

Effect of Pt-MO_x (M = Fe, Co) interaction on the preferential oxidation of CO over Pt/MO_x/TiO₂ catalysts prepared by selective electrostatic adsorption

Navas-Cárdenas, Carlos

Benito, Noelia

Wolf, Eduardo E.

Gracia, Francisco

In this work, the catalytic properties of Pt/MO_x/TiO₂ (M = Fe, Co) catalysts prepared by strong electrostatic adsorption (SEA), were investigated for the preferential oxidation (PROX) of CO in H₂. The SEA method was chosen to achieve a preferential adsorption of Pt onto supported MO_x nanoparticles rather than onto the TiO₂ surface. XPS, TPR and TEM analysis indicate that the enhancement in the catalytic activity of Pt/MO_x/TiO₂ is related to a synergetic effect originated by a close contact between Pt and MO_x (M = Fe, Co) surface. The results clearly show that Pt supported on CoO_x/TiO₂ calcined at 300 °C, and then reduced at 100 °C, exhibits the highest activity, e.g. higher CO conversion and CO₂ selectivity, among the supported catalysts studied in this work, that was attributed to a higher concentration of Pt-CoO_x moieties over the catalytic surface. This study reports a simple and efficient way to synthesize Pt-promoted catalysts where strong metal-support interac