IUPAC POLYMER DIVISION MEETING

World Polymer Congress

National Tsing-Hua University

Leader Hotel

No. 83, Sec. 4, Roosevelt Rd.

Taipei, Taiwan

9.00－12.30 & 14.00－17.30, 28 & 29 July 2008

Minutes

Those attending: Giuseppe Allegra (Italy), Dusan Berek (Slovakia), Michael Buback (Germany), Taihyun Chang (Korea), Kan-Nan Chen (Taiwan), Claudio dos Santos (Brazil), Michael Hess (Germany), Roger Hiorns (France), Phil Hodge (UK), Voravee Hoven (Thailand), Jung-Il Jin (Korea), Richard Jones (UK), Joannis Kallitsis (Greece), Sung-Chul Kim (Korea), Tatsuki Kitayama (Japan), Pavel Kratochvil (Czech Republic), Przemyslaw Kubisa (Poland), Peter Lovell (UK), Graeme Moad (Australia), Robert Moore (USA), Christopher Ober (USA), Stanislaw Penczek (Poland), Mitsuo Sawamoto (Japan), Francois Schué (France), Dennis Smith (USA), Jaroslav Stejskal (Czech Republic), Robert Stepto (UK), Supawan Tantanayon (Thailand), Miroslava Trchova (Czech Republic), Jean-Pierre Vairon (France), Jiri Vohlidal (Czeck Republic), Majda Zigon (Slovenia)

1. President's Introductory Remarks and Finalization of the Agenda.

Chris Ober welcomed the Division members and observers to Taipei. He also very cordially welcomed the former President of the Polymer Division, Jung-Il Jin, noted that since January 1st he serves as President of the IUPAC. He also welcomed the new Vice-President of the Division, Michael Buback who was elected in a special election in November 2007 as a consequence of Prof. Jin's election as IUPAC President. Prof. Jin now serves as a Division AM. Chris Ober further addressed a tribute to Aubrey Jenkin's 80th birthday in September 2007 that acknowledged the scientific work and tireless service of this distinguished member of IUPAC. The agenda of the meeting that had been distributed in advance, was briefly discussed and accepted (see Appendix I). While the Polymer Division continues to be one of the most active Divisions concerning handling and attracting IUPAC projects, nevertheless continuous efforts are required to keep this high standard and to improve it. In particular, the Division is involved in a number of interdivisional projects with Division VIII and

Division II (Interdivisional Subcommittee on Materials Chemistry). In the past year, 6 projects were granted extension, and there are 17 ongoing projects, closely monitored by the Chairs of the corresponding Subcommittees.

The arguments against the Bureau's rule to limit the number of NRs are still supported by the Division, in particular in cases when there is a corresponding request from a National Adhering Organization and there is no AM or TM from that country. Problems concerning voting rights are acknowledged, nevertheless each Division should be free in appointing a National Representative. Otherwise it is difficult to satisfy the international requests for participation and fulfill the Division's needs limited to a number of only 10 NRs.

The IUPAC Fellow membership was expanded beyond retired former Division members and the President of Samsung-Total, Mr. Hong-Sik Ko, was successfully nominated as a new Fellow in honour of his service to IUPAC and our Division.

Finally, Chris Ober asked for a moment of silence in remembrance of Prof. Giovanna Costa (Italy) who had passed away last December.

2. Apologies for Absence.

Absent members sent their apologies together with greetings to the Division.

3. Approval of the Minutes of the Division Committee Meeting, Torino (Italy), August 2007.

The minutes recording the discussion for the 2007 meeting in Torino were accepted without a dissenting vote.

4. Matters Arising.

This year, during MACRO 2008, the DSM Performance Materials Award was awarded for the first time. The Division was involved in choosing the award winner from a list of 10 proposed candidates. The winner is Craig J. Hawker, Professor of Chemistry, Biochemistry and Materials and Director of the Materials Research Laboratory at the University of California, Santa Barbara.

The IUPAC Polymer International Award was given to Zhenan Bao, Stanford.

The Samsung Young Polymer Scientist Award was awarded to Eric Cloutet, Bordeaux.

The DSM Award was presented on Tuesday of the MACRO 2008 and the remaining awards mentioned above were presented to the laureates during a special ceremony on

the final day of MACRO 2008.

5. Report on Terminology and Nomenclature Projects (Jones, Kitayama)

Dick Jones reported progress in the Subcommittee on Macromolecular Terminology over the last year. Two documents have been published in PAC: Definitions of Terms Relating to the Structure and Processing of Sols, Gels, Networks and Inorganic-Organic Hybrid Materials; and Structure-Based Nomenclature for Cyclic Macromolecules. The second edition of the Purple Book has received ICTNS approval to proceed to publication by the Royal Society of Chemistry. Three projects are under public and ICTNS review: Terminology Related to the Kinetics of Polymerization; Terminology for Reversible Deactivation Radical Polymerization; and Polymer Class Names. Terminology for Polymers and Polymerization Processes in Dispersed Systems is approved for submission to ICTNS for public review. There are fourteen other projects at various stages of development, three of which are joint projects with Division VIII and two with Division II. Two new project applications are approved for submission and the feasibility of several more are under consideration. There was no discussion of the subcommittee's report.

