

Catalytic reduction of N_2O by NH_3 with SO_2 and/or steam

의승재, 유인수, 이재근, 김용우, 박명열, 문승현*
한국에너지기술연구원
(shmoon@kier.re.kr*)

It has been reported that N_2O causes a various environmental problems such as global warming and depletion of the stratospheric ozone layer. When NH_3 is used as a reductant, high reaction temperature over 400 °C has been required to obtain N_2O conversions over 70%. Most stationary sources of N_2O can produce NO in oxygen-rich atmosphere as well as N_2O . This study investigated on lowering the reaction temperatures below 400 °C for high conversions of N_2O by NH_3 , where zeolite BEA was pretreated with steam before Fe ion exchange. Fe ions in the steam pretreated zeolite BEA could remove N_2O at low temperatures below 350 °C, which might result from hydroxyl groups associated with Fe ions in the zeolite BEA. It was also observed that the Fe/BEA zeolite pretreated with steam was deactivated by the presence of SO_2 in the reactants. However, the addition of steam to SO_2 in the reaction gas stream could reproduce the activity of the catalyst.