Supporting Information

Chiral Column Core Surrounded by Peripheral Emitting Moieties:: A Novel Strategy for Constructing Columnar Liquid Crystals with Circularly Polarized Luminescence

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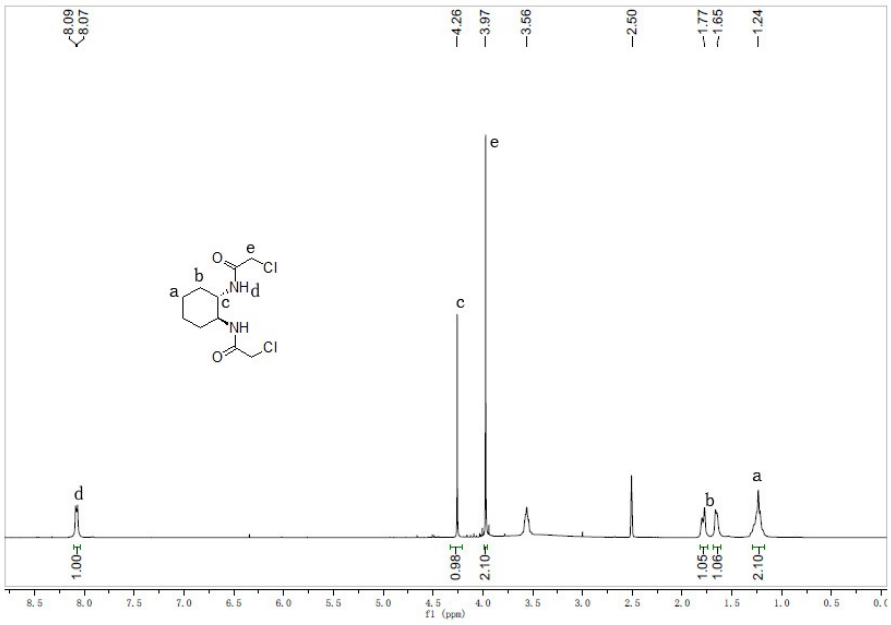


Figure S1 The ^{1}H NMR spectrum of compound **3.**

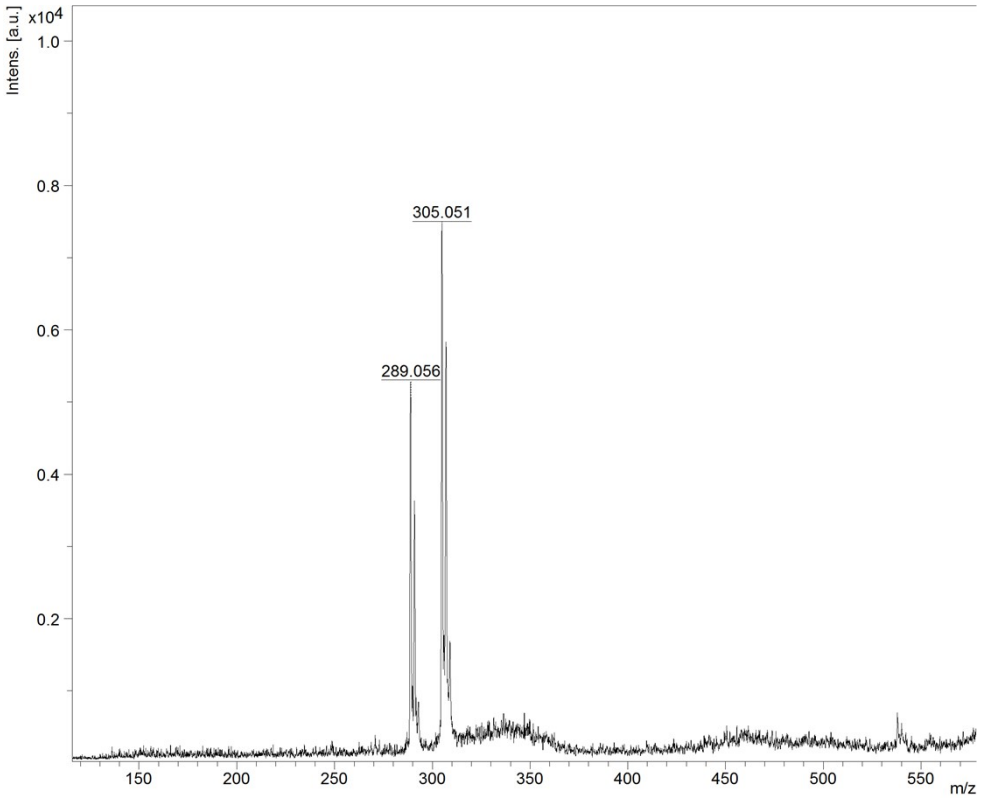


Figure S2 The MALDI-TOF-MS spectrum of compound **3**.

