

Application of mesoporous bimetallic NiCu -CeO₂ oxide as a catalyst for the high temperature water -gas shift reaction**JHA AJAY,**

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Mesoporous bimetallic NiCu -CeO₂ catalysts have been designed and applied to high temperature water gas shift reaction (HT -WGS). We optimized the loading of nickel and copper on mesoporous ceria to obtain highly active and selective catalysts for HT -WGS. Among the catalysts with various nickel and copper loading values, 6%Ni24%Cu -CeO₂ catalyst exhibited not only the highest catalytic activity and selectivity but also remarkable stability. The high activity of the catalyst is due to the mesoporous architecture which provides more accessible active sites for the HT -WGS. The detailed studies on the composition and mesoporosity of the catalysts were performed by using powder X -ray diffraction (XRD), Small angle x -ray scattering (SAXS), N₂ -adsorption/desorption and H₂ temperature-programmed reduction (TPR) techniques to understand the role of bimetallic oxide (NiCu -oxide) in the enhancement of catalytic activity for the HT -WGS.