Mitsuo Sawamoto added that the Society of Polymer Science in Japan is ready to translate the final version of the new Purple Book, as they did with the first edition.

Dick Jones added a brief discussion concerning the ongoing project of the multilingual dictionary that will aid worldwide distribution of IUPAC polymer terminology in a simple and user-friendly way on the basis of the new edition of the Purple Book.

Roger Hiorns stressed that there is a need for essential guidelines to polymer nomenclature to encourage acceptance and use of IUPAC nomenclature, and he is willing to launch a corresponding project. There is still the impression that the editors of the major polymer journals are not very enthusiastic at reinforcing IUPAC nomenclature recommendations. In other fields of chemistry, *e.g.* in the organic chemistry, the situation appears differently.

6. Report on Structure－Property Projects (Dijkstra, Kim)

Since Dr. Dijkstra was unable to attend the meeting, Sung-Chul Kim presented a report on the activities of this Subcommittee. The Subcommittee currently involves 65 members from 12 countries. Membership is balanced between academics and industry (33 from industry and 32 from academia).

There were two meetings in the past 12 months, one in East Asia (Kanazawa, Japan, Dec. 2007), the other in Europe (Casteel Vaalsbroek, The Netherlands, March 2008). The Group has been active since 1963 with presently 7 active projects and 9 feasibility studies, one of them applied for as a full project. Two publications are in preparation. Current information can be drawn from the Subcommittee's website: www.nothere.ukshell.co.uk/Iupac/aboutus.php

The reaction from industry on the work and results of the Subcommittee was addressed as "friendly". The projects require support from producers so that conflicts might be anticipated in case of unfavourable results; however, it was stated that the reports were generally positive and participation of members from industry in the authorship of the resulting papers were seen positively and as a benefit.
Bob Stepto asked about the history of the Subcommittee that should somehow be published in P&AC or e-polymer. Dennis Smith could help to publish the history.
At this point a discussion was initiated on publishing policy since SCI has recently started to distinguish between "Journals" and "Conference Proceedings" with the consequence that "Macromolecular Symposia" are no longer rated as a journal although it typically comes as a full hard-cover book with fully peer-reviewed contributions. Publications in P&AC are financially to the benefit of IUPAC while those in Macromol. Symp. directly benefit the budget of the Polymer Division. Because of its low impact factor and its disappearance as a " journal" an increasing number of authors refuse to publish in Macromol. Symp. Stanislav Penczek pointed out that the organizers are free to publish anywhere and that even a fraction of manuscripts could be published in proceedings while others could go into a special or normal issue of a journal.

7. Report on Molecular Characterization Projects (Pasch and Chang)

Taihyun Chang presented the report of this Subcommittee in the absence of Harald Pasch. The Subcommittee comprises 22 members from 12 countries. The Subcommittee has a long history with 11 finished projects.
There is one new finished project: 2003-023-2-400
"Data Treatment in Size Exclusion Chromatography of Polymers", a very important project in the field of polymer characterization that had an output of 11 publications.
In progress are 4 projects, all less than 4 years:
Project Title: Repeatability and Reproducibility of Sample Preparation and Analysis

in High-Temperature SEC
Task Group Leader: Nyambeni Luruli

Project Title: Efficiency and reproducibility of temperature rising elution fractionation
Task Group Leader: Robert Bruell

Project Title: Accuracy and reproducibility of functionality type analysis of poly(ethylene oxide) homo and copolymers by LCCC
Task Group Leader: Bastiaan Staal

Project Title: Terminology and measurement techniques of starch components
Task Group Leader: Melissa Fitzgerald

Presentations of the results are already organized for the Session on Macromolecular Characterization during the 2009 World Chemical Congress in Glasgow, namely 2 keynote speakers and 7 invited speakers from the Subcommittee.
Penczek asked about presentations on advanced analytical techniques in Glasgow 2009. The answer was positive, and there is a collaboration being prepared with NIST (USA).
Finally, Taihyun Chang observed that there is a new project in progress that will most probably soon be granted:
Project Title: Critically evaluated techniques for size separation characterization of starch.
Task Group Leader: Bob Gilbert

8. Report on Polymerization Projects (Buback)

Michael Buback reported the activities of this Subcommittee since Greg Russell was unable to attend this year's Division meeting. The Subcommittee comprises 34 members from 13 countries. There were recently 5 new members while one person (Prof. Yamada, Osaka) has retired. While roughly 32 members are from academia, there are two directly from industry. Under the headline "Modelling and Mechanism of Free-Radical Polymerization" the aim of the Subcommittee is to systematize and critically evaluate kinetics, mechanisms, rate constants etc. of this class of very important reaction - one reason among others being the technological importance,

another the discrepancies found in literature.
There are presently 12 publications. Their importance and acceptance can be determined from the number of citations that goes up to more than 350 (within 8 years). The working parties of all projects are very active, meeting twice a year on average.
The main focus of the projects lies presently on the topics: termination rate coefficients, vinyl pivalate propagation, propagation in aqueous phase, RAFT polymerization kinetics, and Polymerization terminology.

