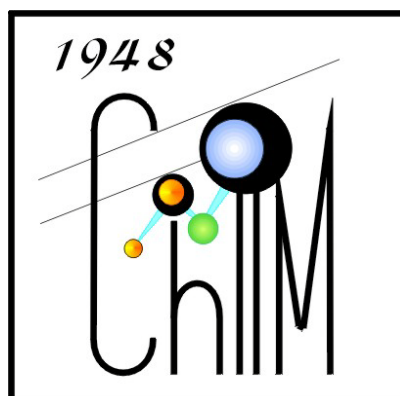


FACULTY OF INDUSTRIAL CHEMISTRY AND ENVIRONMENTAL ENGINEERING



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**RESEARCH CENTRE
PROTECTION AND DEPOLLUTION WATER
ENGINEERING AND ENVIRONMENTAL ANALYSIS OF
INDUSTRIAL PROCESS - P.D.W.E.E.A.I.P.**

GENERAL PRESENTATION

This research centre is a CNCSIS accredited, type C, research centre reapproved by CNCSIS in 12.09.2006, according to CNCSIS certificate nr. 28. The director of the Center is **Assoc. prof. dr. eng. Petru Negrea**.

MAIN ACTIVITIES

The Centre accomplishes research and design in the following topics:

- Environmental analysis of industrial processes
- Drinking and industrial water treatment
- Wastewater treatment
- Process control equipments for research plants in chemical industry
- Control systems using computers for researching plants and low tonnage plants in chemical industry
- Intensive methods for the exoneration of soil from radioactive minerals exploitation and processing areas in the condition of natural disasters or entropic accidents
- Mathematical modeling and numerical simulation of environmental pollution and depollution processes
- Modeling, simulation and process control
- Heat transfer organic agents
- Unit processes
- Magnetic Fluids: Preparation, Characterization and Applications
- The Intensification of Transfer Processes
- Rheological characterization of the substances
- Studies and projects for thermo-technical installations of the silicates industry
- Electrochemical processes
- Obtaining and characterization of oxide compounds

CONTACT

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RESEARCH FIELDS

- **Environmental analysis of industrial processes**

Keywords: environmental, pollution, waste

- **Drinking and industrial water treatment**

Keywords: water treatment, drinking water, industrial water

- **Wastewater Treatment**

Keywords: waste water treatment, pollution

- **Process control equipments for research plants in chemical industry**

Keywords: measuring, control devices

- **Control systems using computers for researching plants and low tonnage plants in chemical industry**

Keywords: process control, research and low tonnage plants

- **Intensive methods for the exoneration of soil from radioactive minerals exploitation and processing areas in the condition of natural disasters or entropic accidents**

Keywords: Climate changes, pollution, risk, sustainable chemistry, modeling

- **Mathematical modeling and numerical simulation of environmental pollution and depollution processes**

Keywords: modeling, simulation, environmental protection

- **Modeling, simulation and process control**

Keywords: modeling, simulation, optimization, process control, absorption-desorption with chemical reaction

- **Oily compounds extraction from waste waters using magnetic fluids**

Keywords: extraction, magnetic fluid

- **Coordinative compounds with organic ligands**

Keywords: coordinative compounds, heterocyclic compounds, hydroxycarboxylic acids, pharmaceutical substances, pigments, dyes

- **Synthesis of nanocomposites with controlled magnetic, optic and catalytic properties**

Keywords: nanoparticles, sol-gel, silica, magnetic, catalytic, polyols

- **Homo-and heteropolynuclear compounds with organic ligands**

Keywords: organic ligand, polinuclear compound, magnetic materials, catalysts, pigments, ferrites, chromites

➤ **Physical Chemistry. Chemically Active Species Grafted on Polymer-Supports**

Keywords: catalysis, homogeneous catalysts, heterogeneous catalysts, polymer-grafted catalysts, polymer-grafted reagents, polymer-support

➤ **Physical Chemistry. The obtaining and characterization of some oxide compounds**

Keywords: solid-state, oxide compounds, unconventional methods

➤ **Organic Electrochemistry**

Keywords: organic electro synthesis, organic electro reduction and oxidation

➤ **Electro catalysis**

Keywords: skeleton electrodes, thermal arc spraying, potentiometer sensors

➤ **Electroplating**

Keywords: copper, zinc, nickel electrodeposition, brighteners

➤ **Fuel Cells**

Keywords: fuel cells, skeleton electrodes, proton exchanges membrane, anion exchange membrane

➤ **Synthesis of ceramic materials through hydrosilicatic forerunners**

Keywords: ceramic, hydrosilicatic, synthesis

➤ **Semi conducting glasses. Fast ion-conducting glasses. Redox equilibrium in glasses. Low melting glasses for fusion type application**

Keywords: conducting, glasses, redox equilibrium, vitreous systems

➤ **Ceramic glazes. Synthesis and characterization of thermo resistant pigments**

Keywords: ceramic glazes, thermo resistant pigments, synthesis method

➤ **Chemistry and technology of building materials**

Keywords: cements, mineral binders
Mathematical modeling and numerical simulation of soil depollution processes.

Researches in WATER TREATMENT AND PURIFICATION

The activity intensifying and diversifying of the industrial processes leads to the quality degradation of water sources, with important implications for water supplies. In this context it is important to research and to elaborate some treatment and purification technologies, more efficient and at low costs. The research activity

was concerning with the majority of aspects involved by water chemistry and technology, as follows:

- physical and chemical characterization of water supplies and of wastewaters
- researches concerning water treatment for drinking and industrial purposes
- researches concerning the technologies of industrial and municipal wastewater treatment

Results of the research activity were published in journals of specialty and communicated at the national and international Symposia.

RESEARCH TEAM

Georgeta Burtica, Aurel Iovi, Petru Negrea, Rodica Pode, Ioan Ursoiu, Adina Negrea, Eugen Lungu, Marius Gheju, Florica Manea, Laura Coheci, Giannin Moșoarță, Lavinia Lupa, Camelia Podariu, Cristina Proca, Ramona Ghiga, Mihaela Ciopec.

Researches in INORGANIC CHEMICAL TECHNOLOGY

Different processes for obtaining of the new products, with superior qualities have been studied (chemical fertilizers with microelements, inorganic salts, etc.), for turning to good account of the native raw materials, industrial wastes and for the recovery of the useful compounds from wastewaters.

Researches in:

- mineral fertilizers: urea, ammonium nitrite, NP, NPK, fertilizers with microelements
- improving and modernizing of the technological processes
- Turning to good account of some native minerals zeolites for wastewaters treatment and for the obtaining and conditioning of the fertilizers with microelements.

The results of researches were applied in industry.

RESEARCH TEAM

Aurel Iovi, Petru Negrea, Georgeta Burtică, Rodica Pode, Laura Coheci, Lavinia Lupa, Mihaela Ciopec

Researches in PROCESS CONTROL EQUIPMENTS FOR RESEARCH PLANTS IN CHEMICAL INDUSTRY

Some specific control equipments for research plants from chemical industry (measurement and control of small and micro gas and liquid flows, gas and liquid compositions, pressure) using as information support low pressure signals (500-3000 N/m²).

Elaboration, design and realization of a high performance reference models.

Keywords: measuring, control devices

RESEARCH TEAM

Delia Perju, Marcel Suta, Carmen Rusnac, Raul Moldovan

Researches in CONTROL SYSTEMS USING COMPUTERS FOR RESEARCHING PLANTS AND LOW TONNAGE PLANTS IN CHEMICAL INDUSTRY

Realization of some specific control equipments using computers and process interfaces for automation of laboratory, research and low tonnage plants from chemical industry.

Elaboration, projecting and realization of control equipments using computers, process interfaces and proper software programs.

RESEARCH TEAM

Delia Perju, Marcel Suta, Carmen Rusnac, Raul Moldovan, Mirela Calisevici, Sorin Marinescu.

Researches in INTENSIVE METHODS FOR THE EXONERATION OF SOIL FROM RADIOACTIVE MINERALS EXPLOITATION AND PROCESSING AREAS IN THE CONDITION OF NATURAL DISASTERS OR ENTROPIC ACCIDENTS

Chemical decontamination of soil in the presence of ultra-sounds

Mathematical models and methods regarding the transfer mechanism in solid-liquid heterogeneous systems for the selection of optimal hydrodynamic parameters

Implementation of interface equipment in measurement devices

Keywords: Climate changes, pollution, risk, sustainable chemistry, modeling

RESEARCH TEAM

Delia Perju, Dana Silaghi – Perju, Carmen Rusnac, Raul Moldovan, Gabriela Alina Brusturean, Harieta Pirlea, Sorin Marinescu

Researches in MATHEMATICAL MODELING AND NUMERICAL SIMULATION OF ENVIRONMENTAL POLLUTION AND DEPOLLUTION PROCESSES

Mathematical modeling and numerical simulation of soil depollution processes

Elaboration of analytical and statistical models of air pollution phenomenon

Waste recycling process control and optimization

Keywords: modeling, simulation, environmental protection

RESEARCH TEAM

Delia Perju, Dana Silaghi Perju, Carmen Rusnac, Gabriela Alina Brusturean, Harieta Pirlea, Sorin Marinescu, Flavius Dobren.

Researches in MODELING, SIMULATION AND PROCESS CONTROL

Modeling and simulation of chemical processes using programming languages and software in process engineering: MATLAB, HYSIS, Aspen Plus, Aspen Custom Modeler;

Apply chemical reactor analysis, process modeling, simulation and optimization to chemical and petrochemical plants and find out solutions for industrial problems;

Modeling, simulation and process control of absorption-desorption with chemical reaction processes.

RESEARCH TEAM

Teodor Todinca, Carmen Rusnac, Alina Brusturean

Researches in OILY COMPOUNDS EXTRACTION FROM WASTE WATERS USING MAGNETIC FLUIDS

It was studied the oily fraction recovery (especially oil products) from waste waters using magnetic fluids. The process is strongly influenced by the magnetic field presence; both the oily fraction and the magnetic phase could be recovered;

RESEARCH TEAM

Zeno Gropsian, Andra Tamas.

Researches in THE PERFORMANCE OF THE COLUMNS WITH STRUCTURED PACKINGS

The structured packing present a high efficiency by comparison with the random packing because of the very high specific surfaces. It was followed the knowledge of wettability degree influence in extraction or rectification processes. The aim of the future experiments is the increase of wettability degree through electrochemical or chemical activation

RESEARCH TEAM

Zeno Gropsian, Andra Tamas

Researches in CONDITIONING MODELS OF SEWAGE SLUDGE

The aim of this research consists in efficiency evaluation of chemical conditioning models by calculation of the sludge volume index (SVI), the specific resistance to filtration to improve sludge dewatering, as well as appropriation of a statistic mathematic model for the correlation of the obtained results.

RESEARCH TEAM

Vasile Pode, Andra Tamas

Researches in NANOCOMPOSITES WITH CONTROLLED MAGNETIC, OPTIC AND CATALYTIC PROPERTIES

Nanocomposites of type ferrite and ferrite/SiO₂ were synthesized trough two original methods: the thermal

decomposition of some heteropolynuclear complex compound (with hydroxocarboxylic anions as ligands) and a modified sol-gel methods.

The fine nature of the obtained nanoparticles gives to the synthesized nanocomposites special magnetic properties that can be used in potential applications. Studies have been made in order to establish the dependence between the synthesis conditions, the dimensions of nanoparticles and their properties.

Studies have been made for the synthesis of hybrid polyol-silica matrix, correlation between synthesis conditions and textural properties of the silica matrix, for its use as support for some catalysts.

Studies are going to be made for the synthesis of metallic nanoparticles in silica matrix, with special properties and for the use of these materials as thin films for biological and environmental applications.

RESEARCH TEAM

Mircea Ștefănescu, Marcela Stoia

Researches in HOMO - AND HETEROPOLYNUCLEAR COMPOUNDS WITH ORGANIC LIGANDS

Synthesis and characterization of some inorganic compounds in order to obtain simple and mixed oxides with catalytic, pigmental and magnetic properties

A new synthesis method has been carried out in order to obtain some homo - and heteropolynuclear compounds with hydroxocarboxylic acid anions as ligands. The simple and mixed oxides with special properties have been obtained by thermal conversion of some complex compounds

RESEARCH TEAM

Mircea Niculescu, Mircea Ștefănescu, Marcela Stoia, Raluca Dumitru, Ilie Julean

Researches in PHYSICAL CHEMISTRY OF SOLIDS. OBTAINING AND CHARACTERISATION OF SOME OXIDE COMPOUNDS

The properties of the oxide compounds formed by reactions in the solid state are significantly dependent on the synthesis method used, respectively on the initial state of the reactants.

For the obtaining of some oxide compounds, different synthesis methods have been used: a) the sol-gel method; b) thermal conversion of certain complex combinations; c) combustion synthesis; d) hydroxide co precipitation; e)

annealing of salts and/or oxides mixtures. The reactivity of the systems was studied comparatively for the different synthesis methods used.

RESEARCH TEAM

Cornelia Păcurariu, Dumitru Becherescu, Ioan Lazău, Radu Ioan Lazau, Zoltan Ecsedi, Robert Ianos, Marius Jurca

Researches in ORGANIC ELECTROCHEMISTRY

Electrochemistry represents today a very convenient method for the synthesis of a variety of important organic compounds, which in many cases have been extended to an industrial scale.

Since 1982 theoretical and practical investigations have been made upon electrode processes of organic electrochemistry. The synthesis of quinine, hydroquinone, and ethylene glycol has been analyzed, especially in undivided electrochemical reactors. Studies upon mediated reduction and oxidation of organic compounds have been undertaken.

RESEARCH TEAM

Nicolae Vaszilcsin, Andrea Kellenberger, Mircea Dan, Narcis Duțeanu

Researches in ELECTROCATALYSIS

Obtaining, characterization and application of the electrodes with catalytic activity.

Methods for the preparation of electrocatalytic films have been elaborated in our research team, based on the thermal decomposition of some complex compounds and through thermal arc spraying technique. These films have been characterized through scanning electron microscopy, X-ray diffraction and voltammetry. The practical applications refer to water electrolysis and to the synthesis of some organic compounds.

RESEARCH TEAM

Nicolae Vaszilcsin, Andrea Kellenberger, Mircea Dan, Narcis Duțeanu

Researches in ELECTROPLATING

Obtaining and characterization of metal coatings

Studies regarding the influence of the nature of the galvanic additives upon the quality of the metal deposition have been made. Metal layers have been characterized by X-Ray diffraction, scanning electron microscopy and energy dispersive X-ray microanalysis. The practical applications refer to the replacement of the cyanide galvanic baths with non-toxic ones.

RESEARCH TEAM

Nicolae Vaszilcsin, Andrea Kellenberger, Mircea Dan, Narcis Duțeanu, Radu Bănică

Researches in FUEL CELLS

The conventional energy systems are the main source of pollution on our planet. Considering the decreasing of the Earth's resources of hydrocarbons, it is necessary to improve an alternative energy conversion technology such as the fuel cells. This technology offers many attractive possibilities for reducing the air pollution, diminishing climate changes and preserving our natural resources. Widespread application of this technology is still prohibitive because materials used to make electrodes are expensive.

The aim of our research is the reducing of the H₂-O₂ fuel cell costs by changing the Pt based electrodes with non-noble based electrode obtained using various methods (thermal decomposition, thermal spraying).

RESEARCH TEAM

Nicolae Vaszilcsin, Andrea Kellenberger, Mircea Dan, Narcis Duțeanu, Radu Bănică

Researches in SYNTHESIS OF CERAMIC MATERIALS THROUGH HYDROSILICATE FORERUNNERS

The use of hydrosilicatic forerunners from precipitate reactions to obtain at lower temperatures some high quality ceramic materials such as: wollastonite, enstatite, diopside, willemite, anortite, magnesium spinel and a multitude of oxidic pigments.

The studies in this field have been made at the "Politehnica" University of Timișoara since 1985. The researches have been materialized in a laboratory synthesis method of the materials involved. Verification of the behavior of some synthesized materials in industrial circumstances.

RESEARCH TEAM

Ioan Lazău, Dumitru Becherescu, Marius Jurca, Radu Ioan Lazău

Researches in SEMICONDUCTING GLASSES. FAST ION CONDUCTING GLASSES. REDOX EQUILIBRIA IN GLASSES. LOW MELTING GLASSES FOR FUSION TYPE APPLICATION

Studies regarding electrical conductivity in new molybdenum glass systems. Influence of different transitional ions upon conduction properties of glasses was studied. Synthesis and characterization of fast ion conducting glasses containing Ag⁺, Li⁺ and Cu⁺ ions. Glasses with optimal ion conductivity were design. New fast ion conducting glasses were obtained. The behavior of redox equilibrium Mn²⁺/Mn³⁺ was studied in the following binary systems: SiO₂-R₂O, P₂O₅-R₂O and B₂O₃-R₂O.

The influence of melting conditions (reducing-oxidizing) upon the presence of Ti⁴⁺ was studied, as well as its relationship with the iron present. The reciprocal influence of Ti⁴⁺ and other different ions usually present as impurities upon the color in industrial glasses was studied.

Design, synthesis and characterization of low melting glasses for fusion type applications was studied. The reciprocal influence fusion glass-support glass was investigated using microscopic techniques.

RESEARCH TEAM

Adina Lația, Cosmin Vancea

Researches in CERAMIC GLAZES. SYNTHESIS AND CHARACTERIZATION OF THERMORESISTANT PIGMENTS

The research field extends over the conventional and unconventional synthesis methods for thermoresistant pigments designed to the ceramic industry (ceramic glazes and enamels), characterization of the obtained pigments from the point of view of crystallochemical structure and color. At the same time, the behavior of the synthesized pigments in the glass generating melt is being pursued.

RESEARCH TEAM

Ioan Lazau, Cornelia Păcurariu, Dumitru Becherescu, Radu Ioan Lazau, Zoltan Ecsedi, Robert Ianos

Researches in CHEMISTRY AND TECHNOLOGY OF BUILDING MATERIALS

Local waste materials are analyzed in order to use their potential resources in the field of building materials. Ecological and economical implications of waste or natural deposits especially from Romanian's regions: Transylvania and Banat, containing minerals with possible interest for buildings materials products and technology are investigated.

RESEARCH TEAM

Aurel Ștefan Todinca

RESEARCH PROJECTS

1. CEEX PROAQUA - 631/03.10.2008: *Promoting innovative and sustainable technologies for drinking water treatment*

Value: 49,000 RON

Director: Prof.dr.eng. Georgeta BURTICĂ

Members: Prof.dr.eng. Corneliu DAVIDESCU

Prof.dr.eng. Aurel IOVI

Prof.dr.eng. Rodica PODE

Assoc.prof.dr.eng. Petru NEGREA

Lect.dr.eng. Ioan URȘOIU

Lect.dr. eng. Adina NEGREA

Lect.dr.eng. Florica MANEA

Lect.dr.eng. Giannin MOȘOARĂ

Assist.dr.eng. Marius GHEJU

Assist.eng. Laura COCHECI

PhD student eng. Corina ORHA
 PhD student eng. Cristina PROCA
 PhD student eng. Maria Ioana CORB
 PhD student eng. Camelia PODARU
 PhD student eng. Dan DANIELESCU
 PhD student eng. Aniela Carmen POP
 PhD student Adriana BEBEȘELEA

FIELD DESCRIPTION

The research fields are focused on new technologies of drinking water - Water supply and sanitation.

ACTIVITIES AND RESULTS

The elaboration of the reference materials of technical-economical analyse, realize of the presentation textbook of the treatment technologies for the SV area of the country: Organizing instruction courses: Communications at scientifically manifestation, exhibitions/symposiums: Publishing in speciality revues, Publish web page.

