

Abstract Submitted
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Shifting the Reference: Co on Cu(775)¹ M.B. YILMAZ, S. WANG, K.R. KNOX, N. ZAKI, J.I. DADAP, R.M. OSGOOD, Columbia University, T. VALLA, P.D. JOHNSON, Brookhaven National Laboratory — Bimetallic metal stepped surfaces enable easy and controlled variation of surface electronic structure. Use of vicinal substrates varies the electronic structure compared to that of flat surfaces directly as a result of the ordered step array and indirectly by affecting the growth mode of the adlayer. We have used ARUPS measurement to probe the coverage-dependent electronic structure of the Co/Cu(775). The regular step structure on our substrate gives rise to Umklapp features and shift in the surface state binding energy ($\Delta E=110$ meV). It also displays a shift in the reference frame, which is in agreement with earlier vicinal-angle guidelines. However, in the presence of even 0.03 ML Co, a dramatic shift in the reference plane occurs, which is in accord with a change in the surface atomic structure. At 0.06 ML, new electronic features are observed, namely a quantum well state that results from the hybridization of Co with the Cu(775) and a nondispersive d-band due to island growth of Co. This latter band smoothly evolves into a Co d-band similar to that previously observed on Co/Cu(111).

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