

Supporting Information

Significantly Enhanced Energy Storage Performance in Multi-Layer SrTiO₃-Based Films via Introducing PZT Polarization Layer

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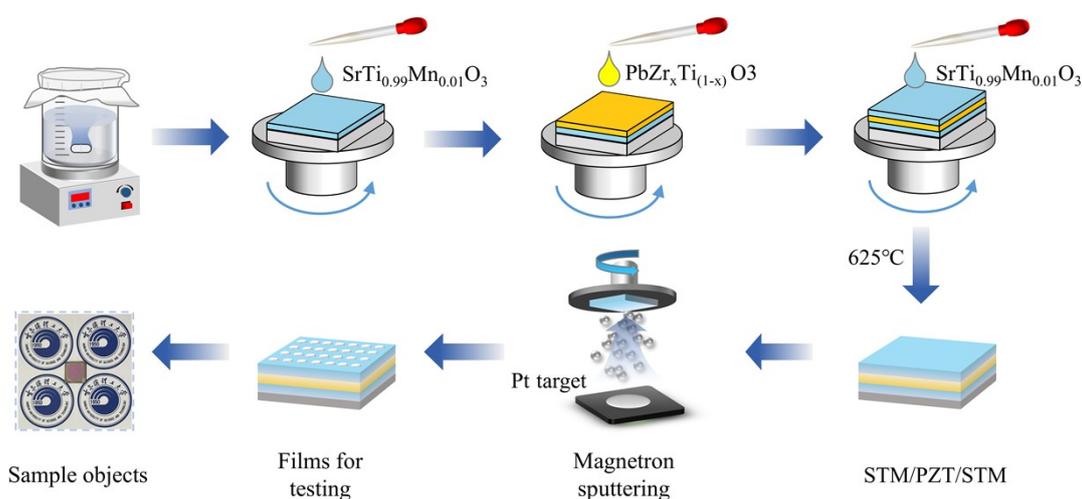


Fig. S1. The schematic diagram for the preparation of STM/PZT composite films.

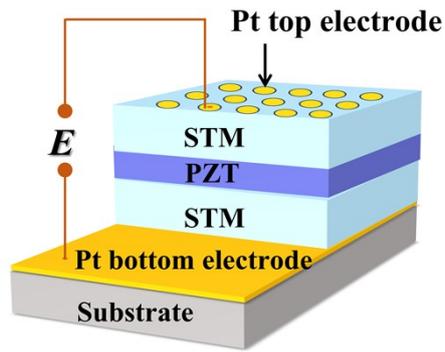


Fig. S2. The electrical performance test structure

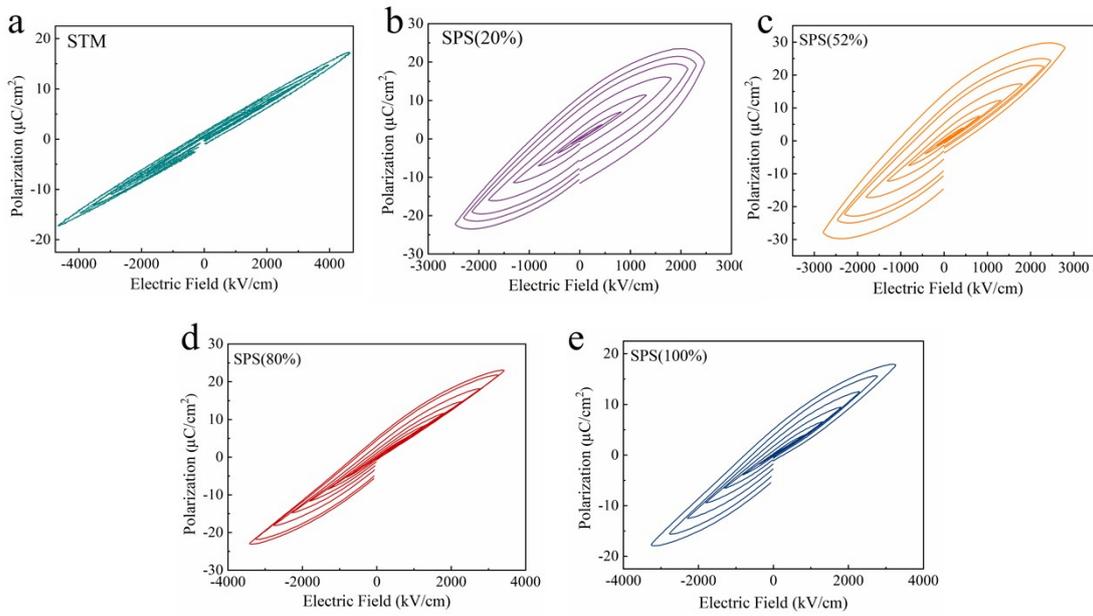


Fig. S3. P - E loops with SPS thin films at different of Zr^{4+}/Ti^{4+} ratio.

