

# INORGANIC CHEMISTRY DIVISION COMMITTEE OF IUPAC

Meeting at The Lingotto, Torino, Italy; August 4-5, 2007

## MINUTES

**Attendance:** Present were *President*, Anthony West; *Vice President*, Kazuyuki Tatsumi; *Secretary*, Leonard Interrante; *Titular Members*: Alan Chadwick, Tyler Coplen, Marku Leskela, Robert Loss, Jan Reedijk and Myunghyun Suh; *Associate Members*: Javier Garcia-Martinez, Norman Holden, Sanjay Mathur, Luis Oro, and Gerd Rosenblatt; *National Representatives*, John Corish, and Tamara Basova; *Commission II.1 Chairman and NR*: Tiping Ding; *Guests*: Giovanni Balducci, University of Roma, Italy, in part: Peter Day, Oxford Univ. England, Peter Mahaffy and Eva Akesson, CCE, Jeff Leigh, Division VIII, M. Cesa, COCI; IUPAC Secretary General David Black; LingKang Liu, Academia Sinica, Taiwan; *Young Observers* Ken Sakai, Kyushu University, Japan; and Kentaro Tanaka, Nagoya University, Japan.

### 1 – Introductions and Announcements (West)

The meeting was called to order by Division President West at ca. 9:20 a.m. on Saturday, August 4, 2007. After a round of introductions, West welcomed the members and guests to the meeting and gave a brief PowerPoint presentation on IUPAC and on the Inorganic Chemistry Division for the benefit of the first-time attendees.

### 2- Agenda (West)

West went through the agenda that had been submitted to the members in advance of the meeting and noted that he wanted to include several additional items at the end under Other Business.

### 3- Approval of the minutes from the Seattle meeting 2006 (Interrante)

The minutes of our off-year (2006) meeting in Seattle, Washington had been sent out to members and posted on the IUPAC website. No additions or corrections were advanced; therefore, these are to be considered approved.

### 4- Report from IUPAC Officers (Black)

Secretary-general Black, who was at the meeting as an observer, was asked to say a few words. He noted that most of the IUPAC funding comes from dues paid by the member countries; however, investments also have contributed to the available support that IUPAC uses to fund its operations and to fund Projects. IUPAC is considering other ways to invest, and also to obtain additional support from industry. Currently some industrial support is received, primarily in the form of prizes that are awarded to young scientists; there is declining support from the IUPAC publications. However, the main limitation on

funding projects comes from the lack of good proposals; all of the currently available funding for Projects will not be spent in this biennium. He encouraged the Division members and guests to submit Project proposals for funding in the current biennium, as well as in the next.

#### **5- Report from the nominating committee for the 2007 TM election (Holden)**

Holden was asked by the Division President to chair our Nominations Committee for the 2007 election of TMs. Tatsumi and Interrante were initially asked to serve on this Committee along with 3 outside members (G. Erker, K.G. Heumann, and C.N.R. Rao); however, Interrante voluntarily left the Committee after it was determined that the positions of Secretary and Vice President were also to be included on the ballot and that there had to be a minority of current Division Committee members on the Nominations Committee. The Committee completed its work in April and presented its list of nominees to the Secretariat who approved the list and conducted the election by email ballot among the current Division TM's, AM's, NR's and active Project Leaders in May, 2007. A total of 42 ballots were received (57.5%). Robert Loss was elected Vice-President for the period 2008-2011, Leonard Interrante as Secretary, and Tipping Ding, Javier Garcia-Martinez, and Luis Oro as TMs for the same period. Due to the fact that Loss was completing his term as TM when he was elected as Vice-President, and therefore was continued as a TM and Vice President, we ended up with an extra (11<sup>th</sup>) TM for the next biennium. This deviation from the IUPAC Rules was eventually approved by Secretary-general Black, when it became clear that it was a consequence of the concurrent election of TMs, which is based on the vacancies that occur when a TM reaches the end of his or her allowable term, and the Officers. This led to a discussion with Black at this meeting regarding the timing of election of the Division TMs and the Officers, who are to be elected from among the active TMs for that period. It was pointed out that if one is to implement the IUPAC Bylaws the TM election should be conducted first, separately from the Division Officers, and then the Officers elected from among the new and continuing TMs. Black agreed to look into this. He later indicated that we should, in the future, conduct two elections by email ballot, before each biennial meeting, of first the TMs and then the officers (Vice-President and Secretary, when appropriate), so that the officers are elected from the new list of TMs (effective at the start of the new biennium). As was pointed out by Rosenblatt, according to current IUPAC and Division Rules, the electorate for the first election (of TMs) should be all of the Division Committee members, including NRs, and the Project Leaders for our current Projects, whereas, in the second election, the electorate should be only the current TMs and AMs on the Division Committee.

#### **6- Review of Division budget allocations and expenditures (West, Coplen)**

Project coordinator Coplen indicated that of the \$53,200 total biennial allocation, current Project commitments total \$16,200, operational costs, \$27,290 (incl \$8.5K for Commission II.1) leaving \$9,710 still available in this biennium for projects.

## **7- Report from Commission on Isotopic Abundances and Atomic Weights (CIAAW) (Ding) and its Subcommittees (Holden, Coplen)**

Commission Chairman Ding reported on the recent Commission meeting, which was held in Pisa immediately preceding the current GA. The major activities at the meeting included evaluation of published isotopic abundances for the period, 2005-2007 and review of the atomic weights, based on the reports from the Subcommittee for Isotopic Abundance Measurements (SIAM). This Subcommittee's recommendations for changes in the isotopic abundance data for 5 elements will be reflected in the publication *Atomic Weights of the Elements 2007*, which will be submitted for publication in PAC before the end of the year. The Commission decided to dissolve the Subcommittee for Extra-Terrestrial Isotope Ratios, because the work of this subcommittee can now be funded via projects submitted to IUPAC. The Subcommittee on the Natural Assessment of the Fundamental Understanding (SNAFU) presented an extensive list of recommendations to the Commission and identified a number of issues on which the Commission needs to take a stand. Six new projects were proposed for submission to the Division for funding. The Commission acknowledged the significant contributions made by National Representatives Prof. J. R de Laeter, Prof. Dr. P De Bièvre, and Dr. N. E. Holden. A list of the current membership of CIAAW follows the full report on this meeting received from Loss in **Appendix 1**. (The remainder of this report on the Commission's activities, presented by Holden, was delayed until later in order to allow our visitor, Peter Day, to give his report before he had to leave Torino. The full details of Holden's report can be found in these Minutes after section 10)

## **8 - Report on Project 2005-001-1-200 – “Towards defining materials chemistry”, Peter Day, Project Leader**

Day reported on the current status (near completion) of a Project to define “materials chemistry”. The final meeting of the Project Working Group, which included Day and two Division Committee members (West and Interrante), was held simultaneously with the meeting of the Materials Chemistry Subcommittee on August 3, 2007. A prior public meeting on this subject, which was attended by Day and Project working group member, Interrante, as well as ca. 50 other participants, was hosted by the Royal Society of Chemistry in London in 2005. This meeting provided useful input to the Working Group at this early stage in the Project.

After reviewing the purpose and justification for the Project, Day presented a suggestion for a materials chemistry definition that had come out of the discussions between members of the Project Working Group and the Materials Chemistry Subdivision meeting on 8/3/07. According to this definition, “Materials Chemistry’ comprises a combination of the design, synthesis, characterisation, processing, understanding and exploitation of assemblages built from atoms and molecules that have useful or potentially useful properties, functions and applications.” There was considerable discussion among the Division Committee members and guests about the proposed definition, particularly regarding what is meant by “assemblages” and “useful”; however, there was no consensus regarding these points, or the suggested definition, except that it

seemed rather general and, therefore, perhaps not very useful. It was decided that the Working Group should attempt to resolve these questions and complete their report on this Project as soon as possible (the Project is scheduled to end in December of this year). This report would then be presented, along with the WG's suggestion(s) for a definition of materials chemistry, to the Materials Chemistry Subcommittee and the Division Committee for further discussion of the proposed definition(s) and the question of the future of materials chemistry within IUPAC, at the next meeting of the Division Committee. In the latter context, the idea, which had come up in the meeting of the Materials Chemistry Subcommittee, of proposing to IUPAC the formation of an interdivisional standing committee on materials chemistry, received much support from the Division Committee meeting participants. In the meantime, the preparation of a final project report and an article for Chemistry International based on this report was encouraged.

We then returned to item 7, above, with a report by N. Holden on the activities and outcomes of the SNAFU Subdivision. Approximately half-way into Holden's presentation, which is summarized in these minutes after the next two sections, we stopped for lunch and ca. 1 ½ hours later, the meeting was reconvened with reports from Jeff Leigh, Associate Member of Division VIII, and Peter Mahaffy of the CCE, before returning again to Holden's report on SNAFU.

### **9 – Report from J. Leigh, Chemical Nomenclature and Structure Representation Division (VIII)**

Leigh noted that the latest edition of the “red book”, on inorganic nomenclature, was published in 2006 and thus had now been out for about a year. This new edition contains several important changes in the nomenclature of coordination compounds, in particular, which were made in order to reflect major recent developments in inorganic chemistry. Moreover, it presents recommendations fully consistent with the principles of the nomenclature of organic chemistry. It is hoped that these important changes will be noted by textbook writers and journal editors, as well as authors of scientific papers, who deal with such substances. The relevant IUPAC website is: <http://www.iupac.org/publications/books/author/connelly.html>. The red book has also been published in Spanish (Miguel A. Ciriano, Pascual Román Polo Prensas Universitarias de Zaragoza, Nomenclatura de Química Inorgánica – Recomendaciones de la IUPAC de 2005, Edición en español (2007) ISBN 978-84-7733-905-2.).

He then spoke about chemical identifiers, which are being used currently in several databases. Quoting from the relevant IUPAC website (<http://www.iupac.org/inchi/>):

“The IUPAC International Chemical Identifier (InChITM) is a non-proprietary identifier for chemical substances that can be used in printed and electronic data sources, thus enabling easier linking of diverse data compilations. It was developed under IUPAC Project 2000-025-1-800 during the period 2000-2004. Details of the project and the history of its progress are available from the project web site.

The InChITM program is free software developed under the auspices of the International Union of Pure and Applied Chemistry (IUPAC).

