

# Copper Modified MnO Nanosphere Composite Cathode Material for Aqueous Rechargeable Zinc-ion Battery

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## Abstract

Manganese oxides are promising cathode materials for aqueous zinc-ion batteries due to their safety, abundance, low cost and high theoretical capacity. However, the high dissolution of Mn, complex reaction mechanism, poor cycle stability and sluggish reaction kinetics hinder the large-scale applications of Mn-based cathodes. Herein, we report copper modified MnO (Cu-MnO) nanosphere composite cathode synthesized by hydrothermal and calcination methods as a new zinc-ion storage material. The XAS result demonstrates that the original structure undergoes phase change to the amorphous layered phase, which becomes the dominant structure for the subsequent electrochemical reactions. The as-prepared Cu-MnO cathode delivers impressive capacity and long cycle life.

**Key words:** Electrochemical properties, manganese (II) oxide, Rechargeable zinc-ion batteries, Structural evolution

