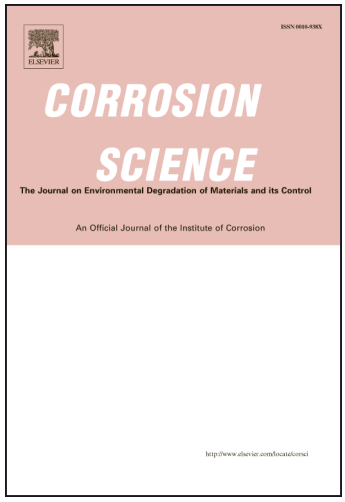

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Experimental Studies of 2-Pyridinecarbonitrile as Corrosion Inhibitor for Mild Steel in Hydrochloric Acid Solution

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Abstract

The effect of 2-Pyridinecarbonitrile (2-PCN) was studied on mild steel (MS) corrosion in 0.1 mol L^{-1} HCl by electrochemical impedance spectroscopy (EIS), linear polarisation resistance (LPR) and potentiodynamic polarisation measurements. The surface morphologies of the MS were investigated in the inhibitor-free and in the presence of 10 mmol L^{-1} 2-PCN containing corrosive media, at 120 h exposure period by scanning electron microscopy (SEM). The mechanism of adsorption was determined from the potential of zero charge (E_{pzc}). 2-PCN adsorption on the MS surface obeyed the isotherm of Langmuir and the thermodynamic parameters K_{ads}; ΔG°_{ads} were also calculated and discussed.

Keywords: A. Mild steel, B. EIS, B. SEM, C. Acid corrosion

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