Supplementary information

Defect-controlled electrocaloric effect in PbZrO₃ thin film

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Supplementary Fig. S1 | XRD patterns of PZO thin films on (100), (110) and (111) Nb: SrTiO₃ single crystalline substrates.
Supplementary Fig. S2 | (a-e) and (f-j) show representative hysteresis loops tested under 600 kV/cm at 10 kHz and 100 Hz respectively. (k-o) and (p-t) show the same loops under 1000 kV/cm.
Supplementary Fig. S3 | The leakage current measured at 303 K, 373 K and 523 K under 1000 kV/cm.
Supplementary Fig. S4 | The ECE calculated from 1st and 3rd tested at 10 kHz are compared in (a-c) and (d-f), and at 100 Hz are compared in (g-i) and (j-l). The results do not show too much difference when calculated from different quadrants.