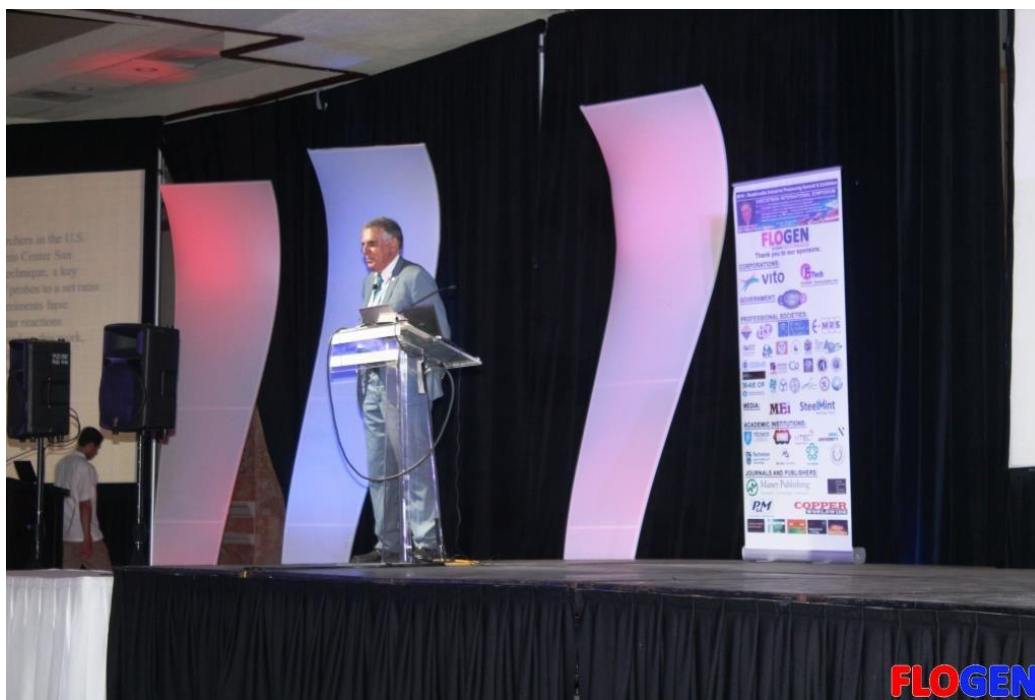


2014 - SUSTAINABLE INDUSTRIAL PROCESSING SUMMIT



29 June - 04 July 2014, Fiesta Americana Condesa Cancun All Inclusive Resort, Cancun, Mexico

Highlights



Prof. Dan Shechtman

The 2014 - Sustainable Industrial Processing Summit/Shechtman International Symposium was held in Cancun, Mexico from June 29th to July 04th 2014 at the Fiesta Americana Condesa Cancun All Inclusive Hotel in honor of the great lifetime achievements of the 2011 Nobel Prize Laureate in Chemistry Professor Dan Shechtman. Professor Shechtman is a materials and metals scientist and engineer. He discovered quasi-crystals exactly 30 years ago, in 1982, while fast quenching an aluminum and magnesium alloy, which has found widespread sustainable applications from LEDs to engines and frying pans due to their non-stick, rust-free and heat-resistant properties. His discovery although met by severe disapproval and ridicule from some scientific circles got Nobel Prize 30 years later.

The Summit covered the important pillars of sustainability: (1) science, technology and industrial practice (2) political and social framework and (3) education in the entire cycle of materials science from mineral processing to metals extraction and the development of new materials.

Sustainability and the Role of Science, Technology and Industrial Practice

It had four summit plenary sessions and a summit plenary Gala that mixed together 3 Nobel Prize Winners as well as:

- Politicians reflecting the importance of political framework
- CEOs of big industrial companies reflecting the role of applied technology and management
- Well known academics reflecting the role of education for an engaged society
- Research Institutes reflecting the role of base technologies.

9 parallel session were held encompassing more than 400 technical presentation from more than 80 countries around the world.



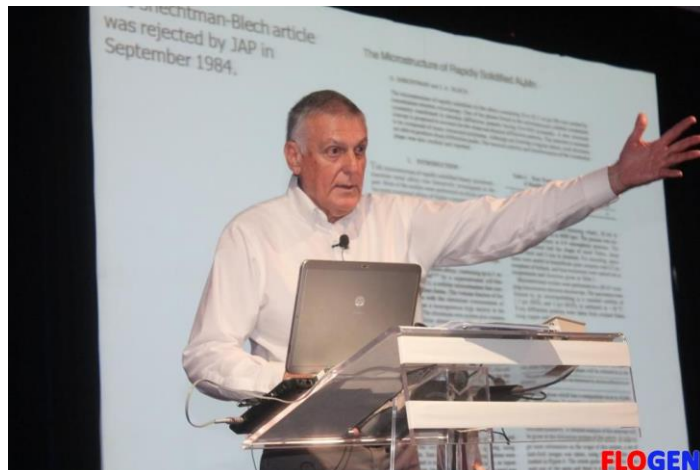
Plenary Hall

Summit Plenary I:

Dr. Florian Kongoli, FLOGEN chairman opened The Summit Plenary 1 with a speech that stressed the important role of science and technology on sustainable development without reducing the importance of other aspects.



