Supporting information

A "Chain-Lock" Strategy to Construct Conjugated Copolymer Network for Supercapacitor Applications

Weishuo Li ,[a ‡] Yitong Guo,[a‡] Yilin Wang,[a ‡] Xing Xing,[b] Xiaolong Chen,[a] Jiaoyi Ning,[a] Hongtao Yu,[a] Jupeng Cao,[a] Yuhao Shi,[a] Imran Murtaza,[c] and Hong Meng[a*]

[a]School of Advanced Materials Peking University Shenzhen Graduate School Shenzhen 518055, China

[b]Research & Development Institute of Northwestern Polytechnical University (Shenzhen), Northwestern Polytechnical University, Shenzhen, 518057, China.Department of Physics

[c]International Islamic University Islamabad 44000, PakistanAddress

‡These authors contributed equally to this work.

Synthesis of the DEBT and TETPA monomers

DEBT and TETPA were prepared in satisfactory yields according to previously reported procedures.[1-2]

DEBT: Yield: 94%. ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.41 (s, 2H), 6.58 (s, 2H), 4.42 (td, J = 3.6, 2.3 Hz, 4H), 4.34 (td, J = 3.7, 2.2 Hz, 4H).

TETPA: Yield: 86%. ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.59 (d, *J* = 8.6 Hz, 6H), 7.11 (d, *J* = 8.6 Hz, 6H), 6.26 (s, 3H), 4.30 (d, *J* = 2.9 Hz, 6H), 4.25 (d, *J* = 3.3 Hz, 6H).

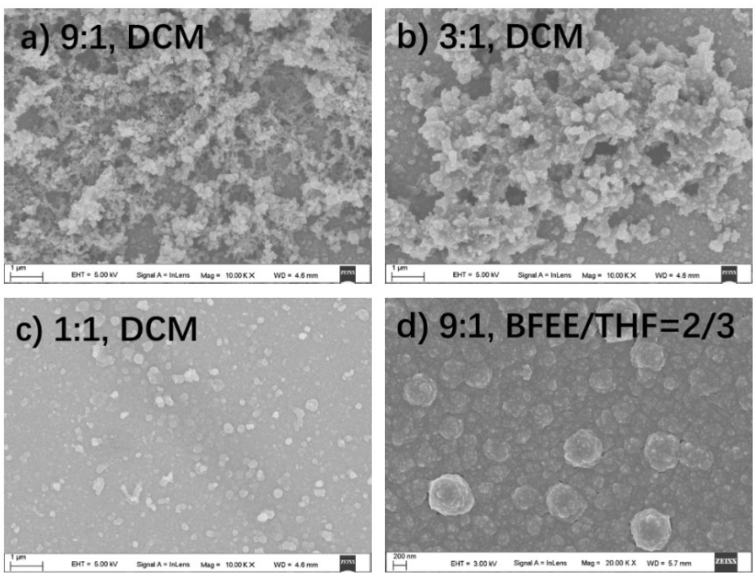


Fig. S1. SEM image of the electrodes with different ratio of the monomers or different solvent in electrolyte used for electropolymerization.

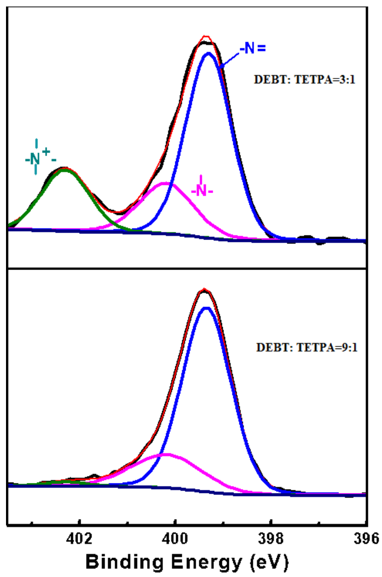


Fig. S2. Nitrogen 1S XPS spectrum of copolymers with monomer mole ratios (DEBT: TETPA) as 3:1 and 9:1 in the electrolyte.

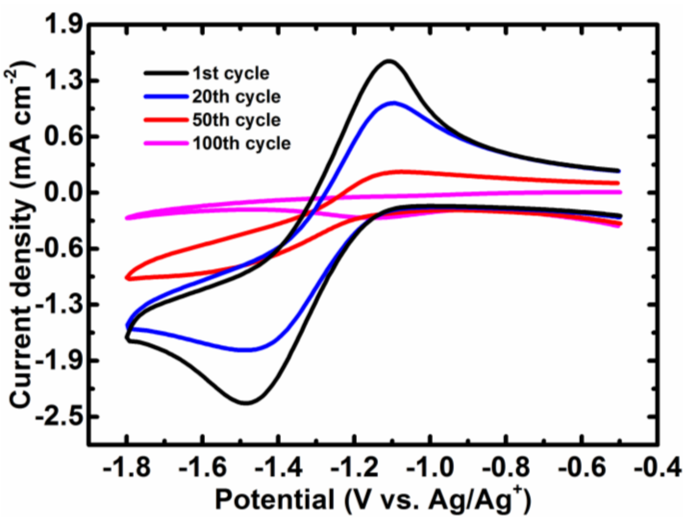


Fig. S3 CV curves of P(DEBT/TETPA)

