

Supporting Information

Chrysene-based Liquid Crystalline Semiconductor for Organic Thin-Film Transistors

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Table S1 LUMO, HOMO and band gaps of BTBT and chrysene

	BTBT	Chrysene
HOMO (eV)	-5.58	-5.51
LUMO (eV)	-1.26	-1.27
Band gap (eV)	4.32	4.24

Table S2 The hole transfer integrals of BTBT and chrysene

	P	T1	T2
BTBT	0.05998 eV	0.02038 eV	0.02038 eV
Chrysene	0.05152 eV	0.04008 eV	0.04008 eV

Table S3 Summary of the mobility of chrysene derivatives

Structure		Mobility [cm ² V ⁻¹ s ⁻¹]	Ref.	
Ph-CR		Thin film	4.1×10 ⁻²	1
		Single crystal	1.6	2
Nap-CR		Thin film	2.3×10 ⁻²	1
		Single crystal	2.2	2
C ₈ -CR		Thin film	9.4×10 ⁻⁴	1
C ₈ S-CR		Thin film	1.4×10 ⁻³	1
o-8P-28CR		Thin film	-	3
p-8P-28CR		Thin film	5.2×10 ⁻²	
m-5P-28CR		Single crystal	10.2	4
m-6P-28CR			8.1	
m-7P-28CR			11.9	
m-8P-28CR			6.5	
m-9P-28CR			3.6	

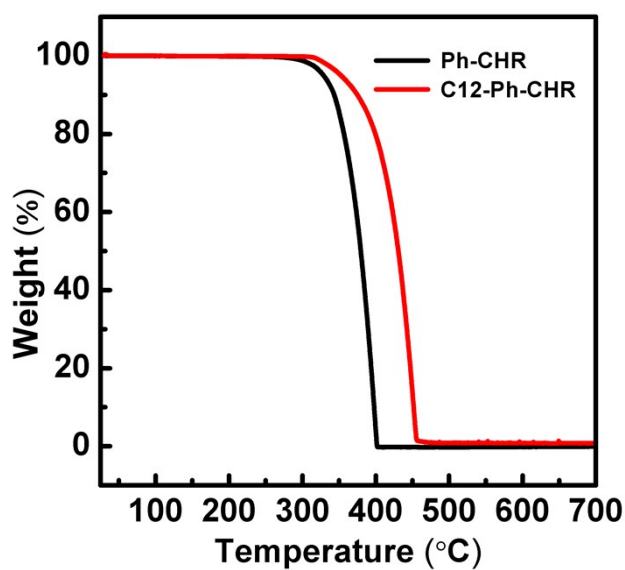


Figure S1 TGA of Ph-CHR and C12-Ph-CHR

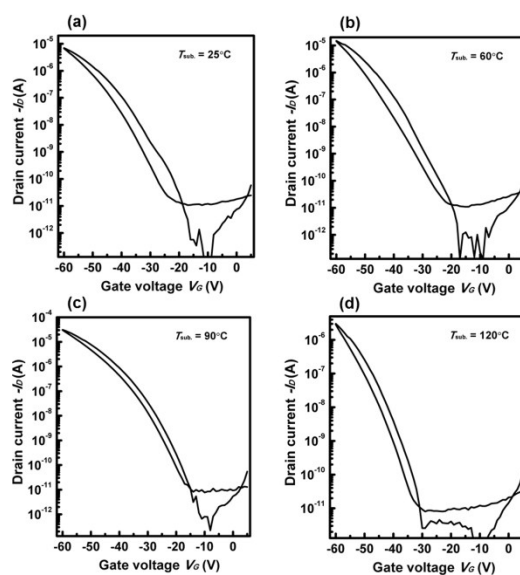


Figure S2 Forward and backward scan in transfer curves of OTFTs of C12-Ph-CHR films deposited at various temperatures.

Due to the HOMO levels of Ph-CHR and C12-Ph-CHR (~ -5.78 eV) not matching well with the work function of gold (5.1 eV), there is hysteresis in the transistor transfer curves.