Dr. Florian Kongoli,
FLOGEN Chairman



Prof. Dan Shechtman, 2011 Nobel Prize Laureate
Technion Inst. of Technology and Iowa State U.

Prof. Dan Shechtman, 2011 Nobel Prize Laureate in Chemistry, in his special plenary lecture described in an inspiring way the history of discovery of quasi-crystals, the numerous hurdles that followed because of disbelief in some scientific circles, the way how he overcome them, the final acceptance of the discovery by scientific community which changed some definition of chemistry and the Nobel Prize that followed 30 years after his original discovery.

Oscar Gonzalez Rocha, CEO, Southern Copper Corporation, Peru, Harvard Business Review one of the 50 most successful CEOs in the world, gave a very interesting review of his company activity to achieve a sustainable growth while continuously improving the life of the communities and protecting the environment.

Dr. Dirk Fransaer, Managing director, VITO, Belgium, a well know Research Institute dedicated to develop base technologies for CO2 mitigation and other sustainable technologies, described the work of his institute while enumerating the sustainable challenges that lie in front of us.



Oscar Gonzalez Rocha
CEO, Southern Copper Corporation



Dirk Fransaer
Managing Director, VITO

Prof. George F. Smoot, 2006 Nobel Prize in Physics, University of California USA and Université Sorbonne Paris Cite, France, gave an enlightened presentation on mapping galaxies through physics and materials sciences and putting the sustainability notion in super macro perspective.



Prof. George F. Smoot, 2006 Nobel Prize Laureate, U. of California and U. of Sorbonne Paris

Prof. Rodrigo Martins, President of European Materials Research Society and New University of Lisbon, Portugal gave an interesting presentation of materials activities in Europe by stressing the indispensable role of materials in boosting innovation.



Prof. Rodrigo Martins, President of E-MRS
New U. of Lisbon

Summit Plenary II:

Honorable Pierre Arcand, Minister, Energy and Natural Resources and Northern Plan, Quebec, Canada, opened this summit plenary with an excellent description of one world's unique and his most challenging plans to develop mining and mineral industries in the north of Quebec in a sustainable way.

Honorable Tarja Halonen, 11th President of Finland, Finland, gave an interesting speech on Finland perspective of achieving sustainability in energy and industrial processing



Honorable Pierre Arcand, Minister Energy and Natural Resources and Northern Plan, Quebec, Canada



Honorable Tarja Halonen
11th President of Finland

Prof. Derek Fray, University of Cambridge, UK, gave an enlightening presentation on the existing gap between the basic research and commercialization through various examples from his rich life time experience.

Dr. Kohmei Halada, Managing Director/Strategic Advanced Materials, National Institute for Materials Science, Japan, described a unique scientific initiative that managed to “beat” economy and develop new materials by reducing the need of rare earth materials.



Prof. Derek Fray
University of Cambridge, UK



Dr. Kohmei Halada,
National Institute for Materials Science, Japan

Prof. Jean-Marie Dubois, Research Director, CNRS, France, enlightened the audience with a description of Dan Shechtman Heritage and the numerous fields of applications that has followed his quasi crystal discovery, 30 years ago.

Prof. Vasant Kumar, University of Cambridge, UK, gave an inspiring description of the process of developing future scenarios in energy and sustainability.



Prof. Jean-Marie Dubois,
Director CNRS, France



Prof. Vasant Kumar,
University of Cambridge, UK

Prof. Stephane Bordas, University of Luxembourg, Luxembourg, gave a joint lecture with Prof. Elias Aifantis, Aristotle University of Thessaloniki, Greece about the challenges in mechanical simulation to bridge the gap between engineering and medicine.



Prof. Stephane Bordas,
University of Luxembourg, Luxembourg

Summit Plenary III:

Dr. Thomas Buenger, Senior Vice President, Aurubis AG, Germany, opened the session with an overview of sustainability from the viewpoint of an industrial complex in Europe.

Prof. John A. Meech, Director, CERM3, The University of British Columbia, Canada, described one of his lifetime challenges: Sustainable Mining – Possibility and Reality



Dr. Thomas Buenger
Aurubis AG, Germany



Prof. John A. Meech
CERM3, The University of British Columbia, Canada

Prof. Andre Carlos Silva, Federal University of Goiás, Brazil, gave a description of the efforts to achieve the sustainable mining in Brazil, a country with vast mineral resources.

