

OVERVIEW OF ECOLOGICAL CHEMISTRY CONFERENCES (1985-2016)

As scientific direction, Ecological Chemistry has been successfully developing in Moldova over the past three decades. Its history began in 1985, when the First International School on Ecological Chemistry of the Environment was organized. More than 80 remarkable scholars from the major research centres of the USSR and 17 foreign countries were among the participants of the event. The main decision made during the event was to develop this scientific direction and the regular organizing of conferences and symposia dedicated to it.

Further, for more than 30 years the Ecological Chemistry has been intensively expanding, being one of the priorities for the sustainable development and international cooperation providing tangible impact to the research and innovation activities in Moldova.

Organization of the ECOLOGICAL CHEMISTRY Conferences in Chisinau, Republic of Moldova transformed into important tradition and represent a series of successful conferences occurred in 1995, 2002, 2005, 2008, 2010 and 2012 being supported by UNESCO, UNEP, CRDF/MRDA, CEI, NATO, ONRG, as well as the local R&D organizations such as the Academy of Sciences of Moldova, Department of Industrial and Ecological Chemistry, Scientific Centre for Ecological and Applied Chemistry, Faculty of Chemistry and Chemical Technology of the Moldova State University, Institute of Chemistry of Academy of Sciences of Moldova, Chemical Society of Republic of Moldova, Moldovan Research and Development Association, etc. The list of the organized Conferences till 2016 and the forthcoming 6th International Conference on Ecological & Environmental Chemistry (2-3 March 2017), number of participants and number of countries are presented in Table 1.

Table 1

The list of the Ecological Chemistry Conferences organized within 1985-2016.

<i>Date</i>	<i>Title of the Conference</i>	<i>No. of Participants</i>	<i>No. of Countries</i>
1985	First School on Ecological Chemistry	80	17
1995	1 st International Conference on Ecological Chemistry	150	21
2002	2 nd International Conference on Ecological Chemistry	250	22
2005	3 rd International Conference on Ecological Chemistry	700	40
2008	4 th International Conference and NATO Advanced Research Workshop: The Role of Ecological Chemistry in Pollution Research and Sustainable Development	160	17
2010	International Conference on Ecological Chemistry: Water resources of the Dniester river – premises for the sustainable development of the regional localities	80	4
2010	International Conference: “Water: History, Resources, Perspectives”	200	10
2012	5 th International Conference on Ecological Chemistry	300	18
2017 (2-3 March)	<i>Forthcoming 6th International Conference on Ecological & Environmental Chemistry</i>	<i>Registered participants 350</i>	25

Through the years, Ecological Chemistry Conferences became an arena to exchange the latest ideas and promising approaches and opportunities, to present and discuss recent results on the physical-chemical and biochemical aspects of processes, which occur in the ecosystem – soil, air and water, environmental pollution impact to human health and its prevention, environmental engineering and modelling, as well as social and educational implications. The topics of Ecological Chemistry Conferences were adjusted each time to the real needs and their evolution is presented in the Table 2.

The conferences encourage and facilitate the communication among young and experienced scientists, engineers, economists, teachers and professionals working on environmental issues and sustainable development in order to promote healthy style and conditions of life.

The 1st International Conference on Ecological Chemistry organized in 1995 gathered participants from the NIS, EU, USA and Australia and draw up the scientific topics for discussing the latest achievements in the field. The conference materials, which included the books of proceedings and abstracts, were spread to participants during the conference. Among the numerous important reports presented at the conference, the following could be mentioned:

- INTRODUCTION IN ECOLOGICAL CHEMISTRY, *Prof. Gheorghe Duca, Moldova;*
- ECOLOGICAL CATALYSIS: TEORETICAL AND PRACTICAL ASPECTS, *Prof. Tatyana Rakitskaya, Odessa, Ukraine;*

- ENVIRONMENTAL ENGINEERING AND MANAGEMENT OF ECOSYSTEMS: APPLICATION OF BIOLOGICAL, CHEMICAL AND PHYSICAL PROCESSES IN WASTE MANAGEMENT, Prof. Joseph Malina, USA;
- WATER RESOURCES MANAGEMENT, Prof. Paolo Lupino, Italy;
- MODERN PERFORMANCES ABOUT PROCESSES OF NATURAL WATERS CHEMICAL SELF-PURIFICATION, Prof. Yurii Skurlatov, Dr. Elena Shtamm, Russia.

