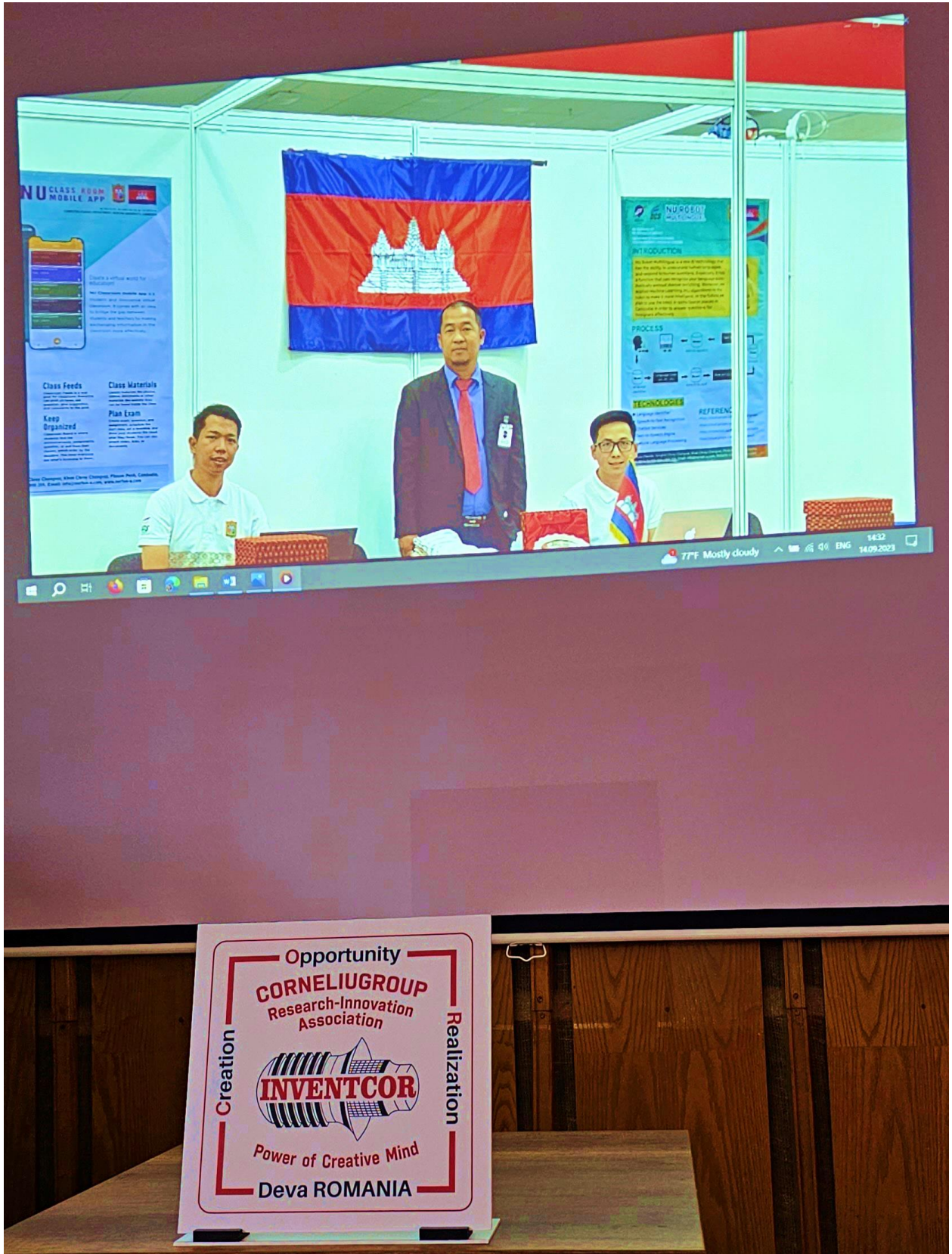


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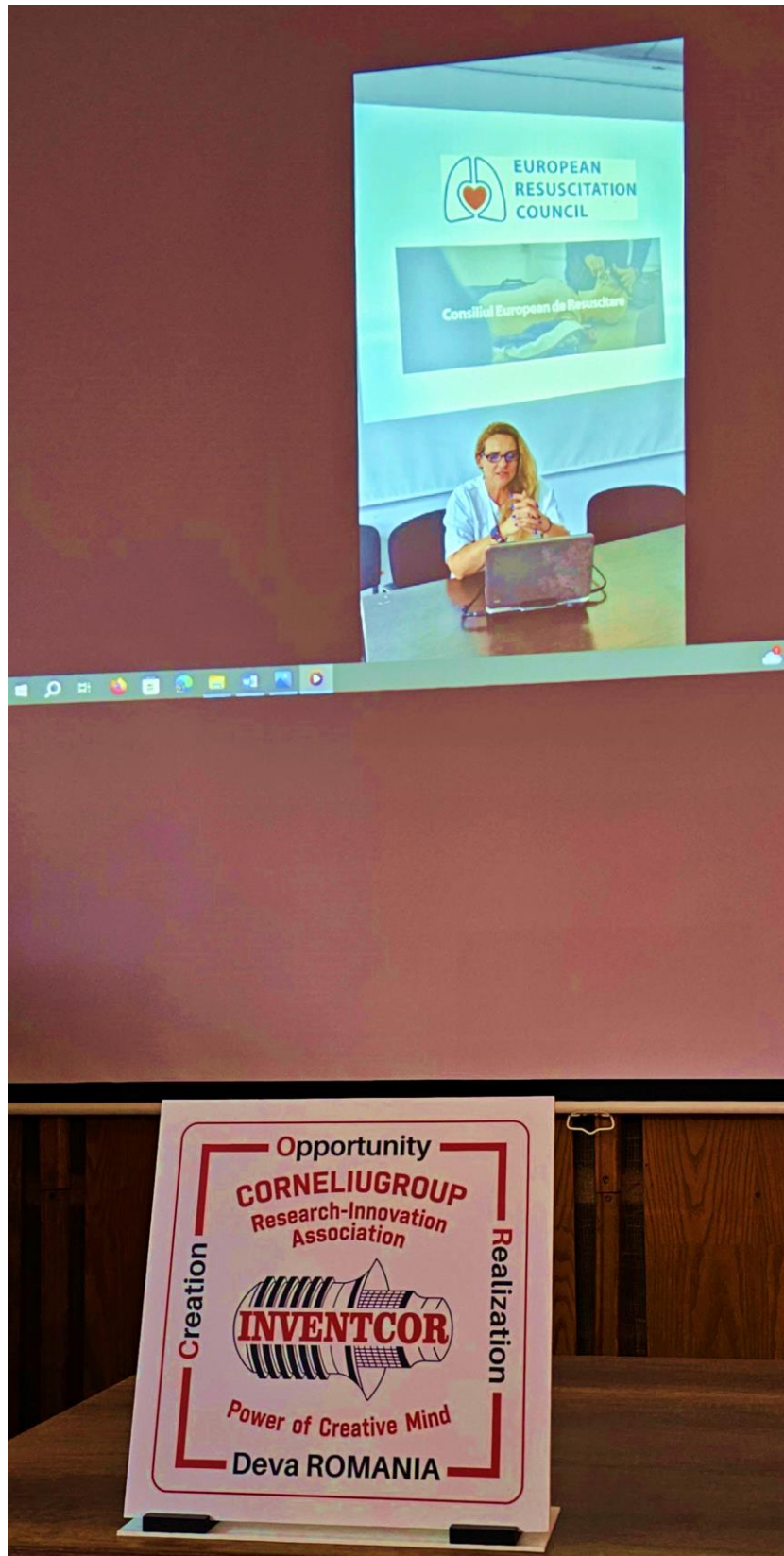


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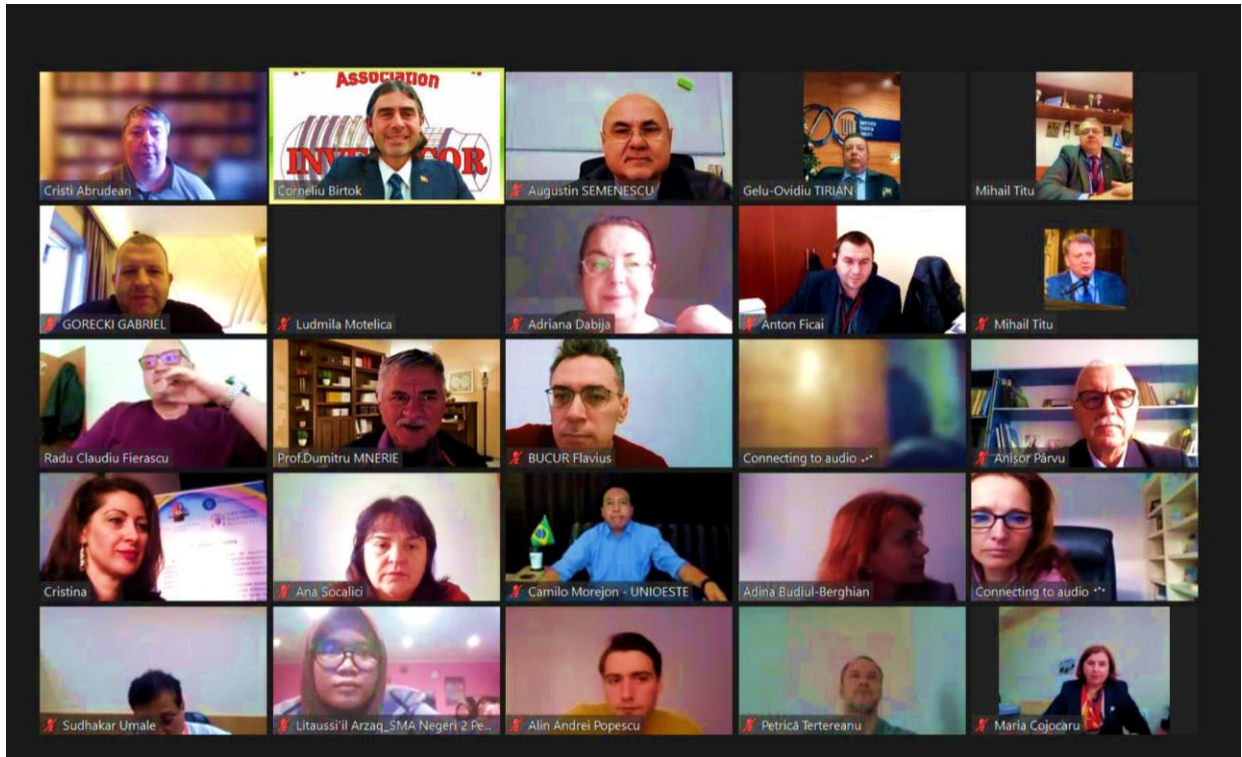


