

## IUPAC MACROMOLECULAR DIVISION (IV)

### Sub-committee on Polymer Terminology

#### Minutes of the meeting held at the International Convention Centre, Beijing 15<sup>th</sup> to 18<sup>th</sup> August 2005

Present: G. Allegra, T. Chang, A. Fradet, J. He, K.-H. Hellwich, M. Hess (chairman), K. Horie, A. D. Jenkins, J.-I. Jin, R. G. Jones (secretary), J. Kahovec, T. Kitayama, P. Kratochvil, P. Kubisa, I. Mita, G. Moad, W. Mormann, N. Nakabayashi, C. Ober, S. Penczek, R. F. T. Stepto (Division President), J.-P. Vairon, M. Vert, J. Vohlidal.

Division VIII members, W. Powell and A. McNaught respectively attended the opening session and the task group meeting of **2001-082-1-800** *Terminology and Nomenclature of Macromolecules with Cyclic Structures*.

### 1. CHAIRMAN'S OPENING REMARKS

#### 1.1 Welcome and Apologies

The Chairman welcomed members and in particular Karl-Heinz Hellwich and Warren Powell (Division VIII) to the meeting. There had been some confusion about Karl-Heinz Hellwich's membership of the SMT and he was now confirming full membership.

There were no apologies but it was noted that none of the people invited to attend as observers had accepted the invitation. It was also noted that Koichi Hatada had expressed a hope to be able to attend future meetings.

Apologies for the unavoidable late funding reduction were extended.

#### 1.2 Approval of the Minutes from the Bordeaux Sub-committee Meeting

The minutes were accepted without change.

#### 1.3 Matters arising from/after the Ottawa Minutes

Two new projects had been accepted since the Bordeaux meeting: (i) 2004-043-1 *Terminology for Biomedical (Therapeutic) Polymers* (Vert); (ii) 2005-005-2 *Revision of the IUPAC Recommendation: Definitions of Terms Relating to Individual Macromolecules, Their Assemblies, and Dilute Polymer Solutions* (Chang).

All other action points are for report under item 2.

#### 1.4 IUPAC Developments

At the Division meeting held over the previous two days the new name, *Sub-committee of Polymer Terminology and Nomenclature*, had been adopted. This was held to better accord with the name of the division and the range of the sub-committee's activities. Approval for adoption of this name would be sought.

## 1.5 Publications since Bordeaux

- (a) **410/24/93** *Terminology Related to Multiphase Polymer Composites and Blends* – Horie, Work
- (b) Although it is not an IUPAC publication, Jiasong He informed the sub-committee that a new book, *Chinese Nomenclature in Polymer Chemistry*, was published in 2005. This is based on IUPAC recommendations and is to be the definitive text for polymer usage in all media that use the Chinese language. He subsequently made a number of copies available for interested committee members, two of which are in the keeping of the Chairman and Secretary.

## 1.6 Upcoming publications

No projects were identified as having received final ICTNS approval for publication. However, it was noted that **2000-006-1-400** *Terminology of Polymers with Ionizable Groups and Polymers Containing Ions* (Kubisa) had been submitted to ICTNS. It was further noted that **2000-007-1-400** *Glossary of Terms Relating to the Structure of Inorganic and Polymeric Gels and Networks, Inorganic Polymeric Materials and the processing thereof* (Jones) had been to outside experts and following approval of the sub-committee would be ready for submission to ICTNS (*vide infra*).

## 1.7 Timetable for the Beijing Meeting

Prior to the meeting the Secretary had circulated a preliminary timetable. Subject to minor modification to accommodate late arrivals and early departures the timetable was finalised (see Appendix 1).

## 2. PROJECTS

### 2.1 Projects in final stages of preparation

It was noted that the following projects should be complete for the 2006 meeting of the sub-committee:

- 2001-081-1-800** *Terminology and Structure-Based Nomenclature of Dendritic and Hyperbranched Polymers* - Kahovec
- 2002-014-1-400** *Glossary of Class Names of Polymers Based on their Chemical Structure and Molecular Architecture* - Vohlidal
- 2002-016-1-400** *Terminology for Kinetics, Thermodynamics and Mechanisms of Polymerization* - Penczek (this project was formerly **410/26/95**)
- 2002-017-1-400** *Polymerization Processes and Polymers in Dispersed Systems* - Slomkowski
- 2003-019-2-400** *Definitions of terms relating to crystalline polymers - revision of IUPAC Recommendations 1988* - Allegra.
- 2002-048-1-400** *Compendium of Macromolecular Nomenclature and Terminology (The Purple Book, 2<sup>nd</sup>. Edition)* – Wilks & Metanomski

Accordingly they would remain open for discussion and report, for which time had been set aside in the timetable of the present meeting (*vide infra*).