Prof. Shin-Ya Kitamura, Tohoku University, Japan, presented a picture of the reality with bottle neck and challenges of steel industry in Japan and its perspective



Prof. Andre Carlos Silva
Federal University of Goiás, Brazil



Prof. Shin-Ya Kitamura
Tohoku University, Japan

Prof. Bartek Glowacki, University of Limerick, Ireland, presented a lecture on the possibility of using H₂ and Superconductors in energy applications.

Prof. Cyro Takano, University of Sao Paulo, Brazil, gave highlights on challenges of high temperature processing in metallurgical industries.



Prof. Bartek Glowacki
University of Limerick, Ireland



Prof. Cyro Takano
University of Sao Paulo, Brazil

Dr. Patrick T. Moseley, President Emeritus, Advanced Lead-Acid Battery Consortium, USA, gave a presentation about sustainable transport, its status, present challenges and the future.



Dr. Patrick T. Moseley, President Emeritus, Advanced
Lead-Acid Battery Consortium, USA

Summit Plenary IV:

Prof. Martin Pech-Canul, CINVESTAV, Mexico, gave a lecture on the Sustainable Role of The Modified Central Paradigm of Materials Science and Engineering in the Development of New Materials, stressing the role of the entire materials cycle to achieve sustainability.

Dr. Manfred Mauntz, CMC Instruments, Germany, lecture was about the impact of sensors for science and technology in the modern industrial society. The lecture was presented by Dr. Florian Kongoli due to a last minute cancellation of the presenter in un-forecasted circumstances.



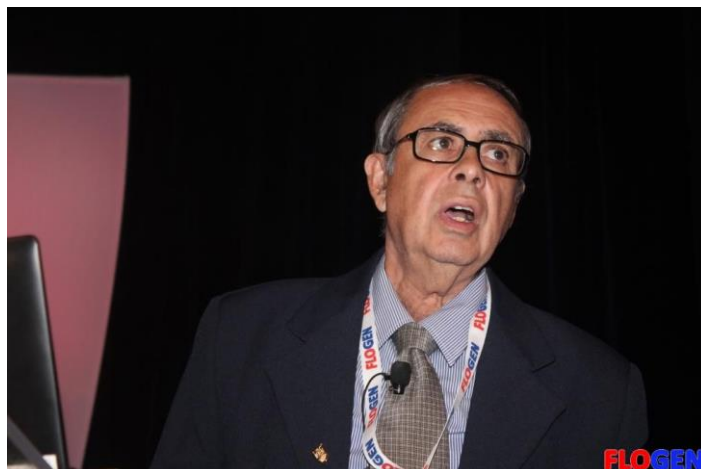
Prof. Martin Pech-Canul
CINVESTAV, Mexico



Prof. Olof Forsen,
Aalto University, Finland

Prof. Olof Forsen, Aalto University, Finland, gave a lecture on the role of hydrometallurgy in sustainable production of metals, with various examples from his long experience.

Prof. Antonio Peres, University of Minas Gerais, Brazil, gave an overview of Mineral Processing in Brazil for sustainable development covering a rich picture of industries and processes.



Prof. Antonio Peres
University of Minas Gerais, Brazil

Plenary Gala:

Dr. Florian Kongoli, FLOGEN Chairman, opened the gala with a speech highlighting the position of scientists and engineers in the society, the need for more recognition and FLOGEN contribution in this direction.



