U.S. DEPARTMENT OF ENERGY | NATIONAL ENERGY TECHNOLOGY LABORATORY

Carbon Management and Oil and Gas Research Project Review Meeting
Point Source Capture — Lab, Bench, and Pilot-Scale Research
Virtual Session Agenda

All times designated in Eastern Daylight Time

Thursday, August 12, 2021

Moderator: **Carl Laird**

10:00 AM **Opening Remarks/Overview on Capture for Power and Industrial Sources**
Lynn Brickett, Carbon Capture Program Manager, Office of Fossil Energy and Carbon Management, U.S. Department of Energy

10:30 AM **Technology Centre Mongstad Update**
Ernst Petter Axelsen, Managing Director and Arne Thorsen Kolle, Commercial Manager, Technology Centre Mongstad

11:00 AM **Engineering Scale Testing of Transformational Non-Aqueous Solvent-Based Carbon Dioxide Capture Process at Technology Centre Mongstad (FE0031590)**
Marty Lail, RTI International

11:25 AM **Scale Up and Testing of Advanced Polaris CO_2 Capture Membranes (FE0031591)**
Tim Merkel, MTR

11:50 AM **Membrane-Sorbent Hybrid System for Post-Combustion Carbon Capture (FE0031603)**
Gokhan Alptekin and Ambalavanan Jayaraman, TDA Research

12:15 PM **BREAK**

Moderator: **Andrew O'Palko**

1:00 PM **Engineering-Scale Demonstration of the Mixed-Salt Process for CO_2 Capture (FE0031588)**
Indira Jayaweera, SRI International

1:25 PM **Large Pilot Testing of the MTR Membrane Post-Combustion CO_2 Capture Process (FE0031587)**
Richard Baker, Membrane Technology and Research, Inc.

1:50 PM **Large Pilot Testing of Linde-BASF Advanced Post-Combustion Carbon Dioxide Capture Technology at a Coal-Fired Power Plant (FE0031581)**
Stephanie Brownstein and Kevin OBrien, University of Illinois

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2:15 PM **National Carbon Capture Center Project Update (FE002256)**
Tony Wu, Southern Company Services, Inc

2:40 PM **Sorbent Based Post-Combustion CO_2 Slipstream Testing (FE0012870)**
Fei Yi, TDA Research, Inc.

3:05 PM **BREAK**

Moderator: Zachary Roberts

3:20 PM **Pilot Test of a Nanoporous, Super-Hydrophobic Membrane Contactor Process for Post-Combustion Carbon Dioxide (CO_2) Capture (FE0012829)**
Shiquang Li and Howard Meyer, Gas Technology Institute

3:45 PM **Validation of Transformational CO_2 Capture Solvent Technology with Revolutionary Stability (Apollo) (FE0031727)**
Nathan Fine, ION Clean Energy, Inc.

4:10 PM **ROTA-CAP: An Intensified Carbon Capture System Using Rotating Packed Beds (FE0031630)**
Osman Akpolat, Gas Technology Institute

4:35 PM **Engineering-Scale Test of a Water-Lean Solvent for Post-Combustion Capture (FE0031945)**
Joseph Swisher, Electric Power Research Institute

5:00 PM **ADJOURN**

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Friday, August 13, 2021

Moderator: **Carl Laird**

9:30 AM **Modeling the Deployment and Impacts of Capture R&D**
Christopher Nichols, National Energy Technology Laboratory

9:55 AM **Updated Costs for Carbon Capture Retrofits**
Tim Fout, National Energy Technology Laboratory

10:20 AM **ACT Overview**
Ragnhild Rønneberg, The Research Council of Norway

10:35 AM **LAUNCH Project**
Gary Rochelle, University of Texas at Austin

11:05 AM **Safeguarding Amines from Oxidation by Enabling Technologies (FE0031861)**
Gary Rochelle, University of Texas at Austin

11:30 AM **Engineering-Scale Demonstration of Transformational Solvent on NGCC Flue Gas (FE0031950)**
Nathan Fine, ION Clean Energy, Inc.

