



## 22<sup>nd</sup> International Conference on Chemistry Education

## 11<sup>th</sup> European Conference on Research In Chemical Education

15-20 July 2012 - ROME, Italy

Stimulating Reflection and Catalysing Change  
in Chemistry Education



SAPIENZA  
UNIVERSITÀ DI ROMA

DIPARTIMENTO DI CHIMICA  
"Sapienza Università di Roma"

# Programme

	Sunday 15 <sup>th</sup>	Monday 16 <sup>th</sup>	Tuesday 17 <sup>th</sup>
Time		[T1] Communicating chemistry	[T2] Didactics of Third level chemistry
09:00		Registration	[PL2] Harold Kroto
09:30		Opening Ceremony	
10:00		[PL1] Vincenzo Balzani	[PL3] Brian Coppola
10:30			
11:00		Coffee Break	Coffee Break
11:30			
12:00		[K1] Mei-Hung Chiu	[K3] Hans-Dieter Barke
12:30		[K2] Melanie Cooper	[K4] Odilla Finlayson
13:00			
13:30		Lunch	Lunch
14:00			
14:30			
15:00		[T1.S1-S7]	[T2.S1-S8]
15:30		Parallel Sessions	Parallel Sessions
16:00			
16:30		Coffee Break	Coffee Break
17:00			
17:30		[T1.S8-15]	[T2.S9-S15]
18:00		Parallel Sessions	Parallel Sessions
18:30			
19:00	Registration	[Cultural Lecture] Luigi Dei	Poster Session 1
19:30			
20:00			
20:30	Welcome Reception		

Wednesday 18 <sup>th</sup>	Thursday 19 <sup>th</sup>	Friday 20 <sup>th</sup>
[T3] ICT and multimedia in teaching chemistry	[T4] Didactics of Second level Chemistry	[T5] Laboratory work in teaching chemistry
[PL4] Mansoor Niaz	[PL6] Norman Reid	[PL8] Avi Hofstein
[PL5] Alexander Renkl	[PL7] Bassam Shakashiri	[PL9] Peter Mahaffy & Ilka Parchmann
Coffee Break	Coffee Break	Coffee Break
[T3.S1-S9] Parallel Sessions	[K5] Maria Sheehan	[K7] Marcelo E. Conti
	[K6] Silvija Markic	Plenary Discussion
Lunch	Lunch	Lunch
	[T4.S1-S8] Parallel Sessions	[T5.S1-S12] Parallel Sessions
Guided tour to Villa Adriana	Coffee Break	Closing Ceremony
	[T4.S9-S16] Parallel Sessions	
	Poster Session 2	
Banquet Dinner		

Welcome

On behalf of the Italian Chemical Society and of its President prof. Vincenzo Barone, it is an honour, a privilege and a pleasure to invite you to Rome in July 2012 on the occasion of the **ICCE** and **ECRICE** conference. For the first time, the two major conferences on Chemical Education will join under the same roof, that of Rome, the eternal City: we are really proud for this and we will do our best to ensure full success of the event and a wonderful Italian trip of all the conveners. Chemical Education is constantly undergoing major changes and developments which are also connected to the changing role of Chemistry in Society and the way this science is perceived; as it always more becomes a Science where social, scientific, cultural and didactic aspects interact with each other and with other emerging disciplines such as Museology, Ethics, Communication Science. We hope that the Rome Conference will be remembered in the future for its contribution to the growth of the quality in Chemical Education. We are working hard to assemble a high-level scientific program as well as setting up working, living and leisure conditions suitable to make **ICCECRICE 2012** a memorable event.

I am sure that you will like to be part of it.

See you in Rome!

*Luigi Campanella*  
*SCI Past President*  
*Conference Chairman*



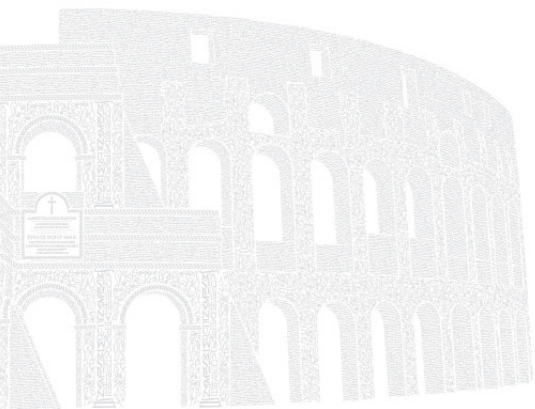
Dear participants

As Chairman of our Conference and as Director of Chemistry Museum of our University I invite you during the period of your staying in Rome for **ICCE ECRICE 2012** to visit our Museum. You can find some precious cases of old instruments and some particular pieces of old traditional chemistry. The most important instrumental methods of chemical analysis are represented starting from chromatography and passing to spectroscopy, X-ray, NMR techniques. A collection of old reagents, dyes and glassery is also exposed. The Museum will be open daily waiting for you on all days (from Monday 16<sup>th</sup> to Friday 20<sup>th</sup> July) at 9hr-18hr. The Museum is located inside University campus in the Chemistry Department at ground floor.

If some of you is also interested in visiting some labs of our Department please don't hesitate to contact me and I'll do the best to satisfy your request. Our Department of Chemistry is one of the most scientifically complete as any field and branch of Chemistry I can say it is represented.

Thanks and welcome.

*Luigi Campanella*



# Organizers



Società Chimica Italiana  
Coordinated by its  
Didactics Division



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## Scientific Committee

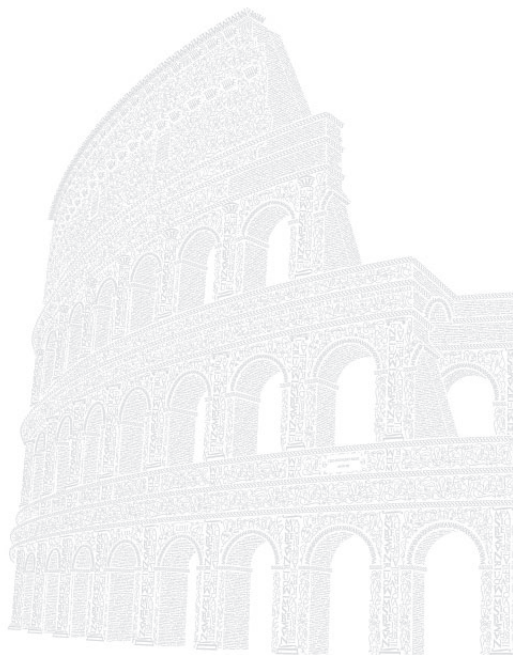
Paola Ambrogi  
Liberato Cardellini  
Peter Childs  
Michele A. Floriano  
Morton Z. Hoffman  
Peter G. Mahaffy  
Ilka Parchmann  
Antonella Rossi

## Local Organizing Committee

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Franco Calascibetta  
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Manuela Mostacci  
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## International Advisory Committee

Eva Åkesson (*Sweden*)  
Robert Bucat (*Australia*)  
Peter Childs (*Ireland*)  
Mei-Hung Chiu (*Taiwan*)  
Hana Ctrnáctová (*Czech Republic*)  
Ameen Farouk M. Fahmy (*Egypt*)  
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Masahiro Kamata (*Japan*)  
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Iwona Maciejowska (*Poland*)  
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Mehmet Mahramanlioglu (*Turkey*)  
Rachel Mamlok-Naaman (*Israel*)  
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Christiane S. Reiners (*Germany*)  
Lida Schoen (*Netherlands*)  
Zhigang Shuai (*China*)  
Ting-Kueh Soon (*Malaysia*)  
Mustafa Sözbilir (*Turkey*)  
Erica Steenberg (*South Africa*)  
Natalia P. Tarasova (*Russia*)  
Zoltan Toth (*Hungary*)  
Georgios Tsapralis (*Greece*)  
Uri Zoller (*Israel*)





# General Information

## Registration:

The registration desk shall be open from h. 17.30 Sunday, July 15th onwards.

## Lecture Room:

The presentations will take place at the **University of Rome “La Sapienza” Faculty of Economics (address: Via Del Castro Laurenziano, 9 Roma)**. The location of the Lecture Room will be shown by appropriate signs.

Please ask for assistance and directions at the registration desk.

Plenary Communication will last 60 minutes, Key Notes will last 30 minutes, Oral Communications will last 15 minutes including questions.

Chairs and speakers are kindly required to keep session on time schedule.

## Instructions for speakers:

The lecture rooms will be equipped with a PC and a video projector.

Speakers are required to deliver their Power Point files with a USB stick to the slide points the half day before their scheduled talks.

The default system for presentations supports Microsoft WINDOWS (not MAC) platforms for the latest versions of Powerpoint® slides.

If your presentation includes any video the required file type is .avi

Technicians will transfer the file directly on the computer in the designated lecture room.

## Instructions for poster presentations:

Presenting authors are asked to be in attendance at their posters for the designated Poster Sessions. Posters will be numbered as indicated in the present Booklet and a corresponding numbered poster board will be available for attaching your presentation at the appropriate time in the display area. Please note that the display time of the posters will be divided in two groups during the Congress, as determined by the number assigned to your presentation.

**Poster Session 1 (authors present Tuesday, July 17th, 18:00 to 19:30)** includes posters with numbers from 1 to 119 (included), which can be mounted starting from **Sunday July 15<sup>th</sup> after registration and displayed until Wednesday July 17<sup>th</sup> at 9:00**. Posters must be removed within this time. Any remaining posters will be removed by the organizers and discarded.

**Poster Session 2 (authors present Thursday, July 19th, 18:00 to 19:30)** includes posters with numbers greater than 119, which can be mounted starting from **Wednesday July 17<sup>th</sup> at 11:30 and displayed until Friday July, 20<sup>th</sup> at 16:30**.

The posters should be stuck to the poster board with the provided material.

**Internet:**

Wireless Internet connection is available in the all Congress area for ICCE-ECRICE 2012 registered participants. Upon registration at Conference Desk you will get your participant kit envelope. Please find your user ID and Password written on the label of the envelope.

**Name tag/Badge:**

All participants are kindly asked to wear the provided name tag in the conference areas.

**Welcome Reception (included in the registration):**

Welcome Reception, Sunday, 15<sup>th</sup> July at h. 20:00

**Lunches (included in the registration):**

Lunches (see the programme) will be served in the University Canteen. Access is reserved to ticket holders. Tickets are included in your participant kit received upon registration.

Additional tickets can be purchased at the registration desk.

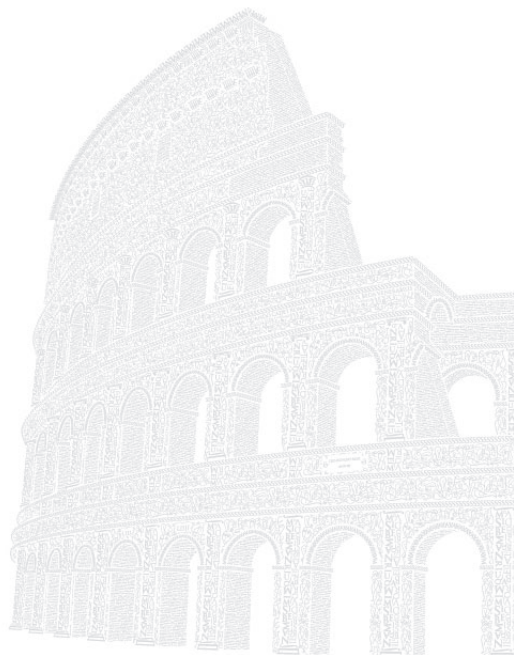
**Coffee Breaks (included in the registration):**

Coffee breaks (see the programme) will be served during working days.

**Social Event (NOT included in the registration):**

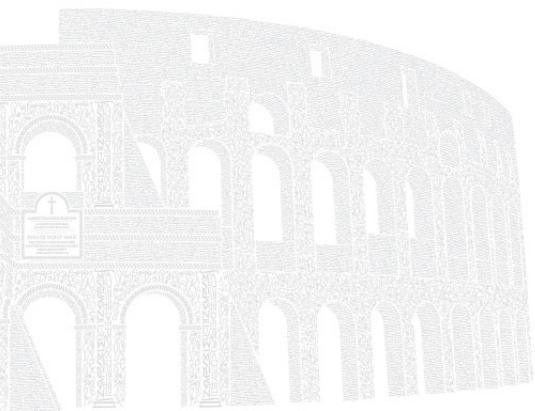
Meeting point at h. 16:00 at Conference Venue Entrance.

Return and drop off at Conference Venue Entrance.



ICCECRICE2012 – July 15-20

Scientific Programme



T= Topic of the Day; PL= Plenary Lecture; K= Key-Notes; WS= Workshop

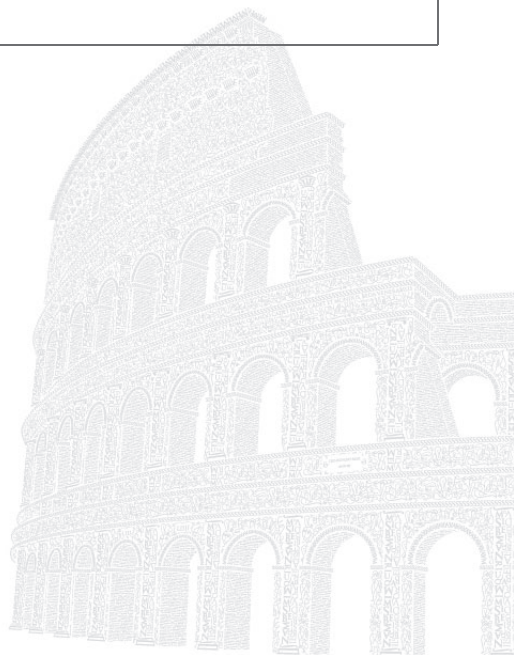
## Sunday 15<sup>th</sup>

17:30-19:30	Registration
20:00-21:30	Welcome Reception

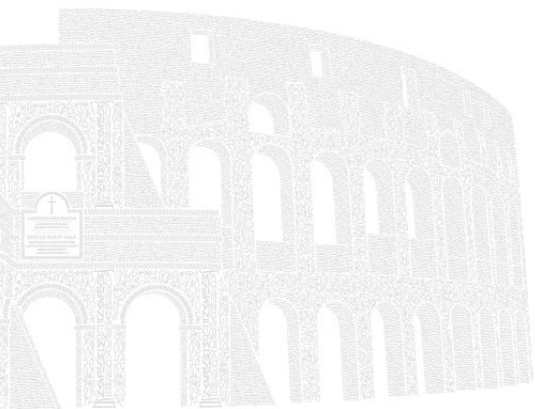
## Monday 16<sup>th</sup> - T1 Communicating Chemistry

### Room A (Aula I - E. Tarantelli)

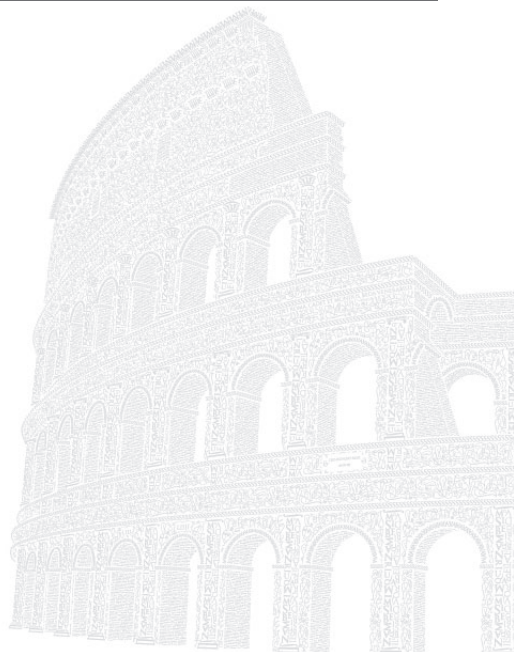
09:00-10:00	Registration & Opening Ceremony
10:00-11:00	PL1: <b>Vincenzo Balzani</b> , The role of science in a fragile world
11:00-11:30	Coffee break
11:30-12:00	K1: <b>Mei-Hung Chiu</b> , Globalization of Chemistry Education
12:00-12:30	K2: <b>Melanie Cooper</b> , Chemistry, Life, the Universe and Everything
12:30-14:00	Lunch
14:00-16:00	Parallel Sessions



