

### 论文摘要

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ZHONGGUO YOUSEJINSHUXUEBAO XUEBAO

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## Mg-Al系和Mg-RE系合金在NaCl溶液中的 腐蚀电化学行为

丁文江<sup>1, 2</sup>, 向亚贞<sup>3</sup>, 常建卫<sup>1, 4</sup>, 彭颖红<sup>4</sup>

- (1. 上海交通大学 材料科学与工程学院 轻合金精密成型国家工程研究中心, 上海 200240;
2. 上海交通大学 材料科学与工程学院 金属基复合材料国家重点实验室, 上海 200240;
3. 上海交通大学 环境科学与工程学院, 上海 200240;
4. 上海交通大学 机械与动力工程学院, 上海 200240)

**摘要:** 采用盐水浸泡法和电化学方法研究AZ91D镁合金和稀土镁合金Mg-3.0Nd-0.2Zn-0.4Zr(NZK)在5%(质量分数)NaCl溶液中的腐蚀行为。结果表明: NZK的腐蚀速率仅为AZ91D镁合金的1/2, 这主要是由于NZK中阴阳极之间的电位差和阴阳极面积比小于AZ91D的所致; AZ91D的腐蚀主要集中在局部区域, 形成较深的腐蚀坑, 而NZK的腐蚀沿合金表面进行, 形成比较均匀的浅腐蚀区域; NZK的腐蚀电位低于AZ91D的腐蚀电位; NZK稀土镁合金的耐点蚀能力高于AZ91D的。

**关键字:** AZ91D镁合金; Mg-RE合金; 腐蚀行为; 循环极化

## Corrosion and electrochemical behaviour of Mg-Al alloys and Mg-RE alloys in NaCl solution

DING Wen-jiang<sup>1, 2</sup>, XIANG Ya-zhen<sup>3</sup>, CHANG Jian-wei<sup>1, 4</sup>, PENG Ying-hong<sup>4</sup>

- (1. National Engineering Research Center of Light Alloys Net Forming, School of Materials Science and Engineering, Shanghai Jiao Tong University, Shanghai 200240, China;
2. Science and State Key Laboratory of Metal Matrix Composite, School of Materials Science and Engineering, Shanghai Jiao Tong University, Shanghai 200240, China;
3. School of Environmental Engineering, Shanghai Jiao Tong University, Shanghai 200240, China;
4. School of Mechanical and Power Engineering, Shanghai Jiao Tong University, Shanghai 200240, China)

**Abstract:** The corrosion behaviour of AZ91D and Mg-3.0Nd-0.2Zn-0.4Zr (mass fraction, %) alloy was investigated in 5% (mass fraction) NaCl solution by immersion test and electrochemical measurements. The immersion test shows that the corrosion rate of NZK is only half of that of AZ91D, which is attributed to the higher potential difference of the cathode-to-

anode phase and the anode matrix and higher cathode-to-anode area ratio of AZ91D than those of NZK. The corrosion of AZ91D concentrates on the certain areas and results in much deeper corrosion pits, while that of NZK spreads across the surface and leads to more uniform and shallow corroded areas. The corrosion potential of NZK is much lower than that of AZ91D indicated by the open circuit potential measurement. The cyclic polarization curves show that NZK alloy has higher pitting corrosion resistance than AZ91D.

**Key words:** AZ91D Mg alloy; Mg-RE alloy; corrosion behavior; cyclic polarization

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地 址：湖南省长沙市岳麓山中南大学内 邮编： 410083

电 话： 0731-88876765, 88877197, 88830410 传真： 0731-88877197

电子邮箱： [f-ysxb@mail.csu.edu.cn](mailto:f-ysxb@mail.csu.edu.cn)