Subcommittee on Polymer Terminology
IUPAC Polymer Division (IV)

Minutes of the meeting held in the BEXCO, Busan, South Korea 10th of August, 2015 to 14th of August, 2015

Present

In person

Prof. Rameshwar Adhikari (*RA*, Nepal)
Mr. Jiazhong Chen (*JC*, USA)
Prof. Chris Fellows (*CF*, New Zealand)
Prof. Alain Fradet (*AF*, France)
Prof. Melissa CHAN Chin Han (*MC*, Malaysia)
Prof. Jiasong He (*JH*, China)
Dr. Karl-Heinz Hellwich (*KHH*, Germany)
Dr. Michael Hess (*MH*, South Korea)
Dr. Roger C. Hiorns (*RCH*, Chair, France)
Prof. Christine K. Luscombe (*CKL*, Secretary, USA)
Dr. Graeme Moad (*GM*, Australia)
Prof. Werner Mormann (*WM*, Germany)
Prof. Tamaki Nakano (*TN*, Japan)
Prof. Christopher K. Ober (*CKO*, Division IV Past-President, USA)
Prof. Greg Russell (*GR*, Division IV Vice-President, New Zealand)
Prof. Stanisław Slomkowski (*SS*, Poland)
Prof. Natalie Stingelin (*NS*, UK)
Prof. Patrick Theato (*PT*, Germany)
Dr. Paul Topham (*PDT*, UK)

Via Skype

Prof. Richard G. "Dick" Jones (*RGJ*, UK)
Prof. Cláudio dos Santos (*CDS*, Brazil)
Prof. Michael Walter (*MW*, USA)

Note: italicized abbreviations for names are used throughout.

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1. OPENING SESSION

1.0 Welcome and apologies

RCH welcomed Members to the Subcommittee on Polymer Terminology (SPT) meeting. Warm thanks were expressed to *CKL* and local organizers for facilitating our stay and for organizing the social events.

Apologies were received from Dr. Ted Wilks (*TW*, USA), Prof. Richard G. "Dick" Jones (*RGJ*, UK), Prof. Phil Hodge (*PH*, UK), Prof. Robert "Bob" Stepto (*RS*), Prof. Pavel Kratochvíl (*PK*, Czech Republic), Prof. Michel Vert (*MV*, France), Dr. Malcolm Purbrick (*MP*, UK), Dr. Ray Boucher (*RB*, UK), Prof. Jean-Pierre Vairon (*JPV*, France), Prof. Cláudio dos Santos (*CDS*, Brazil), and Prof. Stanislaw Penczek (*SP*, Poland).

1.1 Chair's Communication

RCH reminded members of the goals of SPT by highlighting a quote from a Director of Chemical Patents at a large multinational company. The quote states that, "In the drafting, prosecution and litigation of chemistry patents we are grateful if we can rely on exact nomenclature and definitions as provided by IUPAC, as this helps us to define the claimed scope of protection more precisely. In patent law clear and concise claims are also an important requirement for a patent to be valid. So your work is much appreciated." Related to this quote, *RCH*, *MH* and *GR* will be writing a 2-page article to Chemistry International highlighting the importance of nomenclature. *KHH* cautioned that we should ensure that the director of chemical patents is happy for us to use their quote in the article. *RCH* reiterated that SPT must produce work that has impact on the community. Finally, *RCH* requested that TGMs stay on task, be productive, and work with rigour over the next few days.

RCH welcomed three Observers to the meeting, namely Paul Topham (*PDT*), Chris Fellows (*CF*), and Patrick Theato (*PT)*.

RCH announced that *CKL* will be the next Vice-President for Polymer Division. *RCH* thanked her for her services in SPT but also announced that a new SPT secretary will be required. *RCH* requested that SPT members speak to him during the coming week if anyone is interested in the position.

1.2 Approval of the Minutes from the Chiang Mai meeting in 2014

The minutes were approved pending minor changes from *RCH.* From last year's minutes, *KHH* reiterated the importance of either *KHH* or *JC* approving all nomenclature related projects. TGLs should send documents to *KHH* or *JC* during the drafting of the documents, not after.

1.3 Matters arising from the 2014 Minutes

(i) Purple Book 3 – *RGJ*

RGJ reported through Skype on PB3. He stated that he understood that a second volume of PB3 would be appreciated and that many members are waiting for him to act on it. *RGJ* reassured SPT members that he will work on the second volume at some point.

(ii) Publications since the Chiang Mai Meeting

2005-005-2-400 Definitions of terms relating to individual macromolecules, their assemblies, and dilute polymer solutions – Stepto
Published as, '*Definitions of terms relating to individual macromolecules, macromolecular assemblies, polymer solutions, and amorphous bulk polymers (IUPAC Recommendations 2014)'*, R. Stepto, T. Chang, P. Kratochvíl, M. Hess, K. Horie, T. Sato, J. Vohlídal, *Pure Appl. Chem*. **2015**; *87*(*1*): 71–120.

1999-051-1-800 Nomenclature for chemically modified polymers* – Jones
Published as, '*Nomenclature and graphic representations for chemically modified polymers (IUPAC Recommendations 2014)*', R. G. Jones, T. Kitayama, E. S. Wilks, R. B. Fox, A. Fradet, K.-H. Hellwich, M. Hess, P. Hodge, K. Horie, J. Kahovec, P. Kratochvíl, P. Kubisa, E. Maréchal, W. Mormann, C. K. Ober, R. F. T. Stepto, M. Vert, J. Vohlídal, *Pure Appl. Chem*. **2015**; 87(3): 307–319.
An erratum has also been published with three corrections. *Pure Appl. Chem*. **2015**; 87(4), 441-441.

2011-013-2-400 Updating Wikipedia: Synchronizing Polymer Definitions and Terminology – Hess
Published through numerous Wikipedia pages now carrying IUPAC definitions.

2007-008-1-400 Development of a Multilingual Encyclopedia of Polymer Terminology – dos Santos
Published as a Multilingual Polymer Glossary at:
http://www.iceb.ufop.br/dequi/iupac/polymerglossary/index.php

It is also notable that the Purple Book (PB2) was made freely available at:
http://www.iupac.org/fileadmin/user_upload/publications/e-resources/ONLINE-IUPAC-PB2-Online-June2014.pdf

(iv) New Projects statuses
2015-014-1-400 *Polymer Semis: Guide (and Brief Guide) to Polymer Semiconductors* – Walter
MW provided an update about his project via Skype. This project has just been accepted for funding. Ten TGMs will be involved in the work to produce two documents: the first document will be a recommendation for terms used to describe semiconducting polymers, while the second will be a brief guide based on these recommendations. The project is intended to be complementary to the existing field-response polymers project.

2015-013-1-400 *Brief Guide to Polymerization Terminology* - Luscombe
CKL reiterated the goal of the project by stating that this was intended as a follow-up project on the Brief Guide to Polymer Nomenclature but specifically focused on polymerization mechanisms and terminology used to describe them. The project will be co-led by *CKL* and *GM*. The proposal for this project had been submitted in April and has only just been approved. Work on this brief guide will begin in earnest during this 2015 SPT meeting.

2014-034-2-400 *Polymeric Carriers: Nomenclature for polymeric carriers bearing chemical entities with specific activities and names* - Vert
In *MV*'s absence, an e-mailed report was read aloud. Polymers are now involved in a great number of human activities and of specific applications. Some of these applications require temporary or permanent immobilization of complex chemical species characterized by functional names (conjugates), as is the case in pharmacology for temporarily attached drugs or in dyestuffs for coupled dyes. IUPAC recommendations for the structure and source-based nomenclatures of polymers have clear limitations when dealing with current, common

structures which combine macromolecular carriers and chemical entities with properties designed for such specific applications. This project will create rules required for unambiguous and facile naming of such modern, complex polymer conjugates. The project is focused on macromolecules (organic or inorganic) suitable for attachment of (or to) complex chemical entities, including small molecules, macromolecules and biopolymers known and named in relation to their utility. However, the recommendations will be applicable to any other carrier (inorganic or organic carrier like micelles, solid particles and surfaces) provided they bear identified chemical functions suitable for attachment.

Timetable
1) 4 months: Issue draft 1
2) 4-12 months: TG remarks and suggestions collected via internet to generate successive drafts.
3) 1st SPT meeting: Submission of last available draft for comments and suggestions
4) 12-30 months: Further exchanges by TG members
5) 2nd SPT meeting: Final TG draft submitted for discussion and final version.
6) 30-36 months: submission of the approved version to external reviewing and corrections, and finally submission to PAC for publication and diffusion to other journals (see criteria for outcomes) as soon as the processes of acceptance by PAC is achieved.

Financial support
The total sum of USD 9000 has been allocated for the project over its lifetime of three years, starting immediately. The sum includes a contribution of USD 2250 from Div IV, USD 2250 from Div VIII, and USD 4500 from the Project Committee.

2013-050-1-400 *(Revision) – Definition of terms relating to the ultimate mechanical properties of polymers* – Adhikari
A proposal for this was previously submitted but returned. *RA* will make appropriate corrections to it based on referee comments and resubmit the proposal. *RCH* asked that the proposal be shown to him prior to resubmission.
Action: *RA*

Synchronizing Wikipedia: Polymer Definitions and Terminology – Hess
MH described that this was an extension of the first Wikipedia project. The focus this time will be on adding further information to stubs that are already online. For this extension, students from the research groups will be invited to participate to add an educational outreach component to the work. The TGMs will continue to work closely with Martin Walker, our Wikipedia contact. *RGH* noted that a Division VIII member should be included because of the overlap with nomenclature. *WM* advised that endorsement from CCE should be obtained to increase funds. He also noted that there are terms on Wikipedia that claim to be IUPAC terms but in fact are not. *MH* replied that links to IUPAC documents will be included in Wikipedia entries to try and ensure that the newest terms are included online. *RCH* asked for approval from SPT for this project to go ahead for submission. SPT members gave their approval.

