

**Minutes of the ACS-IUPAC Coordination Meeting of the Interdivisional  
Subcommittee on Materials Chemistry (ISMC)  
and the Organizers of the WCC Symposium,  
“Challenges for Materials Chemistry in the 21st Century”,  
Saturday, August 21, 2010 12:30 – 6pm  
Baltic Room, Westin Copley Place Hotel, Boston, MA**

Present: Leonard V. Interrante (chairman), Ed Chandross, Sean Corish, Christopher Ober, Michel J. Rossi, Angela Wilson

Invited but unable to attend: Anthony West, Richard Jones, Carlos R. Cabrera

This meeting was held with the support of the American Chemical Society to serve as both as the off-year meeting for the ISMC and to assist with the organization of the 2011 WCC Symposium on “Challenges for Materials Chemistry in the 21st Century”, which is sponsored by both the ISMC and the American Chemical Society.

The chairman called the meeting to order at 12:45h and started with a few housekeeping items.

*Organization of WCC Symposium 2011*

The World Chemistry Congress (WCC), to be held in 2011 in conjunction with the General Assembly (GA) of IUPAC in Puerto Rico will host a two-day Symposium on Materials Chemistry. This event was recently awarded one of three IUPAC-ACS Challenge Grant Awards to showcase this emerging interdisciplinary field. The organizers of this two-day Symposium are L.V. Interrante, E. Chandross and C.R. Cabrera. The exact title of the Symposium, after some discussion, was determined as "Challenges in Materials Chemistry for the 21<sup>st</sup> Century". In the framework of the 2-day Symposium there will be 6 plenary (45 minutes each) lectures, 4 invited talks (35 minutes each), and 6-8 contributed talks. Depending on the quality of the applications it was discussed to perhaps forego the contributed talks entirely in favor of extending the time slots for invited or keynote talks or extended “questions and answers” sessions. The total time available for oral presentations is determined by the WCC Plenary lectures (involving Nobel prize laureates) in the morning and evenings, which are fixed cornerstone events. The available time is 1030 -12:00h, and 13:30 – 1630h.

In addition, instead of holding poster sessions the organizers plan on holding two “Mini-Workshops”, two hours each in the evenings. It is thought that this 2-day Symposium will primarily attract a predominantly young public consisting of PhD students, postdocs and young staff members, mainly originating from Latin and Central America.

To date the following Symposium plenary speakers have agreed to participate:

- Joanna Aizenberg (Harvard Univ., Cambridge, US): bio-inspired materials synthesis, nanofabrication
- Frank Caruso (Univ. Melbourne, Australia): biomedical materials
- Michael Graetzel (Swiss Federal Institute of Technology, Lausanne, Switzerland): dye-sensitized nanocrystalline metal oxide solar cells

- Ferdinand Schüth (MPI Mülheim, Germany): materials chemistry for energy storage
- Takeo Someya (Japan)
- Jean-Marie Tarascon (Univ. de Picardie, Jules, France)

It was decided to conduct the Mini-Workshops (MWs) in a panel presentation/discussion format, with 3-4 invited panel members for each MW, to be drawn partly, if not entirely, from the invited Symposium speakers (plenary and other invited). One of the 3 Symposium organizers, likely Ed Chandross and Carlos Cabrera, will serve as the chair/moderator of each MW. These two MWs will focus on "Key Topics in Materials Chemistry" with the first one, on "Emerging energy technologies", scheduled for the Monday evening of the WCC after Symposia relating to alternative energy scheduled for that day. The second one would focus on "Frontiers in nanomaterials research and development" and would be scheduled for Tuesday evening, after the first day of oral presentations.

Due to time limitations (2 hours) and the desire to engage the audience in discussions relating to the chosen topics, the panel members will present perspectives and trends rather than reviews on past work. What are the pertinent questions in the field, where does the field go? Of course, this kind of talk necessitates a brief background presentation, perhaps to be presented in part in the oral lectures of the panel members who are also invited speakers. It was felt that this was a challenging assignment for the speakers and leaders of the discussion in view of the following format for the available two hours of each Mini-Symposium: 3-4 15-20-minute overview presentations, followed by one hour of direct interaction of the audience with the speakers, with perhaps a one or two questions from the panel chair in order to start off the discussion plus written questions from the audience presented to the M-W chair

After lengthy discussion the topics for the two Mini-Workshops were suggested:

- **Emerging energy technologies:** possible topics may be chosen among the following: batteries, supercapacitors, fuel cells, hydrogen storage and generation, OLED's and organic semiconductors.
- **Frontiers in nanomaterials research and development:** emphasis on biological and medical materials.

