

POLYMER DIVISION MEETING at 47th World Polymer Congress
Cairns, Australia
30th June, 2018 (09:00-17:30)
July 1st, 2018 (09:00-16:30)

Tully 2 & 3 Rooms, Ground Floor, Pullman Cairns International Hotel

Those attending: Chin Han **Chan** (Malaysia) AM, Claudio **dos Santos** (Brazil) AM, Christopher **Fellows** (Australia) SPED, TM, Jiasong **He** (China) NR, Michael **Hess** (Germany) NR, Roger **Hiorns** (France) TM, Igor **Lacik** (Slovakia) TM, Robin **Hutchinson** (Canada) TM, Jan **Merna** (Czech Republic) observer, Graeme **Moad** (Australia) AM, Greg **Russell** – Division President (New Zealand), Christine **Luscombe** - Division Vice-President (USA), Olga **Philippova** (Russia) NR - SPT, Natalie **Stingelin** (UK) SPT, TM, Patrick **Theato** (Germany) AM-SPED, Paul **Topham** (UK) TM-SPT, Michael **Walter** Division Secretary (USA), Myung-Han **Yoon** (Republic of Korea) SPT, Chris **Ober** (USA) Bureau ISML, John **Matson** (USA) observer, Marloes **Peeters** (UK) SPT, Volker **Abetz** (Germany) observer, Lena **Horne** (Canada) guest, Song **Liu** (Canada) guest, Peter **Mallon** (S. Africa) NR, Stan **Slomkowski** (Poland) SPT, Karl-Heinz **Hellwich** (Germany), Wenbing **Hu** (China) observer, Stefano V. **Meille** (Italy) observer, Richard **Hartshorn** (New Zealand) Secretary General, Yusuf **Yagci** (Turkey) TM, Dave **Haddleton** (UK) observer, Voravee **Hoven** (Thailand) NR, Doo Sung **Lee** (Republic of Korea) AM, Qifeng **Zhou** (China) observer, Sabine **Beuermann** (Germany) NR.

Saturday, 30.06.2018, 09:00-12:30

1.0 President's Introductory Remarks and Welcome for attendees, apologies for absentees

The Division President Greg Russell welcomed the Division members, observers and guests. Greg made a special note of three visitors:

- **Richard Hartshorn** (University of Canterbury, New Zealand) – IUPAC Secretary General
- **Peter Mallon** (Stellenbosch University, South Africa) – National Representative
- **Wenbing Hu** (Nanjing University, China) – Subcommittee on Structure and Properties of Commercial Polymers

2.0 Apologies for Absence

Absent members sent their apologies together with greetings to the Division, namely Mitsuo Sawamoto, Mario Malinconico, Jan van Hest, Ram Adhikari, Ray Boucher, Michael Buback, and Dick Jones.

3.0 Approval of the Minutes of the Division Committee Meeting, Sao Paula, July 2017

The (corrected) minutes recorded from the 2017 meeting in Sao Paula, Brazil were accepted with unanimous acceptance by the division.

4.0 IUPAC Strategic Plan (Richard Hartshorn)

- IUPAC needs to engage more with the plan, and regularly visit the plan and consider what is going on (what can be done better)
- Big challenges for IUPAC – financial stability (getting funds from member countries)
- Convincing these countries the value for the money they are getting
- Diversity challenges (important to maintain geographic diversity, members feel like the can be involved – good mix in Div IV, gender diversity – maintain that level with active

members – IUPAC is an aging organization – we need to be actively working to include/engage younger chemists on the committees

- Discussion on getting younger chemists involved (starting project group)
- Getting more industry involvement
- Junior faculty – helping them develop their courses
- IUPAC has become more academic - less industry driven
- Less Industry support from the middle level of management
- John and Paul (NSF some support, RSC gave full support)
- Young observers showing up and being socially involved, it helps to get folks involved – younger chemists
- Encourage colleagues or someone who would be good for IUPAC

5.0 Highlights of 2017/2018 Web/Twitter/Pubs (Gregory Russell)

- Launch of the twitter site
- Not just Greg has the keys to the kingdom! (anyone can pass along information to getting sent out on twitter)
- Cover and broad coverage in Chemistry International (cover picture)

