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To address these issues, we introduce a blend polymer membrane for a stable zinc-iron flow battery system with enhanced alkaline stability and dendrite-free operation.

Consequently, prolonged cell cycling of the prototype alkaline zinc-iron flow battery demonstrates stable operation for over 130 h and an average coulombic efficiency of 98.5%.

However, the development of zinc-iron redox flow batteries (RFBs) remains challenging due to severe inherent difficulties such as zinc dendrites, iron (III) hydrolysis, ion-crossover, hydrogen evolution reactions (HER), ...

This study addresses the enhanced cycling stability of zinc-based flow batteries through a synergistic strategy integrating a vine-derived porous carbon framework (3D VPCF) with nicotinamide (NAM) ...

Alkaline zinc-iron flow batteries (AZIFBs) represent a promising candidate for large-scale, long-duration energy storage applications. However, the formation and accumulation of inactive zinc ("dead Zn") ...

Most importantly, the PBI mem-brane with ultra-high mechanical stability can resist the zinc dendrite very well, which ensures the cycling stability of the alkaline zinc-iron flow battery.

Zinc-iron redox flow batteries (ZIRFBs) possess intrinsic safety and stability and have been the research focus of electrochemical energy storage technology due to their low electrolyte cost.

Herein, montmorillonite (MMT) with high mechanical stability and negatively charged property is introduced on the surface of a porous poly (ether sulfone) substrate, which enables an efficient and highly ...

Suppressing formation of zinc dendrites through further inclusion of additives in electrolyte is an effective solution to improve performance and stability of AZIFBs.

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