A number of points were noted *en passant*:

- Latin abbreviations such as *e.g.*, *i.e.*, *etc.* should be italicised until told otherwise.
- Correct punctuation and grammar essential. All documents must be scanned for correctness in English usage: Aubrey Jenkins offered to scan documents for incorrect grammar and punctuation.
- Bob Stepto who is on the editorial board of P&AC will recommend that the editor does not take it upon himself to change English usage.
- It was noted that public review and submission to ICTNS can be concurrent processes.

## 2.2 Projects that had been submitted for Public Review

None were reported.

## 2.3. Projects in Preparation by Working Parties

**410/22/93**            *Guide to Polymer Terminology* - Metanomski & Wilks  
**2002-048-1-400**    *The Purple Book* - Metanomski & Wilks  
                          *Dispersity* - Stepto

The above three items were taken together as requiring only progress reports.

*The Guide*: Last year, on the advice of Val Metanomski and Ted Wilks, it was agreed that publication should be put on hold, since bringing a revised version to press would take at least two years. Instead, it would be best to aim for earlier implementation of an on-line version.

It was agreed that chapters could go on-line as and when they were available. Apparently, Chapters 1 and 3 are not yet ready and Chapter 8 still needs reviewing by Bob Stepto for overall consistency. Chapter 3 is close to completion and a final version is expected shortly.

Karl-Heinz Hellwich, Bob Stepto, Val Metanomski, Jaroslav Kahovec and Aubrey Jenkins will read the final versions of those chapters that are available before submitting to ICTNS with a view to on-line publication.

**ACTION: Hellwich, Stepto, Metanomski, Kahovec, Jenkins & Wilks**

*The Purple Book*: All chapters are ready and the preparation of the index is in hand. A preface is to be prepared by Bob Stepto. The history chapter would be published under the authorship of the Secretaries of the former Commission (Baron, Bikales, Fox, Work) expanded to include the present secretary of the sub-committee. A few minor editorial points are also under consideration. There will be no introduction to the Terminology section. However, the existing Introduction to the Polymer Nomenclature chapter still has to be checked for its relevance and consistency within the second edition. PB2 as a whole will be published under the authorship of Wilks, Metanomski, Stepto and Hess.

The revised book is to be completed by 31<sup>st</sup> December after which it will be published on the Web.

**ACTION: Stepto**

*Dispersity*: This is still being progressed under the authorship of Aubrey Jenkins, Bob Stepto, Bob Gilbert and Michael Hess. The final recommendation will be distributed to the sub-committee for member's comments, following which Bob Stepto will submit it for the approval processes.

**2002-006-2-400**     *New Radical Polymerisation* - Jenkins, Moad

Excellent progress had been made since the Bordeaux meeting. At Beijing the task group had agreed a number of outstanding definitions. In particular, the following definition for New Radical Polymerisation was agreed: *Chain polymerisation, propagated by radicals that are deactivated reversibly, bringing them into active-dormant equilibria involving at least two states.*

Ideas for the collective name for the polymerisation processes that are embraced by the project are to be submitted to the task group leaders by e-mail. They will make a recommendation at the 2006 meeting of the sub-committee.

It was agreed that application should be made for a 2-year extension.

**ACTION: Jenkins & Moad**

**2002-014-1-400**     *Glossary of Class Names of Polymers Based on their Chemical Structure and Molecular Architecture* - Vohlidal

Since the Bordeaux meeting a new draft had been prepared and sent to task group members. Comments were received and a further draft (No. 15) was prepared. However, following the meeting of the task group in Beijing it was apparent there were further issues to resolve and changes will be incorporated in yet another draft for circulation to task group members at the end of November. Comments will be returned by the end of December in readiness for distribution to experts at the end of January. A final draft would be presented at the 2006 meeting of the sub-committee.

An application for an extension is required.

**ACTION: Vohlidal**

**2002-016-1-400**     *Glossary of Terms Related to Kinetics, Thermodynamics and Mechanisms of Polymerization* – Penczek

The task group received the completed document which would be sent to 20 external experts by the end of September. Their comments would be received by the end of the year and corrections/modifications incorporated by the end of February 2006. The revised final draft would then be circulated to task group members who would return comments by the end of April. It is expected that the document would go out to public review before the meeting of the sub-committee in 2006.

**ACTION: Penczek**

**2002-017-1-400**     *Polymerization Processes and Polymers in Dispersed Systems - Slomkowski*

In the absence of Stanislaw Slomkowski, the document as it presently stands was laid on the table by Stanislaw Penczek who reported that it is presently under review by external experts. These have been drawn from the *Polymer Colloids Group* but further experts will be identified for consultation prior to the approval for submission for public review being sought from Michael Hess, and Bob Stepto or Jung-Il Jin. External experts would return their observations within 2 months (end of October). However, mistakes were noted by a number of sub-committee members. Members should return their observations and comments to the task group leader as soon as possible but well before the document is presented for submission for public review.