2. CEEX RIWATECH - 62/2008: *Advanced treatment technologies for industrial effluents recycling*

Value: 11,361 RON

Director: Prof.dr.eng. Georgeta BURTICĂ

Members: Lect.dr.eng. Florica MANEA
 PhD student eng. Cristina PROCA
 PhD student eng. Maria Ioana CORB
 PhD student eng. Dan DANIELESCU
 PhD stud. eng. Adriana BEBEȘELEA

FIELD DESCRIPTION

The research fields are focused on new technologies of industrial wastewater.

ACTIVITIES AND RESULTS

Instruction and improvement in the reuse field of the industrial waste waters and sustainable management of water in industry: Semination and Assignable.

3. CEEX MATNANTECH – CD -1/S1/2008: *Multifunctional porous oxidic materials for retaining and degradation of priority dangerous substances from waters*

Value: 91,200 RON

Director: Prof.dr.eng. Rodica PODE

Members: Assoc.prof.dr.eng. Vasile PODE
 Assist.eng. Laura COCHECI

FIELD DESCRIPTION

Researches related to synthesis and certain post – synthesis treatments of the new micro – and mesoporous oxidic materials, with high efficiency in the retaining processes of the main priority dangerous pollutants from waters. Synthesis of new multifunctional synthetic porous oxidic materials, with the same functionality as international ones

Studies concerning the water remediation by decreasing of the inorganic and organic load

ACTIVITIES AND RESULTS

Development of technologies models for the elimination of the compounds with phenol; The development of the technological model for the elimination of the dyes from water; Establishment of some possible bound of research in this field with some potential users; The evaluation of the efficiency of the realised photocatalytic systems; The evaluation of the efficiency of the doubled salty hydroxide LDHS – type hydrotalcit in the adsorption process.

4. CEEX RELANSIN - 59/2008: *Biotechnologies integrated with physico – chemical processes for the municipal wastewaters and the sewage sludge treatment in order to its reusing*

Value: 40,500 RON

Director: Prof.dr.eng. Rodica PODE

Members: Prof.dr.eng. Corneliu DAVIDESCU
 Prof.dr.eng. Aurel IOVI
 Assoc.prof.dr.eng. Petru NEGREA
 Lect.dr.eng. Adina NEGREA
 Lect.dr.eng. Florica MANEA
 Assist.dr.eng. Marius GHEJU
 Assist.eng. Laura COCHECI
 Assist.dr. eng. Lavinia LUPA

FIELD DESCRIPTION

Development of the innovative biotechnologies integrated with physico – chemical processes for the advanced treatment of the municipal effluents in order to recycling.

Development of the technologies for the sewage sludge treatment with the aim of agricultural, industrial and peisagistical reusing or ecological final deposition

ACTIVITIES AND RESULTS

The development of an technological network of excellence in the field of the advanced purification of the municipal waste waters and reuse of the treated waters and residual sludge. The transfer of the technological moduls resulted and of the model of the sustainable delvelopment and results semination.

5. CEEX MENESCO – 51/2008: *Oxide compounds synthesis using unconventional synthesis methods – elaboration of theoretical background and applications for induced properties materials*

Value: 785,150 RON

Director: Prof.dr.eng. Ioan LAZĂU

Members: Prof.dr.eng. Cornelia PĂCURARIU
 Prof.dr.eng. Corneliu DAVIDESCU
 Assoc.prof.dr.eng. Petru NEGREA
 Lect.dr.eng. Marius JURCA
 Lect.dr.eng. Cornelia MUNTEAN
 Lect.dr.eng. Adina NEGREA
 Assist. Dr. eng. Radu LAZĂU
 Assist.eng. Laura COCHECI
 Assist.eng. Raluca DUMITRU
 Assist.eng. Radu ARDELEAN

PhD student eng. Zoltan ECSEDI
 PhD student eng. Robert IANOȘ
 PhD student eng. Silvana IANOȘEV

FIELD DESCRIPTION

The synthesis of oxide compounds using unconventional synthesis methods, represent the most modern solution for obtaining advanced ceramic materials: nanocrystalline powders, controlled porosity films, etc. The main advantages of these methods are: a significant decrease of the temperatures and/or the soaking time related to the annealing phase in order to obtain the designed compounds, high purity, advanced dispersion degree (nanoparticles) of the resulted powders and, the most important, wide possibilities of controlling the characteristics of the product due to the synthesis conditions.

ACTIVITIES AND RESULTS

Elaboration of new unconventional methods for synthesis of some new oxides compounds of practice interest, with directional properties.

6. CEEX CONSINJECT – 63/2008: *Researches concerning the ecosystems integrate protection on building materials stable development with the abidance of the European Recommendations 96/61/CE, 1999/30/EC, 2000/76 CE*

Value: 24,000 RON
Director: Prof.dr.eng. Ioan LAZĂU
Members: Prof.dr.eng. Cornelia PĂCURARIU
 Assist. dr. eng. Radu LAZĂU
 PhD student eng. Zoltan ECSEDI
 PhD student eng. Robert IANOȘ

FIELD DESCRIPTION

Injection is an important part of construction work in rock and soil and is primarily used to change or improve the physical properties of a material, such as permeability, durability, strength or deformation properties. The term injection covers a number of methods and materials for different purposes. A common injection method is permeation grouting, where grout is pumped into a geological structure under pressure, but without disturbing the formation, in order to tighten or strengthen the soil or the rock. Due to relatively low cost and good availability, most of the permeation grouting today is done with cement-based injection grouts.

ACTIVITIES AND RESULTS

The characterisation of some injection fluids based on cimentoid systems.

7. CEEX SIWMANET – 115/2008: *Sustainable and integrated water resources management network*

Value: 5,000 RON
Director: Prof.dr.eng. Georgeta BURTICĂ

Members: Lect.dr.eng. Florica MANEA
 PhD student eng. Aniela Carmen POP

FIELD DESCRIPTION

Preservation and sustainable management of natural and artificial resources

ACTIVITIES AND RESULTS

Residential courses of research for young researchers, results semination and consolidation of the national and international partner ship. The evaluation of the project results.

8. CEEX REMSOL – 4414/2008, *Innovative combined technologies for protection and in-situ remediation of the polluted soils with heavy metals in the purpose of their bio-disponibility*

Value: 30,000 RON
Director: Assoc.prof.dr.eng. Petru NEGREA
Members: Prof.dr.eng. Rodica PODE
 Lect.dr.eng. Adina NEGREA
 Lect.dr.eng. Giannin MOȘOARĂ
 Lect.dr.eng. Marius GHEJU
 Assist.eng. Laura COCHECI
 Assist. dr. eng. Lavinia LUPA
 PhD student Ramona GHIGA

FIELD DESCRIPTION

The characterization of some polluted soils and the comparative analyse regarding the sequential repartition of the metals on the soil main components. The project has the duty to resolve the sterile deflationation from the Moldova Noua area, by applying of some efficient solution of the sterile cover with materials which lead to the stratus forming which could offer live condition to some plants which will maintain the sterile mass in the respective location.

ACTIVITIES AND RESULTS

Testing of the obtained results in laboratory, in variouse climatic conditions, in the first year of culture. Analyse of the accumulated metals in crops and soil.

9. CEEX-Module I - CFN-DYE 23/2008, *Development of nanostructured photo-electrochemical cell based on TiO₂ and dyes*

Value: 80,000 RON
Director: Prof.dr.eng. Nicolae VASZILCSIN
Members: Assoc.prof.dr.eng. Maria NEMEȘ
 Assoc.prof.dr.eng. Petru NEGREA
 Lect.dr.eng. Andrea KELLENBERGER
 Assist.eng. Mircea DAN
 PhD student Narcis DUȚEANU
 PhD student Radu BĂNICĂ

FIELD DESCRIPTION

TiO₂ nanocrystals, Gratzel cell, charge transfer.

ACTIVITIES AND RESULTS

The determination of the conversion degree of the photoelectrical cells with dye. The determination of the additives and stabilisaters influence on the conversion degree.

10. PNII grant No. 56 / 2008, acronim ZEONANO: *Synthesis of functionalized zeolite materials with doped titanium dioxide nanoparticules and testing in water potabilization pilot stations*

Value: 50,000 RON

Director: Prof.dr.eng. Georgeta BURTICA

Members: Lect.dr.eng. Florica MANEA
PhD. Stud. eng. Aniela Carmen POP
PhD.Stud. eng. Adriana BEBESELEA
Ec. Rodica NEAGU

FIELD DESCRIPTION:

Studies over the doped TiO₂ nanocrystals getting through alternative methods, processing to the efficient solutions to get the modified zeolitic materials with TiO₂ nanocrystals doped with metallic/nonmetallic ions, like the characteristics of source and drinking water and a dinking water decontamination

ACTIVITIES AND RESULTS

Studies of concordance on the TiO₂ nano crystals doped with metallic/non-metallic ions trough RX diffraction, Electronic microscopy (TEM, AFM, SEM) - UV-VIS spectrometry. Preliminary researches of synthesis of zeolitic materials functionalised with TiO₂ doped with non-metallic ions. Semination of the results on large scale, trough national and international communication and publishing.

11. MENER research grant, PNCDI, No.758/2008: *Method and installation of chlorine producing and its use in drinkable water chlorination through direct injection in feeding pipe.*

Value: 305,000 RON

Director: Prof.Ph.Eng. Nicolae VASZILCSIN

Members: Ph. Eng. Maria NEMEŞ
Ph. Eng. Petru NEGREA
Ph. Eng. Andrea KELLENBERGER
Phd. Eng. Mircea DAN
Ph. Eng. Narcis DUȚEANU
Phd. Radu BĂNICĂ
Prof. Ph eng. Tudor TODINCĂ
Eng. D-tru TUCU
Eng. D-tru MNERIE
Eng. Titus SLAVICI

FIELD DESCRIPTION

The research field of the project is in the frame of specified thematic area in the durable management of the natural and artificial resources, the drinkable water management occupy an important place through his special and direct impact on the human health.

ACTIVITIES

Realising of some oxides pellicles with electrocatalytic activity, for chlorine emissions; skeleted electrodes for hydrogen emissions.

12. PN-2-TD-2007-2008, Contract 7/2007: *The use of sol-gel method in synthesis of some mesoporous oxides films with directional porosity.*

Value: 21,000 RON

Director: PhD. student eng. Zoltan ECSEDI

FIELD DESCRIPTION:

Macro- and mesoporous alumina materials were prepared with and without PVA addition, from aluminium triisopropylate, by acid catalyzed ~~sol-gel~~ process as non-supported porous membranes and as bulk alumina. The total macroporosity of samples can be increased in the range of 30.98–84.68% by the addition of PVA in the weight ratio in range of 1.25–3.75 g PVA /2.5 g Al₂O₃.

ACTIVITIES AND RESULTS

Obtaining and characterisation of the mesoporous membranes from Al₂O₃ trough sol-gel method.

13. PN-2-TD-2007-2008, Contract 164/2007: *Synthesis of some oxides, oxides compounds and oxides solutions trough combustion method.*

Value: 21,000 RON

Director: PhD. student eng. Robert IANOS

FIELD DESCRIPTION:

Within the framework of the project a large number of ceramic powders have been prepared: Al₂O₃, MgO, MgAl₂O₄, Ca₃Al₂O₆, Ca₄Al₂Fe₂O₁₀. Based on the individual reactivity of metal nitrate/fuel binary mixtures, a new version of combustion synthesis has been developed. This new version, which relies on using fuel mixtures instead of a single fuel, enables the formation of the above mentioned compounds directly from the combustion reaction, without any addition al thermal treatments.

ACTIVITIES AND RESULTS

Obtaining of the nano crystalline oxides compounds trough combustion method.

14. PN II-32-125/2008, acronim- STEDIWAT: *Technical-decisional support system for sustainable management of water.*

Value: 280,000 RON

Director: Lecturer Ph eng. Florica MANEA

Members: Prof. Ph. eng. Georgeta BURTICA
Phd eng. Aniela POP
Phd eng. Cristina PROCA
Phd eng. Adriana BEBESELEA

FIELD DESCRIPTION: The development of some innovative technical support instruments, for monitoring, design and prediction which to be used for sustainable and incorporated management, at hydrographic basin level. Also, the development of the capacity of the collaboration, knowledge and communication transfer between universities and local / regional authorities of water resources management, users and other interest parts in the four studied basins (Prut,, Banat, Arges-Vedea, Olt) with impact on the sustainable development at the local and regional level.

ACTIVITIES AND RESULTS

Research base which contain studies about: evaluation of the infrastructure and of the institutional capacity, management performance, organiser structure and communication channels, sources of pollution and sloop of the waste waters specific for users, hidromorphologic pressure, evolution of the water supply and request, normative for the prevention and full control of pollution, protected areas. In this step will be study, also: the facilities of treatment and purification, water price and the settlement regarding the quality, environment particularities (clime, geography, topography, water resources), field use, demographics data (actual state and tendency), ecological and hydro geological limited conditions. All these studies will be considered in the context of the national and international legislation.

15. PN II-72-156/2008, acronim- NANO-ZEOREZID: *The use of some zeolitic materials functionalised with TiO₂ nano crystals for waste water treatment in the view of these reuse.*

Value: 250,000 RON

Director: Lecturer Ph eng. Florica MANEA

Members: Prof. Ph. eng. Georgeta BURTICA

Phd eng. Aniela POP

Phd eng. Cristina PROCA

Phd eng. Adriana BEBESELEA

FIELD DESCRIPTION:

The use of some functionalized zeolitic materials with TiO₂ nano crystals for residual waters purification in the view of their reuse in the production process trough the combination of the advanced catalytic oxidation process with the electro oxidation process, or the involve of the TiO₂ in the process of photochemical and photo electrolytic purification.

ACTIVITIES AND RESULTS

Studies of scientifically reference material regarding the synthesis and applying of the zeolitic materials functionalised with TiO₂/TiO₂ nano crystals doped with metallic and non metallic ions, electrochemical degradation and integration of those two processes in the waste waters treatment with the purpose of their reuse.

16. PN II -71-026, *Complex researches regarding the obtaining and the magnetically properties of the systems of ferromagnetic nanoparticles of surfactant/ un surfactant CodFe_{3-d}O₄ and biocompatibility with potential applying in cancer therapy.*

Value: 100,000 RON

Director: Prof. Ph. Mircea STEFANESCU

Members: Assist. Ph. Eng. Marcela STOIA

Assist. Ph. Eng. Monika SIMON

Phd student eng. Thomas DIPPONG

FIELD DESCRIPTION:

The project has like objectives the obtaining of the oxides systems Co_xFe_{3-x}O₄ under nano particles forms of various dimensions and their surfactation with biocompatible surfactants in the view of their use at the treatment of cancerous tumours. For the obtaining of the magnetic nano particles are used two unconventional methods of synthesis: the method of the of thermal decay of the precursors of type carboxylic and the co precipitation method. Is followed the establishment of the synthesis conditions needed for the obtaining of the magnetic nanoparticles of various dimensions, and also the study of their magnetical properties function of the medium diametere oOf the nano particles. The magnetic nano particles which will present adequate magmnetic properties will be surfatated and tested in the view of their use in the tumours treatment.

ACTIVITIES AND RESULTS

2 ISI paper accepted for publishing in JTAC

two papers presented at the International conference of Thermal Analyse and Calorimetric, Brasilia 2008.

A PhD thesis sustained public in December 2008 on the project them. Synthesis of the nano materials type CoxFe_(3-x)O₄ with controlled magnetic properties.

17. PN II- 72-171/2008, *Micro porous sensors with polianiline functionalised with pendant groups, innovative materials used in the identification and control of the Parkinson disease.*

Value: 289,000 RON

Director: Assoc.prof.Ph.eng. Andrea KELLENBERGER

Members: Prof. Ph. eng. Nicolae VASZILCSIN

Assist. Phd eng. Mircea Laurentiu DAN

Assist. Ph. eng. Narcis DUTEANU

Phd eng. Radu BANICA

Student Anuta NASUI

Student Raluca NITOI

Student Diana MIHART

FIELD DESCRIPTION:

Electrochemical sensors based on polyaniline for the detection of dopamine in the Parkinson disease.

ACTIVITIES AND RESULTS

Reference materials study regarding the obtaining of the micro porous sensors with polinainlin functionalised with pendant groups.

18. PN II- 71-017/2007-2008, *Gallium obtaining in the view of the complex and efficietn reuse of the bauxite.*

Value: 200,000 RON

Director: Prof. Ph. eng. Nicolae VASZILCSIN

Members: Assoc.prof.Ph.eng. A.KELLENBERGER

Assist. Phd eng. Mircea Laurentiu DAN

Assist. Ph. eng. Narcis DUTEANU

Student Anuta NASUI

FIELD DESCRIPTION:

Electrochemical removal of metals from aqueous solutions.

ACTIVITIES AND RESULTS

The cathode realize for the electrochemical reactor equipment for gallium extraction.

19. PN II- 31-073/2007-2008, *Methods and innovative technologies of management and denoxiously of the hazardous waste and treatment of the levigate with content of toxic elements, resulted from the metallurgy of un ferrous heavy metals.*

Value: 50,000 RON

Director: Prof. Ph. eng. Nicolae VASZILCSIN

Members:

Assoc.prof.Ph.eng.A. KELLENBERGER
 Assist. Phd eng. Mircea Laurentiu DAN
 Assist. Ph. eng. Narcis DUTEANU
 Student Anuta NASUI
 Assoc. prof. Ph. Eng. Petru NEGREA
 Lecturer Ph. Eng. Florica MANEA

FIELD DESCRIPTION:

Treatment of waste water by electrochemical methods.

ACTIVITIES AND RESULTS

Methods and innovative technologies of management and denoxiously of the hazardous waste with content of toxic elements resulted from the metallurgy of unferrous heavy metals.

20. CEEX research grant, PII, No. 057/03.10.2005 Phase 2008: *Soil exoneration using intensive methods from radioactive minerals exploitation and processing areas in the condition of naturals disasters or entropic accidents, acronym RESOLRAD*

Value: 30,000 RON

Directo: Prof.Dr.eng. Delia PERJU

Members: Assoc.prof.dr.eng.D.SILAGHI-PERJU
 Lecturer dr.eng. Carmen RUSNAC
 Assist.dr.eng. Alina BRUSTUREAN
 PhD stud. chim-fiz. Harieta PÎRLEA
 PhD student eng. Raul MODOVAN
 PhD stud. eng. Sorin MARINESCU

FIELD DESCRIPTION

Studies regarding chemical decontamination of soil in presence of ultra-sounds.

