Date: April 13, 2012

From: Mei Hung Chiu, CCE Chair

To: IUPAC Bureau

Re: Committee on Chemistry Education Chair's Report to the Bureau

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This report highlights significant CCE activities since the last Bureau meeting,

I. CCE mandate and mechanisms to carry out that mandate
II. CCE Priorities for 2010-2011 biennium
III. ICCE Conference
IV. Report of CCE project group
V. Membership renewal
VI. Acknowledgments
VII. List of members, roles and sub-committees/working groups

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I. CCE mandate and mechanisms to carry out that mandate

A. CCE mandate

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

B. Mechanisms to carry out that mandate

CCE met as a full committee in August 2011 prior to and during the General Assembly of IUPAC in Puerto Rico. In formal meetings and (mostly) beyond, CCE accomplishes its work through the dedicated efforts of 6 titular members and 2 officers, 8 associate members representing divisions, 23 national representatives and two ex officio members – representing a total of 36 countries.

The work of CCE is carried out through a number of committees and a number of projects. At the moment a number of projects are under decision. During this year a number of projects will start working, as soon as their budget is cleared In 2012 the CCE will organize in close

cooperation with the division on education of EuchemS the ICCE in Rome. CCE also has built and nourished relationships with partners outside of IUPAC. Presently CCE is working to build and strengthen working relationships with chemical industry, UNESCO, Science across the World, the ICSU regional offices, the International Water Association, the Chemical Heritage Foundation, and the Comenius School partnership, since April 2012 CCE also participates in a special committee of OPCW, focused on science education.

II. CCE Priorities for 2012 -2013 biennium

During the meeting of the CCE in Taiwan in 201o the following framework for priorities was adapted.

Framework of Priorities for 2012-2013

Acknowledging that the quality of an education system cannot exceed the quality of its teachers, the **emphasis** for IUPAC's educational activities should be on **supporting chemistry education in developing countries by building capacity in the teaching force at all levels**.

There is a welcome increase in the contributions made by other bodies within IUPAC and in collaborations with CCE. These bodies are the repositories of expertise in their fields and are encouraged to consider how their areas of science could contribute to the achievement of the priorities.

IUPAC should continue to seek collaborations with other organisations in pursuing its objectives.

The six priorities that will lead the work of CCE for 2012-2013 biennium were discussed at the last IUPAC GA in San Juan, Puerto Rico:

(a) To give priority to initiatives that highlight the relationship between chemistry and sustainable development via working with divisions, also to extend the goals of the IYC the UN Decade for Education for Sustainable Development.

(b) To maintain a primary focus on working with other partners, across divisions, and stakeholders to maintain momentum of the International Year of Chemistry.

(c) To emphasize the importance of developing ALL students' inquiry competency and learning outcomes of excellence in chemistry education, both in the developed and developing world.

(d) To identify and share new learning and teaching practice in the areas of chemistry education throughout the world.

(e) To build chemistry education networks among and outside IUPAC, using fully the multicultural capacity within CCE and chemistry to bridge people.

(f) To continue to support initiatives that raise awareness, social responsibilities, and understanding of ethical issues that are important in chemistry education.

The biennial International Conferences on Chemistry Education (ICCE) is considered as a major bridge for CCE to present the outcomes of CCE projects, to link chemistry educators together to empower impact of chemistry education, and to implement CCE strategies for making a valuable contribution to our society.

Details of the priorities and strategies for accomplishing the priorities will be a major focus of our CCE meetings in Rome at the 2012 ICCE.

III. The ICCE conference

The 22nd ICCE and 11th ECRICE will be held in Rome from 15 through 20 July 2012. For the first time the CCE joined forces with the division of chemical education of EuChem. We are looking forward to an interesting and stimulating conference which is in the able hands of an effective committee, based at the Sapienza University in Rome.

Report prepared by Franco Calascibetta, local organizing committee, Rome

"Stimulating Reflection and Catalysing Change in Chemistry Education" will be the central theme for the 2012 joint meeting of the International Conference on Chemistry Education and the European Conference on Research and Innovation in Chemical Education (ICCE-ECRICE) in Rome, Italy, on 15–20 July 2012.

ICCE 2012 will be the 22nd in a series that it is held every two years as an IUPAC sponsored conference. In recent years, the ICCE met in Taipei in 2010, in Mauritius in 2008, in Seoul in 2006, and in Istanbul in 2004. On the other hand, ECRICE 2012 will be the 11th in a series that it is also held every two years as an EuCheMS sponsored conference: ECRICE met in Krakow in 2010, in Istanbul in 2008, in Budapest in 2006, and in Ljubljana in 2004.

The conference is organized in five days; in each one a general theme in the following list will be tackled:

Monday16th - Communicating chemistry

Tuesday 17th - Didactics of Third level chemistry

Wednesday 18th - ICT and multimedia in teaching chemistry

Thursday 19th - Didactics of Second level Chemistry

Friday 20th - Effective methods in teaching chemistry.

Each day is splitted into a first part in which, through keynotes and plenary lectures the general theme will be introduced and a second part where workshops and symposia will discuss and deepen its specific aspects. The total number of planned plenary lectures and keynotes is 13, while at present the number of scheduled events throughout the afternoon sessions is 48.

At the deadline for abstracts submission (February 28th, 2012) 570 communications were received by the organizers either oral communications (410) and posters (160). Before the

due date (March 23rd, 2012), the organizers should notify the authors about the acceptance of the contribution presented and in what form. Basing on the data above at least 500 participants can be estimated, about 100 of which have already paid the registration fee. A more accurate number should be given only after the Early Bird Registration Deadline, set for April 13th, 2012.

For any further information, please check the Conference website http://www.iccecrice2012.org/en/index.php

