



The AIChE Energy Initiative

User's Guide to Energy Focused Events
November 8-13, 2009

AIChE 2009 Annual Meeting
Gaylord Opryland Hotel and Convention Center


09AIChE[®]
Annual Meeting, Nashville, TN

The AIChE Energy Initiative

For much of the 20th Century, the need for reliable, economical, safe and environmentally responsible energy was central to society. With the growth of economies in the developing world, along with continued strong demand in the developed world, energy's importance is projected to continue to grow in the 21st century.

The AIChE Energy Initiative was established to keep Chemical Engineers at the forefront in the development, design and efficient use of energy.

Background

Against the backdrop of growing global demand for energy and new energy legislation, AIChE and its members launched, in 2005, a series of initiatives that apply chemical engineering expertise to help develop solutions to energy problems. The Annual and Spring Meeting attendees have witnessed a surge in the number and variety of papers devoted to energy. CEP has published a series of articles on the critical issues surrounding energy. Operating councils continue to heightened their plans to focus on chemical engineers roles in energy systems development, design, and implementation. Environment Progress Magazine has evolved to become Environment and Sustainable Energy Progress to reflect the growing need for quality peer reviewed publications in the sustainable energy arena. It remains clear that strategies are required to ensure that chemical engineers play a central, if not preeminent role in advancing energy research and development.

Leading Collaborative Efforts

AIChE is working with the AIME, ASEE, IEEE and ASME on a collaborative project on Technologies for Carbon Management. Learn more about the project at <http://www.aiche.org/FSCarbonMgmt/>

AIChE and ACS have issued a joint policy statement on The Framework for US Energy Strategy.

See www.aiche.org/About/howeare/structure/committees/viewall/governance.aspx

**The AIChE Energy Initiative User's Guide
Is Sponsored By**



Learn more about the AIChE Energy Initiative at <http://www.aiche.org/Energy/index.aspx>

Acknowledgements

AICHE's Annual Meeting and the added focus on energy could not happen without the support of its volunteers. Leaders of and within the divisions and forums all have worked tirelessly to provide the energy programming. The Energy Initiative would like to recognize not only these divisions but also their program chairs (when possible) as follows. Please excuse any omissions as they were unintentional.

- **Sanjeev Katti** and **Dhinakar Kompala** of the Catalysis and Reaction Engineering Division.
- **Lorenz Biegler** of the Computing and Systems Technology Division
- **Vasilios Manousiouthakis** of the Environmental Division
- **Paul Collins, Harihara Baskaran, Chris Seymour, Salvador Garcia-Munroz, Qixin Zhong, John Morgan** and **Rex Reklaitis** of the Food, Pharmaceutical and Bio-Engineering Division
- **B.V. Ramarao** of the Forest Products Division
- **Rick Mallinson** and **Galen Suppes** of the Fuel and Petrochemicals Division
- **Jack Hipple** of the Management Division
- **Ed Seebauer, R.M. Kannan, Lonnie Shea, Stephen Rankin, Jane Chang, Jijun Huang** of the Materials Engineering and Sciences Division
- **Stuart Arm, Steven Sherman, George Goff, Supathon Phongikaroon** of the Nuclear Engineering Division
- **Sagar Gadewar, Mitchell Loescher, Lorna Ortiz-Soto Annette Johnston, Joe Powell** and **Shawna Berg** of the Process Development Division
- **Daniela Mainardi, JoAnn Lighty, V.K. Mathur, Kawaji Masahiro** of the Transport and Energy Processes Division
- **Clare McCabe** and **Kristen Fichthorn** of the Computational Molecular Science and Engineering Forum
- **Venkat Bhethanabotla** of the Nanoscale Science and Engineering Forum
- **Gary Patterson** of the North American Mixing Forum
- **Benson Pair, Yinlun Huang, Helen Lou, Wei Liu, Suojiang Zhang** of the Sustainability Engineering Forum
- **Dave Thompson** of the Sustainable Engineering Forum for his tireless work developing the Sustainable Biorefineries Program
- **Manuk Colakyan** of the Particle Technology Forum

Special Energy Related Programs at the 2009 AIChE Annual Meeting

Plenary Session - Looking Forward - Energy Policy & Technology

Monday, November 9, 2009: 8:30 AM - 11:00 AM
Delta Ballroom A (Gaylord Opryland Hotel)

Shaping Our Energy Future: Advanced Research at the U.S. Department of Energy
Jacques Beaudry-Losique, DOE

The Challenges of Scale and Sustainability in U.S. Energy Policy
Marilyn Brown, Georgia Institute of Technology

The Nation's Renaissance in Energy Technology
Dana C. Christensen, Oak Ridge National Laboratory

Clean Coal Technology and CO₂ Capture: A Perspective
L.S. Fan, The Ohio State University

Advanced Biofuels - The Path Forward
W. Densmore Hunter, Catchlight Energy LLC

SBE's Bioenergy Symposium: Transportation Fuels From Coal and Biomass: Review of an NRC Report

Monday, November 9, 2009: 3:15 PM - 5:45 PM
Delta Ballroom A (Gaylord Opryland Hotel)

Biomass Supply and Costs
Michael P. Ramage, ExxonMobil (retired)

Fuels From Bioconversion of Biomass
Gregory N. Stephanopoulos, W.H. Dow Professor, Department of Chemical Engineering, MIT

Fuels from Thermoconversion of Biomass and Coal
James Katzer, ExxonMobil (retired), Affiliate Professor, Chemical Engineering, Iowa State University

Fuels Lifecycle Supply, Costs, CO₂ Impact, and Barriers
James L. Sweeney, Department of Management Science and Engineering, Stanford University
Followed by a Panel Discussion

Energy Efficiency Leadership in the Southeast

Monday, November 9, 2009: 3:15 PM - 5:45 PM
Governor's Chamber E (Gaylord Opryland Hotel)

Sustainable Biorefineries Plenary Session

Tuesday, November 10, 2009: 8:30 AM - 11:00 AM
Delta Ballroom B (Gaylord Opryland Hotel)

Sustainable Energy Plenary

Tuesday, November 10, 2009: 8:30 AM - 11:00 AM
Bayou E (Gaylord Opryland Hotel)

Chairs: Martin A. Abraham, Young State University
William M. Barrett Jr., U.S. Environmental Protection Agency

Algenol Biofuel's DIRECT to ETHONOL™ Technology
Paul Woods, Algenol Biofuels

Coal, Biomass, and Algae as Precursors to Liquid Fuels
Charles Taylor, Anthony V. Cugini and Cynthia Powell, U.S. Department of Energy, National Energy Technology Laboratory

Technology Challenges for Sustainable Energy Solutions – Battelle's Perspective
Charles Lucius, Battelle Memorial Institute

The Nuclear Revival: New Opportunities in the Southeast

Tuesday, November 10, 2009: 8:30 AM - 11:00 AM
Governor's Chamber E (Gaylord Opryland Hotel)

Biofuel Metrics Roundtable

Tuesday, November 10, 2009
4:00 PM - 6:30 PM
Presidential Chamber A (Level 2)

AIChE is launching an industry roundtable to address biofuels metrics along the supply chain. Interested companies are invited to attend to help identify and develop agreed upon measurement criteria which will be used to help inform the federal efforts in this area.

