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Title: The main structure of zinc-iron flow battery

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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  $\text{Fe}(\text{CN})_6^{3-}/\text{Fe}(\text{CN})_6^{4-}$  catholyte suffer from  $\text{Zn}_2\text{Fe}(\text{CN})_6$  precipitation due to the  $\text{Zn}^{2+}$  crossover from the anolyte.

What is a zinc-based flow battery?

The history of zinc-based flow batteries is longer than that of the vanadium flow battery but has only a handful of demonstration systems. The currently available demo and application for zinc-based flow batteries are zinc-bromine flow batteries, alkaline zinc-iron flow batteries, and alkaline zinc-nickel flow batteries.

Can zinc-iron chloride flow batteries be used in grid-scale energy storage?

This enables the use of mixed Zn-Fe electrolytes and microporous separators in place of expensive ion-exchange membranes. Considering the low-cost materials and simple design, zinc-iron chloride flow batteries represent a promising new approach in grid-scale energy storage.

Are zinc-based flow batteries good for distributed energy storage?

Among the above-mentioned flow batteries, the zinc-based flow batteries that leverage the plating-stripping process of the zinc redox couples in the anode are very promising for distributed energy storage because of their attractive features of high safety, high energy density, and low cost.

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