Electrochemical study on the Efficiency of Curcuma extract as a green Inhibitor for Corrosion of α - brass in 1MHCl

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The effect of Curcuma as a corrosion inhibitor compound for the corrosion of α -brass in 1.0 M HCl was studied using chemical and electrochemical techniques. The inhibition effect was attributed to the adsorption of the compound on the α -brass surface. The data obtained fit well to Freundlich and Henry adsorption isotherms. Potentiodynamic measurements indicated that; Curcuma considers a mixed-type inhibitor for α -brass in 1.0 M HCl. Curcuma was found to have high corrosion inhibition efficiency as indicated from the results of weight loss, potentiodynamic polarization, EFM and electrochemical impedance spectroscopy (EIS) measurements. AFM technique was performed and the results showed superior inhibition efficiency of Curcuma. The efficiencies obtained from all different techniques were in a good agreement, which prove the validity of these tools in the measurements of the tested inhibitor.

Keywords: α -brass; corrosion inhibition; Curcuma; HCl; EIS; AFM; FTIR

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