

**IUPAC**

International Union of Pure and Applied Chemistry

## Inorganic Chemistry Division (II) Newsletter 2010\_1

**Editors Note:** One of the (unwritten; but pleasant ) duties of the vice-president is to draft a regular Newsletter. Of course 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 send your items or suggested topics for future issues, preferable via email to [Reedijk@chem.leidenuniv.nl](mailto:Reedijk@chem.leidenuniv.nl) . I can handle most formats of attachments. All the best, from Jan Reedijk. .

### Division II People

**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](#), [Tarafter, Md.](#), [Trendafilova, Natasha](#), [Yoon, Kyung Byung](#)

### Division II Subcommittees and Commissions currently in operation

[Subcommittee on Isotopic Abundance Measurements](#)

[Interdivisional Subcommittee on Materials Chemistry](#)

[Commission on Isotopic Abundance and Atomic Weights](#)

[Stable Isotope Reference Material Assessment](#)

### Meetings and conferences

#### Division II off-year meeting 2010 cancelled.

Due to financial constraints the Division president had to decide that the "off-year" Division Committee meeting, originally scheduled for Fukuoka, October 13-14, should be cancelled.

#### *International Year of Chemistry 2011*

The IYC 2011 will be a year-long celebration in which anyone can participate. Anybody can take part, like coordinate an activity, engage in a project, or simply share an idea. For details see: <http://www.chemistry2011.org/>

**IUPAC 47th General Assembly**  
And "**Chemistry Bridging Innovation**  
**Among the Americas and the World**"  
August 2011, San Juan, Puerto Rico

#### Divisional symposium

The Division Committee will take part in the organisation of one of the several symposia at this meeting, also in collaboration with the ACS.

#### Challenges for Materials Chemistry in the 21st Century (*convenor: Len Interrante*).

This 2-day symposium will include plenary lectures by scientists and engineers who are world leaders in the development of new materials technologies that employ chemistry for meeting the needs of society in the 21<sup>st</sup> century. They will be 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. It will also feature invited keynote speakers who are leaders in key areas of materials chemistry research and development, such as:

- \* the preparation and study of carbon nanomaterials for electronic and structural applications,
  - \* materials for alternative energy generation and storage (e.g., thermoelectrics, H<sub>2</sub> production and storage, porous materials, including Metal-Organic Frameworks, etc.)
  - \* polymers for electronics and photonics.
- The goal of the symposium is to

demonstrate the central role of worldwide materials chemistry R&D in solving key problems in human health and future technology.

### Notices from Bratislava, Slovakia

News items:

1) In Slovakia one has translated and published in the local journal/bulletin "ChemZi" the Technical report "Towards defining materials chemistry", P. Day, L. Interrante, A. West; Pure Appl. Chem., **81**, (9), 1707–1717, 2009, doi:10.1351/PAC-REP-09-03-02. It is anticipated that it will strengthen the recognition of both the definition and the field of materials chemistry among the Slovak chemists and students.

2) The organisation of 23rd ICCBiC (International Conference on Coordination and Bioinorganic Chemistry, June 2011, Smolenice castle, Slovakia; some of you may be aware of this series) has already started. Contact for chairman, secretary of CCBiC see <[iccbic@stuba.sk](mailto:iccbic@stuba.sk)>, They will be happy to provide further details which might be of interest also for the audience of the Newsletter.

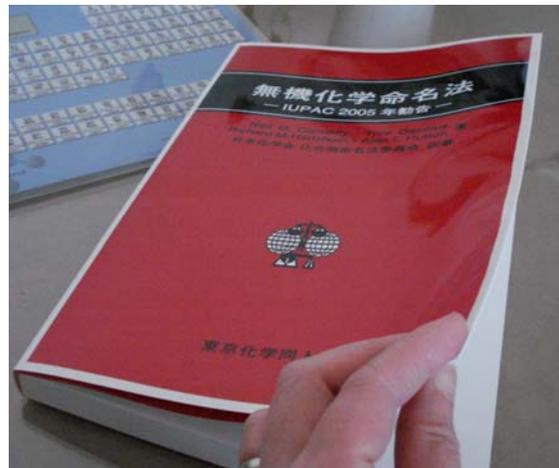
**The 9<sup>th</sup> Conference on Solid State Chemistry** will be held in mid-September 2010 in Prague, Czech Republic. A Web page containing an online "expression of interest" form is already active < [www.ssc2010.cz](http://www.ssc2010.cz) >. As in previous years, the aim of the meeting is to have an interdisciplinary discussion with "contact points" in chemical materials and their integrated description. Yet the organizers got 100 preliminary registrations from the entire world. We look forward to meeting the solid-state and materials chemistry community again at this conference.