The emphasis will be on presenting examples rather than comprehensive overviews, followed by a trend analysis for the immediate future and discussion of salient and relevant open questions including sustainability. Financial aspects in relation to the budget of the Symposium were briefly discussed in light of the expected number of participants. Considerable doubt was expressed as to the optimistic estimate of 3000 participants expected by the organizers (Gabriel Infante), a number half that or even less was judged more realistic in view of several constraints known to be associated with the choice of the location (summer period, steep prices for accommodations, strong expected participation of Latin and Central American participants with limited financial resources). Given the award of the ACS Challenge Grant (25 k\$) to this Symposium the situation was deemed to be acceptable, nevertheless it was felt that every effort should be made to recruit members of the General Assembly among all attending IUPAC member as presenters or active participants in this Symposium in order to alleviate the limited budget. Angela Wilson has been asked to supply some names of speakers on molecular modelling.

#### *Future of the Interdivisional Subcommittee on Materials Chemistry (ISMC)*

In view of the terms of Michel J. Rossi, Len Interrante and Tony West ending at the end of the current biennium in 2011 an appeal for continuity of Div. I and II TM representation on the Subcommittee beyond that date was expressed. In addition to the existing collaboration of

Division II (lead), I and IV other Divisions or members of IUPAC Standing Committees should be invited to participate. The guest, ACS member Ed Chandross, stated that ACS as an organization apparently missed the boat on recognition of Materials Chemistry as a distinct sub discipline of chemistry several years ago. In contrast, the RSC (the British Royal Society of Chemistry) launched a very successful effort at organizing an active and productive Materials Chemistry Section that deserves this name, perhaps as a unique example worldwide. The suggestion was made to appeal to the RSC for help in setting up the proposed ISMC in terms of both moral support and providing arguments for organizing it based on their ten years or so of experience. However, the question remained whether or not the proposed ISMC would be successful at an international level.

Based on this situation, three topics were discussed that should attract and focus the attention of the IUPAC organization on the need for the proposed ISMC: (a) educational aspects centered on Materials Chemistry (MC); (b) project work specific to materials chemistry issues by attracting proposals in areas such as terminology, creation of critically evaluated data bases and critical reviews of methodologies in materials chemistry; (c) holding a successful WCC Symposium that gives us visibility and credibility within the IUPAC organization. In addition, the revitalization of the New Directions in Chemistry, Workshops in Advanced Materials (WAM series) may also be seen as a key element.

Regarding the educational aspects, the planned MC education website should be designed taking the polymer education website created by Chris Ober as a model. It is both simple to handle (updates, expansions) and to implement using existing and available software without the intervention of web professionals. Its strengths are the possibility to introduce a variety of links to other interesting or related websites that may be managed by non-professional web designers. So far, hits of the existing polymer education website come mainly from India and China and indicate a strong need for such a website. Planned essays such as “What would current life be without plastics” available on the web should increase its impact even further. This “What if”-type topic could easily be extended to Materials Chemistry issues. Chris Ober is willing to take the lead on designing and implementing a website for MC designed along the above lines under the condition that he obtains a clear focus and objectives for implementing such a website from the ISMC. He is willing to submit a proposal to IUPAC on designing an educational website in this sense.

#### *Revival of the Workshops on New Directions in Chemistry – Workshop on Advanced Materials (WAM)*

In view of the possibility that the WAM may serve as a vehicle to bolster the case for an ISMC John Corish gave a historical overview of the three previously held editions in the wake of the suggestion for a WAM IV in South America coming from L. Interrante and Cesar Barbero of Argentina. The meeting of the ISMC Subcommittee in October 2009 in Cornell gave additional momentum to pursue the revival of the WAM.

WAM I was held in Hong Kong in 1997 under the chairmanship of Mostafa El-Sayed and organized by J. Jortner, past president of IUPAC. The program was set up like the NATO summer schools except that the participants were young/recent graduates and young professionals from developing countries rather than graduate students. Ten well-known colleagues in Materials Science and Chemistry were chosen as instructors for 80-90 participants. IUPAC had set aside a significant budget for educational purposes in the wake of its reorganization in 2000, and so it was easy to secure funding of WAM I to the tune of 25 k\$. This successful event was repeated in 2002 (WAM II) organized in Bangalore by C.N.R. Rao, past IUPAC president, attracting again 80 young participants. WAM III was

successfully held in 2005 at the University of Stellenbosch and organized by Piet Steyn, past president of IUPAC, following the same successful recipe. This event was also supported in part by German funding which led to the participation of a contingent of ten graduate students from Germany. The planned WAM IV, however, to be held in Bangkok, never materialized owing to changing plans and/or wavering of the organizers as to the location and scope of the meeting. A similar proposal for WAM IV to be held in Kuwait was rejected for similar reasons. Therefore, the proposal for a revitalization of WAM IV comes at an opportune moment. However, the amount of funding of such an event seems to be a major hurdle in view of the limited funds available from IUPAC for Conferences and Projects (PC).

After discussion of this item the ISMC subcommittee adjourned at 1745h.

August 25 2010

Michel J. Rossi