Abstract Submitted
for the TSF06 Meeting of
The American Physical Society

Unusually High Beryllium Diffusion in $GaAs_{1-x}N_x$(x<<0.01)[1]

WENKAI ZHU, ALEX FREUNDLICH, Center for Advanced Materials and Physics Department, University of Hoouston — In this study, Beryllium diffusion in nitrogen doped gallium arsenide $GaAs_{1-x}N_x$ (x<<0.01) epilayers have been investigated for Be concentrations ranging from $5x10^{17}cm^{-3}$ to $5x10^{19}cm^{-3}$. Post thermal annealings are implemented to extract the temperature dependence of diffusion profiles. Be and carrier concentration profiles are extracted using secondary ion mass spectroscopy and electrochemical capacitance voltage measurements respectively. Diffusivities are extracted by fitting experimental profiles using a model derived from Fick's diffusion law. The study reveals an abnormally high Beryllium diffusivities exceeding by one to two order of magnitudes those encountered in GaAs and a significant reduction of diffusion activation energies 0.5 eV.

[1]This work was performed under the support of NASA grant NNC04GB35N

Wenkai Zhu

Date submitted: 15 Sep 2006 Electronic form version 1.4