

Electronic Supplementary Information for:

**Monodisperse macromolecules based on benzodithiophene and  
diketopyrrolopyrrole with strong NIR absorption and high mobility**

Jiayu Wang,<sup>a</sup> Keli Shi,<sup>bd</sup> Yue Suo,<sup>c</sup> Yuze Lin,<sup>\*bc</sup> Gui Yu<sup>\*b</sup> and Xiaowei Zhan<sup>\*a</sup>

<sup>a</sup> *Department of Materials Science and Engineering, College of Engineering, Key Laboratory of Polymer Chemistry and Physics of Ministry of Education, Peking University, Beijing 100871, P. R. China. E-mail: xwzhan@pku.edu.cn*

<sup>b</sup> *Beijing National Laboratory for Molecular Sciences, CAS Key Laboratory of Organic Solids, Institute of Chemistry, Chinese Academy of Sciences, Beijing 100190, P. R. China.*

<sup>c</sup> *Department of Chemistry, Capital Normal University, Beijing 100048, P. R. China.*

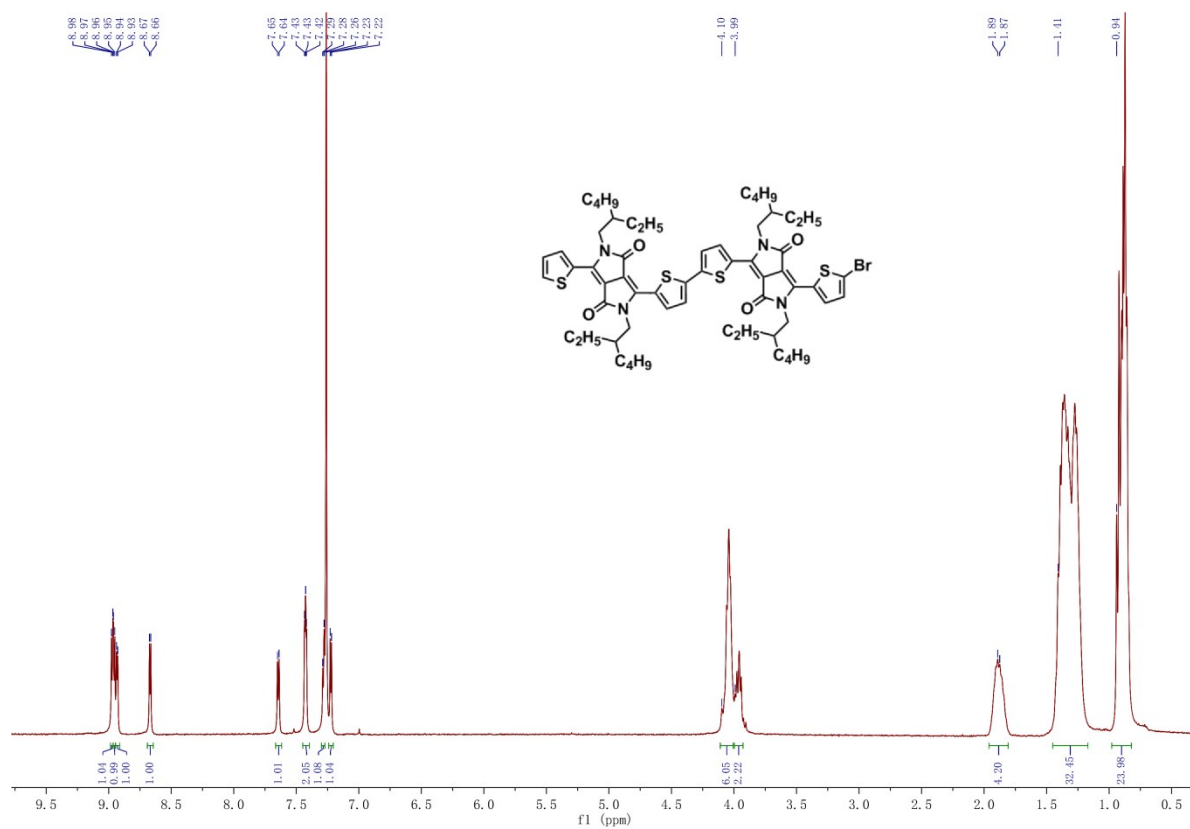
<sup>d</sup> *University of Chinese Academy of Sciences, Beijing 100190, P. R. China.*

