

High temperature CO<sub>2</sub> sorption on binary eutectic mixture promoted MgO based sorbent

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Recent studies on solid sorbents for CO<sub>2</sub> capture have found MgO and Mg(OH)<sub>2</sub> as promising candidates due to its lower operating temperatures (600–700K). Moreover, nitrate modified MgO-based sorbent showed high CO<sub>2</sub> capture capacity and fast sorption kinetics at high temperature but successive uptake loss was observed as regeneration proceeds. In this study, binary eutectic nitrate salts were embedded into MgO by taking advantage of its low melting point and stable melt at a wide temperature range. The CO<sub>2</sub> capture on the modified sorbent as a function of temperature was investigated by in situ x-ray diffraction (XRD), thermogravimetric analysis (TGA) and differential scanning calorimetry (DSC). The results showed that the phase transition favors the facile diffusion of CO<sub>2</sub> and dissociation of Mg–O bond. This work was supported by KCRC through the NRF funded by Ministry of Science, ICT, and Future Planning (NRF-2014M1A8A1049258).