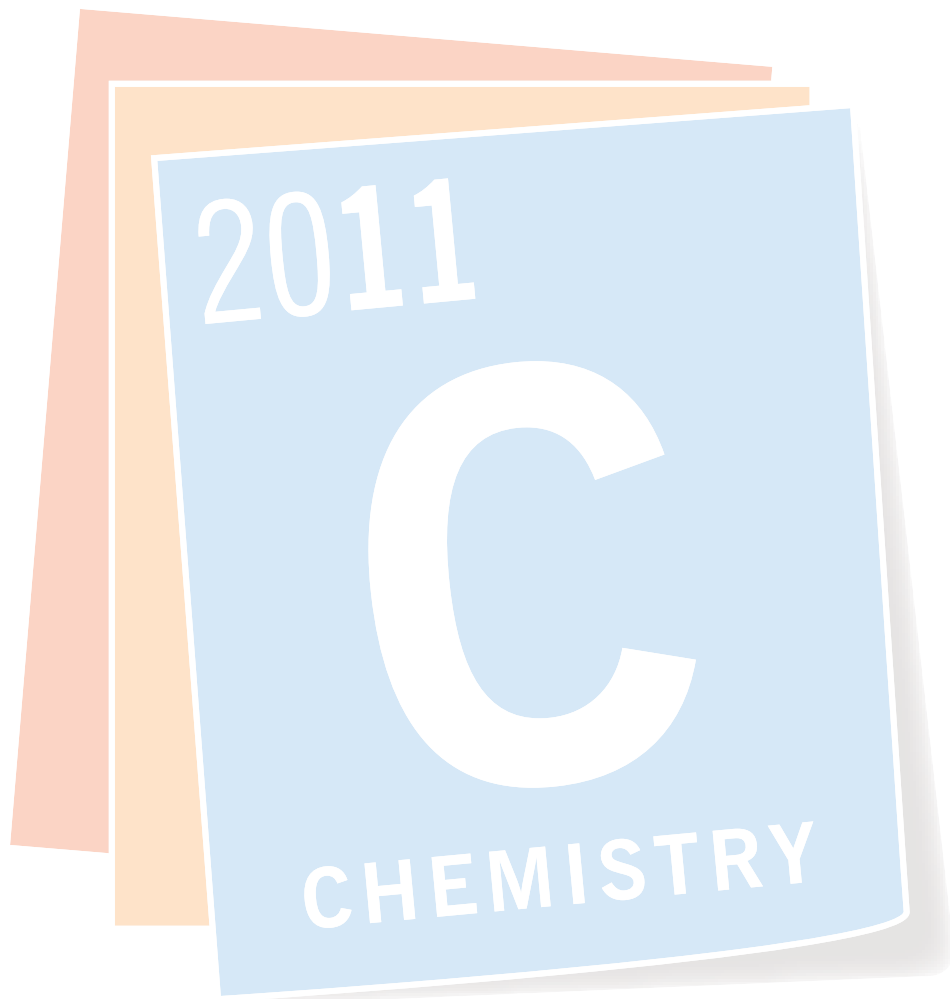


The 2011 International Year of Chemistry

Description and Analysis
of Activities



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This document is a report of the IUPAC task force “Description and Analysis of IYC Activities” (project #2012-009-1-020). The members of the task force were Berhanu Abegaz, Julia Hasler, Kathryn Hughes, Colin Humphris, John Malin, Javier Garcia Martinez, Nicole Moreau, Rovani Sigamoney, Leiv Sydnes, Supawan Tantayanon, and Bryan Henry (chair). Additional sections covering the finance and the activities the IYC Management Committee are available online.

This final report was prepared by Julia Hasler, Bryan Henry, and John Malin, with the assistance of Fabienne Meyers (IUPAC Secretariat) and Chris Brouwer (PUBSimple).

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Foreword

by Nicole Moreau, IUPAC President 2011-2012

To be the president of IUPAC is per se a fascinating job. But to perform these functions during the International Year of Chemistry (IYC) was a unique and extraordinary opportunity. At IUPAC we encouraged active participation in every country, but we all knew that it would be hard to make IYC a success in every country. It is certain that in most places the Year was a success. The details are set out in this detailed report, on which the authors have worked hard, but I want to focus on some events during IYC that were more personal.

I would like to emphasize two of the four Cornerstone Events. First was the pre-launch ceremony held at the January Congress of the South African Chemical Institute and the Federation of African Societies of Chemistry. This event, held one week prior to the official launch, was symbolic of our appreciation for the help Ethiopia and Africa extended to us to secure the United Nation's resolution for the IYC. Second was the official Opening Ceremony held for two days at UNESCO in Paris. I would like to point out the role of UNESCO staff members on the launch organizing committee (including myself!) and to mention that France wanted to honor the foreign visitors by offering the magnificent lounges of the Foreign Ministry for the final reception. Third, the "Madame Curie Celebration Day," a French initiative, held at la Sorbonne, Paris, on the day following the Launch Ceremony, was held with the IUPAC officers, an important Polish delegation, French Ministers, and of the two grandchildren of Marie Curie, Hélène and Pierre Langevin-Joliot.

The contributions from many countries would be easy to underestimate based solely on their own reports. But I can throw a different light on their contributions, because of all the national events to which I was invited; their numbers attest to the enthusiastic engagement of these

countries. It is noteworthy that many countries issued stamps to commemorate IYC. During IYC, in addition to my travels in France, I was invited 36 times abroad and was forced to decline 13 times because of overlapping events. So, I went to Jerusalem, Israel; Johannesburg, South-Africa; Rajkot, India; Nagpur, India; Mulhouse, France (and Germany); Moscow, Russia; Irbid, Jordan; Sopron, Hungary; Florianopolis, Brazil; Madrid, Spain; San-Juan, Puerto-Rico; High Tatras, Slovakia; Lisbon, Portugal; Brussels, Belgium; Washington, D.C., USA; Lublin, Poland; Roma, Italy; Milano, Italy; Barcelona, Spain; Dublin, Ireland; Warsaw, Poland; Brussels, Belgium; and Zarzis, Tunisia. I would be remiss if I did not mention the wonderful people I met. Everywhere the welcome was very warm and the interest in IYC and IUPAC was great. I was asked each time to talk about either one, and sometimes about Madame Curie. There were three types of invitations: those from chemical societies to attend their annual meetings, the most numerous; those directly from countries, often via the French Embassy; and those related to industry. I cannot relate anecdotes about all of them here, but they all form precious memories of my visits.

My travels began in January with a great event in the Knesset Parliament, celebrating IYC, during which two commemorative stamps were issued and two prizes awarded. I had the rare opportunity to greet the audience from the podium, and had a nice visit of the historic city. Then, it was the pre-launch event in Johannesburg, with an emotional breakfast meeting of women. It was extremely moving to hear how some of these ladies have had to struggle to be allowed to study science at a high level.

In February, I attended two symposia in India, in Rajkot and Nagpur. They were impressive because of the spirit of the opening and closing celebrations, of the students' ardour, and the testing of a car fueled with jatropa-based fuel! Then it was the sumptuous IYC Launch ceremony

FOREWORD

in Moscow, where many students showed both their artistic and their intellectual capacities. And it was great to experience the depths of winter in Moscow!

In April, there were three trips: in Mulhouse, where IYC was celebrated for both French and German students. Two weeks later, I found in Jordan a warm welcome, in every sense of the word. Besides the excellent congress, the extraordinary kindness of the Chairman's wife was unforgettable. She invited me and a nice Egyptian professor to enjoy the view over the Dead Sea from Mount Nebo. When you think of the recent horrors you realize that the chemistry community is an example of tolerance. In France, I must note the chemical weekend I spent in a charming village in the Ardèche where I went with Marie Curie's granddaughter. We will never forget giving our lectures to the very attentive village people in a yurt pitched on the square between the school, the church, the village hall, and the bar.

Two (Hungary and Brazil) of the four meetings in May were especially memorable. I flew at tea time on day one from Paris to Vienna, was taken by a member of the Committee of Chemistry from the airport to a location 60km away, dropped luggage at the hotel, and immediately went to a dinner. I attended the congress on day two and three, left for Vienna at 8 pm on day three to arrive in Paris at 10 pm, and took a flight to Rio at 11:20 pm. Then, I changed planes in Rio and arrived in Florianopolis at noon on day four. The congress had started the day before and ran for three days more. It was a great meeting, with many young and enthusiastic people, and I did not regret being there.

In Mid-July, as I was in Madrid for a two-day meeting on education, I was unable to accept an invitation to Dublin, where Marie Curie's granddaughter was to attend. Then, it was on to the IUPAC Congress in Puerto Rico.

September had a very full agenda with five trips.

1. First, the past-president of the Slovak Chemical Society waited for me in at the Vienna airport at noon on the 5th, and took me to the High Tatras where the annual meeting of the society was held. We travelled a beautiful route to the mountain, to arrive at the location of the congress in the evening, for dinner of course! The meeting lasted two days, and on the third day it was a great pleasure to take a walk in the Tatras with my very friendly hosts.

2. I left Vienna on the 8th, and early in the morning of the 9th I flew to Lisbon for an international meeting on "Glycosciences in the International Year of Chemistry." I double enjoyed the meeting, because glycochemistry is my field, and Lisbon and its inhabitants are so warm.

3. On the 14th in Brussels, on "IUPAC Day," I spoke to Belgian chemists about IUPAC, its goals, its projects, and its achievements.

4. After one night at home, I left for Washington, D.C., and arrived on the 15th at 4:40 pm to give a lecture at 6:30 pm at the Carnegie Institution for Science. This was organized by the French and Polish embassies, and I was pleased to tell in my speech how Marie Curie and Andrew Carnegie established with her in 1907 the Curie scholarships, which enabled promising scientists to do full-time research in Marie's lab. It was a very fruitful stay since the French embassy took me to the American Chemical Society and the U.S. National Academies.

5. I left Washington in the evening of September 18 to reach Paris on the 19th at 6 am, where I then took a 9:35 am flight to Warsaw, then went by car the three to four hours to Lublin. It was a very good three-day stay, and I had some time to rest and enjoy the excellent soups prepared for each meal. Not to lose the rhythm, I left Lublin by car at noon on the 22nd, arrive in Paris at 9:30pm for a French meeting on the 23rd and left Paris on the 25th to Roma, where the ICSU General Assembly was held. It was a very intense meeting, and, as president of IUPAC, I was invited by the ambassador of France to his residence, the

gorgeous Palazzo Farnese, for a private dinner.

In October, Terry Renner, our then executive director, and I were invited in Milano for the opening session of Chem-Med 2011, part of a project supporting start-ups and SMEs entering the Bio-based products market. They asked me to give a lecture about women's role in modern chemistry, from Madame Curie up to today. It was very interesting because the meeting was directed toward companies and the forum was part of a huge exhibition.

In early November, I accepted the invitation of ECHA, the European Chemicals Agency, and the French embassy to deliver a lecture for the inauguration of the Marie Skłodowska-Curie Conference Centre in Helsinki. I couldn't go because of a health problem in my family. Marie Curie's granddaughter gave a video address and a Polish colleague replaced me.

On September 15, I went to Barcelona for the closing ceremony of the forum "Química y Sociedad" and shared the podium with the minister of sciences and innovation to speak about IYC. On the 16th, I flew to Dublin for a memorable four-day stay in Ireland. It was an invitation from the French Embassy, organized with the Alliance Française, the international Lycée Français (LFI), and Trinity College. Our treasurer, John Corish—sorry, Seán Mac Fheorais—had been contacted by the Attaché for Scientific and Academic Cooperation, and this enabled an enriched program to be arranged: a visit, an informal meeting with the students at LFI, attendance at a presentation of "la Main à la Pâte" at the French Primary School, a conference about Madame Curie at the School of Chemistry of Trinity College, a visit to the Library of Trinity, with the fabulous Book of Kells, an opening talk and attendance

at 'Effervescence' at LFI, a meeting at the Royal Irish Academy, a refined and hearty lunch with the French ambassador at her residence with Irish colleagues, a rugby match, and a day visit to the Robert Boyle ("The Sceptical Chymist") Festival at Lismore Castle. On the morning of September 20, I returned to Paris, exhausted but delighted. I was unable to accept an overlapping invitation for September 17–18 for a "Workshop on Chemical Names and their Translation," organized by the European Commission in Brussels under the banner of IYC.

From 21–28 November, the Polish Academy in Warsaw celebrated the centenary of the Nobel Prize in Chemistry to Marie Skłodowska-Curie and invited me to make several presentations. There were many impressive events, culminating in a wonderful ballet exhibition.

For me, the year ended in December in Tunisia, when that country's chemical society asked me to present a talk about IUPAC and IYC at the 5th meeting on solid state chemistry.

How long will the momentum initiated by IYC go on? The strong involvement of young people cannot fall, because many programs are continuing in some countries, even if at a lower level. And the centenary of IUPAC in 2019 will give the Union yet another opportunity to celebrate Chemistry.

I. Executive Summary

This report comprises seven sections: I. Executive Summary, II. Origin of IYC, III. Contributions from Countries and Chemical Societies in Specific Regions, IV. Contributions from Industry and IUPAC Divisions and Standing Committees, V. The IUPAC World Chemistry Congress, VI. Closing Ceremonies, and VII. Legacy of IYC. In addition, an Appendix contains a summary report on UNESCO activities, a list of sponsors, and examples of industry-related events by national associations.

Section II describes the genesis of the IYC initiative, beginning with the IUPAC Executive in April 2006, the application to the UN through UNESCO, the role of the IUPAC Executive and the IUPAC IYC Management Committee, and the ultimate approval by the UN General Assembly in December 2008. The UN document designated IUPAC and UNESCO as partners to implement the Year. The goals of IYC were as follows:

- increase the public appreciation and understanding of chemistry in meeting world needs
- encourage interest of young people in chemistry

- generate enthusiasm for the creative future of chemistry
- celebrate the role of women in chemistry

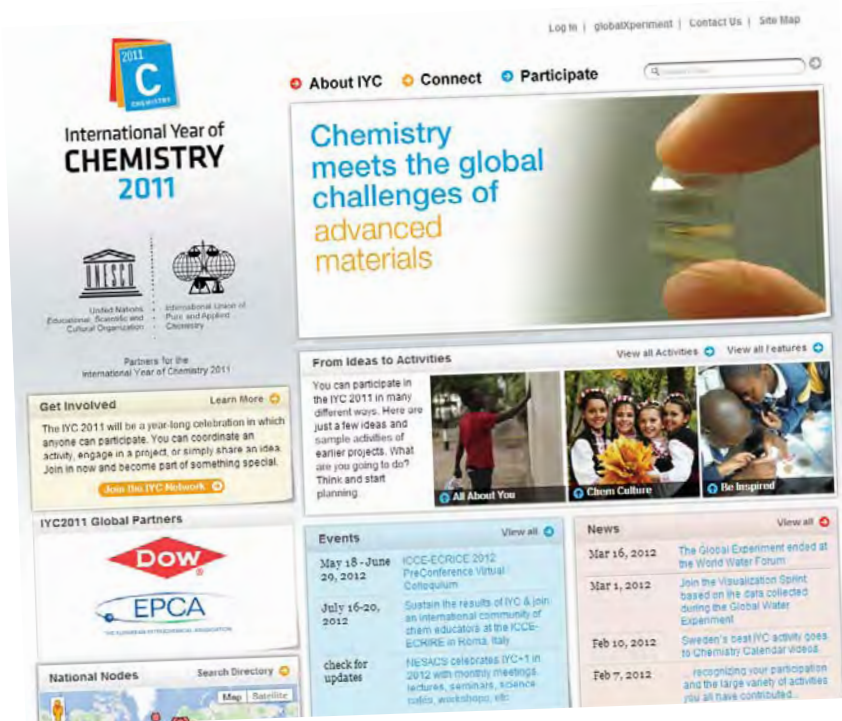
The central importance of the IYC website throughout IYC is noted in this report.

Section III forms the bulk of the report (approximately three quarters of the report). It is a summary of data the Task Force collected from the various countries. Task Force members were asked to collate and summarize the massive amount of material. From these efforts, the writing team further summarized and compiled Section III.

The material in Section III is truly inspiring. The key organizations that carried out IYC activities were the national chemical societies. They attempted to reach out to a variety of audiences, especially young people and the general public. The scope, originality, and sheer number of activities is extremely impressive. It would be impossible to summarize or highlight the material of Section III in this summary. I would urge the reader to scan the section to gain insight into the remarkable IYC events.

Any overall statistical summary of the breadth and number of IYC activities is bound to underestimate what actually occurred. However, some indication of the overwhelming success of IYC can be drawn from website statistics published early in 2012. There were over 9000 individual contacts registered on the site. While, in addition, over 1400 activities and 1000 special events in 100 countries were noted, many activities never reached the website. This was particularly true in the United States where much of the activity took place in local ACS sections.

Section IV describes Industry IYC initiatives. The involvement of the



IUPAC Committee on Chemistry and Industry began in San Juan with the World Chemistry Leadership Meeting. A focus was to activate the chemistry community to make a significant contribution at the Rio +20 Conference in 2012 organized by the UN Commission on Sustainable Development. COCI members were strongly involved in the Global Water Experiment, which featured children around the world doing simple experiments associated with water. COCI was also involved in IYC activities in their national organizations (See Section IV and the Appendix).

Industry provided a significant amount of funding for IYC (see Appendix). We are particularly grateful to the Dow Chemical Company for its financial support of a number of events. The IYC Closing Ceremony was held in Brussels and was organized and paid for by industry.

The IUPAC divisions and standing committees generally had few specific IYC activities. Rather, they worked with national societies and countries to help with the many events in these regions. Section IV does include, for example, a summary of a major project from the Inorganic Chemistry Division associated with IYC, which involved a Periodic Table of the Isotopes run by the Commission on Isotopic Abundances and Atomic Weights.

Section V contains a detailed description of the very successful 43rd IUPAC Congress and the 46th IUPAC General Assembly held from 27 July to 5 August 2011 in San Juan, Puerto Rico. The event included the World Chemistry Leadership Meeting.

Section VI describes presentations at the Closing Ceremonies in Brussels. A particularly interesting event involved a group of young leaders who gave their predictions for the world in 2050, and in particular the role chemical science would play in helping us to build a better world. The meeting con-

cluded with an overall feeling of accomplishment and agreement that IYC had been an outstanding success.

Finally, Section VII attempts to summarize the legacy of IYC. It discusses the strengthened partnership with UNESCO, continuation of the activities of Section III, effects on IUPAC membership, improved interaction with governments and Industry, and planning and preparation for the IUPAC Centenary in 2019.

IYC originated within IUPAC. Many organizations contributed to its success but as members of the IUPAC community, we can all take pride in our central role in this remarkable event.

Many organizations contributed to the success of IYC 2011, but as members of the IUPAC community, we can all take pride in our central role in this remarkable event.



II. Origin of IYC

The genesis of the International Year of Chemistry (IYC) arose from initial suggestions by Russia and Korea. Those suggestions were endorsed and brought to the IUPAC Executive Committee by Bryan Henry (IUPAC president, 2006–2007) in April 2006. The Executive was very supportive and noted that a number of scientific disciplines had received recognition and public appreciation through international years pertaining to their field. After further discussions, the Union officially endorsed IYC in August 2007.

The authority to declare an International Year rests with the United Nations General Assembly and the relevant UN organization, in this case UNESCO. An ad hoc application committee was created by Bryan Henry and chaired by Peter Mahaffy to guide the process. The committee quickly sought the assistance of UNESCO and the Ethiopian Permanent Delegation to UNESCO in making IYC a reality through drafting of the proposal document. During the 179th session of the UNESCO

Executive Board in April 2008, 24 Member States, led by Ethiopia, cosponsored the proposal for the UN proclamation of 2011 as the International Year of Chemistry. The UN General Assembly then declared 2011 the International Year of Chemistry at the 63rd meeting in December 2008, with UNESCO as the responsible UN Agency and IUPAC as a major partner.

Even before UN General Assembly approval was received, Henry asked John Malin to chair an IUPAC-IYC Management

Committee. This committee, with representation from UNESCO, included some 16 individuals active in the planning stages of IUPAC involvement in IYC and continuing operations throughout the year. Meeting several times per year, the committee monitored the processes of UN designation of IYC 2011, established goals and

objectives for the International Year, supported organization of a web presence through the IYC website, produced and promulgated the IYC 2011 Prospectus, established publicity and outreach protocols, invited participation of partner organizations, raised funds, and monitored the organization of several “Cornerstone

Events,” including the opening and closing ceremonies. National chemical societies actually carried out most of the IYC 2011 activities. In addition, UNESCO organized many international and national events through their headquarters in Paris and through their field offices in different parts of the world.

The goals of IYC were formulated by the IUPAC Executive Committee with advice from the Management Committee, as follows:

- increase the public appreciation and understanding of chemistry in meeting world needs
- encourage interest of young people in chemistry
- generate enthusiasm for the creative future of chemistry
- celebrate the role of women in chemistry.

The year 2011 turned out to be a fortunate choice since it was the 100th anniversary of the award of the Nobel Prize in Chemistry to Marie Curie. It also marked the 100th anniversary of the founding of the International Association of Chemical Societies, an organization that evolved



eight years later to become IUPAC.

The IYC website was set up largely due to the efforts of Fabienne Meyers. Ultimately, it included more than 9000 contacts in 170 countries and provided a constant stream of information about IYC activities. Chemists from around the world were encouraged to list their plans and share their ideas. There were videos, instructional materials, and a plethora of chemical activities to interest students and the general public. Over the year 2011, there were more than 400 000 unique visitors and 1.7 millions page views.

The opening ceremony was the first of the IUPAC cornerstone events. Its theme focused on how chemistry could contribute to meeting the UN Millennium Goals with a focus on sustainable development in areas of agriculture, health, nutrition, energy, and materials science. The ceremony was held 27–28 January 2011 at UNESCO, Paris. It was organized by UNESCO, IUPAC, and the Launch Organizing Committee. The two-day event, which attracted 1100 participants, comprised an official opening by UNESCO Director General Irina Bokova, talks by eminent speakers including four Nobel laureates, short films, a debate, a concert, and an exhibition.

The “Chemical Notes” concert, held in the evening of 27 January, attracted an audience of 500 people. The pieces chosen by the talented quartet of young musicians demonstrated links between music and chemistry and provided a highly enjoyable amalgamation of culture and science. The exhibition brought together displays from over 20 institutions and businesses working in chemistry, in collaboration with several partners. Of particular note was the display, arranged in collaboration with the Musée des

Arts et Métiers, Paris, of 10 photographic portraits of Chemistry Nobel Laureates by the German photographer Peter Badge.

Prior to the opening ceremony, IYC was celebrated at the January Congress of the South African Chemical Institute and the Federation of African Societies of Chemistry.

An archive of the IYC website is accessible at <http://iyc2011.iupac.org/>

A series of articles appeared in *Chemistry International* that made reference to IYC. See the following links:

www.iupac.org/publications/ci/2008/3004/oc.html
www.iupac.org/publications/ci/2009/3103/oc.html
www.iupac.org/publications/ci/2009/3105/edit.html
www.iupac.org/publications/ci/2010/3202/oc.html
www.iupac.org/publications/ci/2010/3201/iw6_iycweb.html
www.iupac.org/publications/ci/2011/3301/index.html
 (special Marie Curie issue)
www.iupac.org/publications/ci/2011/3302/iw1_garson.html
www.iupac.org/publications/ci/2011/3302/iw2_iycbegins.html
www.iupac.org/publications/ci/2011/3303/edit.html
www.iupac.org/publications/ci/2011/3303/1_brouwer.html
www.iupac.org/publications/ci/2011/3303/iw1_iyc.html
www.iupac.org/publications/ci/2011/3303/iw2_big_splash.html
www.iupac.org/publications/ci/2011/3306/index.html
 (IYC competitions and IUPAC Congress coverage)
www.iupac.org/publications/ci/2011/3306/curie_stamps.html
www.iupac.org/publications/ci/2012/3402/edit.html
www.iupac.org/publications/ci/2012/3403/si.html
www.iupac.org/publications/ci/2012/3403/index.html
 (Closing Ceremony, Global Water Experiment, and the IYC 2011 Stamp Odyssey)

A more complete description of UNESCO involvement in IYC can be found as the first item in the Appendix.



III. Contributions from Countries and Chemical Societies in Specific Regions

In this section, we present edited summaries of the individual country descriptions of activities for IYC2011:

Australia (page 6), Belgium (8), Botswana (10), Brazil (10), Bulgaria (17), Canada (18), China (21), Cuba (24), Czech Republic (24), Denmark (24), Finland (26), France (28), Germany (32), Hungary (33), Lebanon (35), Malaysia (37), Peru (38), Philippines (40), Portugal (42), Russia (43), Slovakia (45), South Africa (46), Spain (63), Sri Lanka (52), Sweden (62), Switzerland (63), Thailand (63), United Kingdom (66), United States (68).

AUSTRALIA

Adapted from summary materials prepared by Roger Stapleford, CEO of the Royal Institution of Australia.

Increase the Public Appreciation and Understanding of Chemistry in Meeting World Needs

Australian IYC 2011 Launch

This event was held at Parliament House, Canberra, in February, and was opened by the Minister for Innovation, Industry, Science and Research, the Hon. Senator Kim Carr. The event had four sessions looking at key issues facing society and the role chemistry has in their solutions.

Travelling Exhibition

The 5th travelling exhibition, which was based on material innovations, was launched at Science Alive in Adelaide where 34 000 passed through the gates over a three-day period. It toured South Australia and Tasmania. The four original travel-

ling exhibitions completed the tours of their allocated states, visiting an average of nine venues each. Reports received back from the libraries were very positive. In fact, over 90 percent have requested to be included in future tours. Around 50 percent of the venues requested a talk. Royal Australian Chemical Institute (RACI) members have willingly supported this request.

Publicity

There was a significant amount of publicity that was generated mostly by state branches for the IYC 2011 activities. To give an idea of activity, the following statistics relate to news items picked up on the web over the last three months of 2011.

RACI related stories	28
Australian chemistry related stories	28
International IYC activities	441

Encourage Interest of Young People in Chemistry

IYC Website

An International Year of Chemistry website was created and continued to operate until 30 June 2012. Facebook and Twitter were used to enhance the impact with a temporary employee being engaged to run them.

Touring Lectureships

Five tours were completed and achieved the objective of getting the chemistry message to smaller locations, with trips to Newcastle, Wollongong, Darwin, and Armidale included along with the capital cities. The Peter Wothers series aimed at school children was particularly successful, with almost 1000 school students attending both the Melbourne and Canberra series.

Touring Lectures

Lecturer	Venues	Audience numbers
Prof. Peter Tregloan Sponsor: Qld Dept Education	Sydney, Brisbane, Adelaide, Perth, Hobart, Melbourne	541
Prof. Lynn Francesconi (RACI Marie Curie Lecturer) Sponsor: Uni Melb, Lanxess, CSBP	Sydney, Newcastle, ANSTO, Armidale, Melbourne, Darwin, Perth	518
Dr. Peter Wothers Sponsors: ANU, Uni Melb, Monash Uni, Uni Woll	Canberra, Melbourne, Wollongong	2700
Prof. Martyn Poliakoff Sponsors: Chemeca	Sydney (CHEMECA), Melbourne, Canberra, Adelaide, Hobart, Perth	650
Prof. Dame Julia Higgins (Selby Lecturer) Sponsors: AAS, IChemE, Lonza	Brisbane, Sydney, Melbourne (Inc JVECC dinner), Perth	402

One of the touring lecturers created a series of YouTube educational videos. He covered the periodic table while in Australia and the YouTube video had over 20 000 hits in the last three months of 2011.

A collaboration with RiAus made possible a video stream of one of the lecturers, Peter Tregloan, to SA schools.

Resource Book

A resource book for science week for the Australian Science Teachers Association was developed.

Generate Enthusiasm for the Creative Future of Chemistry

Newsletters

Regular newsletters were distributed by RACI.

Periodic Table Art Project

Artistic renderings of the elements were sold on eBay. The purchaser gave a description to an artist who created a print. The table was successfully launched in Hobart and three tables toured

Victoria, WA and NSW. Three of the venues liked the project enough to have it copied for permanent display. It's estimated that over 100 000 people saw the tables during 2011. An interactive version of the table was created on the RACI website and was "discovered" by a group of Spanish bloggers with 8000 hits in just over 2 hours. The table had over 22 000 hits during 2011.

Conferences

Eight conferences took place, planned either by RACI or its associates and all were labeled as IYC 2011.

RACI Awards Dinner

An RACI awards dinner was held to end the year's activities and to celebrate both the completion of the International Year of Chemistry and recognize the achievers in the chemistry profession.

Celebrate the Role of Women in Chemistry

International Women's Networking Event

This worldwide event, held in 44 countries in January, was the idea of Australia's Mary Garson



to bring chemistry women together for a breakfast meeting on a single selected day in 2011. In addition to networking, the aim was to celebrate the pivotal role of Marie Curie in chemistry. Regional or international connections were made on the day using Skype or other VOIP/conferencing methods. In Australia, breakfasts were held in approximately eight venues involving over 200 people. Footage and photos from some events throughout the world were sent to UNESCO, which then made these into a presentation for the official launch of IYC 2011 in Paris on 27 January 2011.

Survey of Women Chemists in Industry

This project was accepted as a linkage project and continued for two years beyond IYC. Footage and photos from some events throughout the world were sent to UNESCO which then made these into a presentation for the official launch of IYC 2011 in Paris on 27 January 2011.

Australia Conclusions

In their own words, “overall the project involved a tremendous amount of work and expense [\$500 000 Australian Dollars] over the year but

managed to bring the subject of chemistry to a wide range of people.”

The two major highlights were the tremendous impact of the chemistry and art sub project involving the periodic table and the engagement of school students with the touring lecturers Peter Wothers and Martyn Poliakof.

The five touring exhibitions and three periodic tables will continue to tour Australia for the next three years to further the goal of bringing the positive aspects of chemistry to the attention of the average Australian.

The survey of the career limitations of women in the scientific field has obtained a linkage project status and will continue. An educational card game based on the periodic table element prints is in the process of being developed.

BELGIUM

Adapted from summary materials prepared by Dr. Paul Baekelmans, National Committee Chemistry Belgium.

The National Committee Chemistry Belgium (NCCB) played the major role in stimulating and

motivating the chemistry community in Belgium, and in coordinating activities. Major players included the academy, and chemical societies in Belgium (Société Royale de Chimie et KVCV), the universities and technical universities active in chemistry. The commitment and support of the chemical industry was a major factor in the success of IYC in Belgium and most particularly in the organization of the closing ceremony in Brussels.

Increase the Public Appreciation and Understanding of Chemistry in Meeting World Needs

The NCCB organized the Opening of the International Year of Chemistry in Belgium in collaboration with Essenscia (the Belgian Federation for Chemistry and Life Sciences industries) on 11 January 2011 at the academy. Political involvement was high, with active participation of the prime minister of Belgium at the Opening Essenscia Press Conference on 11 January together with an EU commissioner.



*The Belgian stamp released on 17 January 2011 also honors the centennial of the First Solvay Conference**

A Belgian chemistry stamp was developed and arranged with the Belgian Post Office.

Organization of the IUPAC day on 1 September, with participants from Belgium, France, Switzerland and the USA.

During the year, invitations were made for open lectures to the public: From Marie Curie to Solar Impulse in Brussels, in Arlon and in Warsaw (Belgian Chamber of Commerce).

Planning and organization of the International Closing Event in Brussels, December 2011 which had 1000 attendees. The active participation of key decision makers as speakers at the closing event was notable (CEOs of DuPont, BASF, DOW, GSK Biologicals, CEFIC, European Policy makers, NGO and UNESCO) as well as the participation of numerous scientists, researchers, politicians, diplomats in the audience and the introduction by Prince Philip. There was a very positive reaction in the press (national/international) Belgian TV.

Encourage Interest of Young People in Chemistry

- All the universities and technical universities active in chemistry in Belgium promoted chemistry internally and organized exhibitions, workshops, lectures, visits.
- There was enthusiastic participation of high schools students and teachers in the closing ceremony and young students in the events/demonstration of the “biggest lab in the world.”
- A series of workshops and exhibitions “Jeunesses Scientifiques de Belgique” was arranged for young people to celebrate chemistry.
- A very exciting and successful initiative was the “Young Team Leaders Project” of Solvay. A group of young chemists from industry who did not know each other beforehand participated from the beginning of 2011 till the end of the year. During the year, teams had meetings, homework, overseas trips with the agreement of their respective companies (BASF, DOW, DuPont, SOLVAY, GSK, European Chemical Agency, McKinsey and UCB part-time), coached by the Solvay team and hosted by Solvay and DuPont. The group presented its team-building projects on the future of chemistry in meeting global challenges at the closing event, impressing the audience with its ideas, team-work, and possibilities for the future (See “A Vision of Chemistry for 2050, C/ May-June 2012, p. 4).

*This stamp and other shown in this report are presented in “An IYC 2011 Stamp Odyssey”, by Daniel Rabinovich, Chem Int May-June 2012, p. 36; www.iupac.org/publications/ci/2012/3403/si.html.

Conclusions

There is a real perception in Belgium that IYC was a worldwide success and that Belgium contributed to it. Scientists and researchers have learned to better work together and their perception of Industry is probably better today.

Some activities will remain for years (e.g., ExperimentalLAB, which is a trailer visiting schools through Belgium, and the Experimentarium Museum at Université Libre de Bruxelles).

The composition of the National Committee has been revisited to open the team to a broader “range” of chemists and to active contributors of IYC 2011. The strategy of the National Committee for the 3 years following IYC has been redefined with a motto: “How to reconcile chemistry and society” and actions of the committee focused on that.

BOTSWANA

Adapted from summary materials prepared by Louis Ngope, principal education officer II (sciences), Ministry of Education & Skills Development.

The principal goal addressed was to Encourage Interest of Young People in Chemistry. The major activities were as follows.

Chemistry Fair days were conducted nationwide in collaboration with the University of Botswana, focused on sharing chemistry related projects, presentations and experiments with primary and secondary learners. These reached as many as 600 learners and teachers. A nationwide essay and poster designing competition generated in excess of 100 submissions, the top 9 submissions at a national event received wide publicity in local media.

Participation in the Global Water Experiment took place at 6 schools nationwide involving up to 100 students and 10 teachers.

The collaborative relationship made between primary and secondary schools with the science

department of our local university (University of Botswana), which was sorely deficient, is now immensely enhanced to our mutual appreciation. Because of this, we have already conducted similar activities between our institutions on astronomy and we are confident other subjects will be featured in the future.

As stated above, our activities were largely successful in reaching audiences. The participation levels of learners and teachers can be taken as a clear indicator that the message “chemistry is part of daily life” reached its intended target.

Further impact is difficult to measure as one long-term objective of these programs was to stimulate interest in science. As the children mature, only time will tell if enrollment and performance in science subjects will see an increase.

BRAZIL

Adapted from summary materials prepared by Claudia M. Rezende, vice president of the Brazilian Chemical Society-Sociedade Brasileira de Quimica and Coordinator of IYC for SBQ.