**ACTION: Slomkowski**

**2003-019-2-400**     *Definitions of Terms Relating to Crystalline Polymers - revision of IUPAC Recommendations 1988 - Allegra.*

Since the Bordeaux meeting the task group has prepared a draft of the revised document. Giuseppe Allegra expressed particular gratitude to Professors D. Bassett and P. Geil for their considerable contributions to the preparation of the document.

Significant differences between the present document and the 1988 original are as follows:

- There are new definitions relating to chirality and chain orientation in crystals that are deemed particularly useful in the domain of biological macromolecules.
- Terms relating to static and dynamic crystalline disorder and the new experimental techniques that enable disorder studies (solid-state NMR, AFM, electron microscopy, SAXS, SANS etc.) are included.
- New examples of polymer conformation and crystal morphology are included.
- Some definitions of existing terms have been extended.
- A format similar to that used for the *IUPAC Polymer Liquid Crystals* Document of 2001 is adopted.

At the task group meeting the following actions were agreed:

- A list of about 20 - 30 additional terms requiring definition.
- Polymer crystallisation in confined spaces to be covered.
- A few (~ 2 - 5) new figures to be inserted with a view to clarifying helical conformation in crystals of biological polymers.
- Table 1 of the original document that illustrates linear symmetry groups of crystalline polymers to be presented in a more complete form.

A new draft of the document will be available at the latest by March 2006 in readiness for discussion at the 2006 meeting of the sub-committee.

An extension is required.

**ACTION: Allegra**

**2003-060-2-400**      *Terminology on Separation of Macromolecules* - Chang

The objective is the revision and elaboration of the terminology on the separation of macromolecules in the section 9.2.6 *Special Terminology Used in Exclusion Chromatography* of the *Compendium of Analytical Nomenclature* - The Orange Book. This section does not present adequate cover of the terminology used in exclusion chromatography. Furthermore, since it was prepared, many new methods of macromolecular separation other than exclusion chromatography have been developed, *e.g.*, interaction chromatography, chromatography at critical condition, temperature rising elution fractionation and field flow fractionation. Therefore, it is necessary to revise and expand the terminology on separation of macromolecules and publish it as a separate document, which will also be incorporated in the next edition of the Orange Book and other relevant IUPAC publications.

It was reported that ~50 potential new terms had been collected and provisional definitions prepared. These had been divided into 3 categories: general, SEC, and non-SEC. Following from discussion in Beijing, the task group decided to focus only on terms relating to the macromolecular separation.

A first draft would be prepared for circulation to task group members by the end of December 2005. Observations would be returned to the task group leader by the end of February. A revised draft would be prepared in readiness for the 2006 meeting of the sub-committee.

**ACTION: Chang**

**2004-043-1-400**      *Terminology for Biomedical (Therapeutic) Polymers* - Vert

Project objectives: Like most materials used by humans, polymers and polymeric materials have been tested and occasionally exploited by surgeons and pharmacists to treat trauma and diseases. This project will list terms and definitions to be accepted and respected by academic, industrial and normative people active in the biomedical and pharmacological fields, and in harmony with the environmental field.

A first draft, prepared by the project leader, was circulated to the members of the working party by the end of June 2005. No constructive replies were received prior to the meeting of the task group at the Beijing meeting of the sub-committee at which:

1. The WP leader recalled the genesis of the project and its desired relationship with future projects dealing with the terminology in the field of (a) biopolymers and (b) environmental degradable and biodegradable polymers, both of which are still at the feasibility stage.
2. There was discussion to define the limits of the expected terminology. It was agreed that:
  - (a) specific polymers or biopolymers would not be included namely because the lists would be much too long and hence useless;
  - (b) problems related to degradable and biodegradable polymers would be treated specifically, taking into account that there are problems that extend beyond the biomedical field to embrace pharmacology and the environment, with the risk of confusion between these various domains.

3. Consideration was given to terms and phenomena that might appear in the project list of terms. It was agreed that:
  - (a) The main requirement is for terms generally grouped under the headings *biocompatibility* and *biofunctionality* that are required for a material to be a biomaterial, with extension to degradable and biodegradable polymeric biomaterials and the various mechanisms by which they can degrade, i.e. an attempt will be made to subsume **F21** into this project.
  - (b) Some terminology for biopolymers, originally intended for preparation by Yoshida Doi as a distinct project, will be subsumed into this project.
  - (c) Terms such as *biopolymer*, *biomaterial*, *therapeutic device* and *therapeutic polymer* will be introduced as soon as possible in the introduction.
  - (d) The presentation of the draft should be adapted to IUPAC format as soon as possible.
  - (e) The lists will be presented as classified lists instead of alphabetical ones.

A second draft will be prepared by the task group leader by the end of September to be submitted to the members of the task group for comment by the end of October, after which a revised draft will be prepared.

**ACTION: Vert**

Karl-Heinz Hellwich, Przemyslaw Kubisa and Bill Work will join the task group.

