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Metal-oxide interaction enhanced CO_2 activation in methanation over ceria supported nickel nanocrystallites

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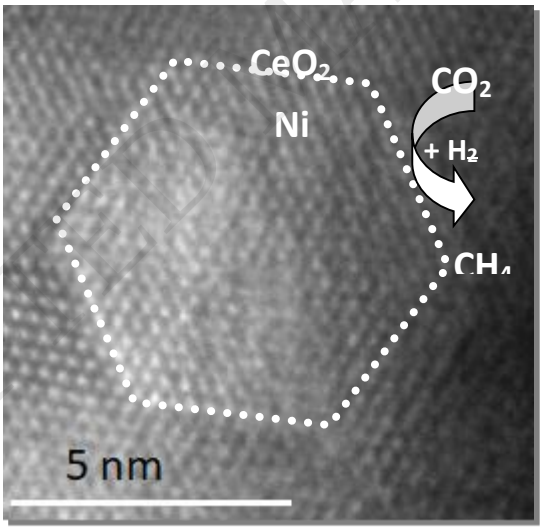
Graphical abstract



Highlights

- Reduction of Ni precursor on CeO_2 generated metal-oxide interface and hexagonal Ni particles.
- Ni/CeO_2 exhibited enhanced activity/selectivity in CO_2 methanation.
- Ni-CeO_2 interface facilitated CO_2 activation.
- Methanation activity can be tuned via decoration of Ni nanocrystallites by ceria.
- Structure reconstruction of Ni nanocrystallites can be linked to an initial loss of activity.