Short Communication

A New Single Flow Zinc-Nickel Hybrid Battery Using a Ni(OH)₂-O₂ Composite cathode

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A novel single flow zinc-nickel hybrid battery with a Ni(OH)₂-O₂ composite cathode was proposed. The electrolyte in this battery was a high-concentration KOH-K₂[Zn(OH)₄] solution, the anode was a copper foil electrodeposited with metallic zinc, and the cathode was the nickel hydroxide and oxygen composite electrode. High efficiencies were achieved with an average coulombic efficiency of 99.2% and an energy efficiency of 84.2% during the first 500 cycles. At the same time, no zinc dendrites accumulated on the negative electrode at the end of the discharge process. The high performance indicates that the single flow zinc-nickel battery with the new designed nickel hydroxide and oxygen composite electrode is a promising energy storage system.

Keywords: zinc-nickel hybrid battery; single flow battery; high-efficiency; hybrid structure

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