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Buchbesprechung

Freimut Marschner, 'Quantenchemie mit Personal Computern. Eine Einführung mit interaktiven Programmen für IBM-PC und Kompatible', Walter de Gruyter, Berlin, 1991, 409 Seiten. Das Buch enthält 2 Disketten. Preis *ca.* Fr. 90.–, ISBN 3-11-011944-7

Leistungsfähige Personal Computer wecken zunehmend das Interesse am Thema dieses Buches. Was habe ich als Leser von diesem Buchtitel erwartet? Natürlich tauchen sofort einige grundlegende Systeme vor meinem geistigen Auge auf: Das Elektron im Kasten, der Harmonische Oszillator, das H-Atom usw. Doch Quantenchemie verspricht noch mehr: HMO, EHT, PPP, CNDO, MNDO, *ab initio* u.a., alles Verfahren, für die heute Programme auf Personal Computern erhältlich sind. Viele dieser Programme erlauben ein interaktives Arbeiten mit benützerfreundlichen Graphikoberflächen.

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Die Gewichtung des quantenchemischen Gehalts kann auch nicht überzeugen. Während von den oben erwähnten Stichworten nur das HMO-, das EHT- und das PPP-Verfahren auf *ca.* 80 Seiten behandelt werden, sind nicht weniger als 100 Seiten der graphischen Darstellung von Orbitalen durch verschiedene kleine Programme gewidmet. Weitere Kapitel bzw. Programme behandeln die *Schrödinger*-Gleichung, numerische Integrationsverfahren, Lineare Regressions- und Varianzanalyse und Symmetriegruppen.

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INFORMATION

7th PSI-Minisymposium 'Electrochemical Energy Storage'

On August 23, 1991, the '7th Minisymposium on Electrochemical Energy Storage' was held at the *Paul Scherrer Institute* (PSI) in Würenlingen. The organizer, Dr. *O. Haas*, Electrochemistry Section, PSI, invited four distinguished scientists, to speak on electronically conducting polymers for battery applications and on Zn/air and Zn/nickel oxide batteries. The Minisymposium, by now a traditional semi-annual event, sponsored by the PSI and BEW (Bundesamt für Energiewirtschaft), was attended by *ca.* 50 participants from industry, universities, and research institutes.

Prof. Dr. *E.M. Genies*, Centre D'Etudes Nucléaires, Grenoble (CENG), presented an overview of electronically conductive polymers in electrolytes dissolved in organic solvents, focusing on polyacetylene, polypyrrole, and polyaniline. The interest in conducting polymers as battery electrodes was initiated by *MacDiarmid et al.* more than ten years ago. Since then, many researchers investigated polymeric active materials, often led by over-optimistic expectations on energy and power density. Prof. *Genies* discussed in detail some of the problems of conducting polymers for energy storage:

i) *Gravimetric Charge Densities.* Most conducting polymers appear to accept only up to one charge unit per *ca.* 10 C (or hetero) atoms, resulting in charge densities which are in the range of 200 Ah/kg or lower (*cf.* 224 Ah/kg for PbO_2).

ii) *Volumetric Charge Densities.* Due to low densities of organic polymers (generally < 1.6 g/cm^3) and their rather high porosity (up to 90%), the volume required for the battery active material is generally higher than with inorganic active materials.

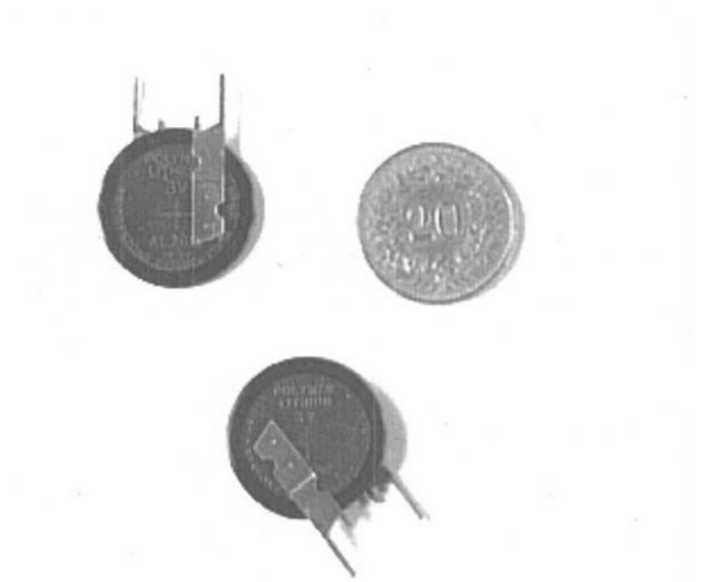
iii) *Stability.* Many conducting polymers are sensitive to overcharge and/or to traces of humidity, resulting in a rather poor cycle life. This may cause serious problems for practical applications in batteries. Prof. *Genies* stressed the need to develop solvents and inert electrolytes which are compatible with the battery materials (the classical $LiClO_4$ or $LiBF_4$ electrolytes show only limited stability). So far, satisfactory cycle life has been achieved only with selected materials, *e.g.* more than 500 cycles with polyaniline in organic media and > 20000 cycles for thin (*ca.* 1 μm) polypyrrole electrodes in 0.5M $LiClO_4$/propylene carbonate [1].

iv) *Power Capability.* With the exception of polyacetylene, electronic conductivities of organic polymers are significantly lower than 100 S/cm and often vary widely with the state of charge. In addition, conductivities of electrolytes dissolved in organic solvents are 10–100 times lower than in standard aqueous batteries. These two factors severely limit maximum power output. However, high power densities may be achieved with thin-layer cells at the expense of energy density [2].

The often cited advantages of 'organic batteries', such as the absence of toxic compounds (*e.g.* Hg, Cd, Pb) have to be discussed critically for each system. For example, during the preparation of polyaniline or poly-*p*-phenylene, highly cancerogenic benzidines or polycondensed aromatics are formed. Prof. *Genies* is, however, optimistic that safety problems could be solved by proper processing techniques, *e.g.* by employing HF/NH_4F melts as the electrolyte during polyaniline preparation. However, it is questionable that a polymer-based battery will ever be built which can be disposed off safely by incineration or even by biological degradation.

One undisputed advantage of polymer batteries is their mechanical resiliency. Especially in combination with polymeric electrolytes, thin and flexible batteries can be developed which may be used in 'smart cards' ('intelligent' credit cards) or which may be shaped to fit any electronic device.

Parallel to fundamental research on conducting polymers, industrial activity for the development of rechargeable batteries has been in progress for the last ten years. It has been shown that by proper cell engineering (cell design, electrolyte concentration, materials for current collectors and containers) energy and power densities of 200 Wh/kg and >100 W/kg are feasible in principle [2]. So far, rechargeable Li-Al/polyaniline button cells, developed by *Seiko/Bridgestone* [3] reach energy densities of *ca.* 8 Wh/kg and 20 Wh/l (8 mAh cells). At 30% depth of discharge, more than 1000 cycles can be achieved. The self discharge rates were given as 10–15% in 3 months. Such batteries might be used for low-drain applications (*e.g.* for pocket calculators, multimeters, *etc.*) in combination with solar cells. Li-Al/polyaniline laboratory cells assembled at CENG employed polyaniline electrodes with a thickness of up to 1 mm. Short circuit current densities of up to 15 mA/cm^2 could be obtained from these cells. On the other hand, the development of Li/polypyrrole cells at VARTA [4] has ceased.



2 coin-type rechargeable Li/polyaniline batteries developed by Bridgestone Corporation, *Japan*

Prof. *Genies* concluded his lecture by stating that much more work is needed for the development of conducting polymers for battery applications. He suggested cross-linking conducting polymers with electrochemically active disulphide bridges thus increasing the charge density of organic active material.