**Table S1** OFET properties of BDT-DPP-based compounds at different annealing temperatures

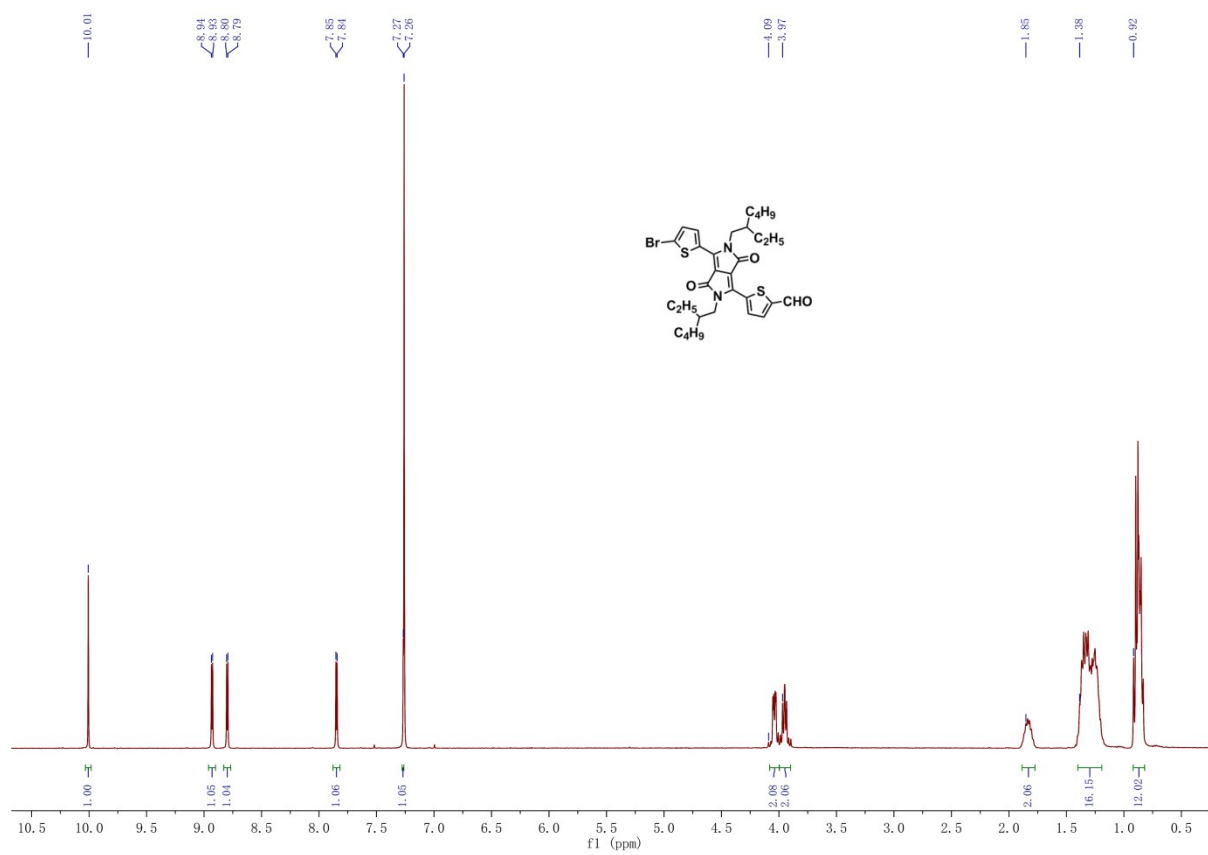
compound	annealing temperature / °C	$\mu_h / \text{cm}^2 \text{V}^{-1} \text{s}^{-1}$	$I_{\text{on}}/I_{\text{off}}$	$V_{\text{th}} / \text{V}$
BDT-4DPP	60	0.0078	$10^2$	-4.1
	100	0.012	$10^4$	-3.5
	140	0.036	$10^5$	-4.2
	180	0.025	$10^5$	-5.4
	220	0.0049	$10^4$	-7.2
BDT-DPP-Rhod	60	0.043	$10^5$	0
	100	0.045	$10^6$	-7.5
	140	0.10	$10^6$	-4.2
	180	0.11	$10^6$	-4.8
	220	0.057	$10^5$	-3.1
BDT-DPP-CA	60	0.087	$10^6$	-16.0
	100	0.15	$10^7$	-8.2
	140	0.19	$10^7$	-8.9
	180	0.070	$10^6$	-11.7
	220	0.0094	$10^6$	-16.3
BDT-2DPP	60	0.0047	$10^4$	8.9
	100	0.0058	$10^5$	-1.1
	140	0.16	$10^6$	-4.7
	180	0.038	$10^6$	-6.4
	220	0.0047	$10^5$	-10.3
BDTS-2DPP	25	0.012	$10^5$	2.2
	80	0.0081	$10^5$	3.3
	120	0.0079	$10^5$	3.5
	160	1.12	$10^5$	2.2
	180	0.55	$10^5$	0

