SUPPORTING INFORMATION

Design, Synthesis, and Characterization of α,ω-Disubstituted Indeno[1,2-b]fluorene-6,12-dione-Thiophene Molecular Semiconductors. Enhancement of Ambipolar Charge Transport Through Synthetic Tailoring of Alkyl Substituents.

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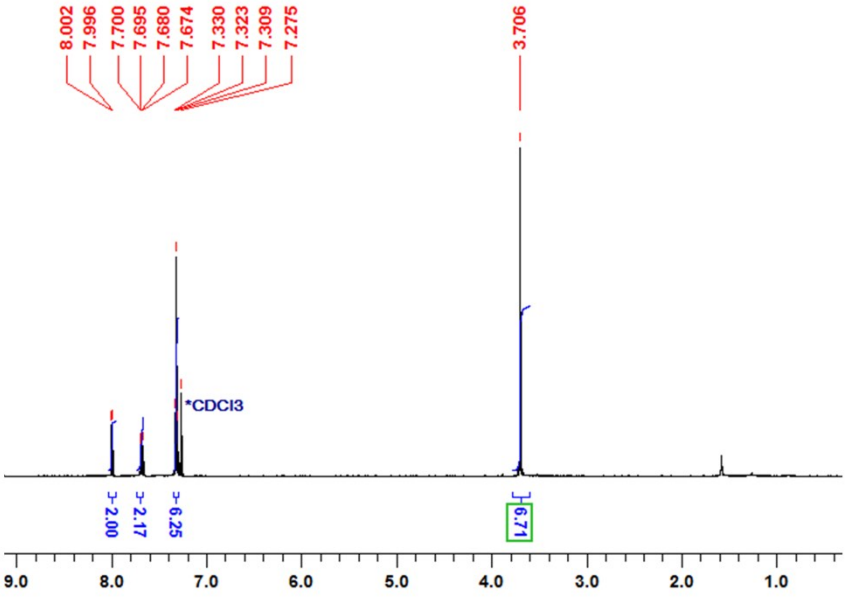

Figure S1. ^{1}H NMR spectra of compound **1** in $CDCl_3$ at room temperature.

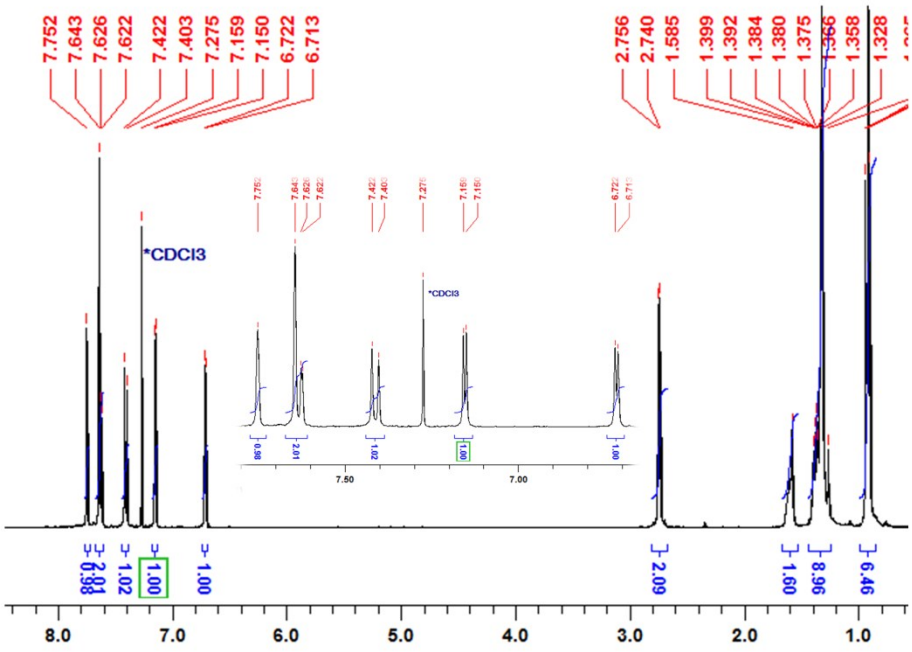

Figure S2. ^{1}H NMR spectra of **2EH-TIFDKT** in $CDCl_3$ at room temperature.