**2005-005-2-400**      *Definitions of Terms Relating to Individual Macromolecules, Their Assemblies, and Dilute Solutions* - revision of IUPAC Recommendations 1989 - Chang

The document published in 1998, when the understanding of polymer properties in the bulk and in concentrated solution was comparatively immature, only dealt with terminology in the physical chemistry of individual macromolecules, their assemblies and in dilute solution. This document will include the terminology that follows from recent advances and be published as superseding recommendations. These will also be incorporated in the new edition of the *Purple Book*.

New terms will be collected from task group members and external experts by the end of 2005. About 50 new terms have so far been proposed for consideration. Phase properties and definitions of upper and lower critical solution temperatures seem to be notable omissions that must be addressed. A draft of the new document will be prepared in readiness for the meeting of the sub-committee in 2006. Revision will follow in preparation for public review at the end of 2007.

## **2.4 Interdivisional projects**

**1999-051-1-800**      *Source-Based Nomenclature for Modified Polymer Molecules* – Kitayama

Changes made to the previous draft (presented at the Bordeaux meeting of the sub-committee) by the task group leader are as follows:

- Since the equivalent connectives, *-mod-* and  $\sim>$ , could be used interchangeably in both structure-based and source-based nomenclature, the following distinctive usages were applied throughout:

poly(A-*mod*-J) for source-based nomenclature and thus consistent with copolymer source-based nomenclature.

poly(A $\sim>$ J) for structure-based nomenclature and thus consistent with, *e.g.*, A/B in structure-based irregular polymer nomenclature.

- To accord with the above, the formats for polymers in which more than one type of new unit has resulted from modification are poly(A-*mod*-J;K;L;...) and poly(A $\sim>$ J/K/L/...) respectively.
- Poly(A-*mod*-G) type naming (see Rules 5 - 7) and Poly(A-*mod*-U-*by*-X) type naming (see Rule 8) are limited to the cases in which the structural information relating to the modified polymer is not known or is too complex. Accordingly, graphic representations for the examples under these rules have been omitted.
- The graphic representation section has been compacted in order to resemble an extension of the published IUPAC document, Graphic Representations (Chemical Formulae) of Macromolecules, *Pure Appl. Chem.*, **66**, 2469-82 (1994).

At the meeting of the task group, the following points were discussed and accepted:

- The preferred term *partial* modification as opposed to *part* modification.
- The question of whether or not the wavy arrow notation,  $\sim>$ , indicated full conversion was raised. It was realised that this was not a problem as it is no more an issue in this context than it is for the straight-shafted arrow used for both complete and incomplete chemical reactions.
- Perhaps a means of differentiating poly(A-*mod*-G) from poly(A-*mod*-J) was required. It was proposed that a hyphen be added after G to indicate that it is usually a univalent radical. This remains under consideration.

Task group members to send their observation to Tatsuki Kitayama by the end of November 2005 with a view to the preparation of a final draft by the end of February 2006.

An extension is required.

**ACTION: Kitayama and task group members**

**2000-007-1-400**      *Glossary of Terms Relating to the Structure of Inorganic and Polymeric Gels and Networks, Inorganic Polymeric Materials and the Processing Thereof* - Jones

Although this project is now progressed as a Division IV project, it is here categorised as an interdivisional project as a reminder that it started life as a joint Division II/IV project and because Division II still take an active interest in its progress.

At the Bordeaux meeting of the sub-committee it was noted that terms relating to the mechanical properties of elastomers had presented unresolved difficulties as the project developed. It was decided that these should be left out and a disclaimer explaining their absence has been included in the Introduction.



The final draft was prepared by the end of 2004 and sent to about 30 external experts. There were a few responses and where appropriate the observations were incorporated.

The sub-committee consented to the submission of the project to ICTNS and thereafter for public review.

**ACTION: Jones**

**2001-081-1-800**     *Terminology and Structure-Based Nomenclature of Dendritic and Hyperbranched Polymers* - Kahovec

This project is practically finished. Bob Stepto had produced a final draft but some minor points had been raised at the last minute. Some of these had been easy to deal with and any remaining issues will be resolved and incorporated within the document for redistribution to the task group members by the end of October 2005 with a view to agreement by the end of November. Thereafter the document would be sent to external experts.

**ACTION: Kahovec**

**2001-082-1-800**     *Terminology and Nomenclature of Macromolecules with Cyclic Structures* - Mormann

**2004-046-1-800**     *Structure-Based Nomenclature for Cyclic Macromolecules* (project extension)

A draft taking account of the questions raised in Bordeaux was sent to sub-committee members in December 2004. Observations were incorporated and finally discussed in a meeting of Werner Mormann and Karl-Heinz Hellwich in July 2005 in Gießen (Germany). A final draft was distributed to sub-committee members on 25<sup>th</sup> July with only minor issues remaining to be clarified at the meeting in Beijing: Karl-Heinz Hellwich, Pavel Kratochvil, Alan McNaught and Werner Mormann discussed issues raised mainly by Pavel.

