



SUBMIT AN ABSTRACT BY JULY 1

**MARCH 14-18, 2021 • ORLANDO WORLD CENTER MARRIOTT
ORLANDO, FLORIDA, USA**
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SUBMIT AN ABSTRACT TO:

ENERGY & ENVIRONMENT

ADVANCED MATERIALS FOR ENERGY CONVERSION AND STORAGE VII

The 7th Symposium on Advanced Materials for Energy Conversion and Storage intends to provide a forum for researchers from national laboratories, universities, and industry to discuss 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.

THEME 1: ENERGY CONVERSION

Co-Organizers: **Souendra Basu**, Boston University, USA; **Xingbo Liu**, West Virginia University, USA; **Kyle S. Brinkman**, Clemson University, USA; **Jung Pyung Choi**, Pacific Northwest National Laboratory, USA; **Prabhakar Singh**, University of Connecticut; **Amit Pandey**, Lockheed Martin Space, USA

Focus areas include:

- Solid Oxide Fuel Cells and PEM fuel cells
- Electrolyzers and reversible fuel cells
- The durability of the fuel cell and stack materials
- Thermal-Chemical-mechanical stresses/expansion
- Study of thermo-mechanical degradation mechanisms
- Effect of microstructure evolution on the properties and efficiency
- Balance of Plant and Chrome poisoning
- Advances in characterization and modeling techniques

THEME 2: ENERGY STORAGE

Co-Organizers: **Partha P. Mukherjee**, Purdue University, USA; **Eric Detsi**, University of Pennsylvania, USA; **Min-Kyu Song**, Washington State University, USA; **George Nelson**, University of Alabama in Huntsville, USA; **Leela Arava**, Wayne State University, USA.

Focus areas include:

- Batteries
- Physicochemical interaction in lithium-ion batteries and beyond (e.g., Li-S, Li-air)
- Electrode microstructure - property - performance interplay
- Mesoscale modeling and characterization (e.g., X-ray tomography)
- Degradation (e.g., mechanical, chemical, electrodeposition) characteristics in electrodes

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THEME 3: MATERIALS DESIGN FOR SUSTAINABILITY AND ENERGY HARVESTING

Co-Organizers: Surojit Gupta, University of North Dakota, USA; Matt Cavalli, Western Michigan University, USA; Sankha Banerjee, California State University, USA; Manoj Kumar Mahapatra, University of Alabama, USA; Lan Li, Boise State University, USA; Luca Masi, Ansys Granta, United Kingdom.

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, etc. Proposed session topics include: solar energy; wind energy; supercapacitor; additive manufacturing, 3D printing, and sustainability; green tribology; and life cycle analysis of materials and products

SYMPOSIUM ORGANIZERS

Jung Pyung Choi, Pacific Northwest National Laboratory, USA
Soumendra Basu, Boston University, USA
Amit Pandey, Lockheed Martin Space, USA
Paul Ohodnicki, University of Pittsburgh, USA

THEME 4: FUNCTIONAL MATERIALS INCLUDING COATING, CERAMICS AND ALLOYS

Co-Organizers: Jung Pyung Choi, Pacific Northwest National Laboratory, USA; Paul Ohodnicki, University of Pittsburgh, USA; Soumendra Basu, Boston University, USA.

Focus areas will include:

- Functional Oxides
- Ceramics and Dielectrics
- Sensors
- Coatings for harsh environments
- Nanotechnology and next-generation multifunctional materials
- Membrane Separation Materials, Processes, and Systems (H₂, O₂, CO₂)
- Water splitting
- In-situ spectroscopy of oxidation state of functional oxides in operation
- Ceramics/Composite Structures/Alloys-corrosion, oxidation, heat, electric, magnetic resistant materials
- Advances in characterization and modeling techniques, including multiscale and in-situ
- Catalyst application

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