

Supporting information

AIE-active Polyamide Containing Diphenylamine-TPE Moiety with Superior Electrofluorochromic Performance

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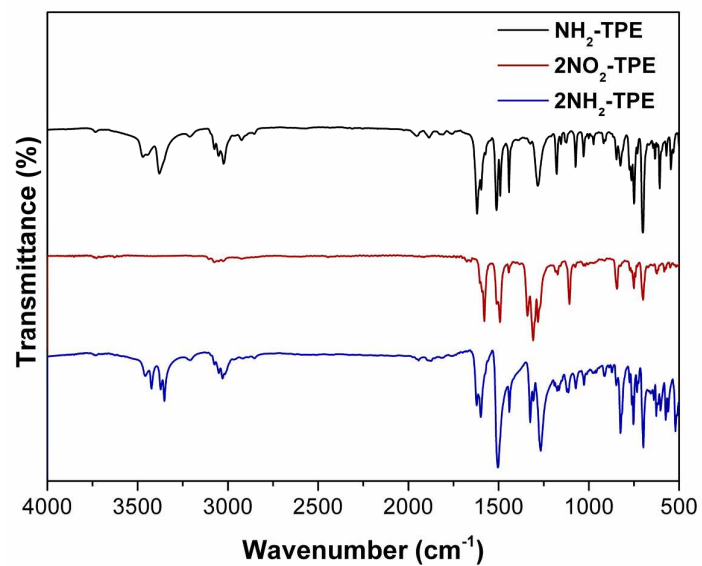


Figure S1 FTIR spectra of the synthesized monomers NH₂-TPE, 2NO₂-TPE and 2NH₂-TPE.

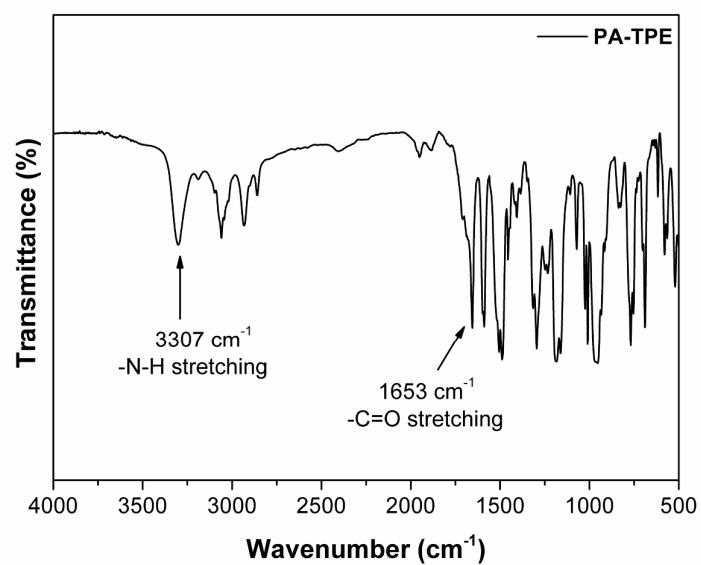


Figure S2 FTIR spectrum of the polyamide PA-TPE.

