

QUESTIONNAIRE

Please, fill in the Questionnaire and return it to contact person in Moldova:

depintrel@asm.md. Phone: 272254

(*) – mandatory fields

	Details about organisation
* Organisation name	Chemistry Institute of the Academy of Science
Organisation acronym	
* Organisation Activity Type (RES - Research, HE - University, SME - Small and Medium Enterprise, IND - Industry, OTH - Other)	RES
* Keywords of main research areas	quantum chemistry; organic chemistry, bioorganic chemistry, chemistry of natural and physiologically active compounds; chemistry of coordination compounds, macrocyclic and supramolecular chemistry; bioinorganic chemistry
* Head of organisation (first name, family name)	Dr. Hab., Prof. Tudor Lupascu
* Post code	MD-2028
* Country	Republic of Moldova
* City	Chisinau
* Street, House	3 Academiei Str.,
* Telephone (+ country & city codes)	(+37322) 725 490
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* Description of organisation and its research achievements for the last five years (~ 5000 signs)
<p>The basis of scientific directions of the Institute was put by the known scientists, members of the Academy of Sciences, founders of scientific schools in Moldova: A.V. Ablov (1905-1978) – founder of the coordination compounds chemistry school; Gh. V. Lazurievski (1906-1987) – founder of the organic and bioorganic chemistry school; Iu. S. Lealicov (1909-1976) – founder of the polarographic school, leader of the researches in the field of physico-chemical methods of analysis. New scientific schools were created as well: quantum chemistry - headed by Academician I. Bersuker; organic chemistry, bioorganic chemistry, chemistry of natural and physiologically active compounds - headed by Academician P. Vlad; chemistry of coordination compounds, macrocyclic and supramolecular chemistry - headed by Academician N. Garbalau. ; bioinorganic chemistry - headed by Corresponding Member C. Turtă.</p> <p>Theory and practice of the template synthesis of coordination compounds of transition metals with organic ligands of the helical and macrocyclic types have been developed, among them molecular magnets, photo- and thermoresistant dye-stuff for polymeric materials, catalysts of production processes, dielectrics stabilizers of electrolytes, reagent for ion-selective membranes were found.</p> <p>Theory and practice of the template synthesis of coordination compounds of transition metals with organic ligands of the helical and macrocyclic types have been developed, among them molecular magnets, photo- and thermoresistant dye-stuff for polymeric materials, catalysts of production processes, dielectrics stabilizers of electrolytes, reagent for ion-selective membranes were found.</p> <p>Original methods of the synthesis of some new coordination compounds of biometals with multifunctional ligands have been derived. Among them there are compounds with pronounced anti-tumor, anti-virus, anti-bacterial, anti-dote, antichloroze and psychotropic properties.</p> <p>The scientific school in the field of chemistry of natural compounds is the leader in the study of superacidic electrophilic cyclization of terpenoids. The regularities of such cyclization processes in different classes of terpenic compounds (alcohols, acetate, acids, ethers, phenylsulphones et all.) have been established. The methods for isolation of labdanic diterpenoid sclareol have been elaborated as well as the method for its transformation into odorous compounds important for tobacco industry and perfumery.</p> <p>Technologies of activated carbon production from vegetal raw material and utilization of these</p>

carbon sorbents for detoxification of human organism and in water treatment processes have been elaborated. The selective methods for determining of heavy metals in different environmental matters were realized.

Contact Information	
* Contact person (first name, family name)	Ion Dranca, PhD
* Department / Laboratory	Lab of physical and chemical methods of analysis
* Position	Head of Lab
* Qualification and research experience	Staff-5: 5 PhD; ID: Since September 2006, Postdoctoral research associate with Prof. Raj Sutyaranayanan, Department of Pharmaceutics, University of Minnesota, US, Phone: 612 624 9626, Since April 2003 Research associate position in the Lab of Prof. Vyazovkin at the Chemistry Department of the University of Alabama at Birmingham, US; The Energy Institute of Pennsylvania State University Sept. 2001- Sept. 2002 Research Interests: Thermophysical properties and reactions of polymeric, energetic, and pharmaceutical materials. We study these materials by using a variety of analytical techniques including Mass Spectrometry (MS), Thermogravimetric Analysis (TGA), Differential Scanning Calorimetry, DSC and advanced multifrequency TMDSC (TOPEM [®] by Mettler-Toledo), Dynamic Mechanical Analysis (DMA); optical and scanning electron microscopy, Voltammeters methods. Experience in both local and international, speaking English environment as second language
* Post address (house, street, city, code, country)	3 Academiei Str., Chisinau, MD 2028 MOLDOVA
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International co-operation / Participation in EU RTD programmes or other bilateral / multilateral actions