Aware of its social responsibility and scientific expertise, the Brazilian Chemical Society (SBQ) joined with IUPAC since the beginning of the IYC campaign. Starting with the IUPAC meeting in South America, held in Concepción, Chile, in October 2009, SBQ has led several actions. These were presented and discussed at the International IUPAC/ACS meeting during their Spring Meeting in San Francisco, California, in March 2010 and at the FLAQ (Federacion Latinoamericana de Asociaciones de Quimica) meeting in Cartagena das Indias, Colombia. The Brazilian delegation also joined in the official opening celebration of IYC 2011 in Paris, on 27–28 January 2011, at UNESCO headquarters.

Certainly important to mention were the joint actions of important sectors such as the Brazilian Chemical Industries Association and the Regional Councils of Chemists. Along with these two seg-

ments of chemical production and professionalism in the country, SBQ has had a proactive and quite significant role. Together with representative associations, universities, research institutions, museums of science and schools, SBQ started planning for IYC 2011 in 2009.

The support of the Ministry of Science and Technology, especially the Department of Popularization and Dissemination of Science and Technology, was an important milestone. Two government financial grants (CNPq 48/2010 and 401756/2010) fundamental to the implementation of the project, were distributed throughout the country and supported 300 projects. Three of these projects were also supported by the Fundações de Amparo a Pesquisa dos Estados (state foundations supporting research) in all Brazilian states.

The project of the IYC remained very active in 2012. SBQ published two books, also available on the web; events were held to bring together journalists and chemists for a better comprehension of chemist activities; participation at the Rio +20 Conference on sustainability (Pop Ciência na Rio +20); exhibitions took place in 2012; an SBQ educational competition on the Legacy of Rio +20, to all levels of education, took place all over the country. In addition, books celebrating chemistry from the American Chemical Society were translated into Portuguese. The actions realized in 2011 are described in the next pages. Some of them are described in detail, due to the huge success involving the society, schools, universities, and industries.

The following projects supported the four goals of IYC 2011.

Increase the Public Appreciation and Understanding of Chemistry in Meeting World Needs

Opening Section of IYC In Brazil

The opening event to celebrate the International Year of Chemistry in Brazil was held on 23 March

at the Brazilian Academy of Science, Rio de Janeiro. It was attended by Brazilian government authorities in science and education, academics, representative associations and the chemical industries.

The National Week of Science and Technology—SNCT (Semana Nacional de Ciência e Tecnologia)

All over Brazil, 17-23 October; <http://semanact.mct.gov.br/index.php/content/view/4293.html>.

In 2011, this event joined IYC with the theme “Environmental disasters and climate changes.” The opening section of SNCT was presented by Dr. Martin Chalfie, Columbia University, Nobel Prize of 2008, at Complexo do Alemão, Rio de Janeiro, with the “pH activity” of the Global Experiment of Water.

Thousands of experiments were performed all over Brazil, including indigenous communities of Amazonia. During the National Week, the Project Ver Ciência promoted and encouraged the dissemination of scientific culture through television, the Internet, and other media and audiovisual technologies. The programs selected were focused on how chemistry can be presented in a clear and interesting way and as a cultural entertainment quality.

Number of Visitors/Downloads on Brazilian IYC Website

Section	Visits	Downloads
365 Days of Chemistry	68 524	
Everyday Chemistry Books		23 504
IYC in Schools	20 196	
Events of IYC	13 497	
The book <i>Experiments with Low Cost for the Classroom of the Elementary and High School</i>		13 010
The Exhibition of Everyday Chemistry		11 990

The Brazilian Website of the International Year Of Chemistry

www.quimica2011.org.br

The site centralized information about the activities held in celebration of the IYC 2011 in Brazil. The website includes events conducted by the academy, industries, and representative associations, as may be observed in the session Events (“Eventos”) on the website. Activities in elementary schools and secondary schools, with photos and reports of teachers and students, are also in the website under the section “AIQ nas escolas” (IYC in schools with more than 100 events).

In addition, all books generated by the project of the Brazilian Chemical Society during 2011 are available for free download on the website, together with an exhibition in the form of panels on the Chemistry of Everyday Life and the project 365 Days of Chemistry, as will be described in the following pages.

The website was also the vehicle for direct communication between the community and SBQ, where thousands of teachers and students from every part of Brazil could talk about projects to be undertaken and exchange experiences.

The total number of visits to the website in 2011 was 520 000. The number of visits to various sections on the site are shown on the table on page 11, and will be described later in this document.

Art and Chemistry—A Luminescent Project

This project has as its central theme the luminescence that exists in nature and in urban centers, as a learning tool. It was developed in partnership with the dance company LUMINI and young students from disadvantaged communities of Rio de Janeiro. At the end of the presentations, the techniques employed were presented to the public, so teachers and students were able to use this tool in learning. In total, 40 presentations were made at six sites. The total audience was about 5000.

Exhibitions

The Brazilian Chemical Society—SBQ enabled and participated in the scientific elaboration and dissemination of the three major exhibitions in the country. Two of these exhibitions were initially presented in Rio de Janeiro and went roaming, one to Roraima (Amazonia), and the other to Minas Gerais (2012). The third was held in São Paulo with the contribution of ABIQUIM. These included the following:

“Elementar—a Química Que Faz o Mundo”
(*Elementary—The Chemistry that Makes the World*)

This exhibition was elaborated by Museu da Vida-Fiocruz, Rio de Janeiro and SBQ. In an innovative Periodic Table, the visitors could learn the characteristics of the chemical elements accompanied by videos. Children and adults could also play, creating molecules in 3D. Interactive actions with plastic bags to form molecules and to manipulate fluid iron were also demonstrated in schools. The history of humanity was discussed, showing that humankind has always performed chemistry. The Museu da Vida received two Interaction Awards-2012 (one of the most prestigious awards in interactive design) recognizing this periodic table.

Blog AIQ

The IYC in Brazil had a social networking platform that includes a blog, twitter profile, Facebook page and YouTube channel. The content is especially directed to the young audience and aims at “translating” Chemistry for the day to day life.

In the whole year of 2011 IYC received nearly 1000 instances of media news coverage, over 3000 followers on social networks, with nearly 800 000 views of content. The blog was visited by people from 500 municipalities.

In 2012, the blog continued with an average of 70 visits per day, it has reached more than 600 municipalities and posts on social networks have the potential of over 1 million views. Blog: <http://>

blog.quimica2011.org.br

To enjoy the Brazilian IYC on Facebook and share information about chemistry in everyday life, go to www.facebook.com/AIQ2011 and also on twitter at www.twitter.com/quimica2011.

“Cadê a Química” Exhibition (Where is the Chemistry?)

The museum of scientific diffusion Casa da Ciência of UFRJ, in partnership with the Brazilian Chemical Society—SBQ held the exhibition entitled “Where’s the Chemistry?”

This was a fascinating experience that stimulated the imagination of the public invited to a lovely home where one can reveal the presence of chemistry in our lives. In each of the seven rooms of a house—balcony, living room, two bedrooms, kitchen, bathroom and laundry area—the visitor discovered interactive chemical phenomena that occur from the ingestion of food, preparation and meals to the pleasure or discomfort of dreams and nightmares that we have when sleeping.

In the master bedroom of the couple who live in this home scene, along with their three children, one could undertake to understand, for example what happens when you’re in love. Why do you feel such an attraction? In the bathroom, a surprise: the shower, where you can listen and sing songs with direct references to chemistry. A fun game in the laundry service area reveals how cleaning agents remove dirt and help us take care of our clothes and home. Workshops, games, lectures and films are part of a parallel programming exhibition.

Animation Video in 3D and Exhibition “The Chemical History of Humanity”

While we think of chemistry as the science of composition and transformation of matter, considering at once atoms, molecules, compounds, compositions, transformations and reactions. What we commonly do not appreciate is how this science has evolved over the years together

with humankind. This video and exhibition show how chemistry has influenced small and great historical events, such as the discovery of Brazil, the independence of the United States and World War I.

Periodic Table of Cartoons in the 34th RASBQ

This project was included among activities taking place at the 34th meeting of the ASBQ, held in Costão do Santinho, Santa Catarina. A Periodic Table of Cartoons was developed with caricatures of eminent researchers of chemistry, international and national, complete with a brief biography of each honoree, representing one of the 112 recognized elements and the 27 names assigned by IUPAC. The material was incorporated into the collection of QNINT and can be accessed at <http://qnint.s bq.org.br/tabela/>.

Generate Enthusiasm for the Creative Future of Chemistry

São Paulo School of Advanced Science (Espca) in Natural Products, and Medicinal Chemistry Organic Synthesis—Integrated Solutions for the World of Tomorrow

Held at the University of Campinas from 14–18 August, this event featured Nobel Prize laureates Ei-ichi Negishi (2010), Ada Yonath (2009), Richard R. Schrock (2005), and Kurt Wüthrich (2002). The event was coordinated by Ms. Vanderlan Bolzani, professor at UNESP. The ESPCA-Chemistry was also sponsored by the Brazilian Chemical Society—SBQ, in collaboration with the São Paulo State University, the University of Campinas, the University of São Paulo, and the Federal University of São Carlos.

“Química Para um Mundo Melhor e Experimentos” (Chemistry for a Better World and Experiments)

The project employed posters illustrative of everyday chemistry discussing environmentally friendly products and raw materials and how

they contribute to the development of society. Each of the four thematic platforms showed how chemistry relates to issues as diverse as communications, technology, energy and resources, nutrition and health, and urbanization, always taking into account interactivity of the exhibit with the visitor. The exhibition was hosted by students of the Institute of Chemistry, University of Sao Paulo who performed experiments aimed at expanding visitors' perceptions of the importance of chemistry in their lives and in the solution of major global problems, and promoting interest in careers that involve science. SBQ, the Chemical Institute of USP, the Federal Council for Chemistry and CRQ-IV and the Science Station and was sponsored by BASF, Bayer, Braskem, Clariant, Dow, Elekeiroz, Evonik, Innova, Lanxess, Oxitenio, Rhodia, Solvay and Praxair Unigel.

365 Days of Chemistry

The "365 days of chemistry" was designed to celebrate the International Year of Chemistry every day of 2011. The purpose was to insert an interview with a professional in the field of chemistry, like a professor, researcher, or professional in the industry, in the Brazilian IYC website (www.quimica2011.org.br) for each day of 2011 along with a contextualized molecule and its 3D image.

This is a pioneering project in the Portuguese language and also in the international context. The project compiled a large database of 365 molecules with historical aspects of application, a list of the molecules uses, and its importance to society. Besides the text, the molecules can be visualized as 3D images, facilitating real-space observation of the molecular structure.

The choice of molecules allowed the virtual exhibit to elucidate the various roles of chemistry as a central science such as in health, employing medicinal molecules both of synthetic origin or natural products, and molecules for diagnosis in living organisms; in agriculture with insecticide molecules, natural and synthetic; natural dyes in foods; in the communications area where the

role of newly developed molecules is still obscure and often described in inaccessible language as in concepts like piezoelectricity; in organic electronic devices, etc. The molecules were compiled by the Brazilian Chemical Society-SBQ in collaboration with a group of doctoral students from the Federal University of Rio de Janeiro and undergraduate students, with the support of QNint (www.qnint.s bq.org.br).

The survey data portal www.quimica2011.org.br, from Google Analytics, with information on traffic and activity on this site, revealed 68524 hits to this session from 18 February to 31 December 2011. This was the most accessed content from the website.

34th Annual Meeting of the Brazilian Chemical Society—RASBQ

With 4420 registrants, the 34th RASBQ was the largest meeting of the Brazilian chemical community yet held, serving as the main meeting point for chemists celebrating the IYC 2011 in Brazil. Two major symposia occurred, one covered internationally, with the participation of representatives of major organizations and scientific societies including Nicole J. Moreau, president of the international Union of Pure and Applied Chemistry; Nancy B. Jackson, president of the American Chemical Society; David Phillips, president of the Royal Society of Chemistry; and Temechehn Engida, president of the Federation of African Societies of Chemistry.

A second symposium, coordinated by César Zucco (UFSC), the former president of SBQ, discussed the progress and challenges of scientific evaluation in chemistry. The thematic sessions played a central role in the promotion of interdisciplinarity through debates in strategic areas of chemistry: (i) drugs and medicines, (ii) advanced materials, and (iii) new trends in methods of structural determination. The important role of young talent in science was emphasized in the thematic session "The International Year of Chemistry 2011)—Joint Symposium of

the Brazilian Chemical Society and American Chemical Society: 28 Young Talents in Science”, organized by SBQ in partnership with the ACS and including six eminent scientists in the international arena—three from Brazil and three from the USA.

Encourage Interest of Young People in Chemistry

Competition for a Brazilian Symbol for the IYC

Sponsored by SBQ, this was an open competition on the web that began in October 2010 and led to the logo which was adopted.

Chemistry National Forum of Graduate and Post-Graduate Coordinators in Brazil

Held 17–19 August at the headquarters of the CRQ-IV, São Paulo, this forum gathered 110 representatives of the Brazilian regions. The meeting focused on the formation of the chemist and professor of chemistry at all levels of education related to the significance of the Brazilian International Year of Chemistry.

Global Water Experiment

The Brazilian Chemical Society coordinated the pH activity of the Global Water Experiment in our country. The experiment was part of the planet’s global set of actions with the aim of contributing to sustainable development and preservation of the planet.

The objective of the Global Experiment in Brazil, whose results were placed in databases on a global scale, was to conduct experiments on water quality in the largest possible number of schools and municipalities. The activities were carried out by schools, science museums, fairs and in popular science events.

The organizers distributed 35,300 kits for all the Brazilian States for pH measurement (capitals and countryside). As can be seen in the Global Experiment website, Brazil accounted for 28 percent of the experiments and 29 percent of

the students listed on the international site.

This activity had the direct support of SBQ, the National Week of Science and Technology from the Department of Science Popularization from the Ministry of Science and Technology – MCT; INCT of Energy and Environment; INCT of Complex Functional Materials, UFBA and UNICAMP and CRQ-SP. Using the kits, students, teachers and educators collected water samples from a natural source location near them.

The average values from the results were released in the Global Experiment Database along with information about the sample and the institution, through a national portal for receiving data (QNint of the Brazilian Chemical Society - <http://qnint.s bq.org.br/qni>).

Complementary material was also arranged to disclose the experiment as may be observed in the following www addresses:

1. Short videos (1 minute or 30 seconds) on the National Week of ST and the pH of water experiment are at: <http://verciencia.com.br/>;
2. A video explaining how to carry out the pH experiment: <http://youtu.be/rRwyUna25v4>
3. The result of the experiments were monitored in real time on the QNint website (<http://qnint.s bq.org.br/qni>).

Everyday Chemistry—A Thematic Project

The Everyday Chemistry project resulted in almost a countless number of celebrations and projects, classroom collections, and the exhibition of thematic posters. We would like to emphasize particularly the *Chemistry in Everyday Life* book of experiments for elementary and high school. These actions are outlined below.

Chemistry in Everyday Life Book Collection

Eight books were produced in this collection of simple materials, easily accessed by students in elementary and secondary education and society in general with themes, such as: *The Chemistry of Love*; *The Chemistry of Food: Fermented Products and Dyes*; *Chemistry and Control of*

Doping in Sport; Chemistry in Nature; Chemistry in Skin Care; Chemistry in Cosmetics; Chemicals in Health and Radioactivity and Environment.

The books are available for free download on the website of the International Year of Chemistry AIQ-2011 (www.quimica2011.org.br). So far, 23504 copies have been downloaded.

Book of Experiments: “A Química Perto de Você” (Chemistry around You)

This material focuses on elementary and high school classes. It was designed with low cost and easy experiments from suitable sources, such as the “Química Nova na Escola”, a publication for high school teachers and students by the SBQ, and from the RSC and ACS websites. As the experiments were carefully tested - the most interesting and feasible ones were chosen to be implemented in class as experiments that do not demand overheating or the use of toxic product. Thus, they did not produce waste and were safe during handling. During 2011, 13 010 copies of this book were downloaded.

These two materials were added to the complete collection of “Química Nova na Escola” with search engines, and a DVD was created to celebrate the IYC in Brazil. It is important to note that 80 000 copies of this DVD were distributed to Brazilian schools all over the country in collaboration of SBQ and the Ministry of Education.

“Chemistry in Everyday Life” Exhibition

Also related to the subject of everyday chemistry, 20 posters were carefully designed by SBQ, accompanied by a manual of experiments, in partnership with the Museu da Vida-FIOCRUZ, Rio de Janeiro, Brazil. This exhibition was inspired by a material kindly provided by the American Chemical Society.

In partnership with science museums and other centers of science dissemination and in collaboration with the Brazilian Association of Science Centers and Museums—ABCMC, the exhibition was presented throughout Brazil in

the first semester of 2011. The total number of presentations in museums and universities was around 350 from January to July of 2011, with an estimated audience of 10 000. Since August 2011, the exhibition has been freely available at www.quimica2011.org.br. It has been downloaded 11 990 times.

“A Química Através da Câmera”

This competition focused on the theme “The chemistry through a camera,” with home videos and photographs, for youngsters between 14 to 25 years of age. The main goal of the contest was to draw attention to the relevance of chemistry in everyday life and its role in building a sustainable world. Choosing the winners was not easy: there were 247 photos and 19 videos.

The competition included young people from all regions of the country and covered the states of Acre, Alagoas, Amapá, Bahia, Ceara, Mato Grosso do Sul, Maranhão, Minas Gerais, Paraná, Rio de Janeiro, Rio Grande do Sul, Rondonia, Santa Catarina and São Paulo . The winner of each category won a trip to the Museu da Vida and Botanical Garden of Rio de Janeiro, in Rio de Janeiro (RJ), the Museu da Vida and Technology and PUC-RS planetary UFRGS in Porto Alegre (RS), the Emilio Goeldi Museum in Belém (PA) and the Science Station, Catavento Cultural and Butantan Institute in São Paulo (SP). It was a partnership between the Museu da Vida/Casa de Oswaldo Cruz / Fiocruz; the Brazilian Chemical Society, SBQ; Museum of Science and Technology PUCRS, Catavento-Cultural, São Paulo; Emilio Goeldi Museum, Pará (Amazon); Ministry of Education and Ministry of Science and Technology.

Celebrate the Role of Women in Chemistry

Women in Science

Many events related to this theme were conducted in Brazil during 2011. Several of the most

important were featured: (1) in Santa Catarina, 25 May at the 34th Annual Meeting of SBQ; (2) at the Networking Breakfast for Women in Araraquara, SP, one of the IYC 2011 activities and (3), as Chemist Day, which was held nationally on 18 June, celebrating the theme “Women in Chemistry.”

BULGARIA

Adapted from summary materials prepared by Prof. Dr. Christo Balarew of the Bulgarian IUPAC National Adhering Organization.

Under the auspices of the NAO, a network was established for the celebration of the IYC with the participation of appropriate persons from the Ministry of Education, Youth and Science, Ministry of Economy, Energetic and Tourism, Ministry of Environment and Waters, all chemical institutes of the Bulgarian Academy of Sciences, all universities teaching chemistry in Bulgaria as well as some chemical enterprises. Every one of these organized the celebration of the IYC in their respective institutions. Messages were sent to all higher educational institutions where chemistry is taught, proposing organization of scientific sessions of chemistry. Messages were sent as well to the high schools proposing organization of evenings dedicated to chemistry in schools.

Increase the Public Appreciation and Understanding of Chemistry in Meeting World Needs

In Sofia, an Official Opening Ceremony of the IYC 2011 in Bulgaria was organized on 11 February at

the Academy of Sciences in Sofia under the chairmanship of Prof. Christo Balarew. Representatives at the event were from Ministries, Scientific Unions, all scientific chemical institutes and all universities teaching chemistry in Bulgaria as well as a strong participation of the general public.

During February-March exhibitions with posters describing scientific results from all scientific chemical institute and all universities teaching chemistry in Bulgaria were organized in the central foyer of the main building of the Bulgarian Academy of Sciences.

A National Conference in Chemistry 2011 with international participation as well as an International Conference “Green Technologies for Greener Environment”, associated with the year of chemistry, were organized from 26 to 29 May 2011.

The “National Polytechnic Museum” in Sofia has organized an exhibition for the chemical sciences, education and industry in Bulgaria as well an exposition “Bulgarian Trace in the Chemical Science”. A special exposition was dedicated to Marie Curie. In September, Chem Days were organized with chemical shows and demonstrations.



*Winner of the Global Chemistry Stamp Competition in the 12-14 age group:
Vasilena Vasileva, Bulgaria*

The “Earth and People Museum” Sofia organized several events for IYC: during February-March an exhibition “Distinguished Bulgarian Chemists and the sustainable development”; on 22 April a Gala-concert dedicated on the IYC was organized; in September-October an exhibition “Chemical Science, Education and Industry”; on 25 November, a special scientific session was organized “Chemistry for the Health and Cosmetics” together with an exposition of medical and cosmetic products developed by chemists from the Bulgarian Academy of Sciences.

The Official Closing Ceremony of the IYC 2011 in Bulgaria was held on 12 December 2011 at the Academy of Sciences in Sofia under the chairmanship of Prof. Christo Balarew. As for the Opening ceremony, representatives attended from Ministries, Scientific Unions, all scientific chemical institutes and all universities teaching chemistry in Bulgaria as well as a strong participation of the general public.

IYC was advertised extensively within the chemistry community e.g. in *Journal of the Bulgarian Academy of Sciences*, Vol. 124, Iss. 1, p. 1, 2011; *Chemistry and Industry* (Bulgarian), Vol. 82, Iss. 1, p. 1, 2011; *Chemistry* (Bulgarian), Vol. 19, Iss. 6, p. 1, 2010; *Science* (Bulgarian), Vol. 21, Iss. 1, p. 1, 2011.

Articles were published in many journals and newspapers on the use and benefit of chemistry in connection with the IYC, for example: One whole Issue of **Journal of the Bulgarian Academy of Sciences**, Vol. 124, Iss. 1, 2011 was dedicated on the International Year of Chemistry and contains 5 scientific publications; In the journal *Chemistry* (Bulgarian), Vol. 19, Iss. 5, p. 323, 2010 was published a comprehensive survey for the IYC and the role of IUPAC, under the headline “2011 – International Year of Chemistry”; In the journal *Science* (Bulgarian), Vol. 21, Iss. 2, p. 3, 2011 was published a comprehensive article describing the Launch Ceremony of the IYC on 27–28 January in Paris.

Outside Sofia, the information taken from internet shows more than 600 initiatives for celebration of IYC.

Encourage Interest of Young People in Chemistry

“The National Home of Technics” in Sofia organized on 13 May 2011 a **Day of the Chemists** with a very strong participation of chemistry teachers and high school students. Outstanding chemistry teachers were awarded with honorary diplomas. Awards were given to high school students, win-

ners in City, Regional and National competitions on chemistry for undergraduate students (organized in collaboration with the Teacher’s Section of the Union of Chemists).

The **Teacher’s Section of the Union of Chemists** organized a broad network of high schools participating in The Global Water Experiment for the International Year of Chemistry.

The **Night of Chemistry** in the University of Sofia was organized on 23 September. An exposition for the achievements of Bulgarian chemists was arranged in the central foyer of the main building of the University of Sofia.

In all universities with chemistry teaching, the IYC was celebrated in different ways. As an example can be given the celebrations in the Department of Chemistry and Biochemistry of the Medical University in Sofia. On 11 May, the Medical University in Sofia organized a Chemistry Party with presentations concerning the application of Chemistry in Medicine. A special presentation was dedicated to Marie Curie. The presentations were accompanied by appropriate music and ended with a cocktail.

The University on Chemical Technologies and Metallurgy in Sofia organized a competition between high school students for writing an essay on the topic “Chemistry—Our Life, Our Future.” One hundred and thirty-one essays were presented. More than 20 of them were awarded a prize.

The University of Chemical Technologies and Metallurgy organized an international workshop on “**Application of Nanomembrane Technologies in the Pharmaceutical Industry.**”

CANADA

Adapted from summary materials prepared by Luke Andersson and Bernadette Dacey, staff members at the Chemical Institute of Canada. The activities are also described on the IYC Canada website www.iyc2011.ca.

Increase the Public Appreciation and Understanding of Chemistry in Meeting World Needs

Science Rendezvous

This event, on 7 May 2011 was intended to give the general public the opportunity to peek behind the doors of the various research institutions to see what is going on at the truly frontiers of Science. Beyond this, it also brought together all institutions, and non-profit organizations, to provide a single event to celebrate the importance of science. There were instructional demonstrations, fun and interactive activities, and direct one-on-one discussions with scientists and Nobel laureates.

National Chemistry Week

National Chemistry Week (NCW) in October is a community-based annual event that unites CIC local sections, businesses, schools, and individuals. Through public lectures, laboratory visits, hands-on experiments at shopping malls, science centres and museums, etc., it communicates the importance of chemistry to our quality of life. This event took on special importance as a part of IYC celebrations.

Joe Schwarcz IYC Lecture Tour

Joe Schwarcz is Director of McGill University's Office for Science and Society, a unique enterprise with a mandate of demystifying science for the public, the media and students. He is well known for his informative and entertaining public lectures on topics ranging from the chemistry of love to the science of aging. His first lecture of the series was entitled "Are Cows More Trustworthy than Chemists?" Over the course of the year, Prof. Schwarcz visited locations across Canada to speak about Chemistry in every day life.



Pierre Beaumier IYC Lecture Tour

Pierre Beaumier, President of CanAlt Health Laboratories, has over 34 years of experience in the field of analytical chemistry. As one of the founders of Maxxam Analytics, Canada's largest private analytical testing laboratory, he has been at the forefront of innovations in the areas of the development of testing methods, improving analytical accuracy, and quality systems and standards. His lectures focused on hair analysis through screening for essential minerals and toxic elements.

Canadian Commemorative Stamp

At the request of the Canadian IYC organizing committee, Canada Post issued a stamp to commemorate IYC 2011. The Canada Post released the stamp on 3 October in honor of IYC, featuring Nobel laureate John Polanyi and his contributions to chemistry. The stamp was unveiled at an event held at the University of Toronto - Chemistry Nuit Blanche.



Some of the participants who were able to attend the mural installation ceremony held for project participants, organizers, and sponsors on 10 April 2012.

A Summary of Outreach Events for the International Year of Chemistry

Initiative	Public Reached	Measure
Science Rendezvous	10 000	IYC Report
IYC on Jeopardy	9 000 000	Quoted Viewership
Globe & Mail Ad	325 000	Quoted Circulation
Joe Schwarcz Tours	1500	10 talks x 150 attendees
Pierre Beaumier Tours	600	4 talks x 150 attendees
Olympiad	160	Students who participated
Hill Times Ad	10 000	Quoted Circulation
YouTube Contest	5000	Views on YouTube, Pick up of Press Release
Facebook/Social Media	1000	"Likes," "Impressions"
Local Section Events	1000	10 events x 100 attendees
Daily Planet	10 000	Very rough estimate
National Chemistry Week	750	Estimate
Global Water Experiment	750	Estimate
Commemorative Stamp	2000	Nuit Blanche attendance; distribution
YTV	5000	Estimated viewership
TOTAL 2011:	~9 376 000*	

*Please note that this number reflects the quoted Jeopardy! viewership, which is a syndicated program. The number of Canadians who viewed the program would be much lower (estimate 750 000). Furthermore, the circulation of newspapers gives the maximum number of impressions the advertisements could have made and is not indicative of how many people took in the ad. The total estimate is 1010 000–1110 000 for all of 2011. Remove Jeopardy! and the Globe and Mail ad and one obtains a conservative estimate of 50 000–100 000 people directly reached or involved.

Encourage Interest of Young People in Chemistry

Chemistry Olympiads

Every year, the Canadian Chemistry Olympiad (CCO) organization works with volunteers and high school and cégep teachers to identify pre-university students who have a talent for chemistry and then to prepare the best of them for participation in the International Chemistry Olympiads. In 2011, the CIC took over the management of the CCO and promoted it as part of IYC.

IYC YouTube Contest

In celebration of IYC, all students who had not yet entered University or College were encouraged to participate in a Chemistry related YouTube

contest, in which winners received scholarship funding to be used to further their education. While stimulating achievement in the students, the videos were also available to view throughout the general public.

Ask a Laureate

On 6 May 2011, the chemistry department at the University of Toronto and the Ontario Institute for Cancer Research hosted the second annual "Ask a Laureate" event. This was an opportunity for high school students as well as the general public across the country, to both hear, and ask questions of, award-winning chemists who have helped to transform our world by their discoveries.

Global Experiments

With global coordination from IUPAC, Canada participated in the global experiment On water.

Public Media

In addition to the web site mentioned above, CIC also developed a Facebook Page, Youtube account, Flickr account and a Twitter page for 2011. The following table summarized the outreach for IYC in Canada

Generate Enthusiasm for the Creative Future of Chemistry

Canadian Chemistry Milestones

As a result of work by Cooper and Martha Langford in the late 1990s, the CIC has a large number of Milestones in Canadian chemistry. In preparation for IYC, these were updated and presented in a number of ways, using electronic means (website, Facebook, etc.), print (magazines, newspapers, etc.), and exhibition (science centres and museums, CSC/CSCe conferences).

Canada Conclusions—Highlights of IYC

- A Guinness World Record is set at Université Laval in honour of IYC. http://www.chem-tech.ca/index.php?ci_id=2804&la_id=1
- Dr. Joe Schwarcz represents Chemists on Daily Planet a show on the discovery channel.
- Alex Trebek informs us about IYC in an episode of Jeopardy! which featured chemistry trivia.
- Canadian students participate in the Global Water Experiment.
- Canada Post launches a commemorative stamp for IYC.
- British Columbia students receive CAN 4000 in funding for further education by sweeping the “It’s Chemistry, Eh!?” YouTube contest for high school students: http://www.chem-tech.ca/index.php?ci_id=2475&la_id=1.
- Canada’s Chemistry Team performs their best ever at the International Chemistry

Olympiads in Turkey.

- Across the nation, thousands came out for fun chemistry demonstrations and lectures during Science Rendezvous.
- Many of Canada’s university chemistry and chemical engineering departments joined in the celebrations hosting public education events throughout 2011.
- The Canadian Society for Chemistry hosted its largest Chemistry Conference to date.
- Finally, IYC activities in Canada were generously supported by associations, companies, government institutions, and universities.

CHINA

Adapted from summary materials prepared by Can Zhang, the Committee of International Affairs, Chinese Chemical Society.

Increase the Public Appreciation and Understanding of Chemistry in Meeting World Needs

Launch of Popularization Activities for IYC 2011

On 19 February, the Chinese Chemical Society had a further launch ceremony at the China Science and Technology Museum in Beijing. In addition to the poster competition and the national fun chemical experiment design competition, a variety of popularization activities were planned to take place in China. A series of popularization lectures, one lecture a month, were organized to be given by Chinese Academy of Sciences members at the China Science and Technology Museum, Beijing.

Official Launch Ceremony of IYC

The launch ceremony of the International Year of Chemistry was held in the Great Hall of the People in Beijing, China, on 9 April. State Councilor Liu Yandong, President of Chinese Academy of Sciences Chunli Bai, President of Chinese Chemical Society Jiannian Yao and 730

attendees from research Institutes, Universities and Chemical Industries attend the ceremony.

“Joy and Music in Chemistry” Concert

A special concert named “Joy and Music in Chemistry” was held in National Centre for Performing Art, Beijing on 24 May. It was a particularly unique activity for celebrating the International Year of Chemistry in China

IYC Public Lecture—History and Prospects

A public lecture was held in Beijing on 7 June 2011 for celebrating IYC. 11 top scientists and experts from Chemistry and Chemical industry. They presented lectures focusing on a variety of topics. 1500 attendees from research Institutes, Universities and Chemical Industries attended the event.

Chemistry Popularization Exhibition

The Chemistry popularization exhibition took “Chemistry—Our Life, Our Future” as a subject, through a picture, an exhibit article, and an interactive game (a small experiment). Its purpose was to demonstrate the charm as well as the contributions of chemistry to human culture. The main coverage included: chemistry and the human culture development, chemistry in daily life, chemistry and the public security and the prospects of chemistry prospect in future development.

A Stamp Commemorating IYC

In January 2011, at the request of the Chinese Chemical Society, China Post issued a postcard to commemorate IYC 2011. The postcard began to be circulated in January 2011. The members of CCS and chemical professionals in China will share celebrating the International Year of Chemistry.

Industrial Cooperation

The Chinese Chemical Society established a relationship with the chemical industry in support of IYC 2011. Results of a video contest called “Green Chemistry Contributes to the Resolution

of Global Problems” organized by AICM and CCS were posted at www.v.chemsoc.org.cn.

Celebrating of 2011 IYC—Yunnan University

On 25 March, in Kunming, China, the teachers and Students of Yunnan University celebrated the IYC through a dance show. At Chongqing University, students also danced in celebration of the IYC.

IYC in China Brochures

Published by CPCIF, CCS, CIESC and AICM, the brochures review the part of IYC activities in China, including numbers of photos.

Reading for Understanding Chemistry

Conducted by the Chinese Association of Science and Technology, this activity featured books that explain chemistry to the general public (see www.iyc2011.cn/m.php?name=zhishihuaxue).

Encourage Interest of Young People in Chemistry

Poster Competition for Celebrating International Year of Chemistry

The competition was scheduled from 1 January to 31 December 2011.

Chemistry, Making Life Better Exhibition

On 26 March, 13 academicians of the Chinese Academy of Sciences and 400 high school students participated in the opening ceremony of the IYC 2011 Memorial Exhibition. CAS President Chunli Bai gave an address emphasizing the motto “Chemistry, Our Life, Youth, and Future” for young students.

Open Door Day of Chemistry Institutions and Colleges in China

The activity took place around May 2011 in universities and Institutes dealing with chemistry in the entire country.

Celebration of 2011 IYC at Renmin University

On 20 April, Department of Chemistry, Renmin University in Beijing opened an “experimental street” on the campus, to demonstrate a variety of interesting chemical experiments to all the teachers and students.

Celebration of IYC at Wuhan University

“Kids and Experiments” was shown in Hubei Science and Technology Museum through pictures and small practical experiments.

The National Fun Chemical Experiment Design Competition

In this competition, students, teachers from high schools, universities and researchers from Institute across China were invited to upload an experiment design scheme. The competition provided the participants the chance to show how their work is also recreation. An experiment design scheme was provided by the organizing committee; the winners will get the certificate and bonus. On 15 August, “2011 IYC Experiments for Fun Competition” came to the end. The competition launched on 19 February and lasted for six months. The competition drew strong interest and enthusiasm from professional chemists and the public, with 274 designs from 132 organizations, in 26 provinces being submitted. The final round was held on 13 and 14 August in Beijing Normal University. Ten teams won first prize, twenty won second prize, thirty won third prize.

Water Quality Measurement Activity of High School Students in China

The activity encouraged high school students, through the water quality measurements of pH value, salinity, hardness, to deepen their understanding on chemistry, improve their environmental protection consciousness and scientific literacy. The activity is sponsored by Division of Chemistry, Chinese Academy of Sciences and Chinese Chemical Society, support by College of Chemistry, Beijing Normal University (<http://2011.chem.bnu.edu.cn/shuiyuan.html>).

Generate Enthusiasm for the Creative Future of Chemistry

The titles of all symposia, more than 29 academic symposia sponsored by CCS in 2011 were preceded by “IYC in China” have been preceded by “International Year of Chemistry in China.”

Care for Life, Care for Chemistry

On 15 May 2011, the Forum of 2011 Beijing Science Week—“Social Responsibility—Chemistry and Scientific Literacy for Citizens” opened at Peking University. This event was co-organized by the college of Chemistry and Molecular Engineering of Peking University and Jiaying Yizu Media Group.