Upcoming Energy Conferences

Carbon Measurement Workshop

December 6-8, 2009

**Hyatt Regency Scottsdale Resort and Spa at Gainey Ranch
Scottsdale, Arizona**

The workshop's objective is to identify gaps, barriers, educational requirements, etc. that would enable an organization to report accurate, consistent, verifiable, timely, and transparent green house gas values. The team's intent is to learn from early adopters and determine where the greater engineering community can assist in these calculations. What issues need to be addressed such that the integrity of the legislation can be met and with resulting environmental improvement.

Steering Committee members:

Dr. Paul Chalmer, National Center for Manufacturing Sciences

Dr. Mary Ann Curran, EPA National Risk Management Research Laboratory

Dr. Subodh Das, Phinix, LLC

Dave Gustashaw, Gustashaw Consulting (facilitator)

Chuck Hookham, HDR

Dr. Beth Kujan, Adjunct, County College of Morris

Dr. Andy Miller, EPA National Risk Management Research Laboratory

Dr. Brajendra Mishra, Colorado School of Mines

Amy Mussen, P.E., Bentley Systems

Energy Events

AICHE's SEF and Energy Initiatives Board Announce

Undergraduate Competition

The AIChE's Sustainable Engineering Forum and Energy Initiative Board announce a competition to promote energy education in K-12 schools for 2009. The program will pair teams of AIChE student chapters and an area K-12 school to work together to develop a hands-on learning activity that addresses curricular needs using energy concepts. \$2,500 prizes will be awarded. Application materials are due December 1, 2009 and can be found at

<http://www.aiche.org/Energy/Education/K12Initiatives.aspx>

Each student group will develop a hands-on demonstration or experiment that illustrates an important concept in alternative energy, while also contributing to the K-12 curriculum learning objectives. The group, working in conjunction with an area school, must submit a proposal that describes the specific activity in enough detail so that it can be judged by a group of chemical engineering educators as to its effectiveness.

Learn more about the AIChE Energy Initiative at <http://www.aiche.org/Energy/index.aspx>

Look at what you missed

The First International Congress on Sustainability Science and Engineering: Where Science and Engineered Technologies Meet the Needs of Society

Held August 9-12, 2009
Kingsgate Marriott Hotel
Cincinnati, Ohio

The Congress was successful at providing a common platform to practitioners of various physical and ecological sciences, engineering fields, economics, and social sciences for exchanging emerging ideas about ways and means of protecting the environment and its resource depletion so that humans can achieve sustained economic growth and societal benefits through generations.

www.aiche.org/ICOSSEAug09

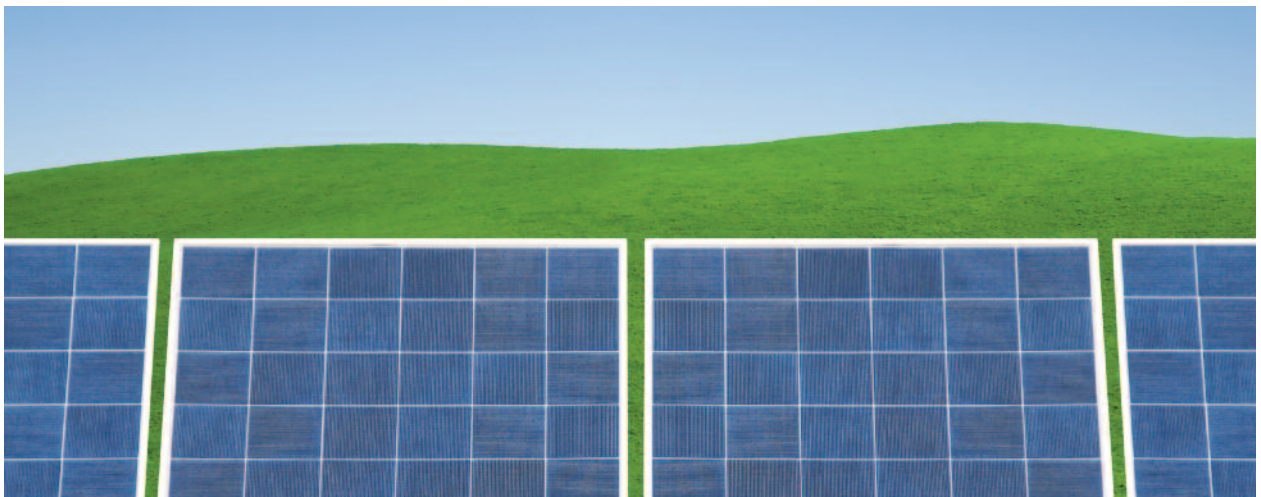
The 4th AIChE/SPE Joint Workshop **"Practical Strategies for Managing CO₂ Emissions —** **Where Are We Going?"**

Held February 22-24, 2009
Fairmont Sonoma Mission Inn
Sonoma, California

Cosponsored by the American Institute of Chemical Engineers (AIChE) and the Society of Petroleum Engineers (SPE)

This AIChE/SPE joint workshop drew on upstream and downstream experts to address the boundary-spanning issues that surround greenhouse gas reduction. This workshop examined current best practices with an eye toward future applications, both domestically and internationally. Attendees explored how to implement the strategies for upstream and downstream energy efficiency, carbon dioxide capture, and sequestration. Scientists, engineers, and managers from both industry and academia will shared ideas and solutions for executing practical strategies and lessons learned in the arenas of technology, policy, and regulation.

<http://www.aiche.org/conferences/specialty/4thSPEWorkshop.aspx>



Learn more about the AIChE Energy Initiative at <http://www.aiche.org/Energy/index.aspx>



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Climate Change				Fossil						Nuclear			Renewable									
Carbon Capture	Carbon Monitoring/Modeling	Carbon Sequestration	Other Greenhouse Gas Emissions	Coal	Coal Bed Methane	Energy Efficiency	Fuel Cells	Heavy Oil	Hydrogen Production	Methane Hydrates	Natural Gas	Oil	Tar Sands	Nuclear	Biodiesel	Biomass	Energy Efficiency	Ethanol	Fuel Cells	Other	Solar	Wind

