Supporting Information

Improvement of the energy storage performance of antiferroelectric Pb,La(Zr,Ti)O_3 thin films by the $LaNiO_3$ buffer layer on metal electrode

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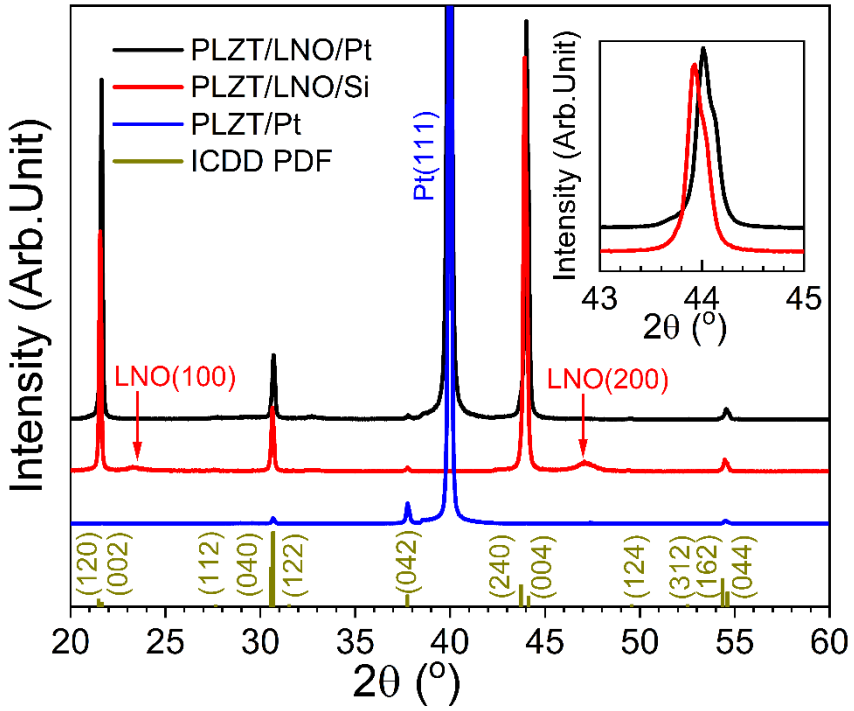

Figure S1. XRD patterns of the PLZT films on Pt, LNO/Si and LNO/Pt.

