

POLYMER DIVISION MEETING at 50th IUPAC General Assembly
Paris, France
6th July, 2019 (09:00-17:30)
7th July, 2019 (09:00-16:30)

Room 351, Palais des Congrès de Paris

Those attending:

Volker Abetz (Germany)	Doo Sung Lee (Republic of Korea) AM
Chin Han Chan (Malaysia) AM	Christine Luscombe (USA) Division Vice-President
Jiun-Tai Chen (China/Taipei) young observer	John Matson (USA)
Sabine Beuermann (Germany) NR	Mario Malinconico (Italy)
Blair Brettmann (USA) young observer	Peter Mallon (S. Africa) NR
Xia Dong (China/Beijing) observer	Stefano V. Meille (Italy) observer
Claudio dos Santos (Brazil) AM	Graeme Moad (Australia) AM
Wes Farrell (USA) young observer	Saravanan Nagalingam (Malaysia)
Christopher Fellows (Australia) TM	Guido Raos (Italy)
Jyoti Giri (Nepal) observer	Greg Russell – (New Zealand) Division President
Francesca Giuntini (UK) young observer	Chris Ober (USA) Bureau ISML
Richard Hartshorn (New Zealand) Secretary General	Rajesh Pandit (Nepal) observer
Danniebelle Hasse (USA) young observer	Melissa Pasquinelli (USA) young observer
Jiasong He (China/Beijing) NR	Stan Penczek (Poland) – past Bureau member
Alexander van Herk (Singapore)	Olga Philippova (Russia) NR
Michael Hess (Germany) NR	Ting Kueh Soon (Malaysia) IKM
Jan van Hest (The Netherlands) NR	Natalie Stingelin (UK) TM
Roger Hiorns (France) TM	Patrick Theato (Germany) AM
Lena Horne (Canada)	Paul Topham (UK) TM
Wenbing Hu (China/Beijing) observer	Michael Walter (USA) Division Secretary
Robin Hutchinson (Canada) TM	Yusuf Yagci (Turkey) TM
Daniel Keddie (UK) young observer	Myung-Han Yoon (Republic of Korea)
Igor Lacik (Slovakia) TM	Qifeng Zhou (China) observer

Saturday, (06.07.2019) 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. Introductions were made around the room (note: 50+ attendees in Paris for Division IV). Greg made a special note for the following visitors and young observers (YO):

- Blair Brettman (Georgia Tech, USA) – Young Observer
- Melissa Pasquinelli (North Carolina State University, USA) – Young Observer
- Wes Farrell (USA Navel Academy, Annapolis) – Young Observer
- Danniebelle Haase (Dow Chemical, USA) – Young Observer
- Francesca Giuntini (Liverpool John Moores, UK) – Young Observer
- Daniel Keddie (University of Wolverhampton, UK) – Young Observer
- Jiun-Tai Chen (National Chiao Tung University, Taipei, China) – Young Observer
- Zhibo Li (Qingdao University of Science and Technology, China) – Young Observer
- Xia Dong (Institute of Chemistry, Chinese Academy of Sciences, Beijing; and Secretary of Polymer Division, Chinese Chemical Society) – Observer

- Saravanan Nagalingam (Quest Intl. Uni., Perak, Malaysia) and Ting Kueh Soon (IKM Malaysia) – Macro 2026
- Rajesh Pandit and Jyoti Giri (Nepal) – Observers
- Jan van Hest (TU Eindhoven, The Netherlands) – National Rep
- Martin Walker (SUNY Potsdam, USA) – Observer
- Stan Penczek (Polish Academy of Sciences) – past Bureau member

2.0 Apologies for Absence

Absent members sent their apologies together with greetings to the Division, namely Stan Slomkowski, Mitsuo Sawamoto, Adriana Sturcva, Marloes Peeters, Karl-Heinz Hellwich and Ram Adhikari.

3.0 Approval of the Minutes of the Division Committee Meeting, Cairns, July 2018

The (corrected) minutes recorded from the 2018 meeting in Cairns, Australia were accepted with unanimous acceptance by the division.

