

Characterization of potassium-based sorbents using metal oxides or metal silicates for post-combustion CO<sub>2</sub> capture

조민선, 이수출, 채호진, 권용목, 류민영, 이중범<sup>1</sup>, 김재창<sup>†</sup>  
경북대학교; <sup>1</sup>한전 전력연구원  
(kjchang@knu.ac.kr<sup>†</sup>)

Potassium sorbents for capturing CO<sub>2</sub> in a fast fluidized bed reactor should have high CO<sub>2</sub> capture capacities, good regeneration properties and high abrasion resistances. Therefore, several studies had focused on the development of the potassium-based solid sorbents using various supports. In this study, the CO<sub>2</sub> sorption and regeneration characterization of the sorbents using metal oxides or metal silicates as a support were investigated. CO<sub>2</sub> sorption and regeneration properties were investigated in a fixed bed reactor at low temperature ranges of 60-200 °C. In addition, structural changes of the sorbents were investigated by powder X - ray diffraction (XRD) and the regeneration characteristics were analyzed by thermogravimetric analysis (TGA). The CO<sub>2</sub> capture capacities of the sorbents using metal silicates as a support show approximately 96 mg CO<sub>2</sub>/g sorbent. In addition, their regeneration ratios were 100%.