

Study of Electronic Structures of Ion-Beam-Mixed Pd-Au alloys

Y.S.Lee, K.Y.Lim, Y.D.Chung, J.H.Kim¹, H.J.Kang¹, J.J.Woo², Y. Jeon³,
C.N.Whang

Department of Physics, Yonsei University, Seoul 120-749, Korea.

¹Department of Physics, Chungbuk Nat'l University, Cheongju 361-763, Korea.

²Department of Physics, Chonnam National University, Kwangju, 500-757, Korea.

³Department of Physics, Jeonju University, Jeonju, 560-759, Korea.

We investigated the electronic structure change of ion-beam-mixed Pd-Au alloys by the electron excited Auger electron spectroscopy and XPS(x-ray photoelectron spectroscopy). We study mainly in a point of view of Auger energy shift and AES line shape. This Auger electron spectra compared with the valence-electron spectra. A shift of the Auger spectrum is the only substantial difference between the Auger spectrum in the alloy metals and that in the pure metals. The line shapes serve as indications for the nature of the local environment because the Auger line shape is the valence band density of states convoluted with itself.

Upon alloying, there is the shape change in both Pd MNN and Au NVV Auger spectra. We obtained the results as follows. In Pd site of ion-beam-mixed Pd-Au alloys, *d* state is increasing with increasing of Au concentration. In Au site of Pd-Au alloys, *d* state is decreasing with increasing of Pd concentration. In addition, we can find that the Au $d_{5/2}$ state is mainly decreasing.

→ This work was supported by BSRI program (BSRI-96-2426, BSRI-96-2433) and the KOSEF through the Atomic scale Surface Science Research Center at Yonsei University.