

论文

Ti纳米粒子对环氧涂层防护性能的影响

邵亚薇;李瑛;王福会;杜元龙

兰州炼油厂设备所

摘要:

应用电化学阻抗法(EIS)、示扫描量热法(DSC)、X射线光电子谱(XPS)研究了添加Ti纳米粒子对环氧涂层防护性能的影响.结果表明:添加Ti纳米粒子可以提高环氧涂层的防护性能,添加量在0.5%(以w/w计)时最好.这是由于添加Ti纳米粒子虽然可增加涂层孔隙率,但Ti纳米粒子与环氧树脂之间存在的相互作用可改善涂层对腐蚀性介质的屏蔽性能,提高涂层的防护性能.

关键词: 纳米Ti粉 环氧树脂 EIS 防护性能

Effect of nano-Ti pigment on the corrosion resistance of an epoxy coating

Yawei Shao;Ying Li;Fuhui Wang;Yuanlong Du

兰州炼油厂设备所

Abstract:

Electrochemical impedance spectroscopy (EIS) was coupled with differential scanning calorimetry (DSC) and X-ray photoelectron spectroscopy (XPS) methods to investigate the effects of nano-Ti particle on the corrosion resistance of an epoxy coating on carbon steel.Four systems were studied:a clear coat and three pigmented coatings (with 0.1%,0.5%,1% nano-Ti).Impedance measurements showed that nano-Ti particle could improve the corrosion resistance of the coating;and the optimal addition is 0.5% (mass%).The results obtained by DSC and XPS showed that the nano-Ti particle enhanced interactions with epoxy resin.Addition the nano-Ti particles into epoxy resin can act two opposite effects: the beneficial effect is attributed to a chemical reaction between the nano-Ti powder and the epoxy resin,which improves the barrier effectiveness of the coating; this outweighs the harmful effect of an increase in the number of pores in the coating.

Keywords: Epoxy resin nano-Ti powder EIS. Corrosion resistance

收稿日期 2004-11-08 修回日期 2005-02-22 网络版发布日期 2006-04-25

DOI:

基金项目:

通讯作者: 邵亚薇

作者简介:

本刊中的类似文章

Copyright 2008 by 中国腐蚀与防护学报

扩展功能

本文信息

Supporting info

PDF(197KB)

[HTML全文](1KB)

参考文献[PDF]

参考文献

服务与反馈

把本文推荐给朋友

加入我的书架

加入引用管理器

引用本文

Email Alert

文章反馈

浏览反馈信息

本文关键词相关文章

- ▶ 纳米Ti粉
- ▶ 环氧树脂
- ▶ EIS
- ▶ 防护性能

本文作者相关文章

- ▶ 邵亚薇
- ▶ 李瑛
- ▶ 王福会
- ▶ 杜元龙