2014 NETL CO_2 Capture Technology Meeting
Sheraton Station Square, Pittsburgh, PA

Tuesday, July 29, 2014 - Grand Station I & II

7:00 a.m. **Registration - Grand Station Foyer**
Continental Breakfast - Grand Station III

Grand Station I and II

8:00 a.m. **Introduction**
Lynn Brickett, U.S. Department of Energy, National Energy Technology Laboratory

8:10 a.m. **DOE/NETL CO_2 Capture R&D Program**
Michael Matuszewski, U.S. Department of Energy, National Energy Technology Laboratory

8:30 a.m. **Direction of CO_2 Capture R&D at EPRI**
Abhoyjit Bhown, EPRI

8:50 a.m **A Global Perspective on CO_2 Capture Developments**
John Gale, IEAGHG

System Studies and Modeling

Moderator – *Andrew O'Palko*, U.S. Department of Energy, National Energy Technology Laboratory

9:30 a.m. **State of the Art and Advanced Post-Combustion Capture**
TBD, U.S. Department of Energy, National Energy Technology Laboratory

9:55 a.m. **NETL Carbon Capture Retrofits Database**
TBD, U.S. Department of Energy, National Energy Technology Laboratory

10:20 a.m. **BREAK - Grand Station III**

Post-Combustion Sorbent-Based Capture

Moderator – *Andrew O'Palko*, U.S. Department of Energy, National Energy Technology Laboratory

10:40 a.m. **Rapid Temperature Swing Adsorption Using Polymeric-Supported Amine Hollow Fibers**
Christopher Jones, Georgia Tech

11:05 a.m. **Evaluation of CO_2 Capture From Existing Coal-Fired Plants by Hybrid Sorption Using Solid Sorbents**
Steve Benson, University of North Dakota, Institute for Energy Studies

11:30 a.m. **A New Sorbent for Post-Combustion CO_2 Capture**
Gökhan Alptekin, TDA Research, Inc.

11:55 a.m. **LUNCH - Admiral Room**

Moderator – *Bruce Lani*, U.S. Department of Energy, National Energy Technology Laboratory

1:25 p.m. **BIAS Sorbent NCCC Testing/CCSI Modeling**
James Fisher, URS and *David Miller,* US. Department of Energy, National Energy Technology Laboratory

1:50 p.m. **Bench-Scale Development and Testing of a Novel Adsorption Process for Post-Combustion CO_2 Capture**
Ravi Jain, InnoSepra, LLC

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2:15 p.m. **Advanced Solid Sorbents and Process Designs for Post-Combustion CO_2 Capture**
Thomas Nelson, RTI International

2:40 p.m. **Rapid Pressure Swing Adsorption for CO_2 Capture**
James Ritter, University of South Carolina

3:05 p.m. **Evaluation of Solid Sorbents as a Retrofit Technology for CO_2 Capture**
Sharon Sjostrom, ADA-ES, Inc.

3:30 p.m. **BREAK - Grand Station III**

Moderator – *Andrew Aurelio*, U.S. Department of Energy, National Energy Technology Laboratory

3:50 p.m. **Optimizing the Costs of Solid Sorbent-Based CO_2 Capture Process Through Heat Integration**
Sharon Sjostrom, ADA-ES, Inc

4:05 p.m. **Bench Scale Development and Testing of Aerogel Sorbents for CO_2 Capture**
Redouane Begag, Aspen Aerogels, Inc.

4:20 p.m. **Pilot-Scale Evaluation of an Advanced Carbon Sorbent-Based Process for Post-Combustion Carbon Capture**
Gopola Krishnan, SRI International

4:45 p.m. **Sorbent based Post-Combustion CO_2 Slip Stream Testing**
Jeannine Elliott, TDA Research, Inc.

5:10 p.m. **ADJOURN**

5:20 p.m. **Systems Analysis Guidance (PIs Only) - Grand Station I and II**

5:45 p.m. **CCSI Demonstration - Woodlawn I**

Wednesday, July 30, 2014 - Grand Station I & II

7:00 a.m. **Registration - Grand Station Foyer**
Continental Breakfast - Grand Station III

Post-Combustion Solvent-Based Capture

Moderator – *Steven Mascaro*, U.S. Department of Energy, National Energy Technology Laboratory

8:00 a.m. **National Carbon Capture Center: Post-Combustion**
John Wheeldon, National Carbon Capture Center

8:25 a.m. **Evaluation of Concentrated Piperazine for CO_2 Capture From Coal-Fired Flue Gas**
Gary Rochelle, University of Texas at Austin

8:50 a.m. **Development of a Novel Gas Pressurized Stripping (GPS)-Based Technology for CO_2 Capture from Post-Combustion Flue Gases**
Shiaoguo (Scott) Chen, Carbon Capture Scientific, LLC

9:15 a.m. **Low-Energy Solvents for Carbon Dioxide Capture Enabled by a Combination of Enzymes and Vacuum Regeneration**
Sonja Salmon, Novozymes North America, Inc.

