Chemistry in Argentina

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Introduction

In attempting to weave the tale of chemistry in Argentina, the main problem is the choice of an adequate frame of reference. Of the many possibilities, I have favored a historical approach; because science and technology are essentially historical processes, it seems to be the most appropriate choice. Therefore, this tale is divided into periods of varying length of time that I hope will give a clear picture of how chemistry activities today in Argentina came into being.

Pre-19th Century Chemistry

To establish the exact limits of chemistry's past in the area that is now Argentina is not an easy task, because the temptation to link this activity to Europeans, though understandable, is not fair. Although the indigenous population was not large by the time Europeans arrived in the 2nd and 3rd decades of the 16th century, the central and northern parts of the territory were provinces of the Inca empire. It is well known that the Incas were quite proficient in a number of activities related to chemistry, such as metallurgy, textile dyeing, pottery, etc. However, what could be called "the Argentine provinces" of this empire were actually frontier land and not only quite far from the center of power but also rather sparsely populated, so not much manufacturing took place.

Not much changed when the Europeans arrived, and the situation remained static for more than 200 years, mainly because the central powers in Spain prevented almost any activity that would imply the possibility of economic growth through industry or commerce. The few exceptions included silver and gold mining and some salting of cattle hides that were sent to the metropolis for tanning and subsequent manufacture of leather goods.

The large territory that included present-day Bolivia, Paraguay, Uruguay, and Argentina was actually divided into four provinces. These regions were ruled by governors sent by the Spanish crown, with no locally elected assemblies except small city councils whose members were chosen from the local Spanish upper class. The first important change came about in 1776 with the creation of the Viceroyalty of the River Plate. Cities and provinces thus gained a small measure of self-rule and, as a result, some important changes started taking place during the last decades of the 18th century. A printing press, which had belonged to the expelled Jesuits, was established for printing books—and even the first newspapers—and some enterprising locally born individuals began manufacturing goods. A soap-making plant was established within the city of Buenos Aires, the salting of hides for export became a thriving activity, some mining started to crop up in the interior provinces, and winemaking began in the central western region. But there were no schools in which to learn any trade, and whatever people were able to do was achieved by direct learning from those who had had some experience in the "old world" before coming to the colonies. Two of the reasons the Argentine National Congress of 1816 gave for declaring independence were the closure, on orders by the Madrid court, of a technical school opened in Buenos Aires in 1802 and the prohibition on sending young people to Europe to study chemistry so they could teach it when returning home. The justification offered by Madrid was that education and travel were "mere luxury items".

The idea of training young people in chemistry was by no means an idle thought. Quite to the contrary, as early as 1802, Dr. Cosme Argerich, a physician born in Buenos Aires who received his doctorate in medicine at the Royal School of Surgery of Barcelona, started a course in chemistry under the aegis of a colonial institution, the so-called "Protomedicato". The institution was responsible for certifying physicians (foreign-trained, of course) to practice medicine in the territory of the Viceroyalty. Also, between 1804 and 1806, Buenos Aires-born Hipólito Vieytes, the man who had started the soap factory, published a newspaper entitled *Semanario de Agricultura, Comercio, e Industria* (*Agriculture, Commerce, and Industry Weekly*). The publisher devoted many issues to a series of "Elements of Chemistry". Later, Vieytes became one of the founding fathers of Argentina, along with Dr. Argerich, who also organized medical services for the nascent armed forces and subsequently became their first Surgeon General.

For purposes of this narrative, this early era ended on 25 May 1810 when the vast territory that is now

Argentina started on its way toward self-rule and, ultimately, independence six years later. A long and bitter war with the metropolis ended only in 1824 on the Peruvian battleground of Ayacucho, but in the meantime changes gained momentum quite rapidly, and a new period got underway.

From Self-Rule and Independence to Political Strife: 1810 to 1875

In a land with no industrial tradition, the initial years were very difficult–in large part because the main city, Buenos Aires, was far from the center of commercial activity, and the seaways were dominated by European fleets. Some supplies needed for the war of independence came from abroad, but in the interior provinces—especially Mendoza—workshops were established to make explosives, forge rifles and guns, supply ammunition, and provide much of what was needed for the military expedition across the Andes that José de San Martín started in January 1817.

The war of independence was followed by a long period of civil strife that drained effort and human resources and stifled initiative. For a short period in the early 1820s, the situation seemed to improve, and this period appeared to be the dawn of a new life for the young country. The University of Buenos Aires was established; courses in mathematics, physics, and chemistry were taught by capable native and foreign teachers; and excellent laboratories were available for experimental work. Chemistry was taught by Dr. Manuel Moreno, then a recent graduate of the University of Maryland. Physics was in the able hands of Ottavio F. Mossotti, an Italian physicist and astronomer who started developing his ideas on dielectric phenomena while teaching in Buenos Aires. Both teachers had excellent experimental facilities because the local government had allocated funds upon the founding of the University of Buenos Aires for the purchase in Europe of two complete laboratories that were in full operation as early as 1826.

But this brief era of enlightenment was just a spark in the darkness; after 1835, ruthless internal strife followed for many years. Dawn came only after 1852 when the country finally got organized constitutionally. However, during the period between independence and constitutional organization, some steps were taken in the right direction. Sugar manufacturing was started in the province of Tucumán around 1821, salting of beef and hides began under the able supervision of European expert Antonio Cambaceres, who was hired for this purpose, and work on extraction of vegetable oils was attempted with some success. In the early 1860s, despite the bitter war with Paraguay, chemistry started to become a part of national economic growth. It is interesting to note that the first patent granted under Law 111 of 1863 was for a soap-making process. At this time, railroads started to penetrate the interior, and communications improved in general so that the country was ready for the next period of progress.

Industry, Teaching, and Research: 1875 to 1935

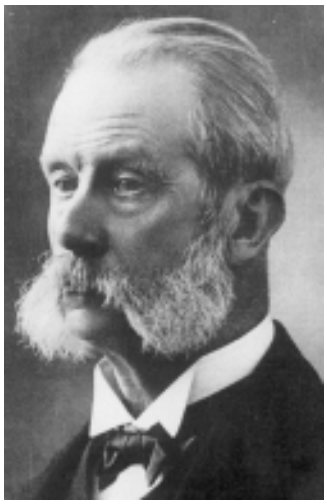
This half-century witnessed the economic ascent of Argentina, taking it from a sparsely populated territory with little industrial activity to an active and growing society. Chemical enterprises were, of course, a part of this prosperity, and it is interesting to note the major enterprises.

Industry

The manufacture of carbon black for the sugar industry started in 1874 and in four years generated exports of 6000 tons. Meatpacking began in 1875 and produced, as a by-product, high-quality gelatin that was also soon exported. These early endeavors were followed in rapid succession by the manufacture of tannins, acetic acid from grape alcohol, ethyl alcohol from molasses, sulfuric acid, soda and potash, glass, carbon sulfide, hypochlorites, oil refining, nitric and hydrochloric acids, copper sulfate, and corn products. The 1895 census recorded 317 chemical plants in Argentina. A serious international financial crisis in the 1890s slowed down the boom in chemical manufacturing; however, it resumed after the turn of the century, and the 1914 census listed 567 chemical industries backed by both local and foreign capital. The period through 1935 brought substantial growth in heavy chemicals. The sulfuric acid (both through lead chambers and catalysis), oxygen and nitrogen, oil distillation products, pulp and paper, and chloro-soda (via electrolysis) industries all thrived.

Teaching

The teaching of chemistry became firmly established at the Universities of Córdoba, Buenos Aires, and La Plata. After several reorganizations, a school of chemistry was created in 1897 in the Facultad de Ciencias Exactas, Físicas y Naturales of the University of Buenos Aires, and it included a doctoral program that produced the first graduates in 1901. Although the doctoral degree in chemistry was considered essentially professional, a thesis was the final step and a *sine qua non* condition. This dissertation requirement implied the need to do research either at the university or in one of the national agencies that had laboratories, such as Obras Sanitarias de la Nación (National Water Works) or Oficinas



Prof. John J. Kyle (1838–1922), director of the first chemistry doctoral thesis in Argentina (1901).

Químicas Nacional y Municipal (National and Municipal Government Chemists). A similar system developed about the same time at the University of La Plata and later on with the creation of the Universities of Tucumán in the center north, Cuyo in the west, and Litoral on the Paraná River.

Research

During the first two decades of the 20th century, chemical research started both at Buenos Aires and La Plata under the direction of professors of inorganic and organic chemistry, and they published their results both locally and abroad. Such research was essentially limited to the universities and mostly focused in analytical and organic chemistry, natural products (vegetable and animal oils), some biochemistry, and a few attempts at inorganic and physical chemistry. There was no privately funded basic or applied research. Of particular interest are the contributions of Enrique V. Zappi (organic chemistry), Horacio Damianovich (one of the first scientists to obtain derivatives of noble gases), and Alfredo Sordelli (biochemistry).

Toward the end of this period, the Asociación Argentina para el Progreso de la Ciencia [Argentine Association for the Advancement of Science (AAPC)]) was founded in Buenos Aires by a small group of visionary scientists active in physiology, biochemistry, and organic chemistry. By Law of Congress, the AAPC received a grant of one million pesos (equivalent to about USD 300 000 at the time) that was invested, and the revenues were used for scholarships and research grants. A substantial number of young graduates, who later became prominent in Argentine science, were able to get their careers started under this program. This initial government fund was increased in subsequent years, with donations from private sources (both individual and corporate). In the late 1940s and early 1950s, the AAPC acted as a National Research Council supporting basic research in fields ranging from pure mathematics to technological applications.

In 1912, the Asociación Química Argentina [Argentine Chemical Association (AQA)]) was founded in Buenos Aires and immediately started to publish its scientific journals, *Anales de la Sociedad Química Argentina*. Local sections of the AQA soon opened in other cities, especially in those near chemistry departments or schools of national universities. Owing to legal requirements, the name of the journal was later changed to Anales de la Asociación Química Argentina, and it is now published regularly with papers in both English and Spanish. A technical information magazine (*Industria y Química*) and a bulletin are also published, with the latter both in print and e-mail editions. The bylaws of the AQA mandated that a chemistry library be organized and supported, and from a modest beginning that library has grown into a substantial source of chemical reference materials. What began as a repository of books and journals (obtained by exchange) is now a high-tech information center that employs all modern means to gain access to the many forms of digitalized chemical information.

The AQA has seven active divisions: Teaching of Chemistry, Industrial Chemistry, Safety and Health Hazards in the Workplace, Physical Chemistry, Chromatography, Medicinal Chemistry, and Theoretical Chemistry. The AQA offers courses on a variety of subjects of interest to industry, organizes National Chemistry Congresses in alternate years, has an extensive awards program that includes recipients who range from recent graduates to distinguished chemists, and has been associated with IUPAC since 1931.

By 1935, with the economic crisis of the early 1930s nearly over, there were enough graduates at work in Argentine chemistry to take an active part in what was going to develop in the next half century when chemical industries were established in many regions of the country, product and process development became more and more frequent in many large and medium-sized industries, and research—both basic and applied—started to attract increasing interest.

The Era of Expansion: 1936–1975

Industry

Local and foreign investment strongly supported everything that happened in this period, during which there was important participation by the government—especially in what were called “mixed en-

Building that housed the first chair of chemistry in Argentina (1822–1835) and the first School of Chemistry in the University of Buenos Aires (1897).

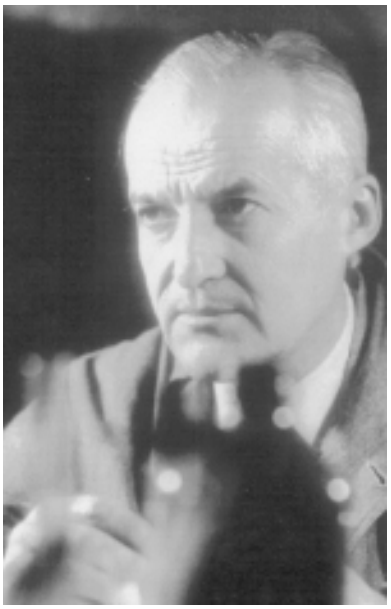
terprises". This cooperation was important in heavy chemicals, steel mills, initial petrochemical enterprises, nonferrous metallurgy, and a variety of solvents, hydrogen peroxide, ammonia and derivatives, etc. Chemistry soon became a full-fledged part of the Argentine industrial scene and, although dependent in some cases on imported raw materials, it was able to fill many local needs and to begin producing exports to neighboring countries. This success was made possible by both local and foreign capital investment that was instrumental in starting not only industrial manufacturing works but also some industrial research as well as process and product development. Examples of the latter include ATANOR (hydrogen peroxide, solvents, formaldehyde, and pesticides), E. R. Squibb & Sons (which started an excellent research laboratory under Profs. Alfredo Sordelli and Venancio Deulofeu), ALBA S.A. (paints and varnishes), Duperial, Compañía Química, and many others.

Research in the Chemical Fields

One of the most important aspects of chemistry in Argentina during this period was the substantial expansion of basic research carried out in universities and at a variety of institutes. Instrumental to this expansion was the creation in 1958 of the National Research Council, whose organizer and president for many years, Prof. Bernardo A. Houssay, combined the qualities of a first-class scientist with those of an able and enterprising administrator. He had shared the Nobel Prize in Medicine and Physiology for 1947 with Gertrude Radnitz and Charles F. Cori.

Prof. Houssay had been one of the more active members of the AAPC who supported several initiatives considered crucial to achieving a solid and fruitful national scientific system. The three most important measures were probably creating a National Research Council, establishing full-time professorships at national universities, and appointing a Secretary of Science and Technology at the Cabinet level.

The first two initiatives were successfully undertaken in 1958, while the third had to wait over a decade, until the distinguished cardiologist Prof. Alberto C. Taquini was appointed to the Cabinet position. However, by this time a number of research groups had been assembled and were very active and productive at several national universities that, in a rather short time, became veritable centers of excellence. They flourished in several regions both at universities, such as Buenos Aires with its well-known Schools of Chemistry at the Facultad de Ciencias Exactas y Naturales (Natural and Exact Sciences) and Farmacia y Bioquímica (Pharmacy and Biochemistry), La Plata with its Institutes of Physical and Organic Chemistry, Córdoba, Rosario, Santa Fé with its pioneering School of Chemical Engineering, Tucumán, the Center of the Province of Buenos Aires, Mendoza, Bahia Blanca, Mar del Plata, and San Luis, among others, and at research institutes with federal, provincial, municipal, and private funding, such as Instituto de Investigaciones Bioquímicas, Fundación Campomar where Dr. Luis Federico Leloir (winner of the Nobel Prize in Chemistry for 1970) worked, Instituto Superior de Investigaciones Fisicoquímicas (INIFTA), Planta Piloto de Química–Universidad Nacional del Sur [Chemical Pilot Plant–University of Bahía Blanca (PLAPIQUI)], Comisión Nacional de Energía Atómica [National Atomic Energy Commission



Prof. Luis F. Leloir (1906–1987), winner of the 1970 Nobel Prize in Chemistry.