ACTIVITIES

Mathematical modeling and methods regarding the transfer mechanism in solid-liquid heterogeneous systems in order to establish the optimal hydrodynamic parameters Implementation of interface equipments in measurement devices

PhD RESEARCH ACTIVITIES

1. Prof.dr.eng. Ilie JULEAN, PhD supervisor in Chemistry

PhD students:

- Lucian Barbul: *Homo- and heteropolynuclear compounds with hydroxycarboxylic acid anions as ligands, used as precursors for oxidic systems*
- Eleonora Marian: *Complexes of transition elements with medicinal substances*
- Georgeta Ursulescu: *Studies concerning the accuracy and precision of some analysis techniques of biological materials*
- Marcela Bota: *Studies concerning some basic compounds used to obtain inorganic pigments*
- Maria Ilici: *Studies about complexes of transition metals with heterocyclic compounds*

2. Prof.dr.eng. Aurel IOVI, PhD supervisor in Chemical Engineering

PhD students:

- Elena Laura Popescu: *Studies about the obtaining process of the complex combinations of the metals ions with spectral use*
- Eugen Lungu: *The use of activated oxidants in the waters treatment domain*
- Claudia Morgovan: *The reuse of the metals ions from galvanic industry wastes under fertilizers with microelements*
- Dalila Marșavina: *The studies of the equilibriums from the undergrounds waters in the view of the use of these as drinkable waters*
- Dan Roșu: *The behavior of the complex combinations with microelements in the obtaining process of the fertilizers*
- Angela Magda: *Studies about some oxygenate compounds of boron with applied in fertilizers technologies with microelements*
- Monica Ihoș: *Unconventional technologies of elimination from water of some specific pollutants*
- Cornel Bogatu: *Specific technologies in the water technology*
- Laura Cochechi: *Oxidative chemical processes for soil decontamination*
- Daniela Micu: *The study of the toxic compounds elimination processes from rural waters sources*
- Adrian Gheorghe Rus: *The study of the obtaining processes of the active principles from medicinal plants and their characterizations*
- Carmen Iuz: *Studies regarding the characterizations and the use of some nano materials of type TiO₂ in the ambient environmental decontamination*
- Ioan Macarie: *Contribution to the synthesis of some amino – organic – phosphoric with biological applied*
- Valeria Rus: *Studies regarding the sludge treatment from the local purification plant in the view of put in good use or elimination*

- Mihaela Maria: *Studies regarding the control and effect of the exposure to hard metals in the professional and unprofessional medium*
- Florina Popa: *Contributions to obtaining and using antiseptic agents based on synergetic mixture*
3. Prof.dr.eng. Georgeta BURĂIC, PhD supervisor in *Chemical Engineering*
- PhD students:*
- Amalia Corina Macarie: *Contributions at the eco-technologies elaboration for the metallic ions recovery from the used electrolyte*
- Petre Vili Furdui: *Studies regarding the monitoring and characterization of the drinking water resources from the Romania's west region*
- Nicoleta Luminița Jurj: *Contributions regarding improvement of the municipal wastewater treatment technology for fall in with the European Normative*
- Elena Gabriela Cical: *Studies concerning the improvement of drinking water quality results from accumulation lake*
- Mihaela Toader: *Considerations regarding municipal wastewater treatment processes improvement*
- Cristina Proca: *Water decontamination technologies used new composite materials based on inorganic salts*
- Ioana Maria Corb: *Studies regarding the production and the characterization of new alumina silicate materials with utilization in ecotechnologies*
- Cornelia Elena Ratiu: *New materials in drinking water treatment technology*
- Daniela Ronamina Sonea: *Drinking water treatment technology improvement*
- PISOI ILIE: *Contributions regarding the improvements of the drinkable technologies of waters*
4. Prof.dr.eng. Dumitru BECHERESCU, PhD supervisor in *Materials' Science and Engineering*
- PhD students:*
- Adriana Calapod: *Concrete as an immobilization factor for some polluting materials*
5. Prof.dr.eng. Ioan LAZĂU, PhD supervisor in *Materials' Science and Engineering*
- PhD students:*
- Alexandru Orban: *Technological parameters optimization for obtaining super-aluminous products*
- Mariana Suba: *The use of the unconventional methods in synthesys of some mineralogic compounds and solid solution for ciment chemistry*
6. Prof.dr.eng. Nicolae VASZILCSIN, PhD supervisor in *Chemical Engineering*
- PhD students:*
- Mircea Dan: *Metal removal from residual water in electrochemical reactor with vibrating electrodes*
- Radu Nicolae Bănică: *Solar cells based on CuInS₂*
- Mirela Ioana Iorga: *Contributions to the mass transfer intensification in electrochemical recovering of metal from solutions*
- Ana Maria Dabici: *Nano particles type TiO₂ with photocatalitic activity*
- Doru Buzatu: *Electro catalise based on niobium*
- Dan Rujan: *Appling of the technologies of fracture theory in Galvan technique.*
- Paula Sfirloagă: *Materials for solar cells*
- Ștefan Dănică Novaconi: *Solar cells with TiO₂ and dyes*
7. Prof.dr.eng. Zeno GROPSIAN, PhD supervisor in *Chemical Engineering*
- PhD students:*
- Bors Nicu: *"The investigation of some chemical products influence on the improvement of liquids flow"*
- Ciobotaru Leopold: *"Contributions to the filtering technology";*
- Frigura (Panescu) Mihaela: *"Contributions to the study of the solid-liquid separation processes";*
- Pop Nadia: *"Advanced methods for gases purification";*
8. Prof.dr.eng. Delia Perju, PhD supervisor in *Chemical Engineering*
- PhD students:*
- Harieta Pîrlea: *Contibution to the simulation and modeling of chemical processis for reduction of nitrogen dioxide emmissions*
- Calisevici Mirela: *Quality Performances Improvement of a Food Process Line Using Advanced Optimal Process Control*
- Marinescu Sorin: *Contributions to the Optimization Possibilities of a Waste Incineration Plant*
- Dancea Daniel: *Contributions to the Modeling, Simulation and Optimal Process Control of Heat Transfer Processes*
- David Ioana Elena: *Study Regarding the Process Control and Optimization Possibilities of Technological Processes Applied in Fibre Glass Technology*
- Manea Adela: *Contributions to the Quality Improvement of Cosmetics Products*
- Osiceanu Antoaneta: *Contributions to Optimisation of Asphaltic Cationic Emulsion Technology.*
- Lal Astrid: *Contributions to the Elimination Process Improvement of Pollutants Resulted from Railway Units Activity*

- Pamfiloiu Mirabela: *Contributions to the Improvement of an Electro thermal Gas Flow meter Performances Using Analogue-Numerical Systems*
 - Cicoare Eugeniu: *Contributions to the Implementation Possibilities of Low Pressure Equipments in Physical-Mechanical Test-Installations Used in the Chemical Technology of Leather*
 - Firczak Monica: *Contributions to the Study of Neural Networks Applied in Chemical Engineering*
 - Ordodi Valentin: *Designing of a micro reactor for the obtaining of the STEM cells*
 - Draghici Loredana: *Contributions regarding the environment protection for the nocive effects of the hazardous substances resulted after the accidental technologies using the mathematical modelation and numeric simulation.*
9. Prof. PhD Mircea ȘTEFĂNESCU, PhD supervisor in *Chemical Engineering*

PhD students:

- Vlăzan Paulina: *Oxides nano materials used as environment sensors*

PhD THESIS SUSTAINED

1. Zoltan Ecsedi: *The use of the unconventional methods in synthesis of some materials with directional properties*, PhD supervisor: prof. dr. eng. Ioan Lazău
2. Robert Ianoș: *Synthesis of some oxides, oxides compounds and solid solutions trough combustion method*, PhD supervisor: prof. dr. eng. Ioan Lazău
3. Thomas Dippong: *Nano materials based on cobalt undispersed and dispersed in inorganic matrixes.*, PhD supervisor: prof. dr. Mircea Ștefănescu
4. Corina Ileana Orha: *Contribution to the study of the obtaining and characterisation process of some zeolitic materials functionalised with use in water disinfection* PhD supervisor: prof. dr. eng. Aurel Iovi
5. Aniela Carmen Pop: *Elaboration, characterisation and applying of some changed electrodes with zeolit in the quantitative evaluation purpose of the organic charging from water*, PhD supervisor: prof. dr. eng. Georgeta Burtica
6. Adriana Ioana Bebeslea Sterp: *Contributions regarding the electrochemical degradation process of the organic compounds from water using electrodes based on carbon*, PhD supervisor: prof. dr. eng. Georgeta Burtica
7. Camelia Podaru: *Contributions regarding the improvement of drinkable technologies of*

water trough applying of some innovative process of filters. PhD supervisor: prof. dr. eng. Georgeta Burtica

8. Cristian Dan Danielescu: *Contributions regarding the improvement of the purification treatment of the residual effluents resulted from the cellulose and paper industry*, PhD supervisor: prof. dr. eng. Georgeta Burtica
9. Raul Moldovan: *Improvement of the heat Boundary Layer Flowmeter Performances Using Analogue Nmerical Systems*, PhD supervisor: prof. dr. eng. Delia Perju

PUBLICATIONS

BOOKS

1. R. Ianoș, I. Lazău, C. Păcurariu, *Synthesis of the oxides compounds trough combustion method*, "Politehnica" Publishing House, Timișoara, 2008, ISBN 978-973-625-692-9, 332 pages (published in Romanian)
2. R. I. Lazău, *Guide of practical applying and problems for the ceramics technology*, "Politehnica" Publishing House, Timișoara, 2008, ISBN ISBN: 978-973-625-720-9, 102 pages (published in Romanian)
3. M. Niculescu, R. Dumitru, *Reactions of the inorganic substances. Principles and applying*, "Politehnica" Publishing House, Timișoara, 2008, ISBN 978-973-625-681-3, 200 pages (published in Romanian)
4. P. Negrea, *Metals. Obtaining, Structure, Properties*. "Politehnica" Publishing House, Timișoara, 2008, ISBN 978-973-625-756-8, 230 pages (published in Romanian)
5. P. Negrea, G. Moșoarca, A. Negrea, M. Ciopec, *Technologies of maize cultivation*, EUROBIT, Publishing House, Timișoara, 2008, ISBN 978-973-620-408-1, 110 pages (published in Romanian).

PUBLISHED PAPERS

1. M. Birzescu, M. Niculescu, Raluca Dumitru, P. Budrugaec, E. Segal, *Copper(II) oxalate obtained through the reaction of 1,2-ethanediol with Cu(NO₃)₂·3H₂O*, Journal of Thermal Analysis and Calorimetry, 94, 2008, ISSN: 1572-8943(online), pp. 297-303
2. R. Ianos, I. Lazau, C. Pacurariu, P. Barvinschi, *Peculiarities of CaO-6 Al₂O₃ Formation by using Low- Temperature Combustion Synthesis*, European Journal of Inorganic Chermistry, 2008, ISSN: 1099-0682, pp. 925-930
3. R. Ianos, I. Lazau, C. Pacurariu, P. Barvinschi, *Applications of New Organic Fuels in the Direct MgAl₂O₄ Combustion Synthesis*, European Journal of Inorganic Chermistry, 2008, ISSN: 1099-0683, pp. 931-938

4. R. Ianos, I. Lazau, C. Pacurariu, P. Barvinschi, *Solution Combustion Synthesis of $MgAl_2O_4$ Using Fuel Mixtures*, Materials Research Bulletin, 43, 2008, ISSN:0025-5408, pp. 3408-3415
5. Z. Ecsedi, I. Lazau, C. Păcurariu, *Microstructural analysis of the effects of polyvinyl alcohol content on the porosity of sol-gel derived alumina ceramics*, Microproous & Mesoporous Materials, DOI:10.1016/j.micromeso.2008.09.025, ISSN : 1387-1811
6. R. Ianos, C. Pacurariu, I. Lazau, S. Ianosev, Z. Ecsedi, R. Lazau. P. Barvinschi, *Comparative study regarding the formation of $La_{1-x}Sr_xCrO_3$ perovskite using unconventional synthesis methods*, Journal of Thermal Analysis and Calorimetry, 94, 2, 2008, ISSN: 1388-6150, pp. 343-348
7. Lazau, R. Ianos, C. Pacurariu, C. Savii, *Spinel Preparation by Combustion Synthesis. The Influence of Synthesis Conditions on the Features of the resulted Spinel $MgAl_2O_4$ Powder*, Romanian Journal of Materials, 38(3), 2008, ISSN: 1583-3186, pp.111-119
8. R.Pode, E.Popovici, L.Cochechi, E.Reisz, E.M.Seftel, V.Pode, *Sorption of phosphate and thiocyanate anions on isomorphic substituted Mg/Zn-Al hydrotalcites*, Journal of Serbian Chemical Society, 73(8-9), 2008, ISSN: 0352-5139, pp. 835-843
9. R.Pode, E.Popovici, E.Reisz, L.Cochechi, E.M.Seftel, V.Pode, *Sorption characteristics of phosphate and thiocyanate anions on multicomponent Mg/Ni-Al -type hydrotalcites*, Revue Roumaine de Chimie, 53(3), 2008, ISSN: 0035-3930, pp.207-215
10. R.Pode, L.Cochechi, E.Popovici, E.M. Seftel, V.Pode, *Degradation of p-Chlorophenol by Advanced Oxidation Processes*, Revista de Chimie, 59(8), 2008, ISSN: 0034-7752, 898-901
11. G.Gavris, O.Stanasel, R.Pode, M.Stoia, V.Chitac, *Study upon the recuperative purging of nickel and cobalt ions from residual solutions by means of chemical precipitation*, Revista de Chimie, 59(1), 2008, ISSN: 0034-7752, pp.61-64
12. Lavinia Lupa, Petru Negrea, Adina Negrea, Aurel Iovi, Laura Cochechi, Giannin Mosoarca, *Modelling and automation of the phosphate ions removal process from waste waters*, Brazilian Journal of Chemical Engineering, 25, 1, 2008, ISSN: 0104-6632, pp.9
13. Mihaela Andoni, Aurel Iovi, Petru Negrea, Adina Negrea, Lavinia Lupa, Mihaela Ciopec, *Studies regarding the removing of mercury from soil using Na-EDTA, $Na_2S_2O_3$ and KI solution*, Revista de Chimie, 59(6), 3, 2008, ISSN: 0034 - 7752, pp. 653
14. Mihaela Andoni, Aurel Iovi, Petru Negrea, Lavinia Lupa, Adina Negrea, Mihaela Ciopec, *Mercury removing from the contaminated soil using KI solution. The pH influence*, Revista de Chimie, 59(7), 3, 2008, ISSN : 0034 - 7752, pp. 779
15. Elena Cical, Gabriela Oprea, Cristina Mihali, Laura Ardelean, Georgeta Burtică, Lavinia Lupa, *Systematic studies for the introduction of a new product in the drinkable flux of an atipic surface source*, Revista de Chimie, 59(9), 6, 2008, ISSN:0034 - 7752, pp. 1030,
16. Vasile Gherman, Jean-Gabriel Breheret, Marilena Motoc, Rahela Carpa, Adina Negrea, Florina-Adriana Radu, *The sulphur and iron metabolism in acidophilic microbial gelatinous formations from an auriferous sulphides mine from the south - west of Romania*, Revista de Chimie, 59(10), 5, 2008, ISSN: 0034 - 7752, pp. 1164
17. Titus Vlase, Cornelia Muntean, *Kinetics of thermal decomposition of some nitrophosphate fertilizer with micronutrients in isothermal conditions*, Journal of Thermal Analysis and Calorimetry, 92(2), 4, 2008, ISSN: 1388-6150, pp. 559
18. Angela Magda, Vasile Pode, Mircea Niculescu, Cornelia Muntean, Geza Bandur, Aurel Iovi, *Studies on process of obtaining the fertilizers based on ammonium phosphates with addition of boric acid*, Revista de Chimie, 59(12), 8, 2008, ISSN: 0034 - 7752, pp. 1340
19. F. Manea, D. Perniu, J. Schoonman, *Defect chemistry of sensors materials, Health and Security: Advanced Materials and Technologies-NATO*, Springer, 2008, ISSN:1-4020-9010-2, pp. 105
20. F.Manea, C.Radovan, A.Pop, I.Corb, G.Burtica, P.Malchev, S.Picken, J.Schoonman, *Carbon composite electrodes applied for electrochemical Sensors, in Sensors for Environment, Health and Security*, Advanced Materials and Technologies - NATO, Springer, 2008, ISSN:1-4020-9010-2, pp.106
21. A.Bebeseselea, F.Manea, C.Radovan, G.Burtica C.Teodosiu, A.Pop, C.Proca, I.Corb, *The degradation of phenol derivates from wastewaters by electrochemical treatment*, WATER POLLUTION IX, Transactions on Ecology and the Environment, 111, Eds. D. Prats Rico, C. A. Brebbia, Y. acampa Esteve, 2008, ISSN: 978-1-84564-115-3, pp.435-444

22. C.Podaru, C.Danielescu, D.Sonea, A. Pacala, I.Vlaicu, C.Cosma, G.Burtica, F.Manea, C.Orha, *A comparative study of two groundwater treatment pilots plants*, WATER POLLUTION IX, Transactions on Ecology and the Environment, 111, Eds. D. Prats Rico, C. A. Brebbia, Y. acampa Esteve, 2008, ISSN:978-1-84564-115-3, pp.149-157
23. M. Gheju, A. Iovi, I. Balcu, *Hexavalent chromium reduction with scrap iron in continuous-flow system. Part 1: Effect of feed solution pH*, Journal of Hazardous Materials, 153(1-2), 2008, ISSN: 0304-3894 pp.655-662
24. L.V. Costea, V.N. Bercean, V. Badea, G. Fafilek, A. Chiriac, *Anodic oxidation of some 1H-3-methyl-4-ethoxycarbonyl-5-arilidenehydrazino-pyrazoles: Substitution effects and linear free energy relationships*, Revista de Chimie, Nr.59 (6), 3, 2008, ISSN:0034-7752, pp.691
25. Popa, C.M. Davidescu, Petru Negrea, G.Ilia, A. Katsros, K.A. Demadis, *Sintesis and Characterization of Phosphonate Ester/Phosphoric Acid Grafted Styrene-Divinilbenzene Copolymer Microbeads and Their Utility in Adsorption of Divalent Metal Ions in Aqueous Solutions*, Industrial & Engineering Chemical Research, 2008, ISSN:0888-5885, pp. 2010-1017
26. Vasile-Daniel Gherman, Jean-Gabriel Breheret, Petru Negrea, Marilena Motoc, *The Testing of the Capacity of an Acidophilic Consortium from an Old Mine Concerning the Elimination of Iron and Manganese from the Underground Waters*, Revista de Chimie, Nr.59(6), 2008, ISSN: 0034-7752, pp. 712 – 715,
27. G. Gavris, O. Stanasel, R. Pode, M. Stoia, V. Chitac, *Studiul epurării recuperative a ionilor de nichel și cobalt prin precipitare chimică din soluții reziduale*, Revista de Chimie, 59 (1), 4, 2008, ISSN: 0034-7752, pp. 61
28. M. Stefanescu, T. Dippong, M. Stoia, O. Stefanescu, *Study on the obtaining of cobalt oxides by thermal decomposition of some complex combinations undispersed and dispersed in SiO₂ matrix*, Journal of Thermal Analysis and Calorimetry , 94 (2) , 5, 2008, ISSN: 1388-6150, pp.389
29. N.Duteanu, A.Kellenberger, N.Vaszilcsin, K.Scott, *Studies on Sodium Borohydride Fuel Cells*, Revista de Chimie, 59(12), 2008, ISSN: 0034-775,2 pp. 1361
30. A.Kellenberger, E.Jähne, H.-J.Adler, T. Khandelwal, L.Dunsch, *In situ FTIR spectroelectrochemistry of poly[2-(3-thienyl)ethyl acetate] and its hydrolyzed derivatives*, Electrochimica Acta, 53 (24), 2008, ISSN:0013-4686, pp. 7054
31. A.Kellenberger, N.Vaszilcsin, N.Duțeanu, M.L.Dan W.Brandl, *Structure, morphology and electrochemical properties of high surface area copper electrodes obtained by thermal spraying techniques*, Studia Universitatis Babeș Bolyai, 53(1), 2008, ISSN:1224-7154, pp. 89
32. K.Scott, E.Yu, G.Vlachogiannopoulos, M.Shivare, N.Duteanu, *Performance of a direct methanol alkaline membrane fuel cell*, Journal of Power Sources , 175(1), 2008, ISSN:0378-7753, pp. 452
33. F.Manea, C.Radovan, I.Corb, A.Pop, G.Burtica, P.Malchev, S.Picken, J.Schoonman, *Simultaneous determination of 4-chlorophenol and oxalic acid using an expanded graphite-epoxy composite electrode*, Electroanalysis, 20(5), 2008, ISSN:1040-0397, pp.1719-1722
34. Pop, F.Manea, C.Radovan, P.Malchev, A.Bebeslea, C.Proca, G.Burtica, S.Picken, J.Schoonman, *Amperometric detection of 4-chlorophenol on two types of expanded graphite based composite electrodes*, Electroanalysis, 20(22), 2008, ISSN: 1040-0397, pp.1719-1722
35. C. Radovan, D. Cinghiță, F. Manea, M. Mincea, C. Cofan, V.Ostafe, *Electrochemical Sensing and Assessment of Parabens in Hydro-Alcoholic Solutions and Water Using a Boron-Doped Diamond Electrode*, Sensors 8, 2008, ISSN:1424-8220, pp. 4330
36. F.Manea, A.Pop, C.Radovan, P.Malchev, A.Bebeslea, G.Burtica, S.Picken, J.Schoonman, *Voltammetric Detection of Urea at Ag-Modified Zeolite-Expanded Graphite-Epoxy Composite Electrode*, Sensors, 8, 2008, ISSN:1424-8220, pp. 5806-5819
37. A.Bebeslea, F.Manea, G.Burtica, D.Micu, *Ecological and economical implication in drinking water treatment*, Environmental Economics, Les Presses Agronomiques de Gembloux, 2008, ISBN: 978-2-87016-094-7
38. Pop, F. Manea, C.Radovan, I. Corb, G. Burtica, P. Malchev, S. Picken, J.Schoonman, *Determination of 4-chlorophenol using two types of graphite based composite electrodes*, Revue Roumaine de Chimie, 53(8), 2008, ISSN: 0035-3930, pp. 623-628.
39. C. Orha F. Manea, A. Pop, G. Burtica, I.Fazakas-Todea, *Obtaining and characterization of zeolitic materials with antibacterial properties*, Revista de Chimie, 59 (2), 2008, ISSN: 0034-7752, pp. 173-177

