

Effect of NO on Catalytic Decomposition of Nitrous Oxide over Cobalt Based Catalysts

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During the last decade, the increasing concentration of N₂O is considered as an important environmental issue due to the high global warming potential (GWP). It has 310 times higher than that of CO₂. It is reported that Co₃O₄ is active for direct N₂O decomposition owing to its relatively high redox property. Cobalt spinel, however, which was prepared by precipitation was significantly inhibited by NO at low temperature (<400°C). To solve this problem, researchers modified the composition of catalyst. This study shows the effect of NO over modified Co₃O₄ at low temperature (<400°C) for decomposition of N₂O. A modified cobalt based catalyst in this experiment was synthesized by co-precipitation and incipient wetness impregnation method[†]. Modified catalysts showed higher activities in the presence of NO than cobalt spinel oxide. In order to identify the effect of NO over prepared catalysts, BET, O₂-TPD, NO-TPD, H₂-TPR, XRD and XPS were performed to characterize catalysts.