6.0 Update on the Trade Booth at MACRO 2018 (Melissa Chan)

- Sun – Thu July 1-5 (Collaborate and Educate)
- The IUPAC Polymer Division is looking to meet you
- Meet the president and vice president
- Meet-the-course-instructor
- Meet the chair person for MACRO 2022 Lena Home and Song Liu
- Autograph – selfie
- Involvement in the polymer division at Paris IUPAC General Assembly

7.0 Polymer Division (Russell and Luscombe)

- Polymer Division Members
- Elections for divisional elections
- 2019 Elections, rules and guidelines for TM/AM/NR
- Two-year term (send Christine your nominations)

8.0 Announcements (Gregory Russell)

- Intra-divisional Appointments 2018:
- Project Manager(s) (new position, for IUPAC Secretariat): **Paul Topham** Website manager (new position for IUPAC Secretariat): **Chris Fellows, Claudio dos Santos**
- Subcommittee on Polymer Terminology (SPT): Chair: **Roger Hiorns**, Secretary: **Paul Topham**
- Subcommittee on Polymer Education (SPed): **Chair Patrick Theato**, Secretary: **Chris Fellows**
- Subcommittee on Modeling of Polymerization Kinetics and Processes (SMPKP): Co-Chair: **Robinson Hutchinson**, Co-Chair: **Sabine Beuermann**
- Subcommittee on Structure and Properties of Commercial Polymers (SSPCP): Chair: **Jiasong He** (East), **Iakovos Vittorias** (West), Secretary: **Dietmar Auhl**, East Asia Research Meeting – Chair: **Chang-Sik Ha**, Secretary: **Soonhoo Lim**
- Conference Applications Coordinator (unofficial position): **Igor Lacik**
- Awards Coordinator (unofficial position): **Michael Hess**

- Lots of great projects, but not enough money to fund all the excellent polymer division projects
- Project committee will give money to interdivisional projects
- Involvement in the polymer division at Paris IUPAC General Assembly
- MACRO 2018 – very well organized, conference has not lost money

9.0 Subcommittee on Polymer Education (SPeD) (Patrick Theato, Chris Fellows)

- Election of Office holders and new members
- Outputs:

Pure & Applied Chemistry, 90(6), 939 2018
 Characterization of polymer electrolytes by dielectric response using electrochemical impedance spectroscopy
 Chin Han Cha and Hans-Werner Kammer
doi.org/10.1515/pac-2017-0911

Pure & Applied Chemistry, 90(6) 955, 2018
 Determination of thermodynamic and structural quantities of polymers by scattering techniques
 Birgit Fischer and Volker Abetz
doi.org/10.1515/pac-2017-1101

Pure & Applied Chemistry, 90(6) 969, 2018
 Education program for controversial defect of recent X-ray instrument termed as a simultaneous small angle X-ray scattering and wide angle X-ray diffraction measuring instrument
 Masaru Matsuo, and Yuezhen Bin
doi.org/10.1515/pac-2017-0801

Chemistry International, 39(4), 24, 2017 IUPAC in Polymer Education Christopher Fellows, and Patrick Theato doi.org/10.1515/ci-2017-0408

- Webpage update - Fellows
- Current Project update
 - o Enhancing Website
 - o Wikipedia
 - o UNESCO/IUPAC Postgraduate Course in Polymer Science
 - o Short Courses in Polymer Science
 - o Chemistry Teacher International – Articles based on Short Course Presentations
 - o Polymer Syllabus
- K-12 Working Group – M. Walter
- World Mapping of Polymer Education
- SPeD YouTube Channel, Twitter
- Emerging Polymer Technologies Summit Hanoi
- Polymer Education Symposium at MACRO 2018
- Geographical Representation of Members

10.0 Macro 2022 – Winnipeg Discussion (Lena Horne)

- Summer in Winnipeg

- Addition to Co-Chair Team (João Soares, Professor – University of Alberta Canada)
- Themes and work Plan (Polymer characterization, synthesis and kinetics, nanotech... etc.)
- Sponsors – two confirmed (Tourism Winnipeg, Artiz REIT – a commercial real estate company in Manitoba)
- International Advisory Committee from Australia, Canada, Mexico, Slovakia, S. Korea, Turkey, USA

11.0 Subcommittee on Polymerization Kinetics (Robin Hutchinson)

- Subcommittee Mandate – consistent values of rate parameters in free radical polymerization systems
- Project Overviews, 2 closing, 3 – in progress, 1 new
- A new IUPAC Initiative – interdivisional discussion of critical evaluation of chemical data – 1st. meeting was in São Paulo
- Future outlook on subcommittee activities (applications are getting more specialized)

12.0 MACRO 2016 – challenges and triumphs (Yusuf Yagci)

- Strong International Representation
- 672 total participants, only 42 cancellations
- Plenary Speakers (Buback, Matyjaszewski, Moeller, Hadjichristidis, Sariciftci, Aida)
- Sponsors and contributors (ACS, Springer, BASF, Mettler Toledo, Wiley, IUPAC, etc.)

