Physicochemical, surface and catalytic properties of nanocrystalline CuO–NiO system as being influenced by doping with La 2O 3


ABSTRACT

The physicochemical, surface and catalytic properties of pure and La2O3-doped CuO–NiO solids prepared by sol–gel method were investigated. The dopant concentrations of La2O3 were 2.0, 4.0 and 6.0mol%. The solids investigated were calcined at 400 and 600°C. The techniques employed were XRD, EDX, TEM, surface excess oxygen, nitrogen adsorption at −196°C and catalytic oxidation of CO by O2 at 150–400°C using both static and flow methods. The results revealed that La2O3 doping of the system investigated followed by calcination at 400 and 600°C led to a considerable increase in its catalytic activity in CO oxidation by O2 carried out using static and flow methods. The doping process was not accompanied by any change in the activation energy of the catalyzed reaction.