Supporting Information

High-temperature energy storage capability of flexible polyimide with the fluorinated pendant group

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Table S1. The feeding ratio of dianhydride to diamine.

Polyimides	Polyamide acid	TFPH	MPD	LPDA
PI-0	PAA-0	0	100	100
PI-25	PAA-25	25	75	100
PI-50	PAA-50	50	50	100
PI-75	PAA-75	75	25	100
PI-100	PAA-100	100	0	100

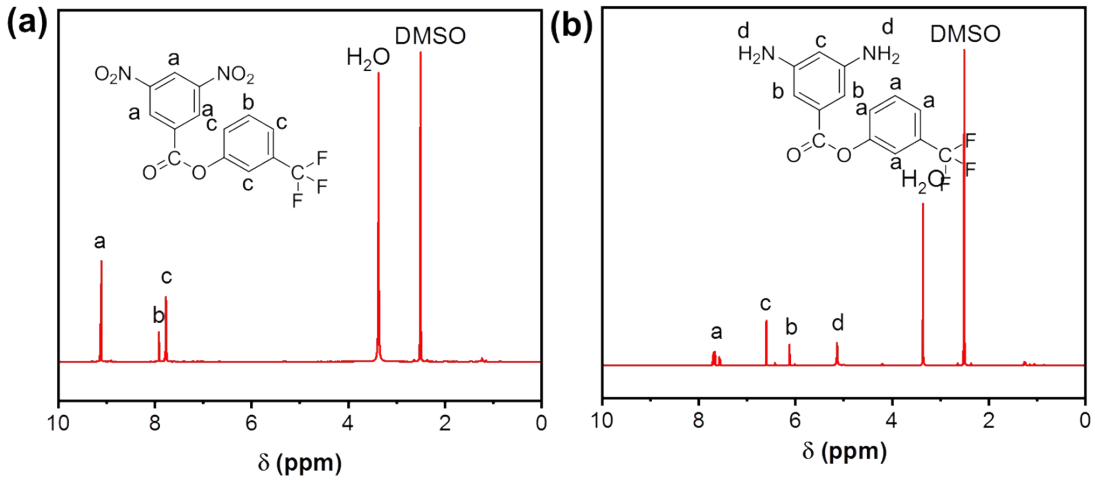

Figure S1. The structural characterizations of monomers from ^{1}H NMR spectra: (a) TFPO and (b) TFPH.

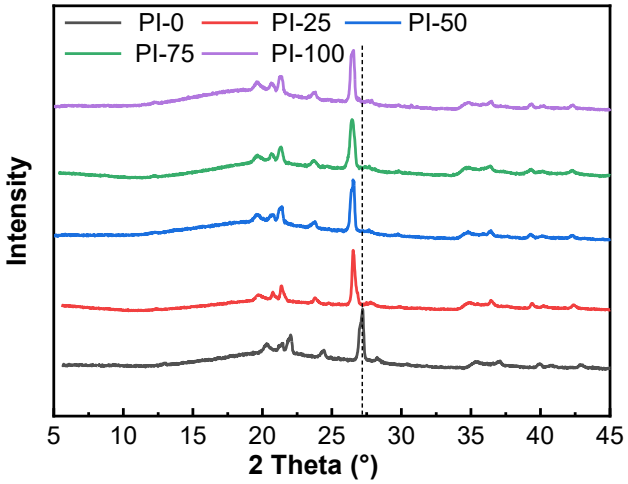

Figure S2. XRD patterns of PI films.

Table S2. The macromolecular weights and polydispersity indexes of PAA samples based on the GPC results.

