Total ions discharged from zinc-cerium flow battery

Herein, a dual-membrane cell configuration with an ion transpiration hub is designed to enable the use of custom-assigned charge carriers, which block the notorious H + poisoning on the zinc side, to ...

Since the 2010s, the electrochemical properties and the characterisation of a zinc-cerium redox flow battery have been identified by the researchers of Southampton and Strathclyde Universities.

In this study, the crossover of the electroactive species Zn (II), Ce (III), Ce (IV), and H + across a Nafion 117 membrane was measured experimentally during the operation of a bench-scale hybrid Zn-Ce ...

This Zn-Ce FB was introduced in the early 2000s, building upon the proven industrial electrolysis of cerium ions for mediated organic electrosynthesis and specialist oxidative cleaning together with the ...

In the previously reported life-cycle analyses of zinc-cerium RFBs, the battery was subjected to a number of charge/discharge cycles until the capacity of the battery faded and no useful...

In a traditional dual-flow battery system with dissolved active species, two electrolyte tanks containing dissolved active species are separated by a membrane. The active species undergo redox ...

The zinc and cerium ions are dissolved in an acidic electrolyte, typically methanesulfonic acid (MSA), which facilitates ionic conduction between the electrodes.

3 zinc ions in 2.7 mol dm 3 methane sulfonic acid. This led to the formation o. more uniform deposits and minimised dendritic growth. The surfaces of the substrates following numerous zinc deposition-dissolution cycl.

The charge and discharge characteristics of the redox flow battery were studied under different operating conditions and Zn/Ce reactant, as well as methansulfonic acid concentration. The cell performance ...

The zinc-cerium redox flow battery was first proposed by Clarke and co-workers in 2004, which has been the core technology of Plurion Inc. (UK). In 2008, Plurion Inc. suffered a liquidity crisis and was under liquidation in 2010 and the company was formally dissolved in 2012. However, the information of the experimental conditions and charge-discharge performance described in the early patents of Plurion Inc. are limited. Since the 2010s, the electrochemical properties and the characterisation of a zinc-cerium redox flow battery have been identifie...

Chapter 3 presents an in situ investigation of the sources of voltage loss during discharge of a zinc-cerium

redox ow battery and the contributions of each side to the overall voltage loss.

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