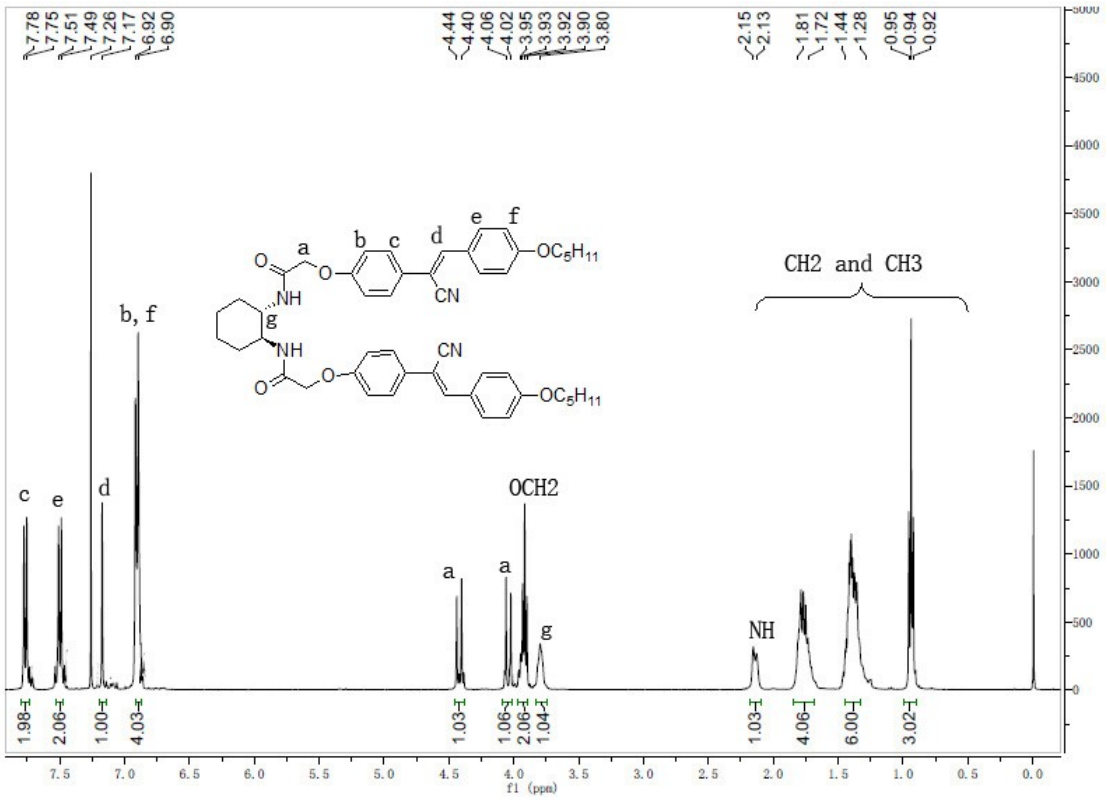


Figure S3 The ^{1}H NMR spectrum of compound **CC-5.**

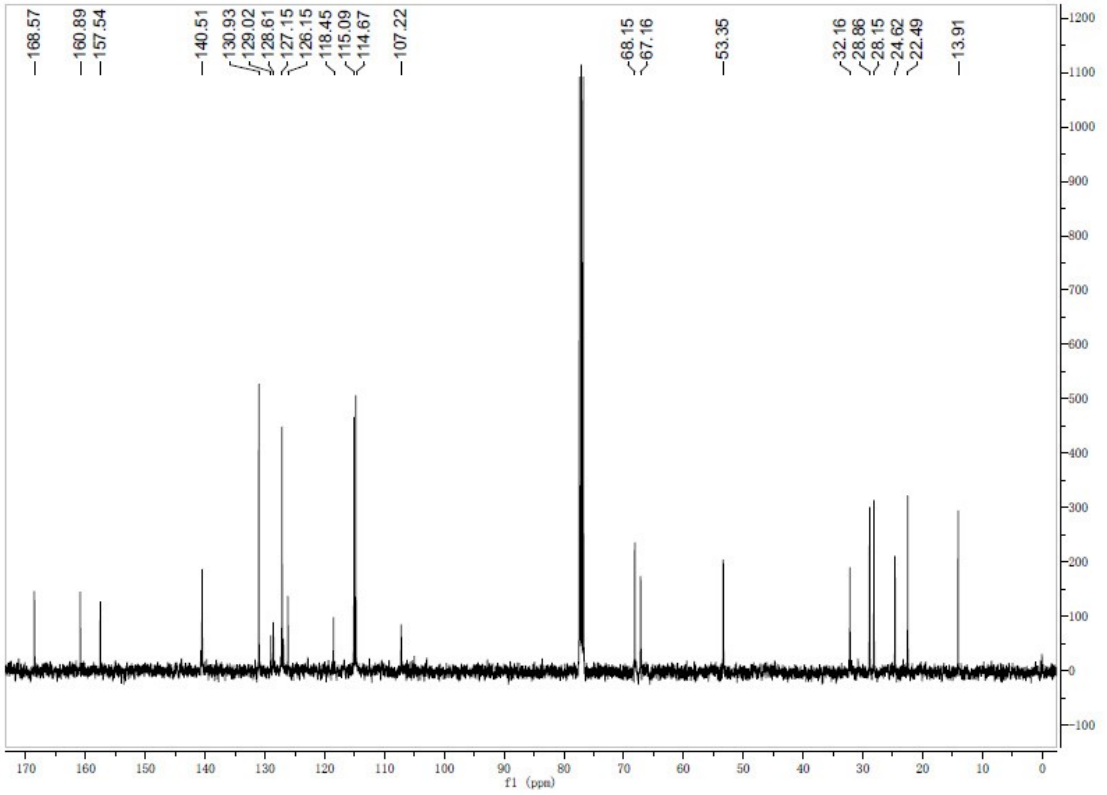


Figure S4 The ^{13}C NMR spectrum of compound **CC-5.**

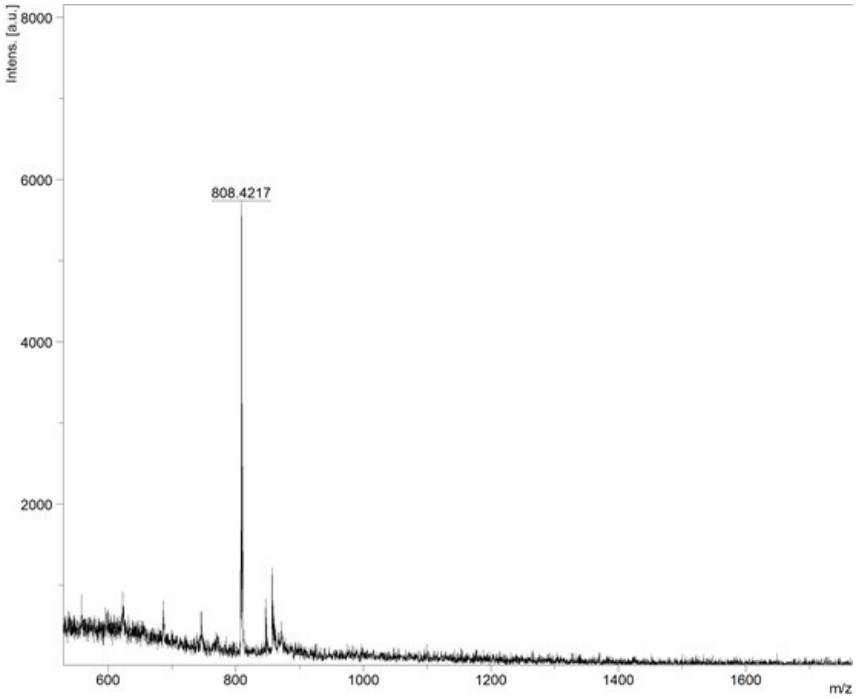


Figure S5 The MALDI-TOF-MS spectrum of compound C**C-5.**

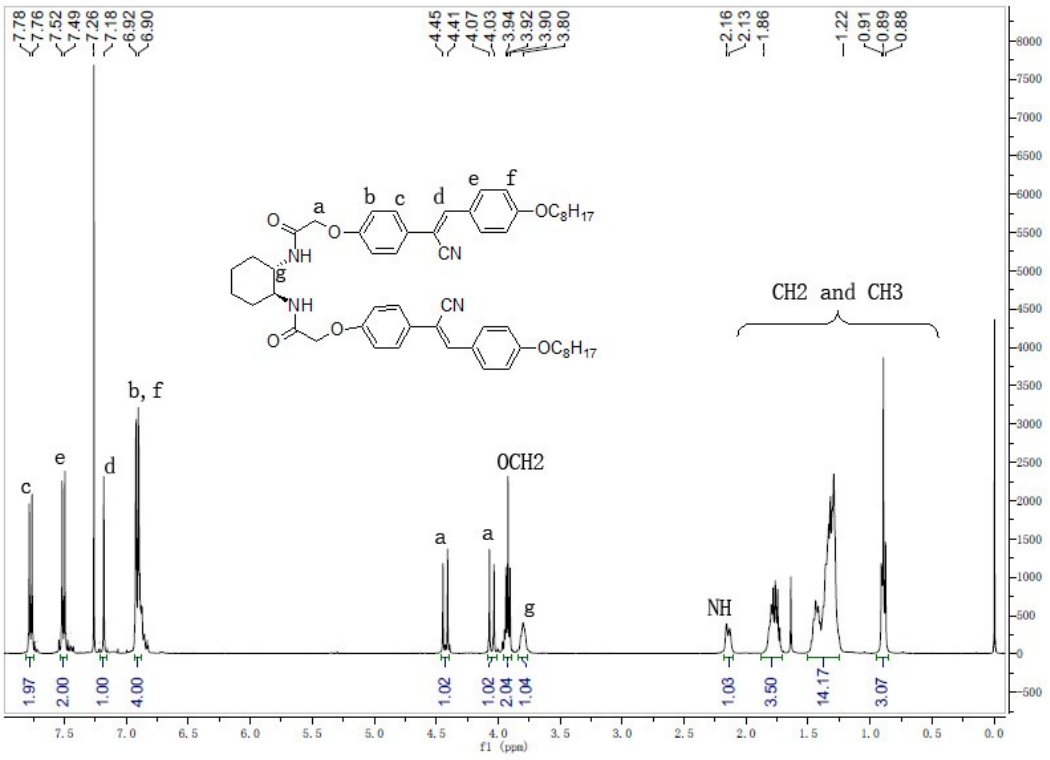


