IUPAC COMMITTEE ON CHEMISTRY EDUCATION

Ottawa General Assembly, 2003

AGENDA

Meeting times:

Monday, August 11 Morning and afternoon
Tuesday, August 12 Morning

2 Minutes of meeting August 2003, Beijing

Attachment CCE/2002/01

6 Subcommittee reports

a. Chemistry for Development (JB)

CCE/2003/02; oral presentation and discussion

b. Public Understanding of Chemistry (PM)

CCE/2003/03; oral presentation and discussion

IUPAC COMMITTEE ON CHEMISTRY EDUCATION

Minutes of Meeting of 9, August, 2002, Beijing

Present: Farouk Fahmy, Bob Bucat, Choon Do, Colin Osborne [*vice* Tony Ashworth], Eva Akesson, Hale Bayram, Jiasong He, John Bradley, Lida Schoen, Masato Ito, Matti Nasakkala, Mei-Hung Chiu, Mordechai Livneh, Natalia Tarasova, Peter Atkins [Chairman], Peter Mahaffy, Qiankun Zhuang, Ram Lamba.

In attendance: A Pokrovsky [UNESCO], Alex Hebel [UNESCO], Sylvia Ware [ACS]

1. Introductions

The Chairman noted that this was an historic first meeting and thanked IUPAC for financial assistance. Also noted that the Secretary, Elisa Maia, was not fit to travel to the meeting and wished her a speedy recovery. In her absence, John Bradley took minutes. Members introduced themselves.

2. Minutes of the final CTC meeting, Brisbane, July 2001

Accepted.

3. Matters arising

The MAP videotapes prepared by Nathan Lewis had been examined by some CTC members. There were mixed views: better animations were available elsewhere; too high level for school teachers in many countries; could be used for professional development of secondary teachers; sound can be switched off; the American Chemical Society (ACS) had declined endorsement. Agreed that usefulness was dependent on national context, and perhaps they could be endorsed with reservations. Agreed that John Bradley would make a technical assessment of the tapes and report to the Chairman, with recommendations.

4. Terms of reference

The meeting noted its terms of reference:

(1) To advise the President and the Executive Committee on matters relating to chemical education and the public appreciation of chemistry.
(2) To maintain a portfolio of educational projects and to coordinate the educational activities of IUPAC.
(3) To monitor chemistry education activities throughout the world and to disseminate information relating to chemical education, including the public appreciation of chemistry.
(4) To develop liaisons with international organizations such as UNESCO, national and regional chemical societies, chemical education committees, and organizations concerned with the public understanding of science.

5. Membership

a. General membership

The membership of the committee was noted. [CCE/2002/5/1]

The meeting also noted the following officers of the committee:

Peter Atkins, UK; CCE Chairman

John Bradley, ZA; CED Chairman
Peter Mahaffy, CA; PUC Chairman
Elisa Pestana, PT; Secretary and Project Coordinator

The chairman requested members to advise of any changes of details on the list.

a. COCI representation

The meeting noted with pleasure that COCI has agreed to nominate one of its members (Dr Luzius Senti, Switzerland) as representative on the CCE. The Chairman of CCE attends COCI meetings.

6. Consideration of CCE Strategy Document [CCE/2002/6/1]

Items 1 and 2 of the minutes of the CCE Strategy Meeting were discussed under this heading. Other items were considered under the relevant headings of the Agenda.

1. Organization of the CCE

Approved the subcommittee names:

Subcommittee 1: Chemistry Education for Development, CED
Subcommittee 2: Public Understanding of Chemistry, PUC

and membership:

CED:

Ram Lamba, Puerto Rico
Natalia Tarasova, Russia
Alvaro Chrispino, Brazil
Dr Shoukry, Egypt*
Professor Wandiga, Kenya*
Professor Sevilla, Phillipines*

PUS:

Tony Ashmore, UK
Lida Schoen, Netherlands
Choon Do, Korea
Yoshito Takeuchi, Japan
Joseph Schwarcz, Canada*
Professor Balusubramanian, India*

*Not members of the CCE

The meeting approved the addition of Professor R. Bucat to be membership of the subcommittee on Public Understanding of Chemistry.

1. Future strategy of the CCE

2A. External relations

Noted the fruitful meeting of COCI attended by the Chairman, who is a member of

that Committee. A working group, which included Peter Mahaffy, was established to assist chemical industry in expressing itself.

