Supplementary Materials: Influence of the Growth Ambience on the Localized Phase Separation and Electrical Conductivity in $SrRuO_3$ Oxide Films

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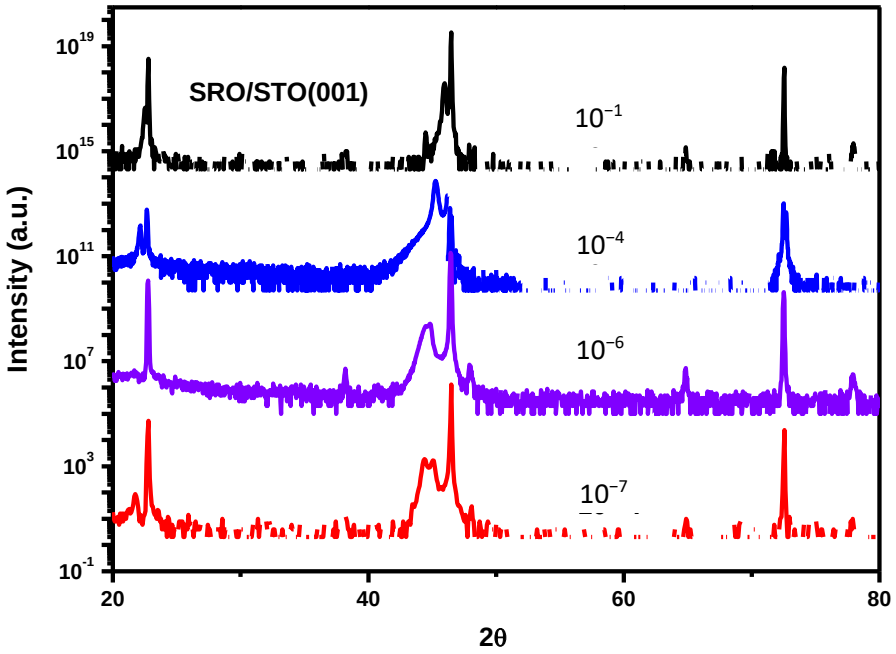

Figure S1. The growth ambience dependent XRD patterns around surface normal of SRO thin films on STO (001) deposited with the oxygen pressure of 10^{-1}, 10^{-4}, 10^{-6}, and 10^{-7} Torr, respectively.

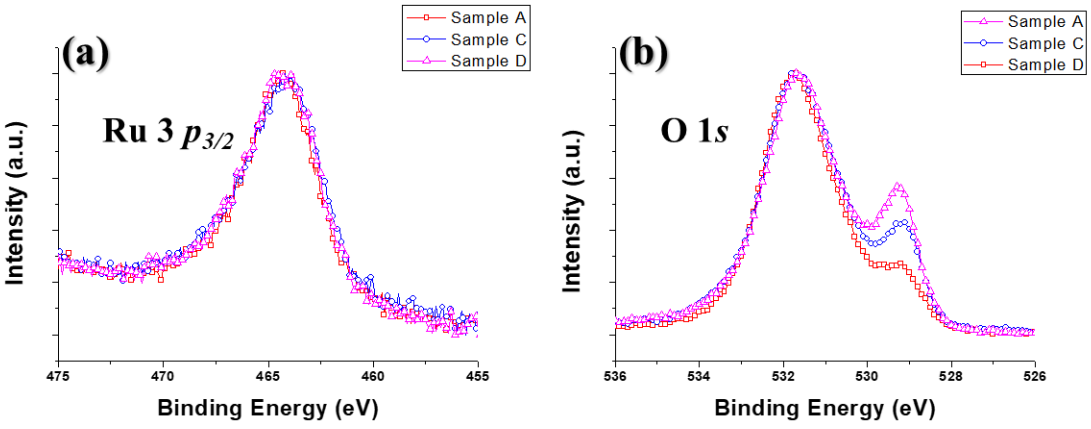

Figure S2. (**a**) and (**b**) are X-ray photoemission spectra of Ru 3*p* core-level and O 1*s* for SRO thin film samples, respectively.

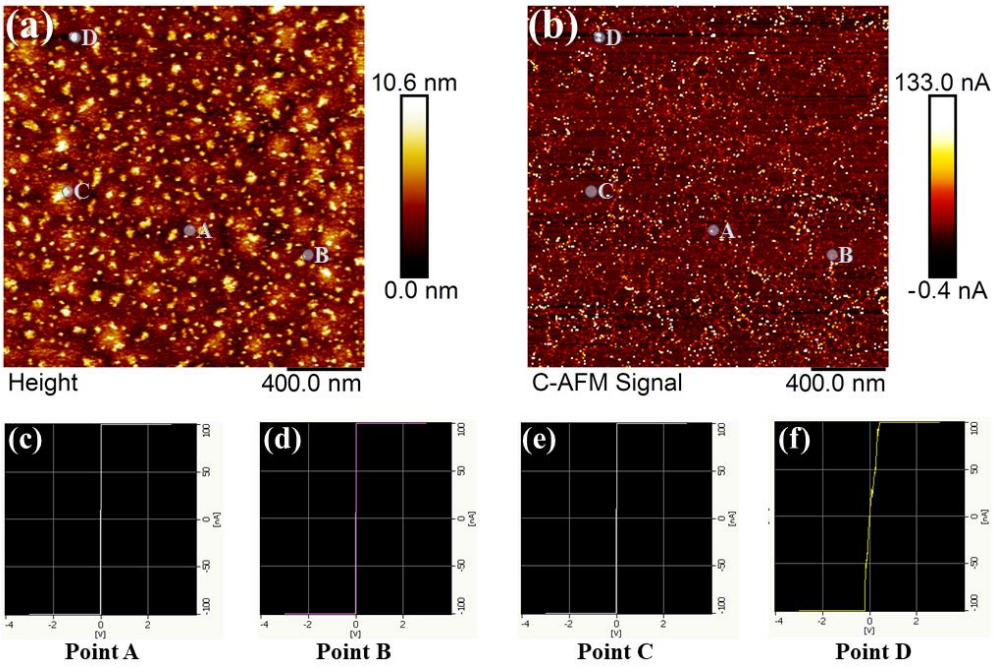

Figure S3. (**a**) and (**b**) The surface topography and the current mapping images for samples A, respectively. (**c**), (**d**), (**e**) and (**f**) The corresponding local I-V curves of region A, B, C, and D.