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Title: Large-capacity sodium-sulfur energy storage single battery

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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.

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.

Are sodium & sulfur batteries good for grid-scale energy storage?

Sodium||sulfur batteries hold great promise for grid-scale energy storage, yet their performance is hindered by the shuttling and sluggish redox of sulfur species. Herein, we report a strategic design of sulfur hosts modified with coordinatively unsaturated iron single-atom (Fe-N_x) for sodium||sulfur batteries.

What is a room-temperature sodium||sulfur (Na||S) battery?

The high specific capacity (1675 mAh g⁻¹) brought by the two-electron transfer of sulfur makes room-temperature sodium||sulfur (Na||S) batteries composed of low-cost and environmentally friendly sodium metal and elemental sulfur exhibit tremendous potential in the field of large-scale energy storage 4, 5, 6.

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