IV. Reports of CCE project group

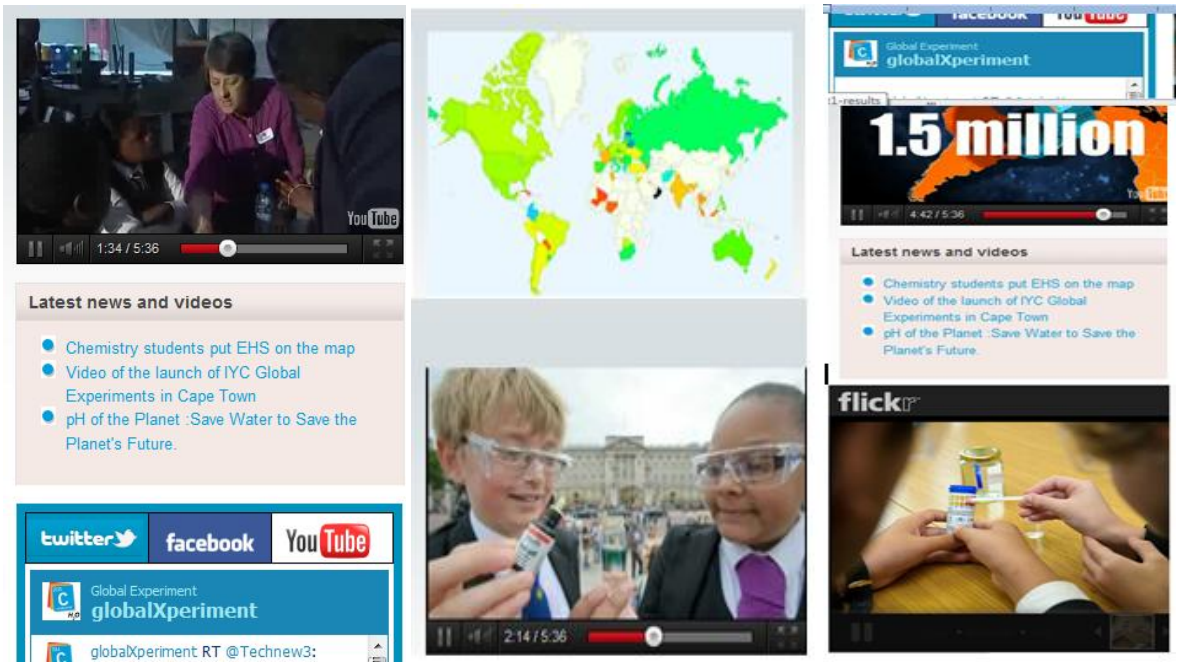
A.1 The Global Chemistry Experiment "Water: A Chemical Solution" (also see a thank you letter in Appendix A)

The Global Chemistry Experiment has been a successful contribution to the IYC in 2011. While the task group of GCE is working to make a sustainable global activity and planning about how to transform it into a legacy activity of the IYC, **the GWE will be open until the end of March** to fulfill an increasing demand,**.**

At the end of December, 43,500 students from 82 countries on 5 continents have shared their results on the central website of GCE. There are more and more participants registering their water data to the website <water.chemistry2011.org>.

The water experiment activities have been implemented into schools science curriculum and have been extensively featured on TV and radio shows, in news articles, and on blogs. The most popular social tools like Twitter and Facebook are integrated into the website, as are several YouTube videos about the experiment. The website, is now available in five languages: English, French, Spanish, Chinese, and Russian. The four activities of the Global Experiment are currently available in 11 languages: English, French, Spanish, Russian, Hebrew, Portuguese, Arabic, Catalan, Slovak, Polish, and Chinese. The results of the Global Experiment were presented during the IYC Closing Ceremony in Brussels to participants, who showed great interesting in the data collected, the countries involved and the use of internet and social media to outreach young people.

The Global Experiment probably the largest chemistry experiment ever. It aims to educate and engage young people in the key role of science in the future of this planet. We are grateful to have many people who provide their efforts, resources, and expertise for supporting this activity. We are hoping to make some activities sustainable and looking forward to collaborating with IUPAC divisions and committees as well as industrial companies for promoting all people's chemistry literacy all over the world.



A.2 IYC_2011_Global_Water_Experiment_Monthly_Statistical_and_Dissemination_Report_December2011_javier (See appendix B)

A.3 IYC_supplement_RSC (See Appendix C)

B. Report by Lida Schoen (Netherlands)

- **YAC for Bureau**
- **'Research-based evaluation of the Young Ambassadors for Chemistry' project (www.iupac.org/web/ins/2007-005-2-050)**
- **Lida Schoen (Netherlands), Mei-Hung Chiu (Taiwan), and Erica Steenberg (South Africa)**

From April 2011 on, the YAC team organized another YAC course and is organising 2 more courses/events in 2012.

(1) **YAC Puerto Rico (13)** in San Juan, before the IUPAC Assembly 2011 on July 29, 2011[1]

(2) **YAC Tanzania (14) to come** in Kasulu, April 23-27, 2011.

(3) **YAC Panama/Mexico (15) to come** in October 2012, joint activity with the Flying Chemist programme.

(a) Spin-off in IYC 2011

[1] www.iupac.org/publications/ci/2011/3306/yac_sidebar.html

1. YAC activity during the 2nd Annual Meeting of the Chemistry Teachers Association in **Kuwait,** April 17-18, 2011 (invitation by president Dr. Abdul-Aziz Alnajjar)
2. YAC activity during the 6th Jordanian International Conference of Chemistry in Irbid, **Jordan**, April 19-21, 2011 (invitation by president Prof. Sultan Abu-Orabi)
3. YAC activity before the ceremony to hand a 1st prize in the Global Stamp Competition to Vasilena Vasileva (age 12-14) in Gorna Malina, **Bulgaria** on November 8, 2011[2]

(b) Aim of the project

To train secondary school and university teachers to teach and guide their students to run a Young Ambassadors for Chemistry event to promote chemistry in a busy public venue. We make use of as many as possible existing resources, that also stimulate international collaboration between schools/universities and developed a series of experiments, related to chemistry in daily life, that can be safely and easily performed in public.

(c) Summary YAC courses and events since April 2010

Country	Initiatiator	Local organiser(s)	Number teachers	Venue course
Kuwait	Dr. Abdul-Aziz Alnajjar	Dr. Abdul-Aziz Alnajjar	50	Science Centre, Kuwait City
Jordan	Prof. Sultan Abu-Orabi	Prof. Ayman Hammoudeh	50	Yarmouk University, Irbid
Puerto Rico	Prof Ram Lamda	Prof. Ingrid Montes	20	University of Puerto Rico in Rio Piedras
Bulgaria	Lida Schoen	Kirilka Stankova Keith Kelly Stefka Kitanova	few	SOU Hristo Botev, Gorna Malina

Country	Number students	Public venue	Public
Kuwait	20	Science Centre	Many teachers, officials
Jordan	45	Yarmouk University, Irbid	Many university teachers, officials, PhD students
Puerto Rico	5	University of Puerto Rico in Rio Piedras	University staff, PhD students
Bulgaria	20	School yard (outside)	Many, all students and teachers, Headmaster, VIPs e.g. Mayor, Ministry of Education, Inspection, radio and TV

Evaluation project 'Research-based evaluation of the Young Ambassadors for Chemistry' project (www.iupac.org/web/ins/2007-005-2-050)

(d) Changes

We carried out new evaluations in Puerto Rico. The teachers and a few students present, reacted (very) positively about the course, so even a half day activity offers new ideas and generates a lot of enthusiasm.

[2] www.factworld.info/bulgaria/IYC_Stamp_11/index.htm

An important issue are the needed chemicals (should be cheap and locally available) and packaging (so students and public can take ‘products’ home). This can be a problem in less developed countries with 'no' chemical industry and suppliers for 'school' chemicals. It appears to be difficult to find out before our visit. Up till now we always managed, usually with sponsorship from industry (multinationals).