Prof. Dr. *F. Beck*, University Duisburg, focused on metal-free battery materials in *aqueous electrolytes*. In comparison with organic solvents, H_2O has the advantage of being nontoxic, cheap and providing high electrolytic conductivities of up to > 0.5 S/cm. Theoretical and practical charge densities and electrode potentials are summarized in *Table 1* for a number of conducting polymers.

Graphite Intercalation Compounds (*GIC*'s). Prof. *Beck* discussed the electrochemical intercalation of anions X^- (X^- = HSO_4^-, ClO_4^-, BF_4^-) into graphite as a function of acid concentration. The onset potential for the intercalation process is practically independent of X and varies *linearly* with the bulk concentration of HX. The linear relationship can be explained by deprotonation equilibria in highly acidic solutions (pH <0) using the *Nernst* equation. GIC's reach charge densities of 40 Ah/kg. The intercalation process was described as highly reversible. Laboratory cells consisting of Pb, HF and natural graphite have been cycled successfully up to 3000 times over one year [5].

Graphite Oxides. Practical charge densities of only ≤ 30 Ah/kg could be reached in concentrated acids (*e.g.* in 12M H_2SO_4). However, cycling behaviour in these media is not satisfactory.

Carbon Black. Carbon blacks are highly amorphous C compounds of complex compositions providing very high surface areas (up to 1500 m^2/g). Such surfaces result in theoretical charge densities of 83 Ah/kg per V, based on double layer capacities of 20 μF/cm^2. Li/carbon black batteries with electrolytes dissolved in *organic* solvents have been developed in Japan (*e.g.* by *Matsushita*). So-called *supercap* cells can be regarded as a crossbreed between standard rechargeable batteries and electrolytic capacitors and are especially interesting for delivering high power in a short time. They are being discussed as a replacement for lead-acid cells as starter batteries in cars. The main problems of these Li/carbon black batteries consist in their

relatively high self-discharge and their sloping discharge characteristics.

Poly-p-*phenylene* (*PPP*). PPP is the conducting polymer whose chemical and electrochemical properties are closest to graphite. Upon anodic oxidation, up to 0.5 electrons can be transferred per phenylene unit under concomitant anion insertion. Practical charge densities of 70 Ah/kg have been obtained so far. However, PPP is very sensitive to over-oxidation in aqueous acid [6]; it is not reversible enough and much more expensive than graphite.

Polypyrrole (*PPy*). Polypyrrole shows a fairly reversible electrochemical behaviour in aqueous media and can yield charge densities of up to 85 Ah/kg. The main drawback of its use as a battery cathode material is the relatively low electrode potential of *ca.* 0.2 V *vs.* the standard hydrogen electrode, which results in rather low battery voltages (*e.g. ca.* 0.56 V for a PPY/H_2SO_4/Pb cell).

Polyaniline. Polyaniline has been suggested as a cathode material in rechargeable batteries in combination with Zn anodes and aqueous electrolytes. Practical charge densities are fairly high for conducting polymers (*ca.* 100 Ah/kg) which correspond however only to *ca.* 50% of the charge densities achievable in nonaqueous media.

Further Organic Active Material. Polyacrylonitriles (PAN) yield, upon pyrolysis, complex, polycondensed six-membered ring systems. These polymers might be used as negative electrodes in aqueous batteries. Other organics suitable for battery electrodes such as organic disulphides or anthraquinone which is a cheap material (3 DM/kg) with a fairly high theoretical charge density (260 Ah/kg) were discussed only very briefly.

Prof. Dr. *K.S.V. Santhanam*, TATA Institute of Fundamental Research, Bombay, presently at PSI as a visiting scientist, gave a short survey on applications of redox polymers and conducting polymers in secondary batteries (due to time limits, he could only present a fraction of his vast collection of data!). He focused on preparation techniques, mainly for polyaniline, polypyrrole, and polyacetylene and described the various types of batteries using polymeric electrodes. Based on energy density, cycle life and toxicity, he emphasised the potentiality of polypyrrole and polyazulene for practical applications. New polymers such as S-, N- or P-linked polymers (*e.g.* $(N{=}P)_n$) were suggested as candidates for battery electrodes. A preprint entitled 'Electrochemical Energy Storage Systems Using Conducing Polymers', authored by *Santhanam et al.* will soon be available from Dr. *O. Haas*, PSI, 5232 Villigen PSI.

Prof. Dr. *E. J. Cairns*, Lawrence Berkeley Laboratory, gave an interesting lecture on recent results obtained with Zn/air and Zn/NiOOH batteries. First of all he outlined battery requirements for electric vehicles and showed that Zn/air and Zn/NiOOH batteries are promising systems to meet the *United States Advanced Battery Consortium* (USABC) mid-term goals (see *Table 2*). The USABC is a joint venture between *General Motors*, *Ford*, and *Chrysler* for the development and promotion of electric vehicles. 50% of the budget of $1 billion over the next ten years is met by the U.S. Department of Energy (DOE). After starting the USABC program in mid 1991 with a budget of $ 27 million ($13.5 million from DOE), $ 54 million will be available in 1992 for the development of advanced batteries and other components for electric vehicles.

The Zn/air laboratory cells (1.3–1.8 Ah) consisted of reticulated Zn-plated Cu foam, 45% KOH with 40 g/l Zn as the electrolyte and bifunctional oxygen diffusion electrodes. The electrolyte was pumped through the negative electrode. The positive electrodes, based on *Teflon*-bonded carbon with CoTMPP and Ni/Co spinels as catalysts for O_2 reduction and evolution were obtained from *Electromedia*. Projected cycle life of the bifunctional oxygen electrode was given as 100 charge/discharge cycles. Cell performance was independent of the state of charge (*e.g. ca.* 1.2 V at a current density of 10 mA/cm^2. Zn/air cells were charged typically at *ca.* 2 V.

The Zn/NiOOH laboratory cells (1.35 Ah vented, 1.35 Ah sealed and 22 Ah sealed) consisted of pasted zinc oxide negative electrodes, KOH electrolyte with various additives (*vide infra*) and commercial sintered-nickel positives. So far, the major problem of rechargeable Zn/NiOOH batteries was their low cycle life. Considerable progress was made by lowering the KOH concentration from 45% to 30–15%, but by adding K_2CO_3 or KF in order to maintain sufficient electrolytic conductivity. The peak power decreased for highly alkaline electrolytes from *ca.* 510 W/kg during the first few cycles to *ca.* 200 W/kg after 200 cycles. With moderately alkaline electrolytes, however, power densities of 300–230 W/kg could be maintained during > 500 cycles (100% depth of discharge). In addition, Zn redistribution on the Zn electrode is less pronounced in moderately alkaline electrolytes.

Prof. *Cairns* pointed out the advantages of sealed Zn/NiOOH batteries: *i*) O_2 evolved towards the end of the charging process cannot escape from the cell and is forced to recombine at the Zn electrode (2% PbO is added to the anode mix in order to suppress H_2 evolution). Therefore, at a given state of charge, the composition of the negative electrode (Zn content) and the electrolyte (amount of H_2O, pOH) remains constant during the battery life. *ii*) O_2 appears to react first at zinc dendrites. Therefore, the shape change of the negative electrode upon cycling is less severe than in vented cells.