Projects are:

"Establishment of quantitative reliability of electron spin resonance techniques for polymerization kinetics"
Leader: Bunichiro Yamada (now retired), succeeded by Per Zetterlund
The project was completed in 2007, 1 publication

Currently in progress are the projects:
"Critically evaluated termination rate coefficients for free-radical polymerization. 1. Current status, evaluation of experimental methods, data for styrene and methyl methacrylate"
Leader: Greg Russell
2 publications, 3rd in preparation
the project is close to finalization and a sequential project is in preparation

"Critically evaluated propagation rate coefficients for free-radical polymerization of water-soluble monomers polymerized in the aqueous phase"
Leader: Igor Lacík
1 publication

"Towards a holistic mechanistic model for reversible addition-fragmentation chain transfer (RAFT) polymerizations:
Dithiobenzoates as mediating agents"
Leader: Philipp Vana
1 publication

"Terminology for radical polymerizations with minimal termination - the so-called "living" and/or "controlled" radical polymerization"

Leader: Aubrey Jenkins
Joint project with the Division IV Subcommittee on Polymer Terminology"
Recommendation close to submission

Future project ideas are:
"Critically evaluated termination rate coefficients as a function of conversion"
"Critically evaluated initiator decomposition and initiator efficiency data"
"Critically evaluated chain-transfer rate coefficients and constants"
"Critically evaluated depropagation rate coefficients"
"Critically evaluated copolymerization reactivity ratios"
"Critically evaluated combination/disproportionation ratios"
"Critically evaluated chain-length-dependent termination rate coefficient"
"Nitroxide-mediated polymerization: benchmark rate coefficients"
"ATRP: current situation on mechanisms; benchmark coefficients *k*p for PEG-ylated MMA"
"Primary radical addition"
"Quantum-chemical calculation of RP rate coefficients: guidelines"
"Critically evaluated rate coefficients for ionic polymerizations"
(A "critical evaluation" always includes recommendation of methods and issuing of guidelines for their use.)

A general problem is to find leaders for these proposals. Mitsuo Sawamoto raised the question of how to deal with these projects that mainly produce numbers and asked for the influence of reaction conditions and progress of the reaction. Michael Buback emphasized the importance of reliable rate constants to understand the behaviour of the systems and to develop a reliable theory for the processes. An easier presentation of the data and a reduction to only a few examples was suggested to show the important correlations and dependences. Jung-Il Jin admired the wonderful data and proposed to present them in a generally more digestible form, maybe as a review document, so that broad availability of this knowledge is granted and he stressed the importance of an extensive use of the data obtained by the scientific community.

9. Reports on Developing Polymer Materials Systems (Vert, Stejskal)

Jaroslav Stejskal reported as the secretary in the absence of Michel Vert (who has replaced Chris Ober after he became Division President) on the activities of the

Subcommittee on Developing Polymer Materials. He stated that the goal of the Subcommittee is to identify new directions and projects for the Division in new areas of polymer science. Currently there are 25 members from 16 countries. Two members are from industry. Current projects include the definitions of terms relevant to biorelated polymer science (lead by Michel Vert), the terminology for self-assembled polymers and aggregations (jointly lead by Profs. Ober and Jones), the terminology for conducting, electroactive, and field responsive polymers (lead by François Schué), and infrared spectra of conducting polymer nanotubes (lead by Miroslava Trchova).

Jaroslav Stejskal questions the project policy of the Subcommittee Developing Polymer Materials Systems:

Projects with review-character, especially when written by only one author are inappropriate for IUPAC, they should rather be published in the existing review journals. Purely informational material, without critical evaluation, and research studies are also not suited for the IUPAC forum. This situation creates a conflict: When a project is not appropriate for IUPAC, then there will be no funding, when there is no funding there is no interest in cooperation with IUPAC. This is an inherent problem of this Subcommittee. There are, in fact, a number of "interesting" (from the scientific point of view) projects, such as:

Conducting polymers = developing materials
Synthesis of nanotubes = nanomaterials
Carbonization to carbon nanotubes = new materials
Deposition of noble-metal nanoparticles = catalysts for fuel-cells technology = hydrogen energy
Corrosion protection = „green“ activities
Magnetic carriers = cancer therapy

However, seen under the point of view mentioned above, these projects are probably not typically IUPAC. Therefore, he describes an appropriate role of the Subcommittee Developing Polymer Materials Systems as one to identify relevant projects, to find external funding, coordinate the initiation of a project, which includes finding project leaders and launching the project application, and getting the project approval. The role of the Polymer Division then should be to provide financial support for these activities and help to find company associates through international connections.

Chris Ober agrees that after 4 years of being in existance a review of the goals of this

Subcommittee is appropriate. Bob Stepto mentioned the standardization of techniques and also possible overlap with terminology projects were mentioned. Funding to start these types of projects might come from the Division, as already addressed. Mitsuo Sawamoto put in that IUPAC is not supposed to direct research but to carefully stimulate the atmosphere for forefront research. Jaroslav Stejskal observed that many fields where IUPAC is active (*e.g.*: nomenclature, terminology,...) are not really exciting and attractive. Mitsuo Sawamoto suggested that one of the fields appropriate for IUPAC could be the initiation and the support of conference, symposia and workshops. Jaroslav Stejskal suggested developing a less conservative style and Chris Ober stated that the raising of new funds through IUPAC would be difficult. Jin saw future perspectives in stimulating projects in new, emerging areas, and Profs. Penczek and Ober mentioned Bio-and Nanomaterials as examples. It appeared obvious to Bob Stepto that more discussion among the members of the Subcommitte is required to develop new, sustainable concepts. Graeme Moad put in that in particular the whole field of controversial data, theories *etc*., still unsettled problems should be considered, such as the critical evaluation of data, the development of proper techniques, sample preparation and so forth. Jung-Il Jin suggested that the Subcommittee should ponder on these suggestions and stressed that more creative and interdisciplinary/interdivisional cooperative projects should be envisaged and "strategic money" could be used for that purpose.

