

Date: June 30, 2011
From: Peter Mahaffy, CCE Chair
To: IUPAC Council
Re: Committee on Chemistry Education Chair's Report to Council

This report highlights significant CCE activities in the last year, emphasizing International Year of Chemistry activities, many of which are carried out in partnership with others within and outside of IUPAC.

1. CCE mandate and mechanisms to carry out that mandate
 2. CCE Priorities for 2010-2011 biennium
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 4. ICCE Conference
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1. 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 2010 prior to and during the 21st International Conference on Chemistry Education in Taipei and will meet again during the GA 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.

Our work is carried out through projects and partnerships; through two subcommittees - Chemistry Education for Development, chaired by TM Mei-Hung Chiu (Taiwan), and the International Year of Chemistry Education Sub-committee, co-chaired by TM Mustafa

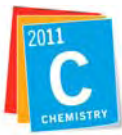
Sozibilir (Turkey) and NR Anthony Wright (Australia); and through biennial ICCE conferences. In addition, educational activities are carried out in cooperation with IUPAC divisions and standing committees, coordinated by CCE Vice-Chair and division liaison, Eva Åkesson (Sweden). CCE also has built and 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.

2. CCE Priorities for 2010 -2011 biennium

The six priorities that have shaped the work of CCE during the 2010-2011 biennium were set at the last IUPAC GA in Glasgow:

- (a) To maintain a primary focus on working with other partners and stakeholders to implement the International Year of Chemistry
- (b) To foreground the importance of learner-centred chemistry curriculum and education, both in the developed and developing world. The extent to which this is done should be one criterion used to assess educational projects.
- (c) To give priority to initiatives that highlight the relationship between chemistry and sustainable development, consistent with the goals of the IYC and the UN Decade for Education for Sustainable Development.
- (d) To build chemistry education networks, using fully the multicultural competence within CCE.
- (e) The biennial International Conferences on Chemistry Education are flagship activities for CCE. We continue to seek to more fully integrate ICCE activities into the work of CCE and use ICCE conferences to report the outcomes of CCE projects and bring participants together to implement CCE strategies
- (f) To continue to support initiatives that raise awareness and understanding of ethical issues that are important in chemistry.


Setting new priorities for the next biennium that will sustain key IYC activities, themes, and will build on the partnerships of IYC will be a major focus of our CCE meetings in Puerto Rico at the 2011 General Assembly.

<h3>3. CCE IYC-2011 Activities and Partnerships</h3>	 <p>International Year of CHEMISTRY 2011</p>
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Consistent with our first priority for the biennium, CCE has focused our resources and global educational networks on IYC activities, programs, and partnerships in the time since my last Bureau report. In that context, I provide below an update on on-going projects, new projects, and proposed projects that are most relevant to our priority to “work with other partners and stakeholders to implement the International Year of Chemistry.” Since IYC is about people –

both using the tools of chemistry and benefitting from them, I have included pictures from many of the IYC activities with my report and some web links for further information.

Some of the NRs have included reports on IYC activities in their countries for the upcoming CCE meetings at the General Assembly. I believe Council may be interested in scanning these reports to give yet another measure of some of the activities carried out during IYC-2011, at the midpoint. These are included in **Appendix I** to this report.

3.1 Global Water Experiment (GWE)	http://water.chemistry2011.org/web/iyc
<p>The Global Launch!</p> <p><i>"Tomorrow is the end and the kids have been filmed (yesterday we had 3 schools and the footage is amazing - the kids were sooo excited that I absolutely loved every minute).</i></p> <p><i>I think we achieved our aim of stimulating the kids - I have never heard kids shout out "Chemistry is exciting, chemistry is fun"</i></p> <p>March 22, 2011 Report from Rovani Sigamoney, UNESCO, in South Africa representing the Global Water Experiment Team for "Big Splash" – the global launch of the GWE, held in conjunction with the UN World Water Day and the national Water week in Cape Town, South Africa. The launch enabled almost 1000 school children to do the GWE over 4 days. In many cases this was their first exposure to hands-on science.</p> <p>Youtube Big Splash UNESCO Video</p>	 <p>Cover photo of "The Business of Chemistry" IYC supplement to the Washington Post, distributed on March 30 to 585,000 readers in the North East of the US. Depicts provision of potable water in rural Cambodia (photo by Steven Chee)</p>

The Global Water Experiment (GWE) come a central flagship unifying activity for IYC, which we hope will reach hundreds of thousands of young people around the world with hands-on experiments related to the substance water, which is vital to all forms of life on earth.

Under the theme, *Water: A Chemical Solution*, the GWE pulls together two complementary threads: (a) Chemistry provides solutions to some global challenges with respect to potable water and (b) Chemistry provides understanding of the fundamental properties of water and its solutions.

The experiment is targeted at school students at all levels of schooling and achieves two educational outcomes:

- Students carry out activities that teach them important chemistry and help them learn some experimental methods.
- Students share the results of their activities with others around the world through the Global Experiment website and learn that chemistry is an international discipline.

Following over a year of dedicated efforts of the planning and implementation teams, the project launched successfully on the UN World Water Day, March 20 - 22, in Cape Town, South Africa. Hundreds of 15-18 year old students from Cape Town townships carried out experiments to test water quality, measure salinity and acidity, and learn how water is filtered and distilled. I can not emphasize strongly enough to the Bureau the significance of the global partnership that has come forward to implement this global IYC unifying activity. In addition to the partnership with UNESCO and the involvement of IUPAC CCE members, members of three IUPAC Divisions, and three IYC management committee members, the task force has benefitted from the very strong participation of chemical industry who are represented by BASF, CEFIC (which served as secretariat of the group in the planning stages), the American Chemistry Council, and the International Water Association. We would not have a global experiment without the efforts of a large number of incredibly dedicated volunteers. To single out just a few of the many key individuals, IUPAC owes a huge debt of gratitude to the implementation team of Colin Humphris, Mark Cesa, Javier Garcia, and Tony Wright from IUPAC and Julia Hasler and Rovani Sigamoney from UNESCO. For the global launch, Rovani Sigamoney from UNESCO travelled to Cape Town to introduce the Global Water Experiment and CCE NR Erica Steenberg (South Africa) was on the ground helping young people carry out the experiments. Each of the members of the full team, however, have worked very hard to get to this point and deserve our thanks – see the listing at: <http://water.chemistry2011.org/web/iyc/the-team>.

This partnership points the way forward as an exemplar of the bridges that IUPAC must both build and strengthen if the goals of IYC-2011 are to be sustained into the future.

While the launch of the Global Experiment marks the end of the planning and developing phase of the experiment, there is a continuing need of support for running the experiment for the rest of the year until GWE closes with the Brussels IYC closing ceremony.

The major resource for the experiment is the collection of four activities that is freely available for download from the IYC Global Experiment website. Translation of these activity protocols into eight languages has been completed at the time of writing this report. Each activity has been designed to require minimal, readily available materials and equipment.

The support of the IUPAC National Adhering Organizations is critical and will not only benefit the Experiment by increasing participation, but will provide a major avenue of contact between the NAOs and national educational systems, allowing the NAOs to communicate the IYC goals of increasing the public appreciation and understanding of chemistry in meeting world needs, of encouraging interest in chemistry among young people, and of generating enthusiasm for the creative future of chemistry.

To reach broadly around the world, the task group welcomes the help of each member of Council to (a) become aware of the IYC website for the experiment <http://water.chemistry2011.org/web/iyc> and (b) to inform NAOs, national IYC committees, teachers and schools, and others within our circles of influence. Please sign up and register yourself as a participant the same day you read this report!

Finally, the reach of the global experiment into countries where resources for equipment are unavailable is very limited, as schools in these contexts need to obtain the kits to carry out the global experiment. These kits are a legacy IYC item, and will permit microscale chemistry to be carried out far beyond 2011. A school pack of kits and instructions for teachers that will enable 100 students to carry out the experiment has an average delivery cost to a school of US \$300. It has always been our hope that IYC would provide a legacy

for young people around the world and that funding would be available to support activities in countries without the resources for major IYC global activities. The implementation team would urge you to help in any way you can by contacting potential sponsors who might allocate IYC contributions toward the provision of kits in poorly resourced settings, so that this can truly be a global experiment. Decisions about the allocation of kits will be made by UNESCO, working through their experience and the UNESCO Associated Schools Network. A complete update on the Global Water Experiment has been provided by task group co-chair Javier Garcia-Martinez, who is a member of IUPAC Division II and the AM on CCE. This is available as **Appendix II** to my report.

3.2 Visualizing and Understanding the Science of Climate Change



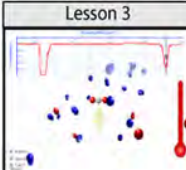

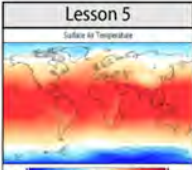




www.ExplainingClimateChange.Com

and

<http://www.chemistry2011.org/participate/featured-ideas/explainingclimatechange/>

Visualizing and Understanding the Science of Climate Change

"Education in and about chemistry is critical in addressing challenges such as global climate change, in providing sustainable sources of clean water, food and energy and in maintaining a wholesome environment for the well being of all people..." -UN International Year of Chemistry resolution

<p>Lesson 1</p>  <p>Introduction to Earth's Climate</p>	<p>Lesson 2</p>  <p>Is Climate Change Happening?</p>	<p>Lesson 3</p>  <p>Heating It Up: The Chemistry of the Greenhouse Effect</p>
<p>Lesson 4</p>  <p>Climate: A Balancing Act</p>	<p>Lesson 5</p> <p>Scale of Temperature</p>  <p>A Global Issue: The Impacts of Climate Change</p>	<p>Lesson 6</p>  <p>Climate Feedback Loops</p>
<p>Lesson 7</p>  <p>Climate Change and the Oceans</p>	<p>Lesson 8</p>  <p>Greenhouse Gases: A Closer Look</p>	<p>Lesson 9</p>  <p>What Now? : Mitigation of Climate Change</p>

The UN IYC resolution that "education in and about chemistry is critical in addressing challenges such as global climate change, in providing sustainable sources of clean water, food and energy and in maintaining a wholesome environment for the well being of all people..." A second legacy IYC-2011 activity that supports this IYC goal is the global release

at the time of the IYC opening ceremony of the first 4 modules (Phase 1) of www.ExplainingClimateChange.Com, a set of peer-reviewed, interactive, web-based materials to help learners visualize and understand the underlying science of climate change. Recognizing that the chemistry profession and chemistry educators play a crucial role in creating understanding about global climate change and working toward solutions, the materials include a special emphasis on the role fundamental chemistry plays in processes affecting earth's radiation balance.

Substantial progress has been made in the past two months on the preparation of the last 5 modules, and additional funding is being sought to complete this important resource so Phase II can be finished, reviewed, tested, and released prior to the end of IYC-2011.

The interactive materials have been created by the visualization research team of undergraduate students and faculty at the King's Centre for Visualization in Science (King's University College, Edmonton, Canada), in partnership with RSC, UNESCO, ACS, and individuals from CCE and the Federation of African Societies of Chemistry. I am particularly grateful for the very substantial in-kind contributions of RSC, who helped in preparation of early written materials, and piloted the draft web materials with groups of teachers.

I am the task group leader for this project. The full list of team members can be found at: <http://www.explainingclimatechange.ca/about.html>.

3.3 Global Stamp Competition: Chemistry as a Cultural Enterprise

www.chemistry2011.org/participate/activities/show?id=110
and
http://mtn.e2bn.net/satw_design_a_national_stamp/



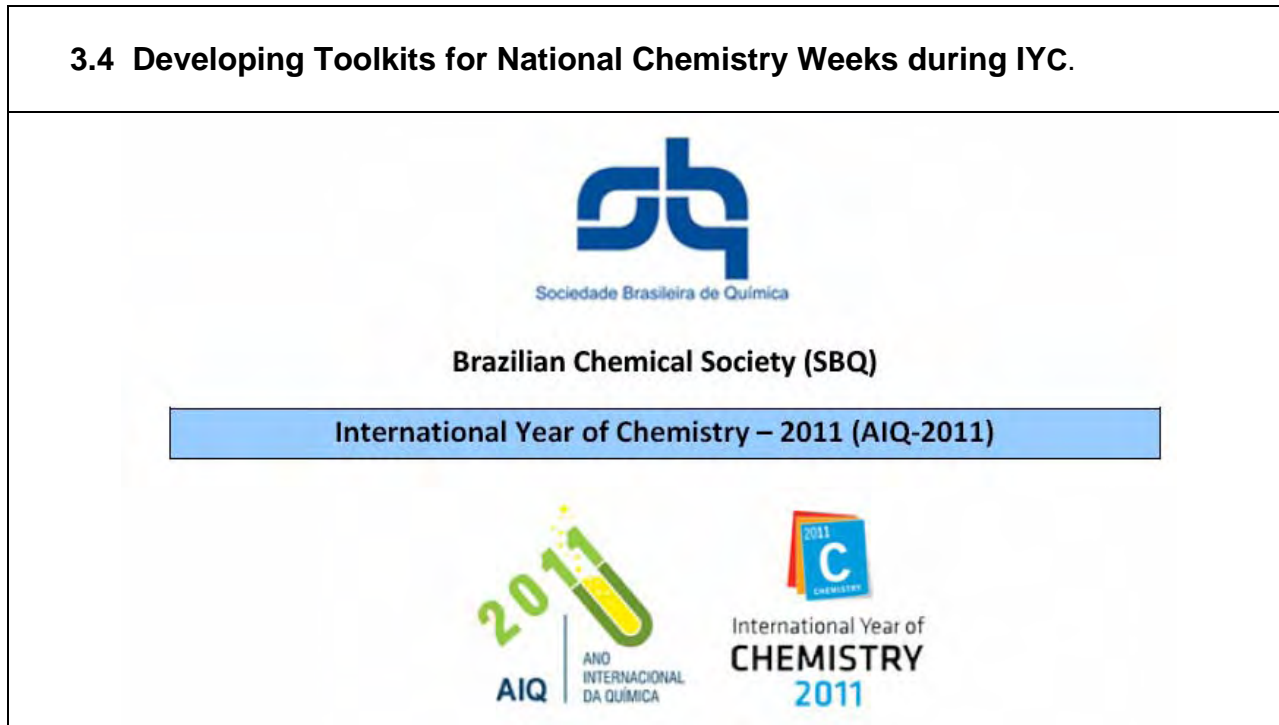
**Entry from Ethiopia for the
Global Stamp Competition**

Report by CCE TM Lida Schoen (Netherlands).