Table 2

International Conferences on Ecological Chemistry Topics Evolution.

1995 - 1 st International Conference on Ecological Chemistry	2002 - 2 nd International Conference on Ecological Chemistry	2005 - 3 rd International Conference on Ecological Chemistry
<p>A. Natural Self-Purification Processes</p> <p>B. Transport and Fate of Pollutants in Ecosystems</p> <p>C. Remedial Measures to Degrade or Immobilize Pollutants Chemically or Biologically</p> <p>D. Impact of Chemical Pollutants and Risk Assessment</p> <p>E. Ecological Policy, Law, Education and Training</p> <p>F. Environmental Engineering</p> <p>G. Environmental Control and Monitoring</p>	<p>A. Ecological Chemistry of Water</p> <ul style="list-style-type: none"> • Quality Management and Water Analysis • Redox and Catalytic Processes of Self-Purification • Drinking Water Quality • Wastewater Treatment <p>A. Electrochemistry and Ecological Chemistry</p> <p>B. Ecological Chemistry of Atmospheric Air</p> <ul style="list-style-type: none"> • Chemical Processes in Atmosphere • Impact of Chemistry on the Ozone Layer • Effect of Greenhouse Gases • Role of Particles on Urban Aerosols • Impact of Combustion Gases on Human Health <p>C. Soil Contamination and Waste Management</p> <ul style="list-style-type: none"> • Industrial Waste and Landfills • Materials Recovery and Recycling • Pesticides and other Persistent Organic Pollutants <p>D. Environmental Friendly Agricultural Technologies</p> <ul style="list-style-type: none"> • Sustainable Agriculture • Pesticides and Fertilizers Management • Food Chemistry <p>E. Chemical Risk Assessment and Health</p> <ul style="list-style-type: none"> • Impact of Chemicals on Ecosystems • Human Health and Environment • Biodegradation and Bioaccumulation <p>G. Pollution Prevention</p> <ul style="list-style-type: none"> • Product and Process Integrated Environmental Protection • Advances in Process and Emission Control 	<p>A. Ecological Chemistry of Water</p> <ul style="list-style-type: none"> • Monitoring of Water Quality and Environmental Modeling • Redox Processes in Natural Water • Water Treatment and Supply <p>B. Ecological Chemistry of Air</p> <ul style="list-style-type: none"> • Chemical Processes in Atmosphere • Air Quality Control and Management • Impact of Air Emissions on Human Health <p>C. Ecological Chemistry of Soil</p> <ul style="list-style-type: none"> • Soil Contamination and Pollution Prevention • Ecological Agriculture • Ecological Technology in Agricultural Sector <p>D. Waste Management and Cleaner Production</p> <ul style="list-style-type: none"> • Industrial Pollution • Solid Waste Management • Persistent Organic Pollutants Management • Cleaner Production and Sustainable Business <p>E. Chemical Risk Assessment</p> <ul style="list-style-type: none"> • Impact of Chemicals on Human Health and Environment • Ecotoxicology • Chemical Risk Mitigation and Analysis <p>F. Ecological Policy and Legislation</p> <ul style="list-style-type: none"> • Ecological Legislation • Community Involvement and Education • Sustainable Development <p>G. Electrochemistry and Ecology</p> <ul style="list-style-type: none"> • Electrochemical methods of environmental protection • Ecological problems in electrochemical production • Electrochemical methods of natural and waste water treatment and conditioning

