

Eutectic mixture promoted magnesia-based composites for enhanced CO₂ capture

황순하, Vishwanath Hiremath, 서정길†

명지대학교

(jgseo@mju.ac.kr†)

MgO–Al₂O₃ composites (Mg/Al molar ratio = 3–5) with (K, Li)NO₃ eutectic mixture were synthesized for high temperature CO₂ capture. The adsorbents are characterized by XRD, BET, SEM–EDX, TEM, and thermogravimetric analysis. It was observed that with the excess of MgO activated at the eutectic point and the carbonation was initiated. The effect of adsorption temperature, conversion of effective carbonation, and the optimum Mg/Al molar ratio were investigated to stabilize sorbents for the effective regenerability during the high temperature CO₂ capture. Also, it was accomplished that with increasing molar ratio and the sorption performance were increased due to the excess of MgO present. Moreover, due to the presence of the basic MgAl₂O₄ phase, the enrichment of MgO towards CO₂ attraction was observed. This work was supported by the National Research Foundation of Korea (NRF) funded by the Ministry of Education (Grant number: NRF-2013R1A1A2060638).