

Ivanovo, Russia) for his poster “Solubility, Solvation Processes of Hydroxyl- and Carboxy- Acetanilides”; and Melanie Oestreich (Institute of Inorganic Chemistry, TU Bergakademie Freiberg, Germany) for her poster “Determination of Solubilities in the System $\text{MgO-MgCl}_2\text{-H}_2\text{O}$ at 25°C, 40°C and 120°C.”

Sponsorship was provided by Das Land Steiermark, the Stadtgemeinde Leoben, the RH I AG, the Gesellschaft von Absolventen und Freunden der Montanuniversität, and the Austrian Chemical Society GÖCH. IUPAC generously granted financial support for six young scientists from Eastern European Countries to attend, and the Organizing Committee waived their registration fees. The participation of a delegate from Nepal was financially supported by the Lion's Club Leoben. The symposium was chaired by Helmut Antrekowitsch and Heinz Gamsjäger, with assistance from Karin Schober and Bettina Hörmann, conference secretaries, and Harald Harmuth and Johannes Schenk, members of the local Organizing Committee.

Participants enjoyed a half-day excursion to Vordernberg and its blast furnace and finery museums. Herbert Hiebler and Gerhard Sperl guided the English-speaking visitors and A. Lampl guided the German-speaking visitors. At the Gasthof “Schwarzer Adler” a typical Styrian “Brettljause” (afternoon tea on a wooden plate) was served. Accompanying persons enjoyed guided tours to the cities of Leoben and Graz, and a tour through the Enns Valley.

The 15th ISSP will be held in July 2012 in Xining, China.

Heinz Gamsjäger <gamsjaeg@mu-leoben.at> was co-chair of the symposium; he is a professor in the Department of Physical Chemistry at Montanuniversitaet Leoben in Austria. He is a long-time member of the SSED. Input to this report was also provided by Clara Magalhães.



Participants of the 9th Annual Meeting of the IUPAC Subcommittee on Solubility and Equilibrium Data, which met the day before the 14th ISSP.

Research and Education in the Middle East

by Stanley Langer

Scientists from 14 Middle East countries attended the Malta-IV conference on “**Frontiers of Chemical Science: Research and Education in the Middle East**” in Amman, Jordan, from 14–19 November 2009. This was the fourth in the biennial series of meetings known as the Malta conferences, designed to forge stronger relationships with, and establish collaborations between, scientists in the region. As with previous conferences, the intention of the organizers was to draw the attention of national governments to the notion that improving scientific cooperation could act as a spur to sustainable growth and in promoting peace and political reconciliation in a volatile region.

This was the first time that the conference had been held in a Middle East country, the previous three having taken place in Malta (2003, 2005) and Turkey (2007). It was attended by almost 80 invited people, with many more women than at previous conferences. Delegates came from Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, the Palestinian Authority, Qatar, Saudi Arabia, Turkey, and the United Arab Emirates. The conference was cosponsored by UNESCO, IUPAC, the Royal Society of Chemistry, the American Chemical Society, and the Gesellschaft Deutscher Chemiker.

As chair of the Organizing Committee, Zafra Lerman opened the meeting by welcoming HRH Prince Hassan bin Talal of Jordan, well-known internationally as a voice for global sustainability, reconciliation, and inter-religious understanding. His opening remarks reflected his ongoing interest in economic and social governance, and water and energy issues in the region. He noted that science cannot be project driven and that science for knowledge should mean science for citizenship, leadership, education, and inclusion. Critical thinking skills are required to address improvements in the lives of the people in the region concerning climate change, food, health, and sustainable development. He stressed the need to address many unpopular truths and the importance of raising awareness of these issues, charging attendees to develop the consciousness of science referred to in Roger Schank's thesis on what it means to have an educated mind in the 21st century. His presentation was extremely well received and he stayed on to talk to students during the morning break. Prince Hassan also expressed an interest in working with the organizers in the future,

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especially on water issues. He was very interested in the exchanges that Stanley Langer, one of the organizers' vice chairs, has had with Tony Blair's office following the resolution on water in the Gaza strip that the Malta-III conference had approved in 2007.

The conference was structured on a series of thematic workshops, keynote talks from Nobel Laureates, visits, and some social activity, all designed to encourage collaboration between individual scientists from countries in the region. A pre-conference doctoral student workshop on "Communicating the Chemical Sciences" was generously supported by several German institutions.

In addition, an IUPAC Working Group on Regional Water Quality Assessment in Jordan, the Palestinian Authority, and Israel also met during the conference and reported its findings at a subsequent session (see below). The conference concluded with a visit to the SESAME synchrotron facility outside Amman, an international center for research and advanced technology under the auspices of UNESCO.