Wednesday, July 30, 2014 - Grand Station I & II

9:40 a.m. **CO_2-Binding Organic Liquids Gas Capture With Polarity-Swing-Assisted Regeneration**
David Heldebrant, Battelle Pacific Northwest Division

10:05 a.m. **BREAK - Grand Station III**

Moderator – *David Lang*, U.S. Department of Energy, National Energy Technology Laboratory

10:25 a.m. **Bench-Scale Process for Low-Cost Carbon Dioxide (CO_2) Capture Using a Phase-Changing Absorbent**
Tiffany Westendorf, GE Global Research

10:40 a.m. **Bench-Scale Development of a Non-Aqueous Solvent (NAS) CO_2 Capture Process for Coal-Fired Power Plants**
Luke Coleman, Research Triangle Institute

10:55 a.m. **Novel Flow Sheet for Low Energy CO_2 Capture Enabled by Biocatalyst Delivery System**
John Reardon, Akermin Inc.

11:10 a.m. **Development of Mixed-Salt Technology for Carbon Dioxide Capture from Coal Power Plants**
Indira Jayaweera, SRI International

11:25 a.m. **An Advanced Catalytic Solvent for Lower Cost Post-Combustion CO_2 Capture in a Coal-Fired Power Plant**
Kunlei Liu, University of Kentucky, Center for Applied Energy Research

11:40 a.m. **Development of a Dual Alkalai Solvent System for CO_2 Capture from Flue Gas**
Shih-Ger (Ted) Chang, Jiantawn, LLC

11:55 a.m. **LUNCH - Admiral Room**

Moderator – *Andrew Jones*, U.S. Department of Energy, National Energy Technology Laboratory

1:25 p.m. **Slipstream Pilot-Scale Demonstration of a Novel Amine-Based Post-Combustion Process Technology for CO_2 Capture from Coal-Fired Power Plant Flue Gas**
Krish Krishnamurthy, Linde, LLC

1:50 p.m. **Status of the Carbon Dioxide Absorber Retrofit Equipment (CARE) Program**
Andrew Awtry, Neumann Systems Group

2:15 p.m. **Application of a Heat-Integrated Post-Combustion CO_2 Capture System**
Kunlei Liu, University of Kentucky, Center for Applied Energy Research

2:40 p.m. **Development and Demonstration of Waste Heat Integration With Solvent Process for More Efficient CO_2 Removal From Coal-Fired Flue Gas**
Todd Wall, Southern Company Services, Inc.

3:05 p.m. **BREAK - Grand Station III**

Moderator – *Mike Mosser*, U.S. Department of Energy, National Energy Technology Laboratory

3:25 p.m. **Pilot-Scale Silicone Process for Low-Cost Carbon Dioxide Capture**
Benjamin Wood, GE Global Research

3:50 p.m. **Ion Advanced Solvent CO_2 Capture Pilot Project**
Alfred (Buz) Brown, Ion Engineering LLC

Wednesday, July 30, 2014 - Grand Station I & II

4:15 p.m. **Supersonic Post-Combustion Inertial CO_2 Extraction System**
Vladimir Balepin, Alliant Techsystems Operations LLC

4:30 p.m. **Transformational Technology Development: Approach and Successes**
David Luebke, US. Department of Energy, National Energy Technology Laboratory

4:55 p.m. **Taking Fundamentally New Materials for CO_2 Capture Toward Applications: A Synergistic Effort**
Berend Smit, Lawrence Berkeley National Laboratory

5:20 p.m. **ADJOURN**

5:30 p.m. **Poster Session/Reception – Grand Station III**

Thursday, July 31, 2014 - Grand Station I & II

7:00 a.m. **Registration - Grand Station Foyer**
Continental Breakfast - Grand Station III

Post-Combustion Membrane-Based Capture

Moderator – *John Litynski,* U.S. Department of Energy, Office of Fossil Energy

8:00 a.m. **Electrochemical Membranes for CO_2 Capture and Power Generation**
Hossein Ghezel-Ayagh, FuelCell Energy, Inc.

8:25 a.m. **Composite Hollow Fiber Membranes for CO_2 Capture**
Dhaval Bhandari, GE Global Research

8:50 a.m. **Low-Pressure Membrane Contactors for CO_2 Capture**
Richard Baker, Membrane Technology & Research, Inc.

