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High quality topological insulator Bi2Se3 thin film growth on amorphous SiO2 using MBE NIKESH KOIRALA, Rutgers Univ, NAMRATA BANSAL, MATTHEW BRAHLEK, SEONGSHIK OH, Rutgers University — We report on the growth of Bi2Se3 thin films on amorphous SiO2 by molecular beam epitaxy method. These films show high c-axis crystalline order and sharp interface with SiO2 substrate. ARPES measurement shows topologically protected surface states in these films. Comparison among Bi2Se3 thin films grown on Al2O3(0001), Si(111) and amorphous SiO2 shows that films grown on amorphous SiO2 are much better than those grown on Si(111) and roughly comparable to those grown on Al2O3 in terms of their electrical transport properties. This suggests that chemical inertness of substrate is more important than lattice matching in determining the transport properties of Bi2se3 films. Additionally, our study on a thinner film shows significant modulation of longitudinal resistivity and sign reversal of hall coefficient with application of gate voltage indicating tunablility of chemical potential through Dirac point.

Nikesh Koirala
Rutgers Univ

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