

# Report of the Project Group of CCE for the Taipei Meeting during the 21st ICCE in August 3-8, 2010

July 25, 2010

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

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- Previous Report: submitted at the CCE Meeting during the 45th IUPAC GA in August 1-6 2009 in Glasgow.
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## 1. Membership of the Project Group

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

## 2. Review Procedure of Proposals in IUPAC

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- Step 1. Receipt at the Secretariat
- Step 2. Internal evaluation and identification of outside reviewers
- Step 3. Distribution to the outside reviewers and gathering of the reviews
- Step 4. Communication of the reviews to the Division(s) or Standing Committee(s) for final decision or recommendation to the Project Committee
- Step 5. Consideration and action by the Project Committee (when applicable)
- Step 6. Notification of IUPAC's decision to the submitter
- Step 7. Responsibility for project management

### Review Procedure of Proposals in the Project Group, CCE (Step 2 in above)

- Step 1. FM (Dr. Fabienne Mayer) send the proposals to the members of Project Group.
- Step 2. Each member sends his (her) opinion to FM
- Step 3. FM sends the opinion of the members to Project Coordinator (PC).
- Step 4. PC summarizes and sends the collective opinion to Chairman of CCE and FM

## 3. Project Budget

USD 20,000 per two years

## 4. Current Projects

### 4.1 CCE Projects (from the most new)

(1) **Project No:** 2009-037-3-050

**Title:** Developing Toolkits for National Chemistry Weeks during IYC

**Chair:** Prof. Mustafa SOZBILIR

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

**Start Date:** 06-07-2010

**Planned End Date:** 30 November 2010

**Budget in USD:** 3.300

**Web Page:** not available yet

(2) **Project No:** 2009-055-1-050

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

**Chair:** Judaš, Nenad; Vladušić, Roko

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

**Start Date:** 01-05-2010

**Planned End Date:** 30 April 2011

**Budget in USD:** 5.000

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

(3) **Project No:** 2010-011-1-050

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

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

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

**Start Date:** 01-01-2010

**Planned End Date:** 31 December 2010

**Budget in USD:** 15.000

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

(4) **Project No: Project No:** 2008-042-1

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

**Chair:** Dr. Tony Ashmore

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

**Start Date:** 01-May-2009

**Planned End Date:** 31 December 2010

**Budget in USD** 7,880

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

(5) **Project No:** 2008-043-1-050

**Title:** Visualizing and understanding the science of climate change

**Chair:** Prof. Peter Mahaffy

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

**Start Date:** 01-Feb-2009

**Planned End Date:** 1 March 2011

**Budget in USD:** 8,400

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

(6) **Project No:** 2007-005-2-050

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

**Chair:** Lida Schoen

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

**Start Date:** 01 January, 2008

**Planned End Date:** 31 December 2010

**Budget in USD:** 11,070

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

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

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

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

**Chair:** Lunin, Valery V.

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

**Start Date:** 01 July 2009

**Planned End Date:** 31 December 2010

**Budget in USD:** 10,000

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

(2) **Project No:** 2007-038-3-200 (Joined with Div-II: Inorganic Chemistry Division)

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

**Chair:** Holden, Norman E.

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

**Start Date:** 01 April 2008

**Planned End Date:** 31 December 2010

**Budget in USD:** 11,000

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

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

**Title:** Green Book - Abridged Version

**Chair:** Marquardt, Roberto

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

**Start Date:** 27 November 2007

**Planned End Date:** 31 December 2010

**Budget in USD:** 12.500

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

### 5. Projects Under Consideration

(1) **Project No:** 2010-025-1

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

**Chair:** Temechegn Engida

**Members:** Peter Mahaffy, Mei-Hung Chiu, Yonas Chebude, Ahmed Mustefa

**Date Submitted:** 13 April 2010

(2) **Project No:** 2010-031-1

**Title:** Chemistry as a Cultural Enterprise

**Chair:** Christiane Reiners

**Members:** Tom Tritton, Liliana Mammino, Boshra M. Awad, Lida Schoen, Mei-Hung Chiu, Liberato Cardellini, Mary J. Garson

**Date Submitted:** 25 May 2010

### 6. Completed Projects

(1) **Project No:** 2002-021-2-050 (Final report has not been written so far!)

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

**Chair:** Masato M. Ito and Yoshito Takeuchi

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

**Start:** 01 October 2002

**End:** 30 June 2010

**Budget in USD:**

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

(2) **Project No:** 2007-050-2-600

(Joined with Div I: Physical and Biophysical Chemistry & Div VI: Chemistry and the Environment)

**Title:** Climate and global change: observed impacts on planet earth

**Chair:** Letcher, Trevor

**Members:** Salminen, Justin

**Start:** 01 February 2008

**End:** 01 June 2009

**Budget in USD:**

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

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

- (3) **Project No:** 2007-022-2-020 (Final report has not been written so far!)

