

PdM(Cu,Ni,Co,Fe)/ZnO catalysts for CO₂ hydrogenation to methanol

송경호, 김학주[†]
한국에너지기술연구원
(hakjukim@kier.re.kr[†])

In recent years the effects of global warming have attracted efforts to cope with the rising level of CO₂ in the atmosphere by capture, storage and utilisation of this abundant carbon source. One such effort is the transformation CO₂ to methanol synthesis.

Methanol from CO₂ hydrogenation was industrially produced under high temperature and high pressure (523–573K, 3–5MPa), mainly using Cu/ZnO/Al₂O₃ catalysts. However, the efficiency of methanol synthesis was severely limited by thermodynamics because methanol synthesis was an exothermic reaction. Therefore, developing a low-temperature catalysts for methanol synthesis will greatly reduce the production cost.

In the present work, The formation of PdM(Cu, Ni, Co, Fe) bimetallic alloys on the ZnO support was investigated, together with the effect of alloy formation on the low temperature CO₂ hydrogenation reaction.