

Immobilization of Ionic Liquid on Amorphous Silica for the Synthesis of Cyclic Carbonate from Carbon Dioxide and Allyl Glycidyl Ether

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In this work, imidazolium salt ionic liquid on amorphous silica catalysts were prepared and their catalytic performance were investigated in the chemical fixation of CO₂. A variety of catalysts were synthesized by manipulating both the HCl to water ratios and TEOS to imidazolium solution ratios. The prepared catalysts were characterized using a number of physico-chemical measurements including EA, BET and ²⁹Si MAS-NMR, showed that the ionic liquid formed an adduct with the chloropropyl groups attached to the silica surface. The synthesis of cyclic carbonate via cycloaddition of CO₂ to epoxide is one of effective routes of CO₂ chemical fixation. The catalytic activity studies were performed for the addition of CO₂ to allyl glycidyl ether (AGE) to produce a cyclic carbonate. The effect of carbon dioxide pressure on the conversion and selectivity were discussed. The imidazolium salt ionic liquid on amorphous silica catalysts showed very good catalytic activity for the synthesis of cyclic carbonate.