

Department of Aerosols and Laser Studies

HEAD

VLADIMÍR ŽDÍMAL

DEPUTY

RADEK FAJGAR

RESEARCH STAFF

IRENA BENEŠOVÁ ŠEVČÍKOVÁ, DAVID BRUS, VLADISLAV DŘÍNEK, ANNA GALÍKOVÁ, JOSEF KUGLER, VALERI V. LEVDANSKI, PAVEL MORAVEC, JAKUB ONDRÁČEK, LUCIE ONDRÁČKOVÁ (DŽUMBOVÁ), DANA POKORNÁ, JOSEF POLA, JAROSLAV SCHWARZ, JIŘÍ SMOLÍK, TEREZA TRÁVNÍČKOVÁ, MARKÉTA URBANOVÁ, PETR VODIČKA

Part time: JAROSLAV KUPČÍK, PAVEL STOPKA

PHD STUDENTS

VĚRA JANDOVÁ, TOMÁŠ KŘENEK, LUDMILA MAŠKOVÁ (ANDĚLOVÁ), DANIELA ŘIMNÁČOVÁ, LENKA ŠKRABALOVÁ, LUCIA ŠTEFANCOVÁ, NADĚŽDA ZÍKOVÁ

TECHNICAL STAFF

DARIA BARTLOVÁ

Fields of research

- Composition, size and hygroscopicity of atmospheric aerosols
- Indoor/outdoor aerosols
- Nucleation phenomena
- Synthesis of nanoparticles *via* aerosol processes
- Heat and mass transfer in aerosol systems
- Interaction of aerosols with electromagnetic radiation
- Combustion aerosols
- Emissions sampling
- IR and UV laser induced chemistry
- Chemical vapour deposition of novel Si-, Ge- and C-based nanostructured materials
- IR laser-induced carbothermal reduction of oxides
- IR and UV laser photopolymerization in the gas phase
- UV laser chemical liquid deposition of metal nanosols and nanocomposites
- CVD of nanostructured objects (nanowires, nanoplatelets)
- IR and UV laser deposition of TiO₂-based materials

Research projects

Development and application of new experimental methods to measure heterogeneous particles in superheated steam

(V. Ždímal, joint project with CTU and Institute of Thermomechanics of the ASCR, v. v. i., supported by GACR, grant No. GA101/09/1633)

The aim of the project is to determine some properties of heterogeneous nuclei present in the superheated steam of steam turbines. In this project, the sampling device, coupled to advanced aerosol instrumentation (condensation particle counter, scanning mobility particle sizer), was used to measure heterogeneous particles at selected power stations. To enable measurements of particles down to about 1 nm, a fast expansion chamber was developed, enabling resolution of particle size by variable supersaturation. Collected data are served as a basis for understanding the transport and the state of agglomeration of chemicals present in the steam circuit, for quantifying their effect on condensation, and, consequently, on the efficiency and reliability of steam turbines. [Refs. 17-19, 51, 59, 60, 62-64, 66, 92]



Aerosol sampling train connected to the turbine at thermal power plant Pruněřov II

Thermophysical properties of water in unexplored, technologically significant regions

(V. Ždímal, joint project with Institute of Thermomechanics of the ASCR, v. v. i., CTU, and University of West Bohemia, Plzeň, supported by ASCR, grant No. IAA4200760905)

This project was focused primarily on liquid water and solutions of selected salts below the freezing point (supercooled water), and water in nano-droplets. Existing hypotheses include the possibility of phase separation of supercooled water into two liquid phases below the second critical point. Density of supercooled water is only known at 0.1 MPa. Suggested measurements up to 100 MPa are providing first data. A new method and apparatus have been developed. The surface tension of supercooled water and a salt solution was measured. The surface tension of nano-droplets was estimated from nucleation experiments. A range of theoretical approaches including phenomenological methods, simplified microscopic models, and molecular simulations, has been used with experimental data to obtain fundamental findings and engineering models. [Refs. 2, 3, 17, 19, 59, 60, 64, 65]

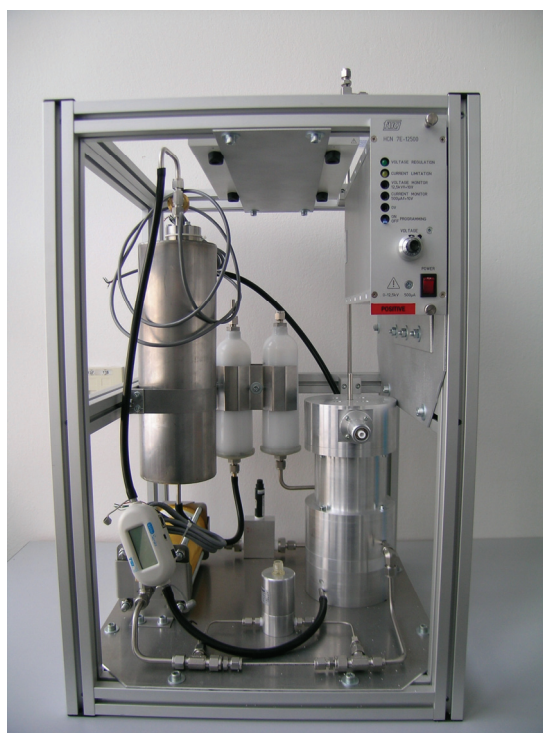


Thermal diffusion cloud chamber built at the ICPF - on the optical bench

New ways to synthesize nanoparticles of various oxides

(V. Ždímal, joint project with the ICT and Spolchemie a.s., supported by the MIT-FR, grant No. FR-TI1/548, 2009-2012)

The aim of the project is to seek new ways how to synthesize nanoparticles of various oxides, characterize produced particles and perform a process scale-up. [Refs. 18, 56, 61, 84]



Electrostatic classifier built at the ICPF for separation of aerosol nanoparticles

European supersites for atmospheric aerosol research (EUSAAR)

(J. Schwarz, supported by European Commission, project No. FP6-026140-EUSAAR)

European infrastructure project EUSAAR is focused on improving the current state of aerosol measurement on European supersites for atmospheric aerosol measurement. This aim is being reached by dissemination of knowledge from basic technical level to setting-up a state of the art of experimental methods on selected sites. QA/QC procedures, intercalibration

of both basic and advanced measurement methods together with development of new aerosol instrumentation are the ways to fulfill the aims of the project. [Refs. 77, 88, 90, 91]

EUSAAR Sixth Framework Programme

European Supersites for Atmospheric Aerosol Research

➤ Network of 20 high-quality ground-based research infrastructures in Europe.

➤ High level of implemented instrumentation for studying the chemical, physical and optical properties of atmospheric aerosols.

Trans-National Access to 11 supersites:

- free use of instrumental facilities at the research station,
- administrative support (e.g., customs, transport),
- on-site logistic support by infrastructure staff.

Call for Transnational Access
⇒ www.eusaar.net

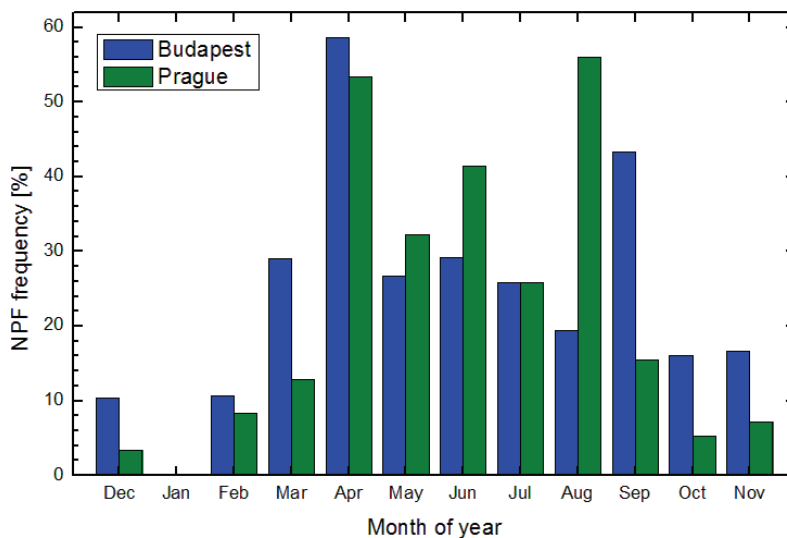
Project Coordination: Prof. A. FLOSSMANN / Dr. P.LAJ, CNRS-LaMP/UBP, Clermont-Ferrand, France • Contact: eusaar@opgc.univ-bpclermont.fr • Information: www.eusaar.net

Koštice supersite (OBK) as a part of European supersites for atmospheric aerosol research

Similarities and differences of ultrafine urban aerosol in Budapest and Prague

(J. Schwarz, supported by MEYS, KONTAKT Mobility project No. MEB 040916)

The main objectives of the project are to determine the concentrations, size distributions and other relevant properties of the ultrafine aerosol particles in Budapest and Prague, to intercompare the measuring results and conclusions for both capitals in order to identify general properties and specialities, to assess the relationships between the size distribution and deposition in the human respiratory system for the ultrafine aerosol, and to study the dynamics of the new aerosol particle formation and growth including specialities in Budapest and Prague.

