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State Pedagogical University of Chisinau, Moldova;
Public Association Innovation in Performance Education;
Academy of Innovative Entrepreneurship

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Summary:

INVENTIONS

ANCIP Cameroun

COMPOSITION MEDICINALE A BASE DE L'ALBIZIA DINKLAGEI POUR LE TRAITEMENT DE LA COVID 19 ET SES COMPLICATIONS CEREBRALES

Patent: N°21047 OAPI

Authors: **CHEICK Mohammed Ali Kela, TIA Sonwa Amelie Judith**

Institution: ANCIP CAMEROUN

Description: Composition médicinale à base de l'albizia Dinklagei pour le traitement de la Covid-19 et ses complication célébrables.

CORNELIUGROUP Research-Innovation Association

CORNELIUGROUP CAMP – LEARNING IN NATURE

Patent: Educational program
Authors: **BIRTOK-BANEASA Corneliu & Team**
Institution: CORNELIUGROUP Research-Innovation Association
Description: Starting from the concept of "outdoor education", Corneliu Group Camp - Learning in Nature aims to offer young people an optimal framework for the preparation of educational projects, in parallel with the development of the creative spirit and connection with nature. Another important part of Corneliu Group Camp - Learning in Nature project is environmental protection through implementation of Sustainable Development Goals.

Our main objective is for young people to spend as much time as possible in nature in the spirit of SDG. In this sense, we have developed programs to teach young people about the importance of communion between man and nature through practical actions as: Planting trees, Creating Vegetable Gardens, Plant careing, Planting Aromatic Plants, Cutting grass.
We encourage #CreativeMindPower, #OutsideTheBox thinking and #SDGActions so if you want a balance between formal education and creativity, we welcome you to join our camp!

DEXTER'S LABORATORY

Patent: Educational program
Authors: **BIRTOK-BANEASA Corneliu & Team**
Institution: CORNELIUGROUP Research-Innovation Association
Description: DEXTER's laboratory is an educational program of the CORNELIUGROUP research-innovation Association that supports students who want to carry out diploma projects with practical realization.
CORNELIUGROUP provides students with the material base as well as specialized staff with extensive experience in the field of engineering. Creative projects, teaching materials, experimental stands for the construction of road vehicles designed and made by students for the laboratory study.

WEEKEND INVENTIONS – AIR BY CORNELIU

Patent: Trademark

Authors: BIRTOK-BANEASA Corneliu & Team

Institution: CORNELIUGROUP Research-Innovation Association

Description: Weekend inventions - Air by Corneliu, are creative-innovative concepts intended for a wide range of consumers and aim to increase the quality of life through the use of environmentally friendly products. The following products are part of the Weekend Inventions range:

- Soap AIR by CORNELIU, an explosion of imagination, originality, inventiveness, colors, harmony, scents and shapes;
- MicroU, multifunctional and ecological alternative to the glasses case, with the role of protection and, at the same time, of cleaning them, without resorting to wet wipes, which are difficult to recycle;
- BircoR, soap holder made of natural materials (rock) of different shapes and sizes. BircoR: reduces stress, improves dexterity, and brings us closer to nature;
- SeptoBirCor hand sanitizer, the hands are disinfected and, at the same time, hydrated, eliminating side effects such as dehydration, irritation and the appearance of skin cracks.

„Lower Danube" University of Galați

OBTAINING A NATURAL LIQUID DYE BASED ON NITROSOHEMOGLOBIN(I)

Patent: Derwent Primary Accession Number 2020-27604F
Authors: **STOICA Maricica, DIMA Cristian, ALEXE Petru**
Institution: „Lower Danube" University of Galați
Description: The invention relates to the production of a natural liquid dye based on nitrosohemoglobine through a controlled nitrosating reaction of hemoglobin from blood (collected on the salt as a food and natural anticoagulant) with ascorbic acid and sodium nitrite and its use in the production of bradt in order to minimize the level of residual nitrite and the formation of the characteristic color of nitrozohemoglobin. The liquid nitrosohemoglobin provides a pink-red color similar to that of conventional nitrite and can be used as a colorant for meat products.

NATURAL PRESERVATIVES OBTAINED BY THE BIOTRANSFORMATION OF LIPIDS FROM PLANT SOURCES

Patent: scientific work pending patenting
Author: **HORINCAR Georgiana**
Institution: „Lower Danube" University of Galați, Faculty of Food Science and Engineering
Description: The scientific work entitled „***Natural preservatives obtained by the biotransformation of lipids from plant sources***" targeted the antimicrobial potential study of saturated and unsaturated fatty acids obtained by *in situ* enzymatic hydrolysis of crude fats from palm (pulp and kernel), coconut and shea. After the solid state of enzymatic hydrolysis, using selected yeast cultures of *Yarrowia lipolytica*, the extraction, characterization and quantification of fatty acids using modern techniques of chromatography were performed and finally, the evaluation of the antimicrobial potential of hydrolysates against pathogenic bacteria with incidence in food spoilage and food safety was established.

BIOPRESERVATIVES EXTRACTED FROM BLACK SEA MACROALGAE

Patent: scientific work pending patenting
Author: **HORINCAR Georgiana**

Institution: „Lower Danube" University of Galați, Faculty of Food Science and Engineering

Description: The scientific work entitled „*Biopreservatives extracted from Black Sea macroalgae*" targeted the extraction of bioactive compounds from algae biomass under conditions that do not affect the integrity and concentration of these metabolites; identification and physicochemical characterization of bioactive compounds extracted from seaweeds; identifying the bioactive potential (antioxidant activity and antimicrobial activity) of the seaweed extracts and testing their preservatives potential. This work confirms the macroalgae potential to be exploited as food resources, to obtain non-conventional energy and numerous additives and ingredients of economic value.

The applications of these bioresources are a valuable alternative, because the macroalgae *Cladophora vagabunda*, *Enteromorpha intestinalis* and *Ceramium rubrum* grow abundantly in natural environmental conditions, and their applications also has an impact on the quality of the environment and the balance in natural ecosystems.

„Gheorghe Asachi" Technical University of Iasi

MOBILE PLATFORM FOR SURFACE WATER AERATION

Patent: RO131395 B1/OSIM

Authors: **ANTOHI Constantin, SLUSER Brindusa, ANTONESCU Ion, CRETESCU Igor**

Institution: „Gheorghe Asachi" Technical University of Iasi, Faculty of Chemical Engineering and Environmental Protection, Romania

Description: The invention refers to a surface water aeration platform used specifically for the remediation of eutrophicated waters. The principle of operation consists in the introduction of an ozonized air stream into the eutrophicated water, which also constitutes the propulsion system of the platform.

„Ion Creanga" State Pedagogical University of Chisinau

MDIR CONSTRUCTOR 3.0 – SOFTWARE FOR CREATING INTERACTIVE AND REDACTABLE TEXTBOOKS

Patent: Certificate of Copyright and Related Rights, AGEPI Moldova (registration date 27.03.2024)

Authors: **BALMUȘ Nicolae, CHIRIAC Tatiana**

Institution: „Ion Creanga" State Pedagogical University

Description: MDIR Constructor 3.00 is an upgraded version of MDIR Constructor 2.00 software, which was created in the Delphi 11 (FMX) integrated development environment using TMS SOFTWARE and WinSOFT tools. This software allows users to create interactive digital textbooks of their own design for a variety of academic subjects based on a *.pdf file.

Version 3.00 of the application includes new features like improved design, new learning and knowledge testing activities, multilingual interface translation options, an integrated robot for voice reading, a new algorithm for placing resources on textbook pages and fields, and a new algorithm for creating student textbooks that teachers can password protect. Version 3.00 of the student textbook allows for the addition of student-designed resources to the fields of the manual. These resources can include audio/video sequences, images, documents, notes, and programming activities created in a variety of programming languages, including Pascal, Delphi, C++, Python, and Scratch.

PROCESS FOR CULTIVATION OF CULTURED PLANTS

Patent: Patent No. 1088

Authors: **ŞTEFÎRŢĂ Anastasia; BRÎNZĂ Lilia, LEAHU Igor; IONAŞCU Angela**

Institution: „Ion Creanga" State Pedagogical University of Chisinau

Description: The invention relates to agriculture, namely to a process for cultivation of cultured plants, particularly corn and soybean. The adaptogenic effect of thiourea is known, which possesses cytokine activity, activates the processes of regulating the growth and development of plants in unfavorable conditions by changing the activity of antioxidant enzymes and increasing the content of photosynthetic pigments. But in conditions of insufficient humidity, the absorption and assimilation of mineral nutrients decrease significantly with a negative impact on water use, plant growth and productivity. The process, according to the invention, comprises soaking of seeds for 2 hours and 2- fold treatment of plants during vegetative growth with a mixture containing 0.005% aqueous solution of thiourea and 0.005% aqueous solution of a

mixture of triaqua-hexa- μ-acetato(O,O')-μ3-oxo-triiron(III)nitrate trihydrate, bis(dimethylglyoximato) di(nicotinamide)cobalt(III)tetrafluoroborate dihydrate, zinc nitrate and magnesium nitrate taken in the ratio of 4:9:4:9, wherein the solutions are taken in the ratio of 1:1, and treatment of plants is carried out with a consumption of 200…250 L/ha.

Financially supported by subprogram no. 010602

PROCESS FOR GROWING GARLIC

Patent: Patent No. 1087

Authors: **ŞTEFÎRŢĂ Anastasia; BULHAC Ion, BRÎNZĂ Lilia, COROPCEANU Eduard; BOTNARI Vasile**

Institution: „Ion Creanga" State Pedagogical University

Description: The invention relates to agriculture, in particular to vegetable growing, namely to a process for growing garlic. The process ensures an increase in the selenium content, antioxidant properties and nutritional value of the production. The process of increasing the antioxidant properties of garlic plants (Allium sativum L.) by increasing the content of selenium in the organs by incorporating sodium selenate into the soil is known.The process, according to the invention, involves soaking of cloves before planting or spraying of garlic plants during the vegetation period with 0.00001…0.000001% aqueous solution of coordinative compound of selenium tetrafluoroborate-[bis(dimethylglyoximato)-(selenocarbamide)1,4-(selenium-selenocarbamide)0,45-(selenium-selenium)0,15cobalt(III)], wherein soaking of cloves is carried out for 2 hours, and spraying of plants − 3 times with an interval of 2 weeks and a consumption of 0.5 L/m^2 .

Financially supported by subprogram no. 010602

Moldova State University

„Alexandru Ciubotaru" National Botanical Garden (Institute)

„MARIA" LOCAL CULTIVAR OF JERUSALEM ARTICHOKE, *HELIANTHUS TUBEROSUS* L.

Patent: no. 402 / 2023.02.28

Author: **ȚÎȚEI Victor**

Institution: „Alexandru Ciubotaru" National Botanical Garden (Institute) of Moldova State University

Description: The local cultivar of Jerusalem artichoke, *Helianthus tuberosus* L 'MARIA' registered in the Catalogue of Plant Varieties (no. 0734840 /2023) and patented by the State Agency on Intellectual Property (AGEPI) of the Republic of Moldova is multi-purpose perennial crops with food, fodder, medicinal, melliferous, ornamental and energy mass applications. The tubers contain 237g/kg dry matter with 10.24 % CP, 0.71% EE, 8.12% CF, 8.02 % ash, 1.6 g/kg Ca, 0.30 g/kg P, 72.90%NFE, 58.29% inulin, 5.10% starch and other carbohydrates, 11.45 MJ/kg metabolizable energy, eligible for feed, fodder and raw material for the pharmaceutical industry and biorafenary. The green mass productivity 84.5 t/ha or 18.4 t/ha dry matter with biochemical composition and nutritive value: 89.7 % OM, 11.6 % CP, 25.1% CF, 29.2% ADF, 45.6 % NDF, 5.3 % ADL, 29.3%Cel, 16.4%HC, 24.8% TSS, 662 g/kg DMD, 12.98 MJ/kg DE, 10.66 MJ/kg ME, 6.67 MJ/kg NEl, RFV=135. The quality indices of prepared silage were: pH=3.95, 41.3g/kg lactic acid, 8.7g/kg acetic acid, 0 g/kg butyric acid, 14.5 % CP, 12.7 **%** ash, 29.9**%**CF, 31.8**%**g/kg ADF, 496**%**NDF, 3.3**%** ADL, 28.5**%**Cel, 17.8**%** HC, 641 g/kg DMD, 12.61 MJ/kg DE, 10.35 MJ/kg ME, 6.37 MJ/kg NEl, RFV=120. The biomethane potential of green mass and silage substrates varied from 322 to 356 l/kg ODM. The dry stalks mass for solid biofuel contains: 47.11% C, 5.51%H, 0.31% N, 0.05% S, 0.04%Cl, 1.03% ash and 18.83 MJ/kg GCV. The estimated theoretical ethanol potential from stalks mass cell wall carbohydrates averaged 571 L/t.

Financially supported subprogram no. 01.01.02. ***"Identification of valuable forms of plant resources with multiple uses for the circular economy"***

Faculty of Physics and Engineering, Scientific Research Laboratory Environmental Physics and Modeling Complex Systems (ePhysMCS Lab)

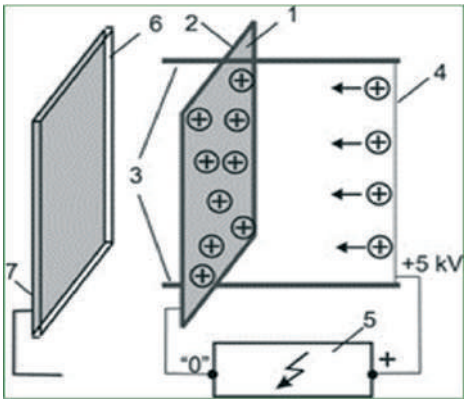
AIRBORNE PARTICULATE MATTER COLLECTION DEVICE AND STUDY METHOD

Patent: MD 1706 / 2023.07.31, BOPI nr. 7/2023

Authors: **SPRINCEAN Veaceslav, CHIRIȚA Arcadi, PALADI Florentin**

Institution: Moldova State University, Faculty of Physics and Engineering, Scientific Research Laboratory Environmental Physics and Modeling Complex Systems (ePhysMCS Lab)

Description: Airborne pollutants such as PM-pollution, can be collected on a silicon monocrystalline wafer 20x20 mm in size (1), which is installed in a dielectric frame (2). A tungsten filament (4), 30 µm in diameter, is mounted on dielectric holders (3) at 10 mm from the surface of the silicon wafer (1). When the high voltage source (5) is turned on, a positive potential of +5 kV is applied to the tungsten filament (4). The "0" electrode of the high voltage source (5) is connected to the reverse side of the silicon wafer (1). Solid particles in the air are positively charged and, under the action of an electrostatic field between the tungsten filament (4) and the silicon wafer (1), are collected on the surface of the silicon monocrystalline wafer (1). For chemical studies, instead of a silicon monocrystalline wafer, chemically resistant plates (quartz, sapphire) (6) with a conductive electrode deposited on their reverse side (7) can be used. Solid particles and liquid droplets collected in such a way on the surface of the silicon monocrystalline wafer (1) can be examined straightforward by means of optical microscopy, atomic force microscopy (AFM) as shown in the figure, as well as energy dispersive X-ray spectroscopy surveys (EDAX). The invention relates to the identification of atmospheric pollutants in Subprogram 011210, in particular to the collection of solid particles and liquid droplets suspended in the atmosphere, and it is used for monitoring of the environmental factors and can be easily attached to the D800 X-8 drone platform.



Institute of Applied Physics

METHOD OF RECOVERY FROM WHEY OF PROTEIN CONCENTRATES ENRICHED WITH BETA-LACTOGLOBULIN

Patent: MD 1637 Z / 2023.03.31

Authors: **BOLOGA Mircea, VRABIE Elvira, SAJIN Tudor, PALADII Irina, POLICARPOV Albert, VRABIE Valeria, STEPURINA Tatiana, SPRINCEAN Catalina**

Institution: Moldova State University, Institute of Applied Physics

Description: The invention relates to the dairy industry and, in particular, to a method for producing a protein-mineral concentrate (PMC) from whey enriched with beta-lactoglobulin (β-Lg) at the electroactivation of whey carried out in two variants:

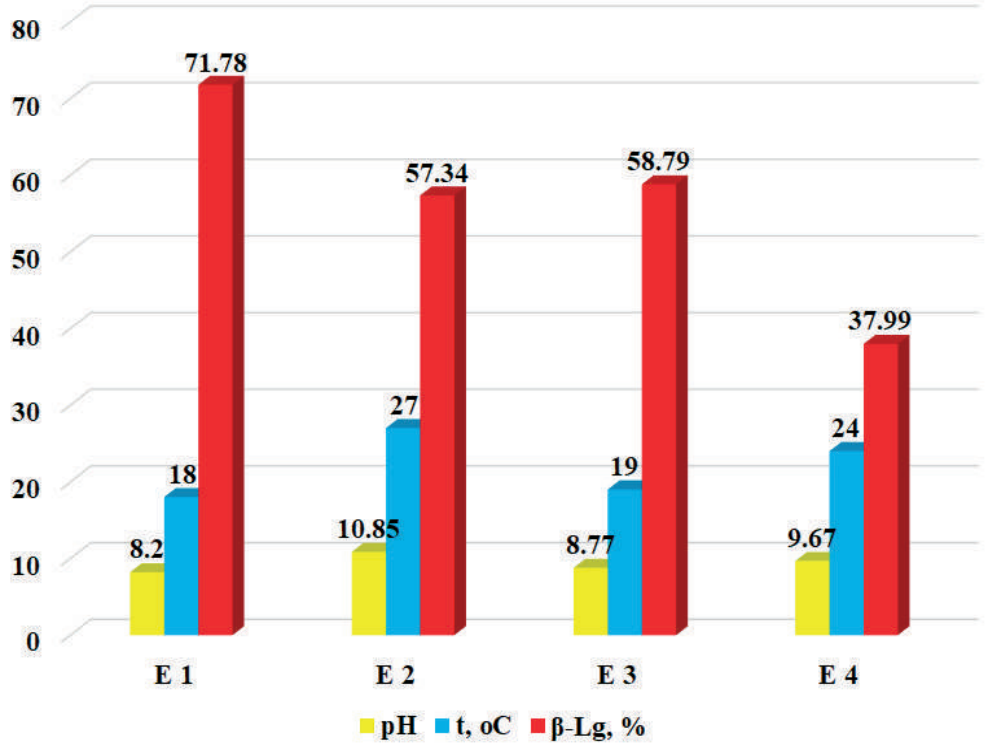


Fig. 1.

1. The electroactivation of whey was carried out ***by cyclic power supply of the electrolyzer with a current with a cycle duration of 60s and an interval between cycles of 10s***, while the PMC was collected from the foamy phase at pH values of 8.00 - 11.00, which allows the recovery of β-Lg of about **72%** at the current density j=10mA/cm^2 (Fig.1. E_1) and of about **57%** at j=20mA/cm^2 (Fig.1. E_2).
2. The electroactivation of whey was carried out ***by a continuous power supply of the electrolyzer with current***, while the PMC was collected from the foamy phase at pH

values of 8.00 - 9.00, which allows the recovery of β-Lg of about **59%** at the current density j=10mA/cm^2 (Fig.1. E_3) and of about **38%** at j=20mA/cm^2 (Fig.1. E_4).

Advantages: Wasteless processing of secondary dairy products with the extraction of mineral protein concentrates (PMC) and simultaneous isomerization of lactose in lactulose, which allows the recovery of proteins in PMC with predetermined protein content, especially with β-Lg.

DEVICE FOR DECONTAMINATION LIQUID

Patent: MD s 2023 0031 / 02.08.2023

Authors: **MUNTEANU Ion, ENACHI Nicolae**

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

Description: The main idea of the proposed device is related to the rotation of contaminated liquids and gases under the action of UV-C through the screw channels, prepared from the quartz rod in the torsion configuration, where the contaminated liquids are rotated along the flow direction. The particularity of the proposed device is the introduction of a quartz spiral inside the decontaminating tube, which increases the efficiency of the disinfection rate of the infected liquid. To improve the efficiency of decontamination, we pay attention to equipment prepared from quartz rods/spherical optics related to the rotational movement of the contaminated fluid through the screw channels. The advantages of this device is the manipulation of pathogens with the help of the quartz coil inserted in the decontamination tube, therefore, the pathogens are directed to the evanescence zones with increased radiation intensity that appear around the coil, and thus the pathogens are subjected to higher doses of radiation with inactivation them.

DISINFECTION AND PROTECTION PROCEDURE OF THE IMPLANT SURFACE USING ULTRAVIOLET C RADIATION THROUGH PERIODIC OPTICAL STRUCTURE

Research Subproject Code: 011206

Authors: **MUNTEANU Ion, ȚURCAN Marina, STARODUB Elena, ENAKI Nicolae**

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

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

with implant surfaces for disinfection and protection are proposed. UV-C disinfection is efficient at wavelengths from 220 to 280 nm. The DNA absorbs it, destroys its structure, and inactivates living cells and therefore microorganisms such as viruses, bacteria, yeasts, and, fungi are rendered harmless within seconds by UV-C radiation. Using metamaterials such as periodical optical structures (photonic crystals and photonic crystal fiber), we have the possibility to channel UV-C radiation in the affected area of the implant surfaces, to treat the infection on the surface formed at the interface between the implant and the cellular tissue in the process of poor adhesion. New implementation methods recently opens up new possibilities for decontamination and the adhesion of the modern implant surface to the organic tissue using the periodical optical system (photonic crystals and photonic crystal fibers). The described method consists in efficient decontamination of pathogens from the interface between the implant and the cellular tissue resulting from the poor adhesion process.

UTILIZAREA BIS(TRIETANOLAMINEI)-COBALT(II) DIIZOBUTIRAT $[Co^{II}(H_3TEA)_2](IS)_2$ ÎN CALITATE DE INHIBITOR AL COROZIUNII OȚELURILOR ÎN APĂ

Patent: CI.Int. S 2019 0051 din 2019.05.22.

Authors: **PARȘUTIN, V.V., CERNÎȘEVA, N., COVALI, A.V., BACA, S.G., KRAVȚOV, V.CH., STATI, D.**

Institution: Institute of Applied Physics

Description: The technical result of the invention is the considerable reduction of corrosion losses of steel pipes and the reduced cost of the inhibitor, due to the simplicity of obtaining and using it.

The claimed compound, structure, properties and production process are not described in the specialized literature. The process for obtaining bis(triethanolamine)-cobalt(II) diisobutyrate $[Co^{II}(H_3tea)_2](is)_2$, (where H_3tea - triethanolamine, is - isobutyric acid) is simple in execution, the initial substances are accessible. The claimed compound is stable in contact with air, well soluble in water.

The compound $[Co^{II}(H_3tea)_2](is)_2$ is obtained in the reaction of Co(II) isobutyrate with triethanolamine in the presence of 3,6-di-2-pyridyl-1,2,4,5-tetrazine. The example of obtaining the compound bis(triethanolamine)-cobalt(II) diisobutyrate with the formula $[Co^{II}(H_3tea)_2](is)_2$. Co(II) isobutyrate (0.05 g, 0.21 mmol), triethanolamine (0.063 g, 0.42 mmol) and 3,6-di-2-pyridyl-1,2,4,5-tetrazine were added (0.01 g, 0.04 mmol) in 10 mL of acetonitrile. The obtained solutions were refluxed for 15 minutes, they were filtered and left in a covered bottle for 2 days. Color crystals browns were filtered and washed with acetonitrile and air-dried. It was determined, %: C-44.34; H-8.18; N-5.47.

For $[Co^{II}(H_3tea)_2](is)_2$, $C_{20}H_{44}CoN_2O_{10}$ (529.48 g mol^{-1}) was calculated, %: C-45.19; H-8.34; N-5.27. Infrared spectrum for the claimed compound: FT/IR (v, cm^{-1}): 3316 br/m, 2966 m, 2903 m, 1837 br/m, 1505 m, 1472 sh, 1456 s, 1439 sh, 1416 v/s, 1372 sh, 1352 m, 1304 m, 1280 s, 1161 m, 1091 sh, 1066 v/s, 1043 v/s, 1018 s, 996 v/s, 910 m, 889 s, 874 sh, 824 m, 774 m , 752 s.

The corrosion test is performed on samples of size 50×25×3 mm by complete immersion in the solution, at the same depth with air access. Their initial roughness is removed by polishing. Mass losses due to corrosion are recorded gravimetrically. The effect of the inhibitor's action is evaluated quantitatively according to the corrosion speed k, g/ m2 • zi and the value of the inhibition coefficient γ = k/k1, where k1, k the corrosion speed of the metal with inhibitor and, respectively, in its absence. This ratio shows how many times the corrosion rate decreases as a result of the action of the inhibitor. The effect of the inhibitor concentration and the test time on the corrosion rate k, g/ m2 • zi and the inhibition coefficient γ are presented in the table. From the data presented in the table, it can be seen that the introduction of this inhibitor in the corrosive environment significantly reduces corrosion losses. The minimum concentration of 0.1 g/l, in this case the braking coefficient reaches from 1.2 during 8 hours of testing and up to 3.9 during 240 hours. The best inhibitor concentration should be considered 0.5 g/l. In this case, the value of the braking coefficient at 8 hours of testing is 7.7, and at 240 hours it increases to 15.4. The maximum concentration of the inhibitor is 1.5 g/l, because the further increase of the concentration has little effect on the corrosion suppression process, simultaneously with the increase of the costs of the inhibitor.

The influence of the concentration of the proposed inhibitor on the parameters of the corrosion process of St.3 steel in water

Inhibitor concentration , g/l	Time (duration) test, τ, ore	Corrosion rate, k, g/m^2•zi	The braking de coefficient γ
0	8 24 72 240	21,0 12,0 6,6 4,0	- - - -
0,1	8 24 72 240	17,5 8,8 3,9 1,03	1,2 1,4 1,7 3,9

0,25	8 24 72 240	8,2 5,9 1,51 0,29	2,6 2,03 4,4 13,8
0,5	8 24 72 240	2,73 1,8 1,14 0,26	7,7 6,67 5,8 15,4
1,0	8 24 72 240	10,05 4,56 1,7 0,47	2,1 2,63 3,9 8,51
1,5	8 24 72 240	10,05 4,0 1,74 0,58	2,08 3,0 3,8 6,9

Thus, an effective corrosion inhibitor for steels in water, harmless from an ecological point of view, has been developed, which allows the considerable reduction of corrosive losses up to 15.4 times.

METHOD OF RECOVERY OF PROTEIN CONCENTRATES ENRICHED WITH ALPHA-LACTALBUMIN FROM WHEY

Patent: MD 1547 Z / 2022.02.28

Authors: **VRABIE Elvira, SAJIN Tudor, BOLOGA Mircea, PALADII Irina, POLICARPOV Albert, VRABIE Valeria, STEPURINA Tatiana, GONCIARUC Valeriu, SPRINCEAN Cătălina**

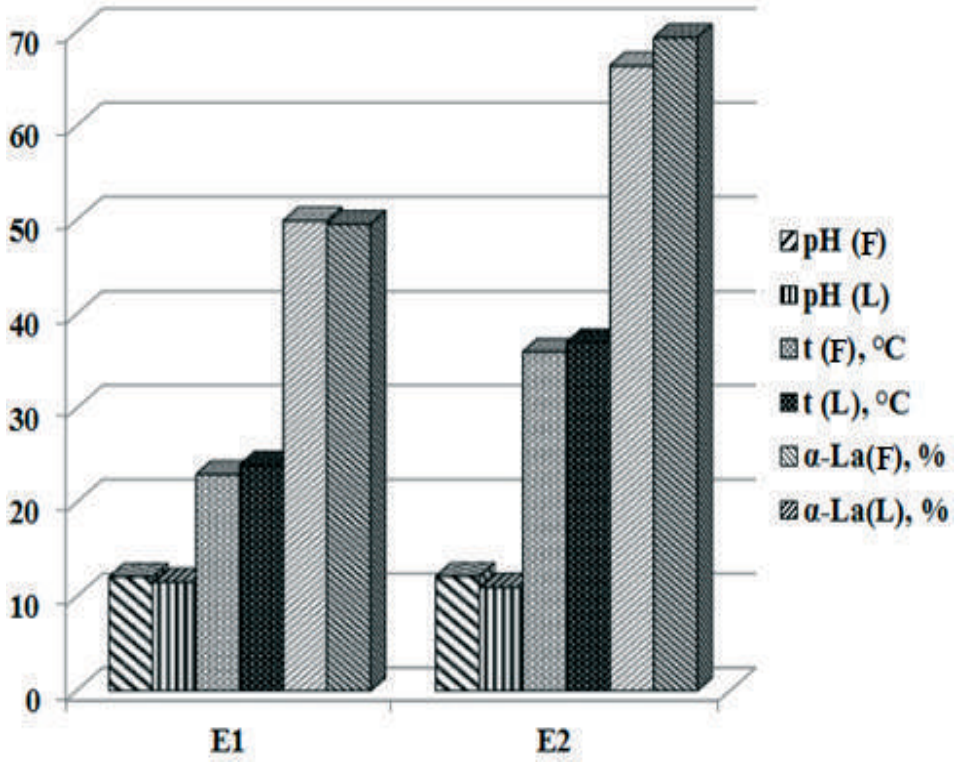
Institution: Moldova State University, Institute of Applied Physics

Description: The invention relates to the dairy industry, namely to the obtaining from whey of the mineral protein concentrates (PMC), enriched with α-lactalbumin (α-La), which includes cooling, electroactivation of the whey in periodic regime for 20-30 min in the diaphragm electrolyzer, at current density of 10-20mA/cm^2, separation of PMC from deproteinized whey in the field of mass forces. The PMC, enriched with 50-70% of α-La are recovered from two phases: the foamy phase - at intensely alkaline values of pH 12.00-12.20 and the liquid phase at pH 11.00-11.50. The temperature of the whey during processing is maintained in the range of 20-40°C.

In the image is shown the variation of α-La extraction in PMC depending on processing regimes and variation of pH and temperature values in examples: E1 (at current density

10mA/cm^2), E2 (at current density 20mA/cm^2) in the foamy phase (F) and the liquid phase (L).

Advantages: Wasteless processing of secondary dairy products with the extraction of mineral protein concentrates (PMC) and simultaneous isomerization of lactose in lactulose, which allows the recovery of proteins in PMC with predetermined protein content, especially with α-La.



Institute of Chemistry

COMPLEX PREPARATION WITH ANTIOXIDANT PROPERTIES

Patent: Patent No. 4647

Author/s: **BULHAC Ion, ŞTEFÎRŢĂ Anastasia; COROPCEANU Eduard; BRÎNZĂ Lilia, COVACI Olga**

Institution: Institute of Chemistry, Moldova State University

Description: The invention relates to chemical compounds with biologically active properties, and can be used in agriculture for reducing the negative impact of oxidative stress caused by reactive oxygen species, for antioxidant protection and diminishing the oxidative destruction of cellular components. The complex preparation, according to the invention, comprises thiourea, $Mg(NO_3)_2 \cdot 6H_2O$, $Ca(NO_3)_2 \cdot 4H_2O$, potassium salicylate, $[Co(DmgH)_2(SeUrea)_2]BF_4 \cdot 2H_2O$, $[Fe_3O(CH_3COO)_6(H_2O)_3]NO_3 \cdot 3H_2O$, $Mn(CH_3COO)_2 \cdot 4H_2O$, $[Co(DmgH)_2(Nia)_2]BF_4 \cdot 2H_2O$, $Zn(NO_3)_2 \cdot 6H_2O$, $(NH_4)_6Mo_7O_{24} \cdot 4H_2O$, $(HOC_6H_4COO)_2Cu \cdot 4H_2O$. The result of the invention consists in reducing the content of malonic di-aldehyde − the final product of lipid peroxidation by the reactive species of oxygen, and in enhancing the activity of the antioxidant protection system enzymes.

Financially supported subprogram no. 010602

TRIS(2,6-DIMETHYL PYRIDINECARBOXYLATE-1*K*ONO)-DI-*M*-(ISOTHIOCYANATO-1,2*K*N)-(DIISOTHIOCYANATO-2*K*N)BARIUM(II)COBALT(II) WITH BIOSTIMULATORY PROPERTIES OF THE SYNTHESIS OF BIOACTIVE PRINCIPLES ON FUNGI

Patent: MD 4847 C1

Authors: **BULHAC Ion; URECHE Dumitru; COCU Maria; BOUROSH Pavlina; CILOCI Alexandra; CONDRUC Viorica; DVORNINA Elena**

Institution: Institute of Chemistry of MSU, Institute of Applied Physics of MSU, Institute of Microbiology and Biotehnology of MTU

Description: The technical result of the invention is to obtain a new well-crystallizable and non-corrosive monocrystalline heterodinuclear complex $[BaCoL_3(\mu\text{-}NCS)_2(NCS\text{-}\kappa N)_2]$ (L = 2,6-pyridinecarboxylic acid dimethyl ester), which is introduced into the nutrient composition of the producers increases the biosynthesis of amylases in the fungal strain *Aspergillus niger* CNMN FD 06 and the productivity of mycelial biomass

in *Lentinus edodes* (Berk) Sing CNMN FB 01 with the reduction of the cultivation cycle by 24-48 hours.

The complex has a stimulating influence on the biosynthesis of exocellular amylases in the *Aspergillus niger* micromycete, exceeding 35.6% and 51.0% of the control on the 5th day of cultivation (6th day of cultivation), facilitating the reduction of the technological cycle with 24 hours.

The application of the heterometallic coordination compound in the cultivation process of the fungi *Lentinus edodes* (Berk) Sing CNMN FB 01 strain producer of mycelial biomass with curative and nutraceutical properties, ensures the increase of the amount of biomass already accumulated on the 6th day of cultivation until the 21,87-22,52 g/L compared to 16.37 g/L maximum of the control on the 8th day of cultivation, which exceeds the level of the maximum of the control by 33,6-37,6% depending on the applied concentration, while reducing the cultivation term by 48 hours.

Financially supported by subprograms no. 010602, 011202 and 020101

NITRATE OF 2,6-DIACETYLPYRIDINE-BIS(PICOLINOYLHYDRAZONE)-(AQUA)(NITRATO) CADMIUM(II) – MONOHYDRATE WITH PHOTOLUMINESCENCE PROPERTIES

Patent: MD 4884

Authors: **DANILESCU Olga, BULHAC Ion, CROITOR Lilia, BOUROSH Pavlina, KULICOVA Olga**

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

Description: The invention relates to coordination chemistry, in particular to the synthesis of a new coordination compound nitrate of 2,6-diacetylpyridine-bis(picolinoylhydrazone)-(aqua)(nitrato)cadmium(II) – monohydrate with the formula $[Cd(H_2L)(H_2O)(NO_3)]NO_3 \cdot H_2O$, H_2L = 2,6-diacetylpyridine bis(picolinoylhydrazone), with photoluminescence properties. The claimed complex exhibits photoluminescent activity about 300 times more intense than the free ligand (H_2L), a fact established by evaluating the effect of the flourescent emission in the range 400-500 nm which can be observed even with the naked eye. $[Cd(H_2L)(H_2O)(NO_3)]NO_3 \cdot H_2O$ is proposed as a applicable material for obtaining blue light sources.

Financially supported by subprograms no. 010602 and 011202

INHIBITORS OF THE PROLIFERATION OF FUNGI OF THE SPECIES *CRYPTOCOCCUS NEOFORMANS*

Patent: MD 4712 C1 / 2020.09.30; MD 4742 C1 / 2021.02.28

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

Institution: Moldova State University, Institute of Chemistry

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

METHOD OF CORROSION PROTECTION OF STEEL IN WATER USING A GREEN INHIBITOR

Patent: MD1726 Y/ 2023.11.30

Authors: **LOZAN Vasile, PARȘUTIN Vladimir, COVALI Alexandr, JOVMIR Tudor**

Institution: Moldavian State University, Institute of Chemistry and Institute of Applied Physics

Description: The method provides the introduction of two synergistically acted inhibitors into the aqueous medium that contacts the steel surfaces (e.g. of thermal power distribution pipes), namely succinic acid dihydrazide at concentrations of 0.10...0.75 g/L and an aqueous extract, obtained from dry walnut leaves, at concentrations of 10...30 mL/L. Inhibitors can be introduced into the aqueous medium in admixture or sequentially. The aqueous extract of walnut leaves is obtained by heating the raw material in water on a water bath, at a temperature of 70...100 °C for 1...3 hours at a solid mass/water ratio of (2... 4):10, followed by separation of the resulting solution.

COMPOUND 2,5,11,14-TETRAAZATRICYCLO-[13,3,1,16,10]-ICOSA-1(19),6,8,10(20)15,17-HEXAEN-3,4,12,13-TETRAONTETRAOXIME DI-N,N-DIMETHYLFORMAMIDE WITH ANTIBACTERIAL AND ANTIFUNGICAL ACTIVITY

Patent: MD 4745 C1

Authors: **URECHE Dumitru, BULHAC Ion, LUPASHCU Lucian, VEVERITZA Anastasia, BOUROSH Pavlina**

Institution: Institute of Chemistry of MSU, Institute of Applied Physics of MSU

Description: The invention relates to chemistry, in particular to tetraoxime 2,5,11,14-tetraazatricyclo- [13,3,1,16,10]-icosa-1(19),6,8,10(20)15,17-hexaen-3,4,12,13-tetraontetraoxime di-N,N-dimethylformamide ($DmFDH_4 \cdot 2DMF$) as a polydentate coordination agent for the purpose of new coordinating compounds obtaining with original and supramolecular structure, as well as to microbiology, intended for use as an antibacterial and antifungal remedy.

It was synthesized a new coordination agent, obtained from the condensation of 1,3-phenylenediamine with dichloroglyoxime in a molar ratio of 1:1. This coordination agent has been studied as an antibacterial and antifungal remedy. Non-pathogenic strains of *Bacillus subtilis* CNMN BB-01, *Pseudomonas fluorescens* CNMN-PFB-01 and phytopathogenic strains of *Xanthomonas campestris*, *Erwinia amylovora*, *Erwinia carotovora* were selected as test bacteria for the evaluation of antibacterial activity and as a test-fungus strains were selected: *Candida utilis* and *Saccharomyces cerevisiae*.

Financially supported by subprograms no. 010602, 011202 and 010601

Institute of Genetics, Physiology and Plant Protection

THYME WITH LEMON FLAVOR OF *THYMUS X CITRIODORUS* (PERS.) SCHREB THE NEW VARIETY – LILY ROZ

Patent: MD 428 / 2024.01.31

Authors: **CHISNICEAN Lilia, VORNICU Zinaida, JELEZNEAC Tamara, BARANOVA Natalia**

Institution: Moldova State University, Institute of Genetics, Physiology and Plant Protection

Description: The variety Lily Roz is part of the early maturity group. Perennial semi shrub with a high – 26.4 cm. The diameter of the plant is 64.8 cm. Speed with 447.3 inflorescence stems. Tiny green oval leaves 5 – 6mm. Pink flowers – intensely placed in a spiniform raceme. Essential oil content 0.326%, (moisture 60%); 1.247% dry matter. The average production of fresh raw material – 4.26 t/ha, pharmaceutical *herba* – 1.34 t/ha. Essential oil production – 13.9 kg/ha. Yield: 3.26 kg essential oil per 1 t raw material. This research was supported by the research subprogram 011102 Increasing and conservation genetic diversity, agricultural crop breeding in the context of climate change, financed by the Ministry of Education and Research.

FAVOARE – NEW VARIETY OF *LAVANDULA ANGUSTIFOLIA* MILL., (LAVENDER)

Patent: MD 426 / 2023.12.31

Authors: **GONCEARIUC Maria, BUTNARAS Violeta, MASCOVTEVA Svetlana, BOTNARENCO Pantelimon, COTELEA Ludmila, BALMUS Zinaida**

Institution: Moldova State University, Institute of Genetics, Physiology and Plant Protection

Description: Lavender variety *Favoare* is a first-generation hybrid (F_1), with a high heterosis effect on a number important quantitative characters, vegetative multiplied with average vegetation period. Variety *Favoare* (Fr.8-5-15v) is part of the early maturity group. Semi-shrub with a height of 68.0 cm, the diameter of the plant is 91.3 cm, spread with 835 floral stems. The leaves of that variety are light green. The shape of the leaves is linear. Spike shape – narrow - conical. The calyx is blue-purpure, The corolla is light purple. The length of the floral stem is 25.5 cm, and the floral spike is 8.5 cm. The flowers are grouped in 6-7 pseudoverticles. The productivity of the variety is 7.4 t/ha of inflorescences containing 2.077 % (60 % humidity) and 5.157% (dry. matter) of essential oil. The productions of essential oil constitute 155.2 kg/ha. The

yields of the variety are 20.7 kg/t (of essential oil from the of fresh inflorescences). This research was supported by the research subprogram 011102 Increasing and conservation genetic diversity, agricultural crop breeding in the context of climate change, financed by the Ministry of Education and Research.

Institute of Zoology

ECOBIOLOLOGICAL MODELING OF NATURAL REPRODUCTION OF TENCH IN WATER BODIES OF MOLDOVA

Patent: Patent nr. 1735/ 2024 The ecological-industrial reproduction method of phytophilic fish species, for example tench.

Patent application No. № S 20230075/ 2023 Device of ecological-industrial reproduction of tench.

Authors: **CREPIS Oleg, BULAT Dumitru, ZUBCOV Elena, BULAT Denis**

Institution: Institute of Zoology, Moldova State University

Description: The invention relates to fish farming, namely to methods for ecobiological modeling of natural reproduction of tench. The method includes installing rectangular spawning cages in a reservoir in areas 0.5-1.0 m deep, placing artificial substrates on their bottom for laying eggs, planting fish breeders in cages, periodically checking nests for the presence of eggs and transferring nests with eggs to incubation tanks , as well as observation and care of cages, nests and producers and differs from known methods in that cages of a new construction are installed in the natural spawning zone of fish on specially prepared areas of the bottom (clearing of aquatic plants and compaction with sand). At the same time, thickets of reeds and other plants are left outside along the perimeter of the site to protect the cages from wind and waves. Artificial spawning nests of a new construction with a combined substrate are installed in the corners of the cages on their bottom, simulating dense thickets of aquatic plants. The catch of spawners is carried out at night, during the period of concentration of fish ready for reproduction on the spawning grounds, using minimally stressful methods of catching and transporting them. Cages, if necessary, are connected to each other with a special device to ensure the independent transition of producers from one cage to another. The result of the inventions: increasing the efficiency of the process of artificial reproduction of fish by creating optimal parameters for environmental stimulation of the spawning process of producers.

METHOD FOR ASSESSING THE SENSITIVITY OF CERVIDS TO STRESS FACTORS

Patent: MD 1667 Y / 2023.01.31

Authors: **RUSU Ştefan, ERHAN Dumitru, SAVIN Anatol, TODERAŞ Ion, ZAMORNEA Maria, CHIHAI Oleg, RUSU Viorelia, GOLOGAN Ion**

Institution: Moldova State University, Institute of Zoology

Description: The invention ”Method for assessing the sensitivity of cervids to stress factors” deals with the protection of hunting fauna, especially deer populations, and relates to a method for assessing the sensitivity of cervids to stress factors. The method, according to the invention, consists in sedation of the animal using a pneumatic weapon intramuscular injection of a 1% solution of suxamethonium iodide in a dose of 0.06 mg/kg, blood sampling from the jugular vein using a syringe with a needle lumen diameter of at least 0.9 mm, mixing blood with a 0.1% solution of adrenaline hydrochloride at a temperature of 37.5-39.5ºC for at least one minute on a watch glass heated to the same temperature, placing the mixture in a pipette of an instrument for determining the erythrocyte sedimentation rate placed at an angle of 45°, maintaining for 30 min, determining the erythrocyte sedimentation rate and comparing it with the erythrocyte sedimentation rate of a control sample. At the same time, if the erythrocyte sedimentation rate in the studied blood sample is at least 10 mm higher compared to that in the control sample, an increased sensitivity of cervids to stress factors is established.

National Agency for Public Health

THE METHOD FOR ASSESSING WORKING CONDITIONS AND HEALTH STATUS OF MEDICAL WORKERS IN PRE-HOSPITAL EMERGENCY MEDICAL SERVICE

Patent: NO. 7697 OF 2023.10.25, SERIES OS

Authors: **STINCA Kristina,** PhD student,
PINZARU Iurie, habilitated doctor of medical sciences, associate professor
Institution: National Agency for Public Health

Description: The invention is attributed to human medicine, namely the field of public health which aims to evaluate the working conditions, the professional risk factors, degree of satisfaction and the health status of medical workers of pre-hospital emergency medical service. The proposed method allows the application of the Questionnaire and the evaluation of the results following the determination of certain associations between the work of medical staff and the items of the questionnaire, which measure those factorial characteristics that describe the state of health, and its evaluation from the perspective of the working conditions declared by the respondents. The method is applied within the Public Medical-Sanitary Institution National Center for Pre-Hospital Emergency Medical Assistance which includes a network of 41 substations and 96 emergency medical assistance points. An important functionality of this tool consists in the possibility of data collection, which serve as a basis for strengthening the management of the supervision of occupational risk factors and the development of preventive measures aimed at improving the quality of the professional life of medical workers. The method will facilitate the response capacities, if the state of health declared through the questionnaire expresses the perception of the presence or absence of the disease, of the occupational risk factors during the work, which is an indicator of complex self-assessment of the quality of life. The proposal stands out as being useful in increasing responsibility and reducing the paradigms for the complex of professional risk factors associated with working conditions, which will not endanger the health and quality of life of the medical staff.

THE METHOD FOR BORON INTAKE ESTIMATION AND ITS INFLUENCE ON THE OSTEOARTICULAR SYSTEM

Patent: Decision no 7839 from 03.04.2024 of the State Agency on Intellectual Property of the Republic of Moldova

Authors: **RACU Maria-Victoria, PINZARU Iurie**

Institution: National Agency for Public Health

Description: The method refers to the field of public health. It aims to study food and drinking water consumption habits to estimate boron intake and its influence on the osteoarticular system, more precisely the morbidity from osteoarthritis (OA) and rheumatoid arthritis (RA) of residents of areas of the country with different concentrations of boron in deep drinking water. Current scientific data suggests that a daily intake of at least 3 mg of boron can positively impact the health of the osteoarticular system. The method consists of an application of a questionnaire with 41 open and closed questions regarding the quality and drinking water consumption, eating habits, and osteoarticular morbidity. Using this tool will make it possible to accumulate the necessary data for developing preventive measures that aim to improve the health status of patients suffering from OA and RA by changing the intake of boron from the water and food products consumed.

The method can be used by research and innovation institutions, hospitals with departments of rheumatology and arthrology, and local and national-level public authorities for the adjustment of normative acts regarding drinking water quality

National Institute for Research and Development in Chemistry and Petrochemistry ICECHIM Bucharest

PROCESS FOR OBTAINING SPATIAL FORMATIONS MADE OF CARBON ATOMS OF THE FULLERENE TYPE, THROUGH ELECTRICAL IMPULSE DISCHARGES, USING PYROLYTIC GRAPHITE CATHODE

Patent: Patent nr. 133558/30.03.2022

Author: Dr. Ing. **LAURENTIU Marin**

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

Description: The invention refers to a process for obtaining spatial formations made of carbon atoms of the fullerene type. The invention was materialized as a result of the research and development works within the doctoral thesis with the title - prevention of adhesion effects between metallic and non-metallic surfaces by means of graphite films. Following the application of electrical discharges from a battery of 600 microfarad capacitors between a pyrolytic graphite cathode and a metal surface. on the latter, a uniform film of graphite is obtained. The graphite film is about 5-7 micrometers thick. As a result of the SEM microscopy analysis, a series of fullerene-type spatial formations were identified on the metal surface.

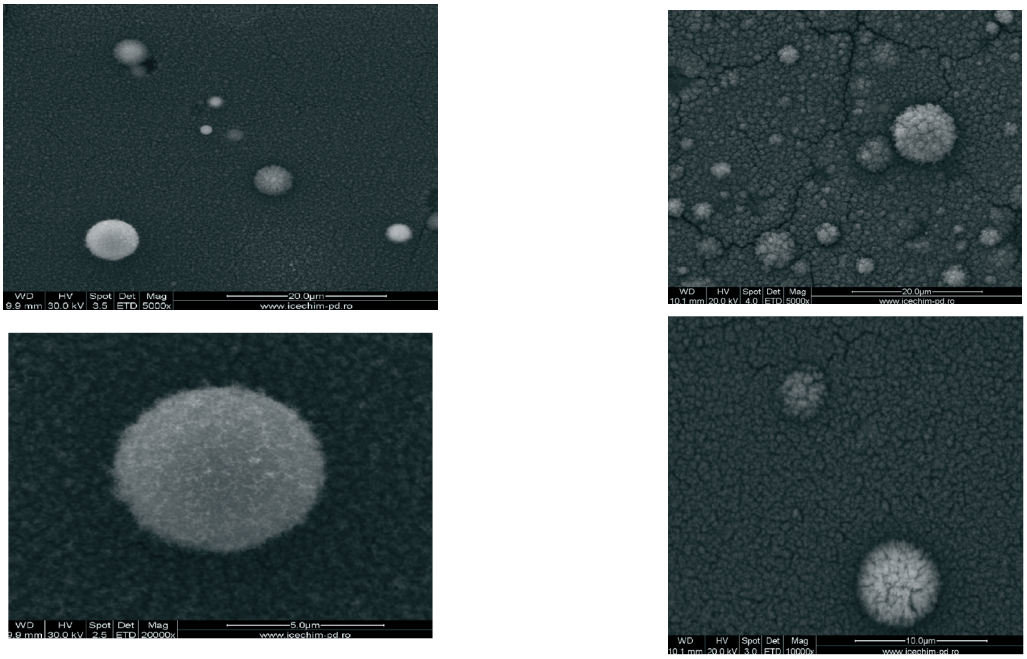


Fig. 1. SEM images for the graphite pellicle with spatial formations made of carbon atoms of the fullerene type.

PROCEDURE FOR CLEANING THE SURFACES OF HERITAGE METAL OBJECTS

Patent: Patent Aplication nr. A/00112/11.03.2021

Authors: Dr. Ing. **LAURENTIU Marin**, Prof. Dr. Chim. **ION Rodica Mariana**, Ing. **NELU Ion**

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

Description: The invention refers to a cleaning process without abrasion or using acids of the metal surfaces of heritage objects. The process involves the use of an electrochemical process (electrolysis) in which the metallic heritage object is placed at one of the poles of the electrolytic cell. The electrolytic medium is a solution of 20% $NaHCO_3$ – sodium bicarbonate. By applying a current with an electromotive force of 4-6 V and an intensity of 2 A, the oxide on the surface of the metal object is reduced. The O^{2-} anion passes into the solution, thus being removed from the metal surface.