The central token of information in Chemistry is a chemical substance, an entity that can often be represented as a well-defined chemical structure. With InChI we have a means of representing this entity as a unique string of characters, which is otherwise represented by various 2-D and 3-D chemical drawings, 'connection tables' and synonyms. InChI therefore represents a discrete physical entity, to which is associated an array of chemical properties and data..."

The U.S. National Institute of Science and Technology is the prime mover in the development of this system, which was primarily designed for organic compounds and is now finding use within the Royal Society of Chemistry, as well as in Google. These are essentially a string of numbers that contain information about the structure of the compound.

Leigh also noted the publication in PAC last year of an article on IUPAC recommendations regarding the graphical representation of stereochemical configuration (Pure Appl. Chem. 78(10), 1897-1970, 2006). An abstract is available at the following IUPAC website: <http://www.iupac.org/publications/pac/2006/7810/7810x1897.html>.

Another recent PAC article (Pure Appl. Chem. 79(10), 1779-1799, 2007) describes the representation of configuration in coordination polyhedra and the extension of current methodology to coordination numbers greater than six (see also <http://www.iupac.org/publications/pac/2007/7910/7910x1779.html>) This report makes recommendations for some geometries of coordination numbers 7, 8, and 9, but not for higher coordination numbers. With these higher coordination numbers, the concept of a coordination polyhedron has been pushed about as far as it can. For the higher CNs, the distortions are such that recognizing any kind of coordination polyhedra becomes impossible.

A book directed at summarizing and explaining the principles of nomenclature for undergraduates was published in 1998, which still provides a good description of the relevant principles and procedures (Principles of Chemical Nomenclature. A Guide to IUPAC Recommendations, G. J. Leigh, H. A. Favre, W. V. Metanomski, Blackwell Science, 1998 [ISBN 0865426856] (see: <http://www.iupac.org/publications/books/author/leigh98.html>).

Finally, he noted that a project on inorganic heterocycles was in process and that a proposal to revisit nomenclature in connection with boron chemistry was under consideration.

Questions were received from Oro, who asked about nomenclature for clusters, and both Oro and Garcia, who questioned the recent departure from the use of wolfram as an alternative name for element #74 (official name: tungsten). Oro pointed out that wolfram was removed as an allowed alternative name for element number 74 from the last edition

of the “red book”. This has caused some concern/frustration among the Spanish community, homeland of the discoverers of this element, as recently described in Goya, P.; Román. P. Wolfram vs. Tungsten. *Chemistry International* 2005, 27 (4), 26–27. The removal of the name wolfram from the “red book” was done without asking Division II, which is the IUPAC body with competency on the naming of elements. Javier Garcia-Martinez gave a short presentation describing the key reasons why removing wolfram from the “red book” causes more harm than good. Briefly:

1. It is the name suggested by its discoverers: Fausto y Juan José Delhuyar (1783).
2. It is the name from which the element symbol derives (W).
3. It derives not from Latin (as Na, K, ...) but from the name of its ore, wolframite.
4. Geologists used this (wolframite) and not any other name for this compound of element 74.
5. It is widely used in many languages (German, Dutch, Swedish, Spanish, ...).
6. Wolfram is an alternative name for element number 74 in the most relevant English dictionaries and encyclopedias (Oxford Dictionary, Merriam-Webster Dictionary, Encyclopedia Britannica, Wikipedia ...).
7. Wolfram was the only name suggested for element 74 at the XV IUPAC General Assembly, Amsterdam 1947.

Although, none of the above reasons alone will be enough, the unique combination of all them, and the unnecessary concerns produced in some countries, strongly suggest reintroducing wolfram as an alternative name for element 74.

Leigh was not familiar with the issue of the discontinued use of wolfram as an alternate name in the Red Book. After some discussion, it was suggested that we revisit the question at the next Division meeting after seeking advice from experts (President Moss) in Division VIII. At Garcia’s request, Holden agreed to prepare a written document about the history of the wolfram/tungsten debate by the time of the Helsinki meeting of the Division.

### **10 – Report from the Chairman of the Committee on Chemical Education (CCE), P. Mahaffy**

We next proceeded with a presentation from Mahaffy of the CCE, who was accompanied by the CCE Secretary, E. Akesson at our meeting. They gave the members a copy of their Committee report to the Bureau and went over the bulleted items in this report. The work of CCE is carried out by its 8 Titular Members, 8 associate members representing Divisions, 21 National representatives, and 2 ex officio members through projects; its two Subcommittees, Public Understanding of Chemistry and Chemical Education for Development; and through the biennial International Conferences on Chemical Education. The priority areas identified by CCE for the current biennium are:

- To foreground the importance of learner-centered chemistry curricula, both in the developing and developed world.

- To give priority to initiatives that highlight the relationship between chemistry and sustainable development, consistent with the goals of the UN Decade for Sustainable Development.
- To continue to support initiatives that highlight ethical concerns in chemistry, including the collaboration that has developed between IUPAC and OPCW.
- To increase the public understanding of chemistry is of central importance to CCE. In this biennium we intend to work closely with COCI and Divisions to obtain broad IUPAC approval for and implementation of our report proposing a niche for IUPAC in public understanding of chemistry.
- To more fully integrate the biennial International Conferences on Chemical Education and ICCE activities into the work of CCE and use the ICCE conferences to report the outcomes of CCE projects and bring participants together to implement CCE strategies.
- To build chemistry education networks, using the full multicultural competence within CCE
- To articulate clear directions for the Chemistry Education for Development Subcommittee, and include the flying chemist program as an integral part of the work for that Subcommittee.

Each of these priority areas was discussed briefly, and some specific examples of the activities used by CCE to address each of these areas were noted. He also noted that efforts are underway to declare 2011 as the year of chemistry (100<sup>th</sup> year anniversary of M. Curie's Nobel Prize). At the request of the IUPAC Bureau, CCE has given leadership to mapping out the necessary steps for designation. This has taken shape through a project (2007-011-1-050) led by the Committee on Chemistry Education with the mandate "to submit to IUPAC a plan to secure the UNESCO (and UN) designation of 2011 as the International Year."

Finally, Mahaffy indicated that educators are constantly coming to them asking about ways to make chemistry come alive to students and that materials chemistry came to mind in this connection.

After Mahaffy's presentation, Garcia reported to the Division his active role in the organization of the Year of Chemistry in Spain during 2007, in which the centenary of Mendeleev's death in Saint Petersburg on February 2<sup>nd</sup> 1907 was celebrated.

This anniversary was celebrated by the issuing of a new stamp: "Mendeleev's Periodic Table of Elements", the first stamp dedicated to Mendeleev by a Western country and the only one on the Periodic Table ever issued. Five million copies of the stamp were issued last February 2<sup>nd</sup> probably constituting the larger dissemination of the Periodic Table ever done. The Spanish Royal Society of Chemistry published a special issue of its official journal celebrating this initiative. The formal presentation of the stamp was done the day before the centenary of Mendeleev's death by the Spanish Minister of Homeland Affairs in Madrid.

On June 2007, an article on Mendeleev's contributions to Chemistry was published by EL PAIS, the most widely sold newspaper in Spain (450.000 copies/day).

Most recently, the Periodic Table Design Competition was organized. Periodic Tables from South America and Spain were received displaying a novel arrangement of the elements by physicochemical properties, historical features or artistic designs. The grand prize and award was presented to Luis Ortuño in Logroño, Spain on July 13<sup>th</sup>.

A Summer School on the History of Chemistry was held at the University of La Rioja, Spain, having Mendeleev as its central figure. The school was a great success in terms of both interest and participation.

Garcia will be writing an article for the last issue of Chemistry International of 2008 summarizing the different activities carried about in Spain during the Year of Chemistry.

Garcia will be attending the next Mendeleev's Congress held in Moscow in September 2008 to coordinate activities to Russian chemists. He indicated that he would be happy to help with the organization of the International Year of Chemistry in 2011.

#### **7- (continued) Report from the CIAAW Subcommittee on the Natural Assessment of the Fundamental Understanding (SNAFU) (Holden)**

We then continued with Holden's presentation. He indicated that the Commission plans to submit a proposal to CCE to jointly prepare a Periodic Table of Isotopic information to help educate teachers, students and the public about the use of isotopes in science. Finally, he noted a problem with the "Green book" ("*Quantities, Units and Symbols in Physical Chemistry*," 2nd edition, Mills, I.; Cvitas, T.; Homann, K.; Kallay, N. and Kuchitsu, K., Blackwell Science, 1993), which contains an error in using their data in an improper way (it lists standard atomic weight values for short-lived unstable chemical elements for which there are no standard atomic weight values). The issue has now been fixed and the Green book will (presumably) be appropriately corrected.

#### **11- Report from the Subcommittee on Materials Chemistry (Corish)**

The Subcommittee meeting was held on the morning and afternoon of August 3, 2007 and included 7 members of the Division II Committee and C. Ober from Division IV. Also attending were guests Day and Balducci, who gave presentations on their currently active projects. A draft of the minutes for this meeting is included in these minutes as **Appendix 2**. The various Projects that are relevant to this Subdivision and their current status were reviewed. A substantial portion of this meeting was devoted to the presentation by Day on his Project (see item 8 above) and a discussion of the proposed definition of materials chemistry, again without a clear resolution, as well as the future role of materials chemistry within IUPAC. In the latter context, the consensus of the Subcommittee members was that the current status of materials chemistry within IUPAC, as a Subcommittee of the Inorganic Division, did not accurately reflect the breadth of this subject and its importance to the worldwide chemistry profession. Moreover, as a practical matter, the current subdivision structure had not proven to be conducive to full participation by members of other Divisions and did not provide an optimal mechanism

for the generation and management of projects, particularly in areas that are inherently interdisciplinary in nature or that center on topics that are clearly outside of “inorganic chemistry”. In this discussion, Rosenblatt suggested that there were four options for this sub-committee (assuming that dissolving the sub-committee is not an option), i.e., (1) continue with a strengthened membership; (2) create a new standing committee, like chemical education with representation from each division in IUPAC; (3) re-name the Inorganic Division; for example, as Inorganic and Materials Chemistry; or (4) create a new Division. It seemed that option (2) is the most preferred at this stage; however, it was not clear how best to progress toward this objective. One possibility would be to have a chairman from another division (Corish is due to leave this division soon). This person could come from Divisions I or IV, where there are people with materials interests. It was felt that at this stage there were no formal actions that would be appropriate and that informal soundings were required of Council and Bureau for a suitable way forward. West and Rosenblatt agreed to undertake these soundings.

