Minutes  CCE meeting draft 10 July 2013

IUPAC COMMITTEE ON CHEMISTRY EDUCATION

Meeting at the

22nd INTERNATIONAL CONFERENCE ON CHEMISTRY EDUCATION (ICCE)
EUROPEAN CONFERENCE ON RESEARCH IN CHEMISTRY EDUCATION (ECRICE)
ROME, ITALY

Meeting times:

Sunday July 15, 09.30 - 13.00 and 14:00-18:00 joint lunch and dinner)
Tuesday, July 17. 19.00-22.00, joint dinner

Meeting location office of Italian Chemical Society, Via Legale 48c

1. Welcome, introduction and orientation (45’)

Likely attendees (see also table below)

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

NR: Suzanne Boniface (New Zealand), Liberato Cardellini (Italy), Peter Childs (Ireland), Maja Elmgren (Sweden), Morton Hoffman- Conference coordinator (USA), Farzana Mahmood (Pakistan), Rachel Mamlok-Naaman (Israel), Tina Overton (United Kingdom), Alex Pokrovsky (Russia), Ting-Kueh Soon (Malaysia).

Guests: Tony Wright, Luigi Campanella(host Italian Chemical Society), Lida Schoen (chair committees), Judith Poë (organizer Toronto), Andrew Dicks (organizer Toronto), Ilka Parchmann(EuChemS), Siegbert Schmid(interest Sydney Australia), Djafer Benachour(OPCW), Daniel Feakes(OPCW)

Ting Kueh Soon arrived at 9.55, Peter Childs arrive 10.15, Liberato Cardellini arrived 11.10 Judith Poe and Andrw Dicks arrived 14.00, Ilka Parchmann arrived 14.30, Siegbert Schmid 16.45, Choon Do 17.00

People presented themselves shortly after Mei Hung Chiu opened the meeting at 09.30

2. Decision on agenda (5’)

The agenda was accepted, but 11.1 was brought forward.

11.1 Report Luigi Campanella, ICCE
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There will be

552 delegates, 624 abstracts submitted, 356 oral communications, 237 posters, 71 countries 275 from Europe, 34 from Africa 80 from US, Ca, 42 South America, 106 Asia, 15 Australia, NZ

He gave short report about the programma in 10 slides (see appendix 1)

Mei Hung Chiu expressed her satisfaction, stating it looked like a good event, with so many abstracts and so many participants.

Luigi indicated about 55 additonal registrations are expected

There will be about 60 Italian high school teachers.

3. Minutes of meeting in Puerto Rico, SanJuan 2011 [CCE2012_3] (5’)

The minutes were approved

4. Matters arising from the minutes of CCE and new Business (10’)

Most matters arising from the minutes are on the agenda.

5. Chair's Report to Council, Leiden April 2012 [CCE2012_004.1,2,3] (15’)

The report of the chair was approved by the meeting.

We recieved a message back from Bureau indicating the CCE should work together with the divisions. It is important that we sustain contact with divisions. The chair and secretary will attend meetings of the divisions and standing committees during the general assembly and present the activities of CCE.

Peter Mahaffy collaboration with OPCW leads to double interest
Pokrovsky: Best partner is Unesco Water Institute to Delft for global water experiment.

6. Future directions for CCE – priorities for 2012-2013 (15’, then tabled until Tuesday)

Mei-Hung Chiu presented the biennial goals (appendix 2). She announced the meeting will break later to discuss possible projects that could be developed in the next year.

coffebreak

7. Report from Projects group (Mustafa Sözbilir) [CCE2012_006]

Mustafa thanks all reviewers for their work. He indicates that more reviewers are necessary.

The report was approved.

8. Review of activities and relationships

8.1. Flying Chemist Program (FCP) (Mei-Hung Chiu)

Mei Hung Chiu reported about her visits to Sri Lanka, Philippines and Ethiopia,
She will do another visit to Panama and Mexico in Oktober 2012, together with Lida Schoen, who will give a YAC-workshop there.

The reports were approved.

8.2a. Global Stamp competition (Lida Schoen [CCE2012_8_2])
Lida Schoen presented her global stamp competition, see appendix 3. Her report was approved.

8.2b. YAC Program (Lida Schoen/ Erica Steenberg) [CCE2012_8_3]
Lida Schoen reported the workshops were very successful. It was the first international workshop in 15 years in some cases. Except for Mexico and Panama, there are no new engagements at this time. Some suggestions for new calls were made, like the former Russian states/Arabic republics and perhaps South Sudan and Malaysia. See appendix 4.

8.3. Relationship with EuCHEMS, ECRICE (Ilka Parchmann)
Ilka indicated she was very happy with the cooperation between CCE and EuChemS. She is looking forward to an interesting conference.

8.4. Relationship with OPCW, (Djafer Benachour)
Djafer gave a presentation about the work of OPCW. See appendix 5.

8.5 International Year of Chemistry 2011 (Mustafa Sözbilir, Anthony Wright)
Bob Belford reported about the use of the virtual conference that took place in the weeks prior to the conference. He indicated the site had over 11,000 hits, many reads of articles and also many comments were given. One article stood out in the hits, because Google sent people to the site. Bob indicates the site had a large impact value. See appendix 6.

8.6. Lida Schoen reported about the distinguished contribution for chemistry education award as she was chair of this committee. The jury further consisted of Ti Soon Koon, Javier Garcia
Nominations: Bob Bucat and Peter Mahaffy were nominated and it was decided they would receive the award.
The guidelines and forms set up by Mei-Hung will be circulated among the CCE for comment
Peter Atkins will hand out the awards during the opening ceremony on Monday.

8.7 future activities

No remarks were made.

Lunch was served in the garden of the office of the Italian Chemical Society.

9. Reports from NRs and TMs [CCE2012_009]
Russia, Ireland, Malaysia, Australia, South Africa, Turkey gave short remarks about their national reports.

10. Interaction with Divisions and Standing Committees
10.1. Oral report from Chair (Mei Hung Chiu)

10.2. Report from Divisional Liaison Officer (Eva Akesson) [CCE2010_009.1]

10.3. Contributions from Divisional Representatives and standing committee chairs


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**10.3.1.** Report from division III, (Mary Garson)  
organic chemistry and green chemistry  
proposal textbook on chemical biology from chair Ganesh

**11. ICCE program** (Morton Hoffman) [CCE2012_11]  
Morton introduced the ICCE program and indicated that we would now hear two  
expressions of interest for 2016.

**11.1. Overview from Italy, 22**\textsuperscript{nd} ICCE & ICRICE (Luigi Campanella)  
this point was moved up in the agenda

**11.2.** Overview from Toronto, 23rd ICCE (Andrew Dicks and Judith Poë)  
Judith Poë reported about the progress made so far in Toronto. see appendix 7

**11.3.** expression of interest from Malaysia, 24th ICCE (Tueh King Soon)  
Tueh King Soon explained in a presentation why he thought the next ICCE  
should take place in Malaysia. See appendix 8.

**11.4.** expression of interest from Australia  
Dr Siegbert Schmid presented the advantages of Australia. see appendix 9.

**11.5.** Considerations for 2016 and beyond  
Mort would like to receive proposals for 2018, and suggested that as 2014 will be  
in North America, 2016 in Asia, 2018 might be in Europe again. If that were the  
case it would be a good idea to combine that again with ECRICE.

**11.6.** Other Educational Conferences  
Peter Childs asked attention for: Eurovariety 2013 Limerick July 2013  
http://www.eurovariety2013.ul.ie/  
Mei-Hung indicated the Asian chemical education network NICE  
http://www.5thnice.org/en-english/  
The General Assembly 2013 will take place in Istanbul. Mustafa presented some  
information about Istanbul ( see appendix 10)  
http://www.iupac2013.org/

**12. Administrative matters** (Mei-Hung Chiu)

**12.1.** Finance Project budget Operating budget  
The total cost was US$9560.33 and the balance was US$10,439.67.  
In the projects budget there is still $ 15,000 left, also project committee possible  
for grants  
For the General Assemblee there is about $ 10,000 left for travel cost and other  
costs.

**12.2.** Membership [CCE2012_011.2]  
\textbf{12.2.1.} TM and officer appointments (Chair, secretary)  
\textbf{12.2.2.} Process for approval of conference coordinator, project group  
chair  
\textbf{12.2.3.} Report on NR and AM appointments  
\textbf{12.2.4.} Acknowledgment to members whose terms expire.

**break out session.**  
The meeting broke for about 45 minutes to discuss in groups possible new  
projects.
Report about new projects.
A number of projects were discussed during the break. After the break the following groups reported.
1. Erica Steenberg and Zuriati Zakaria tried to organize a teacher workshop and a YAC event during IUPAC GA in Istanbul.

2. Mei-Hung Chiu formed a task group on developing international standards for chemistry education. There were several members of CCE (such as Masahiro Kamata, Suzanne Boniface, Rachel Mamlok-Naaman) participating the discussions.

3. Peter Mahaffy led a group of people to work on the OPCW project. The participants were Peter Mahaffy, Jan Apotheker, and Ting Kueh Soon.