Sample	M_n(kD)	M_w(kD)	M_z(kD)	M_w/M_n
PAA-0	27.5	35.2	98.3	1.28
PAA-25	17.1	24.5	38.4	1.43
PAA-50	18.0	26,1	43.9	1.45
PAA-75	18.0	26.9	40.7	1.49
PAA-100	14.2	20.9	33.3	1.48

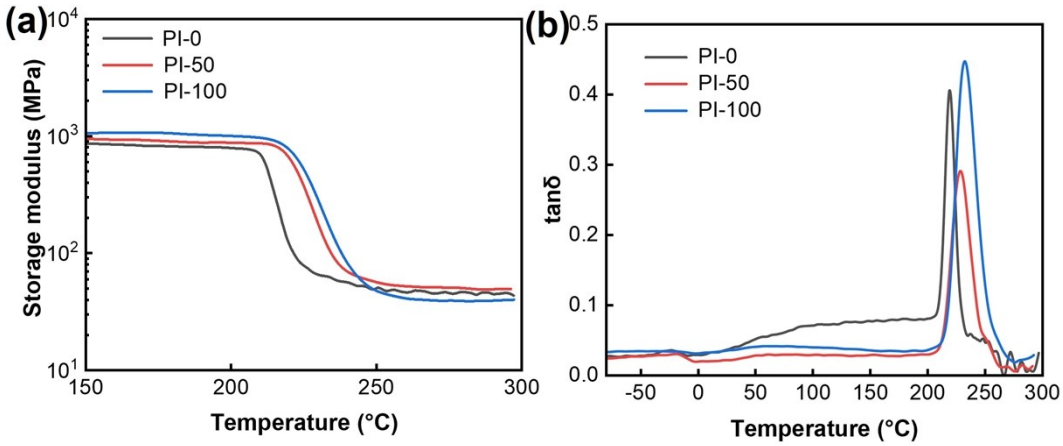

Figure S3. DMA curves of PI films: (a) storage modulus and (b) loss tangent.