We are in the process of changing the questionnaires to be able to understand better, what exactly can be done in a country to optimize the implementation of this way of education and to ensure sustainability. At the same time we plan to provide organizers with a larger set of suitable ‘fool proof’ experiments with clearly written procedures and ideas for the meaningful use of (social) media. And even moving forward further: Web 2.0 applications!

It‘s crucial for success the offered methodology and the experiments are feasible, are part of or can be part of the national or local curriculum and easy to repeat.

(e) Organisers

Local organizers tell us they 'always' need more time than they had available since the green light came from the initiator for the organization. Although we think we wrote complete (visual) instructions, they sometimes appear to be not clear enough.

(f) Sustainability

We notice YAC is well established in Taiwan, Cyprus and Bulgaria. That means (many) more YACs are locally organised in other cities/provinces and during Science Fairs after our visit.

Also ‘money’ seems a key issue for sustainability. Sponsoring the course and event are still problematic. Up till now only the organization in the Philippines (2010) managed to get the event fully sponsored by a shopping center. At the moment organizers in Tanzania try again for the April course and event with a telecom company. UNESCO promises, but it seems extremely difficult to keep the promise.

V. Global Stamp Competition: final report

In the International Year of Chemistry the Committee on Chemistry Education (CCE) organized the Global Stamp Competition for students and undergraduates to show Chemistry as Cultural Enterprise (CCE): IUPAC project 2010-031-2-050 (Christiane Reiners and Lida Schoen). The competition was launched as project idea 110 (www.chemistry2011.org/participate/activities/show?id=110).

The stamps are required to highlight the impact of chemistry on a country’s culture and everyday life. We launched the competition with our partners in Paris last January during the IYC 2011 opening ceremony at UNESCO Headquarters.

International Union of Pure and Applied Chemistry

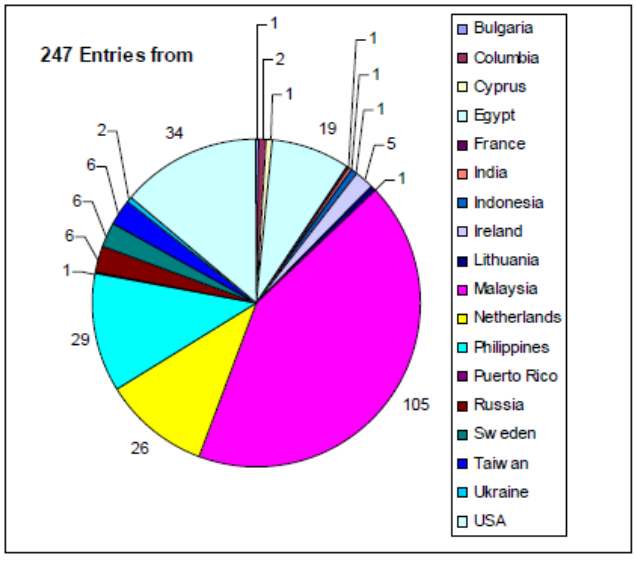
Jeff·Howson, ·owner·of·the·publication·platform¶
http://mtn.e2bn.net/satw_design_a_national_stamp¶

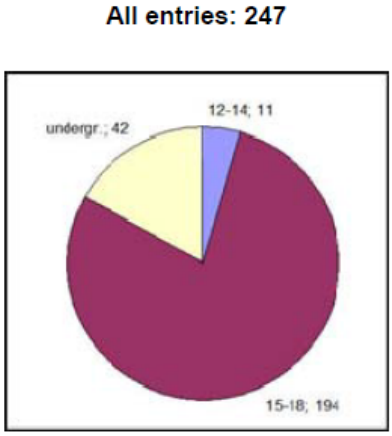
(a) Organisation and results

The competition was open to students all over the world in 3 age categories (12-14, 15-18 and undergraduates / teacher students) from all subjects, not only chemistry! The deadline for submissions was June 15, 2011.

Students uploaded their designs to a publication platform, that allowed peer review. The stamp designs started coming in slowly. We received the first submissions on March 11th, with 63 entries on the last 2 days! Even after the deadline 7 entries arrived, students discussing which time zone was meant! As all entries had to be moderated, impatient students sometime uploaded 2 or even 3 times, apparently not being sure they followed the right procedure. After checking we counted 247 designs from 18 different countries! Students from 15-18 uploaded most of the designs.

The competition was most popular in Asia Pacific (total number 142 with 105 entries from Malaysia). We received both stamps produced on the computer and pictures of stamps, drawn by hand. Most students submitted themselves, often with help of their teachers. From Western European countries quite a few students' groups collaborated on one design. We didn't have to remove many negative, hurting or negative (anonymous!) reviews.





The use of the peer review possibility (mainly -very- positive) started later and we suppose many students used social media to alert each other. In privileged countries even the use of smart phones and tablet computers played a role!

(b) Nominees

The international jury consisted of Prof. Morton Hoffman (CCE NR USA, ACS), Dr. Rachel Mamlok-Naaman (CCE NR Israel), Dr. Lynn Hogue (ACS), Datuk Dr. Soon Ting Kueh (CCE NR Malaysia, IKM, FACS), Dr. Anthony Smith (EC2E2N), Dr. Harry Kelly (GlaxoSmithKline) and Prof. Daniel Rabinovich (USA, stamp expert).

(c) *Criteria*

(1) The design should clearly show the relationship between chemistry and the national/regional culture, so no general history of chemistry, no famous chemists / Nobel laureates, unless born in the country, e.g. no Bohr from outside Denmark and no Periodical System unless from Russia.

(2) The quality of the description (max. 50 words), number of hits and number and quality of the peer reviews (quite a few of them in the national languages, also in non-Latin characters).

(3) No stereotypes like a nerd professor and no bad sides of chemistry (in general), pollution, toxic substances, they already get enough attention in the media (very few entries).

(4) Many designs looked more like (beautiful) posters or water colours than like stamps. Our stamp expert suggested we had better choose designs, that are suitable as a (real) stamp. The jury published a list with 56 nominees (650 hits), students apparently still looked on the publication platform. During 2 long and 'difficult' meetings we selected winners and runners-up.

(d) Winners

12-14: Vasilena Vasileva (14) from SOU Hristo Botev, Gorna Malina, Bulgaria

15-18: Muzhafar Hassan Ismail (17) from Mara Junior Science College Taiping, Malaysia

Undergraduates: Peter Yousef M. Rubio (18) from Santo Tomas University, Manila, Philippines

(f) Runners-up 15-18

Stavrou Maria, Spyrou Chrisia and Stylianou Chrysovalento (Cyprus)

Luqman Safwan Che Mohd Fauzi (Malaysia)

Kyle Stratford and Max Willinger (USA)

Peer review on the winners sites

Vasilena Vasileva (Bulgaria), winner 12-14 age category: 10045 hits, 109 comments

Congratulations, Vasi! The best stamp published so far is yours!

