

A study on fast-SCR inducing De-NO_x catalyst for promoting a low temperature NH₃-SCR activity

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The selective catalytic reaction with NH₃ (NH₃-SCR) is one of the effective technologies for NO_x emission control in industrial sectors. Usually, the flue gas temperature at the SCR inlet in tail-end system is as low as 200°C. However, the optimal operating temperature of commercial SCR catalysts (V-W/Ti) is narrow and high (300–350°C), which requires an enormous operating cost to use reheating system. Therefore, it is necessary to develop a high-efficiency SCR catalyst, which can be operated in a wide temperature range (170–400°C) in order to increase the energy efficiency and to cope with the reinforced NO_x emission regulations. In this study, we investigate a fast-SCR inducing V-based catalyst which shows about a two-fold higher denitrification efficiency at low temperatures compared to commercial SCR catalysts (V-W/Ti). The developed SCR catalyst has high resistance to sulfur and moisture, and exhibits a denitrification efficiency of 92% at 180 °C.