Symposium on the Frontier of Chemistry

The CCS & GDCh Symposium on Frontier of Chemistry in Beijing was held in Tsinghua University in Beijing on 22 June 2011. The organizers invited nine prominent Chemists, including Nobel Laureates. Prof. Hartmut Michel (Germany), Prof. RIKEN Ryoji Noyori (Japan) and Prof. Barry Sharpless (USA) gave the lectures. Prof. Helmut Schwarz (Germany), Prof. Alois Fuerstner (Germany), Prof. François Diederich (Swiss), Prof. Qilin Zhou, Prof. Xi Zhang, Prof. Zhen Yang (China) also spoke. 400 participants from different provinces of China attended symposium. Topics included the membrane protein structure, chiral catalytic synthesis, the total synthesis of catalysis, and organic synthesis of photoelectric material.

Promotion of IYC at East China University

On 19 March, the awards ceremony for the “AICM English Debating Competition and PowerPoint Presentation Competition” celebrated 2011 IYC.

IYC Logo on the Covers of CCS Journals

The CCS publishes 22 chemistry journals listed below. The IYC logo was displayed on the front cover of each of the following journals:

Journal of Fuel Chemistry and Technology, Chinese Journal of Chemical Education, Chinese Journal of Inorganic Chemistry, Chinese Journal of Analytical Chemistry, Chinese Journal of Chromatography, Chinese Journal of Organic Chemistry, Chemistry, Journal of Molecular Science, Acta Polymerica Sinica, Electrochemistry, Chinese Journal of Polymer Science, Acta Chimica Sinica, Chinese Journal of Chemistry, University Chemistry, Chinese Chemical Letters, Chinese Journal of Structural Chemistry, Acta Physico-chimica Sinica, Polymer Bulletin, Chinese Journal of Catalysis, Chinese Journal of Applied Chemistry, Acta Chimica Sinica, Chinese Journal of Chemistry, and Chemical Newsletter.

CUBA

Adapted from summary materials prepared by Roberto Cao.

Increase the Public Appreciation and Understanding of Chemistry in Meeting World Needs

Many activities were organized especially for IYC and mainly directed to the general public:

- A wide discussion of science via newspapers radio and TV, took place with the participation of more than five programs. Two TV programs dedicated frequent small spaces to chemistry and the scientific magazine *Juventud Tecnica* dedicated their May issue to chemistry.
- Issuance of an IYC stamp at an UNESCO representation in Havana on 8 February, the birthday of Mendeleev.

Generate Enthusiasm for the Creative Future of Chemistry

- Monthly lectures on chemistry for associates,

different scientific events were dedicated to IYC.

Encourage the Interest of Young People

- A Summer Camp on Science and Technology was organized for 100 excellent high school students.
- The National Olympic Competition on Chemistry was held for university students.

Celebrate the Role of Women in Chemistry

- A symphonic concert dedicated to M. Curie took place on her birthday at an important concert hall in Havana (the Basílica Mayor de San Francisco de Asís)
- At the Havana Fair of Books (Feb 14) a round table discussion was held on the role of women in Chemistry.

CZECH REPUBLIC

Adapted from summary materials prepared by Dr. J. Stejskal.

One event for IYC was specifically organized by the IUPAC National Adhering Organization of the Czech Republic. A symposium "Conducting Polymers: Formation, Structure, Properties, and Applications" was organized on 10-14 July 2011 as an IYC event to which there were 124 participants from 37 countries, for which a scientific report was published in *Chemistry International*, January-February 2012, p. 29-30.

DENMARK

Adapted from summary materials prepared by Ture Damhus on behalf of the Danish committee for IUPAC.

The Danish committee for IUPAC took the first steps towards initiation of specific IYC activities, but the group had very limited manpower and no hired staff or funding to draw from, so it was a slow start. Danish industry had been thinking about the IYC as well, and eventually a separate working group was formed encompassing representatives from academia, the school system and industry.

In retrospect, one of the problems with the entire IYC concept in Denmark was that very many workers within the broad field of chemistry already engage heavily in trying to bring chemistry to the public and creating enthusiasm for the subject among young people: universities have science shows, industrial companies invite the public to see production facilities or show around school classes and tell about their research, there are science festivals engaging all categories of contributors, etc. Asking for even more is difficult in terms of both funding and the time that people must spend. Still, a number of activities ended up being conceived, and many of them materialized.

Increase the Public Appreciation and Understanding of Chemistry in Meeting World Needs; Encourage Interest of Young People in Chemistry; Generate Enthusiasm for the Creative Future of Chemistry

- A website was set up at www.kemi2011.dk.
- One idea (not unique to the Danish group!) was to have something like a 'molecule of



the week' with colleagues sending stories about their favorite molecules. We did not get a new one each week, but we ended up having 35 good stories which can still be read on the web site.

- A number of articles were commissioned from experts in various areas of chemistry as well as a number of biographies of prominent Danish chemists, including world famous figures like S.P.L. Sørensen, who proposed the pH scale, and the Nobel Laureates Henrik Dam and Jens Christian Skou. All the articles were meant as sources of inspiration including for the high school system. They were eventually edited and published by Kemiforlaget as a book with the title *Aspekter af Dansk Kemi i det 20. og 21. århundrede* (translates to *Aspects of Chemistry in Denmark in the 20th and 21st centuries*).
- Excerpts of some of the above articles were published in the Danish chemistry magazine *Dansk Kemi*, in which additionally a number of portraits of (other) famous chemists appeared, including Marie Curie.
- A chemical-historical tour of the Copenhagen Harbor, once bustling with chemical industries, was arranged. A success that deserves being repeated.
- A symposium on textile chemistry was held which drew together a diverse group of speakers from archeology, of science, indus-



try, textile research and design. The contributions were later published as a book under the auspices of the Danish Society for the History of Chemistry (www.historisk-kemi.dk). The book is in Danish and is intended to have a readership not the least in the Danish educational system.

- Courses were given for chemistry teachers about subjects of current interest like oil, sugar, plastics, catalysts, energy.
- Science shows were staged at the Technical University of Denmark specifically targeting the public in the week of the fall vacation. Some of the lecturers from there were also invited to give their presentation in Danish national TV.
- A Chemistry Day was held under the auspices of the Confederation of Danish Industry for which a competition had been announced in which school children could send in videos about chemistry. The winning contributions can be seen on YouTube.
- Former high school teacher in chemistry, Minister of Culture and Minister of Research Jytte Hilden, herself trained as a chemical engineer, arranged, among other activities, a series of lectures for the public with a focus on chemistry in daily life and a special session on Madame Curie.
- Denmark was represented at the opening ceremony in Paris and in San Juan, and these events were also covered in articles in *Dansk Kemi*.

Celebrate the Role of Women in Chemistry

- A number of Danish women chemists shared a chemical moment in time at the Technical of Denmark on 18 January 2011, as did women chemists all over the world.
- A meeting was held on 8 March 2011, the international women's day, to focus on women, chemistry and career.
- Susan Frontczak, who impersonated Madame

Curie at the IUPAC General Assembly in San Juan, was invited to Denmark and gave performances at two high schools and two universities.

- Events concerning Marie Curie as highlighted in section above.

Conclusions

- Roald Hoffmann and Carl Djerassi's play *Oxygen* was translated into Danish and we had hoped for a number of performances of it as a dramatic reading in Danish. It turned out to be impossible to establish the funding needed. We are still planning to publish the translation with appropriate supplementary material.
- As already mentioned, much is going on already each year in various chemistry fora, and a number of events that are ongoing normally have not been included here.
- The IYC 2011 activities were summarized in a March 2012 article in *Dansk Kemi* which is available online: no. 3 (2012) pp. 8-10.
- The IYC working group mentioned above will most probably continue to meet once in a while to consider future initiatives, so this was one IYC activity that may have effect on a longer timescale.

FINLAND

Adapted from summary materials prepared by Helena Visti.

The Association of Finnish Chemical Societies was the coordinator of the IYC program in Finland. In summer 2009, we established an organizing committee in which all main interest groups were represented, such as universities, industry, teachers union, chemists union, administration etc. The chair of the committee was Professor Markku Leskelä from University of Helsinki.

More than 50 events were organized to celebrate International Year of Chemistry in Finland.

The number of people we reached in those events was about 65 000.

Increase the Public Appreciation and Understanding of Chemistry in Meeting World Needs; Encourage Interest of Young People in Chemistry; Generate Enthusiasm for the Creative Future of Chemistry

A jubilee magazine dedicated to chemistry in the Finnish language for IYC was published in December 2010 by the Association of Finnish Chemical Societies and produced by the editorial staff of Finnish Chemical Magazine. The edition comprised 30 000 copies and these were distributed to the public, to all high schools and secondary schools and was also available at all the events arranged during the year. The magazine covers a wide variety of topics from chemical innovations and presentations of chemists' work in different branches, to chemistry in everyday life. Chemical innovations were also introduced in the poster which was distributed together with the magazine.

The opening ceremony of the IYC was arranged in conjunction with the Science Forum of Finland at the beginning of January. The event included three lectures representing themes of the IYC. Other sessions on chemistry were included in the program of the Forum, as well as a lecture on Marie Curie's life and several workshops during the Night of the Sciences. All these events gathered more than 1000 people.

Chemists and other professionals in the field of chemistry gathered at the Finnish Chemical Congress and ChemBio Finland exhibition in Helsinki Fair Centre in March. The program of the congress concentrated on IYC themes. Eight thousand people visited the exhibition, and over 1000 people listened to the lectures.

There were two main events for the general public in Helsinki area during the year:

i. The first one took place in May in the city

centre of Helsinki. The Association of Finnish Chemical Societies, together with the main partners and sponsors of the IYC project, arranged one day event with workshops, presentations etc. There was a big tent with a stage and stands for partners and a smaller one for workshops. Activities were also arranged outside, such as soap-bubble competition and barbeque presentations. Around 5500 people visited the area during the day.

- ii. The second event in Helsinki Metropolitan Area, was the Night of Chemistry in the Science Centre Heureka in December. Presentations, workshops, lectures etc were going on from afternoon until midnight. One of the highlights was the soap-bubble competition final for the winners of local competitions. The program was planned assuming that in the afternoon the visitors were mainly school classes, a bit later came families and after nine o'clock teenagers and adults, really interested in chemistry. The night was a real success with around 4200 participants.

Local chemistry societies arranged public events in ten different cities. Local companies, universities and other organizations were involved in projects. Knowhow and innovations of the area were introduced in events. There were also activities for children and families, such as local soap-bubble competitions, workshops and presentations. Also Studia Generalia lectures were arranged in many cities. Almost 25 000 people participated in these events. One of the local organizations even produced a DVD, introducing chemistry as a profession. The DVD introduces in a very attractive way prospects that studies of chemistry can provide. The project was carried out together with students of local Media Institute.

The Finnish IYC organizing committee also decided that IYC should be present in big summer festivals. We participated in Pori Jazz

Festival, Kotka Maritime Festival and the Finnish Agriculture Exhibition in Pori. Thousands of people were reached in these events.

To attract interest of journalists and media in chemistry, a special program for journalists was arranged. It contained six events concentrating on different themes of the International Year of Chemistry, such as alternative fuels for transportation, food, health care products etc. Journalists were also invited to visit the Department of Chemistry in University of Helsinki. There they were told about the latest achievements in chemistry and also had an opportunity to explore chemistry in laboratory surroundings. The media program was a great success. One hundred different journalists participated and several articles were published in newspapers, magazines and internet.

Conclusions

We measured the success of activities by face to face contacts and media hits. The number of contacts was estimated to be around 65 000, and media hits were over 200. We also have estimated the amount of the volunteer work, the members of our society has done when arranging IYC activities. Our estimate is that at least 5500 hours of volunteer work has been done. Chemists in Finland were very enthusiastic to celebrate International Year of Chemistry. We put in much effort to reach school Children. The Jubilee Magazine was distributed to over 1000 schools. We also co-operated with teachers union. International Year of Chemistry and its themes were introduced in several events for teachers of natural sciences. Around 600 teachers participated these events during the year. Targeting to the general public and decision makers was considered to be a great success. The activities targeted to general public gathered more than 50 000 people during the year. Our estimate is that at least 60 percent were school children or even younger, which makes 30 000 face to face contacts with young people.

In addition to that come pupils reached through teachers and Jubilee Magazine. Decision makers were invited to main events, such as the Opening ceremony and the Night of chemistry. Some events targeted to them were also arranged.

A large network within the Finnish community was gathered to produce activities for the Year of Chemistry. We had 32 sponsors and partners, including both national and local sponsors, universities, Science Centers, museums etc. Many of them were very active in producing contents for IYC events. All participating organizations have been very satisfied with cooperation. Our intent is to continue the cooperation and renew the network with new partners. Also the media program for journalists will continue with at least one event each year.

FRANCE

In France there was a National Organizing Committee, chaired by Nicole Moreau, which motivated and coordinated activities within the different regions. Each region however was more or less autonomous in organizing events for IYC. A national website—www.chimie2011.fr—was created so each French region could post its own events. Reports have been received from three regions as follows:

Midi-Pyrénées Region

Adapted from summary materials prepared by Lydie Valade.

Increase the Public Appreciation and Understanding of Chemistry in Meeting World Needs; Generate Enthusiasm for the Creative Future of Chemistry

- IYC opening in Midi-Pyrénées 31 January: conference, buffet using molecular cuisine prepared by students, theater, 80 students and 10 professors, 200 participants
- History of chemistry 10 December: conferences, 100 participants

- IYC closing in Midi-Pyrénées 13 December: conference, exhibition, theater, 150 participants
- Chemistry week in each administrative department of the region: conferences, exhibition, theater
- Series of lectures: 11 lectures, 17 lectures, 1100 participants
- Le petit chimiste illustré: a small book prepared with the local newspaper and gathering papers for general public on chemistry research in our region, 10 000 copies
- Product of the day : in collaboration with the Société chimique de France, flyer on materials in bicycles given to general public on Tour de France departure from Cugnaux and arrival in Paris, 2000 flyers
- Science Festival: this is an annual event, 200 participants
- Researcher night: this is an annual event, 150 participants

Encourage Interest of Young People in Chemistry

Specific activities with schools:

- One element, one class: creation of a periodic table of elements with junior high school students, science class and fine arts class, 35 junior high schools, 53 classes, 40 Science professors, 36 Fine arts professors, 1600 students, 21 scientific referents
- Discovery of chemistry by cooking : elementary school students, 51 schools, 60 classes, 56 school teachers, 1433 students, 14 PhD students as referents
- Educational kit: each class participating in the 2 above activities received a set of books and documents on chemistry, 120 kits
- Chemists visit classes: senior chemists and Ph.D. students gave lectures in high schools, 13 lecturers, 13 schools, 2070 students

Celebrate the Role of Women in Chemistry

- Chemistry through theater: "Les lueurs de la rue Cuvier" about Pierre et Marie Curie, in a



play created on the occasion of IYC. Specific performances were organized for students in addition to all public. 7 performances, 2520 students

Conclusions

There was very good participation in IYC events in the Midi-Pyrénées region. A most important element was the good interaction with other associations and education sector and services. Partnerships will continue with other associations and staff and education services.

Some projects with schools are continuing on a smaller scale. Inclusion of a large number of schools was only possible during IYC because financial support could be obtained.

The play “Les lueurs de la rue Cuvier” was also performed all over France, thanks to financial support from the IYC national committee. The website of the play which combines movie and theater performances may be visited. It would be possible to have the play performed in other languages by the addition of subtitles www.ruecuvier.fr (see video on demand).

Upper Rhine Region

Adapted from summary materials prepared by Carsten Jacobi, BASF SE, Ludwigshafen and Jacques Streith, SCF-Alsace, Mulhouse.

In 2009, the French Chemical Society (SCF) proposed an international chemical program in the upper Rhine area within the framework of the International Year of Chemistry. Consequently, an ad hoc committee was launched with some French, German and Swiss chemists, both from academia and from industry, who gathered several times during 2010 at the Université de Strasbourg.

The German representatives of that committee—from the German Chemical Society (GDCh) in Frankfurt am Main and BASF SE in Ludwigshafen—proved to be the decisive driving force of that

committee, along with some chemists mostly from the Mulhouse and the Strasbourg universities. Eventually, our committee decided to organise several lectures to be put on film, translated from French into German or the other way round and loaded onto the IYC 2011 website, which was created by the Université de Strasbourg. This lecture program was entitled IYC 2011 Upper Rhine Initiative and comprised:

1. J.M. Lehn, French version: “De la matière à la vie: chimie? chimie!”; German version: “Von der Materie bis hin zum Leben. Chemie? Chemie! »; both online
2. N. Moreau, French version: “Année Internationale de la Chimie. Comment en est-on arrivé là? Quel est son intérêt pour les scientifiques et pour le public?”; German version: “Internationales Jahr der Chemie. Wie ist es dazu gekommen? Welches Interesse hat es für Naturwissenschaftler und für das Publikum?”; both online
3. S. Bräse, German version: “Chiralität im Alltag und in der Chemie”; French version: “Le concept de chiralité dans la vie de tous les jours et en chimie” ; both online
4. J. Patarin, French version: “Les nanoporeux: des matériaux prometteurs en dépollution et stockage d’énergie”; German version: “Nanoporöse Materialien: vielversprechend zur Entschmutzung und zur Energiespeicherung”; both online
5. M. Baier, R. Stumm and J. Streith, French version: “Des colorants d’aniline à l’affichage par cristaux liquides” (DVD); German version: “Von den Teerfarben zur Flüssigkristall-Anzeige Technologie”; both online
6. J. Streith, *Ergotisme, mal des ardents ou feu de Saint-Antoine du Moyen Âge aux temps modernes. Le “triangle de Saint-Antoine” et le démarrage d’une importante industrie pharmaceutique au coude du Rhin, L’Actualité Chimique*, décembre 2011 - n° 358, 40–48.

Paris Region

Adapted from summary materials prepared by Peter Reinhardt, University Pierre et Marie Curie (UPMC), Paris, France.

The IYC events were organized in the university by a small committee of five persons (researchers, professors, technical staff) surrounded by dozens of colleagues who assisted in conceiving, planning and implementing the various public events. No funding was provided by the national organizing committee. The IYC project at UPMC had four themes (1) Tribute to Marie Curie (2) 117 hours for chemistry (3) Chemistry at UPMC, and (4) Chemistry and Society.

Increase the Public Appreciation and Understanding of Chemistry in Meeting World Needs; Generate Enthusiasm for the Creative Future of Chemistry; Encourage Interest of Young People in Chemistry

A website of the project was created and maintained: www.anneechimie.upmc.fr. It provides a detailed report on the local IYC activities, including publicity created for the occasion. The website is still available.

- A special exhibition “The crystal, jewel of nature, masterpiece of the chemist” within the frame of the superb “Collection des Minéraux de l’UPMC” (mineralogy laboratory).
- One week of demonstrations, theatre, films for school classes and general public (one week in May 2011, the “117 hours for chemistry”)
- Production of a series of short educational movies, now on the web
- Other activities were a series of general conferences, elaboration of a dedicated university course open to general public (Université Inter-âge), several expositions, presentation of an experimental chemical lecture by a renown performer, extended participation on the campus during the national science cel-

ebration (Fête de la Science 2011, October).

- In the project OpenLab, artists met scientists, leading to an exposition in the centre for modern art in nearby Enghien-les-Bains.
- A series of eight general public lectures “Chemistry everywhere” by eminent french chemists was programmed by a member of our committee for “Université de tous les savoirs” (“All Knowledge University”). These lectures can be download from the Web. We estimated having reached several thousands of persons, half of the number being school classes.
- Many professors were also individually presenting lectures in colleges, high schools and for general public all through the year in many places in France.

Celebrate the Role of Women in Chemistry

- Historical walks on the footsteps of Marie Curie, Exhibition “Marie Curie and the discovery of Radium” created for the occasion (12 pictures/photographs (dimension of several metres) on canvas exposed in open air in the campus all year long)
- Performances of the theatre play “Les lueurs de la rue Cuvier”, a creation by Théâtre Extensible, Toulouse
- Co-organisation of the launching and closing ceremonies of the Marie Curie celebration in Paris and Warsaw by Jean-Pierre Vairon, professor at UPMC
- The public opening of the ‘117 hours for chemistry’ included the world première of the movie by G. Meyer “Marie Curie, la chimie de l’impondérable” (Marie Curie, the chemistry of imponderable)

Conclusions

The activities were planned, implemented, and funded together with the city of Paris (Mairie de Paris, festival “Science en Seine”), the European Science foundation (Marie Curie celebration), the CNRS, a few chemical companies and the

department of chemistry (Faculté de Chimie). Contacts were established with the Marie Curie Museum, the Polish Science Academy in Paris, the family of Marie Curie, the National Museum of Natural History, societies like the Union of Physics and Chemistry teachers, the supporting associations of the collection of mineralogy. The activities brought together already within the university numerous researchers, besides assistants and teaching staff members, in chemistry and other disciplines.

Partnerships were developed with the city of Paris (not renewed), BASF (contact kept), theatre company "Les passeurs d'Ondes" (contact maintained, however no possibility to renew activities due to budget constraints), Marie Curie Museum (contact kept, collaboration on the restoration of historical sites among them the laboratory of Marie Curie 1903-1913, preceding the 1911 Chemistry Nobel Prize, 12 rue Cuvier). Efficient partnerships were also developed with the Multimedia Production Center of the university (contact maintained) and with all the departments of the university dedicated to communication, culture, security, safety, (for public events). Contacts have also been maintained with the teachers of the classes which participated in the "117 hours" (for university's and labs' visits, and hands on activity during the Fête de la Science). A general, monthly conference series on chemistry, launched for the IYC, is maintained.

GERMANY

Adapted from summary materials prepared by Hans-Georg Weinig, scientific coordinator, Gesellschaft Deutscher Chemiker e.V.

Increase the Public Appreciation and Understanding of Chemistry in Meeting World Needs

- A marvelous opening ceremony was organized by several chemistry organizations,

including GDCh, on 9 February in Germany. The opening speech was held by Chancellor Dr. Angela Merkel

- A special website dedicated to the IYC 2011 in German was set up (www.ijc2011.de)
- The biannual GDCh Scientific Forum Chemistry and several GDCh division's conferences/meetings were dedicated to IYC 2011

Encourage Interest of Young People in Chemistry

- GDCh was partner in the picture contest and exhibition "Children on Water"
- GDCh was partner in providing the description for the "Global Experiment" in German language
- The GDCh Young Chemists Forum organized public info-desks and contests around chemistry in several German Cities
- Twitter and Facebook was used

Generate Enthusiasm for the Creative Future of Chemistry

- GDCh together with partners organized a hands-on exhibition on Sustainable Chemistry which is to be shown for ca. the next five years after IYC-2011 in different cities in Germany
- GDCh was partner in the picture contest and exhibition "Children on Water"
- GDCh was partner in providing the description for the "Global Experiment" in German language
- The GDCh Young Chemists Forum organized public info-desks and contests around chemistry in several German Cities.
- Twitter and Facebook was used.

Conclusions/Outcome of IYC-2011 for Germany

For future activities and to promote sustainable use of chemistry, GDCh established and/or

strengthened partnerships with several organisations and institutions, e.g.:

- Federal Ministry for Education and Research
- EuCheMS
- Deutsche Bundesstiftung Umwelt, Germany
- Universum Bremen (Science Center), Germany
- Deutsches Museum München, Germany
- The “Nano-Truck” – mobile exhibition center from BMBF
- Universities Mulhouse and Strasbourg, France
- Chemical Societies (ACS, RSC, CCS, CSJ, SCG etc.)
- ECTNA and other European networks
- Route der IndustriekulturRhein-Main (industrial culture and heritage in the Frankfurt / Rhein-Main region)

HUNGARY

Adapted from summary materials prepared by Livia Simon Sarkadi, president of the Hungarian Chemical Society.

The Hungarian Chemical Society (HCS) is one of the oldest professional organizations in Hungary, founded in 1907. HCS represents about two thousand and five hundred chemists working in academia and industry. The Society has 10 regional bodies and 8 workplace groups and supports 24 divisions and 13 working parties, covering all the main fields of chemistry. HCS sponsors or promotes a number of national and international activities and publishes various scientific journals. (www.mke.org.hu)

As part of IYC 2011, the Hungarian Chemical Society, in cooperation with the Section of Chemical Sciences of Hungarian Academy of Sciences, organized and coordinated a number of national activities in Hungary. All preliminary expectations were by far exceeded: more than 100 national programs, participation of several hundred schools, tens of thousands of individual participants, and more than 500 000 web

site visitors demonstrated that Hungary was an excellent contributor to the success of the world-wide event sponsored by UNESCO and IUPAC.

Increase the Public Appreciation and Understanding of Chemistry in Meeting World Needs

- HCS created the IYC website (www.kemia-eve-2011.mke.org.hu)—26 500 visitors.
- HCS and BASF have established a unique online chemistry knowledge database, an educational website celebrating the International Year of Chemistry: www.chem-generation.com. The website is available in 11 languages. Features rich multimedia contents, interactive illustrations, videos, small games and state-of-the-art web applications – 58,239 visitors from 149 countries. Chemgeneration.com won the ‘Homepage of the Year’ contest in Hungary in 2011.
- Wall calendar—commemorates 12 famous Hungarian Chemists: e.g. Rudolf Fabinyi (founder of HCS – 1907), György Hevesy (Nobel Laureate 1943), Albert Szent-Györgyi (Nobel Laureate 1937)
- Brochures entitled ‘Chemistry in the service of humanity’ show the importance of chemistry today under the unifying theme “Chemistry - our life, our future”
- ‘Chemistry from the creation to the present’—sculptures of chemical forms were created by Dr. Béla Vizi – exhibition and CD
- A special issue was published of the Hungarian journal *Természet Világa* (World of Nature): Water and wine chemistry

Events

- Open University of Chemistry (February–May 2011)—program series 11 occasions at the University of Szeged—about 2000 participants
- Night of Chemistry (23 September, 2011)—impressive experiments at all universities—thousands of participants

- Guinness Record attempt: (30 September, 2011)—in seven Hungarian cities (Eger, Miskolc, Nyíregyháza, Orosháza, Pécs, Szeged, Szombathely) chemical experiments were carried out at the same time with the participation of a large number of people. Altogether 3363 people joined the activity.
- Technology Milestones in Chemistry—an exhibit of 32 colorful, transportable posters describing chemistry's contributions in four areas: Energy & Transportation, Communication & Information, Health & Medicine, and Food & Agriculture. The core content was based on the electronic exhibit prepared by members of the American Chemical Society under the chairmanship of Professor Attila Pavlath (former ACS president).
- students participated
- Creative, unusual chemistry competition—Filmmaking about spectacular experiments—35 teams of high school students (105 persons)
- MTV Delta—National Competition on Chemistry in the Hungarian Television 150 teams of high school students (450 persons)

Popularization of Chemistry

- Celebration of Chemistry—extraordinary chemistry lessons at the Hungarian Museum of Science, Technology and Transportation (from January through April 2011)—visited by hundreds of classes from elementary and high schools on weekdays and families on the weekends.
- Fire with water, water with fire (26 January 2011)—national chemical experiments in 285 elementary and high schools.
- Magic chemistry summer camp (4-8 July 2011, Eger)—50 high school students participated

Encourage Interest of Young People in Chemistry

Student Competitions:

- Student Symposium on Chemistry (1-3 April, 2011, Pécs)—70 high school students
- Irinyi János National Competition on Chemistry—an annual academic competition for high school students—more than 2000

Generate Enthusiasm for the Creative Future of Chemistry

HCS organized a series of conferences as shown in the table below.

National Conferences	Date	Place	Participants	No of countries
HCS 1. National Conference (www.mkenk2011.mke.org.hu)	22-25 May 2011	Sopron	500	
10th Environmental, Analytical and Technological Conference (www.kat2011.mke.org.hu)	5-7 October 2011	Sümege	150	
54th Hungarian Symposium on Spectrochemistry (www.spektrokemia.mke.org.hu)	5-7 October 2011	Sümege	120	
HungaroCoat 2011: Exhibition and Conference on Paint Industry and Corrosion Protection (www.hungarocoat.hu)	29-30 November 2011	Budapest	300	
International Conferences				
4th European Conference on Chemistry for Life Sciences (www.4eccls.mke.org.hu)	31 August–3 Sept 2011	Budapest	420	30
Conferentia Chemometrica 2011 (www.cc2011.mke.org.hu)	18-21 Sept 2011	Sümege	120	15
Interfaces '11 (www.interfaces11.hu)	28-30 Sept 2011	Sopron	120	10

Celebrate the Role of Women in Chemistry

Prior to the International Year of Chemistry, HCS organized the International Conference on Women Chemists and Innovation (20-22 October, 2010, Keszthely, Hungary, which provided an overview of the role of women chemists in Europe, focusing on the Visegrad countries. It also celebrated the first doctoral diploma in chemistry issued to Laura Kovács in 1910 in Hungary. Eighty participants from eight countries, from academia and industry, gathered to give a historical overview and present recent results achieved by women with a special session to young scientists.

At the General Assembly of the Hungarian Chemical Society (HCS) in 2011, Professor Dr Livia Simon Sarkadi (Budapest University of Technology and Economics) was elected the first female president of the Hungarian Chemical Society after more than hundred years. She is one of the two editors of the book *European Women in Chemistry*, one of the EuCheMS (European Association for Chemical and Molecular Sciences) contributions to celebrate IYC 2011.

LEBANON

Adapted from summary materials prepared by Prof. Bilal R. Kaafarani, Department of Chemistry, American University of Beirut.

Generate Enthusiasm for the Creative Future of Chemistry

The Department of Chemistry at the American University of Beirut and in celebration of IYC2011 organized a seminar by URB Visiting Scholar and AUB 2011 Honorary Recipient, Prof. Mostafa El-Sayed on 23 June 2011. The seminar was entitled: "Nanotechnology: Confinement of Material Size to the Nano-Scale; New Properties and Some Potential Applications in Material Science and in Cancer-Medicine." With a dense crowd,

Prof. El-Sayed fascinated his public with his research, triggering interest and curiosity in all rows, from first year students to fellow professors. AUB Provost Ahmad Dallal presented a special plaque to Prof. El-Sayed in recognition of his outstanding contribution to science. At the end of the seminar, the floor was opened to questions. The seminar was covered by the AUB Student Newspaper.

Encourage the Interest of Young People in Chemistry

Starting with Lebanon's First Undergraduate Organic Competition on 7 February 2011, 41 teams from six different universities across Lebanon were gathered under the roof of Organic Chemistry in a challenge requiring skill, knowledge, focus, and speed. These teams, comprising of two students each, competed using Clickers with the "Fastest Responders" tool, solving 18 multiple-choice questions that covered Organic I and





Organic II courses. Each question was presented on the screen and students were allowed some time to enter their answers. When all responses were solicited, the statistics of students' answers were shown on the slide and each question and student response was explained and analyzed. A slide listing the top five "Fastest Responders" teams followed. The team with the correct answer in the fastest time earned 50 points; the second team got 40 points; the third team got 30 points; the fourth team got 20 points; the fifth team got 10 points. Midst all that excitement and suspense, a sudden light show surprised all 200 attendees, guests and participants alike, "only minutes away from what was to become the biggest highlight of the night": the surprise honoring of Prof. Makhoul J. Haddadin on the occasion of his 75th birthday and 43 years of continuous service at AUB.

Following a short video covering Haddadin's achievements and history at the American University of Beirut, AUB President Peter Dorman handed Prof. Haddadin a Lifetime Achievement Award for his 43 years of dedicated service to AUB and the scientific community. Far from ending any remaining surprise or suspense, a

tie occurs between the first and second finalists, and third and fourth. Two tiebreakers settled the heat, and trophies and cash awards were given to the winners and IYC pins to the participants.

Both Facebook and the AUB IYC2011 website proved useful tools to post news and updates among participants and students:

www.facebook.com/FirstUndergraduateOrganicCompetition
www.aub.edu.lb/iyc2011

The event was covered by the AUB student newspaper, *Outlook*. The video of the event is posted on Youtube at: <http://youtu.be/Q9iJf0EhD5I>.

Exactly a year after, based on the 2011 success and experience, the 2012 Organic Competition was launched on a regional scale, encompassing 11 universities across the MENA region, 62 teams from five countries, and a total of 390 attendees:

www.facebook.com/OrganicCompetition
www.aub.edu.lb/oc

The event was covered by the AUB student newspaper, *Outlook*. The video of the event is posted on Youtube at: <http://youtu.be/0kOSBumV3QM>.

Furthermore, the Lebanese American University (LAU) organized a Chemistry Olympiad in the discipline Acid-Base Titrations. High school students from high schools across Lebanon competed in a hands-on competition in Acid-Base Titration. A general acid-base titration procedure was provided to all participating high schools ahead of the competition to allow the students to prepare for the competition. On the day of the competition on 2 April 2011, 12 participants carried out three acid-base titrations in the laboratories of LAU and were judged on accuracy, precision, speed and technique. The results were celebrated at the Annual Science and Arts Fair award ceremony held 5-6 May 2011 on the LAU campus. The olympiad is now held annually as part of the Science and Arts Fair at the Lebanese American University.

Another highlight activity was the “Mobarat El'Oloum” in which students from high schools from all over Lebanon competed in many disciplines. A special category under which students presented their projects was the IYC 2011 category. A sample project report is shown on Youtube at: http://youtu.be/LEe6Yg_T3Ws.

MALAYSIA

Adapted from summary materials prepared by Ting-Kueh Soon.

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

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

Addressing the four IYC Goals, the activities for IYC 2011 in Malaysia were the following:

Increase the Public Appreciation and Understanding of Chemistry in Meeting World Needs

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

Karnival Kimia Malaysia (K₂M), 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 was organized on a larger scale than usual 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 comprised the following:

- Talks & Lectures on the theme and sub-themes
- Poster Exhibition
- Demonstration and interactive experiments
- Slide and video shows
- Quiz and competition

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

- National Science Centre, Kuala Lumpur— 15-17 April 2011
- Ipoh, Perak— 7-8 May 2011
- Kota Marudu, Sabah— 19-20 May 2011
- Johor Bahru, Johor— 18-19 June 2011
- Kuala Terengganu— 23-24 July 2011
- Penang— 22-23 September 2011
- Kuching, Sarawak— 15-16 October 2011

Generate Enthusiasm for the Creative Future of Chemistry

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

The Institut Kimia Malaysia (IKM) hosted the 19th IUPAC International Conference on Chemical Research Applied to World Needs (CHEMRAWN

XIX) 2011 in Kuala Lumpur, Malaysia from 27–29 September 2011 as a cornerstone event of IYC 2011. With the theme “Renewable and Sustainable Energy and Materials from Biological Resources”, CHEMRAWN XIX attracted 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.

The 13th International Symposium on Advances in Extraction Technologies (ExTech) 2011 will be held at the Putra World Trade Centre, Kuala Lumpur, Malaysia from 27–29 September 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 12 years.

Encourage the Interest of Young People in Chemistry

K₃M 2010 Top Scorer Attends IYC 2011 Opening in Paris, France

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 31248 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.

IYC 2011 Essay Writing Competition

Institut Kimia Malaysia and the Ministry of Education jointly organized the IYC 2011 Essay Writing Competition for Forms 4–5 (Year 10–11) students in Malaysia. The Competition began in March 2011 and ended in August 2011. The theme of the Competition was “Chemistry: Our Life, Our Future,” the theme of IYC 2011. Certificates and

cash awards were presented to the winners and the top winner selected to attend the Closing Ceremony of IYC 2011 in Brussels, Belgium in December 2011.

