

IUPAC POLYMER DIVISION MEETING 2013
Harbiye Military Museum Istanbul, Turkey
August 09, 09.00 – 17.30
August 10, 9.00 – 12.30

Those attending: Rameshwar **Adhikari** (Nepal), Ray **Boucher** (USA, Wiley), Michael **Buback** – Division President (Germany), Marc **Cesa** (USA) IUPAC Vice-President (09.08.), Chin Han **Chan** (Singapore), Dick **Dijkstra**, (Germany), Claudio **dos Santos** (Brazil), Lucinda **Dudd** (UK), Jiasong **He** (China), Michael **Hess** – Division Secretary (Germany), Roger **Hiorns** (France), Robin **Hutchinson** (Canada), Malika, **Jeffries-El** (USA) Jung-Il **Jin** (Korea), Richard G. **Jones** (UK), Pavel **Kratochvíl** (Czech Republic), Igor **Lacik** (Slovakia), Christine **Luscombe** (USA), Graeme **Moad** (Australia), Werner **Mormann** (Germany), Tamaki **Nakano** (Japan), Christopher **Ober** – Division Past President (USA), Stanislav **Penczek** (Poland), Greg **Russell** – Division Vice-President (New Zealand), Malcolm **Purbrick** (UK), Mitsuo **Sawamoto** (Japan), Carmen **Scholz** (USA) observer, Alena **Šíšková** (Czech Republic), Jaroslav **Stejskal** (Czech Republic), Martina **Stenzel** (Australia), Natalie **Stingelin** (UK), Zhigang **Shuai** (China), Supavan **Tantayanon** (Thailand) guest, Kazuyuki **Tatsumi** (Japan) IUPAC President (09.08.), Miroslava **Trchová** (Czech Republic), Jean-Pierre **Vairon** (France), Michel **Vert** (France), Jiri **Vohlídal** (Czech Republic), Michael **Walter** (USA), Yusuf **Yagci** (Turkey)

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

Michael Buback welcomed the Division members and observers. The previously distributed meeting agenda was briefly discussed and accepted, in-process changes applied (see Appendix 1).

2. Apologies for Absence

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

3. Approval of the Minutes of the Division Committee Meeting, Roanoke, June 2012

The minutes recorded from the 2012 meeting in Roanoke, USA, were accepted with no dissenting vote.

4. Matters Arising

Michael Buback asked all members to consider candidates for new members of the Division, Subcommittees, and Working Parties and in particular to propose successors in case of retirement. There is a need for members from industry and from scientific journals. The Division should be prepared well in advance for the next elections and candidates have to be proposed to the Division Vice-President (Greg Russell). Dick Dijkstra (Structure and Properties of Commercial Polymers) will be succeeded by Jiasong He and Przemyslaw Kubisa (Conferences) will be succeeded by Igor Lacik. Sabine Beuermann (TM), Bernadette Charleux (TM), Robin Hutchinson (AM) and Timothy Long (AM) are the new elected or appointed Division Members for the biennium 2014/2015. For the list of members and their eligibility see Appendix 2.

Of special importance are proposals for the election of the next Division Vice-President. The chairs of the Subcommittees and working parties should propose candidates well in advance. Applications for new projects - in particular interdivisional projects - are welcome and project leaders should review the state of their projects and consider extensions well in advance.

Mark Cesa (IUPAC Vice-President) was welcomed as a guest.

5. Report on the Interdivisional Subcommittee Materials Chemistry (ISMC) (Chris Ober)

Chris Ober reported about the interdivisional Subcommittee Materials formed by members of Divisions I, II, and IV and the meeting of ISMC in Cologne, Germany, 07./08.09.2012. The Subcommittee Polymer Education can be taken as a model for interdivisional cooperation. Nanotechnology appears to be a boosting scientific field that calls for joining forces concerning terminology and characterization. Dick Jones is involved in corresponding activities that started already in Brisbane. There was consensus that the challenge of financing ISMC meetings should be primarily met by project-based funding. More efforts should be made to enhance cohesion among divisions, for example, by generating interdivisional projects. Definitions of Nanochemistry, Teaching solid-state/materials chemistry, Nanomaterials Terminology, and Plasmonics are potential project titles. Mark Cesa was asked to make corresponding information public. No additional symposium is planned during the Istanbul Meeting. Further information is expected for the Division IV meeting in 2014.

6. Report on the Subcommittee Polymer Terminology (SPT) (Dick Jones)

Dick Jones reported that internet access of the Purple Book can be expected in early 2014. The process has been

retarded by copyright problems. It will be easy to incorporate new chapters to the electronic version of the compendium.

New members of the SPT are since

2012: Christine Luscombe (USA), Natalie Stingelin (UK), Michael Walter (USA) & Carmen Scholz (USA) and since 2013: Malika El-Jeffries (USA), Malcolm Purbrick (UK), Martin Walker USA

Because of the retirement of Dick Jones, Roger Hiorns was elected as new chairman, taking over the position by January 1st 2014.

Publications since the Roanoke meeting 2012:

- **2007-009-1-800** *Nomenclature for Macromolecular Rotaxanes* – Vohlídal, published as, ‘Terminology and nomenclature for macromolecular rotaxanes and pseudorotaxanes (IUPAC Recommendations 2012)’, J. Vohlídal, E. S. Wilks, A. Yerin, A. Fradet, K.-H. Hellwich, P. Hodge, J. Kahovec, W. Mormann and R. F. T. Stepto, *Pure Appl. Chem.* **2012**, 84(10), 2135-2165.
- **2008-032-1-400** *Basic Guidelines to Polymer Nomenclature* – Hiorns, published as, ‘A brief guide to polymer nomenclature (IUPAC Technical Report)’, R. C. Hiorns, R. J. Boucher, R. Duhlev, K.-H. Hellwich, P. Hodge, A. D. Jenkins, R. G. Jones, J. Kahovec, G. Moad, C. K. Ober, D. W. Smith, R. F. T. Stepto, J.-P. Vairon and J. Vohlídal, *Pure Appl. Chem.* **2012**, 84(10), 2167-2169.
- **2005-043-2-400** *Self-Assembly and Aggregation in Polymers* – Ober & Jones, published as, ‘Terminology for aggregation and self-assembly in polymer science (IUPAC Recommendations 2013)’, R. G. Jones, C. K. Ober, P. Hodge, P. Kratochvíl, G. Moad and M. Vert, *Pure Appl. Chem.* **2013**, 85(2), 463-492.
- **2006-041-1-400** *Glossary of Thermal and Thermomechanical Properties of Polymers* – Hess, published as, ‘Glossary of terms relating to thermal and thermomechanical properties of polymers (IUPAC Recommendations 2013)’, M. Hess, G. Allegra, J. He, K. Horie, J.-S. Kim, S. V. Meille, V. Metanowski, G. Moad, R. F. T. Stepto, M. Vert and J. Vohlídal, *Pure Appl. Chem.* **2013**, 85(5), 1017-1046.

Projects in public review:

- **2005-005-2-400** (2011-033-1-400) *Terminology of Properties of Macromolecules in Solution* – Stepto (formerly Chang & Stepto)
- **2006-004-1-400** *Abbreviations* – He, Tabak
- **2007-008-1-400** *Multilingual Encyclopedia* – dos Santos

Projects in the final state of preparation are:

- **2001-081-1-800** *Terminology and Structure-Based Nomenclature of Dendritic and Hyperbranched Polymers* – Fradet, Kahovec
- **1999-051-1-800** *Source Based Nomenclature for Modified Polymer Molecules* – Kitayama, Jones
- **2003-042-1-800** *Revision of Source-Based Nomenclature of Homopolymers & Copolymers* – Kitayama, Jones

New Projects since the Roanoke meeting 2012:

- **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

Project Applications under review are:

- **2013-037-1** *Creating Educational Website for Materials Chemistry*
(collaborative project of Divisions I, II and IV))
- **2013-031-2** *Structure-based Nomenclature for Regular Star and Brush Polymers*

Feasibility studies close to application:

- *Constitutionally Dynamic Polymers* - Vohlídal
- *Terminology for the Modelling and simulation of polymers* – Meille
- *IUPAC Certification Standards for Polymer Science Journals (IQPAC)* – Hiorns

Work in progress:

- **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
- **2011-013-2-400** *Updating Wikipedia: Synchronizing Polymer Definitions and Terminology* – Hess
- **2012-001-1-400** *Terminology of Nanomaterials and Nanotechnology in Polymer Science* – Ober & Jones
- **2007-008-1-400** *Multilingual Encyclopedia* – dos Santos (a ‘living’ project)

- **2011-035-1-800 Terminology & Nomenclature of Inorganic & Coordination Polymers** – Jones (collaborative project of Divisions II, IV & VIII)

7. Report on the Subcommittee Structure and Properties of Commercial Polymers (Dick Dijkstra)

The Subcommittee is chaired by Dick Dijkstra (Germany), Jiasong He (China) and the Chairman of the East Asian Meeting of the Subcommittee, Toshikatzu Takigawa (Japan). On April 15th, 2013, the Sub-committee had 67 members from 14 countries with 30 scientists from industry and 37 from academia / research institutions.

The Subcommittee has met in 2012: Subcommittee EA Meeting No. 70A

November 22-23, Jeju, Korea and for a jubilee meeting (50 years Subcommittee IV.2) 08.-10.04.2013 in London, UK.

Actual projects:

2010-029-3-400

Relation between rheological properties and foam processability for polypropylene

Task Group Leader: Prof Masayuki Yamaguchi, Japan Advanced Institute of Science and technology

2010-019-1-400

Characterization, rheology and mechanical properties of high and ultra-high molecular weight polyethylene

Task Group Leader: Prof Clive Bucknall, Cranfield University, United Kingdom

2008-028-1-400

Elongational rheometry devices for shear rheometers

Task Group Leader: Dr Dietmar Auhl, Maastricht University

2007-004-1-400

Guidelines for shear rheometer calibration and performance check

Task Group Leader: Dr Maximilian Ruellmann, BASF, Germany

Feasibility studies:

Rheology of polysaccharide (EA study)

New DSC Methods

co-ordinators: Dietmar Auhl, Christoph Goegelien

Morphology induced structure formation determined

(not necessarily only) by LAOS (FT-rheology)

co-ordinator: Maik Nowak

Publications since the Roanoke meeting:

[87] U. A. Handge, A. Galeski, S. C. Kim, D. J. Dijkstra, C. Goetz, F. Fischer, G. T. Lim, V. Altstaedt, C. Gabriel, M. Weber, H. Steininger,

J. Appl. Polym. Sci., **124**, 740-754 (2012), 'Melt processing, mechanical and fatigue crack propagation properties of reactively compatibilized blends of polyamide 6 and an acrylonitrile-butadiene-styrene copolymer'

[88] M. Md. Ali, S. Nobukawa, M. Yamaguchi, *Pure Appl. Chem.*, **83**(10), 1819 (2011),

'Morphology development of polytetrafluoroethylene in a polypropylene melt'.

[89] Q. Mi, X. Zhang, J. He, *Polym. Eng. Sci.*, **52**(2), 289 (2012),

'Rheological hybrid effect in dually filled polycarbonate melt containing liquid crystalline polymer'.

[90] M. Yamaguchi, T. Yokohama, M. Md Ali, *Nihon Reorogi Gakkaishi (J. Soc. Rheol., Jpn.)*,

in press, 'Effect of flexible fibers on rheological properties of poly(lactic acid) composites under elongational flow'.

