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Supporting Information

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A Red, Green and Blue (RGB) Polymeric Electrochromic Device (PECD): The Dawning of the PECD Era

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Supporting Table

Table S1. Lab and *Yxy* Coordinates of P3MT, PDDTP and PEDOT in their neutral and oxidized states.

	P3MT (red)		**PDDTP (green)**		**PEDOT (blue)**	
	neutral	*oxidized*	*neutral*	*oxidized*	*neutral*	*oxidized*
%Y	10	25	16	21	3	36
x	0.52	0.28	0.27	0.29	0.19	0.30
y	0.36	0.34	0.55	0.40	0.17	0.37
L	38	58	7	53	20	66
a	38	-8	-47	-5	15	-8
b	19	17	30	11	-43	-8

Supporting Figures

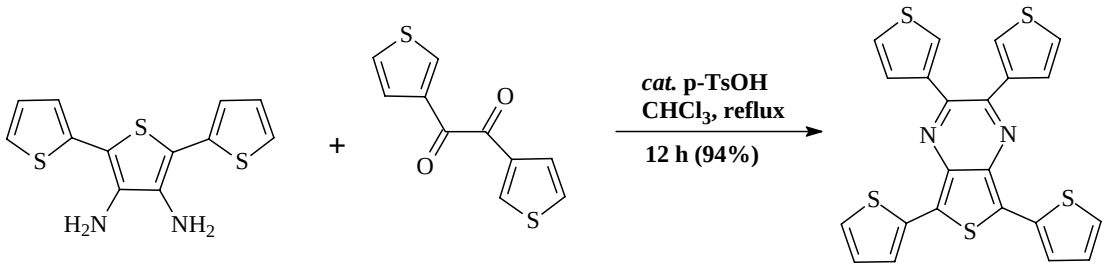
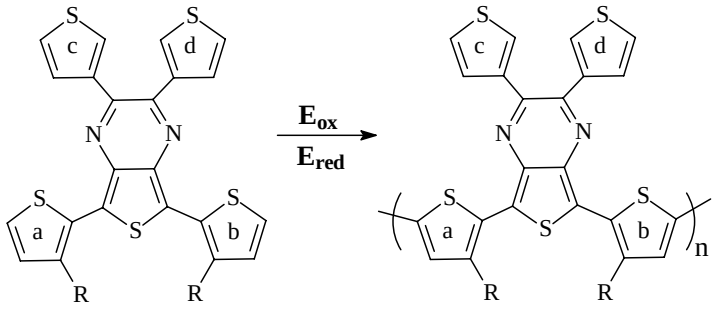


Fig. S1: Synthesis of 2,3-di(thien-3-yl)-5,7-di(thien-2-yl)thieno[3,4-*b*]pyrazine.



R : octyl

Fig. S2: Synthesis of dioctyl substituted poly(2,3-di(thien-3-yl)-5,7-di(thien-2-yl)thieno[3,4-*b*]pyrazine).