Saturday, 30.06.2018, 14:00-17:30

13.0 MACRO 2024 – (Topham and Haddleton)

- MACRO 2024 combined with Warrick Polymer Conference
- Easily accessed, lots of conferences are conducted at this location
- July 1st – July 5th 2024
- The concept is approved – Paul Topham will be coordinating
- Endorsement form from IUPAC!
- We can begin advertising that this will be occurring!

14.0 MACRO 2026 Possibilities – (Gregory Russell)

- Auckland (might be too far to travel), Jerusalem, Mexico?
- We need to contact potential hosts/contacts in Jerusalem
- Israel is a member of IUPAC – getting involved with Israel within IUPAC is not a political statement
- Would there be difficulty getting students from some countries entering Israel? If there was difficulty granting VISA then it would be out.
- MACRO 2026 would be Asian / Australasia
- MACRO Mexico – potential host for a meeting, have the US be the sponsor, but hold the meeting in Mexico
- Proposals:
 - o Melissa Chan - Malaysia (2026 – MACRO)
 - o Vote on interest of proposed countries:
 - o Auckland – 17, Israel – 11, Mexico – 18, **Malaysia – 24**, Italy – 12 (**not 2026**), China – 17
- Ask the Chemical Society of Mexico to contact the secretariat

- Hosting in African – Ghana or South Africa, MRS has been held in Africa
- It will be good to see how the Division II meeting in Botswana

15.0 MACRO 2024 – (Miscellaneous IUPAC Bureau Matters)

- IUPAC's 100th celebration of the start of IUPAC and 2019 is the year of the periodic table
- IUPAC was founded in Paris in 1919 and the 150th Anniversary of Mendeelev's Discovery of Periodicity
- 4 main initiatives (periodic table of Younger Chemists (40 or under at the time of nomination, Global Women's Breakfast, IUPAC stories, periodic table challenge)
- Stories that will be covered for the 100th anniversary (Featured stories)
- What on Earth is InChI, The Wikipedia Polymer Partnership, why does the world need a common language for scientists?
- Global Periodic Table Challenge – questions are being put together and submitted by SPED
- *IUPAC and the Organization for Prohibition of Chemical Weapons*
- Project 2018-022 "Building broader and Deeper Links between OPCW and IUPAC"
- One person from each of the division will attend the 2018 OPCW Conference of States
- Project 2018-022 "Building broader and Deeper Links between OPCW and IUPAC"
- Parties (CSP) 19-20 November and the 4th convention review.
- We need one person for the polymer division to represent
- Marloes Peeters is a great candidate for the Prohibition of Chemical Weapons

16.0 Subcommittee on Polymer Terminology – (Roger Hiorns)

- Purpose: to define terms in polymer science and define polymer nomenclature on behalf of Division IV and Division VIII.
- Discussion about a social secretary
- Continuing the "craft" of Dr. Karl Heinz
- Dendrimers document published
- Projects wrapping up / running / and newly funded and new projects coming through

16.1 Project Statuses (Nearing Completion)

2009-047-1-400 Stereochemical Aspects in Polymer Science – Hellwich & Moad

2010-036-1-400 List of Keywords – dos Santos & Slomkowski

2012-001-1-400 Terminology of Nanomaterials and Nanotechnology in Polymer Science – Ober & Jones

2003-060-2-400 Terminology on Separation of Macromolecules – Hess

2011-035-1-800 A Brief Guide to Polymer Terminology (Brief Terms) – Hiorns, Vohlídal

2013-048-3-400 Structure-based Nomenclature for Regular Star and Brush Polymers – Chen

16.2 Projects Running

2006-028-1-400 Terminology for Conducting, Electroactive and Field-responsive Polymers – Vohlídal