(CONEA)], Laboratorio de Ensayo de Materiales e Investigaciones Tecnológicas [Laboratory for Material Testing and Technological Research (LEMIT)], and Instituto Nacional de Tecnología Industrial [National Institute for Industrial Technology (INTI].

All these efforts found substantial and continuing support from the National Research Council (Consejo Nacional de Investigaciones Científicas y Técnicas, or CONICET, as it is known popularly), which had a good start under Houssay's firm and enlightened leadership as president (reporting directly to the National Executive). The funds CONICET received from the national budget were used judiciously for broad and effective scholarship programs and for the funding of research at universities and institutes. To describe the many activities of CONICET and its impact on science in Argentina is, in fact, another story; suffice it to say here that its existence enabled Argentina to take a significant place on the scientific world scene, with chemistry as one of the most important fields.

Last Quarter of the 20th Century

Viewed under the UNIFOR International Industrial Classification of All Economic Activities (UN), chemistry has an important share that ranges from the production of starting materials for other industries (e.g., food, textiles, printing, construction, transportation, health care, packaging, etc.) to products for direct use both locally and for export (such as paints and varnishes, pharmaceuticals, surface active agents, plastics, pulp and paper products, pigments, metals, rubber, glass, resins, pesticides, and fertilizers).

Oil and petrochemistry deserve a separate commentary. Although Argentine petroleum deposits were first discovered near a Patagonian village in 1907 and later on in other Argentine regions (Salta, Jujuy, Mendoza, Neuquén, Santa Cruz, and Tierra del Fuego), oil and gas production from them satisfied the energy needs of only part of the local market. In the early 1940s, because of demand brought about by World War II, the Dirección Nacional de Fabricaciones Militares (National Military Industries Agency) built a toluene synthesis plant to manufacture raw material for explosives. But it was only in the late 1950s and early 1960s that petrochemistry came into its own, essentially because of an aggressive exploration and production program that provided oil and gas in adequate amounts. Argentine petrochemistry has now become a multimillion-dollar industry that produces olefins and polyolefins, methanol, fertilizers, styrene and polystyrene, ethylene and propylene oxides, aromatics, vinyl chloride and PVC, polyethylene terephthalate, acetone, and other ketones—for both local consumption and export. In 1998, total petrochemical production reached 3.3 million tons (MTons), of which 36% comprised basic products, 28% intermediates, and 36% end-products.

2000 and Beyond

Chemistry in Argentina has traveled a difficult and, at times, bumpy road with moments of great enthusiasm and others of acrid gloom. Both local and foreign capital have contributed to its birth and growth, spawning small to medium-sized (by international standards) companies that make almost every basic chemical needed by the market. But the ever-changing world economy and the peculiar evolution of chemical industries, with emphasis shifting back and forth from industrial products to revenues for shareholders on a worldwide scale, has created unexpected situations that a rather small market like Argentina has difficulties coping with.

Still, a new millennium is just around the corner, and the country has been through worse crises before. We can, therefore, look forward to the future with a hopeful heart.

Chemical Nomenclature Round Table

On 3 May 2000, IUPAC Executive Director John Jost (secretariat@iupac.org) and IUPAC Secretary General Edwin D. Becker (tbecker@nih.gov) sent the following message to IUPAC's Associate National Adhering Organizations, Associated Organizations, and Company Associates; to ICSU Unions; and to a number of chemical societies:

Chemical nomenclature has been a major core activity of IUPAC since its inception. In order to help develop a strategy for the Union's future work in nomenclature, including advances in computer-based aspects of nomenclature, IUPAC held a Round Table discussion on "Representations of Molecular Structure: Nomenclature and Its Alternatives" in Washington, DC on 10–11 March 2000. The meeting brought together 41 participants from 10 countries and included experts in organic, inorganic, biochemical, and macromolecular nomenclature; users of nomenclature in academia, industry, the patent, international trade, health and safety communities; journal editors and publishers; database providers; and software vendors. A detailed report of the conference, including 14 recommendations for IUPAC action, is available on the IUPAC web site at http://www.iupac.org/news/archives/2000/NRT_Report.html, or you can follow the links from the News & Notices page.

The IUPAC Executive Committee has already implemented three recommendations as follows:

1. An ad hoc Committee on Chemical Identity and Nomenclature Systems (CCINS) has been established, with Dr. Alan D. McNaught as Chairman. The CCINS will be responsible for developing

Upper left: Participants at the IUPAC Chemical Nomenclature Round Table meeting in Washington, DC in March 2000; upper right: Alan D. McNaught and Jonathan Goodman in discussion; lower left: Kenneth Cole, Alexander Lawson, Derek Maclean, and John Brennan in discussion; lower right: IUPAC President Alan Hayes (left) and American Chemical Society President Daryle H. Busch, who visited the IUPAC Executive Committee meeting held just before the March 2000 ACS Meeting in San Francisco.

systems for conventional and computer-based chemical nomenclature, cooperating with the four current nomenclature Commissions, coordinating interdisciplinary activities in the nomenclature field, and recommending to the Bureau long-range strategy on chemical nomenclature. It is expected that this body will provide the long-term central planning, management, and coordination of chemical nomenclature that would otherwise be lost when the Commissions are discontinued at the end of 2001.

2. A feasibility study of the Chemical Identifier project, to be managed by the CCINS, has been initiated. A "chemical identifier" is intended to be a meaningful alphanumeric text string that can uniquely identify a chemical compound and facilitate its handling in computer databases. This code would be the equivalent of an IUPAC systematic name but would be designed to be easily used by computers. The identifier could also include other information about the specific substance in question. Because there are several issues to be resolved, the participants in the Nomenclature Round Table recommended that the feasibility of the project and resolution of these issues be carried out as soon as possible by representatives of a wide range of interested parties. Drs. Stephen R. Heller and Steve Stein (NIST) were asked to recommend a list of individuals and groups that should be consulted initially and to propose a framework for addressing the issues.

3. IUPAC has agreed to play a lead role in representing the international chemistry communities in the development of Chemical Markup Language (CML), which is an extension of the more general XML (Extensible Markup Language) with special ability to handle chemical information. XML is a new standard being adopted by web publishers worldwide. It is expected to replace the current standard HTML over the next few years.

Chemistry International Strategy Development Committee

IUPAC President Alan Hayes has appointed a Strategy Development Committee for *Chemistry International (CI)*, charged with the responsibility for developing a recommended mission and strategy for the magazine. Among other things, the committee is being asked to define *CI*'s function within IUPAC and to relate its content to the general mission of the Union in a time of profound change.

Readers who have views on the material that has been or should be included in *CI*, on its organization or physical appearance and layout, or on its relationship to the mission of IUPAC, are urged to communicate with the Chairman of the Strategy Development Committee:

Dr. D. H. Michael Bowen
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E-mail: m_bowen@acs.org

DIDACtic Tools for Teaching Chemistry

Carbon—you can talk about it many different ways; what would be yours? You can do your best and picture yourself as the latest avant-garde modernist painter (see Fig. 1), or simply use DIDAC (see Fig. 2, which illustrates diamond, graphite, and fullerene—three different allotropic forms of carbon).

Because chemistry is fun and teaching it is not always easy, Agfa-Gevaert N.V., Belgium, has developed and produced "didactic" tools such as the DIDAC overhead transparency sheets. For more than five years, Belgian chemistry teachers in several respected schools have been using DIDAC overhead sheets. In the past year, and with the impulse of the Belgian National Adhering Organization, IUPAC's Committee on Chemistry and Industry (COCI), and, more recently, IUPAC's Committee on Teaching of Chemistry (CTC) have recognized the value of this project, and are actively promoting these materials.

Via a collaboration with UNESCO, and after the

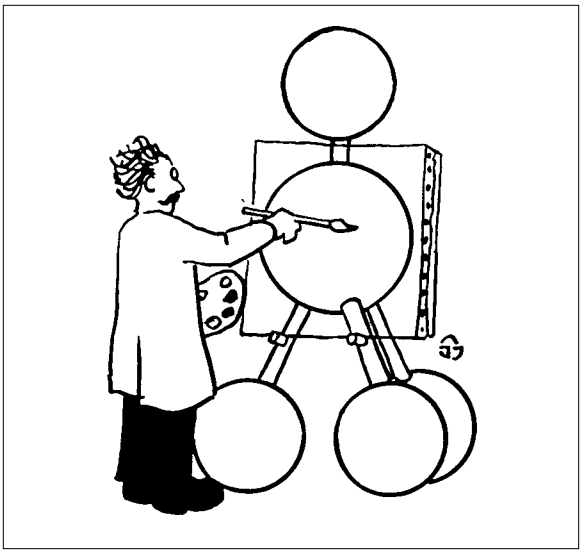


Fig. 1 Avant-garde modernist painter depicting a methane molecule.

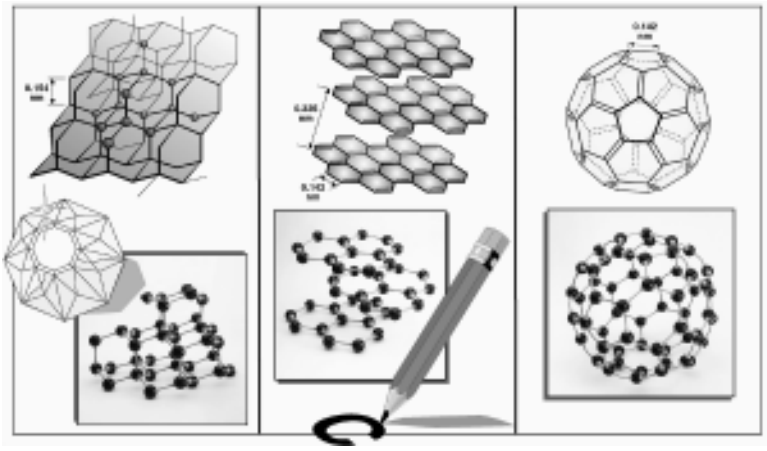


Fig. 2 Three different allotropic forms of carbon, illustrated by diamond, graphite, and fullerene.

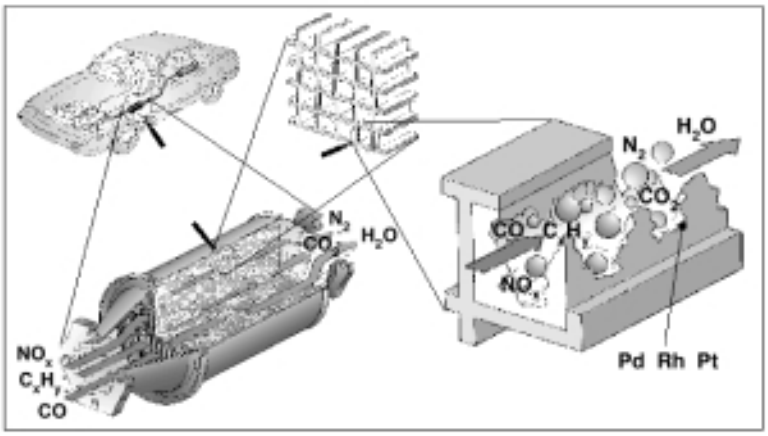


Fig. 3 Catalytic converters in cars.

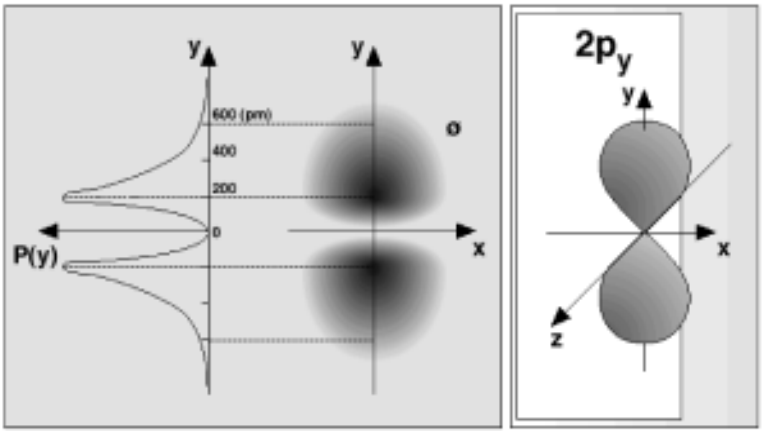


Fig. 4 A $2p_y$ orbital.

IUPAC Congress in Berlin in 1999, DIDAC material was presented at advanced teacher training courses during January–May 2000 in Libya, Mali, Burkina Faso, Belarus, Lithuania, Yemen, Niger, and Iran. By the end of this year, at least 10 more new training activities will be organized in Africa, Europe, and the Caribbean countries; these training activities also feature a workshop on microchemistry organized by CTC. By the end of 2001, the project should be presented in more than 30 countries around the world. The international recognition of DIDAC should be easy because only simple facilities are required for the different levels and different curricula.

As one chemistry teacher put it, "Sometimes it can be awfully difficult to explain a chemical subject by drawing an illustrative picture on the blackboard. Especially when you need three-dimensional drawings, or you are dealing with topics like chemical bonds, equilibria, etc. It is so much more relaxing if you already have the illustration on an overhead sheet, as you then can concentrate on explaining the concept. And that is exactly why I use DIDAC transparencies in my lessons".

When designing the sheets, the topics that are difficult to illustrate on a blackboard first came to mind. The carefully devised, attractive graphical representations help students to visualize the concepts and understand the theory. The sheets do not include narrative text, which make them accessible regardless of the language spoken in class. The sheets are designed for every level; the teacher selects only the sheets that provide added value to the lesson and match the level of the students in each class. Accompanying explanations for the teacher are available in Dutch, French, and English. The sheets are not meant to replace a course book, but merely to help explain topics that are rather difficult to illustrate.

Contents

Five kits are currently available. Each illustrates several common chemical subjects, from the role of chemistry in our daily lives to basic theoretical concepts. Each teaching module consists of approximately 60 color transparencies and presents chemical concepts in an easy-to-understand way. A black-and-white version of the transparencies, from which copies can be made, is included for the students. For example, Fig. 3 illus-

trates catalytic converters in cars, and Fig. 4 depicts a $2p_y$ orbital.

Volume 1

Role of chemistry in our daily lives (10 sheets)
Water (8 sheets)
Periodic table of the elements (31 sheets)
Colloidal systems (7 sheets)
Thermodynamics (14 sheets)

Volume 2

Chemical equilibria (27 sheets)
Petrochemistry (16 sheets)
Silverhalide photography (17 sheets + 3 wedges)

Volume 3

Electrochemistry (22 sheets)
Air and water (19 sheets)
Atomic models (21 sheets)

Volume 4

Polymers (28 sheets)
Biopolymers (25 sheets)
Chemical bonds (26 sheets)

Volume 5

Separation techniques (19 sheets)
Chemistry and health (19 sheets)

The content is specifically designed for students in secondary and higher education. As each sheet is autonomous, the teacher can use only the sheets that are applicable to their students and match their level. Thus, teachers still have complete freedom to design lessons in the way they feel is best for their class.

