**ABSTRACT**

A facile, efficient and eco-friendly synthesis of transition nano metal oxides like zinc oxide (ZnO), copper oxide (CuO), tin oxide (SnO) from *Perseaamericana*. Mill was executed followed by ex-situ polymerization favoring poly (glycerol succinate) (PGS)/nano metal oxide composite for the first time. The incorporation of nanofillers was confirmed by Fourier transform infrared spectroscopy (FT-IR), X-ray diffraction spectrometer (XRD), Scanning electron microscopy (SEM) and Energy dispersive spectroscopy (EDS). As a comparative approach, the extent of metal dissolution was evaluated in presence of precursor as well as nano dispersed forms for various concentrations (10, 50, 100, 500, 1000 ppm) under the cluster of electrochemical and non electrochemical techniques. Enhanced inhibition efficiency of 97% was observed in the case of CuO dispersion which was additionally supported by XRD particle size determination. The increase in charge transfer resistance (Rct) and a decrease in corrosion current (Icorr) elicited from electrochemical measurements strictly proved the role of metal – oxide nanoparticles. Further, the mode of inhibitor was found to be predominantly cathodic.