The effect of copper impregnation on de-NOx(NO2 & total NOx) activity of HC-SCR over Cu-chabazite catalyst

나우진, 홍웅기[1], 이미영[1], 박태정[1], 박덕수[1], 전민기, 차은지, 김정호[2], 박해경[†]

한서대학교; [1]SK Gas; [2]ENEK

(super264@naver.com[†])

In this study, we tried to remove NO2 and total NOx from regeneration process of deactivated catalyst of propane de-hydrogenation in waste heat boiler for propylene production. The flue gas stream after regeneration contains high NO2 and unburned hydrocarbons such as propylene, methane etc. The primarily objective of this study is to develop HC-SCR catalyst for complete elimination of NO2 and simultaneous removal of total NOx by using stream hydrocarbons without any other reductive agents.

De-NOx activity of prepared three zeolite-based catalysts was measured to select the best performance catalyst in a atmospheric micro-reactor and the physical properties were characterized by the analytical instruments. And then over the selected catalyst, several approaches have been performed to further enhance de-NOx activity by controlling the amount of copper impregnation, optimizing the coating slurry and varying the concentration of reductive agent. As the result, the catalyst with high slurry loading and 3% Cu impregnation shows that the removal efficiency of NO2 reached 100% and that of NO was about 65% without any other reductive agent.