Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Langmuir-Blodgett assisted alignment of 2D nanosheets in polymer nanocomposites for high-temperature dielectric energy storage applications

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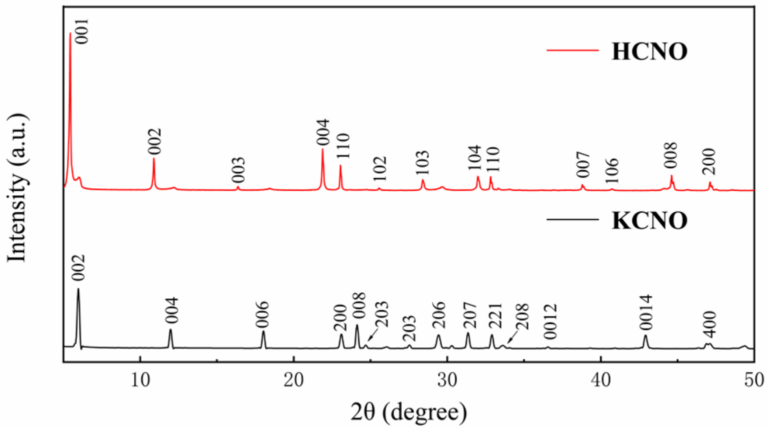

Figure S1. XRD of KCNO and HCNO Powders

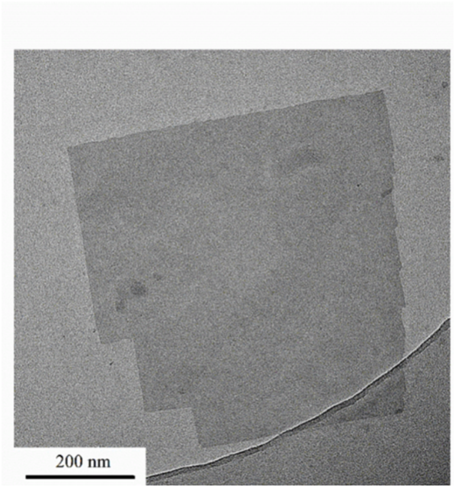

Figure S2. Transmission electron microscopy of CNO nanosheet.

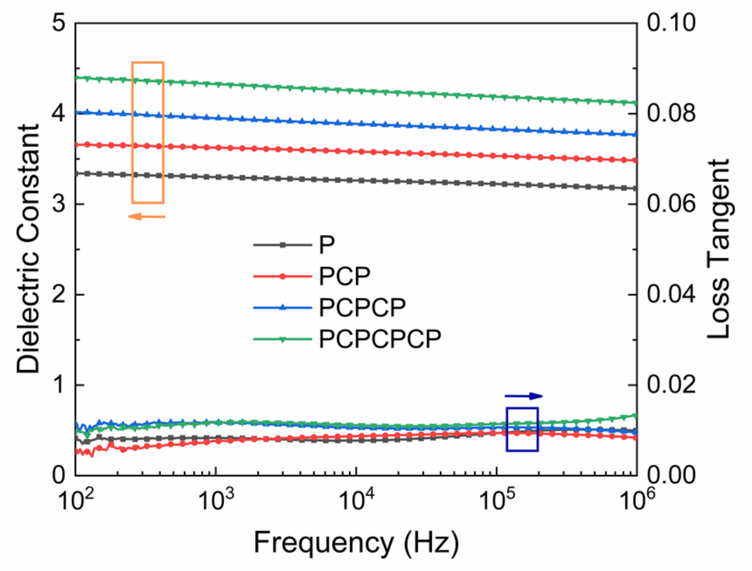

Figure S3. The dependences of dielectric constant and dielectric loss on the frequency from 100 to 1MHz at 25 °C.

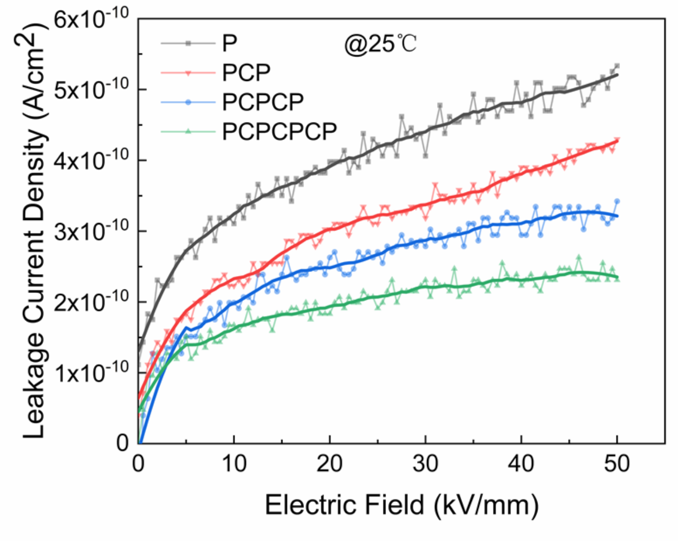

Figure S4. The leakage current for different nanocomposites at 25 °C.

