Abstract Submitted
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Kinetic Monte Carlo Simulations of Nanostructure Evolution During Unstable Growth on Patterned GaAs(001)[1] CHUAN-FU LIN, KRISTA COSERT, AJMI HAMMOUDA, University of Maryland, HUNG-CHIH KAN, National Chung-Cheng University, Taiwan, ROC, RAY PHANEUF, University of Maryland — We present results of kinetic Monte Carlo simulations, which include a diffusion barrier, lateral atom interaction energy, and Ehrlich-Schwoebel barrier to investigate unstable growth for comparison with our observations on patterned GaAs(001) surfaces at typical growth conditions [1-3]. Our results show a profound change in the mode by which an initial lithographic pattern evolves during growth, with growth mounds dominating at low temperatures and island nucleation and growth at higher temperatures. We describe the use of height-height correlation maps as a tool to facilitate the statistical characterization of the evolution of periodic patterns during growth, and correlate peaks in the maps with the change in growth mode with temperature.

[1] T. Tadayyon-Eslami et al., *PRL* **97**, 126101 (2006)
[2] H.-C. Kan et al., *PRB* **73**, 195410 (2006)
[3] H.-C. Kan et al., *PRL* **92**, 146101 (2004)

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