



IUPAC

International Union of Pure and Applied Chemistry

Inorganic Chemistry Division (II) Newsletter 2010_2

Editors Note: It is a pleasant duty of the vice-president 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 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 and good wishes for Christmas and 2011, from Jan Reedijk. .

Division II People 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

[Subcommittee on Isotopic Abundance Measurements](#)

[Interdivisional Subcommittee on Materials Chemistry](#)

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

[Stable Isotope Reference Material Assessment](#)

Election News for the Division

According to the by-laws of IUPAC, the elections for the Division have been held this fall. The outcome is as follows:

1. **Division secretary** for 2012-2015: Prof. dr. Markku Leskelä (Finland)
2. **Titular members** 2012-2013: profs. Milan Drabik (Slovakia), Lars Öhrström (Sweden) and Edit Tsuva (Israel).
3. **Associate Members** 2012-2013: Profs. Tiping Ding (China), Javier Garcia-Martinez (Spain), prof. Rose-Noelle Vannier (France), Joseph Buchweishaija (Tanzania), Daniel Rabinovich (USA), Adem Kiliç (Turkey)
4. **National Representatives** 2012-2013: Prof. Dr. Yang Farina Abdul Aziz, Malaysia, Dr. Biserka Prugovečki, Croatia, Prof. Sujitra Youngme, Thailand, Prof. V. Chandrasekhar, India, Prof. Natasha Trendafilova, Bulgaria, Prof. Henrique E. Toma, Brazil.

Congratulations for the newly elected colleagues (who will be placed on the mailing list from now on), and thanks to the nomination committee for the pre-selections.

Meetings, Events and Conferences

International Year of Chemistry 2011 IYC

2011 will be a year-long celebration in which anyone can participate. Anybody can coordinate an activity, engage in a project, or simply share an idea. The kickoff event will be 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 global project dealing with **water**: see: <http://bit.ly/9FTohF> www.chemistry2011.org/water and <http://www.iupac.org/web/ins/2010-011-1-050>

Prof. Milan Drabik and Lukas Krivosudsky reported as follows from Slovakia: The global chemistry experiment "Water: a chemical solution" to involve the public, and in particular students, in the activities and to meet the goals of IYC 2011, is in an effective progress thanks to the activities of Slovak Chemical Society and Slovak local focal points of the initiative. In addition to "white paper" also the brief Info leaflet was prepared and circulated among Slovak science teachers and students. A wide response to the experiment is expected and a highlight will be the Night of researcher 2011 (the last Friday of September).

**IUPAC 47th General Assembly
And "Chemistry Bridging Innovation Among
the Americas and the World", July 30-
August 7, 2011, San Juan, Puerto Rico**

Divisional symposia in Puerto Rico

The Division Committee or its members will take 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 (*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 21st century. They have been 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, H₂ 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.

Also other (former) Div. II members are active as symposium organisers, like: AES600- "Advanced Nanomaterials for Energy Applications", Javier García-Martínez, and: CSY400- "Transition Metal Homogeneous Catalysis", Louis Oro,
All updates can be read at: www.iupac2011.org

Conferences of interest for the Division:

EuCheMS Inorganic Chemistry Conference, Manchester, 11-14 April 2011; see: <http://www.rsc.org/ConferencesAndEvents/RSCConferences/EICC1/index.asp> ; XXIIIrd International Conference on Coordination and Bioinorganic Chemistry, Smolenice, June 5 - 10, 2011; see: <http://www.icbic.stuba.sk>; ICBIC-15 - International Conference on Biological Inorganic Chemistry, UBC

Vancouver, August 7 to 12, 2011 - SEE: www.icbic15.com; Symposium on Applied Bioinorganic Chemistry: ISABC-11: Barcelona, Dec. 2-5, 2011; <http://www.qi.ub.es/isabc11/Wellcome.htm>

Book: Our TM member prof. Javier Garcia-Martinez has compiled a highly interesting monograph:

Edited by Javier Garcia-Martinez

WILEY-VCH

Nanotechnology for the Energy Challenge

With a Foreword by Ernest J. Moniz



A review is available at: <http://bit.ly/bSImf1>

Project News

From Norman Holden and Tyler Coplen, we received the following information:

1. Progress report of the Joint IUGS/IUPAC Task Group Project –

A few years ago, the International Union of Pure and Applied Chemistry (IUPAC) launched a joint Task Group with the International Union of Geological Sciences (IUGS) to resolve discrepancies in recommended half-lives of long-lived isotopes that are used to measure ages of materials. IUGS recommended half-lives – R.H. Steiger and E. Jäger, *Earth and Planetary Sciences Letters* **36** 359-362 (1977) and IUPAC recommended half-lives – N.E. Holden, *Pure Applied Chemistry* **62** 941-958 (1990) did not agree with each other. Initial efforts at resolving the differences in the case of the uranium isotopes, ²³⁴U, ²³⁵U and ²³⁸U revealed a basic problem in the definition of the

quantity 'year'. There was also a problem for geological scientists in the use of two different symbols, "yr" for time duration and "a" (annus) for age or absolute time, corresponding to the same unit of a physical quantity, the time in years.

After a long period for discussion and review, the Executive Committee of IUGS has now approved the first two papers for publication by the Task Group. One paper is on the definition of the year (to be published in PAC) and the second paper on recommendations for the uranium half-lives.