Noted with appreciation the attendance of Jiasong He, representing the Macromolecular Division.

The Inter-Union meeting convened by the Chairman had already borne fruit with the Workshop on *New Directions in the Teaching and Learning of Science*, during 17 ICCE. UNESCO was positively interested in the development.

Some start had been made at activating relations with ICSU.
Development of relations with national societies had started with the American Chemical Society and the Royal Society of Chemistry (UK).

2B. Future strategy of the CCE itself

Noted the principal function expressed as "flow of ideas". The guidelines for projects aimed to steer project formulation but not to exclude others and were approved as follows:

I. Projects that contribute to the flow of ideas.

II Projects based on ideas that emerge within a country and are perceived to have regional or global significance.

III Project that encourage curriculum development within a region or subregion, where local requirements have indicated a demand.

IV Projects that contribute to the distribution of good practice and information within a region or subregion, using the appropriate language.

V Projects strongly urged by Divisions and Standing Committees that have an educational dimension or are perceived as relevant to the public understanding of chemistry.

VI Projects that reach into regions and subregions that are currently under-represented in IUPAC activity.

VII Projects based on innovations within a country that are perceived by those outside the country as having potential regional or global significance.

VIII Projects encouraging inter-Union collaboration.

IX Projects that are innovative in the realm of the public understanding of chemistry.

X Projects that are a response to an explicitly demonstrable demand within a region or subregion.

XI Projects that encourage collaboration between countries in a region or between regions and subregions.

XII Projects where IUPAC seed money is helpful to gain access to other sources of funding.

Purely notionally, the meeting considered regions and subregions in transition to be:

Eastern Europe
South America

Caribbean
South-East Asia
Far East
Middle East
North Africa
Sub-Saharan Africa

As such the guidelines should be seen as stimuli for project ideas. Noted the emphasis on regionalization. Regional activity should give rise to strong roots. The meeting agreed to a suggestion from the UNESCO representative that the term 'subregion', be incorporated [as above].

7. International Conferences on Chemical Education

a. Timing of meetings

Noted that currently ICCEs occurred in even years and in the same month as the BCCE in the USA. The dates of 18 ICCE in Turkey were now fixed. If ICCEs moved to odd years, there would be a potential conflict with the World Chemical Congress (WCC) and General Assembly of IUPAC. Although WCC had little chemistry education content, the General Assembly implied a CCE meeting. This required the attendance of National Representatives as far as possible. Since their attendance depended on national funding, there would probably be no funding provided in the same year for participation in an ICCE. Considered it unlikely that the principal meeting of CCE could be held at ICCE rather than at the General Assembly.

Noted that the Chem Ed conference in Canada and the European Conference on Chemical Education were also held in odd years. Noted that Korea had made a definite offer to host 19 ICCE in 2006 – the 60th Anniversary of the Korean Chemical Society.

Agreed that a change from even to odd years for future ICCEs could not be justified at present. Every effort would be made to plan dates well in advance and to minimise conflict with BCCE.

a. Future meetings

Congratulated the Turkish delegates on their presentation on 18 ICCE made at the Conference. Noted the valuable meeting of the International Organizing Committee that had taken place thereafter. An Inter-Union plenary session had been requested, to give the concept major visibility, and UNESCO would support it. The Macromolecular Division had requested a session devoted to polymer chemistry education: they would arrange invited speakers.

The meeting approved the proposal from Korea to host 19 ICCE in 2006. Noted that the Chairman had received an informal proposal from Malaysia to host a future ICCE.

The meeting urged that a procedure be developed to ensure that the selection of ICCE sites was less *ad hoc*.

8. Subcommittees

a. Chemistry Education for Development

John Bradley had discussed the ideas contained in the Strategy Document with the two members of the subcommittee present in Beijing. These ideas were endorsed and it was also noted that the forthcoming World Summit on Sustainable Development in Johannesburg could provide important additional ideas. Currently, a number of programmes were continuing, especially in cooperation with UNESCO. UNESCO has secured funding for introductory microscale chemistry workshops in 35 further countries

over the next two years. Within Africa, 22 countries (drawn from North, West, East, South and Central African regions and involving English, French, Portuguese, Spanish and Arabic languages) will also be enabled to conduct pilot projects. Noted that UNESCO had secured the support of SINOPEC to do the Chinese translation of "Introduction to Toxicology" and to support a workshop in China later in the year.

