Abstract Submitted
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Field Effect Transistor based on Single Crystalline InSb Nanowire[1] JIA LU, YENNAI WANG, KARAN BANERJEE, USC, HUIJUN YAO, Juelich Intitute, THOMAS SCHAEPERS, Juelich Institute, NAMI COLLABORATION, IBN COLLABORATION — Semiconductor nanowires have attracted substantial scientific and technological interests due to their unique properties arising from the size confinement effects. Among III-V group, indium antimonide (InSb) has the smallest bandgap energy (170 meV) at room temperature and possess an extremely high bulk electron mobility. It has been widely used in infrared optoelectronics and high-speed devices, and has inspired significant interest for fundamental studies in their nanostructure form. In this work, InSb nanowires with precise stoichiometry and zincblende crystal structure are synthesized via pulsed-laser chemical vapor deposition. Raman spectroscopy shows stoke and anti-stoke peaks of transverse-optical mode with asymmetric broadening. The nanowire demonstrates n-type semiconductor behavior. Enhanced surface scattering due to size confinement leads to reduced electron mobility.

[1]DAAD

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