

Supported Ionic Liquid on Commercial Silica for synthesis of Dimethyl Carbonate from Ethylene Carbonate and Methanol by Transesterification

김동우, 조한준, 김철웅¹, 고재천¹, 박대원*

부산대학교; ¹한국화학연구원

(dwpark@pusan.ac.kr*)

Dimethyl carbonate (DMC), as an environmentally benign building block, has become very important in chemical industry. It is mainly used as methylation reagent for safely substituting extremely toxic dimethyl sulfate or methyl halides and also as carbonylation reagent by replacing phosgene. The use of room temperature ionic liquids as environmentally benign media for catalytic processes or chemical extraction has been widely recognized and accepted. In this study we investigated the synthesis of DMC by transesterification of ethylene carbonate and methanol using immobilized ionic liquid on commercial silica as a catalyst. The catalysts were synthesized by grafting method. The amount of ionic liquid immobilized on silica was measured by elemental analysis. The reaction was carried out in a stainless steel autoclave reactor with various operation conditions such as reaction temperature, initial pressure of carbon dioxide and reaction time. The immobilized catalysts of different alkyl group and counter anion revealed that the transesterification of EC and methanol was highly dependent on the structure and nucleophilicity of the cation and anion, respectively.