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Effects of Ce substitution at the A-site of $LaNi_{0.5}Fe_{0.5}O_3$ perovskite on the enhanced catalytic activity for dry reforming of methane

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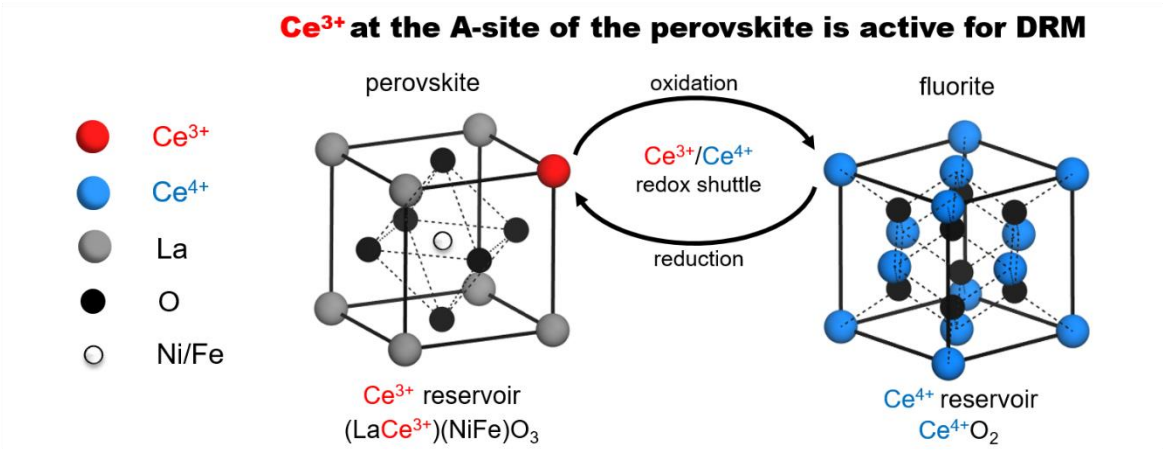
Graphical Abstract



Highlights

- 1, Ce substitution in $LaNi_{0.5}Fe_{0.5}O_3$ mixed-oxide enhances the DRM activity.
- 2, The $(LaCe)(NiFe)O_3$ perovskite is responsible for the enhanced activity.
- 3, Ce^{3+}/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.