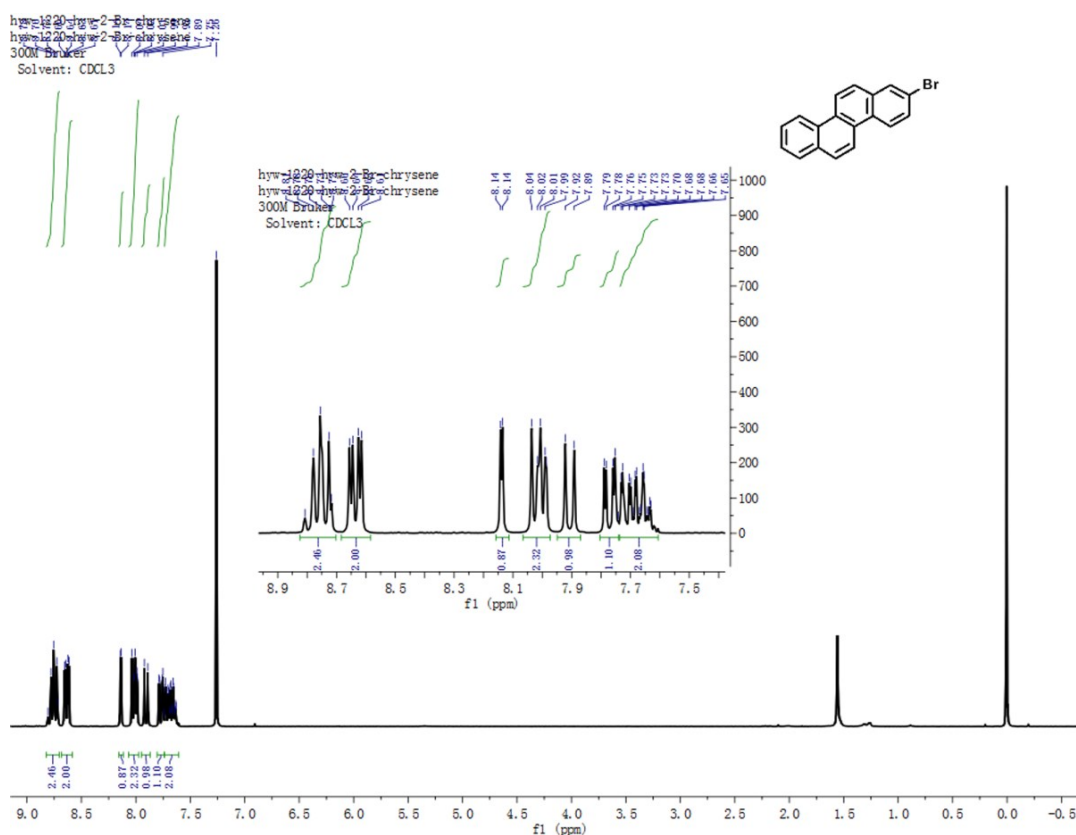
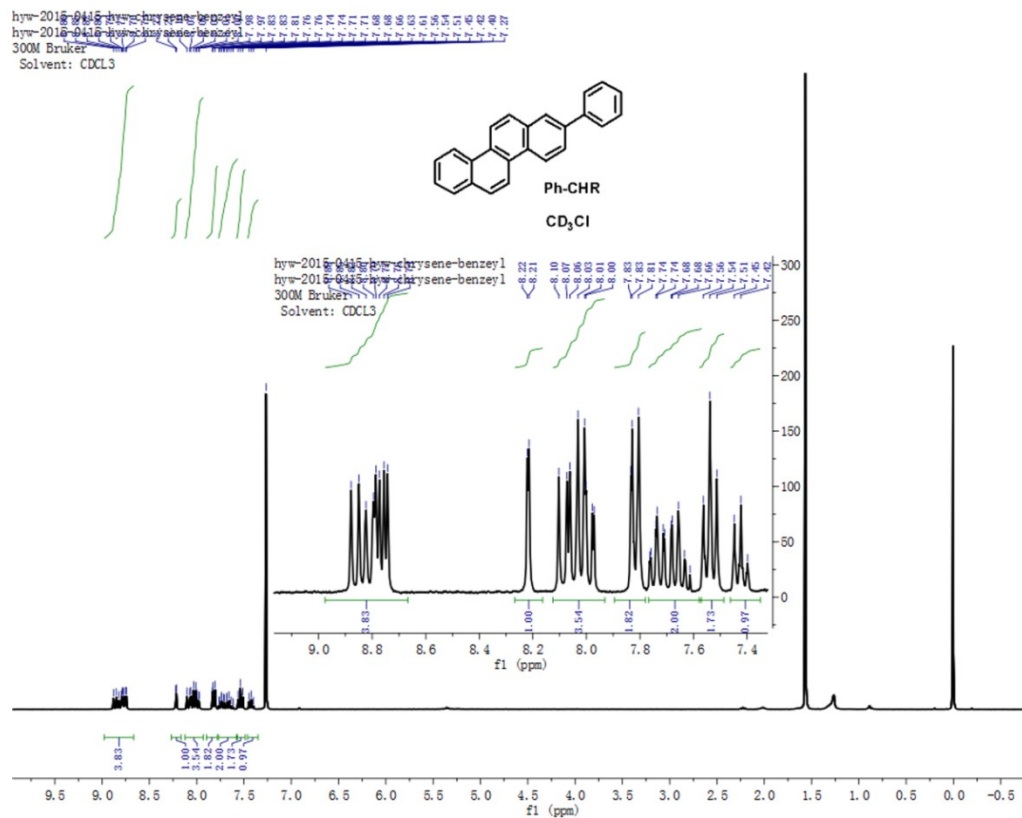
