The Abdus Salam International Centre for Theoretical Physics

AIP Industrial Physics Forum 2012: Capacity Building for Industrial Physics in Developing and Emerging Economies

Cosponsor(s): Co-sponsored by ICTP, American Institute of Physics and TWAS
Organizer(s): AIP: Philip W. Hammer; ICTP: Joseph Niemela (Local Organizer)
Trieste - Italy, 16 - 19 April 2012

Venue: Leonardo da Vinci Building Main Lecture Hall

Final programme

Monday, 16 April 2012 (Room:Leonardo da Vinci Building Main Lecture Hall)

08:30 - 09:30 (Room: Leonardo da Vinci Building, Lobby)
--- Registration ---
All Speakers and Participants are required to complete online registration formalities

10:00 - 10:40 **Welcome and Introductory Remarks - Policy Session I**

Welcome from ICTP (Fernando Quevedo - International Centre for Theoretical Physics, Italy)

Welcome from AIP (Philip W. Hammer - American Institute of Physics, USA)

10:40 - 12:00 **Session Chair: Rudy Ludeke** / *AIP Corporate Associates, USA*
Technical Session I - Alternative Energy

Photovoltaics Technology: No Longer an Outlier (Larry Kazmerski - National Center for Photovoltaics (NREL), USA)

The Thermodynamic and Industrial Potentials of Organic Photovoltaics (Sean Shaheen - University of Denver, USA)

12:00 - 13:15 --- Lunch Break ---

13:15 - 15:15 **Session Chair: Sandro Scandolo** / *International Centre for Theoretical Physics, Italy*
Technical Session II - Materials

Photonic Materials for Solar Energy Conversion at the Thermodynamic Limit (Harry Atwater - California Institute of Technology, USA)

The Battery 500 Project: towards the ultimate battery (Alessandro Curioni - IBM Research, Zurich)

Graphene for nanoelectronic device applications (Luigi Colombo - Texas Instruments Inc., USA)

15:15 - 15:30 --- Coffee Break ---

15:30 - 18:10 **Session Chair: David Seiler** / *National Institute of Standards and Technology, USA*
Policy Session I - Energy Policy

Innovation, Science and Technology Policy, and the Public Good (Venky Narayanamurti - Harvard University, USA)

Photovoltaics in transition towards a mainstream electricity provider - in developed and emerging economies (Winfried Hoffman - European PV Industry Association, Germany)

Bioenergy innovation at local, regional and global levels - addressing needs for emerging technologies to support sustainable growth and development (Caroline Taylor - UC Berkeley, USA)

Grid Access and Renewables in Developing Countries (Rob Stoner - MIT, USA)

18:30 - 20:00 (Room: Leonardo da Vinci Building, Lobby)
Opening Reception and Poster Session
Refreshments will be served in the lobby area

Tuesday, 17 April 2012 (Room:Leonardo da Vinci Building Main Lecture Hall)
Chairperson: Joseph Niemela, ICTP

10:00 - 12:00 **Frontiers in Physics I**

Harnessing Light on a Silicon Chip for Optical Communications (Solomon Assefa - IBM Watson Research Center, US)

From Big Bang to Biosphere: Progress and Prospects in Space Science (Martin Rees - Cambridge University, UK)

Quantum Nanotechology (Andrew Briggs - Oxford University, UK)

12:00 - 13:30 --- Lunch Break ---

13:30 - 14:45 **Session Chair: Dean Zollman** / *Kansas State University, USA*
Education Session I

Introduction to the Education Sessions (Dean Zollman - Kansas State University, USA)

Developing teachers for engaged interactive teaching (Ian Lawrence - Institute of Physics, UK)

14:45 - 15:00 --- Coffee Break ---

15:00 - 17:00 **Session Chair:Dean Zollman** / *Kansas State University, USA*
Education Session II

Coach, An Integrated Learning Environment for Science Education (Ton Ellermeijer & Ewa Kedzierska - CMA-Science, Amsterdam)

19:00 - 22:00 **William Colglazier** / *Science Advisor to the United States Secretary of State, USA*
--- Science and Technology : Building Innovative Societies and 21st Century Diplomacy ---
IPF Banquet with Keynote Address

Wednesday, 18 April 2012 (Room:Leonardo da Vinci Building Main Lecture Hall)