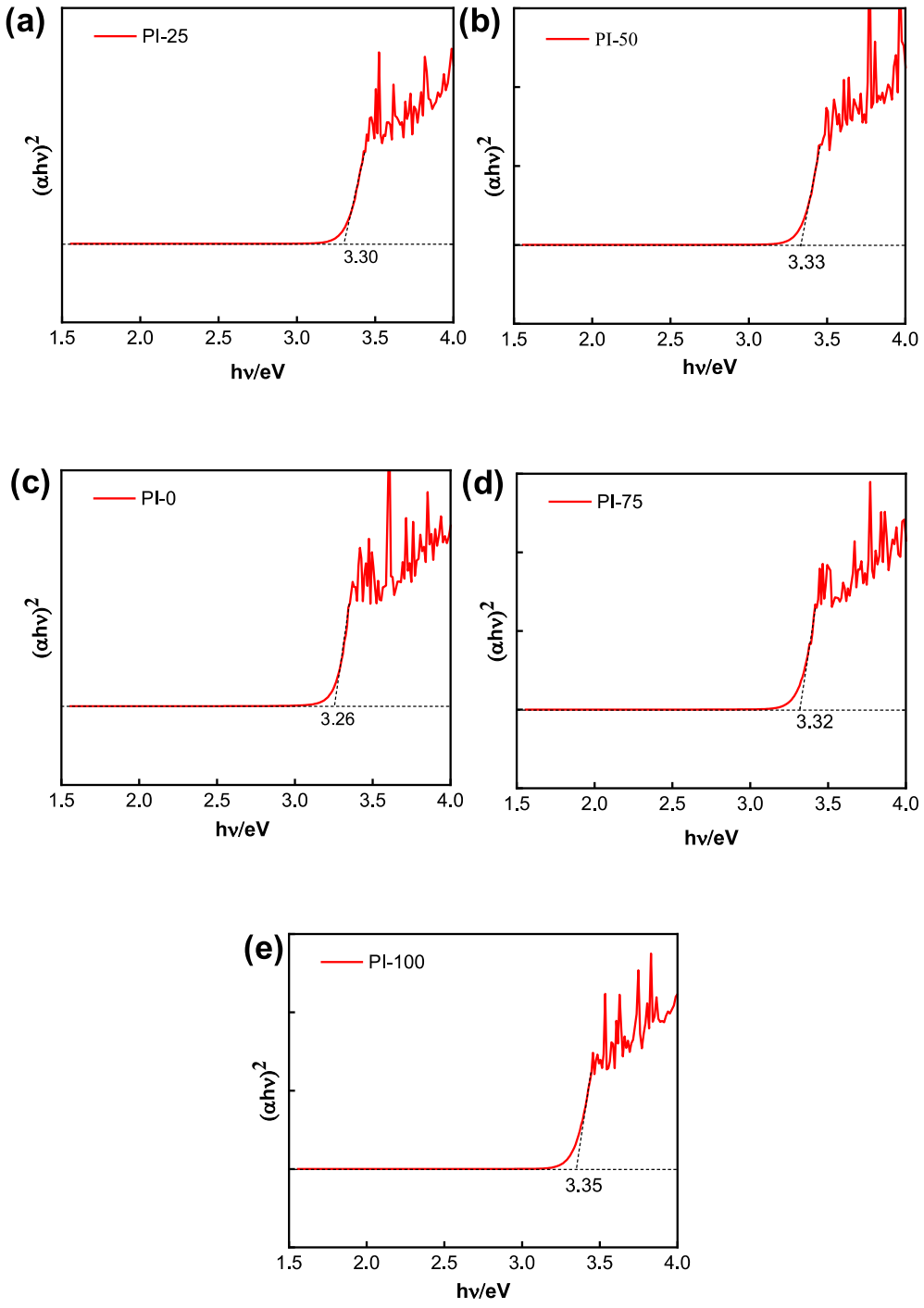

Figure S4. Tauc's diagram of PI films: (a) PI-0, (b) PI-25, (c) PI-50, (d) PI-75, and (e) PI-100. The corresponding bandgap values are labelled inset.

