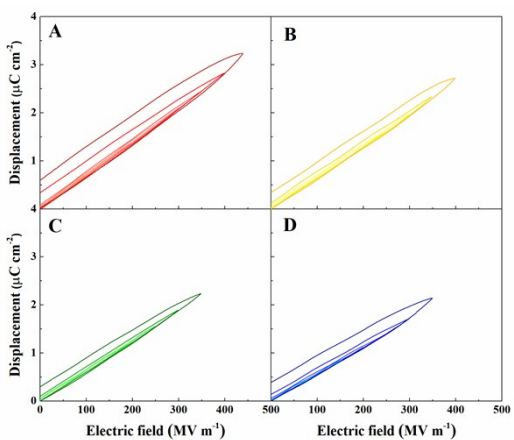


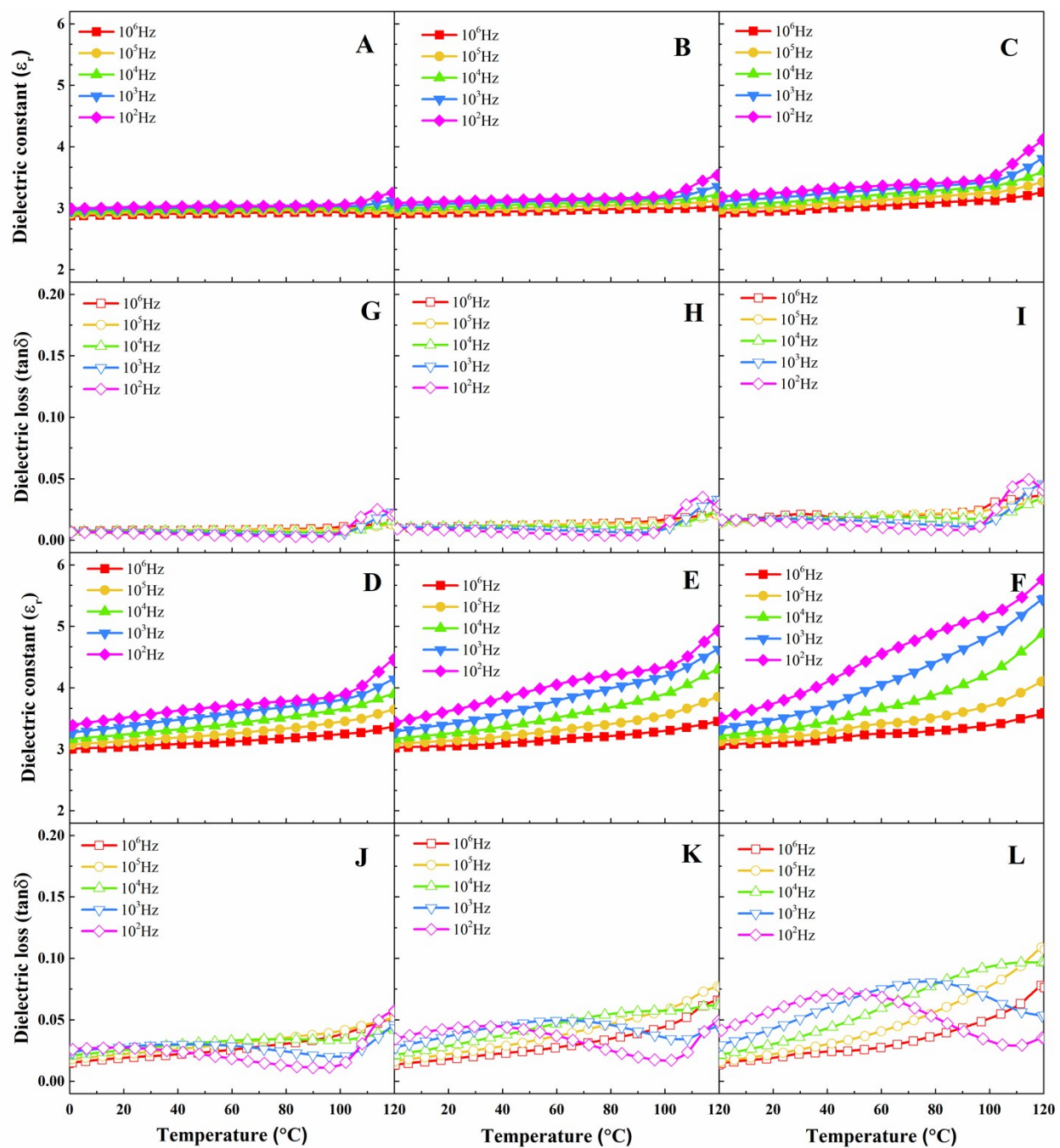
Electronic Supplementary Material (ESI) for Phys. Chem. Chem. Phys.