Continuation of Table 2

2008 - 4 th International Conference and NATO ARW: <i>The Role of Ecological Chemistry in Pollution Research and Sustainable Development</i>	2012 - 5 th International Conference on Ecological Chemistry	2017 - 6 th International Conference on Ecological & Environmental Chemistry
<p>A. Organic Pollutants and POPs in the Environment – Occurrence, Fate and Prevention Measures</p> <p>B. Water Pollution and Wastewater Treatment</p> <p>C. Soil Pollution and Prevention</p> <p>D. Waste Management</p> <p>E. Risk Assessment, Mitigation Measures and Environmental Awareness</p>	<p>A. Ecological chemistry of water</p> <ul style="list-style-type: none"> • <i>Chemical processes and natural waters self-purification</i> • <i>Methods of analysis and monitoring of water resources</i> • <i>Water treatment and supply</i> • <i>Impact of natural waters pollution on the human health</i> <p>B. Ecological chemistry of the atmosphere</p> <ul style="list-style-type: none"> • <i>Chemical processes in atmosphere</i> • <i>Methods of analysis of gas emissions</i> • <i>Mitigation of gas emissions impact on human health</i> 	<p>A. Ecological Chemistry</p> <ul style="list-style-type: none"> • <i>Physico-chemical and chemico-biological processes which determine composition, structure and chemical properties of the environment</i> • <i>Chemical risk assessment of human health and ecological system</i>
<p><i>The International Conference “Water: History, Resources, Perspectives” 2010</i></p>	<p>C. Ecological chemistry of soil</p> <ul style="list-style-type: none"> • <i>Chemical processes in soil</i> • <i>Soil degradation processes and their prevention</i> • <i>Methods of analysis and mitigation of soils pollution with pesticides</i> • <i>Impact of soils pollution on human health and habitat</i> 	<p>A. Environmental Chemistry and Engineering</p> <ul style="list-style-type: none"> • <i>Chemistry and processes of treatment of water, air and waste</i> • <i>Chemical degradation of soil</i>
<p>A. Physics, chemistry, and the evolution of water</p> <p>B. The cultural role of water</p> <ul style="list-style-type: none"> • <i>Water as a symbol</i> • <i>Water in traditional culture (folklore, music)</i> • <i>Water in literature and poetry</i> <p>C. Water and technology</p> <ul style="list-style-type: none"> • <i>The technology of water supply)</i> • <i>The technology of water treatment</i> <p>D. Environmental aspects of water</p> <ul style="list-style-type: none"> • <i>Quantity and quality of water</i> • <i>Water shortage and water-borne diseases as hazards</i> <p>E. Water and waters of Moldova</p>	<p>D. Ecological chemistry and healthy life style</p> <ul style="list-style-type: none"> • <i>Chemical risk assessment of anthropogenic impact on human health and environment</i> • <i>Mathematical modelling and long-term prognosis of human impact on the environment, of trans-boundary transport of pollutants and climate change</i> • <i>Medico-biological perspective on ecological chemistry – problems of acute and chronic toxicity, allergies, cancerigenic effects, bioassay</i> <p>E. Ecological chemistry and sustainable development</p> <ul style="list-style-type: none"> • <i>Ecological awareness and education</i> • <i>Access to ecological information</i> • <i>Ecological auditing</i> • <i>Public participation in addressing environmental pollution problems</i> • <i>Ecological legislation</i> 	<p>B. Green Chemistry</p> <ul style="list-style-type: none"> • <i>Preventing and reducing the negative impact of chemistry on the environment</i> • <i>Design of ecological friendly technologies and chemical products that minimize the use and generation of hazardous substances</i> <p>C. Ecological & Environmental Aspects in Chemical Research and Education</p> <ul style="list-style-type: none"> • <i>Ecological & environmental methodological aspects in chemical research and innovation activities</i> • <i>Ecological & environmental methodological aspects in chemical education</i> <p>D. Yong Scientists Research in Ecological & Environmental Chemistry</p>

The conferences contributed to the fast development of the Ecological Chemistry direction in Moldova. New specializations were created at the Department of Industrial and Ecological Chemistry (DIEC) of Moldova State University resulting in the increase of the number of students. The annual editions of national conferences and trainings in the field of Ecological chemistry for students and young scientists have been organized. During these events, students had the opportunity to present their research results to a large public of experienced scientists. Some trainings and workshops for students and young scientists were organized in Turkey, Romania, Ukraine and other countries, giving them opportunity to familiarize with the latest generation of technologies and practices in the fields of ecological chemistry. Upon the initiative of the students of DIEC, many new ecological non-governmental organizations were founded, such as: CHIMECO, Terra Nostra, UNEP, etc. The projects with great impact for science and society, accomplished by the DIEC staff, were supported by different international foundations - SOROS, ACS, UNDP, UNEP, CRDF, Tacis, REC-Moldova, Novib, GTZ etc. Strong scientific collaborations were established with the researchers from USA, France, Romania, Ukraine, Russia, Armenia, etc.

