Corrosion Inhibition Effect and Adsorption Activities of methanolic myrrh extract for Cu in 2 M HNO₃

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Myrrh extract was tested as inhibitor on the corrosion of Cu in 2M HNO₃ solution. These Tests were done by several procedures like weight loss procedure (WL), Potentiodynamic polarization (PL), electrochemical frequency modulation (EFM) and AC impedance spectra (EIS). The Cu surface was examined by utilizing atomic force microscope (AFM), scanning electron microscopy (SEM), Fourier transform infra-red (FT-IR) techniques. PL curves give indication that the myrrh acts as mixed type inhibitor. The WL, EIS and EFM results displayed that the inhibition efficiency (%IE) rise with myrrh concentration achieving 91.8% at 300 ppm, while it lowered by raising the temperature. Therefore, the results indicate that Myrrh extract has potential to be a corrosion inhibitor for Cu in acidic environment. The Langmuir adsorption isotherm agreed with the obtained results from WL method. Finally, it was found that the obtained results from several techniques are in approximately agreement.

Keywords: Myrrh extracts, corrosion inhibition, Cu, nitric acid, adsorption

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