## Tuning Dielectric and Energy Storage Properties of Polystyrene Based Polymer Dielectric by Manipulating Dipoles and Their Polarizing Behavior

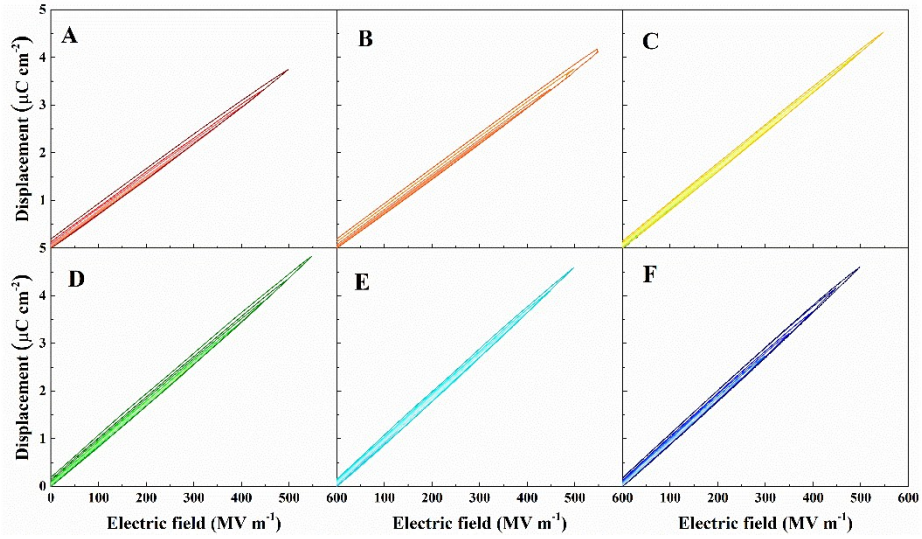
Qizheng Li<sup>a</sup>, Jingjing Liu<sup>a</sup>, Xiao Zhang<sup>b</sup>, Shaobo Tan<sup>a</sup>, Junyong Lu<sup>b</sup>, and Zhicheng Zhang<sup>\*a</sup>



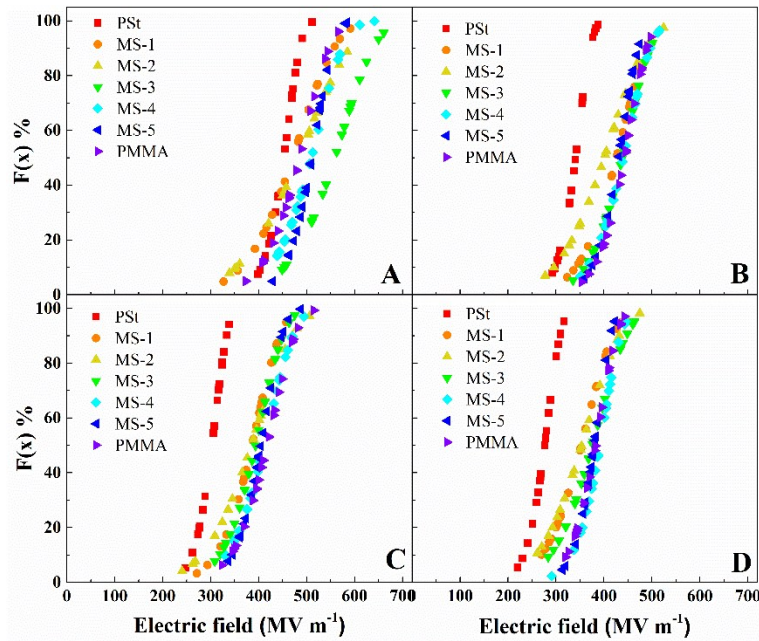
**Fig. S1.** D–E loops of PSt at elevated electric fields under varied temperature of 20 °C (A), 50 °C (B), 70 °C (C) and 90 °C (D).