The Global Stamp Competition was open to students all over the world in 3 age categories (12-14, 15-18 and undergraduates from all subjects (not only chemistry!). The aim of the global competition is to design a national stamp that reflects on 'Chemistry as a Cultural Enterprise', showing the impact of chemistry on the culture and/or every day life. The winning stamps will be displayed during the IYC 2011 Closing Ceremony in the Grand Palais in Brussels, Belgium. The organizers are working to facilitate the designers of the winning stamps to attend a student programme at the closing ceremony on December 1, 2011. Deadline for submission was June 15, 2011, at which time 245 stamps from 18 countries had been submitted.

The global stamp competition was featured in Chemical & Engineering News on March 13 <http://pubs.acs.org/cen/email/html/8911newscrips.html>
This IYC project is championed by CCE TM Lida Schoen and NR Christiane Reiners (Germany).

3.4 Developing Toolkits for National Chemistry Weeks during IYC.



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

The goal of this project was to develop toolkits for national chemistry days and weeks during International Year of Chemistry (IYC) 2011 to raise awareness of the importance of chemistry as the central science by highlighting the applications of chemistry in daily life. Objectives are:

- To identify the countries with established national chemistry days and weeks.
- To collect information about the planned activities for IYC2011 from countries which already have established national chemistry days or weeks.
- To develop toolkits to facilitate the widespread celebration of national chemistry days or weeks around the world, particularly in countries that do not have a strong tradition to date of doing so.

The Task Group met in Taipei prior to CCE meeting during 21st ICCE to review the information collected from NAOs and ANAOs in response to the initial survey sent out by the secretariat. Responding countries included Brazil, France, Jordan, Malaysia, Pakistan, Puerto Rico, USA and Venezuela. To increase the response rate, the task group assigned each member responsibility to collect information from the following regions.

Ram Lamba: Federation of Latin American Chemical Societies (FLAQ), India and Sri Lanka.

Morton Hoffman: North America (ACS, CSC)

Choon Ho Do: Federation of Asian Chemical Societies (FACS)

Jan Apotheker: Federation of European Chemical Societies (EuCheMS)

Mustafa Sözbilir: Middle East (Union of Arab Chemists), Northern Africa, Israel

To gather information from Africa and Russia, two outside persons (Engida Temechegn: Federation of African Chemical Societies (FASC) AND TM Natalia Tarasova from The Mendeleev Russian Chemical Society, request for other nations in former USSR) were requested to help.

The following activities were suggested by the task group in their communication with countries:

1. Each nation is encouraged to set up a web site in local language devoted to IYC 2011 to share the information and this web site should have a link to official IYC 2011 web site with official logo.
2. University professors, people from chemical industry and students (chemistry, chemistry engineering, chemistry teacher training, science education, students from chemistry related departments) are recommended to go to schools to enlighten students and parents about chemistry, chemical industry and its role in our life. Similarly students and parents should be invited to the universities and chemical industries (open house days/weeks) to be informed about chemistry, chemical industry and its role in life.

Recommendation: Teachers should be involved to reach the general public as they have the primary contact with students.

3. Lectures and meetings should be organized by chemical societies, state departments, universities, ministry of educations, private institutions about chemistry, chemical industry for different publics. Well known chemists both from the individual country or abroad could be invited to the lectures.
4. If there is no national chemistry/science day or week in a particular country IYC2011 could be a great opportunity to start a chemistry/science day/week.

19 countries have now provided reports in English about their planned activities for IYC 2011, and their reports are published on the project web site at

<http://www.chemistry2011.org/participate/activities/show?id=61>

3.5 Flying Chemist Program (FCP)

November 2010 – Croatia
February 2011 – Ethiopia



FCP – Ethiopia

The Flying Chemists Program is integrated into the activities of CCE and the Chemistry Education for Development subcommittee chaired by TM Mei-Hung Chiu (Taiwan), and has the overall goal to provide emerging or economically disadvantaged countries means to improve the teaching and learning of chemistry at primary, secondary, and tertiary levels. The FCP provides a country with the expertise and external sounding board to strengthen chemistry education and to assist it in its own development. Two very successful FCP program visits have been held in the past year: Croatia (November 2010), and Ethiopia (February 2011). The Ethiopia FCP program events were scheduled to coincide with the official national launch of IYC in Ethiopia, the country that led the way in obtaining designation at UNESCO and the UN.

The program of activities in Croatia and Ethiopia both followed a model used successfully in the Philippines, India and Sri Lanka in the three previous FCP initiatives, namely bringing together at the national level a critical mass of chemistry educators to improve chemistry education, facilitated by external resource persons with expertise in areas targeted by the country, and including experience with previous FCP programs.

The Croatian FCP brought together a partnership including the Ministry of Science, Education and Sport; the Croatian National Teacher national Education and Teacher Training Agency (ETTA); and the Croatian Chemical Society. 120 participants from around Croatia and a few from the neighbouring countries of Macedonia and Bosnia came together to identify ways to strengthen chemistry education at the primary and secondary levels.



FCP – Croatia, Nov. 2010



FCP – Ethiopia, Feb. 2011

Ethiopia carried out a survey of chemistry education at the secondary and tertiary level in the Fall of 2010, and then brought together a network of chemists and chemistry educators to review the results and discuss ways to enhance the capacity of the country to provide quality chemistry education at these levels. Particular emphases were placed on laboratory instruction; visualization at the molecular level; designing and implementing contextualized and learner-centred chemistry education; promoting innovative ways of training quality chemistry teachers; and placing chemistry education in rich contexts related to local, national, regional, and global challenges. The FCP visit began with a half-day official launch of IYC in Ethiopia, and after three days of workshops, lectures, and brainstorming, was followed by the 27th Annual Conference of the Chemical Society of Ethiopia. The FCP visit was planned in consultation with both the Chemical Society of Ethiopia and the Federation of African Societies of Chemistry. The FCP program was made possible by supplementing the small amount of IUPAC funding with additional support from the Royal Society of Chemistry (UK), UNESCO, the Governments of Ethiopia and Germany, and the Federation of African Societies of Chemistry.

The Ingenuity of Ethiopian FCP participants was covered recently by Chemical & Engineering News <http://cenblog.org/iyc-2011/2011/03/chemists-tell-us-your-story/#more-39>. Ethiopian FCP program co-organizer and president of the Federation of African Societies of Chemistry, Temechegn Engida, has written an essay in the **June 27, 2011 special issue of Chemical and Engineering News** on IYC, in which he focuses on the role for Chemistry in boosting global sustainable development and highlights the importance of improving chemistry education in Ethiopia and other countries.

Chemistry Education for Development Sub-committee chair Mei-Hung Chiu (Taiwan), the CCE chair, and several members of CCE worked closely with local organizers to plan and carry out these two FCP visits, and to ensure that sustainable outcomes ensue. A full report by Mei-Hung Chiu on these two FCP programs as well as the Network of InterAsia Chemical Educators (NICE) is provided in **Appendix III**.

Preliminary plans are underway to hold our next FCP program in Latin America, likely with activities both in Mexico and a Central American Country, making use of the same team of external facilitators.

3.6 Young Ambassadors for Chemistry (YAC)

1. **YAC Malaysia** April 5-6, 2010
2. **YAC Philippines** April 12-14, 2010
3. **YAC Taiwan** August 12, 2010
4. **YAC Ethiopia** February 18-19, 2011
5. **YAC South Africa** early May, 2011.



YAC - Malaysia

The YAC program was originally set up as a partnership between CCE and Science Across the World. Using a '*Train the Trainers*' approach, YAC facilitators have worked with teachers and students to increase public appreciation for and understanding of chemistry in Argentina, Bulgaria, Egypt, Jordan, Korea, Lithuania, Russia, South Africa, Taiwan, Mauritius, and Cyprus. In the past year, the program has run in 5 additional locations.

The report below of the Research Based evaluation of YAC (www.iupac.org/web/ins/2007-005-2-050), is authored by CCE TMs Lida Schoen (Netherlands) and Mei-Hung Chiu (Taiwan), and NR Erica Steenberg (South Africa)

Since April 2010, the YAC team organized 4 more YAC course + events:

6. **YAC Malaysia** (9) in Ipoh on April 5-6, 2010 (www.xs4all.nl/~amschoen/YACMalaysia);
7. **YAC Philippines** (10) in Manila on April 12-14, 2010 (www.xs4all.nl/~amschoen/YACPhilippines)

8. **YAC Taiwan** (11) in Taipei on August 12, 2010 during ICCE 21 (www.xs4all.nl/~amschoen/YACTaiwan);
9. **YAC Ethiopia** (12) in Addis Ababa on February 18-19, 2011 (www.xs4all.nl/~amschoen/YACEthiopia);
10. YAC South Africa **(13) to come** in Grahamstown during the Annual Science Festival, early May, 2011.

Spin-off:

1. YAC activity during the 2nd Annual Meeting of **Kuwait**, 17-18 April 2011 (invitation by president Dr. Abdulaziz Alnajjar)
2. YAC activity during the 6th Jordanian International Conference of Chemistry in Irbid, **Jordan**, 19-21 April 2011 (invitation by president Prof. Sultan Abu-Orabi)

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 resourcesⁱ, that stimulate international collaborationⁱⁱ between schools / universities and developed a series of experimentsⁱⁱⁱ, related to chemistry in daily life, which can be safely and easily performed in public^{iv}.

Summary YAC courses and events since April 2010

Country	Initiator	Local organizer(s)	Number teachers	Venue course
Malaysia	Datuk Dr Soon Ting Kueh IKM ^v	IKM, Perak branch, chair Captain Chan Weng Kwai	30	School SMJK Ave Maria Convent
Philippines	Prof. Fortunato B. Sevilla III	PACT ^{vi} , chair Prof Myrna Rodrigues	40	School: Asian-Pacific College Learning Center for Teachers: FUSE-LCT ^{vii}
Taiwan	Prof. Mei-Hung Chiu	Shiao-Lan Chung	17	TICC ^{viii}
Ethiopia	Dr. Temechegn Engida, President of FASC ^{ix}	Dereje Kidane Mariam, Getachew Atnafu (Addis Ababa University)	41	University of Addis Ababa

Country	Number students	Public venue	Public
Malaysia	60	covered CPS school hall	Many parents, relatives and friends with many more children, teachers from other schools, teacher students, officials (e.g. local government), press
Philippines	60	ShoeMart-Manila shopping mall ^x	Many passing shoppers on a busy Saturday afternoon, VIPs
Taiwan	30	Square in front of City Hall opposite Taipei 101 ^{xi}	Passers by, ICCE 21 participants, VIPs
Ethiopia	40	Spatial pedestrian area at a busy round about, in front of the Ministry of	Many, with an increasing number of other teachers and children taking part on a very

		Education	busy Saturday afternoon, VIPs e.g. Ministry of Education
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Public, students and teachers. We carried out evaluations (2008 – 2011) in 7 countries (also Taiwan, Mauritius and Cyprus). In all countries the teachers, students and the public reacted (very) positively about course, event and public image, so the way we organize the different parts generates a lot of enthusiasm. We are going to change the questionnaires to be able to understand better, what exactly can be done in a country to implement this kind of education. A more discriminating conclusion can be drawn about the use of external resources: a larger variety related to economical and educational state of art in the visited countries.

Local **organizers** tell us they 'always' need more time than they got since the green light from the initiator for the organization. Although we thought we wrote complete (visual) instructions, it's sometimes not clear enough. We plan to produce an instructional video that can be consulted online.

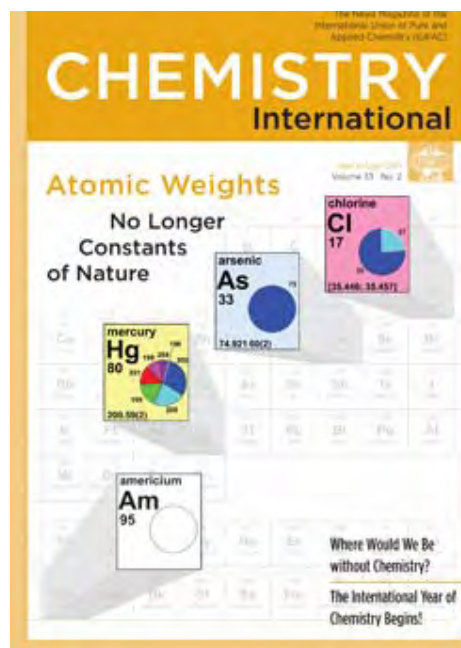
An important issue is the needed chemicals and packaging. This can be a problem in less developed countries with 'no' chemical industry and suppliers for 'school' chemicals. It appears to be difficult to find out before our visit. Up till now we always managed, usually with sponsorship from industry.

Country	Organisers	External evaluators
Malaysia	Initiator 'orders' organisation too late, more time needed.	Need to have the details for preparation more specific
Philippines	Initiators 'orders' organisation too late, more time needed.	Well organized
Taiwan	Familiar with the training and event	Well organized
Ethiopia	Not familiar with this kind of training and event. Limited means available	See below

The **external evaluators** are positive; they usually recommend small local changes, related to the school system and possible new chances. They all like to have the workshop repeated (also in other cities) and generate suggestions. We noticed that YAC is well established in Cyprus and Taiwan. That means more YACs in other cities/provinces and during Science Fairs. We expect many more activities in IYC 2011!

An update on the South Africa YAC will be provided during the Puerto Rico CCE meetings by Lida Schoen, Erica Steenberg, and Mei-Hung Chiu.

3.7 Isotopic Periodic Table (Division II Project)



“Many of us were taught that the standard atomic weights we found in the back of our chemistry textbooks or on the Periodic Table of the Chemical Elements hanging on the wall of our chemistry classroom are constants of nature. This was common knowledge for more than a century and a half, but not anymore.” Tyler Coplen and Norm Holden in the feature article in the March-April 2011.

One of the IUPAC projects that will have great impact on the day-to-day teaching of chemistry in secondary schools is the Division II project to develop a new periodic table of the isotopes. CCE has played a very small role in supporting this project to date and looks forward to helping identify teachers to pilot the new periodic table and supporting materials, and also to help teachers prepare for its introduction into their classrooms.

For full details see the March/April 2011 CI issue and the feature story at:
http://www.iupac.org/publications/ci/2011/3302/2_coplen.html

The task group meets again in Calgary the week before the IUPAC General Assembly, and further updates can be provided following that meeting. The colour print version of the isotopic periodic table will be featured as an insert in the July-August 2011 Chemistry International Issue, which will be distributed to delegates at the Puerto Rico meeting. At the time of submission of this report, the electronic version of CI was not yet available to provide you with a link.