**Table S2** Film thickness of GIXRD samples on OTS-modified Si/SiO<sub>2</sub> substrates

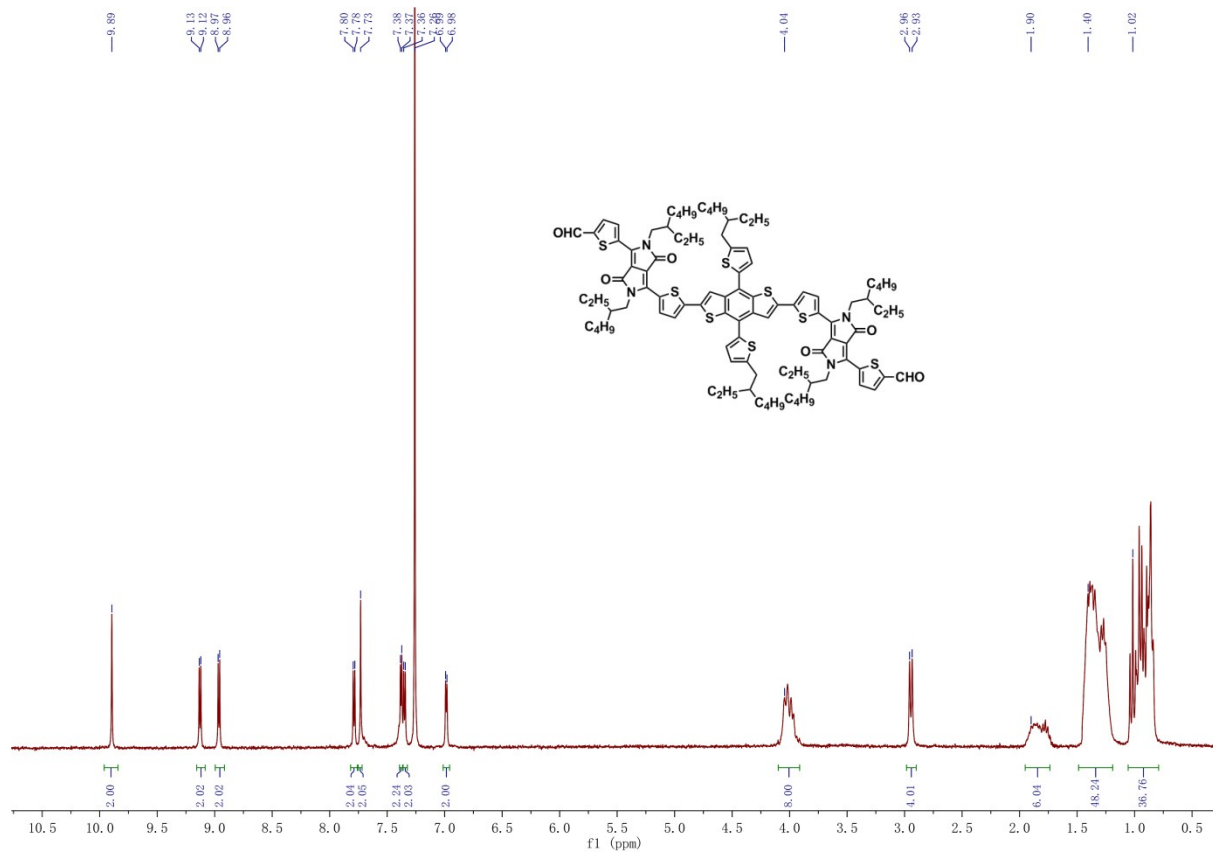
compound	film thickness / nm
BDT-4DPP	576
BDT-DPP-Rhod	611
BDT-DPP-CA	592
BDT-2DPP	583
BDTS-2DPP	585