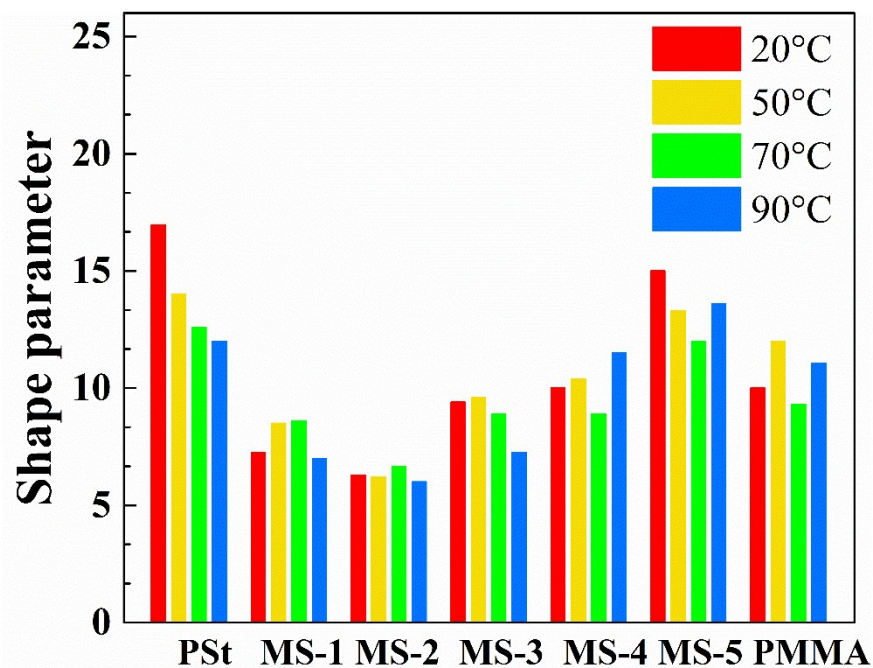
**Fig. S2.** Dielectric constant (A-F) and dielectric loss (G-L) as a function of temperature at different frequencies for P(St-MMA)s and PMMA with varied ratios of St/MMA: MS-1 (A, G), MS-2 (B, H), MS-3 (C, I), MS-4 (D, J), MS-5 (E, K) and PMMA (F, L).



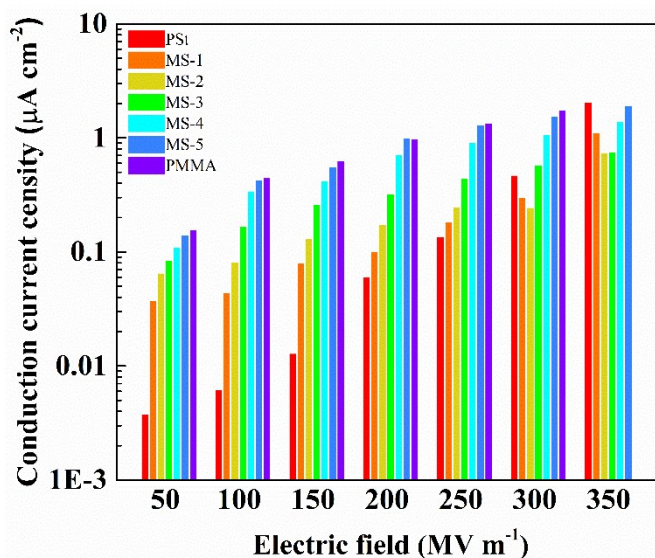
**Fig. S3.** D–E loops of MS-1 (A), MS-2 (B), MS-3 (C), MS-4 (D), MS-5 (E) and PMMA (F) at elevated electric fields@20 °C.



**Fig. S4.** Weibull distribution of the breakdown electric field of PMMA, PSt and P(St-MMA)s with varied ratios of St/MMA at 20 °C (A) 50 °C (B), 70 °C (C) and 90 °C (D).



**Fig. S5.** Shape parameter as functions of Weibull breakdown strength of PMMA, PSt and P(St-MMA)s with varied ratios of St/MMA under different temperature.



**Fig. S6.** Conduction current density@20°C of the PMMA, PSt and P(St-MMA)s with varied ratios of St/MMA films at varied applied electric fields.