The meeting was tabled by Mei-Hung at 17.45 to go to the registration.

Tuesday restart agenda
13. Break out session (Sunday afternoon and Tuesday evening) Focus on new projects.

New projects were presented by Maja Elmgren, see appendix 11, Mei Hung Chui, see appendix 12.

There will be a project about OPCW, in which Peter Mahaffy, Tueh King Soon and Jan Apotheker participate.

There was some discussion about Chemistry day proposal professor Doo. The idea is to share the dates that are already in use, like CCE/ Global/ IUPAC/ chemistry day: 6.02 am 10-23.

14. Next meeting

14.1 Next meeting of CCE will take place during the IUPAC General Assembly in Istanbul, Turkey, August 2013

15. Conclusion of the meeting

Mei-Hung Chiu, Chair

Jan Apotheker, Secretary
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Possible attendants CCE-meeting in Rome

May 2012

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## Guests IUPAC Divisions

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## Guests others

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

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

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

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

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

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

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

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

Details of the priorities and strategies for accomplishing the priorities will be a major focus of our CCE meetings in Rome at the 2012 ICCE.
Minutes CCE meeting draft 10 July 2013

Appendix 3 Report Global Stamps
Appendix 4 YAC report
Appendix 5. Slides Djafer Benachour
Appendix 6. Slides from Bob Belford
Appendix 7. Slides Judith Poë
Appendix 8. Information from Malaysia
Appendix 9. Information from Australia
Appendix 10. Information about Istanbul
Appendix 11 proposals for projects Elmgren
Appendix 12. proposal Mei-Hung Chui
July 15th – 20th, 2012

Congress statistics 1

- Registered delegates: 574
- Total abstracts submitted: 624
- Oral Communications: 356
- Poster Contributions: 237

Congress statistics 2

- Registered delegates: 574
- Represented Countries: 71 (most present: Germany, Italy, USA, Turkey)

Topics, Sessions & Workshops

- Communicating chemistry (15 sessions & workshops)
- Didactics of Third level chemistry (16 sessions & workshops)
- ICT and multimedia in teaching chemistry (9 sessions & workshops)
- Didactics of Second level Chemistry (16 sessions & workshops)
- Laboratory work in teaching chemistry (12 sessions & workshops)

Plenary Lectures

- Vincenzo Balzani, Italy: The role of science in a fragile world
- Harold Kroto, UK: Science, Lost in Translation?
- Brian Coppola, USA: The Chemistry Challenge: Do Real Work, not Homework
- David Rees, Venezuela: Interactions and reflecting over the history of chemistry to facilitate conceptual change
- Alexander Brand, Germany: Active learning: On Visible and Less Visible Conceptions of ‘Active’ and Their Instructional Implications
- Norman Reid, UK: Some Research Keys to Successful Chemistry Education
- Norman Reid, USA: Communicating Chemistry via demonstrations (Walter Schoenfeld Demonstration Lecture)
- Avi Safinya, Israel: Learning in and from chemistry laboratories: Research and practice
- Peter McSharry, Germany: Where do we go from here?

Keynote Lectures

- Mei-Hung Chiu, Taiwan: Globalization of Chemistry Education
- Melanie Cooper, USA: Chemistry, Life, the Universe and Everything
- Hans-Dieter Barke, Germany: Structure of matter - diagnosis of misconceptions and challenge
- Odilla Finlayson, Ireland: Engaging and Challenging First Years Students in Chemistry
- Maria Sombra, Spain: Using ideas from research to change practice in the chemistry classroom
- Peter McSharry, Germany: Linguistic heterogeneity: challenge for modern chemistry education
- Marcelo E. Con1, Italy: Teaching chemistry in a non-chemical college
Subjects more present in the scientific contents of the Conference:

- Increasing tendency to a globalised Model of Education in Chemistry (cooperation, collaboration progress, exchanges especially toward development countries, creation of network at national and international level and participation to the existing one) with online resources in Chemical Education and web-based activities.
- Equilibrated balance between innovative methods and technologies (computers, ICT, multimedia, new education software, virtuality) and traditional historical approaches: we have not to forget that we are Chemists teaching Chemistry.
- Application to real systems in environment and energy of the chemical basic concepts (greenhouse effect, ozone hole, renewable resources).
- Introduction to safety and ethical aspects of our discipline (code of conduct, responsibility, education to evaluate risk/hazard).
- Choice of experiments in labs including researches for innovative ones also with attention to microscale Chemistry and nanotechnology experiments. Increasing cooperation with lab museums and virtual labs providing to fall into the temptation of "magic chemistry".

Thanks to…

- Paola Ambrogi
- Liberato Cardellini
- Peter Childs
- Michele A. Floriano
- Marta Z. Hoffman
- Peter G. Mahaffy
- Elia Panchmann
- Antonella Rossi

...all of YOU as qualified participants!!!
Global Stamp Competition

IYC 2011 project idea 110

- IUPAC project 2010-031-2-050
- Budget: $1750
- Global Stamp Competition
- Submitted stamps must show the impact of chemistry on a country’s culture and everyday life.

Global Stamp Competition

Start

- Flyer with instructions and examples
- All students: Science, English, Art, Geography and History, so of all subjects can take part
- Deadline June 15, 2011

Instructions after Paris launch (1)

- MTN publication platform
- All students can start to submit their contributions now! Submit your stamp and write a max. 50 words ‘explanation’ in English.
- All entries moderated.
- You will be able to see stamp designs from other students as well and you can rate them (peer review).
- Deadline: 15 June 2011

Instructions after Paris launch (2)

- MTN publication platform. Free!
- All students can start to submit their contributions now! Submit your stamp and write a max. 50 words ‘explanation’ in English. Problem?
- All entries moderated. Unpatient students!
- You will be able to see stamp designs from other students as well and you can rate them (peer review). Social media!
- Deadline: 15 June 2011 → 247 entries
Global Stamp Competition

Publication Platform

18 countries

Categories

Results

• Different subjects:
  ➢ Nobel laureates
  ➢ Raw materials
  ➢ (Chemistry of) products
  ➢ History
  ➢ Creative use of equipment

International jury

Prizes

• $500* for 3 winners in 3 age categories
• $250* for 3 runners-up (age 15-18)
• Certificates for
  ➢ Winners
  ➢ Runners up
  ➢ Nominists
  ➢ Participants

* Also made possible by a generous gift of GlaxoSmithKline
Impact (as far as we know)

- **Bulgaria** (prize giving ceremony)
- **Malaysia** (prize giving ceremony)
- **Cyprus** (customised stamps)
- **Netherlands** (customised stamps)
- **Egypt** (certificates)

**Prize giving ceremonies (1): Bulgaria**
Vasilena Vasilieva from SOU Hristo Botev, Gorna Malina

**Malaysia, 15-18**
Global Stamp Competition

Cyprus: runners-up 15-18

Nominees with certificates

Egypt

Netherlands
Global Stamp Competition

Netherlands

Egypt

Global Stamp Competition 26

Global Stamp Competition 27

Global Stamp Competition 28

Global Stamp Competition 29

Global Stamp Competition 30

Certificate of participation

This is to certify that
..................................................................

has participated in the Global Stamp Competition held by IUPAC during January – July 2011

International jury:
Dr. Lida Schoen (Netherlands)
Prof. Morton Hoffman (USA)
Dr. Lynn Hogue (USA)
Prof. Daniel Rabinovich (USA)
Prof. Zuriati Zakaria (Malaysia)

Global Stamp Competition
Global Stamp Competition

Publication in Chemistry International, Vol. 33 No. 6, November-December 2011:

Global Stamp Competition

Available for all attendees during the IYC 2011
Closing Ceremony in Brussels
CCE meeting, Rome, July 15, 2012

(Research based Evaluation) of the Young Ambassadors for Chemistry project
Lida Schoen
Mei-Hung Chiu
Erica Steenberg

**Aim of the YAC project**
To promote chemistry by making
• teachers,
• students,
• public,
• decision makers
aware that chemistry is an important part of their daily life and teach them to act as (Young) Ambassadors for Chemistry.

**Task group / team**
• Lida Schoen (chairman, Netherlands), organiser
• Mei-Hung Chiu (Taiwan), evaluator
• Erica Steenberg (South Africa), evaluator
• Natalia Tarasova (Russia), member
• Ponnadurai Ramasami (Mauritius), member

**YACs**

IUPAC project 2003-055-1-050:
Young Ambassadors for Chemistry
Aim: to enhance the Public Understanding of Chemistry in four target countries
• Taiwan (Taipei)
• Argentina (Buenos Aires)
• Russia (Krasnoyarsk, Siberia)
• Korea (Gwangju)
• South Africa (Grahamstown)
involving IUPAC CCE members and Science Across the World co-ordinators (task group).

