



2022

RESOURCE SUSTAINABILITY ANNUAL PROJECT REVIEW MEETING

October 25-27, 2022

Sheraton Station Square Hotel
Pittsburgh, PA





TUESDAY MORNING, OCTOBER 25

AGENDA

7:00 am REGISTRATION and CONTINENTAL BREAKFAST – Grand Station Ballroom Foyer

Opening Plenary Session GRAND STATION BALLROOM 1 & 2

8:00 am

Dr. Brian Anderson,

Director of the National Energy Technology Laboratory, U.S. Department of Energy

8:15 am

Mr. Brad Crabtree,

Assistant Secretary for Office of Fossil Energy and Carbon Management (FECM), U.S. Department of Energy

8:35 am

Dr. Bryan Morreale,

Research and Innovation Center, National Energy Technology Laboratory, U.S. Department of Energy

9:00 am BREAKOUT SESSIONS – Locations as listed



BREAKOUT SESSIONS

Critical Minerals Sustainability

GRAND STATION BALLROOM 1 & 2

CORE-CM

Moderator: Jessica Mullen

9:00 am

The Illinois Basin CORE-CM Initiative (FE0032049)
Jared Freiburg, Illinois State Geological Survey

9:30 am

Critical Minerals in Coaly Strata of the Cherokee-Forest City Basin (FE0032056)
Franciszek Hasiuk, University of Kansas Center for Research

10:00 am BREAK – Grand Station Ballroom Foyer

CORE-CM

Moderator: Savannah Rice

10:15 am

Consortium to Assess Northern Appalachia Resource Yield (CANARY) of CORE-CM for Advanced Materials (FE0032052)
Sarma V. Pisupati and Jonathan P. Matthews, The Pennsylvania State University

10:45 am

Evolve Central Appalachia (Evolve CAPP) (FE0032055)
Richard E. Bishop, Virginia Tech

11:15 am

Mid-Appalachian Carbon Ore, Rare Earth and Critical Minerals Initiative (FE0032054)
Paul Ziemkiewicz, West Virginia University

11:45 am

Manufacturing Valuable Coal-Derived Products in Southern Appalachia (FE0032045)
Charles Sims, University of Tennessee

12:15 pm LUNCH – Grand Station Ballroom 1 & 2

Carbon Ore Processing

ADMIRAL ROOM

PROGRAM INTRODUCTION/GRAPHITE

Moderator: Michael Fasouletos

9:00 am

Carbon Ore Processing Program Overview
Joseph Stoffa, National Energy Technology Laboratory

9:30 am

Scale up Production of Graphite from Carbon Ore and Coal Refuse (FWP-FEAA157)
Edgar Lara-Curzio, Oak Ridge National Laboratory

10:00 am BREAK – Grand Station Ballroom Foyer

GRAPHITE

Moderator: Michael Fasouletos

10:15 am

Molded Graphite Products Synthesized from Waste-Coal (FE0032141)
Dwayne Morgan, Touchstone Research Laboratory

10:45 am

Utilization of Carbon Supply Chain Wastes and Byproducts to Manufacture Graphite for Energy Storage Applications (FE0032144)
Jason Trembly, Ohio University

11:15 am

Advanced Processing of Coal and Waste Coal to Produce Graphite for Fast-Charging Lithium-Ion Battery Anode (FE0032139)
Alexander Azenkeng, University of North Dakota Energy and Environmental Research Center

11:45 am

Coal as Value-Added for Lithium-Ion Battery Anodes (FE0031879)
Kyle Marcus, Semplastics

12:15 pm LUNCH – Grand Station Ballroom 1 & 2

BREAKOUT SESSIONS

Advanced Remediation and Methane Mitigation Technologies WATERFRONT ROOM

UP-STREAM

Moderator: Alexandra Hakala

9:00 am

Plugging Orphaned and Abandoned Wells (FWP-1022415-Task 24)

Ellis Rosenbaum, National Energy Technology Laboratory

9:30 am

Beneficial Reuse of Drill Cuttings as Soil Supplements (FWP-10224150-Task 23)

Christina Lopano, National Energy Technology Laboratory

10:00 am BREAK – Grand Station Ballroom Foyer

UP-STREAM

Moderator: Robert Noll

10:15 am

Fully Distributed Acoustic and Magnetic Field Monitoring Via a Single Fiber Line for Optimized Production of Unconventional Resource Plays (FE0031786)

Daniel Homa, Virginia Tech

10:45 am

Engineered Water for Improved Oil Recovery from Fractured Reservoirs (FE0031791)

Kishore Mohanty, The University of Texas at Austin

11:15 am

Novel 'Smart Microchip Proppants' Technology for Precision Diagnostics of Hydraulic Fracture Networks (FE0031784)

Amirmasoud Kalantari Dahaghi, The University of Kansas

11:45 am

Dynamic Binary Complexes (DBC) as Super-Adjustable Viscosity Modifiers for Hydraulic Fracturing Fluids (FE0031778)

Mustafa Akbulut, Texas A&M University

12:15 pm LUNCH – Grand Station Ballroom 1 & 2

Water Management REFLECTIONS ROOM

WATER MANAGEMENT

Moderator: Omer Bakshi

9:00 am

Water Management R&D at FECM: An Overview
Hichem Hadjeres, Department of Energy's Office of Fossil Energy and Carbon Management

9:30 am

Water Electrodialysis Reversal Pilot Test Update (FE0032066)

Matthew K. Heermann, Sargent & Lundy

10:00 am BREAK – Grand Station Ballroom Foyer

WATER MANAGEMENT

Moderator: Heather Hunter

10:15 am

Improvement of Coal Power Plant Dry Cooling Technology Through Application of Cold Thermal Energy Storage (FE0031886)

Lida Yan, University of North Carolina Charlotte

10:45 am

Advanced Dry-Cooling with Integrated Enhanced Air-cooled Condenser and Daytime Load-Shifting Thermal Energy Storage for Improved Powerplant Efficiency (FE0031979)

Raj Manglik, University of Cincinnati

11:15 am

Clean Water Production in Cooling Towers (FE0032057)

Karim Khalil, Infinite Cooling, Inc.