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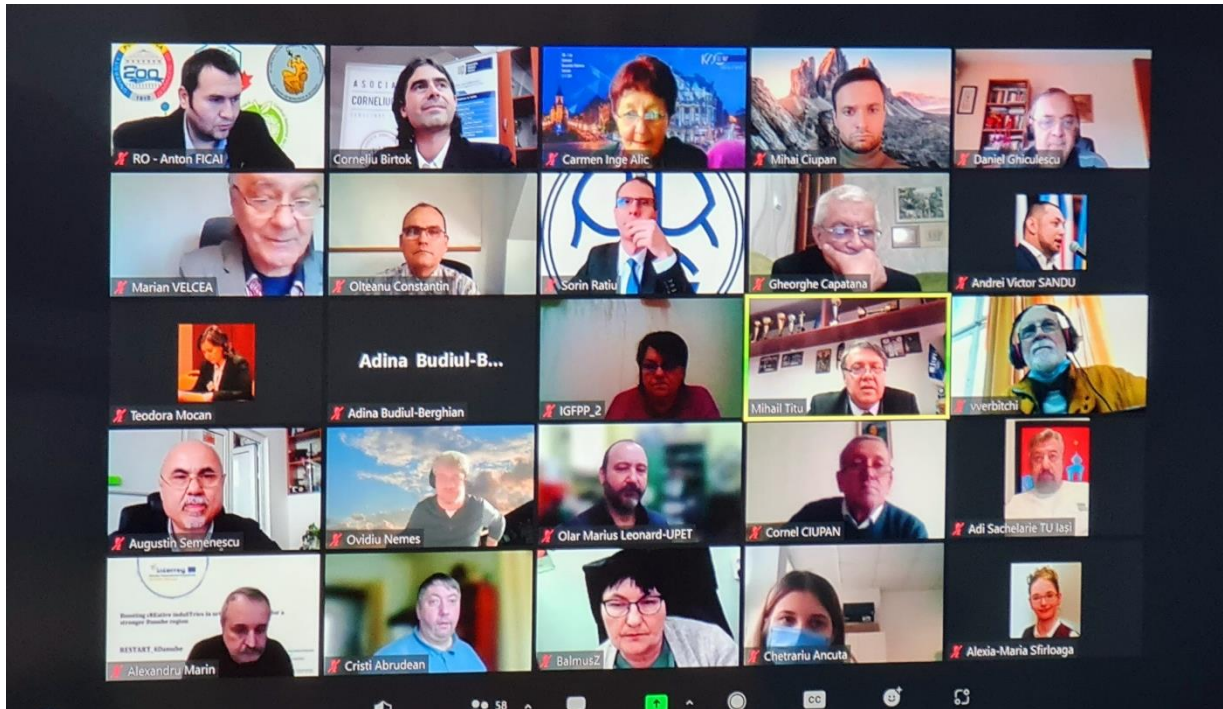
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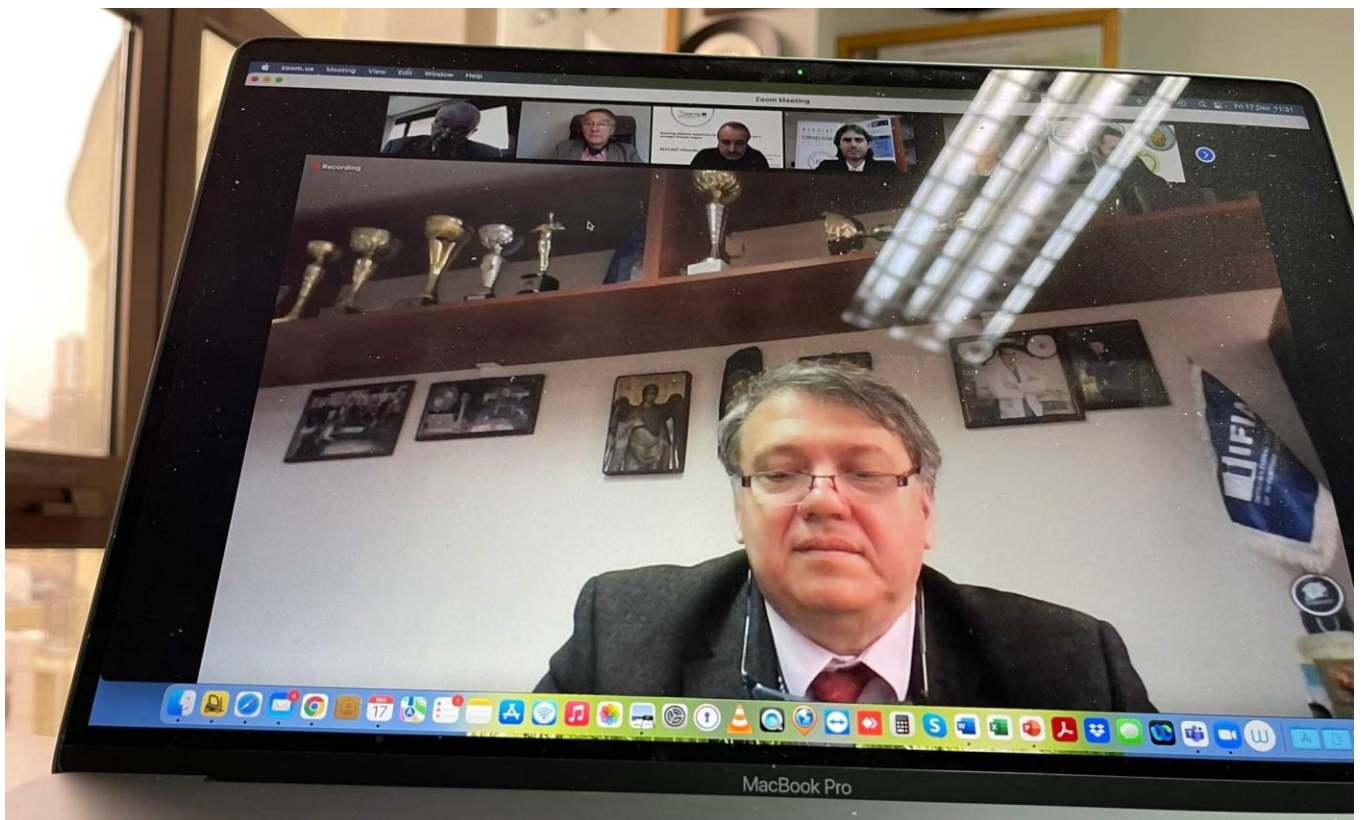
