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Corrosion Prevention on Aluminum Alloy Abstract

Aluminum alloy (Al-alloy) is a widely used metal in construction, aerospace, aviation, and other necessary fields due to its lightweight and tweakable properties. However, corrosion is inevitable on metals and alloys, and that causes millions of dollars of revenue loss every year. Therefore, we propose to research fabricating coating to prevent corrosion on Al-alloy. This study uses an iron-based metal-organic framework (MOF) and polyurethane (PU) based composite coating to prevent corrosion on the Al-alloy. The makeup of the composite material is changed by varying the percentage of MOF. In addition, a binder is also used to enhance the homogenization between MOF and PU. We characterize the coating by FTIR, XRD, UV-visible-DRS, and SEM. The corrosion prevention properties of the coating are assessed using electrical impedance spectroscopy (EIS) and potentiodynamic polarization (PDP).