

Abstract Submitted
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Observation of Anti-parallel Spin Orientation at the LSMO/STO(100) Interface¹ XIAOJING TAN, JIANXING MA, JING SHI, HARRY TOM, University of California Riverside, HARRY W.K. TOM GROUP COLLABORATION, JING SHI GROUP COLLABORATION — Perovskite ferromagnet $\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$ ($0.2 < x < 0.5$) is considered as one of the most potential candidates for tunneling magnetic resistance (TMR) device due to the almost 100% spin polarization. However, there is still a problem which has been confusing people for a long time: the TMR goes to zero at a temperature about $\sim 100\text{K}$ lower than the T_c of LSMO film, which is attributed to possible severe deterioration of ferromagnetism at LSMO/STO interfaces. So it is worthy carrying out interfacial measurement at such interface. Magnetic Second-Harmonic Generation (MSHG) is a well-established all optical tool for characterizing interfaces between centrosymmetric media. By carrying out MSHG measurements as a function of temperature at various incidence angles, and utilizing the depth dependence of the MSHG susceptibility tensor, we found the interface is ferrimagnetic with the spins in most top layer oriented anti-parallel to that in underlying layers. And we also found the T_c of the ferrimagnetic interface is 25K lower than that of the LSMO film.

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