Queried the status of the proposal to produce an IUPAC Periodic Table for wide distribution. John Bradley reported that he had received a disk from the IUPAC Secretariat but there had been technical difficulties in accessing and editing it. The proposal had originated in the International Chemistry Council – Executive Committee, and he had been asked informally to put forward suggestions and costings. Recommended that a project proposal be prepared.

a. Public Understanding of Chemistry

Peter Mahaffy described the multi-facetted and diffuse character of the issue, which has very different significance in different parts of the World. Some IUPAC activities (eg the publication on endocrine disrupters) already have potential for exploitation. Interactions with other Unions may reveal other opportunities.

A principal aim is again a flow of ideas: between different countries (eg. using Chemistry Education International) and to the media (eg. using events like the WCC and ICCE). A one-day symposium will be held within the WCC in Ottawa (2003) and there may also be a session within the programme of 18 ICCE.

A prize for chemical outreach is being considered.

Noted that public appreciation was perhaps a more realistic aim than public understanding for these initiatives. Noted that ACS is running a $40 million media program, similar to the Plastics Council, and that CCE-PUC should be familiar with the scope and limitations of this.

Masato Ito reported that CEI is now on the IUPAC website and invited members to recommend articles. Some keynote and plenary lectures from 17 ICCE may be selected for publication.

9. Projects

a. Procedures for assessment

In the past assessment had been received from only a small number of members when project proposals were circulated. The Chairman urged all members to take the assessment task more seriously, so that many opinions could be gathered.

The meeting agreed to form a CCE project subcommittee to review reports received. Agreed this should comprise the Chairman, Secretary (as Project Coordinator), Professor Robert Bucat, and Professor Ram Lamba.

a. Current projects in consideration

The current status of projects under review is posted at http://www.iupac.org/projects/p_review/
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a. New projects

The Chairman strongly urged members to initiate projects. Lida Schoen noted her interest in extending Science Across the World into new areas.

10. Financial matters

a. The Chairman reported that the CCE was currently running within its operating budget.

b. Noted that CCE had a budget for administrative expenses but not for projects. By contrast all Divisions had budgets for both. In light of the existing projects inherited from CTC and the extent to which these had been able to get UNESCO support, as well as the high expectations of the new CCE, members unanimously requested the Chairman to seek urgent allocation of a projects budget.

c. Acknowledged with gratitude the $7 500 granted by IUPAC to support this first meeting of CCE.

a. The Chairman expressed the deep appreciation of CCE to Dr Pokrovsky, for his active, strong support by means of ideas and funding from UNESCO.

11. Inter-Union collaboration

a. A report on the Inter-Union Workshop on New Directions in Teaching and Learning Science will be circulated. Noted with gratitude the financial support for the workshop by UNESCO and ICSU.

a. Noted the report [CCE/2002/11/1] on the Inter-Union meeting held at RTP had been circulated. Noted the meeting was initiated by UNESCO and convened by the Chairman and had made three main recommendations. UNESCO encouraged interdisciplinarity and Dr Pokrovsky remarked that it would create 8 – 10 Fellowships for basic research and education of this kind. It was proposed to link the IUPAC website with those of other Unions, subject to their approval.

12. DIDAC

Noted the need to assess the impact of this large project.

UNESCO was paying AGFA for the author rights. A CD-ROM and a book will be published and distributed with extra-budgetary funds secured by UNESCO. A $225 000 project will distribute the products in Africa. Posters will be produced for rural schools using US State Department funds. According to UNESCO's agreement with AGFA, only the text on Water and the Atmosphere may be modified. Suggested that CCE endorses this project. Noted however the wish to assess impact: information relevant to future projects could be gained, for example, regarding country differences. Noted that CTC had endorsed the DIDAC materials, following a presentation and discussion at the Berlin meeting (1999). A proposal for IUPAC support of the promotion of DIDAC in less-developed countries had been submitted by COCI with CTC endorsement. It was believed that no decision had been made. Agreed the project proposal should be circulated to CCE members.

Noted that UNESCO member states had requested action during the current biennium, and if this failed to materialise the budget allocation would be lost for ever. Noted

further that inclusion of IUPAC's logo on the proposed book was contingent upon some financial contribution, albeit minor.

[Note added subsequent to the meeting: In consultation between the chairman and the Secretary General, it has been agreed to give this project fast-track status; consequently, funds have been released from IUPAC to UNESCO, and the project can now move forward.]

13. IUPAC Strategic Plan

Approved the document [CCE/2002/12/1] circulated with the agenda.

