

Multifunctional catalyst based on BaO/Pt/CeO₂ for NO₂-assisted soot abatement and NO_x storage

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Publication date

2015/6/1

Journal

Fuel

Volume

149

Pages

78-84

Publisher

Elsevier

Description

In the present work the CeO₂/BaO/Pt system was selected in order to perform an NO₂-assisted soot oxidation. The aim of such catalytic system is to couple the catalytic functionality for soot abatement during DPF regeneration, namely CeO₂, and an embedded lean NO_x trap (LNT) functionality given by BaO, for NO_x storage, whose oxidation over Pt to form adsorbed nitrates is facilitated by the presence of CeO₂ itself.

The impact of process parameters, such as the catalyst preparation and the reaction conditions, was analyzed. The activity towards soot oxidation revealed that a physical mixture of CeO₂ and BaO allowed to obtain more performing catalysts than the co-synthesis route, the former reaching a peak temperature of soot oxidation equal to 475 °C, being 25 °C lower than the latter. The Pt addition to the two catalysts reduced their peak temperatures by around 30 °C in both cases.

It is worth noticing that the ...