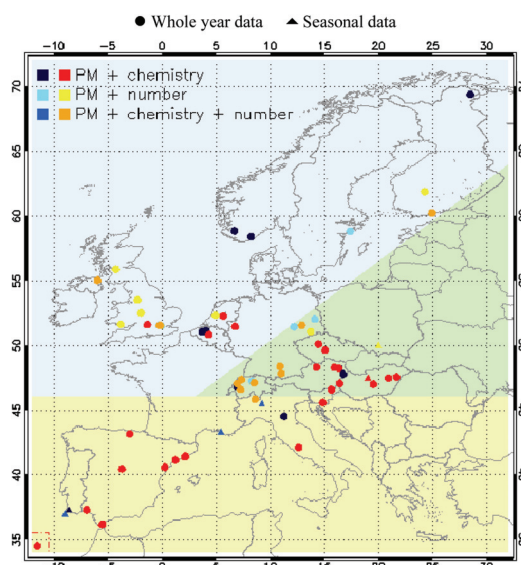


Nucleation frequency during one-year measurement period in Prague and Budapest

Comparison of aerosol composition, source region profiles and types observed in 1994 and 2009 at rural background site in Central Europe

(J. Schwarz, joint project with Nuclear Physics Institute of the ASCR, v. v. i., supported by GACR, grant No. GA205/09/2055)

The objectives of project can be summarized as follows: Atmospheric aerosol elemental composition on daily based samples are analyzed using high sensitive non-destructive multi-elemental analytical technique (Proton Induced X-ray Emission PIXE), using multivariate statistical methods the main aerosol source types and their elemental profiles as well as magnitude of their influence on receptor site are identified. Main source regions and their impact on regional air quality are studied by combining the aerosol composition analysis with air mass transport history study. The obtained results are compared with data available from 1990s to assess the impact of economical and structural changes in Central European economy on air pollution. [Refs. 31, 36, 74, 79, 86, 87]

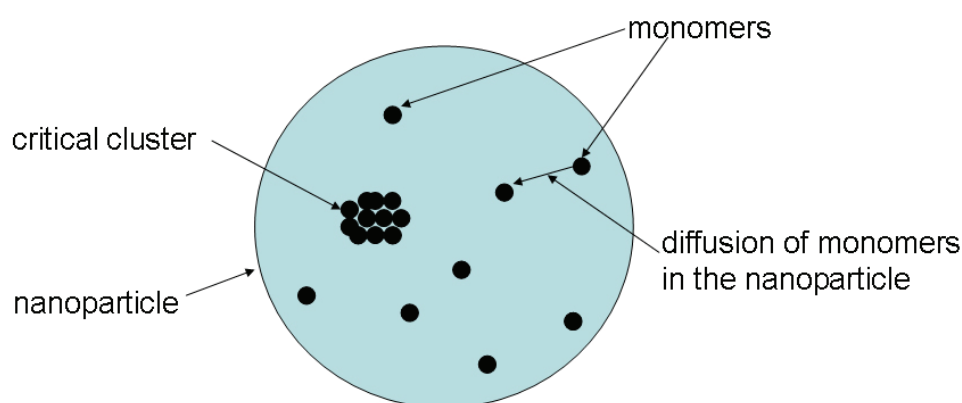


Location of the sampling sites. The pastel background colours delimit the 3 geographical sectors Northwestern, Southern, and Central Europe

Influence of surface processes and electromagnetic radiation on transfer phenomena in aerosol systems with nanoparticles and porous bodies with nanopores

(V.V. Levdanski, supported by ASCR, grant No. IAA400720804)

Aims of the project is to perform a theoretical study of the influence of surface processes, size effects and electromagnetic radiation on transfer phenomena in aerosol systems with nanoparticles and in capillary-porous bodies with nanoscale pores taking into account physicochemical transformations on the particle and pore surface. Study of the joint influence of size effects, electric charge and adsorbable foreign gases on formation of nanoparticles was made as well. Novel methods of the membrane purification of gases under influence of resonance radiation were considered. The effect of radiation on mass transfer and storage of hydrogen in metallic nanoparticles was investigated. The influence of electromagnetic radiation on coagulation, coalescence of nanoparticles and their deposition on a surface has been observed. [Refs. 16-19, 59-66]

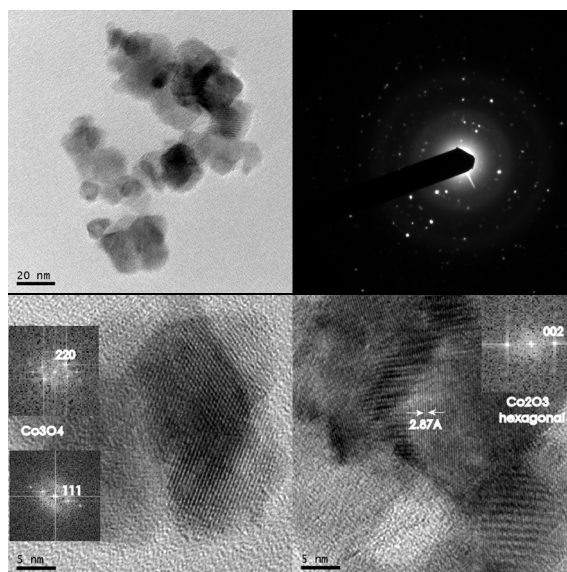


The size dependence of nucleation rate

Composite nanoparticle synthesis by an aerosol process

(P. Moravec, joint project with IIC, and Tampere University of Technology, Finland, supported by GACR, grant No. GA104/07/1093)

Project involves an experimental study of nanoparticle synthesis by chemical vapour condensation method in an externally heated tube flow reactor. In the first part of the project: (i) single component metal and ceramic particles (Co, Ni, Pd, MnO) with great potential of applications are prepared by thermal decomposition of corresponding metal-organic compounds. In the next step: (ii) binary mixed or coated metal-ceramic particles ($\text{TiO}_2\text{-Co}$, $\text{Al}_2\text{O}_3\text{-Ni}$, $\text{Al}_2\text{O}_3\text{-Pd}$) with potential use as catalyst and binary metal-ceramic (Co-SiO_2) and ceramic-ceramic (MnO-SiO_2) particles with potential applications as gas sensors or in electronics are prepared by simultaneous decomposition of two precursors. Particle morphology, crystallinity, and chemical composition were examined by SEM, TEM, SAED, XRD, EDS, etc. Results obtained in a hot wall reactor have been compared with those from experiments with liquid flame spray reactor at Tampere University of Technology. [Refs. 15, 23, 58, 61-63, 66, 71, 72]

