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Palm Oil Leaves as Corrosion Inhibition for Carbon Steel in Seawater

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EXTENDED ABSTRACT

Corrosion control using inhibitor is one of the most effective ways to protect metals from corrosion due to chemical attack or reaction with an environment. Recently, green inhibitor are widely used and studied to inhibit the corrosion of metals in alkali or acidic solution due to environmental issues on synthetic inhibitor. *Elaeis Guineensis* or formally known as palm oil leaves (POL) extraction was used as an inhibitor. The effects of the POL extract as corrosion inhibitor on carbon steel in seawater were studied using *Tafel* extrapolation and weight loss method. *Tafel* extrapolation method was performed using a potentiostat, connected with a computer for data acquisition of potentiodynamic polarization curve. The effect of palm oil leaves extract on the corrosion rate was determined at various temperature, salinity and concentration. The inhibition efficiency was found to increase with the increasing the inhibitor concentration and increasing temperature. The highest inhibitor efficiency was recorded at 83.70% at 303K. The adsorption of the plant extracts best fitted into Langmuir adsorption isotherm. Thermodynamic parameters determined showed that the adsorption of POL extract on the metal surface is an exothermic and spontaneous process and the adsorption was via a physisorption mechanism.

Keywords: Green inhibitor; Palm oil leaves; Tafel Extrapolation; Carbon Steel, Physisorption mechanism

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