11:45 am

Water Recovery from Cooling Tower Plumes (FE0031828)

Karim Khalil, Infinite Cooling, Inc.

12:15 pm LUNCH – Grand Station Ballroom 1 & 2

BREAKOUT SESSIONS

Critical Minerals Sustainability

GRAND STATION BALLROOM 1 & 2

CORE-CM

Moderator: Anna Wendt

1:15 pm

Preliminary Assessment of Coal and Ash Resources in the Gulf Coast Basin (FE0032053)

*Bridget Scanlon, Bureau of Economic Geology,
Jackson School of Geosciences, University of
Texas at Austin*

1:45 pm

Powder River Basin Core-CM: Advancing Strategies for Carbon Ore, Rare Earth Element and Critical Mineral Resource Development in the Nation's Largest Coal Producing Basin (FE0032048)

*Erin Philips, University of Wyoming and Morgan V. Evans,
Battelle Memorial Institute*

2:15 pm

Williston Basin CORE-CM Initiative (FE0032060)

*John P. Kay, University of North Dakota Energy &
Environmental Research Center*

2:45 pm

Bringing Alaska's CORE-CM Potential into Perspective (FE0032050)

*Brent Sheets, University of Alaska – Fairbanks and
Marwan A Wartes, Alaska Division of Geological &
Geophysical Surveys*

3:15 pm BREAK – Grand Station Ballroom Foyer

Carbon Ore Processing

ADMIRAL ROOM

GRAPHITE

Moderator: Michael Fasouletos

1:15 pm

Laboratory-Scale Coal-Derived Graphene Process (FE0031881)

*Alexander Azenkeng, University of North Dakota Energy
and Environmental Research Center*

1:45 pm

Lignite-Derived Carbon Materials for Lithium-Ion Battery Anodes (FE0031984)

Xiaodong Hou, University of North Dakota

2:15 pm

Low Cost Conversion of Coal to Graphene: Bench-scale Testing, Modeling and Techno-Economical Analysis (FE0031999)

Rouzbeh Shahsavari, C-Crete Technologies

2:45 pm

Efficient Ultra-Rapid Microwave Plasma Process for Generation of High Value Industrial Carbons and 3D Printable Composites from Domestic Coal (FE0031793)

*George Skoptsov, H Quest Vanguard and
Randy Vander Wal, Pennsylvania State University*

3:15 pm BREAK – Grand Station Ballroom Foyer



BREAKOUT SESSIONS

Advanced Remediation and Methane Mitigation Technologies WATERFRONT ROOM

UP-STREAM

Moderator: Gary Covatch

1:15 pm

Unlocking the Tight Oil Reservoirs of the Powder River Basin, Wyoming (FE0031779)

Eric Robertson, University of Wyoming, Enhanced Oil Recovery Institute

1:45 pm

CO₂ Enhanced Oil Recovery Improvement in Conventional Fields Using Rich Gas (FE0031789)

Bethany Kurz, University of North Dakota Energy & Environmental Research Center

2:15 pm

Development of an Optical Based Single Well Seismic System (OSWS) for Improved Characterization and Subsurface Monitoring (SC0018613)

Bjorn Paulsson and Mike Wylie, Paulsson, Inc.

2:45 pm

HFTS-1 Liner Refrac Project Update (FE0024292)

Jordan Ciezobka, GTI Energy

3:15 pm BREAK – Grand Station Ballroom Foyer

Water Management and Advanced Remediation and Methane Mitigation Technologies REFLECTIONS ROOM

WATER MANAGEMENT & MID-STREAM

Moderator: Djuna Gulliver

1:15 pm

Water Management for Power Systems: Experimental Tasks (FWP-1022428)

Nicholas Siefert, National Energy Technology Laboratory

1:45 pm

Water Management for Power Systems: System Analysis Tasks (FWP-1022428)

Alison Fritz, National Energy Technology Laboratory

2:15 pm

The National Energy Water Treatment and Speciation (NEWTS) Databasev (FWP-1022428)

