Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Electrochemically grown InSb nanowires: challenges and growth determined properties ABHAY SINGH, USHA PHILIPOSE, University of North Texas — InSb nanowires have myriads of applications such as electronic, optoelectronic, and magneto resistive devices. Synthesis of InSb nanowires in the pores of anodic alumina oxide (AAO) template by direct current electrodeposition is challenging because it involves several steps including opening of barrier layer at the bottom of AAO pores, dissolving of the AAO template post-nanowire growth, followed by extraction of InSb nanowires from solution. We will present evidence of these challenges. The InSb nanowires had good composition and crystalline quality as will be shown by EDX, X-ray, and Raman spectroscopy. Transport measurements made on a single InSb nanowire and on an array of nanowires will be presented. A single nanowire connected in an FET type configuration was used to determine carrier concentration and mobility. By tuning the growth parameters during electrochemical deposition, it is possible to modulate the nanowire composition. Temperature dependent measurements are used to show the semiconducting behavior of the nanowires.

Abhay Singh
University of North Texas

Date submitted: 14 Nov 2014 Electronic form version 1.4