**Abstract**

 Eco-friendly biodegradable *Rhododendron schlippenbachii* (*R. schlippenbachii*) green inhibitors, *R. schlippenbachii* methanolic (RSMeOH) extract, which can effectively reduce low carbon steel corrosion rate, were investigated using weight-loss and electrochemical (electrochemical impedance spectroscopy) techniques. The inhibitors exhibited higher efficiency by retarding the corrosion process in 1M H2SO4 and the inhibition efficiency is found to be concentration dependent. The reactivity of the predominant phytochemical components of the extract are analyzed. The adsorption of inhibitors on low carbon steel is followed the Langmuir adsorption. The protective inhibitor film formed on the metal surface was confirmed by SEM and AFM techniques