Fig. 1. 200-year-old mine lantern cleaned by the patented process

National Research and Development Institute for Gas Turbines COMOTI

FAN ROTOR FOR TURBOFAN ENGINES

Patent: Patent Nr. RO 127764 B1

Authors: **PANAITESCU Costin, CATANĂ Răzvan Marius**

Institution: National Research and Development Institute for Gas Turbines COMOTI

Description: The invention is referring to a new fan rotor configuration and constructive solution, for turbofan engines, a fan rotor that is split in two different sections rotors, a section with fix pitch blades dedicated for engine primary flow, and a section with variable pitch blades dedicated for engine secondary flow. This new fan rotor is designed for a secondary flow optimization at different engine working regimes, in order to decrease the specific fuel consumption and to reduce the gas emissions of turbofan engine. The new fan rotor can be developed for the next generation of turbofan engines; currently a fan with variable blades is applied on engine demonstrator named ultra high bypass ratio (UHBR), by Rolls Royce engine manufacturer.

National Institute for Research and Development in Microtechnologies – IMT Bucharest/ Valahia University of Targoviste/ Institute of Multidisciplinary Research for Science and Technology, Valahia University of Targoviste

FORMALDEHYDE CHEMIRESISTIVE SENSOR

Patent: Romanian Patent Application A00358, RO, OSIM, 10.07.2023

Authors: **SERBAN Bogdan Cătălin, BUIU Octavian, BUMBAC Marius, NICOLESCU Cristina Mihaela**

Institution: National Institute for Research and Development in Microtechnologies - IMT Bucharest/ Valahia University of Targoviste/ Institute of Multidisciplinary Research for Science and Technology, Valahia University of Targoviste

Description: The sensitive film described in this invention, which is used to obtain resistive formaldehyde sensors, is a binary nanohybrid of the nitrogen-doped onion-polyvinylpyrrolidone type nanocarbonic materials. The mass percentage of nanocarbon material in the sensitive layer varies between 80 and 90%. From the point of view of the detection principle, the resistance of the sensitive layer increases with the formaldehyde concentration level. The decrease in conductivity is explained by the fact that polar formaldehyde molecules interact coulombically with onion-type nanocarbon materials (p-type conduction), leading to the formation of a layer depleted in electric charge, disrupting the percolation channels. This situation leads to an increase in the electrical resistance of the sensitive material. The sensor substrate is made of Si/SiO_2 and has a size of 5 mm, the electrodes being made of gold.

The formaldehyde monitoring capacity is investigated by applying a constant current between the two electrodes and measuring the voltage at different values of the formaldehyde concentration to which the sensitive layer is exposed, such as nanocarbon materials of the carbonic onion type doped with nitrogen – polyvinylpyrrolidone. Among the advantages of the proposed sensing layer we can mention:

-CNOs doped with nitrogen offers high specific surface/volume ratio, affinity for formaldehyde molecules as well as a variation in the resistance of the sensitive layer upon contact with them;

-polyvinylpyrrolidone is an effective dispersant for onion-type nanocarbon materials doped with nitrogen.

-additionally, the gradual swelling of PVP has an effective contribution in the detection and monitoring of formaldehyde.

FORMALDEHYDE RESISTIVE SENSOR

Patent: Romanian Patent Application A00359, RO, OSIM, 10.07.2023

Authors: **SERBAN Bogdan-Cătălin, BUIU Octavian, BUMBAC Marius, NICOLESCU Cristina Mihaela**

Institution: National Institute for Research and Development in Microtechnologies - IMT Bucharest/ Valahia University of Targoviste/ Institute of Multidisciplinary Research for Science and Technology, Valahia University of Targoviste

Description: The sensitive film described in this invention, which is used to obtain resistive formaldehyde sensors, is a binary nanohybrid of the nitrogen-doped carbon nanohorns (N-CNHs) / copper oxide (CuO) type. The mass percentage of nanocarbon material in the sensitive layer varies between 70 and 90%. From the point of view of the detection principle, the resistance of the sensitive layer increases with the formaldehyde concentration level. The decrease in conductivity is explained by the fact that formaldehyde donates electrons to the sensitive layer, reducing the concentration of holes. The sensor substrate is made of Si/SiO_2 and has a size of 5 mm, the electrodes being made of gold. The width of the electrodes is about 200 microns, with a separation of 6 mm between them. The formaldehyde monitoring capacity is investigated by applying a constant current between the two electrodes and measuring the voltage at different values of the formaldehyde concentration to which the sensitive layer of the binary nanohybrid type. Among the advantages of the proposed sensing layer we can mention:

-N-CHs give a high specific surface / volume ratio, affinity for formaldehyde molecules as well as a variation in the resistance of the sensitive layer upon contact with the folmaldehyde molecules;

-copper oxide is a p-type semiconductor and has a synergistic effect with nitrogen-doped carbon nanohorns, also p-type semiconductors, when in contact with formaldehyde molecules;

MATRIX NANOCOMPOSITE FOR SURFACE ACOUSTIC WAVES NO_2 SENSOR

Patent: Romanian Patent Application A00361, RO, OSIM, 10.07.2023

Authors: **SERBAN Bogdan-Cătălin, BUIU Octavian, BUMBAC Marius, NICOLESCU Cristina Mihaela**

Institution: National Institute for Research and Development in Microtechnologies - IMT Bucharest/ Valahia University of Targoviste/ Institute of Multidisciplinary Research for Science and Technology, Valahia University of Targoviste

Description: The devices described in this invention consist of new sensing layers for the detection of nitrogen dioxide. The sensitive films described in this invention are used in the design of a surface acoustic wave (SAW) sensor. A surface acoustic wave device is usually composed of a piezoelectric substrate, a pair of interdigital transducers, as well as a layer sensitive to the analyzed gas. The proposed sensitive layers is made of new binary nanocomposite matrices with boron-doped reduced graphene oxide (rGO - B) / oxidized carbon nanohorns (CNHox). The sensitive layers made of rGO-B / CNHox are deposited on the piezoelectric quartz substrate by the drop-casting method or by the spin-coating method.

Among the advantages of the proposed sensing layer we can mention:

-reduced graphene oxide, doped with boron has a higher affinity for NO_2 molecules compared to reduced graphene oxide;

- π-π type interactions between reduced graphene oxide, doped with boron and oxidized carbon nanohorns ensure mutual homogeneous distribution in the sensitive layer.

NANOCARBONIC MATRIX FOR NO_2 SENSOR WITH SURFACE ACOUSTIC WAVES

Patent: Romanian Patent Application A00360, RO, OSIM, 10.07.2023

Authors: **SERBAN Bogdan-Cătălin, BUIU Octavian, BUMBAC Marius, NICOLESCU Cristina Mihaela**

Institution: National Institute for Research and Development in Microtechnologies – IMT Bucharest/ Valahia University of Targoviste/ Institute of Multidisciplinary Research for Science and Technology, Valahia University of Targoviste

Description: The sensitive films described in this invention are used in the design of a surface acoustic wave (SAW) sensor. A surface acoustic wave device is usually composed of a piezoelectric substrate, a pair of interdigital transducers, as well as a layer sensitive to the analyzed gas. The electrical signal, applied to one of the transducers, generates a surface acoustic wave that propagates to the other transducer, the mechanical wave being converted into an electrical signal. The invention refers to sensitive layers made of new binary nanocomposites based on oxidized onion-type nanocarbon materials (oxCNOs) / reduced graphene oxide (rGO). The sensor used is a "delay line sensor" type, dual, made on a quartz piezoelectric substrate. The sensor presents a dual delay line to compensate the thermal drift. The sensitive layers made of rGO / ox CNOs are deposited on the piezoelectric quartz substrate by the drop casting method or by the spin coating method.When the sensitive layer is exposed, the

physisorbed and chemisorbed molecules of NO_2 (oxidizing gas) will act as electron acceptors, increasing the concentration of holes in the nanocarbon material and thus leading to a decrease in resistance.

National Institute of Research and Development for Optoelectronics INOE 2000

PROCEDURE FOR DETERMINING THE THICKNESS AND EVALUATING THE DEGREE OF DEGRADATION OF LAYERS BY CORROBORATING X-RAY IMAGING ANALYSIS AND X-RAY FLUORESCENCE SPECTROSCOPY

Patent: A00938/15.11.2017

Authors: **CHELMUȘ A.I., RĂDVAN R., GHERVASE L.**

Institution: National Institute of Research and Development for Optoelectronics INOE 2000

Description: The invention refers to a non-invasive procedure for obtaining quantitative information (thickness) of some archaeological or cultural heritage objects from radiographies. For example, this procedure can be successfully used in the case of an archaeological object, to approximate its third dimension (thickness), without the need to clean it, which reduces the risk of degradation of the investigated object. This procedure consists of several steps and is based on the use of two non-destructive techniques, namely X-ray imaging and X-ray fluorescence spectroscopy (XRF).

The invention involves the use of nondestructive techniques for performing investigations, which do not endanger the physical integrity, color or chemical composition of the object. By corroborating the two investigation techniques, both quantitative and qualitative information can be obtained regarding archaeological remains and cultural heritage objects. Also, by comparing with standard values, the degree of degradation of the layers can be evaluated. The procedure allows the creation of a complex database, which can be updated according to various requirements (materials, acquisition parameters).

METHOD FOR IN SITU LIBS ANALYSIS OF SUBMERGED OBJECTS

Patent: A00353/23.06.2020

Authors: **DINU M., RĂDVAN R.**

Institution: National Institute of Research and Development for Optoelectronics INOE 2000

Description: The invention describes a method for analyzing submerged objects using the Laser Induced Breakdown Spectroscopy (LIBS) technique in double pulse mode (DP). The procedure for the analysis and stratigraphic characterization of surfaces consists in the application of a train of 2 laser pulses emitted by a laser with YAG: Nd,

at a frequency of 20 Hz, in a point of interest on the surface of an object that is submerged in a liquid, at a fluency high enough so that the first laser pulse will create an air bubble on the investigated surface, and the second pulse will create a small cloud of plasma containing the chemical components, in atomic or ionic form. The spectral information in the plasma cloud is collected under local thermodynamic equilibrium (LTE) conditions by an optical fiber and transmitted to the spectrometer. Spectral lines can be viewed and analyzed in real time using dedicated software.

SCIENTIFIC METHOD FOR CONTROLLED LASER CLEANING OF POLYCHROME OBJECTS

Patent: A/00706/09.11.2020

Authors: **DINU M., GHERVASE L., RATOIU L. C., RĂDVAN R.**

Institution: National Institute of Research and Development for Optoelectronics INOE 2000

Description: The invention describes a scientific method of controlled laser cleaning of polychrome surfaces by corroborating optoelectronic analysis and mapping techniques in order to discriminate the different color areas and to select the appropriate laser cleaning regime for each corresponding area. The method consists in [1] mapping the color areas of the investigated art object using a 3D scanner and hyperspectral camera, [2] elemental analysis performed by X-Ray Fluorescence or Laser Induced Breakdown Spectroscopy – in the case of multilayer objects, [3] identify the appropriate laser cleaning regime for each color cluster, [4] generating a 2D or 3D map (depending on the volume of the object and the relief of its surface) and [5] applying the laser cleaning process controlled by the generated map.

National Research and Development Institute for Welding and Material Testing

WELDING DEVICE FOR UNDERWATER FRICTION STIR WELDING METHOD

Patent application: RO 137449 A2 / 19.11.2021, OSIM Bucharest, Romania
Authors: **BOȚILĂ Lia-Nicoleta, COJOCARU Radu**
Institution: National Research and Development Institute for Welding and Material Testing – ISIM Timisoara
Description: The patent application relates to the development of a welding/processing device usable for the Submerged Friction Stir Welding/Processing (SFSW/SFSP) methods, whose constructive form allows a better cooling of the welding/processing tool to avoid overheating it during the welding/processing process. The constructive solution of the device ensures a large contact surface with water, thus reducing the overheating effect of the welding/processing tools and bearings of the main shaft of the FSW machine. This device for SFSW welding/SFSP processing can be easy integrated on a specialized FSW welding machine and could be used for welding/processing of lightweight alloys (2-10mm thickness), of copper alloys and steels (1.5-5.0 mm thickness), respectively.

FRICTION STIR WELDING DEVICE WITH AIR COOLING OF THE FSW WELDING TOOL AND THE MATERIALS TO BE JOINED

Patent application: RO 137552 A2 / 27.01.2022, OSIM Bucharest, Romania
Authors: **COJOCARU Radu, BOȚILA Lia-Nicoleta**
Institution: National Research and Development Institute for Welding and Material Testing – ISIM Timisoara
Description: The patent application refers to the development of a specialized device usable for friction stir welding/processing (FSW/FSP), whose constructive solution ensures an additional air-controlled cooling of the welding/processing tool and the materials to be joined/processed, in the welding/processing area and in adjacent areas. The constructive solution of the device meets the necessary technical conditions to protect the welding/processing tool and the materials to be joined/processed from overheating, in the action area of the tool, during the welding/processing process, by cooling them with an additional air flow. So, the overheating effect of the welding/processing tool and of the materials to be welded/processed will be reduced, ensuring an increase of the tool service life and also protecting the bearings of the main shaft of the FSW welding machine.

SYSTEM FOR THE APPLICATION OF THE FRICTION STIR WELDING METHOD IN A LIQUID ENVIRONMENT

Patent application: RO 137450 A2 / 19.11.2021), OSIM Bucharest, Romania
Authors: **COJOCARU Radu, BOȚILA Lia-Nicoleta**
Institution: National Research and Development Institute for Welding and Material Testing – ISIM Timisoara
Description: The cooling system is usable for SFSW (Submerged Friction Stir Welding) and SFSP (Submerged Friction Stir Processing) of a wide range of metallic materials (lightweight alloys, steels, copper alloys, etc.) and can be easily integrated on the FSW welding machine. The patent application refers to the development of a system that ensures cooling of the tool, of the welding/processing device and materials to be welded/processed, in the area of action of the welding/processing tool, by continuous or intermittent spraying of water in several directions oriented towards to the tool. The cooling system can be easy integrated on a specialized FSW machine and contribute directly to reduce the overheating of tool and of the device, and indirectly to protect the bearings of the main shaft FSW machine by overheating prevent. Also, using this cooling system, the overheating of the materials to be welded/processed will be reduced, that contribute to improvement of the mechanical properties of the welded joints/processed materials.

PROCESS FOR OBTAINING A REINFORCED ALVEOLAR STRUCTURE

Patent application: A/00078/20.02.2023, OSIM Bucharest, Romania
Authors: **DOBRIN Emilia, MUȘUROI Sorin, MNERIE Gabriela-Victoria, CORCIU Matei-Marin**
Institution: National Research and Development Institute for Welding and Material Testing – ISIM Timisoara
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.

COMPUTERIZED SYSTEM FOR THERMAL FATIGUE TESTING OF FUNCTIONAL OR PROTECTIVE LAYERS

Patent: RO 134649 A2 / 06.06.2019, OSIM Bucharest, Romania

Authors: **MURARIU Alin-Constantin, COJOCARU Radu, PERIANU Ion Aurel, BOȚILĂ Lia-Nicoleta**

Institution: National Research and Development Institute for Welding and Material Testing – ISIM Timisoara

Description: The invention pertains to the development of a computerized system through which thermal fatigue tests can be conducted on functional and protective layers made of advanced materials, deposited using various methods, on different substrate materials, under specific test conditions determined by the operator based on the substrate material and the characteristics of the deposited layer. It enables the assessment of the thermal fatigue resistance under preliminary calibration, real-time monitoring, and control of test conditions, as well as compensation for axial dimensional changes of the test specimen exposed to various temperature values during the test to maintain constant stiffness (deformation resistance) of the simulated spring, implemented in the system through its operating mode.

EQUIPMENT FOR PROCESSING OF COMPOSITE POLYMERIC MATERIALS

Patent application: RO 134039 A2 / 11.10.2018, OSIM Bucharest, Romania

Authors: **OANCĂ Octavian-Victor, SÎRBU Nicușor-Alin, MNERIE Gabriela-Victoria, BINCHICIU Emilia-Florina**

Institution: National Research and Development Institute for Welding and Material Testing – ISIM Timisoara

Description: The installation for processing composite polymer materials consists of an ultrasonic horn as a cutting tool and performs a cutting operation using a hybrid thermal-ultrasonic process. As a result, the cut surfaces do not exhibit "fringes" but appear as two straight lines, without any blackened or discolored areas. The processing time, as a sum of intermediate times, is shorter compared to a cutting operation performed using conventional methods. The invention leads to improved productivity when cutting composite polymer materials by utilizing the hybrid method of heating the semifinished product and cutting with ultrasound as the active working element.

REAL-TIME EVACUATION SYSTEM FOR ABRASIVE MATERIAL SLUGE

Patent application: RO 135579 A2 / 17.09.2020, OSIM Bucharest, Romania
Authors: **PERIANU Ion Aurel, BINCHICIU Emilia Florina, MNERIE Gabriela-Victoria**
Institution: National Research and Development Institute for Welding and Material Testing – ISIM Timisoara
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.

DEVICE FOR TRANSVERSE PROCESSING THROUGH THE WATER JET CUTTING PROCESS

Patent: RO 130329 B1 / 29.11.2018, OSIM Bucharest, Romania
Authors: **PERIANU Ion Aurel, SÎRBU Nicușor-Alin**
Institution: National Research and Development Institute for Welding and Material Testing – ISIM Timisoara
Description: The invention pertains to a device for waterjet cutting or abrasive waterjet cutting processes, used in the machine construction industry. The device consists of a metal frame with a height of 100 mm, which has two faces (A and B), some support elements with a height of 100mm, made in a welded construction, adjustable legs that allow for the levelling of the device, guiding elements, a slide, and a rail, all necessary for positioning the workpiece to be processed with a waterjet on the surface of the metal frame.

METHOD FOR ULTRASONIC WELDING OF PARTS WITH SPATIAL CONFIGURATION OF JOINING ZONES

Patent: RO 133155 B1 / 29.07.2022, OSIM Bucharest, Romania
Author/s: **SÎRBU Nicușor-Alin**
Institution: National Research and Development Institute for Welding and Material Testing – ISIM Timisoara
Description: The invention relates to a method of ultrasonic welding of parts with a spatial configuration of the joining zones using sonotrodes equipped with pins that can

be replaced according to their wear, allowing the reuse of the sonotrode. The method is applicable for the whole frequency range of the ultrasonic field. The pin length, which provides a sonotrode for ultrasonic welding of workpieces with spatial configuration of joint zones, i.e. their tolerance field, is limited by the resonant frequency of the sonotrode.

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

RECYCLING OF AUTOMOTIVE LITHIUM ION BATTERIES

Patent: PhD Thesis / Ph.D. Student Research Project

Authors: **RUS Ioan Alexandru**; Mentors: **NICOLAE Eugen-Viorel, BIRTOK-BANEASA Corneliu**

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

Description: The recycling of used Li-ion batteries must be carried out in accordance with the 4R principle (recycle, reuse, reduce and recover). Battery recycling has two objectives: reducing the negative impact of waste on the environment and reusing the materials that make up the batteries to promote both sustainable production and the circular economy. Materials from battery recycling can also be a valuable resource. The recycling process can be defined as the process, which starts after the collection and possible sorting and/or preparation for recycling of waste batteries and accumulators obtained by a recycling facility and which is completed when the output fractions are produced for use in their original purpose or for other purposes, without being subjected to further treatment and which have ceased to be waste.

„Nicolae Testemitanu" State University of Medicine and Pharmacy

THE QUESTIONNAIRE TO ASSESS POPULATION KNOWLEDGE, ATTITUDES AND PRACTICES ON ANTIMICROBIAL RESISTANCE IN LOW- AND MIDDLE-INCOME COUNTRIES IN EUROPE

Patent: Seria OŞ (opera ştiinţifică), no. 7529, from 11.05.2023. http://www.db.agepi.md/opere/Details.aspx?RealID=6889&lang=ro

Authors: **FERDOHLEB Alina, BĂLAN Greta, CIOBANU Elena, CROITORU Cătălina, ȚAPU Livia, IACONI Oana-Simina, SPINEI Larisa**

Institution: „Nicolae Testemitanu" State University of Medicine and Pharmacy

Description: In order to assess the level of knowledge, attitudes and practices of the population about antimicrobial resistance and antibiotics, a questionnaire was developed for low- and middle-income countries. This tool includes the following sections: knowledge, attitudes, practices and general information.

The use of the questionnaire "Assessment of knowledge, attitudes and practices of the population regarding antimicrobial resistance in low- and middle-income countries in Europe" allows the identification of possible gaps in the knowledge of the population about bacterial resistance to antimicrobial preparations. The method is useful considering that the country currently lacks similar validated methods for estimating knowledge, attitudes and practices among the population.

The developed tool can be used by public health and primary care professionals to identify population knowledge, attitudes and practices regarding antimicrobial resistance in low- and middle-income European countries, the results of which will raise awareness for the problem and widespread application of good practices for antimicrobials use. The tool can be applied without restrictions of age, gender, place of residence, social status, ethnicity, etc.

GRAFT FOR BONE DEFECTS RESTORATING

Patent: 2520 MD

Authors: **JIAN Mariana, FICAI Anton, FICAI Denisa, NACU Viorel, COBZAC Vitalie, MOSTOVEI Andrei, SOLOMON Oleg, CHELE Dumitru**

Institution: „Nicolae Testemitanu" State University of Medicine and Pharmacy of the Republic of Moldova

Description: The invention relates to regenerative medicine, tissue engineering, dentistry and orthopedics, and can be used to repair bone defects. According to the invention, the graft for bone defects repair is composed of collagen, extracted from the

umbilico-placental complex, and hydroxyapatite, obtained by direct mineralization of collagen with precursors (Ca^{2+} and PO_4^{3-}).

The problem that the invention solves, consists in obtaining of a graft with the potential for bone defects restoration, which is composed of allogeneic collagen, extracted from the human umbelico-placental complex and hydroxyapatite. The obtained graft is porous, biocompatible, biodegradable and allogeneic, which has the potential for bone regeneration and excludes the transmission of zoonotic infections and graft rejection. The used collagen is non-immunogenic and has a high purity due to the surfactants utilisation during its extraction, in order to eliminate bood cells and DNA. In accordance with the origin of the biomaterial (human collagen), the proposed graft has a more advantageous structure for the recipient area (human bone), compared to grafts of xenogeneic origin (bovine or porcine).

Politehnica University of Timisoara, CITT Politehnica 2020

HC-SR04 ULTRASONIC DISTANCE SENSOR UPGRADE FOR ARDUINO BLUETOOTH CAR

Patent: Student project
Authors: **BIRTOK Eugen;** Coordinator: **ROB Raluca**
Institution: Politehnica University of Timisoara, CITT Politehnica 2020
Description: This project describes some improvements to the Arduino Bluetooth Car project, a 4x4-powered robot that moves commanded and controlled by an Android application and programmed on the open-source MIT App Inventor platform.

PROCEDURE AND DEVICE FOR CAPTURE, RECOVERY, INVERSION, FILTRATION AND TREATMENT OF FLUIDS

Patent: A/00087/ 23.02.2023
Authors: **BIRTOK-BANEASA Corneliu, MIHAESCU Vlad-Mircea, BUDIUL-BERGHIAN Adina, SOCALICI Ana Virginia, SIRBU Roxana, NEGREA Petru, URSU Daniel-Horatiu, GORECKI Gabriel Petre**
Institution: Politehnica University of Timisoara, CITT Politehnica 2020
Description: The invention relates to a process and device for capturing, recovering, inverting, filtering and treating fluids. The process, according to the invention, consists in coupling the device with the suction path, then the fluid is captured by the external diffuser, then the direction of the fluid is changed in the direction reverser, the fluid on the outside of the external diffuser is taken up by the double recovery diffuser and then directed towards the element of filtration, then fine filtration is carried out simultaneously with the treatment. The device for applying the process, according to the invention, is provided with an external diffuser, reversing direction, filter element, aerodynamic element for directing and treating, internal diffuser, a double recovery diffuser and a recovery.

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

Patent: PhD Thesis / Ph.D. Student Research Project
Authors: **BOBORA Adriana, SOCALICI Ana, ARDELEAN Erika, BIRTOK-BANEASA Corneliu, BUDIUL BERGHIAN Adina**
Institution: Politehnica University of Timisoara, CITT Politehnica 2020
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.

TECHNOLOGIES FOR PROCESSING ROAD VEHICLE RIMS

Patent: PhD Thesis / Ph.D. Student Research Project

Authors: **SAPTA Doru Ioan;** Mentors: **SOCALICI Ana, PUTAN Vasile, BIRTOK BANEASA Corneliu**

Institution: Politehnica University of Timisoara, CITT Politehnica 2020

Description: One of the current trends is the increasing demand for large diameter rims, which can be difficult due to their weight, which leads to increased weight on the car's suspension, compromising comfort and safety behind the wheel, however, this problem has been solved by introducing flow technology forming.

"Flow Forming" is a procedure for increasing the width of the rim, which uses 3 hydraulic rollers and very high speeds and forces, which lead to very low weights and high resistances. Through this process, hydraulic rollers force the cast material to follow the profile given by the solid steel tools. During the process the entire diameter of the rim is created.

SLAG RECYCLING

Patent: Research project

Author: **SOCALICI Ana**

Institution: Politehnica University of Timisoara, CITT Politehnica 2020

Description: During the production of steel, in addition to the secondary product, there is also a waste, metallurgical slag. Currently, a special emphasis is placed on the sustainable management of the environment. The ferrous fraction of the metallurgical slag can be reused in the steel industry and the non-ferrous fraction is used as recycled aggregate in the building materials industry, construction, agriculture, etc.

Experiments in the laboratory phase focused on the identification of solutions for valorization of the ferrous fraction of the steel mill slag with a grain size of 0-10 mm. This, in most cases, is stored and not introduced into the economic circuit. The chosen technology - briquetting. Briquettes were made which have in their composition 30%

ferrous fraction of steel mill slag, 60% ferrous sludge, 5% furnace agglomeration sludge and 5% bentonite. The experimental briquettes obtained have an iron content of 45-58%Fe. Iron recovery rate 70%.

MULTISPECTRAL MODULE AND EQUIPMENT FOR PHYSICAL NON-DESTRUCTIVE CONTROL

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

Authors: **ȘAPTEBANI Neta Ionelia, JURCUTIU Corina Elena, LUCA Flavia**
Mentors: **MOCAN Marian Liviu, IVAȘCU Larisa Victoria, ARTENE Alin Emanuel**
Institution: Politehnica University of Timisoara, CITT Politehnica 2020

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.

Politehnica University of Timisoara, Gheorghe Asachi Technical University of Iaşi

CORPORATE PERFORMANCE ASSESSMENT BASED ON FUZZY LOGIC (COPER)

Patent: Project BC 57/21.10.2021

Authors: **DRĂGAN Florin, IVAŞCU Larisa, PÎSLARU Marius**

Institution: Politehnica University of Timisoara, Gheorghe Asachi Technical University of Iaşi

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 (COPER) 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.

Politehnica University of Timișoara, National Research & Development Institute for Welding and Material Testing

METHOD FOR OBTAINING A REINFORCED ALVEOLAR STRUCTURE

Patent application No: A / 0078, OSIM A/20.02.2023

Authors: PhD. stud. **DOBRIN Emilia**, prof. **MUȘUROI Sorin,** dr. eng. **MNERIE Gabriela-Victoria,** tech. **CORCIU-MARIN Matei**

Institution: Politehnica University of Timișoara, National Research & Development Institute for Welding and Material Testing – ISIM Timisoara

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.

Public Institution Scientific-Practical Institute of Horticulture and Food

PROCESS FOR OBTAINING THE GRAPE AND APPLE BLEND ACIDIFIER

Patent application: No 4757 / 2021.06.30

Authors: **GOLUBI Roman, IORGA Eugen CRUCIRESCU Diana, ARNĂUT Svetlana, FIODOROV Stanislav, IORGA Lucian, VOITCO Elena, RABOTNICOVA Ludmila**

Institution: Public Institution Scientific-practical Institute of Horticulture and Food

Description: The blended grape and apple acidifier is a natural product and serves as a source of acidity in manufactured foods, replacing synthetic acids. The problem solved by the present invention is obtaining a combined acidifier from grapes and apples, which allows the tartaric stabilization of the finished product without cold treatment and improving sensory indices. An important aspect is use of enzyme preparations that increase juice yield and clarification.

The grape acidifier is obtained according to the process described in patent MD 913 Z, and the apples acidifier – to the MD 1286 Y. The technical result of the invention consists in obtaining a coupled acidifier with increased tartaric stability through an easy-to-implement process, as well as reducing manufacturing costs, due to the moderate heat treatment regime. The raw material is unripe grapes and apples, cultivated according to ecological agricultural technologies. The acidifier obtained according to this procedure can be applied to a larger assortment of products compared to the drapes acidifier, because introduced the apple acidifier contributes to improving the taste, aroma and harmonizes with various vegetables and fruits intended for preservation. The finished product's quality indices depend on the raw material's quality and the technological peculiarities of obtaining the acidifier.

PROCESS FOR OBTAINING THE FOOD PRODUCT EXTRUDED FROM CEREALS

Patent application: No. 4826 of 2023.05.31

Authors: **IUSAN Larisa, TERENTIEVA Galina, MIGALATIEV Olga**

Institution: Public Institution Scientific-practical Institute of Horticulture and Food

Description: The invention relates to the food industry, particular to the manufacture of extruded products intended for consumption as breakfast cereals.

In carrying out the process, the mixture is prepared based on soris grains, to which corn grains and wheat germ are added.

The mixture is moistened with water up to 16-18% of the total mass of the mixture, after which it is extruded, where the processing is performed at the temperature of the product before the matrix 418-423 K and at the pressure in the pre-matrix area of 5.5-6.0 MPa and cords with a thickness of 6 - 8 mm are obtained. The cords are cut and dried up to 20-25 ºC, then the product is packed in bags for 12-14 hours to balance the moisture in the product.

The mixture is prepared according to the following ratio of components: soris 60-65%, corn grits 15-20%, wheat germ 15-25%.

The problem solved in the present invention is the development of a new fortified extruded food product, with increased nutritional value and content of vitamins and minerals with the use of soris and corn without complicating the technological process, as well as diversifying the assortment of extruded products from native raw material: soris and corn. When carrying out the process, the mixture is prepared based on soris grains, to which corn grits and wheat germ are added.

The invention ensures the obtaining of the new extruded product with increased nutritional and biological value.

The increase in the nutritional value of the product is achieved through the use of unshelled soris and corn grains.

PROCESS FOR OBTAINING STRUCTURED FRUIT SNACKS

Patent application: No. 1660 Y of 2023.01.31

Authors: **ŞLEAGUN Galina, IUŞAN Larisa, CUPCEA Tatiana**

Institution: Public Institution Scientific-practical Institute of Horticulture and Food

Description: The invention relates to the food industry, in particular to a process for obtaining structured fruit snacks. The procedure, according to the invention, provides: preliminary preparation of the raw materials, fruit mass preparations by dosing and mixing the prepared raw materials, taken in a certain ratio, shaping the fruit mass with a concentration of soluble dry substances (16 ... 38)% by pouring it on sheets or pallets with a layer of (2...8) mm, mass structuring, which is carried out directly during the process of using the temperature of (48...62)°C until reaching the water activity (0.48...0, 60) and subsequent cooling to a temperature of (25 ... 30)°C; shaping the final product.

The result of the invention is to obtain natural fruit snacks with a fruit content of at least 50%, including 100% fruit, well structured and easy to chew, with a pleasant, jelly-like, non-sticky texture, without the use of added sugars or food additives, without the use of structuring agents or with their use in reduced quantities, guaranteed quality when using raw materials of different qualities.

At the same time, additional ingredients can be added to the prepared fruit mass. Highly esterified pectin can be used as an additional ingredient. Natural food fibers can be used as an additional ingredient. Products with natural herbal flavors can be used as an additional ingredient.

An additional result is:

- simplifying the technological process of producing fruit snacks by combining the structuring and drying stages;
- the possibility of using raw materials with low structuring capacity;
- elimination (reduction) of costs for purchasing expensive structuring agents;
- preservation of the original beneficial properties of the fruit components due to soft processing methods;
- increasing the yield of the finished product by optimizing the water activity value.

SACCHAROMYCES CEREVISIAE YEAST STRAIN FOR THE PRODUCTION OF DRY WHITE WINES

Patent: MD 4728 C1 2021.06.30

Authors: **TARAN Nicolae, SOLDATENCO Olga, SOLDATENCO Eugenia**

Institution: Public Institution Scientific-practical Institute of Horticulture and Food Technologies

Description: The invention relates to oenology and biotechnology, in particular to a local yeast strain, isolated in the wine center "Trifesti". The Saccharomyces cerevisiae yeast strain is deposited in the National Collection of Nonpathogenic Microorganisms of the Institute of Microbiology and Biotechnology under the number CNMN-Y-35 and is recommended for the production of dry white wines. The problem solved by the invention lies in obtaining a local yeast strain with advanced technological properties, particularly with the capacity to ferment sugars at low temperatures, thereby expanding their assortment.

SACCHAROMYCES CEREVISIAE YEAST STRAIN FOR THE PRODUCTION OF DRY RED WINES

Patent: MD 4729 C1 2021.06.30

Authors: **TARAN Nicolae, SOLDATENCO Olga, SOLDATENCO Eugenia**

Institution: Public Institution Scientific-practical Institute of Horticulture and Food Technologies

Description: The invention relates to oenology and biotechnology, in particular to a local yeast strain, isolated in the wine center "Trifesti". The Saccharomyces cerevisiae yeast strain is deposited in the National Collection of Nonpathogenic Microorganisms

of the Institute of Microbiology and Biotechnology under the number CNMN-Y-36 and is recommended for the production of dry red wines. The problem addressed by the invention is the obtaining of a local yeast strain with advanced technological properties, particularly with the capacity to ferment sugars at an increased content of phenolic substances, thus expanding their range.

SACCHAROMYCES CEREVISIAE YEAST STRAIN FOR THE PRODUCTION OF DRY RED WINES

Patent: MD 4730 C1 2021.06.30

Authors: **TARAN Nicolae, SOLDATENCO Olga, SOLDATENCO Eugenia**

Institution: Public Institution Scientific-practical Institute of Horticulture and Food Technologies

Description: The invention relates to oenology and biotechnology, in particular to a local yeast strain, isolated in the wine center "Trifesti". The Saccharomyces cerevisiae yeast strain is deposited in the National Collection of Nonpathogenic Microorganisms of the Institute of Microbiology and Biotechnology under the number CNMN-Y-37 and is recommended for the production of dry red wines. The problem solved by the invention lies in obtaining a local yeast strain with advanced technological properties, especially with the capacity to ferment sugars at an increased content of substances and ethyl alcohol, thus expanding their assortment.

SACCHAROMYCES CEREVISIAE YEAST STRAIN FOR THE PRODUCTION OF DRY WHITE WINES

Patent: MD 4727 C1 2021.06.30

Authors: **TARAN Nicolae, SOLDATENCO Olga, SOLDATENCO Eugenia, RUDOI Alexandru, SANDU Vasile, GLAVAN Pavel**

Institution: Public Institution Scientific-practical Institute of Horticulture and Food Technologies

Description: The invention relates to oenology and biotechnology, in particular to a local yeast strain, isolated in the wine center "Trifesti". The Saccharomyces cerevisiae yeast strain is deposited in the National Collection of Nonpathogenic Microorganisms of the Institute of Microbiology and Biotechnology under the number CNMN-Y-34 and is recommended for the production of dry white wines. The problem solved by the invention is obtaining a local yeast strain with advanced technological properties, particularly with the ability to ferment sugars at low temperatures, thereby expanding their assortment.

PROCESS FOR OBTAINING DRY WHITE WINES WITH AN ADVANCED CONTENT OF BIOACTIVE SUBSTANCES

Patent application: Nr.: s 2023 0082/ date: 2023.10.05

Authors: Dr. hab, prof. univ. **TARAN Nicolae, SOLTAN Ana,** dr. **MORARI Boris,** dr. **NEMȚEANU Silvia,** dr. **ADAJUC Victoria, dr. SOLDATENCO Olga,** dr. **PONOMARIOVA Irina,** dr. **URÎTU Dionis, GLAVAN Pavel, SANDU Vasile**

Institution: Public Institution Scientific-practical Institute of Horticulture and Food Technologies

Description: This innovation introduces a technological process for producing dry white wine with an increased content of bioactive substances (BAS). This process involves the use of white grapes of New selection varieties, harvested at technological maturity, as well as an extended maceration at specific temperatures and prolonged contact with the solid phase. This method leads to the production of white wines with an elevated SBA content, which varies depending on the maturity of the grapes.

SC Holistic Lounge SRL

ANTISTRESS PROTOCOL USED IN A VITILIGO CASE

Patent: 301240/29.12.2023

Authors: Senior Lecturer Dr. **MILOICOV BACEAN Codruta Oana**

Institution: SC Holistic Lounge SRL

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 vitiligo. Beyond its impact on the physical manifestations of the condition, it also addresses the psycho-emotional aspects that can accompany the disease.

By promoting psycho-emotional balance, this protocol helps individuals cope with the psychological impact of vitiligo. It addresses the underlying traumas stored in the subconscious, aiding in their release and healing.

Furthermore, the therapeutic ANTISTRESS PROTOCOL protocol focuses on CHACKRA balancing, which plays a vital role in overall well-being. Through this process, the energy centers of the body are harmonized, resulting in improved physical and mental health.

CO-TECH- TEST, MEASURE, BALANCE (INNOVATIVE CONCEPT OF AUTOMATED SOFTWARE PROCESS FOR EVALUATION AND THERAPY THROUGH BIOFEEDBACK)

Patent: 301240/29.12.2023

Authors: Senior Lecturer Dr. **MILOICOV BACEAN Codruta Oana**

Institution: SC Holistic Lounge SRL

Description:

CO-TECH software process automation is an innovative and copyright-protected concept that brings a new perspective to patient evaluation and therapy. By using biofeedback, this system allows for the optimization of evaluation processes, improvement of therapies, and reduction of execution times, resulting in an optimized therapeutic approach with accelerated efficiency.

One of the core features of CO-TECH is its ability to obtain precise and detailed data about patients through biofeedback. This process involves measuring and monitoring the physiological responses of the patient in real-time. As a result, therapists can have access to essential information about the patient's health status and can adapt the treatment based on these data.

By applying CO-TECH software process automation in therapies, specialists can more accurately evaluate the patient's health condition and rapidly identify problems or difficulties they may face. Additionally, this system enables continuous monitoring of therapeutic progress, facilitating real-time adjustment and optimization of the therapy. Moreover, CO-TECH software process automation brings a significant change in terms of the time required for therapies.

By utilizing this innovation, therapists can considerably reduce the overall duration of therapies as they can quickly identify and eliminate inefficient or unnecessary methods. Consequently, patients will benefit from more time dedicated to other types of therapies without compromising the effectiveness of the main treatment.

Another significant value brought by CO-TECH is its capacity to provide an optimized, personalized, and tailored therapeutic approach to each patient's needs. Through efficient resource utilization, therapists can develop specific strategies for each patient and track their evolution and health status in real-time. Through the use of CO-TECH software process automation, therapies become more efficient, faster, and personalized. This revolutionary concept offers the possibility to evaluate and treat patients more accurately, reducing therapy periods and maximizing therapeutic outcomes. CO-TECH brings benefits to the field of biofeedback evaluation, therapy improvement, and streamlining of therapeutic approaches, thus transforming the way patients are treated and cared for. Affections that we have already used the CO-TECH-test, measure, balance concept for: depression, neoplasms, burnout, vitiligo, neurological diseases.

QVIBE FREQUENCY GENERATING THERAPEUTIC DEVICE – USED IN FIBRILLATION

Patent: 009015340-0001, 06/05/2022

Authors: Senior Lecturer Dr. **MILOICOV BACEAN Codruta Oana**

Institution: SC Holistic Lounge SRL

Description: The innovative QVibe device offers a novel approach to fibrillation management, utilizing therapeutic frequencies to modulate myocardial activity. Unlike conventional therapies, QVibe provides a non-invasive and physiologically harmonious intervention.

Mechanism of Action: QVibe operates by emitting targeted frequencies tailored to counteract the pathophysiological mechanisms underlying fibrillation. Its unique formulation integrates anti-inflammatory agents to mitigate myocardial inflammation, optimize coronary perfusion, and enhance myocardial contractility and conduction. Patients can conveniently integrate QVibe into their daily regimen, benefiting from its therapeutic effects irrespective of their location.

Immediate Symptomatic Relief and Prophylactic Benefits: QVibe offered in this case immediate relief from fibrillation symptoms while also exerting prophylactic effects, reducing the likelihood of recurrent episodes and promoting sustained cardiovascular wellness.

Personalized Therapeutic Approach: QVibe embodies a tailored therapeutic paradigm, customized to accommodate the unique pathophysiological profiles of individual patients. Its innovative algorithmic design ensures precise modulation of frequencies, optimizing therapeutic efficacy for fibrillation management.

In summary, the advent of the QVibe device heralds a transformative era in fibrillation management. By furnishing a gentle, natural, and patient-centric therapeutic modality, QVibe empowers individuals to proactively engage in the preservation of cardiac health and enhance their quality of life.

Scientific and Practical Institute of Biotechnologies in Zootechny and Veterinary Medicine

PROCESS FOR INCREASING THE PRODUCTIVITY AND QUALITY OF CARCASSES IN PIGS

Patent: s 2024 0005

Authors: **DANILOV Anatolie, COŞMAN Sergiu, SECRIERU Serghei, PETCU Igor, MAŞNER Oleg, UZUN Telman, COŞMAN Valentina**

Institution: Scientific and Practical Institute of Biotechnologies in Zootechny and Veterinary Medicine

Description: The invention refers to animal husbandry, namely to the production of combined fodder and can be used in the process of preparing combined fodder intended for the feeding of young pigs for fattening. The procedure for increasing the productivity and quality of carcasses in pigs provides for the replacement of soybean meal in the combined feed recipe with pumpkin seed cake in the proportion of 4% in the fattening period from 40 to 70 kg and 7% in the fattening period of at 71 kg until slaughter (120 kg).

The result of the invention presents two recipes of combined fodder, for the nutrition of young pigs subjected to fattening, with a high nutritional value, a balanced content of nutrients, vitamins and microelements, which ensures a better feed conversion, faster growth and development, improves the quality of the carcass and the chemical composition of the pork.

The technical result of the invention consists in ensuring: the digestibility of dry matter of – 78.6%, crude protein – 85.4%, crude fat – 88.8%, crude cellulose – 43.2%, organic matter – 79.9%; average daily growth rate of 789 g; yield at slaughter (hot) of 80.53%; the average layer of fat at the 6/7th thoracic vertebra of 29.33 mm, at the back 23.00 mm, croup 18.67 mm; moss mesh surface of 42.69 cm^2; ham weight of 11.767 kg; fat content in the longus back muscle of 4.53%; reducing the cost price of a kg of combined fodder by 2.7% in the first period and 6.2% in the second fattening period; and obtaining a profit for each head grown and fattened in the amount of 203.90 lei.

The research was carried out within the project 20.80009.5107.12 ”Strengthening the "food-animal-production" chain by using new feed resources, innovative methods and schemes of health care” and the project 20.80009.5107.20 "Management of the genetic potential and productions of purebred animals reproduced and exploited in the pedoclimatic conditions of the Republic of Moldova".

PROCESS TO INCREASE THE QUANTITY AND QUALITY OF DUCK MEAT

Patent: s 2024 0004

Authors: **PETCU Igor, MAŞNER Oleg, LUPOLOV Tatiana, CARAMAN Mariana, STARCIUC Nicolae, BURŢEVA Svetlana, BÎRSA Maxim**

Institution: Scientific and Practical Institute of Biotechnologies in Zootechny and Veterinary Medicine

Description: The invention relates to animal husbandry, namely to feeding ducks raised for meat production. A method for increasing the quantity and quality of duck meat provides for the inclusion of *Streptomyces fradiae* CNMNAc-11 with a biomass concentration of 3.2×10^{11} CFU /g in the composition of combined feeds in an amount of 0.1% for ducklings of the age category from 1 to 126 days with free access to feed. The result of the invention is to increase the quantity and quality of duck meat, namely, to increase the slaughter yield, reduce the percentage of fat content, which helps to increase the juiciness and nutritional value of meat.

The research was carried out within the project 20.80009.5107.12 Strengthening the "food-animal-production" chain by using new feed resources, innovative methods and schemes of health care.

PROCESS TO INCREASE THE PRODUCTIVE INDICATORS IN BREEDING GILTS

Patent: s 2023 0037

Authors: **ROTARI Sveatoslav, MAŞNER Oleg, DONICA Iov, PETCU Igor, CARAMAN Mariana**

Institution: Scientific and Practical Institute of Biotechnologies in Zootechny and Veterinary Medicine

Description: The invention refers to animal husbandry, namely to increase the productive indicators of breeding gilts in farms or complexes with full production cycle. The procedure for increasing the productive indicators in breeding gilts provides for their selection at the age of 25 days (weaning), according to the external indicators specific to the genotype and the respective age, without defects (malformations) of aplombs, upper line and limbs, with healthy clinical appearance and live mass not less than 6.5 kg/head, evenly developed nipples without defects at least 14 (7/7), and transferring them to growth in specially equipped room, separated from the main farm, with a density of at least 1.0 m^2/head inside the group. Ensuring balanced nutrition according to age and body mass. Gilts weighing 6.5-14 kg are fed with pre starter feed which has a protein level of 18-19%, mainly of animal origin, from 14 to 30 kg - with

starter fodder, with 17-18% protein, of vegetable origin; from 30 to 70 kg - with combined fodder containing <14.00% protein, of vegetable origin. From 70 kg until the first insemination, feeding is quantitatively limited (about 2.5 kg feed/head/day) and with the protein level in the ration of <12.00%, so that the gilts do not accumulate a greater increase of 800g/day.

The result of the invention consists in increasing fertility, the average number of piglets born alive per sow, the average number of farrowings per sow per year and the reduction of the number of non-productive days per sow, which ultimately ensures increased economic efficiency for the economic agent.

The research was carried out within the project 20.80009.5107.20 "Management of the genetic potential and productions of purebred animals reproduced and exploited in the pedoclimatic conditions of the Republic of Moldova".

Shohour Public High School, Lebanon

CLIMATE CHANGE CURB

Patent/project number: student project

Author: **ZAINAB Arzouni**

Institution: Shohour Public High School, Lebanon

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.

Stefan cel Mare University of Suceava

METHOD AND PROCESS FOR PREVENTING HONEY CRYSTALLIZATION

Patent: EP 3 794 959 A1
Authors: **AMARIEI Sonia, GUTT Gheorghe, NOROCEL Liliana**
Institution: Stefan cel Mare University of Suceava
Description: The invention relates to a method and a food process for preventing the crystallization of honey in order to preserve the texture corresponding to that of fresh honey. For this purpose, a 2% aqueous solution of trehalose is added under continuous stirring to a quantity of honey without exceeding the maximum moisture allowed for the product. By applying the method and the process according to the invention, it is ensured that honey with unaltered textural properties is preserved for a much longer period than one year, without the need for special storage conditions.

METHOD AND SYSTEM FOR LIMITING THE LOAD CURVE

Patent application: A 2023 00022
Authors: **BEJENAR Ciprian, BEJENAR Marian, MILICI Laurențiu-Dan, PENTIUC Radu-Dumitru, ATĂNĂSOAE Pavel, POPA Cezar-Dumitru, POP Teodor, IFRIM Visarion**
Institution: Stefan cel Mare University of Suceava
Description: The invention involves a specific communication and adjustment system in relation to controllable electrical sources (e.g. charging and/or power supply systems) with which adjustable electrical consumers are equipped and/or flexibly supplied (e.g. electric propulsion vehicles or hybrid), simultaneously connected to an electrical network with limited energy capacity, so that it limits and/or regulates one or more electrical parameters (e.g. electrical voltage, electrical current, etc.).
Advantages:

- The method and system introduce new possibilities for limiting the load curve, so as to provide compatibility with most controllable electrical sources
- The method and system allow energy management, limitation and/or regulation, as the case may be, independently or centrally, of the degree of electrical load of some electrical networks, respectively of some energy systems, whose energy capacity is limited and which cannot satisfy a regime of simultaneous feeding (overload regime) of significant electrical consumers
- The method and system dynamically change the load curve, but do not suddenly change the electrical and/or operating parameters of one or more categories of

compatible electrical consumers, so that they allow the limitation and/or linear regulation of the electrical power absorbed by them

- The method and the system make it possible to limit and/or regulate the electric power transferred to electric consumers in the event of a fault in the networks of an electric power supply system, for which their interruption can be delayed or avoided in a special situation, causing disturbances in power and/or operating anomalies.

METHOD FOR ACTUATING SPRINGS MADE OF SHAPE MEMORY MATERIALS

Patent application: A 2023 00079

Authors: **BEJENAR Ciprian, BEJENAR Marian, POPA Valentin, DIMIAN Mihai, MILICI Laurențiu Dan, RAȚĂ Mihai, AFANASOV Ciprian, UNGUREANU Constantin**

Institution: Stefan cel Mare University of Suceava

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

Advantages:

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

HYBRID SYSTEM FOR IMPROVING THE ENERGY EFFICIENCY OF PHOTOVOLTAIC PANELS

Patent application: A 2023 00576

Authors: **MILICI Laurențiu-Dan, PAVĂL Mihaela, ATĂNĂSOAE Pavel, NIȚAN Ilie, UNGUREANU Constantin, IAVORSCHI Eugen, ALISAVETEI Irina, TUDURIU Constantin Cornel**

Institution: Stefan cel Mare University of Suceava

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

Advantages:

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

SYSTEM FOR INCREASING THE QUALITY OF SLEEP

Patent application: A 2023 00488

Authors: **POPA Valentin, BEJENAR Ciprian, MILICI Laurențiu-Dan, DIMIAN Mihai, UNGUREANU Constantin, PAVAL Mihaela**

Institution: Stefan cel Mare University of Suceava

Description: System for sleep quality enhancement, according to the invention, it assumes a unitary body composed of an elastic rectangular structure of thermo-sensitive elements that react to the local temperature variation, depending on which it adapts the shape of the rest mattresses between the layers of which it is embedded, that it modifies according to the shape of each user's body and returns to its original shape after each use, so that it represents an appropriate solution for the role it fulfills.

Advantages. The invention solves, mainly, a technical problem by which, it allows the integration into the rest mattresses, so that it reduces the need for layers in the composition and the number of materials involved, simultaneously with maintaining

and/or restoring the memory effect, through the thermo-mechanical conversion of thermal energy dissipated by the user's body, in exchange for which the quality of life and sleep is increased in the long term.

- The system introduces new possibilities for improving the user's health and comfort, by enhancing the sleep quality;
- The system presents constructive simplicity and advantageous form;
- The system can be easily embedded between the layers of rest mattresses;
- The system does not depend on additional energy sources, other than the thermal energy of the user's body;
- The system reduces the frequency of maintenance and/or replacement of rest mattresses;

The system does not require maintenance.

BIOSENSOR FOR DETERMINING IRON IONS IN WINE

Patent: RO133893 (B1)

Authors: **NOROCEL Liliana, GUTT Gheorghe**

Institution: Stefan cel Mare University of Suceava

Description: The biosensor has a potentiometric electrochemical cell which consists of a disposable blade made of an electrically insulating polymeric support material, some metallic or pure graphite powder electrodes, a benzophenone-type fixing and immobilizing agent as well as a biologically active deferoxamine-type material with the role of binding iron ions in a wine sample subjected to an in-situ analysis being deposited on the cell.