Figure S6 The ^{1}H NMR spectrum of compound **CC-8.**

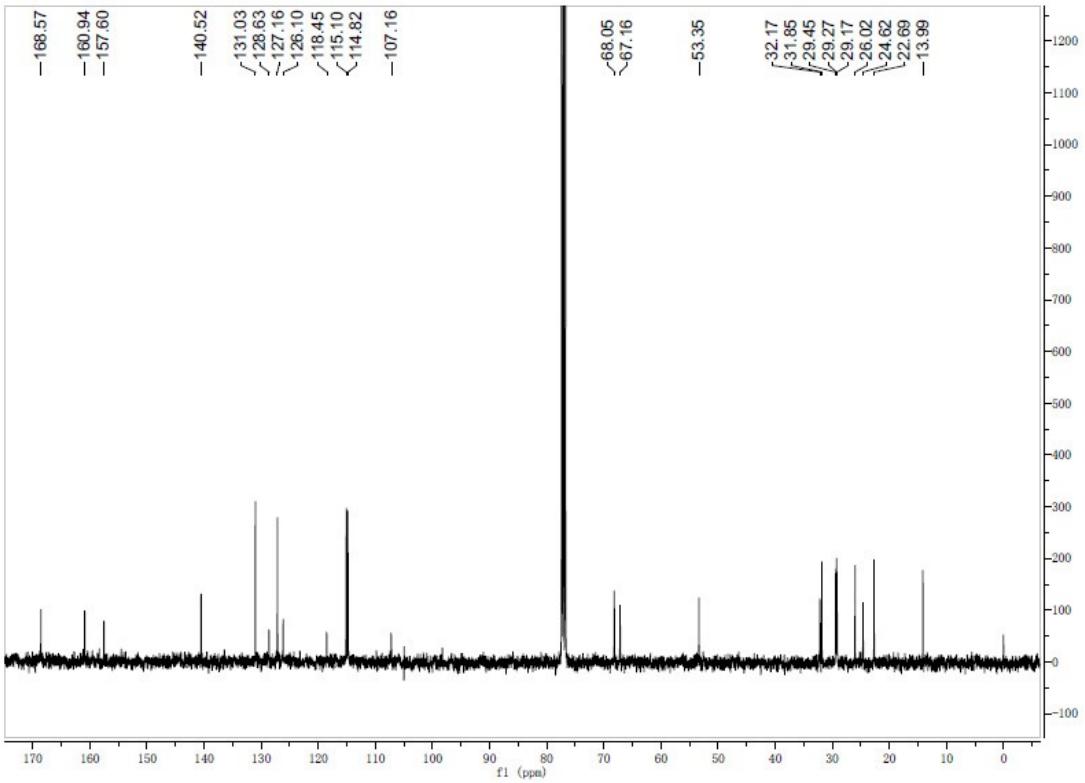


Figure S7 The ^{13}C NMR spectrum of compound C**C-8.**

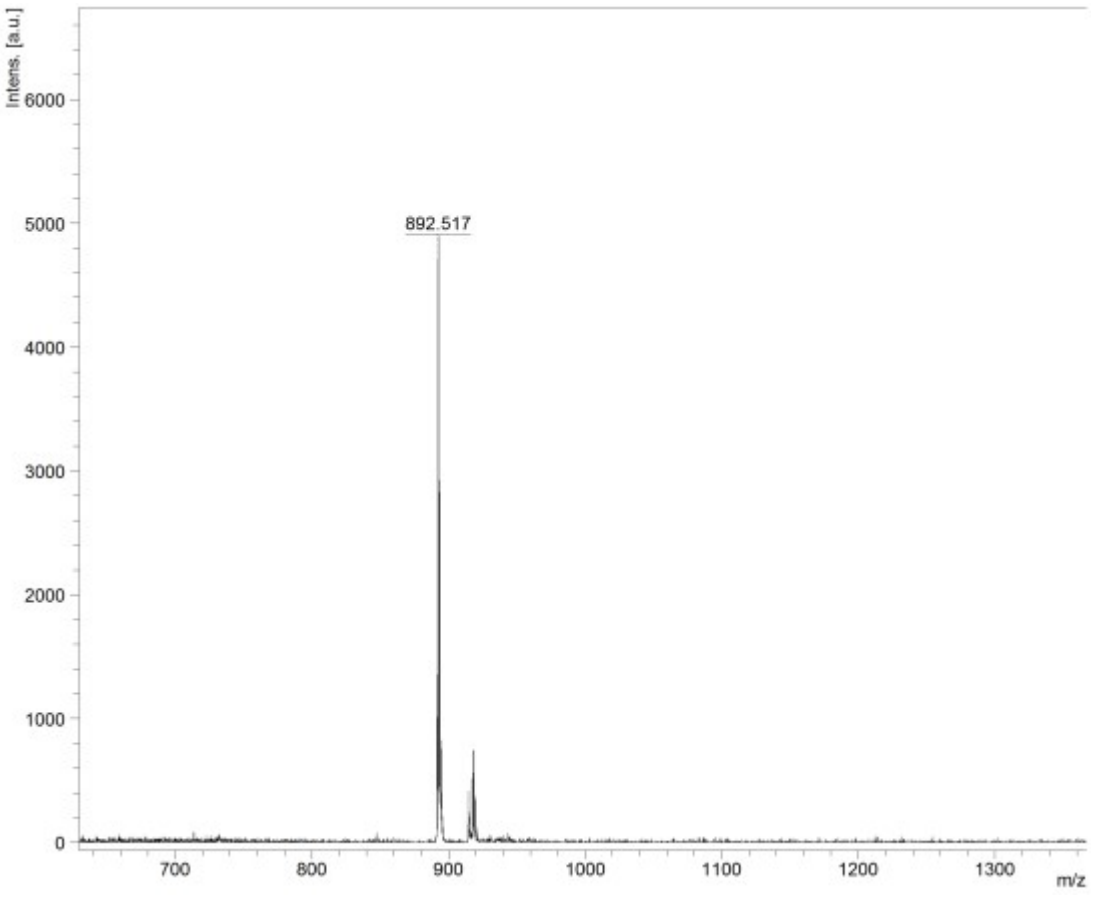


Figure S8 The MALDI-TOF-MS spectrum of compound C**C-8.**

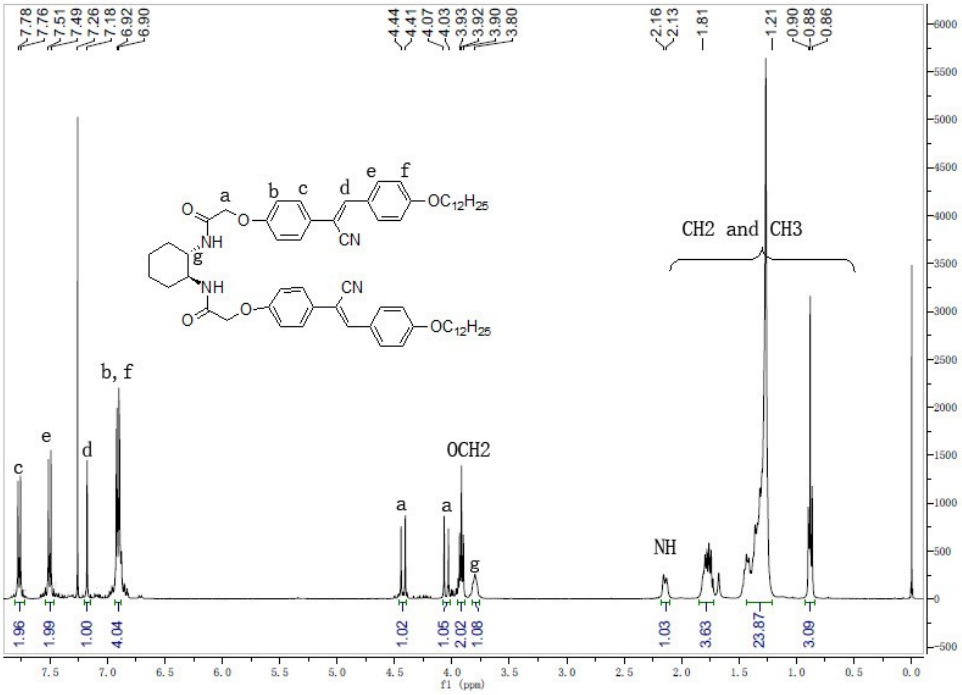


