

Energy: Reducing our Dependence on Fossil Fuels
2013 U.S. Frontiers of Engineering Symposium

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Abstract

Fossil fuels have served us well over the last couple centuries, improving our quality of life and advancing our civilization. However, during this time we have become overly dependent on this singular energy inheritance that took Mother Nature millions of years to accumulate, consuming the available reserves at an accelerating pace. Today, we face a number of serious issues associated with our dependence on fossil fuels, including energy security, national security, air quality, and global climate change.

It is the objective of this session to provide the audience with a broad perspective of the challenges we face due to our dependence on fossil fuels and to motivate the technical solutions for diversifying our fuel production infrastructure to meet the energy needs of a growing population. First, an overview will be presented by Laura Diaz Anadon (Harvard University) highlighting the technical, economic, environmental, social, and political issues associated with our dependence on fossil fuels and challenges for technology innovation. The second speaker, Joyce Yang (Department of Energy), will present a review of the advances and current challenges in biofuel production technologies. The third speaker, Willem Rensink (Shell USA), will present an industry perspective on the efforts and focus to include non-fossil fuels into our fuel infrastructure. Finally, the last speaker, Rachel Segalman (University of California, Berkeley), will provide a review of artificial photosynthesis research focused on directly harnessing solar energy for fuel production. Following the presentations, the session will conclude with an interactive panel discussion encouraging the interaction of the audience with the speakers, capturing the views and ideas presented and generated during the session.

Energy: Reducing our Dependence on Fossil Fuels: Schedule and Speakers 2013 U.S. Frontiers of Engineering Symposium

10:00am – 10:05am	Session Introduction by Session Co-chairs Dr. Halil Berberoglu and Dr. Stuart Thomas
10:05am – 10:30am	“Energy from Fossil Fuels: Challenges and Opportunities for Technology Innovation” Dr. Laura Díaz Anadón Science, Technology, and Public Policy program John F. Kennedy School of Government Harvard University
10:30am – 10:40am	Q&A
10:40am – 11:05am	“Bioenergy Technologies and Strategies - A New Frontier” Dr. Joyce C. Yang Bioenergy Technologies Office (BETO) U.S. Department of Energy
11:05am- 11:15am	Q&A
11:15am – 12:15pm	Lunch
12:15pm – 12:40pm	“Shell Biofuels, Drivers for successful Biofuel production scale-up” Dr. Willem Rensink Innovation and R&D Department Shell International Exploration and Production Inc.
12:40pm – 12:50pm	Q&A
12:50pm – 1:15pm	“Artificial Solar-Fuel Generators” Dr. Rachel Segalman Joint Center for Artificial Photosynthesis Lawrence Berkeley National Laboratories University of California, Berkeley
1:15pm – 1:25pm	Q&A
1:25pm – 2:00pm	Panel Discussion