

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Influence of N Interstitials on the electronic properties of GaAsN Alloys¹ RYAN JOCK, YU JIN, HAILING CHENG, CAGLIYAN KURDAK, RACHEL GOLDMAN, University of Michigan — GaAsN alloys contain a significant fraction of interstitial N, which is often reported to act as a scattering and/or trapping center. In some cases, annealing has been reported to reduce the interstitial N fraction, presumably due to N diffusion to As vacancies. However, the influence of interstitial N on the electronic properties of GaAsN alloys remains unknown. In this work, we used annealing to probe the influence of N interstitials on the electronic properties of GaAsN. In as-grown GaAsN films, temperature-dependent Hall measurements reveal a thermally activated increase in free carrier concentration for temperatures above 150 K, suggesting the presence of a defect level below the conduction band edge, presumably due to interstitial N. Upon annealing, the free carrier concentration increases and becomes nearly temperature-independent, indicating a decrease in the concentration of trapping centers, presumably due to a reduced concentration of interstitial N.

¹We gratefully acknowledge the support of the National Science Foundation through a Focused Research Group (Grant No. DMR 0606406), monitored by Dr. LaVerne Hess.

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Date submitted: 21 Nov 2008

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