



CREATING A BRIGHT ENERGY FUTURE

GCEP at 10 Years

Global Climate & Energy Project
STANFORD UNIVERSITY

GCEP Research Symposium

October 10 – 11, 2012

Stanford, CA

Global Challenges – Global Solutions – Global Opportunities

GCEP Sponsors:

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GCEP RESEARCH SYMPOSIUM 2012

Wednesday, October 10

MORNING			
7:45 – 8:30	McCaw Hall	<i>Check-In, Continental Breakfast*</i>	
8:30 – 9:00	McCaw Hall	Welcome, Global Climate and Energy Project 2012 Sally Benson, Director – GCEP, Stanford University	
9:00 – 9:45	McCaw Hall	Global Energy Assessment Thomas B. Johansson , Co-Chair of the Executive Committee – Global Energy Assessment (hosted by the International Institute for Applied Systems Analysis); former Director – International Institute for Industrial Environmental Economics, Lund University	
9:45 – 10:30	McCaw Hall	Energy Technology Landscape: One Indian Perspective Ajit Sapre , Group President of Research and Technology, Reliance Industries	
10:30 – 10:45	Ford Gardens	<i>Break*</i>	
10:45 – 11:05	McCaw Hall	GCEP Origins Fireside Chat Moderator: Jeff Koseff , Director – Stanford Woods Institute for the Environment Lynn Orr , Director – Precourt Institute for Energy, Stanford University Brian Flannery , Strategy and Program Manager – Environmental Policy and Planning Department (retired), ExxonMobil	
11:05 – 12:00	McCaw Hall	GCEP – The First 10 Years Moderator: Lynn Orr , Director – Precourt Institute for Energy, Stanford University Panelists: James Plummer , Dean – School of Engineering, Stanford University Sherri Stuewer , Vice President – Environmental Policy & Planning (retired), ExxonMobil Philippe Lacour-Gayet , Vice President and Chief Scientist (retired), Schlumberger Nate Lewis , Hub Director – Joint Center for Artificial Photosynthesis, California Institute of Technology Shannon Miller , Co-Founder and CEO – EtaGen	
12:00 – 12:05	McCaw Hall	What GCEP Has Meant to Stanford University Stanford President John L. Hennessy	
AFTERNOON			
	Sy Oak Grove	<i>Lunch*</i>	
12:05 – 1:15	Fisher Conference Center	<i>GCEP Sponsor/Student Networking Lunch (by invitation only)</i>	
GCEP Research – Technical Talks: Carbon-Based Energy Systems		Energy Tutorial: Energy & Earth Systems	
1:15 – 2:45	McCaw Hall	1:15 – 2:45	Fisher Conference Center
Moderator: Jennifer Wilcox , Stanford University Presenters: William Schneider , University of Notre Dame, <i>Chemically-Complexing Ionic Liquids for Pre-Combustion CO₂ Capture</i> Randall Snurr , Northwestern University, <i>New Materials and Process Development for Energy-Efficient Carbon Capture in the Presence of Water Vapor</i> Biondo Biondi , Stanford University, <i>Continuous Passive-Seismic Monitoring of CO₂ Geologic Sequestration Projects</i>		Pamela Matson , Dean – School of Earth Sciences, and Ian Monroe , Stanford University, <i>Energy & Earth Systems 101</i>	

*Badge required for all meals

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GCEP RESEARCH SYMPOSIUM 2012

Wednesday, October 10 (continued)

AFTERNOON		
2:45 – 3:30	McCaw Hall	2012 GCEP Distinguished Student Lectures Kendra Kuhl , Graduate Student – Chemical Engineering, Stanford University <i>Insights into the Electrochemical Reduction of CO₂ on Metal Surfaces</i> Nicholas Bonawitz , Postdoctoral Scholar – Biochemistry, Purdue University <i>Investigating the Molecular Mechanisms of Dwarfing in Lignin-Deficient Mutants</i> Boxiao Li , Graduate Student – Energy Resources Engineering, Stanford University <i>Modeling CO₂ Sequestration: Heterogeneity and Scale Transition</i>
POSTER SESSION AND RECEPTION (3:30 – 6:00)*		
3:30 – 5:00 SESSION A	Ford Gardens	GCEP students present posters in four theme areas. <i>(There are two sessions to allow student presenters a chance to view other posters.)</i> <ul style="list-style-type: none"> • Advanced Energy Transformations and Storage • Bioenergy • Carbon-Based Energy Systems • Solar Energy
4:30 – 6:00 SESSION B	Ford Gardens	
EVENING		
6:00 – 7:30	McCaw Hall	<i>GCEP Student Social (for GCEP graduate students and postdoctoral scholars only)</i>

