Crosscutting Research and Advanced Energy Systems Project Review Meeting
Simulation Based Engineering Virtual Session Agenda

All times designated in Eastern Daylight Time

Monday, May 24, 2021

Process Systems Modeling and Simulation

Moderator: Jason Hissam

9:00 AM **Institute for the Design of Advanced Energy Systems (IDAES) (FWP-NETL)**
David Miller, National Energy Technology Laboratory

IDAES Modeling for Improved Power Plant Operations

Moderator: Jason Hissam

9:30 AM **Modeling and Validation of Flow and Heat Transfer Phenomena for Coal-Fired Boilers for Indirectly-Heated Supercritical Carbon Dioxide Power Cycles (SC0020796)**
Christopher Ruscher, Spectral Energies
(Sponsored by Transformative Power Generation Program)

10:00 AM **Integration of Coal-fired Power Plants Fireside Optimization Tools with the IDAES Platform (SC0020803)**
Shuchita Patwardhan, Microbeam Technologies, Inc.
(Sponsored by Transformative Power Generation Program)

Multiphase Flow Modeling and Applications

Moderator: Jason Hissam

10:30 AM **MFIX - Multiphase Flow with Interphase Exchanges (FWP-NETL)**
Jeff Dietiker, Battelle Memorial Institute

11:00 AM **Machine Learning to Accelerate CFD Models (FWP-NETL)**
Dirk Van Essendelft, National Energy Technology Laboratory

11:30 AM **Implementing General Framework in MFiX for Radiative Heat Transfer in Gas-Solid Reacting Flows (FE0030485)**
Michael Stoellinger, University of Wyoming

12:00 PM **MFIX-DEM Enhancement for Industry-Relevant Flows (FE0026298)**
Wyatt Casey LaMarche, University of Colorado

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12:30 PM **BREAK**

Multiphase Flow Modeling and Applications

Moderator: Omer Bakshi

1:00 PM **Developing Drag Models for Non-Spherical Particles through Machine Learning (FE0031897)**
Rui Ni, Johns Hopkins University

1:30 PM **Development and Evaluation of a General Drag Model for Gas-Solid Flows via Physics-Informed Deep Machine Learning (FE0031904)**
Cheng-Xian Lin, Florida International University

2:00 PM **Unsupervised Learning Based Interaction Force Model for Nonspherical Particles in Incompressible Flows (FE0031905)**
Soohwan Hwang - Student Researcher, Ohio State University

2:30 PM **A General Drag Model for Assemblies of Non-Spherical Particles Created with Artificial Neural Networks (FE0031894)**
Daniel Hinojosa, University of Texas at San Antonio

3:00 PM **Component Level Modeling of Materials Degradation for Insights into Operational Flexibility of Existing Coal Power Plants (FE0031831)**
Anand Kulkarni, Siemens Corporation

Ash Deposition Modeling for Boiler Application

Moderator: Omer Bakshi

3:30 PM **Probing Particle Impingement in Boilers and Steam Turbines Using High-Performance Computing with Parallel and Graphical Processing Units (FE0031746)**
Hyuna Kwon & Steve Yang - Student Researchers, University of California - Riverside

4:00 PM **An Integrated Approach to Predicting Ash Deposition and Heat Transfer in Coal-Fired Boilers (FE0031741)**
Gautham Krishnamoorthy, University of North Dakota (UND)