

## Sorption of Carbon Dioxide on Potassium Carbonate

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Potassium carbonate was used as a sorbent to capture CO<sub>2</sub> from gaseous stream of carbon dioxide, nitrogen, and moisture. The measured breakthrough data of CO<sub>2</sub> in a fixed bed were used to observe the reaction kinetics of CO<sub>2</sub>-carbonate reaction. Several models such as the shrinking-core model, the homogeneous model, and the deactivation model in the non-catalytic heterogeneous reaction systems were used to explain the kinetics of reaction among CO<sub>2</sub>, K<sub>2</sub>CO<sub>3</sub> and moisture using analysis of the experimental breakthrough data. Good agreement of the deactivation model was obtained with the experimental breakthrough data. The sorption rate constant and the deactivation rate constant were evaluated by analysis of the experimental breakthrough data using a nonlinear least squares technique and described as Arrhenius form.