Figure S9 The ^{1}H NMR spectrum of compound **CC-12.**

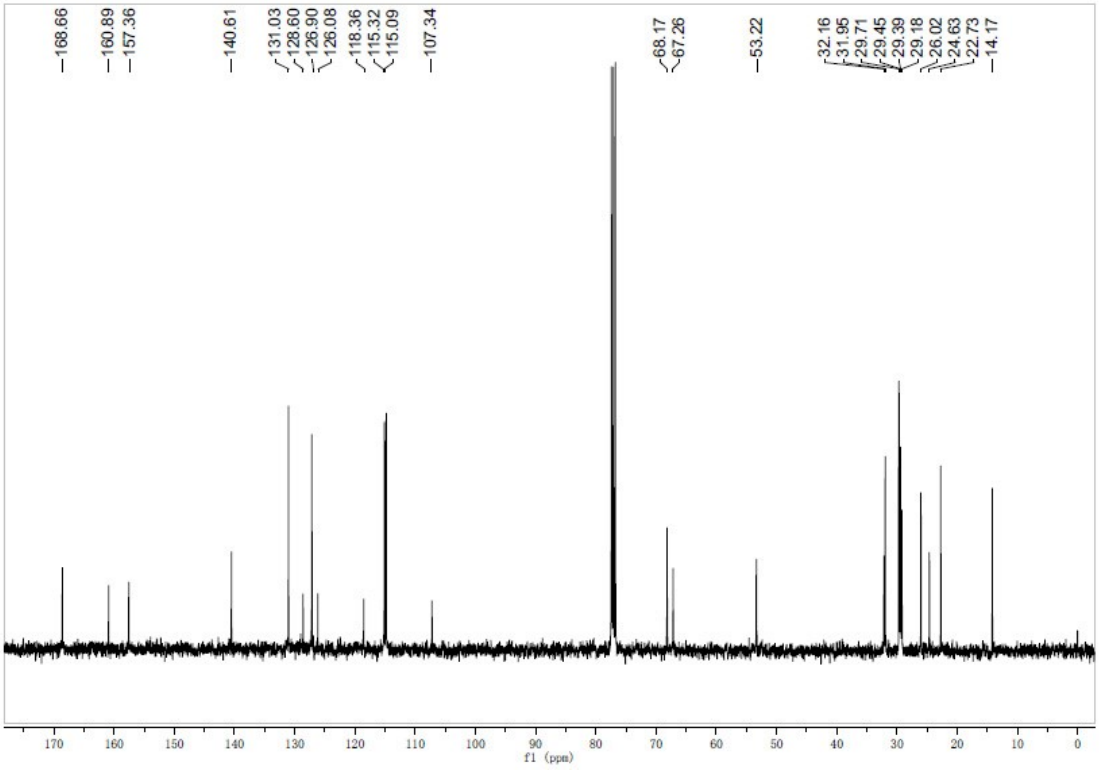


Figure S10 The ^{13}C NMR spectrum of compound C**C-12.**

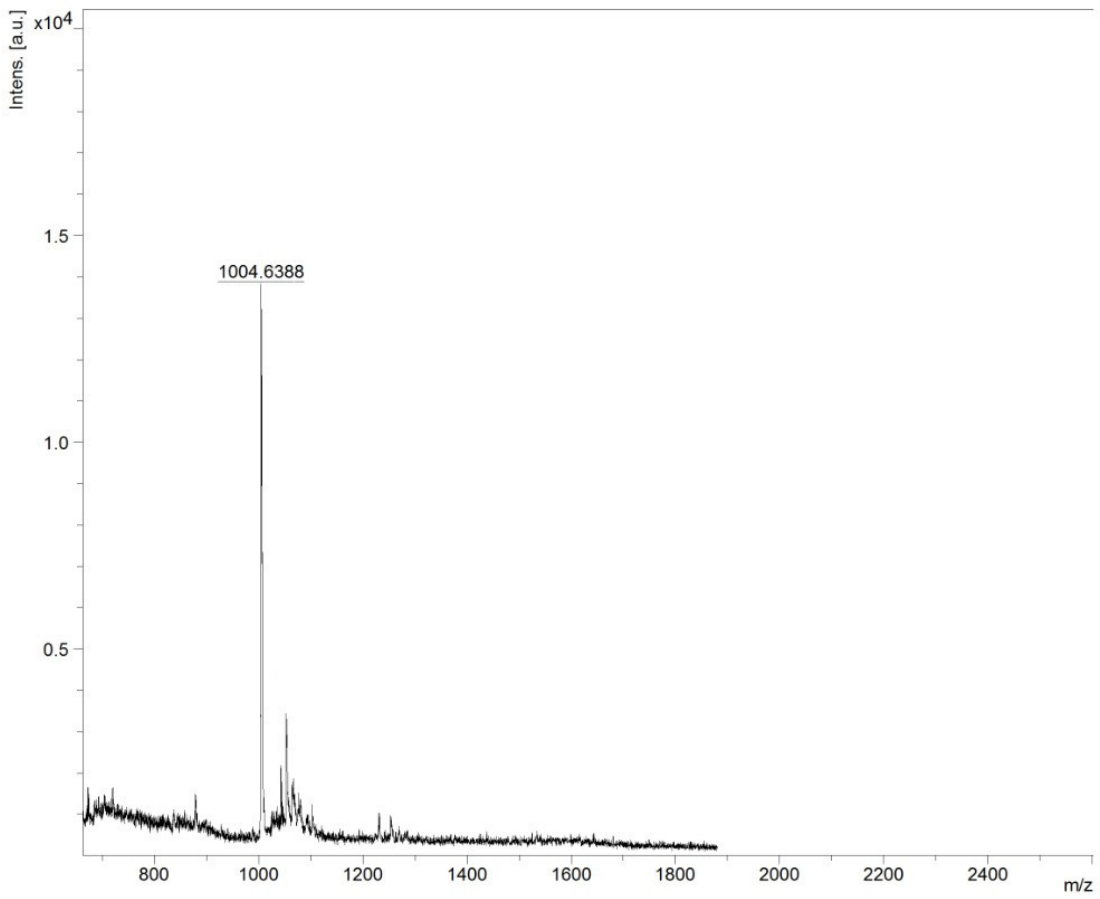


Figure S11 The MALDI-TOF-MS spectrum of compound C**C-12.**

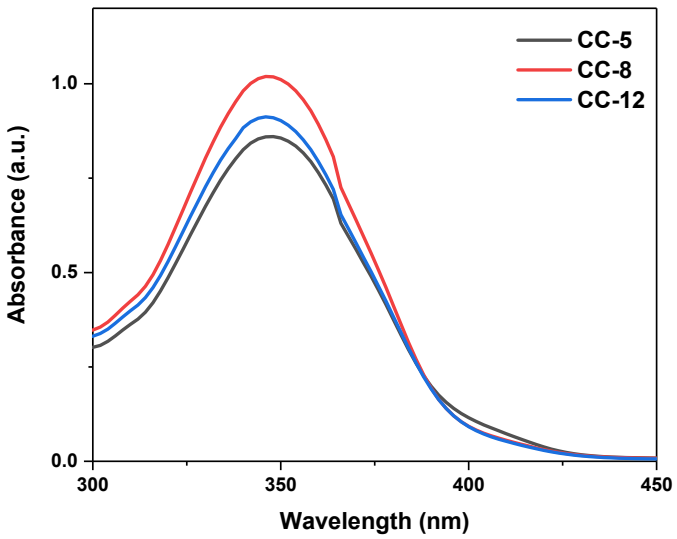


