Supporting Information

Benzoxazole-polymer@CCTO hybrid nanoparticles prepared via RAFT polymerization: toward poly(*p*-phenylene benzobisoxazole) nanocomposites with enhanced high-temperature dielectric properties

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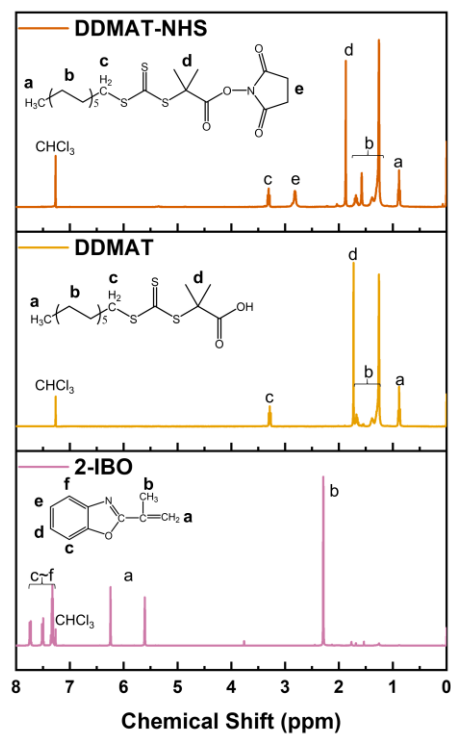
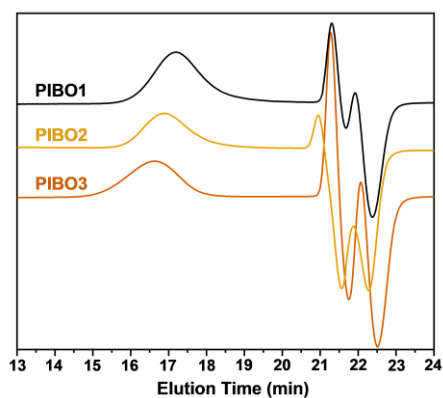**Figure S1** ^{1}H NMR spectra of 2-IBO, DDMAT, and DDMAT-NHS.

Figure S2 GPC traces of the benzoxazole-polymer cleaved from different core-shell structured benzoxazole-polymer@CCTO nanoparticles.
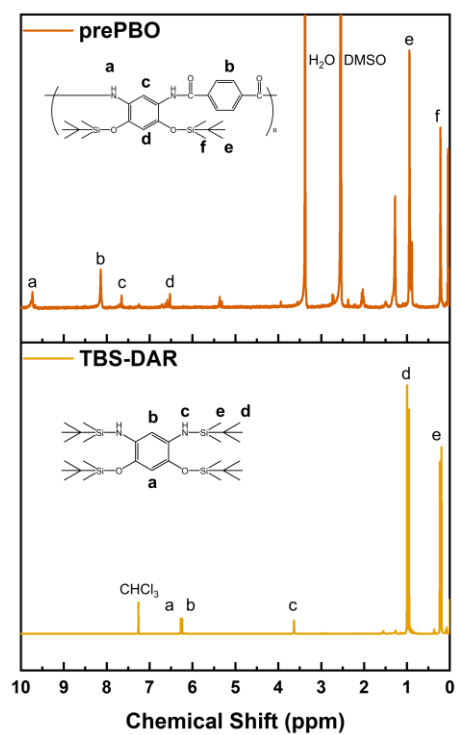
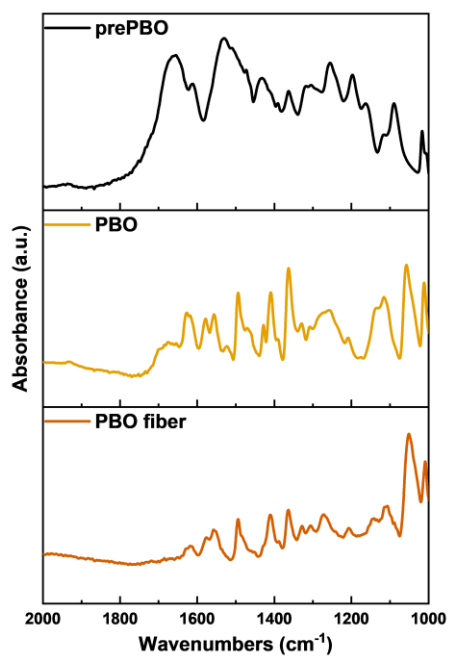**Figure S3** ^{1}H NMR spectra of TBS-DAR and prePBO.

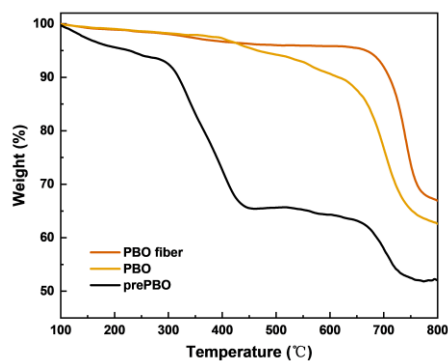**Figure S4** FTIR spectra of prePBO, PBO, and PBO fiber.