Miroslava Trchova commented that her project on the IR spectra of conducting polymer nanotubes will focus on establishing the mechanism for polyaniline nanotube formation in weak acids. Samples of the nanotubes have been distributed around the world for analysis during fall 2007. The results from 11 participants will be summarized by project coordinator (Trchová), and submitted to all participants for discussion with addiditonal experimental work to be planned and done if needed. The coordinator will prepare the manuscript of the Technical Report for the publication in the *Pure and Applied Chemistry.* (Spring 2009). Submission of the manuscript is scheduled before June 2009.

10. Reports on Education Projects and Activities (Vairon, Mormann, Ober)

The activities of the Polymer Education Subcommittee were reported by the Task Group Chairmen for each of the ongoing projects.

11th UNESCO/IUPAC Postgraduate Course in Polymer Science

(Institute of Macromolecular Chemistry/Academy of Sciences, Prague, Czech

Republic)

Task Leader: **P. Kratochvíl**

Cumulative results of the 12 runs held so far are: 95 graduates; 17 nationalities; publications in international journals 119, communications at international meetings 167, citations 1014 (all as of December 2007).

Detailed information on the Course can be found at the address:

http://www.imc.cas.cz/en/imc/unesco.html

10th Annual UNESCO / IUPAC Conference on Macromolecules & Materials (in collaboration with the Macromolecular Society of South Africa) 7-11 September 2008, Berg-en-Dal Restcamp, Mpumalanga, South-Africa

http://academic.sun.ac.za/UNESCO/Conferences/Conference2008/HOME2008.htm

Task leader : **R. Sanderson**

- 16th POLYCHAR 16 (World Forum on Advanced Materials-IUPAC Conference) and Short Course in Polymer Characterization

(Lucknow, April 17-21st, and Delhi April 14th, 2008, India)

Task Leader : V. Choudary/**M. Hess**

The 16th POLYCHAR Conference - Annual World Forum on Advanced Materials was held from February 17th to February 21st 2008 organized by the University of Lucknow, in the capital of the State Uttar Pradesh, India. The Short Course on Polymer Characterization (tutorial) was held on February 14th, hosted by the Indian Institute of Technology, Delhi, India. The annual POLYCHAR Conferences are IUPAC-sponsored since several years and well-known for combining the broad field of materials sciences with clear focus on polymeric materials – the name "POLYCHAR" has its origin in polymer characterization. The Short Course is an Educational Project of the IUPAC Polymer Division (Division IV).

POLYCHAR attracted 292 participants from 35 countries from 4 continents presenting 296 contributions. The conference is also platform of the Paul J. Flory Research Award that was this year given to **Jiasong He,** Chinese Academy of Sciences – Beijing (China) for his work on polymer blends and composites, in particular hybrid materials from polymer liquid crystals and nanoscopic fillers. The International Materials Science Prize, introduced in 2007, was given to **Rameshwar Adhikari**, Tribhuvan University, Katmandu (Nepal) for his work in the field of block copolymers and his engagement to establish Polymer Science and Education in Nepal.

IUPAC has granted the IUPAC Student Poster Awards that went to 3 Indian young scientists

Future POLYCHAR Conferences are scheduled for:

POLYCHAR-17, Rouen, France, April 2009 contact: allison.saiter@univ-rouen.fr, marie-sylvie.kaelin@univ-rouen.fr, or jean-marc.saiter@univ-rouen.fr
Full report on POLYCHAR 16 can be reached at:
http://www.unt.edu/POLYCHAR/

Design of Polymer Education Material for French Speaking Countries

Project in conjunction with CCE:
Task Leader: **G. Froyer**
Definition/implementation of a « French speaking » common teaching program in Polymer Science (bach. level), associated with common teaching materials. Six French speaking countries involved: Belgium, Canada, France, Mauritius, Morocco, Romania.
The different subgroups are working along the lines defined previously (polymer chemistry, solid state, etc..) and the material elaborated (slides, etc..) is made available to all participants through a web platform (IMN-Nantes) to allow suggestions about its content.
We plan to organize the project end-meeting next spring 2009 in France. The end date of the project was postponed –with IUPAC agreement- to June 30th, 2009 accordingly.

Elaboration of an IUPAC sponsored CD on Polymer Education

Task Leader: **C. Ober**
Still in progress

Implementation of a Division IV - Polymer Education Website

Task Leader: **C. Ober**
Education materials approved by the subcommittee will be progressively inserted into the website. When available, the links with the sites of existing polymer education subgroups and/or national polymer groups will also be progressively added (with their agreement). The goal is to identify, advertise and network the potential polymer education projects developed in the different countries, with on-line interactivity.

