Electronic Supplementary Material (ESI) for Nanoscale.

Supplementary Information

Valence-band Offset and Forward-backward Charge Transfer in Manganite/NiO and Manganite/$LaNiO_3$ heterostructures

Xingkun Ning, Zhanjie Wang, and Zhidong Zhang*

Shenyang National Laboratory for Materials Science, Institute of Metal Research (IMR), Chinese Academy of Sciences (CAS), 72 Wenhua Road, Shenyang 110016, China

E-mail:wangzj@imr.ac.cn

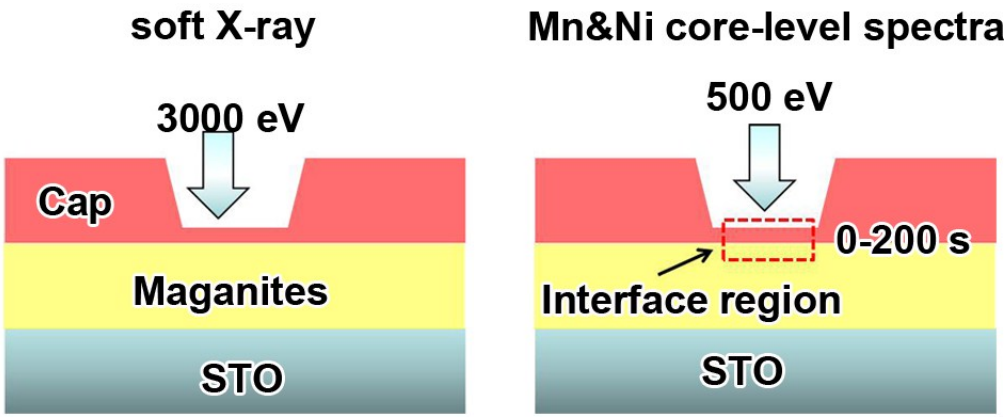

Figure S1. Schematic illustration of the XPS experimental procedure.

