

Accepted Manuscript

Title: Structure and surface properties of ceria-modified Ni-based catalysts for hydrogen production

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PII: S0926-3373(17)31151-7
DOI: <https://doi.org/10.1016/j.apcatb.2017.12.002>
Reference: APCATB 16237

To appear in: *Applied Catalysis B: Environmental*

Received date: 4-9-2017
Revised date: 28-11-2017
Accepted date: 2-12-2017

Please cite this article as: S.Damyanova, B.Pawelec, R.Palcheva, Y.Karakirova, M.C.Capel Sanchez, G.Tyuliev, E.Gaigneaux, J.L.G.Fierro, Structure and surface properties of ceria-modified Ni-based catalysts for hydrogen production, Applied Catalysis B, Environmental <https://doi.org/10.1016/j.apcatb.2017.12.002>

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Structure and surface properties of ceria-modified Ni-based catalysts for hydrogen production

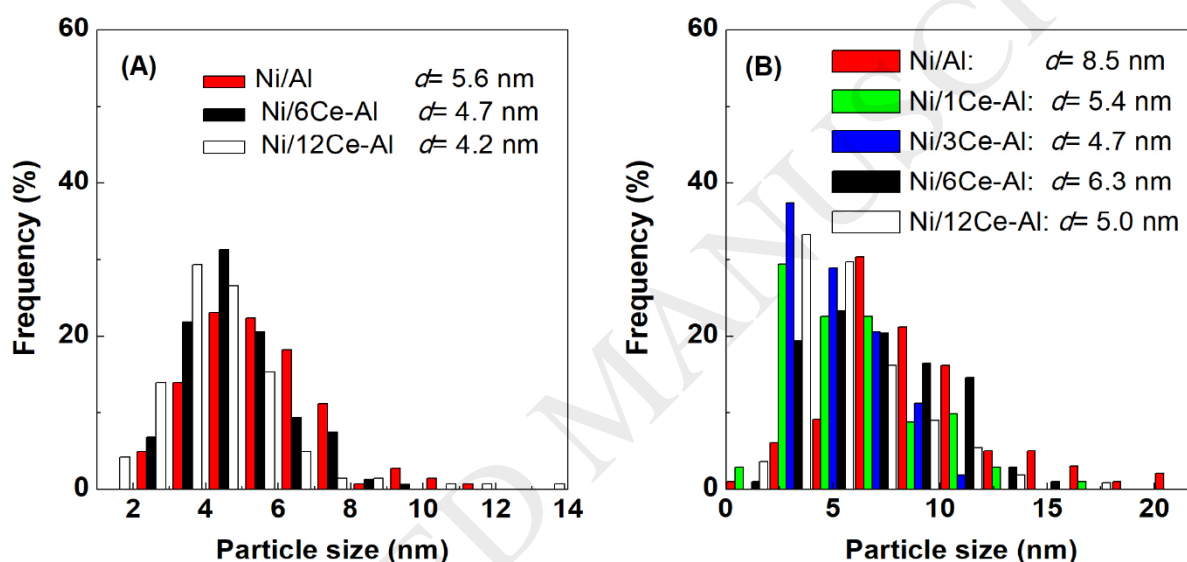
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Graphical Abstract



Particle size distribution for reduced and spent Ni_xCeO₂-Al₂O₃ catalysts with different CeO₂ content for dry methane reforming

Highlights:

- The effect of the CeO₂ content on the structure and behaviors of supported Ni catalysts on mixed xCeO₂-Al₂O₃ oxides in dry methane reforming was studied.
- Alumina-supported Ni catalyst modified with 6 wt% CeO₂ was the most active catalyst due to the intimate contact between the Ni and Ce species causing a high dispersion of the active nickel sites.
- Non-modified with ceria alumina-supported Ni catalyst was deactivated due to the heterogeneous distribution of the Ni particle size from 0.5 nm up to 20 nm that leads to formation of nanofibers.

Abstract

Series of Ni catalysts supported on alumina and mixed xCeO₂-Al₂O₃ oxides with different CeO₂ content (1–12 wt%) were prepared by impregnation method. The effect of CeO₂ loading

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