Electronic Supplementary Material (ESI) for Polymer Chemistry.

Highly Stable Hybrid Selenophene-3,4-Ethylenedioxythiophene as Electrically Conducting and Electrochromic Polymers

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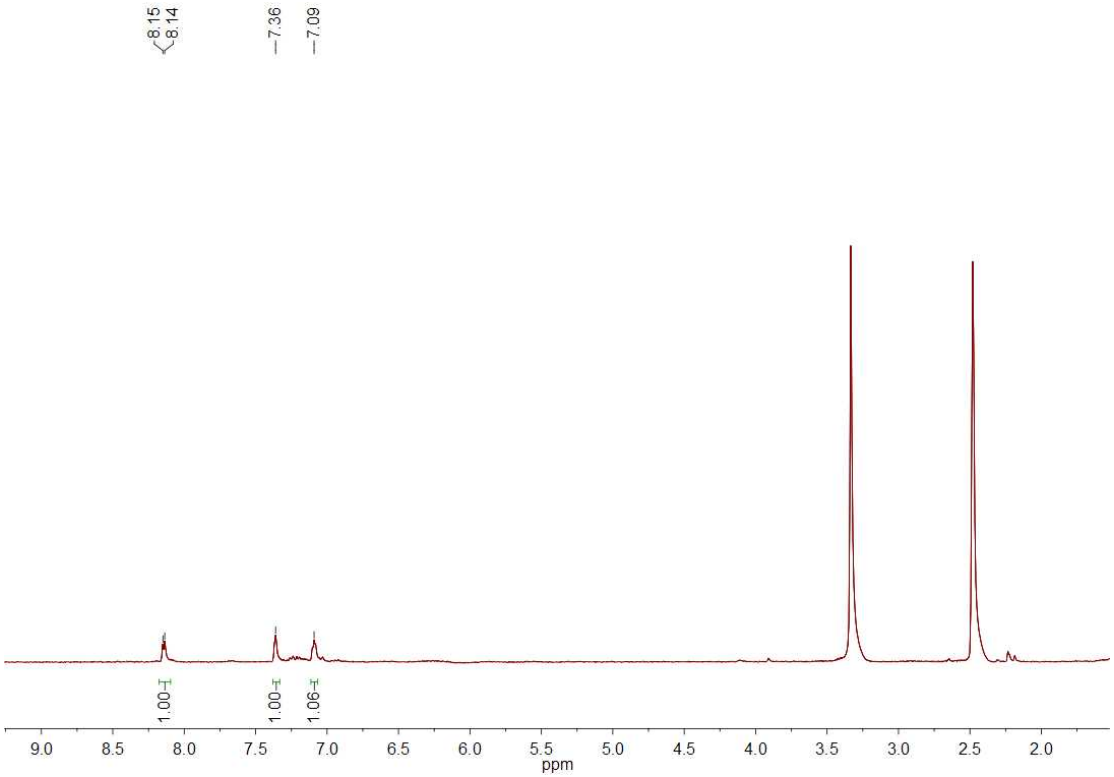

Figure S1 ^{1}H NMR spectrum of 2-bromoselenophene.

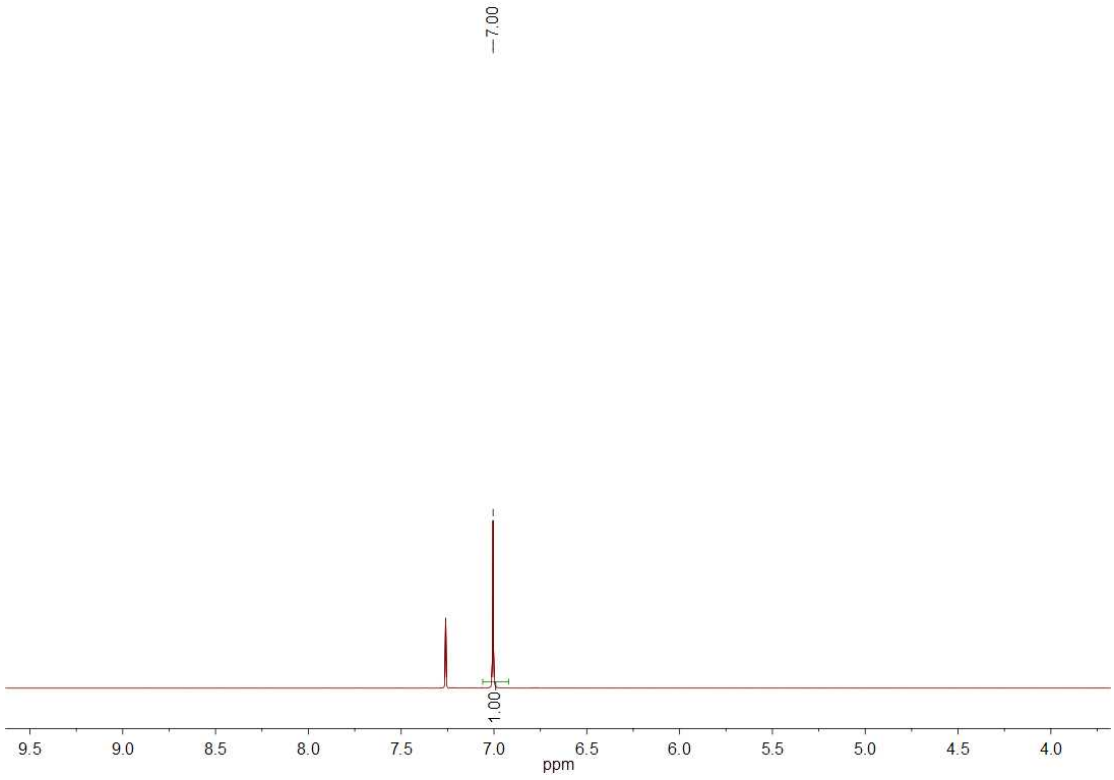

Figure S2 ^{1}H NMR spectrum of 2,5-dibromoselenophene.