(Jointed with )

**Title:** Recommendations for Codes of Conduct

**Chair:** Graham S. Pearson

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

**Start:** 15 October 2007

**End:** 31 December 2009

**Budget in USD:** 5.000

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

- (4) **Project No:** 2006-050-3-100 (Final report has not been written so far!)

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

**Title:** Wet surface vibrational spectroscopy experiments

**Chair:** James McQuillan

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

**Start:** 14 March, 2007

**End:** 31 March 2010

**Budget in USD:** 8.200

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

- (5) **Project No:** 2006-050-3-100 (Final report has not been written so far!)

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

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

**Chair:** Temple, Wayne A.

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

**Start:** 01 March, 2005

**End:** 31 December 2008

**Budget in USD:** 6.007

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

- (6) **Project No:** 2006-050-3-100 (Final report has not been written so far!)

(Jointed with Div-IV: Polymer)

**Title:** Design of polymer education material for French speaking countries

**Chair:** Gerard Froyer

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

**Start:** 01 April 2005

**End:** 30 June 2009

**Budget in USD:** 5.000

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

## 7. Future Projects

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

## 8. Information about IUPAC & Projects

For information about IUPAC Organisation structure please visit  
<http://www.iupac.org/Organization>

For information about IUPAC projects and project submission and review process please visit  
<http://www.iupac.org/Projects>

For CCE Projects please visit  
<http://www.iupac.org/indexes/Projects/bodies/050>

## 9. Appendixes (Update about some projects)

**Project No:** 2007-005-2-050 (An Update)

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

**Chair:** Lida Schoen

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

**Start Date:** 01 January, 2008

**Planned End Date:** 31 December 2010

**Budget in USD:** 11,070

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

### Organisation

We originally planned to organise YAC courses / events for collecting data in Taiwan in 2007, Mauritius in 2008 (during ICCE 20) and Kenya in 2008 (during satellite conference). As Kenya wasn't able to organise any workshops, we spent the remaining money in Cyprus (Nicosia in April 2009), Malaysia (Ipoh in April 2010), the Philippines (Manila in April 2010) and Taipei (Taipei, during ICCE 21). After YAC Mauritius), we changed conditions to encourage local ownership. From now on countries / organisations could bid for YAC and had to find sponsors to cover local expenses, which Cyprus, Malaysia, the Philippines and Taiwan managed to do.

### Evaluation results

- Differences in perception about chemistry** before and after the YAC course / event of teachers, students and the public.  
Erica will report about evaluation in Cyprus during ICCE 21.  
Mei-Hung will report about evaluations in Malaysia and the Philippines during ICCE 21.
- Local 'problems' to organise a YAC course / event**  
After South Africa (2007), Taiwan (2007), Mauritius (2008) and Cyprus (2009), more data were collected in Malaysia and the Philippines. Results from Cyprus, incorporated in new, even more elaborate 'instructions for organisers' seem adequate, we didn't encounter major problems in Malaysia and the Philippines.  
Lida will report about lessons learnt, present and future of the YAC project during ICCE 21.

### Publications

- Erica Steenberg, Lida Schoen, **Young Ambassadors for Chemistry in Cyprus** Chemistry International 32, 4 (July-August 2010): ([www.iupac.org/publications/ci/2010/3204/pp3\\_2003-055-1-050.html](http://www.iupac.org/publications/ci/2010/3204/pp3_2003-055-1-050.html));
- Erica Steenberg, Lida Schoen, **YACs conquer Cyprus**, SAW site, June 2009 ([www.scienceacross.org/index.cfm?fuseaction=content.showcontent&node=690](http://www.scienceacross.org/index.cfm?fuseaction=content.showcontent&node=690));
- Mei-Hung Chiu, Lida Schoen, **YACs in Ipoh, Malaysia**, SAW site, June 2010 ([www.scienceacross.org/index.cfm?fuseaction=content.showcontent&node=695](http://www.scienceacross.org/index.cfm?fuseaction=content.showcontent&node=695));

4. *Mei-Hung Chiu, Lida Schoen, Young Ambassadors for Chemistry in Manila, Philippines*, SAW site, July 2010 ([www.scienceacross.org/index.cfm?fuseaction=content.showcontent&node=696](http://www.scienceacross.org/index.cfm?fuseaction=content.showcontent&node=696)).

#### Future

**During IYC 2011** new YAC activities are scheduled for

1. **Ethiopia**: February 2011, with the Flying Chemists, combined project proposal;
2. **South Africa**: March 2011, follow up of YAC 2007, (again) during the Science festival in Grahamstown – facilitated by Rhodes University funds, not confirmed;
3. **Tanzania** in **Dar-es-Salaam, Kigoma** and **Kyela** (2 rural areas in West Tanzania): March 2011, 'private' initiative', funded by **KISEDEFU** (Kigoma Social Economic Development Fund), CCE Project Group asked to fund travel costs for 2 YAC trainers/evaluators from the remaining YAC budget;
4. **Puerto Rico**: July 2011, during the General Assembly – not confirmed.