<p><b>Room A</b></p> <p><b>(Aula I - Tarantelli)</b></p>	<p style="text-align: center;"><b>Chemistry Education Research I (Chair M. Towns)</b></p> <ol style="list-style-type: none"> <li>1. Kristina M. Mazzarone, <u>Nathaniel P. Grove</u>, Changing perspectives: Understanding students' epistemological development in chemistry</li> <li>2. <u>L. D. Antonoglou</u>, N. D. Charistos, M. P. Sigalas, Exploring Criteria for Selecting Proper Orientations of 2D and 3D Molecular Representations in Chemistry Education</li> <li>3. <u>Todd Gatlin</u>, Santiago Sandi-Urena, Learning from Teaching: Graduate Teaching Assistants' Experience in the Academic Chemistry Laboratory</li> <li>4. Marcy Towns, Nicole Becker, <u>Renee Cole</u>, Using Discourse to Enhance Student Understanding of Physical Chemistry</li> <li>5. <u>Johanna Duque</u>, Gloria Sánchez, Vicente Sanjosé, Question-asking on Unfamiliar Chemical Phenomena: Differences between Students, Preservice Teachers and Experts</li> <li>6. <u>E. Borunova</u>, G. Chernobelskaya, A. Dementiev, School Science Projects for the Continuous Chemical Education in a System "Secondary school – University"</li> <li>7. <u>Marié du Toit</u>, Colin Read, Students' difficulties with Chemical Reaction Types</li> </ol>
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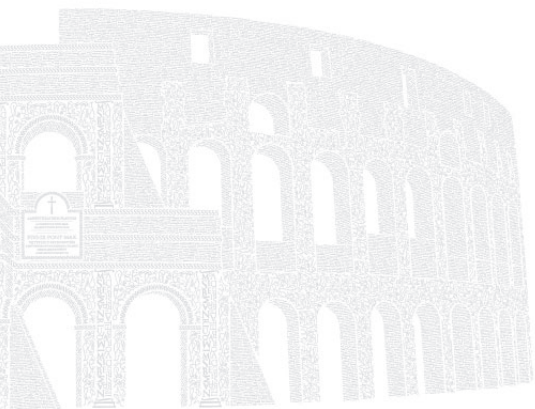
<p><b>Room B</b></p> <p><b>(Aula VIc)</b></p>	<p style="text-align: center;"><b>National Projects (<i>Chair Elke Sumfleth</i>)</b></p> <ol style="list-style-type: none"> <li>1. Rosarina Carpignano, <u>Giuseppina Cerrato</u>, Daniela Lanfranco, Tiziano Pera, Science Teaching in the primary school. A comparison between “good practices” carried out in Italy and in France</li> <li>2. <u>Deborah Corrigan</u>, Developing a National Senior Chemistry Curriculum</li> <li>3. <u>Ugo Cosentino</u>, Piano Lauree Scientifiche: a model system for the connection between School and University and the development of the scientific culture</li> <li>4. Andreas Kometz, <u>Barbara Schmitt-Sody</u>, Following new paths by student labs in teaching chemistry to children with special needs</li> <li>5. <u>Madeleine Schultz</u>, Mark Buntine, Glennys O’Brien, Siegbert Schmid, Daniel Southam, Brian Yates, The Australian Chemistry Discipline Network: a Forum for Sharing</li> <li>6. Jazeps Logins, Janis Svirks, Dace Namsons, <u>Jelena Volkinsteine</u>, Students Collaboration Skills in the Teaching-Learning Process of Chemistry in Elementary Schools of Latvia</li> <li>7. D. Addari, D. Atzei, B. Elsener, M. Fantauzzi, M. Mainas, <u>A. Rossi</u>, Piano Lauree Scientifiche (PLS) - Teachers and students together in the lab: the Sardinian Experience</li> </ol>
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**Room C**  
**(Aula VIb)**

**History and Philosophy of Chemistry in Teaching Fundamental Concepts (*Chair Elisa Maia*)**

1. Maria Elisa Maia, History and Philosophy of Chemistry in the Teaching of Fundamental Concepts
2. Elena Ghibaudi, Alberto Regis, Ezio Roletto, Models From History To The Classroom: An Historic-Epistemological Approach To Chemistry Teaching
3. Christiane S. Reiners, Learning to Teach Nature of Science - The Impact of an Explicit Approach
4. Fátima Paixão, The Diamonds of Lavoisier in the teaching of the concept of combustion in Low-Secondary Education
5. Serhad Sadi Barutcuoglu, Ajda Kahveci, Hayati Seker, Incorporating History of Technology into the Chemistry Curriculum: Teacher Views
6. Diana M. Fariás, Aginaldo Arroio, Analysing the role of biographies in chemistry education: What they can contribute to understanding how scientists and science works
7. Mary Virginia Orna, Marco Fontani, Tracking down the Lost Elements: An Anthology of Spurious and Erroneous Discoveries
8. David A. Katz, Using History in Teaching Chemistry: History on PowerPoint



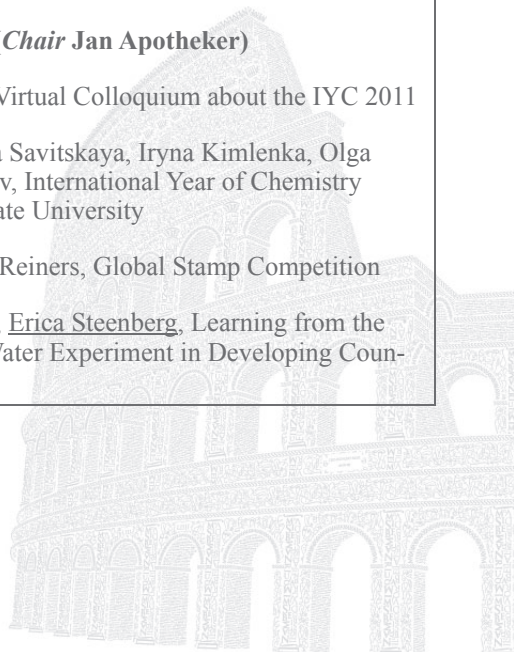
<p><b>Room D</b></p> <p><b>(Aula XI)</b></p>	<p style="text-align: center;"><b>Nanoscience Education (<i>Chair Ilka Parchmann</i>)</b></p> <ol style="list-style-type: none"> <li>1. <u>David A. Katz</u>, Nanotechnology Experiments for General Chemistry Laboratory Classes</li> <li>2. <u>Sevil Akaygun</u>, A nanoeducation model for pre-service teachers: From nanoliteracy to action</li> <li>3. <u>Anna-Leena Kähkönen</u>, Anssi Lindell, Jouni Viiri, Research in Student Understanding of Nanoscience</li> <li>4. Ayşe Aytar, <u>Faik Özgür Karatas</u>, Suat Ünal, Chemistry Students' Perception of Nano-Science and Technology</li> <li>5. <u>Antti Laherto</u>, Anna-Leena Kähkönen, Nanoscience in secondary school? Teachers' views</li> <li>6. <u>Dimitrios Stavrou</u>, Manfred Euler, Exploring Primary Student Teachers' Conceptions of Size - Dependent Properties at the Nanoscale</li> <li>7. <u>Ron Blonder</u>, Sohair Sakhnini, From Teacher Professional Development to Junior High School students: Teaching Nanotechnology by Using a Variety of Teaching Methods</li> <li>8. <u>Joel Chevrier</u>, Elsa Jardinier, Bertrand Lacoste, Simon Ledenmat, Ahmad Bsiesy, Gorka Arrizabalaga, Jean François Mainguet, Eric Martinet, Nanotechnologies produce high tech low cost tools for nanoeducation: the USB MEMS accelerometer case</li> </ol>
<p><b>Room E</b></p> <p><b>(Aula XII)</b></p>	<p style="text-align: center;"><b>The PROFILES Project I (<i>Chair Claus Bolte</i>)</b></p> <ol style="list-style-type: none"> <li>1. <u>Claus Bolte</u>, Jack Holbrook, An Introduction to PROFILES: Professional Reflection-Oriented Focus on Inquiry based Learning and Education through Science PROFILES</li> <li>2. <u>Miia Rannikmae</u>, Jack Holbrook, Learning Environment for the Promotion of PROFILES</li> <li>3. <u>Avi Hofstein</u>, Rachel Mamlok-Naaman, From Theory to Practice: Design and Implementation of a CPD Model towards Teacher Ownership</li> <li>4. <u>Claus Bolte</u>, Sabine Streller, Evaluating Student Gains in the PROFILES Project by means of the MoLE Instrument,</li> <li>5. <u>Franz Rauch</u>, Jack Holbrook, Claus Bolte, Teachers' and Stakeholders' Networking in PROFILES</li> </ol>



<p><b>Room F</b> (Aula XIV)</p>	<p><b>The European Dimension of University Chemical Education. The ECTN Association and its Achievements</b> (<i>Chair Francesco De Angelis</i>)</p> <p><u>Evangelia Varella</u> (ECTNA President), ECTN Association presentation</p> <p><u>Terry Mitchell</u>, The Philosophy of the Chemistry Eurolabels</p> <p><u>Evangelia Varella</u>. The Eurolabel accreditations in Europe and the Eurodoctorate projects</p> <p><u>Antonio Laganà</u>, Carlo Manuali, EChemTest and web support</p> <p><u>Pascal Mimero</u>, Communication and dissemination: the ECTNA newsletter and website</p> <p>Discussion</p>
<p><b>Room G</b> (Aula XIII)</p>	<p><b>Chemistry in the Museum, (<i>Chair Valentina Domenici</i>)</b></p> <ol style="list-style-type: none"> <li>1. <u>Valentina Domenici</u>, The role of Museums in Chemistry Communication. An Introduction to the Workshop</li> <li>2. <u>Luigi Campanella</u>, University Museums: a precious cultural and scientific resource</li> <li>3. Antonio Guarna, <u>Laura Colli</u>, Mariagrazia Costa, To approach Chemistry with an historical museum</li> <li>4. <u>Susanne Rehn-Taube</u>, Christine Kolczewski, Chemistry in the Deutsches Museum: A new access to Chemistry</li> <li>5. <u>Cecilia Cecchini</u>, New methods for exhibiting plastic material through design, research, preservation and educational means: the Plart Foundation</li> <li>6. <u>Giovanni Petrillo</u>, Anna Maria Cardinale, Silvia Vicini, Museum&amp;Lab Projects At The Museo Di Chimica – DCCI, Genoa University</li> <li>7. Katarina Nordqvist, <u>Anna Johanna Lindqvist Forsberg</u>, <u>Stina Lindberg</u>, “Research Aid” - Arising School Children’s Interest in Science?</li> </ol>
<p><b>16:00-16:30</b></p>	<p>Coffee break</p>



16:30-18:00	Parallel Sessions
<b>Room A</b>  <b>(Aula I - Tarantelli)</b>	<p style="text-align: center;"><b>Chemistry Education Research II (Chair M. Towns)</b></p> <ol style="list-style-type: none"> <li>1. Jeffrey Raker, Kristen Murphy, <u>Thomas Holme</u>, Cognitive Complexity And Student Performance On Chemistry Tests</li> <li>2. <u>Tina Overton</u>, Nicholas Potter, Christopher Leng, A Phenomenographic Study Of Problem Solving In Chemistry Capitalized</li> <li>3. Karrie Gerlach, Anja Blecking, Peter Geissinger, <u>Kristen L. Murphy</u>, Scale literacy of students in foundation-level chemistry courses</li> <li>4. <u>Dušica Milenković</u>, Mirjana Segedinac, Stanko Cvjetičanin, Cognitive Load in Different Levels of Representation of Knowledge in Chemistry</li> <li>5. <u>Ela Ayse Koksall</u>, Semra Kocyigit, Durdane Caglar, Use Of Worksheets When Teaching/Learning About Mixtures</li> <li>6. <u>Sheila Qureshi</u>, Phyllis B Griffard, Process Oriented Guided Inquiry Learning (POGIL) in Foundation Chemistry: A progress report.</li> </ol>
<b>Room B</b>  <b>(Aula VIc)</b>	<p style="text-align: center;"><b>Nanoscience Education 2 (Chair Jan Apotheker)</b></p> <ol style="list-style-type: none"> <li>1. M. Esmann, S. Beckhaus, <u>C. Lienau</u>, A tuning-fork based atomic force microscope for educational purposes</li> </ol> <p style="text-align: center;"><b>IYC 2011 (Chair Jan Apotheker)</b></p> <ol style="list-style-type: none"> <li>1. <u>Robert Belford</u>, Report on Virtual Colloquium about the IYC 2011</li> <li>2. <u>Dmitry Grinshpan</u>, Tatsiana Savitskaya, Iryna Kimlenka, Olga Mosejtschuk, Ivan Reznikov, International Year of Chemistry Events at the Belarusian State University</li> <li>3. <u>Lida Schoen</u>, Christiane S. Reiners, Global Stamp Competition</li> <li>4. Beverly Bell, John Bradley, <u>Erica Steenberg</u>, Learning from the Experience – The Global Water Experiment in Developing Countries</li> </ol>



<p><b>Room C</b> <b>(Aula VIb)</b></p>	<p><b>The language we use, and its influence on the images that students' visualize (<i>Chair Bob Bucat</i>)</b></p> <ol style="list-style-type: none"> <li>1. <u>Emmanuel V. Garcia</u>, Eric R. Punzalan, Communicating Chemistry: A Video Production Experience of Chemistry Educators in the Philippines</li> <li>2. Denise A. Adams, Joanne T. Blanchfield, James J. De Voss, Lawrence R. Gahan, Gwendolyn A. Lawrie, Shih-Chun Lo, Ross A. McGeary, Philip C. Sharpe, <u>Mary J. Garson</u>, Humpty Dumpty and the First Year Organic Chemistry Curriculum</li> <li>3. <u>Nenad Judaš</u>, A Contemporary View on Chemical Equations - How to Teach and Why</li> </ol>
<p><b>Room D</b> <b>(Aula XI)</b></p>	<p><b>Promoting the Globalization in Chemical Education (<i>Chair Luigi Campanella</i>)</b></p> <ol style="list-style-type: none"> <li>1. <u>Bing Wei</u>, In Search of Professionalism in the Field of Chemistry Education in China: The Story of Zhixin Liu</li> <li>2. <u>Nina Harsch</u>, H.-D. Barke, „Air and Atmospheric Pollution“ in Senior Natural Science Class: An Empirical Study and a Resultant Lecture Series</li> <li>3. <u>Pieter Marais</u>, Fiona Marais, Improving The Conceptual Understanding Of First Year Chemistry Students From Resource Disadvantaged High Schools</li> <li>4. A. Dicks, <u>J. C. Poč</u>, Developing Learning Communities in the Chemical Sciences</li> <li>5. <u>B.H.S.Thimmappa</u>, Free and open source teaching-learning materials for an exciting learning experience</li> <li>6. <u>Parvinder Singh</u>, Chemistry Teaching Effectively with Multimedia And latest technology</li> <li>7. <u>Tatsiana Savitskaya</u>, Iryna Kimlenka, Aliaksandr Ryttau, The greening of the chemistry curriculum: international cooperation “Belarus-V4 countries”</li> </ol>

<p><b>Room E</b> <b>(Aula XII)</b></p>	<p align="center"><b>The PROFILES Project II (Chair Claus Bolte)</b></p> <ol style="list-style-type: none"> <li>1. <u>Theresa Schulte</u>, Claus Bolte, Overview and First Findings of the PROFILES Curricular Delphi Study on Science Education</li> <li>2. <u>Tuula Keinonen</u>, Seija Juntunen, Theresa Schulte, Claus Bolte, Stakeholders' views on science education in Finnish PROFILES Project</li> <li>3. <u>Radu Lucian Olteanu</u>, Crinela Dumitrescu, Gabriel Gorghiu, Laura Monica Gorghiu, Aspects Related To The Continuous Professional Development Of Chemistry Teachers Stated In The Frame Of PROFILES Training Program</li> <li>4. <u>Marc Stuckey</u>, Marianne Lippel, Ingo Eilks, Teaching about 'Stevia' – An Example of Cooperative Curriculum Innovation within PROFILES in Germany</li> </ol>
<p><b>Room F</b> <b>(Aula XIV)</b></p>	<p align="center"><b>The European Dimension of University Chemical Education. The ECTN Projects Successor: EC<sub>2</sub>E<sub>2</sub>N (Chair Michele A. Floriano)</b></p> <p><u>Anthony Smith</u> (Network coordinator), The network presentation – past and present</p> <p><u>Antonio Laganà</u>, Virtual campus for Chemistry and Chem. Engineering</p> <p><u>Evangelia Varella</u>, Linguistic issues</p> <p><u>Paul Yates</u>, Lecturing qualifications for university teaching staff</p> <p><u>Anne-Marie Billet</u>, Transparency of Chemistry and Chem. Engineering</p> <p><u>Gino Paolucci</u>, Student-centered activities, summer schools and contests</p> <p><u>Michele A. Floriano</u>, Attractiveness of Chemistry and Chem. Engineering</p> <p>Discussion</p>
<p><b>Room G</b> <b>(Aula XIII)</b> <b>WS</b></p>	<p align="center"><b>The ESTABLISH Project – WORKSHOP for Teachers in Chemistry Inquiry (Chair Odilla E. Finlayson)</b></p>

**18:00-19:00**

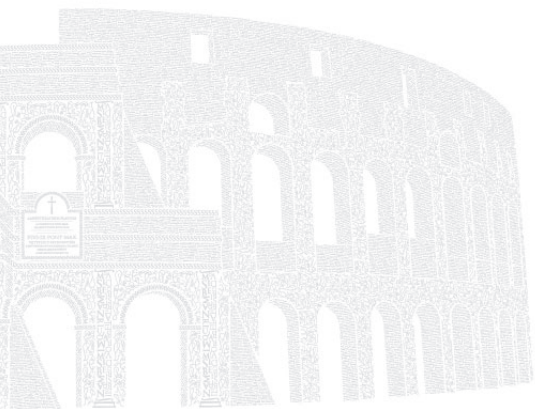
**Luigi Dei**, Molecules of an author in search for memory: rereading Primo Levi

