



2011 World Materials Summit

L'Enfant Plaza Hotel | Washington, DC | October 9-12, 2011



PROGRAM

2011 World Materials Summit & Student Congress

2011 World Materials Summit & Student Congress

funded in part by



National Science Foundation
Division of Materials Research
www.nsf.gov



www.aldrich.com



U.S. DEPARTMENT OF
ENERGY

Office of Basic Energy Science
www.doe.gov



www.dow.com



Office of Naval Research
Naval Materials Division
www.onr.gov



The World's Manufacturer
of Engineered Materials
www.americanelements.com

MatSEEC

Materials Science and
Engineering Expert Committee
www.esf.org

INTRODUCTION

Welcome to the 2011 World Materials Summit and Student Congress! This is the third in a series of Summits, convening scientists and policy makers to share ideas for global materials research directions. These Summits are built on the collaboration between the Materials Research Society (MRS), the European Materials Research Society (EMRS) and the Chinese Materials Research Society (CMRS).

The inaugural summit was held in Lisbon, Portugal in October 2007, coinciding with the Portuguese Presidency of the European Union. The scope included reduced CO₂ emissions, solar energy, wind power, biofuels, hydrogen fuel cells, nuclear fission and fusion, and complementary problems in energy storage, transmission, efficiency, and waste utilization. The Second World Materials Summit was held in October 2009 in Suzhou, China. This Summit made recommendations on how best to achieve the essential acceleration of development by the worldwide materials science and technology community, and developed a declaration to be presented at the United Nations Climate Change Conference in Copenhagen in December 2009.

Like the prior Summits, in 2011 we will continue the themes of clean energy and environmental sustainability, but also introduce a discussion of the critical role energy plays in providing clean potable water to the world. Additionally, we will hold the first ever Materials Student Congress, convening graduate students and post-doctoral fellows selected from many applicants worldwide who are passionate about engaging in and solving our critical challenges.

On behalf of MRS, EMRS and CMRS, we welcome you to Washington, DC. And we thank you for your insight and expertise as we seek to align research policy across international borders.

Gabriel Crean Commissariat à l'énergie atomique et aux énergies alternatives (CEA)

David Ginley National Renewable Energy Laboratory

Yafang Han Beijing Institute of Aeronautical Materials

Alan Hurd Los Alamos National Laboratory



Gabriel Crean



David Ginley



Yafang Han



Alan Hurd

2011 WMS Chairs



2011 World Materials Summit & Student Congress

STUDENT CONGRESS TUTORIALS

Sunday, October 9, 2011 | Monet 1

- 8:00 am Breakfast
- 8:45 - 9:00 am Introduction
Meeting Chairs: Gabriel Crean, David Ginley, Yafang Han, Alan Hurd
- TUTORIALS**
Chairs: Kathleen Alexander, Ashley White
- 9:00 - 10:00 am Global Energy and the Environment
Lynn Orr *Stanford University*
- 10:00 - 11:00 am Renewable Energy Generation
Ryne Raffaele *Rochester Institute of Technology*
- 11:00 - 12:15 pm Vehicles and Transportation
Bernard Frois *CEA/DRT*
Yusheng Zhao *University of Nevada—Las Vegas*
- 12:15 - 1:00 pm Lunch | Solarium
- 1:00 - 1:15 pm Welcome from The National Academies
Susan Sauer Sloan *The National Academies*
- 1:15 - 2:15 pm Energy Efficiency in Buildings
Ron Judkoff *National Renewable Energy Laboratory*
- 2:15 - 3:15 pm Energy Critical Elements
Frances Houle *Lawrence Berkeley National Laboratory*
- 3:15 pm Break
- 3:30 - 4:30 pm The Challenge of Water
David Cahill *WaterCAMPWS*
- 4:30 - 5:30 pm Challenges of Energy and Policy
Harry Kroto *Florida State University*
- 5:30 - 6:00 pm Student Roles
Meeting Chairs: David Ginley, Alan Hurd
- 6:00 pm Dinner on own
- 7:30 pm Summit Welcome Reception | Solarium

