Activities of Subcommittee on Chemistry Education for Development of Committee on Chemistry Education (CCE)

Prepared by Mei-Hung Chiu, August 6-7, 2007

CED Group members

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The activities:

(1) To work with Dr. Fortunato B. Sevilla III on the Flying Chemists Program in Philippines in 2008. Two activities were completed. First, a pre-conference round table discussion was held on 12 October, 2007 to organize the national conference in Phillipines. Second, the program of the 2-day conference "Improving Chemical Education in the Philippines" was held 17-18 April 2008, at the University of Santo Tomas, in Manila, Philippines (See Appendix A for final report). Both activities went successfully.
(2) To contact possible persons for FCP 2009.
(3) To work with Lida Schoen (Netherlands) and Erica Steenberg (South Africa) on a new YAC evaluation project to be held in Kenya and Mauritius.
(4) To pass the NICE chairmanship to Dr. Masahiro Kamato who will conduct the third NICE in Japan.

Issues to be discussed:

1. Proposed Scholarship for international students to attend ICCE ($500---for four international students) (See Appendix B)
   (1) Procedures (2) Qualification
2. Other activities

IMPROVING CHEMICAL EDUCATION IN THE PHILIPPINES

Dr. Fortunato B. Sevilla III
University of Santo Tomas, Philippines

A two-day conference on “Improving Chemical Education in the Philippines” was held at the University of Santo Tomas in Manila, Philippines on 17 and 18 April 2008. It was an activity of a project under the IUPAC Flying Chemists Program carried out by the Commission on Higher Education (CHED), the government body covering higher education institutions in the Philippines, in cooperation with the Kapisanang Kimika ng Pilipinas (Chemical Society of the Philippines) and the University of Santo Tomas (UST).

This conference is a follow-up activity to the revision carried out by the CHED Technical Committee for Chemistry of the curriculum for the B.S. program for chemistry. It aimed to upgrade the course delivery methods employed by chemistry teachers in the Philippines. The project was inspired by the write-ups featured in the Chemistry International on the India and Sri Lanka project of the Flying Chemists Program.

The participation in the conference, a total of 324 tertiary-level chemistry teachers, was beyond the expectation. The participants came from all the regions in the country and represented 89 different institutions of higher education in the Philippines. Among the participants were twelve young chemistry teachers who received travel grants through the IUPAC Program on Financial Support of Conferences.

Five lectures were presented during the conference by IUPAC resource persons: “The role of visualization” by Prof. Peter Atkins of the University of Oxford University (U.K.); “New technologies and new tools for Chemistry Education” by Prof. Peter Mahaffy of King’s

University College (Canada); “Microscale chemistry” by Prof. Jorge G. Ibañez of the Universidad Ibero-americana (Mexico); “Evaluation of an integrated chemistry laboratory program at the undergraduate level in Taiwan” by Prof. Mei-Hung Chiu of the National Taiwan Normal University (Taiwan), and “Low-cost instrumentation for chemical education” by Prof. Fortunato Sevilla III of the University of Santo Tomas (Philippines).

Peter Atkins demonstrated how pictures can help with simple introductory chemistry issues, such as stoichiometry and electrochemistry. Peter Mahaffy presented approaches that he has found valuable in introductory university chemistry, and gave examples of new tools for helping students to visualize the molecular world. Jorge Ibanez proved that the majority of the laboratory experiences in Chemistry can be substituted using small-scale techniques without decreasing the educational gain. Fortunato Sevilla III discussed a number of instrumentation that can be fabricated at low cost and that can be used for microscale experiments. Mei-Hung Chiu reported that the impact of the integrated laboratory program that provided students at the National Taiwan University a scaffolding structure to integrate different skills for conducting chemistry experiments needed for developing chemistry literacy.

Three workshops were conducted concurrently in two sessions of the conference. The topics of the workshops included “Microscale Chemistry”, “Low-cost instrumentation” and “Microscale chemistry” which were facilitated by Prof. P. Mahaffy, Prof. Sevilla and Prof. Ibañez, respectively. These workshops provided the participants a hands-on and close-up experience with the teaching and learning resources described in the lectures. An industry-academe forum was also held, involving three presenters from industry and from academe.