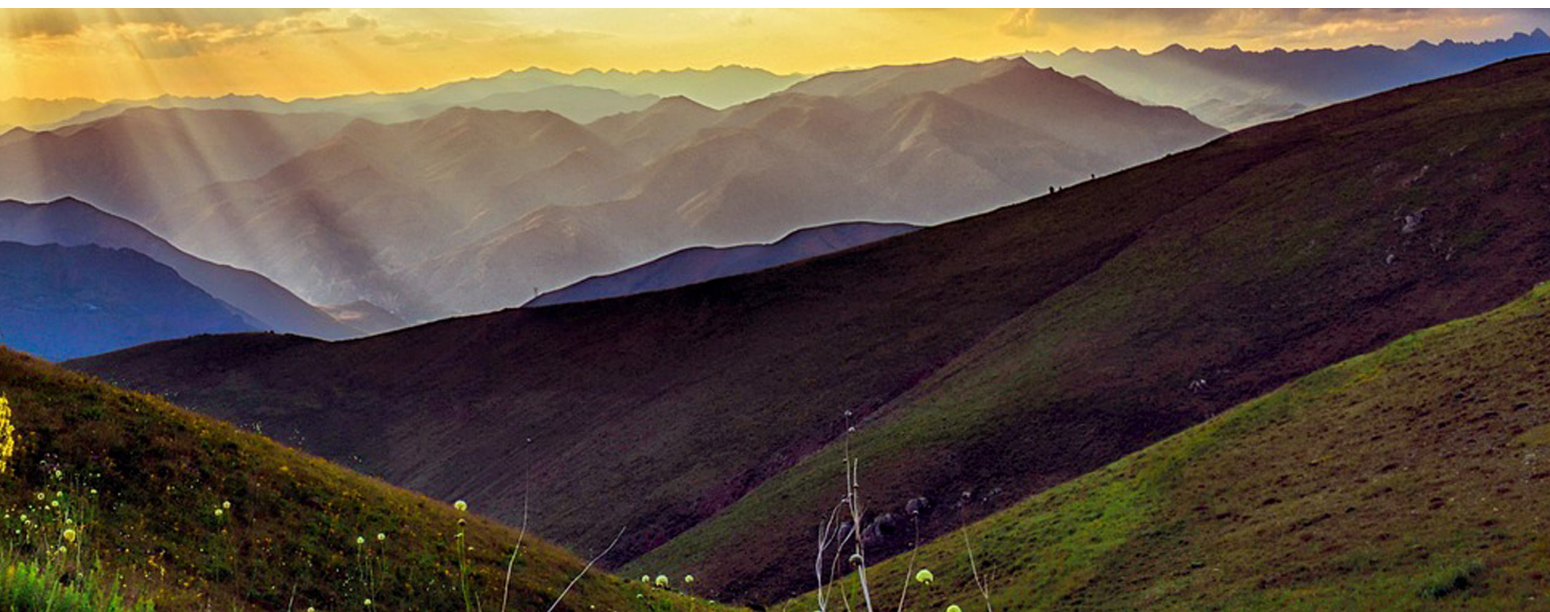
Burt Thomas, National Energy Technology Laboratory

2:45 pm

Subsurface Hydrogen Assessment, Storage, and Technology Acceleration (SHASTA) Project Overview (FWP-1022478)

Angela Goodman, National Energy Technology Laboratory

3:15 pm BREAK – Grand Station Ballroom Foyer



BREAKOUT SESSIONS

Critical Minerals Sustainability

GRAND STATION BALLROOM 1 & 2

CORE-CM/REE DETECTION SYSTEMS

Moderator: Savannah Rice

3:30 pm

Rare Earth Elements (REE) in Late Cretaceous Coal and Beach-Placer Sandstone Deposits in the San Juan Basin, New Mexico: Preliminary Observations (FE0032051)

*Virginia McLemore, New Mexico Bureau of Geology/
New Mexico Tech*

4:00 pm

Transforming Unita Basin Earth Materials for Advanced Products (TUBE-MAP) I-Based and Related Resources (FE0032046)

Michael Free, University of Utah

4:30 pm

CORE-CM in the Greater Green River and Wind River Basins: Transforming and Advancing a National Coal Asset (FE0032047)

*Davin Bagdonas, University of Wyoming School of
Energy Resources*

5:00 pm

Evaluation of Laser-Based Analysis of Rare Earth Elements in Coal-Related Materials (FWP-FE-781-16-FY17)

Sam Clegg, Los Alamos National Laboratory

**5:45 – 7:45 pm OPENING RECEPTION, POSTER SESSION,
AND COMPUTER-BASED RESEARCH TOOL
DEMONSTRATION –**
GRAND STATION BALLROOM 3, 4 & 5

Carbon Ore Processing

ADMIRAL ROOM

GRAPHITE

Moderator: Christian Robinson

3:30 pm

Conversion of Coal to Li-Ion Battery Grade Graphite (FE0031797)

Michael J. Wagner, The George Washington University

4:00 pm

Developing a Facile Technology for Converting Domestic United States Coal into High-Value Graphene Materials (FE0031988)

Duy Xuan Luong, Universal Matter, Ltd.

4:30 pm

Efficient Process for the Production of High Conductivity, Carbon-Rich Materials from Coal (SC0018837)

Dorin V. Preda, Physical Sciences, Inc.

5:00 pm

Lab-Scale Production of Particle Bonded Filaments with High-Loading Coal-Derived Carbon (FE0032147)

Kun Fu, University of Delaware

**5:45 – 7:45 pm OPENING RECEPTION, POSTER SESSION,
AND COMPUTER-BASED RESEARCH TOOL
DEMONSTRATION –**
GRAND STATION BALLROOM 3, 4 & 5

BREAKOUT SESSIONS

Advanced Remediation and Methane Mitigation Technologies WATERFRONT ROOM

UP-STREAM

Moderator: Alexandra Hakala

3:30 pm

Project PARETO – DOE's Produced Water Optimization Initiative (FWP-1022477)

*Markus Drouven and Miguel Zamarripa-Perez,
National Energy Technology Laboratory*

4:00 pm

Predicting Pollutant Generation in the Subsurface to Inform Produced Wastewater Remediation and Reuse (FWP-1022415 - Task 27)

Lauren Burrows, Leidos Research Support Team (LRST)

4:30 pm

Monitoring Well-to-Well Communication to Reduce Environmental Impacts (FWP-1022415 - Task 25)

Djuna Gulliver, National Energy Technology Laboratory

5:00 pm

Digital Library for DOE Field Laboratories (FWP-1022415-Task 22)

*Dustin Crandall and Kelly Rose, National Energy
Technology Laboratory*

**5:45 – 7:45 pm OPENING RECEPTION, POSTER SESSION,
AND COMPUTER-BASED RESEARCH TOOL
DEMONSTRATION –
GRAND STATION BALLROOM 3, 4 & 5**

Advanced Remediation and Methane Mitigation Technologies REFLECTIONS ROOM

MID-STREAM

Moderator: Bruce Brown

3:30 pm

A Modular System for Direct Conversion of Methane into Methanol via Photocatalysis (FE0031867)

