

New regenerable alumina-modified sorbents for CO₂ capture at temperatures below 200°C

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The CO₂ capture capacity of a potassium-based sorbent containing Al₂O₃ poses disadvantage in that there was a decrease of CO₂ capture capacity during multiple tests. To overcome this problem, a new regenerable alumina-modified sorbent (Re-KAl(I)) was developed for CO₂ capture at temperatures below 200°C. The Re-KAl(I) sorbent maintained its CO₂ capture capacity during multiple tests even at a regeneration temperature of 130°C. This excellent CO₂ capture capacity and regeneration properties were due to the characteristics of the Re-KAl(I) sorbent producing only a KHCO₃ phase without byproduct during CO₂ sorption, unlike the potassium-based sorbent using γ -alumina (Aldrich) as a support (KAlI30) which formed byproduct such as KAl(CO₃)(OH)₂ phase even at 60°C.