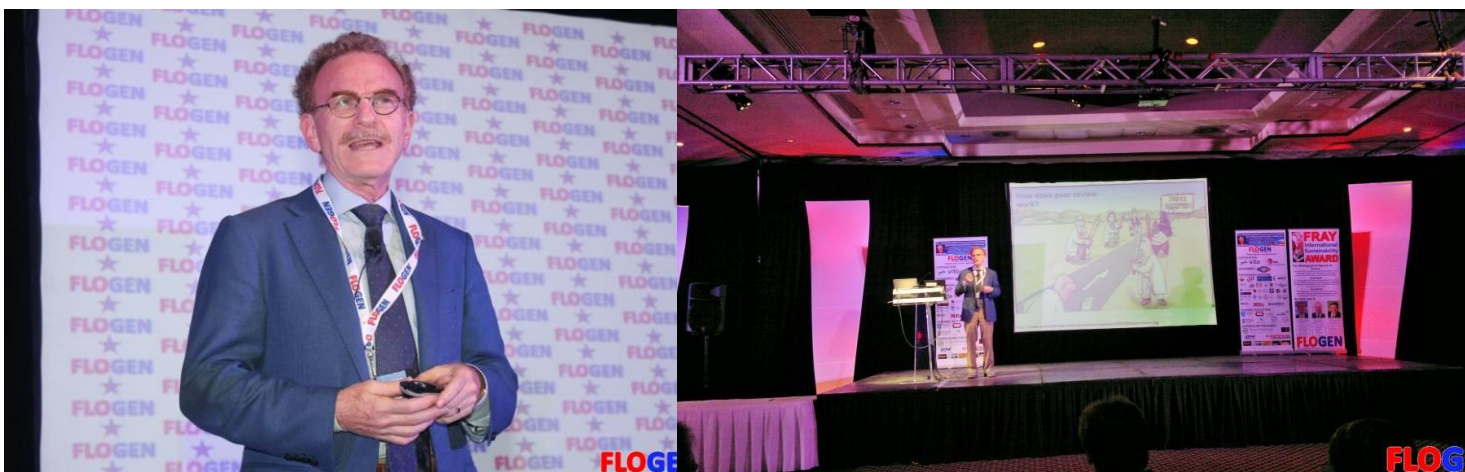
Dr. Florian Kongoli, FLOGEN Chairman

Prof. Dan Shechtman, 2011 Nobel Prize Laureate, Technion Institute of Technology and Iowa State University gave a speech about scientific blunders and the fine line between blunders and real discoveries.



Prof. Dan Shechtman, 2011 Nobel Prize Laureate, Technion Inst. of Technology and Iowa State U.

Prof. Randy W. Schekman, 2013 Nobel Prize Laureate, University of California, Berkeley, USA, presented a lecture of the challenge of publishing the most important scientific work today.



Prof. Randy W. Schekman, 2013 Nobel Prize Laureate, University of California, Berkeley, USA,

Fray International Sustainability Award

During the Award Ceremony and Gala Dinner several personalities/entities were honored with the 2014 Fray International Sustainability Award and its respective World Crystal Trophy adding their name in the previous list of distinguished personalities that won this award (www.flogen.org/awards.php).

The 2014 winners in their respective categories were the following:

Academia:

- Prof. Dan Shechtman, Technion Institute of Technology, Israel and Iowa State University, USA
- Prof. John A. Meech, Director, CERM3, The University of British Columbia, Canada

"For Leadership in developing new technologies that contribute to a global sustainable development in the environment, economy and social points of view"



Prof. Dan Shechtman, 2011 Nobel Laureate
Technion Inst. of Technology and Iowa State Univ.



Prof. John A. Meech
CERM3, University of British Columbia, Canada

Corporations:

- Oscar Gonzalez Rocha, CEO, Southern Copper Corporation, Peru

"For Leadership in developing and applying new innovative business plans and operation technologies for a sustainable development of the company in the environment, economy and social points of view"



Oscar Gonzalez Rocha
CEO, Southern Copper Corporation

Politics:

- Pierre Arcand, Minister Energy and Natural Resources and Northern Mining Plan, Quebec, Canada
- Tarja Halonen, 11th President of Finland

"For Leadership in developing new advanced public policy frameworks related to the efficiency of mineral and metal resources for a global sustainable development"



Pierre Arcand, Minister, Energy and Natural Resources
and Northern Mining Plan, Quebec, Canada

Research Institutions:

- VITO, Flemish Institute for Technological Research

“For leadership in developing through scientific research new innovative technologies that help achieve a sustainable global development in the environment, economy and social points of view”



Dirk Fransaer
Managing Director, VITO, Belgium

Shechtman International Leadership Award:

The new Shechtman International Leadership Award established in honor of Dr. Dan Shechtman, (Technion Institute of Technology and Iowa State University), whose unique life-time story of Scientific Conviction, Courage and Persistence brought him a very delayed success in revising the existing concepts of chemistry and shaping the future of an entire new branch of quasi-crystals, a success that culminated with being awarded the 2011 Nobel Prize in Chemistry. The purpose of this Award is to acknowledge the work of various personalities or entities among politicians, corporations and academics that with courage, conviction and persistence pioneer new ways of thinking that shape the future <http://www.flogen.org/awards.php?spage=1>. The citation reads:

“For leadership through courage, conviction, persistence and willingness to break with the taboos and stereotypes in pioneering new ways of thinking that shape the future for a global sustainable development in the environment, economy and social points of view”

The 2014 winner is

- Prof. Randy W. Schekman, University of California



Prof. Randy W. Schekman
University of California
2013 Nobel Prize Laureate

Micro and Macro World:

Dr. Florian Kongoli in conversation with Nobel Laureates, Professors Shechtman and Smoot

On Monday evening before the show, an interesting conversation was organized with Nobel Prize Winners Professors Shechtman and Smoot. The conversation covered important issues such as similarities and differences between Micro World (microscopy, quasi crystals) and Macro World (galaxies), the governing laws of both worlds, roles of both worlds in our life in our planet, the possibility to go in a different planet, the bridge between different scientific fields, good and bad authority in science and pioneering new fields, increasing human life expectancy, science and politics - their common ground and differences, the meaning of life, etc.