STUDENT CONGRESS PARTICIPANTS

- Ivana Aguiar *Universidad de la República, Uruguay*
Ratna Kumar VVSD Annabattula *Karlsruhe Institute of Technology, Germany*
Janet Bamgbose *University of Agriculture, Nigeria*
Jagadeesh Bellam *CINVESTAV-IPN, Mexico*
Ndigui Billong *Université de Yaoundé I, Cameroon*
Elsa Callini *Empa, Switzerland*
Sun-Tang Chang *National Taiwan University of Sciences and Technology, Taiwan*
Alfred Chidembo *University of Wollongong, Australia*
Enock Dare *University of Agriculture, Nigeria*
He-yun Du *National Taiwan University, Taiwan*
Hongmei Du *China University of Mining & Technology, China*
Lawrence Edomwonyi-Otu *Ahmadu Bello University, Nigeria*
Dongsheng Fu *Chinese Academy of Sciences, China*
Stella Itzhakov *Weizmann Institute of Science, Israel*
Jianying Ji *Washington State University, USA*
Gusphyl Justin *Naval Research Laboratory, USA*
Maria Kandyla *National Technical University of Athens, Greece*
Lauren Klein *Rutgers University, USA*
Dmitry Kvashnin *Moscow Institute of Physics and Technology, Russia*
Agnieszka Lekawa-Raus *University of Cambridge, United Kingdom*
Bin Li *Washington State University, USA*
Yu Liu *Beijing University of Technology, China*
Ying Ma *Rutgers University, USA*
Marina Mariano Juste *ICFO-The Institute of Photonic Sciences, Spain*
Juan Mario Michan *University of British Columbia, Canada*
Ian Murray *Northwestern University, USA*
Nour Nijem *University of Texas at Dallas, USA*
Ana Lia Noguera *Centro Universitario Regional Este, Uruguay*
María Eugenia Pérez Barthaburu *Universidad de la República, Uruguay*
Yusheng Qin *Chinese Academy of Sciences, China*
Javad Rafiee *Rensselaer Polytechnic Institute, USA*
Manoj Ramachandran *Universidad Nacional Autónoma de México, Mexico*
Araceli Rios Flores *CINVESTAV-IPN Unidad Mérida, Mexico*
Daniel Shoemaker *Argonne National Laboratory, USA*
Bright Sogbey *University of Ghana, Ghana*
Isaac Tamblin *Dalhousie University, Canada*
Yifeng Tao *Beijing University of Chemical Technology, China*
Antonio Vicente *Universidade Nova de Lisboa, Portugal*
Jenny Vitillo *Università di Torino, Italy*
Ming Wang *Central Iron and Steel Research Institute, China*
Mingshan Wang *University of Science and Technology Beijing, China*
Xin Wang *Huazhong University of Science and Technology, China*
Nicolas Woehrl *University Duisburg-Essen, Germany*
Deniz Wong *National Taiwan University, Taiwan*
Meiling Wu *Beihang University, China*
Mengqi Zhou *University of Science and Technology Beijing, China*

KEYNOTE & PLENARY PRESENTATIONS

Monday, October 10, 2011 | Grand Ballroom

7:00 am Breakfast | Solarium
8:00 - 8:30 am Introduction
Meeting Chairs: Gabriel Crean, David Ginley, Yafang Han, Alan Hurd

KEYNOTE SPEAKERS

8:30 - 9:15 am Steven Koonin Undersecretary for Science, US Department of Energy
9:15 - 10:00 am Gabriel Crean Scientific Director, Commissariat à l'énergie atomique et aux énergies alternatives (CEA)
10:00 - 10:30 am Break
10:30 - 11:15 am Xianhong Wang Changchun Institute of Applied Chemistry, Chinese Academy of Sciences
11:15 - 12:00 pm Sergio Alcocer Undersecretary, Ministry of Energy, Mexico
12:00 pm Lunch | Solarium

