

## Supporting Information

### Chiral diphenylacrylonitrile-perylene liquid crystal with circularly polarized luminescence in aggregated state

Hongyu Guo,<sup>a,b</sup> Xue Wang,<sup>a</sup> Wenchao Zhou,<sup>a,b</sup> and Fafu Yang<sup>\*a,c</sup>

<sup>a</sup> *College of Chemistry and Materials, Fujian Normal University, Fuzhou 350007, P.R.China; E-mail: yangfafu@fjnu.edu.cn*

<sup>b</sup> *Fujian Key Laboratory of Polymer Materials, Fuzhou 350007, P.R. China*

<sup>c</sup> *Fujian provincial Key Laboratory of Advanced Materials Oriented Chemical Engineering, Fuzhou 350007, P.R. China*

E-mail: yangfafu@fjnu.edu.cn

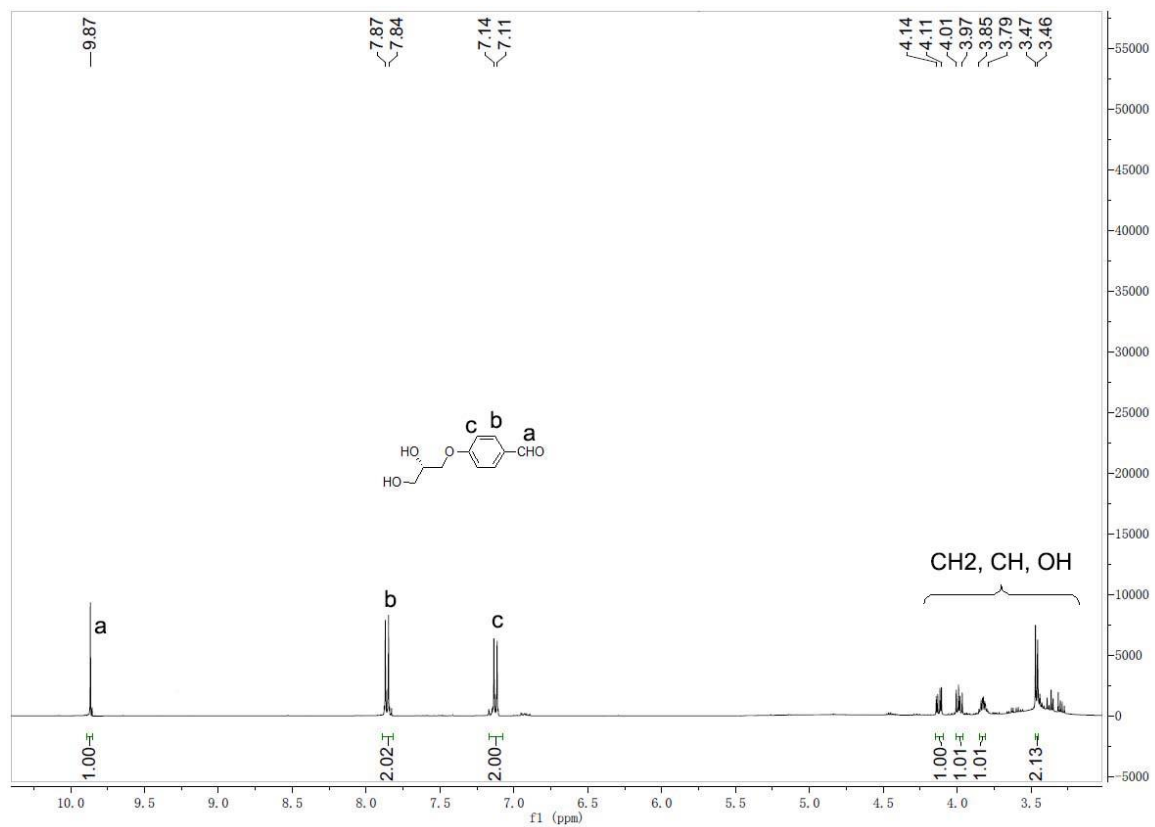


Figure S1. The <sup>1</sup>H NMR spectrum of compound **1**

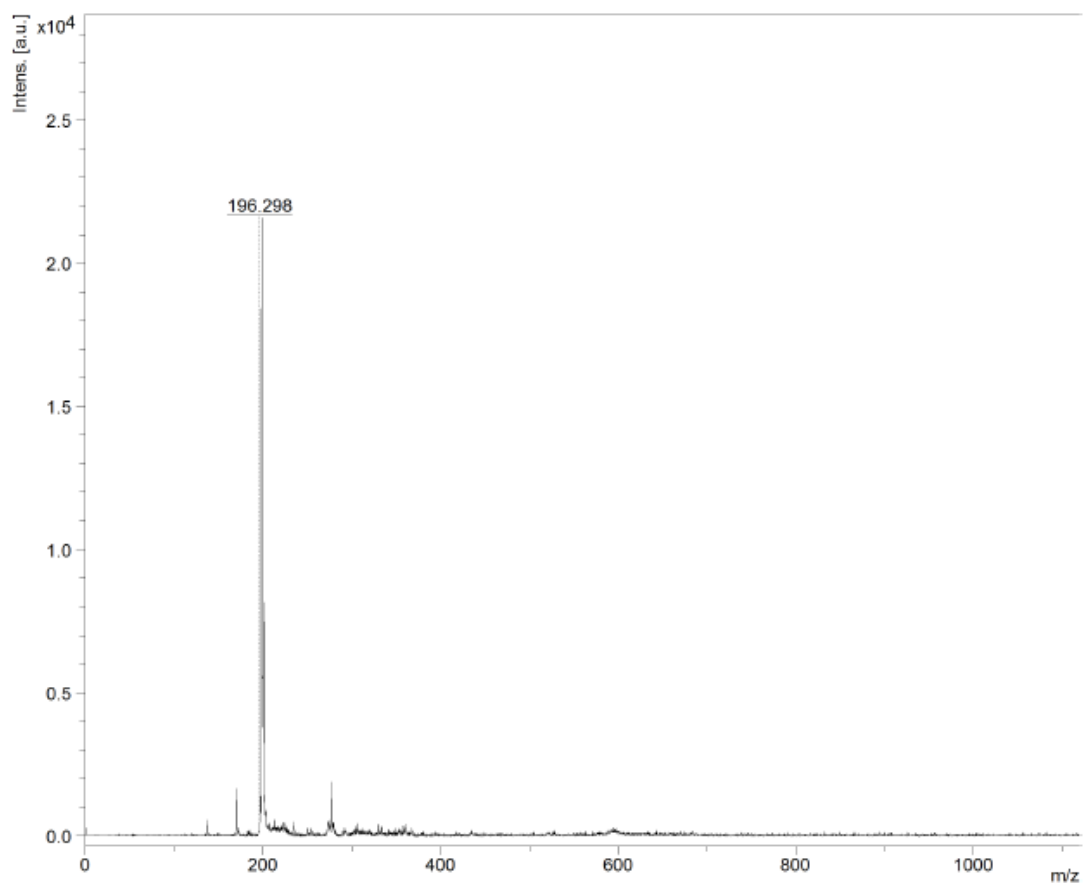


Figure S2. MALDI-TOF-MS spectrum of compound **1**