40. F. Manea, D. Perniu, J. Schoonman, *Defect chemistry of sensors materials*, Health and Security: Advanced Materials and Technologies-NATO, Springer, 2008, ISSN:1-4020-9010-2, pp..105
41. F.Manea, C.Radovan, A.Pop, I.Corb, G.Burtica, P.Malchev, S.Picken, J.Schoonman, *Carbon composite electrodes applied for electrochemical Sensors*, in Sensors for Environment, Health and Security: Advanced Materials and Technologies-NATO, Springer, 2008, ISSN:1-4020-9010-2, pp. 106
42. A.Bebeselea, F.Manea, C.Radovan, G.Burtica C.Teodosiu, A.Pop, C.Proca, I.Corb, *The degradation of phenol derivates from wastewaters by electrochemical treatment*, WATER POLLUTION IX, Transactions on Ecology and the Environment, Vol. 111, Eds. D. Prats Rico, C. A. Brebbia, Y. acampa Esteve , 2008, ISSN:978-1-84564-115-3, pp. 435-444
43. C.Podaru, C.Danielescu, D.Sonea, A.Pacala, I.Vlaicu, C.Cosma, G.Burtica, F.Manea, C.Orha, *A comparative study of two groundwater treatment pilots plants*, WATER POLLUTION IX, Transactions on Ecology and the Environment, Vol. 111, Eds. D. Prats Rico, C. A. Brebbia, Y. acampa Esteve , 2008, ISSN:978-1-84564-115-3, pp.149-157
44. Adina Negrea, Lavinia Lupa, Cornelia Muntean, Mihaela Ciopec, Petru Negrea, Carmen Ghimboasa, Marilena Motoc, *Studies regarding the Possibilities of Ammonium Ions Removal from Underground Waters*, Chem. Bull. "Politehnica" Univ. (Timisoara), 53(67), nr. 1-2, 4, 2008, ISSN: 1224-6018, pp. 106
45. Adina Negrea, Cornelia Muntean, Petru Negrea, Mihaela Ciopec, Lavinia Lupa, *Bio-remediation of the Zinc polluted Soils from Mining Areas*, Chem. Bull. "Politehnica" Univ. (Timisoara), 53(67), nr. 1-2, 5, 2008, ISSN: 1224-6018, pp. 83
46. Adina Negrea, Lavinia Lupa, Mihaela Ciopec, Cornelia Muntean, Petru Negrea, Georgiana Mladin, *Studies Regarding the Establishment of the Optimum Conditions of Ammonium and Phosphate Ions Removal from Water*, Chem. Bull. "Politehnica" Univ. (Timisoara), 53(67), nr. 1-2, 2008, 4, 2008, ISSN: 1224-6018 pp. 98
47. Ramona Ghiga, Aurel Iovi, Petru Negrea, Adina Negrea, Cornelia Muntean, Lavinia Lupa, Mihaela Ciopec, *Studies regarding the Establishment of the optimum Conditions of Obtaining Process of NP Fertilizers with Micronutrients*, Chem. Bull. "Politehnica" Univ. (Timisoara), 53(67), nr. 1-2, 2008, 3, ISSN: 1224-6018, pp. 276
48. Petru Negrea, Florin Sidea, Adina Negrea, Lavinia Lupa, Mihaela Ciopec, Cornelia Muntean, *Studies regarding the Benzene, Toluene and o-Xylene Removal from Waste Water*, Chem. Bull. "Politehnica" Univ. (Timisoara), 2008, 53(67), nr. 1-2, 3, ISSN: 1224-6018, pp. 144
49. Adina Negrea, Mihaela Ciopec, Lavinia Lupa, Cornelia Muntean, Petru Negrea, *Studies regarding the Copper Ions Removal from Waste Waters*, Chem. Bull. "Politehnica" Univ.(Timisoara), 53(67), nr. 1-2, 5, 2008, ISSN: 1224-6018, pp. 93
50. Cornelia Muntean, Adina Negrea, Mihaela Ciopec, Lavinia Lupa, *Studies on the sea buckthorn used in therapeutic purpose*, Buletinul AGIR, Anul XIII, nr. 1-2, 4, ISSN: 1224-7928, pp. 42
51. Adina Negrea, Mihaela Ciopec, Lavinia Lupa, Cornelia Muntean, *The obtaining of the PK fertilizers with the copper microelements in the view of the crops quality improvement*, Buletinul AGIR, Anul XIII, nr. 1-2, 8, 2008, ISSN: 1224-7928, pp. 46
52. Lavinia Lupa, Petru Negrea, Monica Sallai, Mihaela Ciopec, Ramona Ghiga, *The reuse of the zinc ash under zinc oxide with a high purity*, Buletinul AGIR, Anul XIII, nr. 1-2, 2008, 5, ISSN: 1224-7928, pp.66
53. Petru Negrea, Dan Visoiu, Raul Brauner, *Studies regarding the quality of zinc obtained trough the reuse of the zinc waste*, Buletinul AGIR, Anul XIII, nr. 1-2, 3, 2008, ISSN: 1224-7928, pp. 71
54. Lavinia Lupa, Nicoleta Tunea, Aurelian Miulescu, Cristian Dumitrescu, *The determination of the heavy metals from wine trough atomic absorption spectrophotometry*, Buletinul AGIR, Anul XIII, nr. 1-2, 4, 2008, ISSN: 1224-7928, pp. 74
55. Petru Negrea, Cristina Draga, Andreea Bancioiu, Georgeta Mihoc, *Studies regarding the lead analyse from sugar trough atomic absorption spectrophotometry*, Buletinul AGIR, Anul XIII, nr. 1-2, 3, 2008, ISSN: 1224-7928, pp. 79
56. Petru Negrea, Andreea Bancioiu, Cristina Draga, Georgeta Mihoc, *Studies regarding the quality of the sodium chlorine, the determination of the Ferro cyan*, Buletinul AGIR, Anul XIII, nr. 1-2, 5, 2008, ISSN: 1224-7928, pp. 82
57. Petru Negrea, Dana Baltacescu, Bianca Molnar, Cristina Urban, *Studies regarding the contamination with arsenic of the underground water trough the atomic absorption spectrophotometry (HG_AAS)*, Buletinul AGIR,

- Anul XIII, nr. 1-24, 2008, ISSN: 1224-7928, pp. 201
58. Giannin Mosoarca, Petru Negrea, *The control and the effect of aluminium in the drinkable water*, Buletinul AGIR, Anul XIII, nr. 1-2, 5, 2008, ISSN: 1224-7928, pp. 208
59. Petru Negrea, Cristian Nichita, Doina Marin, Rodica Lungu, *The determination and the effect of the ozone in the environment*, Buletinul AGIR, Anul XIII, nr. 1-2, 5, 2008, ISSN:1224-7928, pp. 213,
60. A. Pop, F. Manea, C. Proca, C. Radovan, G. Burtica, P. Malchev, S. Picken, J. Schoonman, *Electrochemical Detection of 4-Chlorophenol from Water Using Ag-modified Zeolite-Expanded Graphite-Epoxy Composite Electrode*, Chem. Bull. "POLITEHNICA" Univ. (Timișoara), 53(67), 2008, ISSN: 1224-6077, pp.16-21
61. A. Bebeselea, F. Manea, G. Burtica, L. Nagy, G. Nagy, *Electrochemical degradation and determination of 4-nitrophenol using multiple pulsed amperometry at graphite based electrodes*, Chem. Bull. "POLITEHNICA" Univ. (Timișoara), 53(67), 2008, ISSN: 1224-6077, pp. 34-38,
62. C.Ratiu, C.Orha, P.Sfirloaga, C.Lazau, F.Manea, A.Pacala, I.Vlaicu, G.Burtica, I.Grozescu, *Enhancement of natural organic matter removal from surface water using TiO₂-modified zeolite*, Chem. Bull. "POLITEHNICA" Univ. (Timișoara), 53(67), 2008, ISSN: 1224-6077, pp.171-175
63. M.Ihos, F.Manea, A.Iovi, *Removal of nonylphenol polyoxylylate by electrochemical oxidation at modified SnO₂ electrodes*, Chem. Bull. "POLITEHNICA" Univ. (Timișoara), 53(67), 2008, ISSN: 1224-6077, pp.175-179
64. G.E. Moșoarcă, C. Bogatu, P. Negrea, *Modeling of Chlorination Process for Bega River Water*, Chem. Bull. "Politehnica" Univ. (Timisoara), 53 (67), 1-2, ISSN: 1224-6018, pp. 88
65. M. Gheju, A. Miulescu, *Kinetics of hexavalent chromium adsorption on granular activated carbon*, Chem. Bull. of "Politehnica" Univ. 53 (67), 1-2, ISSN: 1224-6018, pp. 179-183
66. L.V. Costea, V.N. Bercean, V. Badea, A. Magda, G. Fafilek, H. Kronberger, *Influence of the Electrode Material on the Electrochemical Behavior of 1H-3-Methyl-4-Ethoxycarbonyl-Benzylidene-Hydrazino-Pyrazole*, Chem. Bull. of "Politehnica" Univ. 53(67), 1-2, ISSN: 1224-6018, pp.26-30
67. N.Plesu, A.Kellenberger, N.Vaszilcsin, *A polyaniline-skeleton nickel electrode for the potentiometric detection of nitrate and nitrite*, of "Politehnica" Univ. 53 (67), 1-2, 2008, ISSN: 1224-6018, pp. 117
68. C. Vaduva, A. Kellenberger, B. Pancan, N. Vaszilcsin, *Copper electrodeposition on printed circuits. I Kinetic study by voltammetric method*, Scientific and Technical Bulletin, University "Aurel Vlaicu" Arad, 2008, XIII (12), ISSN: 1582-1021, pp. 6
69. A.Kellenberger, N. Vaszilcsin, C. Vaduva, B. Pancan, *Copper electrodeposition on printed circuits. II Study by electrochemical impedance spectroscopy*, Scientific and Technical Bulletin, University "Aurel Vlaicu" Arad, XIII (12), ISSN: 1582-1021, pp.6
70. A.Pop, F. Manea, C. Proca, C. Radovan, G. Burtica, P. Malchev, S. Picken, J. Schoonman, *Electrochemical Detection of 4-Chlorophenol from Water Using Ag-modified Zeolite-Expanded Graphite-Epoxy Composite Electrode*, Chem. Bull. of "Politehnica" Univ. 53 (67), 1-2, ISSN: 1224-6018, pp. 16-21
71. A.Kellenberger, N.Vaszilcsin, N.Duteanu, M.L.Dan, *Kinetics of aluminum dissolution reaction in skeleton nickel electrode preparation*, 9th International Conference on Fundamental and Applied Aspects of Physical Chemistry, ISSN: 978-86-82475-16-3, pp. 273
72. S. Ianoșev, I. Lazău C. Păcurariu, A. Avramescu, *Cordierite (2MgO·2Al₂O₃·5SiO₂) synthesis by unconventional methods*, Processing and Application of Ceramics, Univ. Novi Sad-Serbia , 2 (1),2008, ISSN:1820-6131, pp. 39-44
73. S. Ianoșev, I. , Lazău C. Păcurariu, A. Goleanu, *Spinel Pigments Synthesis by the Thermal Conversion of Complex Combinations*, 2nd International Congress on Ceramics Verona (Italy) June 29-July 4, 2008, Global Roadmap for Ceramics-ICC2 Proceedings, Verona (Italy), CD-ROM, ISSN: 978-88-8080-084-2, pp. 6
74. Z. Ecsedi, I. , Lazău C. Păcurariu, *Nitrogen adsorption/desorption study of nanocrystalline alumina prepared by sol-gel method*, 2nd International Congress on Ceramics Verona (Italy) June 29-July 4, 2008, Global Roadmap for Ceramics-ICC2 Proceedings, Verona (Italy), CD-ROM, ISSN: 978-88-8080-084-2, pp. 6
75. L.Coheci, R.Pode, A.Iovi, E.Leonte, *Removal of Cr(VI) from wastewaters using Mg/Zn-Al – CO₃ layered double hydroxides*, 5th Chemical Engineering Conference for Collaborative

- Research in Eastern Mediterranean Countries, Cetraro, Italia, Proceedings, 2008, pp. 352,
76. R.Pode, F.Manea, V.Rus, E.Leonte, I.Vlaicu, E.M.Savescu, M.Morariu, *Chemical Conditioning of Digested Sewage Sludge with Floerger FR 7850 Synthetic Polyelectrolyte*, 5th Chemical Engineering Conference for Collaborative Research in Eastern Mediterranean Countries, Cetraro, Italia, Proceedings, pp. 341
77. Petru Negrea, Lavinia Lupa, Adina Negrea, Mihaela Ciopec, *Zinc recycling from hot-dip galvanizing wastes*, International Scientific Conference microCAD 2008, Section A; Waste Processing, Recycling, Miskolc-Hungary, Proceedings, 2008, ISSN: 978-963-661-812-4, 9787-661-813-1, pp. 39
78. Mihaela Ciopec, Adina Negrea, Aurel Iovi, Petru Negrea, Lavinia Lupa, *The use of metals recovered from wastes as microelements at the fertilizers obtaining*, International Scientific Conference microCAD 2008, Section A; Waste Processing, Recycling, Miskolc-Hungary, Proceedings, 2008, ISSN:978-963-661-812-4, 9787-661-813-1, pp.45
79. Adina Negrea, Cornelia Muntean, Lavinia Lupa, Mihaela Ciopec, Petru Negrea, *Studies regarding the sequential extraction of zinc from soil*, The 15th Symposium on Analytical and Environmental Problems, Szeged, Hungary, Proceedings, 2008, ISSN: 978 – 963 –482-903-4, pp. 258
80. Petru Negrea, Lavinia Lupa, Mihaela Ciopec, Cornelia Muntean, Adina Negrea, *Aerobe biological treatment of waste waters on a pilot installation*, The 15th Symposium on Analytical and Environmental Problems, Szeged, Hungary, Proceedings, 2008, ISSN: 978 – 963 –482-903-4, pp. 262
81. Cornelia Muntean, Petru Negrea, Mihaela Ciopec, Lavinia Lupa, Adina Negrea, Marinela Motoc, *Studies on the copper ions removal from waste solutions through precipitation with Na₂CO₃*, The 15th Symposium on Analytical and Environmental Problems, Szeged, Hungary, Proceedings, 2008, ISSN: 978 – 963 –482-903-4, pp. 266
82. Adina Negrea, Lavinia Lupa, Petru Negrea, Giannin Moșoarcă, Mihaela Ciopec, *Studies concerning minimization and recycling of sludge resulted during hot-dip galvanization*, 1-st International Conference, "Hazardous Waste Management", Chania - Creta, Grecia, Proceedings, CD, 2008, pp.5
83. Lavinia Lupa, Giannin Moșoarcă, Petru Negrea, Mihaela Ciopec, Adina Negrea, *Effect of filter washing water recycling on iron and manganese removal process from ground water*, 1-st International Conference, "Hazardous Waste Management", Chania-Creta, Grecia, Proceedings, 2008, CD, pp.4
84. C. Danielescu, C.Podaru, D.Sonea, F.Manea, I.Vlaicu, A.Pacala, C.Cosma, G.Burtica, *Studies on the application of zeolites in treating potable water on a pilot scale*, 5th Chemical Engineering Conference for Collaborative Research in Eastern Mediterranean Countries, Cetraro, Italia, Proceedings, 2008, pp.337
85. A.Bebeselea, F. Manea, G.Burtica, C.Teodosiu, *A study of the anodic oxidation of 4-chlorophenol from wastewaters*, 5th Chemical Engineering Conference for Collaborative Research in Eastern Mediterranean Countries, Cetraro, Italia, Proceedings, 2008, pp. 349
86. F.Manea, C.Radovan, G.Burtica, A.Bebeselea, A.Pop, C.Proca, I.Corb, *Electrochemical oxidation and detection of 4-chlorophenol from wastewaters by using boron-doped diamond electrode*, 5th Chemical Engineering Conference for Collaborative Research in Eastern Mediterranean Countries, Cetraro, Italia, Proceedings, 2008, pp. 289
87. A. Bebeselea, F. Manea, C. Radovan, G. Burtica, J. Schoonman, *Electrochemical degradation of phenol derivatives at carbon electrodes*, The XVth Symposium on Analytical and Environmental Problems, Proceedings, 2008, ISSN: 978-963-482-903-4359, pp. 359
88. A.Pop, F. Manea, G.Burtica, P.Malchev, S.Picken, J.Schoonman, *Voltammetric detection of organic pollutants from water on modified zeolite- graphite composite electrodes*, The XVth Symposium on Analytical and Environmental Problems, Proceedings, 2008, ISSN: 978-963-482-903-4, pp.355
89. C.Ratiu, F.Manea, L.Nagy, G.Burtica, G.Nagy, J.Schoonman, *Electrochemical oxidation and determination of p-aminophenol at carbon based electrodes*, The XVth Symposium on Analytical and Environmental Problems, Proceedings, 2008, ISSN: 978-963-482-903-4, pp. 288
90. Giannin Mosoarca, *Studies regarding the possibilities of aluminum sulphate recovery from settling tank sludge and its reuse as coagulant*, Proceedings of The Second Edition of the Symposium with International Participation "New trends and strategies in the chemistry of advanced materials with relevance in biological systems, technique and environmental protection", 2008, ISSN: 2065-0760, pp. 106 -111

