

Special Issue

Energy Conversion and Storage via Advanced Solid Oxide Cells and Electrolyzers

Message from the Guest Editor

The global transition toward sustainable, low-carbon energy systems requires efficient technologies for energy conversion, storage, and sector integration. Solid oxide cells (SOCs) – including solid oxide fuel cells (SOFCs), solid oxide electrolysis cells (SOECs), and reversible SOC (rSOCs) – offer high efficiency, fuel flexibility, and potentially support the hydrogen economy. They also play a key role in hydrogen and Power-to-X (P2X) technologies. Recent progress in advanced ceramic materials, electrodes, interfaces, surface engineering, and innovative cell architectures and designs has contributed to improved electrochemical performance and stability, while emerging fabrication and processing methods enable scalable, cost-effective production of high-performance SOC components. However, challenges remain in long-term durability, degradation, and system optimization. This Special Issue invites contributions on SOC and electrolyser materials, cell design, fabrication, advanced characterization, modeling, simulation, and renewable energy integration, highlighting innovations in solid oxide technologies for sustainable energy systems. For more information, please visit [here](#).

Guest Editor

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Message from the Editor-in-Chief

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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