Gang Wan and Eddie Sun, Stanford University

4:00 pm

Undocumented Orphaned Wells Program Overview (LANL-AE-963-1161)

Hari Viswanathan, Los Alamos National Laboratory

4:30 pm

Nanocomposite Advanced Surface Protection (HydroPel) for Safe and Efficient Hydrogen Transport in Existing Steel Pipelines (SC0021946)

*Ganesh Kumar Arumugam and Vinod P. Veedu,
Oceanit Laboratories, Inc.*

**5:45 – 7:45 pm OPENING RECEPTION, POSTER SESSION,
AND COMPUTER-BASED RESEARCH TOOL
DEMONSTRATION –
GRAND STATION BALLROOM 3, 4 & 5**

Name of Tool:

PARETO – DOE's Produced Water Optimization Framework

Presenter:

Miguel Zamarripa

Description:

PARETO is a free and open-source decision-support application that can help organizations better manage, treat, and – where possible – beneficially reuse produced water from oil and gas operations.

Related Presentation (if applicable):

Tuesday, Oct. 25, 3:30 pm. "Project PARETO – DOE's Produced Water Optimization Initiative." *Markus Drouven*

Related Poster (if applicable): N/A

Name of Tool:

RokBase

Presenter:

Dustin Crandall

Description:

Beta online platform to access digital core information from unconventional field laboratories, and other subsurface resources.

Related Presentation (if applicable):

Tuesday, Oct. 25, 5:00 pm. "Digital Library for DOE Field Laboratories." *Dustin Crandall*

Related Poster (if applicable):

FWP-1022415, Task 22. "Digital Library for DOE Field Laboratories"

Name of Tool:

AIIM - Advanced Infrastructure Integrity Modeling Tool

Presenter:

Lucy Romeo

Description:

AIIM utilizes a multi-model framework that integrates big data, machine learning, and advanced models to provide critical insights into offshore energy infrastructure integrity to help inform safe use and repurposing strategies, as well as support risk prevention.

Related Presentation (if applicable):

Thursday, Oct. 27, 11:45 am. "Smart Models to Optimize Use or Reuse of Production and Transport Infrastructure." *Lucy Romeo and Jennifer Bauer*

Related Poster (if applicable): N/A**Name of Tool:**

STA - Subsurface Trend Analysis Tool

Presenter:

MacKenzie Mark-Moser

Description:

The Subsurface Trend Analysis (STA) Tool uses science-based methods and data to improve the forecast of subsurface reservoir properties, even for areas with no preexisting, measured data. STA utilizes a spatio-temporal, AI/ML enhanced workflow to organize and visualize disparate big data and knowledge resources, facilitate multi-dimensional statistical analyses and validation, and characterize critical subsurface property trends and predictions.

Related Presentation (if applicable):

Thursday Oct. 27, 10:45 am. "Geohazards and Subsurface Uncertainty Smart Modeling." *MacKenzie Mark-Moser*

Related Poster (If applicable): N/A

Name of Tool:

OGA - Ocean and Geohazard Analysis Toolbox

Presenter:

Jennifer Bauer

Description:

The Ocean & Geohazard Analysis (OGA) software tool is designed to provide insights into a wide range of offshore hazards that can threaten offshore activities, spanning from the seafloor to metocean environment. Drawing from a diverse set of approaches and data sources, the OGA tool utilizes artificial intelligence, machine learning, and probabilistic approaches to analyze offshore hazards selected by the user and produce predictions for regions and time frames where those hazards are more likely to occur.

Related Presentation (if applicable):

Thursday, Oct. 27, 11:15 am. "Ocean & Geohazard Analysis." *Rodrigo Duran, MacKenzie Mark-Moser*

Related Poster (if applicable):

FWP-1022409-Task 11. "Integrated Geologic and Techno-Economic Assessment of Offshore Saline Systems for Deepwater and Ultra-Deepwater Reuse Potential"

Name of Tool:

The NEWTS Database (alpha version)

Presenter:

Burt Thomas

Description:

The National Effluent Water Treatment and Speciation Database is a new tool being developed by NETL to help communities and industries understand the chemistry of energy effluent waste water resources across the United States. This National level dataset is a web application designed to output chemical species information and location and flow information in formats that are compatible with industry standard software for water treatment. NEWTS consists of publicly available data that is often difficult to access by community and industry members (such as State regulatory reports). As NEWTS grows, the goal is to develop a tool that helps connect users and producers of energy effluent water to identify industrial re-use opportunities and to help communities understand both the value of these waste resources and the opportunities to address environmental challenges presented by the water.

Related Presentation (if applicable):

Tuesday, Oct. 25, 2:15 pm. "The National Energy Water Treatment and Speciation (NEWTS) Database."
Burt Thomas

Related Poster (If applicable): N/A

Name of Tool:

CORD Platform and Database

Presenters:

Kelly Rose, Devin Justman and/or Burt Thomas

Description:

The Carbon Ore Resources Database (CORD) is a working collection of 399 data files associated with carbon ore (including REE/CM) resources in the United States. The collection includes spatial/non-spatial, filtered, processed, and secondary data files with original data acquisition efforts focused on domestic coal resources. The tool/platform is a web application that enables exploration and use of the database from any web browser. Devin Justman, Michael Sabbatino, Scott N. Montross, Scott Pantaleone, Andrew Bean, Kelly Rose, Burt Thomas, Carbon Ore Resources Database (CORD), 8/26/2021, <https://edx.netl.doe.gov/dataset/cord>, DOI: 10.18141/1813861.

