The effect of Calcination Temperature on CO_2 Capture Capacity of Sodium-Based Sorbents

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The CO_2 capture and regeneration properties of sodium-based sorbents were measured in a fixed bed reactor at the temperature conditions (CO_2 capture at 210°C and regeneration at 350~550°C and 1atm). The sorbents were prepared by the physical mixing and calcined at various temperatures from 700 to 950°C. In this temperature range, the minimum CO_2 capture capacity of sodium-based sorbents was 25 mg CO_2 /g sorbent. The maximum CO_2 capture capacity was 77 mg CO_2 / g sorbent. Although the CO_2 capture capacity was decreased, it maintained after two cycles. The CO_2 capture and regeneration properties of sodium-based sorbents could be explained by the effect of the crystal structure through X-Ray diffraction analysis.