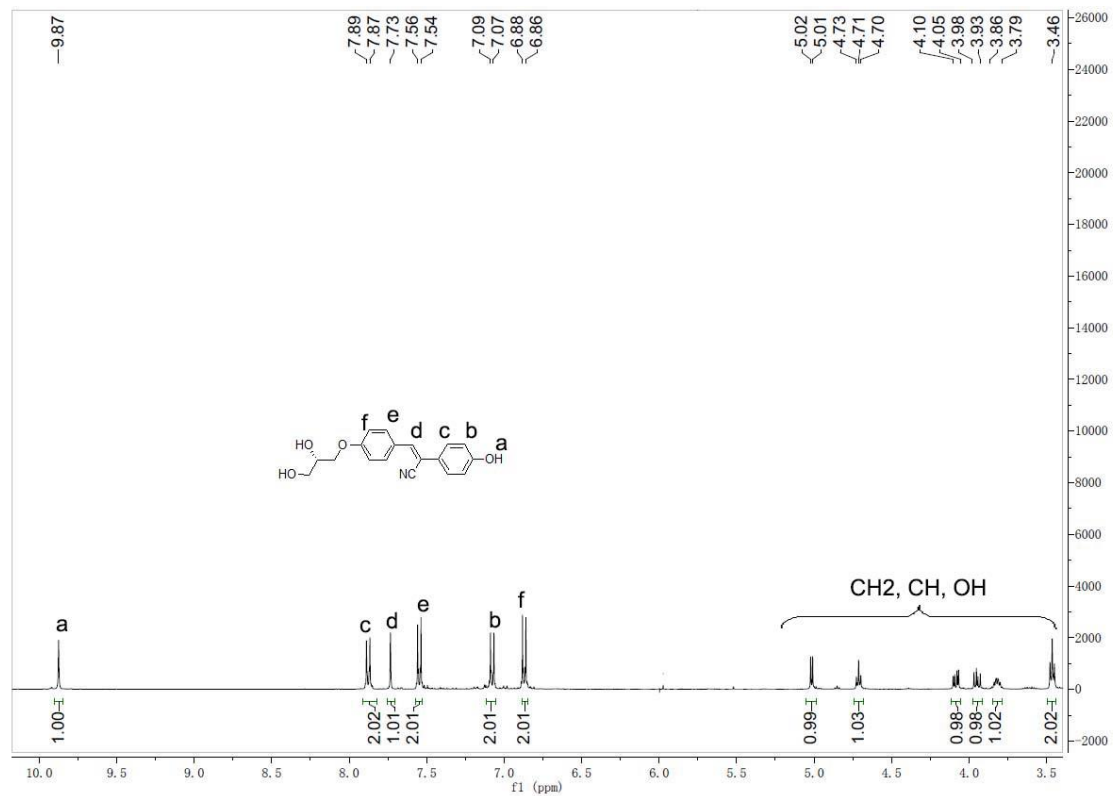


Figure S3. The <sup>1</sup>H NMR spectrum of compound 2

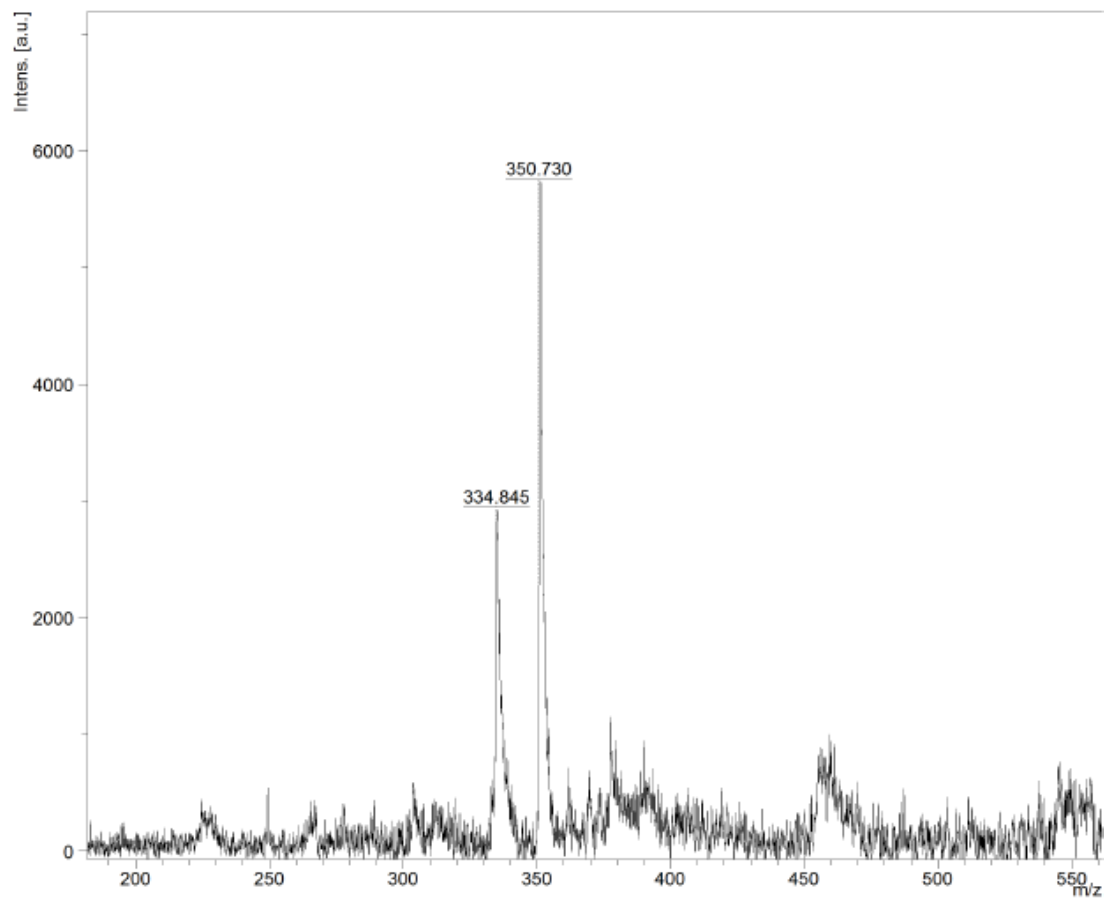


Figure S4. MALDI-TOF-MS spectrum of compound 2

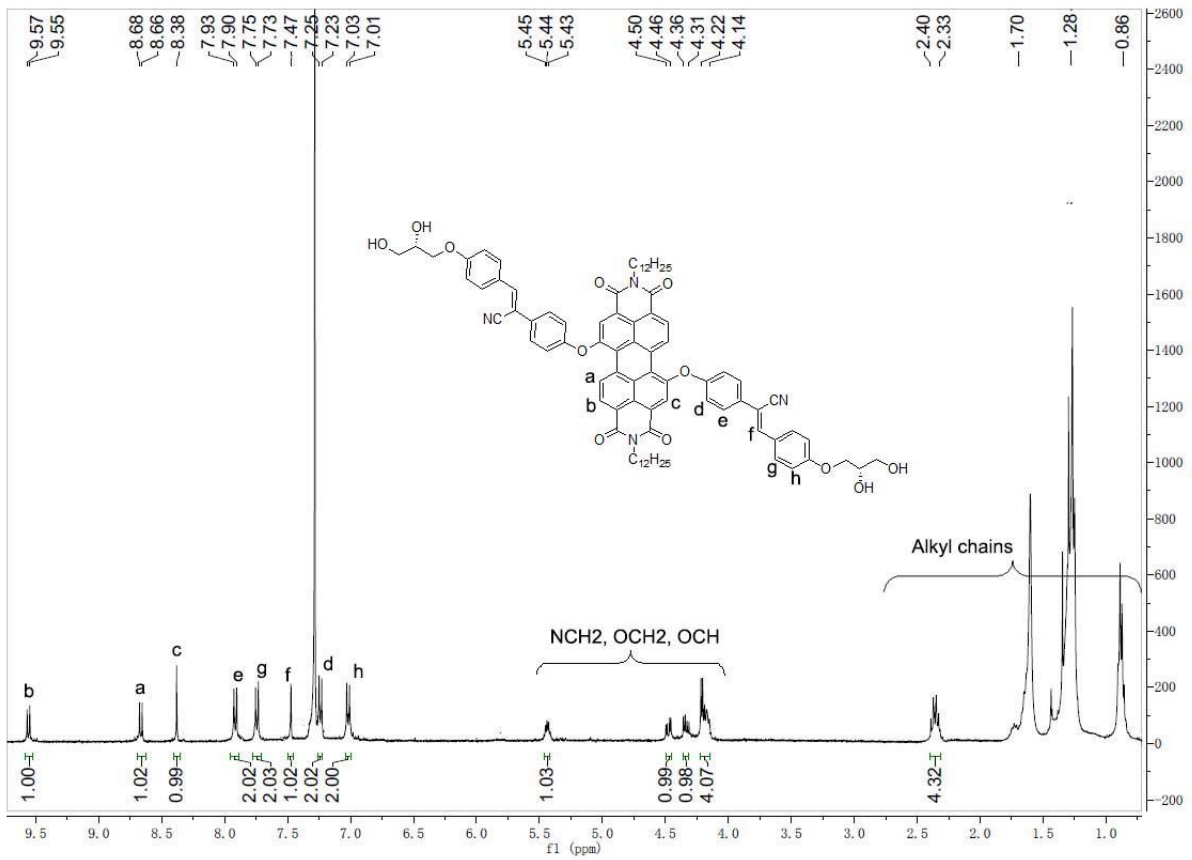


