Special Issue

Modeling and Simulation of Solid Oxide Cells

Message from the Guest Editors

The world is witnessing and experiencing major issues arising from climate change. Electrochemical converters play crucial roles in mitigating these issues. Among them, solid oxide cells (SOCs) are able to operate in fuel cells (SOFCs), electrolysis cells (SOECs) or even reversible solid oxide cells (RSOC) with different gas components, which represent a very promising technology for carbon-neutral attainment and decarbonization. SOCs exhibit relatively high efficiency but face challenges from electrode/cell material science, stack assembling, thermal management, system integrity and control, etc. To overcome these challenges, various computational and modeling techniques have been proposed and developed which allow for the systematic simulation, design and optimization of SOCs at different levels, aiming to provide valuable insights into the phenomena occurring within the cells, stacks and systems that reduce the development cycles. This Special Issue aims to present and disseminate the most recent advances related to modern modeling and simulation technologies, as well as applications ranging from material design to system control in the field of SOCs.

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Energies is an international, open access journal in energy engineering and research. The journal publishes original papers, review articles, technical notes, and letters. Authors are encouraged to submit manuscripts which bridge the gaps between research, development and implementation. The journal provides a forum for information on research, innovation, and demonstration in the areas of energy conversion and conservation, the optimal use of energy resources, optimization of energy processes, mitigation of environmental pollutants, and sustainable energy systems.

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