PLENARY SPEAKERS

1:00 - 1:30 pm Global Energy Challenges and Sustainability
Harry Kroto Florida State University
1:30 - 2:00 pm Global Energy Flows
Lynn Orr Stanford University
2:00 - 2:30 pm Materials Challenges in Renewable Energy
George Crabtree Argonne National Laboratory
2:30 - 3:00 pm The Challenge of Water
David Cahill WaterCAMPWS
3:00 - 3:30 pm Terawatt Renewables and Green Technology
Patrick Bressler Fraunhofer-Gesellschaft
3:30 pm Break
4:00 - 4:30 pm Raw Materials
Duan Weng Tsinghua University
4:30 - 5:00 pm The Grid Worldwide
Paul Waide Navigant Consulting
5:00 - 5:30 pm Future Vehicles and Energy
Jerry Gibbs US DOE Vehicle Technologies
5:30 - 6:00 pm Resource Allocation
Randy Kirchain Massachusetts Institute of Technology
6:00 - 6:30 pm Nuclear Energy
V. S. Arunachalam Center for Study of Science, Technology and Policy
6:30 - 7:00 pm Governmental Materials Science Perspective
Bill Brinkman US DOE Office of Science

POSTER SESSION & RECEPTION

7:30 - 10:00 pm L'Enfant Plaza Hotel | Solarium



2011 World Materials Summit & Student Congress

EXPERT PANEL SESSIONS

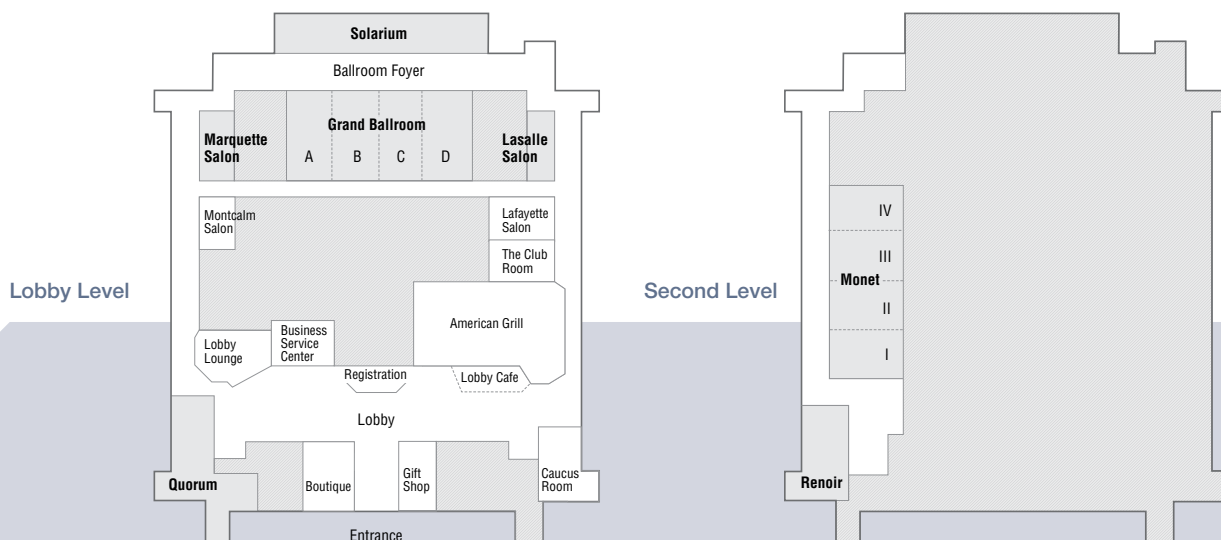
Tuesday, October 11, 2011

- 7:00 am Breakfast | Ballroom Foyer
- 8:00 - 8:30 am Instructions – Setting the Stage for the Panel Work | Grand Ballroom
- 8:30 - 9:45 am Initial Discussions
- 9:45 am Break | Ballroom Foyer
- 10:15 - 12:00 pm Discussions
- 12:00 pm Lunch | Solarium
- 1:00 - 3:30 pm Report Development
- 3:30 pm Break | Ballroom Foyer
- 4:00 - 5:45 pm Report Development – Prepare Summary
- 5:45 - 6:15 pm Personal Time
- 6:15 pm Dinner at the US Chamber of Commerce
(meet in the L'Enfant Plaza Hotel Lobby at 6:15 pm)

