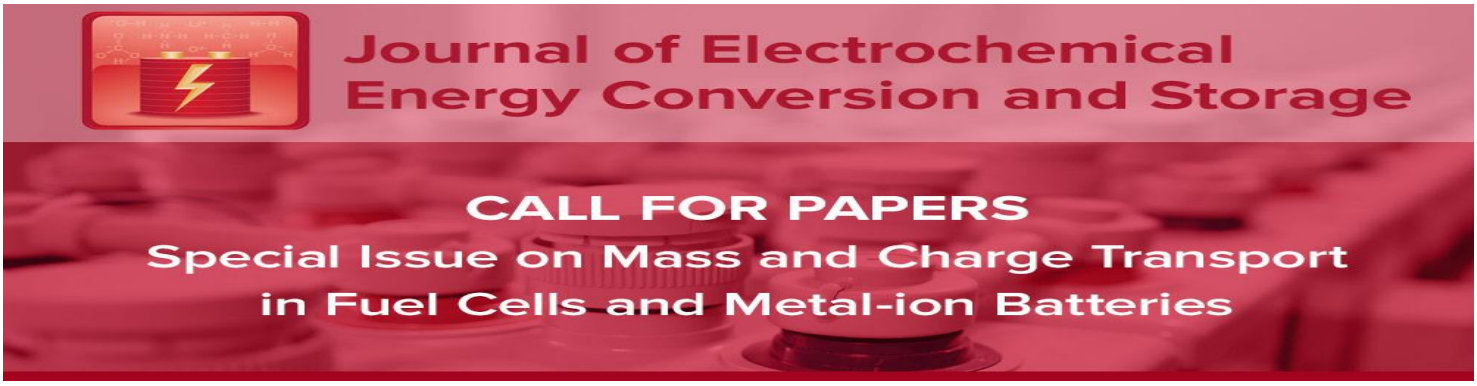

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ASME *Journal of Electrochemical Energy Conversion and Storage*

Special Issue on Mass and Charge Transport in Fuel Cells and Metal-ion Batteries

Fuel cells and metal-ion batteries have been receiving ever-increasing attention for energy conversion and storage in several applications such as portable, mobile, and stationary applications. Not understanding mass and charge transport in fuel cells and metal-ion batteries results in serious performance and durability challenges. For example, the insufficient interaction of catalyst/ionomer/reactant as a result of fuel cells lacking the ion-conducting, reactant-delivering, or proton-conducting pathways leads to the deactivated triple-phase boundary. Meanwhile, the metal-ions transport in the interface of solid active materials and electrolyte; the charge transport, including ions transport in the electrolyte; and electron transport in the solid phase, are not well known in advanced metal-ion batteries. An ideal electrode architecture that boosts the performance and durability of cells and batteries needs the electrode design to meet all the requirements of electrochemical kinetics and mass and charge transport characteristics. Deep understanding of the mass and charge transports in the fuel cells and metal-ion batteries could accelerate their commercialization. This Special Issue is envisioned to cover the entire range of the mass and charge transports in fuel cells and metal-ion batteries, with equal emphasis on both experimental and theoretical research.

Potential topics include, but are not limited to:

- Mass and charge transport properties of materials, components, cells, and stacks
- Mechanism and catalysis for the oxygen reduction reaction and the oxygen evolution reaction
- Anode/Cathode materials in metal (Li, Na, K, Zn, Mg, Al)-ion batteries
- Density functional theory (DFT) calculation for high specific capacity
- Multiscale transport modeling and measurements
- Water management in fuel cells
- Analysis and evaluation of ageing phenomena
- Design and optimization of materials, components, cells, and stacks

Publication Target Dates

Special Issue open to submissions:	**June 15, 2020**
Paper Submission Deadline:	**December 15, 2020**
Initial Review Completed:	**March 1, 2021**
Special Issue Publication Date:	**August 2021**

Submission Instructions

Papers should be submitted electronically to the journal at journaltool.asme.org. If you already have an account, log in as author and select **Submit Paper** at the bottom of the page. If you do not have an account, select **Submissions** and follow the steps. In either case, at the **Paper Submittal** page, select the ***Journal of Electrochemical Energy Conversion and Storage*** and then select the Special Issue on **Mass and Charge Transport in Fuel Cells and Metal-ion Batteries**. Papers received after the deadline or not selected for inclusion in the Special Issue may be accepted for publication in a regular issue.

Special Issue Editors

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