

Abstract Submitted
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Inequivalent Down Atom (3x3) structure in Sn/Ge(111). R. CORTES, Dpto. Fisica Materiales, Univ. Complutense, Spain, A. TEJEDA, MPQ, CNRS, France, J. LOBO-CHECA, Dpt. of Physics, Univ. of Basel, Switzerland, C. DIDOT, B. KIERREN, D. MALTERRE, LPM, Univ. Henri Poincare, France, E.G. MICHEL, Dpto. Fisica Mat. Condensada, Univ. Autonoma de Madrid, Spain, A. MASCARAQUE, Dpto. Fisica Materiales, Univ. Complutense, Spain — The (3x3) phase of Sn/Ge(111) is formed by three Sn atoms in the unit cell, one of them at a higher level than the other two (1-up, 2-down model). Although this model is mostly accepted, it is still controversial because of apparently contradicting experimental results related to the Sn 4d core level line shape. This work reports on high-resolution photoemission spectroscopy (HR-PES) and scanning tunnelling microscopy (STM) experiments on Sn/Ge(111)-(3x3). Our PES data resolve three main components in the Sn 4d core level [1] instead of two found before [2], which are assigned to the three Sn atoms in the unit cell. This indicates that the two down atoms are at slightly different heights, forming an inequivalent-down-atoms (IDA)-(3x3) structure, also confirmed by STM images. These results conclusively solve the long-standing controversy [2] on the interpretation of the Sn 4d core level line shape, and support a model fully consistent with an initial state picture. [1] A. Tejeda et al. Phys. Rev. Lett. In press [2] R.I.G. Uhrberg et al., Phys. Rev. Lett. 85, 1036 (2000) and references there in.

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