Short Communication

Influence of Li_2CrO_4 as additive for NaCl electrolyte on Mg-air battery discharge performances

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Li_2CrO_4 in different amounts was used as an electrolyte additive for Mg-air batteries based on a 0.6 M NaCl solution in this study. The effect of Li_2CrO_4 content on the corrosion behaviour of AZ31 alloy in 0.6 M NaCl solution was studied by EIS curves, polarization curves and hydrogen evolution tests; the influence of Li_2CrO_4 content on the discharge performance of Mg-air batteries was studied by constant current discharge tests. The addition of Li_2CrO_4 in different amounts significantly improved the corrosion resistance of the AZ31 alloy and the anode efficiency of the Mg-air battery. The anode efficiency of the Mg-air battery increased obviously with the increase in the added amount of Li_2CrO_4 when this amount was less than 0.02 M but underwent no significant change when it was greater than 0.02 M. In addition, when the added amount of Li_2CrO_4 reached 0.1 M, the discharge voltage of the battery dropped dramatically, and the voltage lag time also increased greatly. Therefore, the optimal added amount of Li_2CrO_4 is 0.02 M.

Keywords: Mg-air batteries; Corrosion inhibitor; Anodic efficiency; Discharge potential; Electrolyte additive

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