Figure S12 The UV-vis absorption spectra of compound **CC-5**, **CC-8** and **CC-12** (1.0×10^{-5}M in THF solution, each)**.**

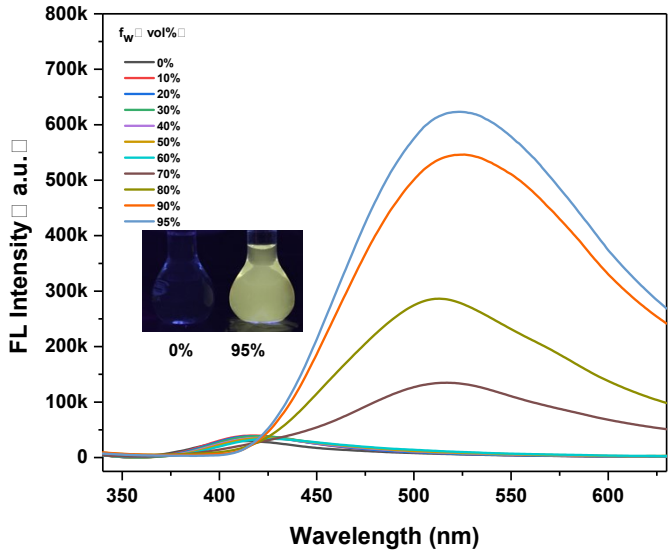


Figure S13 The fluorescence spectra of **CC-5** in THF-H_2O solutions (1×10^{-5} M . λ_{ex} = 350 nm). (Insert: The pictures in pure THF and THF-H_2O (5:95) solutions).