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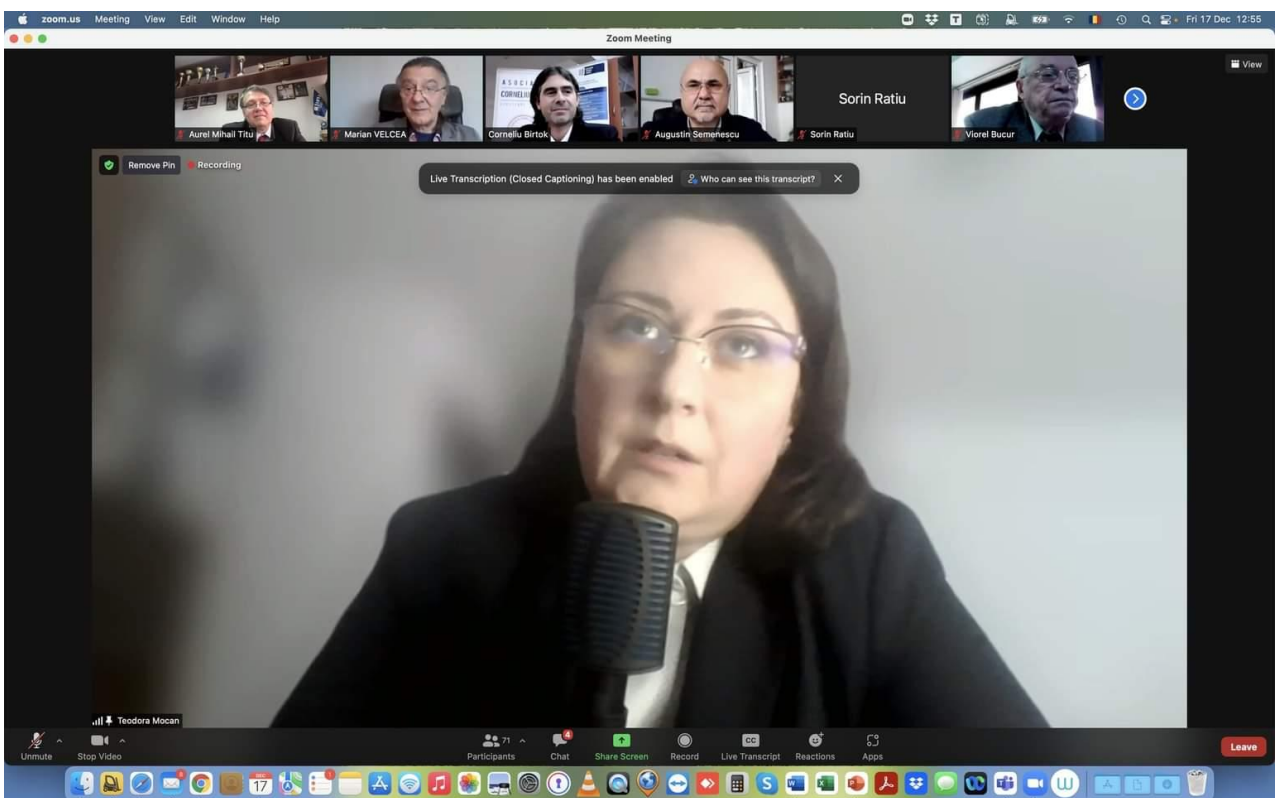


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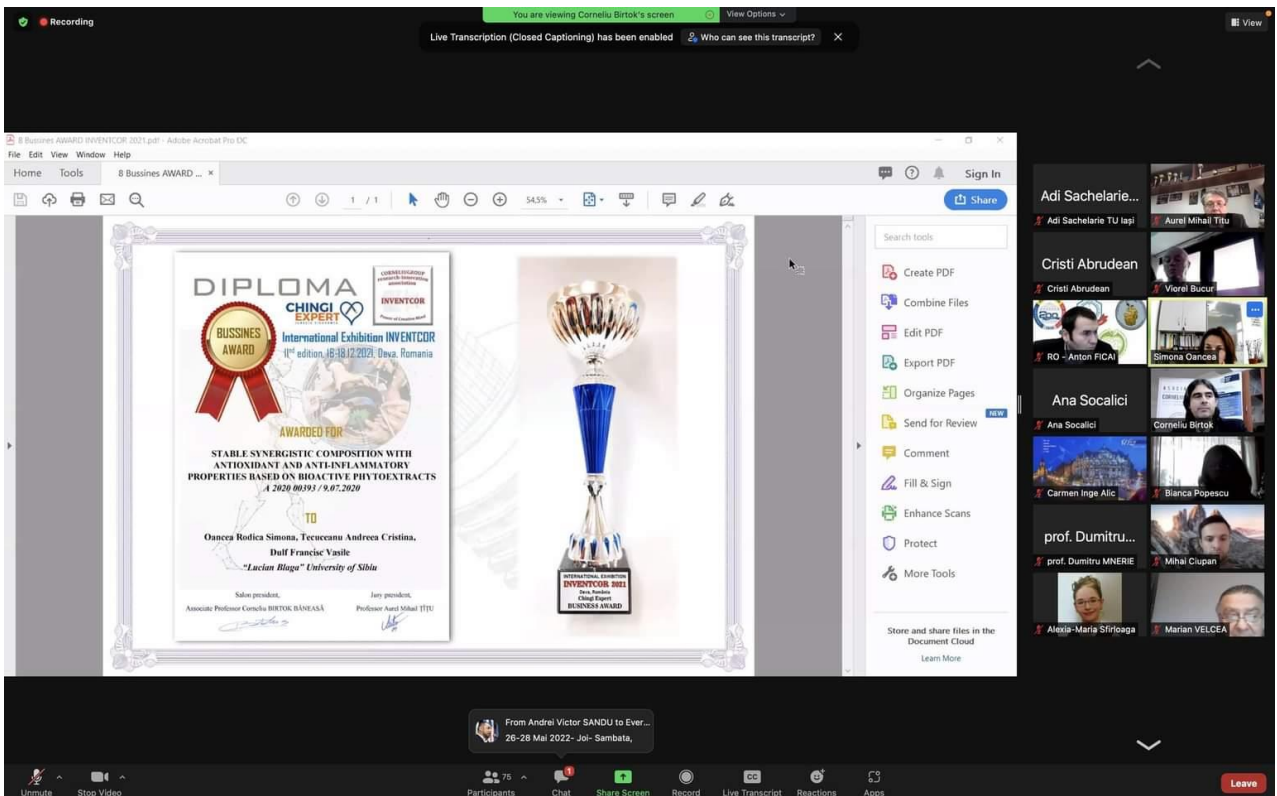


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