High Pedagogical Value

The DIDAC editorial team consisted of Agfa chemists and an interuniversity group of professors and teachers from several Flemish universities, colleges, and didactic centers. This team ensured the educational value of each set of overhead sheets. They also selected the topics that were to be addressed in consultation with teachers, and in relation to the curriculum of secondary schools and colleges. The accompanying explanations provided with each teaching module constitute a valuable support for preservice and in-service teacher training. The DIDAC editorial team welcomes any comments and suggestions from the chemistry community.

www.agfa.com/didac/

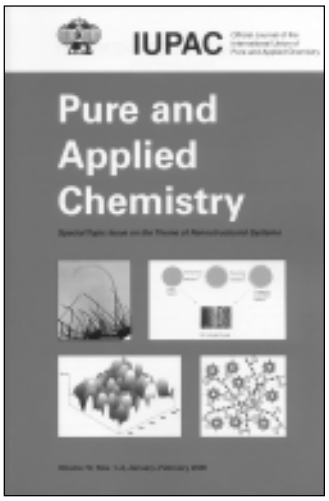
The DIDAC web site presents detailed contents of each volume. Sample sheets can be viewed there in color and as they will appear on an overhead projector. Price and ordering information are also available on the DIDAC web site, or you may contact the IUPAC Secretariat, P.O. Box 13757, Research Triangle Park, NC 27709-3757, USA; Tel: +1 919 485 8700; Fax: +1 919 485 8706; E-mail: secretariat@iupac.org; URL: http://www.iupac.org or specifically for DIDAC: http://www.iupac.org/divisions/current_projects/1998/022_17_98.html.

Pure and Applied Chemistry: The Special Topics Project

Prof. James R. Bull (Department of Chemistry, University of Cape Town, Rondebosch 7701, South Africa; E-mail: special.pac@iupac.org), IUPAC Special Topics Editor, has submitted the following article:

Background

The special topics project has its origins in a series of one-off issues of *Pure and Applied Chemistry* (*PAC*) published during recent years. These issues comprised collections of critical reviews on aspects of pure and applied chemistry that were deemed to be of compelling public interest, and were instrumental in broadening the readership base of the journal and publicizing the role of IUPAC in interdisciplinary ventures. As a consequence, a decision has been taken by the Executive Committee to introduce the concept as a regular feature of *PAC*. This innovation is intended to find expression in publication of thematically related collections of papers, as before, and occasional stand-alone review articles. These features will complement the traditional role of *PAC* as a medium for publishing articles based upon plenary lectures of IUPAC-sponsored events and reports and recommendations generated by the activities of IUPAC Commissions, and they are intended to supersede some of those special publication ventures formerly referred to by terms such as "White Book", etc.



The publication of a first issue of the journal under this new dispensation (*PAC*, Vol. 72, Nos. 1–2, pp. 1–331, 2000), is devoted to a collection of short critical reviews and research papers arising from presentations made at the first IUPAC-sponsored Work-

shop in the series "New Directions in Chemistry". This event was conducted at Hong Kong University on 14–18 July 1999, and the topic "Nanostructured Materials" offered an ideal model for the special topics initiative, because it reflects an emerging interdisciplinary branch of science in which hitherto unimagined new opportunities for future development and exploitation of molecular structure and properties are under investigation and in prospect. The resultant exciting mix of current discovery and future promise perfectly exemplifies the themes that should enjoy high priority in this new publication venture.

What Is the Purpose of Special Topics?

The concept of special topics should be considered in the context of the status and future prospects of *PAC*, and its role in the global business of scientific publications. The traditional uniqueness of the journal, as an "official" scientific organ of IUPAC, through publication of outputs from organizationally sponsored conferences, and deliberations on nomenclature and symbols, is no longer a guarantee of widespread obligatory readership in the international scientific community. The distinctiveness of this role has been diminished by growth of alternative forms of access to information and review material, and the inevitable replication of published versions of conference proceedings or topics accompanying the massive proliferation of review media. Furthermore, these organizational constraints on publication policy have hitherto obliged the journal to adopt a reactive role that competes unfavorably with the more market-sensitive editorial policies of numerous comparable publications.

Simply expressed, the special topics initiative is designed to introduce a new dimension of relevance and immediacy into the publication policy of *PAC*, and to reflect the responsiveness of IUPAC to the new challenges facing science in society. At the same time, it will target opportunities to demonstrate and exemplify the centrality of IUPAC as an authentic voice of the international community of chemists. Societal and regional diversity is one of the distinctive characteristics of the organization, and the special topics project will be guided by initiatives that reflect and foster this principle.

What Are Special Topics?

The term "special topics" implies something out of the ordinary but can comprise the publishable output of any legitimate activity of IUPAC, and reflect any aspect of current and future-directed chemical sciences. In reality, this initiative merely extends the current scope of *PAC* publication policy from the traditional, reactive role to a more flexible and dynamic approach, in which IUPAC members and interest groups can propose and undertake projects leading to publication of feature articles and collections of thematically related reviews. The concept can certainly be extended to include collections sometimes referred to as "symposia-in-print", comprising overviews together with research papers. In all special topics projects, the essential criteria governing publishability will, therefore, be peer-review evaluation of scientific merit and aspirations toward IUPAC "distinctiveness". It is hoped that the application of these criteria will ensure that *PAC* occupies a unique and indispensable place in the ever-proliferating review literature, which complements those of comparable publications.

How Are Special Topics Projects Initiated and Implemented?

The task of the Special Topics Editor is to seek out and encourage the formulation of projects leading to publication of special topics, and to provide the appropriate technical support and liaison to bring the projects to conclusion.

A proposal for a special issue should first be submitted to the Special Topics Editor, and should outline the intended scope and coverage of a theme, together with a draft proposal on prospective authorship and a target date for publication. Ideally, a project editor (or editors) should be nominated to take responsibility for ensuring that the appropriate level of scientific rigor is brought to bear on the content of the proposed special topic issue.

It is perhaps worth emphasizing that the role of the Special Topics Editor is essentially that of a facilitator, and in no way usurps the central function and responsibility of the project editor(s), whose task it is to ensure that contributions are thematically appropriate and scientifically rigorous. In practice, this necessitates a central role for the project editor(s) in advising on referees and refereeing procedures, and ensuring that manuscripts are appropriately revised. In addition, the project editor(s) will assume or delegate responsibility for drafting introductory and/or summary material for incorporation into the special topic issue, where these are necessary.

The Special Topics Editor's first role in a defined project will be to establish communications with prospective authors and notify them of guidelines for manuscript preparation and a timetable for submission of manuscripts. Manuscripts will be submitted to the Special Topics Editor, who will implement and coordinate the refereeing process in close collaboration with the project editor, and liaise with the IUPAC publications office on communications and

manuscript management. The Special Topics Editor will also assume responsibility for ensuring overall consistency in the scientific standard and style of the issue, in consultation with the various project participants.

Who Should Participate?

The activities and projects of IUPAC Divisions provide natural outlets for joint ventures, which may well be candidates for special topic publications of *PAC*. Individuals and interest groups serving on IUPAC bodies are urged to take advantage of opportunities to promote their areas of specialized interest and expertise through this medium.

In addition, the Special Topics Editor will welcome proposals for authorship of stand-alone feature articles, intended to capture the essence of those new and emerging concepts and principles that may be expected to wield a major influence in the chemical sciences during the next decade and more. In addition to welcoming nominations for authorship, the Special Topics Editor will consider topic proposals submitted directly by would-be authors. These proposals should take the form of a short outline of the suggested topic, and its perceived appropriateness as a feature article in *PAC*. Proposals of this nature may be subject to peer evaluation, prior to the issue of a formal invitation to submit a manuscript.

Symposia and Conferences in Developing and Economically Disadvantaged Countries

In August 1999 in Berlin, the IUPAC Council approved a program (for a four-year trial period) of providing financial support of up to USD 10 000 to no more than two international conferences each year to be held in developing or economically disadvantaged countries that are full Members of IUPAC in good standing. IUPAC funds are to be used to pay international travel expenses of eminent invited lecturers whose participation will be critical to the success of the conference. An announcement of the program and invitation for applications follows.

The announcement and application forms are available on the IUPAC web site. The Bureau has not prepared a list of countries that are specifically eligible because the criteria of "developing" and "economically disadvantaged" are not firm, and economic circumstances (including currency exchange rates) often vary rather rapidly. IUPAC invites applications widely and leaves it up to the conference organizers making the application to provide adequate justification to the selection committee, which comprises members of the Bureau.

As indicated in the announcement, an application should be submitted to the Secretariat, preferably in electronic form, with a copy to the relevant National Adhering Organization (NAO). Because the program is just beginning, IUPAC will accept applications this year until August 31 for conferences in 2001, but the normal application deadline will be January 31 of the year preceding the conference, as indicated in the announcement.

Please consult the IUPAC web site or contact the Secretariat for further information or advice.

Announcement

The International Union of Pure and Applied Chemistry (IUPAC) will provide financial support for international symposia and conferences in the chemical sciences that have been granted IUPAC sponsorship and are being held in developing and economically disadvantaged countries. The country in which the conference is being held must be a Member of IUPAC. IUPAC is able to provide financial support to no more than two conferences per year with up to USD 10 000 each, the funds to be used to pay for international travel of eminent invited conference speakers. Applications must be received by the IUPAC Secretariat according to the following schedule:

Year of Conference	*Application Due*	*Approval Granted*
2001	31 August 2000	31 October 2000
2002	31 January 2001	30 April 2001
2003	31 January 2002	30 April 2002
2004	31 January 2003	30 April 2003

Applications received after the deadline will be considered only if funds are still available.

Purpose

As part of its efforts to strengthen the chemical sciences worldwide, IUPAC wishes to encourage high quality conferences in developing countries and in countries that have great difficulty in supporting the international travel of conference lecturers because of national economic circumstances. The aims are to stimulate scientific activities in the host country and especially to permit young scientists in the host country to meet and interact with leading scientists from other parts of the world.

Eligibility

The program is limited to conferences to be held in countries that are full Members of IUPAC (currently 45 countries, as listed on the IUPAC web site). Countries must be in good standing at the time of appli-

cation. Conference organizers in any of the IUPAC Member countries may apply but must demonstrate that the country's economic circumstances meet the criteria for this program. Conferences must be truly international in scope and have been granted IUPAC sponsorship. They should be expected to attract speakers and participants from several countries.

Funding Restrictions

It is expected that the conference organizers will obtain adequate financial support within the host country and/or from registration fees to meet most needs. The funds provided by IUPAC are limited to payment of international travel for eminent invited speakers whose participation is crucial to the development of a high-quality scientific program.

Selection Criteria

Conferences on any aspects of the chemical sciences will be evaluated on the basis of the quality of the planned scientific program, the overall organization of the conference, the anticipated impact within the host country, the expected impact on international science, and the economic need as described above. Factors to be considered include relevance to important new areas of science and/or relevance to a specific geographic region. Innovative approaches are encouraged.

Application Procedure

Applications should be submitted to the IUPAC Secretariat, together with an Advance Information Questionnaire (AIQ) required for IUPAC sponsorship of a conference. Submission of both documents in electronic form is strongly preferred. Copies of both forms are available for downloading on the IUPAC web site, http://www.iupac.org/symposia/support.html. Supplementary material may be sent by air mail.

The items on both forms are largely self-explanatory. The Secretariat should be consulted if there are questions. Particular attention should be given to providing as complete a description of the planned conference as possible, including its aims, scope, and as detailed a scientific program as is available. The names of probable invited speakers should be given, along with details of the planned use of the IUPAC funds to support speakers' international travel and the reasons why such funds are important to the success of the conference. An overall budget for the conference should be provided, with indications of the probable sources of funds. In line with the policy for IUPAC sponsorship of conferences, it is expected that plenary and invited lectures will be made available for publication in *Pure and Applied Chemistry*. Explain any requests for deviation from this policy.

A copy of the application should be submitted to the relevant NAO (addresses appear on the IUPAC web site).

Please send completed applications and AIQs to the IUPAC Secretariat:

E-mail (preferred): pam@iupac.org

Mail: IUPAC Secretariat
Attn: Ms. Pamela Footman
P.O. Box 13757
Research Triangle Park, NC 27709-3757
USA

Tel.: +1 919 485 8700
Fax: +1 919 485 8706

IUPAC-NIST Solubility Data Series

Three more volumes in the IUPAC-NIST Solubility Data Series have recently been published as issues of the *Journal of Physical and Chemical Reference Data (JPCRD)*, as per the cooperative agreement described in *Chemistry International*, Vol. 21, No. 2, pp. 36–37, 1999. These volumes have been published by The American Chemical Society (ACS) and the American Institute of Physics (AIP) for the National Institute of Standards and Technology (NIST).

IUPAC-NIST Solubility Data Series 67. Halogenated Ethanes and Ethenes with Water, by Ari L. Horvath, Forrest W. Getzen, and Z. Maczynska, appeared as Reprint No. 559, *JPCRD*, Vol. 28, No. 2, pp. 395–627, 1999.

IUPAC-NIST Solubility Data Series 68. Aliphatic Compounds C_3–C_{14} with Water, by Ari. L. Horvath and Forrest W. Getzen, appeared as Reprint No. 560, *JPCRD*, Vol. 28, No. 3, pp. 649–777, 1999.

IUPAC-NIST Solubility Data Series 69. Ternary Alcohol–Hydrocarbon–Water Systems, by Adam Skrzecz, David Shaw, and Andrzej Maczynski, appeared as Reprint No. 566, *JPCRD*, Vol. 28, No. 4, pp. 983–1236, 1999.

For more information about these IUPAC-NIST volumes, see the article on New Publications from the American Chemical Society and the American Institute of Physics on page 118 of this issue.

Report on IUPAC's Financial Condition for the Biennium 1998–1999

After serving IUPAC as Treasurer and Chairman of the Finance Committee for eight years, Prof. John Ward has taken a well-deserved retirement from the financial helm of IUPAC. During his term, IUPAC's financial condition improved from a position of income not meeting expenses in the biennium to a position during the 1998–1999 biennium in which income covered expenses and long-term reserves have been established to strong levels. Financial responsibilities have transferred to Dr. Christoph Buxtorf, newly elected Treasurer of IUPAC and recently retired Head of Production and Technology of Novartis Crop Protection (Switzerland), and Dr. Edwin Przybylowicz, Chairman of the Finance Committee and retired Director of Research at Eastman Kodak Co. (USA). This report on the financial condition of IUPAC is submitted to the IUPAC membership as a summary. These comments are based on the financial figures summarized in the tables that are part of this report. More detailed financial statements can be found on the IUPAC web site at: http://www.iupac.org. The comments are summarized in two categories: near-term operational income/expense and long-term investments.