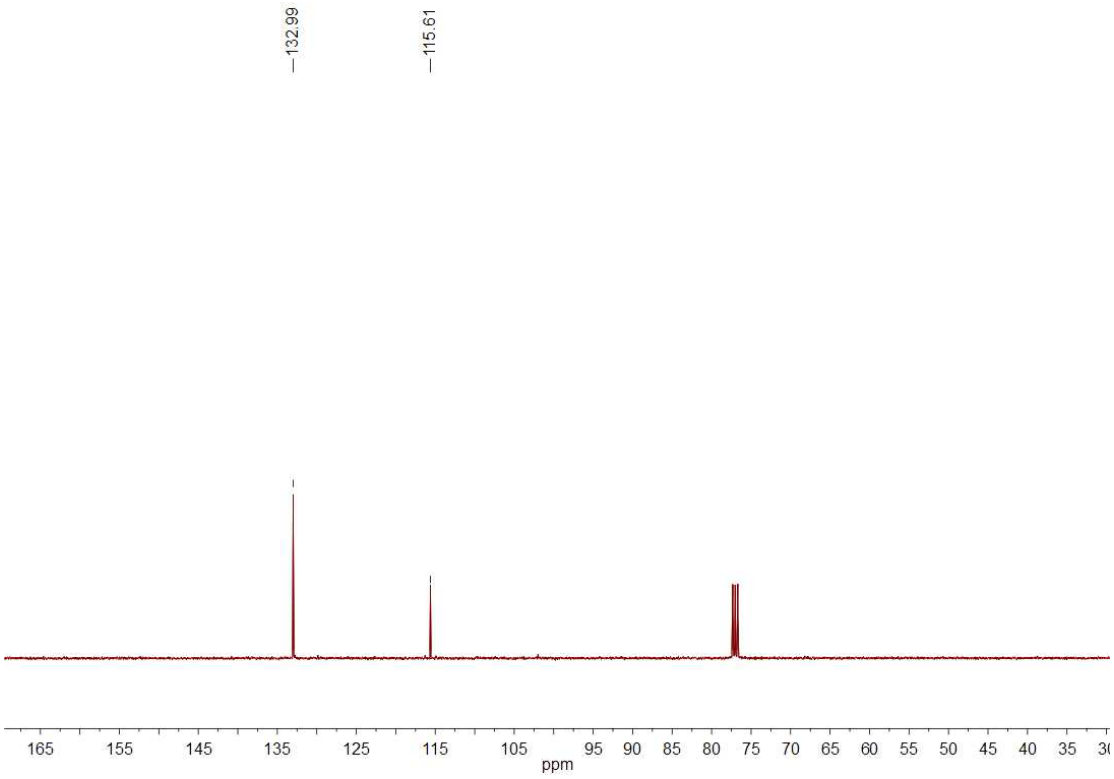

Figure S3 ^{13}C NMR spectrum of 2,5-dibromoselenophene.

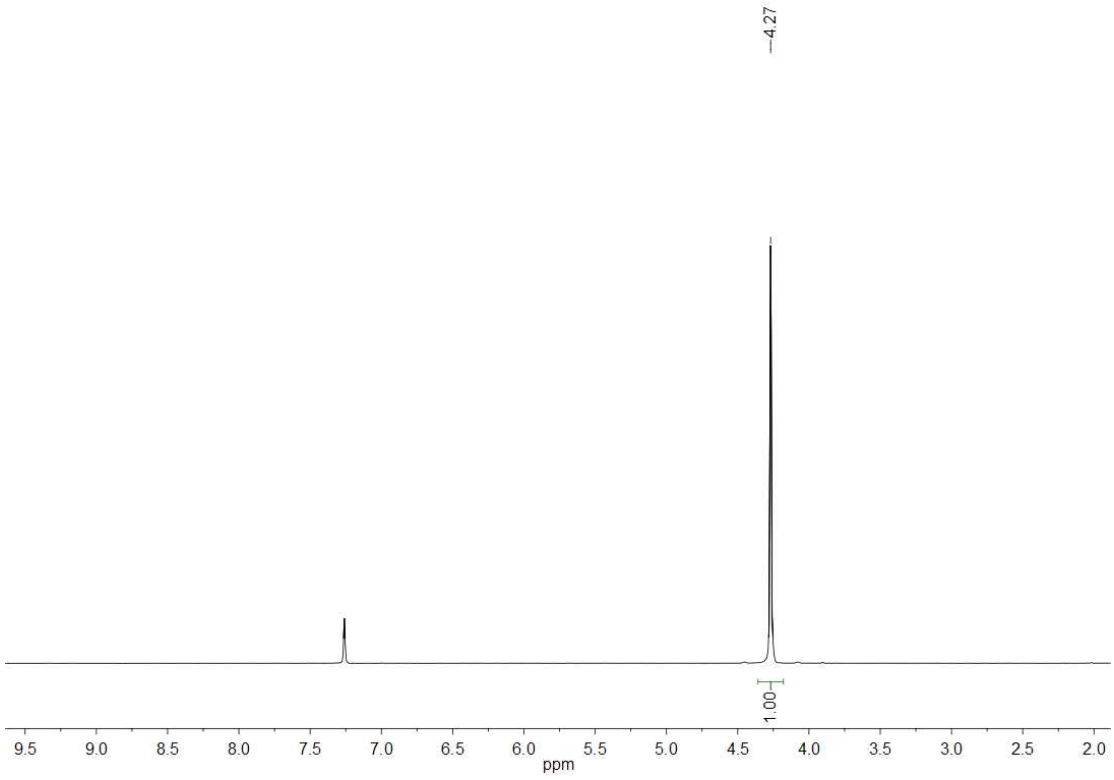

Figure S4 ^{1}H NMR spectrum of 2,5-dibromo-EDOT.