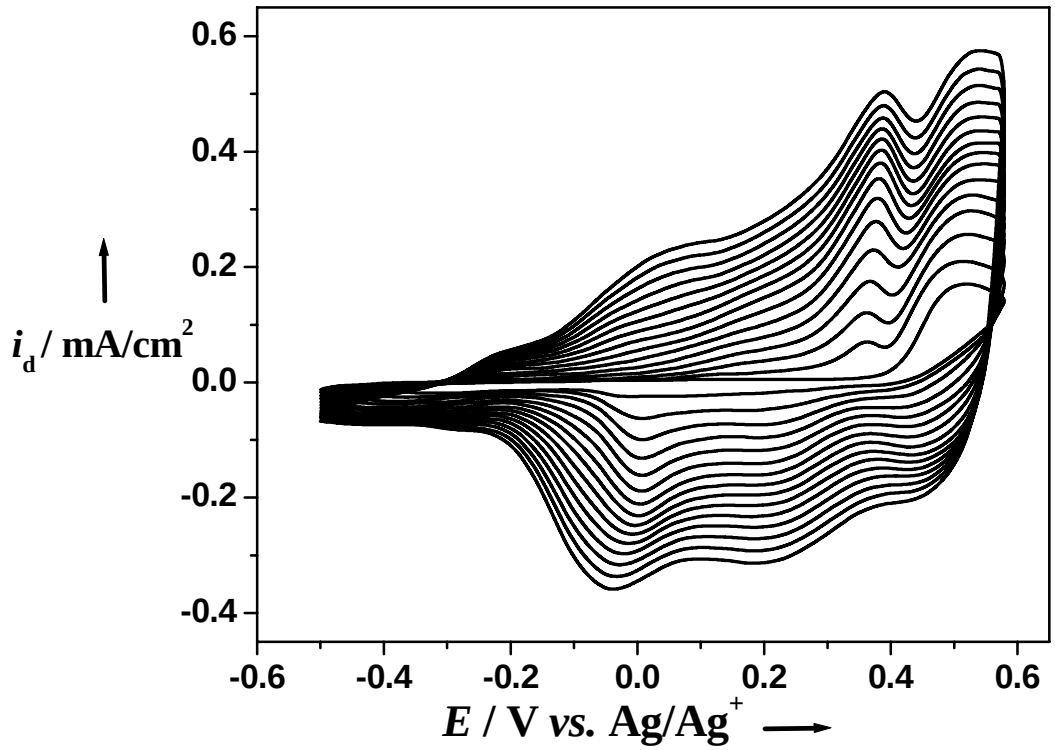


Fig. S3: Electrodeposition of 2,3-di(thien-3-yl)-5,7-di(thien-2-yl)thieno[3,4-*b*]pyrazine by potential scanning from a 0.01 M solution of monomer in 0.1 M Bu_4NPF_6/DCM:ACN (20:80) at 20 mV/s on a Pt button electrode.