Figure S5. The  $^1\text{H}$  NMR spectrum of compound **5**

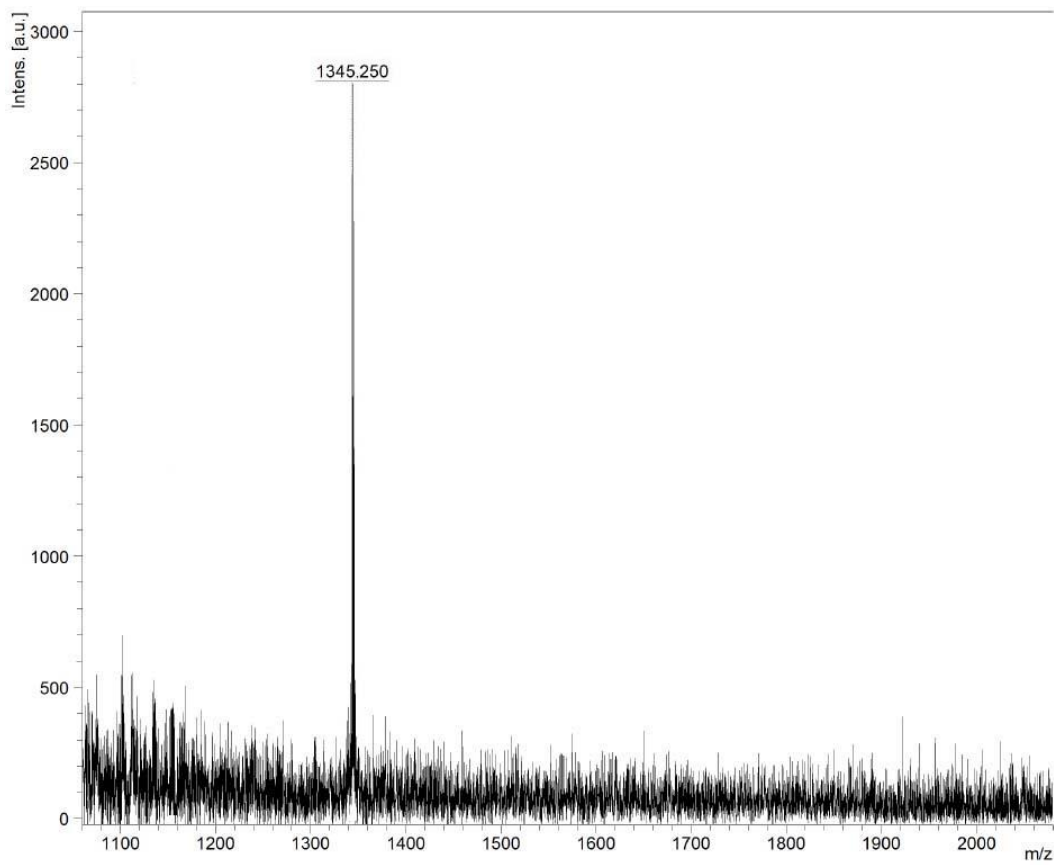


Figure S6. MALDI-TOF-MS spectrum of compound **5**

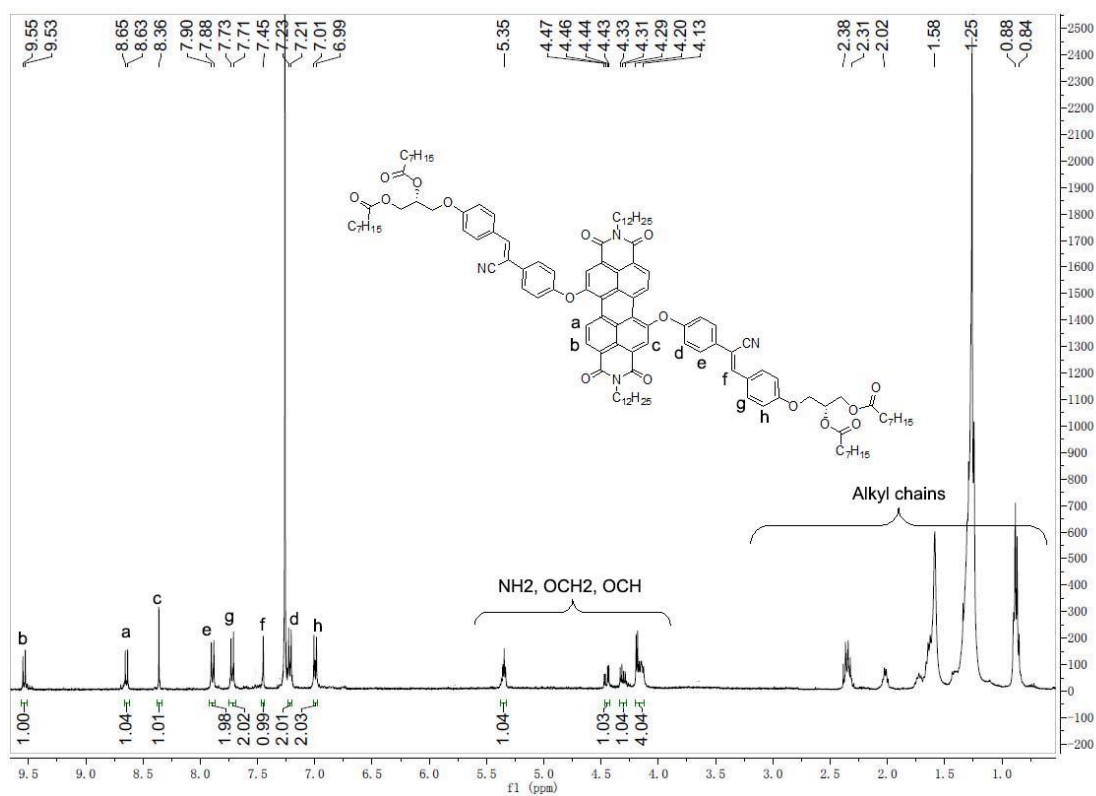


Figure S7. The <sup>1</sup>H NMR spectrum of CPL-P

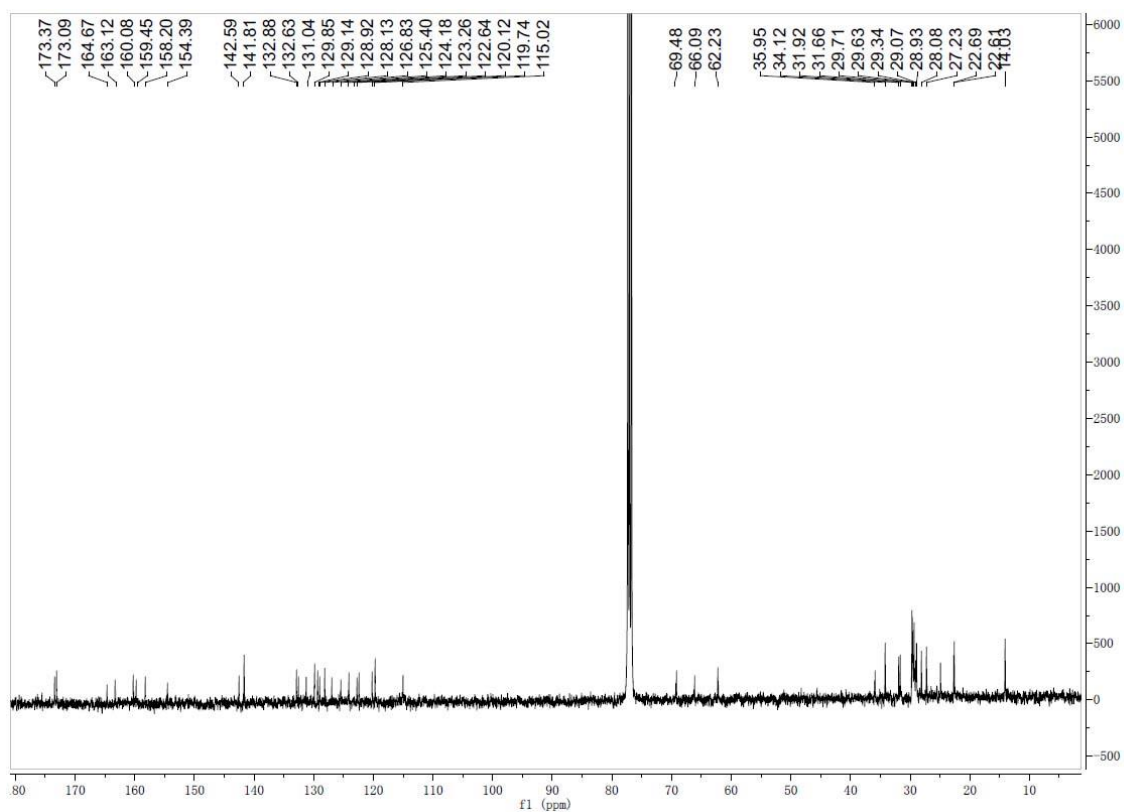


