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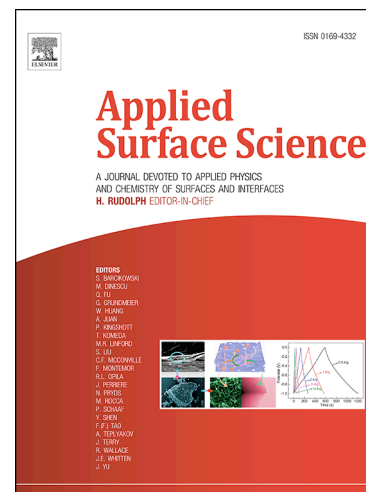
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Corrosion protection determine of $ZrO_2/AA7057$ nanocomposite coating with inhibitor using a mathematical ranking methods

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Abstract

Aluminium alloys have been used in the aerospace, automotive and military industrial applications. However, these alloys have the tendency to corrode when the contact with corrosive solution. Therefore, there are many trends to protect these alloys to increase the corrosion resistant by applying the coating. In this work, the zirconia coating doped with benzotriazole and cerium nitrate inhibitors was deposited on AL7075 Aluminium alloy. In order to evaluate the effect of inhibitor on the corrosion resistance, the different type of zirconia coatings were studied. Furthermore, the corrosion behavior of coating was investigated by electrochemical impedance spectroscopy (EIS) and polarization test. Finally the results showed that the homogeneous, uniformity and nanostructured of the zirconia coating was formed. Additionally, the zirconia coatings doped with BTA (4-layers contained inhibitor) showed the better corrosion resistant than the composite coating of (2-layer contained inhibitor) and the zirconia coatings (4 layers without benzotriazole). Finally, the analytic hierarchy process (AHP) and Technique of Order Preference Similarity to the Ideal Solution (TOPSIS) methods, depend on the criteria of

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