

Abstract Submitted  
for the MAR09 Meeting of  
The American Physical Society

**Effect of order/disorder near the  $\Gamma$ -L and L-X crossovers in the conduction band of lattice-mismatched  $\text{Ga}_x\text{In}_{1-x}\text{P}$  alloys**<sup>1</sup> L. BHUSAL, M. STEINER, J. GEISZ, A. MASCARENHAS, National Renewable Energy Laboratory, 1617 Cole Blvd, Golden CO-80401 — In this work we have studied the effect of order/disorder on the  $\Gamma$ -L and L-X crossover points in the conduction band of  $\text{Ga}_x\text{In}_{1-x}\text{P}$  alloys, using polarized photoluminescence and electroreflectance techniques at various temperatures.  $\text{Ga}_x\text{In}_{1-x}\text{P}$  samples ( $x=0.25-0.78$ ) were grown by atmospheric pressure organometallic vapor phase epitaxy (OMVPE). Some samples were grown directly on a miscut GaAs substrate while in other samples a thick GaAsP step-grade was grown first, to reduce the dislocation density. The significance of the crossover point in the conduction band of the alloy for the efficiency of devices such as multijunction high-efficiency solar cells and light emitting diodes will be discussed.

<sup>1</sup>This work was supported by the U.S. Department of Energy Grant No. DE-AC36-08GO28308. This abstract is subject to U. S. government rights.

L. Bhusal  
National Renewable Energy Laboratory, 1617 Cole Blvd, Golden CO-80401

Date submitted: 15 Dec 2008

Electronic form version 1.4