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论文

1Cr18Ni9Ti不锈钢应力腐蚀开裂的电位扰动极化效应

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摘要： 在慢应变速率拉伸过程中通过施加恒电位、循环电位扫描及电位阶跃等不同的电位扰动极化方式，研究了1Cr18Ni9Ti奥氏体不锈钢在0．75mol·L-1HCl＋0．25mol·L-1NaCl溶液中的应力腐蚀开裂敏感性，并利用SEM观察断口形貌.结果表明，电位扫描速度和电位阶跃频率对裂纹萌生与扩展有显著影响.相同电位范围内，高频率电位阶跃比电位扫描导致更高的材料断裂敏感性

关键词： 1Cr18Ni9Ti不锈钢 应力腐蚀开裂 电位扰动 极化

EFFECT OF POTENTIAL PERTURBATION POLARIZATION ON THE STRESS CORROSION CRACKING OF 1Cr18Ni9Ti STAINLESS STEEL

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Abstract: The SCC susceptibility of 1Cr18Ni9Ti austenitic stainless steel in 0.75mol·L-1HCl +0.25mol·L-1NaCl solution has been studied by slow strain rate tests(SSRT) and SEM. During the slow rate tensile process, the specimen was polarized with different potential perturbation modes such as potentiostatic, cyclic potential scan and cyclic potential step methods. The results indicated that potential scan rate and step frequency played an essential role in the initiation and propagation of crack. Potential step at high frequency led to much higher cracking susceptibility than potential scan within the same potential ranges.

Keywords: 1Cr18Ni9Ti stainless steel stress corrosion cracking potential perturbation polarization

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