91. Dippong Thomas, Marcela Stoia, Paul Barvinschi, Mircea Stefanescu, *Characterization of Co(II) carboxylates resulted in the $\text{Co}(\text{NO}_3)_2 - \text{C}_3\text{H}_8\text{O}_2$ reaction by acidic-basic electrometric titrimetry*, Symposium on analytical and Environmental Problems, Szeged, Hungaria, Proceeding XVth Symposium on analytical and Environmental, 2008, ISSN: 978-963-482-903-4, pp.229
92. A.Kellenberger, N.Vaszilcsin, L.Dunsch, E.J ähne, H.J.Adler, *Spectroelectrochemical study of the p-doping of poly(2-(3-thienyl)ethyl acetate) and its derivatives*, First Regional Symposium on Electrochemistry of South-East Europe, Rovinj, Croatia, RSE-SEE, 2008, ISSN: 978-953-6894-33-8, pp. 93
93. N.Duteanu, K.Scott, N.Vaszilcsin, A.Kellenberger, M.Dan, *Parametric study of direct borohydride fuel cells*, First Regional Symposium on Electrochemistry of South-East Europe, Rovinj, Croatia, RSE-SEE, 2008, ISSN: 978-953-6894-33-8, pp.159
94. A.Kellenberger, N.Vaszilcsin, N.Duteanu, M.L.Dan, *Kinetics of aluminum dissolution reaction in skeleton nickel electrode preparation*, 9th International Conference on Fundamental and Applied Aspects of Physical Chemistry, Belgrade, Serbia, Proceedings of the 9th Int. Conference on Fundamental and Applied Aspects of Physical Chemistry, I, 2008, ISSN978-86-82475-16-3, pp.273 0
95. Ioan Ursoiu, Anca Ursoiu, Giannin Mosoarca, *Studies regarding waste waters with zinc ions content pre-treatment through ionic exchange*, International Symposium Environmental Protection & Ecological Education EPEE '08 Timisoara, 2008, CD, ISSN: 2065-0833, pp. 37-43
96. R.E. Maries, I. Manovicu, G. Bandur, G. Rusu, V. Pode, *Study by Thermal Methods of Physico-Mecanical Properties of Polycarbonate Used for High Performance Sport Products*, Materiale Plastice, 45(1), 2008, ISSN: 0025-5289, pp.3.
97. R.Pode, F.Manea, V.Rus, E.Leonte, I.Vlaicu, E.M.Savescu, M.Morariu, *Chemical Conditioning of Digested Sewage Sludge with Floerger FR 7850 Synthetic Polyelectrolyte*, 5th Chemical Engineering Conference for Collaborative Research in Eastern Mediterranean Countries, Cetraro, Italia, Proceedings, 2008, pp.341.
98. C. Danielescu, C.Podaru, D.Sonea, F.Manea, I.Vlaicu, A.Pacala, C.Cosma, G.Burtica, *Studies on the application of zeolites in treating potable water on a pilot scale*, 5th Chemical Engineering Conference for Collaborative Research in Eastern Mediterranean Countries, Cetraro, Italia, Proceedings, 2008, pp.337
99. R.Pode, F.Manea, V.Rus, E.Leonte Pena, I.Vlaicu, E.M. Savescu, M.Murariu, *Chemical conditioning of digested sewage sludge with floerger FR 7850 synthetic polyelectrolyte*, 5th Chemical Engineering Conference for Collaborative Research in Eastern Mediterranean Countries, Cetraro, Italia, Proceedings, , 2008, pp.341
- 100.A.Bebesilea, F. Manea, G.Burtica, C.Teodosiu, *A study of the anodic oxidation of 4-chlorophenol from wastewaters*, 5th Chemical Engineering Conference for Collaborative Research in Eastern Mediterranean Countries, Cetraro, Italia, Proceedings, 2008, pp. 349
- 101.F.Manea, C.Radovan, G.Burtica, A.Bebesilea, A.Pop, C.Proca, I.Corb, *Electrochemical oxidation and detection of 4-chlorophenol from wastewaters by using boron-doped diamond electrode*, 5th Chemical Engineering Conference for Collaborative Research in Eastern Mediterranean Countries, Cetraro, Italia, Proceedings, 2008, pp. 337
- 102.A.Bebesilea, F. Manea, C. Radovan, G. Burtica, J. Schoonman, *Electrochemical degradation of phenol derivates at carbon electrodes*, The XVth Symposium on Analytical and Environmental Problems, Proceedings, 2008, ISSN: 978-963-482-903-4, pp. 359
- 103.A.Pop, F. Manea, G.Burtica, P.Malchev, S.Picken, J.Schoonman, *Voltammetric detection of organic pollutants from water on modified zeolite- graphite composite electrodes*, The XVth Symposium on Analytical and Environmental Problems, Proceedings, 2008, ISSN: 978-963-482-903-4, pp. 355
- 104.C.Ratiu, F.Manea, L.Nagy, G.Burtica, G.Nagy, J.Schoonman, *Electrochemical oxidation and determination of p-aminophenol at carbon based electrodes*, The XVth Symposium on Analytical and Environmental Problems, Proceedings, 2008, ISSN: 978-963-482-903-4, pp. 288
- 105.Cornelia Muntean, Petru Negrea, Adina Negrea, Mihaela Ciopec, Lavinia Lupa, Giannin Mosoarca, Ramona Ghiga, *IR-Spectroscopy and SEM Studies on Some Nitrophosphate Fertilizers Containing Microelements*, International Scientific Symposium: „Increase of Profitability ans Sustainability of Agricultural Production in Trans-Frontier Area” PHARE CBC RO 2005/017-536.01.01.01.25., 1, Proceedings, 2008, ISSN: 978-973-620-392-3, pp. 66

106. Ramona Ghiga, Aurel Iovi, Petru Negrea, Adina Negrea, Lavinia Lupa, Mihaela Ciopec, Cornelia Muntean, Giannin Moșoarcă, *Studies Regarding the Otaining Process of NP Fertilizers with Copper and Zinc Microelements*, International Scientific Symposium: „Increase of Profitability ans Sustainability of Agricultural Production in Trans-Frontier Area” PHARE CBC RO 2005/017-536.01.01.01.25., 1, Proceedings , 2008, ISSN: 978-973-620-392-3, pp. 51
107. Petru Negrea, Dana Baltacescu, Lavinia Lupa, Adina Negrea, Mihaela Ciopec, Ramona Ghiga, *Studies regarding the elimination of arsenic from water*, International Symposium "Environmental Protection & Ecological Education" EPEE '08, Timișoara, CD, 2008, ISSN:2065-0833, pp. 56-61
108. Petru Negrea, Lina Jurja, Mihaela Ciopec, Lavinia Lupa, Adina Negrea, Cornelia Muntean, Marilena Motoc, *Copper ions elimination from residual waters trough precipitation with NaOH*, International Symposium "Environmental Protection & Ecological Education" EPEE '08, Timișoara, CD, 2008, ISSN:2065-0833, pp. 66-72
109. Petru Negrea, Cristi Dumitrescu, Lavinia Lupa, Mihaela Ciopec, Adina Negrea, *Studies regarding the Cr(VI) reduction to Cr(III) and his removal trough precipitation*, International Symposium "Environmental Protection & Ecological Education" EPEE '08, Timișoara, CD, 2008, ISSN:2065-0833, pp. 49-56
110. Adina Negrea, Georgiana Mladin, Lavinia Lupa, Mihaela Ciopec, Cornelia Muntean, Petru Negrea, *Studies regarding the ammonium and phosphate ions removal from water*, International Symposium "Environmental Protection & Ecological Education" EPEE '08, Timișoara, CD, 2008, ISSN:2065-0833, pp. 61-66
111. Adina Negrea, Lavinia Lupa, Cornelia Muntean, Mihaela Ciopec, Petru Negrea, Carmen Ghimboasa, Marilena Motoc, *Studies regarding the elimination of ammonium ions from water resulted from a rural area*, International Symposium "Environmental Protection & Ecological Education" EPEE '08, Timișoara, CD, 2008, ISSN:2065-0833, pp. 43-50
112. Corneliu Bogatu, Smaranda Masu, Benoni Lixandru, Anca Pricop, Adina Negrea, Lavinia Lupa, *Phytoremediation use for metals extraction from polluted soils*, International Symposium "Environmental Protection & Ecological Education" EPEE '08, Timișoara, CD, 2008, ISSN:2065-0833, pp. 22-28
113. Smaranda Masu, Corneliu Bogatu, Neculai Dragomir, Adina Negrea, Mihaela Ciopec, Giannin Mosoarca, *Waste mining zone decontamination by herbaceous plants cultivation*, International Symposium "Environmental Protection & Ecological Education" EPEE '08, Timișoara, CD, 2008, ISSN:2065-0833, pp. 17-22
114. Mihaela Andoni, Anca Dragomirescu, Aurel Iovi, Ioan Ursoiu, Adina Negrea, Lavinia Lupa, Petru Negrea, Mihaela Ciopec, *A new approach regarding the removing pof mercury from contaminated waters*, The second edition of the Symposium with Inetrnational Participation „New trends and strategies in the chemistry of advanced materials with relevance in biological systems, technique and environmental protection”, Proceedings, 2008, ISSN: 2065-0760, pp. 112-116
115. Bragea M., D. Perju, G. Jinescu, L. Toro, C. Cristache, *Shaping of the diffusion process of the radio nuclides in the sterile dump with uranium*, Revista de chimie, 59(1), 2008, ISSN0034-7752, pp.74-78
116. Bragea M., D. Perju, G. Jinescu, L. Toro, S. Marinescu, C. Cristache, M. Poiană, *Research concerning improvement of uranium waste dumps through diminution 226Ra and Unat radionuclides migration*, Revista de chimie 59(11), 2008, ISSN0034-7752, pp. 1285-1289
117. Bragea M., D. Perju, G. Jinescu, M. Poiană, *The use of the concept of the eco toxicological risk evaluation of the chemical substances presented for the prediction of the irradiation by the surface storage with uranium waste*, Revista de chimie, 59(4), 2008, ISSN0034-7752, pp.367-370
118. Glevitzky M., I. Bogdan, G.A. Brusturean, D. Perju, D. Silaghi-Perju, *The study of the inhibition process of degradation of the natural juice submit to thermal treatment trough pasteurization*, Revista de chimie 59(5), 2008, ISSN0034-7752 , pp.595-600
119. Glevitzky M., M. Pop, G.A. Brusturean, I. Bogdan, M. Calisevici, D. Perju, *Efficiency of the antioxidants agents used at the protection of the fruit juice*, Revista de chimie 59(12), 2008, ISSN0034-7752, pp.1291-129
120. Hegheduș-Măndru G., R.C. Biron, D.M.Perju, L.M. Rusnac, A Rivis, D. S. Ștef, *Cation contents in natural mineral waters of Romania determined with the HPLC method*, Journal of Food, Agriculture & Environment 6 (3&4), 2008, ISSN1459-0255, pp.506-509
121. Perju D., H. Pîrlea, G.A. Brusturean, D. Silaghi-Perju, S. Marinescu, *Modelling and simulation of NO₂ dispersion phenomenon in atmosphere by*

- analytical – experimental methods*, Revista de chimie 59(10), 2008, ISSN0034-7752, pp. 1112-1116
122. Bragea M., D. Perju, G.A. Brusturean, C. Cristache, H. Pirlea, G. Brânzei, *Influence of distribution coefficients on the transfer of radionuclides from water to geological formation*, Chem. Bull. "Politehnica" Univ. Timișoara 53(67), 1-2, 2008, ISSN1224-6018, pp.248-250
123. Glevitzky M., I. Bogdan, G.A. Brusturean, D. Perju, *Use of artificial neural networks as methodology of establishing the shelf life of carbonated soft drinks*, Chem. Bull. "Politehnica" Univ. Timișoara 53(67), 1-2, 2008, ISSN1224-6018, pp.241-243
124. Manea A., H. Pirlea, D. Perju, G.A. Brusturean, M. Calisevici, *Study of Cosmetic Creams Stability as a Function of Temperature*, Chem. Bull. "Politehnica" Univ. Timișoara 53(67), 1-2, 2008, ISSN1224-6018, pp.50-55
125. Pirlea H., G.A. Brusturean, D. Silaghi-Perju, D. Perju, *Simulation of NO₂ Emission Dispersion in Timisoara City, in a Certain Reference Point in Relation with a Stationary Source*, Chem. Bull. "Politehnica" Univ. Timișoara 53(67), 1-2, 2008, ISSN1224-6018, pp.244-247
126. Glevitzky M., I. Bogdan, G.A. Brusturean, D. Perju, *The standards development of the management quality and implementation of the HACCP programs like instrument of management of the securities of the sanitary of foods for the technological process of nectar obtaining*, Buletinul AGIR XIII (1-2), 2008, ISSN 1224-7928, pp. 36-41
127. Glevitzky M., I. Bogdan, M. Calisevici, G.A. Brusturean, D. Perju, *The analyse of the critical points in the reduction of the available terms of the refreshment drinks using the ASLD method*, Buletinul AGIR XIII (1-2), 2008, ISSN 1224-7928, pp. 54-59
128. Brusturean G.A., J. Carre, D. Perju, R. Moldovan, *The extraction under low pressure or ventilation in situ – comparative study of the depollution performance of the polluted soils with volatile organic compounds*, Buletinul AGIR XIII (1-2), 2008, ISSN 1224-7928, pp. 224-229
129. Calisevici M., D. Perju, G.A. Brusturean, R.C. Moldovan, S. Marinescu, *Thermodesimetric procedure for liquid mixture concentration measurement. I: Principles*, MicroCAD 2008 International Scientific Conference, Fluid and heat engineering, University of Miskolc, Hungary 2008, ISBN 978 963 661 812 4 O, pp.75-80
130. Calisevici M., D. Perju, G.A. Brusturean, R.C. Moldovan, A. Manea, *Thermodesimetric procedure for measurement of liquid mixture concentration. II: Statistical modeling*, MicroCAD 2008 International Scientific Conference, 2008, Fluid and heat engineering, University of Miskolc, Hungary, 2008, ISBN 978 963 661 812 4 O, pp.81-86
131. Marinescu S., D. Perju, G.A. Brusturean, M. Calisevici, A. Manea, F. Dobren, *Continuous incinerator emissions monitoring systems*, MicroCAD 2008 International Scientific Conference, 2008, Waste processing, recycling, University of Miskolc, Hungary 2008, ISBN 978 963 661 812 4, pp.87-91
132. Manea A., D. Perju, G.A. Brusturean, M. Calisevici, S. Marinescu, *Contributions to the stabilization processes of the cosmetic creams*, MicroCAD 2008 International Scientific Conference, 2008, Materials science and technology, University of Miskolc, Hungary 2008, ISBN 978 963 661 812 4 O, pp.65-70.

RESEARCH CENTRE SYNTHESIS AND APPLICATIONS OF ORGANIC AND MACROMOLECULAR COMPOUNDS - S.A.O.M.C.

GENERAL PRESENTATION

Synthesis and Applications of Organic and Macromolecular Compounds (S.A.O.M.C.) is a research centre, type C, which has been evaluated and approved by CNCSIS. The Centre was created in 2002, in accordance with the CNCSIS certificate, nr. 47/4.12.2003. The director of the Centre is **Assoc.prof.dr.eng. Mihai Medeleanu**.

MAIN ACTIVITIES

The Center performs research activities in domains such as:

- BioNanoMaterials – obtaining, characterization and applications of the biocompounds and biosystems/cyclodextrins or liposomes nanoparticles
- Drug Design and Synthesis – molecular modeling, SAR, QSAR, virtual high throughput screening,

- docking, synthesis, analysis and applications of drugs
- Natural Food Flavours and Spices – isolation, purification, stabilization, conditioning, and characterization of natural extracts or compounds used as flavours and spices
 - Perfumes and Cosmetics – obtaining, stabilization, characterization of natural biosystems with applications in perfumery and cosmetic industry
 - New methods in organic synthesis
 - Studies on structure-properties relationship using the topological model of organic molecules
 - Structured packings and their applications in systems with chemical reaction
 - Synthesis and characterization of PVC plasticizers
 - Oligomers with functional groups
 - Chemistry and technology of drugs and pesticides
 - Chemistry and technology of dyestuffs, and textile auxiliaries
 - Process control equipments for research plants in chemical industry
 - Control systems using computers for researching plants and low tonnage plants in chemical industry
 - Intensive methods for the exoneration of soil from radioactive minerals exploitation and processing areas in the condition of natural disasters or entropic accidents
 - Mathematical modeling and numerical simulation of environmental pollution and depollution processes
 - Modeling, simulation and process control
 - Magnetic Fluids: Preparation, Characterization and Applications
 - Heat transfer organic agents
 - Unit processes
 - The Intensification of Transfer Processes
 - Rheological characterization of the substances

CONTACT

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RESEARCH FIELDS

➤ BioNanoMaterials

Keywords: bioactive compounds, drugs, natural compounds, nanoparticles, nanocapsules, cyclodextrins, liposomes, scanning electron microscopy, transmission electron microscopy,

thermogravimetry, differential scanning calorimetry, preparative liquid chromatography

➤ Drug Design and Synthesis

Keywords: drugs, drug design, total synthesis, semi-synthesis, biosynthesis, quantitative structure-activity relationships, virtual high throughput screening, docking, gas chromatography, preparative liquid chromatography, high pressure liquid chromatography

➤ Natural Food Flavours and Spices

Keywords: flavor, flavour, aroma, food, odorant, spice, biosynthesis, biotechnology, extraction, natural food additives, gas chromatography, GC, analytical high pressure liquid chromatography, HPLC, spectrometry, spectrofotometry, sensory analysis, statistical multivariate analysis, PCA, HCA

➤ Perfumes and Cosmetics

Keywords: perfumes, cosmetics, odorants, terpenoids, biosynthesis, biotechnology, extraction, toiletries, essential oils, volatile compounds, design of perfumes, gas chromatography, GC, analytical high pressure liquid chromatography, HPLC, spectrometry, spectrofotometry, olfactometry, statistical multivariate analysis, PCA

➤ New methods in organic synthesis

Keywords: synthesis of organic compounds, carbonic acid derivatives, sterically hindered phenols with antioxidant activity, structure determination by NMR, biocatalysis of organic reactions

➤ Studies on structure-properties relationship using the topological model of organic molecules

Keywords: topology, graphs, structure-properties relationship (SAR), size and shape of molecules, van der Waals volume and surface

➤ Structured packings and their applications in systems with chemical reaction

Keywords: static mixers, motionless mixers

➤ Plasticizers for polymers

Keywords: plasticizer, plasticizing

➤ Synthesis and characterization of PVC plasticizers

Keywords: PVC-plasticizer

➤ Oligomers with functional groups

Keywords: oligomer, functional group, reactive oligomers

➤ Chemistry and technology of drugs and pesticides

Keywords: drug, pesticides, chemistry, technology, semi-synthesis, agriculture

➤ Chemistry and technology of dyestuffs, and textile auxiliaries

Keywords: dyes, dye accelerators, dispersants, textile auxiliaries

➤ Process control equipments for research plants in chemical industry

Keywords: measuring, control devices

- **Control systems using computers for researching plants and low tonnage plants in chemical industry**

Keywords: process control, research and low tonnage plants

- **Intensive methods for the exoneration of soil from radioactive minerals exploitation and processing areas in the condition of natural disasters or entropic accidents**

Keywords: Climate changes, pollution, risk, sustainable chemistry, modeling

- **Mathematical modeling and numerical simulation of environmental pollution and depollution processes**

Keywords: modeling, simulation, environmental protection

- **Oily compounds extraction from waste waters using magnetic fluids**

Keywords: extraction, magnetic fluid

- **The Performance of Columns with Structured Packings**

Keywords: wet ability, specific surface

Researches in BIONANOMATERIALS

Obtaining and analyses methods on the bioactive compounds and systems/cyclodextrins and liposomes micro/nanoparticles. The bioactive compounds used for nanoencapsulation are: drugs, natural compounds with biological activity (*i.e.* alkaloids and flavonoids, volatile oils), perfumes and cosmetics, natural food additives (*i.e.* natural flavors, natural colorants). This products have excellent properties in comparison with the starting materials: oxidative, thermal stability, protective properties against radiations, controlled release of the bioactive compounds, hydrosolubilization of hydrophobic biocompounds, masking of the unpleasant taste and odors, easily handling of the powdery bionanomaterials.

The methods used for obtaining of the bionanomaterials are: crystallize from solution, spray-drying, spray-chilling, fluidized bed, by mixing or melting, by ultrasonication. The main methods of separation-purification and analyses are: preparative liquid chromatography (preparative HPLC), scanning electron microscopy (SEM), transmission electron microscopy (TEM), thermogravimetry (TG), differential scanning calorimetry (DSC).

RESEARCH TEAM

Daniel Hădăruță, Geza Bandur, Gerlinde Rusu, Iulia Pînzaru, Volica Damșa

Researches in DRUG DESIGN and SYNTHESIS

Design of new compounds with potential drug properties and synthesis of hits. The methods used for drug design are: molecular modeling of the known compounds, qualitative and quantitative structure-activity relationship studies (SAR and QSAR), virtual high throughput screening (VHTS), molecular docking of the predicted drugs.

