

Corrosion Resistance of Mild Steel Coated with Different Polyimides/h-Boron Nitride Composite Films

Authors : Tariku Nefo Duke

Abstract : Herein, we synthesized three PIs/h-boron nitride composite films for corrosion resistance of mild steel material. The structures of these three polyimide/h-boron nitride composite films were confirmed using (FTIR, ¹H NMR, ¹³C NMR, and 2D NMR) spectroscopy techniques. The synthesized PIs composite films have high mechanical properties, thermal stability, high glass-transition temperature (T_g), and insulating properties. It has been shown that the presence of electroactive TiO₂, SiO₂, and h-BN, in polymer coatings effectively inhibits corrosion. The h-BN displays an admirable anti-corrosion barrier for the 6F-OD and BT-OD films. PI/ h-BN composite films of 6F-OD exhibited better resistance to water vapor, high corrosion resistance, and positive corrosion voltage. Only four wt. percentage of h-BN in the composite is adequate.

Keywords : polyimide, corrosion resistance, electroactive, T_g

Conference Title : ICEEE 2022 : International Conference on Electrochemistry and Electrochemical Engineering

Conference Location : San Francisco, United States

Conference Dates : September 27-28, 2022