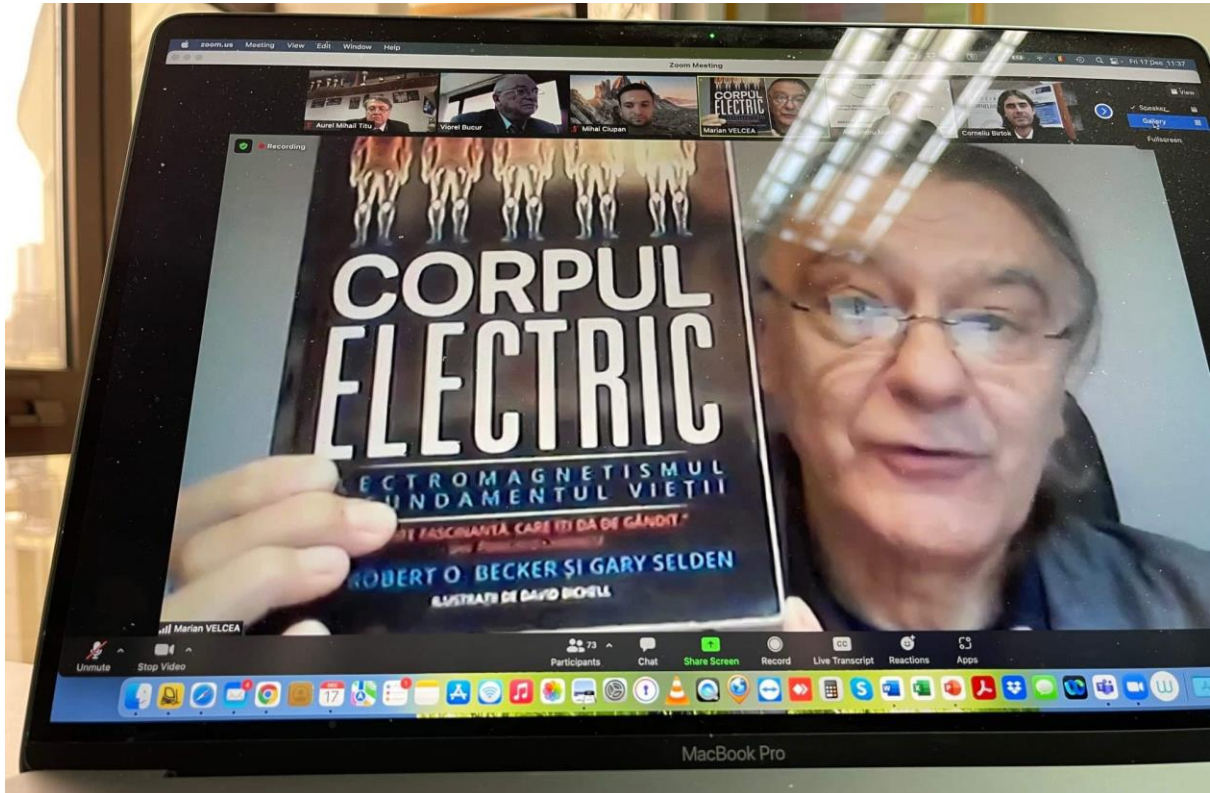


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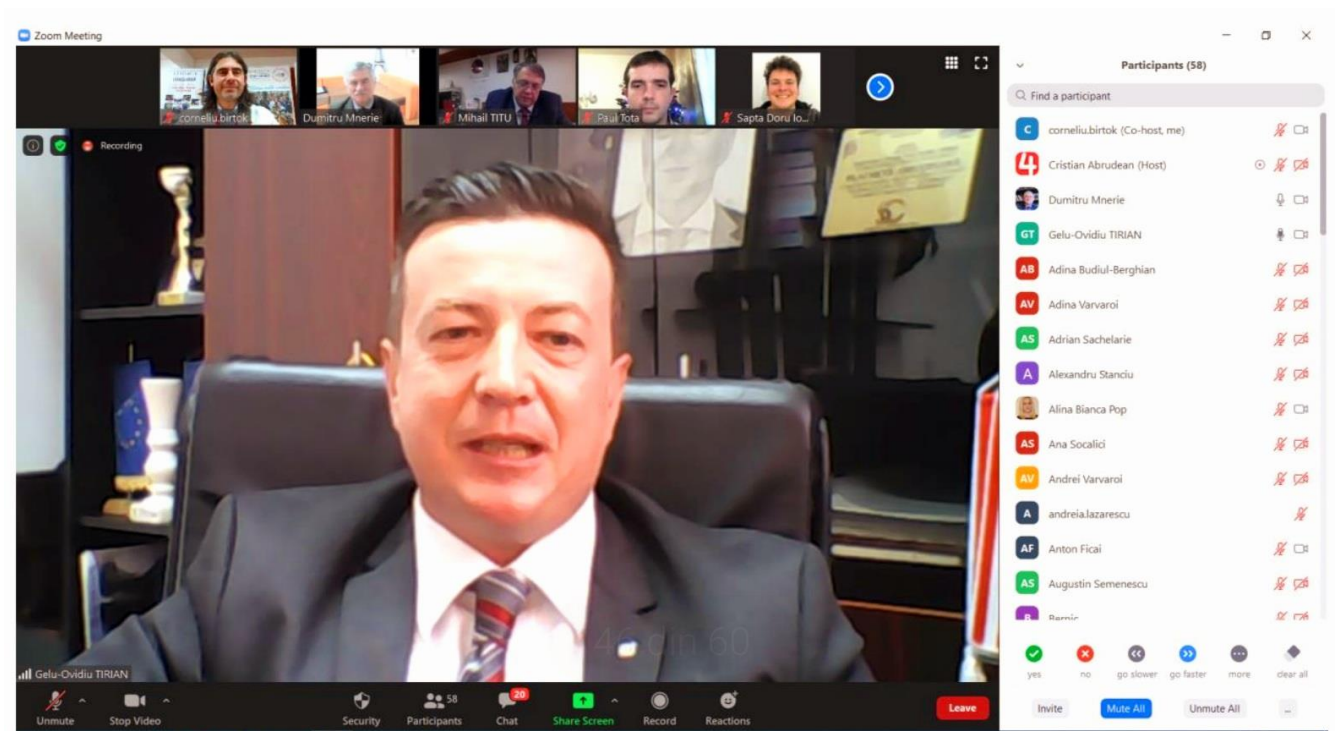
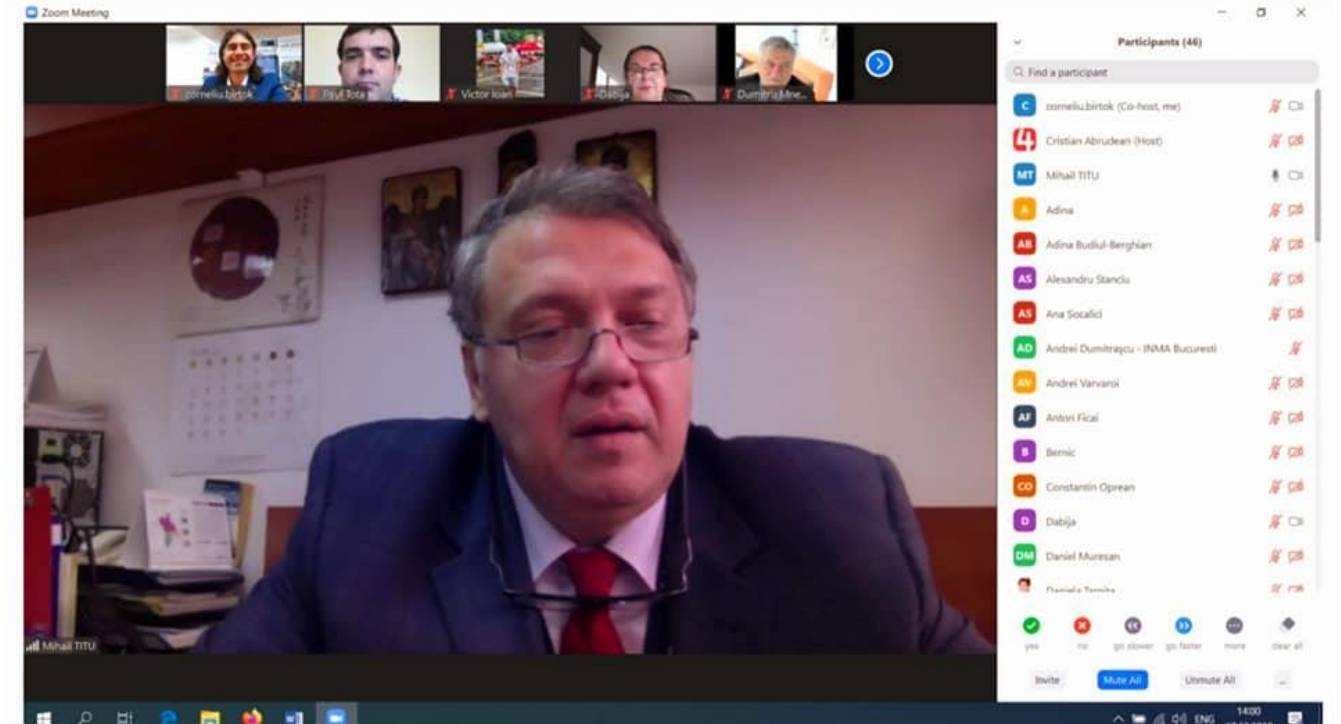
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