Comments arriving by 5<sup>th</sup> September would be considered for a new draft that would be prepared by 15<sup>th</sup> September for distribution to external experts. Their observations would be required by the end of November and a final draft taking account of these would be sent to ICTNS by 15<sup>th</sup> January 2006.

**ACTION: Mormann**

**2002-037-1-800**     *Nomenclature for Macromolecular Rotaxanes and Catenanes* - Wilks

This project had been put on hold until the Division VIII low molecular weight rotaxanes document was finished. This is now the case so the project would be re-activated under the leadership of Jiri Vohlidal. However, the preparation of the *catenane* component remains deferred. The future of this component remains an issue and the Division IV & VIII presidents (Bob Stepto/Alan McNaught) were to be asked to resolve the problem.

**ACTION: Vohlidal**

**2003-42-1-800**      *Source-based Nomenclature of Linear Polymers*  
formerly *Source-based Nomenclature of Organic Homopolymers and Copolymers* - Kitayama

The task group met on the first day in Beijing. The title of this project remained of concern to the point that the task group leader presented five new possibilities as alternatives to the present title:

1. Source-based Nomenclature of Linear Polymers
2. Nomenclature of Linear Polymers
3. Source-based Nomenclature of Linear Polymers and Pseudo-structure-based Nomenclature of Polycondensation-type Polymers
4. Source-based Nomenclature of Linear Polymers and Pseudo-source-based Nomenclature of Polycondensation-type Polymers
5. Source-based and Pseudo-structure-based Nomenclature of Linear Polymers

The task group recommended the first of these, which was put to the vote and adopted.

The latest draft was tabled for reference by the task group leader. Notable new issues that had arisen since the Bordeaux meeting of the sub-committee were as follows:

- Trivial names of monomers are in common usage by the polymer community but not by the organic chemistry community; it was agreed that trivial and systematic names would be accepted by Division IV but the sensitivities of the Organic Division would not be challenged by expanding the present list.
- It was agreed that poly(ethylene terephthalate) and similar structures with implicit monomers (pseudo structure-based or root-based names) cannot be excluded; Itaru Mita and Aubrey Jenkins would produce a generic title for such systems in order that they could be addressed within this document.

**ACTION: Mita & Jenkins**

The sub-committee recorded its thanks to Itaru Mita who had put in a great deal of hard work in the preparation of the present draft.

A new draft for distribution to task group members would be prepared for the end of October with comments to Itaru Mita required by the end of December. A revised draft would be distributed at the end of March 2006 with comments to Itaru required by the end of May. This will lead to a new draft for presentation to the sub-committee at the 2006 meeting.

**ACTION: Kitayama & Mita.**

## **2.5. Projects in process of approval**

**2000-006-1-400**      *Terminology of Polymers with Ionizable Groups and Polymers Containing Ions* - Kubisa

As stated above, this project has been to ICTNS for comment. Observations are being incorporated in consultation with Bob Stepto.

It was recommended that a qualification be added within the notes to the definition of **polyacid** that relates to the broader meaning of the term. Kaz Horie was to check for corresponding terms within the *functional polymers* document. Some minor typographical inconsistencies were also noted, together with the need to alter the name of the Division on the first page and to update the membership of the sub-committee.

**ACTION: Kubisa & Horie**

## 2.6. Feasibility Studies

### F-6 *Thermal Properties* - Hess (Acting Task Group Leader)

There has not been much activity since Bordeaux but Michael Hess has received the ICTAC document on Nomenclature in Thermal Analysis. He confirmed his belief that the project is necessary and will bring a fully developed proposal to the 2006 sub-committee meeting.

**ACTION: Hess**

### F-18 *Ultimate Mechanical Properties of Polymers* – Hess

There has been no progress since the Bordeaux meeting of the sub-committee but it is still intended that this project shall be progressed.

**ACTION: Hess**

### F-19 *Abbreviations* – He/Tabak

A paper describing progress made since the meeting in Brisbane in 2001 was tabled by Jiasong He. This illustrated the complexity of the underlying issues. Itaru Mita tabled another paper in the form of usual recommendations and based on abbreviations already in common use. This addresses many of the requirements previously proposed, which are as follows:

1. A document is required that goes beyond a simple list of abbreviated terms and polymer names in common usage.
2. There should be guidelines as to how abbreviations should be coined. The preparation of abbreviations for structure-based names should also be described. However, since existing systems for establishing abbreviations are not very strict it would probably be for the best if *guidelines* or *recommendations* were not presented as rules.
3. An abbreviation might correspond to different polymer names in different publications but each should be defined on the first occasion it appears in the text.
4. For many familiar polymers, the same row of uppercase letters as the corresponding ISO abbreviation is recommended as far as possible.
5. Italic connectives such as *-co-*, *-block-* should be used as necessary in the identical sense to their usage in the full names of polymers.