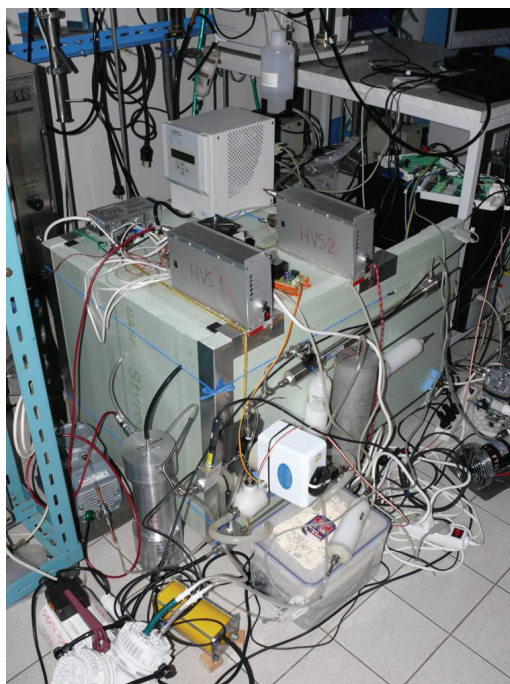


HRTEM images and SAED pattern of CoO_x nanoparticles synthesized by oxidation of CoAA

European integrated project on aerosol cloud climate and air quality interactions (EUCAARI)

(J. Smolík, supported by EC, project No. FP6-036833-2-EUCAARI)

European infrastructure project EUCAARI is designed as a research chain that aims to advance our understanding of climate and air quality through a series of connected activities beginning at the molecular scale and finishing at the regional and global scale. EUCAARI is build upon the pool of available data from previous field campaigns and long-term measurements in order to establish globally consistent data sets. A hierarchy of complementary models, at the molecular, process, meso-, regional and global scales has been applied in a coordinated way in EUCAARI. [Refs. 11, 12, 78, 89]



Hygroscopic Tandem Differential Mobility Analyzer (HTDMA) for measurements of hygroscopic properties of atmospheric aerosol particles

Improvement of the assessment methods of ambient air pollution loads of PM₁₀ in the Czech Republic

(J. Smolík, joint project with Czech Hydrometeorological Institute, and Norwegian Institute for Air Research, supported by Norwegian Funds (via Ministry of Finance of the CR), project No. CZ 0049)

The aim of the project is to improve the characterization of PM₁₀ suspended particles with the focus on secondary particle contribution, proposal of chemical model of secondary particles formation, identification of sources, and application and verification of dispersion models. The project provides direct support to the improvement of ambient air quality in the Czech Republic, respects the principle of air pollution prevention and meets the conception of sustainable development. [Refs. 2, 4, 8, 9, 10, 21, 35, 41, 42, 52, 69]

Determination of chemical and toxicological properties of suspended particles and study of their formation

(J. Smolík, joint project with Czech Hydrometeorological Institute, Technical Services for Air Protection, Institute of Analytical Chemistry of the ASCR, National Institute of Public Health, and TU of Ostrava, supported by Ministry of Environment, grant No. SP/1A3/148/08)

The aim of the proposed project is to suggest possible legal measures to decrease level of atmospheric aerosol burden in the Czech Republic. The sampling and chemical analysis of both particulate emissions and immissions at several types of sources and places in the Czech Republic, statistical analysis of the results and toxicological characterization of particles have been used to fulfill the aim of the project. [Ref. 34, 47-50, 53, 55, 73, 78, 80]

Chemical interactions between cultural artefacts and indoor environment (EnviArt)

(J. Smolík, supported by European Science Foundation (ESF), COST Action D42)

The aim of EnviArt is to explore chemical interactions between cultural artefacts and typical indoor environmental conditions through field studies and laboratory experiments and transfer the results into preventive conservation practice. The Action focuses on the chemical impact of pollutants on materials, thus also considering physical and environmental aspects, materials technology, chemical analytics, emission and standardization.

Environmental monitoring and evaluation of tolerability of indoor environment in the Baroque Library Hall of the National Library

(J. Smolík, joint project with National Library in Prague and Norwegian Institute for Air Research, supported by Norwegian Funds (via Ministry of Finance of CR), project No. A/CZ 0046/2/0001)

The main goal of the project is detailed characterization of indoor air pollution in the Baroque Library Hall of the National Library Hall in Prague. The research is focused both on gaseous pollutants and particulate matter (PM), including the estimation of outdoor and indoor sources contribution. [Refs. 1, 20, 43, 44, 67, 68, 70, 75, 81-83, 85]



Measurements in Baroque Library Hall of the National Library Hall in Prague

Detailed characterization of particulate matter in the indoor environment of the National Library in Prague

(J. Smolík, supported by MEYS, grant No. OC09049)

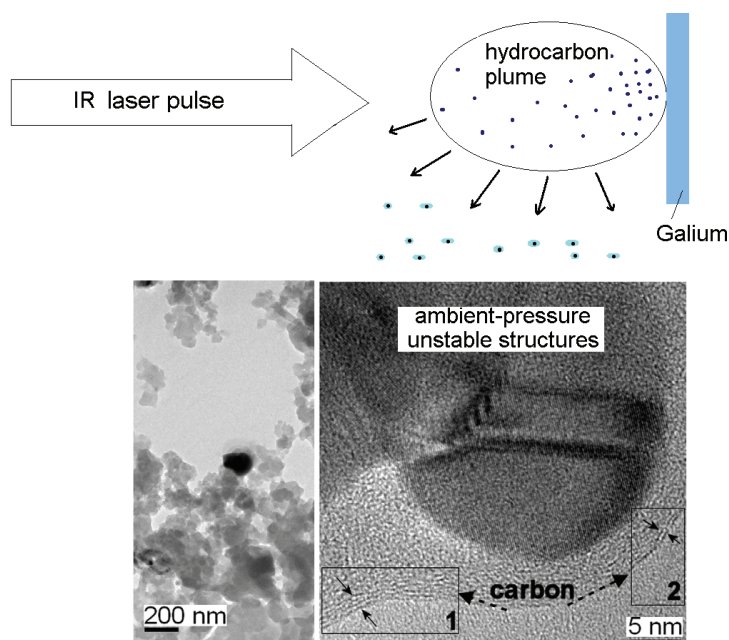
The aim of the project is detailed characterization of size-resolved PM in the indoor environment of the National Library in Prague, with possible effects on deposited books and manuscripts and estimation of contribution of typical activities indoors [Refs. 1, 36, 43, 44, 70, 75, 81-83, 85].

New laser induced process for production of novel carbon-based nanomaterials and carbon-based nanomaterials with incorporated Si, N, and B heteroatoms

(J. Pola, supported by ASCR, grant No. IAA400720619)

MW and GW UV laser-induced photolysis of gaseous benzene, toluene, pyridine and acetylene has been demonstrated as a process leading to transient polyacetylenes and cumulenes and yielding nanostructured carbon soot whose properties depend on the precursor. Simultaneous back-side etching of silica adjacent to laser-induced plasma enables to enrich the soot with polyoxocarbosilane. The process was previously shown as capable of chemical vapour deposition of composites containing nanodomains of very rare chaoite in amorphous C/Si/O/N phase, conversion of silica into nanosized carbon-polyoxocarbosilane composites, or deposition of for the first time prepared nanosized silicon oxycarbide. Our studies have been continuing in 2009 by exploration of (i) chemical vapour deposition of Co-C films through concurrent IR laser-induced ablation of metals and adjacent dielectric breakdown in gaseous hydrocarbons and (ii) studies on chemical vapour deposition of ultrafine Cl-substituted carbonaceous powders by using intense UV laser photolysis of dichloroethenes. The former process affords deposition of Co, Co₂C and Co₃C nanograins

embedded in a shell of hexagonal graphite and amorphous sp^3 -hybridized carbonaceous matrix, and the latter process results in deposition of novel nanoscopic Cl-substituted hydrogenated carbon that has a potential for structural modification of carbon materials at the C-Cl bonds. [Refs. 25-29, 33, 45, 46, 54, 76]

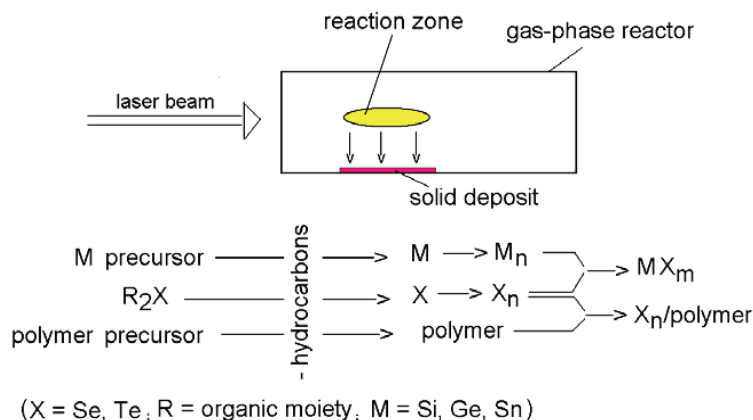


High-resolution transmission electron microscopy (HRTEM) images of the film deposited from benzene showing cubic Ga nanograins covered with curved carbon environment

