# IUPAC in Beijing—Division Roundups Part II

**Part I of the Division Roundups from the 2005 General Assembly (GA) in Beijing appeared in the Nov.-Dec. 2005 *CI* (page 7). That article covered Division I. Physical and Biophysical Chemistry, Division II. Inorganic Chemistry, Commission II.1. Isotopic Abundances and Atomic Weights, Division IV. Polymer, Division VIII. Chemical Nomenclature and Structure Representation, and CHEMRAWN.**

## Division V. Analytical Chemistry
### *Roger Smith, Secretary*

The Analytical Chemistry Division (ACD) includes a symposium or workshop in its annual meetings. These explore emerging and challenging areas in analytical chemistry, with a view to identifying potential new projects and suitable task groups. The several guests and young observers at the ACD meeting in Beijing contributed to worthwhile discussions and brought new perspectives.

This year's symposium on Future Opportunities and Challenges for Analytical Chemistry covered the following topics: Separations Science, Molecular Spectroscopy, Analytical Atomic Spectrometry, Nuclear Methods in Radioanalytical (and Radio-Pharmaceutical) Chemistry, Bioanalytical Chemistry, Emerging Needs in Developing Countries, Opportunities for New Critical Evaluations, and Metrology and Quality Assurance. The division also hosted a successful and well-attended interdivisional meeting on metrological traceability concepts in chemical analysis.

The ACD focuses its effort on a series of core activities and emerging areas. The four core activities are critical evaluation, quality assurance, terminology, and communication. The emerging areas are bioanalytical chemistry, nanotechnology, and emerging needs for developing countries. Each theme has an associated team of titular members, associate members, and national representative. An assessment of our commitment to these priority areas was an important aspect of discussions in Beijing. Communication within the division is aided by the circulation of the division newsletter *Teamwork* to all committee and task group members involved in project work.

An important activity of the meeting was to review all of the current ACD projects. This task was aided by the regular progress reports supplied by the task group chairmen of each project. These reports are subsequently posted on the project web pages. An important consideration for each project evaluation is the proposal for dissemination. As well as projects on important analytical topics, such as the comparability of pH measurements and the chemical speciation of environmentally significant heavy metals, each of the division's priority areas is well represented in the project portfolio.

A number of projects will assist the updating of the terminology in the Orange Book. The Subcommittee on Solubility and Equilibrium Data has continued to evaluate a wide range of chemical data important to industry, which has lead to numerous publications. Interdivisional projects include the *Critical Compendium of Pesticide Physical Chemistry Data*, and Analytical Capacity Building in Africa. The Interdivisional Working Party on the Harmonization of Quality Assurance has continued its work in areas such as Terminology for Soil Sampling, Proficiency Testing Methods, and Metrological Traceability Concepts in Chemical Analysis.

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The ACD is very conscious of the need to make its work both public and relevant. A particularly visible activity has been the series of articles in *Chemistry International* on "Emerging Issues in Developing Countries," which is coordinated by Jan Åke Jönsson. The most recent article was also featured in *Gallium*, the special newsletter published for the GA.

The division officers for 2006–2007 will be Ryszard Lobinski (president, France), Ales Fajgelj (vice president, Slovenia), Kip Powell (past president, New Zealand), and Roger Smith (secretary, UK). Professors Paul De Bièvre (Belgium), Walter Lund (Norway), and Jan Labuda (Slovakia) were elected as new titular members.

## Division VI. Chemistry and the Environment
### *Ken D. Racke, President*

A total of 18 division committee members and 3 visiting contributors participated in the Division VI meeting, which proved to be an interesting event as some challenging issues were discussed. Among these were a fundamental dialogue on strategic issues, establishment of stronger linkages with other IUPAC divisions, and priorities for new initiatives.

Although it was concluded that the communication among division members and revitalization of the sub-

committees need further attention, the efforts and output of the project teams were found to be most encouraging. Since the beginning of the 2004–2005 biennium, eight projects have been completed, one project was abandoned, and seven new projects have been initiated. Most active projects appear to be making solid progress versus milestones, but it was agreed upon that one project lacking such progress should be terminated. This leaves the division with 21 active projects, several of which have interdivisional cooperation.

Several new areas of project activities were discussed, including an ambitious new book series on biophysico-chemical processes in environmental systems. Two specific project proposals are currently under review, and a call for new project proposals in priority areas of interest will be made in the near future, with funding expected to arise from the 2006–2007 biennium budget. Major conferences related to crop protection chemistry and food chemistry are planned for 2006 and 2007, respectively.