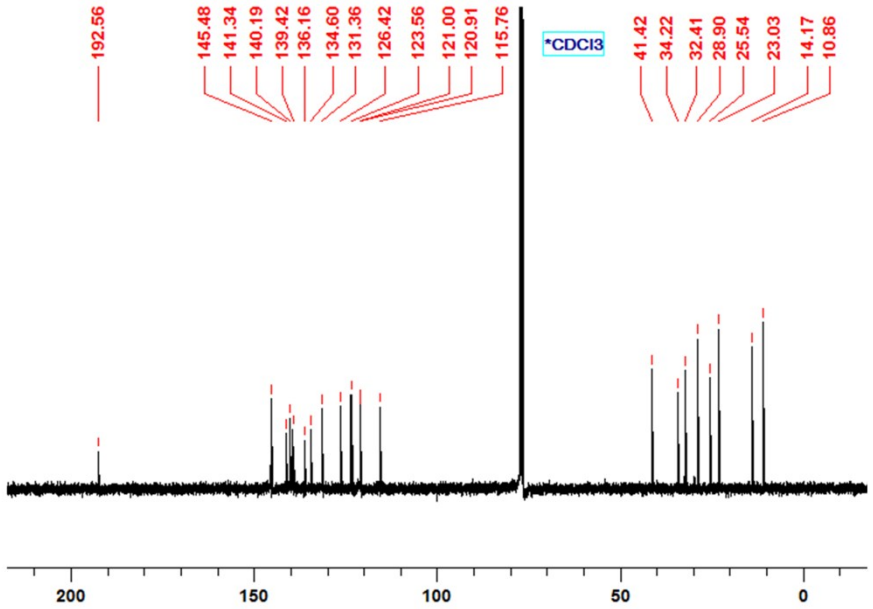

Figure S3. ^{13}C NMR spectra of **2EH-TIFDKT** in $CDCl_3$ at room temperature.

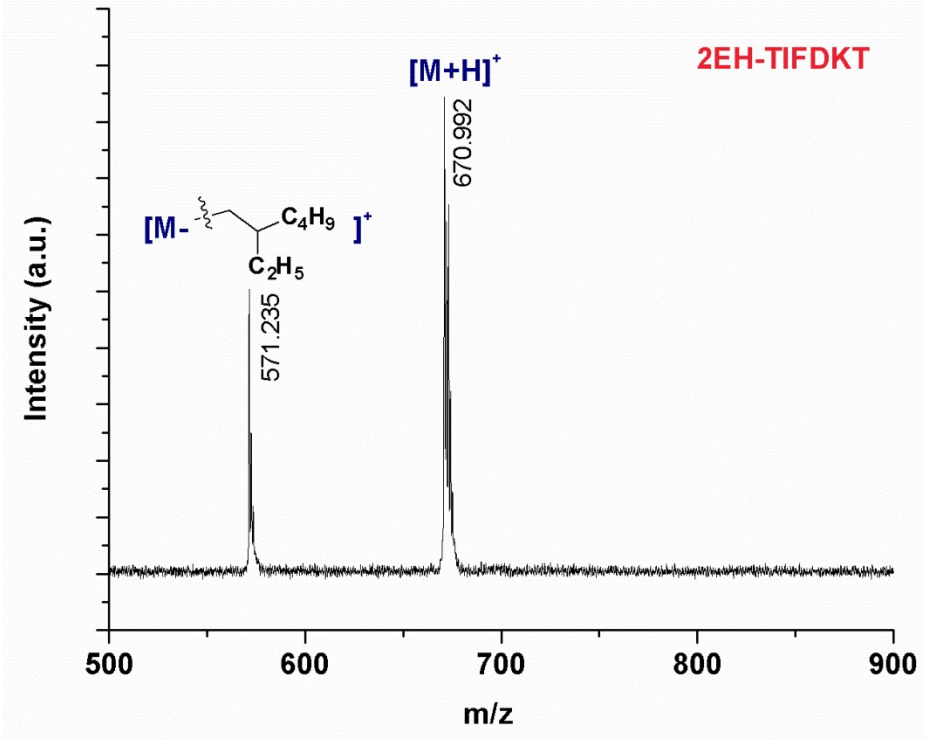

Figure S4. Positive ion and linear mode MALDI TOF-MS spectrum of **2EH-TIFDKT**.

