

Supporting Information

Improving electroluminescent performance of blue light-emitting poly(fluorene-*co*-dibenzothiophene-*S,S*-dioxide) by tuning the intramolecular charge transfer effects and temperature-induced orientation of the emissive layer structure

Liwen Hu,^{ab} Junfei Liang,^{ac} Wenkai Zhong,^a Ting Guo,^{*a} Zhiming Zhong,^{ab} Feng Peng,^{ab} Baobing Fan,^{ab} Lei Ying,^{*a} and Yong Cao^a

^aInstitute of Polymer Optoelectronic Materials and Devices, State Key Laboratory of Luminescent Materials and Devices, South China University of Technology, Guangzhou 510640, China

^bSouth China Institute of Collaborative Innovation, Dongguan 523808, China

^cSchool of Environment and Civil Engineering, Dongguan University of Technology, Dongguan 523808, China

Table S1 Photophysical properties of copolymers

Polymer	Toluene			Chloroform			ϕ_{PL} (%)
	λ_{abs}	λ_{PL}	FWHM	λ_{abs}	λ_{PL}	FWHM	
	(nm)	(nm)	(nm)	(nm)	(nm)	(nm)	
PFSO10	389	430	48	392	446	65	63
PFTA1SO10	388	430	52	390	446	67	40
PFTA2SO10	387	430	55	390	448	69	42
PFTA3SO10	387	430	60	388	446	82	42
PFSO10TA1	386	429	50	388	445	64	49
PFSO10TA2	386	429	51	389	447	65	56
PFSO10TA3	386	430	53	388	448	77	49

Table S2 EL performance of copolymers

Polymer	$V_{\text{turn-on}}^{\text{a}}$	LE_{max} (cd/A)	EQE_{max} (%)	L_{max} (cd/m^2)	CIE^{b}
PFSO10	4.0	2.2	1.9	5586	(0.16,0.13)
PFTA1SO10	3.8	4.7	3.7	9688	(0.16,0.15)
PFTA2SO10	3.6	4.3	3.4	8240	(0.16,0.17)
PFTA3SO10	3.4	4.0	2.7	7455	(0.16,0.20)
PFSO10TA1	3.8	4.5	3.5	11141	(0.16,0.14)
PFSO10TA2	3.6	5.2	4.4	9591	(0.16,0.15)
PFSO10TA3	3.4	3.8	2.9	6610	(0.16,0.18)

^a The device structure: ITO/PEDOT:PSS/polymer/CsF/Al, the emissive layer was pretreated at thermal annealing temperature of 80 °C. ^b Measured at current density of 12 mA cm⁻².

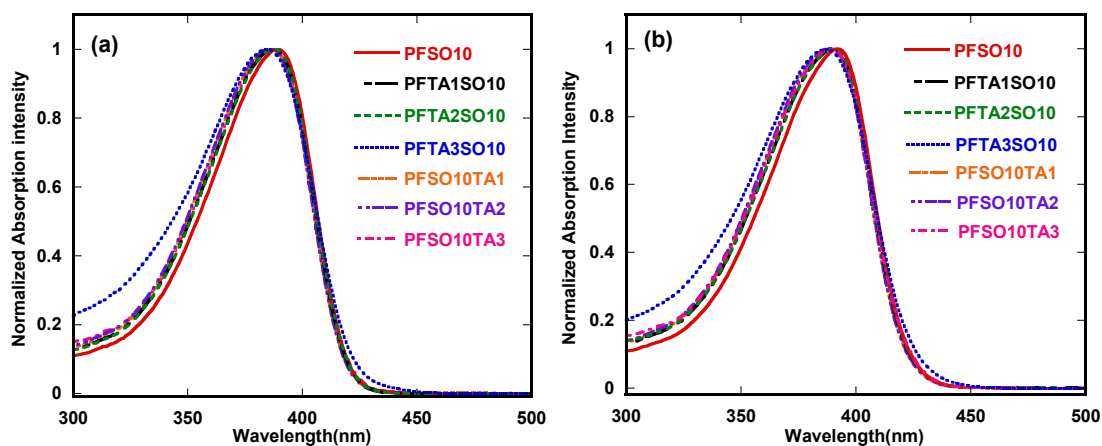


Fig.S1 UV-vis absorption spectra of copolymers in toluene (a) and solid film (b).

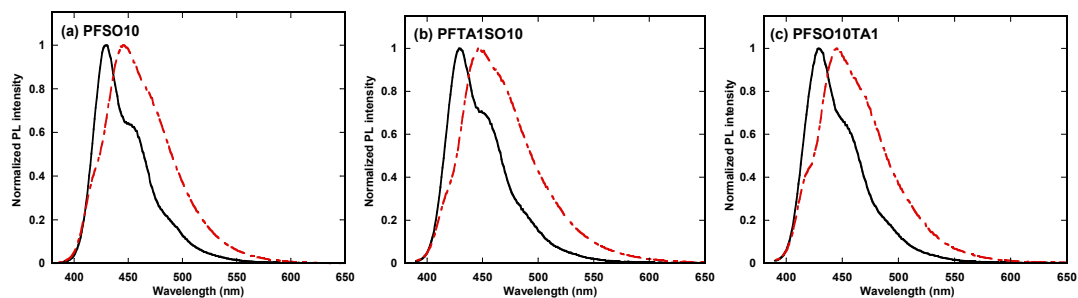


Fig. S2 PL spectra of copolymers in toluene (real line) and chloroform (dotted line).

