

Electrocatalyzed oxidation of Toluene by Co(II) in pyrrolidinium cation containing room temperature ionic liquid

문일식<sup>†</sup>, Kannan Karunakaran, SUBRAMANIAN BALAJI

순천대학교

(ismoon@sunchon.ac.kr<sup>†</sup>)

Room temperature ionic liquids (RTILs) are mixed ionic systems possessing organic cations and organic or inorganic anions existing in liquid state at ambient temperatures. They are widely used in many electrochemical applications such as gas sensors, catalysis, electro deposition, solar cells and batteries etc., due to their unique physico-chemical like low volatility, high thermal stability, wide electrochemical potential window and intrinsic conductivity. In the present study we have used N-butyl-N-methylpyrrolidinium bis(trifluoromethylsulfonyl)imide ([bmpyr]<sup>+</sup> [TFSI]<sup>-</sup>) as the solvent medium for the oxidation of Cobalt(II) species to generate electrochemically Co(II)/Co(III) redox couple. The electrochemically generated Co(II) was used to electro-catalyze the oxidation of toluene at various temperatures. It was observed that toluene undergoes facile oxidation in presence of Co(II) ion and converted to benzoquinone.