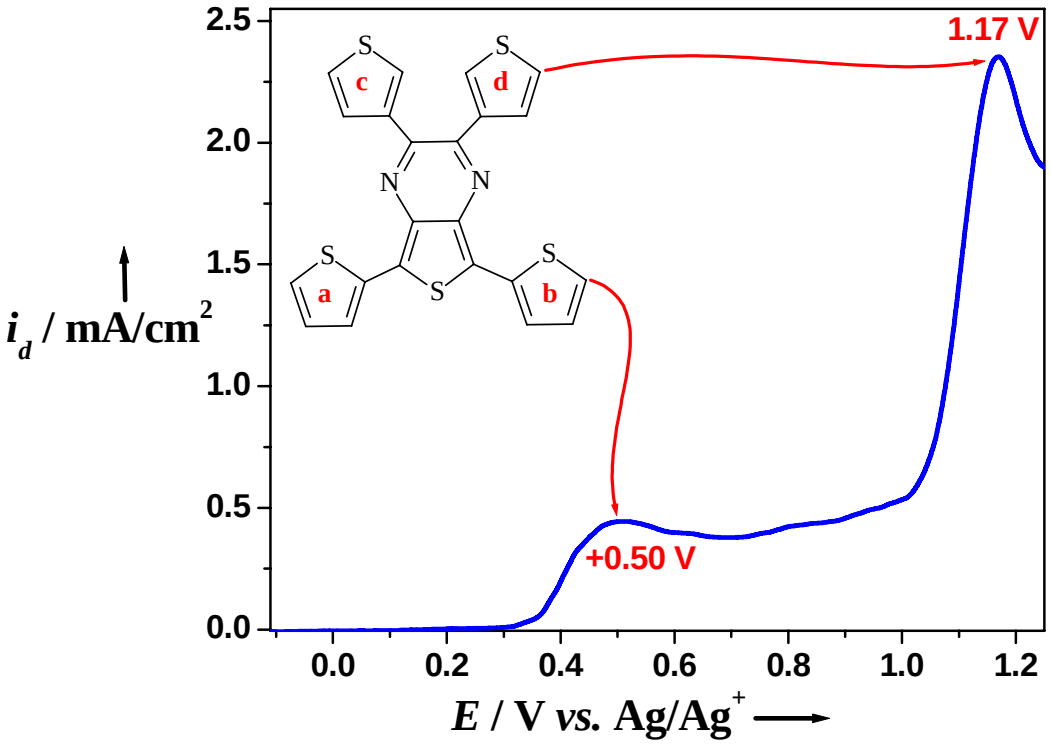


Fig. S4: Electrochemical oxidation of 0.01 M 2,3-di(thien-3-yl)-5,7-di(thien-2-yl)thieno[3,4-*b*]pyrazine in 0.1 M Bu_4NPF_6/DCM:ACN (20:80) at 20 mV/s on a Pt button electrode.

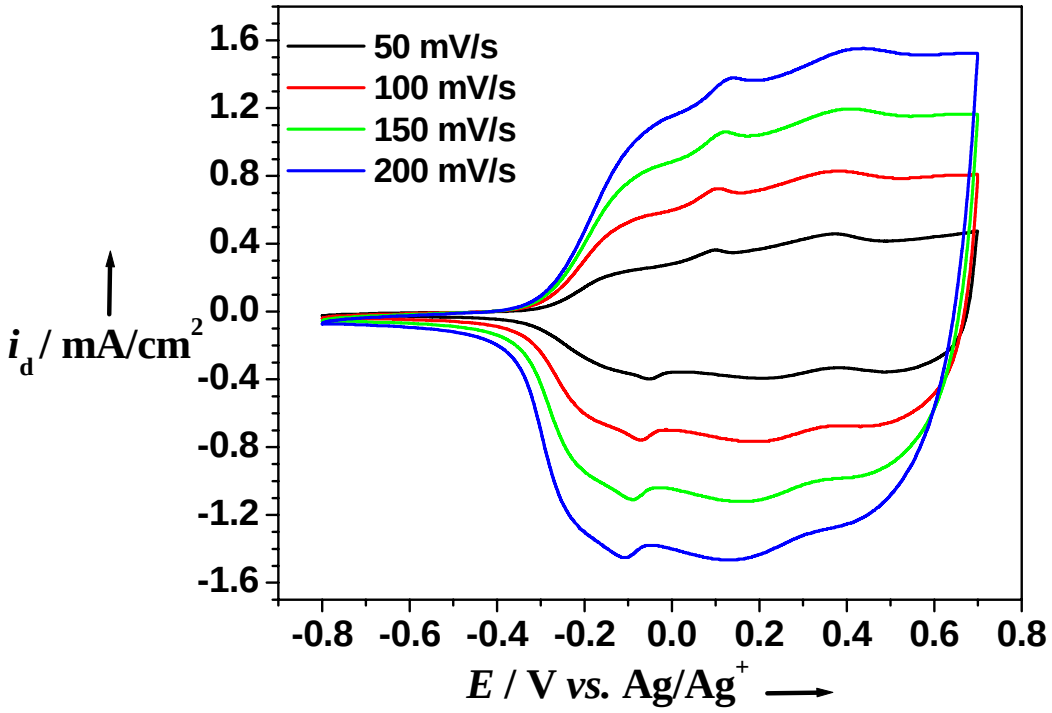


Fig. S5: Scan rate dependence of PDDTP film in monomer free solution of 0.1 M Bu_4NPF_6/ACN at different scan rates.

