

Performance of Ni/Hexaaluminate Catalyst in CO₂ Reforming of CH₄

김희연*, 이승재, 정남조, 류인수, 강성규, 송광섭
한국에너지기술연구원
(kyeonee@hanmail.net*)

CO₂ reforming of CH₄ has drawn much attention due to the potential significance as an alternative to the conventional steam reforming. The objective of this study is to improve the performance of Ni catalyst by using La-hexaaluminate, which has been known to be the excellent catalyst support for the high-temperature catalytic combustion, as a support of Ni. At the beginning of the reaction, CH₄ conversion of Ni(20 wt%)/La-hexaaluminate is larger than the case of Ni(20 wt%)/Al₂O₃. After 24 h, the catalytic activity of the former is slightly decreased, but the higher activity compared to that of Ni(20 wt%)/Al₂O₃ is still maintained. TGA results of both catalysts designates that the amount of coke deposited on the catalyst surface is much larger in the case of Ni/Al₂O₃ and the oxidation completed at lower temperature in the case of the former catalyst. These above results designate that the La-hexaaluminate is preferable to commercial Al₂O₃ for the use as a support of the reforming catalysts. We also investigated the coke deposition and the phase transformation of Ni catalysts of various metal loadings, catalyst support, and reaction periods by using TPO, XRD and SEM.