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Study on the effect of electrolyte concentrations on anodizing for magnesium alloy AZ91D

ZHANG Yong-jun[1], LIAO Jing-yu[1], DUAN Hong-ping[2], YAN Chuan-wei[2]
(1. *Institute of Corrosion Protection & Surface Engineering, College of Industrial Equipment & Control Engineering, South China University of Technology, Guangzhou* 510640, *China*; 2. *State Key Laboratory for Corrosion & Protection, Research Institute of Metals, The Chinese Academy of Sciences, Shenyang* 110016, *China*)

Abstract: While all the other factors, including the constituents of electrolyteic solutions, which has effects on the formation of anodic films and their properties are fixed, the effect of electrolyte concentrations on anodizing for magnesium alloy AZ91D is investigated using the techniques of constant current density anodizing and potentiodynamic polarization test. As a result, it is found that electrolyte concentration has a very important effect on the courses and results of anodizing. If different electrolyte concentrations are chosen, both spark discharge phenomena and bath voltage behaviors are different during anodizing. Furthermore, the average growth rates of anodic films and the corrosion protections provided by them are different. The effect of electrolyte concentrations on anodizing for magnesium alloy should be attributed to their effect on the structures and thickness of anodic films.

Key words: magnesium alloy; anodizing; electrolyte concentration

纳米晶稀土贮氢合金

广州有色金属研究院开发的纳米晶稀土贮氢合金材料,具有优良的性能,适合于制作高容量的普通型及动力型的 Ni/MH 电池.该合金有适宜的平衡氢压,$p(H_2) = 8.31 \times 10^4$ Pa;较低的磁滞 $\lg(p_a/p_d) = 0.077$;低的平台斜率 $\lg(p_3/p_{1.5}) = 0.035$.用该合金制备的模拟电池的 0.2C 放电比容量为 340 mA·h/g.用该合金制备的 AA1800,AA2000 电池具有高的重量比能量和体积比能量.用该纳米晶贮氢合金制备的动力型Ni/MH电池,其 0.2C 放电比容量为 320 mA·h/g,10C 放电比容量大于 230 mA·h/g,高倍率放电能力 HRD 为 80%,其充放电循环稳定性可与用进口贮氢合金粉制备的动力型电池相媲美.目前,已建成了纳米晶稀土贮氢合金的生产线.