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Electronic properties of ultrathin GdTiO3 thin films and GdTiO3/SrTiO3 interfaces POUYA MOETAKEF, BHARAT JALAN, JACK ZHANG, University of California, Santa Barbara, S. JAMES ALLEN, SUSANNE STEMMER, University of California, Santa Barbara — Interfaces between Mott insulators, such as the rare earth titanates, and band insulators, such as SrTiO3, have recently attracted much attention. We report on the transport properties of epitaxial rare earth titanate thin films, GdTiO3, grown by molecular beam epitaxy (MBE) and those of heterostructures with SrTiO3 and GdTiO3. Growth of GdTiO3 was performed by shuttered growth of alternating titanium tetra isopropoxide (TTIP) and Gd fluxes, in the absence of any additional oxygen. We show that to stabilize the GdTiO3 perovskite phase, SrTiO3 buffer layers are needed for growth on perovskite substrates, such as LSAT ((LaAlO3)0.3(Sr2AlTaO6)0.7). The contribution of n-type SrTiO3 buffer layers and that of the SrTiO3/GdTiO3 interfaces to the transport properties are determined by measurements of the electrical resistance and Hall coefficient as a function of temperature and magnetic field.

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