Doping assessment in GaAs nanowires - DTU Orbit (18/12/2018)

**Doping assessment in GaAs nanowires: Paper**

Semiconductor nanowires (NWs) are a candidate technology for future optoelectronic devices. One of the critical issues in NWs is the control of impurity doping for the formation of p-n junctions. In this study, beryllium (p-type dopant) and tellurium (n-type dopant) in self-assisted GaAs NWs was studied. The GaAs NWs were grown on (111) Si by molecular beam epitaxy using the self-assisted method. The dopant incorporation in the self-assisted GaAs NWs was investigated using Raman spectroscopy, photoluminescence, secondary ion mass spectrometry and electron holography. Be-doped NWs showed similar carrier concentration as compared to thin film (TF) standards. However, Te-doped NWs showed at least a one order of magnitude lower carrier concentration as compared to TF standards. Dopant incorporation mechanisms in NWs are discussed.

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