Monday	Session #	Session Title	Room	Carbon Capture	Carbon Monitoring/Modeling	Carbon Sequestration	Other Greenhouse Gas Emissions	Coal	Coal Bed Methane	Energy Efficiency	Fuel Cells	Heavy Oil	Hydrogen Production	Methane Hydrates	Natural Gas	Oil	Tar Sands	Nuclear	Biodiesel	Biomass	Energy Efficiency	Ethanol	Fuel Cells	Other	Solar	Wind	
8:30am-11:00am	6	2009 Annual Meeting Plenary Session - Looking Forward - Energy Policy & Technology	Delta Ballroom A	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	10	Advances in Gasification Research - I	Ryman D																	●	●	●	●	●	●	●	
	13	Bio-Based Composites	Cheekwood G				●													●							
	14	Biobased Materials - I	Cheekwood H				●													●							
	16	Chemical Looping Processes - I	Ryman A	●	●	●										●						●					
	17	Colloidal and Interfacial Phenomena in Aquatic Systems	Governor's Chamber C	●																							
	18	Computational Catalysis I: Methodology	Lincoln E							●																	
	19	Computational Modeling of Surfaces and Surface Phenomena	Hermitage B	●	●	●					●																
	20	Design for Sustainability	Bayou A	●	●	●															●						
	21	Distillation: General Topics On Equipment, Applications, and Modeling	Ryman C							●																	
	22	Dynamics and Modeling of Particulate Systems I	Jackson C					●																			
	25	Environmental, Catalytic, and Industrial Sensors	Belle Meade C/D																					●	●		
	27	Fundamentals of Environmental Biotechnology	Bayou E	●																●				●	●		
	28	Fundamentals of Environmental Sustainability	Canal E			●																				●	
	29	Fundamentals of Fluidization - I	Governor's Chamber B		●		●												●		●						
	30	Future Directions in Reaction Engineering	Tennessee B								●									●	●	●	●	●	●	●	●
	32	Interactions with K-12	Hermitage C	●	●	●	●															●		●			
	36	Managing Innovation	Jackson A										●				●										
	41	Nanofabrication and Nanoscale Processing	Bayou D								●		●				●										
	42	Nanomaterials for Energy Storage I	Delta Ballroom D				●																	●			
	44	Novel Catalytic Materials I	Lincoln C																	●	●	●	●	●	●		
	49	Plenary on Fundamentals and Applications of Adsorption and Ion Exchange I	Delta Ballroom B	●		●					●					●					●			●	●		
	53	Reaction Kinetics and Reaction Engineering for Electronic and Photonic Devices	Magnolia Boardroom B																		●						
	54	Reaction Path Analysis I	Lincoln D		●					●											●						
	56	Solids Handling and Processing	Governor's Chamber A												●												
	67	Technology Advances, and Applications of Thermal Chemical Conversion of Various Carbon Sources	Delta Ballroom C	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	12:30pm-3:00pm	71	Advances in Biocatalysis and Biosynthesis I	Bayou C																●					●		
		101	Modeling and Optimization for Manufacturing and Process Development	Jackson E	●		●	●													●						
102		Molecular Modeling of Biophysical Processes I	Bayou A																	●							
103		Nanomaterials for Energy Storage II	Delta Ballroom D																						●	●	
104		Nanoscale Materials as Catalysts I	Lincoln C											●							●						
107		Particle Synthesis and Stabilization	Governor's Chamber E	●																					●		
108		Particulate and Multiphase Flow I	Presidential Boardroom A			●		●						●	●	●											
109		Plenary: Separations, Energy and Sustainability	Delta Ballroom A			●										●	●			●				●	●	●	●
112		Reaction Path Analysis II	Lincoln D														●				●		●				
113		Recent Advances in Molecular Simulation Methods I	Tennessee C																						●		
116		Stability and Nonlinear Hydrodynamics	Presidential Boardroom B			●		●							●	●											
119		Sustainable Biomass Feedstock Production and Supply for the Emerging Biorefinery Industry	Lincoln A			●															●		●	●	●	●	●
120		Sustainable Design: Materials/Water Conservation/Energy Efficiency	Belle Meade A/B			●	●														●	●	●	●	●	●	●
121		Sustainable Fuel From Renewable Resources	Jackson A			●															●	●	●	●	●	●	●
122		The Directorate for Education and Human Resources at NSF: Opportunities and Awards	Hermitage C			●															●			●	●	●	●
123		Thermodynamic Properties and Phase Behavior II	Hermitage A	●			●																				



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12:30pm-3:00pm	73	Advances in Gasification Research - II	Ryman D																										
	74	Advances in Optimization I	Ryman A																										
	75	Biobased Materials - II	Cheekwood H																										
	76	Biomass Pretreatment CAFI Developments	Governor's Chamber C																										
	80	Catalytic Biofuel Refining	Ryman C																										
	81	Catalytic Biomass Pyrolysis and Gasification I	Canal D																										
	82	Catalytic Hydrogen Generation for Fuel Cell Applications I	Tennessee A																										
	85	Computational Catalysis II: Transition Metals	Lincoln E																										
	87	Dynamics and Modeling of Particulate Systems II	Jackson C																										
	88	Free Forum On Chemical Engineering Education I	Cheekwood F																										
3:15pm-5:45pm	89	Fuel Cell Technology II	Washington B																										
	90	Fundamental Research in Transport Processes	Hermitage E																										
	91	Fundamentals of Surface Reactivity	Hermitage B																										
	92	Gas-Phase Deposition of Thin Films	Magnolia Boardroom B																										
	94	In Silico Systems Biology: Cellular and Organismal Models	Canal C																										
	97	Invited: Session Honoring Professor James Wei - I	Tennessee B																										
	98	Micro and Nanofabricated Sensors. In Honor of CC Liu I	Belle Meade C/D																										
	125	Advances in Algal Biorefineries	Lincoln A																										
	128	Advances in Fluid-Particle Separations	Jackson A																										
	130	Biobased Materials - III	Cheekwood H																										
	132	Catalytic Biomass Conversion to Chemicals	Canal D																										
	133	Catalytic Conversion of Renewable Resources to Synthesis Gases and Pyrolysis Oils	Governor's Chamber C																										
	134	Catalytic Hydrogen Generation for Fuel Cell Applications II	Tennessee A																										
	135	Catalytic Processing of Fossil and Biorenewable Feedstocks: Chemicals	Tennessee D																										
	137	Circulating Fluidized Beds	Governor's Chamber D																										
	138	Composites for Energy Applications	Cheekwood G																										
	139	Computational Catalysis III: Oxides and Oxide-Supported Transition Metals	Lincoln E																										
	141	DNA Analysis in Microfluidic & Nanofluidic Devices	Canal A																										
	142	Energy Efficiency Leadership in the Southeast	Governor's Chamber E																										
	143	Energy Systems Design and Alternative Energy Sources	Lincoln D																										
144	Environmental Aspects of Biofuels: III-Soil/Biomass Pyrolysis	Delta Ballroom C																											
146	Fuel Cell Technology	Ryman F																											
147	Fuel Cell Technology III	Washington B																											
148	Fundamental Research in Transport Processes II	Hermitage E																											
150	Fundamentals of Hydrogen Production	Jackson D																											
152	Invited: Session Honoring Professor James Wei - II	Tennessee B																											
157	Nanomaterials for Hydrogen Production and Fuel Cells I	Delta Ballroom D																											
158	Nanoscale Materials as Catalysts II	Lincoln C																											
162	Novel Numerical Methods in Fluid Mechanics	Presidential Boardroom B																											
163	Particulate and Multiphase Flow II	Presidential Boardroom A																											
165	Plenary On Fundamentals and Applications of Adsorption and Ion Exchange II	Canal E																											
169	Solution-Phase Synthesis of Electronic and Photonic Materials	Magnolia Boardroom B																											
174	Technologies for Reductions of Emissions	Governor's Chamber A																											



