Short Communication

Electrodeposition of Super-Hydrophobic Nickel Film on Magnesium Alloy AZ31 and Its Corrosion Resistance

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Super-hydrophobic surface has been widely studied owing to its various distinct functions. The original microstructures of the characteristic plant leaves, which are super-hydrophobic, have inspired researchers to design and manufacture synthetic super-hydrophobic surface. Among all the structural-metal materials, magnesium alloy, which is the lightest alloy, was restricted because of its low resistance to erosion. Through the nickel electrodeposition approach, a super-hydrophobic surface, which possess self-cleaning feature, was succeeded to be deposited on AZ31 Mg alloy. To study the wettability of the nickel film, which is super-hydrophobic, the surface was exposed under air ambient at room temperature, where the water contact angle is 151.7°. Moreover, electrochemical impedance spectroscopy (EIS) and Tafel polarization measurements were employed to evaluate the erosion resistance of the super-hydrophobic surface.

Keywords: Electrodeposition, Nickel, Magnesium alloy; EIS, Corrosion; Potentiodynamic polarization

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