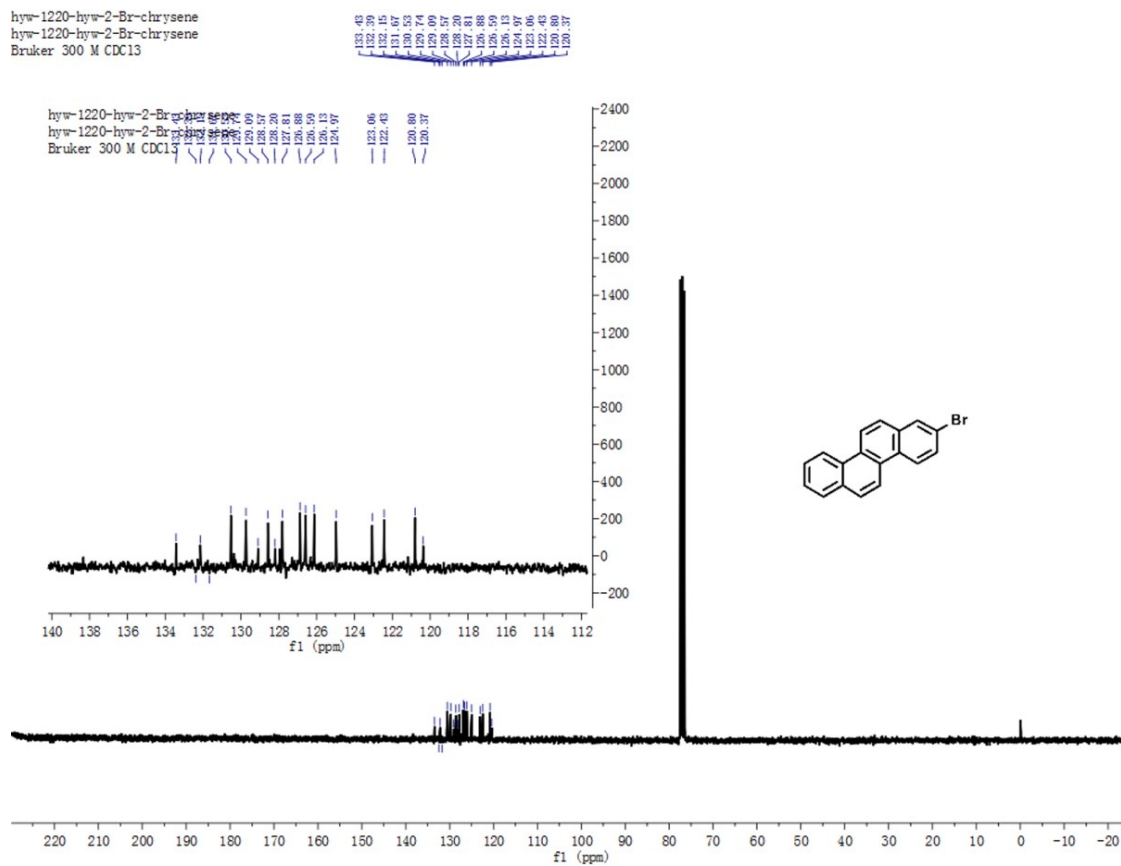


