

Report of the International Union of Pure and Applied Chemistry: 1996

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Executive Secretary

As a non-General Assembly year, the business of the Union in 1996 was conducted through meetings of the Executive Committee (Oxford, April) and the Bureau (Oxford, September). The membership remained unchanged at 41 NAOs.

Consideration of the future scientific policy of the Union continued through a regional 'brainstorming' session in the USA (Belmont, June). Some 12 academic and industrial chemistry leaders from North America participated in an attempt to develop suitable long-term plans. Follow-up sessions are planned for 1997 in Europe (London, February) and in Asia (Singapore, June). A meeting of the IUPAC Officers with Division Presidents and Vice-Presidents (Frankfurt, March), to consider the recommendations arising from the 'brainstorming' sessions and the 1997 Vice-Presidential Critical Assessment.

Having resolved in 1995 to reconsider its earlier decision, by adopting the 1994 recommendations on names and symbols for the transfermium elements as provisional, the Union duly invited public comment during January–May 1996. The submissions were considered by the Commission on Nomenclature of Inorganic Chemistry (Chestertown/Maryland, August) and revised recommendations for elements 104–109 were referred for comment by the three laboratories concerned in the discovery of TFE. Eventually, the revised recommendations will be presented to the IUPAC Council (Geneva, August 1997) for final approval.

IUPAC considered a number of declarations, particularly the Manila Declaration of 1992 and the Melaka Accord of 1994, on the subject of biodiversity. An IUPAC statement drafted by its Medicinal Chemistry Section, *Preservation and Utilization of Natural Biodiversity in Context of Search for Economically Valuable Medicinal Biota*, was approved by the Bureau and published in the IUPAC journal *Pure and Applied Chemistry (PAC)* (December 1996). Several recommendations were made,



which should be considered by participants when promulgating declarations and enacting legislation on the topic.

Over the past few years, much concern has been expressed about the effect of chlorine and chlorine-containing compounds on the environment. In its capacity as an international non-governmental organization, IUPAC published a *White Book on Chlorine*. The chapters, prepared by 14 experts from throughout the world, critically evaluated various aspects of the subject and are of interest not only to academic institutions, industry, governmental agencies and environmental organizations, but also to the general public. Publication was as an issue of *PAC* (September 1996), and bulk copies were made available to the chemical industry through regional chemical manufacturers associations. The *White Book* attracted considerable attention, and similar analyses are envisaged of other globally important issues, in which IUPAC can play a role, standing firmly on a scientific foundation independent of governments and industry, by calling on its worldwide network of experts from various fields of chemistry.

CHEMRAWN IX—World Conference on The Role of Advanced Materials in Sustainable Development: Sustainable Production, Use, Disposal and Recycling of Materials—was held in Korea (Seoul, September). It was a follow-up to several earlier CHEMRAWN Conferences on related issues, organized to coincide with the 50th anniversary of the Korean Chemical Society. There were over 360 participants from 17 countries, and the Conference was generally held to have been a success. Important global and multinational problems were identified, such as the role of technology in reducing the ecological load, introduction of renewable energy sources, strategies for selection of and research for ecology-friendly processes, formulation of criteria for estimation of acceptability of current technologies for material production, and effective ways of international cooperation and information exchanges. Two panels on *What New Materials are Needed for Sustainable Development* and *Zero Emissions and Zero Waste Processing for Sustainable Development* focused on problems of primary importance. Proceedings and Perspectives and Recommendations prepared by the Future Actions Committee were published in early 1997.

A reconstituted Committee on Affiliate Membership was assigned the task of considering replacement of the Affiliate Membership Programme as such with elements of priority as identified by the Bureau and Council (Guildford, 1995), including a critical evaluation of the overheads and Secretariat staff costs. It met (Oxford, September) for extensive discussions, with the intention to finalise its recommendations for presentation to the Executive Committee (April 1997). A final proposal will then be submitted to the Council (Geneva, August 1997).

