

PROCESS AND PRODUCT TECHNOLOGY

羟基氧化镍的电解制备、结构表征和电化学性能研究

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摘要 NIOOH was prepared by one-step electrolysis of spherical Ni(OH)₂ and the effects of electrolysis parameters were examined. The highly pure NIOOH was obtained after electrolysis at a current density of 60mA·g⁻¹ and 30°C with anodic potential controlled in the range of 1.73–1.85V (vs. Zn/ZnO) for 360min. The NIOOH samples were characterized by X-ray powder diffraction (XRD) and scanning electron microscope (SEM) analysis. Results indicate that the electrolysis product is spherical NIOOH doped with graphite. Charge and discharge tests show that the prepared NIOOH offers a discharge capacity of over 270mAh·g⁻¹ at current density of 30mA·g⁻¹ and can be directly used as cathode material of alkaline Zn/NIOOH batteries. Galvanostatic charge/discharge and cyclic volt-ammetry (CV) tests reveal good cycling reversibility of the NIOOH electrode.

关键词 [NIOOH](#), [electrolysis](#), [current density](#), [discharge capacity](#), [cycling reversibility](#).

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Electrolytic preparation, structure characterization and electrochemical performance of NIOOH

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Abstract NIOOH was prepared by one-step electrolysis of spherical Ni(OH)₂ and the effects of electrolysis parameters were examined. The highly pure NIOOH was obtained after electrolysis at a current density of 60mA·g⁻¹ and 30°C with anodic potential controlled in the range of 1.73–1.85V (vs. Zn/ZnO) for 360min. The NIOOH samples were characterized by X-ray powder diffraction (XRD) and scanning electron microscope (SEM) analysis. Results indicate that the electrolysis product is spherical NIOOH doped with graphite. Charge and discharge tests show that the prepared NIOOH offers a discharge capacity of over 270mAh·g⁻¹ at current density of 30mA·g⁻¹ and can be directly used as cathode material of alkaline Zn/NIOOH batteries. Galvanostatic charge/discharge and cyclic volt-ammetry (CV) tests reveal good cycling reversibility of the NIOOH electrode.

Key words [NIOOH](#), [electrolysis](#), [current density](#), [discharge capacity](#), [cycling reversibility](#).

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