The hits selected by drug design are obtained by known methods (total synthesis, semi-synthesis, biosynthesis), separated and analyzed by modern methods (preparative liquid chromatography – preparative HPLC, liquid and gas chromatography – HPLC and GC, ¹H- and ¹³C-NMR, X ray diffraction, UV-VIS, IR, MS spectroscopy) and further evaluated as drugs.

RESEARCH TEAM

Constantin Dăescu, Daniel Hădăruță, Mihai Medeleanu, Geza Bandur, Gerlinde Rusu, Iulia Pînzaru, Volica Damșa

Researches in NATURAL FOOD FLAVOURS AND SPICES

Developing new natural food flavours and spices with enhanced stability and bioactivity, more healthy and with functional properties. The obtaining of food flavours and spices (especially those from the romanian tradition) are realized by classical methods (non-aggressive, like hydrodistillation, hydroalcoholic or supercritical fluid extraction etc.). The analysis of these biosystems are realized by chromatographic (GC, HPLC, GC-O, TLC), spectroscopic (FT-IR, UV-Vis, NMR), and sensorial methods. The protection and controlled release of the natural bioactive compounds are realized by micro/nanoencapsulation in natural bioavailable matrices (like cyclodextrins and liposomes), and the analysis of these nanoparticles are realized by microscopic and thermal analyses (like, SEM, TEM, TG, DSC).

RESEARCH TEAM

Francisc Peter, Daniel Hădăruță, Geza Bandur, Gerlinde Rusu, Iulia Pînzaru, Volica Damșa

Researches in PERFUMES AND COSMETICS

Design and evaluation of new perfume and cosmetic formulations. The main ingredients from perfume or cosmetic formulations are obtained from natural resources (especially from the traditional herbs) by classical methods (hydrodistillation, hydroalcoholic or supercritical fluid extraction etc.). The analysis of these biosystems are realized by gas chromatography (GC-FID, GC-MS, GC-Sniffing etc.), liquid chromatography (RP-HPLC-UV-Vis/MS) spectroscopic methods for bioactive compounds (FT-IR, UV-Vis, NMR), and sensory analysis. The protection and controlled release of the natural odorant compounds from natural bioactive systems are realized by micro/nanoencapsulation in natural bioavailable matrices (like cyclodextrins and liposomes), and the

analysis of these nanoparticles are realized by microscopic and thermal analyses (like, SEM, TEM, TG, DSC).

RESEARCH TEAM

Daniel Hădăruță, Mirabela Pădure, Gerlinde Rusu, Iulia Pînzaru, Volica Damșa

Researches in NEW METHODS IN ORGANIC SYNTHESIS

Synthesis of organic compounds (carbonic acid derivatives, phenolic antioxidants, amino acids and peptides) using new methods or reagents: single electron transfer reactions, triphosgene as a low toxic and easy to handle substitute of phosgene, isatoic anhydrides, enzymes obtained by biosynthesis or extraction (aminoacylase, protease, lipase).

The chemistry of organic derivatives of carbonic acid is the traditional field of our Department, pioneered by Professor Giorgio Ostrogovich. Studies in the field of synthesis of chlorocarbonates, carbonyl chlorides, carbamates, carbonates, ureas, aryl cyanates, isocyanides and heterocyclic as well as kinetics and mechanisms of reactions of carbonic acid derivatives were performed. Since 1980 synthesis of phenolic antioxidants, studies of biocatalytic processes in organic synthesis and structure determination of organic compounds by NMR spectroscopy were also investigated.

RESEARCH TEAM

Carol Csunderlik, Mihai Medeleanu, Marius Milea, Francisc Peter

Researches in STUDIES ON STRUCTURE-PROPERTIES RELATIONSHIP USING THE TOPOLOGICAL MODEL OF ORGANIC MOLECULES

The topological model, as an application of graph theory in chemistry is a useful tool for quantification of molecular structure and has been largely used in the last years, due to its simplicity and good correlation results in studies concerning the shape and size of molecules and structure-properties relationship for many classes of compounds.

By applying the topological model to organic molecules, information's like the number of atoms and the connectivity's are compressed in numbers named topological indices. These can be correlated with physical and chemical properties and biological activities and are also used to describe the shape and size of molecules. Better correlation coefficients were obtained when certain heteroatom were included into topological model (halo derivatives, oxygen and sulphur derivatives and local anesthetics). Van der Waals surface and

volume of organic molecules were also performed using the Monte Carlo algorithm.

RESEARCH TEAM

Mihai Medeleanu, Daniel Hădăruță

Researches in STRUCTURED PACKINGS AND THEIR APPLICATIONS IN SYSTEMS WITH CHEMICAL REACTION

The structured packings (former name: static mixers or motionless mixers) increase the mixing efficiency in all flow regime, but any other device does not equalize their performances in the laminar flow regime. Their application in all types of reactive systems (homogeneous or heterogeneous) has started several years ago and is in a continuous expansion. Recently, catalysts supported on static mixers are commercially available.

Since 1986, different applications were developed (e.g. reactor for hydrogenation of fatty oils, CO₂ absorption in monoethanolamine solutions). Theoretical studies include: investigations concerning the mixing mechanism in columns equipped with Sulzer SMV type static mixers; influences of main parameters on the size and distribution of the droplets formed in column fitted with structured packings; analysis of gas holdup and solid distribution in three phase gas-liquid-solid reactors equipped with different motionless mixers in order to grow the liquid phase conversion in slurry bubble columns.

RESEARCH TEAM

Lucian Rusnac, Sabina Nițu, Carmen Rusnac

Researches in PLASTICIZERS FOR POLYMERS

The undertaken research aims to correlate the structure and the plasticizing properties, both permanent and temporary of certain polymers, belonging to new series of chemical compounds.

More than 100 new substances have been synthesized, described and assessed. Within the same framework of activity, there has been a practical and theoretical concern for the problems of both permanent and temporary plasticizing of polar polymers, thus enabling the drawing of conclusions with a view to industrial applications and to new correlation of the structure and the plasticizing properties. The research is represented by more than 60 scientific papers and research agreements.

RESEARCH TEAM

Ionel Manovicu, Geza Bandur, Gerlinde Rusu

Researches in SYNTHESIS AND CHARACTERIZATION OF PVC PLASTICIZERS

Many high molecular weight materials, organic and inorganic, are benefited by plasticizers, yet our major emphasis is on organic plasticizers for synthetic organic polymers and particularly for PVC.

Since 1970 we are concerned with the synthesis and characterization of some new ester type PVC plasticizers, namely "direct" plasticizers derived from a

diacid and "reversed" plasticizers derived from a diol esterifies with monoacid. Taking into account the fundamental technological and theoretical parameters (as the Flory-Huggins interaction parameter χ and the Hildebrand solubility parameter δ) it becomes possible to correlate the structure of the models involved with their real effectiveness in PVC compounds.

RESEARCH TEAM

Liviu Mirci, Sorina Boran, Sergiu Curelea

Researches in OLIGOMERS WITH FUNCTIONAL GROUPS

Synthesis and characterization of some low-molecular polymers of different structure, containing two or several functional groups capable of undergoing some subsequent chemical transformations

Synthesis, characterization and application of dimethacrylates as reactive plasticizers for poly (vinyl-chloride). Synthesis and characterization of functional oligomers under non-stoichiometric conditions with a total conversion (α, ω -dihydroxy-polyesters). Chemical modification of polyethylene oligomers.

RESEARCH TEAM

Ionel Manovicu, Geza Bandur, Gerlinde Rusu

Researches in CHEMISTRY AND TECHNOLOGY OF DRUGS AND PESTICIDES

Synthesis, analysis and testing of total and semi synthetic drugs, odorants and pesticides for human use and agricultural applications

Studies in this field have been started since 1950 at the Faculty of Industrial Chemistry of Technical University Timisoara (former Polytechnic Institute of Timisoara). This activity was finalized in books, manuals, journal papers, patents and research programs for micro production and industry.

RESEARCH TEAM

Constantin Daescu, Alfa-Xenia Lupea, Daniel Hădărugă, Mirabela Padure, Zlatimir Stanoiev

Researches in CHEMISTRY AND TECHNOLOGY OF DYESTUFFS, AND TEXTILE AUXILIARIES

Synthesis of organic dyestuffs, dyeing accelerators and dispersants.

The researches undertaken have been concerned with the study of separating components in organic dyes synthesis. Synthesis of some new substantive cationic dyes used in finishing natural and synthetic yarns and fibers has been studied.

Syntheses of some key intermediates for organic dye technologies have also been performed.

RESEARCH TEAM

Simona Popa, Ioan Macarie

Researches in PHYSICAL CHEMISTRY. CHEMICALLY ACTIVE SPECIES GRAFTED ON POLYMER-SUPPORTS

Preparation and investigation of chemically active species (catalysts, reagents, substrates, enzymes, polycationic biocides) grafted on polymer-supports (styrene-divinylbenzene copolymers, polyethylene glycol) acting as "hybrid-phase" systems. Studies on the structure-activity relationship. Synthesis and testing of multifunctional or multistep recyclable and reusable catalysts.

Since 1982 the research program in the field was focused on the synthesis of the new types of polymer ligand homologous of Schiff bases, hydrazones, oximes and azines by polymer-analogous reactions, synthesis of polymer-grafted tertiary heterocyclic amines acting as "hybrid-phase" biomimetic catalysts similar to chemotripsine and studies of the kinetics, mechanism and structure-activity relationship in a test reaction of activated esters hydrolysis. A new kinetic model of the nucleophile bimolecular substitution using phosphonium and/or ammonium salts grafted on polymer-supports as phase-transfer catalysts was proposed.

RESEARCH TEAM

Corneliu Davidescu, Erika Reisz, Radu Ardelean

RESEARCH PROJECTS

1. CEEX CHIROMAR 2CEX06-11-30/25.07.2006: *Molecular Chirality: Determination of Enantiomeric Excess and Absolute Configuration by Nuclear Magnetic Resonance Spectroscopy (NMR) and Application to Bioactive Compounds and Intermediates in Fine Synthesis.*

Value: 92 000 RON

Director: Prof. dr. Carol CSUNDERLIK

Members: Lect. dr. Vasile BERCEAN

Assoc. prof. dr. Francisc PETER

Assist.dr. Valentin BADEA

Assist. dr. Monika SIMON

Ph.D.student A. Cristina ZARCULA

FIELD DESCRIPTION

Preparation and Characterisation of Molecular Chirality of Some Intermediates and Bioactive Compounds by Magnetic Resonance Spectroscopy (NMR).

ACTIVITIES

Stereoselective Synthesis of Some Chirals Beta-aminoacids. Chiral separations.

- enantioselective acylation of secondary alcohols by sol-gel entrapped lipases

- determination of enantiomeric ratio of chiral esters obtained by gas chromatography using a chiral column
- obtaining of chiral oxazolidinone as precursors for beta-aminoacids synthesis.

2. CEEEX RMNSTAR 2CEX06-11-41/25.07.2006: *Adaptation of Sequences of NMR Pulses, Elaboration of Multicentre-type Tests and On-line Interconnecting of the Superconductive NMR Spectrometers in Romania.*

Value: 60 000 RON

Director: Prof. dr. Carol CSUNDERLIK

Members: Prof. dr. Corneliu DAVIDEASCU
 Assoc. prof. dr. Mihai MEDELEANU
 Assoc. prof. dr. Petru NEGREA
 Assist. dr. Valentin BADEA
 Assist. dr. Monika SIMON
 Assist. Radu ARDELEAN
 Assist. Narcis DUTEAN

ACTIVITIES

Elaboration of multicentre-type tests and on-line interconnecting of the superconductive NMR spectrometers in Romania.

3. PN-II IDEI Grant 268/01.10.2007: *New bioproducts by valorization of microbial hydroxyalkanoic acids*

Value: 208.820 RON

Director: Prof. dr. eng. Francisc PETER

Members: Prof. dr. eng. Corneliu DAVIDESCU
 Prof. dr. eng. Carmen BOERIU
 PhD stud. eng. Cristina ZARCULA
 PhD student eng. Sandor Balazs
 KAKASI-ZSURKA

FIELD DESCRIPTION

Industrial biobased products have an increasing potential in the chemical and material industries. The diversity of biomass feedstocks like sugars, oils, proteins, or lignocellulosics, combined with the numerous biochemical and thermochemical conversion technologies, can provide a diversity of products as polymers, lubricants, solvents, adhesives, herbicides, and pharmaceuticals. Polyhydroxyalkanoates (PHAs) are polyesters of various hydroxyalkanoates that are synthesized by bacteria. These polymers are accumulated intracellularly to levels as high as 90% of the cell dry weight and are stored as granules, to act as carbon and energy reserve.

The objectives pursued by the fulfilling of this project are based on the current stage of knowledge on PHA and their transformations. Considering the large interest for this field, it is

presumable that a series of such products, obtained from either microorganisms or plants, will be available at reasonable prices and in large quantities. In these conditions, the development of knowledge on this field and the broadening of the area of applications by the manufacture of new bioproducts should have a strong impact on the development of new technologies based on renewable materials. This project has an interdisciplinary character, as it aims the investigation of biocatalytic processes, optimization of the functionality of enzymes, synthesis and physico-chemical characterization of organic bioproducts and biopolymers.

ACTIVITIES

In the year 2008 the activities were focused on the following research topics:

- Survey of the recent scientific literature concerning polyhydroxyalkanoate hydrolysis and synthesis of β -butyrolactone copolymers.
- Chemical and enzymatic hydrolysis of PHA's
- Biocatalytic synthesis of 3-hydroxybutyric acid esters using lipases, determination of optimal reaction conditions, identification and characterization of reaction products
- Immobilization study of microbial lipases
- Experimental protocol for β -butyrolactone copolymers synthesis and characterization of reaction intermediates and products.

4. PN2 21077/14.09.2007: *Biofuels obtained by valorization of cellulosic residues in an integrated chemo-enzymatic system.*

Value: 167.731 RON

Director: Prof. dr. eng. Francisc PETER

Members: Prof. dr. eng. Dumitru TUCU
 Prof. dr. eng. Dumitru MNERIE
 Lect. dr. eng. Marius GHEJU
 Assist. dr. eng. Cristina ZARCULA
 Lect. dr. eng. Titus SLAVICI
 Lect. dr. eng. Dinu GUBENCU

FIELD DESCRIPTION

Bioethanol manufacture is a very complex issue, resulting from the diversity of the raw material and difficulties of set up the optimal parameters for every process step.

This project is targeted on valorization of residual lignocellulosic biomass resources by conversion to bioethanol, using an optimal combination of chemical and biocatalytic steps.

The main objectives pursued by this project are: manufacture of laboratory equipments for pretreatment of lignocellulosic materials, to ensure maximum efficiency of the following hydrolysis step; optimization of the pretreatment method based on the composition of cellulosic biomass; investigation of enzymatic hydrolysis of cellulose and cellulose-containing substrates, using the new generation of highly efficient cellulolytic enzymes commercially

available (Genencor, Novozyme); evaluation of immobilization possibilities of cellulases, for possible multiple reuse; study of cellulosic sugars fermentation and optimization of bioreactor parameters for simultaneous fermentation of hexoses and pentoses, avoiding inhibitions; investigation of simultaneous saccharification and fermentation; isolation and characterization of the obtained bioethanol, and evaluation of biofuel properties.

ACTIVITIES

The main activities issued for 2008 have been:

- Physico-chemical characterization of the raw materials from cellulosic biomass
- Manufacture of a laboratory equipment for mechanical pretreatment by grinding of solid cellulosic residues
- Study of pretreatment methods of cellulosic biomass (acid, microwave) and analysis of the resulted products
- Enzymatic hydrolysis of cellulose and cellulose containing biomass hydrolyzates.

5. CEEEX MANANTECH 82/2006, *Organophosphoric-like hybrids with special properties*

Value: 20 000 RON

Director: Assoc.prof.dr.eng. Geza BANDUR

Members: Lect.dr.eng. Simona POPA
Assist.dr.eng. Gerlinde RUSU

FIELD DESCRIPTION

Organic – inorganic hybrids from organo – phosphoric compounds with special properties synthesis and their utilization in polymerizations processes.

ACTIVITIES

In the year 2008 the activities were centered on the following investigation topics Organic – inorganic hybrids from organo – phosphoric compounds with special properties synthesis, physical – chemical, chemical and thermal characterization of these products.

6. PN2 PC 72152/1.10.2008: *Synthesis and investigation of biodegradable polymers based on polylactic acid, with applications in medicine (BIOPLAST)*

Value: 0 RON

Director: Assoc.prof.dr.eng. Geza BANDUR

Members: Prof.dr.eng. Francisc PETER
Assist.dr.eng. Gerlinde RUSU
PhD Stud. S. KAKASI-ZSURKA

FIELD DESCRIPTION

One of the main contemporary scientific challenges is discovery and manufacturing of new ecologically friendly, biodegradable and

biocompatible polymers which could replace the existing polymeric materials.

Polylactic acid is such a material, extensively studied for industrial and biomedical applications. Its biocompatibility is owed to lactic acid, the degradation products which can be metabolized.

The main objectives of this project are the synthesis and characterization of polymeric structures with new properties, based on racemic and/or enantiomerically pure (L-form) lactic acid. Policondensation reactions of lactic acid monomers will be investigated by non-catalyzed reactions at 100-300°C, or in microwave conditions. Inclusion of other monomers like as diphenyl-methyl isocyanate and/or ethyleneglycols in the polymer chain will be also studied to obtain new copolymers with improved properties and extended applications.

Oligomer mixtures and multibloc copolymers will be characterized by specific methods as size-exclusion chromatography, magnetic resonance spectrometry, mass spectrometry, infrared spectroscopy, thermal analysis. The mechanistic and elastic properties of the new biopolymers will be also evaluated, compared to well-known polymeric materials (polivinyll chloride, polyethylene, polyurethanes), as well as the degradation and biodegradation properties.

ACTIVITIES

Survey of the recent scientific literature concerning biodegradable polymers holding ester likages

7. CEEEX 2-CEEEX06-11.57 (2006-2008), *Modern Technology for Pyrazin-2,3-dicarboxylic acid synthesis – an intermediate for drug synthesis*

Value: 205,000 RON

Director: Assoc.prof.dr.eng.M. MEDELEANU

Members: Prof. dr. eng. Nicolae VASZILCZIN
Prof. dr. eng. Francisc PETER
Assoc.prof.dr. Andreea KELLENBERGER
Asist. eng. Zlatimir STANOIEV
Asist. Mircea DAN
PhD Stud. eng. Oana Raluca POP

FIELD DESCRIPTION

Studies concerning new electrochemical methods for synthesis of pyrazine dicarboxylic acid.

ACTIVITIES

- Building a data base for electrochemical oxydative methods applied in organic chemistry.
- Mn⁷⁺ based intermediate synthesis.
- Optimal reaction path analysis and kinetic studies.
- Stability of MnO₄⁻/MnO₂²⁻ redox couple.
- Quinoxaline oxydation by the above intermediate.
- Methods for analysis. Technology setup.

8. P4 – Priority Domains Partnership, Reasearch grant 52-145 (2008-2010), *Antioxidant and Hypoglycemia Food Supplements with Anthocyanidin Structure (SAHASA)*

Value: 200,000 RON

Director: Assoc.prof.dr.eng. Mihai MEDELEANU

Members: Assist. dr. eng. Valentin BADEA
 Assist. dr. eng. Monika SIMON
 Asist. eng. Zlatimir STANOIEV
 Asist. eng. Mircea DAN
 PhD Stud. eng. Oana Raluca POP
 PhD Stud. eng. Beniamin PINTEA
 PhD Stud. eng. Ioana POPA

FIELD DESCRIPTION

This project is focused on the evaluation of potential antioxidant activity as well as hypoglycemia effects of compounds with anthocyanidin structure obtained from natural extracts.

ACTIVITIES

- Identification and dosage of possible antioxidant activity and hypoglycemia effects components from inland plant species.
- Technology setup for biological active components extraction
- Physico-chemical methods for exactly identification of structures and compositions of biological active mixtures.
- *In vitro* testing of biological activity.