The Second International Conference on Ecological Chemistry– 2002 was dedicated to 10th Anniversary of the Department of Industrial and Ecological Chemistry of Moldova State University. The most important reports were presented at the plenary session:

- ADVANCES AND PROSPECTS OF ECOLOGICAL CHEMISTRY, *Prof. Gheorghe Duca, Moldova;*
- AQUATIC ECOLOGICAL CHEMISTRY: PAST, PREZENT AND FUTURE, *Prof. Yurii Skurlatov, Russia;*
- GLOBAL TRENDS SHAPING AGRICULTURE, AN ENVIRONMENTAL PERSPECTIVE, *Prof. Seymour Van Gundy, USA;*
- IMPACT OF AIR POLLUTION ON SOIL QUALITY, *Dr. Eiliv Steiness, Norway;*
- MODERN STATE OF THE ACID RAIN PROBLEM, *Prof. Anatolyi Purmali, Russia;*
- ENVIRONMENTAL ENGINERING IS KEY TO SUSTAINABLE DEVELOPMENT, *Prof. Joseph Malina, USA;*
- THE NEW APPROACHES AT A QUANTITATIVE ESTIMATION OF SELFLEARNING ABILITY OF NATURAL WATERS, *Prof. Gevork Pirumyan, Armenia;*
- APPLICATION OF SLIME BINDING COMPOSITIONS FOR PESTICIDE CONSERVATION, *Prof. Alma Samurzina, Kazakhstan;*
- CONSERVATION OF LAND FOR THE PRODUCTION OF ORGANIC CEREALS, *Iain Tolhurt, UK;*
- BIOETICS AND ECOLOGICAL CHEMISTRY, *Prof. Pietro Cavazini, Italy.*

The 3rd International Conference on Ecological Chemistry organized in 2005 is considered the largest conference because it was attended by more than 700 experienced and young scientists from 40 countries: Albania, Armenia, Austria, Azerbaijan, Belarus, Bulgaria, China, Croatia, Czech Republic, Egypt, Estonia, Germany, Greece, Georgia, France, Hungary, India, Iran, Italy, Israel, Kazakhstan, Kyrgyzstan, Latvia, Moldova, Nigeria, Northern Cyprus, Norway, Pakistan, Poland, Romania, Russia, Serbia and Montenegro, Switzerland, Tajikistan, Turkey, Vietnam, Ukraine, UK, USA, Uzbekistan.

The event received the financial support from UNESCO, U.S.CRDF, ONRG, U.S.NSF, American Chemical Society and the diplomatic missions of the participating countries.

Some of plenary reports are specified below:

- ECOLOGICAL CHEMISTRY. ASCHIEVEMENTS AND PERSPECTIVES, *Prof. Gheorghe Duca, Moldova;*
- CHEMICAL REACTIONS IN THE ATMOSPHERIC WATER, *Prof. Anatolii Purmali, Russia;*
- STRATEGIES FOR SOLVING THE PROBLEM OF ARSENIC POLLUTION IN NATURAL WATER, *Dr. John Malin, USA;*
- ECOLOGICAL CHEMISTRY AS A SCIENCE AND EDUCATION PROCESS, *Prof. Alma Samurzina, Kazakhstan;*
- ELECTROCHEMICAL TECHNICS FOR A CLEANER ENVIRONMENT, *Prof. Maria Jitaru, Romania;*
- THE DEVELOPMENT OF MOLECULAR BIOLOGY IN MOLDOVA TO ADDRESS AGRICULTURAL AND ENVIRONMENTAL ISSUES, *Prof. Seimour Van Gundy, USA;*
- THE ROLE OF BIOTESTING METHODS IN THE EVALUATION OF WATER QUALITY, *Dr. Elena Shtamm, Russia;*
- THE RISK ASSESSMENT OF THE TRANSFORMATION OF NATURAL ECOSYSTEMS OF BELARUSI UNDER THE IMPACT OF ATMOSPHERIC MAN-CAUSED NITROGEN AND SULFUR, *Dr. Vadim Zubritskii, Belarus;*
- ON THE ISSUES OF MODELING OF ENVIRONMENTAL PROCESSES OCCURRING IN RIVER WATER, *Dr. Trahel Vardanian, Armenia.*