4. International Conference on Chemistry Education (ICCE)



Mei-Hung Chiu, 21st ICCE organizer



Focused conference participants

The biennial International Conference on Chemistry Education (ICCE) series is a flagship activity for CCE, bringing together chemistry educators from around the globe to address issues in and set directions for chemistry education. The 21st ICCE, held on August 8-13, 2010 in Taipei, Taiwan, focused on “Chemistry Education and Sustainability in the Global Age.” 333 participants from 36 countries came together during the conference week for 10 plenary lecturers, five workshops, three symposia, one presidential panel discussion, one chemical demonstration, 145 oral presentations, 74 posters, and a variety of other activities.

At its meeting in Glasgow, CCE received two bids for the ICCE in 2012, and, after presentations by the individuals involved, chose the one from Italy; ICCE 2012, which has the support of the Italian Chemical Society, will be held July 15-20, 2012, in Rome. The meeting will be held jointly with the European Conference on Research and Innovation in Chemical Education (ECRICE), which is also a biennial conference that meets in even-numbered years.

At its meeting in Taipei in August 2010, CCE received a preliminary expression of interest from a group at the University of Toronto, Canada, to host the ICCE in 2014; the group has prepared a bid for consideration by CCE at its meeting in San Juan at the time of the IUPAC Congress and General Assembly. Looking forward to 2016, 2018 and beyond, members of CCE and other interested parties in Africa, Southeast Asia, Europe, and Latin America are being contacted to consider hosting future ICCE meetings.

Prof. Mei-Hung Chiu, TM from Taiwan did a spectacular job of organizing the 21st ICCE in Taipei. Morton Hoffman, dedicated NR from the USA has also served CCE and IUPAC exceptionally well as conference coordinator in working with potential bids to host the conference and in raising awareness within CCE about chemistry education related conferences around the world.

5. Report of the CCE Project Group to the CCE Chair for the Bureau Meeting

Prepared by Prof. Mustafa Sözbilir (Turkey) – *Project Coordinator*

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:** 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 Åkesson, 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. Membership renewal

Balancing the importance of bringing in new ideas and enthusiasm with maintaining on-going activities, the CCE officers have been concerned to formalize procedures for renewal of membership and to recommend through an election process the titular members and officers to be appointed by the IUPAC president. We also wanted to bring our procedures more closely in line with the processes used by Subject Divisions. Following consultations with the IUPAC President and Secretary General, and prior to our CCE meeting in Taipei in August 2010, the chair appointed an ad-hoc committee to analyze our current practices, as well as those used by other standing committees and divisions and to recommend a process for nomination and election. The committee, consisting of Eva Åkesson (CCE Vice-Chair), Richard Hartshorn (CCE AM and Division VIII president), Lida Schoen, CCE TM and Morton Hoffman, CCE NR. CCE has approved the following procedures, which we are currently implementing for 2012-2013, under an abbreviated timeline, following a report on these procedures to the Bureau at its Spring 2011 meeting. We anticipate having completed elections for titular members and officers by the time of the General Assembly.

Recommended Procedures for CCE Nominating Committee

1. CCE chair appoints a nominating committee, consisting of 5 members including a chair. Normally the nominating committee will include 2 TMs, 1 NR, 1 AM and 1 other member from any one of these groups or from outside CCE. Nominating committee members should be selected from those not eligible for or intending to stand for one of the vacancies.
2. The nominating committee works with the IUPAC secretariat to identify the vacancies, and then solicits nominations from CCE members (AMs, TMs, NRs) and from NAOs (through the IUPAC secretariat). Approval should be obtained from candidates who are being nominated.

3. The nominating committee would put forward a slate of candidates (with a brief description of each candidate for the available TM and officer positions (Chair – 4 years, Chair-Elect -2 years, and Secretary – 2 years) and present this to the CCE chair.
4. The CCE chair passes on the slate of candidates to the IUPAC secretariat, who will manage the procedure for voting, as is the case for subject divisions. CCE TMs, Officers, and AMs will vote on the slate of candidates. A The IUPAC secretariat will inform the nominating committee and the CCE chair of the outcome.
5. The nominating committee will remind divisions to recommend AMs for appointment to CCE, before the IUPAC GA, so transition can be arranged with new AMs
6. The CCE chair will then recommend to the IUPAC president the candidates for appointment to new TM, AM, and officer positions.
7. The IUPAC President, in consultation with the Executive Committee, shall appoint the officers, titular members, and associate members.
8. The nominating committee will work with the CCE officers to recommend to the IUPAC secretariat who should be appointed as NRs, working from the list of nominees brought forward by the NAOs.

Recommended Timeline – CCE Nominating Committee (for 2012-2013 biennium)

March 31, 2011. CCE members receive suggested nominating committee procedures and asked for comments by April 15, 2011

April 15, 2011. CCE Chair appoints nominating committee

June 1, 2011. Nominating committee puts forward slate of candidates to CCE chair

June 15, 2011. IUPAC secretariat oversees the start of the voting

July 15, 2011. CCE chair brings recommendation to IUPAC president for appointment of CCE officers, TMs and AMs.

Recommended Terms of appointment for chair, chair elect and secretary

The period of service of Chair shall be four years. The period of service of Chair Elect shall be for 2 years, and of Secretary, 2 years (renewable). Normally, the Chair will serve an additional 2-year term as past-chair, so that at any given time the Chair will be supported by either a Past-Chair or Chair elect.

The period of service of Titular Members shall be four years, renewable for a further term of four years. The period of service of Associate Members shall be two years, renewable to a total period of eight years. The period of service of National Representatives shall be two years, subject to re-nomination and reappointment to a maximum period of service of twelve years.

The sum of the years of service as a Titular member and as the Chair, Chair elect, Secretary shall not exceed ten years.

Note: For the 2012-2013 biennium we will need to elect a chair, secretary, and a number of TMs to be determined based on the length of service of existing TMS, as well as AMs and NRs. Since the term of office of chair is 4 years, we would elect a chair-elect for the 2014-2015 biennium.

7. Acknowledgments

The Puerto Rico meeting represents my final Council meeting as CCE Chair. It has been a privilege to serve with the dedicated members of CCE as we seek to: advise IUPAC on matters

relating to chemistry education, including the public appreciation and understanding of chemistry; maintain a portfolio of educational projects and coordinate the educational activities of IUPAC; monitor chemistry education activities throughout the world and disseminate information relating to chemical education, including the public appreciation and understanding of chemistry; and 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. (*CCE Terms of Reference*).

It has been both challenging and rewarding to serve IUPAC at this interface of science and education during the period leading up to and including our International Year of Chemistry. I would like to thank my colleagues on Council for their support in raising the profile for education in and about chemistry during IYC both within and beyond IUPAC and for helping to build partnerships with potential to fundamentally transform IUPAC's role in the future. I am convinced that if we attend to these partnerships, this will be the most important IYC legacy for IUPAC!

I also owe a large personal debt of gratitude to each of the CCE TMs, AMs, and NRs, who have worked together in such a constructive and supportive way over the past 5 years to identify needs and find mechanisms to address them. Special thanks is due to fellow CCE officer Eva Åkesson, who has served in such a professional capacity as secretary, division liaison, and most recently vice-chair, always adding large aliquots of wisdom and good advice.

The work CCE carries out could not be done without facilitation by the secretariat – in particular I would like to acknowledge the tremendous support given to our work and to IUPAC's mandate in this area by Fabienne Meyers, both for her patient and encouraging help with processes, and for her leadership and creative flair in communicating so effectively chemistry and chemistry education through Chemistry International and the IYC website.

8. Current Membership, Roles and Sub-Committees

- Prof. Peter G. Mahaffy (Canada) – *Chair*
- Prof. Eva Åkesson (Sweden) – *Vice-Chair and division liaison*

Titular Members

- Prof. Mei-Hung Chiu (China/Taipei)
- Prof. Choon H. Do (Korea)
- Prof. Ram S. Lamba (Puerto Rico)
- Dr. Lida Schoen (Netherlands)
- Prof. Mustafa Sözbilir (Turkey)
- Prof. Natalia P. Tarasova (Russia)

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. Jean-Pierre Vairon (France)
Polymer
- Prof. Maria Filomena Camões (Portugal)
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

National Representatives

- Prof. Tony Wright
Australia
- Prof. Muhammed Muhibur Rahman
Bangladesh
- Ludo Brandt
Belgium
- Prof. Borislav Toshev
Bulgaria
- Prof. Zhigang Shuai
China/Beijing
- Prof. Ameen Farouk M. Fahmy
Egypt
- Prof. Theodros Solomon
Ethiopia
- Ms. Nina H. K. Aremo
Finland
- Dr. Christiane Reiners
Germany
- Prof. Miklos Riedel
Hungary
- Prof. Uday Maitra
India
- Prof. Peter E. Childs
Ireland
- Dr. Mordechai Livneh
Israel
- Prof. Liberato Cardellini
Italy
- Prof. Masahiro Kamata
Japan
- Prof. Abdulaziz A. Al-Najjar
Kuwait
- Dr. Ting-Kueh Soon
Malaysia
- Prof. Farzana Mahmood
Pakistan

- Prof. Erica Steenberg
South Africa
- Prof. Maja Elmgren
Sweden
- Prof. Phillippe Boesch
Switzerland
- Prof. Morton Z. Hoffman – *Conference coordinator*
United States
- Prof. Tina Overton
- United Kingdom

Ex Officio

- Dr. Michael J. Dröscher (Germany), *COCI Representative*
- Audra Wolfe (USA), *Chemical Heritage Foundation*

Subcommittee on Chemistry Education for Development

- Prof. Mei-Hung Chiu (China/Taipei), *Chair*
- Prof. Jan Apotheker (Netherlands)
- Dr. Chin-Cheng Chou (China/Taipei)
- Prof. Masahiro Kamata (Japan)
- Prof. Ram Lamba (Puerto Rico)
- Prof. Christiane Reiners (Germany)
- Dr. Lida Schoen (Netherlands)
- Dr. Erica Steenberg (South Africa)
- Prof. Natalia Tarasova (Russia)

International Year of Chemistry Education Sub-Committee

- Prof. Mustafa Sözbilir (Turkey), *co-chair*
- Prof. Anthony Wright (Australia), *co-chair*
- Prof. Liberato Cardellini (Italy)
- Prof. Christiane Reiners (Germany)
- Dr. Lida Schoen (Netherlands)
- Prof. Mustafa Sözbilir (Turkey)
- Prof. Natalia Tarasova (Russia)

CCE Project Group

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

**Appendix I: Reports on National IYC activities to CCE
(submitted as of June 30, 2011 – further reports are forthcoming prior to CCE
meetings)**

June 30, 2011

Peter Mahaffy: Report on Canada IYC activities

The Chemical Institute of Canada has given leadership, along with participants from industry, government labs, schools and universities to launch a variety of initiatives during IYC. These include a commemorative stamp by Canada Post, to be issued in October 2011, country-wide participation in Science Rendezvous in May, an IYC 2011 YouTube contest, publicizing Canadian Chemistry Milestones, and special content in ACCN, Canadian Chemical News each month.

Full details are available at www.iyc2011.ca and I've captured below a screen from the page to give you a fuller list of What's Happening.

Home Chemical Institute of Canada Contact Us Media French

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2011
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Canada IYC

International Year of
CHEMISTRY
2011

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What is IYC? Plan Your Own Events Programs and Activities Sponsorship

Programs and Activities

Find out What's Happening

- IYC hits prime-time TV on Jeopardy!
- Guinness World Record
- Milestones in Canadian Chemistry
- YouTube Contest
- Special Magazine Content
- Commemorative Stamp
- Science Rendezvous
- Ask a Laureate
- National Chemistry Week
- Chemistry Olympiad
- Partnerships with Developing Countries
- Global Water Experiment
- Lecture Tours
- Discovery Channel - IYC Featured on Daily Planet
- Women Sharing a Chemical Moment in Time
- Periodic Table Gets a New Look
- Calendar of Events

You are here: Home > Programs and Activities > Find out What's Happening

Find out What's Happening

To help celebrate the achievements of chemistry and its contributions to the well-being of mankind — meeting the global challenges of clean air, safe water, healthy food, dependable medicine, advanced materials, eco-friendly products and sustainable energy — the organizers of the Canadian IYC celebrations are planning a variety of initiatives, including a YouTube video contest, a series of Milestones in Canadian Chemistry, a commemorative stamp and several other events and outreach programs throughout the year.

- [Enter our IYC 2011 YouTube contest](#)
- [Read the special IYC 2011 magazine content in ACCN, The Canadian Chemical News](#)
- [View the IYC 2011 commemorative stamp from Canada Post](#)
- [Come out and celebrate IYC 2011 at Science Rendezvous](#)
- [Get involved in National Chemistry Week](#)
- [Participate in the Chemistry Olympiad](#)
- [See how we're partnering with developing countries for IYC 2011](#)
- [Learn about the IUPAC Global Water Experiment for IYC 2011](#)
- [See what else is happening on our calendar of events for IYC 2011](#)
- [Plan your own local event IYC 2011 event](#)
- [Discover Canadian Chemistry Milestones](#)
- [What's Happening Globally](#)

IYC Activities in Ethiopia

The Chemical Society of Ethiopia in collaboration with the Federation of African Societies of Chemistry (FASC) and the Pan Africa Chemistry Network (PACN), the Ministry of Foreign Affairs (MoFA), Ministry of Education (MoE), Ministry of Science and Technology (MoSCT), Ethiopian Academy of Sciences (EAS), IUPAC, UNESCO, and AAU has been celebrating the event since February, 2011.

Activities Conducted

1. Public Show at Miazia 27 Square, Addis Ababa, February 19, 2011. This was the Young Ambassadors of Chemistry Program. (Responsible Person(s): Dr. Temechegn Engida and CCE.)
2. Official launching of IYC 2011 in Ethiopia at the Desalegn Hotel, (Addis Ababa), February 21, 2011. (Chairperson: Dr. Yonas Chebudie.)
3. 7th Green Chemistry Workshop, 100th Anniversary of the Award of Nobel Prize for Chemistry to Marie Curie. The 7th GC workshop was especially arranged for female chemistry students at the Chemistry Department, Addis Ababa. (Responsible person: Dr. Nigist A.)
4. "Women Sharing a Chemical Moment in Time" is designed to connect women together globally through an international networking breakfast. The breakfast meetings was held at the United Nations Conference Center, Economic Commission for Africa (ECA) and the 30 + participants were linked to each other through Skype video on January 18th, 2011. (Responsible person: Dr. Nigist A.)
5. 27th Annual Congress of the Chemical Society of Ethiopia (CSE) at the Addis Ababa Institute of Technology, February 25-27, 2011. (Responsible person: Dr. Yonas Chebude.)
6. "Using Locally Available Resources for Elementary School Chemistry Education": A one day workshop organized by KCTE (Responsible person: Dr. Sileshi)

Planned Activities

1. TV Quiz for High School Students (a popular show of Ethiopian Television, ETV): tentative schedule , October, 2011
2. Commemorative Stamp IYC 2011, to be discussed with the Ethiopian Postal Authority.
3. TV Programme on traditional Distillation of "Katikala", locally distilled spirit.
4. Poster Competition, October 2011.

