

研究论文

纳米氧化物对MH/Ni电池负极电化学性能影响的研究

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摘要 采用纳米氧化铜作为添加剂掺杂制备MH/Ni电池负极,研究了氧化铜在电极内部的反应机理,考察了修饰后电极储备容量的变化,及电极的电化学性能,并应用EIS方法探讨了电极性能改善的作用机理.

循环伏安测试表明,氧化铜在首次充电时被还原成铜并沉积在合金颗粒表面. 电化学测试表明,掺杂后合金电极的电化学性能显著提高. EIS分析表明,掺杂后合金电极的导电性提高,电化学活性增强.

关键词 [纳米氧化铜](#) [MH/Ni电池](#) [电化学性能](#) [电动车](#)

分类号

Study on the Influence of Nanometric Oxide on the Electrochemical Performance of Negative Electrode in Nickel Metal Hydride Batteries

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Abstract The negative electrode of MH/Ni battery with nanometric cupric oxide additive was prepared. The changes of storage capacity and mass of LaNi₅ metal hydride electrode with nanometric CuO additive and the electrochemical performance of the electrode were investigated. Cyclic voltammograms and SEM results indicated that CuO was reduced during first charging process and copper particles were deposited on the surface of alloy. Electrochemical testing results showed that the electrode with additive had better rate capability and cycle performance. Electrochemical impedance spectroscopy analysis indicated that the electrode with additive had higher activity and electrical conductivity, and lower ohmic and electrochemical impedance, which can help to improve the electrochemical properties of the electrode.

Key words [nanometric copper oxide](#) [nickel metal hydride battery](#) [electrochemical performance](#) [electric vehicle](#)

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