

## Characterization of alkali metal-based dry sorbents using SnO<sub>2</sub> for post-combustion CO<sub>2</sub> capture

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Titanium dioxide (TiO<sub>2</sub>) and gamma alumina ( $\gamma$ -Al<sub>2</sub>O<sub>3</sub>) are commonly used as a support or an additive material to develop the ideal alkali metal-based sorbent. However, these sorbents have disadvantages in terms of thermal stability and cyclic CO<sub>2</sub> capture of the sorbent. To overcome these problems, new alkali metal-based sorbents were developed by impregnation of SnO<sub>2</sub> as a support with K<sub>2</sub>CO<sub>3</sub> or Na<sub>2</sub>CO<sub>3</sub>. In addition, the CO<sub>2</sub> sorption and regeneration properties of these alkali metal-based sorbents were investigated at a low temperature range between 60°C and 200°C. And the structure changes of the potassium-based sorbents were investigated by power X-ray diffraction. These sorbents show high CO<sub>2</sub> capture capacities (89–113.7mg CO<sub>2</sub>/g sorbent). Furthermore, these high CO<sub>2</sub> capture capacities are maintained during multiple cycles even at a low regeneration temperature of 200°C.