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4-Ethylcyclohexanonethiosemicarbazone as Corrosion Inhibitor for Iron Metal in 0.5N Hydrochloric Acid Solutions

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Abstract : The corrosion inhibition of iron (Fe) metal in acidic medium (0.5N HCl) in the presence of synthesized 4-ethylcyclohexanonethiosemicarbazone (ECHTSC) has been investigated by the weight loss method. The protective layer of thiosemicarbazone on Fe surface was confirmed by scanning electron microscopy (SEM). Inhibition efficiency, corrosion rate and surface coverage were evaluated at different concentrations of thiosemicarbazone in 0.5N HCl. The adsorption equilibrium constant (K_{ads}) and standard free energy of adsorption (ΔG_{ads}) were calculated. The values of free energy of adsorption (ΔG_{ads}) revealed that the inhibitor was adsorbed on the Fe surface via both physical and chemical adsorption mechanisms.

Keywords: 4-ethylcyclohexanonethiosemicarbazone (ECHTSC), Iron (Fe), Adsorption, Acidic Medium, SEM.

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