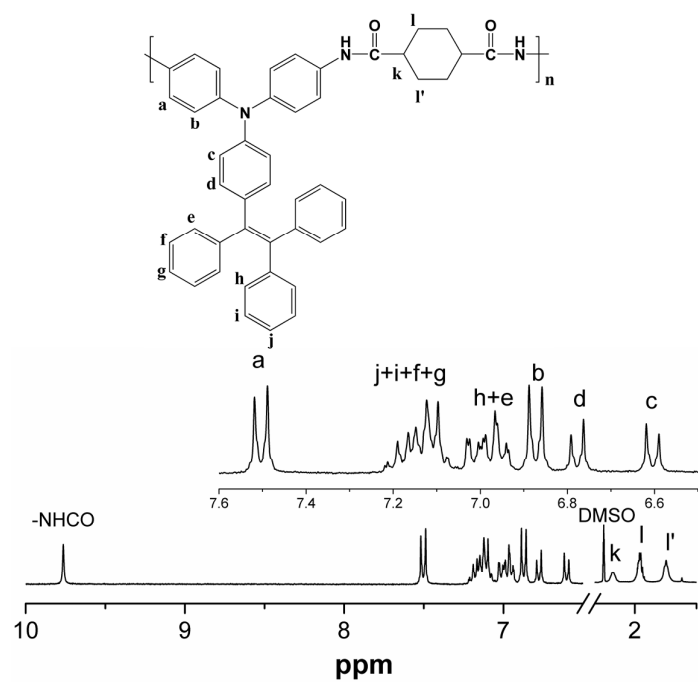


Figure S3 ^1H NMR spectrum of the polyamide PA-TPE.

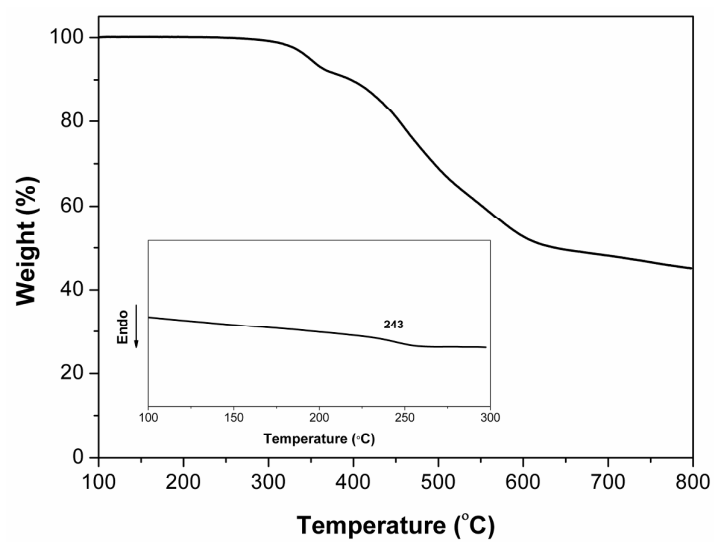


Figure S4 TGA and DSC (inset) curves of the polyamide PA-TPE.

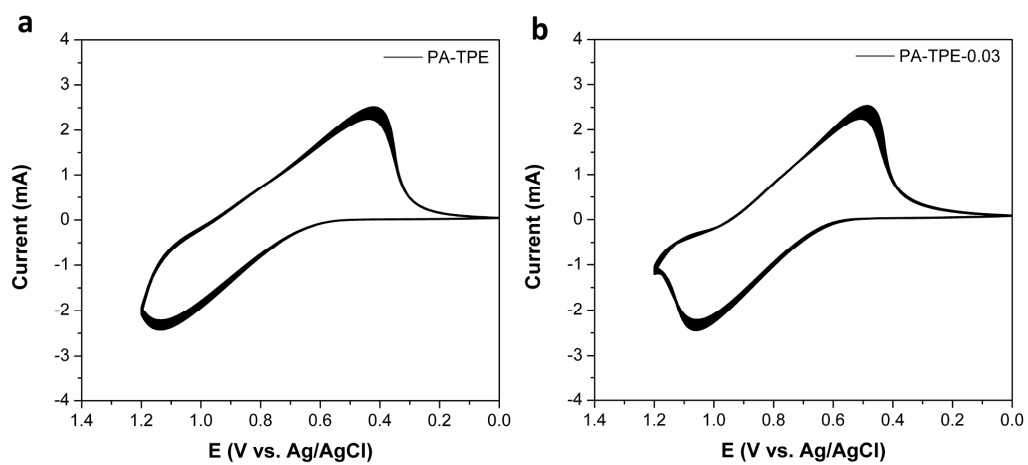


Figure S5 CV diagrams of PA-TPE (a) and PA-TPE-0.03 (b) at a scan rate of 100 mV/s for 100 cycles.

