

Abstract Submitted
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Synthesis and Characterization of Indium Antimonide Nanoparticles (NPs) using Inert Gas Condensation Process SNEHA PANDYA, MARTIN KORDESCH, Physics and Astronomy, Ohio University — Nanoparticles (NPs) of Indium Antimonide (InSb), varying from 10nm to 200nm in size, were synthesized using a vapor phase synthesis technique known as Inert Gas Condensation (IGC) process. These NPs were directly deposited over 1 inch-square (111) p-type Silicon (Si) wafer, glass cover slip and Sodium Chloride (NaCl) substrates. The Wide-Angle X-ray Scattering spectra obtained for these NPs showed (111) and (220) diffraction peaks and revealed the crystalline behavior of these NPs exhibiting a cubic symmetry. The 1:1 composition ratio of In:Sb was confirmed by the Energy Dispersive X-Ray Spectroscopy studies. Raman spectra of these NPs exhibited a peak at 186.7cm^{-1} , which corresponds to the LO modes of phonon vibration in InSb. The morphological and structural characterization of these NPs will be carried out using a High-Resolution TEM and XRD. X-ray peak broadening analysis will be used to evaluate the crystalline sizes and lattice strain by the Williamson-Hall (W-H) analysis. NPs will be size selected during the synthesis process and their size dependent band gap, measured using Fourier Transform Infrared (FTIR) spectroscopy, will be presented. Wavelength dependent photo-responsivity will be measured and the corresponding results will be discussed

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