Short Communication

Performance of Mg-air Battery Based on AZ31 Mg Alloy Sheets with Different Grain Sizes

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Mg-air batteries have attracted great attention recently because of their high energy density and lack of pollution. This paper studied the effect of grain sizes on the performance of Mg-air batteries. AZ31 Mg alloy sheets with different grain sizes were obtained through cold-rolling and annealing. The potentiodynamic polarization curves revealed that AZ31 Mg alloy sheets with fine grain sizes have higher electrochemical activity and better corrosion resistance compared to AZ31 Mg alloy sheets with coarse grain sizes. Mg-air batteries based on processed AZ31 alloy sheets were prepared, and the battery performances were investigated by a constant-current discharging test. The results show that the Mg-air battery based on a fine-grain anode exhibited a preferable discharge performance, including a higher discharge voltage and a higher anodic efficiency than those of the battery with a coarse-grain anode.

Keywords: Mg alloys, Grain size, Electrochemical property, Mg-air battery, Anodic efficiency, Discharge voltage

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