
Zinc-iodine-bromine flow battery

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 zinc iodine flow batteries suitable for large-scale electrochemical energy storage?

Zinc-iodine flow batteries are promising candidates for large-scale electrochemical energy storage owing to their high energy density, safety, and low-cost features. However, the limited utilization of iodine species by liberating I⁻ to stabilize I₂ and severe anodic dendrite growth are still serious challenges.

Are zinc-iodine flow batteries safe?

The growing demand for grid-scale energy storage calls for safe and low-cost solutions, for which zinc-iodine flow batteries (ZIFBs) are highly promising. However, their practical application is critically hindered by two issues: accumulation of insoluble solid iodine at the cathode and zinc dendrite growth at the anode.

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.

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Researchers reported a 1.6 V dendrite-free zinc-iodine flow battery using a chelated Zn(PPi)₂·6H₂O electrolyte. The battery demonstrated stable operation at 200 mA cm⁻² over 250 ...

The zinc-bromine flow battery (ZBFB), despite being one of the first proposed flow batteries in

the 1980s, has only recently gained enough traction to compete with the well ...

However, the development of zinc-iodine flow batteries still suffers from low iodide availability, iodide shuttling effect, and zinc dendrites.

Aqueous zinc-iodine flow batteries show potential in large-scale storage but face water imbalance-induced instability. Here, authors develop a tailored ionic-molecular sieve ...

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