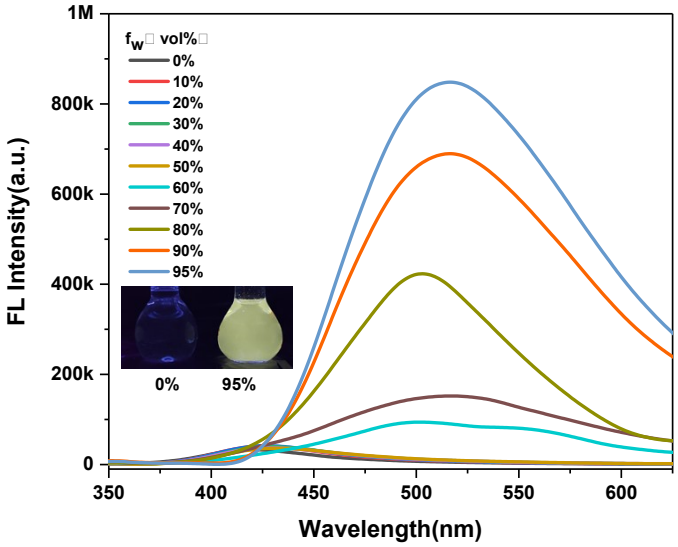
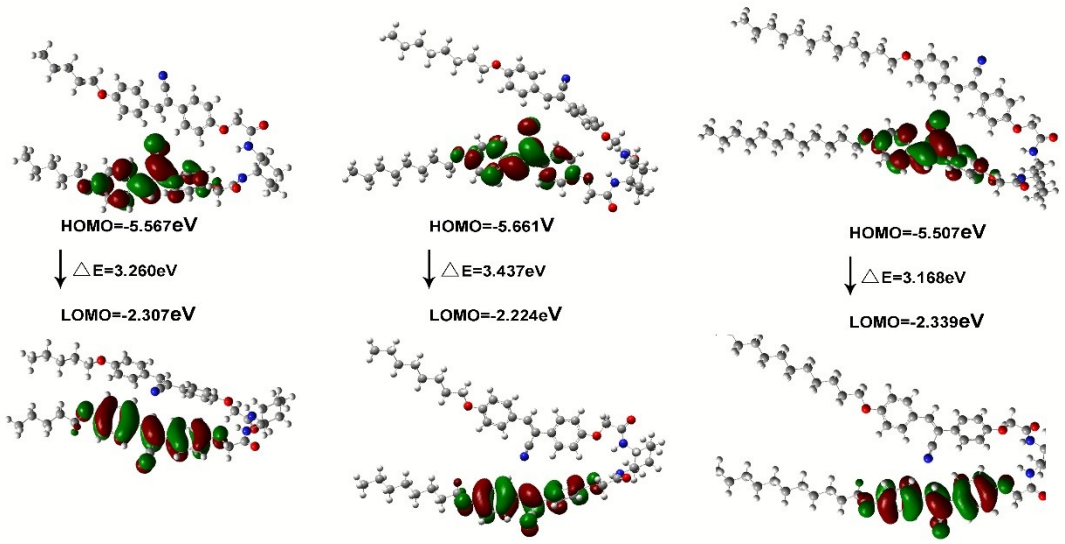


Figure S14 The fluorescence spectra of **CC-12** in THF-H_2O solutions (1×10^{-5} M . λ_{ex} = 350 nm). (Insert: The pictures in pure THF and THF-H_2O (5:95) solutions).



CC-5 **CC-8** **CC-12**

Figure S15 Molecular theoretical orbital amplitude plots of HOMO and LUMO energy levels of **CC-5**, **CC-8** and **CC-12**.

Table S1 Gelation properties of **CC-5**, **CC-8** and **CC-12** in various solvents.

Solvent	**CC-5**	**CC-8**	**CC-12**
H_2O	I	I	I
Acetonitrile	S	S	S
Methanol	I	I	I
Ethanol	I	I	I
Acetone	I	I	I
$CHCl_3$	S	S	S
ethyl acetate	I	I	I
CH_2Cl_2	S	S	S
toluene	I	I	I
hexane	I	I	I
THF	S	S	S
DMF	S	S	S
DMSO	S	S	S

CH_2Cl_2+*n*-hexane	G	G	G
CH_2Cl_2+Methanol	P	P	P
THF+ hexane	S	S	S
THF+Ethanol	P	P	P
THF+Methanol	P	P	P

G: stable gel; S: soluble; I: insoluble; P: precipitate.

1:3 **1:2** **2:3** **1:1** **2:1**

Figure S16 Photographs of the gel formed by **CC-8** in different ratios of CH_2Cl_2:hexane under 365 nm ultraviolet irradiation.

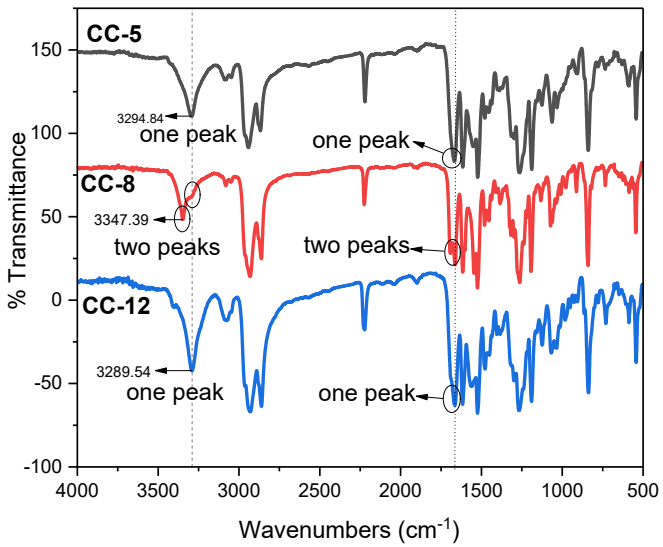


Figure S17 FT-IR spectra of **CC-5**, **CC-8** and **CC-12** in xerogels states.

Table S2 Results of (hkl) indexation of XRD profiles at a given temperature (T/℃) of mesophase

Compound (L[a]/Å)	Mesophase (T/°C)	d_{obs}/Å	hkl[b]	a[c]/Å	n_{ells}
CC-5	Col	36.48	100	42.12	4.76
(23.58)	(170)	21.06	110		
		18.24	200		
		13.80	210		
		4.35(h)			
CC-8	Col	38.05	100	43.94	4.96
(27.52)	(150)	21.97	110		
		19.02	200		
		14.38	210		
		4.4(h)			
CC-12	Col	40.13	100	46.33	4.89
(32.03)	(100)	23.18	110		
		20.07	200		
		4.31(h)			

[a] molecular length；[b] Miller Indices；[c] Lattice constant. $n_{cell} = (a2)(\sqrt{3}/2)(h\rho N_A/M)$, where the ‘‘a’’ is the lattice parameter, and N_A and M are Avogadro’s number and the molecular mass, respectively. The h is the thickness of the slice. The density (ρ) was set as 1 g cm^{-3}.