14. IUPAC General Assembly, Ottawa, 2003

The Chairman outlined the IUPAC initiative to convene a World Chemistry Leadership Meeting (WCLM) at Brisbane. This had drawn little support from industry and it might therefore be appropriate for the WCLM in Ottawa to adopt a theme of central interest to chemical industry. If so, then chemical industry should contribute financial support, and the Chairman will recommend to IUPAC accordingly.

Noted that a satellite symposium on chemical education had been organized in conjunction with the World Chemical Congress in Brisbane. Perhaps this could become a regular feature, fitting into alternate years with the ICCEs. Incorporation within WCC might be better, however.

15. Dates of future meetings

The committee noted the following dates:

General Assembly, August 10 – 15, 2003
Council, August 16 – 17, 2003
World Chemistry Leadership Meeting, August 15, 2003
Next meeting of CCE: August 11 – 12, 2003

16. Any other business

There was no other business. The Chairman thanked members and observers for their attendance.

JB, Acting Secretary CCE
20 August 2002

REPORT ON SUB-COMMITTEE FOR CHEMISTRY EDUCATION IN DEVELOPMENT FOR THE 2001–2003 BIENNIUM

INAUGURATION AND COMPOSITION OF THE SUB-COMMITTEE

The sub-committee was conceived in the deliberations of the Education Strategy Development Committee (ESDC) that took place in the previous biennium. The recommendation to form the sub-committee was approved at the 41st IUPAC Council meeting held on 7-8 July, 2001 (Brisbane). It was born on 1 January, 2002 with Prof JD Bradley as its first chairman. The ESDC Report had outlined the proposed aims of the sub-committee, but it was clearly important and urgent to clarify these and to map its place and role within the new Committee on Chemistry Education (CCE). A CCE strategy meeting was held in New York in March, 2002, at which this was discussed. Also at this meeting the composition of the sub-committee was discussed and six possible members identified. An attempt was made to obtain a wide geographic distribution, with inclusion of prominent and active chemistry educators from developing countries and countries in transition. To achieve this it was also agreed to invite some members from countries that are not members of IUPAC. Following the meeting all invitees agreed to serve as follows:

Prof R Lamba (Puerto Rico)
Prof N Tarasova (Russia)
Prof A Chrispino (Brasil)
Prof A Shoukry (Egypt)
Prof S Wandiga (Kenya)
Prof F Sevilla (Philippines)

PROJECTS

The sub-committee (CED) inherited two major, active projects from the previous dispensation (CTC). Activities within these existing projects are first described.

1. Small-Scale Chemistry

This project has continued intensively in association with UNESCO (Basic Sciences Division). During this biennium several more countries have hosted introductory workshops, which introduce and advocate the benefits of small-scale chemistry practical work: Azerbaidjan, Botswana, Cape Verde, China, Congo (Brazzaville), Eritrea, Guinea-Bissau, Hong Kong, Latvia, Liberia, Mauritius, Morocco, Namibia, Seychelles, Sierra Leone, Sudan, Swaziland, Ukraine and Uzbekhistan. A number of these countries, as well as those previously visited, have been sufficiently inspired to establish pilot projects. These are designed locally to evaluate the application of the concept in the local conditions and in relation to the national curriculum. UNESCO has been very active and successful in soliciting funds from donor organisations to support the programme. IUPAC has also approved a project supporting the programme.

Alongside this workshop activity, the important task of translation of example worksheets into national languages also continues. Spanish and Uzbekh translations have been completed; the latter has been taken by Afghan translators to prepare Pushtu and Dhari language versions in anticipation of an intervention in Afghanistan.

The impact of the IUPAC-UNESCO Global Programme is significant. Centres promoting small-scale methods (with particular reference to school education) are emerging spontaneously in a number of

countries. Illustrative of the impact now perceptible in Africa at least, was the MINEDAF VIII Conference held in Dar es Salaam in December 2002. This triennial meeting of Ministers of Education in Africa, which covers all aspects of education policy, included an afternoon session on "Microscience Experiences", chaired by the Minister of Education of Cameroon. On this occasion Prof Bradley represented IUPAC, and addressed delegates on IUPAC and on the IUPAC-UNESCO Global Programme.