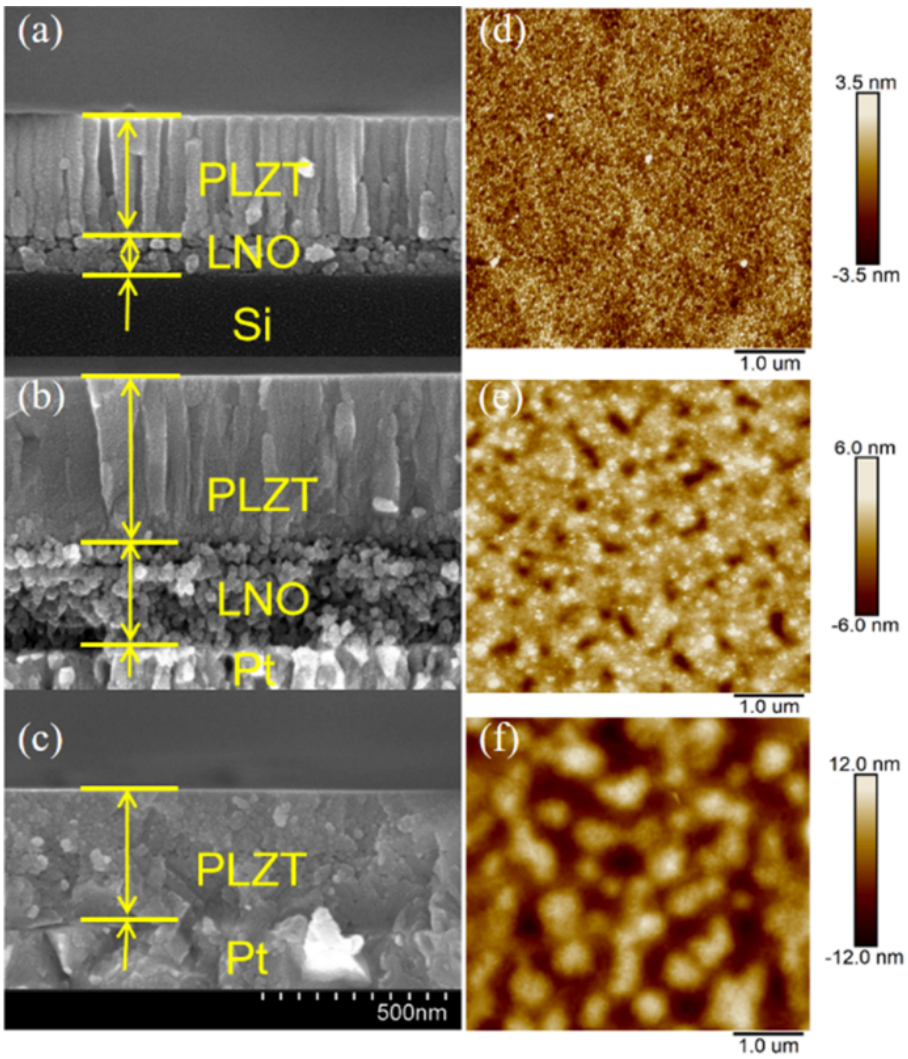

Figure S2. Cross-sectional SEM images of (a) PLZT/LNO/Si, (b) PLZT/LNO/Pt, (c) PZLT/Pt and the surface AFM images of (d) PLZT/LNO/Si, (e) PLZT/LNO/Pt, (f) PZLT/Pt.

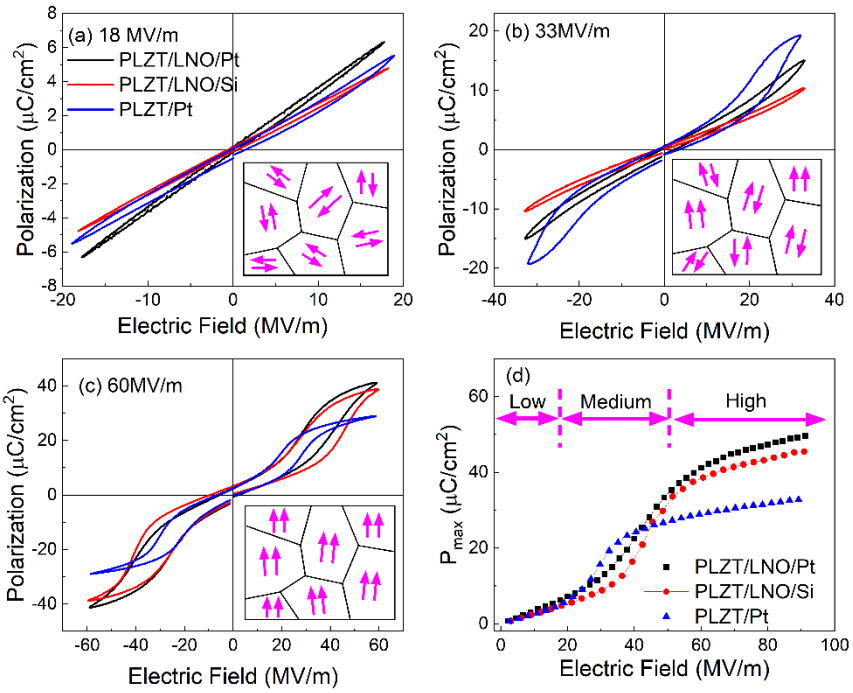

Figure S3. P-E loops of the PLZT films on Pt, LNO/Si, and LNO/Pt at the electric fields of (a) 18 MV/m, (b) 33 MV/m, and (c) 60 MV/m. (d) the electric field dependence of Pmax. Insets in (a), (b) and (c) are the illustrations of the polarization arrangement.