Green chalcogenation of metals by laser-prepared poly(silachalcogenide)

(J. Pola, supported by GACR, grant No. GA203/09/0931)

IR and UV laser co-photolysis of silane and thirane has been studied to explore chemical vapour deposition and reactivity of poly(silathiane) towards selected metal surfaces. The poly-(silathiane) formation in the gas phase and deposition on metal surfaces was found out as a feasible process, but sulfidation of metal surfaces by this inorganic polymer reagent appears to be restricted to thin polymer-metal interphase and Cu and Bi only. Raman spectral studies confirm this conclusion. The experimental study was preceded by literature search and compiling the data on laser deposition of nanostructured Se- and Te-based materials. [Ref. 30]



Scheme of decomposition, agglomeration and reaction/interaction between the decomposition products

IR Laser gas-phase deposition of metastable binary alloys from volatile Si, Ge and Sn precursors

(J. Pola, supported by ICPF)

IR laser-induced co-decomposition of binary gaseous mixtures of MH_4 and $M(CH_3)_4$ ($M = Si, Ge, Sn$) has been recognized as a novel process for gas-phase deposition of M elements alloys. The process is initiated in dielectric breakdown or by infrared multiple photon absorption in IR radiation absorbing gas and it involves extrusion and coalescence of M elements and cooling of their nanosized metastable alloys in the gas phase within short laser pulses. This one-step process represents a simple approach for synthesis of nanosized metastable alloys. [Refs. 13, 14, 24, 32, 37, 40, 57]

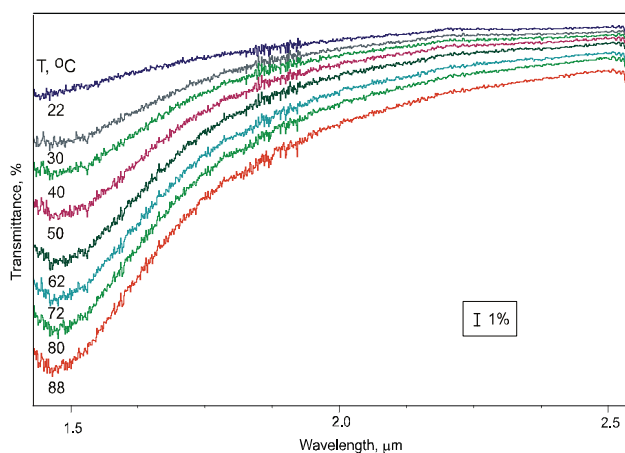


SEM of deposit obtained by laser-induced decomposition of Me_4Sn and simultaneous ablation of Au target

Preparation of Ti/O/Si based photocatalysts by laser induced CVD and sol-gel technique

(R. Fajgar, supported by GACR, grant No. GA203/09/1117)

UV laser-induced ablation of titanium and vanadium dioxide targets was used to prepare multilayer films of non-stoichiometric Ti/O/V films. The films, deposited on glass substrates were studied by means of microscopy, spectroscopy and diffraction techniques. Annealing up to 450 °C leads to formation of mixed-oxide layers. The films possess good adhesion to the glass substrate and revealed photochromic properties in NIR region. SnO_2/TiO_2 nanoparticles were prepared by laser-induced oxidation of tetramethyltin and titanium tetraisopropoxide. The oxidation shows an explosive course and direct formation of SnO_2/TiO_2 and SnO/TiO_2 nano-particles was observed. The nanoparticles with diameter up to 50 nm were characterized and sensoric properties were studied. [Refs. 5, 22, 38, 39]

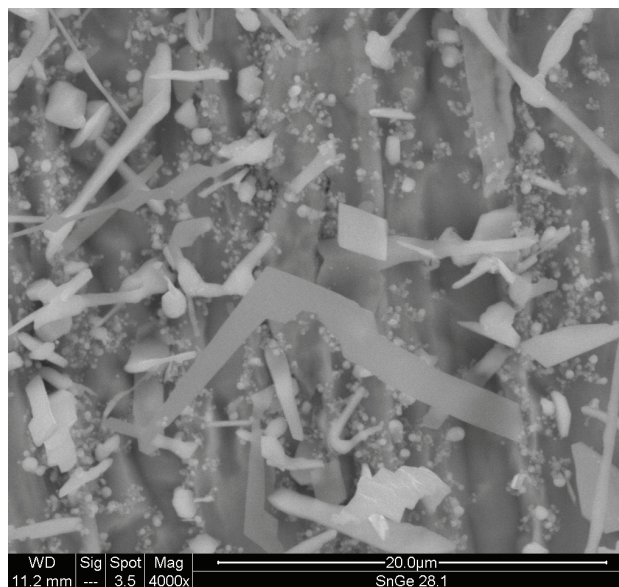


Temperature dependence of transmission spectra of the prepared Ti/O/V film in the NIR region

Preparation of nanostructured Si/Ge/C deposits

(V. Dřínek, supported by GACR, grant No. GA203/09/1088)

Nanoplatelets made of Cu_xGe_y material were prepared using Low Pressure Chemical Vapour Deposition (LPCVD) of SnMe_4 and Ge_2Me_6 . They were represented in rhombohedral and hexagonal forms. Along with nanoplatelets, Ge nanoparticles were observed as well. They grew from CuSn seeds. Nanoplates were formed on copper sheets using precursor mixture of ethylsilane and hexamethyldigermane. The areas of nanoplates are up to thousands square microns and thickness about 50 nm. EDX analysis revealed $\text{Cu}_3\text{Si}_{0.5}\text{Ge}_{0.5}$ composition. Along with nanoplates, Cu/Si/Ge nanowires were formed. [Refs. 6, 7]



SEM picture of Cu_3Ge nanoplatelets

International co-operations

Centre of Molecular and Macromolecular Studies, Polish Academy of Sciences, Lodź, Poland: UV laser-induced cross-linking of polysiloxanes

Division of Nuclear Physics, Department of Physics, Lund University, Lund, Sweden
Faculty of Technology and Metallurgy, University of St. Cyril & Methodius, Skopje, R.

Macedonia: Novel preparation and photocatalytic study of titania-based catalysts

Finnish Meteorological Institute, Helsinki, Finland: Studies on homogeneous nucleation using diffusion chambers

Ghent University, Institute for Nuclear Sciences, Ghent, Belgium: OC/EC in urban and suburban PM₁₀ aerosol in Prague, Hygroscopic properties of urban and suburban carbonaceous aerosols

Institute of Environmental Engineering, National Chiao Tung University, Hsinchu, Taiwan

Instituto de Estructura de la Materia, CSIC, Madrid, Spain: Studies on IR laser deposition of nanosized metal chalcogenides and polycarbosilathianes

King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia: Laser degradation of contaminants in fuel oils

Laboratory of Atmospheric Chemistry, Paul Scherrer Institut, Switzerland

National Institute for Lasers, Plasma and Radiation Physics, Bucharest, Romania: Laser-induced CVD of Fe/polymer nanocomposites

National Institute of Advanced Industrial Research and Technology, Tsukuba, Japan: Laser control of organic reactions
Norwegian Institute for Air Research, Kjeller, Norway: Indoor aerosol behaviour
Philipps-Universität Marburg, Marburg, Germany: Experimental study of homogeneous nucleation in supersaturated vapours
POLYMAT, Institute for Polymer Materials, San Sebastian, Spain
Southern Illinois University Carbondale, Carbondale, IL, USA: Friction materials based on polymer matrix containing metals and their impact on environment
Technical University of Crete, Chania, Greece: Aerosols in the environment
Tampere University of Technology, Tampere, Finland: Synthesis and characterization of nanosized metal/ceramic particles
University of Eastern Finland, Kuopio, Finland: Novel aerosol generation processes focused on medical treatment and nanotechnology
University of Helsinki, Division of Atmospheric Sciences, Helsinki, Finland
University of Crete, Heraklion, Greece: Laser induced chemical vapour deposition of polycarbosilathianes