BIOSENSOR FOR IN SITU DETERMINATION OF IONS OF COPPER FROM WINE

Patent: RO 133892 (B1)

Authors: **NOROCEL Liliana, GUTT Gheorghe**

Institution: Stefan cel Mare University of Suceava

Description: The biosensor has a potentiometric electrochemical cell consisting of a disposable blade, made of an electrically insulating polymeric support material, the metallic or pure graphite powder electrodes, an agarose-type fixing and immobilizing agent as well as a biologically active glycine-type material with the role of binding copper ions in a wine sample subjected to an analysis deposited on the cell.

Technical University of Moldova

LABORATORY MICE FEEDING PROCEDURE

Patent: Application No. s 2024 0007

Authors: **CAISÎN Larisa, BIVOL Ludmila, CEBOTARU Elena**

Institution: Technical University of Moldova

Description: The invention relates to agriculture, particularly to the feed production industry, and can be used for thepreparation of laboratory mouse feed by using a protein concentrate, flour from poultry feathers in diets. The method of feeding laboratory mice enhances growth by ensuring metabolic balance and the well-being of laboratory mice, based on feeding them with balanced compound feed containing, in its composition, the following percentages: extruded corn – 36.0; extruded wheat – 32.0; barley – 13.0; soybean meal – 8.5; skimmed milk powder – 3.5; chalk – 0.84; monocalcium phosphate – 0.74; salt – 0.42; premix – 1; protein concentrate flour from feathers – 4.0.

METHOD OF FEEDING LABORATORY MICE

Patent: Patent Application No. s 2024 0008

Authors: **CAISÎN Larisa, BIVOL Ludmila, CEBOTARU Elena**

Institution: Technical University of Moldova

Description: The invention relates to the feed preparation industry, specifically to laboratory mouse food utilizing protein additives to ensure the health and optimal performance of these animals in laboratory research conditions. The insect-based additive has a certain biological value, which allows it to be used as part of a compound feed for laboratory animals.

The method of feeding laboratory mice with compound feed includes supplementing them with a protein additive: flour from Hermetia illucens larvae (black soldier fly). As a result, we obtain a complete compound feed with high biological value in the feed industry.

The method of feeding laboratory mice increases growth and ensures normal metabolism for the well-being of laboratory mice by providing a balanced compound feed with the following composition in percentages: extruded corn – 36.0; extruded wheat – 32.0; barley – 13.0; soybean meal – 8.5; skim milk powder – 3.5; chalk – 0.84; monocalcium phosphate – 0.74; salt – 0.42; premix – 1; flour from Hermetia illucens larvae (black soldier fly) – 4.0.

METHOD OF FEEDING LAYING HENS

Patent: Patent No. 2477

Authors: **CAISÎN Larisa, CARA Ala, ABD ALJABAR HASSAN Al Khatib Jehad, BIVOL Ludmila**

Institution: Technical University of Moldova

Description: The invention relates to the feed industry, namely to feed for poultry. An additive made from peat has a certain biological value, which allows it to be used as part of feed for laying hens. The method of feeding laying hens to increase their productivity refers to the use of complete feed in feed production or directly for birds on farms and can be used for feeding laying hens during the laying period. The method of feeding laying hens ensures an increase in productivity based on feeding a balanced feed containing, in %: corn – 54.0; wheat – 5.0; soybean meal – 13.0; sunflower cake – 9.0; wheat bran – 5.0; Smart Fish – 2.5; soybean oil – 9.0; premix – 0.5; soybean oil – 2.0; additive made from peat – 1.0.

PROCESS OF FEEDING BEES

Patent: MD 1598 Z 2022.09.30

Authors: **EREMIA N., MACAEV F., POGREBNOI S., ZNAGOVAN A., MODVALA S., MARDARI T., EREMIA I., SARÎ N.**

Institution: TECHNICAL UNIVERSITY OF MOLDOVA; STATE UNIVERSITY OF MOLDOVA; STATE UNIVERSITY OF MEDICINE and PHARMACY "NICOLAE TESTEMIŢANU"

Description: The process includes feeding the bees in the fall with a mixture of 60% inverted corn syrup and 1.5-4.0 ml/L of a 3% aqueous solution of stevioside, in the amount of 2.0 L per bee colony and in the spring with a mixture of 50% inverted corn syrup and 1.5-4.0 ml/L of 3% aqueous solution of stevioside, in the amount of 1.0 L per bee colony, every 7-9 days, from April until the main harvest.

Feeding bees with a mixture of 60% inverted corn syrup and a 3% aqueous solution of stevioside, in the amount of 2.0 l per bee colony in autumn, provides an increase in immunity and winter hardiness by 8.33%, and feeding them during the spring with 50% syrup and bioregulator in the amount of 1.0 L of mixture per bee family, over every 7-9 days, starting from April until the main harvest, increases the strength of the bee families with 25.38%, the number of hatchlings by 32.73%, the number of broods by 32.74% and the production of honey by 33.57% more than the control group.

PROCESS OF FEEDING BEES

Patent: MD 1607 Z 2022.10.31

Authors: **EREMIA N., MACAEV, F., POGREBNOI, S., ZNAGOVAN, A., NEICOVCENA, Iu., COȘELEVA, O., SARÎ, N., EREMIA, M., JEREGHI, V.**

Institution: TECHNICAL UNIVERSITY OF MOLDOVA, STATE UNIVERSITY OF MOLDOVA STATE UNIVERSITY OF MEDICINE AND PHARMACY "NICOLAE TESTEMIȚANU"

Description: The process includes feeding the bees in the fall with a mixture of 60% sugar syrup and 1.5-4.0 ml/L of 3% aqueous solution of stevioside, in the amount of 3.0 L per bee colony, and in the spring with mixture of 50% sugar syrup and 1.5-4.0 ml/L of 3% aqueous solution of stevioside, in the amount of 1.0 L per bee colony, over every 7 days, from April to the main harvest.

Feeding bees with a mixture of 60% sugar syrup and natural bioregulator, in the amount of 3.0 L to a colony of bees in autumn, provides an increase in immunity and winter resistance by 0.89-9.53%, and their feeding in the spring period with 50% syrup and bioregulator, in the amount of 1.0 L of mixture per bee family, over every 7 days, starting from April until the main picking, increases the strength of the bee families by 18.3 -21.8%, the number of hatchlings and the brood of the queen by 77.7% and honey production by 22.6-55.7% more compared to the control group.

University of Agricultural Sciences and Veterinary Medicine, Cluj-Napoca, Romania

ASSORTMENT OF BREAD

Patent: No. 133596 - 30.03.2023

Authors: **VLAIC Romina Alina, MUSTE Sevastița, MUREȘAN Vlad, PĂUCEAN Adriana, MAN Simona Maria, MUREȘAN Crina, PINTEA Aurelia**

Institution: VADPAN SRL

Description: The goal of innovation is to bring added value through the fortification of bakery products to raise nutritional value, which has a positive impact on the consumer, taking into account their growing interest in functional products rich in active principles. Bread enriched with essential fatty acids and essential amino acids from Nettle seed (Urtica dioica L.) and mushroom flour are products with high nutritional values. Innovation of the product consists in enriching it with essential fatty acids and essential amino acids by adding 3%, 6% and 9% of the nettle seed/ mushroom flour to products with nutritional and functional properties.

University of Life Sciences „King Mihai I" from Timisoara

ANTIMICROBIAL APPLICATIONS OF *Linaria vulgaris* L. EXTRACTS IN THE MEDICAL AND COSMETIC FIELD

Patent:

Authors: **BOROZAN Aurica Breica, POPESCU Sorina, DUMBRAVA Delia-Gabriela, MOLDOVAN Camelia, BORDEAN Despina-Maria, POPA Mirela, MISCĂ Corina Dana, CAMEN Dorin, RABA Diana Nicoleta, DOBREI Alina**

Institution: University of Life Sciences "King Mihai I" from Timisoara

Description: The species chosen for this study is *Linaria vulgaris* L. which has a composition rich in polyphenols, terpenes, alkaloids, organic acids, mineral salts, sugars, pectins etc. with beneficial, unexplored effects. It has anti-acne, emollient, anti-inflammatory, depurative, cleansing urinary properties etc. and is recommended for internal and external use. It grows in a diversified habitat, from the lowland areas to the mountains, being considered a weed. It can be easily harvested from unpolluted areas without additional costs.

The main objective was the antimicrobial screening of the extracts of *Linaria vulgaris* L. and the establishment of the extracts with possibilities for use in the medical and cosmetic field.

Although phytotherapy only recommends flowers, we microbiologically analyzed alcoholic extracts from all parts of the plants of *Linaria vulgaris* L, namely roots, stems, leaves and flowers in comparison with solvent and antibiotics. Microorganisms that produce internal and external (cutaneous) diseases have been selected for testing. The bacteria most affected by the linaria alcohol extracts were *E. coli* and *S. epidermidis*. Molecular analyzes have shown that short-term treatment with linaria extract products does not induce resistance in *Staphylococcus epidermidis* cells. Besides the flower extracts, good antimicrobial effect also had the extracts from the stems.

RIS CONSUMER ENGAGEMENT LABS - EIT FOOD CEL-2024-15

Reasearch project

Authors: **COCAN Ileana, ERSILIA Alexa, RABA Diana, NEGREA Monica**

Institution: University of Life Sciences "King Mihai I" from Timisoara

Description: The EIT Food RIS Consumer Engagement Labs 2024 project, number IMP-RIS-2325-19153-01, coordinated by the University of Life Sciences "Regele Mihai I" of Timisoara, in partnership with The Family Butchers SRL, aims to implement a Consumer Lab for the co-creation of hybrid meat products, based on the consultation and preferences of consumers interested in healthy eating. The need for this focus group is due to studies on the impact of consumption of high fat animal foods

on human health in the world and in Romania. As part of the partnership between The Family Butchers SRL and the University of Life Sciences "Regele Mihai I" in Timisoara, the objective of the Co-creation Labs involves working sessions, creative meetings with consumers, interviews, focus groups, consumer panels, social labs, co-creation workshops, creative sessions with consumers to promote healthy eating, low fat hybrid meat products that will be obtained through this project.

JELL-BEET-ESSO by AKADEMIKAFOOD

Patent: TRADEMARK registered to OSIM (M2024/003330)

Authors: **DUMBRAVA Delia-Gabriela, BORDEAN Despina Maria, BOROZAN Aurica-Breica, COCAN Ileana, DRUGĂ Mărioara, MIȘCĂ Corina Dana, MOLDOVAN Camelia, POIANA Mariana-Atena, POPA Viorica Mirela, RABA Diana-Nicoleta, RADOI Petru Bogdan, ȘTEF Ducu Sandu**

Institution: University of Life Sciences "King Mihai I" from Timisoara

Description: Making sugar-free jellies is a way to diversify and meet the demands of the consumer market, which is increasingly looking for quality products, especially with a high nutrient content and lower caloric value, whether for aesthetic, physiological reasons or health restrictions. The invention relates to natural, vegan jellies, without added sugar, based on red beet juice with various additions of apple juice, pear, lemon, ginger and essential oils, in different assortments according to the manufacturing recipe. The products were obtained by a simple technology using agar-agar as gelling agent. The jellies of the present invention are distinguished by a high content of polyphenolic compounds, have a strong antioxidant activity, are low in calories and have superior sensory properties.

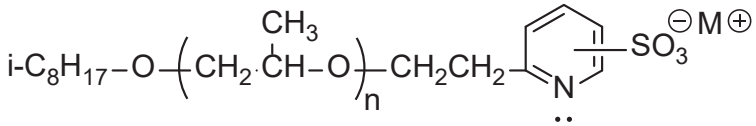
NEW NONIONIC-ANIONIC 2-(BETA-2-ETHYL-POLYPROPYLENEOXYETHYL)PYRIDINE ALKALINE MONO- AND/OR DI-SULFONATE AND/OR ETHANOLAMMONIUM SULFONATE

Patent: RO134636-B1

Authors: **JIANU I.C.; JIANU A.M.; RADULESCU M.; MISCA C.D.; RUSU L.; BUJANCA G.S.; FOLESCU R.; STANGA L.C.; SUCIU O.; MARC M.; PESCARU C.; MANOLESCU D.; LAZUREANU E.; ARDELEAN L.C.; MIU C.**

Institution: University of Life Sciences "King Mihai I" from Timisoara

Description: The invention refers to the synthesis and fundamental colloidal characterization for a homologous series of nonionic-anionic surfactant architectures not reported in the literature from the category 2-[ß-2-ethylhexyl polypropyleneoxy (n=0,3,6,9,12,18) ethyl]pyridine 3(6)-homogeneous mono- and or alkaline disulfonates and/or ethanolammonium (mono-, di-, tri-) with the general formula:



where n represents the degree of homogeneous oligomerization of propene oxide in the polyoxypropylene chain with, determined value (0,3,6,9,12,18), and M^+ alkaline cation and/or ethanolammonium (mono-, di-, tri-).

NATURAL ALTERNATIVE TREATMENT WITH *ANETHUM GRAVEOLENS* AND *ORIGANUM MAJORANA* ESSENTIAL OIL NANOEMULSIONS AGAINST ORAL CANDIDOSIS

Patent: RESEARCH PROJECT

Authors: **OBIȘTIOIU Monica Diana, HULEA Anca Sofiana, IMBREA Ilinca Merima, POPESCU Iuliana, FLOAREȘ Doris, HULEA Călin, IMBREA Florin**

Institution: University of Life Sciences "King Mihai I" from Timisoara

Description: Oral candidiasis, caused by fungi of the genus *Candida*, is a common infection, especially among immunocompromised people. Conventional treatment involves synthetic antifungals, which, although effective, can have side effects and lead to fungal resistance. The innovation consists of an alternative treatment based on essential oils, offering a natural and effective solution incorporated as nanoemulsion. The proposed treatment uses different essential oils from plants commonly grown in the Banat region and used as spices. Compared to Miconazole (10µg/mL-recommended dose), the nanoemulsion of *Anethum graveolens* essential oil had a

similar effect at 0.32 mg/mL active compound, while the nanoemulsion of *Oreganum majorana* essential oil had a similar effect but at 0.16 mg/mL. This innovation has the potential to significantly change the field of antifungal treatments, providing a natural and effective solution against oral candidiasis.

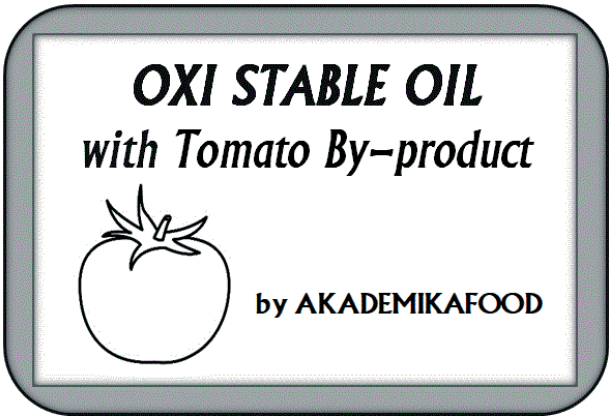
OXI STABLE OIL WITH TOMATO BY-PRODUCT BY AKADEMIKAFOOD

Patent: TRADEMARK registered to OSIM (M2024/002547)

Authors: **POIANA Mariana-Atena, MOIGRADEAN Diana, RABA Diana-Nicoleta, MOLDOVAN Camelia, POPA Viorica-Mirela, DUMBRAVA Delia-Gabriela, STOIN Daniela, BORDEAN Despina-Maria, TORJOC Cristina-Georgiana, BOROZAN Aurica-Breica, MISCA Corina Dana, VELCIOV Ariana-Bianca, RADU Florina-Adriana, PIRVULESCU Luminita, RIVIS Adrian**

Institution: University of Life Sciences "King Mihai I" from Timisoara

Description: The invention relates to a novel application of tomato processing by-product from juice production for the development of value-added sunflower oil (SFO) formulations with improved thermo-oxidative stability. The idea behind this approach focused on the fact that tomato processing by-product represents a valuable source of bioactive compounds and dietary fibre, under-exploited for their antioxidant potential. This is an attempt to reuse tomato processing by-products as an effective natural antioxidant to limit oxidative degradation of sunflower oil subjected to high-temperature heating. SFO samples, supplemented with different doses of dried tomato by-product powder (TBP) to ensure a total phenolic content (TPC) of 200, 300, 400 and 500 ppm GAE (gallic acid equivalents), were subjected to convective heating at 185°C up to 12 hours. The thermo-oxidative degradation process of the TBP-supplemented oil was monitored by specific chemical indices in comparison with an SFO sample with 200 ppm butylated hydroxytoluene (BHT) and a control sample without any addition. The results showed that an inhibitory effect close to that of BHT was obtained by incorporating TBP at a level ensuring 300 ppm GAE, while higher doses of TBP provided greater protection against thermo-oxidative degradation. Our findings are important for both consumers and processors in the food industry and recommend tomato processing by-product powder as a natural antioxidant for sunflower oil used in high-temperature food applications.



CAROTEFF-BRIO BY AKADEMIKAFOOD

Patent: TRADEMARK registered to OSIM (M2023/09848)

Authors: **STOIN Daniela, JIANU Ionel-Calin, POIANA Mariana-Atena, ALEXA Ersilia-Calina, RIVIS Adrian, TRASCA Teodor-Ioan, COCAN Ileana, NEGREA Monica-Viorica, VELCIOV Ariana-Bianca, STEF Ducu-Sandu, MOIGRADEAN Diana, RADU Florina-Adriana**

Institution: University of Life Sciences "King Mihai I" from Timisoara

Description: The present invention concerns the creation of gluten-free muffins that are enriched with bioactive compounds, proteins, fiber, and minerals. This is achieved through the addition of varying proportions of teff flour (TF) and carob powder (CP). Specifically, rice flour (RF) was substituted with 10%, 15%, and 20% TF (*v/v*) and 5% CP, respectively. Standard methods were used to examine the proximate composition, physical and sensory characteristics, total polyphenol content (TPC), total flavonoid content (TFC), and antioxidant capacity (AA) of the developed muffin formulas. It can be seen that as the percentage of incorporated TF increased, the muffin samples showed changes in all characteristics. Sensory analysis showed that muffins with added TF and CP had a pleasant, rich aroma and sweet taste, leading to increased overall acceptability. The results showed that the muffin sample with 15% TF was the best rated in terms of sensory attributes, with the following scores: colour - 7.52, texture - 7.44, flavor - 8.62, taste - 8.58 and overall acceptability - 8.63. Data obtained from proximate composition analysis reveals the superior nutritional profile of TF and CP added muffin samples compared to the control sample, reflected by higher ash, fiber, protein and fat content, as well as lower carbohydrate level. It was also observed that the addition of TF and CP in the muffin recipe resulted in significantly higher levels of TPC, TFC and AA compared to the control. The results provide strong evidence for the use of TF and CP as a partial replacement for RF to obtain fortified muffin

formulations, and these findings are useful in the development of new food products with improved functionality.

FEED SUPPLEMENT FOR DAIRY COWS AIMED AT IMPROVING THE QUANTITY AND QUALITY OF MILK

Patent: Patent application No.CBI a 2023 00048/06/02/2023

Authors: **ȘTEF Lavinia, JULEAN Călin, PET Ioan, ȘTEF Ducu Sandu, MARCU Adela, SIMIZ Eliza, CORCIONIVOSCHI Nicolae, CARABA Valer, MORARIU Florica, BALTA Igori**

Institution: University of Life Sciences "King Mihai I" from Timisoara

Description: The invention purpose is to obtain a feed supplement designed for dairy cows to improve the quantity and quality of milk. The feed supplement according to the invention is a homogeneous mixture consisting of the following components expressed in percentages: rapeseed meal 40-60%, sunflower meal 20-40%, wheat bran 20-40%, protected vegetable fat 4-12%, calcium carbonate 4-6%, monocalcium phosphate 2-4%, sodium bicarbonate 2-4%, CLA (Conjugated Linoleic Acid sources) 2-4%, live feed yeast 0.4-0.8%, and a vitamin-mineral premix 0.8-2%. A quantity of 2.5 kg of this feed supplement is incorporated at a ratio of 25-35% into the structure of a concentrated mix. The nutritional value of the feed supplement is as follows: 0.95 UFL, 105-155 g PDIN, and 75-95 g PDIE. It results in an increase in milk production by up to 25% while simultaneously improving the quality of the milk, as evidenced by changes in the amount and profile of unsaturated fatty acids. Applications in Animal husbandry, Zoo-veterinary field.

University of Petrosani

PROCEDURE FOR MONITORING THE STABILITY OF ECOLOGICAL LANDFILLS

Patent: RO A/00025/17.01.2017 (CERERE DE BREVET)

Authors: **DOBRA Remus, RÎȘTEIU Mircea, PĂSCULESCU Dragoș**

Institution: University of Petrosani

Description: The invention refers to a process for monitoring the stability of existing ecological landfills both in mining areas, such as dumps and tailings deposits, and in urban areas, such as settling ponds and waste deposits. This process holds significant importance in the field of environmental protection and responsible waste management. It enables the continuous monitoring of the stability of these landfills, aiding in the prevention of accidents and the protection of the environment. Additionally, the innovation may contribute to reducing health risks and ensuring efficient and safe waste management, strengthening public trust in ecological and sustainable practices.

PLANNING PROCEDURE BASED ON AN ALGORITHM FOR OPTIMAL TASK DIVISION

Patent: RO A/00168/2019 (CERERE DE BREVET)

Authors: **IONICĂ Andreea Cristina, LEBA Monica, DOVLEAC Raluca Anamaria**

Institution: University of Petrosani

Description: The invention proposed an algorithm which allows automatic task division for development stages with the help of an indicator called offset, and it is based on an iterative development lifecycle approach. The offset indicator allows the measurement of customer satisfaction achievement by taking into account aspects such as: the degree to which a task covers a user requirement, interdependencies between tasks, degree of task difficulty and so on. Based on this, the algorithm proposes the optimal outcome for the development period and the tasks required to be completed during the course of this period. The innovation of this algorithm brings significant benefits to software development and impacts economic efficiency. The offset indicator and iterative approach optimize task distribution, considering user requirements, complexity, and task interdependence. This algorithm contributes to enhancing the quality of software products by measuring customer satisfaction. By saving resources and time in the development process, the innovation has the potential to reduce costs and improve the profitability of software projects. It also promotes good

customer relationships and can stimulate economic growth by increasing market competitiveness and attracting new business opportunities.

SMART ELECTRIC MOTOR VEHICLE WITH LORA COMMUNICATION SYSTEM AND THE RECOVERY OF A PART OF ELECTRIC POWER CONSUMPTION IN ORDER TO INCREASE AUTONOMY

Patent: RO A00201/28.03.2019 (CERERE DE BREVET)
Authors: **MĂRCUȘ Răzvan-Marcel, RUS Neluţu Cosmin, LEBA Monica**
Institution: University of Petrosani
Description: The invention relates to the manufacture of a smart electric vehicle having a function of recovering the energy consumed during the movement by means of gears mounted on the front axle or the rear axle. The front axle gear is made up of a pinion system mounted in the front axle hub that engages with a planetary gear or a direct shaft a designed and built-in generator in its own mode. The rear axle gear is made up of another toothed wheel that is connected to the toothed wheel that transmits power to the wheels. This innovation has the potential to revolutionize the electric vehicle industry by enhancing range and reducing energy consumption, thereby promoting more sustainable and efficient mobility.

BURNOUT STATUS IDENTIFICATION AND ALARMING SYSTEM

Patent: IL 270751/ 18.11.2019 (CERERE DE BREVET)
Authors: **NASSAR Yonnis, IONICA Andreea Cristina, LEBA Monica**
Institution: University of Petrosani
Description: The object of the invention is a two devices system: a wearable device for identifying and alarming the occurrence of the burnout state and a device for setting/reading as follows: setting the initial data by the specialist as result of the state assessment and reading the data measured by the wearable device also by the specialist. The communication between the two devices is made through bidirectional visible light-spectrum communication (VLC). The wearable device is equipped with sensors for reading the physiological parameters (pulse and oximetry). The setting/reading device is a bidirectional translator between the USB protocol and the VLC protocol. The innovation presented holds significant socio-economic and technical importance. The portable device for identifying and alerting to the state of burnout brings essential benefits for individual health and well-being, preventing professional exhaustion. This aspect positively impacts employee productivity and quality of life, with economic repercussions in reducing absenteeism and healthcare costs. The use of Visible Light

Communication (VLC) technology ensures efficient communication between devices, and the integration of sensors for monitoring physiological parameters provides accurate data. Thus, the innovation facilitates the evaluation of health status, helping medical professionals to offer personalized treatments, and contributes to increasing the efficiency of medical services.

PROGRAMMABLE BLOCK FOR COMBINE AND CONVEYOR COMMAND IN EXPLOSIVE MINES

Patent: RO 123641/2015 (BREVET DE INVENȚIE)

Authors: **NICULESCU Titu, PĂSCULESCU Dragoș, RIDZI Sorin Florian**
Institution: University of Petrosani

Description: The invention refers to an electronic equipment with a programmable automaton, intended for the control of the exploitation and transport processes in underground mines with a risk of explosion. The command and confirmation circuits are intrinsically safe and secure against possible defects that could lead to accidents. From a socio-economic perspective, the equipment contributes to the protection of personnel and mining infrastructure, reducing costs associated with incidents and delays. The innovation brings significant benefits to the mining industry, promoting safety, efficiency, and sustainability of underground operations, as well as enhancing reputation and compliance with safety standards.

A DEVICE ATTACHED TO A HUMAN GARMENT INTENDED TO SUPPORT OR MOVE A PERSON'S UPPER LIMB

Patent: RO A/00813/2021 (CERERE DE BREVET)

Authors: **OLAR Marius Leonard, LEBA Monica**
Institution: University of Petrosani

Description: This invention consists of a device for supporting or moving the upper limb of a person with an inability to use this limb. The device works at the shoulder and elbow joint levels to facilitate glenohumeral and forearm movements. This is useful for injuries to the shoulder joint caused by medical conditions, trauma or overuse, which can restrict the movement of the arm and forearm. The device can be used for any arm that has difficulty performing these movements. The innovation can bring a notable improvement to the quality of life and independence of people with special needs, as well as facilitating the recovery and therapy process.

PORTABLE HOLOGRAPHIC SCREEN WITH PROJECTION SYSTEM ATTACHED

Patent: RO A00347/03.07.2023 (CERERE DE BREVET)

Authors: **PANAITE Arun Fabian, Monica LEBA**

Institution: University of Petrosani

Description: The invention refers to the achievement of a projection screen that has the function of portability, with the help of a closing system, handles and wheels, with which it can be moved to the places where the displayed images can be seen. Thus, the elements displayed within it will be seen, in forms that include depth and not only length and width. The transfer of the image from the projector to the screen is done by using a white surface of the visual buff er type, from which the projected waves are reflected in the display surface, where the visible element called depth is added to them. The innovation of the portable projection screen represents a significant technical solution. This device offers portability and mobility, facilitating the projection of images in various locations. Beyond simple two-dimensional projection, the screen allows for the display of content with a sense of depth, providing a captivating visual experience. Its technology of projecting onto a specially designed white surface adds a depth element, thereby enhancing the quality of the images. This innovation has significant implications in the fields of entertainment, presentations, and education, promoting more immersive and interactive experiences. Economically, it opens up new business opportunities in the entertainment and projection technology sectors.

PROGRAMMABLE BLOCK FOR TIMED-STEP CONTROL OF CONVEYORS IN EXPLOSIVE MINES

Patent: RO 123640/2015 (BREVET DE INVENȚIE)

Authors: **PĂSCULESCU Dragoș, NICULESCU Titu, RIDZI Sorin Florian**

Institution: University of Petrosani

Description: The invention refers to an electronic device with a programmable automaton intended for the control of the mining process in mines with a risk of explosion. It performs the command of four conveyors, respecting the start-up logic and the safety rules stipulated by the security standards in the field. Technically, it ensures the synchronized and safe operation of the equipments. From a socio-economic standpoint, it enhances the safety and efficiency of mining operations, minimizing costly accidents and improving productivity. The innovation brings considerable benefits to the mining industry by contributing to the protection of personnel, cost reduction, and enhancement of the sector's reputation.

LABORATORY TEST DEVICE AND PROCEDURE FOR ROCKS SUBJECTED TO TRIAXIAL TENSIONS

Patent: RO A/02023/00013 (CERERE DE BREVET)

Authors: **POPESCU Sorinel, MIC Cristian, RADU Sorin Mihai, DANCIU Ciprian Gheorghe, DINESCU Stela, VÎLCEANU Florin**

Institution: University of Petrosani

Description: The invention relates to a device and method for laboratory testing of rocks subjected to triaxial stresses, on thick-walled cylinder type samples The technical problem that the invention solves is testing under pressure conditions similar to underground excavations.

The invention can be applied in the field of laboratory testing devices and procedures for rocks subjected to triaxial stresses, thus fulfilling the condition of industrial applicability, according to Art 12 of Law 64 1991 republished in 2014 (OSIM Directorate of Invention Patents and Technological Information, Report with Written Opinion/ 08 11 2023).

MOVEMENT IDENTIFICATION AND SUPPORT DEVICE FOR THE RIGHT ARM FOR PERSONS WITH MOBILITY PROBLEMS

Patent: RO A/00101/2019 (CERERE DE BREVET)

Authors: **RISTEIU Marius Nicolae, LEBA Monica, IONICA Andreea Cristina**

Institution: University of Petrosani

Description: The invention has as objective realization of a device for identifying and supporting the right arm movement for persons with mobility problems. The device is controlled by intentional movements of the muscular tissue that reach the surface and can be measured from the skin. It is useful where the muscle has the movement intention, can move the arm, but does not have enough force to sustain the arm. The designed exoskeleton follows the arm movement and offers support when it is tired.

The innovation presented holds significant socio-economic and technical importance. From an economic perspective, it alleviates the burden on caregivers and reduces healthcare costs, allowing these individuals to participate more actively in society. Thus, the innovation contributes to promoting inclusion and enhancing the efficiency of healthcare services.

UNDERGROUND PERSONNEL MONITORING SYSTEM BASED ON VISIBLE LIGHT COMMUNICATION (VLC) TECHNOLOGY

Patent: RO A/0491/2018 (CERERE DE BREVET)

Authors: **RIUREAN Simona Mirela, LEBA Monica, IONICĂ Andreea Cristina**

Institution: University of Petrosani

Description: The underground personnel monitoring system aims to monitor in real time personnel's position in main galleries where the illumination fixture is already setup and to monitor their position on a map in the main surveillance room situated on the mine's surface. Miner's lamp with VLC embedded has the main role of the wireless data communication transmitter (Tx). Data regarding the lamp's ID are piggy-backed by illumination to the access points with the VLC embedded that act as receivers (Rx). Rx are integrated into the illumination network already setup on the ceiling of the main galleries into the underground spaces.

The personnel monitoring system in underground environments represents an innovation with significant impact in both technical and socio-economic fields. It enables real-time monitoring of personnel in underground tunnels, providing precise localization via miner lamps with integrated Visible Light Communication (VLC). By utilizing the existing lighting network in the tunnels, data is wirelessly transmitted, ensuring security and accuracy in monitoring. This innovation offers significant benefits by improving safety and operational efficiency in mining, thereby reducing risks to personnel. From an economic perspective, it lowers monitoring costs and can enhance productivity. Additionally, it may open new opportunities in surveillance services and mining technology sectors. Thus, the system promotes the safety of personnel and the efficiency of operations in underground environments.

MODULAR TECHNOLOGY FOR SUPPORTING UNDERGROUND EXCAVATIONS

Patent: RO A 00596/ 25.08.2016 (CERERE DE BREVET)

Authors: **VERES Samuel Ioel, RADU Sorin Mihai, GHIMIȘI Ștefan Sorinel, PLESEA Valeriu**

Institution: University of Petrosani

Description: The invention consists in the realization of a support technology that ensures the stability of underground excavations for much longer periods of time, with the recording of higher load-bearing capacities, due to much lower labor consumption and maintenance expenses.

This innovation is of significant importance in the field of underground mining and construction. It contributes to extending the lifespan of excavations and reducing the costs associated with maintenance and renovation. By enhancing stability and load-bearing capacity, the innovation can have a positive impact on the efficiency and safety of underground operations, as well as on the economy, contributing to cost reduction and improving the durability of underground infrastructure.

METHOD AND ALGORITHM OF AUTOMATIC, ANTICIPATIVE PROTECTION AGAINST OVERCURRENTS IN ELECTRICAL INSTALLATIONS

Patent: RO A/00246/07.04.2016 (CERERE DE BREVET)

Authors: **ZOLLER Carol, PĂSCULESCU Dragoș, MARC Gheorghe, DOBRA Remus**

Institution: University of Petrosani

Description: The objective of the invention is a method, respectively an algorithm of automatic, anticipatory protection against overcurrent, which can be used in electrical installations of any type. The actuation characteristic of the automatic, anticipatory, overcurrent protection, resulting from the proposed method, faithfully models the established actuation characteristics of current protections (overload and/or short circuit). This algorithm offers an innovative approach for preventing overcurrent by accurately modeling the operating characteristics of conventional current protections, which activate in cases of overload or short circuit. This innovation has significant technical importance and brings benefits to the field of electrical installation protection, enhancing their reliability and safety. By efficiently preventing overcurrent, it helps in reducing material damages, avoiding unplanned outages, and ensuring the optimal operation of electrical installations.

METHOD OF OPERATIONAL CONTROL OF SYMMETRICAL COMPONENTS IN THREE-PHASE ELECTRICAL POWER SYSTEMS

Patent: RO 130884/2017 (BREVET DE INVENȚIE)

Authors: **ZOLLER Carol, COSTINAS Sorina, MARC Gheorghe, DOBRA Remus, PĂSCULESCU Dragoș**

Institution: University of Petrosani

Description: The invention refers to a method of operative control of symmetrical voltage (or current) components in three-phase sinusoidal electro-energetic systems, which can be implemented in electronic relays specific to protection subsystems, which operate on numerical principles. This method can be efficiently implemented in specialized electronic relays for protection subsystems that operate on numerical principles. It ensures the monitoring and maintenance of the balance of voltage or current components, contributing to the stability and reliability of the electrical system. The innovation has significant technical and economic importance, improving the efficiency and safety of electrical systems, minimizing downtime, and preventing costly damages. It addresses critical needs in the field of electrical protection and contributes to the advancement of electrical engineering and energy infrastructure.

Valahia University of Targoviste

RAPID METHOD FOR ISOLATION OF MICROPLASTICS FROM MILK, YOGURT, SOUR CREAM, AND BUTTER

Patent: RO 137927 A0 & PCT/RO2024/000010
Authors: **RADULESCU Cristiana, DULAMA Ioana Daniela, BANICA Andreea Laura, BUCURICA Ion Alin, STIRBESCU Raluca Maria, GHIORGHIU Laura Monica**
Institution: Valahia University of Targoviste

Description: The invention relates to a method of isolating microplastics (MPs) from milk and processed milk-based products (yogurt, sour cream, and butter), to be applied in the food safety field. According to the invention, the method consists of the following stages: A - pretreatment of raw material (milk and processed milk-based products with high-fat content) with advanced purity reagents in the following mass ratios: 10:1 for milk:hydrogen peroxide, 1:0.2 :100 for yoghurt:NaOH:distilled water, 1:0.1:0.12:100 for sour cream:sodium dodecylsulfate:NaOH:distilled water, 1:0.5:0.125:62.5 for butter:sodium dodecylsulfate:NaOH:distilled water, for the digestion of the complex organic matrix and the homogenization by stirring at 150 rpm, for 20 min, B - digestion proper by ultrasound treatment at 30°C, for 20 min, C - vacuum filtration on filters with a porosity of 12...15 μm and keeping the mixture on water bath at 60°C up to the complete filtration; eventually, the isolated MPs are quantified and characterized by complex analytical techniques.

The advantage of the invention consists in its practical use in the food industry (primary analysis laboratories, complex analysis, quality control of raw materials, respectively of finished products, consumer information department/ National Authority for Consumer Protection), with the role of warning about the risk of contamination with microplastics of human, but also a warning and awareness role for suppliers and processors to develop the technological process and finished products.

Conclusions: Technical problem solved by the invention & final thoughts

By applying the invention, the following advantages are obtained:

- reduced working time (30 minutes);
- reduced amounts of reagent;
- effective application (complete isolation of microplastics) of the procedure, depending on the nature of the product, regardless of the fat content;
- equipment that requires high costs in terms of consumables, utilities, or special training of the operator is not required;

- common working parameters for all the mentioned products (milk, yogurt, cream, and butter), only the amounts of samples and reagents are varied, which allows the simultaneous isolation of microplastics from different categories of samples;
- low degree of toxicity of the resulting products (residues).

Acknowledgments: This work was supported by the Ministry of Research, Innovation, and Digitization from Romania, through Project No. 43PFE/30.12.2021, Excellence and performance for increasing the R&I institutional capacity (ProExcellence).

Zarqa University, Jordan

TWO STROKE APPOSED PISTONS PARALLEL CYLINDERS INTERNAL COMBUSTION ENGINE

Patent:

Author: **ABDELKHALEQ Dardas**
Institution: Zarqa University, Jordan

Description: Thanks to the size and minimal components of this engine, it performs smoothly with fewer potentials for malfunctioning, consequently, it decreases the cost of expensive maintenance of the parts.

Radially semi-non-uniform mechanical stresses on the cylinder are eliminated or at least significantly reduced by freeing the cylinder from passive architectural or structural elements of the engine, such as an engine block. In one aspect, the cylinder may be supported in the engine principally by piston structures and fuel and coolant lines.

Altogether, these improvements maintain a close, uniform cylinder-to-piston clearance that enables a tight seal between the cylinder and the pistons, while avoiding contact between the pistons and the inside surface of the cylinder.

Further improvements in engine operation may be realized by permitting some compliance between the cylinder and pistons during engine operation. The pistons may be mounted in the engine with a degree of flexibility that enables the pistons to maintain alignment with the cylinder during engine operation. The engine can be lubricated similar to any other internal combustion engine.

BOOK SALON

Academy of Sciences of Moldova

ACADEMY OF SCIENCES OF MOLDOVA (2009-2021). ILLUSTRATED CHRONOLOGICAL SUMMARY

ISBN of the book: 978-973-27-3429-2

Author: **TOFAN Eugenia**

Institution: Academy of Sciences of Moldova

Description: The work elaborated by Eugenia Tofan, head of the Media Center of the Academy of Sciences of Moldova (AȘM), is a rigorous chronicle, compiled from the „inside" of the scientific forum in the Republic of Moldova. The author follows, step by step, the entire activity of the academic scientific life in the Republic of Moldova.

In the work, from a historical perspective, the resonant events, facts, innovations, scientific elaborations, scientific and cultural manifestations, examples of national and international recognition of AȘM, the supreme scientific forum of the Republic of Moldova, of some personalities in the field, including the reform presented to the supreme scientific forum of the Republic of Moldova, the rise and disturbances that are taking place in the background and are generated by the reform to which it was subjected. A special place was given to well-known personalities in the field of science and culture, in particular, members of the Academy. The chronicle of scientific life highlights the cooperation relations of AȘM with national and international scientific institutions.

A special emphasis was placed on the cooperation of the Academy of Sciences of Moldova with scientific institutions from the entire Romanian area, in particular, with the Romanian Academy, with scientific institutions from Bucharest, Iași, Cluj-Napoca, Craiova, Oradea, etc. It is noted that, in full format of the managements of both academies, the Memorandum of technical-scientific cooperation between the Romanian Academy and the Academy of Sciences of Moldova was signed within the European Union Program for research and innovation Horizon 2020 (December 1, 2014);

A delegation from the Academy of Sciences of Moldova was also present at the celebrations of the 150th anniversary of the founding of the Romanian Academy, which included personalities from the scientific and cultural life of the Republic of Moldova (April 4, 2016);

A pinnacle of cooperation was the Scientific Session of the Academy of Sciences of Moldova and the Romanian Academy with the title „Centenary of the Union of Bessarabia with Romanians". The scientific session of the two Academies was attended

by officials from both Romanian states, representatives of creative unions, people of culture, an absolute first, constituting the presence at this historic moment of a delegation of 30 members of the Romanian Academy, led by acad. Cristian Hera, president of the Romanian Academy, accompanied by members of the Bureau of the Presidium and the Presidium (March 27, 2018). The event continued in the historical capital of Moldova, Iași (March 28, 2018).

Over time, several personalities originating from the Pruto-Dniester area were included in the supreme Romanian scientific forum. In the recent period, several members of the Academy of Sciences of Moldova became members of the Romanian Academy and vice versa, as a sign of deep gratitude for the special contribution to the consolidation of inter-academic relations.

The textual material is accompanied by iconographic sources developed by the author of the book.

The work is addressed to scientific researchers, decision-makers in the sphere of science and innovation, as well as to all those interested in the problems of academic research in the Republic of Moldova in a national and international context

Centrul de Excelenţă în Transporturi

EXPERINŢĂ DIDACTICĂ – MODEL DE PROIECTARE PE UNITĂŢI DE ÎNVĂŢARE PENTRU CLASELE A 10-A, A 11-A, A 12-A.

ISBN of the book: 978-9975-171-04-5
Authors: **CIORICI Alina, PANAINTE Doinița**
Institution: Editura Lyceum
Description: Un profesor dedicat este arhitectul viitorului, construind punți de cunoaștere și deschizând porți către succes pentru fiecare elev în parte. Proiectarea unităților de învățare la Limba și literatura română" este o experiență valoroasă pentru toți cei interesați, oferindu-le o abordare flexibilă și personalizată a demersului didactic. În conformitate cu ideea prezentată în citatul motivațional, un cadru didactic consacrat înțelege importanța adaptării metodelor și a activităților de învățare la nevoile și interesele elevilor săi. Este un amalgam între tradițional și modern, care integrează elemente din pedagogia constructivistă – metoda clasei inversate și elemente din pedagogia experiențială – învățarea în afara clasei outdoor, bineînțeles, într-un cadru psiho-emoțional echilibrat, în care starea de bine stă în capul mesei.

Lucrarea propune proiectări pe unități de învățare și permite profesorilor să ajusteze demersul educațional în funcție de particularitățile grupului de elevi. O astfel de abordare admite o explorare diversificată a temelor și subiectelor din literatura română, captând interesul și implicarea elevilor în procesul de învățare individual. Prin furnizarea de strategii creative și flexibile, modelul de proiectare poate să orienteze cadrele didactice în personalizarea demersului didactic, modificând, completând, înlocuind activitățile de învățare pentru a asigura o interconexiune între conținutul educațional și realitatea cotidiană a elevilor. În acest fel, „Proiectarea unităților de învățare la Limba și literatura română" se transformă într-un model practic și inspirațional pentru cadrele didactice, oferindu-le instrumente esențiale pentru a crea un mediu de învățare captivant, diferențiat, în funcție de nevoi, contexte de învățare și oportunitățile mijloacelor didactice. Acest model de proiectare devine astfel un partener de încredere în procesul de planificare, predare și evaluare, contribuind la creșterea calității realizării demersului educațional și la formarea unor generații de elevi cu pasiune pentru limba și literatura română.

NOTE: 1. Fiecare activitate din cadrul lecției necesită o adaptare la stilul profesorului și la specificului clasei de elevi în funcție de necesități și posibilități.

2. Cu * asterisc sunt marcate temele și sarcinile pentru profilul umanist.

N.B. Modelul de proiectări pe unități de învățare poartă caracter de sugestie, orientare, inspirație.

„Lower Danube" University of Galați

NANOMATERIALS FOR BEVERAGE PACKAGING

ISBN of the book: 978-606-696-203-2
Autors: **STOICA Maricica, IVAN Angela Stela**
Institution: „Lower Danube" University of Galați
Description: This book was written in a "state of alert", with thoughts from GOD, born from the passion for innovative food packaging materials, thoughts that crossed the mind and specialized literature with the intense longing of students and the hope of wide open arms. Out of Love for People and for the Highest Quality of Life, the Engineers from "Dunărea de Jos" keep writing! The book is aimed at students from the Food Engineering and Materials Processing Engineering programs and specialists who have an interest in the food packaging.

BIOPRESERVATIVES FROM VEGETABLE FATS

ISBN of the book: ISBN 978-606-527-714-4
Author: **HORINCAR Georgiana**
Institution: „Lower Danube" University of Galați, Faculty of Food Science and Engineering
Description: The book entitled "Biopreservatives from vegetable fats" is structured in 8 chapters and includes important aspects regarding the biotransformation of some lipids from vegetable sources, in order to obtain natural preservatives, with different applications in the food industry. The volume highlights the results of studies on obtaining, characterizing and evaluating the antimicrobial potential of saturated and unsaturated fatty acids obtained by in situ enzymatic hydrolysis of palm, coconut and shea fats. In addition, the focus falls on the identification of new sources of biologically active compounds, which can be used both in preserving food products and in obtaining antibacterial packaging, without having significant implications in changing the sensory and nutritional properties of food. The book provides relevant, up-to-date scientific information that can be a valuable source of documentation for the development of academic research activities. In addition, it provides specialists with a wealth of fundamental and practical knowledge, accompanied by information from the specialized literature on the subject.

Hryhorii Skovoroda University in Pereiaslav

EUROPEAN HIGHER EDUCATION IN THE REALITIES OF THE DIMENSION OF CHANGES AND ACHIEVEMENTS.

ISBN of the book: 978-6177747-94-8

Authors: **SHAPRAN Olha, DOMBROVSKA Ya. M.**
Institution: Hryhorii Skovoroda University in Pereiaslav

Description: The author's team has proposed a scientific publication that is devoted to the analysis of the state and directions of further development of higher education systems in European countries. The chapters of the monograph describe the systems of higher education in various regions of the European part of the world, taking into account their achievements and promising tasks with the aim of high-quality professional training of education seekers. The features of the higher education systems of next parts of Europe have been determined: Western, North-Central, Northern, Central-Eastern, Southern, South-Eastern Europe, Baltic countries, Benelux, Danubian and Island countries.

It is for scientific and pedagogical workers, doctoral students, graduate students, master's students.

Public Institution Scientific-Practical Institute of Horticulture and Food

SCIENTIFIC AND PRACTICAL FOUNDATIONS OF YEAST UTILIZATION IN OENOLOGY

ISBN of the book: 978-9975-56-862-3

Author: **SOLDATENCO Olga**

Institution: Public Institution Scientific-practical Institute of Horticulture and Food Technologies

Description: The monograph provides a comprehensive, profound, and detailed synthesis of the stages of isolation and selection of local yeast strains, which are presented through the scientific results obtained, offering a possibility to address the issues at hand. The use of pure yeast cultures with known biotechnological properties is widely practiced worldwide. By using selected cultures, the must ferments rapidly, and complete fermentation of sugars occurs, resulting in 0.5-1% more alcohol compared to spontaneous fermentation. The resulting wine contains fewer acids and volatile esters, has a taste and aroma that highlights the grape variety, is less susceptible to microbial alterations, and clears more easily. In this context, the author has focused on the issue of understanding the microbial circuit in the wine industry by providing informative and applicative presentations of the study and scientific research on the isolation and selection of local yeast strains. The monograph is intended for a wide range of specialists in the field of oenology and wine microbiology, including scholars, doctoral candidates, researchers, and students.

„Ion Creanga" State Pedagogical University of Chisinau

AXIOLOGY OF EDUCATION

ISBN of the book: ISBN 978-606-36-2430-8
Authors: **ANTOCI Diana, BOROZAN Maia**
Institution: „Ion Creanga" State Pedagogical University of Chisinau
Description: The university textbook is provided for the study discipline "**Axiology of education**" being a fundamental course in the professional training of teaching staff, which contributes to the formation of a general vision on the philosophical evolution of pedagogical thinking regarding the complex issue of values. "Axiology" ensures the in-depth foray into the knowledge of the theory of values necessary for the understanding of pedagogical values and educational innovation processes from an axiological perspective. The practical importance of the **Axiology of education** results from the fact that in a constantly changing society, understanding the meaning and internalizing the fundamental values become essential in education. The strategic approaches designed in the course will favor the promotion of professional responsibilities and respect in the educational environment.

The university textbook, a didactic work developed in accordance with the principles of the philosophy of pedagogical science, is made up of 4 chapters and provides informative support regarding the fundamental elements of the axiology of education as a university study discipline, addresses the specific basic notions, includes autonomous learning activities and self-assessment, assignments for independent study, glossary of terms, bibliographic references and annexes corresponding to the 4 course units.

The university textbook "**Axiology of education**" is intended for university teaching staff for use in the process of initial professional training of future pedagogues in higher education, constituting a benchmark for students, master's students, doctoral students and researchers in the field of education sciences. The theoretical content and practical activities can serve as support in the continuous professional training of teachers, concerned with the development of the axiological referential of the students and their own professional referential.

METHODOLOGY OF AXIOLOGICAL EDUCATION

ISBN of the book: ISBN 978-606-36-2377-6
Authors: **ANTOCI Diana, BOROZAN Maia, BICULESCU Florina Teodora**
Institution: „Ion Creanga" State Pedagogical University of Chisinau
Description: The methodological guide "**Methodology of Axiological Education**" contributes to ensuring the quality of university education by implementing its own

research that was the basis of the construction and development of the curriculum for the master's programs. In the scientific discourse as a reference term, the concept promoted by the new research direction Theory and methodology of axiological education (Antoci D., 2021) "axiological education is the process of continuous training focused on the value system of contemporaneity, designed in terms of goals, specific contents and methodologies, generating value orientations through the pedagogical exploration of the formal-nonformal-informal framework".

The content of the **methodical guide** is structured in three chapters that develop the logic of the transfer of pedagogical innovations in the practice of education (the main scientific values created by the three authors in the doctoral theses). The **structure** of each learning unit contains the theoretical part organized on separate topics with specific objectives and designed behaviors, seminars for self-evaluation and autonomous learning, reference bibliography relevant to the topics of analysis, breviaries of texts taken from the field literature as support in independent study.

The methodical guide "**Methodology of Axiological Education**" is intended for students, teaching staff in higher education and general education (primary and those in secondary and high school education), constituting a support in the continuous training of teaching staff, concerned with the formation of the axiological referential of students, because through the formation of value orientations the satisfaction of the personal needs of students regarding the clarification of the individual axiological system and the permanent reconsideration of value priorities.

DIMENSIUNI PSIHOLOGICE ALE PERSONALITĂŢII ÎN ÎNVĂŢAREA PE TOT PARCURSUL VIEŢII. COMPLEX METODOLOGIC

ISBN of the book: 978-9975-3285-1-7

Author: **BATOG Mariana**
Institution: Institutul de Ştiinţe ale Educaţiei

Description: Învăţarea pe tot parcursul vieţii (Lifelong Learning) ocupă, în ultimii ani, o poziţie centrală în cuprinsul agendei politice europene în domeniul educaţiei, formării şi reprezintă un proces continuu de oportunităţi flexibile de învăţare, corelând învăţarea şi competenţele dobândite în instituţiile formale cu dezvoltarea competenţelor în contexte non-formale şi informale, în special la locul de muncă.