[91] Martin Laun, Dietmar Auhl, Rüdiger Brummer, Dirk J. Dijkstra, Claus Gabriel, Marc A. Mangnus, Maximilian Rüllmann, Wim Zoetelief, Ulrich A. Handge, 'Guidelines for checking performance and verifying accuracy of rotational rheometers: Viscosity measurements in steady and oscillatory shear' submitted to *Pure and Applied Chemistry*

8. Trends in Polymer Science (Yusuf Yagci)

Yusuf Yagci gave an overview of the publication activities in the field of polymer science in recent years, i.e. 2010-2013. The data for 2013 only cover the first 6 months of the year, see fig. 1. The number of publications in Polymer Science is still increasing at a level of about 17,000 at the moment. The search was done using certain key words. Leading countries (in decreasing order) in terms of the number of publications are the PR China, USA, Japan, Germany, South Korea, India, France, UK, and Canada.

The distribution of publications over the Journals is shown in fig. 2, with *J. Appl. Polym. Sci.* leading far ahead. Fig. 3 reveals the present activities in different field of Polymer Science. For a list of recent trend articles see appendix 3.

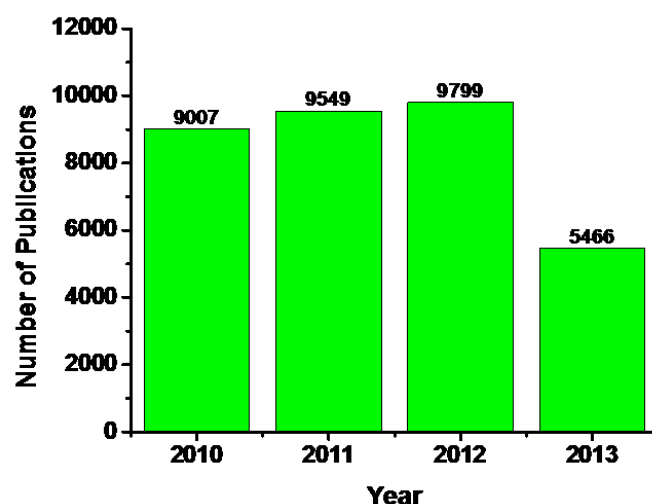


Fig. 1: Number of publications in Polymer Science, data from ISI-WOS, 27 July 2013. Number of 33,821 original contributions including 1147 review articles.

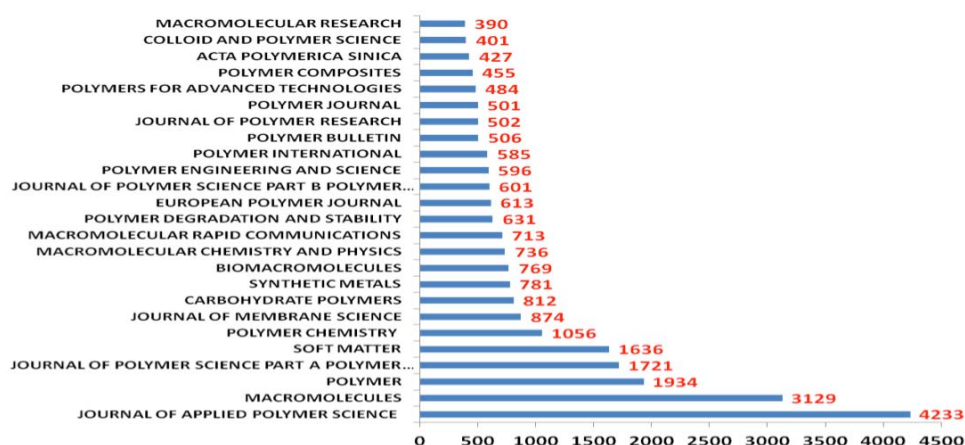


Fig. 2: Distribution of publications in Polymer Science over the journals, data from ISI-WOS, 27 July 2013.

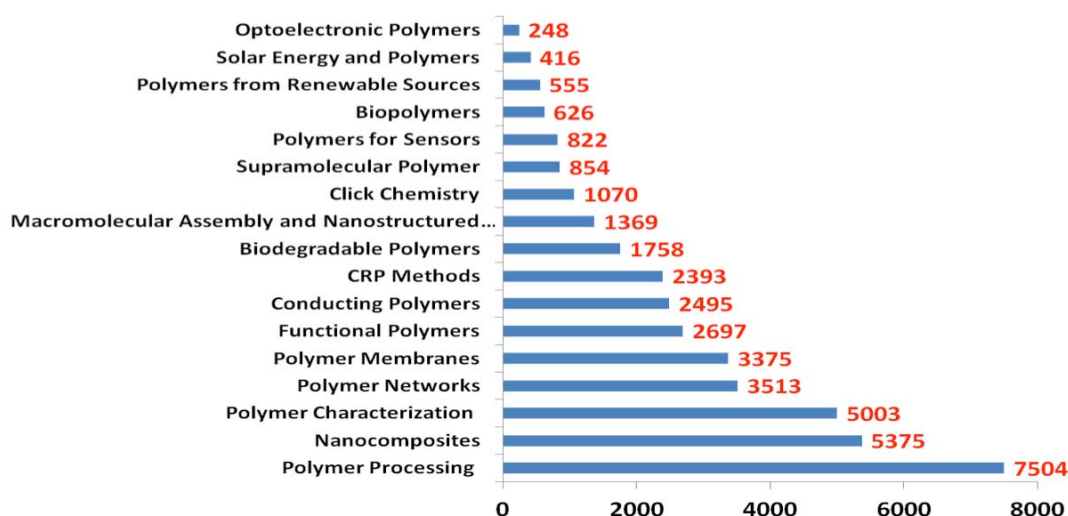


Fig. 3: The most active fields in Polymer Science, data from ISI-WOS, 27 July 2013.

The actual trends in Polymer Science are also reflected by the topics that are presently in the focus of MACRO 2014:

- Recent Developments in Polymer Synthesis
- Recent Advances in Functional Polymers
- Polymer Physics: Theoretical Studies and Modeling
- Advances in Polymer Characterization
- Polymer Processing and Composites
- Macromolecular Assembly and Nanostructured Polymers
- Polymers for Biotechnology and Biomedical Application
- Environmental Benign Polymers
- Innovations in Polymer Industry
- Polymers for Energy Technology: Energy, Information Technology, Optics, Electronics and Optoelectronics
- Polymer Education
- Polymer-Based Carriers for Medical and Cosmetic Application
- Biopolymers: Advances in Materials, Biomedicine and Health
- Natural Rubber: From Basic to Applications
- Nanofabrication and Nano-Patterning: Challenges and Innovation
- Polymer Surfaces and Interfaces

It was observed that an increasing number of Iranian scientists – although not an IUPAC member – are attending IUPAC sponsored conferences with an increasing number of contributions that are rarely published in major journals.

In general it can be seen that prestigious journals are chosen for publications. This can lead to the effect that national journals are neglected and ‘dried out’.

Since the analysis of the trends in polymer science is very useful to identify future trends as well as neglected fields, it was suggested to make the above results publicly available. Dick Dijkstra suggested to include an analysis of the patent literature because that should reflect different trends.

9. Report on the Subcommittee on Modelling of Polymerization Kinetics and Processes (R. A. Hutchinson)

Greg Russell has passed on his chairmanship to Robin A. Hutchinson (Kingston, Canada), who presented this report. Robin Hutchinson and Sabine Beuermann (Clausthal, Germany) share chairmanship and secretary's job of the Subcommittee.

There are presently 42 active members from 13 countries (industry 4, research institutes 4, universities 34). Since the last meeting one member retired from the group while 4 new members were recruited. Some countries have a strong representation while other important countries or even continents are only weakly or not represented, e.g. the USA, UK and many Asian countries. Consequently, new members – in particular from industry – are very welcome. Targeted areas to expand are Asia and the UK.

The Subcommittee is active in critically evaluating kinetic parameters of polymerization processes and establishing reliable methodologies. While propagation rate coefficients have been determined for many methacrylates, butyl acrylate, methacrylic acid and vinyl pivalate the activities are now extended to the determination of termination rate constants, initiation rate parameters, RAFT¹ and NMP² polymerization kinetics. In detail there are the following projects:

Project 2004 – 034 – 1 – 400

Critically evaluated propagation rate coefficients for free-radical polymerization of water-soluble monomers polymerized in the aqueous phase. The second publication dealing with precision of SEC for poly(acrylic acid) and poly(methacrylic acid) is to be finalized.

Project 2004 – 040 – 1 – 400

Towards a holistic mechanistic model for reversible addition-fragmentation chain transfer (RAFT) polymerizations: Dithiobenzoates as mediating agents. Graeme Moad has prepared and published a review for *Macromol. Rapid Commun.* about the current situation of RAFT retardation. This paper completes the project.

Project 2009 – 050 – 1 – 400 (cont.)

Propagation and termination of radical polymerization. Graeme Moad is in charge of writing the first publication on azo-initiators.

Project 2010 – 027 – 1 – 400 (cont.)

Determination of rate constants in reversible-deactivation radical polymerization. Currently data from

¹ RAFT = **R**eversible **A**ddition-**F**ragmentation (Chain-) **T**ransfer Polymerization

² NMP = **N**itroxide-**M**ediated **P**olymerization

TEMPO³ and SG1⁴ are being measured. The task group leadership has been passed from Denis Bertin to Yohann Guillauneuf.

2010 – 007 – 1 – 400

Terminology for chain polymerization.

2009 – 050 – 1 – 400

Critically evaluated rate coefficients associated with initiation of radical polymerization.

2010 – 027 – 2 – 400

Critically evaluated dissociation rate coefficients for alkoxyamines.

New Project 2011 – 034 – 2 – 400

Critically evaluated rate coefficients for (methyl) acrylate propagation.

Manuscript completed and online available (Polymer Chem.)

New Projects – Following Currently Concluding Projects

Critically evaluated rate coefficients for chain-length-dependent termination.

Future Project Ideas

- Critically evaluated **termination rate coefficients** as a function of **conversion**
- Critically evaluated **chain-transfer** rate coefficients and constants
- Critically evaluated **depropagation** rate coefficients
- Critically evaluated copolymerization **reactivity ratios**
- Critically evaluated **combination/disproportionation** ratios
- Critically evaluated rate coefficients for **ionic polymerizations**
- **ATRP**: current situation on mechanisms; benchmark rate coefficients
- Set of benchmark rate coefficients for a **particular monomer**

Summary:

Active Projects:

- **Initiation rate parameters**
- **Methyl acrylate propagation**
- **NMP rate parameters**

Extended projects:

- **Aqueous phase propagation**
- **RAFT polymerization mechanism**

New projects being initiated

- **Styrene polymerization rate parameters**
- **Vinyl ester propagation**
- **Chain-length dependent termination**

Citations of Publications (22 June 2010 → 24 July 2012)

Consistent values of rate parameters in free radical polymerization systems	160 → 161 citations.
Part II: Outstanding dilemmas and recommendations	190 → 192 citations
Consistent values of rate parameters in free-radical polymerization systems.	31 → 33 citations
Critically evaluated rate coefficients for free-radical polymerization,	
1. Propagation rate coefficients for styrene	487 → 508 citations
Critically evaluated rate coefficients for free-radical polymerization,	
2. Propagation rate coefficients for methyl methacrylate	364 → 387 citations
Critically evaluated rate coefficients for free-radical polymerization -	
3. Propagation rate coefficients for alkyl methacrylates	138 → 148 citations
Critically evaluated rate coefficients for free-radical polymerization, 4.	
Propagation rate coefficients for methacrylates with cyclic ester groups	52 → 57 citations
Critically evaluated rate coefficients for free-radical polymerization,	
5. Propagation rate coefficient for butyl acrylate	145 → 147 citations
Critically evaluated rate coefficients for free-radical polymerization, Part 6.	
Propagation rate coefficient of methacrylic acid in aqueous solution	24 → 26 citations
Determination of the Propagation Rate Coefficient of Vinyl Pivalate based on	
EPR Quantification of Propagating Radical Concentration	1 → 1 citation

³ TEMPO = 2,2,6,6-tetramethyl-1-piperidinyloxy radical

⁴ SG1 = N-tert-butyl-N-(1-diethylphosphono-2,2-dimethylpropyl) nitroxide

Critically-evaluated propagation rate coefficients in free radical polymerizations.