INTAS, TACIS, TEMPUS, COST, EUREKA, other RTD programmes (please specify programme/s, project title/s and year/s)

Dranca: Fulbright Scholarship, at the Pennsylvania State University, the Energy Institute, USA, Prof. M.Maroto-Valer ,(12 months, 2001-02)

The grant from DAAD, Germany, Research Program, Institute of Ecological Chemistry, Neuherberg-Munich, Prof.Dr.A.Kettrup (October 21, 2002 – December 21, 2002)

The grant from DAAD, Germany, Research Program, Dortmund University, Prof. Dr. H.L-Keller (1998)

Staff member, Dr. Munteanu: Fulbright Scholarship, at the Mississippi (2006-07), USA
The grant from DAAD, Germany, Research Program, Oldenburg University

Work experience at Bucharest University, and P.Poni Macromolecular Chemistry Institute, Iasi Romania

NATO program, Dr. Revenco

Staff member, Dr. Cazacu: Work experience at Cluj University, Romania

	* Please, use "X" to indicate the scientific area/s of your potential project
CHEMISTRY	X Chemistry of Materials, Pharmaceutics, voltammeter methods
SOCIAL AND HUMAN SCIENCES	
ECONOMIC SCIENCES	
ENGINEERING SCIENCE	
ENVIRONMENT	
AGRICULTURE AND FOOD	
HEALTH	
MATHEMATICS	
INFORMATION SCIENCE	
PHYSICS	
NANOTECHNOLOGIES	X Polymer Nanocomposites
ENERGY	
TRANSPORT	
SPACE	

*** Summary of potential research project envisaged hosting of European researcher for the period of between 1 and 2 years**

Title: *Alfa and beta Relaxations in Polymer nanocomposites and Pharmaceutics*

The importance of the low temperature mobility for physical stability of amorphous is well recognized. *Amorphous pharmaceuticals* draw a great deal of interest because of their potential to enhance bioavailability. The study will be conducted to determine the effective activation energies (E) of the relaxation in sub- T_g (β -relaxation) and T_g (α -relaxation or glass transition) regions in different pharmaceutical materials, polymer nanocomposites. Another purpose of the current project: To demonstrate the utility of Differential Scanning Calorimetry (DSC) for determining activation energy landscape in amorphous pharmaceuticals and polymers. DSC instrumentation will be used also to study the α -relaxation (glass transition) as well as β -relaxation (sub- T_g relaxation) in both virgin polymers and *polymer-clay nanocomposites*.

In order to better elucidate a variation of the activation energy throughout the glass transition step an advanced isoconversional method will be employed. Basically, for pharmaceuticals: influence of moisture, glass transition, melting (isothermal step melting point) crystallization behavior, polymorphism, drying, and heat capacity decomposition behavior, stability will be investigated. An advanced TOPEM model for temperature modulated DSC data will be employed for pharmaceuticals and polymers. Additionally, will be performed synthesis and comprehensive thermal analysis of copolymers from carbazolyethylmetacrilate for electrography and nanocomponents for carbazolic polymers with polyiodomethan as a photoresistive materials.

The relaxation processes in polymers and pharmaceuticals will be characterized by determining the effective activation energy (E) and evaluating the size of cooperatively rearranging regions (SCR) at the glass transition (V_g).

Due to the fact, that the importance of reliable kinetic analysis cannot be overestimated as it may provide information on the energy barriers of the process as well as offer mechanistic clues. So, we intend to initiate at the Chemistry Institute, Moldova systematic kinetic studies of polymer nanocomposites obtained in the laboratories of organic chemistry.

Recycling of PET By using thermal analysis instrumentation DSC and TGA the values of T_g (glass transition temperature) T_c (crystallization temperature) and T_m (melting point temperature) will be investigated to make a contribution in recycling of post-consumer PET (POSTC-PET).

	Please, confirm your agreement on data publication and dissemination
I agree with the publication of the data on the web-site http://www.inco-ecca.net , and dissemination among Mobility National Contact Points of the EU MS and AC (YES / NO)	YES
Date June 12, 2008	