

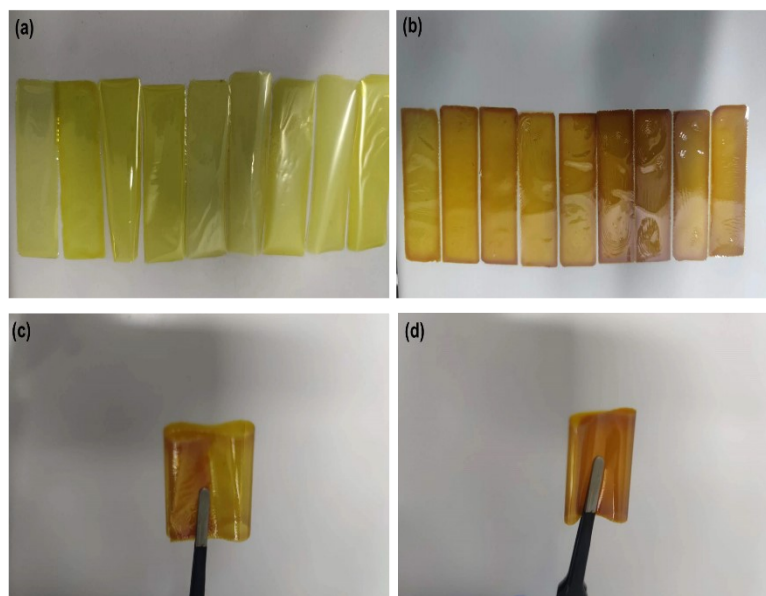
# Supporting information

**Scalable Co-Cured Polyimide/Poly(p-phenylene benzobisoxazole) All-organic Composites Enabling Improved Energy Storage Density, Low Leakage Current and Long Cyclic Stability**

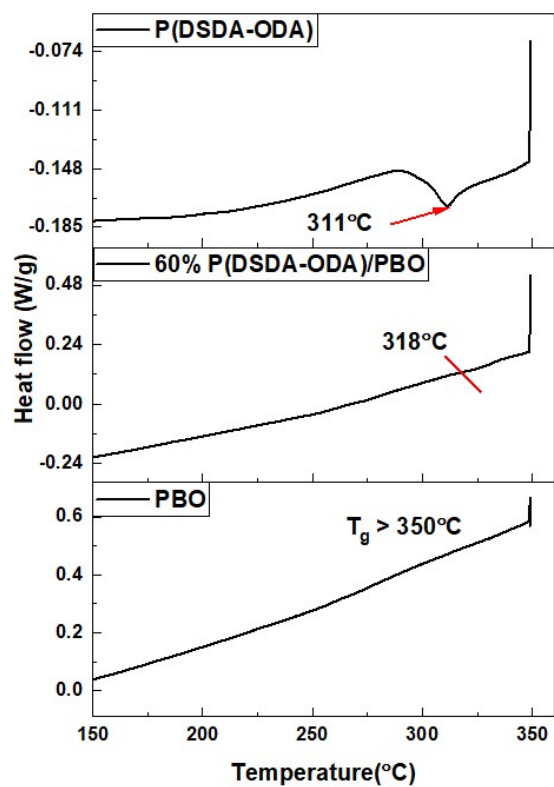
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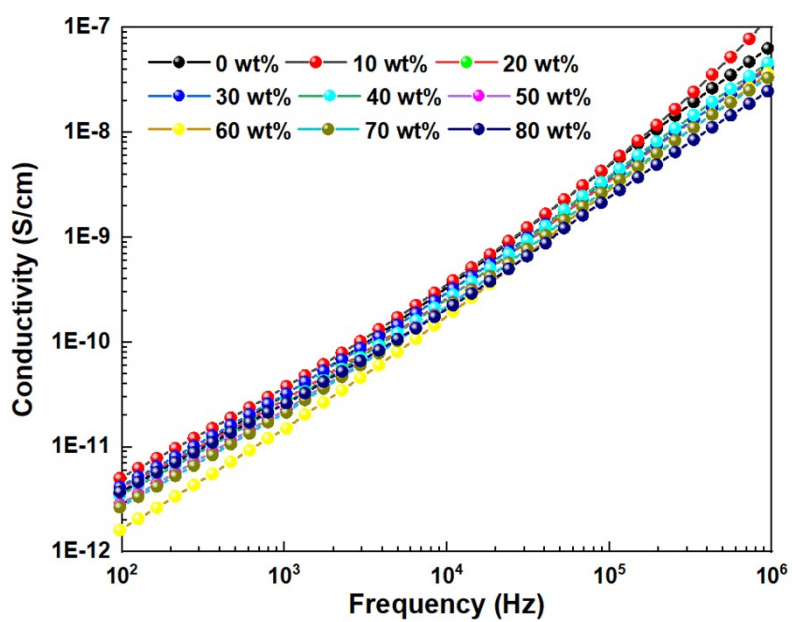
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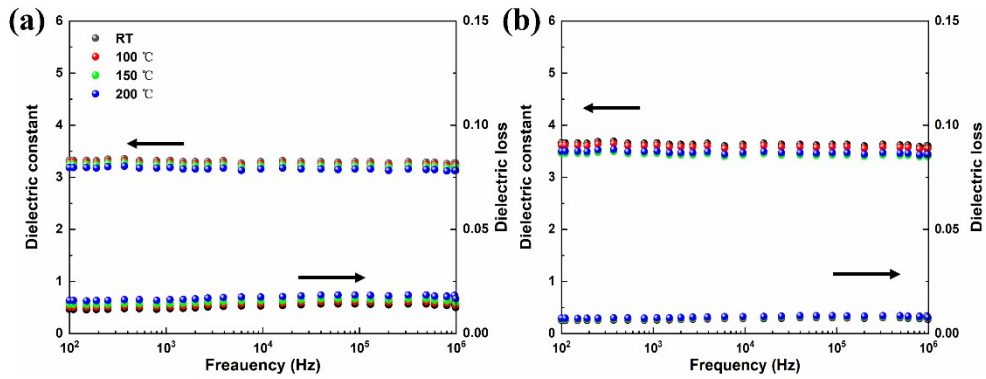
**Figure S1** (a) Digital photo of P(DSDA-ODA)/PBO with P(DSDA-ODA) ratio from 0~80 wt.%; (b) composite film after co-curing reaction; (c) PBO thin film; (d) PBO composite film with 80 wt.% P(DSDA-ODA).



