

Abstract Submitted
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Temperature and Flux Dependence of Unstable Growth Mode on Patterned GaAs(001)¹ TABASSOM TADAYYON-ESLAMI, HUNG-CHIH KAN, University of Maryland, SUBRAMANIAM KANAKARAJU, CHRIS RICHARDSON, Laboratory for Physical Sciences, RAY PHANEUF, University of Maryland — We report on the temperature and flux dependence of the growth mode of GaAs(001) during molecular beam epitaxy (MBE). Our previous results [1] for growth on patterned GaAs(001) surfaces showed that growth under typical conditions produces a transient instability. Lowering the temperature beneath ~ 530 °C at a growth rate of ~ 0.3 nm/s produces a qualitative change in the way that the corrugations evolve. This temperature is close to that of a preroughening transition in the absence of growth [2], however on increasing the As₂ flux the onset temperature for preroughening moves *up*, while the onset temperature of the growth mode change moves *down*. We correlate the change in growth mode with a change in the surface reconstruction. [1] H. C. Kan, S. Shah, Tadayyon-Eslami, and R. J. Phaneuf, Phys. Rev. Lett, **92**, 146101, (2004). [2] V. P. Labella et al. Phys. Rev. Lett. **84**, 4152, (2003).

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