Html Project - Moad
GM stated that the goal of this project is to produce an html version of the Purple book. He explained that while there is enthusiasm for the project within IUPAC, nobody seems to know

how to implement it because of questions remaining about who would host it. The project was brought up at the ICTNS and the feedback received was that all Divisions were interested in having their books online as well. *GM* mentioned that it would be beneficial to work with publishers because they already have the capabilities to convert documents to html versions. He also stated that *RB* may be interested in helping through Polymer International. *RCH* has asked his home institution about hosting the website there, but Pau were uncertain if they would be able to do so. *GM* replied that, in principle, the html version of PB really should be hosted on the IUPAC Polymer Division website, and in many ways the IUPAC website would be preferable because it can stay there for eternity. *WM* asked for clarification regarding the difference between the html version versus a pdf version. *GM* stated that a pdf requires the whole document to be downloaded before one can search for terms on it, while for an html version, the search can be performed online and would allow for a more rapid search. *KHH* mentioned that Division 8 had a lot of experience in converting documents to html but was currently facing a problem because the one person who had been doing all the work has just retired. *RCH* requested that we proceed with this project independent of the availability of the IUPAC website. *PT* reminded the committee that the website should be mobile device compatible as well.
Action: *GM*

Development of a multilingual glossary of polymer terminology with new languages – dos Santos
CDS provided an update over Skype. This project will build upon the previous multilingual glossary but will focus on non-western languages. The project will include TGMs from China, Thailand, Saudi Arabia, Japan, Nepal, and Malaysia. The goal is to also include Pakistan and Russia. *CDS* mentioned that he was having difficulty completing the team because of lack of responses specifically from the NRs of Pakistan and Russia. *RCH* requested SPT members to e-mail Claudio if they have any ideas of polymer scientists from Pakistan, Russia, and Greece. *KHH* responded that he will nominate someone from Greece, and *GM* will suggest someone from Cyprus. The proposal for the project will be submitted as soon as the TGMs are lined up. *RCH* noted that the proposal included a large budget but that this was required because of the vast amount of computational work that will be carried out.
Action: *CDS*

Rubber Elasticity – Adhikari
RS, *MH*, and *JH* have agreed to be part of the TG. *MC* will also participate. A one-day meeting in Germany will be held to finalize details for the proposal.
Action: *RA*

Self-Assembled Structures – Topham
PDT stated that there are numerous terms that are now used to describe self-assembled structures such as octopi, jellyfish, micelles, vesicles, and worms, which are causing confusion in the literature. *RCH* noted that there is a need and interest in defining these terms.
Action: *PDT* will prepare proposal with support from SPT members.

Essential of Source-based Nomenclature – Fradet
AF noted that while the source-based document led by *RGJ* is extremely useful, there are many examples for polymers such as polyimides, polyurethanes, polyesters, PET, where the

simple rules presented cannot be applied. Specifically, source-based naming of polymers synthesized using two or more monomers is challenging using source-based nomenclature. *AF* has discussed this issue with *KHH* and proposes to create a source-based nomenclature system that is more similar in style to organic nomenclature. *KHH* noted that there is a section about this in *RGJ*'s document already, which has been submitted for public review.
Action: *KHH* and *AF* will discuss with *RGJ* to see if changes can be made to the current document during public review.

(v) The Blue Book
KHH reminded us that the Blue Book has been published and shared the copy with those in the room. 1000 entries now appear in the Blue Book. Unfortunately, as it stands, the Blue Book contains many typographical errors with random spaces between words. Division VIII is looking for ways to correct these minor errors and are considering either reprinting the book or publishing a list of errata. Unfortunately, the decision has been difficult to reach because no one currently has access to the full original files that the publishers used. *KHH* also noted that the original document should have been online by now because it has already been a year since publication, however, he noted that it wasn't. *RCH* asked when the corrected pdf should be available online. *KHH* reiterated that everything was unclear at the moment because of the lack of access to the original file and because of legal issues related to a new contract with the publishers. *RCH* asked if the errors would affect those of us working in polymer nomenclature. *KHH* responded that this would not be an issue. If people are interested, there is a list of errata available online so that people can cross-reference any mistakes. *WM* pointed out that a camera-ready version of the document was online but not the pdf. This is a problem because the camera-ready version doesn't allow one to search individual terms. *KHH* reminded others the problems that IUPAC has been having with De Gruyters, the publishers, and that new contract needs to be negotiated to minimize the errors that have been seen recently.

(vi) Essentials
KHH updated SPT members on the status of the Essentials reports, which are similar in format to the Brief Guides that have been produced within SPT. The latest one entitled "Brief Guide to the Nomenclature of Inorganic Chemistry" will be published soon and a similar report for organic chemistry will be produced within a year. *KHH* mentioned that there have been issues with PAC and De Gruyters where the editors would make changes to the documents after submission, which resulted in the revised versions looking worse. *RCH* agreed that there are ongoing issues with De Gruyters.

(vi) Translations
KHH reported that 3 translations of polymer related documents in PAC have been made.
Carsten Schmuck*, Juliane Keilitz
Glossar von Begriffen zur Assoziatbildung und Selbstorganisation in den Polymerwissenschaften
Angew. Chem. **2014**, *126, Nr. 11*, 3078 – 3091
Original: *Pure Appl. Chem.* ***85***, 463 – 492 (2013)

Carsten Schmuck*, Elisabeth Weber
Definition der Halogenbrücke

Angew. Chem. **2014**, *126, Nr. 24*, 6391 – 6392
Original: *Pure Appl. Chem.* ***85***, 1711 – 1713 (2013)

Roland A. Fischer*, Inke Schwedler
Terminologie von Metall-organischen Gerüstverbindungen und Koordinationspolymeren
Angew. Chem. **2014**, *126, Nr. 27*, 7209 – 7214
Original: *Pure Appl. Chem.* ***85***, 1715 – 1724 (2013)

(vii) Dates of the next meeting in Istanbul
RCH announced the dates for the next meeting, which were decided after a discussion with the SPT Bureau. The meetings will be held prior to Macro 2016 on July 12-15th SPT and July 16-17th Polymer Division. The SPT meeting will be starting on a Tuesday rather than the usual Monday to minimize time away from home for SPT members.

1.4 Social Events
Warm thanks were extended to Prof. Taihyun Chang for his organization of the Sunday evening meal, and also for the tour planned for the following Thursday.

1.5 Timetable for the Busan meeting
A prepared project timetable was displayed; everyone agreed upon that shown in Appendix 2.

2. Projects
2.0 Projects submitted to ICTNS & public review
None currently submitted.

2.1 Projects in the final stages of preparation
2003-042-1-800 *Source-based nomenclature of single-strand organic polymers and copolymers** – Jones
See Appendix 3 for detailed report from *RGJ*.

RGJ provided an update through Skype and noted that his was very important project because it is useful to the polymer community since source-based nomenclature is widely used. Unfortunately, the project has taken a long time to come to fruition. It was originally led by *TW*, then *TK*, and then finally by *RGJ* with progress being stealthy during the early years of the project. In 2011, Fabienne drew attention to this long-lasting project pointing out that it needed to be completed. Since then, much progress has been made through special thanks to *KHH* and *WM* who have helped to ensure its completion.

Problems with publishers were brought up again where *RGJ* noted that the PAC submission site is exceptionally difficult to use and does not provide a method to submit a document. Ultimately, *RGJ* had to contact Fabienne and also had to e-mail a PAC editor directly to complete the submission of the manuscript. Regardless, the document has been now submitted and is currently under review.

2.2 Projects for deliberation within Task Groups
2.2.1 *Polymer Division projects*
2003-060-2-400 *Terminology on of macromolecules* – Hess
TC and *MH* created a list of terms that will be incorporated into the document. *GM* and *CF* will go through this list and add any missing terms. *MH* will then populate the terms with

definitions. The goal is to complete this process within a year. One challenge in moving forward the project has been *TC*'s availability. *MH* will work together with *TC* and ensure that feedback is received from him by the end of October.
Action: *MH*

2006-028-1-400 *Terminology for conducting, electro-active and field-responsive polymers* – Vohlídal
NS, *RGJ*, *CO*, *SS*, and *JV* were present at the meeting. *CKL* was unable to be there because of overlapping meeting for chain polymerization. Work began on the document, where changes made by *JV*, *RGJ*, and *RCH* prior to the meeting, had been incorporated. During the meeting, the work primarily focused on making correction to typographical errors to the first part of the document. This corrected version will be circulated at the end of August to the TGMs with the emphasis that corrections should be made to the second half of the document. Feedback from TGMs is expected by the end of September. It is expected that 2-3 cycles of this review process will take place to complete the document.
Action: *JV*

2008-015-1-400 *Preferred names for polymers* – Mormann
This project is very close to completion. *WM* and *KHH* held final discussions on the latest version of the document. *KHH* will go through the document within the next two weeks. After that, *WM* will produce the final draft within two weeks. The final draft will then be circulated to SPT members, and then submitted for public review.
Action: *KHH* and *WM*

