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Experimental and quantum chemical studies on corrosion inhibition performance of synthesized Schiff base for mild steel in acidic media

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Abstract : The effect of synthesized Schiff base 4,4'-bis(2-carboxaldehyde thiophene) diphenyl diimino ethane (L) on the corrosion of mild steel in acidic media 1 M HCl has been investigated using electrochemical impedance spectroscopy (EIS) and potentiodynamic polarization. These studies have shown that (L) is a good corrosion inhibitor for mild steel in 1M HCl. The adsorption of inhibitor on mild steel surface was found to follow Langmuir isotherm model and the adsorption isotherm parameters (K_{ads}, $?G^0_{ads}$) were determined. Quantum chemical calculations were further applied to reveal the adsorption structure and explain the experimental results

Keywords : Mild steel, corrosion inhibition, adsorption isotherm, Quantum chemical studies