

## The Role of the Surface Oxide Layer on Ru Nanoparticles in Catalytic Activity of CO Oxidation

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The study on the catalytic oxidation of carbon monoxide (CO) to carbon dioxide (CO<sub>2</sub>) using the noble metals has long been the interest subject and the recent progress in nanoscience provides the opportunity to develop new model systems of catalysts in this field. Of the noble metal catalysts, we selected ruthenium (Ru) as metal catalyst due to its unusual catalytic behavior. The size of colloid Ru NPs was controlled by the concentration of Ru precursor and the final reduction temperatures. For catalytic activity of CO oxidation, it was found that the trend is dependent on the size of Ru NPs. In order to explain this trend, the surface oxide layer surrounding the metal core has been suggested as the catalytically active species through several studies. In this poster, we show the influence of surface oxide on Ru NPs on the catalytic activity of CO oxidation using chemical treatments including oxidation, reduction and UV-Ozone surface treatment. The changes occurring to UV-Ozone surface treatment will be characterized with XPS and SEM. The catalytic activity before and after the chemical modification were measured. We discuss the trend of catalytic activity in light of the formation of core-shell type oxide on nanoparticles surfaces.