

Corrosion Behavior of ZrCrMoNb High-entropy Alloy Coating in Ethylene Glycol Solution

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A novel ZrCrMoNb high-entropy alloy coating was prepared on 3A21 aluminum alloy and its corrosion behavior in ethylene glycol solution was studied. By polarization curve, electrochemical impedance spectroscopy (EIS) and scanning electron microscope (SEM), the effects of temperature and concentration of ethylene glycol on corrosion behavior of ZrCrMoNb high-entropy alloy coatings were analyzed. The results show that the corrosion resistance of ZrCrMoNb high-entropy alloy coating degraded with the increase of temperature, and the corrosion current density of ZrCrMoNb high-entropy alloy coating in ethylene glycol solution decreases significantly when the V/V concentration ethylene glycol changes from 15% to 30%, after that, the corrosion current density changed little with the increase of ethylene glycol concentration. Scanning electron microscope results display that the coating can improve the pitting corrosion resistance of 3A21 aluminum alloy in ethylene glycol solution.

Keywords: High-entropy alloy coating; ZrCrMoNb coating; Ethylene glycol solution; corrosion

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