

Sodium-sulfur battery low temperature energy storage





Overview

All-solid-state sodium-sulfur (Na-S) batteries are promising for stationary energy storage devices because of their low operating temperatures (less than 100 °C), improved safety, and low-cost fabrication. Are rechargeable room-temperature sodium-sulfur (na-S) batteries suitable for large-scale energy storage?

Rechargeable room-temperature sodium-sulfur (Na-S) and sodium-selenium (Na-Se) batteries are gaining extensive attention for potential large-scale energy storage applications owing to their low cost and high theoretical energy density.

Why are sodium-sulfur batteries used in stationary energy storage systems?

Introduction Sodium-sulfur (Na-S) batteries with sodium metal anode and elemental sulfur cathode separated by a solid-state electrolyte (e.g., beta-alumina electrolyte) membrane have been utilized practically in stationary energy storage systems because of the natural abundance and low-cost of sodium and sulfur, and long-cycling stability , .

What is a high temperature sodium sulfur battery?

High-temperature sodium-sulfur (HT Na-S) batteries were first developed for electric vehicle (EV) applications due to their high theoretical volumetric energy density. In 1968, Kummer et al. from Ford Motor Company first released the details of the HT Na-S battery system using a β -alumina solid electrolyte .

Are metal-sulfur batteries a good energy storage system?

Among various energy storage systems, metal-sulfur batteries (e.g. Li-S and Na-S batteries) are especially attractive and important energy-storage devices since the sulfur cathode is not only abundant and cheap but also has an extremely high theoretical capacity of 1672 mAh g⁻¹ .



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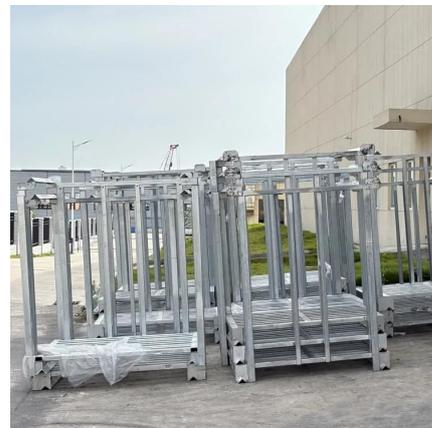


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