2010-007-1-400 Terminology for Chain Polymerization – Luscombe & Moad

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

2014-033-1-400 Nomenclature for polymeric carriers bearing chemical entities with specific activities and names – Vert

2014-034-2-400 Brief Guide to Polymerization Terminology – Luscombe & Moad

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

2015-050-3-400 Synchronising Wikipedia: Polymer Definitions and Terminology (PC) – Hess

2015-049-1-400 Brief Guide to the Characterisation of Polymers - Topham

2015-032-2-400 Definition of Terms Relating to the Ultimate Mechanical Properties of Polymers – Adhikari

2016-050-3-400 Definition of Terms Pertaining to Polymers in the Solid State: Molecular Arrangement from the Nano- to the Micrometer Scale Stingelin

16.3 Newly Started Projects

2017-039-2-800 Graphical Representation of Polymer Structures – Hellwich

16.4 Submitted or to be Submitted Shortly

2016-050-3-400: (ADDITIVES) Additives intended to promote the degradation of polyolefin-based thermoplastic materials - Malinconico (Autumn 2018)

2018-XXX-1-400: (NANO-NANO) Nanoscale properties of polymers (health and inorganic) - Yoon (September 2018)

2018-XXX-1-400: (WIKI) Advanced wiki training for SPT members - Raos (October 2018)

2018-XXX-1-800 (STARS 2) Structure-based nomenclature for irregular linear, star, comb and brush polymers with different types of constitutional repeating units (CRU) – Chen (November 2018)

2018-XXX-1-400: (MUSHROOMS) Terminology of Polymer Aggregates - Nakano (December 2018)

2019-XXX-1-400: (SEQs) Sequence controlled polymerisations - Théato (Spring 2019)

2019-XXX-1-400: (LINGUAL) Multilingual glossary of polymer terminology: extension to non-western languages - dos Santos (Summer 2019)

2019-XXX-1-400: (OVER) Overview terms for polymerisations - Matson (Autumn 2019)

2019-XXX-1-800: (ELECTRO) Electronic Representation Tools - Yerin (Winter 2019)

2020-XXX-1-800: (BGR) Revision of the Brief Guide to Polymer Nomenclature - Hiorns (2020)

16.5 Projects under discussion for submission:

- PB3 assembly - **Jones**
- http of PB2 - **Moad**
- Renewable and recycled polymers / polymer degradation – **Vairon / Gardette**
- Polymers for Bioelectronics - **Walter**
- Polymers for 3D printing – **Walter**
- Ionic liquids/polymer inorganic devices – **Ober**
- Adhesion, adhesive polymers and associated terminologies – **Vairon**
- Evaluation of polymer crystals - **Mielle**

17.0 IUPAC Endorsed Conferences (Igor Lacik):

- Lacik service to the PD IUPAC reviewing since 2013
- IUPAC Bureau meeting in Bratislava, April 4-8, 2018
- Conference Conditions for IUPAC Endorsement
- Conference Endorsement by PD in year 2018
 - o Chemistry Conference for Young Scientists 2018
 - o Polymers: Design, Function and Application
 - o Polymers and Organic Chemistry 2018
 - o Chemistry for Beauty and Health
 - o World Polymer Congress: MACRO 2018
 - o POLYSOLVAT-12, 12th Conference on Polymer-Solvent Complexes and Intercalates
 - o 8th IUPAC International Conference on Green Chemistry
 - o EastWest Chemistry Conference 2018
 - o Nature Inspires Chemistry Engineers 2018
 - o 82nd PMM: Polymer Networks and Gels 2018
- Implementing changes to promote the IUPAC label with endorsement

18.0 Reports on IUPAC-Endorsed Conferences from the Last 12 Months (Gregory Russell)

- 17th IUPAC International Symposium on Macromolecular Complexes, Tokyo (Japan), 28–31 August 2017, Christine attending and doing an IUPAC talk
- 81st Prague Macromolecular Meeting, Prague (Czech Republic), 10–14 September 2017, Adriana Sturcova to attend (but Hugh Burrows to give the IUPAC talk?)
- International Symposium on Ionic Polymerization – IP 2017, Durham (United Kingdom), 17-22 September 2017
- 25th POLYCHAR 2017 World Forum on Advanced Materials and 25th Short Course on Polymer
 - o Characterization, Kuala Lumpur (Malaysia), 9–13 October 2017, Greg Russell attending and doing an IUPAC talk
- IUPAC-FAPS 2017 Polymer Congress on Smart Materials for Emerging Technology, Jeju Island (South Korea), 11–13 October 2017, Chris Ober attending and doing an IUPAC talk
- Polymers: Design, Function and Application, Barcelona (Spain), 22–23 March 2018
- Polymers and Organic Chemistry 2018 (POC 2018), Montpellier (France), 4–7 June 2018, Roger H attending and doing an IUPAC presentation – confirmed!

