

## Adsorptive, inhibitive and thermodynamics studies on the corrosion of mild steel in the presence of *Mangifera indica* gums

Habibat F. CHAHUL\*, Elijah MAJI, and Tanko B. DANAT

*Department of Chemistry, Federal University of Agriculture, P.M.B. 2373 Makurdi, Nigeria*

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**Abstract.** The adsorption and inhibitive behavior of gums obtained from *Mangifera indica* tree was investigated at 303-333 K using weight loss and linear polarization measurements. The results obtained from both measurements showed that *Mangifera indica* gums inhibited the corrosion of mild steel in 1.0 M HCl. Linear polarization measurements revealed *Mangifera indica* gums to inhibit both the anodic and cathodic reactions on the surface of the mild steel thereby functioning as a mixed-type inhibitor. Adsorption behavior of the gums were approximated by the isotherm models of Langmuir, Freundlich and Temkin. The adsorption mechanism derived from the trend in inhibition efficiency as a function of temperature as well as kinetic and activation parameters signified *Mangifera indica* gums adsorbed on the surface of the mild steel through the mechanism of physisorption and that the adsorption process was exothermic and spontaneous.

**Keywords:** mild steel, corrosion inhibition, gums, adsorption isotherm, activation energy.

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\* Corresponding author. *E-mail address:* momohbat2007@gmail.com (Habibat F. Chahul)