1. Styrene and methyl methacrylate

96 → 101 citations

Critically evaluated termination rate coefficients for free-radical polymerization –

1. The current situation

102 → 108 citations

Critically evaluated termination rate coefficients for free-radical polymerization,

2. Experimental methods

66 → 72 citations

Mechanism and Kinetics of Dithiobenzoate-Mediated RAFT Polymerization,

1. The Current Situation

224 → 250 citations

Terminology for reversible-deactivation radical polymerization previously called “controlled” radical or “living” radical polymerization

1 → 38 citations

In particular the series of papers dealing with the critical evaluation of rate constants proved to be very successful.

Monomer	Journal	Year	Web of Science Citations (Jul13)
1. Styrene	<i>Macromol. Chem. Phys.</i>	1995	508
2. Methyl Methacrylate	<i>Macromol. Chem. Phys.</i>	1997	387
3. Alkyl Methacrylates	<i>Macromol. Chem. Phys.</i>	2000	148
4. Functional Methacrylates	<i>Macromol. Chem. Phys.</i>	2003	57
5. <i>n</i> -Butyl Acrylate	<i>Macromol. Chem. Phys.</i>	2004	174
6. Methacrylic Acid	<i>Pure Appl. Chem.</i>	2007	26
7. Methyl Acrylate	<i>Polym. Chem.</i>	2013	
8. Vinyl Acetate (new)			

10. Report on the Subcommittee on Polymer Education (SPED) (Werner Mormann) Educational Courses, Workshops and Conferences

- Educational Courses, Workshops and Conferences

17th UNESCO/IUPAC Postgraduate Course in Polymer Science 2012/2013 (Prague)

Objective: To enable young university graduates and PhDs from countries with limited research facilities to acquire knowledge on recent advances in polymer science and professional skills needed for promotion of polymer science in their home countries. Details at www.imc.cas.cz/en/umch/kursy_unesco_iupac.htm

17th UNESCO/IUPAC Course 2012-13 started October 2012 – July 2013

12 students from Bulgaria, Poland, Russia, Ukraine, and Vietnam

18th run (October 2013 – July 2014) so far 13 applicants nominated

Cumulative results of the 17 runs:

graduates: 138 from 20 countries, publications in international journals: 285,

communications at international meetings: 329, citations: 4500 (all as of January 2013).

Support through IUPAC Project #2011-052-1-400.

Task leader: Pavel Kratochvil

POLYCHAR 21 (21st World Forum on Advanced Materials-IUPAC Conference and Short Course on Polymer Characterization March 11-15, 2013, Gwangju, Republic of Korea

<http://polychar21-korea.org/>

Sponsored with general IUPAC funds USD 4,000 (Program for Conferences in Scientifically Emerging Regions).

Short Course sponsored by IUPAC Polymer Division with USD 2,000 (support of 14 students/young scientists)

Support of 15 students from under-privileged countries (SE-Asia, Africa, South America)

- Announcement with a bid invitation;

- Selection of applicants on the basis of certain criteria (country, proof of status, letter of recommendation, registration)

- IUPAC secretariat established contact to the candidates and arranged money transfer.

Task leader: Michael Hess

12th Annual UNESCO / IUPAC Workshop and Conference
24 – 28 April 2013 Stellenbosch, South Africa

<http://academic.sun.ac.za/unesco/>

Preference for contributed presentations to young researchers that recently started their academic career and to students and researchers from previously underrepresented countries.

Delegates: 151 from 33 countries; Africa: South Africa, Nigeria.

Students: 53 (12 historically black University students).

A project IUPAC support "13th Annual UNESCO/IUPAC Workshop and Conference on Functional Polymeric Materials" has been approved.

Task leaders: Harald Pasch

Polymer Education Symposia in the frame of IUPAC World Polymer Congress Series

Polymer Education at IUPAC MACRO 2014 – Chiang Mai, Thailand

Format: One day symposium, W. Mormann co-organizer

Program: Focus on Polymer Education in South-East Asia

- Situation in different countries
- Lectures on specific topics in Polymer Education; Names, suggestions appreciated (email to W. Mormann)
- Round Table with active student's participation is planned.

- **Division IV - Polymer Education Website** <http://www.iupac.org/plyedu/index.html>

A project has been approved

Enhancing Educational Website for Polymer Chemistry

Task group:

C. K. Ober (task group leader)

W. Mormann

R.G. Jones

C. dos Santos

L. Corley (young observer)

Choon Do

- Reviewing of Polymer Science Textbooks

The intention is the Revision of textbook manuscripts by IUPAC SPT experts to implement IUPAC Terminology and Nomenclature.

Textbooks with this revision should obtain an IUPAC label like: "*Terminology and Nomenclature IUPAC approved*" or "*Textbook following IUPAC recommendations for polymer terminology terminology and nomenclature*"

Benefits for IUPAC (Polymer Division) are:

Increased awareness of IUPAC;

Promulgation of polymer terminology and nomenclature

Financial contribution of publisher covering the associated costs should be considered

Publishers contacted do not see benefits only legal and copyright problems.

Outcome of Roanoke meeting discussion:

Approach an author of a textbook who prepares a new edition and offer the "IUPAC service" on a personal basis with the aim to give the printed version "IUPAC approval".

Dick Jones approached Ian Cowie; his book with Valeria Arrighi as co-author has recently appeared in a new edition.

The last remaining option might be that the IUPAC Polymer Division should offer an award (up to 2500 USD) to an author, who is willing to implement Nomenclature and Terminology with the help of SPT and SPED members.

It would be great, if that could happen under the flag of SPED.

Perhaps we could launch a project, once an author has been identified.

Transnational call and Showcase Pilot Program for a Research Cooperation between International

Funding Organizations and IUPAC as represented by the Polymer Division

7 Proposals were funded with a total of 25 research teams.

<http://www.iupac.org/polyedu/DivIVCall/page6/page7/page7.html>

Mid-term presentations at IUPAC World Polymer Conference Macro 2012, Blacksburg VA.

Tri-National Award Session

Final reports at a special workshop at IUPAC Macro 2014

Symposium to be organized by the Call Oversight Committee and task group of “Guidelines of multinational Calls project”

Project report on the “Experience and Recommendations for Future Calls” together with a collection of relevant documents

[http://www.iupac.org/nc/home/projects/project-db/project-details.html?tx_wfqbe_pi1\[project_nr\]=2010-032-3-400](http://www.iupac.org/nc/home/projects/project-db/project-details.html?tx_wfqbe_pi1[project_nr]=2010-032-3-400)

[http://www.iupac.org/nc/home/projects/project-db/project-details.html?tx_wfqbe_pi1\[project_nr\]=2010-032-3-400](http://www.iupac.org/nc/home/projects/project-db/project-details.html?tx_wfqbe_pi1[project_nr]=2010-032-3-400)

Documents were used for launching a second call under the guidance of IUPAC:

International Call for Proposals in Sustainable Chemistry

<http://www.iupac.org/news/news-detail/article/international-call-for-proposal-in-sustainable-chemistry.html>

11. Conferences (Michael Buback in proxy of Przemyslaw Kubisa)

General information about Conference Sponsorship

The granting of sponsorship by IUPAC is judged on the following criteria: scientific quality, significance of conference, suitability of conference, evidence of sufficient advanced planning, suitable time spacing of conferences of a similar type, rotation of leadership for conferences in a series or of a similar type, geographically diverse International Advisory Board, participation of industrial chemists and women as speakers and as members of the International Advisory Board. In general, IUPAC sponsorship of a conference or symposium attests to its quality but does not provide financial support. However, Divisions and Standing Committees of IUPAC may apply for financial support for Conferences via two programs: *New Directions in Chemistry* and *Scientifically Emerging Regions*. For details see: <http://www.iupac.org/home/conferences/application-for-sponsorship.html>

IUPAC Sponsored Conferences – Polymer Division						
Year	2008	2009	2010	2011	2012	2013
Number of conferences	7	11	8	13	8	10
Publications in Macromol Symp	3	3	6	3	4	2
No of pages	459	566	1580	390	857	177
Locations of conferences						
2010 Europe: 6 (Germany, France, UK, Czech R., Poland, Greece) America: 1 (Jamaica) Asia: 1 (China)						
2011 Europe: 5 (Russia, Spain, Czech R., Finland, Turkey) N. America: 1 (USA) Asia: 4 (Nepal, India, China, China) Australia: 1 Africa: 2 (S. Africa)						
2012 Europe: 3 (Croatia, Czech R. Ukraine) N. America: 1 (USA) Asia: 2 (Nepal, India) Australia: 1 Middle East: 1 (Qatar)						
2013 Europe: 3 (Italy, Czech R., UK) N. America: 1 (USA) Asia: 3 (S. Korea, Japan, China) Australia/ N. Zealand: 2 Africa: 1 (S. Africa)						

IUPAC Polymer Division Sponsored Conferences – 2012 (8 conferences)

- Conference: 14th International IUPAC Conference on Polymers and Organic Chemistry January 6-9, 2012, Doha, Qatar
- Conference: 33rd Australasian Polymer Symposium, February 12-15, 2012, Hobart – Australia
- Conference: 20th International Conference on Polymer Characterization – World Forum on Advanced Materials, March 26-30, 2012, Dubrovnik – Croatia
- Katmandu Symposium on Advanced Materials, Katmandu, Nepal, May 9-12, 2012
- Conference: 44th International Symposium on Macromolecules –IUPAC World Polymer Congress, June 24-29, 2012, Blacksburg - United States
- 76th Prague Meeting on Macromolecules: Polymers in Medicine, July 1-5, 2012, Prague, Czech Republik
- 9th International Conference on Polymer-Solvent Complexes and Intercalates (PolySolvat-9), September 11-14, 2012, Kiev, Ukraine
- 6th International Conference on Macro- and Supramolecular Architectures & Materials (MAM-2012), November 21-25, Coimbatore, India

• **IUPAC Polymer Division Sponsored Conferences – 2013 (10 conferences)**

- 21st International Conference on Polymer Characterization – World Forum on Advanced Materials (Polychar-21), March 11-15, 2013, Gwangju, Korea
- 12th UNESCO/IUPAC Workshop and Conference on Macromolecules & Materials, March 24- 28, Stellenbosch, South Africa
- Congress of the European Polymer Federation (EPF-2013) June 16 – 21, Pisa, Italy
- 34th Australasian Polymer Symposium (34 APS) July 07 – 10, Darwin, Australia
- 19th European Symposium on Polymer Spectroscopy (ESOPS 19) July 08 – 11, Prague, Czech Republik
- 5th International Symposium on MacroMolecular Complexes (MMC-15), August 13-16, Clemson, SC, United States
- 10th International Conference on Advanced Polymers via Macromolecular Engineering (APME-2013), August 18-23, 2013, Durham, United Kingdom
- 21st International Symposium on Ionic Polymerization (IP2013) September 23 – 28, Awaji Island, Hyogo, Japan

2014 (approved untill now)

- 8th International Symposium on Molecular Mobility and Order in Polymer Systems, June 02 – 06, St. Petersburg, Russia
- 10th International Conference on Polymer-Solvent Complexes and Intercalates (PolySolvat-10) September 22 – 25, Salerno, Italy

Conference Proceedings published by Macromol. Symp. 2012 (4 issues) (857 pages)

- Functional Polymeric Materials and Composites, March 2012, Volume 315, Issue 1, Pages 1–232, Issue edited by: Rameshkhari Adhikari
- POLYCHAR-19 World Forum on Advanced Materials, May 2012, Volume 313-314, Issue 1, Pages 1–194 Issue edited by B. Klumperman, P. E. Mallon, H. Pasch, A. J. van Reenen
- Macromolecular Complexes, August 2012, Volume 317-318, Issue 1, Pages 1-309,
- Molecular Mobility and Order in Polymer Systems, June 2012, Volume 316, Issue 1, Pages 1-122,

2013 (2 issues untill now)

- Ionic Polymerization, January 2013, Volume 323, Issue 1, p. 1-91
- Polychar 20 – World Forum on Advanced Materials, June 2013, Volume 328, Issue 1, p. 1-86
-

12. Monitoring Projects (Michael Buback)

As reported earlier there are a number of recently approved projects including the extension of the educational website and – after the success of the Brief Guide to Polymer Nomenclature – now the Brief Guide to Polymer Terminology. Further projects are ‘Rate Constants of Radical Polymerization of Acrylates’, ‘Lactic Acid’, and ‘Nanoparticles and Human Health’. A project on ‘Structure-Based Nomenclature for Regular Star and Brush Polymers’ (Chen) is in the evaluation process. Chris Ober plans to create a Materials website. The dormant project on ‘Polymer Separation’ (2003-060-2-400) will be re-vitalized under a new task group leader to be

determined at the SPT meeting. Michael Buback emphasized to apply for new projects/extensions before October.

