Self-discharge of zinc-bromine flow batteries

Systematic electrochemical investigations of the origin of the self-discharge phenomena in non-flow (stationary) Zn-Br 2 batteries have clearly highlighted the leading role of the uncontrolled ...

We here introduce a practical Zn-Br battery that harnesses the synergy effects of complexation chemistry in the electrode and the salting-out effect in the aqueous electrolyte.

Kim, Effect of a bromine complex agent on electrochemical performances of zinc electrodeposition and electrodissolution in Zinc-Bromide flow battery, J. Power Sources

In this review, the focus is on the scientific understanding of the fundamental electrochemistry and functional components of ZBFBs, with an emphasis on the technical challenges of reaction ...

This work demonstrates a zinc-bromine static (non-flow) battery without these auxiliary parts and utilizing glass fiber separator, which overcomes the high self-discharge rate and low...

Here we introduce a Br 2 scavenger to the catholyte, reducing the Br 2 concentration to an acceptable level (~7 mM). The scavenger, sodium sulfamate (SANa), reacts rapidly with Br 2 to ...

In this review, we first elucidate the fundamental electrochemistry underlying bromine conversion reactions, and critically analyze the primary challenges currently impeding the ...

Here, we discuss the device configurations, working mechanisms and performance evaluation of ZBRBs. Both non-flow (static) and flow-type cells are highlighted in detail in this review.

Dendritic zinc deposits could easily short-circuit the cell, and the high volubility of bromine allows diffusion and direct reaction with the zinc electrode, resulting in self-discharge of the cell.

Aqueous zinc bromine batteries (ZBBs) attract extensive research interest owing to their high theoretical energy density, high operating voltage, and low cost. However, they suffer from ...

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