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Electrochemical synthesis and corrosion properties of polyaniline coating on aluminum

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Electrochemical polymerization of Polyaniline (PANI) film on aluminum electrode from aqueous solution of 0.20 mol dm^{-3} sodium benzoate containing 0.25 mol dm^{-3} aniline have been investigated using potentiodynamic and galvanostatic techniques. Corrosion behavior of aluminum and PANI coated aluminum electrode during initial exposure to 3% NaCl have been investigated using electrochemical potentiodynamic and impedance spectroscopy technique (EIS). It was observed that thin PANI coating of estimated thickness of $10 \mu\text{m}$ had provided good initial corrosion protection of aluminum in 3% NaCl, decreasing the corrosion current density at least 15 times.

Key words: polyaniline, electrochemical polymerization, corrosion