**ABSTRACT**

The present investigation deals with the corrosion inhibition of mild steel in 1M H2SO4 with 1, 4-dihydro pyridine and its derivatives prepared using microwave activation method. The synthesis of inhibitor was confirmed by IR spectra. The effect of 1, 4-dihydropyridine derivatives on the corrosion inhibition of mild steel in 1M H2SO4 was studied using weight loss and electrochemical polarization techniques. Influence of temperature (303-333K) and synergistic effect of halide ions (I-, Br- and Cl-) on the inhibition behaviour was also studied. Corrosion products on the metal surface were analyzed by scanning electron microscopy (SEM) and a possible mechanism of inhibition by the compounds is suggested. Thermodynamic parameters were calculated using weight loss data in order to elaborate the mechanism of corrosion inhibition. Polarization measurements revealed that the studied compounds acted as mixed type inhibitor but slightly anodic in nature. Electrochemical impedance measurements revealed that the compounds were adsorbed onto the carbon steel surface and the adsorption obeyed the Langmuir adsorption isotherm. The synergistic effect of halide ions on the IE increases with increase in concentration. The IE obtained from atomic absorption spectrophotometric studies was found to be in good agreement with that obtained from the conventional weight loss method. SEM revealed the information of a smooth, dense protective layer in presence of the inhibitors