The 4th International Conference on Ecological Chemistry organized in 2008 hosted the NATO Advanced Research Workshop: “**The Role of Ecological Chemistry in Pollution Research and Sustainable Development**”, gathering experts from 17 countries: Austria, Armenia, Belarus, Germania, Egypt, Italy, Moldova, Romania, The Netherlands, Turkey, Ukraine, Russia, etc. **The main objective of the both events** was to re-evaluate the state-of-the-art of pollution research in NIS, Middle East and Western European countries and to present promising approaches and strategies for environmentally friendly technologies towards a sustainable development including capacity building by education. The most representative reports are the following:

- TREATMENT OF WINERY SECONDARY PRODUCTS, *Prof. Gheorghe Duca, Chisinau, Moldova;*
- TEACHING SUSTAINABILITY IN CHEMICAL EDUCATION, *Prof. Ali Müfit Bahadır, Braunschweig, Germany;*
- BROMINATED FLAME RETARDANTS IN THE ENVIRONMENT, *Dr. Jacob de Boer, Ijmuiden, The Netherlands;*
- MONITORING AND MEASURES ON POPS IN TURKEY, *Dr. Özcan Ceylan, Istanbul, Turkey;*
- CURRENT STATE IN THE FIELD OF POPS MANAGEMENT IN UKRAINE, *Dr. Svitlana Sukhorebra, Kiev, Ukraine;*
- INTERMEDIATES IN PHOTOCHEMISTRY OF Fe(III)-CARBOXILATE COMPLEXES IN NATURAL WATERS, *Prof. Viktor Plyusnin, Novosibirsk, Russia;*
- THE ROLE OF SOIL ORGANIC MATTER IN LIMITING ORGANIC POLLUTION IN SOILS, *Prof. Nicola Senesi, Italy;*
- HUMIC SUBSTANCES IN MUNICIPAL REFUSE DISPOSED OF IN A LANDFILL, *Prof. Zdenek K. Filip, Czech Republic;*
- FATE AND BEHAVIOUR OF ORGANIC POLLUTANTS WHILE SLUDGE TREATMENT BY GAMMA-IRRADIATION, *Dr. Rawia El-Motaium, Cairo, Egypt;*
- COMPARATIVE STUDY OF KNOWLEDGE IN ENVIRONMENTAL PROBLEMS IN THE CONTEXT OF VARIOUS POPULATION GROUPS IN TWO EU MEMBER STATES, *Prof. Alfa Xenia Lupea, Timisoara, Romania.*

Following the event the book entitled “The Role of Ecological Chemistry in Pollution Research and Sustainable Development” was published by Springer in Series: NATO Science for Peace and Security Series C: Environmental Security, by Editors: Prof. Ali Müfit Bahadır, Germany and Acad. Gheorghe Duca, Moldova.

The scientific works gathered in this book demonstrate clearly the role of the processes defining the composition of the natural environment, its structure and chemical properties corresponding to the biologic value of habitation, the essential impacts of human activity and other related factors on all the environment components, including water, soil and air. The research in ecological chemistry contribute to diminishing of these negative impacts, and promote the rational using of natural resources, their qualified management, broader application of environmentally-friendly production technologies, thus leading to pollution reduction and sustainable development.