There are still a number of projects that did not deliver a final report, 2003-009-1-400 Wassner, 2004-022-3-400 Fitzgerald, 2004-040-1-400 Vana, 2005-011-3-400 Luruli, 2006-028-1-400 Vohlidal, 2007-008-1-400 dos Santos, 2008-015-1-400 Mormann, 2008-020-1-400 Hodge, 2009-047-1-400 Hellwich, 2010-007-1-400 Moad, 2009-050-1-400 Moad, 2010-036-1-400 dos Santos (see also Appendix 4). A report to project 2009-019-2-400 Meira, has been delivered for the Istanbul meeting (Appendix 6) and top 'Other Business' 20.

In fact, no project shall just be reported and the end dates should be within a reasonable range.

Michael Dröscher (COSI) was welcomed as guest. He announced the World Chemistry Leadership Meeting during the World Chemistry Congress and its focus on Young Scientists. The very successful safety training program for developing countries was addressed and the NAOs are asked to send members to COCI. Mitsuo Sawamoto reported that 30 members from industry are supporting the program. The IUPAC website lists no representative of the Polymer Division. Chin Han asked about IUPAC sponsorship for a Conference on Functional Polymers – Advanced Materials (4th FAPS 2015, Malaysia) and Jung-Il Jin informed correspondingly.

13. Strategy (Sawamoto)

Mitsuo Sawamoto had no news to report and announced the next up-date of the "World Polymer Organizations" document for the next meeting in Chiang Mai. The visualization of Polymer Division is still an ongoing issue. It is advised to form a task group to develop tools to motivate young members as potential successors of retiring members. Jung-Il Jin suggests combining strategy issues in the future with Vice-President's topics.

14. Vice-President's Topics (Russell)

Elections for the period 2014-2015 (January 1st –December 31st), Restrictions, rules, rewritings:

The Division President cannot chair the Nomination Committee (NC), the Division Vice-President is appointed to this position.

While the TMs of the last election (2012-2013) were elected for 4 years and will be in service accordingly, the election 2014-2015 TMs are only on duty for 2 years according to the new IUPAC rules.

AMs are no longer elected but rather 'selected' and appointed. The Secretariat keeps a list that provides information about the eligibility of candidates and forwards this to the NC Chair.

The elections for the period 2014-2015 had a deadline August 2012 for the **nominations of TMs candidates** by the NAOs. The Nomination Committee (Division Vice-President, Ezio Rizzardo, Kris Matyjaszewski, Pavel Kratochvil, and Michael Dröscher) advised candidates. Election of TMs terminated January 2013. Deadline for **selection of AMs and NRs** March 2013. April 2013 Bureau Meeting to approve **TMs, AMs and NRs**.

The structure of the Division Committee (2014-2015):

Titular Members (TMs): **Jiasong He** (Subcommittee Structure and Properties of Commercial Properties - **SSP**), **Roger Hiorns** (Subcommittee Polymer Terminology - **SPT**), **Graeme Moad** (**SPT**), **Sabine Beuermann** (Subcommittee Modelling of Polymerization Kinetics and Processes - **SKM**), **Werner Mormann** (Subcommittee on Polymer Education - **SPed**), **Bernadette Charleux** (**SPed**), **Mitsuo Sawamoto** (strategy), **Chris Ober** (Division Past President).

Associate Members (AMs): **Dick Dijkstra** (**SPCP**), **Robin Hutchinson** (**SKM**), Igor Lacik (conferences), **Tim Long** (**SPE**), **Yusuf Yagci** (trends in Polymer Science **STP**), **Dennis Smith** (industrial relations)

National Representatives (NRs)* (2014-2015)

Voravee Hoven (Thailand)

Chain-Shu Hsu (China/Taipei)

Theo Dingemans (The Netherlands)

Claudio dos Santos (Brazil)

Richard Jones (UK)

Doo Sung Lee (Republic of Korea)

Aziz Muzafarov (Russia)

Mohammad Siddiq (Pakistan)
Jiri Vohlidal (Czech Republic)
Chan-Chin Han (Malaysia)

* NRs: may only come from countries not already represented; nomination by NAO; previous work and visibility; eligibility for other positions; miscellaneous (e.g. that the 2015 GA is in South Korea, so there has to be a representative).

The identification of the Division Committee for the period 2016-2017 will start late in 2014 and this time some Division Officers have to be elected. The most important will be the next Division Vice-President who should (but not necessarily needs to) come from the Americas (after Europe, Asia-Australia-New Zealand-Oceania). Everybody is encouraged to nominate NRs, the nominations do not necessarily need to be submitted by the NAO (however, see the boundary conditions mentioned above*). Michael Buback stressed the point of bringing in new, in particular young members to the Subcommittees and encourage them to become active in WPs. In particular it appears advisable to get observers involved in projects.

Stan Penczek stressed the importance of interdivisional projects, on which Dick Jones commented that interdivisional cooperations in many cases have proven to be rather one-sided. Pavel Kratochvil observed that from his point of view not all Divisions are treated equally, means at eye-level.

Important issues remain – unchanged since the Roanoke-Meeting 2012:

- The venue of the MACRO meetings (2018, 2020,...)
- Publication-driven projects via subcommittees
- The Subcommittees SPT and SPE
- Future leaders (especially next VP)
- Collegiality and friendship via personal contact

Division elections and “selections” are pivotal in being able to deliver good results above.

Finally, the question arises if it is advised to install the position of an ‘Award Coordinator’ for the international Prizes that are granted on the occasion of the biannual MACRO-World Polymer Congress: SAMSUNG Award, DSM Award, and Polymer International Prize.

15. The President’s Statement (Michael Buback)

The Division’s budget situation remains strained since about 60% are still consumed by travel expenses, in particular in years where there is no IUPAC GA. The Samsung Grant, that also feeds the biannual SAMSUNG Award still serves as a reserve. Michael Buback stressed the importance of publishing conference papers in Wiley’s Macromolecular Symposia that contribute to the Division’s budget through the royalties. Not much money from the Division is left for projects and those expenses have to be critically checked. New projects/project extensions should be submitted not later than October 2013.

The Awards in which the Division is involved (DSM, SAMSUNG) and the Polymer International Prize that is also closely connected with the Polymer Division and the World Polymer Conference are of great importance for the recognition of the Division by the scientific community.

According to the VP’s Statement, the TMs and AMs are assigned to certain duties within the Division. Active participation of NRs in the Divisions activities are acknowledged and very much appreciated, although it was observed that in some cases the NRs were never seen in a meeting during their time of appointment nor any contributions made. However, contributions from NRs are very important in particular to show the potential of their country and to recruit new members for WPs and other Division activities that are mainly carried out by the core Subcommittee. Michael Buback asked the representatives of the Division in the IUPAC bodies to present reports on the activities of the corresponding bodies on a regular basis, starting with the 2014 meeting in Chiang Mai. All members of the Division are asked to watch out for possible new members. The IUPAC website does only list Werner Mormann as Division IV representative in CCE, there is no such representative listed for CHEMRAWN (Chemical Research and World Needs) or COCI. Graeme Moad is regular member of ICTNS and Chris Ober of PC (Program Commission).

The Division Representatives/members to IUPAC Bodies are asked to report about the activities on the next Division Meeting in Chiang Mai.

Saturday, 10.08.2013

16. IUPAC Evaluation Committee (EvC) Penczek

Stan Penczek reported the results of the IUPAC Evaluation Committee (EvC) consisting of Michael Dröscher, Richard Hartshorne, Colin Humphries, Stanislav Penczek, and Elsa Reichmanis. While the Bureau is responsible for the evaluation of the Divisions and Standing Committees, EvC covers the retrospective evaluation of activities and projects applying statistical methods in order to facilitate identification of trends for the Bureau (Project Committee) and the Council. The detailed statistics can be found in Appendix 5. EvC has started its analysis around 2003/4 with the support of the Divisions and standing Committees.

In the future the statistical analysis should go deeper into the actual impact of the project and corresponding criteria have to be identified. EvC suggests a joint meeting with the Project Committee where proposals are to be presented on ways of identifying the most productive/promising project areas.

In general it can be observed that the number of projects is showing a decreasing tendency with the polymer Division still standing strong with many important contributions. The determination of critically evaluated rate constants is a very important issue for practical application. There are not many contributions to data bases from the Polymer Division. The biggest data base in IUPAC covers solubility data. In total there have been about 3000 individual contributors from 77 countries participating in projects. Members from 54 countries all-over the world have contributed to the progress of IUPAC Projects by acting as a Chairperson.

The question was raised what is done in IUPAC to stay ahead in chemistry in particular in emerging regions. IUPAC documents should be made public during the annual meetings of the NAOs. IUPAC members, NRs are asked to report on important IUPAC projects, not only when they are finished but also when they are still in preparation. On IUPAC-sponsored conferences there is the chance for the IUPAC representative to spread the corresponding information, and in this context it is important that the IUPAC material will be presented on that occasion and up-dated and should be modified by the IUPAC representative to inform about the most successful IUPAC projects and about important changes. Enhancing visibility of IUPAC work is important.

17. Report on the Division Web Page and Electronic Publications (dos Santos)

No new developments are to be reported. Claudio dos Santos will make sure that the communication between the IUPAC members and the electronic IUPAC media (website) is improved. There is still the old website with information late into the 1990ies www.old.iupac.org, an intermediate website www.stage.iupac.org, and the new website www.iupac.org. Claudio dos Santos encouraged all Subcommittee Chairs to check their web presentation and report to him.

18. General Assembly/World Chemistry Congress 2019

Jean-Pierre Vairon announced the application of Paris, France, to perform the 50th IUPAC General Assembly (= 47th World Chemistry Congress) on the occasion of the 100th anniversary of IUPAC in the year 2019 in the Congress Centre and the Maison la Chimie.

19. Future World Polymer Congresses (Supavan Tantayanon – Thailand, Yusuf Yagci – Turkey, Martina Stenzel – Australia)

Application to arrange a World Polymer Congress is advised to be done well in advance (say 10 years). The venue needs to be carefully selected and the Scientific Program as well as the Advisory board to be closely monitored by the Polymer Division.

Supavan **Tantayanon** presented the actual state of the preparations of MACRO 2014 in Chiang Mai. There will be as many keynote speakers as Sessions (16) and 6 plenary lectures and a special slot for the winners of the prizes and for the SAMSUNG and DSM representatives. Keynote and Plenary speeches are not supposed to be in parallel. All Session Chairs have confirmed, response from the invited speakers is expected during fall 2013. The Division offers any help if required and stresses the importance of the Conference.

Chiang Mai is the most important city in Northern Thailand (capital of the Province having the same name), about 700 km (~1hr. flight) from Bangkok - http://de.wikipedia.org/wiki/Chiang_Mai. The venue of the conference – the Chiang Mai International Conference and Exhibition Centre – is about 20 min (car) outside the city centre and 30 min from the International Airport. The conference organization lies in professional hands

(Wild Blue Congress Organizer) with about 10 years of experience and more than 60 Congresses. The Advisory board stands.