08:30 - 10:30 **Session Chair: Vasudevan Lakshminarayanan** / *University of Waterloo, Canada*
Technical Session III - Solar Energy

Insight into Organic Photovoltaics (K. S. Narayan - Jawaharlal Nehru Centre for Advances Scientific Research, Bangalore, India)

Towards Affordable Clean Energy Solutions: The Nanoscience Route (Satishchandra B. Ogale - National Chemical Laboratory, Pune, India)

Insight into Organic Photovoltaics (Rene Lopez - University of North Carolina, Chapel Hill, USA)

10:30 - 10:45 --- Coffee Break ---

10:45 - 12:45 **Session Chair: Martin Poitzch** / *Schlumberger-Doll Research, USA*
Technical Session IV - Micro & Complex Fluidics I

Microfluidic System Technology in Chemical Analysis (Karsten Kraiczek - Agilent, Walbron, Germany)

Microfluidics and the oil industry (Patrick Tabeling - ESPCI, France)

Explaining the flow of elastic liquids (John Hinch - Cambridge University, UK)

12:45 - 14:00 --- Lunch Break ---

14:00 - 15:20 **Technical Session V - Optics**

Photonics-based Telemedicine Technologies toward Smart Global Health Systems (Aydogan Ozcan - UCLA, US)

Realistic applications of optical spectroscopy in the environmental and medical fields, with industrial potential (Sune Svanberg - Lund University, Sweden & South China Normal University)

15:20 - 15:40 --- Coffee Break ---

15:40 - 17:40 **Session Chair: Dean Zollman** / *Kansas State University, USA*
Education Session III

Experiences in Physics Education at the Open University (John Bolton - British Open University, UK)

Inquiry teaching using inexpensive materials and unexpected results (Gorazd Planinsic - University of Ljubljana, Slovenia)

Destinations and Inspirations: The role of undergraduate research in capacity building for industrial physics (Liz McCormack - Bryn Mawr College, USA)

Thursday, 19 April 2012 (Room:Leonardo da Vinci Building Main Lecture Hall)

08:30 - 09:00 **Session Chair: Philip W. Hammer** / *American Institute of Physics*
Policy Session III - Capacity Building for Industrial Physics in Developing and Emerging Economies

Scialog as a Model for Capacity Building Action Planning (Richard Wiener - Research Corporation for Science Advancement, USA)

09:00 - 09:35 **Capacity Building Action Planning I - Facilitated Breakout Groups**
Facilitators: Richard Wiener, Research Corporation for Science Advancement, USA; Rene Lopez, University of North Carolina, Chapel Hill, USA; Liz McCormack, Bryn Mawr College, USA; Sean Shaheen, University of Denver, USA

09:35 - 09:50 --- Coffee Break ---

09:50 - 11:00 **Capacity Building Action Planning II - Facilitated Breakout Session: Technical**

11:00 - 12:10 **Capacity Building Action Planning III - Facilitated Breakout Session: Regional**

12:10 - 13:15 --- Action Planning Lunch ---

13:15 - 13:45 **Capacity Building Action Planning IV - Plan Development**

13:45 - 15:05	**Session Chair: Catharine O'Riordan** / *American Institute of Physics* **Frontiers in Physics II** Time-Reversal, Waves and Innovation (Mathias Fink - EPSI, France) Diagnostics and Treatment of Tumours using Laser Techniques (Sune Svanberg and Katarina Svanberg - Lund University, Sweden and South China Normal University, Guangzhou, China)
15:05 - 15:30	--- Coffee Break ---
15:30 - 17:30	**Session Chair: Surya Raghu** / *Advanced Fluidics LLC, USA* **Technical Session VI - Micro & Complex Fluidics II** Reservoir Modeling and Simulation (Thomas Halsey - ExxonMobil Upstream Research, USA) Microfluidics for global health diagnostics (Samuel Sia - Columbia University, USA) Microfluidic principles and devices for analytical and synthetic purposes (Han Gardeniers - University of Twente, Netherlands)
17:30 - 18:10	**Policy Session IV** Photovoltaics and Renewable Electricity in Europe (Arnulf Jaeger-Waldau - European Commission's Joint Research Center, Inspra, Italy)
18:30 - 19:00	(Room: Adriatico Guest House (Lower Level 1)) **Capacity Building Action Planning V - Poster Session of Action Plans**
19:00 - 21:00	(Room: Adriatico Guest House (Terrace)) --- Closing Reception ---