The status of two long-standing Division sponsored, materials-related conferences and workshops was summarized. The Workshops on Advanced Materials (WAM) series has reached a bit of a snag; the status of WAM IV is currently uncertain. A proposal from Thailand was accepted but did not fly due to a change in IUPAC avenues of funding. There was also a problem with the planned nature of this particular workshop, which did not seem to conform to the original intent of the WAM series, which should involve a strong participation from students and local scientists. The original proposal was scrapped and they are now back to the original plan for Thailand, but probably will delay to 2009 rather than 2008. A report on the WAM IV is attached as **Appendix 3**.

High Temperature Materials Chemistry (HTMC) is set for 2009 in Davis, Calif. with A. Navrotsky as Chairperson. The next one will be in 2012 and the organizing committee is being revised to select the site.

Mathur reported that he was preparing a revised proposal on terminology in nanotechnology and that it will be resubmitted soon.

## **12- New Elements: Validation of Claims and Naming (Corish)**

Corish indicated that one of the responsibilities of this Division was to oversee evaluation of claims for the discovery of new elements, which is carried out by a joint IUPAC/IUPAP Working Party. Claims for the discovery of elements of atomic number greater than 111 were invited and the scientists named below have submitted the following claims:

Dr. Amnon Marinov, The Hebrew University, Jerusalem, Israel; for element 112

Dr. Kosuke Morita, The Institute of Physical and Chemical Research, Riken, Japan; for element 112 (in part) and element 113

Dr. Sergey Dimitriev, Joint Institute for Nuclear Research, Dubna, Russia; for elements 112, 113, 114, 115, 116, and 118

Dr. Sigurd Hofmann, Gesellschaft für Schwerionenforschung mbH, Darmstadt, Germany; for element 112

A short report regarding these claims was published in CI by Corish (“Priority Claims for the Discovery of Elements with Atomic Number Greater than 111”, *Chemistry International* January-February 2007, pg 18). He reported that the work of the Joint Working Party is proceeding well and that they decided to split their report into two parts, one dealing with elements below 112 and the other above. These reports will be published as technical reports, probably early next year. A written report to the Division on the Authentication and Naming of New Elements was submitted by Corish and is attached to these Minutes as **Appendix 4**.

**13- Reports from other IUPAC bodies and Affiliated Organizations**  
**Interdivisional Committee on Terminology, Nomenclature,**  
**and Symbols (Corish)**

Corish provided a written report to the Secretary, which is attached to these Minutes as **Appendix 5**.

**Committee on Chemistry Education**  
 (see item 10 above)

**Chemical Nomenclature and Structure Representation Division (Leigh)**  
 (see item 9 above)

**Committee on Chemical Industry (presented later in the meeting by M.C. Cesa, COSI Chair, see Item 18, below)**

**International Union on Geological Sciences IUGS (Holden)**  
 (see item 15, Project 2006-016-1-200)

**14- Reports on recent and planned Division-sponsored conferences**  
 (see item 11, above)

**15- Project-by-project review of project status (Coplen, etc.)**

Project Coordinator Coplen reported that there were 16 funded projects at the time of the Seattle meeting; 10 of these projects were extending past the due date. The current situation looks better – two are overdue out of 13; which places us 2<sup>nd</sup> in order of the Divisions. On the other hand, we are also 2<sup>nd</sup> from the bottom among the Divisions in terms of the number of active Projects. Two of the previous projects were abandoned (the money was sent back to IUPAC).

**1999-049-1-200 Thermodynamic characterization of high-temperature superconductors in the yttrium-barium-copper-oxygen system (Voronin); planned ending date: 31-Dec-2002; Division monitor: West**

\$5,764 out of \$5K allocated has been spent, but no update was received from Voronin on progress. This is one of our two overdue projects, with the initially planned ending date of Dec. 31, 2002.

**2000-024-2-200 Teaching High Temp Materials Chem (Balducci); planned ending date: 31-Dec-2007; Division monitor: Rosenblatt**

Balducci, who attended our meeting, gave an oral report on this project, the complete written version of this report is included as **Appendix 6**. Thus far only \$257 was spent out of \$4,800. Good progress has been made – he expects to be finished soon.

**2001-015-1-100 Standard potentials of radicals (Stanbury); Division monitor: Rosenblatt**

\$15,000 (with Division I) was originally allocated to this project; of this amount, \$1554 is unspent. The planned ending date for this project was December 31, 2004; however, the following update was received from Stanbury, indicating that the project is near completion.

“The Task Group had its fourth (and likely final) meeting in Braunwald, Switzerland, over the weekend of June 9, 2007. During this meeting we reviewed and debated the progress to date, and we made final plans for publication of the work. Since Review 3 we have evaluated or revised 73 different reaction equilibria or redox potentials. We have achieved consensus on almost all of the main reference redox couples, including some rather contentious ones such as promethazine. Almost all of the important inorganic radicals have now been reviewed. The task-group website is working quite well, and we have decided to include it in our final published report. Thus, the report will consist of a printed introduction and tables summarizing the recommended data; the publisher of this printed report will also host a copy of the task-group web site (edited for public viewing) that will give the detailed evaluations and references for each recommendation. We sadly note the passing of Dave Armstrong in July ‘06, one of our task-group members; he contributed greatly to the project, providing evaluations of redox potentials for most of the organosulfur compounds, and he provided valuable guidance in many other aspects of our work.

We have set a deadline of Dec. 31, 2007 for completion of the first draft of our report to be submitted for publication. About two inorganic redox potentials remain to be evaluated, and several of the organic redox potentials need to be revised in light of adjustments made to some of the reference potentials. The main introductory text needs to be completed.”

**2001-019-2-200 Guidelines for mass spec measurements (Walczyk); planned ending date: 31-Dec-2007; Division monitor: Coplen**

\$2,000 was allocated to, and spent on, this project, which has been completed within the projected time. The outcomes of the project have included presentations by Walczyk at the EU Institute of Reference Materials and Measurements (IRMM), Geel, Belgium, June

21-22, 2004, the Winter Plasma Conference, Fort Lauderdale (FL), Jan 5-10, 2004 and the Fourth International Conference on High Resolution Sector Field ICPMS, Venice, Oct 15-17, 2003, as well as a publication (Anal. Bioanal. Chem. 378, 229-231 (2004)).

**2001-042-1-200 Review of Isotopic Abundances in Extraterrestrial Materials: Part 1 (Ebihara)**

This project was not completed and has been abandoned.

The meeting was adjourned for the day at 5:30pm and resumed on Sunday, August 5, 2007 at 9:20am with R. Loss' presentation:

**2002-049-2-200 A new comprehensive report on the isotopic compositions of the elements for global users communities (RICE phase I) (Loss/Taylor); Allocated: \$8,000; spent: \$7,699; Division monitors: Coplen and Holden; status: completed.**

Started in 2002, this project led on to RICE II (2006) (Project #2005-027-1-200) with Berglund as Chairman. R. Loss gave an oral presentation on the progress of this project, and that of Weisner (2003-033-1-200) (see list below), which are key projects of the Subcommittee for Isotopic Abundance Measurements (SIAM). The objectives of Project 2005-027-1-200 involve the evaluation of published isotopic ratio data and new techs (i.e., ICPMS) used in evaluating Atomic Weights (AWs) and then to recommend new AWs to the Commission. They use data from publications that employ validated methods and procedures. New values for Ar (best measurement of the isotopic composition), Ni, Zn and Mo (new atomic weights) have resulted from this work. A news release was generated for IUPAC based on the results and will be transmitted by West to the Bureau (Appendix 7).

**2003-031-1-200 Isotopic Compositions of Selected Elements (Berglund); Planned Ending Date: 31-Dec-2007; allocated: \$12,000; spent: \$12,513; Division monitor: Loss. See previous Project report; this Project should be finished by December 2007.**

**2003-033-1-200 Determination of Atomic Weights Using New Analytical Techniques (Wiesner); Planned Ending Date: 1-May-2008; allocated: \$14,899; spent: \$12,200; Division monitor: Loss**

By decision of Leiv Sydnes this project was funded in early 2004 at no cost to Division II. (see report by Loss on Project 2002-049-2-200 above)

**2003-034-1-200 Classification,, Terminology etc of Borophosphates (Kniep); planned end date 31-Dec-2006; allocated \$16,000; spent: \$0; Division montor: West**

The last report on this Project was received at the Beijing GA in 2006: Prof. Jing-Tai Zhao indicated that the task group would meet on 6-7 August 2007 in China to review the latest progress and formulate a report based on a recent review by Bastian Ewald, Ya-Xi Huang, and Rüdiger Kniep titled "Structural Chemistry of Borophosphates, Metalloborophosphates, and Related Compounds", Z. Anorg. Allg. Chem. (in press).

**2005-001-1-200 Towards Defining Materials Chemistry (Day); Allocated: \$8,000; spent: \$571; Planned Ending Date: 31-Dec-2007; Division monitor: West**  
(see item 8, above)

**2005-022-1-200 Calibration of Organic and Inorganic Oxygen-bearing Isotopic Reference Materials (Brand/Coplen); planned ending date: 31-Dec-2007; Division monitor: Coplen**

Coplen reported that the goal of this Project is that the “measurement of the same homogeneous sample by any laboratory worldwide should yield the same delta value within analytical uncertainty”. The aim was to calibrate 3 waters, 3 sulfates, 3 nitrates, and 2 organic isotopic reference materials. This task proved to be far more difficult than anticipated. Multiple labs were involved, with more than 5,000 measurements. The task group recently met in Prague to discuss the analytical results. A report and completion of the Project is expected in a few months. Thus far, \$10,896/\$12000 has been spent.

**2005-027-1-200 Evaluated Published Isotope Ratio Data (2005-2007) (Berglund); planned ending date: 31-Dec-2007; Allocated: \$9,800; spent \$8,050 ; Division monitor: Loss** (also, see above, under Project No. **2002-049-2-200**) A full report on this Project was submitted to the Secretary and is attached as **Appendix 7**.

**2005-043-2-400 Terminology for self-assembly and aggregation of polymers (Ober); planned ending date: 1-April-2009; total funding allocated: \$6,000 (\$2K from Div II); Spent \$3,303. Division monitor: Chadwick**  
Chadwick reported that this Project was proceeding on schedule.

