

H₂S EMISSIONS CONTROL IN INDUSTRIAL EXHAUSTS USING TiO₂ NANOPARTICLES

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ABSTRACT

The response from the industrialists in Pakistan towards environmental laws and regulations regarding air pollution is very poor. This study focuses on developing a technique for in-situ treatment of H₂S gas at high temperatures by using TiO₂ nanoparticles, so that simultaneous destruction of H₂S gas could be investigated for power generation and gasification processes and brick kilns, which are carried out at high temperatures. Initial experimental results at lab scale have shown a decrease of 95-99% in the H₂S gas concentrations. This technique is likely to help in the in-situ treatment of this malodourous toxic gas resulting in considerable abatement of air pollution in Pakistan without installing any new device or changing the existing practices of exhaust gases by the industrialists making it easy for them to comply with the environmental laws and regulations.

Keywords: TiO₂ nanoparticles, gas destruction, high temperatures, fixed bed catalyst systems