The symposium terminated with a general discussion, mediated by Dr. *Haas*, on the scope of 'Energy Storage Systems'. Prof. *Cairns* presented the state of the art of metal/air batteries and H_2/O_2 fuel cells. He pointed out that the Al/air battery has been commercialised by *Alupower* for special purposes such as reserve power systems for telecommunication. While the Zn/air program has been started recently, the development of Fe/air batteries has been ceased by the DOE due to low energy efficiency and low cell voltages. Phosphoric acid fuel cell plants as large as 200 kW to 11 MW have been realized or are under construction. Solid polymer electrolyte

Table 2. *Electric Vehicle Battery Goals and Achievements*

Property	IDSEP Van[a])	USABC mid-term	USABC long-term	Zn/Air	Zn/NiOOH
Specific energy (Wh/kg)	30	80	200	90[b])	60–75
Energy density (Wh/lit)	35	135	300	90[b])	130–190
Specific power (W/kg)	79	150	400	110[b])	170–260
Power density (W/lit)	92	250	600	110[b])	380–580
Cycle life	500	600	1000	100	600
Charge time (h)	12	< 6	3–6	6–12	6
Price ($/kWh)		< 150	< 100	125[b])	125 (est)

[a]) Designed so the Pb-acid battery could qualify. IDSEP: Improved Dual Shaft Electric Propulsion.
[b]) Projected values from 45 kWh battery design, *R. Putt, Matsi, Inc.*

Tab. 1. *Charge Densities and Electrode Potentials for Some Electroactive Organic Materials*

System	Ah/kg theo.	pract.	E_{rev}/V at pH = 0 *vs.* SHE[a])	Remarks
Graphite intercalation coumpounds	40	30–40	1.5–1.9	high reversibility
Graphite oxides	650[b])	*ca.* 30	2.1	low reversibility
Carbon black	170		0.5–1	1500 m^2/g, 20 μF/cm^2
Poly-*p*-phenylene	106	70	1.0	y = 0.5[c])
Polypyrrole	91	85	0.2	y = 0.33[c])
Polyaniline	300	*ca.* 100	0.5	y = 1[c])
Pyrolysed PAN[d])		*ca.* 400	–0.5	1–6 M H_2SO_4
Antraquinone	260	*ca.* 150	0.15	side reactions

[a]) Quasireversible potential *vs.* the standard hydrogen electrode.
[b]) Based on the hypothetical reaction: $C_{2n} + n\ H_2O \rightarrow [C_2OH]_n + n\ H^+ + n\ e^-$.
[c]) y = electrons transferred per repeat unit.
[d]) PAN = polyacrylonitriles.

fuel cells (*ca.* 10 kW) appear especially promising for automotive applications due to their high achievable energy densities. High-temperature fuel cells are interesting for total energy systems because of their heat output at elevated temperatures. However, several years of development work will be needed before multi-kW stacks of solid oxide fuel cells will be available in the U.S. (*i.e.* from *Westinghouse* or from *Allied*). 20 kW molten carbonate fuel cell systems have been operated successfully over several 1000 h in Japan. The main limiting factor for their life time appears to be Ni^{II} dissolution from the positive electrode, resulting in deposition of Ni dendrites and short circuits.

The speakers agreed that further development of batteries employing conducting polymers is justified, especially in view of systems for power shaping. Before such batteries can be developed, which are considerably larger than button cells, further fundamental and engineering work is necessary to increase charge densities and stabilities of conducting polymers, to improve ionic conductivities and stabilities of electrolytes and to establish the optimum cell design for a given application.

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European Federation for Medicinal Chemistry and the American Chemical Society, Division of Medicinal Chemistry

The Section of Medicinal Chemistry of the Swiss Chemical Society cordially invites you to attend the

XIIth International Symposium on Medicinal Chemistry

Basel, Switzerland, September 13–17,1992

Background
The European Federation for Medicinal Chemistry, comprised of representatives of national medicinal chemistry organizations in Europe, organizes biennial International Medicinal Chemistry Symposia. Previous symposia were held in Florence (1962), Münster (1968), Milan (1972), Noordwijkerhout (1974), Paris (1976), Brighton (1978), Torremolinos (1980), Toronto (1982, in cooperation with the Medicinal Chemistry Divisions of the Chemical Institute of Canada and the American Chemical Society), Uppsala (1984), Berlin/West (1986), Budapest (1988), and Jerusalem (1990).

Duration of Conference
The Symposium will be held in Basel at the European World Trade and Convention Center, starting on Sunday afternoon (September 13) with the Registration and Inaugural Lecture. The scientific programme will take place from Monday morning (September 14) until Thursday (September 17).

Conference Language
The official language of the Symposium will be English.

Chairman of the Organizing Committee
E. Kyburz (CH)

Chairman of the Scientific Committee
B. Testa (CH)

Scientific Programme
The programme will focus on a number of selected themes of current significance. These will be covered in one inaugural lecture, 4 plenary lectures and 36 main lectures. Special therapeutic areas as well as general methodological approaches will be presented.

Specialized themes according to mechanisms of action:
- Proteases and their inhibitors
- The immune system as a drug target
- Peptidomimetics acting on peptide receptors
- Agents affecting post-receptors events
- Selected enzyme inhibitors
- Drugs acting on neurotransmitter systems
- Drugs acting on nucleic acids and nucleic acid processing enzymes
- Ion channel modulators

General themes:
- Exciting new topics
- Approaches in lead finding and lead optimization
- Molecular toxicology
- Prodrugs and targeted drug delivery

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Schweizerischer Chemiker-Verband
Schweizerische Chemische Gesellschaft
Association Suisse des Chimistes
Société Suisse de Chimie
Swiss Association of Chemists
Swiss Chemical Society

Preannouncement

6th International Seminar on

Modern Synthetic Methods

May 4/5, 1992, Interlaken, Switzerland

Chairman: Prof. Rolf Scheffold, University of Bern

Topics in Carbanion Chemistry

Topics in Carbohydrate Chemistry

The detailed programme will be available in Dezember 1991:
Secretary's Office for Symposia
c/o Institute of Organic Chemistry, University of Bern
Freiestrasse 3
CH–3012 Bern
Tel. 031 65 43 11, Fax 031 65 44 99

Federation of European Chemical Societies

Annual Report for 1990

1. Summary

In 1990 member societies celebrated the 20th Anniversary of the Federation at a special meeting in Frankfurt.

Dr. *W. Fritsche* was elected Chairman of the Council for the period 1990–1992.

Several important scientific conferences were sponsored throughout Europe.

As a result of the fusion of some societies and alterations in national boundaries the membership has changed. There are now 38 member societies from 26 countries.

The application of the Romanian Society for Analytical Chemistry was accepted.

fuel cells (*ca.* 10 kW) appear especially promising for automotive applications due to their high achievable energy densities. High-temperature fuel cells are interesting for total energy systems because of their heat output at elevated temperatures. However, several years of development work will be needed before multi-kW stacks of solid oxide fuel cells will be available in the U.S. (*i.e.* from *Westinghouse* or from *Allied*). 20 kW molten carbonate fuel cell systems have been operated successfully over several 1000 h in Japan. The main limiting factor for their life time appears to be Ni^{II} dissolution from the positive electrode, resulting in deposition of Ni dendrites and short circuits.

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Société Suisse de Chimie
Swiss Association of Chemists
Swiss Chemical Society

Preannouncement

6th International Seminar on

Modern Synthetic Methods

May 4/5, 1992, Interlaken, Switzerland

Chairman: Prof. Rolf Scheffold, University of Bern

Topics in Carbanion Chemistry

Topics in Carbohydrate Chemistry

The detailed programme will be available in Dezember 1991:
Secretary's Office for Symposia
c/o Institute of Organic Chemistry, University of Bern
Freiestrasse 3
CH–3012 Bern
Tel. 031 65 43 11, Fax 031 65 44 99

Federation of European Chemical Societies

Annual Report for 1990

1. Summary

In 1990 member societies celebrated the 20th Anniversary of the Federation at a special meeting in Frankfurt.

