



University Coalition for Fossil Energy Research



2020 Annual Technical Review Meeting

Host: National Energy Technology Laboratory
3610 Collins Ferry Rd, Morgantown, WV 26505
Room: B26-G51ABC

AGENDA May 27-28, 2020

Wednesday, May 27, 2020

- 8:00 – 9:00 am **Arrival and Breakfast**
- 9:00 – 9:05 am **Opening Remarks**
Madhava Syamlal, *DOE Technical Director, University Coalition for Fossil Energy Research*
- 9:05 – 9:10 am **Welcome to NETL**
Brian Anderson, *Director, National Energy Technology Laboratory*
- 9:10 – 10:00 am **NETL Science and Technology**
David Miller, *Senior Fellow, Science & Technology Strategic Plans & Programs, National Energy Technology Laboratory*

John Wimer, *Associate Director, Strategic Planning, National Energy Technology Laboratory*

Bryan Morreale, *Executive Director, Research & Innovation Center, National Energy Technology Laboratory*
- 10:00 – 10:30 am **BREAK**
- 10:30 – 11:00 am **State of the Coalition**
Chunshan Song, *Director, University Coalition for Fossil Energy Research*
- 11:00 – 11:10 am **Administrative Update**
Omer Bakshi, *DOE Project Officer, University Coalition for Fossil Energy Research*
- 11:40 – 12:30 pm **LUNCH**
Food will be served in room **B922-106C**
- 12:30 – 1:00 pm **Methane Emissions Quantification (MEQ) of Compressor Stations (02-VaT-F1a-20: Oil and Gas)**
Nino Ripepi, *Virginia Polytechnic and State University*

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Wednesday, May 27, 2020 Continued

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| 1:00 – 1:30 pm | Seed-Free MHD Topping Cycle for Coal and Gas-Fired Power Generation (03-TAMU-H1a-61: Advanced Combustion)
Richard Miles, <i>Texas A&M University</i> |
| 1:30 – 2:00 pm | Modular Chemical Functionalization of External Surfaces of Porous Metal-Organic Framework for Filler Particles for Optimization of Interfacial Properties in Mixed Matrix Membranes (03-UPitt-I1b-04: Carbon Capture)
Nathaniel Rosi, <i>University of Pittsburgh</i> |
| 2:00 – 2:30 pm | Porous Polymer Network Membranes with Porous Molecular Additives for Post-Combustion CO₂ Capture (03-TAMU-I1b-80: Carbon Capture)
Hong-Cai Zhou, <i>Texas A&M University</i> |
| 2:30 – 2:45 pm | BREAK |
| 2:45 – 3:15 pm | Catalytic conversion of CO₂ into vinyl acetate (03-LSU-K1d-45: Carbon Use and Reuse)
James Spivey and Ye Xu, <i>Louisiana State University</i> |
| 3:15 – 3:45 pm | Atomically Precise Au₂₅-based Alloy Nanoclusters for Electrochemical CO₂ Conversion (03-UPitt-K1d-16: Carbon Use and Reuse)
Ioannis Bourmpakis (Giannis Mpourmpakis), <i>University of Pittsburgh</i> |
| 3:45 – 4:15 pm | Computational Investigation of Coal Conversion via Microwave Induced Plasmas (03-WVU-M1a-51: Gasification)
Terence Musho, <i>West Virginia University</i> |
| 4:15 pm | ADJOURN |
| 5:30 – 9:30 pm | Closed Meeting for Technical Advisory Council Members Only
Holiday Inn Express and Suites Pittsburgh West-Greentree
875 Greentree Road
Pittsburgh, PA 15220 |

Dinner will be served at 5:30pm. Meeting will begin at 6:00pm.

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Thursday, May 28, 2020

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| 8:00 – 9:00 am | Arrival and Breakfast |
| 9:00 – 9:30 am | Improved wellbore integrity via sealing small cracks with CO₂-soluble polymers that block water, oil and gas (03-UPitt-J1a-41: Carbon Storage)
Robert Enick, <i>University of Pittsburgh</i> |
| 9:30 – 10:00 am | CO₂ Storage Optimization under Geomechanical Risk and Prediction Uncertainty Using Coupled-Physics Models (03-USC-J2a-20: Carbon Storage)
Behnam Jafarpour, <i>University of Southern California</i> |
| 10:00 – 10:30 am | Optimization of Microwave-Driven, Plasma-Assisted Conversion of Methane to Hydrogen and Graphene (03-PSU-L1a-17: Fuel Cell Technologies)
Randy Vander Wal, <i>Pennsylvania State University</i> |
| 10:30 – 10:40 am | BREAK |
| 10:40 – 11:10 am | 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, <i>Virginia Polytechnic and State University</i> |
| 11:10 – 11:40 pm | Developing a Novel Ultrafine Coal Dewatering Process (04-VaT-P1-32: Coal Beneficiation)
Rui Qiao, <i>Virginia Polytechnic and State University</i> |
| 11:40 – 1:00 pm | LUNCH
Food will be served in room B922-106C |
| 1:00 – 1:30 pm | Porous Silicon/Lignite-Derived Graphene Composite Anodes for Lithium-Ion Batteries (04-UND-P2-15: Coal Beneficiation)
Xiaodong Hou, <i>University of North Dakota</i> |
| 1:30 – 2:00 pm | Computer vision and machine learning making the processing-microstructure-property connection in heat resistant alloys (04-CMU-Q1-20: Crosscutting Research)
Elizabeth Holm, <i>Carnegie Mellon University</i> |
| 2:00 – 2:30 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)
Yiguang Ju, <i>Princeton University</i> |

Thursday, May 28, 2020, Continued

2:30 – 2:45 pm	BREAK
2:45 – 3:15 pm	Metal-free Catalyzed Synthesis of Novel Carbon by Carbon Allotrope Seeds (04-PSU-R2-02: Fuel Cell Technologies) <i>Randy Vander Wal, Pennsylvania State University</i>
3:15 – 3:30 pm	Open Feedback Discussion and Closing Remarks <i>Madhava Syamlal, DOE Technical Director, University Coalition for Fossil Energy Research</i>
3:30 pm	ADJOURN