Preparation and Anticorrosive Properties of Oligoaniline Modified Silica Coatings

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Novel trianiline-containing sol-gel hybrid coatings were prepared by one-step electrodeposition technology on the surface of Q235 steel. The chemical component, microstructure of the as-prepared coatings were measured by FTIR, UV-vis, SEM. The effects of deposition time on the thickness, contact angle (CA) and surface roughness of coatings were investigated. The results showed that the modified silica coatings exhibited an excellent hydrophobic nature. By comparing with various deposition times (100, 300, 500, 700 s) under the deposition potential of -1.5 V, the coating under the deposition time of 500 s presented the best anti-corrosion effectiveness for bare steel substrate in 3.5 wt.% NaCl solution as verified by Tafel curves and electrochemical impedance spectroscopy (EIS).

Keywords: Oligoaniline; Sol-Gel coating; Electrodeposition; Corrosion resistance; Hydrophobicity

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