Welcome and NETL Overview, Dr. Grace Bochenek (Invited), Director, National Energy Technology Laboratory, U.S. Department of Energy

Crosscutting Research Program Overview, Dr. Robert Romansky, Acting Technology Manager, Crosscutting Research, National Energy Technology Laboratory, U.S. Department of Energy

Crosscutting Activities in Systems Engineering and Analysis, Mr. Travis Shrubs, Supervisor, Energy Process Analysis Team, National Energy Technology Laboratory, U.S. Department of Energy

Registration and Continental Breakfast

PLENARY SESSION

2017 CROSSCUTTING RESEARCH AND GASIFICATION SYSTEMS PROJECT REVIEW

TRACK C (GASIFICATION)

MORNING BREAK

10:00 AM

Karin Dahmen

Number

Presentation Title

Dry Solids Pump Feed Technology Program

Bo Zhang

Jonathan Lekse

Hai Xiao

Saki Golafale

TDA Research

Organization

Air Products and

Juan Li

Melisa Stewart

Integrated WGS/Precombustion Carbon Capture

Serration Behavior of High-Entropy Alloys

Reduced Cost Bond Layers for Multi-Layer Thermal/Environmental Barrier

Auburn University

Omer Dogan

Breakout Session

Moderator

University of

Yirong Lin

Feng Yuan Zhang

Distributed Wireless Antenna Sensors for Boiler Condition Monitoring

University of Texas at Arlington

Ming-Chau Lo

Wireless Sensors

New Temperature Sensors and Wireless Telemetry for Active Condition Monitoring of Advanced Gas Turbines

Siemens Corporation

Akiand Kubayi

Wireless Sensors

Novel Ultra-High-Performance Platforms with Engineered Surface Functionality and Spheroidal Morphology for Low-Cost High-Effectivity Carbon Capture

Delta State University

Nicholas Piscitell

Wireless Sensors

Low-Cost Efficient and Durable High Temperature Wireless Sensors by Acoustic Sensor System for Fossil Energy Applications

Acoustic Sensor Systems of Ohio

Robert Fryer

Wireless Sensors

Metal Oxide/Nitride Heterostructured Nanowire Arrays for Ultra-Sensitive and Selective Multi-Mode High Temperature Gas Detection

University of Connecticut

Guo Zhang

Wireless Sensors

Reducing the Guidance/Evaporative Performance of Structural Alloys in Supercritical CO2

Electric Power Research Institute

John Whightfather

Wireless Sensors

Wireless 3D Nanorod Composite Arrays-Based High-Temp Surface Acoustic Wave Sensors for Selective Gas Detection Through Machine Learning Algorithms

University of Connecticut

Shangping Keck

Wireless Sensors

Innovations in Functional Materials for High-Effectivity Electrical Energy Storage

University of Tennessee

Feng Yuan Zhang

Wireless Sensors

Wireless Electrochemical Sensors for Selective Gas Detection Through Machine Learning

University of Connecticut

Robert Fryer

Wireless Sensors

Grade Open-Source DEM Framework w Integrated Uncertainty Quantification

University of Minnesota

Kevin Espinosa

Wireless Sensors

Performance Monitoring of Advanced Gas Turbines

Siemens Corporation

Akiand Kubayi

Wireless Sensors

Monitoring of Advanced Gas Turbines

Siemens Corporation

Akiand Kubayi

Wireless Sensors

Wireless Sensors

Welcome and NETL Overview, Dr. Grace Bochenek (Invited), Director, National Energy Technology Laboratory, U.S. Department of Energy

Mr. Douglas Hollett, Acting Assistant Secretary for Fossil Energy, U.S. Department of Energy

Thursday, March 20, 2014

11:45 AM
<table>
<thead>
<tr>
<th>Project</th>
<th>University/Entity</th>
<th>Title</th>
<th>Presenter</th>
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<tbody>
<tr>
<td>Sporian Microsystems Inc.</td>
<td>University of Florida</td>
<td>Advanced Ceramic Materials and Packaging Technologies for Realizing Sensors Operable in Advanced Energy Generation Systems</td>
<td>Jason Fish</td>
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<tr>
<td>Oregon State University</td>
<td>University of Tennessee</td>
<td>New Mechanistic Models of Long Term Evolution of Microstructure and Mechanical Props of Nickel Based Alloys</td>
<td>Alex Greaney</td>
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<tr>
<td>University of Florida</td>
<td>University of Tennessee</td>
<td>High-Temperature Sapphire Pressure Sensors for Harsh Environments</td>
<td>Alexandra Gerraud</td>
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<tr>
<td>Ohio State University</td>
<td>Pennsylvania State University</td>
<td>Advanced Control Architecture and Sensor Information Development for Process Automation, Optimization, and Imaging of Chemical looping Systems</td>
<td>Andrew Tong</td>
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<tr>
<td>West Virginia University</td>
<td>Oregon National Laboratory</td>
<td>Development of Integrated Economic Framework with Intelligent Monitoring, Cognition and Decision Capabilities for Control of Advanced Energy Plants</td>
<td>Debangu Bhattacharya</td>
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<tr>
<td>University of Florida</td>
<td>Rice/Queens</td>
<td>Computational Design and Perf Prediction of Creep-Resistant Ferritic Superalloys</td>
<td>Peter Law</td>
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<td>West Virginia University</td>
<td>West Virginia University</td>
<td>Passive Wireless Sensors Fabricated by Direct-Writing for Temperature and Health Monitoring of Energy Systems in Harsh Environments</td>
<td>Robert Fryer</td>
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<tr>
<td>West Virginia University</td>
<td>West Virginia University</td>
<td>Smart Refractory Sensor Systems For Wireless Monitoring of Temperature, Health and Degradation of Slagging Geathers</td>
<td>Edward Sabolsky</td>
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<tr>
<td>Oregon State University</td>
<td>North Carolina State University</td>
<td>Rational Design of Mixed Metal Oxides for Chemical Looping Combustion of Coal Via Computational Studies</td>
<td>Earning Li</td>
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<tr>
<td>Rice/Queens</td>
<td>Rice/Queens</td>
<td>Design of Next Generation Sensors for Realizing Power-Applications</td>
<td>Chris Nichols</td>
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</table>

