**ABSTRACT**

Two polyesters namely poly (glycerol adipate) (PGA) and 4-(1-(4-methoxyphenyl) cyclohexyl) phenyl 6-oxoheptanoate (MPOHP) were synthesised in a facile manner and characterised using Fourier transform infrared spectroscopy (FT-IR) and nuclear magnetic spectroscopy (NMR). The synthesised polyesters were subjected to evaluate the mild steel protecting ability at various concentrations of 10, 50, 100, 500, 1000 ppm in 0.5 M H2SO4 medium. A precise comparison of metal protecting ability rendered by both aliphatic and aromatic moiety was analysed. As an initiation, gravimetric measurements carried out at room temperature resulted with increased inhibition efficiency with increased concentration. Higher temperature studies suggested physisorption mechanism resulting with decreased inhibition efficiency. Experimental results were best fitted with Langmuir adsorption isotherm model. Electrochemical impedance measurements carried out for the selected concentrations of the inhibitors (10, 100, 1000 ppm) revealed increased charge transfer resistance (Rct) with a maximum inhibition efficiency of 54.07% (PGA) and 69.92% (MPOHP) at 1000 ppm indicating the formation of protective barrier. Potentiodynamicpolarisation method suggested mixed type of inhibition of both PGA and MPOHP on the metal surface resulting in decreased metal dissolution that could be evidenced from lowered corrosion current density (Icorr).