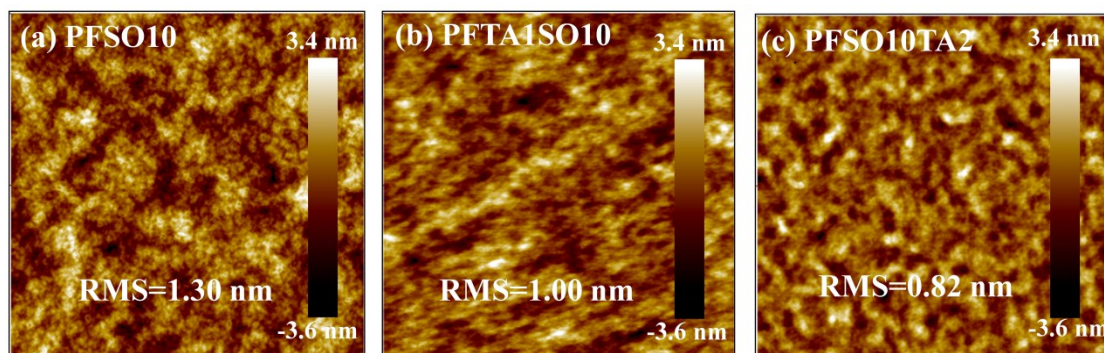


Fig. S3 AFM image ($5\mu\text{m} \times 5\mu\text{m}$) of the copolymers thermal annealed at 80°C for 10 min.

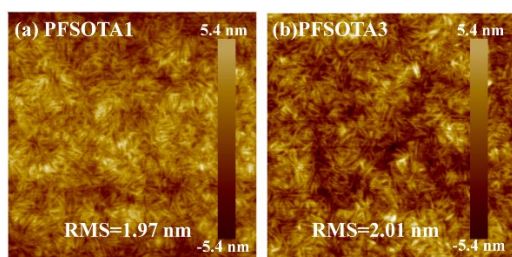


Fig. S4 AFM image ($5\mu\text{m}\times 5\mu\text{m}$) of the copolymers thermal annealed at 115°C for 10min.

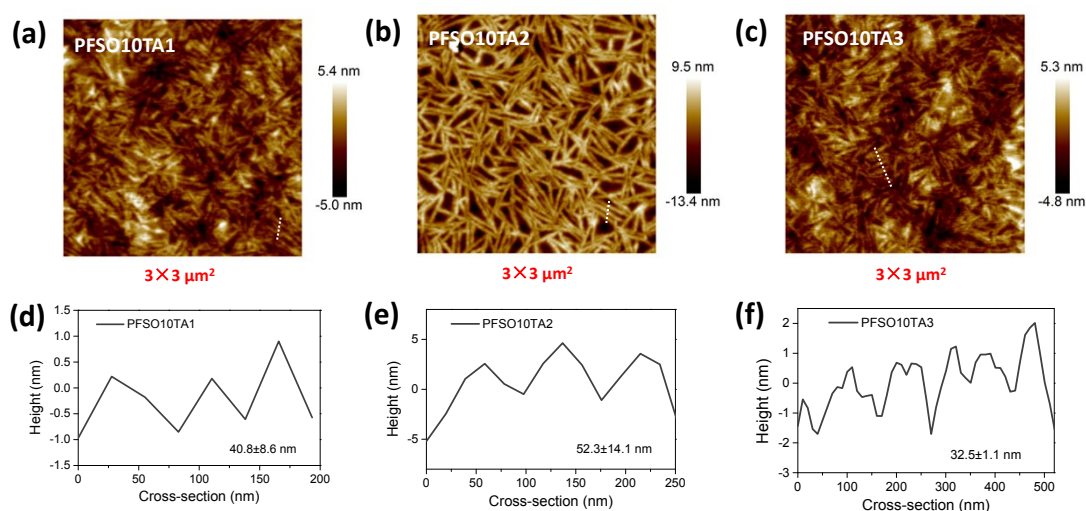


Fig. S5 (a-c) The AFM images ($3\mu\text{m}\times 3\mu\text{m}$) of copolymer films after annealing at 115°C for 10 min; (d-f) the cross-section profiles of the dashed line in (a-c).

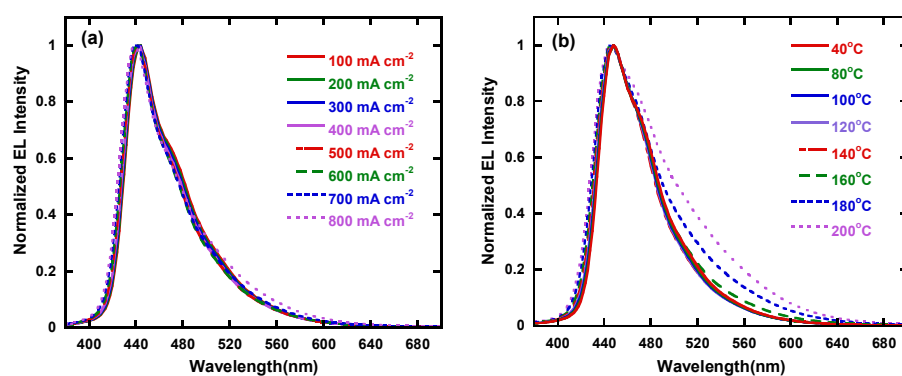


Fig. S6 EL spectra of polymer PFSO10 at different current density and different temperature.