Dr. *W. Fritsche* was elected Chairman of the Council for the period 1990–1992.

Several important scientific conferences were sponsored throughout Europe.

As a result of the fusion of some societies and alterations in national boundaries the membership has changed. There are now 38 member societies from 26 countries.

The application of the Romanian Society for Analytical Chemistry was accepted.

fuel cells (*ca.* 10 kW) appear especially promising for automotive applications due to their high achievable energy densities. High-temperature fuel cells are interesting for total energy systems because of their heat output at elevated temperatures. However, several years of development work will be needed before multi-kW stacks of solid oxide fuel cells will be available in the U.S. (*i.e.* from *Westinghouse* or from *Allied*). 20 kW molten carbonate fuel cell systems have been operated successfully over several 1000 h in Japan. The main limiting factor for their life time appears to be Ni^{II} dissolution from the positive electrode, resulting in deposition of Ni dendrites and short circuits.

The speakers agreed that further development of batteries employing conducting polymers is justified, especially in view of systems for power shaping. Before such batteries can be developed, which are considerably larger than button cells, further fundamental and engineering work is necessary to increase charge densities and stabilities of conducting polymers, to improve ionic conductivities and stabilities of electrolytes and to establish the optimum cell design for a given application.

J. Desilvestro

[1] P. Novak, W. Vielstich, *J. Electrochem. Soc.* **1990**, *137*, 1036.
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European Federation for Medicinal Chemistry and the American Chemical Society, Division of Medicinal Chemistry

The Section of Medicinal Chemistry of the Swiss Chemical Society cordially invites you to attend the

XIIth International Symposium on Medicinal Chemistry

Basel, Switzerland, September 13–17,1992

Background
The European Federation for Medicinal Chemistry, comprised of representatives of national medicinal chemistry organizations in Europe, organizes biennial International Medicinal Chemistry Symposia. Previous symposia were held in Florence (1962), Münster (1968), Milan (1972), Noordwijkerhout (1974), Paris (1976), Brighton (1978), Torremolinos (1980), Toronto (1982, in cooperation with the Medicinal Chemistry Divisions of the Chemical Institute of Canada and the American Chemical Society), Uppsala (1984), Berlin/West (1986), Budapest (1988), and Jerusalem (1990).

Duration of Conference
The Symposium will be held in Basel at the European World Trade and Convention Center, starting on Sunday afternoon (September 13) with the Registration and Inaugural Lecture. The scientific programme will take place from Monday morning (September 14) until Thursday (September 17).

Conference Language
The official language of the Symposium will be English.

Chairman of the Organizing Committee
E. Kyburz (CH)

Chairman of the Scientific Committee
B. Testa (CH)

Scientific Programme
The programme will focus on a number of selected themes of current significance. These will be covered in one inaugural lecture, 4 plenary lectures and 36 main lectures. Special therapeutic areas as well as general methodological approaches will be presented.

Specialized themes according to mechanisms of action:
- Proteases and their inhibitors
- The immune system as a drug target
- Peptidomimetics acting on peptide receptors
- Agents affecting post-receptors events
- Selected enzyme inhibitors
- Drugs acting on neurotransmitter systems
- Drugs acting on nucleic acids and nucleic acid processing enzymes
- Ion channel modulators

General themes:
- Exciting new topics
- Approaches in lead finding and lead optimization
- Molecular toxicology
- Prodrugs and targeted drug delivery

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XIIth International Symposium on Medicinal Chemistry, Administrative Secretariat, P.O. Box 141, CH–4007 Basel, Switzerland.

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The application of the Romanian Society for Analytical Chemistry was accepted.

The Discussion Group on 'Chemistry in the Conservation of the Cultural Heritage' was given the status of a Working Party.

Revision of the Statutes is under discussion as a result of the application for full membership of the Federation by the Israel Chemical Society.

Due to the delay of some Societies and Working Parties in sending their descriptions intended for the new edition of the information booklet on member societies, the date of its publication was postponed.

2. Officers

The 1989 Assembly had left one vacancy on Council and another vacancy had arisen due to the resignation of Professor *Inel*. The 21st General Assembly (Frankfurt, 12–13 June 1990) after a secret ballot elected Prof. *I. Rasines* and Dr. *F.A. Battig*.

At the end of the year Council had the following *elected members*:

Dr. *W. Fritsche* (Chairman)	Gesellschaft Deutscher Chemiker
Prof. *C. Barré*	Société Française de Chimie
Dr. *F.A. Battig*	Austrian Chemical Society
Dr. *V. Chvalovsky*	Czechoslovak Chemical Society
Dr. *R. Darms*	Schweizerisches Komitee für Chemie
Prof. *E. Fanghanel*	Gesellschaft Deutscher Chemiker
Prof. *I. Rasines*	Spanish Royal Society of Chemistry
Mr. *E.J. de Ryck van der Gracht*	The Royal Netherlands Chemical Society

3. Meetings

The Council met twice, on 15 March in Florence, Italy (14 officers present) and on 12–13 June in Frankfurt, Germany (14 officers present).

The General Assembly was organised by the Gesellschaft Deutscher Chemiker on 12–13 June in Frankfurt, Germany (26 delegates and 2 observers present).

4. Working Parties

Summary reports of Working Party activities are as follows:

WP Analytical Chemistry

Membership: 31 societies from 26 countries and 7 observers.

The WP held its annual meeting on 26 August, 1990 in Vienna (Austria), in connection with Euroanalysis VII conference. This meeting had a very high attendance of 1100 participants and the active participation of numerous delegates in the 'Special Sessions'. The WP's new activities were: International Student Competition, 3–7 September, 1990, Prague; WPAC-EURO-COURSES and preparations for EUROENVIRONMENT '92, 10–14 May, 1992.

WP Chemical Education

Membership: 25 societies and 1 observer

1990 was the 15th Anniversary of the founding of the Working Party.

The WP met on 4 October 1990 in Italy where five delegates gave detailed reports on the state of chemical education in their county.

A first draft of the second edition of 'Chemical Education in Europe' was completed and circulated for comment.

In conjunction with the Mendeleev Society, a chemical Olympiad for gifted teenagers was organised in September 1990.

Dr. *M. Gagan* (U.K.) replaced Dr. *J. Douek* (U.K.) as the WP Secretary.

WP Chemistry and the Environment

Membership: 24 members from 21 countries.

Prof. Dr. *A. Hackl* has taken over as Chairman of the Working Party from Mr. *G. Dickes*.

A short history of the WP since its inception in 1976 has been written by Dr. *Clement Troyanovsky*.

The next major meeting, organised by the WP, will be in Vienna in August 1992 and has 'Chemistry and Waste' as its theme. In addition to conferences, the WP is involved in organising workshops.

WP Computational Chemistry

Membership: 8 societies from 8 countries (last year's information).

During 1990 no meeting took place because of coordination problems. Nevertheless Prof. *Bernardi* had the opportunity to meet the delegates and people interested in the activities of the WP during various Scientific Symposia. A Minisymposium on 'The Future of Computational Chemistry' will be held at the Institute of Organic Chemistry of the Technical University of Munich, in Garching, Germany, on 22 March 1991.

WP Electrochemistry

Membership: 16 societies from 15 countries.

The WPEC meeting took place in Prague, August 1990, in the course of *J. Heyrovsky* Centennial Congress on Polarography. The first issue of the WPEC booklet containing a survey of electrochemical research centres in 5 European countries was published. The Information Bulletin No. 3 of WPEC appeared in April 1990. Five Chemical Societies were contacted by the Chairman in an attempt to encourage their participation in the Working Party's activities.