IUPAC CCE meeting 2011 San Juan, Puerto Rico
Report from Finland
Nina Aremo

IYC activities in Finland

Several events for general public has been arranged around the Finland with great success. The Association of Finnish Chemical Societies has been the head coordinator but also the local Chemical Societies have arranged several events.

The Finnish IYC activities can be found at web-site: <http://kemia2011.fi/>

The jubilee issue for International Chemistry Year has been published: http://www.kemia-lehti.fi/juhla_lehti/201012/index.html

In addition 14 schools (455 students and 27 teachers) around the Finland will participate to the IUPAC Water: A Chemical Solution - A Global Experiment.

Competitions: Soup bubble competition, chemistry and art –fotography competition

Stories about Better Everyday Life.

Sustaining IYC activities

Universities are continuing the “Studia Generalia” –lectures concerning everyday chemistry and innovations in chemistry. Also science lectures for children “Academy of Children” were so successful that the Universities will arrange them again.

Biennium priorities for CCE

An important issue is for now and especially in the future how we can make chemistry and natural sciences more visible and interesting among young people.

June, 2011

Preparations towards the IYC 2011 in Israel

The first meeting regarding the IYC 2011 committee in Israel took place on September 13th. The committee consisted of: The president of the Israeli chemical society, and people from the chemistry industry and the academia, and chemistry educators (researchers and teachers). The main decisions and plans were:

1. Establishment of five sub-committees referring to: (1) The tertiary education, (2) the elementary and secondary education, (3) the informal education the chemistry industry, (4) the chemistry industry, and (5) information and communication.
2. Definition of the IYC 2011 local goals:
 - a. Increasing the interest of the young generation in chemistry and in chemistry studies.
 - b. Increasing the interest of the general population in chemistry and in chemistry studies.
 - c. Increasing the positive attitudes of the society towards the chemistry industry.
 - d. Linking the chemistry issues to other disciplines and to society issues.
3. Activities:
 - a. Issuing 2 stamps which relate to the research of three recent Israeli Nobel Prize winners: (1) Ada Yonat, and (2) Chechanover and Hershko.
 - b. Establishment of an IYC 2011 website.
 - c. Development of stuff for the media in order to enable publicity and dissemination of the IYC 2011 ideas.
 - d. Development of a special issue in one of the Israeli newspapers.
 - e. Demonstrating interesting experiments on the web (Utube for example).
 - f. Activities for non-science oriented students and for their parents.

- g. Producing a monthly calendar consisting of historical documentation about chemists and about chemistry innovations (in the framework of the National Center for Chemistry Teachers).
- h. Producing a monthly newsletter devoted to the 2011 IYC (in the framework of the National Center for Chemistry Teachers).
- i. Monthly events aimed at the large population. For example: "The Chemists Night", which already took place in several places in Israel, and consisted of formal and informal conversations with chemists, as well as demonstrations.
- j. Activities devoted to the IYC 2011, which took place during the Annual Meeting of Chemistry teachers in the framework of the National center for Chemistry teachers (December 6th, 2010).
- k. Activities devoted to the IYC 2011, which took place during the Annual Meeting of the Israeli Chemical Society (February 2011).

Attached please find an activity which took place in an Arabic school in Israel.

With best wishes,

Rachel

International Year of high school chemistry Alahaliia Umm al-Fahm, Israel, Led by Issam Agbaria, a chemistry teacher

The main theme of the international chemistry in high school Alahaliia is "The sound of chemistry." For example, running a radio station during the breaks once a week. Radio broadcasts relevant chemical articles, or reports written by chemistry students. Parallel to the broadcasts, one may look at the screens scattered hallways at school, and watch power point presentations on the subject of the article.

Additional activities:

- During the breaks – students who major in chemistry, performed experimental demonstration, quizzes, and puzzles related to chemistry.
- There was a competition of "The best logo" for the international chemistry at school.
- A unique event held on the 3rd of March, 2012 -
The event included activities for students during the morning, with the participation of the school board, school teachers, and guest teachers (please see the attached invitation).

The students presented their activities, lit candles in honor of the international chemistry, made a cake in the form of the periodic table, composed poetry and chemical contexts, and the guest speaker Prof. Hussam Haick from the Technion, lectured about electronic sensors for the cancer disease.

During this day, each class got a chemical name, and all corridors were decorated with posters related to chemistry. The general atmosphere was a holiday atmosphere. The students were enthusiastic and motivated. The school board was proud of the activities, and paid for all the expenses.

A few attached photos will serve as examples to the festive atmosphere.

IYC Report from JAPAN

NR. Masahiro Kamata

The Science Council of Japan, which is the national adhering organization of IUPAC in Japan, ordered the Japanese Union of Chemical Science and Technology to manage realization of events and at the same time, requested The Chemical Society of Japan as well as other chemistry related societies to cooperate with it. In response to this request, the Japan Committee on the IYC was established to plan and promote substantial activities. According to the website of the Japan IYC committee;

<http://www.iyc2011.jp/index-e.html>,

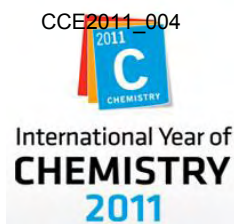
more than 70 activities have been registered as IYC events on June 24, 2011.

However, due to the devastating earthquake and Tsunami on March 11, several large events which were scheduled from March 17 to 29 as shown below were cancelled.

- "White Paper of Science" Symposium: "World-Changing Chemistry",
- 2011 GSC Workshop: "Chemistry for a Sustainable Society",
- Chemical Industry Technology Forum in the 76th annual meeting of SCEJ, Symposium entitled "What would be conditions for chemistry to lead the next generation?"
- The 91st Annual Meeting of The Chemical Society of Japan.

There is no immediate danger from the accident of Fukushima nuclear power plant and life in Tokyo is not so different from what it was before the disaster. However large power shortage is anticipated in summer season, and therefore, large events cannot be held especially in eastern Japan this summer. In addition, many companies related to chemical industries are still suffering from direct and/or indirect damage caused by the quake and Tsunami. Therefore, it seems inevitable for IYC activities to be less active than expected. But there are many who believe that now is the time to make an appeal of IYC because chemistry does take an important role in recovery from the disaster.

As for water measurement, no practice has been reported yet.



Kuwait Chemical Society

Kuwait Chemical society
Celebrating the International Year of Chemistry 2011
Under the patronage of
His Highness the Amir Sheikh Sabah Al-Ahmad Al-Sabah Kuwait

1- The formation of the High Commission to celebrate the International Year of Chemistry 2011

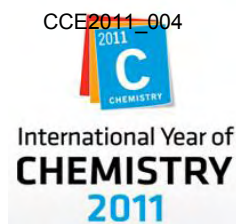
Chemical Society (Member of IUPAC) and Kuwait National KCS has formed a higher committee from several government and the private sector and from this Committee several sub-committees emerged to prepare and plan for the activities of the International Year of Chemistry 2011. The KCS prepared a busy schedule over the course of 2011, Among the activities: conferences, workshops, training courses, programs in the malls (Scientific shows and organizing competitions, field visits to some sites, lectures, ... etc).

2- The KCS has held a press conference in 22nd of February 2011, to launch the events to celebrate the International Year of Chemistry.

3- The 6th International Symposium on Microscale Chemistry from 13 to 15 March – Kuwait

Under the patronage of His Excellency the President of the National Assembly Mr. Jassem Al-Kharafi, the Kuwait Chemical Society organized the 6th International Symposium on Microscale Chemistry from the 13th to the 15th of March in «Holiday Inn Hotel» Salmiya, in the presence and participation of a large number of researchers and chemists from Kuwait, the Gulf and the world.

The conference included the opening ceremony, lectures and workshops over three days and finally the closing ceremony, honored by the attendance of the National Assembly Speaker Mr. Jassem Al-Kharafi, included honoring the lecturers and sponsors, participants and delegations of States.



Kuwait Chemical Society

4- Kuwait Chemical Society organized the Second Microscale Workshop on General Chemistry

Kuwait Chemical Society (KCS) organized workshop on microscale general chemistry for teachers of chemistry of the Ministry of Education in the period of 30/11-2/12/2010 in the Faculty of Technological Studies - Public Authority for Applied Education and Training, to train them on treating chemical experiments in the curriculum in accordance with the global trend in reducing levels of pollution and cost by adopting the concept of green chemistry and eco-friendly microscale chemistry.

5- Kuwait Chemical Society organized the Second Microscale Workshop on Organic Chemistry

Kuwait Chemical Society (KCS) organized workshop on microscale organic chemistry in the period of 6-8 March 2011 in the Faculty of Technological Studies - Public Authority for Applied Education and Training.

The workshop was prepared by a Preparatory Committee consists of Dr. Abdulaziz Alnajjar (KSC President), Dr. Alya Al-Etaibi, Dr. Mervat Abdel-Khalek, and Dr. Abdel Zaher Elaasar, in addition to contribution of Ms. Huda Nassar, Mr. Ahmed Mohammed Ali, Ms. Mona Almkimi, and Ms. Salwa Al-Kandari (assistants).

6- Kuwait Chemical Society Organized a Networking Women Breakfast in the International Year of Chemistry 2011

The Committee of Chemistry and women of the Kuwait Chemical Society has organized a networking women breakfast at Kuwait Towers on 18/1/2011 under the patronage of Professor Faiza Al-Kharafi and the presence of Professor Nouria Al-Awadi. During the celebration Prof. Faiza Al-Kharafi was honored on the occasion of receiving the L'Oreal UNESCO Award for Women in Science 2011 for Africa and the Arab countries as well as the participants in the activities of the Kuwait Chemical Society and the Scientific Committee of the Kuwait Conference on Chemistry and Industry, organized by the KCS in March 2010. Also



International Year of
CHEMISTRY
2011



Kuwait Chemical Society

four students who represented Kuwait and participated in the competition of the sixth Arab Olympics in Chemistry, which was held in the UAE, were given awards.

7- Kuwait Chemical Society Organized Two Training Courses on (Creativity in Teaching Chemistry)

Kuwait Chemical Society organized two training courses on 24-28 October 2010 and 27-31 March 2011. The five-day training courses titled (Innovation in Chemistry Education) were conducted for teachers of the Ministry of Education from 9:00 am to 1:00 pm.

Lectures were conducted by Dr. Abdulaziz Alnajjar (President of the Kuwait Chemical Society) over three days, and Professor Osman El-Dusouqui over two days.

Both courses included a significant positive interaction between the audience and lecturers who used multi-media educational means and a variety of practical applications, and panel discussions, workshops and role-playing.

8- Kuwait Chemical Society Organized a Lecture on Women and Alternative Medicine

Kuwait Chemical Society organized in collaboration with the Centre for Islamic Medicine a lecture entitled Women and Alternative Medicine on Thursday, 31/03/2011 at the Theatre of the Centre of Islamic Medicine, by Dr. Hamad Al-Abbad - Director of the Centre.

9- Kuwait Chemical Society Participated in the Chemistry Exhibition Organized by the Ministry of Education.

10-Attending the Ceremony for Celebrating the International Year of Chemistry in 2011, January 27-28, 2011

11-The Second Annual Meeting of School Teachers (Kuwaiti ChemTea Network)

Kuwait Chemical Society organized the second annual meeting of school teachers (Kuwaiti ChemTea Network) under the patronage of Prof. Modi Al-Hamoud, Minister of Education and



International Year of
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2011



Kuwait Chemical Society

Minister of Higher Education, for teachers of chemistry at the Ministry of Education in the period from 17-18 April 2011 in the Scientific Center - Hall of IMAX, in order to exchange experiences and opinions, ideas and training to deal with chemical experiments in the curriculum in accordance with the global trend in reducing levels of pollution and cost by adopting the concept of green chemistry, eco-friendly and trained them through workshops on how to be creative in teaching chemistry.

During the two days of the meeting, lectures and workshops were conducted by:

1. Dr. Alin Hazari
2. Dr. Roy Tasker
3. Dr. Alida Maria
4. Dr. Abdulaziz Alnajjar, President of the KCS

Appendix I

INTERNATIONAL YEAR OF CHEMISTRY (IYC) 2011 IN MALAYSIA

Institut Kimia Malaysia (IKM), as a National Adhering Organisation (NAO) of IUPAC, and the Malaysian National Commission for UNESCO (SKUM) will be spearheading the International Year of Chemistry (IYC) 2011 programmes in Malaysia.

A National Committee on IYC 2011 for Malaysia has been established by Institut Kimia Malaysia (IKM) and Malaysian National Commission for UNESCO (SKUM) to coordinate all IYC 2011 activities in Malaysia. Other institutions represented in this National Committee are the Academy of Sciences Malaysia (ASM), Chemistry Department Malaysia (KIMIA Malaysia), National Science Centre (PSN) and PETROSAIN Sdn Bhd.

Among the proposed activities for IYC 2011 in Malaysia are the following:

1. **K₃M 2010 Top Scorer to attend IYC 2011 Opening in Paris, France in January 2011**

The Kuiz Kimia Kebangsaan Malaysia (Malaysia National Chemistry Quiz), or K₃M, is an annual programme organised by Institut Kimia Malaysia (IKM) for secondary school students throughout Malaysia. In 2010, a total of 31,248 students took part in K₃M. The IYC 2011 National Committee has decided that the top scorer of K₃M 2010 will be invited to attend the Opening Ceremony of IYC 2011 in Paris, France in January 2011.

2. **IYC 2011 Essay Writing Competition (EWC)**

Institut Kimia Malaysia (IKM) and the Ministry of Education (MOE) will jointly organise the IYC 2011 **Essay Writing Competition (EWC)** for Forms 4 – 5 (Year 10 - 11) students in Malaysia. The Competition will begin in March 2011 and end in August 2011. The theme of the Competition is “Chemistry – Our Life, Our Future”, the theme of IYC 2011. Certificates and cash awards will be presented to the winners and the top winner will be selected to attend the Closing Ceremony of **IYC 2011** in Brussels, Belgium in December 2011.

