

Conference Call

High Temperature Materials Chemistry

by **Michio Yamawaki** and **Gerd M. Rosenblatt**

The IUPAC Conferences on **High Temperature Materials Chemistry** (HTMC) were initiated by the Inorganic Division's Commission on High-Temperature Materials and Solid State Chemistry in 1977 and have become the premier international venue for exploring the combination of chemistry and materials science as they affect understanding, production, and utilization of high-temperature materials.

The eleventh conference in the HTMC series was held 19–23 May 2003 in Tokyo, Japan, the first time that an HTMC conference has been held in Asia. It was organized by Prof. Michio Yamawaki of the University of Tokyo with the help of Professors T. Terai, S. Nagasaki, and K. Morita. The Tokyo conference provided significant opportunities for constructive interchange between basic and applied researchers, with particular emphasis on material synthesis, nuclear energy application, and electronic functional materials. The fundamental contributions were primarily in the areas of thermodynamics, gas phase/liquid phase/solid phase chemistries, and interface chemistry.

There were about 140 papers and 140 participants from 16 countries at this successful meeting. The number of papers and participants was somewhat smaller than anticipated because of the unexpected spread of the SARS epidemic in some parts of the world and because of the Iraq war.

To ensure productive dialog between basic science and applications and among industry, research laboratory, and academic scientists, the conference, following tradition, was held with no parallel sessions and with lots of opportunities for formal and informal discussions. The majority of the papers were presented in poster sessions. In addition, there were 7 invited plenary lectures, 18 keynote lectures, 6 shorter oral presentations, and 5 hands-on demonstrations of computerized thermodynamic databases.

Among the plenary lectures, to be published in a future issue of *Pure and Applied Chemistry*, were the following:

- "Phase Diagram Calculation and its Application to Alloy Design" (K. Ishida, Tohoku University, Sendai, Japan)
- "Interaction of Water Vapor with Oxides at Elevated Temperatures" (N. Jacobson, NASA Glenn Research Center, Cleveland, USA)

- "Crystal Growth of Superconductive Oxide from Oxide Melts" (Y. Shiohara, International Superconductivity Technology Center, Tokyo, Japan)
- "Stability of Li_x , Li_xH_y and Li_nO_m Clusters and their Relevance to Fusion, Primordial, and Hypervalent Molecules" (C. H. Wu, Max-Planck Institute for Plasma Physics, Garching, Germany)
- "Actinide Research Related to Nuclear Fuel and Fuel Cycle" (J. P. Glatz, ITU, Karlsruhe, Germany)

Keynote lectures by leaders of their fields covered the following topics: high-temperature mass spectrometry, NMR measurement and X-ray absorption fine structure (XAFS) techniques; a number of forefront experimental and modeling studies of ceramic materials and oxides; and studies of alloys, photocatalytic materials, SnO_2 nanotubes, molten salts, supercritical fluids and fuel cells. These papers, along with the other oral and poster presentations, illustrated the tremendous variety of physical and chemical techniques that are utilized, and of systems that are studied, under the umbrella of "high-temperature materials."

The two meetings that immediately preceded HTMC-XI in this well-established and successful IUPAC series were in Jülich, Germany (2000) and State College, Pennsylvania, USA (1997). Following a pattern of meeting every three years on a different continent, the next conference, HTMC-XII, is scheduled for 2006. It will be held in Vienna, Austria, and will be hosted by Prof. Adolf Mikula of the University of Vienna <Mikula@ap.univie.ac.at>.

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Plasma Chemistry

by **Stephen Girshick**

The **16th International Symposium on Plasma Chemistry**, ISPC-16, was held in Taormina, Italy, from 22–27 June 2003, under the auspices of IUPAC and of the International Plasma Chemistry Society. The symposium was organized by an International Organizing Committee chaired by Prof. R. d'Agostino of the University of Bari, Italy, and by a Local Organizing Committee, co-chaired by Prof. d'Agostino, P. Capezzuto, and M. Capitelli.