Related Presentation (if applicable): N/A

Related Poster (If applicable): N/A

Name of Tool:

REE/CM Geologic Sample Characterization

Presenters:

Scott Montross, Kelly Rose

Description:

A set of recommendations on methods and formats for systematic characterization of geologic derived samples (including byproducts) to quantify and assess REE/CMs in samples has been published. The worksheet supporting this data collection, a recent journal publication, and an integrated database hosted via NETL's Energy Data eXchange (EDX) will be demonstrated. Montross, et al., On a unified core characterization methodology to support the **systematic assessment of rare earth element and critical mineral bearing** unconventional carbon ores and sedimentary strata. *Minerals* 2022, 12, *in press/accepted*.

Related Presentation (if applicable):

Thursday, Oct. 27, 8:30 am. "Developing a Geo-Data Science Method for Assessing Rare-Earth Occurrences from Unconventional Geologic Sources." Christy Pecyna

Related Poster (If applicable): N/A

Name of Tool:

Unconventional REE/CM Assessment Method *alpha* tool

Presenters for the Demo:

Kelly Rose, Devin Justman, Gabe Creason

Description:

This tool enables the Creason et al. method that uses geoscience, data science and AI methods to expedite evaluation and prediction of REE/CM occurrences in unconventional geologic sources. This demo will review the tool that is in development and expected out in spring 2023. The method is discussed in Creason, et al., (in review). **A Geo-Data Science Method for Assessing Unconventional Rare-Earth Occurrences in Sedimentary Systems.** *Natural Resources Research*.

Related Presentation (if applicable):

Thursday, Oct. 27, 8:30 am. "Developing a Geo-Data Science Method for Assessing Rare-Earth Occurrences from Unconventional Geologic Sources." Christy Pecyna

Related Poster (If applicable): N/A

WEDNESDAY MORNING, OCTOBER 26

7:00 am REGISTRATION and CONTINENTAL BREAKFAST – Grand Station Ballroom Foyer

Opening Plenary Session GRAND STATION BALLROOM 1 & 2

8:00 am – 8:05 am WELCOME

8:05 am

Mr. Ryan Peay, Deputy Assistant Secretary (DAS) for Resource Sustainability, Office of Fossil Energy and Carbon Management (FECM), U.S. Department of Energy

8:25 am – 9:30 am FECM DIVISION DIRECTORS

8:25 am

Ms. Vanessa Núñez-López, Director, Advanced Remediation Technologies, FECM, U.S. Department of Energy

8:45 am

Mr. Timothy Reinhardt, Director, Methane Mitigation Technologies, FECM, U.S. Department of Energy

9:05 am

Dr. Grant Bromhal, Acting Director, Mineral Sustainability, FECM, U.S. Department of Energy

9:25 am – 9:30 am QUESTIONS

9:30 am – 10:00 am

Dr. Christine Veeder, Senior Advisor, Office of Energy Jobs, U.S. Department of Energy

BREAKOUT SESSIONS

Critical Minerals Sustainability

GRAND STATION BALLROOM 1 & 2

PROCESS SYSTEMS

Moderator: Jason Montgomery

10:15 am

Development and Testing of an Integrated Acid Mine Drainage (AMD) Treatment and Rare Earth/Critical Mineral Plant (FE0031834)

Paul Ziemkiewicz, West Virginia University

10:45 am

Demonstration of Scaled-Production of Rare Earth Oxides and Critical Materials from Coal-Based Sources (FE0031827)

Rick Honaker, University of Kentucky

11:15 am

Rare Earth Element Extraction and Concentration at Pilot-Scale from North Dakota Coal-Related Feedstocks (FE0031835)

Nolan Theaker, University of North Dakota

11:45 am

Rare Earth Element Extraction from Powder River Basin Coal Byproducts (TCF)

Christina Lopano, National Energy Technology Laboratory

Carbon Ore Processing

ADMIRAL ROOM

NANOMATERIALS/CONDUCTIVE INKS

Moderator: Christian Robinson

10:15 am

Solution Processible Carbon Precursors for 2D Amorphous Carbon Dielectric (FWP-1022432)

*Christopher Matranga and Congjun Wang,
National Energy Technology Laboratory*

10:45 am

U.S. Coal to Conductive Inks (SC0018694)

James G. Hnat and Kevin C. Kerns, Minus 100, LLC

11:15 am

Production of Carbon Nanomaterials and Sorbents from Domestic U.S. Coal (FE0031798)

Seyed Dastgheib, University of Illinois

11:45 am

Environmentally Friendly Production of High-Quality and Multifunctional Carbon Quantum Dots from Coal (FE0031997)

Maohong Fan and Zhe Chan, University of Wyoming



BREAKOUT SESSIONS

Advanced Remediation and Methane Mitigation Technologies WATERFRONT ROOM

UP-STREAM

Moderator: Scott Beautz

10:15 am

Cost-effective Optical Seismic for Unconventional Wells and Alternative Energy (FE0031780)

Caleb A. Christensen, MagiQ Technologies, Inc.

10:45 am

Chemically Enabled Carbon Dioxide Enhanced Oil Recovery in Multi-Porosity, Hydrothermally Altered Carbonates in the Southern Michigan Basin (FE0031792)

Matt Young, Battelle

11:15 am

Demonstration of Hydromechanical Fracture Changes Using Electromagnetic Surveys (FE0031785)

Mohsen Ahmadian, Bureau of Economic Geology at the University of Texas at Austin

11:45 am

Non-Fouling, Low Cost Electrolytic Coagulation and Disinfection for Treating Flowback and Produced Water for Reuse (FE0031854)

James Farrell, University of Arizona

Advanced Remediation and Methane Mitigation Technologies REFLECTIONS ROOM

MID-STREAM

Moderator: Gary Covatch

10:15 am

Process Intensification by a One-Step, Plasma-Assisted Synthesis of Liquid Chemicals from Light Hydrocarbons (FE0031862)

Jason Hicks, University of Notre Dame

10:45 am

Low Cost Retrofit Kit for Integral Reciprocating Compressors to Reduce Emissions and Enhance Efficiency (FE0031863)

