

Preparation and characterization of Mn/Na₂WO₄ catalyst

송훈, 송요순^{1,*}, 조성준¹
진남대학교 응용화학공학과; ¹진남대학교 응용화학공학부
(yssong@chonnam.ac.kr*)

Methane has drawn much attention as a clean energy in near future. Chemical conversion of methane as valuable chemical feedstocks are also important for petrochemical industry. The Mn/Na₂WO₄/SiO₂ or MgO catalysts are well known for oxidative coupling of methane at 1073–1173 K. C₂ product yield was limited to 16% (80% conversion and 20% selectivity). Typical Mn/Na₂WO₄/SiO₂ has low surface area, ~ 1 m²g⁻¹. Thus, increasing the active surface area can be an alternative to enhance the catalytic performance of the Mn/Na₂WO₄. In the present work, Al(Mg)O has been utilized as a support for the Mn/Na₂WO₄. The catalyst supported Al(Mg)O has been prepared by incipient wetness method. The surface area of the obtained catalyst was extremely large, 37 m²g⁻¹ compared to that of the supported catalyst on SiO₂, 0.05 m²g⁻¹. This difference comes from the catalytic sintering of SiO₂ by Na⁺. The result of XRD patterns indicates that there is large agglomerates of MnWO₄, MnO etc in the silica-supported catalyst. However, it seems that the catalytic entity was well dispersed on the Al(Mg)O support, which can be beneficial for the catalytic conversion of methane to C₂ products. The details of characterization of the catalysts will be presented.