Polymer Teaching video clips data base

Task Leader**: W. Mormann**
An ongoing problem with this database is the problem of intellectual property, which seems to be a major problem and causes people to be reluctant. To get things started on the level of the German Chemical Society (GDCh), the division of Macromolecular Chemistry has been approached. Dr. Hans-Wilhelm Engels, Bayer

Material Science AG in Leverkusen is the present chair of the division. He has been contacted and the topic has been discussed at a meeting of the division board. A topic will be prepared for the next meeting in September. In the meantime an approach at the Bayer Material Science level will be attempted.

Boosting the Polymer Education in Africa

Task Leader**: R.D. Sanderson** (with D. Jhurry, Mauritius)

Work still in progress.

Critical examination/reviewing of polymer science textbooks

Task Leader **: S. Penczek**

The action has been engaged and a first report will be finalized soon.

Implementing an open call for joint proposals for young polymer scientists

Task(s) Leader(s) ***: to be defined***

As considered in the minutes of the Torino Education subcommittee meeting, Chris Ober submitted to the members of the IUPAC Task Group on « International Research Funding in the Chemical Sciences » the intent of the Polymer Division to prepare a transcontinental call for proposals with multilateral joint applications which could be a showcase to initiate innovative IUPAC actions. The project could not only to boost the international collaboration in polymer research but also identify and support brilliant young researchers and PhD students, thus highly contributing to polymer education.

The proposal received an enthusiastic welcome from the members of the IUPAC Task Group composed of heads (or their delegates) of the Chemistry Divisions of Funding Agencies/Research Organizations from Argentina, China, France, Germany, Hungary, Israel, Japan, Spain, UK, USA. A working group from Division IV (C. Ober, W. Mormann, M. Sawamoto, J.-P. Vairon, and G. Bechtold administrator from DFG) was established to define the action and prepare the proposal to be submitted in Taipei to the members of the Division IV Committee and Education Subcommittee. A meeting was held in Paris on November 22nd, 2007 and a Pilot Program on Transnational Funding of Polymer Chemistry Research was elaborated. It will involve essentially bright young polymer scientists *and* PhD students as far as possible from developing countries. Its implementation will be monitored by the Polymer Division.

Conclusions on 2007-2008 activities

As noticed in 2007

- the « established » activities (courses/conferences) work well.

- some other work packages were essentially inactive for the reasons already considered in Torino (too time-consuming initiatives, absence of real collaboration for joint activities, technical or political difficulties).

However, new and promising actions are well engaged that could progressively modify our current approach of polymer education:

- on-line interactive networking of the education groups of the different national Polymer (or Chemical) Societies.
- IUPAC validation (advices only !) of the textbook contents (terminology and science)
- networking young polymer scientists and students via implementation of multinational joint calls for proposals, piloted by Division IV but funded by the relevant national Funding Agencies or Research Organizations.
- developing educational projects in conjunction with industry.

11. New Project Areas

Chris Ober stressed the necessity to get an overview of the way funding is done around the world in order to establish methods for multi-national cooperation including multilateral funding and to foster cooperation among international funding agencies. This is part of a developing project between IUPAC, the Polymer Division and international funding agencies. Polymer Chemistry appears to be an ideal field to start such activities in particular supporting excellent young scientists is supposed to be an ideal subject to start with. Next steps will be discussed at the ACS-Meeting in Philadelphia and a report is expected for Glasgow 2009.

The following items will be clarified, namely: a) define the composition and exact mission of the task group and b) define the actions and a time schedule. Division IV should start with a well-defined pilot project. At a later stage this model might be interesting and adaptable for other Divisions, too. First discussions were held in Paris, November 2007, and a rough plan was created for a call for proposals involving at least 3 different countries. Mitsuo Sawamoto suggested a corresponding pilot program with an allocated funding comprising a small amount of money from IUPAC and the major part of the budget provided by international funding agencies. Bob Stepto observed that active participation of the Division is desired so that it is not only reduced to a mere referee's work and he strongly suggests there be a real benefit for the Division. He expects an output that makes the work of the Division more known and more popular within the scientific community. The results of the consultations will be taken to the next Bureau Meeting (March 2009) by Jung-Il Jin.

Chris Ober also reported that during IUMACRO-07 (Macromolecules for a Safe, Sustainable and Healthy World-2nd Strategic Polymer Symposium Polytechnic University Brooklyn, N.Y., USA) a mini-summit was held with members of the Polymer Division and representatives of international polymer societies (namely the European Polymer Federation, the Japanese Society of Polymer Science, the Korean Polymer Society, and the American Chemical Society) to contemplate several topics concerning a closer cooperation among polymer societies around the world. Fields of major overlap of interests to the IUPAC Polymer Division include education, the developing world, and sponsoring symposia especially aimed at young polymer scientists were identified. As a first action, however, there will be the International Young Polymer Scientist Symposium during MACRO 2008.

The year 2011 is going to be the International Year of Chemistry to honour the 100th anniversary of the Nobel Prize for Marie Curie (1911 Chemistry, 1903 Physics). Jin raised the question of which kinds of activities could be considered and in particular in which way polymer chemistry could be promoted. The Division's Education website established recently by the Educational Subcommittee of the Polymer Division should be considered as one of the sources of information for the community. A task group including Mitsuo Sawamoto and Majda Zigon will be assembled to tackle the problem.

