

Enhancement effect of noble metals over the hydrotalcite catalyst in propane autothermal reforming

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The performance of hydrotalcite catalysts in propane autothermal reforming for hydrogen production was studied in fixed-bed flow reactor. Hydrotalcite catalysts were synthesized by co-precipitation and compared with commercial catalysts. Reaction test was conducted using a feed of H₂O/C/O₂=3/1/0.37 at a temperature range from 300°C to 700°C. The addition of alkali earth metals and ceria enhanced the catalytic activity and this enhancement was further increased when the catalysts were modified by noble metals. Among the alkaline earth metals added to the catalysts, metals of larger atomic number exhibited higher activity. When added the promotor of small quantity, the size of nickel particles was decreased and degree of dispersion increased. Also the carbon deposit is low after the reaction.