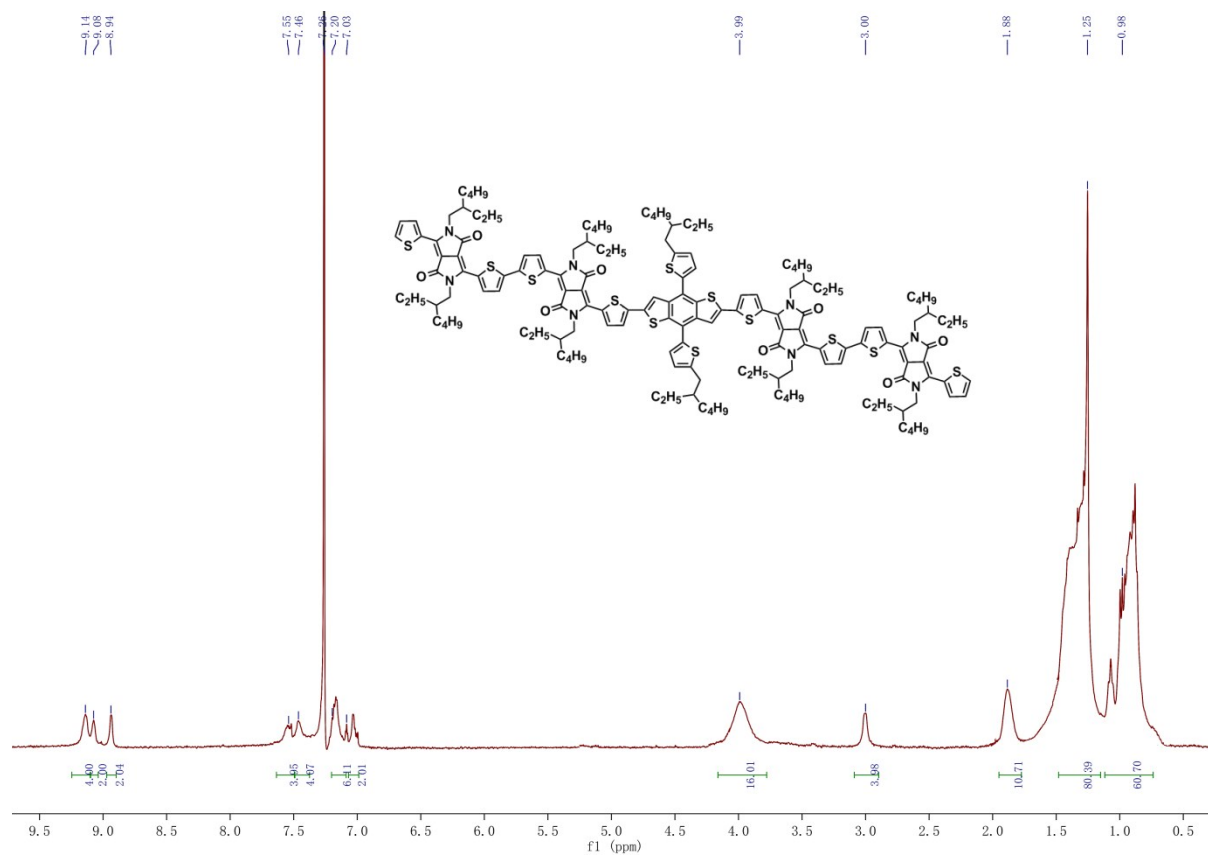
**Fig. S1**  $^1\text{H}$  NMR spectrum of 2DPP-Br.



