

Where 2B & Y

Chemistry in a Multidisciplinary, Interdisciplinary World

World Chemistry Leadership Meeting 2017
49th IUPAC General Assembly
7-14 July 2017, São Paulo, Brazil

Chemistry is an essential element of modern society, providing vital solutions in a sustainable fashion to such basic societal needs as food, energy, and water. Chemistry enables solutions in healthcare that detect and cure disease and will do so increasingly. Even the most sophisticated forms of computation and communication depend on chemistry to provide its materials and devices. At the same time, although chemistry has never been more important to so many societal needs, there is an air of uncertainty regarding future steps the discipline must take. Palermo, in her report on the future of chemistry for RSC, emphasizes the need for an even greater role by chemists in solving challenges of significant societal need. [1] As noted in their commentary in *Nature Chemistry*, Matlin and colleagues report that chemistry in general has not identified grand challenges the way other disciplines have. [2] For example, the Human Genome Project depends on advances in chemistry, but is driven by the fields of biology, genetics, and medicine. They suggest that "chemistry must go beyond 'being a science' and embrace the concept of 'being a science for the benefit of society'". Chemistry should be multidisciplinary, interdisciplinary and even transdisciplinary, "recognizing that valuable knowledge can be found in the spaces between defined disciplines, addressing the complexity of problems and the diversity of perceptions of them".

The areas in chemistry between disciplines are forefront research topics and often the career focus of the younger scientist community. Chemistry does not work alone in addressing these challenges. Whitesides, in his perspective in *Angew. Chem. Int. Ed.*, states that chemistry is limited by its traditional organization into

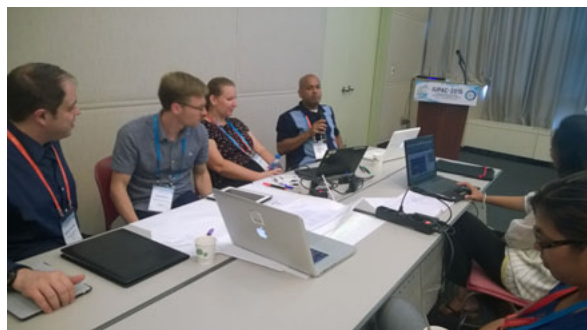
specialties and needs to break down those barriers. [3] The problems that chemistry must address are increasingly multidisciplinary and interdisciplinary, as they also depend closely on chemistry in its broadest sense and other scientific (e.g. physics, biology) and engineering disciplines to tackle. New tools in computation and data mining promise to revolutionize our approach to chemistry and discovery. It is the objective of WCLM2017 that these multidisciplinary and interdisciplinary themes will now be developed in depth. This work will be facilitated through the inter-divisional committee on Green Chemistry for Sustainable Development (ICGCSD) and the inter-divisional sub-committee on materials chemistry (ISMC) using them as a launch pad for developing shared languages and activities.

This WCLM follows in the tradition established in the 2011 meeting to prepare groundwork for a debate on the future of chemistry, its role in sustainable development, and IUPAC's part in advancing this future. Attendance is for IUPAC members at large, including members of Divisions and Standing Committees, NAOs and Associate NAOs and their delegates, and the representatives of Company Associates and Associated Organizations. WCLM2017 aims to facilitate the specific involvement of Young Observers (YOs) by targeting interdisciplinary topics and cross divisional/committee collaboration.

The YOs and invited leaders will have the opportunity to discuss and identify gaps in existing knowledge and practice of chemical science and how to address them. The YOs will assess the future of chemistry in breakout sessions and then present their findings to a panel of experienced leaders of the global chemical community. The outcome should help generate new projects in line with IUPAC's strategic vision. We ask the NAOs in particular to invite YOs to participate in the WCLM programme.

The programme will begin with a session in which the different IUPAC divisions and committees will intro-

Young Observer workshop during the WCLM 2015 in Busan, Korea.



duce themselves to participants using a "speed dating" concept. In a following workshop, YO's will assemble and work on projects in line with the themes of the WCLM. Finally, a symposium featuring outstanding speakers will be capped with a panel discussion and a report by the YO's on possible IUPAC projects. The programme will be as follows:

Monday Evening, July 10: Reception for YO's hosted by IUPAC Divisions and Committees to introduce WCLM activities. This will be done in a speed-networking format in which we will have a round table discussion at each station with representatives from each Division/Committee and up to 10 YO's in each discussion. This networking opportunity will continue and extend during the reception held with the International Young Chemists Network and around their poster session (To learn more about IYCN, see feature page 4) .

Tuesday Morning, July 11: Following a workshop with ISMC and ICGCSD representatives, the YO teams will work with IUPAC volunteers to develop their ideas into a presentation for the WCLM.

Wednesday Morning, July 12: Plenary presentations will be made by noted leaders from academia and industry. Presentations from YO teams will be given to the assembled audience. Group discussions and identification

of highest priority tasks will take place.

Post-GA Activities: Outcomes from the WCLM will be as a means to develop interdisciplinary projects. YO's will be encouraged to participate in working groups and newly formed project teams.

References

1. A. Palermo, "Future of the Chemical Sciences", RSC Report, 2015, www.rsc.org/globalassets/04-campaigning-outreach/campaigning/future-chemical-sciences/future-of-the-chemical-science-report-royal-society-of-chemistry.pdf.
2. Stephen A. Matlin, Goverdhan Mehta, Henning Hopf and Alain Krief, "One-world chemistry and systems thinking", *Nature Chemistry* 2016, **8**:393
3. G. Whitesides, "Reinventing Chemistry", *Angew. Chem. Int. Ed.* 2015, **54**:3196-3209

<https://iupac.org/project/2016-032-2-020>



Trace Elements Analysis of Environmental Samples with X-rays

Zurich, Switzerland, 16-20 July 2017

The use of X-ray methods for the analysis of trace elements in environmental samples has become a modern tool for scientists around the world. With dedicated instrumentation, X-ray analyses of trace elements in environmental matrices can be successfully performed both at synchrotron facilities and in the lab.

This Symposium aims to inform the audience about the most recent developments in trace elements analysis in environmental samples with X-rays, available both at synchrotron beamlines and as laboratory instrumentation. In particular, the latest developments in X-ray technology (sources, optics, detectors) and sample preparation will be presented, as well as new X-ray based analytical methods for the analysis of trace elements in the environment.

New developments in the fields of X-ray diffraction, X-ray fluorescence, and X-ray absorption will be dis-

cussed, in both 2D and 3D applications, with a special emphasis on spatially resolved microscopic and submicroscopic analyses of minor and trace elements in environmental matrices.

The Symposium will be organized in oral and poster sessions, with invited keynote lectures. Three poster prizes, including an award certificate and prize money, will be awarded by IUPAC Division VI to young participants.

The Symposium, co-sponsored by IUPAC Division VI, Chemistry and the Environment, and by Bruker Nano GmbH, is part of the International Conference on the Biogeochemistry of Trace Elements (ICOBTE 2017)-www.icobte2017.ch

This Symposium is part of a project task group which includes Roberto Terzano (IT, chair), Koen Janssens (BE), Ryan Tappero (US), Melissa Anne Denecke (UK), Gerald Falkenberg (DE), David Paterson (AU), Bradley Miller (US), Armin Gross (DE), and Fang-Jie Zhao (CN)

<https://iupac.org/project/2016-019-2-600>