

# CuO nanoparticles supported by ceria for NO<sub>x</sub>-assisted soot oxidation: insight into catalytic activity and sintering

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## Description

The current work introduces Cu nanoparticles (Cu-NPs) stabilized by organosilane and deposited as CuO-NPs onto ceria with two different morphologies: spongy, microstructured ceria synthesized by Solution Combustion (CeO<sub>2</sub>-SCS) and nanostructured ceria nanocubes (CeO<sub>2</sub>-NC). Catalytic activity tests have demonstrated that combination of CuO-NPs and CeO<sub>2</sub>-SCS bring significance to CO and NO oxidations as it results in easier reducibility and better metal dispersion on the surface. However, CuO-NPs with CeO<sub>2</sub>-NC give the opposite effect on CO and NO oxidations: the increase of Cu loading lowers the catalytic activity. However, Cu/CeO<sub>2</sub>-NC combination, especially the one with low Cu loading, gives the best synergy for normal soot oxidation with oxygen, thanks to the structure-sensitivity of the reaction. In the presence of NO<sub>x</sub>, Cu/CeO<sub>2</sub>-SCS catalysts are active for soot oxidation at low temperature as ...