

# Magnetohydrodynamic Power Generation Workshop Agenda

Wednesday, October 01, 2014

7:00 am to 8:00 am | Registration – Arlington 1 and 2 Foyer

## Session 1: Introduction – Salon 1

|                      |  |
|----------------------|--|
| 8:00 am to 8:05 am   | <b>1.1: Workshop Welcome</b><br><i>Susan Maley</i> ; Technology Manager for Crosscutting Research at U.S. Department of Energy National Energy Technology Laboratory   |
| 8:05 am to 8:20 am   | <b>1.2: Introduction to DOE Programs and Interests</b><br><i>Dr. Darren Molloy</i> ; Director, Office of Advanced Fossil Technology Systems at United States Department of Energy  |
| 8:20 am to 9:05 am   | <b>1.3: Emerging Technology and the Changing Nature of Power Generation</b><br><i>Dr. James Black</i> ; Lead Researcher, Thermal Sciences Division at United States Department of Energy National Energy Technology Laboratory |
| 9:05 am to 9:20 am   | Break – Salon Foyer 1  |
| 9:20 am to 10:05 am  | <b>1.4: Retrospective and Prospective Aspects of MHD Power Generation</b><br><i>Dr. Rigel Woodside</i> ; Researcher, Thermal Sciences Division at United States Department of Energy National Energy Technology Laboratory     |
| 10:05 am to 12:00 pm | <b>1.5: Instructions and Breakout Session – Salon 1 and Salon 2</b>  |
| 12:00 pm to 1:30 pm  | Lunch (on your own)  |

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## Session 2: Related Research in Other Agencies and Parts of DOE – Salon 1

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|--------------------|--|
| 1:30 pm to 2:00 pm | <b>2.1: The MHD-Controlled Turbojet Engine: an Alternate Powerplant for Access to Space</b><br><i>Dr. Isaiah Blankson</i> ; Senior Technologist for Hypersonics, National Aeronautic and Space Administration Glenn Research Center        |
| 2:00 pm to 2:30 pm | <b>2.2: Potential Exploitation of Dusty Plasma Physics to PDE Small Scale MHD</b><br><i>Dr. Alan Garscadden</i> ; Adjunct Professor/Researcher, Air Force Institute of Technology at Wright-Patterson Air Force Base                       |
| 2:30 pm to 3:00 pm | <b>2.3: Research relevant to MHD power generation in the Naval Research Laboratory's Plasma Physics Division</b><br><i>Dr. Stuart Jackson</i> ; Research Physicist, Plasma Physics Division at the United States Naval Research Laboratory |
| 3:00 pm to 3:15 pm | Break – Salon Foyer 1  |
| 3:15 pm to 3:45 pm | <b>2.4: Overview of NSF's Combustion and Fire Systems Program</b><br><i>Dr. Ruey-Hung Chen</i> ; Program Director, Combustion and Fire Systems Program at National Science Foundation  |
| 3:45 pm to 4:15 pm | <b>2.5: MHD: Enabling the Pursuit of Fusion Energy (and Much More)</b><br><i>Dr. Sean Finnegan</i> ; Program Manager, Department of Energy Office of Fusion Energy Sciences  |
| 4:15 pm            | Adjourn for Wednesday  |

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Thursday, October 02, 2014

## Session 3: Power and Other Applications – Salon 1

|                     |   |
|---------------------|---|
| 8:00 am to 8:30 am  | <b>3.1: Oxy-Fuel Combustion Components Relative to a Future MHD Concept</b><br><i>Justin Strock</i> ; Consulting Engineer – Advanced Combustion Systems, Leonardo Technologies, Inc.  |
| 8:30 am to 9:00 am  | <b>3.2: MHD Power Generation Based on Pressure Gain Combustion Systems</b><br><i>Greg Meholic</i> ; Senior Project Engineer, Spacelift Systems and Concepts at The Aerospace Corporation  |
| 9:00 am to 9:15 am  | Break – Salon 1 Foyer   |
| 9:15 am to 11:30 am | <b>3.3: Poster Presentations – Salon 1 followed by Salon 2</b> <ul style="list-style-type: none"><li>▪ Ad Astra Rocket Company</li><li>▪ JP Aerospace</li><li>▪ Lawrence Livermore National Laboratory</li><li>▪ Massachusetts Institute of Technology Plasma Science and Fusion Center</li><li>▪ National Energy Technology Laboratory Office of Research and Development</li><li>▪ National Energy Technology Laboratory Office of Performance and Benefits</li><li>▪ Oregon State University</li><li>▪ Pennsylvania State University</li><li>▪ Princeton University &amp; Princeton Plasma Physics Laboratory</li><li>▪ Sandia National Laboratories</li><li>▪ University of Wisconsin-Madison</li></ul> |
| 11:30 am to 1:00 pm | Lunch (on your own)   |

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## Session 4: Facilitated Discussions – Salon 1 and Salon 2

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|--------------------|--|
| 1:00 pm to 1:30 pm | <b>4.1 Instructions to Participants and Technology Goals</b> |
| 1:30 pm to 2:30 pm | <b>4.3: Research Scenarios</b>                               |
| 2:30 pm to 3:00 pm | <b>4.4: Open Discussion and Comments – Salon 1</b>           |
| 3:00 pm            | Adjourn Workshop   |

## Additional Poster Information

Thursday, October 02, 2014

### Poster Titles and Presenters

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|--|---|
| Ad Astra Rocket Company  | <b>Fossil Based Energy Conversion Using Radio Frequency Plasma-Catalyzed Magnetohydrodynamics</b><br><i>Dr. Mark Carter</i> |
| JP Aerospace   | <b>MHD at JP Aerospace</b><br><i>John Powell</i>  |
| Lawrence Livermore National Laboratory                                 | <b>MHD Generators &amp; ALE3D</b><br><i>Dr. Aaron Fisher</i>  |
| Massachusetts Institute of Technology Plasma Science and Fusion Center | <b>Large Scale Superconducting Magnet Technology for MHD Power Generation</b><br><i>Dr. Joseph Minervini</i>                |

National Energy  
Technology Laboratory  
Office of Research and  
Development

**Magnetohydrodynamic Energy Conversion R&D**

*Dr. Rigel Woodside*

National Energy  
Technology Laboratory  
Office of Performance  
and Benefits

**Direct Power Extraction Techno-Economic Analysis**

*Dr. Robert Stevens*

Oregon State  
University

**Estimating Current Densities in Equilibrium  
Magnetohydrodynamic Generator Channels**

*Dr. Duncan McGregor*

Pennsylvania State  
University

**Processing of Metals, Ceramics and Composites by Field  
Assisted Sintering Technology (FAST) for MHD Power**

*Dr. Jogender Singh*

Princeton University &  
Princeton Plasma  
Physics Laboratory

**New Capabilities for MHD Power Generation Enabled by  
Nanosecond High-Voltage Pulses and Electron Beam  
Methods**

*Dr. Mikhail Shneider (Princeton University)*

Sandia National  
Laboratories

**Understanding the Complexities of Enhanced Oxygen, High  
Temperature Pulverized Coal Char Combustion**

*Dr. Ethan Hecht*

University of  
Wisconsin-Madison

**Overview of MHD Computation for Magnetic Confinement  
Fusion**

*Dr. Carl Sovinec*