Evaluation of Cleome Droserifolia (Samwah) as Green Corrosion Inhibitor for Mild Steel in 1 M HCl Solution

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Cleome Droserifolia (Samwah) extract (CDE) was investigated for its capability to prevent mild steel (MS) corrosion in HCl (1.0 M) by means of mass loss (ML) and electrochemical (e.g. Tafel polarization (TP), electrochemical frequency modulation (EFM), electrochemical impedance spectroscopy (EIS)) techniques. The inhibitor protection (IP) improved with rise in inhibitor concentration and lowered with decrease the temperature. Tafel polarization (TP) showed that this extract acts as mixed kind inhibitor. CDE was adsorbed physically on MS surface obeying Langmuir adsorption isotherm. Surface analyses via atomic force microscope (AFM) and scanning electron (SEM) showed a significant surface of the MS. The CDE was used to be the best corrosion inhibitor for MS in 1.0 M HCl as all utilized techniques report.

Keywords: Corrosion inhibition, Cleome Droserifolia (Samwah) extract, mild steel, HCl, SEM, AFM

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