IUPAC
International Union of Pure and Applied Chemistry

Inorganic Chemistry Division (II) Newsletter 2011_1

Editors Note: It is a pleasant duty of the vice-president to draft a regular Newsletter. It may be clear that such a Newsletter can only be filled when members who have relevant photos and news items for this newsletter provide me with their input. So keep sending your items, including pictures, or suggested topics for future issues, preferable via email to Reedijk@chem.leidenuniv.nl . I can handle most formats of attachments. Kindest regards, Jan Reedijk.

Division II Members 2010-2011

President: Loss, Robert D., **Vice President:** Reedijk, Jan, **Secretary:** Interrante, Leonard V.
Past President: Tatsumi, Kazuyuki;
Titular members: Ding, Tiping, Garcia-Martinez, Javier, Mathur, Sanjay, Sakai, Ken, Holden, Norman E., Karen, Pavel,
Associate members: Coplen, Tyler B., Drabik, Milan, Leskelä, Markku, Basova, Tamara V., Öhrström, Lars R., Liu, Ling-Kang,
National representatives: Bologna Alles, Aldo, Gonfiantini, Roberto, Chadwick, Alan V., Chandrasekhar, V., Dasgupta, Tara, Goh, Lai Yoong, Kiliç, Adem, Tarafder, Md., Trendafilova, Natasha, Yoon, Kyung Byung
Division II Subcommittees and Commissions currently in operation are the following:
Subcommittee on Isotopic Abundance Measurements
Interdivisional Subcommittee on Materials Chemistry
Commission on Isotopic Abundance and Atomic Weights
Stable Isotope Reference Material Assessment

IUPAC 47th General Assembly

"Chemistry Bridging Innovation Among the Americas and the World", July 30-August 7, 2011, San Juan, Puerto Rico

The division committee met on July 29 and 30, with a good attendance on both days**.**

A full group picture is presented close to the end of this Newsletter.
At the IUPAC Council meeting prof. Javier Garcia-Martinez was elected as Bureau Member, and via this Newsletter we congratulate him on his election!
He appears to be one of the youngest Bureau members ever.

Divisional symposia in Puerto Rico

The Division Committee or its members have taken part in the organisation some of the several symposia at this meeting, also in collaboration with the ACS.
MSC-400: Challenges for Materials Chemistry in the 21st Century organized by Len Interrante.
The goal of this symposium was to demonstrate the central role of worldwide materials chemistry R&D in solving key problems in human health and future technology. Fourteen invited lectures were given by scientists and engineers who are world leaders in the development of new materials science and technologies that employ chemistry for meeting the needs of society in the 21st century. They were chosen according to their knowledge and experience in representative areas of major current and future interest, such as materials for use in maintaining human health and meeting future needs in energy generation and storage. In addition to these oral presentations, 2 mini-workshops on "Emerging Energy Technologies" and "Frontiers in Nanomaterials Research and Development" were held in the evenings that featured brief overview presentations by experts in these areas, followed by in-depth discussions with the audience.
At the Puerto Rico conference 2 other Division II symposia have been organized.

To be mentioned are **CEH900 "The Chemical Element: Chemistry's Contribution to our Global Future**", organized by Javier García-Martinez (Univ. Alicante, Spain), Peter G. Mahaffy (King's University College, Canada and the IUPAC Committee on Chemistry Education).
This half-a-day symposium was divided in short presentations and finished by a panel on the theme of the meeting. This symposium aimed both to celebrate the many contributions of Chemistry to mankind and also to rethink and coordinate how we can better use chemistry technologies, innovation and understanding to tackle critical issues such as energy and food security, water, sanitation, health and hunger under the umbrella of the Millennium Development Goals. The speakers of this timely symposium, very much connected with the goals of the IYC, included: R. de Jonge, J. Apotheker (the Netherlands), M. F. Ostrowski, E. Steenberg (US and South Africa), and R. Sigamoney, J. Hasler (from UNESCO).
The second symposium held was, **AES600-AES600- "Advanced Nanomaterials for Energy Applications",** also organized by Javier García-Martinez (Univ. Alicante, Spain).
During two-days and divided into three sessions, a total of eleven speakers, discussed the new and exciting applications for cleaner energy technologies that are now possible thanks to novel nanomaterials with unique and tunable properties. The topics of the presentations included nanostructured electrodes for fuel cells, batteries or supercapacitors, dye-sensitized PV cells and hydrogen production catalysts. The scope of the symposium included also nanostructured catalysts for more energy efficient chemical processes and nanoporous materials for CO_2 capture and sequestration. Energy saving, an important component of energy efficiency, was discussed by leading experts in the field of lighter and smart nanomaterials and nanofabrication. Finally a panel of five speakers discussed with the audience the main challenges and opportunities that nanomaterials present for energy applications. There was a long list of contributions to this two-day symposium from a wide variety of fields including: M. Herranz, N. Martin, D. M. Guldi, W. J. Youngblood, S. Ahferom, K. Haynes, M. Leskela, S. Varma, R. Luque, T. M. Tritt and L. Arroyo-Ramirez, among others.