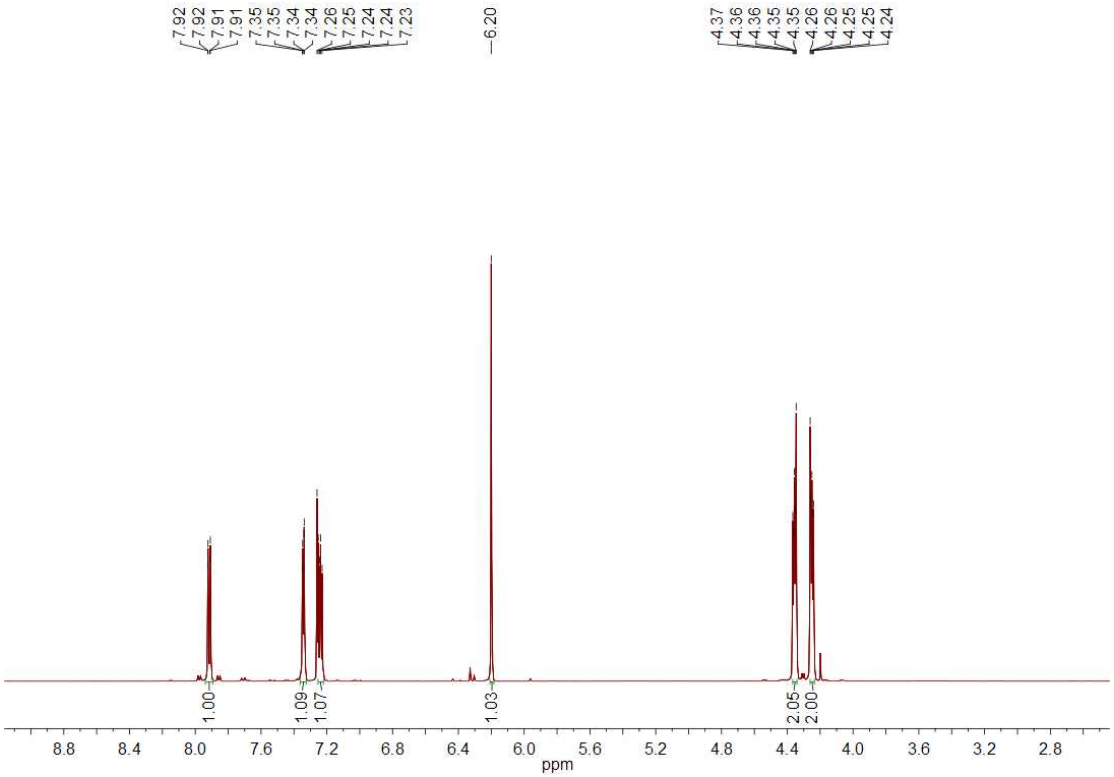

Figure S5 ^{1}H NMR spectrum of Se-EDOT.

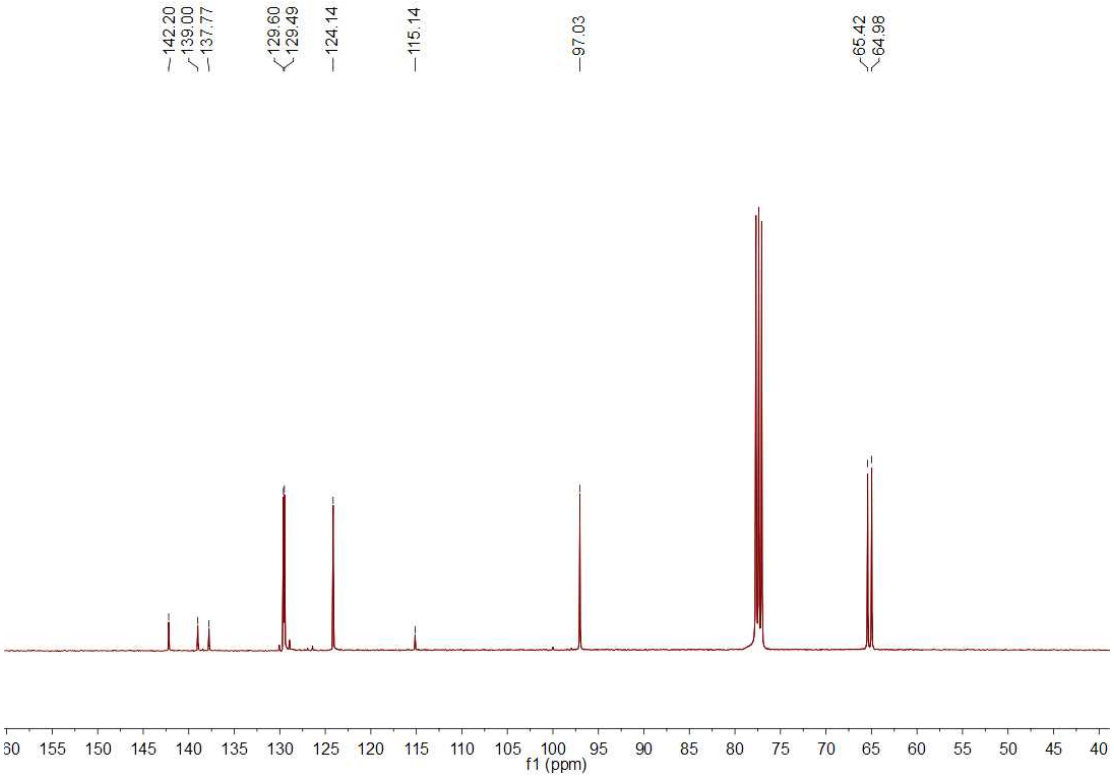

Figure S6 ^{13}C NMR spectrum of Se-EDOT.

