THE WORLD COMES HERE.

TMS 2024

153rd Annual Meeting & Exhibition

MARCH 3–7, 2024
HYATT REGENCY ORLANDO
ORLANDO, FLORIDA, USA
#TMSAnnualMeeting

SUBMIT AN ABSTRACT FOR THE FOLLOWING TMS2024 SYMPOSIUM:

ELECTRONIC, MAGNETIC, AND ENERGY MATERIALS

Advanced Materials for Energy Conversion and Storage 2024

Theme 1: Energy Conversion
These focus area topics include, but are not limited to experiments and modeling of energy conversion systems, including:

- SOFCs and reversible SOFCs/SOECs
- PEM fuel cells
- The durability of the fuel cell and stack materials
- Degradation due to thermo-mechanical-chemical effects
- Effect of microstructure evolution on the properties and efficiency
- Chromium poisoning from interconnections and Balance of Plant
- Advances in characterization and modeling techniques for energy generation systems include AI, big data, and Deep Learning.

Theme 2: Energy Storage
Focus areas include:

- Batteries
- Physicochemical Interaction in intercalation, conversion, and metal batteries, e.g., lithium-ion, solid-state, Na-ion, Li-S, Li-air
- Electrode microstructure - property - performance interplay
- Mesoscale modeling and characterization (e.g., X-ray tomography)
- Degradation (e.g., mechanical, chemical, electrodeposition) and safety characteristics in electrodes
- Computer simulation/modeling includes AI, big data, and deep learning.

Theme 3: Materials Design for Sustainability and Energy Harvesting
This symposium component 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, etc.

Proposed Session Topics:

- Solar Energy
- Wind Energy
- supercapacitor
- Additive manufacturing, 3D printing, and sustainability
- Green Tribology
- Life cycle analysis of materials and products
- Computer simulation/modeling includes AI, big data, and deep learning.

Theme 4: Functional Materials, including Coating, Ceramics, and Alloys
Focus areas include:

- Functional Oxides, Nitrides, and Carbides
- Ceramics and Dielectrics
- Sensors
- Thermal Energy Harvesting, Conversion, storage, and Management Devices
- Functional Coatings for Harsh Environments
- Nanotechnology and Multifunctional Materials
- Membrane Separation Materials, Processes, and Systems (H2, O2, CO2)
- Water Splitting and Other Catalyst Applications
- In-Situ Spectroscopy and Advanced Characterization of Functional Materials
- Harsh Environment Electromagnetic Materials
- Computer simulation/modeling includes AI, big data, and deep learning.

This symposium intends to provide a forum for researchers from national laboratories, universities, and industry to discuss the current understanding of materials science issues in advanced materials for energy conversion and storage, including high-temperature processes, and to discuss accelerating the development and acceptance of innovative materials, and test techniques for clean energy technology.

ORGANIZERS
Jung Choi, Pacific Northwest National Laboratory, USA
Amit Pandey, Lockheed Martin Space, USA
Partha Mukherjee, Purdue University, USA
Surojit Gupta, University of North Dakota, USA
Soumendra Basu, Boston University, USA
Paul Ohodnicki, University of Pittsburgh, USA
Eric Detsi, University of Pennsylvania, USA

SYMPOSIUM SPONSORS
TMS Functional Materials Division
TMS Energy Conversion and Storage Committee

www.tms.org/TMS2024

QUESTIONS?
Contact programming@tms.org