There was a majority of task group members in favour of promoting the proposal to an official project. Several members were against having a section for abbreviations of structure-based names. Many strongly supported the use of ISO abbreviations. The inclusion of abbreviations relating to chirality was recommended.

It was agreed that the project should go forward as recommendations and that a project submission form should be prepared, but the task group will look further into the matter of whether or not rules could be established.

**ACTION: He & Mita**

Karl-Heinz Hellwich joined the task group.

**F-20**                      *Multilingual Encyclopedia* - Hess

There has been only limited progress. However, using English, French, Czech, Chinese (traditional) and Chinese (simplified), Michael Hess demonstrated how the Encyclopaedia might operate:

<http://kdm.uni-duisburg.de/~larinde/iupac2>

It would be a very flexible translation tool. The Glossary of Basic Terms would be the first to go on-line but others will follow.

Money was needed to progress the development, as a student would need to be employed in its preparation. It would remain a feasibility study until such time as it could be so enabled but meanwhile further information relating to translation would be obtained.

**ACTION: Hess**

**F-21**                      *Biodegradation and Biodegradable Macromolecules* – Narayan

See **2004-043-1-400** *Terminology for Biomedical (Therapeutic) Polymers*

**F-22**                      *Field Responsive Polymers* (formerly **PFS-4**) - Ober

A detailed proposal was tabled. Advice had been sought from a number of external experts, all of whom were very supportive.

It was noted that there would be overlap with the interests of other sub-committees and even IUPAP. Nevertheless, if the project is progressed, SPT&N would assume the lead role. Repetition of work already completed was to be avoided so the efforts of Division I *Physical & Biophysical Chemistry* and IUPAP were to be checked.

It was agreed to advance the proposal as a broad-based project but if it appears better only as a polymer-based project there will still be sufficient material. Stanislaw Penczek would look for someone to cover pH and temperature responsive polymers and thereby merge his earlier feasibility proposal into this project.

**ACTION: Ober, Penczek**

**F23**                      *Self Assembly and Aggregation in Polymers*  
(formerly **PFS-5**) - Ober/Jones

A draft project application was tabled. Based on this it was agreed that external consultants should be approached, including Jean-Marie Lehn, and that the application could then go forward.

**ACTION: Jones & Ober**

## 2.7. Proposed Feasibility Studies.

**PFS-3 (2004)**      *Elastic Properties* - Hess & Stepto

No progress was reported.

**PFS-7**              *Stereochemical Notation in Polymers* - Hellwich

**PFS-8**              *Structural Representation in Polymers* - Kahovec

This would be a revision of Graphic Representations (Chemical Formulae) of Macromolecules (Recommendations 1994), *Pure Appl. Chem.*, **66**, 2469-2482 (1994). It should be incorporated within Division VIII's Graphical Representations document.

**PFS-9**              *Nomenclature in Inorganic Polymers* - Jones

This would be an IV/VIII interdivisional project.

## 3. ANY OTHER BUSINESS

### 3.1 Project Extensions

The following projects needing extensions require the completion of project application forms before the end of 2005:

**1999-051-1-800**    *Modified Polymers* - Kitayama (1 year)

**2002-006-2-400**    *New Radical Polymerisation* - Jenkins, Moad (2 years)

**2002-014-1-400**    *Glossary of Class Names* - Vohlidal

**2003-018-2-400**    *Crystalline Polymers* - Allegra (1 year)

### 3.2 SMT Membership

For full details including those of provisional members see Appendix 3:

Prof. G. Allegra

Prof. T. Chang

Dr. A. Fradet

Prof. J. He

Dr. K.H. Hellwich

Dr. M. Hess (Chairman)

Prof. P. Hodge

Prof. K. Horie

Prof. A. Jenkins

Prof. J.-I. Jin

Prof. R. G. Jones (Secretary)

Dr. J. Kahovec

Prof. T. Kitayama

Prof. P. Kratochvil

Prof. P. Kubisa

Dr. W. V. Metanomski

Prof. I. Mita

Dr. G. Moad

Prof. W. Mormann

Prof. N. Nakabayashi

Prof. C. Ober

Prof. S. Penczek

Prof. S. Slomkowski

Prof. R. F. T. Stepto

Prof. D. Tabak

Prof. J.-P. Vairon

Prof. M. Vert

Prof. J. Vohlidal

Dr. E. S. Wilks

Dr. W. J. Work

Michael Hess would write to Ernest Marechal, Maximo Baron and Marguerite Rinaudo enquiring as to their intentions for continued involvement with the SPT&N. He would also inform Prof. Philip Hodge that he is welcomed as a full member of the sub-committee.

**ACTION: Hess**

### **3.3. Closing Remarks**

Michael Hess expressed his thanks to the participants and all others who have helped to make good progress during the last year, thus allowing the Beijing meeting to be a success. He closed wishing members a safe journey home or on holiday and looked forward to seeing as many as possible next year in Rio.