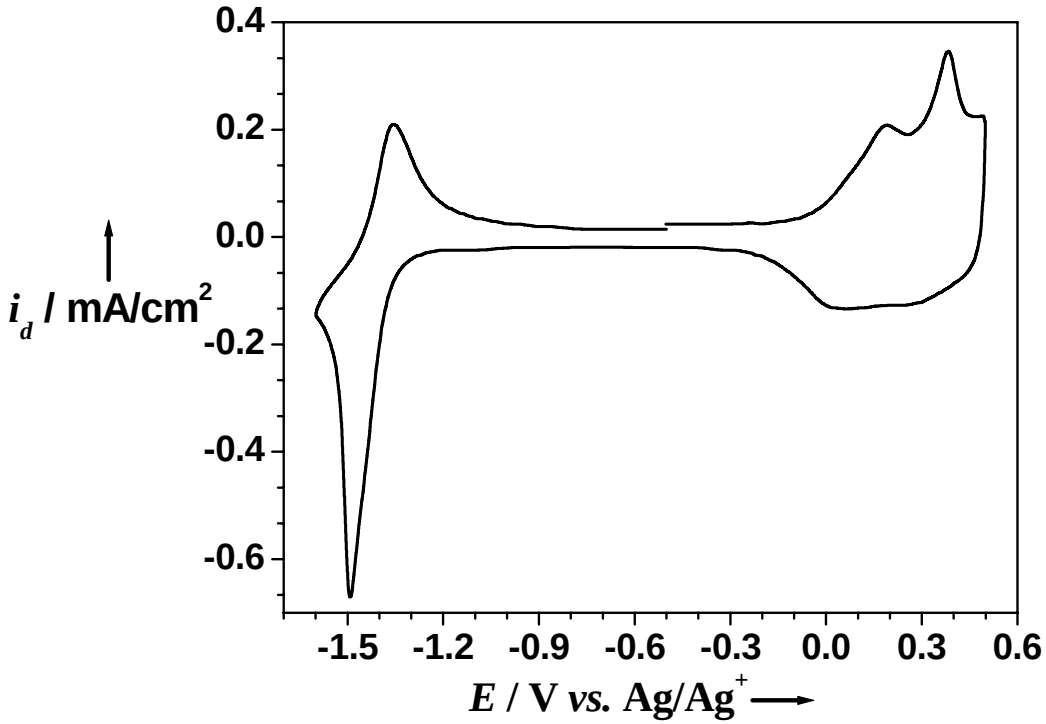


Fig. S6: p- and n-doping of PDDTP film in monomer free electrolyte solution of 0.1 M Bu_4NPF_6/ACN at a scan rate of 100 mV/s.