Dr. Christoph Buxtorf

Near-Term Operational Income and Expense

Over the past biennium, IUPAC income has exceeded expenses by USD 373 500, an amount that was significantly greater than in the previous biennium (1996–1997) when income exceeded expenses by USD 20 600. Much of the surplus from these years has been moved to our long-term investment accounts, where it has been earning a good return for potential use to support the organization's projects.

The surplus during the past biennium is the result of a number of factors, including: (1) a more efficient operation of the Secretariat at Research Triangle Park, (2) stronger fiscal management of expenses by Divisions and Standing Committees, and (3) tight fiscal management by our Treasurer. The impending reorganization of the work done by IUPAC may have also caused some reduction in spending during this millennium. As the new project system gets established, it is anticipated that expenses and income will be more closely matched.

There are some cautions and concerns to be noted, however, as we view IUPAC's operational financial condition. On the income side, our national subscriptions provide slightly over 50% of our operating income. This income represents the main support of our organization; however, it is subject to monetary fluctuations and regional macroeconomic problems that regularly impact the organization. For example, countries where severe inflation has caused hardships are not able to meet their annual subscription because inflation has diminished the value of their currencies. Such circumstances are recognized and handled on a temporary basis by the Officers of the Union in a way that does not impact the participation of the countries in IUPAC activities. However, such occurrences do impact IUPAC's budgeted income levels. This effect has occurred in the recent past, and IUPAC's financial plans must take the possibility of such events into account.

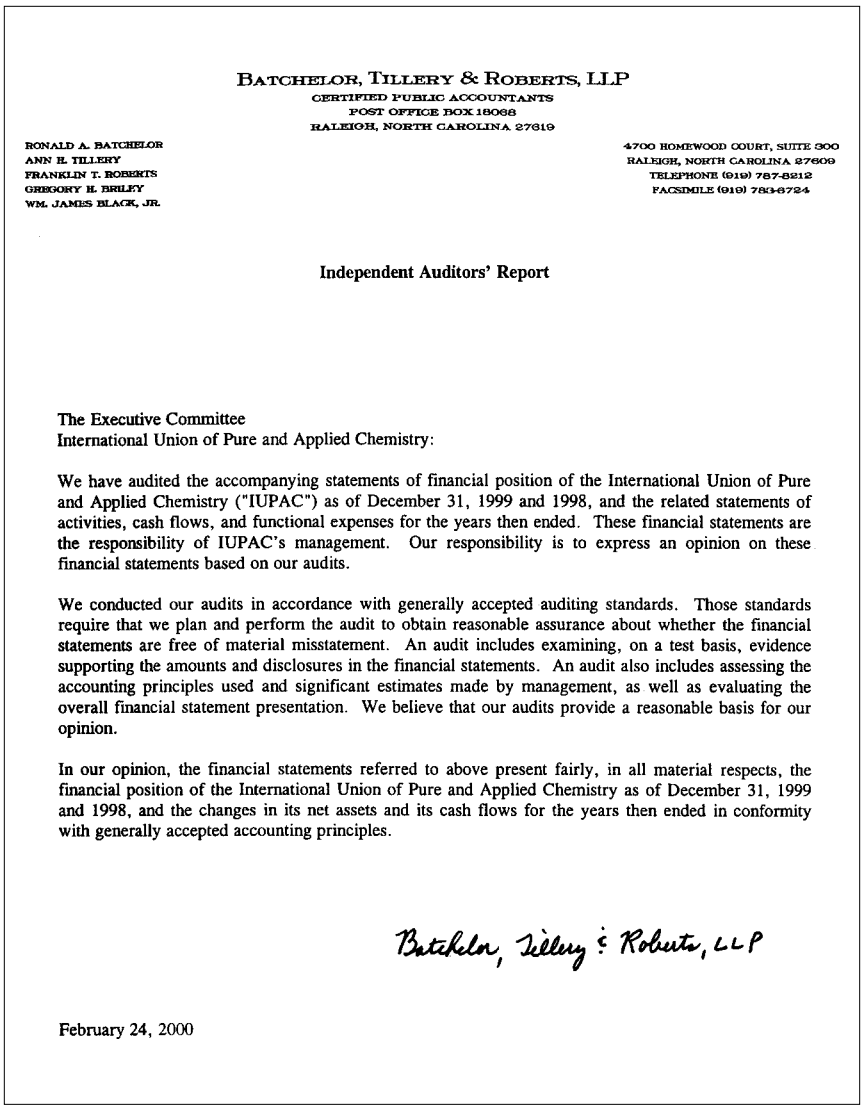
Dr. Edwin Przybylowicz

Another major contributor to our biennial income is IUPAC publications. During the past biennium, publication income provided approximately 33% of the total income. IUPAC, under the leadership of our Executive Director, Dr. John Jost, has moved in the direction of self-publishing. This change has improved the response time for IUPAC publications and has also resulted in a significant improvement in income. One caution in the longer term is whether printed publications will continue to provide such income levels, given the trend toward electronic publication and use of the excellent IUPAC web site.

The third major contributor to IUPAC income derives from dividends and interest. During the past biennium, these sources have contributed 9%, down slightly from the 10% of the previous biennium. This item is mainly determined by the Union's average cash position and the prevailing interest rates.

On the expense side, total expenses for this biennium are down by 8% over the previous biennium, during which the Secretariat was moved from Oxford, England to Research Triangle Park, North Carolina (USA). While this move had a significant impact on our operations, it did not impact the scientific work of the organization. Prof. Ward regularly reminded the Division Presidents and Standing Committee Chairs of the availability of funding for worthy projects.

It will be a challenging task to select and support projects under the Strategic Plan 2000–2001. IUPAC will undergo a fundamental strategic change in the years ahead, from a commission-based to a project-driven "new millennium" organization. The challenge for financial planning will be to provide the necessary support for good projects as well as an equitable distribution of funds across the broad spectrum of activities in which IUPAC is involved.



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Independent Auditors' Report

The Executive Committee
International Union of Pure and Applied Chemistry:

We have audited the accompanying statements of financial position of the International Union of Pure and Applied Chemistry ("IUPAC") as of December 31, 1999 and 1998, and the related statements of activities, cash flows, and functional expenses for the years then ended. These financial statements are the responsibility of IUPAC's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the International Union of Pure and Applied Chemistry as of December 31, 1999 and 1998, and the changes in its net assets and its cash flows for the years then ended in conformity with generally accepted accounting principles.

Batchelor, Tillery & Roberts, LLP

February 24, 2000

Long-Term Investments

Long-term investments for IUPAC are subdivided into four funds: (1) Reserve Fund, (2) Southern Hemisphere Sinking Fund, (3) Endowment Fund, and (4) Endowment Fund Reserve. While the accounting practice shows specific amounts of money allocated to each of these funds, for investment purposes, the aggregate of the four funds is handled as a single portfolio. The purpose of each of these funds is as follows:

Reserve Fund

This fund is intended to provide operational expenses to carry IUPAC for a full biennium, should other sources of income not be forthcoming. It is the prime financial protection for the Union in the event of a severe worldwide economic downturn.

Southern Hemisphere Sinking Fund

This fund is one that is planned to be used to help hold General Assembly and Congress meetings in places where the costs of travel, meeting arrangements, etc. are considerably more expensive than the norm. It is anticipated that significant use of this fund will be made during the upcoming General Assembly and Congress in Brisbane, Australia.

Endowment Fund

This fund was established to pay for special projects of a broad nature that enhance the stature of the Union. For example, the recently established IUPAC Prize for Young Chemists will be supported entirely by the proceeds from the Endowment Fund. Proceeds from this fund are calculated using the yield on fixed income investments rather than the entire portfolio.

Endowment Fund Reserve

This fund was created to provide matching funds from IUPAC to add to outside funds that might be made available to IUPAC for endowment purposes. The Endowment Fund Reserve would match funding for projects of an ongoing nature from partnerships of IUPAC with industry, government, or technical organizations.

Total IUPAC Portfolio Growth

The total IUPAC investment portfolio grew from a value of USD 3 055 920 at the end of the previous biennium (market value as of 31 December 1997) to USD 3 940 707 (market value as of 31 December 1999) for a 29% gain in value. This change is the result of two factors: (1) the investment growth of the portfolio during this period, and (2) savings that were accrued from operations during this period and transferred to the long-term investment account. During the past biennium, the Finance Committee and Treasurer have established a balanced portfolio of 60% equities and 40% fixed income investments, with a regional balance of 60% U.S. investments and 40% in Europe.

During the next year, the Finance Committee will develop a written investment policy statement, which will be reviewed and approved regularly by Officers of the Union, as a means of understanding and maintaining IUPAC's strong financial condition.

Investment Account (in USD)	Market Value 12/31/97	Market Value 12/31/98	Market Value 12/31/99
Reserve Fund	2 172 515	2 500 837	2 860 943
Southern Hemisphere Sinking Fund	100 000	150 000	200 000
Endowment Fund	343 800	563 603	632 926
Endowment Fund Reserve	439 605	219 802	246 838
Total Long Term Portfolio Value	3 055 920	3 434 242	3 940 707
Annual Percentage Change in Value		12.4%	14.7%
Biennium Percentage Change in Value			29.0%

Budget vs. Expense 1998–99 (USD, thousands)

	1998–99 Biennium (Actual)	1998–99 Biennium (Budget)	1998–99 Biennium (Over/Under)	1996–97 Biennium (Actual)
INCOME				
National Subscriptions	1 332.7	1 350.0	(17.3)	1 278.1
Service Charges	15.5	25.0	(9.6)	17.5
Interest & Dividends Earned	193.4	220.0	(26.6)	249.5
Other Income/Restricted Income	64.2	22.0	42.2	10.3
	1 605.8	1 617.0	(11.3)	1 555.4
Publications				
Blackwell	762.9	650.0	112.9	669.4
Other Publishers	57.2	20.0	37.2	27.8
Blackwell Science Grant	40.0	40.0	-	40.0
	860.1	710.0	150.1	737.2
Affiliate Membership Program				
Contributions	133.4	110.0	23.4	139.9
Royalties-Blackwell	-	2.0	(2.0)	3.0
Ties & scarves	0.3	0.2	0.1	0.3
	133.7	112.2	21.5	143.2
Total Income	2 599.4	2 439.2	160.3	2 435.8

Budget vs. Expense 1998–99 (USD, thousands) (continued)

	1998–99 Biennium (Actual)	1998–99 Biennium (Budget)	1998–99 Biennium (Over/Under)	1996–97 Biennium (Actual)
EXPENSE				
Governance Expense				
Officers	33.1	16.0	17.1	6.0
Restructuring Activities	7.1	-	7.1	51.5
Relocation of Secretariat	-	-	-	187.7
Contributions to ICSU	46.9	45.0	1.9	42.6
Total (Governance)	87.1	61.0	26.1	287.8
Administrative Expense				
Secretariat (General)	709.8	684.2	25.6	599.9
Accounting, Audit & Bank Fees	64.9	30.0	34.9	43.8
Other expense	24.1	-	24.1	43.0
Handbook	20.5	17.0	3.5	14.9
Total (General)	819.3	731.2	88.1	701.6
Secretariat (Publications)	1.5	-	1.5	285.5
Misc. Exp.	23.9	60.0	(36.1)	61.4
Total (Publications)	25.4	60.0	(34.6)	346.9
Secretariat (AMP& Fellows)		-		28.7
CI & leaflets	90.8	100.0	(9.2)	99.3
Misc. Exp.	4.0	8.0	(4.0)	7.4
Total (AMP & Fellows)	94.8	108.0	(13.2)	135.4
Total Secretariat (w/o Acctng. Trans.)	939.5	899.2	40.2	1 183.9
Accounting Transactions				
Depreciation, etc.	21.2	40.0	(18.8)	33.8
Foreign Exchange Diff.	0.8	-	0.8	(3.5)
Bad Debts Provision	16.8	-	16.8	(9.1)
Total (Accounting Transactions)	38.8	40.0	(1.2)	21.2
Total Secretariat (w/ Acctng. Trans.)	978.3	939.2	39.0	1 205.1
Operations Expense				
Standing Committees	138.8	163.5	(24.7)	120.1
Divisions & Sections	401.8	418.5	(16.7)	319.4
Special Projects	37.3	26.0	11.3	-
Chem. Weapons	4.7	18.0	(13.3)	-
Chem. Intl. for Members	37.7	46.0	(8.3)	44.4
General Assembly	464.7	510.0	(45.3)	425.4
Representatives on Other Orgs.	20.8	21.0	(0.2)	12.8
Contingencies	-	60.0	(60.0)	-
Total (Operations)	1 105.8	1 263.0	(157.2)	922.1
Restricted Expenses (CHEMRAWN, ICSU, JCAMP, UNESCO)	54.9	-	54.9	-
Total Expense	2 226.1	2 263.2	(37.2)	2 415.0
Net Income (Expense)	373.3	176.0	197.5	20.8

Reports from IUPAC-Sponsored Symposia

12th International Symposium on Carotenoids, 18–23 July 1999, Cairns, Australia

This meeting was the first symposium held under the auspices of the International Carotenoid Society (http://www.carotenoid.uconn.edu), and also the first time the symposium has been held in the Southern Hemisphere. Nevertheless, it is the latest in a long and distinguished series of meetings on carotenoids that began under IUPAC sponsorship with a small symposium held in Trondheim, Norway in 1966. As interest in this fascinating family of molecules has increased over the years, so has attendance at the symposia. At the 11th symposium, held in Leiden, The Netherlands, in 1996, it was realized that the field of carotenoid science was broad and diverse enough to justify an international society devoted to its promulgation. The International Carotenoid Society was inaugurated at that meeting. The Society exists to promote all areas of carotenoid science, pure and applied, and one of its main responsibilities is the organization of future symposia.

The program of the Cairns symposium covered all of the major areas of carotenoid research, including chemistry and analysis, biosynthesis, biotechnology, bioavailability and metabolism, biological functions, photosynthesis, medicine and nutrition, and commercial applications. The symposium featured 11 invited lectures, 68 presentations in special interest sessions, and 71 poster contributions. The total registration was 233.

On behalf of all participants, we would like to thank the Local Organizing Committee, Chair Lance Schlipalius, Roger Hiller, Tom Bruynel, and Ron Tume, and their helpers, whose dedicated work ensured a memorable symposium.

