Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Non-classical second layer nucleation in Pb/Si(111) and the kinetics of the wetting layer. M. HUPALO, Ames Laboratory of US DOE, Iowa State University, Z. KUNTOVA , Z. CHVOJ, Institute of Physics, Academy of Sciences of the Czech Republic, C.Z WANG, K.M HO, M. C. TRINGIDES, Ames Laboratory of US DOE, Iowa State University — By studying the island growth in stepwise deposition experiments with STM we showed two non-classical features i.e. the unusual second layer ring morphology and the crucial role of the wetting layer in the kinetics. The filling of the vacancy island inside the ring is much slower process than the ring formation due to higher radial diffusion barrier towards the island center. In addition Pb is transferred to unstable islands from the continuous spreading of the wetting layer to the island top uncovering the underlying 7x7 reconstruction. Combined Monte Carlo simulations on a novel Potential Energy Surface (PES) constructed with input from first principles calculation can account for most of these unusual non-classical observations.

M. Hupalo
Ames Laboratory of US DOE, Iowa State University

Date submitted: 20 Nov 2006 Electronic form version 1.4