Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Electronic Supplementary Material

Ferroelectric-mediated filamentary resistive switching in P(VDF-TrFE)/ZnO nanocomposite films

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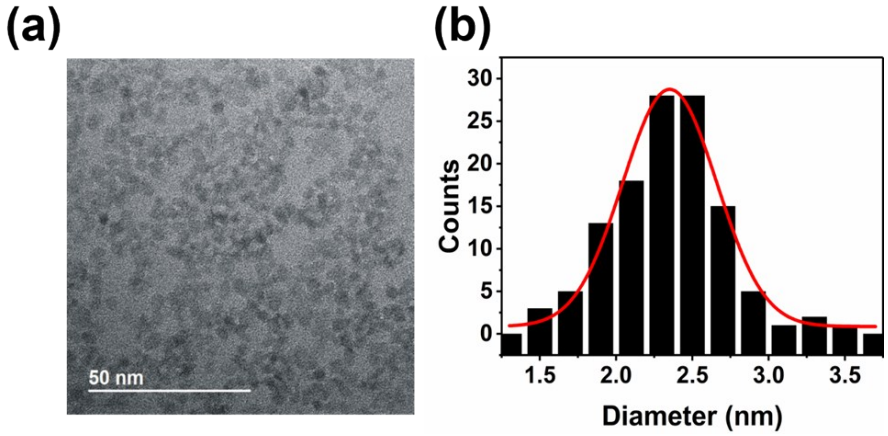

Figure S1. (a) TEM image of the as-synthesized ZnO NPs and (b) the corresponding particle size distribution

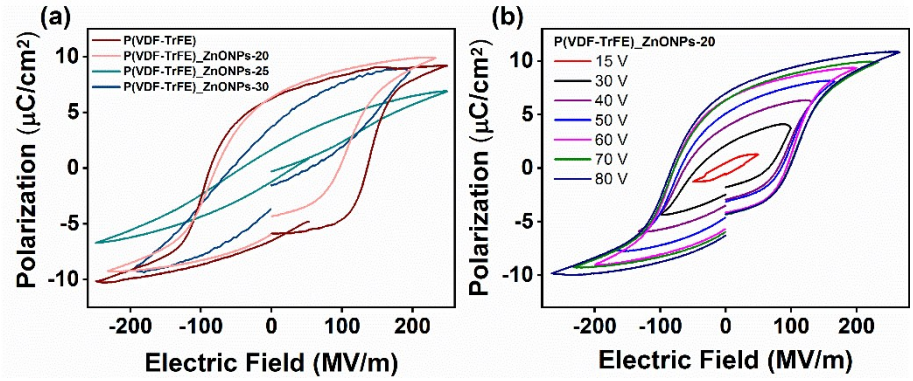

Figure S2. (a) P-E curves of P(VDF-TrFE)_ZnO NPs-20, P(VDF-TrFE)_ZnO NPs-25, and P(VDF-TrFE)_ZnO NPs-30 nanocomposites and (b) the PE loops of P(VDF-TrFE)_ZnONPS-20 nanocomposites at various applied voltages.

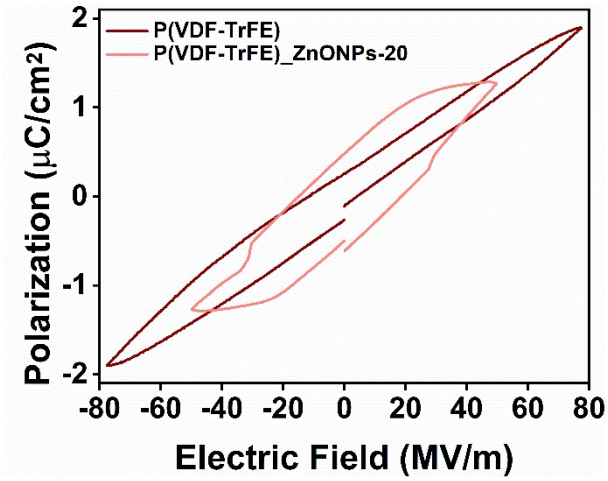

Figure S3. P-E curves of P(VDF-TrFE) and P(VDF-TrFE)_ZnO NPs-20 nanocomposites film recorded at 35 V, 15 V, respectively.

