## **Supplementary Material**

## P(TT-TPA) featuring conjugated extended structure: enabling highperformance flexible electrochromic-supercapacitors

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Fig. S1 Top SEM images of PHTPA.





Fig. S2 Thickness measurement of PHTPA films.



Fig. S3 LSV of HTPA (0.01 mol L<sup>-1</sup>) in the system of BFEE and ACN at a scan rate of 100 mV s<sup>-1</sup>.



**Fig. S4** CVs electropolymerized by 0.01 mol L<sup>-1</sup> **PHTPA** on the Pt filament electrode at a scan rate of 100 mV s<sup>-1</sup> in the BFEE system.



Fig. S5 Linear dependence between scan rate and redox peak current density.  $j_{p,a}$ , anodic peak current density;  $j_{p,c}$ , cathodic peak current density.