Posted 16:29 on 10 Jun 2011 by Kirilka Stankova

Muzhafar Hassan Ismail (Malaysia), winner 15-18 age category: 2886 hits, 78 comments

.... For years this source of nature has contributed to the emergence of a more and more powerful nation on the planet. With the help of chemistry.

Posted 17:59 on 7 Jun 2011 by Erny Trota

Peter Yuosef M. Rubio (Philippines), winner undergraduates: 680 hits, 86 comments

Very nice. This is what the philippines is known for. The message is clear, although as for the image quality, the overlaying of the pictures could be improved.

Posted 04:05 on 17 Jun 2011

(g) Prizes

Due to a generous gift of GlaxoSmithKline we were able to send the winners $500 and the runners-up $250 (for the group). All mentioned students received a personal certificate. All other participants got a certificate of participation.

(h) Official Closing Ceremony of the International Year of Chemistry

During the Official IYC 2011 Closing Ceremony on December 1 in Brussels a hard copy of Chemistry International with an article about the Global Stamp Competition (www.iupac.org/publications/ci/2011/3306/8_stamp_competition.html) was available for all delegates.

A selection of the best designs was on show in our Global Stamp Competition booth, which attracted during the breaks many delegates to have a look at the wonderful students' results. . Pictures taken in the booth:
https://picasaweb.google.com/112105353391375810743/BrusselsIYC2011

(i) Other 'happenings' and customised stamps

Peter Yousef Rubio's winning design (undergraduate category) was presented during the Coconut Week Celebration of the Philippine Coconut Authority-Department of Agriculture on August 25-28, 2011 in the SM Megatrade Hall in Manila in the **Philippines**. **Vasilena Vasileva** (**Bulgaria**) received her prize from Lida Schoen on November 8, 2011 in a ceremony in her school. Report with pictures on www.factworld.info/bulgaria/IYC_Stamp_11/index.htm.

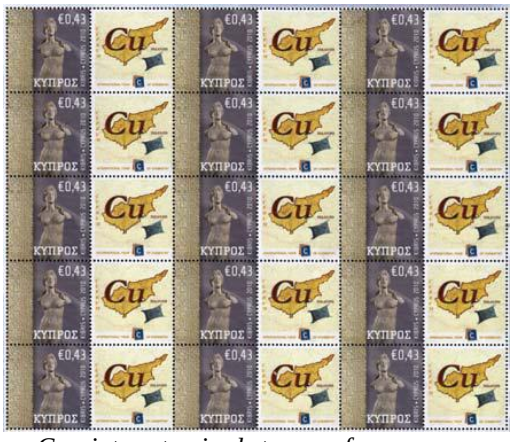
IKM Malaysia offered an additional prize to the winner and runner-up. The Society honoured the students with invitations for the Annual Meeting on December 9, 2011

The Honourable Minister of Science, Technology and Innovation, YB Datuk Seri Panglima Dr Maximus Johnity Ongkili, attended Malam Kimia at the Sime Darby Convention Centre offering the prizes and certificates to competition prize winner and runner-up ***Muzhafar Hassan Ismail*** *(left) and* ***Luqman Safwan Che Fauzi*** *(right), both in the 15-18 age category. Far right Datuk Dr. Soon Ting-Kueh, president of IKM.*

Mariam El-Agamy (School Principal Lycée La Liberté d'Alexandrie, **Egypt**) sent a picture of all nominees from the school in Alexandria with their certificates.

Cyprus issued a customised stamp with the runners-up design.

The Netherlands sent us a picture of the Dutch winning (nominated) students and a sheet of their customised stamps by the Dutch National Postal Services.



Cypriot customised stamps of runner-ups Stavrou Maria, Spyrou Chrisia and Stylianou Chrysovalento

Dutch winning designers: Dragana Caldrmoski en Poeja Lachman

Dutch customised stamps of the winning Dutch design

VI. Report by CCE TM Mustafa Sözbilir (Turkey), Task Group Chair.

Prepared by Prof. Mustafa Sözbilir (Turkey) – *Project Coordinator*
Prof. Mei-Hung Chiu (Taiwan)
Prof. Mary Garson (Australia)
Prof. Morton Z. Hoffman (USA)
Prof. Masahiro Kamata (Japan)
Prof. Ram Lamba (Puerto Rico)

Contents:

- Previous Report: submitted at the CCE Meeting during San Juan-PR during 46th IUPAC GA in July, 31- August 1, 2011.

1. Membership of the Project Group

Prof. Mustafa Sözbilir (Turkey) – Project Coordinator

Prof. Mei-Hung Chiu (Taiwan)

Prof. Mary Garson (Australia)

Prof. Morton Z. Hoffman (USA)

Prof. Masahiro Kamata (Japan)

Prof. Ram Lamba (Puerto Rico)

2. Review Procedure of Proposals in IUPAC

Step 1. Receipt at the Secretariat

Step 2. Internal evaluation and identification of outside reviewers

Step 3. Distribution to the outside reviewers and gathering of the reviews

Step 4. Communication of the reviews to the Division(s) or Standing Committee(s) for final decision or recommendation to the Project Committee

Step 5. Consideration and action by the Project Committee (when applicable)

Step 6. Notification of IUPAC's decision to the submitter

Step 7. Responsibility for project management

Review Procedure of Proposals in the Project Group, CCE

(Step 2 in above)

Step 1. FM (Dr. Fabienne Mayer) send the proposals to the members of Project Group.

Step 2. Each member sends his (her) opinion to FM

Step 3. FM sends the opinion of the members to Project Coordinator (PC).

Step 4. PC summarizes and sends the collective opinion to Chairman of CCE and FM

3. Project Budget

USD 20,000 per two years

4. Current Projects

4.1 CCE Projects (from the most new)

(1) Project No: 2011-054-1-050
Title: Flying Chemists Program in Mexico and Panama

Chair: Cecilia BERRIOS, Jorge IBANEZ
Members: Juan Pérez Hernández, Héctor Cárdenas Lara, Mei-Hung Chiu, Abdiel Aponte, Cristina Rueda,
Start Date: 01 January 2012
Planned End Date: 31 Decemberr 2012
Budget in USD: 5.465
Web Page: http://www.iupac.org/web/ins/2011-054-1-050

(2) Project No: 2010-011-1-050 **(Joined with Div V: Analytical Chemistry) (IYC 2011 Activity)**
Title: Global Chemistry Experiment for the International Year of Chemistry – Design and Development
Chair: García-Martínez, Javier; Wright, Anthony (Tony) H.
Members: Camões, Maria Filomena; Cesa, Mark C.; Hasler, Julia; Humphris, Colin J.; Joyce, Alexa; Kamata, Masahiro; Steenberg, Erica
Start Date: 01 January 2010
Planned End Date: 31 March 2012
Budget in USD: 15.000
Web Page: http://www.iupac.org/web/ins/2010-011-1-050
IYC 2011 Activity Page:
http://www.chemistry2011.org/participate/activities/show?id=92
IYC 2011 Activity Page: http://water.chemistry2011.org