Accommodation will be available from \$ 120 ++ in the highest categories over \$80-\$50 to ~\$30 in the lowest category of hotels and \$10-20 in guest houses.

The Scientific Sessions are:

- Recent Developments in Controlled Polymerization (M. Sawamoto)
- Recent Advances in Functional Polymers (T. Demming, P. Theato)
- Polymer Physics: Theoretical Studies and Modeling (M. Rubenstein)
- Advances in Polymer Characterization (M. Hess)
- Polymer Processing and Composites (T. Kikutani)
- Macromolecular Assembly and Nanostructured Polymer (R. Advincula)
- Polymers for Biotechnology and Biomedical Applications (M. Akashi)
- Environmentally Benign Polymers (A.-C. Albertsson)
- Innovation in Polymer Industry (S. Tantayanon)
- Polymers for Emerging Technology: Energy, Information Technology, Optics, Electronics, and Optoelectronics (E. Reichmanis)
- Polymer Education (W. Mormann)
- Polymeric-based Carriers for Medical and Cosmetic Applications (T. Emrick)
- Biopolymers: Advances in Materials, Biomedicine and Health (R. Gilbert)
- Natural Rubber: From Basic to Applications (K. Suchiva)
- Nanofabrication and Nanopatterning: Challenges and Innovation (C. Ober)
- Polymer Surfaces and Interfaces (A. Takahara)

IUPAC related activities

- **Meeting:** SPT Meeting (4 days: 30.06.-03.07.2014) + Division Meeting (2 days: 04./05.07.2014)

(meeting facilities + coffee break + hotel special rate + excursion + dinner)

- **Awards:**
The Samsung-IUPAC Young Polymer Scientist Award
The DSM Performance Materials Award + Symposium
The Polymer International-IUPAC Award
IUPAC Poster Awards (supported by IUPAC)
- **Publication:** Conference proceeding published in Wiley-VCH Macromolecular Symposia
- **Scholarship:**
Travel support or registration fee waive for international young scientists in particular from scientifically emerging regions
- **Promotion for MACRO 2016:** Program book/handout, Desk, Presentation

The direct contact person is Voravee Hoven vipavee.p@chula.ac.th
<http://www.macro2014>

It was announced that USD 10,000 are transferred from Virginia Tech (MACRO 2012) to MACRO 2014 (Chiang Mai, Thailand).

Yusuf Yagci presented information about **MACRO 2016** (Istanbul, Turkey). As the motto for MACRO 2016 'Polymers: Science, Technology and Applications' was chosen. The program, although not yet completely fixed, is not going to be split-up into too many subjects. The idea is to offer 12 topics including a Session on Education.

The next **IUPAC GA and World Chemistry Congress** are scheduled for 05.-13.08.2015 (GA) and 09.-14.08.2015 (World Chemistry Congress).

Martina Stenzel (Australia) presented the application of Cairns, Queensland, Australia, as the venue of MACRO 2018, organized under the auspices of the Australian Chemical Society. The professional and very

enthusiastic presentation was accepted by the Polymer Division and provisional approval was suggested. More information will be given and the final decision will be made during the 2014 meeting of Polymer Division.

20. Other Businesses (Buback & participants)

Final Report of IUPAC project (former Subcommittee Characterization):

“Data Treatment in SEC and Other Techniques of Polymer Characterization. Correction for Band Broadening and Other Sources of Error” (<http://www.iupac.org/web/ins/2009-019-2-400>)

See Appendix 6

Rameshwar Adhikari (Nepal) expressed his thanks for the warm welcome he has experienced as the first representative of his country in IUPAC in general the Polymer Division in particular. He shortly explained history and background of the fresh Nepalese membership. He is happy to start his active membership in the Polymer Division as leader of a WP (Ultimate mechanical properties) and a feasibility study (rubber elasticity)

21. Date of Next Meeting (Hess)

SPT-Meeting 30.06.-03.07. SPT

Division Meeting 04./05.July 2014 **after the SPT-Meeting** and just before MACRO 2014 Chiang Mai, Thailand (06. – 11.07. 2014)

06.07.-11.07. World Polymer Congress

The next General Assembly is scheduled 05.08.-13.08.2015 in Busan, South Korea

22. Closing remarks

Michael Buback closed the 2013 meeting of the Polymer Division. He thanked all participants for their fruitful cooperation and wished a rewarding conference to those who attended MACRO 2012 and a safe travel home.

Michael Hess (Secretary), March 2014

APPENDIX 1

IUPAC POLYMER DIVISION MEETING
09.-10.08.2013
BEFORE THE SPT-MEETING
DURING THE
14th IUPAC GENERAL ASSEMBLY, 09.-15.08.2013
Harbiye Military Museum & Conference Centre and Lutfi Kidar Congress &
Exhibition Centre, Istanbul, Turkey

Agenda
09.08.2013

1. President's Introductory Remarks and Finalizing of the Agenda (Buback)
2. Apologies for Absence
3. Approval of the Minutes of the Division Meeting, Roanoke USA, June 2012 (Hess)
4. Matters Arising (Buback)
5. Report on InterDivSubcomMaterChem – ISMC (Ober)
6. Report on Terminology and Nomenclature Projects – SPT (Jones)
7. Report on Structure-Properties Projects – SSP (Dijkstra)
8. Report on Trends in Polymer Science –STP (Yagci)
9. Report on Polymerization Kinetics & Mechanics – SKM (Hutchinson)
10. Report on Educational Projects and Activities – SPE (Mormann)
11. Report on Division-sponsored Conferences (Buback)
12. Monitoring Projects Projects (Buback)
Visit Michael Dröschner (COCSI)
13. Strategy (Sawamoto)
14. Vice-President's Remarks (Russell)

10.08.2013

15. Report IUPAC Evaluation Committee – EvC (Penczek)
16. President's Remarks (Buback)
17. Electronic Communication (dos Santos)
18. Application GA 2019 – 100 years IUPAC (Vairon)
19. Future Conferences (Tantanayon, Yagci, Stenzel)
20. Other Business (participants)
21. Next Meeting (Hess)

Date of Next Meeting

Before 45th World MACRO 2014, Chiang Mai, Thailand 06.-11.July 2014

SPT-Meeting: 30.06.- 03.07.2014

Division Meeting: 04.06./ 05.06.2014

Appendix 3

Trend articles 2010–2012

Angewandte Chemie – International Edition

1. Light-Induced Click Reactions
2. Highly Fluorescent Semiconducting Polymer Dots for Biology and Medicine
3. Proton Conduction in Metal–Organic Frameworks and Related Modularly Built Porous Solids
4. Biopolymers as a Flexible Resource for Nanochemistry
5. Functional Block Copolymers: Nanostructured Materials with Emerging Applications
6. para-Connected Cyclophenylenes and Hemispherical Polyarenes: Building Blocks for Single-Walled Carbon Nanotubes?
7. Building Bio-Inspired Artificial Functional Nanochannels: From Symmetric to Asymmetric Modification
8. Polymeric Graphitic Carbon Nitride as a Heterogeneous Organocatalyst: From Photochemistry to Multipurpose Catalysis to Sustainable Chemistry
9. Surface Chemistry of Metal–Organic Frameworks at the Liquid–Solid Interface
10. Oils and Fats as Renewable Raw Materials in Chemistry
11. From the Surface to Volume: Concepts for the Next Generation of Optical–Holographic Data-Storage Materials
12. Nitroxides: Applications in Synthesis and in Polymer Chemistry
13. Nanocelluloses: A New Family of Nature-Based Materials
14. Multifunctional Poly(ethylene glycol)s
15. Development and Evaluation of Porous Materials for Carbon Dioxide Separation and Capture
16. Thiol–Ene Click Chemistry
17. Liquid Chromatography–Its Development and Key Role in Life Science Applications
18. Carbon Dioxide Capture: Prospects for New Materials
19. Poly(ethylene glycol) in Drug Delivery: Pros and Cons as Well as Potential Alternatives
20. Exploiting Cavities in Supramolecular Gels
21. Polymeric Multilayer Capsules in Drug Delivery
22. Functional Materials: From Hard to Soft Porous Frameworks
23. Nucleic Acid/Organic Polymer Hybrid Materials: Synthesis, Superstructures, and Applications
24. Synthesis of Functional Polymers by Post-Polymerization Modification
25. Modular Synthesis of Functional Nanoscale Coordination Polymers
26. Two-Dimensional Polymers: Just a Dream of Synthetic Chemists?
27. Metal-Free Organic Dyes for Dye-Sensitized Solar Cells: From Structure: Property Relationships to Design Rules
28. Miniemulsion Polymerization and the Structure of Polymer and Hybrid Nanoparticles
29. Click Chemistry beyond Metal-Catalyzed Cycloaddition
30. Nanogels as Pharmaceutical Carriers: Finite Networks of Infinite Capabilities
31. Metal–Organic Frameworks: Opportunities for Catalysis
32. Poly(2-oxazoline)s: A Polymer Class with Numerous Potential Applications

Macromolecules

1. Polymer/Nanoparticle Interactions: Bridging the Gap
2. ADMET: The Future Revealed
3. Nanocomposites with Polymer Grafted Nanoparticles
4. Structure and Morphology Control in Crystalline Polymer–Carbon Nanotube Nanocomposites
5. Controlled Polymerization of Next-Generation Renewable Monomers and Beyond
6. Microflow Technology in Polymer Synthesis
7. Controlled Depolymerization: Stimuli-Responsive Self-Immolative Polymers

8. Polypeptoid Materials: Current Status and Future Perspectives RAFT Agent Design and Synthesis
9. Polymer Nanoparticles via Living Radical Polymerization in Aqueous Dispersions: Design and Applications
10. Atom Transfer Radical Polymerization (ATRP): Current Status and Future Perspectives
11. Light-Responsive Block Copolymer Micelles
12. Discovery of Methylaluminoxane as Cocatalyst for Olefin Polymerization
13. Novel Ferroelectric Polymers for High Energy Density and Low Loss Dielectrics
14. Shaped Hairy Polymer Nanoobjects
15. o-Nitrobenzyl Alcohol Derivatives: Opportunities in Polymer and Materials Science
16. Proteins Fibrils from a Polymer Physics Perspective
17. Rational Design of High Performance Conjugated Polymers for Organic Solar Cells
18. Dendritic and Hyperbranched Polymers from Macromolecular Units: Elegant Approaches to the Synthesis of Functional Polymers
19. Injectable Block Copolymer Hydrogels: Achievements and Future Challenges for Biomedical Applications
20. Microwave-Assisted Polymerizations: Recent Status and Future Perspectives
21. Triggered Release from Polymer Capsules
22. Top-Down Multidimensional Mass Spectrometry Methods for Synthetic Polymer Analysis
23. Polyhedral Phenylsilsesquioxanes
24. Surface-Induced Polymer Crystallization and the Resultant Structures and Morphologies
25. Block Copolymers for Fuel Cells
26. Controlled Radical (Co)polymerization of Fluoromonomers
27. Bioinspired Polymeric Nanocomposites
28. Click Polymerization: Progresses, Challenges, and Opportunities
29. Responsive Polymers for Detection and Sensing Applications: Current Status and Future Developments
30. Relaxation Phenomena in Vitrifying Polymers and Molecular Liquids
31. Structurally Dynamic Conjugated Polymers
32. Graphene/Polymer Nanocomposites
33. Photoinitiated Polymerization: Advances, Challenges, and Opportunities
34. Interplay of Structure and Dynamics in Macromolecular and Supramolecular Systems
35. Exploitation of Intrinsic Microporosity in Polymer-Based Materials
36. Tailored Assemblies of Block Copolymers in Solution: It Is All about the Process
37. Covalent Adaptable Networks (CANs): A Unique Paradigm in Cross-Linked Polymers
38. Organocatalysis: Opportunities and Challenges for Polymer Synthesis
39. Transmission Electron Microtomography and Polymer Nanostructures
40. Nanoreactors for Polymerizations and Organic Reactions
41. Polymer Scaffolds for Biomaterials Applications
42. Macromolecular Engineering through Click Chemistry and Other Efficient Transformations