WP Food Chemistry

Membership: 34 members from 20 countries.

A symposium on Residues of Veterinary Drugs in Food of Animal Origin was held in May 1990. Future planned symposia include Euro Food Tox III in Zürich in May 1991 and Euro Food Chem VI in Hamburg in September 1991.

The Working Party co-operates with a wide range of other organisations in an effort to bring together the activities of chemists and microbiologists, toxicologists, chemical engineers *etc.* in relation to the problems of food.

WP History of Chemistry

Several changes in the membership of the Working Party have occurred as a result of the death of three previous members.

Work has started on the second edition of the WP's 'Guide to European Museums and Expositions on Chemistry and the History of Chemistry' and the information collection stage is expected to be completed by August 1991.

WP Organometallic Chemistry

Membership: 20 societies from 20 countries and 1 observer.

During the year no meeting took place. The main activity was focused on the preparation of the IX FECHEM Conference on Organometallic Chemistry, Heidelberg, 15–19 July 1991. The booklet 'Organometallic Research Centres in Europe' was published and distributed.

WP Professional Affairs

Membership: 15 societies from 13 countries.

Two meetings were held during the year. Two documents were finalised for submission to the General Assembly: 'Analytical Chemists in Europe' and 'Guidelines for Chemists Working Abroad'. Other drafts are under development, including 'Diffusion of Chemistry into other Disciplines' and 'Links between Higher Education and Industry'.

The WP developed questionnaires aimed at obtaining information on:
- national laws on placing drugs, hazardous substances and toxic substances on the market,
- women members of national societies.

Information on manpower statistics was collected. The WP continued to support development of proposals for 'European Chemist'.

WP Chemistry in the Conservation of the Cultural Heritage

Membership: 15 societies from 14 countries.

The WP met twice during the year. The main activities were:
- finalization of the activity of the WP,
- selection of subjects for immediate action; attention will be concentrated on the conservation of stone, metals and paintings,
- setting up Working Groups on Stone, Metals, and Paintings.

The WPCCH is contributing to the organisation of the FECS Conference EUROENVIRONMENT '92 to be held from 10 to 14 May 1992.

5. Sponsorships

A total of 10 FECS-sponsored events took place in 1990.

It is a matter of regret that the number of FECS-sponsored events is decreasing from year to year.

6. FECS Lecture

The 1990 FECS Lecture was given by Prof. *E. Hengge*, Graz, Austria.

7. FECS Awards

The 1990 FECS Award was presented to Prof. *Robert Kellner* for his outstanding work of fifteen years as Secretary of the Working Party on Analytical Chemistry.

8. Relations with other Bodies

8.1. *IUPAC*

The good liaison between IUPAC and FECS has continued; a major objective for the future will be to co-ordinate the IUPAC environmental programme with that of the WPCEnv.

8.2. *EUCHEM*

The possibility has arisen that Euchem conferences would become part of the new 'Gordon style' conferences organised by the European Science Foundation (ESF). Euchem may be prepared to open their meetings to East Europe.

8.3. *European Communities Chemistry Committee (ECCC)*

Cooperation with ECCC has continued. FECS can make use of reports compiled by ECCC such as 'Priorities in Chemical Research for the 1990's', and the preparation work on the 'European Chemist' qualification, or it could use the ECCC Schedule of Qualifications in its discussions.

9. Young Chemists

The idea of setting up a separate organisation of young chemists was not supported; it is preferable that young chemists are integrated into the various national Societies.

10. New Edition of the Yellow Booklet

Arrangements were made for the publication of the new edition of the information booklet on Member Societies. Due to delays by some Societies, the date of the publication has had to be postponed, but it is expected to be published before the end of 1991.

IUPAC, Macromolecular Division, Commission on Macromolecular Nomenclature

Nomenclature of Regular Double-Strand (Ladder and Spiro) Organic Polymers (Provisional Recommendations 1991)

Structure-based and source-based nomenclature rules are extended to regular double-strand (ladder and spiro) organic polymers. Recommendations for naming regular single-strand polymers have been published previously. A double-strand polymer is defined as a polymer whose molecules are formed by an uninterrupted sequence of rings with adjacent rings having one atom in common (spiro polymers) or two or more atoms in common (ladder polymers). The structure-based nomenclature rests upon the selection of a preferred constitutional repeating unit (CRU) of which the polymer is a multiple. Factors taken into consideration are in decreasing order of priority: minimization of the number of free valences of the CRU, maximization of the number of most preferred hetero atoms in the ring system, retaining the most preferred ring system, and choosing the longest chain for an acyclic CRU. Prior to naming the polymer, the CRU is oriented and named according to the established principles of organic nomenclature for naming bivalent and multivalent groups. Rules are provided for denoting substituents and end groups. The source-based nomenclature identifies the starting monomer(s) from which the double-strand polymer is prepared with addition of an appropriate prefix 'ladder-' or 'spiro-'.

Comments on the document are welcome and should be sent by 31 August 1992 to: Dr. W.V. Metanomski, Chemical Abstracts Service, POB 3012, 2540 Olentangy River Road, Columbus, Ohio 43210, USA.

Schweizerische Chemische Gesellschaft

Sektion Medizinische Chemie an der Herbsttagung der Schweizerischen Chemischen Gesellschaft

Anlässlich der diesjährigen Herbsttagung der SCG am 18. Oktober 1991 in Bern hat sich traditionsgemäss auch die erste Fachgruppe der Gesellschaft, die Sektion Medizinische Chemie, mit acht wesentlichen Beiträgen zu diversen aktuellen Porblemen beteiligt. Die von Vertretern der Industrie und der Hochschulen präsentierten Themen reichten von neuartigen Metallkomplexen zur Lokalisation von Tumoren, über neue Enzyminhibitoren und potentielle, auf der Basis von selektiven Rezeptor-Antagonisten konzipierte Antihypertensiva, bis zu faszinierenden Anwendungsmöglichkeiten der NMR- und X-Ray-Technik und neuer chemischer Methodologien.

Die Tagung bot einen Vorgeschmack auf das von der Sektion in Zusammenarbeit mit der European Federation of Medicinal Chemistry und der Medicinal Chemistry Section der American Chemical Society organisierte, im September 1992 in Basel stattfindende 'XIIth International Symposium on Medicinal Chemistry'.

Schweizerischer Chemiker-Verband

Technisch, wirtschaftliches Seminar 'Total Quality Management' 26. und 27. März 1992

Programm

Donnerstag, 26. März 1992

09.00	Eröffnung des Seminars
09.15–10.00	Qualitätsmanagement. Ein Werkzeug für die Wettbewerbsfähigkeit Dr. *B. de Sousa, Ciba-Geigy SA*
Kaffeepause	
10.30–11.30	Die Bedeutung von zertifizierten, integralen Qualitätssystemen in den 90er Jahren Dr. *A. Girschweiler*, Geschäftsführer SQS Bern
11.45–12.45	Die 7 glorreichen Werkzeuge im TQM Dr. *H. Flueler*, Mathematische Applikationen, *Ciba-Geigy AG*, Basel
Mittagessen	
14.45–15.45	Die Qualität als Gewinndeterminante Prof. Dr. *F.F. Neubauer*, IMD Lausanne
16.00–16.45	Einführung und Motivation von und für TQM in der Verfahrensentwicklung für Feinchemikalien Dr. *H.R. Dettwiler, Lonza AG*, Visp
17.00–17.45	Bemerkungen zur Wirtschaftlichkeit von TQM Dr. *F. Horner, Sandoz-Agro AG*, Basel

