

Research in Chemistry Education

by Jan Apotheker and John Bradley

On the occasion of the celebration of the 50th anniversary of the African Union, the Federation of African Societies of Chemistry (FACS) organized the first **African Conference on Research in Chemistry Education**. The conference was held in the same venue where seven years ago the FACS was founded, the UNECA conference center in Addis Ababa.

Around 150 registered participants attended the conference, with invited speakers from USA, South Africa, Egypt, Ethiopia, Nigeria, Turkey, Japan, Greece, Norway, the Netherlands, and Poland.

The conference marks an important step for chemistry education in Africa. Chemistry education is an important factor in meeting the challenges humankind faces in the coming years. Conferences where people can exchange their experiences and research are vital for the growth and improvement of chemistry education. The organizers, Professor Temechehn Engida from Ethiopia and Professor Farouk Fahmy from Egypt are to be commended for taking this initiative.

From IUPAC, Leiv Sydnes, chair of CHEMRAWN, and Jan Apotheker, secretary of CCE, were present. At the opening session Jan Apotheker was able to congratulate the organizers on behalf of IUPAC.

The conference ran 5-7 December 2013. The use of ICT was one of the main themes in the conference with interesting contributions from sources as far apart as the USA, South Africa, and Japan. Subjects ranged from the use of cell phones, apps for smart phones to special presentation software. Visualization was also an interesting topic where specific software was used to demonstrate chemical reactions.

As was the main idea of course there were also contributions from local chemistry education researchers. They gave us some interesting insights in developments and challenges in chemistry education both at the university level as well as the high school level.

One does not always realize that the access to literature, instruments like Sci-finder—but more importantly chemicals—is not a matter of course as it is in most developed countries.

Despite some organizational hurdles the conference was a success. During the conference dinner the organizers introduced participants to the Ethiopian culture and they were not only able to sample the Ethiopian cuisine, but were also introduced to Ethiopian music and dance.

For the continuing development of chemistry education and research in chemistry education it is very important that this conference will be continued every two year in the future. At the closing of the conference Johannesburg and Egypt were indicated as possible venues for the second ACRICE.

Homogeneous and Heterogeneous Catalysis

by Kiyotaka Asakura

The Sixteenth International Symposium on Relations between Homogeneous and Heterogeneous Catalysis Conference (ISHHC-16), chaired by Professor Atsushi Fukuoka (Hokkaido University), was held in Sapporo, Japan 4-9 August, 2013, under the sponsorship of International Union of Crystallography (IUCr), the Science Council in Japan (JSC) and the Japan Society for the Promotion of Science (JSPS). The Honorary Chair was Professor Yasuhiro Iwasawa.

The ISHHC is a series of symposia on catalysis starting in Brussels, Belgium (1974), followed by Lyon, France (1977), Gröningen, The Netherlands (1981), Asilomar, USA (1983), Novosibirsk, Russia (1986), Pisa, Italy (1989), Tokyo, Japan (1992), Balatonfüred, Hungary (1995), Southampton, UK (1999), Lyon, France (2001), Evanston, USA (2003), Florence, Italy (2005), Berkeley, USA (2007), Stockholm, Sweden (2009), and Berlin, Germany (2011) every two or three years. Catalysis investigation is the most important issue to support sustainable development. Aims of ISHHC are to link different fields of catalysis: heterogeneous, homogeneous and enzyme, and to understand catalysis on the molecular level. Recent advances in instrumentation, synthesis and reaction studies will permit the molecular-nanoscale characterization of the catalyst systems for similar reactions and the development of molecular-level integration and correlations of these three different catalysis fields. To further this goal we aim to uncover new aspects and common concepts that emerge from the molecular-nanoscale studies of active structures and dynamics of the three types of catalysts, achieving catalyst design and synthesis and addressing key issues of catalytic activity and selectivity.

We had 503 participants from about 30 countries including scientists from Africa, South America and Asian countries such as Thailand, Saudi Arabia, Mexico, Brazil and Nigeria.