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Climate Change Fossil Nuclear Renewable

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Monday	Session #	Session Title	Room	Carbon Capture	Carbon Monitoring/Modeling	Carbon Sequestration	Other Greenhouse Gas Emissions	Coal	Coal Bed Methane	Energy Efficiency	Fuel Cells	Heavy Oil	Hydrogen Production	Methane Hydrates	Natural Gas	Oil	Tar Sands	Nuclear	Biodiesel	Biomass	Energy Efficiency	Ethanol	Fuel Cells	Other	Solar	Wind
6:00pm-8:00pm	178	Poster Session: Computational Molecular Science and Engineering Forum	Ryman Hall B1/B2															•	•				•	•		
	179	Poster Session: Interfacial Phenomena	Ryman Hall B1/B2	•		•						•									•					
	180	Poster Session: Thermodynamics and Transport Properties	Ryman Hall B1/B2	•			•	•				•							•	•	•		•	•		

Tuesday	Session #	Session Title	Room	Carbon Capture	Carbon Monitoring/Modeling	Carbon Sequestration	Other Greenhouse Gas Emissions	Coal	Coal Bed Methane	Energy Efficiency	Fuel Cells	Heavy Oil	Hydrogen Production	Methane Hydrates	Natural Gas	Oil	Tar Sands	Nuclear	Biodiesel	Biomass	Energy Efficiency	Ethanol	Fuel Cells	Other	Solar	Wind
8:30am-11:00am	182	Advances in Metabolic Engineering I	Bayou D																•	•	•	•		•		
	183	Advances in Optimization II	Jackson B	•																						
	184	Advances in Process Intensification I	Jackson E	•									•	•							•	•		•	•	•
	186	Alternative Fuels and Enabling Technologies	Delta Ballroom A	•		•	•													•	•		•	•	•	•
	187	Applications of Fluidization	Delta Ballroom D	•						•		•									•					
	188	Biomass and Biorenewables Processing Under Pressure	Cheekwood C																		•					
	191	Catalytic Conversion of Oxygenates	Delta Ballroom C																		•					
	192	Catalytic Hydrogen Generation - General I	Hermitage B											•		•					•		•	•	•	
	193	Catalytic Processing of Fossil and Biorenewable Feedstocks: Fuels I	Tennessee D				•														•		•		•	
	194	Characterization of Adsorbent Materials I	Canal B	•				•																		
	195	Characterization of Engineered Particles and Nano-Structured Particles	Governor's Chamber A				•																			
	196	Chemical and Biological Processes for Woody Biomass Conversion to Fuels and Chemicals - I	Cheekwood F																		•		•		•	
	197	Chemical Looping Processes - II	Lincoln C	•				•	•		•		•		•	•										
	199	Computational and Numerical Approaches to Particle Flow I	Lincoln D														•				•					
	200	Computational Modeling in Energy and the Environment	Lincoln A		•	•											•	•								•
	203	Dynamics, Design and Control of Sustainable Processes and Technologies and Associated Waste Management Principles	Belle Meade A/B	•				•													•					
	204	Electrocatalysis for PEM Fuel Cells I	Hermitage A																					•		
	205	Fluid-Particle Interactions and Processing	Lincoln E														•	•								
	207	Fundamentals of Interfacial Phenomena I - Wetting and Interfacial Forces	Governor's Chamber B														•									
	209	In Honor of Harmon Ray's 70th Birthday I	Tennessee B				•										•				•					
	210	Mathematical Approaches in Systems Biology I: Genome Scale Models	Cheekwood H																		•		•		•	
	211	Mixing in Multi-Phase Systems - Solid-Liquid Systems	Bayou A																							
	212	Modeling and Control of Energy Systems	Jackson C				•	•																	•	
	212	Oxycombustion of Coal - Needs, Opportunities, and Challenges - I	Belle Meade C/D					•																		
	214	Nanomanufacturing	Washington B							•	•	•					•					•			•	•
	216	New Developments in Extractive Separations I	Canal E	•						•	•						•									
	217	Non-Newtonian Flows	Presidential Boardroom B																	•						
218	Oxycombustion of Coal - Needs, Opportunities, and Challenges - I	Belle Meade C/D	•	•	•				•				•	•	•											
220	Rational Catalyst Design I	Hermitage E																		•	•					
222	Session in Honor of Prof Edward Cussler	Canal C	•						•	•		•	•	•	•					•	•		•			
223	Smart Manufacturing: Stimulating Productivity and Growth in U.S. Industry	Jackson F	•	•	•	•			•	•		•	•	•	•											



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Day	Session #	Session Title	Room	Carbon Capture	Carbon Monitoring/Modeling	Carbon Sequestration	Other Greenhouse Gas Emissions	Coal	Coal Bed Methane	Energy Efficiency	Fuel Cells	Heavy Oil	Hydrogen Production	Methane Hydrates	Natural Gas	Oil	Tar Sands	Nuclear	Biodiesel	Biomass	Energy Efficiency	Ethanol	Fuel Cells	Other	Solar	Wind
8:30am-11:00am	226	Sustainable Biorefineries Plenary Session	Delta Ballroom B	●														●	●	●			●			
	228	The Nuclear Revival: New Opportunities in the Southeast	Governor's Chamber E															●								
	229	Thermodynamic Properties and Phase Behavior IV	Cheekwood A	●																						
12:30pm-3:00pm	267	Advances in Process Intensification I	Jackson E					●																		
	232	Poster Session in Fluid Mechanics	Ryman Hall B1/B2	●		●										●	●			●		●	●			
	234	Advances in Metabolic Engineering for Biofuels	Jackson A																●	●		●		●		
	235	Advances in Metabolic Engineering II	Bayou D																	●						
	237	Advances in Process Intensification II	Jackson E						●							●										
	238	Alternative Fuels and Enabling Technology II	Delta Ballroom A	●								●			●	●	●			●	●		●	●		
	239	Biological Conversions and Processes for Renewable Feedstocks I	Governor's Chamber A																●	●	●	●	●			
	242	Catalytic Hydrogen Generation - General II	Hermitage B	●	●															●		●		●	●	
	243	Catalytic Processing of Fossil and Biorenewable Feedstocks: Fuels II	Tennessee D				●													●						
	244	Characterization of Adsorbent Materials II	Canal B	●	●	●	●	●																		
	245	Chemical and Biological Processes for Woody Biomass Conversion to Fuels and Chemicals - II	Cheekwood F	●																●	●	●		●		
	247	Communication and Collaboration Using New Technology	Belle Meade A/B													●										
	249	Computational and Numerical Approaches to Particle Flow II	Lincoln D	●					●																	
	254	Electrocatalysis for PEM Fuel Cells II	Hermitage A			●																	●			
	255	Fundamentals of Fluidization - II	Delta Ballroom D														●									
	256	Fundamentals of Interfacial Phenomena II - Surfactants and Liquid/Solid Interfaces	Governor's Chamber B	●						●			●	●	●											
	260	Materials Synthesis and Processing with Compressed or Supercritical Fluids I: General	Cheekwood C														●			●						
	261	Mathematical and Computational Biosystems Engineering	Lincoln A												●											
	263	Nano-Structured Materials for Electronic and Photonics Applications	Magnolia Boardroom B																			●			●	
	264	Networked Process Control	Jackson C				●	●	●																	
265	New Developments in Extractive Separations II	Canal E																●								
267	Oxycombustion of Coal - Needs, Opportunities, and Challenges - II	Belle Meade C/D	●	●		●																				
270	Session in Honor of Prof Edward Cussler - II	Canal C				●																				
271	Separations Design	Presidential Boardroom A														●										
272	Session in Honor of Prof Edward Cussler - II	Canal C	●						●																	
274	Sustainability Education	Bayou E																	●	●						
275	Sustainable Biofuels and the Impact in the Southeast	Governor's Chamber E																	●		●		●			
278	Systems Biotechnology	Tennessee C				●																	●			
279	Thermodynamic Properties and Phase Behavior V	Cheekwood A				●																				
281	Turbulent Flows	Presidential Boardroom B	●	●				●	●	●	●	●	●	●	●	●										
305	Oxycombustion of Coal - Needs, Opportunities, and Challenges - II	Belle Meade C/D				●																				
3:15pm-5:45pm	285	Operations Under Uncertainty	Jackson B													●										
	286	Fundamentals of Interfacial Phenomena III - Biological and Organic Molecules at Interfaces	Governor's Chamber B			●										●										
	287	Advances in Liquid Separation Membranes and Applications	Canal C						●																●	
288	Advances in Metabolic Engineering III	Bayou D																	●	●		●	●			