9. PN2 PC-41070 / 18.09.2007, *Action and stressprotecting / immunostimulating effects of some new bioactive materials (IMUNO-NANOMAT)*

Value: 57,700 RON

Director: Lect.dr.eng. Daniel-Ioan HĂDĂRUGĂ

Members: Assoc.prof.dr.eng. Geza N. BANDUR
 Lect.dr.eng. Nicoleta HĂDĂRUGĂ
 Teach.assist.eng. Iulia A. PÎNZARU
 Tehn. Volica DAMȘA

FIELD DESCRIPTION

In this project, the obtaining, analysis and application of the titanium dioxide (undoped and doped with Au, Ag, Pt ions)/biocompatible matrices micro/nanoparticles and micro/nanocapsules will be studied. Cyclodextrins, liposomes and other similar natural compounds (systems) will be used as encapsulation matrices. The biocompatible nanoparticles will be obtained by spray-drying, spray-chilling, fluidized bed, or ultrasonic methods. The analysis of the micro/nanoparticles will be realized by microscopical methods (SEM, TEM), termoanalytical methods (thermogravimetry, differential scanning calorimetry), X ray diffraction etc. The bionanomaterials will be evaluated from the stress-protecting and/or immuno-stimulating effects point of view.

ACTIVITIES

- Literature survey on the obtaining and characterization of micro/nanoparticles,

- especially containing metal oxides and metal ions;
- Experimental design of the micro/nanoencapsulation processes;
- Obtaining and characterization of the undoped TiO₂/biocompatible matrices micro/nanoparticles;
- Obtaining and characterization of the Au, Ag, Pt doped TiO₂/biocompatible matrices micro/nanoparticles;
- Optimization of the micro/nanoencapsulation processes.

10. PN2 PC-62072 / 1.10.2008, *Hepatoprotecting nanoparticles with enhanced bioavailability (Nano-HEPAT)*

Value: 44,000 RON

Director: Lect.dr.eng. Daniel-Ioan HĂDĂRUGĂ

Members: Assoc.prof.dr.eng. Geza N. BANDUR
 Prof.dr.eng. Francisc PETER
 Assoc.prof.dr.eng. Mihai MEDELEANU
 Lect.dr.eng. Andra TAMAS
 Teach.assist.eng. Gerlinde RUSU
 Teach.assist.eng. Iulia A. PÎNZARU
 PhD Stud. eng. Cristina ZARCULA
 Tehn. Volica DAMȘA
 MS Stud.eng. Alina POP
 MS Stud.eng. Radu PREJBAN
 Stud. Ionut TANASE
 Stud. Gabriel TOTH

FIELD DESCRIPTION

In this project, the obtaining (separation, purification), semi-synthesis, nanoencapsulation, analysis, and hepatoprotective evaluation of natural or modified biosystems or biocompounds from *Chelidonium*, *Berberis*, *Matricaria* species will be studied.

The obtaining of the hepatoprotective biosystems from *Chelidonium*, *Berberis*, *Matricaria* species will be realized by classical ethanol-water extraction, the extracts will be fractionated by preparative liquid chromatography, and evaluated from the hepatoprotective point of view. The extracts/fractions/natural compounds with the best activity will be used for the obtaining of cyclodextrin-like nanoparticles (or other encapsulation matrices). Furthermore, some active compounds will be chemically modified in order to increase the hepatoprotective activity and these compounds will be used for the obtaining of nanoparticles with enhanced bioavailability.

The analysis of the extracts/fractions/natural or modified compounds will be realized by GC (after derivatizing), HPLC, MS, NMR, FT-IR etc. The analysis of nanoparticles will be realized by microscopical methods (SEM, TEM, AFM), termoanalytical methods (thermogravimetry, differential scanning calorimetry), X ray diffraction, EDAX etc.

ACTIVITIES

- Literature survey on the obtaining and characterization of *Chelidonium*, *Berberis*,

Matricaria extracts/main compounds, and on the obtaining and analysis of such bioactive compounds/cyclodextrin nanoparticles;

- Experimental design of the nanoencapsulation processes between bioactive compounds/cyclodextrins;
- Obtaining and characterization of the *Chelidonium*, *Berberis*, *Matricaria* extracts/fractions/bioactive compounds (with hepatoprotective activity);
- Obtaining and characterization of the bioactive compounds or extracts/cyclodextrin nanoparticles (with enhanced bioavailability on the hepatoprotection);
- Optimization of the nanoencapsulation processes.

11. CEEEX research grant, No. 80-MCT/710-P3 / 04.09.2006 – *Computer aided technology for obtaining some metal processing oils, environmental friendly, used in automotive industry, acronym CUTOIL*

Value: 0 RON

Director: Prof.dr.eng. Liviu MIRCI

Members: Assoc.prof.dr. Geza BANDUR
Assist.eng. Sorina BORAN
PhD student eng. Gerlinde RUSU
PhD stud. eng. Sergiu CURELEA

FIELD DESCRIPTION

Control systems using computers for researching some metal processing oils used in automotive industry

ACTIVITIES

In the year 2008 the activities were centered on the following investigation topics. Realization of some specific control equipments using computers and process interfaces for automation of laboratory, research for obtaining some metal processing oils, environmental friendly, used in automotive industry.

12. CEEEX research grant, No. 81-MCT/746-P3/ 04.09.2006: *Technical solutions, alternatives for obtaining performing lubricants, based on renewable raw materials - at European competitiveness standards and environmental protection, acronym HQ-LUB*

Value: 47,858 RON

Director: Prof.dr.eng. Liviu MIRCI

Members: Assoc.prof.dr.eng. Geza BANDUR
Assist.eng. Sorina BORAN
PhD student eng. Gerlinde RUSU
PhD student eng. Sergiu CURELEA

FIELD DESCRIPTION

Work deals with the synthesis and characterization of some polyfunctional

derivatives built on the basis on renewable raw materials.

ACTIVITIES

In the year 2008 the activities were centered on the following investigation topics. The research done implied the following activities:

- Synthesis, purification and characterization of the special alcohols of alkyl-aryl structure;
- Synthesis and characterization on the basis of specific organic indices of the esters;
- Evaluation of the representative characteristics of the realized products as polymer plasticizers and as tribological fluids.

PhD RESEARCH ACTIVITIES

1. Prof.dr. Carol CSUNDERLIK, PhD supervisor

PhD students:

- Nitu Sabina Violeta: *Synthesis and Characterization of Some Pyrazole Derivatives*
- Stanoiev Zlatimir: *Synthesis and Characterization of Heterocyclic Compounds Used in Derivatization Reactions of Natural Polymer Compounds*
- Szöcz-Biro Emese: *Synthesis of Functional Derivatives of Polyhydroxilic Compounds Using Biotransformation Reactions with Free or Immobilized Enzymes*
- Pinteana Beniamin-Nicolae: *New Synthetic Methods for Obtaining of N-Substituted Derivatives of the Cyclic Imides of Dicarboxylic Acids*
- Zarcu (Paul) Ana Cristina: *Biocatalytic Transformations Using Immobilized Hydrolytic Enzymes by the Sol-Gel Methods*
- Pop Oana-Raluca: *Synthesis and Reactivity of Some Carbonylic Derivatives of Aromatic Heterocycles*
- Şişu Ioana: *Studies of the Synthetic Methods for Obtaining of Functional Derivatives of Aldoses*
- Bosilcov Alin: *Studies of Methods for Organic Synthesis in the Field of Derivatives of Essential Oils*
- Palani Adil: *Thermal Decomposition of N-Carbamoyl Derivatives of Cyclic Imides*
- Ledeti Ionuţ: *Synthesis of functionalized mercapto-triazoles and use as ligands or compounds with potential biological activity*
- Creangă Andreea Anda: *Synthesis of heterocyclic mercaptans from azol class*

2. Prof.dr.eng. Ionel MANOVICIU, PhD supervisor

PhD students:

- Homone Claudia-Gabriela: *Contributions to study of rubber compound's composition for rolling bands and hard tire's flank*
- Mărieş Gheorghe Radu Emil: *Contributions to injection parameter's study of thermoplasts for performance sports articles*
- Roşca Cristina: *Interaction characterization of rubber-filling*

- Mișcă Ruxanda Manuela: *Researches about improvement of physico-mechanic characteristics of synthetics elastomers's compounds*
- Uscătescu Maria Ramona: *Contribution at study of rubber mixture's adherence at transport band's base*
3. Prof.dr.eng. Alfa-Xenia LUPEA, PhD supervisor
- PhD students:*
- Lascu Anca: *Study on the reaction of anomeric center of monosaccharides*
- Condrat Dumitru: *Obtaining of some plant extracts with antioxidant activity*
- Grăvilă Corina: *Synthesis of substituted N-amides of aromates hydroxy-acids*
- Ionescu Carmen Georgeta: *Valorification of proteic substances using complex combinations of aminoacids with heavy metals*
- Grad Maria Elena: *Synthesis of some non-benzidinic colorants*
- Crășmăreanu Eleonora Cornelia: *Synthesis and characterization of intermediates and colorants with amidic groups*
- Vancea Valentina: *Synthesis of some pyridine derivatives with potential biological activity*
- Talos Ioan: *Synthesis and properties of some phosphonic acids and derivatives*
- Popa Ioana Gabriela: *Structure-properties relationships for some natural hydroxyl-quinine*
- Costescu Corina Iuliana: *Stabilizing of some bioactive principles from Compositae family plants by cyclodextrin nanoencapsulation*
- Pleșa Carmen Manuela: *Doctoral School*
4. Prof.dr.eng. Corneliu-Mircea DAVIDESCU, PhD supervisor
- PhD students:*
- Kakasi-Zsurka Sandor: *Obtaining of some new bioactive compounds by modification of polyhydroxyalkanoates*
- Corici Livia: *Biocatalytic processes with immobilized enzymes by sol-gel method*
- Croitoru Ramona: *Synthesis of carbon hydrates oligomers and polymers by enzymatic catalysis*
- Stefanescu Oana: *FexOy type oxidic nanomaterials undispersed and dispersed in anorganic-organic matrices: synthesis, characterization, application*
5. Prof.dr.eng. Lucian RUSNAC, PhD supervisor
- PhD students:*
- Bașa Ioana Adela: *Contributions on the obtain of the biodiesel*
- Sălăgean Ioana Ramona: *Contributions on carbohydrate based polymers synthesis and characterization*
- Udrescu Valentina Liliana: *Optimizing of modern ionization techniques by electrospray chip for expression determination of some glycoconjugates*
- Dobren Flavius: *Contribution regarding the modeling and simulation research of the CO₂ dispersion process in urban environment*
- Pascariu Mihai Cosmin: *Tensioactive agents based on saccharide derivatives*
- Paută Radu: *Polymers including carbohydrates*
- Chiș Ana-Maria (Pană): *Saccharide derivative-based polymers*
- Mariș Ioan Dorel: *Doctoral School*
- Kiss Antonie Gabriel: *Doctoral School*
6. Prof.dr.eng. Constantin DĂESCU, PhD supervisor
- PhD students:*
- Pînzaru Iulia Andreea: *Naphtoxidine-nucleotides DNA-markers and inhibitors*
7. Prof.dr.eng Liviu MIRCI, PhD supervisor
- PhD students:*
- Boran Sorina: *The principle of polyfunctionality and asymmetry in the realization of new plasticizers and lubricants*
- Curelea Sergiu: *Polyfunctional derivatives esters for polymer processing and tribological applications*

PhD THESIS SUSTAINED

1. Turoczi Maria-Cristina: *The use of bis(o-nitrophenyl)carbonate in the synthesis of carbonic acid derivatives (urea, carbamates, carbonates);* December 2008; PhD supervisor: Prof. Dr. Csunderlik Carol
2. Ienașcu Ioana Maria Carmen: *Potentially biological active with o-hydroxybenzamydic structure;* February 2008; PhD supervisor: Prof. Dr. Eng. Lupea Alfa Xenia
3. Szabo Maria-Raluca: *Food autooxidation and methods of prevention and/or diminish;* June 2008; supervisor: Prof. Dr. Eng. Lupea Alfa Xenia
4. Pop Mariana: *Vegetable extracts, from berry, possible used in bioconstituents oxidation processes inhibition;* October 2008; PhD supervisor: Prof. Dr. Eng. Lupea Alfa Xenia
5. Samoilă Corina Olguța: *Possibilities of control of oxygen reactive species from human body: applications in food engineering and medicine;* October 2008; PhD supervisor: Prof. Dr. Eng. Lupea Alfa Xenia
6. Hegheduș Mîndru Gabriel: *Contributions to the study possibilities of mineral water indicators improvement by utilizing modern techniques of*

simulation, modeling and automated operation; September 2008; Prof. Dr. Eng. Rusnac Mircea Lucian

7. Grandtner Gerlinde Iuliana: *Contributions at study of reagent oligomers usage in nanocomposites*; November 2008; Prof. Dr. Eng. Manovicu Ionel

PUBLICATIONS

BOOKS

1. Hădărugă, N.G.; Hădărugă, D.I., *Food Products Quality Control*, Ed. ArtPress, Timișoara, 2008, ISBN 978-973-108-132-8 (published in Romanian)
2. Jurcau, D.; Plesu, N.; Popa, S., *Organic pigments. Vol. II. Structure, properties, and utilization*, Eurostampa, Timisoara, 2008, ISBN 973-638-192-7; 978-973-687-725-4 (published in Romanian)
3. Dăescu, C., *Chemistry and Technology of Drugs*, Vol. 1 and 2, 3rd edition, Politehnica, Timișoara, 2008, ISBN 978-973-625-650-9, 978-973-625-651-6 (published in Romanian)
4. Dăescu, C., *Bio- and Semisynthesis Products*, 2nd edition, Politehnica, Timișoara, 2008 (published in Romanian)
5. Lupea, A.X.; Ardelean, A.; Gharibeh-Branic, A.; Ardelean, D., *Fundamente de Chimia Mediului*, Editura Didactică și Pedagogică, București, 2008, ISBN 978-973-30-2015-8.

PUBLISHED PAPERS

1. Turoczi, M.-C.; Simon, M.; Badea, V.; Csunderlik, C., *Synthesis of Bis-ureas from Bis(o-nitrophenyl) Carbonate*, *Molecules* **2008**, 13(12), 3192-3197, ISSN1420-3049
2. Bors, N.; Tamas, A.; Minea, R., *The dimensioning optimization of a rotating rheometer*, *Revista de Chimie* **2008**, ISSN0034-7752
3. Costea, L.V.; Bercean, V.N.; Badea, V., Fafilek, G.; Chiriac, A., *Anodic oxidation of some 1H-3-methyl-4-ethoxycarbonyl-5-substituted-benzylidene-hydrazino-pyrazoles: substitution effects and linear free energy relationships. II*, *Revista de Chimie* **2008**, 59(6), 691-694, ISSN 0034-5572
4. Costescu, C.I.; Hădărugă, N.G.; Hădărugă, D.I.; Riviș, A.; Ardelean, A.; Lupea, A.X., *Bionanomaterials: Synthesis, Physico-Chemical and Multivariate Analyses of the Dicotyledonatae and Pinatae Essential Oil / β -Cyclodextrin Nanoparticles*, *Revista de*

Chimie **2008**, 59(7), 739-744, ISSN 0034-7752

5. Grad, M.E., Raditoiu, V.; Popa, S.; Jurcau, D.; Lupea, A.X., *Colour and Tinctorial Behavior of Some Chromogens Derivates of 4,4'-diaminostilben-2,2'-disulphonyc acid*, *Revista de Chimie* **2008**, 59(12), 1355-1360, ISSN 0034-7752
6. Grad, M.E.; Simu, G.M.; Lupea, A.X.; Tomas, S.; Pascariu, A., *Synthesis and colour assessment of some new stilbene AZO dyes*, *Revue Roumaine de Chimie* **2008**, 53(2), 107-111, ISSN 0035-3930
7. Hădărugă, D.I.; Hădărugă, N.G.; Hermenean, A.; Riviș, A.; Pâslaru, V.; Codina, G., *Bionanomaterials: Thermal Stability of the Oleic Acid / α - and β -cyclodextrin Complexes*, *Revista de Chimie* **2008**, 59(9), 994-998, ISSN 0034-7752
8. Hegheduș-Măndru, G.; Biron, R.C.; Perju, D.M.; Rusnac, L.M.; Riviș, A.; Ștef, D.S., *Cation contents in natural mineral waters of Romania determined with the HPLC method*, *Journal of Food, Agriculture & Environment* **2008**, 6(3&4), 506-509, ISSN 1459-0255
9. Ienașcu, I.; Lupea, A.X.; Hădărugă, D.I.; Hădărugă, N.G.; Popescu, I., *The antimicrobial activity and quantitative structure – biological activity relationships evaluation of some novel 2-hydroxybenzamide derivatives*, *Revista de Chimie* **2008**, 59(2), 247-250, ISSN 0034-7752
10. Ienascu, I.M.C.; Lupea, A.X.; Popescu, I.M.; Thomas, S.; Zamfir, A.D., *Synthesis and Characterization of Some New 2-Hydroxy-N-(3-Trifluoromethyl-Phenyl)-Benzamide Derivatives*, *Revista de Chimie* **2008**, 59(1), 56-59, ISSN 0034-7752
11. Lupea, A.X.; Pop, M.; Cacig, S., *Structure-Radical Scavenging Activity Relationships of Flavonoids from Ziziphus and Hydrangea Extracts*, *Revista de Chimie* **2008**, 59(3), 309-313, ISSN 0034-7752
12. Mărieș, R.E.; Manovicu, I.; Bandur, G.; Rusu, G.; Pode, V., *Study by Thermal Methods of Physico-Mecanical Properties of Polycarbonate used for High Performance Sport Products*, *Materiale Plastice* **2008**, 45(1), 3-7, ISSN 0025-5289
13. Nitu, S.; Bercean, V.N.; Badea, V.; Creanga, A.A.; Csunderlik, C., *Azoic compounds obtained from 1H-5-amino-4-ethoxycarbonyl-3-methylpyrazole and phenols or pnenolic derivatives*, *Revista de Chimie* **2008**, 56(12), 1352-1354, ISSN 0034-7752
14. Peter, F.; Zarcu, C.; Kakasi-Zsurka, S.; Croitoru, R.; Davidecu, C.; Csunderlik, C., *Solid-phase lipase biocatalysts for kinetic resolutions*, *Journal of Biotechnology* **2008**, 136S, 374, ISSN 0168-1656
15. Pop, L.; Pușcaș, C.; Bandur, G.; Vlase, G.; Nuțiu, R., *Basestock oils for lubricants from mixtures of corn oil and synthehic diesters*, *J. Am.Oil*