4.0 Division People News (Greg Russell)

- Evan Makoto Luscombe is born!
- Marloes Peeters new Senior Lecturer in Newcastle
- Natalie Stingelin elected a Fellow of the Materials Research Society
- Humboldt Research Award – Yusuf Yagci (11.2018)
- Chris Fellows working in Jubail, Saudi Arabia (for 2019)
- Guido Raos elected in his town's city council (2019)
- Roger Hiorns promoted to a Directeur de Recherche – CNRS (2019)

5.0 Polymer Division Core Values (Christine Luscombe)

- IUPAC foundation
- Raising more money via corporate sponsors
- Family friendly accommodations for meetings
- Education and outreach CWC (chemical safety and security)

6.0 The Bureau (Richard Hartshorn)

- IUPAC foundation and raising money via corporate sponsors
- Information on the IUPAC Green chemistry (interdivisional panel)
- Symposium 8.5 – Organization for Economic Cooperation and Development (OECD)

7.0 Polymer Division Members and Elections (Christine Luscombe)

- Geographic diversity
- Young scientists
- Female scientists
- TM's established
- We need to be cultivating and recruiting new people
- New list of AM/TM's, etc. will be available when approved by the secretary general (also located on slide #18 – Greg's notes for Paris)

8.0 Polymer Division (Gregory Russell and Christine Luscombe)

- Polymer Division Members and Intra-Divisional Appointments (2019) – see Greg's slides for all appointments

- Electorates for divisional elections
- IUPAC Strategic Plan

9.0 IUPAC Endorsed Conferences (Igor Lacik)

- Routinely endorsed PD conferences
- Fewer conferences this past year
- ACS conferences endorsed by IUPAC? (note: ACS is a much different kind of organization)
- 9-11 conferences per year and has been going down
- Only two conferences that are IUPAC endorsed in the next 12 months (Greg)
 - o 13th International symposium on ionic polymerization
 - o 48th IUPAC World Polymer Congress – MACRO 2020

10.0 POLY-CHAR 2019 report, Educational Workshop (Jeju), Chemistry Teacher International (Melissa Chan)

- Polymer for sustainable development
- Hosted by the Nepal Polymer Institute (NPI) and (RECAST) – (5/19 – 5/23)
- 16 countries, 50% international participants
- Educational Workshops – MACRO 2020 (Applications)
- Instructors Prof. Schonherr, Prof. Yoon, Prof. Zetterlund
- IUPAC-MACRO 2020 Trade Booth (Melissa & Michael W.) to coordinate
- Special Issue Chemistry Teacher International (2020)
 - o Good practices in chemistry education
 - o Reports about development in chemistry education
 - o Workshop contributions will be published in CTI

Saturday, (06.07.2019) 14:00-17:30

11.0 MACRO 2022 – Progress Report (Lena Horne)

- Kickoff meeting (April 2019)
- RBC convention centre plan for MACRO 2022
- Convention centre has good proximity to hotels
- Endorsements
 - o Macromolecular Science and Engineering Division (MSED) of the Chemical Institute of Canada (CIC).
 - o Manitoba Institute for Materials (MIM)
 - o Composites Innovation Centre (CIC-MB)
 - o Institute of Textile Science (ITS)
- Two options for holding meetings (pros and cons)
 - o Downtown hotel close to convention center
 - o Hold meetings at University of Manitoba campus

12.0 MACRO 2020 – Report (Doo Sung Lee)

- Scientific program (session topics)
 - o Polymer synthesis and supramolecular architecture
 - o Polymer processing and printing
 - o Polymer biotechnology

- Energy harvesting and storage
- Innovation and industry
- Polymer physics and characterization
- Polymer nanostructures and nanocomposites
- Soft electronics and displays
- Polymers and environment
- Polymer education
- Four Plenary Speakers (Cho, Cheng, Kato, Stevens)
- Venue (International Convention Center) ICC Jeju – World-Class resort style facilities

12.0 MACRO 2024 / Warrick Polymer – Report (Paul Topham)

- MACRO 2024 combined with Warrick Polymer
- Easily accessed, lots of conferences are conducted here (transport, etc.)
- July 1st – July 5th 2024
- Whole campus designated as IUPAC congress campus (large capacity)
- The concept is approved – Paul Topham will be coordinating
- Endorsement form from IUPAC
- This can now be advertised (MACRO 2024)