**Research based evaluation**

New IUPAC project: 2007-005-2-050
‘Research based evaluation of the YAC project’ (2008-2010)

Data from:
• South Africa (Grahamstown, March 2007): Erica, (Lida)
• Taiwan (Taipei, December 2007): Mei-Hung Chiu, Erica, (Lida)
• Mauritius (August ’08): Erica, Mei-Hung, (Lida)

**YAC Logo**

Design
Nicolás Fossati
T.S.Eliot School, Buenos Aires, Argentina

**Research based evaluation YAC project 2011-2012**
Course / event materials

- An existing Science Across the World resource: Chemistry in our lives
- course materials (Train the trainers), translated in the local language, if needed

Results / new aims

Results ‘old’ project
- Thousands of students, teachers, parents and public (either invited or by chance) in many countries have been exposed to the ‘good’ side of chemistry, young students showing easy to produce instructive models and producing everyday-life products, that everybody uses.
- Local ownership proved to be essential for a successful course / event and follow-up.

Aims evaluation
- To identify (more) conditions to make YAC sustainable and self-supporting in visited and new countries;
- to find conditions to attract (new) sponsors;
- to compare evaluation results in the different visited countries;
- to build an IUPAC-YAC website with results and guidelines for interested countries in hosting a YAC course / event.

Evaluation data (1)

Questionnaires for and observations from
- teachers,
- students,
- public,
- local organisers,
- external evaluators.

Evaluation data (2)

New condition: ownership (comparable with Flying Chemists):
- Project budget provides travel costs for a trainer and an evaluator
- Visited country provides all local costs

Data from
- Cyprus (Nicosia, 2009): Erica (Lida)
- Malaysia (Ipoh, 2010): Mei-Hung (Lida)
- Philippines (Manila, 2010): Mei-Hung (Lida)
- Ethiopia (Addis Ababa, 2011): Erica (Lida)

More data from (2012)
- Puerto Rico (San Juan, August 2011): Erica (Lida)
- Tanzania (Kasulu, April 2012): Erica (Lida)

Summary YAC events

<table>
<thead>
<tr>
<th>Country</th>
<th>YAC venue</th>
<th>Number of students involved</th>
<th>Estimated number of passers-by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mauritius</td>
<td>In front of a major shopping centre</td>
<td>50</td>
<td>Many (Saturday afternoon)</td>
</tr>
<tr>
<td>Cyprus</td>
<td>On the Square of Freedom</td>
<td>40</td>
<td>Many (Saturday afternoon)</td>
</tr>
<tr>
<td>Malaysia</td>
<td>School hall (inside)</td>
<td>50</td>
<td>Many (Saturday afternoon)</td>
</tr>
<tr>
<td>Philippines</td>
<td>Dome shopping mall (inside)</td>
<td>50</td>
<td>Many visitors, many assistants</td>
</tr>
<tr>
<td>Taiwan</td>
<td>In front of City Hall at Taipei 101 (200 m)</td>
<td>50</td>
<td>Passers-by, many young kids</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>In front of the Ministry of Education</td>
<td>40</td>
<td>Many (Saturday afternoon)</td>
</tr>
</tbody>
</table>

Spin-off (IYC 2011)

<table>
<thead>
<tr>
<th>YAC activity</th>
<th>Date</th>
<th>Host</th>
<th>Local organiser</th>
<th>Contact after activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kuwait City</td>
<td>April 18, 2011, during 2nd Kuwait ChemNet Conference</td>
<td>Dr. Abdul Aziz Al-Najjar, president of Kuwait Chemical Society, Kuwait</td>
<td>Dr. Mervat with assistance from Ahmed</td>
<td>Dr. Abdul Aziz Al-Najjar</td>
</tr>
<tr>
<td>Irbid, Jordan</td>
<td>April 20, 2011, during 6th Jordanian International Conference on Chemistry</td>
<td>Prof. Sultan Ali, President of Yarmouk University, Irbid</td>
<td>Prof. Ayman Hannoun with many assistants (PhD students)</td>
<td>Prof. Ayman Hannoun (vice dean of Faculty)</td>
</tr>
<tr>
<td>San Juan, Puerto Rico</td>
<td>July 20, 2011, before IUPAC Puerto Rico Chemistry Department of the University of Puerto Rico</td>
<td>Prof. Ingrid Montse with many assistants (PhD students)</td>
<td>Prof. Ingrid Montse</td>
<td></td>
</tr>
</tbody>
</table>
Spin-off (IYC 2011) details

<table>
<thead>
<tr>
<th>Country</th>
<th>Public venue for YAC event</th>
<th>Visitors</th>
<th>VIPs</th>
<th>After activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kuwait City</td>
<td>Science Centre</td>
<td>Visiting and invited students and teachers</td>
<td>President Chemical Society MOE</td>
<td>Promises to repeat the experiment with young children</td>
</tr>
<tr>
<td>Jordan</td>
<td>The small improvised laboratory with too many people</td>
<td>Participating teachers and students</td>
<td>Prof. Ahmad</td>
<td>(\text{Hammudan (late dean of Faculty of Chemistry)})</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>Chemistry Department of the University of Puerto Rico–Rio Piedras</td>
<td>Participating teachers and students, PhD students</td>
<td>Prof. Ingrid Montes, Chris Brouwer</td>
<td>(\text{Chris Brouwer (C)}: \text{www.iupac.org/publications/ci/2011/3306/yac_sidebar.html})</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>Schoolyard (outside SOU)</td>
<td>All students of this rural school (3000) and relatives, friends</td>
<td>Kirika Stankova, Keith Kelly, Headmaster, Teacher Training College, Initiator</td>
<td>(\text{Keith Kelly, FactWorld: <a href="http://www.factworld.info/bulgaria/IYC_Stamp_11/index.htm?%7D">www.factworld.info/bulgaria/IYC_Stamp_11/index.htm?}</a> )</td>
</tr>
</tbody>
</table>

YAC course 2012

<table>
<thead>
<tr>
<th>Country</th>
<th>Date</th>
<th>Host</th>
<th>Local organiser</th>
<th>Contact after activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tanzania</td>
<td>April 25-27, 2012</td>
<td>Kasulu Secondary School</td>
<td>Headmaster with 14 private schools Initiator</td>
<td>Gideon Bunyaga Thadeo Ntambala</td>
</tr>
</tbody>
</table>

YAC event 2012

<table>
<thead>
<tr>
<th>Country</th>
<th>Public venue for YAC event</th>
<th>Number of students</th>
<th>Visitors</th>
<th>VIPs</th>
<th>After activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tanzania</td>
<td>On the shaded grandstand of the local football stadium</td>
<td>50 + 50</td>
<td>Many passers-by, many young kids</td>
<td>Headmaster, Teacher Training College, Initiator</td>
<td>Thadeo Ntambala: (\text{www.youtube.co.uk/watch?v=V_ptrpD1840&amp;feature=youtu.be})</td>
</tr>
</tbody>
</table>

YAC Puerto Rico (2011)

<table>
<thead>
<tr>
<th>Country</th>
<th>Public venue for YAC event</th>
<th>Number of students</th>
<th>Visitors</th>
<th>VIPs</th>
<th>After activities</th>
</tr>
</thead>
</table>

YAC Bulgaria (2011)

<table>
<thead>
<tr>
<th>Country</th>
<th>Public venue for YAC event</th>
<th>Number of students</th>
<th>Visitors</th>
<th>VIPs</th>
<th>After activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulgaria</td>
<td>Schoolyard (outside SOU)</td>
<td>All students of this rural school (3000) and relatives, friends</td>
<td>Kirika Stankova, Keith Kelly, Headmaster, Teacher Training College, Initiator</td>
<td>(\text{Keith Kelly, FactWorld: <a href="http://www.factworld.info/bulgaria/IYC_Stamp_11/index.htm?%7D">www.factworld.info/bulgaria/IYC_Stamp_11/index.htm?}</a> )</td>
<td></td>
</tr>
</tbody>
</table>

2012: YAC Tanzania (1)

Research based evaluation YAC project 2011-2012
Summary conclusions/evaluations

**Organisers:**
- Still problems with visualising YAC event in 'new' countries
- Not yet success with attracting industrial sponsors (SM Manila in the Philippines -2010- seemed good start, but up till now the only one!)