Pejman Kazempoor, University of Oklahoma

11:15 am

Gas to Carbon Crystals (FE0031868)

Brad Rupp, Palo Alto Research Corporation

11:45 am

Microwave Catalysis for Process Intensified Modular Production of Carbon Nanomaterials from Natural Gas (FE0031866)

John Hu, West Virginia University

WEDNESDAY AFTERNOON, OCTOBER 26

12:15 pm LUNCH – Grand Station Ballroom 1 & 2

BREAKOUT SESSIONS

Critical Minerals Sustainability

GRAND STATION BALLROOM 1 & 2

PROCESS SYSTEMS

Moderator: Brett Hakey

1:15 pm

Multi-Sourced Collaboration for the Production and Refining of Rare Earth and Critical Metals (FE0032119)

Josh Werner, University of Kentucky

1:45 pm

Production of Germanium and Gallium Concentrates for Industrial Processes (FE0032124)

Steven Benson, Microbeam Technologies Incorporated

2:15 pm

Technology Development and Integration for Volume Production of High Purity Rare Earth Metals from Phosphate Processing (FE0032123)

Patrick Zhang, FIPR Institute, Florida Polytechnic University

2:45 pm

Advanced Processing of Rare Earth Elements and Critical Minerals from Acid Mine Drainage Feedstocks (FE0032120)

Aaron Noble, Virginia Tech

3:15 pm BREAK – Grand Station Ballroom Foyer

Carbon Ore Processing

ADMIRAL ROOM

CARBON FIBER/BUILDING MATERIALS

Moderator: Heather Dougherty

1:15 pm

C4WARD: Coal Conversion for Carbon Fibers and Composites (FWP-FEAA155)

Edgar Lara-Curzio, Oak Ridge National Laboratory

1:45 pm

Coal-Derived Alternatives to Fiber-Cementitious Building Materials (FE0031981)

Jason Trembly, Ohio University

2:15 pm

Coal to Carbon Fiber (C2CF) Continuous Processing for High Value Composites (FE0031796)

Matthew Weisenberger, University of Kentucky, Center for Applied Energy Research

2:45 pm

Coal Plastic Composite Piping Infrastructure Components (FE0031982)

Jason Trembly, Ohio University

3:15 pm BREAK – Grand Station Ballroom Foyer



WEDNESDAY AFTERNOON, OCTOBER 26

12:15 pm LUNCH – Grand Station Ballroom 1 & 2

BREAKOUT SESSIONS

Advanced Remediation and Methane Mitigation Technologies WATERFRONT ROOM

UP-STREAM

Moderator: Joe Renk

1:15 pm

Improving Production in the Emerging Paradox Oil Play
(FE0031775)

Brian McPherson, University of Utah

1:45 pm

Field Evaluation of the Caney Shale as an Emerging
Unconventional Play, Southern Oklahoma (FE0031776)

*Mileva Radonjic and James (Jim) Puckette,
Oklahoma State University*

2:15 pm

Permanent Magnet (PM) Induction Heater for Paraffin
Abatement (SC0018464)

Mukul M. Sharma, Austin Geotech Services, Inc.

2:45 pm

The Austin Chalk/Eagle Ford Field Laboratory (FE0031579)

Dan Hill, Texas A&M University

3:15 pm BREAK – Grand Station Ballroom Foyer

Advanced Remediation and Methane Mitigation Technologies REFLECTIONS ROOM

MID-STREAM

Moderator: Kyle Clark

1:15 pm

Methane Mitigation Using Linear Motor Leak Recovery
Compressor (FE0031875)

Jason Stair, GTI Energy

1:45 pm

Modular Processing of Flare Gas for Carbon Nanoproducts
(FE0031870)

*Alan (Al) Weimer and Jessica Hauck, University of
Colorado Boulder*

2:15 pm

Electrocatalytically Upgrading Methane to Benzene in
a Highly Compacted Microchannel Protonic Ceramic
Membrane Reactor (FE0031871)

Jianhua (Joshua) Tong, Clemson University

2:45 pm

Reduction of Methane Leaks through Corrosion Mitigation
Pre-treatments for Pipelines with Field Applied Coatings
(FE0031874)

Kenneth Y. Lee, Det Norske Veritas

3:15 pm BREAK – Grand Station Ballroom Foyer



BREAKOUT SESSIONS

Critical Minerals Sustainability GRAND STATION BALLROOM 1 & 2

PROCESS SYSTEMS/SEPARATION TECHNOLOGIES

Moderator: Heather Dougherty

3:30 pm

Extraction, Separation, and Production of High Purity Rare Earth Elements and Critical Minerals from Coal-Based and Related Resources (FE0032122)

Michael Free, University of Utah

4:00 pm

Tunable Electrochemical Pathway for High-Purity Rare Earth Metals (REM) and Critical Minerals (CM) (FE0032121)

Jivan Thakare, University of North Dakota, Energy & Environmental Research Center

4:30 pm

Multi-Bed Adsorption Study for the Fractionation of Critical Metals from Acid Mine Drainage (FWP-1022420)

Walter Wilfong, Leidos Research Support Team and McMahan Gray, National Energy Technology Laboratory

5:00 pm

Development of Ligand-Associated Solid-Liquid Extraction of High Purity Rare Earth Elements (SC0021702)

Chett Boxley, GlycoSurf, LLC and Timothy Dittrich, Wayne State University

Carbon Ore Processing ADMIRAL ROOM

BUILDING MATERIALS/ADDITIVE MANUFACTURING

Moderator: Jason Montgomery

3:30 pm

High-Performance Coal-Based Commercial Façade Panels and Architectural Components (FE0031990)

Walter Sherwood, Semplastics

Low Weight, High Strength Coal-Based Building Materials for Infrastructure Products (FE0031991)

