

Abstract Submitted
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Periodic Stacking Faults in Ag Films Grown on Si(111) Decorated by Atomic Chains AARON GRAY, University of Illinois Urbana Champaign, MANAMI OGAWA, University of Tokyo, HAWOONG HONG, Argonne National Lab, IWAO MATSUDA, University of Tokyo, TAI CHAING, University of Illinois Urbana Champaign — Thin films grown on a substrate decorated by a periodic array of atomic wires can exhibit unusual properties such as stacking faults and electronic topological phase transitions due to the interfacial modulation. We report a study of Ag films grown on an array of atomic In chains on Si(111). Prior STM studies have suggested an array of stacking faults in the Ag films that allow the film lattice structure to match the interfacial modulations. STM however can only probe the surface. Our work uses x-ray diffraction to elucidate the internal 3-dimensional structure of this system. The measurements are found to be best explained by a model in which the unit cell contains a single stacking fault.

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