

A crucial role for the $\text{CeO}_2\text{-ZrO}_2$ support for the carbon dioxide reforming of methane over
MgO-promoted Ni-CeO₂-ZrO₂ catalysts

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To investigate the key factors that influence the catalytic performance in the carbon dioxide reforming reaction, MgO-promoted Ni-CeO₂-ZrO₂ catalysts are prepared by co-precipitation method with different CeO₂/ZrO₂ ratio. Ni-MgO-CeO₂ shows the smallest Ni particle size and the particle size decreases with increasing ZrO₂ content. Ni-MgO-Ce_{0.6}Zr_{0.4}O₂ exhibits the largest oxygen storage capacity among the prepared catalysts. The size of the Ni particles and the oxygen storage capacity are found to be the primary and secondary key factors that influence the catalytic performance, respectively. Overall, Ni-MgO-Ce_{0.8}Zr_{0.2}O₂ shows the best performance owing to a number of Ni active sites.