

A Continuous IR System for Monitoring N₂O Emissions from NH₃-SCR DeNO_x Processes

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Nitrous oxide (N₂O) is a strong greenhouse gas with global warming potential (GWP) which is much greater, by 310 times, than that of CO₂. N₂O having such effects and high GWP value would be significantly produced from NH₃-SCR DeNO_x (selective catalytic reduction of NO_x by NH₃) processes that are widely used for abating NO_x from fossil fuel-fired power plants. The use of grab sampling for N₂O analysis gives its formation in the sample during transport and storage, because of the simultaneous presence of NO, SO₂ and H₂O in the sample. In this study, an on-line continuous N₂O monitoring system with IR equipped with a gas cell having an optical path of 10 meters was developed to measure N₂O concentrations formed during NO-NH₃-O₂ reaction with commercial SCR catalysts. The IR system was evaluated for possible interferences such as SO₂, H₂O, CO₂, CO and CH₄.