Future evaluations

More data from:
- **Panama City, Panama:** Mei-Hung, (Lida), October 2012
- **Cancun, Mexico**: Mei-Hung, (Lida), October 27-31, 2012

* YAC and FCP during 30º Congreso Latinoamericano de Química - 47º Congreso Mexicano de Química y 31º Congreso Nacional de Educación Química
Publications since GA Puerto Rico

1. Chris Brouwer: Learning with laughter in Chemistry International, nr. 6, Nov-Dec 2011:

2. Local TV: Interview with Vasi Vasilena:
   www.youtube.com/watch?v=3yU-VPSH1gI&feature=channel_video_title

3. Keith Kelly: Chemistry as a Cultural Enterprise, Gorna Malina, Bulgaria:
   www.factworld.info/bulgaria/IYC_Stamp_11/index.htm

4. Erica Steenberg, Lida Schoen, Young Ambassadors for Chemistry in Kasulu, Tanzania (will be more exciting title), in the press: Chemistry International, nr. 5, Sept-Oct 2012

Sponsors Evaluation Project

‘Chemicals’ and packaging for YAC Puerto Rico, Bulgaria and Tanzania

- IFF (Netherlands) for donating concentrated oils for perfume;
- Annindriya (Netherlands) for donating small spray bottles for perfume;
- SASOL (Germany) for donating detergents;
- Seppic (France) for donating emulsifier.
Temporary Working Group on Education and Outreach
(Scientific Advisory Board)

Past work, Current Status and Objectives, Future tasks

Djafer BENACHOUR
(Chairman of the TWG)
djafer.benachour@nasr-dz.org

Introduction

- Education and outreach in Sciences & Technologies are important to the CWC’s future implementation. Education and outreach serve a number of purposes including:
  - raising awareness of the CWC among the broad community of relevant professionals who should be aware of it
  - stressing the potential risks posed by the multiple uses of chemicals
  - contributing to national implementation of the CWC
  - contributing to the prevention of the misuse of toxic chemicals
  - facilitating chemical safety and chemical security
  - building skills and capabilities in areas relating to the peaceful uses of chemistry

Early SAB work

- Much input by individual SAB members
- In 2004 SAB-6 decided to establish a TWG on education and outreach
- In 2007 SAB-10 decided that ToRs should be drafted, based on past work and the TWG should focus on “practical procedures”
- In 2008 SAB-11 said E&O had progressed beyond the point where a TWG would accelerate progress

UN disarmament education study

OPCW-IUPAC collaboration

- Workshops on S&T in 2002, 2007 and 2012
- Conference in Oxford in July 2005
- PAC report (2006)
- “Multiple uses” project
- Chem Int article (Nov-Dec 2007)
- Website, but IUPAC link not working properly
- Codes of conduct project
- Chem Int article (Nov-Dec 2011)
- Involvement of CCE members
**Work in other fields**

- Life sciences
  - BWC intersessional process
  - InterAcademy Panel etc
- Nuclear security
  - International Nuclear Security Educators’ Network
  - MSc course syllabus
- CTBTO
  - Capacity Development Initiative

**The 2011 SAB decision**

- August 2010 letter from DG
- SAB-16 discussion on outreach
- Funding for two TWG meetings included in draft EU Council Decision
- SAB-17 decided to establish a TWG chaired by Prof Djäfer Benachour

**TWG objectives**

- The objectives of the TWG are:
  - to build on earlier work in this area by the SAB and its members
  - to utilise the experience of other initiatives in this field and related areas
  - to make recommendations to the SAB for sustainable activities which could be pursued by the OPCW and its Member States

**Questions for the TWG**

- How to raise awareness of the CWC in the education sector?
- How can the OPCW further develop its relationships with the scientific community and the chemical industry?
- How can the OPCW contribute towards expanding and promoting a culture of responsibility in the scientific community and the chemical industry?
- Existing initiatives in this area with a view to avoiding duplication and allowing the OPCW to build relationships with other international organisations, professional associations, networks etc
- Sustainable ways in which the OPCW can take forward its education and outreach activities once the TWG completes its work

**Actual composition of the TWG E&O**

- Djäfer Benachour (Algeria)
- Philip Coleman (South Africa)
- Temechegn Engida (Ethiopia)
- Jo Husbands (USA)
- Peter Mahaffy (Canada)
- Alejandra Suarez (Argentina)
- Alastair Hay (UK)
- Detlef Maenig (Germany)
- Jan Apotheker (The Netherlands)
- Mahdi Sulemani Mood (Iran)
- Ting-Kueh Soon (Malaysia)
- Robert Mathews (Australia)

First meeting: April 12-13, 2012, The Hague (OPCW)
Current status of the TWG E & O

- Strong support from the DG
- Relevance to future priorities of OPCW
- Three-year TWG mandate
- Funding for 2 meetings in 2012 (first session April 13-14, second scheduled for November 20-21) and one meeting in 2013 (?)

The TWG E & O held its first session on April 12-13, 2012 at the OPCW headquarters in The Hague.

Participants: 22
(4 guests + 11 TWG E & O + 7 TS/OPCW)

During this session 18 presentations were made:
- 4 by the TS/OPCW (ppt.)
- 2 by invited persons (guests) (ppt.)
- 1 by the TS/guest (in the form of a movie)
- 11 by the TWG E & O members (oral and ppt.)

The first presentation was made by Daniel Feakes who gave an overview of the aims and objectives of the TWG as set out in the terms of reference.

These objectives are to build on earlier work in this area by the SAB and its members, to utilize the experience of other initiatives in the field and related areas, and to make recommendations to the SAB for sustainable activities which could be pursued by the OPCW and its Member States.

The others TS/OPCW presentations were made respectively by:
- Boitumelo Kgarebe who briefed the TWG on the Education and Outreach activities of the International Cooperation Branch. She also presented impressive statistics for the April 1997-December 2004 period.
- Michael Luhan presented the public diplomacy and related activities of the OPCW with respect to Education and Outreach.
- Mark Albon gave a detailed presentation on the ‘OPCW Electronic Tools and e-learning’ facilities and tools available. The accent was made on how these tools could be developed more in the near future in order to reach much larger audiences.

TWGEO members presentations
- Alastair Hay: overview of the IUPAC ‘multiple uses of chemicals’ project and the resulting educational material made available for teacher use since 2005. Additional resource material in the form of supporting background material on the CWC, OPCW, and codes of conduct is also available.
- Robert Mathews: ‘Codes of Conduct for Scientists and the BWC’ and provided the TWG with an overview of relevant activities u (BWC). The similarities of the E & Outreach programmes of the BWC and the CWC/OPCW were underlined.
- Jo Husbands summarized work carried out in the life sciences by international scientific unions and by the National Academy of Sciences in the USA.

Djafer Benachour gave a presentation on ‘Education and Outreach: Towards whom and at what level?’ He reported that despite many Education and Outreach activities, organized by different institutions, for different audiences and at different levels, the impact is not what has been expected...

Temechegn Engida presented the Federation of African Societies of Chemists (FASC). This federation has an electronic journal entitled ‘African Journal of Chemical Education’ (AJCE), ready to publish a special issue on the CWC as related to education and outreach.

Ting-Kueh Soon introduced the Federation of Asian Chemical Societies (FACS), 30 national chemical societies of the Asian Pacific Region. FACS members are involved in chemical safety and security issues and activities. FACS is interested in working with the OPCW in promoting education and outreach on OPCW, CWC, chemical safety and security.
Detlef Maenig recalled the chemistry industry training and outreach activities and the close links that should exist between scientific and industrial communities.

Jan Apotheker discussed the need for chemistry education and outreach for high school students and considered that these audiences should be the level to start at.

Alexandra Graciela Suarez insisted on providing educational material for undergraduate university students as well and the use of the new tools made available by internet and its extensions. She also focused on the role of National Authorities and how they could/should be more involved on education and outreach activities at the national level.

Mahdi Balali-Mood pointed out the relevant experience of other international scientific organizations such as the International Association of Toxicology and the different workshops on Biosafety and related topics.

Philip Coleman noted the role of NGO’s, national and regional scientific organisations, and how they could be associated to education and outreach activities. He also discussed the levels and audiences for chemistry education and outreach, and the different tools that could be used for that purpose.

The guest presentations were made by:

- Jean du Preez (in collaboration with Ryan Gonzalez) of the Preparatory Commission for the Comprehensive Nuclear Test-Ban Treaty Organisation (CTBTO) gave a large overview on ‘Training and Education Activities at the CTBTO’.

- Andrea Braunegger-Guelich, of the International Atomic Energy Agency (IAEA) presented a complete overview of ‘The IAEA Human Resource Development Programme for Nuclear Security’. She focused on the different audiences targeted by such a programme and on the International Nuclear Security Network (INSEN) being put in place.

The presentation by the TS/guest (in the form of a movie)

A very interesting short movie ‘FIRES’ (produced by Eric van der Borght of the OPCW Media and Public Affairs Branch) on the life of Fritz Haber, movie made with the collaboration of Prof. Chretien Schouteten. This movie emphasized the way chemistry should be taught: scientific facts based on real life events and associated with ethical and social impacts. This new teaching approach increased the students’ interest in chemistry as well as their awareness about chemicals misuses.

From the different presentations, it was noted that:

- Education and Outreach is a priority for different institutions,
- These institutions have similar activities on E & O; they rely more and more on electronic tools,
- Educational + training + outreach materials are available under diverse forms (books, CD’s, electronic platforms: e-learning and live modules...). However these materials are used by limited audiences,
- State Parties and National Authorities are not fully engaged in E & O activities,
- International institutions work separately; they are rarely linked through networks,
- The chemical industry is an inevitable partner in E & O...

A rich and intense debate followed the different presentations. The participants came up with several recommendations that could be summarized as follows:

1-Prepare educational and outreach materials not only in the forms of books and printed documents, but also in the form of electronic platforms, documentaries, short video films...
- Specific materials will be adjusted to the different academic as well as industry audiences: high school students, university students, instructors, teachers, technicians, engineers, managers...
2- Take advantage of other education and outreach activities made by similar organizations (IAEA, CTBTO, BWC, WHO,...), international scientific bodies (IUPAC, IUTOX, IUBMB...) , professional associations (ICCA, CEFIC...) as well as NGO’s...