The scientific topics addressed at Ecological Chemistry Conferences lead to the organization of a series of events in civil society. One of the most worth mentioning is the **International Conference “Water: History, Resources, Perspectives”**, organized in 2010 with considerable support of the Austrian Academy of Sciences and Art. At this event, the interdisciplinary approach and relationship between the humanitarian and natural science focused on folklore, history, terminology usage, management, science and innovation were presented. The most interesting reports are reflected below:

- WATER IN FOLKLORE, *Prof. Thede Kahl, Austria, Germany;*
- MANAGEMENT OF WATER QUALITY, *Acad. Gheorghe Duca, Moldova;*
- TOWARDS BALANCING SAFETY, SECURITY AND SUSTAINABILITY OF WATER GLOBALLY, *Prof. Ashok Vaseashta, USA;*
- SOS: DRINKING WATER, *Acad. Vladislav Goncheuruc, Ukraine;*
- WATER AND ITS ROLE IN VALUING THE GEOGRAPHICAL POSITION OF A STATE, *Dr. Radu Sageata, Paul Serban, Romania;*
- SOME CONSIDERATIONS REGARDING THE RELATIONSHIPS BETWEEN COMPOSITION OF WATER RESOURCES AND APPLIED POTABILISATION TECHNOLOGIES, *Dr. Margareta Nicolau, Romania;*
- SYMBOLIC AND RITUAL SIGNIFICANCE OF WATER IN ORTHODOX SOUTH-EASTERN EUROPE, *Prof. Walter Puchner, Greece;*
- PROTECTION OF THE HUMAN RIGHT TO WATER UNDER INTERNATIONAL LAW: THE NEED FOR ANEW LEGAL FRAMEWORK, *Dr. Jordan Daci, Albania;*
- CONTRIBUTION ON THE SOIL WATER BALANCE OF AN AGRARIAN SITE, *Prof. Othmar Nestroy, Austria;*
- GROUNDWATER CONTAMINATION BY NITRATES, SALINITY AND PESTICIDES: CASE OF THE UNCONFINED AQUIFER OF TRIFFA PLAIN, *Prof. Yassine Zarhloule, Morocco.*

Another important event organized in 2010 is the **International Conference on Ecological Chemistry: “Water resources of the Dniester river – premises for the sustainable development of the regional localities”**, which attracted stakeholders from R&D sector, public authorities and non-governmental organizations. The conference gathered more than 60 representatives of the scientific and the civil society from more than 30 NGOs from Moldova, Transnistria and Ukraine. The main objectives of the event were:

- Promotion and strengthening of collaboration between the representatives of scientific and civil community, and representatives of public authorities in management of Dniester River water quality;
- Raising public awareness about the importance of water quality and its impact on the human health and sustainable development of the localities.

The 5th International conference on Ecological Chemistry, organized on March 2-3, 2012 was dedicated to 20th Anniversary of the Department of Industrial and Ecological Chemistry of the State University of Moldova and was supported by the Academy of Sciences of Moldova, Intergovernmental Foundation for Educational, Scientific and Cultural Cooperation, Moldovan Research and Development Institution, Scientific Centre for Ecological and Applied Chemistry, Department of Industrial and Ecological Chemistry, Faculty of Chemistry and Chemical Technology of Moldova State University, Institute of Chemistry of Academy of Sciences of Moldova and University of Academy of Sciences of Moldova.

The Conference works were focused on promotion of "Healthy Style of Life" by discussing the recent results in the field of ecological chemistry of water, air, soil and promising approaches of sustainable development, as well as social and educational implications. The aim of the conference was to encourage and facilitate the interdisciplinary communication among scientists, engineers, economists, teachers and professionals working on environmental issues and sustainable development. The plenary reports presented at this conference were the following:

- CHEMISTRY VS ECOLOGY, *Acad. Gheorghe Duca, President of the Academy of Sciences of Moldova;*
- REDOX AND FREE-RADICALS PROCESSES IN ENVIRONMENT, *Prof. Yury Skurlatov, Institute of Chemical Physics Russian Academy of Sciences, Russia;*
- SUSTAINABLE WATER MANAGEMENT IN DEVELOPING COUNTRIES, *Prof. Mufit Bahadir, Director of the Institute of Environmental and Sustainable Chemistry, Technical University, Braunschweig, Germany;*
- CHEMISTRY – FRIEND OR ENEMY OF ENVIRONMENT, *Acad. Ionel Haiduc, President of the Romanian Academy, Romania;*
- WATER FOR GLOBAL SAFETY, SECURITY AND ECOLOGICAL SUSTAINABILITY, *Prof. Ashok Vaseashta, Director of the Institutes of Advanced Sciences Convergence and International Clean Water, Marshal University, Huntington, WV, USA;*
- CHEMISTRY, PHYSICS AND BIOLOGY OF WATER, *Acad. Vladislav Goncharuk, Director, A.V. Dumanskii Institute of Colloid Chemistry and Water Chemistry, National Academy of Sciences of Ukraine, Kiev, Ukraine;*
- UNUSUAL PROPERTIES OF WATER, *Prof. Janus Lipkowski, Head of Department of Physical Chemistry of Supramolecular Complexes, Institute of Physical Chemistry, Polish Academy of Sciences, Poland;*
- SOIL DECONTAMINATION FROM ORGANIC POLLUTANTS, *Prof. Nicola Sennesi - Dept. Agriforestry & Environmental Biology & Chemistry, University of Bari, Italy;*
- COMPUTER-BASED METHODOLOGY TO PREDICT TOXICITY IN ENVIRONMENTAL POLLUTANTS, *Acad. Isaak Bersuker, Professor, Texas University, TX, USA.*

The forthcoming edition of **International conference on Ecological Chemistry** (2-3 March, 2017) will gather more than 300 participants from 25 countries. The conference agenda will include discussions on different approaches in chemistry *versus* ecology, opinions and exchange experience on terminology usage in different countries and regions. The conference will be organized in five scientific sessions entitled *Ecological Chemistry, Environmental Chemistry and Engineering, Green Chemistry, Ecological & Environmental Aspects in Chemical Research and Education* and *Young Scientists Research in Ecological & Environmental Chemistry*. The last two sessions are dedicated to teachers and young scientist that will present research works in the field and the ecological & environmental methodological aspects in chemical research, education and innovation sphere. The conference programme will include plenary reports:

- RETROSPECTIVE AND PERSPECTIVE OF ECOLOGICAL AND ENVIRONMENTAL CHEMISTRY, *Acad. Gheorghe Duca, President of the Academy of Sciences of Moldova;*
- ROLE OF OXIDATION-REDUCTION PROCESSES IN FORMATION OF TOXIC PROPERTIES OF A NATURAL AQUEOUS ENVIRONMENT, *Prof. Yurii Skurlatov, Institute of Chemical Physics, Russian Academy of Sciences, Russian Federation;*
- MERCURY AND DICHROMATE FREE DETERMINATION OF CHEMICAL OXYGEN DEMAND (COD), *Prof. Mufit Bahadir, Technisch e Universitaet Braunschweig, Leichtweiss Institute of Hydraulic Engineering and Water Resources, Germany;*
- STATISTICAL DATA ANALYSIS IN ENVIRONMENTAL PROBLEMS, *Prof. Asaf Haji Oglu Hajiyeve, Secretary General, Parliamentary Assembly of the Black Sea Economic Cooperation (PABSEC);*
- ECOLOGICAL CHEMISTRY THROUGH POPULAR SCIENTIFIC ARTICLES, *Prof. Ketevan Kupatadze, Ilia State University, Tbilisi, Georgia;*
- GENETIC DAMAGE IN BIOINDICATOR ORGANISMS AND HEAVY METALS CONTENT IN ECOGENOTOXIC STUDIES, *Prof. Rouben Aroutiounian, National Academy of Sciences of Armenia;*
- POWER GENERATION FROM LOW-GRADE FUELS AND WASTES PROCESSING USING FILTRATION COMBUSTION, *Prof. Sergey ALDOSHIN, First Vice President of the Russian Academy of Sciences, Institute of Problems of Chemical Physics, Russian Federation;*
- NANO TECHNOLOGICAL INNOVATIONS SUPPORTING WATER SAFETY AND SECURITY, *Prof. Ashok Vaseashta, International Clean Water Institute, Manassas, VA, USA;*
- QUO VADIS SEPARATION SCIENCES? NEW SOLUTIONS AND CHALLENGES IN ENVIRONMENT MONITORING, *Prof. Boguslaw Buszewski, Faculty of Chemistry, Nicolaus Copernicus University in Torun, Poland;*

