Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Low melting metal-induced synthesis of multi-component III-V semiconducting nanowires. ROMANEH JALILIAN, ZHIQIANG CHEN, GAMINI SUMANASEKERA, University of Louisville — Semiconductor multi-component alloys provide a natural means of tuning the band gap and other parameters to optimize and extend the application of semiconductor electronic/optoelectronic devices. In this study, multi-component nanowires have been synthesized in vapor phase by laser ablation of solid targets consisting of initial bulk materials. Growth of nano-crystals is believed to seed from low melting metallic droplets generated from laser bombardment and heating of the target. Curved tips have been observed at one end of the nanowires which contain same elemental components as the body of the nanowires. This technique is proven to be a successful approach to eliminate the need for external catalyst which can have detrimental consequences affecting the performance of an optoelectronic device. As-synthesized nanowires were characterized using TEM, SEM, XRD, EDS, photo luminescence, Vis-IR absorption and Raman spectroscopy. Results of transport properties of individual nanowires will also be presented.

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Date submitted: 27 Nov 2007 Electronic form version 1.4