**Registration and Continental Breakfast**

**Plenary Session**


Small Modular Gasification Systems Overview, K. David Lyons, Acting Technology Manager, Gasification Systems, National Energy Technology Laboratory, U.S. Department of Energy

University Coalition for Fossil Energy Research, Dr. Chunshong Song, Director, Energy Institute, Pennsylvania State University

Technology Maturation in Power Generation, Thomas Alley, Jr., Electric Power Research Institute

**Breakout Session Leads Report on Discussions held at each Group**

**Final Remarks**

Adjourn (4:00 PM)

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**Meeting Agenda**

**Tuesday March 21**

**Registration and Continental Breakfast**

**MORNING BREAK**

**TRACK A (CROSSCUTTING)**

<table>
<thead>
<tr>
<th>Number</th>
<th>Title</th>
<th>Moderator</th>
<th>Organization</th>
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<tr>
<td>4</td>
<td>Session</td>
<td>Jason Fish</td>
<td>University of Florida</td>
<td>High-Temperature Sapphire Pressure Sensors for Harsh Environments</td>
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**TRACK B (CROSSCUTTING)**

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<tbody>
<tr>
<td>4</td>
<td>Computational Materials</td>
<td>Dr. Geo Richards</td>
<td>Pennsylvania State University</td>
<td>Computational Design and Discovery of Ni-Based Alloys and Coatings: Thermodynamic Approaches Validated by Experiments</td>
</tr>
</tbody>
</table>

**TRACK C (Modular Gasification Workshop)**

**PANELISTS**

Moderator: Mr. K. David Lyons, Acting Gasification Technology Manager, NETL
Dr. Geo Richards, Senior Fellow, NETL
Dr. Raghubir Gupta, Senior Vice President, RTI
Mr. Sean Kelly, Director, OTM Systems, Praxair
Dr. John Holladay, Energy & Environment Directorate, PNNL

**Facilitated Breakout Sessions**

Participants break into small focus groups

**PARTICIPANTS BREAK INTO SMALL FOCUS GROUPS**

**AFTERNOON BREAK**

**POSTER SESSION (4:30 PM TO 6:00 PM)**
<table>
<thead>
<tr>
<th>Breakout Session Number</th>
<th>Title</th>
<th>Moderator</th>
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<tr>
<td>11</td>
<td>Water Treatment &amp; Reuse</td>
<td>Barbara Callery</td>
<td>Ohio University</td>
<td>Advanced Integrated Technologies for Treatment and Utilization of Impaired Water in Fuel Cell-Based Power Plant Systems</td>
<td>Jason Trenkle</td>
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<tr>
<td>11</td>
<td>Water Treatment &amp; Reuse</td>
<td>Gisela Gilbert</td>
<td>GE Global Research</td>
<td>Model-based Extracted Water Desalination System for Carbon Sequestration</td>
<td>Rachel Gettings</td>
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<tr>
<td>11</td>
<td>Water Treatment &amp; Reuse</td>
<td>William Fullmer</td>
<td>NETL - Research and Innovation Center</td>
<td>Dewatering of High Salinity Brines</td>
<td>Jason Arena</td>
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### TRACK A (CROSSCUTTING)

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<tr>
<td>12</td>
<td>Water Treatment &amp; Reuse</td>
<td>Geneva Muller</td>
<td>Research Triangle Institute</td>
<td>Low-Energy Water Recovery from Subsurface Brines</td>
<td>Young Chul Choi</td>
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<tr>
<td>12</td>
<td>Water Treatment &amp; Reuse</td>
<td>Daniel Hang Ruan</td>
<td>LANL - Los Alamos National Laboratory</td>
<td>Advanced Thermally Robust Membranes for High Salinity Produced Brine Treatment</td>
<td>Rajendra Singh</td>
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<tr>
<td>13</td>
<td>Water Treatment &amp; Reuse</td>
<td>Maria Riedisius</td>
<td>Research Triangle Institute</td>
<td>fouling Resistant Membranes for Treating Concentrated Batters for Water Reuse in Advanced Energy Systems</td>
<td>Zachary Hendren</td>
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<tr>
<td>13</td>
<td>Water Treatment &amp; Reuse</td>
<td>Zunaid Chowdhury</td>
<td>University of Pittsburgh</td>
<td>Development of Membrane Distillation Technology Utilizing Waste Heat for Treatment of High Salinity Wastewater</td>
<td>Omkar Lokare</td>
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<tr>
<td>14</td>
<td>Water Treatment &amp; Reuse</td>
<td>Omar Balbucki</td>
<td>Sporni Microsystems Inc.</td>
<td>Integrated Sensors for Water Quality</td>
<td>Laurence Frediani</td>
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<tr>
<td>14</td>
<td>Water Treatment &amp; Reuse</td>
<td>Omar Balbucki</td>
<td>Nanosonic Inc.</td>
<td>Wireless Networked Sensors in Water for Heavy Metal Detection</td>
<td>Hang Yuan</td>
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<td>14</td>
<td>Water Treatment &amp; Reuse</td>
<td>Omar Balbucki</td>
<td>University of Illinois</td>
<td>An Integrated Supercomputational System for Efficient Produced Water Treatment and Power Generation</td>
<td>Seyed Deighob</td>
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