

2016 CROSSCUTTING RESEARCH & RARE EARTH ELEMENTS PORTFOLIOS REVIEW

GRAND STATION 3-5

POSTER PRESENTATIONS

TUESDAY, APRIL 19 – 5:00–6:45 P.M.

ADVANCED SENSORS

- 1 • **Passive Wireless Sensors Fabricated by Direct-Writing for Temperature and Health Monitoring of Energy Systems in Harsh-Environments**
– *Ioannis Kortidis and Michael Comparetto, West Virginia University*
- 2 • **High Temperature Integrated Gas and Temperature Wireless Microwave Acoustic Sensor System for Fossil Energy Applications**
– *Anin Maskay, University of Maine System*
- 3 • **Low-Cost Efficient and Durable High Temperature Wireless Sensors by Direct Write Additive Manufacturing for Application in Fossil Energy Systems**
– *Rahul Panat, Washington State University*
- 4 • **Wireless Three Dimensional (3D) Nanorod Composite Arrays-Based High-Temperature Surface Acoustic Wave Sensors for Selective Gas Detection through Machine Learning Algorithms** – *Dongwook Kwak, University of Connecticut*
- 5 • **Metal Three Dimensional (3D) Printing of Low-Nitrous Oxide (NO_x) Fuel Injectors with Integrated Temperature Sensors** – *Jorge Mireles, University of Texas at El Paso*

HIGH PERFORMANCE MATERIALS

- 6 • **Physics-based Creep Simulation of Thick Section Welds in High Temperature and Pressure Applications** – *Thomas Lillo, Idaho National Laboratory*
- 7 • **Materials Qualification and Deployment for High Efficiency Coal Fired Boilers**
– *Bruce Pint, Oak Ridge National Laboratory*
- 8 • **Microstructure and Properties of Ni-based Components Fabricated by Additive Manufacturing** – *Sebastien Dreyepont, Oak Ridge National Laboratory*
- 9 • **Data Science Initiative** – *Slava Romanov, NETL Research & Innovation Center*

INNOVATIVE ENERGY CONCEPTS

- 10 • **Combustion Synthesis of Boride-Based Electrode Materials for Magnetohydrodynamic (MHD) Direct Power Extraction**
– *Sergio Cordova, University of Texas at El Paso*

SIMULATION BASED ENGINEERING

- 11 • **Interfacing MFIX with PETSC and HYPRE Linear Solver Libraries**
– *Gautham Krishnamoorthy, University of North Dakota*
- 12 • **High Fidelity Computational Model for Fluidized Bed Experiments**
– *Vinod Kumar, University of Texas at El Paso*
- 13 • **Institute for the Design of Advanced Energy Systems (IDAES)**
– *John Eslick, NETL Research & Innovation Center*
- 14 • **Prediction of Discretization Error using the Error Transport Equation**
– *Ismail Celik, NETL Research & Innovation Center*

WATER MANAGEMENT

- 15 • **Wireless Networked Sensors in Water for Heavy Metal Detection**
– *Hang Ruan, Nanosonic Inc.*
- 16 • **Integrated Sensors for Water Quality** – *Laurel Frediani, Sporian Microsystems Inc.*
- 17 • **Advanced Thermally Robust Membranes for High Salinity Produced Brine Treatment via Direct Waste Heat Integration** – *Nick Siefert, NETL Research & Innovation Center*

RARE EARTH ELEMENTS

- 18 • **Recovery of Rare Earth Elements (REEs) from Coal Mine Drainage**
– *Paul F. Ziemkiewicz, West Virginia University*
- 19 • **Recovery of Rare Earth Elements (REEs) from Coal Ash with a Closed Loop Leaching Process** – *Rick Peterson, Battelle Memorial Institute*
- 20 • **Plasma Arc Gasification Based Rare Earth Element Recovery from Coal Fly Ash**
– *Ken Jeffers, Southern Research Institute*
- 21 • **Economically Viable and Environmentally Benign High Performance Technology to Recover Rare Earth Elements from Coal By-products**
– *Gary Carlson & Dean Stull, Tusaar, Inc.*
- 22 • **Novel Membrane and Electrodeposition-Based Separation and Recovery of Rare Earth Elements from Coal Combustion Residues** – *Helen Hsu-Kim, Duke University*
- 23 • **Pilot-scale Testing of an Integrated Circuit for the Extraction of Rare Earth Minerals and Elements from Coal and Coal Byproducts Using Advanced Separation Technologies** – *Rick Honaker, University of Kentucky*
- 24 • **Investigation of Rare Earth Element Extraction from North Dakota Coal-Related Feedstocks** – *Steve Benson, University of North Dakota*
- 25 • **High Yield and Economical Production of Rare Earth Elements from Coal Ash**
– *Prakash Joshi, Physical Sciences Inc.*
- 26 • **A Pollution-Prevention and Economically-Viable Technology for Separation of Rare Earth Elements from Powder River Basin (PRB) Coal Ashes**
– *Maohong Fan, University of Wyoming*
- 27 • **Rare Earth Elements (REE) from Coal and Coal By-Products**
– *Evan Granite, NETL Research & Innovation Center*