عنوان مقاله:

The Effect of Environmental Parameters on the Corrosion Behavior of Simple Shear Extruded AZ۹۱ Magnesium Alloys

محل انتشار:

مجله شیمی فیزیکی و الکتروشیمی, دوره 5, شماره 1 (سال: 1396)

تعداد صفحات اصل مقاله: 10

نویسندگان:

Ramineh Medhat - *Department of Materials Science and Engineering, Shiraz University, Shiraz, Iran*

Mahmoud Pakshir - *Department of Materials Science and Engineering, Shiraz University, Shiraz, Iran*

Khashayar Morshed Behbahani - *Department of Materials Science and Engineering, Shiraz University, Shiraz, Iran*

Pooria Najafisayar - *Department of Materials Science and Engineering, Shiraz University, Shiraz, Iran*

خلاصه مقاله:

In this study, the effects of forming method (extrusion) and environmental factors (solution pH and temperature) on the corrosion performance of AZ۹۱ magnesium alloys were investigated using potentiodynamic polarization, electrochemical impedance spectroscopy (EIS), scanning electron microscopy (SEM) and salt spray techniques. The polarization test results of the specimens showed that simple shear extrusion (SSE) process have adverse effect on the samples corrosion behavior in ۳.۵ wt% NaCl solution and corrosion current densities increased by increasing temperature/ decreasing pH of the solution. Moreover, the EIS test results showed that the increase in temperature or acidity of the solution led to decrease in charge-transfer resistance (Rct) at the electrode/solution interface for both as-cast and SSEed samples. In addition, the weight loss measurements, based on the salt spray test results, revealed that normally extruded samples have better corrosion performance than as-cast and SSEed ones which is in accordance with the electrochemical test results.

کلمات کلیدی:

AZ۹۱ magnesium alloy, Simple shear extrusion, Corrosion, Electrochemical impedance spectroscopy, Potentiodynamic test