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# CHEMRAWN

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Chemistry Research Applied to World Needs

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## **COMMITTEE MEETING**

Chemistry Department, University of Bergen, Bergen Norway, June 30 to July 1, 2016

Members present: Rameshwar Adhikari, Oleg Demchuk, Nadia Kandile, Venceslav Kaucic, Zafra Lerman, Ekaterina Lokteva, Jay Oghifo, Brindaban Ranu, Ting-Kueh Soon, Leiv Sydnes, Carlos Tollinche (Chair), Gary vanLoon (Secretary), Hidehiko Yashima,

*Tollinche opened the meeting at 9:00 am by welcoming members, who then introduced themselves individually. Tollinche also expressed thanks to Sydnes for the excellent arrangements in Bergen and at the University. He also reviewed the Terms of Reference for the CHEMRAWN Committee.*

*Sydnes then introduced the Department Head Knut Børve who extended greetings and spoke to the goals of ChemRAWN as well as giving an overview of the University of Bergen, and particularly the Chemistry Department.*

Discussion of ChemRAWN business then began

1. The agenda was approved by straw vote
2. The minutes of the meeting held on August 9 and 10, 2015 were approved after a motion by Ranu, seconded by Sydnes.
3. Matters arising
  - o Website improvements

Tollinche and vanLoon spoke of the improvements made to the IUPAC and, within it, the ChemRAWN website. More changes are required to enable groups like ChemRAWN to upload appropriate material. Several persons appreciated the video in which Sydnes speaks of the work of ChemRAWN. In general the Committee agreed that we need to be more proactive in terms of suggesting content and changes to include these contents. To that effect, Lokteva recommended that additional appropriate videos would be good to have in webpage if the page framework and



INTERNATIONAL UNION OF  
PURE AND APPLIED CHEMISTRY

IUPAC allows it. Sydnés pointed out that a process of editing is required. At present for posting items, it is necessary to ensure that items are consistent with the IUPAC framework, and it is required to go through the IUPAC office if we wish to post material. In terms of comments of general nature to the IUPAC webpage, the members were encouraged to contact Dr. Soby as requested by the Secretariat. Tollinche and vanLoon will continue to look at these issues and try to secure from the Secretariat the proper action or advice on the procedure to be observed. We need to know if we would eventually have privileges for directly updating our webpage and how to request changes in the format of the page to include related materials of interest (i.e like the videos)

- Prize on Green and Atmospheric Chemistry

Tollinche reported on the status of the Prize for Green Chemistry. In the current round, there were nine entries and Associate Professor Ali Maleki of the Iran University of Science and Technology in Tehran was awarded the prize. The award will be made at the Green Chemistry Conference in Venice, Italy in September 5-8, 2016. We are of the opinion that the Announcement of the award should be posted on the ChemRAWN website (or a line item with a link <http://iupac.org/?s=CHEMRAWN+Prize>), along with a call for nominations for the next round two years from now.

- IUPAC Strategic Plan

Tollinche spoke briefly regarding the IUPAC Strategic Plan (copy attached), and announced that we will have further discussion about how we can align ChemRAWN to this after a presentation by the IUPAC Past President, Dr. Mark Cesa later during the meeting. (Item 8)

- Interdivisional Committee for Sustainable Development through Green Chemistry

Tollinche reported that a new standing committee focussing on Green Chemistry is being set up within IUPAC. ChemRAWN will have a representative in this committee as soon as it is set. The goal of the committee is to raise the profile of Green Chemistry and to strength communications in this area between divisions and standing committees in IUPAC

#### 4. Report of the Chair

Tollinche is preparing a written report for the committee, and this will be forwarded to committee members. He had given a report at the Bureau meeting in Montreal in April of this year and a copy has been forwarded. The desire of IUPAC is that we align our goals with those outlined in the strategic plan. Tollinche noted that we need clarification



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INTERNATIONAL UNION OF  
PURE AND APPLIED CHEMISTRY

of some parts of the Strategic Plan; the overview shows that there are common features that we can build on. In this regard, it is important for us to work toward year round engagement of committee members. Concerning ChemRAWN conferences, Tollinche brought up issues of the need for seed funding and pointed out the importance of good organizing and execution of conferences. At present, we should make every effort to advance at least two plans for future meetings, with plans for Green Catalysis and Water already being considered. We should also consider the possibility of holding a workshop during IUPAC 2017.