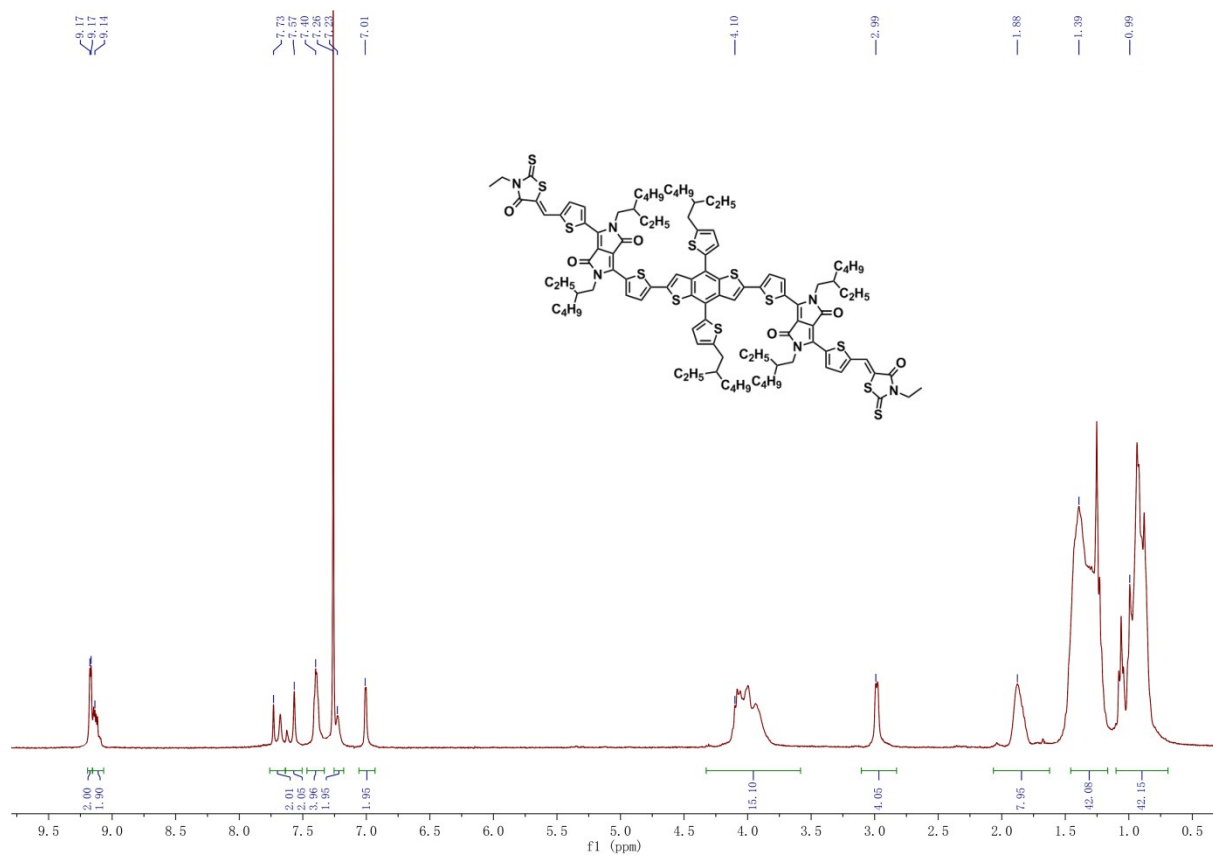
**Fig. S2**  $^1\text{H}$  NMR spectrum of Br-DPP-CHO.



