

### Studies on the Steam CO<sub>2</sub> Reforming of Methane over Ni based Catalyst

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Simultaneous steam CO<sub>2</sub> reforming reaction of methane(MSCR) for the production of syngas was investigated over Ni based catalysts. The Ni based catalysts were prepared by the solid phase crystallization and impregnation methods. The catalysts before and after the reaction were characterized by N<sub>2</sub> physisorption, CO chemisorption, TPR, XRD, SEM and TEM techniques.

For Fischer-Tropsch synthesis reaction, the feed ratio of CH<sub>4</sub>/H<sub>2</sub>O/CO<sub>2</sub> for the production of H<sub>2</sub>/CO=2 was estimated by the modeling of PRO II simulation, and identified in the fixed bed reactor system. The results on the MSCR were compared with those on steam reforming(SR) of methane over the same catalyst. It was found that the Ca modified Ni based hydrotalcite catalyst showed higher catalytic stability with the restriction of carbon formation in the MSCR under the tested condition.