

# Investigations into nanostructured ceria–zirconia catalysts for soot combustion

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Publication date 2016/1/1

Journal Applied Catalysis B: Environmental

Volume 180

Pages 271-282

Publisher Elsevier

## Description

A set of nanostructured ceria–zirconia catalysts with different Zr-contents and structural features has been prepared to study the effect of both the Zr-amount and its surface-dependent activity towards soot combustion under different experimental conditions (namely in “loose” and “tight” soot-catalyst contact). A ceria–zirconia sample has been synthesized by means of solution combustion synthesis (SCS) for comparison purposes. The physico-chemical properties of the catalysts have been investigated using complementary techniques.

The best catalytic performances have been achieved for the  $\text{Ce}_{0.9}\text{Zr}_{0.1}\text{O}_2$ -NP catalyst (where NP means nano-polyhedra and 0.9 indicates the atomic ratio of Ce/Ce + Zr), due to the higher mobility of the lattice oxygen within the solid, and its easier reducibility, compared to high-surface area catalysts with the same Ce/Zr ratio. Moreover, better activities, in terms of soot conversions ...

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