**2006-016-1-200 Recommendations for Isotope Data in Geosciences (Renne); planned ending date: 30-Sept-2008; Division monitor: Holden**

N. Holden gave a brief report on this Project whose objective is to update and harmonize recommendations on half-lives and isotopic compositions between the International Union of Geological Sciences (IUGS) and IUPAC. \$2,900 was allocated by the Division for the Project; additional funds were obtained from other sources. Although no funds have been expended, meetings have been conducted by various task group members; Villa (IUGS), Holden (Div II), Loss (Div II) and DeBievre (Div V) met twice prior to the General Assembly to discuss the methods used by IUGS to obtain the decay constants of geological samples and Villa has agreed to prepare and circulate a short document detailing these methods. Initial work is being concentrated on the three most important elements for dating samples in the geochronology community. Most of the work will be carried out via the use of e-mail but at least one face-to-face meeting is anticipated. It is hoped that work will be completed on the three elements prior to the end of the project in October 2008.

**2006-025-1-200 Assessment of fundamental understanding of isotopic abundances and atomic weights of the chemical elements (Holden); Allocated: \$9,800, Spent \$6,906; planned ending date: 1-Oct-2008; Division monitor: Holden**

The objective of the Project is to review fundamental issues and concerns that have been raised by members of the Commission on Isotopic Abundances and Atomic Weights.

See Item 7 for further details - Holden added that a final report on this Project is hoped to be available by late Spring, 2008, prior to the October 2008 deadline.

**2006-028-1-400 Terminology for conducting, electroactive and field responsive polymers (Ober); planned ending date: 1-Sept-2009; Allocated: \$6,000 total (with Division IV); Spent: \$2,096; Division monitor: Chadwick**

With recent advances in the realm of organic electronics for displays, solar cells, and other applications, the entire field of electroactive polymers is of growing importance. This project is aimed at proposing a list of terms and definitions to be accepted and respected by chemists and others working as materials scientists within academia and industry.

**2006-046-1-200 Priority claims for the discovery of elements with atomic number greater than 111 (Karol/Corish); Division monitor: Corish**

Nothing allocated, nothing spent (of IUPAC funds) – See Item 12.

**Review of Project proposals:** Four Projects were funded at cost of \$16.2k total, i.e.,

2005-043-2-400 Ober & Jones, Terminology for self-assembly and aggregation of polymers	\$2 k
2006-016-1-200 Renne, Recommendations for isotope data in geosciences	2.4 k
2006-028-1-400 Ober & Vohlidhal, Terminology for conducting, electroactive and field-responsive polymers	2 k
2006-025-1-200 Holden, Assessment of fundamental understanding of isotopic abundances and atomic weights of the chemical elements	9.8 k

The following is a **list of the current Division II projects** (as listed on the IUPAC website):

2000-024-2-200 - Teaching high temperature materials chemistry at University

2001-019-2-200 - Guidelines for mass spectrometric isotope ratio measurements

2003-031-2-200- Isotopic compositions of selected elements

2003-033-1-200 - Determination of atomic weights using new analytical techniques

2003-034-1-200 - Classification, terminology and nomenclature of borophosphates\*

2005-001-1-200 - Towards defining materials chemistry\*

2005-022-1-200 - Calibration of organic and inorganic oxygen-bearing isotopic reference materials

2005-027-1-200 - Evaluated published isotope ratio data (2005-2007)

2006-016-1-200 - Recommendations for isotope data in geosciences\*

2006-025-1-200 - Assessment of fundamental understanding of isotopic abundances and atomic weights of the chemical elements

2006-046-1-200 - Priority claims for the discovery of elements with atomic number greater than 111

\* Interdivisional project

### **16- Status of pending project proposals (Coplen)**

None have been officially received but several are expected before the end of the current biennium.

### **17- Review of any new project proposals (Coplen)**

Garcia gave a presentation on the current status of the Mathur/Garcia proposal. There was some discussion about the best way to present (and the timing of) this proposal.

We broke for coffee at 10:55pm

After coffee – at ca. 11:20 we moved to another room for a short time which had access to the internet and Coplen demonstrated the new web site that the commission had developed regarding its activities, with links to the IUPAC website (which did not have good access via Google and other search engines).

### **18- Discussion on solicitation of new projects (West)**

Coplen went through a particular example of a successful project proposal to show the new members, in particular, what was involved in preparing such a proposal. Basically the only thing that you can request are travel funds for face-to-face meetings of the task group. Under “Criteria for Retrospective Evaluation” – the number of citations for the published article(s) can be used; Referees – should not be currently associated with IUPAC. How are these proposals evaluated? The first step is a Divisional review; if it passes this, the Division Project Coordinator sends it to IUPAC. IUPAC evaluation generally takes a couple of months; in general the proposal has to be reviewed and the Division has to look at the reviews and decide whether to allocate the funds. This should be doable in the time available in the current biennium if submitted in the next 30 days.

We then had a presentation from **Mark Cesa on “the structure and Functions of COCI”**. He is visiting all of the Divisions to explain what they are doing and how they can interact with the Division (see listing under item 13).

We asked about the potential interest on the part of COSI in Projects dealing with terminology in nanotechnology. He indicated that they would definitely be interested in such a proposal. Interrante suggested as a potential symposium topic for Glasgow, “Applications of Nanotechnology in Industry”. Mark indicated that this would be appropriate and that they would look into the idea.

We then went back to a discussion of possible projects. Ty presented a proposed project on behalf of SIAM to be led by M. Bergland for \$12,800 (for travel to Glasgow) that he would like to submit to the Division on evaluating isotope ratio publications between 2007 and early 2009, to determine the “best isotope ratios”, etc. The Division indicated that we would approve submission of this proposal (the priorities for funding among the submitted proposals will be determined later). Another project proposal for \$13,750 was presented that they would like to submit for funding by the Project Committee, joint with the Analytical Division. A 3<sup>rd</sup> project proposal to be submitted with CCE that is also to go to the Projects Committee was in preparation. This proposal will be directed at the educational arena. Finally, two more proposals that relate to heavy element isotopic abundance variations were in preparation in which SNIF diagrams would be the main output. Norm had one other proposal that he will present after the lunch break. We decided that Coplen would prioritize their proposals and give us them in order and that we would put Mathur’s revised proposal, if received, first among the proposals to be submitted by the Division for funding under the current biennium.

We broke for lunch at 1pm and started again at 2:12pm with a presentation by Holden on his proposal – to evaluate isotopic abundance variations of selected radiogenic elements. \$6400 will be proposed for a 4 year period.

Reedijk indicated that he intended to submit a proposal in the area of bioinorganic chemistry terminology, asking for \$3k. We agreed to put this second in order of priority for funding in the current biennium, if submitted in time.

**19- Comments on the Division report for the next Council meeting: suggestions for verbal update. (West)**

Reedijk suggested that we should note the problems with the IUPAC website. Tony indicated that this was an item for the Bureau meeting but not the Council meeting. The reason for the elimination of Wolfram from the list of alternative names of the elements came up for discussion. We agreed to add this to the agenda for our next meeting.

**20- Discussion of the proposal to institute an “Action Item List” as part of the Minutes for each Division Meeting (Holden)**

We adopted this suggestion for the current meeting and Alan Chadwick was asked to make a list of Action Items during the meeting. We will go over this list at the end of this meeting.

### **21- Preparation of an Information Packet for new Division members (West)**

Loss and Garcia agreed to do this for future additions to the Division Committee.

### **22- Status of the Division Rules (Rosenblatt)**

Shortly before the Turin GA Rosenblatt sent a report to Interrante, West and Tatsumi on the history of the current rules, along with copies of the rules that had been approved by Council at the 2005 Beijing GA and of the “model rules” the Division had received from the Secretary General in 2002 which are the basis of the current rules. The Division II Rules are available on the IUPAC website (but may be difficult to find; see [http://www.iupac.org/news/archives/2005/43rd\\_council/Item\\_18-1\\_DivII.pdf](http://www.iupac.org/news/archives/2005/43rd_council/Item_18-1_DivII.pdf)).

Rosenblatt volunteered to e-mail the rules and accompanying material to any Division member that requested them. He noted that Black has agreed to return to the dual election procedure implicitly required by the IUPAC Bylaws and Division Rules in the future (see Item 5).

### **23- Report by Reedijk on the plans to form an Inorg Chem Division within the EUCHEMS (Federation of Chemical Societies in EU) and on the Division VIII (Nomenclature Committee) meeting**

Regarding the Nomenclature Committee meeting, he noted that an ongoing project of Division 8 deals with a follow-up of Red Book 2005 and its use. Major changes in RB-2005 are now being advertised. An important one deals with proper use of additive nomenclature: **all** anionic ligands have simple  $-o$  replacing the  $-e$ . *No trivial names are recommended anymore.* In particular, **Since 2005** all anionic ligands now end with the letter -o, so that the last  $-e$  of the anion is changed into  $-o$ , **when used in a name.**

**So in names:** acetato, chlorido, methoxido, oxido, azido, hydroxido, azido, phenoxido, sulfido, benzoato, bromido, fluorido, hexafluoridophosphato, tetrafluoridoborato, tetraoxidoperchlorato (or perchlorato), etc.

**compare:** tetrachloromethane (organic substitutive) and tetrachloridocarbon (inorganic additive); or tetrabromostannane, vs. tetrabromidotin for  $\text{SnBr}_4$ .

Another major project is the development of Preferred Inorganic Names (PIN), in analogy with organic preferred names. The users should be able to choose THE PREFERRED NAME. Difference inorganic: organic; Additive versus Substituted. So users should be able to see whether  $\text{SiCl}_4$ ,  $\text{SiCl}_3(\text{CH}_3)$ ,  $\text{Pb}(\text{OAc})_4$ ,  $\text{Pb}(\text{Me})_4$  are organic or inorganic!

**For the moment:** solid state structures, zeolites, polymers are left out. The first stage is molecular inorganic compounds where a central element can be defined

Reedijk also reported on the progress in the development of a Division of Inorganic Chemistry within EuCheMS in Europe (EuCheMS: European association on Chemistry and Molecular Sciences). EuCheMS will have their 2008 meeting in Turin on Sept.15-20. The Division structure of EuCheMS and the structure of the Inorganic Division (ID), in particular, are currently under development. The founding meeting of the ID (with a representative from each member country) was held in Vienna, July 2007.