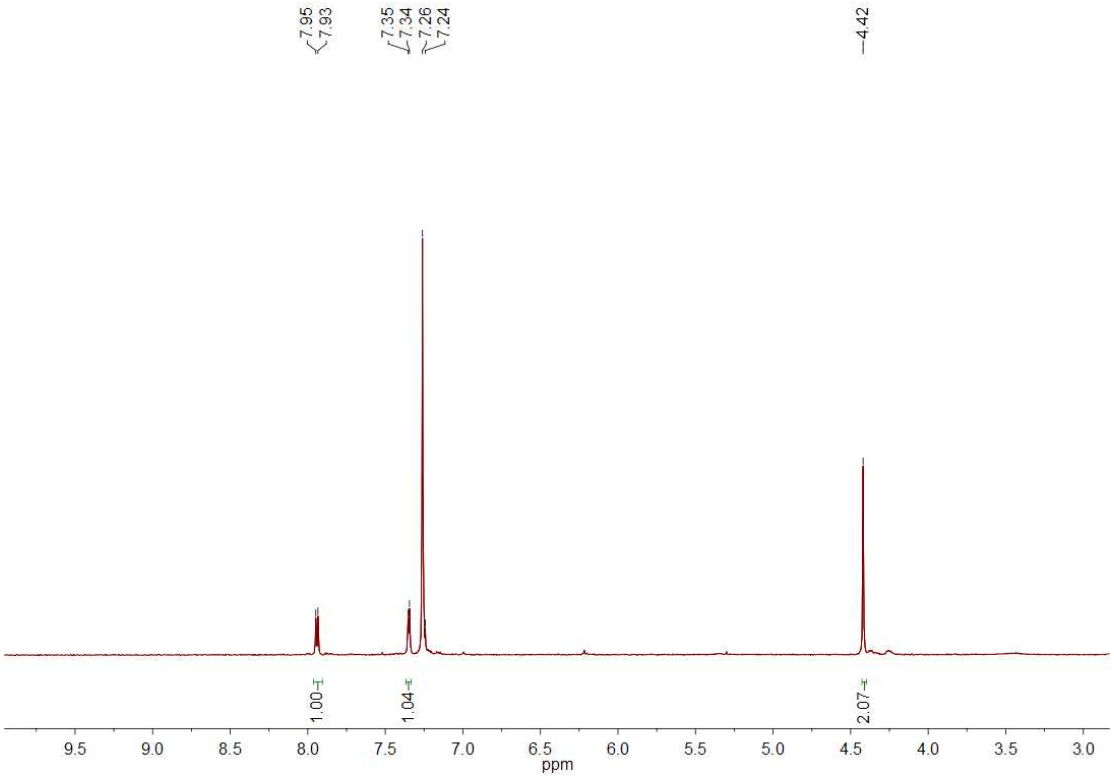

Figure S7 ^{1}H NMR spectrum of Se-EDOT-Se.

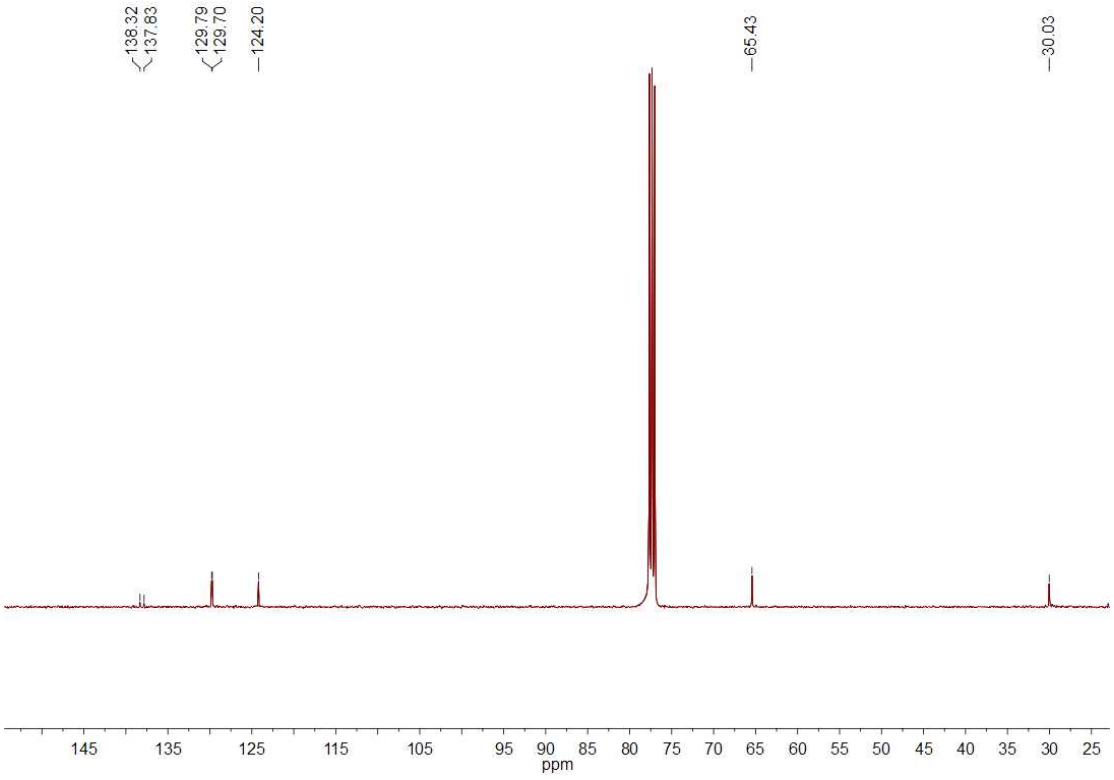

Figure S8 ^{13}C NMR spectrum of Se-EDOT-Se.