13.0 MACRO 2026 Malaysia (Melissa Chan)

- 51st World Polymer Congress – Kuching City, Sarawak, Malaysia (6th – 11th July 2026)
- Institut Kimia Malaysia (IKM) – FACS/FAPS ACS, RSC, OPCW sponsors
- Strong support, good security, affordable and surrounding tourism/activities
- Borneo Convention Centre Kuching, BCCK, first class Gala dinner
- Letters of support from Ministry of Education, Science, and Technological Research (MESTR)
- Industrial Sector support – (Malaysian Plastics, Rubber, etc.)
- Proposed Scientific Program
 - Advances in Polymer Synthesis
 - Polymer Physics & Polymer Characterization
 - Advances & Green Polymer Processing
 - Advanced Functional Polymeric Materials & Membranes
 - Biological, Biomedical & Environmental-friendly Polymers
 - Polymeric Materials for Clean & Sustainable Energy
 - Elastomers & Latexes
 - Durability & Performance

14.0 Subcommittee on Polymer Terminology (Roger Hiorns)

- SPT has 43 members – now have reached steady state – strong team feeling
- To define terms in polymer science and define polymer nomenclature on behalf of division IV and division VIII.
- SPT needs to increase number of people with expertise in nomenclature
- Gender balance and diversity is still needed
- 15 running projects and 2 coming to completion in 2019
- 1 project newly started, with 5 more to be shortly submitted

14.1 Project Statuses (Nearing Completion)

2013-048-3-400 A Brief Guide to Polymer Terminology (Brief Terms) – Hiorns, Vohlídal

2013-031-2-800 Structure-based Nomenclature for Regular Star and Brush Polymers – Chen

14.2 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^[1]_{SEP}

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

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

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

14.3 Submitted or to be Submitted Shortly

2018-XXX-1-400: (NANO-NANO) Nanoscale properties of polymers (health and inorganic) - Yoon (September 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: Revision of the Brief Guide to Polymer Nomenclature - Hiorns (2020)

14.4 Projects under discussion for submission:

- Terminology of plastics recycling http of PB2 **Moad**, Hiorns, Jones, Luscombe
- Renewable and recycled polymers **Vairon**, Adhikari, dos Santos, Fradet, Hess, Walter, Vert
- Development of a multilingual glossary of polymer terminology with new languages (Project Committee) **dosSantos**
- Adhesion **Vairon**
- Terminology for constitutional-dynamic polymers **Vohlidal**, Philippova, Topham
- Glossary of Terms for Space and Extreme Environments **Walter**
- Polymers for bioelectronics **Walter**, Meille
- Polymers for 3D printing **Walter**, He, Luscombe, Moad, Ober
- Ionic liquids/polymer inorganic devices **Ober**, Luscombe, Meille, Moad
- Mediatized terms **dos Santos**,
- Modified extended short hand names **Vert**, Hellwich, Moad
- Polymers of Relevance to Human Health **Stingelin**, CG, Vladimir Gubala, Linda Johnston, Moad, Schwenk, Topham, Vert, Walter
- Terminology of Polymer Biodegradation and Toxicology in Polymers **Gubala**, Giuntini, Harald Krug, Peeters, Stingelin, Vert

15.0 Subcommittee on Polymer Education (SPed) (Patrick Theato, Chris Fellows)

- Symposium at MACRO 2020 – invitations sent out
- Wikiproject - ~35 pages created/fixed at Milano workshop
- Polymer syllabus – Tuesday 9:00-12:30
- Polymer Workshops – MACRO 2020 #4 in series
 - o More workshops desired – continue on these projects
 - o Secondary education presenters – appropriate for high school educators
- Bimonthly Skype meetings
- Concerns:
 - o Website – to keep the website going and in good condition
 - o It is important to keep this energy going
 - o Gold Book – volunteers are needed
 - o Increased participation
 - o We want to support chemistry education in developing countries

16.0 Subcommittee on Polymerization Kinetics (Robin Hutchinson)

- Prof. Olaj (Hutchinson and Beuermann) Pure Appl. Chem., submitted
- Too many reviews for a non-recommendation process
- Project 2009 – 050 – 1 – 400 – critically evaluated coefficients (closed)
- Efforts towards putting benchmark data sets on the IUPAC website
- New working party on copolymerization parameters (**Alex van Herk**) announced on Sunday (07.07.2019)