Polymer (London)

1. A review of stimuli-responsive shape memory polymer composites
2. Plasmod-PPI: A web-server predicting complex biopolymer targets in plasmodium with entropy measures of protein-protein interactions
3. Theoretical investigation on the white-light emission from a single-polymer system with simultaneous blue and orange emission
4. "Recombinamers" as advanced materials for the post-oil age
5. Nanotubes as polymers

6. Atom transfer radical polymerization in inverse miniemulsion: A versatile route toward preparation and functionalization of microgels/nanogels for targeted drug delivery applications
7. Poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) nanocomposites with optimal mechanical properties
8. How atomic force microscopy has contributed to our understanding of polymer crystallization
9. Study of peptide fingerprints of parasite proteins and drug-DNA interactions with Markov-Mean-Energy invariants of biopolymer molecular-dynamic lattice networks
10. Computer modeling of polymer crystallization – Toward computer-assisted materials' design
11. Composite colloids and patterning
12. Uneven distribution of nanoparticles in immiscible fluids: Morphology development in polymer blends
13. Transmission electron microtomography in polymer research
14. Carbon nanotube induced polymer crystallization: The formation of nanohybrid shish-kebabs
15. From the glassy state to ordered polymer structures: A microhardness study
16. Core cross-linked star polymers via controlled radical polymerisation

Macromolecular Rapid Communications

1. Post-Functionalization of Polymers via Orthogonal Ligation Chemistry
2. Chemistry of Crosslinking Processes for Self-Healing Polymers
3. Light-Triggered Multifunctionality at Surfaces Mediated by Photolabile Protecting Groups
4. Self-Healing Polymers via Supramolecular Forces
5. Nanoscale Inhomogeneities in Thermoresponsive Polymers
6. Progress in Renewable Polymers from Natural Terpenes, Terpenoids, and Rosin
7. Routes to Hydrogen Bonding Chain-End Functionalized Polymers
8. Colloid-Electrospinning: Fabrication of Multicompartment Nanofibers by the Electrospinning of Organic or/and Inorganic Dispersions and Emulsions
9. Anion Responsive Imidazolium-Based Polymers
10. Polymers with Upper Critical Solution Temperature in Aqueous Solution
11. Non-Stoichiometric Polycondensations and the Synthesis of High Molar Mass Polycondensates
12. High Internal Phase Emulsion Templating – A Path To Hierarchically Porous Functional Polymers
13. How to Modulate the Chemical Structure of Polyoxazolines by Appropriate Functionalization
14. Poly(2-oxazoline)s as Polymer Therapeutics
15. Poly(2-Oxazoline)s – Are They More Advantageous for Biomedical Applications Than Other Polymers?
16. Polyoxazolines for Nonfouling Surface Coatings – A Direct Comparison to the Gold Standard PEG
17. Rare Earth Metal-Mediated Group Transfer Polymerization of Vinylphosphonates
18. Advanced Luminescent Materials Based on Organoboron Polymers
19. Alkene Metathesis – A Tool for the Synthesis of Conjugated Polymers
20. Development of Star Polymers as Unimolecular Containers for Nanomaterials
21. Light-Induced Dynamics in Conjugated Bis(terpyridine) Ligands – A Case Study Toward Photoactive Coordination Polymers
22. Polymer Nanostructures Made by Scanning Probe Lithography: Recent Progress in Material Applications
23. Benzo[1,2-b:4,5-b']dithiophene Building Block for the Synthesis of Semiconducting Polymers

24. Polymers for Anion Recognition and Sensing
25. Stimuli-Responsive Water-Soluble Fullerene (C60) Polymeric Systems
26. Bergman Cyclization in Polymer Chemistry and Material Science
27. Functional Microgels Tailored by Droplet-Based Microfluidics
28. Kumada Catalyst-Transfer Polycondensation: Mechanism, Opportunities, and Challenges
29. Poly(cyclic imino ether)s Beyond 2-Substituted-2-oxazolines
30. Scanning Force Microscopy as Applied to Conformational Studies in Macromolecular Research
31. Amino-Acid-Based Block Copolymers by RAFT Polymerization
32. A Nanocage for Nanomedicine: Polyhedral Oligomeric Silsesquioxane (POSS)
33. Polymer Brushes by the "Grafting to" Method
34. Amphiphilic Peptide-Polymer Conjugates with Side-Conjugation
35. One Decade of Microwave-Assisted Polymerizations: Quo vadis?
36. Roles of Interlayers in Efficient Organic Photovoltaic Devices
37. Organic Ambipolar Conjugated Molecules for Electronics: Synthesis and Structure-Property Relationships
38. Synthesis of Poly(lactide)s with Modified Thermal and Mechanical Properties
39. A Road Less Traveled to Functional Polymers: Epoxide Termination in Living Carbanionic Polymer Synthesis
40. On the Importance of Morphology Control in Polymer Solar Cells
41. Polysaccharide-Containing Block Copolymers: Synthesis, Properties and Applications of an Emerging Family of Glycoconjugates
42. Water-Soluble Conjugated Polymers for Fluorescent-Enzyme Assays
43. Cell-mediated Delivery and Targeted Erosion of Vascular Endothelial Growth Factor-Crosslinked Hydrogels
44. Ultra Rapid Approaches to Mild Macromolecular Conjugation
45. pH-Responsive Polymers as Gene Carriers
46. Combining Living Anionic Polymerization with Branching Reactions in an Iterative Fashion to Design Branched Polymers
47. Advances in the Elegance of Chemistry in Designing Dendrimers
48. Poly(ferrocenylsilane) Gels and Hydrogels with Redox-Controlled Actuation
49. Recent Progress on the Photonic Properties of Conjugated Organometallic Polymers Built Upon the trans-Bis(para-ethynylbenzene)bis(phosphine)platinum(II) Chromophore and Related Derivatives
50. Poly(2-oxazoline)s as Smart Bioinspired Polymers
51. Metal-Containing Polymers: Building Blocks for Functional (Nano)Materials
52. Multifunctional Nanoscale Platforms for Targeting of the Cancer Cell Immortality Spectrum
53. Advances in Dielectric Elastomers for Actuators and Artificial Muscles
54. Using Metallo-Supramolecular Block Copolymers for the Synthesis of Higher Order Nanostructured Assemblies

Polymer Chemistry

1. Radical telomerization of fluorinated alkenes with dialkyl hydrogenophosphonates
2. UV- and NIR-responsive polymeric nanomedicines for on-demand drug delivery
3. Functionalized polymersomes for biomedical applications
4. Atom transfer radical polymerization of hydrophilic monomers and its applications
5. Hyphenated separation techniques for complex polymers
6. Nanoscale polymeric penetration enhancers in topical drug delivery
7. Nitroxide radical coupling reaction: a powerful tool in polymer and material synthesis
8. Functional polyacetylenes: hybrids with carbon nanotubes
9. Self-healing polymers based on thermally reversible Diels-Alder chemistry
10. Polymers with redox properties: materials for batteries, biosensors and more
11. Hydrogels locked by molecular recognition aiming at responsiveness and functionality

12. Synthesis of hyperbranched polymers with controlled structure
13. Constructing well-defined star graft copolymers
14. From self-assembled toroids to dynamic nanotubules
15. Progress on multi-compartment polymeric capsules
16. Polyimide memory: a pithy guideline for future applications
17. Making polymeric nanoparticles stimuli-responsive with dynamic covalent bonds
18. Chirality in conjugated polymers: when two components meet
19. Phase separation of supramolecular and dynamic block copolymers
20. Schiff's base as a stimuli-responsive linker in polymer chemistry
21. Activators generated by electron transfer for atom transfer radical polymerization: recent advances in catalyst and polymer chemistry
22. The spinning disk reactor: an example of a process intensification technology for polymers and particles
23. Challenges in polymer analysis by liquid chromatography
24. The role of polymers in detection and isolation of circulating tumor cells
25. Mesogen-jacketed liquid crystalline polymers: from molecular design to polymer light-emitting diode applications
26. Synthesis and polymerization of C-vinyl- and N-vinyl-1,2,3-triazoles
27. Controlled grafting of cellulose fibres – an outlook beyond paper and cardboard
28. Functional PEG-based polymers with reactive groups via anionic ROP of tailor-made epoxides
29. Developments of highly proton-conductive sulfonated polymers for proton exchange membrane fuel cells
30. Molecular imaging with polymers
31. Tailoring polymer architectures with macromonomer azoinitiators
32. Double click reaction strategies for polymer conjugation and post-functionalization of polymers
33. Synthesis of biodegradable polymers from renewable resources
34. Temperature-sensitive nanogels: poly(N-vinylcaprolactam) versus poly(N-isopropylacrylamide)
35. Honeycomb structured polymer films via breath figures
36. Bioerodible polyphosphazenes and their medical potential
37. Solution-processable triarylamine-based electroactive high performance polymers for anodically electrochromic applications
38. Recent progress on phosphonate vinyl monomers and polymers therefore obtained by radical (co)polymerization
39. Synthesis of poly(p-phenylene vinylene) materials via the precursor routes
40. Hyperbranched polyethylenes by chain walking polymerization: synthesis, properties, functionalization, and applications
41. Constructing star polymers via modular ligation strategies
42. Preparation and applications of novel fluoroalkyl end-capped oligomeric nanocomposites
43. Azlactone-functionalized polymers as reactive platforms for the design of advanced materials: Progress in the last ten years
44. Bioinspired conformational changes: an adaptable mechanism for bio-responsive protein delivery
45. Polymeric nanomaterials from combined click chemistry and controlled radical polymerization
46. Functional polymers for optoelectronic applications by RAFT polymerization
47. Single site catalysts for stereoselective ring-opening polymerization of lactides
48. Functionalized cyclic carbonates: from synthesis and metal-free catalyzed ring-opening polymerization to applications
49. Controlled/living radical polymerization in nanoreactors: compartmentalization effects
50. Recent progress on photochromic diarylethene polymers

51. Permethylated cyclodextrin-based insulated molecular wires
52. Synthesis of highly syndiotactic polymers by discrete catalysts or initiators
53. Main-chain photochromic conducting polymers
54. Conjugated polymer nanostructures for organic solar cell applications
55. Some new design strategies for second-order nonlinear optical polymers and dendrimers
56. Initiators for the stereoselective ring-opening polymerization of meso-lactide
57. Intermolecular radical 1,2-addition of the BlocBuilder MA alkoxyamine onto activated olefins: a versatile tool for the synthesis of complex macromolecular architecture
58. Organic-inorganic nanocomposites synthesized via miniemulsion polymerization
59. Perspectives for the mechanical manipulation of hybrid hydrogels
60. Helical poly(isocyanides): past, present and future
61. Synthetic polymers for biopharmaceutical delivery
62. A spoonful of sugar: the application of glycopolymers in therapeutics
63. Design of complex polymeric architectures and nanostructured materials/hybrids by living radical polymerization of hydroxylated monomers
64. Cyclic polyesters: synthetic approaches and potential applications
65. Functionalization of inorganic nanoparticles with polymers for stealth biomedical applications
66. Self-immolative linkers in polymeric delivery systems
67. Recent advances in entropy-driven ring-opening polymerizations
68. Surface modification of carbon nanotubes with dendrimers or hyperbranched polymers
69. Nitrones in synthetic polymer chemistry
70. New micellar morphologies from amphiphilic block copolymers: disks, toroids and bicontinuous micelles
71. Benzotriazole containing conjugated polymers for multipurpose organic electronic applications
72. Polymerization of substituted acetylenes and features of the formed polymers
73. Cryostructuration as a tool for preparing highly porous polymer materials
74. Chain-end- and in-chain-functionalized AB diblock copolymers as key building blocks in the synthesis of well-defined architectural polymers
75. Multiresponsive polymers: nano-sized assemblies, stimuli-sensitive gels and smart surfaces
76. Through-space conjugated polymers consisting of [2.2]paracyclophane
77. RAFT-synthesized copolymers and conjugates designed for therapeutic delivery of iRNA
78. Polymeric vesicles in biomedical applications
79. RAFT polymerization mediated bioconjugation strategies
80. Overcoming the PEG-addiction: well-defined alternatives to PEG, from structure-property relationships to better defined therapeutics
81. Fluorene-containing cardo polymers as ion conductive membranes for fuel cells
82. Topological polymer chemistry: a cyclic approach toward novel polymer properties and functions
83. Polymeric chiral organocatalysts
84. Boron-containing polymers as versatile building blocks for functional nanostructured materials
85. Diels-Alder "click" reactions: recent applications in polymer and material science
86. Recognition of polymer side chains by cyclodextrins
87. Donor-acceptor polymers for advanced memory device applications
88. Catalytic chain transfer and its derived macromonomers
89. Controlled polymerizations for the synthesis of semiconducting conjugated polymers
90. Benzo[1,2-b:4,5-b']dithiophene-based conjugated polymers: band gap and energy level control and their application in polymer solar cells