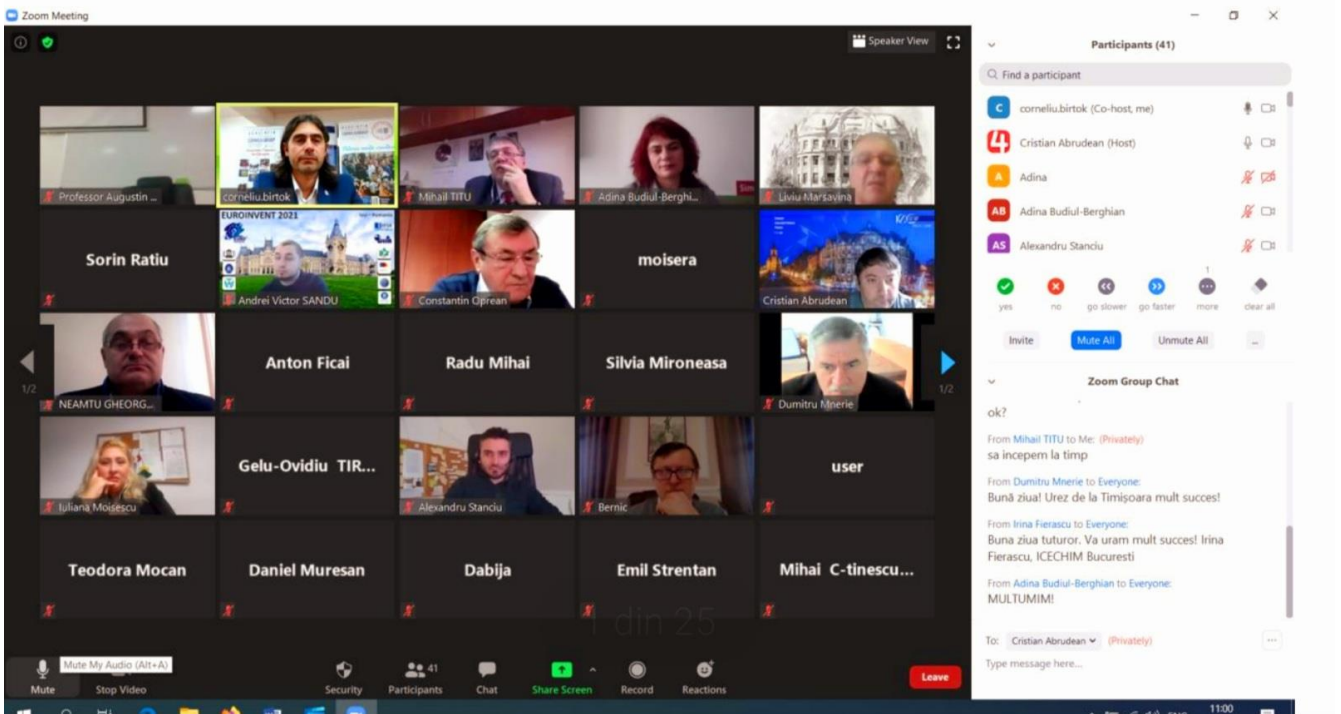


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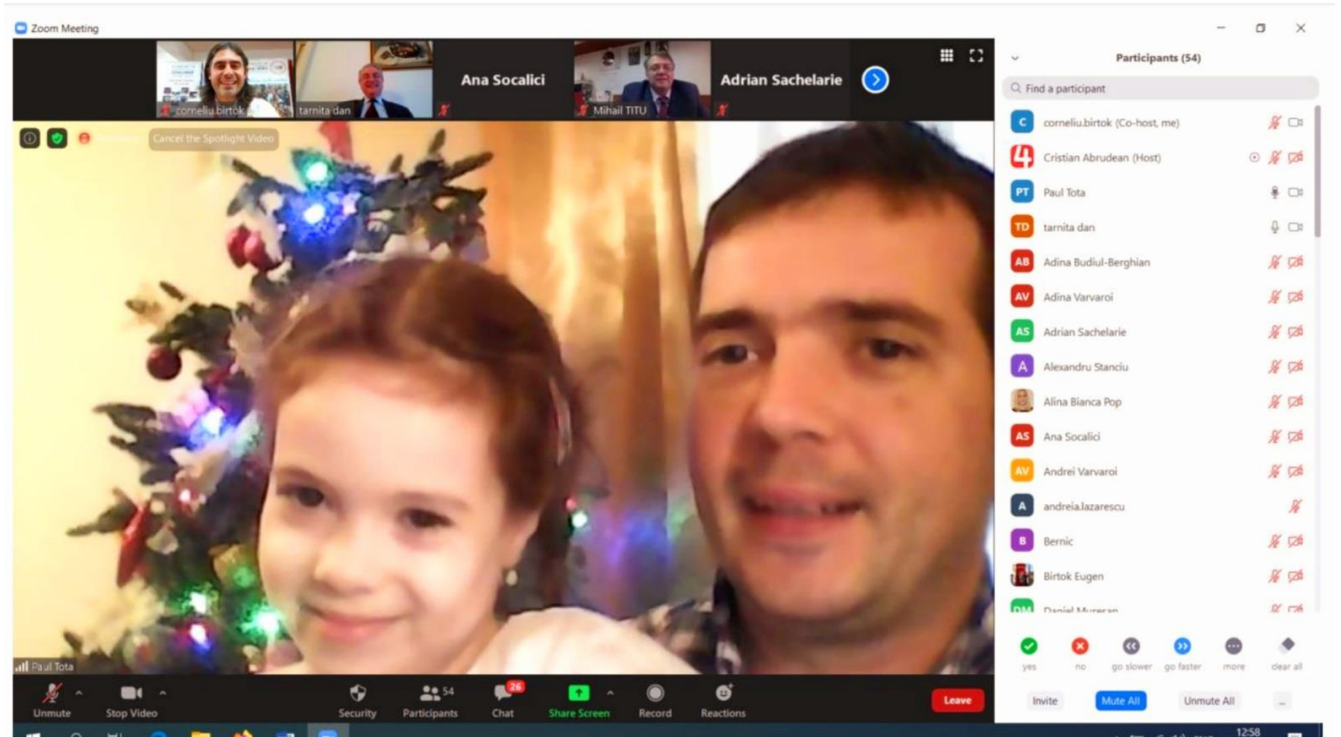


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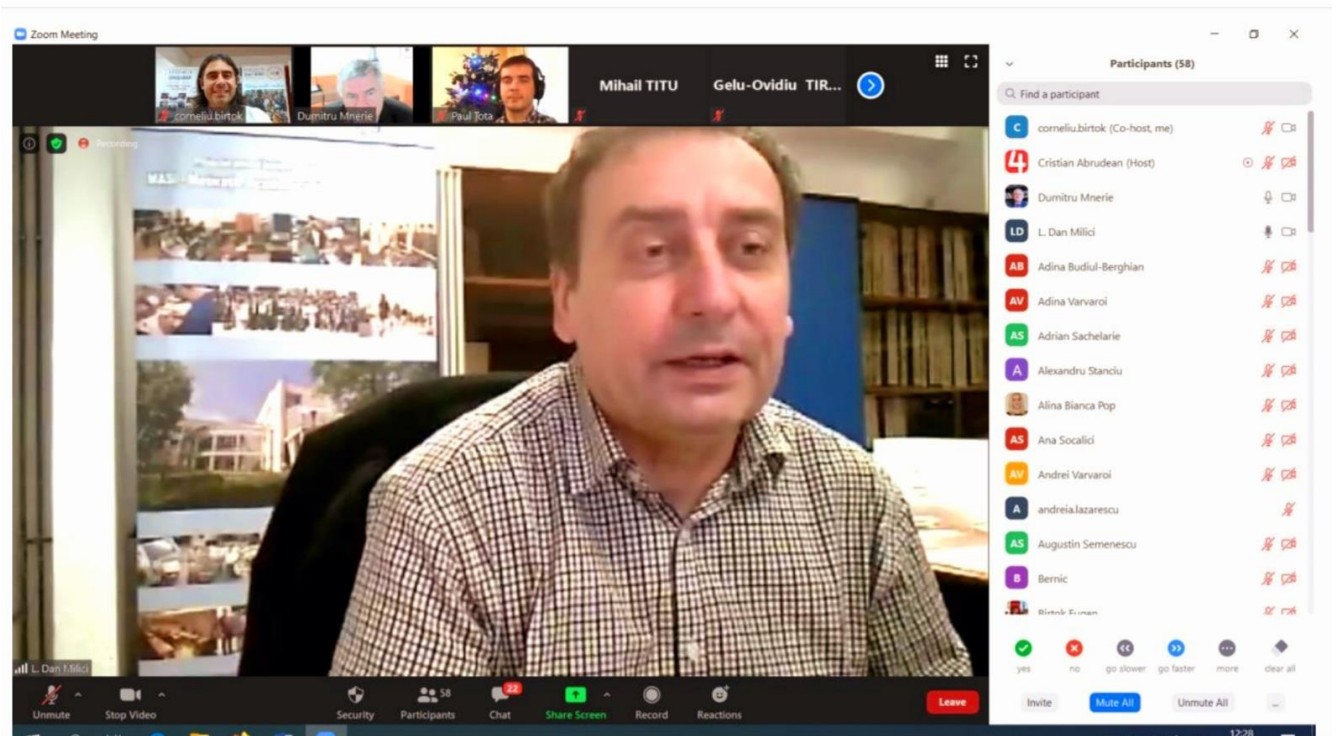