The participants and the International Carotenoid Society Committee are also most grateful to IUPAC for their sponsorship and support, and for allowing publication of the plenary lectures in *Pure and Applied Chemistry* (see *PAC*, Vol. 71, No. 12, 1999). They also thank the following companies and institutions, without whose support the symposium would not have been possible: F. Hoffman-La Roche, Ltd.; Betatene Pty., Ltd.; LycoRed Natural Products Industries, Ltd.; Wyeth-Ayerst Laboratories, Inc.; Rehnborg Center of Nutrition & Wellness; F. H. Faulding & Co., Ltd.; Nutrilite Division of Amway Corp.; Nikken Sohonsha Co.; Far North Queensland Promotional Bureau; Henkel Corp.; University of Connecticut; Kraft Foods, Inc.; Suntory Co., Ltd.; Thomas J. Lipton Co.; Chr. Hansen A/S.

The symposium editors wish to thank all of the invited speakers who provided manuscripts of high quality, and met the deadlines necessary to publish their work in *PAC*, which we hope will be a useful record of the symposium for those who attended, and for those who could not. As one can see from the papers published in *PAC*, it is becoming increasingly clear that carotenoids are a unique class of molecules that not only pique scientific curiosity, but also perform a variety of fundamentally important biological and nonbiological functions.

Prof. Thomas A. Moore, Ana L. Moore, and Devens Gust
Symposium Editors of the 12th International Symposium on Carotenoids
Cairns, Australia

Reports from Commissions

Commission on Electrochemistry—I.3

Summary of Minutes of Commission Meeting at IUPAC General Assembly, Berlin, Germany, 8–10 August 1999

The Chairman reported on the new project-based structure for IUPAC to be implemented after the General Assembly in 2001 and on IUPAC's strategic goals. Attention was also drawn to interdivisional initiatives, especially regarding coordination of environmental projects and the strategic initiative on materials chemistry, both of which are highly relevant for electrochemistry and Commission I.3.

The following projects have been completed recently: "Spectroelectrochemistry: A survey of *in situ* spectroscopic techniques", W. Plieth, G. Wilson, and C. Gutierrez, published in *Pure and Applied Chemistry*, 70, 1395–1414, 1998, and "Electrochemical nanotechnology. *In situ* local probe techniques at

electrochemical interfaces", W. J. Lorenz and W. Plieth, eds., Wiley-VCH, March 1998.

The following Technical Report projects, whose status was discussed during the meeting, are expected to be completed during the next biennium: "Measurements of redox potentials of proteins", F. Hawkridge and G. Wilson; "Electrochemistry at the interface of two electrolyte solutions", Z. Samec; "Electrochemistry for the environment", C. M. A. Brett and J. F. Rusling; and "State of the art of the waste water treatment for industrial plating facilities", M. de Vogelaere.

New projects to be proposed include "Electrochemistry and interfacial chemistry for environmental cleanup and green chemical processes" (see http://www.iupac.org/divisions/current_projects/2000/990051_100_00.html), together with Commission I.6, which had already attracted cosponsorship from the International Council of Scientific Unions (ICSU), and "Size effects in electrochemical reactivity".

Joint meetings to discuss common projects and projects of mutual interest were held with Commissions I.1 (Physicochemical Symbols, Terminology, and Units), I.2 (Thermodynamics), I.6 (Colloid and Surface Chemistry including Catalysis), V.5 (Electroanalytical Chemistry), and the Working Party on pH Measurement. There was agreement with Commission I.1, following lengthy discussion and optimization within Commission I.3 over the last three years, concerning the extensively revised electrochemistry section for the forthcoming new edition of the "Green Book" (*Quantities, Units, and Symbols in Physical Chemistry*).

Christopher Brett succeeded Waldfried Plieth as Chairman of the Commission in January 2000, and the new Secretary is Juan Feliu-Martinez.

Christopher Brett
Secretary, IUPAC Commission on Electrochemistry I.3

Provisional Recommendations

IUPAC Seeks Your Comments

In this section, we publish synopses of IUPAC's latest provisional recommendations on nomenclature and symbols. All comments on these recommendations are welcome and will be taken into consideration. The final revised versions are published in *Pure and Applied Chemistry*, and synopses of these are published in *Chemistry International* as recent reports.

If you would like to comment on the provisional recommendations, please visit the IUPAC web site (http://www.iupac.org/) or write to your nearest national/regional center to request a copy of the full report. Copies are not available from the IUPAC Secretariat. The most recent list of national/regional centers appeared in *Chemistry International* 1997, 17, 141. This information is also available on the IUPAC web site.

Inorganic Chemistry Division. Commission on Nomenclature of Inorganic Chemistry—Names for Muonium Atoms and Ions

Although chemical reactions of muonium atoms have been studied for more than two decades, the nomenclature of muonium and related species has not been addressed by IUPAC. The name 'muon' is used in physics for the species that belong to the lepton family and that are designated with the symbols μ^+ and μ^-, each having a mass 207 times that of the electron. When a negative muon replaces an electron in the 1s orbital of an atom, then this atom is called a 'muonic' atom: $H^+\mu^-$ is 'muonic hydrogen'. Replacement of an electron by a muon in other atoms is possible. Negative muons have been less well studied than positive muons, which are formed as energetic, polarized beams at specialized facilities. The positive muon can abstract an electron near the end of the radiation track, and the combination of positive muon and electron mimics the reactivity of the hydrogen atom. For this combination, the name 'muonium' has been used. Were a negative muon to replace an electron in muonium, the name would be 'muonic muonium' ($\mu^+\mu^-$).

Comments by 31 December 2000 to Prof. Dr. W. H. Koppenol, Laboratorium für Anorganische Chemie, Eidgenossische Technische Hochschule, Universitätsstrasse 6, CH-8092 Zürich, Switzerland. Tel.: +41 1 632 2875, Fax: +41 1 632 1090, E-mail: koppenol@inorg.chem.ethz.ch.

Awards and Prizes

Alois Fürstner Wins Thieme-IUPAC Prize in Synthetic Organic Chemistry

Prof. Dr. Alois Fürstner, Director of the Max-Planck-Institut für Kohlenforschung, Mülheim, Germany, has won the 5th Thieme-IUPAC Prize in Synthetic Organic Chemistry (2000). The Prize will be presented to him at an Award Lecture on 3 July 2000 at the 13th International Conference on Organic Synthesis (ICOS-13) in Warsaw, Poland.

The Thieme-IUPAC Prize, consisting of DM 10 000, is awarded every two years on the occasion of IUPAC's International Conference on Organic Synthesis (ICOS) to a scientist under 40 years of age, whose research has had a major impact on the field of synthetic organic chemistry. The Prize is sponsored jointly by Georg Thieme Verlag, IUPAC, and the Editors of *Synthesis*, *Synlett*, *Science of Synthesis*, and *Houben-Weyl*.

Prof. Dr. Fürstner was born on 23 July 1962 in Austria. He completed his Ph.D. in carbohydrate chemistry under the direction of H. Weidmann at the Technical University Graz, Austria, in 1987. After working as a postdoctoral fellow with W. Oppolzer on metallo-ene reactions at the University of Geneva, Switzerland (1990–1991), he returned to Graz to obtain his Habilitation on metal activation. In 1993, he joined the Max-Planck-Institut für Kohlenforschung, Mülheim, Germany, as head of a research group. Since 1998, he has held the position of Director at the Institute and is an affiliated professor with the University of Dortmund.

Fürstner's work displays a fruitful interplay of basic research in organometallic chemistry and catalysis, and applications to natural product chemistry and the total synthesis of biologically relevant compounds. Prof. Dr. Fürstner was one of the first chemists to recognize the enormous potential of metathesis for the synthesis of macrocycles. With considerable insight into this reaction, he has spelled out rules on how to implement metathesis-based macrocycle formations in multistep syntheses, and has demonstrated the validity of his concepts by elegant applications to natural product total synthesis. Fürstner's syntheses of the macrolide (–)-gloeosporone, the terpene dactylol, the tripyrrole pigment nonylprodigiosin, and the complex glycolipids tricolorin A and G are highlights in this field.

Fürstner's conceptually new approaches to the synthesis of olfactory macrocycles (e.g., Exaltolide) indicate the enormous potential of olefin metathesis for fine chemical production. Additionally, he has opened up promising new perspectives for preparative chemistry by introducing the first examples of ring-closing alkyne metathesis, as well as a mechanistically unprecedented enyne metathesis simply catalyzed by platinum(II) chloride. The latter transformation has already been employed in an efficient total synthesis of immunosuppresive alkaloids of the prodigiosin series.

Another major area of Fürstner's work concerns metal-induced C–C bond formations. He has developed a versatile reductive indole synthesis and has pioneered a new branch of catalysis research by discovering McMurry-type reactions catalytic in titanium as well as Nozaki-Hiyama-Kishi reactions catalytic in chromium.

Prof. Dr. Fürstner has achieved worldwide recognition for his highly innovative and creative independent research. He has received several awards, including the prestigious Leibniz Award (1999) from the German Science Foundation.

Milton T. W. Hearn Wins H. G. Smith Memorial Medal

Prof. Milton T. W. Hearn, Chairman and Titular Member of IUPAC's Commission on Biotechnology (III.4) and Titular Member of IUPAC's Organic and Biomolecular Chemistry Division Committee (III.0), has won the coveted H. G. Smith Memorial Medal of the Royal Australian Chemical Institute (RACI) for 1999. Prof. Hearn has served as Professor of Biochemistry, Monash University, Clayton, Victoria, Australia since 1986.

The H. G. Smith Memorial Medal is awarded annually "to the member of RACI who has contributed most to the development of some branch of chemical science". Prof. Hearn was cited for contributing "to the current, advanced state of application of

chemical and biophysical principles and strategies that underpin the chromatographic and electrophoretic sciences in biochemical analysis, including advanced procedures and technologies for the separation of peptides, proteins, and polynucleotides of commercial importance in the chemical, pharmaceutical, and biotechnological industries". His studies on the structure and function of bioactive peptides, protein hormones, and growth factors involved in normal and disease state processes, including biomolecules involved in the regulation of reproductive function and tumorigenesis, have also attracted much international attention.

Lester A. Mitscher Wins American Chemical Society Division of Medicinal Chemistry Award

Prof. Lester A. Mitscher, Titular Member of IUPAC's Commission on Training and Development (VII.M.2) of the Medicinal Chemistry Section (VII.M), received the 11th ACS Division of Medicinal Chemistry Award at the 27th National Medicinal Chemistry Symposium held 13–17 June 2000 in Kansas City, Missouri, USA. The award was established by ACS in 1979 "to recognize outstanding achievement in the sciences that contribute to the field of medicinal chemistry".

After a distinguished career at Lederle Laboratories as a group leader in antibiotics, Prof. Mitscher joined the faculty of Ohio State University, where he served as professor of natural products chemistry in the College of Pharmacy. A faculty member at the University of Kansas since 1975, Prof. Mitscher has been chairman of the department of medicinal chemistry for 16 years. Recently retired as editor of *Medicinal Research Reviews*, Prof. Mitscher has had affiliations with the editorial boards of 13 journals, has coauthored or edited 6 books, and has authored almost 250 scientific manuscripts.

Prof. Mitscher's work in natural product chemistry, ranging from development and popularization of circular dichroism for structural elucidation to isolation of novel entities using bioassay-guided fractionation, has gained him great renown. His recent research has focused on identifying and developing new antimicrobial agents, such as those based on tetracycline and quinolone. His isolation of novel antioxidants from green tea has attracted considerable interest among colleagues and in the mass media.

Prof. Mitscher won the Ernest H. Volwiler Award in 1985 and the Smissman Bristol-Myers Squibb Award of the ACS Division of Medicinal Chemistry in 1989. In 1997, he was named Distinguished Alumnus of Wayne State University, from which he received a B.S. degree in pharmacy and a Ph.D. degree in the laboratory of Prof. Carl Djerassi.

New Books and Publications

Macromolecular Symposia, Vol. 147: Mechanical Behavior of Polymeric Materials. Symposium Editor, Jaroslav Kahovec; Editor-in-Chief, Hartwig Hocker; Editors, W. Guth, B. Jung, I. Meisel, and S. Spiegel. Published by WILEY-VCH, December 1999, pp. 1–267. ISBN 3-527-29907-6 (ISSN 1022-1360).

Volume 147 of *Macromolecular Symposia* contains main and special lectures delivered at the 18th Discussion Conference, organized as the 56th meeting in the series of Prague Meetings on Macromolecules (PMM), held in Prague, Czech Republic 20–23 July 1998, as usual under the auspices of IUPAC at the Institute of Macromolecular Chemistry, Academy of Sciences of the Czech Republic (see symposium report by Prof. Dr. G. H. Michler published in *Chemistry International* in July 1999, Vol. 21, No. 4, pp. 110–111). The topic of the meeting and of this resultant volume, mechanical behavior of polymeric materials, is an area that has an interesting long history and tradition. From the very beginning, this field has been a meeting place of experts from polymer synthesis, processing, and applications. Indeed, mechanical characteristics are decisive for reliable functions of polymers in virtually all application fields—starting from materials for industrial structure parts through medical applications up to contemporary media for data storage. In all these fields, mechanical failure can cause extensive damage and heavy losses. Consequently, mechanical parameters serve for optimization of technological processes, quality control, and right design of dependable parts.

Mechanical behavior of polymeric materials depends on their structure. The structure, in turn, must

be considered at various levels: molecular, supermolecular, crystalline, phase, up to microscopic cracks. Together with the development of mechanical testing methods, a considerable body of knowledge has subsequently been accumulated on interrelations between the parameters of individual levels of hierarchical structure and macroscopic mechanical behavior. This information allowed formulation of structure models on one hand and application of mechanical methods for the characterization of structure and structural dynamics on the other. The understanding of structure–property relationships finally allowed the development of high-performance polymeric materials with dramatically enhanced strength, toughness, durability, and reliability in comparison to classic polymers. Quite logically, the study of mechanical behavior became an important and respected branch of polymer physics.

Lecturers and participants at the 18th Discussion Conference held in Prague, Czech Republic.

The meeting that led to Volume 147 of *Macromolecular Symposia* attracted 127 participants from 24 countries. There were 10 main lectures, 10 special lectures, and 74 poster communications. Two panel discussions were devoted to mechanical behavior of high-performance polymers (led by A. Hiltner, United States) and strength and toughness of oriented polymer systems, composites, and blends (led by H. H. Kausch, Switzerland). All the contributions and discussions provided a gauge of the contemporary understanding of structural micromechanisms responsible for macroscopic molecular behavior. In particular, it is clear now that the assessment of complex hierarchical structure is important for the formulation of a realistic structure model of mechanical behavior. As expressed by Prof. Eric Baer, only very few experts in mechanical behavior of polymers did not come to Prague in the summer of 1998. The participants created not only an excellent professional forum, but also very agreeable company. We wish to express our gratitude to all participants and sponsors for supporting the meeting, to the organizing committee for their very good job, and to the contributors for their carefully prepared papers.