Complexul metodologic cu titlul „Dimensiuni psihologice ale personalităţii în învăţarea pe tot parcursul vieţii" a fost realizat în cadrul proiectului „Epistemologia şi praxiologia asistenţei psihologice a învăţării pe tot parcursul vieţii" derulat la Institutului de Ştiinţe ale Educaţiei, Chişinău. Complexul metodologic a fost elaborat

în sectorul „Asistența Psihologică în Educație” și are ca scop să disemineze unele rezultate obținute.

Accepţiuni valoroase în contextul învăţării pe tot parcursul vieţii constituie: dezvoltarea capacităţii de asumare a responsabilităţii; responsabilitate pentru propriul program de pregătire; responsabilizarea pentru propria învăţare şi dezvoltare; responsabilitatea pentru evoluţia societăţii; consolidarea şi cultivarea independenţei personale la beneficiarii învăţării pe tot parcursul vieţii; independenţa în opinie şi acţiune; independența în luarea deciziilor, eficientizarea capacităţii de a lua decizii referitor la propria învăţare; implicarea în procesele de luare a deciziilor a tuturor actorilor câmpului educaţional; dezvoltarea personală şi profesională etc.

Complexul metodologic prezintă un ansamblu de metode şi tehnici, varii instrumente psihologice, orientate spre evaluarea, formarea şi dezvoltarea unor dimensiuni psihologice ale personalităţii valoroase în contextul învățării pe tot parcursul vieţii. Prezenta lucrare constituie una dintre principalele modalităţi de diseminare a rezultatelor ştiinţifice şi conține repere teoretice, metodologii de asistență psihologică a tinerilor și adulților în învățarea pe tot parcursul vieții (ÎPTPV), în special, se centrează pe dimensiuni psihologice semnificative, cum ar fi: responsabilitatea, independența și capacitatea decizională.

Complexul metodologic cuprinde: acronime, preliminarii, două capitole, concluzii, citate despre responsabilitate, independenţă şi decizie, bibliografie și webografie, glosar de termeni psihologici, anexe, date despre autor.

Prezenta lucrare este destinată psihologilor, în special celor ce activează în sistemul educațional și constituie un suport în vederea soluționării problemelor psihologice ale beneficiarilor implicați în învățare pe tot parcursul vieţii, pe dimensiuni psihologice de personalitate: responsabilitate, independență și capacitatea de decizie.

THE STE(A)M APPROACH IN EDUCATION IN THE STUDY SUBJECTS OF PHYSICS, CHEMISTRY, BIOLOGY, GEOGRAPHY. METHODICAL GUIDE.

ISBN of the book: 978-9975-46-682-0

Authors: **BOCANCEA Viorel, CAZACIOC Nadejda, PLĂCINTĂ Daniela, JECHIU Elena**

Institution: “Ion Creanga” State Pedagogical University

Description: The methodological guide "The STE(A)M approach in education to the disciplines of physics, chemistry, biology, geography" is a valuable resource that brings to the fore the concrete ways of implementing STE(A)M educational concepts

in pre-university education, with special emphasis on the study subjects of physics, chemistry, biology and geography.

The authors of the guide have worked to provide concrete examples of STE(A)M projects, specifically adapted to each discipline, so as to respond to the needs and interests of students in pre-university education. These project examples not only illustrate how STE(A)M elements can be integrated into the educational process, but also provide practical ways to implement them in the classroom.

Through this guide, the authors aim to provide teachers with useful tools and resources to develop and implement educational activities that stimulate students' critical, creative, and innovative thinking while promoting collaboration and problem solving.

This methodological guide is an important source of inspiration and support for teachers in their efforts to integrate the STE(A)M approach in pre-university education, contributing to increasing the relevance and impact of the learning process.

RELAȚIILE ȚĂRII MOLDOVEI CU AȘEZĂMINTELE ORTODOXE DIN STRĂINĂTATE (SFÂRȘITUL SEC. AL XIV-LEA – SEC. AL XVII-LEA)

ISBN of the book: ISBN 978-9975-172-28-8.

Authors: **BOLDUMA Viorel, MELINTI Maxim**

Institution: "Ion Creanga" State Pedagogical University

Description: The relations between the Romanian Countries and the entire Orthodox space constituted fundamental coordinate of Romanian history, they demonstrate the place and the role of Romanians in the history of Europe and the world. The research subject of this study is the relations of Moldova with the Apostolic patriarchates, with the Athonite monasteries, with the Orthodox Brotherhood from Lvov and with the Orthodox center from Kiev, in the person of Petru Movilă, Metropolitan of Kiev. The work contains introduction, three chapters, appendices, selective bibliography, list of abbreviations and a glossary, in which the terminology is explained church, index of names and toponyms. The general chronological segment, addressed in the present paper, includes the end of the century XIV - century the seventeenth. The target group of this work will be historians, teachers, students and master's students of the faculties of history and theology, the general public, interested in the given subject etc.

PSIHOPEDAGOGIA CENTRATĂ PE FORMABIL

ISBN of the book: 978-9975-46-892-3

Authors: **BOTNARI Valentina; REPEȘCO Gabriela**

Institution: "Ion Creanga" State Pedagogical University

Description: The work is a coherent and detailed presentation of the main aspects of Subject-Centered Education, successfully addressing the various learning units proposed within the course. A systematic approach is demonstrated in dealing with each learning unit, starting from providing basic informative landmarks and then offering planned learning tasks, both for independent study under the course instructor's monitoring and for self-study.

A strong point of the work is the constructivist perspective on the student-centered teaching process, which provides a solid theoretical basis for understanding and applying the discussed concepts. Additionally, grounding the addressed phenomena in the context of the constructivist paradigm adds significant value to the informative support presented for each learning unit.

It is worth mentioning that the learning tasks require the learner to go through the 10 phases of transformative learning proposed by Jack Mezirow. In carrying out the tasks, students are required to engage in independent reflections to successfully model original products at each phase, ensuring the professional progress of the learner.

It is a valuable resource for both students and educators involved in the teaching process, providing a comprehensive guide for improving its efficiency in modern schools.

THEORY AND METHODOLOGY OF FORMING THE COMPETENCE OF SELF-MANAGEMENT OF THE LEARNING ACTIVITY IN STUDENTS

ISBN of the book: ISBN 978-9975-3568-1-7

Authors: **BOTNARI Valentina, LAȘCU Lilia**

Institution: "Ion Creanga" State Pedagogical University of Chișinau

Description: The approach to education from the perspective of competences is generated by the world trends of integration, globalization of the European education system. One of the ideas born in the century. XX, keeping its relevance even today, aims at the transition from knowledge-based education to competence-based education (Competence-Based Education-CBE).

Orientation of education towards a new global finality – competence occurred in the 70s of the century. XX in the USA. N. Comsky in 1965 proposed the notion of competence. The approach to competence as the finality of the educational process begins in the 90s of the century.

Currently, the notion of competence is one of the key concepts of the European Qualification Framework (EQF), being taken over in the definition of National

Qualification Frameworks and implemented at different levels and in various educational contexts.

The process of integration into the European education system, the need to establish a common framework for the definition and recognition of learning outcomes conditioned and imposed the implementation of a new paradigm in education in the Republic of Moldova - the skills approach.

Currently, education in the Republic of Moldova is witnessing conceptual changes materialized in reforms that directly or indirectly promote learning based on competences. The approval of educational policy documents (Education Code, Concept of Education, National Framework of Qualifications, Higher Education Strategy of the Republic of Moldova, etc.) serve as reference sources.

The actions undertaken in the last decade in order to reform education and connect it to European imperatives have created adequate premises for the modernization of the education system. Adhering to the Bologna process involves all actors of the university space in a complex process of connecting to the European dimensions of higher education, the valuable one being the training of skills for future specialists.

Education Code of the Republic of Moldova, the purpose of education is to "form the personality with a spirit of initiative, capable of self-development, which possesses a system of competences that includes knowledge, skills, attitudes and values that allow the personality to cope current and future needs of society".

PEDAGOGICAL REFLECTION

ISBN of the book: 978-9975-3342-6-6

Authors: **BOTNARI Valentina, GRĂDINARU Nina, GRUȘCA Aliona**

Institution: "Ion Creanga" State Pedagogical University of Chișinau

Description: The rapid pace of development of all branches of human activity has also challenged the education system to make changes. These changes have prompted reforms designed to bring about both educational policy and system-wide changes which, in turn, have led to increased demands on the level of educational provision by teachers in early education institutions. To implement such an approach it is not enough to to appeal to creative intelligence or acquired skills, but it requires reflexivity in action. Teaching activity, complex in content and dynamic as a process, requires specialists to constantly rethink and modify their experience. In this respect, the issue of developing pedagogical reflection of educator is one of the most relevant in the education system.

Today's society has great reservations about teachers who know how to solve problems by applying predefined techniques, because these are ineffective in new

problem situations that arise. Socio-educational changes in the country require new approaches to both the educational process and the teaching methodology. teachers' thinking. Society needs competent educators who skillfully combine in their work the achievements of modern science and pedagogical practice, improving their skills on the basis of in-depth study and analysis of their personal and professional qualities. In education there are no 'recipes' or ready-made answers to every problem, and educators do not always have developed the thinking that will help them solve every problem, and educators do not always have developed the thinking that will help them solve every problem. A good teacher who educates for tomorrow certainly cannot carry out his or her tasks if they are structured according to yesterday's logic, taken over routinely, without improvement or restructuring. Today's professionals are in a hurry, pressed for time and tired, looking for quick solutions to old problems and wanting everything to happen now and immediately, without much retrospection. John Dewey mentioned that educators and quality education cannot simply imitate techniques that have worked in the past, but rather must understand the principles behind those techniques. When there is more reflection, the quality of service delivery increases, and unreflective educators tend to accept the reality of everyday life.

John Maxwell in his book "Start Thinking" points out that reflective thinking is essential to progress. When we think like others, we will not achieve more than they do. Reflective thinking has become a habit. But the pace of life imposed by the society we live in does not encourage reflective thinking.

People prefer to go straight to action, not to think" [105, p. 34].

We believe that the topicality of the problem presented in this paper is also determined by the need to improve the quality of the continuous training of pedagogical reflection of educators in the institution where they work. Quick and timely reactions, good questions in their place and time, always and productively doubtful and scrutinizing attitude, management of one's own being in the subtle game between certainty and uncertainty, critical taking of everything that is offered to us daily, rigour, respect for oneself and others, trust in oneself and others, humanism of our actions - all these are part of pedagogical reflection, which propels the child to the centre of education, giving him more opportunities to realize in full volume his capabilities, to become an active and responsible personality. They also enable educators to meet the demands and challenges of everyday life. In adult education, only the constructivist solution can be effective.

This idea is supported by the researcher Gutu Vladimir: "... professional development in the context of the socio-constructivist paradigm is an integral part of the professional responsibilities of the educator and his daily work; an indispensable

component of institutional development and a condition for ensuring the quality of educational services. One of the principles, on which the professional development of teachers in early education is based, is the principle of reflection and responsible professional decision, which implies the need to see the educator as a professional, whose pedagogical decisions are based on reflection on their own practice and on a thorough psycho-pedagogical argumentation both in the work with children and in the construction of their own professional development" [20, p. 8-12]. At the same time, the success of professional development is driven by personal growth, determined by the depth and quality of self-knowledge and self-understanding, which in turn depends on reflective rethinking of the self [24, p. 10].

In this context, we can state with certainty that reflexivity presents a personality capability that has always been in demand and appreciated, and in the century when professionalism codifies in defined competences, it occupies the top position among other capabilities. Much more valuable is the possession of reflexivity for professionals, whose work requires subject-subject relationship, and for educators of early education institutions, the subject in question is the child, i.e. the emerging personality, which calls for new demands in the approach.

ELEMENTE DE BIONICĂ

ISBN of the book: ISBN 978-5-88554-325-5

Author: **CHIRIAC Eugenia**

Institution: "Ion Creanga" State Pedagogical University

Description: Manualul promovează aspectul inter- și transdisciplinar axat pe aplicarea modelelor din natură în inginerie, arhitectură, diverse tehnologii etc. Concepția manualului se încadrează armonios în metodologia STEAM. Sunt aduse o serie de exemple despre avantajele sistemelor din lumea animală și vegetală, care pot servi pentru dezvoltarea ideilor economic avantajoase. Lucrarea prezintă o provocare pentru cercetarea lumii înconjurătoare cu scopul descoperirii misterelor și mecanismelor compelxe de rezistență la diferite condiții, termoreglare, transmitere a semnalelor, acumulare a unor substanțe specifice în organismele vii etc. Explicarea fenomenelor naturale se bazează pe argumente științifice, ce descriu transformările reciproce materie-energie, circuitul materiei în natură și ergonomia sistemelor biologice. Manualul este elaborat pentru elevi, profesori, studenți de la ciclul I (licență) și II (master), dar și pentru toți iubitorii naturii.

COMPLEXUL DE ASISTENȚĂ PSIHOLOGICĂ ÎN ORIENTAREA PROFESIONALĂ A PERSOANELOR CU DIZABILITĂȚI

ISBN of the book: ISBN 978-9975-48-142-7

Author: **CUCER Angela**

Institution: Universitatea Pedagogică de Stat „Ion Creangă” din Chişinău, Institutul de Ştiinţe ale Educaţiei fuzionat în 2022

Description: Constituirea unei societăţi şi economii de succes, bazate pe cunoaştere, pretinde formarea de noi atitudini şi capacităţi, un acces mai larg la oportunităţile de educaţie şi de învăţare permanentă şi măsuri de protecţie socială pentru a însoţi schimbările rapide din mediul social. În acest context dezvoltarea serviciului psihologic în scopul îmbunătăţirii procesului de orientare profesională a persoanelor cu dizabilităţi în conformitate cu cerinţele moderne, îmbunătăţirea formării specialiştilor competenţi din domeniu, sporirea abilităţilor acestora este necesară.

Ghidul pe care îl propunem vine în sprijinul tuturor celor implicaţi în orientarea profesională a persoanelor cu dizabilităţi. Scopul ghidului vizează îmbunătăţirea asistenţei psihologice a persoanei cu dizabilităţi în procesul de orientare profesională.

În Ghid sunt expuse succint unele viziuni generale privitor la asistenţa psihologică în procesul de orientare profesională a persoanelor cu dizabilităţi; cadrul general legislativ/normativ referitor la asistenţa persoanelor cu dizabilităţi în acest proces. Deopotrivă cititorii vor face cunoştinţă cu unele sugestii şi metode pentru depistarea nivelului de pregătire al acestor persoane pentru orientarea profesională; direcţiile de organizare a complexului metodologic de orientare profesională; sunt propuse mai multe tehnici de formare a competenţelor de orientare profesională. În baza materialelor prezentate (*tehnici, jocuri, metode interactive*) beneficiarii vor putea uşor să creeze programe de traininguri proprii pentru a forma competenţele necesare de orientare profesională la persoanele cu dizabilităţi. Totodată venim cu unele recomandări ce ar îmbunătăţi procesul de orientare profesională a acestor persoane.

Sperăm, că materialul propus în Ghid va oferi posibilităţi considerabile în orientarea profesională a persoanelor cu dizabilităţi, contribuind la dezvoltarea şi completarea psihologiei şi psihopedagogiei speciale cu rezultate noi în acest domeniu. Totodată menţionăm că, lucrarea dată n-ar fi fost realizată şi finisată dacă la baza ei n-ar fi stat lucrările unor savanţi ca N. Bucun, A. Bolboceanu, M. Vîrlan, Ю.В. Тюшев, А.П. Чернявская, Я.С. Сунцова et al., cărora le exprimăm o profundă recunoştinţă şi le aducem respectuoase mulţumiri.

Materialul propus în ghid a fost elaborat în cadrul Proiectului de cercetare „Epistemologia şi praxiologia asistenţei psihologice în educaţie” (2015-2018), director de proiect – Aglaida Bolboceanu, doctor habilitat în psihologie, profesor cercetător.

Ghidul „*Complexul de asistenţă psihologică privind orientarea profesională a persoanelor cu dizabilităţi*” este destinat specialiştilor din domeniu, tuturor celor interesaţi în orientarea profesională a persoanelor cu dizabilităţi, precum şi specialiştilor tineri, studenţilor facultăţilor de psihologie, psihopedagogie specială şi pedagogie.

Orice persoană, inclusiv şi cu dizabilităţi creându-şi viitorul său, în primul rând, hotărăşte/ ia decizia ce profesie să-şi aleagă. Anume în această perioadă importantă a vieţii oricărei persoane, rolul celor din jur: a părinţilor, psihologilor, pedagogilor etc. este de a-i ajuta să-şi formeze competenţele necesare ce îl vor orienta în alegerea profesiei.

ORIENTAREA PROFESIONALĂ A PERSOANELOR CU DIZABILITĂȚI

ISBN of the book: ISBN 978-9975-48-155-7

Author: **CUCER Angela**

Institution: Universitatea Pedagogică de Stat „Ion Creangă” din Chişinău, (Institutul de Ştiinţe ale Educaţiei fuzionat în 2022).

Description: Această lucrare reprezintă o incursiune în cele mai incitante cercetări ştiinţifice ce stau la baza asistenţei psihologice a persoanelor cu dizabilităţi în procesul de orientare profesională. Oportunitatea de a implementa politici educaţionale active de orientare profesională în cadrul strategiilor naţionale de învăţare pe tot parcursul vieţii a stabilit patru domenii prioritare pentru orientarea învăţării pe tot parcursul vieţii: dobândirea unor competenţe utile în gestionarea carierei; accesul la servicii de orientare profesională, în special pentru persoanele care aparţin grupurilor defavorizate; calitatea serviciilor de orientare. Coordonarea şi cooperarea între toate părţile interesate relevante la toate nivelurile posibile este subliniată în „Rezoluţia Consiliului Europei şi a reprezentanţilor guvernelor statelor membre” din 21 noiembrie 2008. Această idee este stipulată şi în documente, acte normative ale Republicii Moldova: Codul Educaţiei al Republicii Moldova; Programul de dezvoltare a educaţiei incluzive în Republica Moldova pentru anii 2011-2020 (HG nr. 523 din 11.07.2011); Planul de acţiuni pe anii 2015-2017 pentru implementarea Programului de dezvoltare a educaţiei incluzive în Republica Moldova pentru anii 2011-2020 (HG nr. 858 din 17.12.2015) care conţin acţiuni concrete privind organizarea şi funcţionarea sistemului educaţional.

Problema formării şi orientării profesionale a persoanei cu dizabilităţi în procesul învăţării pe tot parcursul vieţii este actuală, deoarece revoluţia ştiinţifică şi tehnică în condiţiile societăţii contemporane solicită participanţilor la procesul de producţie un

orizont tehnologic tot mai larg, capacităţi şi abilităţi superioare de folosire a tehnicii. În opinia noastră orientarea şi pregătirea profesională temeinică a acestor persoane, pentru a putea face faţă schimbărilor semnificative şi accelerate din societate, este în aceste condiţii indispensabilă.

Orientarea profesională include un complex de acţiuni destinate să informeze o persoană despre o profesie sau o familie de profesii, în conformitate cu interesele şi aptitudinile sale, având ca scop identificarea – pentru fiecare individ – a celei mai potrivite profesii. Serviciile de orientare profesională îndeplinesc în toate ţările civilizate ale lumii un rol cheie, contribuind la creşterea eficienţei repartiţiei şi utilizării resurselor umane, la echitatea accesului la posibilităţile educaţionale şi profesionale. În procesul de orientare profesională specialistul psiholog ghidează adolescenţii, adulţii spre meseria/profesia care i se potriveşte, contribuind la formarea autocunoaşterii personale a acestora în situaţii diferite, la mobilizarea „rezervelor" la timpul oportun, propunându-i mijloacele prin care să-şi compenseze incapacităţile. În această acţiune trebuie să se ia în considerare situaţia familială şi posibilităţile de angajare oferite de piaţa muncii. În mod concret, orientarea profesională a persoanelor cu dizabilităţi este o 4 activitate practică desfăşurată de către factorii responsabili precum părinţi, profesori, consilieri, psihologi etc. prin care se urmăreşte informarea şi orientarea unui subiect către locul de muncă sau instituţia de învăţământ în care să-şi poată valorifica potenţialul.

Studiul este structurat în capitole, precum urmează. În primul capitol „Abordări psihopedagogice ale procesului de orientare profesională a persoanelor cu dizabilităţi", sunt expuse experienţe internaţionale şi naţionale ale asistenţei psihologice a persoanelor cu dizabilităţi în procesul orientării profesionale. În capitolul doi „Consideraţii generale" sunt prezentate rezultatele cercetării vizând resursele individuale ale persoanei necesare în orientarea profesională, opiniile persoanelor cu dizabilităţi privind învăţarea pe tot parcursul vieţii, impedimentele întâlnite de ei în acest proces. Capitolul trei „Demers psihopedagogic în orientarea profesională a persoanelor cu dizabilităţi" descrie unele aspecte psihologice ale acestui proces, repere metodologice corespunzătoare.

Lucrarea pe care o propunem tuturor celor implicaţi în procesul de orientare profesională a persoanelor cu dizabilităţi, va îmbunătăţi asistenţa psihologică a persoanei cu dizabilităţi în procesul de orientare profesională.

Sperăm ca materialul tratat şi interpretat în lucrare să contribuie la dezvoltarea şi completarea psihologiei şi psihopedagogiei speciale cu noi rezultate în acest domeniu. Totodată menţionăm că, lucrarea dată n-ar fi fost realizată şi finisată dacă la baza ei n-ar fi stat lucrările unor savanţi precum N. Bucun, A. Bolboceanu, M. Vîrlan, Ю.В.

Тюшев, А.П. Чернявская, Я.С. Сунцова et al., cărora le exprimăm o profundă recunoştinţă şi le aducem gratitudinea noastră.
Studiul a fost elaborat în cadrul Proiectului de cercetare „Epistemologia şi praxiologia asistenţei psihologice în educaţie” (2015-2018), director de proiect – Aglaida Bolboceanu, doctor habilitat în psihologie, profesor cercetător, fiind destinată specialiştilor din domeniu, tuturor celor interesaţi în orientarea profesională a persoanelor cu dizabilităţi, precum şi specialiştilor tineri, studenţilor facultăţilor de psihologie, psihopedagogie specială şi pedagogie.

GHID METODOLOGIC PRIVIND ACTIVITATEA PSIHOLOGULUI ȘCOLAR LA DIMENSIUNEA AFECTIVĂ ȘI PSIHOCOMPORTAMENTALĂ A ELEVILOR DIN ÎNVĂȚĂMÂNTUL LICEAL

ISBN of the book: ISBN 978-9975-46-840-4.
Authors: **CUCER Angela, RACU Iulia, CIOBANU Adriana, MAXIMCIUC Victoria, GOLOVEI Lilia**
Institution: Universitatea Pedagogică de Stat „Ion Creangă” din Chişinău, Institutul de Cercetare Inovare şi Transfer Tehnologic.
Description: O componentă indispensabilă a școlii generale este serviciul psihologic școlar, care este destinat să valorifice potențialul fiecărui elev, să asigure confortul psihologic pentru toți actorii educaționali, contribuind astfel la îmbunătățirea procesului educațional. De asemenea o condiție importantă este cunoașterea de către psiholog a personalității elevului și soluționarea eficientă a impedimentelor ce pot apărea la elevi.

Ghidul metodologic privind activitatea psihologului școlar la dimensiunea afectivă și psihocomportamentală a elevilor din învățământul liceal este realizat în cadrul proiectului „*Bazele teoretice și metodologice ale asistenței psihologice în sistemul de învățământ general din perspectiva abordărilor societale contemporane”*. Cercetările realizate în cadrul acestui proiect au scos în evidență că psihologii școlari își cunosc bine meseria, dar întâlnesc unele impedimente în asistența elevilor cu diferite probleme în special privind evaluarea psihologică și psihodiagnostic, prevenție/psihoprofilaxie, intervenție psihologică.

Din acest considerent ghidul pune în discuție mai multe aspecte metodologice privind activitatea psihologului cu elevii din liceu cu privire la: *aspecte psihopedagogice ale activității psihologului cu devierile comportamentale la elevi; prevenția, evaluarea și intervenția psihologică pentru valorificarea potențialului comunicării la elevii din treapta liceală; digitalizarea serviciului psihologic școlar la*

nivel liceal; sugestii științifice privind proiectarea metodologiilor pentru prevenția, evaluarea și intervenția psihologică privind dezvoltarea resurselor personale la elevii de la treapta liceală; managementul asigurării asistenței psihologice în învățământul liceal.

Necesitatea acestor discuții vor contribui la elaborarea unei viziuni clare asupra activității psihologului din școala generală cu referire la rezolvarea diferitor probleme ce pot apărea la elevi.

Sperăm că acest fapt va contribui la promovarea calității în învățământ și va asigura activitatea psihologilor din acest sistem cu metodologii de prevenție/ psihoprofilaxie, evaluare/ diagnosticare, intervenție psihologică .

Ghidul este destinat psihologilor ce activează în învățământul general, doctoranzilor, masteranzilor, studenților de la specialitățile de psihologie, precum și tuturor celor interesați de îmbunătățirea activității psihologului din școala generală.

ASPECTE ALE ACTIVITĂȚII PSIHOLOGULUI ȘCOLAR ÎN ÎNVĂȚĂMÂNTUL GENERAL. *MONOGRAFIE COLECTIVĂ*

ISBN of the book: ISBN 978-9975-46-856-5

Authors: **CUCER Angela, RACU Jana, FURDUI Emilia, BATOG Mariana, LUNGU Tatiana**

Institution: Universitatea Pedagogică de Stat „Ion Creangă” din Chișinău, Institutul de Cercetare Inovare și Transfer Tehnologic.

Description: În contextul schimbărilor sociale globale, sistemul educațional este marcat de transformări profunde în ceea ce privește misiunea, idealul și principiile fundamentale ale educației, care să răspundă provocărilor impuse de procesele globalizării, intensificării tehnologiilor informaționale și de comunicare.

Mediul educațional este spațiul optim pentru protejarea sănătății mintale a copiilor, deoarece reunește copilul, părinții, semenii, copiii de diferite vârste, psihologii și profesorii într-un sistem de relații interpersonale. Pentru implementarea eficientă a procesului educațional într-o școală modernă, este necesară nu numai cunoașterea fundamentelor teoretice ale formării personalității, dezvoltării colectivului, a legităților de funcționare a proceselor cognitive, ci și identificarea condițiilor și specificului acestor procese. în raport cu condițiile unei anumite instituții de învățământ, în raport cu o anumită clasă de copii și cu personalitatea copilului.

Astăzi, tot mai frecvent se atestă confruntarea cadrului didactic cu unele situații aparent insolvabile, ce afectează bunul mers al procesului de predare-învățare la clasă. În același timp, școala și cel mai important, relațiile formate în cadrul instituției pot fi o experiență incredibil de stabilizatoare, pozitivă și formatoare în viața unui elev, ce

pot veni în sprijinul lor pentru a depăși perioadele dificile. Calitatea suportului psihologic de care beneficiază o persoană îi influențează stima de sine, capacitatea de a face față situațiilor dificile, sănătatea mintală și fizică. Drept urmare, psihologul școlar rămâne una din veriga cea mai importantă din instituție, care prin măiestria și competența sa profesională reușește să asigure starea de bine a tuturor actanților educaționali: elevi, cadre didactice și cadre de conducere, părinți/ reprezentanți legali. Competențele dobândite de profesioniști în implementarea strategiilor propuse în acest suport vor contribui pe termen lung la dezvoltarea unor medii educaționale deschise, prietenoase, flexibile la necesitățile copiilor, implicarea progresivă în asigurarea continuității educaționale prin gestionarea proceselor de tranziție și de suport, de a oferi suport părinților în procesul de educație a copiilor și implicare școlară.

Menționăm că proiectul *Bazele teoretice şi metodologice ale asigurării activităţii psihologice în sistemul de învățământ general din perspectiva abordărilor societale contemporane* se încadrează în problematica programelor europene de cercetare pe dimensiunea asigurării calităţii în educaţie şi crearea unei societăți bazate pe cunoaștere. În acest context, cercetările realizate în cadrul proiectului nominalizat au definit bazele teoretice și praxiologice ale asigurării activității psihologice în învățământul general, din perspectiva abordărilor societale contemporane. Pentru a răspunde acestor provocări, au fost promovate cercetări cu referire la asigurarea condițiilor psihologice optime în desfășurarea procesului de învățământ general.

Monografia colectivă *Aspecte ale activității psihologului școlar în învățământul general* elaborată în cadrul acestui proiect științific reflectă activitatea psihologului privind adaptarea psihosocială a personalității elevului, comportamentul antisocial/prosocial al elevilor; dezvoltarea sferei relaționale și afective a elevilor, elevii din grupul de risc şi gestionarea situațiilor de criză în mediul educațional.

În special au fost analizate următoarele aspecte:

1. Abordările teoretice privind adaptarea psihosocială a personalității; metodele și tehnicile de evaluare a adaptării psihosociale la adolescenți; cercetarea adaptării psihosociale la elevii claselor liceale: descrise și analizate rezultatele experimentale.
3. Fenomenul comportamentului antisocial în contextul provocărilor societale; problemele asistenței psihologice a elevilor cu comportament antisocial prin prisma reprezentărilor sociale; asigurarea psihologică a copiilor cu comportament antisocial la nivel național; cauze ale comportamentului antisocial la elevi; indicatori psihocomportamentali a elevului cu comportament antisocial; comportamentul prosocial al elevului; metodologii de prevenție/profilaxie și intervenție privind comportamentul antisocial al elevului;

4. Problemele societale contemporane influente asupra asigurării activității psihologice în sistemul de învățământ general; politicile naționale și internaționale (Moldova, Italia, Franța) care reglementează organizarea și asigurarea activității psihologice în sistemul de învățământ general din perspectiva abordărilor societale contemporane; conceptele cu referire la asigurarea activității psihologice în sistemul de învățământ general privind dezvoltarea sferei relaționale a elevilor; modele de asigurare a activității psihologice din sistemul de învățământ general privind dezvoltarea sferei relaționale la elevi;
5. Problemele societale contemporane vizând asigurarea activității psihologice cu referire la afectivitatea elevilor; politicile naționale și internaționale cu referire la asigurarea activității psihologice cu referire la afectivitatea elevilor; dimensiunile conceptuale și modele de asigurare a activității psihologice în sistemul de învățământ general din perspectiva abordărilor societale contemporane cu privire la afectivitatea elevilor; metodologiile de prevenție, evaluare și intervenție psihologică cu referire la afectivitatea elevilor;
6. Asistența psihologică a elevilor din grupul de risc; intervenția psihologică în gestionarea situațiilor de criză; metodele şi tehnicile de intervenție în gestionarea situațiilor de criză.

Rezultatele cercetării elucidate în monografia colectivă completează cercetările anterioare cu referire la gestionarea situațiilor de criză și intervenția psihologică privind elevii din grupul de risc, problemelor de comportament, relaționare, afective, de adaptare psihosocială a elevilor, prezentând diverse contribuții metodologice și practic-aplicative pentru psihologii școlari, cadrele didactice, părinți și alți specialiști privind:

- realizarea unor intervenţii eficiente și cu impact practic în vederea depășirii situațiilor dificile la elevi;
- diverse strategii și soluţii concrete de intervenţie în vederea dezvoltării competențelor socio-emoționale la elevi și abilităților de a face față evenimentelor dificile, consolidând reziliența acestora;
- realizarea unor cercetări în psihologia educațională și socială, pentru aprofundarea nivelului de cunoaştere cu referire la factorii ce favorizează apariția diferitor probleme la elevi și gestionarea situațiilor dificile, de criză în mediul educațional.

Lucrarea este destinată psihologilor practicieni, cercetătorilor științifici, managerilor din sistemului educațional, cadrelor universitare, cadrelor didactice, studenților, masteranzilor, doctoranzilor.

VALORI EPISTEMICE: LIMBA ŞI LITERATURA ROMÂNĂ ÎN ÎNVĂȚĂMÂNTUL PRIMAR

ISBN of the book: ISBN 978-9975-175-54-8.

Author: **GOLUBIȚCHI Silvia**

Institution: "Ion Creanga" State Pedagogical University

Description: Ghidul de față surprinde coordonatele specifice ale disciplinei școlare Limba și literatura română la nivelul învățământului primar, aspectele oralului, și este conceput în cadrul general al mentalităților educaționale în vederea formării și dezvoltării profesionale a studenților și a cadrelor didactice, sub aspect teoretic și metodologic.

Limba și literatura română este disciplina de bază în învățământul primar, scopul acesteia fiind acela de a forma un elev cu o cultură comunicativă și literară, capabil să înțeleagă semenii din jurul său, să comunice și să interacționeze, să utilizeze în mod eficient și creativ capacitățile proprii.

Ghidul pune în lumină diversele tematici pe care trebuie să le asimileze viitorul, dar și actualul cadru didactic, pentru a transmite cunoştinţe spre elevi, urmărindu-se şi activitatea de preluare, de asimilare şi de interpretare a acestora. Astfel, este un suport în operaţiunea de selectare a conţinuturilor specifice, în elaborarea obiectivelor formative la disciplina Limba și literatura română, în conturarea competențelor ce trebuie formate elevilor din învățământul primar.

Didactica limbii și literaturii române presupune sintetizarea și organizarea conținuturilor din domeniile cunoașterii, astfel încât să se asigure proiectarea de către elevi a unei imagini coerente, unitare despre lumea reală și este structurată în funcție de modelul comunicativ-funcțional, care presupune predarea integrată a capacităților de receptare și de exprimare orală, cât și a capacității de receptare a mesajului scris și de exprimare în scris. Conform acestui model, comunicarea este un domeniu complex, care înglobează procesele de receptare a mesajului oral (și a celui scris), precum și cele de exprimare orală (respectiv de exprimare scrisă), în domeniile limbii și este definită în termeni de capacități.

În viziunea pe care o propune, ghidul recuperează o parte din complexitatea reală a fenomenului educațional, întrucât domeniile de conținut pe care le are în vedere sunt selectate în funcție de necesitățile operaționale ale utilizatorului. Principalele paliere discursive abordate sunt următoarele: ce este fenomenul respectiv, pentru ce este abordat, ce rezultate palpabile poate genera, cum poate fi valorificat, în ce modalitate poate fi înțeles, de ce este important, în ce condiții este util. O parte din elementele constructive ale ghidului sunt reprezentate de generalitățile didacticii disciplinei Limba și literatura română în învățământul primar; de caracteristica perioadelor de învățare:

prealfabetară, alfabetară, postalfabetară; de text ca bază a vorbirii elevilor din clasele primare.

Conținutul prezentat, indiferent de complexitatea sa, îi are în calitate de coautori pe cei doi protagoniști ai actului reflexiv – autorul și beneficiarii – și are drept scop generarea unei realități care să producă schimbarea spre mai bine. Majoritatea acestor tematici asigură construirea diverselor realități educaționale prin crearea codurilor relaționare, care transgresează fundamentele spre un travaliu interpretativ și creativ.

CREATIVITATEA – RESURSĂ PSIHOLOGICĂ PENTRU ÎNVĂȚAREA PE TOT PARCURSUL VIEȚII A PERSOANELOR CU DIZABILITĂȚI. GHID METODOLOGIC

ISBN of the book: 978-9975-48-144-1.

Author: **FURDUI Emilia**

Institution: UPSC / Institutul de Științe ale Educației

Description: Recunoaşterea rolului esenţial al creativităţii pentru progresul societăţii a condus la cercetarea mecanismelor gândirii critice şi creative şi la apariţia unor metode care să favorizeze capacitatea omului de a găsi noul. În ultimii ani, atenția cercetătorilor psihologi s-a îndreptat spre acest proces fascinant, care este creativitatea. Am ajuns să o cunoaștem, să gândim strategii pentru dezvoltarea și stimularea ei încă din copilărie și până la vârsta adultă. Cercetările în domeniu au demonstrat că copiii, inclusiv şi cei cu dizabilităţi, pot să fie creativi fără prea mult efort, deoarece, acolo unde realul se îmbină cu fantasticul, nu există reguli stricte și totul pare să fie posibil. De aceea, cunoscând specificul vârstei respective, se poate interveni adecvat în acordarea asistenţei psihologice eficiente şi adultului cu deficienţe.

Cum funcționează şi cum se dezvoltă totuşi acest proces numit creativitatea? Din aspect psihopedagogic, putem menţiona că creativitatea, în educaţia de orice nivel, reprezintă un proces de modernizare continuă, care asigură cea mai mare eficienţă în formarea şi dezvoltarea integrală a personalităţii, astfel, contribuind la dobândirea şi manifestarea valorilor psihosociale pe parcursul întregii vieţi. Programul iniţiat de noi abordează aplicarea tehnicilor creative în activităţile psiho-corecţionale cu persoanele cu dizabilităţi, care vor conduce la:

- mobilizarea resurselor interioare pentru adaptarea la situaţii noi;
- îmbunătăţirea abilităţilor din sfera emoţională, verbală şi cognitivă;
- stimularea creativităţii persoanelor respective, implicând originalitate, imaginaţie, iniţiativă, cooperare, provocare la exprimare, dragoste pentru joc, pentru mister, spontaneitate, autocunoaştere etc.

Acest ghid se vrea o dovadă a faptului că dezvoltarea creativităţii, în general, şi la persoanele cu dizabilităţi, în mod special, se bazează pe utilizarea metodelor de învăţământ activ-participative şi nu trebuie să urmărească creativitatea în sensul restrâns al noţiunii – de a crea ceva nou, ci să iniţieze şi să dezvolte o gândire şi o atitudine creativă. Cercetarea realizată evidenţiază vulnerabilitatea şi nevoile de asistenţă psihologică şi educaţională ale persoanelor cu dizabilităţi. Pentru a contribui eficient la dezvoltarea creativităţii persoanelor nominalizate, prin aplicarea metodelor programului de asistenţă psihologică, respectiv, venim cu unele recomandări practice adresate psihologilor, specialiştilor în domeniu, părinţilor.

Într-o societate a cunoaşterii care ne cere să renaştem mereu prin imaginaţie, creativitate şi inovare, vrem să încheiem cu o maximă americană, în care se accentuează că „activitatea psihologului are efect asupra eternităţii şi nu se poate spune niciodată unde se sfârşeşte influenţa sa”. Acest demers impune tuturor mai multă responsabilitate, străduinţă şi datoria de a deveni în mod consecvent cât mai creativi. Dar, mai presus de toate, se situează convingerea că fiecare persoană cu dizabilităţi contează.

HELMINTIC FAUNA OF AMPHIBIANS AND REPTILES IN THE REPUBLIC OF MOLDOVA. TREMATODA. VOLUME I

ISBN of the book: ISBN 978-5-88554-163-3.

Authors: **GHERASIM Elena, ERHAN Dumitru**

Institution: „Ion Creanga” State Pedagogical University; Moldova State University, Institute of Zoology

Description: The reviewed monographic work represents a detailed analysis of the results of the scientific research carried out by the authors regarding the diversity of the helminthic fauna of the batrachofauna in the Republic of Moldova of the DIPLOSTOMATIDAE Poirer, 1886; STRIGEIDAE Railliet, 1919; CLINOSTOMATIDAE Luhe, 1901; BRACHYLAEMIDAE Stiles et Hassall, 1898; CATHAEMASIIDAE Fuhrmann, 1928; ECHINOSTOMATIDAE Poche, 1926; PARAMPHISTOMATIDAE Odhner, 1913; BBACHYCOELIlDAE Johnston, 1912; DICROCOELIIDAE Odhner, 1911; PLAGIORCHIDAE Ward, 1917 families.

The monograph is presented on 408 pages, exposed in 4 chapters. The content of the material is completed with 235 fi gures and 5 tables. The bibliography consists of 245 titles. The work in question represents a scientific support for university professors, doctoral students, master's students, students and all specialists in the field interested in the issue of the ecological state of the conservation of the animal world.

HELMINTIC FAUNA OF AMPHIBIANS AND REPTILES IN THE REPUBLIC OF MOLDOVA. TREMATODA. VOLUME II

ISBN of the book: ISBN 978-5-88554-308-8

Authors: **GHERASIM Elena, ERHAN Dumitru**

Institution: „Ion Creanga" State Pedagogical University; Moldova State University, Institute of Zoology

Description: The reviewed monographic work represents a detailed analysis of the results of the scientifi c research carried out by the authors regarding the diversity of the helminthic fauna of the amphibians and reptiles in the Republic of Moldova of the: LECITHODENDRIIDAE Odhner, 1910; ALLOCREADIIDAE Looss, 1902; GORGODERIDAE Looss, 1901; HETEROPHYIDAE Odhner, 1914; DEROGENIDAE Nicoll, 1910; CEPHALOGONIMIDAE Loos, 1899; ENCYCLOMETRIDAE Mehra, 1931; MACRODERIDAE (Goodman, 1952) Yamaguty, 1971; CYATHOCOTYLIDAE Mühling, 1898; PSILOSTOMATIDAE Odhnr, 1913; SPIRORCHIDAE Stunkard, 1921; LIOLOPIDAE Odhner, 1912; AURIDISTOMATIDAE Stunkard, 1924; TELORCHIDAE Loos, 1898; LEUCOCHLORIDIIDAE Poche, 1907; BUCEPHALIDAE Poche, 1907; PROTERODIPLOSTOMIDAE Dubois, 1936 families

In the second compartment, data relating to the main ecological and parasitological aspects related to the mechanism of formation and maintenance of relationships in the host-parasite system are presented: the growth of the parasite population, the characteristic of the host-parasite system, the formation and maintenance of the relationship in the host system – parasite,

parasite prolifi cacy, egg production, parasite spread, parasite search and host entry using vectors, synchronization of host and parasite life cycles, origin of host-parasite system, parasite specifi city, specifi cation manifestation, parasite spread in host system – parasite, the types of host-parasite systems, the spread of parasites in the host population depending on its age, depending on the ethology of the host, depending on the gender of the host, the spread of parasites in the host population, as well as the characteristics of the habitats through the characteristics of the parasitic fauna.

The work in question represents a scientific support for university professors, doctoral students, master's students, students and all specialists in the field interested in the issue of the ecological state of the conservation of the animal world.

PRAXIOLOGIA ȘTIINȚELOR

ISBN of the book: 978-9975-3568-7-9

Author: **GÎNJU Gheorghe**

Institution: „Ion Creanga" State Pedagogical University

Description: In this work, the theoretical and practical contents taught to students of the Faculty of Education Sciences are correlated with the learning units and content from the Primary Education Curriculum, 2018. The knowledge and skills acquired by students will serve as prerequisites for a more thorough understanding of the Didactics of Sciences course.

Presented in its current form, the work is designed as a synthetic presentation of the knowledge future teachers need to acquire in order to teach Science in primary classes. At the same time, the course material can be used within continuing education or retraining courses.

PROIECTAREA ACTIVITĂȚILOR INTEGRATE: PENTRU COPIII DIN GRUPA MICA I (2-3 ANI). IARNA. PRIMĂVARA. TOAMNA

ISBN of the book: 978-9975-162-67-8 (978-9975-162-68-5, 978-9975-162-70-8,978-9975-162-69-2)

Authors: **HAHEU-MUNTEANU Efrosinia, ISTRATI Viorica, PAVLENCO Mihaela**

Institution: „Ion Creangă" State Pedagogical University

Description: The design of integrated activities for children from the first group (2-3 years old) is a source of inspiration for beginning teachers and students, consisting of three volumes: Autumn, Winter, Spring.

These books contain projections of integrated activities for 2–3-year-old children carried out by educators during the school year. The projects are connected to the requirements put forward by the curricular policy documents specific to Early Education level: Curriculum for Early Education, Standards of learning and development the child from birth to 7 years, Preschool Education Framework Plan, being centred on the child. The books demonstrate the effective way of correlating the curriculum policy documents by relating the competence units, the indicators from the standards, the operational objectives and the learning situations proposed in the common and interest centres activities.

The guide is structured by seasons, addressing global themes and country-specific holidays, being correlated with the specifics of the age. Through their extensive and complex content, beginning teachers will better understand how to interact with 2-3-year-old children, referring not only to age characteristics, but also to individual ones, they will distinguish the ways of integrating the curricular contents of different fields of activity taking into account the provisions of the Framework Plan.

THE PERSONAL DEVELOPMENT OF YOUNG WOMEN DESCENDS FROM AGGRESSIVE FAMILY BACKGROUNDS

ISBN of the book: ISBN 978-9975-46-692-9

Authors: **LOSÎI Elena, CRÂȘMARU Ana Maria**
Institution: „Ion Creanga" State Pedagogical University of Chisinau

Description: Aggressive behavior in the family space is a very topical problem all over the world. Aggressive family environment is the family environment where forceful actions or procedures occur, such as unprovoked attacks of any kind (physical, emotional, sexual), especially when they are intended to dominate or to have control in the family. Globally, victims of domestic violence are generally women, and women tend to experience more severe forms of violence. Violence against women, especially by an intimate partner (IPV), is receiving increased attention because of its prevalence and serious health consequences. The World Health Organization periodically conducts studies in several countries on violence against women. UN research shows that in 2018 approximately 20,000 women were victims of domestic violence, with 44 dying as a result of the blows they received. 31% of Romanian women stated that they had been affected by physical/sexual violence at some point in their lives.

Another aspect of the problem is that women who come from aggressive and/or criminal backgrounds also exhibit aggressiveness and antisocial behavior. Examining the literature on aggression leads to the conclusion that women tend to engage in indirect forms of aggression (eg, rumor spreading, verbal aggression) than other types of aggression. We are aware that not only Romania and the Republic of Moldova face aggression in couples, but also all other countries of the world, regardless of their nature and culture. It is a "scourge" that affects couples of all kinds and from all countries, which is why several institutions and legislation have been created worldwide, which can be brought into play when the need and the situation calls for it. For the reasons stated above in the presentation of the context, we consider the topic of the paper to be topical and of major importance.

Based on this situation, we carried out a theoretical-experimental study which is presented in the respective monograph. This study is based on the group psychological assessment and intervention activity, carried out with the participation of a group of 182 women from Romania. The aim consisted in identifying the psychological peculiarities of young women from aggressive family environments, developing and implementing a psychological intervention program for their personal development.

The work is structured in the following chapters: In the Introduction, the topicality of the studied theme, the problem and its scientific importance are argued, the conceptual basis of the study was exposed and substantiated, the research problem was

formulated, the purpose, objectives and research hypotheses were exposed, the novelty and scientific originality of the results obtained, the theoretical and applied value of the work, the opportunity to implement the results, the approval and dissemination of the research results, the summary of the thesis sections was also presented.

In Chapter I, entitled *Theoretical milestones regarding the development of young women in aggressive environments*, the theoretical approaches to the problem investigated at the national and international level are presented. The concepts involved in the research were defined: the psychology of women's development, aggressive family and social environments, aggression, the status and role of victim/aggressor, domestic violence, violence in intimate partnerships. Family functioning as a predictor of conduct disorders in adolescence and young adulthood has also been explained.

In the *Chapter II,* entitled *Experimental research of the psychological characteristics of young women from aggressive environments*, presents the purpose, objectives, hypotheses and research methodology. The investigation tools used and the characteristics of the research group were described (age, background, level of education, marital status and length of relationship, existence of children, professional status). The level of risk factors for domestic violence and the perception of victim/aggressor status are identified, as well as the level of manifestation of aggression and its components. Clinical mental status as well as protective factors such as self-esteem, resilience, locus of control, emotional intelligence and psychological well-being were also assessed. Finish the paper with general conclusions and recommendations, appendices.

In the *Chapter III,* entitled *Psychological intervention program for the personal development of young women descended from aggressive environments*, presents the results of the experimental research on the identification of psychological particularities of young women descended from aggressive family environments, as well as the experiential personal development programme applied on those women. The effectiveness of the programme in personal development of women descended from aggressive family environments are demonstrated. As consequences of programme we consigned some changes: increasing the abilities to identify an aggressive environment, diminishing own aggression, optimizing personality by reducing negative affects and antagonism, developing resilience and self-esteem, improving emotional intelligence, well-being, decreasing depressive and anxious tendencies, diminishing stress and the reducing the level of detachment as sign of trauma.

Scientific novelty and originality. For the first time at national level, the experimental study of the personality of women from aggressive backgrounds was

conducted; the specificity of the interaction of young women involved in domestic violence with aggressor from the basic family was identified, the level of risk for domestic violence for women from aggressive backgrounds of the origin was assessed; the level of aggression and its components (physical and verbal aggression, hostility and anger) in young women were highlighted; the level of self-perception on the status of victim of domestic violence was assessed; the personality factors of women victims of domestic violence that are considered to be predictors of status of victim-aggressor and the relationship between them were investigated; the relationship between the perceived aggression in the family of origin and the manifest aggression in the current family was explained, this fact allowed to develop the personality of young women from past and present aggressive environment through the application of program of psychological intervention. This psychological intervention program represents the originality and the scientific novelty.

The theoretical significance consists in highlighting the personality peculiarities developed by young women from aggressive family backgrounds and their risk and protective factors.

The applied value of the work. During the study, a psychological intervention program was developed, implemented and evaluated with the objective of developing the personality of young women from aggressive family backgrounds. The obtained results join and complete the current knowledge, the research results being the basis of a personal development program, grounded theoretically and practically. The psychological intervention program can be applied by psychologists and coaches, who work in social protection systems, in state and non-governmental assessment and counseling centers dedicated to people involved in domestic violence. The proposed methods and recommendations can be used in the practical activity of psychological counseling of victims of domestic violence, in the development of individual programs and personal development trainings.

Implementation of scientific results. The obtained results are used in the process of continuous training of clinical psychologists, counselors psychotherapists and are recommended for the training of specialists in domestic violence. The thesis represents a contribution to the enrichment of the scientific literature in the field of psychology and is used in the activity of psychological counseling at GTL Medical Clinic, Bacau Romania.

FORMAREA COMPETENȚEI DE SCRIERE ÎN ÎNVĂȚĂMÂNTUL PRIMAR: ASPECTE DE EVALUARE

ISBN of the book: ISBN 978-9975-59-263-5

Authors: **MARIN Mariana, GOLUBIȚCHI Silvia**

Institution: "Ion Creanga" State Pedagogical University

Description: Ghidul metodologic se referă la aspectele evaluării axate pe proces (cu intenţie de evaluare a cunoştinţelor, a priceperilor şi a deprinderilor) şi evaluarea competenţei, care la rândul său presupune o finalitate, deci un produs. Ca atare, competenţa explorează contextul de învăţare şi conexiunea cu realitatea raportată la ansamblul de cunoştinţe, capacităţi şi atitudini. Deci evaluarea autentică are în vizor experienţa acumulată în contexte reale, depăşite de limitele clasei.

Pe de o parte învăţăm că suntem diferiţi, iar pe de altă parte încercăm să comparăm rezulatele. Elevul nu ştie pentru ce învaţă: pentru părinte, pentru sine, pentru coleg, pentru mama colegului sau pentru altcineva. Este foarte important ca profesorul să conceapă evaluarea nu neapărat ca o zonă de confort, în care să se odihnească după o muncă asiduă. Evaluarea constituie o zonă de risc, iar măiestria şi competenţa profesională îl va ajuta să obţină rezultatele scontate.

