

**Green Approach To The Synthesis Of Cyclic Carbonates From Carbon Dioxide And Epoxides
Effected With Derivatized Cellulose Supported Ionic Liquids**

Kuruppathparambil Roshan Roshith, 김유진, 이선명, 박대원*
부산대학교
(dwpark@pusan.ac.kr*)

A versatile application of carboxymethylcellulose (CMC) which is chemically a cellulose congener, as a supporting material for a variety of imidazolium based ionic liquids has been reported here (CMIL). The activity of these single component catalyst systems in the cycloaddition reactions of carbon dioxide with epoxides resulting in five membered cyclic carbonates was studied and found efficient under solvent free and mild reaction conditions of 110 °C, 1.8 MPa and 2 hr. Characterization techniques such as EA, FT-IR, NMR and XRD were performed to characterize the support material H-CMC and the ionic liquids employed. The CMILs showed high selectivity and conversion and exhibited reusability over five times with small decrement in conversion retaining a selectivity of 100%. DFT studies were performed to explore the mechanistic details of the CMIL assisted catalysis. The high activity is attributed partly to the vicinal hydroxyl groups on CMC and the synergistic effect of carboxyl groups on CMC and the nucleophilic halide ions.