

Selective reduction of NO<sub>x</sub> by NH<sub>3</sub> with V<sub>2</sub>O<sub>5</sub>-WO<sub>3</sub>/TiO<sub>2</sub>-based Fe-MFI catalysts

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V<sub>2</sub>O<sub>5</sub>-WO<sub>3</sub>/TiO<sub>2</sub>-based Fe-MFI catalysts have been prepared using samples of a commercial 1.68% V<sub>2</sub>O<sub>5</sub>-7.6% WO<sub>3</sub>/TiO<sub>2</sub> and a Fe-ZSM-5 with a 96-% exchange level and used for the selective catalytic reduction (SCR) of NO<sub>x</sub> by NH<sub>3</sub>. The presence of the Fe-MFI in the commercial SCR sample plays a minor role in lowering deNO<sub>x</sub> activity at 300-400°C, by 5-10%, compared to the bare V<sub>2</sub>O<sub>5</sub> catalyst, and the extent of the decrease in NO<sub>x</sub> conversion depended visibly on amounts of the Fe-zeolite used. Regardless, this way of combining such a V<sub>2</sub>O<sub>5</sub>/TiO<sub>2</sub>-based catalyst with Fe-zeolites may offer us a good alternative to suppress the formation of N<sub>2</sub>O in NH<sub>3</sub>-SCR reaction, because the commercial SCR catalyst with the Fe-ZSM-5 gave very low N<sub>2</sub>O production (< 2 ppm) even at 480°C at which ca. 50 ppm N<sub>2</sub>O was measured with the unpromoted V<sub>2</sub>O<sub>5</sub> catalyst. NH<sub>3</sub> and NO TPD measurements with the samples could well support such activity data.