On this occasion, there were six thematic workshops that dealt with sustainable air and water quality in the Middle East, nanoscience and technology, alternative energy sources, medicinal chemistry and natural products, and two science education workshops covering innovation and chemistry safety and security. Each was co-chaired by Middle East and Western contributors.

The talks given by the Nobel Laureates have always been regarded as crucial to the success of these conferences, providing the cement that binds the delegates together and it is a reflection of the esteem in which these conferences are held that laureates are willing to take so much time out of their busy lives to stay for the entire period of the meeting. On this occasion, the laureates were Claude Cohen-Tannoudji (École Normale Supérieure, Paris), Richard Ernst (ETH, Zurich), Robert Grubbs (Caltech, Pasadena), Walter Kohn (University of California at Santa Barbara), and Yuan Tseh Lee (Academia Sinica, Taiwan).

In "Advances in Atomic Physics: An Overview," Claude Cohen-Tannoudji presented a high-powered erudition on an extremely complex and difficult subject that he made relatively easy to understand.

Richard Ernst's talk on "Academic Responsibility and Our Future" presented more philosophical arguments on ethics and altruism, and brought in concepts voiced by Nelson Mandela, Mahatma Gandhi, and Karl Popper. He professed an obligation on society for global responsibility based on altruism rather than personal profit and the need to be willing to give up a degree of freedom to collaborate towards a responsible market economy. Yuan Tseh Lee's superb talk on "Dynamics of

Molecular Dissociation by Molecular Beam Techniques" also made a complicated subject appear understandable due to the speaker's ability to promote his subject in a clear and authoritative manner.

Bob Grubbs' lecture on "Catalysis for Green Chemistry and the Synthesis of Nanomaterials" brought the focus back to more traditional science and was a direct contribution to the workshop on this topic. Walter Kohn's presentation on "A World Predominantly Powered by Solar and Wind Energy" indicated the enormous problems for the future of the planet if alternative energy sources are not embraced urgently. He drew upon the *Stern Report on Energy* and discussed oil

and natural gas as well as prospects for the nuclear industry.

The organization of the conference allowed considerable time for informal discussions amongst the participants. Most morning and afternoon sessions began with one of the Nobel Laureate presentations followed by discussion and then one or more workshops. These were scheduled so that each attendee had an opportunity, so far as was practicable, to participate in each session. As at previous conferences, each workshop developed a set of statements and recommendations for future action that were presented in a plenary session on the last day.

The workshop on Alternative Energy Sources featured two working sessions consisting of oral presentations and extensive discussions on relevant topics, some of which were updates of the work presented at the previous conference in Istanbul. Two major ideas were considered appropriate for continuing collaboration: a student school/workshop and an Internet communication channel. The workshop, the theme of which would be "Towards Solar Paint: Research to Making a



A poster session at the Malta conference.

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Dream into Reality” would probably be held in 2011. The idea behind an Internet communication channel is to allow contact between scientists and their students on issues relevant for alternative research and teaching. To this end, it was suggested that a closed website could be established that might, for example, provide quantitative, reviewed information on energy information needed by students for experiments and projects, details on suppliers, and open scientific literature that may not otherwise be available.

The workshop on Nanoscience and Technology dealt with basic concepts, sensors and bio-applications, and hybrid organic/inorganic structures. Organizers plan to promote greater student participation at future Malta conferences and a workshop for about 40 students was planned for Turkey in July 2011. It is anticipated that this workshop will deal with the topics discussed in Amman as well as with energy-related applications.

The workshop on Medicinal Chemistry and Natural Products identified a need for focused multidisciplinary programs (e.g., in pharmacology, toxicology, and clinical chemistry) and for further practical postgraduate training, especially for female students. There also needs to be an expansion of web-based resources such as a directory of laboratory equipment and expertise, together with web links of databases and software that are freely available.

The first of the Chemical Education workshops dealt with innovation, with participants asked to identify challenges facing chemical education in the Middle East during the next decade. Numerous issues were identified, including improving university and pre-university education in relation to the development of the region and beyond, reversing the negative response of students towards chemistry and the bad image of the subject presented by the media, and promoting environmental issues, alternative energy sources, and water for irrigation.

The initial presentations set the theme for a discussion on the role of entertainment in teaching science, with the latter talks initiating considerable discussion

regarding the contrast between the linear and systematic approaches to teaching organic chemistry. Several ideas for future action emerged from these discussions, the first being the establishment of a Malta conference science education website to share curricular materials developed by teachers in the region.

Workshop participants put forth a proposal, incorporating aspects of both the above suggestions, to hold a series of workshops for teachers in several Middle East countries on developing teaching materials on alternative energy concepts. It was anticipated that such workshops would serve as models for adoption in other countries. It was noted that there was no regular course or degree in the region that dealt with risk management. It was suggested that a task force be established to develop short courses and/or training sessions in this area and also to develop the criteria and requirements for a degree program in this important subject.