2008-020-1-400 *Revision of the web-based guide, IUPAC Recommendations on Macromolecular Nomenclature – Guide for Authors of Papers and Reports in Polymer Science and Technology* – Hodge
A meeting was held between *CL*, *KHH* and *RCH* to determine what needed to be done on the project document to ensure its rigorous completion in an efficient manner. Given the high profile of the document, and that the very relevant Source-based project had just been submitted, it was decided that the web-guide should closely follow the Source-based project recommendations. Accordingly, *KHH* agreed to send corrections to that end within three months or so to *RCH* (text) and *CKL* (figures) who would then complete the document. The final manuscript will be sent to *PH* for him to seek approval from the TG for submission for review. In the discussions, it was also agreed by those present that Table 9 should be removed on the basis that it was out of context, and therefore *RCH* would recommend to *PH* that this be done.
Action: *KHH*, *RCH* and *CKL*

2009-047-1-400 *Definitions and notations relating to stereochemical aspects in polymer science* – Hellwich & Moad
Final revisions were made during the meeting where it was decided that certain abbreviations related to diads, such as in the Abbreviations document, should be added; specifically, those related to syndiotactic, isotactic, and unknown tacticity (UT). *GM* noted that many people use the term atactic, instead of unknown tacticity, which is incorrect because atactic is specifically for where there is a 50/50 mixture of R/S configurations. *GM* is aiming to finish the document within a few months. The document will then be circulated amongst the TGMs followed by

public review.
Action: *GM*

2010-007-1-400 *Terminology for chain polymerization* – Moad
CF, *TN*, *CKL*, *PDT*, *GR* and *GM* went through the existing draft in its entirety finding errors and other issues. Based on their input during the meeting, *CF* and *PDT* will be added to the TG. The current plan is to incorporate changes as was discussed, come up with a new final document within the next few months, and circulate the document to TGMs. The document will then be circulated within SPT. Remaining issues include expanding examples in each of the categories. The goal is to complete the work by the end of the year.
Action: *GM*

2010-036-1-400 *Keywords in polymer science journals* – dos Santos & Slomkowski
SS, *CKL*, *GR*, and *CF* were present at the meeting during which linguistic changes were made to the document. It was noted that *SS* has done an excellent job collecting all the keywords. Within a week, *CKL* will send a revised version to *GR*, who will work on it for a week. This revised version will then be sent to *CF*. *SS* will incorporate all the changes made into a single document and then send it out to the TGMs for review. The expected timeline for completion is one month.
Action: *CKL*, *GR*, *CF*, and *SS*

2012-001-1-400 *Terminology of nanomaterials and nanotechnology in polymer science* – Jones & Ober
The meeting focused on addressing comments that had been made by *RGJ*. Specific people have been identified to work on certain sections of the document. *CKO* will incorporate everyone's changes into a single document and then sent it out for review to TGM.
Action: *CKO*

2012-042-1-400 *Terminology Relevant to Lactic Acid-based Polymers: Synthesis, Structure, Properties, Applications and Degradation* – Vert
The meeting was led by *KHH* and *JC* in *MV*'s absence. *TN* was also present with *SS* and *JV* joining later on. The group has collated several recommendations to make to *MV*. Specifically, it was noted that the introduction was very lengthy and read more like a review. Furthermore, it currently occupies more than 50% of the document. As such, it has been suggested that this be edited down. Secondly, it was recommended that *R* and *S* should be used to describe the stereochemistry instead of *D* and *L,* which are more commonly used for poly(saccharide)s. Finally, chiral, chirality, and stereocenter are defined in this document. Given that these are well-defined in other IUPAC documents, it is recommended that references to these previous documents should be included.
Action: *MV*

2012-048-3-400 *Brief Guide to Polymer Terminology* – Hiorns & Vohlídal
A meeting was held with *NS*, *JV*, *GM*, *CF*, *CKL*, with *PDT* observing and led by *RCH*. During the meeting, rapid progress was made on *JV*'s first draft of the brief guide. Over the next month, *RCH* and *JV* will work on the document, after which specific requests will be sent out to TGMs at the end of September.
Action: *RCH*, *JV*

2014-014-1-400 *Terminology for modeling and simulation of polymers (ModSim)* – Meille
In the absence of *VM*, the meeting was led by *GR* with *NS* and *TN* present. The project seems has lain dormant since final project approval in Sept. 2014 (that is the latest date at which *VM* has provided documentation). Membership issues were discussed. It was suggested that *GM* be added, who was present at the meeting in Chiang Mai. At Chiang Mai it was also suggested to add Martin Field and Jun-Ya Hasegawa (*TN* is unsure how much this colleague of his would really be able to add to the project). Work will begin by looking up the Gold Book for terms on Valdo's long "preliminary list" on the project proposal. This long list is a good start, but perhaps it needs to be divided into subgroups in order to be workable. Most of the terms on the list are from physical/theoretical/computational chemistry rather than being specific to polymer science. Therefore we should not seek to define these terms but instead to give examples of rigorous use in polymer science. *GR* will follow-up with *VM*.
Action: ***VM***

2014-034-2-400 *Polymeric Carriers: Nomenclature for polymeric carriers bearing chemical entities with specific activities and names* – Vert
The meeting was held with Gerry Moss, *GM*, *JC*, *RCH* and observed by *SS*. The first draft and the related comments from Adrey Yerin were considered. It was suggested that source-based nomenclature be supplemented by structure-based nomenclature in the document. One specific example, using both systems was discussed. Problems around the use of the linking group were raised, and suggestions for resolution were listed. The draft was worked on so as to start formatting in the correct manner. The working draft was sent to the full TG.
Action: ***MV*** to collect opinions form TGMs on the suggestions were made, and take forward the project as he sees best.

2015-013-1-400 *Brief Guide to Polymerization Terminology* – Luscombe
The meeting was held with *CKL*, *GM*, *CF*, *RCH*, *TN*, *GR*, and *PDT* present. During this first meeting, a list of terms that would be incorporated into the document was created. *CKL* will take a first stab at incoporating these terms into complete sentences and will circulate the document amongst TGMs.
Action: ***CKL***

2015-014-1-400 *Polymer Semis: Guide (and Brief Guide) to Polymer Semiconductors* - Walter
In the absence of *MW*, a meeting was held with *TN*, *RCH*, *NS*, *PDT*, and *CKL* present. A list of terms that should be defined in the document was created. This list has been forwarded to *MW* for refinement. *MW* will complete the list and start adding definitions.
Action: ***MW***

2.2.2 *Interdivisional projects*

2001-081-1-800 *Terminology and structure-based nomenclature of dendritic and hyperbranched polymers** – Fradet
Modifications were made to the document, which is now almost complete. *AF* will be incorporating final changes in the next week or two to solve inconsistencies between this document and the star-shaped polymer documents. After these final changes have been made, the document will be sent to the TG for approval. The document will then be sent to *RCH*, to

SPT, *RCH*, and Fabienne in that order. *RCH* will look into how one obtains approval from Division VIII.
Action: *AF*

2011-035-1-800 *Terminology and nomenclature of inorganic and coordination polymers (TINCOPS) – a extended revision of Nomenclature for regular single-strand and quasi-single-strand inorganic and coordination polymers (1984)*[*] – Jones
Update was provided by *RGJ* over Skype. The document is progressing. The project involves both organic and inorganic divisions. So far *RGJ* has done most of the work, and he has done as much as can on the document without the inorganic chemists and *KHH*. Input from other divisions is required at this stage.

2013-001-1-800 *Structure-based nomenclature for regular linear star, comb and brush polymers** – Chen
This project overlaps with the dendrimers projects, so during the meeting, work was done to ensure the naming systems were consistent between the two projects. Some conflicts still remain in the naming of star polymers. To eliminate this problem, *JC* will communicate with *TW* and other TGMs by e-mail.
Action: *JC*

2.2.2 *Projects recently submitted for funding*

2015-012-1 *Terminology of Tissue Engineering and Regenerative Medicine in Polymer Science* – Purbrick
In the absence of *MP*, the meeting was not held. Update was provided by *RCH*. The goal of this project is to put together terms that will educate biologists about polymer terms, and polymer scientists about biological terms. The proposal has been submitted but it is still under review.

2.3 New projects in preparation

2013-050-1-400 (Revision) – *Definition of terms relating to the ultimate mechanical properties of polymers* – Adhikari
MH and *RA* will be meeting in Leibniz in 1.5 months time. *MH* will mentor *RA* on how to put together a proposal. The draft proposal will be submitted to *RCH*.
Action: *RA* and *MH*

Synchronizing Wikipedia: Polymer Definitions and Terminology – Hess
During the meeting, work was done on the project, in particular on the budget. The proposal will be completed very soon and will be submitted to Fabienne.
Action: *MH*

Brief Guide to the Characterisation of Polymers – Hess
During the meeting, it was felt that it may be premature to be tackling a Brief Guide, when so many of the terms have never been defined in the first place. The current plan is to adapt the Brief Guide proposal to write a recommendation of defined terms related to polymer characterization. The goal is to submit the proposal by the end of November.

[*] Division VIII project pursued under the auspices of SPT.

Action: ***MH***

Development of a multilingual glossary of polymer terminology with new languages– **dos Santos**
In the absence of *CDS*, a meeting was not held.

