

Abstract Submitted
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STM and LEEM Observations of Pb Growth on W(110) SHIRLEY CHIANG, DONELL HOFFMAN, University of California Davis — We have recently used both scanning tunneling microscopy (STM) and low energy electron microscopy (LEEM) in a combined UHV system to study the growth of Pb on W(110). As seen in previous studies, Stranski-Krastanov growth occurs. STM images show rows of Pb islands. A critical mass of Pb is required before condensation of clusters into stacks occurs at room temperature, while at 200C the Pb immediately formed distinguishable stacked islands. After the completion of the first monolayer, LEEM observations of this system show the development of 3D Pb crystallites, with the island density depending strongly on temperature. For Pb deposition at a substrate temperature of 200C, the islands grow together and form larger islands with quasi-hexagonal sides. Annealing the Pb crystallites causes them to merge and reshape while maintaining long-range order. The crystallites melt at the usual Pb melting temperature of 323C, resulting in small, round, disordered islands. Upon recooling, the islands develop a hexagonal shape. They desorb from the surface at approximately 425C.

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