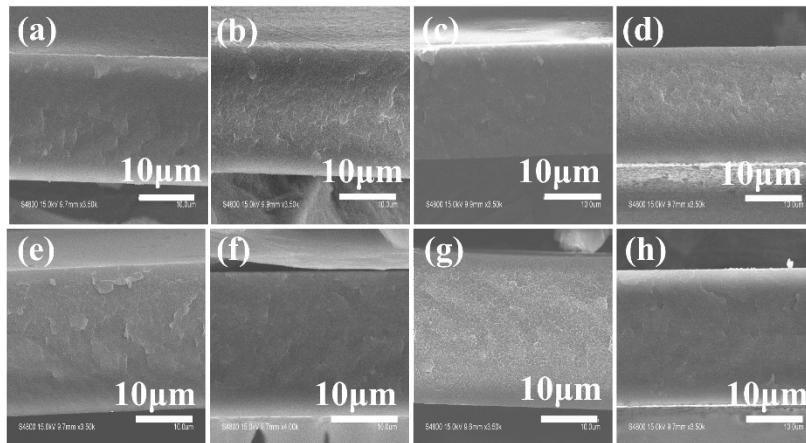
**Figure S2** DSC curves based on P(DSDA-ODA), 60% P(DSDA-ODA) and PBO polymers.