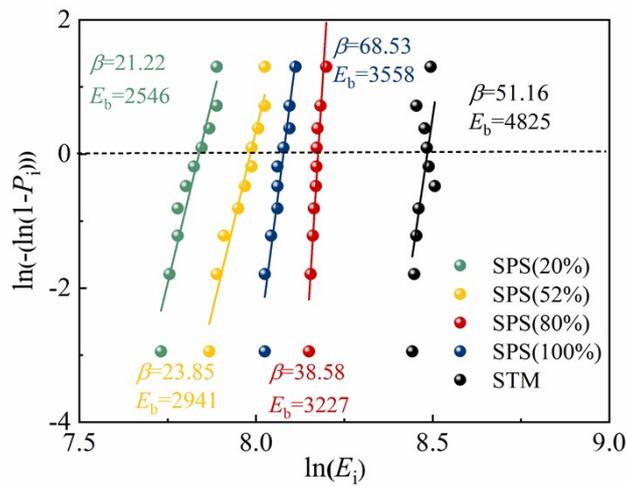


Fig. S4. Weibull distribution of measured breakdown for SPS thin films.

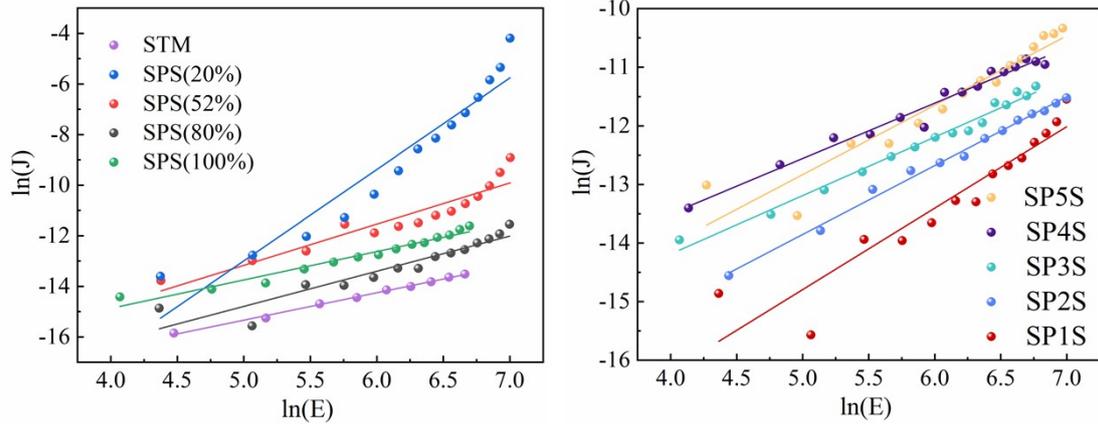


Fig. S5. Fitting of the conduction current of STM/PZT films to Ohmic conduction model.

Table S1. Statistics on the Slope of the Ohmic Conduction Model for STM/PZT

Name	STM	SPS (20%)	SPS (52%)	SPS (80%)	SPS (100%)	SP2S	SP3S	SP4S	SP5S
Slope	1.08	3.61	1.62	1.39	1.12	1.17	0.998	0.944	1.18

Table S2 The key parameters of SPnS films

Name	P_{\max} ($\mu\text{C}/\text{cm}^2$)	P_r ($\mu\text{C}/\text{cm}^2$)	ΔP ($\mu\text{C}/\text{cm}^2$)	E_b (kV/cm)	W_{rec} (J/cm^3)	η (%)	ε_r (1kHz)
STM	17.26	1.5	15.76	4825	36.62	80.28	92.16
SPS(20%)	23.5	10.97	12.05	2546	8.91	20.68	189.58
SPS(52%)	25.01	10.33	13.98	2941	12	32.1	205.47
SPS(80%)	23.08	4.62	18.46	3558	24.27	57.36	156.16
SPS(100%)	17.92	5.13	12.79	3227	16.2	47.22	129.18
SP2S	23.34	4.71	18.63	3443	28.38	63.21	240.85
SP3S	25.05	2.77	22.28	3362	35.73	74.61	268.49
SP4S	39.18	1.21	37.97	3263	52.98	86.08	342.77

SP5S	25.85	4.52	21.33	2879	23.38	51.13	309.07
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