The conference opened with welcome remarks from Prof. Fortunato Sevilla III, chair of the

CHED Technical Committee for Chemistry and dean of the UST College of Science; CHED Commissioner Saturnino Ocampo Jr. and Prof. Peter Mahaffy, chair of the IUPAC Committee for Chemistry Education.

The culmination of the conference was the presentation of the output of the parallel group discussions, wherein the participants evaluated the applicability of the approaches or strategies presented in the five lectures. The participants affirmed that visualization, microscale laboratory experiments, low-cost instrumentation and integrated laboratory courses can be implemented in various courses in the B. S. Chemistry program offered by colleges and universities in the country. They expressed enthusiasm in carrying out the newly-learned approaches and adopting newly-learned technologies to improve the teaching and the learning of chemistry.

The output of these discussions provided the basis for the actions that will be taken as a result of the conference. The outcome of these actions will be reported during the 2009 Philippine Chemistry Congress, wherein several sessions will focus on Chemical Education. The participants agreed to present during the congress papers on their endeavors to apply the tools and strategies expounded by the IUPAC speakers. Indeed, the IUPAC "flying chemists" have become partners of the Philippine chemistry teachers in their goal to upgrade chemical education in the Philippines.

Committee on Chemistry Education (CCE), IUPAC

PROPOSED SCHOLARSHIP

Purpose

The CCE scholarship intends to serve the following purposes:

1. To encourage international graduate students and international young scholars in chemistry education to participate in ICCE biennial conference.
2. To share experiences and develop professionally with members of CCE. .
3. To demonstrate committee of CCE of becoming an international organization by financially supporting international science educators to attend the CCE biennial conference.

What do the scholarships cover?

Scholarships are not meant to cover the full cost associated with attending the ICCE conference. They are rather intended to defray some of the cost of attending the conference. The scholarships may be used for air travel, ground transportation, and conference registration fees.

Number of scholarships and scholarship amount

We plan to offer 4 scholarships at a maximum amount of $500.00 per scholarship. The total amount of this proposal is $2,000.

Who is eligible to get the scholarships?

The following individuals are eligible to receive the CCE scholarships, in order of priority:

1. Members of CCE who are international chemistry education graduate students studying outside the country that holds the ICCE.
2. Members of CCE who are junior international science education scholars within 5 years since completion of their PhD and working outside the country that holds the ICCE.
3. The scholarship recipients must be participating in the conference by presenting a paper or a poster.

Applicants need to demonstrate a need for support and to provide evidence that they have attempted to get support from other sources to attend the conference. Preference will be given to applicants from under-represented groups, applicants from developing countries. All the applicants could only receive this scholarship once.

Scholarship application procedures:

Applicants should

1. Fill out the application form
2. Provide evidence for needing support

Selection process

The Subcommittee on Chemistry Education for Development will decide scholarships by consensus based on the merit and need of applicants.

Application deadline

Detailed information and the application form for the scholarships are posted on the IUPAC website.

Committee on Chemistry Education (CCE), IUPAC

SCHOLARSHIP APPLICATION FORM

APPLICANT:_____

COUNTRY:_____

1. IS YOUR COUNTRY A MEMBER OF IUPAC (YES/NO):

2. ARE YOU A MEMBER OF CHEMICAL SOCIETY OF YOUR COUNTRY?

3. ARE YOU EITHER A GRADUATE OF A PH.D. STUDENT OR A YOUNG SCHOLAR (GRADUATED IN 5 YEARS, IN WHICH YEAR YOU RECEIVED YOUR PH.D.)?

4. WHAT TYPE OF YOUR PRESENTATION WILL BE AND HOW MANY PRESENTATIONS?

   ☐ ORAL PRESENTATION _____

   ☐ POSTER _____

   ☐ WORKSHOP_____

   ☐ OTHERS _____

5. PLEASE DESCRIBE HOW YOUR RESEARCH IS RELEVANT TO CCE COMMUNITY.

6. PLEASE SHOW YOUR COMPETENCE IN CONDUCTING A RESEARCH AND CONTRIBUTING TO CHEMICAL EDUCATION.

7. PLEASE PRIVIDE YOUR CURRICULUM VITA (AT MOST IN TWO PAGES).