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Climate Change				Fossil						Nuclear			Renewable									
Carbon Capture	Carbon Monitoring/Modeling	Carbon Sequestration	Other Greenhouse Gas Emissions	Coal	Coal Bed Methane	Energy Efficiency	Fuel Cells	Heavy Oil	Hydrogen Production	Methane Hydrates	Natural Gas	Oil	Tar Sands	Nuclear	Biodiesel	Biomass	Energy Efficiency	Ethanol	Fuel Cells	Other	Solar	Wind

Tuesday	Session #	Session Title	Room	Carbon Capture	Carbon Monitoring/Modeling	Carbon Sequestration	Other Greenhouse Gas Emissions	Coal	Coal Bed Methane	Energy Efficiency	Fuel Cells	Heavy Oil	Hydrogen Production	Methane Hydrates	Natural Gas	Oil	Tar Sands	Nuclear	Biodiesel	Biomass	Energy Efficiency	Ethanol	Fuel Cells	Other	Solar	Wind		
3:15pm-5:45pm	289	Alternative Fuels and Enabling Technologies III	Delta Ballroom A																									
	290	Biological Conversions and Processes for Renewable Feedstocks II	Governor's Chamber A																									
	294	Carbon Based Materials (nanotubes and graphene) for Electronics and Photonics	Magnolia Boardroom B																									
	295	Catalytic Biomass Pyrolysis and Gasification II	Lincoln C																									
	296	Catalytic Hydrogen Generation - General III	Hermitage B																									
	297	Catalytic Processing of Fossil and Biorenewable Feedstocks: Fuels III	Tennessee D																									
	298	Colloidal Dispersions III	Governor's Chamber C																									
	301	Computational Catalysis IV: Nanoparticles and Homogeneous Catalysts	Lincoln A																									
	302	Control for Business and Financial Objectives	Belle Meade A/B																									
	305	Electrocatalysis for Solid Oxide Fuel Cells	Hermitage A																									
	307	Emulsions and Foams	Jackson D																									
	308	Experimental Methods in Adsorption	Canal B																									
	309	Extraction for Bioseparations	Canal E																									
	311	Industrial Innovation in Process Design & Operation	Lincoln D																									
	313	Interface of Water and Energy Use	Bayou E																									
	314	Interfacial Flows	Presidential Boardroom B																									
	315	Materials Synthesis and Processing with Compressed or Supercritical Fluids II: Polymers	Cheekwood C																									
	316	Mathematical Approaches in Systems Biology III: Kinetics and Dynamic Processes	Cheekwood H																									
	318	Nanostructured Particles for Catalysis	Delta Ballroom D																									
	320	Oxy-Combustion of Coal - Needs, Opportunities, Challenges - III	Belle Meade C/D																									
322	Process Control Applications	Lincoln E																										
323	Production of Fungible Biofuels From Lignocellulose	Cheekwood F																										
324	Rational Catalyst Design III	Hermitage E																										
328	Synthetic Systems Biology II	Delta Ballroom B																										
330	Thermodynamics of Energy Systems	Cheekwood A																										
6:00pm-8:00pm	335	Poster Session: General On Separations	Ryman Hall B1/B2																									
	336	Poster Session: Membranes	Ryman Hall B1/B2																									
	337	Poster Session: Nanoscale Science and Engineering	Ryman Hall B1/B2																									
	338	Poster Session On Fundamentals and Applications of Adsorption and Ion Exchange	Ryman Hall B1/B2																									
	339	Poster Session: Particle Technology Forum	Ryman Hall B1/B2																									



