



AIChE® American Institute of Chemical Engineers

THE AIChE ENERGY INITIATIVE

The primary forum for
chemical engineers to discuss,
learn about and impact energy issues.

AIChE®

November 2008

Energy News

- **The International Energy Agency (IEA) has recently released two reports.**
The first report "[Carbon Dioxide Capture and Storage: A Key Carbon Abatement Option](#)" emphasizes the importance of decarbonizing fossil fuel emissions and estimates that with enough investment, this technology could cut greenhouse gas emissions in half by 2050. The second report "[Energy Security and Climate Policy](#)" offers an analytical approach for governments to improve energy security while mitigating climate change. Both reports are essential reading for those in the energy business.
- **The DOE releases "Methodology for Development of Geologic Storage Estimates for Carbon Dioxide"**
The release details the procedure for estimating the CO₂ storage potential in various types of geological formations found in the U.S.
http://www.fossil.energy.gov/news/techlines/2008/08055-DOE_Releases_Carbon_Storage_Method.html
- **New, Nano-Engineered Antireflective Coating for Solar Cells**
Researchers develop a new, nano-engineered antireflective coating for solar cells that boosts the amount of sunlight captured and allows the panels to absorb the entire spectrum of sunlight from any angle, regardless of the sun's position in the sky.
<http://news.rpi.edu/update.do?artcenterkey=2507>
- **New "Smart" Catalyst Design to Improve Fuel Cell and Pollution Control Technologies**
Lawrence Berkeley National Laboratory scientists use state-of-the-art spectroscopy to watch catalysts, possibly enabling them to design "smart" catalysts to improve fuel cell and pollution control technologies.
<http://newscenter.lbl.gov/press-releases/2008/10/21/catalysts/>
- **Biochemists Discovery**
Biochemists discover microbes that produce an enzyme that can break down cellulosic walls at low temperatures, a discovery that could reduce the energy costs for many biorefineries. <http://www.ars.usda.gov/is/pr/2008/081022.htm>

Energy Highlights at the AIChE Annual Meeting

Biofuels Symposium - Future Fuels from Renewable Resources on Monday, November 17, 2008 from 3-5 PM in the Marriott Philadelphia Downtown Salon G/H. Invited speakers will highlight biomass availability and technologies enabling the thermochemical and biochemical

conversion of biomass into energy:

- James Dumesic, University of Wisconsin, "The Catalytic Conversion of Bioproducts to Fuels"
- Bruce Dale, Michigan State University, "All Biomass is Local: Thinking Creatively about Biofuel Feedstocks"
- Timothy Searchinger, Princeton University, Woodrow Wilson School of Public Affairs, "Supplying Biofuels: Implications for Costs, Food and Global Warming"

Additional Energy Highlights:

- [Oil Characterization & Thermodynamics to Flow Assurance I](#) and [II](#)
- [Oil Shale and Oil Sands](#)
- [From Fuels to Emissions: Fundamentals of Conversion and Reductions](#)
- [Advances In Gasification Research](#)
- [Oxycombustion of Coal – Needs, Opportunities, and Challenges](#)
- [Advance Modeling Methods in Carbon Dioxide Sequestration](#)
- [Chemical Looping Processes](#)
- [Gasification and Syngas Refining](#)
- [Sustainable Biorefineries](#)
- [Hydrogen Production for a Hydrogen Economy](#)
- [Fuel Cells and Alternative Fuel Systems](#)
- [Nanomaterials for Energy Applications](#)
- [International Fusion Energy Technology Topical](#)
- [The Petroleum Environmental Research Forum on Biofuels](#)

AIChE Energy Prize Winners

Winners of this year's **AIChE Energy Prize** for undergraduates will present their papers at the Institute for Sustainability's Youth Council poster session on November 17 at 12:30-3:00pm in Exhibit Hall A of the Pennsylvania Convention Center:

- First Place – Elizabeth Carter, Northwestern University, "Electricity in Illinois – What's Next?"
- Second Place - John Casey Campbell, University of South Carolina, "A Comparison of Energy Savings Strategy for the Vacuum Distillation of Acetic Acid/Acetic Anhydride"
- Third Place – Pradnya Bhawalker, Rice University, "Automatic Control Systems for Efficient Facilities Management"

Also presenting their papers in this poster session are three outstanding engineering students that AIChE funded through the 2008 **WISE Intern program**. These students spent nine weeks in a special summer program to learn how government officials make decisions on complex technological issues and how engineers can contribute to legislative and regulatory policy decisions. The papers are:

- Viktoriya Buchko, Georgia Institute of Technology – "The Impact of Pharmacogenomics on the Pharmaceutical Industry"
- Nicholas Horelik, Tufts University – "Biofuels in the U.S. Transportation Sector: Public Policy and Its Effects on the Industry"
- Michaelangelo Tabone, University of Pittsburgh – "Metrics in Congress: Useful Metrics for Evaluating Biofuels Legislation"

Additional AIChE News on Energy

K-12 Energy Education.

Is your student chapter interested in working with grade or high school students? AIChE is offering awards to student chapters that develop curriculum to engage K-12 students in alternative energy education. [Click here](#) to find out how your AIChE student chapter can apply. The proposal deadline has been extended to December 1, 2008.

Against the backdrop of growing global demand for energy and new energy legislation, AIChE members have launched several projects that focus on consensus-based **energy metrics**. They intend to develop a set of metrics that provide technical, sustainability and societal perspectives on choices of energy systems. In support of this objective, two specific projects are underway.

1. The United Engineering Foundation has provided a grant of \$125,000 to a Founders Society Team led by AIChE President Dale Keairns that will address challenges posed by assessing and implementing technologies for carbon management.
2. AIChE member John Carberry of DuPont is leading an exploratory discussion for the proposed Renewable Energy Metrics Committee at the November's AIChE meeting. The proposed committee will develop, vet, test and recommend for adoption criteria and measurements for assessment of biofuels development and use. For additional information, contact sustainability@aiiche.org.

Congratulations! SAIC has become a silver sponsor of AIChE's Energy Metrics Initiative and e-Newsletter.

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