

Effect of oxidation state of vanadium precursor in V_2O_5/TiO_2 selective catalytic reduction catalysts for low temperature application

윤승희, 정소연, 김도희*
서울대학교
(dohkim@snu.ac.kr*)

Selective catalytic reduction (SCR) of NO_x for marine application in low temperature range has gained great interest due to Tier III of International Maritime Organization (IMO) taking effect after 2016. Marine SCR catalyst requires the high DeNO_x activity in lower temperature region than automobile one. In this study, we aimed at changing the operating temperature of V_2O_5/TiO_2 catalyst by using various vanadium precursors with four different oxidation states. Using four different precursor samples, TiO_2 supported V_2O_5 catalysts (1, 3, 5, 7wt%) were prepared by applying wet impregnation method. We used various analytic techniques, such as BET, TPR, TPD, XRD, XPS, Solid NMR and FT-IR to investigate the influence of oxidation states of vanadium precursor in V_2O_5/TiO_2 on the physiochemical properties. Combination of characterization and activity results allows us to obtain the valuable information about the desirable parameter for the preparation of low temperature SCR catalyst.