The second of the chemical education workshops dealt with chemistry safety and security, the main topics for discussion being safety, waste management, and risk assessment in the laboratory; issues surrounding the subject of chemical weapons; the disposal of laboratory waste; the promotion of a laboratory inspection tour during the next conference; and the development of a curriculum on chemical risk management. It was also suggested that the Malta conference could act as a pool for information on chemical safety and security.

The workshop on Sustainable Air and Water Quality identified two specific areas for possible future collaborative research projects. The first would deal with the environmental impact of desalination schemes. The forecast of increasingly intensive desalination activity to provide additional fresh water for the region may threaten the environmental quality of coastal land and marine ecosystems, as well

as degrading marine water quality, making desalination activities more difficult and expensive. The outcome of such a project could include guidelines for the sustainable operation of desalination technology. The second project would be participation in regional air-



Conference Chair Zafra Lerman (left), Prince Hassan bin Talal of Jordan, and Stanley Langer, conference vice chair.

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quality studies centered on the eastern Mediterranean. These studies would require extensive data production on both primary air pollution emissions from the cities, industries, and agricultural activities in the region as well as ambient air-quality data across the region. The aim of the project would be to help coordinate the collection of regional emissions and air-quality data for use in regional air-quality model inputs and evaluation studies.

Closely allied to the activities of the air and water-quality workshop was the working group on Regional Water Quality Assessment in Jordan, the Palestinian Authority, and Israel referred to earlier in this report (see IUPAC project 2008-003-3-600; www.iupac.org/web/ins/2008-003-3-600). Participants recommended that the initial study area be expanded to the north to include Lebanon and Syria, which share many of the same water sources. It was also agreed that the results of the initial study be widely disseminated and used to motivate further studies to include Egypt, Libya, and Sudan to the west, and Iraq, Kuwait, Saudi Arabia, and the Gulf States to the east. A full report on this project can be found in the March-April 2010 *CJ*, p. 22.

Conferees presented about 30 oral papers during the workshop sessions, as well as 20 contributions to well-attended and highly stimulating poster sessions that included contributions on water, energy, bioremediation, desert crops, air quality, virtual screening in drug discovery, and science education innovation. These provided participants with an overview of work in the region related to scientific and management strategies. Private discussions will undoubtedly lead to collaborations that would be extremely difficult, if not impossible, to establish under normal circumstances. It was evident that all those present made a contribution to promoting the chemical sciences for peace, diversity, and human rights by building friendship, trust, tolerance, and cooperation in a very turbulent part of the world.

It is well worth recording that the organization of Malta-IV required several additional obstacles to be overcome compared to previous conferences. These included, for example, problems obtaining visas for some participants, and only the strong relationships forged in those earlier meetings enabled such problems to be solved. Without these relationships, an already difficult conference organization would have made matters even more burdensome. The numerous positive comments from participants at the end of the meeting more than justified the efforts made to ensure that the conference took place.

UNESCO will host Malta-V in Paris as a contribution towards the International Year of Chemistry in 2011.

Stanley Langer <stanley1910@yahoo.co.uk> was vice chair of the organizing committee for Malta-IV.

Another Organic Synthesis Boost

by Leiv K. Sydnes

The **18th International Conference of Organic Synthesis** (ICOS-18) was held in Bergen, Norway, from 1-6 August 2010. The meeting was attended by almost 500 delegates from 48 countries, which is quite decent considering the fact that a large number of people who intended to participate, had registered and even paid, had to withdraw because their employer, in most cases university departments, cut the funding. The academic predominance was therefore considerably lower on this occasion than what has usually been the case at previous ICOS meetings, and it is quite noteworthy that more than 75 percent of participants from countries like Denmark, Sweden, and Switzerland came from chemical industry.

The main ingredients of the meeting, following the ICOS tradition, were lectures, including the Thieme-IUPAC Prize Lecture, poster sessions, exhibitions, and a Wednesday afternoon conference trip. Due to very valuable input from members of the International Advisory Board, plenary and invited lectures were delivered by chemists from 22 different countries from all around the world. The talks covered most aspects of modern organic synthesis, from new delicate methodologies based on mechanistic understanding, via greatly improved synthesis technologies and exciting total syntheses, to the application of organic synthesis to meet challenges in bioorganic chemistry and the life sci-



Professor Phil S. Baran, the winner of the Thieme-IUPAC Prize in Synthetic Organic Chemistry, gave a wonderful lecture about the ideal synthesis. (Photo: Adnan Budnjo, University of Bergen).