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## Cobalt-containing mixed oxide catalysts for removal of N<sub>2</sub>O from nitric acid plant tail gases

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Catalytic decomposition of N<sub>2</sub>O belongs to the Best Available Technologies for N<sub>2</sub>O abatement from nitric acid production, which has been recognized as the biggest industrial source of N<sub>2</sub>O emission. Many efforts have been made to develop the catalyst for efficient nitrous oxide removal from nitric acid tail gases at economically appealing low temperature (below 400 °C). However, this issue still remains an unsolved problem due to the presence of inhibiting co-reactants in the feed gas (O<sub>2</sub>, H<sub>2</sub>O and NO<sub>x</sub>) and the low concentration of the N<sub>2</sub>O pollutant.

Presented contribution summarizes our research dealing with cobalt mixed oxide catalysts for low temperature N<sub>2</sub>O catalytic decomposition. Tuning of the catalyst properties was guided by catalytic tests of N<sub>2</sub>O decomposition including the effect of water, oxygen and NO<sub>x</sub> inhibitors, TPR-H<sub>2</sub> 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 N<sub>2</sub>O removal from the tail gases of the nitric plant was reached.

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