

Monday Morning, October 31, 2011

Energy Frontiers Focus Topic

Room: 104 - Session EN-MoM

Industrial Physics Forum on Energy I

Moderator: R.A. Sears, Massachusetts Institute of Technology, B. Clark, Schlumberger

8:20am **EN-MoM1 Energy Security and Energy Policy**, *W.W. Hogan*, Harvard University **INVITED**

Energy security is broader and different than energy independence. Different definitions of energy security produce different policy prescriptions. A consistent framework for energy security must address basic principles.

9:00am **EN-MoM3 Technology Innovation and China's Skyrocketing Demand for Energy**, *E. Steinfeld*, Massachusetts Institute of Technology **INVITED**

9:40am **EN-MoM5 Making Energy Sustainable – Scientific Challenges in Determining the Pathways to the Future**, *E.D. Williams*, BP plc, UK **INVITED**

The scale and cost of the energy challenge are immense. Everyone wants secure, reliable, and affordable energy, but climate change, demand growth and, increasingly, resource scarcity, are transforming the energy landscape and it will continue to evolve.

There are many possible technical pathways to a low-carbon energy future, and each presents unresolved technical challenges that will influence the time, money and global-scale asset and infrastructure deployment that will take place over the next decades. BP's energy portfolio demonstrates many of the research challenges in this arena, and some examples from Carbon Capture and Storage and Biofuels will be discussed here specifically. Ultimately, research, technology, policies and partnerships will determine the pace of change.

10:40am **EN-MoM8 Synthetic Biology for Energy and the Environment**, *A.A.N. Patrinos*, Synthetic Genomics (SGI) **INVITED**

Synthetic biology is one of the major "tools" that are converting biology from a concept-driven scientific revolution to a tool-driven scientific revolution. This paradigm shift will enable significant applications of the new biology to major challenges in medicine, energy, and the environment.

11:20am **EN-MoM10 Manufacturing Innovations for a Sustainable Energy Future**, *R. Castro*, *O. Nalamasu*, Applied Materials, Inc. **INVITED**

Nanomanufacturing technology, the cost-effective and practical manufacturing solutions based on equipment and process solution platforms have been translating the promise of nanotechnology to reality in advancing transforming the electronics and display industries. Technology, Scale and Innovation would continue to be fundamental to meet the global inflections associated with Electronics and Display industries and more importantly, advances in nanomanufacturing technology are critical to solving the energy and environment challenges. In this presentation, I will detail the challenges and opportunities in building a sustainable energy future based on nanomanufacturing innovations.

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