Study of the influence of the Cu/Ce loading ratio in the formation of highly active species on ZrO2 supported copper-ceria catalysts

Aguila, Gonzalo

Guerrero, Sichem

Baeza, Patricio

Araya, Paulo

 This work studies the effect of different Cu/Ce loading ratios in the formation of highly dispersed copper species being interacting with CeO2 on zirconia-supported CuO?CeO2 catalysts. These species have a strong effect on the CO oxidation reaction and for this reason such reaction was selected to conduct the present study. Catalysts with different metal loads were prepared by the co-impregnation method of Cu and Ce nitrates on ZrO2 support. It was found that the influence of the two metals occurs cooperatively. The type of copper species formed on the ZrO2 support depends on the Cu and Ce loads, with the existence of an optimum in activity when the Cu/Ce loading ratio being around 0.5. The incorporation of CeO2 increases the dispersion capacity of ZrO2 and facilitates the reduction of surface CuO species. Maintaining the Cu/Ce loading ratio constant at the optimal ratio (0.5) and increasing the total metal load (Cu+Ce) gave no significant increase in the catalytic