Monday Dinner Hall



Dr. Florian Kongoli with Nobel Laureates, Professor Dan Shechtman and George F. Smoot



Prof. Dan Shechtman



Prof. Bartek Glowacki, University of Limerick, UK



Prof. George F. Smoot



Dr. Swatantra Prakash

Material and Life Sciences:

Dr. Florian Kongoli with Nobel Laureates Professors Shechtman and Schekman

On Thursday morning an interesting conversation was organized with two Nobel Prize Winners Professors Shechtman and Schekman. The conversation covers important issues related to commonalities between Materials and Life Sciences such as peer review publications, role of government in fundamental research, Nobel Prize and its life-changing experience, suggestions for success in science, technological entrepreneurship, meaning of life etc.



Dr. Florian Kongoli with Nobel Laureates, Professors Dan Shechtman and Randy W. Schekman



Prof. Dan Shechtman



Prof. Tamas Kekesi, University of Miskolc, Hungary



Dr. Florian Kongoli with Nobel Laureates Professors Dan Shechtman and Randy W. Schekman

Dr. Florian Kongoli in conversation with Oscar Gonzalez Rocha CEO Southern Peru Corporation

Also on Thursday, an interesting conversation was held by Oscar Gonzalez Rocha, CEO, Southern Peru Corporation, one the best 50 CEOs in the world according to Harvard Business Review in 2012. The conversation covers important issues related to the role of CEO in managing a big corporation in good times as well as in crisis times, the importance of being an engineer and being recognized for your work in this domain in the society, the support role of the family for an engineer etc.



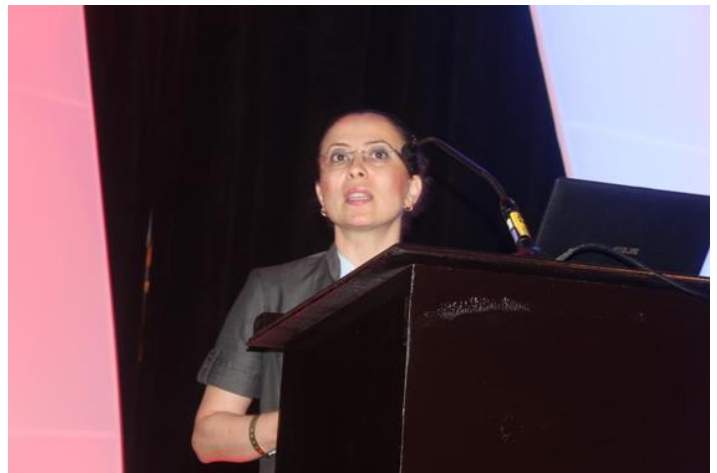
Dr. Florian Kongoli with Oscar Gonzalez Rocha, CEO Southern Peru Corporation

Thematic Symposiums

The summit had a strong number of technical and thematic with special emphasis on the sustainable developments of the 21st century. The overwhelming response from the international professional community was reflected in about 400 contributions received from authors and co-authors from 82 countries all over the world, which made this symposium a record in its class. Papers by primary authors represented the following 56 countries given alphabetically: Albania, Armenia, Australia, Austria, Bangladesh, Belarus, Belgium, Brazil, Bulgaria, Canada, Chile, China, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Great Britain, Greece, Hong Kong, Hungary, India, Iran, Ireland, Israel, Italy, Japan, Kazakhstan, Kosovo, Luxembourg, Mexico, Mongolia, New Zealand, Nigeria, Oman, Pakistan, Peru, Poland, Portugal, Romania, Russian Federation, Serbia and Montenegro, Slovakia, South Africa, South Korea, Spain, Sweden, Taiwan, Turkey, Ukraine, United Kingdom, United States. The biggest contributor countries were United States, Mexico, Brazil, Canada, China, Russia, Germany and India.



