Special Issue

Advanced Materials for Solid Oxide Fuel Cells (SOFCs)

Message from the Guest Editor

Solid oxide fuel cells (SOFCs) show the highest efficiency among all energy-conversion devices and are attractive for energy storage by operating reversible modes. Decreasing the operational temperature of SOFCs would enable wider applications and increase the durability of the cell. However, lowering the temperature to a range that is safe from the point of view of material durability, called the intermediate temperature (IT) range (500–800 °C) or low-temperature range (350–500 °C), increases energy losses due to the slow electrode reactions, which is especially serious in the case of the cathode reaction. This Special Issue is focused on topics including those listed below: Describing new materials of perovskite structure for both cathodes and anodes for solid oxide fuel cells and proton conducting fuel cells, oxygen electrode materials for solid oxide electrolysis cells, reversible solid oxide cells, improving the performance of existing electrode materials by lowering the polarization resistance and enhancing the kinetics of oxygen reduction reaction or oxygen evolution reaction and describing their mechanism.

Guest Editor

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Materials (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

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