



## **Inhibition of Mild Steel Corrosion in Sulfuric Acid Solution by New Schiff Base**

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The efficiency of Schiff base derived from 4-aminoantipyrine, namely 2-(1,5-dimethyl-4-(2-methylbenzylidene)amino)-2-phenyl-1H-pyrazol-3(2H)-ylidene) hydrazinecarbothioamide as a corrosion inhibitor on mild steel in 1.0 M H<sub>2</sub>SO<sub>4</sub> was investigated using electrochemical impedance spectroscopy (EIS), potentiodynamic polarization (PD) and electrochemical frequently modulation (EFM) in addition to the adsorption isotherm, corrosion kinetic parameters and scanning electron microscopy (SEM). The results showed that this inhibitor behaved as a good corrosion inhibitor, even at low concentration, with a mean efficiency of 93% and, also, a reduction of the inhibition efficiency as the solution temperature increases. A polarization technique and EIS were tested for different concentrations and different temperatures to reveal that this compound is adsorbed on the mild steel, therefore blocking the active sites, and the adsorption follows the Langmuir adsorption isotherm model. The excellent inhibition effectiveness of 2-(1,5-dimethyl-4-(2-methylbenzylidene)amino)-2-phenyl-1H-pyrazol-3(2H)-ylidene)hydrazinecarbothioamide was also verified by scanning electron microscope (SEM).

**Keywords:** 4-aminoantipyrine; electrochemical measurements; SEM; corrosion inhibitor