Characterization of Ni-based Catalysts for SNG synthesis

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Recently, the production of synthetic natural gas (SNG) from syngas (CO and H_2) has attracted considerable attention. Most of the processes for the SNG production use the Ni-based catalysts, which contain up to 50% of Ni on alumina support. They include several promoters to improve the catalytic activity or prevent the catalyst deactivation. In the present study, we prepare the SNG catalysts based on the knowledge from the commercial catalyst. Generally, the catalysts were prepared by co-precipitation using nickel nitrate, aluminum nitrate and magnesium nitrate. The effect of supports including Al_2O_3 and MgO-Al_2O_3 prepared by different method has been verified. These catalysts have been characterized by XRD, TPR and FT-IR. We also prepared the spinel $MgAl_2O_4$ structure, and the catalytic activity over this support will be presented.