

IUPAC in Glasgow, Scotland

Division Roundups, Part II

Committee on Chemistry Education

by Christiane Reiners, national representative from Germany, and with contributions from Chris Brouwer.*

Among the many committee meetings at IUPAC's General Assembly in Glasgow in August 2009, the passion and enthusiasm for the International Year of Chemistry in 2011 was perhaps most evident in the deliberations of the Committee on Chemistry Education (CCE). After all, this committee was instrumental in building support for the UN Declaration of IYC2011 and it will play a lead role in planning and organizing IYC events. However, the committee's meeting on 2-3 August encompassed much more than IYC. The "normal" committee business was simply condensed into about half the allotted time.

Shortly into the meeting, CCE Chair Peter Mahaffy framed the magnitude of what lies ahead, calling IYC an "opportunity of a lifetime for the professional chemistry community." Against this backdrop, much of the meeting was devoted to discussing "How best can we contribute to the IYC?" Mahaffy encouraged committee members to "focus on the importance of chemistry in our lives" as they devised strategies and developed ideas for activities.

"It is impressive to see what has happened all ready in national chemical societies," said Mahaffy about IYC progress so far. "My hope is that there be something of a scientific legacy that we leave behind." As he explained, the year of geophysics in 1957 resulted in extensive atmospheric monitoring, which then led to our understanding of climate change.

In order to contemplate such grand ideas, and smaller ones too, CCE members broke into working groups for a portion of the meeting to identify, formulate, and plan projects that CCE could coordinate. Before the working groups met, Tony Wright

(Australia) and Mustafa Sözbilir (Turkey) presented the results of a task group that had considered the best types of IYC activities for CCE to pursue.

Since IUPAC has limited financial and human resources, Wright said, there should be an emphasis on activities that support developing countries and a focus on helping teachers. In addition, the task group suggested that IYC activities should be evaluated to see if they meet the following criteria:

- reinforce curiosity among elementary school students
- encourage cooperative learning rather than didactic
- teach responsible stewardship, which includes sustainable development and ethical issues
- facilitate appropriate curriculum development and learning

Four main proposals emerged from CCE's meeting at the GA: (1) global experiments; (2) celebrations of national stories of chemistry; (3) coordination of an international chemistry day or week; and (4) efforts to directly engage the general public. For a more detailed description of these proposals, see the November 2009 *CI* (p. 10, "WCLM Generates Ideas for IYC2011").

As noted previously, CCE plans to emphasize IYC2011 through some of its existing activities, including the Young Ambassadors for Chemistry and the Flying Chemists Program. Mei-Hung Chu, chair of the Subcommittee on Chemistry Education for Development, provided an overview of the Flying Chemists Program, which, since 2005, has provided resources to developing countries that want to promote chemistry. Chu reported that in 2011, the program will focus on Ethiopia, which is fitting since the Ethiopian Chemical Society was the lead petitioner to UNESCO and then the United Nations in the successful designation of 2011

as the International Year of Chemistry.

The meeting included presentations by Lida Schoen, who discussed the Young Ambassadors for Chemistry (YAC) project, and by Natalia Tarasova, who discussed the UN-Decade for Education for Sustainable Development. Furthermore, presentations were made about several important groups: the



Mei-Hung Chiu, chair of the CCE Subcommittee on Chemistry Education for Development, discusses the Flying Chemists Program.

有朋自遠方來，不亦悅乎？

"Isn't it delightful to have friends visiting from afar!"
(Mei-Hung Chiu).

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Network for Inter-Asian Chemistry Educators (NICE), the Australian Collaborative Education Network, FACS, the National Association of Research in Science Teaching, Chemical Heritage Foundation, and OPCW. All these activities aim at bringing partners and stakeholders together and underline the versatility of chemical education, which is a focusing and radiating enterprise at the same time.

Apart from the activities within CCE, it was interesting and encouraging to listen to the contributions from divisional representatives and from the standing committee representatives of COCI (Chemistry and Industry) and CHEMRAWN (Chemical Research for Applied World Needs). On the one hand, those interactions support the idea that chemistry education needs strong partners in other disciplines as chemistry education without chemistry is knitting without wool. On the other hand, chemistry teachers turn out to be important multipliers for spreading innovations in chemistry. Consequently, the interactions with other divisions helped to build up a close communication network, smoothing the way to an International Year of chemistry.