The retirement of the Executive Secretary (March 1997) and other senior staff provided a unique opportunity to move the IUPAC Secretariat elsewhere. After carefully evaluating several possibilities, it was decided to accept an offer to relocate the Secretariat at Research Triangle Park, North Carolina, during 1997 for at least the next ten years, and then to review the location every ten years. A significant financial investment in future information technology equipment and other facilities is required. The opportunity is being taken to update the *History of IUPAC* with a supplement covering 1987–1997 before the Secretariat is relocated.

Meanwhile, an IUPAC Home Page was launched in early 1996 on the Internet (WWW) as a subagent of the UK Royal Society of Chemistry's home page. It provides comprehensive information on the work of the Union, and includes directories of all IUPAC bodies. Chemists will be kept up to date with the Union's meetings and initiatives, training for safety and environmental protection. Also, they can visit chemical industrial WWW sites via hypertext links to the IUPAC Company Associates,

and check on publications via the Union's publisher, Blackwell Science. The contents of the home page are being expanded to cover other IUPAC activities, and the possibility of developing IUPAC provisional recommendations via the page is under consideration.

ICSU funding was provided for three IUPAC projects in 1996. A main part of the Education Training project consisted of *The Design and Field Testing of An Environmental Package* by the Committee on Teaching of Chemistry: steady progress has been accomplished, and completion of the work is expected early in 1998.

The Quality Control in Trace and Process Analysis grant was used by the Commission on General Aspects of Analytical Chemistry to organize a meeting (Bologna, August) to discuss the first draft report. A final report is expected in mid-1997. The Water/Aqueous Chemistry grant was used in part to fund a meeting of the Commission on Equilibrium Data (Budapest, July), at which the project on *Complexation Processes in Seawater* was considered. Part I of the report was published (see technical report 5 in Appendix hereto), and a first draft of Part II is expected by mid-1997.

APPENDIX

The following reports on nomenclature, symbols, terminology, and conventions (IUPAC Recommendations 1996) were published during the year:

- 1 Commission on Chemical Kinetics. A glossary of terms used in chemical kinetics, including reaction dynamics. *Pure Appl. Chem.* 1996, **68**, 149–192.
- 2 Working Party on Theoretical and Computational Chemistry. Acronyms used in theoretical chemistry. *Pure Appl. Chem.* 1996, **68**, 387–456.
- 3 Commission on Molecular Structure and Spectroscopy. Symmetry, selection rules and nomenclature in surface spectroscopies. *Pure Appl. Chem.* 1996, **68**, 457–467.
- 4 Commission on Quantities and Units in Clinical Chemistry and International Federation of Clinical Chemistry. Glossary of terms in quantities and units in clinical chemistry. *Pure Appl. Chem.* 1996, **68**, 957–1000.
- 5 Commission on Agrochemicals and the Environment. Glossary of terms relating to pesticides. *Pure Appl. Chem.* 1996, **68**, 1167–1193.
- 6 Commission on Functional Polymers. Terminology for membranes and membrane processes. *Pure Appl. Chem.* 1996, **68**, 1479–1489.
- 7 Commission on Separation Methods in Analytical Chemistry. Nomenclature for non-linear chromatography. *Pure Appl. Chem.* 1996, **68**, 1591–1595.
- 8 Joint Commission on Biochemical Nomenclature. Nomenclature of carbohydrates. *Pure Appl. Chem.* 1996, **68**, 1919–2008.
- 9 Commission on Nomenclature of Organic Chemistry and Commission on Physical Organic Chemistry.

- Basic terminology of stereochemistry. *Pure Appl. Chem.* 1996, **68**, 2193–2222.
- 10 Commission on Photochemistry. Glossary of terms used in photochemistry. *Pure Appl. Chem.* 1996, **68**, 2223–2286.
 - 11 Commission on Macromolecular Nomenclature. Glossary of basic terms in polymer science. *Pure Appl. Chem.* 1996, **68**, 2287–2311.
 - 12 Commission on Macromolecular Nomenclature. Definitions of terms relating to degradation, aging, and related chemical transformations of polymers. *Pure Appl. Chem.* 1996, **68**, 2313–2323.
 - 13 Section on Medicinal Chemistry. Preservation and utilization of natural biodiversity in context of search for economically valuable medicinal biota. *Pure Appl. Chem.* 1996, **68**, 2325–2332.

