

### Catalytic activity of Mg promoted Ni catalysts for dry reforming

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In recent years, catalytic reforming of methane with carbon dioxide to synthesis gas has received considerable attention. One of the serious problems in this reaction is the carbon deposition, which leads to severe catalyst deactivation. It has been well established that noble metals such as Rh, Ru, and Pt do not experience severe carbon deposition, while Co and Ni are very sensitive to deactivation by carbon deposition. However, high market prices of noble metals render their industrial application quite questionable. Therefore, it is more practical from the industrial standpoint to develop an improved nickel-based catalyst. This leads to the investigation of supported catalysts consisting of non-noble metal and promoters, in order to obtain a considerable catalytic activity without suffering the catalyst deactivation by carbon deposition. In this study, we prepared the co-impregnated Ni-Mn/HY, Ni-K/HY, Ni-Ca/HY, and Ni-Mg/HY catalysts and investigated their catalytic activity and stability in the methane reforming with carbon dioxide with an aim of minimizing carbon deposition on catalyst surface and improving the stability and performance of Ni/HY catalyst.