

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Controlled layer-by-layer depth-profiling of GaAs(110) using scanning tunneling microscopy DAVID GOHLKE, DONGHUN LEE, JAY GUPTA, Department of Physics, Ohio State University — The electronic properties of dopants in semiconductors such as GaAs vary depending on proximity to interfaces. We utilize a low temperature (5K) scanning tunneling microscope to realize a layer-by-layer peeling technique on p-GaAs(110). We apply positive voltage pulses near As vacancies to desorb surface-layer Ga and As atoms. Subsequent motion of the STM tip peels away the first layer from this starting point, fully exposing sections of the subsurface layer. The second and further layers can be readily peeled away by the same technique. This newly created pit allows depth-profiling of subsurface defects with STM. Funded by the Center for Emergent Materials at the Ohio State University, an NSF MRSEC (DMR-0820414). <http://www.physics.ohio-state.edu/~jgupta>

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Date submitted: 29 Dec 2010

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