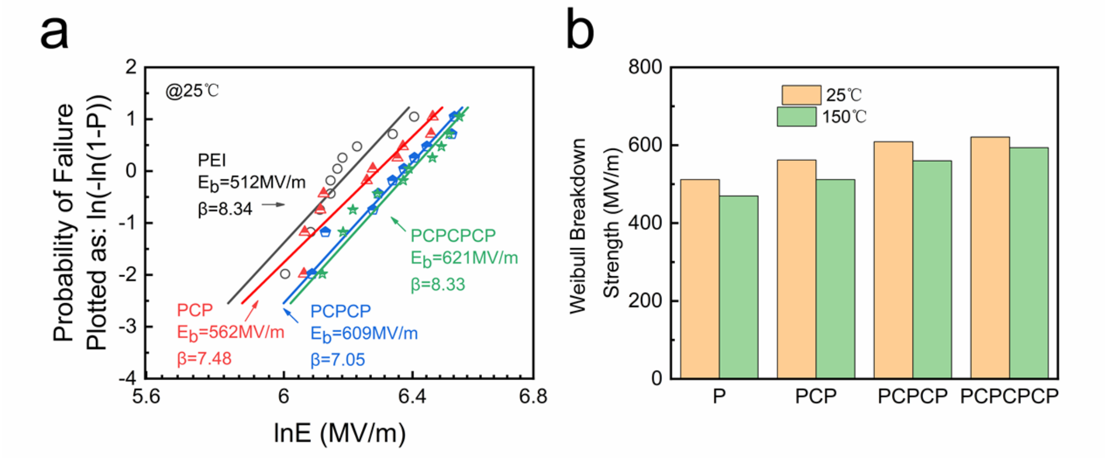

Figure S5. (a) Weibull breakdown characteristics at 25 °C. (b) Comparison of Weibull breakdown characteristics of different nanocomposites at 25 ℃ and 150 ℃

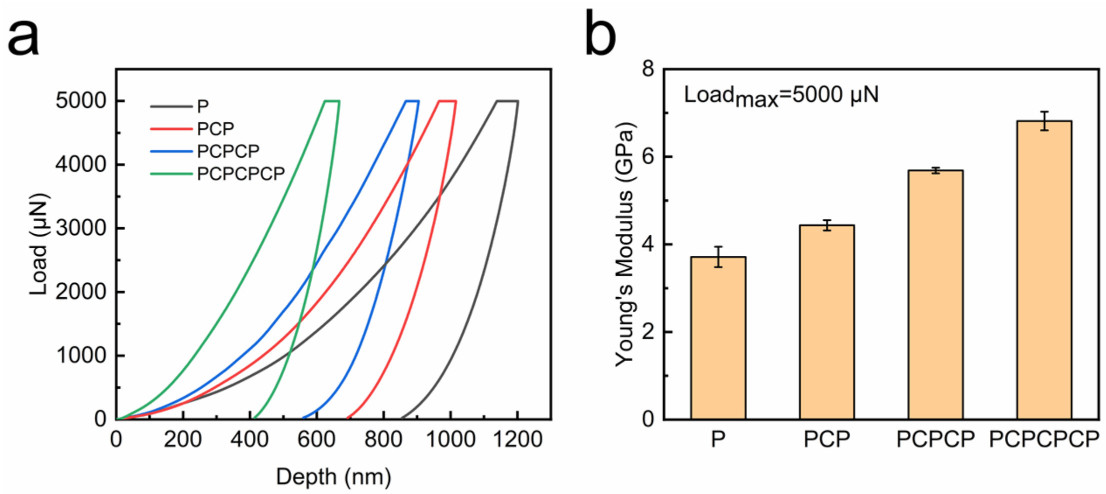

Figure S6. (a) load-displacement curves of different nanocomposite films obtained by nanoindentation. (b) The calculated Young's modulus of different nanocomposite films.