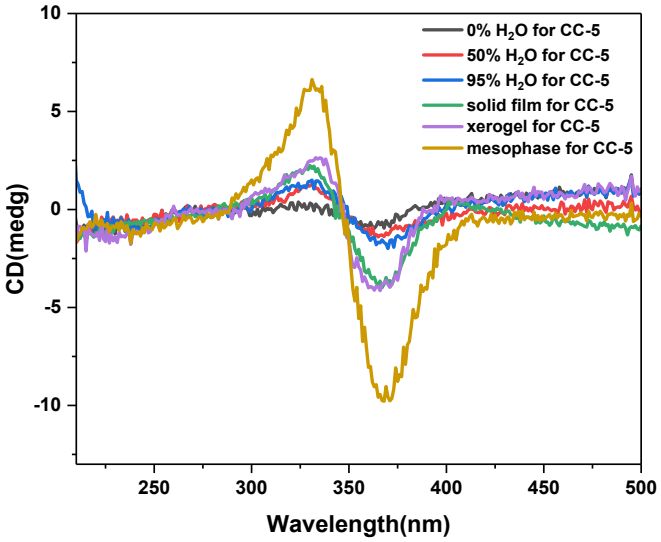


Figure S18 CD spectra of **CC-5** in various states (5.0×10^{-5} M for THF-H_2O solutions).

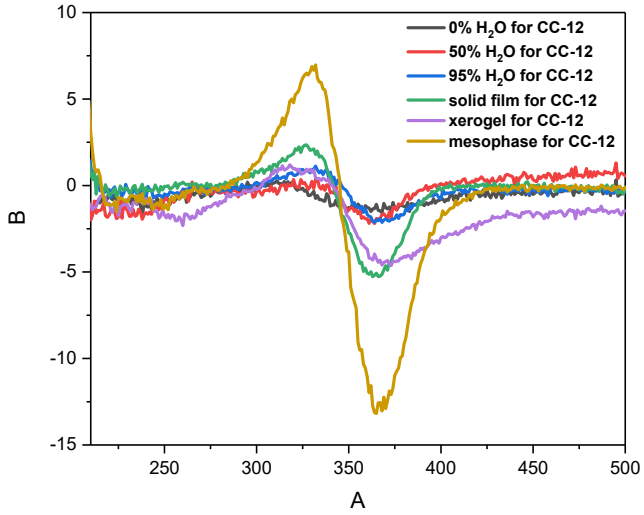


Figure S19 CD spectra of **CC-12** in various states (5.0×10^{-5} M for THF-H_2O solutions).

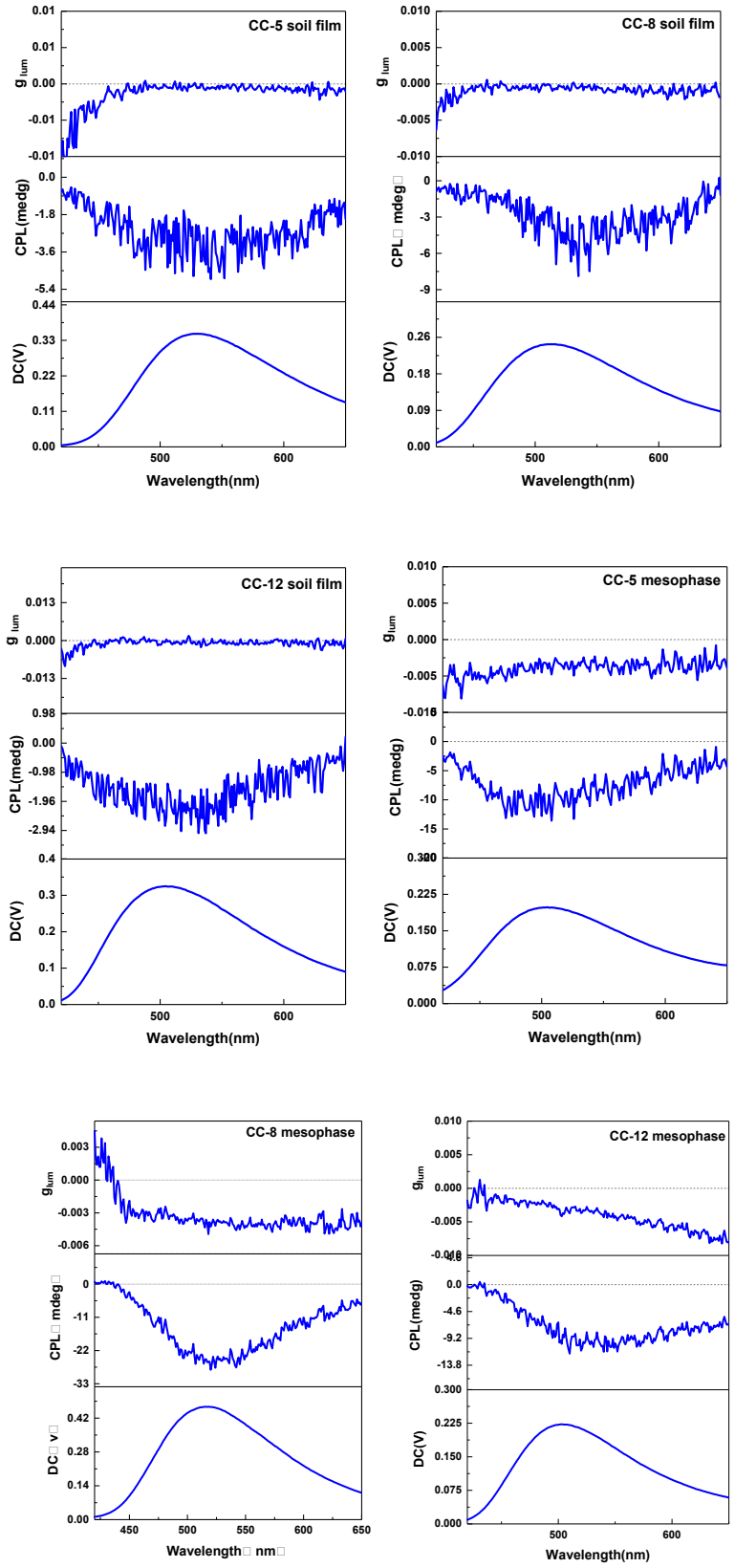


Figure S20 CPL spectra of solid thin films and liquid crystal phases of **CC-5**, **CC-8** and **CC-12**.

