

### Low-temperature selective catalytic reduction over V-Ce/TiO<sub>2</sub>-CNTs: Optimization of the amount of CNTs addition

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Over the past decades, selective catalytic reduction (SCR) reaction have been mainly used to reduce nitric oxide (NO) from stationary sources. The main limitation on currently used catalyst is the deactivation in the presence of SO<sub>2</sub> and fine particulate matter present in the flue gas. Many researchers has found that SO<sub>2</sub> and fly ash does not generate in low temperature SCR reaction. Thus, it is mandatory to design catalyst having good performance in low-temperature. Therefore, we are going to utilize carbon nanotubes (CNTs) as an organic promoter. It is expected that a small amount of CNTs could change intrinsic property of catalyst and might alter whole reaction mechanism. In this study, the amount of CNT in V-Ce/TiO<sub>2</sub>-CNTs has been closely controlled for low-temperature NH<sub>3</sub>-SCR of NO. In order to investigate the effect of CNT in V-Ce/TiO<sub>2</sub>-CNTs, XRD, BET, H<sub>2</sub>-TPR, NO-TPD, NH<sub>3</sub>-TPD, FT-IR, and XPS have been conducted.