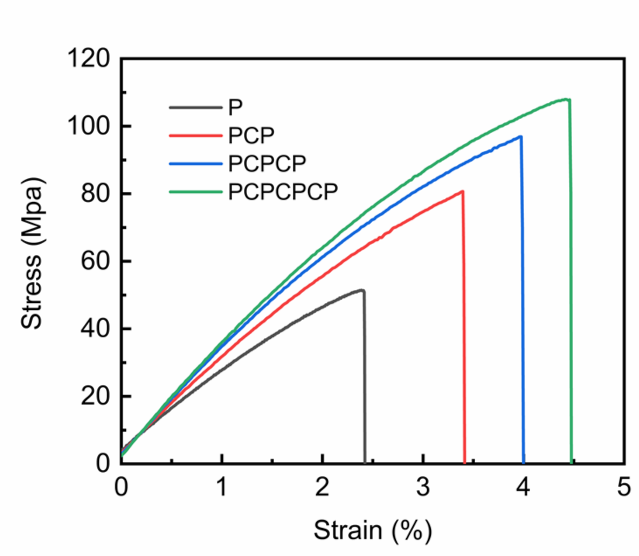

Figure S7. Stress-strain curves.

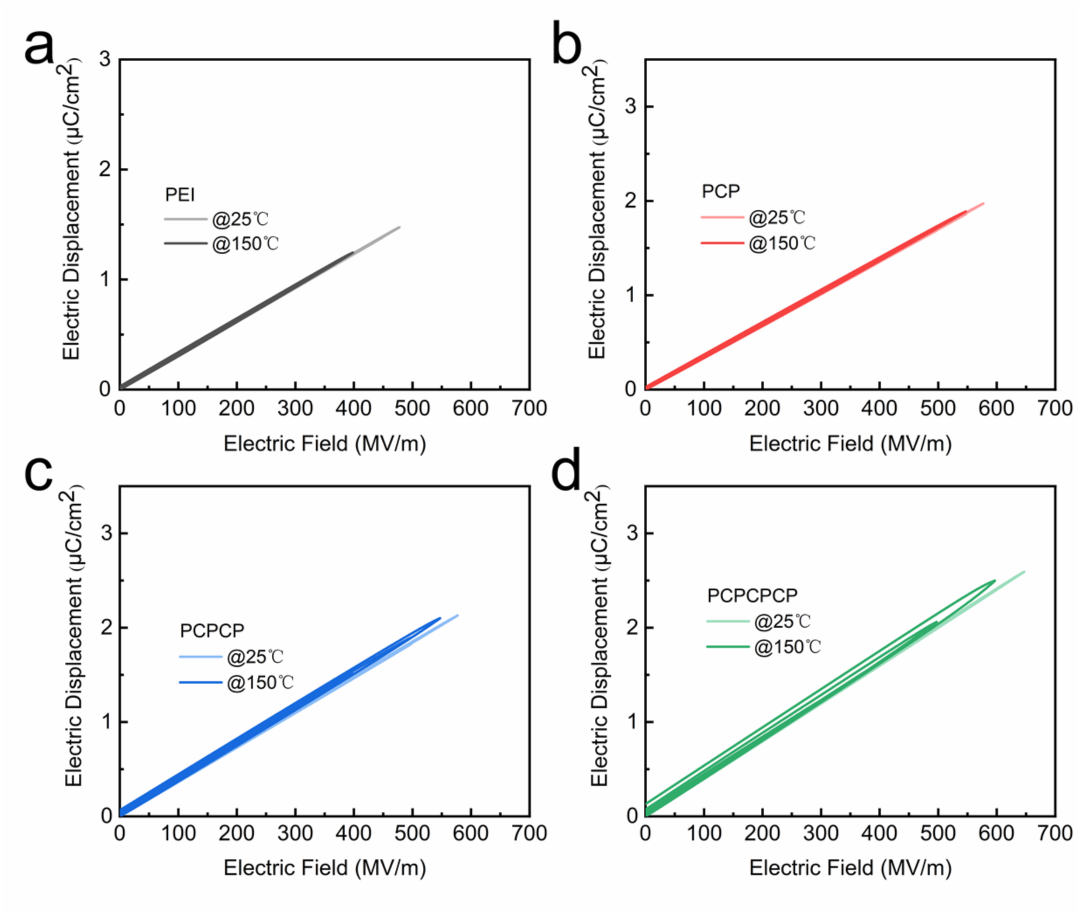

Figure S8. The comparison of D-E loops between RT and 150 °C: (a) PEI; (b) PCP; (c) PCPCP; (d) PCPCPCP.

