

论文

微尺度Ni悬臂梁试样的腐蚀和疲劳性能

张强^{1、2}, 郭兴蓬^{1、2}

1 华中科技大学 化学系, 武汉 430074 2 材料化学与服役失效湖北省重点实验室, 武汉 430074

摘要:

采用飞秒激光器制备了纯Ni微悬臂梁试样, 研究了它的腐蚀与腐蚀疲劳性能. 结果表明, 宏试样表面出现明显的局部腐蚀特征, 微试样表面主要表现为全面腐蚀特征; 载荷幅和介质中Cl⁻的含量对试样的疲劳寿命有显著的影响; 试样在疲劳断裂前的最大载荷逐渐降低.

关键词:

CORROSION AND FATIGUE BEHAVIOR OF MICRO-SIZED Ni CANTILEVER BEAMS

ZHANG Qiang^{1、2}, GUO Xing-peng^{1、2}

1 Chemistry Department, Huazhong University of Science and Technology, Wuhan 430074

2 Key Laboratory of Materials Chemistry and Service Failure of Hubei Province, Wuhan 430074

Abstract:

Micro-sized Ni cantilever beams with dimensions of 50 μm×50 μm×80 μm(h×W×L) were fabricated by femtosecond laser processing. Static corrosion and corrosion fatigue tests were carried out on the micro sized Ni cantilever beams. The results indicate that the micro sized specimens exhibit general corrosion behavior on the surface of specimens, on the contrary, localized corrosion behavior on the surface of ordinary sized plates. The fatigue lifes of micro-sized specimens were significantly influenced by load amplitudes and Cl⁻ contents in the corrosive solution, and the maximum bending loads for the micro-sized Ni specimens decreased gradually prior to final fracture.

Keywords: cantilever beam corrosion fatigue nickel micro-system

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通讯作者: 张强 Email: whzhang0077@163.com

作者简介: 张强 (1976-), 男, 博士研究生, 研究方向为微系统腐蚀与控制.

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