3- Engage in other forms of outreach: museums, chemistry Olympiads, national chemical societies promoting awareness in schools, national scientific events...

4- Encourage teaching of ethics and responsible science as part of training of scientists and educators...

5- Review existing national codes of conduct, in particular any elements related to the CWC. Based on these results, consult with IUPAC leadership about possible additional initiatives...

6- Convince the National Authorities and State Parties that they should get involved more in outreach activities and that they must co-work with their national scientific community.

7- The TWG members should put together a calendar of future related events at which side events might be possible for chemical education and outreach activities...

8- Identification and promotion of national ‘top-end champions’ ...

9- The TWG recommends that a focal point be identified within the TS.

The TWG members wish to hold their second meeting by the end of 2012 / early 2013.

8- Identification and promotion of national ‘top-end champions’ ...

9- The TWG recommends that a focal point be identified within the TS.

The TWG members wish to hold their second meeting by the end of 2012 / early 2013.

**Summary OF WHAT IS EXPECTED OF THE TWG E & O**

- Advice to SAB on
  - Audiences
  - Methods
  - Synergies with other actors

- Focus on
  - Sustainability and “practical procedures”
  - “Bottom-up” as well as “top-down” approaches
  - Learn from other processes/initiatives
  - Importance for national implementation and safety and security

**FIRST CONCLUSIONS and ANSWERS**

1) **TOWARDS WHOM ?**

-> Different audiences: students, teachers, researchers, professionals, general public...

2) **AT WHAT LEVELS ?**

-> Different levels: high school, college, university, post-university.

But are these the appropriate targets? Are they the only ones? Are they other levels to begin with? Other means of information diffusion about CBRN?

**NEW QUESTIONS:**

- Who should be responsible?
- Who should be involved?
- Who should be concerned? for/inby the Education and Outreach initiatives
At this moment, I am in front of the IUPAC Committee on Chemistry Education seeking for help, cooperation, information, advice... and any contribution that could help the TWG E & O of the SAB/OPCW reach its objectives. I am quite confident that working together, we will free our planet not only from the misuse of chemicals but also from the dangers of chemical weapons...

BUT WE SHOULD NEVER SEE AGAIN IMAGES LIKE THIS

SO LET US DO OUR VERY BEST TO EDUCATE AND REACH OUT ALL AUDIENCES IN ORDER TO GET RID OF THIS SIGN...
Thank You for your Attention
IYC 2011 Virtual Colloquium

May 18 – June 28, 2012

Robert E. Belford
Associate Professor of Chemistry
University of Arkansas at Little Rock

Presentation Outline

1. What is a Virtual Colloquium?
   What Class of Scientific Communication is it?
   • Is it Symposium Session?
   • Is it a Publication?
   • Is it a New Form of Scientific Communication?

2. What Did we Learn?
   • With Respect to our Goals to Preserve and Sustain IYC 2011 Initiatives?
   • With Respect to Engaging Scientists in a Virtual Colloquium?

The Discussions:

Enabled by combining Listserv technology with standard Drupal web 2.0 Comment Feature

• Subscribe confchem@ualr.edu to a paper when it is discussed
• Commenting on a paper does two things:
  • Inserts comment below paper (archives it)
  • Triggers email to list.
    • email has link to comment
    • Allows discussions to be threaded below paper
• “Relying to an email” sent the list moderator an email (caused some SPAM filter issues)

Virtual Colloquium to Sustain and Celebrate IYC 2011 Initiatives in Global Chemical Education

Is this a New Type of Scientific Communication?

Paper n:
• 859 Reads (July 9, 2012)
• 13 Comments

Paper

Comments

Is this a New Type of Scientific Communication?

Paper p:
• 482 Reads (July 9, 2012)
• 3 Comments

Paper

Comments
Is this a New Type of Scientific Communication?

Paper w:
• 963 Reads (July 9, 2012)
• 7 Comments

Comments

Is this a New Type of Scientific Communication?

Paper x:
• 456 Reads (July 9, 2012)
• 14 Comments

Comments

Is this a New Type of Scientific Communication?

Paper y:
• 527 Reads (July 9, 2012)
• 10 Comments

Comments

Is this a New Type of Scientific Communication?

Paper z:
• 618 Reads (July 9, 2012)
• 12 Comments

Comments

Virtual Colloquium to Sustain and Celebrate IYC 2011 Initiatives in Global Chemical Education

Papers
Week 1
1. An Introduction to the International Year of Chemistry
2. IYC2011 and Beyond – UNESCO’s Contribution

Week 2
4. Young Ambassadors for Chemistry

Week 3
5. PAC Recognizes the “Hand of the Youth” in Shaping Chemistry
6. The Periodic Table of Isotopes for the Educational Community
7. Visualizing and Understanding the Science of Climate Change
8. Global Stamp Competition: Chemistry as a Cultural Enterprise
9. Chemistry Cartoon Competition: An IYC Activity from Physical Chemistry in IUPAC

Week 4
10. The Continuing Celebration of IYC 2011: What the IUPAC Polymer Division is doing to Keep Things Going
11. MSC100 – French-Polish Accent of the IYC 2011

Week 6
12. Sustainability and Globalization of Chemistry Education

Note: Week 5 was a Discussion of National Initiatives

Summary of Tracking Statistics:
• 11,616 hits during 6 week conference (June 30, 2012)*
• 155 comments posted to papers during conference
• 12,141 hits on July 9, 2012*

* Includes conference homepage (with abstracts)
**Virtual Colloquium to Sustain and Celebrate IYC 2011 Initiatives in Global Chemical Education**

**Paper 1:**
*An Introduction to the International Year of Chemistry - 2011*
John M. Maxin & Bryan Henry

**Sample of Comment Topics**
- UN Millennium Goals (w/link)
- Sustainable Energy for All (w/link)
- Future of Sustainable Chemistry (w/link)
- Earth Policy Institute (w/link)
- CHEMRAWN Perspectives and Recommendations (w/link)
- Global Change Education Program (w/link)
- Spherical Cow (book w/link)
- CRC Press Green Organic Chemistry Book (w/link)
- Spanish Language Green Organic Chemistry Book (w/link)

**Virtual Colloquium to Sustain and Celebrate IYC 2011 Initiatives in Global Chemical Education**

**Paper 2:**
*IYC2011 and Beyond - UNESCO's Contribution*
Rovani Sigamoney

**Sample of Comment Topics**
- UNU Based Case Studies
- Use of Library Resources to find Case Studies

*Unfortunately, the author was not able to participate in the discussion.*

**Virtual Colloquium to Sustain and Celebrate IYC 2011 Initiatives in Global Chemical Education**

**Paper 3:**
The Global Experiment of the IYC 2011: Creating Online Communities for Education and Science
Javier Garcia Martinez & Rovani Sigamoney

**Sample of Comment Topics**
- Use of Facebook and Twitter by different populations
- Need for continuation of the Experiment
- Possible future experiment on “What do you eat?”
- People heard about it too late to join

**Virtual Colloquium to Sustain and Celebrate IYC 2011 Initiatives in Global Chemical Education**

**Paper 4:**
*Young Ambassadors for Chemistry*
Lida Schoen, Mei-Hung Chiu & Erica Steenberg

**Sample of Comment Topics**
- Tie YAC activities to other IYC initiatives like GWE
- Challenges of Train the Trainer type programs
- Issues with Chemical Hygiene
- Desire (by participant not author) for discussions not to be distracted by safety issues
- Are there funding plans for the future?
- The rest were elaborations on YAC projects done in various nations.

**Virtual Colloquium to Sustain and Celebrate IYC 2011 Initiatives in Global Chemical Education**

**Paper 5:**
PAC recognizes the "Hand of the Youth" in Shaping Chemistry
Professor Nicole Jeanne MOREAU

**Sample of Comment Topics**
- Inquiry and answers into details on how organizers of IUPAC sponsored conferences can include IUPAC Poster prizes for students
- Inquiry and answers into nomination process for IUPAC Young Chemist Prizes, and language restrictions
- Need to bring education to masses, not just "elite"
Virtual Colloquium to Sustain and Celebrate IYC 2011
Initiatives in Global Chemical Education

**Paper 6:**
The Periodic Table of Isotopes for the Educational Community

This paper presents a tool with potential to enhance in this presentation. So we will discuss WHY, not WHAT.