(3) **Project No:** 2009-055-1-050 **(Final Report Pending)**
Title: Toward Higher Quality of Chemistry Teacher In-service Training in Croatia
Chair: Judaš, Nenad; Vladušić, Roko
Members: Bucat, Robert B.; Chiu, Mei-Hung; Luetić, Marina; Šunjić, Vitomir
Start Date: 01-05-2010
Planned End Date: 30 April 2011
Budget in USD: 5.000
Web Page: http://www.iupac.org/web/ins/2009-055-1-050

(4) **Project No:** 2008-043-1-050 **(Final Report Pending)**
Title: Visualizing and understanding the science of climate change
Chair: Prof. Peter Mahaffy
Members: Chiu, Mei-Hung; Engida, Temechegn; Hasler, Julia; Kirchhoff, Mary; Martin, Brian; Osborne, Colin; Tarasova, Natalia P.
Start Date: 01-Feb-2009
Planned End Date: 31 August 2012
Budget in USD: 8.400
Web Page: http://www.iupac.org/web/ins/2008-043-1-050

(5) **Project No: Project No**: 2008-042-1-050
Title: Development of a framework of priorities for IUPAC Committee on Chemistry Education
Chair: Dr. Tony Ashmore
Members: Akesson, Eva; Chiu, Mei-Hung; Kirchhoff, Mary; Lamba, Ram S.
Start Date: 01-May-2009

Planned End Date: 31 August 2012
Budget in USD: 7.880
Web Page: http://www.iupac.org/web/ins/2008-042-2-050

(6) **Project No**: 2007-005-2-050
Title: Research-based evaluation of the Young Ambassadors for Chemistry
Chair: Dr. Lida Schoen
Members: Mei-Hung Chiu, Ponnadurai Ramasami, Erica Steenberg, and Natalia Tarasova
Start Date: 01 January 2008
Planned End Date: 31 December 2012
Budget in USD: 11.070
Web Page: http://www.iupac.org/web/ins/2007-005-2-050

4.2 Interdivisional Projects (Joint Projects with Other Inter-Division /Standing Committees projects)

(1) **Project No:** 2007-038-3-200 **(Final Report Pending)**
(Joined with Div-II: Inorganic Chemistry Division)

Title: Development of an isotopic periodic table for the educational community

Chair: Holden, Norman E.

Members: Böhlke, John Karl; Coplen, Tyler B.; Mahaffy, Peter G.; Vocke, Robert D.; Walczyk, Thomas R..; Wieser, Michael; Yoneda, Shigekazu; de Laeter, John R.

Start Date: 01 April 2008

Planned End Date: 31 December 2011

Budget in USD: 11.000

Web Page: http://www.iupac.org/web/ins/2007-038-3-200

(A feature titled 'Atomic Weights - No Longer Constants on Nature' published in Chemistry International March-April 2011, by Tyler B. Coplen and Norman E. Holden. It could be read at http://old.iupac.org/publications/ci/2011/3302/2_coplen.html). For more information please also visit http://www.ciaaw.org.

(2) **Project No:** 2007-032-1-100 **(Final Report Pending)**
(Joined with Div-I: Physical and Biophysical Chemistry Division)

Title: Green Book - Abridged Version

Chair: Marquardt, Roberto

Members: Brett, Christopher M. A.; Cvitas, Tomislav; Frey, Jeremy G.; Hinde, Robert J.; Holmström, Bertil; Kuroda, Yutaka; Pavese, Franco; Quack, Martin; Smith, Sean; Stohner, Jürgen; Thor, Anders J

Start Date: 27 November 2007

Planned End Date: 31 December 2011

Budget in USD: 12.500

Web Page: http://www.iupac.org/web/ins/2007-032-1-100

(3) **Project No:** 2004-045-1-700 **(Final report Pending)**

(Jointed with Div-VII: Chemistry and Human Health)

Title: Training of school children on pesticides and health - "Toxicology in the classroom"

Chair: Temple, Wayne A.

Members: Awang, Rahmat; Besbelli, Nida; Duffus, John H.; Heinzow, Birger; Makalinao, Irma

Omar, Maizurah; Binti Rexilius, Lutz; Schweinsberg, Fritz

Start: 01 March, 2005

End: 31 December 2008

Budget in USD: 6.007

Web Page: http://www.iupac.org/web/ins/2004-045-1-700

(November 2009 - feature published in Chem. Int. Nov-Dec 2009. Please visit http://www.iupac.org/publications/ci/2009/3106/4_omar.html) In addition an amended version of the Toxiclaro multimedia package is now been developed which can be found at www.prn2.usm.my/toxicology2009.

5. Projects Under Consideration

(1) **Project No:** 2012-009-1-050
Title: Description and Analysis of IYC Activities

Chair: Bryan Henry

Members: Berhanu Abegaz, Javier García-Martínez, Julia Hasler, Kathryn Hughes, Colin Humphris, John Malin, Nicole Moreau, Rovani Sigamoney, Leiv Sydnes, Supawan Tantayanon

Date Submitted: 30 January 2012

(2) **Project No:** 2011-055-1-050
Title: Young Ambassadors for Chemistry in Mexico and in Panama

Chair: Cecilia Anaya Berrios

Members:

Date Submitted: 31 October 2011

(3) **Project No:** 2011-003-1-050
Title: Benchmarking of learning outcomes

Chair: Maja Elmgren

Members: Eva Å kesson, Christiane S. Reiners, Marcy Towns, Siegbert Schmid, Ilka Parchmann

Date Submitted: 25 January 2011

5.1 Current Projects

5.1.1 CCE Projects

(1) Project No: 2010-031-2-050 **(IYC 2011 Activity)**

Title: Chemistry as a Cultural Enterprise

Chair: Prof. Christiane S. REINERS & Dr. Lida SCHOEN

Members: Boshra M. AWAD, Liberato CARDELLINI, Mei-Hung CHIU, Mary J. GARSON, Morton, Z. HOFFMAN, Rachel MAMLOK-NAAMAN, Liliana MAMMINO, Daniel RABINOVICH & Thomas R TRITTON

Start Date: 01 September 2010

Planned End Date: 01.September 2012

Budget in USD: 1.735

Web Page: http://www.iupac.org/web/ins/2010-031-2-050

IYC 2011 Activity Page:
http://www.chemistry2011.org/participate/activities/show?id=110

(2) Project No: 2010-025-1-050 **(IYC 2011 Activity)**

Title: Enhancing the capacity to provide quality chemistry education at secondary and tertiary levels in Ethiopia

Chair: Prof. Temechegn ENGIDA

Members: Yonas CHEBUDE, Mei-Hung CHIU, Peter G. MAHAFFY, Ahmed MUSTEFA

Start Date: 01 September 2010

Planned End Date: 31 December 2011

Budget in USD: 5.500

Web Page: http://www.iupac.org/web/ins/2010-025-1-050

(3) Project No: 2010-011-1-050 **(Joint with Div V: Analytical Chemistry) (IYC 2011 Activity)**

Title: Global Chemistry Experiment for the International Year of Chemistry – Design and Development

Chair: García-Martínez, Javier; Wright, Anthony (Tony) H.