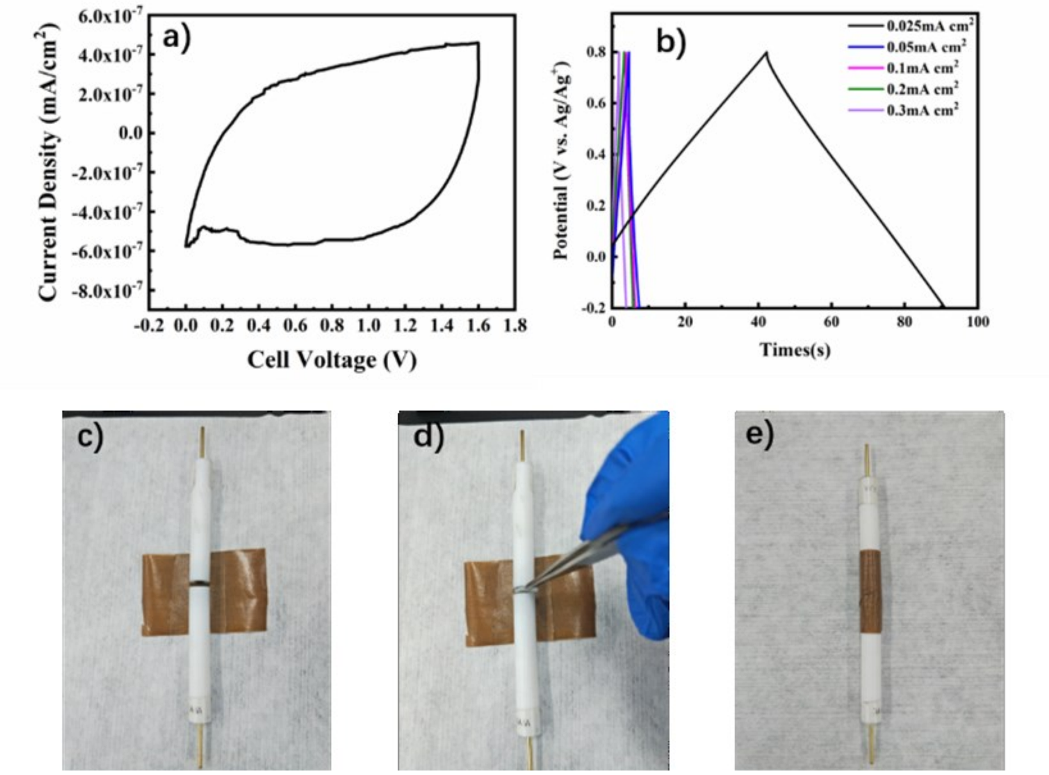


Fig. S4 Two electrodes device performance and device structure.

