

# PARDAM

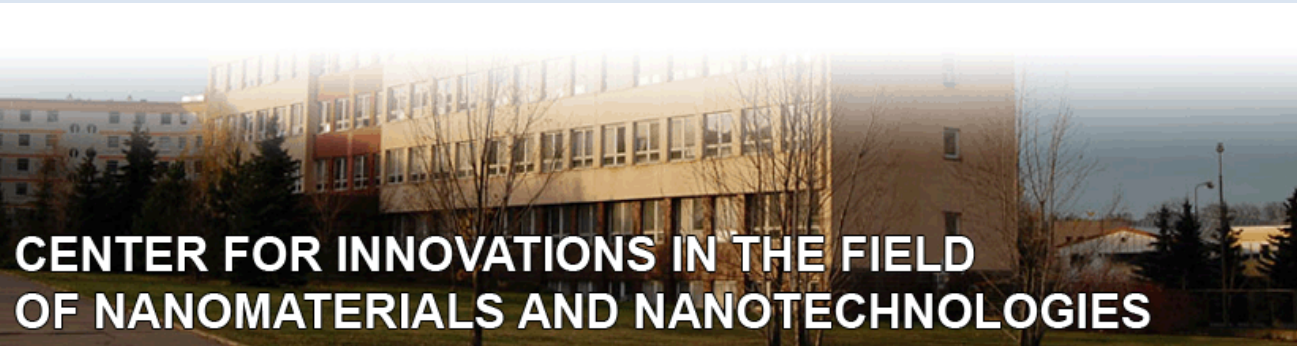
## Visit of students from Lodz University of Technology February 28, 2012



Common program organized by Pardam company  
and J. Heyrovský Institute of Physical Chemistry of AS CR (JHI)  
App. 35 participants from Lodz University of Technology.  
Organizers: Dr. Květa Stejskalová (JHI), Dr. Jan Buk (Pardam, s.r.o.)

<http://www.pardam.cz>; <http://www.jh-inst.cas.cz>; <http://www.kertaknanotechnology.com>; <http://www.p.lodz.pl/en>

3 groups of students (10-12 students in a group)	9:00 – 9:45	10:00 – 10:45	10:45 – 11:00	11:00 – 11:25	11:30 – 11:55	12:00 – 12:25
<b>Group 1</b> (guide - PGS student A. Havlík)	Lecture hall  Jaroslava Morávková / Jan Buk	Lecture hall  Eva Kudrnová	Lecture hall  Květa Stejskalová	Visit of laboratory of synthesis and catalysis in the 3rd and the 5th floor, Mgr. Chlubná and Dr. Kubů, start in room 304.	Visit of group of clusters in molecular beams (Dr. Fárník - room 01, basement)	Visit of Pardam laboratory in the 6th floor (room 625 and 605) Jaroslava Morávková
<b>Group 2</b> (guide Dr.K. Stejskalová)	Kertak  Company presentation	Technological Centre of the Czech Academy of Sciences  Support for Czech companies	Science in JHI Short introduction to research of JHI in the field of physical chemistry.....	Visit of laboratory of photocatalysis in Center for innovations, Dr. Rathouský, start in room 612, the 6th floor.	Visit of Pardam laboratory in the 6th floor (room 625 and 605) Jaroslava Morávková	Visit of group of mass spectrometry-analysis of human breath (prof. Španěl - room 217, the 2nd floor)
<b>Group 3</b> (guide - PGS student M. Klusáčková)	(break 15 minutes)			Visit of Pardam laboratory in the 6th floor (room 625 and 605) Jaroslava Morávková	Visit of group of mass spectrometry-analysis of human breath (prof. Španěl - room 217, the 2nd floor)	Visit of group of clusters in molecular beams (Dr. Fárník - room 01, basement)



### CENTER FOR INNOVATIONS IN THE FIELD OF NANOMATERIALS AND NANOTECHNOLOGIES



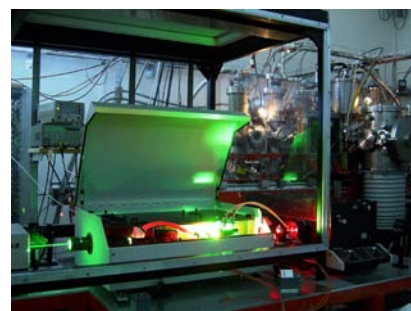
## Visit of some laboratories of the J. Heyrovsky Institute of Physical Chemistry of the AS CR, Prague

February 28, 2012

### **Laboratory of the clusters in molecular beams (Dr. M. Fárník)**

Structure and dynamics of various molecular clusters. The research focuses on: (i) rare-gas clusters as model systems for cluster ionization and fragmentation studies; (ii) hydrogen bonded clusters important in physics, chemistry and biology; (iii) clusters of atmospheric relevance (e.g., acidic dissociation of HCl in mixed HCl/H<sub>2</sub>O clusters); (iv) heterogeneous clusters with embedded foreign species.

<http://www.jh-inst.cas.cz/~farnik/>



### **Laboratory of the SIFT and mass spectrometry - analysis of human breath (prof. P. Španěl, Dr. K. Dryahina)**

Research of fundamentals of selected ion flow tube mass spectrometry for trace gas analysis, SIFT-MS. Interdisciplinary studies using this method in biology, physiology and environmental and planetary science. Experimental studies of ion-molecule reaction kinetics required for absolute SIFT-MS quantification.