Meetings, Events and Conferences

International Year of Chemistry 2011 IYC

2011 indeed appears to be a successful year-long celebration in which many people do participate. The kickoff event was held in Paris, January 27-28, 2011 For details see: http://www.chemistry2011.org/
Many activities are ongoing, also organized from Division II. To be mentioned is here the activity started by Javier Garcia-Martinez on a very successful global project dealing with **water**: see for details: http://www.iupac.org/web/ins/2010-011-1-050
A detailed report of the water project, is available at the website of Division 2 (IUPAC pages), for a direct hyperlink, see:
http://iupac.org/divisions/II/II_rpt2011.pdf

Duties of Division Members

Starting 2012 all division member duties will be made visible in a matrix table. This is on the request of the newly elected members. A welcome package for the new members is also available and will be updated early 2012.

The so-called **off-year meeting of Division II** will be held in 2012 at the University of Cologne (Host-organizer prof. Sanjay Mathur), from Sept. 6-8. Details will be in the next Newsletter.

New elements 114 and 116

Now thate these new elements have been officially been recognized by IUPAC and IUPAP, the assigned discoverers can propose names and 2-letter abbreviations. This is to be expected in October 2011. After that Division II can accept (or reject) these names and symbols. After acceptance, the Bureau and Council have to ratify the new names after which a 5 month public review period will commence. More news is to be expected in our Spring 2012 Newsletter.

Upcoming Conferences of interest for the Division:

Symposium on Applied Bioinorganic Chemistry: ISABC-11: Barcelona, Dec. 2-5, 2011;
http://www.qi.ub.es/isabc11/Wellcome.htm

The 25th conference on Organometallic chemistry in 2012 is scheduled to be in Lisbon, Sept. 2-7, http://cqe.ist.utl.pt/events/icomc25/

The 40th ICCC (International Conference on Coordination Chemistry) in 2012 is scheduled to be in Valencia, Sept. 9-14, http://www.iccc40.com

Report from events in which the Division was involved in some way, e.g. by one of its members.

The first European Inorganic Chemistry Meeting of the EUCHEMs Division was held in Manchester UK, April, 10-14. This meeting attracted over 400 delegates from a variety of countries, including many participants from outside Europe. Topics covered varied from solid state chemistry to bioinorganic chemistry, with significant attention to coordination chemistry and molecular materials. The chief conference organizer was Prof. Richard Winpenny from Manchester.

23rd International Conference on Coordination and Bioinorganic Chemistry (ICCBiC)

This conference was held in Smolenice, Slovakia, in June 5th – 10th as one of the events of the IYC-related activity "Specialized international conferences and symposia in Slovakia", for details see: http://www.chemistry2011.org/participate/activities/show?id=1093. The conference, as in the past, dealt with up-to-date current problems of coordination, bioinorganic and inorganic chemistry, new trends and applications achieved in these fields were also presented. More on the scope, topics and program are visible at http://www.iccbic.stuba.sk/index.htm. The conference hosted almost 150 participants from 29 countries, the total number of lectures was 120, 46 of which were given by young colleagues in the "young scientists section". 23rd ICCBiC was an event which enabled a vital, inspirational and stimulating exchange of knowledge and ideas about the professional scientific interests of participants. One of the members of our IAB, guests and invited speakers has valued besides the scope of topics tackled also venue, atmosphere and time-span which allowed the oral presentations of the majority of contributions and stated: *"This is the first conference that I have attended in years where I found that the far majority of the delegates (120 out of 147) gave a talk, whereas we had 20 posters. The over 40 slots for junior scientists of 10 minutes, were a highlight of the meeting. To see beginning PhD students given clear digital presentations was a real pleasure, and holds a lot of promise for the future."*