Celebrate the Role of Women in Chemistry

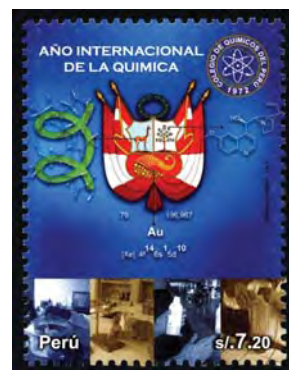
The International Symposium on Women In Science and Engineering 2011

Planned jointly by the Ministry of Science, Technology and Innovation and Institut Kimia Malaysia, the International Symposium on Women in Science and Engineering highlighted the role of women in developing science and engineering as a key enabler for socio-economic development in the world. The Symposium also aimed at promoting increasing participation of women in science and engineering, especially in the developing world.

PERU

Adapted from summary materials prepared by the Peruvian Chemical Society.

The Sociedad Química del Perú, is a nonprofit scientific institution, serving the country, founded in 1933, which brings together chemists, chemical engineers, pharmacists, biologists, and other professionals involved in chemistry. It aims to promote awareness and development of Chemistry in both its basic and application fields, spread knowledge and advances in chemistry, provide assistance to educational institutions (public and private), to achieve the improvement of chemical science education at different levels and promote scientific research in chemistry.



Increase the Public Appreciation and Understanding of Chemistry In Meeting World Needs

- Inauguration of the International Year of Chemistry with representatives of Academia Nacional de Ciencias, Ministerio de Educación and Comisión Nacional Peruana de Cooperación with UNESCO (13 January).
- Radio Interviews with the President of the Sociedad Química del Perú, speaking about the international year of chemistry.
- Divulcation of science and the IYC by TV and radio with the participation in more than 4 programs.

Generate Enthusiasm for the Creative Future of Chemistry

- XVIII Encuentro Científico Internacional de Verano (6 January), in the Chemistry Section, the activities were initiated by the "International Year of Chemistry".
- Participation in the 43th World Congress of Chemistry, held in the city of San Juan, Puerto Rico. The Peruvian delegation presented their research works. They had the opportunity to meet seven distinguished Nobel Prizes. (30 July to 7 August 2011).
- XIX International Winter Meeting scientific (3 August).
- Forum "Science and the Sustainable Development in the Context of Climate Change." The SQP main event was successful due to the quality of the speakers. The audience mainly of high school students, had the opportunity to witness numerous instructive chemical demonstrations. (19–21 October).
- Workshop "Teaching and Research in Chemistry in Peru." This event aimed to bring together experts, including teachers and university researchers from diverse areas of chemistry to discuss the situation and the prospect of chemistry in the country, to learn the salient features of chemical research carried out in each university; to discover the

areas of chemical expertise that Peruvian chemical industry requires and therefore to propose guidelines for improving in chemistry education in the country, to unite the efforts of the seven universities that create chemists in Peru and to develop future alliances to deal with issues of education, research and innovation (22 November).

- A series of lectures commemorating the "International Year of Chemistry entitled "Chemistry in its various applications" (June 2011).
- A course entitled "Gestión de calidad de laboratorios de ensayo según la norma ISO/IEC 17025". Its objective was to raise awareness of the environment under which the accreditation of testing laboratories is established, and based on this, to understand the objectives of ISO / IEC 17025. It showed how standards are created and addressed the technical and management requirements that are applied to the organizational structure of a typical laboratory (June–July, 2011).

Encourage the Interest of Young People in Chemistry

- The First International Youth Congress of Chemistry was attended by national and international delegations of children eager to learn about chemistry (14–18 November 2011).
- The final sessions of the Forum "Chemistry, Society and Sustainable Development" involving the several institutions that sponsored this event (6 December).
- A course for teachers at the secondary level, entitled Modern Approaches in Basic Chemistry in the "International Year of Chemistry" (17–22 January).
- A course on "Good Laboratory Practices." (9–16 April).
- Lectures on Chemistry for associates called "Jueves Científicos."
- From January to December 2011, along with

the Universidad Nacional Agraria La Molina, Faculty of Science, presentations of a variety of research topics in chemistry employing the “Agenda Química Virtual”.

Celebrate the Role of Women in Chemistry

- “Ladies Tea” to celebrate the contribution of women to chemistry, especially the contribution of Marie Curie, celebrating the centenary of her Nobel Prize in Chemistry (18 January). There were over 85 participants and contact by internet with professionals from Paraguay and Australia who were simultaneously conducting a similar meeting.
- A Ceremony recognizing the Path of Women in the field of chemistry, held in the auditorium of the Peruvian Congress Jose Faustino Sanchez Carrion. The event recognized the outstanding work of nine professionals from the fields of chemistry, chemical engineering and pharmaceutical chemistry (5 May)

PHILIPPINES

Adapted from summary materials prepared by Dr. Andre Guidote Jr., President, Philippine Federation of Chemistry Societies, Inc.

Encourage the Interest of Young People in Chemistry

The Philippine Federation of Chemistry Societies (PFCS) carried out two activities related to the International Year of Chemistry. The results of the two activities were published online and in national newspapers.

Global Chemistry Experiment—“Water: A Chemical Solution”

www.ateneo.edu/index.php?p=120&type=2&aid=10544

In celebration of the International Year of Chemistry, the Ateneo de Manila University was

among the 10 universities in the Philippines chosen to conduct various experiments on water meant to emphasize the importance of its role in our lives.

The global experiment was dubbed “Water: A Chemical Solution.” Dr. Nestor Valera, chair of the Department of Chemistry, said the experiment highlights the “appreciation of the role of water in our lives.” Dr. Rene Macahig, also of the Department of Chemistry, said the experiments aim to show that “chemistry can provide solutions” to the problem of “water as a dwindling resource.”

Valera said “the turnout was better than expected.” A total of four high schools, namely the Philippine Science High School main campus, Marikina Science High School, Miriam College High School and the Ateneo de Manila High School, participated in the event and sent five students each to represent their schools.

The experiments were simultaneously held in different parts of the globe. In Ateneo, aside from the high school students who conducted the experiments on 17 November, all Chemistry 2 classes also participated. The water samples were taken from Marikina River since it is the nearest body of water.

Four experiments that were conducted: pH of the planet—which measured the acidity level of the local water sample; salty waters—which measured the amount of salt in the body of water from which the sample was taken; water purification—which allowed participants to purify water using a clarification method; and lastly, solar still challenge — which allowed participants to build a solar still and discover how it can purify water.

At the end of the session, the average results for the first two experiments were: 7.34 pH and 3.12 percent acidity of the water samples taken from Marikina River. The results for the last two experiments were going to take a while longer. All of these results will be tabulated and then sent to the website of the Global Chemistry Experiment.

The participants were grouped with others from different schools. Their excitement while doing the experiments is undeniable. Aside from making new friends, the experiments showed young scientists inaction.

Marcus Mendoza of the Ateneo de Manila High School said the activity reminds everyone that “water is a very important part of our world.”

Anna Martinez of the Philippine Science High School also acknowledges the importance of water, saying that “experimenting about water will help us in the future.”

Vinz Solanoy, also from the Philippine Science High School, for his part, said, “Since drinking water is scarce there is a need for other water sources to be cleaned as well.”

Miguel Antonio Brion, a science teacher from Ateneo High School, said it was not only the academic grades that they considered in choosing their delegates but also their “investigatory projects connected to water analysis.”

The young scientists’ groups were each guided by a chemistry undergraduate student from the Ateneo. Jero Santos, a third-year Chemistry MSE student, said that even if the experiments were simple it was good that the participants were able to see “applications of chemistry.”



First prize in the On-the-Spot Poster Making Contest for Children: Yanicko Sydbourne E. Covar, Southbay Montessori School.

In the end, the experiments not only showed the high school freshmen who came applications of chemistry but also fostered their love and interest in science.

Aside from certificates of participation given to the participants, a micro/pocket scale was also distributed along with a set of materials for use for their future experiments.

Valera said the distribution of the micro/pocket sale was “part of low-cost instrumentation so public schools will think they can use low-cost materials.” The experiments also proved that chemistry experiments need not be expensive as the experiments encouraged the use of simple materials.

In the end, what matters is the inculcation in the minds of the young of the love for science and to feed their curiosity by encouraging them to take part in activities such as these.

On-the-Spot Poster Making Contest for Children
www.ateneo.edu/index.php?p=120&type=2&aid=10710

The Poster Making Contest was scheduled in December of 2011 but the number of participants was few due to the children’s examinations and the Christmas Season. Therefore it was decided to hold it again in February 2012 with the



SECOND PRIZE
Bridge Lee

Grace Christian College
 Elementary School



THIRD PRIZE
Sandra Louise Santos
 Kalumpang Elementary School



FOURTH PRIZE
John Paul Balila
 San Diego Elementary School



FIFTH PRIZE
Ignacio Ilagan Jr.
 Old Balara Elementary School

result that participation increased tremendously. Financial support was provided by UNESCO.

The Federation planned for more activities to celebrate IYC but was burdened by lack of manpower as the chemists leading the Federation are also very involved with administrative and management matters of universities, government offices and private companies. In a way, this speaks well of the Philippine chemists since they play leadership roles.

PORTUGAL

Adapted from summary materials prepared by the Sociedade Portuguesa de Quimica.

The events of the International Year of Chemistry showed that chemistry is a scientific and creative enterprise necessary for sustainability and the many benefits of our way of life. IYC 2011 coincided with the celebration of the first centenary of several institutions devoted to higher education, namely the Universities of Lisbon and Porto and the Portuguese Chemical Society, SPQ, the IUPAC National Adhering Organization.

This happy circumstance contributed to trigger the enthusiasm of the Portuguese chemists to promote and collaborate in multiple initiatives dedicated to show the beauty and the importance of chemistry. Tens or even hundreds of seminars and congresses, conferences and talks, workshops, presentations, publications, exhibitions, competitions, visits to schools, radio and television programmes and other less conventional activities were held. Lectures and celebrations took place in the most diversified locations at both national and international levels ranging from events at the National Parliament to Chemical Evenings throughout the Country.

The events demonstrated the relevance of chemistry and research in chemistry to solving global problems related to food, water, health, energy, transports, etc., essential for our quality

of life. The active participation in the design and development, edition of protocols and implementation of the Global Experiment- Water, a Chemical Solution, took place through the whole year, reaching schools and science centers through out the country. Posters and stickers were made available to support dissemination.

The global activity “Women Sharing a Chemical Moment in Time” on 18 January and the Opening Ceremony in Paris, on 27 January were the beginning of a very rich year. Numerous projects are listed and illustrated in the SPQ Annual Report in http://www.spq.pt/files/docs/rel_conta_2011.pdf. Many more can be viewed in the portal www.spq.pt/quimica2011/.

In summary, the activities of the Sociedade Portuguesa de Quimica supported the four goals of IYC2011 as follows:

Increase the Public Appreciation and Understanding of Chemistry in Meeting World Needs

The Portuguese Chemical Society organized at least fifteen dramatic presentations including plays and a ballet celebrating the science of chemistry. Subjects included the music of chemist-composer Borodin, a dramatization of the life of Madame Sklodowska-Curie, the Ballet “Substances”, and a play entitled “the Man Who Wanted to be Water.”

Numerous laboratory open houses, and demonstrations were held at Universities in Lisbon, Bragança, Porto, Beira, Madeira, and Aveiro.

Eight books were published on subjects ranging from “One Hundred Organic Chemistry Experiments” to “Radioactivity – Its Contribution to the History of Art.” Also produced were nine audiovisual presentations including “The Chemistry of the Universe.”

Seventy-four expositions and public events were held celebrating the science of chemistry.

Generate Enthusiasm for the Creative Future of Chemistry

Under IYC 2011 auspices sixty-six lectures and seminars were presented on a wide variety of subjects including nanotechnology, electrochemistry and innovation, theoretical biophysics, medicinal chemistry, carbohydrates, photochemistry, organic and inorganic chemistry.

Encourage the Interest of Young People in Chemistry

Understanding the special interest of younger chemists in electronic media, the PCS created the blog “Chemistry for Everyone”, as well as Facebook and Twitter profiles and two websites. Twenty-three Olympiads and competitions were held during IYC 2011, attended by hundreds of students. Also presented were nine educational workshops on topics ranging from “Chemical Security” to “Microchemistry”.

Celebrate the role of Women in Chemistry

Women chemists from the Portuguese Chemical Society participated in the international event “Women Sharing a Chemical Moment in Time”, held on 18 January.

RUSSIA

Adapted from summary materials prepared by the Russian Chemists Union.

Increase the Public Understanding and Appreciation of Chemistry in Meeting World Needs

IYC Opening Ceremonies in Paris and in Moscow
The Official International Launch Ceremony for IYC 2011 took place at UNESCO World

Headquarters in Paris on 27-28 January 2011, under the aegis of the UN, UNESCO and the IUPAC. The event was attended by a delegation of the Russian Chemists Union (RCU), headed by Vice-President of the RCU, a member of the Federation Council of Russia Andrei Guriev.

The Russian Chemists Union has launched a wide public relations effort to promote the Year of Chemistry in Russia. Through events at the local, provincial, and federal levels, RCU sparked enthusiasm for this central science in all people, of all ages.

A ceremony marking the grand opening of the International Year of Chemistry in Russia took place in early 2011 at the Great Hall of the Russian Academy of Sciences.

The celebration included the start of the International Year of Chemistry for teachers in Russia. The event was held at the Polytechnic Museum in Moscow. A part of the ceremony featured presentation of the book entitled “Where Does It All Come From?” which simply describes the role of the chemical sciences in the world. One scene of the film shows a chemistry lesson in high school No. 35 of Nizhnekamsk, Russia.

Encourage the Interest of Young People in Chemistry

Global Water Experiment

The Russian Chemists Union launched the Global Experiment “Water: Chemical Solution”, whose goal was to study one of the world’s most important resource.

The global experiment was organized by a dedicated committee of members of IUPAC and UNESCO. Students around the world were invited to explore one of Earth’s most critical resources, water. The results of their investigations contributed to the Global Experiment, which became the biggest chemistry experiment ever. Under the overall theme, students focused on modules that examine the properties of their local water and the technological solutions chemistry provides to

humanity in supplying clean drinking water.

The objective of the Experiment was to involve students of all ages in the research, raising their awareness about the role of chemistry in solving problems of water pollution and treatment. Results of the students' studies were displayed on the world map and in the international database on water quality in various parts of the earth. The Global Experiment was a major project in achieving one of the goals of the International Year of Chemistry, i.e., to increase understanding of the role of chemistry supporting the welfare of mankind, and also to build the interest of young people in science.

Generate Enthusiasm for the Creative Future of Chemistry

Congresses

The International Exhibition of Chemical Industry and Science "Chemistry-2011" was held in Moscow. This is the 16th exhibition describing the role of the Russian chemical industry in the world, a series which has been presented in Moscow since 1965. The Exhibition was organized to include a broad program: academic conferences, workshops, project competitions for young scientists and the best products exhibited. One special event was the scientific symposium "The Role of Chemistry in the Innovative development of Russia and the CIS."

The central event of the International Year of Chemistry was the XIX Mendeleev Congress on General and Applied Chemistry, held in Volgograd. The Congress served as a platform for international cooperation of scientists and their professional organizations. Russian President Dmitry Medvedev sent a greeting to participants of the Congress with best wishes for success and progress. Professor David Black, the Secretary-General of the International Union of Pure and Applied Chemistry, provided a greeting from IUPAC.

Traditionally the topics of the scientific program of the Mendeleev Congresses cover the

main directions of chemical science, technology, industry and chemical education. These issues were discussed at plenary and oral sessions, satellite symposia and round table discussions. The program of the Congress included exhibitions of chemical facilities, equipment, technological developments.

Leading Russian and foreign scientists including several Nobel Prize winners presented plenary lectures. Russian and foreign companies dealing with the production of chemicals and materials presented their activities.

Headed by the President Viktor Ivanov, a delegation of the Russian Chemists Union participated actively in all sections of a Congress organized by the Ministry of Industry of Russia, the Russian Chemists Union and "NIITEKHIM". The conference discussed the problems of defining the innovative development of the chemical industry. During the days of this Exhibition in the heart of Moscow, just a few steps from Red Square, the 5th Congress of the Russian Chemists Union, took place, bringing together over 200 delegates. The RCU Congress was one of the official events of the International Year of Chemistry in Russia, which focusing on the importance of the chemical industry to global problems of mankind. Virtually all the greetings addressed to the Congress marked contribution to the strengthening of the RCU and the development of social partnerships.

Sustainable Development

At the 5th International Responsible Care Conference in Russia "Security. Health. Environment—Basis of the Enterprise" the leading players of the Russian chemical industry presented their views on the issue of Sustainable Development in the World through further extension of the Responsible Care program. This fifth Responsible Care conference held in Russia covered issues concerning not only the safety of the chemical industry (the report "Best Practices in enterprises chemical sector"—experience of the

BASF, “Russian paint”, “Pigment”, etc.), but demonstrated the security level of the Russian chemical industry in the world (report, “Benchmarking, 2010”). Representatives of the Government of the Russian Federation, heads of industry associations, and heads of Russian and international chemical companies participated in the Conference. They considered important issues of the chemical enterprise, such as the impact of state and regional plans for the development of chemical industry. The event was organized by The Russian Chemists Union and the Association “Tsentrak”, with the active support of the Yaroslavl regional Government.

The Russian Chemists Union together with D. Mendeleyev University of Chemical Technology of Russia, the Russian Chemical Society of D. Mendeleyev, and the Coordinating Informational Service Center, held a conference “Sustainable Chemistry. Contribution to Future Generations”. Representatives of The Ministry of Industry and Trade of the Russian Federation, experts in the field, and representatives of public organizations and enterprises attended.

Celebrate The Role of Women in Chemistry

During 2011, leading Russian scientists and public organizations took part in various chemical forums, conferences, lectures and exhibitions. Grant programs involving open competitions were established. The year 2011 coincided with the 100th anniversary of the Nobel Prize awarded to Madame Marie Curie, which provided an opportunity to celebrate the contributions of women to science.

The International event “Women Sharing a Chemical Moment in Time”, was attended by women who have established themselves in the field of chemical science. Simultaneous events were held at D. Mendeleyev University of Chemical Technology of Russia in Moscow, Moscow State University in Kazan, Belgorod

Oblast, Kursk, Tambov and Krasnoyarsk and more than 45 countries. The meeting showed that Russian chemical science opens new horizons, and women make a significant contribution to this process. Networking over coffee and cakes, the participants celebrated the role of Marie Curie as well as contemporary women in Chemistry. Topics of the discussions were: ‘Women in Business’ and ‘Women in Interdisciplinary Science’. The Russian Chemists Union together with D. Mendeleyev University of Chemical Technology of Russia assisted in collecting data for the report “Womens’ Careers in Chemistry—The Russian Example” which was given by Prof. Natalya Tarasova.

The report was also presented in San Juan (Puerto Rico) at the International Chemical Congress IUPAC: Chemistry Bridging Innovation among the Americas and the World.



SLOVAKIA

Adapted from summary materials prepared by Prof. Milan Drábik, chair of the Slovak National Committee of IUPAC.

Increase the Public Appreciation and Understanding of Chemistry in Meeting World Needs

- Chemical horizons and Novartis lectures. During IYC-2011, the cycle of these traditional lectures by chemists and for chemists in Slovakia were conducted and publicised for a broader audience in the form of “scientific

cafes,” with the choice of themes related to goals of IYC.

- Milestones of chemistry. This exhibition originally from the ACS had been translated into Slovak and, in cooperation with ASCHFS and ZCHFP, was enlarged to comprise also key information on Slovakian chemistry and chemists. The exhibition was open to the public in various parts of Slovakia, including students and teachers of high schools, to promote broadly an awareness of chemistry and its positive role in society.
- Thematic postage stamp. The relevant Slovakian authorities contributed to IYC effort through design and production of a special Euro-based stamp which was released on January 17th 2011 in Slovakia.
- Special issue of ChemZi. The collaboration of the editors with SCHS, ASCHFS, ZCHFP and also with several industrial contributors enabled the compilation of valuable material about chemistry, focused on Slovakia, which will be interesting and useful long after the closure of the IYC 2011.
- Press conferences/briefings were held on occasions of such activities as the annual meeting of chemists, edition of postage stamp, ECTNA meeting, Chemistry Slovakia 2011 fair, in collaboration with ZCHFP. Besides the promotion of IYC and its goals, the briefings aimed to inform the Slovak public also about chemical research, education and industry and about the impact of these on society and life in general.

Encourage Interest of Young People in Chemistry

- European Chemistry Thematic Network Association (ECTNA). The Slovak Chemical Society is one of the founders of this Association. In May 2011, Bratislava and Slovak chemists hosted the Annual conference of European chemistry and chemical engineering education network—EC2E2N

and General Assembly of ECTNA, where about 180 chemists from 26 countries discussed university chemical education.

- SCHS traditionally is responsible for the Chemistry Olympiad in Slovakia and the participation of the best Slovak young chemists in the International Chemistry Olympiad. In 2011 with the aim to make chemistry more visible and popular amongst schools and the general public, additional activities were conducted successfully:
 - A competition among students in Slovak grammar and secondary schools: “How and Where I See Chemistry in Everyday Life”
 - The participation of Slovak youth in the global IYC experiment Water: A Chemical Solution—started during the Chemistry Slovakia 2011 fair and continued all year round.

The booth of SCHS in the fair “Chemistry Slovakia 2011” (one of the IYC 2011 official activities in Slovakia) held from 12-14 April in Bratislava, was equipped also for a running the global IYC 2011 experiment. Pupils of several schools used this opportunity and subsequently sent their results to the interactive global map of “Water; a chemical solution.” Prof. J.I. Jin, Past president of IUPAC, conducted encouraging discussions with the staff and pupils around the “laboratory” of the global IYC 2011 experiment during the 1st day of the fair. Thanks to the earlier complete translation and distribution of the leaflets and instructions, the involvement of Slovak teachers and pupils in the global experiment continued in schools all year round and a large amount of data about water in Slovakia has appeared in the interactive global map of the results of this corner stone activity of IYC 2001. The feedbacks of teachers, students and pupils showed the attraction and positive attitudes towards this and similar activities in the future. (Lukáš Krivosudský, Slovak national contact point & coordinator of the Global experiment).

Generate Enthusiasm for the Creative Future of Chemistry

- 63rd annual meeting of Slovak (SCHS) & Czech (ASCHFS) chemists. SCHS in collaboration with ASCHFS organized this meeting (in early September) as the top event of IYC 2011 for the Slovak and Czech republics. Prof. Nicole J. Moreau, president of IUPAC, was invited and gave her thoughts on “Beyond 2011 – how to make IYC a long lasting success?”
- Activities of Working groups of SCHS focussed on promotion of various types of activities including: a textbook, a variety of lectureships, colloquia, conferences and symposia to reflect the specific fields and aims of the Working groups. For the year 2011, the role of chemistry in sustainable development has been emphasized throughout and particularly also in the fair “Chemistry Slovakia 2011”, in cooperation with Incheba.

Conclusions

Support for IYC: There was verbal support from governmental bodies, and to some extent also the press and electronic media were supportive. In particular, there was great interest of young people shown through their very strong participation in the “Global water experiment”, which has been locally managed (e.g. complete translation and distribution of the leaflets and instructions) by the Slovak national coordinator of GWE. Thirty schools and 1325 pupils reported results on the IYC Global Experiment web-site.

Partnerships with chemistry community (SCHS) established during IYC: The Center of Scientific and Technical Information of the Slovak Republic (official institution of Slovak government for support of science and scientists, and public awareness of scientific and technical activities); established partnership to promote the series of lectures and discussions “Chemical horizons” in future years. Incheba—established partnership with this Slovak exhibitions and fair

company; fairs “Chemistry Slovakia” are anticipated to be held biannually.

The IYC legacy rests in the motivation and commitment of the Slovak chemistry community to continue in the future to improve the understanding of chemistry by the public and to target activities to young people.

SOUTH AFRICA

Adapted from summary materials prepared by E Steenberg, via Lynn L. Ngwenya on behalf of the NAO (South Africa) and RADMASTE Centre, University of the Witwatersrand.

Specific plans were made to publicize and celebrate IYC 2011 at the Third FASC Congress (16–21 January 2011 in South Africa) and during National Science Week, a countrywide celebration of science involving various stakeholders conducting science activities at multiple sites in all nine provinces simultaneously from 1–6 August 2011. Scifest Africa formed part of science activities conducted by the Northern Cape Department of Education in the province. Most reported South African activities addressed the following goal:



Encourage Interest of Young People in Chemistry

During National Science Week South African chemists put on chemistry shows for schoolchildren and workshops for educators in rural schools in Kimberley and Kuruman in the Northern Cape province. There was also a chemistry show as part of the opening of the new Mothibistad Science Centre in Kuruman.

- During the week of 3 August, a workshop was held at the Kimberley Civic Centre to familiarise educators with chemistry that may be carried out with readily available household chemicals. The workshops will take many of the demonstrations from the Kitchen Chemistry show and concentrate on learning outcomes and developing the demonstrations into investigations suitable for the whole class.
- South Africa participated extensively in the Global Water Experiment, using locally designed low-cost equipment. Broadly speaking, there was participation by two parastatal bodies, a single large corporate involvement and a number of smaller educational programmes. We did not participate in the Global Stamp Competition, since this

type of activity is not yet very popular with our teachers or students.

For actual participation in the focus point, namely the Global Water Experiment, we relied on data logging on the website to give us an indication of the extent of participation. This was also not good, since the data logging process was not easy enough for our schools to use.

Parastatal Participation in the Global Water Experiment

- The Department of Science and Technology (DST) initiates programmes with learners outside of the school curriculum. During IYC, DST provided low-cost equipment to 40 South African schools and was involved in 4 public events:
 - Co-host of the UN World Water Day and Big Splash, 22 March 2011
 - IYC Eastern Cape 13 August 2011 - large public event for IYC
 - IYC Northern Cape 27 August 2011 - large public event for IYC
 - Meeting of G8 Ministers and Advisors of Science and Technology, Cape Town
- The South African Agency for Science and Technology Advancement, SAASTA, has a number of Science Centres in their portfolio. In total, SAASTA provided low-cost equipment to 75 schools, but unfortunately no information on individual school participation in the Global Water Experiment is available. The participation of DST and SAASTA assisted in reaching decision makers.



Corporate Involvement in the Global Water Experiment

The Corporate Social Investment division of SASOL (South Africa) provided low-cost equipment to 205 schools, potentially allowing 800 teachers to do the Global Water Experiment with their learners. SASOL launched an extensive pro-

gramme and trained teachers on how to do the four activities of the Global Water Experiment. They also ran a Water Saving Competition in the schools and unfortunately the competition (with a prize money of USD 27500) overshadowed the aims of the Global Water Experiment. Participating teachers were awarded a Certificate of Leadership by SASOL.

There was extensive collaboration between RADMASTE Centre and both IUPAC and UNESCO in the design and distribution of low-cost equipment and the development of suitable experimental protocols for the equipment.

On the occasion of UN World Water Day, 22 March 2011, UNESCO and IUPAC launched the International Year of Chemistry Global Water Experiment with the “Big Splash”. This event occurred at Ratanga Junction, Cape Town, from 22-25 March 2011 and was organized in collaboration with the City of Cape Town Municipality.

We tried to use the website as much as possible but there was initial frustration when the uploading of experimental protocols for the low cost equipment was inexplicably delayed.

Good partnerships were formed with the DST, and continued cooperation is envisaged to promote interesting practical activities in schools. No further cooperation with SASOL is indicated at this stage.

The extension of the Global Water experiment into the rest of the country after its launch in Cape Town in March was later than we expected. The timing was not very suitable for our academic year, taking into account that the southern hemisphere academic year starts in January and that the summer months of January–April would have been most suitable for the activities in the Global Water Experiment. By the time ambient temperatures had risen enough again, (September – November), schools were preparing for and writing end-of-year examinations and it was very difficult to motivate teachers to devote time to the Global Water Experiment. Although the Global Water Experiment was extended until

March 2012, a great deal of the IYC momentum had been lost and very little additional participation was noted in the extended period.

The heavy reliance of the Global Water Experiment on electronic data logging proved to be problematic in South Africa. Although SASOL tried to circumvent the difficulties by providing a form and a fax number, this was not very effective and of the 205 SASOL schools, only 16 submitted data this way. The fact that schools had to register as a user and then create an account (with details irrelevant to South African schools) before they could log results, contributed to our frustrations.

We cannot estimate individual numbers, but we estimate 474 schools were reached in some way or another.

Two PDF documents were also included in the submission:

1. A flyer advertising a GWE workshop offered at the Convention of the South African Chemical Institute, January 2011.
2. A newspaper article published after the launch of the GWE in Johannesburg for the Northern provinces, April 2011.

There was no central feedback mechanism in South Africa. In hind-sight, this was not good, since none of the schools or educational programmes felt obliged to report on their participation. When contacted early in 2012, only a small number of participants could give feedback. The local IYC Committee did not have the capacity to establish a feedback mechanism and no other role players emerged to undertake this task.

Smaller Educational Programmes

In total, 23 sets of low cost equipment were used in South Africa by a wide range of programmes, such as a Water Monitoring Project in the Pretoria Zoo, a science programme for disadvantaged learners in the Northern Cape and a mobile science laboratory.

Children's Book

In celebration of the International Year of Chemistry, South African children's author Ginny Stone has written a children's book, entitled "Sibo Mixes Things Up", about chemistry. In this story, the main character—a young girl named Sibó—has made a huge mess and has to clean it up before her mother finds out. Her friend Lennie comes to the rescue and helps clean up the mess with a chemical "magic potion." Sibó becomes curious about chemicals and wants to learn more about them. So her teacher invites a guest to come talk to her class about chemistry and how it helps them in their everyday life.

SPAIN

Adapted from summary materials prepared by by Javier Garcia Martinez. Spain organized many events for IYC-2011 and these are comprehensively listed on www.quimica2011.es/historico-de-actividades. Based on a report from the Consejo Superior de Investigaciones Científicas, Spain.

Increase the Public Appreciation and Understanding of Chemistry in Meeting World Needs

The CSIC with 15 centers for chemical research, with more than 1300 people working, and many other centers in related areas, played a prominent role in activities in Spain for IYC 2011. Through the development of actions to promote scientific culture, CSIC aimed to increase appreciation and understanding of



chemistry, increase young people's interest in science and generate enthusiasm for fostering a creative future of chemistry. The proceedings

of the Council during the year were coordinated with other institutions, and developed in the framework of the Chemistry and Society Forum.

The official opening of the International Year of Chemistry in Spain took place on February 8. As usual with scientific commemorations, CSIC has created a website dedicated to chemistry and the celebration of the International Year. In addition to reporting the commemorative activities held during this year, this website was intended to complement other existing spaces on the Internet offering rigorous scientific content. These contents are planned to be updated and expanded over the years and will be developed by the CSIC research community and other partners, in a way accessible to all citizens. The website hosted articles on the history of chemistry and its characters, and the chemistry and development in the fields of health, environment, food, exploring new energy sources or the solution to the demand for new materials. It offered content on chemistry in our everyday life (e.g., the senses, sport, cinema, wine, etc.), a virtual exhibition on demand and downloadable teaching resources useful in the classroom and students (experiments, workshops, lesson plans, videos, etc.). All this material has been supplemented with information on publications and items representative of Chemistry. Everyone has access and material/activities highlighted are as follows:

- Through a brief audiovisual animation, citizens can get an idea of the role that chemistry plays in developing solutions to major challenges in the areas of energy, the environment, food, etc. It starts with a primitive fire taking us back to the origins of chemistry in the context of water, the world and life. A neural network leads to different scientific research applications, including in the textile industry and a molecular computer. These molecules disintegrate forming the periodic table, one of the major conceptual contributions of the history of science. The exhibition,

- teaching units and audiovisual entertainment, have the financial support of the FECYT.
- In the third edition of the course “Advances in Chemistry and Their Impact on Society”, participants could see how chemistry provides us comfort in our daily lives, important applications in human and animal health, agriculture, environmental protection, materials, supplies, etc. (September 2011, Madrid).
 - “CHEMISTRY IN THE STREET” was a series of chemistry teaching workshops on the street. The workshops were aimed at the Institutes Baccalaureate and secondary schools in the morning and the general public in the afternoon. There were 4 sessions of which two were in Zaragoza (courtyard of IberCajaZentrum), one in Huesca and another in Teruel. The workshops lasted approximately 20 minutes and highlighted the following: Indicators, Gases CO_2/H_2 , batteries, invisible Ink, surface tension / pressure steam, reversible reactions, extraction of caffeine, floppy polymers and, liquid crystals.

Generate Enthusiasm for the Creative Future of Chemistry

- During 2011 new titles were published in the series about chemistry by the Council in collaboration with the publishing of Los Libros de la Catarata (collections “¿Qué sabemos de?”, “Divulgación”). Among the new titles were included various topics of chemistry, on the occasion of the IYC-2011. Information was disseminated through web pages and commemorative CSIC (www.csic.es, www.quimica2011.es).
- A cycle of ten lectures was held in Ibercaja-Zentrum (Zaragoza), from February, involving the Faculty of Zaragoza, the Federation of Chemical and Plastics of Aragon, the College of Chemical Zaragoza, the Spanish Royal Society Chemicals, Life Science Association and the CSIC Delegation in Aragon.
- The International fair Expoquimia and closing of IYC. During 14-18 November 2011, Barcelona CSIC Expoquimia participated in the fair, and the official Spanish closing of the International Year of Chemistry, on the 15th November.

Encourage the Interest of Young People in Chemistry

- In the show “Between molecules” for the IYC 2011, the CSIC offered an instructive and entertaining vision of chemistry. The show was aimed at the whole population, with special attention to young students of the different cycles of secondary education. It consisted of 22 panels that introduce visitors to the central role of chemistry and its contributions to humanity. The content of the exhibition, curated by Bernardo Herradón, offered an overview of chemistry and its role in science, followed by a brief summary of the major contributions made throughout history. In a third block, the presentation delved into the chemistry for major fields such as environment, health, energy and power, relating them to the research conducted in Spanish laboratories.
- As part of the lecture series that CSIC organised with other institutions, presentations on different approaches and issues in the field of chemistry were offered. Information was made available on the website of the CSIC. A cycle of ten lectures was presented at Ibercaja-Zentrum (Zaragoza), beginning in February, involving the Faculty of Zaragoza, the Federation of Chemical and Plastics of Aragon, the College of Chemical Zaragoza, the Spanish Royal Chemical Society, Life Science Association and the CSIC Delegation in Aragon. Also in Aragon, scientific talks were held at the Experimental Station of Aula Dei in secondary schools.
- Chemistry was introduced as a key theme

in other events such as science fairs that took place in different regions, the Week of Science and Technology 2011, and in the Hall of Science in Zaragoza. Likewise the Movilab promoted interest in chemistry through specific workshops. The eighth edition of FOTCIENCIA introduced a special award related to the International Year of Chemistry.

- Students in Spain participated in the Global Water Experiment.

Celebrate the Role of Women in Chemistry

In celebrating the anniversary of Marie Curie's Nobel prize, the CSIC Delegation in Aragon made a presentation of statistics of women researchers from the CSIC in Aragon.