Sydney mentioned the possibility of mounting a joint workshop with COCI on Responsible Care, but there has been no feedback to date. According to the Secretariat report on the status of the 2017 IUPAC São Paulo Conference, the topic of Responsible Care would be addressed by ABIQUIM (Brazilian Association of the Chemical Industry). The Responsible Care topic would also be appropriate to Latin America. Discussion that followed noted the issues and problem of multiple chemical bodies in each country e.g. Brazil, Nepal, Nigeria and regions like Asia – this problem is especially relevant in Latin America. However, it was made clear that, for a joint workshop on any subject, we should work with FLAQ (Federation of Latin America Chemical Associations).

#### 5. Conference reports and FAC reports

- Herbal Medicines (CHEMRAWN XX)

The report prepared by Mosihuzzaman has been circulated to all members. An article prepared by Sydney will appear in next issue of CI (copies made available to the committee members at the meeting). Other publications arising from the conference are still to come. On the whole, the meeting was a success with attendance of 240 participants including 40 from 15 countries other than Bangladesh. It was a challenge to get representation from the traditional pharmaceutical industry. There is a need to bring people from different countries together to come to a common view about regulations. Bangladesh and India are combining to work on standardization. The organizers need to ensure that the Future Actions Committee, through future publications of papers and reports, do pursue sound follow-up initiatives as conceptualized by the observations and guidelines for future action entitled “What should we do about”. It is important that the topics with potential for the IUPAC project system be identified and pursued. There are two feasible action aspects arising as promising: a) establishment focal – point laboratories for chemical and biochemical analyses; b) International Center for Natural Products.

- Urban Solid Waste Management (CHEMRAWN XXI)

In the absence of Vincenza Faraco other attendees spoke about the conference that had taken place in Rome. A written report by Faraco has been circulated to the ChemRAWN committee. A report of the Future Actions Committee is yet to come;



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PURE AND APPLIED CHEMISTRY

Sydney is assisting in writing this document. He also noted that we need to develop the guiding principles describing how a FAC should operate. In spite of many aspects of preparation occurring quite late, the conference as well as the pre-conference on Emerging Biotechnologies for Sustainable Waste Management and Biorefinery Development in Naples was well attended and successful. An audience with Pope Francis was held within the conference. It was suggested that an article about the meeting and the audience should be circulated more widely in the popular media, with appropriate translations especially for Poland and Latin America. Sydney observed that issues of the 'circular economy' were emphasized. These issues should form the basis for future conferences such as the long-considered meeting on e-waste proposed to be held in Africa. It should be emphasized that the circular economy component alongside with entrepreneurship should be part of the aspects to be measured or addressed as part of the FAC proceedings.

We would welcome inputs for the content of this **FAC guiding principles** from those that have already been involved with the organization of the past CHEMRAWN conferences. This schematic can be added to the Future Action Committee (FAC) section of the main document: *"Roles and Responsibilities of Committees Involved in CHEMRAWN Conferences"*

It is important that the topics identified by FAC for CHEMRAWN XXI with potential for the IUPAC project system be identified and pursued.

## 6. Conferences under development

### o Green Catalysis

Ranu spoke to the formal application that he had submitted (circulated earlier) on Green Catalysis. The suggested location is Mumbai, and date in November 2017. He asked for committee feedback. Opinions were generally positive, but there were important comments and suggestions made. It is essential to differentiate what is planned for this conference from what other conferences on catalysis cover. The list of types of catalysis should be removed. The emphasis should be on green catalysis as a means of minimizing or eliminating waste.

It is important to get strong industrial input and speakers who can discuss real cases of the benefits of green catalysis compared to other processes. Committee membership should ensure diversity, including in the FAC and should avoid having the same people in the various committees. It is important that there be representatives from China and female participation. Suggestions for these persons are solicited from committee members. On a motion by Oghifo, seconded by Soon, the committee endorsed the proposal, contingent on Ranu taking into account the suggestions made.



INTERNATIONAL UNION OF  
PURE AND APPLIED CHEMISTRY

## 7. Conferences under consideration

### ○ Chemistry in Water Treatment

Little progress has been made up to the present. Kandile described that Egypt is not appropriate as a location at the present time. Kew-Ho Lee has not responded to enquiries about topic and location. It is recognized that water is an important topic, but the actual focus needs to be decided upon - with topics such as the Middle East, desalination, waste water, potable water all being suggested. There was some considerable feeling by the committee that the focus would be best placed on water quality and water treatment for safe supplies. Kandile is to prepare a concept proposal and submit it to the secretary by September 1, 2016. The Committee will review it and make suggestions. In the meantime, Sydnes will try contact Dr. Lee for feedback whether he continues committed to develop the conference.

### ○ Diagnostic Technologies for Resource-Limited Countries

A very brief report from Iyer had been circulated. Only very preliminary work on this topic has been done up to now by him. Tollinche and vanLoon will pursue issues with Iyer and also contact Justin Youngblood, a Young Observer in IUPAC 2011, who expressed interest in this conference. Oghifo will provide ideas for assistance to Tollinche and vanLoon. Tollinche will send Oghifo the background information we have on the project. Other inputs from committee members are solicited.