**Project No:** 2008-043-1-050 (An Update)

**Title:** Visualizing and understanding the science of climate change

**Chair:** Prof. Peter Mahaffy

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

**Start Date:** 01-Feb-2009

**Planned End Date:** 1 March 2011

**Budget in USD:** 8,400

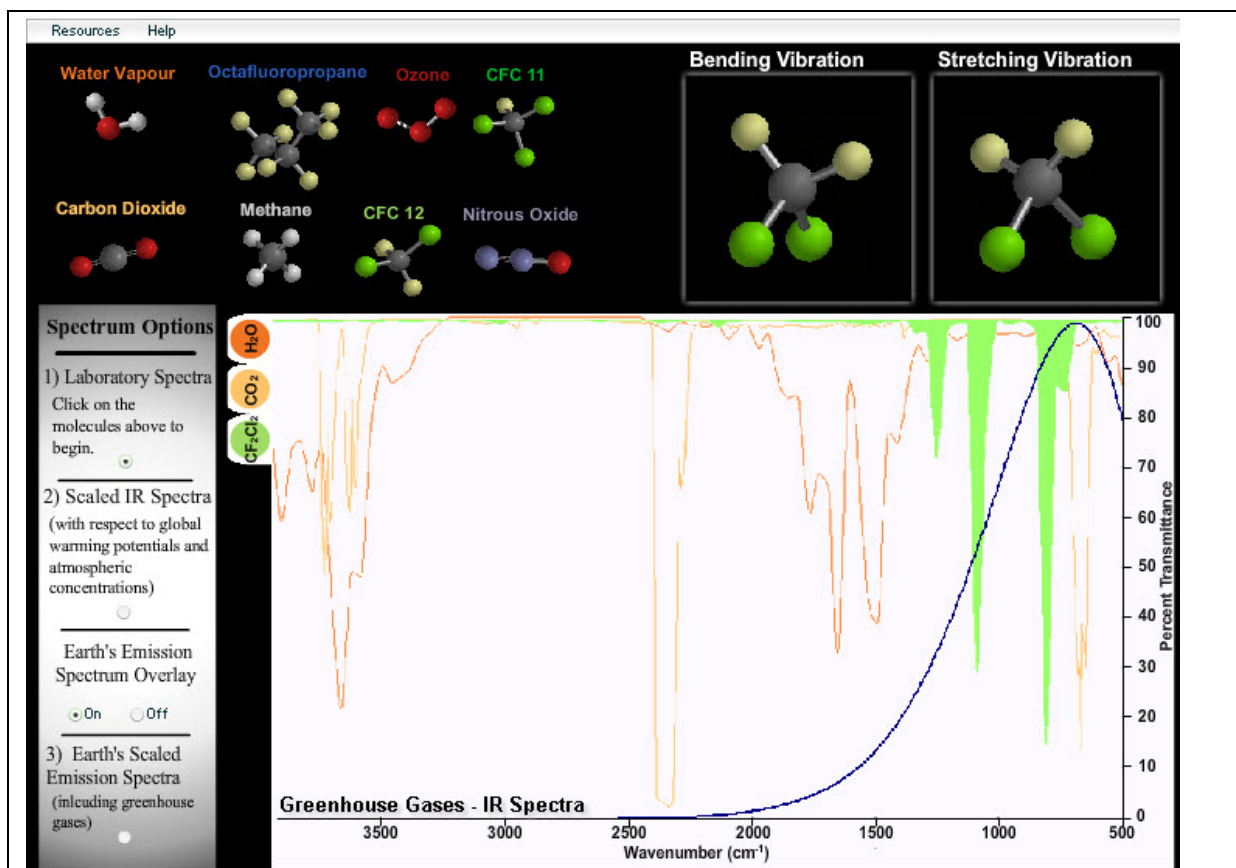
**Web Page:** <http://www.iupac.org/web/ins/2008-043-1-050>

- It's -25° C today in Northern Alberta. Is climate change actually happening? How do we know?
- Our world has gone through ice ages and warm periods in the past – how is this any different?
- Why are CFCs such potent greenhouse gases? I thought they were important in stratospheric ozone depletion, not climate change.
- How does the absorption of infrared radiation by greenhouse gases in our troposphere actually lead to warming?
- Predictions of future climate are just based on models – I need to see data, not models to believe that climate is changing.
- How do we know what the temperature was a half-million years ago?

