

Direct use of Vanadia-based SCR catalyst by adding low Pt content for reducing NH₃ & CO emissions

변상우, Bekelcha T. Gadisa¹, 박포원¹, 강성봉[†]

광주과학기술원; ¹주나노

(sbkang@gist.ac.kr[†])

The NH₃-SCR system is normally operated with slightly excess injection of NH₃ to achieve maximum conversion of NO_x, where unreacted NH₃ is slipped out from catalytic converters. The emission of CO by partial combustions of fuel is also one of the major concerns in air pollution control. The ammonia slip catalysts (ASC) have been developed to oxidize NH₃ to N₂. Modern aftertreatments have required the multifunctional catalyst to simultaneously convert NH₃ and CO. In this study, we have directly employed the VW/TiO₂ catalyst widely used for NH₃-SCR by adding Pt to oxidize CO and NH₃. Compared to the Pt/TiO₂ catalyst, the PtVW/TiO₂ catalyst revealed a superior N₂-selectivity (>90%) in the high-temperature region (>300 °C). The catalytic performance was apparently affected by the vanadium loading, which means this can be attributable to the *internal*-SCR mechanism with the reaction of continuously introducing NH₃ and nitrate species formed on the surface. The mechanistic study by DRIFT will be also provided to identify surface intermediates.