Drs.-Ing. Miroslav Raab and Jaroslav Kahovec
Institute of Macromolecular Chemistry
Academy of Sciences of the Czech Republic,
Prague

***Regels voor de Nomenclatuur van de Organische Chemie. Sectie E: Stereochemie en Basisterminologie in de Stereochemie.* By H. J. T. Bos, D. Tavernier, F. C. Alderweireldt, and L. Maat. Koninklijke Nederlandse Chemische Vereniging (KNCV), Den Haag, Netherlands (1999), pp. 1–113. ISBN 90-407-1927-6. [Dutch translation of Section E on Stereochemistry from the IUPAC "Blue Book", *Nomenclature of Organic Chemistry*, prepared for publication by J. Rigaudy and S. P. Klesney, Pergamon Press (1979), pp. xix + 1–559, ISBN 0-08022-3699 and "Basic terminology of stereochemistry" (IUPAC Recommendations 1996), *Pure Appl. Chem.*, Vol. 68, No. 12, pp. 2193–2222, 1996, prepared for publication by G. P. Moss.]**

This Dutch translation of Section E on Stereochemistry from the 1979 edition of the IUPAC "Blue Book" (now out of print) and "Basic terminology of stereochemistry" (IUPAC Recommendations 1996) was prepared by H. J. T. Bos, D. Tavernier, F. C. Alderweireldt, and L. Maat of the Koninklijke Nederlandse Chemische Vereniging (KNCV, Royal Netherlands Chemical Society), in cooperation with the Koninklijke Vlaamse Chemische Vereniging (KVCV, Royal Flemish Chemical Society). It is available from the KNCV, Burnierstraat 1, 2596 HV The Hague, Netherlands.

"Basic terminology of stereochemistry" (IUPAC Recommendations 1996) is a glossary of the more important, and most widely used, stereochemical terms. It extends the list of those defined in the IUPAC Nomenclature of Organic Chemistry, Section E: Stereochemistry (IUPAC Recommendations 1974) [*Pure Appl. Chem.*, Vol. 45, No. 1, pp. 11–30, 1976] and includes some terms from the Glossary of Terms used in Physical Organic Chemistry (IUPAC Recom-

mendations 1994) [*Pure Appl. Chem.*, Vol. 66, No. 5, pp. 1077–1184, 1994]. Additional terms have been added from inorganic and macromolecular chemistry. Some misleading terms are included, together with guidance on correct usage or acceptable alternatives. Many of the symbols used in stereochemical nomenclature are mentioned, but details of their assignment or their incorporation into chemical names are left to the appropriate recommendations. Terminology related to techniques used in the determination of stereochemistry is largely excluded, as well as terms used to describe reaction mechanisms.

New Publications from the American Chemical Society and the American Institute of Physics

***Evaluated Kinetic and Photochemical Data for Atmospheric Chemistry, Organic Species: Supplement VII. IUPAC Subcommittee on Gas Kinetic Data Evaluation for Atmospheric Chemistry*, by R. Atkinson, D. L. Baulch, R. A. Cox, R. F. Hampson Jr., J. A. Kerr (Chairman), M. J. Rossi, and J. Troe. USD 97.00. Published in the *Journal of Physical and Chemical Reference Data*, Vol. 28, No. 2, pp. 191–393, 1999, by the American Chemical Society (1155 Sixteenth Street, N.W., Washington, DC 20036-9976) and the American Institute of Physics (Suite 1NO1, 2 Huntington Quadrangle, Melville, NY 11747-4502) for the National Institute of Standards and Technology [S0047-2689(99)00102-6].**

This paper updates and extends part of the previous database of critical evaluations of the kinetics and photochemistry of gas-phase chemical reactions of neutral species involved in atmospheric chemistry [*J. Phys. Chem. Ref. Data* **9**, 295 (1980); **11**, 327 (1982); **13**, 1259 (1984); **18**, 881 (1989); **21**, 1125 (1992); **26**, 521 (1997); **26**, 1329 (1997)].

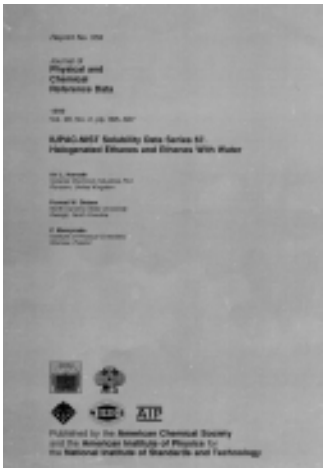
The present evaluation is limited to the organic family of atmospherically important reactions. The work has been carried out by the authors under the auspices of the IUPAC Subcommittee on Gas Phase Kinetic Data Evaluation for Atmospheric Chemistry. Data sheets have been prepared for 171 thermal and photochemical reactions, containing summaries of the available experimental data with notes giving details of the experimental procedures.

For each thermal reaction, a preferred value of the rate coefficient at 298 °K is given, together with a temperature dependence where possible. The selection of the preferred value is discussed, and estimates of the accuracies of the rate coefficients and temperature coefficients have been made for each reaction.

For each photochemical reaction, the data sheets list the preferred values of the photoabsorption cross-sections and the quantum yields of the photochemical reactions, together with comments on how they were selected.

The data sheets are intended to provide the basic physical chemical data needed as input for calculations that model atmospheric chemistry. A table summarizing the preferred rate data is provided, together with an Appendix listing the available values of enthalpies of formation of the reactant and product species.

***IUPAC-NIST Solubility Data Series 67. Halogenated Ethanes and Ethenes with Water*, by Ari L. Horvath, Forrest W. Getzen, and Z. Maczynska. USD 109.00. Published in the *Journal of Physical and Chemical Reference Data*, Vol. 28, No. 2, pp. 395–627, 1999, by the American Chemical Society (1155 Sixteenth Street, N.W., Washington, DC 20036-9976) and the American Institute of Physics (Suite 1NO1, 2 Huntington Quadrangle, Melville, NY 11747-4502) for the National Institute of Standards and Technology [S0047-2689(99)00202-0].**



This volume covers the solubilities of halogenated ethanes and ethenes with water, heavy water, seawater, and aqueous electrolyte solutions. All data were critically examined for their reliability, and best value estimates were selected on the basis of such evaluations. Referenced works are presented in the standard IUPAC-NIST Solubility Data Series format. Reported and best value data are presented in tabular form and, where justified, data correlation equations and graphical illustrations are provided. Throughout the volume, SI conventions have been employed as the customary units.

The importance of these data arises from the fact that halogenated ethanes and ethenes have commercial uses as industrial chemicals, propellants, solvents, and the like. In such applications, often from

spillage, leakage, or mishandling, they contact water and are exposed to the atmosphere. The data are essential for concentration estimates for the halogenated ethanes and ethenes in drinking and ground water, foodstuffs, human tissue, marine organisms, and the atmosphere.

The halogenated aliphatics are of particular interest to health scientists, engineers, environmentalists, and atmospheric chemists in that they represent a class of chemical materials that has many significant industrial applications. However, at the same time, these substances have been shown, in some cases, to be carcinogenic and also to be especially damaging to the earth's atmospheric composition through their chemical reactivity, which results in atmospheric ozone depletion. The high ozone depletion potentials of this class of chemical substances emphasizes the importance of having available complete, accurate, and reliable data for mutual solubilities with water. The availability of such data is essential for estimates of halogenated hydrocarbon levels in both natural waters and aqueous industrial liquids that result from industrial fabrication, industrial waste removal processes, and the like. The data also provide significant solubility values for studies concerning the health of human and other biological systems.

***IUPAC-NIST Solubility Data Series 68. Aliphatic Compounds C_3–C_{14} with Water,* by Ari L. Horvath and Forrest W. Getzen. USD 67.00. Published in the *Journal of Physical and Chemical Reference Data*, Vol. 28, No. 3, pp. 649–777, 1999, by the American Chemical Society (1155 Sixteenth Street, N.W., Washington, DC 20036-9976) and the American Institute of Physics (Suite 1NO1, 2 Huntington Quadrangle, Melville, NY 11747-4502) for the National Institute of Standards and Technology [S0047-2689(99)00403-1].**

This volume covers the solubilities of halogenated aliphatic C_3–C_{14} compounds with water, heavy water, seawater, and aqueous electrolyte solutions. All data were critically examined for their reliability, and best value estimates were selected on the basis of such evaluations. Referenced works are presented in the standard IUPAC-NIST Solubility Data Series format. Reported and best value data are presented in tabular form and, where justified, data correlation equations and graphical illustrations are provided. Throughout the volume, SI conventions have been employed as the customary units.

The importance of these data arises from the fact that halogenated aliphatics have commercial uses in a variety of applications such as industrial chemicals, process raw materials, solvents, and the like. In such applications, they are often in contact with water and are routinely exposed to the atmosphere. Sometimes, such contact and exposure results from spillage, leakage, or mishandling. Reliable data are essential for concentration estimates for the halogenated aliphatics in drinking and ground water, foodstuffs, human tissue, marine organisms, and the atmosphere.

The halogenated aliphatics are of particular interest to health scientists, engineers, environmentalists, and atmospheric chemists in that they represent a class of chemical materials that has many significant industrial applications. However, at the same time, some of this class of substances have been shown to be carcinogenic and also to be especially harmful for the earth's atmospheric and natural water composition. Indeed, the chemical reactivity of some halogenated aliphatics has resulted in atmospheric ozone depletion. The high ozone depletion potentials of such chemical substances emphasizes the importance of having available complete, accurate, and reliable data for mutual solubilities with water. The availability of such data is essential for estimates of halogenated aliphatic hydrocarbon levels in both natural water and aqueous industrial liquids that result from industrial fabrication, industrial waste removal processes, and the like. The data also provide significant solubility values for studies concerning the health of human and other biological systems.

***IUPAC-NIST Solubility Data Series 69. Ternary Alcohol–Hydrocarbon–Water Systems,* by Adam Skrzecz, David Shaw, and Andrzej Maczynski. USD 117.00. Published in the *Journal of Physical and Chemical Reference Data*, Vol. 28, No. 4, pp. 983–1236, 1999, by the American Chemical Society (1155 Sixteenth Street, N.W., Washington, DC 20036-9976) and the American Institute of Physics (Suite 1NO1, 2 Huntington Quadrangle, Melville, NY 11747-4502) for the National Institute of Standards and Technology [S0047-2689(99)00304-9].**

The mutual solubilities of ternary systems containing alcohols, hydrocarbons, and water are reviewed. An exhaustive search of the literature was attempted for numerical data on all alcohols and hydrocarbons that are liquid at STP. Data were found for alcohols with up to nine carbon atoms, but mostly with fewer than four carbons. Data for a variety of hydrocarbon structural types were found, including alkane, alkene, and arene. A total of 205 original studies treating 116 ternary systems that have been published through 1992 are compiled. For 47 systems, sufficient data were available to allow critical evalua-

tion. All solubility data are expressed as mass and mole fractions as well as the originally reported units. Similar reviews of the related binary systems have previously been prepared for the Solubility Data Series.

New Publications from the National Institute of Standards and Technology

***Guide to the Nomenclature of Particle Dispersion Technology for Ceramic Systems*, by Vincent A. Hackley. NIST Special Publication 945, U.S. Department of Commerce, Technology Administration, National Institute of Standards and Technology, 24 pp., 2000. Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-9325.**

This little pamphlet is the work of a committee of academic, government, and industry specialists and is designed to provide a collection of standard definitions for the most common technical terms used in the area of particle dispersion technology for ceramic systems. The aim is certainly a worthy one, because the fields of particle technology and colloid science cover a diverse range of applications and have given rise to an equally diverse nomenclature.

The nomenclature problem stems partly from the wide range of areas to which the subject has some relevance—from food science through pharmaceuticals and cosmetics all the way to agricultural and soil engineering. But there is also the fact that many of these areas have a very long history of prescientific technological development, and in none of them is that more evident than in ceramics. The modern scientific understanding of ceramic processing has been grafted onto the enormously rich legacy of art and craft that underpinned the technology until relatively recently, and which still strongly influences some areas even today.

Because I had an opportunity to look at the material and offer comments prior to publication, I have not found any obvious deficiencies in the final work. There are some odd statements, however, such as the separation of the term *fine* from *coarse*, which is said to correspond to a dimension less or more than *roughly* 37 μm (my emphasis). It seems curious to make the separation so precisely and call it *roughly* until one translates that dimension into a sieve size and then recognizes it in terms of an aperture for a standard screen measured in the old f.p.s. unit of inches. Such are the strange ways in which we are reminded of the history of the subject.

There are well over a hundred definitions, covering the description of disperse systems, states of subdivision, association and dissociation processes, dispersion stability, and interfacial and electrokinetic properties. Each is succinct and carefully presented together with a bibliography and index.

I would not pretend that everyone will agree that every definition is couched in the most effective way. There will even be arguments about the exact meaning of some terms. When the phenomenon of particle association is described by terms like aggregation, agglomeration, coagulation, and flocculation (and there may be more), there is ample room for disagreement on details, but the definitions offered here have the weight of common usage behind them. The purpose of the exercise is to encourage a wider and more consistent use of the terms. That can only be an aid to communication and a contribution to clarity. The distinguished group of advisors on this project and the recorder, Vince Hackley, are to be congratulated on so ably performing such an important service.

Robert J. Hunter
School of Chemistry
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New Book from The Royal Society of Chemistry

***Chemistry, Society, and Environment: A New History of the British Chemical Industry.* Editor: Colin Russell (History of Chemistry Research Group, Open University, Milton Keynes MK6 7AA, England, UK).**

Public attitudes toward science have turned from awe to mistrust, and nowhere is this transformation more apparent than in the public image of the chemical

industry. The industry is seen as the great polluter, with much of the blame for the current environmental crisis laid firmly at its door. At the other extreme, many attempts by supporters to explain the benefits of the chemical industry have focused exclusively on the positive and have lacked any analysis of its effects on either society or the environment.

This book, published by the Royal Society of Chemistry, presents a critical history of the British chemical industry, with a focus on its social and environmental impact, both historically and in the present. Above all, it aims to be objective, and strong criticism is voiced on some issues. However, unexpected findings also emerge. For example, the book shows that industrial chemists have always been aware of the environmental consequences of their activities, and they have often found satisfactory ways of dealing with them. Overall, the chemical industry emerges in a more positive light than its popular image suggests.

No assessment of the environmental dilemmas we now face can be complete without an understanding of how they developed. From academics to industrialists to politicians, all those concerned with the social and environmental impact of the chemical industry will find their understanding broadened by this book. The editor, Colin Russell, and the three contributing authors are honorary members of the History of Chemistry Research Group of the Open University.

For further details or to order this book, contact Sales and Customer Care, The Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, England CB4 0WF, UK; E-mail: sales@rsc.org; Tel.: +44 1223 432360; Fax: +44 1223 423429; Web site: http://www.rsc.org/metpath or http://www.chemsoc.org/.

