

Steam-CO₂-Reforming of methane over MgO-MgAl₂O₄ structural catalyst with controlled pore morphologies

임상진^{1,2}, 안병성¹, 문동주¹, 이관영², 김상우^{1,†}

¹KIST; ²고려대학교

(swkim@kist.re.kr[†])

Magnesium oxide (MgO) as a support for a nickel catalyst has been much attracted because it has excellent capability to inhibit the carbon coking during the Steam-CO₂-Reforming (SCR) of methane. In spite of the benefit, the application of MgO as the catalyst support has been limited in the SCR of methane because of its low mechanical strength. Magnesium aluminate spinel (MgAl₂O₄) offers a desirable combination of properties for use in the catalyst, due to its high melting temperature, good chemical stability and mechanical strength.

The intrinsic factors of the catalyst support affecting the SCR reaction are the pore size, pore shape, pore surface area, and so on. In this study, we controlled the factors artificially by changing the shape of MgO precursors such as cube-like and sphere-like shape in the MgO-MgAl₂O₄ structural catalyst support. And we compared the effects of Ni/MgO-MgAl₂O₄ structural catalysts including different shape of MgO precursors on the SCR reaction.