Coordinating Chemistry

by Franc Meyer, translated from German to English by Katja Heinze

From 21–26 July 2002, the International Conference on Coordination Chemistry (ICCC) took place in Heidelberg, Germany. More than 1100 chemists from 57 nations traveled to the scientific metropolis at the Neckar river to report on and discuss the latest progress in coordination chemistry in 223 lectures and 768 poster presentations.

Since 1950, the ICCC, which usually takes place biannually, has been the central meeting of coordination chemists from all over the world. This year, the 35th conference in the series was brought to Germany for the third time—after Hamburg (1976) and Gera (1990). There was overwhelming interest in the conference, but limitations in the size of the venue prevented a much larger number of participants. The up-to-date and attractive conference program was compiled by the organizing committee of Gottfried Huttner, Elisabeth Kaifer and Roland Krämer.

The diversity of modern coordination chemistry today and the evolution of coordination chemistry into a link between different fields of modern chemistry was impressively demonstrated. Whether bioinorganic chemistry, molecular precursors for novel materials, supramolecular chemistry, or homogeneous metal catalysis—coordination units constitute the fundamental building blocks. Accordingly, the excellent plenary lectures covered all the topics of modern coordination chemistry. Itamar Willner (Jerusalem) gave an account on the development of functional nanostructures elaborately composed of coordination units, biopolymers, and surfaces to construct modules of electronic, electrocatalytic, and optoelectronic devices. Dante Gatteschi (Florence) elucidated the strategies for achieving and understanding high magnetic anisotropies in single molecules—anisotropy is the fundamental prerequisite for molecular magnetism and a thorough understanding is necessary for the improvement of magnetic properties and for future application in nanomagnets. The fact that the mechanism of metallocen-catalyzed olefin polymerization can be conceived only if the so-far neglected “non-coordinating” counter anions are also taken into account, was demonstrated by Hans H. Brintzinger (Konstanz). The awarding of the Wilkinson prize to Achim Müller (Bielefeld) was doubtlessly a highlight, as well as the impressive lecture given by the laureate, in which he showed the controlled construction, transformation, nesting, and combination of giant molecular polyoxometallate balls, disks, and rings with up to 264 metal atoms—coordination chemistry in a novel dimension.

Finally, J. H. Clark (London) entertained the audience with his colorful presentation about analysis of inorganic pigments used in arts. Raman microscopy not only allows the identification pigments for dating and assigning artwork, but also leads to the discovery of art forgeries as shown by several spectacular examples. Other plenary lectures covered the following topics: self-organization of coordination cage compounds and control of chemical reactions in such supramolecular vessels (M. Fujita, Tokyo); structure elucidation of photosystem I with more than 96 cofactors and of the unique Mn$_4$ cluster in the water oxidizing complex of photosystem II (P. Fromme, Berlin); synthesis and electronic analysis of novel, inverted sandwich compounds of uranium (C. C. Cummins, MA, USA); luminescent materials with variable absorption and emission characteristics synthesized in a rational way using a coordination chemical approach (V. W.-W. Yam, Hong Kong); and complexes of lanthanide ions with expanded and modified porphyrins which have advanced in clinical testing as anticancer drugs (J. L. Sessler, Austin/Texas). These contributions show once more that fundamental research—especially in the interdisciplinary field of coordination chemistry—leads to new insights, beautiful results, and new applications.

The numerous diversified oral presentations were organized in six parallel sessions (Bioinorganic Chemistry, Metals in Medicine, Metals in Catalysis, Werner Type Complexes, Supramolecular Coordination Chemistry, Materials and Nanochemistry) giving many young scientists the opportunity to present their research. The two poster sessions, in which the participants actively and vividly discussed all aspects of coordination chemistry and socialized with each other, constituted an integral part of the conference. The fact that many discussions and conversations lasted far into the night was due to the perfect organ-
Chemical Thermodynamics by Gerhard M. Schneider

The 17th IUPAC Conference on Chemical Thermodynamics (ICCT 2002) was held at Rostock, Germany, from 28 July to 2 August 2002. Conference chairmen were Prof. A. Heintz and Prof. E. Vogel, University of Rostock, Germany. Since the first event in 1969 in Warsaw, Poland, these biennial conferences have gained increasing international interest and reputation. They are now well established and belong to the most important periodical conferences in the field of chemical thermodynamics worldwide.

The conference was a very successful meeting with 594 attendees (including 78 accompanying persons) from 46 countries. The scientific program included the Rossini Lecture, 7 plenary lectures, 3 main lectures, 25 invited lectures, 227 oral contributions, and 273 posters. Invited lectures will appear in Pure and Applied Chemistry, with John H. Dymond as conference editor.

In Rostock, the scientific program started with the traditional Rossini Lecture, which was presented by Prof. J. M. Prausnitz, Berkeley, CA, USA, on "Molecular Thermodynamics for Some Applications in Biotechnology" (see page 13).

Seven symposia and four workshops were held concurrent with the Laehnwitz Seminar on Calorimetry. The complete program was accompanied by database demonstrations coordinated by H. V. Keiaian and W. M. Haynes.

Succeeding the former IUPAC Commission on Thermodynamics, the new International Association on Chemical Thermodynamics (IACT), established at Rostock, will arrange for all future conferences including IUPAC sponsorship. J.-P. Grolier (Clermont-Ferrand, France) will act as chairman, J. H. Dymond (Glasgow, U.K.) as secretary, and A. R. H. Goodwin (Cambridge, U.K. and Ridgefield, CT, USA) as treasurer. All will serve four-year terms.

The next ICCT will be held in Beijing, China, from 23-27 August 2004.

Symposia
- Molecular Simulations of Fluids and Statistical Thermodynamics, coordinated by T. Boublik and H. Krienke
- Phase Equilibria, Supercritical Mixtures, and Separation Techniques Including Polymer Systems, coordinated by T. W. de Loos and W. Art
- Electrolyte Solutions and Non-Electrolyte Mixtures Including Reactive Chemical Systems, coordinated by T. M. Letcher, E. Wilhelm, and G. Maurer
- Thermodynamic Properties of New and Advanced Materials Including Pharmaceuticals, coordinated by R. D. Weir and S. Stalen
- Organized Solutions, Surface and Colloid Chemistry, coordinated by G. Olofsson and G. H. Findenegg
- Thermochemistry, Calorimetry, and Molecular Energetics, coordinated by A. L. Smith and G. Wolf.

This symposium also included the Laehnwitz Seminar on Calorimetry, coordinated by C. Schick.

- Thermodynamics in the Biological Sciences. Theoretical Aspects and Technical Applications, coordinated by R. Goldberg and H.-J. Hinz

Workshops
- Material and Energy Transport in Dense Membranes, coordinated by J. G. Crespo and R. N. Lichtenthaler
- Thermochemical, Thermodynamic, and Transport Properties of Halogenated Hydrocarbons and Mixtures, coordinated by A. Laesecke and U.K. Deiters,
- Properties of Ionic Liquids and their Application in Chemical Engineering, coordinated by K. N. Marsh and A. Heintz
- Educational Thermodynamics, coordinated by T. M. Letcher

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