Short Communication

The Electrochemical Behavior of Mg-Al-Zn-In-Ga Alloy as Anode Materials in Sodium Chloride Solution

Jiarun Li^{1,2}, Kai Wan^{1,*} and Ning Wang^{1,2}

¹ Key Laboratory of Marine Environmental Corrosion and Bio-fouling, Institute of Oceanology, Chinese Academy of Sciences, Qingdao 266071, Shandong, China;

² University of Chinese Academy of Sciences, Beijing 100049, China

*E-mail: wank711011@163.com

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The microstructures and electrochemical behavior of Mg-Al-Zn-In-Ga alloys are investigated by scanning electron microscopy (SEM), X-ray diffraction (XRD), galvanostatic oxidation, potentiodynamic polarization and electrochemical impedance spectroscopy (EIS). Their performances as anode for Mg-CuCl water-activated battery are also evaluated. It is found that appropriate Ga alloying (1 wt.%) could promote the electrochemical properties of Mg-Al-Zn-In alloy, but over alloying (2 wt.%) may increase the self-corrosion and decrease the discharge capability. The Mg-6%Al-3%Zn-1%In-1%Ga alloy with desirable corrosion resistance and discharge performance is a kind of promising anode materials for broadening the Mg power sources application.

Keywords: Magnesium alloy; Electrochemical behavior; Anode materials; Corrosion; Discharge

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