

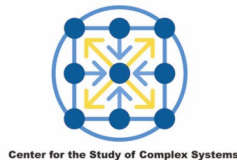


# U-M Energy Workshop

## Forging Alliances, Positioning for Opportunity

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8:00 a.m. – 8:30 a.m.	Terrace	Registration & Continental Breakfast
8:30 a.m. – 9:40 a.m.	Terrace	Welcome: <b>Gary S. Was</b> Plenary: <b>Stephen Forrest</b> , U-M Vice President for Research <i>“Energy: The World of Opportunities”</i> <b>Sarah Walter</b> , U-M Director of Federal Relations for Research <i>“The Obama Administration and Trends in Federal Energy Research”</i> <b>David Eaglesham</b> , Vice President of Technology, First Solar <i>“The Opportunities and Needs for Renewable-Energy Companies”</i>
9:40 a.m. – 10:50 a.m.	Regency 1/Regency 2/Huron	Sessions <b>1A</b> Bio-Fuels, <b>1B</b> Combustion, <b>1C</b> Energy Conversion & Storage
10:50 a.m. – 11:00 a.m.	Regency Buffet	Break
11:00 a.m. – 12:10 p.m.	Regency 1/ Regency 2 / Huron	Sessions <b>2A</b> Bio-Fuels & Bio-Energy ( <b>2A-1</b> Vehicles & Transportation), <b>2B</b> Energy Sustainability, <b>2C</b> Energy Conversion & Materials
12:10 p.m. – 12:20 p.m.	Regency Buffet	Break
12:20 p.m. – 12:50 p.m.	Terrace	<b>Keith Cooley</b> , CEO, NextEnergy <i>Collaborating for “The Next Michigan”</i>
12:50 p.m. – 2:00 p.m.	Terrace	Lunch and roundtable discussions
2:00 p.m. – 3:10 p.m.	Regency 1/Regency 2/Huron	Sessions <b>3A</b> Vehicles & Transportation, <b>3B</b> Carbon Free Sources, <b>3C</b> Electric Grid
3:10 p.m. – 3:20 p.m.	Regency Buffet	Break
3:20 p.m. – 4:30 p.m.	Regency 1/Regency 2/Huron	Sessions <b>4A</b> Policy, Economics & Social Impact, <b>4B</b> Solar Energy Conversion & Lighting, <b>4C</b> Proposal Competition
4:30 p.m. – 4:40 p.m.	Regency Buffet	Break
4:40 p.m. – 6:00 p.m.	Terrace	The Bottom Line: Where Do We Go from Here? / Refreshments
6:00 p.m. – 7:30 p.m.	Huron	Strolling Dinner



**Session 1**

**Session 1A: Bio-Fuels**  
 Regency 1  
 Chair: Phil Savage, Engineering

**Session 1B: Combustion**  
 Regency 2  
 Chair: Volker Sick, Engineering

**Session 1C: Energy Conversion & Storage**  
 Huron  
 Chairs: Katsuyo Thornton, Engineering

9:40 a.m.	<b>Supercritical Fluids for Biomass Conversion to Fuels</b> P. Savage	9:40 a.m.	<b>Multi-Parameter High-Speed Imaging Techniques in Combustion Research</b> V. Sick	9:40 a.m.	<b>Applications of Microstructural-Level Simulations to Materials for Energy Systems</b> K. Thornton
9:50 a.m.	<b>Electrochemical Generation of Hydrogen: Development of Biomimetic Catalysts</b> N. Lehnert	9:50 a.m.	<b>Industrial Energy Efficiency &amp; Pollutant Reduction through Radioactive Homogeneous Combustion</b> A. Atreya	9:50 a.m.	<b>Control and Prognosis for Fuel Cell, Batteries and Flex-Fuel Systems</b> A. Stefanopoulou
10:00 a.m.	<b>Harnessing Microbial Metabolism for Liquid Fuels and High Value Biodegradable Polymers</b> D. Sherman	10:00 a.m.	<b>Computational Combustion Science-Development of High-Fidelity Simulation Techniques for Characterization of Clean and Efficient Combustion Technologies</b> M. Ihme	10:00 a.m.	<b>Improving Proton Exchange Membrane Fuel Cell Performance an Order of Magnitude with Ultrafast Laser Modification of Nafion</b> S. Yalisove
10:10 a.m.	<b>Bio-Oil Platform Design, Development and Integration</b> H. Wang	10:10 a.m.	<b>Predictive Simulations Toward High Efficiency IC Engines-Discovery of Fundamental Combustion Characteristics Through Advanced Computing</b> H. Im	10:10 a.m.	<b>Predicting Li-battery Electrode Properties from First Principles</b> A. Van der Ven
10:20 a.m.	<b>Microbial Generation of Energy-Rich &amp; Greenhouse Gases</b> S. Ragsdale	10:20 a.m.	<b>Low-Temperature Combustion and Performance Optimization of Bio-, Synthetic, and Non-Traditional Fossil Fuels and Fuel Blends</b> M. Wooldridge	10:20 a.m.	<b>Extend the Life and Capacity of Lithium-Ion Batteries and Renewable Energy Storage Systems</b> C. Mi
10:30 a.m.	<b>Shedding Light on Membrane Trafficking Pathways Involved in Plant Cell Wall Biogenesis</b> E. Nielsen	10:30 a.m.	<b>Modeling of Catalyst Based Aftertreatment Systems for Clean Diesel Combustion</b> T. Shamim	10:30 a.m.	<b>The Use of Borohydrides as Solid-State Hydrogen Storage Media</b> M. Hartman
10:40 a.m.	<b>Engineering Plant Enzymes to Produce New Bio-Fuels</b> N. Marsh			10:40 a.m.	<b>Terahertz Electrical Measurement Technique and its Application in Photovoltaic Research</b> Z. Zhong

