

Report to Bureau: CHEMRAWN Committee 2006

I. Highlights

Since the CHEMRAWN conferences began in 1978, fourteen conferences and a number of workshops have been held addressing important aspects of the global theme: **CHEMical Research Applied to World Needs**. A meeting of the CHEMRAWN committee was held at Queen's University, Kingston, Ontario on August 23-24, 2006. The minutes of that meeting will be posted on the committee's Webpage.

Current activities: Members and associates of the committee have been engaged in the following:

- ***Summary of CHEMRAWN - History and Efficacy.*** A thorough summary of the CHEMRAWN conferences has been prepared and will soon be available on <http://www.iupac.org/standing/chemrawn.html> the committee's webpage. An electronic copy can be obtained from the committee chair.
- ***CHEMRAWN XII: Chemistry, Sustainable Agriculture and Human Well-Being in sub-Saharan Africa*** is scheduled to be held in Stellenbosch, South Africa from 3-6 December 2007. Professor Ikenna Onyido (Nigeria) has described the vision for CHEMRAWN XII in *Chemistry International*. Two pre-conference workshops were held: the first at the International Congress on Chemistry in Africa, August 2004, in Arusha, Tanzania and the second during the Annual Congress of the Chemical Society of Ethiopia in February 2006 in Addis Ababa.
- ***CHEMRAWN XIII: Chemistry for Clean Energy.*** At its meeting in Kingston, Ontario the committee considered a preliminary proposal to reschedule the conference to a new venue, in Moscow in 2007. Details were incomplete, but the proposal may be reconsidered when more comprehensive information becomes available.
- ***CHEMRAWN XIV: Toward Environmentally Benign Products and Processes.*** The Future Actions Committee has met regularly and has dispensed funds from CHEMRAWN XIV to support international workshops, exchanges of personnel and contributions to green chemistry programs. By agreement with American Chemical Society, matching funds that originated and still remain with ACS are being employed to support activities of the Green Chemistry Institute.
- ***CHEMRAWN XV: Chemistry for Water.*** The Perspectives and Recommendations volume for the conference is completed and scheduled for publication. The CHEMRAWN committee viewed an electronic copy of the publication at its meeting in Kingston, Ontario.

- *Solving the Problem of Arsenic Contamination in the Water in Bangladesh*, CHEMRAWN representatives visited Dhaka, Bangladesh in December 2005 where they organized a workshop on remediation of arsenic present in groundwater obtained from tube wells. The conference has been described in *Chemistry International*, May-June, 2006.
- *CHEMRAWN XVII: Greenhouse Gas Mitigation Strategies*. The CHEMRAWN Committee discussed the conference, scheduled to be held at Queen's University during 8-12 July 2007, with representatives of the organizing committee during the committee's meeting at Queen's. The program has been largely developed, a conference Website www.chem.quesnsu.ca/greenhouse/ is online and fundraising is progressing satisfactorily.
- *Frontiers of Chemical Science: Research and Education in the Middle East*, The CHEMRAWN committee was represented among the organizers of the second IUPAC-sponsored Middle East chemistry conference held in December 2005 in Malta. The committee will again be represented at the third conference scheduled for 2007.

II. Support for the Six IUPAC Goals

Strategic Planning. The CHEMRAWN committee continues to focus upon strategic objectives, in concert with IUPAC's six overall goals, as follows.

Address global issues:

Each CHEMRAWN conference focuses on a major issue. Specific examples are: chemistry as a tool for sustainable development; food security; mitigation of greenhouse gases; sources of cleaner energy; pollution prevention through the redesign of chemical processes; and adequacy of supply of pure water and sanitation.

Advance research through scientific discussion:

The findings and recommendations arising from each conference usually include instances where advances in research have made significant contributions and where further work is warranted. CHEMRAWN XIV, for example, highlighted the advances being made in Green Chemistry and proposed areas for further research. CHEMRAWN XV described numerous research advances relevant to purification of water. CHEMRAWN XVI outlined how innovation takes place productively in the chemical industry.

Assist industry toward sustainable development, wealth creation, and improvement of the quality of life.

Starting with CHEMRAWN I: *Future Sources of Organic Raw Materials*, CHEMRAWN conferences on advanced materials, ocean resources, health, atmosphere, sustainable development, greener manufacturing processes, innovation in industry, and chemistry and water have all focused on the needs of industry and have been attended or anticipated to be attended and supported by major chemical firms. This has continued through the most recent conference, *CHEMRAWN XV: Chemistry for Water* and will be emphasized in the planned *CHEMRAWN XVII: Greenhouse Gases: Mitigation and Utilization*.

Foster communication among chemists and organizations with special emphasis on needs in developing countries.

Virtually all CHEMRAWN conferences have emphasized issues of major import to the developing world, most recently through (1) the CHEMRAWN XII workshops on soil fertility and food supplies in Africa and (2) the project dealing with the problem of arsenic contamination of groundwater in Bangladesh.

Enhance education and the appreciation of chemistry globally.

One of the most challenging conferences to develop and hold was focused on educational issues (CHEMRAWN X); examining particularly the education of chemists who will work for “trans-national” companies. The committee seeks to include an education component in all future conferences.

Increase the diversity in IUPAC bodies.