- OBTAINING OF LIGNOCELLULOSE BIOSORBENTS MODIFIED WITH INORGANIC NANOCCLUSERS, *Prof. Mykola Kartel, Chuiko Institute of Surface Chemistry, NAS of Ukraine, Kiev, Ukraine;*
- TECHNOLOGY OF BIOFUEL PRODUCTION FROM ALTERNATIVE RENEWABLE RAW MATERIALS SOURCES, *Prof. Alexander Garabadzhiu, Saint-Petersburg State Institute of Technology, Russian Federation;*
- PREDICTIVE ASSESSMENT OF THE HUMAN AND ENVIRONMENTAL TOXICITY OF CHEMICAL SUBSTANCES, *Prof. Gerrit Schüürmann, Department of Ecological Chemistry at the Helmholtz-Centre for Environmental Research in Leipzig, Germany;*
- ASSESSING LONG-TERM VARIATION OF OCEAN ACIDIFICATION DUE TO ANTHROPOGENIC CARBON PENETRATION IN SEAWATER, *Prof. Catherine Goyet, Perpignan University, France.*

Concluding remarks

Importance of theoretical and practical contributions of Ecological Chemistry Conferences to general scientific knowledge and implementation of environmentally friendly processes, benefits of healthy lifestyle, and proceeding from the strong necessity to promote the further development of this discipline are focused to the following preconditions:

- Maintaining the promotion and support of the interdisciplinary approach to ecological chemistry in strengthening of research-education-innovation in order to reduce the negative anthropogenic impacts on the human health and the environment.
- Strengthening fundamental and applied research of physical, chemical, and biological processes associated with the natural and anthropogenic pollution of environment and various interactions between the living organisms and natural environment.
- Enlarging the medico-biological research in the framework of ecological chemistry, including methods of prognosis of acute and chronic toxicity, allergic and carcinogenic effects, as well as assessment of the factors that may cause these conditions and prevent their development.
- Advanced study of various factors that describe the dynamics of eco-chemical processes in the environment, which lead to solving of ecological problems in different sphere of human activities.
- Improving of water quality indicators using combined methods of bio-testing based on toxicity parameters and standardization with subsequent inclusion in the measurement system of permissible level of impact to the state of water ecosystems and security of drinking water.
- Continuous studies on the phenomena of self-purification processes, in order to keep the natural systems in equilibrium state, and to stimulate their efficiency in pollutants diminution in environment.
- The developing of efficient methods for mathematical modelling and long-term prognosis of human impact on environment, of trans-boundary transport and transformations of pollutants, of climate change, as well as design of new technologies of waste treatment and reuse.
- Elaboration of advanced and environmental friendly methods for extraction of useful substances from the municipal and agricultural wastes, and deepened research of their structure, physical, chemical, and biological properties to facilitate their use in different sectors of economy.
- Promote the education of all ages population by introducing the main aspects of Ecological Chemistry in the educational programs and curricula and its enlargement to the rural area.

Traditionally the resolutions and recommendations draw up at the end of each edition of Ecological Chemistry conferences raise awareness and needs to study and prevent the negative impact of pollutions on human health and environment, and to bring into attention of the Governmental bodies and Authorities involved in the environment protection about the latest achievements and ideas in ecological chemistry.

It is important to continue supporting awareness campaigns using mass-media, press, TV, radio, on environment protection at national, regional and international levels. Also, continuous promotion of Ecological Chemistry principles and achievements through the strengthening of international collaboration for the sustainable use of natural resources and habitat protection, information exchange, development of bilateral and multilateral projects with involvement of key-persons from research, education, civil society and business.

Academician Gheorghe DUCA
President of the Academy of Sciences of Moldova

Dr. Lidia ROMANCIUC
Director of the Centre of International Projects