

## Partial oxidation of methane over transition-metal-substituted hydrotalcite catalysts

의승환, 김미소, 곽정훈, 윤기준\*  
성균관대학교 화학공학과  
(kijyoon@skku.edu\*)

Catalytic performance of transition-metal-substituted hydrotalcite ( $M_xMg_{6-x}Al_2(CO_3)(OH)_{16}4H_2O$ ;  $M=Ni, Co, Zn, Cu, Mn, x=0.5\sim3$ ) in partial oxidation of methane was studied in a fixed-bed reactor. The hydrotalcite catalysts were synthesized by a co-precipitation method with changing of the transition metal and the ratio of  $M/Mg$  from 0.5/5.5 to 3/3. The catalysts were characterized by XRD, SEM and BET. Partial oxidation of methane was carried out by using 0.05 g each of catalyst at a temperature range from 500°C to 800°C.  $CH_4/O_2$  feed ratio was fixed to 2 (VHSV = 120,000 $cm^3/g \cdot h$ ). Among the transition metals investigated, Ni exhibited higher activity than the others. The hydrotalcite catalyst with the Ni/Mg ratio of 3/3 exhibited higher catalytic activity than the catalysts with the lower Ni/Mg ratios.