# Highly active cobalt based catalyst for $N_2O$ decomposition in the presence of NO

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Annually, Greenhouse gas emissions by nature and anthropogenic source have been increased. Among these gases, $N_2O$ has a high global warming potential (GWP) which is 310 times higher than that of $CO_2$. Therefore it is required to remove $N_2O$ in aerosphere. It is reported that $Co_3O_4$ is active for $N_2O$ decomposition due to its relatively high redox ability. However, Cobalt spinel synthesized by the co-precipitation method was significantly deactivated by NO at low temperature (below 400 °C). Many researchers reported that competitive adsorption between NO and $N_2O$ inhibit the catalytic activity for $N_2O$ decomposition. In order to overcome this phenomena, Co-Cu catalyst was prepared by co-precipitation method. This catalyst showed high activities in the presence of NO. The modified cobalt catalysts exhibit slightly decreased $N_2O$ conversion compared to that of $Co_3O_4$ at low temperature when NO is introduced into reactor. To identify this phenomena, the prepared catalysts were characterized by XRD, BET, $H_2$-TPR, $O_2$-TPD, NO-TPD and XPS.