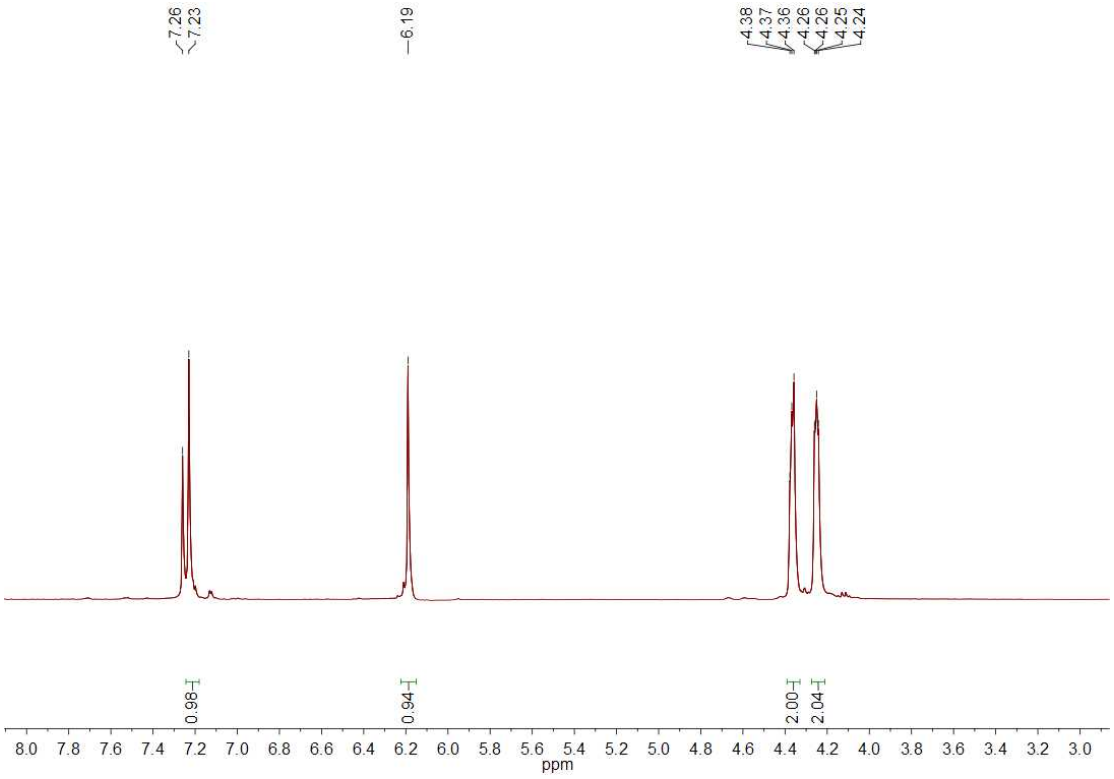

Figure S9 ^{1}H NMR spectrum of EDOT-Se-EDOT.

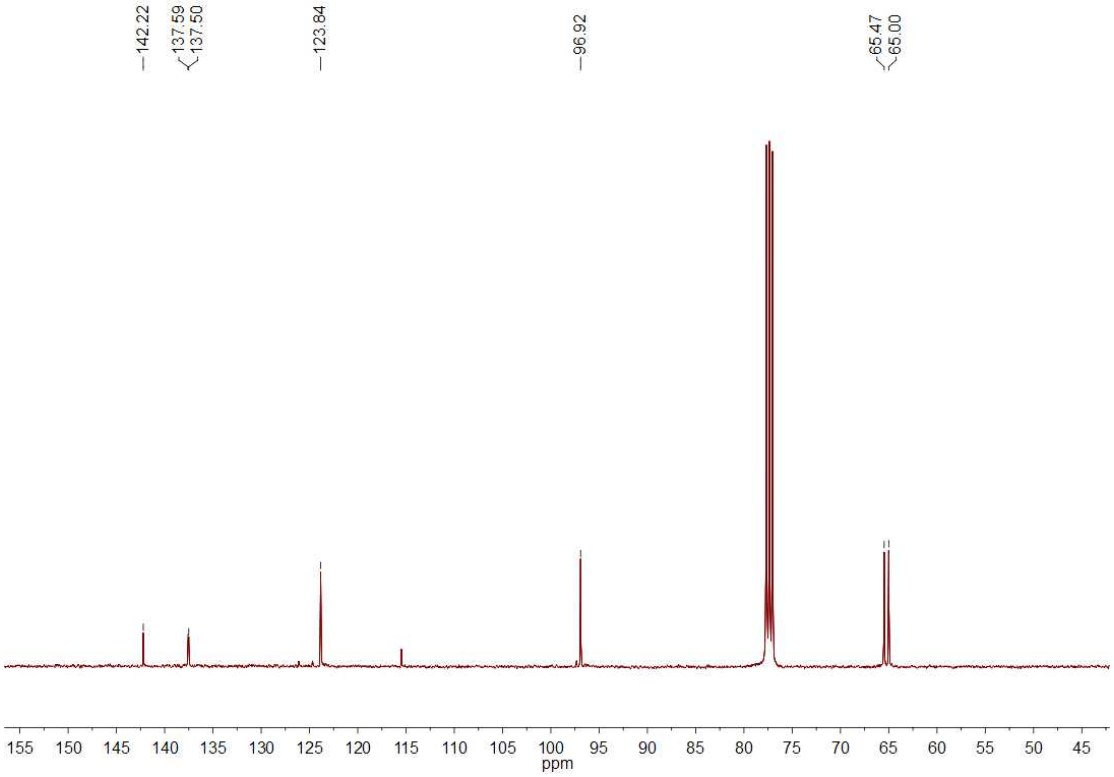

Figure S10 ^{13}C NMR spectrum of EDOT-Se-EDOT.