12. Monitoring of Projects (Sawamoto)

The custom of invoicing reports about the status of projects on a regular bases as practiced by the SPT has been proven to be a useful tool in monitoring projects making them more efficient with improved progress. Although a few of the older projects are still delayed a progress in the efficiency of the WPs can be observed. Stepto observed that the number of incoming new project proposals has decreased. Chris Ober stressed that the Division needs new projects to keep the Division's budget at a reasonable level. The members of the Division are asked to keep an eye on the development of polymer science and identify areas where the Division should become active. In particular the Subcommittees on Characterization and Structure & Properties were asked for some input.

13. Reports on Division-sponsored Conferences (Penczek, Kubisa)

The report of the activities since the last meeting were given by Stan Penczek and Przemyslav Kubisa, presented by Stan Penczek. Also, Stan Penczek reviewed the conference approval process and the way IUPAC sponsorship is granted. He stressed

the fact that, unfortunately, the number of meetings asking for sponsorship has decreased although there is a number of good meetings that fully deserve IUPAC sponsorship. Whenever the two referees receive (in due time) the information about a conference, they contact the organizers after having conducted some preliminary investigations. They brief the organizers about the scope and the meaning of IUPAC sponsorship and in majority of cases finally the pertinent meaning of an IUPAC sponsored meeting. In a few instances the organizers answer that they do not see a reason to take some burden and then get only little.

In the whole procedure there is a certain unnecessary red tape and sometimes a dualism. According to the information given on the IUPAC website, organizers should in principle take the corresponding form (Application information Questionnaire – AIQ) from the IUPAC website and, after filling it, send it to the IUPAC Secretariat (Mr. Paul Leclair) who forwards it to the Polymer Division President (and occasionally with copies to Division members Kubisa and Penczek). They submit their opinion about the application to the Division President. In cases where Kubisa and Penczek encourage Conference organizers to apply for IUPAC sponsorship, they suggest to short-cut the procedure and submit the AIQ directly to them. In addition, Kubisa and Penczek give support how to properly fill the AIQ in order to shorten the decision-making process. Penczek described the process in detail since he plans to step down from his responsibility he has fulfilled for so many years. This way he wants to give the next team the opportunity to become familiar with the procedures.

Surprisingly, there was one polymer Symposium (held in St. Petersburg, Russia) that was granted IUPAC sponsorship directly from the Secretariat without involvement of the Polymer Division. The Division representatives asked for clarification of this instant but they received no answer. This particular case is even more spectacular since the corresponding meeting has received financial support from IUPAC, an act that otherwise rarely happens. From July 2007 (Torino) to July 2008 (Taipei) the following Conferences were sponsored by IUPAC:

- Macromolecular Complexes, Fukuoka (Japan), N. Toshima
- International Symposium in Ionic Polymerization, Bayreuth (Germany), A. Müller
- International Symposium on Novel Materials and Their Synthesis, Shanghai (China), Y. Wu
- Polychar 16 – World Forum on Advanced Materials, Lucknow (India), P. Tandon, R. P. Singh
- 6th International Symposium on Molecular Order and Mobility in Polymer Systems, St. Petersburg, Russia, T. M. Birshtein

- MACRO 2008, Taipei (Taiwan), S.-A. Chen

The importance to publish high quality papers from Division-sponsored Conferences in Macromolecular Symposia was stressed. These publications also add to the budget of the Division.

The status report of the next MACRO (11^{th} -16^{th} July 2010, Glasgow) was presented by Peter Lovell, followed by the presentation of the representatives of the candidates for MACRO 2012 (Virginia Tech, Blacksburg, USA; Robert Moore) and MACRO 2014 (Chulalongkorn University, Bangkok, Thailand; Supawan Tantayanon and Voravee Hoven).

MACRO 2010 will be hosted by the MACRO Group UK and the concept is now fully approved by the Royal Society of Chemistry. Peter Lovell reported about the progress with detailed information about plenary and invited speakers, accommodation and venue of the conference. Up-dated information can be found at www.MACRO2010.org. Stan Penczek suggested to display information of Polymer Conferences and about Universities with corresponding courses. It was observed that MACRO 2010 appears to be extraordinary expensive, which can be explained by the high standard of the congress centre in Glasgow. However, concerns were raised that this might cause problems for underdeveloped countries. Support for the participation of students can probably be expected from SAMSUNG.

The presentation of the application for MACRO 2012 at Virginia Tech in Blacksburg, Virginia, raised some concerns. In particular the question if the available space for the poster sessions will be large enough and if the distances between the lecture halls will be short enough to be covered in reasonable time. A critical revision of the concept was strongly advised and the Division President will contact the local organizers to adjust the present concept to the demands of the Division.

The enthusiastic presentation of the application for MACRO 2014 in Thailand was acknowledged by the Division and a preliminary, provisional acceptance was given. The date of the conference is well in the future but the preparation for the reservation of the conference rooms *etc*. and in particular the chances for raising financial support from governmental and other sources requires preparation well in advance. A positive, although provisional statement of the Division is very helpful for negotiations and fund-raising. The Division was pleased by the application presented by Supawan Tantayanon was considered as a promising project looking forward to its future development.