11:55 AM **BREAK**

Moderator: **Krista Hill**

12:45 PM **Chevron Natural Gas Carbon Capture Technology Testing Project (FE0031944)**
Justin Freeman, Chevron

1:10 PM **Engineering Scale Design and Testing of Transformational Membrane Technology for CO_2 Capture (FE0031946)**
Shiguang Li, Gas Technology Institute and Yang Han, The Ohio State University

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1:35 PM **Critical Component/Technology Gap in Coal FIRST Gasification Based Poly-Generation: Advanced Ceramic Membranes/Modules for Ultra Efficient H_2 Production/CO_2 Capture for Coal-Based Polygeneration Plants (FE0031930)**
Richard Ciora, Media and Process Technology, Inc.

2:00 PM **Pilot Testing of a Highly Effective Pre-Combustion Sorbent-Based Carbon Capture System (FE0013105)**
Gokhan Alptekin and Ambalavanan Jayaraman, TDA Research

2:25 PM **A High Efficiency, Modular Pre-Combustion Capture System for Coal FIRST Poly-Generation Process (FE0031926)**
Gokhan Alptekin and Ambalavanan Jayaraman, TDA Research

2:50 PM **ADJOURN**

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Monday, August, 16, 2021

Moderator: **Elliot Roth**

10:00 AM **Delivering Over 90% CO_2 Capture – Learnings From Modelling and Pilot Plant Studies**
Mai Bui, Research Associate and Niall Mac Dowell, Professor of Future Energy Systems, Imperial College London

10:30 AM **Development and Bench-Scale Testing of a Novel Biphasic Solvent-Enabled Absorption Process for Post-Combustion Carbon Capture (FE0031600)**
Yongqi Lu and Paul Nielsen, Illinois State Geological Survey, University of Illinois at Urbana-Champaign

10:50 AM **A Process with Decoupled Absorber Kinetics and Solvent Regeneration through Membrane Dewatering and In-Column Heat Transfer (FE0031604)**
Kunlei Liu, University of Kentucky

11:10 AM **Low Corrosion Pre-Combustion Solvents for Novel Solvent/Membrane Hybrid Capture Processes**
Nick Siefert, National Energy Technology Laboratory

11:30 AM **Computational Screening of Carbon Capture Materials**
Jan Steckel, National Energy Technology Laboratory

11:50 AM **Bench-Scale Development of a Transformational Graphene Oxide-Based Membrane Process for Post-Combustion CO_2 Capture (FE0031598)**
Shiguang Li, Gas Technology Institute and Miao Yu, University of Buffalo (SUNY)

12:10 PM **BREAK**

Moderator: **Nicole Shamitko-Klingensmith**

1:00 PM **Universal Solvent Viscosity Reduction Via Hydrogen Bonding Disruptors (FE0031629)**
Xu Zhou and Hunaid Nulwala, Liquid Ion Solutions, LLC

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1:20 PM **High-Temperature Ceramic-Carbonate Dual-Phase Membrane Reactor for Pre-Combustion Carbon Dioxide Capture (FE0031634)**
Jerry Lin, Arizona State University

1:40 PM **Transformational Membranes for Pre-Combustion Carbon Capture (FE0031635)**
Winston Ho and Yang Han, The Ohio State University

2:00 PM **Mixed-Salt-Based Transformational Solvent Technology for CO_2 Capture (FE0031597)**
Palitha Jayaweera, SRI International

2:20 PM **Development of Self-Assembly Isoporous Membranes (FE0031596)**
Hans Wijmans and Fanglei Zhou, Membrane Technology and Research, Inc.

2:40 PM **Highly Permeable Thin Film Composite Membranes of Rubbery Polymer Blends for CO_2 Capture**
Lingxiang Zhu, National Energy Technology Laboratory

3:00 PM **BREAK**

Moderator: Dustin Brown

3:15 PM **Bench-Scale Development of a Transformative Membrane Process For Pre-Combustion CO_2 Capture (FE0031632)**
Jay Kniep, Membrane Technology and Research, Inc.

