

### Autothermal reforming properties of nickel–alumina catalysts with various preparation methods

주동건, 정석용, 이수출, 김재창\*  
경북대학교  
(kjchang@knu.ac.kr\*)

To investigate autothermal reforming properties for diesel, various nickel–alumina catalysts were prepared by different preparation methods, such as, co-precipitation (NA10-CP), impregnation(NA10-IM) and porous material method(NA10-PM) using PMMA(poly methyl methacrylate). The various nickel–alumina catalysts were carried out in a fixed-bed reactor at 750°C, S/C = 0.5~2, O<sub>2</sub>/C = 0.2~0.5 and GHSV = 5000~12000h<sup>-1</sup>. Dodecane was selected as a surrogate for diesel fuel because it is regarded to have similar properties. NA10-PM catalyst recorded production above 80% of theoretically calculated hydrogen production amounts and no deactivation for 100hr. The other catalysts like NA10-IM and NA10-CP recorded hydrogen production of 60~80% in initial reaction, but these catalysts activities were deactivated. These results were related to pore size, pore volume, crystal structure and dispersion of Ni active sites of nickel–alumina catalysts formed by various preparation methods.