Members: Camões, Maria Filomena; Cesa, Mark C.; Hasler, Julia; Humphris, Colin J.; Joyce, Alexa; Kamata, Masahiro; Steenberg, Erica

Start Date: 01 January 2010

Planned End Date: 31 December 2010

Budget in USD: 15.000

Web Page: http://www.iupac.org/web/ins/2010-011-1-050

IYC 2011 Activity Page:
http://www.chemistry2011.org/participate/activities/show?id=92

IYC 2011 Activity Page: http://water.chemistry2011.org (will be active from March 22, 2011)

(4) Project No: 2009-055-1-050

Title: Toward Higher Quality of Chemistry Teacher In-service Training in Croatia

Chair: Judaš, Nenad; Vladušić, Roko

Members: Bucat, Robert B.; Chiu, Mei-Hung; Luetić, Marina; Šunjić, Vitomir

Start Date: 01-05-2010

Planned End Date: 30 April 2011

Budget in USD: 5.000

Web Page: http://www.iupac.org/web/ins/2009-055-1-050

(5) Project No: 2009-037-3-050 (IYC 2011 Activity)

Title: Developing Toolkits for National Chemistry Weeks during IYC

Chair: Prof. Mustafa SOZBILIR

Members: Choon Ho DO, Morton HOFFMAN, Ram S. LAMBA, Jan H. APOTHEKER

Start Date: 1 August 2010

Planned End Date: 30 June 2011

Budget in USD: 3.300

Web Page: http://www.iupac.org/web/ins/2009-037-3-050

IYC 2011 Activity Page:
http://www.chemistry2011.org/participate/activities/show?id=61

(6) Project No: 2008-043-1-050 (IYC 2011 Activity)

Title: Visualizing and understanding the science of climate change

Chair: Prof. Peter Mahaffy

Members: Chiu, Mei-Hung; Engida, Temechegn; Hasler, Julia; Kirchhoff, Mary; Martin, Brian; Osborne, Colin; Tarasova, Natalia P.

Start Date: 01-Feb-2009

Planned End Date: 1 March 2011

Budget in USD: 8.400

Web Page: http://www.iupac.org/web/ins/2008-043-1-050

(7) Project No: Project No: 2008-042-1-050

Title: Development of a framework of priorities for IUPAC Committee on Chemistry Education

Chair: Dr. Tony Ashmore

Members: Akesson, Eva; Chiu, Mei-Hung; Kirchhoff, Mary; Lamba, Ram S.

Start Date: 01-May-2009

Planned End Date: 31 December 2010

Budget in USD: 7.880

Web Page: http://www.iupac.org/web/ins/2008-042-2-050

(8) Project No: 2007-005-2-050

Title: Research-based evaluation of the Young Ambassadors for Chemistry

Chair: Dr. Lida Schoen

Members: Mei-Hung Chiu, Ponnadurai Ramasami, Erica Steenberg, and Natalia Tarasova

Start Date: 01 January 2008

Planned End Date: 31 December 2010

Budget in USD: 11.070

Web Page: http://www.iupac.org/web/ins/2007-005-2-050

5.1.2. Interdivisional Projects (Joint Projects with Other Inter-Division /Standing Committees projects)

(1) **Project No**: 2008-017-4-300 (Joint with Div-III: Organic and Biomolecular Chemistry Division)

Title: Green Chemistry – creation and implementation of international cooperation in teaching and investigations

Chair: Lunin, Valery V.

Members: Arico, Fabio; Chang, Jie; Golubina, Elena V.; Han, Buxing; Karakhanov, Edward; Kirchhoff, Mary; Lokteva, Ekaterina S.; Parmar, Virinder S.; Rashidova, Sayera; Tarasova, Natalia P.

Start Date: 01 July 2009

Planned End Date: 31 December 2010

Budget in USD: 10,000

Web Page: http://www.iupac.org/web/ins/2008-017-4-300

(2) **Project No**: 2007-038-3-200 (Joint with Div-II: Inorganic Chemistry Division) **(IYC 2011 Activity)**
Title: Development of an isotopic periodic table for the educational community

Chair: Holden, Norman E.

Members: Böhlke, John Karl; Coplen, Tyler B.; Mahaffy, Peter G.; Vocke, Robert D.; Walczyk, Thomas R..; Wieser, Michael; Yoneda, Shigekazu; de Laeter, John R.

Start Date: 01 April 2008

Planned End Date: 31 December 2010

Budget in USD: 11.000

Web Page: http://www.iupac.org/web/ins/2007-038-3-200

(3) **Project No:** 2007-032-1-100 (Joint with Div-I: Physical and Biophysical Chemistry Division)

Title: Green Book - Abridged Version

Chair: Marquardt, Roberto

Members: Brett, Christopher M. A.; Cvitas, Tomislav; Frey, Jeremy G.; Hinde, Robert J.; Holmström, Bertil; Kuroda, Yutaka; Pavese, Franco; Quack, Martin; Smith, Sean; Stohner, Jürgen; Thor, Anders J

Start Date: 27 November 2007

Planned End Date: 31 December 2010

Budget in USD: 12.500

Web Page: http://www.iupac.org/web/ins/2007-032-1-100

5.2 Projects Under Consideration

(1) **Project No:** 2011-003-1-050
Title: Benchmarking of learning outcomes

Chair: Maja Elmgren

Members: Eva Å kesson, Christiane S. Reiners, Marcy Towns, Siegbert Schmid, Ilka Parchmann

Date Submitted: 25 January 2011

5.3 Recently Completed Projects

(1) **Project No:** 2002-021-2-050 (Final report pending)

Title: A feasibility study of the scope and limitation of machine translations as a means of disseminating useful reading material for chemical education to be used on the internet

Chair: Masato M. Ito and Yoshito Takeuchi

Members: Anthony D. Ashmore, Philippe Boesch, Liberato Cardellini, Choon H. Do, Joseph J. Lagowski, Norma Nudelman, Elisa Pestana, Yuri Vladimirovich Smetannikov, Ting-Kueh Soon, and Qiankun Zhuang

Start: 01 October 2002

End: 30 June 2010

Budget in USD:

Web Page: http://www.iupac.org/web/ins/2002-021-2-050

(2) **Project No:** 2007-050-2-600
(Joint with Div I: Physical and Biophysical Chemistry & Div VI: Chemistry and the Environment)
Title: Climate and global change: observed impacts on planet earth

Chair: Letcher, Trevor

Members: Salminen, Justin

Start: 01 February 2008

End: 01 June 2009

Budget in USD:

Web Page: http://www.iupac.org/web/ins/2007-050-2-600

(Book entitled "Climate Change-Observed Impacts on Planet Earth" was produced as a result of the project published by Elsevier, 2009 [ISBN: 044453301X ; ISBN 13: 9780444533012].