SRI LANKA

Adapted from summary materials prepared by A.M.Jayasekara and N.M. Hettigedera, Chair of the Steering Committee, IYC 2011 Sri Lanka.

The National Adhering Organization for IYC 2011 in Sri Lanka was the Institute of Chemistry

Ceylon which is the successor to the Chemical Society of Ceylon (founded in 1941) established in the year 1971 for the general advancement of science and practice of chemistry.

IYC 2011 activities were initiated in Sri Lanka, with the appointment of a Steering Committee in 2009/2010 by the Council and the establishment of a Secretariat.

Planning of IYC 2011 Activities With the assistance of the Steering Committee - IYC 2011 planning activities

were conducted and a practical programme to contribute to the objectives of IYC was developed.

Increase the Public Appreciation of Chemistry in Meeting World Needs

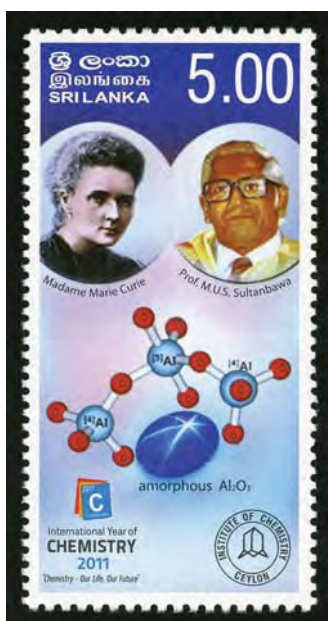
Branding IYC 2011 in Sri Lanka - production and publication of IYC calendar, pens, banners, fliers, car stickers, etc.

A beautiful and informative calendar for the Year 2011 depicting important events in the history of chemistry and chemical sciences was published. It has a very good educational value as the important photographs which have been selected are well explained.

- A ball pen marked IYC 2011 was distributed among chemistry students as well as professionals. It was one of the gift items presented to the students who took part in the games at CHEMEX 2011 exhibition and Trade Fair.
- The IYC fliers, IYC envelopes and IYC letter heads bearing the IYC logo were very attractively designed and printed. The fliers were distributed along with other documents to various agencies including press and electronic media organizations as well as to the sponsors.
- T-shirts and caps with IYC logo were produced. The College of Chemical Sciences also produced T-shirts.
- A daily home organizer and a School organizer were designed. Action will be taken to print and distribute them in future.
- A first day cover for the IYC stamp was designed with pictures related to Chemistry and chemical sciences.

Ceremonial Inauguration of IYC 2011

In keeping with the official opening ceremony at UNESCO headquarters in Paris from January 27th-28th 2011, the IYC 2011 in Sri Lanka was ceremonially inaugurated at Bandaranaike International Conference Hall in Colombo on 27th January 2011 by Hon. Prof. Tissa Vitharana



Sr. Minister of Scientific Affairs by lighting the traditional oil lamp.

Hon. Prof. Tissa Vitharana, Sr. Minister for Scientific Affairs accepted our invitation to grace the inaugural ceremony as the Chief Guest and delivered a valuable speech stating the importance of chemistry in the national development. The welcome address was delivered by Prof. M D P De Costa, Dean College of Chemical Sciences. The keynote address on “Chemical Research on Technology Development” was delivered by Dr. A. M. Mubarak, Director Industrial Technology Institute of Sri Lanka. Prof. S. Sotheeswaran, President Elect, IChemC gave the concluding remarks. A large number of invitees, guests, industrialists, Government Officers, students and general public participated at the Inauguration ceremony.

CHEMEX 2011 Educational Exhibition and Trade Fair CHEMEX 2011 Exhibition and Trade Fair

This event was ceremonially inaugurated on the 27th April 2011 by the Hon. Senior Minister of Scientific Affairs. CHEMEX 2011 was organized by the IYC National Secretariat of the Institute of Chemistry Ceylon as part of the IYC activities lined up for 2011 for the celebration of achievements of chemistry and chemical sciences.

CHEMEX 2011 Program of the First Day

(27 January 2011) The major events of the first day of CHEMEX 2011 were inauguration of the International Year of chemistry in Sri Lanka and the opening ceremony of CHEMEX 2011 Exhibition and Trade Fair by Prof. Tissa Vitharana, Senior Minister of Scientific Affairs. Welcome address was delivered by Prof. M. D. P. De Costa, President of the Institute of Chemistry Ceylon. The theme for the first day was ‘Chemical Research and Technology Development’. Mr. N. M. S. Hettigedera, Chairman of the Steering Committee of IYC 2011 (Sri Lanka) explained the objectives of IYC 2011 and the details of activi-

ties planned in Sri Lanka. Keynote Address on ‘Chemical Research in Technology Development’ was delivered by Dr. A. M. Mubarak, Director of the Industrial Technology Institute.

CHEMEX2011 Program of the Second Day (28 January 2011)

The theme for the second day was ‘Chemistry in Day to Day Life’. Welcome address was delivered by Prof. M.D.P.De Costa, President of the Institute of Chemistry Ceylon. Prof. S. Sotheeswaran President elect, Institute of Chemistry Ceylon delivered the key note address on “chemistry in day to day life”. Mr. Prithi Perera, Secretary General of the Sri Lanka National Commission for UNESCO, who graced the occasion as the Chief Guest, explained the role of the UNESCO and its commitment for assisting the event. The meeting was addressed by the Guest of Honour, Prof. H.D.Gunawardene Sr. Professor of the College of Chemical Sciences and the concluding remarks were made by Prof. S.I.Samarasinghe, Secretary, International Relations, I Chem C.

CHEMEX 2011 Program of the Third Day (29 January 2011)

The theme for the third day was “Chemistry for Industry’. Welcome address was delivered by Mr. M. R. M. Haniffa, Secretary of the IChem C. The key note address on ‘Chemistry for Industry’ was delivered by Mr. Rajitha Kariyawasam, Managing Director of the Haycarb, Pvt Ltd. The meeting was addressed by the Chief Guest, Mr. A. G. H. R. Samaraweera, chair of the Maliban Biscuit Manufactories Ltd. The Guest of Honour was Mr. Asanga Ranasinghe, Director of the Unilevers Sri Lanka. The concluding remarks were made by Dr. Sujatha Hewage, Sr. Lecturer.

CHEMEX 2011 Program for the Fourth Day (30 January 2011)

The theme for the final day was ‘Chemical Education for well being of the Society’. Welcome

address was delivered by Mrs. M.N.K.D.S. Goonathilake, Secretary, Institute of Chemistry Ceylon. The key note address on 'Chemical Education for well being of the society' was delivered by Prof. J. N. O. Fernando, Dean, College of Chemical Sciences. The Chief Guest of the fourth day ceremony was Prof. M.D.P.de Costa, President of the Institute of Chemistry Ceylon. Addresses were delivered by Dr. R.O.B. Wijesekara, on behalf of Prof. E. R. Janz, Dr. T. Kandasamy and Mr. H. S. Mevan Pieris, the past Presidents of the Institute of Chemistry. Concluding remarks were made by Mr. N.M.S. Hettigedera, Chairman of the Steering Committee IYC 2011. He thanked the Dean of the Institute of Chemistry Ceylon and the Staff, Prof. J. N. O. Fernando, Dean, College of Chemical Sciences and staff and students and Dr. S. Sotheesewaran, President Elect, I Chem C and expressed his gratitude to all the external agencies for their cooperation extended towards successful completion of the event and sought their continued support. The IYC 2011 stamp was ceremonially cancelled on the 4th day as a special event.

Exhibition Stalls

Over 100 exhibition stalls depicted various aspects of chemistry and chemical industrial products.

Public Lectures

Well organized public lectures were held by eminent Chemists at the CHEMEX 2011 venue with a view to increasing awareness of the importance of chemistry in industrial development as well as in the day to day to day life thus contributing to the fulfillment of IYC 2011 objectives. A large number of people attended the lectures. The topics covered and the lecturers were:

- 'Toxic Substances and Prevention of Toxicity' by Dr. R. Perera, Sr. Lecturer, University of Colombo
- 'Sri Lanka Raw Materials for Industry' by Dr. Mohandas, Greentech Consultant

- 'Tea and Health' by Dr. Nimal Punyasiri, Senior Research Officer, Tea Research Institute
- 'Opportunities for Chemistry Graduates' by Dr. S. Weliwegamage, Sr. Lecturer, Institute of Chemistry Ceylon.
- 'Healthy Food Habit for Prevention of Disease' by Mr. N. M. S. Hettigedera, Consultant Dietitian, and Nutritionist,
- 'Water and Life' by Mr. S. Perasiyan, Retired Chief Chemist.

Conclusion of the "CHEMEX 2011"

The Exhibition and Trade Fair was successfully concluded on 30 January 2011 accruing much benefit, especially to the younger generation of the country. It has been estimated that a good cross section of the society, around 200000 people consisting of school children, university students, businessmen, industrialists, academics and the general public from all the three communities have visited the CHEMEX 2011. Participation of teachers and school children from the areas of North and East such as Jaffna, Mullaitivu, Akkaraipattu and Batticaloa too at this event was of special significance.

In addition to displaying various industrial products and services to a broader cross section of the society, the Exhibition & Trade Fair contributed much to the achievement of three major goals of the International Year of Chemistry (IYC 2011) namely, increase of public appreciation of chemistry in meeting world needs, increase of interest in chemistry among young people and generate enthusiasm for the creative future of chemistry. The principle target group, the younger generation and the students as well as teachers were able to accrue maximum benefits. The feedback received from the general public, industrial sector, academic institutions and students from schools clearly indicates that the exhibition was very fruitful to them and the achievements are considerable and that, they are eagerly looking for such opportunities in future too.

Issuance of IYC 2011 Commemoration Stamp

A commemorative postage stamp printed by the Sri Lanka Philatelic Bureau in collaboration with the Institute of Chemistry Ceylon was issued on the 30 of January 2011, as a special event for celebration of achievements of Chemistry and Chemical Sciences in keeping with the objectives of the declaration of IYC 2011 by the UN. The stamp includes the logos of IYC and the Institute of Chemistry Ceylon.

Avurudu Asiriya—IYC 2011 Cultural Program

This unique cultural program was held on 3 April 2011 at Janakala Kendraya, Pelewatte, Battaramulla with the participation of more than 600 persons including members of Institute of Chemistry, visitors, family members, students and children. Being a joint effort of the Steering Committee of the National Secretariat (IYC 2011) Sri Lanka and the Social Affairs Committee of the Institute of Chemistry Ceylon, Janakala Kendraya of the Ministry of National Heritage was selected as it was an ideal venue for the event.

The Avurudu Asiriya Cultural Program was ceremonially opened by the president of the Institute of Chemistry and the members of the Council, President of the National Steering Committee IYC 2011 and members' and the Chairman and Members of the Social Affairs Committee of the Institute of Chemistry by lighting the traditional oil lamp. Among the guests attended were the Secretary General of the Sri Lanka National Commission for UNESCO and the Additional Secretary to the Ministry of National Heritage.

The most attractive and colorful event was the selection of Avurudu Kumari (princess of the New Year) and Avurudu Kumaraya (prince of the New Year). The contesting students of the college, well prepared for the event with colorful special costumes participated at the contest before a panel of judges. The contestants had to undertake various performances which were carried out amidst unending cheers of the crowd.

As for our publicity programs, a colorful leaflet on the Avurudu Asiriya celebration was printed and made available to over 45 professional associations in Sri Lanka, several media organizations and a few tourist hotels (through the arrangements made with Sri Lanka Tourism). The 'Avurudu Asiriya' Sinhala and Tamil New Year Program was telecasted by the HERITAGE TV and TNL on the arrangements made by the Ministry of National Heritage. Press releases were sent to various media organizations. The Sri Lanka Tourism made special arrangements to publish the event through the Ministry of Information on their website. The details of the 'Avurudu Asiriya' programme along with pictures from a book written by Prof. G. B. Dissananayaka were published on the IYC website. More news and photographs will be published on the web site which has been already enriched with IYC activities so far undertaken in Sri Lanka, thus bringing much reputation to the profession of chemistry, Institute of Chemistry Ceylon, College of Chemical Sciences and the Graduate Chemists and students while contributing to the achievements of IYC 2011 objectives as laid down by the UN.

Increase Interest of Young People in Chemistry

Interuniversity Debate Competitions

Among the other activities, inter-university debate competitions were held on various topics. The students had the opportunity to actively participate in these debates and seminars which were conducted by the academics and professionals in chemistry and chemical sciences.

Australian National Chemistry Quiz programme

Above examination had been held on 31st July 2010 in various parts of the country. More than 15000 students from 140 schools from both the Junior Division (Year 11) and the Senior Division (Year 12) participated in the examination.

The Fourteenth Award Ceremony of the

Australian National Chemistry Quiz Competition was held on 27 January 2011 as a special IYC activity at the Bandaranaike Memorial International Conference Hall with the participation of a large number of students, general public, and members of industry.

Science Day Drama Competition

A series of drama competitions were held earlier among the school students under the sponsorship of the National Science Foundation of Sri Lanka and in collaboration with the Institute of Chemistry Ceylon. Opportunities were provided to those students who were successful to stage their dramas at the CHEMEX 2011 Exhibition site. The dramas attracted a large number of audience contributing the goals of the IYC 2011. The dramas oriented towards chemical education imparted a good knowledge to the audience on the use of chemistry in day to day life.

All Island Interschool Chemistry Quiz Contest

A total number of 124 schools applied for the first round. The preliminary written test of the chemistry quiz competition was held on 13th November 2010 at 21 examination centres, island wide. Eighteen (18) schools were selected for the second round of the competition which was held at the Adamantane House on 21 January 2011. Four (4) schools were selected for the final round conducted on 27 January at BMICH during CHEMEX 2011 Exhibition and Trade Fair. Winners were Royal College, Colombo 7, Ananda College (1st runner up) Trinity College, Kandy, Holy Family Convent, Bambalapitiya.

Chemistry in Sri Lanka will be sent to all the schools who participated in the Inter School chemistry Quiz.

Seminars and Chemistry Practical Demonstrations for A/L Students

A large number of GCE Advanced Level students from various schools attended the A/L Seminars conducted by the University Lecturers

and Professors, at CHEMEX 2011. The feed back received from schools clearly indicates that the seminars had been extremely useful to them. .

Traditional Magic Shows and Chemical Magic Shows

CHEMEX 2011 exhibition was unique in that, it consisted of multifarious activities such as seminars, debates, chemistry magic shows, dramas and chemistry demonstrations, as well as kiddies play, musical programmes, dances and many other entertainments. Chemistry magic shows as well as traditional magic shows, orchestra and traditional dances etc., provided much entertainment to the visitors. Therefore, CHEMEX 2011 was indeed very much more than a mere exhibition.

Raffle Draw

The Dean, College of Chemical Sciences organized the IYC Raffle draw which became very popular and it provided attractive prizes to the winners.

Ceremony for Appreciation of the Services of Staff and Students

A ceremony to distribute the Certificates of Appreciation to those who contributed to the success of CHEMEX 2011 was held on 26 February 2011 at the P.P.G.L. Siriwardene Auditorium of the Institute of Chemistry Ceylon.

The services of the staff of the Institute of Chemistry Ceylon and the teachers and students of the College of Chemical Sciences who worked day and night for the successful conclusion of the IYC inauguration ceremony and 'CHEMEX 2011' Exhibition and Trade Fair (which were held at BMICH Sri Lanka from 26-30 January 2011) were appreciated and certificates were awarded for their performances. It was attended by more than 400 students and staff members of the Institute of Chemistry Ceylon/ College of Chemical Sciences.

A special speech on "Supporting the Global Chemistry Community" was delivered by Dr.

Neville V Reed, Managing Director, Science Education and Industry, Royal Society of Chemistry UK. His interesting speech was centered on practical aspects of Chemical Sciences. Because of his unique art of presentation as well as its very useful content, it attracted many commendations cheers from the audience.

Chemistry Seminars for Advanced Level Students
Seminars for A/L students were conducted from 27–30 January 2011 at BMICH, Sri Lanka. A large number of Advanced Level students from various schools attended the A/L seminars conducted by the University Lecturers and Professors, at CHEMEX 2011.

Directory of Graduate Chemists in Sri Lanka

Action is being taken by the Dean, College of Chemical Sciences to publish a Directory of Graduate Chemists in Sri Lanka in the International Year of Chemistry (IYC 2011).

The Institute of Chemistry Ceylon (ICChemC) wishes to update its Directory of Graduate Chemists in order to have continuous contact and correspondence and publicize the activities Graduate Chemists are involved in.

The Directory will carry information about the current qualifications, employment and contact details of Graduate Chemists.

Commemorating the Chemistry Greats

Dr. Devanandan was perhaps the most world renowned scientist that Sri Lanka has ever produced. The event was held on 9 September 2011 at the Institute of Chemistry Ceylon (ICChem C) Adamantane House, Rajagiriya to honour this great scientist of Sri Lanka.

School Packs for the Global Water Experiment

On behalf of the UNESCO, RADMASTE Centre at the University of the Witwatersrand sent five School Packs and five sets of printed materials to us at the request of UNESCO-Paris, in order for schools in Sri Lanka to take part in the Global

Water Experiment of the International Year of Chemistry 2011. National Secretariat has been identified by UNESCO as the Focal Point for collection and distribution of the kits in Sri Lanka.

“CHEMEX 2011” Open Day and Exhibition

Creation of awareness on Chemistry is one of the important goal of the International Year of Chemistry (IYC 2011) declared by the UN. The CHEMEX 2011 Exhibition and Trade Fair conducted by this Institute at BMICH from 27–30 January 2011 brought much benefits, especially to the younger generation of the country, especially in the increase of interest and enthusiasm in chemistry. As a result a considerable demand has been created thus more and more schools requesting for continuation of such activities.

Interschool Titration Competition

An Interschool Titration Competition was conducted at the Institute of Chemistry Ceylon, “Adamantane House,” Rajagiriya, 15–21 November 2011 as part of the above IYC 2011 activities. The main objective of the competition is to assess abilities achieved by the students with respect to laboratory skills of conducting titrations, proper recording of the results, and correlation of the results with the theory of the GCE (A/L) syllabus.

Organizations Involved in IYC Activities

The following organizations have been involved in IYC activities in various forms such as providing advice and guidance, cooperation and collaboration, sponsoring, providing donations, proving stalls etc.

State Organizations

Presidential Secretariat
Ministry of Technology and Research
Ministry of National Heritage
Ministry of Information
Ministry of Posts and Telecommunication

International Organizations

Sri Lanka National Commission for UNESCO

Academic Institutions

Institute of Chemistry Ceylon

College of Chemical Sciences

Leading Universities of Sri Lanka

Government Statutory Organizations

National Science Foundation

National Aquaculture Development Authority

Sri Lanka Tourism Promotion Bureau

Bandaranaike International Conference Hall

Philatelic Bureau of Sri Lanka

Sri Lanka Tourism

Sri Lanka Exhibition and Convention Bureau

Private-Sector Industrialists

Unilevers (Sri Lanka), Maliban Biscuit
Manufactories Ltd, Maliban Milk Products Ltd,
Sevenssea UK, Abbot Diagnostics

Media Organizations

Independent Television Networks , Sirasa TV,
Swarnawahini TV, Associated Newspapers
Ceylon Ltd.(Lake House), Lakhandha Broadcasting
Service, Nelus Advertising Agency, SIYATHA TV

Official IYC Website

The IYC 2011 website, www.chemistry2011.org provided information on IYC activities conducted by the countries which took part in the celebrations. The National Secretariat IYC 2011 updated this website pertaining to the IYC activities of Sri Lanka regularly.

Interaction with Other International Agencies

Sri Lanka National Commission for UNESCO (UNESCO is one of the global partners) is the principal international organization which supports IYC activities in Sri Lanka. The National Secretariat (Sri Lanka) IYC 2011 will make link-

ages with other agencies which are contributing to the global IYC activities.

Proposed Future Programs Continuing IYC 2011 Activities

Broadening the Scope of the National Secretariat

The present National Secretariat established for the implementation of IYC activities will be reorganized and strengthened to plan and implement programmes for the promotion of chemistry and chemical sciences in Sri Lanka. The National Secretariat has the task of reviewing the present legislation in regard to various other Acts and formulating a Chemists Act. It will also involve in the administration of said Act. The National Secretariat will be housed in the same building of Institute of Chemistry Ceylon, thus there is no need to rent out office facilities. The staff will consist of Chairman (Specialist), Hony. Secretary and a Programme Specialist.

A steering committee consisting of the Chairman, President IChemC, the Rector of the CCS, Hony Secretary, Hony Treasurer, Chairman International Relations of IChemC, Chairman A&EP Committee will be established. The Secretariat will be strengthened to carry out coordination with the relevant government agencies, law enforcement authorities and the industry as well as educational institution. It will be equipped with the required furniture, office equipment and communication equipment. While administering the provisions of Chemists Act it will identify, plan, and implement programmes for the promotion of chemistry and chemical sciences.

Chemistry Days, School Essay/Art/Poster Competition

In view of the importance of chemistry and chemical sciences in the national development, high priority has been accorded to promote Chemistry among school children and the general public. Action will be taken by the National

Secretariat to continue awareness programmes and educational programmes with a view to creating enthusiasm and interest in chemistry among the students. Accordingly, essay/arts/poster competitions will be conducted at each Educational Division level with the assistance of the Zonal education Offices of the Ministry of Education. Three best contestants from each Zonal Education Area will be selected for the Provincial Level contests. Three best contestants from each Province will then be selected for the national level competition. The National Level Competition will be held by the Ministry of Education/NSC. Chemistry Days will be conducted in selected schools. The objective of the Chemistry Day programme is to create awareness of the importance of chemistry in the daily life, contribution of chemistry to the well being of the society, enhancing the interest in chemistry among school children, improvement of knowledge in chemistry, and its importance in the national development. It will also, enrich school children's knowledge in chemistry to help them at school level studies, encourage young people to get interested in chemistry and generate enthusiasm for chemistry activities, increase the student's appreciation and understanding of chemistry and its role in everyday of life. It is expected to select one school from District and each such school will invite neighboring schools for the Chemistry Day.

Publications

Action will be taken to publish articles, news paper advertisements, workshop proceedings, leaflets and pamphlets, proceedings of the workshops to strengthen the above activities and to disseminate information among the chemical societies, universities, educational institutions, and government organizations etc.

Avurudu Asiriya Program

The Avurudu Asiriya 2012 Cultural Program, jointly organized by the Ministry of National

Heritage and the Institute of Chemistry Ceylon with a view to celebrate Sinhala and Tamil New Year 2012 concluded successfully on 21 April 2012 at the Folk Art Centre (Janakala Kendraya), Battaramulla. It was held for the third consecutive year by the Institute of Chemistry Ceylon, based on a concept of Professor JNO Fernando, Rector of the College of Chemical Sciences. It is estimated that over 800 persons consisting of members of the staff of the Ministry of National Heritage, members of the Institute of Chemistry Ceylon, students of Janakala Kendraya and College of Chemical Sciences, participated at the event.

The activities were commenced by lighting the Traditional Oil Lamp. Mrs. Kanthi Wijethunga, Secretary to the Ministry of National Heritage welcomed the invitees and participants and stressed the importance of promoting cultural programmes such as Avurudu Asiriya to impart knowledge and experience on age old traditions and the highly valued national heritage to our younger generation.

The events included, various traditional Avurudu Sports such as Banis Kema, Lime and Spoon, Egg Passing, Kiri Kema, Needle and String, Avurudu Kumara open contest, Avurudu Kumari open contest, Water Filling, Badhaka Diweema, racing, Suuppuwen Beema, Fancy Dress Competition and many more activities such as Racing competitions, Kamba Edeema and Sinhala and Tamil traditional dances.

Generate Enthusiasm for the Creative Future of Chemistry

Workshop on Chemistry and Chemical Science for Social Well Being

Workshop on 'Chemistry and Chemical Industry for the Well being of the Society' was held at Admantane House, Institute of Chemistry Ceylon, Rajagiriya, 31 May 2012.

Chemistry as well as chemical sciences play an important role in the national development

while chemical education, training and regulation of chemical industry are vital for achievement of sustainable development the industry. Therefore, the Institute of Chemistry Ceylon, organized a national Workshop on 'Chemistry and Chemical Industry for the Well being of the Society' on 31 May 2012 at Admantane House, Institute of Chemistry Ceylon, Rajagiriya.

A welcome address was delivered by Professor S. Sotheeswaran, President Institute of Chemistry Ceylon. Key Note Address was delivered by Professor MDP DE Costa, Department of Chemistry, University of Colombo. Presentations made were as follows:

- Achievements of IYC 2011 activities in Sri Lanka and future directions - Address by Mr. NMS Hettigedera: Chairman IYC steering committee,
- Chemical Education towards Human Resources Development - Professor JNO Fernando, Hony Rector, College of Chemical Sciences, Institute of Chemistry Ceylon.
- Contribution of Chemistry for the Development of Sri Lankan Agricultural Sector - Dr. Swarna Wimalasiri, Sr. Lecturer, Department of Food Science and Technology, Faculty of Agriculture, University of Peradeniya. Chemical Industry in Sri Lanka and the Role of Chemist - Mr. DBN Perera, General Manager, 4 Ever Skins Naturals (Pvt) Ltd. Chemical Laboratory and Service Sector for National Development - Mrs. Sumathy Rajasingham, Laboratory Services Business Manager, SGS Lanka Pvt Ltd. Contribution of Chemist for the Enhancement of Food Processing Industry in Sri Lanka -Mr. Marian Arsakularathna, Quality Assurance Research and Development Consultant, Ceylon Cold Stores Ltd. Role of Chemist in Pharmaceutical Industry - Dr. Parakrama Herath, Astron Ltd. Control of Toxic and Hazardous Chemicals - Professor. R P Perera, Director, Center for Implementation of Chemical Weapons Convention, Ministry of Industry

and Commerce, Conclusive remarks - Dr. AAP Keerthi, Joint Secretary, Institute of Chemistry Ceylon. Vote of Thanks - Mr. AM Jayasekara, Institute of Chemistry Ceylon

Public Lectures on Chemistry

A programme of conducting public lectures with a view to increase awareness of importance of chemistry in industrial development as well as day to day life was undertaken by the National Secretariat IYC 2011 Public lectures on chemistry 27-30 January 2011 at BMICH, Colombo, Sri Lanka. A large number of people attended the lectures.

The Fourth Inaugural Professorial lecture on 'Chemistry for Sustainable Utilization of Material Resources of Sri Lanka' was held by Prof. H. D. Gunawardhana, Chartered Chemist on 14 March 2011 at P.P. G.L. Siriwardena, Auditorium of the Institute of Chemistry Ceylon.

The Institute of Chemistry Ceylon has planned to celebrate its 70th Anniversary simultaneously with its 40th Annual Sessions on 16th-17th June 2011 at the Sri Lanka Foundation Institute, Colombo, Sri Lanka.

The Institute of Chemistry Ceylon is the successor to the Chemical Society of Ceylon (founded in 1941) and was established in the year 1971 for the general advancement of the science and practice of chemistry. The Institute is a learned society catering to the chemical sciences as well as a professional, qualifying and examining body looking after and responsible for the maintenance and enhancement of the profession of chemistry.

A seminar on Photochemistry for the well-being of the society will be held by the Institute of Chemistry Ceylon on 17 June 2011 at the Sri Lanka Foundation Institute, Colombo.

Presentations were made by the eminent scientists who are experts in the relevant field. Welcome address and Introduction to Photochemistry will be made by the President of the Institute of Chemistry Ceylon. The main sub-

jects discussed were: Organic Photochemistry, A Personal History- Photochemistry of Solar Cells, Photochemical Sensors, Industrial Photochemistry, Photochemistry in Medicine, Photochemistry in Nano technology and, Environment Photochemistry.

Training seminar on Packaging, for Food, Pharmaceutical and cosmetic industries on 6 May 2011, Adamantane House. <http://pubs.acs.org/cen/newscrip/89/8911newscrip.html?featured=1>.

The subjects discussed were Food Packaging its Role, Regulations and Safety, Glass Packaging for Beverages, Flexible Packaging in Food. Tetra Pak packaging: Food (Labelling and Advertising) Regulations 2005. Cosmetics and Packaging Interrelations, and Pharmaceutical Packaging.

A Training Seminar on Nano Technology was held on 30 September 2011 at the Institute of Chemistry Ceylon with the participation of over 100 industrial sector representatives and graduate students.

Subjects discussed were Nano Technology Towards Basic Human Needs, Principles and historical background, Nanotechnology towards new materials development Nanotechnology in energy production and storage, Nano Technology Liquid Crystals, Nanotechnology research at University of Peradeniya, Medical industrial and other applications, Carbon nano tubes and their applications and Instrumentation in Nanotechnology, Nanotechnology and Environment.

Training Seminar on Sustainable Development in Quality, Safety and Health Aspects of Tea, 2 November 2011, Venue Adamantane House, Rajagiriya.

A training seminar on Toxicology: Clinical, Industrial and Environmental Applications was held on 20 January 2012 at the Adamantane House, Institute of Chemistry, Rajagiriya. Chief Guest at the event was the Hon. Pavithra Wanniarachchi, Minister of Technology and Research. There were about 100 participants at the seminar. Professor S Sotheeswaran deliv-

ered the welcome address which was followed by the Minister's address. The Keynote address was delivered by Dr. Rohan P Perera (Senior lecturer, Department of Chemistry, University of Colombo & Director, National Authority for the Implementation of Chemical Weapons).

Role of Chemistry Research in National Development : The International Conference on Chemical Sciences 20-22 June 2012, Colombo, Sri Lanka. The major aim of the conference will be to discuss how chemistry meets the global challenges of clean air, safe water, healthy food, dependable medicine from plants, and how the chemical education imparted to our students achieve the UN Millennium development goals.

Celebrate the 100th Anniversary of the Marie Curie Nobel Prize

Publication of a stamp containing the portraits of Mme Marie Curie and Prof. M.U.S. Sultanbawa as well as the pictures of Blue Sapphire, the national gem of Sri Lanka, Al_2O_3 molecule (which is the main component of the gem) reflects Sri Lanka's commitment towards the achievement of IYC goals.

Publications

January 2011 issue of *Chemistry in Sri Lanka* was dedicated to IYC 2011. A number of articles were published covering the current topics relevant to Chemistry which were also highlighted in the international activities of IYC 2011. The topics included women in Chemistry, medicine, energy, water, environment, green chemistry, materials and food. The pride of place was given to Marie Curie recognizing the hundredth anniversary of the award of the Nobel Prize in Chemistry to her and to highlight the women's contributions to chemistry. The articles were written by the Sri Lankan experts in their relevant fields. Many other newspaper supplements, newspaper articles, brochures, leaflets, photographs, etc. were published. In addition articles were contributed to the journals published by other organizations.

SWEDEN

Adapted from summary materials prepared by Agenta Sjogren for the Svenska Nationalkommittén för Kemi.

The Swedish National Committee for Chemistry, a working committee under the Royal Academy of Sciences, was the principal coordinator of the Swedish celebration of the International Year of Chemistry, KEMINS ÅR 2011. The coordination of the celebrations took place in a project group formed by the Swedish National Committee together with the Swedish Chemical Society, the trade association, Swedish Plastics & Chemicals Federation, and the Chemistry Teachers' Resource Centre. VINNOVA, the Sweden's Innovation Agency, and the Swedish Research Council contributed financially.

Efforts to implement activities that showed the role of chemistry were organized by various actors throughout Sweden. Information about all activities is available on www.kemi2011.se including a final report. Many activities covered several goals of IYC.

IYC Activities

Sweden's Best IYC Activity covered three of the IYC goals and was entitled the Chemistry Calendar, a series of 12 short videos produced during the International Year of Chemistry 2011. The project was awarded as Sweden's most innovative and successful activity during IYC2011.

The Chemistry Calendar was a joint project between Molecular Frontiers, an international outreach organization, Chalmers University of Technology, University of Gothenburg, science center Universeum and Untamed Science, a small movie company specializing in fun and educational science videos. Together, they developed videos, one for each month of the year, that show how chemistry plays an important role in everyday life. At the same time, the videos point to the future by highlighting ongoing research. The

videos combine scientific content with humor, adventure and action. Our goal is to inspire the audience to want to learn more, says Per Thorén of Molecular Frontiers, who initiated the project. The videos appeal to kids in all ages—but are also appreciated by many adults!

The monthly themes, spanning from fashion to sports and sustainable development, were common to all IYC activities in Sweden. Each video is approximately 5 minutes long, which makes it easy to use the videos in various contexts, such as during a lesson at school. The videos are published on YouTube (www.youtube.com/chemistrycalendar), from where they can be embedded on websites and blogs. A Swedish version of each video has also been made.

In conjunction with each video, teaching material has been generated, available for download on Molecular Frontiers website "MoleClues" (www.moleclues.org). The teaching material contains background facts and descriptions of simple experiments of varying difficulty level, that can be carried out in a classroom. On MoleClues there are also games, news and interviews that relate to the content in each video.

Besides all the exciting activities falling under the Chemistry Calendar described above, individual companies and organizations focussed on the interest of young people. For example, BASF, Sweden engaged in the International Year of Chemistry, with the purpose to increase young people's interest in science. Part of this was in sponsoring schools with Science Dictionaries and sponsoring the Chemical Day (October) organized by the Plastic & Chemical Federation.

Conclusions

On 30 November 2011 the Swedish part of International Year of Chemistry was summed up. It was a day dedicated to chemistry at the Royal Academy of Sciences in Stockholm. We discussed how efforts made could be a platform for the future and organized a big workshop with focus on how to create curiosity in chemistry

and influence young people's attitudes. In the exhibition we shared our best events and let us be inspired by some of the more than 300 arranged during the year. During the year there were about 360 media reports about Swedish activities during IYC and all articles were posted during the exhibition. The participants included universities, colleges, businesses, organizations and science centers. The day ended with the National Committee for Chemistry promising to invite all that work for chemistry in Sweden back in a year so that this inspiring forum for dialogue about the role of chemistry can become a regular event, a platform for the future.

SWITZERLAND

Adapted from summary materials prepared by Barbara Winter, chief science officer, Platform Chemistry, Swiss Academy of Sciences.

The Platform Chemistry of the Swiss Academy of Sciences (SCNAT) together with the Swiss Chemical Society and Science Industries took responsibility for the coordination of all IYC activities in Switzerland in advance and during 2011.

IYC Activities

- The national webpage www.chemistry2011.ch (German/French) was set up to ensure Swiss participation and indicates over 85 activities throughout the country for IYC.
- A very successful launch ceremony of the IYC in Switzerland was organized, as well as the closing ceremony which was held jointly with the Annual Congress of the Swiss Academy of Sciences, with the title "Dimensionality." These events as well as all the events throughout Switzerland were posted on the Webpage.
- The «Platform Chemistry» of SCNAT initiated or led three big projects:
- ChemistryBookforChildren "ChemiemitGlobi"

—Globi is a very famous comic figure in Switzerland (www.globi.ch).

- Coffee cream cover
- Swiss stamp with Vitamin C
- Furthermore there were over 400 articles about the IYC2011 in Swiss newspapers, which is for our rather small country a big success.

