Supporting Information

A Novel Nano C@$BaTiO_3$ Fibers/ Polar Trans-cyclohexane Modified Polyimide Composite Films with Enhanced Dielectric Properties and Energy Storage Density

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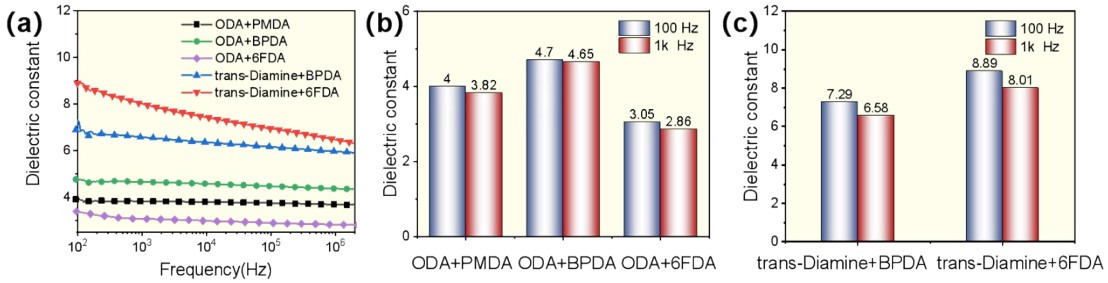

Figure S1. Dielectric constant of PI synthesized by different monomers.

For convenience, here *Trans*-cyclohexane-1,4-diamine acetate is referred to as *trans*-Diamine. The Figure S1(a) shows the comparison of the dielectric constant of different PI, and it can be seen that the dielectric constant of PI is significantly improved after the addition of *trans*-Diamine. As shown in the Figure S1(b) and (c), the dielectric constant at 100 and 1k Hz for different PI, the dielectric constant of PI reacted and formed by *trans*-Diamine and 6FDA reaches the highest, thus used as the best choice. It is worth noting that, the PI reacted and formed by *trans*-Diamine and PMDA is not represented in the figures owing to its difficulty for forming films. At the same time, PI reacted and formed by *trans*-Diamine and 6FDA has better processability compared with that of *trans*-Diamine and BPDA.

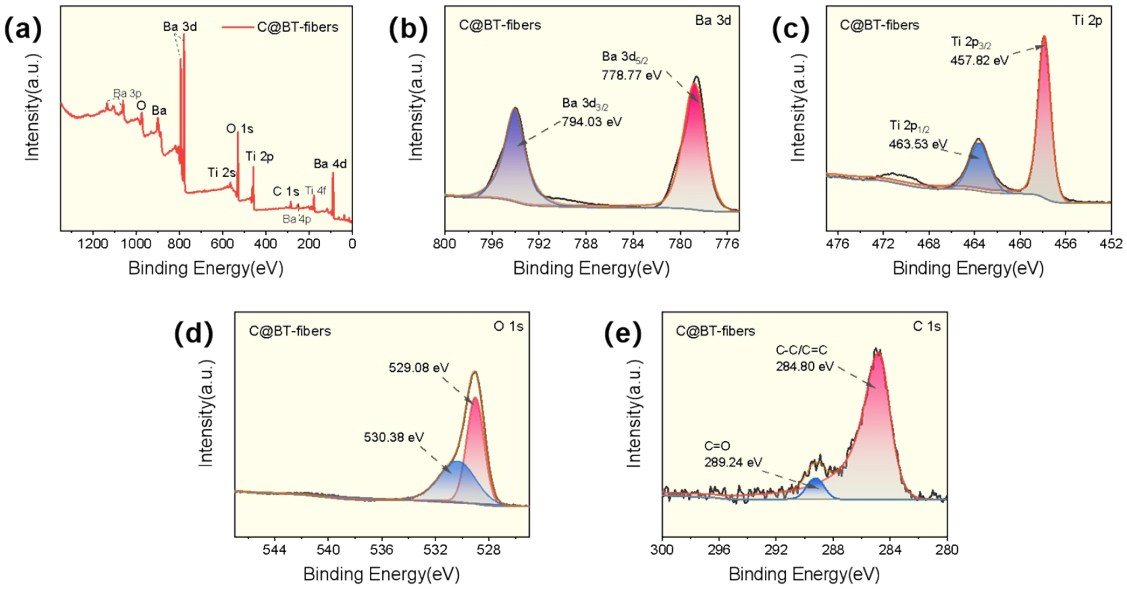

Figure S2. XPS spectra of C@BT-fibers.

Figure S2(a) shows the survey XPS spectra of C@BT-fibers, which shows the presence of Ba, Ti, O, and C elements. Figure S2(b) shows the Ba 3d XPS spectra, corresponding to two peaks at 778.77 eV and 794.03 eV. Figure S2(c) shows the Ti 2p XPS spectra, with two peaks at 457.82 eV and 463.53 eV. Figure S2(d) shows the O 1s XPS spectra, with two peaks at 529.08 eV and 530.38 eV, corresponding to the lattice oxygen and oxygen vacancies in barium titanate. As for Figure S2(e), it has been described in the paper.