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Steam Reforming of Methanol on Ni/Al_2O_3 Catalyst in a Pd-membrane Reactor

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The application of the membrane reactor to steam reforming of methanol was studied as a hydrogen producing reaction. The activities, stabilities and selectivities of Cu/ZnO, Ni/Al_2O_3 and Ru/Al_2O_3 catalysts were tested using a conventional fixed-bed flow reactor. Ni/Al_2O_3 catalyst showed the most stable activity at 723 K but relatively low hydrogen yield because of methanation. However, the hydrogen-permeable membrane reactor suppressed methanation and hydrogen yield was enhanced compared with the conventional reactor. The membrane reactor was more effective at higher temperatures and higher *W/F*.

Keywords: Membrane reactor, Palladium membrane, Steam reforming, Methanol, Hydrogen production

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