

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Temperature dependence of electron mobilities in InN¹

LEONARDO HSU, University of Minnesota, WLADEK WALUKIEWICZ, Lawrence Berkeley National Laboratory — InN allows the possibility of engineering nitride materials with bandgaps as small as 0.7 eV. We have calculated electron mobilities in InN taking into account the non-parabolicity of the conduction band, as well as the standard scattering mechanisms of acoustic and optical phonons and Coulomb scattering from charged impurities. Although our calculations explain well the experimentally measured mobilities at temperatures higher than about 200 K, the measured mobilities in lightly doped InN at low temperatures decrease in a way that cannot be accounted for by the standard theory. We discuss the characteristics and possible origins of the additional mechanism that must be included in the calculations in order to fit the experimental results.

¹This work was partially supported by the US DOE under Contract No. DE-AC03-76SF00098.

Leonardo Hsu
University of Minnesota

Date submitted: 21 Nov 2008

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