3. **Karnival Kimia Malaysia (K₂M) 2011**

Karnival Kimia Malaysia (K₂M), or formerly known as Malaysian Chemistry Festival, is an annual function of Institut Kimia Malaysia (IKM) with the objectives of promoting public awareness and appreciation of Chemistry, especially among the school students. In celebrating the International Year of Chemistry (IYC) 2011, **K₂M 2011** will be organised in a bigger scale with the theme “Chemistry – Our Life, Our Future” and the following sub-themes:

- ❖ Chemistry of Life
- ❖ Chemistry of Food and Nutrition
- ❖ Chemistry of Water
- ❖ Chemistry and Energy
- ❖ Chemistry and the Materials World
- ❖ Chemistry of Oils and Fats
- ❖ Chemistry and Climate Change
- ❖ Chemistry and Quality of Life

K₂M 2011 will comprise the following:

- Talks & Lectures on the theme and sub-themes

- Poster Exhibition
- Demonstration and interactive experiments
- Slide and video shows
- Quiz and competition

The **National Launch of IYC 2011** in Malaysia will be held on April 15, 2011 at the National Science Centre in Kuala Lumpur with **K₂M 2011** as the Inaugural Event. The Honourable Minister of Science, Technology and Innovation, YB Datuk Seri Dr Maximus Johnity Ongkili will officiate at the Launching Ceremony.

K₂M 2011 will be held in the National Science Centre, Kuala Lumpur from April 15-17, 2011 and then moves to six other places in subsequent months as shown below:

National Science Centre, Kuala Lumpur – April 15-17, 2011

Ipoh, Perak – May 7-8, 2011

Kota Marudu, Sabah – May 19-20, 2011

Johor Bahru, Johor – June 18-19, 2011

Kuala Terengganu, Terengganu – July 23-24 2011

Penang – September 22-23, 2011

Kuching, Sarawak – October 15 -16, 2011

4. 19th IUPAC International Conference on Chemical Research Applied to World Needs (CHEMRAWN XIX) 2011

Institut Kimia Malaysia (IKM) is hosting the **19th IUPAC International Conference on Chemical Research Applied to World Needs (CHEMRAWN XIX) 2011** in Kuala Lumpur, Malaysia from September 27 – 29, 2011 as a cornerstone event of IYC 2011. With the theme “Renewable and Sustainable Energy and Materials from Biological Resources”, **CHEMRAWN XIX** is expected to attract a large following of scientists, industrialists and entrepreneurs to discuss the latest research and development in new and innovative energy sources from biomass, biofuels, biogas, and other plant or animal materials, or also microorganisms. .

5. 13th International Symposium on Advances in Extraction Technology (ExTech) 2011

The **13th International Symposium on Advances in Extraction Technologies (ExTech) 2011** will be held at the Putra World Trade Centre, Kuala Lumpur, Malaysia from September 27 – 29, 2011 as a major scientific meeting celebrating IYC 2011. More than 200 scientists from all over the world is expected to attend this annual meeting which has been held all over the world in the last twelve years.

6. International Symposium on Women In Science and Engineering (WISE) 2011

To be jointly organised by the Ministry of Science, Technology and Innovation (MOSTI) and Institut Kimia Malaysia (IKM), the **International Symposium on Women in Science and Engineering (WISE)** will highlight the role of women in developing science and engineering as a key enabler for socio-economic development in the world. The Symposium also aims at promoting increasing participation of women in science and engineering, especially in the developing world.

Activities of KNCV, The Netherlands for the IYC 2011.

Jan Apotheker, board member education KNCV.

On the website www.jaarvandechemie.nl most Dutch activities are indicated.

On Youtube: <http://youtu.be/bYvcfoLeG E> an introductory trailer can be seen, that was shown during the official opening on January 28 2011 in **The Hague**.

During the year a number of activities have been planned, culminating in a large scientific chemistry conference on 28, 29 and 30 November 2011 which is called CHAINS (CHemistry As INnovative Science).

The Netherlands will take part in the global experiment. A number of schools have started preparations to be ready. A number of groups have participated in 'Women sharing a chemical moment in time' in January.

At the end of the year a book on the periododic table for 12 to 13 year olds will be published (English title will be: Harry Hydrogens' amazing adventures in the periodic table) in Dutch.

Students in the Netherlands take actively part in the CCE Global Stamp Competition (deadline June 15, 2011). We investigate possibilities to have the winning Dutch entry officially issued by the National Postal Services.

On June 4th the night of art and sciences took place in Groningen, an event that drew at least 15.000 people. Part of that festival is the I-phone and android app 'molecular city', in which AR-illustrations of molecules are related to shops and areas.

As part of the IYC-activities the KNCV is organizing a series of public lectures, called, the Curie-lectures. These lectures are given by important Dutch scientists and are meant to demonstrate research in science.

Other activities include speial exhibitions in various science centres, a special chemistry marathon, an open day of chemistry, and a special exhibition in Kijkduin connecting art and chemistry.

Biennium priorities for CCE.

For the CCE two things are important issues.

The renewal of chemistry education is an issue that both in Europe and in the US will need a lot of time and attention.

The second issue is defining the criteria that make a good science teacher. Both at the secondary school level and at the university level discussion in international gremia are going on about the quality requirements for science teachers.

During the CCE- conferences these subjects could be a theme.

IYC Educational Activities (accomplished by June 1st, 2011)

N	Action	Executing organization	Location/action period	
1.	Competition of research works of primary school children	«Mendeleev Heritage» Foundation, Lomonosov Moscow State University, Mendeleev Russian Chemical Society, Mendeleev University of Chemical Technology of Russia	February 6-8, 2011	
2.	Final phase of all-Russia Chemistry Olympiad (for secondary and high school students) dedicated to the 300 th anniversary of M.V. Lomonosov	Ministry of Education and Science, Northern (Arctic) Federal University, Lomonosov Moscow State University	March 23-30 2011, Arkhangelsk	
3.	45 th International Mendeleev Olympiad for secondary and high school students) of Baltic countries, CIS, Romania, Bulgaria and Macedonia dedicated to the 300 th anniversary of M.V. Lomonosov	Lomonosov Moscow State University, Mendeleev Russian Chemical Society	April 24-31, 2011, Moscow	
4.	Participation in the Global Water Experiment	Mendeleev Russian Chemical Society, Mendeleev University of Chemical Technology of Russia	Russian language web-site, April 2011	St.-Petersburg branch of Mendeleev Russian chemical society

IYC Exhibition Activities (accomplished by June 1st, 2011)

N	Action	Executing organization	Location/action period	
1.	International exhibition "Chemistry 2011" under motto "Chemistry is our life, our future"	JV "Expocenter", JV "Roskhimneft", Mendeleev Russian Chemical Society	2011, Moscow	
2.	Public lecture course "Chemistry is our life, our future"	Lomonosov Moscow State University	January-March 2011, Moscow	

REPORT FOR CCE MEETING, 31 JULY – 1 AUGUST 2011IYC ACTIVITIES IN SOUTH AFRICA1. 2011SACI CONVENTION, 17 – 21 JANUARY 2011

Although held before the IYC Opening Ceremony in Paris, the Convention served as an excellent opportunity for chemists from all disciplines to meet before the start of the 2011 academic year and to kick-start IYC celebrations in South Africa. During the week of the convention, a feast of plenary lectures, oral and poster sessions and a teachers' workshop was provided in Johannesburg on the University of the Witwatersrand Campus.

On 17 January 2011, RADMASTE hosted a Teachers' Workshop on the day devoted to Chemical Education. The local attendees came from far and wide and two overseas participants came from Ghana and Switzerland respectively. We were privileged to host Mme Nicole Moreau and Prof David Black, both from IUPAC. These two unexpected VIP guests became so engrossed in the Global Water Experiment that they conducted both the 'pH of the Planet' and the 'Water Treatment' activities.



Nicole Moreau (President, IUPAC) and David StC. Black (Secretary General IUPAC), conducting the Water Treatment activity.

2. ACTIVITIES RELATED TO THE GLOBAL WATER EXPERIMENT2.1 Training of Science Centres Staff

On 13 January 2011, RADMASTE trained staff from various Science Centres in two of the experiments (pH and Water Treatment). After the training, Science Centre Staff would be able to conduct the Global Water Experiment with groups of learners and would also be able to train other staff and teachers.

2.2 Launch of the Global Water Experiment, Cape Town 22 – 25 March 2011

The World-wide launch took place in Cape Town and the event was jointly organised by UNESCO and the Water Sanitation Department of Cape Town Municipality. A UNESCO report and a short video have been loaded on the website <http://water.chemistry2011.org>. E. Steenberg acted as Facilitator for the Global Experiment in Cape Town on behalf of UNESCO – an experience which was not only an honour, but also immensely valuable in gaining experience on how to guide large groups of learners to do the GWE over a number of consecutive days. Late in 2010, South African learners also participated in a workshop to record footage for the ICCA promotional video.

2.3 Gauteng Launch of the Global Water Experiment, 19 April 2011

Sci-Bono, the Science Centre for Gauteng, hosted a northern Launch of the Global Water Experiment. It was gratifying to note that a facilitator that had received training earlier in the year had sufficient confidence to arrange the function and the learners' workshops. The International Year of Chemistry received excellent publicity in a widely-circulated daily newspaper in Gauteng.

2.4 Corporate Sponsorship of the Global Water Experiment by SASOL

A major initiative has been undertaken by the SASOL Social and Community Trust. They are sponsoring equipment and reagents to 200 schools in areas where SASOL has operations, namely Mpumalanga, Free State, Limpopo and Kwa-Zulu Natal. They have added value to the equipment pack by adding educational materials such as posters and have greatly empowered schools to participate by providing a fax number for results. SASOL will log results on behalf of their schools. SASOL also provided training for teachers in four different provinces at five nodes.

2.5 Support given to various role players to participate in the Global Water Experiment

2.5.1 Local assistance

A significant number of local participants elected to use the microscience kits to participate in the Global Water Experiment. This is thought to be due to the lack of equipment in many local schools and the convenience of purchasing both equipment and reagents at a modest price. Examples of such assistance are:

- Pretoria Zoo, where the Global Water Experiment will be used in monitoring the Apies River which runs through the zoo;
- A rural research site in Kwa Zulu Natal;
- A Winter School for learners in the Northern Cape;
- Ten schools supported by Impala Platinum;
- Ten Schools supported by BASF.

2.5.2 Overseas promotion and support

Twenty complimentary Sample Sets of microscience equipment have been sent to various interested parties. During overseas microscience workshops in Kuwait, Addis Abeba and Tanzania, participants were informed about the Global Water Experiment and every effort was made to introduce them to the activities. Limited overseas sales (through RADMASTE contacts or promotion) have been to Gambia, Australia, the Netherlands and Spain.

3. Challenges Experienced

3.1 Local challenges

In spite of contacting the Department of Education (DoE) and all the Natural Sciences Coordinators countrywide, there has been no response or endorsement from the DoE for IYC 2011. No support could be obtained from large corporate or government water bodies such as the Department of Water and Forestry, Joburg Water and Tshwane Water.

Although the Department of Science and Technology has bought 40 sets of equipment and SAASTA has bought 75 sets, logging of data from South Africa is very limited. The reason for the lack of data is not clear at this stage.

3.2 Other challenges

The Global Water Experiment website requires schools to register individually before results can be logged. This is problematic in our setting where we were hoping that SASOL, RADMASTE and the Science Centres could act as data-logging agents on behalf of the schools that don't have internet access.

Participation from the remainder of Africa

At present this is very limited, but should improve once UNESCO support becomes available.

4. Future activities

As result of collaboration between Mary Ostrowski and Erica Steenberg on the Water Treatment Activity, i) the World Chlorine Council donated USD 20 000 to sponsor chlorine test strips in the microscience kits, and ii) a paper describing the development of the Water Treatment Activity has been accepted for oral presentation at the Congress in Puerto Rico.

A very exciting development in South Africa is the circulation of a Draft National Strategy and Framework for the Public Engagement of Science. Such policy will open the door for projects like YAC on government level and will contribute significantly to scientific literacy and awareness amongst the wider population.

Activities in Sweden during the IYC

Maja Elmgren

On the website <http://www.kemi2011.se/> many of the Swedish activities are found.

The formal responsibility for celebrating the Swedish IYC is held by the National Committee of Chemistry, an educational board linked to the Royal Swedish Academy of Sciences. The planning of the celebration of the Swedish ICY was initiated by a three membered group, representing the Swedish Chemical society, Swedish Plastics & Chemicals Federation, and The National Resource Centre for Swedish chemistry teachers.

Twelve themes, one for each month during the year 2011, were chosen to show the interaction of chemistry with culture and everyday life. The themes are: January, *Arts and culture* (Spring opening of galleries); February, *Fashion* (Fashion week); March, *Climate and energy*; April, *Chemical Industry*; May, *The chemistry of Love* (Springtime in the Nordic countries); June, *Water and air* (Vacation time for schools starts); July, *Sustainable development* (Main vacation time in Sweden); August, *The chemistry of Sports* (WC of Athletics in South Chorea); September, *Communication* (Computers, mobiles etc.); October *Health* (Allergies, medicines); November, *Food* (Natural vs. unnatural); December, *Alfred Nobel and the Nobel prizes*

Several regional groups, often led by chemists at universities, plan their own activities. Many local activities have been coupled to the themes, e.g. exhibitions, laboratory activities for children and lectures. Other activities are more linked to chemistry history in Sweden like chemistry walks where former Swedish chemists are celebrated and installations of periodic tables with notions of where the elements were first discovered.

Popular scientific articles concerning the themes have been written and a chemistry calendar has been uploaded to YouTube. The National Resource Centre for Swedish chemistry teachers have designed various laboratory experiments for different levels in school for each theme and films on the web with challenging problems to discuss. Swedish schoolchildren will also take part in *Water – A Chemical Solution: A Global Experiment*.

In January a national opening ceremony took place in Stockholm. Many universities held local ceremonies, coupled to open houses, exhibitions etc. In Uppsala and Lund groups were gathered celebrating *Women Sharing a Chemical Moment in Time*. In December closing ceremonies coupled to the Nobel festivities will be held. Marie Curie is honoured both in the opening and the closing of the Swedish Year of Chemistry.

Activities on Celebrating for International Year of Chemistry in Taiwan

Mei-Hung Chiu

Titular member of CCE, IUPAC

Several activities were organized to celebrate IYC in Taiwan. The followings are the dates and titles of the activities.