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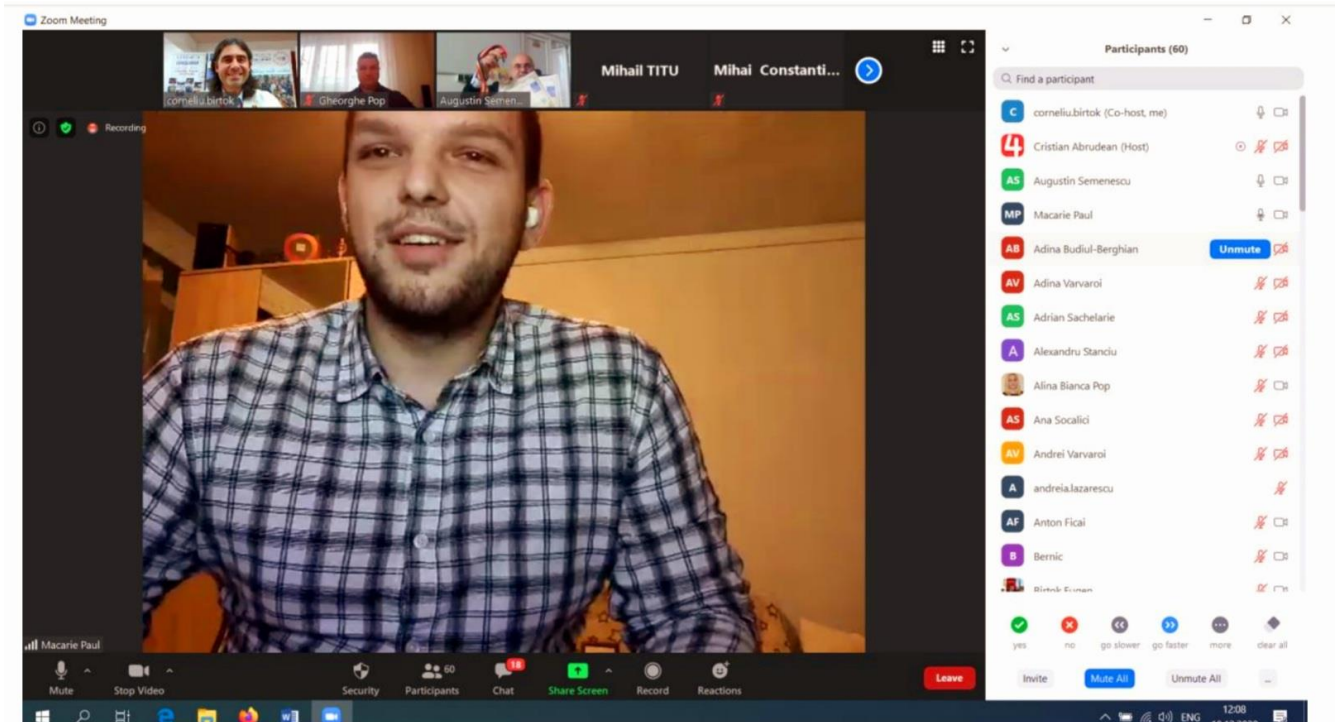


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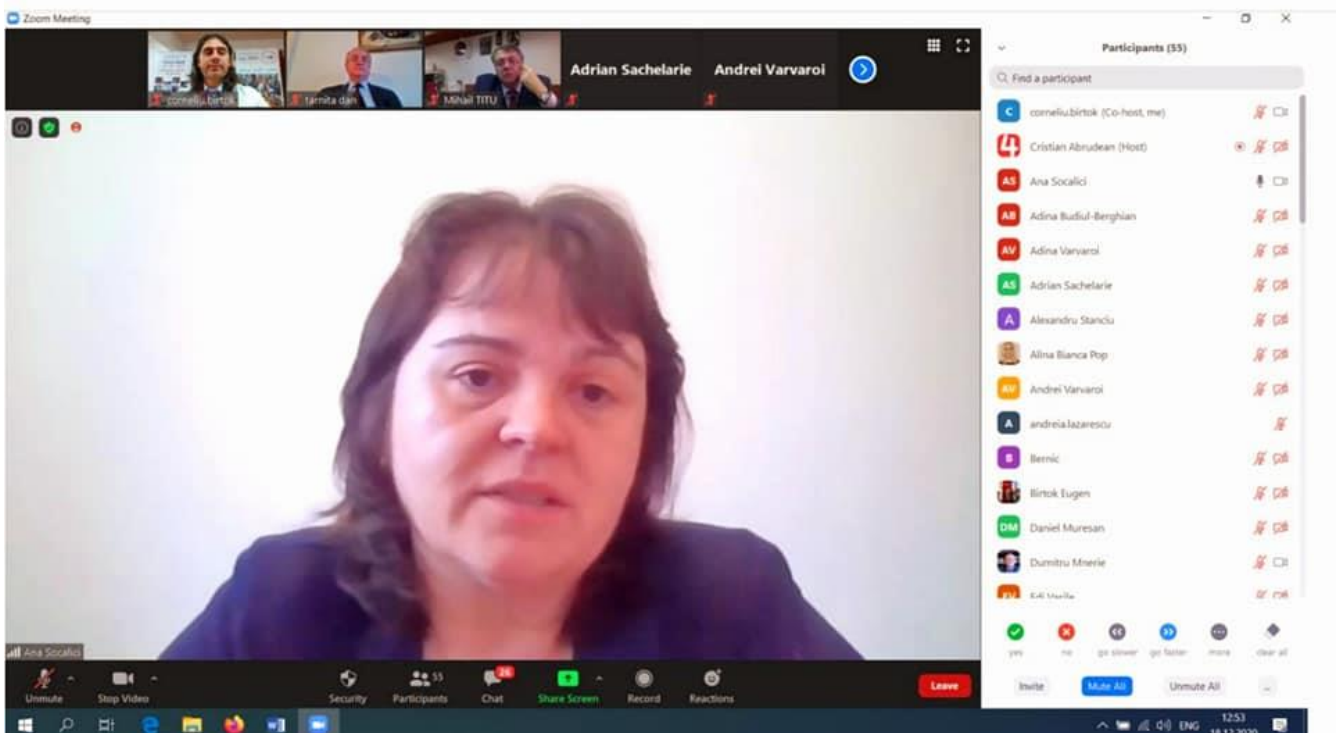
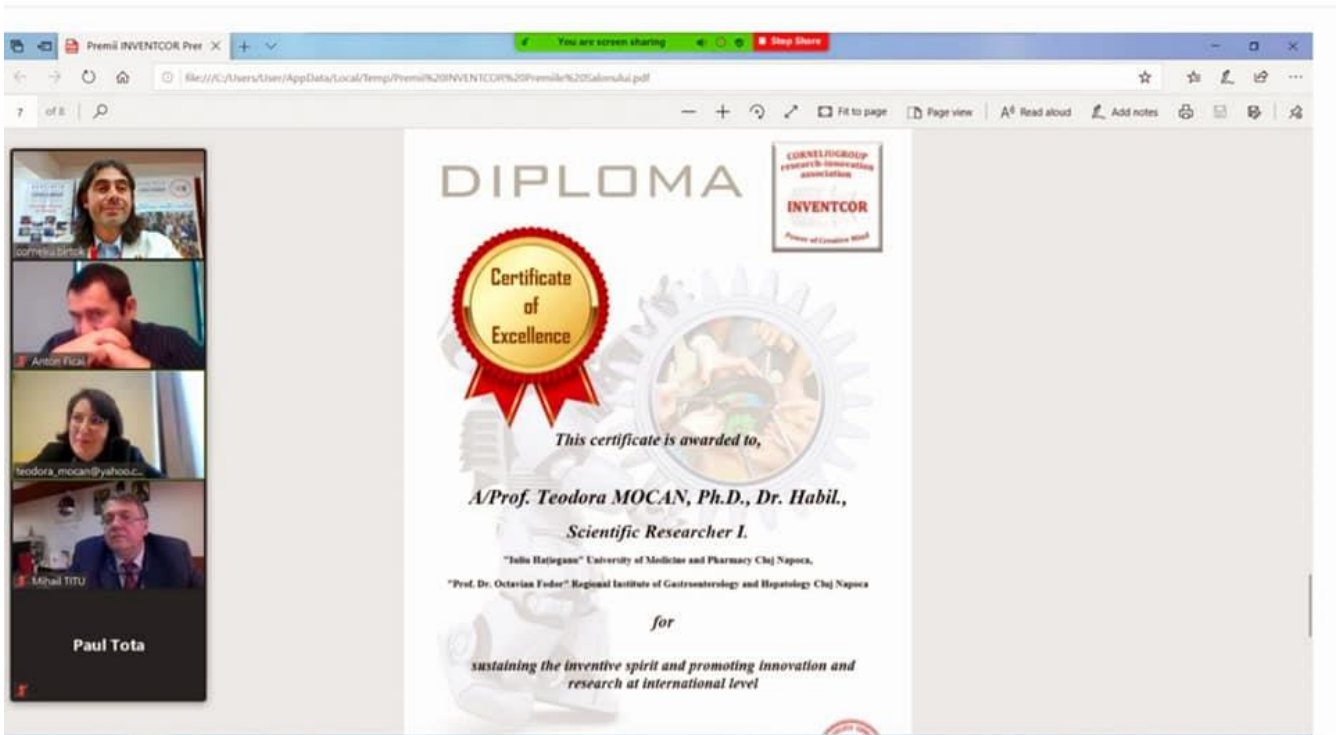


