

Abstract Submitted
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Photoreflectance spectroscopy of single GaAs/GaP Core-shell Nanowires¹ A. WADE, M. MONTAZERI, M.A. FICKENSCHER, H.E. JACKSON, L.M. SMITH, University of Cincinnati, J.M. YARRISON-RICE, Miami University, J.H. KANG, Q. GAO, H.H. TAN, C. JAGADISH, Australian National University — We present a direct observation of the light hole (lh) and heavy hole (hh) valence band splitting in highly strained GaAs/GaP core/shell nanowires obtained by photoreflectance (PR) from a single nanowire. The NWs were prepared by Au nanoparticle (100 nm) catalyst-assisted MOCVD growth with two different shell thicknesses, where the induced strain is controlled varying the core/shell ratio. They were then dispersed on silicon for the PR measurement. The spectra show a ~ 140 eV splitting of the lh and hh bands for two different wires. Raman spectroscopy was carried out on the same growths in order to measure the hydrostatic and shear strain [1]. From the measured strain we calculate the hh and lh splitting and find them to be in reasonable agreement with PR.

[1] M. Montazeri, et. al., Nano Letters 10, 880-886 (2010).

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