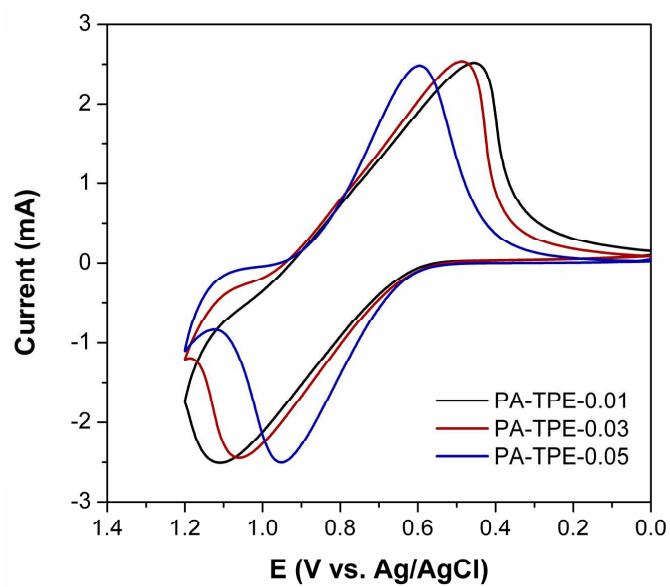


Figure S6 CV diagrams of PA-TPE-0.01, PA-TPE-0.03 and PA-TPE-0.05 containing TBAP at a scan rate of 100 mV/s.

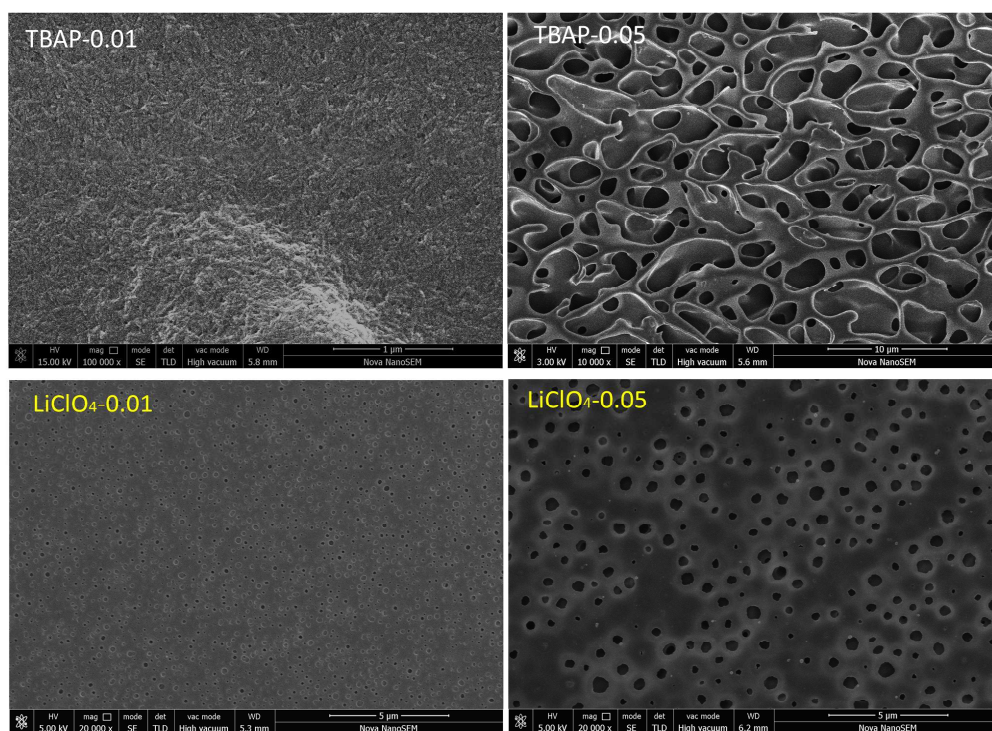


Figure S7 SEM images of PA-TPE-0.01 and PA-TPE-0.05 containing electrolyte salts TBAP and LiClO₄, respectively.