9:15 a.m. **Novel Inorganic/Polymer Composite Membranes for CO_2 Capture**
Winston Ho, The Ohio State University

9:40 a.m. **Combined Pressure, Temperature Contrast, and Surface-Enhanced Separation of CO_2 for Post-Combustion Carbon Capture**
George Hirasaki, Rice University

10:05 a.m. **BREAK - Grand Station III**

Moderator – *José Figueroa*, U.S. Department of Energy, National Energy Technology Laboratory

10:25 a.m. **Bench-Scale Development of a Hybrid Membrane-Absorption CO_2 Capture Process**
Brice Freeman, Membrane Technology & Research, Inc

10:40 a.m. **Mixed Matrix Membranes for Post-Combustion Capture**
Erik Albenze, US. Department of Energy, National Energy Technology Laboratory

11:05 a.m. **Slipstream Testing of a Membrane CO_2 Capture Process**
Tim Merkel, Membrane Technology & Research, Inc.

11:30 a.m. **CO_2 Capture by Cold Membrane Operation with Actual Coal Fired Power Plant Flue Gas**
Trapti Chaubey, Air Liquide

Thursday, July 31, 2014 - Grand Station I & II

11:55 a.m. **LUNCH - Admiral Room**

Moderator – *José Figueroa*, U.S. Department of Energy, National Energy Technology Laboratory

1:25 p.m. **Pilot Test of a Nanoporous, Super-Hydrophobic Membrane Contactor Process for Post-Combustion Carbon Dioxide (CO_2) Capture**
S. James Zhou, Gas Technology Institute

Pre-Combustion Capture Projects

Moderator – *Dani Petrucci*, U.S. Department of Energy, Office of Fossil Energy

1:50 p.m. **Pre-Combustion Carbon Dioxide Capture by a New Dual-Phase Ceramic Carbonate Membrane Reactor**
Jerry Lin, Arizona State University

2:15 p.m. **High-Temperature Polymer-Based Membrane Systems for Pre-Combustion CO_2 Capture**
Kathryn Berchtold, Los Alamos National Laboratory

2:40 p.m. **Designing and Validating Ternary Pd Alloys for Optimum Sulfur/Carbon Resistance in Hydrogen Separation and Carbon Capture Membrane Systems Using High-Throughput Combinatorial Methods**
Scott Hopkins, Pall Corporation

3:05 p.m. **Hydrogen-Selective Exfoliated Zeolite Membranes**
Michael Tsapatsis, University of Minnesota

3:30 p.m. **BREAK - Grand Station III**

Moderator – *Dani Petrucci*, U.S. Department of Energy, Office of Fossil Energy

3:50 p.m. **National Carbon Capture Center: Pre-Combustion CO_2 Capture**
Tony Wu, Southern Company Services, Inc.

4:15 p.m. **CO_2 Capture From IGCC Gas Streams Using the AC-ABC Process**
Gopola Krishnan, SRI International

4:40 p.m. **ADJOURN**

Friday, August 1, 2014 - Grand Station I & II

7:00 a.m. **Registration - Grand Station Foyer**
Continental Breakfast - Grand Station III

Pre-Combustion Capture Projects

Moderator – *Elaine Everitt*, U.S. Department of Energy, National Energy Technology Laboratory

8:00 a.m. **Hybrid PDMS Testing and Techno-Economic Model**
Nicholas Siefert, US. Department of Energy, National Energy Technology Laboratory

8:25 a.m. **Robust and Energy Efficient Dual Stage Membrane-Based Process for Enhanced CO_2 Recovery**
Paul Liu, Media and Process Technology, Inc.

8:40 a.m. **Pilot Testing of a Highly Effective Pre-Combustion Sorbent-Based Carbon Capture System**
Gokhan Alptekin, TDA Research Inc

Friday, August 1, 2014 - Grand Station I & II

9:05 a.m. **Development of a Precombustion Carbon Dioxide Capture Process Using High Temperature Polybenzimidazole Hollow-Fiber Membrane**
Gopola Krishnan, SRI International

9:30 a.m. **BREAK - Grand Station III**

Oxy-Combustion and Chemical Looping

Moderator – *Steve Richardson*, U.S. Department of Energy, National Energy Technology Laboratory

9:50 a.m. **Recovery Act: Oxy-Combustion: Oxygen Transport Membrane Development**
Sean Kelly, Praxair, Inc.

10:15 a.m. **Advanced Oxy-Combustion Technology Development and Scale Up for New and Existing Coal-Fired Power Plants**
Mark Fitzsimmons, Aerojet Rocketdyne

10:40 a.m. **Advanced Oxy-Combustion Technology Development and Scale Up for New and Existing Coal-Fired Power Plants**
Richard Axelbaum, Washington University, St. Louis

11:05 a.m. **Alstom's Chemical Looping Combustion Technology with CO_2 Capture for New and Existing Coal-Fired Power Plants**
Herbert Andrus, Alstom Power, Inc.

11:30 a.m. **Commercialization of the Iron Based Coal Direct Chemical Looping Process for Power Production with in situ Carbon Dioxide Capture**
Luis Velazquez-Vargas, Babcock & Wilcox

11:55 a.m. **ADJOURN**