- Chem.Soc. (DOI 10.1007/s11746-007-1156-z) **2008**, 85(1), 71-76, ISSN 0003-021X
16. Pop, M.; Lupea, A.X., *Effect of berries extracts on the oxidative stability of Silybum marianum oil and its 20% oil-in-water emulsion*, Revista de Chimie **2008**, 59(9), 956-959, ISSN 0034-7752
 17. Pop, M.; Lupea, A.X.; Glevitzxky, M.; Ardelean, A., *The Effect of Berries Extract Addition on the Phenolic Content and on the Colour of Rosé and White Wines*, Revista de Chimie **2008**, 59(8), 829-833, ISSN 0034-7752
 18. Pop, M.; Lupea, A.X.; Turcus, V., *Studies on the Polyphenolics Compounds Extraction from Vaccinium Fruits*, Revista de Chimie **2008**, 59(5), 491-494, ISSN 0034-7752
 19. Popa, S.; Pop, M.; Lupea, A.X.; Turcu, V., *Colour Study in CIELAB Space on Natural Colorants from Vaccinium Vitis - Idaeum Fruits*, Revista de Chimie **2008**, 59(10), 1160-1163, ISSN 0034-7752
 20. Riviş, A.; Hădărugă, N.G.; Hădărugă, D.I.; Traşcă, T.; Drugă, M.; Pînzaru, I.A., *Bioactive nanoparticles. The complexation of odorant compounds with α - and β -cyclodextrin*, Revista de Chimie **2008**, 59(2), 149-153, ISSN 0034-7752
 21. Samoila, C.; Lupea, A.X.; Anghel, A.; Motoc, M.; Otiman, G.; Motoc, A.; Tamas, L., *Denaturing High Performance Liquid Chromatography and Bioinformatics - Two Modern Tools for Extracellular Superoxide Dismutase (SOD3) Gene Promoter Analysis*, Revista de Chimie **2008**, 59(7), 773-778, ISSN 0034-7752
 22. Segneanu, A.; Milea, M.; Simon, M.; Csunderlik, C., *N,N'-Diphtalimidylcarbonate used in synthesis of unsymmetrical organic carbonates with applications in peptide synthesis*, Revista de Chimie **2008**, 59(5), 575-577, ISSN 0034-7752
 23. Simon, M.; Csunderlik, C.; Jones, P.G., *Structural studies of some o- and p-nitrophenylcarbamates by IR spectroscopy and X ray diffraction*, Zeitschrift für Naturforschung B **2008**, 63b, 1402-1406, ISSN 0932-0776
 24. Şofei, M.-D.; Ilici, M.; Badea, V.; Csunderlik, C., Bercean, V.-N., *Sinteza și caracterizarea unor noi 1H-3-aril-6-metil-7-etoxicarbonil-pirazolo[5,1-c][1,2,4]triazoli*, Revista de Chimie **2008**, 59(1), 41-45, ISSN 0034-7752
 25. Szabo, M.R.; Idoiou, C.; Chambree, D.; Lupea, A.X., *Antiradical activity evaluation of some plants used in the Romanian cuisine*, International Journal of Food Properties **2008**, 11(2), 330-338, ISSN 1094-2912
 26. Tamas, A.; Pop, N.; Gropsian, Z., *Studii privind îmbunătățirea contactului bifazic la coloanele cu umpluturi structurate*, Revista de Chimie **2008**, 59(1), 65-69, ISSN 0034-7752
 27. Turoczi, M.-C.; Simon, M.; Badea, V.; Csunderlik, C., *Synthesis of Bis-ureas from Bis(o-nitrophenyl) Carbonate*, Molecules **2008**, 13, 3192-3197, ISSN 1420-3049
 28. Vlad-Oros, B.; Dragomirescu, M.; Preda, G.; Peter, F.; Chiriac, A., *Characterization of silica-based biomaterials containing microbial amylases*, Revue Roumaine de Biochimie **2008**, 52(11), 1083-1087, ISSN 0035-3930
 29. Lupea, A.X.; Gharibeh-Branic, A.; Ardelean, A.; Samoilă, O.C.; Negrea, P., *Comparative Study of Knowledge in Environmental Problems in the context of various population groups in two member states*, NATO Advanced Research Workshop, Chişinău. Moldova, 8-12 octombrie **2008**, The Role of Ecological Chemistry in Pollution Research and Sustainable Development", Nato Program „Science for Peace and Security”
 30. Bors, N.; Tamas, A.; Gropsian, Z., *Specific effects in liquids subject to rotational motion*, Chem. Bull. "Politehnica" Univ. Timișoara **2008**, 53(67/1-2), 16-20, ISSN 1224-6018
 31. Coneac, G.; Gafițanu, E.; Hădărugă, D.I.; Hădărugă, N.G.; Pînzaru, I.A.; Bandur, G.; Urșica, L.; Păunescu, V.; Gruia, A., *Flavonoid Contents of Propolis from the West Side of Romania and Correlation with the Antioxidant Activity*, Chem. Bull. "Politehnica" Univ. (Timișoara) **2008**, 53(1-2), 56-60, ISSN 1224-6018
 32. Coneac, G.; Gafițanu, E.; Hădărugă, D.I.; Hădărugă, N.G.; Riviş, A.; Bandur, G.N.; Pînzaru, I.A.; Rusu, G.; Urșica, L.; Păunescu, V.; Gruia, A.; Sebeșan, M.; Grozescu, I.; Lazău, C.; Sfirloagă, P., *Propolis Extract/ β -Cyclodextrin Nanoparticles: Synthesis, Physico-Chemical, and Multivariate Analyses*, Journal of Agroalimentary Processes and Technologies **2008**, 14(1), 58-70, ISSN 1453-1399
 33. Costea, L.V.; Bercean, V.-N.; Badea, V.; Magda, A.; Fafilek, G.; Kronberger, H., *Influence of the Electrode Material on the Behavior of 1H-3-Methyl-4-Ethoxycarbonyl-5-Benzylidene-Hydrazino-Pyrazole*, Chem. Bull. Techn. Univ. "Politehnica" Timișoara **2008**, 53(67/1-2), 22-26, ISSN 1224-6018
 34. Costescu, C.I.; Hădărugă, N.G.; Hădărugă, D.I.; Lupea, A.X.; Riviş, A.; Pârveu, D., *Obtaining, characterization, encapsulation and the antioxidant*

- activity evaluation of some *Matricaria chamomilla* L. extracts, *Journal of Agroalimentary Processes and Technologies* **2008**, 14(2), 417-432, ISSN 1453-1399
35. Creangă, A.A.; Bercean, V.-N.; Badea, V.; Csunderlik, C., *Benzoylation of thiosemicarbazide*, *Chem. Bull. Techn. Univ. "Politehnica" Timișoara* **2008**, 53(67/1-2) 45-50, ISSN 1224-6018
36. Dumbravă, D.G.; Hădărugă, N.G.; Hădărugă, D.I.; Gruia, A.; Tatu, C.; Păunescu, V.; Lupea, A.X., *Antioxidant activity of some celandine (Chelidonium majus L.) carotenoidic extracts*, *Journal of Agroalimentary Processes and Technologies* **2008**, 14(2), 433-441, ISSN 1453-1399
37. Frigura-Iliasa, M.; Tamas, A., *A Few Aspects About the Manufacturing Process of Five and Two Additives Metal Oxides Varistors*, *Chem. Bull. "Politehnica" Univ. Timișoara* **2008**, 53(67/1-2), 282-285, ISSN 1224-6018
38. Maries, G.R.E.; Bandur, G.; Rusu, G., *Influence of Processing Temperature on Some Mechanical-Physical Properties of Thermoplastic Polyurethane Desmopan KA 8377 Used for Injection Moulding of Performance Sport Products*, *Chem. Bull. "Politehnica" Univ. (Timisoara)* **2008**, 53(67/1-2), 131-134, ISSN 1224-6018
39. Hădărugă, D.I.; Hădărugă, N.G.; Mureșan, S.; Bandur, G.; Lupea, A.X.; Păunescu, V.; Riviș, A.; Tatu, C., *Fatty Acid/ β -Cyclodextrin Nanoparticles: Thermal Analyses and Molecular Modeling Studies*, *Journal of Agroalimentary Processes and Technologies* **2008**, 14(1), 43-49, ISSN 1453-1399
40. Hădărugă, N.G.; Hădărugă, D.I.; Bandur, G.N.; Riviș, A.; Pârvu, D.; Lupea, A.X., *Protection and controlled release of fatty acids and essential oils by nanoencapsulation in cyclodextrins (a review)*, *Journal of Agroalimentary Processes and Technologies* **2008**, 14(2), 381-389, ISSN 1453-1399
41. Kakasi-Zsurka, S.; Zarcu, C.; Trașcă, L.; Peter, F., *Synthesis of 3-hydroxybutyric acid esters by enzymatic catalysis*, *Annals of West University of Timisoara, Series of Chemistry* **2008**, 17(3), 67-72, ISSN 1224-9513
42. Maries, G.R.E.; Bandur, G.; Rusu, G., *Variation of Cavity Pressure Depending on Processing Temperature at Injection Moulding of the Polymers Used for Manufacturing of Sport Products*, *Chem. Bull. "Politehnica" Univ. (Timisoara)* **2008**, 53(67/1-2), 123-127, ISSN 1224-6018
43. Maries, G.R.E.; Bandur, G.; Rusu, G., *Study by Thermal Methods of Some Physical-Mechanical Properties of Polypropylene (PP) Used for High Performance Sport Products*, *Chem. Bull. "Politehnica" Univ. (Timisoara)* **2008**, 53(67/1-2), 127-130, ISSN 1224-6018
44. Nițu, S.V.; Bercean, V.-N.; Badea, V.; Csunderlik, C., *Azoic compounds obtained from 1H-4-ethoxycarbonyl-3-methyl-5-aminopyrazole and 1,3-disubstituted 1H-pyrazol-5-ones*, *Chem. Bull. Techn. Univ. "Politehnica" Timișoara* **2008** 53(67/1-2), 115-118, ISSN 1224-6018
45. Popa, S.; Padure, M.; Jurcau, D.; Drutau, M., *Colour Study on Some Azoic Dyes Derived of Salicylic Acid*, *Chem. Bull. "Politehnica" Univ. (Timișoara)* **2008**, 53(1-2), 254-257, ISSN 1224-6018
46. Rusu, G.; Bandur, G.; Rusnac, L.; Manovicu, I.; Simon, M.; Joly, N.; Martin, P., *Degradable Polymers with Inulin Content*, *Chem. Bull. "Politehnica" Univ. Timișoara* **2008**, 53(67/1-2), 13-15, ISSN 1224-6018
47. Salagean, I.R.; Bandur, G.; Rusnac, L.M., *Copolymerization of 3-O-Acryloyl-1,2:5,6-di-O-Isopropylidene- α -D-Glucofuranose and Butyl Acrylate at Different Molar Ratios*, *Chem. Bull. "Politehnica" Univ. (Timisoara)* **2008**, 53(67/1-2), 69-72, ISSN 1224-6018
48. Tamas, A.; Stoia, M.; Ștefănescu, M., *Rheological studies of some Ethylene-Glycol – TEOS gels*, *Chem. Bull. "Politehnica" Univ. Timișoara* **2008**, 53(67/1-2), 269-272, ISSN 1224-6018
49. Tamas, A.; Bors, N.; Minea, R., *The effect of some additives on the friction in liquids subject to rotational motion*, *Buletinul Univ. Petrol-Gaze din Ploiești, Seria Tehnică* **2008**, 60(4B), 105-111, ISSN 1224-8495
50. Zarcu, C.; Corîci, L.; Croitoru, R.; Peter, F., *Double immobilization of porcine pancreas lipase*, *Annals of West University of Timisoara, Series of Chemistry* **2008**, 17(3), 61-66, ISSN 1224-9513
51. Pop, M.; Lupea, A.X.; Pădure, M., *Determination of antioxidant activity of some vegetable extract using DPPH assay and sunflower oils as oxidation substrate*, *INMATEH, Agriculture and engineering-complying with the European requirements*, vol II (24), Bucuresti, **2008**, ISSN 1583-1019
52. Stana, L.; Trif, A.; Lupea, A.X.; Padure, M.; Stana, L.G.; Muselin, F., *Comparative study of a new synthesis product (by-product of salicylic acid) and basis structural compounds over some energetic metabolism parameters on rats, in perspective of*

- therapeutically use*, *Lucrari Stiintifice Medicina Veterinara (Timisoara)* **2008**, *41*, 922-931, ISSN 1221-5295
53. Trif, A.; Stana, L.; Muselin, F.; Lupea, A.X.; Padure, M.; Stana, L.G., *Comparative study concerning the impact of a new synthesized product (salicylic acid derivative) and its structural components on some hematological parameters in rats, in the perspective of utilization in the therapy*, *Lucrari Stiintifice Medicina Veterinara (Timisoara)* **2008**, *41*, 975-980, ISSN 1221-5295
54. Stana, L.; Trif, A.; Muselin, F.; Lupea, A.X.; Padure, M., *The impact of in vivo administration of an synthesis product (by-product of salicylic acid) on some biochemical parameters on rats*, *Lucrari Stiintifice Zootehnie si Biotehnologii (Timisoara)* **2008**, *41*, 605-610, ISSN 1221-5287
55. Stana, L.; Trif, A.; Stana, L.G.; Lupea, A.X.; Padure, M.; Muselin, F., *Effect of a synthesis product (by-product of salicylic acid) in comparison with basis structural compounds on some proteic metabolism parameters in rats*, *Lucrari Stiintifice Zootehnie si Biotehnologii (Timisoara)* **2008**, *41*, 611-616, ISSN 1221-5287
56. Rusu, G.; Toth-Tascau, M.; Bandur, G.; Rusu, L., *Mechanical Characteristics of some Poly(methyl methacrylate) based Polymers with Biodegradable Potential*, *Zbornik Radova, University of Belgrade* **2008**, *3.87*, ISBN 978-86-7083-628-0
57. Zarcu, C.; Croitoru, R.; Csunderlik, C.; Peter, F., *Ionic liquids and sol-gel immobilized lipases: possible synergism*, *Fourth International Congress on Biocatalysis: Biocat 2008, Book of Abstracts (Taschenbuch)*, Verlag: TuTech Innovation **2008**, 293-294, ISBN 978-3930400744
58. Medeleanu, M.; Popa I., *Naphthazarine Hydrogen Bond Characterization By Computational Methods*, *Proceedings of the 15th Symposium on Analytical and Environmental Problems* **2008**, *4*, ISBN 978-963-482-903-4
59. Branic, A.G.; Ardelean, A.; Hădăruță, D.I., *Juniperus Active Principles for Pharmaceuticals, Cosmetics, and Alimentary Industry*, *Proceedings of the International Conference on Ecological Materials and Technologies (ECOMAT 2008)*, **2008**, September 25-26, Bucharest (Romania), Ed. Printech, 38-40, ISBN 978-606-521-079-0
60. Pop, M.; Ardelean, A.; Lupea, A.X., *Berries extracts-antioxidant activity and effect on storage stability of crocus (Crocus banaticus) oil*, *Proceedings of the International Conference on Ecological Materials and Technologies (ECOMAT 2008)*, **2008**, September 25-26, Bucharest (Romania), Ed. Printech, ISBN 978-606-521-079-0
61. Coneac, G.; Gafițanu, E.; Hădăruță, D.I.; Hădăruță, N.G.; Pînzaru, I.A.; Radu, Ana-Maria; Radu, Anca; Pantis, Violeta; Bandur, G.; Urșica, L.; Păunescu, V.; Gruia, A., *Flavonoid contents of propolis from the west side of Romania and correlation with the antioxidant activity*, *International Conference on Chemistry and Chemical Engineering, 60 Years of Chemical Engineering Education* **2008**, Timișoara
62. Prejban, R.; Hădăruță, N.G.; Hădăruță, D.I., *Anti-HIV agents chemical space mining. QSAR and docking studies on nevirapine derivatives and pyrrolobenzoxazepinones as HIV-1 RT inhibitors*, *International Conference on Chemistry and Chemical Engineering, 60 Years of Chemical Engineering Education* **2008**, Timișoara
63. Hădăruță, N.G.; Hădăruță, D.I.; Negrea, A.; Ciopec, M.E.; Negrea, P., *Minor and trace elements in parsley (Petroselinum sativum Hoffm.) from the west side of Romania*, *Proceedings of the 8th International Symposium on Metal Elements in Environment, Medicine, and Biology*, **2008**, December 5-6, Timișoara, Publishing House "Eurobit" Timișoara, 173-180, ISSN 1583-4204
64. Costea, L.V.; Bercean, V.N.; Badea, V.; Magda, A.; Fafilek, G.; Kronberger, H., *Influence of the Electrode Material on the Electrochemical Behavior of 1H-3-Methyl-4-Ethoxycarbonyl-Benzylidene-Hydrazino-Pyrazole*, *International Conference on Chemistry and Chemical Engineering, 60 Years of Chemical Engineering Education* **2008**, Timișoara
65. Creangă, A.-A.; Bercean, V.-N.; Badea, V.; Csunderlik, C., *Benzoylation of Thiosemicarbazide*, *International Conference on Chemistry and Chemical Engineering, 60 Years of Chemical Engineering Education* **2008**, Timișoara
66. Mosoarca, E.M.; Bercean, V.N.; Costinas, I.; Mot, C.; Tudose, R.; Costisor, O., *Complex compounds containing triazoles as coligands with potential therapeutic relevance*, *International Conference on Chemistry and Chemical Engineering, 60 Years of Chemical Engineering Education* **2008**, Timișoara
67. Nițu, S.V.; Bercean, V.-N.; Badea, V.; Csunderlik, C., *Azoic Compounds Obtained from 1H-5-Amino-4-Ethoxycarbonyl-3-Methyl-Pyrazol And 1H-1,3-Disubstituted-5-Pyrazolones*, *International Conference on Chemistry and Chemical Engineering, 60 Years of Chemical Engineering Education* **2008**, Timișoara

68. Creangă, A.-A.; Bercean, V.-N.; Badea, V.; Csunderlik, C., *Benzoylation of Thiosemicarbazide*, International Conference on Chemistry and Chemical Engineering, 60 Years of Chemical Engineering Education **2008**, Timișoara.
69. Kakasi-Zsurka, S.; Zarcu, C.; Trasca, L.; Peter, F., *Sinteza enzimatică a esterilor acidului 3-hidroxibutiric*, Book of Abstracts XXX-th Romanian Chemistry Conference **2008**, 51, ISBN 978-973-750-124-0
70. Zarcu, C.; Croitoru, R.; Csunderlik, C.; Peter, F., *Influența mediului de reacție asupra acilării unor alcooli secundari*, Book of Abstracts XXX-th Romanian Chemistry Conference **2008**, 64, ISBN 978-973-750-124-0
71. Lascu, A.; Bercean, V.; Șișu, I.; Pascariu, A.; Neanu, C.; Șișu, E., *Glicopiranozilsulfone ale mercaptoizilor. sinteză și caracterizare*, Book of Abstracts XXX-th Romanian Chemistry Conference **2008**, 19, ISBN 978-973-750-124-0
72. Creangă, A.A.; Bercean, V.N.; Badea, V.; Ledeti, I.; Csunderlik, C., *4H-4-Amino-5-aril-3-mercapto-1,2,4-triazoli cu capacitate mărită de complexare*, Book of Abstracts XXX-th Romanian Chemistry Conference **2008**, 21, ISBN 978-973-750-124-0
73. Bercean, V.N.; Nițu, S.; Ledeti, I.; Badea, V.; Csunderlik, C., *Noi coloranți pirazolil-azo-fenolici complexabili, intermediari în sinteza pirazolo[5,1-c]benzo[1,2-e] [1,2,4]triazinelor*, Book of Abstracts XXX-th Romanian Chemistry Conference **2008**, 45, ISBN 978-973-750-124-0
74. Torok, A.I.; Jeromos, K.; Venter, M.M.; Varga, R.A.; Bercean, V.N.; Zahariac, V., *Mercapto-thiadiazoles and mercapto-triazoles: ligands and related d p- and d- metal complexes*, Book of Abstracts XXX-th Romanian Chemistry Conference **2008**, 21, ISBN 978-973-750-124-0
75. Tămaș, A.; Pop, M.; Lupea, A.X., *Aprecierea stabilității cremelor alimentare cu adaus de extracte din fructe de pădure, respectiv emulsii U/A ce conțin aceste extracte prin studiul comportării reologice*, Book of Abstracts XXX-th Romanian Chemistry Conference **2008**, ISBN 978-973-750-124-0
76. L. Pop, C. Pușcaș, G. Bandur, G. Vlase, R. Nuțiu, *Basestock oils for lubricants from mixtures of corn oil and synthetic diesters*, J.Am.Oil Chem.Soc. (DOI 10.1007/s11746-007-1156-z), 2008, 85(1), 71
77. R.E. Mărieș, I. Manovicu, G. Bandur, G. Rusu, V. Pode, *Study by Thermal Methods of Physico-Mechanical Properties of Polycarbonate used for High Performance Sport Products*, Materiale Plastice, 2008, 45(1), 3