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The subcommittees reported a great deal of activity. The Subcommittee on Biophysico-Chemical Processes in Environmental Systems had Volume 9 of the Wiley series on *Analytical and Physical Chemistry in Environmental Systems* published during 2004, with Volumes 10 and 11 close to completion and another book project approved in 2004 on metals and metalloids. Within the Subcommittee on Chemistry of the Environmental Compartments, the ongoing arsenic remediation project has generated a lot of interest since it deals with a topic of major concern in many countries. The Subcommittee on Crop Protection produced an impressive list of projects, including the highly successful International Workshop on Crop Protection Chemistry held in Costa Rica. Finally, a prolonged debate was organized to thoroughly discuss the future of the Subcommittee on Food Chemistry.

The results of the 2005 election of titular members by e-mail ballot were confirmed and 7 associate members and 10 national representative positions were agreed upon. Ken Racke is continuing as division president (to 2007) and Willie Peijnenburg is the new division secretary after Patrick Holland steps down from this post after 20 years of meritorious service to IUPAC.

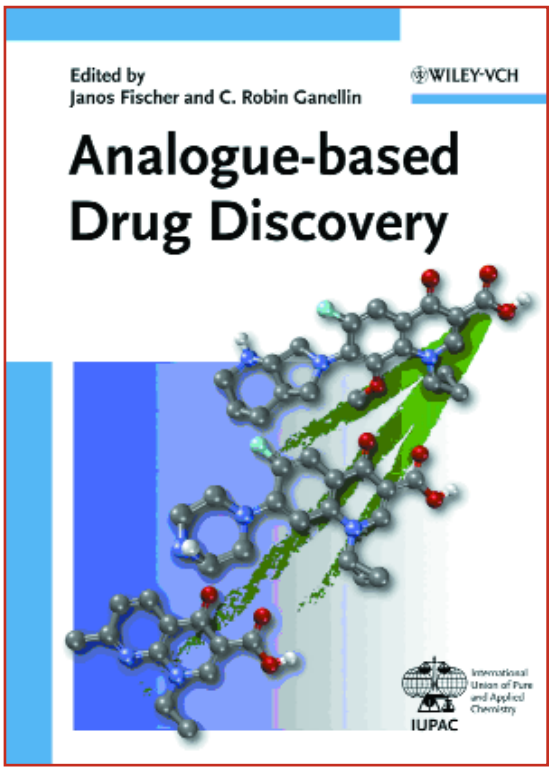
It was agreed that the next face-to-face meeting of the committee will be in Bilthoven, Netherlands, during July 2006, with at least one phone conference to be held in advance of this session.

## Division VII. Chemistry and Human Health

### *Paul W. Erhardt, President*

For its meeting, Division VII developed a very useful tool for evaluating the status of numerous ongoing projects. For the first time, a short update form was distributed by the three subcommittee chairpersons to each of the project leaders within their respective technical areas. There were approximately 10 projects completed in the current biennium, about 25 active projects, and nearly 15 projects undergoing serious consideration at various stages of subcommittee, divisional, and IUPAC review. Taking just one highlight from each subcommittee's activities, the following examples demonstrate the breadth of topics being addressed by the division.

Within the Subcommittee on Nomenclature, Properties, and Units (NPU) in Laboratory Medicine, the C-NPU database <http://dior.imt.liu.se/cnpu> has



been upgraded with codes for the most common properties associated with clinical chemistry using mass concentrations along with identifiers for clinical molecular biology, transfusion medicine, and immunoheamatology. Within the Subcommittee on Medicinal Chemistry and Drug Development, a thorough examination of the role that analog-based drug discovery has played toward bringing both improved and novel therapeutics to the clinic was completed. This important topic is the subject of a book recently published (John Wiley & Sons, GMbH, 2005) and replete with numerous case studies. Finally, within the Subcommittee on Toxicology and Risk Assessment, the second edition of the popular text *Fundamental Toxicology for Chemists* will soon be released (Royal Society of Chemistry).

Thanks to a proactive and rigorous effort by the nomination committee, the division's elections were a resounding success. Among the 10 titular members, 3 associate members, and 8 national representatives, all of which will be participating at the divisional level in 2006, a total of 19 different countries are represented. Dr. Pedro Soares de Araujo (Brazil) was elected vice president.