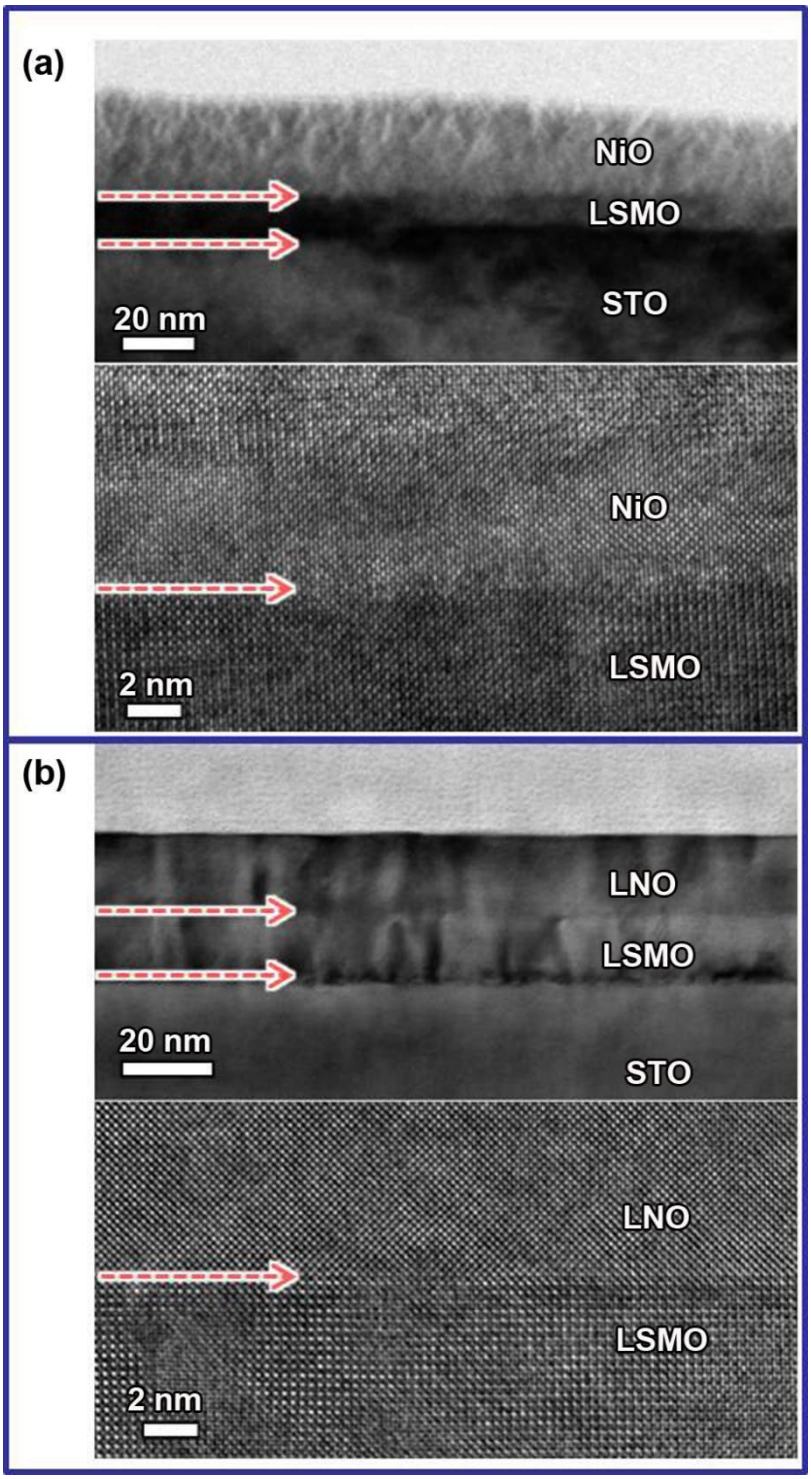

Figure S2. TEM and HRTEM images for the LSMO/NiO and LSMO/LNO heterostrucutres.

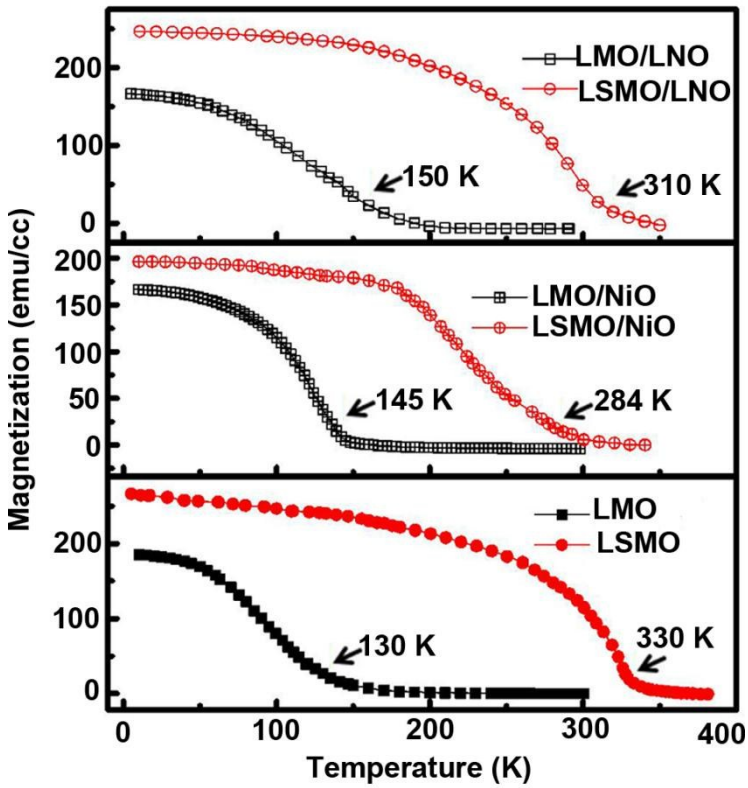

Figure S3. Temperature dependence of the magnetization measured in an in-plane magnetic field of 2000 Oe for the single LSMO and LMO films and the LSMO/NiO, LMO/NiO, LSMO/LNO and LMO/LNO heterostructures.

The temperature dependences of the magnetization after FC, measured in an in-plane magnetic field of 2000 Oe for the samples, are shown in Figure S3, respectively. For these films, the FC magnetization decreases with increasing temperature and a FM-PM transition is observed. The magnetic-ordering temperature T_C is determined to be 130 K and 330 K for the single LMO and LSMO film. The Curie temperatures are about 145 K, 150 K, 284 K and 310 K for the LMO/NiO, LMO/LNO, LSMO/NiO and LSMO/LNO films.