Wednesday, October 12, 2011

- 7:00 am Breakfast | Solarium
- 8:00 - 10:15 am Panel Presentations/Audience Feedback | Grand Ballroom
- 10:15 am Break | Ballroom Foyer
- 10:30 - 12:00 pm Panel Regroup – Prepare Final Report | Panel Breakout Rooms
- 12:00 pm Lunch | Solarium
- 1:00 - 2:00 pm Final Summit Report | Grand Ballroom
- 2:00 - 3:00 pm Closing Session | Grand Ballroom

HOTEL FLOOR PLANS



PANELS

BUILDINGS/LIGHTING | BALLROOM A

Eric Amis United Technologies Research Center
Jeffrey Brownson The Pennsylvania State University
Claes Göran Granqvist The Angstrom Laboratory, Uppsala University
Ron Judkoff National Renewable Energy Laboratory
Jerry Simmons Sandia National Laboratories
Dujin Wang Institute of Chemistry, CAS
Luoyi Xu The Institute of Technical Information for Building Materials Industry

ENERGY FUELS | MONET SUITE IV

Jim Brainard National Renewable Energy Laboratory
David Cahen Weizmann Institute of Science
Russ Chianelli University of Texas at El Paso
José Olivares Los Alamos National Laboratory
Xianhong Wang Changchun Institute of Applied Chemistry, CAS
Huamin Zhang Dalian Institute of Chemical Physics, CAS
Xu Zhang Beijing University of Chemical Technology

NUCLEAR ENERGY | MONET SUITE III

Kathleen Alexander US Department of Energy — LANL
Todd Allen University of Wisconsin — Madison
V S Arunachalam Center for Study of Science, Technology and Policy
Mark Bourke Los Alamos National Laboratory
Gabriel Crean Commissariat à l'énergie atomique et aux énergies alternatives (CEA)
Man Yao Dalian University of Technology

POLICY AND EDUCATION | BALLROOM D

Sergio Alcocer Ministry of Energy, Mexico
William Brinkman US Department of Energy
Hanns-Ulrich Habermeier Max Plank Institute for Solid State Research
Yafang Han Beijing Institute of Aeronautical Materials
Ron Kelley MRS Washington Office
Linda Sapochak National Science Foundation
Michael Scott National Science Foundation
Meiqing Shen Tianjin University

RENEWABLES | BALLROOM B

Patrick Bressler Fraunhofer-Gesellschaft
George Crabtree Argonne National Laboratory
Hong Lin Tsinghua University
Xiaoguang Ma Suntech Power Holdings Co, Ltd
Ryne Rafaelle Rochester Institute of Technology
Ramesh Ramamoorthy US Department of Energy
Sergio Mejia Rasales Universidad Autonoma de Nueva Leon
Hui Yang Suzhou Institute of NanoTech and NanoBionics, CAS
Josephat Zimba Salene Mining

RESOURCE ASSESSMENT | BALLROOM C

Jacques Amoureux Université Pierre et Marie Curie
Douglas Arent Joint Institute for Strategic Energy Analysis
Pol Guennoc BRGM
Frances Houle Lawrence Berkeley National Laboratory
Randy Kirchain Massachusetts Institute of Technology
Lynn Orr Stanford University
William Tumas National Renewable Energy Laboratory
Hongtao Wang Sichuan University

STORAGE/SMART GRID | MONET SUITE II

Paul Denholm National Renewable Energy Laboratory
Paul Waide Navigant Consulting
Weiguo Wang Ningbo Institute of Materials Technology and Engineering, CAS
Ying Wu China Iron & Steel Research Institute Group