2010

Oct. 1 ~ Dec. 31 Magic Chemistry & Mad Laboratory, National Taiwan University

Dec. 23~25, Chemistry Olympiad, National Taiwan Normal University

2011

Jan. 16, Solar Cell Workshop, Providence University

Jan. 18, Young Female Chemists – Global Breakfast Seminar, National Taiwan Normal University

Jan. 25~29 National Chung Hsing University Chemistry Camp, National Chung Hsing University

Jan. 26~31, National Cheng Kung University 18th Chemistry Camp, National Cheng Kung University

Mar. 05 Chung Ling Innovations in Chemistry Competition, Tamkang University

Mar. 10 Mobile lab Opening Ceremony, Tamkang University

Mar. 12 IYC100 Department of Applied Chemistry Symposium, Chung Shan Medical University

Mar 17~18 The Conference of Theoretical and Computational Chemistry and Physics (TCCP) Chinese Culture University

May 07 IYC Opening Ceremony in Taiwan, National Taiwan Science Education Center

May 07 IYC Hands-on Chemistry (YAC), National Taiwan Science Education Center

May 06~08, Magic Chem Opera, National Taiwan Science Education Center

May 19 2011 IYC White Sand Surprising Show, Department of Chemistry, National Changhua University of Education

Jul 17~22 Madam Curie High school Summer Camp (CCTMF)

Oct. 01~02 Taiwanese Feminist Scholars Association Conference 2011, Tamkang University

June 10-Oct 15 National stamp competition---Chemistry as a Human Enterprise



IYC 2011 Activities in TURKEY

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IYC 2011 activities are planned by the lead of three organizations, Turkish Chemical Society (TCS), Turkish Chemical Manufacturers Associations' Platform (TCMAP) and Ministry of National Education (MoNE) in Turkey. These three organizations set up their own websites. Each organization is targeting different groups. TCP is targeting to initiate awareness among academia, schools and public whereas TCMAP is targeting mainly chemical industry and schools and public. MoNE is mainly focusing on students and teachers. Planned activities are publicized from their web sites.

The web sites are as follows:

<http://www.ululararasikimyayili2011.org.tr> (TCS)

<http://www.ksp-kimya2011.org> (TCMAP)

<http://ttkb.meb.gov.tr/kimyayili.aspx> (MoNE)

In addition to make it easy to follow what each organization is doing I have also set up a blog to share all activities in Turkey. The blog link is <http://iyc2011.wordpress.com>. The blog includes links to the all national and international events and summaries of some cornerstone events.

The Cornerstones Events declared so far:

- 1. November 2010:** A slogan competition among high schools students. The best slogans were awarded during 5th Chemical Industry Development Congress took place in Ankara on 28-29th April 2011. See the price celebration at <http://iyc2011.wordpress.com/2011/05/03/iyc-2011-slogan-yarismasinda-dereceye-girenler-belli-oldu>.
- 2. February 2011:** Launch of IYC 2011 in Turkey with a opening conference in Istanbul on 1st of February by TCS with the participation of Dr. Terry RENNERT, IUPAC Secretary General, and IYC 2011 is announced to the public by a press conference 3rd February by TCMAP.
- 3. April 2011:** A conference entitled "5th Chemical Industry Development Congress" is organized in Ankara, the capital city, with the participation of Ministry of Industry, people from industry, academia, bureaucracy and societies on 28-29 April 2011.
- 4. April-May 2011:** MoNE has organized 12 one day IYC 2011 events in 12 different cities with the participation of over 500 chemistry teacher all around Turkey to introduce IYC 2011 and new developments in chemistry and Chemistry Education. <http://ttkb.meb.gov.tr/kimyayili.aspx>.
- 5. April 2011:** Chemistry Day, April 7, has been celebrated with intensive activities including media coverage throughout the universities in Turkey.

6. **June 2011:** 2nd Undergraduate Chemistry Congress is organized by Abant İzzet Baysal University in cooperation with TCS on 14-17 June 2011. <http://www.kok2011.ibu.edu.tr>.
7. **June 2011:** 25th National Chemistry Congress is organized in cooperation with TCS and Ataturk University on 26 June-2 July 2011 in Erzurum with more than 1500 participants. <http://www.kimya2011.com>.
8. **July 2011:** 2nd National Chemistry Education Congress is organized cooperation with Ministry of National Education, TCS and Ataturk University on 5-8 July 2011 in Erzurum with more than 200 participants. <http://ukek2.atauni.edu.tr>.
9. **July 2011:** Turkey is hosting 43rd International Chemistry Olympiads under the leading organization of Middle East Technical University on July 9-18 2010 in Ankara. <http://nernst.chem.metu.edu.tr/icho2011/index.php?lang=en>.
10. **Whole year:** During 2011 all chemical plants, members of Turkish Chemical Manufacturers Associations Platform, is organizing open door meetings and factory visit for the public and students from primary to tertiary level.
11. **Whole year:** In coordination with Ministry of National Education a photography competition is organized.
12. **Whole year:** Several international and national presenters are invited to give both academic and public lecturers about chemistry and its importance in our daily life.
13. **Whole year:** A brochure, periodic table and a calendar has been prepared and distributed through fairs, meetings and schools.
14. **IYC 2011 Song:** Şişli Terakki Okulları, a private school in Istanbul, has composed a special song to IYC 2011 both in Turkish and English. It could be listed at <http://www.terakki.org.tr/tvideo>.
15. A week of chemistry is organized to condensed celebration of IYC during October 2011, last week of October which included October 23.



ACS Celebrates the International Year of Chemistry 2011 (IYC 2011)

IYC 2011 provides the global chemistry community with an historic opportunity to celebrate the many ways that chemistry improves people's lives, and ACS is proud to be part of the celebration. The following are some of the projects in which ACS is engaged for IYC 2011.

Outreach Opportunities and Tools

- Pennies for Pur™ Water Project: Launched officially at the 241st ACS National Meeting in Anaheim, the Pennies for Pur™ Water Project is a partnership with Procter & Gamble's Children's Safe Drinking Water program. The ACS goal is to raise enough funds to be able to provide over 1.5 million gallons of clean water. ACS local sections have been challenged to work in their communities throughout the country to raise money and awareness of this important initiative.
- A robust year-long outreach plan (see <www.acs.org/iyc2011>)
 - Four Quarterly Themes: Environment, Energy, Materials and Health
 - The *Celebrating Chemistry* publication, resources, and activities available for each quarter
 - Webinars about outreach throughout 2011 (launched December 7, 2010; archived online at <www.acswebinars.org>)
 - Chemists Celebrate Earth Day 2011 and National Chemistry Week 2011 large-scale unifying events.
 - Designed to support the efforts of individual members/non-members, local sections, student chapters, high school chemistry clubs to celebrate and promote IYC 2011.
- Chemistry Ambassadors program provides support for talking about chemistry during 2011.
- IYC 2011 grant programs for local sections, student chapters, high school chemistry clubs.
- Member-Get-A Member Campaign features a special IYC 2011 blanket.
- Promotion of global water experiment and ACS IYC 2011 resources to over 18,000 U.S. teachers and students.
- ACS celebrates IYC in the media and beyond:
 - NPR radio interview with President Nancy Jackson for IYC.
 - Articles in *Connect* magazine, the *Philadelphia Inquirer*, Fairfax County schools newsletters.
 - Numerous blog references.
 - ACS and IYC 2011 have officially been recognized by the House of Representatives of the State of Minnesota.

Web-based Opportunities and Tools:

- *365: Chemistry for Life*
 - A web-based daily calendar featuring chemistry highlights.
 - An ongoing contest with prizes to provide additional content.
- Free toolkits with ideas and templates available for download by any IYC 2011 program planner.
- IYC Network Group on the ACS Network for sharing and gathering IYC celebration ideas.
- *IYC Bulletin* – a monthly newsletter for IYC planners and enthusiasts.
- IYC Partner Program
 - IYC partner organizations are joining ACS in celebrating and promoting IYC 2011. Current partners include: Academy of Science-St. Louis, American Association of Physics Teachers, American

Crystallographic Association, American Geophysical Union, American Oil Chemists' Society, American Physical Society, American Society for Biochemistry and Molecular Biology, ASTM International, Iowa Mathematics & Science Education Partnership, Materials Research Society, National Science Teachers Association, Optical Society of America, School Science and Mathematics Association, SkillsNET Corporation, Société de Chimie Industrielle, Society for Science and the Public, Technical Association of the Pulp and Paper Industry, American Ceramic Society, Council for Chemical Research, Triangle Coalition for Science and Technology Education.

- IYC Videos
 - “A Day Without Chemistry,” a Younger Chemists Committee/Office of Public Affairs collaborative project, was released during January 2011.
 - Additional videos will be released during the 3rd quarter of 2011
- Special IYC 2011 Chemluminary Awards will be presented in 2012.

ACS Publications

- *ACS IYC Virtual Journal*
 - Health, energy, environment, and materials are the core themes of this monthly online journal.
 - Free access to the full text of the selected journal content.
- *Chemical & Engineering News*
 - IYC articles throughout 2011.
 - Mid-year special issue.
- Other ACS publications will feature IYC articles and information.
 - ACS Journals.
 - *InChemistry* and *ChemMatters*.
 - *ACS Matters* and ACS local section and division newsletters.

Live Opportunities for Celebration and Involvement

- The U.S. IYC Launch event
 - Collaboratively organized panel discussion (ACC, ACS, AIChE, CHF) on February 1, 2011, at the Chemical Heritage Foundation, Philadelphia.
 - ACS-led community event at the Franklin Museum, Philadelphia, conducted by local section and student chapter members of ACS, AIChE, and ACS staff on February 5, 2011.
- AAAS Family Science Day (February 19-20, 2011) in Washington, DC.
 - ACS-led outreach activities conducted by ACS local section members and ACS staff.
 - Over 2,100 attendees participated in hands-on activities at the ACS booth.
- 2011 ACS National Meetings in Anaheim (March) and Denver (August).
 - Chemistry Ambassadors performed rap and dance for IYC, just before the start of Sci-Mix on Monday, March 28, at the ACS Meeting in Anaheim. The event was videotaped and posted to YouTube to help generate enthusiasm for IYC.
 - 23 ACS Divisions with at least one technical session supported one or more of the four IYC outreach themes in Anaheim.
 - IYC 2011 Booth in the Exhibit Hall.
 - Outreach events include ACS IYC themes.
- 2011 Regional Meetings (Central in Indianapolis, Northwest in Portland, Midwest/Great Lakes in St. Louis, Southeast in Richmond, Southwest in Austin, Western in Pasadena)
- 2011 Local Section activities, involving many of the 189 sections throughout the 50 states and Puerto Rico.

**Appendix II: Update on Global Experiment
Provided by Javier Garcia Martinez
July 2, 2011**

The Global Chemistry Experiment

“Water: A Chemical Solution”

water.chemistry2011.org

Report, June 2011

June 30th, 2011

*IUPAC and UNESCO have developed a set of activities to entice students around the world to learn about how chemistry contributes to one of the most important resources in their daily lives, **water**. This global experiment, “**Water: A Chemical Solution**”, explores the chemistry of water and the role of water in society and the environment.*

The Global Chemistry Experiment is a cornerstone activity of the IYC which consists of four component activities. Each can be carried out by children of all ages in schools around the world. The activities are adaptable to the skills and interests of students of various ages and use equipment that is widely available. The activities provide students with an appreciation of chemical investigation and data collection and validation. The results submitted by the students are available in a website, water.chemistry2011.org, as an interactive global data map - demonstrating the value of international cooperation in science (Figure 1). The activities have been carefully selected in order to ensure they are suitable for implementation in schools across the world; they have been tested to ensure workability, especially in developing countries.

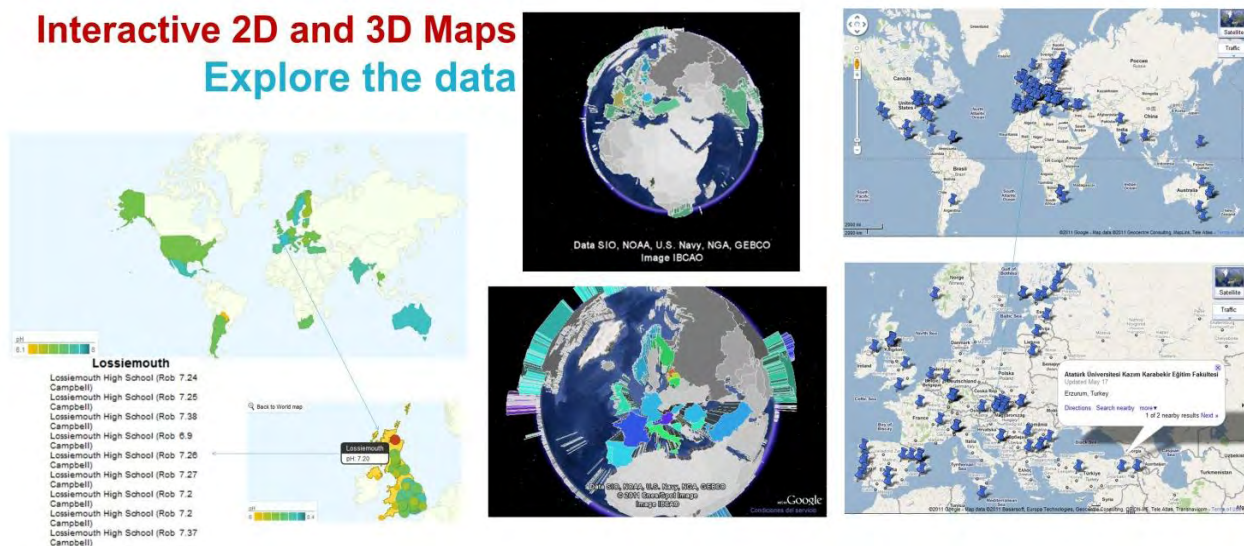


Figure 1. Interactive 2D map showing the pH values as an average for each country (top left) and the values measured by each school (bottom left). The 3D map (center) and the map of all the schools involved in the Global Experiment (right) are also available at water.chemistry2011.org



Some Figures

The Global Experiment was launched on May 22nd, the World Water Day. As by the end of June, only in three months after its launch, the Global Experiment has:

- 472 schools registered with 8,000+ students from over 40 countries from the 5 continents
- water.chemistry2011.org, done and maintained with European SchoolNet, is available in 4 languages: English, French, Spanish and Russian, including state-of-the-art interactive tools, 2D and 3D map showing the data, and pictures, videos and news on the Global Experiment
- The four activities of the Global Experiment are currently available in 8 languages: English, French, Spanish, Russian, Hebrew, Portuguese, Catalan and Chinese
- The Twitter account of the Global Experiment has 370 followers
- 500 people follow the Global Experiment in Facebook
- 4 videos have been made to promote the Global Experiment
- 5 Schoolpacks containing 10 Global Water Kits and a School Resource Kit have been sent to 30 countries for free to favour the participation of low-income communities
- The Global Experiment has been extensively featured in TV and Radio shows, news articles, and blogs, including BBC's flagship magazine programme "The One Show" on 21/06/2011 and the BBC Radio show "Science in Action" on 23/06/2011.