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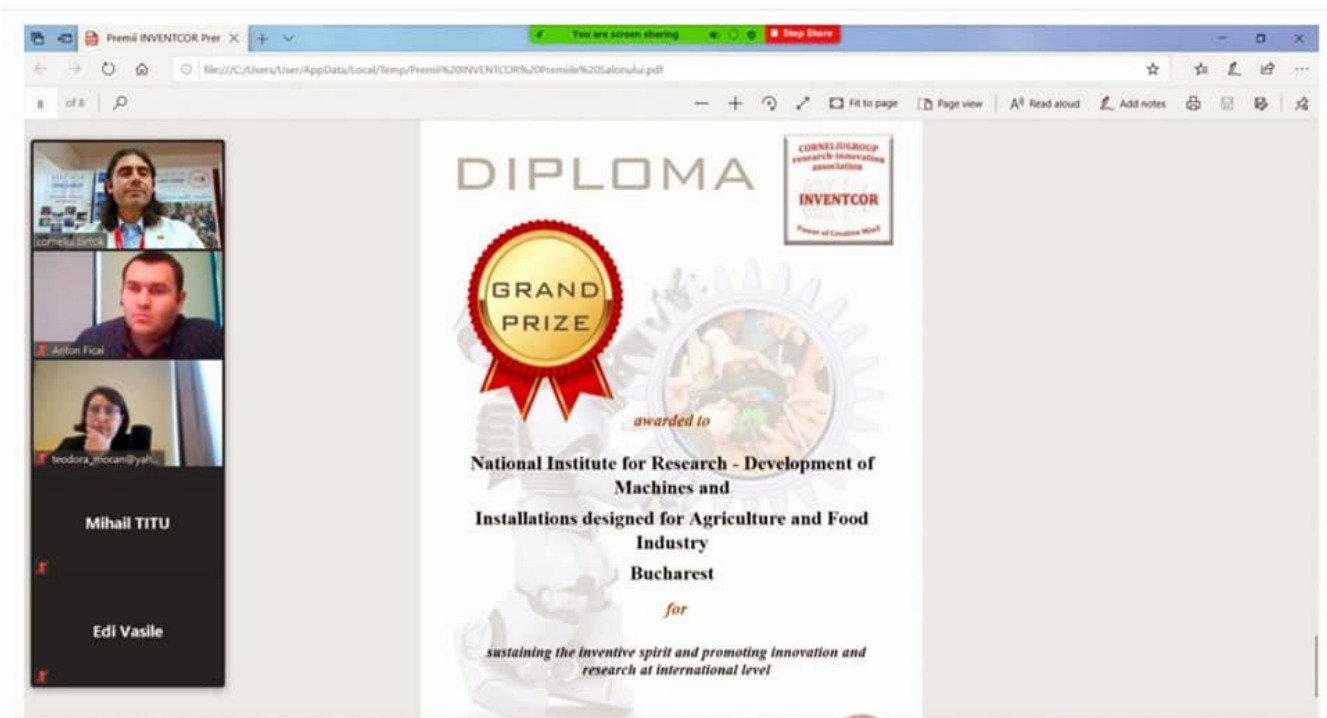


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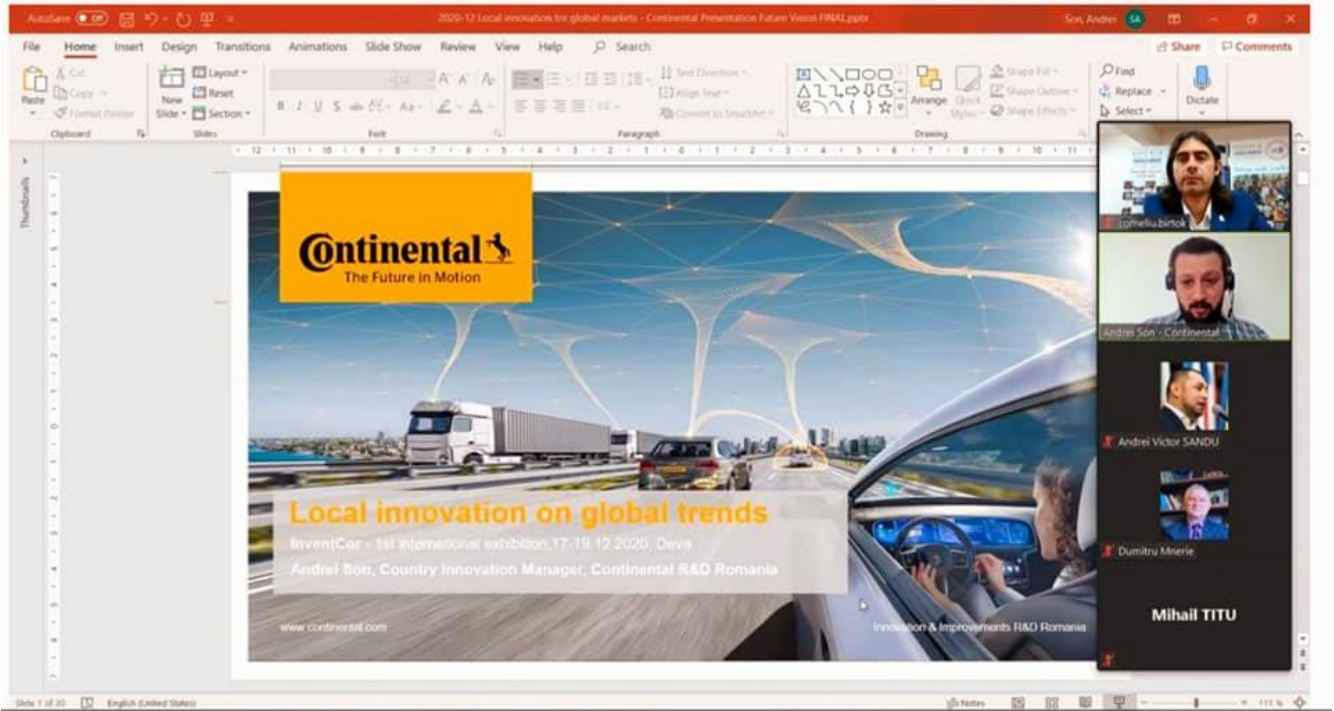