VEHICLES | LASALLE SALON

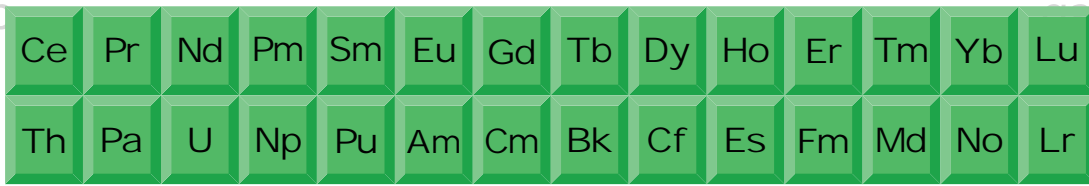
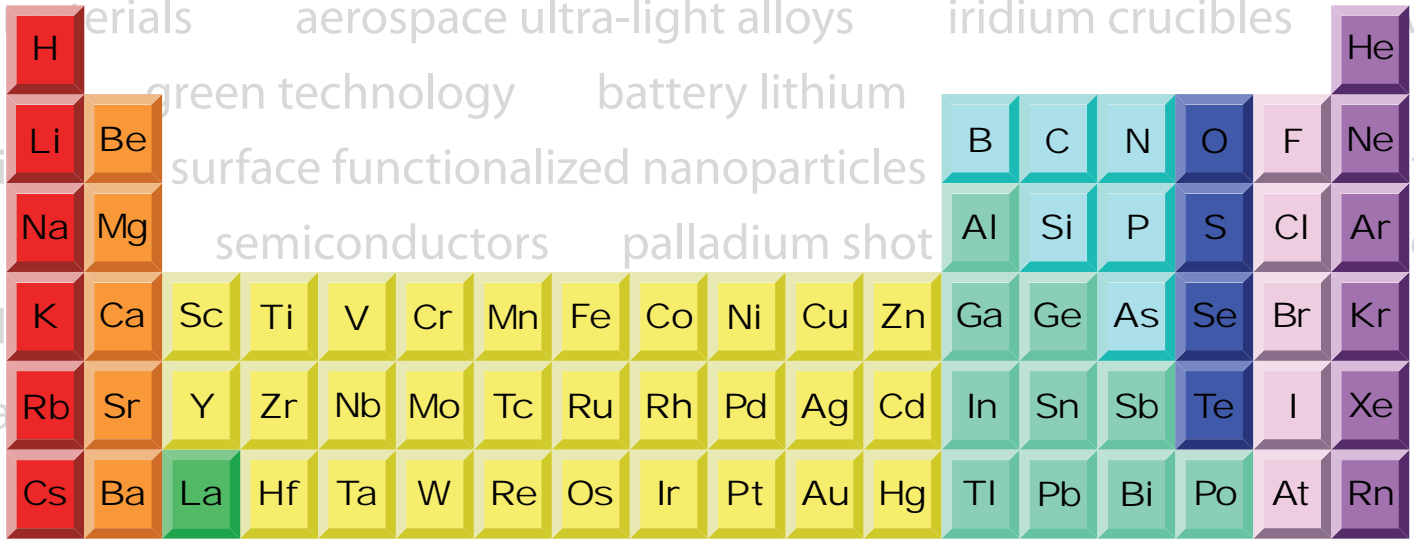
Lizhen Fan University of Science and Technology Beijing
Bernard Frois CEA/DRT
Jerry Gibbs US DOE Vehicle Technologies
Xuejie Huang Institute of Physics, CAS
Fusheng Pan Chongqing Academy of Science and Technology
Yusheng Zhao University of Nevada — Las Vegas

WATER | MARQUETTE SALON — Tuesday RENIOR — Wednesday

David Cahill WaterCAMPWS
Jiashun Cao Hohai University
Martin Green National Institute of Standards and Technology
Marcel Morabito CEA Grenoble
Xie Quan Dalian University of Technology
RunCang Sun South China University of Technology
Duan Weng Tsingua University

STUDENT CONGRESS | MONET SUITE I

FACILITATORS
Eric Garfunkel Rutgers University
Ashley White AAAS Fellow — NSF DMR



Now Invent.™



World's Leading Manufacturer of Engineered & Advanced Materials

catalog: americanelements.com

© 2001-2011. American Elements is a U.S. Registered Trademark.