# Tuesday 17<sup>th</sup> - T2 Didactics of Third level chemistry

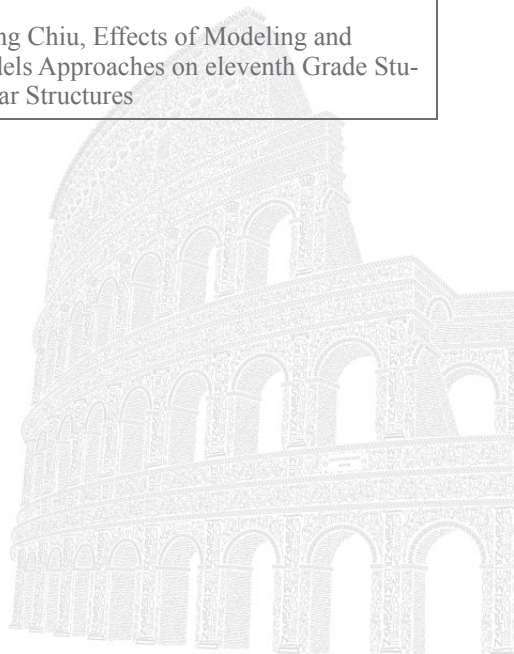
## Room A (Aula I - E. Tarantelli)

	<b>Room A (Aula I - Tarantelli)</b>
<b>09:00-10:00</b>	<b>PL2: Harold Kroto</b> , Science, Lost in Translation?
<b>10:00-11:00</b>	<b>PL3: Brian Coppola</b> : The Creativity Challenge: Do Real Work, not Homework
<b>11:00-11:30</b>	Coffee break
<b>11:30-12:00</b>	<b>K3: Hans-Dieter Barke</b> , Structure of Matter - Diagnosis of Misconceptions and Challenge
<b>12:00-12:30</b>	<b>K4: Odilla Finlayson</b> , Engaging and Challenging First Years Students in Chemistry
<b>12:30-14:00</b>	Lunch

<b>14:00-16:00</b>	<b>Parallel Sessions</b>
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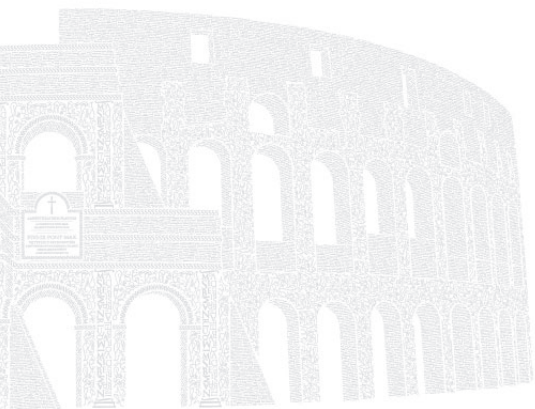
<p><b>Room A</b> <b>(Aula I - Tarantelli)</b></p>	<p style="text-align: center;"><b>Teaching and learning Science and Chemistry worldwide</b> <b>(Chair T. Holme)</b></p> <ol style="list-style-type: none"> <li>1. <u>Qing Zhou</u>, Xiao Cong Yang, Tao Peng, Qiu Yan Huan, Integrating Webquest into Chemistry Classroom Teaching to Promote Students' Critical Thinking</li> <li>2. <u>Chen Chong Sheau Huey</u>, Relationship between Students' Chemistry Anxiety and Their Performance in Stoichiometry</li> <li>3. Destin Mangane, <u>Isabelle Kermen</u>, African Students' (Grade 12) Difficulties In Learning The Semiotic Representations Of The Spatial Structure Of Organic Molecules</li> <li>4. Yıldızay <u>Ayyildiz</u>, Leman Tarhan, Development of a Cooperative Learning Material on High School Chemistry Teaching "Spontaneity"*</li> <li>5. <u>Betul Ekiz</u>, Mustafa Tuysuz, Oktay Bektas, Aysegul Tarkin, E. Selcan Kutucu, Esen Uzuntiryaki, How Do Pre-Service Chemistry Teachers Connect Solubility of Gases in Liquids to Daily Life Events?</li> <li>6. <u>Mei-Hung Chiu</u>, Shiao-Lan Chung, Hsueh-Pi Li, Tzu-Hua Wang, Using the Web-based Mental Model Diagnostic (WMMD) System to Analyze Junior High School Students' Mental Models of Gas Particles</li> <li>7. <u>Shiao-Lan Chung</u>, Mei-Hung Chiu, Effects of Modeling and Multi-representational Models Approaches on eleventh Grade Students' Learning of Molecular Structures</li> </ol>
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**Room B**  
**(Aula VIc)**

**Teaching and learning Science and Chemistry in some Latin American, European and Asian countries I (Chair Yuri Orlik)**

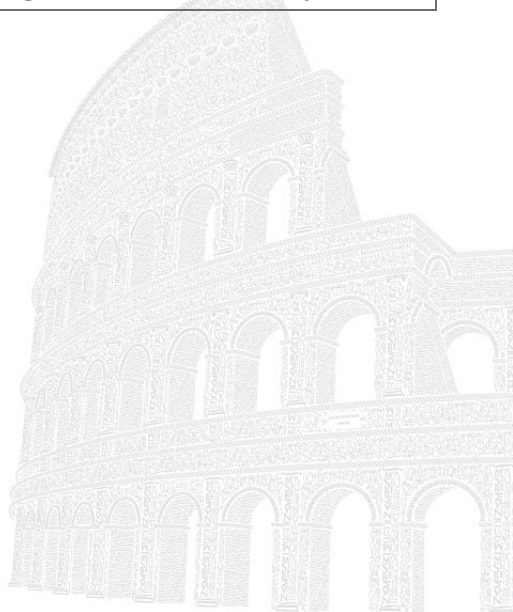
1. Yuri Orlik, Teaching and learning Science and Chemistry in some Latin American, European and Asian countries
2. Ryszard M. Janiuk, Chemical education in Poland: past, present and future
3. Beáta Brestenská, Chemistry and Science Education in the Slovakia
4. Maria Pak, Chemical education in Russia: features and trends
5. Hana Čtrnáctová, Věra Čížková, Chemistry and Science Education in the Czech Republic
6. Marcela E. Fejes, Learning Chemistry while creating simulations: a Brazilian experience
7. Carlos C. Barbosa Costa, Ana Maria Yoshitake, Marcela Fejes, Introducing real research in Chemistry education for youth and adults
8. Agustina R. Echeverría, Nyuara da Silva Mesquita, Márlon H. F. B. Soares, Characterization of high school chemistry in Brazil



**Room C**  
**(Aula VIb)**

**Inquiry-Based Student- Centred Instruction**  
**(Chair Ram S. Lamba)**

1. Haruo Ogawa, Hiroki Fujii, Inquiry-Based Learning in Japan
2. İlkay Buket Atac Ozdemir, Emine Adadan, Inquiry-Based Laboratory Instruction to Address the Concepts of Reversibility, Incomplete Conversion and Dynamic Equilibrium
3. Nina Aremo, Integration Of Inquiry-Based Teaching In Finnish Chemistry Curriculums
4. Jenna Sanger, Markus Emden, Elke Sumfleth, Fostering Scientific Inquiry With Worked Examples And Prompts
5. Kua Miew Kheng, Ong Chiau Jin, Inquiry-Type Laboratory Activities in Chemistry For High Ability Students
6. Mauro Mocerino, Natasha Rauh, Melinda Smith, Daniel C. Southam, Identifying Student Understandings of mechanisms with POGIL type activities
7. Muhammad Haris Effendi Hasibuan, Anthony Wright, Gwendolyn Lawrie, Investigating the Implementation Of Inquiry-Based Chemistry Experiments In Regional Indonesia Secondary School





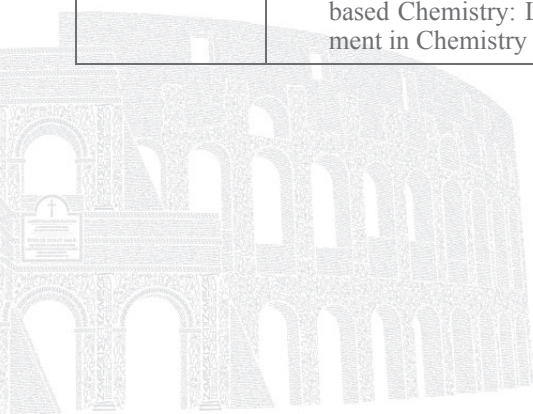
<p><b>Room D</b> <b>(Aula XI)</b></p>	<p><b>Applications of Systemic Approach to Teaching and Learning in Chemistry [SATLC] I (Chair Ameen Farouk M. Fahmy)</b></p> <ol style="list-style-type: none"> <li>1. <u>Theodoros Vachliotis</u>, Katerina Salta, Chryssa Tzougraki, Evaluating the SAQ Scheme for Assessing Meaningful Understanding and Systems Thinking in the Organic Chemistry Domain</li> <li>2. <u>John Bradley</u>, Erica Steenberg, The Chemists' Triangle And A General Systemic Approach To Teaching And Learning Chemistry</li> <li>3. <u>Mare Taagepera</u>, Ramesh Arasasingham, Students' Perception of Matter and Energy Conservation in Chemical Reactions</li> <li>4. <u>Xiangqun Guo</u>, SATL in Analytical Chemistry Teaching</li> <li>5. Misbah Nazir, <u>Iftikhar Imam Naqvi</u>, Applications Of Satl In Physical Chemistry</li> <li>6. <u>A.F.M.Fahmy</u>, J.J.Lagowski, [SATLC - Initiative] Uses of SATL &amp; Multiple intelligences [MI] For Tertiary Level: Part-I: Benzene Structure Activity</li> </ol>
<p><b>Room E</b> <b>(Aula XII)</b></p>	<p><b>A Challenging but Rewarding Experience: Teaching Introductory Chemistry (Chair Ozcan Gulacar)</b></p> <ol style="list-style-type: none"> <li>1. <u>Jailson F. Lima</u>, Fostering Imagination to Enhance Learning: Art and Chemistry_</li> <li>2. <u>S. Reid Long</u>, Teaching Through Research: Revolutionizing the Freshman Experience</li> <li>3. <u>Donald Wink</u>, Aligning introductory chemistry education with the logic and language of mathematics</li> <li>4. <u>Mareike Klostermann</u>, Maïke Busker, Ilka Parchmann, Bridging gaps between school and university – university students' and teachers' beliefs on demands and study skills in chemistry</li> <li>5. <u>Chin-Cheng Chou</u>, Jau-Shyong Chen, Investigation the Problem and Solution Strategy in the Linking Curriculum between Vocational High School and University of Technology—Take Chemistry Remedial Courses as Examples</li> <li>6. <u>Vibor Roje</u>, What is the Concentration of Stones at the Bottom of the Sea? – Pitfalls and Errors in Teaching of Chemical Equilibrium</li> <li>7. M. Ryan Prnka, Joshua Belland, <u>Diana Mason</u>, Influence of e-Homework Use on Student Success in General Chemistry</li> </ol>

<p><b>Room F</b> (Aula XIV)</p>	<p style="text-align: center;"><b>General Chemistry (from Teaching organic chemistry)</b> (Chair Martin Goedhart)</p> <ol style="list-style-type: none"> <li>1. <u>Andreas Nehring</u>, Annette Upmeier Zu Belzen, Kathrin H. Nowak, Rüdiger Tiemann, Assessing and Comparing Processes of Scientific Inquiry in Chemical and Biological Contexts</li> <li>2. <u>Mustafa Sozibilir</u>, M. Diyaddin Yasar, M. Ertac Atila, Ali Yildirim, Teachers' Perceptions of Constructivist Principles in the Renewed Chemistry Curriculum In Turkey</li> <li>3. <u>Sebastian Ritter</u>, Eckart Hasselbrink, Elke Sumfleth, How Teaching Nanoscale Science Can Contribute To The Knowledge of the Particulate Nature Of Matter</li> <li>4. <u>Gwen Lawrie</u>, Madeleine Schultz, Profiling Diverse Chemistry Cohorts Through The Application of Chemical Concept Inventory Diagnostics</li> <li>5. <u>S. K. Airee</u>, Cahit Erkal, Dalana Short, Use of A Fuel Cell to Illustrate Basic Chemistry And Physics Principles in an Undergraduate Laboratory</li> </ol>
<p><b>Room G</b> (Aula XIII)</p>	<p style="text-align: center;"><b>Teaching and learning chemical bonding concepts</b> (Chairs Georgios Tsaparlis, Rachel Mamlok-Naaman)</p> <ol style="list-style-type: none"> <li>1. <u>Rachel Mamlok-Naaman</u>, Tami Levy Nahum, Avi Hofstein, A new approach to teaching and learning the bonding concept</li> <li>2. <u>Karina Adbo</u>, Keith S. Taber, Constructing the chemical bond concept in Swedish high school: Insights from a case study</li> <li>3. <u>Sevil Akaygun</u>, Visualizing condensation: What do the student generated animations of condensation tell?</li> <li>4. <u>Sheau Huey Chen Chong</u>, Students' understanding of chemical bonding</li> <li>5. <u>Iztok Devetak</u>, Saša A. Glažar, First year pre-service primary school teachers' conceptions about chemical bond</li> <li>6. <u>Mageswary Karpudewan</u>, Sumathi Ganesan, Mageswary Karpudewan, The effectiveness of computer-assisted instruction (CAI) in overcoming misconceptions in relation to chemical bonding</li> <li>7. <u>Georgios Tsaparlis</u>, Eleni Pappa, How knowledge about intra- and inter-molecular bonding is organized in general chemistry textbooks</li> </ol>

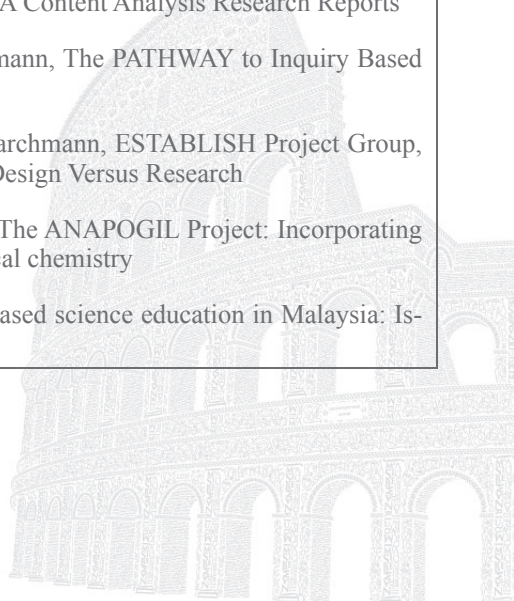
<b>Computer Room</b>  <b>WS</b>	<b>Meeting Chemistry and Climate Literacy Learning Outcomes in Introductory University Chemistry (<i>Chairs</i> Peter Mahaffy, Brian Martin, Marcy Towns, Lallie McKenzie, Mary Kirchhoff)</b>
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<b>16:00-16:30</b>	Coffee break
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<b>16:30-18:00</b>	<b>Parallel Sessions</b>
<b>Room A</b>  <b>(Aula I - Tarantelli)</b>	<p style="text-align: center;"><b>Chemistry Education Research III (<i>Chair</i> Paola Ambrogi)</b></p> <ol style="list-style-type: none"> <li>1. <u>Santiago Sandi-Urena</u>, Adrián Villalta-Cerdas, Learning Chemistry Through the Generation of Self-Explanations</li> <li>2. <u>Siegbert Schmid</u>, David J. Youl, Adrian V. George and Justin R. Read, Do Bridging Courses Help Students' University Studies? Reflection on Outcomes</li> <li>3. <u>Marcy Towns</u>, Stacey Lowery Bretz, Faculty Goals For Undergraduate Chemistry Laboratory</li> <li>4. <u>Sakari Tolppanen</u>, Maija Aksela, International Students' Questions About Climate Change</li> <li>5. <u>Dorit Taitelbaum</u>, Rachel Mamlok-Naaman, Avi Hofstein, How Does a Continuous Professional Development (CPD) Program Influence Teacher's Practice?</li> <li>6. Sevil Akaygün, <u>Tagmay Yılmaz</u>, Comparison of the Effects Of Model – Based and Computer – Based Instruction on 9th Grade Students' Spatial Abilities and Conceptual Understanding of Ionic Lattice</li> <li>7. <u>Sabiha Sunar</u>, Ömer Geban, Classroom Implementation of Context-based Chemistry: Learning Styles of Students and Their Achievement in Chemistry</li> </ol>