Thursday, October 11

MORNING		
7:45 – 8:30	McCaw Hall	<i>Check-In, Continental Breakfast*</i>
GCEP Research – Technical Talks: Bioenergy		Energy Tutorial: Electrocatalysis
8:30 – 10:00	McCaw Hall	8:30 – 10:00 Fisher Conference Center
Moderator: Alfred Spormann , Stanford University Presenters: Chris Field , Carnegie Institution, Stanford University, <i>The Climate-Protective Domain</i> Claire Halpin , University of Dundee, <i>Tailoring Plant Biomass for Bioenergy Applications by Manipulating Lignin</i> Bruce Logan , Penn State University, <i>Capturing Electrical Current via Mechanisms Used for Interspecies Electron Transfer to Produce Methane</i>		Thomas Jaramillo , Stanford University, <i>Electrocatalysis 101</i>
10:00 – 10:15	Ford Gardens	<i>Break*</i>
GCEP Research – Technical Talks: Solar Energy		Energy Tutorial: Geoengineering
10:15 – 11:45	McCaw Hall	10:15 – 11:45 Fisher Conference Center
Moderator: Michael McGehee , Stanford University Presenters: Jennifer Dionne , Stanford University, <i>Upconverting Electrodes for Improved Solar Energy Conversion</i> Mark Brongersma , Stanford University, <i>Plasmonics and Mie Scattering</i> Harry Gray , California Institute of Technology, <i>Solar Fuels</i>		Ken Caldeira , Carnegie Institution, <i>Geoengineering 101</i>
11:45 – 1:00	McCaw Hall	<i>Lunch*</i> Energy Innovation Ecosystem Cathy Zoi , Silver Lake Kraftwerk; Former Assistant Secretary of Energy Efficiency and Renewable Energy, U.S. Department of Energy

GCEP RESEARCH SYMPOSIUM 2012

Thursday, October 11 (continued)

AFTERNOON			
1:00-1:15	McCaw Hall	Break*	
GCEP Research – Technical Talks: Advanced Energy Transformations and Storage		Energy Tutorial: Exergy	
1:15 – 2:45	McCaw Hall	1:15 – 2:45	Fisher Conference Center
Moderator: Thomas Jaramillo , Stanford University Presenters: Jens Nørskov , Stanford University, SLAC, <i>Electrochemical CO₂ Reduction: Catalyst Design Strategies</i> Yi Cui , Stanford University, SLAC, <i>Materials Design for Grid-Scale Energy Storage</i> Scott Barnett , Northwestern University, <i>A Novel Solid Oxide Flow Battery Utilizing H-C-O Chemistry</i>		Chris Edwards , Stanford University, <i>Exergy 101</i>	
2:45 – 3:00	Ford Gardens	Break*	
3:00 – 3:45	McCaw Hall	GCEP Postdoctoral Scholars in Energy Systems Analysis Charlie Barnhart , <i>Energetic and Material Limits to Electrical Energy Storage</i> Michael Dale , <i>The Energy Balance of the Photovoltaic (PV) Industry</i>	
3:45 – 4:30	McCaw Hall	Reducing Our Dependence on Fossil Fuels: An Industrial Perspective on Energy Research Douglas Muzyka , Senior Vice President and Chief Science & Technology Officer, DuPont	
4:30 – 5:20	McCaw Hall	Grand Challenges in the Future of Energy Moderator: Sally Benson , Director – GCEP Panelists: Chris Field , founding Director – Department of Global Ecology, Carnegie Institution, GCEP Research Theme Leader – Bioenergy Gary Leonard , Global Technology Director, Aero-Thermal & Mechanical Systems Technologies, GE Steven Freilich , Director of Materials Science and Engineering – Central Research and Development, DuPont Thomas Jaramillo , Associate Professor – Chemical Engineering, Stanford University, GCEP Research Theme Leader – Electrochemical Energy Conversion and Storage Jason Bloking , Graduate Student – Materials Science and Engineering, Stanford University, GCEP Student Representative	
5:20 – 5:30	Ford Gardens	GCEP Student Poster Awards Closing Remarks: Sally Benson , Director – GCEP	

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Conference presentations, videos and posters (with permission from speakers/authors) will be posted on the GCEP website by the end of October at <http://gcep.stanford.edu/symposium>.

All food served at the symposium is provided by Catering By The Other Woman – seasonal, sustainable cuisine with an emphasis on organic and natural foods.



Global Climate and Energy Project

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