**Session 2**

**Session 2A: Bio-Fuels & Bio-Energy**  
 Regency 1  
 Chair: Angela Violi, Engineering

**Session 2B: Energy Sustainability**  
 Regency 2  
 Chair: Greg Keoleian, SNRE

**Session 2C: Energy Conversion & Materials**  
 Huron  
 Chair: Max Shtein, Engineering

11:00 a.m.	<b>Waste as a Resource – Recovering Energy Through Wastewater Treatment</b> N. Love	11:00 a.m.	<b>Curbing Vehicle Carbon Emissions: Role for Technology, Consumers and Alternative Fuels</b> G. Keoleian	11:00 a.m.	<b>Novel Materials for Thermoelectric Power Generation: Nanostructured Skutterudites</b> C. Uher
11:10 a.m.	<b>Reconfigurable Bioenergy Production</b> R. Main	11:10 a.m.	<b>The Role of the Global Carbon Cycle in Understanding Climate Impacts of Energy Consumption</b> A. Michalak	11:10 a.m.	<b>Thermal-to-Electrical Energy Conversion</b> K. Pipe
11:20 a.m.	<b>Bioenergy Production and Sustainable Waste Treatment</b> L. Raskin	11:20 a.m.	<b>Durable Materials for Solid Carbon Sequestration</b> J. Halloran	11:20 a.m.	<b>Manufacturing of Nanostructure Arrays for Energy Conversion and Storage</b> J. Hart
11:30 a.m.	<b>Next-Generation Biofuels from Lignocellulosic Biomass: A Synthetic Microbial Consortia Approach</b> X. Lin	11:30 a.m.	<b>Molecular Sponges to Clean the Environment</b> A. Matzger	11:30 a.m.	<b>All-Organic High Energy Density Capacitor for a Brighter Energy Future</b> T. Goodson
11:40 a.m.	<b>Kinetic Mechanisms for Novel Biofuels</b> A. Violi	11:40 a.m.	<b>Wireless Microsystems for Comprehensive Environmental Monitoring</b> T. Zellers	11:40 a.m.	<b>Electron Microscopy Study of Materials for Energy</b> K. Sun
	<hr/> <b>Vehicles &amp; Transportation</b> <b>Session 2A-1</b> Zoran Filipi, Engineering	11:50 a.m.	<b>Annual Energy Baseline Models for Integration of Building Operation with its Space Utilization Within Selected Buildings</b> M. Navvab	11:50 a.m.	<b>Probing Material Structure at the Nano-Scale and Below</b> D. Gidley
11:50 a.m.	<b>University-wide Collaboration on PHEV Performance and Use</b> P. Sweatman	12:00 p.m.	<b>Integrated Passive Energy Strategies for Buildings</b> H. Giles	12:00 p.m.	<b>College of Engineering Vision for Energy Research</b> J. Schwank
12:00 p.m.	<b>Virtual AutoMotive MarketPlace Simulation VAMMP</b> J. Sullivan				

