Reduction of NO by NH_3 and Oxidation of Elemental Mercury over Supported V_2O_5 Catalysts

양기혁, 응웬 티 프엉 타오, 김문현†
대구대학교
(moonkim@daegu.ac.kr†)

We have studied supported V_2O_5-based catalysts with different vanadate structures to simultaneously conduct selective reduction of NO by NH_3 and oxidation of gas-phase mercury. The catalysts were prepared by a wet impregnation technique using different supports, such as anatase- and rutile-type TiO_2, SiO_2, and TiO_2-SiO_2. ^{51}V NMR measurements disclosed that tetrahedral and octahedral coordination environments of VO_x depend not only on the support but also on VO_x amount. This was consistent with Raman spectra for the supported V_2O_5-based catalysts. These catalytic activities for the NO reduction with NH_3 strongly vary with the support, and this observation could be explained by an amount of and a thermal stability of NH_3 adsorbed on each sample. The extent of the oxidation of elemental mercury vapor at chosen temperatures was associated with the VO_x structures.