Brief Guide to Polymer Microstructure – **Stingelin**
A meeting was held with *NS*, *JH*, *MH*, *GM*, and *PDT* as observer. Significant work was done on the proposal where a lengthy discussion was held to pinpoint what the title of the document would be. Currently, it has been settled to be 'Definition of terms of polymers in the solid state'. The TGMs found that quite a few of the terms that should be included in the Brief Guide have been defined in other documents already, while some are also missing eg. mesostructure. Based on these findings, it was decided that it would be challenging to produce a Brief Guide at this stage. The proposal will be for a recommendations document. The goal is to complete the proposal within the next week. TGMs will include *GM*, *MW*, *JH*, *PDT*, *CKO*, and *VM*.
Action: ***NS***

Phase diagrams – **Stingelin**
The goal of this project is create a short two page documents about how to create phase diagrams for polymers. *MH* and *PDT* have expressed an interesting in being TGMs. It was noted that previous documents discuss thermodynamics aspects of phase diagrams but never talk about how to actually create one. *GR* asked if this was a project that belongs in SPT given that it is not a terminology project. *RCH* asked that a project proposal be prepared so that it can be discussed in more detail with our education and materials representatives (*CF* and *CKO*).
Action: ***NS***

http of PB2 – **Moad**
Renewable and recycled polymers – **Vairon**
Terminology for constitutionally-dynamic polymers – **Vohlídal**
Polymers for Bioelectronics – **Walter**
Polymers for 3D printing – **Walter**
Ionic liquids/polymer inorganic devices – **Ober**
Mediatized terms – **dos Santos**
Modified extended short hand names – **Vert**
Adhesion, adhesive polymers and associated terminologies –**Vairon**
Polysiloxanes –
Polymer Inorganic hybrids –
Evaluation of polymer crystals –

2.5 Project Extensions
None

2.6 Group Participations
See Appendix 4.

3.0 ANY OTHER BUSINESS

A heartfelt speech was made by *WM* announcing that this would be his last SPT meeting. *RCH* and *GR* expressed deep thanks on behalf of SPT and Polymer Division for his long and dedicated service.

MH announced that Ron Sanderson had passed away. He worked at Stellenbosch, South Africa and had close connections with Division IV. He was the first one to start the annual meeting on polymers in Stellenbosch and this meeting has now been held in a number of places in South Africa but other African countries including Zimbabawe. His legacy will be carried on by Peter Melon and Bert Klumperman. He was an extremely friendly man, and really pushed forward IUPAC and polymer science. He had suffered from Parkinson's Disease for a number of years. He was a great man and will be greatly missed. *GR* followed by reading an e-mail from Bob Gilbert. *GR* said that he has passed on our condolences from IUPAC Polymer Division.

It was unanimously approved that *CF*, *PDT*, and *MH* will formally be SPT members.

RCH announced that *PDT* will take up position to be secretary from 1/1/2016.

A discussion was held about how long the tenure of an SPT chair should last. *MH* stated that the SPT chair appointments should be connected with the TM, AM, and NR terms, whereas, *WM* felt that it was not appropriate to have them be connected. *WM* believes that it is best to review the chair's performance every 4 years. *RCH* asked that SPT members provide input about their thoughts. These issues will then be discussed further by the Bureau and will return with propositions for SPT to discuss in 2016.

The Bureau membership was discussed. When it was established in 2014, it had been decided that the Bureau should consist of the SPT Chair, secretary, Polymer Division VP, former SPT chair, along with two other SPT members. As such, currently, the Bureau consists of *RCH*, *CKL*, *GR*, *RGJ*, *JV*, and *CDS*. With the changes in Polymer Division President, VP and SPT Secretary, *GR* should be replaced by *PDT*. *RCH* requested that *GR* stay on for another year while *PDT* becomes accustomed to the workings of SPT.

Though discussion with Dr. Cheng (hncheng100@gmail.com) from the ACS, it was proposed that a joint symposium on polymer terminology be held with the ACS. *NS* will organize a joint symposium at Macro 2016. *CKL* will organize in 2017 at an ACS National meeting.
Action: *NS* and *CKL*

3.1 2016 Meeting

Istanbul, Turkey. SPT: July 12-15th 2016, Polymer Division: July 16-17th 2016, World Polymer Congress: July 17-21st 2016.

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APPENDIX 1: AGENDA

BEXCO Congress Centre, Busan, Korea, Monday 10th to Thursday 13th August 2015

Summary

Time	09:00	10:30	10:50	12:00	14:00	15:30	15:50	17:15	17:30
Monday	SPT	Break	Projects	Lunch	Projects	Break	Projects	SPT reports	Close
Tuesday	Projects		Projects						Close
Wednesday									Close
Thursday			SPT and Close		Tour				

MONDAY

Time	Item	Subject
09:00	**1.0**	Welcome and Apologies
	1.1	Chair's Communication
	1.2	Approval of Minutes from the Chiang Mai SPT meeting of 2014
09:30	**1.3**	Matters arising from the 2014 Minutes
	(i)	PB3 (RGJ)
	(ii)	Publications since the Chiang Mai meeting (see Appendix 1)
	(iii)	New project statuses (CKL, CdS, MH, MW, MV, NS, GM, RA) (Appendix 1)
	(iv)	The Blue Book (KHH)
	(v)	Essentials (KHH)
	(vi)	Translations
	(vii)	Dates of the next meeting in Istanbul
	1.4	Social Events (CKL)
	1.5	Timetable for the Busan meeting (Appendix 2)
10:30		**Break**
10:50		Project work
12:00		**Lunch**
14:00		Project work
15:30		**Break**
15:50		Project work
17:15		Reports to SPT
17:25		Housekeeping
17:30		Close

TUESDAY AND WEDNESDAY

09:00	Project work
10:30	**Break**
10:50	Project work
12:00	**Lunch**
14:00	Project work
15:30	**Break**
15:50	Project work
17:15	Reports to SPT
17:25	Housekeeping
17:30	Close

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THURSDAY

09:00		Project work
10:30		**Break**
10:50		Reports to SPT
11:00	**1.6**	Future projects studies (Appendix 1)
	1.7	Project Extensions
	1.8	Group participations (Appendix 3)
	1.9	Dates of the next meeting in Istanbul (cont.)
11:50	**2.0**	**Any other business**
	2.1	**2016 Meeting:** Istanbul, Turkey
		Housekeeping
12:00		**Close**

CKL and RCH, 9th of July, 2015.

AGENDA Appendix 1. List of Projects and Publications

Publications just prior to and since the last meeting in Chiang-Mai

2006-004-1-400 Abbreviations – He, Tabak
Published as, '*Abbreviations of polymer names and guidelines for abbreviating polymer names (IUPAC Recommendations 2014)*', J. He, J. Chen, K.-H. Hellwich, M. Hess, K. Horiea, R. G. Jones, J. Kahovec, T. Kitayama, P. Kratochvíl, S. V. Meille, I. Mitaa, C. dos Santos, M. Vert and J. Vohlídal, *Pure Appl. Chem.* **2014**, *86*(*6*), 1003–1015.

2005-005-2-400 Definitions of terms relating to individual macromolecules, their assemblies, and dilute polymer solutions – Stepto
Published as, '*Definitions of terms relating to individual macromolecules, macromolecular assemblies, polymer solutions, and amorphous bulk polymers (IUPAC Recommendations 2014)'*, R. Stepto, T. Chang, P. Kratochvíl, M. Hess, K. Horie, T. Sato, J. Vohlídal, *Pure Appl. Chem*. **2015**; *87*(*1*): 71–120.

1999-051-1-800 Nomenclature for chemically modified polymers* – Jones
Published as, '*Nomenclature and graphic representations for chemically modified polymers (IUPAC Recommendations 2014)*', R. G. Jones, T. Kitayama, E. S. Wilks, R. B. Fox, A. Fradet, K.-H. Hellwich, M. Hess, P. Hodge, K. Horie, J. Kahovec, P. Kratochvíl, P. Kubisa, E. Maréchal, W. Mormann, C. K. Ober, R. F. T. Stepto, M. Vert, J. Vohlídal, *Pure Appl. Chem*. **2015**; 87(3): 307–319.

2011-013-2-400 Updating Wikipedia: Synchronizing Polymer Definitions and Terminology – Hess
Published through numerous Wikipedia pages now carrying IUPAC definitions.

2007-008-1-400 Development of a Multilingual Encyclopedia of Polymer Terminology – dos Santos
Published as a Multilingual Polymer Glossary at:
http://www.iceb.ufop.br/dequi/iupac/polymerglossary/index.php

It is also notable that the Purple Book (PB2) was made freely available at:
http://www.iupac.org/fileadmin/user_upload/publications/e-resources/ONLINE-IUPAC-PB2-Online-June2014.pdf

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Projects submitted to ICTNS & public review

None currently submitted.