Milan Drabik, A. M. of the division II of IUPAC, member of the organizing committee of 23rd ICCBiC.

A picture of the delegates at the Smolenice meeting is presented on the next page.

Report from the Commission on Isotopic Abundances and Atomic Weights (CIAAW)

Dr. Michael Wieser, Secretary of CIAAW, reports as follows on their biannual meeting held in Calgary, July 27-28, 2011. The meeting was chaired by Dr. Willi A. Brand.

The Commission focused on the Periodic Table of the Isotopes that was featured in an article published in Chemistry International, as well as a separate pull-out (Vol. 33 No. 2 and Vol. 33 No. 4). The table uses colour coding to distinguish between elements that have two or more stable isotopes and the atomic weights of these elements are given as atomic weight intervals, elements that have one stable isotope and an atomic weight that is constant in Nature, and finally elements that have no stable isotopes.

The Periodic Table of the Isotopes also features pie charts to indicate the relative stable isotopic composition of the elements. This Table can play a key role in education and outreach to inform students that chemical elements are made up of stable and unstable isotopes and illustrate how isotopic composition affects the atomic weights of the elements. The Commission changed the standard atomic weights of bromine, magnesium, germanium, indium, and mercury based on recent determinations of isotopic abundances and reviews of previous isotopic abundances and atomic masses. Because of increased activity in the scientific community to measure the isotopic composition of the elements, the Subcommittee on Isotopic Abundance Measurements (SIAM) evaluated 82 peer-reviewed publications published in the past two years. Based on this work, the Commission changed the standard atomic weights of bromine, magnesium, germanium, indium, and mercury based on recent determinations of isotopic abundances and reviews of previous isotopic abundances and atomic masses.

These changes in the atomic weights will be published in a new Table of Standard Atomic Weights 2011, to be submitted for publication in Pure and Applied Chemistry. A picture of the meeting is shown below, together with one of the free afternoon.

Project Planning News

A new project, Joint with Div VIII and IV, on the revisions of the 1984 recommendations of metal-based polymers will be submitted soon (convenor prof. Richard Jones, Div., IV).

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Conference delegates in Smolenice, 2011

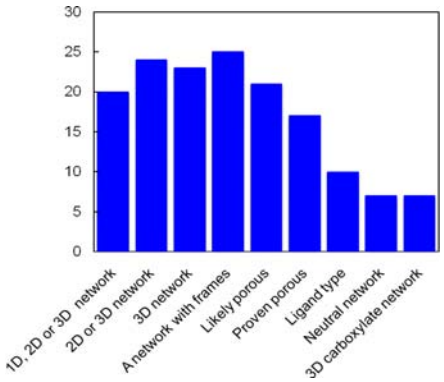
At the Puerto Rico meeting, the **Division II team** met for 2 full days discussing the progress in the several projects and subcommittees and to deal with the planning of future activities. The meeting was attended by 9 TMs and 5 AM's, a few observers, and 2 National Representatives.
The group picture taken at the end of the meeting is shown below:

Legend: ***Back row*** *from left to right: Ken Sakai, Henrique Toma, Sanjay Mathur, Ling-Kang Liu, Lars Öhrström, Ty Coplen, Norman Holden, Daniel Rabinovich and Javier Garcia-Martinez.*
Front Row*: Tara Dasgupta, Ti-Ping Ding, Miki Hasegawa, Robert Loss, Len Interrante, Jan Reedijk*

The so-called MOF project on terminology of Coordination polymers and metal organic frameworks: terminology and nomenclature guidelines (2009-012-2-200), led by prof. Lars Öhrström had made good progress, and a brief intermediate summary report provided by the convenor is here:

Coordination Polymers and Metal-Organic Frameworks (MOF) are interdisciplinary research fields with origins in solid state, inorganic and coordination chemistry. The field has recently also attracted the interest of industry and found its way into undergraduate textbooks. The number of publications in the area now exceeds 2000 per annum and a consistent terminology is urgently needed. The task group is working by surveying both primary and secondary literature, ongoing discussions and collecting the opinions of the chemical community.