Prof. Tomas Havlik
Technical University of Kosice



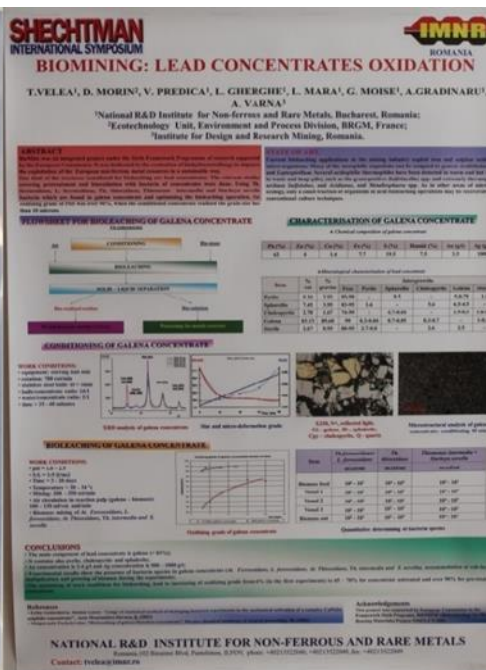
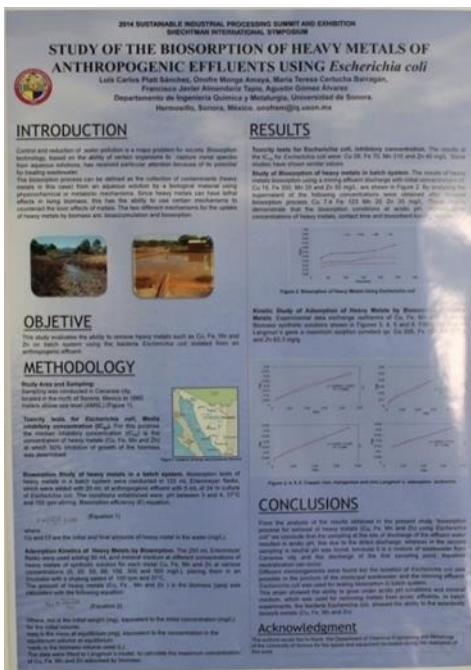
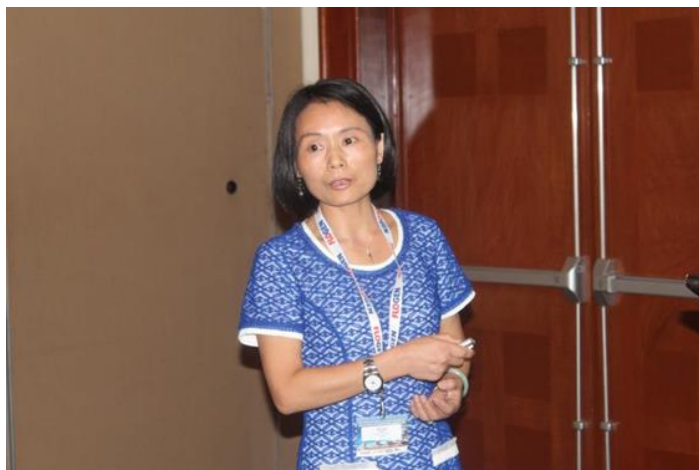
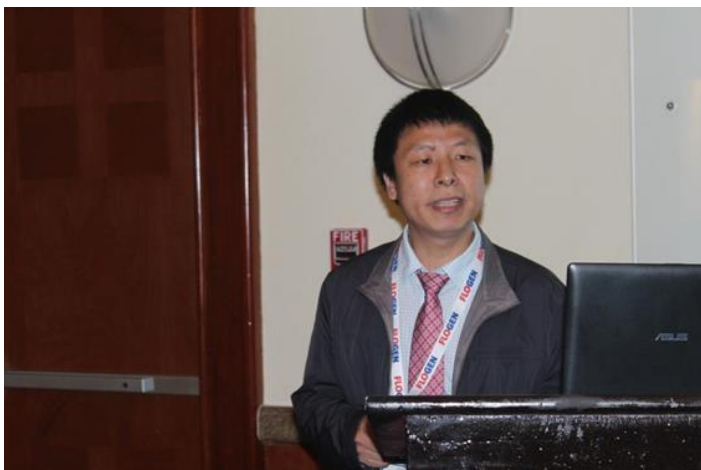
Prof. Nuray Demirel
Middle East Technical University



Prof. Carsten Schwandt
University of Nizwa



Prof. Christopher Anderson
Massey University



Posters
Presentations

The papers were presented in **72 sessions** divided in the following thematic symposiums:

- **Sustainable Mining and Processing**
(*Plenary speaker* = Christopher Anderson / *Keynote speakers* = Nuray Demirel, Gustavo Angeloci, Greg Baiden and Justin Salminen)
- **Sustainable Mineral Processing**
(*Plenary speakers* = Michael Free and Olof Forsen / *Keynote speaker* = John Meech)