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Wednesday	Session #	Session Title	Room	Carbon Capture	Carbon Monitoring/Modeling	Carbon Sequestration	Other Greenhouse Gas Emissions	Coal	Coal Bed Methane	Energy Efficiency	Fuel Cells	Heavy Oil	Hydrogen Production	Methane Hydrates	Natural Gas	Oil	Tar Sands	Nuclear	Biodiesel	Biomass	Energy Efficiency	Ethanol	Fuel Cells	Other	Solar	Wind	
8:30am-11:00am	341	Advances in Climate Change Science	Cheekwood A	●																							
	345	Alternative Fuels	Hermitage D				●												●	●		●	●				
	346	Biobased Fuels and Chemicals I	Bayou B																	●		●	●				
	349	Catalysis with Microporous and Mesoporous Materials I	Hermitage A						●					●	●		●			●							
	350	Chemical Engineering Advances in the Nuclear Fuel Cycle (including NED student competition)	Delta Ballroom A				●												●								
	353	CO ₂ Capture and Storage by Adsorption – Adsorbents	Canal B	●	●	●	●	●	●	●	●	●	●	●	●	●											
	355	Developments in the Pretreatment of Lignocellulosics for Bioconversion I	Belle Meade C/D			●															●		●		●		
	357	Dynamics, Reduction and Control of Distributed Parameter Systems	Lincoln A	●																							
	358	First-Principles Simulation of Condensed Phases: Bulk Materials	Delta Ballroom B				●																	●	●		
	359	Functional Nanoparticles and Nanocoatings on Particles	Governor's Chamber E	●	●	●				●					●							●	●				
	360	Green Chemistry and Reaction Engineering I	Governor's Chamber A	●	●	●														●		●		●			
	361	Industrial Application of Computational and Numerical Approaches to Particle Flow	Tennessee A	●													●										
	363	Innovation in Sustainable Process Engineering	Bayou E			●															●		●				
	364	Innovations in Energy Processes	Jackson E	●																	●						
	365	Integrated Biorefineries for Lignocellulosic Biomass	Cheekwood F				●														●	●		●			
	366	Interfacial Phenomena in Energy Systems	Governor's Chamber D	●	●							●		●	●	●											
	374	Modeling and Identification	Lincoln E																					●	●		
	379	Plenary Session for the Stine Award	Tennessee C				●																	●			
	380	Process Design I	Lincoln D																								
	383	Self-Assembly in Solution I	Governor's Chamber B																								
384	Separations, Energy and Sustainability: Distillation Applications	Canal A																					●				
385	Supply Chain Optimization and Logistics Management	Lincoln C		●									●														
386	Thermodynamic and Transport Properties Under Pressure	Belle Meade A/B	●	●	●			●	●							●											
387	Thermodynamics at the Nanoscale I	Cheekwood C																									
12:30pm-3:00pm	390	Biobased Fuels and Chemicals II	Bayou B	●	●	●														●	●		●	●			
	394	Catalysis with Microporous and Mesoporous Materials II	Hermitage A				●						●	●	●						●			●			
	396	Chemical and Catalytic Conversions and Processes for Renewable Feedstocks	Lincoln C	●																	●	●		●			
	397	Chemical Engineering Modules	Hermitage B							●			●														
	399	Chemistry and Kinetics Integrated CFD Modeling	Delta Ballroom B				●		●		●						●								●		
	400	Climate Change Legislation and Regulation	Cheekwood A	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●							
	404	CO ₂ Capture and Storage by Adsorption – Process	Canal B	●	●		●	●					●														
	405	Developments in Electrolytic Routes to Hydrogen	Magnolia Boardroom B	●																				●	●	●	
	406	Developments in the Pretreatment of Lignocellulosics for Bioconversion II	Belle Meade C/D																		●		●				
	408	Festschrift for Professor Dimitri Gidaspow's 75th Birthday	Bayou E																					●			
	411	Green Chemistry and Reaction Engineering II	Governor's Chamber A	●	●	●	●	●	●								●							●	●	●	
	413	In Honor of the Wilhelm Award Winner I	Hermitage D			●						●					●				●	●		●			
	420	Novel Catalytic Materials	Tennessee B																		●	●					
	422	Numerical Methods for Molecular and Mesoscopic Systems	Lincoln A																								



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12:30pm-3:00pm	425	Process and Product Development for Sustainability	Jackson E				●																					
	426	Process Design II	Lincoln D			●																						
	428	Reaction Engineering for Renewables	Jackson D			●																						
	431	Self and Directed Assembly at the Nanoscale I	Washington B																									
	434	Thermochemical Biorefineries I	Cheekwood F																									
	435	Thermodynamics at the Nanoscale - II	Cheekwood C			●																						
3:15pm-5:45pm	437	Advances in Computational Methods and Numerical Analysis	Lincoln A			●																						
	438	Advances in Process Control II	Bayou C			●																						
	440	Biobased Fuels and Chemicals III	Bayou B																									
	444	Festschrift for Professor Dimitri Gidaspow's 75th Birthday - II	Bayou E																									
	445	Catalysis with Microporous and Mesoporous Materials III	Hermitage A																									
	447	Chemical Processing for Advanced Photovoltaics	Tennessee A				●																					
	448	Climate Change Tracking, Documentation and Reporting	Cheekwood A		●	●	●																					
	449	Colloidal Assembly and Fabrication III	Governor's Chamber C																									
	452	Developments in the Pretreatment of Lignocellulosics for Bioconversion III	Belle Meade C/D																									
	453	Dynamics and Control of Fuel Cells	Jackson C																									
	454	Energy and Operations	Lincoln E		●																							
	455	Festschrift for Professor Dimitri Gidaspow's 75th Birthday - II	Bayou E		●	●	●																					
	456	First-Principles Simulation of Condensed Phases: Surfaces	Delta Ballroom B				●																					
	457	Fuel Cells and Fuel Reforming for Fuel Cells	Governor's Chamber A				●																					
	459	Hybrid and Emerging Membrane Based Separations Technologies II	Canal C		●		●																					
	460	In Honor of the Wilhelm Award Winner II	Hermitage D		●																							
	462	Membrane Reactors	Canal E		●	●																						
	464	Microfluidics and Small-Scale Flows III: Technological Advances	Presidential Boardroom A																									
	468	Novel Computational Methods in Mixing Research and Design	Delta Ballroom C																									
	469	Nuclear Hydrogen Plant Design, Analysis and Commercialization	Magnolia Boardroom B																									
472	Planning and Scheduling II	Jackson B																										
473	Process and Product Development for Sustainability II	Jackson E																										
475	Proteomics & Metabolomic Approaches to Systems Biology	Tennessee D																										
476	Reaction Engineering for Biomass Conversion	Jackson D			●	●																						
477	Reactor Engineering for Biomass Feedstocks	Lincoln C				●																						
481	Thermochemical Biorefineries II	Cheekwood F				●																						
6:00pm-8:00pm	484	Poster Session Applied Mathematics and Numerical Analysis	Ryman Hall B1/B2																									
	485	Poster Session: Bioengineering	Ryman Hall B1/B2																									
		Poster Session: Systems and Process Design	Ryman Hall B1/B2																									
	486	Poster Session: Computers in Operations and Information Processing	Ryman Hall B1/B2				●																					
	487	Poster Session: CRE Division Poster Session	Ryman Hall B1/B2		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	488	Poster Session: Materials Science and Engineering Division	Ryman Hall B1/B2																									
	490	Poster Session: Sustainability and Sustainable Biorefineries	Ryman Hall B1/B2		●	●	●																					
	491	Poster Session: Systems and Process Design	Ryman Hall B1/B2		●	●																						
	494	Poster Session: Topics in Systems and Control	Ryman Hall B1/B2																									