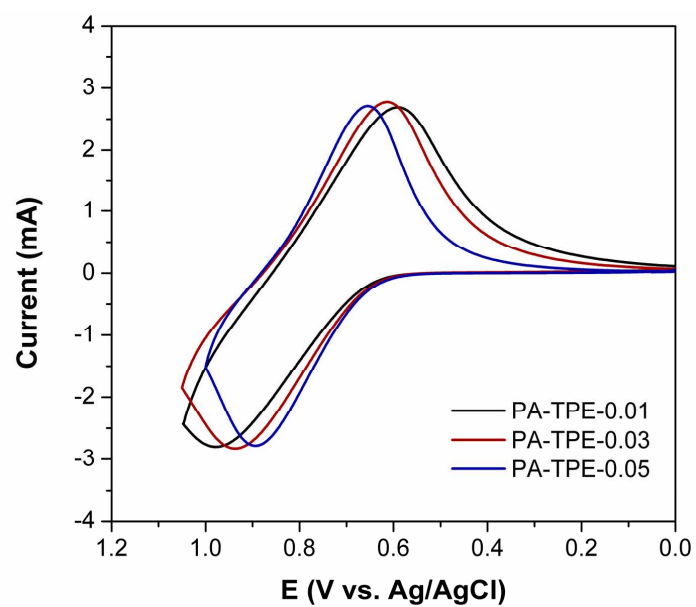


Figure S8 CV diagrams of PA-TPE-0.01', PA-TPE-0.03' and PA-TPE-0.05' containing LiClO_4 at a scan rate of 100 mV/s.

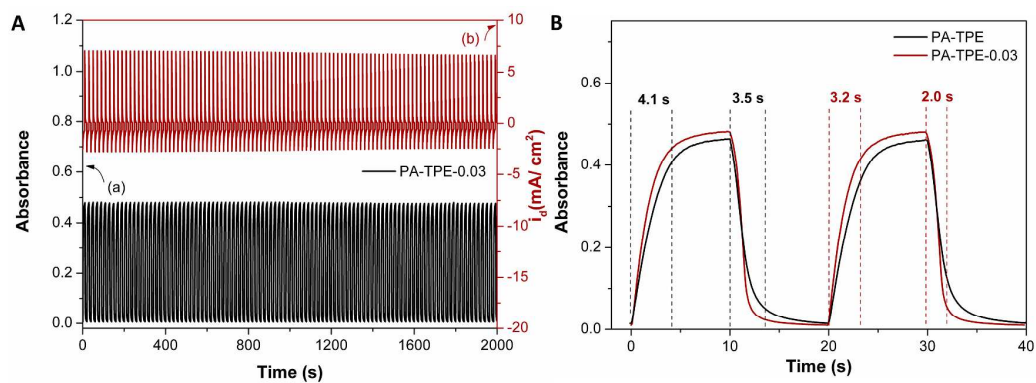


Figure S9 (A) EC switching of PA-TPE-0.03 thin film electrode between 0 V and 1 V: (a) absorbance changes and (b) current consumption at the monitored wavelength of 408 nm. (B) Switching time comparison of PA-TPE and PA-TPE-0.03.

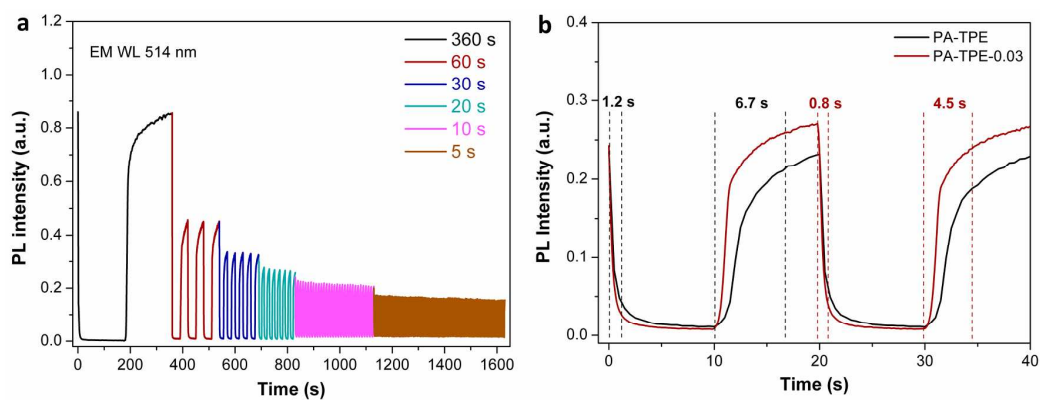


Figure S10 (a) EFC switching of PA-TPE-0.03 thin film electrode under applied potentials between 0 V and 1 V with duration time set as 360 s, 60 s, 30 s, 20 s, 10 s, 5 s. (b) EFC switching time comparison of PA-TPE and PA-TPE-0.03.

