

### Silica Grafted Functional Ionic Liquids as Catalyst for Cycloaddition Reaction

한리나, 최수진, 김유진, Roshith.K.R, 박대원\*  
부산대학교  
(dwpark@pusan.ac.kr\*)

A series of ionic liquids functionalized by carboxyl group and hydroxyl group were synthesized and grafted on silica gel. The obtained heterogeneous catalysts were characterized by  $^{29}\text{Si}$  solid NMR,  $^{13}\text{C}$  NMR, FTIR and TGA. The catalytic activity of these heterogeneous catalysts for the synthesis of cyclic carbonate via cycloaddition reaction of epoxide and  $\text{CO}_2$  was studied. The effect of grafted ionic liquids structure (different functional group and anions) and reaction conditions such as reaction temperature, time, pressure and the amount of catalyst used on the reaction have been investigated. Carboxyl and hydroxyl group are selected for different functional group. It was demonstrated that the synergetic effects of carboxylic acid moieties and halide anion in the catalyst were responsible for the high yield of cyclic carbonates. Excellent catalytic performance could be obtained at the optimized condition.