

## MgO Promotion of Ni/Al<sub>2</sub>O<sub>3</sub> Catalysts for the Control of Coke on Combined Reforming of Methane

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The combined steam and carbon dioxide reforming of methane has recently been carried out for the control of H<sub>2</sub>/CO ratios in synthesis gas production. Especially, for application of oxo-synthesis and Fischer-Tropsch process, it is necessary to produce synthesis gas with a H<sub>2</sub>/CO ratio of 2. In this reforming process, Ni based catalysts have been used as promising catalysts due to high activity comparable to expensive noble metal catalysts. Generally, the deactivation of these catalysts is mainly attributed to coke deposition and metal sintering in severe operating conditions.

In this study, Ni/Al<sub>2</sub>O<sub>3</sub> catalyst has been promoted with basic metal oxide (MgO) to enhance the coke resistance with a good thermal stability due to the formation of stable MgAl<sub>2</sub>O<sub>4</sub> spinel phase. MgO-promoted Ni/Al<sub>2</sub>O<sub>3</sub> catalyst was prepared by an incipient wetness method and characterized by XRD, BET and H<sub>2</sub>-TPR. The coke amount was measured quantitatively by TGA analysis.