

Abstract

In this research work, different coordination complexes of zinc metal with carboxylic acid and its derivatives (like salicylic acid, maleic acid, and anthranilic acid as ligands) were synthesized by using the single synthetic strategy *i.e.* Reflux method. Transition metal-carboxylate is one of the profound catalysts for the fixation of carbon dioxide into epoxide and proved one of the efficient species for ring activation and opening of epoxide and converting it into worthwhile products. The synthesized metal-carboxylate complexes were characterized by FT-IR spectroscopy and UV-Vis spectroscopy and the results of these analytical techniques confirmed the formation of metal-carboxylate complexes when maximum wavelength (λ_{max}) and peaks of the functional group shift towards the higher wavelength and lower frequency respectively. Catalytic behavior of these complexes was also studied by evaluating the fixation of carbon dioxide into epichlorohydrin under different conditions of temperature, pressure, time duration, solvents, and co-catalyst (TBAB) to get optimized reaction conditions where the selectivity, conversion of carbon dioxide, and yield of cyclic carbonate will be maximum. The catalytic results displayed the reasonable yield of corresponding cyclic carbonate and the resulting products were examined by the GCMS technique.