Projects in the final stages of preparation

2003-042-1-800 Source-based nomenclature of single-strand organic polymers and copolymers* – Jones

Projects running

2003-060-2-400 Terminology on separation of macromolecules – Hess

2006-028-1-400 Terminology for conducting, electro-active and field-responsive polymers – Vohlídal

2008-015-1-400 Preferred names for polymers – Mormann

2008-020-1-400 Revision of the web-based guide, IUPAC Recommendations on Macromolecular Nomenclature – Guide for Authors of Papers and Reports in Polymer Science and Technology – Hodge

2009-047-1-400 Definitions and notations relating to stereochemical aspects in polymer science – Hellwich & Moad

2010-007-1-400 Terminology for chain polymerization – Moad

2010-036-1-400 Keywords in polymer science journals – dos Santos & Slomkowski

2012-001-1-400 Terminology of nanomaterials and nanotechnology in polymer science – Jones &Ober

2012-048-3-400 Brief Guide to Polymer Terminology – Hiorns & Vohlídal

2014-014-1-400 Terminology for modeling and simulation of polymers (ModSim) – Meille

Interdivisional projects

2001-081-1-800 Terminology and structure-based nomenclature of dendritic and hyperbranched polymers* – Fradet

2011-035-1-800 Terminology and nomenclature of inorganic and coordination polymers (TINCOPS) – a extended revision of Nomenclature for regular single-strand and quasi-single-strand inorganic and coordination polymers (1984)[*] – Jones

2013-001-1-800 Structure-based nomenclature for regular linear star, comb and brush polymers* – Chen

Projects recently awarded funding

2014-034-2-400 Nomenclature for polymeric carriers bearing chemical entities with specific activities and names – Vert

2014-033-1-400 (Extension of 2012-042-1-400) Nomenclature and terminology relevant to lactic acid-based polymers: synthesis, structure, properties, applications and degradation – Vert

2015-013-1-400 Brief Guide to Polymerization Terminology – Luscombe

2015-014-1-400 Guide (and Brief Guide) to Polymer Semiconductors – Walter

Projects recently submitted for funding

2015-012-1 Terminology of Tissue Engineering and Regenerative Medicine in Polymer Science – Purbrick

New projects in preparation for submission for funding

2013-050-1-400 (Revision) –
Definition of terms relating to the ultimate mechanical properties of polymers – **Adhikari**

Synchronizing Wikipedia: Polymer Definitions and Terminology – **Hess**

Brief Guide to the Characterisation of Polymers – **Hess**

Development of a multilingual glossary of polymer terminology with new languages (Project Committee) – **dos Santos**

Brief Guide to Polymer Microstructure – **Stingelin**

http of PB2 – **Moad**

[*] Division VIII project pursued under the auspices of SPT.

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Renewable and recycled polymers – **Vairon**
Terminology for constitutionally-dynamic polymers – **Vohlídal**
Polymers for Bioelectronics – **Walter**
Polymers for 3D printing – **Walter**
Ionic liquids/polymer inorganic devices – **Ober**
Mediatized terms – **dos Santos**
Modified extended short hand names – **Vert**
Adhesion, adhesive polymers and associated terminologies –**Vairon**
Polysiloxanes –
Polymer Inorganic hybrids –
Evaluation of polymer crystals –

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Appendix 2: Timetable of Task Group Discussions

APPENDIX 2. PRELIMINARY SPT SCHEDULE - Busan

	9:00 - 10:30	10:30 - 10:50	10:50-12:00	12 - 2	2 - 3:30	3:30 - 3:50	3:50 - 5:15	5:15-5:30
Mon.	**SPT**	Break	**Dendritic - Fradet** Chen, Hellwich, Mormann, Stepto, Vohlídal, Wilks		**Preferred Names for Polymers – Mormann,** Chen, Hellwich, Wilks	Break	**Preferred Names for Polymers – Mormann,** Chen, Hellwich, Wilks	Reports / Housekeeping
					Brief Chain – Luscombe, Moad Beuermann, Boucher, Hiorns, Jones, Keddie, Nakano, O'Reilly, Russell, Stepto, Vairon, Wassermann, Yokozawa		**Brief Chain – Luscombe, Moad,** Beuermann, Boucher, Hiorns, Jones, Keddie, Nakano, O'Reilly, Russell, Stepto, Vairon, Wassermann, Yokozawa	
			Nano – Ober, Jones, Stingelin, Luscombe, Meille, Walter, Purbrick, Reichmannis, Schmidt, Hayakawa, Ueda, Carter, Slomkowski *and into lunch*		**Synchronizing Wiki - Hess,** He, Hiorns, Jin, Jones, Moad, Ober, Stingelin, Walter		**Synchronizing Wiki - Hess,** He, Hiorns, Jin, Jones, Moad, Ober, Stingelin, Walter	
Tues.	**Chain Polymerization – Moad** Hodge, Jones, Luscombe, Nakano, Penczek, Russell, Stepto, Vairon		**Chain Polymerization – Moad** Hodge, Jones, Luscombe, Nakano, Penczek, Russell, Stepto, Vairon		**Dendritic - Fradet** Chen, Hellwich, Mormann, Stepto, Vohlídal, Wilks		**Dendritic – Fradet,** Chen, Hellwich, Mormann, Stepto, Vohlídal, Wilks	Reports / Housekeeping
	Lactic – Vert, Chen (local Chair), Vohlídal, Hellwich, Nakano, Scholz		**Lactic – Vert,** Chen (local Chair), Vohlídal, Hellwich, Nakano, Scholz		**ModSim – Meille,** Muumar, Russell, Rutledge, Stingelin, Nakano, Raos		**ModSim – Meille,** Muthukumar, Russell, Rutledge, Stingelin, Nakano, Raos	
	Field-Responsive Polymers Vohlídal, Hiorns, Luscombe, Ober, Jones, Stingelin, Walter		**Field-Responsive Polymers - Vohlídal,** Hiorns, Luscombe, Ober, Jones, Stingelin, Walter		**Separations – Hess,** Chang, Kratochvíl, Moad, Stepto		**Separations – Hess,** Chang, Kratochvíl, Moad, Stepto	
	Ultimate – Adhikari, Hess, Henning, Stepto		**Ultimate – Adhikari,** Hess, Henning, Stepto		**Brief Guide to Polymer Terminology Hiorns/Vohlídal,** Boucher, Do, Hodge, Jones, Kratochvíl, Luscombe, Moad, Ober, Stingelin, Walter, Vairon		**Brief Guide to Polymer Terminology Hiorns/Vohlídal,** Boucher, Do, Hodge, Jones, Kratochvíl, Luscombe, Moad, Ober, Stingelin, Walter, Vairon	
Wed.	**Stereochemical Aspects in Polymer Science Hellwich/Moad,** Meille, Nakano, Stepto, Vert		**Stereochemical Aspects in Polymer Science Hellwich/Moad,** Meille, Nakano, Stepto, Vert		**Stars – Chen,** Wilks, Hellwich, Fradet, Hiorns, Purbrick, Nakano		**Stars – Chen,** Wilks, Hellwich, Fradet, Hiorns, Purbrick, Nakano	Reports / Housekeeping
					Polymer Microstructure Stingelin, Boucher, Choon, Delongchamp, Hess, Meille, Ober		**Polymer Microstructure - Stingelin,** Boucher, Choon, Delongchamp, Hess, Meille, Ober	
	Polymeric Carriers – Vert Chen, Hiorns, Jones, Purbrick, Yerin, Moss (confirmed free), Moad		**Polymeric Carriers – Vert** Chen, Hiorns, Jones, Purbrick, Yerin, Moss, Moad		**Keywords – Slomkowski,** Adhikari, dos Santos, Hiorns, Jones, Luscombe, Nakano, Purbrick, Stingelin, Walter		**Keywords – Slomkowski,** Adhikari, dos Santos, Hiorns, Jones, Luscombe, Nakano, Purbrick, Stingelin, Walter	
Thurs.	**Polymer Semis – Walter (Skype confirmed),** Bao, Boucher, Loo, Hiorns, Stingelin, Luscombe, Meille, Nakano, Ober		**SPT**		Tour			
	Brief Characterization Hess, Chang, He, Saiter, Simon, Schoenherr, Stepto, Vohlídal, Rose							

Colour code: nomenclature, terminology, both; possibly by Skype depending on connection/time zone etc. Note *extra*-meeting *via* Skype for Phil's Web Project on Monday at 5:45 (PH, CKL, KHH, RCH).

Appendix 3: Reports on 1999-051-1-800 Source Based Nomenclature for Modified Polymers, 2003-042-1-800 Source-based Nomenclature for Single-Strand Homopolymers and Copolymers, and 2011-035-1-800 Terminology and Nomenclature of Inorganic and Coordination Polymers (TINCOPS)

IUPAC GENERAL ASSEMBLY

BUSAN, AUGUST 2015

PROJECT REPORTS TO DIVISION VIII & THE SUBCOMMITTEE ON POLYMER TERMINOLOGY

1999-051-1-800 Source Based Nomenclature for Modified Polymers

This project was published in March 2015: *Pure Appl. Chem*. 87(3), pp. 307-319 (2015). A short erratum was published in April 2015: *Pure Appl. Chem*. 87(4), pp. 441-441 (2015)

2003-042-1-800 Source-based Nomenclature for Single-Strand Homopolymers and Copolymers

The project was originally funded in the late 1990s for development within the former *Commission on Macromolecular Nomenclature*. In 2000, it was transferred to the remit of the new Division VIII with agreement that it should be advanced under the auspices of the newly constituted Subcommittee on Polymer Terminology. In 2003, the Task Group Leadership was transferred from Ted Wilks to Tatsuki Kitayama who secured a project extension.

Slow but steady progress was made until 2011 when an apparent impasse with Division VIII concerning the present day acceptability of traditional polymer names and their associated monomer names was reached. This took a full year to reach partial resolution by which time the IUPAC Secretariat were of a mind to cancel the project, which was long past its completion date. Source-based nomenclature being of central importance to polymer science, in my then capacity as Chairman of SPT dissuaded the Secretariat from that course of action conditional upon my assuming responsibility for driving the project's completion. Accordingly, alongside Tatsuki I became co-TGL of the project and immediately set about fully resolving the contentious issue of traditional names. In the end this was achieved, although not to unanimous agreement within the task group but my appreciation of the efforts of everyone who contributed to the discussion must be recorded.