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09.00–09.45	The Experience of Obtaining ISO 9002 Certification for the Manufacture and Supply of Vitamins *A.C. Conduit*, Quality Control Manager, *Roche Products Ltd.*, Dalry, Airshire
Kaffeepause	
10.00–10.45	Vers la qualité totale: évolution ou révolution? Dr. *P. Manes, Nestec SA, Nestlé*
11.00–11.45	Quality Management im Dienstleistungssektor ISO 9002 und Dienstleistungen Dr. *U. Burkhard*, Bureau Veritas, Quality International, Zürich
12.00–13.00	Perspektiven und Entwicklung von TQM in Europa Dr. *Kees J. von Ham*, EFOM
Mittagessen	
14.45–15.00	Podiumsgespräch
Kaffeepause	
15.15	Gründung der Vereinigung der Industriechemiker

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IUPAC, Macromolecular Division, Commission on Macromolecular Nomenclature

Nomenclature of Regular Double-Strand (Ladder and Spiro) Organic Polymers (Provisional Recommendations 1991)

Structure-based and source-based nomenclature rules are extended to regular double-strand (ladder and spiro) organic polymers. Recommendations for naming regular single-strand polymers have been published previously. A double-strand polymer is defined as a polymer whose molecules are formed by an uninterrupted sequence of rings with adjacent rings having one atom in common (spiro polymers) or two or more atoms in common (ladder polymers). The structure-based nomenclature rests upon the selection of a preferred constitutional repeating unit (CRU) of which the polymer is a multiple. Factors taken into consideration are in decreasing order of priority: minimization of the number of free valences of the CRU, maximization of the number of most preferred hetero atoms in the ring system, retaining the most preferred ring system, and choosing the longest chain for an acyclic CRU. Prior to naming the polymer, the CRU is oriented and named according to the established principles of organic nomenclature for naming bivalent and multivalent groups. Rules are provided for denoting substituents and end groups. The source-based nomenclature identifies the starting monomer(s) from which the double-strand polymer is prepared with addition of an appropriate prefix 'ladder-' or 'spiro-'.

Comments on the document are welcome and should be sent by 31 August 1992 to: Dr. W.V. Metanomski, Chemical Abstracts Service, POB 3012, 2540 Olentangy River Road, Columbus, Ohio 43210, USA.

Schweizerische Chemische Gesellschaft

Sektion Medizinische Chemie an der Herbsttagung der Schweizerischen Chemischen Gesellschaft

Anlässlich der diesjährigen Herbsttagung der SCG am 18. Oktober 1991 in Bern hat sich traditionsgemäss auch die erste Fachgruppe der Gesellschaft, die Sektion Medizinische Chemie, mit acht wesentlichen Beiträgen zu diversen aktuellen Porblemen beteiligt. Die von Vertretern der Industrie und der Hochschulen präsentierten Themen reichten von neuartigen Metallkomplexen zur Lokalisation von Tumoren, über neue Enzyminhibitoren und potentielle, auf der Basis von selektiven Rezeptor-Antagonisten konzipierte Antihypertensiva, bis zu faszinierenden Anwendungsmöglichkeiten der NMR- und X-Ray-Technik und neuer chemischer Methodologien.

Die Tagung bot einen Vorgeschmack auf das von der Sektion in Zusammenarbeit mit der European Federation of Medicinal Chemistry und der Medicinal Chemistry Section der American Chemical Society organisierte, im September 1992 in Basel stattfindende 'XIIth International Symposium on Medicinal Chemistry'.

Schweizerischer Chemiker-Verband

Technisch, wirtschaftliches Seminar 'Total Quality Management' 26. und 27. März 1992

Programm

Donnerstag, 26. März 1992

09.00	Eröffnung des Seminars
09.15–10.00	Qualitätsmanagement. Ein Werkzeug für die Wettbewerbsfähigkeit Dr. *B. de Sousa, Ciba-Geigy SA*
Kaffeepause	
10.30–11.30	Die Bedeutung von zertifizierten, integralen Qualitätssystemen in den 90er Jahren Dr. *A. Girschweiler*, Geschäftsführer SQS Bern
11.45–12.45	Die 7 glorreichen Werkzeuge im TQM Dr. *H. Flueler*, Mathematische Applikationen, *Ciba-Geigy AG*, Basel
Mittagessen	
14.45–15.45	Die Qualität als Gewinndeterminante Prof. Dr. *F.F. Neubauer*, IMD Lausanne
16.00–16.45	Einführung und Motivation von und für TQM in der Verfahrensentwicklung für Feinchemikalien Dr. *H.R. Dettwiler, Lonza AG*, Visp
17.00–17.45	Bemerkungen zur Wirtschaftlichkeit von TQM Dr. *F. Horner, Sandoz-Agro AG*, Basel

Freitag, 27. März 1992

09.00–09.45	The Experience of Obtaining ISO 9002 Certification for the Manufacture and Supply of Vitamins *A.C. Conduit*, Quality Control Manager, *Roche Products Ltd.*, Dalry, Airshire
Kaffeepause	
10.00–10.45	Vers la qualité totale: évolution ou révolution? Dr. *P. Manes, Nestec SA, Nestlé*
11.00–11.45	Quality Management im Dienstleistungssektor ISO 9002 und Dienstleistungen Dr. *U. Burkhard*, Bureau Veritas, Quality International, Zürich
12.00–13.00	Perspektiven und Entwicklung von TQM in Europa Dr. *Kees J. von Ham*, EFOM
Mittagessen	
14.45–15.00	Podiumsgespräch
Kaffeepause	
15.15	Gründung der Vereinigung der Industriechemiker

7. FECS Awards

The 1990 FECS Award was presented to Prof. *Robert Kellner* for his outstanding work of fifteen years as Secretary of the Working Party on Analytical Chemistry.

8. Relations with other Bodies

8.1. *IUPAC*

The good liaison between IUPAC and FECS has continued; a major objective for the future will be to co-ordinate the IUPAC environmental programme with that of the WPCEnv.

8.2. *EUCHEM*

The possibility has arisen that Euchem conferences would become part of the new 'Gordon style' conferences organised by the European Science Foundation (ESF). Euchem may be prepared to open their meetings to East Europe.

8.3. *European Communities Chemistry Committee (ECCC)*

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Eine Sektion «Industrielle Chemie» in der neuen Gesellschaft

Um die Stimme der Schweizer Chemiker zu stärken, haben die Schweizerische Chemische Gesellschaft und der Schweizerische Chemiker-Verband die Absicht, sich im Frühjahr 1992 in einer einzigen Organisation zu vereinigen. In der neuen Gesellschaft werden Sektionen verschiedene Fachgebiete der Chemie pflegen.

Am Nachmittag des Freitags, dem 27. März 1992 wollen wir die Sektion «Industrielle Chemie» vorläufig gründen. Diese Sektion wird sich hauptsächlich mit Fragen rund um die chemische Produktion befassen. Wir laden Sie freundlich ein bei dieser Gründung mitzumachen. Dadurch erhalten Sie die Gelegenheit mit Ihrer Stimme das zukünftige Leben dieser Sektion mitzubestimmen.

Une section «Chimie industrielle» dans la nouvelle société

Pour renforcer la voix des chimistes suisses, la Société chimique suisse et l'Association suisse des chimistes ont l'intention de se réunir en une société au printemps de l'année 1992. Dans la nouvelle société, les intérêts divers pourraient être cultivés dans différentes sections. L'après-midi du vendredi 27 mars 1992, nous allons procéder à la fondation provisoire de la nouvelle section «Chimie industrielle». Cette section s'occupera des problèmes qui touchent à la production chimique. Nous vous invitons à participer à cette création. Ainsi vous aurez l'occasion d'influencer les futurs principes de cette nouvelle section en exprimant votre opinion.

