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Performance with Respect to Flue Gas Composition of a Combined Desulfurization / Denitration Process Using Powder-Particle Fluidized Bed

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摘要 A new combined desulfurization/denitration (DeSO_x/DeNO_x) process was tested in this study.

The process uses the so-called powder-particle fluidized bed (PPFB) as the major reactor in which a coarse DeNO_x catalyst, several hundred micrometers in size, is fluidized by flue gas as the fluidization medium particles while a continuously supplied fine DeSO_x sorbent, several to tens of micrometers in diameter, is entrained with the flue gas. Ammonia for NO_x reduction is fed to the bottom of the bed, thus, SO_x and NO_x are simultaneously removed

in the single reactor. By adopting a model gas, SO₂-NO-H₂O-N₂-air, to simulate actual flue gas in a laboratory-scale PPFB, simultaneous SO₂ and NO removals were explored with respect

to various gas components of flue gas. It was found that the variations of SO₂ removal with concentrations (fractions) of oxygen, water vapor, SO₂ and NO in flue gas are little affected by the simultaneous NO_x reduction. However, the dependences of NO removal upon such gas components are closely related to the interactions between DeSO_x sorbent and DeNO_x catalyst.

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Key words

[environment; combustion; combined SO_x/NO_x removal; fluidized bed; powder-particle technology](#)

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