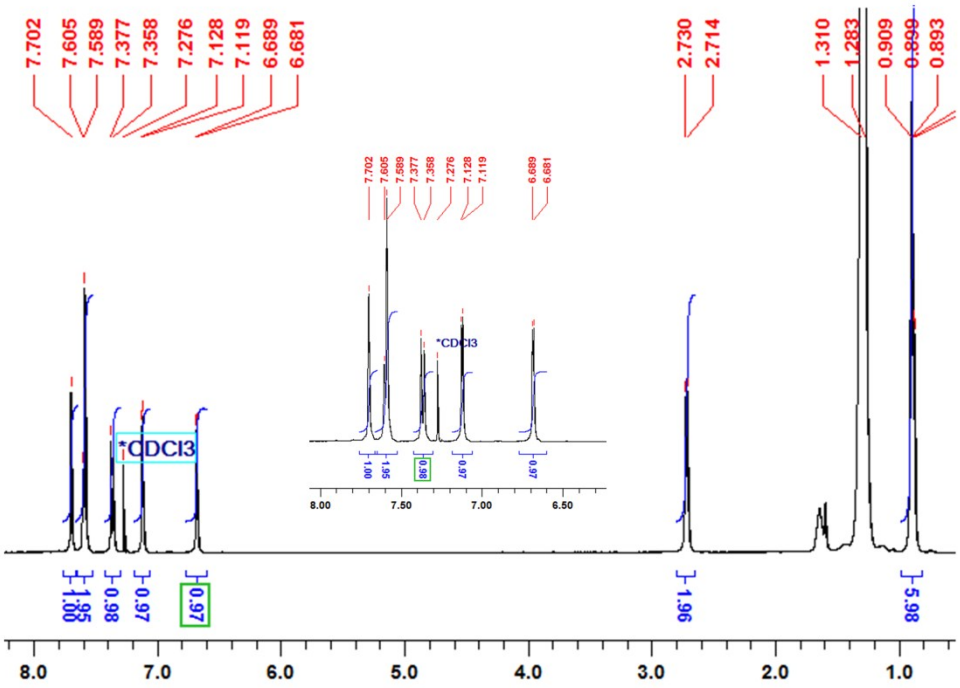

Figure S5. ^{1}H NMR spectra of **2OD-TIFDKT** in $CDCl_3$ at room temperature.

