

Immobilization of ionic liquid on the synthesis of montmorillonite clay and its catalytic performance in the synthesis of allyl glycidyl carbonate

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Utilization of CO₂ has become an important global issue due to the significant and continuous rise in atmospheric CO₂ concentrations, accelerated growth in the consumption of carbon-based energy worldwide, depletion of carbon-based energy resources, and low efficiency in current energy systems. Owing to its low viscosity and negligible vapor pressure, ionic liquids (ILs) have been widely used as environmentally benign solvents in various organic reactions and regarded as a new important precursor material for catalyst. In this study, various ionic liquids supported on montmorillonite clay were prepared and their catalytic performances were investigated for the synthesis of cyclic carbonate from allyl glycidyl ether (AGE) and CO₂. The prepared catalysts were characterized by elemental analysis (EA), X-ray diffraction (XRD), surface area-pore volume measurements (BET) and ¹³C NMR. The synthesis of allyl glycidyl carbonate were performed under various reaction condition. The immobilized ionic liquids showed good catalytic performance with acceptable recyclability. High temperature, long reaction time and high CO₂ pressure were found to be favorable for high AGE conversion.