**Milan Drábik**, [Milan.Drabik@savba.sk](mailto:Milan.Drabik@savba.sk)  
& **Tomáš Grygar**, [grygar@iic.cas.cz](mailto:grygar@iic.cas.cz)  
SSC 2010 Conference Scientific Secretary

### News from Japan:

The Red Book of Inorganic Chemistry Nomenclature (2005) has been translated into Japanese by a team led by Prof. Ogino. The translation was made by members of the Committee for Nomenclature, Chemical Society of Japan: Professors Hiroshi Ogino, Toschitake Iwamoto, Masaaki Okazaki, Taro Saito, and

Masayoshi Nakahara. The book was published in March 2010 by Tokyo Kagaku Dozin Co., Ltd. The book will smooth the mutual exchange of ideas and interests between the chemists of Japan and other countries. The picture shows some details of the book.



### Project News

**Newly started Division II Project:**

**What is a Metal-Organic Framework?**

**Lars Öhrström reports on a new project.**

As is often the case, practice precedes theory and synthesis precedes nomenclature and terminology. This is certainly the case in one of the fastest growing fields of contemporary inorganic chemistry: coordination polymers (CPs) and metal organic frameworks (MOFs). This is an interdisciplinary research field with origins in coordination and solid-state chemistry that is now also attracting the interest of the chemical industry. However, the rather diverse research community working in the field has yet to agree on a proper definition of just what a Metal-Organic Framework or MOF is

The Division II project: *Coordination polymers and metal organic frameworks: terminology and nomenclature guidelines*, is now up and running and will attempt to answer this and other related questions. We were very lucky to get some initial funding approved just before the IUPAC meeting in Glasgow so that most of the task group could convene for a first meeting. Despite the heated feelings the issue sometime can arouse, we had a very

amicable and profitable discussion in one of the dressing rooms of the "Armadillo" auditorium and concert hall ("This is where the starts come!" the friendly RSC staff told me).

As the project now has complete approval by IUPAC and data collection is on its way we hope to present our first ideas to the coordination chemistry community at the IUPAC sponsored ICCS in Australia later in 2010 and we will then also invite the general research community to submit comments and suggestions via the webpage

(<http://www.iupac.org/web/ins/2009-012-2-200>). In a first step we will this later this Spring solicit views of the editors and editorial boards of leading journals in the field via a website questionnaire.

Indeed, we intend to conduct most of the task groups activities in the virtual world, although live meetings via Skype or equivalent systems may be unpractical as the large geographical spread of the group means few members reside in the same time-zones.

#### **New elements: "Element 112" podcast**

It might be of interest to the division II members that Sigurd Hofmann presents his groups work on Copernicium (Cn) in a short podcast featured in the "Chemistry in its element" series from "Chemistry World", the magazine of the UK Royal Society of Chemistry, see and hear on <http://www.rsc.org/chemistryworld/podcast/element.asp>. In addition, later this year there will appear two podcasts on Rhodium and Thorium in the same series, written and read by one of the division II members."

For **Element 117** and its recently claimed discovery, one might be interested to see <http://www.nanowerk.com/news/newsid=15675.php> And also an earlier one: <http://www.aolnews.com/2010/04/08/time-to-update-the-periodic-table-not-so-fast/19430872/>

