Ionic conduction of zinc-based flow batteries

Here, authors develop a tailored ionic-molecular sieve membrane that selectively intercepts hydrated ions, enabling stable high-capacity long cycling with low projected costs.

The size-sieving effect effectively suppresses polyiodide cross-over, enabling the utilization of porous membranes with high ionic conductivity.

Herein, we report the development of high-performance ion-conducting membranes with enhanced hydroxide ion selectivity and conductivity, specifically tailored for alkaline zinc-based flow ...

Herein, we develop a tailored ionic-molecular sieve membrane to regulate the transport behaviors of water/hydrated ion clusters, enabling the electrolyte balance by precise size sieving effects.

This review provides an in-depth understanding of all theoretical reaction mechanisms to date concerning zinc-iodine batteries. It revisits the inherent issues and solutions of zinc-iodine ...

In this perspective, we first review the development of battery components, cell stacks, and demonstration systems for zinc-based flow battery technologies from the perspectives of both ...

The exploration of enhancing ionic pathways involves multiple aspects such as the introduction of nano-fillers, optimization of polymer matrix, incorporation of ionic liquids, and other emerging methods.

The morphological evolution of zinc electrodes was controlled by using ionic liquids, 1-ethyl-3-methylimidazolium acetate (EMIA), and 1-propylsulfonic-3-methylimidazolium tosylate ...

Here, high-conductivity thin Turing membranes prepared by Co²+ coordination with polybenzimidazole (OPBI) are designed and their efficient ion transport in the alkaline zinc-iron flow...

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