

Characterization of a series of PtRu/C catalysts with Pt : Ru ratios for the electrooxidation of CO

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We investigated the electrochemical oxidation of carbon monoxide (CO) over a series of carbon supported PtRu catalysts, in which the Pt:Ru ratio is systematically varied from 10:0 to 0:10 that were prepared through an impregnation method by using reductants of NaBH₄. The electrocatalytic activity was measured and compared through the cyclic voltammetry technique (i.e., CO stripping voltammetry) over a three-electrode half-cell system. CO stripping voltammetry results showed that the nominal Pt:Ru ratio of 5:5 would be the best performing composition among the various PtRu/C electrocatalysts, considering the experimental results that the lowest CO stripping oxidation voltage and the highest current density were observed at 5:5 composition in line with others reported previously. In this study, we are devoting to correlate the electrocatalytic activities of the CO oxidation with the structural and electronic properties of the PtRu/C catalysts with different Pt:Ru ratios as examined by XRD (Power X-Ray Diffraction), HRTEM (High-Resolution Transmission Electron Microscopy), XPS (X-ray photoelectron microscopy) and XAFS (X-ray absorption fine structure).