

Nanostructured equimolar ceria-praseodymia for NO_x-assisted soot oxidation: Insight into Pr dominance over Pt nanoparticles and metal–support interaction

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Description

This work compares the catalytic activity of nanostructured ceria-praseodymia impregnated with Pt nanoparticles stabilized by *n*-octylsilane (Pt/Ce50Pr50-NP), with pure ceria nanoparticles (Ce-NP), ceria-praseodymia (Ce50Pr50-NP) and Pt on ceria (Pt/Ce-NP). The idea behind these structures stems from the fact that both Pt/ceria and Ce-Pr mixed oxide are effective towards CO, NO and soot oxidations, as well as for the NO_x-assisted soot oxidation. The oxide supports have been prepared via a hydrothermal synthesis. Catalytic activity tests have shown the effectiveness of Ce50Pr50-NP towards the NO_x-assisted soot oxidation. The intrinsic activity of this material is even higher than the Pt/Ce-NP counterpart. This finding seems related to the adsorption of NO₂ onto ceria-praseodymia. The addition of Pt on the Ce50Pr50-NP surface appears unnecessary as the effect of Pr on the catalytic activity prevails. The ...