An online survey amongst scientists is being carried out (see and participate at http://www.iupac.org/web/ins/2009-012-2-200). A concluding meeting of the project team is foreseen for May 2012. The graphs on the right show an intermediate score on "requirements to be named MOF".

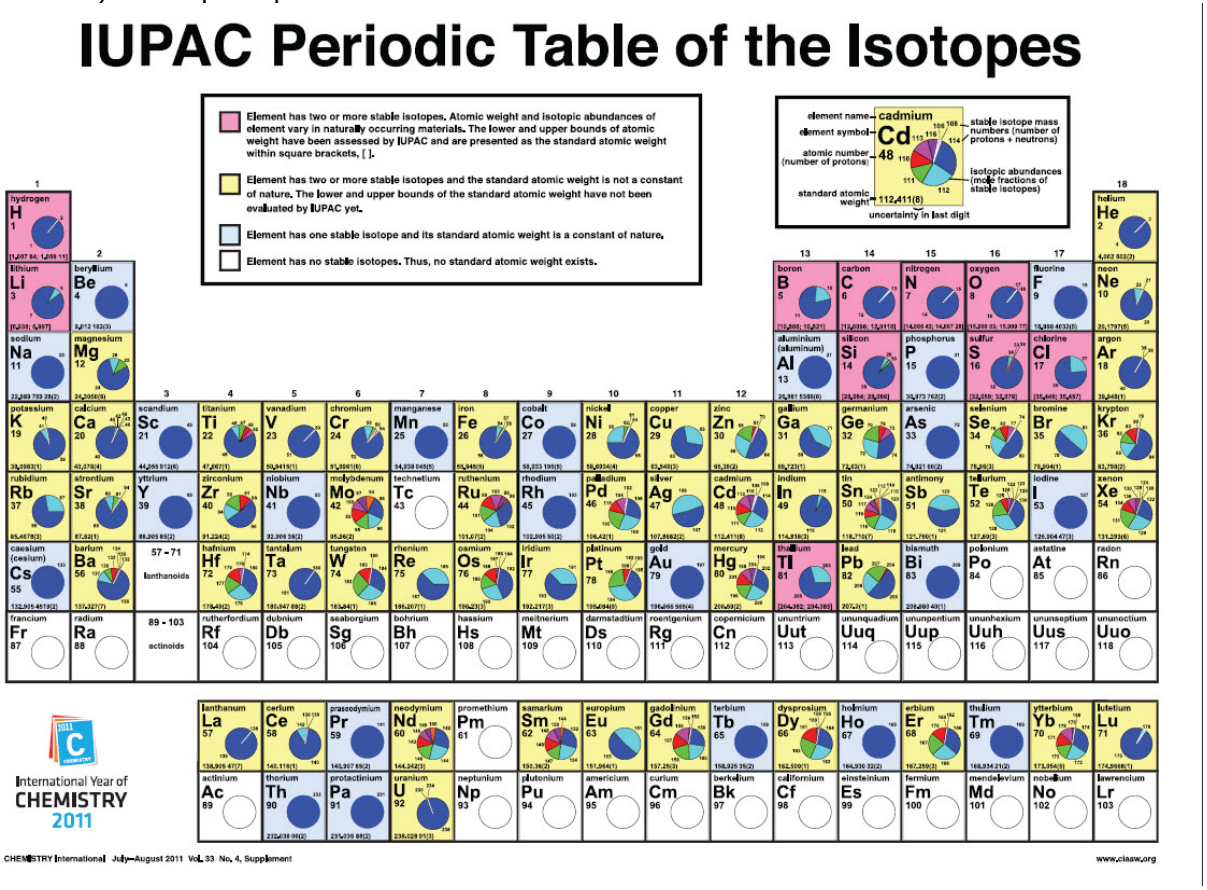


Recently started and ongoing Divisional projects (overview with hyperlinks)