He also shared a few thoughts about possible Projects for Division II. Bioorganometallic chemistry is rapidly appearing, and is using terminology developed “on the spot”, or from e.g. organometallic, coordination, bioinorganic chemistry; they are about to start an international association that coordinates their conferences. A small Div. II project group, joint with Div. VIII, might be useful to clear up ambiguities, and develop a joint terminology in this area and applications, like biomonitoring (as studied by COCI; in a later part of the GA meeting, after consulting COCI members informally, it turned out COCI was on a different track and more medicinal, so that a joint project is less likely)

**Another topic of possible interest:** metal-organic frameworks (coordination-based zeolites), but only for after 2007 (with prof. M.P. Suh)

Finally on the topic of tungsten vs. wolfram, this issue is back to Division II for discussion at the 2008 Division Meeting. Now RB-2005 only allows different names (SPELLING) for Cs and Al.

#### **24- Other business**

The location of our off-year meeting was discussed; we decided to accept Leskela’s suggestion of a meeting in early August (2<sup>nd</sup>-3<sup>rd</sup> week) in Finland.

Garcia is representing the Division this year at the IUPAC Torino Congress and has organized a session. 75 contributions were received from a host of different countries, including a number of developing countries. Ca. 40 posters and a number of oral presentations are scheduled.

Regarding the “job assignments” for TMs in the coming biennium, Loss agreed to handle the proposed Division Newsletter; this will be sent to all of the Division officers and their Project Leaders, and placed on the Division web site. Reedijk agreed to take over the job of Project Development Officer after receiving proper instructions; Leskela, will be our representative on COCI; West will prepare the summary for CCE rep; Garcia will take over as the Division rep on CCE.

Chadwick had prepared a list of Action Points resulting from the current meeting. These were briefly discussed and are attached to these Minutes as **Appendix 9**.

West discussed the planning for the Glasgow IUPAC World Chemistry Congress; the organization of this meeting is already well in hand; he then went over the 8 themes for

the Conference. Reedijk is on the international advisory board for this Congress. The dates of next GA in Glasgow, will be August 3-9, 2009

The meeting ended at 4pm with an acknowledgement and sincere “thank you” from all of the Division members to Rosenblatt for his long-standing service to the Division.

The membership of the Division II Committee for 2008-2009 is attached to these Minutes as **Appendix 10**.

## Appendix 1

### Report for the Inorganic Division (31 – 7 – 07) Commission Isotope Abundances & Atomic Weights (CIAAW) Report for 2005-2007

The Titular and Associate members, National Representatives and Observers present at the Commission on Isotope Abundances and Atomic Weights Meeting in Pisa were: W. Brand (Germany), T. Ding (Chair, China), J.K. Böhlke (USA), T. Coplen (USA), T. P. De Bièvre (Belgium), J. R. de Laeter (Australia), M. Ebihara (Japan), A. R. Gonfiantini (Italy), M. Gröning (Germany), T. Hirata, N. E. Holden (USA), R.D. Loss (Australia), N.E. Holden (USA), R. Schönberg (Germany), S. Tonarini (Italy), T. Walczyk (Switzerland), M Wieser (Canada), S. Yoneda (Japan),

An evaluation of published isotope abundance measurements for the period 2005–2007, review of the atomic weights, based on the reports from the Subcommittee for Isotopic Abundance Measurements (SIAM), continues to be the major activity of the Commission. The SIAM met on July 24 and 25, 2007 at the CNR in Pisa, and evaluated isotopic abundance data in 14 publications covering 13 elements and made recommendations to change or modify entries for the following polyisotopic elements: Ni, Zn, Mo, Yb, and Lu.

The changes to Standard Atomic Weight were as follows

1.  $A_r(\text{Ni})$  to 58.6934 (4) from 58.6934 (2)
2.  $A_r(\text{Zn})$  to 65.38 (2) from 65.409 (4)
3.  $A_r(\text{Mo})$  to 95.96 (2) from 95.94 (2)
4.  $A_r(\text{Yb})$  to 173.054 (5) from 173.04 (3)
5.  $A_r(\text{Lu})$  to 174.9668 (1) from 174.967 (1)

These recommendations will be reflected in the publication *Atomic Weights of the Elements 2007*, which will be submitted for publication in PAC before the end of the year.

The recommended value for the isotope amount ratio of  $^{40}\text{Ar}/^{36}\text{Ar}$ , which is of importance to geochronologists has been changed to 298.56 (31) from 296.03 (53).

Dr. W. Brand will collaborate with Dr. Assonov (paper evaluated by the Commission: Assonov, S.S. and Brenninkmeijer (2003) On the  $^{17}\text{O}$  correction for  $\text{CO}_2$  mass spectrometric isotopic analysis. Rapid Comms in Mass Spect. 17, 1007 – 1016) to calculate a new  $^{17}\text{O}/^{16}\text{O}$  isotope amount ratio based on the latest calibrations of  $^{13}\text{C}/^{12}\text{C}$  for use by researchers engaged in assessing climate change by means of the global  $\text{CO}_2$  cycle.

In addition to the SIAM, the Subcommittee on the Natural Assessment of the Fundamental Understanding (SNAFU) presented an extensive list of recommendations to the Commission. Numerous issues were identified upon which the Commission needs to take a stand so the output of the Commission can continue to provide the scientific community with reliable, evaluated atomic weight and isotope abundance data. Significant outcomes include a communication to be sent to the CCQM to advise them of the work of the Commission to eliminate the need for the CCQM to setup an atomic weights evaluation program of its own; the Commission should form subcommittees, consisting of appropriate experts, to address specific issues related to atomic-weight variations for poly-isotopic elements; the Commission should consider the use of asymmetric uncertainties for the “Standard Atomic Weights” of elements that exhibit atomic weight variation; the Commission should work cooperatively with IUPAC’s Committee on Chemical Education and carry out an integrated marketing strategy to create CDs, posters, etc to disseminate a Periodic Table of the Isotopes and information on isotopic abundances and atomic weights; the Commission should publish biennially two tables of standard atomic weights abridged to five and four significant figures to serve the needs of the educational and scientific communities; the creation of a Commission website to disseminate the publications of the Commission and inform the educational and scientific communities on isotopic abundances and the atomic weights.

New analytical techniques for isotope amount ratio determinations have made a significant impact on how data are collected and reported. In the case of Zn, for the first time in the history of the Commission, an atomic weight based on a new best measurement determined by multiple collector inductively coupled plasma mass spectrometry was recommended.

It was recommended to the Commission that the Subcommittee for Extra-Terrestrial Isotope Ratios be dissolved, because the work of this subcommittee can now be funded via projects submitted to IUPAC. The Commission should continue to highlight the significance of non-terrestrial isotopic variations in its reports.

Following the meeting the members of CIAAW formed working parties to work on several projects most of which will be submitted to IUPAC before the end of the Assembly period:

- 1) Evaluation of the isotopic composition of the elements 2007-2009;
- 2) Survey and evaluation of Isotopic Reference Materials;
- 3) Educational outreach regarding variability of atomic weights in nature via posters, CDs, webpages, *etc.*;
- 4) Developing a vocabulary specific to isotope amount ratios and atomic weights;
- 5) Report on the stable isotope fractionation of selected elements (*i.e.* Cr, Fe, Ni, Cu, Mo);
- 6) Report on the radiogenic isotope amount variations of selected elements.

The Commission acknowledges the significant contributions made by National Representatives Prof. J. R de Laeter, Prof. Dr. P De Bièvre, and Dr. N. E. Holden. The Commission emphasizes the importance of the participation of these individuals for the evaluation of atomic weight data over the next two years.

**Commission Members 2008 - 2009:**

- (a) Titular Members
  - Prof. Roberto Gonfiantini (Chair)
  - Dr Michael Wieser (Secretary)
  - Dr. Michael Berglund
  - Dr. Manfred Gröning
  - Dr. Thomas Walczyk
  - Dr. Shigeku Yoneda
  
- (b) Associate Members:
  - Dr. Willi Brand
  - Dr. Takafumi Hirata
  - Dr. Ronny Schönberg
  - Dr. Xiang Kun Zhu
  
- (c) Membership of the Subcommittee for Isotopic Abundance Measurements (SIAM)
  - Dr. Michael Berglund (Chairman)
  - Dr. John Karl Böhlke
  - Dr. Willi Brand
  - Dr. Tyler B. Coplen
  - Prof. Paul De Bièvre
  - Prof. John R. De Laeter
  - Prof. Tiping Ding
  - Dr. Roberto Gonfiantini
  - Dr. Manfred Gröning
  - Dr. Takafumi Hirata
  - Dr. Norman E. Holden
  - Dr. Robert D. Loss (Secretary)
  - Prof. Etienne Roth
  - Prof. Kevin J. R. Rosman
  - Dr. Ronny Schönberg
  - Dr. Robert Vocke
  - Dr. Thomas Walczyk
  - Dr. Michael Wieser
  - Dr. Shigeku Yoneda
  - Dr. Xiang Kun Zhu

## Appendix 2

### Interdivisional Sub-Committee on Materials Chemistry

#### Minutes of the Meeting on 3rd August 2007 in Turin

**Present:-** John Corish (Chairman), Alan Chadwick (Secretary), Tony West, Len Interrante, Sanjay Mathur, Javier Garcia-Martinez, Gerd Rosenblatt, Peter Day (invited attendee), Chris Obers (Division IV), Gianni Balducci.

**Apologies for Absence:-** Dick Jones (Division IV)

#### 1. Welcome

The Chairman welcomed the members of the Sub-Committee to the meeting. He particularly welcomed Peter Day for attending the meeting and for his report on the project 'Towards Defining Materials Chemistry'.

#### 2. Minutes of the last meeting

The minutes of the last meeting of this Sub-Committee at Seattle had been circulated and were accepted. Matters arising from the minutes were covered by items in the current agenda.