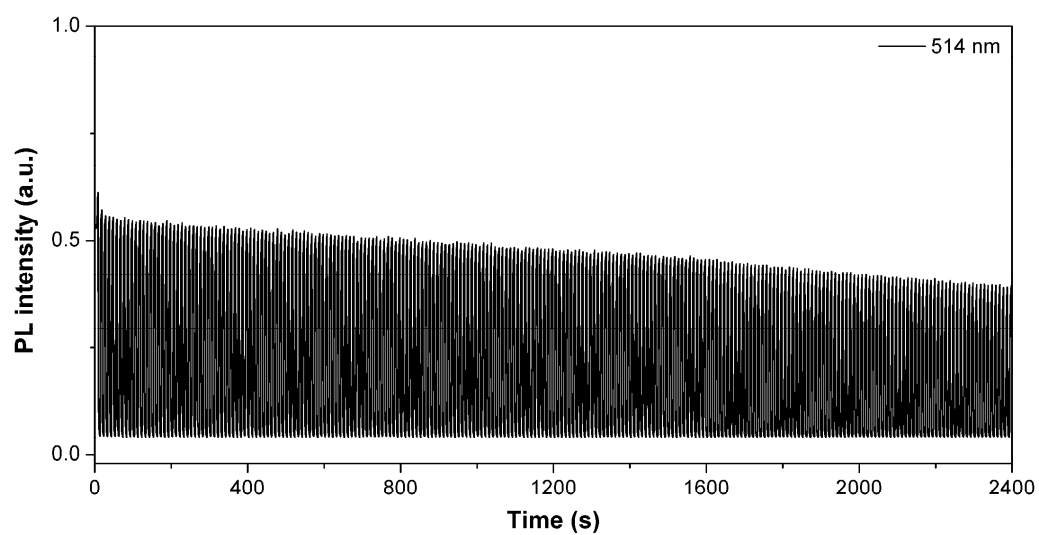


Figure S11 EFC switching of PA-TPE-0.03 thin film electrode under applied potentials between 0 V and 1 V with duration time set as 10 s,

Table S1 Inherent Viscosities, Molecular Weights and Solubilities of the polymers.

Sample	η_{inh} (dL/ g) ^a	GPC ^b			Solvents ^c						
		M_w	M_n	PDI	NMP	DMAc	DMF	DMSO	THF	CHCl ₃	CH ₃ CN
PA-TPE	1.27	63100	46000	1.37	++	++	++	++	+-	--	--

^a Inherent viscosity was measured at a concentration of 0.5 g/ dL in DMAc at 25°C; ^b Relative to polystyrene standard, using DMF as the eluent; ^c Qualitative solubilities were tested with 10 mg of polymers in 1mL of solvent. ++, soluble at room temperature; +-, partially soluble; --, insoluble even on heating.

Table S2 Optical and electrochemical properties of the polyamide PA-TPE.

polymer	Solution (nm) ^a			Film (nm)				Oxidation Potential (V)	
	Abs. max	PL max ^b	Φ_F (%) ^c	Abs. onset	Abs. max	PL max ^b	Φ_F (%) ^c	E_{onset}	$E_{1/2}$ ^d
PA-TPE	315	511	1.77	441	314	514	69.1	0.61	0.77

^a The polymer concentration was 10^{-5} mol/L in NMP. ^b They were excited at the Abs_{max} for the solution states. ^c The quantum yield was tested by using a calibrated integrating sphere. ^d $E_{1/2}$ (Average potential of the redox couple peaks).