# Coke study of Ni/MgO-$MgAl_2O_4$ structural catalyst with controlled pore morphologies for steam-$CO_2$-reforming of methane

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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-$CO_2$-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 poor strength.
Magnesium aluminate spinel ($MgAl_2O_4$) 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-$MgAl_2O_4$ structural catalyst support. And we compared coke resistance of Ni/MgO-$MgAl_2O_4$ structural catalysts including different shape of MgO precursors on the SCR reaction.