- Traditional ConfChem Audience are Chemical Educators
- Paper was Relevant to needs in the Classroom
- Paper indicated a need to rethink current process and gave tools to do so with
- Both Authors were engaged (in "TagTeam" style)
- Authors responded immediately to questions.
- 9 pages of Paper (including images)
- 15 pages of Discussion

**Paper 7:**
Visualizing and Understanding the Science of Climate Change

Peter Mahaffy, Brian Martin & Anna Schwalfenberg

Sample of Comment Topics

- Syntactic analysis of target audience speech level
- User interaction associated with a predefined curriculum
- Need for these resources to be maintained at same site (DOI issue?)
- Copyright and reuse issues
- General Compliments on Quality of Work

**Paper 8:**
Global Stamp Competition: Chemistry as a Cultural Enterprise

Lida Schoen & Christiane Reiners

Sample of Comment Topics

- Variance between state issued stamps and student issued stamps
- Power of stamp collections in Information Sciences as image mining corpus (vs. text mining corpus)

**Paper 9:**
Chemistry Cartoon Competition: An IYC Activity from Physical Chemistry in IUPAC

Jim McQuillan

Sample of Comment Topics

- Possibility of Open Notebook Science based projects
- Encouragement to continue video film competition
- Encouragement to make this an annual event
- Need to archive entries and have sufficient copyright to share/distribute them
Virtual Colloquium to Sustain and Celebrate IYC 2011
Initiatives in Global Chemical Education

Paper 9: Chemistry Cartoon Competition: An IYC Activity from Physical Chemistry in IUPAC
Jim McQuillan
July 13: 1041 hits

Google Image Searches

Sample of Comment Topics
• Importance of translating videos
• Captioning of Videos
• YouTube has two captioning options
• Machine transcription
• Matching author uploaded file to audio. Later can involve translations to multiple languages

Virtual Colloquium to Sustain and Celebrate IYC 2011
Initiatives in Global Chemical Education

Paper 10: The continuing celebration of IYC 2011: What the IUPAC Polymer Division is doing to keep things going
Christopher K. Ober

Sample of Comment Topics

Virtual Colloquium to Sustain and Celebrate IYC 2011
Initiatives in Global Chemical Education

Paper 11: MSC100 - The French-Polish Accent of the IYC2011
Robert Guillaumont, Janusz Lipkowski, Barbara Petelenz, & Jean-Pierre Vairon

Sample of Comment Topics

Virtual Colloquium to Sustain and Celebrate IYC 2011
Initiatives in Global Chemical Education

Paper 12: Sustainability and Globalization of Chemistry Education
Mei-Hung Chiu

Sample of Comment Topics

Virtual Colloquium to Sustain and Celebrate IYC 2011
Initiatives in Global Chemical Education

IYC 2011 National Initiative
Author name

Sample of Comment Topics

595 Reads (July 9, 2012)
9 Comments

Relative Size of Paper

Relative Size of Comments
Dear Colleagues,

We cordially invite you to participate in the 23rd IUPAC International Conference on Chemical Education to be held at the University of Toronto from 13-18 July, 2014. This will be the first time since 1989 that this conference has come to Canada.

The theme of the conference is communications. Our goal is to investigate how best to forge global links in the chemistry teaching and learning communities and to consider best practices in exploiting technological advances in communications in order to establish innovative learning partnerships. Symposia will focus on communication amongst chemistry professionals, educators, students and the lay community.

We look forward to welcoming the global chemical education community to Canada.

Andrew Dicks               Co-chairs                      Judith Poë

Conference themes and format
1. Communicating across the Educational Levels
2. Outreach to the Lay Community
3. International Student Learning Communities
4. Technological Support of Chemistry Learning
5. Greening Attitudes in Chemistry Education
6. Interdisciplinary Collaborations

Symposia and workshops that support these themes are solicited. Your ideas are key to making ICCE2014 a successful event. We look forward to hearing your thoughts on the development of the conference program.

The conference will consist of plenary lectures, submitted oral and poster presentations, panel discussions, roundtable discussions as well as an exhibition. Recently renovated, state-of-the-art laboratories are available for practical workshops.

Language
The official language of the conference will be English.

Important Dates

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 2013</td>
<td>deadline for symposia/workshop submissions</td>
</tr>
<tr>
<td>Oct. 2013</td>
<td>second circular abstract submission opens</td>
</tr>
<tr>
<td>Jan. 2014</td>
<td>deadline for abstract submission registration opens</td>
</tr>
<tr>
<td>Mar. 2014</td>
<td>notice of abstract acceptance</td>
</tr>
<tr>
<td>May 2014</td>
<td>deadline for early registration fees</td>
</tr>
<tr>
<td>July 2014</td>
<td>ICCE2014</td>
</tr>
</tbody>
</table>
**IUPAC visa statement**
IUPAC sponsorship implies that entry visas will be granted to all *bona fide* chemists, provided application is made not less than six months in advance. If a visa is not granted two months prior to the meeting, the applicant should notify the conference secretary and the IUPAC secretariat.

**Canadian visa information**
Information regarding visas to enter Canada can be found at [www.cic.gc.ca/english/visit/visas.asp](http://www.cic.gc.ca/english/visit/visas.asp).

**About Toronto**
Toronto is Canada’s largest city and its cultural, entertainment and financial capital. The city is the 5th largest in North America with more than 5.5 million people in the Greater Toronto Area. One-quarter of Canada’s population is located within 160 km of the city, mainly along the corridor leading to Niagara Falls. Its southern border is Lake Ontario which separates it from the State of New York. It is a hub of multiculturalism as illustrated by its web site which is available in over 50 languages ([www.toronto.ca](http://www.toronto.ca)). Multicultural festivals abound throughout the summer months.

---

**Organizing Committee**
Penny Ashcroft Moore - Secretary/Treasurer  
Scott Browning - Poster Session Coordinator  
Andrew Dicks - Co-chair  
Alen Hadzovic -  
Svetlana Mikhaylichenko - Teacher Liaison  
Paul Piunno - Fund Raising  
Judith Poë - Co-chair  
Wanda Restivo - Social Events Coordinator  
Effiete Sauer - Social Events Coordinator  
David Stone - Lab Workshop Coordinator  
Patrick Wong - Webmaster  

All correspondence should be addressed to:  
icce2014@chem.utoronto.ca

**International Advisory Committee**
TBA
is excited to present our bid to host 24th International Conference on Chemical Education (24ICCE) 2016 in SARAWAK, MALAYSIA.

OUR COMPPELLING REASONS WHY 24th International Conference on Chemical Education 24ICCE 2016 should be held in SARAWAK, MALAYSIA

WHY SARAWAK, MALAYSIA

1. IKM, Your Local Host
   • vast experience in hosting international meetings
   • strong network of universities and schools
   • strong regional and international industry networks

2. Malaysian Industry & Government Support
   • Ministry of Education, Ministry of Higher Education, education community

3. Malaysia, Tropical Paradise
   • A warm people who treat visitors like friends
   • English is widely used all over Malaysia
   • A multi religious & multi cultural society: peaceful, safe & harmonious
   • Large variety of food; shoppers haven

4. Conference & Accommodation Facilities
   • best value for money in SEA and AP
   • superb infrastructure for conventions, accommodations, transportation

5. Centrally located in Asia; easy flight connections; many airlines = Attract new delegates from near & far, especially those who cannot afford long-distance travel.

6. Politically, economically and socially stable and safe.

7. Charming and unique : culture, nature and adventure meets the modern city.

8. Financial support for comprehensive conference marketing plan = increases meeting delegate numbers.

9. Try Sarawak! = Conference delegates are seeking fresh new destination (report by ICCA “International Congress and Convention Association”)

10. Sarawak’s unblemished track record of hosting international conferences since 2007

an invitation by SARAWAK, BORNEO
explore a land rich in **MYSTERY & CULTURE**

- **BAKO NATIONAL PARK**
- **ORANGUTANS** at **SEMENGGOH**
- **RAINFOREST TRACKING**

**NATURE**

- **MULU WORLD HERITAGE**
- **TEE OFF IN THE CLOUDS**
- **RIVER BOATING**

**SHOPPING**

- **KUCHING CITY**
- **SUNSET ON THE SAMPAN**

**COCKTAIL IN THE CAVE**

**BREAKFAST ON MISTY MOUNTAIN TOPS**

**RAINFOREST MUSIC**

**Batang Ai Longhouse Safari**
a taste of SARAWAK, BORNEO

relax and rejuvenate in PARADISE

THE RIGHT TIME

- Perfect timing to raise awareness + research in Malaysia and Asia Pacific region!
- Increased air connections worldwide with great value
- Fabulous value for money in Asia Pacific

REASONS TO ACCEPT OUR BID

1. THE RIGHT TIME
   - Perfect timing to raise awareness + research in Malaysia and Asia Pacific region!
   - Increased air connections worldwide with great value
   - Fabulous value for money in Asia Pacific

2. THE RIGHT HOST
   - IKM (Institut Kimia Malaysia) is a team of passionate, experienced members 100% committed to delivering a first class scientific programme & seamless congress
   - Support from Malaysia Government
   - Support from SCB & MyCEB (National and State Convention Bureaux)
   - ... Support from the People of Malaysia!

FLIGHT ACCESSIBILITY KUCHING

Frequent Flights Into Sarawak

Sarawak can be accessed via efficient air links serviced by 52 airlines and accessible to over 100 scheduled global destinations via Kuala Lumpur, Johor Bharu, Kota Kinabalu and Penang in Peninsular Malaysia as well as 1 hour from Singapore, Brunei and Indonesia.

Currently there is an average of 2,500 flight seats per day into Kuching from Kuala Lumpur as well as the regional hubs mentioned above.