Status project Division August 2011

Running Project of Division II	**weblink**
Standard potentials of radicals	http://www.iupac.org/web/ins/2001-015-1-100
Guidelines for mass spec measurements	http://www.iupac.org/web/ins/2001-019-2-200
Terminology for self-assembly and aggregation of polymers	http://www.iupac.org/web/ins/2005-043-2-400
Recommendations for Isotope Data in Geosciences	http://www.iupac.org/web/ins/2006-016-1-200
Assessment of fundamental understanding of isotopic abundances and atomic weights of the chemical elements	http://www.iupac.org/web/ins/2006-025-1-200
Terminology for conducting, electroactive and field responsive polymers	http://www.iupac.org/web/ins/2006-028-1-400
Priority claims for the discovery of elements with atomic number greater than 111	http://www.iupac.org/web/ins/2006-046-1-200
Evaluated Published Isotope Ratio Data (2007-2009)	http://www.iupac.org/web/ins/2007-028-1-200
Evaluation of Isotopic Abundance Variations in Selected Heavier Elements	http://www.iupac.org/web/ins/2007-029-1-200
Evaluated Compilation of International Reference Materials for Isotope Abundance Measurements	http://www.iupac.org/web/ins/2007-031-1-200
Development of an Isotopic Periodic Table for the Educational Community	http://www.iupac.org/web/ins/2007-038-3-200
Analysis of the Usage of NanoScience and Technology in Chemistry	http://www.iupac.org/web/ins/2007-040-2-200
Thermodynamic study on hydrogen storage materials: metal organic frameworks and metal or complex hydrides	http://www.iupac.org/web/ins/2008-006-3-100
Towards a comprehensive definition of oxidation state	http://www.iupac.org/web/ins/2008-040-1-200
Coordination polymers and metal organic frameworks: nomenclature guidelines	http://www.iupac.org/web/ins/2009-012-2-200
Evaluation of Radiogenic Abundance Variations in Selected Elements	http://www.iupac.org/web/ins/2009-023-1-200
Technical Guidelines for Isotope Abundances and Atomic Weight Measurements	http://www.iupac.org/web/ins/2009-025-1-200
Assessment of Stable Isotopic Reference and Inter-Comparison Materials	http://www.iupac.org/web/ins/2009-027-1-200
Evaluated Published Isotope Ratio Data (2010-2011)	http://www.iupac.org/web/ins/2009-029-1-200
Guidelines for Measurement of Luminescence Spectra and Quantum Yields of Inorganic Compounds, Metal Complexes and Materials	http://www.iupac.org/web/ins/2009-045-1-200
Terminology and definition of quantities related to the isotope distribution in elements with more than two stable isotopes	http://www.iupac.org/web/ins/2009-046-2-200
Online evaluated isotope ratio database for user communities (2011-2014)	http://www.iupac.org/web/ins/2009-026-2-200

The latest version of the IUPAC Periodic Table of the Isotopes, created under project IUPAC 2007-038-3-200 (Development of an Isotopic Periodic Table for the Educational Community) is found at http://www.ciaaw.org/pubs/Periodic_Table_Isotopes.pdf Evaluated Published Isotope Ratio Data (2010-2011). A sample is printed below.



Standard atomic weights of 10 elements (H, Li, B, C, N, O, Si, S, Cl, and Tl) are now expressed as intervals, a method that more accurately reflects their variations in naturally occurring materials. These new values are found in the Table of Standard Atomic Weights 2009, which also includes Tables abridged to four figures and five figures. The IUPAC Periodic Table of the Isotopes is in vector format and is suitable for printing a poster for a chemistry room wall. It also has an explanatory backside.

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The NEXT Division II Newsletter is scheduled for early 2012. In that issue we shall present the newly elected TM, AM and NR members of the division.