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**Coverage Dependent Collective Diffusivity of Dense Pb Wetting Layer on Si(111)** LI HUANG, CAI-ZHUANG WANG, Ames Laboratory, MAOZHI LI, Department of Physics, Renmin University of China, Beijing & Ames Laboratory, KAI-MING HO, Ames Laboratory — The anomalous mass transport in the Pb wetting layer on Si(111) surface observed in recent experiments is studied using dynamical calculations of a generalized Frankel-Kontorova model. Instead of typical random-type diffusion, a novel collective liquid-like motion of the Pb atoms within the dense wetting layers is revealed to give rise to the ultrafast kinetics of the wetting layers even at low temperatures. With this collective spreading mechanism of the dense wetting layer, a simple kinetic Monte-Carlo simulation quantitatively reproduces the experimental observations.

Li Huang  
Ames Laboratory

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