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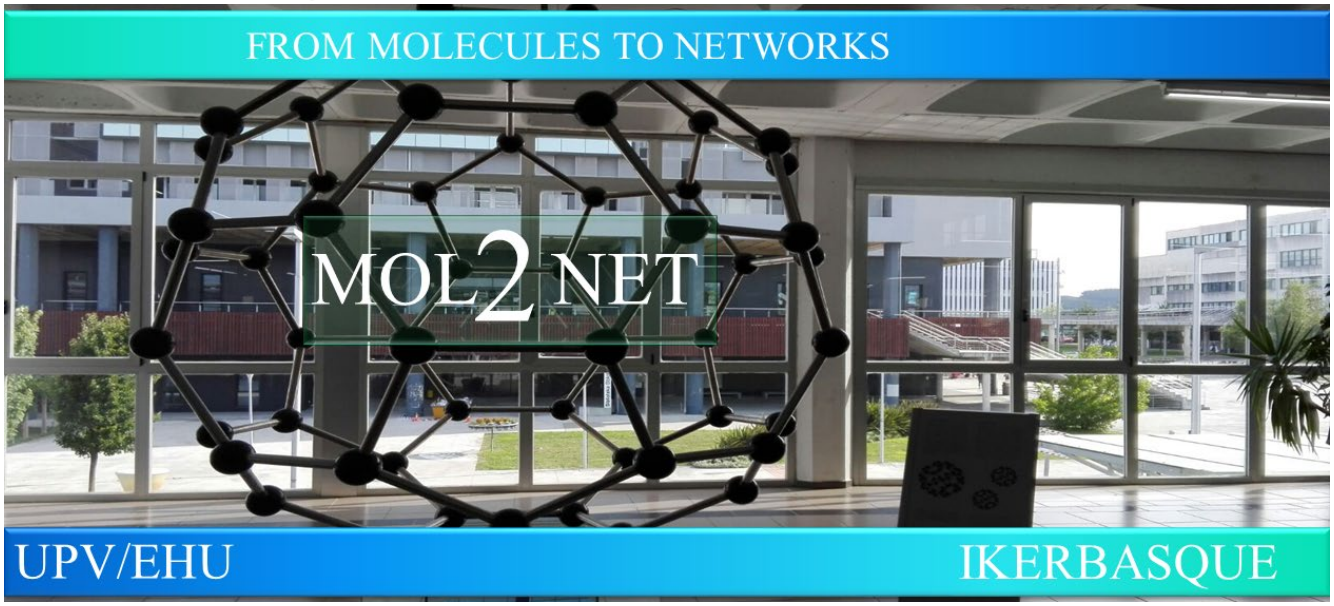


# Study of the adsorption/desorption effect of triazole-based Schiff base ligand as an effective corrosion inhibitor for XC40 carbon steel in 1.0 M hydrochloric acid solution

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**Abstract.**

*In this study, the XC40 carbon steel corrosion inhibition performance and the corresponding mechanisms of new triazole-based compound 2-(((4H-1,2,4-triazol-4-yl)imino)methyl)-4-bromophenol in 1.0 M hydrochloric acid (HCl) solution were investigated using weight loss measurement, potentiodynamic polarization and electrochemical impedance spectroscopy (EIS) techniques. Results from electrochemical measurements showed that the triazole-based compound were effective in inhibiting corrosion in acidic medium, such that the inhibition efficiency increased with increasing*

*inhibitor concentration due to the adsorption of the inhibitor molecules on the metal surface. The maximum value was achieved at 10-3 M at 25 °C, which was approximately 93.6%, 94.6% and 90.55%, according to the potentiodynamic polarization curves, EIS results and weight loss measurement, respectively. Additionally, with the temperature ranging from 25 to 55 °C, the corrosion inhibition ability of these compound was decreased. The polarization curves show that this compound act as a mixed-type inhibitor with predominantly anodic characteristics. In addition, it was established the Langmuir adsorption isotherm fits well with the experimental data. Finally, the inhibition efficiency of the triazole-based compound was discussed in terms of adsorption and protective film formation*