High on the meeting agenda was CCE's flagship activity: the International Conference on Chemical



Thomas Tritton, president of the Chemical Heritage Foundation, addresses the CCE meeting.

Education. Morton Hoffman, the CCE member responsible for the series, reviewed the successful ICCE held in Mauritius in 2008. He was followed by Mei-Hung Chiu, who made a compelling case for attending the 21st ICCE in Taiwan 2010, to be held 8 to 13 August. Meeting participants were then asked to consider competing bids from Poland and Italy to host the 22nd ICCE in 2012. The presentations by the Polish and Italian representatives were impressive and convincing at the same time, which made the final vote rather difficult. After the final tally, Italy was declared the winner, which means that the 22nd ICCE

will take place in Rome. But, before then, see you in Taiwan!

Chris Brouwer, production editor of *C* and principal of *pubsimple*, contributed to this report.

Division IV: Polymer

by Michael Hess, division secretary

The Polymer Division gathered in sunny Glasgow on 31 July to 1 August 2009, with 36 participants from more than 20 countries. The division, which has Christopher Ober (Cornell University, USA) as president and Michael Buback (University Göttingen, Germany) as vice president, comprises six subcommittees:

- Polymer Terminology
- Developing Polymer Materials
- Polymer Education
- Molecular Characterization of Polymers
- Structure and Properties of Commercial Polymers
- Modeling of Polymerization Kinetics

The chairs of these subcommittees reported the results of their work since the last division meeting at the IUPAC World Polymer Congress 2008 in Taipei. At this meeting and in Glasgow, minisummits were held between the Polymer Division and representatives of many international polymer societies (e.g., The European Polymer Federation, The Japanese Society of Polymer Science, The Korean Polymer Society, the American Chemical Society) in order to contemplate tangible cooperation in certain areas. Ideas that emerged from these meetings include the following:



21st International Conference on Chemical Education

Chemical Education & Sustainability in the Global Age

**8–13 August 2010
Taipei, Taiwan**

<http://icce2010.gise.ntnu.edu.tw/>



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- Organize joint symposia and conferences with large international organizations (e.g., during the meetings of the European Polymer Federation or the Asian Pacific Federation as well as at the 2011 GA in Puerto Rico).
- Improve the division's presence on the Internet. The Polymer Division has established a polymer education website <www.iupac.org/polyedu> that has generated strong interest.
- Improve public awareness of the importance and the value of polymer science and technology to our societies. Contacts with industry are being cultivated for a fruitful implementation of the division's ideas.

In order to arouse public interest and to improve visibility of IUPAC activities, the Polymer Division administers the IUPAC-SAMSUNG Polymer Scientists' Award, the DSM Performance Materials Award in cooperation with the Polymer Division, and the IUPAC-Polymer International Award. In particular, these awards acknowledge the activities of young scientists in the field. For 2008, the DSM Award went to Craig Hawker (USA), the IUPAC Polymer International Award to Zhenan Bao (USA), and the Samsung Award to Eric Cloutet (France) in 2008.

An International Research Funding (Pilot) Project was launched by the Polymer Division with the cooperation of the IUPAC task group on International Research Funding in Chemical Sciences. Discussions in Washington, D.C., in 2008 resulted in a detailed plan to call for proposals involving (at least) three scientists and students from a minimum of three countries as a part of the division's educational efforts. The call was launched in October 2009 (for more details see www.iupac.org/polyedu/DivIVCall/). A symposium assembling all participants is planned during the IYC 2011.

Part of the Glasgow meeting involved updates on activities of individual subcommittees. Following is a sampling of some of these updates.

Polymer Terminology

The Subcommittee on Polymer Terminology consists of 38 members from 15 countries. In the past two years, the subcommittee has worked on 24 projects, 7 of which are concerned with polymer nomenclature or are nomenclature related and which involve interdivisional cooperation, specifically with Division VIII. The most important publication is the new edition of the Purple Book, or *Compendium of Polymer Terminology and Nomenclature*, which was finally completed by a group of editors, headed by Richard G. Jones. The

compendium comprises 13 chapters of terminology and 9 chapters related to nomenclature, all of which are based on documents previously published in *PAC*. Another five glossaries containing recommendations have been published in *PAC*.

Developing Polymer Materials

The subcommittee consists of 25 members and has currently two projects in progress. One of its goals is to identify promising developments in the forefront of polymer science.