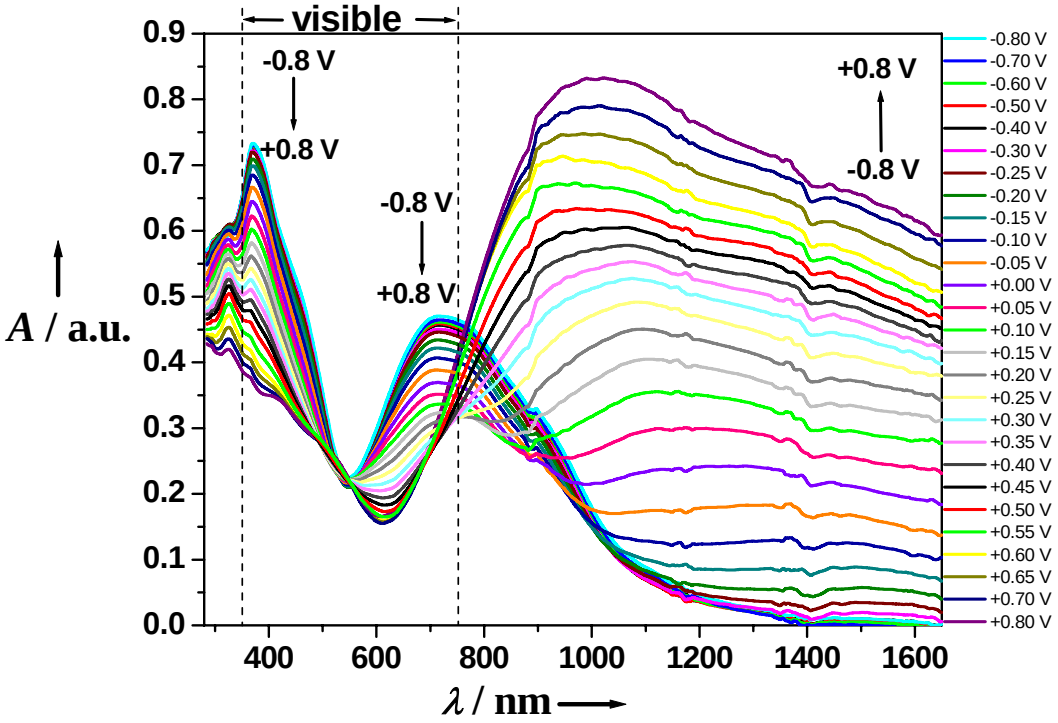


Fig. S7: Spectroelectrochemistry of PDDTP film in 0.1 M Bu_4NPF_6/ACN at different applied potentials *vs.* Ag/Ag^+.

Fig. S8: A device made by using initials of “Exotic Materials Institute” using PEDOT as blue, P3MT as red and PDDTP as green color. Polymer films switch from RGB colors in their neutral state to transmissive colors in their oxidized state.

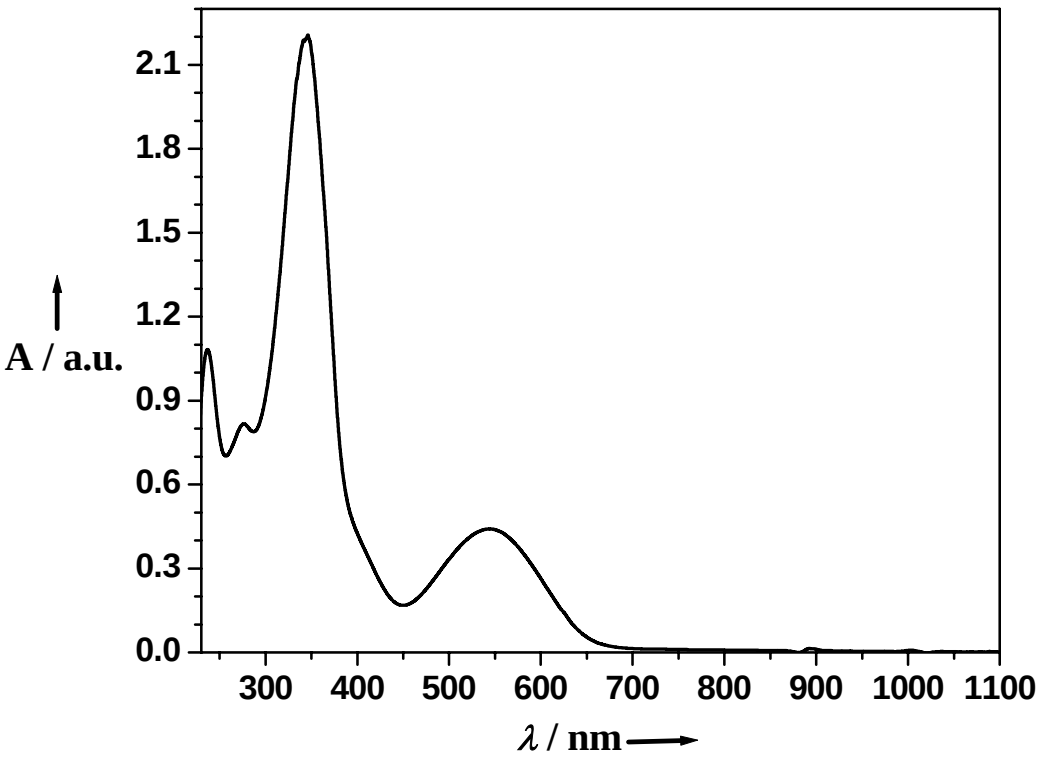


Fig. S9: UV-visible spectrum of the monomer solution of DDTP in DCM:ACN (20:80).