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PREPARATION AND CHARACTERIZATION OF CALCIUM ZINCATE SYNTHESIZED BY MICROWAVE METHOD

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Abstract

Calcium zincate as an active material in Zn/Ni secondary battery has been successfully synthesized by microwave method. The sample was characterized by X-ray diffraction (XRD), thermogravimetric analysis, scanning electron microscope (SEM), charge-discharge test (CT) and cyclic voltammetry (CV) analysis. The results show that the chemical composition of sample is $\text{Ca}(\text{OH})_2 \cdot 2\text{Zn}(\text{OH})_2 \cdot 2\text{H}_2\text{O}$ with regular spherical shapes. The results from CV and CT measurement indicate that the battery has very high discharge plateau of 1.688 V as well as an initial discharge capacity $246.48 \text{ mAh.g}^{-1}$, and the battery capacity does not decay much during 120 cycles, exhibiting good prospect for practical use especially at high discharge rate.

Key words: microwave synthesis, calcium zincate, Ni/Zn battery, electrochemical performance

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