

SCR of NO with natural gas over metal supported catalyst under lean conditions: activity and stability on water vapor

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The selective catalytic reduction (SCR) of NO with methane over various metal-ion exchanged zeolites has received much attention. Methane is a main component of natural gas (90% in natural gas), which is widely utilized as fuel in various fields such as power plants, industrial furnaces etc. Therefore, a SCR system which can use methane as a reductant would be beneficial for not only natural gas fueled facilities, but also stationary NO<sub>x</sub> emission sources where natural gas supply is available. In SCR of NO, it is well known that a pronounced loss of activity is observed on the presence of water vapor over Pd/zeolite catalyst, indicating that Pd-agglomeration and zeolite-dealumination were promoted by water. So, in this study, ZSM-5 supported transition metal (Co or Ce), Pd combination catalysts were investigated in the SCR of NO with natural gas in the presence of water vapor under NO-lean conditions.