3:35 PM **Development of Carbon Molecular Sieves Hollow Fiber Membranes Based on Polybenzimidazole Doped with Polyprotic Acids with Superior H_2/CO_2 Separation Properties (FE0031636)**
Haiqing Lin and Leiqing Hu, University at Buffalo

3:55 PM **Emissions Mitigation Technology for Advanced Water-Lean Solvent-based CO_2 Capture Processes (FE0031660)**
Jak Tanthana, RTI International

4:15 PM **Development and Testing of a High Temperature PBI Hollow-Fiber Membrane Technology for Pre-Combustion CO_2 Capture (FE0031633)**
Indira Jayaweera and Michael Wales, SRI International

4:35 PM **ADJOURN**

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Tuesday, August 17, 2021

Moderator: **Mariah Richardson**

10:00 AM **The ARPA-E FLECCS Program: Designing CCS Processes for Future Energy Systems**
Scott Litzelman, Program Director, ARPA-E

10:30 AM **Reactive Capture**
Amishi Kumar, Carbon Utilization Program Manager, Office of Fossil Energy and Carbon Management, U.S. Department of Energy

11:00 AM **Advancing Post Combustion CO_2 Capture through Increased Mass Transfer and Lower Degradation (FE0031661)**
Jesse Thompson, University of Kentucky, Center for Applied Energy Research

11:20 AM **Fog and Froth-Based Post Combustion CO_2 Capture in Fossil Fuel Power Plants (FE0031733)**
Heather Nikolic, University to Kentucky Center for Applied Energy Research

11:40 AM **Novel Transformational Membranes and Process for CO_2 Capture from Flue Gas (FE0031731)**
Winston Ho and Yang Han, The Ohio State University

12:00 PM **BREAK**

Moderator: **Dustin Brown**

1:00 PM **Transformational Molecular Layer Deposition Tailor-Made Size-Sieving Sorbents for Post-Combustion CO_2 Capture (FE0031730)**
Patrick Underhill, Rensselaer Polytechnic Institute, James Ritter, University of South Carolina and Miao Yu University of Buffalo

1:20 PM **Transformational Sorbent System for Post-Combustion Carbon Capture (FE0031734)**
Gokhan Alptekin and Ambalavanan Jayaraman, TDA Research

1:40 PM **Bench Scale Testing of a High Efficiency, Ultra-Compact Process for Pre-Combustion CO_2 Capture (FE0031737)**
Theodore Tsotsis, University of Southern California

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2:00 PM **Advanced Structured Adsorbent Architectures for Transformative Carbon Dioxide Capture Performance (FE0031732)**
Deborah Jelen, Electricore, Inc. and Pierre Hovington, Svante, Inc.

2:20 PM **Overview of Carbon Capture Simulation for Industry Impact ($CCSI_2$) Accomplishments**
Michael Matuszweski, National Energy Technology Laboratory

2:40 PM **Sequential Design of Experiments for Scaling Up Carbon Capture Technologies**
Abby Nachtsheim, Los Alamos National Laboratory

3:00 PM **BREAK**

Moderator: Zachary Brown

3:15 PM **Framework for Optimization and Quantification of Uncertainty and Surrogates (FOQUS) Capabilities and Applications**
Anuja Deshpande, National Energy Technology Laboratory

3:35 PM **Transformational Sorbent-Based Process for a Substantial Reduction in the Cost of CO_2 Capture (FE0031722)**
Ravi Jain, InnoSepra, LLC

3:55 PM **Intensified, Flexible, and Modular Carbon Capture Demonstration with Additively Manufactured Multi-Functional Device (FWP-FEAA384)**
Costas Tsouris and Josh Thompson, Oak Ridge National Laboratory

4:15 PM **High-Efficiency, Integrated Reactors for Sorbents, Solvents, and Membranes using Additive Manufacturing (FWP-FEW0225)**
Du Nguyen, Lawrence Livermore National Laboratory

4:35 PM **Parametric Testing of CO_2BOLs to enable Industry (FWP-76270)**
David Heldebrant, Pacific Northwest National Laboratory

4:55 PM **Reducing the Degradation of Carbon Capture Solvents (FWP-77217)**
Phillip Koech, Pacific Northwest National Laboratory

5:15 PM **ADJOURN**