14. Recruitment to the Division

Stanislav Penczek stated that a continuous recruitment of new members of the Division is mandatory. He observed that it has proven to be a good way to link possible candidates to a working party. In particular new projects are good opportunities to identify new candidates. They can then be invited to the meetings of the Subcommittees or even start as a project leader and be recommended to the Division President. Since recruitment of new members through projects a strategy for new projects is required. There are possible new fields in the area of the interaction of chemistry and society or contributions of chemistry to global problems. Roger Hiorns stressed the importance of having members from important publishers in the Division. The Division members are asked to propose possible candidates or observers to the WP chairs or the Division President.

In this context it was stressed that the activities of the Division have to become better visible. In this context the revitalization of the Polymer Summit was addressed, see below.

15. Report on Division Web Page and Electronic Publications (Jones, Hess)

There are still problems with the new version of the IUPAC web sites but these are assumed to be overcome in the near future. However, the Division members are asked to check the correctness of the corresponding website.

Bob Stepto suggested to place regular status reports of the projects on the Division website. These information can be obtained from the Subcommittee chairs, and corresponding report forms are existing since 2003. Also the list of the Division electorate and the candidates should be published on the Division website.

16. Strategy, Communication (Sawamoto, Ober)

As already addressed before a revision of the fields of activity of the Division has is required, new fields of activity have to be identified and the activities of the Division has to become more public in particular in areas beyond the scientific worlds. In this context it was observed that the Polymer Summit has lost its significance and that a revitalization is recommended. A combination with a MACRO-Conference appears to be more promising than with a General Assembly, and the Summit should be chaired by the organizers of the corresponding MACRO. They should be encouraged to contribute to the publicity of the Polymer Summit through the National Organizations (NAO) and it should be considered to involve representatives of the NAO's. It was proposed that representatives from all countries present at the corresponding MACRO

should be invited and also Division seniors. Mitsuo Sawamoto's continuously updated list was recommended as a source of information. It was stressed that a precise definition of the goal of the summit is required. Sawamoto was asked to investigate the Division's opinion to develop a concept together with the Division President to be circulated within the Division.

At this point discussion of the number of NRs in a Division was raised again and a change of the By-Law was demanded that restricts the number of NRs of a Division. A striking discrepancy was seen in the number of NAOs and the allowed number of NRs. Michael Buback explained that the limitation to 10 NRs is determined by the electorate of a Division. The Division President will write to the Secretariat on the behalf of the limited number of NRs.

17. Budget, Projects and Division Structure (Ober, Buback)

The financial support provided by Samsung and the royalties from Wiley (Macromol. Symp., see above) still constitute a large fraction of the Division budget. Most of it was spent to support projects with only a small amount used for administrative expenses. Support for the Division from IUPAC for the next biennium will only increase by 3%. The DSM relationship that is developing will provide more money for use in organizing symposia. The royalty proceeds from Wiley publications of Division approved Macromolecular Symposia comes directly to the Division.

The Division President stressed the importance of an improved concept for the Divisions development and focus for the future and the need for new projects with a high public attention and impact. He pointed out that the budget is limited and that projects with a high budget decrease the number of projects. As a standard value a funding increase of about $1,000 to $2,000 per annum can be assumed.

18. Division Elections 2008 (Buback)

The election for the Division Service 2010-2011 are closing in. The positions that were held by Jung-Il Jin and Stanislav Penczek will be free with the end of the year 2009. There are 2 TMs and 6 AMs to be elected. There will be a two-step process in that the TMs are going to be elected in the first run, and the candidates that were not elected still can remain candidates for AM positions. The Division Vice-President will send out the corresponding information during the coming fall. The Nomination Committee (NC) for the period 2010-2011, as approved by David Black, consists of:

P. Kratochvil, H. Nishide. M. Buback, K. Matyjaszewski, M. Droescher

19. Vice – President's Topics (Buback)

The Vice-President thanked all Division members for their contribution to the Division's fruitful work since the last meeting. His future activities will concentrate on efforts to strengthen the Division's role in education and to develop closer ties to industry. The Division's activities should involve young scientists and industrial scientists in the Division work. Another field of activity is to develop stronger ties to polymer activities in developing countries. He will use his relations to foster contact of the Polymer Division with industry and intensify the Division's activities to attract young scientists. He pointed out that it is also necessary to involve leading persons from major publishers in the activities of the Division. Stronger efforts are required to better utilize the internet for communications and make the output of the Polymer Division more widely known in the scientific community.

Finally, the President and Vice-President thanked all participants for joining the meeting and contributing to its success. Looking forward to the opening of MACRO 2008 with leading presentations, plenary lectures from leading scientists, ceremonies giving divisional awards, they wished the Division members some more interesting days in Taipei, a safe travel home and a successful work in their projects until the next meeting in Glasgow, 2009.

20. Any Other Business

No other business was discussed.

21. Date of Next Meeting

The next Division meeting will be held during the 45th General Assembly in Glasgow, UK, on Friday July 31st and Saturday August 1st 2009.