These and many other questions by students, teachers, and the general public have been asked over the past two years of the task group coordinating the project “Visualizing and Understanding the Science of Climate Change.” People are barraged by contradictory claims in the media about whether our climate is changing, and what is causing the changes that are seen. And at the heart of the answers to many of these questions is a basic understanding of chemistry and physics.

The IUPAC task group is working to produce thirteen interactive lessons for global dissemination that are designed to help students visualize and understand the science underlying climate change. We started with research literature reports of common misconceptions that students have about climate change, and also fundamental principles of climate science needed to create climate literate students and teachers. Digital learning objects are being developed at the King's Centre for Visualization in Science (Canada), and integrated with written materials prepared by The Royal Society of Chemistry (UK) and the American Chemical Society (USA) into a set of critically reviewed interactive lessons for 16-19 year old students. Task group members from IUPAC's Committee on Chemistry Education, UNESCO, and the Federation of African Societies of Chemistry will participate in the review of materials and facilitate dissemination through national and international networks.

To give you a taste of the project, a screen capture from one of the interactive visualizations is shown below:



This interactive flash learning object helps to answer the third question in the list we started this report with – Why are CFCs such potent greenhouse gases? Absorption of infrared radiation in the region between 700 – 1200  $\text{cm}^{-1}$  causes excitation of the C-F stretching vibrational modes of CFC molecules. This happens to occur in a region of the IR spectrum where water and carbon dioxide, the two best known greenhouse gases are transparent (a spectral window). And so thinking of the earth as a giant IR source, CFCs absorb energies of IR radiation which have historically escaped into space, thus cooling our planet. This is also in a region of the spectrum close to the peak of earth's emission band (shown in the screen capture as a blue overlay).

When complete, the set of interactive lessons will provide tools for chemistry educators to make important connections in their classrooms to help students understand climate change, one of the defining challenges of the 21<sup>st</sup> Century.

The first lessons will be completed over the next several months – meanwhile you can already see some examples of interactive digital learning objects, including the one featured above, at [www.kcvs.ca](http://www.kcvs.ca).

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

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

**Chair:** Lunin, Valery V.

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

**Start Date:** 01 July 2009

**Planned End Date:** 31 December 2010

**Budget in USD:** 10,000

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

- February 2009 Russian-Chinese workshop on Catalysis, green chemistry and chemical engineering (Changchun Institute of Applied Chemistry, Changchun, China) 3 Russian participants, about 20 Chinese participants
- regular renovation of information on the web-sites [www.greenchemistry.ru](http://www.greenchemistry.ru), [www.chemweb.ru](http://www.chemweb.ru);
- June 2009 Russian-Chinese seminar on biomass transformation into chemical products (Guandjou, China) 3 Russian Participants, 25 Chinese participants, charmen Prof. Chang Jie
- Round Table on the topic of IUPAC project 2008-017-4-300 in the frames of Joint Conference: 4<sup>th</sup> International Conference on Green and Sustainable Chemistry (GSC-4) and 2<sup>nd</sup> Asian-Oceanian Conference on Green and Sustainable



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Chemistry (AOC-2) August 20-24 2009, Beijing, China (34 participants from Green Silk Way countries, round table head Prof. Vatsadze S.)

- The workshop on the project in the frames of Russian Conference on Supercritical Fluids (Kazan, Russia, September 2009), 25 participants, head of workshop Prof. Lunin V.V.

- 16-17 September 2009 Workshop "Supercritical fluids for sustainable development: the evolution of cooperation" Suzdal, Russia, 26 participants

- Materials about the project were published in International Journal (2010) (What we are doing for kids love chemistry)

- Materials were published in Russian newspaper Poisk (Serch) (2010)

- International Mendeleev Chemistry Olympiad 2009 on chemistry was organized in Turkmenistan (Asia) (Head of organizing Committee Lunin V.V.). In the frame of Olympiad the Workshop "Green Silk Way" was organized (all team leaders were participated)

- October 2009 – All-Russian Seminar of middle-school teachers of chemistry (Tobolsk, Russia) – the report about Green Silk Way project.

- June 2010 – Kuala-Lumpur, Malasia, Round table on creation of Green Silk Way Network, organized by Savilov S. in the frames of International Conference on Nanotubes

- 1-2 July 2009 Round table on the problems of green chemistry and catalysis, Novosibirsk, Russia, about 30 participants from Russia and other countries

- 2009 translation and publication of "Green organic lab training course" in Russian ([www.oc-praktikum.de/rus](http://www.oc-praktikum.de/rus))

- on-line questionnaire "Green or not green: What do you now about green chemistry" is prepared in Russian and translation on English and Chinese is started

- Preparation of leaflet about green chemistry for school pupils is finished in Russian and soon will be translated to Chinese, English and Uzbek

Also Russian-Chinese Seminar on the topic of project was prepared (May 2010) but cancelled because of terroristic attack in Moscow Metro. Cancellation was done by Chinese side.

### 10. Acknowledgements

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