Members expressed their sincere appreciation for all the effort that Michael Hess had put in over the years that he has been Chairman of SMT.

## **4. 2006 MEETING**

This will be held from 11<sup>th</sup> to 14<sup>th</sup> July 2006 prior to the Polymer Division meeting and the World Polymer Congress prior to the World Chemistry Congress in Rio de Janiero, Brazil.

RGJ – 14 November 2005

## Appendix 1: SMT SCHEDULE - BEIJING 2005

DAYS/ HOURS	MONDAY 15 <sup>th</sup>	TUESDAY 16 <sup>th</sup>	WEDNESDAY 17 <sup>th</sup>	THURSDAY 18 <sup>th</sup>	
08.30-09.00	<b>AGENDA Items:1 &amp; 2</b>	2002-016 KINETICS	<i>2002-016 Kinetics</i>	<i>2003-042 Source-Based Nomen. *</i>	
09.00-09.30		2002-006 LIVING etc. RADICAL	<i>2000-007 Sol-Gel</i>	<i>2001-081 Dendritics*</i>	
09.30-10.00			<i>2001-82 Macrocyclics*</i>	<i>2002-014 Glossary Class Names</i>	
10.00-10.30	<i>410/22/93 The Guide, 2002-048 The Purple Book &amp; Dispersivity</i>	2000-007 SOL-GEL	<i>F-18 ULTIMATE MECHANICAL PROPERTIES</i>	<i>1999-051 Modified P.* &amp; 2002-037 Rots.&amp; Cats.</i>	
10.30-11.00		2004-043 BIOMEDICAL	<i>PFS-3 ELASTIC PROPERTIES</i>	<i>F-6 THERMAL PROPERTIES</i>	
11.00-11.30			<i>PFS-4 ELECTRIC FIELD RESPONSIVE POLYMERS</i>		
11.30-12.00	<i>2000-006 Ions &amp; Ionizable</i>	2005-005 SOLUTION PROPS.	<i>PSF-5 SELF-ASSEMBLY &amp; AGGREGATION IN POLYMERS</i>		
12.00-12.30	<b>LUNCH</b>	<b>LUNCH</b>	<b>LUNCH</b>	<b>LUNCH</b>	
12.30-13.00					
13.00-13.30					
13.30-14.00	2003-019 CRYSTALLINE POLYMERS	2001-081 DENDRITICS*	<b>EXCURSION</b>	<i>F-19 ABBREVIATIONS</i>	
14.00-14.30		2002-014 GLOSSARY CLASS NAMES		2003-006 SEPARATIONS	<i>F-20 MULTILINGUAL ENCYCLOPAEDIA</i>
14.30-15.00		2003-042 SOURCE- BASED NOMENCLATURE *		<i>2005-005 Solution Props.</i>	<b>NEW FEASIBILITY STUDIES</b>
15.00-15.30				<i>2002-017 Dispersed Systems</i>	
15.30-16.00		2001-82 MACROCYCLICS*		<i>2003-019 Crystalline Polymers</i>	<b>AGENDA Items: 3 &amp; 4</b>
16.00-16.30				<i>2004-043 Biomedical &amp; F-21 BIOBASED &amp; BIODEGRADABLE</i>	
16.30-17.00				<i>2002-006 Living etc. Radical</i>	
17.00-17.30					
Evening			<b>SUB-COMMITTEE DINNER</b>		

\* Interdivisional projects

WORKING PARTIES (uppercase) *W/P reports to sub-committee (lowercase italic)*

Feasibility Studies (uppercase italic)

