

WORKSHOP ON ENERGY PROGRAM

Michigan League

Thursday, January 18, 2007

8:00 a.m. – 8:30 a.m.	Ballroom	Registration & Continental Breakfast
8:30 a.m. – 9:30 a.m.	Ballroom	Welcome and Plenary: Gary Was The University of Michigan Energy Initiative <i>Stephen Forrest</i> The Energy Business: Managing Market and Political Uncertainty <i>Thomas Lyon</i> Energy and Environmental Sustainability Nexus and Grand Challenges <i>Gregory Keoleian</i>
9:30 a.m. – 10:45 a.m.	Vandenberg/Hussey/Michigan	Sessions 1A Fuels, 1B Utilization, 1C Enabling Technology
10:45 a.m. – 11:15 a.m.	Concourse	Break
11:15 a.m. – 12:30 p.m.	Vandenberg/Hussey/Michigan	Sessions 2A Production, 2B Utilization, 2C Enabling Technology
12:30 p.m. – 1:30 p.m.	Ballroom	Lunch and morning session wrap-up: Brian Talbot
1:30 p.m. – 2:45 p.m.	Vandenberg/Hussey/Michigan	Sessions 3A Production, 3B Utilization, 3C Environmental Sustainability
2:45 p.m. – 3:00 p.m.	Concourse	Break
3:00 p.m. – 4:15 p.m.	Vandenberg/Hussey/Michigan	Sessions 4A Vehicles/Transportation, 4B Vehicles/Transportation and Fuels, 4C Environmental Sustainability
4:15 p.m. – 4:45 p.m.	Vandenberg	Afternoon session wrap-up: Tom Lyon, Workshop wrap-up: Gary Was
4:45 p.m. – 5:30 p.m.	Concourse	Reception and announcement of Energy Science, Technology and Policy awards



Session 1

Session 1A: Fuels

Vandenberg Room
Chair: Levi Thompson, Engineering

Session 1B: Utilization

Hussey Room
Chair: Richard Laine, Engineering

Session 1C: Enabling Technology

Michigan Room
Chairs: Charles Yocum, Literature, Science & Arts
Huei Peng, Engineering

9:30 a.m.	Developing a Global Market for Biofuels-Constraints and Opportunities <i>R. Howse</i>	9:30 a.m.	How Do Energy Producers Respond to “Cap and Trade” Programs <i>M. Fowlie</i>	9:30 a.m.	Energy Storage: Enabling Technology for Microelectronics, Vehicles and Grid <i>A. Sastry</i>
9:40 a.m.	Biomass Gasification in Supercritical Water <i>P. Savage</i>	9:40 a.m.	Approaches to Solar Energy Conversion Employing Nanostructured Organic and Inorganic Semiconductors <i>S. Forrest</i>	9:40 a.m.	Simulations of Nanomaterials Self-Assembly and Materials Design for Energy Applications <i>S. Glotzer</i>
9:50 a.m.	Modular Reactors for Synthetic Fuel Production and On-Board Fuel Processing <i>J. Schwank</i>	9:50 a.m.	Tailoring Advanced and Biorenewable Fuels for High Efficiency, Low Emissions and High Energy Densities <i>M. Wooldridge</i>	9:50 a.m.	Materials Science of Li-ion Electrodes: a First-Principles Perspective <i>A. Van der Ven</i>
10:00 a.m.	Investigation of the Central Hydrogen-forming Step in Fe-Only Hydrogenases <i>N. Lehnert</i>	10:00 a.m.	Polymer White-Light Emitting Devices on a Flexible Plastic Substrate <i>J. Kanicki</i>	10:00 am	Modeling and Configuration Optimization of Power-Split Hybrid Vehicles <i>H. Peng</i>
10:10 a.m.	Nanostructured Materials & Devices for Hydrogen Production <i>L. Thompson</i>	10:10 a.m.	Flexible Conjugated Polymer Photovoltaic Cell Having Controlled Nano-structure <i>J. Kim</i>	10:10 a.m.	HECAM-Hydrogen Energy and Carbon Materials <i>J. Halloran</i>
10:20 a.m.	Hydrogen Production by Dissociation of Water Using a Helicon Plasma Source <i>A. Gallimore</i>	10:20 a.m.	Computational Design of Novel Materials for Solar Cell and Fuel Cell Membrane Applications <i>J. Kieffer</i>	10:20 a.m.	Environmental Monitoring Buoys to Assess Impact of Energy Development and Use: a Self-Sufficient, Energy-Harvesting Buoy for Open Ocean Monitoring <i>G. Meadows</i>
10:30 a.m.	Electronic-Structure Research of (1.) Hydrogen Storage Materials and (2.) Electron Transport in Molecular Devices <i>B. Dunietz</i>	10:30 a.m.	Energy Efficient Lighting Transparent Ceramics from Nano Metal Oxides <i>R. Laine, et al</i>	10:30 a.m.	Photobioenergetics: Electron Transfer in Photosystem II <i>C. Yocum</i>

