

Zinc-iodine liquid flow energy storage

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

With super high energy density, long cycling life, and a simple structure, a ZISFB becomes a very promising candidate for large scale energy storage and even for power batteries. A zinc-iodine single flow battery (ZISFB) with super high energy density, efficiency and stability was designed and presented for the first time.

Are aqueous zinc-iodine batteries suitable for energy storage?

Aqueous zinc-iodine batteries (AZIBs) are promising for cost-effective energy storage. However, some critical problems related to the slow reaction kinetics of iodine conversion, polyiodide shuttle effect and polyiodide corrosion greatly hinder their practical applications.

What is a zinc iodine single flow battery (zisfb)?

A zinc-iodine single flow battery (ZISFB) with super high energy density, efficiency and stability was designed and presented for the first time. In this design, an electrolyte with very high concentration (7.5 M KI and 3.75 M ZnBr₂) was sealed at the positive side. Thanks to the high solubility of KI, it fu

How does a zinc iodine redox flow battery work?

The core equipment of zinc-iodine redox flow batteries consists of an electrolyte circulation system comprising pumps, storage tanks, and pipelines (Figure 14b,c), where the catholyte and anolyte circulate independently in the pumps. [36, 161 - 162] In contrast, static zinc-iodine batteries have a smaller amount of electrolyte and it is static.

Why do zinc iodine batteries have a low energy density?

This leads to slower iodine redox kinetics, exacerbates the generation of intermediates, and makes the self-discharge of zinc-iodine batteries more severe. Therefore, the insufficiently high iodine loading has consistently led to unsatisfactory energy densities in zinc-iodine batteries.

What are aqueous zinc iodine batteries?

The aqueous zinc-iodine batteries, a new type of aqueous zinc-ion battery, the mechanism for its electric energy storage relies on the reversible oxidation-reduction process between the zinc anode and the iodine cathode.

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