Regenerable Sodium-Based Sorbents for CO_2 Capture at Middle Temperatures

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A regenerable sodium-based sorbent (Na(P)) was developed for CO_2 capture in IGCC (Integrated Gasification Combined Cycle) at middle temperatures range (200~400 °C). The sorbent was prepared by the physical mixing of sodium carbonate with some special support. The Na(P) sorbent adsorbed CO_2 at 210 °C and it was regenerated easily at 350 °C. The Na (P) showed an excellent CO_2 capture capacity of 60 mg CO_2/g sorbent at the first cycle. By deactivation, the CO_2 capture capacity was decreased to 33 mg CO_2 /g sorbent and this capacity was maintained for repeated experiments. The excellent CO_2 capacity was due to the active alloy material formed from sodium and special support (P). These results were discussed through the analysis of XRD patterns.