- 82nd PMM: Polymer Networks and Gels 2018, Prague (Czech Republic), 17–21 June 2018 – Adriana Šturcová attending and doing an IUPAC talk
- MACROMOL Synth (leave as is for MACROMOL Synth)

19.0 Interactive Education Workshop in Polymer Science – report (Melissa Chan)

- Polymer synthesis (2016) – MACRO 2016
- Characterization (2017) – Poly CHAR 2017
- Processing (2018) – MACRO 2018
 - o 6 lectures for workshop (educational workshop in Polymer Science – 3 instructors)
- Applications (2020)
- Feedback so far
 - o Downloadable content is very helpful for participants
 - o Many participants were interested in post workshop discussion with the speakers
- One special Issue of The Chemistry Teacher International

Sunday, 01.07.2018, 09:00-12:30

Introductions – (IUPAC President 2018/2019 - Qi-Feng Zhou)

20.0 Subcommittee on Structure and Properties of Commercial Polymers – report (Lee)

- Sungkyunwan University – Doo Sung Lee – representing (two meetings every year)
- Balanced membership from industry to academia 1:2 ratio
- 23+ companies have joined
- two meetings each year (Europe and Asia)
- activity of the subcommittee, gender balance in the subcommittee? ~
- commercial samples are available for experimentation/analyses, etc.
- other journals, bio, materials (IP - intellectual property)

21.0 Current Trends in Polymer Science (Yusuf Yagci)

- Data collecting on publication collected via Web of Science
- Journals publishing polymer chemistry research covered
- China publishes the most followed by US

22.0 Greg Russell- Division Awards 2018

- Stepto Plenary Lecturer Award – 2018 goes to Chris Ober
- DSM had to cancel their award symposium at MACRO 2016, official award lecture will occur at MACRO 2018 – “less chemistry orientated”
- DSM award – does that need IUPAC in the title?
- Polymer International – IUPAC Award (Richard Hoogenboom could not come to MACRO 2016, will be an invited lecturer at MACRO 2018)
- Cyrille Boyer 2018 IUPAC Award
- 2018 Hanwha IUPAC Award – no precise terms of reference for this award

23.0 Greg Russell – Miscellaneous Polymer Division Matters

- Emeritus membership – an honor for members who have been recognized for their work (historically) for the division
- Should it be for the division or just SPT – it should be accessible for everyone
- Agreed on by the full division
- The initial nominations should go through the chairs of the subcommittees
- There will be a review panel

24.0 Natalie Stingelin – International Year of Polymers

- 2020 marks 100 years since Staudinger's seminal paper in which the principles of macromolecular structure were definitely formulated
- Hesitance of pushing Staudinger seminal work of German chemical society due to his participation in WWII
- National commission for UNESCO, need a lead country (national society)
- Year of polymers, not just a year for Staudinger
- Germany is still celebrating 2020
- Natalie will continue to push other countries
-

25.0 Christine Luscombe – vice president's remarks

- ICGCSD – Interdivisional Committee on Green Chemistry for Sustainable Development
- Invitation by OECD – global forum on environment – plastics in a circular economy design of sustainable
- We need someone to step up and get involved with, possibilities (Mario, Jean Luc, John)
- Its own subcommittee for ICGCSD – setting up a new subcommittee
- Be able to react immediately if there is a meeting (there needs to be someone)
- Backed by expertise, but also have some people
- Christine goals for 2018-2019 learn everything that Greg knows

26.0 Greg Russell – last announcements

- reports from the National Reps. (Thailand is an active member)
- Polymer Division: Future Meeting Schedule
- Paris, France
- Jeju Island, South Korea
- Montreal, Canada
- Winnipeg, Canada
- The Hague, The Netherlands
- Warwick, UK



- Michael Walter (Division Secretary), June 2018