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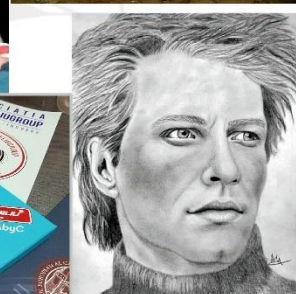
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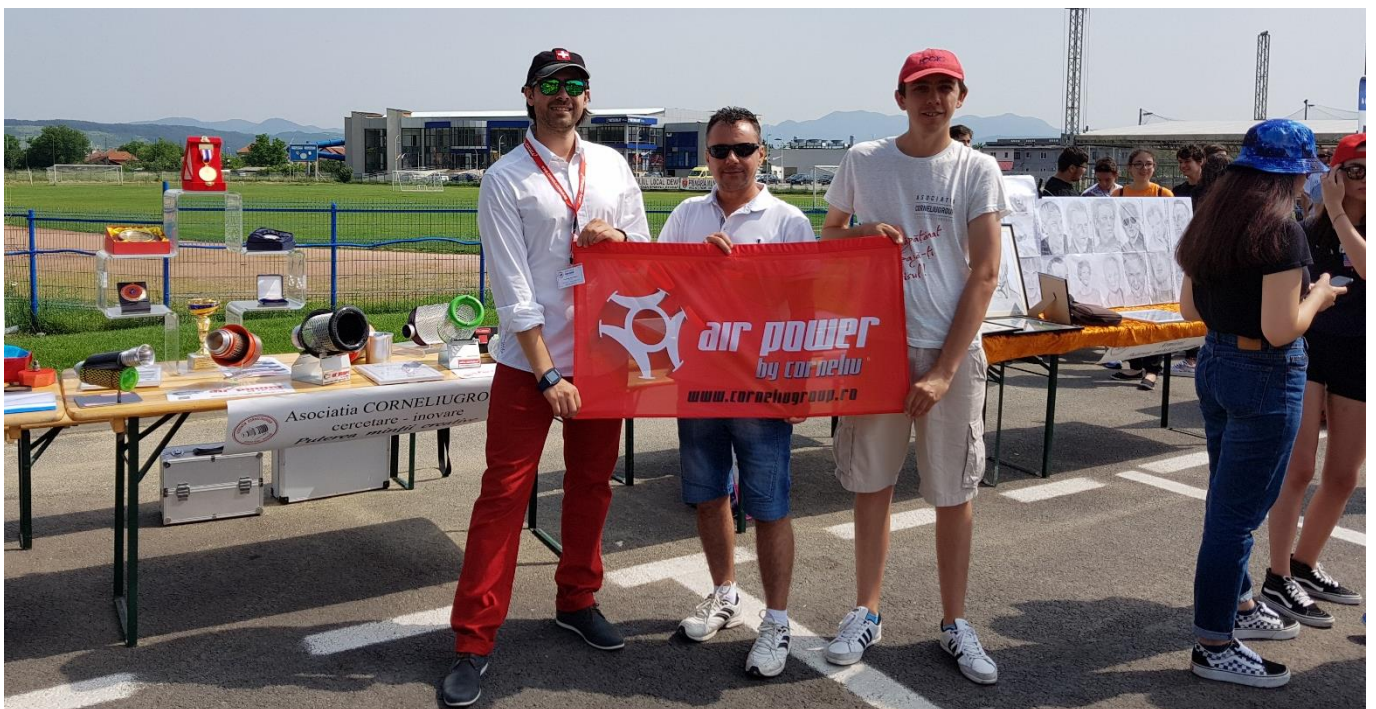


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