

Autothermal reforming properties of nickel–alumina based catalysts with n-hexadecane

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To investigate ATR (autothermal reforming) properties for diesel, various Ni–Al based catalyst added with Lanthanum (LaNA10–PM), Cerium (CeNA10–PM) and Iron (FeNA10–PM) promoter were prepared. These catalysts were prepared by polymer incipient method using PMMA (poly methyl methacrylate). The catalytic activity of the catalysts was tested carried out in a fixed-bed reactor, S/C = 1.19, O<sub>2</sub>/C = 2.42 and GHSV = 5000~12000 h<sup>-1</sup> at 750 °C. N-hexadecane was selected as a surrogate for diesel fuel because it is regarded to have similar properties. The FeNA10–PM catalyst showed the higher and more stable H<sub>2</sub>, CO yields and hexadecane conversion than other catalysts. The catalysts were characterized by XRD, XPS and SEM–EDS.