Expired Paracetamol as Corrosion Inhibitor for Low Carbon Steel in Sulfuric Acid. Electrochemical, Kinetics and Thermodynamics Investigation

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Expired paracetamol is used as efficient inhibitor for the general and pitting corrosion of low carbon steel (LCS) in 1.0 mol L⁻¹ H₂SO₄ solution. Three electrochemical tests are used to measure the inhibition efficacy. The inhibition efficacy increases with increasing the concentration of the expired paracetamol and with lowering temperature. The outcomes indicate the values of corrosion current density and capacity of the double layer decrease while the charge transfer and the inhibition efficacy increase. The values of pitting potential are moved to more positive trend. These outcomes emphasize the inhibitory strength of expired paracetamol. The inhibition can be explicated in term of the spontaneous adsorption of the complex formed between iron (II) ion and paracetamol on the surface LCS. The adsorption followed Langmuir isotherm. The thermodynamics parameters for the activation and adsorption process were assessed from the study of impact temperature

Keywords: Low carbon steel, Expired paracetamol, Polarization, Adsorption, Corrosion inhibitor.

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