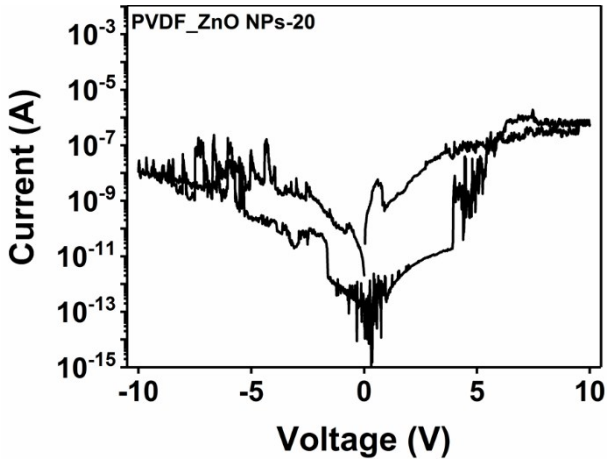

Figure S4. The *I-V* curves of Au/PVDF_ZnO NPs/n^{++} Si device

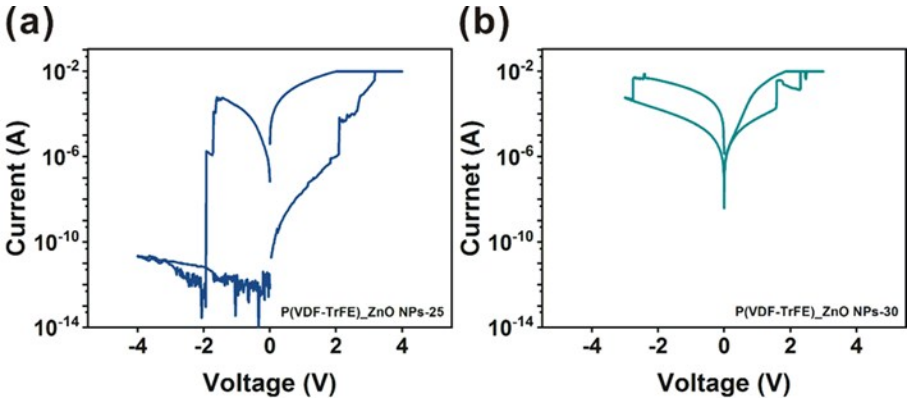

Figure S5. The *I-V* curves of (a) Au/P(VDF-TrFE)_ZnO NPs-25/n^{++} Si and (b) Au/P(VDF-TrFE)_ZnO NPs-30/ n^{++} Si devices

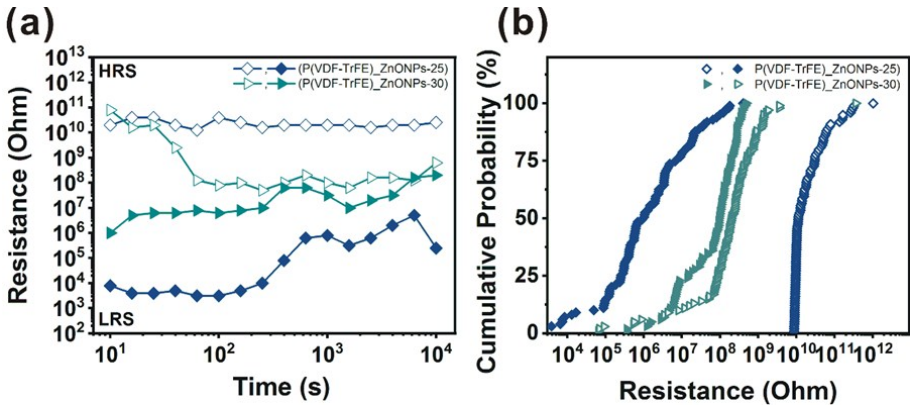

Figure S6. Electrical characterization of the Au/P(VDF-TrFE)_ZnO NPs-25/n^{++}Si and Au/P(VDF-TrFE)_ZnO NPs-30/n^{++}Si devices. (a) Stability of R_{HRS} and R_{LRS} through the retention test of the P(VDF_TrFE)_ZnO NPs devices. (b) Cumulative probability distributions of the resistance values at a read voltage of 0.5 V for the initial 10,000 cycles. The devices exhibit poor stability.