**Session 3A: Vehicles & Transportation**

Regency 1

Chair: Zoran Filipi, Engineering

**Session 3B: Carbon-Free Sources**

Regency 2

Chair: Levi Thompson, Engineering

**Session 3C: Electric Grid**

Huron

Chair: Ian Hiskens, Engineering

2:00 p.m.	<b>Catalysis Research in the Transportation Energy Center</b> J. Schwank	2:00 p.m.	<b>Next-Generation Nuclear Plant for Hydrogen Production</b> T. Downar	2:00 p.m.	<b>A Systems View of the "Smart Grid"</b> I. Hiskens
2:10 p.m.	<b>Comparing Gasoline, Electricity and CNG as Power Source for Passenger Cars</b> K. Murty	2:10 p.m.	<b>Developing Materials for a New Generation of Advanced Nuclear Reactors</b> G. Was	2:10 p.m.	<b>Modeling and Controlling Electricity Loads</b> D. Callaway
2:20 p.m.	<b>Modeling and Configuration Optimization of Power-Split Hybrid Vehicles</b> H. Peng	2:20 p.m.	<b>Using Hard-Soft Chemical Interfaces to Tackle Problems in Renewable Energy</b> B. Bartlett	2:20 p.m.	<b>Progress Towards Battery Health-Conscious Optimal Power Management in Plug-in Hybrid Vehicles and Smart Grids</b> H. Fathy
2:30 p.m.	<b>Integrated Energy Management Systems for Sustainable Marine Environment</b> J. Sun	2:30 p.m.	<b>Marine Renewable Energy</b> M. Bernitsas	2:30 p.m.	<b>Impacts of Plug-In Hybrid Electric Vehicles on Electric Grid Reliability</b> J. Lee
2:40 p.m.	<b>Simulations &amp; Experiments to Make Hybrids and Plug-in Hybrids a Reality</b> Z. Filipi	2:40 p.m.	<b>Electronic-structure Research of (I) Electron Transport and (II) Hydrogen Storage in Molecular Scale Systems</b> B. Dunietz	2:40 p.m.	<b>Engineering Research on System-level Interaction among Energy, Propulsion, Traffic, Transportation and Grid</b> B. Liu
2:50 p.m.	<b>Fuel Efficiency and Environmental Benefits of Marine Highways: Modeling of Social (Internal and External) Costs in Competing Modes of Transportation</b> A.N. (Tassos) Perakis	2:50 p.m.	<b>Nanostructure Materials for Hydrogen Production</b> L. Thompson	2:50 p.m.	<b>College of Engineering Vision for Energy Research</b> J. Hu
3:00 p.m.	<b>Carbon-Neutral Vehicle, 21st Century Transportation Fuels and HCCI</b> D. Assanis	3:00 p.m.	<b>Offshore Wind Energy Economic, Environmental &amp; Energy Security Opportunities</b> S. Kota		

**Session 4A: Policy, Economics & Social Impact**

Regency 1

Chair: Jonathan Levine, Urban Planning

**Session 4B: Solar Energy Conversion & Lighting**

Regency 2

Chairs: Rachel Goldman, Engineering

**Session 4C: Proposal Competition**

Huron

Chair: Gary Was, Jack Hu, Keith Cooley

3:20 p.m.	<b>Economics and Politics of Renewable Energy</b> T. Lyon	3:20 p.m.	<b>Solar-to-Electricity &amp; Electricity-to-Lighting Energy Conversion</b> M. Shtein	3:30 p.m.	<b>The Science &amp; Engineering of Hydrothermal Conversion of Wet Biomass to Liquid Fuels</b> P. Savage
3:30 p.m.	<b>Visualizing the Benefits of Green Technology Policies</b> S. Skerlos	3:30 p.m.	<b>Designer Organic Molecules for Flexible Solar Cells and Solid-State Lighting</b> J. Kim	3:45 p.m.	<b>Hierarchically Designed Materials for Integrated Electrochemical Storage and Power Applications</b> J. Hart
3:40 p.m.	<b>The Long Haul: Adaptive management of the Required Energy/Climate Transition</b> E. Parson	3:40 p.m.	<b>Achieving Efficient Solid State Lighting Using Organic Light Emitting Devices</b> S. Forrest	4:00 p.m.	<b>Energy-Efficient Data Centers</b> M. Papaefthymiou
3:50 p.m.	<b>Transportation Accessibility and Metropolitan Sustainability: Comparative Indicators for Policy Reform</b> J. Levine	3:50 p.m.	<b>New Devices for Energy Efficient Utilization of Light</b> P.C. Ku	4:15 p.m.	<b>A Concept for the Establishment of an Energy Research Center for Carbon Neutral Vehicle (ERC-CNV)</b> D. Assanis
4:00 p.m.	<b>Energy Technologies and Social Systems: Concepts for Teaching About Energy to Two "Cultures."</b> I. Salmeen	4:00 p.m.	<b>Improving Solar Cell Efficiency With Low-Cost Material</b> J. Phillips		
4:10 p.m.	<b>Catalyzing Social Science and Policy Research on Energy</b> C. Simon	4:10 p.m.	<b>Photoelectrochemical Strategies for the Conversion of Solar Energy into Chemical Fuel</b> S. Maldonado		
4:20 p.m.	<b>Interacting Infrastructures: The Energy Water Nexus Financial and Environmental Modeling Tools for Alternative Cooling Technologies</b> P. Adriaens	4:20 p.m.	<b>Semiconductor Nanocomposites for Solar- and Thermal- to-Electric Energy Conversion</b> R. Goldman		