

TMS 2018
147th Annual Meeting & Exhibition**MARCH 11 – 15, 2018**
PHOENIX, ARIZONA**SUBMIT AN ABSTRACT TO:****ENERGY & ENVIRONMENT****MATERIALS FOR ENERGY CONVERSION AND STORAGE**

This symposium is organized into the following themes:

Energy Conversion with Emphasis on SOFCs

Co-organizers: Kyle S Brinkman, Clemson University; Hitoshi Takamura, Tohoku University; Xingbo Liu, West Virginia University; Soumendra Basu, Boston University; Jung Pyung Choi, Pacific Northwest National Laboratory; Prabhakar Singh, University of Connecticut.

Topics include experiments and modeling of the above-mentioned systems including:

- Durability of fuel cell and stack materials
- Thermal-chemical-mechanical stresses/expansion
- Study of thermo-mechanical degradation mechanisms
- Effect of microstructure evolution on properties and efficiency
- Role of grain boundary density, grain size, orientation and grain growth
- Advances in characterization and modeling techniques

Energy Storage with Emphasis on Batteries

Co-organizers: Partha P. Mukherjee, Texas A&M University; Leela M.R. Arava, Wayne State University; George Nelson, University of Alabama in Huntsville

Topics will include:

- Physicochemical interaction in lithium-ion batteries and beyond (e.g. Li-S, Li-air, Na-ion)
- Electrode microstructure - property - performance interplay
- Meso-scale modeling and characterization

Materials Design for Sustainability and Energy Harvesting

Co-organizers: Surojit Gupta, University of North Dakota; Indrajit Dutta, Corning Inc.; Hamidreza Mohseni, BOSCH; D. Wen, University of Leeds

This component of the symposium will focus on a variety of green and sustainable technologies for energy harvesting, additive manufacturing, green tribology, next-generation products and processes, and development of advanced instrumentation and control systems. Proposed session topics include:

- Solar Energy
- Energy Harvesting
- Nanotechnology and next generation multifunctional materials
- Additive manufacturing, 3D printing, and sustainability
- Green Tribology
- Life-cycle analysis of materials and products

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ABSTRACT DEADLINE IS JULY 1, 2017. SUBMIT ONLINE AT www.programmaster.org/TMS2018.

QUESTIONS? CONTACT programming@tms.org

Functional Materials including High Temperature Ceramics and Alloys

Co-organizers: Paul Ohodnicki, National Energy Technology Laboratory; Jung Pyung Choi, Pacific Northwest National Laboratory; Reza Shahbazian-Yassar, University of Illinois at Chicago; Soumendra Basu, Boston University; Dwayne Arola, University of Washington; Josh Gladden, Olemiss; Rajeev Gupta, University of Akron

Materials/Applications:

- Functional oxides/(SOFC, Sensors, Others)
- Ceramics and dielectrics/(battery, insulation dielectrics, capacitors, sensors)
- Solid state batteries/electrolyzers/solid oxide fuel cells/membrane separation/electrolysis cells

Topics will include:

- Coatings for interconnections
- Membrane separation materials, processes and systems (H₂, O₂, CO₂)
- High temperature electrolysis cells
- High temperature performance of functional materials (electrochemical, electronic, optical, etc.)
- In-situ spectroscopy of oxidation state of functional oxides in operation
- Ceramics/composite structures/alloys
- Solid oxide fuel cells, thermal barrier coatings, diesel particulate filters etc.
- Reliability and durability of high-temperature ceramics and alloys, including the effect of residual/operational stresses, corrosion under oxidizing and reducing environment
- Advances in the characterization and modeling techniques including multiscale and in-situ
- Microstructural reconstruction and mapping onto fundamental mechanistic models for predicting overall performance
- Nanostructuring and infiltration of functional electrode materials (SOFC, battery, capacitor) for electronic/electrochemical performance

The intent of this symposium is to provide a forum for researchers from national laboratories, universities, and industry to discuss current understanding of materials science issues in high-temperature processes and accelerate the development and acceptance of innovative materials and test techniques for clean energy technology.

ORGANIZERS

Amit Pandey, LG Fuel Cell Systems Inc., USA

SPONSORS

TMS Functional Materials Division

TMS Energy Conversion and Storage Committee

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