Figure S3 ^1H NMR of 2-bromochrysene



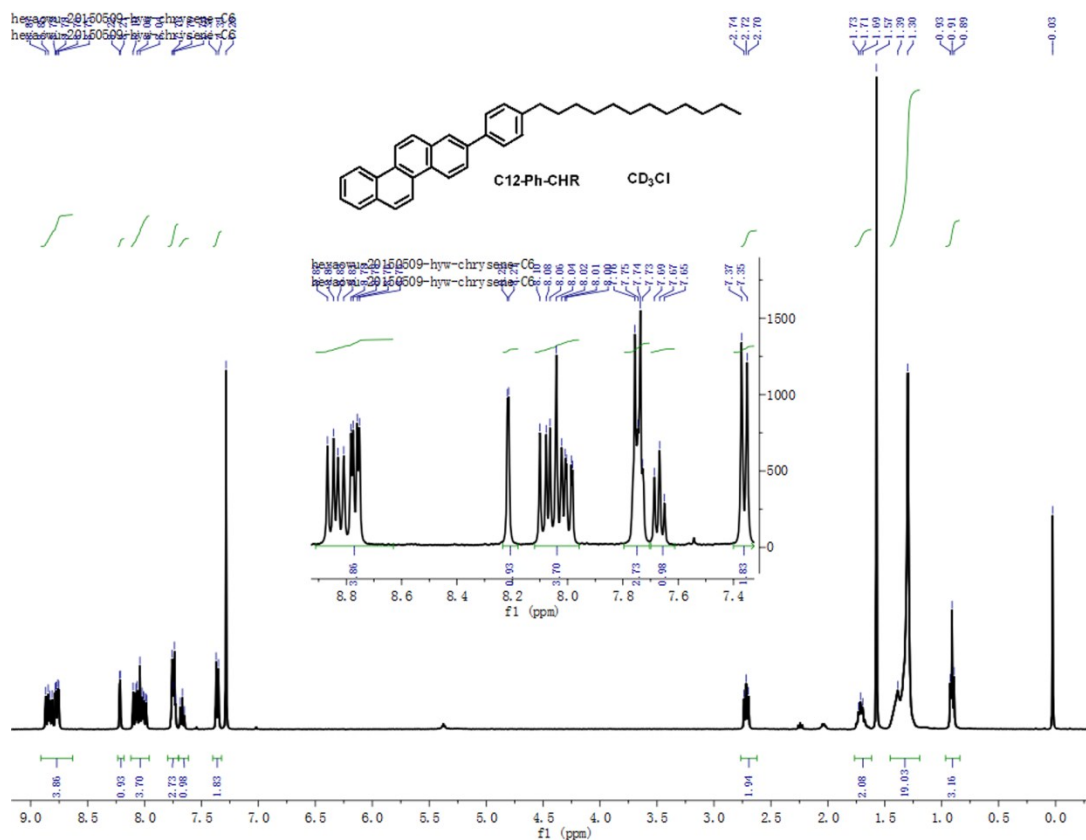


Figure S6 1H NMR of C12-Ph-CHR

References

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