

Promotional effect of carbon nanotubes on V-Ce/TiO₂ catalysts for NH₃-SCR reaction

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Over the past decades, V-based catalysts have been primarily used in selective catalytic reduction (SCR) reaction with NH₃ to reduce NO emission from industry. In general, the flue gas temperature containing NO is above 300 °C, thus the V-based catalysts are designed to achieve high catalytic efficiency at this temperature. However, gas emitted above 300 °C contain large amount of fly ash and SO₂, which adversely affect on the catalytic performance. Many researchers have proven that fly ash and SO₂ do not be generated at low temperature (below 250 °C), and hence development of catalyst showing high efficiency at low temperature are urgently required. In response to the demands of these industrial requirement, many low temperature catalysts have been recently developed. In this study, small amount of carbon nanotubes (CNTs) having exclusive electronic transportation and high NO adsorption properties was utilized as promoter, and V-Ce/TiO₂-CNTs catalyst was synthesized and tested for NH₃-SCR reaction. Moreover, various characterization were used to elucidate the influence of CNTs in V-Ce/TiO₂-CNTs catalyst.