Over the intervening period, the document underwent two major restructurings during which it became evident that source-based nomenclature of condensation polymers was being approached in a quite different and more exceptional way when compared to that of other polymers. This led to further rationalisation and the inclusion of a glossary of terms, both of which greatly strengthened the evolving manuscript and by the end of June 2015 agreement that it was ready for submission was reached within both SPT and Division VIII. Accordingly, in early July the manuscript was submitted

to *Pure & Applied Chemistry*[*] for public review and consideration by ICTNS with a view to its publication. This process will take five months from the date of submission.

2011-035-1-800 Terminology and Nomenclature of Inorganic and Coordination Polymers (TINCOPS)

The Task Group of this project comprises members of Divisions II, IV and VIII. It first met in Leiden shortly after the start in order to agree a broad structure for what would be a significantly larger document than that of 1984 for which it was to be an update and revision. Progress thereafter has not been as rapid as hoped for a variety of reasons including (i) there being no former terminology section on which to draw, (ii) no electronic version of the earlier document other than one scanned from the paper copy thereby requiring rewriting of much of the text retained from the former document and the redrawing of all the structures, and (iii) my catastrophic loss of a working ChemDraw package with which to effect the latter. With ChemDraw being so expensive and my university refusing to include emeritus staff in the site license structures are presently being drawn using ChemDoodle.

Notwithstanding the above explanation for the delay, by 2013 the terminology section was essentially complete so redrafting of the nomenclature section of the former document was embarked upon. Since 1984, many polymers have been developed, the naming of which has come to rely more heavily on the precepts of organic polymer nomenclature than those of inorganic polymer nomenclature. Accordingly, the distinction between source-based and structure-based polymer nomenclature has had to be developed in an inorganic context leading to the formalisation of three distinct names for some inorganic and coordination polymers.

Working more or less in isolation as a polymer chemist, I have taken the document as far as I reasonably can. In July, I circulated a 1st draft to the other TGMs acknowledging that the document still had a long way to go and would probably have to be the subject of critical argument before further progress could be made by them. The draft is presently under consideration but it has been tentatively agreed that in the fullness of time a second TG meeting should take place in Canterbury and that the remaining project funds should be reserved for that purpose.

Dick Jones,
27th July 2015

[*] At that time, the P&AC Manuscript Central submission website was in a mess. By the time this report is read it might still be in a mess so those about to submit documents should be forewarned that there is no means of knowing that manuscripts have entered the review process other than by contacting the Chairman of ICTNS.

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IUPAC Polymer Division (IV)

Appendix 4: Current Projects and Task Group Members

Project code and name	Active TG Members
SPT PROJECTS	
2006-028-1-400 Electric Field Responsive Polymers	**Vohlídal,** Hiorns, Jones, Luscombe, Ober, Stejskal, Stingelin, Walter
2008-015-1-400 Preferred Names for Polymers	**Mormann,** Chen, Hellwich, Wilks
2008-020-1-400 Revision of "IUPAC Recommendations on Macromolecular Nomenclature; Guide for Authors of Papers and Reports in Polymer Science and Technology"	**Hodge,** Hellwich, Hiorns, Jones, Luscombe, Mormann, Stingelin, Walter, Wilks
2009-047-1-400 Definitions and Notations Relating to Stereochemical Aspects in Polymer Science	**Hellwich**, **Moad**, Fellows, Kitayama, Meille, Mormann, Nakano, Stepto, Vert
2010-007-1-400 Terminology for Chain Polymerization	**Moad**, Fellows, Hodge, Jones, Kitayama, Luscombe, Matyjaszewski, Nakano, Penczek?, Russell, Stepto, Topham, Vairon
2010-036-1-400 Keywords	**Slomkowski**, Adhikari, dos Santos, Fellows, Kubisa, Hiorns, Jones, Luscombe, Nakano, Purbrick, Russell, Stingelin, Walter
2012-001-1-400 Terminology of Nanomaterials and Nanotechnology in Polymer Science	**Ober & Jones**, *Carter, *Hayakawa, Luscombe, Meille, Moad, Purbrick, *Reichmannis, *Schmidt, Slomkowski, Stingelin, Topham, *Ueda, Walter *consultants
2012-048-2-400 A Brief Guide to Polymer Terminology	**Hiorns, Vohlídal**, Boucher, Do, Duhlev, Fellows, Hodge, Jones, Kratochvíl, Luscombe, Moad, Ober, Russell, Slomkowski, Stepto, Stingelin, Walter, Vairon, Vert
2014-014-1-400 Terminology for modeling and simulation of polymers (ModSim)	**Meille**, Moad, Muthukumar, Nakano, Raos, Russell, Rutledge, Stingelin
2014-033-1-400 (2012-042-1-400) Terminology of Lactic acid-based polymers	**Vert**, Chen, Hodge, Nakano, Penczek, Purbrick, Scholz, Slomkowski, Vohlídal, Hellwich
2014-034-2-400 Polymeric Carriers: Nomenclature for polymeric carriers bearing chemical entities with specific activities and names	**Vert,** Chen, Hiorns, Jones, Moad, Moss, Purbrick, Yerin
2015-013-1-400 Brief Chain: Brief Guide to Polymerization Terminology	**Luscombe, Moad**, Beuermann, Boucher, Fellows, Hiorns, Jones, Keddie, Nakano, O'Reilly, Russell, Stepto, Topham, Vairon, Wassermann, Yokozawa
2015-014-1-400 Polymer Semis: Guide (and Brief Guide) to Polymer Semiconductors	**Walter,** Bao, Boucher, Loo, Hiorns, Stingelin, Luscombe, Meille, Nakano, Ober, Topham

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SUBMITTED PROJECTS	
2015-012-1 (Project Committee) TE/RM: Terminology of Tissue Engineering and Regenerative Medicine in Polymer Science	**Purbrick**, **Stingelin**, Boucher, Gubala, Hiorns, Luscombe, Scholz, Schwenk, Vert
INTERDIVISIONAL PROJECTS	
2001-081-1-800 Dendritic & Hyperbranched	**Fradet**, Chen, Hellwich, Mormann, Stepto, Vohlídal, Wilks
2003-042-1-800 Source-Based Nomenclature of Source-based Nomenclature of Single-strand Organic Polymers	**Jones**, **Kitayama**, Hellwich, Hodge, Kratochvíl, Mormann, Ober, Stepto, Vohlídal, Wilks
2011-035-1-800 Nomenclature of Inorganic Polymers (TINCOP)	**Jones**, Batten (Blight) Damhus, Hiorns, Öhrström, Reedijk, Walter
2013-001-1-800 Structure-based nomenclature for regular linear star, comb and brush polymers	**Chen,** dos Santos, Fradet, Hellwich, Hiorns, Nakano, Pubrick, Wilks
NEW PROJECTS IN PREPARATION	
2013-050-1-400 (Revision) – Definition of terms relating to the ultimate mechanical properties of polymers	**Adhikari**, He, Hess, Stepto
Synchronizing Wikipedia: Polymer Definitions and Terminology	**Hess**, Fellows, He, Hiorns, Luscombe, Moad, Ober, Rumbles, Stingelin, Topham, Walker, Walter
Brief Guide to the Characterisation of Polymers	**Hess**
Development of a multilingual glossary of polymer terminology with new languages	**dos Santos**, Adhikari, Chan, Do, He, Jalal, Nakano, Philippova
Brief Guide to Polymer Microstructure	**Stingelin**, He, Hess, Meille, Moad, Ober, Topham
http of PB2	**Moad**, Hiorns, Jones, Luscombe
Renewable and recycled polymers	**Vairon**, Adhikari, dos Santos, Fradet, Hess, Purbrick, Walter, Vert
Terminology for constitutionally-dynamic polymers	**Vohlídal**
Polymers for bioelectronics	**Walter**, Hiorns, Meille
Polymers for 3D printing	**Walter**, He, Luscombe, Moad, Ober
Ionic liquids/polymer inorganic devices	**Ober**, Luscombe, Meille, Moad
Mediatized terms	**dos Santos**, Hiorns, Luscombe, Purbrick
Modified extended short hand names	**Vert**, Hellwich, Hiorns, Moad, Purbrick
Adhesion, adhesive polymers and associated terminologies	**Vairon**

Appendix 5: Rules of the Subcommittee on Polymer Terminology

1. The **membership** of the Subcommittee shall be decided by its **Official Members and approved by the Polymer Division Committee**. The Official Members are nominally those listed within the IUPAC Division IV webpages, but the official membership may be changed at any time with the agreement of the current Official Members.

2. Besides the Official Members, there are **Consultants** (former members who are still active), **Correspondents** (persons with only a loose connection with the Subcommittee), and **Observers** (persons who are invited by the Chairperson of the Subcommittee and approved by the Official Members of the Subcommittee).

3. No person shall be an **Observer** for more than two years but in the light of evidence of their contribution to the work of the Subcommittee they shall thereafter be invited to be Official Members.

4. **The Subcommittee will usually meet annually** (normally associated with an IUPAC General Assembly or a World Polymer Congress). Any **Official Member who fails to attend two consecutive meetings of the Subcommittee and fails to make substantial written contributions to the work of the Subcommittee over the same period of time** shall have their membership withdrawn.

5. No person shall remain an **Official Member**, **Consultant** or **Correspondent** of the Subcommittee who in the collective judgement of the Chairman, the Secretary, the Polymer Division President and Division Secretary have abused their membership and thereby their association with the Polymer Division.

6. **The list of the Consultants, Correspondents and Observers** will be reviewed annually by the Official Members. In addition, names can be added or removed at any time with the Subcommittee Chairperson's approval.

7. **Initiatives for polymer terminology and nomenclature projects or feasibility studies** may be placed before the Subcommittee by any interested party.