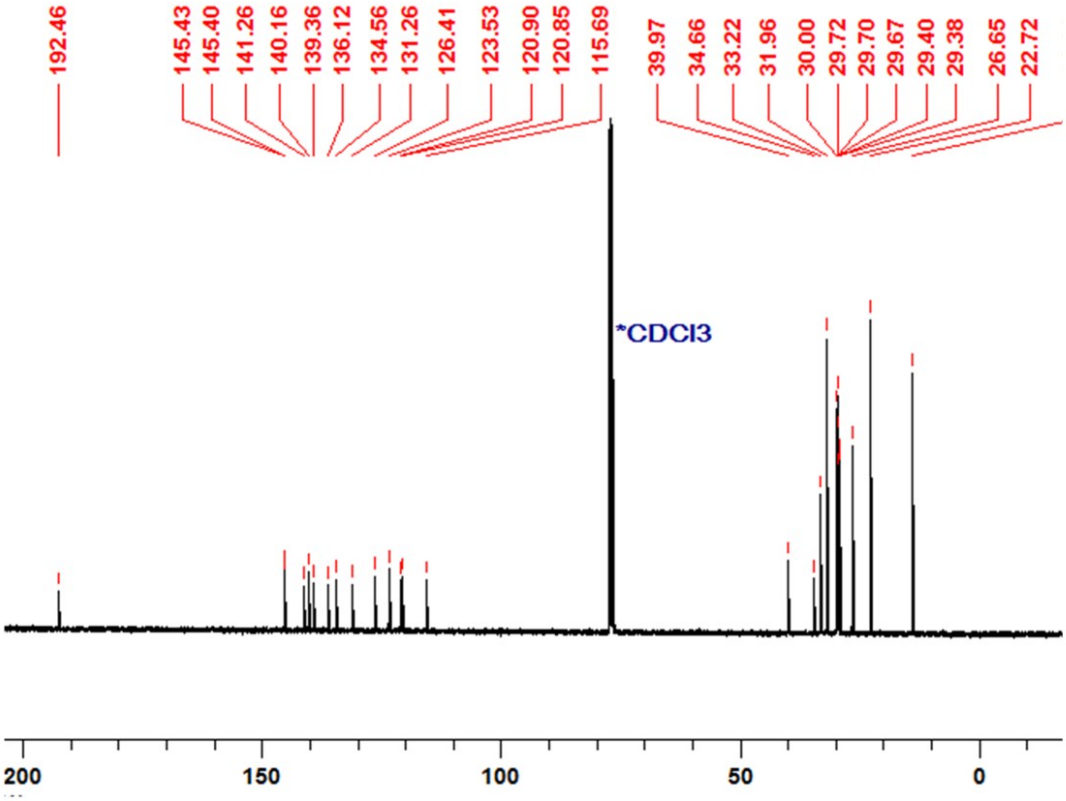

Figure S6. ^{13}C NMR spectra of **2OD-TIFDKT** in $CDCl_3$ at room temperature.

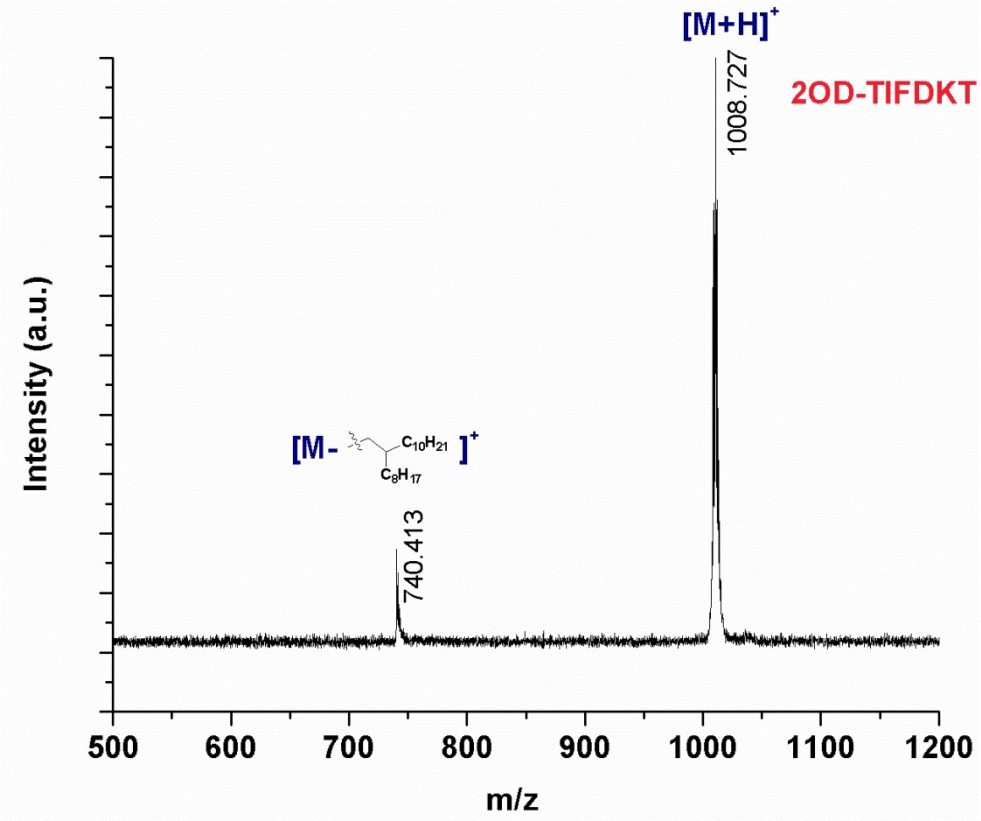

Figure S7. Positive ion and linear mode MALDI TOF-MS spectrum of **2OD-TIFDKT**.