Direct mid to long haul access is available from KLIA and Singapore to:
- 5 Australian and 5 Middle Eastern cities
- 7 North American and African cities
- 9 European cities and
- Several cities in the Asia Pacific region.

FOCUSED EVENT

PERFORMANCE MEASURES

- Financial: Membership growth
- Learning outcomes: Participants feedback

EXPERIENCE: AN ASSET

- QUALITY International Conferences & Conventions

We’re GOOD at this!
Chemistry as a Profession in Malaysia

Chemical analysis is a professional practice in Malaysia regulated by the Chemists Act 1975

Institut Kimia Malaysia (IKM)
- Registered under the Societies Act 1966 in 1967
- Incorporated under Chemists Act 1975 in 1977
- Membership: 3,077 as of Jan 2012
- Council comprises 13 elected members with the Director General of Chemistry as Registrar
- IKM Council 2012/13:

IKM BRANCHES

National & International Affiliations
IKM is a Founding Member/Member of:
- Confederation of Scientific and Technological Associations in Malaysia (COSTAM)*
- Balai Ikhtisas Malaysia (BIM)*
- Federation of Asian Chemical Societies (FACS)*
- Pacific Polymer Federation (PPF)
- Asian Chemical Editorial Society (ACES)
- Federation of Asian Polymer Societies (FAPS)
- International Union of Pure and Applied Chemistry (IUPAC)

INSTITUT KIMIA MALAYSIA (IKM)

National Malaysian Chemistry Quiz (K3M)
- Annual quiz open to upper secondary students since 2002
- Participation tripled from 10,024 (2002) to 34,318 (2012)
- Top scorers from K3M are awarded training for International Chemistry Olympiad (IChO)

Academic Collaborations
- Partnerships to develop chemistry and chemistry-related programmes:
  - Universiti Kebangsaan Malaysia (UKM)
  - Universiti Malaya (UM)
  - Universiti Sains Malaysia (USM)
  - Universiti Teknologi Malaysia (UTM)
  - Universiti Putra Malaysia (UPM)
  - Universiti Teknologi MARA (UiTM)
  - Kolej Tunku Abdul Rahman (KTAR)
  - Universiti Malaysia Pahang (UMP)

IKM plays a leading role in many international bodies
- For FACS – IKM President Datin Dr Soon Ting Kueh is Past President (2007-2009) & Coordinator of Projects (2011-2013)
- PPF, FAPS, ACES and IUPAC
- IKM became a National Adhering Organisation (NAO) of IUPAC in 2009
- For IUPAC International Year of Chemistry (IYC) 2011, IKM hosted:
  - CHEMRAWN XIX 2011
  - Global Stamp Competition (GSC) 2011
  - IUPAC also collaborates with: US State Department (USSD), American Chemical Society (ACS), British High Commission (BHC), Royal Society of Chemistry (RSC), National University of Singapore (NUS), Himpunan Kimia Indonesia (HKI), Cambodian Chemical Society (CCS), Organisation for the Prohibition of Chemical Weapons (OPCW)
2011 has been proclaimed as the International Year of Chemistry (IYC) by IUPAC and UNESCO
IKM celebrated IYC 2011 in a big way with many activities in accordance with the Objectives of IYC 2011
Launching of IYC 2011 in Paris, France

IKM is a Founding Member of FACS
29 Member Societies from Asia and the Pacific Inaugurated on August 16, 1979 in Bangkok
FACS 16th General Assembly (16GA) in Bangkok on September 5, 2011

IKM IN THE YEAR 2011/2012

MEETING & OTHER FUNCTIONS
• Annual General Meeting
• Karnival Kimia Malaysia (K2M)
• Malaysian Chemical Congress (MCC)
• Regional Seminar on "Total Laboratory Management" (QSEL)
• Kelaj Kimia Kebangsaan Malaysia (KKM)
• Malam Kimia (Chemistry Night)
• Karnival Kimia Malaysia (K2M) 2011
• 13th International Symposium on Extraction Technologies (ExTech) 2011
• 19th IUPAC International Conference on "Chemical Research Applied to World Needs" (CHEMRAWN XIX)
• International Symposium on Women in Science and Engineering (WISE) 2011
• LabAsia 2011

IKM IN THE YEAR 2011/2012

INSTITUT KIMIA MALAYSIA (IKM)

Karnival Kimia Malaysia (K,M) 2011

Karnival Kimia Malaysia (K,M) 2011 was a keystone event of IYC 2011 celebrations in Malaysia
Launched April 15, 2011 in Kuala Lumpur by the Honourable Minister, YB Datuk Seri Panglima Dr Maximus Johnity Ongkili
Objective: Enhance public awareness of chemistry and its applications in improving the quality of life
K,M 2011 was subsequently held in 6 other major Malaysian States

CHEMRAWN XIX

19th IUPAC International Conference on "Chemical Research Applied to World Needs"
(ChemRAWn XX)
• Held in Kuala Lumpur, Malaysia from September 27-29, 2011 with the theme "Bioenergy and Biomaterials from Renewable Resources"
Scientific programme includes:
• Biomaterials
• Bioethanol & Biodiesel
• Biogas
• Biomass including Biomass to Liquid (BTL)
• Green energy from algae
• Renewables from effluent and sewage
• Other renewables and sustainable energy sources and materials
• Food vs fuel vs carbon footprints
CHEMRAWN/ExTech/WISE/LabAsia Banquet

IKM YEAR 2012-2016

IKM 2012/2013
- 17th Total Laboratory Management Symposium (TLMIS) 2013
- 17th Malaysian Chemical Congress (17MCC) 2013
- Cambodia Malaysian Chemical Conference (CMCC) 2013

IKM 2013/2014
- International Conference on Water & Wastewater Management (ICWWM) 2013
- LabAsia 2013
- ChemAsia 2013

IKM 2015
- 4th Federation of Asian Polymer Societies (FAPS) Polymer Congress 2015
- LabAsia 2015
- ChemAsia 2015

IKM 2016
- 19th Malaysian Chemical Congress (19MCC) 2016

IKM YEAR 2012-2014

17th Malaysian Chemical Congress 2012
October 15-17, 2012
PWTC, Kuala Lumpur

Cambodian Malaysian Chemical Conference 2012
October 19-21, 2012
Sihanouk, Cambodia

International Conference on Water and Wastewater Management (ICWWM) 2013
October 9-11, 2013
Kuala Lumpur, Malaysia

TAKING EXTRA CARE OF YOUR NEEDS

THE RIGHT SPONSORSHIP
- Sarawak Convention Bureau (State Government) your one-stop-advisory centre!
- Confirmed sponsorship of RM300,000 (USD100,000)

FINANCIAL BACKING : WHO?

Commitments for Funding:
- Sarawak State Government
- Sarawak Convention Bureau
- MyCEB (Malaysian Convention & Exhibition Bureau)
- Academy of Sciences Malaysia (ASM)
- Ministry of Science, Technology & Innovation (MOSTI)
- ....... & Growing!

REASONS TO ACCEPT OUR BID

THE RIGHT PROGRAM
An interesting blend of all that is good and current in Management Science trends.
24ICCE Theme & Programme

Theme – Chemical Education for Socio-economic Transformation

- Teaching & Learning of Chemistry at the secondary level
- Chemistry/science teacher education including pre- & post
- New technologies in chemical education including web-based, multimedia and e-learning
- Laboratory classes in chemical education including microscale chemistry
- Critical analysis of chemistry curricula & textbooks
- Tertiary chemistry education & lifelong learning
- Research in Chemical Education including ethics
- Green chemistry and environmental chemistry education
- Public awareness and appreciation of chemistry
- International Chemistry Olympiad (IChO)

Our promise:
"Quarterly reports on Conference activity will be sent to the ICCE Protemp Committee."

MORE REASONS TO ACCEPT OUR BID

SUPERIOR COMMUNICATION
We acknowledge the importance of
• Transparency
• Thoroughness
• Regular communication

Our promise:
"Quarterly reports on Conference activity will be sent to the ICCE Protemp Committee."

MORE REASONS TO ACCEPT OUR BID

THE WARMEST INVITATION
IKM & Sarawak
Extends a warm invitation to CCE members to
• visit the Conference Venue & Facilities
• sample the culture, adventure and mystery of Sarawak before 24ICCE 2016

DESTINATION PLUS

Safe, Peaceful Destination
✓ Stable democratic government.

Multi-lingual Communications
✓ Most people speak English.

Value for Money
✓ Asia’s most competitive ground and accommodation costs.

Warm Weather
✓ Moderate 20-30 Celcius

TAKING EXTRA CARE OF YOUR NEEDS

THE RIGHT CONGRESS FOR ALL

Registration Fees
• Reasonable & attractive delegate fees
• Special rate for members
• Special rate for students & some scholarships for less privileged or academic stars
• Expected Participants: 500 pax

Quick Notes on Costs
• 5 star restaurants: <US$50
• Simple meal: <US$3
• Taxi fares (Airport to city): <US$5-10 each way
• 4 hotel nights + 1 city tour + meals + souvenirs = RM2300 (US$686) = 40% cheaper than Japan, Hong Kong, Korea, Taiwan, Shanghai or Bangkok

Safe, Peaceful Destination
✓ Stable democratic government.

