

Solid Oxide Fuel Cell Energy Storage



Overview

Solid oxide fuel cells (SOFCs) represent a highly promising technology for distributed power generation and clean energy due to their superior efficiency, fuel flexibility, and low emissions. 1,2 While hydrogen is the conventional SOFC fuel, its practical implementation faces significant challenges including high production costs, storage and transportation difficulties, and leakage risks, particularly in mobile applications like vehicles and marine systems. 3,4 Owing to their high-temperature operation, SOFCs demonstrate broad fuel compatibility, enabling the use of alternative fuels such as hydrocarbons (methane, ethane, and propane), oxygenates (methanol and ethanol), and zero-carbon hydrogen carriers, including ammonia. 4,5 Among these, ammonia offers distinct advantages as a SOFC fuel: it eliminates carbon deposition inherent to hydrocarbons, 6 possesses a high hydrogen mass content (17.



Article Content

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Current developments in reversible solid oxide fuel cells

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1. INTRODUCTION Solid oxide fuel cells (SOFCs) represent a highly promising technology for distributed power generation and clean energy due to their superior efficiency, fuel flexibility, ...

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Energy, exergy and economic (3E) analysis of a novel hydrogen storage ...

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