These data are only the tip of the iceberg as many students that performed the Global Experiment did not submit their data using the website. For example, on June 22nd, hundreds of schools and thousands of students took part in Global Experiment in UK during the national launch of this activity in Britain.

The Global Experiment of the International Year of Chemistry has already been described as the "biggest ever global chemistry experiment" by several media and chemical societies like the Royal Society of Chemistry.

Truly 2.0 Experience: Creating the Global Experiment Virtual Community

One of the main objectives of the Global Experiment is to allow educators and students from all around the World to interact, share experiences, news and pictures, and interact using social media. The website water.chemistry2011.org includes several state-of-the-art tools to share content, interact, and coordinate activities. Special attention has been paid to the use of social media to promote, coordinate and engage the youth in the Global Experiment. The most popular social sites like Twitter (with 370 followers and following 1800 people) and Facebook (with 500 members) (see Figure 3) have been extremely useful and fully integrated in the website with the tool shown in Figure 2. Also several videos have been especially done for the Global Experiment, posted in YOUTUBE and integrated in the website (Figure 4). Finally, the teachers and the students have the possibility to share their pictures with the rest of the community through the website. A few examples are all around the World are shown in Figure 5.



Figure 2. Box included in the home page of water.chemistry2011.org that integrates the main social media in the Global Experiment

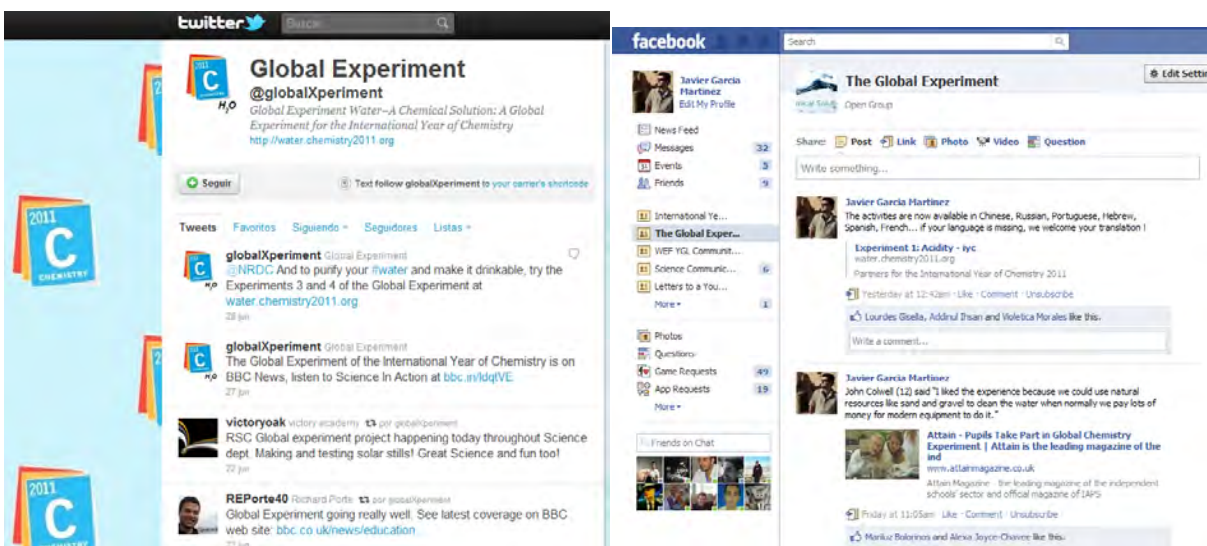


Figure 3. The official Twitter (left) and Facebook (right) sites of the Global Experiment. Hundreds of followers interact using these social media allowing a more interactive participation of students and educations in the Global Experiment.



Figure 4. Videos made to promote the Global Experiment posted at water.chemistry2011.org



Figure 5. Some of the pictures received from all around the World of students performing the Global Experiment and available at water.chemistry2011.org

The Big Splash: The Launch of the Global Experiment on the World Water Day, March 22nd

Following over a year of dedicated efforts of the planning and implementation teams, the project launched successfully on the UN World Water Day, March 20 - 22, in Cape Town, South Africa. Hundreds of 15-18 year old 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 city. Rovani Sigamoney, the IYC Focal Point at UNESCO, recently reported in Chemistry International that "the participating pupils enthusiastically found the pH of a sample of water from Intaka Island (a wetland in Cape Town) and then filtered and purified the water under the supervision of Erica Steenberg from RADMASTE Centre, University of Witwatersrand, and three volunteers". Rovani said: "This was the first chemistry experiment that most of the pupils had ever carried out and their excitement at completing the exercise and obtaining the results was delightful to witness. Their total engagement in the experiment was evident in the many questions that they asked".



Figure 6. One of the kits distributed during the Big Splash of the Global Experiment and some of the students from Cape Town, South Africa performing the activities on March 22nd, during the official launch of the Global Experiment on the World Water Day.

Making Headlines: "Schoolchildren to test local water in world's largest-ever chemistry experiment"

Dozens of articles, TV and Radio shows and blog entries have been published in the last months on the Global Experiment.

RSC president, Professor David Phillips, said: "This remarkable initiative will demonstrate the enjoyment gained from practical experimentation". "We believe the results will also provide a picture of global pH that will be very informative". "So the work by students all over our country, and in others where the experiment will be taking place on the same day, is of genuine national and international use."

The Global Experiment has been extensively featured in TV and Radio shows, news articles, and blogs, including BBC's flagship magazine programme "The One Show" on 21/06/2011, the BBC Radio show "Science in Action" on 23/06/2011.

From the BBC interview in [Science in Action](#):

"Water Acid Maps. One of the findings from the IPSO report showed that a rising carbon dioxide level in the atmosphere is leading to increased acidity of the oceans, as it dissolves in water. Currently there is no global record of how acidic the water around the world actually is – more data is desperately needed. So in what is being billed as the world's largest chemistry experiment is aiming to provide. Schools around the world are being asked to measure their local body of water, and plot the results on a global map. Pupils in London have been honing their skills, as Science in Action's Ania Lichtarowicz found out."

These are some of the quotes from the media coverage on the Global Experiment:

"Schoolchildren to test local water in world's largest-ever chemistry experiment" RSC Press Release (17/06/2011)

"School students around the world are invited to explore one of Earth's most critical resources. The results of their investigations will contribute to a Global Experiment, which will possibly become the biggest chemistry experiment ever", ChemistryViews (08/02/2011)

"Schoolchildren take part in world's largest-ever chemistry experiment" Bedfordshire News (22/06/2011)

"Water, Water Everywhere : "Water: A Chemical Solution" is a set of four simple experiments designed to entice students around the world to learn about how chemistry contributes to one of the most important resources in their daily lives" Chemical and Engineering News (21/02/2011)

Mr Barwell, Member of the British Parliament said: "I am really looking forward to welcoming young people from my constituency to the House of Commons and joining them in taking part in the world's largest chemistry experiment. It is so important for children of all ages to take part in hands-on science lessons and I am hugely grateful to the Royal Society of Chemistry for organising the event." Many UK schools participate in this, the world's biggest-ever chemistry experiment, which will be the largest single collection of data on water quality ever undertaken at one time and will be achieved by hundreds of thousands of youngsters around the globe becoming scientists for a day", the RSC reported (28/06/2011)

"A Global Experiment is planned as a signature/flagship IYC-2011 activity initiated by IUPAC/UNESCO that will involve children and teachers from around the world. These young people will measure simple properties of water and log their data so that there can be a global visualization of the results. The purpose is to provide wider engagement by young people and schools throughout the world in visible hands-on chemistry activities that they share and analyze together". The Washington Post (02/03/2011).

BBC
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England Northern Ireland Scotland Wales UK Politics **Education** Magazine

22 June 2011 Last updated at 12:48 GMT



Pupils test world water in mass chemistry experiment

Children from hundreds of schools in Britain are taking part in what organisers say may be the biggest ever global chemistry experiment.

Students from around the world are testing the acidity of water from their local rivers and lakes.

The International Union of Pure and Applied Chemistry will collate the data into a map of global water quality.



Schools around the world are collecting and submitting results

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- ▶ 2007 Press Releases
- ▶ 2006 Press Releases

Schoolchildren to test local water in world's largest-ever chemistry experiment

17 June 2011

A worldwide one-day experiment next week will provide a picture of the planet's pH levels.

On 22 June pupils from UK schools will participate in this, the world's biggest-ever chemistry experiment.

The experiment will be the largest single collection of data on water quality ever undertaken at one time and will be achieved by hundreds of thousands of youngsters around the globe becoming scientists for a day.

Figure 7. One of the examples of the media coverage on the Global Experiment. Article published on the BBC on 22/06/2011 describing the participation of hundreds of schools in Britain in the "biggest ever global chemistry experiment" and a press release from the RSC also describing the Global Experiment as the "world's largest-ever chemistry experiment" (17/06/2011)

A Truly Global Community

Great efforts have been made to make the Global Experiment a truly global activity. The website has been made available in four languages: English, French, Spanish and Russian, but this is not enough. All the activities can be downloaded in eight languages so far including English, French, Spanish, Russian, Chinese, Portuguese, Hebrew, and Catalan. UNESCO has graciously made these translations available and others have been translated by volunteers.

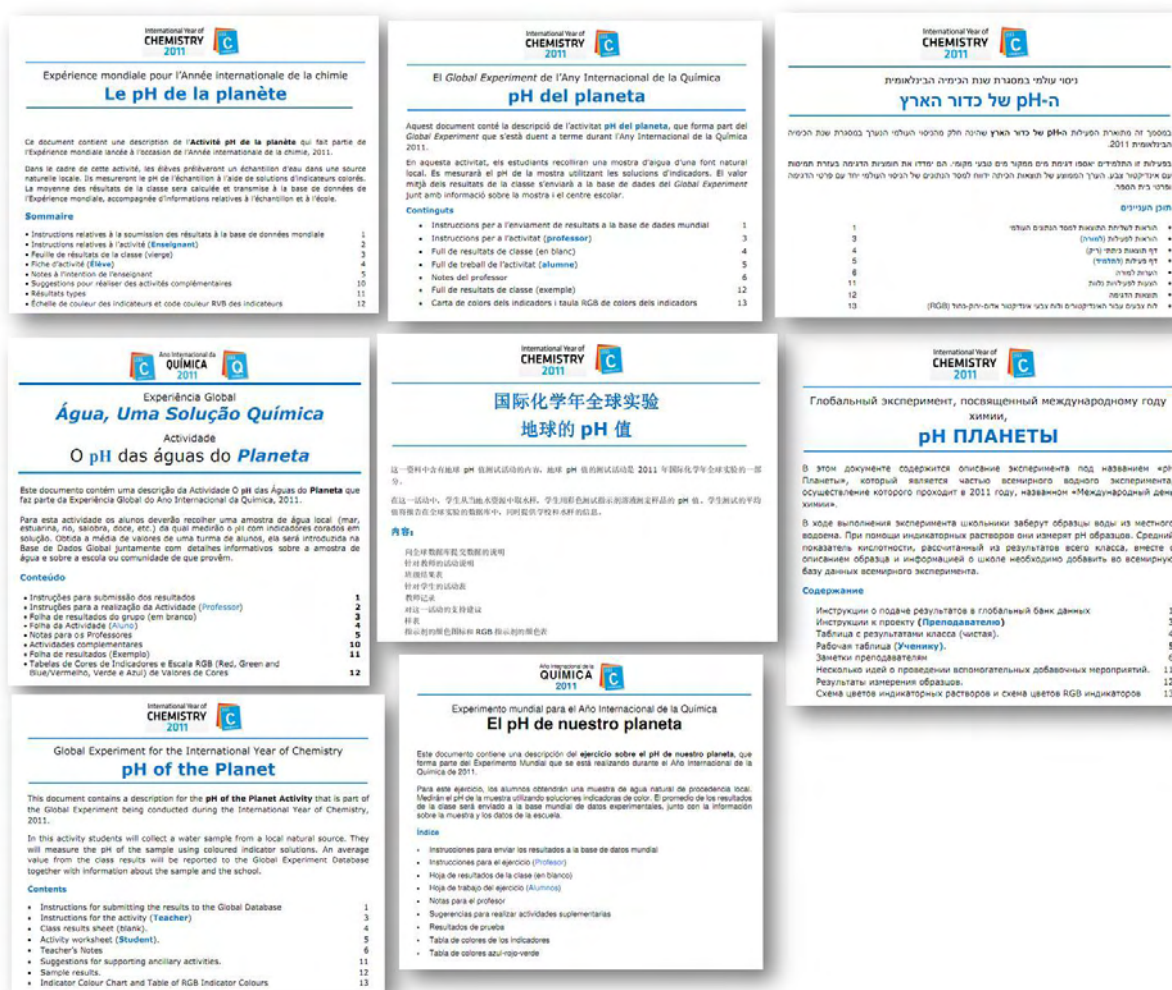
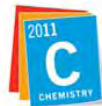


Figure 8. The first activity of the Global Experiment, entitled “pH of the Planet”, is currently available in 8 languages: English, French, Spanish, Russian, Hebrew, Portuguese, Catalan and Chinese

But not everybody has access to a computer, much less to Internet, so the activities are also available as hard copies from the UNESCO regional offices that also coordinate the submission of the data collected by students that have no access to Internet. Thank to these efforts the Global Experiment, in only three months, has collected data from schools from over 40 countries from the five continents.



Making the Global Experiment Available to Every School on the Planet

From the very beginning it was clear that if the Global Experiment aims to be truly global it must be made available to every school, even to those without the most basic materials. Adapted experimental protocols have been developed for these kits to ensure consistency with the Global Water experiment.

Five Schoolpacks containing 10 Global Water Kits (GWK) and a School Resource Kit have been sent to 30 countries for free to favour the participation of low-income communities . Since one GWK can be used by four to six learners at the same time, a School Pack caters for a class of 40 to 60 students. Very small quantities and volumes of chemicals are used, so the teacher can use the same School Pack several times with different classes and different grades. This means that even if a school receives only one School Pack, they will be able to participate in the Global Experiment with many students.

A list of the 30 countries that received free kits to perform the Global Experiment in a true effort to make the Global Experiment available to every body:

Senegal, Mali, Tajikistan, Ghana, The Gambia, West bank, Gaza, Nauru, Burkina Faso, Indonesia, 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, Malaysia.

