Polymer-supported ionic liquid catalyst for coupling reaction of allyl glycidyl ether and CO_2

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Chemical fixation of CO_2 to synthesize carbonates is one of the most attractive subjects in synthetic organic chemistry. CO_2 is one of the greenhouse gases, it is non-toxic, abundant, and recoverable C_1 building block. One of the industrial processes for CO_2 utilization is coupling reaction of AGE and CO_2 to produce cyclic carbonate, which can be used as aprotic polar solvents, monomers for pharmaceutical and fine chemical intermediates. Polyethylene glycol immobilized ionic liquids (PEG-ILs) were synthesized and evaluated for their catalytic performance in the coupling reaction of AGE and CO_2. PEG-ILs was characterized by ^{1}H-NMR, FT-IR and EA. The reaction was carried out in a batch autoclave reactor and the effects of catalyst structure and reaction parameter such as CO_2 pressure, reaction temperature, and reaction time were investigated.