Visits abroad

D. Brus: Finnish Meteorological Institute, Helsinki, Finland (12 months)
J. Ondráček: Institute of Environmental Engineering, National Chiao Tung University, Hsinchu, Taiwan (1 month)

Visitors

J. Blazevska-Gilev, University of St. Cyril & Methodius, Skopje, R. Macedonia
M.A. Gondal, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia
T. Hussein, University of Helsinki, Helsinki, Finland
Nguyen Cuu Khoa, Institute of Chemical Technology, VAST, Ho Chi Minh City, Vietnam
Nguyen Thanh Danh, Institute of Chemical Technology, VAST, Ho Chi Minh City, Vietnam
V. Nororos, University of Helsinki, Helsinki, Finland
M.N. Siddiqui, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia
Ta Anh Tuan, HCM City Institute of Physics, VAST, Ho Chi Minh City, Vietnam

Teaching

V. Ždímal: Faculty of Mathematics and Physics, CU, postgraduate course: “Aerosol Engineering”
V. Ždímal: ICT, Faculty of Chemical Engineering, postgraduate course “Aerosol Engineering”

Publications

Original papers

- [1] Andělová L., Smolík J., Ondráčková L., Ondráček J., López-Aparicio S., Grontoft T., Stankiewicz J.: Characterization of Airborne Particles in the Baroque Hall of the National Library in Prague. (Eng) e-Preservation Sci. 7, 141-146 (2010).

- [2] Brus D., Hyvärinen A.-P., Viisanen Y., Kulmala M., Lihavainen H.: Homogeneous Nucleation of Sulfuric Acid and Water Mixture: Experimental Setup and First Results. (Eng) *Atmos. Chem. Phys.* 10(6), 2631-2641 (2010).
- [3] Brus D., Ždímal V.: Role kyseliny sírové v atmosférické nukleaci. (Czech) The Role of Sulphuric Acid in Atmospheric Nucleation. *Chemagazín* 20(3), 6-7 (2010).
- [4] Chen S.-Ch., Tsai Ch.-J., Huang Ch.-Yu, Chen H.-D., Chen S.-J., Lin Ch.-Ch., Tsai J.-H., Chou Ch.C.K., Lung S.-Ch., Huang W.-Ru, Smolík J., Džumbová L.: Chemical Mass Closure and Chemical Characteristics of Ambient PM_{0.1}, PM_{2.5} and PM₁₀ in a Highway Tunnel and at a Roadside. (Eng) *Aerosol Sci. Technol.*, 44(9), 713-723 (2010).
- [5] Danilovska V., Blazevska-Gilev J., Dimova V., Fajgar R., Tomovska R.: UV Light Induced Surface Modification of HDPE Films with Bioactive Compounds. (Eng) *Appl. Surf. Sci.* 256(7), 2276-2283 (2010).
- [6] Dřínek V., Fajgar R., Klementová M., Šubrt J.: Deposition of Germanium Nanowires from Hexamethyldigermane: Influence of the Substrate Pretreatment. (Eng) *J. Electrochem. Soc.* 157(10), K218-K222 (2010).
- [7] Dřínek V., Šubrt J., Klementová M., Fajgar R.: Chemical Route for Si/C Coated Germanium Nanowires. (Eng) *J. Anal. Appl. Pyrolysis* 89(2), 255-260 (2010).
- [8] Glytsos T., Ondráček J., Džumbová L., Kopanakis I., Lazaridis M.: Characterization of Particulate Matter Concentrations during Controlled Indoor Activities. (Eng) *Atmos. Environ.* 44(12), 1539-1549 (2010).
- [9] Herrmann E., Brus D., Hyvärinen A.-P., Stratmann F., Wilck M., Lihavainen H., Kulmala M.: A Computational Fluid Dynamics Approach to Nucleation in the Water-Sulfuric Acid System. (Eng) *J. Phys. Chem. A* 114(31), 8033-8042 (2010).
- [10] Hyvärinen A.-P., Brus D., Wedekind J., Lihavainen H.: How Ambient Pressure Influences Water Droplet Nucleation at Tropospheric Conditions. (Eng) *Geophys. Res. Lett.* 37, L21802 (2010).
- [11] Kerminen V.-M., Petäjä T., Manninen H.E., Paasonen P., Nieminen T., Sipilä M., Junninen H., Ehn M., Gagné S., Laakso L., Riipinen I., Brus D.: Atmospheric Nucleation: Highlights of the EUCAARI Project and Future Directions. (Eng) *Atmos. Chem. Phys.* 10(22), 10829-10848 (2010).
- [12] Kerminen V.-M., Petäjä T., Manninen H.E., Paasonen P., Nieminen T., Sipilä M., Junninen H., Ehn M., Gagné S., Laakso L., Riipinen I., Brus D.: Atmospheric Nucleation: Highlights of the EUCAARI Project and Future Directions. (Eng) *Atmos. Chem. Phys. Discuss.* 10(7), 16497-16549 (2010).
- [13] Křenek T., Murafa N., Bezdička P., Šubrt J., Pola J.: Laser-Induced Dielectric Breakdown in Tetramethylgermane/Tetramethyltin Mixtures: Deposition of Nanostructured Sn/Ge/C and Ge-Sn/C Films. (Eng) *Appl. Organometal. Chem.* 24(6), 458-463 (2010).
- [14] Křenek T., Murafa N., Bezdička P., Šubrt J., Pola J.: IR Laser CVD of Nanostructured Si/Ge Alloy from Silane-Germane Mixture. (Eng) *J. Anal. Appl. Pyrolysis* 89(1), 137-141 (2010).
- [15] Kukutschova J., Moravec P., Tomášek V., Matějka V., Smolík J., Schwarz J., Seidlerová J., Šafářová K., Filip P.: On Airborne Nano/Micro-Sized Particles Released from Low-Metallic Automotive Brakes. (Eng) *Environ. Pollut.*, 159(4), 998-1006 (2011).
- [16] Levdansky V.V., Dragun V.L., Smolík J., Ždímal V.: Vliyanie razmera chastits na fiziko-khimicheskie protsesy v aerazol'nykh sistemakh. (Russ). *Vesti Nat. Ak. Nauk Belarusi, Ser. Fyz.-Tekh. Navuk* 4, 62-65 (2010).
- [17] Levdansky V.V., Smolík J., Moravec P.: Size Effects in Physicochemical Transformations in Aerosol Systems with Nanoparticles. (Eng) *Int. Commun. Heat Mass Transfer* 37(6), 593-595 (2010).
- [18] Levdansky V.V., Smolík J., Moravec P.: Chemical Reactions in Nanoparticles. (Eng) *J. Eng. Phys. Thermophys.* [Inzh. - Fiz. Zh. 83(2), 376-380, 2010] 83(2), 401-405 (2010).
- [19] Levdansky V.V., Smolík J., Moravec P.: Vliyanie postoronnikh adsorbiruyuschikhsya gazov na obrazovanie klasterov v parogazovykh sistemakh. (Russ). *Inzh.-Fyz. Zh. [J. Eng. Phys. Thermophys.* 83(4), 843-848, 2010] 83(4), 790-795 (2010).
- [20] López-Aparicio S., Smolík J., Mašková L., Součková M., Grontoft T., Ondráčková L., Stankiewicz J.: Relationship of Indoor and Outdoor Air Pollutants in a Naturally Ventilated Historical Building Envelope. (Eng) *Build. Environ.* 46(7), 1460-1468 (2011).
- [21] Manka A.A., Brus D., Hyvärinen A.-P., Lihavainen H., Wölk J., Strey R.: Homogeneous Water Nucleation in a Laminar Flow Diffusion Chamber. (Eng) *J. Chem. Phys.* 132(24), 244505-10 (2010).
- [22] Maryško M., Fajgar R., Šubrt J., Murafa N., Knižek K.: Magnetic Properties of FeCo Nanoparticles Encapsulated in Carbon. (Eng) *J. Phys.: Conference Series* 200(7), 072065/1-5 (2010).
- [23] Moravec P., Smolík J., Keskinen H., Mäkelä J.M., Bakardjieva S., Levdansky V.V.: NiO_x Nanoparticle Synthesis by Chemical Vapor Deposition from Nickel Acetylacetonate. (Eng) *Mater. Sci. Appl.* 2, 258-264 (2011).