#### 3. Reports of progress on projects

(a) Current projects (an asterisk denotes an inter-divisional project)

***1999-049-1-200 - Thermodynamic characterization of high-temperature superconductors in the yttrium-barium-copper-oxygen system- GF Voronin***

At this meeting there was no information on this project. [At the Division II meeting it was reported that the budget has now been spent (apparently for a meeting at a conference in Vienna) however no report has been submitted to IUPAC]

**[Action:- Tony West to contact Voronin for the report on this project]**

***2000-007-1-400 - Glossary of terms relating to polymeric gels and networks, hybrid inorganic polymeric materials and the processing thereof \*- RG Jones***

This project is now completed. It has gone through ICTNS and will appear in PAC in the autumn 2007.

***2000-024-2-200 - Teaching high temperature materials chemistry at University-G Balducci***

This project is nearly completed. A meeting was held last year in Vienna at HTMS-XII. A draft copy of the report is available. Gerd Rosenblatt has read and edited the report. The report has been discussed with Fabienne Meyer. She said in addition to the report going onto the Web it should also be archived somewhere within IUPAC. Tony West suggested it might go into J. Chem. Ed. Gerd Rosenblatt felt this might be inappropriate in current form. There are old (30 years) articles by Brewer on this subject.

**[Action:- Gianni Balducci to send an electronic copy to the Secretariat for circulation to this sub-committee]**

***2003-034-1-200 - Classification, terminology and nomenclature of borophosphates-R Kniep***

At this meeting it was believed that this project had been abandoned and the status needs to be verified. It is certain that Kniep is no longer involved in the project. [At the Division II meeting it was reported that this project was still active although no funds of a relatively large budget had been spent. At that meeting there was an action on Tyler Coplen to investigate the status of this project]

***2005-043-2-400 - Terminology for self-assembly and aggregation of polymers-C. Obers***

***2006-028-1-400 - Terminology for conducting, electroactive and field-responsive polymers-C. Obers***

These two projects originated from Division IV. Chris Ober reported that good progress had been made on both projects. The first is focused on self-assembly using weak forces and a draft report has been prepared and will be refined during the GA. The second project is on electroactive materials. Chris Obers was co-chairing the task force but has handed this to Francois Schué. The project is going well with input from both chemical and physical communities and is on schedule. Further meetings of the task group are planned for later this week.

***2005-001-1-200 - Towards defining materials chemistry-P Day***

This project was discussed by the task force before this meeting. The Chairman thanked Peter Day again for the presentation and for attending this meeting. A number of key points arose from discussion on the project.

**1. A definition of 'Materials Chemistry' for general use.**

There is still work to come to a final definition. Peter is proposing something on the lines of:-

*'Materials chemistry' comprises a combination of design, synthesis, characterisation, processing, understanding or exploitation of molecular or atomic assemblages that have useful or potentially useful properties, functions and applications.*

This is being worked on by the task force but completion is expected very soon.

**2. Publication outputs from the project.**

The results of the project will be a report and a publication in Pure and Applied Chemistry. Gerd Rosenblatt also suggested that a more general article in Chemistry International would help the cause of materials chemistry within IUPAC. A model could be the article in the Sept – Oct 2006 issue by Jesper Sjostrom (p. 9) which looked at the role of biomedical chemistry,

**3. How does MC fit into IUPAC?**

This was discussed later in the agenda

**4. What does IUPAC do?**

The next stage is that the Sub-committee passes the report on to Division II after more revision. Further discussion of the role of materials chemistry was conducted here and later in the agenda; the minutes of the discussion are below under 6.

**4. WAM IV**

Sanjay Mathur reported on what had happened. Thailand had been chosen however difficulties arose as this country was not an NAO. However, Prof. El-Sayed was contacted who said that the original WAMs were advanced institutes with only a few invited, senior scientists – not local scientists. This is not the type of meeting that was required by this Sub-committee. However, the local organisers sent invitations to senior scientists as speakers for a beach meeting in Thailand. This was done without a formal application being made to IUPAC for funding. The plan was scrapped, which annoyed one of the local organisers who felt let down by IUPAC; however it must be stressed again that they had gone ahead without approval or even an application for sponsorship. Thus we are back to the original plan. One of the local organisers, Joydeep Dutta at Asian Institute of Technology in Klong Luang Pathumthani, is still willing to organise

WAM, but an application needs to be made. A WAM in 2008 is now regarded as impractical and the meeting should be planned for 2009.

**[Action:- The Chairman to contact Dr Dutta to elicit a proposal for sponsorship as soon as possible]**

## **5. HTMC Conferences.**

HTMC-2006 in Vienna was successful. A report is on the Web and a report appeared in Chemistry International.

[[http://www.iupac.org/publications/ci/2007/2902/cc4\\_170906.html](http://www.iupac.org/publications/ci/2007/2902/cc4_170906.html)]

HTMC-2009 will be in Davis California and will be organised by Alexandra Navrotsky. Organisation plans are well in hand.

HTMC-2012. IUPAC and particularly this group have always been involved with this conference series. Gerd Rosenblatt and Gianni Balducci have been involved for many years and been on the committee to select the conference venue. However they are leaving that committee and a new member is required to chair the selection committee. Gerd Rosenblatt suggested that as Tony West is part of the selection committee that he should be proposed as chairman. Tony West was lukewarm but agreed to take the post until a new chairman is selected. This would maintain continuity and links – as this conference series has been a responsibility of this division – used to be part of the sub-commission.

**[Actions:- Tony West to act as temporary chair of HMTTC selection panel. Gerd Rosenblatt to seek new chairman for the selection panel]**

## **6. Future of the Sub-committee.**

There was discussion of this topic at various points in the meeting, particularly after the presentation by Peter Day. After some discussion Gerd Rosenblatt summarised the points and suggested that there were four options for this sub-committee (assuming that dissolving the sub-committee is not an option).

1. Continue with a strengthened membership,
2. New standing committee, like chemical education. With representation from each division in IUPAC.
3. Re-name Inorganic division; for example, as Inorganic and Materials Chemistry.
4. Create a new division.

It seemed that option 2 is the most preferred at this stage, however to get there the membership needs to be strengthened. One way this might be done would be to have a chairman from another division (John Corish is due to leave this

division soon). This person could come from Divisions I or IV, where there are people with materials interests,

The question arose as to the role of a standing committee. It would clearly report to Council and therefore have a high profile. It would play a major role in organising the Congress. The 2009 Congress will involve Paul O'Brien (Manchester Chemistry) as one of the organisers so there will be a strong materials and nanochemistry bias – which would be good for this proposed standing committee. As a standing committee it would have representation from all divisions and there is large materials interest that is untapped; probably leading to more projects. It would also be involved with HTMC and WAM.

It was felt that at this stage there were no formal actions that would be appropriate and that informal soundings were required of Council and Bureau for a suitable way forward. The chairman, Tony West and Gerd Rosenblatt agreed to undertake these soundings.

**[Action:- The Chairman, Tony West and Gerd Rosenblatt to make informal enquiries of Council and Bureau as the best way to advance materials chemistry within IUPAC]**

## **7. Any other business**

Sanjay Mathur and Javier Garcia-Martinez had started on a proposal on the nomenclature in nanomaterials. They have done some groundwork and already have started on the glossary. Some discussion indicated that there may be a need for funds for a project to define the project; the initial project would prepare an overview. Then a terminology project(s) would follow. This would be discussed further at the Division meeting.

A new chairman is required as John Corish will probably move on from this Division. Several names were suggested from other divisions (not minuted); a Chairman from another division was regarded as a move to strengthen the sub-committee.

## **8. Date of next meeting**

The 'off-year' meeting of the Division will be in Helsinki in August 2009. This Sub-committee will meet again as part of this meeting.

Alan Chadwick  
06 August 2007

### Appendix 3

#### *Report to Inorganic Chemistry Division on the Workshop on Advanced Materials 2008, WAM IV*

Following the acceptance at Seattle of a bid from Thailand to host the fourth in the series of Workshops on Advanced Materials WAM IV discussions were held to decide between possible sites and alternative arrangements. Some misunderstandings had arisen over the nature and mission of the WAM meetings. Difficulties had also arisen because Thailand is not an NAO and therefore cannot host an IUPAC sponsored conference. Incidentally, this represents a change in the IUPAC rules from the time at which the first WAM meeting had been held in Hong Kong. There is one possible scheme open that could be followed to allow the Union to provide some funding for WAM IV and this had been brought to the attention of the original proposer in more recent correspondences. There is therefore a good chance that the original proposal, which was completely in line with the objectives of the WAM series, can be reinstated although the time line for the organisation of conference is now quite short.

John Corish,  
Trinity College Dublin,  
August 2007.

### Appendix 4

#### *Report to Inorganic Chemistry Division on Authentication and naming of New Elements*

The IUPAC/IUPAP Joint Working Party as reconstituted in 2005, again under the chairmanship of Professor Paul Karol, has continued to consider claims submitted for six new elements 112, 113, 114, 115, 116, and 118. The first call for documentation had a deadline of January 2006 but as new documentation emerged an ancillary call formally extended the deadline to June 2007. During the course of its deliberations the JWP reported informally that its work had progressed well and that it had reached the conclusion that it would be both most expedient and effective to split its next report into two sections. The first will deal with  $Z = 112$  and the second with elements with  $Z > 112$ . The first section of the report is currently in final draft form and is expected to issue as an IUPAC Technical report in the near future. When this report has issued and has been accepted then, provided the claims for the discovery have been verified and accepted, the formal process of naming the new element can begin.

One member of the JWP, Prof H.W. Gäggeler, has decided that he should not continue to serve because of a possible conflict of interest and his resignation has been accepted. The JWP has indicated, through its chairman, that it does not require a replacement at this time.

John Corish,  
Trinity College Dublin,  
August 2007.

## Appendix 5

### *Report to Inorganic Chemistry Division on ICTNS 2005-2007 (taken from the Report from ICTNS to Council)*

During the biennium August, 2005 to August 2007, ICTNS continued its activities on behalf of IUPAC in reviewing and approving Technical Reports and Recommendations submitted to IUPAC. Most of these Technical Reports and Recommendations were, or are about to be, published in *Pure and Applied Chemistry*. A few comprise what are essentially research papers containing new results but emanating from IUPAC projects, and these have been reviewed with publication recommended in research journals. A few others emanated from publications in preparation or prepared by international bodies of which IUPAC is a member; these were reviewed in the usual way. Finally, several of the “color” books have undergone revision during the biennium, and these have been reviewed by ICTNS. They include:

- Nomenclature of Inorganic Chemistry (Red Book), 2005
- Compendium of Chemical Terminology, on-line XML version (Gold Book), 2006
- Quantities, Units and Symbols in Physical Chemistry (Green Book), 3<sup>rd</sup> ed. In press, 2007
- Terminology and Nomenclature in Polymer Chemistry (Purple Book), 2<sup>nd</sup> ed.