Conference Announcements

designates IUPAC sponsorship.

114th AOAC International Annual Meeting and Exposition, 10–14 September 2000, Philadelphia, Pennsylvania, USA

This meeting focuses on analytical methodology and laboratory management for chemists, microbiologists, and other scientists working in analysis of foods, beverages, feeds, fertilizers, pesticides, soil, water, human and animal drugs, hazardous wastes, forensics, and other related areas.

Scheduled program topics include advances in herbal and dietary supplement analysis, AOAC Technical Division for Laboratory Management, capillary electrophoresis, drugs [harmonization of CEN (European) and AOAC methods], European Union community recovery, genetically modified organisms (GMOs), liquid chromatography/mass spectrometry (LC/MS), *Listeria* methods, microbiological accreditation regulations (microbiology, food, chemistry, drugs, agriculture), PCB/natural toxin contamination (air/food/water), phasing in Good Manufacturing Practices (GLPs) to analytical testing laboratories, proficiency testing (accreditation/quality assurance), regulatory chromatography standards and methods (advantages and disadvantages), and the Wiley Award Symposium on Authentication of Fats and Oils.

The meeting will also feature numerous poster sessions to give attendees the chance to talk with presenters one-on-one. A large Expo will display the latest in analytical laboratory equipment and services, and will provide the opportunity to discuss needs with vendors and learn how to improve your laboratory.

Training courses held before and after the meeting will include sessions on intralaboratory (in-house) analytical method validation; ISO9000, ISO/IEC Guide 25, and the laboratory; quality assurance for analytical laboratories; quality assurance for microbiological laboratories; and statistics for method development.

Holding this first AOAC International Annual Meeting of the new millennium in Philadelphia, which was the site of the very first Annual Meeting of the Association of Official Analytical Chemists back in 1886, provides an opportunity to reflect on AOAC's long history and to envision the

Association's place in the future.

For more information, contact the AOAC International Meetings and Education Department, 481 North Frederick Avenue, Suite 500, Gaithersburg, Maryland 20877-2417, USA; E-mail: meetings@aoac.org; Tel: +1-800-379-2622 from North America or +1 301 924 7077 worldwide; Fax: +1 301 924 7089; Web site: http://www.aoac.org. The web site will have regularly updated information about the meeting.

16th IMEKO World Congress, 25–28 September 2000, Vienna, Austria

This Congress of the International Measurement Confederation, IMEKO 2000, is being organized by the Austrian Society for Measurement and Automation (ÖGMA). The scope of this meeting is extremely broad, encompassing the following areas:

- education and training in measurement and instrumentation
- photonic measurements
- measurement of force, mass, and torque
- measurement of electrical quantities
- hardness measurement
- measurement science
- traceability in metrology
- flow measurement
- technical diagnostics
- metrological infrastructures
- thermal and temperature measurement
- measurements in biology and medicine
- measurement of geometrical quantities
- experimental mechanics
- pressure and vacuum measurement
- measurement in robotics
- measurement of human functions
- special topics for IMEKO-XVI in Vienna
- micro and nano technology
- estimation of uncertainty and errors in measurement
- interfaces of measurement and decision making
- expert systems in decision making
- statistical evaluation of measurement results
- quality management
- environmental management
- sustainable development and its indicators

*For additional information, contact the Congress Secretariat, Abteilung Austauschbau und Messtechnik (AuM), Karlsplatz 13/3113, A-1040 Wien, Austria; E-mail: imeko@mail.ift.tuwien.ac.at or imeko2000@ove.e2i.at; Tel: +43 1 58801 31140 or +43 1 585 52 71; Fax: +43 1 58801 31196 or +43 1 585 85 91; Web site: http://www.imeko2000.*at.

POLYCHAR-9 World Forum on Polymer Applications and Theory and Short Course on Polymer Characterization, 8–12 January 2001, Denton, Texas, USA

The POLYCHAR-9 Conference (9–12 January) focus is on characterization on one hand and synthesis, processing, manufacturing, and properties on the other, with emphasis on predictions of service performance. All polymer-based materials, including thermoplastics, thermosets, heterogeneous and molecular composites, blends, polymer melts, and solutions, are covered.

Research presentations will be in oral and poster formats in the following areas:

- predictive methods
- polymerization
- polymer liquid crystals
- mechanical properties and performance
- dielectric and electrical properties
- interfaces
- rheology
- solutions and processing
- recycling
- characterization
- structure–property relations

Prizes to young investigators and students will be awarded for a presentation in either format; the Paul J. Flory Prize for Polymer Research might also be awarded. There will be an equipment and book exhibition. Participants from 41 countries took part in POLYCHAR-8 in January 2000.

The Short Course (8 January) will include the following topics:

- computerized mechanical testing (tension, compression, bending, impact, stress relaxation, friction, and dynamic mechanical analysis)
- thermophysical characterization (differential scanning calorimetry, thermogravimetric analysis, thermal mechanical analysis, and PVT measurements for solids and melts)
- electrical properties (dielectric spectroscopy and thermally stimulated depolarization)
- microscopy
- interface investigation

These Conferences used to be called International Conferences on Polymer Characterization; the new name better reflects the wide profile and the fact that experimentalists, modeling and simulation people, and theorists jointly discuss their research and de-

velopment results.

The following speakers have been invited to discuss their research and/or provide overviews:

- Akihiro Abe, Technical University of Tokyo, Japan
- James Economy, University of Illinois, Urbana-Champaign, USA
- Robert G. Gilbert, University of Sydney, Australia
- Ailton de Sousa Gomes, Federal University of Rio de Janeiro, Brazil
- Lutz Goetlich, North Atlantic Treaty Organization, Brussels, Belgium
- Yuri S. Lipatov, Institute of Macromolecular Chemistry, Kiev, Ukraine
- Andrew J. Lovinger, National Science Foundation, Arlington, Virginia, United States
- Georg H. Michler, Martin-Luther University, Merseburg, Germany
- Jaan Noolandi, Xerox Research Centre of Canada, Mississauga, Ontario, Canada
- Deodato Radic, Pontifical University of Chile, Santiago, Chile
- Michael Silverstein, Technion, Haifa, Israel
- George Springer, Stanford University, California, United States

For further information, contact POLYCHAR-9, University of North Texas, P.O. Box 305310, Denton, TX 76203-5310, USA; E-mail: polychar@marta.phys.unt.edu; Fax: +1 940 565 4824; Web site: http://www.unt.edu/POLYCHAR/.

6th International Conference on Heteroatom Chemistry (ICHAC-6), 22–27 June 2001, Łódz, Poland

The scientific program of this conference will cover all aspects of heteroatom chemistry, in particular: basic heteroatom chemistry, heteroatom chemistry toward organic synthesis, biologically relevant heteroatom compounds, supramolecular and coordination chemistry of heteroatoms, and advanced heteroatom-containing materials. Each field will be represented by plenary and invited lectures. Prof. Marian Mikolajczyk will serve as Conference Chairman; Profs. Binne Zwanenburg and Grzegorz Mlostñ will be Cochairmen.

For more information, contact Dr. Piotr Kielbasinski,Conference Secretary of ICHAC-6, Center of Molecular and Macromolecular Studies, Polish Academy of Sciences, Sienkiewicza 112, 90-363 Łódz, Poland; E-mail: piokiel@bilbo.cbmm.lodz.pl; Tel.: +48 42 681 58 32; Fax: +48 42 684 71 26.

38th IUPAC Congress—Frontiers in Chemistry/World Chemistry Congress 2001,1–6 July 2001, Brisbane, Australia

Held in conjunction with the 41st IUPAC General Assembly (29 June–8 July 2001) and incorporating the 9th Asian Chemistry Congress (1–4 July 2001) and AIMECS 01 (3–6 July 2001), the 38th IUPAC Congress/World Chemistry Congress 2001 in Brisbane, Australia will be a landmark event, featuring a diverse program and a range of associated meetings and activities that will combine to make attendance a valuable experience. The Royal Australian Chemical Institute will host all the Congress events in Brisbane, a city that offers every amenity and is an ideal point from which to explore the vast Australian continent.

Scientific program themes will include the following:

Materials Chemistry for the Future

- materials chemistry in confined systems
- supramolecular chemistry
- biomaterials
- spectroscopy, optoelectronics, energy production, and storage
- combinatorial methods for novel materials and devices
- novel polymeric and composite materials

Chemistry by Computer

- molecular structure and reactions: theories, modeling, and experimentation
- chemical education in the information age
- chemometrics
- trends in computational quantum chemistry and chemical dynamics
- molecular simulations and theory of complex materials

Challenges for Drug Discovery and Development in the 21st Century—Joint with AIMECS 01

- target discovery
- libraries and screens
- molecular design
- molecular development
- new vistas in therapy

Environmental Chemistry and the Greening of Industry

- chemical synthesis, processing, and analysis for improved environmental impact
- chemistry of responsible care
- atmospheric, urban air, and water chemistry
- chemistry of energy production and use
- agricultural chemistry
- standards and measurement of future directions

Modern Synthetic Chemistry

- new synthetic transformations
- combinatorial diversity in synthesis
- new organometallics—synthesis and applications
- inorganic and organic catalysis in synthetic and biological systems
- novel macromolecule syntheses
- synthetic efficiency for health and profit

The preliminary program will be released this month. Early bird discount registration closes 3 December 2000. Abstract submissions are invited for contributed oral and poster presentations on topics within the scope of the World Chemistry Congress and the associated meetings. Abstract submissions close on 31 March 2001, and authors will be notified after 1 May 2001.

A trade exhibition will be a major feature of the World Chemistry Congress, and organizations interested in commercial display opportunities are welcome. A detailed exhibition kit is available to those who contact the Congress Secretariat.

For more information, contact World Chemistry Congress 2001 Secretariat, P.O. Box 177, Red Hill Q 4059, Australia; E-mail: wcc2001@ccm.com.au; Tel.: +61 7 3368 2644; Fax: +61 7 3369 3731; Web site: http://www.ccm.com.au/wcc or contact Executive Secretariat, Associate Professor Mary Garson, Chemistry Department, The University of Queensland; E-mail: wcc2001@chemistry.uq.edu.au.

10th International Conference on the Coordination and Organometallic Chemistry of Germanium, Tin, and Lead, 8–12 July 2001, Talence, France

This conference, held once every three years, provides an international forum for presentation and discussion of new findings in molecular and supramolecular chemistry of germanium, tin, and lead. Compounds of these metals have long been at a center stage of chemistry, with far-reaching impact on products, processes, and technologies that continue to underpin chemical industries and quality of life. In many fields, they continue to show their mettle, and important results emerge continually. Recently, germanium, tin, and lead compounds have shown promising new applications in organic synthesis, materials chemistry, surface chemistry, catalysis, analytical chemistry, and as multiply bonded intermediates. Around 250 scientific participants from around the world are expected to attend this conference.

For additional information, contact Dr. B. Jousseaume, Laboratoire de Chimie Organique et Organométallique,UMR 5802, Université Bordeaux 1, 351 avenue de la Libération, F-33405 Talence Cedex, France; E-mail: b.jousseaume@lcoo.u-bordeaux.fr; Tel.: +33 (0) 5 56 84 64 43; Fax: +33 (0) 5 59 84 69 94.

11th IUPAC International Symposium on Organometallic Chemistry Directed Towards Organic Synthesis (OMCOS 11), 22–26 July 2001, Tapei, Taiwan

This symposium continues a long and distinguished series of IUPAC-sponsored symposia in an important interdisciplinary area of growing significance. OMCOS 11 will feature sessions on asymmetric synthesis via organometallics, structural and mechanistic aspects related to synthesis, metal-organics in materials, catalytic processes involving organometallics, new C–C and C–heteroatom bond-forming processes via metals, and cyclizations/ring-opening reactions involving organometallics. Approximately 800 scientific participants are expected to attend OMCOS 11.

For further information, contact Prof. Tien-Yau Luh, Department of Chemistry, National Taiwan University, Tapei 106, Taiwan; E-mail: tyluh@ccms.ntu.edu.tw; Tel.: +886 2 23636288; Fax: +886 2 23644971; Web site: http://www.ch.ntu.edu.tw/omcos/.

6th International Symposium on Bioorganic Chemistry (ISBOC-6), 12–15 May 2002, Toronto, Canada

This symposium continues a tradition of IUPAC-sponsored symposia on bioorganic chemistry; the most recent ones were held this past January in Pune, India (ISBOC-5) and in 1997 in Biarritz, France (ISBOC-4). These symposia focus on advancement of international collaboration and communication at the interface of organic chemistry with biological and medicinal science. ISBOC-6 will feature sessions on bioorganic mechanisms: key problems for the 21st century, bioorganic chemistry and discovery of new therapeutics, and biomimetic processes and synthesis—impact of automation. Approximately 1 000 scientific participants are expected to attend ISBOC-6.

For more information,contact Prof. Ronald Kluger, Department of Chemistry, University of Toronto, Toronto, Canada M5S 3H6; E-mail: rkluger@chem.utoronto.ca; Tel. and Fax: +1 416 978 3582.

10th International Conference on Polymer Characterization (POLYCHAR-10), 7–11 January 2002, Denton, Texas, USA

This continuing series of conferences has been held annually at the University of North Texas since 1992. For a description of the goals and content of the conference, see the listing for POLYCHAR-9 (9–12 January 2001) above.

For additional information, contact POLYCHAR-10, University of North Texas, P.O. Box 305310, Denton, TX 76203-5310, USA; E-mail: polychar@marta.phys.unt.edu; Fax: +1 940 565 4824; Web site: http://www.unt.edu/POLYCHAR/.

Conference Calendar

Visit http://www.iupac.org for complete information and further links.