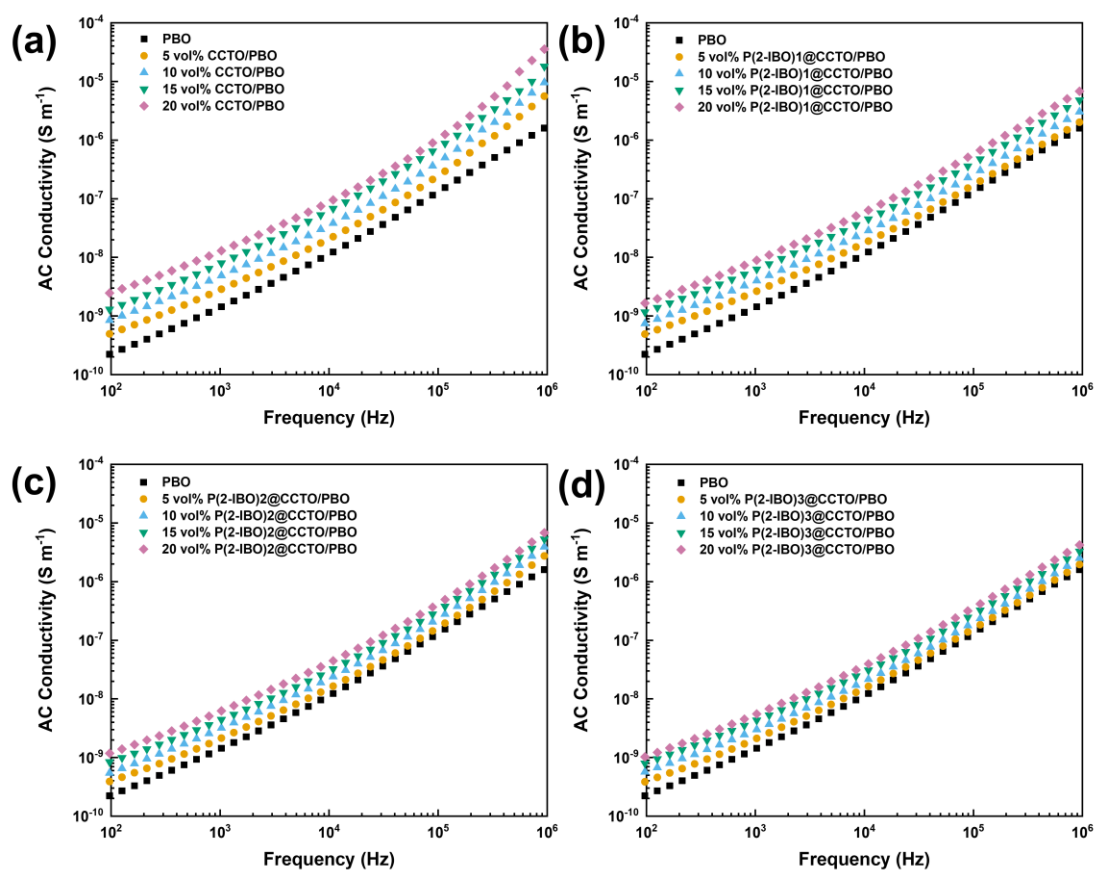**Figure S5** TGA curves of prePBO, PBO, and PBO fiber.

Figure S6 Frequency dependence of ac conductivity of the PBO-based nanocomposite films with (a) CCTO, (b) P(2-IBO)1@CCTO, (c) P(2-IBO)2@CCTO, and (d) P(2-IBO)3@CCTO.

Table S1 The dielectric properties of the prepared composites and some reported materials

Matrix	Fillers	Breakdown strength (KV mm^{-1})	Discharge energy density (J cm^{-3}) under 200 KV mm^{-1}	Dielectric thermal stability (℃)	Ref.
PES	10 vol% BT-HCuPc	310	0.4 (25 ℃)	25-150	S1
c-BCB	10 vol% BNNs	447	0.6 (25 ℃)	25-300	S2
c-BCB	7.5 vol% Al$_2$O$_3$-NPLs	489	0.6 (150 ℃)	25-200	S3
PI	7 vol% Al$_2$O$_3$	422	0.7 (150 ℃)	25-200	S4
PI	5 vol% HfO$_2$	397	0.8 (150 ℃)	25-200	S4
PI	1 vol% TiO$_2$	342	0.8 (150 ℃)	25-200	S4
PEI	11 vol% Al$_2$O$_3$@ZrO$_2$	615	0.9 (25 ℃)	25-200	S5
PBO	10 vol% P(2-IBO)3@CCTO	337	1.67 (25 ℃)	25-200	This work

Reference

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