The symposium was attended by 641 registered participants from 44 countries, including Italy (103), Japan (103), France (92), Germany (67), Czech Republic (41), the United States (36), Canada (28), Russia (23), the Netherlands (14), the United Kingdom (14), Switzerland (12), Poland (11), South Korea (11), and 31 other countries. The excellent attendance and widespread international participation reflect the increasing importance and vitality of the field of plasma chemistry. However, we note with regret that none of our Chinese colleagues were able to attend due to the SARS epidemic.

The symposium was preceded (18–20 June) by three separate summer schools held in Taormina, devoted to Low-Pressure Plasma Processing of Materials, High-Pressure Plasma Processing of Materials, and Plasma Processes for Microelectronics. On 21 June a workshop was held on Industrial Applications of Plasma Chemistry. There were 57 total participants for the summer schools and 94 for the workshop.

The symposium itself consisted of 810 contributions, including 5 plenary lectures, 15 topical invited talks, 20 invited talks for three special sessions, 116 other oral presentations, and 654 posters. Attendees received a book containing one-page abstracts of all contributions, together with a compact disk containing the full proceedings, including the full-length contributed papers and abstracts of the topical and plenary invited talks. The full texts of the plenary and invited lectures will be published in *Pure and Applied Chemistry*. The book of abstracts and CD proceedings were edited by R. d'Agostino, P. Favia, F. Fracassi, and F. Palumbo. This was the first time that the full ISPC proceedings, well over 4000 pages, were published on CD.

Plenary lectures were presented as follows:

- M. Kuzuya on "Recent Advances on Plasma Techniques for Bio-Medical and Drug Engineering"
- M. Wertheimer on "Plasmas and Polymers"
- A. Fridman on "Non-thermal Atmospheric Pressure Discharges"
- N. Sadeghi on "High Sensitivity Laser-Based Techniques Applied for Plasma Diagnostics"
- P. Fauchais on "Plasma Spraying from Thick to Thin Coatings and Micro to Nano Structured Coatings"

Among the topics covered in the regular sessions were fundamentals of plasma-surface interactions; nonequilibrium effects and atmospheric pressure plasma processes; plasma sources; plasma deposition of inorganic and hard coatings; clusters, particles, and

powders; plasma chemical synthesis; and hybrid plasma/radiation processes. In addition, special sessions were organized on biomedical applications of plasma processes, plasma treatment of wastes, and atmospheric pressure plasma processes.

The Plasma Chemistry Award, recognizing outstanding achievement over a career in the field of plasma chemistry, was presented to Prof. Charles H. Kruger of Stanford University. The Best Paper Awards were given to three young scientists: Gudrun A. Saevarsdottir, of the University of Iceland, for "A Novel Approach to Cathode/Anode Modelling for High Current AC-Arcs"; Shinsuke Mori, Tokyo Institute of Technology, for "Numerical Analysis of Carbon Isotope Separation by Plasma Chemical Reactions in CO Glow Discharge"; and Peter Messerer, Munich University of Technology, for "Characterisation of a Double Inductively Coupled Plasma Reactor."

Elections were held during the symposium for several openings on the Board of Directors of the International Plasma Chemistry Society. The next president of the society will be Kunihide Tachibana, of the University of Kyoto, Japan, and the next vice president will be Jean-Michel Pouvesle, of the University of Orléans, France.

The next International Symposium on Plasma Chemistry, ISPC-17, will be held in Toronto, Canada, 7–12 August 2005.

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Organo-Metallic Chemistry

by Mark Lautens

OMCOS-12 (**Organo-Metallic Chemistry Directed Towards Organic Synthesis**) was held in Toronto, Canada, from 6–10 July 2003. The inaugural conference in this series was held some 25 years ago in Fort Collins, Colorado, USA. In the intervening years, OMCOS has grown to become a very successful and well-established event that brings together chemists from academia and industry to share results in the areas of catalysis, new organometallic reagents and reactions, and new materials chemistry.

OMCOS-12 was organized in collaboration with Rick Friesen (Merck Frosst in Montreal), with much-