NEW *designates a new conference since the last issue.*

2000

Organic Synthesis

1–5 July 2000
13th International Conference on Organic Synthesis (ICOS-13), Warsaw, Poland.
Prof. M. Makosza, Institute of Organic Chemistry, Kasprzaka 44, 01-224 Warsaw 42, P.O. Box 58, Poland.
Tel.: +48 22 631 8788
Fax: +48 22 632 6681
E-mail: icho-s@ichf.edu.pl

Physical Organic Chemistry

8–13 July 2000
15th International Conference on Physical Organic Chemistry (ICPOC 15), Göteborg, Sweden.
Prof. P. Ahlberg, Organic Chemistry, Department of Chemistry, Göteborg University, SE-412 96, Göteborg, Sweden.
Tel.: +46 31 7722900
Fax: + 46 31 7723843
E-mail: Per.Ahlberg@oc.chalmers.se

Macromolecules

9–14 July 2000
38th International Symposium on Macromolecules (MACRO 2000), Warsaw/Łódz, Poland.
Prof. Stanislaw Penczek, Polish Academy of Sciences, ul. Sienkiewicza 112, 90363 Łódz, Poland.
Tel.: +48 42 81 9815
Fax: +48 42 684 7126
E-mail: spenczek@bilbo.cbmm.lodz.pl

Coordination Chemistry

9–14 July 2000
34th International Conference on Coordination Chemistry (34-ICCC), Edinburgh, Scotland.
Prof. P. Tasker, Chairman
Dr. John F. Gibson, Secretary
The Royal Society of Chemistry, Burlington House, London W1V OBN, UK.
Tel.: +44 171 440 3321
Fax: +44 171 734 1227
E-mail: gibsonj@rsc.org

Polymers in Medicine

17–20 July 2000
40th Microsymposium on Polymers in Medicine, Prague, Czech Republic.
Dr. Jaromir Lukas, Institute of Macromolecular Chemistry, Academy of Science of the Czech Republic, Heyrovskeho nam. 2, 162 06 Praha 6, Czech Republic.
Tel.: +420 2360341
Fax: +420 2367981
E-mail: sympo@imc.cas.cz

Polymer Networks '2000

17–21 July 2000
15th Polymer Networks Group Meeting "Polymer Networks '2000", Cracow, Poland.
Prof. H. Galina, Rzeszow University of Technology, Faculty of Chemistry, W. Pola Str.2, PL 35-959 Rzeszow, Poland.
Tel.: +48 17 628 057
Fax: +48 17 854 3655
E-mail: hgal@prz.rzeszow

Photochemistry

22–27 July 2000
18th IUPAC Symposium on Photochemistry, "Photochemistry into the New Century", Dresden, Germany.
Prof. Dr. Silvia E. Braslavsky, Max-Planck Institut für Strahlenchemie, Postfach 101365, D-45413 Mülheim an der Ruhr, Germany.
Tel: +49 (208) 306 3681
Fax: +49 (208) 306 3951
E-mail: braslavskys@mpi-muelheim.mpg.de

Organometallic Chemistry

23–28 July 2000
19th International Conference on Organometallic Chemistry (XIX ICOMC), Shanghai, China.
Profs. Li Xin Dai and Chang Tao Qian, Chairmen, Prof. Xue Long Hou, Secretary, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, 354 Fenglin Road, Shanghai 200032, PR, China,
Tel.: +86 21 641 63300
Fax: +86 21 641 66128
E-mail: xlhou@pub.sioc.ac.cn

Solubility Phenomena

25–28 July 2000
9th International Symposium on Solubility Phenomena (9th ISSP), Hammamet, Tunisia.
Prof. Najia Kbir-Ariguib, National Institute for Scientific and Technical Research, P.O. Box 95, Hammam-Lif, 2050 Tunisia.
Tel: +216 1 430 215
Fax: +216 1 430 934
E-mail: ariguib@planet.tn

Chemical Education

5–10 August 2000
16th International Conference on Chemical Education: Chemistry for a Healthier Planet (16 ICCE), Budapest, Hungary.
Prof. Alajos Kalman, Chairman, Prof. Gabor Naray-Szabo, Department of Theoretical Chemistry, Lorand Eotvos University, Pazmany Peter st. 1b, H-1117 Budapest, Hungary.
Tel.: +36 1 209 0555, ext. 16-30
Fax: +36 1 209 0602
E-mail: mail2.mke@mtesz.hu

Chemical Thermodynamics

6–11 August 2000
16th IUPAC Conference on Chemical Thermodynamics, Halifax, Nova Scotia, Canada.
Prof. M. A. White, Department of Chemistry, Dalhousie University, Halifax, Nova Scotia B3H 4J3, Canada.
Tel.: +1 902 494 3894
Fax: +1 902 494 1310
E-mail: Mary.Anne.White@DAL.CA

Thermal Analysis and Calorimetry

14–18 August 2000
12th International Congress on Thermal Analysis and Calorimetry, Copenhagen, Denmark.
Dr. O. Toft Sorensen, Materials Research Department, Riso National Laboratory DK-4000, Roskilde, Denmark.
Tel: +45 4677 5800
Fax: +45 4677 5758
E-mail: o.toft.sorensen@risoe.dk

Biotechnology

3–8 September 2000
11th International Biotechnology Symposium, Berlin, Germany.
Prof. G. Kreysa, DECHEMA e.V.— c/o 11th IBS, Theodor-Heuss-Allee 25, 60486 Frankfurt/Main, Germany.
Tel.: +49 69 7564 235 / -249
Fax: +49 69 7564 176 / -304
E-mail: biotechnology2000@dechema.de

Nuclear and Radiochemistry

3–8 September 2000
5th International Conference on Nuclear and Radiochemistry (NRC5), Pontresina, Switzerland.
Prof. H. W. Gäggeler, Chairman, Mrs. R. Lorenzen, Secretary, Paul Scherrer Institut, CH-5232 Villigen-Ost, Switzerland.
Tel.: +41 56 310 2401
Fax: +41 56 310 4435
E-mail: ruth.lorenzen@psi.ch

Analytical Chemistry

3–9 September 2000
EUROANALYSIS XI, Lisboa, Portugal.
Prof. Maria Filomena Camões, Chair, Dr. Cristina Oliveira, Secretary, Departamento de Química e Bioquímica, Faculdade de Ciências, Universidade de Lisboa, Edifício C1-5º Piso, P-1700 Lisboa, Portugal.
Tel.: +351 1 3906138
Fax: +351 1 3909352; 7500088
E-mail: euroanalysisxi@fc.ul.pt

Natural Products

4–8 September 2000
22nd International Symposium on the Chemistry of Natural Products, São Carlos, São Paulo, Brazil.
Dr. M. Fátima das G.F. da Silva, Universidade Federal de São Carlos, Depto. de Química, Via Washington Luiz, km 235, CP676, São Carlos, São Paulo, Brazil.
Tel.: +55 16 260 8208
Fax: +55 16 260 8350
E-mail: dmfs@power.ufscar.br

Medicinal Chemistry

18–22 September 2000
XVI International Symposium on Medicinal Chemistry, Bologna, Italy.
Prof. C. Melchiorre, Universitá di Bologna, Dipartimento di Scienze Farmaceutiche, Via Belmeloro 6, I-40126 Bologna, Italy.
Tel.: +39 051 259 706
Fax: +39 051 259 734
E-mail: camelch@alma.unibo.it

Trace Elements in Food

9–11 October 2000
Warsaw, Poland.
Prof. B. Szteke, Chairman, Dr. R. Jedrzejczak, Secretary, Institute of Agricultural and Food Biotechnology ul. Rakowiecka 36 02-532 Warsaw, Poland. Tel.: +48 22 606 3876 Fax: +48 22 4904 28 E-mail: jedrzejczak@ibprs.waw.pl

Food Packaging

8–10 November 2000
2nd International Symposium on Food Packaging—Ensuring the Safety and Quality Food, Vienna, Austria.
Liên-Anh Tran, ILSI Europe, 83, Avenue E. Mounier, Box 6, B-1200, Brussels, Belgium. Tel.: +32 (2) 771 0014 Fax: +32 (2) 762 0044 E-mail: anh@ilsieurope.be

Polymers

20–24 November 2000
7th Latin-American Symposium on Polymers (SLAP'2000) and 5th Ibero American Congress on Polymers, Havana, Cuba.
Dr. Ricardo Martínez, Dr. Waldo Argüelles-Monal, IMRE, Universidad de La Habana La Habana 10400, Cuba. Fax: +53 7 33 42 47 E-mail: slap@imre.oc.uh.cu

2001

Polymer Characterization

9–12 January 2001
9th International Conference on Polymer Characterization (POLYCHAR), Denton, Texas, USA.
Dr. Witold Brostow, Department of Materials Science, University of North Texas, Denton, Texas, 76203-5310 USA. Tel.: + 1 940 565 4358, -3262, or 4337 Fax: +1 940 565 4824 E-mail: brostow@unt.edu or polychar@marta.phys.unt.edu

Chemistry and Chemical Engineering

16–20 April 2001
IV International Congress on Chemistry and XIII Caribbean Conference on Chemistry and Chemical Engineering, Havana, Cuba.
Prof. Alberto J. Núñez Sellés, Sociedad Cubana de Química, Ave 21&200, Atabey, Apdo. 16042, CP 11600, Havana, Cuba. Tel.: +537 218 178 Fax: +537 336 471 E-mail: cqf@infomed.sld.cu

CHEMRAWN XIV

9–13 June 2001
Chemrawn Conference—Toward Environmentally Benign Processes and Products, Boulder, Colorado, USA.
Dr. Dennis L. Hjeresen, Environmental Management Program, Los Alamos National Laboratory - Mail Stop J591, Los Alamos, NM 87545. Tel.: +1 505 665 7251 Fax: + 1 505 665 8118 E-mail: dennish@lanl.gov

IUPAC 41st General Assembly

29 June–8 July 2001
Brisbane, Australia.
IUPAC Secretariat. Tel.: +1 919 485 8700 Fax: +1 919 485 8706 E-mail: secretariat@iupac.org

IUPAC 38th Congress/World Chemistry Congress 2001

1–6 July 2001
Brisbane, Australia.
Congress Secretariat, P.O. Box 177, Red Hill Q 4054, Australia. Tel.: + 61 7 3368 2644 Fax: + 61 7 3369 3731 E-mail: wcc2001@ccm.com.au

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To apply for IUPAC sponsorship, conference organizers should complete an Advance Information Questionnaire (AIQ). The AIQ form is available at http://www.iupac.org or by request at the IUPAC Secretariat, and should be returned between 2 years and 12 months before the conference. Further information on granting sponsorship is included in the AIQ and available online.

Coordination and Organometallic Chemistry of Germanium, Tin, and Lead

8–12 July 2001
10th International Conference on the Coordination and Organometallic Chemistry of Germanium, Tin, and Lead, Talence, France.
Dr. B. Jousseaume, Laboratoire de Chimie Organique et Organometallique, UMR 5802, Universite Bordeaux 1, 351 avenue de la Liberation, F-33405 Talence Cedex, France. Tel.: +33 (0) 5 56 84 64 43 Fax: +33 (0) 5 59 84 69 94 E-mail: b.jousseaume@lcoo.u-bordeaux.fr

Scattering Methods and Polymers

9–12 July 2001
20th Discussion Conference on Scattering Methods for the Investigation of Polymers, Prague, Czech Republic.
Dr. Jaromir Lukas, Institute of Macromolecular Chemistry, Academy of Sciences of the Czech Republic, Heyrovskeho nam. 2, CZ-162 06 Praha 6, Czech Republic. Tel.: +420 2 204 0332 Fax: +420 2 367 981 E-mail: sympo@imc.cas.cz

Polymer Membranes

16–19 July 2001
41st Microsymposium on Polymer Membranes, Prague, Czech Republic.
Dr. Jaromir Lukas, Institute of Macromolecular Chemistry, Academy of Sciences of the Czech Republic, Heyrovskeho nam. 2, CZ-162 06 Praha 6, Czech Republic.
Tel.: +420 2 204 03332
Fax: +420 2 367 981
E-mail: sympo@imc.cas.cz

Organometallic Chemistry

22–26 July 2001 NEW
11th IUPAC International Symposium on Organometallic Chemistry Directed Towards Organic Synthesis (OMCOS 11), Tapei, Taiwan.
Prof. Tien-Yau Luh, Department of Chemistry, National Taiwan University,
Tapei 106, Taiwan.
Tel.: +886 2 23636288
Fax.: +886 2 23644971
E-mail: tyluh@ccms.ntu.edu.tw

Phosphorus Chemistry

29 July–3 August 2001
15th International Conference on Phosphorus Chemistry, Sendai, Japan.
Prof. Masaaki Yoshifuji, Department of Chemistry, Graduate School of Science,Tohoku University, Aoba, Sendai 980-8578, Japan.
Tel.: +81 22 217 6558
Fax: +81 22 217 6562
E-mail: yoshifj@mail.cc.tohoku.ac.jp

Analytical Sciences

6–10 August 2001
International Congress on Analytical Sciences 2001 (ICAS2001), Tokyo, Japan.
Prof. Tsuguo Sawada, Chairman, Department of Applied Chemistry, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Toyko 113-8656, Japan.
Tel.: +81 3 5841 7236 (or 7237)
Fax: +81 3 5841 6037
E-mail: icas2001@laser.t.u-tokyo.ac.jp

Biodiversity

3–8 November 2001
3rd IUPAC International Conference on Biodiversity (ICOB-3), Antalya, Turkey.
Prof. B. Sener, Department of Phamocognosy, Faculty of Pharmacy, Gazi University, P.O. Box 143 06572, Maltepe-Ankara, Turkey.
Tel.: +90 312 212 2267
Fax: +90 312 213 3921
E-mail: blgsener@tr-net.net.tr

Sweeteners

13–17 November 2001
2nd International Symposium on Sweeteners, Hiroshima-Shi, Japan.
Prof. Kasuo Yamasaki, Institute of Pharmaceutical Sciences, Faculty of Medicine, Hiroshima University Kasumi, Minami-ku, Hiroshima 734-8551, Japan.
Tel.: +81 82 257 5285
Fax: +81 82 257 5289
E-mail: yamasaki@pharm.hiroshima-u.ac.jp

2002

Polymer Characterization

7–11 January 2002
10th International Conference on Polymer Characterization (POLYCHAR), Denton, Texas, USA.
Dr. Witold Brostow, Department of Materials Science, University of North Texas, Denton, Texas, 76203-5310 USA
Tel.: + 1 940 565 4358, -3262, or 4337
Fax: +1 940 565 4824
E-mail: brostow@unt.edu or polychar@marta.phys.unt.edu

Visas

It is a condition of sponsorship that organizers of meetings under the auspices of IUPAC, in considering the locations of such meetings, should take all possible steps to ensure the freedom of all bona fide chemists from throughout the world to attend irrespective of race, religion, or political philosophy. IUPAC sponsorship implies that entry visas will be granted to all bona fide chemists provided application is made not less than three months in advance. If a visa is not granted one month before the meeting, the IUPAC Secretariat should be notified without delay by the applicant.

Bioorganic Chemistry

12–15 May 2002
6th International Symposium on Bioorganic Chemistry, Toronto, Canada.
Dr. Ronald Kluger, Department of Chemistry, University of Toronto, Toronto,Canada M5S 3H6.
Tel.: +1 416 978 3582
Fax.: +1 416 978 3482
E-mail: rkluger@chem.utoronto.ca

Polymer Science and Technology

2–5 December 2002
IUPAC Polymer Conference on the Mission and Challenges of Polymer Science and Technology, Kyoto, Japan.
Prof. Seiichi Nakahama, Faculty of Engineering, Tokyo Institute of Technology, 2-12-1 Ohokayama, Meguro-ku, Tokyo 152-8552, Japan.
Tel.: +81 3 5734 2138
Fax.: +81 3 5734 2887
E-mail: snakaham@polymer.titech.ac.jp