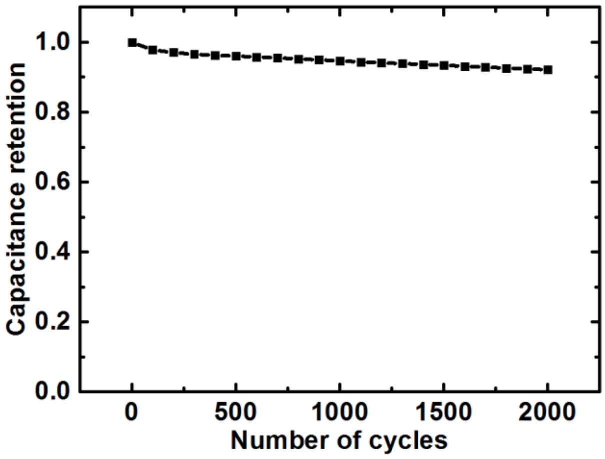


Fig. S5 Cycling stability of PDEBT tested by CV

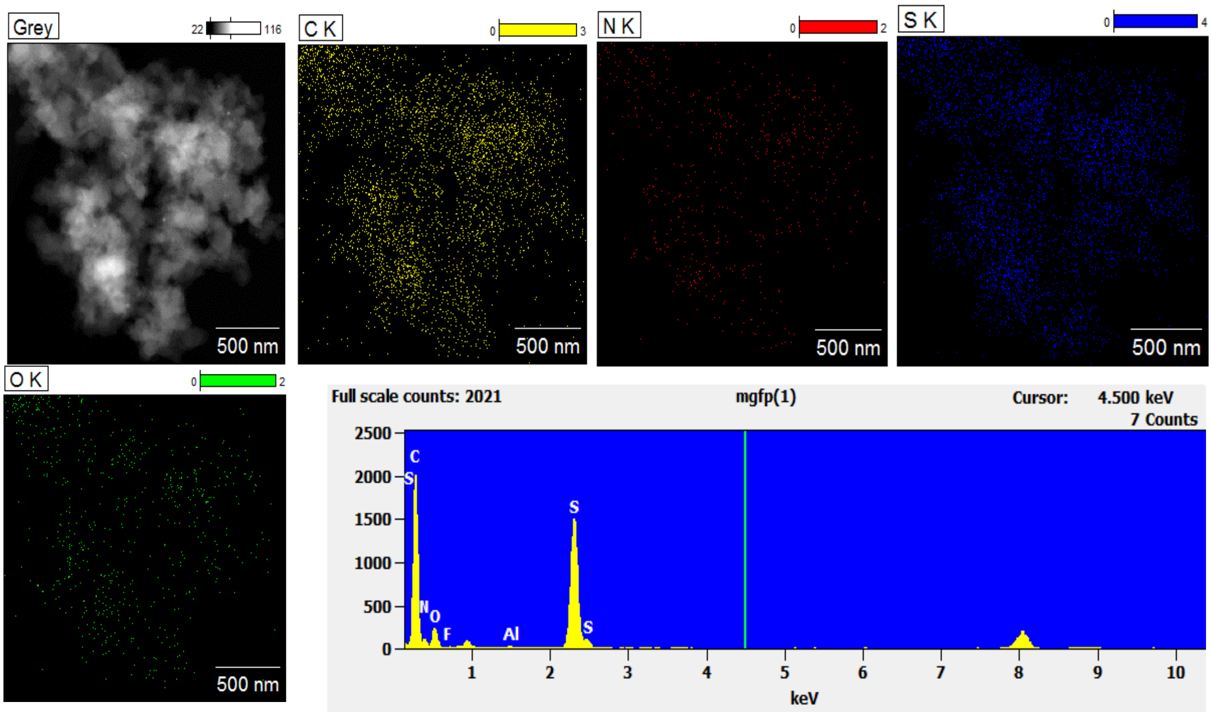
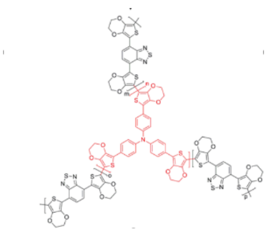
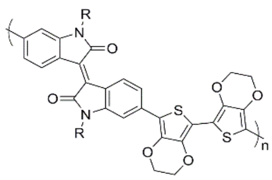
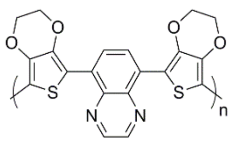
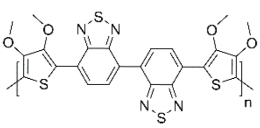
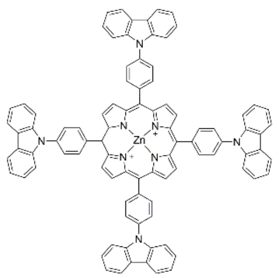
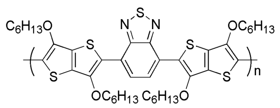
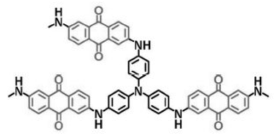
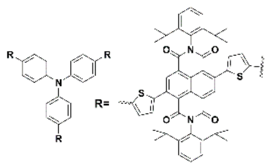
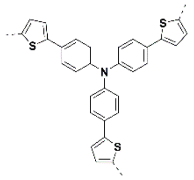
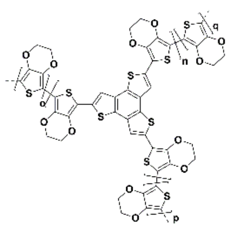


Fig. S6 Results of element mapping with TEM in P(DEBT/TETPA)

Table S1. Comparison of the capacitance value of P(DEBT/TETPA) with the literature

Polymer Structure	Electrode composition	Capacitance	Ref.
	Electropolymerized on Pt disk	149 F g^{-1}	This work
	Electropolymerized on Au-Kapton	Single electrode: 1.7 mF cm^{-2} Device (0.5 V): 14 F g^{-1}, 50 mV s^{-1}	3
	Electropolymerized on Pt disk	30 F g^{-1}, 0.5 A g^{-1}	4
	Electropolymerized on Pt disk	25 F g^{-1}, 0.5 A g^{-1}	4

	Electropolymerized on ITO glass	142 F g^{-1}, 5 A g^{-1}	5
	Spray-coated on ITO/PET	Single electrode: 2.5 mF cm^{-2}, 31 F g^{-1}, 1.2 A g^{-1}	6
	Coated on carbon paper	Single electrode: 576 F g^{-1}, 1 A g^{-1}	7
	Composited with PTFE	22 F g^{-1}, 0.1 mA	8
	Electropolymerized on Au/PI	Single electrode: 990 F g^{-1} (Peak value), 50 mV s^{-1}	9
	Electropolymerized on glassy carbon	Single electrode: 443.8 mF cm^{-2}, 1.0 mA cm^{-2}	10

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