The following technical reports were published during the year:

- 1 Commission on Molecular Structure and Spectroscopy. High resolution wavenumber standards for the infrared. *Pure Appl. Chem.* 1996, **68**, 193–208.
- 2 Commission on Equilibrium Data. Stability constants of metal complexes of amino acids with charged side chains—I: Positively charged side chains. *Pure Appl. Chem.* 1996, **68**, 469–496.
- 3 Commission on Polymer Characterization and Properties. Critically-evaluated propagation rate coefficients in free radical polymerizations—I. Styrene and methyl methacrylate. *Pure Appl. Chem.* 1996, **68**, 1491–1494.
- 4 Commission on Microchemical Techniques and Trace Analysis. Analytical methodology for determination of aluminium fractions in natural fresh waters. *Pure Appl. Chem.* 1996, **68**, 1597–1638.
- 5 Commission on Equilibrium Data. Specific problems in measurement and interpretation of complexation phenomena in seawater. *Pure Appl. Chem.* 1996, **68**, 1639–1656.
- 6 Commission on High Temperature and Solid State Chemistry. Quantitative analysis of a PbO-SiO₂ glass by electron microprobe. *Pure Appl. Chem.* 1996, **68**, 1657–1663.
- 7 Commission on Polymer Characterization and Properties. A collaborative study of structure and rheological properties of EVOH/SMA blends produced by reactive extrusion. *Pure Appl. Chem.* 1996, **68**, 1665–1682.
- 8 Committee on Chemistry and Industry. *IUPAC White Book on Chlorine*. *Pure Appl. Chem.* 1996, **68**, 1683–1824.
- 9 Section on Medicinal Chemistry. General features of contracts for natural product collaborations. *Pure Appl. Chem.* 1996, **68**, 2333–2337.
- 10 Commission on Atomic Weights and Isotopic Abundances. Atomic weights of the elements 1995. *Pure Appl. Chem.* 1996, **68**, 2339–2359.
- 11 Commission on Thermodynamics. *International Thermodynamic Tables of the Fluid State—Vol. 13: Methane*. Published in book form by Blackwell Science, Oxford, 1996.
- 12 Commission on Thermodynamics. *Transport Properties of Fluids: Their Correlation, Estimation and Prediction*. Published in book form by Cambridge University Press, 1996.
- 13 Commission on Thermodynamics. *Heat Capacity of Liquids: A Critical Review and Recommended Values*. Published in book form as Monograph 6 (in 2 volumes) in *J. Phys. Chem. Ref. Data* monograph series by American Chemical Society, Washington, DC, 1996.
- 14 Commission on Solubility Data. *Solubility Data Series—Vol. 62: Carbon Dioxide in Water and Aqueous Electrolyte Solutions*. Published in book form by Oxford University Press, Oxford, 1996.
- 15 Commission on Solubility Data. *Solubility Data Series—Vol. 63: Metals in Liquid Alkali Metals—I: Be to Os*. Published in book form by Oxford University Press, Oxford, 1996.
- 16 Commission on Solubility Data. *Solubility Data Series—Vol. 64: Metals in Liquid Alkali Metals—II: Co to Bi*. Published in book form by Oxford University Press, Oxford, 1996.
- 17 Commission on Solubility Data. *Solubility Data Series—Vol. 65: Copper (I) Halides and Pseudohalides*. Published in book form by Oxford University Press, Oxford, 1996.
- 18 Committee on Printed and Electronic Publications. *Chemistry for the 21st Century—Reactivity of Solids: Past, Present and Future*. Published in book form by Blackwell Science, Oxford, 1996.
- 19 Commission on Toxicology and Committee on Teaching of Chemistry. *Fundamental Toxicology for Chemists*. Published in book form by UK Royal Society of Chemistry, 1996.
- 20 Division on Organic Chemistry. *Highlights in Bioorganic Chemistry: A Symposium in Print*, *Pure Appl. Chem.* 1996, **68**, 2009–2192.