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Thursday	Session #	Session Title	Room	Carbon Capture	Carbon Monitoring/Modeling	Carbon Sequestration	Other Greenhouse Gas Emissions	Coal	Coal Bed Methane	Energy Efficiency	Fuel Cells	Heavy Oil	Hydrogen Production	Methane Hydrates	Natural Gas	Oil	Tar Sands	Nuclear	Biodiesel	Biomass	Energy Efficiency	Ethanol	Fuel Cells	Other	Solar	Wind	
8:30am-11:00am	495	Adsorbent Materials I	Canal B				•			•						•								•	•		
	496	Advanced Modeling Methods in Carbon Dioxide Sequestration	Belle Meade C/D	•	•	•	•																				
	498	Applied Environmental Catalysis I	Hermitage D				•			•	•					•					•						
	501	Biomems and Microfluidics: Novel Applications	Canal D																	•							
	504	Complex and Networked Systems	Lincoln A													•	•										
	505	Complex Multiphase Flows	Jackson B									•				•	•										
	506	CO ₂ Separation Technologies - I	Canal A	•												•											
	508	Design and Analysis Under Uncertainty	Lincoln D	•	•											•	•			•		•					
	509	Developments in Biobased Alternative Fuels I	Governor's Chamber E			•														•		•					
	510	Distributed Chemical Processing Technologies	Presidential Boardroom B	•		•										•	•		•	•	•	•	•	•	•	•	
	513	Fundamentals of Oxide Catalysis	Jackson D													•	•		•								
	514	Fundamentals of Supported Catalysis I	Hermitage B									•				•					•						
	515	Gas/Solid Mixing and Heat/Mass Transfers in Fluidized Beds	Jackson F							•																	
	516	High Temperature Materials and Systems for Hydrogen Production	Presidential Boardroom A			•												•	•		•		•		•		
	517	Industrial Applications of Computational Chemistry and Molecular Simulation I	Jackson A			•										•											
	520	Membranes for Gas Separations I	Canal E	•		•				•																	
	521	Membranes for Water Treatment	Canal C							•																	
	522	Microreaction Engineering I	Washington B							•	•	•	•	•							•						
	523	Modeling for Process Optimization	Jackson E	•			•																				
	524	Modeling of Interfacial Systems I	Governor's Chamber C													•	•										
	525	Multi-Scale Modelling I	Jackson C	•	•					•						•											
	527	Nanowires A: Synthesis, Modeling and Applications	Ryman F			•																				•	
	530	Photo-Electro-Chemical Conversion for Fuels and Chemicals	Governor's Chamber A	•																				•	•	•	
	532	Polymer Thin Films and Interfaces I	Tennessee D													•											
	537	Solar - Thermal Processing	Belle Meade A/B	•		•																				•	
	538	Sustainability Metrics, Assessment and Performance Prediction by Computation	Bayou E		•	•										•			•	•		•		•			
	539	Syngas Production and Gas-to-Liquids Technology	Governor's Chamber B			•	•	•								•											
	542	Thin Films, Coatings, and Interfacial Phenomena Using Compressible or Supercritical Fluids	Cheekwood C																							•	
12:30pm-3:00pm	544	Adsorbent Materials II	Canal B	•						•						•											
	546	Advances in Thermochemical Hydrogen Production	Presidential Boardroom A				•											•									
	547	Applied Environmental Catalysis II	Hermitage D				•			•						•											
	552	CO Hydrogenation I	Governor's Chamber B	•												•											
	553	Conversion of Solid Wastes to Energy and/or Product	Presidential Boardroom B	•		•				•											•		•		•		
	554	CO ₂ Separations Technologies II	Canal A	•			•	•								•											
	555	Developments in Biobased Alternative Fuels II	Governor's Chamber E				•													•	•		•				
	558	Environmental Applications of Adsorption - I	Canal D	•	•	•	•										•					•					
	559	Fluidization and Fluid-Particle Systems for Gasification and Biomass Utilization	Jackson F																			•	•				
	560	Fundamentals of Supported Catalysis II	Hermitage B										•				•					•		•			
	561	Fundamentals of Surface Reactivity II	Jackson D									•	•			•	•								•		



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12:30pm-3:00pm	562	Industrial Applications and Implementations in Operations I	Jackson B	●																						
	563	Industrial Applications of Computational Chemistry and Molecular Simulation II	Jackson A	●																●	●	●	●			
	564	Integrated Processes for Biochemical Conversion of Renewable Feedstocks to Fuels and Chemicals	Bayou E	●		●														●	●	●	●	●		
	565	Lithium Ion Battery Technology	Bayou B																						●	●
	568	Membranes for Gas Separations II	Canal E	●									●		●											
	569	Membranes for Hydrogen Purification I	Canal C	●	●		●	●	●	●	●	●	●	●	●											
	571	Mixing in Water Purification and Waste Treatment / Applied Mass Transfer	Bayou C				●		●																	
	575	Nanoelectronic Materials I	Hermitage A																						●	
	576	Nanomaterials for Photovoltaics I	Delta Ballroom C																		●				●	
	578	Nanowires B: Nanowires and Their Composites for Sensing, Energy Conversion and Energy Storage	Ryman F																		●	●	●	●	●	
	579	Novel Membranes and Processes for Water Treatment, Desalination and Purification II	Tennessee B				●													●					●	
	580	Oil Characterization and Thermodynamics as Related to Flow Assurance	Belle Meade C/D									●				●	●									
	586	Solar Biofuels I	Belle Meade A/B	●	●															●	●				●	
	587	Structured Catalytic Reactors: Monoliths and Membranes	Governor's Chamber A							●					●											
	588	Templated Assembly of Inorganic Nanomaterials I	Jackson E							●	●	●	●	●	●											
	590	Thermophysical Properties of Ionic Liquids	Lincoln E	●	●																					
	606	CO ₂ Separations Technologies II	Canal A				●																			
	592	Environmental Biotechnology: Green Bioprocessing	Delta Ballroom B																	●	●	●	●	●		
3:15pm-5:45pm	594	Adsorption and Sustainable Energy	Canal B	●								●			●					●		●	●			
	595	Advanced Fluids	Ryman F	●																						
	596	Advances in Porous Materials: From Synthesis to Applications	Washington B							●		●	●	●	●											
	599	Biomass Refining: Unit Operations, Processes, and Optimization	Ryman D	●	●															●	●	●	●	●	●	
	604	Carbon Nanotubes III: Adsorption and Transport	Ryman C																			●				
	605	Characterization and Simulation of Novel Membranes and Separations	Canal A			●		●		●		●	●											●		
	606	CO Hydrogenation II	Governor's Chamber B			●									●					●		●		●		
	608	Environmental Applications of Adsorption - II	Canal D				●																			
	609	Fuel Cell Membranes: I	Canal E			●				●														●		
	610	Fundamentals of Environmental Catalysis	Jackson D			●		●							●											
	611	Fundamentals of Supported Catalysis III	Hermitage B		●	●																		●		
	613	Hydrogen Production and Carbon Redirection Technologies	Jackson C	●						●	●	●														
	614	Industrial Applications and Implementations in Operations II	Jackson B			●		●							●											
	617	International Forum On Sustainable Energy & Environment	Presidential Boardroom B			●																				
	618	Life Cycle Analysis of Renewable Feedstock-Based Processes and Products	Governor's Chamber E		●	●	●														●	●	●	●	●	
	620	Membranes for Hydrogen Purification II	Canal C	●	●	●				●		●	●	●	●								●			



