

MODIFICATION OF COBALT SPINEL CATALYST FOR REMOVAL OF N₂O FROM NITRIC ACID PLANT TAIL GASES

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Abstract

Multicomponent K-doped Co-Mn-Al mixed oxide deN₂O catalysts were prepared by calcination of Co-Mn-Al layered double hydroxide and following impregnation by KNO₃. Tuning of the catalyst properties was guided by catalytic tests of N₂O decomposition including the effect of water, oxygen and NO_x inhibitors, TPR-H₂ and in-situ work function measurements. The optimal composition of the catalyst revealed in the laboratory experiments was successfully reproduced in large scale synthesis and shaping. In the pilot plant tests (130 days), high output in N₂O removal from the tail gases of the nitric plant was reached.

Keywords: Nitrous oxide, catalytic decomposition, mixed oxide catalyst, potassium

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