

Corrosion Protection of Steel 316 by Electrochemically Synthesized Conductive Poly (O-Toluidine)

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Abstract : The corrosion protection effect of poly(o-toluidine) (POT) coated on steel 316 electrode was determined in corrosive media such as NaCl, H₂SO₄ and HCl with the use of Tafel curves and electrochemical impedance spectroscopy techniques. The POT coatings were prepared with cyclic voltammetry technique in aqueous solution of oxalic acid and they were characterized by FTIR and UV-Visible absorption spectroscopy. The Tafel curves revealed that the POT coating provides the most effective protection compared to the bare steel 316 electrode in NaCl as corrosive medium. The results were evaluated based upon data decrease of corrosion current and shift to positive potentials with the increase of number of scans. Electrochemical impedance spectroscopy measurements were found to support Tafel data of POT coating.

Keywords : corrosion, impedance spectroscopy, steel 316, poly(o-toluidine)

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