EDUCAȚIA DIGITALĂ ÎN INSTITUȚIA DE EDUCAȚIE TIMPURIE. SUPORT DE CURS PENTRU STUDENȚI. PROGRAM DE STUDII PEDAGOGIE PREȘCOLARĂ

ISBN: 978-9975-46-851-0.

Autors: **OHRIMENCO (BOȚAN) Aliona, COJOCARI Lidia**

Institution: UPS „Ion Creangă"

Description: Pe măsură ce tehnologiile sunt integrate în toate activitățile din orice domeniu, capacitatea de a utiliza aceste tehnologii și de a ține pasul cu evoluția lor rapidă a devenit o condiție obligatorie, întrucât tehnologiile digitale transformă fiecare aspect al vieții, de la stilul de viață personal la activitatea profesională. Competențele digitale devin importante și necesare deopotrivă cadrelor didactice și copiilor în creștere.

Internetul și dispozitivele digitale au adus o schimbare de paradigmă în modul fundamental în care se face învățarea. Învățarea digitală a evoluat cu mult peste capacitățile sale originale - nu se mai limitează la o metodă didactică, care avea un monolog cu sens unic de la cadrul didactic la copil. Progresele actuale în educația digitală îi permit copilului să joace un rol activ în activitatea de învățare, cu feedback și evaluări interactive.

Cursul universitar „Educația digitală în instituția de educație timpurie" face parte din categoria disciplinelor obligatorii orientate spre formarea competențelor de bază ale educatorilor. Cursul vizat presupune recunoașterea și aplicarea tehnologiilor,

resurselor digitale interactive, în diferite contexte educaționale, dând dovadă de responsabilitate față de securitatea personală a copiilor.

Suportul de curs este adresat studenților pedagogi viitori educatori și tratează conținuturi, precum relevanța tehnologiilor digitale în educația timpurie, drepturile copiilor într-o eră digitală, argumente psihopedagogice în formarea competențelor digitale ale copiilor, beneficii și limite ale utilizării TIC, modalități de integrare a softurilor educaționale, instruirea părinților pentru educația digitală a preșcolarului. Aceste conținuturi vor permite tânărului cadru didactic să realizeze parentajul digital pentru a diminua lupta între copil și ecrane și pentru a crea o relație sănătoasă cu tehnologiile informaționale a copilului în scopul formării competențelor digitale, necesare azi fiecărui cetățean.

FUNCȚIONALITATEA INTEGRALITĂȚII ȘI CONTINUITĂȚII ÎN EDUCAȚIA COPIILOR

Patent: 978-9975-157-96-4

Author: PASCARI Valentina

Institution: Universitatea Pedagogică de Stat „Ion Creangă”

Description: Monografia de față se înscrie în preocupările de valoare ale științelor educație. Acest studiu monografic promovează o reconstrucție în domeniul funcționalității integralității și continuității printr-o nouă direcție de cercetare în pedagogie, oferă o viziune inedită, în drumul unei redări a faptelor și fenomenelor din domeniul educației copiilor de 6-9 ani: particularitățile de vârstă, mediul integrator, pregătirea pentru școală, poziția internă a școlarului mic etc.

Rezultatele acestei investigații pot fi utilizate la predarea cursurilor în instituțiile universitare și pot fi un suport teoretico-metodologic pentru cadrele didactice, studenți, elevi din colegiile pedagogice, masteranzi, doctoranzi inclusiv pentru cercetătorii științifici.

The present monographic study is part of the value concerns of education sciences. This monographic study promotes a reconstruction in the field of the functionality of integrity and continuity through a new direction of research in pedagogy, it offers a new vision, in the way of a reproduction of the facts and phenomena in the field of the education of 6-9 year old children: the particularities of age, the environment integrator, preparation for school, the internal position of the young schoolboy, etc.

The results of this investigation can be used for teaching courses in university institutions and can be a theoretical-methodological support for teachers, students,

students from pedagogical colleges, master's students, doctoral students including scientific researchers.

DEVELOPMENT OF VOLITIONAL QUALITIES IN PREADOLESCENTS

ISBN of the book: 978-9975-46-842-8

Authors: **RACU Iulia, NIȚĂ Liliana**

Institution: „Ion Creanga" State Pedagogical University of Chişinau

Description: The monography entitled „Development of volitional qualities in preadolescents" is dedicated to an important theme of contemporaneous psychology (developmental psychology and educational psychology), particularities of volition and volitional qualities in preadolescents.

The Introduction of the present monography includes the arguments and the importance of the research topic, the description of the situation in the research field, the purpose, objectives and hypotheses of the research, the results that were obtained which contribute to solving the important scientific problem. The scientific novelty of the obtained results, the theoretical importance and the applicative value of the paper are exposed and substantiated.

Chapter 1, entitled „The problem of volition in psychology", examines and describes the theoretical approaches of volition, the structure and stages of the volitional act, the main volitional qualities, disorders and pathologies of volition are presented and highlighted. It also includes a synthesis on the peculiarities of preadolescence and the volitional sphere in preadolescence.

Chapter 2, entitled „Experimental research of volition and volitional qualities in preadolescents" describes the purpose, objectives, hypotheses and research methodology, highlights the following aspects of the approach: the development of volition and volitional qualities during preadolescent age, gender differences in the manifestation of volition and volitional qualities in preadolescents, characteristic personality traits of preadolescents with different levels of volition development.
The finding research included a sample of 239 preadolescents, aged between 10 and 15 years (117 preadolescent boys and 122 preadolescent girls).

Chapter 3, entitled „Development of volitional qualities in preadolescents" includes the characterization of the formative approach: the purpose, hypothesis, objectives and principles of designing and developing the program of psychological interventions, methods, techniques and procedures, characteristics and stages of group activities are described, the efficiency of the implemented psychological intervention program is presented by examining and highlighting the differences between the results

of preadolescents in the experimental test / retest group, between the results of preadolescents in the test / retest control group and between the results of preadolescents in the retest experimental group / retest control group.

DIMENSIUNI ALE OPEREI COREGRAFICE DIN PERSPECTIVA FORMĂRII VALORILOR ARTISTICE LA STUDENȚI

ISBN of the book: ISBN 978-9975-46-823-7

Author: **TALPĂ Svetlana**

Institution: Universitatea Pedagogică de Stat „Ion Creangă”

Description: Lucrarea prezintă un studiu ce vizează formarea valorilor artistice la studenți în procesul de instruire coregrafică. În lucrare este realizată o cercetare aprofundată a dimensiunii conceptuale a procesului de instruire coregrafică, este abordată valoarea educativă a instruirii coregrafice din perspectiva formării valorilor artistice la studenți. Un loc aparte este dedicat modelului pedagogic de formare a valorilor artistice studenților în instruirea coregrafică.

Determinăm o altă calitate de durată a cărții, și anume ideea că lucrarea de față poate fi abordată și ca un acord sau o convenție teoretico-pragmatică, marcată de o tentă sistemică despre formarea profesională inițială a studenților-coregrafi, viitoare cadre didactice de specialitate. Autoarea Talpă Svetlana, prin optica propriei experiențe și cercetări, oferă comunității pedagogice un tablou științific și metodologic specific dezvoltării acestui domeniu. Angajându-se convingător în exegeza diverselor aspecte ale câmpului tematic de tip coregrafic relaționat competenței artistice și valorilor artistice ale studentului-receptor, interpret și creator de produse coregrafice, autoarea arată că, din punct de vedere al statutului teoretic, există o simetrie considerabilă între procesul de instruire coregrafică în cadrul învățământului superior și baza teoretică, tehnologică de valorificare a operei coregrafice – ambele evidențiază conceptul teoretic de schimbare și transformare continuă a acestui proces esențial de creație coregrafică. Monografia propusă oferă largi posibilități și poate servi drept suport metodologic pentru cadrele didactice și toți cei interesați de problematica abordată.

PEDAGOGICAL VALUES OF THE DEVELOPMENT OF NON-CONFLICT ATTITUDE OF STUDENTS FROM THE PERSPECTIVE OF PROFESSIONAL INTEGRATION

ISBN of the book: 978-9975-46-639-4

Author: **ȚĂRNĂ Ecaterina**

Institution: „Ion Creanga” State Pedagogical University of Chișinau

Description: This monograph is addressed to university and school teaching staff, students, master's students, doctoral students and all those interested in the knowledge and recognition of pedagogical values as sources of the development of non-conflictual attitude from the perspective of professional integration. The idea of developing the monograph is determined by the prospective approach in the context of positive education, which promotes the anticipation of coercion at the level of personal development in the university environment and, therefore, outlines a perspective to prevent professional non-integration from the point of view of the possibilities of educational intervention during training professional.

In Chapter 1, *Conceptual approaches aiming at pedagogical values in consonance with non-conflictual attitudes - professional integration*, the evolution of the interaction of concepts is analyzed and an analysis of the degree of research in the Republic of Moldova is carried out; the scientific reality regarding the connection and conceptual interaction between *values-attitudes-conflict/non-conflict-adaptation/integration* is theoretically ascertained; the central idea of the research aiming at the *relevance of pedagogical values as sources of the development of non-conflictual attitude from the perspective of professional integration* is substantiated; the particularities of pedagogical values are explained *as sources of the development of non-conflictual attitude from the perspective of professional integration*; conflictual/non-conflictual attitude indicators are theoretically identified and distinctively analyzed; the pedagogical values considered as sources of the development of the non-conflictual attitude from the perspective of professional integration are analyzed: *integrity, responsibility, pedagogical tact, empathy, correctness, objectivity*; evidence is provided regarding the *significance of the development of the non-conflictual attitude*. In this chapter, we considered it important to demonstrate the evolution, meaning and interaction of the concepts: *pedagogical values – development of non-conflictual attitude – professional integration* in the order presented, starting from the interpretive analysis of the definitions synthesized and ranked by fields.

In chapter 2, *Theoretical-praxiological guidelines in the knowledge and recognition of pedagogical values as sources of non-conflictual development from the perspective of professional integration*, pedagogical values are analyzed as sources of non-conflictual attitude development from the perspective of professional integration in the context of interdisciplinary and transdisciplinary approaches. The chapter was structured on the idea of presenting a multi-level and multi-relational explanation required by the study object of the research, bringing synthesized arguments from 1) pedagogy; 2) philosophy; 3) sociology; 4) psychology; 5) conflictology. The

theoretical documentation is structured on a subsumed axis: ***normative paradigms*** (functionalist theory, organizational theory, culturalist theory, conflictualist theory) and ***interpretive paradigms*** (interactionist theory, cognitivist theory, constructivist theory, positivist theories), exposing the scientific positions that justify **the functional imperatives for knowledge and the recognition/promotion of pedagogical values as sources of the development of non-conflictual attitudes from the perspective of professional integration**.

In chapter 3, *Methodology for the development of students' non-conflictual attitude from the perspective of professional integration*, the cognitive dimension of pedagogical values in the development of non-conflictual attitude is analyzed; the pragmatic dimension and the applied dimension of pedagogical values in the development of the non-conflictual attitude from the perspective of professional integration; the conceptualization of the *three-dimensional Model of the development of students' non-conflictual attitude from the perspective of professional integration* (TMNA) is presented; the constitutive elements of *TMNA* with triple functionality are described: *knowledge of pedagogical values* (theoretical dimension); *recognition/promotion of pedagogical values* (pragmatic dimension*); the development of the non-conflictual attitude from the perspective of professional integration* (applicative dimension) which highlights the constructivist, positivist and prospective nature of university education.

In chapter 4, *Development of students' non-conflictual attitude from the perspective of professional integration - experimental approach*, arguments and evidence are presented to justify the experiment. The obtained results demonstrated the effectiveness of TMNA with triple functionality: knowledge of pedagogical values (theoretical dimension); recognition/promotion of pedagogical values (pragmatic dimension); the development of the non-conflictual attitude from the perspective of professional integration (applicative dimension) and confirmed the validity of the Formative Planning of knowledge and recognition/promotion of pedagogical values as sources of the development of the non-conflictual attitude from the perspective of professional integration.

The carried out study opens a new direction of research on the prospective dimension in the context of positivist education, conflictology and deontology: Prospective pedagogy of professional integration. Premises were created for the extension of applied research on the dimension of the interaction of pedagogical values – the development of non-conflictual attitude – perspectives of professional integration.

CONFLICTOLOGIA

ISBN of the book: ISBN 978-9975-134-76-7

Author: **ȚĂRNĂ Ecaterina**
Institution: „Ion Creanga" State Pedagogical University of Chişinau

Description: The work *Conflictology* include a synthesis and analysis of the outstanding works in the field, offering to the pedagogical students various possibilities of interpreting the conflict processes and situations through the models of analysis and application. Understanding the importance of the *Conflictology course* starts from a strong belief that *a conflict does not go away by itself and is not just destructive*. In the paper we promote the idea that *the ability to choose how we react to events in our lives is learned*, but unfortunately, we are not always aware that every event in our lives has both positive and negative effects from which we must learn, to draw a conclusion. In this regard, we consider that the pedagogical university, as a training institution, can modify the competitive orientation of the pedagogical students towards the tendency of collaboration, developing to the students the ability to solve the conflicts in a constructive way.

Of course, the student must distinguish between a conflictual individual and a non-conflictual individual. We support the idea that the role of the university community is to train professionals with a constructive critical sense, with the ability to understand and respond appropriately to the various challenges and conflicts, developing the non-conflictual attitude and positive thinking, unconditional, impartial judgment and responsibility etc. In this sense, if due to the intense changes we frequently encounter all kinds of constructive or destructive conflicts, and the educational environment is no exception from this reality (for example, conflicts between students and teachers, between students and the school administration, between parents and students , between parents and teachers, not talking about conflicts only between teachers or students), then we must be aware that the training of conflict resolution skills for the pedagogical students is extremely important, we could even say a condition of the relationship and of the vocational training.

Starting from these tendencies, we have structured the work as a textbook in which the most important aspects relate to the research on conflict. The content is organized into seven chapters: 1) General from the perspective of conflictology. Definitions and concepts; 2) Intrapersonal conflict - causes, sources and forms of manifestation; 3) Interpersonal conflict; 4) Group conflict; 5) Conflict in organizations; 6) Conflicts in the educational environment; 7) Conflict resolution and communication in exceptional situations.

At the beginning of each chapter, certain objectives are set, which facilitates a better understanding of what is expected of students to know and apply after completing the chapter. Each chapter contains a section for "Key concepts", facilitating the knowledge and understanding of important concepts. The section "Questions and topics of reflection" involves an evaluation of the assimilated material, being based on practice methods and techniques, as well as on the training of conflict resolution skills. Thus, in the face of conflicting situations, students are required to chose a course of action that they consider to be appropriate, are challenged to make a certain decision, and by this they expresses their attitude and preference in conflict resolution. In addition, each chapter is followed by the section "Further reading», which offers certain bibliographic recommendations on the topic and invite the reader to further research. This paper is addressed to students, but it can also be useful to those who do not want to be labeled "conflicting people".

In the hope that the work Conflictology lecture notes engages pedagogical students in constructive debates, our intention is to provide them with practical support and, at the same time we encourage them develop non-conflictual.

University of Life Sciences „King Mihai I" from Timișoara

THE UNIVERSALITY OF GRAPEVINE

ISBN of the book: 978-9975-62-435-0

Authors: **DOBREI Alin, DOBREI Alina, DARAU Petru, ALEXANDROV Eugeniu, BOTNARI Vasile, GAINA Boris**

Institution: „King Mihai I" University of Life Sciences from Timișoara

Description: Throughout history, only sedentary peoples have grown grapes, which, from this point of view, have become a symbol of agricultural societies in contrast to hunters-gatherers. The respect for grapes has manifested itself in the traditional mentality through the idea that what grows from wheat (bread) and what grows from grapevine (the berries that turn into wine) is sacred. In Christianity, bread is a symbolic representation of the body of Christ, and wine – of His blood (Holy Communion). In each grape, a peasant sees a gift from God and an expression of His grace, a sign that the Earth will exist as long as the grapevine bears fruit in order to celebrate the Holy Communion.

For some peoples, grapes symbolize the kindness of a mother: as a mother breastfeeds her children, so grapevine "feeds its children" – bunches of grapes. They are also a symbol of harmony between heaven and earth – the dark red color (burgundy) of the bunches represents the union between the earth (red is the color of blood and, indirectly, life) and the sky (purple or violet, the last color of the rainbow, the color closest to God) and a symbol of a nation's wealth – grapevine multiplies and bears fruit every year. At the same time, the grape must, which by fermentation turns into wine, is considered as living water that drives away the diseases of a person.

The cultural identity of each nation is based on symbols, customs, legends, religious beliefs etc., which leave their mark on toponymy. Thus, grapevine is one of the most commonly used symbols in toponyms. However, the use of this concept in the names of settlements is not always a proof that the main occupation of local residents has been the cultivation of grapevine.

Grape is probably the most common plant in Romanian as well as world mythology. The traditional Romanian costume is a manifestation of artisanship, a standard of beauty and an important part of the cultural heritage. Grapevine leaves and fruits, embroidered with green, purple or blue threads, are an evidence of the occupation of people in many regions (villages located near vineyards, where the main activities are grape growing and wine trade), but also of wealth and prosperity.

Since ancient times, artists have admired grapes, this gift from the gods. On the paintings of the great masters who lived in different epochs and countries – Francesco

del Cossa, Sandro Botticelli, Peter Paul Rubens, Francisco José de Goya, Karl Pavlovich Bryullov, Sylvester Shchedrin, Vincent van Gogh, Pablo Picasso, Aurel David, Mihai Petric etc. – we see compositions associated with the cultivation of grapes, as well as with the production of wine.

Movies are a way of presenting and promoting traditions and methods of grape growing and wine production. Documentary and feature films provide information in an accessible and synthetic form. The heraldry of a country tends towards the creation of a unitary territorial armorial, based on tradition and simplicity. Territorial coats of arms, after the state coat of arms, are the most common coats of arms in the world and represent the image of a country. In the course of development of civilization, people tried in various ways to promote the values and the cultural heritage of a region, country, city etc. Given that the distribution of coins is not limited, they are a very effective means of promoting the cultural values of a nation. Very often, coins served as a way of expressing and demonstrating the values associated with the cultivation of grapes. Various coins depict techniques of growing grapes and winemaking. A metal coin is a valuable document that contains concise information about the socio-political, economic, religious, cultural and artistic realities of the period in which they were issued. In addition, a coin manages to collect a short message written through legend, as well as iconographic (using figurative engravings) and metrological (using size and weight) information. Even if the coins are not dated, the information obtained allows an accurate classification over time, especially when compared with historical information from other sources (chronicles, written evidence, epigraphic documents etc.).

During the development of agriculture, winemaking, as part of it, has influenced and determined the development of various specific additional crafts, such as *carpentry* - the manufacture of wooden vessels to process and store grapes, various equipment used in winemaking (for crushing, pressing, fermentation etc.), storage and transportation of wines (barrels);*pottery*–the production of clay vessels for the storage and transportation of wine, as well as for serving wine; *blacksmithing* – making metal tools necessary for the cultivation of grapevine and processing grapes: crushing-pressing, fermentation and storage of wines etc.

Since ancient times, people have grown grapevine near the house, and then in plantations. Grapevine around the house is pleasing to the eye and can be used as an ornamental plant, at the same time, its fruits can satisfy the most refined tastes due to their sweetness and aroma, and, finally yet importantly, it can bring relief to the soul through the soothing and healing effect of the wine consumed in moderation.

Winemaking countries with long traditions promote the idea that wine is not just a drink in a bottle, wine is a fairy tale, it provides an insight into the history and culture of several nations, and it is part of rural traditions and urban charm. Wine lovers should not only enjoy selected wines in restaurants or at home, but also visit vineyards and wineries, to see where grapevine grows, where the bunches of grapes ripen and then turn into wine. Wine tourism is more than just a visit to a winery, it is also the journey of grapes from the vineyard to the bottle, it is a particular state of mind, it is happiness.

Grapevine is widely used both in folk medicine and in modern medicine, it is successfully used in the food industry, cosmetics etc. Jams, juices, various sweets and other tasty drinks and foods are prepared from grapes. Raisins have special properties and are widely used in cooking. Leaves, young shoots are used in salads, for making stuffed rolls, teas etc. Ripe grapes are used to make various types of wine, wine vinegar, cognac and other beverages. Traditional dishes prepared according to authentic local recipes, associated with a delicious wine, are the main incentive that can put a viticultural region on the map of popular destinations for gastronomic and wine tourism around the world.

Moldova State University

SUNFLOWER CROP IN THE CONTEXT OF CLIMATE CHANGES

ISBN of the book: 978-9975-3430-8-4

Authors: **DUCA Maria, CLAPCO Steliana, PORT Angela, DOMENCO Rodion, MUTU Ana, BOIAN Ilie, BIVOL Ina, BURCOVSCHI Ion**

Institution: Moldova State University

Description: The book provides an overview of the status of the sunflower in the Republic of Moldova, in general, and in the context of current climate changes, in particular. In order to identify principal environmental factors that influence the crop development and production, several types of data (statistical, climatic, molecular, morpho-anatomical, physiological, sociological etc.) were combined and analyzed employing different statistical analysis models. Chapters include discussions of climate and sunflower production trends in the Republic of Moldova during the last 20 years, the impact of climate conditions on sunflower yield and traits associated with productivity, as well as the relationship between climate variables (temperature during the vegetation period, the amount of precipitation during the cold period and the vegetation period) and crop yield at the level of country, administrative-territorial units and experimental fields of the State Commission for Testing Plant Varieties (with homogeneous cultivation practices); peculiarities of interaction of genotype with environment (GxE), pathogens (GxExP), and potential effects in the modification of some traits of interest.

The information included in the book is useful for: sunflower breeding programs; understanding of the relationship between climate and agricultural production and guiding future research efforts in critical regions; the development of management practices and technologies for climate change adaptation and mitigation; zoning hybrids and achieving high production yields. Finally, the accumulated data can contribute to diminishing the negative impact of unfavorable environmental conditions, reducing the risks determined by climate change and, respectively, the associated economic losses. Based on the obtained data recommendations for producers and breeders have been elaborated.

PROBLEMS OF PRESENTING INFORMATION ON THE RESULTS OF ESG – BEHAVIOR IN THE REPORTING OF COMPANIES FOR THE IMPLEMENTATION OF SDGs

ISBN: 978-9975-165-97-6

Authors: **GOLOCHALOVA Irina, COJOCARU Maria, MASKO Ludmila, GAVRILOV Ruslan**

Institution: Moldova State University

Description: The modern Concept of Financial Reporting provides for the use of a combination of economic and legal approaches, which contributes to the formation of useful information, primarily focused on the interests of owners as the main group of users. At the same time, the phenomena caused by the interaction of business with society and the environment often have no legal justification and, at first view - the economic sense, which excludes the presentation of the result of these phenomena in the financial statements. The absence of these data indicates a contradiction in accounting methodology, the key element of which is the concept of financial capital, while the modern technological mode requires a transition to its expanded interpretation - associated capital, as the source of all business resources. At the same time, a special concept - social responsibility - orientates business towards the fulfillment of a duty towards other non-financial contributors of associated capital - society and the environment.

In this context, according to the developed research model, the monograph "Problems of presenting information on the results of ESG - behavior in company reporting for the implementation of sustainable development goals" reveals theoretical and practical aspects of the transition to a socio-economic model of accounting and financial reporting. The purpose of the said reporting model is to provide business stakeholders with useful information about the contribution to sustainable development of its business-model. The research has scientific significance for improving the methodology of accounting and practical importance for determining the prospects for the development of the accounting system in the Republic of Moldova in the context of the transition to the socioeconomic reporting paradigm.

POLYMERS, METAL COMPOUNDS AND NEW MATERIALS

ISBN of the book: 1-5275-4308-0; (13): 978-1-5275-4308-9.

Author: **GUTSANU Vasile**

Institution: Moldova State University

Description: The monograph is a summary of personal work that discusses the results of obtaining and researching composites based on metal compounds in the phase of commercial cross-linked ionic polymers. The research was carried out using physical methods such as Mossbauer Spectroscopy, FT-IR, SEM, XRD analysis, Thermogravimetry and the mathematical process optimization method. For the first time it is demonstrated that, contrary to theory, Fe^{3+}, Cr^{3+}, Al^{3+}, In^{3+}, Ga^{3+} and Lanthanides(III) ions form nanometric particles of JAROSITE mineral type compounds in the polymer phase. The Bi^{3+} ions form compounds of another type. A

series of adsorbent-catalysts were obtained and patented. Water purification processes from NO_2^-, NO_3^-, HS^-, S^{2-} ions and H_2S using composites have also been patented. Composites have also been used to remove H_2S and I_2 from air, processes also patented. Some of the materials in the monograph were used in the didactic process.

THE TREASURE OF BESSARABIA. COIN DISCOVERIES BETWEEN 1812-1944

ISBN of the book: 978-9975-163-72-9

Authors: **MATVEEV Sergiu, ARCUŞ-JANTOVAN Elena**
Institution: Moldova State University

Description: During the century XIX and the first half of the century. XX in the space between the Prut and the Dniester dozens of monetary treasures were discovered that form a veritable Treasury of Bessarabia, and a part of the population was caught by the fever of treasure hunting. Some of the treasures were taken over by the official bodies and, according to the laws of the time, they were sent for evaluation to Saint Petersburg, in that procedure being involved the most famous numismatists from the Imperial Archaeological Commission, such as academicians A. Bobrinski, V. Latâšev, etc. By the decision of the experts, the most beautiful pieces were redeemed, others of precious metals melted down, and those considered worthless – returned to the discoverers. The authors of the volume, as a result of research in archives and libraries in Chisinau, Odesa, Moscow and Frankfurt/Main, managed to recover information about the discovery and fate of more than 17,000 identified gold and silver coins and several hoards of other coins about which we know very little. The volume aims to: identify the legal framework regarding cultural heritage on the territory of Bessarabia; the repertory of Bessarabian treasures known in archival materials, their analysis and mapping, etc. That theme remains unstudied in historiography; thus, through the respective contribution, research that includes coins from antiquity to the modern era, important pages from the history of the Pruto-Dnistrian space will be rehabilitated. The Treasure of Bessarabia represents exceptional pages, but which remained lost for several decades both to the specialized scientific environment and to all those interested in the heritage of the Republic of Moldova. The complex analysis of the archival materials materialized in the monographic work *Treasury of Bessarabia. Coin discoveries between 1812-1944*. Through the accompanying text and illustration, the work comes to fill a gap in the history of the space between the Prut and Dniester, representing the results of interdisciplinary research: archaeology, history, numismatics, archival, etc., which respond to the cultural requests of specialists and the general public.

MEANDERS OF HISTORY: THE ARCHAEOLOGICAL HERITAGE FROM THE IRON AGE AND THE ROMAN PERIOD IN THE COGÂLNIC RIVER BASIN (REPUBLIC OF MOLDOVA)

ISBN of the book: 978-5-36241-132-9
Authors: **MATVEEV Sergiu, VORNIC Vlad, COROBCEAN Andrei**
Institution: Moldova State University
Description: The volume "Meanders of history. The archaeological heritage from the Iron Age and the Roman period in the Cogâlnic river basin" falls into a genre that has become a standard in modern archeology in the Republic of Moldova. The widespread use of the diachronic approach, representing a certain zone in the form of an event unfolding in time and space, prompts several thoughts. First, despite the extreme popularity of zonal studies, the archaeological map still contains many blank spots. Second, this level of detail does not always make it possible to connect specific parts of the region into a single coherent picture, and this is not facilitated by the conscious choice of restrictions - be it administrative divisions or natural boundaries. The authors of the present paper preferred the latter criterion as a research sample, and this decision seems to be a correct one, since watersheds, especially small ones, fit perfectly into current ideas about the space of prehistoric and ancient communities. After all, rivers are not only a source of water and food, but also often transport arteries or communication routes along which ancient routes were oriented. It should be noted that the selected zone is one of the relatively well-studied ones between the Dniester and the Prut for certain historical periods. The need for such a fundamental work was dictated, to a great extent, by the systematic or rescue researches on the key archaeological sites of the region, such as those at Stolniceni and Lipoveni. In addition to these, the area of responsibility of the authors also included one of the grandest monuments of antiquity – Upper Traian's Wall, which far exceeds the territory chosen for the study. The respective volume brings some issues back into discussion, without however insisting on premeditated solutions to the fundamental and, to some extent, "cursed" questions of archaeology. The work itself is an important invitation to discussions about the interpretation of Iron Age and Late Antiquity monuments.

RESEARCH OF THE POTÂRCA ARCHAEOLOGICAL SITE IN THE CULTURAL-NATURAL RESERVE „ORHEIUL VECHI”

ISBN of the book: 978-9975-3354-6-1
Authors: **NICULIȚA Ion, MATVEEV Sergiu, NICIC Andrei**
Institution: Moldova State University

Description: Through this volume, the team of researchers from the State University of Moldova manage to highlight information regarding one of the best-preserved Getic fortified settlements located within the cultural-natural reserve "Orheiul Vechi", the cultural layers of which include artifacts from different periods of the Iron Age and the Middle Ages. The respective pieces offer researchers, but also the general public, the opportunity to familiarize themselves with and understand the evolution of the historical landscape specific to the analyzed area, being a true information guide regarding the Tracho-Getic world in the area between the Prut and Dniester and the nearby regions. The authors draw up a systematic report of the excavations carried out 20 years ago, under particularly difficult logistical and environmental conditions, in a fortified site located in a dominant point on the lower Răut valley, in which vestiges of different stages of the first millennium BC; the overall picture of the archaeological site and microzone is supplemented with more recent results of interdisciplinary investigations, such as those based on LiDAR data and analyzes in the field of landscape archaeology. The presented documentation contributes to the study of the construction techniques used in the construction of the enclosures in the second Iron Age, their chronological evolution and the problem of waves with arson elements. Particularly valuable is the comprehensive illustration of the various lots of material discovered here, including amphoric imports.

CREAREA ŞI CONSOLIDAREA SISTEMULUI DE ÎNVĂŢĂMÂNT SUPERIOR ÎN RSSM: STUDIU, DOCUMENTE ŞI MATERIALE

ISBN of the book: 978-9975-3502-6-6.

Author: **ROTARU Liliana**
Institution: Moldova State University

Description: The volume represents a critical edition of about 350 unpublished documents identified in the national and institutional archives of the Republic of Moldova, which reflect the history of higher education in the Moldavian SSR from the creation of the higher education system after the annexation of Bessarabia in 1940 and until the second half of the 1940s , when the system was affected by the organized famine of 1946-1947. The documents are accompanied by footnotes with explanations of Sovietisms, acronyms, specific Soviet terms and biographies of the people mentioned in the documents. The collection of documents is preceded by a serious analytical study, in which various aspects of the process of establishing and consolidating higher education in the Moldavian SSR are addressed. The volume is addressed to researchers from various fields of socio-human knowledge, students and other categories interested in the history of totalitarian regimes, communist states, the

process of formation and modification of mentalities, language policies, political and social history, etc.

POLITICA LINGVISTICĂ ÎN ÎNVĂȚĂMÂNTUL SUPERIOR DIN RSSM – ELEMENT AL IDEOLOGIEI IMPERIALE ȘI INSTRUMENT DE INGINERIE NAȚIONALĂ

ISBN of the book: 978-9975-172-39-4 (Lexon-Prim). – **ISBN**: 978-606-9659-95-3 (Ratio et Revelatio).

Author: **ROTARU Liliana**
Institution: Moldova State University

Description: The monograph addresses the issue of the Soviet language policy in the higher school of the Moldavian SSR, a problem that has not been studied in historiography, although the Soviet national policy was an important object of interest for researchers. The research is developed on the basis of an impressive number of new sources from the national archives of the Republic of Moldova, the archives of higher education institutions, which operated in the Moldavian SSR, and the state archives of Ukraine, and other published sources. The author established that the Soviet communist regime promoted a conscious and consistent linguistic policy of Russification of higher education in the Moldavian SSR, whose instruments were implemented by pressure, disguised by propaganda, from the creation of the higher education system in the SSR and were finalized in the mid-1960s by official policy of the transformation of the Russian language into a "second mother tongue" and its spread bilingualism. To a certain extent, Soviet language policy achieved its goal, producing a largely Russified Moldovan intelligentsia, but the contradictions of the Soviet language policy, which, on the one hand, declared the right of peoples to an education in their mother tongue, respect for "national differences and peculiarities", and, on the other hand, consistently and aggressively promoted the Russian language in Moldovan higher education, transforming l in "national" by form and Russian by substance, the provocative Russification of the didactic-scientific bodies and the student contingents, the manifestations of velicorous chauvinism in relation to the "representatives of the autochthonous nationality - of the Moldavians" caused a resistance of the latter, this being manifested in different forms and with different intensity in the first two decades of the post-war period and fueled and amplified states of conflict in the "multinational" university environments of the SSR.

SINUOZITĂȚILE ÎNVĂȚĂMÂNTULUI SUPERIOR DIN RSSM ÎN PERIOADA STALINISMULUI TÂRZIU (1947-1953): STUDIU ŞI DOCUMENTE

ISBN of the book: 978-9975-172-04-2.
Author: **ROTARU Liliana**
Institution: Moldova State University
Description: The volume represents a critical edition of over 300 unpublished documents identified in the national and institutional archives of the Republic of Moldova, which reflect the history of higher education in the SSR in the period 1947-1953: from the end of 1947, which ended the process of creating the education system superior and until the physical disappearance of Stalin, but also the structural transformations of the system in 1953. The documents are published in the original language and included in the collection in accordance with the chronological principle, taking into account the fact that the academic year does not coincide with the calendar year. The documents are accompanied by a list of abbreviations, footnotes with explanations of Sovietisms, acronyms, specific Soviet terms and biographies of the people mentioned in the documents. The collection of documents is preceded by a serious analytical study, in which various aspects of the process of establishing and consolidating higher education in the Moldavian SSR are addressed. The volume is preceded by an introductory study and is followed by an index of names and a list of abbreviations in Romanian and Russian. It is addressed to researchers from various fields of socio-human knowledge, students and other categories interested in the history of totalitarian regimes, communist states, the process of formation and modification of mentalities, language policies, political and social history, etc.

RECURS LA MEMORIE: ÎNVĂȚĂMÂNTUL SUPERIOR DIN RSS MOLDOVENEASCĂ. Vol. 1

ISBN of the book: 978-9975-163-37-8.
Authors: **ROTARU Liliana, STEPANOV Georgeta, XENOFONTOV Ion Valer**
Institution: Moldova State University
Description: The book includes 29 semi-structured interviews with former students of the Moldavian SSR. Profiles of personalities, the student universe (from session to session, life in the dormitory, work in the collective farm, free time, etc.), aspects of the history of the cities of Chisinau, Tiraspol, Balti, the interference of the political and ideological factor in the higher education system are presented. Edited memoirs covering student life in the Soviet Union are also on display. The volume is the result of over two years of effort by a group of researchers engaged in the project *Academic*

university heritage from the Moldavian SSR: investigating and capitalizing on good practices (State Project 2020–2023) and is the first work that aims to challenge the memory of former Soviet students , to recover some silent or hidden aspects of the history of higher education in the Moldavian SSR and of our stolen history, in general. The volume is addressed to historians, anthropologists, journalists, all readers interested in the inner life of the higher education system of Soviet origin.

RECURS LA MEMORIE: ÎNVĂȚĂMÂNTUL SUPERIOR DIN RSS MOLDOVENEASCĂ Vol. 2.

ISBN of the book: (Historia Universitaria, ISBN **978-9975-3454-5-3**). – ISBN **978-9975-163-37-8.**

Authors: **ROTARU Liliana, STEPANOV Georgeta**

Institution: Moldova State University

Description: The second volume of the collection of interviews *Recourse to memory: higher education in the Moldavian SSR,* is a result of the activity of researchers within the project Academic university heritage in the Moldavian SSR: investigation and capitalization of good practices. It includes interviews, conducted with students and teaching staff, enrolled in the higher school of the Moldavian SSR in the late 1980s and early 1990s, the authors of the volume intending to highlight the role and contribution of the main actors of higher education in the National Emancipation Movement of Romanians from the former USSR. The volume is addressed to historians, anthropologists, journalists, all readers interested in the inner life of the higher education system of Soviet origin.

ARTIFACTS, TECHNOLOGY AND RAW MATERIAL IN THE TISZA-DNIESTER REGION IN THE IRON AGE. PROCEEDINGS OF THE SAHARNA SUMMER COLLOQUIUM (July 27th - July 30th 2023)

ISBN of the book: 978-5-36241-129-9

Authors: **ZANOCI Aurel, BĂȚ Mihail**

Institution: Moldova State University

Description: The volume “Artifacts, Technology and Raw Material in the Tisza-Dniester area in the Iron Age” is a collection of articles resulting from communications presented at the traditional Saharna Summer Colloquia, which took place from 27 to 30 July 2023. The volume was prepared under the editorship of Dr. Aurel Zanoci and Dr. Mihail Băț and published under the auspices of the Ion Niculiță Archaeology Center of the Moldova State University.

It includes nine articles written by specialists in archeology from Romania, Germany and the Republic of Moldova, which are focused on such topics as Iron Age fortifications in the Prut-Dniester Region, the relationship between the Getae communities and the Hellenistic world, wine production in barbarian communities, archaeometric studies in the research of Iron Age artifacts, construction technologies used for various structures, procedure of cranial trepanation practiced by Iron Age communities, and so on.

The works are published in two languages (Romanian, English) and are accompanied by high-quality illustrations that contribute to a better understanding of the content of these studies.

OLD DISCOVERIES AND NEW APPROACHES TO THE ARCHAEOLOGY OF THE IRON AGE IN THE TISA-DNIESTER AREA. PROCEEDINGS OF THE SAHARNA SUMMER COLLOQUIUM (Juli 28th - 31th 2022)

ISBN of the book: 978-9975-166-59-1

Authors: **ZANOCI Aurel, BĂȚ Mihail**

Institution: Moldova State University

Description: The volume "Old discoveries and new approaches to the Archaeology of the Iron Age in the Tisa-Dniester area" is a collection of articles resulting from communications presented at the Saharna Summer Colloquia, which took place from 28 to 31 July 2022. The volume was prepared under the editorship of Dr. Aurel Zanoci and Dr. Mihail Băț and published under the auspices of the Ion Niculiță Archaeology Center of the Moldova State University.

The collection includes 12 articles written by specialists in archeology from Romania, Germany and the Republic of Moldova, which addresses topics of real interest to researchers of the archeology of the Romanian space, as well as South-Eastern and Central Europe. It is worth noting a number of studies in which new archaeological materials were used, both from the territory of the Republic of Moldova and from Romania. Also, here we find new approaches and interpretations of archaeological remains already known to the scientific world.

The works are published in two languages (Romanian, English) and are accompanied by high-quality illustrations that contribute to a better understanding of the content of these studies.

„Alexandru Ciubotaru" National Botanical Garden (Institute)

IMPROVEMENT OF ORNAMENTAL PLANTS (*IRIS* L.)

ISBN of the book: 978-9975-180-13-9
Authors: **CERNEI Eugenia, SÎRBU Tatiana**
Institution: "Al. Ciubotaru" National Botanical Garden (Institute), SUM
Description: The work constitutes a succinct synthesis of the improvement of flowering plants, as a result of the adaptation in ex-situ conditions of a series of non-native species and varieties. The included data reflect part of the vast and complex improvement process (on the example of the Iris collection), carried out by scientific researchers from the Ornamental Plants Laboratory of the National Botanical Garden (Institute) "Al. Ciubotaru" (NBGI). After evaluating the genetic potential of the collections for more than four decades, more than 100 certified and patented varieties have been created.

The work also includes: the history of cultivation and breeding, botanical description, taxonomic analysis, biomorphological peculiarities and horticultural classification of the genus Iris L. At the same time, the collection of the genus Iris of NBGI is analyzed, the parents used in the breeding process and the cultivars obtained are described; presented the methods, techniques and results of the improvement of this culture. The experimental data obtained and the practices accumulated, displayed in this work, are offered both to specialists in the field, as well as to students, teachers, but also to all those who are passionate about the fascinating world of plants.

Responsible for the edition: Dr. Sîrbu Tatiana, associate researcher, NBGI.
Reviewers: Țimbală Valentina, doctor in biological sciences, research associate, NBGI; Roșca Ion, doctor in biological sciences, research associate, NBGI; Cantemir Valentina, doctor in biological sciences, research associate, NBGI.

KNIPHOFIA IN REPUBLIC OF MOLDOVA

ISBN of the book: 978-9975-64-339-9
Author: **SFECLĂ Irina**
Institution: "Al. Ciubotaru" National Botanical Garden (Institute), MSU
Description: The accumulated and recorded knowledge in the work „*Kniphofia* în Republica Modova" (En: Kniphofia in Republic of Moldova) represents a significant contribution for the vast process of introducing and ameliorating flowering plants. The results of studying the ontogenetic cycle facilitate the accurate cultivation, the favorable development of the plant, and the efficient fructification with obtainment of a qualitative seed material consequently. The studies of the flowering's particularities

enable the sustainable use of the studied species in landscaping green spaces and flower production.

The work was approved and recommended for publication by the Scientific Council of the „Alexandru Ciubotaru" National Botanical Garden (Institute). Published with the financial support of the project „Research on mobilizing plant diversity with ornamental potential for ex situ conservation"- 20.80009.7007.14.

The book appeals to specialists in biological sciences, teachers, students and plant lovers.

SERIES OF BOOKS (INFORMATIVE GUIDE): SEMPERVIVUM; HOSTA; CHRYCANTHEMUM; HEMEROCALLIS

ISBN of the book: 978-9975-3587-4-3; 978-9975-5-3587-3-6; 978-9975-4424-9-7; 978-9975-62-458-9.

Authors: **SFECLĂ Irina; VOINEAC Ina; MANOLE Svetlana**

Institution: "Al. Ciubotaru" National Botanical Garden (Institute), SUM

Description: The data accumulated in the scientific-methodical guide "*Sempervivum*" reflect the results of the research regarding the introduction of representatives of the genus *Sempervivum* L. in the conditions of the Republic of Moldova and present the existing collection in the NBGI. The content shows the botanical and horticultural classification of the *Sempervivum* L. genus, the ontogenetic study, the cultivation technology, as well as their use in the arrangement of green spaces.

The data accumulated in the scientific-methodical guide "*Hosta*" reflect the results of the research regarding the introduction of representatives of the genus *Hosta* Trattinnick in the conditions of the Republic of Moldova and present the collection created in the "Al. Ciubotaru" National Botanical Garden (Institute) (NBGI). The content shows the botanical and horticultural classification of hostas, the phenological study, the cultivation technology, as well as their use in the arrangement of green spaces.

In the work "*Chrysanthemum*" the botanical description, horticultural classification of the *Chrysanthemum* genus is elucidated. Described 22 chrysanthemum varieties from the NBGI collection. Cultivation procedures and methods, ecological requirements, use and phytosanitary protection are presented.

The work "*Hemerocallis*" presents the botanical description and horticultural classification of the genus *Hemerocallis* L. The varieties of *Hemerocallis* from the collection of the NBGI are described. Presented data relating to the origin, ornamental qualities, growth and care of this type of decorative plants.

The guides are recommended to students and teaching staff from higher education institutions, colleges and professional schools, as teaching support for carrying out practical work in the disciplines of Floriculture, Design of green spaces, Landscape Architecture, Arrangement and maintenance of green spaces, as well as amateurs and producers of ornamental plants.
The works were approved and recommended for publication by the Scientific Council of the "Al. Ciubotaru" National Botanical Garden (Institute).

GOOD LAND USE PRACTICES IN CULTIVATING HIGH POTENTIAL ENERGY CROPS: A PRACTICAL GUIDE FOR AGRICULTURAL PRODUCERS

ISBN of the book: ISBN 978-9975-87-778-7
Authors: **ŢÎŢEI Victor, ROŞCA Ion**
Institutions: "Alexandru Ciubotaru" National Botanical Garden (Institute) of Moldova State University; CPIU IFAD of the Republic of Moldova; National Agency for Rural Development (ACSA) of the Republic of Moldova.
Description: This guide describes the soil degradation processes, the types and categories of degraded lands for rehabilitation and creation of plantations of energy crops, the results of the research on agrobiological features, technological elements of the cultivation of 45 species of annual, biennial and perennial plants from the botanical families *Asteraceae, Brassicaceae, Fabaceae, Hydrophylaceae, Malvaceae, Papaveraceae, Poaceae, Polygonaceae, Rosaceae* and *Salicaceae*, which possess high potential of energy biomass production, as well as the location of energy crops depending on the type and category of degraded land, the assortment of species and various sowing or planting schemes, land preparation and specific agricultural equipment needed for it, plant care techniques, technologies for harvesting herbaceous and woody crops for energy biomass, methods of processing the biomass into solid biofuels (bales, biomass chips, pellets and briquettes), liquid biofuels (bioethanol and biodiesel) and gaseous biofuel (biomethane). The creation of industrial plantations with the suggested crops can contribute to diminishing the intensity of land degradation processes and its progressive recovery, will produce energy biomass in an area deficient in firewood sources, offering the possibility of using these crops as honey plants, improving the landscape, creating new jobs and improving the living conditions of rural residents. The publication is recommended to farmers, biofuel producers, scientific and teaching staff, students and master's degree students. This guide has been elaborated with the financial support of International Fund for Agricultural Development (IFAD), according to the contract „*Elaboration and printing of*

publications to promote the resilience of the agricultural sector to climate change and the organization of trainings in the field of ecological rehabilitation of agricultural lands and in the zootechnical field" implemented by the National Agency for Rural Development (ACSA), within the programme Inclusive Rural Economic and Climate Resilience Programme (IFAD VI), implemented by the Consolidated IFAD Programme Implementation Unit (CPIU IFAD).

Financially supported subprogram no. 01.01.02 ***"Identification of valuable forms of plant resources with multiple uses for the circular economy".***

Faculty of Physics and Engineering, Scientific Research Laboratory Environmental Physics and Modeling Complex Systems (ePhysMCS Lab)

EDUCATION FOR DRONE: COURSE SUPPORT

ISBN of the book: 978-9975-142-85-4.

Editors: **DAPONTE Pasquale, PALADI Florentin, BULIMAGA Tatiana**

Authors: **NEDEOGLO Natalia, ROTARU Corneliu, DANICI Anton, SEINIC Valeriu, SPRINCEAN Veaceslav, VOZIAN Constantin, CAZAN Valeriu, CORCIMARI Ion, CEBOTARI Eugenia**

Institution: Moldova State University, Faculty of Physics and Engineering, Scientific Research Laboratory Environmental Physics and Modeling Complex Systems (ePhysMCS Lab)

Description: The book was edited within the European Union (EU) Erasmus+ Capacity Building in Higher Education (CBHE) project entitled "Educational for Drone" (eDrone, 574090-EPP-1-2016-1-IT-EPPKA2-CBHE-JP, http://www.edroneproject.org), a consortium formed by 17 institutions from 8 EU states and partner countries, including 5 institutions from the Republic of Moldova. Moldova State University was the national coordinator of the eDrone project. The main objective of the eDrone project was to provide higher education institutions in the partner countries, Moldova, Armenia, Georgia and Belarus, with effective and efficient instruments to setup Offices for Education for Drones (OED), for the transferring of state-of-the-art knowledges to professionals of each Partner Country. Content of the course support is divided into three parts: Drone technology, Law and regulatory elements of drones, and Civil applications. The course support is being used in the continuing professional training courses “Education for Drones” (Robotics and Mechatronics), approved by the MSU Senate and coordinated with the Ministry of Education and Research of the Republic of Moldova, and carried out since 2018 within the Office for Education for Drones at the Faculty of Physics and Engineering of the MSU.

Course support is freely available online at https://moodle.usm.md/pluginfile.php/137023/coursecat/description/Handbook_eDrone.pdf, and represents also a theoretical support within the research subprogram “Advanced physical methods and UAV-based technologies for complex monitoring, evaluation and modeling”, PHYSTECH, Subprogram Code 011210.

THE *eALERT* PLATFORM USER GUIDE

ISBN of the book: 978-9975-62-662-0.

Editors: **SPRINCEAN Veaceslav**

Authors: **SPRINCEAN Veaceslav, PALADI Florentin, LEU Alexei, JALENCU Marian, SAVVA Marianna, CIOBU Victor**

Institution: Moldova State University, Faculty of Physics and Engineering, Scientific Research Laboratory Environmental Physics and Modeling Complex Systems (ePhysMCS Lab)

Description: *eALERT* represents the first platform in the municipality of Chisinau for monitoring in real time and instant warning of the population in case of natural and man-made hazards dangerous. This information system and network of monitoring sensors derived from the innovation and technology transfer and research projects carried out at the Faculty of Physics and Engineering of the MSU, which studied atmospheric pollutant emissions from various sources in the Republic of Moldova, their dynamics and impact. The Guide is intended for the staff of the General Inspectorate for Emergency Situations of Ministry of Internal Affairs, General Directorate of Social Assistance and Health of the City Hall Chisinau, the Environmental Protection Inspectorate, the State Hydrometeorological Service from Republic of Moldova, but also to other beneficiaries interested in the successful use of the platform *eALERT*, for which training courses are organized according to this Guide. The publication is also intended for students from the continuous professional training courses "Robotics and mechatronics (Education for Drones (eDrone))" and students of the Faculty of Physics and Engineering, specialty 0710.2 - Engineering and Quality Management, in study disciplines Environmental Metrology Environment and Measurement Information Systems. The book was published in framework of the innovation and technology transfer project “Creation of the *eALERT* platform for monitoring the environment in real time and instantly warning the population of Chisinau in the event dangerous natural and anthropogenic hazards”, no. 22.80015.7007.262T (03.01.2022-31.01.2023), and it is freely available online at https://ephysimlab.usm.md/wp-content/uploads/Ghid_eALERT_versiunea_21_12_2023.pdf, and represents a theoretical support within the research subprogram “Advanced physical methods and UAV-based technologies for complex monitoring, evaluation and modeling”, PHYSTECH, Subprogram Code 011210.

Institute of Applied Physics

FUNDAMENTALS OF FLUID MECHANICS

ISBN of the book: 978-9975-87-886-9
Author: **CERNICA Ion M.**
Institution: Moldova State University / Institute of Applied Physics
Description: The equations, theorems and fundamental methods of fluid mechanics are presented in a rigorous form. Particular attention is drawn to the theory of incompressible fluids, although the general equations of dynamics are given for compressible media. The physical meaning of different terms which appear in the equations of motion, energy, kinetic energy of turbulent fluctuations, etc., as well as their relationship to the physical phenomena is shown. The boundary layer theory, the unidirectional flow of perfect gasses and the movement of viscous fluids in pressurized pipes are treated in the conventional way.

The textbook comprises 15 chapters, a bibliographic list with over 350 titles and an appendix with elements of differential, vector and tensor calculations necessary for the exposure of fluid mechanics in accordance with the current requirements of science and education. Most of the chapters have a pronounced theoretical content and are accompanied by numerous solved technical and numerical examples.

The textbook is addressed to under- and postgraduate students of energy, mechanical, technological, hydrotechnical, civil, aerospace, and maritime faculties and aims to deepen and consolidate theoretical and applied knowledge of statics, kinematics and fluid dynamics. It will be useful for industry engineers and researchers concerned with the study of advanced hydro- and aerodynamic problems in the science and practice.