Conclusions

As the SCNAT and partners played mainly the coordination role for IYC 2011 within Switzerland, the continuation of the activities lies with the different organizations that arranged their events. SCNAT is too small (human and financial resources) to organize events during the IYC as well as for future years. After 2011, SCNAT reverts to "regular modus" and has proceeded with regular annual activities as before IYC, for example, the programme «Chemical Landmarks in Switzerland» which was initiated in 2009 (www.chemicallandmarks.ch).

THAILAND

Adapted from summary materials prepared by Supawan Tantayanon, president, Chemical Society of Thailand.

Increase the Public Appreciation and Understanding of Chemistry in Meeting World Needs

International Conference on Pure and Applied Chemistry 2011

International Conference on Pure and Applied Chemistry is the annual conference of the Chemical Society of Thailand under the Patronage of Her Royal Highness Princess Chulabhorn. This year it has been co-organized by the Department of Chemistry, Faculty of Science, Srinakharinwirot University on 5-7 January 2011 in Bangkok,

Thailand which devoted for the International Year of Chemistry with the theme of Sustainable Development: From Basic to Applied Chemistry. The total participants were around 1000.

The 14th Asian Chemical Congress

The congress was held by the Chemical Society of Thailand under the Patronage of Her Royal Highness Princess Chulabhorn Mahidol and under auspices of the Federation of Asian Chemical Societies and IUPAC on 5-8 September 2011, at Queen Sirikit National Convention Center, Bangkok, Thailand. The theme of this congress was Contemporary Chemistry for Sustainability and Economic Sufficiency. There were 8 sessions, 23 symposia and 5 workshops with the total participants of around 1800 from 48 countries. Among these, the symposium of IYC 2011 "Future Chemical Perspectives in Asia", chaired by Prof. David St. Black, was particularly organized as for celebrating the IYC which was held on 8 September 2011. In addition, the other special activity to celebrate IYC is "Bangkok Bank Young Chemists Awards" were supported by Bangkok Bank Co. Ltd. The 100 awards were presented during the 14ACC Banquet on 6 September 2011.

Chemistry Activities During the National Science Weeks

The National Science Weeks this year were from 7-22 August at the Convention hall, Bitec Bang-na, Bangkok. There were several activities in all fields of Science included chemistry. The major organizer was the National Science Museum, Ministry of Science and Technology, while many organizations, like the Chemical Society of Thailand, were the co-organizers. The number of the audiences around 20 000 to 40 000 everyday. There were chemistry activities were as follows:

- The exhibition on See San Chemie (or Color of Chemistry): The exhibition demonstrated the colorful chemistry in daily life by display-

ing and describing the chemical products and goods for household use and transportation. There were hands-on experiments, the history of Madame Marie Curie, the chemistry questions and answers competition, the chemistry magic show, games and posters.

- Science Contest: The national science contest was held to celebrate IYC2011. It involved the students and teachers from high schools, universities and researchers from institutes across Thailand. This contest was on 16 August 2011.
- Chemistry Show: The Chemistry Show was held on 18 August 2011. It aimed to show how chemistry was fun and joy with safety awareness.

Study Trip on Chemistry in Our Culture and Our Life

The event was arranged to visit various cultural places to gain insight of the chemistry in our culture and our daily life. One of the places was the Grand Palace, Bangkok. The event was done in 9 October 2011, with 82 attendees.

Encourage the Interest of Young People in Chemistry

Children Day in Chemistry Laboratory

The Department of Science Service, Ministry of Science and Technology has opened the chemistry laboratory for the children on 26 January 2011. The children with their parents could experience the determination of the acidity and basicity of water taken from several locations as one example to show the chemistry in our daily life. It gives the opportunity for the next generation to appreciate chemistry. About 4000 people visited the chemistry laboratory.

The National Standard Test of Chemistry

The Chemical Society of Thailand has organized the meetings of the heads of the chemistry departments of all the academic institutions in

Thailand, at least twice a year. The 13th meeting was held on 24 June 2011, at Rangsit University, Bangkok. In this meeting, the national standard test of chemistry as to celebrate the International Year of Chemistry 2011 has been initiated and planned. This activity has involved all Departments of Chemistry in Thailand by nominating the staff for writing the exam questions in five subjects, (i.e., Organic Chemistry, Inorganic Chemistry, Physical Chemistry, Analytical Chemistry and Biochemistry).

Youth Chemists of Thailand Awards

To celebrate the International Year of Chemistry, the Chemical Society of Thailand has launched the brand new 100 awards for the Youth Chemists of Thailand. The selection of the qualified students were selected from the secondary schools nationwide through the two examination competitions, both in theory and practice, before and after two trainings, which were organized by the Promotion of Academic Olympiad and Development of Science Education Foundation under the patronage of HRH Princess Galyani Vadhana Krom Luang Naradhiwas Rajanagarindra. The final competition of this year was held in Faculty of Science, Taksin University, Songkla, and the winners were announced on 10 May 2011.

Practical Experiment Meeting for High School Students

The activity was held in the Department of Chemistry, Faculty of Science and Technology, Thammasat University, Pathumthani, on 6 September 2011 with 128 attendances.

Let's Celebrate the International Year of Chemistry 2011

The exhibition of Let's celebrate the international year of chemistry 2011, at the 32nd Chemistry Test, organized by Undergraduate Students Club, the Department of Chemistry, Faculty of Science, Kasetsart University, 6 November 2010.

Science Teachers Training via VDO

Teleconferencing on Small-Scale Chemistry

The training was organized by the Distance Learning Foundation, the Chemical Society of Thailand and Department of Chemistry of Chulalongkorn University. It was the co-operation between the Chemical Society of Thailand and Mexican Center of Green Chemistry and Microscale Chemistry. Iberoamericana University, Mexico for the content in this training. It was composed of five parts on small scale chemistry experiments (i.e., water electrolysis, copper electrodeposition, oxidation numbers, concentration and chemical reactions, and properties of CO_2 , H_2 , O_2 , Cl_2). This training was broadcasted to 14 000 schools on 25–27 January and 8–9 February 2012. The audiences were estimated to be around 50 000.

Seminar on Sustainable Chemistry in the World and Thai Society for Young Chemists

The event was held on 6 June 2011 in the Department of Chemistry, Faculty of Science and Technology, Thammasat University, Pathumthani. It is aimed to educate the chemistry students to pay attention on sustainability. The number of the attendees were 254.

Generate Enthusiasm for the Creative Future of Chemistry

Green Chemistry Book (in Thai)

Green Chemistry: Theory and Practice, edited by Paul Anastas and John Warner, has been translated into Thai and printed for free distribution in Thailand, under the permission of Oxford Press.

Celebrate the Role of Women in Chemistry

During the conference, the international year of chemistry in Thailand was launched on 6 January 2011 with the special event on “Women sharing a chemical moment in time.” The female mem-

bers of the Thai Chemical Society and 70 female attendees from the research institutes, universities and chemical industries got together while having tea and coffee.

The Award Presentation of L’Oreal For Women in Science in Thailand

The Award Presentation of L’Oreal For Women in Science in Thailand was organized by L’Oreal (Thailand) Co.Ltd. on 7 September 2011, . Prof. Ada Yonath, Nobel Laureate 2002, chaired the ceremony.

Marie Curie, Our Life Our Future

This event was the last activity to celebrate the International Year of Chemistry in Thailand. It was organized by exhibition was held by the Chemical Society of Thailand, the National Science Museum, Poland Embassy. The aim of this exhibition is to celebrate 100 years of Madame Marie Curie with the year of Chemistry on the theme of Chemistry, Our Life Our Future. It was held in Science Square of the National Science Museum, Bangkok, on 3-30 April 2012. The total audiences were more than 10 000. The activities in this event were as follows:

- The Display of Madame Marie Curie: The Polish Embassy in Thailand had brought the original posters and Nobel Laureate medals of Madame Marie Curie from the Marie Curie Museum in Warsaw, to display to the public.
- “Chemistry for Life’ Photo Contest: The contest was organized in collaboration with Department of Chemistry, Faculty of Science, Chulalongkorn University. The activity was aimed to make the public being aware of the important role of chemistry in life. There were a total of 39 photos sent for the contest.
- “Chem Challenge” Chemistry Contest for High School Students: The competition was organized in collaboration with Department of Chemistry, Faculty of Science, Chulalongkorn

University. The final round of competition was held at National Science Museum, Chamchuri Square, Bangkok, Thailand. There were a total of 44 teams entering the competition. The questions covered general chemistry knowledge at high school level as well as Marie Curie biography.

General

The announcement of IYC activities in Thailand was actually done through schools and universities via e-mail, air mail and website, both the CST and IYC websites, but no social media. We estimated more than 2 million people knew IYC through our various programs.

We established the partnership with the Promotion of Academic Olympiad and Development of Science Education Foundation under the Patronage of HRH Princess Galayani Vadhana Krom Luang Naradhiwas Ralanagarindra (POSN), for the selection of the 100 youth chemists of Thailand from the secondary schools nationwide. This activity has been continued and will be one of the annual activities of our society.

We contacted IUPAC from time to time asking questions and requesting the IYC pins and the copies of the special issue of Chemistry International for distribution in Thailand. The main constraints in developing the IYC initiatives is the budget which we had to raise fund from the private sectors and some governmental organizations.

UNITED KINGDOM

Adapted from summary materials prepared by Jon Edwards, corporate communications manager, Royal Society of Chemistry.

A variety events and activities for IYC 2011 were organized in the UK throughout the year, a summary of which is as follows:

Increase the Public Appreciation and Understanding of Chemistry in Meeting World Needs; Generate Enthusiasm for the Creative Future of Chemistry

- IYC activities were launched at the Houses of Parliament, with the Federation of African Societies of Chemistry. President of the Federation of African Chemistry Societies, Professor Temechehn Engida spoke to dozens of parliamentarians, including UK science minister David Willetts.
- Several seminars and meetings took place in the UK throughout the year, at the Chemistry Centre and in other places. Topics discussed included drug use, the unique role of the Organisation for the Prohibition of Chemical Weapons (OPCW) in ensuring that chemistry is used only for peaceful purposes, the history of London's water supply, debates on whether or not the UK can meet targets for reducing carbon emissions without the use of nuclear power, the challenges we face in securing freshwater supplies at a global level, Boyle's life and works, sport and doping, innovation to transform the chemical industry, and the genius of Michael Faraday.
- A unique online microsite was developed offering access to RSC's best gold-related publications throughout 2011.
- The RSC launched its new Visual Elements periodic table as a legacy to IYC.
- The RSC President, Professor David Phillips, traveled throughout the UK and around the world during 2011, promoting chemistry through a variety of entertaining lectures.
- The RSC West India Section and Pakistan Section organized events in India and Pakistan.
- IYC was brought to an end when RSC celebrated its own anniversary of 170 years of publishing at a chemical landmark ceremony at Thomas Graham house in Cambridge.

Encourage Interest of Young People in Chemistry

- Many activities targeted students: (1) Thousands of students took part in the Global Experiment "Water- a chemical solution". (2) RSC student members at the University of Edinburgh took their activities out of the laboratories with a series of demonstrations. They engaged with others at the university who do not have a connection with chemistry. (3) Four hundred school children enjoyed an exciting programme of events at the Charterhouse School IYC Day, including a presentation by the Nobel Laureate Sir Harry Kroto. (4) The RSC hosted a competition for children from eight countries in Africa and Europe. (5) The Our Children on Water was a thought-provoking art exhibition showing how the world's children feel about water.
- Four series of the RSC's 'Chemical Lunchboxes' were organized covering a wide variety of topics including food colourings, flavours, cardiovascular disease and sustainability of food.
- The RCS took part in the Cambridge Science Festival. Activities had a 'liquid and water' theme designed to generate interest in the IYC Global Experiment.



Celebrate the Role of Women in Chemistry

- In January, women scientists from 44 countries, including the UK, gathered together via a video link and social media channels to share a chemical moment in time over breakfast.
- The centenary anniversary of Marie Curie's Nobel Prize for Chemistry was honored on several occasions: a lecture that considered Marie Curie's contribution to science and examined other aspects of the history of radiochemistry (organized by the RSC), an evening of readings about the life of Marie Curie followed by a one-day symposium celebrating the life and work of Marie Curie and Helmet Maecke at King's college, as well as a visit of Hélène Langevin-Joliot, the granddaughter of Marie Curie, to Trinity College in Dublin.
- and the Our Children on Water art exhibition, which toured Europe and Africa after its launch at the Chemistry Centre in London.
- For the first time, the annual Bill Bryson Science Communication Competition for school pupils, championed by best-selling author Bill Bryson, saw an invitation for entries from international schools. Since 2011, international entries have been invited as a direct legacy of IYC.
- New relationships with other international organizations were forged by holding joint events and initiatives, such as the Organisation for the Prohibition of Chemical Weapons, the Organisation for Economic Cooperation and Development and the World Gold Council, among many others.
- A source of funding was made available to member groups and local sections of the RSC, which they could use on projects to advance the chemical sciences in the spirit of the IYC's objectives. Most groups have planned education or outreach events/bursaries with their funding, and some have pooled their funding to engage even larger audiences, including an international collaboration between our members in the UK and Belgium.

Conclusions

1. A broad estimate of audiences reached would include:

- Dozens of parliamentarians through events
- Hundreds of teachers
- Thousands of pupils through engagement activities throughout the year
- Many millions of the general public through high-profile media activity, including national and international press, radio and television. For example, a slot on BBC1's The One Show television programme demonstrating the Global Experiment reached a primetime audience of many millions of people.

2. Partnerships established during IYC:

- Many relationships with other chemical societies around the world were strengthened through planning joint events such as the Chemical Moment in Time breakfast events

UNITED STATES

Adapted from summary materials prepared by Liezl Perez and Terri Taylor, staff members at the American Chemical Society. A link to the full report can be found at http://portal.acs.org/portal/PublicWebSite/global/iyc2011/CNBP_031241.

Increase the Public Appreciation and Understanding of Chemistry in Meeting World Needs

The United States Senate Recognizes 2011 as the International Year of Chemistry

On 26 September 2011, with bipartisan and unanimous consent, the U.S. Senate passed Senate Resolution 283, which recognized 2011 as the International Year of Chemistry. Through the resolution, the U.S. Congress officially recognized the achievements made in the field of chemistry and the contributions of those achievements to the well-being of humankind.

U.S. State Legislatures Recognize ACS and IYC 2011

IYC 2011 was also officially recognized by the legislatures in Tennessee, Ohio, and Minnesota.

Membership Marketing Promotions

Membership Marketing promoted the IYC through a variety of branding on membership materials.

Media Promotions

The ACS Office of Public Affairs reported that a total of 120 stories about chemistry appeared in print, online, and on television. Many of these were generated by local section public-relations chairs who mentioned IYC in their news releases and promoted IYC as part of their public events.

Volunteer Support and Member Communities Webinars

The ACS Volunteer Support & Member Communities Department held a series of webinars introducing the IYC outreach plan, events, quarterly themes in chemical sciences, and resources for outreach coordinators. The webinars included the following:

- *IYC 1st and 2nd Quarters: International Year of Chemistry 2011—Activities and Resources for your Celebration:* On Tuesday, 2 December 2010, a webinar was held to introduce the IYC 2011 outreach plan. Ms. Lynn Hogue (Chair, ACS Committee on Community Activities) and Dr. Judith Benham (Chair, ACS International Activities Committee) moderated the event introducing upcoming activities, tips, and resources to use to celebrate the theme. The webinar was complete

with outreach resources and demonstration videos of outreach activities.

- *IYC 3rd and 4th Quarter: IYC 2011 Webinar—Materials and Health Community Engagement:* On Tuesday, 24 May 2011, a webinar was held for local section outreach coordinators that explained the fourth and final quarter theme of “Health,” the chemical sciences related to nutrition, hygiene, and medicine. The webinar covered activities planned by ACS and online resources available for volunteers, in addition to presentations on how volunteers can participate in third and fourth quarter IYC activities.
- *IYC 2011 Webinar—National Chemistry Week Outreach:* The 2011 National Chemistry Week webinar took place on Wednesday, 28 September, 2011, and featured the theme overview and available resources for outreach coordinators. The webinar provided suggestions for promotion and using public relations, as well as tips on how to evaluate the success of the program and activities.

Speaking Simply about IYC Videos

ACS Staff edited and produced 61 videos for the “Speaking Simply” series from footage in Denver. Members were asked to describe in simple terms, for a non-scientist, how chemistry is providing advances across the IYC themes (water, materials, health, environment, and energy) and how their Local Section, Division, or Committee is celebrating the IYC. The videos were posted online under IYC-Tell Others and IYC-Take Action and served as examples of how to talk in understandable language about how chemistry improves our lives. The videos also provide ideas for outreach that can be used during the year and beyond the IYC.

National Historic Chemical Landmarks

The ACS National Historic Chemical Landmarks program supported IYC in fulfilling its mission to enhance public appreciation for the contribu-

tions of the chemical sciences to modern life in the U.S. and to encourage a sense of pride in their practitioners for chemistry's rich history.

Dual ceremonies for "NMR and MRI: Applications in Chemistry and Medicine," designated in 2011, emphasized the IYC with speeches by ACS President Nancy B. Jackson at Stony Brook University in Stony Brook, New York, and by ACS Santa Clara Valley Section Chair Abby Kennedy at Agilent Technologies in Santa Clara, California. Promotional materials were IYC-branded, and local media reports included mentions of the IYC.

Additionally, Landmark re-celebrations were conducted during IYC for "The Development of Diagnostic Test Strips" (Elkhart, Indiana) and "Production of Aluminum Metal by Electrochemistry" (Oberlin, Ohio). These events provided additional opportunities to reach the public and recognize the role of chemistry in our lives and the community.

Science Festivals

ACS participated in two science festivals during the 4th quarter of IYC: Celebrate Science Indiana (October 2011, Indianapolis, Indiana) and the Bay Area Science Festival (November 2011, San Francisco, California). The events both included a Passport to Chemistry Event with hands-on activities and a Chemistry Demonstration Show. Volunteers were recruited from neighboring Local Sections, the Society for the Advancement of Chicanos and Native Americans in Science (SACNAS), and the National Organization for Professional Advancement of Black Chemists and Chemical Engineers (NOBCChE) chapters to conduct hands on activities. Both festivals were extremely successful with more than 800 attendees each.

National-Level Local Section Activity

Pennies for PUR™ Water Project Launched officially at the 241st ACS National Meeting in

Anaheim, the Pennies for PUR™ Water Project was a partnership with Procter & Gamble's (P&G) Children's Safe Drinking Water program. The ACS goal was to raise enough funds to provide over 1.5 million gallons of safe drinking water. ACS local sections were challenged to work in their communities throughout the U.S. to raise money and awareness of this important initiative. ACS presented P&G with USD 18000 at the end of 2011.

Examples of Local Section Outreach Events

Festival de Química, San Juan, Puerto Rico

The traditional Festival de Química, one of the pivotal events that took place during the IUPAC World Congress, featured the efforts of hundreds of volunteers who, through various demonstrations emphasized the importance of chemistry in daily life in relation to the IYC 2011 themes of water, environment, energy, materials, and health. During the event, participants joined thousands of students around the world in conducting the IYC Global Water Experiment. Over 2000 people participated in this event.

ChemExpo, San Diego, California

The San Diego Local Section's ChemExpo, their 24th annual celebration of National Chemistry Week, drew a crowd of 750 participants. The event featured stage and hands-on demonstrations, and exhibits by local organizations and companies. Consistent with the IYC 2011 theme of "water," the San Diego-based non-profit Give Clean Water, Inc., showed their technology for purifying water.

Encourage Interest of Young People in Chemistry

American Geological Institute and the Global Water Experiment

AGI promoted the IYC and the IYC Global Water Experiment as activities for Middle School teach-

ers to take part in during the AGI-sponsored Earth Science Week on 9-15 October 2011. The Office of Public Affairs worked with ACS's Education Division to provide AGI with relevant web content and hard copy information.

Programming during the National Meetings and Undergraduate Involvement

The Education Division, Office of Undergraduate Programs was active in 2011 ACS national meetings, celebrating with the Undergraduate Social Celebrate IYC, and organizing a lecture from Eminent Scientist David Philips from the Royal Society of Chemistry in Anaheim.

Chemists Can Dance

The IYC chemistry rap song and dance that debuted in Anaheim was performed at the ChemLuminary Dance in Denver. YouTube views of the dance now top 20000.

Volunteer Support and Member Communities Production of IYC Outreach Publications In English and Spanish

IYC 1st Quarter

A link to the Celebrating Chemistry digital publication, "Water in Our World (WOW)," was made available for the 1st quarter theme of IYC, Water in the Environment. This publication, also available in Spanish, featured one 'Meg-A-Mole Future Chemist' interview, articles and hands-on activities explaining the composition, filtration, and conservation of water as a sustainable natural resource. This online publication garnered 10823 views, and its Spanish version garnered 1850 views.

IYC 2nd Quarter

The Celebrating Chemistry Spring 2011 publication, "Energy—It's Everywhere!," was made available for the 2nd quarter of IYC and was devoted to Alternative Energy, in both English and Spanish. The issue featured one 'Meg-A-

Mole Future Chemist' interview, included several articles, and two hands-on activities that explored viable alternative energy sources (such as solar and water energy) as a key aspect of sustainability. The alternative energy focus also coincided with the Chemists Celebrate Earth Day (CCED) 2011 energy theme. During, 'During 2011, 6000 copies of "Energy —It's Everywhere!" were distributed in English, and 3000 copies were distributed in Spanish.

IYC 3rd Quarter

A link to the Celebrating Chemistry digital publication, "Living in a Materials World," was made available for the 3rd quarter of IYC pertaining to its materials theme. The publication, also available in Spanish, included four 'Meg-A-Mole Future Chemist' interviews and articles and hands-on activities illustrating the importance of recycling; in addition, the properties of materials and nanomaterials were also highlighted. This online publication garnered 5925 views, and its Spanish version garnered 63 views.

IYC 4th Quarter

The Celebrating Chemistry Fall 2011 publication, "Chemistry—Our Health, Our Future!" was made available in English and Spanish for the 4th quarter of the IYC. The publication was devoted to the chemistry of health and featured one 'Meg-A-Mole Future Chemist' interview, and included articles that focused on the importance of hygiene, nutrition, and exercise in staying healthy. This publication also coincided with the NCW 2011 health theme. During 2011, 67750 copies of "Chemistry—Our Health, Our Future!" were distributed in English and 13250 copies were distributed in Spanish.

inChemistry Magazine

inChemistry, the official ACS student member magazine, published the following articles in honor of IYC 2011:

- "Drugs in the Drink: Researchers Consider

Effects of Pharmaceuticals in Wastewater” (by Cynthia Washam)

- “Plants Fuel Drive to Greener Driving” (by Cynthia Washam)
- “NASA Spin-offs: How We All Benefit when Materials Chemistry Collides with Rocket Science” (by Wendy Hankle)
- “Cancer Treatment Gets Personal: Discovery of Mutations Leads to Better Drugs” (by Cynthia Washam)
- “Putting Chemistry on the Calendar! – 2011 Is Designated as the International Year of Chemistry” (by Terri M. Taylor)

Kids Discover Magazine

The ACS Office of Public Affairs launched *Kids Discover*, a special chemistry/IYC issue, which debuted in August of 2011. It was sent to 185 000 subscribers and 40 000 schools. In addition, ACS purchased 20 000 copies that were given out at science festivals, National Science Teachers Association meetings, and –through Chemistry Ambassadors—to teachers and students around the country. The magazine has a shelf life of five years and targets audience in grades 5–7.

The U.S. National Aeronautics and Space Administration (NASA) and the IYC Global Experiment

NASA and staff from the ACS Office of Public Affairs and the Education Division teamed up to present a webinar on 22 September 2011, through NASA’s Digital Learning Network. Chemistry Ambassador Valerie Moore was in-studio to perform the water purification experiment with space scientists at the Johnson Space Center in Houston. The webinar was made available to schools across the country, and three ChemClub schools were connected “live.” The Office of Public Affairs generated publicity for each of the schools in newspapers and on television.

Fanmail Newsletter

ACS’s Education Division, Undergraduate

Programs featured IYC activities, resources, and outreach ideas for faculty and students in every issue in 2011 of their *FANmail* newsletter.

ACS Student Chapters’ IYC Activities

The Education Division’s Undergraduate Programs reported 106 chapters conducted 118 IYC events at elementary schools, museums, shopping malls, and college campuses. Of those, 48 chapters received chapter grants ranging from USD 75–750 with a total of USD 19 600 granted. Data was collected from the 337 chapter reports submitted in May 2011 (spring semester events only), and a faculty advisor survey with 127 respondents.

ACS and the IYC Global Water Experiment

Thirty local sections participated with schools and chemistry clubs in the IYC Global Water Experiment to measure water quality from a variety of regional sources (tap water, rivers, streams, ponds, and oceans). The experiment involved four activities: “Acidity: pH of the Planet,” “Salinity: Salty Waters,” “Filtration: No Dirt, No Germs,” and “Purification: Solar Still Challenge.” Teachers and adult leaders were able to submit the results of their experiments in an online form.

Approximately 100 schools in the U.S. entered their data on the world map. As schools were posted, news releases were issued to the media in their community, along the lines of “Chemistry Students put Stuart High School on the World Map.” The releases were published, giving recognition to the teacher and students and getting out messages about the IYC and the role of chemistry in providing clean water to the world.

To celebrate the IYC, the Offices of High School Chemistry and Public Affairs sent a special IYC packet to help ChemClub participate in the IYC Global Water Experiment. This special package consists of the kit to measure the pH of the water with appropriate instructions. ACS’s Global Innovation Imperatives (Gii) also donated

kits and hosted a train-the-trainer session in Puerto Rico during the IUPAC 2011 meeting.

IYC Chemistry Kit Development And Distribution

With funding from the National Science Foundation and National Institutes of Health, the Office of K-8 Science, within the ACS Education Division, created and distributed chemistry challenge kits to over 8000 upper elementary/middle school teachers.

COP 17—Students Blog Climate Change Talks

For the second year, ACS partnered with York College in Pennsylvania and other universities, to offer a unique educational opportunity for students to learn more about climate change policy development and to try their hand at communicating science issues to the general public. Five students traveled to Durban, South Africa from 28 November to 9 December 2011, to attend symposia, lectures, and events, held personal interviews with leaders in climate change issues, and wrote about the news, issues, and perspectives that they encountered. In 2011, the Office of Public Affairs' communications staff led a media training to provide the students with essential interviewing skills and the basics of writing news for a general audience as distinct from an academic audience. The students posted their blog reports at <http://acsstudents.weebly.com>.

Volunteer Support and Member Communities' IYC Events and Festivals in 2011

IYC 1st Quarter

An outreach event was held on 5 February 2011, at the Franklin Institute in Philadelphia, Pennsylvania. The event was held in Franklin Hall and consisted of 18 tables of fun hands-on activities. The mole mascot was present for photo opportunities.

ACS Spring National Meeting in Anaheim, California

During the ACS Spring 2011 National Meeting

in Anaheim, ACS Member Communities staff worked with the Committee on Community Activities (CCA) to sponsor the Presidential Outreach Event: Chemistry of Natural Resource. The outreach event was held on 26 March 2011 at the Discovery Science Center. A total of 58 volunteers from CCA and ACS Student Chapters carried out nine hands-on activities during this event, which drew over 400 children of all ages from around the Anaheim area.

IYC 3rd Quarter

During the ACS Fall 2011 National Meeting in Denver, Member Communities staff worked with CCA to sponsor the Presidential Outreach Event: Exploring our World through Chemistry. The outreach event was held on 28 August 2011 at the Denver Museum of Nature and Science. A total of 42 volunteers from CCA, ACS Student Chapters, and the Colorado Local Section carried out 10 hands-on activities during this event, which drew over 860 attendees of all ages from around the Denver area.

IYC 4th Quarter

On Wednesday, 16 November 2011, ACS Member Communities staff carried out an outreach event, "Chemistry Day" in the gymnasium of McKinley Technology High School in Washington, DC. A total of 38 volunteers from ACS staff and ACS Student Chapters participated in this event, which featured eight hands-on activities (covered areas such as polymers, decomposition, cohesion, and oxidation), and drew approximately 250 students.

IYC Video Series: Spellbound: How Kids Become Scientists

The ACS Public Affairs Office launched a video series that featured Drs. Ahmed Zewail, Kristala Jones-Prather, Bassam Shakhashiri, and Helen Free, among other renowned chemists. The series has received over four thousand views since its launch, and was prominently featured on

Contributions from Countries and Chemical Societies in Specific Regions

the National Science Foundation's Science360 website. The ACS Education Division also developed teacher resources to accompany the use of the videos in the classroom.

Percy Julian Institute Morning of Discovery Event

ACS and the Metropolitan African Methodist Episcopal Church partnered with the Percy Julian Institute to host the Morning of Discovery event, in celebration of the IYC and the International Year for People of African Descent. Activities included hands-on demonstrations for students, led by volunteers from ACS, NASA, and Howard University. Sessions for parents and teachers were held to support students and encourage their interest in STEM fields, including "Things to Do Now: Planning a STEM Career" by Bryan Tweedy, production manager for ACS's Professional Education. The event's attendance was successful with over 100 students and parents, 15 representatives from the

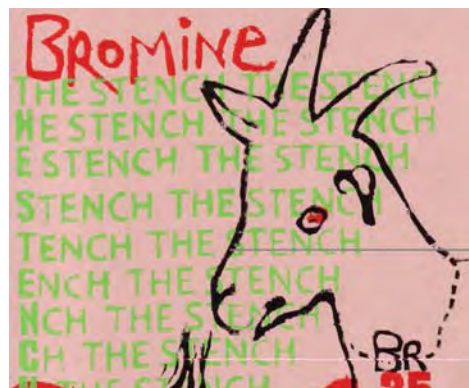
metro faith area, and 30 ACS volunteers. Student exit evaluations showed that participation was the key success factor behind their enjoyment in the event, and showed willingness to participate in similar events again.

Local Section Activities

Nearly half (45%) of all local section activities reported during IYC 2011 consisted of hands-on outreach events in the form of science fairs, festivals, science experiments, and magic shows and demonstrations, which targeted K-12 students, teachers, families, and the general public. Nearly a quarter (23%) of all IYC local section activities reported were local section meetings in which guest speakers from industry, research, and academia were invited to speak to section members. Meeting topics ranged from renewable energy, air and water quality, nanotechnology, history of patent medicines, careers in chemistry, and art conservation. A handful of section meetings



Elemental Matters: Artists Imagine Chemistry, which opened on 4 February 2011 at the Chemical Heritage Foundation in Philadelphia, kicked off the U.S. Celebration of IYC 2011. The exhibit featured 15 works by seven artists as well as a group project involving nearly 100 artists.



were held as facility tours (e.g., local breweries). Some other activity highlights consisted of a smattering of science cafes (6%) geared toward the general public; undergraduate symposia and/or programs (6%); special awards banquets (3%) and other social functions (3%) for section members, consisting of movie screenings, local section anniversary celebrations, and outdoor events such as picnics and barbeques.

Generate Enthusiasm for the Creative Future of Chemistry

IYC 2011 Chemluminary Award

The ACS International Activities Committee (IAC) sponsored this unique, one-time award, which was awarded during the Fall 2012 ACS National Meeting, to promote international engagement both within and outside the traditional realm of the Society. The award honoured ACS Local Sections, Technical Divisions, and Committees in recognition of exemplary contributions to the celebration of the IYC.

National Meeting Resource Tagging for IYC Themes and Nanoscience

The ACS Member Communities staff identified symposia that were related to the IYC quarterly themes of environment, energy, materials, and health and the overarching theme of water. These symposia were flagged and identified in the online technical program for both the Anaheim and Denver National Meetings. More than 280 symposia were identified.

ACS IYC Partner Program

ACS launched the IYC Partner Program, a partnership with 40 like-minded societies and institutions with the goal of creating synergies surrounding celebrations of the IYC. Working together with these peer organizations ensured that the contributions of the chemical sciences reached the general public to the fullest extent. Partner organizations also benefitted from the

partnership because their work and strategic interests were highlighted through the global communities and networks created by the celebration of the IYC. IYC Partners contributions included: posting the IYC logo on their websites; distributing literature and promotional items in bags during their annual meetings; posting IYC-related articles in their respective trade publications and blogs; featuring IYC-related symposia in their meetings' technical program; and hosting IYC-themed events. In addition, the ACS successfully coordinated the presence of an IYC booth during the annual meetings of the American Crystallographic Association. There were a total of 40 IYC Partners.

IYC Opening Event in U.S. at Chemical Heritage Foundation

The U.S. launch of IYC 2011 was held on 1 February 2011, in Philadelphia, Pennsylvania, where prominent leaders from industry and academia gathered to discuss solutions to increasing global demands for energy, safe food and water, and improving human health at a panel discussion, titled "Global Challenges/Chemistry Solutions." The event was presented by the Chemical Heritage Foundation in collaboration with the ACC, ACS, AIChE, and the U.S. National Committee for IUPAC at the National Academy of Sciences.

2010 PACIFICHEM

The ACS Meetings and Operations Department held an IYC 2011 kick-off celebration at Pacificchem in Hawaii in December 2010. Specialty Conference staff worked closely with the Office of International Activities on this event which attracted the participation of several thousand participants.

IYC 2011 Bulletin

ACS's office of International Activities produced the *IYC Bulletin*, a monthly electronic newsletter geared towards planners and enthusiasts

worldwide. It was distributed to a readership of approximately 4400 individuals in over 100 countries across the globe.

IYC Web Promotion And Recognition

Chemical Abstracts Service's (CAS) Marketing group ran a promotion for IYC on www.cas.org in February 2011. There were approximately 10 other IYC mentions on the website where recognition for the IYC was incorporated as part of other messaging such as news releases, STNews, and so on. Editorial Operations (EO) management and CAS also distributed IYC pins during the year to staff in EO's various departments. The Office of International Activities publicized IYC events and information on its webpage for the entire year.

365: Chemistry for Life

This online calendar featured chemistry themes, famous chemists, and other topics related to the chemical sciences.

National Awards Banquet and Ceremony

On 29 March 2011, 700 people attended the IYC-themed 75th Awards Banquet, which was held during the ACS National Meeting in Anaheim, California. Attendees included 70 award recipients of 57 national awards and their guests, sponsor representatives, ACS Board and governance, senior scientists, and special guests. ACS President, Nancy Jackson, and President-elect, Bassam Shakhshiri, hosted the evening and presented the 2011 recipients and sponsor representatives to the attendees. Dr. Ahmed Zewail, the 2011 Priestley Medalist, gave the keynote presentation of the evening "Dreaming the Future."

ACS IYC Virtual Journal

To celebrate IYC 2011, the ACS Office of Public Affairs, Education Division, and Web Strategy and Operations group published a first-of-its-kind ACS *Virtual Journal*. The journal published 12 issues in 2011, and was hosted on the IYC 365 site platform. Each issue highlighted over

a dozen health, environment, energy, and materials research articles from a number of ACS Publications products, including *Environmental Science & Technology*, *C&EN*, *Energy & Fuels*, and *Molecular Pharmaceuticals*, just to name a few. During 2011, all featured articles were made free for anyone who visited through the IYC Virtual site. After each issue was published on the site, links to the new issues were publicized via Facebook and Twitter, with the first issue promoted with a press release, featured in ACS Matters newsletter, and ACS Broadcast e-mail, and the *IYC Bulletin*. As of 25 February 2012, the *IYC Virtual Journal* issues and promotions yielded over 1800 article requests.