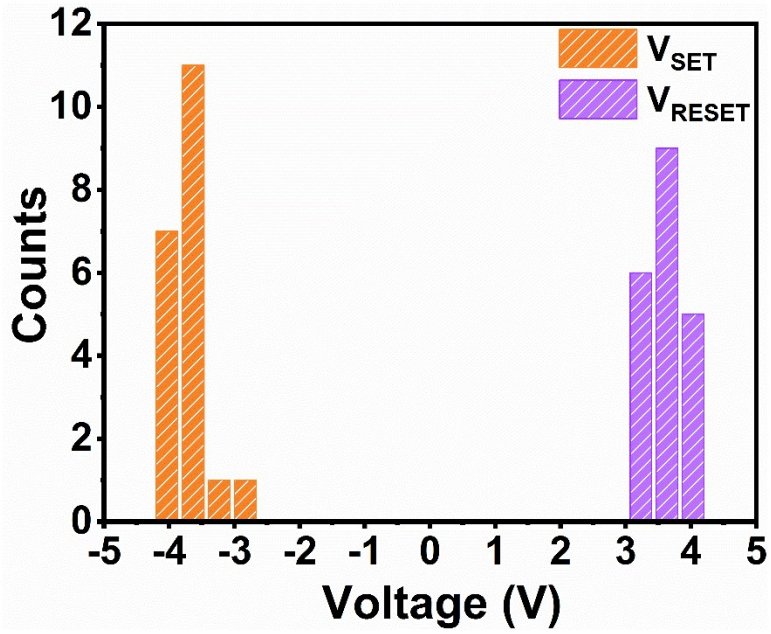

Figure S7. The cumulative probability of V_{SET} and V_{RESET} of 20 different Au/P(VDF-TrFE)_ZnONPs-20/n^{++}Si device.

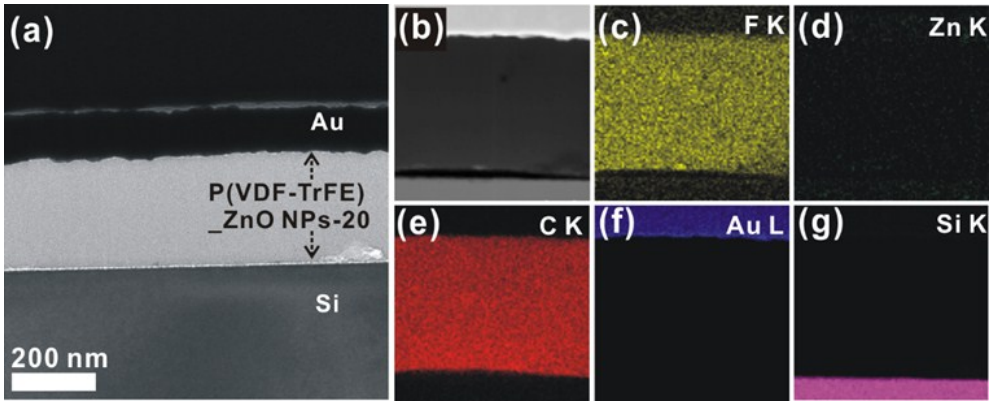

Figure S8. (a) Cross-sectional TEM image of unbiased Au/P(VDF-TrFE)_ZnO NPs-20/ n^{++} Si device. (b-g) STEM and EDS maps of the corresponding area. ZnO NPs are uniformly dispersed in the P(VDF-TrFE) matrix.

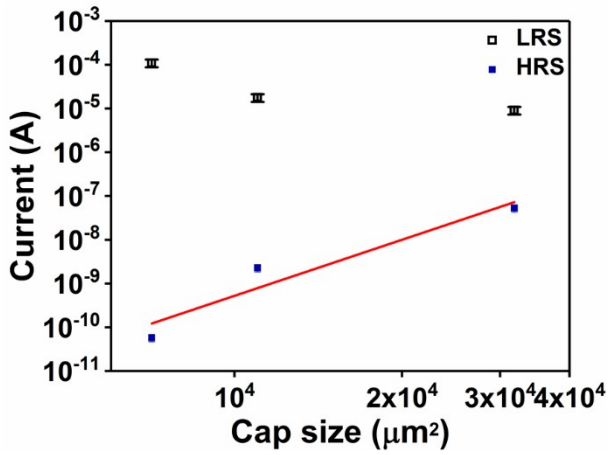

Figure S9. The dependence of cell resistance (HRS and LRS) with the various device area for identification whether the conduction occurs through localized filamentary channels.