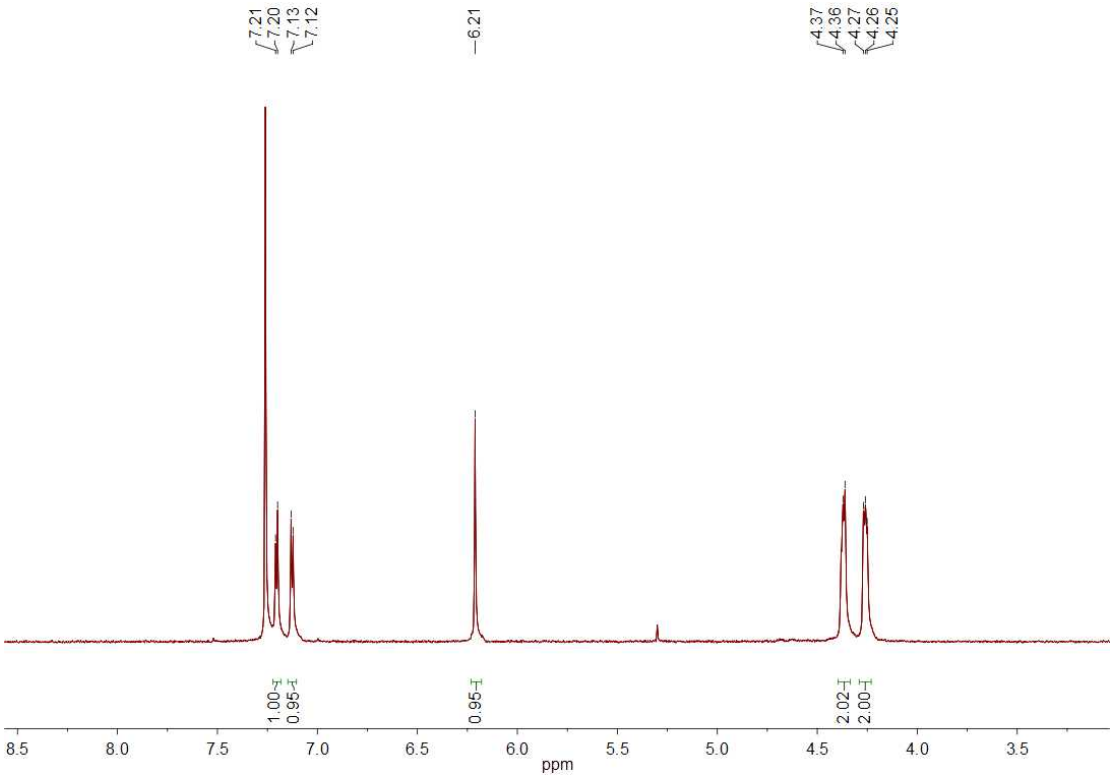

Figure S11 ^{1}H NMR spectrum of EDOT-Se-Se-EDOT.

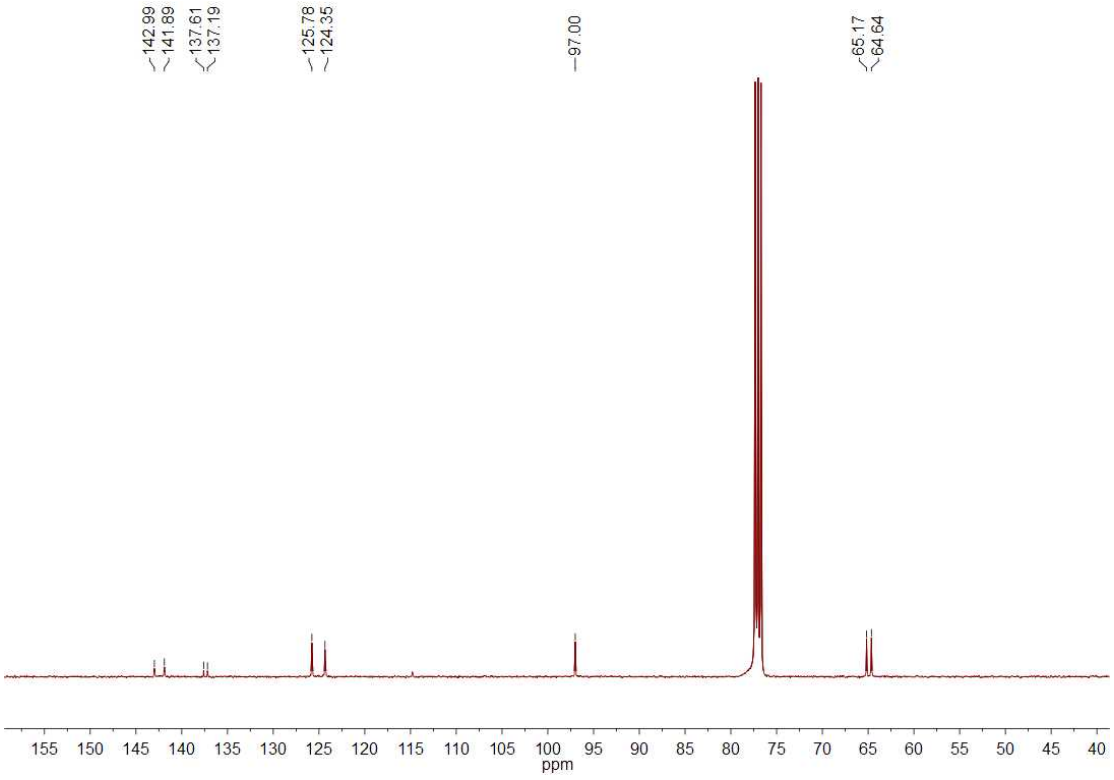

Figure S12 ^{13}C NMR spectrum of EDOT-Se-Se-EDOT.