- **Sustainable Non-ferrous Smelting in 21st Century**
(Plenary speakers = Seshadri Seetharaman, Ramana Reddy and Patrick Masset / Keynote speakers = Wei-Sheng Chen, Johnny Zahng, Tingan Zhang, Svetlana Leiman, Yuriy Zaikov and JiWhan Ahn)
- **Advanced Sustainable Iron and Steel Making**
(Plenary speakers = Andrey Dmitriev and Volodymyr Shatokha / Keynote speakers = Swatantra Prakash, Shin-ya Kitamura and Perparim Demi)
- **Sustainable Materials Recycling Processes and Products**
(Plenary speaker = Shuji Owada)
- **Quasi-crystals, Metallic Alloys, Composites, Ceramics and Nano Materials**
(Plenary speaker = Raman Singh / Keynote speakers = Daolun L. Chen, Raji Heyrovska, Noam Eliaz and Remo Proietti Zaccaria)
- **Environmental, Health, Policy, Legal, Management and Social Issues Related to Metals, Materials and Mineral Processing**
- **Rare Earth and Platinum Group Metals: Managing and Processing**
(Keynote speakers = Taek-Soo Kim, Teodora Retegan, Takashi Nagai and Nobuaki Sato)
- **Sustainable Molten Salt and Ionic Liquid Processing**
(Plenary speakers = Rasmus Fehrmann, Yasuhiko Ito, Frank Endres, George Kaptay, Derek Fray and Xianbo Jin)
- **Sustainable Secondary Battery Manufacturing and Recycling** (all invited speakers)
(Plenary speakers = Michael Aziz, Emilio Bunel and Carsten Schwandt / Keynote speakers = Jiakuan Yang, Patrick Moseley, Bartek Glowacki, Zhaoxiang Wang, Sian Dutton and Derek Fray)
- **Synthesis and Properties of Nanomaterials for Future Energy Demands**
- **Sustainable Energy Production: Gas/Oil/Shale and new renewable carbon free technologies**
(Keynote speakers = Dirk Vangeneugden)
- **Composite, Ceramic and Nano Materials Processing, Characterization and Applications Symposium**
(Plenary speakers = Ramana Reddy, Konstantin Borodianskiy and Reshef Tenne/ Keynote speakers = Michael Roth, Miroslav Cernik, Martin Pech-Canul and Shmuel Zilberg)
- **The High Temperature Protection Coatings**
(Plenary speaker = Patrick Masset)
- **Multiscale Material Mechanics in the 21st Century: Old Ideas for New Models Across Materials, Processes and Scales**
(Plenary speaker = Roman Nowak)



Prof. Raman Singh
Monash University, Australia



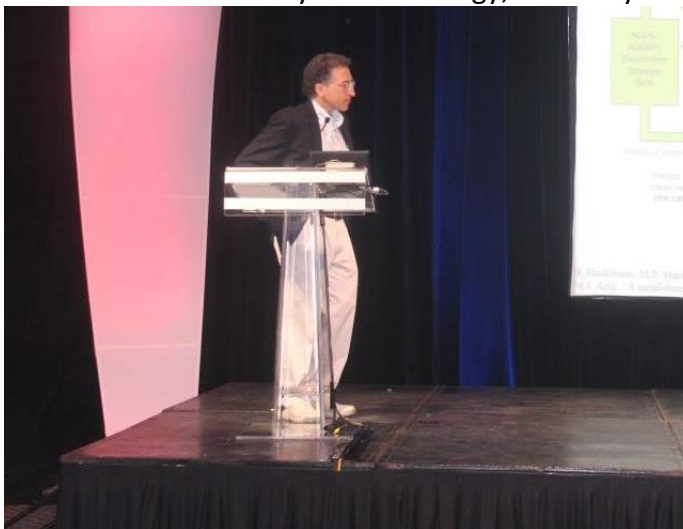
Prof. Volodymyr Shatokha
National Metallurgical Academy of Ukraine



Prof. Frank Endres
Clausthal University of Technology, Germany



Dr. Emilio Bunel
Argonne National Laboratory, USA



Prof. Michael Aziz
Harvard School of Engineering and Applied
Sciences, USA



Prof. Patrick Masset
Fraunhofer UMSICHT, Germany



Prof. Seshadri Seetharaman
Royal Institute of Technology, Sweden



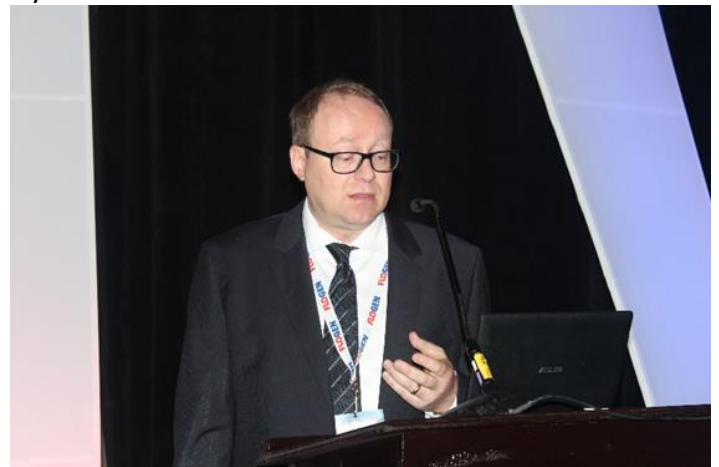
Prof. Michael Free
University of Utah, USA



Prof. Rasmus Fehrmann
Technical University of Denmark



Prof. Shmuel Zilberg
The Hebrew University of Jerusalem, Israel



Dr. Justin Salminen
Technical Research Centre of Finland



Dr. Greg Baiden
Penguin Automated Systems Inc., Canada



Dr. Dirk Vangeneugden
VITO. Belgium

Social Program

The participants enjoyed several outstanding social functions which included:

- The Sunday evening Cocktail/full buffet dinner held in the Pool Deck area, where the attendees enjoyed a spectacular dancing show and after-show humor on stage built especially for the symposium in between the swimming pools.





