
ZiFeLiquid Flow Battery

Are neutral zinc-iron flow batteries a good choice?

Neutral zinc-iron flow batteries (ZIFBs) remain attractive due to features of low cost, abundant reserves, and mild operating medium. However, the ZIFBs based on Fe (CN) 6³⁻ /Fe (CN) 6⁴⁻ catholyte suffer from Zn₂ Fe (CN) 6 precipitation due to the Zn²⁺ crossover from the anolyte.

Are flow batteries sustainable chemistries?

Abstract: Flow batteries, with their low environmental impact, inherent scalability and extended cycle life, are a key technology toward long duration energy storage, but their success hinges on new sustainable chemistries. This paper explores two chemistries, based on abundant and non-critical materials, namely all-iron and the zinc-iron.

Are alkaline Zn-Fe flow batteries suitable for large-scale energy storage?

The alkaline Zn-Fe flow battery stably operated for over 500 h, achieving an EE of 86.3 % at 80 mA cm⁻². Alkaline zinc-based flow batteries (AZFBs) are considered one of the most promising candidates for large-scale energy storage owing to Zn abundance, cost effectiveness, intrinsic safety and eco-friendliness.

Can a chelated zinc-iodine flow battery be used for energy storage?

Researchers reported a 1.6 V dendrite-free zinc-iodine flow battery using a chelated Zn (PPI)₂₆₋ negolyte. The battery demonstrated stable operation at 200 mA cm⁻² over 250 cycles, highlighting its potential for energy storage applications.

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As a result, the assembled battery demonstrated a high energy efficiency of 89.5% at 40 mA cm⁻² and operated for 400 cycles with an average Coulombic efficiency of 99.8%. Even at 100 mA cm⁻², the ...

Benefitting from PST additives, the zinc-iodine flow battery demonstrates a remarkable combination of improved power density (616 mW cm⁻²), enhanced energy density (185.18 Wh L⁻¹) as well as prolonged ...

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A synergistic electrolyte engineering strategy is proposed to overcome the coupled stability challenges of the cathode and anode in zinc-iodine flow batteries by introducing ...

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