Finally, the entire division is extremely excited about the recent formation of the IUPAC-Richter Prize in Medicinal Chemistry. Funded by a generous donation from Richter Pharmaceuticals, Ltd. (Budapest, Hungary), this award will recognize one scientist every two years whose work has made a significant contribution to medicinal chemistry within the context of drug discovery and development. Awardees will receive a cash prize of USD 10 000 at an IUPAC-associated scientific meeting wherein they will be expected to deliver a lecture about their work. Funding has been allocated for 5 such awards across 10 years. (For more information, see www.iupac.org/news/Richter_prize.html)

## Interdivisional Subcommittee on Materials Chemistry

### *John Corish, Chairman*

The project to define "materials chemistry" has received IUPAC approval, with Peter Day as project leader. In his absence, Dr. Graham McCann of the Royal Society of Chemistry updated the subcommittee on the project's progress. The objective of the project, which will run for two years, is to produce a statement showing how materials chemistry can fit within the overall IUPAC structure. (See Sept.-Oct. 2005 *CI*, p. 22).

Following discussion, it was agreed that materials chemistry is clearly an interdisciplinary area that crosses the borders of several divisions within IUPAC, although Inorganic is its current principal home. To promote discussion, McCann presented the following first draft of a definition of materials chemistry based on his experience as editor of the *Journal of Materials Chemistry*:

> "The synthesis, processing, characterization, and exploitation of compounds that have useful, or potentially useful, properties and applications. The focus of the research is the creation, understanding, and development of substances or systems with improved properties that will impact positively on business and personal life. To use chemistry to create compounds that may lead to new technological opportunities or significant improvements in existing technology."

As expected and hoped, this generated a considerable amount of positive discussion.

Another hot topic during the meeting was a proposal by Sanjay Mathur to produce a glossary of nano-related terminology. This suggestion was received with much enthusiasm from the subcommittee; in particular, such a project it was thought could perhaps form the first step in a much wider glossary of terminology in materials chemistry. Considerable helpful discussion followed concerning how to establish an agreed terminology in an emerging area such as this.

As reported on page 35, the very successful IUPAC New Directions in Chemistry—Workshop in Advanced Materials (WAM III) attracted more than 150 participants to South Africa on 4–9 September 2005.

It was noted that several of the subcommittee members have continued membership in Division II and therefore the immediate future is assured. However, new recruits are certainly needed.

**Interested In Hosting WAM IV in 2008?**

Contact the subcommittee chairman:

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## Committee on Chemistry Education (CCE)

*Morton Z. Hoffman, U.S. National Representative*

The meeting of CCE, which was chaired by Peter Atkins, began with descriptions by committee members of the chemical education issues that confront their countries. In Europe, the focus is on the implementation of the "Bologna Process," in which all undergraduate university programs will follow a very similar pattern that leads to a uniformly recognized EuroBachelor; the quality of the curricula, the broadening of the diversity of students, and their future employability are current concerns. Russia and the other countries of the former Soviet Union are struggling to complete the reforms that were begun over the past 15 years; the result is that many old wheels have been reinvented. Asian countries are working to adjust their educational systems to reflect their newly developed economic opportunities. Questions have been raised within the provinces in Canada about the licensing of chemists as professionals in the same way that engineers are licensed. Sadly, chemical education in the developing countries around the world is just barely hanging on. In the United States, the American Chemical Society is playing an important role in producing materials across the educational spectrum, reaching out to high school teachers, encouraging research in educational practices and teaching and learning, and working to reflect the changes that are taking place within chemistry and the other molecular sciences in curricular content and pedagogical approaches.

*Peter Mahaffy and Peter Atkins hard at work during the CCE meeting.*

One of the very interesting issues that was discussed, which could have wide ramifications in the publishing world, was the recent directive from the Chinese Ministry of Education requiring that in as little as three years science and mathematics must be taught in English in China's many colleges and universities. The Chinese government is providing funds for faculty members to spend time in anglophone countries in order to perfect their English; institutions are eager to host visits by native English speakers or those for whom English is a well-developed second language. Whether or not this move will succeed in the absence of draconian measures remains to be seen, but clearly, China is looking toward taking a great leap forward in chemical education.

