Special Issue

Additive Manufacturing of Metallic Porous Components in Electrochemical Systems

Message from the Guest Editors

Electrochemical energy and conversion devices, such as fuel cells, electrolyzers and batteries, are expected to play a key role in the decarbonization of the energy system during this century. Additive manufacturing of metallic porous components is a powerful approach for the design of tailored components to reduce electrical contact resistances, enhance two-phase transport, improve mechanical integrity, and create durable interfaces, among other benefits. This trend is reflected in the exponential growth of the number of publications related to “printed electrochemical devices” in the last decade. Additive manufacturing can also provide the following innovative solutions along the value chain for the design of next-generation electrochemical devices: (1) complex geometries, design freedom, fast prototyping, cost-efficiency, automated fabrication, and material saving; (2) the integration of modeling and numerical methods in the design cycle; (3) high performance and extended durability; and (4) a ubiquitous availability.

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