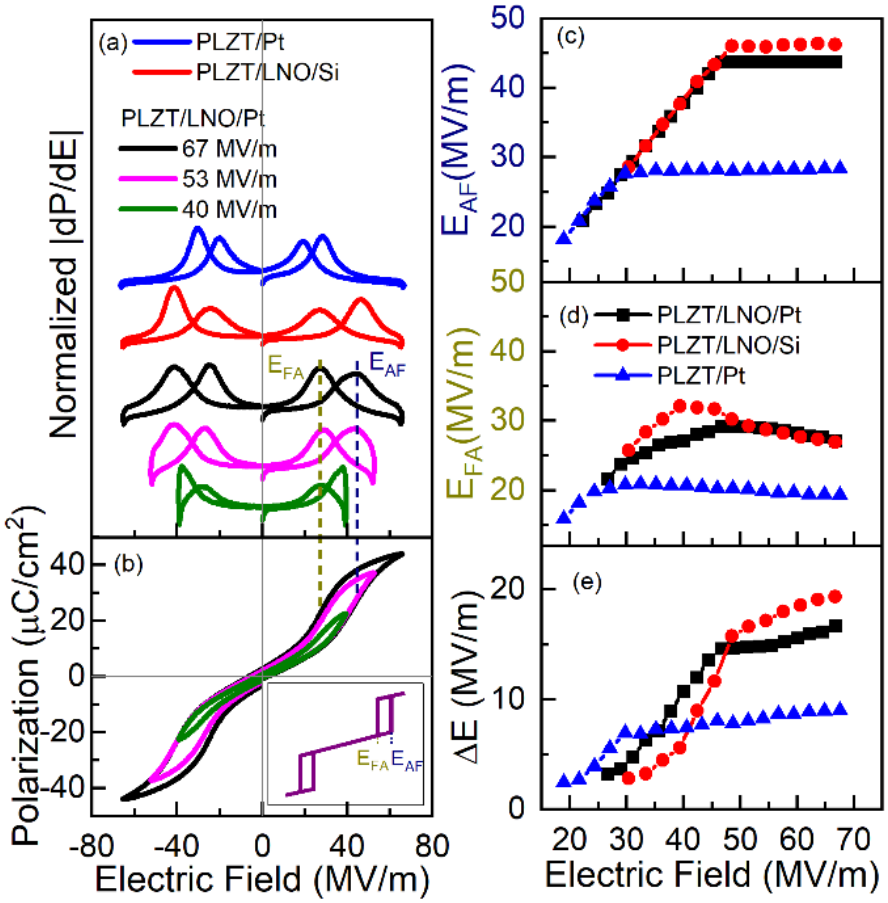

Figure S4. (a) Curves of normalized |dP/dE| vs. electric field of the PLZT films on different substrates and those of the PLZT film on LNO/Pt at different electric field. (b) P-E loops of the PLZT film on LNO/Pt at different electric field. Inset: the schematic diagram of P-E loop of AFE and the positions of EFA and EAF. The electric field dependence of (c) EAF (d) EFA, and (d) □E.