Figure S8. The <sup>13</sup>C NMR spectrum of CPL-P

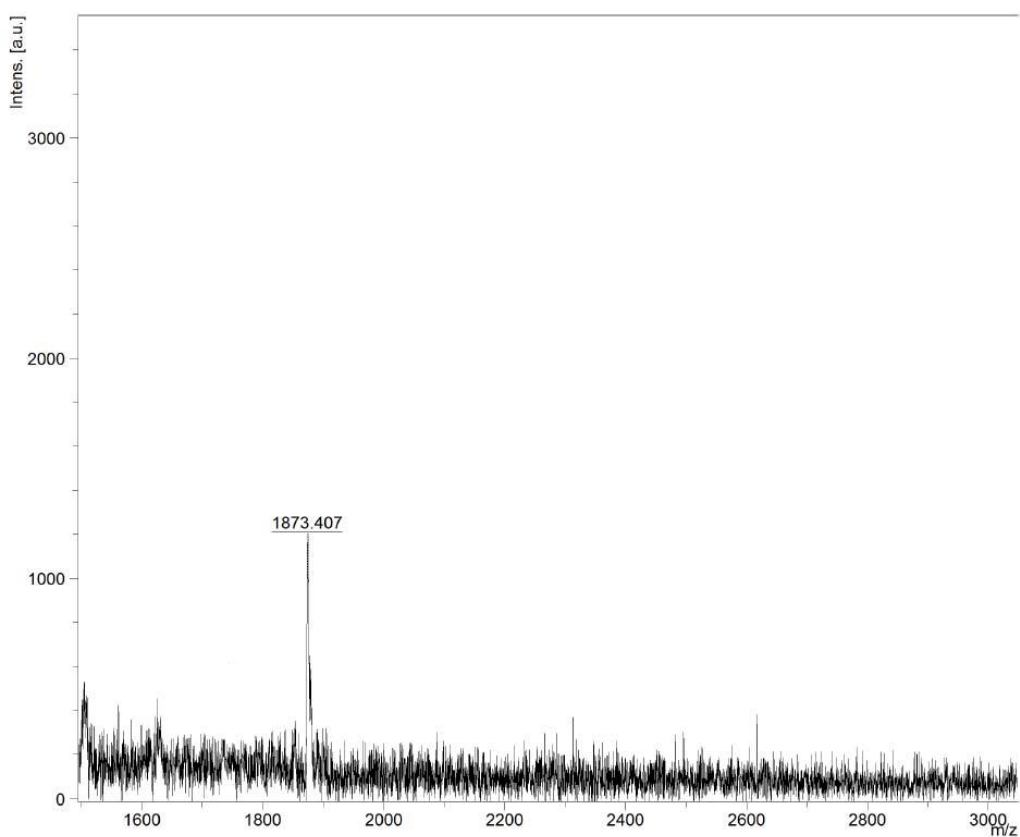


Figure S9. MALDI-TOF-MS spectrum of compound **CPL-P**

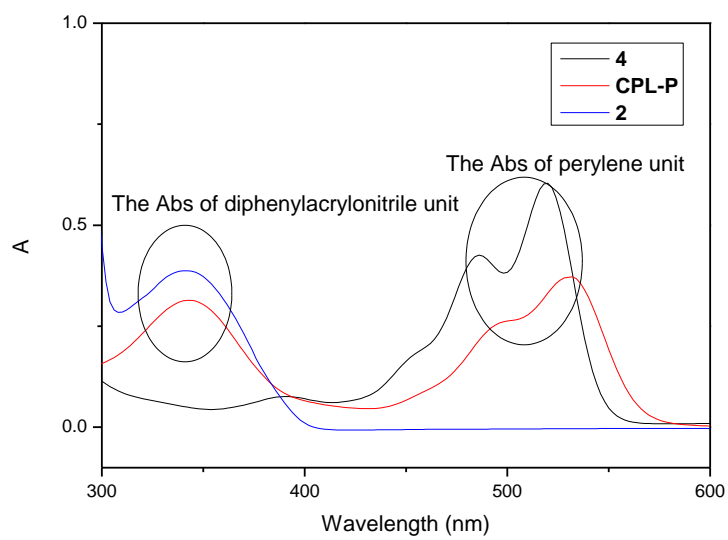
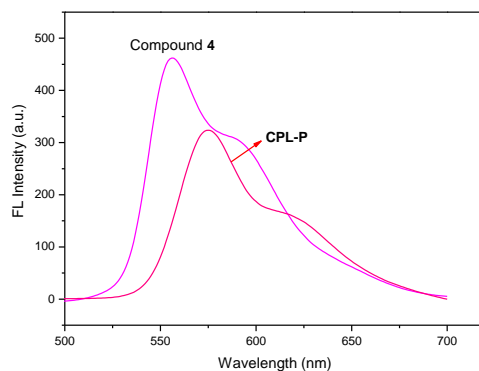
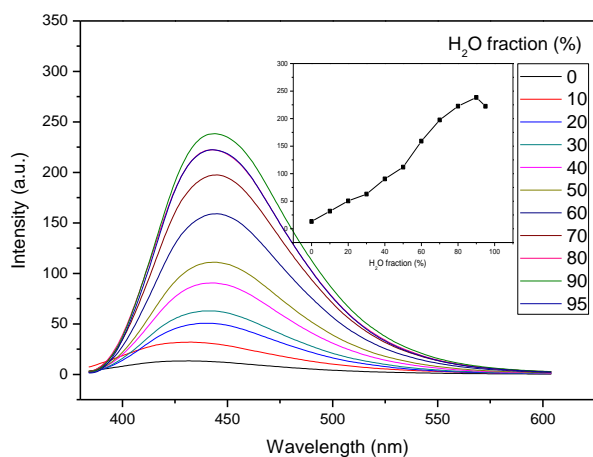


