**ABSTRACT**

 The inhibition effect of two synthesized Mannich bases (MB 1 & MB 2) on the corrosion inhibition of mild steel in 1 M H2SO4solution was studied by weight loss measurements, polarization, alternating current impedance (electrochemical impedance) spectroscopy and quantum chemical studies. The surface examination was carried out by scanning electron microscopy and fourier transform infrared spectroscopy. The compounds show the maximum of 77% and 81% inhibition efficiency respectively at 0.5 mM concentration. Polarization curves revealed that the use of inhibitors exhibit mixed-type affecting both cathodic & anodic corrosion reactions. Adsorption of the Mannich base led to a reduction in the double- layer capacitance and an increase in the charge transfer resistance. The results indicate that the inhibition efficiency was significantly increased with increasing concentration and decreased with temperature. Adsorption of both compounds obeys the Langmuir adsorption isotherm.