

## **Report to Council and Bureau: CHEMRAWN Committee 2004-2005**

### ***I. Highlights***

Since the CHEMRAWN conferences began in 1978, fourteen events have been held addressing important aspects of the global theme: **CHEMical Research Applied to World Needs**. The most recent conference, **CHEMRAWN XV: Chemistry for Water** took place in Paris on June 21-23, 2004. A meeting of the CHEMRAWN committee was held jointly with that conference. The minutes of the meeting are available on <http://www.iupac.org/standing/chemrawn.html>

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

- ***CHEMRAWN XII: African Food Security and Natural Resource Management; the New Scientific Frontiers***, A workshop on Soil Fertility and African Food Supplies was held on August 7, 2004 at the International Congress on Chemistry in Africa (ICCE), in Arusha, Tanzania. A report of the workshop and plans for CHEMRAWN XII was published in a cover article in "*Chemistry International*" (1).
- ***CHEMRAWN XIII: Chemistry for Clean Energy***. At its meeting in Paris the committee heard a proposal to reschedule the conference to a new venue, in China in 2006.
- ***CHEMRAWN XIV: Toward Environmentally Benign Products and Processes***. The Future Actions Committee has met regularly and has used funds from CHEMRAWN XIV to support international workshops, exchanges of personnel and contributions to green chemistry programs.
- ***CHEMRAWN XV: Chemistry for Water***. The conference was held successfully on June 21-23, 2004 in Paris at the Maison de la Chimie. The meeting was described in detail in *Chemical and Engineering News* (2) and in *Chemistry International* (3).
- ***Solving the Problem of Arsenic Contamination in the Water in Bangladesh***, CHEMRAWN representatives reported at CHEMRAWN XV on their visit to Bangladesh to plan a workshop addressing the problem.
- ***CHEMRAWN XVI: Innovation and the Chemical Industry***, was held on 9 August, 2003 in Ottawa during the IUPAC Congress and General Assembly. The conference was described in a cover article in *Chemistry International* (4).
- ***CHEMRAWN XVII: Greenhouse Gas Mitigation Strategies***. The organizing committee has proposed that the conference be held in Canada in 2007.

- ***Frontiers of Chemical Science: Research and Education in the Middle East***, The CHEMRAWN and CCE committees were represented among the organizers of this conference held in Malta in December 2003 (5). The committee helped to obtain UNESCO funding for that conference and committee members are assisting with organization of the Malta II conference scheduled for late 2005.

## ***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*.

### **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) a workshop on soil fertility and food supplies in Africa and (2) our 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); especially the education of industrial 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. At the request of the IUPAC Vice-President, the CHEMRAWN committee chair is compiling an in-depth summary of CHEMRAWN conferences and their efficacy in addressing world problems. The analysis will be available at the 43<sup>rd</sup> IUPAC General Assembly in Beijing.

#### ***IV. Tabular material***

##### Titular members

John M. Malin	USA	Chair
Jerzy A. Kopytowski	Poland	Secretary
Fedor A. Kuznetsov	Russia	Associate Chair
Kew-Ho Lee	Korea	
Norma S. Nudelman	Argentina	
Swaminathan Sivaram	India	
Alan Smith	UK	
Gary van Loon	Canada	

##### Associate Members

Stanley Langer	UK
Venelin G. Marinov	Bulgaria
Nthabiseng A. Ogude	South Africa
Yukihiko Suematsu	Japan
Ayhan Ulubelen	Turkey

##### ***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)

### ***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. Heidelberg, 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. Montevideo, 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