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研究报告

合金元素对铝基牺牲阳极性能的影响

李威力^{1,2}, 闫永贵², 陈光¹, 马力²

1. 南京理工大学材料科学与工程系 南京 210094

2. 中船重工七二五所 海洋腐蚀与防护重点实验室 青岛 266101

摘要: 通过合金化方法, 在Al-Zn-In三元牺牲阳极中依次添加Mg、Ti、Ga、Mn、Sn等元素, 炼制不同成分的铝合金牺牲阳极。采用电化学性能测试、极化曲线测量及扫描电子显微镜分析等手段分析了合金元素对铝合金牺牲阳极性能的影响。结果表明, 随着添加元素种类的增加, 牺牲阳极电化学性能提高。在Al-Zn-In三元阳极中加入Mg和Ti, 阳极溶解形貌更加均匀; 加入Ga与Sn后, 阳极的开路电位与工作电位负移; 加入Mn后阳极的电流效率提高。

关键词: 合金元素 溶解形貌 电流效率 电位

EFFECT OF ALLOY ELEMENTS ON ELECTROCHEMICAL PERFORMANCE OF ALUMINUM SACRIFICIAL ANODE

LI Weili^{1,2}, YAN Yonggui², CHEN Guang¹, MA Li²

1. Department of Materials Science of Engineering, Nanjing University of Science and Technology, Nanjing 210094

2. State Key Laboratory for Marine Corrosion and Protection, Luoyang Ship Material Research Institute, Qingdao 266101

Abstract: Elements such as Mg, Ti, Ga, Mn and Sn were added to the Al-Zn-In based ternary anode in order using alloying method and the aluminum sacrificial anodes with different incorporated elements were cast. The electrochemical performance test, polarization plots and scanning electron microscope technique were carried out to analyze the influence of several familiar elements to the performance of the aluminum anode. The experiment results indicated that with the increase of the adding element the anode electrochemical performance was improved. When the elements of Mg and Ti were added to Al-Zn-In ternary anode the dissolution morphology was more uniform. When Ga and Sn were added, the anode open-circuit potential and closed-circuit potential were more negative. When Mn was added, the current efficiency was promoted.

Keywords: alloying elements dissolution morphology current efficiency potential

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通讯作者: 李威力

作者简介: 李威力, 男, 1983年生, 博士生, 研究方向为金属材料腐蚀与防护

通讯作者E-mail: lwlwin@yahoo.com.cn

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