

Characterization and Catalytic Activity of MnFeOx/TiO₂ for NO Oxidation to NO₂

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Selective catalytic reduction with ammonia(NH₃-SCR) is the oldest commercial catalyst technology commonly used to remove nitrogen oxides from stationary source because of fossil fuels burning. Because the SCR process is used in temperature range 300–400 °C, it causes maintenance costs to maintain high temperature operation condition and catalyst deactivation. As a technology that can cope with this, the Fast SCR process obtain a faster catalytic reaction and denitrification efficiency than the existing SCR process (standard SCR reaction) in the low temperature of about 200 °C by adjusting the concentration ratio of NO/NO₂ to about 1. Because approximately 95% of NO_x among flue gas is present as NO, an oxidation reaction step of oxidizing NO to NO₂ is required before the NH₃-SCR process for fast SCR reaction. In this study, MnFeOx/TiO₂ was prepared as NO oxidation catalyst and characteristic evaluation was performed, and the oxidation reaction characteristics according to NO concentration, space velocity, and temperature were compared.