   New projects should normally be launched as feasibility studies approved by the Subcommittee. The acceptance of a project or a feasibility study will normally be decided upon by the approval of the majority of the Official Members present at the meeting where it is proposed and will be subject to the Subcommittee Chairperson's approval.

8. Although in principle anybody can **submit a project proposal** directly to the IUPAC Secretariat, the agreed procedure for members of the Subcommittee is that a Project Submission Form is completed by the Task Group Leader of the proposed project and sent to the Subcommittee Chairperson who submits the form.

9. The names of the **Task Group Leaders** for official IUPAC recommendations and other projects are subject to the approval of the Subcommittee Chairperson and at least one Task Group Leader shall be an Official Member of the Subcommittee.

10. Provided they have relevant expertise, **Membership** of the task groups for official IUPAC recommendations and other projects is open to all Official Members,

Consultants, Correspondents and Observers, subject to the approval of the Subcommittee Chairperson and the Task Group Leader.

Any member of a task group is free to propose additional, external members who could start as Observers or Correspondents with the approval of the Subcommittee Chairperson.

No Task Group Member should over commit through membership of too many Task Groups.

11. The **budgets** for individual projects will be made available by the Task Group Leaders for the use of the Subcommittee Chairperson to help attendance at the annual meetings of the Subcommittee.

12. The use of project budgets by Task Group Leaders for Task Group Meetings on individual projects shall be with the agreement of the Subcommittee Chairperson.

13. Task Group Leaders shall report progress to the annual meetings of the Subcommittee either in person or by asking another to represent them. It is expected that there should be clear evidence that they are driving their project(s) towards completion.

14. The **authorship** of a document prepared by a task group approved by the Subcommittee is decided by the Subcommittee Chairperson in consultation with the Task Group Leader(s). Membership of a task group does not automatically mean authorship.

    Authors will normally be listed with the Task Group Leader(s) preceding the other authors and with Task Group Leader(s) and other authors being listed, respectively, in English alphabetical order. In the case of a dispute, the matter will be decided by a majority vote of the official subcommittee members present at the meeting at which the authorship is being decided.

15. Each **official IUPAC recommendation** prepared by the Subcommittee shall list the Official Members of the Subcommittee during the period of its preparation, as well as those consultants, correspondents and observers who, in the opinion of the Task Group Leader(s) and the Subcommittee Chairman, contributed significantly to the document. In the case of a dispute, the matter will be decided by a majority vote of the Official Members present at the meeting at which the names to be listed are being decided.

    If the period of preparation of an official IUPAC recommendation started before 2002, when Commission IV.1 was in existence, the recommendation shall also list the Titular Members of the Commission during that period and list the Associate Members and others who, in the opinion of the Task Group Leader(s) and the Subcommittee Chairman, contributed significantly to the recommendation.

16. The **publication of translations of official IUPAC recommendations** by members of the Subcommittee have to be brought to the attention of the Chairperson and the Secretary of the Subcommittee and the IUPAC Secretariat (presently Fabienne Meyers). The translation should be identified as such and the original IUPAC cover page should precede the translation.

Subcommittee on Polymer Terminology
IUPAC Polymer Division (IV)

Appendix 6: Presentation Slides of the Report to Division IV by *RCH*

DIVISION IV - POLYMER DIVISION

Subcommittee on Polymer Terminology

Busan, Republic of Korea, 2015

SPT Objectives

SPT

- to define terms in polymer science
- to define polymer nomenclature on behalf of DIV VIII

Subcommittee on Polymer Terminology
IUPAC Polymer Division (IV)

Publications Just Prior to and Since Chiang Mai, Thailand 2014

SPT

2005-005-2-400 Solutions – Stepto
Published as, '*Definitions of terms relating to individual macromolecules, macromolecular assemblies, polymer solutions, and amorphous bulk polymers (IUPAC Recommendations 2014)*', R. Stepto, T. Chang, P. Kratochvíl, M. Hess, K. Horie, T. Sato, J. Vohlídal, *Pure Appl. Chem.* **2015**; *87*(*1*): 71–120.

1999-051-1-800 Modified – Jones
Published as, '*Nomenclature and graphic representations for chemically modified polymers (IUPAC Recommendations 2014)*', R. G. Jones, T. Kitayama, E. S. Wilks, R. B. Fox, A. Fradet, K.-H. Hellwich, M. Hess, P. Hodge, K. Horie, J. Kahovec, P. Kratochvíl, P. Kubisa, E. Maréchal, W. Mormann, C. K. Ober, R. F. T. Stepto, M. Vert, J. Vohlídal,
Pure Appl. Chem. **2015**; 87(3): 307–319.

2011-013-2-400 Updating Wikipedia – Hess
Published through numerous Wikipedia pages now carrying IUPAC definitions.

2007-008-1-400 Multilingual Encyclopedia – dos Santos
Published as a Multilingual Polymer Glossary at:
http://www.iceb.ufop.br/dequi/iupac/polymerglossary/index.php

Purple Book (PB2) was made freely available at:
http://www.iupac.org/fileadmin/user_upload/publications/e-resources/ONLINE-IUPAC-PB2-Online-June2014.pdf

Projects submitted to ICTNS & public review

2003-042-1-800 Source-based nomenclature of single-strand organic polymers and copolymers – Jones

Projects nearing Completion

SPT

2001-081-1-800	*Terminology and Structure-Based Nomenclature of Dendritic and Hyperbranched Polymers* – Fradet
2003-060-2-400	Terminology on separation of macromolecules – Hess
2006-028-1-400	Terminology for Conducting, Electroactive and Field-responsive Polymers – Vohlídal
2008-015-1-400	*Preferred Names of Polymers* – Mormann
2008-020-1-400	*Revision of the Division IV Web-based Terminology Guidelines* – Hodge
2009-047-1-400	*Stereochemical Aspects in Polymer Science* – Hellwich & Moad
2010-007-1-400	*Terminology for Chain Polymerization* – Moad
2010-036-1-400	*List of Keywords* – dos Santos & Slomkowski
2011-035-1-800	*Terminology & Nomenclature of Inorganic & Coordination Polymers* – Jones (collaborative project of Divisions II, IV & VIII)
2012-001-1-400	*Terminology of Nanomaterials and Nanotechnology in Polymer Science* – Ober & Jones
2012-042-1-400	Terminology Relevant to Lactic Acid-based Polymers: Synthesis, Structure, Properties, Applications & Degradation – Vert
2013-027-3-400	*Enhancing Educational Website for Polymer Chemistry* – Ober
2013-048-3-400	*A Brief Guide to Polymer Terminology (Brief Terms)* – Hiorns, Vohlídal
2013-031-2-800	*Structure-based Nomenclature for Regular Star and Brush Polymers* – Chen
2014-014-1-400	Terminology for modeling and simulation of polymers (ModSim) – Meille

Subcommittee on Polymer Terminology
IUPAC Polymer Division (IV)

SPT Objectives

SPT

- to define terms in polymer science
- to define polymer nomenclature on behalf of DIV VIII

"In the drafting, prosecution and litigation of chemistry patents we are grateful if we can rely on exact nomenclature and definitions as provided by IUPAC, as this helps us to define the claimed scope of protection more precisely. In patent law clear and concise claims are also an important requirement for a patent to be valid. So your work is much appreciated."

Director of Chemical Patents
Large Multinational company with revenue ca 50 billion $ pa

SPT Objectives

SPT

- to define terms in polymer science
- to define polymer nomenclature on behalf of DIV VIII

"In the drafting, prosecution and litigation of chemistry patents we are grateful if we can rely on exact nomenclature and definitions as provided by IUPAC, as this helps us to define the claimed scope of protection more precisely. In patent law clear and concise claims are also an important requirement for a patent to be valid. So your work is much appreciated."

Director of Chemical Patents
Large Multinational company with revenue ca 50 billion $ pa

- polymer science is ca 40% of the world chemistry economy
- is not citations, but has a real economic, scientific and educational impact

Subcommittee on Polymer Terminology
IUPAC Polymer Division (IV)

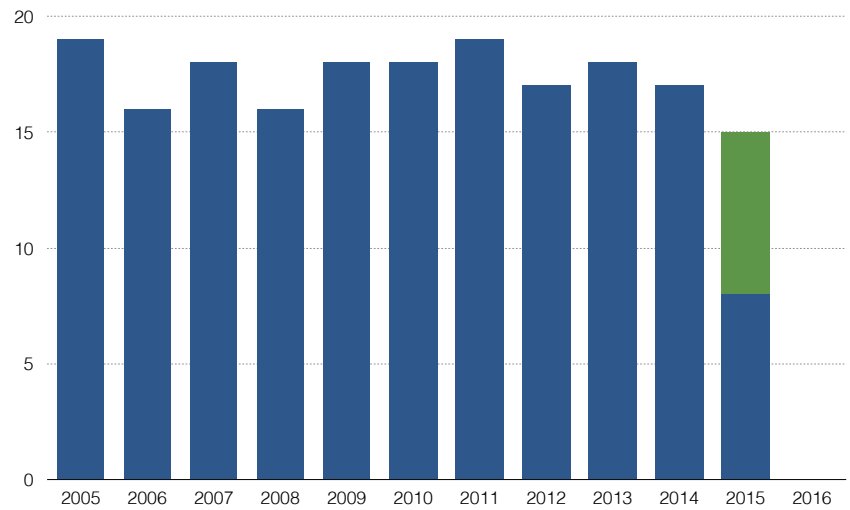
Project Situation going into 2015

SPT

Without new projects we would have had only 15 projects running with 7 coming to an end within one year (average over last 10 years is 18)

