

论文摘要

中国有色金属学报

ZHONGGUO YOUSEJINSHUXUEBAO XUEBAO

第19卷 第6期 (总第123期) 2009年6月

 [PDF全文下载]  [全文在线阅读]

文章编号: 1004-0609(2009)06-1068-06

热处理温度对电沉积纳米晶Ni-Fe合金箔的组织与性能的影响

董虎林, 郭占成, 刘丽妍

(北京科技大学 生态与循环冶金教育部重点实验室, 北京 100083)

摘要: 在氢气气氛下对电沉积法制备的粒径10 nm左右的纳米晶Ni-Fe合金箔进行中温热处理(200、300、400和500 °C); 利用扫描电镜观察合金箔的截面组织形貌; 采用X射线衍射仪检测合金箔的晶体结构和粒径; 利用软磁材料直流磁性测试装置测试合金箔的直流磁特性。结果表明: 在氢气气氛中, 300 °C热处理保温1 h后, 合金箔的粒径维持在10 nm左右, 且直流磁性能最好, 最大磁导率达到56.4 mH/m, 饱和磁感应强度为1.56 T, 矫顽力降至15.0 A/m。

关键字: 纳米晶; 热处理; 电沉积; Ni-Fe合金箔; 直流磁特能

Effect of heat treatment temperature on microstructure and properties of nanocrystalline Ni-Fe alloy foils prepared by electrodeposition

DONG Hu-lin, GUO Zhan-cheng, LIU Li-yan

(Key Laboratory of Ecological and Recycle Metallurgy, University of Science and Technology Beijing, Beijing 100083, China)

Abstract: Nanocrystalline Ni-Fe alloy foils with grain size of about 10 nm prepared by electrodeposition were annealed under hydrogen atmosphere at medium temperatures of 200, 300, 400 and 500 °C. The cross-section microstructure was observed by scanning electronic microscopy, and the crystal structure and grain size were studied by X-ray diffractometry. The direct-current magnetic properties were measured by direct-current magnetic property testing equipment. The results indicate that when the sample is annealed at 300 °C for 1 h, the grain size of Ni-Fe alloy foils is still about 10 nm and the Ni-Fe alloy foils have the best direct-current magnetic properties of maximum permeability 56.4 mH/m, saturation flux density 1.56 T and coercivity 15.0 A/m.

Key words: nanocrystalline; annealing; electrodeposition; Ni-Fe alloy foil; direct-current magnetic property

版权所有：《中国有色金属学报》编辑部 湘ICP备09001153号

地 址：湖南省长沙市岳麓山中南大学内 邮编： 410083

电 话： 0731-8876765, 8877197, 8830410 传真： 0731-8877197

电子邮箱： f-ysxb@mail.csu.edu.cn