Una sezione «Chimica Industriale» nella nuova Associazione

Al fine di permettere ai chimici svizzeri di far sentire più chiaramente la loro voce, i membri della Società Chimica Svizzera e dell'Associazione Svizzera dei Chimici si propongono di riunirsi in una società unica nel corso della primavera del 1992. Nella nuova società è previsto che i vari interessi siano trattati da sezioni distinte. Venerdì 27 marzo 1992 nel pomeriggio, si procederà dunque alla creazione provvisoria della sezione «Chimica Industriale» il cui compito sarà di occuparsi dei problemi inerenti alla produzione negli impianti chimici. Siete cordialmente invitati a partecipare alla creazione di questa nuova sezione. Avrete così la possibilità di poter esprimere la vostra opinione a proposito dei principi su cui si fonderanno le sue attività future.

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Dr. H. R. Dettwiler, Lonza, Visp
Dr. J. Herold, Ciba-Geigy, Monthey
Prof. Dr. J. Portmann, HTL Fribourg
Dr. H. L. Senti, Firmenich, Genève

Vorträge:	Die Vorträge finden im grossen Hörsaal des Chemiegebäudes der Universität statt
Mahlzeiten:	Am Donnerstag und Freitag wird ein Mittagessen organisiert. (Kosten im Seminarpreis inbegriffen)
Nachtessen:	Ist es der Wunsch der Mehrzahl der Teilnehmer, wird ein gemeinsames Nachtessen organisiert. (Nicht im Kursgeld inbegriffen)
Einschreibung:	Die Einschreibung ist zu richten an: Schweizerischer Chemiker-Verband Ingenieurschule Freiburg Museumstrasse 4, 1700 Freiburg
Einschreibeschluss:	20. März 1992
Organisator:	Prof. Dr. J. Portmann Ingenieurschule, 1700 Freiburg
Kurskosten:	Es ist pro Teilnehmer ein Kursgeld von Fr. 350.– einzubezahlen. Studenten Fr. 100.–. Einzahlung per Postscheck auf Konto: Schweizerische Bankgesellschaft Schweizerischer Chemiker-Verband Nr. 01314649 MIL 1700 Freiburg
Hotel:	Zimmerreservationen können beim Verkehrsbüro Freiburg gemacht werden. (Tel. 037/813175 / 813176)

Vorträge

Chemische Gesellschaft Zürich

Mittwoch 17.15 Uhr
Hörsaal CAB D2 im Chemie Altbau ETH
Universitätstrasse 6, 8092 Zürich

4. Dezember 1991	Dr. *F. Stoessel* *Ciba-Geigy AG*, Basel «Reaktionstechnik im Dienste der thermischen Sicherheit»
11. Dezember 1991	Prof. Dr. *D. Oesterhelt* *Max-Planck*-Institut für Biochemie, Martinsried «Ein molekularer Schalter für Ionentranslokation und optische Informationsspeicherung»

Chemische Gesellschaft Fribourg

Die Vorträge finden jeweils am Dienstag, 17.15 Uhr im grossen Hörsaal der Chemischen Institute der Universität Fribourg (Pérolles), statt.

17. Dezember 1991	Prof. Dr. *H.J. Güntherodt* Universität Basel 'The New Scanning Probe Methods – Imaging, Spectroscopy, Modification and Manipulation on an Atomic and Molecular Scale'

ETH-Zürich, Institut für Polymere

Makromolekulares Kolloquium

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11. Dezember 1991 CAB D 28	Dr. *H.W. Bewersdorff* Institut für Hydromechanik und Wasserwirtschaft, ETHZ «Fliessverhalten verdünnter Polymerlösungen und mizellarer Tensidlösungen»
18. Dezember 1991 ML II D28	Dr. *Th. Sauer* *Max-Planck*-Institut für Polymerforschung, Mainz 'New Polymers for Molecular Electronics Applications'

Institut für Physikalische Chemie der Universität Basel

Das Kolloquium findet jeweils am Mittwoch 16.30 Uhr im kleinen Hörsaal (2. Stock) des Instituts für Physikalische Chemie, Klingelbergstrasse 80, statt.

4. Dezember 1991	Dr. *W. de Heer* Institut de Physique Expérimentale, Ecole Polytechnique Fédérale, Lausanne 'Magnetic properties of transition metal clusters in molecular beams'
11. Dezember 1991	Prof. *R. Schilling* Institut für Physik, Universität Mainz «Moden-Kopplungstheorie und Glasübergang»
18. Dezember 1991	Prof. Dr. *M. Lambla* Ecole d'Application des Hauts Polymeres Université Louis Pasteur, Strasbourg, France 'Polymer blends: state of the art and new developments'

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Organisch-Chemisches Institut der Universität Zürich

Winterthurerstrasse 190

Organisch-Chemisches Seminar, jeweils dienstags um 17.15 Uhr im Hörsaal 91.

3. Dezember 1991 — Dr. *A. Brown*
EPFL
«Der oxidative Abbau organischer Verbindungen in wässrigen Systemen mittels Vakuum-UV-Photolyse»

10. Dezember 1991 — Prof. Dr. *M. Mutter*
Université de Lausanne
«Neue Aspekte im Protein de novo Design»

Laboratorium für Anorganische Chemie der ETH-Zürich

Koordinationschemie und Homogene Katalyse

Mittwoch, 9.00–10.15 Uhr, Hörsaal CAB B9, Universitätstrasse 6

4. Dezember 1991 — Prof. *E.P. Kündig*
Universität, Genf
«π-Aren-Metall-Komplexe: Synthesen,Reaktionen, Anwendungen»

Laboratorium für Organische Chemie der ETH-Zürich

Organisch-chemische Kolloquien
Hörsaal CHN A31, Universitätstrasse 16
montags, jeweils 16.30 Uhr

2. Dezember 1991 — Prof. Dr. *E. Vogel*
Universität zu Köln, Institut für Organische Chemie, Köln
«Die Porphyrine: aus der Perspektive eines 'Annulen-Chemikers' gesehen»

Technisch-Chemisches Laboratorium und Institut für Biotechnologie ETH-Zürich

Kolloquium in Bioengineering
Mittwoch, 15.15 Uhr, Hörsaal CAB D-18, ETH-Zürich, Universitätstr. 6

4. Dezember 1991 — *W. Hogrefe*
Ciba-Geigy, Grenzach, Deutschland
«Produktionsintegrierter Umweltschutz in der Chemischen Industrie»

11. Dezember 1991 — *T.K. Ghose*
IIT-Delhi, India
'Cellulose to Ethanol via Simultaneous Saccharification, Fermentation and Separation: a Report on Integration'

Laboratorium für Physikalische Chemie der ETH-Zürich

Kolloquium für Physikalische Chemie
Hörsaal CHN E7, Dienstag, 17.15 Uhr

3. Dezember 1991 — Dr. *Steffen J. Glaser*
Institut für org. Chemie, J.W. Goethe Universität, Frankfurt a.M.
«Massgeschneiderter Kohärenztransfer durch NMR-Multipulssequenzen»

10. Dezember 1991 — Dr. *Eric Vauthey*
Laboratorium für Physikalische Chemie, ETH-Zürich
'Intermolecular photo-induced electron transfer reactions in solution'

17. Dezember 1991 — Prof. *H.J.C. Berendsen*
Department of Chemistry, University of Groningen, NL
'The real face of membranes'

Société Vaudoise des Sciences Naturelles

Mercredi à 17.15 h, auditoire C, Collège Propedeutique
Université de Lausanne, Dorigny

11 décembre 1991 — Prof. Dr. *K. Müllen*
Max-Planck-Institut, Mainz
'Tailoring conjugated polymers for chromophoric and electrophoric behavior'

Universität Bern, Institut für Organische Chemie

Seminar in Organischer Chemie

2. Dezember 1991, Montag 16.30 Uhr, S. 379 — Prof. *H. Kessler*
Technische Universität München, Garching
'Determination of the Conformation in Solution by NMR and MD Calculation; Structure, Picture or Cartoon?'

