



GCEP Research Symposium

Energy Research — Five Years and Beyond



October 1–3, 2008

Frances C. Arrillaga Alumni Center
STANFORD UNIVERSITY

Wednesday, October 1

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| 8:00 – 8:30 | CONTINENTAL BREAKFAST | |
| 8:30 – 12:10 | Introduction and Keynote | |
| 8:30 | GCEP Welcome | Lynn Orr, <i>GCEP</i> |
| 8:40 | Keynote Address—Planning for Innovation: AB 32 and the Role of Technology | Mary Nichols <i>California Air Resources Board</i> |
| 9:40–12:00 | Perspectives on Energy Research in the Next Five Years | Chair: Lynn Orr |
| 9:40 | The Challenge of Low-Carbon Transportation Futures | Joan Ogden <i>Institute of Transportation Studies, UC Davis</i> |
| 10:20 – 10:40 | BREAK | |
| 10:40 | Cellulosic Biofuels | Chris Somerville <i>Energy Biosciences Institute UC Berkeley</i> |
| 11:20 | Energy R&D: Facilitating the Great Transition in Energy Systems | John Weyant <i>Precourt Institute for Energy Stanford</i> |
| 12:00 – 1:00 | LUNCH | |
| 1:00 – 5:00 | Progress in Energy Research and Opportunities in the Next Five Years | Chair: Sally Benson |
| 1:00 | Solar Energy | Martin Green, <i>UNSW</i> |
| 1:40 | Bioenergy and Bio Conversion | Chris Field, <i>Stanford</i> |
| 2:20 | Advanced Energy Transformations and Storage | Chris Chidsey, <i>Stanford</i> |
| 3:00 – 3:30 | BREAK | |
| 3:30 | Carbon Capture and Storage | T.S. Ramakrishnan <i>Schlumberger</i> |
| 4:10 | Recent Workshops on New GCEP Topic Areas | Sally Benson, <i>Stanford</i> |
| 4:50 | ADJOURN | |
| 5:15 – 6:45 | Reception | |



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Thursday, October 2

8:00 – 8:30 **CONTINENTAL BREAKFAST**

8:30 – 12:00 Solar Energy **Chair: Martin Green**

8:30 Third Generation Photovoltaics Gavin Conibeer, *UNSW*

9:00 Materials for High-Efficiency, Low-Cost Thin Film Solar Cells Alberto Salleo, *Stanford*

9:30 Lateral Nanoconcentrator Nanowire Multijunction Photovoltaic Cells Peter Peumans, *Stanford*

10:00 Artificial Photosynthesis: Membrane Supported Assemblies That Use Sunlight to Split Water Nate Lewis, *Caltech*

10:30 – 10:45 **BREAK**

10:45 Solar Energy Poster Session

12:15 – 1:00 **LUNCH**

1:00 – 5:00 Biofuels and Bioenergy Conversion **Chair: Chris Field**

1:00 Direct Solar BioHydrogen Jim Swartz, *Stanford*

1:30 Directed Evolution and Genomic Analysis of Novel Yeast Species for More Efficient Biomass Conversion Gavin Sherlock, *Stanford*

2:00 Biomass Energy: The Climate-Protective Domain—Analytical Models and Techniques Scott Loarie, *Carnegie Institute of Washington*

2:30 Designing Lignins for Improved Biomass Processing John Ralph, *Univ. of Wisconsin*

3:00 – 3:30 **BREAK**

3:30 Biofuels and Bioenergy Conversion Poster Session

5:00 **ADJOURN**



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Friday, October 3

8:00 – 8:30 **CONTINENTAL BREAKFAST**

8:30 – 12:00 Carbon Capture and Storage **Chair: Sally Benson**

- 8:30 Development of Innovative Gas Separation Membranes Through Sub-Nanoscale Materials Control Yuichi Fujioka, *RITE*
- 9:00 Multiphase Flow of Carbon Dioxide and Brine Sally Benson, *Stanford*
- 9:30 Coal Energy Conversion With Aquifer-Based Carbon Sequestration: An Approach to Electric Power Generation With Zero Matter Release to the Atmosphere Reggie Mitchell, *Stanford*
- 10:00 Anatomy of a Coalbed Fire Lynn Orr, *Stanford*

10:30 – 10:45 **BREAK**

10:45 Carbon Capture and Storage Poster Session

12:15 – 1:00 **LUNCH**

1:00 – 5:00 Advanced Energy Transformations and Storage **Chair: Chris Chidsey**

- 1:00 Development of Low-Exergy-Loss, High-Efficiency Chemical Engines Chris Edwards, *Stanford*
- 1:30 Nanoengineering of Hybrid Carbon Nanotube-Metal Nanocluster Composite Materials for Hydrogen Storage Anders Nilsson, *Stanford*
- 2:00 Nanoscale Architectural Engineering for High-Performance Solid Oxide Fuel Cells Dave Goodwin/Sossina Haile *Caltech*
- 2:30 A Quantum Leap Forward for Li-Ion Battery Cathodes Josh Thomas, *Uppsala Univ.*
- 3:00 – 3:30 **BREAK**
- 3:30 Advanced Energy Transformations and Storage Poster Session
- 5:00 **ADJOURN**