

# Nanostructured ceria-praseodymia catalysts for diesel soot combustion

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## Description

Nanostructured ceria-praseodymia catalysts with different praseodymium contents have been prepared through hydrothermal synthesis to study the effect of Pr as a dopant and the effect of morphology towards soot combustion under “loose” and “tight” soot-catalyst conditions. Samples synthesized through solution combustion synthesis (SCS) have also been prepared as comparative materials. Studies in physicochemical properties of the catalysts have been carried out using complementary techniques. The present work also resorts to soot-TPR as an unconventional method of investigating the ability of solid catalysts to initiate soot oxidation in the absence of bulk oxygen. Ce50Pr50 catalyst (where 50 indicates the atomic percentage of cerium as well as of praseodymium) with mixed structures of nanorods and nanocubes has attained the best catalytic performances, thanks to the high lattice oxygen mobility and ...