<p><b>Room B</b> <b>(Aula VIc)</b></p>	<p><b>Teaching and learning Science and Chemistry in some Latin American, European and Asian countries II (Chair Yuri Orlik)</b></p> <ol style="list-style-type: none"> <li>1. <u>Paweł Cieśla</u>, Małgorzata Nodzyńska, Jan Rajmund Paško, Variety of Textbooks and its Influence on Quality of Chemistry Education in Poland</li> <li>2. <u>Mansoor Niaz</u>, Is there a difference between general chemistry textbooks published in different countries?</li> <li>3. <u>Constantino Fidalgo Basterrechea</u>, Acela Cantero Zayas, Jesús Romero Recasens, Nisdalys Figueredo Trimiño, Marlen Villalonga González, Raquel Garcia Lora, Ana Lidia Menéndez Parrado, Mirla Vento, Zoila Montalvo, The Teaching Process of Chemistry in High School Education of Republic of Cuba</li> <li>4. <u>Gavronskaya Yulia Y.</u>, Interactive learning chemistry in Russian pedagogical universities</li> <li>5. <u>Ivanova Irina</u>, Adaptive teaching of chemistry at evening schools in Russia</li> <li>6. <u>Toletova Marina</u>, Smirnova Marina, Multilevel methodological programs for pre-service chemistry teachers in Russia</li> </ol>
<p><b>Room C</b> <b>(Aula VIb)</b></p>	<p><b>Inquiry-Based Student- Centred Instruction (Chair Ram S. Lamba)</b></p> <ol style="list-style-type: none"> <li>1. <u>Mustafa Sozibilir</u>, M. Diyaddin Yasar, Aydin Kizilaslan, Inquiry Based Teaching In Turkey: A Content Analysis Research Reports</li> <li>2. <u>Nina Wegner</u>, Rüdiger Tiemann, The PATHWAY to Inquiry Based Science Teaching</li> <li>3. <u>Odilla E. Finlayson</u>, Ilka Parchmann, ESTABLISH Project Group, Inquiry Based Learning – Design Versus Research</li> <li>4. <u>Renee Cole</u>, Juliette Lantz, The ANAPOGIL Project: Incorporating guided inquiry into analytical chemistry</li> <li>5. <u>Soon Ting-Kueh</u>, Inquiry-based science education in Malaysia: Issues and Challenges</li> </ol>



<p><b>Room D</b> <b>(Aula XI)</b></p>	<p><b>Applications of Systemic Approach to Teaching and Learning in Chemistry [SATLC] II (Chair Ameen Farouk M. Fahmy)</b></p> <ol style="list-style-type: none"> <li>1. <u>Abdelwahab M. Kamel</u>, Systemic Thinking Approach to Teaching and learning Chemistry</li> <li>2. <u>Suzana Golemi</u>, Neira Medja, Gezim Bara, Donalda Lacej, The Systemic Approach in Teaching and Learning Medical Biochemistry</li> <li>3. <u>Iftikhar Imam Naqvi</u> and Misbah Nazir, SATL Model Lesson in Chemical Kinetics Ontological Representations in Solving</li> <li>4. <u>Tamara Hrin</u>, Mirjana Segedinac, Jasna Adamov, Saša Horvat, Ontological Representations in Solving Stoichiometry Problems in Chemistry Education</li> <li>5. <u>Gloria Sánchez</u>, Carles Furió, Alfredo Pérez, Developing Professional Teaching Competencies of Chemistry Professors</li> <li>6. <u>Catarina F. Correia</u>, Astrid Bulte, Coherence in Knowledge Integration in Biochemistry</li> </ol>
<p><b>Room E</b> <b>(Aula XII)</b></p>	<p><b>Problem Solving in Chemistry: Skill Development and Assessment (Chair Santiago Sandi-Urena)</b></p> <ol style="list-style-type: none"> <li>1. <u>Liberato Cardellini</u>, Strategies plus Motivation: A Systemic Approach to the Learning of Chemistry</li> <li>2. <u>Derek Cheung</u>, Student Beliefs about School-based Assessment of Chemistry Practical Skills</li> <li>3. <u>M. Emden</u>, Assessing Student Achievement with a Process-Model of Experimentation</li> <li>4. <u>Ines Schmidt</u>, David-S. Di Fuccia, Mathematical Modelling In Chemistry Lessons</li> <li>5. <u>Georgios Tsaparlis</u>, Vaso Exarchou, Problem Solving In Third-Level Electrochemistry</li> <li>6. <u>Adrián Villalta-Cerdas</u>, Santiago Sandi-Urena, Use of Problem Solving to Elicit Self-explaining in General Chemistry</li> </ol>

<b>Room F</b> <b>(Aula XIV)</b>	<p style="text-align: center;"><b>Bridging gaps between modern research and education</b>  <b>(Chair Ilka Parchmann)</b></p> <ol style="list-style-type: none"> <li>1. <u>F. Picchioni</u>, Chemical Product Technology: Embedding Chemistry into Research and Design at Academic Level</li> <li>2. <u>Reiner Salzer</u>, Changing Careers in Chemistry</li> <li>3. <u>Hannah Sevia</u>, Steven Cullipher, Vicente Talanquer, A Hypothetical Learning Progression in Terms of Implicit Assumptions Made by Learners about Benefits, Costs and Risks in Chemical Design</li> <li>4. <u>Stefan Schwarzer</u>, Michael Baum, Frederike Tirre, Manfred Euler, Ilka Parchmann, Bridging gaps between research and education: the NanoLab Klick!“</li> </ol>
<b>Room G</b> <b>(Aula XIII)</b>  <b>WS</b>	<p style="text-align: center;"><b>An Exploration of Molecular Shape</b>  <b>Through Mathematical Beading (Chair Bih-Yaw Jin)</b></p>
<b>Computer Room</b>  <b>WS</b>	<p style="text-align: center;"><b>2nd Workshop on Computational Chemistry</b>  <b>and Chemical Education (Chair Ponnadurai Ramasami)</b></p> <ol style="list-style-type: none"> <li>1. L. Rhyman, P. Ramasami, <u>S. Baxi</u>, Tautomerism and Chalcogen Effect of 1-Hydroxypyridin-2-one: Computational Chemistry as a Tool to Enhance Learning</li> <li>2. <u>Ponnadurai Ramasami</u>, From Beaker to Computer: Computational Chemistry Integrating Teaching and Research</li> </ol>
<b>18:00-19:30</b>	<b>Poster Session 1</b>

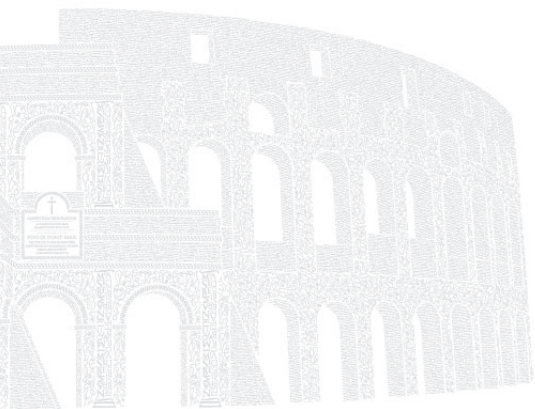
## Wednesday 18<sup>th</sup> - T3 ICT and multimedia in teaching chemistry

### Room A (Aula I - E. Tarantelli)

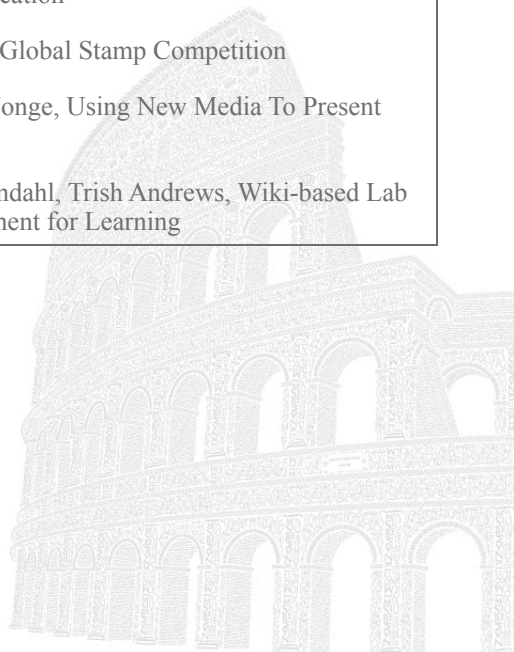
	<b>Room A (Aula I - Tarantelli)</b>
<b>09:00-10:00</b>	<b>PL4: Mansoor Niaz</b> , Stimulating and Reflecting over the History of Chemistry to Facilitate Conceptual Change
<b>10:00-11:00</b>	<b>PL5: Alexander Renkl</b> , Active Learning: on Sensible and Less Sensible Conceptions of ‘Active’ and Their Instructional Implications



11:00-11:30	Coffee break
11:30-13:30	Parallel Sessions
<p><b>Room A</b> <b>(Aula I - Tarantelli)</b></p>	<p style="text-align: center;"><b>The New Educational Software in Chemistry and Science Education and Ways of Improving Chemistry Education with Computer I (Chair Robert A. Pribush)</b></p> <ol style="list-style-type: none"> <li>1. <u>R. A. Pribush</u>, Use of the On-Line Graded Homework System Mastering Chemistry to Improve and Assess Student Work Ethic, Metacognition, and Performance in a First-Year University General Chemistry Course</li> <li>2. D. A. Behmke, <u>C. H. Atwood</u>, Implementation and Assessment of Cognitive Load Theory (CLT) Based Questions in an Electronic Homework and Testing System</li> <li>3. <u>O. Gulacar</u>, W. Burrough, Cyber POGIL: Enhanced Active Learning Scenarios through Web-Based Collaboration</li> <li>4. <u>E. van Rozendaal</u>, A. Franssen, H. Zuilhof, Online Web Learning Improves Final Grades in Organic Chemistry</li> <li>5. F. Lessard, <u>G. Deslongchamps</u>, Organic Chemistry Flashware 2.0 – a Preview</li> <li>6. <u>J. Heinrichs</u>, D. Di Fuccia, Ways of Diagnosing and Fostering Judgement-Competence</li> <li>7. <u>R. M. Kelly</u>, A Qualitative Study Informing the Design of an Electronic Learning Tool Showcasing an Atomic Level View of Substances Undergoing Conduction</li> </ol>



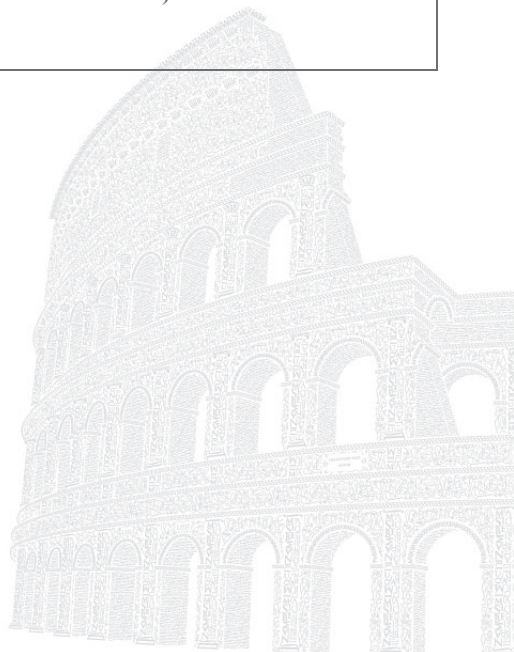
<p><b>Room B</b> (Aula VIc)</p>	<p><b>Teaching and learning Science and Chemistry in some Latin American, European and Asian countries III</b> (Chair <b>Muhamad Hugerat</b>)</p> <ol style="list-style-type: none"> <li>1. <u>Aarne Tõldsepp</u>, The development of chemistry education in Baltic States</li> <li>2. <u>Irina A. Orlova</u>, Ecological-chemical education for the sustainable development as a reflection of the new world-view</li> <li>3. <u>Agustín Adúriz-Bravo</u>, Cristian Merino Rubilar, Mercè Izquierdo-Aymerich, Research Around the Notion of ‘School Chemical Activity’</li> <li>4. <u>Muhamad Hugerat</u>, Naji Kortam, Teaching and Learning Science and Chemistry in Israel</li> </ol>
<p><b>Room C</b> (Aula VIb)</p> <p><b>WS</b></p>	<p><b>Chemistry 2.0: creating on-line communities</b> (Chairs <b>Javier Garcia-Martinez, E. Serrano</b>)</p> <ol style="list-style-type: none"> <li>1. Elena Serrano, <u>Javier García-Martínez</u>, Using Social Media and On-line Tools for Chemistry Education</li> <li>2. <u>Akira Ikuo</u>, Haruo Ogawa, Development of Teaching Material Based on Computer Graphics by Quantum Chemistry Calculation</li> <li>3. Peter Mahaffy, <u>Brian Martin</u>, Using Applets to Foster Active Learning in Chemistry Education</li> <li>4. <u>Lida Schoen</u>, YAC and the Global Stamp Competition</li> <li>5. <u>Jan Apotheker</u>, Renske de Jonge, Using New Media To Present Science</li> <li>6. <u>Gwen Lawrie</u>, Lisbeth Grøndahl, Trish Andrews, Wiki-based Lab Reports: Authentic Assessment for Learning</li> </ol>





<p><b>Room D</b> <b>(Aula XI)</b></p>	<p><b>Best practices in the teaching and learning of chemistry: international sharing of methods, insights, and results I (Chairs Mickey Sarquis, Lynn Hogue, Maija Aksela)</b></p> <ol style="list-style-type: none"> <li>1. <u>Carmen Gauthier</u>, Promoting chemical education collaborations among four-year institutions and high schools”</li> <li>2. <u>Vivi-Ann Långvik</u>, Daina Lezdins, On the Relevance of Chemistry for Young People</li> <li>3. <u>Zafra Lerman</u>, Creative Methods for Teaching and Learning Chemistry</li> <li>4. <u>Jan Jansson</u>, Maija Aksela, Popularizing Chemistry through Historical Play of Finnish Nobel Laureate</li> <li>5. <u>David A. Katz</u>, Integrated Lecture-laboratory Courses to Produce Educated Citizens and Consumers</li> <li>6. Kidane Fanta Gebremariam, Per-Odd Eggen, <u>Lise Kvittingen</u>, Revisiting the Daniell Cell</li> <li>7. <u>Per-Odd Eggen</u>, Astrid Johansen, Can we improve our models and practice in electrochemistry education?</li> <li>8. <u>Lynn Hogue</u>, Airline Sarquis, Claims and evidence--Linking argument-based inquiry to the scientific method</li> </ol>
<p><b>Room E</b> <b>(Aula XII)</b></p>	<p><b>General Chemistry Education (Chair Ron Blonder)</b></p> <ol style="list-style-type: none"> <li>1. <u>Julia Hostenbach</u>, Maik Walpuski, Decision-Making on Socioscientific Issues – Analyses of Influential Aspects</li> <li>2. <u>Liak Phong Lee</u>, Zi Sheng Tham, Developing High Order Thinking Skills in Gifted Students Through Problem Manipulation and Clickers</li> <li>3. <u>Wang Lei</u>, Zhi Yao, Study on the Chemistry Epistemic Style Of High School Students</li> <li>4. <u>Dae Hong Jeong</u>, Choi, Baeck, Kim, Lee, Min, Kang, Problem Solving In School Chemistry Experiments in Debate</li> <li>5. <u>Abdeljalil Métioui</u>, Louis Trudel, Student’ Conception In Primary Teacher Education About Matter and Its Transformation Education</li> <li>6. <u>Katharina Gross</u>, Reiners, Alternative Documentations of Experiments – A Differentiation and Diagnosis Tool In Chemistry Lessons?</li> </ol>

<p><b>Room F</b> (Aula XIV)</p>	<p align="center"><b>Digital Laboratories and Computer Simulations in Chemical Education (Chair Denis Zhilin)</b></p> <ol style="list-style-type: none"> <li>1. <u>Martin Bilek</u>, Veronika Machkova, Didactic Analysis of Computer Simulations as a Mean of Innovation in the Pre-Graduate Chemistry Teacher Training</li> <li>2. Enzo Bergamini, Sara Comai, Fulvio Corno, Gabriele Cristini, Guglielmo Lanzani, Davide Mazza, <u>Pierangelo Metrangolo</u>, Giuseppe Resnati, Giancarlo Terraneo, Gianluca Brero, Rosa Virginia Espinoza Garnier, Elisa Magnanelli, Khalid Mahmood, Giacomo Mazzoletti, Stefano Pascali, Alessandro Rizzi, A Haptic-Enhanced Framework For Chemistry Education</li> <li>3. Denis Zhilin, <u>Oleg Povalyaev</u>, Didactically Correct Sensors for Digital Labs</li> </ol>
<p><b>Room F</b> (Aula XIV)</p>	<p align="center"><b>Alternative assessment in chemistry education (Chairs Robert Bucat, Mei-Hung Chiu)</b></p> <ol style="list-style-type: none"> <li>1. <u>Iwona Maciejowska</u>, Learning Outcomes and Their Assessment in the Opinion of Jagiellonian University Lecturers</li> <li>2. <u>Tony Wright</u>, Susan Hamilton, Mary Rafter, Supporting Learning in Chemistry with Feedback from a Concept Inventory</li> </ol>
<p><b>Room G</b> (Aula XIII) <b>WS</b></p>	<p align="center"><b>Publishing in Chemistry Education Journals (Chair Norbert Pienta)</b></p>



