

# Influence of the $\text{MgCo}_2\text{O}_4$ Preparation Method on $\text{N}_2\text{O}$ Catalytic Decomposition

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## Description

$\text{MgCo}_2\text{O}_4$  spinel catalysts were prepared via the solution combustion synthesis (SCS) and coprecipitation (CP) methods. The produced powder catalysts were characterized by XRD, BET, FESEM, TPD, and XPS. The performance of these catalysts toward the decomposition of  $\text{N}_2\text{O}$  to  $\text{N}_2$  and  $\text{O}_2$  was evaluated in a temperature programmed reaction (TPRe) apparatus in the absence and in the presence of oxygen ( $W/F = 0.03 \text{ g}\cdot\text{s}/\text{cm}^3$ ). The catalyst prepared by the CP method has been found to provide the best activity; the half conversion temperature ( $T_{50}$ ) of nitrous oxide was 380 and 415 °C in the absence and in the presence of oxygen, respectively. The  $\text{MgCo}_2\text{O}_4$  spinel catalysts were directly deposited, by *in situ* SCS and CP, over ceramic honeycomb monoliths and tested in a lab-scale test rig. Again in this case, a prevalent activity of the catalytic monolith prepared by CP has been observed. The higher activity ...