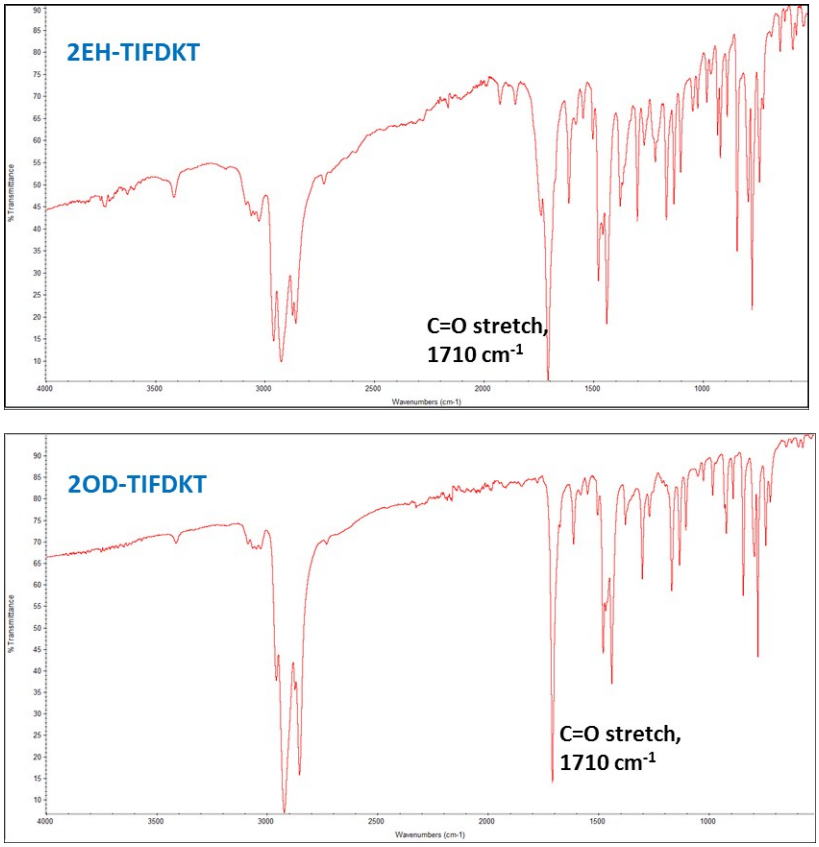

Figure S8. FTIR spectra of **2EH-TIFDKT** and **2OD-TIFDKT**.