Still under revision - publication expected late 2007 or 2008.

ICTNS monitored and was consulted on IUPAC's interactions with international metrological societies on which IUPAC has representation.

ICTNS acted as a resource for the Secretariat in answering many questions received from a wide variety of students and professionals on terminology, symbols, units and general scientific questions.

The publications approved by ICTNS during the period were

*IUPAC Recommendations, 10m publications, Total pages published: 370*

*IUPAC Technical Reports, 14 publications, Total pages published: 296*

PAC-REP-06-03-01. Atomic Weights of the Elements 2005 (Wieser - Div. II). PAC **78**, 2051-2066 (2006), 16 pp.

*Publications reviewed and approved by ICTNS for publication elsewhere than in PAC, 5 publications*

*Recommendations*

PAC-REC-04-04-03. Nomenclature of Inorganic Chemistry (Revised “Red Book”) (Connelly). RSC Publishing (2005).

PAC-REC-05-11-10. Quantities, Units and Symbols in Physical Chemistry, 3<sup>rd</sup> ed. (“Green Book”) (Quack - Div. I). In press. RSC Publishing.

*Technical Reports (reviewed, edited and approved as noted), 3 publications.*

Only those of interest to Division II are specifically listed here: a full listing is available in the Report from ICTNS to Council.

John Corish,  
Trinity College Dublin,  
July 2007.

## Appendix 6

### **Report on the status of the IUPAC Project: 2000-024-2-200 Balducci: “*Teaching of high temperature materials chemistry at university*”**

The project is practically completed. A very close-to-final draft has been prepared in the last months and distributed a few weeks ago to TG members and other colleagues expert in the field of HTMC. With respect to the previous draft submitted in 2006 this report has been considerably enriched: the list of topics has been rearranged and enlarged, the helpful bibliography implemented and adjourned by adding where possible web site addresses. This work of “restyling” has been much helped by suggestions sent to me by TG members and some other colleagues. Further inputs came from discussions I have had with colleagues during my participation in the last IUPAC sponsored HTMC-XII conference held in Vienna in September 2006.

The syllabus is constituted by an introduction and eight main headings, each one with a number of subtopics. The aims of the first part are, initially, to define high temperature chemical behaviour of inorganic materials and give an overview of historical developments leading to the emergence of high temperature chemistry; subsequently the “core” part is to describe high-temperature reactivity of materials based mainly on equilibrium thermodynamics and kinetics, determination of thermodynamic data from experiments and computations and their use. The last section covers more specific topics, mostly concerning technological applications of high temperature materials and processes, and in part, reflecting objectives and results of researches currently carried out and presented at the principal international venues in the field such as the IUPAC-sponsored HTMC and Gordon Research Conferences on high temperature materials, processes and diagnostics.

As next (and final) step, the final version of the report (shared with all the TG members) will be made ready for dissemination.

G.Balducci  
July 3, 2007

## Appendix 7

# Inorganic Chemistry Division (II)

## Project Report

**Project Number:** 2005-027-1-200

**Title:** Evaluated published isotope ratio data (2005-2007)

**Task Group Chairman:** Michael Berglund

**Members:** John Karl Böhlke, Tyler B. Coplen, Paul De Bièvre, John R. De Laeter, Tiping P. Ding, Roberto Gonfiantini, Manfred Groening, Norman E. Holden, Robert D. Loss, Kevin J.R. Rosman, Etienne Roth, Thomas Walczyk, Michael Wieser, Mo-tian Zhao, Xiang Kuo Zhu, and Shige Yoneda.

**Addition co-opted experts:** M. Hirata, Ronny Schönberg, Sonia Tonarini

**Objective:** The primary aim of this project was to evaluate isotope ratio publications between early 2005 and early 2007, to recommend "best isotope ratio measurements" for compilation and publication in the next TICE and where appropriate recommend "new" standard atomic weights to the Commission for Isotopic Abundances and Atomic Weights (CIAAW). The recommendations once approved by CIAAW will be published as the "Atomic Weights of the Elements 2007" in Pure and Applied Chemistry, which will also include a table of relative atomic masses and half-lives of selected radio-nuclides.

**Description/Outcomes:** The task group evaluated isotope ratio data for 13 elements (Ar, Br, C, Cl, Cd, Lu, Mo, Ni, O, Si, Ti, Zn, Yb) in 16 publications reported between mid-2005 and mid 2007 (see list of references). Particular attention was paid to evaluations of uncertainties, the types of materials analysed, and the variability of isotope ratio measurements reported.

Of equally importance to the approval of the new data was the attention paid by the task group to high precision isotopic ratio measurements reported for elements such as Cd, Ti, and Ni for which changes to best measurements were **not** made. This highlighted the need for specialist analysts to be called on to address issues related to specific analytical techniques.

Final uncertainty calculation and expansions were performed using the principles and procedures proposed by IUPAC Project number 2003-031-2-200 (RICEII) using full GUM procedures. For the elements requiring changes, appropriate uncertainty expansion factors were used to ensure compatibility with current CIAAW accepted evaluation procedures. A full implementation of RICEII proposals in this type of work awaits CIAAW approval.

At the 24-27 July Pisa meeting of the Subcommittee on Isotopic Abundance Measurements the new "best isotope ratio" data for Ar, Lu, Mo, Yb and Zn were recommended to CIAAW for inclusion in the next (2009) CIAAW Table of Isotopic Composition of the elements (TICE). In addition, new Standard Atomic Weights were also recommended for Lu, Mo, Ni, Yb and Zn to be published in "Atomic Weights of the Elements 2007" prepared for Pure and Applied Chemistry. A subsequent, publication in J. Phys. Chem. Ref. Data is also anticipated. Details of the evaluations and the recommendations are shown in the attached minutes of the SIAM meeting.

### EVALUATED ISOTOPE ABUNDANCES

The following Tables show data for the six elements for which changes were recommended.

Table 1

<b>Ar</b>	<b>isotope amount abundances</b>	
<i>Isotope</i>	<i>Current TICE Best Meas +</i>	<i>New Rec Best Meas (1s)*</i>
36	0.003365(6)	0.003336(4)
38	0.000632(1)	0.000629(1)
40	0.996003(6)	0.996035(4)

+ specific author defined uncertainties

\* Recommended Best Measurement taken from Lee et al. (2006)

**NO CHANGE** to Standard Atomic Weight

Table 2

<b>Lu</b>	<b>isotope amount abundances</b>			
<i>Isotope</i>	<i>Current TICE</i>	<i>Current TICE Best Meas (2se)</i>	<i>New Rec Best Meas (2s)*</i>	<i>SIAM AW calculation (6s)</i>
175	0.9741(2)	0.97416(5)	0.974013(12)	0.974013(12)
176	0.0259(2)	0.02584(5)	0.025987(12)	0.025987(12)

\* Recommended Best Measurement taken from *de Laeter and Bukilic (2006)*

Recommended Standard Atomic Weight be changed from 174.967(1) to 174.9668(1)

Table 3

<b><i>Mo</i></b>	<b>isotope amount abundances</b>			
<i>Isotope</i>	<i>Current TICE</i>	<i>Current TICE Best Meas (2s)</i>	<i>New Rec Best Meas (2s)*</i>	<i>SIAM AW calculation (6s)</i>
92	0.1477(31)	0.147 69(1)	0.145 246(15) but actually: 0.145 25(15)	0.1453 (31)
94	0.0923(10)	0.092 28(1)	0.091 514(74)	0.0915 (9)
95	0.1590(9)	0.159 022(4)	0.158 375(98)	0.1584 (11)
96	0.1668(1)	0.166 76(7)	0.166 72(19)	0.1667 (15)
97	0.0956(5)	0.095 618(7)	0.095 991(73)	0.0960 (14)
98	0.2419(26)	0.241 959(6)	0.243 91(18)	0.2439 (37)
100	0.0967(20)	0.096 671(4)	0.098 24(50)	0.0982 (31)

\* Recommended Best Measurement taken from *de Laeter and Bukilic (2006)*  
Recommended Standard Atomic Weight be changed from 95.94 (2) to 95.96 (2)

Table 4

<b><i>Ni</i></b>			
<i>Isotope</i>	<i>Current TICE</i>	<i>Current TICE Best Meas. (2s)</i>	<i>SIAM AW calculation – uncert reflect variability *</i>
58	0.680769 (89)	0.680769(59)	0.68077 (16)
60	0.262231 (77)	0.262231(51)	0.26223 (13)
61	0.011399 (6)	0.011399(4)	0.011399 (12)
62	0.036345 (17)	0.036345(11)	0.036345 (35)
64	0.009256 (9)	0.009256(6)	0.009255 (17)

\* variability range taken from Tanimizu et al (2006)  
NO CHANGE to Best IC measurements – only delta variations reported.  
Recommended Standard Atomic Weight be changed from 58.6934 (2) to 58.6934 (4) to cover to variability in nature.

Table 5

<b><i>Yb</i></b>	<b>isotope amount abundances</b>			
<i>Isotope</i>	<i>Current TICE</i>	<i>Current TICE Best Meas. (2se)</i>	<i>New Rec Best Meas (2s)*</i>	<i>SIAM AW calculation (6s)</i>
168	0.0013(1)	0.00127(2)	0.001232(4)	0.001233(29)
170	0.0304(15)	0.0304(2)	0.02982(6)	0.02982(38)
171	0.1428(57)	0.1428(8)	0.14086(20)	0.1409(13)
172	0.2183(67)	0.2183(10)	0.21686(19)	0.2168(13)
173	0.1613(27)	0.1613(7)	0.16103(9)	0.16103(62)
174	0.3183(92)	0.3183(14)	0.32025(12)	0.32026(78)
176	0.1276(41)	0.1276(5)	0.12995(13)	0.12996(81)

\* Recommended Best Measurement taken from *Wieser and de laeter, 2006)*

Recommended Standard Atomic Weight be changed from 173.04 (3) to 173.054(5)

Table 6

<b>Zn</b>	<b>isotope amount abundances</b>			
<i>Isotope</i>	<i>Current TICE</i>	<i>Current TICE Best Meas. (2s)</i>	<i>New Rec Best Meas (2s)*</i>	<i>SIAM AW calculation (range based)</i>
64	0.48268(321)	0.48268(214)	0.491704(83)	0.49170 (25)
66	0.27975(77)	0.27975(51)	0.27731(11)	0.27731 (33)
67	0.04102(21)	0.04102(14)	0.040401(18)	0.04040 (5)
68	0.19024(123)	0.19024(82)	0.184483(69)	0.18448 (21)
70	0.00631(9)	0.00631(6)	0.006106(11)	0.00611 (3)

\* Recommended Best Measurement taken from *Ponzevera et al (2006)*

Recommended Standard Atomic Weight be changed from 65.409 to 65.38 (2) to account for variability.