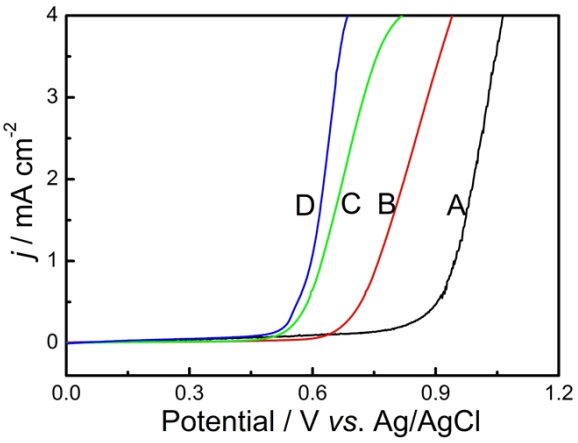

Figure S13 The anodic oxidation curves of 0.01 mol L^{-1} Se-EDOT (A), Se-EDOT-Se (B), EDOT-Se-EDOT (C), and EDOT-Se-Se-EDOT (D) on a Pt working electrode in CH_2Cl_2-Bu_4NPF_6 (0.10 mol L^{-1}). Potential scan rate: 50 mV s^{-1}.

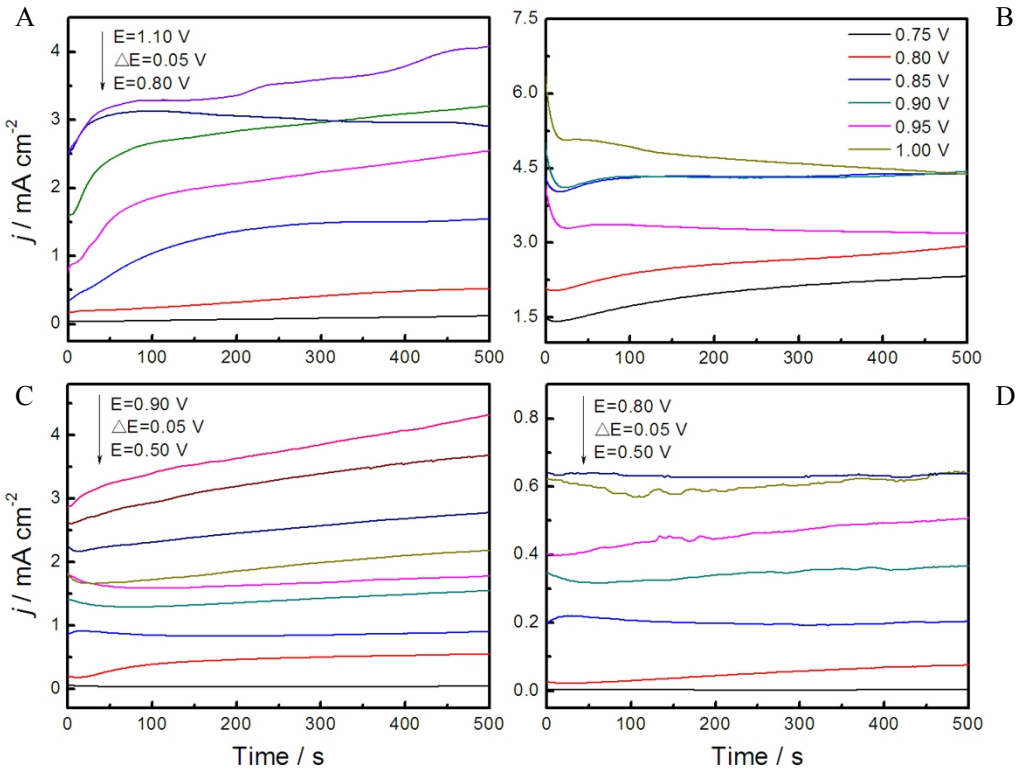

Figure S14 Chronoamperometric curves of 0.01 mol L^{-1} Se-EDOT (A), Se-EDOT-Se (B), EDOT-Se-EDOT (C), and EDOT-Se-Se-EDOT (D) on a Pt working electrode in

CH_2Cl_2-Bu_4NPF_6 (0.10 mol L^{-1}) at different applied potentials for 500 s.