Prof Wandiga is also active in East Africa promoting the concept in Kenya, Uganda and Tanzania, from the Centre for Science and Technology Innovation in Nairobi. Prof Sevilla, a long-time promoter of cost-effective practical work in science, hosted a workshop in Manila at the University of Santo Tomas during 2002, and is planning further activities in his region. A description of aspects of the Programme appeared in Chemistry International (24, No3, pp 8- 10, 2002).

1. DIDAC

This project has also become a joint effort of IUPAC and UNESCO. It has also benefited from the very active support of UNESCO in soliciting funds and negotiating with Agfa Gevaert. This has permitted the distribution of sample sets of resources in several countries, and the translation of the textual materials into a number of languages. Cost savings have been achieved by linking the presentation on the DIDAC resources and the personal delivery of these, with the holding of a small-scale chemistry workshop. As the financial and technical support of Agfa Gevaert is now being withdrawn, transfer of the rights to the materials to UNESCO is taking place. UNESCO, in cooperation with IUPAX, aims to distribute the material electronically for free use worldwide. The review and endorsement of DIDAC by COCI AND CTC in the previous biennium, is now bearing fruit on a global scale. The convening of a symposium on DIDAC within the programme of the 39th IUPAC Congress, recognises this coming to global maturity of a project first conceived in Belgium to mark the 75th anniversary of IUPAC. Once again we are indebted to UNESCO for so successfully assisting IUPAC in advancing "the worldwide aspects of the chemical sciences".

1. IUPAC Periodic Table

The publication of a small laminated Periodic Table, to mark the 80th anniversary of IUPAC prompted the idea that something of this kind would have wide appeal in the world of chemistry education. Two possibilities were envisaged: it could either be a commercial venture, earning revenue for IUPAC, or it could be designed for free distribution. The evaluation of this concept and its formulation as a project have not yet been completed.

COMMUNICATION

Since the inauguration of CED there has been a meeting of CCE on the occasion of the 17th ICCE in Beijing. Unfortunately only two members of CED (Profs Lamba and Tarasova) were attending. Nevertheless the opportunity was taken to discuss on an informal basis the policy guidelines proposed for CED at the strategy meeting in New York. The chairman has also met on other occasions during 2002, Profs Wandiga and Sevilla. Electronic communication needs to be intensified in future.

CONCLUSION

The very significant benefit to CED of cooperation with UNESCO is clear, and we wish to record our gratitude to Dr Pokrovsky for this.

JB
Chairman, CED
July 2003

REPORT ON THE CCE PUBLIC UNDERSTANDING OF CHEMISTRY SUBCOMMITTEE

cat·a·lyst (kät'l-ïst) n. 1. Chemistry. A substance, usually used in small amounts relative to the reactants, that modifies and increases the rate of a reaction without being consumed in the process. *(Am. Heritage Dictionary, 3rd ed.)*

How can IUPAC serve as a catalyst to increase the global public understanding of chemistry? This is a critical long-range goal for our international union with a mandate to: "advance the worldwide aspects of the chemical sciences and contribute to the application of chemistry in the service of humankind."

The Public Understanding of Chemistry (PUC) has now begun it's task of trying to discover the substances and effective doses needed to catalyze IUPAC efforts to build mutual trust and communication between chemistry and the general public. The subcommittee held its first informal meeting at the 17th International Conference on Chemical Education in Beijing in August 2002, where five of eight members who were able to attend set the direction for the Committee's work.

Subcommittee members are:

Dr. Anthony D. Ashmore (UK)
Dr. D. Balasubramanian (India)
Professor Robert B. Bucat (Australia)
Professor Choon H. Do (Korea)
Dr. Lida Schoen (Netherlands)
Professor Joseph Schwarcz (Canada)
Professor Yoshito Takeuchi (Japan)
Professor Peter Mahaffy (Canada, Chair)

In our first year, the PUC subcommittee has focused on three activities:

(1) We are preparing a proposal for an IUPAC project to map and evaluate existing public understanding of science efforts and propose a focus for PUC activities. Consistent with IUPAC's focus, activities will likely be centered on facilitating communication among those responsible for on-going public understanding initiatives, and encouraging others to fill in the gaps that are identified. It is clear that much of our work will be done electronically, and the Internet will be an important tool in communicating what is being done. Bob Bucat <bucat@chem.uwa.edu.au> is coordinating the preparation of a project proposal. He welcomes your comments.