Application of mass spectrometry to structural studies of organic, bioorganic and organometallic compounds, and of mechanisms of ionization and fragmentation processes. Kinetic studies of the gas-phase radicals and molecules using variable-time neutralization-reionization mass spectrometry; experimental and theoretical studies of structure and reactivity of nitrocompound cations; organometallic mass spectrometry.

<http://www.jh-inst.cas.cz/~spanel/>



### **Laboratory of photocatalysis in Center of Innovations (Dr. J. Rathouský)**

Laboratories of photocatalysis are oriented towards: (i) Mechanistic studies of photocatalytic mineralization of model molecules and environmental pollutants. (ii) Development of photocatalysts and photocatalytic devices for purification of water and air.

<http://www.jh-inst.cas.cz/nanocentrum>



### **Department of Synthesis and Catalysis - laboratory of zeolites (prof. J. Čejka, Mgr. P. Chlubná)**

Synthesis and characterization of zeolites and mesoporous molecular sieves and their application in adsorption and catalysis centered on petrochemical applications and synthesis of fine chemicals. The main task is to understand the general relationship among the structure of molecular sieve catalysts, structure and properties of catalytically active sites and conversion and selectivity in transformations of

aromatic hydrocarbons, acylation reactions, oxidations with hydrogen peroxide, metathesis of olefins and unsaturated esters or ethers, and reactions leading to formations of new C-C bonds.

Laboratory is oriented towards: (i) Synthesis of zeolites, zeotypes, mesoporous molecular sieves and hierarchic materials combining micro and meso porosity. (ii) Adsorption of carbon dioxide, hydrogen and organic vapours on advanced molecular sieves. (iii) Catalytic application of zeolites, mesoporous molecular sieves and hierarchic materials

<http://www.zeolites.cz/>



## J. Heyrovský Institute of Physical Chemistry of the ASCR, v. v. i. (<http://www.jh-inst.cas.cz>)

**The Institute is a centre of fundamental research in physical chemistry, electrochemistry and chemical physics.**

*The research work is characterized by many cross-links both within the Institute and also with other institutions in Europe, the U.S.A., Japan and other parts of the world. Much of the scientific work is concerned with fundamental research, but several groups, in particular in catalysis and electrochemistry, are also making contributions in more applied aspects. Besides the research activities the Institute is strongly involved in training of both undergraduate and graduate students, supervising their diploma and Ph.D. theses, and in teaching at universities.*

**There is long tradition of electrochemistry in the J. Heyrovsky Institute. The award of Nobel Prize for Chemistry to Professor Heyrovsky in 1959 was strong to develop and study different methods of electroanalysis.** At the present time the J. Heyrovský Institute has covers much broader activity, which includes: theory of chemical bond, quantum chemistry, organometallic chemistry, adsorption and heterogeneous catalysis and also electron and molecular spectroscopy. The main research area is the investigation of new materials with specific properties, modelling of biological processes, studies of nanostructures and novel nanomaterials according to trends in European research policy. A characteristic advantage of the Institute is its multidisciplinary allowing complex solutions of research projects and close connections between theoretical and experimental work. The J. Heyrovsky Institute thus gains the extraordinary ability of detailed analysis of physicochemical processes on molecular level, which leads to understanding of the essence of these processes and to optimization of their utilization.

Recently the J. Heyrovský Institute has been declared as one of three best scientific institutes of Academy of Sciences. All its history represents a leading Central-European research centre. This conclusion has been repetitively confirmed by regular action of the International Advisory board, which takes place every two years. There is also a number of internationally recognised scientists, therefore I would have a good chance for scientific discussion and exchange.

International cooperation is an integral part of the research and the Institute cooperates with universities and research institutions all over the world. It can be demonstrated by a number of finished and running International grants and projects.

In the Institute work at present about 155 full-time employees and approximately 45 graduate students. Roughly 70 per cent of the personnel are engaged in research (in 8 departments), the remaining staff provides technical and administrative services. Members of the Institute publish each year approximately 200 research papers, for the most part in impacted international journals, several books or chapters in monographs, and a number of communications in proceedings of scientific meetings.

In addition to the research activities in the fields of physical and analytical chemistry and chemical physics, the Institute meets the social, cultural or economic needs of the Czech Republic by raising the level of knowledge and education in the Czech Republic, by the exploitation of the results of scientific research in practical applications, by organizing the scientific research in the Czech Republic and EU, and by improving the visibility of the research in the Czech Republic worldwide. In particular, the members of all departments of the Institute:

- (a) acquire, process and disseminate scientific information in top level scientific publications (journals, monographs, conference proceedings),
- (b) provide scientific assessments, professional opinions, recommendations, consulting and advisory services to the academic and/or industrial communities,
- (c) participate in the evaluation panels of the grant agencies, or in various professional national and international societies, or in the scientific councils of universities
- (d) participate in the research projects with a strong applied aspect comprising the industrial partners from both the Czech Republic and EU,
- (e) in cooperation with universities, they supervise doctoral studies (several PhD students obtained prestigious national awards for their outstanding achievements) and provides training for a high number of undergraduates,
- (f) provide lecture courses, practical exercises and student practices for students of both secondary (high) schools and universities,
- (g) promote international cooperation, including the organization of joint research projects with foreign partners, and participate in exchange scientific programs,
- (h) organize scientific meetings, conferences, seminars and lectures at the national and international levels.

Besides, the Institute provides the infrastructure for research including accommodation for its employees and guests, and has an ambitious plan for the popularization of science and the results of the research activities through its own webpages, and the radio and TV programs.

