CO Oxidation Performances: Cu Oxides Versus Ni, Pd–TiO2@SiO2 Core–Shell Nanostructures

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We prepared Cu oxides, and Ni and Pd-TiO2@SiO2 core-shell nanostructures, and tested their CO oxidation performances by temperature-programmed mass spectrometry. We found the starting temperatures of CO oxidation are around 200°C and 300°C for Ni and Pd-TiO2@SiO2 nanostructures, respectively. Cu oxides are cubes with 50~200 nm with, prepared with different concentrations of NaOH and ascorbic acid. For the core-shell structures, we prepared 100 nm SiO2 spheres, first coated the surface with TiO2 precursor, and then coated with Ni and Pd. Their characteristics are further examined by scanning electron microscopy, optical microscope, FT-IR, and UV-Vis absorption spectroscopy.

Keyword: CO oxidation