

Supplementary Information for

**Interfacial Defect Complex at the MgO/SrTiO<sub>3</sub>  
Heterojunction and its Electronic Impact**

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Figure S1

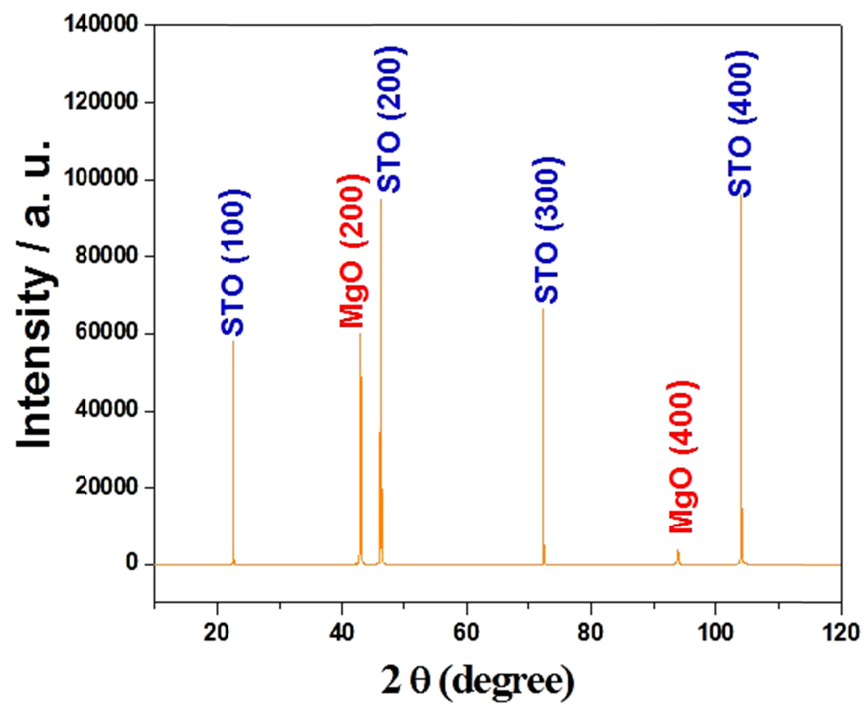


FIG. S1. XRD pattern of MgO thin film grown on the SrTiO<sub>3</sub> substrate.

Figure S2

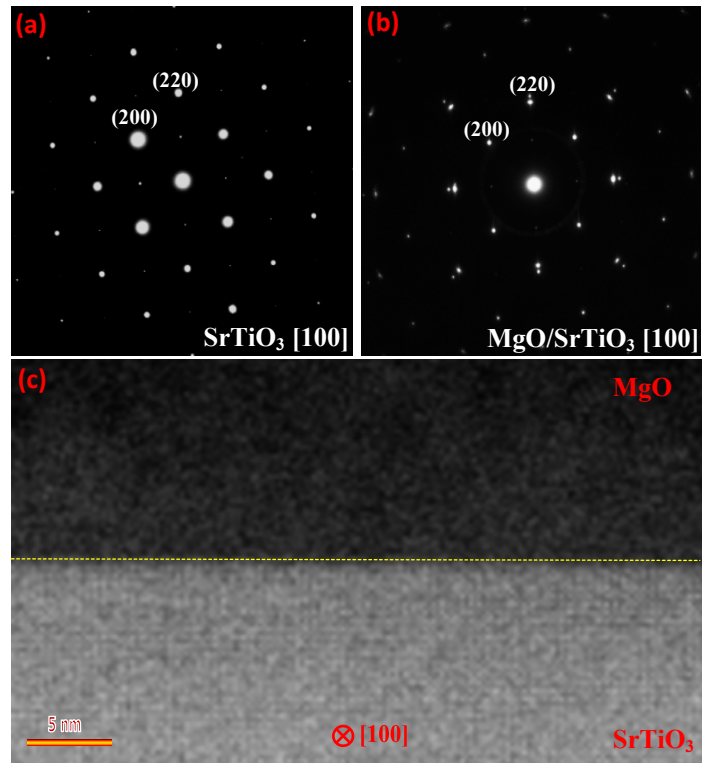


FIG. S2. Selected area diffraction patterns taken at (a) substrate and (b) interface, confirming the epitaxial orientation relations  $(001)\text{MgO} // (001)\text{SrTiO}_3$  and  $[100]\text{MgO} // [100]\text{SrTiO}_3$ . (c) Low-magnification STEM image, revealing the flatness of the interface at the large scale.