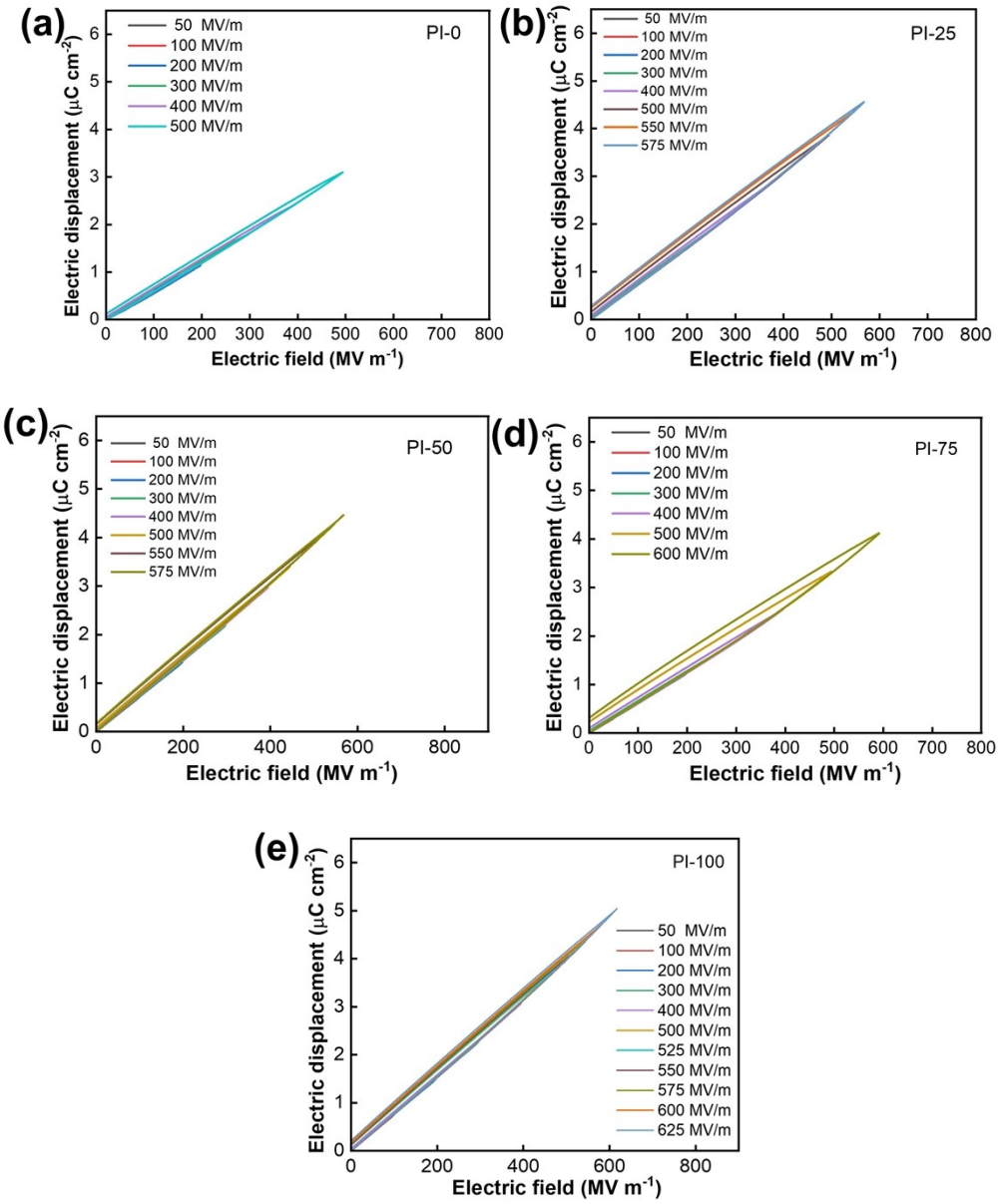

Figure S5. The hysteresis *P*-*E* loops of PI films versus the applied fields at room temperature: (a) PI-0, (b) PI-25, (c) PI-50, (d) PI-75, and (e) PI-100.