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## Appendix 8: News Release

### Summary of Minutes of Commission Meeting at IUPAC General Assembly, Torino, Italy, 30-31 July 2007.

The Commission on Atomic Weights and Isotopic Abundances (II.1) met for two days of evaluations and discussions under the chairmanship of Professor Tipping Ding during the 44<sup>st</sup> IUPAC General Assembly in Torino, Italy.

The standard atomic weights of five chemical elements have been changed based on new determinations of isotopic abundances and reviews of previous isotopic abundances and atomic masses.

The changes to Standard Atomic Weight were as follows

6.  $A_r(\text{Ni})$  to 58.6934 (4) from 58.6934 (2)
7.  $A_r(\text{Zn})$  to 65.38 (2) from 65.409 (4)
8.  $A_r(\text{Mo})$  to 95.96 (2) from 95.94 (2)
9.  $A_r(\text{Yb})$  to 173.054 (5) from 173.04 (3)
10.  $A_r(\text{Lu})$  to 174.9668 (1) from 174.967 (1)

These changes in the atomic weights will be published in a new Table of Standard Atomic Weights 2007, which will be submitted for publication in *Pure and Applied Chemistry (PAC)* by the end of 2007. The Commission also continued its review of publications of the variation in the natural isotopic abundances.

The recommended value for the isotope amount ratio of  $^{40}\text{Ar}/^{36}\text{Ar}$ , which is of importance to geochronologists has been changed to 298.56 (31) from 296.03 (53).

Michael E. Wieser  
Secretary IUPAC Commission on Isotopic Abundances and Atomic Weights.

**Appendix 9: ACTION POINTS**  
**IUPAC Inorganic Chemistry Division Committee**  
**The Lingotto, Torino, Italy August 4-5, 2007**

The action points in **RED** are linked to the items on the original Agenda.

- 1- Introductions and overview (West)
- 2- Approval of the Agenda with modifications (West)
- 3- Approval of Seattle Minutes
- 4- Report by IUPAC Officers

During this item David Black gave a presentation on funds and IUPAC. Prizes and extra funding for divisions was mentioned.

**Action on everybody to seek funding for the Division and IUPAC. Some divisions have done this, particularly in terms of money for prizes for young chemists.**

- 5- Report from the nominating committee for the 2007 TM election (Holden, Tatsumi)
- 6- Review of Division budget allocations and expenditures (West, Coplen)

It was noted that funding available for projects is \$9210 (until end of year) from the Division. More funding is available from the Projects Committee; this is underspent.

**Action on everyone; put in some good projects.**

- 7- Report from Commission on Isotopic Abundances and Atomic Weights (CIAAW) (Ding) and its Subcommittees (Holden, Coplen)

Several items were discussed that required updating activities

**Sean to bring up Green book revision at ICTNS following earlier correspondence.**

**Gerd to update Periodic Table**

- 8- Report from P. Day
- 9- CNSR Division (VIII) Report (Leigh)

During this item the question of tungsten/wolfram was raised by Javier as a concern of the Spanish community.

**Javier was asked to produce a document to support his petition to reintroduce the name of wolfram as an alternative name for element 74 in the red book to be voted on at the next Division off-year meeting.**

**Sean to talk to Geoff Leigh about the history of the loss of the name wolfram**

10- CCE Report

11- Report from the Subcommittee on Materials Chemistry (Corish)  
Report on Project: 2005-001-1-200; Towards Defining Materials Chemistry (Day)

Sean reported on the MC meeting and Peter Day gave a summary of his project on defining materials chemistry. There was discussion on the ways of forwarding materials within IUPAC

**Tony, Sean, Gerd to talk to the secretariat as to a way forward on MC**  
**Tony to raise MC difficulty at Bureau**

12- New Elements: Validation of Claims and Naming (Corish)

13- Reports from other IUPAC bodies and Affiliated Organizations  
Interdivisional Committee on Terminology, Nomenclature,  
and Symbols (Corish)

14- Reports on recent and planned Division-sponsored conferences (Rosenblatt, Corish)  
HTMC-XII (see item 11, above)  
Next Workshop on Advanced Materials (WAM)

**Sanjay to write to Joydeep to elicit a formal proposal for sponsorship as soon as possible**

15- Project-by-project review of project status (Coplen, etc.)

1999-049-1-200 Thermodynamic characterization of high-temperature  
superconductors in the yttrium-barium-copper-oxygen system (Voronin)

**Action on Tony to get report from Voronin**

2000-024-2-200 Teaching High Temp Materials Chem (Balducci)

**Action on Alan to get electronic copy from Gianni**

2001-015-1-100 Standard potentials of radicals (Stanbury)

2001-019-2-200 Guidelines for mass spec meas (Walczyk)

2002-049-2-200 A new comprehensive report on the isotopic compositions of  
the elements for global users communities (RICE phase I) (Loss/Taylor)

2003-006-1-100 NMR Chemical Shifts: Updated Conventions (Harris)

2003-033-1-200 Determination of Atomic Weights Using New Analytical Techniques (Wieser)

2005-022-1-200 Calibration of Organic and Inorganic Oxygen-bearing Isotopic Reference Materials (Brand/Coplen)

2005-027-1-200 Evaluated Published Isotope Ratio Data (2005-2007) (Berglund)

2003-034-1-200 - Classification, terminology and nomenclature of borophosphates\* R Kniep

**Ty to chase this one (large budget, Kniep seems to have pulled out). After this meeting (on 12/42007) Fabienne Meyers attempted to contact Kniep to inquire about this Project; however, no reply was received after waiting for several months.**

2005-043-2-400 Terminology for self-assembly and aggregation of polymers (Ober)

2006-016-1-200 Recommendations for Isotope Data in Geosciences (Renne)

2006-025-1-200 Assessment of fundamental understanding of isotopic abundances and atomic weights of the chemical elements (Holden)

2006-028-1-400 Terminology for conducting, electroactive and field responsive polymers (Ober)

2006-046-1-200 Priority claims for the discovery of elements with atomic number greater than 111 (Karol/Corish)

**On time; no budget but funds could be obtained if required. Sean thought a meeting might be useful. He should contact Karol to see if a meeting of group is required. Funds would probably come from Project Committee.**

16- Status of pending project proposals (Coplen)

Sanjay/Javier project on nanomaterials nomenclature.

**Bob and Gerd to help Sanjay/Javier to prepare a (preliminary) proposal on nanochemistry**

Berglund proposal from Atoms

**Action on Ty to submit the project by Berglund (Evaluated Published Isotope Ratio Data published between 2007-9)**

Fajeli proposal from Atoms

Joint with Analytical Division and will go to Project Committee

**Action on Ty to submit the project by Fajeli to Project Committee**

Project in preparation with CCE and will go to Project Committee

**Action on Ty to complete and submit the project**

Isotopic ratios of heavy elements – still preparation – key is graphical presentation.

**Action on Ty to complete and submit the project; try to get support from Geological Union**

New isotope abundance measurement review by Norm. \$6400 budget for 4 years

**Action on Norm to submit**

Jan had a project in mind on bioinorganic issue together with COCO; if that would not work, a topic on the nomenclature in bioinorganic chemistry, joint with Division 8, might develop. \$2-3k **Action on Jan to progress the proposal**

17- Review of any new project proposals (Coplen)

18- Discussion on solicitation of new projects (West)

19- Comments on the Division report for the next Bureau meeting: suggestions for verbal update. (West)

20- Discussion of the proposal to institute an “Action Item List” as part of the Minutes for each Division Meeting (Holden)

**Action Alan to send out action list**

21- Preparation of an Information Packet for new Division members (West)

**Action on Bob and Javier to prepare this pack**

22- Status of the Division Rules (Rosenblatt)

**NOT AN ACTION; Gerd can send anyone a background history of the rules.**

24- Other business

**Action on Kaz – to appoint a representative to ICTNS**

**Appendix 10**  
**Division II Membership 2008-2009**

Name	Proposed Status	Proposed Term	NAO
Prof. Anthony R. West	TM - Past President	2008-2009	United Kingdom
Prof. Kazuyuki Tatsumi	TM - President	2008-2011	Japan
Prof. Leonard V. Interrante	TM - Secretary	2008-2011	United States
Prof. Robert D. Loss	TM - Vice President	2008-2011	Australia
Prof. Tiping Ding	TM	2008-2011	China/ Beijing
Dr. Tyler B. Coplen	TM	2006-2009	US
Prof. Markku Leskelä	TM	2006-2009	Finland
Prof. J. García-Martínez	TM	2008-2011	Spain
Prof. Luis A. Oro	TM	2008-2011	Spain
Prof. Jan Reedijk	TM	2006-2009	Netherlands
Prof. M. Paik Suh	TM	2006-2009	Korea
Prof. Josef Takats	AM	2008-2009	Canada
Dr. Milan Drabik	AM	2008-2009	Slovakia
Dr. Norman E. Holden	AM	2008-2009	US
Prof. Sanjay Mathur	AM	2008-2009	Germany
Prof. Alan Chadwick	AM	2008-2009	UK
Prof. K. Sakai	AM	2008-2009	Japan
Prof. Ling-Kang Liu	NR	2008-2009	China/Taiwan
Dr. R. Gonfiantini	NR	2008-2009	Italy
Prof. Pavel Karen	NR	2008-2009	Norway
Dr. Tamara V. Basova	NR	2008-2009	Russia
Prof. Lars R. Öhrström	NR	2008-2009	Sweden
Prof. Aldo Bologna Alles	NR	2008-2009	Uruguay
	11 TMs, 6 AMs, 7 NRs		

AM = Associate Member

NR = National Representative

TM = Titular Member