There is also the possibility to purchase the kits, although the activities of the Global Water Experiment are designed to be undertaken with equipment and materials commonly available in a school laboratory. However if preferred, a kit especially designed for carrying out the activities in the Global Water Experiment can be purchased from the Radmaste Centre at the University of Witwatersrand in South Africa:<http://www.radmaste.org.za/>. The kit is supplied as a school resource with the common equipment and materials to perform the experiments and ten individual sets of equipment for student use (which can also be ordered individually).

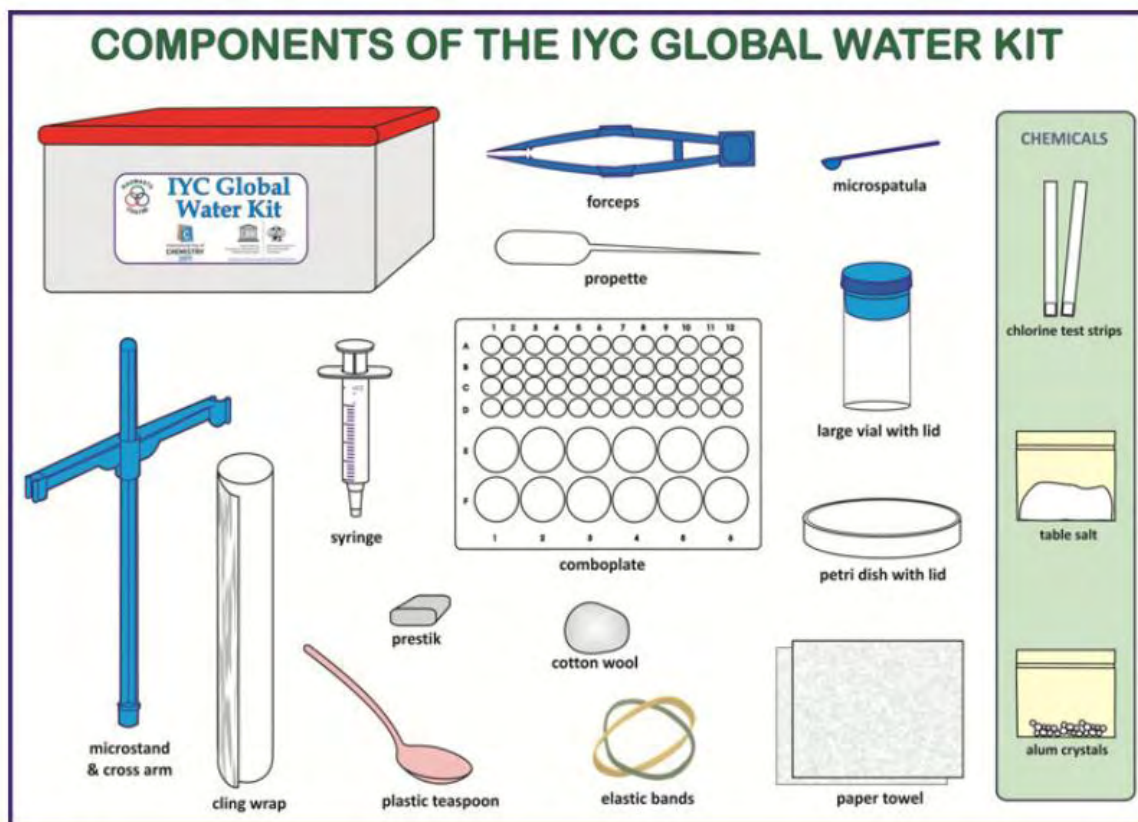
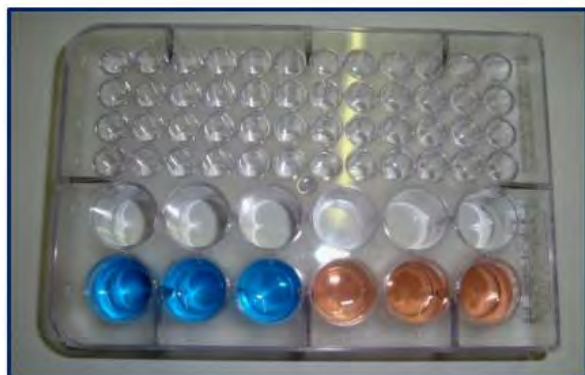


Figure 9. Components of the Global Experiment Kit designed and distributed by Radmaste Centre at the University of Witwatersrand in South Africa



This sea water sample from Durban (South Africa) shows a pH of about 7.8 with bromothymol blue (three wells on the left). It has been tested further with *m*-Cresol purple in the wells on the right, where it shows a pH value of between 7.8 and 8.0.

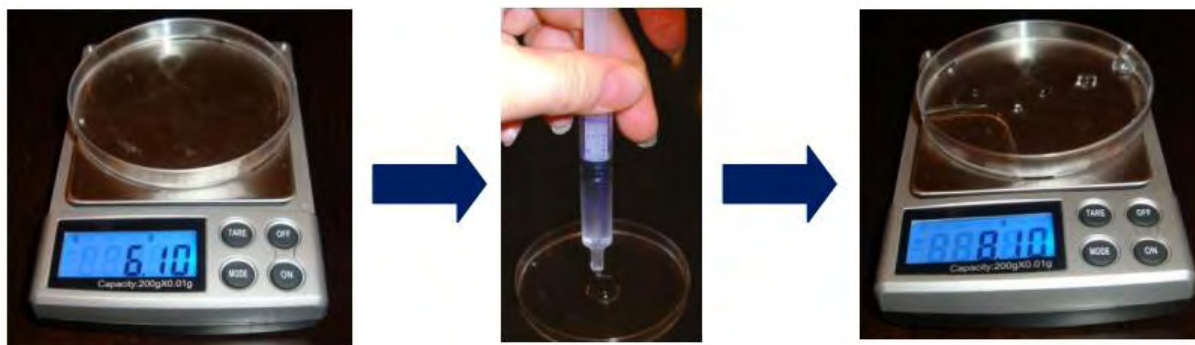
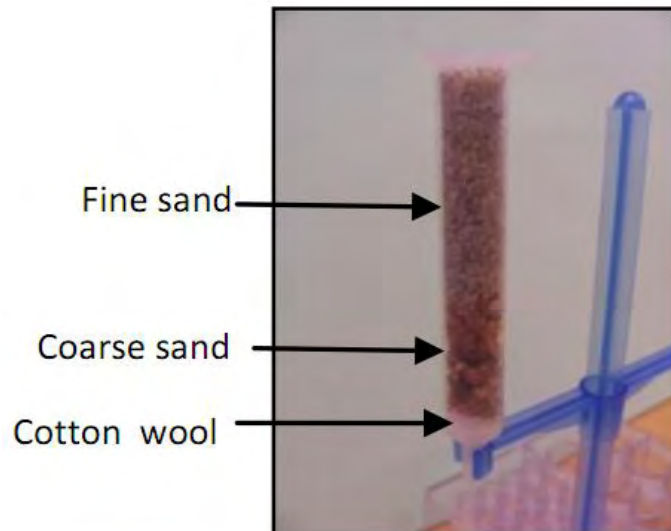


Figure 10. Pictures of some of the components of the Global Experiment Kit.

The Global Experiment Task Group: Building a Global Partnership

I can not emphasize strongly enough the significance of the global partnership that has come forward to implement this global IYC unifying activity. We would not have a global experiment without the efforts of a large number of incredibly dedicated volunteers. In addition to the partnership with UNESCO and the involvement of IUPAC CCE members, members of three IUPAC Divisions, and three IYC management committee members, the experiment has benefitted from the very strong participation of chemical industry who are represented by BASF, CEFIC (which served as secretariat of the group in the planning stages), the American Chemistry Council, and the International Water Association. The task group and partnerships for the Global Experiment include contributors from fields, sectors, and regions far and wide, demonstrating the wide interest and global reach of the project:

- Franco Bisegna, Claudine Drossart, and Madeleine Laffont, CEFIC
- Mark Cesa, INEOS, USA and IUPAC Organic and Biomolecular Chemistry Division, and IUPAC Committee on Chemistry and Industry (COCI)
- Robert Bowles and Richard Porter, RSC
- John Bradley and Erica Steenberg, University of the Witwatersrand, Johannesburg, and CCE Microchem project
- Filomena Camões, University of Lisbon and IUPAC Analytical Chemistry Division
- Johanna Coleman and Jacqueline Haider, BASF
- Javier Garcia-Martinez, University of Alicante, IUPAC Inorganic Chemistry Division and CCE
- Julia Hasler, Magalie Lebreton, and Rovani Sigamoney, UNESCO
- Colin Humphris, IUPAC Bureau and IYC Management Committee
- Alexa Joyce, European SchoolNet
- Masahiro Kamata, Tokyo Gakugei University
- Frances Lucraft, International Water Association
- Mary Ostrowski and Ben Zingman, American Chemistry Council
- Cristiane Reiners, Universität zu Köln and CCE
- Lida Schoen, CCE and the Young Ambassadors for Chemistry program
- Tony Wright, The University of Queensland, Australia and CCE



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Appendix III: Reports on three activities---

Flying Chemists Program (FCP) in Croatia 2010, FCP in Ethiopia 2011, and NICE in 2011
Prepared by Mei-Hung Chiu
CED sub-committee of CCE

1st Croatia Workshop on Chemical Education (1CWCE) in 2010

The 1st Croatia Workshop on Chemical Education was held during November 10th - 14th 2010. The plenary lectures, topics, and workshops are listed below.

Bob Bucat (Australia) Topic 1: *Constructivist and Information-Processing models in teaching and learning* (P) and Topic 2: *Levels of Operation in Chemistry*; **Nenad Judas (Croatia)**: *On the Croatian Small-Group Discovery-Based Learning Strategy* (L); **Tom Greenbowe (United States of America)**: *Small Group Learning - On the Science Writing Heuristic & Process Oriented Guided Inquiry Learning* (L); **Marian DeWane** : *Answers you don't want your students to write on examinations: Examples of student difficulties and trends on the College Board Advanced Placement Chemistry Test*; **Mei-Hung Chiu (Taiwan)**: *Students' Understandings in Chemistry - How Should We Teach* (L); **Mordechai Livneh (Israel)**: *Microscale Chemistry and Green Chemistry* (L); **Metodija Najdoski (Republic of Macedonia)**: *Microscale Chemistry and Green Chemistry Presenting* (W); **Milan Sikirica**: *What can be learned in the kitchen*.

The 1st Croatia Workshop on Chemical Education was very successful. The official number of participants was 117 chemistry teachers (not including 3 organizers, 2 translators, assistants, and speakers) from the entire country. During the workshop period, the official hours for all the participants were arranged from 9 AM to 6PM, but nobody left the auditorium room even the lectures or workshops ran overtime. After 30 years without holding such sessions for school teachers, the organizing committee publicized the 1CWCE to school teachers and teacher's agents and encouraged them to take this opportunity to develop their professional skills and knowledge eagerly. From my observation of the interaction between the organizers and the teachers, I believe the teachers were satisfied with the workshop very much and expressed their enthusiasm for the second CWCE. This was evident at the following event, at the closing ceremony, the organizer Nenad Judas already announced their preliminary plan for the 2nd CWCE to be held in 2012 in conjunction with the 22nd ICCE in Rome. The organizing committee also created a Forum on their chemical society website as a catalyst to network teachers and university professors together. One of the plans was to establish a doctoral program at the University of Split.

2. Flying Chemistry Program in Ethiopia 2011

Project: Enhancing the capacity of chemists in providing quality chemistry education at secondary and tertiary levels in Ethiopia

The president of Federation of African Society of Chemistry (FASC), Dr. Temechegn Engida, held the fifth FCP in Addis Ababa University in celebration of the International Year of Chemistry from Feb 21-23 in conjunction with Chemistry Education on Feb 24, Annual Chemistry Conference in Ethiopia on Feb 25-26, and Young Ambassadors for Chemistry (YAC) during Feb 18-19 which was also sponsored by the IUPAC. There were three objectives to be achieved by the FASC, namely, (1) to introduce innovative and cost-effective laboratory instruction at secondary level so that students are well prepared for the tertiary level chemistry education, (2) to empower tertiary

level chemistry instructors in designing and implementing contextualized and learner-centered chemistry education, and (3) to promote innovative ways of training quality chemistry teachers equipped with modern instructional strategies. The seven resource persons were Temechegn Engida, Sileshi Yitbarek, Peter Mahaffy, Hans Dieter Barke, Jorge Ibanez, Lida Schoen, and Mei-Hung Chiu. Among the invited lectures, there were accompanied with workshops on visualization in chemistry by Peter Mahaffy, structure-oriented chemistry teaching by Hans Dieter Barke, micro-scale chemistry by Jorge Ibanez, Development of Diagnostic Assessment in Chemistry by Mei-Hung Chiu, and Laboratory chemical safety and security. And the YAC workshop with teachers, students, and the public was conducted by Lida Schoen and Mei-Hung Chiu. Both activities were successfully conveyed the idea of promoting chemistry education in Ethiopia.

Over 100 school teachers and university lectures participated in the lectures, workshops, and lab demonstration. The participants found the innovative instructions provided them a new way of thinking and teaching in their practice in educational setting. The most difficult challenge for them is how to adopt these innovations into their teaching with limited resources available. Continuous effort for promoting chemistry education in Ethiopia is still going on.

3. The 4th Symposium of Network for Inter-Asian Chemistry Educators (NICE)

The 4th Network for Inter-Asian Chemistry Educators (NICE) will be chaired by Professor Choon Do from Korea, co-chaired by Professors Masahiro Kamata from Japan and Mei-Hung Chiu from Taiwan. The symposium will be held in National Seoul University in July 26-28, 2011. The dates were arranged coincidentally (and unexpectedly) with the 46th General Assembly that will be held during July 27-August 5 in Puerto Rico. As the agreement among the organizers, the host will provide 12 invited participants (including high school teachers) (6 from Japan and Taiwan respectively) with 2-3 night accommodation in order to encourage school teachers to be actively involved in this symposium.

-
- i Collaboration with the Science Across the World programme
 - ii We started to use social media, e.g. Facebook and YouTube. In some countries we encounter problems with blocking these sites.
 - iii We always produce and leave a local course book and a website with a report and all (downloadable) files
 - iv We usually manage to get many free samples from industry (multi-nationals)
 - v Institut Kimia Malaysia
 - vi Philippine Association of Chemistry Teachers
 - vii Foundation for the Upgrading of the Standard of Education
 - viii Taiwan International Convention Center
 - ix Federation of African Chemical Societies
 - x Organisers managed for the first time to obtain sponsoring by 'industry': SM shopping mall chain
 - xi One of the tallest buildings in the world: 101 floors, 509 m