### ○ Education – Sydnes

Sydnes reported on the IOCD initiative on Chemistry for Development which had been presented last year by Alain Krief. Some leaders of the initiative have left it for the time being and Sydnes recommended that ChemRAWN should also set aside any work on this. Committee members discussed briefly the role of green chemistry in education in the global context and it was noted that this could be topic for a one-day workshop at Sao Paulo.

### ○ For consideration - a one-day conference for the 49<sup>th</sup> GA or 46<sup>th</sup> WCC in Brazil 2017

This was considered further as part of the general discussions on Day 2

## 8. Presentation of IUPAC Strategic Plan via Skype – Cesa

Mark Cesa, Past President of IUPAC, spoke with us through the Webex platform Go To Meeting from Chicago. Dr. Lynn Soby (IUPAC's Executive Director) was also present managing the Go to Meeting system. He outlined the Strategic Plan, emphasizing the



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core values of collaboration, diversity, inclusiveness, respect, transparency and ethical behaviour, relevance, uniqueness, and service. Discussing the position of ChemRAWN within the overall goals of IUPAC, he saw ChemRAWN as being exclusive in its mandate of providing tools for application of chemical knowledge to the world at large. He emphasized the distinctiveness and importance of the Future Actions Committees as they enabled meetings to have an impact beyond the members of IUPAC itself. He urged our committee to fit our activities within the strategic plan of IUPAC, to build and maintain a plan of our own, to promote collaboration and to think about how we could contribute to targeting the UN Sustainable Development goals. Consistent with this statement, our guiding documents should be revised to reflect the strategic plan perspective and that of the UN Sustainable Goals. He commented on the ICSU grant program that focusses on science education and outreach to the public and suggested we consult their website and consider making a collaborative application. A virtual discussion followed.

Meeting Day 1 Session adjourned at 17:00.

A committee network dinner was held as part of the activities for this off-year meeting.

Day 2

#### 9. Ideas Generation Group Breakout Session

Tollinche introduced the discussion which focussed on 'New Ideas for Conference topics and other ChemRAWN activities'. The committee was divided into three groups which each considered the following four topics and then brought their ideas back to the whole group.

1. What new topics are appropriate for conferences?
2. What activities beyond conferences can ChemRAWN be involved in?
3. How can we participate in Interdivisional/Intercommittee interactions and joint events?
4. How can each individual ChemRAWN committee member contribute to these activities beyond participation in the annual committee meeting?

A summary compilation of ideas presented by individual groups and in the open meeting is provided here.

1. Suggestions for new conference topics



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#### - Water of various types

Topics might include provision of drinking water, hygiene and sanitation, water for agriculture, desalination. Kandile is to submit her ideas to Yashima, Lokteva and Soon.

#### Energy

Topics might include renewable energy, green production, energy efficiency, loss during transmission, portable energy

#### Food safety

Genetically modified new crops, genetic modification for pest control, biocatalysis for food production

Food additives and supplements

#### Climate change

Carbon dioxide and other GHGs, green chemistry

#### Sustainable development

Support the UN SDG

#### Traditional knowledge, indigenous knowledge, including intellectual property rights.

The focus is how this can be incorporated in promoting sustainable development. Lokteva and Adhikari will prepare some preliminary ideas about this subject as a possible conference topic.

#### Corporate social responsibility

Public appreciation of chemistry and the chemical industry – to overcome a bad image.

Companies might be will to support this, companies like BASF might support this.

Note that in some English-speaking countries, Chemist means a seller of drugs

#### E-waste

During CHEMRAWN XXI in Rome, Sydnese has met Nigerian and Ethiopian colleagues who have knowledge and interest in e-waste. This topic is a globally important one and it would be especially relevant in Nigeria, which has been a location where much of this type of waste (local and imported) is deposited and treated. Nigeria is also the largest (population) country in Africa. Professor Oladele Osibanjo was suggested as a plenary lecturer. Sydnese and Oghifo will work on putting together an initial proposal.

#### Energy saving green tools (ball milling, visual light) in chemical transformation

#### Bio-inspired reactions

#### New materials for solar energy harvesting

#### Water splitting and hydrogen storage

#### Entrepreneurship and innovation in chemistry for world needs

#### Chemistry Research for world peace

#### In terms of the conference framework:

- Invite the media to the CHEMRAWN conference



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- FAC – develop specific guiding principles to facilitate the functionality at each stage of the conference toward a seamless operational structure

## 2. Suggestions for activities beyond conferences

ChemRAWN could identify other international and national meetings where topics relevant to our mandate are being presented. Committee members could then be assigned to contribute there as a ChemRAWN representative. Alternatively, a CR committee member would seek to organize a session on Chemistry Applied to World Needs within one of these non-IUPAC meetings. This could be named as a ChemRAWN session.