Multi-lingual Communications
✓ Most people speak English.

Value for Money
✓ Asia’s most competitive ground and accommodation costs.

Warm Weather
✓ Moderate 20-30 Celcius

Expected Participants: 500 pax

Kuching currently has a total of 2821 rooms which are located 15 minutes from the airport.

1200 comfortable, unique rooms below USD50 per night within the city.
## Affordables World Class Hotels

<table>
<thead>
<tr>
<th>Category</th>
<th>Type</th>
<th>No. of Room</th>
<th>Avg. Cost – Daily Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Star</td>
<td>Single / Double</td>
<td>769</td>
<td>RM350-RM500 (USD101-USD145)</td>
</tr>
<tr>
<td>4 Star</td>
<td>Single / Double</td>
<td>288</td>
<td>RM300-RM450 (USD87-USD134)</td>
</tr>
<tr>
<td>3 Star</td>
<td>Single / Double</td>
<td>851</td>
<td>RM200-RM350 (USD87-USD101)</td>
</tr>
</tbody>
</table>

*All hotel rates are correct at the time of printing and quoted per night, exclusive of 15% service & government tax.

### Accommodation

**Pullman Kuching**
- MAX 389 Rooms

**Hilton Kuching**
- MAX 315 Rooms

**Four Points by Sheraton**
- MAX 421 Rooms

**Grand Margherita**
- MAX 288 Rooms

**Riverside Majestic**
- MAX 241 Rooms
The Borneo Convention Centre Kuching is a brand-new purpose built convention centre situated in Kuching, Sarawak. The BCCK offers the unique opportunity to experience world-class conferences in exotic, tropical Sarawak.

**Main Features**
- Plenary Hall to seat up to 5,000 delegates on tiered and flat seating
- Banquet facilities for 2,000
- Great Hall boasting a space of 2,793m² (57m x 49m)
- Pillar-free exhibition space
- 14 Meeting Rooms with the capacity for 40 to 1100 delegates in varying combinations
- 700 car parking spaces

**Social Events / Charity Gala**

The 24ICCE 2016 offers delegates unique and once in a lifetime experience during their visit with special theme party awaits them at the congress social events.

Charity Campaign Gala Dinner to raise fund for the Physical Disability Children Society in Sarawak
Handcraft Conference bag
Recycled conference tag/lanyard
Charity/Fundraising Gala Dinner

IKM
24ICCE 2016
In Asia’s most exotic new destination
International Conference on Chemistry Education
Sydney 2016

Presented by Dr Siegbert A Schmid
University of Sydney

Bid Committee

- Chemistry Education Division, Royal Australian Chemical Institute.
- ChemNet – Network of Australian Tertiary Chemistry Educators.
- SaMnet – Science and Mathematics Network of Australian Educators.
- Institute for Innovation in Science and Mathematics Education, The University of Sydney.

Dr Siggi Schmid
Dr Adrian V George

Why Sydney?

- A magnificent city set on the world’s finest natural harbour.
- High profile and impressive track record of hosting major events.
- Sydney is easily accessible to delegates from around the world and is the international gateway to Australia.
- Close proximity to Asia Pacific provides direct access to one of the largest growing delegate bases.
- World class conference venues and an extensive range of accommodation.
- Pre and post touring options to satisfy and delight delegates and partners.

Destination Sydney, Australia

International Access

37 international passenger airlines with more than 580 flights arriving per week

Conference Venue

The University of Sydney
Accommodation

<table>
<thead>
<tr>
<th>No. of Establishments</th>
<th>Star Rating</th>
<th>Average cost per room per night AUD</th>
</tr>
</thead>
<tbody>
<tr>
<td>107</td>
<td>3 Star</td>
<td>$127.58</td>
</tr>
<tr>
<td>123</td>
<td>4 Star</td>
<td>$173.53</td>
</tr>
<tr>
<td>23</td>
<td>5 Star</td>
<td>$250.09</td>
</tr>
</tbody>
</table>

Source: Australian Bureau of Statistics, Tourist Accommodation, Sept 2011

Student and Budget Accommodation

<table>
<thead>
<tr>
<th>Name of Property</th>
<th>Features</th>
<th>Rates per night (AUD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Billabong Gardens</td>
<td>10 minute walk to the University. Fully equipped kitchen, coin operated laundry.</td>
<td>$50</td>
</tr>
<tr>
<td>Alishan Guest House</td>
<td>10 minute walk to the University. Fully equipped kitchen, coin operated laundry and wireless broadband.</td>
<td>$70</td>
</tr>
<tr>
<td>Glebe Village</td>
<td>5 minute bus ride or 15–20 minute walk to the University</td>
<td>$75</td>
</tr>
<tr>
<td>Figtree YHA</td>
<td>Fully equipped dormitory, shared bathrooms, laundry and TV room</td>
<td>$70</td>
</tr>
<tr>
<td>Cathie Lessie Bed and Breakfast</td>
<td>5 minute bus ride or 15 minute walk to the University. Cable TV, a mini fridge and tea/coffee making facilities.</td>
<td>$80</td>
</tr>
<tr>
<td>Glebe Point YHA</td>
<td>5 minute bus ride or 15 minute walk to the University. Cable TV, a mini fridge and tea/coffee making facilities.</td>
<td>$80</td>
</tr>
<tr>
<td>Hamilton</td>
<td>5–10 minute walk to the University. Terraces available - one single and one double share bathroom.</td>
<td>$80</td>
</tr>
</tbody>
</table>

Touring Options

- Bondi Beach
- BridgeClimb
- Sydney Beyond Sydney
- The Three Sisters, Blue Mountains
- Port Douglas
- Great Barrier Reef
- Vineyards in Hunter Valley Wine Country

Support

See you in Sydney, 2016
Istanbul welcomes you!
Appendix 2 slides Maja Elmgren

Objective
Learning outcome driven chemistry education is increasingly practiced, providing new opportunities for international comparisons. We will develop a method for benchmarking (i.e., learning by sharing and comparing best practices) these outcomes. To enhance learner-centered chemistry education both in the developed and developing world, the project builds on and extends the best group experiences from national and international projects.

International cooperation
- New perspectives
- Shared knowledge
- Global understanding
- Conscious differences

Workshop Monday
- The project
- Interpretations of
  - benchmarking
  - learning outcomes
- ...
- Use of material from group members

ConstrucTive Alignment

- Expected learning outcomes
- Learning activities
- Examination/Assessment
How do the different levels of learning outcomes correspond to each other in your country or at your university?

How do you know that the learning outcomes affect learning activities and assessment?

**Over arching QF with Learning outcomes**

- Eurobachelor - Europe
- ACS guidelines - USA
- Learning and teaching Academic Standards – Australia

- Both similar and different?
- Applicable? Useful? Yes?

**Self reflection**

- Analysis of local learning outcomes in relation to some overarching QF, national and or international descriptions
- LO modules in relation to LO program – Program matrix
- Alignment with learning activities and assessment

**Program matrix**

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Group 4</th>
<th>Group 5</th>
<th>Group 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning outcome 1</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Learning outcome 2</td>
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<td>X</td>
<td>X</td>
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<tr>
<td>Learning outcome 3</td>
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<td>X</td>
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<td>Learning outcome 4</td>
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<td>Learning outcome 5</td>
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<td>X</td>
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<tr>
<td>Learning outcome 6</td>
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<tr>
<td>Learning outcome 7</td>
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<td>X</td>
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<tr>
<td>Learning outcome 8</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

**Self reflection**

- What material must be provided?
- In which format?
- What questions need to be addressed?
- With analysis!

**Until workshop 2013**

- Skype meetings and drop box communication – through the year
- Send suggestions for self reflection including questions after discussions with teachers – Deadline 1 October
- Prepare instructions/guidelines for self reflection – Deadline 1 January (final and final)
- Make self reflection – Deadline 1 May 2013
- Workshop w ith peer review – August 2013, one day before the CGB meeting
Objective

Learning outcome driven chemistry education is increasingly practiced, providing new opportunities for international comparisons. We will develop a method for benchmarking (e.g., learning by sharing and comparing best practices) these outcomes to enhance learner-centered chemistry education both in the developed and developing worlds. The project builds on and extends the task group experiences from national and international projects.
International Standards for Chemistry Education Group

Members joined the discussion on July 15 & 17.

July 15 (16:50-17:30): Mei-Hung, Rachel, Mustafa

July 17 (11:20-13:00): Mei-Hung (Taiwan), Rachel (Israel), Mustafa (Turkey), Suzanne (NZ)

Terms

Standards? Guidelines? Competence?

Competencies

International Competencies for Chemistry Education

• Hierarchy or a representation of competencies?

Compulsory education

Taiwan (6, 3, 3)
Turkey (4, 4, 4)
NZ (6, 2, 4, 1)
Israel (6, 3, 3)
USA

When does SCIENCE start?

Documents for Competencies

• Statements (embedded interests)
• Competencies
• Learning progression
• Learning Outcomes
• Assessment
• Professional development