AMINO ACID-BASED IONIC LIQUIDS AS NOVEL NON-HALOGEN CATALYSTS FOR THE SYNTHESIS OF CYCLIC CARBONATES FROM CO2 AND EPOXIDES

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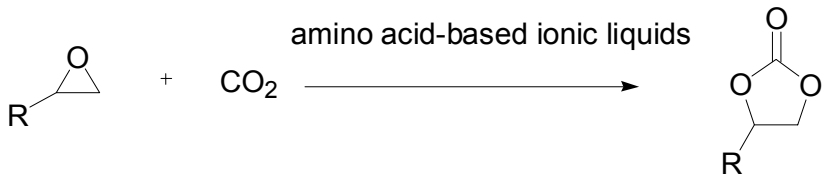
Carbon dioxide is regarded as an abundant, nontoxic and cheap C_1 resource as well as being the main greenhouse gas. Chemical fixation of CO_2 is an attractive subject from the viewpoint of sustainable chemistry and environment protection. One of the most promising methodologies in this area is the synthesis of cyclic carbonate via the coupling of CO_2 and epoxide. Due to their versatile properties, ionic liquids have attracted considerable attention recently. An amino acid-based ionic liquid is a novel non-halogen ionic liquid with special characteristics, such as natural origin, various functional groups and chiral center. Extensive efforts has been devoted to the design, synthesis, properties and application of the amino acid-based ionic liquid. In this work, amino acid-based ionic liquids are proved to be an effective and recyclable catalyst for the synthesis of cyclic carbonates from epoxide and CO_2 under mild conditions (Scheme 1).



Scheme 1 Cycloaddition of epoxide with CO_2 catalyzed by amino acid-based IL

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