

Long-lasting non-fading zinc-bromine flow battery





Overview

Why it matters: Zinc-bromine flow batteries (ZBFBs) target 4-12+ hour grid storage with non-flammable chemistry and long cycle life-ideal for renewables firming and microgrids. Are zinc-bromine flow batteries suitable for large-scale energy storage?

Zinc-bromine flow batteries (ZBFBs) offer great potential for large-scale energy storage owing to the inherent high energy density and low cost. However, practical applications of this technology are hindered by low power density and short cycle life, mainly due to large polarization and non-uniform zinc deposition.

Are aqueous zinc-bromine flow batteries reversible?

Aqueous zinc-bromine flow batteries show promise for grid storage but suffer from zinc dendrite growth and hydrogen evolution reaction. Here, authors develop a reversible carbon felt electrode with Pb nanoparticles to suppress these issues, improving battery performance and cycle stability.

What are zinc-bromine flow batteries?

In particular, zinc-bromine flow batteries (ZBFBs) have attracted considerable interest due to the high theoretical energy density of up to 440 Wh kg⁻¹ and use of low-cost and abundant active materials [10, 11].

Are aqueous non-flow zinc-bromine batteries a good energy storage system?

Aqueous non-flow zinc-bromine batteries (NF-ZBBs) offer low fabrication cost, good safety, and a large capacity, making them appealing energy storage systems. However, the performance of bromine conversion hosts is substantially hampered by the polybromide shuttle effect and sluggish redox reactions. In this



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A high-rate and long-life zinc-bromine flow battery

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Predeposited lead nucleation sites enable a ...

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Unlike ...

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