

Draft

**21st Annual Solid Oxide Fuel Cell (SOFC) Project Review Meeting
Pittsburgh Airport Marriott Hotel, Pittsburgh, PA
July 21-23, 2020**

Tuesday July 21, 2020

7:30 – 8:30 a.m. Registration
Continental Breakfast

Opening Session Moderator: Patcharin Burke, U.S. DOE, NETL

8:30 – 9:00 am NETL’s Fuel Cell Program Overview
Shailesh Vora, Fuel Cells R&D Portfolio Manager
U.S. Department of Energy, National Energy Technology Laboratory

9:00 - 9:45 am Project Update from FuelCell Energy (FE 27584, FE31639, FE31648,
FE26199)
Hossein Ghezal-Ayagh, FuelCell Energy, Inc.

9:45 – 10:15 am NETL R&D: SOFC Materials Development and Degradation Modeling
Greg Hackett, National Energy Technology Laboratory

10:15 – 10:45 am **BREAK**

Moderator: Debalina Dasgupta, U.S. DOE, NETL

10:45 – 11:15 pm SOFC Development at PNNL: Overview – PNNL (FWP66841)
John Hardy and Brian Koepfel, Pacific Northwest National Lab

11:15 – 11:45 pm Reliability of Materials and Components for SOFCs- ORNL (FEAA121)
Edgar Lara-Curzio, Oak Ridge National Lab

11:45 – 12:15pm Evaluation of Feedstock Materials for SOFC Performance Reliability
(FWP20089)
Brian Ingram, Argonne National Lab

- 12:15 – 1:30 pm **LUNCH**
- Moderator: Diane Revay Madden, U.S. DOE, NETL**
- 1:30 – 2:00 pm Enhancing Coking Tolerance and Stability of SOFC Anodes Using Atomic Layer Deposition (ALD) of Oxide Thin Films (FE31673)
Ray Gorte, University of Pennsylvania
- 2:00 – 2:30 pm Processing of SOFC Anodes for Enhanced Intermediate Temperature Catalytic Activity at High Fuel Utilization (FE26096)
TBD, Boston University
- 2:30 – 3:00 pm Scalable Nano-Scaffold Architecture on the Internal Surface of SOFC Anode for Direct Hydrocarbon Utilization (FE26167)
Xueyan Song, West Virginia University
- 3:00 – 3:30 pm **BREAK**
- Moderator: Patcharin Burke, U.S. DOE, NETL**
- 3:30 – 4:00 pm Development of High Temperature Anode Gas Recycle Blowers for SOFCs (FE 27895)
TBD, Mohawk Innovative Technology, Inc.
- 4:00 – 4:30 pm Sputtered Thin Films for Very High Power, Efficient, and Low-Cost Commercial Solid Oxide Fuel Cells (FE31656)
TBD, Redox Power Systems, LLC
- 4:30 – 6:00 pm Poster Session/Reception –

Wednesday July 22, 2020

- 7:30-8:30 am Registration
Continental Breakfast
- Moderator: Steve Markovich, U.S. DOE, NETL**
- 8:30– 9:00 am Redox Robust Solid Oxide Fuel Cell (SOFC) Stacks for affordable, Reliable, Distributed Generation Power Systems (FE27897)
Bryan Blackburn