In this ISHHC-16 we emphasized the interdisciplin-

any nature of the field. The conference logo shows a symbol mark of ISHHC-16. The Chinese character in the background of the center of symbol mark means a strong linkage. We have invited following seven plenary lecturers, top-class scientists in each field; Prof. Keiji Morokuma (Theoretical chemistry), Prof. Gabor A. Somorjai (Heterogeneous catalyst), Prof. Pierre Dixneuf (Homogeneous catalyst), Prof. David Milstein (Homogeneous catalyst), Prof. Krzysztof Matyjaszewski (Polymer catalyst), Prof. Hans-J. Freund (Surface science), and Prof. Christophe Coperet (Heterogeneous catalyst). Prof. Somorjai stressed the importance of stronger collaborations in the investigation of biological systems, such as enzymes. We invited two keynote lecturers, Prof. Osamu Ishitani speaking about photoreduction of CO₂ by biomimetic catalyst and Prof. Alexander Katz speaking about bioinspired catalysts.

The oral sessions were composed of two parallel sessions. We had 96 general oral talks and 17 keynote lectures on the following eight topics: 1. New Concept and Mechanism, 2. New Methods and Characterization, 3. Advanced Materials for Catalysis, 4. Catalysis for Green and Sustainable Chemistry, 5. Catalysis for Fine Chemicals, 6. Bio-inspired Catalysts, 7. Energy and Environmental Catalysts, and 8. New Industrial Catalyses and Processes. In each oral session, lectures of the homogeneous and heterogeneous scientists were completely mixed up so that we could enhance the interaction between different fields and deepen our knowledge about catalysts by looking from the different sides.

In the poster session we had 230 posters including 31 recent results reports (RRR). In order to encourage young scientists we awarded 13 young scientists: M. P. Conley, K. Takahashi, C. Jiang, O. Verho, E. Watanabe, S. Kityakarn, Y. Satoh, J.-S. Huang, Y. Nagata, M. Baldofski, M. Gao, K. Fukumoto, and M.M. Nigra.

Three evening sessions for specialized topics were held in order to enhance the intensive discussion.

On the first day we had an industrial session where four big Japanese chemical companies presented their challenges in developing new catalysts. The evening session on the second day was concerned with the global collaboration to establish the sustainable society using catalysts. Six

professors representing each field have discussion about the possibilities of our international collaboration. Prof. Eiichi Negishi, Nobel Laureate in Chemistry, 2010, happened to participate in the second day's evening session and give his comments. On the third day Prof. Naoto Chatani organized a session about molecular activation, a new kind of catalyst where five professors were invited. They were all very interesting sessions and many people took part in the session until late at night.

In conclusions the ISHHC -16 ended in success. The proceedings will be published in *Topics in Catalysis* as a special issue in 2014. The next ISHHC-17 will be held in Utrecht, Netherland, organized by Prof. Bert Weckhuysen. Finally we heartily express our thanks to IUCr for their kind sponsorship.

www.shokubai.org/ishhc16/

Brazilian Symposium on Biorefineries

by *Silvio Vaz Jr.*

The second **Brazilian Symposium on Biorefineries** was held in the city of Brazilia, Brazil, 24-26 September 2013, and welcomed 200 participants from industry, research institutions, universities and government, who presented their research on the important theme of chemical sciences and related areas, such as biology, agronomy, economy, and engineering. This series of meetings started in Brasília in September 2011 as the Brazilian Symposium on Biorefineries (SNBr), organized by Dr. Silvio Vaz Jr. and others researchers at Brazilian Agricultural Research Corporation (Embrapa).

The program topics of the second SNBr symposium ranged from biomass production and availability to conversion processes, analytical technologies, economic and regulatory framework, and sustainability.

The symposium had four plenary lectures, and sixteen invited lectures, confirming the vitality of this area of bioeconomy and renewable chemistry.

Now, the Organizing Committee is starting the discussion for the third Brazilian Symposium on Biorefineries in 2015.

www.snbr2013.com.br