- [24] Murafa N., Křenek T., Pola J., Šubrt J., Bezdička P.: Formation of Sn/Ag/C Nanoalloy Through Laser Ablation of Ag Target and Simultaneous Decomposition of TMT in the Gas Phase. (Eng) *Microscop. Microanal.* 16(Suppl. 2), 1254-1255 (2010).
- [25] Pokorná D., Urbanová M., Bakardjieva S., Šubrt J., Pola J.: Laser Ablation of Ga in Dielectric Breakdown of Gaseous Hydrocarbons: Deposition of Ambient-Pressure Unstable Ga Nanophases in Carbonaceous Environment. (Eng) *J. Photochem. Photobiol. A* 215(2-3), 164-171 (2010).
- [26] Pola J., Galíková A., Bakardjieva S., Šubrt J., Bastl Z., Vorlíček V., Maryško M., Ouchi A.: Megawatt Ultraviolet Laser Photolysis of Dichloroethenes for Gas-Phase Deposition of Nanosized Chlorinated Soot. (Eng) *J. Phys. Chem. C* 114(39), 16153-16159 (2010).
- [27] Pola J., Galíková A., Šubrt J., Ouchi A.: ArF Laser Photolytic Deposition and Thermal Modification of an Ultrafine Chlorohydrocarbon. (Eng) *Chem. Pap.* 64(5), 625-629 (2010).
- [28] Pola J., Urbanová M., Pokorná D., Šubrt J., Bakardjieva S., Bezdička P., Bastl Z.: IR Laser-induced Formation of Amorphous Co-C Films with Crystalline Co, Co₂C and Co₃C Nanograins in a Graphitic Shell. (Eng) *J. Photochem. Photobiol., A* 210(2-3), 153-161 (2010).
- [29] Pola J., Ouchi A., Maryško M., Vorlíček V., Šubrt J., Bakardjieva S., Bastl Z.: UV Laser Photodeposition of Nanomagnetic Soot from Gaseous Benzene and Acetonitrile-Benzene Mixture. (Eng) *J. Photochem. Photobiol., A*, 220, 188-194 (2011).
- [30] Pola J., Urbanová M., Pokorná D., Bastl Z., Bakardjieva S., Šubrt Š., Bezdička P.: Solid-state Room-temperature Reaction between Copper and UV Laser-photodeposited Sulfur. (Eng) *J. Photochem. Photobiol., A*, 219, 109-114 (2011).
- [31] Putaud J-P., Van Dingenen R., Alastuey A., Bauer H., Birmili W., Cyrus J., Flentje H., Fuzzi S., Gehrig R., Harrison R.M., Schwarz J., Smolík J.: A European Aerosol Phenomenology - 3: Physical and Chemical 2 Characteristics of Particulate Matter from 60 Rural, Urban, and Kerbside Sites Across Europe. (Eng) *Atmos. Environ.* 44(10), 1308-1320 (2010).
- [32] Santos M., Diaz L., Camacho J.J., Poyato J.M., Pola J., Křenek T.: Laser Induced Breakdown Spectroscopy of Germane Plasma Induced by IR CO₂ Pulsed Laser. (Eng) *Appl. Phys. A* 99(4), 811-821 (2010).
- [33] Santos M., Díaz L., Camacho J., Urbanová M., Pokorná D., Šubrt J., Bakardjieva S., Bastl Z., Pola J.: IR Laser-induced Metal Ablation and Dielectric Breakdown in Benzene. (Eng) *Infrared Phys. Technol.* 53(1), 23-28 (2010).
- [34] Sipilä M., Berndt T., Petäjä T., Brus D., Vanhanen J., Stratmann F., Patokoski J., Mauldin, III R.L., Hyvärinen A.-P., Lihavainen H., Kulmala M.: The Role of Sulfuric Acid in Atmospheric Nucleation. (Eng) *Science* 327(5970), 1243-1246 (2010).
- [35] Smolík J., Ondráčková L., Maršíková J.: Koncentrace aerosolových částic v zubní ordinaci. (Czech) *Aerosol Particle Concentration in a Dental Surgery.* *Chem. Listy* 105(5), 371-374 (2011).
- [36] Štefancová L., Schwarz J., Maenhaut W., Chi X., Smolík J.: Hygroscopic Growth of Atmospheric Aerosol Sampled in Prague 2008 Using Humidity Controlled Inlets. (Eng) *Atmos. Res.* 98(2-4), 237-248 (2010).
- [37] Urbanová M., Pokorná D., Bakardjieva S., Šubrt J., Bastl Z., Bezdička P., Pola J.: IR Laser-induced Ablation of Ag in Dielectric Breakdown of Gaseous Hydrocarbons: Simultaneous Occurrence of Metastable hcp and Stable fcc Ag Nanostructures in C:H Shell. (Eng) *J. Photochem. Photobiol., A* 213(2-3), 114-122 (2010).
- [38] Vacík J., Lavrentiev V., Novotná K., Bačáková L., Lisá V., Vorlíček V., Fajgar R.: Fullerene (C₆₀)-Transitional Metal (Ti) Composites: Structural and Biological Properties of the Thin Films. (Eng) *Diam. Relat. Mater.* 19(2-3), 242-246 (2010).
- [39] Fajgar R., Bastl Z., Šubrt J., Murafa N., Maryško M.: ArF Laser-Induced Deposition of Carbon Encapsulated CoFe Nanoparticles. (Eng) *J. Electrochem. Soc.*, submitted.
- [40] Jandová V., Bastl Z., Šubrt J., Pola J.: IR Laser-Produced Carbon-Phase Shield to Oxidation of Nanosized Titanium Monoxide. (Eng) *Appl. Surf. Sci.*, submitted.
- [41] Řimnáčová D., Ždímal V., Schwarz J., Smolík J., Řimnáč M.: Atmospheric Aerosols in Suburb of Prague: The Dynamics of Particle Size Distributions. (Eng) *Atmos. Res.*, in press.
- [42] Šťávoval P., Ondráček J., Džumbová L., Barták M., Smolík J.: Interzonal Airflow Measurements in a Two-Zone Apartment Using Two Tracer Gases. (Eng) *Energ. Buildings*, submitted.

International conferences

- [43] Andělová L., Ondráčková L., Ondráček J., Smolík J., Grontoft T., López-Aparicio S., Stankiewicz J.: Airborne Particles in the Baroque Hall of the National Library in Prague. (Eng) 9th Indoor Air Quality Meeting, Posters, p. 133, Chalon-sur-Saone, France, 21-23 April 2010.