- 9:00– 9:30 am Innovative Versatile and Cost-Effective Solid Oxide Fuel Cell Stack Concept (FE26211)
Nguyen Minh, University of California - San Diego
- 9:30– 10:00 am Next Generation Durable, Cost Effective, Energy Efficient Tubular Solid Oxide Fuel Cell (FE31674)
TBD
- 10:00 – 10:30 am **BREAK**
- Moderator: Seth Lawson, U.S. DOE, NETL**
- 10:30 – 11:00 am Developing Accelerated Test Protocols and Tuning Microstructures of the Common Materials to Improve Robustness, Reliability, and Endurance of SOFC Cells (FE26097 and FE31667)
Xiao-Dong Zhou, University of Louisiana
- 11:00 – 11:30 am Tuning Surface Stoichiometry of SOFC Electrodes at the Molecular and Nano-Scale for Enhanced Performance and Durability (FE31662)
Eric Wachsman, University of Maryland
- 11:30 – 12:00 pm Multi-Constituent Airborne Contaminants Capture with Low Cost Oxide Getters and Mitigation of Cathode Poisoning in Solid Oxide Fuel Cells (FE31647)
Prabhakar Singh, University of Connecticut
- 12:00 – 1:15 pm **LUNCH**
- Moderator: Jason Montgomery, U.S. DOE, NETL**
- 1:15 – 1:45 pm High-Performance Circuit Pastes for Solid Oxide Fuel Cell Applications Chromium Tolerant (FE31672)
Jason Nicholas, Michigan State University
- 1:45 – 2:15 pm Development and Validation of Low-Cost, Highly-Durable, Spinel-Based Contact Materials for Solid Oxide Fuel Cell Cathode-Side Contact Application (FE31187)
Jiahong Zhu, Tennessee Technological University
- 2:15 – 2:45 pm Core-Shell Heterostructures as Solid Oxide Fuel Cell Electrodes (FE31205)
Srikanth Gopalan, Boston University
- 2:45 – 3:15 pm **BREAK**

Moderator: Steve Markovich, U.S. DOE, NETL

3:15 –3:45 pm Computationally Guided Design of MULTIPLE Impurities Tolerant Electrode (FE31652)
Yu Zhong, Worcester Polytechnic Institute

3:45 –4.15 pm Minimizing Cr-Evaporation from Balance of Plant Components by Utilizing Cost-Effective Alumina-Forming Austenitic Steels (FE27947)
Xingbo Liu, West Virginia University

4:15 pm **ADJOURN**

Thursday July 21, 2016

7:30-8:30 am Registration
Continental Breakfast

Moderator: Jason Montgomery, U.S. DOE, NETL

8:30– 9:00 am Robust Highly Durable Solid Oxide Fuel Cell Cathodes - Improved Materials Compatibility & Self-Regulating Surface Chemistry (FE31668)
Clement Nicollet, Massachusetts Institute of Technology

9:00– 9:30 am Self-Cleaning Cathodes for Endurance to Chromium Poisoning (FE31206)
TBD, Boston University

9:30– 10:00 am Operating Stresses and Their Effects on Degradation of Lanthanum Strontium Manganite Based Sulfur Oxide Fuel Cell Cathodes (FE31189)
Mark De Guire, Case Western Reserve University

10:00 – 10:30 am **BREAK**

Moderator: Debalina Dasgupta, U.S. DOE, NETL

10:30 – 11:00 am Cost-Effective, Thin-Film Solid Oxide Fuel Cells for Reliable Power Generation (FE31670)
Frank Chen, University of South Carolina

11:00 – 11:30 am A Transformational Natural Gas Fueled Dynamic Solid Oxide Fuel Cells for Data Center In-Rack Power (FE31671)

Kevin Huang, University of South Carolina

11:30 – 12:00 pm Solid Oxide Fuel Cell Development and Demonstration Test Center
FE0024233-5.1
Chad Wocken, University of North Dakota Energy and Environmental
Research Center (UNDEERC)

12:00 – 1:15 pm LUNCH

Moderator: Venkat Venkataraman, U.S. DOE, NETL

1:15 – 1:45pm Degradation & Performance Studies of Ald-Stabilized Nano-Composite
SOFC Cathodes (FE31250)
Jason D. Nicholas, Michigan State University

1:45 – 2:15pm On-Demand Designing of Cathode Internal Surface Architecture for Dramatic
Enhancement of SOFC Performance and Durability (FE31251 and FE31665)
Xueyan Song, West Virginia University

2:15 – 2:45pm Multi-Gas Sensors for Enhanced Reliability of Solid Oxide Fuel Cell
Operation (FE31653)
Radislav Potyrailo, GE

2:45 – 3:15pm Robust Optical Sensor Technology for Real-Time Monitoring of Solid Oxide
Fuel Cells with High Spatial Resolution (FE31175)
Peng Chen, University of Pittsburgh

3:15 – 3:45 pm Low cost HEA Anode for Distributed Reforming and Prevention of Carbon
Deposition in SOFC (SC17050)

3:45 pm **WORKSHOP CLOSES**