SPT

Project Status in 2015 without New Projects



Subcommittee on Polymer Terminology
IUPAC Polymer Division (IV)

Projects Submitted Since Chiang Mai SPT

- facilitating access
- terms and nomenclature at cross-science boundaries

Projects Funded

2014-034-2-400 (Project Committee) Nomenclature for polymeric carriers bearing chemical entities with specific activities and names – Vert

2014-033-1-400 (Extension of 2012-042-1-400) Nomenclature and terminology relevant to lactic acid-based polymers: synthesis, structure, properties, applications and degradation – Vert

2015-013-1-400 Brief Guide to Polymerization Terminology – Luscombe

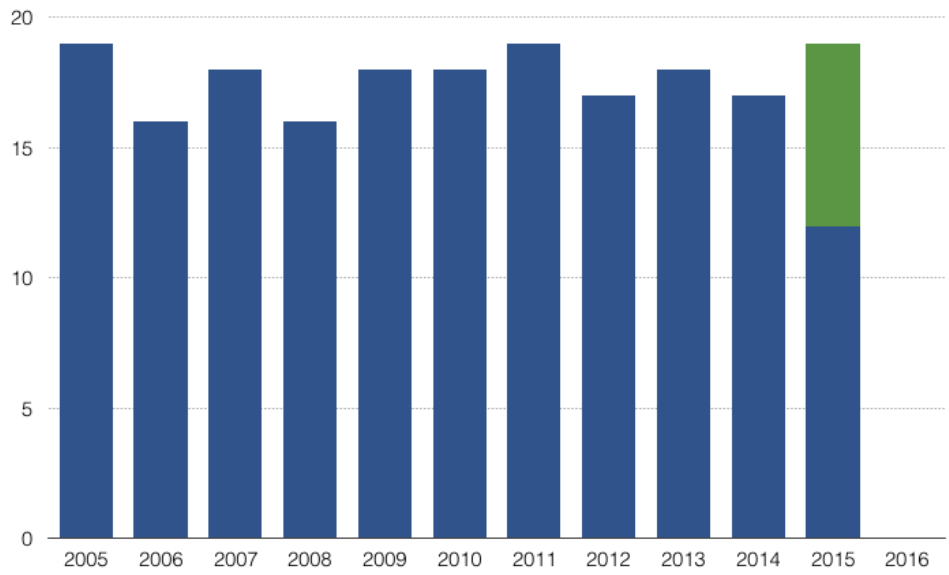
2015-014-1-400 Guide (and Brief Guide) to Polymer Semiconductors – Walter

Projects recently submitted for funding

2015-012-1 (Project Committee) Terminology of Tissue Engineering and Regenerative Medicine in Polymer Science – Purbrick

SPT

Project Status in 2015 with New Projects



Subcommittee on Polymer Terminology
IUPAC Polymer Division (IV)

Projects Close to Submission for Funding

SPT

Project Committee

- Updating Wikipedia: Synchronizing Polymer Definitions and Terminology – **Hess**
- Multilingual Glossary of Polymer Terminology: Stage II - Non Western Languages – **dos Santos**

Polymer Division

- **2013-050-1-400** Definition of Terms Relating to the Ultimate Mechanical Properties of Polymers - **Adhikari**
- Brief Guide to the Characterisation of Polymers – **Hess**
- Brief Guide to Polymer Microstructure – **Stingelin**

Mid- to Longer Term

http of PB2 – **Moad**
Renewable and recycled polymers – **Vairon**
Terminology for constitutionally-dynamic polymers – **Vohlídal**
Polymers for Bioelectronics – **Walter**
Polymers for 3D printing – **Walter**
Ionic liquids/polymer inorganic devices – **Ober**
Mediatized terms – **dos Santos**
Modified extended short hand names – **Vert**
Adhesion, adhesive polymers and associated terminologies –**Vairon**
Evaluation of polymer crystals – **Mielle**

A Typical SPT Meeting

SPT

APPENDIX 2. PRELIMINARY SPT SCHEDULE - Busan

	9:00 - 10:30	10:30 - 10:50	10:50-12:00	12 - 2	2 - 3:30	3:30 - 3:50	3:50 - 5:15	5:15-5:30
Mon.	SPT	Break	Dendritic - Fradet Chen, Hellwich, Mormann, Stepto, Vohlidal, Wilks Synchronizing Wiki - Hess, He, Hiorns, Jin, Jones, Moad, Ober, Stingelin, Walter		Preferred Names for Polymers – Mormann, Chen, Hellwich, Wilks Multilingual - dos Santos, He, Chang, Nakano Nano – Ober, Jones, Stingelin, Luscombe, Meille, Walter, Purbrick, Reichmanis, Schmidt, Hayakawa, Ueda, Carter, Slomkowski	Break	Preferred Names for Polymers – Mormann, Chen, Hellwich, Wilks Multilingual - dos Santos, He, Chang, Nakano Nano – Ober, Jones, Stingelin, Luscombe, Meille, Walter, Purbrick, Reichmanis, Schmidt, Hayakawa, Ueda, Carter, Slomkowski	Reports Jones Skype 5:15 / Housekeeping
Tues.	Chain Polymerization – Moad Hodge, Jones, Luscombe, Nakano, Penczek, Russell, Stepto, Vairon Lactic – Vert, Chen (local Chair), Scholz, Vohlidal, Hellwich, Nakano, Scholz Synchronizing Wiki - Hess, He, Hiorns, Jin, Jones, Moad, Ober, Stingelin, Walter Ultimate – Adhikari, Hess, Henning, Stepto		Chain Polymerization – Moad Hodge, Jones, Luscombe, Nakano, Penczek, Russell, Stepto, Vairon Lactic – Vert, Chen (local Chair), Scholz, Vohlidal, Hellwich, Nakano, Scholz Brief Guide to Polymer Terminology Hiorns/Vohlidal, Boucher, Do, Hodge, Jones, Kratochvil, Luscombe, Moad, Ober, Stingelin, Walter, Vairon Ultimate – Adhikari, Hess, Henning, Stepto		Dendritic - Fradet Chen, Hellwich, Mormann, Stepto, Vohlidal, Wilks ModSim – Meille, Muthukumar, Russell, Rutledge, Stingelin, Nakano, Kaps Separations – Hess, Chang, Kratochvil, Moad, Stepto Brief Chain – Luscombe, Moad Beuermann, Boucher, Hiorns, Jones, Keddie, Nakano, O'Reilly, Russell, Stepto, Vairon, Wassermann, Yokozawa	Break	Dendritic – Fradet, Chen, Hellwich, Mormann, Stepto, Vohlidal, Wilks ModSim – Meille, Muthukumar, Russell, Rutledge, Stingelin, Nakano, Kaps Separations – Hess, Chang, Kratochvil, Moad, Stepto Brief Chain – Luscombe, Moad, Beuermann, Boucher, Hiorns, Jones, Keddie, Nakano, O'Reilly, Russell, Stepto, Vairon, Wassermann, Yokozawa	Reports / Housekeeping
Wed.	Field-Responsive Polymers Vohlidal, Hiorns, Luscombe, Ober, Jones, Stingelin, Walter Stereochemical Aspects in Polymer Science Hellwich/Moad, Meille, Nakano, Stepto, Vert Polymeric Carriers – Vert Chen, Hiorns, Jones, Purbrick, Yerin, Moss (confirmed free)		Field-Responsive Polymers - Vohlidal, Hiorns, Luscombe, Ober, Jones, Stingelin, Walter Stereochemical Aspects in Polymer Science Hellwich/Moad, Meille, Nakano, Stepto, Vert Polymeric Carriers – Vert Chen, Hiorns, Jones, Purbrick, Yerin, Moss		Stars – Chen, Wilks, Hellwich, Fradet, Hiorns, Purbrick, Nakano Polymer Microstructure Stingelin, Boucher, Choon, Delongchamp, Hess, Meille, Ober Keywords – Slomkowski, Adhikari, dos Santos, Hiorns, Jones, Luscombe, Nakano, Purbrick, Stingelin, Walter		Stars – Chen, Wilks, Hellwich, Fradet, Hiorns, Purbrick, Nakano Polymer Microstructure - Stingelin, Boucher, Choon, Delongchamp, Hess, Meille, Ober Keywords – Slomkowski, Adhikari, dos Santos, Hiorns, Jones, Luscombe, Nakano, Purbrick, Stingelin, Walter	Reports / Housekeeping
Thurs.	Polymer Semis – Walter (Skype confirmed), Bao, Boucher, Loo, Hiorns, Stingelin, Luscombe, Meille, Nakano, Ober Brief Characterization Hess, Chang, He, Salter, Simon, Schoenherr, Stepto, Vohlidal, Rose		SPT		Tour			

Colour code: nomenclature, terminology, both; possibly by Skype depending on connection/time zone etc. Note extra-meeting via Skype for Phil's Web Project on Monday at 5:45 (PH, CKL, KHH, RCH).

Subcommittee on Polymer Terminology
IUPAC Polymer Division (IV)

SPT Bureau Activated

SPT

SPT Board made first recommendation
- dates for future meeting

Role

advise chair on administrative decisions for greater efficiency
for example - supporting projects through admin process

help organise Agenda

forwarding electronic methodologies - SPT communication
SPT administrative memory

purely administrative

no deliberations on nomenclature or terminology
Members: Christine, Claudio, Dick, Greg, Jiri and Roger

Redmine Activated

SPT

- library and file exchange

Subcommittee on Polymer Terminology
IUPAC Polymer Division (IV)

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