

2023 FECM/NETL Spring R&D Project Review Meeting Poster List



Gasification Systems

Electrochemical Pump for Hydrogen Purification and Compression (FE0032178)

Benjamin Kumfer, Washington University in St. Louis

Effect of the Porous Support on Hydrogen Permeation (FE0032205)

Simona Liguori, Clarkson University

Catalytic Membrane Reactors Based on Carbon Molecular Sieve Hollow Fiber Membranes for Sustainable and Modular H₂ Production (FE0032209)

Haiqing Lin, University at Buffalo, SUNY

Optimization of Coal Waste/Biomass Gasification for Hydrogen Production (SC0022871)

David Stadem, Microbeam Technologies, Inc.

Modular H₂ Separation System for Biomass Gasification (SC0022877)

Ambal Jayaraman, TDA Research, Inc.

Fluidized Bed Gasification for Conversion of Biomass and Waste Materials to Renewable Hydrogen (FE0032176)

Zach El Zahab, GTI Energy

Electric Field Assisted Thermo-Catalytic Decomposition with Regeneration: Comparisons with ReaxFF Atomistic Simulations (FE0032070)

Randy Vander Wal, Pennsylvania State University

Co-Gasification and Co-Pyrolysis of Blends of Waste Plastics and Other Traditional Feedstocks (DE-FOA-0002376)

Ashish Bhattarai (Primary Student Presenter) and Ayden Kemp, Auburn University

Process Modeling and Analysis of Blue Hydrogen Production from Natural Gas (FE0032150)

Manish Maurya (*Student Presenter*), University of Wyoming

Preparation and Characterization of Coal/Biomass/Plastic Slurries (FE0032042)

Logan Hughey (*Student Presenter*), University of Utah

Producing Clean Hydrogen Using a Modular Two-Stage Intensified Membrane-Enhanced Catalytic Gasifier (FE0032191)

Oishi Sanyal, West Virginia University

Enabling Low Carbon Feedstocks for Gasification (FEAA437)

Jim Parks, Oak Ridge National Laboratory

Development of Allothermal Rotary Gasifier with CO₂ Acceptor for Hydrogen-Enriched Syngas Production from Coal Waste and Biomass (DE-SC0022816)

Xiaolong Li, Reaction Engineering International

Sensors & Controls

Advanced Sensors and Controls (FWP-1022427)

Samuel Bayham, National Energy Technology Laboratory

First-Principles Study of Temperature Dependence of Band Gap Renormalizations and Optical Properties on High-Temperature Gas Sensor Materials (FWP-1022427)

Yuhua Duan, National Energy Technology Laboratory

Quantum Sensing for Energy Applications (FWP-1022427)

Hari Paudel, National Energy Technology Laboratory

University Training & Research

Biogas Utilization in Refuse Power Plants (BURP2) (FE0032194)

Lawrence Anyim (*Student Presenter*), University of North Dakota

HBCUs, Education and Training

Innovative Biomonitoring and Remediation of Heavy Metals Using Phytotechnologies at the Savannah River Site (SRS) Coal Combustion Product (CCP) Impoundment Sites (FE0032198)

Ashvini Chauhan, Florida A&M University

Reversible Solid Oxide Fuel Cells

Improving Durability and Performance of Solid Oxide Electrolyzers by Controlling Surface Composition on Oxygen Electrodes (FE0032102)

Bildge Yildiz, Massachusetts Institute of Technology

Solid Oxide Fuel Cell Development and Demonstration Test Center (FE0024233-5.1)

Chad Wocken, University of North Dakota Energy and Environmental Research Center

Reversible Solid Oxide Fuel Cell (SOFC) and Solid Oxide Electrolysis Cell (SOEC) Stacks Based on Stable Rare-Earth Nickelate Oxygen Electrodes (FE0031972)

John Pietras, Saint-Gobain Ceramic Materials

Atomic Layer Deposition of Highly Active Oxygen Electrode SrCo_{0.9}Ta_{0.1}O_{3-d} (FE0032111)

Yeting Wen (*Student Presenter*), University of South Carolina

Development of Highly Conductive and Durable Proton Conductors for High-Performance Reversible Solid Oxide Cells (FE0032115)

Zheyu Luo (*Student Presenter*), Georgia Institute of Technology

Accelerating the Fuel Cell Cathode Materials Discovery via Machine Learning Approach (FE0032115)

Xueyu Hu (*Student Presenter*), Georgia Institute of Technology

Multi-Constituent Airborne Contaminants Capture with Low-Cost Oxide Getters and Mitigation of Cathode Poisoning in Solid Oxide Fuel Cells (FE0031647)

Prabhakar Singh, University of Connecticut

Low-Cost HEA Anode for Distributed Reforming and Prevention of Carbon Deposition in SOFC (18 RD 987) (SC0017050)

Prabhakar Singh, University of Connecticut

Designing Internal Surfaces of Porous Electrodes in Solid Oxide Electrolysis Cells for Highly Efficient and Durable Hydrogen Production (FE0032112)

Xueyan Song, West Virginia University

The Effect of A-Site Doping Elements and Concentrations on the Diffusivity and Ionic Conductivity of $\text{La}_2\text{NiO}_{4+\delta}$ Studied by AB Initio Calculations (FE0032116 & FE0031972)

Yu Zhong, Worcester Polytechnic Institute

Physical and Chemical Degradation Modeling of Solid Oxide Cells (FE0025912)

Debangsu Bhattacharyya, West Virginia University

Optimal Design Approaches for Rapid, Cost-Effective Manufacturing and Deployment of Chemical Processes (FWP-1022423)

Georgia Stinchfield (*Student Presenter*), Carnegie Mellon University

Investigation of Long-Term Performance for Solid Oxide Fuel Cells with Multiple Degradation Mechanisms (FWP-1022411)

Harry Abernathy, National Energy Technology Laboratory

Space Charge Layer Evolution at Yttria-stabilized Zirconia Grain Boundaries Upon Operation of Solid Oxide Fuel Cells (FWP-1022411)

Yun Chen, West Virginia University

Microstructure Optimization of LSM/YSZ Air Electrodes for Catalyst Infiltration (FWP-1022411)

Jay Liu, National Energy Technology Laboratory

Defect Thermodynamics and Transport Properties of Proton Conducting Oxide $\text{BaZr}_{1-x}\text{Y}_x\text{O}_{3-\delta}$ ($x \leq 0.1$) and $\text{BaFe}_{0.9}\text{Y}_{0.1}\text{O}_{3-\delta}$ Evaluated Based on Density Functional Theory Modeling (FWP-1022411)

Yueh-Lin Lee, National Energy Technology Laboratory

Advanced Manufacturing of Unique Solid Oxide Fuel Cell Electrode and Electrolyte Microstructures through Aerosol Deposition (FWP-1022411)

Joshua Tenney and Ed Sabolsky, National Energy Technology Laboratory and West Virginia University

Versatile Reversible Solid Oxide Cell System for Hydrogen and Electricity Production (FE0031986)

Alexander Vaeth, Nexceris, LLC

Advanced Energy Materials

Conformal Coatings on Additive Manufactured Robust Alloys for Significant Mitigation of Oxidation, Erosion, and Corrosion (FE0032068)

Xueyan Song, West Virginia University

Heat Treatment Design for Haynes 282 Alloy Processed by Wire-Arc Additive Manufacturing Through CALPHAD-based ICME (FE0026825)

Luis Fernando Ladinos Pizano (*Student Presenter*), University of Pittsburgh