

INTERFACIAL EFFECTS IN MANGANITE THIN FILMS

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Complex oxides, and in particular perovskite oxides, are a subject of strong research interest due to their broad spectrum of intrinsic functionalities including, for instance, ferroelectricity, magnetism and superconductivity. It is expected that combined use of these functionalities will provide the basis for new electronic, magnetic and magnetoresistive devices with new and enhanced performances. Most of these potential applications require the use of thin films and heterostructures in which interfaces and surfaces do play a very active role on the final properties. Interfacial effects are especially relevant in manganite-based magnetic tunneling junctions where not only electronic but also magnetic properties are important. Lattice strain effects may be very important in these compounds due to the strong orbital-lattice coupling. However, polar discontinuity across the interface may also play a relevant role, since in the (001) LCMO/STO interface both TiO_2 and SrO terminations are neutral but, $(\text{La}_{2/3}\text{Ca}_{1/3})\text{O}$ and MnO_2 layers are charged, $+2/3$ and $-2/3$ respectively. In this work we have carefully analyzed magnetic and transport properties of high quality LCMO/STO thin films by using different techniques to clarify the role of these effects in manganite films and heterostructures.