

Weitering *et al.* Reply: Based on a comparison of their photoemission data¹ with our electrical data² Le Lay and Hricovini³ argue that the difference of the Schottky-barrier height (SBH) cannot simply be assigned to two different structures of the two-dimensional adlayers and rather points to drastic structural changes in the first layers during the growth of the Pb islands. We have recently carried out conventional x-ray photoemission spectroscopy and angle-resolved ultraviolet photoemission spectroscopy, and synchrotron photoemission experiments and we fully agree with the data presented by Le Lay, Hricovini, and Bonnet.⁴ The interesting question is whether the discrepancy between the electrical data and the photoemission data must be attributed to drastic structural changes below the islands.

However, the SBH's which can be inferred from photoemission experiments at monolayer coverage are not necessarily the same as those derived from electrical measurements on thick layers.⁵ In our Letter,² we stated that the different pinning positions of the Fermi level for both Schottky diodes must be due to different types of interface states. From core-level photoemission experiments on the Pb/Si(111) system, one can follow the change of the Fermi-level position during the Pb deposition up to a coverage of one monolayer. At (sub)monolayer coverage, the Fermi level is pinned by Pb-induced surface states. The nature of these states can be different from those at a fully established interface. So different electronic states might be responsible for Fermi-level pinning at (sub)monolayer coverages and at thick films. Therefore the discrepancy between the electrical data and photoemission data cannot be conclusively assigned to structural rearrangements at the interface.

Of course, detailed structural information about the atomic arrangement at the interface is a prerequisite for a definite interpretation of the difference in SBH. Recently, we performed grazing incidence x-ray-diffraction experiments on the metastable adlayer covered by a Pb

film with a nominal thickness of 600 Å.⁶ We find that the interfacial layer still exhibits a 7×7 symmetry. We do not have similar data on the incommensurate interface yet, but without experimental evidence it is premature to state that the atomic arrangement of the incommensurate Pb layer will change. To our understanding the paper of Huang *et al.*⁷ does not provide conclusive evidence that a change of the interface layer in the Pb/Ge(111) system occurs. Further x-ray-diffraction experiments at the Pb/Si(111) interfaces are in progress.

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