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Highly efficient and stable Ru/K-OMS-2 catalyst for NO oxidation

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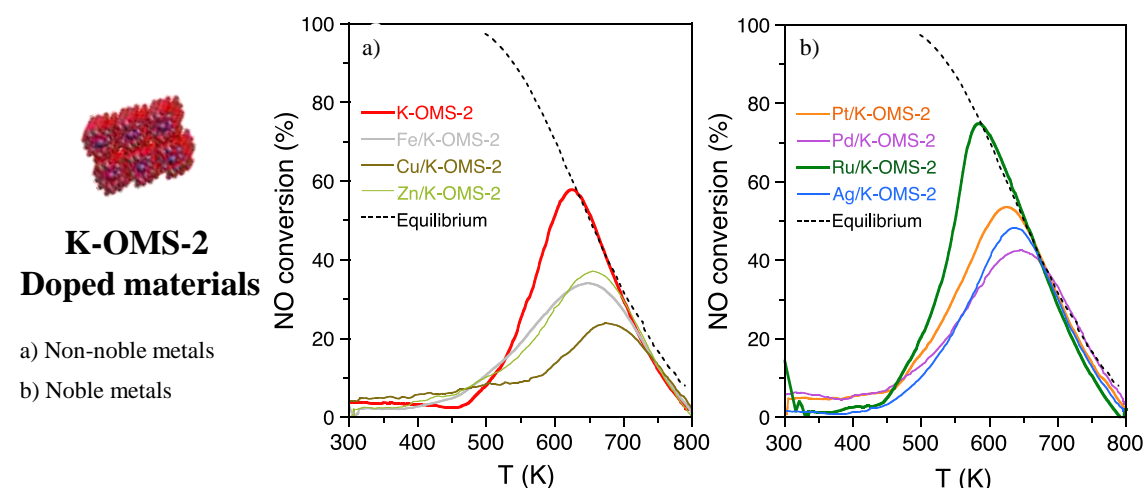
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Graphical Abstract



Highlights

- OMS showed higher catalytic activity than MnO_2 and LaMnO_3 .
- Noble metals modified the reducibility of OMS in the order $\text{Ru} > \text{Pt} > \text{undoped} > \text{Ag}$.
- The highest NO conversion was obtained for a K-OMS-2 catalyst modified with Ru.
- Ru/K-OMS-2 showed no deactivation during a 24 h stability test.

Abstract

The influence of addition of a series of non noble and noble metals to a manganese oxide octahedral molecular sieve (OMS) with a cryptomelane structure (K-OMS-2) has been studied for NO oxidation in view of fast selective catalytic reduction applications. Fe, Cu, Zn, Pt, Pd, Ru and Ag were selected as dopant metals with a metal loading around 2 wt.%. The catalysts were characterized in detail by ICP-OES, N_2 adsorption/desorption at 77 K, XRD, H_2 -TPR and HR-

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