

Accepted Manuscript

Title: Effects of Ce substitution at the A-site of $\text{LaNi}_{0.5}\text{Fe}_{0.5}\text{O}_3$ perovskite on the enhanced catalytic activity for dry reforming of methane

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PII: S0926-3373(17)30969-4
DOI: <https://doi.org/10.1016/j.apcatb.2017.10.022>
Reference: APCATB 16102

To appear in: *Applied Catalysis B: Environmental*

Received date: 5-7-2017
Revised date: 9-10-2017
Accepted date: 10-10-2017

Please cite this article as: Meng Wang, Tingting Zhao, Xiaolei Dong, Ming Li, Haiqian Wang, Effects of Ce substitution at the A-site of $\text{LaNi}_{0.5}\text{Fe}_{0.5}\text{O}_3$ perovskite on the enhanced catalytic activity for dry reforming of methane, *Applied Catalysis B, Environmental* <https://doi.org/10.1016/j.apcatb.2017.10.022>

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Effects of Ce substitution at the A-site of $\text{LaNi}_{0.5}\text{Fe}_{0.5}\text{O}_3$ perovskite on the enhanced catalytic activity for dry reforming of methane

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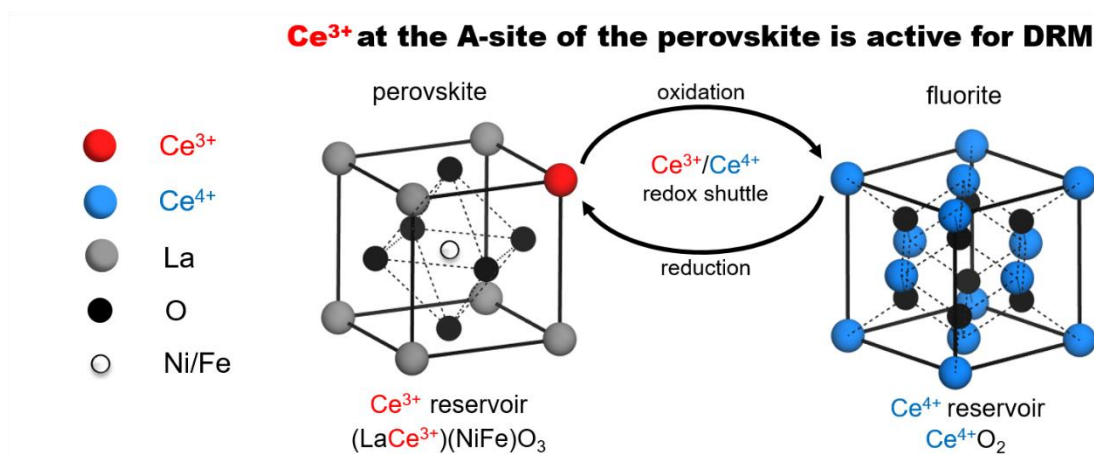
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Graphical Abstract



Highlights

- 1, Ce substitution in $\text{LaNi}_{0.5}\text{Fe}_{0.5}\text{O}_3$ mixed-oxide enhances the DRM activity.
- 2, The (LaCe)(NiFe) O_3 perovskite is responsible for the enhanced activity.
- 3, $\text{Ce}^{3+}/\text{Ce}^{4+}$ cations reversibly shuttle between (LaCe)(NiFe) O_3 and CeO_2 during DRM.
- 4, Ce^{3+} at the A-site introduces more oxygen vacancies by activating the B-site cations.

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