THERMAL AND HYDRAULIC MEASUREMENTS TREATISE

ISBN of the book: 978-973-720-619-0
Author: **CERNICA Ion M.**
Institution: Moldova State University / Institute of Applied Physics
Description: The book presents in a unitary way the most important principles, methods and technical means that are used at present for measuring thermal and hydropower. The book tackles the technique utilized for the measurement of temperature, pressure, flow rate and of other physical quantities. Special attention is paid to the theory of measurements and errors and to the methods for eliminating the errors. At the same time, the advantages and disadvantages of the measurement methods and means are also approached. The topic covered by the book is accompanied

by numerous numerical applications designed to enable a better and thorough understanding of the basic text.

The book is intended for the thermal and hydropower specialists, for those whose research, design, operation and maintenance activity includes preoccupations in the field of experimental physics and for the students and Master's students whose curriculum covers subjects specific to the measurement techniques.

Institute of Chemistry

APLICAȚII PRACTICE LA REACȚIILE ÎN SISTEME OMOGENE ȘI ETEROGENE APOASE (ECHILIBRE CHIMICE COMPLEXE)

ISBN of the book: 978-9975-158-99-2

Authors: **POVAR Igor, PINTILIE Boris, SPÎNU Oxana**
Institution: Institute of Chemistry of the Moldova State University

Description: The monograph "*Practical applications to reactions in homogeneous and heterogeneous aqueous systems (complex chemical equilibria)*", prepared by Igor Povar, Oxana Spinu and Boris Pintilie, presents a model for disseminating the results obtained under the State Program 2020-2023, addressing a wide circle of specialists in different fields. The monograph is dedicated to the development and use of a new thermodynamic approach to research chemical equilibria in heterogeneous systems "solid phase - saturated solution" of any degree of complexity, under the conditions of secondary reactions of hydrolysis, protonation, complexation, etc., to identify processes modern technology and optimization of existing ones. The authors offer original solutions to the two important problems of the thermodynamics of chemical equilibrium: the direct problem and the indirect one. In this context, the *direct problem* is the calculation of the thermodynamic functions of the global process based on the thermodynamic characteristics of the particular reactions. The calculation of the total variation of the Gibbs energy of complex chemical processes allows the determination of the areas of thermodynamic stability of solid phases, the direction and optimal conditions of chemical processes, in real conditions, different from standard ones, for a certain chemical composition of the analyzed system. of pH and ambient temperature. The *indirect problem* aims to calculate the thermodynamic characteristics of separate reactions based on total data. Satisfactory correlation between the results of the calculations and the experimental data from the literature demonstrates the viability of the developed theoretical procedures. Understanding the content of the monograph requires deep knowledge in the field of complex chemical equilibria in both homogeneous, single-phase systems and heterogeneous, biphasic systems. Therefore, chapters three and four contain theoretical applications aimed at a wide range of various chemical equilibria, exercises and problems of calculating complex equilibria. Both through its rigorous theoretical foundation and the large number of applications and examples, the monograph addresses a wide range of readers, specialists in various adjacent fields: physical chemistry, analytical chemistry, chemical technology, wastewater treatment technology, agrochemistry and others.

Institute of Genetics, Physiology and Plant Protection

ECOLOGICAL AGRICULTURE: THEORETICAL ASPECTS AND PRACTICAL VALUES: MONOGRAPH

ISBN of the book: ISBN 978-9975-62-451-0.

Author: **VOLOSCIUC Leonid**

Institution: Institute of Genetics, Physiology and Plant Protection, MSU

Description: The monograph represents the generalization of the results recorded over several years aimed at solving ecological problems in agriculture. The author substantiated and promoted the concept of ecological agriculture, changing the paradigm of plant protection to that of "Plant Health", presenting a significant informational mass and gratifying results of the implementation of ecological means of plant protection, which are highly requested by agricultural producers in the field of plant engineering in conventional and organic agriculture.

Institute of Zoology

FAUNA OF COLLEMBOLA FROM THE REPUBLIC OF MOLDOVA

ISBN of the books: ISSN: 978-9975-3477-1-6;
Author: **BUȘMACHIU Galina**
Institution: Moldova State University, Institute of Zoology
Description: The work includes the first inventory of species, faunal and ecological research of species diversity of Collembola, carried out throughout the territory of the Republic of Moldova, in the most diverse habitats, both natural and agricultural, during the thirty years of activity. As a result of the investigations on the territory of the Republic of Moldova, 270 species of collembola were identified, 250 of which were cited for the first time by the author, and 13 species were described as new to science. The paper includes zoogeographical and vertical distribution, trophic relationships, species ecology and key for identification.

FAUNA OF THE „PRUTUL DE JOS" BIOSPHERE RESERVE. INVERTEBRATES

ISBN of the books:ISSN: 978-9975-3605-2-4.
Authors: **BUȘMACHIU Galina, BACAL Svetlana, ENCIU Elena, ȚUGULEA Cristina, DERJANSCHI Valeriu, GROZDEVA Svetlana, BURDUJA Daniela, PALADI Viorica**
Institution: Moldova State University, Institute of Zoology
Description: The work includes the results of faunal and ecological research carried out in the „Prutul de Jos" Biosphere Reserve. The volume is an inventory of species from two classes Collembola and Insecta (Odonata, Hemiptera, Coleoptera and Lepidoptera), accumulated during the years 2002-2023. As a result of research 741 species, of which: Collembola (50) and Insecta (691), including Odonata (21), Hemiptera (145), Coleoptera (235) and Lepidoptera (281) were revealed. Additionally, references to Hymenoptera (8) and Ephemeroptera (1) species are included. The identified species are cited for the first time for the reserve, and 15 of them (1 moth, 5 beetles, 1 ant and 8 butterflies) are included in the ed. III of the Red Book of the Republic of Moldova (2015). The volume includes research history, description of habitats, list of species, their ecology and distribution, photos of habitats and some species.

FAUNA OF THE „PLAIUL FAGULUI" RESERVE. INVERTEBRATES

ISBN of the books: ISSN: 978-9975-3477-9-2;

Authors: BUȘMACHIU Galina, GROZDEVA Svetlana, DERJANSCHI Valeriu, BACAL Svetlana, CALESTRU Livia, BELOVA Victoria, ȚUGULEA Cristina, MÎNZAT Cristian, TĂUȘAN Ionuț, ȘULEȘCO Tatiana, CUZA Petru

Institution: Moldova State University, Institute of Zoology

Description: The results of inventory of the species diversity of two classes Collembola and Insecta (Odonata, Hemiptera, Coleoptera, Lepidoptera, Hymenoptera and Diptera) accumulated during 2000 – 2021 years in the "Plaiul Fagului" Reserve were included. As a result of research 1011 species, were revealed, of which 580 are new for the reserve, 7 new for of the Republic of Moldova. Among them, 39 species are included in the Red Book of the Republic of Moldova. The species of dragonflies, ants and mosquitoes are reported for the first time, and the number of identified species of springtails, cycads, bugs, beetles and butterflies has increased considerably. The volume includes the list of species, their ecology and distribution, photos of the habitats as well as of some species.

FAUNA OF THE „PRUTUL DE JOS" BIOSPHERE RESERVE. TERRESTRIAL VERTEBRATES

ISBN of the books: ISSN: 978-9975-3644-5-4

Authors: **NISTREANU Victoria, PALADI Viorica, ȚURCAN Vladimir, LARION Alina, OBADĂ Theodor, SAVIN Anatolie, CALDARI Vladislav**

Institution: Moldova State University, Institute of Zoology

Description: The book is a synthesis of the multiannual studies of the terrestrial vertebrate fauna in the "Prutul de Jos" Biosphere Reserve. The new species reported in the last 10 years were highlighted, the diversity of terrestrial vertebrate species was elucidated (10 species of amphibians, 12 species of reptiles, 246 species of birds and 53 species of mammals). The complex ecological analysis of the taxonomic groups is carried out, rare terrestrial vertebrate species and limiting factors were highlighted. The fossil sites on the territory of the reserve and their faunal composition are presented.

SPECIES OF HUNTING IMPORTANCE FROM THE FAUNA OF THE REPUBLIC OF MOLDOVA

ISBN of the books: ISSN: 978-9975-3660-7-6

Author: **SAVIN Anatolie**

Institution: Moldova State University, Institute of Zoology

Description: The book describes the game species (mammals and birds) from the fauna of the Republic of Moldova: exterior features, biology, ecological and ethological peculiarities, analysis of seasonal and multiannual dynamics of the number, population structure, limiting factors (predators, parasites, invasive species) and biotechnical measures for adequate hunting exploitation. The aspects of conservation and rational use of the game fauna are presented.

SNAKE FAUNA (REPTILIA: SERPENTES) FROM THE REPUBLIC OF MOLDOVA

ISBN of the books: ISSN: 978-9975-62-475-6
Author: **ȚURCAN Vladimir**
Institution: Moldova State University, Institute of Zoology
Description: The book describes in detail the snake fauna of the Republic of Moldova: evolution, morphological and eco-biological peculiarities, spread and character of the distribution of snake species in the ecosystem, trophic relationships and the role of snakes in maintaining ecosystem stability, as well as some behavioral aspects. The problem of conserving the diversity and protection of snakes in the conditions of the current environment is discussed.

FAUNA OF THE „PLAIUL FAGULUI" RESERVE. TERRESTRIAL VERTEBRATES

ISBN of the books: ISSN: 978-9975-62-475-6
Authors: **ȚURCAN Vladimir, MUNTEANU Andrei, ZUBCOV Nicolai, BOGDEA Larisa, BUCIUCEANU Ludmila, NISTREANU Victoria, SAVIN Anatolie, SÎTNIC Veaceslav, LARION Alina**
Institution: Moldova State University, Institute of Zoology
Description: The book presents a synthesis of the multi-year (15 years) research of the terrestrial vertebrate fauna from the "Plaiul Fagului" reserve. The ecological analysis of the main taxonomic groups, species of economic interest and rare ones is carried out. The new species, rare species of terrestrial vertebrates and the importance of the reserve in maintaining the diversity of the animal world were highlighted.

GHID METODOLOGIC PENTRU PISCICULTORI

ISBN of the book: 978-9975-157-05-6
Editors: **ZUBCOV Elena, MIRON Liviu-Dan**
Authors: **ZUBCOV E., MIRON L.-D., ANDREEV N., BULAT Dm., BULAT Dn., UNGUREANU L., TUMANOVA D., UNGUREANU G., LEBEDENCO L.,**

BAGRIN N., ZUBCOV N., CIORBA P., IVANOVA A., TODERAȘ I., BILEȚCHI L., VULPE V., LAZĂR M., GHIORGHIASA R., GOLOGAN I., BOSTĂNARU A.

Institution: Moldova State University, Institute of Zoology

Description: The guide supplements the knowledge in the field of aquaculture, aiming to ensure the good health status of the fish raised in the ponds, which are located in the Prut river basin, through sustainable management of fish ponds.

The methods for rapid diagnosis of some cyprinid diseases are updated, suggesting a range of practical recommendations for those interested in improving the state of fish ponds, increasing fish production or controlling fish pathology, monitoring human health, in the conditions of the occurrence of transmissible diseases from fish to humans, also taking into account the environmental protection issue.

The work was published within the project 2 SOFT/1.2/47 Team up for healthy fish in aquaculture systems of the Prut river basin – TeamUp HealthyFish (Joint Operational Program Romania-Republic of Moldova 2014-2020, financed by the European Union) and is available (in Romanian) at https://zoology.md/index.php/en/new-publications.

ECOTOXICOLOGICAL METHODOLOGICAL GUIDE FOR ENVIRONMENTAL MONITORING: PROBLEMATICS, LABORATORY TECHNIQUES AND HEALTH RISK INVESTIGATION

ISBN of the book: 978-9975-157-99-5

Editors: **ZUBCOV Elena, ENE Antoaneta**

Authors: **ZUBCOV Elena, ENE Antoaneta, ZUBCOV Natalia, UNGUREANU Laurenția, TODERAȘ Ion, BAGRIN Nina, BILEȚCHI Lucia, ANDREEV Nadejda, CIORNEA Victor, JURMINSCAIA Olga, BULAT Dumitru, BULAT Denis, CIORBA Petru, TUMANOVA Daria, LEBEDENCO Liubovi, TEODOROF Liliana, SPANOS Thomas, VASILE Aida Mihaela, BAHRIM Gabriela Elena, ENACHI Elena, CHIȚESCU Carmen Lidia**

Institution: Moldova State University, Institute of Zoology

Description: The book makes an introduction in ecotoxicology, pointing on the interdisciplinary character of this science and briefly describing the bases of ecotoxicokinetics, ecotoxicodynamics, ecotoxicometry and assessment of the environmental risk associated with the presence of toxic compounds. The peculiarities of the ecotoxicological investigation of aquatic ecosystems are revealed and some results of the monitoring of metals in aquatic ecosystems are presented. A special attention is given to the methodological aspects of the research of emerging microbial

contaminants and pharmaceuticals in water. The radiological risk, based on the presence of ionizing radiation in the environment, is also described.

The work was published separately in separately in Romanian (ISBN 978-9975-157-79-7) and English (ISBN 978-9975-157-99-5) in the frame of the project eMS BSB 27 Black Sea Basin interdisciplinary cooperation network for sustainable joint monitoring of environmental toxicants migration, improved evaluation of ecological state and human health impact of harmful substances, and public exposure – MONITOX (Joint Operational Program Black Sea Basin 2014-2020, financed by the European Union) and is available at https://zoology.md/index.php/en/new-publications.

GUIDANCE ON THE MONITORING OF WATER QUALITY AND ASSESSMENT OF THE ECOLOGICAL STATUS OF AQUATIC ECOSYSTEMS

ISBN of the book: 978-9975-157-05-6

Editors: **BILEȚCHI Lucia, ZUBCOV Elena**

Authors: **ZUBCOV Elena, JURMINSKAIA Olga, CIORNEA Victor, ENE Antoaneta, BAGRIN Nina, ZUBCOV Natalia, BORODIN Natalia, IVANOVA Anastasia, CIORBA Petru, ȘUBERNEȚKII Igor, NEGRU Maria, UNGUREANU Laurenția, TUMANOVA Daria, UNGUREANU Grigore, BILEȚCHI Lucia, LEBEDENCO Liubovi, ANDREEV Nadejda, MUNJIU Oxana, TODERAȘ Ion, BULAT Dumitru, BULAT Denis, USATÎI Marin, CREPIS Oleg, ȘAPTEFRAȚI Nicolae**

Institution: Moldova State University, Institute of Zoology

Description: The book offers a guidance on the types of the aquatic ecosystems monitoring programs, principles of the micro- and macroelement analysis of environmental components, including the required chemical analysis equipment, description of the methods of investigation of the chemical composition of natural waters (dissolved gases, main ions, mineralization, hardness, nutrients, microelements) and of the aquatic life components – bacterioplankton, phytoplankton, macrophytes, zooplankton, macrozoobenthos and fish fauna.

The guidance is addressed to young researchers, including PhD and MS students, specialists in the field of environment and all those who desire to acquaint themselves with the theoretical and applied aspects of the research of aquatic ecosystems. It was published in the frame of the project no. 20.80009.7007.06 AQUABIO, State Program (2020-2023), and is available at https://zoology.md/index.php/en/new-publications.

METHODOLOGICAL GUIDE FOR MONITORING THE HYDROPOWER IMPACT ON TRANSBOUNDARY RIVER ECOSYSTEMS

ISBN of the book: 978-9975-47-198-5

Editors: **ZUBCOV Elena, BILEȚCHI Lucia**

Authors: **ZUBCOV Elena, UNGUREANU Laurenția, BILEȚCHI Lucia, BAGRIN Nina, ANDREEV Nadejda, ZUBCOV Natalia, ENE Antoaneta, JURMINSKAIA Olga, CIORNEA Victor, ȘUBERNEȚKII Igor, ONISHCHENKO Eduard, MATYGIN Alexander, GRANDOVA Maria, KOVALYSHYNA Svetlana, TUMANOVA Daria, UNGUREANU Grigore, LEBEDENCO Liubovi, NABOKYN Mykhailo, KOVALYSHYNA Svetlana, CHUZHEKOVA Tatyana, MUNJIU Oxana, BULAT Denis, BULAT Dumitru, USATÎI Marin, CAZANTEVA Olga, COROBOV Roman, SIRODOEV Ghenadii**

Institution: Moldova State University, Institute of Zoology

Description: The guide is dedicated to the methodological aspects of the monitoring of the impact of hydrotechnical constructions on river ecosystems, including their hydrological, hydrochemical and hydrobiological (phytoplankton, planktonic and benthic invertebrates, and fish fauna) parameters and the principles and methodology of the economic valuation of ecosystem services and their losses are proposed. In parallel, the methodology for assessing a climate change factor in the hydropower impact research is described.

It guides the researchers, specialists in aquatic ecology, hydrology, youth (students of all levels of the higher education institutions) and all other interested people in their acquaintance with the theoretical and applied aspects of monitoring the impact of hydropower complex operation and climate change on ecological status and functioning of aquatic ecosystems, including processes occurring in their watersheds.

The work was published separately in separately in Romanian (ISBN 978-9975-157-80-3) and English (ISBN 978-9975-47-198-5) in the frame of the project eMS BSB 165 Creating a system of innovative transboundary monitoring of the Black Sea river ecosystems transformation under impacts of hydropower development and climate change – HydroEcoNex (Joint Operational Program Black Sea Basin 2014-2020, financed by the European Union) and is available at https://zoology.md/index.php/en/new-publications.

National Institute for Research and Development in Chemistry and Petrochemistry ICECHIM Bucharest, Politechnical University Bucharest, State University Alecu Russo Balti, Republic of Moldova

GRAPHITE FILMS DEPOSITED ON METAL SURFACE BY PULSED ELECTRICAL DISCHARGE MACHINING

ISBN of the book: 978-3-319-30198-3

Author: **LAURENTIU Marin, TOPALA Pavel, BESLIU Vitalie**

Institution: National Institute for Research and Development in Chemistry and Petrochemistry ICECHIM Bucharest, Politechnical University Bucharest, State University Alecu Russo Balti, Republic of Moldova

Description: The chapter refers to a process of applying graphite films on metal surfaces through a process of electrical impulse discharges. The chapter of the book was developed as a result of the research and development works within the doctoral thesis with the title - "Prevention of adhesion effects between metallic and non-metallic surfaces by means of graphite films". Following the application of electrical discharges from a battery of 600 microfarad capacitors between a pyrolytic graphite cathode and a metal surface. on the latter, a uniform film of graphite is obtained. The graphite film is about 5-7 micrometers thick.

National Institute for Research and Development in Microtechnologies, Bucharest Valahia University of Targoviste/ Institute of Multidisciplinary Research for Science and Technology, Valahia University of Targoviste

ORGANIC STEREOCHEMISTRY, BASIC CONCEPTS AND APPLICATIONS, 2018, PRINTECH PUBLISHING HOUSE.

ISBN of the book: 978- 606- 23- 0885- 8

Authors: **ŞERBAN Bogdan-Cătălin, BUMBAC Marius, SCHIKETANZ Iosif, POPESCU Mihai-Viorel, NICOLESCU Cristina-Mihaela, BUIU Octavian**

Institution: National Institute for Research and Development in Microtechnologies - IMT Bucharest/ Valahia University of Targoviste/ Institute of Multidisciplinary Research for Science and Technology, Valahia University of Targoviste

Description: The present book entitled "Organic stereochemistry, basic concepts and applications" consists of two parts. The first part contains a very brief overview of stereochemistry; it refers to fundamental theoretical aspects, concepts and terms such as conformational and configurational isomers, Cahn-Ingold-Prelog conventions for E/Z isomerism, R/S isomerism of chiral centres such as biaryls and cumulated polyenes, etc. The second part contains 164 problems and exercises. These have various levels of difficulty and are presented in different formats such as multiple-choice questions, standard stereochemistry exercises or simple questions. The content of this second part has been developed to support your endeavor for understanding the basic, as well as more subtle concepts and tools of stereochemistry. Solutions are provided for all the problems and exercises; in many cases these are accompanied by detailed explanations. Beyond the traditional aspects of stereochemistry (chiral recognition elements, establishing the number of stereoisomers, racemic mixture separation, identification of the pairs of enantiotopic ligands or diastereotopic ligands, heterotopic faces, epimers and epimerization, etc.), this includes also problems based on terms and concepts less encountered in the stereochemistry workbooks such as ambo, molecular recognition, quasi-enantiomers, solvation diastereoisomers, supramolecular chirality, criptochirality, quasiracemate, mutarotation, Pfeiffer effect, protein folding, eudysmic ratio, serine octamer cluster, etc. The chiral molecules - based reaction schemes, aspects concerning the importance of molecule's geometry in establishing reactivity and reaction mechanisms, as well as problems of chemical kinetics and thermodynamics are also included. A great deal of attention has been paid in highlighting the importance of stereochemistry in drugs design and pharmaceutical industry (see Thalidomide case, detailed in the book). The second part ends with a

special section named “Did you know…?”. Here the reader can find out about great scientists who have decisively influenced the stereochemistry field, about chiral ligands which are widely used in asymmetric synthesis or about pharmaceuticals that are currently marketed in racemic or single - enantiomer form, etc.

ORGANIC CHEMISTRY, QUESTIONS AND ANSWERS

ISBN of the book: ISBN 978-606-23-1121-6

Authors: **ŞERBAN Bogdan-Cătălin, BUMBAC Marius, SCHIKETANZ Iosif, LUPU Valentin-Razvan, BUIU Octavian, NICOLESCU Cristina Mihaela, POPESCU Mihai Viorel**

Institution: National Institute for Research and Development in Microtechnologies - IMT Bucharest/ Valahia University of Targoviste/ Institute of Multidisciplinary Research for Science and Technology, Valahia University of Targoviste

Description: This volume contains, as the name suggests, a collection of questions and answers together with mechanistic and evidence based explanatory texts, that are motivating the reader to understand the chemical processes, and not just learn the facts. Thus, the book targets both the traditional aspects of organic chemistry (organic syntheses, reaction mechanisms, stereochemistry, symmetry groups, aromaticity, reaction schemes, determining the structure of organic compounds, instrumental analysis, acids and bases), and questions about some more unconventional aspects, most of which you might find in day to day life, in the kitchen, at a barbeque, in a beauty salon or even in a medical tests laboratory. Thus, this volume discuss about macrocyclic ligand and their various applications, compounds with applications in medicine (alginic acid, hyaluronic acid, human serum albumin, interferons, uric acid, fibrinogen, erythropoietin, botulinum toxin, prostaglandins, oxitocin), the allotropes of carbon with numerous uses (carbon nanotubes, colossal carbon nanotubes, graphene, fullerenes), compounds which are present in many commercial products, little known chemical reactions (lethargic reactions, template reactions, the quasiFavorski transposition, the semipinacol transposition), the toxic compounds created when grilling meat and how we can limit their formation, the complex and incompletely researched chemical processes known as Maillard reactions and their importance, etc. All the questions in this book have highly detailed answers associated. The pictures of molecules in this book were reproduced, according to the standard protocol, with permission of Protein Data Bank.

National Institute of Research and Development for Optoelectronics INOE 2000

THE RESTORATION OF HISTORICAL MONUMENTS. CONCEPT, THEORIES, PRACTICES

ISBN of the book: 9786068922171

Author: **RATOIU Lucian Cristian**

Institution: National Institute of Research and Development for Optoelectronics INOE 2000

Description: Starting from the origin of the modern concept of historical monument and from the essential distinction between the “intentional” monument and the “unintentional” monument, the book follows to what extent the sociocultural contexts, specific to some historical periods, had the capacity to influence the collective perception on some constructions, through: artistic currents, theories, ideologies, institutions or legislation. The mutation phenomenon proposed for investigation is specific only to the category of historical monuments, while "intentional" monuments, as forms of remembrance of personalities or historical events, are much more exposed to total disappearance, following political or ideological changes. The book is not a restoration manual or a compendium of the diversity of techniques that a correct intervention on historical monuments can imply. It is a critical look at the concepts, theories and practices that have shaped the patrimonial phenomenon over time and determine it today. It is a consistent contribution to the theory of preservation and restoration of historical monuments. As the domain is constantly changing, its regular revisiting is not only opportune, but also necessary in the attempt to always identify, understand and rationalize the new sequences of its evolution. Combining the critical perusal of the reference works with the thorough research of the state of affairs in the territory, the book succeeds in capturing defining aspects of the patrimonial phenomenon in the present. The argumentation is rigorously structured but is still left open at both ends: the interpretation of the writings of the forerunners is formulated from the perspective of the present, yet put in a historical, political and socioeconomic context. The author’s theses and hypotheses are stated as an invitation to dialogue, to reply, to continuation.

„Nicolae Testemitanu" State University of Medicine and Pharmacy

MEDICAL ASPECTS OF CLIMATE CHANGE: REALITIES AND PERSPECTIVES

ISBN of the book: 978-9975-165-63-1

Authors: *Coordinating author:* Croitoru Cătălina
All authors: **CROITORU Cătălina, ALBU Adriana, BAHNAREL Ion, BALICA Ecaterina, BĂLAN Greta, BURDUNIUC Olga, CALIGA Ioana, CAZACU-STRATU Angela, CIOBANU Elena, COJOCARI Rodica, FRIPTULEAC Grigore, GARABAJIU Maria, GUȚU Luminița, LOGHIN-OPREA Natalia, MARINESCU Valentina, MAZUR Minodora, MAZUR-NICORICI Lucia, OPOPOL Nicolae, OVERCENCO Ala, PETRESCU Cristina, PUȚUNTICĂ Anatolie, RĂILEANU Valentin, SADOVICI-BOBEICA Victoria, SAGAIDAC Irina, ȘALARU Virginia**
Institution: „Nicolae Testemitanu" State University of Medicine and Pharmacy

Description: The monograph brings to the attention of the specialized public a current issue, located at the interface between the fields of health, medicine, social sciences, environment and politics. It constitutes a debate on environmental changes as a social determinant of health, and, at the same time, an approach on the connections that are defined between the climate and its changes, biodiversity, health and disease, the basic pillars of climate education and training.

The main aspects detailed in the paper are related to: the climate change phenomenon, interpreted at the global, European level, and particularized for the Republic of Moldova; the debate about global warming or cooling, with the presentation of research, studies and solutions, but also the development of future climate projections (models) around the globe and in the Republic of Moldova; the effects of climate change on health, with the approach of the One Health concept, of the climate impact on transmissible and non-transmissible pathology, the implications on pathogens, vulnerabilities and particularities on different subpopulations (extreme age groups, pregnant women, various professions); adaptation to climate changes, involving feedback mechanisms at the level of society and the health system; the degree of awareness of the population in the field of health risks and climate communication; climate migration, scoring elements related to climate education and training.

The collective of authors – experts in various fields, from renowned universities in the Republic of Moldova but also from abroad (Romania), bring to the fore a comprehensive dialogue between researchers who have found common points of discussion – the realities and perspectives faced by the individual faced with climate change and the impact on his health.

INSTRUMENTE DE CERCETARE ÎN SĂNĂTATEA PUBLICĂ (CULEGERE DE CHESTIONARE)

ISBN of the book: 978-9975-165-65-5

Authors: **FERDOHLEB Alina, CROITORU Cătălina, CIOBANU Elena**
Institution: „Nicolae Testemitanu" State University of Medicine and Pharmacy

Description: The health system's landscape is intricately mapped by a comprehensive array of indicators that mirror its health and efficiency. Central to evaluating the nation's healthcare framework are the indicators related to health-related quality of life, serving as pivotal markers of well-being. The exploration of public opinion holds paramount importance in assessing the fabric of a health system oriented towards social welfare. This includes delving into people's satisfaction with healthcare quality, the delivery of services, workplace conditions, employment contentment, staffing levels, and occupational safety measures. Equally critical is capturing the perspectives of healthcare professionals to attain a nuanced understanding of the system's operational realities.

To systematically gather and analyze these varied viewpoints, the "Research Tools in Public Health" questionnaire compendium was devised. This comprehensive toolkit is designed for surveying the population on a wide range of subjects, including but not limited to the training of occupational health practitioners, stress levels across different professional sectors, and the working conditions experienced by diverse professional groups. This endeavor aims to bolster socio-hygienic and medico-social studies, offering robust support to both novice researchers undertaking their inaugural scientific investigations and seasoned experts in public health.

The inception of this invaluable resource was a collaborative effort led by the Scientific Laboratory of Occupational Health, in conjunction with the academic and pedagogical cadre of the Hygiene Discipline at "Nicolae Testemitanu" SUMPh. This initiative was part of the broader institutional project titled "Estimation of Population Health in Relation to Priority Exogenous and Psychosocial Harmful Factors and Development of Risk Reduction Measures", bearing the project number 15.817.04.07A. Official endorsements were garnered from the Quality Management Council of the "Nicolae Testemitanu" State University of Medicine and Pharmacy, as documented in protocol no. 1 dated 19 October 2017, and subsequently from the Scientific Council of the National Centre for Public Health – now rechristened as the National Agency for Public Health - under protocol no. 1 dated 24 January 2018. This comprehensive validation underscores the collection's significance and utility in advancing public health research and practice.

Pedagogical University of Krakow, Poland

SENTIMENTUL SENSULUI VIEȚII A PERSOANELOR ÎN VÂRSTĂ. INSPIRAȚII PENTRU INSTRUIREA OAMENILOR LA BĂTRÂNEȚE

ISBN of the book: 978-9975-76-193-2

Author: **PIKUŁA N. G.**

Institution: Pedagogical University of Krakow, Poland

Description: Lucrarea este dedicată problemei căutării sensului vieții la persoanele în vârstă – problemă de mare actualitate. Problema îmbătrânirii populației și evoluția societății la etapa actuală impune o abordare nouă reieșind din aceste realități. Procesul de îmbătrânire a populației de pe continentul european, schimbarea sistemelor de asistență socială și medicală au produs un efect important și necesită o nouă abordare conceptuală în cazul societății moderne. Problema atitudinii față de îmbătrânire și instruire în perioada bătrâneții este o chestiune care necesită o abordare complexă. Lurarea propune o serie de soluții pentru asigurarea încadrării persoanelor de vârsta a treia în diverse activități social utile.

Publishing House Politehnica Timisoara

DIAGNOSTICS AND REPAIR OF ROAD VEHICLES – APPLICATIONS

ISBN of the book: 978-606-35-0489-1 / 2022
Author: **BIRTOK-BANEASA Corneliu**
Institution: Publishing House Politehnica Timisoara
Description: The development of intelligent diagnostic systems induce major effects on maintenance technologies and repair procedures applied in the automotive industry. The work aims to:
- the acquisition of specific knowledge in determining the causes of failure of various subassemblies of motor vehicles, learning to operate with diagnostic equipment and mastering the work procedures specific to the diagnosis of motor vehicles;
- the application of maintenance technologies and the provision of fundamental and specialized training in the repair of road vehicles.

DIGITAL TRANSFORMATION – TECHNOLOGY, TOOLS, AND STUDIES

ISBN of the book: 978-3-031-55951-8 / 2024
Authors: **CIOCA Lucian-Ionel, IVASCU Larisa, FILIP Florin Gheorghe, BANCIU Doina**
Institution: Publishing House Springer
Description: The Digital Transformation - Technology, Tools, and Studies is part of the book series entitled “Intelligent Systems Reference Library”. The aim of this series is to publish a Reference Library, including novel advances and developments in all aspects of Intelligent Systems in an easily accessible and well structured form. The series includes reference works, handbooks, compendia, textbooks, well-structured monographs, dictionaries, and encyclopedias. Our book presents recent research on digital transformation, integrates research from different fields of activity outlining a timely picture, technologies, tools, and studies.

Scientific and Practical Institute of Biotechnologies in Zootechny and Veterinary Medicine

DIVERSIFICATION OF THE FODDER BASE BY STUDYING AND EXPLOITING NEW AND LESSER-KNOWN FODDER RESOURCES IN THE REPUBLIC OF MOLDOVA

ISBN of the book: 978-9975-180-12-2

Authors: **COȘMAN Sergiu, DANILOV Anatolie, ȚÎȚEI Victor, COȘMAN Valentina, BAHCIVANJI Mihail**

Institution: Scientific and Practical Institute of Biotechnologies in Zootechny and Veterinary Medicine

Description: For the formation of a permanent fodder base, in line with the basic, traditional fodder, it is necessary to use more widely various residues from agriculture and the processing industry, new sources of non-protein nitrogen, new fodder plants, less known in our country. In these fodder resources are large potential reserves of proteins, carbohydrates, minerals and vitamins.

We have undertaken an attempt to systematize some data on these questions and also to demonstrate the results of multi-year research regarding the chemical composition, nutritional value and effectiveness of the use of non-traditional forage plants, new feed additives, as well as residues from the livestock industry. processing in the rations of farm animals and poultry.

The term "residues" means the products obtained as a result of the physical-chemical processing of the raw material, but they are not the purpose of this technological process. The residues can be used immediately after obtaining in natural form, or dehydrated and then used as a raw material included in the composition of combined feeds or various feed additives.

The authors of this monograph aimed to generalize and analyze a vast material from specialized and experimental literature accumulated over a longer period of time. During the description in the sections of the work, data are presented that include the biological characteristic, chemical composition, nutritional value and efficiency of the use in the feeding of agricultural animals of various residues from the processing industry, of new, non-traditional fodder plants for our country, as well as of some feed additives less known.

In this work we tried not only to give the characteristics of non-traditional fodder products and plants, but also to demonstrate their influence on animal productivity, production quality, health status and the economic effectiveness of their use in various rations.

The monograph is addressed to scientific researchers, teachers from specialized educational institutions, doctoral students, students, agricultural specialists and farmers. The monograph was developed within the project 20.80009.5107.12 Strengthening the "food-animal-production" chain by using new feed resources, innovative methods and schemes of health care.

ARTIFICIAL INSEMINATION IN SHEEP

ISBN of the book: 978-9975-56-819-7

Authors: **DARIE Gr., MAȘNER O, CIBOTARU Elena, PÎRLOG Alisa, ROTARI Doina, BRADU Nina, OSIPCIUC Galina, DJENJERA Irina.**

Institution: Scientific and Practical Institute of Biotechnologies in Zootechny and Veterinary Medicine

Description: The recommendations were developed within the Scientific-Practical Institute of Biotechnologies in Zootechny and Veterinary Medicine based on the results of the multi-year research of the Biotechnologies in Reproduction and Embryo Transfer Laboratory of the Institute and experience in the field from other countries.
The recommendations describe and illustrate the basic work on organizing and carrying out the artificial insemination of sheep for the purpose of educating zootechnical specialists concerned with the problem, including sheep farmers-breeders, who pursue the objective of making the operation more efficient, by intensifying the reproductive functions of sheep and increasing the quality of the reared herd.

The rapid transformation of sheep populations with lower productive characteristics into those with a higher level of productivity cannot be achieved without the implementation of artificial insemination, using breeding rams from selection nuclei created within a specific breed or from breeding breeds used for inbreeding and obtaining crossbreeds with programmed genetic and productive characteristics.

The main sections of the activity for the smooth development of sheep reproduction through artificial insemination can be summarized as follows: provision of breeding rams; organizing the collection, examination, dilution and preparation for dissemination of the semen; the correlation and functional interconnection between: the daily work schedule of the central subdivisions with the seed distribution schedule and the work schedule of each artificial seeding point in the territory.

The recommendations was developed within the project 20.80009.5107.20 "Management of the genetic potential and productions of purebred animals reproduced and exploited in the pedoclimatic conditions of the Republic of Moldova".

SHEEP BREEDING RECOMMENDATIONS FOR SKINS

Patent/ISBN of the book: 978-9975-56-731-2

Authors: **EVTODIENCO Silvia, MAȘNER Oleg, LIUȚCANOV Petru, PETCU Vitalii, CARAMAN Mariana**

Institution: Scientific and Practical Institute of Biotechnologies in Zootechny and Veterinary Medicine

Description: The recommendations address several aspects related to the breeding and exploitation of sheep for skins in the Republic of Moldova. The results of scientific research obtained over several years are presented, including the research currently carried out on sheep farms. There is a brief description of the breeds for hides, including the Moldovan karakul type created at Scientific and Practical Institute of Biotechnologies in Zootechny and Veterinary. Included in the recommendation are methods for assessing skin production in lambs at birth, milk production in ewes and growth of sheep youth. Pairing schemes and some calculations regarding the economic efficiency of the branch are presented. Indications are also given regarding the prevention of diseases and the calendar plan of mandatory sanitary-veterinary measures for sheep farms.

The research was carried out within the project 20.80009.5107.20 "Management of the genetic potential and productions of purebred animals reproduced and exploited in the pedoclimatic conditions of the Republic of Moldova".

University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Romania

FOOD SAFETY MANAGEMENT, DIDACTIC MANUAL

ISBN of the book: 978-630-309-055-9

Authors: **MARC Romina Alina, MUREŞAN Crina Carmen**

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

Description: Didactic manual, FOOD SAFETY MANAGEMENT, Authors: MARC ROMINA ALINA and MUREŞAN CRINA CARMEN, is aimed especially at students. This work provides notions regarding general aspects of food safety, the stages of implementing a management system, food contamination: physical, chemical, biological hazards, HACCP system design, SR EN ISO 22000:2019-Food safety management system. Requirements for any organization in the food chain, Certification of organizations and IFS FOOD-Audit Standard for the quality and safety of food products

The present work is also a support for laboratory workers, researchers, engineers, operators, auditors and managers in the food sector who work in the field of the food industry.

FOOD SAFETY – PAST AND PRESENT

ISBN of the book: 978-973-53-2732-3

Authors: **MUREŞAN Crina Carmen, MARC Romina Alina**

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

Description: The scientific book "Food safety – past and present" Authors: MUREŞAN CRINA CARMEN and MARC ROMINA ALINA is a book addressed to the general public interested in food safety. This book covers topics of interest regarding loneliness and food security before, during and after the pandemic, such as: the challenges of the Covid-19 Pandemic period (SARS-CoV-2) regarding food safety, Overview of the implication of Covid-19 in safety food chain, Transmission of SARS-CoV-2 in the food chain, Potential survival of SARS-COV-2 in food products, The need for food hygiene practices from farm to fork during the Covid-19 Pandemic, Impact of COVID-19 on the supply chain with food, HACCP during the Covid-19 Pandemic (SARS-CoV-2), Delivery of food products during the Covid-19 Pandemic, Food safety for home-cooked food during the Covid-19 Pandemic, The need for active

and intelligent packaging during the Pandemic Covid-19, Current policies and knowledge gaps during the Covid-19 Pandemic, The role of bioactive ingredients in supporting the human immune system in the pandemic coronary heart disease (COVID-19) crisis, Sustainability of food systems during the Covid-19 Pandemic, The economic impact of the pandemic Covid-19 on the food and agricultural sector, Conclusions on food safety during the Covid-19 pandemic (SARS-CoV-2).

TRACEABILITY OF BIOCHEMICAL COMPOUNDS FROM PLUM FRUITS

ISBN of the book: 978-606-020-105-2

Author: **VLAIC Romina Alina**

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

Description: The scientific book entitled TRACEABILITY OF BIOCHEMICAL COMPOUNDS FROM PLUMS, Authors: VLAIC ROMINA ALINA, presents general and specialized notions regarding the nutritional properties of plum fruits and their multiple benefits in different stages of development, as well as the traceability of biochemical compounds from different varieties of plum.

This book comes with more detailed information on the properties and composition of plum fruits and the changes that occur during their growth and development.

The present work is a support for researchers working in the field of plum fruit study.

University of Craiova

POLUANȚI ATMOSFERICI ÎN MUNICIPIUL CRAIOVA: STUDIU DE CAZ

ISBN of the book: ISBN 978-606-28-1665-0 / DOI: Digital Object Identifier): 10.5682/9786062816650

Author: **DRĂGULEASA Ionuț-Adrian**
Institution: Editura Universitară, București, România

Description: The present paper includes a theoretical part analyzing the domestic and international specialized literature and a practical research part consisting of an analysis of air quality in the city of Craiova, Romania.

The paper is structured in three parts, with a total of seven chapters, with each chapter containing several sub-chapters of analysis, synthesis, and applied research. The work totals 156 pages and 28 appendices in which correlations and data analysis are presented. These data were obtained from students who completed a questionnaire, while we also gleaned statistical data from the Monitoring Network of Air Quality. This work has more than 100 references, including multiple websites.

In Romania, air pollution is one of the major problems in the urban environments of many cities. In general, air pollution in a city, region, or country depends very much on the amount of air pollutant emissions, as well as on the weather conditions during the calendar year. For example, the dispersion of air pollutants can be associated with wind speed and direction.

Laboratory experiments represent an efficient operative didactic method in the assimilation and learning of scientific content, ultimately constituting the bridge between the abstract and theoretical and the concrete and practical. For teachers, experiments are beneficial because they help to capture students' interest during practical lessons, helping in the search for answers regarding the phenomena presented in the theory lessons.

Having an experimental character, chemistry cannot be taught, learned and evaluated without resorting to laboratory experiments, documentation sheets, experimental sheets, virtual experiments, etc. The principle of learning in contact with reality is a necessary stage in the transfer of contents, by applying theoretical knowledge in immediate practice.

Also, the laboratory experiment, normally, is an efficient-operational method in assimilating and mastering the scientific contents, constituting the link between the abstract, theoretical and the concrete, practical. Placed at the right time, it represents

the "advantage" that helps you capture the student's interest, inciting him to search for answers regarding the presented phenomenon.

Air quality monitoring in the city of Craiova, Romania, is carried out through five automatic monitoring stations that are part of the National Air Quality Monitoring Network, hereinafter called RNMCA. The increase in atmospheric pollutants in the city of Craiova can negatively affect the health of the local population, a fact that is evidenced by the increase in respiratory diseases and deaths due to suspended particles. Therefore, the increase in atmospheric pollutants represents, at the local, regional, national, and international levels, a social factor that can reduce life expectancy.

Environmental pollution represents a problem that manifests itself at the local, regional, and national levels, as well as at the hemisphere level, because the pollutants emitted in a city/country reach the atmosphere, thus contributing to the decrease in air quality in other cities or neighboring countries.

The urban area of the city of Craiova has intense road traffic, industrial activity, and cultural–sporting events and is subject to many harmful atmospheric pollutants, of which nitrogen oxides are some of the most important. To a lesser extent, rail and air traffic affect the quality of the environment.

Thus, for urban traffic in the municipality of Craiova, concrete measures are needed to decongest traffic through the creation of new bypass routes from the central area to the neighboring areas; the creation of several parking areas with a vegetal carpet of plants on the roofs; the modernization of transport infrastructure; and encouraging the inhabitants to use ecological transport (cycling, electric scooters, and walking through parks and the botanical garden).

My gratitude goes to Mrs. Professor Conf. Univ. Dr. Reiss Aurora - Department of Chemistry, Faculty of Sciences, University of Craiova whose experience in scientific research was very helpful to me.

University of Petrosani

QUALITY TOOLS EMBEDDED IN IT STARTUP PROJECT MANAGEMENT

ISBN of the book: 978-620-3-30332-2
Authors: **DOVLEAC Raluca, IONICA Andreea, LEBA Monica**
Institution: University of Petrosani
Description: The scope of the book is, on one hand, to provide a thorough literature review in the field of startups, their project management, quality management and risk management practices, as well as the means by which these types of business achieve quality within and throughout their development cycle. On the other hand, it proposes an integrated fuzzy-logic based risk management model meant to help startups satisfy customer requirements in an optimum way, by planning the most efficient sprints, based on the report between the amount of work to be done and visible functionality of the final product.
Lastly, the aim is to provide a startup specific framework which incorporates elements of quality management, project management and risk management in order to help startups ensure the quality of their products and processes, as well as manage them accordingly.

BURNOUT – EVALUARE DIN PERSPECTIVĂ RELAȚIONALĂ CU CLIMATUL ORGANIZAȚIONAL PRINTR-O SOLUȚIE INOVATIVĂ

ISBN of the book: 978-973-741-892-0
Authors: **NASSAR Yunis, IONICA Andreea**
Institution: University of Petrosani
Description: The book presents an original and up-to-date interdisciplinary approach integrating knowledge, concepts, methods, techniques and tools from the field of psychology, from the field of management and from the field of engineering sciences. The approach is based on the integration of research results on the influence of the organizational climate on burnout and research on the design of a system for evaluating and predicting the burnout state of school principals in southern Israel, with the expected result being the validation of this system. Thus, through the proposed approach, methods, techniques and tools belonging to different disciplines are transferred, resulting in a burnout assessment/ prediction system that has as input elements the results of the analysis of the organizational climate, the assessment of the burnout state and the results of the measurement of physiological parameters and which is based on an algorithm that uses an artificial neural network. With this approach, the

specialist will be assisted by a self-learning system that becomes more accurate in its assessment as more data is entered.

EXOSKELETON CONTROL SYSTEM

ISBN of the book: 978-973-741-862-3
Authors: **RISTEIU Marius, LEBA Monica, STOICUTA Olimpiu**
Institution: University of Petrosani
Description: Every year an increasing number of people suffer from neurological disorders that affect their limbs, plus the number of older people is growing and by 2030 will increase by about 20% of the EU population, a trend that justifies the interest in research for the construction of a small system, with the lowest possible costs for the recognition of movements, which can be easily positioned on the body and allows the acquisition and classification of electromyographic signals (EMG) in real time. Several research projects focus on the idea of developing devices that support human movements, even if the results are promising, none of the proposed solutions provide an effective control or actuation system for this type of devices. The research presented in this book focuses on the development of an exoskeletal robotic device for people who have certain problems or limitations in the basic movements of the upper limbs. Although some movements may seem trivial, they are essential in the rehabilitation process, but also in everyday life, because the patient will no longer be dependent on another person for certain operations.

APPLICATION OF VISIBLE LIGHT WIRELESS COMMUNICATION IN UNDERGROUND MINE

ISBN of the book: 978-3-030-61407-2
Authors: **RIUREAN Simona, LEBA Monica, IONICA Andreea**
Institution: University of Petrosani
Description: The miner's profession is one of the most dangerous one worldwide, mainly because of the specific workplace characteristics. For the underground mining area activity, no matter the type of exploitation, ore, coal, salt, or any other kind of minerals, a significant volume of research has been dedicated to identifying the main risk factors for health and workers' safety and decreasing, as much as possible, their negative effects. In order to improve workers' safety underground, many different technologies have been already theoretically proposed and some practically applied. The workers' position underground and continuous monitoring of risk factors in real time are important issues in underground operation, where the conditions are continuously changing. More and more internationally well-known companies run

projects aiming to add to the core illumination function, data communication, and to solve challenges for high-speed, highly secure wireless connectivity. The VLC technology promises to provide, in the near future, a safer, faster, and greener underground data wireless communication system. As fast this technology develops, within a few years, we expect to see VLC together with other wireless complementary technologies creating a new ubiquitous computing platform. Under this forthcoming integration, every device large enough to include an LED, a transmitter driver, and a light sensor can be connected and powered by VLC.

THE USE OF ELECTRIC VEHICLES IN ENCLOSED SPACES

ISBN of the book: 978-973-741-862-3

Authors: **RUS Cosmin, LEBA Monica**
Institution: University of Petrosani

Description: The book THE USE OF ELECTRIC VEHICLES IN ENCLOSED SPACES delves into the application of electric vehicle (EV) technology within indoor settings, spread across five chapters that highlight its significance for sustainable mobility and technological advancement. The initial chapter outlines EV technology's history, current trends, particularly in the EU, and the shift towards autonomous electric vehicles, framing the environmental and technological strides in the sector. Subsequent chapters explore the development of an electric All-Terrain Vehicle (ATV), focusing on adapting EV technology for confined spaces through detailed discussions on drive system selection, control algorithms, and the implementation of a LoRa communication system for effective operation.

Further, the book examines the technical construction of EVs, presenting mathematical models for vehicle dynamics and induction motor control, essential for understanding EV reliability and functionality. It also covers the creation of a LoRa sensor network vital for IoT communications within EV frameworks, illustrating the importance of advanced communication technologies in the evolution of electric vehicles.

The concluding chapter focuses on autonomous navigation, showcasing the role of sensory integration, LiDAR technology for environmental mapping, and navigation algorithms in advancing autonomous EV capabilities, promising increased efficiency and safety in enclosed environments. Aimed at engineers, researchers, and professionals, this work scrutinizes EV technology's technical, environmental, and operational aspects in indoor contexts. It emphasizes innovation and safety's paramount importance, offering an in-depth perspective on electric mobility's current challenges and future opportunities in restricted spaces.

EXPLORING THE POSSIBILITIES OF USING PROJECT MANAGEMENT METHODOLOGIES IN THE 20ST CENTURY EDUCATION

ISBN of the book: 978-620-6-75526-5
Authors: **SAAD Ahmad Fuad, IONICA Andreea, LEBA Monica**
Institution: University of Petrosani
Description: The book aims to explore one of the ICT tools, namely the blogs along with other elements like Agile methodology in STEM project under formal K-12 educational setting in particular. Yet, there are still many other conditions to be further considered, such as the method of selecting assignments, or the content materials, or the methods of assessing students. Other variables including: the use of Gamification elements when setting up the project, the use of Google Analytics to properly analyze data; may be used with other conditions in order to motivate students to learn and keep them engaged. The making and usability of the designed blog, according to the previous conditions, is also considered to be one of the aims. The research will explore the use of blogs, Google Analytics, Gamification and PBL in STEM subject along with the use of Augmented Reality.

ON INDUSTRIAL TOURISM AS A VIABLE PERSPECTIVE FOR JIU VALLEY

ISBN of the book: 978-620-6-14907-1
Authors: **SAMUIL Ionela, IONICA Andreea**
Institution: University of Petrosani
Description: The Jiu Valley was formed and developed, in its current structure, as a result of coal mining and processing activities, and in the absence of this industry it is trying to reinvent itself, looking for other economic pillars to support itself. Although the development of industrial tourism, as an alternative to former industrial activities, is generally accepted as the most viable development direction, taken into account in all zonal development strategies, none of the coal mines are capitalized in a tourism development project. The book aims to identify the premises that underlie the development of tourism in the area, in order to explore the potential for the development of industrial tourism in the Petrila mining perimeter, Jiu Valley, an area drastically affected by deindustrialization, by creating a theme park on the site of the old mine. It is also desired to identify the main milestones that will form the basis of a business model with community involvement for Petrila Theme Park.

INNOVATIVE ENTREPRENEURSHIP

Moldova State University
"Alexandru Ciubotaru" National Botanical Garden (Institute)

THE INNOVATIVE TECHNOLOGY FOR FOUNDATION INDUSTRIAL MELLIFEROUS-ENERGY PLANTATION

Patents: no. 208/ 2016.05.31; no. 400 / 2023.02.28; no. 401 / 2023.02.28.
Author: **ŢÎŢEI Victor**
Institution: „Alexandru Ciubotaru" National Botanical Garden (Institute) of Moldova State University
Description: New cultivars of non-traditional crops created at the "Alexandru Ciubotaru" National Botanical Garden (Institute), of Moldova State University registered in the Catalogue of Plant Varieties, patented and patenting at the State Agency for Intellectual Property (AGEPI) in the Republic of Moldova are intended for the establishment industrial melliferous-energy plantation on marginal, degraded, eroded and polluted lands that cannot be profitably cultivated with traditional crops.

