GOODS CONTAINERS

Aqds flow battery

Overview

The example we demonstrate is a metal-free flow battery based on the redox chemistry of 9,10-anthraquinone-2,7-disulphonic acid (AQDS).

How does aqueous flow battery (AQDS) perform reversible two-electron two-proton reduction?

AQDS undergoes extremely rapid and reversible two-electron two-proton reduction on a glassy carbon electrode in sulphuric acid. An aqueous flow battery with inexpensive carbon electrodes, combining the quinone/hydroquinone couple with the Br2/Br− redox couple, yields a peak galvanic power density exceeding 0.6 W cm−2 at 1.3 A cm−2.

What is a aqueous flow battery?

An aqueous flow battery with inexpensive carbon electrodes, combining the quinone/hydroquinone couple with the Br2/Br− redox couple, yields a peak galvanic power density exceeding 0.6 W cm−2 at 1.3 A cm−2. Cycling of this quinone–bromide flow battery showed >99 per cent storage capacity retention per cycle.

What is AQDS NH4 2 flow battery chemistry?

The present AQDS (NH 4) 2 flow battery chemistry opens a new avenue to apply anthraquinone molecules in developing low-cost and benign pH-neutral flow batteries for scalable energy storage.

What are aqueous redox flow batteries?

Among various ESS candidates, aqueous redox flow batteries (ARFBs) have emerged as a powerful solution due to their ability to store the large amount of energy and their rapid response time [, , ,]. However, despite such benefits, ARFBs have several issues that need to be addressed.

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Aggregation and Capacity Limiting Effects in Anthraquinone-Based Flow

Feb 1, 2024 · Anthraquinone-based molecules are promising electroactive materials for use in aqueous organic flow batteries. At high concentrations in aqueous solutions, the well-known ...

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Dec 14, 2016 · Organic molecules are currently investigated as redox species for aqueous low-cost redox flow batteries (RFBs). The envisioned features of using organic redox species are ...

[Understanding Aqueous Organic Redox Flow Batteries: A ...]

Oct 19, 2022 · Using a well-studied chemistry of anthraquinone (AQDS)-based anolyte and Na4 [Fe (CN)6] catholyte, different techniques for the characterization of RFBs were described. The ...

[A pH-Neutral, Metal-Free Aqueous Organic Redox Flow Battery ...]

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