

Abstract No. Khan0257

Valence-State XPS of Bimetallic Surfaces

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Beamline(s): U12

Introduction: Bimetallic Surfaces have been known for many years to have unique physical, chemical and electronic properties. Previously, we have shown that Ni/Pt(111) and Ni/W(110) surfaces show unique catalytic properties using chemical probes such as hydrogen, cyclohexene, ethylene and thiophene [1-3]. Using the highly surface sensitive electronic probe of valence-state X-ray photoelectron spectroscopy (XPS), we have investigated the electronic properties of these surfaces.

Methods and Materials: Ni metal was deposited on Pt(111) and W(110) single crystals to fabricate the bimetallic surfaces. Ni was evaporated using a metal doser with Ni wire wrapped around a tungsten filament. XPS measurements were taken as a function of coverage on a clean substrate surface, 0.5 ML (monolayer), 1 ML and >2 ML Ni.

Acknowledgments: This project was funded by Department of Energy, Office of Basic Energy Sciences. NSLS is also funded from the Department of Energy.

References:

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