The Subcommittee on Chemistry Education for Development reported on its work in India to develop web-based interactive quizzes for high school chemistry students in several Indian languages in order to motivate students toward further studies in chemistry. The "Flying Chemist Program" seeks to provide the expertise needed to strengthen chemistry education on the primary, secondary, and tertiary levels through visits by chemists who will catalyze the establishment of partnerships among schools, industries, and governments (see Project Place, p. 24). Another project continues to be the development of microscale chemistry for Indian high schools in order to implement low-cost, hands-on experiences.

The Subcommittee on the Public Understanding of Chemistry issued a report that detailed the important role of IUPAC in enhancing the public appreciation of chemistry. The conclusion was reached that chemistry activities aimed at supporting teachers and students within the formal school system are often more effective than those aimed at the general public. The targeted public should be chemists and educators who would understand and work with a variety of other publics. IUPAC would focus on activities such as helping scientists to identify and understand their publics, influencing international organizations, supporting science education systems (particularly in countries in transition), communicating relevant findings from IUPAC projects and activities, and supporting national chemical societies (particularly in countries in transition). The subcommittee also reported on the Young Ambassadors for Chemistry initiative to enhance the public understanding of chemistry through teacher and school audiences in target locations within regions in transition.

Attention was brought to the latest issue of *Chemical Education International* <www.iupac.org/

publications/cei>, the online newsletter of CCE, that contains the texts of the plenary and keynote papers from the 18th International Conference on Chemical Education (ICCE), held 3-8 August 2004 in Istanbul, Turkey. The 19th ICCE will be held in Seoul, Korea, 12-17 August 2006 <www.19icce.org>. Consideration was given to an application from chemists in Mauritius to host the 20th ICCE in 2008.

The committee elected Peter Mahaffy (King's University College, Edmonton, Alberta, Canada) as the new chairman of the committee, and voiced acclamation for the leadership of Peter Atkins since 2002.

## Committee on Chemistry and Industry (COCI)

### *David A. Evans, Chairman*

In essence, COCI's role is to act as a key focus for the "A" (i.e., Applied) in IUPAC by promoting topics and activities of interest and relevance to the chemical industries. So what can be said about COCI after its meeting in Beijing? The clear answer is that COCI is alive and kicking, as evidenced by the attendance of more than 95 percent of committee members, from over 20 countries, who were active contributors to the meetings. Over the years, a great deal of social cohesion has developed amongst group members, again in evidence during the formal meetings, visits, and social gatherings organized in Beijing.

The undoubted highlight was a delightful banquet graciously hosted by Mr. Xianghong Cao and senior colleagues from SINOPEC which set the scene for a magical stay in Beijing. Another key event was a visit of the group to the Beijing Research Institute of Chemical Industry (BRICI), organized and hosted by Jinliang Qiao, one of our long-serving Chinese delegates. COCI is particularly indebted to colleagues at SINOPEC for making our visit to China such a success.

*Former COCI Chairman David Evans and Michael Droescher, German National Representative on COCI.*

*COCI Members and Safety Training Program participants at a tour of SINOPEC research facilities in Beijing (from left): Isiaka O. Bakare (Rubber Research Institute of Nigeria), Esma Toprak (National Representative on COCI from Turkey), and Aldo B. Alles (member from Uruguay).*

With regard to formal committee events, mention must be made of the Safety Training Program Workshop held as part of the Congress. A parallel event was held at the Ottawa Congress in 2003, which I have often described as the best session of that Congress, but regrettably poorly attended. I can report that the symposium in Beijing was also the best session of the Congress (at least in my opinion!) and was well attended! The Safety Training Program and associated Workshops are COCI's flagship activities and the event in Beijing acted as a fitting tribute to its continuing success.

Other notable successes include progress with new projects in Responsible Care, from Bernard West, and nanotechnology, with Alan Smith, and a developing interest in biometrics from Colin Humphris. In the area of the public appreciation of chemistry, the joint CCE/COCI/CHEMRAWN meeting featured a lively and informative discussion of an important paper by Peter Mahaffy (CCE) in which it was concluded that a key to gaining a better image for our craft is education of ourselves as to how best to communicate issues. This is an important pointer for future programs in this area.

COCI regards the Company Associates (CA) program as crucial to its ability to engage chemical companies in IUPAC affairs. There have been several notable achievements during the biennium including a stalwart effort in recent months by Ms. Khalida al-Dalama of Kuwait who has recruited three new CAs. However, one key objective that remains for the future is to streamline the recruitment process with active cooperative engagement of the NAOs, the Secretariat, and COCI.

Mark Cesa, of Innovene, USA, is the new chairman of COCI.