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晶界工程处理对Incoloy 800 合金耐腐蚀性能和力学性能的影响

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Effect of Grain Boundary Engineering on Corrosion Resistance and Mechanical Proper of Incoloy 800 Alloy

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- 摘要
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摘要 通过扫描电子显微镜(scan electron microscopy, SEM)、光学显微镜和电化学工作站分析研究晶界工程(grain boundary engineering, GBE) 工艺对Incoloy 800 合金的耐蚀性能和力学性能的影响. Incoloy 800 合金在980 ℃ 固溶处理15 min, 冷轧5% 后在980 ℃退火15 min, 其耐晶间腐蚀能力和临界点蚀电位均显著提高, 抗拉强度和$\sigma_{0.2}$ 略有提高, 断后伸长率则变化不大.

关键词： Incoloy 800 合金 晶界工程 低ΣCSL 晶界 耐蚀性能 力学性能

Abstract： This work investigates the effect of grain boundary engineering (GBE) on the corrosion resistance and mechanical properties of Incoloy 800 alloy by scan electron microscopy (SEM), optical microscopy and electrochemical workstation. The resistance to intergranular corrosion and critical pitting potential of Incoloy 800 alloy are improved significantly after specimens are solution treated at 980 ℃ for 15 min, followed by 5% rolling reduction and then annealed at 980 ℃ for 15 min. The tensile strength and $\sigma_{0.2}$ increase slightly, while the elongation rate changes little.

Keywords： Incoloy 800 alloy, grain boundary engineering (GBE), low CSL (coincidence site lattice) grainboundary, corrosion resistance, mechanical property

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