- [44] Andělová L., Smolík J., Ondráčková L., Ondráček J., López-Aparicio S., Grontoft T., Stankiewicz J.: Polutanty ve vnitřním ovzduší Barokního knihovního sálu Národní knihovny v Praze. (Czech) Pollutants in the Indoor Air in the Baroque Library Hall of the National Library in Prague. Conference konzervátorů-restaurátorů, Sborník, pp.118-120, Uherské Hradiště, Czech Republic, 07-09 September 2010.
- [45] Bakardjieva S., Pola J., Bakardjiev M., Szatmary L.: Nanocrystals of Ag and AgO Encapsulated in Carbon (C) or Boron Nitride (BN) Shells: Challenge for New Bio-based Applications. (Eng) SBS Biomolecular Symposium, Advancing the Science of Drug Discovery, San Francisco, USA, 19-21 June 2010.
- [46] Blazevska-Gilev J., Kupčík J., Šubrt J., Pola J.: Laser Ablative Deposition of Polymer Films: a Promise for Sensor Fabrication. (Eng) Nanotechnological Basis for Advanced Sensors, Book of Abstracts, p. 18, Sozopol, Bulgaria, 30 May - 11 June 2010.
- [47] Brus D., Neitola K., Petäjä T., Lihavainen H.: Diffusion Coefficient Measurements: Sulphuric Acid – Air. (Eng) International Aerosol Conference IAC 2010, Registration Handbook, P2L7, Helsinki, Finland, 29 August - 03 September 2010.
- [48] Glytsos T., Ondráček J., Smolík J., Lazaridis M.: Changes in the Modal Structure of Indoor Aerosol Due to Simulated Indoor Activities. (Eng) International Aerosol Conference IAC 2010, Registration Handbook, P1F42, Helsinki, Finland, 29 August - 03 September 2010.
- [49] Görke H., Neitola K., Brus D., Hyvärinen A.-P., Wölk J., Strey R.: Influence of the Carrier Gas Pressure of Homogeneous Nucleation of n-Propanol Measured in a Laminar Flow Diffusion Chamber. (Eng) International Aerosol Conference IAC 2010, Registration Handbook, 6D1, Helsinki, Finland, 29 August - 03 September 2010.
- [50] Herrmann E., Brus D., Hyvärinen A.-P., Kulmala M.: CFD Simulations of Binary Nucleation. (Eng) International Aerosol Conference IAC 2010, Registration Handbook, P3U16, Helsinki, Finland, 29 August - 03 September 2010.
- [51] Hrubý J., Kolovratník M., Ždímal V., Bartoš O., Moravec P., Jiříček I.: Nonequilibrium Condensation Processes in Steam Turbines in the Light of New Measurements of Heterogeneous Particles. (Eng) 9th Conference on Power Systems Engineering, Thermodynamics and Fluid Flow - ES 2010, Book of Abstracts, pp. 45-52, Pilsen, Czech Republic, 17-18 June 2010.
- [52] Hussein T., Smolík J., Kulmala M.: Modelling Dry Deposition of Aerosol Particles onto Rough Surfaces. (Eng) International Aerosol Conference IAC 2010, Registration Handbook, 11F6, Helsinki, Finland, 29 August - 03 September 2010.
- [53] Hyvärinen A.-P., Komppula M., Miettinen P., Spiegel J.K., Nozière B., Ekström S., Neitola K., Brus D., Asmi E., Kivekäs N., Leskinen A., Portin H.: Third PALLAS Cloud Experiment (PACE III): Campaign Description. (Eng) International Aerosol Conference IAC 2010, Registration Handbook, P2H12, Helsinki, Finland, 29 August - 03 September 2010.
- [54] Jandová V., Bastl Z., Šubrt J., Pola J.: IR Laser-Induced Carbothermal Reduction of Titanium Monoxide: Carbon-Phase Shield to Nanosized TiO Oxidation. (Eng) Nanocon 2010, Olomouc, Czech Republic, 12-14 October 2010.
- [55] Kerminen V.-M., Petäjä T., Manninen H.E., Paasonen P., Nieminen T., Sipilä M., Gagné S., Laakso L., Vehkamäki H., Kurten T., Ortega I.K., Brus D.: Atmospheric Nucleation: Main Findings Made during the EUCAARI Project. (Eng) International Aerosol Conference IAC 2010, Registration Handbook, 1E2, Helsinki, Finland, 29 August - 03 September 2010.
- [56] Kimmer D., Vincent I., Petras D., Fenyk J., Zatloukal M., Sambaer W., Slobodian P., Salmela H., Lehtimäki M., Ždímal V.: Application of Nanofibres in Filtration Processes. (Eng) NANOCON 2010, Proceedings, pp. 1-9, Olomouc, Czech Republic, 12-14 October 2010.
- [57] Křenek T., Murafa N., Bezdička P., Šubrt J., Pola J.: Formation Of Sn-Ag-C and Sn-Au-C Nanoalloys Through Ir Laser Ablation OF Ag and Au Target and Simultaneous Decomposition of TMT in the Gas Phase. (Eng) Nanocon, Olomouc, Czech Republic, 12-14 October 2010.
- [58] Kukutschová J., Dvořáčková J., Moravec P., Komínek P., Zeleník K., Bielníková H., Filip P.: Nano-Particle Emissions from Road Traffic and Potential Health Impact. (Eng) High-Level Symposium on Nanotechnology Safety, Scientific Posters, 15, Prague, Czech Republic, 29-30 November 2010.
- [59] Levdansky V.V., Smolík J., Moravec P.: Zakhvat molekul para i primesi nanorazmernymi chastitsami (klasterami). (Russ)а. 5. Rossiiskaya natsionalnaya konferentsiya po teploobmenu, Trudy, Tom 1, pp. 215-218, 2010, Moskva, Russia, 25-29 October 2010.
- [60] Levdansky V.V., Smolík J., Moravec P.: Formation of Nanosized Particles (Clusters) in Resonance Radiation Field. (Eng) International Conference Fundamentals of Laser Assisted Micro- and Nanotechnologies FLAMN-10, Abstracts, p. 126 (PS1_47), St. Petersburg - Pushkin, Russia, 05-08 July 2010.
- [61] Levdansky V.V., Smolík J., Moravec P.: Size Effect in Oxidation of Nanoscale Silicon Particles. (Eng) E-MRS 2010 Spring Meeting, Program View, Strasbourg, France, 07-11 June 2010.

