

Oral Presentation

Natural or synthetic compounds: Inhibitors for carbon steel Corrosion in 1 M HCl Solution

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Abstract

The inhibitive action and adsorption behaviour of natural or synthetic compounds on corrosion of carbon steel in 1M HCl solution at various temperatures was investigated through chemical (weight loss measurements), electrochemical (potentiodynamic polarization) and surface analysis (FTIR, XPS and XRD) methods. Results obtained show that, the adsorption of inhibitor molecules on the C-steel surface obeyed the Langmuir adsorption isotherm and act as cathodic or mixed type inhibitor for C-steel in 1M HCl. The inhibitory property of the molecules was discussed in terms of the mechanism by which its components adsorb onto the C-steel surface. Activation energy of corrosion and other thermodynamic parameters such as standard free energy, standard enthalpy, and standard entropy of the adsorption process as well as FTIR, XPS and XRD examinations of the electrode surface revealed that the corrosion inhibition of C-steel in 1M HCl in presence of PGLE is mainly controlled by physical adsorption process. Furthermore, POM analyses provide substantial idea about the structural features of inhibitors in relation to biological activities against disease causing agents.