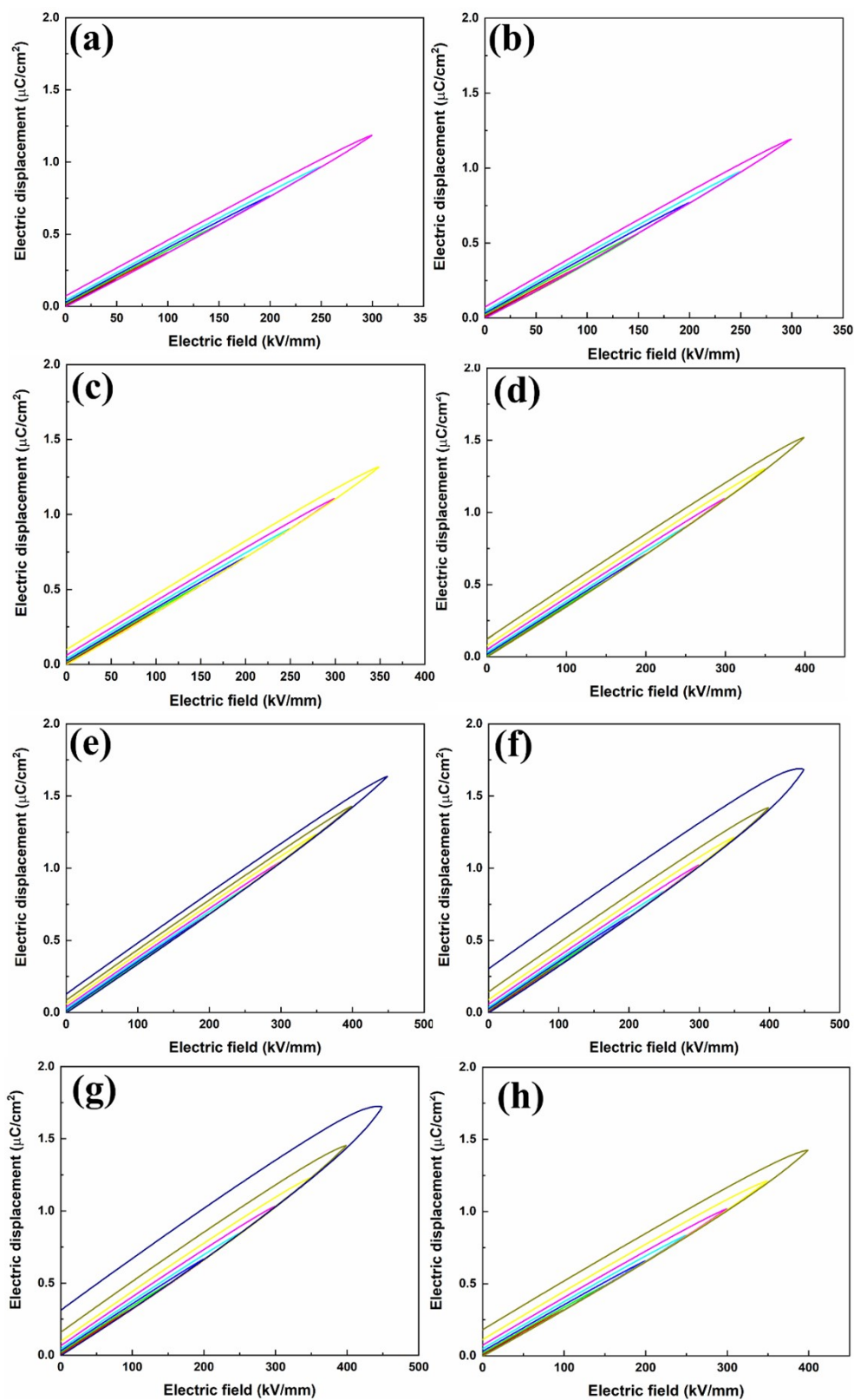
**Figure S3** Conductivity of P(DSDA-ODA)/PBO all-organic films with different contents of P(DSDA-ODA).



