

## Study on regeneration kinetics of potassium-based dry sorbents by Thermogravimetry and bubbling fluidized bed

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This paper gives the first measurements from a project investigating the regeneration of potassium-based dry sorbents in a laboratory scale, bubbling fluidized bed at atmospheric pressure. The aim of the work was to examine the reactions kinetics parameters occurring in a bubbling fluidized bed rather than simply treat the reactor as a black box. Experiments were performed to investigate the heating rates had effect on the regeneration reaction of the potassium-based dry sorbents KX35T5. Thermogravimetric analysis, as well as batch bubbling fluidized bed experiments using the potassium-based dry sorbents KX35T5 from different heating rates in the laboratory were performed. A comparison kinetics of regeneration reaction was made between the same samples of potassium-based dry sorbents KX35T5 in bubbling fluidized bed and TG, respectively. The activation energy for interpreting the kinetics of potassium-based dry sorbents was also investigated. From Coats-Redfern and Ozawa method, respectively, the activation energy and the pre-exponential factor were able to calculate and explain the reaction performance of regeneration kinetics for the sorbents.