

论文

316L不锈钢在NaCl溶液微动过程中局部腐蚀作用研究

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摘要:

采用球-平面接触微动磨损设备,对轧制固溶316L不锈钢在0.9%NaCl溶液微动过程中局部腐蚀的作用进行了研究.结果表明微动是使不锈钢发生腐蚀的主导因素.开路状态下,316L不锈钢在微动过程中发生严重缝隙腐蚀,金属离子在微动区外发生氧化反应,生成碱性氢氧化物沉淀,加剧了微动区中心的贫氧特征,并改变了材料表面钝化膜与基体间的应力状态,使用权材料表面氧化膜发生局部损伤,成为主导微动损伤扩展的主要因素之一.在强阳极极化态下,微动区边缘磨屑诱发点蚀,促进了微动损伤区的扩展过程,才增大了不锈钢的微动失重.

关键词: 微动 缝隙腐蚀 点蚀 316L不锈钢 0.9%NaCl溶

THE EFFECT OF LOCALIZED CORROSION ON FRETTING ATTACK OF 316L STAINLESS STEEL IN 0.9% NaCl SOLUTION

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Abstract:

The effect of localized corrosion,such as crevice corrosion and pitting on fretting attack of solution annealed 316L stainless steel in saline solution, has been studied with ball-plane contacted fretting test system.The results suggested that fretting induced remarkable corrosion,and the combination of fretting and crevice-like condition made the material suffer severe corrosion damage.The oxidation of the fretting corrosion product resulted in alkaline deposit on the surface outside of the fretted center,which would play an important role in the fretting process.Debris could play some apparent role on the damage when fretting carried on under high anodic polarization condition.The concentration of debris on the edge of fretting area might accelerate the occurrence of pitting ,which made great contribution to the damage and the expansion of fretting scars.

Keywords: fretting crevice corrosion pitting 316Lstainless steel 0.9%NaCl solution

收稿日期 1999-08-16 修回日期 1900-01-01 网络版发布日期 2000-08-25

DOI:

基金项目:

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