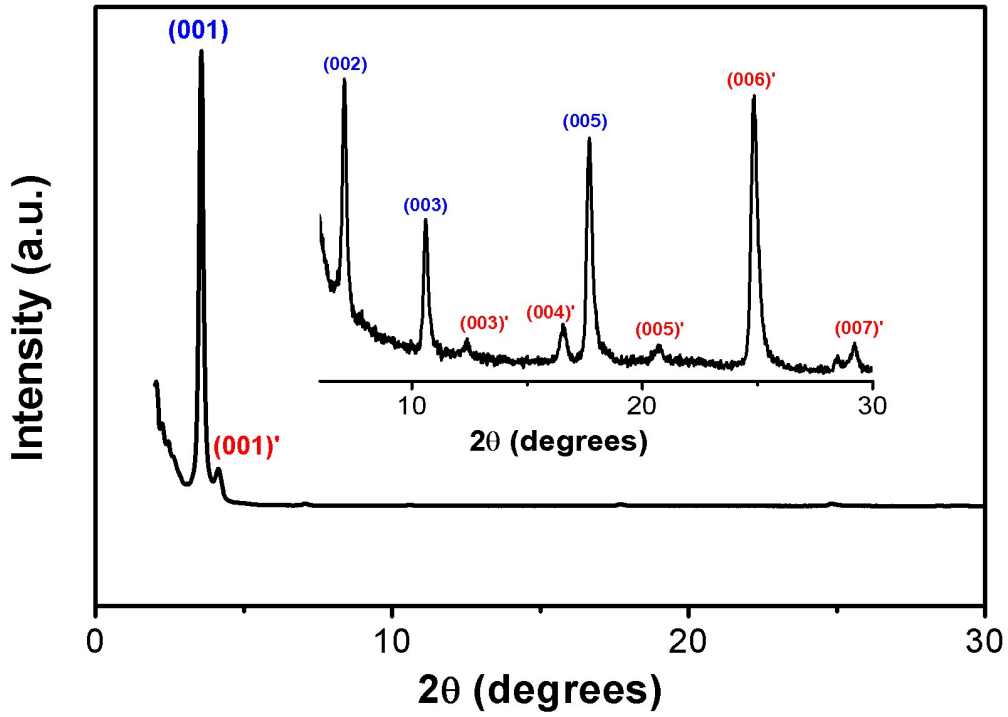

Figure S9. θ-2θ X-ray diffraction (XRD) scans of films fabricated by drop-casting of **2EH-TIFDKT.**

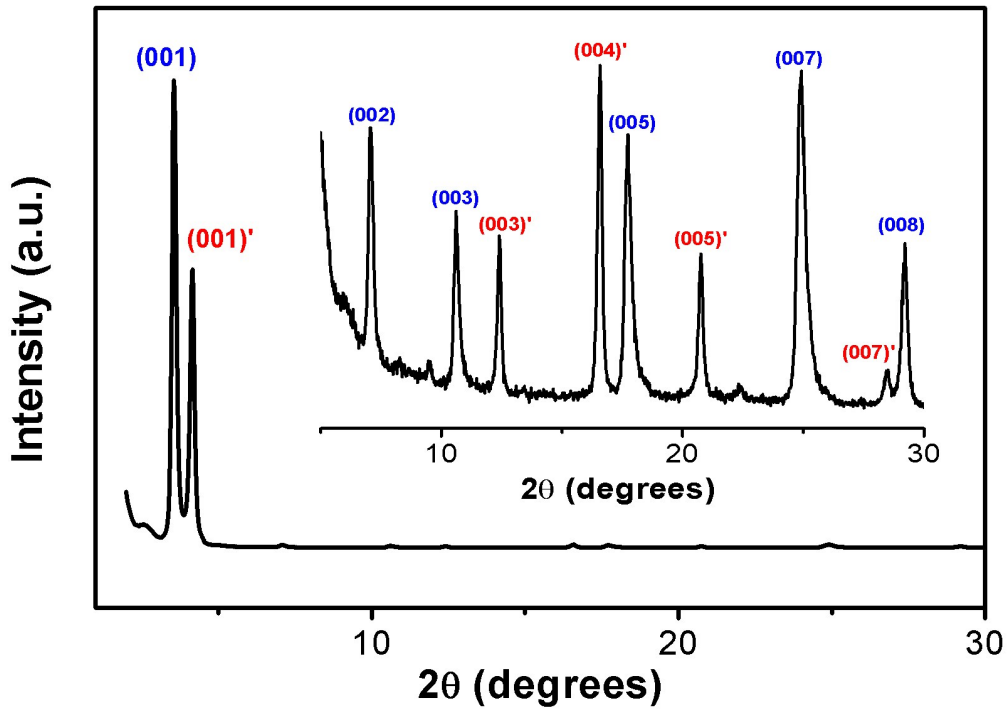

Figure S10. θ-2θ X-ray diffraction (XRD) scans of films fabricated by droplet-pinned crystallization of **2EH-TIFDKT**.