Pool-Area Dinner and Dancing Show

- The Monday Evening Cocktail/full buffet dinner held in Condesa Ballroom where participants appreciated a 45 minutes conversation with Nobel Prize Winners Professor Dan Shechtman and Professor George Smoot and a special Circus Show and after-show humor.



Circus Show closed the Cocktail/full buffet dinner on Monday night

- The Tuesday evening Cocktail/full buffet dinner held in the Beach front area under magnificent artificial lighting. Here the attendees enjoyed a variety of Mexican food as well as a magnificent Mexican Dancing Show on the stage built especially for the symposium in the sanded area in front of the ocean. It was followed by an after-show humor and drinks in the Pool Deck. Many attendees will not forget the pictures they took with the dancers with colorful costumes at the end of the show.



Beach Area Cocktail, Dinner and Mexican Dancing Show

- The Wednesday evening Cocktail Reception/Dinner Gala/VIP Speeches/Awards Ceremony and International Dancing Show held in the Condesa Foyer/Ballroom where participants also appreciated a special three course dinner with specialties prepared specifically for the attendees by the resort chef.



Ballroom cocktail/full buffet dinner Gala/VIP Speeches/Awards Ceremony and International Dancing Show

- During their stay the attendees enjoyed individually three a-la-carte fine restaurants (Italian, Mexican & Asian) and diverse evening/nights activities in the Cancun center as well as a range of post-symposium tours.

Attendees' Satisfactory Rate

A poll among the attendees after the symposium showed an overall satisfactory rate of 98%.

Publications

The final submitted papers are published in Official Publication Volumes which, similarly to all previous publications (www.flogen.org/books):

Contain official ISBN numbers:

1. 2014 - Sustainable Industrial Processing Summit/Shechtman International Symposium Metals and Materials Processing in a Clean Environment Volume 1: Mining [978-0-9879974-6-3](#)
2. 2014 - Sustainable Industrial Processing Summit/Shechtman International Symposium Metals and Materials Processing in a Clean Environment Volume 2: Mineral Processing [978-0-9879974-7-0](#)
3. 2014 - Sustainable Industrial Processing Summit/Shechtman International Symposium Metals and Materials Processing in a Clean Environment Volume 3: Non-Ferrous & Iron Steel [978-0-9879974-8-7](#)
4. 2014 - Sustainable Industrial Processing Summit/Shechtman International Symposium Metals and Materials Processing in a Clean Environment Volume 4: Recycling & Secondary Battery [978-0-9879974-9-4](#)
5. 2014 - Sustainable Industrial Processing Summit/Shechtman International Symposium Metals and Materials Processing in a Clean Environment Volume 5: Composite, Ceramic, Quasi-crystals, Nanomaterials & Coatings [978-1-987820-00-3](#)
6. 2014 - Sustainable Industrial Processing Summit/Shechtman International Symposium Metals and Materials Processing in a Clean Environment Volume 6: Ionic Liquids & Rare Earth [978-1-987820-01-0](#)
7. 2014 - Sustainable Industrial Processing Summit/Shechtman International Symposium Metals and Materials Processing in a Clean Environment Volume 7: Energy Production, Environmental & Multiscale [978-1-987820-02-7](#)
8. 2014 - Sustainable Industrial Processing Summit/Shechtman International Symposium Metals and Materials Processing in a Clean Environment 7-volume Package [978-1-987820-10-2](#)
9. 2014 - Sustainable Industrial Processing Summit/Shechtman International Symposium Metals and Materials Processing in a Clean Environment 7-volume Package (CD-ROM) [978-1-987820-11-9](#)

Contain official ISSN numbers:

[2291-1200](#) (Book)

[2291-1227](#) (CD-ROM)

Sponsors

The symposium was organized by FLOGEN Star Outreach™ (www.flogen.org), a non-profitable international organization dedicated to bringing to the world-wide society a level of acknowledgement of various science, technology and engineering persons or entities for achievements related to global sustainable development. Financial sponsorship was provided by VITO, FLOGEN Technologies Inc. and ONRG (Office of Naval Research Global)/US Government.

Other sponsors included 78 Professional Organizations; Media; Academic Institutions and Journals and Publishers. The complete list of financial supporters and organizational sponsors at:

<http://www.flogen.org/ShechtmanSymposium/?gid=31>

Dr. Florian Kongoli
Chair and Organizer
Shechtman International Symposium
Jun. 29th - Jul. 04th, 2014
fkongoli@flogen.org



July 08, 2014