Chracteristics of CO_2 absorption and desorption of MgO promoted by solid and liquid carbonates

곽진수, 김강영, 오경렬, 권영욱†
성균관대학교
(ywkwon@skku.edu†)

In this research, we explained CO_2 absorption and desorption of solid- (A_2CO_3; A=Na, K, Rb, and Cs) and liquid- (($Li_{0.435}Na_{0.315}K_{0.25})_2CO_3$) state alkali carbonate-promoted MgO absorbents. These two types of CO_2 absorbent have same two-step absorption behavior, but details are different depending on the state of the promoter at the operating condition. Liquid alkali carbonate-promoted MgO absorbent shows improved MgO conversion and kinetics than solid alkali carbonate-promoted MgO absorbent. Liquid alkali carbonate provides reaction medium for MgO and CO_2 and facilitates the CO_2 absorption like alkali nitrate-promoted MgO absorbent. Whereas, there is no reaction medium in solid alkali carbonate-promoted MgO. CO_2 absorption of solid alkali carbonate-promoted MgO absorbent occurs at the interface between A_2CO_3 and MgO. Additionally, we find the phase of the carbonated product is different from the phase of the promoter. Detailed data and their explanation will be presented in the poster session.