Soon mentioned that he would set up a CHEMRAWN session on Green Chemistry Education as part of upcoming ICCE 2016 in Malaysia.

Education, especially in green and environmental chemistry, bank of ideas on CR website, chemistry festivals, national quiz competition, short training programs, sharing of experiences, issues related to chemical curricula (to make professionals more adaptable to their job functions) in schools and universities, bringing the subject into the 21<sup>st</sup> century, and meeting global employment demands. We should work with the Committee on Chemical Education in all these areas.

Addressing the mass media. Focus should be on ‘world need’ subjects and should be aimed especially toward younger people.

Make use of social media – YouTube, blogs, Facebook where we could have a ChemRAWN webpage. Topics like avoiding abuse of chemicals are appropriate for these media.

Demchuk offered to prepare a proposal as to how we could access social media. If we decide to do something in this area, we should forward our ideas to IUPAC for permission. We would need to harmonize the ChemRAWN website with any participation in social media.

Discussion about the above suggestions focussed on the idea as to whether it was useful to get involved in some of these areas since they are already covered by other organizations, such as the ACS, which often have more resources. Are there unique ways in which we could contribute? We could perhaps support these other groups by participation as noted above.

## 3. Participation in interdivisional/intercommittee interactions

There was considerable discussion regarding the ICSU proposal possibility and it was agreed on a motion by Oghifo, seconded by Ranu that an appropriate topic would be



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**Green Chemistry Education and Practice.** This proposal needs to be addressed initially by July 15, 2016.

In a more general sense several persons indicated that it is good to work in a coordinated way with other divisions where interests overlap. We need to identify which are these divisions and standing committees and see how each of us can participate in interdivisional/intercommittee events or joint activities. Alternatively, look into having representation or establish a mode of interaction with divisions or committees. As example in CCE, in principle, all national representatives are members.

In all that we do, we should encourage the work of young researchers and women, and work to build capacity for research around the world.

Adhikari brought forward a preliminary proposal to create a program in Nepal directed toward providing young researchers there with encouragement and ideas about generating local research projects that are relevant to the needs of that country. This would be one step in slowing the brain drain in which the best young scientists always attempt to travel abroad and frequently emigrate permanently.

#### 4. Individual members' participation

As noted above, it was suggested that committee members should take part in National and other International meetings, identifying themselves as associated with ChemRAWN. Through this, they can promote the role of IUPAC in their country of residence.

Participation in social media is a possible avenue for promoting the role of chemistry in contributing to satisfying world needs.

#### **Other items discussed in the plenary session**

There was discussion about the possibility of holding a one-day ChemRAWN meeting as part of assembly in Sao Paulo. This should be organized in cooperation with FLAQ.

- One proposition made was to ask for ideas by contacting from Brazil both Prof. Vania Zuin from Universidad Federal Sao Carlos (2014 CHEMRAWN Prize Awardee) and Dr. Silvio Vaz Junior from EMBRAPA.
- Another suggestion was for a session on entrepreneurship and innovation especially as it relates to the circular economy. Lerman was to get the details of the workshop session offered at the November 2015 Malta Conference. She later suggested the name of Olli Vuola, who organized a workshop on this subject at a Malta Conference. This could be appropriate for a one-day meeting at Sao Paulo and perhaps later for a whole ChemRAWN conference.



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PURE AND APPLIED CHEMISTRY

- Soon suggested that 'Water as a Chemical for Life' would be a most appropriate subject in the South American context, and this was agreed upon by the Committee. Soon offered to prepare a one page proposal and circulate to Kandile and other members of the group.
- Lerman spoke about the 8<sup>th</sup> Malta Conference. Workshops continue to be underway, including a Water Group that focusses on water in Middle East and they may submit a proposal for water collaboration to USAID. A ChemRAWN meeting could possibly be held on the subject in connection with this collaborative effort.

#### 10. ChemRAWN Committee membership

There was no discussion on this.

#### 11. Next Meetings:

A virtual meeting (via Webex) is tentatively planned for December 6 or 7, 2016. This would be held at approximately 2 or 3 pm GMT. Tollinche and vanLoon will work out the details and coordinate with Lynn Soby to help schedule the Webex using the Go to Meeting platform.

The next face-to-face meeting will be held during the IUPAC 49th General Assembly in Sao Paulo, Brazil on 9-14 July 2017. Committee members should get started on VISA applications ensuring more than two months of lead time.