APPENDIX 1

Agenda IUPAC Division IV Meeting
Taipei, 28.06.-29.06.2008

1. President's Introductory Remarks and fionalization of the Agenda
2. Apologies for Absence
3. Approval of the Minutes of the Division Committee Meeting, Torino, August 2007
4. Matters arising
5. Report on Terminology and Nomenclature Projects (Jones, Kitayama)
6. Report on Structure-Property Projects (Dijkstra, Kim)
7. Report on Molecular Characterization Projects (Chang, Pasch)
8. Report on Polymerization Projects (Buback, Russell)
9. Reports on Developing Polymer Materials Systems (Vert, Stejskal)
10. Reports on Education Projects and Activities (Vairon, Mormann)
11. New project Areas-International Year of Chemistry; Industrial Interactions; International Funding Cooperations; Computational Polymer Chemistry
12. Monitoring of Projects (Sawamoto)
13. Reports on Division-Sponsored Conferences (Penczek, Kubisa)and Forthcoming World Polymer Congresses: UK (Lovell), US (Moore), Pacific Region (Tantayanon)
14. Recruitment to the Division (Penczek)
15. Strategy and Commnication, Polymer Summit (Sawamoto)
16. Report on Division Web Page and Electronic Publications (Jones, Hess)
17. Budget, Projects and Division Structure (Ober, Buback)
18. Division Elections 2008 (Buback)
19. Vice-President's Topics (Buback)
20. Any Other Business
21. Date of Next Meeting

APPENDIX 2

Project Expenses vs. Budget

Through 28 May 2008	Actual	Budget	Over/ (Under) Budget	% of Budget	Planned End Date
400-Macro					
Samsung Fund Income	25,500	28,343	(2,843)	90%	
Wiley VCH Royalties	5,000	5,980	(980)	84%	
1999-020-1-400 Bailey	5,312	6,000	(688)	89%	31-Dec-2003
2000-028-1-400 Russell	2,424	3,000	(576)	81%	30-Jun-2003
2002-006-2-400 Jenkins	6,950	7,000	(50)	99%	31-Dec-2007
2002-014-1-400 Vohlidal	3,200	3,200	-	100%	30-Jun-2007
2002-016-1-400 Penczek/Moad	4,250	4,250	-	100%	31-Dec-2003
2002-017-1-400 Slomkowski	2,000	2,000	-	100%	31-Dec-2004
2002-048-1-400 Jones	209	0	209	100%	1-Sep-2004
2002-057-1-400 Sawamoto	2,950	3,000	(50)	98%	1-Dec-2007
2003-009-1-400 Wassner	-	-	-	-	30-Jun-2008
2003-019-2-400 Allegra	3,835	5,000	(1,165)	77%	30-Sep-2008
2003-023-2-400 Meira	3,500	3,500	-	100%	1-Jan-2007
2003-038-4-400 Alstaedt	2,296	8,000	(5,704)	29%	1-Jul-2008
2003-051-1-400 Kim	6,007	6,000	7	100%	31-Dec-2006
2003-060-2-400 Chang	6,500	6,500	-	100%	31-Dec-2007
2004-009-1-400 Dijkstra	3,000	3,000	-	100%	30-Apr-2007
2004-022-3-400 Fitzgerald	420	7,000	(6,580)	6%	30-Apr-2007
2004-034-1-400 Lacik	3,000	3,000	-	100%	1-Dec-2007
2004-037-1-400 Froyer	-	5,000	(5,000)	-	30-Jun-2009
2004-040-1-400 Vana	2,000	3,500	(1,500)	57%	1-Sep-2007
2004-043-1-400 Vert	3,829	10,000	(6,171)	38%	1-Apr-2010
2004-044-2-400 He	4,860	6,000	(1,140)	81%	1-Nov-2008
2005-005-2-400 Chang	5,510	6,000	(490)	92%	31-Dec-2008
2005-007-1-400 Wilks	-	-	-	-	31-Dec-2005
2005-009-3-400 Brüll	-	4,000	(4,000)	-	1-Jul-2008
2005-011-3-400 Luruli	2,344	5,000	(2,656)	47%	31-Dec-2008
2005-021-3-400 Staal	-	5,000	(5,000)	-	31-Dec-2007
2005-023-2-400 Steininger	1,000	3,000	(2,000)	33%	31-Dec-2008
2005-043-2-400 Ober	5,198	6,000	(802)	87%	1-Apr-2009
2006-004-1-400 He	4,010	6,000	(1,990)	67%	1-May-2009
2006-018-2-400 Trchova	2,000	2,000	-	100%	1-Jul-2009
2006-028-1-400 Schué	4,151	6,000	(1,849)	69%	1-Sep-2009

Project Expenses vs. Budget

Through 28 May 2008	Actual	Budget	Over/ (Under) Budget	% of Budget	Planned End Date
2006-041-1-400 Hess	2,807	6,000	(3,193)	47%	31-Dec-2010
2007-004-1-400 Rullmann	-	4,000	(4,000)	-	1-Jul-2009
2007-008-1-400 dos Santos	2,705	5,000	(2,295)	54%	1-Sep-2010
2007-027-1-400 Singh	3,500	3,500	-	100%	31-Mar-2008
2007-049-1-400 Kratochvil	5,000	5,000	-	100%	31-Dec-2008
2007-058-1-400 Gilbert	-	6,000	(6,000)	-	31-Mar-2010
2008-015-1-400 Mormann	-	6,000	(6,000)	-	30-Jun-2011