

Abstract Submitted
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In situ x-ray scattering investigation of the Pb/Si(111)7x7 interface¹ MICHAEL GRAMLICH, U Missouri-Columbia, RUI FENG, Georgia Inst. Tech, SHAWN HAYDEN, U Missouri-Columbia, MYRON HUPALO, MICHAEL TRINGIDES, Ames Lab, CHINKYO KIM, Kyunghee U, CRAIG JEFFREY, U Missouri-Columbia, PHILIP RYAN, MUCAT, APS Agronne Nat Lab, PAUL MICELI, U Missouri-Columbia, EDWARD CONRAD, Georgia Inst. Tech. — In situ x-ray scattering was used to investigate the structure of Pb deposited on the Si(111)7x7 surface, which exhibits a one- monolayer-thick wetting layer followed by quantum-size-effect nanocrystals at higher coverages. The structure of the wetting layer and its relationship to the nanocrystals is important to understand in order to explain the novel growth kinetics [PRL 96, 106105 (2006)] in this system as well as the charge transfer at the interface. The nanocrystals consume the wetting layer and exhibit a smooth buried interface while displacing the nanocrystal vertically by 0.4 angstroms. This study examines how the Pb modifies the Si, both in the wetting layer, which exhibits a modified 8x8 structure, and beneath the nanocrystals.

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