Electro-oxidation of Phenol catalyzed by Cobalt (II) in imidazolium ionic liquids at various temperatures

Kannan Karunakaran, SUBRAMANIAN BALAJI, 문일식†
순천대학교
(ismoon@sunchon.ac.kr†)

Preliminary cyclic voltammetric investigations were carried out to find the electro-oxidation characteristics of Co(II) dissolved in two room temperature ionic liquids at various temperatures. 1-butyl-3-methylimidazolium trifluoromethanesulfonate ([bmim] CF_3SO_3) and 1-butyl-3-methyl imidazolium hexafluorophosphate ([bmim]PF_6) were used as the solvent medium for the electrochemical oxidation of Co(II) at the Pt disc working electrode. The diffusion co-efficient values of Co(II) were found to range from 0.64 x 10^{-7} to 2.3 x 10^{-7} cm^2/s. The oxidized Co(II) acts as a mediator for the oxidation of phenol and the enhancement in catalytic current was found good. The enhancement in catalytic current was found to increase with temperature. The formed product was analyzed by FTIR spectroscopy. The appearance of new peak in the region 1710 cm^{-1} confirmed the presence of keto group.