Session 2

Session 2A: Production

Vandenberg Room

Chair: Myron Campbell, Literature, Science & Art

Session 2B: Utilization

Hussey Room

Chair: Johannes Schwank, Engineering

Session 2C: Enabling Technology

Michigan Room

Chair: Gregory Keoleian, Natural Resources and Environment

11:15 a.m.	VIVACE (Vortex Induced Vibration Aquatic Clean Energy): A New Concept in Ocean Energy Conversion <i>M. Bernitsas</i>	11:15 a.m.	Fuel Cell/Processor Modeling <i>D. Assanis</i>	11:15 a.m.	Enabling Technology for a Sustainable Energy Future Through Interdisciplinary Research and Teaching <i>G. Keoleian</i>
11:25 a.m.	Clean, Portable Hydro-Electric Power for Remote Alaskan Villages and Camps <i>G. Meadows</i>	11:25 a.m.	3D Engineering of Fuel Cell Electrode Microstructure <i>K. Thornton</i>	11:25 a.m.	Advanced Materials for Gas Sensors, Catalysis, and Energy Storage Automotive Emission Control Catalysis <i>J. Schwank</i>
11:35 a.m.	High Efficiency Adaptive Blades for Wind Turbines <i>S. Kota, et al</i>	11:35 a.m.	Assembly and Performance Modeling of Proton Exchange Membrane (PEM) Fuel Cells <i>J. Hu</i>	11:35 a.m.	Nanofluids for Energy-Efficient Thermal Management <i>A. Shih, et al</i>
11:45 a.m.	Optimizing Enzyme Activity to Catalyze Industrial Processes <i>C. Fierke</i>	11:45 a.m.	Modeling and Control for Water Management of PEM Fuel Cell Systems <i>H. Peng</i>	11:45 a.m.	Nanotechnology for Energy Applications <i>N. Kotov</i>
11:55 a.m.	Ultrafast Reaction Dynamics of Light-Driven Photocatalysis <i>K. Kubarych</i>	11:55 a.m.	Materials and Methods for Fabrication of Nanostructured Fuel Cells <i>L. Thompson</i>	11:55 a.m.	Integrating Research Assessment, Economics, and Public Policy to Optimize Renewable Electricity Generation <i>D. Callaway</i>
12:05 p.m.	Novel, Ultrafast Spectroscopy for Energy Transfer in Biological Systems <i>J. Ogilvie</i>	12:05 p.m.	Fundamental Research to Enhance Solid Oxide Fuel Cell Technology <i>S. Linic, et al</i>	12:05 p.m.	Characterization of Engineered Voids at the Nanoscale <i>D. Gidley</i>
12:15 p.m.	Reconfigurable Manufacturing in Bioenergy Production <i>H. Wang</i>	12:15 p.m.	Efficient and Non-Polluting Mode of Industrial Combustion <i>A. Atreya</i>	12:15 p.m.	Radiochemistry and the Nuclear Fuel Cycle <i>H. Griffin</i>

Session 3

Session 3A: Production

Vandenberg Room
Chair: James Holloway, Engineering

Session 3B: Utilization

Hussey Room
Chair: Rachel Goldman, Engineering

Session 3C: Environmental Sustainability

Michigan Room
Chair: Andrew Hoffman, Business
and Natural Resources & Environment

