

Abstract Submitted
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Synthesis and Characterization of InAs / InSb Nanowire Heterojunctions¹ MINKYUNG JUNG, MICHAEL SCHROER, JASON PETTA, Princeton University — InSb is a very promising material for both electronic and optoelectronic devices due to its unique features, including a very small band gap, large bulk mobility, enormous electronic g- factor and strong spin-orbit interaction. In particular, the small effective mass of InSb makes it straightforward to fabricate devices that display effects due to quantum confinement [1,2]. Here InAs/InSb nanowire heterostructures were grown by metal-organic vapor-phase epitaxy on InAs (111)B substrates. We investigated morphology changes of InAs/InSb nanowires with varying growth temperature and V/III ratio. The samples were characterized using scanning electron microscopy and high resolution transmission electron microscopy. In order to study the transport properties of InAs/InSb nanowires, field effect transistors were fabricated on SiO₂/Si substrates and characterized at room temperature and 4.2 K.

[1] H. A. Nilsson *et al.*, Nano Lett. **9**, 3151 (2009)

[2] P. Caroff *et al.*, Small **4**, 878 (2008)

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