91. Recent advances in block copolymer-assisted synthesis of supramolecular inorganic/organic hybrid colloids
92. Slowing the growth of ice with synthetic macromolecules: beyond antifreeze(glyco) proteins
93. Recent developments in polymer stabilised liquid crystals
94. Miktoarm star polymers: advances in synthesis, self-assembly, and applications
95. Protein-polymer amphiphilic chimeras: recent advances and future challenges
96. Chemistry, chances and limitations of the radical ring-opening polymerization of cyclic ketene acetals for the synthesis of degradable polyesters
97. Self-healing and self-mendable polymers
98. Self-assembly and thermodynamic synthesis of rotaxane dendrimers and related structures
99. Polymer brushes: Applications in biomaterials and nanotechnology
100. Polymer prodrug approaches applied to paclitaxel
101. Catalyzed chain growth (CCG) on a main group metal: an efficient tool to functionalize polyethylene
102. Metal catalysts for epsilon-caprolactone polymerisation
103. Recent advances in the design of bioconjugates from controlled/living radical polymerization
104. Mass spectrometry in polymer chemistry: a state-of-the-art up-date
Stamps, inks and substrates: polymers in microcontact printing
105. Progress in ionic organic-inorganic composite membranes for fuel cell applications
106. Conjugated polymers for high-efficiency organic photovoltaics
107. Furans as offspring of sugars and polysaccharides and progenitors of a family of remarkable polymers: a review of recent progress
108. Water-soluble conjugated polymers as the platform for protein sensors
109. Towards poly(ester) nanoparticles: recent advances in the synthesis of functional poly(ester)s by ring-opening polymerization
110. Polycarbazoles for plastic electronics
111. End group removal and modification of RAFT polymers
112. Thiol-ene "click" reactions and recent applications in polymer and materials synthesis
113. Photo-responsive systems and biomaterials: photochromic polymers, light-triggered self-assembly, surface modification, fluorescence modulation and beyond
114. Sequence-controlled polymerizations: the next Holy Grail in polymer science?
115. Highly permeable polymers for gas separation membranes
116. Polymer-protein conjugates: an enzymatic activity perspective
117. Electroactive polymers for neural interfaces
118. Synthesis of glycopolymers and their multivalent recognitions with lectins
119. Flame retardancy of polylactide: an overview
120. Hyper/highly-branched polymers by radical polymerisations
121. Colloidal crystals formed by polymer brush-afforded fine particles
122. Cyclodextrin functionalized polymers as drug delivery systems
123. Clickable initiators, monomers and polymers in controlled radical polymerizations

APPENDIX 4

Project Expense vs. Budget

Through 8 July 2013	Actual	Budget	Over/ (Under) Budget	% of Budget	Planned End Date
400-Macro					
IMACRO Contract	50,146	60,000	(9,854)	84%	
Samsung Fund Income	34,500	70,481	(35,981)	49%	
Wiley VCH Royalties	8,512	17,965	(9,453)	47%	
2000-028-1-400C Russell	3,000	3,000	-	100%	Completed
2003-009-1-400 Wassner	-	-	-	-	30-Jun-2008
2003-038-4-400C Alstaedt	7,999	8,000	(1)	100%	Completed
2003-060-2-400 Chang	6,500	6,500	-	100%	31-Dec-2012
2004-022-3-400 Fitzgerald	7,000	7,000	-	100%	30-Apr-2007
2004-040-1-400 Vana	3,498	3,500	(2)	100%	1-Sep-2012
2004-043-1-400C Vert	9,976	10,000	(24)	100%	Completed
2005-005-2-400 Chang/Stepo	6,000	6,000	-	100%	31-Dec-2012
2005-007-1-400T Wilks	-	-	-	-	Terminated
2005-011-3-400 Luruli	2,344	5,000	(2,656)	47%	31-Dec-2012
2005-023-2-400 Steininger	1,916	3,000	(1,084)	64%	31-Dec-2013
2005-043-2-400C Ober	6,000	6,000	-	100%	Completed
2006-004-1-400 He	6,000	6,000	-	100%	30-Jun-2013
2006-028-1-400 Vohidal	6,000	6,000	-	100%	1-Sep-2009
2006-041-1-400C Hess	6,000	6,000	-	100%	Completed
2007-004-1-400 Handge	2,425	4,000	(1,575)	61%	31-Dec-2013
2007-008-1-400 dos Santos	11,000	11,000	-	100%	1-Sep-2012
2007-058-1-400 Gilbert	2,664	6,000	(3,336)	44%	31-Dec-2013
2008-015-1-400 Mormann	5,578	6,000	(422)	93%	30-Jun-2011
2008-020-1-400 Hodge	4,638	5,000	(362)	93%	31-Dec-2011
2008-028-1-400 Auhl	-	5,000	(5,000)	-	31-Dec-2013
2008-032-1-400C Hiorns	5,000	5,000	-	100%	Completed
2009-019-2-400 Meira	3,810	5,000	(1,190)	76%	31-Dec-2012
2009-047-1-400 Hellwich	5,224	6,000	(776)	87%	1-Apr-2013
2009-050-1-400 Moad	3,400	5,300	(1,900)	64%	31-Dec-2012
2010-007-1-400 Moad	3,370	6,000	(2,630)	56%	1-Apr-2013
2010-019-1-400 Bucknall	4,517	5,000	(483)	90%	1-Apr-2014
2010-027-2-400 Bertin	-	1,000	(1,000)	-	31-Dec-2013
2010-029-3-400 Yamaguchi	3,000	3,000	-	100%	31-Dec-2013
2010-032-3-400 Mormann	1,733	9,000	(7,267)	19%	30-Sep-2014
2010-036-1-400 dos Santos	2,000	2,000	-	100%	31-Dec-2012
2010-062-1-400C Adhikari	-	-	-	-	Completed

Project Expense vs. Budget

Through 8 July 2013	Actual	Budget	Over/ (Under) Budget	% of Budget	Planned End Date
2011-013-2-400 Hess	2,950	5,360	(2,410)	55%	31-Dec-2013
2011-033-1-400 Chang/Stepito	2,392	3,000	(608)	80%	
2011-034-2-400 Barner	-	1,000	(1,000)	-	1-Mar-2014
2011-052-1-400C Kratochvil	5,000	5,000	-	100%	Completed
2012-001-1-400 Ober	1,990	6,000	(4,010)	33%	31-Jan-2015
2012-027-3-400 Ober	842	6,000	(5,158)	14%	1-Mar-2015
2012-042-1-400 Vert	1,830	4,500	(2,670)	41%	31-Dec-2013
2012-048=3-400 Hiorns	-	5,000	(5,000)	-	1-Jun-2016
2013-012-1-400 Buback	-	10,000	(10,000)	-	31-Dec-2014

APPENDIX 5
IUPAC Evaluation Committee

IUPAC, General Assembly , Istanbul 2013

No of Projects Started: Div/Comm/year

Division/Comm	Year, started										
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
I. Phys/Biophys	6	4	6	3	10	8	4	5	1	5	52
II. Inorg	2	1	2	3	-	4	3	5	2	-	22
III. Org/Bio	2	-	2	2	2	2	5	-	2	2	19
IV. Poly	7	7	9	6	5	5	3	8	4	3	57
V. Analyt	8	-	8	3	5	6	2	5	3	7	47
VI. Chem/Env	4	6	1	3	3	4	2	2	5	3	33
VII. Chem/Hum H	1	6	3	5	3	4	2	2	5	-	31
VIII. Chem/Nom	1	1	1	1	2	-	2	5	-	-	13
CHEMR	-	1	-	1	1	1	3	1	3	1	12
COCI	-	1	-	1	-	1	1	-	-	-	4
CCE	1	1	6	2	2	1	2	5	-	3	23
CPEP	2	-	-	2	-	-	1	-	-	-	5
EC	2	2	1	3	2	1	2	-	1	-	14
Total	36	30	39	35	35	37	32	38	26	24	332

EVC, FC, PC, ICTNS, PAC: not included (low number)

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IUPAC, General Assembly , Istanbul 2013

Major Subjects of Projects/Divisions. Started: 2003-2013

Division	„Scoping Projects“ ¹⁾	Nomenclature, Standards ²⁾	Databases ³⁾	Novel and improved experimental methods	Projects aimed at publishing books, chapters	Chemistry Education	Workshops, Conferences	Other (difficult to define)	Total ⁴⁾
I. Physical and Biophysical	3	9	19	7	4	-	-	3	45/121
II. Inorganic	-	4	13	4	-	1	-	4	26/61
III. Organic and Biomolecular	4	3	2	1	3	3	2	3	21/51
IV. Polymer	1	22	1	22	-	13	1	-	60/118
V. Analytical	-	12	22	11	-	3	-	3	51/205
VI. Chemistry and the Environment	2	5	2	19	4	-	3	-	35/72
VII. Chemistry and Human Health	-	14	10	4	-	6	-	-	34/72
VIII. Norm TOTAL	10	69	69	68	11	26	6	13	272 / 700

1) Projects to define future activities and terminology, 2) Collaboration of data

4) x/y = from 2003 to 2013/total (from the first one in a given Division) {272 (332)/~700}

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IUPAC, General Assembly , Istanbul 2013

No of years to completion of projects started > 2003.