<b>Computer Room</b>	<p><b>On-line Resources in Chemical Education (<i>Chair Robert Belford</i>)</b></p> <ol style="list-style-type: none"> <li>1. <a href="#">Robert E. Belford</a>, Michael A. Bauer, Daniel Berleant, Rober A. Hall, John W. Moore, Jon L. Holmes, ChemEd DL WikiHyper-Glossary: Connecting digital documents to online resources while coupling social to canonical definitions within a glossary</li> <li>2. <a href="#">Jordi Cuadros</a>, 7 Ways To Model A Sodium Chloride Solution In The ChemCollective Virtual Lab</li> <li>3. <a href="#">Choon H. Do</a>, Materials for Public Understanding of Chemistry</li> <li>4. <a href="#">Jon L. Holmes</a>, Rebooting into HTML5 and Multiple Devices</li> <li>5. <a href="#">William Vining</a>, Susan Young, Roberta Day, Beatrice Botch, The Owlbook, A Fully Integrated, Interactive Online Text For General Chemistry</li> <li>6. <a href="#">John Eastman</a>, Paul Wyatt, Teaching innovations: Using technology to enrich the traditional</li> <li>7. <a href="#">Michael Abraham</a>, Thomas Greenbowe, Michael Abraham, Web Based Activities For Before, During, and After Class</li> </ol>
<b>13:30-15:00</b>	Lunch

<b>16:00-23:30</b>	<b>Guided tour to Villa Adriana and Social Dinner (only for the registrated to the events)</b>
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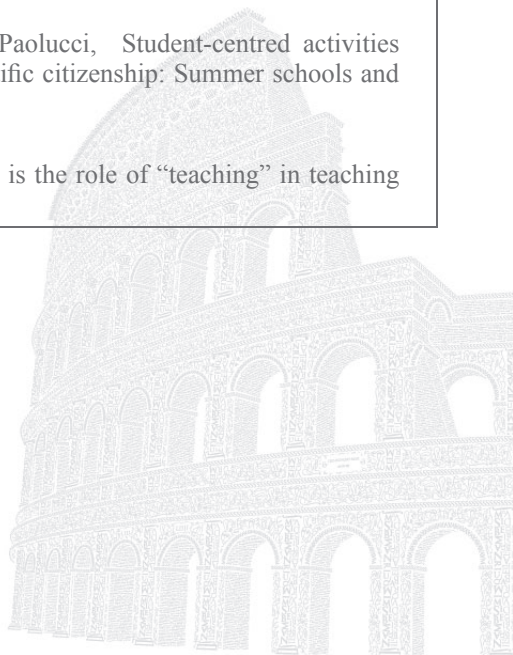
## Thursday 19<sup>th</sup> - T4 Didactics of Second level Chemistry

### Room A (Aula I - E. Tarantelli)

	<b>Room A (Aula I - Tarantelli)</b>
<b>09:00-10:00</b>	<b>PL6: Norman Reid</b> , Some Research Keys to Successful Chemistry Education
<b>10:00-11:00</b>	<b>PL7: Bassam Shakashiri</b> , Communicating Chemistry via Demonstrations (Viktor Obendrauf Demonstration Lecture)
<b>11:00-11:30</b>	Coffee break
<b>11:30-12:00</b>	<b>K5: Maria Sheehan</b> , Using Ideas from Research to Change Practice in the Chemistry Classroom

12:00-12:30	<b>K6: <u>Silvija Markic</u></b> , Linguistic Heterogeneity: Challenge for Modern Chemistry Education
12:30-14:00	Lunch

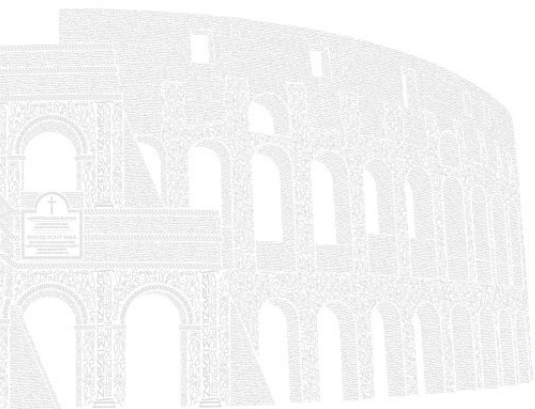
14:00-16:00	<b>Parallel Sessions</b>
<b>Room A</b>  <b>(Aula I - Tarantelli)</b>	<p><b>General Chemistry Session (<i>Chair Gaylany H Abdullah</i>)</b></p> <ol style="list-style-type: none"> <li>1. <u>Jaana Björkman</u>, Rüdiger Tiemann, Scientific Inquiry In Chemistry Lessons In Germany And Sweden - A Video Study</li> <li>2. <u>M. Nasiruddin Khan</u>, Sadaf Bhutto, Sana Iqbal, Anila Sarwar, The Kinetics of Double Clock Reaction: A Modified Version of Traditional Kinetic Experiment for Graduate Chemistry Laboratory</li> <li>3. <u>Mohamed Radid</u>, Mohammed Talbi, El Hassane Touli, The teaching-learning of chemistry in high school Moroccan: obstacles and areas for improvement</li> <li>4. <u>Anna Windt</u>, Rupert Scheuer, Insa Melle, Scientific Experiments In Early Childhood Education – Evaluation of Different Learning Opportunities</li> <li>5. <u>Eugenio Caponetti</u>, Gino Paolucci, Student-centred activities promoting European scientific citizenship: Summer schools and contests</li> <li>6. <u>Luiz Claudio Oberti</u>, What is the role of “teaching” in teaching Chemistry in High School?</li> </ol>



**Room B**  
**(Aula VIc)**

**Improving Secondary Education: PROFILES in Italy**  
**(Chair Liberato Cardellini) (BILINGUAL)**

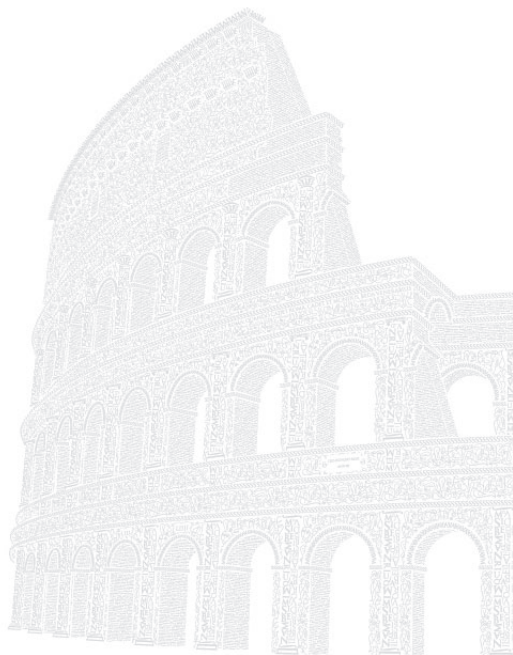
1. Paola Ambrogi, Christiane S. Reiners, Chemistry competence based curricula: a comparative analysis of the implementation in Germany and Italy
2. Daniela Bianchini, Francesca Maria Foresi, Chemistry... What a Pizza!!!
3. Liberato Cardellini, Motivational Secondary Science Education: PROFILES in Italy
4. Teresa Carloni, Lucia Caporali, Rosa Pescrilli, How much are you costing me!
5. Brett R. Bodsgard, Trisha A. Johnson, Roger W. Kugel, Nathan R. Lien, Debra J. Martin, Jaime A. Mueller, High School Chemistry Night: An Annual Outreach and Recruitment Event
6. Roman Luboradzki, Open Air Chemical Experiments
7. Sergio Palazzi, The colours of chemistry: There's a new scent in the air, or old perchance?
8. Alfredo Tifi, Counting The Chemical Concepts
9. Alfredo Tifi, Beginners Approach To Chemistry In A "Mild" Inquiry Based Learning Laboratory Context



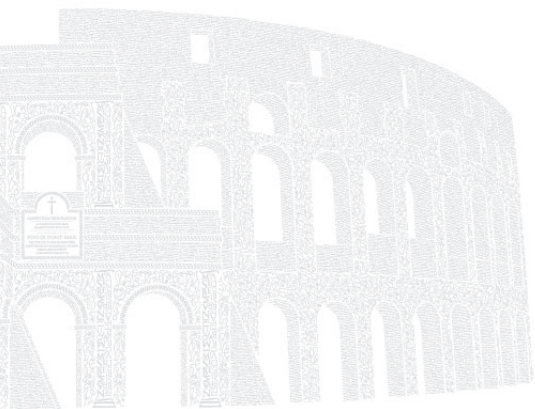
**Room C**  
**(Aula VIb)**

**Best practices in the teaching and learning of chemistry: international sharing of methods, insights, and results II**  
**(Chair Mickey Sarquis)**

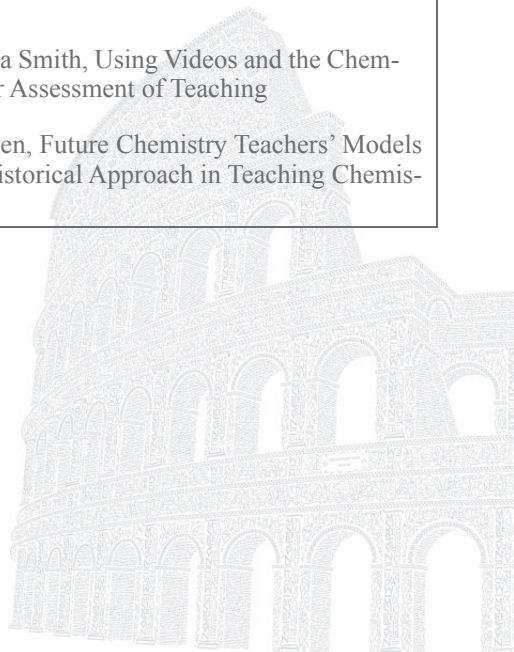
1. Morton Hoffman, Peer-Led Team Learning (PLTL)
2. Kazuko Ogino, Keiko Shoji, The New Guideline For Science Education And Microscale Chemistry
3. Andoni Garritz, Glinda Irazoque, Mercè Izquierdo, High School's chemistry teachers Pedagogical Content Knowledge on Chemical Equilibrium
4. Karpudewan Mageswary, Zurida Ismail, Green Chemistry in Secondary School Chemistry Curriculum And Chemistry Teaching Methods Course
5. Rebecca M. Jones, G. Robert Shelton, The iPad Project: Integrating iPads into General Chemistry
6. Ian Torrie, Teaching High School Chemistry in the 21st Century
7. David Salter, Joel Adam, Sheila Woodgate; Analysing the Mistakes Made by New Zealand Year 13 Students Using Bestchoice Chemistry Tutorial Website



<p><b>Room D</b> <b>(Aula XI)</b></p>	<p style="text-align: center;"><b>In-Service Training of Chemistry Teachers</b> <b>(Chairs Iwona Maciejowska, Jane Essex)</b></p> <ol style="list-style-type: none"> <li>1. <u>Odilla E. Finlayson</u>, Eilish McLoughlin, Christina Ottander, Margareta Ekborg, Ewa Kedzierska, Ton Ellermeijer, Teaching Chemistry through Inquiry – in-service teacher programme</li> <li>2. <u>Malka Yayon</u>, Dvora Katchevich, Rachel Mamlok-Naaman, Avi Hofstein, PROFILES Continuous Professional Development Workshop of Chemistry Teachers: The Israeli experience_</li> <li>3. <u>Radu Lucian Olteanu</u>, Crinela Dumitrescu, Gabriel Gorghiu and Laura Monica Gorghiu, Aspects Related To The Continuous Professional Development Of Chemistry Teachers Stated In The Frame Of PROFILES Training Program</li> <li>4. <u>Patricia Smith</u>, Mary Virginia Orna, Using The New ChemSource to Improve Questioning Skills</li> <li>5. Jane Fieldsend, Doug Scorer, <u>John Oversby</u>, Do UK secondary chemistry teachers have better understanding than physics and biology teachers?</li> <li>6. Dayse Pereira Silva, <u>Maria Eunice Ribeiro Marcondes</u>, Analyzing Chemistry Teachers' Progress In Planning Experimental Inquiry-Based Activities</li> <li>7. <u>Celeste Ferreira</u>, Mónica Baptista, Agnaldo Arroio, In-service training of Chemistry teachers: the use of Multimedia in Teaching Chemistry</li> </ol>
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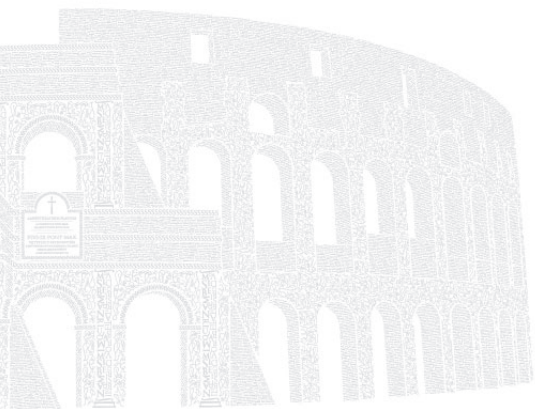


<p><b>Room E</b> <b>(Aula XII)</b></p>	<p><b>Pre-service Training of Chemistry Teachers I (<i>Chairs Ingo Eilks</i>)</b></p> <ol style="list-style-type: none"> <li>1. <u>Mareike Burmeister</u>, Ingo Eilks, Training Chemistry Teachers in Education for Sustainable Development</li> <li>2. <u>Sarah Hayes</u>, Peter E. Childs, Developing Skills in Transforming Scientific and Educational Research into Practice as Part of Chemistry Teacher Training</li> <li>3. Gildo Giroto Júnior, <u>Carmen Fernandez</u>, Following novice teachers: the development of PCK from student to a chemistry teacher</li> <li>4. <u>Rachel Mamlok-Naaman</u>, Teaching Certificate Program at the Weizmann Institute of Science in Israel</li> <li>5. <u>Agustín Adúriz-Bravo</u>, Natalia Ospina, Rafael Amador-Rodríguez, Yefrin Ariza, Interpretive Frameworks' Supporting Argumentation Processes in Pre-Service Chemistry Teachers: The Role of Meta-Theoretical Ideas</li> <li>6. <u>Peter E. Childs</u>, Sarah Hayes, Anne O'Dwyer, Maria Sheehan, TY Science: curriculum development involving trainee science teachers</li> <li>7. <u>Mary Virginia Orna</u>, Patricia Smith, Using Videos and the Chem-Source Skill Inventories for Assessment of Teaching</li> <li>8. <u>Maija Aksela</u>, Simo Tolvanen, Future Chemistry Teachers' Models and Views on the Use of Historical Approach in Teaching Chemistry in Laboratory</li> </ol>
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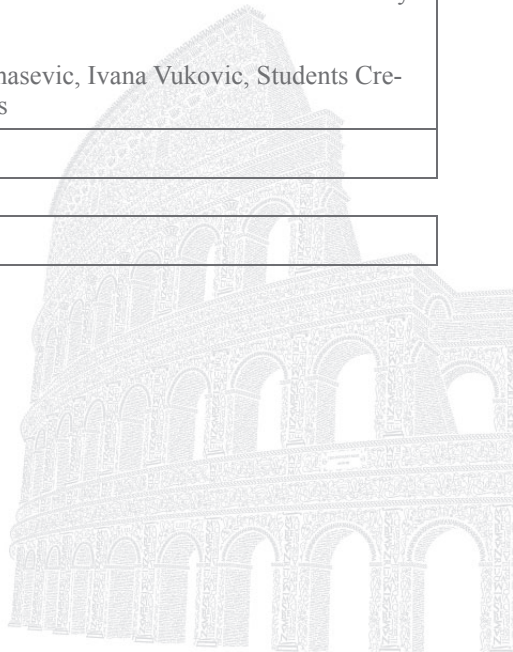