Walter Sherwood, Semplastics

4:00 pm

Coal Core Composites for Low Cost, Light Weight, Fire Resistant Panels and Roofing Materials (Phase IIB) (SC0018794)

Walter Sherwood, Semplastics EHC, LLC

4:30 pm

Manufacture of Carbon Foam in a Continuous Process at Atmospheric Pressure (FE0031992)

Rudolph Olson III, CONSOL Innovations (Formerly CFOAM LLC)

5:00 pm

Fused Deposition Modeling Additive Manufacturing of Carbonized Structures Via Waste-Enhanced Filaments (FE0032143)

Yahya Taha Ayed Al-Majali, Ohio University

5:30 pm

Coal Enhanced PEEK Filament Production For Additive Manufacturing In Industrial Services (FE0032146)

Lakshmi Vendra, Baker Hughes

BREAKOUT SESSIONS

Advanced Remediation and Methane Mitigation Technologies WATERFRONT ROOM

UP-STREAM

Moderator: Scott Beautz

3:30 pm

Field Pilot Test of Foam-Assisted Hydrocarbon Gas Injection in Bakken Formations (FE0031787)
Mohammad Piri, University of Wyoming and Kaveh Ahmadi, Hess Corporation

4:00 pm

First Ever Field Pilot on Alaska's North Slope to Validate the Use of Polymer Floods for Heavy Oil EOR (FE0031606)
Abhijit Dandekar, University of Alaska Fairbanks

Advanced Remediation and Methane Mitigation Technologies REFLECTIONS ROOM

MID-STREAM

Moderator: Eric Smistad

3:30 pm

Methane Mitigation for the Compression Industry (FE0031865)
Derek Johnson, West Virginia University

4:00 pm

Predictive Self-Healing Seals for Gas Transmission (FE0031876)
Michael W. Keller, The University of Tulsa

4:30 pm

Catalyst, Reactor and Process Innovation for One-Step Non-Oxidative Methane Upgrading (FE0031877)
Dongxia Liu, University of Maryland College Park

5:00 pm

Methane Partial Oxidation Over Multifunctional 2-D Materials (FE0031878)
Andreas Heyden, University of South Carolina

7:00 am REGISTRATION and CONTINENTAL BREAKFAST – Grand Station Ballroom Foyer

BREAKOUT SESSIONS

Critical Minerals Sustainability GRAND STATION BALLROOM 1 & 2

RARE EARTH RECOVERY

Moderator: Burt Thomas

8:00 am

An Overview of NETL's Critical Minerals Research Portfolio (FWP-1022420)

Burt Thomas, National Energy Technology Laboratory

8:30 am

Developing a Geo-Data Science Method for Assessing Rare-Earth Occurrences from Unconventional Geologic Sources (FWP-1022420)

Kelly Rose, National Energy Technology Laboratory and Scott Montross, LRST

9:00 am

Characterization Informed Recovery of Critical Minerals from Acid Mine Drainage Treatment Solids (FWP-1022420)

Mengling Stuckman, National Energy Technology Laboratory

9:30 am

Portable Fiber Optic Sensors for Critical Metal Ions (FWP-1022420)

Scott Crawford, National Energy Technology Laboratory

10:00 am ADJOURN

Carbon Ore Processing ADMIRAL ROOM

BUILDING MATERIALS/ADDITIVE MANUFACTURING

Moderator: Brett Hakey

8:00 am

Environmentally Friendly Use of Carbon Ore for Advanced Building Materials for Homes and Commercial Buildings (FE0031985)

William Easter, X-MAT CCC, LLC

8:30 am

Coal-Waste-Enhanced Filaments for Additive Manufacturing of High-Temperature Plastics and Ceramic Composites (FE0032145)

Walter Sherwood, Semplastics

9:00 am

Coal-Based Bricks & Blocks (CBBs): Process Development to Prototype Fabrication Coupled with Techno-Economic Analysis and Market Survey (FE0031987)

Randy Vander Wal, Pennsylvania State University

9:30 am

Eco-Friendly High-Performance Building Material Development from Coal (FE0031996)

Kam Ng, University of Wyoming

10:00 am BREAK – Grand Station Ballroom Foyer

BUILDING MATERIALS

Moderator: Mark Render

10:15 am

Light, High Performance and Scalable Coal-Derived Composites for Construction (FE0031980)

Rouzbeh Shahsavari, C-Crete Technologies

10:45 am

Utilizing Coal-Derived Solid Carbon Materials Towards Next-Generation Smart and Multifunction Pavements (FE0031983)

Hongyu Zhou, University of Tennessee

11:15 am

Development of Novel Sintered Carbon-Ore Building Materials (FE0032083)

Matt Fuka, Microbeam Technologies, Inc.

11:45 am

Low Cost, Rapid and Scalable Microwave Carbon Ore Melt-Casting for Modular Carbon-Based Building (FE0032085)

Rouzbeh Shahsavari, C-Crete Technologies

7:00 am REGISTRATION and CONTINENTAL BREAKFAST – Grand Station Ballroom Foyer

BREAKOUT SESSIONS

Advanced Remediation and Methane Mitigation Technologies WATERFRONT ROOM

OFF-SHORE

Moderator: Dave Cercone

8:00 am

Advanced Multi-Dimensional Capacitance Sensors Based Multiphase Mass Flow Meter to Measure and Monitor Offshore Enhanced Oil Recovery Systems (FE0031858)
Qussai Marashdeh, Tech4Imaging, LLC

8:30 am

Enhancing Offshore Recovery by Enabling Longer, Safer, and Cheaper Subsea Well Tiebacks (FE0031859)
Art J. Schroeder, Jr., Subsea Shuttle, LLC

9:00 am

In-Situ Applied Coatings for Mitigating Gas Hydrate Deposition in Deepwater Operations (FE0031578)
Carolyn A. Koh, Colorado School of Mines and Vinod Veedu, Oceanit

9:30 am

Hexagonal Boron Nitrate Reinforced Multifunctional Well Cement for Extreme Conditions (FE0031574)
Rouzbeh Shahsavari, C-Crete Technologies, LLC

10:00 am BREAK

OFFSHORE

Moderator: Janine Carney

10:15 am

Underwater Laser Telecommunications and Remote Access (FE0031857)
Ishan Mons, Oceanit Laboratories, Inc.