Division & Comm./ years	1	2	3	4	5	6	7	8	9	10	>10
I. Phys/Biophys	4	8	6	1	2	3	2				
II. Inorg		1	1	3	3	1					
III. Org/Bio	2	2	2	3	1					1	
IV. Poly	8	2	2	2	3	5	2		1		
V. Analyt	1	5	7	5	2	1	1	1			
VI. Chem/Env	1	4	7	5	4	1	1	1			
VII. Chem/Hum H	2	2	1		3						
VIII. Chem Nom				1							
CHEMR		2		1							
COCI	2	1	1		1	1					
CCE	5	3	5								
CPEP		2	1								
EC	4	3	1	1	1						
(29 35 34 22 20 12 6) +4 = 162 (out of ~ 300)											

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IUPAC, General Assembly , Istanbul 2013

No of Members in Projects; 1997-2012

Algeria: 3	Finland: 15	Namibia: 1	Slovenia: 4
Argentina: 29	France: 130	Nepal: 1	Spain: 27
Australia: 132	Germany: 280	Netherlands: 79	Sri Lanka: 1
Austria: 42	Greece: 7	New Zealand: 20	Sweden: 52
Bangladesh: 7	Guatemala: 2	Nicaragua: 1	Switzerland: 53
Belgium: 61	Hungary: 27	Nigeria: 3	Taiwan: 15
Brazil: 55	India: 45	Norway: 16	Thailand: 5
Bulgaria: 8	Ireland: 8	Pakistan: 6	Tunisia: 1
Cameroon: 1	Israel: 43	Panama: 3	Turkey: 13
Canada: 112	Italy: 71	Paraguay: 1	United Arab Emirates: 2
Chile: 7	Jamaica: 2	Peru: 1	United Kingdom: 295
China: 82	Japan: 146	Philippines: 4	United States: 509
Colombia: 3	Jordan: 4	Poland: 62	Uruguay: 16
Costa Rica: 14	Kenya: 5	Portugal: 23	Uzbekistan: 1
Croatia: 3	Korea: 47	Puerto Rico: 5	Venezuela: 3
Cuba: 1	Kuwait: 3	Republic of Singapore: 12	Zimbabwe: 1
Czech Republic: 135	Luxembourg: 1	Republic of South Africa: 35	
Czechoslovakia: 1	Malaysia: 12	Romania: 1	
Denmark: 33	Mauritius: 3	Russia: 77 / USSR: 2	
Egypt: 7	Mexico: 10	Serbia: 1	
Ethiopia: 6	Morocco: 2	Slovakia: 11	
			TOTAL:2966

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IUPAC, General Assembly , Istanbul 2013

No of Chairs: / Country 1997-2013

Argentina: 7	Hungary: 8	Poland: 16
Australia: 21	India: 6	Portugal: 5
Austria: 6	Ireland: 1	Republic of South Africa: 5
Bangladesh: 3	Israel: 3	Romania: 1
Belgium: 11	Italy: 25	Russia: 18
Brazil: 9	Jamaica: 1	Slovakia: 4
Bulgaria: 2	Japan: 19	Slovenia: 4
Canada: 21	Kenya: 1	Spain: 8
China: 9	Korea: 5	Sri Lanka: 1
Costa Rica: 1	Luxembourg: 1	Sweden: 13
Croatia: 2	Malaysia: 1	Switzerland: 4
Czech Republic: 27	Mauritius: 1	Taiwan: 2
Denmark: 4	Mexico: 2	Turkey: 2
Egypt: 1	Nepal: 1	United Kingdom: 83
Ethiopia: 1	Netherlands: 14	United States: 96
Finland: 1	New Zealand: 7	Uruguay: 1
France: 15	Nigeria: 1	TOTAL: 564
Germany: 41	Norway: 4	
Greece: 6	Philippines: 2	

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No of countries: 54

IUPAC, General Assembly , Istanbul 2013

Projects-subjects (ca 10% not included)

Division & Committee	Year , Subject										
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Analysis	5	4	4	6	3	2	4	3	2	3	36
Data Base	9	6	7	5	4	8	9	9	5	5	67
Education	5	5	12	4	2	-	5	3	-	1	37
Nomenclature/Terminology	5	9	5	7	6	9	6	13	4	5	69
Organization	-	2	2	1	2	2	1	2	3	-	15
(Novel) Materials, Experiments	5	4	6	10	7	7	5	6	5	2	57
Workshops, Courses	4	2	1	1	2	4	4	1	4	1	24
Total	33	32	37	34	26	32	34	37	23	17	305

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APPENDIX 6

July 2013

Progress Report of IUPAC project (former Subcommittee Characterization):

“Data Treatment in SEC and Other Techniques of Polymer Characterization. Correction for Band Broadening and Other Sources of Error” (<http://www.iupac.org/web/ins/2009-019-2-400>)

The following table lists the project sublines and the members involved. Most of the contributions were produced on Sublines 2, 3, 4, 5, and 9 (in blue).

SUBLINES	MEMBERS INVOLVED
1. Effect of the injected polymer mass on the peak elution times of narrow standards and on the derived molar mass calibration.	D. Berek, P. Castignolles, M. Martin, M. Netopilik, J. Vega, G. Meira
2. Triple-detection SEC: direct estimation of an unbiased MMD of narrow standards without explicit calculation of the BBF.	P. Castignolles, T. Chang, M. Martin, M. Netopilik, J. Vega, G. Meira
3. Propagation of errors into the Distribution of Long Chain Branches, as determined by SEC/ Visc. or SEC/ LS.	P. Castignolles, T. Chang, M. Netopilik, J. Vega, G. Meira
4. Quantitative determination of the MMD and other distributions in chromatographically-complex polymers (e.g.: polymer mixtures and copolymers).	D. Berek, M. Martin, B. Trathnigg
5. Evaluation of theoretical models for LC of polymers, and their eventual use for improving polymer characterization.	F. Dondi, A. Felinger, L. Pasti, M. Martin, M. Netopilik
6-7. Procedures for robust baseline identification; Swelling/ unswelling of the gel.	J. Baumgarten
8. Compensation of the dependence of detector response on molar mass.	D. Berek, B. Trathnigg, J. Vega, G. Meira
9. Study of preferential solvation.	D. Berek, B. Trathnigg
10. Promotion of the recommended data treatment through simulation programs and other media, in the context of education of chromatographers.	J. Reijenga

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Chromatography Symposia where 3 Project Meetings took place

The **First Project Meeting** took place in Rome, in Sept. 6-10, 2010, at the 16th. International Symposium on Separation Sciences (16th. ISSS, <http://www.16issssrome2010.it>). Most of the project members presented contributions at the Rome Symposium. The assisting members were: G. Meira, D. Berek, T. Chang, F. Dondi, M. Martin, L. Pasti, and A. Felinger. Even though the project members J. Vega, P. Castignolles, and B. Trathnigg did not attend, they nevertheless coauthored some of the presentations.

The following articles were presented (Project Members, underlined):

1. D. Berek, “Two-Dimensional Liquid Chromatography of Synthetic Polymers” (Keynote Lecture).
2. A. Felinger, “Mapping the Surface Heterogeneity of Reversed-Phase Packing Materials with Solvent Adsorption” (Keynote Lecture).
3. F. Dondi, A. Cavazzini, L. Pasti, “Stochastic Methods in Theoretical Chromatography; an Overview and Recent Achievements” (Keynote Lecture).
4. G.R. Meira, J.R. Vega, P. Castignolles, “Quantification of Long Chain-Branched Homopolymers by Multidetector Size Exclusion Chromatography: A Critical Assessment” (Oral Comm.)
5. T. Chang, Y. Kim, S. Ahn “Martin’s Rule for HPLC Retention of Polystyrene Oligomers” (Oral Comm.)
6. M. Martin, M. Mishra, A. De Wit, C. Grivel, S. Heinisch, “Sample Solvent Strength and Viscous Fingering Effects in Two-Dimensional Liquid Chromatography” (Oral Comm.)
7. L. Pasti, A. Martucci, A. Alberti, N. Marchetti, A. Cavazzini, F. Dondi, “Pharmaceutical Retention Mechanisms of Hydrophobic Zeolites” (Oral Comm.)
8. B. Trathnigg, “Two-dimensional Separation of Amphiphilic Polymers and Oligomers” (Oral Comm., not presented).
9. H. Lee, T. Chang, “Characterization of PS-graft-PI by 2D-LCCC” (Poster).
10. S. Ahn, T. Chang, “2D-TGIC Characterization of Comb-Polymer by Isotope Effect” (Poster).
11. I. Kiss, A. Felinger, “Totally Porous or Superficially Porous Stationary Phase?. Comparison of the Mass Transfer Kinetics” (Poster).
12. P. Vajda, A. Cavazzini, A. Felinger, “Adsorption Equilibria of Proline in Hydrophilic Interaction

Chromatography" (Poster).

13. A. Cavazzini, A. Massi, L. Pasti, E. Dondi, "Continuous Reaction on Proline Functionalized Silica Stationary Phase under Flow Conditions and High Pressure: the Case of Slow and Fast Aldolic Reactions" (Poster).

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The **Second Project Meeting** took place in Torun (Poland), in Sept. 9-12, 2012, at the 9th. International Symposium on Chromatography (ISC'2012) (<http://en.isc2012.pl/program>). Most of the project members presented contributions at the Rome Symposium. The assisting members were: G. Meira, M. Netopilik, D. Berek, M. Martin, J. Vega, and A. Felinger.

The following articles were presented (Project Members, underlined):

14. D. Berek, Tutorial Letter: "Recent Progress in Liquid Chromatography of Synthetic Polymers".
15. A. Felinger, P. Vajda, "Solvent Adsorption in Liquid Chromatography".
16. M. Netopilik, "Problems in Detection of Branching in SEC with Triple Concentration/Viscometric and Light Scattering Detection", Poster.
17. G.R. Meira, J.R. Vega, L.A. Clementi (2012), "Long Chain-Branching by Size Exclusion Chromatography: Effects of Molecular Topology and Other Sources of Error", Oral Presentation.
18. J.R. Vega, L.A. Clementi, G.R. Meira, M.M. Yossen, L.M. Gugliotta (2012), "Unbiased Molar Mass Distributions of Narrow Polymers by Size Exclusion Chromatography with Light Scattering Detection", Poster.
19. J.R. Vega, D. Berek, G.R. Meira (2012), "Polymer Characterization by SEC with a Concentration Detector. Errors in the Average Molar Masses Due to Contamination by a Minority Constituent", Poster.
20. M.M. Martin, F. Steiner, M. Heidorn, M. Plante, F. McLeod, "On the Way towards Standard-Free Quantitative and Qualitative Analysis in Liquid Chromatography".

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The **Third Project Meeting** will take place in Porec (Croatia), on Sept. 25-28, 2012, at the 19th. International Symposium on Separation Sciences, "New Achievements In Chromatography", 25-28 September 2013, Poreč, Croatia (<http://pierre.fkit.hr/hdki/iss/>). The expected assisting members are G. Meira and D. Berek.

The following articles will be presented (Project Members, underlined):

21. L.A. Clementi, J.R. Vega, G.R. Meira, "Randomly-Branched Polymers by Size Exclusion Chromatography with Triple Detection: Computer Simulation Study on Biases in Distributions of Molar Masses and Degrees of Branching".
22. D. Berek, "Comprehensive Molecular Characterization of Complex Polymer Systems by Advanced Liquid Chromatography Methods".

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Some Recent Publications in Scientific Journals

23. M. Yossen; J. Vega; T. Chang; G.R. Meira (2012), "Determination of the Band Broadening Function in Size Exclusion Chromatography with Light-Scattering Detection", *J. Liq. Chromatogr. & Rel. Technol.*, Vol. 35, pp 79–94.
24. M. Netopilik (2012), "Size Exclusion Chromatography Separation of Randomly Branched Polymers with Tetrafunctional Branch Points and Local Dispersity", *J. Chromatogr. A*, 1260, 97-101.
25. K. Dusek, M. Netopilik, P. Kratochvil (2012), "Nonuniformities of Distributions of Molecular Weights of Grafted Polymers", *Macromolecules*, 45, 3240-3246.
26. Singla, P., Mehta, R., Berek, D., Upadhyay, S.N. (2012), "Microwave-Assisted Synthesis of Poly(Lactic Acid) and its Characterization using Size Exclusion Chromatography", *J. Macromol. Sci. A*, 49, 963-970.
27. S. Ahn, H. Lee, S. Lee, T. Chang (2012), "Characterization of Branched Polymers by Comprehensive Two-Dimensional Liquid Chromatography with Triple Detection", *Macromolecules*, 45, 3550-3556.
28. Lee, W., Cho, Y.J., Choi, H.R., Park, H.J., Chang, T., Park, M., Lee, H. (2012), "Elution Behavior of Shortened Multiwalled Carbon Nanotubes in Size Exclusion Chromatography", *J. Separ. Sci.*, 35, 3250-3256.
29. M. Gaborieau, P. Castignolles (2011), "Size Exclusion Chromatography of Branched Polymers and Polysaccharides", *Anal. Bioanal. Chem.*, 399, 1413-1423.

Greg Meira, July 2013