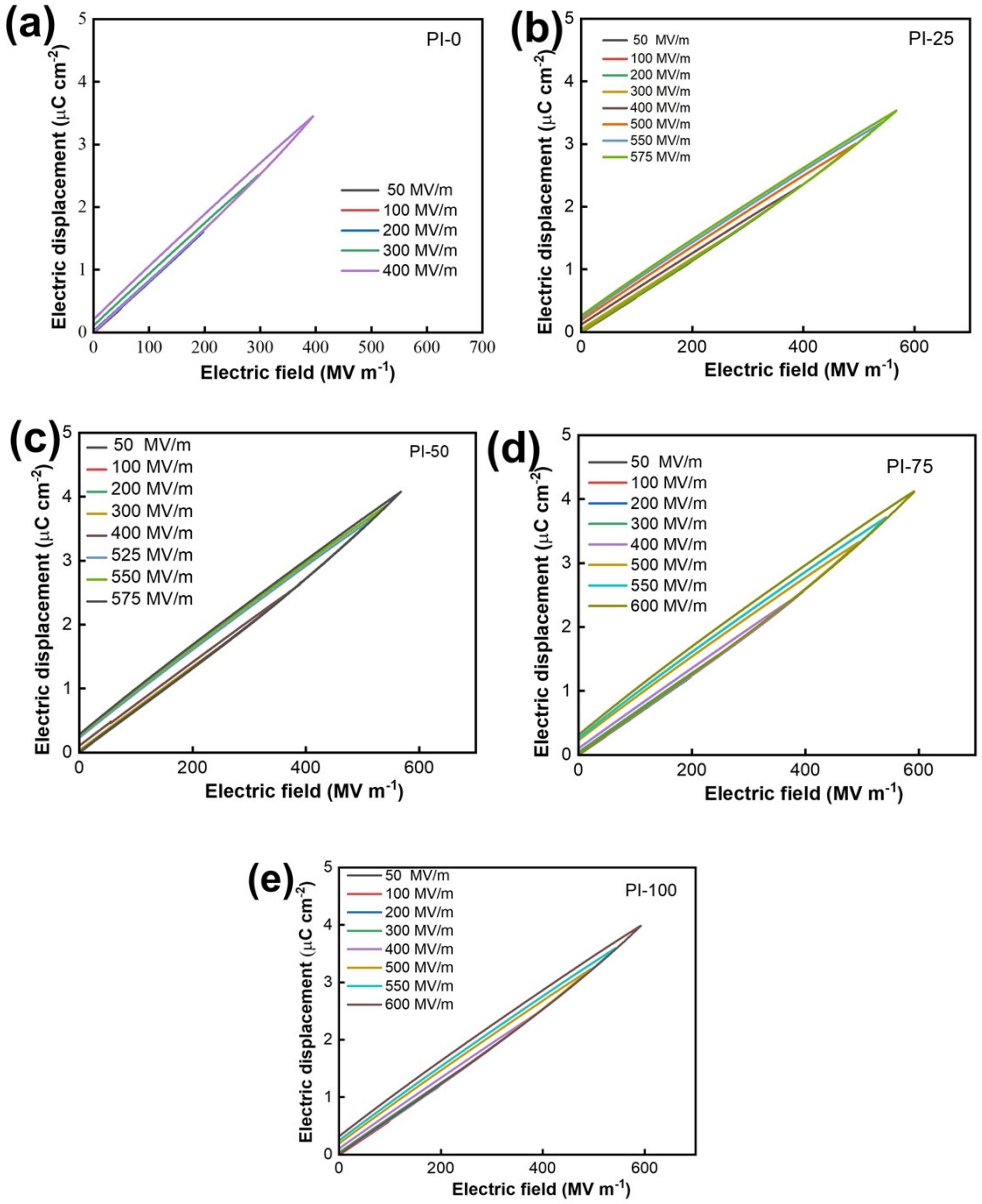

Figure S6. The hysteresis *P-E* loops of PI films versus the applied fields at 150 °C: (a) PI-0, (b) PI-25, (c) PI-50, (d) PI-75, and (e) PI-100.

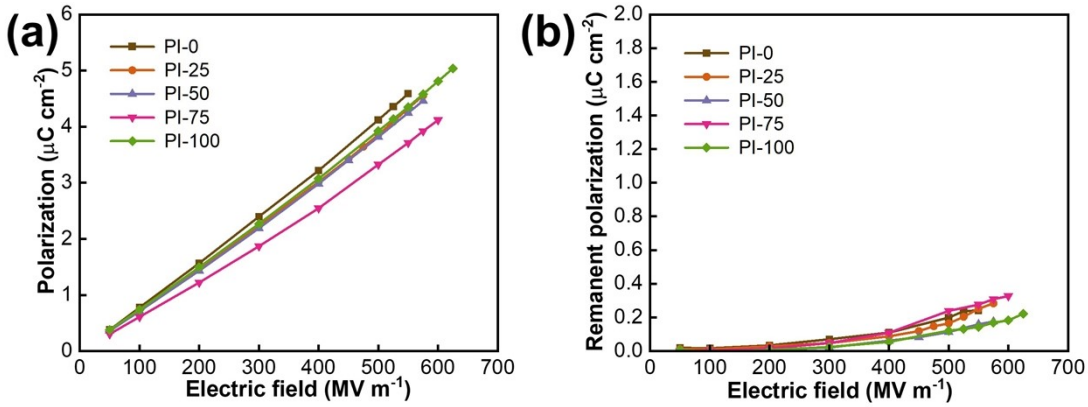

Figure S7. The polarization values of PI films at 25 °C: (a) P_{max} and (b) $P_{r.}$

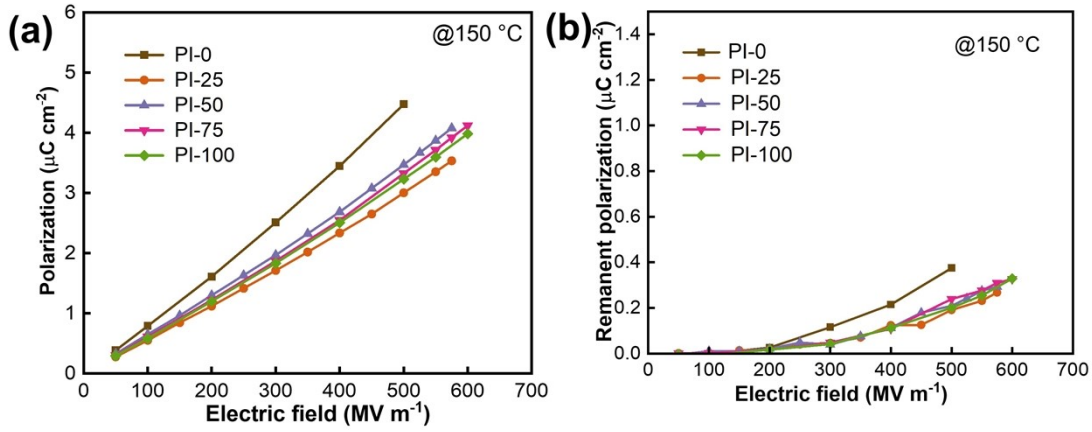

Figure S8. The polarization values of PI films at 150 °C: (a) P_{max} and (b) $P_{r.}$