17.0 Structure and Properties of Commercial Polymers (Lee)

- Currents efforts to update the IUPAC website
- Group founded in 1963
- Meet at least once a year and define projects on which at least a significant part of the members agrees
- 25 companies providing commercial polymers
- Publications – update

18.0 ICTNS, including Gold Book (Moad)

- All IUPAC recommendations and technical reports that bear the IUPAC label must go through ICTNS
- Only articles submitted through PAC go to ICTNS, anything that does not go through ICTNS should not be called an IUPAC recommendation or technical report
- The terms of reference of ICTNS will be revised to fix inconsistencies
- Subcommittee on Polymer Education, Polymer Terminology, Structure and Properties of Commercial Polymers, and Modeling of Polymerization Kinetics and Processes
- New gold book online – Summer 2019, however 2 gold book projects proposed
 - o Task 1 – examine polymer division terms on-line Gold Book (1 year)
 - o Task 2 – list of existing (Polymer Division) defined terms which are not in the gold book (2 year)
- New entries from existing recommendations (already approved by division and ICTNS)
- Each definition in new Gold Book has a unique doi

Sunday, (07.07.2019) 9:00 - 12:30

19.0 Interdivisional Meetings – (Theato and Hiorns)

- Division III, IV, VII, and IV (co-chairs Francesoc Nicotra, Roger Hiorns, and Vlad Gubala
- Roger Hiorns chair Divs. IV and VII (Chemical Nomenclature and Structure)

20.0 Current Trends in Polymer Science (Yusuf Yagci)

- Journals publishing polymer chemistry research
- China publishes the most followed by US
- Impact Factors for #80 polymer science journals (0.109 to 24.537)
- Numbers of publications vs. year vs. subject matter have been assembled
 - o Polymer composites
 - o Drug delivery
 - o Nanocomposites
 - o Polymer membranes
 - o Self-assembly
 - o Polymeric micelles
 - o Controlled polymerizations
 - o Conducting polymers
 - o Biodegradable polymers
 - o RAFT
 - o Polymer processing
 - o Solar cells
 - o Polymer Sensors

- ATRP
- Renewable resources
- Click chemistry

21.0 Division Awards (Gregory Russell)

- Stepto Plenary Lecturer Award (2018) went to Chris Ober
- Award name? – possible names and votes
 - Stepto (Plenary) Lecture Award (votes by PD yes = 21)
 - IUPAC Polymer Award (votes by PD yes = 10)
 - IUPAC Award for Excellence in Polymer Chemistry (yes = 0)
- Free registration and hotel stay in previous years
- For 2020 – what can the organizers provide? (there will be an award)
- For 2020, there will be a DSM award presented at MACRO 2020!
 - Doo Sung Lee has called for transparent involvement of the PD in the 2020 award
- 7th PI-IUPAC Award Nominations Open – nominees must be up to 10 years post-PhD
- 2018 Hanwha IUPAC award – no precise terms of reference available for this award
- Overall, increase diversity of the nomination pool for 2020 and beyond

22.0 Miscellaneous Polymer Division Matters (Greg Russell)

- How to Access Chem. Int. Content for Free
- IUPAC's 100th celebration of the start of IUPAC and 2019 is the year of the periodic table (IUPAC founded in Paris and 150th Anniversary of Mendeleev's Discover)
- 4 main initiatives
 - Periodic table of Younger Chemistry (40 or under at the time of the nomination) – Paul Topham from PD represents hydrogen!
 - Global women's breakfast (celebration throughout the world)
 - IUPAC stories (stories will be covered for the 100th anniversary – featured stories - IUPAC)
 - Periodic table challenge (questions are being put together and submitted by SPED)

23.0 Update on IUPAC Periodic Table Centennial (Guido Raos)

- IYPT 2020 on 29th January - Report
- Guido attended with Jean-Pierre Vairon and Karl-Heinz Hellwich
- At UNESCO's headquarters in Paris
- Full recorded event can be streamed online (webcast_unesco.org/live)
- IYPT is supported by UN General Assembly and UNESCO in partnership with
 - International Union of Pure and Applied Physics (IUPAP)
 - European Association for Chemical and Molecular Science (EuCheMS)
 - International Astronomical Union (IAU)
 - International Union of History and Philosophy of Science and Technology (IUHPS)