(3) **Project No:** 2007-022-2-020 (Final report pending)
Title: Recommendations for Codes of Conduct

Chair: Graham S. Pearson

Members: Sultan T. Abu-Orabi, Edwin D. Becker, Alastair W. Hay, Jo Husbands, Peter G. Mahaffy, Robert Mathews, Ting-Kueh Soon, Leiv K. Sydnes, Natalia P. Tarasova, Rietje van Dam-Mieras, and Bernard West

Start: 15 October 2007

End: 31 December 2009

Budget in USD: 5.000

Web Page: http://www.iupac.org/web/ins/2007-022-2-020

(4) **Project No:** 2006-050-3-100 (Final report pending)

(Joint with Div-I: Physical and Biophysical Chemistry)

Title: Wet surface vibrational spectroscopy experiments

Chair: James McQuillan

Members: Masatoshi Osawa, Derek Peak, Bin Ren, Zhong-Qun Tian, and Thomas Wandlowski

Start: 14 March, 2007

End: 31 March 2010

Budget in USD: 8.200

Web Page: http://www.iupac.org/web/ins/2006-050-3-100

(5) **Project No:** 2006-050-3-100 (Final report pending)

(Joint with Div-VII: Chemistry and Human Health)

Title: Training of school children on pesticides and health - "Toxicology in the classroom"

Chair: Temple, Wayne A.

Members: Awang, Rahmat; Besbelli, Nida; Duffus, John H.; Heinzow, Birger; Makalinao, Irma Omar, Maizurah; Binti Rexilius, Lutz; Schweinsberg, Fritz

Start: 01 March, 2005

End: 31 December 2008

Budget in USD: 6.007

Web Page: http://www.iupac.org/web/ins/2004-045-1-700

(6) **Project No:** 2006-050-3-100 (Final report pending)

(Jointed with Div-IV: Polymer)

Title: Design of polymer education material for French speaking countries

Chair: Gerard Froyer

Members: Djafer Benachour, Philippe Dubois, Jean-Pascal Eloundou, Dhanjay Jhurry, Hamid Kaddami, Armand Soldera, and Françoise Winnik

Start: 01 April 2005

End: 30 June 2009

Budget in USD: 5.000

Web Page: http://www.iupac.org/web/ins/2004-037-1-400

5.4 Acknowledgements

Most of data in this report was obtained from the website of IUPAC. We appreciate very much for Dr. Fabienne Meyers' excellent documentation in the web site. We also thank many internal and external reviewers for their efforts to screening and identifying excellent projects.

6. Completed Projects

(1) Project No: 2010-031-2-050 **(IYC 2011 Activity)**

Title: Chemistry as a Cultural Enterprise

Chair: Prof. Christiane S. REINERS & Dr. Lida SCHOEN

Members: Boshra M. AWAD, Liberato CARDELLINI, Mei-Hung CHIU, Mary J. GARSON, Morton, Z. HOFFMAN, Rachel MAMLOK-NAAMAN, Liliana MAMMINO, Daniel RABINOVICH & Thomas R TRITTON

Start Date: 01 September 2010

Planned End Date: Completed

Budget in USD: 1.735

Web Page: http://www.iupac.org/web/ins/2010-031-2-050

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Chair: Prof. Temechegn ENGIDA

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Chair: Prof. Mustafa SOZBILIR

Members: Choon Ho DO, Morton HOFFMAN, Ram S. LAMBA, Jan H. APOTHEKER

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(4) **Project No:** 2006-050-3-100

(Jointed with Div-I: Physical and Biophysical Chemistry)

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Chair: James McQuillan

Members: Masatoshi Osawa, Derek Peak, Bin Ren, Zhong-Qun Tian, and Thomas Wandlowski

Start: 14 March, 2007

End: Completed

Budget in USD: 8.200

Web Page: http://www.iupac.org/web/ins/2006-050-3-100

(5) **Project No:** 2004-037-1-400

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Chair: Gerard Froyer

Members: Djafer Benachour, Philippe Dubois, Jean-Pascal Eloundou, Dhanjay Jhurry, Hamid Kaddami, Armand Soldera, and Françoise Winnik

Start: 01 April 2005

End: Completed

Budget in USD: 5.000

Web Page: http://www.iupac.org/web/ins/2004-037-1-400

(June 2011 - project completed - a collection of 400 ppt slides is available via the IUPAC Polymer Education Website portal (http://www.iupac.org/polyedu/page36/page38/page38.html). The slides illustrate different chapters of Polymer Science and are grouped together into 6 chapters forming an expanded introduction to polymers: Introduction to polymer science, Polymer chemistry, Polymer solid state, Simulation of polymer chains, Rheology and processing, Electrical and optical properties of polymers.

The project continues under French Polymer Group whose website (http://www.gfp.asso.fr) provides additional resources and references. Additional topics will cover physical chemistry, mechanical properties, and biopolymers.)

7. Future Projects

IUPAC operates using a project-driven system. This is done to ensure by selection that only high quality projects bear the IUPAC label, and to encourage participation by the worldwide chemistry community. Therefore you are encouraged to produce more projects and submit.

8. Information about IUPAC & Projects

For information about IUPAC Organisation structure please visit http://www.iupac.org/home/about.html

For information about IUPAC projects and project submission and review process please visit http://www.iupac.org/home/projects.html

For CCE Projects please visit

http://www.iupac.org/nc/home/projects/projects-by-divisions/project-list-for-division.html?tx_wfqbe_pi1%5Bdivision%5D=Committee%20on%20Chemistry%20Education

9. Acknowledgements

Most of data in this report was obtained from the website of IUPAC. We appreciate very much for Dr. Fabienne Meyers and Linda Tapp's excellent documentation in the web site. We also thank many internal and external reviewers for their efforts to screening and identifying excellent projects.

V. Membership renewal

Accordance with the rules set for a nominating procedure by the CCE nominating committee elections were held and a number of new officers and Titular members were duly elected.

In January 2012 the board of the CCE was changed Peter Mahaffy stepped down as chair, Eva Å kesson as secretary. Mei Hung Chiu and Jan Apotheker have taken their places. Project coordinator is Mustafa Sözbilir. As for Titular Members, they are Nina Aremo, Eva Å kesson, Choon Do, Masahiro Kamata, and Erica Steenberg.