## Appendix 2: WORKING PARTIES

PROJECTS	NAMES
<b>SUB-COMMITTEE PROJECTS</b>	
<b>410/22/93</b> <i>Guide to Terminology and Nomenclature</i>	<b>Wilks</b> , Alemán, Baron, Fox, Hatada, Hess, Horie, Jenkins, Jin, Jones, Kahovec, Kramer, Kratochvil, Kubisa, Maréchal, Meisel, Metanomski, Penczek, Shibaev, Sirigu, Stepto, Swift, Work.
<b>410/24/93</b> <i>Multiphase Composites &amp; Blends</i>	<b>Work</b> , Fox, Hess, Horie, Baron, Stepto
<b>2000-006-1-400</b> <i>Ions &amp; Ionizable</i>	<b>Kubisa</b> , Hess, Jones, Mormann, Rinaudo, Schubert, Stepto, Swift, Tabak, Vohlidal
<b>2000-007-1-400</b> <i>Inorganic &amp; Polymeric Gels &amp; Networks</i>	<b>Jones</b> , Chadwick (Div.II), He, Hess, Horie, Meisel, Mita, Work, Stepto, Vohlidal
<b>2002-014-1-400</b> <i>Glossary of Class Names</i>	<b>Vohlidal</b> , Hess, Horie, Jones, Kahovec, Kratochvil, Metanomski, Mormann, Stepto, Tabak, Wilks.
<b>2002-016-1-400</b> <i>Terminology for Kinetics etc.</i>	<b>Penczek</b> , Baron, Hatada, Hess, Jenkins, Kubisa, Maréchal, Moad, Pepper, Schulze, Sigwalt, Stepto, Vohlidal.
<b>2002-017-1-400</b> <i>Polymer in Dispersed Systems</i>	<b>Slomkowski</b> , Alemán, Hess, Horie, Kubisa, Meisel, Penczek, Mormann, Stepto, Gilbert
<b>2002-006-2-400</b> <i>Living and Controlled Radical Polymerization</i>	<b>Jenkins</b> , Fukuda, Gilbert, Hess, Jones, Kratochvil, Matyjaszewski, Moad, Penczek, Quirk (correspondent), Russell (correspondent), Stepto, Vairon, Vohlidal
<b>2003-019-2-400</b> <i>Crystalline Polymers (revision)</i>	<b>Allegra</b> , Bassett, Blackwell, Geil, He, Hess, Jin, Meille, Mormann, Ober, Stepto, Vohlidal.
<b>2003-060-2-400</b> <i>Separation of Macromolecules</i>	<b>Chang</b> , Berek, Davankov, Gilbert, Hess, Jandera, Kratochvil, Moad, Pasch, Stepto, Tabak, Vohlidal
<b>2004-043-1-400</b> <i>Biomedical(Therapeutic) Polymers</i>	<b>Vert</b> , Domb, Hellwich, Hess, Horie, Kubisa, Nakabayashi, Naryan, Penczek, Rinaudo, Schué, Work.
<b>2005-005-2-400</b> <i>Macromolecules, Assemblies and Dilute Solutions</i>	<b>Chang</b> , Hess, Horie, Kratochvil, Stepto, Vohlidal.
<b>INTERDIVISIONAL PROJECTS</b>	
<b>1999-051-1-800</b> <i>Modified Polymers</i>	<b>Kitayama</b> , Fox (consultant), Fradet, Hodge, Horie, Jones, Kahovec, Kubisa, Maréchal, Ober, Vohlidal, Vert, Wilks
<b>2001-081-1-800</b> <i>Dendritic &amp; Hyperbranched</i>	<b>Kahovec</b> , Baron, Metanomski, Fox, Horie, Kubisa, Mita, Stepto.
<b>2001-082-1-800</b> <i>Cyclic Polymers</i>	<b>Mormann</b> , Baron, Fox, Hellwich, Horie, Kahovec, Kitayama, Kubisa, Maréchal, Meisel, Metanomski, Mita, Schultz, Stepto, Swift.
<b>2002-037-1-800</b> <i>Rotaxanes &amp; Catenanes</i>	<b>Vohlidal</b> , Fradet, Hellwich, Kahovec, Kubisa, Metanomski, Mormann, Stepto, Wilks
<b>2003-042-1-800</b> <i>Source-based Nomenclature of Linear Polymers</i>	<b>Kitayama</b> , Fradet, Haddleton (consultant), Hess, Hodge, Horie, Jenkins, Kahovec, Kratochvil, Mita, Mormann, Ober, Penczek, Stepto, Thurlow, Vohlidal, Wilks
<b>FEASIBILITY STUDIES</b>	
<b>F-6</b> <i>Thermal Properties</i>	<b>Hess</b> (acting task group leader), He, Horie, Metanomski, Moad, Stepto, Vert, Vohlidal.
<b>F-18</b> <i>Ultimate Mechanical Properties</i>	<b>Hess</b> , He, Stepto, Work.
<b>F-19</b> <i>Abbreviations</i>	<b>He</b> , <b>Tabak</b> , Hellwich, Hess, Horie, Kahovec, Kitayama, Kratochvil, Meisel, Mita, Nakabayashi, Slomkowski, Vert, Work,
<b>F-20</b> <i>Multilingual Encyclopaedia</i>	<b>Hess</b> , Baron, Camino (Polytechnic of Turin), Chang, Fradet, He, Kitayama, Kubisa, Rinaudo
<b>F-21</b> <i>Biobased &amp; Biodegradable</i>	<b>Narayan</b> , Chiellini, Doi, Penczek, Schué, Vert.



<b>PROPOSED FEASIBILITY STUDIES</b>	
<b>PFS-3</b> <i>Elastic Properties of Polymers</i>	<b>Hess &amp; Stepto</b>
<b>PFS-4</b> <i>Electric Field Responsive Polymers</i>	<b>Ober</b> , Jin, Jones, Hess, Horie, Schué, Vohlidal
<b>PFS-5</b> <i>Self-Assembly and Aggregation in Polymers</i>	<b>Ober &amp; Jones</b> , Chang, Hodge, Kratochvil, Moad, Vert.

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