For the foundation of industrial melliferous-energy plantations with local cultivar *'Melifera'* of lacy phacelia, *Phacelia tanacetifolia* (MD 208) are necessary 6-10 kg/ha seeds incorporated at a depth of 2-3 cm in soil. It is an early-medium source of pollen and nectar for bees (May-June) with 400-600 kg/ha potential honey. The biomethane potential of green mass substrates collected at the end flowering period averaged 300 l/kg organic matter. The energy dry biomass potential after harvesting the seeds averaged 7-9 t/ha with 17.03 MJ/kg net calorific value of solid biofuel and 487 L/t estimated theoretical ethanol potential.

For the creation of industrial plantations with local cultivar '*Vigor*' of milkvetch, *Astragalus galegiformis* (MD 400) are needed 8-10 kg/ha scarified seeds incorporated at a depth of 3-4 cm and 30-45 cm between rows. It is an early-medium source of pollen and nectar for bees (May-June), possible to obtain 90-100 kg/ha of honey in second growing season, but in the next 3-5 growing years the honey yield reach 200-300 kg/ha. The harvested green mass at the end flowering period may be used as co-substrates in biogas plants with biochemical methane potential 270-337 L /kg organic matter. The stems biomass after harvesting the seeds may be used for production of the densified biofuel (briquettes and pellets) with specific density 870-1000 kg/m^3, 18.1-18.8 MJ/kg gross calorific value and 1.5-3.3% ash content. The estimated theoretical ethanol potential from stalks mass cell wall carbohydrates varied from 408 to 535 L/t.

For the foundation of industrial plantations with local cultivar '*Ileana*' of elecampane, *Inula helenium* (MD 401), 6-10 kg/ha seeds are needed to be incorporated at a depth of 1-2 cm or 28-40 thousand seedlings / ha with planting scheme 70 cm x 35 cm. It is a medium source of pollen and nectar for bees (June-August) with honey

potential of 70-130 kg/ha. The biochemical methane potential of green and ensiled mass substrates was 230-300 l/kg organic matter. The dry stalks biomass had moderate gross calorific value of 18.4-18.5 MJ/kg and the amount of ash 2.6-3.1%, the specific density of the densified biofuel reached 800-940 kg/m^3. The estimated theoretical ethanol potential from stalks mass cell wall carbohydrates averaged 527 L/t.

Financially supported subprogram no. 01.01.02 "Identification of valuable forms of plant resources with multiple uses for the circular economy"

„Nicolae Testemitanu" State University of Medicine and Pharmacy

THE USE OF THE SPECIALIZED QUESTIONNAIRE FOR ASSESSING THE RISKS OF GLOBAL WARMING AND THE DEVELOPMENT OF INFECTIOUS DISEASES IN THE REPUBLIC OF MOLDOVA

Patent: Innovative certificate no. 6212
Authors: **CRISTEA Daniel, CIOBANU Elena, CROITORU Cătălina**
Institution: „Nicolae Testemitanu" State University of Medicine and Pharmacy

Description: In the context of global warming, the Republic of Moldova faces significant challenges in terms of population health. One of the risks of global warming is spreading and intensity of communicable diseases that cause many consequences for the national health system. The research was carried out in the Republic of Moldova, based on the questionnaire developed and registered as an innovation (no. 6212 of 11.03.24).

The questionnaire contains 38 questions divided into 2 sections. The first section includes the general data, and the second section - the topic-specific questions.
The questionnaire can be applied for the evaluation of epidemiological data, patterns of disease transmission and the impact of global warming on vectors and reservoirs. Increasing air temperature accelerates the developmental cycle, egg production, and population density and distribution of ticks.

These consequences can be caused by extreme weather and can delay or even prevent timely treatment of acute infections with important epidemiological consequences.

The developed questionnaire allows the analysis of the following indicators (in the perception of the population): 1) infectious vectors that are capable of transmitting a transmissible disease in the rural environment of the Republic of Moldova - ticks, mosquitoes, flies, rodents; 2) the consequences of global warming at the regional level - the degree of air and water pollution, the amount of waste; 3) the risk of vulnerability of the organ systems – the respiratory system, the cardiovascular system, the digestive system and the nervous system.

The use of the questionnaire allows the assessment of specific risks and identified preventive measures to minimize the impact of global warming on the health of the population.

THE METHOD OF USING THE ECO-ARTHEMISINOL ECOLOGICAL DISINFECTION SOLUTION

Patent: Innovative certificate no.6021

Authors: **CRISTEA Daniel, STRATULAT Silvia**

Institution: „Nicolae Testemitanu" State University of Medicine and Pharmacy

Description: In the context of the COVID-19 pandemic and the increase in the number of pathogens, the need for alcohol-based disinfectants has been increased in the Republic of Moldova. In our country products with such use are found in a very wide range in pharmacies, in the form of powder, alcohol-based disinfectant solution that can cause skin burns, irritation, allergies and shortness of breath caused by the presence of free alcohol at a high concentration, which can create these problems. Thus, a solution has been proposed that has been registered as an innovation (no. 6021 of 12.04.23) and serves as a method of sanitization and disinfection.

The solution can be widely used in medical practice as a disinfectant, being more effective and natural than the commercial products from the country's pharmacies. Due to the combinations of the active substances in this plant, when dissolved in an alcoholic solution, complexes and chemical structures are obtained, which can serve as a disinfectant widely in medicine.

The main principles of the solution are represented by the capacity of the dissolved substances, the active substances (Lactone sesquiterpenoids, Azulene and Flavonoids) which increase the field of use of the alcoholic solution and the concentration of the active substances and the strong smell of this solution is directly proportional to the efficiency and practical yield of this solutions.

The obtained solution limits the development of pathogens and represents a sanitizing solution with great efficiency. Its usefulness can be found in the work of microbiologists and pharmacists. The given solution has a lot of beneficial effects that limit the spread of parasites that cause digestive, respiratory and skin diseases. The chemical complexes in the composition of this solution give alcohol multiple properties and can be used as a preparation for sanitizing and preventing complications and reducing the degree of parasite development.

Scientific and Practical Institute of Biotechnologies in Zootechny and Veterinary Medicine

SYNTHETIC POPULATION OF SHEEP FOR MILK-MEAT

Patent/ISBN of the book: the result of research into the creation of a new line of sheep for milk-meat production

Authors: **LIUȚCANOV Petru, MAȘNER Oleg, EVTODIENCO Silvia**

Institution: Scientific and Practical Institute of Biotechnologies in Zootechny and Veterinary Medicine

Description: The synthetic sheep population for milk-meat production has the complex genotype ♀[♀(Tușca×Karacul)×♂(Karacul×Awassi)]×♂Assaf with the following basic characteristics: body mass (at 2.5 years) of rams 90-98 kg, sheep - 65-70 kg. Milk production of ewes from the created population - 250-280 kg/lactation, udder volume of 5500-6700cm^3, wool fineness 50-58 according to the Bradfoard system, slaughter yield in 5-month-old rams is 47%.

The research was carried out within the project 20.80009.5107.20 "Management of the genetic potential and productions of purebred animals reproduced and exploited in the pedoclimatic conditions of the Republic of Moldova".

The Union Of Arab Academics

YEMEN KEEOER ROBOTS FRUTS

Author: **MOHAMMED ALI HUMRAN**
Institution: The Union of Arab Academics, Yemen, TUOAA

Description: The idea: - The idea came about seeing children who protect the fruits of grains, corn, grapes, and others farms in Yemen and Arab regions.

Definition: It is an electronic tool or robot that works by electric power through the sun and is used to guard the fruits during the day and night from birds, animals and humans that do damage to the fruits of the farm of various kinds.

Configuration:

1-A base for fixing the robot
2-Pillar length of 2 meters
3-Solar energy unit3
4-micron and optical device
5-An energy storage device
6-Voices and Light Memory

Uses: - It is used as a warning device to guard the fruits from the dangers and harms of birds, animals and humans.

Operations: The robot works by means of a storage device by solar energy with a 20-volt unit that operates the acoustic and optical devices

The presence of a remote sensor that alerts the future and causes light and sound.

- An automatic electronic device that routinely emits a light and sound to make an alert, which constitutes a warning against approaching the fruit from approaching birds and animals and people.

Coast: The cost is very negligible, as it is estimated at about $ 2000

Economic and strategic importance: - It is one of the important robots that can be used and developed in alerting to a number of risks in the future that affect a number of different farm fruits.

University of Life Sciences „King Mihai I" from Timisoara

MOLECULAR RESEARCH REGARDING THE IDENTIFICATION OF *TRICHINELLA* NEW SPECIES IN WILD CARNIVORES FROM ROMANIA AND EVALUATION OF THE HUMAN INFECTION RISK

Patent: Research project

Authors: **MARIN Ana-Maria, MEDERLE Narcisa, OLARIU Tudor Rareș, MEDERLE Ovidiu-Alexandru, POPOVICI Dan-Cornel, MARUCCI Gianluca, CHERCHI Simona, MORARU Maria Monica Florina, RADBEA Oana Raluca**

Institution: University of Life Sciences „King Mihai I" from Timisoara

Description: *Trichinella* spp. are etiological agents of a zoonosis affecting humans, caused by consuming raw or undercooked meat from animals infested with the larvae of these zoonotic nematodes. The European reservoir for Trichinella species is wildlife, with wild animals being the most important source of infection for domestic pigs, which are the main source of infection for other animals (e.g. horses), especially for humans. In Romania, there are no reports that support the possible consumption of meat from wild carnivores, but they appear as invasive species and suitable hosts for *Trichinella* species.

The present project aimed to identify *Trichinella* spp. larvae in muscle from 10 wild carnivores in Romania by artificial digestion and to characterize the molecular isolates obtained. There are same species of the genus *Trichinella* which present zoonotic potential. Some of them could be identified by PCR. In our project, *Trichinella spiralis* in wild boar, *Trichinella britovi* in eight wild hosts, and *Trichinella pseudospiralis* in jackal have been identified. The present study reports the first identification of *T. pseudospiralis* in Romania. Infection with *T. britovi* in the raccoon dog and European pine marten was reported for the first time in Romania.

University of Petrosani

INNOVATIVE METRICS FOR ASSESSING CROWDFUNDING READINESS

Patent: Innovative system resulted from research project – UPET-12/2021
Authors: **CSEMINSCHI Stanislav, IONICA Andreea, LEBA Monica**
Institution: University of Petrosani
Description: If an innovation will be useful to the community can be determined by a multitude of factors, including the product's technological level, team composition, market, and funding sources, including crowdfunding which nowadays is very popular in the online environment because it allows to gain the money that does not need to be returned, but it must be used effectively so as not to lose people's trust. This project proposes developing metrics that can measure the readiness level of a university innovation for being put on a crowdfunding platform so with the help of the backers the product can be evolved further or to grow the manufacturing process before launching onto the market. The results based on the metrics will allow the identification of the weak points and the best suited future enhancement directions for the projects of the University of Petrosani.

CONTROLLING A ROBOTIC HUMANOID HEAD USING KINECT

Patent: Innovative product resulted from research project – UPET-10/2021
Authors: **MUNTEAN Emanuel, LEBA Monica**
Institution: University of Petrosani
Description: The development of intuitive and natural methods for human-robot interaction has been a significant focus in the field of robotics. Traditional teleoperation systems often rely on wearable sensors or handheld controllers, which can be cumbersome and limit the operator's natural movements. This paper presents a novel approach to robotic control that leverages the capabilities of the Microsoft Kinect V1 device for non-wearable gesture-based interaction. The Kinect V1, known for its ability to combine RGB and depth images to estimate 3D human posture in real-time, offers a promising solution for teleoperating robots without the need for physical contact or wearable devices. The proposed system utilizes the Kinect V1 to capture the user's gestures, translating them into control signals for a 3D printed open-source humanoid robotic head with six degrees of freedom. The Kinect's skeleton tracking feature, capable of monitoring 20 joint positions is employed to estimate the user's posture and accordingly control the robot's movements. This method of control is implemented within the MATLAB-Simulink environment, where the calculation of joint angles

derived from the user's gestures facilitates the precise manipulation of the robotic head's movements. The potential applications of this technology are vast and varied. In the realm of rehabilitation, such a system could significantly benefit patients recovering from injuries or strokes by controlling exoskeleton joints, thereby enhancing the recovery process through more engaging and intuitive interaction methods. The entertainment industry, particularly gaming and virtual reality, stands to gain from gesture control technologies by providing users with a more immersive and interactive experience. By enabling body movements as input, users can engage with games and virtual environments in a novel and captivating manner. Furthermore, in the industrial sector could see improvements in safety and efficiency through the adoption of gesture-based control systems for machinery and processes.

BUGGY4FUN

Patent: Innovative product resulted from research project – UPET-2/2021

Authors: **RISTEIU Marius, RUS Cosmin, LEBA Monica, IONICA Andreea, MARCUS Răzvan, SIBISANU Remus**

Institution: University of Petrosani

Description: The project presents a small electric car, which can be used on various types of terrain, including in urban centers, to reduce pollution. The developed platform offers the possibility to test several types of electric motors, together with their controllers. The engines are powered both from dedicated batteries and from alternative sources resulting from regenerative braking, as well as from solar energy sources. The project of a small and versatile electric car holds special significance in today's society. It not only contributes to reducing pollution in urban areas but also offers an innovative platform for testing various types of electric motors and controllers. This aspect supports the development of green technologies and the advancement of sustainable mobility. Moreover, the ability to power the motors from dedicated batteries, regenerative sources, and solar energy demonstrates a strong commitment to efficiency and environmental protection. Therefore, the project represents a promising solution for the current needs of clean and sustainable transportation.

CONTRIBUTIONS REGARDING THE USE OF NEURAL HEADSET FOR ARTIFICIAL ARM CONTROL

Patent: Innovative product resulted from research project – UPET-6/2021

Authors: **ROSCA Sebastian, LEBA Monica**

Institution: University of Petrosani

Description: The BCI based on neural interface headset is able to reproduce conscious thoughts of the user using electroencephalography principle to convert brain signals into binary code to be understood by the computer or by a microcontroller with real-time operating system. Due to BCI training it can be created a database with all mental patterns of each user resulted from each mental command imagined in part, that corresponds to a certain revolute motion of kinematic joint of an 3D printed robotic upper limb prosthetics used for medical purpose or in manipulation of dangerous substance. This technology has applications in medicine and the management of hazardous substances, thereby promoting innovation and safety in critical areas.

SOCIETY 5.0-INSPIRED SYSTEM DYNAMICS FOR SUSTAINABLE AGRITOURISM: INTEGRATING EMERGING TECHNOLOGIES WITHIN COMMUNITY-CENTRIC DEVELOPMENT

Patent: Innovative system resulted from research project – UPET-11/2021

Authors: **SAMUIL Ionela, STANCIOIU Loredana, IONICA Andreea, LEBA Monica**

Institution: University of Petrosani

Description: This project introduces a system dynamics model that integrates emerging technologies in the pursuit of sustainable agritourism development within communities. Based on Society 5.0, this model aims to blend technological innovations with community-oriented approaches so as to redefine the agritourism landscape. The suggested framework picturizes an integrated and harmonious relationship between agritourism, emergent technologies and societal dynamics for achieving a holistic and comprehensive development paradigm. Through exploiting the potentials of Society 5.0, the model hopes to increase community participation, promote sustainability practices and create enhanced overall experience in agritourism. With the synthesis of systems' dynamic principles and philosophy of Society 5.0, this project contributes to discussing future directions for agritourism development that concentrate on community-based tourism with technology integration in its path towards future growth trajectory.

COLLABORATIVE MIND SENTINELS

Patent: Innovative system resulted from research project – UPET-3/2021

Authors: **SIBISANU Remus, LEBA Monica**

Institution: University of Petrosani

Description: The system uses artificial intelligence to manage various terrestrial, aerial and submarine robots, which can be used to collect information from the environment, to collaborate, to transmit information and to learn together. The developed system is useful in applications for exploring unknown areas, search and rescue applications, in agriculture, as well as in alternative communication systems. The project of implementing artificial intelligence in managing terrestrial, aerial, and submarine robots holds particular importance. This advanced technology promotes safety, efficiency, and progress in research, facilitating intelligent solutions for the complex challenges of the modern world.

OUTDOOR APP WITH ONLINE SOCIAL FEATURES

Patent: Innovative system resulted from research project – UPET-9/2021

Authors: **TRIOHIN Victor, LEBA Monica, IONICA Andreea**

Institution: University of Petrosani

Description: This work addresses the 21st century's sedentary lifestyle, proposing a Unity-based smartphone app to encourage outdoor activity. By integrating a virtual map with geolocation, the app highlights nearby parks for walks and includes a feature for users to upload and share photos. It aims to combat sedentarism by promoting the health benefits of nature, such as stress reduction and improved cognitive function, encouraging a return to an active, outdoor lifestyle. In the application, Mapbox is utilized for path construction, pinpointing the user's current location, identifying the destination, and generating a list of nearby parks for the user to choose from. This comprehensive integration ensures a seamless navigation experience, empowering users to effortlessly select their preferred outdoor destination and guiding them through their journey with ease. PlayFab serves as the backbone for the database, handling user information storage, login processes, and the management of other crucial data. This system streamlines user interactions and ensures secure and efficient data handling within the application. The application leverages Amazon S3 for storing and retrieving user-generated photos, allowing users to access and view them within the platform. For enhanced security, Amazon Cognito and Amazon IAM are employed, ensuring robust authentication and authorization mechanisms protect user data and photos. This approach ensures a secure and user-friendly experience for storing and sharing memories. The app's interface, designed in Adobe Illustrator and Figma, focuses on simplicity and user-friendliness, using minimalistic shapes and a calming green color palette to reflect its nature-oriented theme. Montserrat font adds a modern touch. The use of shadows enhances depth, making the interface intuitive. The logo, a simplified

tree illustration, encapsulates the app's focus on connecting users with outdoor spaces, embodying the essence of nature and growth. Developed in Unity, the app capitalizes on its multiplatform strengths and mobile optimization. This approach highlights the app's focus on promoting outdoor activity through a user-friendly and visually appealing design.

IMPLEMENTATION OF RESEARCH RESULTS

„Ion Creangă" State Pedagogical University

STRENGTHENING THE FUNCTIONALITY OF THE INTERSECTORAL PARTNERSHIP FOCUSED ON ENSURING THE WELL-BEING OF CHILDREN

Pedagogical model, "**Strengthening the functionality of the intersectoral partnership focused on ensuring the well-being of children**", carried out in the context of the research project "Valorization of the intersectoral partnership focused on ensuring the well-being of children", based at the Doctoral School of Educational Sciences, "Ion Creangă" State Pedagogical University

Field: **Educational Sciences**

Specialty: 531.01 General theory of Education

Authors: **SCUTARU Albina, BOTNARI Valentina**

Institution: „Ion Creangă" State Pedagogical University

Description: The pedagogical model reflects the set of components in which interconnected relationships or connections that contribute to the achievement of a common goal prevail.

The pedagogical model "Strengthening the functionality of the intersectoral partnership focused on ensuring the well-being of children" includes:

- the conceptual dimension comprising **paradigms and theories**: the holistic paradigm, the humanistic paradigm, the connectionist theory; **principles**: the principle of functionality, the principle of integrity, the connectionist, sustainability, unity/tolerance principles; **norms**: active and conscious participation, identification of the useful, preparation, exercise, effect, balance in actions, common values.
- the praxeological dimension **of the intersectoral educational partnership focused on ensuring the well-being of children**; **education agents** involved in the intersectoral educational partnership: educational institutions, Centers of General Practitioners, Police Inspectorates, Territorial Directorates of Social Assistance, families; **responsibilities of education agents**: welfare assessment, support planning, implementation of support actions, monitoring; **functions** of the intersectoral educational partnership: the function of organizational openness, synergistic, informational, social actions; **operating conditions**: communication, collaboration, coherence, conformity, creativity, cohesion.

„Nicolae Testemitanu" State University of Medicine and Pharmacy

FIBROSCAN ASSESSMENT OF METHOTREXATE LIVER TOXICITY IN JUVENILE IDIOPATHIC ARTHRITIS

Patent: 5982

Authors: **IACOMI Vladimir, REVENCO Ninel**

Institution: The State University of Medicine and Pharmacy „Nicolae Testemitanu"

Description: The test is a painless maneuver and does not require prior preparation, and the result is released onsite. It is based on the concept of transient elastography. This system uses controlled external mechanical excitation that is integrated with an ultrasonic transducer to monitor the pulse of shear waves that is generated. The ultrasonic transducer has a fixed focal configuration, and the shear wave velocity that is measured corresponds to the average shear wave velocity in the tissue region along the "A-line" that is the transducer image. FibroScan is specifically designed to measure liver stiffness without displaying a B-mode image. Median liver elasticity reference values were taken from the European Federation of Societies for Ultrasound in Medicine and Biology. Thus, the median liver elasticity in the amount of 4.40; 4.73 and 5.10 kPa were assigned to age groups 0 – 5; 6 – 11 and 12 – 18 years, respectively (p=0.001).

Following the study, an interdependence between individual liver elasticity results and therapeutic response (including side effects) was observed in patients with juvenile idiopathic arthritis, which denotes the presence of premature risk in this category of children. The subclinical presence of liver toxicity and inflammation require the implementation of elastographic evaluation by FibroScan in all patients with juvenile idiopathic arthritis following methotrexate for more than 6 months and the possible personalized change of the treatment stage.

EVALUATION OF THE T677T AND C677T/A1298C GENETIC POLYMORPHISMS OF METHYLENETETRAHYDROFOLATE REDUCTASE IN JUVENILE IDIOPATHIC ARTHRITIS

Patent: 5981

Authors: **IACOMI Vladimir, REVENCO Ninel**

Institution: The State University of Medicine and Pharmacy „Nicolae Testemitanu"

Description: Mutations of the studied gene induce the regulatory dysfunction of folate metabolism, thus being directly involved in increasing the level of homocysteine, attributing the role of an independent risk factor in the initiation of secondary reactions in methotrexate treatment.

Blood was collected from the cubital vein in the morning, on fasting, in the EDTA container. Sample tubes were transported within no more than 24 hours and stored until the start of the study at -20°C. Later, n number of samples were weekly examined by isolation of the DNA of the peripheral cells in the supernatant resulting from the centrifugation after the addition of the lysis solution. The next step was the polymerase chain reaction with real-time detection of the accumulated PCR product by measuring the emitted fluorescence. At the end of the amplification cycles, genotyping was performed by melting curve analysis. The analyzer used was CFX96 Touch Real-Time PCR Detection System, Bio-Rad, USA. The assessment method is a qualitative one with 100% clinical specificity.

The analysis appreciated the relationship between the pathological polymorphisms and the therapeutic response in patients with juvenile idiopathic arthritis and can serve as screening for non-responders.

Valahia University of Targoviste

RECOVERY OF PV CELLS FROM MECHANICALLY DAMAGED PV MODULES BEFORE FINAL RECYCLING

Authors: **LEȚ Dorin-Dacian, DULAMĂ Ioana-Daniela, GURGU Ion Valentin, LEȚ Andreea-Mihaela, BUCURICĂ Ioan-Alin, IONIȚĂ Giorgian-Marius, TUDORACHE George Daniel**

Institution: Valahia University of Târgoviște

Description: Buildings are responsible for around 40% of energy consumption and 36% of CO2 emissions in the EU, and 84% of their demand is still generated by fossil fuels. With the Green Deal, the EU signed its commitment to become the first continent to achieve climate neutrality by 2050. Given the high relevance of the building sector for emissions reduction, the concept of PEBs is gaining increasing attention. Besides, construction and demolition waste accounts for 35% of EU waste. REN+HOMES tackle the sustainable transition not only by reducing carbon emissions, but also resource scarcity, energy poverty and focusing on education /participation of stakeholders. REN+HOMES project objectives are: i) develops a set of 23 solution: 9 hardware (industrialized panel with recycled materials, pre-fabricated BIPV insulated façade, wireless IoT device, end user platform and BMS, LPWAN connectivity, geothermal walls, BIPV/BAPV with repurposed cells, H2 storage), 7 software (BDEA, INTEMA, VERIFY-B, GRT, TCQi, RCS, CBEO) and 7 Circular Plus Energy Homes (CPEH) methodologies (for AU, ES, EE, RO, EL, FR and a universal one); ii) tests and implements them in 4 large-scale demonstrators (19.843 m2 - 2 renovation and 2 new construction sites) in AU, ES, EE, and RO; iii) develops business models combining cost-effective deep-retrofitting, demand response, and energy communities.

To retain the value of PV cells (e.g., above production cost, the China mainland transport value) and minimize the embodied CO2 before reaching landfills or recycling plants, we propose a 2-step process. Initial inspection of PV modules collected for recycling (typically done through shredding) using electroluminescence and computer processing for identification and ranking of usable cells, followed by thermo-mechanical and chemical processing for delaminating parts of modules that can be reused. Considering the entire process can be economically competitive to the EU market price value, and accounting for the electronic waste incentives for recycling PV modules, the recovered cells can thus be reclaimed into new re-purposed products, retaining part of the embodied carbon footprint and their economic value.

Acknowledgments: This work was supported through Horizon Europe Framework Programme (HORIZON), Project No. HORIZON-CL5-2022-D4-01-02 "Renewable ENergy-based Positive Homes – RENplusHOMES" GA 101103450.

GRAPE BY-PRODUCTS: POTENTIAL SOURCES OF PHENOLIC COMPOUNDS FOR NOVEL FUNCTIONAL FOODS

Authors: **RĂDULESCU Cristiana, OLTEANU Radu Lucian, NECHIFOR (Tudorache) Mihaela**
Institution: Valahia University of Targoviste

Description: Nowadays consumers who have to face increased risks related to stress, health problems, and environmental pollution, are generally open to functional foods, to which many health-related benefits are attributed. As a result, functional foods have gained popularity but also significant research attention in food health and technological innovation. There is increasing evidence, based on their antioxidant activity, that consumption of phenolic compounds present in fruits and vegetables may lower the risk of serious health disorders. Natural and potent antioxidants are requested not only for food preservatives and nutraceuticals/pharmaceuticals but also for the formulation of functional foods. Grapes contain both enzymatic and non-enzymatic (nutritional) antioxidants, such as ascorbic acid and bioflavones. High amounts of these valuable compounds are removed through processing if the skin and the seeds are separated from the pulp. Around 30% of the total quantity of vinified grapes corresponds to wine by-products representing around 20 million tons. During the vinification process, a large amount of grape pomace is generated with valuable recovery because it constitutes an important source of value-added products such as phenolic compounds. The hydroalcoholic extracts obtained from grape by-products (pomace, stems and skins and seeds respectively) of Fetească Albă and Tămâioasă Românească were proved to be characterized through total polyphenols content ranging between 3.32±0.34 mg GAE/g dried matter (stems of Tămâioasă Românească by ultrasonication) and 15.32±1.93 mg GAE/g dried matter (pomace of Tămâioasă Românească subjected to ultrasonication). The total flavonoid content registered values between 1.15±0.07 mg QE/g dried matter (stems of Tămâioasă Românească by ultrasonication) and 3.53±0.40 mg QE/g dried matter (pomace of Tămâioasă Românească subjected to ultrasonication). High antioxidant activity was determined both for Fetească Albă and Tămâioasă Românească, regardless of the grape part analyzed and the extraction procedure (maceration/ultrasonication) applied. It has been well documented that grapes by-products, such as skin and seeds, contain high levels

of various health-enhancing substances, including phenolic compounds. However, according to our knowledge, this is the first study reporting the total polyphenols content, total flavonoids content, and antioxidant activity (expressed as by the half maximal inhibitory concentration - IC_{50}) of the hydroalcoholic extracts obtained from the two white grape Romanian varieties, i.e., Fetească Albă and Tămâioasă Românească. This research represents a new approach to waste management by determining the amount of polyphenols from grape by-products and optimizing the conditions of their extraction. Subsequently, utilization of the grape by-products as such or of their recovered phenols in developing functional foods could be a method for enhancing the antioxidant daily intake of consumers, for producing food with high nutritional quality, and also a path to successful valorization of food by-products, by closing the loop of resources in winemaking. Comprehensive studies evaluate the consumers' preferences for formulated polyphenol-rich functional foods.

Acknowledgments: This work was supported by the Ministry of Research, Innovation, and Digitization from Romania, through Project No. 43PFE/30.12.2021, Excellence and performance for increasing the R&I institutional capacity (ProExcellence).

Individual entrepreneur

ZACUSCA BOIERULUI

Authors: **CIMPOIEȘ Ana**

Antreprenor individual

Description: Vânata taiată plastine, sarată, unsă cu ulei și coaptă în rolă cu adaus de ceapă puțin înnădușită, nucă greciască, usturoi, ardei iute și otet de mere.

SĂRMĂLUȚE FERMENTATE DIN LEGUME

Authors: **CIMPOIEȘ Ana**

Antreprenor individual

Description: împlutura din radacinoase ca spre exemplu țelina, postârnacul, pătrunjelul și morcovul tăiat "pai", condimentate, invelite în orice fel de varză sau frunzi comestibile fermentate în sos de ardei cu usturoi și diferite condimente, puse la fermentare, apoi fermentarea este stopată cu oțet de mere natural.

YOUNG INVENTOR

Centru de Excelență în Medicină și Farmacie „Raisa Pacalo”

OBȚINEREA MATERIALULUI SĂDITOR DE MUR PRIN BIOTEHNOLOGII

Authors: **GHEORGHIȚA Ilinca, MACOVEI Alexandra, MIȚCO Mihaela**
Professor: **LOZINSCHII Mariana**
Institution: CEMF ”Raisa Pacalo”

Description: Cercetările realizate de noi au avut loc în loc în Laboratorul de Genetică, Fiziologie și Biochimie a Plantelor, la facultatea de Biologie și Chimie, a Universității Pedagogice de Stat „Ion Creangă”. Proiectul realizat de noi implică înmulțirea *in vitro* a soiului **Arapaho**, specia ***Rubus fruticosus*** cu scopul de a obține material săditor omogen și sănătos, deviruzat. În cadrul acestui proiect, am cercetat microclonarea plantelor in condiții de laborator. Factorii fizici și anume temperatura (20-23C), umiditatea (80-90%), și lumina (1200 lux) au contribuit la creșterea armonioasă în condiții de laborator. Factorii biologici au fost: meristeme din muguri apicali și meristeme din muguri laterali.

Arapaho este mai puţin prezentată în literatura de specialitate, specia fiind, de asemenea, recent introdusă în cultură atât la noi în ţară cât şi în unele ţări din Europa. Acest soi se remarcă atât prin valoarea alimentară datorită conţinutului mare de vitamine, săruri minerale şi antioxidanţi dar şi printr-o rezistenţă ridicată atât la temperaturile scăzute din anotimpurile reci cât şi la cele ridicate din cursul verii, valorificâd, de asemenea, şi solurile mai puţin fertile. Având în vedere faptul că acest soi este mai puţin cultivat în prezent, dificultatea producerii de material săditor poate fi un impediment pentru înfiinţarea de plantaţii comerciale.

În acest context, elaborarea unor protocoale eficiente pentru producerea de material săditor prin micropropagare la soiul **Arapaho** va permite introducerea rapidă în cultură a soiurilor nou create sau cerute pe piaţă.

PÂINE VIE CU MAIA: O ALCHIMIE A GUSTULUI ȘI SĂNĂTĂȚII

Authors: **MARUȘCEAC Alexandrina, IAȚUC Cristina, GÎNJU Daniela**
Professor: **LOZINSCHII Mariana**
Institution: Centru de Excelență în Medicină și Farmacie Raisa Pacalo

Description: Cercetarea noastră este pâinea cu maia, dospită natural, obținută prin fermentarea aluatului cu o cultură starter, numit maia sau aluat madre. Acest aluat este obținut prin fermentarea amestecului făinii și apei timp de câteva zile sau săptămâni, de regulă 14 zile, în care microorganismele naturale din mediul înconjurător își fac loc și îl îmbogățesc cu arome și texturi unice. Pâinea cu maia este mai ușor de digerat și

are un indice glicemic mai scăzut, ceea ce înseamnă că nu va provoca o creștere bruscă a nivelului de zahăr din sânge.

În cadrul acestei cercetări ne-am propus o serie de obiective inovative, acestea fiind: 1. Investigarea modului în care pâinea cu maia influențează digestia și absorbția nutrienților, ținând cont de microbiomul intestinal. 2. Studierea efectului pâinii cu maia asupra nivelului de zahăr din sânge și a sensibilității la insulină. 3. Determinarea diferențelor de compoziție nutritivă (proteine, fibre, minerale, vitamine) și a compușilor bioactivi (antioxidanți, polifenoli) între pâinea cu maia și pâinea dospită cu drojdie comercială. 4. Evaluarea potențialului pâinii cu maia de a combate anumite infecții bacteriene și de a reduce inflamația. 5. Experimentarea cu diverse tipuri de maie (secara, grâu, alte cereale) și tehnici de fermentare (temperaturi, durate) pentru a obține pâine cu caracteristici specifice. 6. Crearea de rețete pentru diverse tipuri de produse de panificație cu maia, cum ar fi pâine integrală, pâine cu semințe, focaccia, covrigi, pizza, etc. 7. Promovarea pâinii cu maia ca o alternativă sănătoasă și gustoasă la pâinea tradițională. 8. Identificarea factorilor care influențează caracteristicile organoleptice (gust, aromă, textură) și aspectul pâinii cu maia (volum, porozitate, crustă).

Pâinea nu este doar o opțiune delicioasă, ci și una care poate aduce beneficii adiționale sănătății datorită metodelor sale tradiționale de preparare. Produsele de panificație din Maia pot avea un aport nutritiv variat, cu toate acestea, în general, pot fi o sursă bună de: carbohidrați - Principala sursă de energie a organismului, provenind din făină. Cantitatea de carbohidrați variază în funcție de tipul de făină utilizată (albă, integrală). O felie de pâine conține aproximativ 30 de grame de carbohidrați. Fibre - acestea ajută la digestie și la menținerea unei senzații de sațietate (acestea ajungând la o cantitate de 3 grame). Proteine - 5 grame de regulă la o felie de pâine cu maia. Vitamine și minerale-Produsele de panificație abordate reprezintă o sursă de vitamine din grupul B, vitaminele C și E, fier, calciu și magneziu, fibre dietice, mangan, potasiu, seleniu, zinc (1 miligram de fier, 50 de miligrame de calciu, 50 de miligrame de magneziu), aminoacizi esențiali și antioxidanți.

Datorită proprietăților sale, ne propunem să obținem o serie de produse de panificație gustoase pe bază de maia, spre exemplu: pâinea integrală, albă, cu secară, cu semințe, cu fructe, baghete, ciabatta. Acestea sunt doar câteva dintre varietatea produselor posibil de preparat. Cu puțină creativitate și experimentare, putem folosi maia pentru a crea o gamă largă de produse de panificație unice și delicioase.

Putem concluziona prin ideea că analizele efectuate indică faptul că pâinea cu maia conține un nivel mai ridicat de antioxidanți, datorită procesului mai lent de fermentație, și prezintă un indice glicemic mai scăzut comparativ cu pâinea preparată cu drojdii comerciale. În plus, aciditatea dezvoltată în procesul de fermentare a maiei contribuie

la o mai bună conservare naturală a pâinii și la intensificarea profilului său aromatic. Prin urmare, utilizarea maiei nu doar că îmbunătățește calitatea organoleptică a pâinii, dar poate oferi și avantaje sănătății, favorizând o digestie mai bună și o mai bună toleranță la gluten. Aceste studii accentuează importanța redescoperirii și integrării metodelor tradiționale de panificație în practicile contemporane, pentru a îmbunătăți calitatea produselor de panificație și a sănătății consumatorilor.

PROTEINA – BAZA ALIMENTAȚIEI SĂNĂTOASE

Authors: **VASILIAN Mădălina, PLĂMĂDEALĂ Evelina**
Professor: **LOZINSCHII Mariana**
Institution: Centru de Excelență în Medicină și Farmacie Raisa Pacalo

Description: Rețetele proteice sunt preparate culinare care au în conținutul lor o cantitate mare de proteine, ce sunt esențiale pentru orice organism, întreținând țesutul din corpul nostru.

În cadrul acestei cercetări ne-am propus câteva obiective: Identificarea și analizarea diferitor rețete proteice, concentrându-ne pe ingredientele utilizate și modul de preparare; Investigarea diverselor surse de proteine și compararea lor nutrițională; Realizarea a câtorva rețete proteice originale și cercetarea impactului lor asupra organismului uman. Explorarea modului în care rețetele proteice pot fi adaptate în diverse diete. Pentru a putea avea rezultate bune și rapide am urmat câțiva pași indispensabili: 1. Selectarea produselor convenabile; 2. Cercetarea lor nutrițională și energetică; 3. Măsurarea cantității necesare de produse; 4. Gătirea alimentelor corespunzător la temperatură și timpul convenabil; 5. Calcularea finală a valorii energetice; 6. Aranjarea preparatului într-o forma estetică; 7. Includerea preparatului în dieta sau regimul corespunzător și savurarea lor.

Aceste alimente sunt benefice pentru o varietate mare de persoane cu diferite afecțiuni și nevoi alimentare dar și pentru întreținerea unei vieți sănătoase. Potrivit mai multor surse și cercetări s-a constatat faptul ca cantitățile zilnice de proteine recomandare în funcție de vârstă și sex sunt următoarele: copii 1- 3 ani: 13 grame; copii 4 – 8 ani: 19 grame; copii 9 – 13 ani: 34 grame; adolescente: 14 – 18 ani: 46 grame; adolescenți 14 – 18 ani: 52 de grame; femei 19+: 46 grame; bărbați 19+: 56 de grame. Pentru a acumula cantitățile de proteine necesare am inclus alimente precum carne, pește, ouă, leguminoase, lactate și nuci. Sunt excelente pentru a susține masa musculară și pentru a ne menține sătui și energici. Conținutul proteic pentru fiecare aliment: un ou mare conține 6 grame de proteine (50% din proteine se află în albuș); 100 g de piept de pui conține 32.1 g de proteine; 226 g de brânză conține 28 g de proteine; 170 g de iaurt grecesc conține 17 g de proteine; 250 ml de lapte conține 8 g de proteine; 85 g de

carne de vită conține 25 g de proteine; 75 grame de linte fiarta conține 17.86 g de proteine; 170 g de năut fiert conține 14.53 g de proteine; 130 g de mazăre gătită conține 8.53 grame de proteine; 23 boabe migdale prăjite conțin 5.94 grame de proteine și multe altele.

Există o varietate mare de mâncăruri delicioase pregătite folosind alimente proteice. Spre exemplu: tofu, salată de quinoa cu legume și nuci, chili vegetarian cu fasole, curry de linte sau burgeri vegetarieni din năut, pizza cu blat din linte, pâine din linte, supă de fasole albă, chifteluțe din năut, bastonașe proteice din fulgi de ovăz cu miere și fructe uscate, etc . Acestea sunt doar câteva exemple, dar există o mulțime de opțiuni pe care le putem încerca pentru a obține proteinele necesare.

Susținem faptul ca alimentele proteice reprezintă o componentă importantă a unei diete sănătoase și echilibrate. Este important să includem aceste alimente în alimentația zilnică pentru susține sănătatea organismului și a asigura necesarul de aminoacizi.

Instituția Publică Liceul Teoretic „Boris Dînga” Criuleni

SURSA ECO DE ENERGIE PE BAZA MAGNEȚILOR NEODIM

Authors: **GUZUN Lidia – elev clasa a 11-a, SAVCIUC Ștefan – elev clasa a 11-a**
Institution: Instituția Publică Liceul Teoretic „Boris Dînga” Criuleni

Description:

Scopul proiectului: Obținerea energii regenerabile prin proiectarea unui generator la baza căruia sunt magneții neodim.

Obiectivele Cercetării:

1. Familiarizarea populației cu ideea proiectului.
2. Proiectarea unui viitor ecologic și raționalizarea resurselor.
3. Dezvoltarea conceptului lansat în cadrul proiectului din 2022-2023.
4. Determinarea cantității de energie stocată în acumulator, în urma activității generatorului *pe baza* magneților neodim

Metoda/metodele utilizată/utilizate în cercetare și elaborarea produsului:

- Metoda comparativă (impactul generatorului asupra mediului comparativ cu alte surse de energie)
- Metoda inductivă (prin care am dedus problema și care pot fi consecințele ei asupra mediului)
- Metoda cauză-efect (la analiza efectelor generatorului și schimbările posibile)

Aspectul inovativ: Dispozitivul/ generatorul nostru se diferențiază de toate celelalte, datorită sistemului inovativ de fucționare și de producerea/ stocarea energiei. Aceste idei pot ajuta la schimbările semnificative în mediul înconjurător.

Avantajele: Generatorul creat este o soluție pentru un mediu ecologic. Am fost capabili să aducem argumente profitabile în avantajul acestui proiect, iar rezultatele proiectului nostru pot garanta o soluție veritabilă.

Astfel, odată cu introducerea acesteia pe plan internațional, vom observa schimbări deosebite ce ar proveni din Republica Moldova-primul stat ce ar identifica soluții demne de a fi aplicate nu doar teoretic, dar și practic.

Astfel, implementând proiectul, vom contribui la crearea unui mediu curat și sănătos prin:

1. îmbunătățirea biodiversității ecosistemelor acvatice și terestre, a calității aerului și mediului;
2. folosirea rațională a apelor;
3. promovarea modului de viață corect și curat;
4. promovarea utilizării resurselor verzi și inepuizabile;
5. eliminarea unor factori poluanți din viața oamenilor.

De asemenea acest proiect ar fi un început al evoluției și un pas spre rezolvarea problemei poluării mediului și încălzirii globale.

Concluzii: În urma exploatării generatorului, obiectivele și scopurile propuse au fost realizate, astfel, după proiectarea dispozitivului unic și individual am primit răspuns la toate întrebările propuse și am obținut următoarele rezultate: Identificarea propriilor surse de generare a curentului electric.

Producerea energiei pe baza unui generator în continuă mișcare, fără a folosi o altă energie din exterior.

Obținerea electricității, utilizând magneții neodim.

Promovarea spiritului ecologic în rândul populației orașului.

Acestea sunt doar câteva dintre avantajele și dezavantajele centralei hidroelectrice. Este important să se ia în considerare toate aceste aspecte atunci când se evaluează opțiunile de energie, pentru a găsi cele mai bune soluții ce ar asigura un mediu sustenabil și o economie durabilă. Pe măsură ce tehnologia progresează și mai multe cercetări sunt realizate pentru a ameliora efectele negative pe care le are energia valurilor, vom reuși ca în viitorul apropiat să implementăm mai eficient acest tip de sistem de energie, cu o amprentă cât mai redusă asupra mediului.

„Ion Creanga" State Pedagogical University

DIGITAL WORKBOOK "MICII OLIMPICI"

Author: **EFROS Victoria,** masterand anul II, Tehnologii de creare a resurselor educaționale digitale.
Institution: Universitatea Pedagogică de Stat „Ion Creangă"

Description: The proposed digital auxiliary "Micii Olimpici" is an innovative educational resource designed for primary school students with exceptional mathematical abilities. It provides a captivating and tailored learning experience, encouraging critical thinking, creativity, and problem-solving. Structured around the idea of offering a predictable and well-organized experience, the auxiliary encourages an integrative approach to mathematical concepts, with the complexity of tasks gradually increasing over time. Each page of the auxiliary presents tasks and mathematical problems of high difficulty, meticulously designed to stimulate critical thinking and explore various branches of mathematics. Implementing this auxiliary with the help of the Interactive Problems tool brings digital accessibility and immediate feedback, thus reinforcing understanding and passion for mathematics in a modern educational environment. The auxiliary thus becomes a comprehensive source of knowledge and a tool for holistic development, intended to stimulate interest, creativity, and enjoyment in exploring the fascinating world of mathematics.

WATER PURIFICATION OF PETROLEUM PRODUCTS USING THE MAGNETIC FIELD

Authors: **GHICOV Adriana,** student „Ion Creangă" State Pedagogical University;
CEBANU Natalia, student, „Ion Creangă" State Pedagogical University;
Professor: **GÎNJU Gheorghe**, doctor, university lector

Description: As part of the optional university course Ecological Education, we carried out a STEAM project, selecting the problem of purifying water from petroleum products. We have developed an effective method of water purification from oil products by using magnetic field and a iron dust/filing.

For our investigations we designed/built a prototype boat, equipped with electromagnet, holes at the water line, tank for collected oil products and dust/iron filing sprayer. We researched the purification of fresh and sea water by the method ours, previously polluted with various petroleum products (crude oil, diesel and motor oil).

Based on our own investigations, we have demonstrated that the method of using the magnetic field in the depollution of petroleum product waters is effective, cheap,harmless, accessible and with great environmental benefits.

IP Gimnaziul Temeleuți

UTILAJ PENTRU SORTAREA CARTOFILOR

Authors: **VOLENTIR Ioan**, cl.a VIII-a, **CHIRONEȚ Ioan**, cl. a VII-a,
Professors: **COROLEȚCHI Ana; SPINEI Mariana**
Institution: IP Gimnaziul Temeleuți

Description: Acest utilaj are destinația de a sorta cartofii după dimensiune, fără pierderi și de a eficientiza timpul de muncă. Noi am venit cu ideea de a inventa utilajul dat, care ar economisi timpul, am putea fi implicați și noi în procesul de lucru fără părinți. Utilajul dat ne oferă siguranță din punct de vedere a securității muncii, deoarece nu cere energie electrică, și nici nu este o mașinărie care trebuie condusă de adulți.

Datorită faptului că familiile noastre se ocupă cu agricultura și anume creșterea cartofului, noi suntem implicați în diferite procese de muncă. Sortarea lor după dimensiuni , e necesară pentru realizarea pe piața de desfacere și preț conform dimensiunilor, pentru a obține un venit financiar mai mare în familie, fără pierderi. Utilajul este format din 5 picioare, care au funcția de suport. Pe picioare sunt amplasate două site de dimensiuni diferite. Pe prima sită turnăm o cantitate de cartofi (cca 10 kg), cele mai mici se duc jos într-un vas, cele care rămân le mânuim și le transmitem sitei a doua. Prin sita a doua trec cartofii mijlocii, ducându-se în containerul amplasat sub sită. Rămân cartofii cei mai mari, pe care îi dăm în al treilea container cu mâinile. Astfel alegem cartofii în trei categorii, după mărime, fără a greși dimensiunile. Am mai adăugat la utilajul nostru lăzi încorporate, astfel încât să nu se împrăștie cartofii. Acest lucru îl putem face fără implicarea părinților, astfel le venim în ajutor.

IPLT „C. Stere”, Soroca

LEVITRON

Author: **BABĂRĂ Alexandru**
Professor: **CIUVAGA Victor**
Institution: IPLT „C. Stere”
Description: The prototype it self show the example of an magnetic levitation wich can be used in the medicine in different purpose, an example is the levitation of medical instruments, wich can make a more sterile interventions.

SISTEM AUTOMAT DE UDARE A PLANTELOR

Author: **Bardețchii Ana**
Institution: IPLT ,,Constantin Stere”
Description: Procesul automat de udare a plantelor reprezintă utilizarea tehnologiei pentru a gestiona și controla furnizarea de apă către plante în mod automat, fără intervenția umană directă. Acest sistem se bazează pe senzori și algoritmi care monitorizează nivelul de umiditate a solului și furnizează apa necesară în funcție de nevoile individuale ale plantelor. Folosind dispozitive precum plăci și senzorii de umiditate, sistemul poate ajusta cantitatea de apă livrată în funcție de condițiile de mediu și cerințele specifice ale plantelor. Această abordare oferă o soluție eficientă și ecologică pentru menținerea sănătății plantelor în mediile de cultivare.

Principiul fundamental al sistemului automat de udare a plantelor constă în monitorizarea continuă a umidității solului pentru a asigura condiții optime de creștere. Senzorii de umiditate sunt plasați în sol în apropierea rădăcinilor plantelor și măsoară constant nivelul de umiditate. Aceste date sunt apoi transmise către placa Arduino, care interpretează informațiile și decide dacă este necesară udarea. În funcție de setările preconfigurate sau ajustate de utilizator, Arduino activează sau dezactivează pompa de apă pentru a furniza cantitatea adecvată de apă. Integrând tehnologia Arduino cu aceste componente, sistemul automat de udare oferă o soluție eficientă și precisă pentru menținerea sănătății plantelor fără a necesita intervenția umană constantă.

1. Integrarea tehnologiei în system oferă o platformă flexibilă și programabilă, permitând personalizarea și extinderea funcționalităților în funcție de nevoile utilizatorului.
2. Sistemul utilizează senzori de umiditate și algoritmi de control inteligent pentru a asigura o udare precisă și adaptabilă în funcție de necesitățile specifice ale plantelor, contribuind la creșterea lor sănătoasă.

3. Prin optimizarea consumului de apă și programarea automată a udării în funcție de condițiile meteorologice și umiditatea solului, produsul nostru contribuie la economisirea de apă și resurselor.
4. Sistemul nostru oferă o soluție convenabilă și ușor de utilizat pentru îngrijirea plantelor, fiind accesibil și adaptabil pentru utilizatori de toate nivelurile de experiență.
5. Aspectul compact și estetic al produsului nostru îl face potrivit pentru utilizarea în locuințe sau spații de lucru, contribuind la crearea unui mediu sănătos și plăcut.

COSTUME FOR BLIND PEOPLE

Authors: **DEȘAN Dumitru**
Professor: **CIUVAGA Victor**
Institution: IPLT „C. Stere”

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

Key features of the costume include:

Sensors: The suit is equipped with sensors that detect obstacles and environmental cues, providing feedback to the wearer to assist in navigation.

Integration with Urban Infrastructure: A groundbreaking aspect of the project is the implementation of an intelligent system embedded in the sidewalk. When detected by the cane, this system announces nearby landmarks or points of interest, such as stores or pharmacies, aiding in orientation and mobility.

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

Conclusion: Modern equipment and technologies, along with their applications, play a vital role in improving human activity and long-term development. The development of this system will contribute to reducing inequalities and creating a more comfortable environment for visually impaired individuals. Recommendations for future enhancements include the implementation of LiDAR sensors for improved

distance sensing and consideration of integrating the project into educational activities to promote student engagement and stimulate further research and development.

SUNTRACKER

Author: **ONILOV Artiom**
Professor: **CIUVAGA Victor**
Institution: IPLT "C. Stere"

Description: Currently, many solar panels on the market can be set by different methods. The transformation of solar energy into electrical energy depends on the angle at which the sun's rays hit the surface of the battery. Most solar cells are placed at a calculated angle to obtain the maximum amount of energy.This prototype proposes to maximize the amount of solar energy through an integrated motor, which allows the panel to rotate in the current direction of the sun in the sky. The Smart Panel is a significant advance in the field of solar energy, offering an innovative next step in optimizing energy collection compared to traditional solar panels.
Compared to most solar panels on the market, this prototype has the possibility to change the orientation angle of the placed photovoltaic element. The device changes position and rotation in real time depending on that of the Sun or the light source in the sky.

