Abstract Submitted
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Transport study on tunnel junction structures based on In2Se3/Bi2Se3 heterostructures NIKESH KOIRALA, MATTHEW BRAHLEK, Department of Physics, Rutgers University, NAMRATA BANSAL, Department of Electrical Engineering, Rutgers University, SEONGSHIK OH, Department of Physics, Rutgers University — Bi2Se3 is a 3D Topological Insulator (TI) candidate material with structural similarity to In2Se3, which is a band insulator with large band gap. This compatibility leads to possibility of epitaxial growth of In2Se3/Bi2Se3 heterostructure, which has various application potential. For example, by depositing Superconducting or Ferromagnetic materials on top of this heterostructure, tunnel junctions can be fabricated. We have studied device structures made up of such tunnel junctions. In2Se3 was grown on top of Bi2Se3 using molecular beam epitaxy on Al2O3(0001) substrates. Superconductor (Nb) or Ferromagnet (CoFe, Gd) was then sputtered on top of In2Se3 and photolithography was used to make the tunnel junctions. Transport measurement data obtained from such structures will be presented.

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