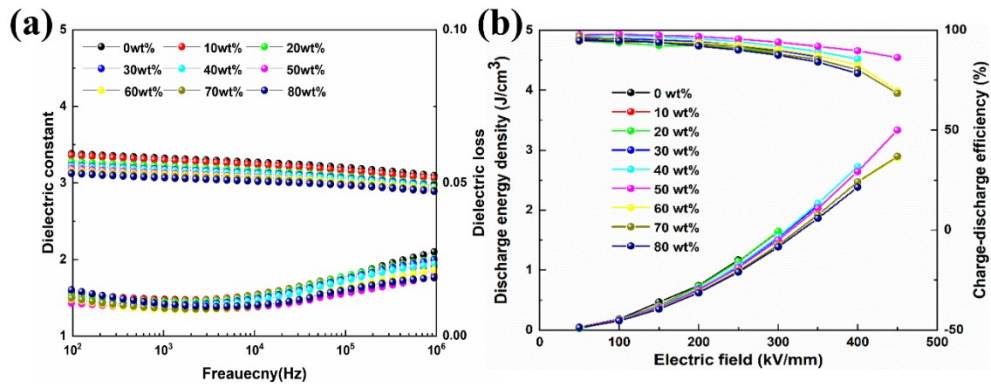
**Figure S4** Frequency dependent dielectric constant and dielectric loss of (a) PBO and (b) 60 wt.% P(DSDA-ODA)/PBO film at room temperature, 100 °C, 150 °C and 200 °C, respectively.



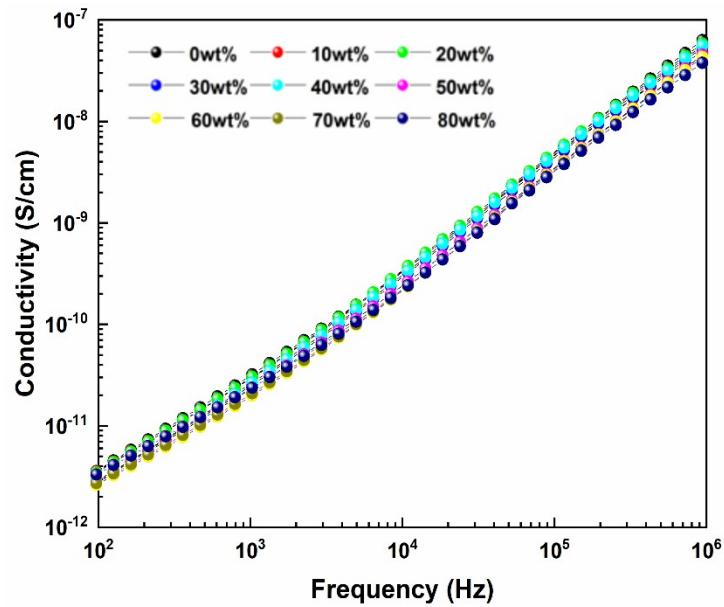
**Figure S5** ((a)~(h)) Cross-section SEM images of the P(6FDA-ODA)/PBO composite films with P(6FDA-ODA) weight fractions from 10~80 wt.%.



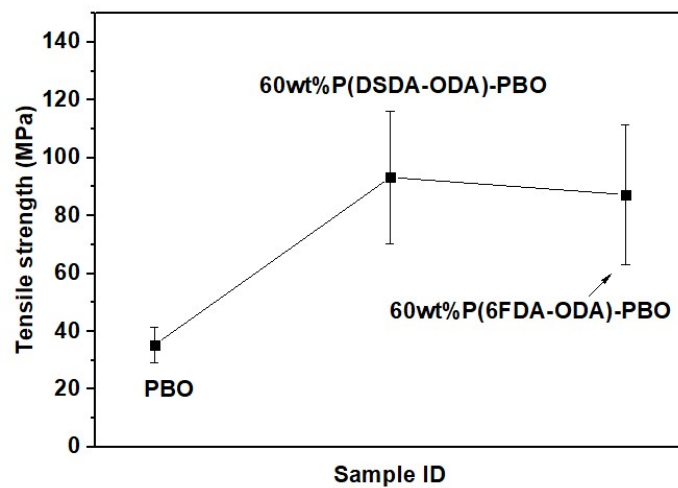
**Figure S6** D-E loops of P(6FDA-ODA)/PBO all-organic composites with P(6FDA-ODA) fraction from 10~80 wt.%.



**Figure S7** (a) Dielectric constant and loss ; (b) discharge energy storage density and charge-discharge efficiency of P(6FDA-ODA)/PBO composites.



**Figure S8** Conductivity of P(6FDA-ODA)/PBO all-organic films with different contents of P(6FDA-ODA).



**Figure S9** Tensile strength of PBO, 60wt.%P(DSDA-ODA)/PBO and 60wt.%P(6FDA-ODA)/PBO.