(2) We will catalyze discussion on the Public Understanding of Chemistry at the 39th IUPAC Congress, held jointly this year with the 86th Conference of the Canadian Society for Chemistry (session CE03 of the Congress, on Aug 14, 2003). On that date a series of three symposia featuring invited speakers will be held, focusing on various aspects of the public understanding of chemistry. Symposia titles and the invited speakers are as follows:

The Flow of Ideas Between Chemists and the Public Through the Media, sponsored by DOW Canada, and featuring - ***Madeleine Jacobs***, editor-in-chief, Chemical & Engineering News, USA; ***Claire McLoughlin***, Press & Public Relations, Royal Society of Chemistry, UK; ***Vince Smith***, President, Dow Chemical Canada Inc.; ***Ian Shugart***, Assistant Deputy Minister, Health Policy and Communications Branch, Health Canada.

Key questions to be addressed include:

-- How do ideas flow between chemistry and the public through the media?
-- What role could the media play in facilitating a credible two-way dialogue between those involved in chemistry and the public?
-- How can this dialogue help build trust and increased understanding of the role that chemistry plays in people's lives?

· ***The Flow of Ideas from the Research Lab to Industrial or Public Use,*** sponsored by Imperial Oil Products and Chemicals, featuring - ***Howard Alper***, Vice-rector, University of Ottawa and President of the Royal Society of Canada***; Jean-Claude Gavrel***, Director, Networks of Centres of Excellence, NSERC, Canada; ***Ole Kihle***, PE Products Technology Manager, Polymers Technology Centre, Imperial Oil Limited, Canada.

Key questions to be addressed include:

-- How do ideas flow between the research lab and industry or public use?
-- How are ideas originating in the research laboratory translated into eventual refinement of technologies for industrial and public use?
-- How are needs perceived by industry and the public translated back into the research laboratory?
-- What are the various interactions among academia, government and industry within this product cycle, and how can a convergence of interests can be optimized?

· ***The Flow of Ideas Through Society***, sponsored by Shell Canada Chemicals, featuring ***Neil Camarta***, senior vice-president, oilsands, Shell Canada; ***Peter Calamai***, science writer, Toronto Star; ***Stuart Smith***, chair, Ensyn Technologies, past chair of the National Round Table on the Environment and the Economy and past chair, Science Council of Canada; ***David Harpp***, McGill University Office for Chemistry and Society, Canada; ***Elizabeth Dowdeswell***, president, Nuclear Waste Management Organization, former Assistant Deputy Minister, Environment Canada and former executive director of the United Nations Environmental Program.

Key questions to be addressed include:

-- How do ideas flow through society?
-- How can chemistry, the central science, continue to make significant contributions to the well being of society and provide benefits for future generations?
-- How does chemistry position itself and interact with other key disciplines concerned with the health of people and the environment, social justice,

economic growth and the
-- general aspirations of society?
-- How can a convergence of societal interests be optimized?

I would like to acknowledge the tremendous support for these symposia by the conference organizing committee, especially conference president Dr. Alex McCauley, and program committee chair, Dr. Bryan Henry. The congress has agreed to open the full day of session to the public at no charge. This initiative would not have taken place without the tireless work of symposia co-chair, Dr. Jean Belanger, who has brought many of these distinguished speakers together for this important dialogue.

(3) Younger chemists and citizens have brought a rich visual dimension to this topic by contributing over the past four months to our international poster contest for 10–16 year old students on the topic ***"It's a Chemical World."*** A distinguished panel of judges has agreed to accept the very difficult task of selecting winners from the 260 paper and electronic entries that have come in from students in over 20 countries. Select entries will be displayed throughout the Ottawa Congress and published in Chemistry International. PUC member Lida Schoen (IUPAC) and Kathy Darvesh (CSC) are the contest coordinators through the Science Across the World (SAW) network. I would like to acknowledge the considerable time, effort, and enthusiasm contributed to this project by the coordinators and staff members of the SAW network, as well as the Canadian Chemical Education Trust Fund, DIDAC, and SAW for contributing substantial prizes for the winning students and their schools. Please contact Lida Schoen (email: amschoen@xs4all.nl) for more information.

Finally, catalysts are present in tiny amounts relative to reactants, and the PUC subcommittee simply can't be effective without broad ownership of this work and input from the membership of IUPAC. We welcome your suggestions for priorities and would like to be made aware of activities and efforts in your professional society, country, or region. Please contact the chair (email: peter.mahaffy@kingsu.ca) or any of the committee members with your comments and suggestions.

Peter Mahaffy
Chairman, PUS
July 2003