24.0 OPCW Marloes Peeters Report (presented by Michael Walter)

- Clean-up of hazardous chemicals in areas Africa/Asia complicated
 - Drone technology helps

- IUPAC/OPCW conference with a theme
- No IUPAC names for several hazardous polymers
- Special document on sensors and wearable tech
- Plastic waste education is needed (mentioned by all companies)
- IUPAC and Organization for Prohibition of Chemical Weapons (Project 2018-0222 “Building broader and deeper links between OPCW and IUPAC”)
- Michael Walter attended special OPCW meeting for Marloes Peeters – secretariat office (Richard Hartshorn)

25.0 International Younger Chemists Network (IYCN) Poster Speed Networking Sessions (Melissa Chan)

- Program – Monday July 8th, 2019 – Palais des Congrès Bar Arlequin
- Information for younger chemists about:
 - o Subcommittee on Polymer Terminology
 - o Subcommittee on Modeling of Polymerization Kinetics and Processes
 - o Subcommittee on Polymer Education
 - o Subcommittee on Structure and Properties of Commercial Polymers

26.0 Wikipedia Courses in Italy (Guido Raos)

- Hands-on training on wikipedia and wikidata for application of IUPAC terms across Wikipedia
- Project number – 2018-038-1-400, related to “Synchronizing Wikipedia: Polymer Definitions and Terminology”
- Overview of Wikipedia’s importance of the dissemination of knowledge
- Wikipedia is a mult-lingual, international endeavor
- Participation and output, 45 PhD students (mostly in engineering)
- On-line monitoring tool developed
- Wikipedia participants on GLAM (Mabbett, Hess, Raos, Gintini, Caranti, Chemello, Topham, and Merna)
- Future activities:
 - o Complete more articles (5-6, 2020)
 - o Article for Chemistry International
 - o Participation of other IUPAC members to next edition of the course Polimi (June 2020)
 - o Creation of a Wikidata template for the properties of polymers (template for chemical compounds)

27.0 Division Rules - Membership (Greg Russell)

- Resolved to form a committee for Division Rules in São Paulo – still a work in progress (Greg, Roger, Chris F., and Christine on committee)
- Emeritus membership
 - o Your qualification for emeritus status should be the same for each division
 - o Emeritus – long standing, high performance status

28.0 Vice President’s Remarks (Christine Luscombe)

- Staudinger Centenary for 2020
- Polymer Society of Korea (including MACRO 2020)

- Gesellschaft Deutscher Chemiker via Patrick Theato
 - o Special Issue deadline (August 15th – Jan issue 2020)
 - o MRSCP
 - o Freiburg – Polymer Enable – whenever, where ever, whatever
 - o 104 articles to speared the word about polymers!
- ACS meeting – Macromolecules for the Spring Meeting
 - o Macromolecules is having a special issue (where polymer is headed)
 - o Advertise that we are celebrating a centenary of macromolecules
- Invitation by OECD – global forum on environment – plastics in a circular economy sustainably designed (in Cairns a committee was formed (Michael W., Michael H., Peter M.))
- Christine’s Goals for 2020
 - o Fund raising
 - o Promoting diversity
 - o Find resolution for IUPAC endorsed conferences
 - o Identify projects with ICGCSD (interdivisional groups)
- “Thank you, Greg – for all the years” – bottle of bubbly presented to Greg Russell

29.0 Extra-divisional Appoints., Misc. Matters, Last announcements (Greg Russell)

- All extra Div. IV extra-divisional appointments 2019 are listed – Russell (slide #46)
- Future meeting schedule
 - o IUPAC 2019 (Paris, France) – Division Dinner Sun, July 7th
 - o MACRO 2020 – Jeju Island, South Korea
 - o IUPAC WCC & GA 2021 – Montréal, Canada
 - o MACRO 2022 – Winnipeg, Canada
 - o IUPAC WCC & GA 2023 – The Hague, The Netherlands
 - o MACRO 2024 – Warwick, UK
 - o IUPAC WCC & GA 2025: to be decided at this council meeting between Lagos (Nigeria), Bangkok (Thailand) & Kuala Lumpur (Malaysia)

Thank you Greg Russell!!! – From: IUPAC Polymer Division



- Michael Walter (Division Secretary), July 2019