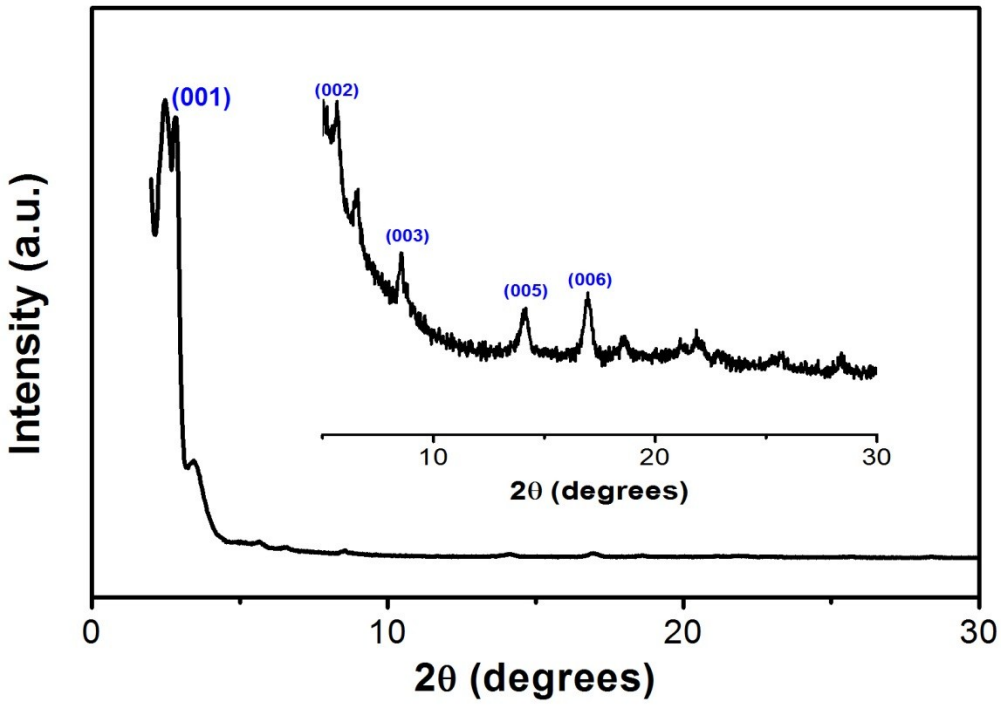

Figure S11. θ-2θ X-ray diffraction (XRD) scans of films fabricated by drop-casting of **2OD-TIFDKT.**