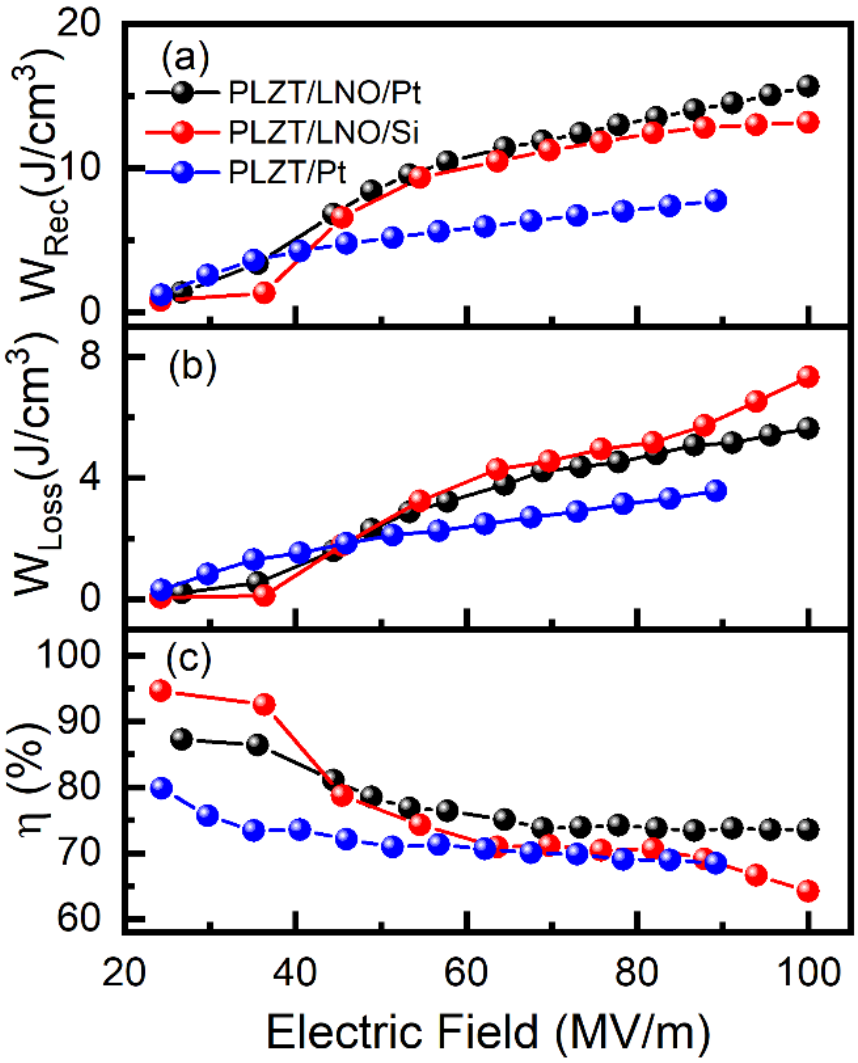

Figure S5. The electric field dependence of (a) WRec, (b) WLoss and (c) □ of the PLZT thin films.

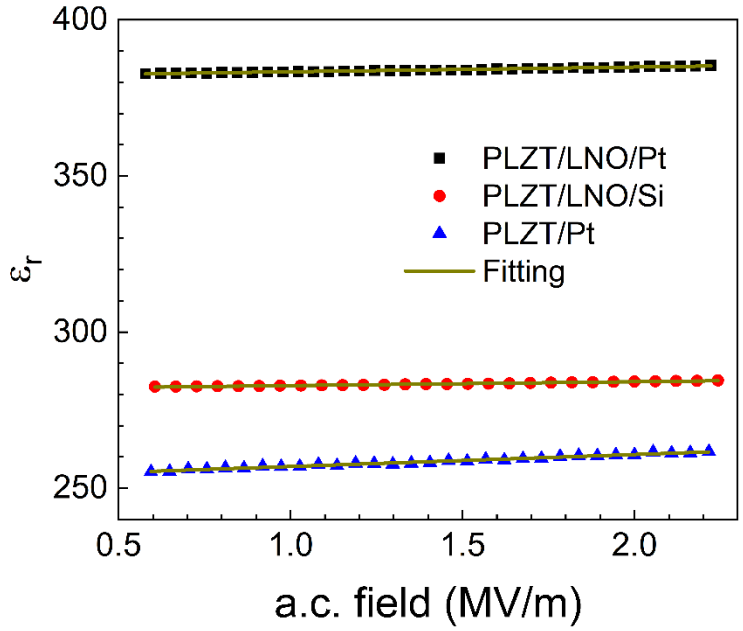

Figure S6. The a.c. field dependence of the permittivity of the PLZT films.