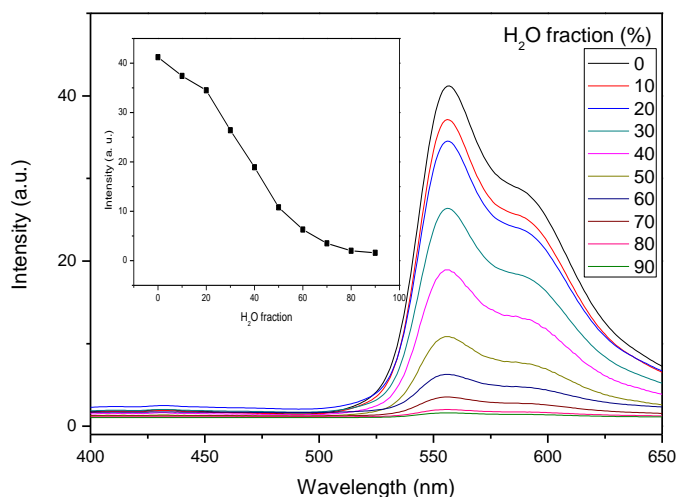
Figure S10 The absorption spectra of compounds **2**, **4** and **CPL-P** in THF solution ( $1 \times 10^{-6}$  M)



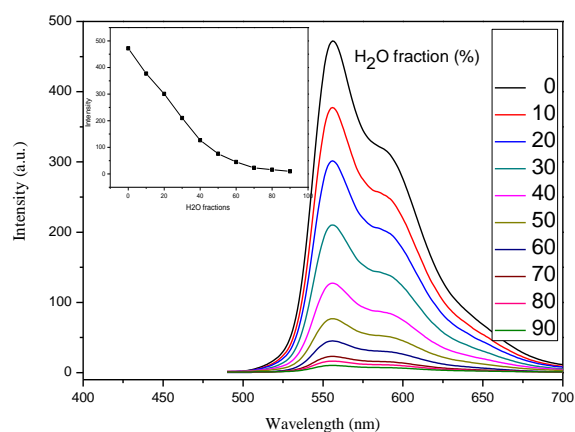
**Figure S11** The emission spectra of compounds **5** and **CPL-P** in THF solution ( $2 \times 10^{-6}$  M) with  $\lambda_{\text{ex}} = 480$  nm.



**Figure S12** The emission spectra of precursor **2** with different fractions of  $\text{H}_2\text{O}$  in THF- $\text{H}_2\text{O}$  system ( $5 \times 10^{-6}$  M) with  $\lambda_{\text{ex}} = 340$  nm. (inserted: Variation in intensity with fractions of  $\text{H}_2\text{O}$  in THF- $\text{H}_2\text{O}$  system)

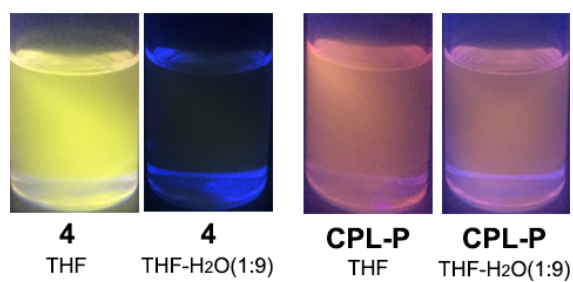


**Figure S13** The emission spectra of sample **4** in THF/H<sub>2</sub>O mixtures ( $2 \times 10^{-6}$  M) with different H<sub>2</sub>O fractions ( $\lambda_{\text{ex}} = 340$  nm). (Inserted: Variation in intensity with H<sub>2</sub>O fractions)

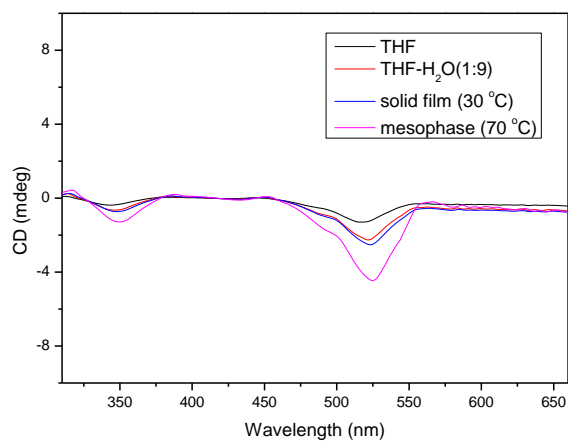


**Figure S14** The emission spectra of sample **4** in THF/H<sub>2</sub>O mixtures ( $2 \times 10^{-6}$  M) with different H<sub>2</sub>O fractions ( $\lambda_{\text{ex}} = 480$  nm). (Inserted: Variation in intensity with H<sub>2</sub>O fractions)