Thirty-six symposia were sponsored by IUPAC in 1996, namely:

- 1 26–29 February 1996. 8th International Conference on Phenothiazines and Structurally Related Psychotropic Compounds, Jaipur, India.
- 2 16–19 April 1996. International Conference on Chemical Physics on the Border of 21st Century, Moscow, Russia. [Proceedings to be published in *Pure Appl. Chem.*, 1997].
- 3 21–24 May 1996. 2nd International Symposium on Molecular Order and Mobility in Polymer Systems, St. Petersburg, Russia. [Proceedings published as *Macromolecular Symposia* Vol. 113 by Hüthig & Wepf Verlag, Basel, 1997].
- 4 26–31 May 1996. 2nd International Symposium on Free Radical Polymerization: Kinetics and Mechanisms, Santa Margherita Ligure, Genoa, Italy. [Proceedings published as *Macromolecular Symposia* Vol. 111 by Hüthig & Wepf Verlag, Basel, 1996].

- 5 27–31 May 1996. 9th International IUPAC Symposium on Mycotoxins and Phycotoxins, Rome, Italy.
- 6 24–28 June 1996. 11th Bratislava International Conference on Polymers: Thermal and Photo-induced Oxidation of Polymers and Its Inhibition in the Upcoming 21st Century, High Tatras, Slovak Republic. [Proceedings published as *Macromolecular Symposia* Vol. 115 by Hüthig & Wepf Verlag, Basel, 1997].
- 7 25–29 June 1996. 11th International Conference on Surface Forces, Moscow, Russia.
- 8 17–20 June 1996. International Symposium on Theoretical and Experimental Aspects of Protein Folding, San Luis, Argentina.
- 9 30 June–4 July 1996. 11th International Conference on Organic Synthesis, Amsterdam, Netherlands. [*Pure Appl. Chem.* 1997, **69**(3)].
- 10 30 June–5 July 1996. 11th International Congress on Catalysis, Baltimore, MD, USA. [Proceedings to be published by Elsevier, Amsterdam].
- 11 7–12 July 1996. 17th International Conference on Organometallic Chemistry, Brisbane, Australia.
- 12 14–20 July 1996. International Symposium on Sweeteners, Jerusalem, Israel. [Proceedings to be published in *Pure Appl. Chem.* 1997, **69**(4)].
- 13 14–19 July 1996. 14th International Conference on Chemical Education—Chemistry: Expanding the Boundaries, Brisbane, Australia.
- 14 15–18 July 1996. 37th Microsymposium on Macromolecules—(Bio)degradable Polymers: Chemical, Biological and Environmental Aspects, Prague, Czech Republic. [Proceedings to be published as a *Macromolecular Symposia* volume by Hüthig & Wepf Verlag, Basel, 1997].
- 15 22–25 July 1996. 7th International Symposium on Solubility Phenomena, Leoben, Austria. [Proceedings to be published in *Pure Appl. Chem.* 1997, **69**(5)].
- 16 21–26 July 1996. 18th International Carbohydrate Symposium, Milan, Italy. [Proceedings to be published in *Pure Appl. Chem.* 1997, **69**(7)].
- 17 21–26 July 1996. 16th IUPAC Symposium on Photochemistry, Helsinki, Finland. [Proceedings to be published in *Pure Appl. Chem.* 1997, **69**(4)].
- 18 4–9 August 1996. 36th IUPAC Symposium on Macromolecules, Seoul, Korea. [Proceedings to be published as a *Macromolecular Symposia* volume by Hüthig & Wepf Verlag, Basel, 1997].
- 19 14–17 August 1996. 2nd International Conference on Excitonic Processes in Condensed Matter, Kurort Gohrisch, Germany. [Proceedings to be published in *Pure Appl. Chem.* 1997, **69**(6)].
- 20 18–23 August 1996. 31st International Conference on Coordination Chemistry, Vancouver, Canada. [Proceedings to be published in *Pure Appl. Chem.* 1997].
- 21 18–23 August 1996. 11th International Symposium on Carotenoids, Leiden, Netherlands. [Proceedings to be published in *Pure Appl. Chem.* 1997].
- 22 20–25 August 1996. International Symposium on Macromolecular Condensed State, Beijing, China. [Proceedings to be published as a *Macromolecular Symposia* volume by Hüthig & Wepf Verlag, Basel, 1997].
- 23 25–29 August 1996. 13th IUPAC Conference on Physical Organic Chemistry, Incheon, Korea. [Proceedings to be published in *Pure Appl. Chem.* 1997].
- 24 25–30 August 1996. 14th IUPAC International Conference on Chemical Thermodynamics, Osaka, Japan. [Proceedings to be published in *Pure Appl. Chem.* 1997].
- 25 25–30 August, 1996. 10th International Biotechnology Symposium, Sydney, Australia.
- 26 1–4 September 1996. International Conference on Environmental Biotechnology, Palmerston North, New Zealand. [Proceedings to be published in *Pure Appl. Chem.* 1997].
- 27 1–6 September 1996. CHEMRAWN IX: World Conference on Role of Advanced Materials in Sustainable Development, Seoul, Korea. [Proceedings published by Korean Chemical Society, 1997].
- 28 1–7 September 1996. EUROANALYSIS IX, Bologna, Italy.
- 29 8–12 September 1996. 14th International Symposium on Medicinal Chemistry, Maastricht, Netherlands.
- 30 11–13 September 1996. International Symposium on Food Packaging: Ensuring Safety and Quality of Foods, Budapest, Hungary.
- 31 15–18 September 1996. 4th International Symposium on Characterization of Porous Solids, Bath, UK.
- 32 15–20 September 1996. 20th IUPAC International Symposium on the Chemistry of Natural Products, Chicago, USA. [Proceedings to be published in *Pure Appl. Chem.* 1997].
- 33 23–26 September 1996. International Symposium on Polycondensation Related Processes and Materials, Paris, France. [Proceedings to be published as a *Macromolecular Symposia* volume by Hüthig & Wepf Verlag, Basel, 1997].
- 34 30 September–4 October 1996. 7th International Conference on Multiphoton Processes, Garmisch-Partenkirchen, Germany.
- 35 13–16 October 1996. International Workshop on Pesticide Use and Environmental Safety in Latin America, Sao Paulo, Brazil.
- 36 4–8 November 1996. International Symposium on Industrial Applications of Mössbauer Effect, Johannesburg, South Africa. [Proceedings to be published in *Hyperfine Interactions*, 1997].