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3:15pm-5:45pm	621	Multiscale Modeling and Characterization of Polymers	Lincoln A																									
	622	Nanoelectronic Materials II	Hermitage A																									
	623	Nanomaterials for Photovoltaics II	Delta Ballroom C				•													•							•	
	629	Polymer Thin Films and Interfaces III	Tennessee D	•	•	•		•	•	•		•	•	•	•	•											•	
	630	Portable Power Systems	Bayou B				•				•		•				•					•		•				
	631	Reaction and Separations for Thermochemical Cycles	Presidential Boardroom A				•												•			•		•	•	•	•	
	634	Solar Biofuels II	Belle Meade A/B				•														•	•					•	
	635	Systems Analysis of Sustainability	Bayou E																		•	•	•	•	•	•	•	
	636	Systems Engineering Approaches in Biology and Biomedicine	Lincoln E																			•		•				
	637	Templated Assembly of Inorganic Nanomaterials II	Jackson E							•																		
665	CO Hydrogenation II	Governor's Chamber B					•																					
Friday	Session #	Session Title	Room	Carbon Capture	Carbon Monitoring/Modeling	Carbon Sequestration	Other Greenhouse Gas Emissions	Coal	Coal Bed Methane	Energy Efficiency	Fuel Cells	Heavy Oil	Hydrogen Production	Methane Hydrates	Natural Gas	Oil	Tar Sands	Nuclear	Biodiesel	Biomass	Energy Efficiency	Ethanol	Fuel Cells	Other	Solar	Wind		
8:30am-11:00am	643	Advances in Fermentation and Biological Conversion	Bayou B	•			•														•		•					
	644	Atmospheric Chemistry and Physics - I	Lincoln A		•																							
	648	Carbon Nanotubes IV	Hermitage C																								•	
	650	Computational Studies of Self-Assembly	Cheekwood C																									
	653	Experimental Phase Equilibria and PVT I	Cheekwood A	•	•											•	•											
	656	Green Engineering in the Pharmaceutical and Fine Chemical Industry	Bayou E				•		•																			
	657	Hydrogen Separation/Storage	Bayou A				•						•		•										•	•		
	659	Membrane/Surface Modification	Canal D	•	•									•														
	661	Methane Hydrate: Modeling, Experiment and Exploration	Lincoln C			•									•	•												
	662	Mixed Matrix Membranes	Canal E	•					•						•	•						•	•		•			
	665	Molecular Simulation of Adsorption I	Canal B	•	•		•	•	•	•					•	•												
	666	Multiphase Reaction Engineering	Lincoln E																		•	•						
	669	Novel Catalytic and Separation Process Based On Ionic Liquids I	Belle Meade A/B																			•		•				
	670	Novel Catalytic Imaging Techniques	Hermitage A													•	•					•	•	•	•	•	•	
	671	Photo, Microwave and Ultrasound Catalysis I	Jackson F																		•	•	•	•				
	672	Polymer Thin Films and Interfaces IV	Tennessee D																						•			
	673	Reaction Engineering for Combustion and Pyrolysis	Governor's Chamber D	•	•				•							•	•				•							
	674	Reactions in near-Critical and Supercritical Fluids	Governor's Chamber C											•								•			•	•		
	675	Science and Engineering of Catalyst Preparation I	Hermitage B								•		•			•					•			•				
	676	Sustainable Electricity: Generation and Storage	Governor's Chamber B	•	•																•	•		•	•	•	•	
	677	Sustainable Value Chain	Hermitage D																			•		•				
	678	Thermodynamics of Polymers	Cheekwood B																			•						
	679	Unconventional Technologies for CO ₂ Capture, Conversion and Utilization I	Belle Meade C/D	•		•		•								•	•											
	12:30pm-3:00pm	680	Advanced Oxidation/Reduction Applications: Liquid/Gas Phase II	Washington B				•	•																			
		683	Biodiesel From Microorganisms	Tennessee B	•		•															•	•					
		688	Carbon Nanotubes V: Adsorption and Transport	Hermitage C										•														
		689	Chemical Reactor Dynamics	Governor's Chamber A				•		•	•		•		•	•												



The AIChE Energy Initiative

User's Guide to Energy Focused Events
November 8-13, 2009

AIChE 2009 Annual Meeting
Gaylord Opryland Hotel and Convention Center

Climate Change Fossil Nuclear Renewable

Carbon Capture	Carbon Monitoring/Modeling	Carbon Sequestration	Other Greenhouse Gas Emissions	Coal	Coal Bed Methane	Energy Efficiency	Fuel Cells	Heavy Oil	Hydrogen Production	Methane Hydrates	Natural Gas	Oil	Tar Sands	Nuclear	Biodiesel	Biomass	Energy Efficiency	Ethanol	Fuel Cells	Other	Solar	Wind
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Friday	Session #	Session Title	Room	Carbon Capture	Carbon Monitoring/Modeling	Carbon Sequestration	Other Greenhouse Gas Emissions	Coal	Coal Bed Methane	Energy Efficiency	Fuel Cells	Heavy Oil	Hydrogen Production	Methane Hydrates	Natural Gas	Oil	Tar Sands	Nuclear	Biodiesel	Biomass	Energy Efficiency	Ethanol	Fuel Cells	Other	Solar	Wind
12:30pm-3:00pm	690	Computational Fluid Dynamics in Chemical Reaction Engineering	Governor's Chamber D										•		•											
	691	Control of Metal Hap Emissions (Hg, Se, As, Cr, etc.)	Bayou A				•																			
	692	Development of Intermolecular Potential Models	Cheekwood C													•	•									
	693	Diffusion in Polymers II	Presidential Boardroom B																					•		
	695	Experimental Phase Equilibria and PVT II	Cheekwood A	•																						
	697	Ionic Polymers and Gels	Cheekwood B			•			•							•										
	698	Membrane\Surface Modification II	Canal D						•			•				•	•									
	699	Modeling Transport in Membrane Processes	Canal E																					•		
	700	Molecular Simulation of Adsorption II	Canal B	•	•	•			•	•	•			•	•	•	•									
	702	Nanomaterials for Energy Production and Fuel Cells II	Lincoln D																					•		
	703	Nanoscale Structure in Polymers III: Polymer Nanocomposites	Jackson A								•			•		•										
	705	Nanostructured Thin Films II	Presidential Boardroom A																							•
	707	Novel Catalytic and Separation Process Based On Ionic Liquids II	Belle Meade A/B	•				•								•					•				•	
	708	Photo, Microwave and Ultrasound Catalysis II	Jackson F																							•
	709	PSA / TSA	Canal A	•																						
	710	Science and Engineering of Catalyst Preparation II	Hermitage B																		•					
714	Sustainability Under Uncertainty	Bayou E			•			•								•										
715	Unconventional Technologies for CO ₂ Capture, Conversion and Utilization II	Belle Meade C/D	•	•	•	•	•	•	•	•	•	•	•	•	•	•										

How this User's Guide was developed:

AIChE's conference planning tool, CONFEX was used to query each author who submitted a paper to the 2009 Annual Meeting. Drop-down menus offered context-related keywords that the author could use to classify their submitted paper. For example, if the author decided the paper was related to renewable energy, the keywords *wind, solar, biomass, ethanol, biodiesel, other fuels derived from renewable resources, energy efficiency, and other — fill in key word* appeared so that the paper could be further categorized. Many papers were classified into multiple areas. The grid shows all energy related sessions at the 2009 Annual Meeting and how the papers within each session are classified with regards to energy. You can learn more about each paper in the session by using the session number from this grid to look up the session in the main Annual Meeting Program Book.

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William Byers, VP, CH2M Hill, Inc.

Dale Keairns, Senior Advisory Engineer, Science Applications International Corporation (SAIC)

John Chen, Professor and Dean Emeritus, Lehigh University, AIChE President '06

Jeffrey Sirola, Technology Fellow, Eastman Chemical Co., AIChE President '05

Ashok Gupta, Air and Energy Program Director, Natural Resources Defense Council (NRDC)

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