

锌镍电池负极的循环伏安行为

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摘要: 采用粉末微电极研究了锌镍电池负极活性物质 ZnO 、 $Zn_4SO_4(OH)_6$ 和 $CaZnO_2$ 在 1.8 mol/L K_2CO_3 、1.8 mol/L KF 和 3 mol/L 的 KOH 电解液中的循环伏安行为。研究了峰值电流电势与扫描速度的关系, 推导出了锌镍电池负极活性物质循环伏安的可逆性区间, 比较了活性物质的可逆性, 发现氧化锌表现出更好的可逆性。计算了 3 种活性物质制备的锌负极在可逆性区间内的平衡电极电位。

关键词: 锌镍电池; 氧化锌; 锌酸钙; 碱式硫酸锌; 循环伏安法

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Cyclic voltammetry performance of negative electrode in Zn/Ni battery

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Abstract: The cyclic voltammetry performance of active material which was respectively made of ZnO , $CaZnO_2$ and $Zn_4SO_4(OH)_6$ in negative electrode of Zn/Ni battery was tested by powder microelectrode in 1.8 mol/L K_2CO_3 , 1.8 mol/L KF and 3 mol/L KOH alkaline electrolyte. The relationship between current, potential in peak value and scan rate was studied as well as the reversible interval of cyclic voltammetry of active materials in negative electrode of Zn/Ni battery was derived. The reversibility among active materials was compared and the result showed the reversibility of zinc oxide was the best. The equal electrode potentials of negative electrodes were calculated in the reversible interval.

Key words: VRLA battery; lead carbonate; PAM; cycle voltammogram; EIS; SEM; chemical structure water