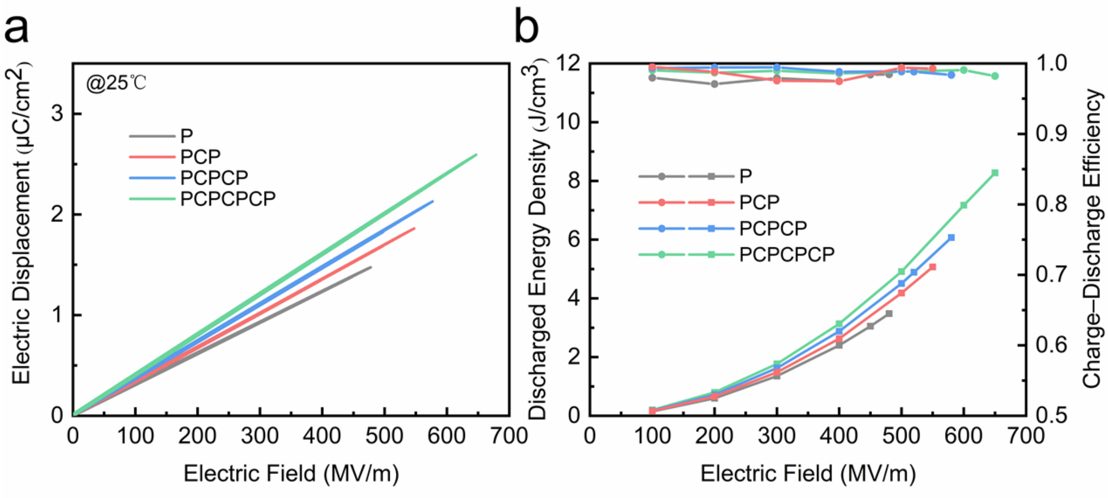

Figure S9. a) D-E loops of various nanocomposites at 25°C. b) Variation of discharged energy density and charge-discharged energy efficiency with the applied electric field for different nanocomposites at 25°C.

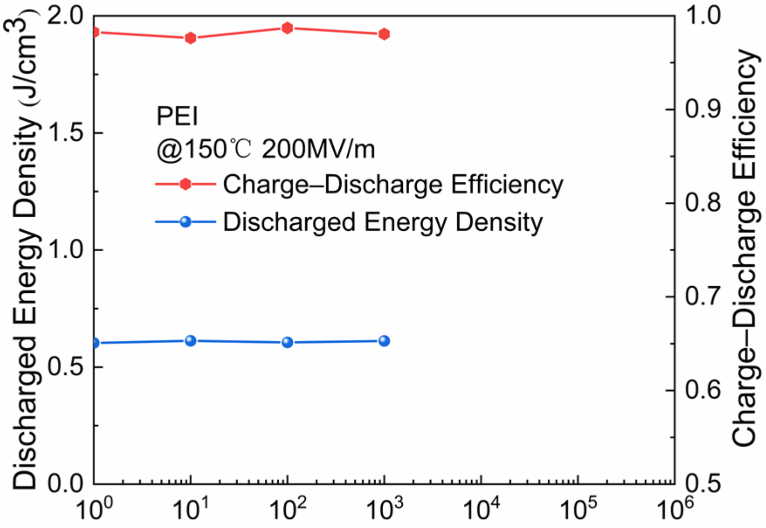

Figure S10. Discharged energy density and charge-discharged energy efficiency of PEI (at 200 MV/m) at 150 °C within 10^3 cycles.

