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Investigation of GaAs/GaP core/shell Nanowires via Off-Axis Electron Holography[1] JAMES MCNEIL, ALI DARBANDI, AZADEH AKHTARI-ZAVAREH, SIMON WATKINS, KAREN KAVANAGH, Simon Fraser University — In this talk I will outline the application of a transmission electron microscope (TEM) to study electrical properties of GaAs/GaP core/shell nanowires using a form of electron interferometry known as off-axis electron holography (OAEH). The epitaxial GaP surface layer is designed to passivate the surface states of the GaAs nanowire. This system also has a unique property that the mean inner potentials (MIP) of the two crystalline volumes are almost identical. I will demonstrate that the phase and amplitude information of reconstructed hologram can be applied simultaneously to remove geometrical dependencies for this system, enabling the search for built in fields near the heterostructure interface. The sensitivity of OAEH in mapping electrostatic fields which permeate into the vacuum from charging nanowires with nm resolution will also be discussed.

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