

Studied on the effects of meso/macro pores structured Ni based catalysts in Steam-  
CO<sub>2</sub>-Reforming of methane.

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The catalyst supports with bimodal pre structure were prepared from MgO cube and MgAl<sub>2</sub>O<sub>4</sub>, which presented meso and macro pores. To investigate the effect of macro pore volume on the SCR activity, two kinds of Ni/MgO-MgAl<sub>2</sub>O<sub>4</sub> catalysts with largely different macro pore volume and size but nearly same meso pore volume and size were compared. The bimodal catalyst with a large macro pore size and volume exhibited the enhanced CO<sub>2</sub> conversion but slightly reduced CH<sub>4</sub> conversion. As a result, it was found that the large macro pores led to an enhanced mass transfer rate of CO<sub>2</sub> absorption into the spinel pore channels and the reduced methane decomposition rate, because the MgO has the strong base strength and high concentration of base sites on the surface of the catalyst. The coke formation was also suppressed effectively.