- [62] Levdansky V.V., Smolík J., Moravec P.: Size Dependence of Chemical Reactions in Nanoscale Aerosol Particles. (Eng) International Aerosol Conference IAC 2010, Registration Handbook, P2L1, Helsinki, Finland, 29 August - 03 September 2010.
- [63] Levdansky V.V., Smolík J., Moravec P.: Factors Affecting Formation and Growth Rate of Atmospheric Aerosols. (Eng) 4th Environmental Physics Conference, Book of Abstracts, AC-4 (58), Hurghada, Egypt, 10-14 March 2010.
- [64] Levdansky V.V., Smolík J., Ždímal V., Moravec P.: Molecule Trapping in Formation of Nanoscale Particles (Clusters) by Deposition from a Gas Phase. (Eng) XIVth Research Workshop Nucleation Theory and Applications, Program of the Workshop Part, invited lecture, Dubna, Russia, 01-30 April 2010.
- [65] Levdansky V.V., Smolík J., Ždímal V., Moravec P.: Influence of Foreign Gas on Trapping of Vapor Molecules by Nanoscale Particles (Clusters). (Eng) XI. Konference České aerosolové společnosti, Sborník konference, pp. 49-50, Praha, Czech Republic, 18-19 November 2010.
- [66] Levdansky V.V., Smolík J., Ždímal V., Moravec P.: Impurity Concentration in Aerosol Particles Growing by Vapor Condensation. (Eng) XI. Konference České aerosolové společnosti, Sborník konference, pp. 57-58, Praha, Czech Republic, 18-19 November 2010.
- [67] López-Aparicio S., Stankiewicz J., Grontoft T., Smolík J.: Indoor Air Quality Assessment in the Baroque Hall of the National Library (Prague, Czech Republic). (Eng) Final Conference 2010 of the COST Action D42 - Impact of the Indoor Environment of the Preservation of Our Moveable Cultural Heritage, Book of Abstracts, pp. 43-46, Dublin, Ireland, 08-10 November 2010.
- [68] López-Aparicio S., Stankiewicz J., Smolík J.: Indoor Air Quality in the Baroque Hall of the National Library in Prague - Preliminary Results. (Eng) 9th Indoor Air Quality Meeting, Posters, p. 125, Chalon-sur-Saone, France, 21-23 April 2010.
- [69] Mølgaard B., Tareq H., Ondráček J., Smolík J.: Air Flow Rates and Penetration Factors Estimated Through Multi-Compartment Indoor Aerosol Model Simulations. (Eng) International Aerosol Conference IAC 2010, Registration Handbook, 11F4, Helsinki, Finland, 29 August - 03 September 2010.
- [70] Mašková L., Smolík J., Ondráčková L., Ondráček J., Součková M., Stankiewicz J., Lopez-Aparicio S., Grontoft T.: Aerosolové částice ve vnitřním prostředí Národní knihovny v Praze. (Czech) Aerosol Particles in the Indoor Environment of the National Library in Prague. XI. Konference České aerosolové společnosti, Sborník konference, pp. 19-22, Praha, Czech Republic, 18-19 November 2010.
- [71] Moravec P., Smolík J., Levdansky V.V., Bakardijeva S.: Preparation of Nanoparticles by Pyrolysis and Oxidation of Cobalt Acetylacetonate. (Eng) XI. Konference České aerosolové společnosti, Sborník konference, pp. 59-62, Praha, Czech Republic, 18-19 November 2010.
- [72] Moravec P., Smolík J., Levdansky V.V., Bakardjjeva S.: Nanoparticle Synthesis from Cobalt Acetylacetonate. (Eng) International Aerosol Conference IAC 2010, Registration Handbook, P2J35, Helsinki, Finland, 29 August - 03 September 2010.
- [73] Neitola K., Brus D., Anttila T., Lihavainen H.: Growth Rates of H₂SO₄-H₂O Particles Produced in a Flow Tube as a Function on Sulphuric Acid Concentration. (Eng) International Aerosol Conference IAC 2010, Registration Handbook, P1D11, Helsinki, Finland, 29 August - 03 September 2010.
- [74] Ondráček J., Schwarz J., Smolík J., Ždímal V.: Number and Mass Size Distribution on Atmospheric Aerosol in Various Environments of the Czech Republic. (Eng) High-Level Symposium on Nanotechnology Safety, Scientific Posters, 14, Prague, Czech Republic, 29-30 November 2010.
- [75] Ondráčková L., Andělová L., Ondráček J., Smolík J., Grontoft T., López-Aparicio S., Stankiewicz J.: Characterization of Airborne Particles in the Baroque Hall of the National Library in Prague. (Eng) 9th Indoor Air Quality Meeting, Posters, p. 55, Chalon-sur-Saone, France, 21-23 April 2010.
- [76] Pola J., Galíková A., Šubrt J., Ouchi A.: ArF Laser Photolytic Deposition and Thermal Modification of Solid Chlorocarbon. (Eng) 37th International Conference of Slovak Society of Chemical Engineering, Proceedings, p. 203 (10 pp. full text on CD-ROM), Tatranské Matliare, Slovakia, 24-28 May 2010.
- [77] Putaud J.-P., Cavalli F., Alastuey A., Bourcier L., Ceburnis D., Džumbová L., Fors E., Genberg J., Hoffer A., Kiss G., Schwarz J., Sellegri K.: Determination and Mitigation of Artifacts in Sampling Particulate Organic Carbon Across Europe. (Eng) International Aerosol Conference IAC 2010, Registration Handbook, 3A1, Helsinki, Finland, 29 August - 03 September 2010.
- [78] Schwarz J., Smolík J.: Chemical Composition of PM_{2.5} and PM₁₀ at Košetice. (Eng) EUCAARI Annual Meeting, Presentation Abstracts, p. 1-2, Helsinki, Finland, 22-26 November 2010.
- [79] Schwarz J., Vodička P.: OC/EC at Urban and Rural Background Sites in Parallel and in Higher Time Resolution. (Eng) International Aerosol Conference IAC 2010, Registration Handbook, P2H13, Helsinki, Finland, 29 August - 03 September 2010.
- [80] Sipilä M., Berndt T., Petäjä T., Brus D., Vanhanen J., Stratmann F., Patokoski J., Mauldin III R.L., Hyvärinen A.-P., Lihavainen H., Kulmala M.: Resolving the Mystery of Sulphuric Acid in Atmospheric

- Nucleation. (Eng) International Aerosol Conference IAC 2010, Registration Handbook, 7F4, Helsinki, Finland, 29 August - 03 September 2010.
- [81] Smolík J., Andělová L., Ondráčková L., Ondráček J., Stankiewicz J., Grøntoft T., López-Aparicio S.: Aerosol Particles in the Baroque Library Hall of the National Library in Prague. (Eng) International Aerosol Conference IAC 2010, Registration Handbook, P1F40, Helsinki, Finland, 29 August - 03 September 2010.
- [82] Smolík J., Mašková L., Ondráčková L., Ondráček J., Součková M., Stankiewicz J., López-Aparicio S., Grøntoft T., Zíková N.: Aerosol Particles in the Baroque Hall of the National Library in Prague. (Eng) Final Conference 2010 of the COST Action D42 - Impact of the Indoor Environment of the Preservation of Our Moveable Cultural Heritage, Book of Abstracts, pp. P 51 - P 53, Dublin, Ireland, 08-10 November 2010.
- [83] Smolík J., Ondráčková L., Andělová L., Ondráček J., Stankiewicz J., Grøntoft T., López-Aparicio S.: Ionic Composition of Size-Resolved PM in the Indoor Environment of the National Library in Prague. (Eng) International Aerosol Conference IAC 2010, Registration Handbook, P3LP19, Helsinki, Finland, 29 August - 03 September 2010.
- [84] Škrabalová L., Ždímal V.: Kalibrace řediče aerosolu. (Czech) Calibration of the Aerosol Diluter. XI. Konference České aerosolové společnosti, Sborník konference, pp. 39-40, Praha, Czech Republic, 18-19 November 2010.
- [85] Škrdlantová M., Doubravová K., Kučerová L., Smolík J., Mašková L., Ondráčková L., Veselý M., Zmeškal O., Dzik P.: COST Action D42 "ENVIART" "The Czech Republik": Impact of 4 Years Networking. (Eng) Final Conference 2010 of the COST Action D42 - Impact of the Indoor Environment of the Preservation of Our Moveable Cultural Heritage, Book of Abstracts, p. P 129, Dublin, Ireland, 07-10 November 2010.
- [86] Vodička P., Ondráček J., Schwarz J.: Aerosolový hmotnostní spektrometr: první zkušenosti z měření a srovnání s ECOC analyzátozem. (Czech) Aerosol Mass Spectrometer: First Measurement Experiences and Comparison with the ECOC Analyzer. XI. Konference České aerosolové společnosti, Sborník konference, pp. 63-66, Praha, Czech Republic, 18-19 November 2010.
- [87] Vodička P., Schwarz J.: Porovnání organického a elementárního uhlíku v aerosolech: město vs. pozadová stanice. (Czech) Comparison of Organic and Elemental Carbon in Aerosols: City vs. Background Stations. XI. Konference České aerosolové společnosti, Sborník konference, pp. 9-12, Praha, Czech Republic, 18-19 November 2010.
- [88] Zíková N.: Connection between Atmospheric Aerosol, Gaseous Pollutants Concentrations and Atmospheric Stability Parameters. (Eng) Week of Doctoral Students 2010, Proceedings of Contributed Papers, 2 pp, Praha, Czech Republic, 01-04 June 2010.
- [89] Zíková N., Wagner Z., Schwarz J., Smolík J., Ždímal V.: Diurnal Cycles of Aerosol Particle Number Size Distributions in Relation to Meteorology and Gaseous Pollutants. (Eng) EUCAARI Annual Meeting 2010, Presentation Abstracts, Helsinki, Finland, 22-26 November 2010.
- [90] Zíková N., Wagner Z., Schwarz J., Smolík J., Ždímal V.: One-year SMPS Measurements at Background Station Košetice - Basic Statistics. (Eng) International Aerosol Conference IAC 2010, Registration Handbook, P3LP12, Helsinki, Finland, 29 August - 03 September 2010.
- [91] Zíková N., Wagner Z., Schwarz J., Smolík J., Ždímal V.: Rozdělení velikosti aerosolových částic na stanici Košetice - základní statistika roční řady měření spektrometrem SMPS. (Czech) Aerosol Number Size Distribution in Košetice Observatory - Basic Statistic of One-Year SMPS Measurement. XI. Konference České aerosolové společnosti, Sborník konference, pp. 29-30, Praha, Czech Republic, 18-19 November 2010.
- [92] Ždímal V., Rupová M., Kovářová E., Zíková N.: Měření filtrační účinnosti materiálu filtrační polomasky v závislosti na velikosti částic. (Czech) Filtration Efficiency Measurements of a Filtering Facepiece Material as a Function of Particle Size. XI. Konference České aerosolové společnosti, Sborník konference, pp. 31-34, Praha, Czech Republic, 18-19 November 2010.