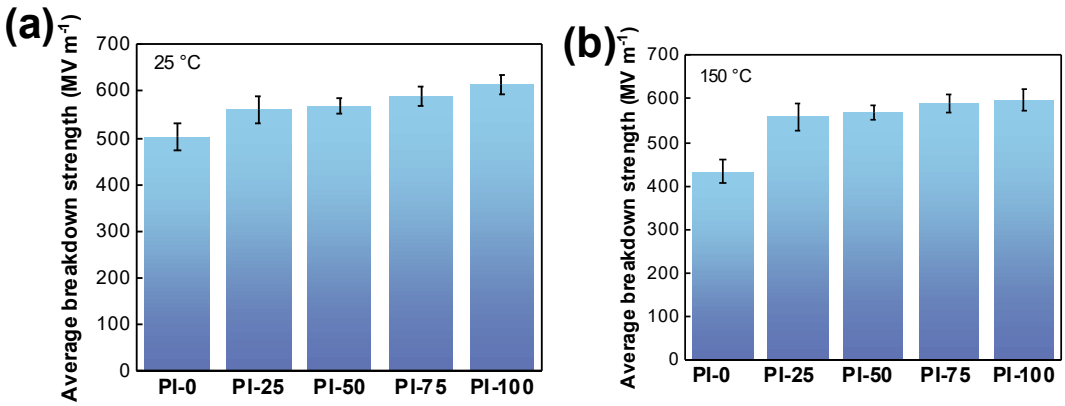

Figure S9. Average breakdown field strength of PI film with error bars under different testing temperatures: (a) 25°C, and (b) 150°C.

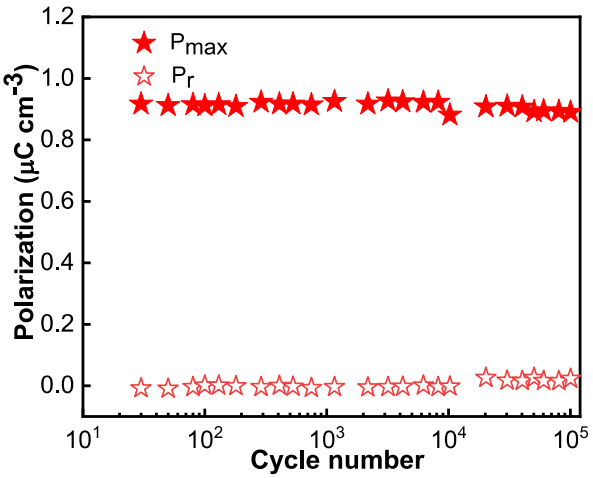

Figure S10. The variations of P_{max} and P_r values versus cycle number for PI-100 under an applied electric field of 200 MV m^{-1} at 150 °C.

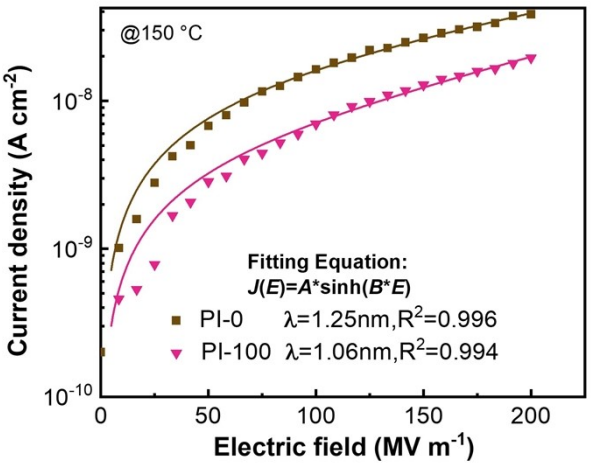

Figure S11. The leakage current data and fitting curves of PI-0 and PI-100 at 200 MV m^{-1} and 150 °C. The solid curves fit to hyperbolic sine.