

Carbon dioxide reforming of methane using CeO₂, ZrO₂, and Ce-ZrO₂ promoted Ni-MgO catalysts for syngas production: Effect of Ce-Zr ratio

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ZrO₂, CeO₂, and Ce-ZrO₂ promoted Ni-MgO catalysts were prepared by a one-step co-precipitation method. The synthesized catalysts were applied to the dry reforming of methane. Catalytic reaction was carried out at 800 °C and a gas hourly space velocity (GHSV) of 720,000 h⁻¹ was used to screen the catalytic performance. The physicochemical properties of the catalysts were investigated using various techniques such as BET, XRD, TPR, H₂-chemisorption, and CO₂-TPD. Among the prepared catalysts, the Ni-MgO-ZrO₂ catalysts exhibited the highest CH₄ conversion. This result is mainly due to the easier reducibility, high Ni dispersion, and high specific surface area.