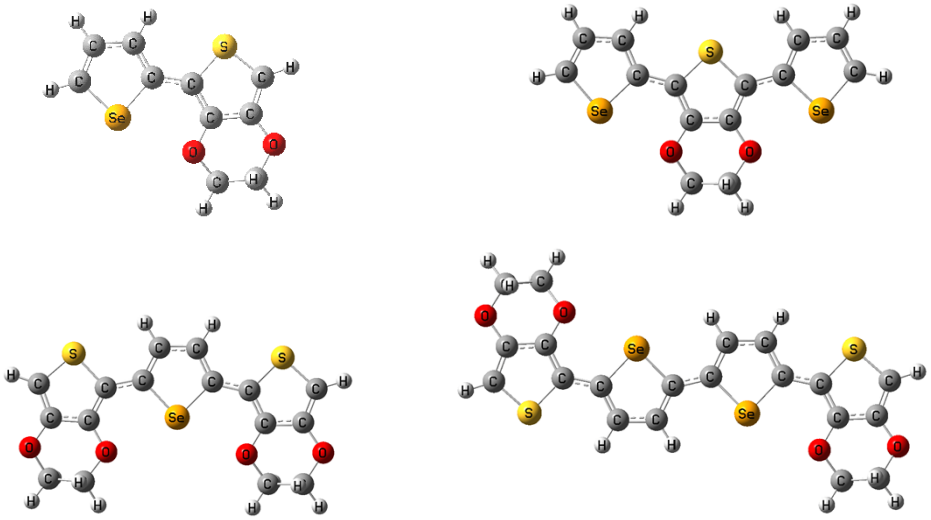

Figure S15 Optimized structures of Se-EDOT oligomers.

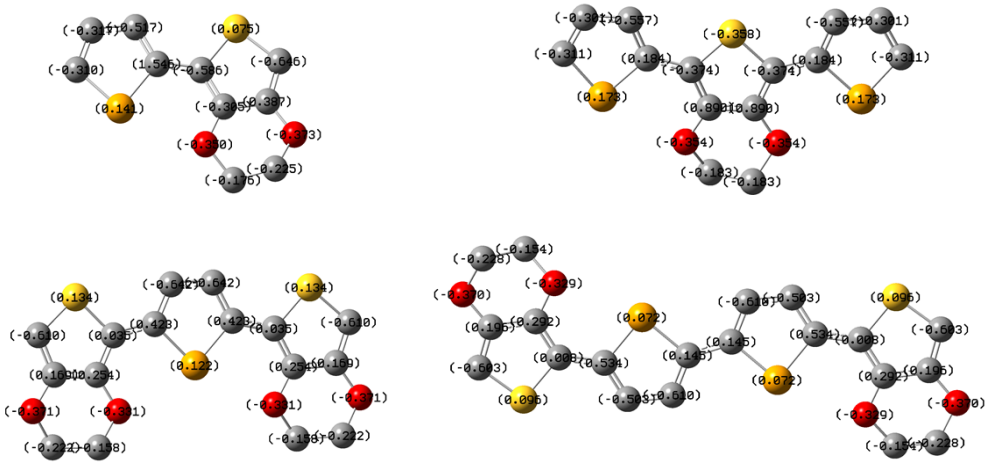

Figure S16 Main atomic electron density populations for Se-EDOT oligomers.

Table S1 The experimental switching colors of the hybrid polymers from the doped to dedoped states.

Polymer	Doped	Dedoped
PEDOT-Se		
PEDOT-Se-EDOT		
PSe-EDOT-Se		
PEDOT-Se-Se-EDOT		

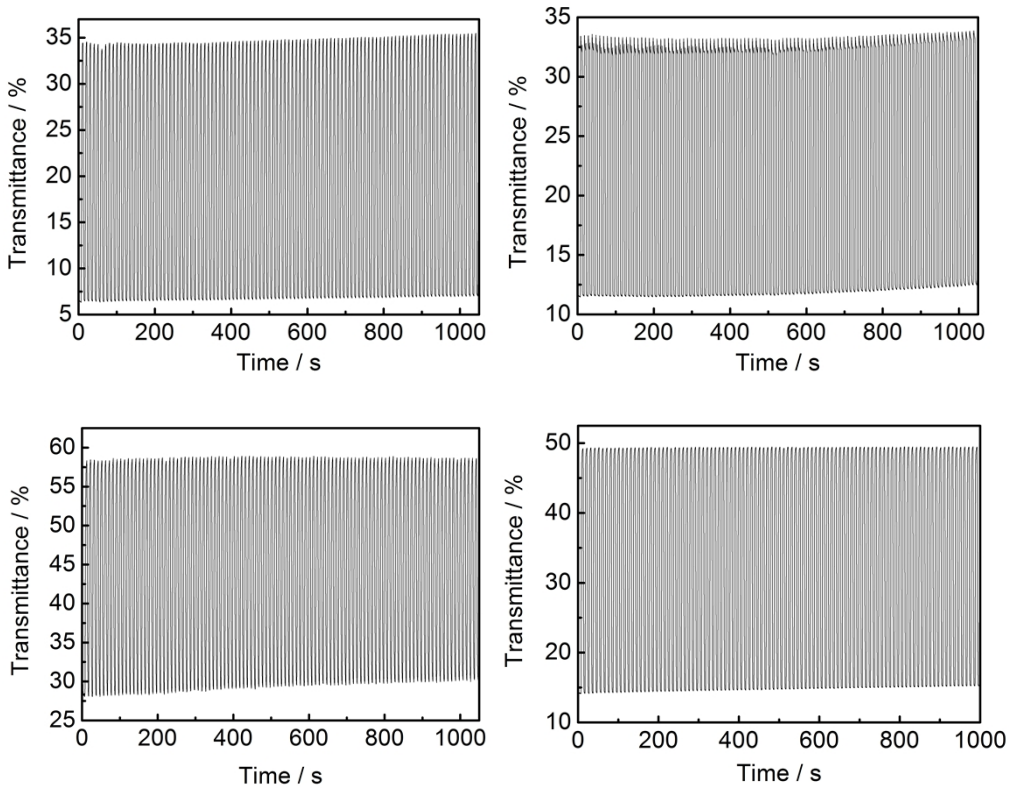

Figure S17 Optical activity and stability upon repeated cycling of PSe-EDOT (A), PSe-EDOT-Se (B), PEDOT-Se-EDOT (C), and PEDOT-Se-Se-EDOT (D) at 580, 520,

510, 580 nm, respectively. Switching time: 10 s.