

## Third Russian Conference “Surface Chemistry and Nanotechnology” (with International Participation)

A. A. Malygin

*St. Petersburg State Institute of Technology,  
Moskovskii pr. 26, St. Petersburg, 190013 Russia*

DOI: 10.1134/S1070363207030012

In accordance with the plan of activities of the Ministry of Education and Science of the Russian Federation, the Third Russian Conference (with international participation) “Surface Chemistry and Nanotechnology” was held from September 24 through October 1 in the “Sanatorii Khilovo” Medical and Preventive Treatment Facility (Pskov Region).

The responsibility for organizing and holding the conference was placed on the St. Petersburg Institute of Technology (Technical University) {SPbSTI (TU)}. The organization of the conference was also contributed by the “Surface Chemistry and Synthesis of Small Size Systems” Section (Chairman Prof. A.A. Malygin) of the Scientific Council for Inorganic Chemistry of the Russian Academy of Sciences (RAS) (Chairman Acad. G.P. Shveikin) and the Scientific Council for Colloid Chemistry and Physicochemical Mechanics of RAS (Chairman Acad. RAS A.I. Rusanov).

The conference was sponsored by the Russian Foundation for Basic Research (project no. 06-03-42076-g) and Klockner Pentaplast GmbH & Co. Kg (Germany).

The Organizing Committee included the following scientists and representatives of industry: Dr. Sc. (Chem.), Prof. Malygin A.A. (Chairman), SPbSTI (TU), Russia; Dr. Sc. (Tech.), Prof. Dudyrev A.S. (Co-Chairman), SPbSTI (TU), Russia; Prof. Dorison Alain (Co-Chairman), Ecole des Mines d’Ales, France; Cand. Sc. (Chem.) Dubrovenskii, S.D. (Academic Secretary), SPbSTI (TU), Russia; Acad. NAS Belarus Agabekov V.E., Belarus; Corresponding Member of RAS Aleskovskii V.B., St. Petersburg State University (SPbSU), Russia; Dr. Sc. (Tech.), Prof. Alekhin A.P., “NIIFP im. F.V. Lukina” State Research Center, Russia; Corresponding Member of RAS Gusarov V.V., Grebenshikov Inst. of Silicate Chemistry of RAS, Russia; Prof. Kohlert Christian, Klockner

Pentaplast GmbH & Co, Germany; Kulikov N.A., “Svetlana–Rentgen” Close Joint-Stock Company, Russia; Prof. Lattes Armand, President of the Chemical Society of France; Dr. Sc. (Chem.), Prof. Lisichkin G.V., Lomonosov Moscow State University (MSU), Russia; Dr. Sc. (Chem.), Prof., Member of the Russian Academy of Natural Sciences Murin I.V., SPBSU, Russia; Dr. Sc. (Chem.), Prof. Parkhomenko Yu.N., Moscow Institute of Steel and Alloys, Russia; Dr. Sc. (Tech.) Pichugin V.S., “Tsentr MNTP” Federal State Enterprise, Russia; Acad. RAS Rusanov A.I., SPbGU, Russia; Dr. Sc. (Tech.), Prof. Sergeev S.K., Federal Agency for Education, Russia; Dr. Sc. (Chem.), Prof. Smirnov V.M., SPbSU, Russia; Dr. Sc. (Chem.), Prof. Sobolev V.V., SPbSTI (TU), Russia; Dr. Sc. (Phys.–Math.), Prof. Strikhanov M.N., Ministry of Education and Science, Russia; Dr. Sc. (Phys.–Math.), Prof. Suzdalev I.P., Semenov Institute of Chemical Physics of RAS, Russia; Acad. RAS Tereshchenko G.F., Topchiev Institute of Petrochemical Synthesis of RAS, Russia; and Acad. RAS Shveikin G.P., Institute of Solid State Chemistry, Ural Branch, RAS, Russia.

The list of authors and co-authors of conference presentation included more than 600 people from Russia, Ukraine, Belarus, France, Germany, Slovenia, Poland, Moldova, representatives of more than 112 institutions from 35 towns, including Moscow, St. Petersburg, Minsk, Voronezh, Tomsk, Kiev, Izhevsk, Ales (France), Stavropol, Gomel, Novosibirsk, Saratov, Nalchik, Tambov, Ekaterinburg, Kharkov, etc. The conference was attended by 105 scientists, including 1 Member of RAS, 16 Doctors of Sciences, 46 Candidates of Sciences, 19 post-graduate students, 1 student, and 18 researchers and young scientists. The conference participants represented 37 Russian institutions, including 20 higher educational institutions, 11 academic and 6 research centers and sectorial institutions, as well as

universities from Belarus (Minsk, Gomel), Slovenia (Ljubljana), France (Ales), and a firm from Germany.