The CHEMRAWN Committee works continually to include underrepresented minorities in its membership and also to organize its conferences with diverse partners worldwide.

III. Other Substantive Issues.

A. The Committee continues to be engaged by strategic issues of

- 1) Obtaining funding of major conferences and finding less costly ways to carry out our mission.
- 2) Increasing the impact of conferences, workshops and studies through practical and actionable recommendations by the Future Actions Committee, many of which can be implemented by the Committee or individuals and organizations which it can directly influence.

3) Formulating activities that complement the organization of traditional CHEMRAWN conferences. This includes fostering scientific exchanges and small workshops, carrying out studies, and drafting position papers.

4) Reaching out to cooperate with other IUPAC Committees and Divisions as well as with international organizations such as the International Council for Science (ICSU).

5) Obtaining adequate publicity and recognition for the results of CHEMRAWN conferences, which will be essential in securing the resources necessary for future activities.

B. Members of the Council and Bureau can help support the work of the CHEMRAWN Committee by

- Recommending individuals to serve on the Committee or act as “friends” in organizing conferences or carrying out a CHEMRAWN study or workshop.
- Calling upon the Committee to provide a “Future Actions Committee” for one of your conferences where major issues are discussed and a set of findings and recommendations should be developed and disseminated and
- Urging the Committee to address a particular issue with a conference or workshop where there is broad interest throughout the chemical community.

C. As noted above, the CHEMRAWN committee chair is compiling an in-depth summary of CHEMRAWN conferences and their efficacy in addressing world problems. The analysis is now available upon request to the committee Chair.

IV. Tabular material

Titular members

John M. Malin	USA	Chair
Fedor A. Kuznetsov	Russia	Associate Chair
Stanley Langer	UK	Secretary
Kew-Ho Lee	Korea	
Norma S. Nudelman	Argentina	
Yukihiko Suematsu	Japan	
Ayhan Ulubelen	Turkey	
Gary van Loon	Canada	

Ex Officio

Christoph Buxtorf	Switzerland
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Associate Members

Venelin G. Marinov	Bulgaria
Nthabiseng A. Ogude	South Africa
M. Anwar Panezai	Pakistan
Jean-Marc Paris	France
Carlos Tollinche	Puerto Rico

Recent Publications

- (1) I. Onyido, "Exploring Solutions to Africa's Food Crisis," *Chemistry International*, 2005, 27 (3), 8-10
- (2) M. Freemantle, "Chemistry for Water", *Chemical and Engineering News*, July 19, 2004, p. 25-30.
- (3) A. Smith, "Chemistry for Water – CHEMRAWN XV Conference," *Chemistry International*, 2004, 26 (5)
- (4) J.A. Kopytowski, "Innovation in the Chemical Industry," *Chemistry International*, 2004, 26 (5)
- (5) J. M. Malin, ""Frontiers of Chemical Science – Research and Education in the Middle East," *Chemistry International*, 2004 26, (3)
- (6) Frontier Science in the Middle East, *Chemistry International*, 2006, 28 (2)
- (7) "Analysis and Remediation of Arsenic Contamination in Groundwater", *Chemistry International*, May-June 2006, pp 14-18

Current and Recent Projects

2001-086-1-021 – CHEMRAWN XII – Chemistry, Sustainable Agriculture and Human Well Being in Sub-Saharan Africa

2001-087-1-021 – CHEMRAWN XIII – Chemistry for Cleaner Energy

2003-003-1-021 – CHEMRAWN XVI – Innovation in the Chemical Industry: the Way from Pure to Applied Chemistry

2003-050-1-021 – Solving the Problem of Arsenic Contamination in Water in Bangladesh

List of CHEMRAWN Conferences

- I. Toronto, Canada (1978). *Future Sources of Organic Raw Materials*
- II. Manila, Philippines (1982) *Chemistry and World Food Supplies: The New Frontiers*

- III. The Hague, the Netherlands (1984) *Resources Material Conversion*
- IV. Keystone, Colorado, USA (1985) *Modern Chemistry and Chemical Technology Applied to the Ocean and its Resources*
- V. Heidleberg, Germany (1986) *Current and Future Contributions of Chemistry to Health*
- VI. Tokyo, Japan (1987) *Advanced Materials for Innovations in Energy, Transportation , and Communications*
- VII. Baltimore, Maryland, USA (1991) *The Chemistry of the Atmosphere: Its Impact on Global Change*
- VIII. Moscow, Russia (1992) *Chemistry and Sustainable Development*
- IX. Seoul, Korea (1996) *Advanced Materials and Sustainable Development*
- X. Budapest, Hungary; Washington, DC, USA; Honolulu, Hawaii; and Brisbane, Australia (1999-2000) *The Globalization of Chemical Education – Preparing Chemical Scientists and Engineers for Transnational Industries*
- XI. Monteviedo, Uruguay (1998) *Latin American Symposium on Environmental Analytical Chemistry*
- XIV. Boulder, Colorado, USA (2001) *Toward Environmentally Benign Processes and Products*
- XV. Paris, France (2004) *Chemistry for Water*
- XVI. Ottawa, Canada (2003) *Innovation and the Chemical Industry*

John M. Malin, Chair
CHEMRAWN Committee