<p><b>Room F</b> <b>(Aula XIV)</b></p>	<p style="text-align: center;"><b>Language in Teaching Science</b> <b>(Chairs Silvijia Markic, Peter Childs)</b></p> <ol style="list-style-type: none"> <li>1. <u>Hannah Busch</u>, B. Ralle, Special Language Competencies. Diagnosis and Individual Support</li> <li>2. <u>Martin Goedhart</u>, Chemical Language in Context-Based Education</li> <li>3. Daniel Pyburn, Elizabeth Reilly, Victor K. Benassi, and <u>Samuel Pazicni</u>, Language Comprehension and Learning Chemistry</li> <li>4. Peter E. Childs, <u>Marie Ryan</u>, The Elephant in the room: Irish Science teachers' perception of the problems caused by the language of Science</li> <li>5. <u>Silvijia Markic</u>, Judith Hartai, Rebecca Bari, Science Teachers' Perspectives, Needs and Knowledge About Dealing With Linguistic Heterogenous Classes</li> </ol>
<p><b>Room F</b> <b>(Aula XIV)</b></p>	<p style="text-align: center;"><b>General Chemistry Education</b> <b>(Chairs Silvijia Markic, Peter Childs)</b></p> <ol style="list-style-type: none"> <li>1. <u>Suat Ünal</u>, Seda Okumuş, Faik Özgür Karataş, The Effects of Argumentation Model On Students' Conceptual Understanding: States of Matter and Heat</li> <li>2. <u>Nermin Tunali</u>, Elke Sumfleth, Language-Sensitive Teaching In Chemistry</li> </ol>



<p><b>Room G</b> <b>(Aula XIII)</b></p>	<p><b>General Chemistry Education (<i>Chair Antonella Rossi</i>)</b></p> <ol style="list-style-type: none"> <li>1. <u>Daina Priede</u>, Aira Aija Krumina, Variable Approach In Acquisition Of Chemistry</li> <li>2. <u>Yoon-Fah Lay</u>, Adeline Leong Suk Yee, Direct And Indirect Effects Between Attitudes Towards Chemistry And Chemistry Anxiety: A Structural Equation Modeling Approach</li> <li>3. <u>S. Bernholt</u>, I. Parchmann, Students' Understanding Of Energy In Chemistry</li> <li>4. <u>Robyn Ford</u>, Mason, Effects Of Online Content Drill Versus Web-Based Brain Training On Student Success In High School Chemistry</li> <li>5. <u>Katrin Vaino</u>, Holbrook, Exploring An Approach To Raising Students' Intrinsic Motivation In Learning Chemistry</li> <li>6. <u>K. Stief</u>, E. Sumfleth, Thillmann, Homework Motivation And Achievement In Chemistry Education</li> <li>7. <u>Gaylany H Abdullah</u> - Title to be defined</li> </ol>
<p><b>Room G</b> <b>(Aula XIII)</b></p>	<p><b>Better Chemistry Through Writing (<i>Chair Antonella Rossi</i>)</b></p> <ol style="list-style-type: none"> <li>1. <u>Liliana Mammino</u>, Guided Laboratory Reports in Physical Chemistry Courses: an Option to Promote Connections between Theory and Experiment</li> <li>2. <u>Dragica Trivic</u>, Biljana Tomasevic, Ivana Vukovic, Students Creativity in Chemistry Classes</li> </ol>
<p><b>16:00-16:30</b></p>	<p>Coffee break</p>

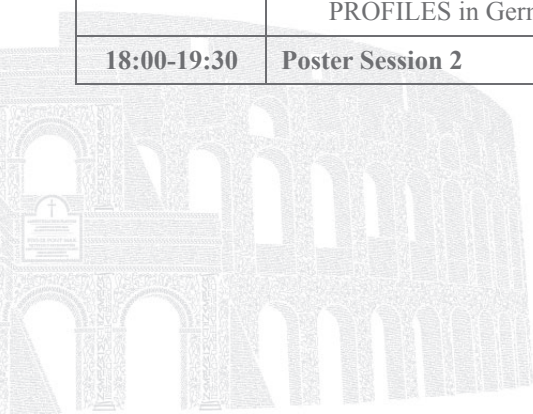
<p><b>16:30-18:00</b></p>	<p><b>Parallel Sessions</b></p>
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<p><b>Room A</b></p> <p><b>(Aula I - Tarantelli)</b></p>	<p><b>PCK and Chemistry Teaching (Chair Vanessa Kind)</b></p> <ol style="list-style-type: none"> <li>1. <u>Emine Adadan</u>, Diler Oner, The Development of Preservice Chemistry Teachers' Pedagogical Content Knowledge Representations about the Nature and Behavior of Gases</li> <li>2. <u>Dermot Donnelly</u>, Suzanne Boniface, Anne Hume, Supporting New Zealand Chemistry Teacher Professional Development Through CoRes And PaP-eRs On A Wiki</li> <li>3. <u>Stefanie Herzog</u>, Ilka Parchmann, How Can We Explain and Predict the Chemical Behaviour of Substances? Student Teachers' Content Knowledge and Pedagogical Content Knowledge Regarding the Basic Concept of Structure-Property-Relations</li> <li>4. <u>Vahide Taskin</u>, Sascha Bernholt, Ilka Parchmann, A Multi-Method Investigation of Student Teachers' Content Knowledge and Pedagogical Content Knowledge of Chemical Representations</li> <li>5. <u>Oliver Tepner</u>, Comparing Secondary School Teachers' Professional Knowledge in Chemistry and Physics and Their Students' Outcome</li> </ol>
<p><b>Room B</b></p> <p><b>(Aula VIc)</b></p>	<p><b>Assessment and measuring student learning in chemistry (Chair T. Holme)</b></p> <ol style="list-style-type: none"> <li>1. <u>Kristen Murphy</u>, Lisa Kendhammer, Thomas Holme, Differential item functioning on multiple choice general chemistry assessments</li> <li>2. <u>Madeleine Schultz</u>, Dan Bedgood, Adam Bridgeman, Greg Dicinowski, Ian Jamie, Gwen Lawrie, Kieran Lim, Ken Russell, Roy Tasker, Magda Wajrak, Benchmarking First-Year Chemistry at Australian Universities</li> <li>3. <u>Nora Ferber</u>, Elke Sumfleth, Markus Emden, The conceptual development of 7th–9th grade students in chemistry</li> <li>4. <u>Thomas Holme</u>, Kristen Murphy, Facilitating Longitudinal Curricular and Program Assessment</li> <li>5. <u>Donald Wink</u>, Michael Dianovsky, Choe Jeong-hye Hwang, Marlynne Nishimura, Alternative assessment strategies in a general education chemistry course</li> <li>6. <u>Melanie Cooper</u>, Mike Klymkowsky, Sam Bryfczynski, Be Socratic</li> </ol>

<p><b>Room C</b> <b>(Aula VIb)</b></p>	<p><b>Best practices in the teaching and learning of chemistry: international sharing of methods, insights, and results II</b> <b>(Chair, Lynn Hogue)</b></p> <ol style="list-style-type: none"> <li>1. <u>Liberato Cardellini</u>, Learning Through Problem Solving</li> <li>2. <u>Marietjie Lutz</u>, Ilse Rootman-le Grange, Using Cell Phones and Peer Instruction to Enhance Understanding and Learning in Large First-year Chemistry Classes</li> <li>3. <u>Nilüfer Okur Akçay</u>, Umit Simsek, Teaching State of Matter and Heat with Jigsaw and Stad Methods Classrooms in Lower Secondary School Chemistry Lessons</li> <li>4. <u>Nanping Li</u>, Construction of the Activity Curriculum Course “I and Chemistry” for the students from the middle school and high school in Guangzhou</li> <li>5. <u>V. Krsmanovic</u>, M.Todorovic, N. Jevtic, L. Peric, D. Manojlovic, M. Sumar, R. Golubovic, Metodology Of Teaching/Learning Chemistry For Gifted Stuidents In Petnica Science Center - Serbia</li> </ol>
<p><b>Room D</b> <b>(Aula XI)</b></p> <p><b>WS</b></p>	<p><b>Interplay of Language and Visualization in Chemistry Teaching</b> <b>(Chair Liliana Mammino)</b></p>
<p><b>Room E</b> <b>(Aula XII)</b></p>	<p><b>Pre-service Training of Chemistry Teachers II</b> <b>(Chair Rachel Mamlok-Naaman)</b></p> <ol style="list-style-type: none"> <li>1. <u>Andrea Schumacher</u>, Christiane S. Reiners, Reflecting Authentic Learning Environments In Pre-Service Chemistry Teacher Education And Translating It Into Practice_</li> <li>2. <u>Wang Lei</u>, Wangwei Zhen, Research on Pre-service Chemistry Teachers: PCK Development and Influences</li> <li>3. <u>Muireann Sheehan &amp; Peter E. Childs</u>, The Chemistry Misconceptions of Pre-service Science Teachers in Ireland</li> <li>4. <u>Sevinç Nihal Yeşiloğlu</u>, Serap Küçükler, Fitnat Köseoğlu, Investigating Preservice Chemistry Teachers’ Reflective Thinking About Instructional Methods Using Activity-Based Instruction in Science Methods Course</li> </ol>

<p><b>Room F</b></p> <p><b>(Aula XIV)</b></p> <p><b>WS</b></p>	<p><b>Low cost demonstrations for teachers (Chair Sarah Hayes)</b></p> <ol style="list-style-type: none"> <li>1. <u>Maurice Cosandey</u>, Original Material for Handling Gases at School</li> <li>2. <u>Antonio Guerra</u>, Claudia V.T. de Barros, “CHEMLIG” – Introducing Chemical Bond to a Second Level Students</li> <li>3. <u>G. Robert Shelton</u>, Mason, Smith, Green Lights that Engage Chemistry Students</li> <li>4. <u>Antonio Guerra</u>, Claudia V. T. de Barros, Rafael S. Iack, Nadia C. S. Pedro, Anderson C. de Oliveira, Roberto X. Almeida, Lucas S. Grion, Joaquim F. M. da Silva, Teaching Chemistry to a Students with Disabilities – Using the Five Senses</li> </ol>
<p><b>Room G</b></p> <p><b>(Aula XIII)</b></p>	<p><b>SALiS - Student Active Learning in Science: The theoretical framework and objectives (Chairs Ingo Eilks, Peter Childs)</b></p> <ol style="list-style-type: none"> <li>1. <u>Peter E. Childs</u>, The Impact of the TEMPUS-Project SALiS on Teacher Training within the EU-Partners</li> <li>2. <u>Ingo Eilks</u>, Marika Kapanadze, A Theoretical Framework for Innovating Science Teacher Education within the TEMPUS-Project SALiS</li> <li>3. <u>Muhamad Hugerat</u>, Ahmad Basheer and Riam Abu-Much, The Impact of the TEMPUS-Project SALiS on Innovations in Chemistry and Science Teacher Training in Israel</li> <li>4. <u>Marika Kapanadze</u>, Simon Janashia, The Impact of the TEMPUS-project SALiS from the Perspective of an Eastern European Country</li> <li>5. <u>Marc Stuckey</u>, Marianne Lippel, Ingo Eilks, Teaching about ‘Stevia’ – An Example of Cooperative Curriculum Innovation within PROFILES in Germany</li> </ol>
<p><b>18:00-19:30</b></p>	<p><b>Poster Session 2</b></p>



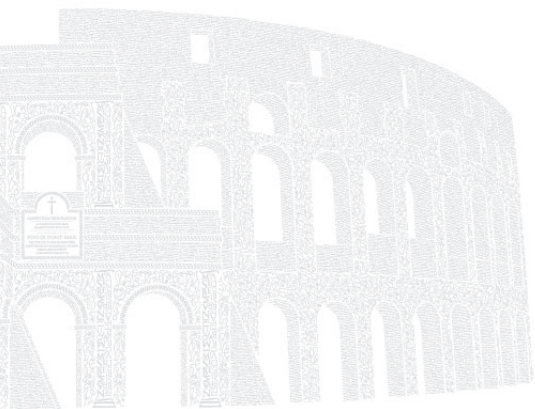
# Friday 20<sup>th</sup> - T5 Effective methods in teaching chemistry

## Room A (Aula I - E. Tarantelli)

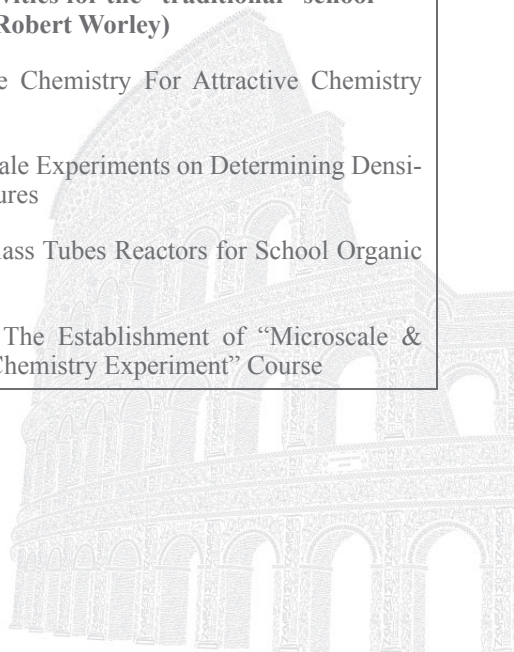
	<b>Room A (Aula I - Tarantelli)</b>
<b>09:00-10:00</b>	<b>PL8: Avi Hofstein</b> , Learning in and from Chemistry Laboratories: Research and Practice
<b>10:00-11:00</b>	<b>PL9: Peter Mahaffy, Ilka Parchmann</b> , Where Do we Go from Here?
<b>11:00-11:30</b>	Coffee break
<b>11:30-12:00</b>	<b>K7: Marcelo E. Conti</b> , Teaching chemistry in a non chemical college
<b>12:00-13:00</b>	Plenary Discussion
<b>13:00-14:30</b>	Lunch

<b>14:30-16:30</b>	<b>Parallel Sessions</b>
<b>Room A (Aula I - Tarantelli)</b>	<b>Building Active Learning Environments (Chair Mauro Mocerino)</b> <ol style="list-style-type: none"><li>1. <u>Daniel Adsmond</u>, Maximizing Scientific Thought Through The Design Of A Collaborative Research-Based Organic Chemistry 2 Laboratory Course</li><li>2. <u>Dvora Katchevich</u>, Avi Hofstein, Rachel Mamlok-Naaman, Argumentation In The Chemistry Laboratory</li><li>3. <u>Gwen Lawrie</u>, Susan Rowland, Denise Adams, Joanne Blanchfield, Paula Myatt, Laboratory Undergraduate Research Experiences: A Longitudinal Study Of Impact On Learning Gains</li><li>4. <u>Suzanne Boniface</u>, Amanda Gilbert, How Do Interventions In First Year Chemistry Classes Affect Critical Thinking And Communication Skills?</li><li>5. <u>M. Bergs</u>, M. Walpuski, Students' Proceeding In Real And Virtual Guided Inquiry Environments</li><li>6. <u>S. Abels</u>, S. Puddu, A. Lembens, Inquiry-Based Learning Environments To Welcome Diversity In Chemistry Classes</li><li>7. <u>Liezel Retief</u>, Marietjie Potgieter, Marietjie Lutz, Refinement And Analysis Of Questionnaires On Student Perceptions And Attitudes Towards Chemistry Laboratory Training Using The Rasch Model</li></ol>

<p><b>Room B</b> <b>(Aula VIc)</b></p>	<p style="text-align: center;"><b>Spectroscopic Methods in Teaching Chemistry</b> <b>(Chair Peter Mahaffy)</b></p> <ol style="list-style-type: none"> <li>1. <u>Rihab Angawi</u>, A Viable Approach to the Interpretation of <sup>1</sup>H NMR Spectra of Organic Compounds</li> <li>2. <u>Rafia Azmat</u>, Khalida Perveen Mahar, Visual Study Of Light Interaction In Photochemical Reaction Of Dyes</li> <li>3. <u>Janusz Lipkowski</u>, Teaching Chemistry In The Post-Crystallographic Era</li> <li>4. <u>Anastasia Wilson</u>, Timothy W. Stephens, William E. Acree, Jr., Using Spectroscopy Laboratory Experiments to Facilitate Learning in Chemistry Lecture</li> <li>5. <u>Peter G. Edwards</u>, Peter Hollamby, Uncovering Chemical Secrets – an Integrated Approach to Accessing University Infrastructure in the Support of Secondary Education</li> </ol>
<p><b>Room B</b> <b>(Aula VIc)</b></p>	<p style="text-align: center;"><b>Environmental Chemistry (Chair Peter Mahaffy)</b></p> <ol style="list-style-type: none"> <li>1. <u>Ayşe Aytar</u>, Muammer Çalik, Exploring Senior Science Student Teachers' Views Of Environmental Issues In 'Environmental Chemistry' Course: A Preliminary Qualitative Study</li> <li>2. <u>Luiza Cristina De Moura</u>, Giovana M. N. Da Silva, Maria J. F. Calixto, Jussara L. De Miranda, Soil Experiments For Contextualizing Environmental Sciences For Secondary Students</li> <li>3. <u>Oya Ağlarçl</u>, Kabapınar, Cengiz, Prospective Chemistry Teachers' Ideas Concerning Global Climate Change, Ozone Layer Depletion, Greenhouse Effect and Acid Rain: Are They Scientifically Acceptable?</li> </ol>