The conference was devoted to the memory of the Corresponding Member of RAS V.B. Aleskovskii, who took active part in the organization of the conference as a member of the Organizing Committee.

Ten plenary and 16 oral reports were presented at the conference. Posters were presented in four sections:

(1) Synthesis of Small Size Systems and Physico-chemical Processes with Their Participation (84 posters).

(2) Equipment for Synthesis and Methods for Investigation of Small Size Systems (33 posters).

(3) Functional Properties and Applications of Nanomaterials (61 poster).

(4) Education in the Field of Surface Chemistry and Nanotechnologies (7 posters).

The presentations not only reflected new results in surface chemistry and nanotechnology, but also strategic targets in this field, as well as practical perspectives of nanotechnology and nanomaterials. Further progress is observed in thermodynamics and quantum-chemical simulation of small size systems (Acad. RAS A.I. Rusanov et al.), advances in probe microscopy were considered, in particular, integration of local exposure methods (SPM, FIB) and group process approaches (Prof. V.A. Bykov), new approaches to formulating the concept of discrete nanoclusters and nanostructures (Prof. I.P. Suzdalev), etc.

Much attention in plenary lectures and oral and poster presentations was given to practical perspectives of different types on nanotechnology and functional materials, as well as creation of nanotechnological equipment. Novel approaches in the design of nanotechnological processes and nanomaterials, based on the interdisciplinary nature of nanoprocesses, their certain universality, and broad spectrum of opportunities for practical realization of nanomaterials.

Noteworthy is the contribution of Russian scientists into the development of nanotechnological module complexes (FAB) for electronics (V.A. Bykov, A.P. Alekhin); use of plasmachemical technologies with remote plasma in nitride film deposition, formation of silicon nanoclusters on semiconductor supports (S.E. Aleksandrov); use of molecular layering nanotechnology for production of various-purpose nanomaterials (A.A. Malygin), some of which have already found use in aviation instrument making (modified sorbents, "Ramenskii priborostroitel'nyi zavod" Close Joint-Stock Company), production of X-ray tubes

(ceramic isolators, "Svetlana-Rentgen" Close Joint-Stock Company); sorption catalytic materials and sensors (G.V. Lisichkin, A.A. Evstratov, A. Dorizon, et al.), sol-gel technologies (O.A. Shilova et al.), polymeric, including composite materials (A.A. Malygin et al.), metal and alloy nanopowders (I.P. Suzdalev et al.), as well as medicine, membrane technologies, nanopowders for magnetic recording systems, LB films in tribology, etc.

For the first time the conference was organized with the participation of the President of the Chemical Society of France A. Latt and Rector of the High Mining and Polytechnic School A. Dorison (Ales, France).

Evidence for the practical importance of the presented works is provided by the active participation in preparing and holding the conference of the firms Klockner Pentaplast GmbH & Co. Kg (Germany), Svetlana-Rentgen, NIIFP im. Lukina, Prometei, and other production companies and organizations.

Professor H. Kollert (Klockner Pentaplast GmbH & Co. Kg) not only presented data of the industrial application of nanomaterials in manufacturing polymeric films, but also outlined a series of perspective fields that call for nanotechnological approaches.

The discussion at the conference touched upon not scientific questions, but also problems of education in surface chemistry and nanotechnology, which are reflected in the creation of new specialties and specializations, new educational disciplines, as well as in already existing lecture courses, laboratory and practical trainings at the Chemical Department of MSU (G.V. Lisichkin), SPbSTI(TU) (A.A. Malygin, A.F. Nechaev), SPbSPU (S.E. Aleksandrov); the report on skill formation in nanotechnology in France (A. Dorizon, A.A. Evstratov) attracted interest.

The Round Table dedicated to the memory of V.B. Aleskovskii highlighted his role as a prominent scientist in solid state chemistry, founder of the "Chemistry of Highly Organized Substances" Russian Scientific School, developed principles of chemical nanotechnology and synthesized first nanostructures in early 1960s. The Round Table was attended by more than 50 conference participants, and 14 of them took part in the discussion.

Analysis shows that the most part of works presented by Russian Scientists is supported by grants of the Russian Foundation for Basic Research (25%), as well as implemented in the framework of programs of the Ministry of Education and Science of the Russian Federation or international projects.