#### **Extension of Project number 2005-022-1-200**

Two New Human Hair Reference Materials for Stable Isotopes of H, C, N, O, and S

Currently, internationally distributed human hair reference materials do not exist, and they would be useful in forensic science investigations, for example, for tracking humans and for geolocation of humans. The Reston Stable Isotope Laboratory (<http://isotopes.usgs.gov/>) has created two human hair isotopic reference materials. These materials will enable laboratories globally to measure the same unknown samples and report the same isotopic compositions within analytical uncertainty. To accomplish this goal, we first had to accurately analyze the unknown human hair samples. We did this by developing a technique to seal water in a metal tube; analyzing internationally distributed isotopic reference materials interspersed between human hair unknowns and normalizing measurement results to their consensus delta values. Two human hair materials were collected, one from the Tibetan plateau and the second from India. The hair needed to be isotopically homogeneous and after many experiments it was determined that hair in a powdered form is best. The hair arrived in longer strands and had to be cut to less than 1 cm, then was cryogenically pulverized in a stainless steel ball mill. The hair was then sieved to separate hair that was larger than 100 mesh in size (149  $\mu\text{m}$ ).



*Technician Sarah Dade cryogenically pulverizing hair.*

All hair was reprocessed until of adequate size. The end product was over 1 kg of each isotopic reference material, which can be distributed internationally after calibration.

**Recent and ongoing Divisional projects  
(brief overview)**

<b>Running Project of Division II</b>	<b>weblink</b>
Standard potentials of radicals	<a href="http://www.iupac.org/web/ins/2001-015-1-100">http://www.iupac.org/web/ins/2001-015-1-100</a>
Guidelines for mass spec measurements	<a href="http://www.iupac.org/web/ins/2001-019-2-200">http://www.iupac.org/web/ins/2001-019-2-200</a>
Terminology for self-assembly and aggregation of polymers	<a href="http://www.iupac.org/web/ins/2005-043-2-400">http://www.iupac.org/web/ins/2005-043-2-400</a>
Recommendations for Isotope Data in Geosciences	<a href="http://www.iupac.org/web/ins/2006-016-1-200">http://www.iupac.org/web/ins/2006-016-1-200</a>
Assessment of fundamental understanding of isotopic abundances and atomic weights of the chemical elements	<a href="http://www.iupac.org/web/ins/2006-025-1-200">http://www.iupac.org/web/ins/2006-025-1-200</a>
Terminology for conducting, electroactive and field responsive polymers	<a href="http://www.iupac.org/web/ins/2006-028-1-400">http://www.iupac.org/web/ins/2006-028-1-400</a>
Priority claims for the discovery of elements with atomic number greater than 111	<a href="http://www.iupac.org/web/ins/2006-046-1-200">http://www.iupac.org/web/ins/2006-046-1-200</a>
Evaluated Published Isotope Ratio Data (2007-2009)	<a href="http://www.iupac.org/web/ins/2007-028-1-200">http://www.iupac.org/web/ins/2007-028-1-200</a>
Evaluation of Isotopic Abundance Variations in Selected Heavier Elements	<a href="http://www.iupac.org/web/ins/2007-029-1-200">http://www.iupac.org/web/ins/2007-029-1-200</a>
Evaluated Compilation of International Reference Materials for Isotope Abundance Measurements	<a href="http://www.iupac.org/web/ins/2007-031-1-200">http://www.iupac.org/web/ins/2007-031-1-200</a>
Development of an Isotopic Periodic Table for the Educational Community	<a href="http://www.iupac.org/web/ins/2007-038-3-200">http://www.iupac.org/web/ins/2007-038-3-200</a>
Analysis of the Usage of NanoScience and Technology in Chemistry	<a href="http://www.iupac.org/web/ins/2007-040-2-200">http://www.iupac.org/web/ins/2007-040-2-200</a>
Thermodynamic study on hydrogen storage materials: metal organic frameworks and metal or complex hydrides	<a href="http://www.iupac.org/web/ins/2008-006-3-100">http://www.iupac.org/web/ins/2008-006-3-100</a>
Towards a comprehensive definition of oxidation state	<a href="http://www.iupac.org/web/ins/2008-040-1-200">http://www.iupac.org/web/ins/2008-040-1-200</a>
Coordination polymers and metal organic frameworks: nomenclature guidelines	<a href="http://www.iupac.org/web/ins/2009-012-2-200">http://www.iupac.org/web/ins/2009-012-2-200</a>
Evaluation of Radiogenic Abundance Variations in Selected Elements	<a href="http://www.iupac.org/web/ins/2009-023-1-200">http://www.iupac.org/web/ins/2009-023-1-200</a>