Polymer Education

A major focus of the Polymer Education Subcommittee is preparing for IYC, but it also is working on providing new teaching materials for free online and improving international research funding. In addition, the subcommittee tries to encourage the hiring of students and post-docs from developing regions to improve their training and broaden their scientific networks. Ongoing projects are the UNESCO/IUPAC Postgraduate Course organized by Pavel Kratochvíl at the Institute of Macromolecular Chemistry in the Czech Republic and the tutorial (Short Course in Polymer Characterization) offered before the annual IUPAC-sponsored POLYCHAR Conference (Delhi/Lucknow, India, in 2008; Rouen, France, in 2009).

Molecular Characterization of Polymers

This subcommittee is currently working on five projects with a high number of participants from industry. Many of the projects tackle statistical problems in chromatographic characterization of polymers, such as reproducibility and reliability of results, but also basic problems involving the description of the separation process that are important when the validity of results has to be considered.

Group photo of Division IV at the General Assembly in Glasgow.



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Structure and Properties of Commercial Polymers

This subcommittee has the most members from industry, with 33 out of 65 members in total from 12 countries. The subcommittee is divided into an Asian-Pacific and a European-American group, which each have two co-chairs. Since the GA in Torino, four projects were completed dealing with topics such as scratch resistance, structure and properties of cyclic polyolefins, and guidelines for rheological characterization.

Modeling of Polymerization Kinetics

The subcommittee consists of 34 members from 11 countries. Modeling and mechanistic studies into free-radical polymerizations are important for science and industry, but often completely different model assumptions and parameter values are reported for ostensibly the same systems. Projects of the subcommittee aim to rectify this situation by producing critically evaluated kinetic parameters, whose values are reliable and which can be used by the international polymer community.

Conferences

There were 16 IUPAC-sponsored international conferences in almost all continents since the last GA, from which six volumes of *Macromolecular Symposia* (Wiley & Sons) were produced, totaling nearly 1000 pages.

The next meeting of the Polymer Division will be at the IUPAC-World Polymer Congress 2010 in Glasgow, Scotland.

Division II: Inorganic Chemistry

by Leonard Interrante, division secretary

The Inorganic Chemistry Division meeting in Glasgow was attended by 25 division members and guests, including 4 Young Observers. It was preceded by a meeting (23–30 July 2009 in Vienna) of the Commission on Isotopic Abundances and Atomic Weights and its major working subcommittees at which isotopic data and atomic weights for the 2007–2009 period were evaluated.

A particularly interesting aspect of the Glasgow meeting was the enthusiasm and involvement of the Young Observers present, with several YO's presenting excellent ideas for the upcoming International Year of Chemistry. In addition to reports from the division president, commission representative Tiping Ding, the subcommittee chairs, and from our project coordinator, Ty Coplen, on the various active and completed



Group photo of Division II at the General Assembly in Glasgow.

projects, along with the proposals submitted and in preparation, we had presentations from CCE, COCI, and the Analytical Division regarding the activities of these groups and from Fabienne Meyers on *Chemistry International*.

Among the topics discussed at this meeting was the name and symbol of the new element with atomic number 112: A provisional recommendation for the name “copernicium” and the symbol “Cn” was made by the division and is now available for public comment. (See <www.iupac.org/reports/provisional/abstract09/corish_310110.html> or page 23). The provisional recommendation is co-authored by Kasuyuki Tatsumi and John Corish, and is open for public comment until 31 January 2010. At the end of the review period, the division will consider the comments received and make the final recommendation.

Another important outcome was approval of the recommendation of the Subcommittee on Materials Chemistry to transform itself into a truly Interdivisional Subcommittee on Materials Chemistry by developing a new structure that would recognize the interdisciplinary and interdivisional character of this subject. Following the meeting in Glasgow, two division members, Leonard Interrante and Tony West, attended a meeting with members of Divisions I (Physical Chemistry) and IV (Polymer) at Cornell University in Ithaca, New York, USA, on 17 October 2009 to set up this new ISMC structure and plan its activities for the coming biennium.

Division II will begin 2010 with a new division president and vice president. Since Division President Kazuyuki Tatsumi was elected vice president of IUPAC in Glasgow, Bob Loss, current division vice president, will become president in January 2010. In a special election held just after the Glasgow meeting, titular member Jan Reedijk was elected vice president of the division, also effective January 2010. 🏆