

The Effect of La_2O_3 content on $\text{Ni-La}_2\text{O}_3\text{-Ce}_{0.8}\text{Zr}_{0.2}\text{O}_2$ Catalysts for low temperature Steam Reforming of Methane

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$\text{Ni-La}_2\text{O}_3\text{-Ce}_{0.8}\text{Zr}_{0.2}\text{O}_2$ catalysts with different La_2O_3 content has been applied to low temperature steam reforming of methane. The catalysts are prepared by co-precipitation method. To understand the physicochemical properties of catalysts, various techniques has been carried out such as BET, XRD, TPR, H_2 -chemisorption. BET surface area, Ni dispersion, crystallite size of Ni, and reducibility are strongly dependent on the La_2O_3 content. Among the prepared catalysts, $\text{Ni-La}_2\text{O}_3\text{-Ce}_{0.8}\text{Zr}_{0.2}\text{O}_2$ catalyst which is contained 70 wt.% La_2O_3 shows the highest CH_4 conversion ($X_{\text{CH}_4} > 53.3\%$). This result is mainly due to high Ni dispersion, small crystallite size of Ni and high reducibility.