Celebrate the Role of Women in Chemistry

Distinguished Women in Chemistry and Chemical Engineering Project

On 2 August 2011, on the occasion of the 43rd IUPAC World Chemistry Congress and 46th IUPAC General Assembly in San Juan, Puerto Rico, the Distinguished Women in Chemistry/Chemical Engineering Project, an officially-sanctioned IYC 2011 project supported by an ACS challenge grant, hosted several events, including:

- Symposium: Are Women Still Underrepresented in Science?
- Play reenactment of "A Living History of Marie Curie" by Susan Marie Frontczak.
- "Distinguished Women in Chemistry/Chemical Engineering" Recognition Ceremony honoring 23 chemists from around the globe followed by the Marie Curie exhibition courtesy of the Embassy of Poland to the United States.

The 2011 ACS Challenge Grants were created in order to encourage the development of technical symposia that recognize the international and multidisciplinary nature of the IUPAC congress, which had a theme of Chemistry Bridging

Innovation among the Americas and the World. Three awards were granted to support the development and execution of symposia, each totaling up to USD 25 000.

IYC Special Issue of C&EN

The cover story of the 27 June 2011 issue, “Celebrating IYC 2011,” contained five essays by prominent scientists on ways chemistry contributes to the well-being of humanity; a biographical profile of Marie Curie, who received her Nobel Prize in Chemistry in 1911; a comment on IYC by ACS President Nancy Jackson; and an editorial

on the celebration by Editor-in-Chief Rudy Baum.

Conclusions

The U.S. response to IYC was massive. All we have done here is to provide a summary with examples of major events. Much of the activity took place in local ACS Sections. ACS’s IYC efforts were led by its International Activities Committee, Committee on Community Activities, Society Committee on Education, Local Section Activities Committee, and Divisional Activities Committee.

GLOBAL PARTICIPATION

Individuals and organizations from the following countries registered on the IYC Web site and took part in activities:

Algeria
Andorra
Argentina
Australia
Austria

Bangladesh
Barbados
Belarus
Belgium
Bosnia and Herzegovina
Bostwana
Brazil
Bulgaria

Canada
Chile
China
Colombia
Costa Rica
Croatia
Cuba
Cyprus
Czech Republic

Denmark

Ecuador
Egypt
Estonia
Ethiopia

Finland
France

Georgia
Germany
Ghana
Greece

Haiti
Hong Kong
Hungary

India
Indonesia
Iran
Iraq
Ireland
Israel
Italy

Jamaica
Japan
Jordan

Kenya
Korea
Kuwait

Latvia
Lebanon
Lithuania
Luxembourg

Malaysia
Malta
Mauritius
Mexico
Morocco

Nepal
Netherlands
New Zealand
Nigeria
Norway

Pakistan
Palestinian Territory
Papua New Guinea
Paraguay
Peru
Philippines
Poland
Portugal
Puerto Rico

Qatar

Romania
Russia

Saudi Arabia

Serbia
Sierra Leone
Singapore
Slovakia
Slovenia
South Africa
Spain
Sri Lanka
Sudan
Sweden
Switzerland
Syrian Arab Republic

Thailand
Tunisia
Turkey

Ukraine
United Arab Emirates
United Kingdom
United States
Uruguay

Venezuela
Vietnam

Countries listed in **bold** provided detailed descriptions of their activities, all of which can be found in Section III, page 6.

IV. Contributions from Industry and IUPAC Divisions and Standing Committees

INDUSTRY

Adapted from summary materials prepared by Colin J. Humphris and Michael Droescher.

Within IUPAC, industry activities are centralized in the Committee on Chemical Industry (COCI). We will begin with a summary of COCI contributions to the IYC. Both the Secretary, Colin Humphris, and TM Mark Cesa were members of the IYC Management Committee.

COCI involvement began in San Juan with the WCLM. This meeting focused on sustainability activities related to 20 years after the Rio conference. The theme was “Accelerating the contributions of chemistry to Sustainable Development”. A focus was to activate the chemistry community to make a significant contribution at the Rio +20 conference in 2012 organized by UN Commission on Sustainable Development.

COCI members were strongly involved in the Global Water Experiment, which was very successful, and is well documented in other places in this report. COCI members were also involved in IYC activities in their national organizations. COCI worked closely with CCE to provide industrial perspectives in the public appreciation of chemistry. COCI supported the CHEMRAWN conference on Biofuels, which was held at the Putra Trade Center in Kuala Lumpur in Malaysia on 27-29 September 2011.

The announcement of the UN International Year of Chemistry (IYC) on 30 December 2008 caught the imagination of the chemicals industry. The objectives for the year complemented its interests in promoting the understanding and appreciation of applied chemistry, and its interest in encouraging all young people to study chemistry thereby broadening the diversity of its

potential, future employee base. The year provided a context into which to focus and refresh many regular existing industry events and programmes designed to help it engage more effectively with the communities it serves.

Industry participation included direct participation in events and activities, supporting or helping the organisation of these, sponsorship of IYC as a whole, sponsorship of specific events or activities, and the creation of media to promote the role of chemistry in modern life. Companies engaged at the international, national and regional levels.

International Engagement

In the Appendix there is a list of the companies and organisations which sponsored IYC and the cornerstone events and key activities. Global Partners provided USD 250 000 or more as money or in kind and we are indebted to the Dow Chemical Company for its financial support and the European Petrochemical Producers Association (EPCA) for their support in-kind. The short film, “Chemistry: All About You”, was made through a partnership of UNESCO and IUPAC with the European Petrochemical Association (EPCA). The film was designed for a young audience to show the important role of chemistry in daily life and was launched at the Opening Ceremony for IYC. It was positively received in many countries around the World. UNESCO translated the film into French, Spanish, Russian, Chinese, Arabic, Dutch and German. Thereafter, with the assistance of various partners, the film has been translated into Portuguese, Italian and Japanese, to name but a few additional languages.

Global Sponsors provided USD 50 000 or more as funding (e.g. Evonik) or in-kind or

a combination of the two (e.g., Cefic, BASF, L'Oreal, Solvay). Sponsors provided USD 15 000 or more (Honam, Fiz Chemie, Phosagro, ICCA, the World Chlorine Council) again as funding, in-kind or a combination of the two. It was noticeable that there was very limited support from the Pharmaceutical industry which continues to declare its interests to be primarily in life sciences rather than chemistry per se.

A list of the sponsors who supported the IYC Opening Ceremony held at UNESCO Paris on 27–28 January 2011 can also be found in the Appendix. Some organised events associated with the Opening (Dow, L'Oreal). Industry provided many of the key note speakers, exhibited or prepared media for the Opening Ceremony.

The Global Water Experiment (GWE) was highlighted as a year long activity for school children to explore local water quality and purification. Cefic facilitated the planning of GWE and produced a promotional video for it featuring school children around the world undertaking and discussing GWE. This was shown at side events during the IYC Opening Ceremony at UNESCO. The World Chlorine Council provided funding support for the experimental kits (specifically for chlorine strips which were an expensive component of the kits) to enable assessment of disinfection in the purification experiment. GWE was launched during on World Water Day held in Cape Town on March 22nd 2011 when 1000 local school children took part in the experiments during an event funded jointly by Sasol and the South African Department of Science and Technology.

The supporters of the IUPAC Congress in San Juan Puerto Rico are also shown in the Appendix. Industry support was provided to the World Chemistry Leadership Meeting (WCLM) during the General Assembly. The Dow Chemical Company organised and funded a virtual debate on the future of Sustainable Chemistry which enabled WCLM participants to interact whilst watching to 30 of the world's authorities from

academia, industry, NGOs, International agencies and governments discussing the topic. This interactive programme subsequently went live on the net over a period of six weeks and Dow estimate that a worldwide audience measured in many millions were aware of the broadcast through direct participation, through Google searches on “sustainable chemistry” and media coverage including that in Scientific American and the Economist. The conclusion of WCLM (*Chemistry International*, Mar-Apr 2012, pp. 12-15; www.iupac.org/publications/ci/2012/3402/3_humphris.html) was that chemistry should play an active role in the World Summit on Sustainable Development in Rio in June 2012 but this legacy opportunity was subsequently missed.

The IYC Closing Ceremony was held in Brussels and was organised and paid for by industry. The sponsors of the meeting are shown in the Appendix. The focus of the meeting was a moderated debate involving a number of young scientists and industry professionals outlining their views of the key technical challenges chemistry needs to meet over the next 50 years.

National and Regional Activities

Around the world, industry engaged with national chemistry societies to stage events and activities consistent with IYC objectives. There were notable examples of close collaboration, such as the opening ceremony in the USA in which the CEOs of the largest chemical companies took part alongside the leading academics. This didn't happen everywhere however. The Royal Society of Chemistry and the Chemical Industries Association organised separate opening ceremonies at the UK Houses of Parliament early in the year.

Companies held open days at their manufacturing plants to enable engagement with local communities, they supported local schools in chemistry activities such as the Global Water

Experiment and engaged in the national events organised by their industry associations. The experience of Evonik was typical. As part of a German industry wide “open day” initiative held on 24 September 2011, approximately 40 000 people visited Evonik’s manufacturing sites across Germany to gain an appreciation of their products and the role of chemistry in climate change, transport and health. Evonik also opened its plants in Belgium and in China, and supported local school children undertaking GWE.

In Japan, approximately 12 000 elementary school children and their parents participated in the 2011 experiment show held on 26–27 November at the National Museum of Emerging Science and Innovation in Tokyo. During the event, member companies of the Japan Chemical Industry Association (JCIA) and other chemical organizations hosted 19 different experiment classrooms, two stage shows and a special event—a “Performance of Drawings in Light”—to celebrate the International Year of Chemistry. Many of the experiments enlisted the participation of children from the audience and included: making batteries using fruits; demonstrating how detergents work; recycling plastics; a water treatment process; and production of aromatics.

In Brazil, around 127 000 students from 369 grade and middle schools in 133 cities throughout the Brazilian state of São Paulo benefited from the “IYC in School—Chemistry, our Lives, our Future” project. The scheme ran until end October and included over 1800 lectures, with the participation of 138 speakers including chemistry teachers, specialists and industry professionals. The aim was to show children and young people the importance of chemistry to society and the ways it is present in daily life, awakening students’ interest in science as a topic and a profession.

Cefic itself organised two linked events. The first was hosted at the European Commission headquarters building (Berlaymont) in September 2011 and was the first-ever Berlaymont exhibition

on the role of chemistry in ensuring a sustainable future for Europe through innovation. The four-day exhibition entitled “Tomorrow starts with Chemistry” was an interactive chemistry showcase which led visitors and Commission staff through a tour explaining how chemistry is set to make the next great breakthroughs to help society meet future challenges.

Cefic subsequently re-organised this as a public event held at the Palais des Académies in Brussels in November 2011. The event included the award of prizes for the 65 schools for 16 countries across Europe who took part in the 2011 “Xperimania” project. “Xperimania” is organised by APPE (part of Cefic) and European Schoolnet see <http://www.xperimania.net/www/en/pub/xperimania/homepage.htm> and continues to feature media developed for IYC. For 2011, two prizes were awarded for “a portrait of woman chemist” and for “an awareness campaign of the role of women in chemistry” in line with a key objective of IYC.

Globally industry associations organised a wide range of events. The Appendix includes examples that demonstrate the creativity, breadth and diversity of these activities.

Impact and Legacy of IYC

The IYC legacy will be discussed in detail in Section VII. Here we look at some aspects of the impact and legacy directly related to Industry.

Informal discussion with industry colleagues involved with IYC events and activities shows a high level of satisfaction with IYC. Many found the opportunity to collaborate with IUPAC and UNESCO particularly attractive underlining the value of this partnership as a potential enduring legacy of the year. The cornerstone events and GWE were seen as well run and effective.

There is also however a general feeling that IYC could have had wider public impact. For example, the children directly involved in the “Xperimania” competitions linked to women in

chemistry will probably have lasting impressions but we need to recognise that it was only 65 schools from the many thousand across Europe. By their very nature most of the IYC events and activities could only touch small numbers and often those already in the world of chemistry. Similarly there was only sufficient funding for 5 schools per developing world country to receive sponsored experimental kits for the GWE. This ensured a breadth of involvement but meant depth was lacking.

Cefic does undertake regular assessment of the effectiveness of its communication activities and the good news is that during 2011, IYC ranked alongside the industry's flagship programme Responsible Care in terms its influence with key opinion formers in Europe.

In terms of legacy, interest in the industry to support science continues. The Dow Chemical Company was the sole sponsor of the Chemistry Olympiad in USA in 2012. Solvay recently announced "Chemistry for the Future Solvay Prize".

Conclusions and Recommendations

1. There was extensive interest and involvement from the chemicals industry in IYC. Satisfaction by those who engaged was good.
2. More needs to be done to build bridges to the pharmaceuticals industry and to engage in more practical ways with the Chemicals industry.
3. IUPAC should consider now the steps it should take for sponsorship and funds raising for its centenary in 2019.
4. Active project management with a dedicated resource is needed throughout an international event such as IYC if it is to realize its potential more fully, to organize effective feedback processes during the events and follow up.
5. An effective partnership between IUPAC and

UNESCO is of value to industry. Building on the IYC partnership is therefore a key legacy item. Ongoing industry support to chemistry and the use of IYC media in programmes such as Xperimania are also encouraging.

IUPAC DIVISIONS AND STANDING COMMITTEES

The IUPAC Divisions and Standing Committee generally had few specific IYC activities. Rather they worked with National Societies and Countries to help with the many events in these regions. They also contributed to the cornerstone activities, particularly the water project.

For example the Inorganic Chemistry Division (Division II) explicitly stated that they participated in many local and national IYC events but did not in itself instigate or generate any activities specifically for IYC.

Division II contributed to the Global Water Experiment through the efforts and participation of titular member Prof. Javier Garcia, and were indirectly involved through supporting (together with the Committee and Chemistry Education [CCE]) a major project on the Periodic Table of the Isotopes run by the Commission on Isotopic Abundances and Atomic Weights (CIAAW).

CIAAW did indeed prove to be a major project and because of its association with IYC we present a summary below based on a report prepared by Norman Holden.

Development of an Isotopic Periodic Table for the Educational Community

This is a project jointly funded by Division II, the Committee on Chemistry Education (CCE) and IUPAC. The project membership represents many countries:

Australia—Prof. John R. DeLaeter, Curtin

University, Perth, deceased;

Canada—Prof. Peter Mahaffy, Kings University College, Edmonton; Prof. Michael Wieser, University of Calgary;

France—Prof. Etienne Roth, CEA-CEN, Saclay, deceased;

Japan—Dr. Shigekazu Yoneda, National Science Museum, Tokyo;

Republic of Singapore – Prof. Thomas Walczyk, Singapore;

USA—Dr. John Karl Böhlke, U.S. Geological Survey, Reston, Virginia; Dr. Tyler B. Coplen, U.S. Geological Survey, Reston, Virginia; Dr. Norman E. Holden, Brookhaven National Laboratory, Upton, New York; Glenda O'Connor, U.S. Department of Energy, Chicago; Lauren V. Tarbox, U.S. Geological Survey, Reston, Virginia; Dorothy H. Tepper, U.S. Geological Survey, Reston, Virginia.

An initial draft of the Table was given to CCE for comments and they responded during late summer 2010 after their off-year meeting. A version of the Table was published in January 2011 in the Brookhaven National Laboratory's ScienceBlogs/Brookhaven *bits & bytes*. A revised version of the Table was published in the center fold of *Chemistry International* magazine in July/August 2011 together with a write-up for distribution at the San Juan IUPAC General Assembly (see also www.iupac.org/publications/ci/2011/3304/pp6_2007-038-3-200.html).

During 2012, an article was published in the Spring 2012 ConfChem: Virtual Colloquium to Sustain and Celebrate IYC 2011 Initiatives in Global Chemical Education, entitled IUPAC Periodic Table of Isotopes for the Educational Community. This Conference was held from May 18–28 June 2012 with a follow up presentation in the ICCE-ECRICE conference on 17 July 2012 in Rome, Italy. A series of reader feed back questions to the paper were presented online along with the author's replies. A summary article is

being prepared for publication in the Journal of Chemical Education, which will provide a permanent record of our paper and the various questions and answers that arose from the Virtual Conference. This information should be published sometime in 2013 or early 2014 in that journal. Talks were presented at the Brookhaven National Laboratory's summer "Portal to Discovery" program for ninth grade students from New York City, Nassau and Suffolk Counties that the US Department of Energy funds to encourage students selected by their teachers for summer enrichment (July 2012) and at the Periodic Table of the Isotopes at an Educational Outreach session of the 2013 International Conference on Nuclear Data for Science and Technology (March 2013) in New York City.

Other Projects

The IUPAC Chemical Nomenclature and Structure Representation Division (Division VIII) considered the following two activities as being IYC2011 activities:

- Completion and publication of the chemical nomenclature guide *Principles of Chemical Nomenclature* so that it was ready to present at the IYC closing ceremony in Brussels. The volume was de facto released in December 2011 and available in time for the closing (RSC 2011, ISBN 978-1-84973-007-5). Editor-in-Chief Jeff Leigh, followed up in *CI* with brief columns on various aspects of nomenclature (*Chemistry International* Mar-Apr 2012; www.iupac.org/publications/ci/2012/3402/nn.html).
- Initiation of the production of "brief guides" or "essentials" of organic and inorganic nomenclature. The guides are intended to be parallels to the polymer guide published recently (*Pure Appl. Chem.* 84 2012, Vol. 84, No. 10, pp. 2167–2169 and included as a tear-out in *Chem Int* Nov-Dec 2012).

IUPAC Periodic Table of the Elements

Key: atomic number, Symbol, standard atomic weight

1 H hydrogen (1.007, 1.009)																	2 He helium 4.003
3 Li lithium (6.938, 6.997)	4 Be beryllium 9.012											5 B boron (10.80, 10.83)	6 C carbon (12.00, 12.02)	7 N nitrogen (14.00, 14.01)	8 O oxygen (15.99, 16.00)	9 F fluorine 19.00	10 Ne neon 20.18
11 Na sodium 22.99	12 Mg magnesium 24.31											13 Al aluminum 26.98	14 Si silicon (28.08, 28.09)	15 P phosphorus 30.97	16 S sulfur (32.05, 32.08)	17 Cl chlorine (35.44, 35.46)	18 Ar argon 39.95
19 K potassium 39.10	20 Ca calcium 40.08	21 Sc scandium 44.96	22 Ti titanium 47.87	23 V vanadium 50.94	24 Cr chromium 52.00	25 Mn manganese 54.94	26 Fe iron 55.85	27 Co cobalt 58.93	28 Ni nickel 58.69	29 Cu copper 63.55	30 Zn zinc (65.38(2))	31 Ga gallium 69.72	32 Ge germanium 72.63	33 As arsenic 74.92	34 Se selenium (78.96(3))	35 Br bromine 79.90	36 Kr krypton 83.80
37 Rb rubidium 85.47	38 Sr strontium 87.62	39 Y yttrium 88.91	40 Zr zirconium 91.22	41 Nb niobium 92.91	42 Mo molybdenum 95.96(2)	43 Tc technetium	44 Ru ruthenium 101.1	45 Rh rhodium 102.9	46 Pd palladium 106.4	47 Ag silver 107.9	48 Cd cadmium 112.4	49 In indium 114.8	50 Sn tin 118.7	51 Sb antimony 121.8	52 Te tellurium 127.6	53 I iodine 126.9	54 Xe xenon 131.3
55 Cs caesium 132.9	56 Ba barium 137.3	57-71 lanthanoids	72 Hf hafnium 178.5	73 Ta tantalum 180.9	74 W tungsten 183.8	75 Re rhenium 186.2	76 Os osmium 190.2	77 Ir iridium 192.2	78 Pt platinum 195.1	79 Au gold 197.0	80 Hg mercury 200.6	81 Tl thallium (204.3, 204.4)	82 Pb lead 207.2	83 Bi bismuth 209.0	84 Po polonium	85 At astatine	86 Rn radon
87 Fr francium	88 Ra radium	89-103 actinoids	104 Rf rutherfordium	105 Db dubnium	106 Sg seaborgium	107 Bh bohrium	108 Hs hassium	109 Mt meitnerium	110 Ds darmstadtium	111 Rg roentgenium	112 Cn copernicium						
57 La lanthanum 138.9	58 Ce cerium 140.1	59 Pr praseodymium 140.9	60 Nd neodymium 144.2	61 Pm promethium	62 Sm samarium 150.4	63 Eu europium 152.0	64 Gd gadolinium 157.3	65 Tb terbium 158.9	66 Dy dysprosium 162.5	67 Ho holmium 164.9	68 Er erbium 167.3	69 Tm thulium 168.9	70 Yb ytterbium 173.1	71 Lu lutetium 175.0			
89 Ac actinium 227.0	90 Th thorium 232.0	91 Pa protactinium 231.0	92 U uranium 238.0	93 Np neptunium	94 Pu plutonium	95 Am americium	96 Cm curium	97 Bk berkelium	98 Cf californium	99 Es einsteinium	100 Fm fermium	101 Md mendelevium	102 No nobelium	103 Lr lawrencium			

Notes

- IUPAC 2009 Standard atomic weights abridged to four significant digits [Table 4 published in *Pure Appl. Chem.* 83, 359-396 (2011); doi:10.1351/PAC-REP-10-09-14]. The uncertainty in the last digit of the standard atomic weight value is listed in parentheses following the value. In the absence of parentheses, the uncertainty is one in that last digit. An interval in square brackets provides the lower and upper bounds of the standard atomic weight for that element. No values are listed for elements with no stable isotopes. See PAC for more details.

- "Aluminium" and "caesium" are commonly used alternative spellings for "aluminum" and "caesium".

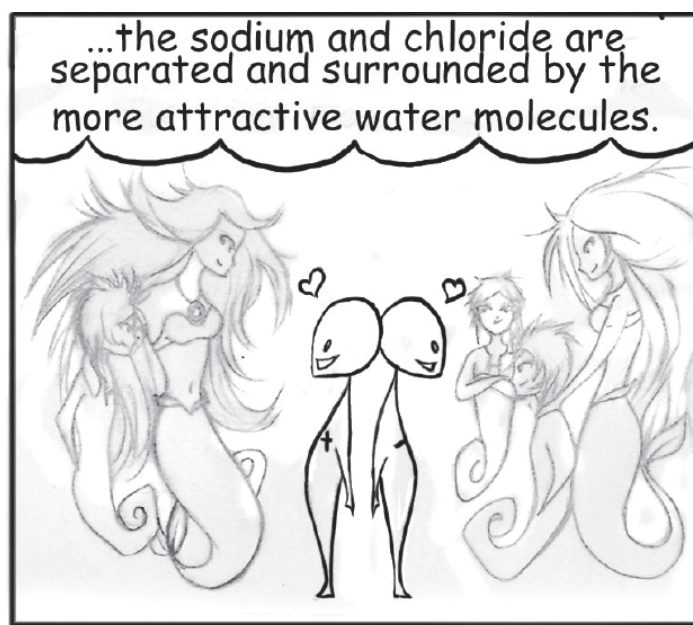
For updates to this table, see iupac.org/reports/periodic_table/. This version is dated 21 January 2011.
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International Year of
CHEMISTRY
2011

Cartoons about chemistry were the focus of an IYC 2011 competition carried out by IUPAC's Physical and Biophysical Chemistry Division (Division I). On 1 August, Jessica Hough of Valley Central High School, Montgomery, New York, USA, was awarded first prize in the Chemistry Cartoon Competition at a ceremony held in the Exhibition Hall of the IUPAC Congress in San Juan.

Hough's cartoon, entitled *Chemical Attraction*, was selected from 63 entries from 8 countries. The goal of the competition was to clearly illustrate a chemistry principle in a way that would be clear and accessible to the general public and would enrich the teaching of chemistry. The entries were judged based on three criteria: the science, their appearance and the sense of humor in the cartoon. (*Chem. Int* Nov-Dec 2011, pp. 22-23; www.iupac.org/publications/ci/2011/3306/6_iyc_cartoons.html)



A panel from Jessica Hough's cartoon *Chemical Attraction*.

The IUPAC Polymer Division (Division IV) organized an video/essay contest, titled “A World Without Polymers.” The contest was open to university and high-school students in each of IUPAC’s 60 member countries. Students were asked to submit either a video or an essay on the theme of “A World Without Polymers?”, that is, to consider how the world might be if, as absurd as it may sound, there were no polymers in the present or future. The objective was to encourage an improved understanding of the significance of polymers and polymeric materials to everybody’s quality of life. Division IV contacted polymer societies around the globe and received numerous entries for both the essay and video competition. A panel of distinguished polymer chemists selected three winning videos and three winning essays were selected. These are posted on the IUPAC Polymer Education website at www.iupac.org/polyedu (*Chem. Int* Nov-Dec 2011, pp. 24-25; www.iupac.org/publications/ci/2011/3306/7_polymers_competition.html).



The winner of the “A World without Polymers?” video contest poses with members of the IUPAC Polymer Division and members of the Malaysian delegation. Front (from left): Mrs. Lann, Yvonne Lann, Zuriati Zakaria; back (from left): Jung-Il Jin, Dennis Smith, Mr. Lann, Christopher Ober, Robert Stepto, Majda Zigon, and Ting-Kueh Soon.

Headed by Lida Schoen and Christiane Reiners of the IUPAC Committee on Chemistry Education (CCE), a stamp competition was launched in January during the IYC 2011 opening ceremony. "Chemistry as a Cultural Enterprise" was the theme of the competition; all entries were required to highlight the impact of chemistry on a country's culture and everyday life. Designs were judged for their artistic value, how well they showed the relationship between chemistry and the national/regional culture, and the quality of the description (max. 50 words).

The competition benefited greatly from social media: the site students used to upload their submissions allowed for sharing of comments and reviews. In so doing, the competition itself became a social and cultural enterprise. In fact, among the criteria used by the judges were the number of hits and number and quality of the peer reviews on the site. 247 submissions from 18 countries were received. (*Chem. Int* Nov-Dec 2011, pp. 26-27; www.iupac.org/publications/ci/2011/3306/8_stamp_competition.html)



The Global Stamp Competition

After six months and 247 submissions from 18 countries, the winners of the International Year of Chemistry Global Stamp Competition have been announced:

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

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

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

Runners Up in the 15-18 age group:

- Stavrou Maria, Spyrou Christa, and Stylianou Chrysvalento (Cyprus)
- Luqman Safwan Che Mohd Fauzi (Malaysia)
- Kyle Stratford and Max Willinger (USA)

Headed by Lida Schoen and Christiane Reiners of the IUPAC Committee on Chemistry Education (CCE), the competition was launched in Paris last January during the IYC 2011 opening ceremony at UNESCO Headquarters. "Chemistry as a Cultural Enterprise" was the theme of the competition; all entries were required to highlight the impact of chemistry on a country's culture and everyday life. Designs were judged for their artistic value, how well they showed the relationship between chemistry and the national/regional culture, and the quality of the description (max. 50 words). The competition benefited greatly from social media: the site students used to upload their submissions allowed for sharing of comments and reviews. In so doing, the competition itself became a social and cultural enterprise. In fact, among the criteria used by the judges were the number of hits and number and quality of the peer reviews on the site.

Due to a generous gift of GlaxoSmithKline the winners received \$500 and the runners up \$250 (for the group). A selection of the best designs will be on display during the IYC Closing Ceremony in Brussels. Cyprus issued a customized stamp with the runner-up design and the National Dutch Postal Services did the same with the Dutch winners' design.

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



Winner 12-14: Vasilena Vasileva, Bulgaria

"Bulgaria is famous for its production of rose oil. It is produced by double distillation of various types of roses (*Rosa damascena*, *sempervirens*, *moschata*, *centrifolia*). The vast majority of rose oil produced in Bulgaria comes from the *Rosa damascena* rose grown near the town of Kazanlak, situated in the Rose Valley. The conditions in the valley are the most suitable for growing these roses; from them the best quality of oil is obtained and widely used in perfumes, due in part to the 300 different chemical substances found in the extracted rose oil."



Merihan Alaa (Egypt)



Yeh Ying Chen, Taiwan

(GlaxoSmithKline), and Prof. Daniel Rabinovich (USA, stamp expert).

This IYC activity enjoys the support of IUPAC, the American Chemical Society, GlaxoSmithKline, The European Chemistry and Chemical Engineering Education Network, the Institut Kimia Malaysia (IKM), and Jeff Howson (EZBN.org).

www.chemistry2011.org/participate/activities/show?id=10



Winner 15-18: Muzhafar Hassan Ismail, Malaysia

"This is the remarkable icon of Malaysia. Rubber is actually a plant originated from Brazil, but it was brought to Asia by Singapore. Despite the limited land for plantations, it was then planted in Malaysia. Back then, it was "White Gold" that people were hunting for, instead of the black gold of today (the petroleum). Soon after its introduction, rubber plantations spread all over Malaysia. This valuable commodity was essential to the country's growth. Today, maybe rubber is not regarded as the White Gold anymore, but its remarkable story lives on..."



Winner undergraduates: Peter Youssef, Philippines

"My stamp is about the benefits of coconut and its contributions to science and industry. The coconut tree is considered to be the tree of life because of its many benefits to people and the environment. An important breakthrough in the field of medicine is the discovery that lauric acid, found in the coconut fruit, can fight the HIV virus. Bio-diesel from coconut trees is also another great discovery which could replace fossil fuels and help the environment."



Stavrou Maria (Cyprus), Runner-Up 15-18



Kyle Stratford (USA) Runner-Up 15-18



Erica Lind, Paulina Jaśkó, Frida Richter, Erika Kankkunen (Sweden)



Luqman Fauzi (Malaysia) Runner-Up 15-18



Tatiana Tikhonova (Russia)



Maria Pulido (Colombia)

V. The IUPAC World Chemistry Congress

Adapted from summary materials prepared by Prof. Ram S. Lamba. A full account can be found at www.iupac.org/publications/ci/2011/3306/4_infante.html.

The 43rd IUPAC Congress and the 46th IUPAC General Assembly was held from 27 July to 5 August 2011 in San Juan, Puerto Rico. The Congress was entitled

“Chemistry Bridging Innovation among the Americas and the World”

Puerto Rico is the first Latin American country to host such an IUPAC World Chemistry Congress and General Assembly. Seven plenary lectures were delivered by Nobel Laureates: Aaron Ciechanover, Ada Yonath, Mario J. Molina, Robert Grubbs, Richard R. Ernst, Roald Hoffman, and Prof. Richard Schrock and a special lecture, “Homo Sapiens Report - The Future of Humanity” by Michael Wadleigh, the “Oscar” winner for Best Documentary.



Speakers who participated in the symposium “Are Women Still Under-Represented in Science?”

Highlights

There were over 2100 participants (1200 from outside) from 70+ countries including 800 Latin Americans. Fifty six young scientists were given awards. There were 210 sessions with 1274 papers, the seven lectures by Nobel Laureates and 2

additional invited lectures (Ira Reese and Peter Atkins), 35 Symposia in 93 concurrent sessions, 55 General Oral Concurrent Sessions, 23 Poster Sessions (1000+), and 22 Continuing Education Courses in 31 concurrent sessions. The scientific program was organized around the following 10 major themes: Alternative Energy Sources, Chemistry and the Environment, Chemistry of Life, Chemical Education and Heritage Industrial and Applied Chemistry, Materials Science, Macromolecular, Supramolecular and Nanotechnology, Chemical Synthesis, Physical and Computational Chemistry, Chemical Analysis and Imaging and Chemical Synthesis.

A special full day Symposium “Are Women still Underrepresented in Science?” was well attended with approximately 200 attendees. The Symposium was followed by a public event, an reenactment of parts of Marie Curie’s life and by the presentation in a formal ceremony of the first “Distinguished Women in Chemistry/Chemical Engineering awards (see *Chem Int* Nov-Dec 2011, pp 19-21; www.iupac.org/publications/ci/2011/3306/5_montes.html).

A full-day World Chemistry Leadership Meeting was held on 2 August 2011 during the IUPAC General Assembly. Activities at that meeting have already been noted in this report in Section IV—Industry (a more detailed description can be found at www.iupac.org/publications/ci/2012/3402/3_humphris.html). Colin Humphris, chair of the meeting, noted the Congress took place in the midst of the United Nations’ Decade of Education for Sustainable Development (2005–2014). There was an enhanced level of dialogue on sustainable development among the scientific community represented by the IUPAC family, society represented by UN agencies, and industry.

The PR House of Representatives and the Senate approved a Resolution to recognize the “Colegio de Químicos de Puerto Rico” and IUPAC.

VI. Closing Ceremonies



Adapted from summary materials prepared by Prof. Bryan Henry and Prof. Douglas Templeton.

The ceremonies took place in the rather opulent Square Brussels Meeting Centre in the heart of downtown Brussels. There were close to 1000 in attendance. The event was organized and sponsored by the industry, and coordinated by Dr. Paul Baeklmans (Solvay).

There were some formal remarks, including an excellent speech by HRH Prince Phillippe of Belgium to open the ceremonies. Nicole Moreau, the then president of IUPAC, identified the origins of IYC. The initial proposal originated with IUPAC in 2006 and was developed with the help of UNESCO before final approval by the United Nations General Assembly in December 2008.

A group of young leaders were introduced by brief remarks from Geoffery Merszei, president of Dow Europe, Middle East, and Africa. The young leaders gave their expectation of the world in 2050, and in particular the role chemical science would play in helping us to build a better world (*Chem Int* May-June 2012, pp 4-9; www.iupac.org/publications/ci/2012/3403/1_chemistry2050.html). They identified as priorities the provision of clean water, food, energy, and universal health to the World's growing

population. Four common themes were present throughout their remarks, and indeed throughout the entire program. For science to flourish and contribute effectively to solving world problems and increasing the quality of life, there are four key requirements:

1. Governments, Academia and Industry must develop ways to collaborate effectively.
2. Artificial barriers between scientific disciplines must disappear.
3. We must find a way to attract the brightest young people to science in general, and to chemistry in particular.
4. International barriers to scientific collaboration must disappear.

There were two outstanding scientific presentations, by Ada Yonath (Nobel Prize in Chemistry, 2009) and by Jean-Luc Brédas (Francqui Prize, 1997). The former described the key role played by ribosomes in living organisms with a focus on their role in antibiotic mechanisms and potential for overcoming bacterial drug resistance. The latter analyzed the factors present in providing sustainable power to a growing population over the next several decades, principally through photochemical conversion, photovoltaics, and energy storage.

A senior panel of leaders from government, industry and academia returned to the topic of future challenges and in particular the need to demonstrate the value of scientific advances to the public. Again the four requirements referred to previously were stressed. The panel also noted that science can only provide its maximum benefits in a free, open, democratic and just society.

Closing remarks were given by Kurt Bock, chair of the Board of Directors of BASF SE and by Maciej Nalecz.

There was a general spirit of euphoria in the room and agreement that IYC had been an outstanding success.



VII. Legacy of IYC

Aspects of the impact and legacy directly related to Industry are given in Section IV. Here we consider the general worldwide legacy.

Involvement of Young People

The involvement of young people in various programs was a real success in IYC. One only has to scan the country list of activities in Section III to see the myriad of activities. The water experiment is a notable example. There is real opportunity to build on what was done by continuing some programs and introducing others.

Global Outreach

Many more countries participated in IYC than those that are full IUPAC members. The IYC experience presents an opportunity to reach out to these countries and encourage them to join IUPAC.