Task Group members include, P. Renne, Berkeley Geochronology Center, USA, IUGS, chairman; Dunyi Liu, Chinese Academy of Geological Sciences, China, IUGS; Igor M. Villa, U. Bern, Switzerland, IUGS; Mauro L. Bonardi, U. Milan, Italy, IUPAC, Div. 5; Paul DeBievre, Kasterlee, Belgium, IUPAC, Div. 5; Ales Fajgeli, IAEA, Vienna, Austria, IUPAC, Div. 5 and N.E. Holden, Brookhaven National Lab, USA, IUPAC, Div. 2.

A Project for further work on discrepant half-life values of other isotopes is presently being discussed and may come up for consideration during the next Division II Committee meeting at the IUPAC General Assembly in San Juan, Puerto Rico.

2. Atomic Weights of the Chemical Elements are NOT constants of nature.

During their 2009 meeting at the International Atomic Energy Agency (IAEA) in Vienna, Austria, the Division II Commission on Isotopic Abundances and Atomic Weights (CIAAW) prepared a report stating that for ten chemical elements, the recommended atomic weights would be "intervals" and no longer a single value with an uncertainty. These elements have stable isotopes that vary in nature far beyond the measurement uncertainties associated with their experimental values. The report will also indicate that the data for some additional elements still require further careful evaluation and that atomic weight intervals may eventually apply to more than just these ten initial elements. The details are being published in an article in *Pure and Applied Chemistry* by M. Wieser and T.B. Coplen and in a companion article in *Chemistry International* by T.B. Coplen and N.E. Holden in early 2011.

These and other (press) links are found at: <http://usgs.gov/newsroom/article.asp?ID=2661> and

<http://www.ucalgary.ca/news/utoday/december16-2010/periodictable>

The new PAC document is found at <http://iupac.org/publications/pac/asap/PAC-REP-10-09-14/>

The companion article is found at http://www.iupac.org/publications/ci/2011/3302/1_coplen.html

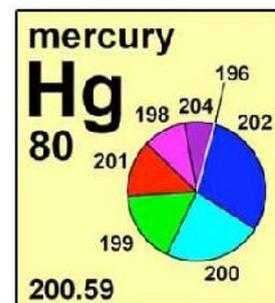
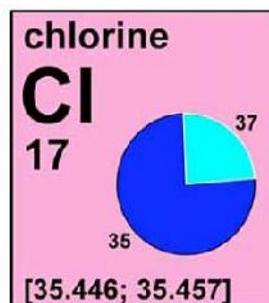
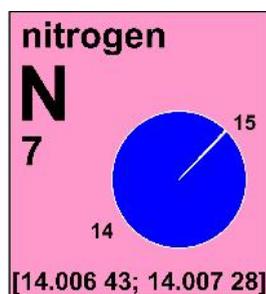
Data for other chemical elements will be evaluated by the Division II Subcommittee on Isotopic Abundance Measurements (SIAM) during their 2011 meeting at the U. Calgary and results referred to CIAAW for their recommendations. Final results from the SIAM and CIAAW meetings will be reported during the Division II Committee meeting during the IUPAC General Assembly in San Juan, Puerto Rico in August 2011.

3. Progress report on IUPAC Task Group on a Periodic Table of Isotopes for Education-

The Division II Commission on Isotopic Abundances and Atomic Weights (CIAAW) proposed an education project jointly with the IUPAC Committee on Chemistry Education (CCE) to produce a Periodic Table of the Isotopes to expose students and teachers to the existence of stable and radioactive isotopes in atoms and the concept that variations in the abundances of the stable isotopes cause the atomic weights of many elements to be variable in nature, i.e., *Atomic Weights of the Elements are not constant.*

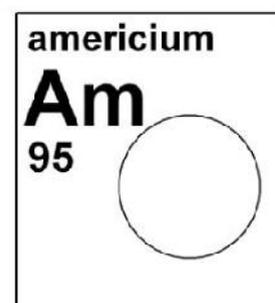
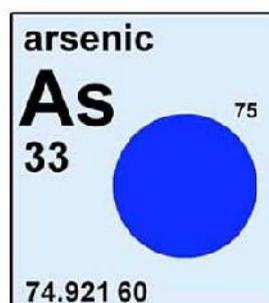
This effort was planned in response to the proposed International Year of Chemistry (IYC-2011). An interim version of this Table has just been prepared. A limited field test or "pilot study" of this material is being planned to be tested in one or two countries first, before releasing the material world-wide as a "paper-product. Distribution of this material world-wide via the IUPAC National Adhering Bodies is under consideration.

The Task Group members include J.K. Böhlke, U.S. Geological Survey, USA; T.B. Coplen, U.S. Geological Survey, USA; J.R. DeLaeter, Curtin U., Australia, deceased; P. Mahaffy, Kings U., Canada, CCE; E. Roth, CEA, Saclay, France, deceased; ms. G. Singleton, New Brunswick Lab., USA; T. Walczyk, National U., Singapore; M. Wieser, U. Calgary, Canada; S. Yoneda, Science Museum, Tokyo; and N.E. Holden, Brookhaven Nat. Lab., USA, chairman. Some examples of periodic Table items are presented below:



A further report will be presented at the next Division II Committee meeting during the IUPAC General Assembly in San Juan, Puerto Rico in August 2011.

Recent and ongoing Divisional projects (brief overview)



Status project Division December 2010

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