**Fig. S3**  $^1\text{H}$  NMR spectrum of BDT-DPP-CHO.

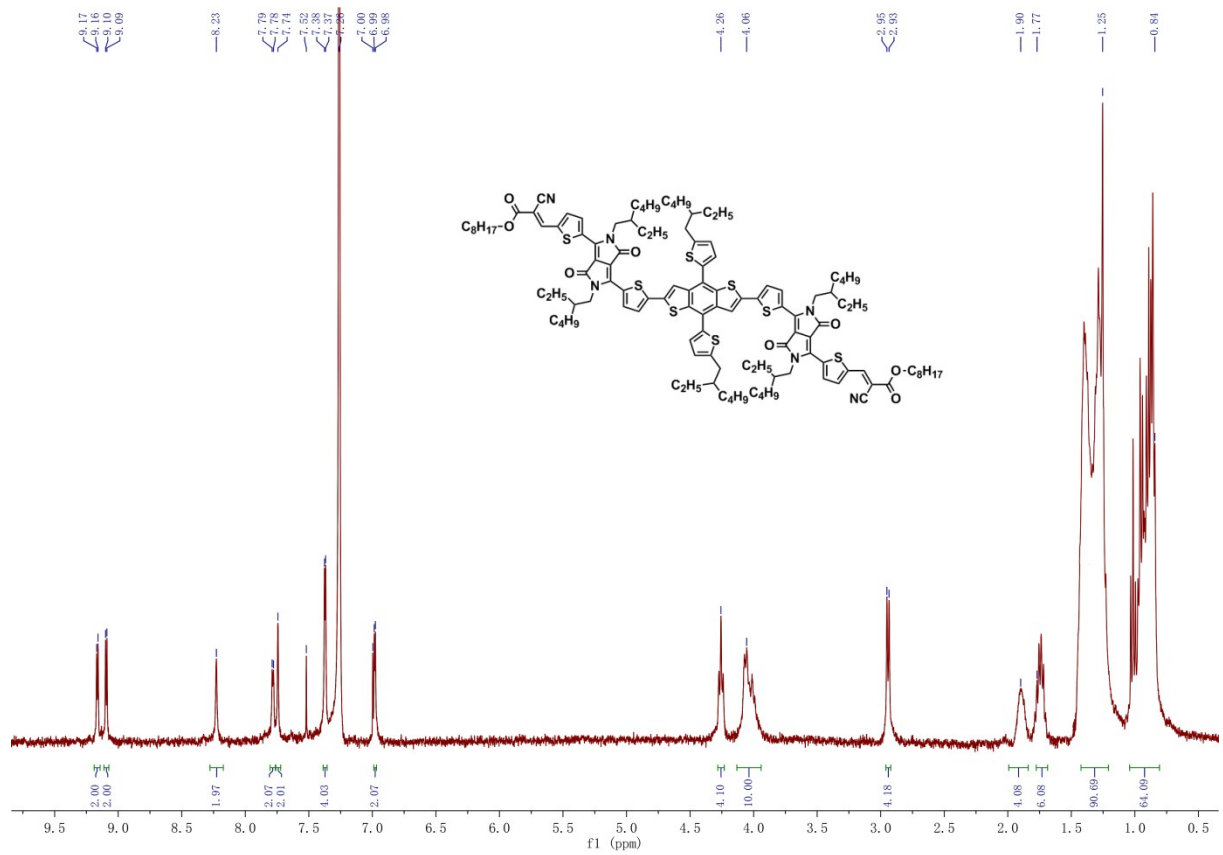


**Fig. S4** <sup>1</sup>H NMR spectrum of BDT-4DPP.



**Fig. S5** <sup>1</sup>H NMR spectrum of BDT-DPP-Rhod.





**Fig. S6** <sup>1</sup>H NMR spectrum of BDT-DPP-CA.