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**Electrochemical and surface characterization of a new eco-friendly corrosion inhibitor for mild steel in acidic media: A cumulative study**

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**Abstract**

Corrosion restraining performance of a newly synthesized imine compound namely, 4-(4-methoxy-6-methylpyrimidin-2-yl)imino)methyl)benzaldehyde (MMYB) on mild steel in 0.5 M H<sub>2</sub>SO<sub>4</sub> solution have been studied via several electrochemical and surface characterization techniques. The results have been supplemented by DFT treatment of the inhibitor molecule and by various thermodynamic adsorption and activation parameters. This inhibitor is of particular importance because of its high inhibition efficiency at low concentrations and high temperatures. In this paper a new, eco-friendly and economically viable scheme for corrosion protection is proposed.

**Keywords:** A. Schiff's base, B. Corrosion inhibition, C. Density Functional Theory, D. Attenuated Total Reflectance, E. Scanning Electron Microscopy - Energy Dispersive X-ray Spectroscopy and F. Atomic Force Microscopy.

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