UNESCO Partnership

The partnering with UNESCO during IYC opened up opportunities for activities through UNESCO and its network of field offices, national commissions, and partner NGOs of UNESCO. (See report of UNESCO activities in Appendix.)

Chemistry Contributions to Society

In some cases, national chemistry organizations directly interacted with governments around IYC and the recognition of Chemistry and its contributions to society. There are many examples, the UK, France and the United States are notable. Through UNESCO, all governments were kept informed about IYC and in a number of countries activities were hosted with governmental support (see report of UNESCO activities in Appendix). We need to build on this success, particularly during our upcoming Centenary.

IUPAC 2019 Centenary

The activities of 2011 and this report will be helpful for IUPAC in planning and preparing for its Centenary in 2019. In this regard, we agree fully with the recommendation in section IV. Based on the experience with IYC, active project management with a totally dedicated person in IUPAC head office will be needed before, during and after this event if the centenary is to realize its full potential.

Industry Interactions

Interaction between IUPAC and Industry did occur during IYC, most notably with the Dow Chemical Company and with Solvay. There is a real opportunity to continue such cooperation. In this regard, Solvay and IUPAC have instituted the IUPAC-Solvay International Award for Young Chemists recognizing the most outstanding PhD theses in the chemical sciences.

Research Grants for Young Chemists

An important legacy item is that of the strengthening of links with UNESCO and a continuing cooperation in the area of support for young people in chemistry. This is particularly evident in the newly established PhosAgro/UNESCO/IUPAC Partnership in Green Chemistry for Life which is to provide research grants for young chemists in green chemistry. Phos-Agro will fund the program at USD 1.4 million as a direct follow up to IYC. See www.iupac.org/news/news-detail/article/phosagrounescoiupac-research-grants-in-green-chemistry-call-for-applications.html and www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/green_chemistry_Guidelines.pdf.

Sharing a Chemical Moment

The “global handshake for women” event was launched in 2011 as part of IYC. There have been a number of events built on this initial interaction. For example on March 4, 2014, Dow hosted the 4th Women’s Networking Breakfast at Dow Terneuzen aimed at managing stress and expanding personal networks.

Online Presence

During IYC a number of web sites came into existence. Many of these are currently accessible and in that sense represent an ongoing legacy of IYC. Examples are as follows:

Global Water Experiment

“Now you can explore all the data collected using an interactive tool designed to analyze and compare the results world-wide.”

<http://water.chemistry2011.org/web/iyc>

Brazil National Website

The “365 days of chemistry” was designed to celebrate the International Year of Chemistry in all days of 2011. The purpose was to insert an interview with a professional in the field of chemistry, like a professor, researcher or professional in the industry, in the Brazilian IYC website for each day of 2011 along with a contextualized molecule and its 3D image. This is a pioneering project in the Portuguese language and also in the international context. The project compiled a large database of 365 molecules with historical aspects of application, a list of the molecules uses, and its importance to society. Besides

the text, the molecules can be visualized in 3D image, facilitating real-space observation of the molecular structure.

www.quimica2011.org.br

Periodic Table of Cartoons (Brazilian activity)

This project was included among activities celebrating IYC 2011 that took place at the 34th meeting of the ASBQ, 23-25 May in Costao do Santinho, Santa Catarina. A Periodic Table of Cartoons was developed with caricatures of eminent researchers of chemistry, international and national, complete with a brief biography of each honoree, representing one of the 112 recognized elements and the 27 names assigned by IUPAC.

<http://qnint.s bq.org.br/tabela>.

Royal Society of Chemistry

Lists RSC projects including water experiment, climate change module, catalytic clothing. Also links to European Petrochemical Ass’n video, Chemistry World, and summary entitled “Celebrating an International Year of Chemistry”.

www.rsc.org/get-involved/IYC

Chemical Heritage Foundation

www.chemheritage.org/visit/events/international-year-of-chemistry-2011.aspx

UNESCO

www.unesco.org/new/en/natural-sciences/science-technology/basic-sciences/chemistry/international-year-of-chemistry

IUPAC

<http://iyc2011.iupac.org>

Appendix

Summary Report on UNESCO Activities

Adapted from summary materials prepared by Dr. Julia Hasler and Rovani Sigamoney, assisted by Magalie Lebreton.

Planning 2008-2010

In December 2008, the 63rd General Assembly of the United Nations adopted a resolution proclaiming 2011 as International Year of Chemistry, placing UNESCO and the IUPAC at the helm of the event. This resolution followed the IUPAC Council decision in 2007 and the UNESCO resolution in 2008 to obtain the UN proclamation of 2011 as the International Year of Chemistry.

From January 2009, UNESCO was heavily involved in planning activities with IUPAC and other partners for IYC 2011. Besides participation in the main IYC Management Committee meetings hosted by IUPAC, UNESCO was a major player in the Launch Committee which met frequently in Paris during 2009 and 2010. Other planning activities took place with a variety of partners during 2009-2010.

Implementation of Activities

1. The IYC 2011 Launch Ceremony (27-28 January 2011) held at UNESCO, Paris was organized by UNESCO, IUPAC, and the Launch Organizing Committee, and attracted 1100 participants. The two-day event, with the theme of chemistry for sustainable development, comprised an official opening by UNESCO Director General Irina Bokova, talks by eminent speakers including four Nobel laureates, short films, a debate, concert and exhibition.

The concert held in the evening of 27 January, "Chemical Notes", attracted an audience of 500 people. The pieces chosen by the talented quartet of young musicians demonstrated links

between music and chemistry and provided a highly enjoyable amalgamation of culture and science.

The exhibition brought together displays from over 20 institutions and businesses working in chemistry, in collaboration with several partners. Of particular note was the display, arranged in collaboration with the Musée des arts et métiers, Paris, of 10 photographic portraits of Chemistry Nobel Laureates by the German photographer Peter Badge.

2. A film "Women Sharing a Chemical Moment in Time" was made by UNESCO, in collaboration with Professor Mary Garson, Australia, for the launch of IYC. On the instigation of Professor Garson, women from 44 countries participated in "breakfast" events on 18 January 2011 during which they shared their experiences of chemistry. The local organizers of each event provided UNESCO with film clips and photographs. The resulting compilation into the final film provided a powerful statement of the excitement, commitment and world-wide participation of women in chemistry.

3. The short film, "Chemistry: All About You," was made through a partnership of UNESCO and IUPAC with the European Petrochemical Association. The film was designed for a young audience to show the important role of chemistry in daily life and was launched at the Opening Ceremony for IYC. It was positively received in many countries around the World. UNESCO translated the film into French, Spanish, Russian, Chinese, Arabic, Dutch and German. Thereafter, with the assistance of various partners, the film has been translated into Portuguese, Italian and Japanese, to name but a few additional languages.

4. On the occasion of UN World Water Day, 22 March 2011, UNESCO and IUPAC launched the International Year of Chemistry Global

Experiment with the “Big Splash.” This event occurred at Ratanga Junction, Cape Town, South Africa from 22-25 March 2011 and was organized in collaboration with the City of Cape Town Municipality. One thousand school-learners were able to do the Global Experiment with the kits sponsored by the South African Department of Science and Technology, and with teaching provided by the RADMASTE Centre, Johannesburg.

The IYC Global Experiment, designed as a unifying activity for students around world and to promote hands-on experimentation, remained open for participation until mid-2012. In all, after The Big Splash, 2354 teachers and 128330 students participated in the Global Experiment with their results uploaded onto the dedicated UNESCO-IUPAC Global Water Experiment website. The Global Experiment was extensively featured on TV and radio shows, in news articles, and on blogs. Through the input of UNESCO, the website, <water.chemistry2011.org> is available in five languages: English, French, Spanish, Chinese, and Russian. The web-site includes state-of-the-art interactive tools, 2D and 3D maps showing the data, and pictures, videos, and news on the Global Experiment. The four activities of the Global Experiment are available in 11 languages: English, French, Spanish, Russian, Hebrew, Portuguese, Arabic, Catalan, Slovak, Polish, and Chinese.

It is believed that even more students and teachers participated in the Global experiment on their own, for instance, in Brazil, where the Global Experiment was highlighted in the National Science and Technology week during October 2011 and integrated into the schools science curriculum. In order to encourage the participation of developing countries, 150 school packs containing 10 Global Water Kits and a School Resource Kit were sent free to over 30 countries: Senegal, Mali, Tajikistan, Ghana, The Gambia, West bank, Gaza, Nauru, Burkina Faso, Zimbabwe, Jordan, Sri Lanka, Saint Lucia, Haiti, Maldives, Grenada, Syria, Lebanon, Bhutan,

Democratic Republic of Congo, Madagascar, Armenia, Tanzania, Morocco, Namibia, Oman, Pakistan, Ethiopia, Nigeria, Kenya, Botswana, and Malaysia. Those countries in receipt of kits and that did not upload results should be followed up.

5. In February 2011, the Federation of African Societies of Chemistry supported the organization of the IYC-2011-Ethiopia event in collaboration with the Chemical Society of Ethiopia, the Addis Ababa University, the Ministries of Education and Science and Technology, and the UNESCO-Addis Ababa office. UNESCO-Natural Sciences Sector, Paris, UNESCO-Addis Ababa Office, UNESCO-IICBA and IUPAC were the major sponsors of the events that took place from 18-26 February. International guests from Canada, USA, Mexico, the Netherlands, Germany, and Taiwan offered training workshops to Ethiopian chemists and teachers coming from all over the country on such topics as visualization of climate change, chemical safety and security, micro-scale chemistry, young ambassadors for chemistry (YAC), chemistry understanding and diagnostic chemistry assessment. The national (Ethiopian) chemical educators reviewed and presented the state of undergraduate chemistry education in Ethiopia, and the state of chemistry teacher education in Ethiopia (past, present and future). These events were followed by discussions on the way forward for a sustainable chemistry education in Ethiopia.

6. The World Chemistry Leadership Meeting (WCLM) was an opportunity for leaders from chemistry to set new priorities for the science, to address the challenges of a sustainable world, and to approach Rio+20 and beyond. This WCLM unique event took place on 2 August 2011 within the IUPAC World Chemistry Congress in Puerto Rico from 31 July to 5 August 2011. The Assistant Director-General for Natural Sciences, Gretchen Kalonji participated as the UNESCO

representative. There were many outcomes from this meeting for the follow-up of IYC as well as Rio+20 meeting.

7. The 23rd Annual Conference of Academia Europaea took place from 20-22 September 2011 at UNESCO headquarters. This conference was held under the auspices of the International Year of Chemistry and it highlighted the links between chemistry, the sciences and society. This event brought together 300 academy members under the theme “Chemistry, Science, Culture and Society in the making of Europe”. The aim was to raise awareness of science, particularly chemistry, for a broad audience (social sciences, humanities, the general public, young people).

8. The opera “Madame Curie,” on 15 November 2011, and the exhibition “The Life and Achievements of Maria Skłodowska-Curie” were presented at UNESCO within the framework of the International Year of Chemistry and the 100th anniversary of the Nobel Prize in Chemistry awarded to Marie Curie. This event was jointly organised by the Polish Delegation to UNESCO and the UNESCO Natural Sciences Sector. About 800 people attended the Opera which was in Polish with French subtitles. At the event, CDs of the film “Chemistry: All About You” were handed out to the audience.

9. From 5-8 December 2011, UNESCO hosted the last international IYC event held under the auspices of UNESCO, namely the Malta V Conference, the fifth in the series “Frontiers of Chemical Sciences: Research and Education in the Middle East.” It brought together six Nobel Laureates and eminent scientists from the North with scientists from the Middle East, neighbouring countries and Israel, for in-depth dialogue on frontiers of chemical sciences and opportu-

nities to promote solidarity and peace through cooperation in science. Countries represented from the Middle East included Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Palestinian Authority, Qatar, Saudi Arabia, Syria, Turkey and United Arab Emirates. The focus themes for the workshops of the Conference were: Medicinal Chemistry and Natural Products; Environment: Air and Water Quality; Sustainability of Resources, Energy and Materials; Science Education at All Levels; and Nanotechnology and Material Science. The Conference was opened with an address by UNESCO’s Director General Ms. Irina Bokova, followed by HRH Prince Hassan of Jordan.

10. Besides the activities mentioned already (Ethiopia and Cairo) where UNESCO field offices organized IYC activities, there were a number of other field offices that promoted and organized IYC events in their regions. It is impossible to summarize briefly all types of activities supported or organized by UNESCO field offices as a wide range of activities and events were organized all around the world. The following are examples of some of these activities:

- National launch ceremonies were organized in several countries on all continents, including Cuba (14 January 2011), India (14 January 2011), Bangladesh (14 February 2011) and China (9 April 2011).
- IYC websites were developed in different languages. For example, the Russian language website devoted to the IYC 2011 was especially intended for the cluster countries of the UNESCO Moscow Office and other Russian-speaking countries and communities.
- Chemistry fairs were organized, such as the Chemistry Fair at the Chisipite High School (Zimbabwe) with support from UNESCO

Harare. More than 50 students in 14 teams presented a chemistry experiment and a jury decided on the best projects. The winner was a presentation on the use of the colour changes of red cabbage as a low-cost pH (acidity) indicator.

Some country examples:

- A list of activities in Sri Lanka, in collaboration with the UNESCO office in New Delhi, includes: distribution of commemorative stamps, a Chemistry Exhibition "Wonders in Chemistry"; school activities (lectures, demonstrations and chemistry magic shows for school children); teacher training programmes; design and construction of 50 mobile chemistry laboratory units to be used in remote areas of Sri Lanka; seminars, workshops and training courses in selected chemistry topics including nanotechnology and its applications; publications and guides on the use of chemistry in the day to day life; design of a postgraduate training course in chemical analysis for the benefit of the industry; establishment of a committee of professional chemists in academia and industry; public awareness programmes on television, radio and print media on chemical science and its applications especially targeting general public; and training of 50 middle level laboratory technologists.
- Activities organized in Cuba, in collaboration with the UNESCO office in Havana, include a round table at the Havana International Book Fair on the subject of women in chemistry; a summer camp devoted to chemistry; the 10th Scientific Culture Day (conferences by the President and the Vice President of the

Cuban Society of Chemistry and a workshop on chemistry with students from the vocational science pre-university); the first National Chemistry Olympics with the participation of 51 students; a concert in honor of Alvaro Reynoso and Maria Sklodowska-Curie; and a symposium "Cuba in the International Year of Chemistry".

- Key initiatives in India were the setting up of a National Chemical Safety and Management Institute by the Ministry of Chemicals and Fertilizers, the promotion of chemical safety management for states parties in Africa by the Ministry of Defence, and a Chemical Process Safety Course.

11. The International Year of Chemistry was officially closed with the Ceremony in Brussels on 1 December 2011, at which UNESCO and IUPAC played a major role. The director of the International Basic Sciences programme, Maciej Nalecz, participated as the main representative of UNESCO.

In summary, activities of the Year have been extensive in scope and have contributed to a greater understanding of the role of chemistry in everyday life. The Year engendered great enthusiasm amongst young people for chemistry through the many activities which targeted youth. Importantly, new partnerships have been formed and activities to follow on the Year are planned. The focus of many IYC celebrations on the 100th anniversary of Marie Curie's Nobel Prize in Chemistry (1911-2011) allowed also for very efficient stressing of the role and importance of women in science.

List of Sponsors

IYC2011 Global Partners



Global Sponsors



Sponsors



Sponsors of the Official IYC Launching Ceremony





Sponsors of the IUPAC 2011 World Chemistry Congress



Sponsors of the Official IYC Closing Event



Examples of Industry Related Events by National Associations

AUSTRIA

FCIO—Fachverband der Chemischen Industrie Österreichs

www.chemie2011.at

www.wochederchemie.at

1. Chemistry Olympic Österreich
2. Awards Austropapier
3. Chemistry as an energy project competition prizes
4. Chemical Week
5. Educational activities: experiments in laboratories
6. International H.F. Mark-Symposium

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BELGIUM

Essenscia

www.iyc2011.be

1. Special stamp dedicated to IYC (chemistry theme) to be launched on 17 January 2011
2. Week of chemistry, plastics and life sciences organised for primary and secondary schools (in partnership with Living Tomorrow, PASS and Technopolis) – 28 February – 4 March 2011
3. Essenscia annual event – 27 April 2011
4. Open doors of the chemical industry – 20-21 May 2011
5. Re-edition of the sustainable development report of Essenscia – autumn 2011
6. International IYC Closing Ceremony on 1 December in Brussels

Laura Grandry: LGrandry@essenscia.be

CZECH REPUBLIC

Association of Chemical Industry of the Czech Republic

www.schp.cz

1. IYC 2011 calendar
2. Conference on Competitiveness of Chemistry, May 2011, in cooperation with Ministry of Industry and Trade
3. Gala evening on chemistry, 22 September 2011

Ladislav Novák & Jiří Reiss, Secretary for Trade, R&D and Innovations:
mail@schp.cz

ESTONIA

Federation of Estonian Chemical Industries

1. 18-19 April 2011. National event for academy, industry and high school teachers in the form of two-days conference with oral and poster presentations from academia, industry and Union of High School Chemistry teachers. Event will be advertised in national media and will be open to general public also.
2. Exhibition of the all available Estonian chemistry literature
3. Industry laboratories will open the doors for the students
4. The art exhibition concerning chemical industry in Estonia during the Estonian Chemistry Days
5. International conference on Materials and Technologies for Green Chemistry (SustainChem) will be held in Tallinn from September 5 to September 9, 2011: www.sustainchem2011.ttu.ee
6. Audiovisual learning programme 100+ test (regularly updated) in chemistry will be linked with IYC 2011: <http://keemiavideod.ut.ee>

Hallar Meybaum: info@keemia.ee

FINLAND

KT RY—Kemiantoollisuus ry
www.kemia2011.fi

1. Opening of the Year during Science Forum in January 2011
2. ChemBio- exhibition and discussion Forum in March 2011
3. Traveling Science Circus during autumn 2011
4. Closing ceremony, December 2011 (Chemistry night)
5. University and campus events and lectures for chemistry professionals on various themes
6. Academy of Chemistry - lectures of chemistry & chemical industry for decision makers
7. Open door activities in companies. Tool kit for open door activities updated
8. Media programme
9. Educational events: school visits, national chemistry education day
10. Cooperation with trade unions

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FRANCE

UIC—Union des Industries Chimiques
www.reactions-chimiques.info
www.chimie2011.fr
www.chemicalworldtour.fr

1. Opening Ceremony: UNESCO launches the IYC on 27-28 January 2011
2. A partnership with Universciences and the CSTI in Rennes as part of a travelling exhibition on chemistry that will be launched in June 2011 at the “Palais de la Découverte” in Paris
3. Inauguration of the exhibition « Chimie » at the Palais de la Découverte », 8 June 2011
4. Organising classroom debates (for children aged 15/16/17) on the importance of chemistry using a documentary where young chemistry students report on new and innovative

projects in chemistry worldwide

5. 4-day event in 4 towns where the chemical industry uses art to put its message across

Hélène Mejean: hmejean@uic.fr

GERMANY

VCI—Verband der Chemischen Industrie e. V.
www.ijc2011.de
www.ihre-chemie.de
www.vci.de/Internationales_Jahr_der_Chemie/

1. National start-up event together with other chemical organizations, 9 February
2. Achievement campaign „Ihre Chemie“ (Your Chemistry)
3. Pupil experiment/competition H₂O mach's bunt (H₂O make it colourful)
4. Forum Future E-Mobility, 7 April
5. Open Day, 24 September
6. Press dossiers/activities on the chemical industry's contributions to sustainable development
7. Involvement in the touring exhibition Sustainable Chemistry of DBU (German Environmental Foundation)
8. New information series for schools on the topics of energy, crop protection and construction chemistry
9. FCI founds all awards for the youth research competition Jugendforscht
10. Convention for elementary school teachers on best practices in the promotion of science teaching from an early age in Hessen
11. Joint presentation (VCI, employer's association and 14 chemical companies) of Exciting world of chemistry at Ideen Expo in Hannover, a nine days long exhibition for young people (www.ideenexpo.de)
12. Innovation congress Small particles - big chances at Potsdam University
13. Day of chemistry - children's universities open their doors in Rhinland-Palatinate

Martina Ludwig: Ludwig@vci.de

HUNGARY

MAVESZ—Hungarian Chemical Industry Association

1. National Conference to be held in Sopron, March
2. Chemical Industry Conference on Environment Protection & Chemical Safety in Eger, mid October
3. Special Chemical Industry Yearbook devoted to IYC prepared/published by MAVESZ and GKI Economic Research Ltd.
4. Competitions for technical high school students on chemistry in Budapest & Northern Hungary
5. One day at a chemical plant” – visits of high school students

Iván Budai: budai@mavesz.hu

IRELAND

Pharmaceutical Ireland
www.pharmaceuticalireland.ie
www.careersportal.ie

1. Chemistry stands at major science events – January - November
2. Career seminar for international women day-March
3. Molecular parade at St Patrick’s day - March
4. Chemistry awards for post primary students -April/March
5. Science week- the main theme for science week 2011 will be chemistry - November
6. Advertising campaigns & IYC related articles in science magazines
7. Science teachers awards
8. On-line chemistry Quiz
9. Chemistry Career days

Siobhan Murphy: Siobhan.murphy@ibec.ie

ITALY

Federchimica
www.chimica2011.it

1. Opening Ceremony in February
2. National School Award in April
3. Open Gates in May
4. Federchimica Assembly in June
5. National week on chemistry at school and responsible care in October

Silvia Colombo: s.colombo@federchimica.it

NORWAY

Norsk Industri

1. Opening Ceremony 10 February in corporation with Norwegian Chemical Society and The Federation of Norwegian Industries. There will be representatives from the Norwegian government, partners associations, universities, chemical enterprisers, and other institutions.
2. Workshops, stands, websites during the FIS Nordic World Ski Championships 23 February – 6 March. Theme: “The chemistry of ski wax.” Cooperation with Norwegian Television Company, NRK.
3. Activities organized during 2011, themes: climate, energy, sky’s chemistry, food, biochemistry, water, industry, health and environment and at last, the chemistry at home.
4. Delivering materials of molecular building kits to young students.
5. Activities in corporation with universities, science centers, schools and organizations, Oslo, Trondheim, Bergen, Stavanger and Tromsø.
6. Educational activities for 300 teachers in primary schools to stimulate and motivate teaching of pupils in the magic world of chemistry. January – October.

- Nordic Conference for teachers in chemistry, Stockholm 28 – 29 October
- Women in chemistry, Marie Curie and Ellen Gleditch, 7 November
- Young students writing contest. Themes: Chemistry and Energy.
- Lecture series by invited professionals.
- Symposium on Organic Chemistry, Warsaw, April 2011
- Educational activities: lectures, September 2011
- Closing event: ceremony of scientific and popular science events & conference about Supramolecular Chemistry, November 2011

Olav Melbo: Olav.Melbo@norskindustri.no

THE NETHERLANDS

VNCI—Vereniging van de Nederlandse Chemische Industrie
www.jaarvandechemie.nl

- Opening ceremony, January 2011
- Educational activities: carry out experiments in WonderLab, January – February 2011
- Music theatre performance “Marie Curie”, March – December 2011
- Chemical Plants Open Door Day: 21 May 2011
- International exhibition at the seaside: “Chemistry – creating new worlds”, 3 – 26 June 2011
- Sea and dunes form the natural setting for the monumental works of glass and light art.
- Exhibition “Chemistry & Technology”, Science Center Nemo. Exhibitions, theatre performances, films, workshops and demonstrations, 25 June – 4 September
- Chemistry run: Chemistry is everywhere, 10 September 2011
- Closing event “Chains”, 28 – 30 November 2011

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POLAND

PIPC—Polish Chamber of the Chemical Industry

- French-Polish Symposium on Molecular Chemistry, Paris, January 2011
- French-Polish Catalytic Symposium, Cracow, January-February 2011

Wojciech Lubiewa-Wielezyski: wojciech.lubiewa-wielezyski@pipc.org.pl
sekretariat@pipc.org.pl

RUSSIAN FEDERATION

- Moscow International expo Chemistry 2011 under the tagline “Chemistry is Our Life. Chemistry is Our Future” organized with Russian Chemists Union (RCU)
- Open door events in chemical industry - visits by students, professors and public
- Session of the RCU under tagline “Chemistry is Our Life. Chemistry is Our Future”
- Joint conference between RCU and Mendeleev Russian Chemists Association on sustainable development in chemistry and investing in future generations
- International conference «Responsible Care. Social Responsibility as a major factor in company’s competitiveness» dedicated to the IYC
- RCU Council on Continuing Education of Personnel in Chemical and Petrochemical Industry»
- “Youth Days” at leading companies organized by RCU with Russian Chemists Trade Union
- Regional expositions under the tagline “Chemistry is Our Life. Chemistry is Our Future”
- Press publications on the importance of chemistry/chemical industry for the economy
- Development of a project to establish a museum of chemistry and its history
- Conference “Chemical Production Safety is

the Safety of Our Planet” on national and international regulations

SLOVAKIA

ZCHF—Association of Chemical & Pharmaceutical Industry of the Slovak Republic

1. February 2011: Chemical conference connected with the presentation of the occasional postage stamp on IYC 2011. There will be representatives of the Slovak government, partner associations, universities, and other institutions
2. March 2011: Occasional issue of specialized chemical magazine ChemZi in co-operation of SCHS and ZCHF SR focused on presentation and popularization of chemistry
3. 9 April 2011: Chemical Horizons – Lifetime of Polymers, opening of art exhibition
4. 12-14 April 2011: International fair “Chemistry Slovakia 2011/CARPLAST” – global experiment “Water a Chemical Solution”
5. 19-22 May 2011: International Conference “European Chemistry & Chemical Engineering Education Thematic Network Association”
6. 23-27 May 2011: Workshop Let’s do Experiments in Chemistry, high school
7. 26-29 June 2011: 14th Blue Danube Symposium on Heterocyclic Chemistry
8. 5-9 September 2011: The 63rd Congress of Chemists. The representative of ZCHF SR will come up with the presentation in the frame of thematic evening „Picture and reflexion of chemistry by the public”
9. 23 September 2011: The Researcher’s Night, Global Experiment Water
10. 5-7 October 2011: 6th specialized conference CHÉMIA 2011 traditionally organized by ZCHF SR in the tourist centre Liptovský Ján (The Low Tatras)
11. During 2011: touring exhibition Milestones of Chemistry

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SPAIN

FEIQUE

www.feique.org

1. Edition of a Commemorative Postage Stamp
2. Spanish IYC logo adaptation
3. Opening and Closing Ceremony Events
4. Reception at the Royal House with H.M. King of Spain, at the Spanish Parliament & Senate
5. Commemorative Book “11 Ideas how chemistry changes the World”
6. Construction of the Museum of Chemistry
7. Advertising Campaigns
8. Rafael Nadal Performance related with Chemistry (Chemistry & Sports)
9. Photography Contest
10. Spanish Olympics of Chemistry Special Promotion and Business Awards
11. Delivery of Chemistry Popularizing Materials to Schools
12. Chemistry Vocations Program
13. High School Sciences Teachers Training Conferences
14. Research Awards Chemistry & Society, FEIQUE’s and Royal Society, SUSCHEM Young Chemist
15. Conference on Sustainable Chemistry, Innovative and Competitive companies
16. Reports: Spanish chemical Industry competitive and Social Responsibility
17. Promote participation in the International Fair Expoquimia

Juan Labat: jal@feique.org

SWEDEN

The Swedish Plastics and Chemicals Federation

www.kemi2011.se

1. Opening Ceremony, January
2. Educational Activities: 12 lessons in chemistry published on educational website for teachers (www.lektion.se), Chemistry Day in October, Competition for school children,

exhibition with Berta, the dragon girl who loves chemical experiments

3. Use existing activities and make chemistry more visible. Coordinate activities regionally
4. Different calendars, monthly themes, "living experiments"
5. Competitions - for small children, schools, young people (arts, project works, best film on YouTube etc.)
6. Produce videos on the societal and everyday benefits of Chemistry
7. Politicians as target group. Present a chemist of the day, arrange discussions with them
8. Popularizing science cafés. City walks-the history of chemistry
9. Contacts with universities-secondary schools-primary schools
10. Chemistry shows for schools/young people
11. Children's programs on TV FB, YT, Twitter
12. Specific items like T-shirts, pins, stickers (i.e. Chemist and proud, Contains chemicals), candies with flavors of different isomers

Ulla Nyman: ulla.nyman@plastkemiforetagen.se

SWITZERLAND

SGCI—Chemie Pharma Schweiz
www.sgci.ch

1. Open door day with possibility to visit industry plant in Switzerland
2. Content specials and competitions on simplyscience.ch, our engagement to hire young people for the chemical branch. Competition example: Chemistry poster contest "Achievements in chemistry"
3. Special subject at the general assembly of SGCI Chemie Pharma Schweiz to promote the IYC 2011 in Switzerland, e.g. Award "Achievements in chemistry"
4. Branding the sgci.ch website and stationaries
5. Brochure with all the activities in Switzerland
6. Press work by SGCI Chemie Pharma Schweiz

Marcel Sennhauser: Marcel.Sennhauser@sgci.ch

TURKEY

TKSD—Turkish Chemical Manufacturers Association

1. General Secretaries of each subsector under Chemical Sector Platform, will meet periodically and prepare quarterly progress reports
2. Promotion of the IYC in TV and Radio interviews by chemical sector representatives
3. Chemical Sector group activities involving the Turkish Chemistry Society, Istanbul Chemicals and Chemical Products Exporters Union, the Chemical Sector Platform, Universities/Chemistry/Chemical Engineering Departments & NGOs
4. Follow up of Green Chemistry
5. Interaction with government leaders on the importance of the Chemical Year
6. Reaching out to students of all levels, from pre-school to University level, through visual chemistry presentations
7. Organization of Open-door days and plant site visits at chemical companies
8. Submitting IYC related articles to the press media and magazines
9. Preparation of poster exhibitions related to chemistry
10. Publicizing developments in chemical research originated from Turkey
11. Lecture series by invited professionals to talk about role of chemistry in their jobs

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UNITED KINGDOM

CIA - Chemicals Industries Association Ltd
www.cia.org.uk

1. House of Commons Early Day Motion in support of the IYC in constituencies, January 2011
2. Pre-briefing to journalists on UK CIA programme, January 2011
3. Science Fiction story competition for young

people, January 2011

4. Parliamentary launch, students' picture completion, February 2011
5. International Women's Day, 8 March 2011
6. Publication and official launch of "Essential Water", May 2011
7. Sustainability Industry Award, June 2011
8. Future Forum event at Science Museum, October 2011
9. Launch of UK version of global experiment
10. Lunch for careers journalists with Young Ambassadors
11. Publication of CIA Olympics brochure

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AFRICA

SOUTH AFRICA

1. Special IYC banner for display at conferences, meetings, exhibitions etc
2. A careers brochure has been produced publicizing IYC and already used at Science Fairs
3. Special January edition of a magazine for schools to publicize IYC through a series of articles
4. Commemorative stamp with the IYC logo for stamping outgoing postal items
5. The 40th South African Chemical Institute Convention incorporating the 3rd Federation of African Societies of Chemistry (FASC) Congress takes place on the 16-21 January 2011 in Johannesburg and will commemorate the IYC
6. South Africa will be participating in the Global Experiment with the collaboration of a representative on the IUPAC Task Team

AMERICAS

BRASIL

1. Annual Meeting of the Brazilian Chemical Industry (December 2010)
2. Website and social media launch January 2011
3. Opening Ceremony January 2011
4. Advertisement campaign in March 2011
5. Educational activities in March, May, June and August
6. Partnerships with trade unions and NGOs in May and August
7. Celebration of Marie Curie's Nobel Prize in May 2011
8. Responsible Care Congress in June 2011
9. Running event in August 2011
10. Annual Meeting of the Brazilian Chemical Industry in December 2011

CANADA

1. Commemorative Stamp
2. Canadian Chemistry Milestones
3. Science RendezVous - open doors at research institutions
4. Chemical Institute of Canada (CIC) Chemistry Olympiads
5. CIC National Week of Chemistry with public lectures, laboratory visits, hands-on experiments at shopping malls, etc
6. Science centres and museums
7. Partnership with Development Countries
8. Participation in the IYC Global Experiment

MEXICO

1. Opening exhibition in the "UNIVERSUM" museum

UNITED STATES

1. Opening event: week of activities coordinated by the Chemical Heritage Foundation in Philadelphia in February 2011; The American Chemistry Council is cooperating with several American societies of academia and chemical engineering
2. World Chemistry Leaders Meeting in San Juan, Puerto Rico on 2 August 2011 as a side-event of the IUPAC World Congress on "The Challenges for Chemistry in Sustainable Development" - Involvement of top scientists, UN/NGO officials and industry leaders

ASIA Pacific

AUSTRALIA

1. Special events in March and June 2011

JAPAN

1. IYC committee Japan established headed by Nobel Prize laureate Dr. Ryoji Noyori and including CEOs/ Chairmen of Mitsui Chemicals, Mitsubishi Chemical, Sumitomo Chemical and Showa Denko , leading media observer members, supported by 22 academic societies and industry associations (launch press conference in August 2010 with around 25 journalists)
2. Countdown Commemorative Symposium in December 2010
3. Exhibition for dream-comes-true-though-Chemistry
4. Young students writing contest
5. More Chemistry in Science Museums.
6. Chemistry Communication Award
7. Foot prints of Japanese Chemists

IYC Management Committee

The IYC management committee was established in 2008 to stir up the IYC 2011 initiative. The group includes IUPAC officers and representatives of the major chemical federations from Europe, Africa, Asia, and Latin America, and representatives from the chemical industry and UNESCO.

Chair

John Malin

UNESCO Representative

Julia Hasler

IUPAC Representatives

David StC. Black (Secretary General)

Mark Cesa (Representative of the Committee on Chemistry and Industry)

John Corish (Treasurer)

Bryan Henry (Past President)

Jung-Il Jin (Past President)

John Jost/Terry Renner (Executive Directors)

Peter Mahaffy (Chair of the Committee on Chemistry Education)

Nicole Moreau (President)

Leiv Sydnes (Chair of CHEMRAWN, the

CHEMical Research Applied to World Needs

Natalia Tarasova (Bureau Member and liaison to the IYC Educational Committee)

Other Representatives

Colin Humphris (International Council of Chemical Associations (ICCA))

Wolfram Koch (European Association for Chemical and Molecular Sciences (EuCheMS))

Ahmed Mohammed (Federation of African Societies of Chemistry (FASC))

Ting-Kueh Soon (Federation of Asian Chemical Societies (FACS))

Gabriel Infante (Federación Latinoamericana de Asociaciones Química (FLAQ))

IUPAC Officers

2006–2007

Bryan R. Henry, President, Canada

David StC. Black, Secretary General, Australia

Christoph F. Buxtorf, Treasurer, Switzerland

Leiv K. Sydnes, Past President, Norway

2008–2009

Jung-Il Jin, President, Korea

Nicole Moreau, Vice President, France

David StC. Black, Secretary General, Australia

John Corish, Treasurer, Ireland

Bryan R. Henry, Past President, Canada

2010–2011

Nicole Moreau, President, France

Kazuyuki Tatsumi, Vice President, Japan

David StC. Black, Secretary General, Australia

John Corish, Treasurer, Ireland

Jung-Il Jin, Past President, Korea

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