

Simultaneous removal of SO<sub>x</sub> and NO<sub>x</sub> using Liquid Homogeneous catalyst for CO<sub>2</sub> liquefaction process

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SO<sub>x</sub> and NO<sub>x</sub> simultaneous removal process for coal power plant flue gas has been developed in pilot plant scale to provide an isothermal, low operating cost method for carrying out the simultaneous removed by liquid phase catalyst for introduce CO<sub>2</sub> into the green house for the purpose of CO<sub>2</sub> rich horticulture cultivation. Gas purification and carbon dioxide recovery carried out through the muti panel auto circulation bubble lift column reactor utilizing Fe-EDTA as a homogeneous catalyst and conducted for evaluate optimum conditions for flue gas of coal power plant. A novel oxidation-removal process capable of removing NO<sub>x</sub> and SO<sub>x</sub> simultaneously was proposed, which utilized the injection of ·OH radicals from H<sub>2</sub>O<sub>2</sub> catalytic decomposition with iron ions. The stack gas composition were 15% CO<sub>2</sub>, 9ppm CO, 34ppm NO, and 34ppm NO<sub>x</sub>, respectively. After passed the reactor, flue gas were 15% CO<sub>2</sub>, 7ppm CO, 19ppm NO and 19ppm NO<sub>x</sub>, respectively. SO<sub>2</sub> was completely removed to trace concentration and NO<sub>x</sub> was reduced to 19ppm(56% removal efficiency). In case of CO, removal is too low, because of its low solubility in liquid phase reaction. we introduced metal loaded active carbon as CO and remain NO removal.