VI. Acknowledgments

The 2012 Leiden meeting will be the first meeting for Mei-Hung Chiu as CCE Chair. We would like to acknowledge the enormous amount of work both Peter Mahaffy and Eva Å kesson have done in the past to make the CCE to a successful organization. Especially the efforts for the International Year of Chemistry are impressive. The new board faces a major challenge to continue the work of Peter in the CCE and look forward to continuously collaborating with members among IUPAC.

VII. Current Membership, Roles and Sub-Committees

- Prof. Mei-Hing Chiu (China/Taipei) – *Chair*

- Jan Apotheker (Netherlands) – *Secretary*

1. **Titular Members**

- Akesson, Eva (Sweden)
- Apotheker, Jan (The Netherlands)
- Aremo, Nina (Finland)
- Chiu, Mei-Hung (Taiwan)
- Do, Choon (Korea)
- Kamata, Masahiro (Japan)
- Sözbilir, Mustafa (Turkey)
- Steenberg, Erica (South Africa)

2. **Associate Members** (Divisional Representatives)

- Dr. Assaf Friedler (Israel)
  Physical and Biophysical Chemistry
- Dr. Javier Garcia-Martinez (Spain)
  Inorganic Chemistry
- Prof. Mary Garson (Australia)
  Organic and Biomolecular Chemistry
- Prof. Mormann, Werner
  Polymer
- Prof. Torto, Nelson
  Analytical Chemistry
- Dr. Hemda Garelick (United Kingdom)
  Chemistry and the Environment
- Dr. John Duffus (United Kingdom)
  Chemistry and Human Health
- Prof. Richard Hartshorn (New Zealand)
  Chemical Nomenclature and Structural Representation

3. National Representatives

- Al-Najjar, Abdulaziz (Kuwait)
- Boesch, Philippe (Switzerland)
- Boniface, Suzanne (New Zealand)
- Brandt, Ludo (Belgium)
- Cardellini, Liberato (Italy)
- Childs, Peter (Ireland)
- Elmgren, Maja (Sweden)
- Fahmy, Ameen (Egypt)

- Hoffman, Morton- *Conference coordinator* (USA)
- Mahmood, Farzana (Pakistan)
- Maitra, Uday (India)
- Mamlok-Naaman, Rachel (Israel)
- Overton, Tina (United Kingdom)
- Pokrovsky, Alex (Russia)
- Rahman, M. Muhibur (Bangladesh)
- Reiners, Christiane (Germany)
- Riedel, Miklós (Hungary)
- Shuai, Zhigang (China/Beijing)
- Solomon, Theodros Ethiopia
- Soon, Ting-Kueh (Malaysia)
- Tantayanon, Supawan (Thailand)
- Toshev, Borislav (Bulgaria)
- Wright, Anthony (Tony) (Australia)

Ex Officio

- Dr. Michael J. Dröscher (Germany), *COCI Representative*

Appendix A. A thank you letter prepared by Mark Cesa, Javier Garcia, Colin Humphris, Peter Mahaffy, Rovani Sigamoney, & Tony Wright

The Global Chemistry Experiment
"Water: A Chemical Solution"

United Nations Educational, Scientific and Cultural Organization · International Union of Pure and Applied Chemistry

Partners for the International Year of Chemistry 2011

25/01/2012

Dear GWE supporter,

We want to take a moment to thank you personally for your invaluable contribution to the Global Water Experiment of the IYC and communicate you that due to an increasing demand, **the GWE will be open until the end of March.** So we want to ask you for an extra effort to make this activity even more successful, as we are working to making a "big splash" also at the closing of the global activity and planning about how to transform it into a legacy activity of the IYC.

It has been a long journey that started more than two years ago at the IUPAC GA in Glasgow. We are very happy to tell you that as of the end of December, 43,500 students from 82 countries on 5 continents have shared their results on the central website. We anticipate that many more people will be registering their data in the coming weeks and months. It is believed that even more students and teachers have completed the global experiment on their own, for instance as in Brazil, where the Global Experiment was highlighted in the National Science and Technology week during October and integrated into the schools science curriculum. The Global Experiment has been extensively featured on TV and radio shows, in news articles, and on blogs. The results of the Global Experiment were presented during the IYC Closing Ceremony in Brussels to participants, who showed great interesting in the data collected, the countries involved and the use of internet and social media to outreach young people.

There are many people who made this successful story possible, but **we want to thank you personally** for your extraordinary contribution. The design of the activities was carefully done in order to provide students, especially in developing countries, with an appreciation of chemical investigation and data collection and validation. One of the main objectives of the Global Experiment is to allow educators and students from all around the world to interact using social media and share experiences, news, and pictures. The most popular social tools like Twitter and Facebook are integrated into the website, as are several YouTube videos about the experiment. The website, <water.chemistry2011.org> is now available in five languages: English, French,

Spanish, Chinese, and Russian. It includes state-of-the-art interactive tools, 2D and 3D maps showing the data, and pictures, videos, and news on the Global Experiment. The four activities of the Global Experiment are currently available in 11 languages: English, French, Spanish, Russian, Hebrew, Portuguese, Arabic, Catalan, Slovak, Polish, and Chinese.

After more than a year of dedicated planning and implementation, the project was launched at the UN World Water Day, 20–22 March in Cape Town, South Africa. Hundreds of students from Cape Town townships carried out experiments to test water quality, measure salinity and acidity, and learn how water is filtered and distilled. During the "Big Splash," which coincided with the South African National Water Week, students were exposed to different activities that emphasized the importance of water in their region. From the very beginning it was clear that if the Global Experiment was to be truly global it needed to be made available to any school, even to those without the most basic materials. In order to encourage the participation of low-income communities, 150 school packs containing 10 Global Water Kits and a School Resource Kit were sent free to over 30 countries: Senegal, Mali, Tajikistan, Ghana, The Gambia, West bank, Gaza, Nauru, Burkina Faso, Zimbabwe, Jordan, Sri Lanka, Saint Lucia, Haiti, Maldives, Grenada, Syria, Lebanon, Bhutan, Democratic Republic of Congo, Madagascar, Armenia, Tanzania, Morocco, Namibia, Oman, Pakistan, Ethiopia, Nigeria, Kenya, Botswana, and Malaysia.
Thank you very much for your making the Global Experiment probably the largest chemistry experiment ever, but certainly a great activity that aims to educate and engage young people in the key role of science in the future of this planet.
Sincerely yours,

Mark Cesa, Javier Garcia, Colin Humphris, Peter Mahaffy, Rovani Sigamoney, Tony Wright

Appendix B.
IYC_2011_Global_Water_Experiment_Monthly_Statistical_and_Dissemination_ Report_December2011

Appendix C. IYC_supplement_RSC