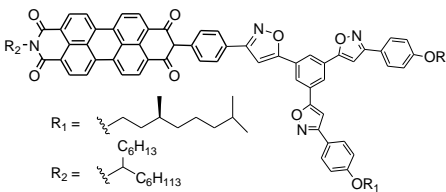
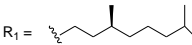
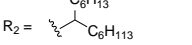
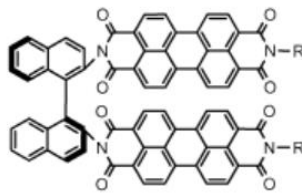
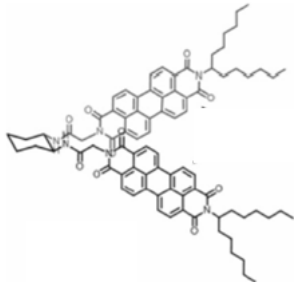
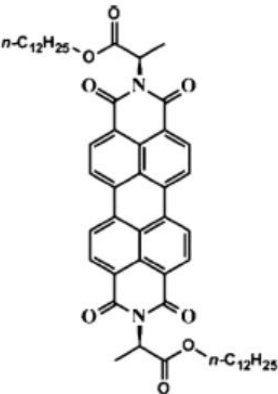
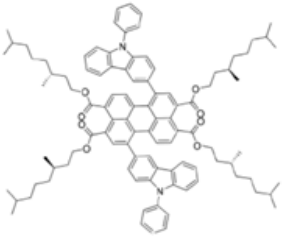
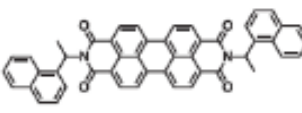


**Figure 15** The fluorescence photographs of sample **4** and **CPL-P** under UV light ( $\lambda_{\text{ex}} = 365 \text{ nm}$ )

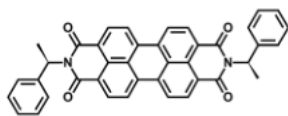


**Figure S16.** CD spectra of **CPL-P** in various phases

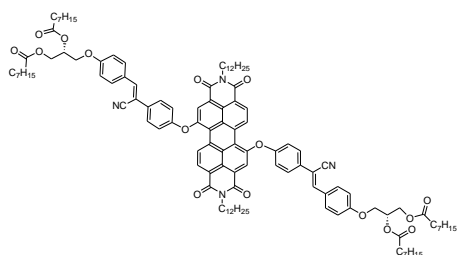
**Table S1** Comparison of CPL properties for perylene derivatives

Molecular structure	CPL values in solution	CPL values in film	Reference
	$\Phi/g_{lum}$	$\Phi/g_{lum}$	
 <p>R<sub>1</sub> =   R<sub>2</sub> = </p>	0.07/0.007	not mentioned	T. Ikeda, T. Masuda, T. Hirao, J. Yuasa, H. Tsumatori, T. Kawai and T. Haino, <i>Chem. Commun.</i> , 2012, <b>48</b> , 6025-6027
 <p>R=CH(C<sub>6</sub>H<sub>13</sub>)<sub>2</sub></p>	0.88/3×10 <sup>-3</sup>	Very weak(no data mentioned)	H. Tsumatori, T. Nakashima and T. Kawai, <i>Org. Lett.</i> , 2010, <b>12</b> , 2362-2365
	0.24/8×10 <sup>-3</sup>	0.035/not mentioned	J. Kumar, T. Nakashima, H. Tsumatori, M. Mori, M. Naito and T. Kawai, <i>Chem. Eur. J.</i> , 2013, <b>19</b> , 14090-14097
	0.67/0.02	not mentioned	F. Li, Y. Li, G. Wei, Y. Wang, S. Li and Y. Cheng, <i>Chem. Eur. J.</i> , 2016, <b>22</b> , 12910-12915
	0.53/1.93×10 <sup>-4</sup>	0.2/5.34×10 <sup>-4</sup>	J. Li, C. Yang, X. Peng, Q. Qi, Y. Li, W. Lai and W. Huang, <i>Org. Biomol. Chem.</i> , 2017, <b>15</b> , 8463-8471
	0.06/3.9×10 <sup>-3</sup>	0.04/1.7×10 <sup>-3</sup>	K. Watanab, A. Taniguchi, D. Kaji, N. Hara, T. Hosoya, A. Kanesaka, T. Harada, H. Nishikawa, Y. Imai, <i>Tetrahedron</i> , 2019, <b>75</b> ,

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Hara, R. Murata, S.  
Akiyama, T. Harada, A.  
Sudo, H. Nishikawa, and Y.  
Imai, *RSC Adv.*, 2019, **9**,  
1976-1982.  
This work



0.76/not mentioned

 $0.09/2.0 \times 10^{-3}$  $0.30/5.6 \times 10^{-4}$  $0.32/1.37 \times 10^{-3}$