6. Dezember 1991, Freitag 16.30 Uhr, S. 379 — Prof. *H. Kessler*
Technische Universität München, Garching
'Design of Cyclique Analogues for the Inhibition of Cell-Cell Recognition'

Berner Chemische Gesellschaft

jeweils Mittwoch, 16.30 Uhr im Hörsaal EG 16
Chemische Institute, Freiestrasse 3, Bern

11. Dezember 1991 — Prof. *J. Weber*
Département de chimie physique, Université de Genève
'Recent applications of molecular modeling to chemical reactivity'

Ehrungen

Ruzicka-Preis 1991

Der Schweizerische Schulrat hat den *Ruzicka*-Preis 1991 Herrn Dr. *Alois Renn*, wissenschaftlicher Mitarbeiter der ETH-Zürich, zugesprochen. Der Preisträger hielt bei der Preisverleihung am 16. September 1991 einen Vortrag mit dem Thema: «Holographie und spektrales Lochbrennen: Von der Grundlagenforschung zur optischen Informatiosspeicherung».

Akademische Ehrungen für Professoren der ETH-Zürich

Prof. Dr. *Luigi Venanzi*, Professor der ETH Zürich für anorganische Chemie, wurde vom Shanghai Institute of Chemical Technology, VR China, zum 'Honorary Professor' ernannt.

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Die DECHEMA (Deutsche Gesellschaft für Chemisches Apparatewesen, Chemische Technik und Bio-

Organisch-Chemisches Institut der Universität Zürich

Winterthurerstrasse 190

Organisch-Chemisches Seminar, jeweils dienstags um 17.15 Uhr im Hörsaal 91.

3. Dezember 1991 — Dr. *A. Brown*
EPFL
«Der oxidative Abbau organischer Verbindungen in wässrigen Systemen mittels Vakuum-UV-Photolyse»

10. Dezember 1991 — Prof. Dr. *M. Mutter*
Université de Lausanne
«Neue Aspekte im Protein de novo Design»

Laboratorium für Anorganische Chemie der ETH-Zürich

Koordinationschemie und Homogene Katalyse

Mittwoch, 9.00–10.15 Uhr, Hörsaal CAB B9, Universitätstrasse 6

4. Dezember 1991 — Prof. *E.P. Kündig*
Universität, Genf
«π-Aren-Metall-Komplexe: Synthesen,Reaktionen, Anwendungen»

Laboratorium für Organische Chemie der ETH-Zürich

Organisch-chemische Kolloquien
Hörsaal CHN A31, Universitätstrasse 16
montags, jeweils 16.30 Uhr

2. Dezember 1991 — Prof. Dr. *E. Vogel*
Universität zu Köln, Institut für Organische Chemie, Köln
«Die Porphyrine: aus der Perspektive eines 'Annulen-Chemikers' gesehen»

Technisch-Chemisches Laboratorium und Institut für Biotechnologie ETH-Zürich

Kolloquium in Bioengineering
Mittwoch, 15.15 Uhr, Hörsaal CAB D-18, ETH-Zürich, Universitätstr. 6

4. Dezember 1991 — *W. Hogrefe*
Ciba-Geigy, Grenzach, Deutschland
«Produktionsintegrierter Umweltschutz in der Chemischen Industrie»

11. Dezember 1991 — *T.K. Ghose*
IIT-Delhi, India
'Cellulose to Ethanol via Simultaneous Saccharification, Fermentation and Separation: a Report on Integration'

Laboratorium für Physikalische Chemie der ETH-Zürich

Kolloquium für Physikalische Chemie
Hörsaal CHN E7, Dienstag, 17.15 Uhr

3. Dezember 1991 — Dr. *Steffen J. Glaser*
Institut für org. Chemie, J.W. Goethe Universität, Frankfurt a.M.
«Massgeschneiderter Kohärenztransfer durch NMR-Multipulssequenzen»

10. Dezember 1991 — Dr. *Eric Vauthey*
Laboratorium für Physikalische Chemie, ETH-Zürich
'Intermolecular photo-induced electron transfer reactions in solution'

17. Dezember 1991 — Prof. *H.J.C. Berendsen*
Department of Chemistry, University of Groningen, NL
'The real face of membranes'

Société Vaudoise des Sciences Naturelles

Mercredi à 17.15 h, auditoire C, Collège Propedeutique
Université de Lausanne, Dorigny

11 décembre 1991 — Prof. Dr. *K. Müllen*
Max-Planck-Institut, Mainz
'Tailoring conjugated polymers for chromophoric and electrophoric behavior'

Universität Bern, Institut für Organische Chemie

Seminar in Organischer Chemie

2. Dezember 1991, Montag 16.30 Uhr, S. 379 — Prof. *H. Kessler*
Technische Universität München, Garching
'Determination of the Conformation in Solution by NMR and MD Calculation; Structure, Picture or Cartoon?'

6. Dezember 1991, Freitag 16.30 Uhr, S. 379 — Prof. *H. Kessler*
Technische Universität München, Garching
'Design of Cyclique Analogues for the Inhibition of Cell-Cell Recognition'

Berner Chemische Gesellschaft

jeweils Mittwoch, 16.30 Uhr im Hörsaal EG 16
Chemische Institute, Freiestrasse 3, Bern

11. Dezember 1991 — Prof. *J. Weber*
Département de chimie physique, Université de Genève
'Recent applications of molecular modeling to chemical reactivity'

Ehrungen

Ruzicka-Preis 1991

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Ernennung

Reinhard Neier, Dr., Professeur associé im Institut für Organische Chemie der Universität Fribourg wurde zum Ordinarius an der Universität Neuenburg (Nachfolge Prof. Dr. *Jacot-Guillarmod*) ernannt.

Zweifacher Nobelpreisträger und legendärer Befürworter von Vitamin C

Prof. *Linus Pauling*, einziger Gewinner zweier nicht-geteilter Nobelpreise, prominenter Forscher im Dienste eines längeren Lebens mit erhöhter Lebensqualität und legendärer Befürworter von Vitamin C, ist 90 Jahre jung.

Der Gelehrte, der immer noch in seinem Forschungsinstitut aktiv tätig ist, nimmt nach wie vor täglich 18 g kristalline Ascorbinsäure (Vitamin C) zu sich, um einer Erkrankung an Krebs oder Arteriosklerose vorzubeugen.

Erst nach langem Zögern liessen sich seine Kollegen von den «US National Institutes of Health» dazu bewegen, seine These der krebsverhütenden Wirkung von Vitamin C wissenschaftlich zu prüfen. Das Resultat fiel negativ aus, doch wirft *Pauling* der Untersuchung methodische Mängel vor.

Personalia

Geburtstage

Henning Kausch
Prof. Dr., Lausanne, Mitglied des SChV, feiert am 1.12.91 seinen 60. Geburtstag.

Jakob Schreiber
Dr. sc. techn., Dietikon, Mitglied des SChV, feiert am 13.12.91 seinen 70. Geburtstag.

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