

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

MnAs/Al(AsSb)/InAs Heterostructure-Based Spin LEDs¹ H. ZHANG, E.D. FRASER, S. HEGDE, J. KWON, J.B. HATCH, H. LUO, G.P. LINDBERG, B.A. WEINSTEIN, B.D. MCCOMBE, State University of New York at Buffalo — MnAs is a promising spin alignment material for spin-injection into InAs-based structures due to its well studied structural and magnetic properties. A well known difficulty of spin injection from a ferromagnetic metal spin aligner into a semiconductor is the so-called conductivity mismatch, which has been overcome via tunnel barrier contacts.^{2,3} Lattice matching the tunnel barrier to the active region is important because a highly strained interface and resulting defects can reduce spin polarization of the injected carriers. We report development of a spin-LED structure with a lattice matched $\text{AlAs}_{0.16}\text{Sb}_{0.84}$ tunneling barrier between the MnAs spin aligner and an InAs quantum well. The composition was characterized through XRD and Raman spectroscopy. Sample growth, characterization, LED fabrication and optical polarization studies of electroluminescence in the 3 micron spectral region will be discussed.

¹This work is supported partly by the NSF grant NSF-ECCS-0824220.

²B.T. Jonker *et al.*, PRB **62**, 8180 (2000).

³X. Jiang *et al.*, PRL **94**, 056601 (2005).

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Date submitted: 24 Nov 2010

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