

论文摘要

中国有色金属学报

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热处理对低Co贮氢合金M1 (NiCoMnAlFe)₅

电化学性能的影响

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摘要: 系统研究了热处理对低Co贮氢电极合金M1 (NiCoMnAlFe)₅电化学性能的影响。结果表明, 铸态合金的放电容量为297 mA·h/g, 经268次充放电循环后的容量保持率为68%; 经热处理后, 合金的放电容量提高至302 mA·h/g, 268次充放电循环后的容量保持率提高至80%, 热处理提高了合金的放电容量和循环稳定性; 同时发现热处理会导致合金高倍率放电特性的恶化。XRD测试表明, 热处理降低了晶格应力与晶格缺陷, 改善了合金的成分均匀性, 从而提高了合金的放电容量和循环稳定性。

关键字: 热处理; 低Co贮氢合金; 晶体结构; 电化学性能

Effects of heat treatment on electrochemical properties of low Co contained M1 (NiCoMnAlFe)₅ hydrogen storage alloy

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Abstract: Effects of heat treatment on the electrochemical properties of low Co contained M1(NiCoMnAlFe)₅ hydride electrodes were investigated. The results of electrochemical measurement show that the discharge capacity and electrochemical cycling stability of hydride electrodes are improved after heat treatment, meanwhile heat treatment results in the deterioration of high rate dischargeability (HRD) of hydride electrodes. The results of XRD show that because heat treatment enhances the compositional homogeneity, and reduces the lattice strain and defects of the as cast alloy, the electrochemical properties of hydride electrodes are improved.

Key words: heat treatment; low Co contained hydrogen storage alloy; crystal structure; electrochemical properties

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