1:30 p.m.	Economics and Renewable Energy <i>T. Lyon</i>	1:30 p.m.	Nanostructured Energy Conversion Devices <i>M. Shtein, et al</i>	1:30 p.m.	Corporate Strategies that Address Climate Change <i>A. Hoffman</i>
1:40 p.m.	Offshore Energy – Exploration/Production/ Transportation <i>A. Troesch</i>	1:40 p.m.	High Efficiency Lighting and Solar Energy Conversion Using Nanostructured GaN-Based Materials <i>P. Ku</i>	1:40 p.m.	Regulatory Approaches to Greenhouse Gases <i>G. Helfand</i>
1:50 p.m.	Development of Computational Methods to Analyze VHTR Nuclear Reactors for Hydrogen Production <i>W. Martin</i>	1:50 p.m.	ZnO and Related II-VI Oxide Materials for Solid State Lighting and Solar Cells <i>J. Phillips</i>	1:50 p.m.	Does Making Life Easier Always Make It Better? The Nexus Between Planning for Sustainable Communities and Improvements in Energy-Related Technologies <i>R. Norton</i>
2:00 p.m.	Development of TRU Transmuters for Nuclear Fuel Cycle Optimization <i>J. Lee</i>	2:00 p.m.	Materials for Photovoltaic Devices <i>J. Millunchick</i>	2:00 p.m.	Sequestration of Carbon Emissions in Forest Plants & Soils <i>M. Hunter</i>
2:10 p.m.	Developing Materials for a New Generation of Advanced Nuclear Reactors <i>G. Was</i>	2:10 p.m.	Direct Energy Conversion: Novel Thermoelectric Materials for Waste Heat Recovery <i>C. Uher</i>	2:10 p.m.	New Modeling and Monitoring Approaches for Quantifying Carbon Fluxes at Regional and Global Scales <i>A. Michalak</i>
2:20 p.m.	Paleoseismic Investigations for Determining the Design Ground Motions for Nuclear Power Plants <i>R. Green, et al</i>	2:20 p.m.	Design and Optimization of Novel Solar Thermoelectric Materials <i>M. Kaviany, et al</i>	2:20 p.m.	Sustainable Energy: New Frontiers in Research and Teaching (Alt Fuels, Health Concerns from Nanoparticles) <i>A. Violi</i>
2:30 p.m.	Adhesive Bonding for Light-Weight Structures for Transportation <i>M. Thouless</i>	2:30 p.m.	Nanocomposite Materials for Energy Conversion Applications <i>R. Goldman</i>	2:30 p.m.	Life Cycle Energy Analysis of Products and Technology at the Center for Sustainable Systems <i>G. Keoleian</i>

Session 4

Session 4A: Production

Vandenberg Room
Chair: Zoran Filipi, Engineering

Session 4B: Utilization

Hussey Room
Chairs: Jonathan Levine, Architecture and
Urban Planning

Session 4C: Environmental Sustainability

Michigan Room
Chair: Michael Moore, Natural Resources
and Environment

3:00 p.m.	Economic Analysis of Automotive Energy Issues and Policies <i>W. McManus</i>	3:00 p.m.	Clean Diesel Technologies <i>Assanis, et al</i>	3:00 p.m.	The University of Michigan Lead in LEED and Sustainable Design <i>M. Navvab</i>
3:10 p.m.	Hybrid Propulsion and Alternative Fuels <i>Z. Filipi</i>	3:10 p.m.	Synthetic Fuels for Commercial & Military Aircraft <i>J. Driscoll</i>	3:10 p.m.	Green Innovations in Architecture <i>J. Kim</i>
3:20 p.m.	Control and Optimization of Integrated Energy Management Systems Involving Heterogeneous Power Plants <i>J. Sun</i>	3:20 p.m.	Small Molecule Water Oxidation Catalysts <i>V. Pecoraro</i>	3:20 p.m.	Design Innovations in Low Energy Housing Typologies and Building Façade Systems <i>H. Giles</i>
3:30 p.m.	Control of Fuel Cell Power Systems <i>A. Stefanopoulou</i>	3:30 p.m.	Adsorbents Enabling Clean Energy <i>A. Matzger</i>	3:30 p.m.	Behavioral Aspects of Energy Conservation and Sustainability – UM Pilot Study <i>R. Marans</i>
3:40 p.m.	Novel Modes of Combustion in IC Engines Exhaust Aftertreatment <i>D. Assanis</i>	3:40 p.m.	Improvement of Energy Production from Hydrocarbon Sources <i>S. Fogler</i>	3:40 p.m.	The Political Economy of the New Globalized Oil Order, and U.S. Persian-Gulf Policy <i>T. O'Donnell</i>
3:50 p.m.	Fuel Savings Through Ad-Hoc Ride Sharing <i>P. Resnick</i>	3:50 p.m.	Enabling Clean Use of Alternative Fuels with High-Speed Imaging Diagnostics <i>V. Sick</i>	3:50 p.m.	Limiting Greenhouse Gas Emissions: a New Look at Technology-Forcing Regulation <i>T. Parson</i>
4:00 p.m.	UMTRI Strategy for Transportation Energy Research <i>P. Sweatman</i>	4:00 p.m.	Metropolitan Accessibility and Transportation Sustainability: Comparative Indicators for Policy Reform <i>J. Levine, et al</i>	4:00 p.m.	Cap and Trade Programs for Conventional Air Pollutants <i>M. Moore</i>