论文

纳米化对M38高温合金电化学腐蚀行为的影响

白会平,王福会

中国科学院金属研究所，金属腐蚀与防护国家重点实验室，沈阳 110016

摘要：

通过动电位极化曲线和Mott-Schottky分析电化学方法，研究了M38合金纳米涂层在3.5% NaCl溶液中的电化学腐蚀行为.结果表明，在3.5% NaCl溶液中，纳米化虽然没有改变合金表面钝化膜的半导体类型(p型)，但是改善了钝化膜的致密性，降低了钝化膜中的载流子密度，提高了钝化膜的稳定性，所以，M38纳米涂层更耐氯离子侵蚀.

关键词： 纳米涂层 钝化膜 半导体特性 氯离子侵蚀

EFFECT OF NANOCRYSTALLIATION ON ELECTROCHEMICAL BEHAVIOR OF M38 SUPERALLOY

BAI Hui-ping, WANG Fu-hui

State Key Laboratory for Corrosion and Protection, Institute of Metal Research, Chinese Academy of Sciences, Shenyang 110016

Abstract:

Nanocrystallized coatings (NC) of superalloy M38 were prepared by magnetron sputtering on samples of cast M38 alloy. The electrochemical behavior was investigated by potentiodynamic and capacitance measurements for samples of the cast M38 alloy without and with sputtered coatings. The results showed that M38 NC had higher resistance to pitting corrosion than M38 cast alloy in 3.5% NaCl solution. Although the passive films formed on the cast alloy and the sputtering coating were p type, however the passive film formed on the latter was much compact with a lower density of carriers, thus exhibited a higher stability than that on the former.

Keywords: nanocrystalline coating alloy pitting corrosion passive film

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通讯作者: 白会平 Email:huipingbai@163.com

作者简介: 白会平 （1979-），女，博士，工程师，研究方向为纳米材料的电化学腐蚀行为.

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