Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Pressure and PL study of dilute-N GaInNAs films for applications in photovoltaics[1] GEORGE P. LINDBERG, University at Buffalo, Department of Physics, Buffalo, NY 14260, MIWA FUKUDA, University of Oklahoma, Department of Physics and Astronomy, Norman, OK 73019, M. AL KHALFIOUI, CRHEA-CNRS, Valbonne, France, KHALID HOSSAIN, Amethyst Research Inc. Ardmore OK., IAN R. SELLERS, University of Oklahoma, Department of Physics and Astronomy, Norman, OK 73019, BERNARD A. WEINSTEIN, University at Buffalo, Department of Physics, Buffalo, NY 14260 — Multi-junction photovoltaic devices employing dilute-N GaInNAs alloys are currently of high interest for efficient solar energy conversion. The negative band-bowing produced by introducing a few percent N into GaInAs provides a convenient way to match the 1eV component of the solar spectrum, providing recombination losses in localized states can be reduced while maintaining favorable carrier extraction. High pressure photoluminescence (PL) experiments exploring the localization of band-edge excitons in dilute-N GaInNAs films grown by plasma assisted MBE will be discussed. The effects of post-growth annealing and hydrogen incorporation on the PL spectra of the films are considered.

[1]Research supported by Amethyst Research Inc. through the State of Oklahoma, ONAP program.

Bernard A. Weinstein
University at Buffalo, Department of Physics, Buffalo, NY 14260

Date submitted: 14 Nov 2012 Electronic form version 1.4