CUTIA AUTOMATĂ

Author: **ZINCENCO Sergiu**
Institution: I. P. Liceul Teoretic „Constantin Stere"

Description: Gestionarea eficientă a deșeurilor este o problemă globală cu implicații serioase asupra mediului și a sănătății publice. Proiectul nostru abordează această problemă prin implementarea unui sistem modern de gestionare a deșeurilor, care utilizează tehnologia și componentele electronice pentru a oferi o soluție inovatoare, eficientă și igienică.

Scopul proiectului este să dezvolte o alternativă modernă pentru gestionarea deșeurilor, care să aducă beneficii semnificative în ceea ce privește igiena, eficiența și comoditatea utilizării. Obiectivele includ dezvoltarea unei soluții fiabile și eficiente, optimizarea colectării deșeurilor, îmbunătățirea experienței utilizatorului și promovarea igienei și a sănătății publice.
Sistemul nostru se bazează pe un senzor care detectează prezența utilizatorului, iar când este activat, un microcontroller trimite un semnal către motoarele servo, care deschid

automat capacul cutiei de colectare a deșeurilor. Acest design automatizat elimină necesitatea de a atinge manual capacul, reducând riscul de contaminare.

Flexibilitatea și adaptabilitatea designului îl fac ideal pentru diverse medii și contexte, putând fi implementat în locuințe rezidențiale, spații publice, instituții de învățământ și birouri.

În concluzie, sistemul nostru modern de gestionare a deșeurilor utilizează tehnologia pentru a oferi o soluție inovatoare, eficientă și igienică, contribuind la un mediu mai curat și mai sănătos pentru toți.

IPLT „Mihai Eminescu”, Căușeni

MEC TISSUES

Author: **Șeremet Mihai-Cristian**
Professor: **Șeremet Ileana-Simona**
Institution: IPLT „Mihai Eminescu”, Căușeni

Description: Nowadays, scientific innovations in the field of biomedical engineering have a direct connection with life, as it is central to how we deal with health problems related to vital organs such as damaged human tissues. In this sense, the artificial production of tissues and organs proposes tissue regeneration innovations with artificial ones, obtained by isolating the cellular matrix of a living tissue.

Therefore, by understanding and applying decellularization process on leafs, we will be able to develop alternative methods of obtaining new MEC tissues and artificial organs.

This process focuses on the repair and regeneration of tissues and organs through various methods, using stem cells and growth factors, to treat heart disease, spinal cord injuries or degenerative conditions, significantly contributing to the patient's quality of life.

IPLT „Mircea Eliade”

MECHOSORT

Authors: **JOSAN Dragos, COGILNICEANU Alexandru**
Institution: IPLT “Mircea Eliade”

Description: Each of us has been in a situation when we went to the store to buy some products and we saw that the expiration date has passed, or even worse, we didn’t notice it and consumed expired products, that can lead to illneses. My colleague and I decided to find a solution to this problem, so we created Mechosort, an intelligent prototype that can sort products by expiration date. This robot aims to revolutionize the food, pharmaceutical, agricultural and many other industries by increasing the effectiveness and precision so that there will be no room for errors. Today, a lot of people work in warehouses and expose themselves to unnecessary danger, with the help of this robot we want to solve this issue. taking all this into account, we believe that our robot could be widely used all over the world, solving 2 big problems at once: food waste and people’s health and insurance. We believe that this robot could be made in production by 2026.

MedAI

Authors: **BOGDAN Denis, SOLOMCA Alexandru**
Institution: IPLT “Mricea Eliade”

Description: This robot called “MedIA” is a remote pharmacy prototype, which will carry different medicine to patients, either at home or in the hospital lounge. The robot can be controlled by the specialist or can be programmed to get directly to the patient. the medicine is stored in its mini deposit and is dispensed in the right compartment (that depends on which medicine the doctor has prescribed or what medicine the patient has selected).

„ELAI” – YOUR ONLINE ASSISTANT IN SOLVING PROBLEMS AND EQUATIONS IN CHEMISTRY

Authors: **SPĂTARU Ionuț, PLĂMĂDEALĂ Ștefan**
Institution: IPLT „Mircea Eliade”

Description: The ELAI project in Education aims to aid middle school students in understanding chemical concepts through an interactive website leveraging Artificial Intelligence (AI) technology.

Project objective: Focused on addressing the learning needs of middle school students in chemistry, the project seeks to create an interactive learning experience integrating AI for instant feedback and error correction.

Research objectives and methods: Over a five-month period starting October 2023, the project employs quantitative and qualitative research methods, collaborating with students and teachers to ensure comprehensive insights.
Research and product development methods: Utilizing statistical analysis and group discussions, the project aims to develop software using Node JS, TypeScript, React.js, and Next.js, incorporating AI to facilitate learning.
Planned and accomplished activities: The project includes creating an interactive website and implementing automated learning processes to enhance the efficiency and quality of chemistry knowledge assimilation.
Innovative aspect: Continuous interface enhancement, design optimization, and a user-oriented approach are key features, ensuring adaptability to students' evolving needs.
Conclusions: ELAI platform exhibits a clear demand in education, with recommendations for close collaboration with teachers and extensive student testing to ensure platform relevance and accessibility.

IPLT „Ștefan cel Mare și Sfânt”

VOLTBOOST

Author: **BOCANCEA Adrian**
Professors: **CAZACIOC Nadejda, GAMANJI Nina**
Institution: IPLT „Ștefan cel Mare și Sfânt”, s. Taraclia, r. Căușeni

Description: VoltBoost is an innovative invention that brings an efficient and practical solution for converting electricity from 12 volts to 220 volts. Designed to meet the needs of various fields, from home use to mobile and emergency applications, VoltBoost uses a technology advanced to transform and amplify electrical energy in a safe and reliable way. With outstanding efficiency and fast conversion capability, VoltBoost offers its users a portable and powerful power source. This compact inverter is equipped with multiple built-in protections to ensure safe use and protection against overload, overvoltage and overheating. Due to its small size and portability, the VoltBoost is ideal for use in cars, caravans, boats or in emergency situations. With its ability to transform available electrical energy into larger and more versatile power sources, VoltBoost represents a valuable innovation in portable power.

SCANE: PYTHON TECHNOLOGY FOR EVALUATING E-NUMBERS IN FOOD PRODUCTS

Author: **OBOROCIAN Adelina**
Professor: **CAZACIOC Nadeja**
Institution: IPLT „Ștefan cel Mare și Sfânt”, s. Taraclia, r. Căușeni

Description: ScanE is a revolutionary innovation in the field of food product composition evaluation, based on Python programming. This advanced technology enables users to quickly scan the labels of food products and identify the E-numbers in their composition. Using image recognition algorithms and natural language processing, ScanE analyzes label content and provides detailed information about each detected food additive. Utilizing an extensive database and up-to-date information, ScanE offers its users a comprehensive assessment of the impact of each identified E-number on health. Through a scoring and classification system, the program indicates the potential harms or benefits of each food additive based on scientific research and international regulations. ScanE represents an innovative solution for consumers concerned about food quality and safety, empowering them to make informed decisions about their diet. This promising technology has the potential to contribute to improving public health and promoting healthier and more balanced eating worldwide.

IPLT „Universul”

„BIOBLITZ – JOC INTERACTIV PENTRU PREGĂTIREA DE BAC ȘI CONSOLIDAREA CUNOȘTINȚELOR LA BIOLOGIE”

Author: **PARFENI Inga**
Profesor: **LOZINSCHII Mariana**
Institution: IPLT „Universul”

Description: Biologia este o știință complexă și fascinantă care studiază structura, funcționarea și evoluția vieții pe Pământ, de la nivelul celulelor individuale la ecosistemele întregi.

Jocul interactiv elaborat la disciplina biologie este cu scopul de a consolida și memoriza mai ușor și interactiv noțiuni, limbajul științific, procese, structuri și fenomene biologice. Prin intermediul acestui joc putem să ne aprofundăm în înțelegerea proceselor biologice fundamentale, care stau la baza sănătății, medicinii, ecologiei, biodiversității și diverselor ramuri ale științei. Luând în considerare importanța majoră a acestui obiect, am elaborat un joc interactiv numit „BioBlitz” care are ca scop să ajute elevii să se pregătească de evaluări sumative, teze, concursuri științifice, olimpiade și testări naționale. Acest joc are la fel scopul de a testa cunoștințele elevilor în cadrul orelor de biologie, cercul de biologie și de a servi drept un joc interactiv ce v-a fascina jucătorii prin întrebările sale provocatoare.

BioBlitz constă dintr-o hartă de tip Monopoly formată din 40 de pași, 100 de cartonașe a câte 6 întrebări (total - 600 întrebări), un zar, 4 figurine și instrucțiunea. Regulile jocului sunt următoarele:

- Se aleg până la patru echipe de jucători (echipa poate consta dintr-un număr nelimitat de jucători). Fiecare echipă își alege figurina și o plasează pe linia de START;
- Fiecare echipă extrage câte un cartonaș;
- Pe rând, echipele aruncă zarul. Cifra care a nimerit echipei corespunde cu numărul întrebării de pe cartonaș la care trebuie să răspundă. Dacă răspunsul este corect, figurina echipei avansează cu un pas în față, iar dacă răspunsul este greșit figurina rămâne pe loc;
- După ce fiecare echipă a răspuns la întrebări și și-a mutat figurina, cartonașele se mixează și începe o nouă rundă;
- Prima echipă care ajunge la pătratul START a câștigat jocul.

Întrebările din joc au fost extrase din testele de evaluări naționale, teste de evaluări sumative și manuale de biologie pentru clasele a X-a, XI-a și a XII-a.

Ne dorim ca acest joc să ajute semnificativ doritorii de a susține examenul de bacalaureat la biologie și să servească drept sursă de recreere eficientă pentru iubitorii de a afla cât mai mult și de a se aprofunda în lumea științelor.

OBȚINEREA MATERIALULUI SĂDITOR DE ZMEUR PRIN BIOTEHNOLOGII

Authors: **PARFENI Inga, ȘTEFANCO Cristina, GOGEANU Romanița**
Professor: **LOZINSCHII Mariana**
Institution: IPLT „Universul”

Description: Micropropagarea sau microclonarea plantelor în mediul de cultură este o ramură a biotehnologiei vegetale ce constă în cultivarea celulelor, țesuturilor vegetale în vederea propagării plantelor.

Cercetările realizate de noi au avut loc în Laboratorul de Genetică, Fiziologie și Biochimie a Plantelor, la facultatea de Biologie și Chimie, a Universității Pedagogice de Stat „Ion Creangă”. Lucrarea realizată de noi se bazează pe înmulțirea in vitro a hibridului Taybery, cu scopul de a obține material săditor, pur, devirusat, omogen. Toate activitățile se desfășoară în condiții sterile și controlate artificial, în recipiente etanșe din sticlă transparentă, pe medii nutritive artificiale ce conțin apă, agar, saharoză și toți nutrienții esențiali pentru creșterea plantelor armonioasă. Pentru realizarea scopului sunt trei etape principale de înmulțire: inițierea culturii in vitro, în care fragmente de plante din câmp, sursa fiind planta-mamă, sunt sterilizate după un protocol și introduse în mediu de cultură, multiplicarea (fază în care se realizează cicluri succesive de culturi pentru a obține numărul dorit de plante), în final, aclimatizarea, când plantele sunt scoase din mediul de cultură și sunt adaptate la condițiile din seră și mai apoi câmp.

Relativ nou în peisajul grădinilor, soiul de zmeur Tayberry devine tot mai apreciat. Deși încă rar întâlnit în grădini și plantații din republica Moldova acest taxon atrage atenția datorită fructelor sale delicioase, care sunt mai mari în dimensiuni, mai ferme decât cele ale zmeurei tradiționale. Fructele hibridului Tayberry se remarcă prin forma sa conică și culoarea roșie-rubinie la coacere, amintind de zmeură. Moștenind lungimea de 3 cm și faptul că miezul rămâne în fruct la coacere astfel fructului de mur, Tayberry este bogat în o combinație unică de nutrienți. Cu toate că este un hibrid, zmeurul Tayberry se coace mult mai repede, cu câteva săptămâni mai devreme decât zmeurul și murul. Asemenea părinților săi (mur&zmeur), este bogat în fibre și antioxidanți, fiind ideal pentru diverse delicii, de la gemuri, la băuturi alcoolice, înghețate. Conținutul impresionant de nutrienți, fructele taxonului Tayberry sunt o sursă bună de caroten, vitaminele Ași C, luteină, fier, fosfor, mangan, potasiu, calciu și magneziu, contribuind la o alimentație sănătoasă și echilibrată.

Liceul de Creativitate și Inventică „Prometeu-Protalent”

PANOU FOTOVOLTAIC CU MECANISM DE ROTAȚIE

Author: **GRECU Mihai**, clasa a XI-a.
Professor: **ȘARGAROVSCHI** Sergiu
Institution: Liceul de Creativitate și Inventică „Prometeu-Protalent”, mun. Chișinău

Description: Prototipul creat este un panou fotovoltaic cu un mecanism de rotație, care permite panoului să se rotească în direcția mișcării aparente a Soarelui pe parcursul zilei. Acest sistem automatizat utilizează senzori de lumină care detectează unghiul panoului față de mișcarea aparentă a Soarelui și totodată ajustați de 2 motoare electrice pentru a regla poziția panoului în timp real, maximizând astfel producția de energie electrică.

Avantajele prototipului elaborat de noi sunt: panoul fotovoltaic cu mecanism de rotație poate fi orientat întotdeauna spre lumina solară maximă, ceea ce duce la o producție mai mare de energie electrică în comparație cu panourile fixe; prototipul poate fi instalat într-o gamă mai largă de locații, deoarece nu este limitat de orientarea fixă.

Liceul Teoretic Internațional de Informatică Constanța

ELECTROCARIOGRAF DE UZ ȘCOLAR

Author: **COVĂSNEANU Emona Andreea**
Professor: **RADU Simona**
Institution: Liceul Teoretic Internațional de Informatică Constanța

Description: Proiectul prezintă un electrocardiograf de uz școlar realizat cu ajutorul programelor de coding și a pieselor mecanice specifice roboticii. Ideea autorului a pornit de la necesitatea înțelegerii prin aplicații practice a noțiunilor de biologie și tehnologie medicală pentru liceeni viitori studenți la specializări medicale

Lucrul cu tehnologia de vârf îi inspiră pe elevi să propună și să dezvolte noi soluții și inovații.Elevii devin mai familiarizați cu concepte medicale și tehnologice, consolidând bazele pentru cariere profesionale în domenii STEM.Proiectele de acest tip contribuie la dezvoltarea abilităților analitice și de cercetare, esențiale în educația științifică.

Integrarea ECG în programele școlare încurajează învățarea interdisciplinară a biologiei, fizicii și tehnologiei. Elevii pot participa la proiecte unde construiesc variante simplificate ale ECG, combinând teoria cu aplicarea practică.

Liceul Teoretic Internațional de Informatică Constanța, Colegiul Național Mircea cel Bătrân Constanța

LAVERAN

Authors: CHIRON DYNAMICS TEAM - **MARIN David Alexandru, ZEVRI Matei Tudor, FUDULI Andrei, YILDIRIM Ali Baris, CRISTOCEA Teodor Andrei**
Institution: LICEUL TEORETIC INTERNAȚIONAL DE INFORMATICĂ CONSTANȚA; COLEGIUL NAȚIONAL MIRCEA CEL BĂTRÂN CONSTANȚA

Description: Together we realized a project that aims to reduce the consumption of all types of pesticides, calculating the optimal moment of their application and notifying the farmers. The device achieves this with the help of the values obtained from several sensors (temperature, humidity, pressure, etc.) which are used to create a vulnerability index. This index shows how vulnerable the crop is to various diseases, parasites and pests, and can be customized to the farmer's liking and depending on the crop to be protected. Currently, we have several algorithms for calculating the index for Colorado cockroaches, aphids, caterpillars and Anopheles mosquitoes that transmit Malaria, thus improving the distribution of vaccines against this disease.

LT „Spiru Haret"; LTPR „Mihai Marinciuc"; UPS „I.Creangă"

THE WINTER MUSHROOM FLAMMULINA – A TRUE ECOLOGICAL TREASURE

Authors: **GÎNJU Ștefan**, pupil in 10th grade, LT „Spiru Haret"; **ANTONCIUC Vlada**, pupil in 12th grade LTPR „Mihai Marinciuc"
Professor: **GÎNJU Gheorghe**, PhD in Biology ,UPS „I.Creangă"

Description: Our investigations aim to improve the situation of some ecological problems through: a) the rational use of plant residues; b) cultivation of ecological food products; c) saving energy resources.

The winter mushroom Flammulina velutipes, which we found fruiting intensively on a tree trunk in the "Valea Morilor" park at the end of December 2021, served us as an object of study. We were amazed by the fact that this mushroom fruits abundantly at the temperature of +1 - +5 °C, most often at the end of November and until March.

We started from the hypothesis of investigating the conditions and optimal method of cultivating this mushroom in greenhouses (solar ones) in the country, which mostly remain vacant during the winter due to expensive energy sources, as well as farmers being free during this period. We investigated the method of cultivating the mushroom on trunks of 12 genera of trees from spontaneous flora and fruit trees, using the natural method of inoculation (with spores) and the method of inoculation with mycelium grown on wheat grains. From the results obtained, we can conclude that both inoculation methods are good and all the tree trunks studied can be used for cultivating this mushroom, but better results were recorded with oak, willow, and walnut. For the first time in science, we researched the way to use vegetable waste as a substrate for cultivation: the thin branches after spring cleaning of the trees, mixed with fallen autumn leaves, which are usually gathered by householders in piles and burned, heavily polluting the air in localities during that period. We investigated 5 substrate variants and chose two optimal variants for cultivating the enoki mushroom throughout the winter in our country, on free substrates – vegetable waste.

„Mircea Eliade" Theoretical High School

ICE TRAY BATTERY

Author: **LOZANU Andreea-Francesca**
Institution: „Mircea Eliade" Theoretical High School

Description: The Ice-Tray Battery is developed over the years before becoming the battery we all know and use. The Experimental Ice-Tray Battery is a simple and ingenious demonstration of generating electricity using common household objects. Ice-Tray Battery builds upon the foundation experimented by Volta, which will be my experiment.

For this experiment resulting from Volta's discoveries, we will only need a few elements found around the house:

1. A container intended for ice production.
2. Five clean nails, each one inch long.
3. A piece of uninsulated copper wire.
4. A small quantity of distilled vinegar.
5. A LED light bulb with wires protruding from the base.

Step 1 - Wrap the bare copper wire 5 times around the upper part of one of the galvanised nails.

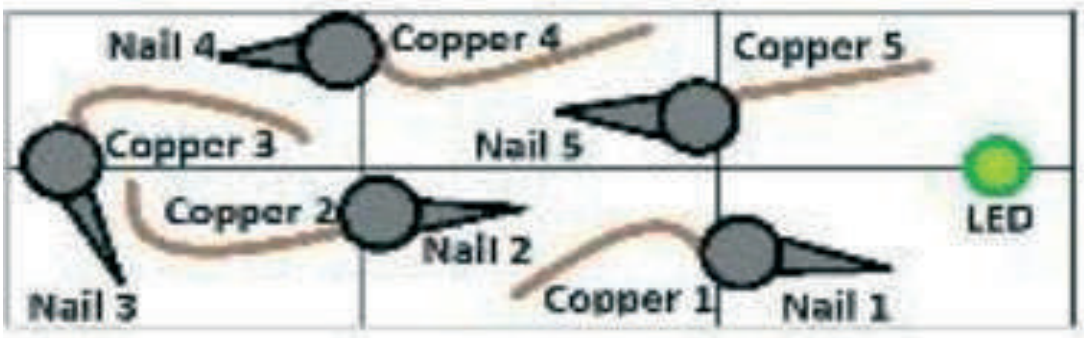
Step 2 - Repeat the above step for all 5 nails.

Step 3 - Fill 6 wells of the ice tray with distilled white vinegar.

Step 4 - Place a nail in each of the wells of the tray. A circuit is created by making sure that the copper wire attached to each nail is in contact with the vinegar of the adjacent well. The last well will have only the copper wire from the previous well in it.

Step 5 - Place the LED such that its leads are in the the first and final well; the first well contains the nail whilst the last well contains only copper wire.

Step 6 - If the LED does not light up switch the the position of the legs of the LED. LEDs are polarity sensitive devices and only allow current to flow through them in one direction.



In conclusion, after this entire process, the LED lights up, which signifies that the experiment and Volta's discoveries are true and functional. The illumination of the LED is also due to the fact that the batteries made by Volta are constructed from two different metals suspended in an acidic solution. In this case, the metals are copper and zinc - zinc is found in the galvanization on the surface of the nail. Vinegar is mostly water, with a little acetic acid dissolved in it, and this acts as a very good medium for ion migration. Copper holds onto its atoms more strongly than zinc does, and therefore, when placed in a good electrolyte, electrons flow from zinc to copper. Once the LED is placed in the ice tray, the circuit is complete, and electrons flow through the LED, transforming electrical energy into visible light.

National College Mihai Viteazul Ploiesti

MAGKEN 1.04

Author: **VLĂDESCU Mihai Albert**
Institution: National College Mihai Viteazul Ploiesti, 7th grade

Description: MagKen 1.04 - Local or remote cloning of a modulated, single or compound bioresonant frequency. The proposed goal of MagKen 1.04 is to find a way through a mobile device and a web application that I have also created, to transfer and reconstruct information that can take various forms from electromagnetic radiation to frequencies of a broad spectrum.

Practically, the device allows the generation of a frequency created in another device, situated at a distance, frequency that can have various uses, such as the creation in a given space, of a background vibration, known for the well-being, induced to the people located in that space.

This positive behavior was observed for the first time in the plant kingdom, with research extending to living beings as well. (eg: the relaxing effect of the sounds emitted by whales have on people is well known).

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

AUDI'S QUATTRO HISTORY

Patent: Student project

Author: **BOBARU Sorin Mihai**

Professor: **BIRTOK-BANEASA Corneliu**

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

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

CALCULATION AND CONSTRUCTION OF AMERICAN TRUCKS

Patent: Student project

Authors: **ISTOC Marius Alexandru**

Professor: **BIRTOK-BANEASA Corneliu**

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

Description: The study presents an analysis of the design and construction dynamics of American trucks, taking into account their evolution over time and technological progress. American tucks are renowned for their ruggedness and strength, distinctly reflecting the characteristics of the US auto industry. With imposing designs and powerful engines, these vehicles are designed to handle heavy loads and varied road conditions. Built with attention to durability and performance, American trucks are often associated with impressive size, advanced technologies and the ability to handle diverse tasks, from hauling freight to towing in challenging conditions. From the point of view of the constructive characteristics in the case of American trucks, two different

architectures can be distinguished as follows: Flat face and Long-nose. Flat face trucks have the following advantages: cab positioning, visibility and greater turning radius in smaller spaces compared to long nose trucks. Long-nose trucks have the following differences: The cab is positioned behind the engine, an easier way to access the engine for maintenance and repairs, have a more traditional and iconic desing for each truck.

Schillerschule – Dettingen an der Erms, Germany

ALEX'S 3D PAPER CRAFT

Patent: Kid project
Author: **ROTEA Alexandru**
Institution: Juniorklasse Schillerschule - Dettingen an der Erms - Germany
Description: Bandit Heeler is a fictional character who is one of the main protagonists of the Australian preschool animated television series Bluey, created by Joe Brumm. Employed as an archeologist, he enjoys playing with his daughters, Bluey and Bingo, and takes any role he plays in a game they devise seriously despite often being seen as reluctant and unwilling to partake in their games. He often teaches life lessons to his daughters while he plays with them, but this strains his public relationship with them in some episodes. I like to design and make the characters from my favorite cartoons out of cardboard, paper, stickers, aluminum foil and other recyclable materials. My project is the Bandit made according to the instructions from Bluey magazine.

SEBASTIAN'S CUSTOM LEGO CARS

Patent: Kid Project
Author: **ROTEA Sebastian**
Institution: Schillerschule - Dettingen an der Erms, Klasse 6c - Germany
Description: My project features Custom Lego Cars, this means creating a new car model from an existing Lego Auto set using the same parts.
Thus I have the pleasure to present you 8 models:
- the first car is a Nissan Silvia with a modified engine with a supercharging group;
- the second car is a Mercedes AMG One;
- the third car is a Mclaren F1 GTR;
- the fourth car is a Nissan GT-R from 2 fast 2 furios;
- the fifth car is a Lamborgini Countach;
- the sixth car is a Mclaren F1 car;
- the seventh car is a Aston Martin Valkyrie;
- the eighth car is a Audi Quattro.

St. Patrick School Inc., Philippines

GITURO – A GUIDED LIGHT-EMITTING DIODE GUITAR INSTRUMENT

Patent/project number: Student Project

Authors: **Robotics Students Team of ST. Patrick School**

Professor: **Dr. DARY E. Dacanay**

Institution: ST. PATRICK SCHOOL INC. - PHILIPPINES

Description: The idea of the Gituro was made for the beginners who find online guides confusing and expensive, plus to give people with physical or mental challenges the ability to learn and play the guitar with less difficulty. Gituro is an attachment for the guitar that will guide you with the chords using LED lights on the Fretboard along a song. Gituro has an onboard computer and LED strips to put on the Fretboard, you will be able use your phone to connect it with a Bluetooth via an app and will be asked to choose a song to play and practice. Gituro is oriented towards beginners and physically troubled learn through Gituro's app is easily interface and individuals, that are incapable of hearing are able to Gituro. Accessible and simple to learn. The apps user friendly language support makes it accessible to anyone. The app will run on community made content, which means you can make your own songs!We conducted survey to 100 students from our school about their experiences in playing the guitar and these are the results, 45% of student who considered playing the guitar but got intimidated, 28% of the students who attempted but gave up, 7% were successful at playing the guitar, and 20% who did not consider playing the guitar. The respondents are all students of St. Patrick School of Quezon City from Junior High to Senior High.

„Petru Rareș" Theoretical High School

FOLDMAX

Author: **ZGARDAN Maxim**
Professor: **CIUVAGA Victor**
Institution: „Petru Rareș" Theoretical High School
Description: We demonstrated the possibility of the act of paper recycling in domestic conditions, which represents a solution to the global ecological problem. At the same time, we built a modern and robotic device, which reuses recycled paper in the field of bureaucracy, the final product representing universal use envelopes.

PAVLOV'S CAT

Author: **TARTUS Mădălina**
Professor: **CIUVAGA Victor**
Institution: „Petru Rareș" Theoretical High School
Description: An intelligent device that has the main function to develop on of the conditioned reflexes to pets and to animals from a farmland. In addition, this modern mechanism is able to enhance the quality of some animals products, such as meat and milk. Moreover, this invention was built on Arduino software.

Școala Gimnazială ”Ion Creangă” Suceava

ARDUINO INDOOR GREENHOUSE

Authors: **URSAN Teodora, TIPA Fabian, BÂRZU Ianis, DĂMIAN Tudor**
Professor: **HRECIUC Elena Matroana**
Institution: Școala Gimnazială ”Ion Creangă” Suceava

Description: ARDUINO Indoor GreenHouse - Seră de interior ARDUINO - este o inițiativă inovatoare, a elevilor din clasa a-VIII-a A a Școlii Gimnaziale ”Ion Creangă” Suceava, Romania – Teodora Ursan, Fabian Tipa, Ianis Bârzu și Tudor Dămian, coordonați de prof. Elena Matroana Hreciuc, axată pe durabilitate și creșterea plantelor. Acesta combină principiile reciclării și tehnologia avansată pentru a crea o structură de susținere pentru plante care utilizează materiale reciclate, în primul rând conducte de instalație de încălzire reutilizate și sticle PET ghivece pentru plante ornamentale. Ideea de bază este de a oferi o soluție conștientă de mediu pentru cultivarea plantelor, redefinind în același timp iluminatul prin tehnologia LED integrată și programarea Arduino, pentru a se alinia cu creșterea eficienței energetice și a crea spații ecologice pentru învățarea durabilă în Școala Gimnazială Ion Creangă Suceava, România. O aplicație anterioară Arduino pentru monitorizarea plantelor, colegii noștri au fost găzduiți de Creative Club, profesorul nostru organizând în fiecare an în școala noastră pentru predarea/ învățarea despre robotică, reutilizarea și adaptarea noului nostru concept. Conceptul ARDUINO Indoor GreenHouse - Seră de interior ARDUINO aliniază inovația cu conștiința de mediu, prezentând o soluție care hrănește plantele și exemplifică potențialul materialelor reciclate și al tehnologiei în dezvoltarea durabilă.

YOUNG ENTREPRENEUR

IP Gimnaziul Peticeni

GRĂDINA ȘCOLARĂ

Authors: **CEREȘNEA Cornelia**, cl.a VIII-a, **DRAPAC Iuliana**, cl. a IX-a, **PRUTEANU Liviu**, cl. A IX-a,
Professor: **SPINEI Mariana**
Institution: IP Gimnaziul Peticeni

Description: Suntem elevi în Instituția Publică Gimnaziul Peticeni din satul Peticeni, raionul Călărași Republica Moldova este o comunitate constituită din 123 de elevi, 16 cadre didactice și 121 de părinți. Localitatea este situată la o distanță de 11 km de raionul Călărași și este constituită din 1042 de băștinași. Localitatea este situată în mijlocul Codrilor de centru, între două dealuri ce mărginesc râul Bâc, pe parcursul întregului teritoriu al satului, în apropierea Rezervației „Plaiul Fagului". Din punct de vedere al fertilității solului, putem afirma că este constituit, în mare parte din cernoziom, ce oferă posibilitatea plantării oricărei culturi, pentru a crește și obține roade fără fertilizarea solului artificial. Planul managerial al instituției susține implementarea politicilor educaționale ale Ministerului Educației al Republicii Moldova întru formarea unui cetățean bine informat și educat, însă imposibilitatea atingerii performanțelor de calitate și necesare pentru viață este una din problemele prioritare ale instituției școlare. Suntem defavorizați din cauza incapacității implementării ofertelor curriculare actuale și strict necesare cum sunt activitățile practice și material didactic la orele de biologie; educația tehnologică: modulul: „Activități agricole"; cursului opțional "Educația economică și antreprenorială". Acest fapt, duce la micșorare numărului de elevi, preferând să plece într-o altă instituție ce le oferă mai multe posibilități de învățare.

Am participat la concur de proiecte - Gradina Școlară pentru dezvoltarea antreprenoriatului agricol - membri ai rețelei „Grădina școlară" din Republica Moldova Programul își propune stimularea spiritului antreprenorial și încurajarea inițiativelor de afaceri în agricultură, într-o economie modernă în care tinerii creativi pot crește nivelul de competitivitate, pot să țină pasul cu tehnologia, și sunt motivați să aducă un plus de siguranță financiară.

Instituția dispune doar de câteva instrumente pentru prelucrarea solului ceea ce acoperă insuficient necesarul pentru întreaga comunitate școlară, de material săditor și sistem de irigare automat nici atât - lipsește total, dar un avantaj deja este că avem sădiți pe teritoriul adiacent gimnaziului 30 nuci, 25 meri, 3 peri, 5 vișin, 5 tei, 10 molizi, 20 trandafiri simpli, 10 arbuști de liliac. Roada de la acești pomi fructiferi o uscăm și produsul îl vindem la târguri. În acest fel dezvoltăm și competențele antreprenoriale.

Utilajele din cadrul proiectului ne favorizează ascendența motivației elevilor pentru învățare și implicare pentru activități în grădina școlară. Aceste utilaje sunt: uscător de fructe, ambalator de produse pe care le vom colecta de pe lotul grădinii școlare aparat de vidat, cântar, ambalaje ECO pentru produse, etichete. La moment dispunem de 2 încăperi ce le vom folosi ca laborator pentru grădina școlară. În acest laborator ne întâlnim membrii grădinii școlare și tinerii din sat pentru activitățile din cadrul proiectului, vom instala deshidratorul, aparatul de vidat, toate produsele colectate și prelucrate, plantele pentru uscat, vasele pentru produsele ambalate și toate cele necesare pentru activitatea în grădina școlară.

Unele produse le colectăm de pe meleagurile natale, de exemplu: măcieș. păducel, coarne, prune, prăsade, gutui, cireșe, alune, și alte plante medicinale.

Toate produsele sus numite ne ajută foarte mult în dezvoltarea Grădinii Școlare și dezvoltarea antreprenoriatului la elevi și promovăm această experiență de dezvoltare a antreprenoriatului la elevi împreună cu cadrele didactice din alte instituții de învățământ.

IP Gimnaziul Temeleuți

DESHIDRATAREA FRUCTELOR

Authors: **CHIRONEȚ Mirela**, cl.a VII-a, **ARMAN Marcel**, cl. a VII-a, **OANCEA Valentina**, cl. A VII-a,
Professors: **SPINEI Mariana, CHIRONEȚ Ana**
Institution: IP Gimnaziul Temeleuți

Description: Suntem elevi în Instituția Publică Gimnaziul Temeleuți din satul Temeleuți, raionul Călărași Republica Moldova este o comunitate constituită din 92 de elevi, 16 cadre didactice și 82 de părinți. Localitatea este situată la o distanță de 21 km de raionul Călărași și este constituită din 1075 de băștinași. Localitatea este situată în mijlocul Codrilor de centru, între două dealuri ce mărginesc râul Bâc, pe parcursul întregului teritoriu al satului, în apropierea Rezervației „Plaiul Fagului". Din punct de vedere al fertilității solului, putem afirma că este constituit, în mare parte din cernoziom, ce oferă posibilitatea plantării pomilor fructiferi, pentru a crește și obține roade fără fertilizarea solului artificial.

Planul managerial al instituției susține implementarea politicilor educaționale ale Ministerului Educației al Republicii Moldova întru formarea unui cetățean bine informat și educat, însă imposibilitatea atingerii performanțelor de calitate și necesare pentru viață este una din problemele prioritare ale instituției școlare.

Suntem defavorizați din cauza incapacității implementării ofertelor curriculare actuale și strict necesare cum sunt activitățile practice și material didactic la orele de biologie; educația tehnologică: modulul: „Activități agricole"; cursului opțional "Educația economică și antreprenorială". Acest fapt, duce la micșorare numărului de elevi, preferând să plece într-o altă instituție ce le oferă mai multe posibilități de învățare.

Am participat la concur de proiecte- Gradina Școlară pentru dezvoltarea antreprenoriatului agricol - membri ai rețelei „Grădina școlară" din Republica Moldova Programul își propune stimularea spiritului antreprenorial și încurajarea inițiativelor de afaceri în agricultură, într-o economie modernă în care tinerii creativi pot crește nivelul de competitivitate, pot să țină pasul cu tehnologia, și sunt motivați să aducă un plus de siguranță financiară.

Instituția dispune doar de câteva instrumente pentru prelucrarea solului ceea ce acoperă insuficient necesarul pentru întreaga comunitate școlară, de material săditor și sistem de irigare automat nici atât - lipsește total, dar un avantaj deja este că avem sădiți pe teritoriul adiacent gimnaziului 30 nuci, 25 meri, 3 peri, 5 vișini,. Roada de la acești pomi fructiferi o uscăm și produsul îl vindem la târguri, diaspora. În acesf fel dezvoltăm și competențele antreprenoriale.

Utilajele din cadrul proiectului ne favorizează ascendența motivației elevilor pentru învățare și implicare pentru activități în grădina școlară. Aceste utilaje sunt: uscător de fructe, ambalator de produse pe care le vom colecta de pe lotul grădinii școlare aparat de vidat, cântar, ambalaje ECO pentru produse, etichete.

La moment dispunem de 2 încăperi ce le vom folosi ca laborator pentru grădina școlară. În acest laborator ne întâlnim membrii grădinii școlare și tinerii din sat pentru activitățile din cadrul proiectului, vom instala deshidratorul, aparatul de vidat, toate produsele colectate și prelucrate, fructele pentru uscat, vasele pentru produsele ambalate și toate cele necesare pentru activitatea în grădina școlară.

Unele peroduse le colectăm de pe meleagurile natale, de exemplu: mere, păducel, coarne, prune, prăsade, gutui, cireșe, vișini, și alte fructe. Toate produsele numite ne ajută foarte mult în dezvoltarea Grădinii Școlare și dezvoltarea antreprenoriatului la elevi și promovăm această experiență de dezvoltare a antreprenoriatului la elevi înpreună cu cadrele didactice din alte instituții de învățământ. Am contribuit cu contribuție financiară în sumă de 2000lei pentru proiectul „Gardul școlii”, câștigat de Gimnaziul Temeleuți, rnul Călărași, prin intermediul GAL„Codrii Călărașului”.

TINERII APICULTORI

Authors: **COROLEȚCHI Patricia**, cl.a VII-a, **TATARCIUC Tudor**, cl. a VII-a, **SPINEI Ivan**, cl. a VIII-a, **PRUNICI Sergiu**, cl. a IV-a,
Professors: **SPINEI Mariana, CHIRONEȚ Ana**
Institution: IP Gimnaziul Temeleuți

Description: Această propunere de proiect ne-a motivat să participăm deoarece pune accent pe micii antreprenori. Noi fiind educați în familii de antreprenori în domeniul apiculturii, suntem permanent alături de părinții noștri în astfel de activități. În unele familii când tăticii noștri sânt plecați la muncă peste hotare, noi muncim cot la cot cu mama. Cunoaștem foarte bine această muncă foarte plăcută și folositoare, atât pentru sănătate cât și pentru un venit în familie. Prin aceste activități învățăm multe secrete pentru a deveni un antreprenor de succes. Această activitate este prietenoasă mediului, ceea ce ne v-a salva natura și pe noi. Utilajele folosite în această activitate de prisacă, le mânuim cu plăcere și multă atenție, fără pierderi și de a eficientiza timpul de muncă. Noi am venit cu ideea de a vă demonstra munca la prisacă. Munca la prisacă poate fi realizată și de copii, dar ghidați de părinți. Când ne implicăm și noi, ne reușește să economisim timpul, am putea fi implicați și din ce în ce mai de s și fără părinți. Stupinele și utilajul dat ne oferă siguranță din punct de vedere a securității muncii, deoarece folosim echipamente de protecție.

Datorită faptului că familiile noastre se ocupă cu apicultura, noi suntem implicați

în diferite procese de muncă. Confecționarea sau procurarea stupilor, ramelor, colectarea propolisului, polenului, lăptișorului de matcă, a mierii de la diferite plante, Albinele le putem folosi și pentru terapie. Terapia este un plan pentru viitor. Pentru toate produsele obținute de la albini este cerere pe piață. Obținem un venit financiar mai mare în familie și fără pierderi.

Utilajul este format din stupi, colectoare de polen, centrifuga pentru miere și multe ustensile. Mult din acest lucru îl putem face fără implicarea părinților, astfel le venim în ajutor.

IPLT „Ștefan cel Mare și Sfânt”

ECOSOAP

Author: **CAZACIOC Mihaela**
Professor: **CAZACIOC Nadejda**
Institution: IPLT „Ștefan Cel Mare și Sfânt”, s. Taraclia, r. Căușeni

Description: The concept of this business focuses on harnessing available resources and creating environmentally friendly and sustainable products. The idea is to use used vegetable and animal fats, which would otherwise be thrown away or recycled in other ways, to produce high quality artisanal soaps. By collecting used fats, either from restaurants, commercial kitchens or from individual households, and processing them, the raw material needed for the production of soaps can be obtained. This not only reduces waste and environmental pollution, but also harnesses a resource that would otherwise be wasted.

Sustainable raw materials: we collect used vegetable and animal fats from local sources such as restaurants, commercial kitchens and individual households. By recycling these resources, we not only reduce pollution, but also create a sustainable raw material for our production.

Artisan manufacturing process: our soaps are handmade using traditional techniques and the best quality natural ingredients. We add essential oils and plant extracts to achieve products with therapeutic and moisturizing benefits for the skin.
Promotion and distribution: we focus on promoting our products among consumers interested in natural and eco-friendly products. We collaborate with specialized stores, local markets and profile events to reach the widest possible audience.

DDC – DIVINE DELIGHTS CHOCOLATES

Author: **CAZACIOC Mihaela, ARNAUT Gabriela**
Professor: **CAZACIOC Nadejda**
Institution: IPLT „Ștefan Cel Mare și Sfânt”, s. Taraclia, r. Căușeni

Description: Our business aims to position itself as a trusted player in the artisanal chocolate production industry, adopting an integrated and innovative approach. Utilizing authentic recipes and natural ingredients, we are committed to offering premium assortments of chocolate tailored to the needs and preferences of consumers. By employing artisanal processes and sustainable production methods, we focus on providing a unique gourmet experience that stands out for its quality and diversity.
The main focal points of our business plan are:

1. Handmade chocolate production: By applying traditional recipes and using superior-quality ingredients, we pledge to produce milk, dark, and white chocolate, each with a distinct and refined taste. This approach allows us to differentiate ourselves in the market and attract a varied segment of customers eager to experience premium and authentic products.
2. Personalization and diversity: We are dedicated to offering a personalized experience to our customers, providing the option to customize chocolate according to their preferences, including special shapes and flavors. This flexibility enables us to respond to the individual requirements of customers and build strong, long-lasting relationships with them.
3. Pricing strategy: Considering the production costs and the added value of our products, we have set competitive prices to ensure a reasonable profit and maintain the long-term sustainability of the business. Thus, the selling prices for a 100g chocolate range between 45 and 50 lei, reflecting the quality and exclusivity of our products.
4. Promotion and distribution: We are committed to efficiently and strategically promoting our products using social networks, local events, and partnerships with specialized stores to reach our target customers. Through a well-thought-out marketing strategy and strategic collaborations, we aim to increase awareness and attract new customers to our business.

With this integrated strategy focused on customer needs, we estimate that we will achieve a consistent and sustainable income rate, contributing to the development and consolidation of our position in the artisanal chocolate production market.

IPLT „Vasile Vasilache”

PASTA DE DINȚI BIO

Authors: **CANȚER Mădălina, PREPELIȚĂ Arina**
Professor: **ȘARGAROVSCHI Viorica**
Institution: IPLT „Vasile Vasilache”, mun. Chișinău

Description: Pasta de dinți BIO este o opțiune excelentă pentru cei care caută produse de igienă orală din incrediente naturale și inofensive mediului înconjurător, evitând aditivii chimici și conservanții sintetici.

Acest proiect este o demonstrație a faptului că sunt în viață o mulțime de substanțe ce le utilizăm zilnic și pe care le putem recrea acasă cu propriile noastre mâini. În cazul nostru, am ales pasta de dinți, care considerăm, că a ieșit cu mult mai sănătoasă și mai ieftină decât cea pe care o procurăm de la magazin.

Compoziția creată o puteți face chiar voi, fără intervenția adulților, este foarte ușor de pregătit. Aceasta este alcătuită din ingrediente naturale, fiecare având funcția sa în îngrijirea și albirea dinților: untul de cocos crează un amestec mai cremos și antibacterian; xylitol-ul oferă și menține o respirație proaspătă; uleiul esențial de eucalipt – pentru un miros mai plăcut și un gust mai aromat; bicarbonatul de sodiu albește și curăță dinții; argila albă întărește smalțul dentar. Toate substanțele au fost amestecate bine până la crearea unei paste omogene.

Prețul a fost calculat în funcție de cantitatea folosită a incredientelor, iar acestea pot fi găsite în supermarket-uri, farmacii, cât și online. Suma de bani cheltuită pentru a prepara 100 g pastă de dinți BIO este de 54 lei, pe când în comerț, BIO produsele sunt foarte costisitoare și depășesc suma de 90 lei.

Importanța folosirii pastei de dinți BIO constă în mai multe aspecte: ingredientele naturale și organice înlocuiesc substanțele chimice agresive cu alternative mai blânde, mai prietenoase cu organismul și cu mediul înconjurător; fără substanțe nocive, pasta de dinți BIO exclude aceste ingrediente, oferind o alternativă mai sigură și mai sănătoasă; protejarea mediului înconjurător și conștientizarea consumatorului constă în reutilizarea ambalajului și ingredientele au origine sustenabilă. În concluzie, pasta de dinți BIO reprezintă o opțiune atrăgătoare pentru cei care își doresc o igienă orală mai naturală și mai sustenabilă cu cheltuieli minim posibile.

RECICLARE ȘI CREARE

Authors: **LUPU Ana**, clasa a XI-a; **COROLEȚCHI Nicoleta**, clasa a XII-a.
Professor: **ȘARGAROVSCHI Viorica**
Institution: IPLT „Vasile Vasilache”, mun. Chișinău

Description: Reciclarea hârtiei nu este doar un gest simplu de eliminare a deșeurilor, ci și o oportunitate de a transforma ceva folosit în ceva nou și creativ.

Cu toții am realizat că această practică nu reduce doar impactul asupra mediului, ci și contribuie la menținerea echilibrului economic, prin reducerea consumului de materii prime și energie, ceea ce poate duce la diminuarea costurilor de producție.

Pentru acest proiect, am folosit 3 kg de hârtie adunată de noi, pe care am mărunțit-o, am creat pasta cuvenită și ulterior am uscat-o. După ce am obținut mostre de hârtie reciclată, am pus rapid creativitatea în aplicare și am folosit hârtia într-o varietate de moduri: de la confecționarea felicitărilor și a caietelor, până la albume deosebite.

Spre exemplu, în comerț o felicitare costă în jur de 10 lei, dar costul felicitării create de noi a ajuns la 1.20 lei, iar pentru realizarea ei s-a folosit doar hârtie netrebuincioasă, apă și energia noastră. De asemena, remarcăm faptul că albumele pe piață costă în jur de 20 lei, iar cele reciclate au costat doar 7 lei, ceea ce este un mare avantaj antreprenorial întrucât costurile de producție sunt mai mici și astfel ne permitem să creăm o mai mare diversitate de produse.

Am fost foarte încântați de creațiile obținute și ne-am propus să repetăm experiența în viitor, deoarece această activitate ne-a inspirat să protejăm mediul și sa folosim creativitatea pentru a crea lucruri noi și frumoase din resursele existente.

Astfel, am devenit nu doar reciclatori, ci și artiști ai mediului înconjurător.

RUJ IGIENIC BIO

Author: **ȘARGAROVSCHI Marinela,** clasa a IV-a.
Professor: **ȘARGAROVSCHI Viorica**
Institution: IPLT „Vasile Vasilache”, mun. Chișinău

Description: Rujul igienic BIO este un produs de machiaj care conține ingrediente naturale și este fabricat fără utilizarea substanțelor chimice dăunătoare/ nocive.

Necesitatea preparării rujului igienic BIO a apărut dintr-o conștientizare a impactului asupra sănătății. Compoziția este simplă și procesul ușor de realizat. Cheltuielele optime pentru a prepara 4 g de ruj igienic BIO sunt de 16 lei, pe când în comerț, BIO produsele sunt costisitoare și depășesc suma de 70 lei.

Astfel, pentru a prepara 4 g de ruj am folosit ceară de albini, unt de shea, ulei de cătină, ulei de migdale, vitamina E, opțional se adaugă extract de morcov sau arome naturale.

Avantajele utilizării unui ruj igienic BIO sunt: ingridiente naturale și organice care sunt mai sănătoase pentru piele în comparație cu substanțele chimice sintetice; prin evitarea substanțelor toxice se reduce riscul de reacții alergice și de iritații; protejarea

mediului înconjurător și conștientizarea consumatorului constă în reutilizarea ambalajului și utilizarea ingredientelor provenite din surse regenerabile.

Avantajul economic al utilizării rujului igienic BIO poate fi observat pe termen lung. Ele pot fi mai economice datorită calității superioare a ingredientelor, care poate necesita utilizarea unei cantități mai mici de produs pentru a obține același rezultat și datorită efectului pozitiv asupra buzelor pe termen lung, ceea ce poate reduce necesitatea altor produse cosmetice sau de îngrijire suplimentară.

Liceul Teoretic „Mihai Eminescu”, or. Cahul

LAVANDA – GENERATOAREA TINEREȚII

Author: **PODCALIUC Irina**
Professor: **PODCALIUC Elena**
Institution: Liceul Teoretic „Mihai Eminescu”, or. Cahul

Description: Proiectul nostru abordează o problemă ecologică și de sănătate publică semnificativă: poluarea mediului cu substanțe nocive găsite în balsamuri și săpunuri din industria cosmetologică. Această poluare contribuie la degradarea mediului și afectează sănătatea umană. Scopul proiectului este de a produce, într-o fază pilot, balsam și săpun EcoFriendly, utilizând materii prime care nu sunt dăunătoare pentru corpul uman și mediul înconjurător, și de a valorifica resursele naturale autohtone.

Pentru a atinge acest scop, ne-am propus următoarele obiective: selectarea ingredientelor cosmetice din surse locale care sunt lipsite de toxicitate; elaborarea rețetelor pentru balsamul și săpunul EcoFriendly; producerea acestora în faza pilot, folosind procedee tehnologice specifice industriei cosmetice; și evaluarea produselor obținute, verificând calitățile organoleptice și pH-ul.

Argumentul proiectului se bazează pe faptul că doar 10% din ingredientele folosite în produsele de igienă corporală sunt evaluate ca fiind sigure pentru sănătate, în timp ce restul pot fi nocive pentru om și mediu. Metodele de cercetare aplicate includ documentarea, experimentul, observația, compararea și analiza.

În perspectivă, dorim să inaugurăm un laborator specializat în producerea balsamurilor și săpunurilor ecologice. Concluzia proiectului este că, prin evitarea utilizării substanțelor chimice toxice și valorificarea calităților curative ale lavandei, am reușit să obținem un produs benefic pentru om și inofensiv pentru mediu, susținând în același timp producătorii locali să devină mai sustenabili.

„Nicolae Testemitanu" State University of Medicine and Pharmacy

BIO-ORIZONT IS A FORM OF MODERN AGRICULTURE IN THE 21ST CENTURY

Author: **CRISTEA Daniel**
Institution: State University of Medicine and Pharmacy „Nicolae Testemitanu"

Description: Bio-Orizont is an innovative start-up that combines concerns for the environment with improving the health of the population. By developing methods and techniques for soil treatment, Bio-Orizont contributes to the prevention of diseases caused by the excessive use of chemical substances in agriculture.

Our project emphasizes the implementation of ecological agricultural methods, which can improve both our lives and the environment. We are committed to a long-term project that guarantees sustainable production over time, unlike current agricultural methods that favor the use of chemicals for high yields, but neglect the state of the environment.

Bio-Orizont has been tested and analyzed for 5 years on an area of 3 hectares, proving that any company and agricultural household can improve the ecological condition of the soil and compete with large crops on the market. Our strategy involves the rational use of compost, limiting the diversity of weeds and parasites through correct and rational rotation, and maintaining soil fertility through crop rotation with organic substances.

By alternating crops of corn, wheat, peas, sunflower, barley and alfalfa, Bio-Orizont proposes an ecological, sustainable, modern and healthy agriculture. This model can be adapted according to the needs of each household or agricultural business, taking into account socio-economic, technical and relief factors.

Bio-Orizont is a start-up that aims to revolutionize agriculture, putting health and the environment at the center of its concerns. With a lasting vision and an innovative approach, Bio-Orizont is ready to face the challenges of the 21st century in the field of agriculture.