International Journal of Mechanical Engineering (IJME)
ISSN(P): 2319-2240; ISSN(E): 2319-2259
Vol. 4, Issue 4, Jun - Jul 2015, 15-28

International Academy of Science, Engineering and Technology
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CORROSION INHIBITION EFFICIENCY AND ADSORPTION MECHANISM OF SOME SCHIFF BASES AT MILD STEEL/HCL INTERFACE

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ABSTRACT

In this study, the inhibition effect of two Quinazolinone-Based compounds, namely, 2-(3, 3-Dimethyl-2, 3-dihydro-indol-2-ylidene)-3-[(2-hydroxyphenyl)-imino] propylidene and 2-(3, 3-Dimethyl-2, 3-dihydro-indol-2-ylidene) -3-[(2-hydroxyphenyl)-imino] propanal (LH_1 and LH_2, respectively),were investigated as potential corrosion inhibitors for mild steel in 1.0 M HCl solution. Various corrosion analysis methods were used, such as the gravimetric method, potentiodynamic polarization, electrochemical impedance spectroscopy (EIS) and scanning electron microscope (SEM). The results revealed that the inhibition efficiencies increased with an increase in HLs concentration having a mean efficiency of 92 % at 50 ppm in 1.0 M HCl. The obtained results showed that the inhibition efficiency of $HL_1$was greater than HL_2 and that these obtained efficiencies from methods employed were in a good agreement. The polarization results revealed that the inhibitor decreased the corrosion current densities by means of a mixed mode mechanism. The SEM results indicated that the adsorption of the protective layer of the inhibitor on the metal/solution interface and obeyed Langmuir adsorption isotherm.

KEYWORDS: Metal, Corrosion, Electrochemical Methods, Schiff Bases, Surface Characteristics