

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Surface, Step-Edge, and Facet-Edge Diffusion Barriers in Growth of Pb Nanomesas YONG HAN, FENG LIU, GUANG-HONG LU, Department of Material Science and Engineering, University of Utah, Salt Lake City, UT 84112, BYEONG-JOO LEE, Department of Material Science and Engineering, Pohang University of Science and Technology, Pohang 790-784, Republic of Korea — To obtain a better understanding of the growth kinetics of faceted Pb mesas on Si(111) surface, we perform extensive calculations of diffusion barriers for a Pb adatom (1) on a flat Pb(111) surface, (2) crossing a single A- or B-step edge on the Pb(111) surface, and (3) crossing the joint edge of the Pb(111) and (001) facet, using a modified embedded atom method. We have investigated different diffusion mechanisms mediated by vacancies and concerted displacements of multiple atoms. A quantitative comparison will be made between the calculated results and recent experiments. *This work is supported by NSF.

Yong Han
Department of Material Science and Engineering, University of Utah
Salt Lake City, UT 84112

Date submitted: 02 Dec 2004

Electronic form version 1.4