

Synthesis and CO₂ capture properties of Amino acid ionic liquid Modified Silica Colloidal nanoparticles

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Task specific ionic liquids (TSILs) have great potential for CO₂ capture at room temperature but, at higher temperature, as a reason of thermal stability the adsorption capacity decreases. In this work, 1-ethyl-3-methylimidazolium amino acid {[EMIM] [AA]} Colloidal silica nanoparticles [SIm(AA)] with a mean diameter of 100 nm were prepared according to standard method for the evaluation of high temperature CO₂ capture. The as synthesized nanoparticles were successfully characterized by modern techniques such as FT-IR, N₂ adsorption-desorption, FESEM, FETEM and TGA. The developed TSIL functionalized silica colloidal nanoparticles are expected to exhibit fast adsorption-desorption kinetics as well as good capacity for high temperature CO₂ capture. This work was supported by KCRC through the NRF funded by Ministry of Science, ICT, and Future Planning (NRF-2014M1A8A1049258).