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Sodium-sulfur flow battery

Overview

What are sodium-sulfur batteries?

Sodium-sulfur (Na–S) batteries that utilize earth-abundant materials of Na and S have been one of the hottest topics in battery research. The low cost and high energy density make them promising candidates for next-generation storage technologies as required in the grid and renewable energy.

Who makes sodium sulfur batteries?

Utility-scale sodium–sulfur batteries are manufactured by only one company, NGK Insulators Limited (Nagoya, Japan), which currently has an annual production capacity of 90 MW . The sodium sulfur battery is a high-temperature battery. It operates at 300°C and utilizes a solid electrolyte, making it unique among the common secondary cells.

How does a sodium-sulfur battery work?

The sodium–sulfur battery uses sulfur combined with sodium to reversibly charge and discharge, using sodium ions layered in aluminum oxide within the battery's core. The battery shows potential to store lots of energy in small space.

Are sodium-sulfur batteries suitable for next-generation grid-level storage systems?

Due to high theoretical capacity, low cost, and high energy density, sodium-sulfur (Na-S) batteries are attractive for next-generation grid-level storage systems. However, the polysulfide shuttle leads to a rapid capacity loss in sodium-sulfur batteries with elemental sulfur as the cathode material.

Sodium-sulfur flow battery

Unsaturation degree of Fe single atom site manipulates ...

Sodium-sulfur batteries performance is hindered by the shuttling and sluggish redox of S species. Herein, authors propose geometric and electronic descriptors ...

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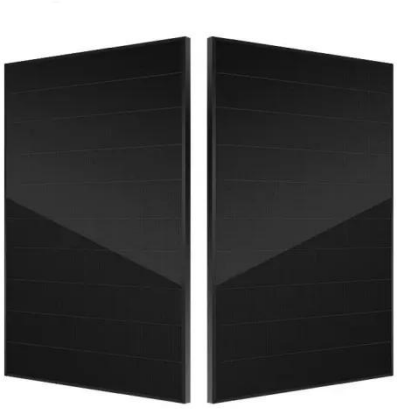

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Sodium Sulfur Battery

A sodium-sulfur battery is defined as a secondary battery that utilizes molten sodium and molten sulfur as rechargeable electrodes, with a solid sodium ion-conducting oxide (beta alumina) ...

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