

제조조건에 따른 메탄의 이산화탄소 개질 반응용
Ni/헥사알루미늄 옥사이드 촉매의 특성

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The CO₂ reforming of methane has attracted our attention because it is a very effective way for the conversion of two of the cheapest carbon containing molecules, CH₄ and CO₂, to CO and H₂. Precious metals, such as Pd, Pt and Ir, have showed high activity for the reforming, but the high cost is an inhibiting factor for the industrial application. Supported Ni catalysts have also been reported to be effective for reforming, however they suffer from serious deactivation due to coking, sintering of metal particles and phase transformation. La-hexaaluminate, which has been known to be an excellent catalyst for the high-temperature catalytic combustion, is used for the support of Ni. La-hexaaluminate is prepared at various conditions and tested for the reforming reaction. The catalytic activity for the CO₂ reforming of methane were examined and compared to that of Ni/Al₂O₃. The reaction products were on-line analyzed using a GC. The crystalline structure of the catalyst before and after the reaction was investigated by XRD and the phase transformation and coke deposition were observed by using SEM. TGA and TPO were performed for the identification of the carbonaceous compounds deposited on the catalyst surface.