

Production of hydrogen by autothermal reforming of propane

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The performance of hydrotalcite-like catalysts in propane autothermal reforming for hydrogen production was studied in fixed-bed flow reactor. Hydrotalcite-like catalysts were synthesized by co-precipitation and modified co-precipitation by a impregnation method and compared with commercial catalysts, Ni/Al₂O₃. Reaction test was conducted using a feed of H₂O/C/O₂=3/1/0.37 at in a temperature range from 300°C to 700°C. Catalysts were characterized by using XRD, TEM, SEM, EDX methods. The results of analysis indicated that the nickel particle size of hydrotalcite-like catalysts was smaller and more dispersive than the commercial catalyst. Reaction test results indicated that hydrotalcite-like catalysts of modified method by a impregnation was better showed higher H₂-yield than co-precipitation method. The sequence of the activities of the hydrotalcite M/MgAl(M=Ni, Co, Cu) for autothermal reforming of propane was Ni > Co > Cu.