10:45 am

Geohazards and Subsurface Uncertainty Smart Modeling with the Subsurface Trend Analysis Tool (FWP-1022409 - Task 5)
MacKenzie Mark-Moser, National Energy Technology Laboratory

11:15 am

Infrastructure and Metocean Technology: The Ocean & Geohazard Analysis (FWP-1022409 - Task 6)
MacKenzie Mark-Moser and Rodrigo Duran, National Energy Technology Laboratory

11:45 am

Smart Infrastructure Integrity Models to Support Remediation and Inform Safe Use Strategies (FWP-1022409 - Task 10)
Lucy Romeo and Jennifer Bauer, National Energy Technology Laboratory

Advanced Remediation and Methane Mitigation Technologies REFLECTIONS ROOM

MID-STREAM

Moderator: Bill Fincham

8:00 am

Production of Hydrogen and Carbon from Associated Gas Catalytic Pyrolysis (FWP-1022467 - Task 2)
Ranjani Siriwardane, National Energy Technology Laboratory

8:30 am

Upcycling of Associated Gas into BTX via Microwave Assisted Catalysis (FWP-1022467 - Task 3)
Daniel Haynes, National Energy Technology Laboratory

9:00 am

Advanced Sensors for Real-Time Monitoring of Natural Gas Pipelines (FWP-1022424 - Task 2)
Ruishu Wright, National Energy Technology Laboratory

9:30 am

Pipeline Materials Technologies for Mitigating Corrosion, Methane Emissions, and Hydrogen Embrittlement (FWP-1022424 - Task 3)
Omer Dogan, National Energy Technology Laboratory

10:00 am BREAK

MID-STREAM

Moderator: Steve Henry

10:15 am

Natural Gas Infrastructure: Field-based Methane Emissions Quantification (FWP-1022424 - Task 5)
Natalie Pekney, National Energy Technology Laboratory

10:45 am

Core-Shell Oxidative Aromatization Catalysts for Single Step Liquefaction of Distributed Shale Gas (FE0031869)
Luke Neal, North Carolina State University

11:15 am

Advancing Development of Emissions Detection (ADED) (FE0031873)
Daniel Zimmerle, Colorado State University

11:45 am

Solid State Mixed-Potential Electrochemical Sensors for Natural Gas Leak Detection and Quality Control (FE0031864)
Lok-kun Tsui, University of New Mexico Center for Micro-Engineered Materials

NOTES

12:15 pm LUNCH – Grand Station Ballroom 1 & 2

BREAKOUT SESSIONS

**Carbon Ore
Processing**
ADMIRAL ROOM

BUILDING MATERIALS

Moderator: Mark Render

1:15 pm

Coal to Carbon Fiber Novel Supercritical Carbon Dioxide (SCO₂) Solvated Process (FE0031800)

Charles S. Hill, Ramaco Carbon

Experimental Validation and Continuous Testing of an On-Purpose High-Yield Pitch Synthesis Process for Producing Carbon Fiber from US Domestic Coal (FE0031801)

Charles S. Hill, Ramaco Carbon, LLC

1:45 pm

Coal Refining: A Low Cost Environmentally Compliant, High BTU (FE0031708)

Lee G. Meyer, Carbon Fuels, LLC

2:15 pm

Pilot-Scale Testing of the Hydrophobic-Hydrophilic Separation Process to Produce Value-Added Products from Waste Coals (FE0031711)

Roe-Hoan Yoon and Christopher Aaron Noble, Virginia Tech

2:45 pm

Sub-Pilot-Scale Production of High-Value Products from U.S. Coals (FE0031880)

Eric Eddings, University of Utah

3:15 pm ADJOURN

THURSDAY AFTERNOON, OCTOBER 27

12:15 pm LUNCH – Grand Station Ballroom 1 & 2

BREAKOUT SESSIONS

Advanced Remediation and Methane Mitigation Technologies WATERFRONT ROOM

OFF-SHORE

Moderator: Jennifer Bauer

1:15 pm

Relative Permeability for Offshore HPHT (FWP-1022409 - Task 7)

Dustin Crandall, National Energy Technology Laboratory

1:45 pm

Thermodynamic Modeling of Mineral Scale at High-Temperatures and High-Pressures (FWP-1022409 - Task 8)

Isaac Gamwo, National Energy Technology Laboratory

2:15 pm

Kick Signatures through Advanced Multi-Phase Data (FWP-1022409 - Task 12)

Janine Carney, National Energy Technology Laboratory

2:45 pm ADJOURN

Advanced Remediation and Methane Mitigation Technologies REFLECTIONS ROOM

HYDRATES

Moderator: Rich Baker

1:15 pm

The 2023 Gulf of Mexico Hydrate Coring Program and the Visco-Plastic Behavior of the Hydrate Reservoir (FE0023919)

Peter B. Flemings and Alejandro Cardona, University of Texas at Austin

1:45 pm

Alaska Natural Gas Hydrate Production Test: Accomplishments To-Date and Science In Progress (89243321SFE000024)

Seth Haines, U.S. Geological Survey

2:15 pm

Natural Gas Hydrate Research at NETL (FWP-1022410)

Yongkoo Seol, National Energy Technology Laboratory

2:45 pm ADJOURN



NOTES





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