

2021 Virtual Annual Technical Review Meeting

Host: National Energy Technology Laboratory
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Webinar Info: +1 (631) 992-3221

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AGENDA

October 5th and 6th, 2021

October 5th, 2021

Introduction

- 11:00 – 11:15 am **Welcome Remarks and Administrative Update**
Dr. Brian Anderson, *Director, National Energy Technology Laboratory*
Omer Bakshi, *DOE Project Officer, University Coalition for Fossil Energy Research*
- 11:15 – 11:45 am **State of the Coalition**
Bruce Miller, *Director, University Coalition for Fossil Energy Research*

Coal Beneficiation

- 11:45 – 12:05 pm **Porous Silicon/Lignite-Derived Graphene Composite Anodes for Lithium-Ion Batteries (04-UND-P2-15: Coal Beneficiation)**
Xiaodong Hou, *University of North Dakota*
- 12:05 – 12:25 pm **Developing a Novel Ultrafine Coal Dewatering Process (04-VaT-P1-32: Coal Beneficiation)**
Rui Qiao, *Virginia Polytechnic and State University*
- 12:25 – 12:35 pm **Coal Beneficiation Q&A & Discussion**
- 12:35 – 1:05 pm **LUNCH BREAK**

Carbon Capture

- 1:05 – 1:25 pm **Selective Porous Polymer Networks Supported on Hollow Fiber Superstructures for Direct Air Capture of CO₂ (05-TAMU-S1-33: Carbon Capture)**
Hong-Cai Zhou, *Texas A&M University*
- 1:25 – 1:45 pm **Development and Optimization of Metal Organic Framework (MOF) Sorbents for Direct Air Capture (DAC) of CO₂ (05-VaT-S1-18: Carbon Capture)**
Amanda Morris, *Virginia Tech University*

- 1:45 – 2:05 pm **Core Shell Metal Organic Frameworks (MOFs) for Direct Air Capture (05-UPitt-S1-22: Carbon Capture)**
Katherine Hornbostel, *The University of Pittsburgh*
- 2:05 – 2:25 pm **Crosslinked Microspherical Adsorbents from Lignite-derived Humic Acid for CO₂ Capture (06-UND-Z1-13: Carbon Capture)**
Xiaodong Hou, *University of North Dakota*
- 2:25 – 2:45 pm **Carbon Capture Q&A & Discussion**
- 2:45 – 2:55 pm **BREAK**
- 2:55 – 3:15 pm **Development of Novel Process Intensification Device, Acoustic Driven Packing Material (06-Uky-Z1-05: Carbon Capture)**
Bradley Irvin, *University of Kentucky Research Foundation*
- 3:15 – 3:35 pm **A Novel Reactive Separation Method for Carbon Dioxide Capture From Flue Gas (06-USC-Z1-10: Carbon Capture)**
Theodore Tsotsis, *U. Southern California*
- 3:35 – 3:55 pm **Use of a Novel Process for Revolutionizing CO₂ Capture (06-Uwy-Z1-35: Carbon Capture)**
Maohong Fan, *University of Wyoming*
- 3:55 – 4:10 pm **Carbon Capture Q&A & Discussion**
- Carbon Storage**
- 4:10 – 4:30 pm **Upscaling Experimental Measurements to the Field Scale Using a Machine-Learning-Based, Scale-Bridging Data Assimilation Approach (04-VaT-O1-09: Carbon Storage)**
Cheng Chen, *Virginia Polytechnic and State University*
- 4:30 – 4:35 pm **Carbon Storage Q&A & Discussion**
- 4:35 – 4:40 pm **Closing Remarks & Adjourn**

October 6th, 2021

- 11:00 – 11:10 am **Opening Remarks and Administrative Update**
Dr. Sean Plasynski, *Deputy Director & Chief Technology Officer, National Energy Technology Laboratory*
Omer Bakshi, *DOE Project Officer, University Coalition for Fossil Energy Research*

Crosscutting Research

- 11:10 – 11:30 am **Wire Arc Additive Manufacturing of Advanced Steam Cycle Components Using Location Specific Design Enhanced by High-Throughput Experiments and Machine Learning (06-UPitt-W2-19: Crosscutting Research-AUSC)**
Wei Xiong, *University of Pittsburgh*
- 11:30 – 11:50 am **Computer Vision and Machine Learning Making The Processing-Microstructure-Property Connection In Heat Resistant Alloys (04-CMU-Q1-20: Crosscutting Research)**
Nan Gao, *Carnegie Mellon University*
- 11:50 – 12:10 pm **Adaptive Depth Neural Networks for Scale-Bridging Modeling of Multiphase Reacting Flows (06-PrU-W1-01: Crosscutting Research)**
Giuseppe D'Alessio, *Princeton University*

- 12:10 – 12:25 pm **Crosscutting Research Q&A & Discussion**

- 12:25 – 12:55 pm **LUNCH BREAK**

Advanced Coal Processing

- 12:55 – 1:15 pm **An Economically Viable Technology for Production of Coal-derived Aerogel Insulation Envelope (06-UKy-Y1-28: Advanced Coal Processing)**
Hanjing Tian, *University of Kentucky*

- 1:15 – 1:20 pm **Advanced Coal Processing Q&A & Discussion**

Fuel Cell Technologies

- 1:20 – 1:40 pm **Development of a Novel Supersonic Hybrid Non-Equilibrium Plasma Reactor for Efficient and Tunable Co-Production of Hydrogen and Value-Added Solid Carbons (04-PrU-R1-10: Fuel Cell Technologies)**
Andrey Starikovskiy, *Princeton University*

- 1:40 – 2:00 pm **Metal-free Catalyzed Synthesis of Novel Carbon by Carbon Allotrope Seeds (04-PSU-R2-02: Fuel Cell Technologies)**
Muhammad Salim, *Pennsylvania State University*

- 2:00 – 2:10 pm **Fuel Cell Technologies Q&A & Discussion**

- 2:10 – 2:20 pm **BREAK**

Gasification Systems and Coal & Coal-Biomass to Liquids (CCBTL)

2:20 – 2:40 pm **A Novel Modular Coal-to-Methanol Reactor Using Electroactive Membranes (05-UPitt-T1-11: Gasification Systems & CCBTL)**
James R. McKone, The University of Pittsburgh

2:40 – 3:00 pm **Design of Bifunctional Fischer-Tropsch Catalysts with Improved Heat Conductivity for Modular Small-Scale Reactor Applications (05-UUt-T1-19: Gasification Systems & CCBTL)**
Michael Nigra, University of Utah

3:00 – 3:10 pm **Gasification Q&A & Discussion**

Natural Gas Technologies

3:10 – 3:30 pm **Quantification of Methane Emissions from the Natural Gas Gathering System using Distributed Sensors (05-CMU-U1-12: Natural Gas Technologies)**
Albert Presto, Carnegie Mellon University

3:30 – 3:35 pm **Natural Gas Technologies Q&A & Discussion**

Rare Earth Elements

3:35 – 3:55 pm **Current Uses and Future Opportunities for US Industry in REE and CM Technologies and Markets: Knowledge-Base Tool Development (05-PSU-V1-04: Rare Earth Elements)**
Justin Richter, Pennsylvania State University

3:55 – 4:00 pm **Rare Earth Elements Q&A & Discussion**

4:00 – 4:05 pm **Closing Remarks & Adjourn**