**ABSTRACT**

The corrosion behavior of mild steel in 1 M H2SO4 was studied using 2,3-diphenylpyrazine (DP), 2,3-di(furan-2-yl)pyrazine (FP) and 2,3-di(furan-2-yl)quinoxaline (FQ) as inhibitors using weight loss, potentiodynamic polarization and electrochemical impedance spectroscopy (EIS) studies. Scanning electron microscopy (SEM) and atomic force microscopy (AFM) methods were utilized for surface characterization. The results showed that the three inhibitors possess excellent inhibition effect toward mild steel corrosion. The inhibitor molecules are adsorbed on the mild steel surface, blocking the reactive sites available for acid attack. Adsorption of the inhibitor was found to obey Langmuir isotherm. Electronic structure calculations were used to study the inhibition efficiency of the inhibitor molecules on Fe (100) surface. The calculated results are in agreement with the experimental findings.