VIII International Conference "Mechanisms of Catalytic Reactions". ABSTRACTS Volume I. Professor Kirill Ilyich ZAMARAEV. An extraordinary scientist, talented teacher and statesman, Professor Zamaraev was the Director of the Boreskov Institute of Catalysis (1984-1995), and the President of the International Union of Pure and Applied Chemistry (1994-1995). Professor Kirill Ilyich Zamaraev was one of the pre-eminent physical chemists. His main field of interest was the application of new physicochemical techniques to the investigation of mechanisms of homogeneous and heterogeneous catalytic reactions. Chemical Society, Washington, 1990. Organic Chemistry International Union of Pure and Applied Chemistry, A Guide to IUPAC Nomenclature of Organic Compounds, Recommendations 1993, Panico, R., Powell, W. H., and Richer, J.-C., Eds., Blackwell Scientific Publications, Oxford, 1993. Chem., 68, 2287, 1996. Biochemistry International Union of Biochemistry and Molecular Biology, Biochemical Nomenclature and Related Documents, 2nd Edition, 1992, Portland Press, London, 1993; includes recommendations of the IUPAC-IUBMB Joint Commission on Biochemical Nomenclature. International Union of Biochemistry and Molecular Biology, Enzyme Nomenclature, 1992, Academic Press, Orlando, FL, 1992.