

Ionic Liquids as Green Catalysts for the Preparation of Glycerol Carbonate from Glycerol and Urea

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Ionic liquids (ILs) are well known to be environmentally benign media for catalytic processes or chemical extraction. In this work, ILs were used as a green catalyst under solvent free conditions for the synthesis of glycerol carbonate from glycerol and urea as an alternative source for carbonylation. The reaction was carried out in a semi batch reactor system, under vacuum or purging nitrogen for removing ammonia. The influence of various ionic liquids, the structure of ILs and reaction parameters like temperature, reaction time and degree of vacuum was investigated. IL with butyl group exhibited the highest activity among different alkyl length of ILs. Higher temperature and degree of vacuum and longer reaction time were favorable for the glycerol conversion. An effect of metal containing ionic liquid catalysts in the reaction was also studied for a better understanding of the reaction mechanism.