<p><b>Room C</b> <b>(Aula VIb)</b></p>	<p><b>Innovative Chemical Experiments: from Research Forefront to Laboratory Teaching (<i>Chair Zhigang Shuai</i>)</b></p> <ol style="list-style-type: none"> <li>1. <u>Jorge Ibanez</u>, Simultaneous Electrochemical Processes In The Laboratory</li> <li>2. <u>Kartik Kumar Nandi</u>, Selected Green Bromination Experiments Suitable for Practical Organic Chemistry Curriculum</li> <li>3. <u>Andrew Dicks</u>, Robert A. Batey, Training Undergraduates To “Think Green”</li> <li>4. <u>Kwok Man Chan</u>, Innovative School-Level Quantitative Chemistry Experimental Technique (I)</li> <li>5. <u>Paul A. E. Piunno</u>, An Introduction of Modern Research Techniques to the Undergraduate Analytical Chemistry Laboratory: Development and Implementation of a Microfluidics Laboratory Module</li> <li>6. <u>Meena Wadhvani</u>, Shubha Jain, Kinetics Of Oxidation Of Some Carbohydrates By Chloramine-T with Photochemically Generated Radicals</li> <li>7. <u>Xyris Gerard</u>, A. Fernandez, Lolita V. Sicat, Maria Elena D. David, Analysis Of The Ambient Air Quality And Respiratory Morbidity: The Case In Tarlac City, Philippines, 2009-2010</li> </ol>
<p><b>Room D</b> <b>(Aula XI)</b></p>	<p><b>Microscale chemistry activities for the “traditional” school (<i>Chair Robert Worley</i>)</b></p> <ol style="list-style-type: none"> <li>1. <u>Kazuko Ogino</u>, Microscale Chemistry For Attractive Chemistry Class</li> <li>2. <u>Tetsuo Nakagawa</u>, Microscale Experiments on Determining Densities of Ethanol-Water Mixtures</li> <li>3. <u>Zhilin Denis</u>, Self-made Glass Tubes Reactors for School Organic Synthesis</li> <li>4. <u>Li Jiliang</u>, Yang jinghua, The Establishment of “Microscale &amp; Semi-microscale Organic Chemistry Experiment” Course</li> </ol>





<p><b>Room D</b> <b>(Aula XI)</b></p>	<p align="center"><b>General Chemistry Education (second level)</b> <b>(Chair Robert Worley)</b></p> <ol style="list-style-type: none"> <li>1. <u>Ryszard M. Janiuk</u>, Robert Mojsa, Factors Affecting Junior Secondary School Students' Attitudes</li> <li>2. <u>Caroline Körbs</u>, Rüdiger Tiemann, Minimum Achievements in Chemistry</li> <li>3. <u>Hiroki Fujii</u>, Shiozaki, Hiramatsu, Ohgata, Utsumi, Kim, Ogawa, Japan-Korea Cooperative Lesson on the Topic of Bio-diesel in Chemical Education: Focus on Promotion of Students' Abilities in Proper Judgment</li> </ol>
<p><b>Room E</b> <b>(Aula XII)</b></p>	<p align="center"><b>The New Educational Software in Chemistry and Science Education and Ways of Improving Chemistry Education with Computer II</b> <b>(Chair Robert A. Pribush, USA)</b></p> <ol style="list-style-type: none"> <li>1. <u>K. Kupatadze</u>, Information Technologies in Service of Chemistry Teaching</li> <li>2. <u>A. F. da Silva</u> and J. L. Capitaneo, Use of Simulators in the Teaching of Chemistry</li> <li>3. <u>K. C. D. Tan</u>, Y. S. Chee, and E. M. Tan, Multi-Player Gaming and the Learning of Chemistry</li> <li>4. <u>S. K. Tiwari</u>, S. Bhat, and K. K. Mahato, MEMS Design Tool in Teaching Orientation Dependent Double Sided Silicon Etching</li> <li>5. <u>N. G. Kini</u>, Study on Molecular Structure Analysis Using High Performance Computing</li> <li>6. <u>N. A. Fakhre</u>, High Quality of Modern vs. Traditional Methods in Teaching University Students</li> </ol>
<p><b>Room E</b> <b>(Aula XII)</b></p>	<p align="center"><b>General Chemistry Education (second level)</b> <b>(Chair Robert A. Pribush)</b></p> <ol style="list-style-type: none"> <li>1. <u>Eva Kölbach</u>, Elke Sumfleth, Influences of Context-oriented Learning on Students' Situational Interest and Achievement in Chemistry Education</li> <li>2. <u>Rebecca Knobloch</u>, Sumfleth, Walpuski, How does the quality of content-related communication influence the learning outcome in small-groups?</li> </ol>

<b>Room F</b> <b>(Aula XIV)</b> <b>WS</b>	<b>“Some non-standard ways of developing and assessing deep understandings, of chemistry students”</b> <b>(Chairs Robert Bucat, Australia, Mei-Hung Chiu)</b>
<b>Room G</b> <b>(Aula XIII)</b>	<p style="text-align: center;"><b>General Chemistry Education (Third level)</b>  <b>(Chair Morton Z. Hoffman)</b></p> <ol style="list-style-type: none"> <li>1. <u>Anne O’Dwyer</u>, Peter E. Childs, Organic Chemistry In Action! – A Trialled Intervention</li> <li>2. <u>Ayalew Temesgen</u>, The Effect Of Using Cooperative Learning On Students’ Achievement In Organic Chemistry: (With Special Reference To Haramaya University First Year Chemistry Department Students)</li> <li>3. <u>Ceyhan Cigdemoglu</u>, Failing Students In General Chemistry Course: A Framework For Their Reasons</li> <li>4. <u>Ceyhan Cigdemoglu</u>, Omer Geban, Students’ Achievement On Chemical Reactions And Energy Concepts Through Context-Based Approach</li> <li>5. <u>Franka Miriam Brueckler</u>, Vladimir Stilinović, Teaching Point Groups Using Modular Origami</li> <li>6. <u>Katja Freyer</u>, Matthias Epple, Elke Sumfleth, Predicting Success Of Freshmen In Chemistry</li> <li>7. <u>Liz Dorland</u>, History, Politics, Culture: Nsf &amp; The Science Education Wars Since Sputnik</li> </ol>
<b>Room</b> <b>(Dept. Chem.)</b> <b>WS</b>	<p style="text-align: center;"><b>Chemistry Demonstration Workshop (Chair Peter Childs, Ireland)</b></p> <ol style="list-style-type: none"> <li>1. David A. Katz, Chemical Principles Visualized: Intermolecular Forces</li> </ol>
<b>Room</b> <b>(Dept. Chem.)</b> <b>WS</b>	<p style="text-align: center;"><b>Educational Experiment Using Commercial Batteries</b>  <b>(Chair Masahiro Kamata, Japan)</b></p>

**16:30-17:30**

Closing Ceremony

# ICCECRICE 2012 – July Tuesday 17th

## Poster Session 1 (18:00 - 19:30)

N°	Author	Co-Authors	Title
1	Burcin Acar Sersen	Ayfer Karadas	Identification Of Pre-Service Science Teachers' Misconceptions About Some Chemistry Concepts By Two-Tier Diagnostic Test
2	Chryssa Tzougraki	I. Karachaliou, K. Salta	Student's Mental Models For Materials And Chemical Substances
3	Georgios Tsapralis	Eufrosyni Nakou	Relevant And Popular Lessons And Scientific Literacy: Application Of Modules From The European Project Parsel
4	Georgios Tsapralis	Constantinos Kampurakis	Comparative Evaluation Of Junior High-School Chemistry Textbooks: The Role Of Science Education
5	Igor Matijasevic	J. Korolija, I. Stajic, L. Mandic	Translation Of Gas Laws Representations
6	Jasminka Korolija	I. Matijasevic, L. Mandic	How To Improve Learning Chemistry Through Practical Work?
7	Jongseok Park	Jungah Koo, Minjung Hwang, Byunghoon Chung	Reappearance Of The Nature-Study's Philosophy In Contemporary Chemistry Education In Korea
8	Katerina Salta	V. Gkitzia, C. Tzougraki	Investigation Of High School Students' Competence In Translating Between Different Types Of Chemical Representation
9	Lars Eriksson		Chemistry Teachers' Views ON The Construction Of Knowledge
10	Luiz Claudio Oberti		What Is The Role Of "Teaching" In Teaching Chemistry In High School?
11	Melanie Cooper	Sonia Underwood, Nathaniel Grove	How Do Students Learn To Use Representations In Chemistry?

12	Miriam Possar Do Carmo	Maria Eunice Ribeiro Marcondes, Rita De Cássia Suart, Susan Bruna Carneiro Aragão	A Study Of The Relationship Of Student-Teacher Dialogical Interactions In A Brazilian School From The Perspective Of Toulmin's Argumentation Framework, Cyclic Argumentation, And Indicators Of Scientific Literacy
13	Lin Show-Yu		Non-Science Major Undergraduate Students' Understandings Of Chemical Food Additives
14	Susan Bruna Carneiro Aragao	Maria Eunice Ribeiro Marcondes	Scientific Literacy: Future Chemistry Teachers Conceptions
15	Erica Parri	Laura Cetti, Mirella Macelloni, Laura Rossetti, Enzo Magazzini, Alessandro Lenzi, Valentina Domenici	Students Of The Third Classes Of Primary School At The Museum: Report Of Activities And Feedback
16	Marcia Borges	Carlos Magno R. Ribeiro, Denise R. Ara-ripe, Eluzir P. Chacon, Lucidéa G. R. Coutinho, Daisy M. Luz	Taking Science Courses As A Moderator Of Relationship Between Public Risk Perception Of Science And Attitude Toward Water Resources
17	Natalia Shakirova	A. Dementiev, G. Chernobelskaya	Chemistry Propaedeutic Classes For Schoolchildren In The Polytechnic Museum
18	Valentina Domenici	Erica Parri, Alessandro Lenzi	"Development Of Methods And Practices In Chemistry Laboratories From The 1900 Up To Now": A Museum Exposition
19	Abdeljalil Métioui	Ahmed Legrouri, Abdelkarim Ouardaoui	Historical Development Of Electrochemical Cell And Student Conceptions About Its Functionings
20	Deividi Marcio Marques	Gustavo M. Ferreira, Nicea Q Amauro, Tiago Rebecca	History Of Chemistry And Theatre: The Scheele, Priestley And Lavoisier'S Air
21	Liz Muñoz	Roberto Nardi	An Analysis Of Interpretations Performed By Prospective Chemistry Teachers On Scientific Representations

22	Mary Virginia Orna		Launch Of The Springer Brief History Of Chemistry Volumes In 2012
23	Michal Siba	Helena Klimova	History Of Science In Chemistry Education
24	Lida Schoen	Chíu, Steenberg	Young Ambassadors For Chemistry (YAC)
25	Simo Tolvanen	M. Aksela	Inquiry-Based Learning In The Context Of Water In Lower Secondary School
26	Tzu-Ching Kung	Ya-Wen Chang	IYC 2011 Activities For The Taiwan High School Students
27	Maria Ganajová	Petra Lechová	Inquiry- And Project-Based Learning About Plastic And Plastic Waste
28	Valentina Devoto	Battistina Carzedda, Ivana Cocco, Maria Cristina Mereu	Journey Around CO <sub>2</sub> : An Interdisciplinary Course
29	B.H.S. Thimmappa		Free And Open Source Teaching-Learning Materials For An Exciting Learning Experience
30	Charles Estay Osandón	H.D. Barke	Urban Solid Waste In Europe: Development, Influencing Factors And A Cross-Curricular Teaching Concept
31	Chun-Yen Tsai		Taking Science Courses As A Moderator Of Relationship Between Public Risk Perception Of Science And Attitude Toward Water Resources
32	Fiona Marais	Pieter Marais, Ina Louw	Changing How We Teach First Year Chemistry
33	Hyunju Park	Y. Baek, S. Noh, J. Jeong	4C-STEAM Education In Korea
34	Michele Zanata	Orietta Ferronato	Ethics And Chemistry: Introducing The Challenge To Secondary School Students

35	Ponnadurai Ramasami	Tuula Asunta, John P. Canal	Strategies To Improve The Teaching, Research And Public Image Of Chemistry
36	Teresa Celestino		Sustainable Development In Chemical Education
37	Basil Marasinghe		Students Changing Attitudes Towards Learning Chemistry Among School Children And Undergraduates In Papua New Guinea
38	Bih-Show Lou	Ching-Fen Chou, And Chuan-Wei Hsu	Creative General Chemistry Experiments With Citrus Fruits
39	Nazan Kunduz	Nilgün Seçken	Effects Of Teaching Using Animations On Academic Achievement In The Topic Of “Precipitation Titration”
40	Nilgün Seçken		Development Of Materials Involving Animations About “Precipitation Titration” Based On 7E Model
41	Nuray Yörük	Nilgün Seçken	Effects Of Visits To Science And Technology Museum And Factory On The Students’ Understanding Of The Relationship Between Chemistry, Society, Technology And Environment
42	Oktay Bektas	Aysegul Tarkin, E.Selcan Kutucu, Betul Ekiz, Mustafa Tuysuz, Esen Uzun-tiryaki	Pre-Service Chemistry Teachers’ Conceptual Understandings On Factors Affecting Chemical Equilibrium: A Case Study
43	Pasquale Di Rad-do		Poetry For Chemists: An Educational Tool
44	Peter Loyson		Lecturing Physical Chemistry At A South African University : Misconceptions, Analogies And Teaching Methods
45	Rabin Bissessur		Materials Science In The Undergraduate Curriculum
46	Silvia Porro		Naïve Conceptions About The Nature Of Science And Technology

47	Simone Martorano	Marcondes, Maria Eunice R.	Progressive Transition Of Chemistry Teachers' Models Of Chemical Kinetics Teaching Based On The Study Of Historical Development Of This Subject
48	Yamit Sharaabi Naor	Yael Shwartz, Avi Hofstein, Miri Kesner	We Have Chemistry! A National Project To Encourage Chemistry Studies In Israel
49	Yasuhiko Ogura	H. Fujii, M. Nishikori	Development Of Instructional Program Designed For Students To Form Conception Of Particles' Combination: A Case Study Of Junior High School Chemistry
50	Zhaolong Li	Jinxiang Yin Tianshu Lin	Construction Of Elaboration Curriculum Of Advanced Organic Chemistry
51	Lynn Farh	Shyan-Jer Lee	The Connection Of Academic English Proficiency And The Scientific Achievement In College Students Majored In Science Subdivisions
52	Tatiana Myasoe-dova	Nina Malysheva	The Formation Of Professional Competence Of The Engineer-Chemist With The Participation Of Employers
53	Tatiana Myasoe-dova	Alexander Chibisov	The Role Of Supplementary Education In Career Development
54	Akira Ikuo	Yuka Ono, Yusuke Yoshinaga, Haruo Ogawa	Development Of Teaching Material Based On Computer Graphics By Quantum Chemistry Calculation - Nitration Of Benzene
55	Haruo Ogawa	Hiroshi Nagashima, Akira Ikuo	Visualization Of Chemical Reaction Based On Quantum Calculation - Addition Of Halogens To Cyclopentene -
56	Iztok Devetak	Diane M. Bunce	Evaluating The Development Of Nonscience Major Students' Motivation For Learning Chemistry And Its Influence On Their Achievement
57	Jan Lundell	R, Matilainen, P. Jääskelä, U. Valleala	Interactive And Topical Chemistry For University Freshmen

58	Marco A. B. Leite	Luiza C. De Moura	A New Approach To Quantum Chemistry In A General Chemistry Class
59	Califano Filomena		Study Of Miscibility Of Liquid Mixtures With A Critical Point
60	Dai Guanghong		The Analysis Of Teaching Content And Teaching Objectives Design Based On The Core Concept Of Education
61	Nieto Elizabeth	G. Hernández, N. López, F. Reyes	What Changes And What Remains? Didactics Sequence For The Topic Of Chemical Reaction
62	Sérgio Leal	Robson Novais, Carmen FERNandez	Experienced Teacher' Pedagogical Content Knowledge In A General Chemistry Course
63	Xiuyuan Liu	Feihong Guo, Qing Wu	Self-Directed Learning In High School Chemistry Classes: A Case Study From Mainland China
64	Zhen Lu	Jiarong Zhao, Zheng Zou	The Modeling Of Instructional Structure In The Teaching Of Chemical Theories
65	Franka Miriam Brueckler	Krešimir Molčanov	Topology In Chemistry – Can It Be Explained In Simple Terms?
66	Steven Cullipher	Hannah Sevian, Vicente Talanquer	Using Research On CFC Replacement Compounds To Uncover Implicit Assumptions Of Learners About Benefits, Costs And Risks In Chemical Design
67	Andero Vaarik	Mare Taagepera, Toomas Tenno	The Impact Of Guided-Inquiry Methods On Developing Understanding Of The Matter Concept
68	Huang Suwen		Challenges Of Implementation On The Chemistry-Project-Based Learning In High School And Countermeasures
69	Jee-Hye Hong	Hun-Gi Hong	Applying The Empowerment Evaluation To Open Inquiry Activities
70	Jongho Baek	Chui Im Choi, Dae Hong Jeong	A Case Analysis Of Motivation And Strategy For Inquiry Process



