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Simulation of self-organized evolution of patterned GaAs(001) surfaces during homo-expitaxial growth[1] ERIN FLANAGAN, Department of Materials Science and Engineering, University of Maryland, College Park , HUNG-CHIH KAN, Department of Physics, University of Maryland, College Park and the Laboratory for Physical Sciences , TABASSOM TADAYYON-ESLAMI, Department of Materials Science and Engineering, University of Maryland, College Park and the Laboratory for Physical Sciences , SUBRAMANIAM KANAKARAJU, The Laboratory for Physical Sciences, CHRIS RICHARDSON, The Laboratory for Physical Sciences, RAYMOND PHANEUF, Department of Materials Science and Engineering, University of Maryland, College Park and the Laboratory for Physical Sciences — We report on both physically based and phenomenological simulations for morphological evolution of patterned GaAs(001) surface during homo-epitaxial growth. We compare these simulations with the experimental observations of homo-epitaxial growth on substrates patterned with arrays of cylindrical pillars. Our atomic force microscope (AFM) characterization indicates that the pillars evolve in a self-organized manner, i.e. the shape evolution of the pillars seems to be insensitive to its initial diameter in the [-110] direction.

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