

Catalytic Performance of Polymer-Supported Ionic Liquids in the Synthesis of Glycerol Carbonate by Glycerolysis with Urea

김동우, 박문석, 박경아, 이선도¹, 박대원*
부산대학교; ¹제우스유화
(dwpark@pusan.ac.kr*)

Ionic liquids immobilized onto structurally modified Merrifield peptide resin (MPR) were prepared through the reaction of imidazole with alkoxyated MPR. Elemental analysis and SEM image showed that the immobilized ionic liquid groups were well incorporated onto the support. The MPR-supported ionic liquids (MPR-IL) proved to be an effective heterogeneous catalyst for the solventless synthesis of glycerol carbonate from glycerol and urea as alternative source for carbonylation. The catalytic conversion of glycerol was carried out in a semi-batch batch reactor system, under vacuum or purging nitrogen for removing ammonia. The influence of the structure of MPR-IL and reaction parameters like temperature and reaction time was investigated. It was found that higher temperature and vacuum and longer reaction time were favorable for glycerol conversion. MPR-IL can be reused for the reaction through up to three consecutive runs without significant loss of its catalytic activity. The effect of zinc oxide as a promoter was also studied.