71	Shui-Ping Yang	Chung-Chia Li	What Indicators Are Appropriate For Differential Acid–Base Titrations? Incorporating Discovery Learning Into General Chemistry Laboratory
72	Tina Overton	C. Randles	Dynamic Problem-based Learning In Chemistry
73	Wink Donald		Dewey To Mckee To Schwab: Intellectual Origins Of Inquiry In Education
74	Fatma Gulay Kirbaslar	Zeliha Ozsoy-Gunes, Elif Ince, Dilek Cagiran Gulden, Yasemin Derelioglu	Pre-Service Primary School Teacher Practice Of Mathematics In Operational Chemistry And Physics Problems And Mathematics Self-Efficacy Perception
75	Flora Costa		Pólya's Strategies For Mathematical Problem Solving And Organic Chemistry IUPAC Nomenclature Attribution: An Analogy
76	Ibrahim Gunes	Zeliha Ozsoy-Gunes, Yasemin Derelioglu, Fatma Gulay Kirbaslar	Approaches Of Engineering Faculty Students To Solving Of Operational Chemistry And Physics Problems
77	Silvia Bello	Gisela Hernández, Elizabeth Nieto	The Teaching-Learning Sequence, An Important Resource For Chemistry Understanding
78	Ayfer Karadas	Itr Zeynep Yasar, Fatma Gülay Kirbaslar	The Approaches Of Elementary Class And Science Teachers To The Applications Of Chemistry Activities In Science And Technology Textbooks
79	Gabriela Lorenzo	Andrea Farré	Difficulties In Organic Chemistry Learning At University
80	Gisela Hernández-Millán	Margarita Castelán-Sánchez	Use Of Blog COL As A Tool To Evaluate Activities In The Chemistry Laboratory
81	Hua-Lin Bi	Shan-Shan Lu	A Study Of Chinese Mainland Middle School Students Of "Electrolyte" Concept Developmental Level And Alternative Frameworks

82	Merve Kirbaslar	Zeliha Ozsoy-Gunes, Filiz Avci	Critical Thinking Dispositions And Entrepreneurship Levels Of Chemistry And Chemical Engineering Students
83	Sah Ismail Kirbaslar	Zeliha Ozsoy-Gunes, Filiz Avci, Adem Cinarli	Chemistry And Chemical Engineering Students' Self-Efficacy Levels Of Mathematical Literacy And Their Dispositions Of Critical Thinking
84	Salete Queiroz	Jane Oliveira	Scientific Language Rhetoric: From The Theoretical Basis To The Production Of Didactic Material For Undergraduate Chemistry Teaching
85	Yinjuan Bai	Zhen Shi, Bingqin Yang	Teaching And Learning Of Spectroscopy Analysis
86	Zeliha Ozsoy Gunes	Fatma Gulay Kirbaslar	The Evaluation Of Anxiety Levels Of Chemistry, Physics, Biology And Pre-Service Science Teachers Students To Chemistry Laboratory
87	Hans Vanhoe	Pieters, Strubbe, Capenberghs,	Enhancing The Performance And Attitude Towards Practical Chemistry Sessions By Means Of Ict
88	Jan Lundell		Ict And Modelling In Chemistry Teacher Education
89	João Belo	Maria Simões, Maria Ismael	My Chemistry Classes: Evolution From The Board And Chock To The Multimedia Technology
90	Montserrat Tortosa	Fina Guitart	Real Time Experiments In Chemistry As A Way To Improve Science Competencies In Secondary Education: The Spanish Situation
91	Somashekara Bhat		Teaching Silicon Etch Process Using Animations And MEMS Simulation Tools
92	Mihails Gorskis		Integration Of Virtual Environment For Chemistry Students And Educators In Latvia

93	Takashi Yasuoka	Sekine	Case Study On The Introduction Of ICT Into A Problem-Finding And Problem-Solving Oriented Chemistry Class
94	Fina Guitart	Caamaño	Educació Química Eduq
95	Agnieszka Wojciechowska	Hanna Gulińska	Proactive Teaching, The Śniadecki Academy Project
96	Glinda Irazoque	Patricia Huerta, Yosajandi Pérez	A Website With Multimodal Teaching-Learning Sequences Using ICT
97	Hanna Gulińska		Multibook, An Electronic Book
98	Małgorzata Bartoszewicz		ICT In Chemistry Teaching On Various Levels Of Education
99	María Esther Del Rey	Yolanda Castells, Federico García	Odyssey And Spartan As Educational Support At High School Level
100	Müller Carrera	Zaldivar Coria	Interactive Media, New Options For Teaching Chemical Nomenclature
101	Silvana Caglieri	Mariángeles Pagnan	Theoretical Study Of Alkaline Hydrolysis Of N,N Dimethylacetamide
102	Sven Capenberghs	Strubbe, Vanhoe, Raes, Schellens	Web-Based Learning Environments In Chemistry Education
103	Tomasz Wołowicz	Hanna Gulińska	Electronic Workbook Instead Of A Traditional Workbook
104	Franco Calascibetta	Gabriele Favero, Giuliano Moretti	Electrolysis: A Chance To Talk About Chemistry, But Also History, Economics, Environment
105	Liz Dorland		Visualization In Science And Education: Outcomes Of Gordon Research Conferences From 2001 - 2011
106	Peter G. Edwards	Peter Hollamby	Public Perception And Exciting Young Minds With Chemistry
107	Peter Hollamby	Peter G. Edwards	Improving Teaching And Learning Using ICT – A ‘DIY’ Approach

108	Pierangelo Me- trangolo	Enzo Bergamini, Sara Comai, Fulvio Corno, Gabriele Cristini, Guglielmo Lanzani, Davide Mazza, Giuseppe Resnati, Giancarlo Terraneo, Gianluca Brero, Rosa Virginia Espinoza Garnier, Elisa Magnanelli, Khalid Mahmood, Giacomo Mazzoletti, Stefano Pascali, Alessandro Rizzi	Hapticchem - A Multidisciplinary Project To Improve Chemistry Teaching With Haptic Devices
109	Zoltán Tóth	Gabriella Sója-Gajdos	Using A Word Association Method To Study Students' Knowledge Structure Related To Energy Sources
110	Zuriati Zakaria	Soon Ting Kueh	Generating Interest In Chemistry Among The Younger Generation In Malaysia
111	Aristea Boulouxi	Spyros Koinis	How Greek Pupils And Students Conceptualise Burning
112	Marcin M. Chrza- nowski	Irmina Buczek, Barbara Ostrowska	Cross-Curricular Educational Tools Dedicated To Water Resource Policy Problems
113	Sasa A. Glazar	Janez Vogrinc, Barbara Šket	Concept Maps As A Tool In Teaching Organic Chemical Reactions
114	Silvia Kreile	Aira Krumina	Concept Of Mole In Chemistry Curriculum In The School – Problems And Solutions
115	Agnieszka Kamińska-Ostę		Increasing The Role Of Students' Individual Work In Chemistry Education
116	Amalia Uamusse	T. Kuleshova, H. Malessane E F. Machalela	Exploring The Use Of Locally Available Materials To Enhance The Teaching Of Chemistry At Secondary Schools
117	Deividi Marcio Marques	Paulo V. T. Souza, Marcos D. Silva, Nicéa Quintino Amauro	Density: A Proposal For Investigative Classroom

118	Fulya Basaran	Kemal Doymus	The Effect Of Cooperative Learning Methods In Teaching Chemistry Topics At Secondary School Level
119	Jasmina Kolbl	Iztok Devetak	Developing Guided Active Learning In Chemistry Teaching Materials To Teach Hydrocarbons

## ICCECRICE 2012 – July Thursday 19th

### Poster Session 2 (18:00 - 19:30)

N°	Author	Co-Authors	Title
120	Karolina Broman		Upper Secondary School Students Opinions On How To Improve Their Chemistry Education
121	Kewen-Liu	Zichuan-Ma	The Study On The Building And Practice Of Teaching Chemistry Mode In High School Based On Problem-Solving
122	Leena Bröll		Talking About Misconceptions In Chemical Education: The Citric Battery
123	Liguang Wen		Objective Design And Strategy Implementation Of Inquiry Learning On Environment In Junior High School Chemistry
124	Márcia R. Cordeiro	M. F. Campos Mendonça, Polyana Tomé De Paiva, Keila Bossolani Kiill	Contextualization As A Learning Facilitator: A CTS Approach For Teaching The “Substances And Mixtures” Theme
125	Nail Ilhan	Ali Yildirim	The Effect Of Context Based Approach On The Learning Of Chemical Equilibrium

126	Oya Ağlarıcı	Kabapınar	The Effect Of Discovery Learning Method On High School Students' Understanding Of Daily Life Chemistry Concepts
127	Rossana Scholes	Oberti	Developing The Culture And Practice Of Secondary School Chemistry In A Rural School In The South Of Minas Gerais State In Brazil
128	Vojin Krsmanovic	Marija Todorovic, Nina Jevtic, Ljubica Peric, Dragan Manojlovic, Maja Sumar, Radisav Golubovic	Metodology Of Teaching/Learning Chemistry For Gifted Students In Petnica Science Center - Serbia
129	Gisela Hernandez-Millan	Elizabeth Nieto Calleja	Training For High School Teachers Of Natural Science. An Experience In Mexico.
130	Lia M. S. Marcondes	Silva, M., Kiill, K., Cordeiro, M., Virtuoso, L.	Case Study In The Teaching Of Chemistry: The Soil Of The Coffee Trees
131	Luciane Hiromi Akahoshi	Maria Eunice Ribeiro Marcondes	Science, Technology And Society In Instructional Materials Produced By High School Chemistry Teachers: A Content Analysis
132	Marcelo Lambach	Carlos Alberto Marques	In-Service Training For Chemistry Teachers In Adult Education Under The Freirean Perspective
133	Marina Vieira Santos	Keila B. Kiill, Márcia R. Cordeiro, Luciano S. Virtuoso	Density And Hot Hair Balloons: Contextualized Didactic Proposal
134	Mojca Jurišević	Devetak, Vogrinc	Teacher's Portfolio In The PROFILES Context: Some Conceptual And Methodological Issues
135	Päivi Tomperi	Aksela	Promoting Inquiry-Based Practical Chemistry Using SOLO Taxonomy
136	Pirjo Häkkinen	Jan Lundell	Motivating Classroom Teachers Into Hands-On Science Experiments In Primary School Science Education

137	Shyan-Jer Lee	Cheng-Min Chen, Mei-Hung Chiu, Lynn Farh	Sustainability Into Curricula De- sign For Solar Energy
138	Viviani A Lima	Maria E R Marcondes	Planning Inquiry-Based Experi- mental Activities: A Process Of Oriented Reflection Experienced By High School Chemistry Teach- ers
139	Adejoke Adeso- kan	C. Reiners	On the Way to Scientific Inquiry - Supporting Hearing-Impaired Learners in Chemistry Classes
140	Iwen Kobow	Maik Walpuski	Development And Validation Of A Paper-Pencil Test Regarding Com- munication Of Chemical Informa- tion
141	Muthwii Samson		The Dynamics Of An African Chemistry Classroom Presentation Experience: The Case Of A Kenya Class Teaching
142	Elena Purtova	Natalia Tarasova, Gennadiy Yagodin	Education for Sustainability
143	Buket Yakmaci- Guzel	Sibel Yigit	How Much Competent Are Pre- Service Chemistry Teachers In Determining Students' Alternative Conceptions?
144	Florentina Canada	Clara Alvarado, An- doni Garritz, Vicente Mellado, Lina Melo	The Pedagogical Content Knowl- edge Of High School Chemistry Teachers On Acids And Basis Concept
145	Louise Lehane	Dr. John O'reilly, Dr. Geraldine Mooney Simmie	Utilising An Existing PCK Instru- ment To Capture And Develop Irish Pre-Service Teachers PCK Towards An Inquiry Oriented Fo- cus
146	Michal Drechsler		Relating Course Theory To School Practise – A Study Of Science Student Teachers Learning

147	Rui Wei	Lei Wang	High School Chemistry Teachers' Misconceptions On Atomic Orbital: Investigation And Implications For Developing Chemistry Textbooks
148	Tobias Pollender	Oliver Tepner	Developing A Test Instrument For Analyzing Communication Processes In Chemistry Education
149	Akira IKUO	Yousuke FUJII, Haruo OGAWA	Development Of Experimental Program For Acquisition Of Mole Concept
150	Betul DEMİRDÖĞEN	Sevgi Aydın, Elif Selcan Kutucu, Mustafa Tüysüz, Betül Ekiz, Ayşegül Tarkin, Fatma Nur Akın, Esen Uzun-tiryaki	Development Of Pre-Service Chemistry Teachers' Science Teaching Orientations In Practice Teaching Course
151	Caio ZANVETTOR	Joaquim F.M. Silva, Lennon S. Santos, André B. Farias	Brazil-Portugal International Pre-Service Formation Interchange: The Vision Of Brazilian Chemistry Students At The University Of Coimbra
152	Elif Selcan Kutucu	Mustafa Tuysuz, Oktay Bektas, Aysegul Tarkin, Betul Ekiz, Esen Uzun-tiryaki	Pre-Service Chemistry Teachers' Instructional Designs Of 5E Learning Cycle Model On Intermolecular Forces
153	Elif Selcan Kutucu	Nilgun DEMIRCI, Betul EKIZ	Pre-Service Chemistry Teachers' Perceptions On Mentors' Practices
154	Nilgun Demirci	Ziya Kilic, Ömer Geban	Scientific Argumentation With Pre-Service Chemistry Teachers
155	Sevinc Nihal Yesiloglu	Serap KUCUKER, Fitnat KOSEOĞLU	Investigating Preservice Chemistry Teachers' Reflective Thinking About Instructional Methods Using Activity-Based Instruction In Science Methods Course
156	Sirpa Kärkkäinen	Tuula Keinonen, Katri Hämeen-Anttila, Kirsti Vainio	Teacher Students' Perceptions Of Medicines And Medicine Education
157	Stefan Mutke	Oliver Tepner	Development Of Student Teachers' Professional Knowledge In Chemistry



158	Wagner Moreira	Paulo Henrique Trentin, Carmen Fernandez	The Cylinder-And-Candle Experiment: An Open Problem And The Level Of Argumentation In A Chemistry Teaching Methodology Course
159	Yoon-Fah Lay	Chwee-Hoon Khoo	Direct And Indirect Effects Among Pre-Service Chemistry Teachers' Attitude-Towards-Chemistry, Chemistry Self-Efficacy, And Chemistry Learning Experiences At Tertiary Level: A Structural Equation Modeling Approach
160	Shadi DALILI	Allyson Skene	Impact Of Facilitated Study Groups On Student Learning In 2nd Year Organic Chemistry Courses
161	Bessie OLIVA	Marta María DEL CID, Elisandra HERNANDEZ	An Experiment To Determine Total Organic Carbon In Water For Teaching Environmental Chemistry To Chemistry
162	Chiung-Lan Wang	Min-Hui Chang	Chinese Landscape Painting
163	Chiung-Lan Wang	Min-Hui Chang	Bionic Experiment: The Growth Of Kelp
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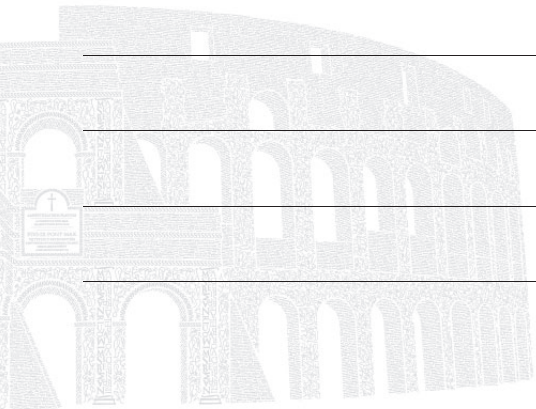
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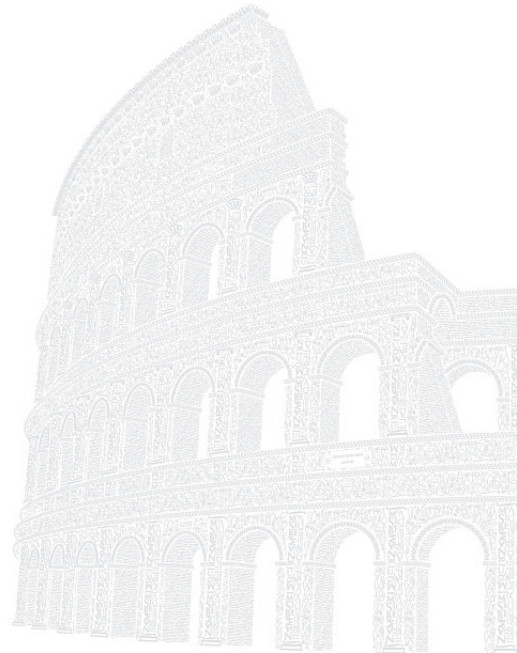
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University  
Canteen

Main Entrance  
Registration Desk  
Plenary Room





Room D (Aula XI)  
Room E (Aula XII)  
Room F (Aula XIV)  
Room G (Aula XIII)