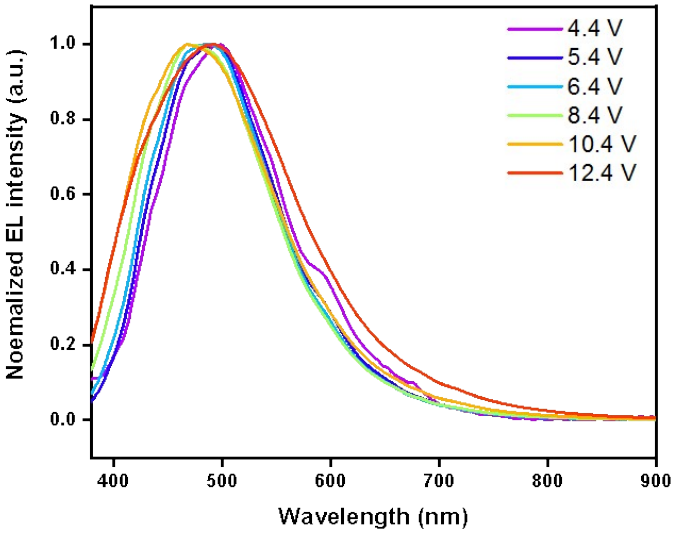


Figure S21 EL spectra of **CC-5** at different voltages.

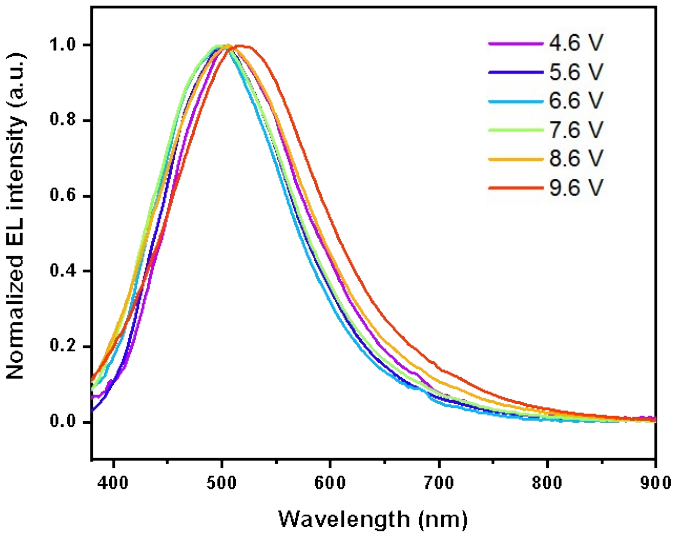


Figure S22 EL spectra of **CC-8** at different voltages.

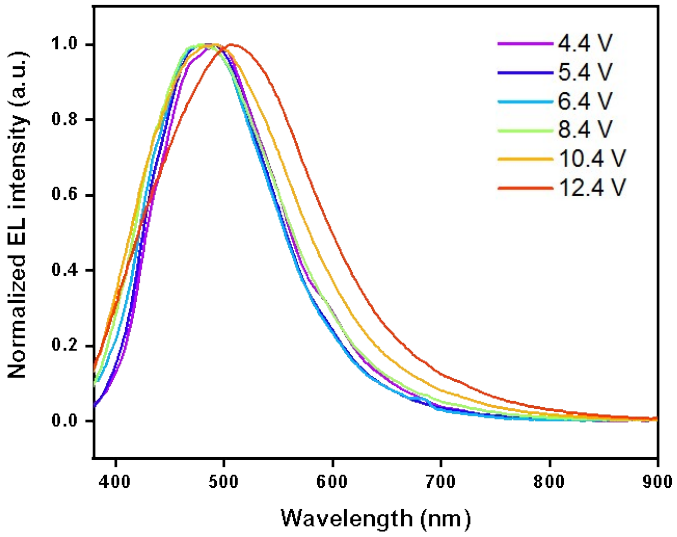


Figure S23 EL spectra of **CC-12** at different voltages.

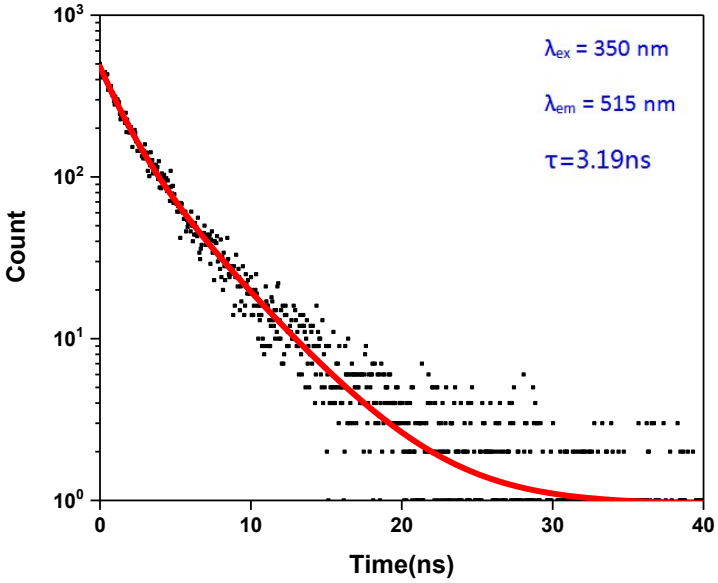


Figure S24 Photoluminescence lifetime spectrum of **CC-8** in THF-H_2O (5:95) solution

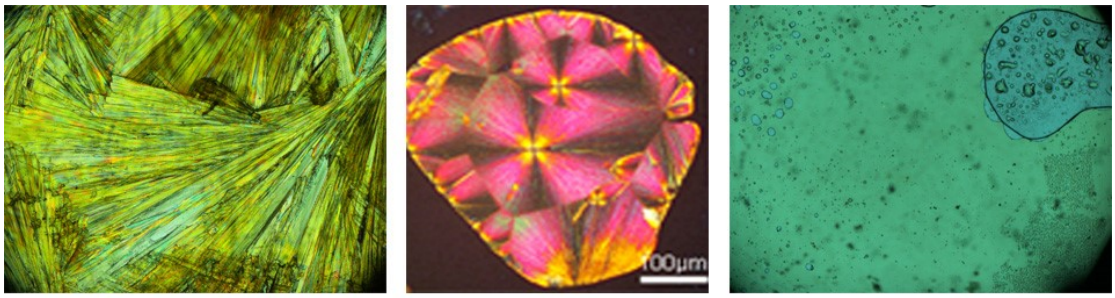


Figure S25 The textures for **CC-8** in different phases