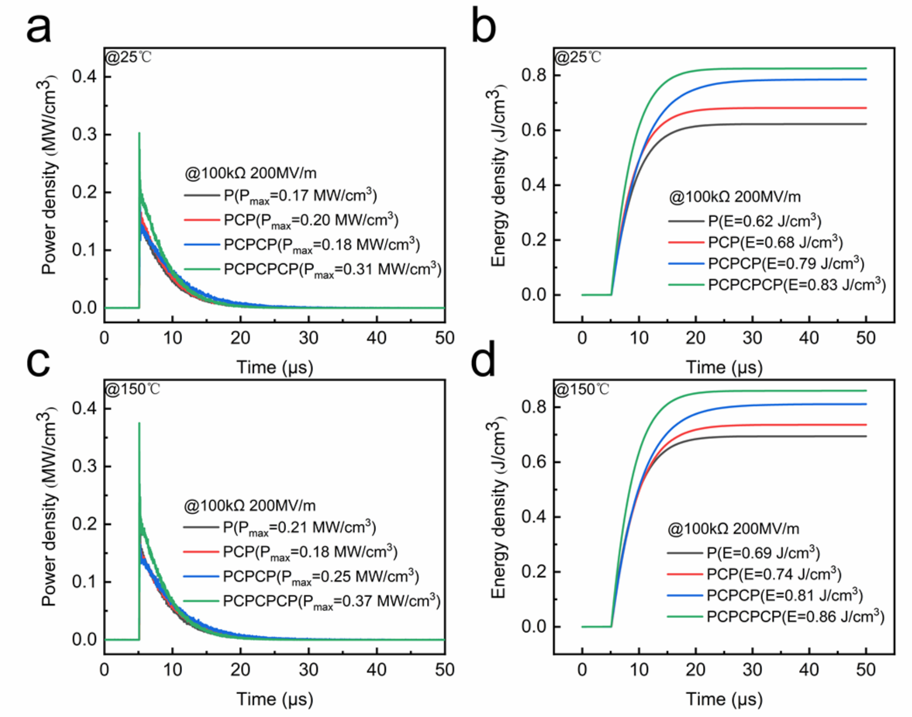

Figure S11. (a) Discharged energy density and (b) power density as a function of time for different composite films at 25 °C, under the charged electric field of 200 MV/m and discharged to the load resistor of 100 kΩ. (c) Discharged energy density and (d) power density as a function of time for different composite films at 150 °C, under the charged electric field of 200 MV/m and discharged to the load resistor of 100 kΩ. the charged electric field of 200 MV/m and discharged to the load resistor of 100 kΩ.

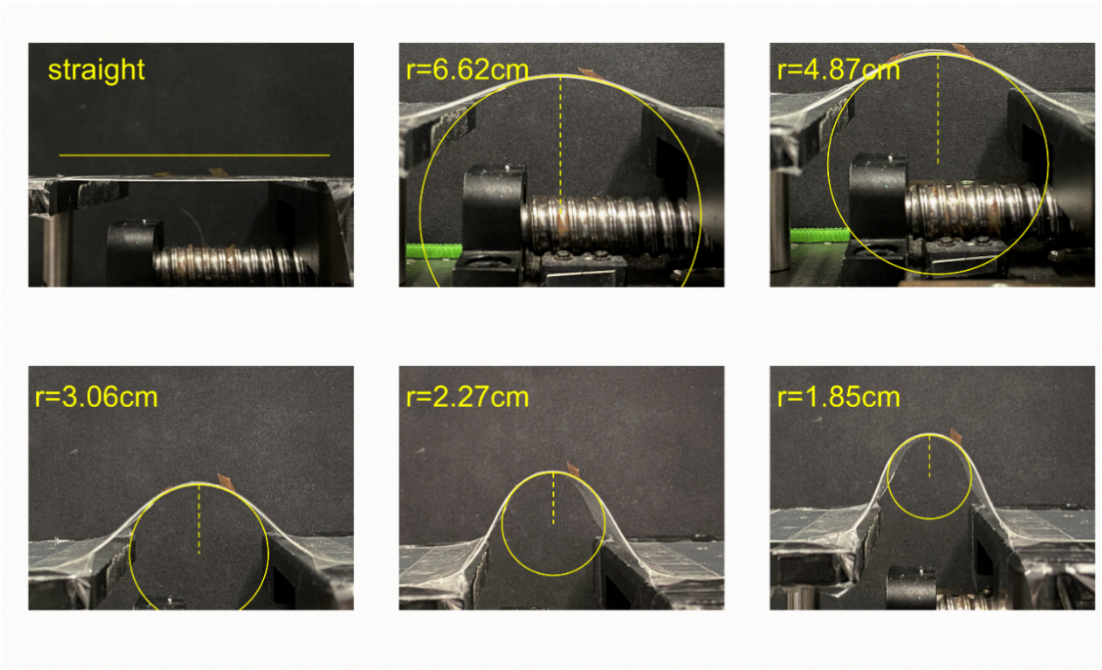

Figure S12. Actual situation of different bending degrees of nanocomposite films