

论文

防锈油膜在5% Na₂SO₄溶液中的半导体导电行为

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摘要:

采用电位-电容法及Mott-Schottky分析技术研究了自腐蚀电位条件下防锈油膜在5% Na₂SO₄溶液中失效过程的导电机制转变行为.防锈油膜在5% Na₂SO₄溶液中的失效过程存在半导体导电特征,随着浸泡时间的延长,防锈油膜从浸泡初期的p型半导体转变为n型半导体,转变过程中,防锈油膜中出现两个空间电荷过渡层.随着浸泡时间的延长,防锈油膜中的空间电荷层厚度皆逐渐减小,载流子密度则逐渐增加,并且计算了不同转变时期防锈油膜中的电子给体(ND)和电子受体(NA)密度大小.

关键词: 防锈油膜 导电机制 型半导体

Abstract:

2003-04-11 2003-06-03 SEMI CONDUCTIVE BEHAVIOR OF RUST PREVENTIVE OIL COATING IN 5% Na₂SO₄ SOLUTION DURING ITS DEGRADATION ZHONG Qing-Dong(1),ZHENG Jin(1,2),XU Nai-Xin(2),YIN Ren-He(2),ZHOU Guo-Ding(1) 1 Electrochemical Research Group,Shanghai University of Electric Power, Key Laboratory of State Power Corporation of China; 2 Department of Chemistry,Shanghai University; 3 Shanghai Institute of Microsystem and Information Technology,Chinese Academic of Science In this paper,conducting transformation of rust preventive oil coating in 5% Na₂SO₄ solution under corrosion potential was studied by utilizing potential capacitance method and Mott Schottky analysis.It was pointed out that there existed semiconducting behaviour of rust preventive oil coating during its degradation in 5% Na₂SO₄ solution.With increasing of immersion time,rust preventive oil coating transformed from p type semiconductor at the early stage of immersion to n type semiconductor,two reverse space charge layers gradually formed in the rust preventive oil coating.The thickness of space charge layers in the oil coating decreased along with immersion time,however,the density of charge carriers in the oil coating increased with increasing immersion time.ND and NA of oil coating in different transition process were also calculated. rust preventive oil coating;degradation;conducting mechanism;p type semiconductor;n type semiconductor

Keywords:

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