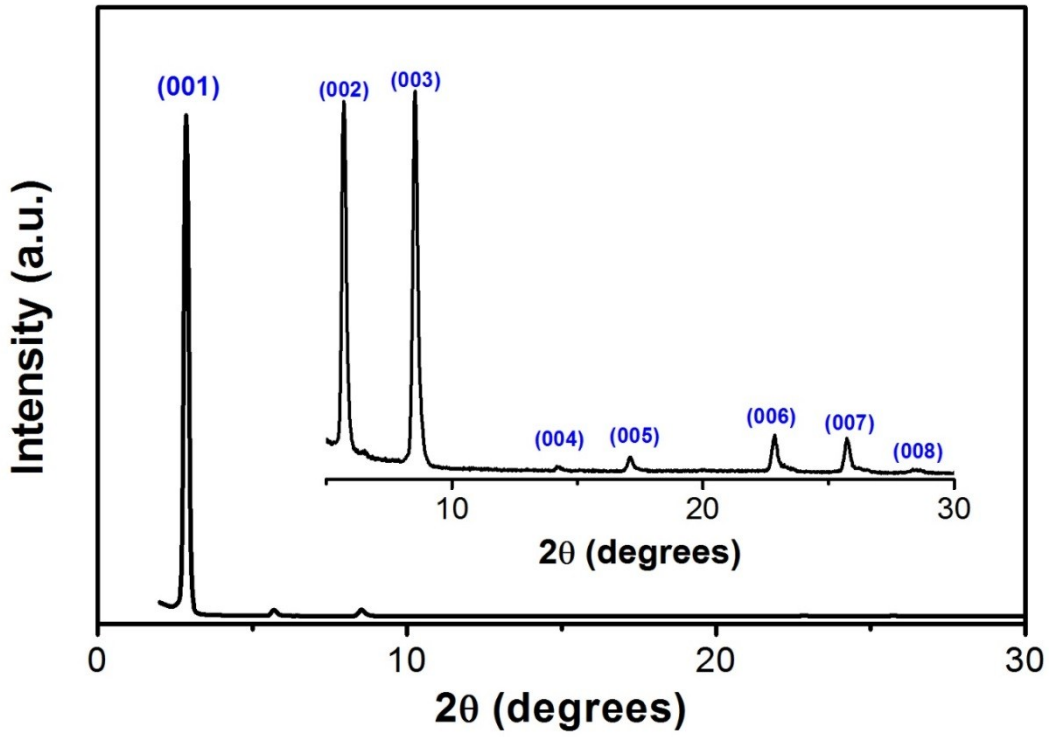

Figure S12. θ-2θ X-ray diffraction (XRD) scans of films fabricated by droplet-pinned crystallization of **2OD-TIFDKT**.

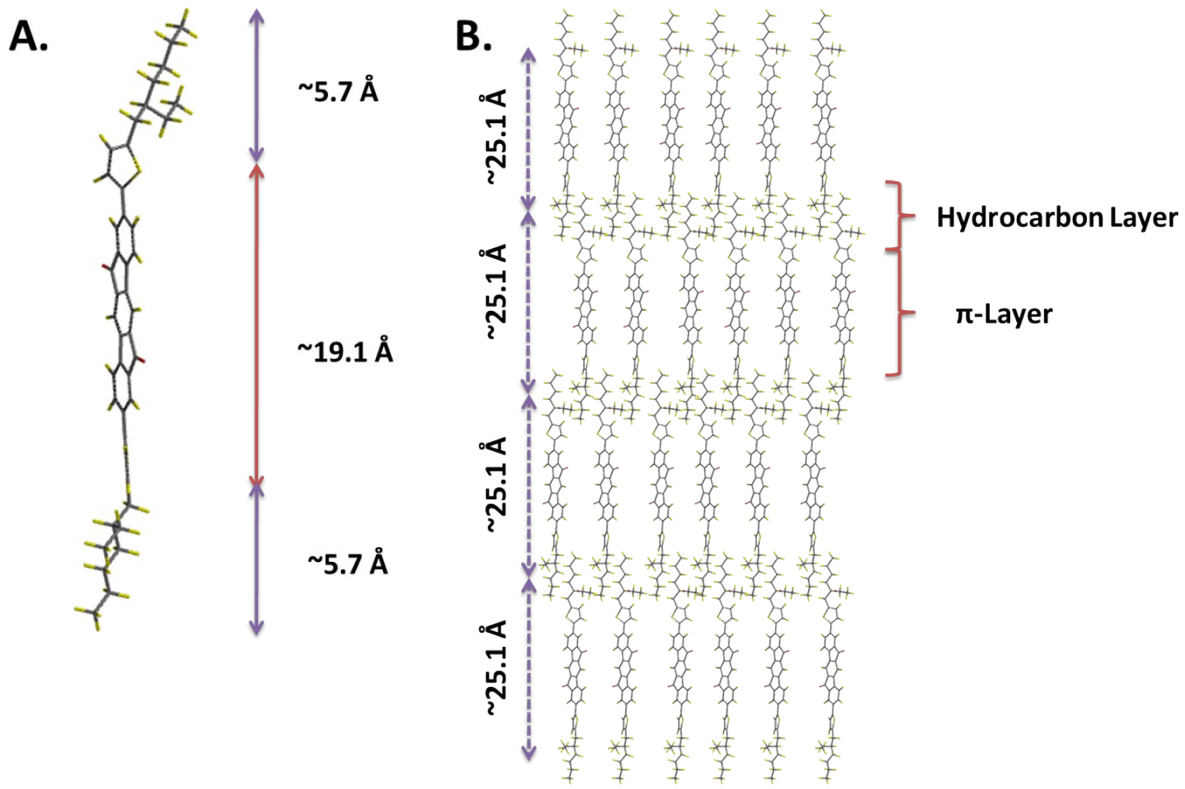

Figure S13. A. The computed molecular dimensions, and B. Proposed thin-film phase packing motif for **2EH-TIFDKT**.

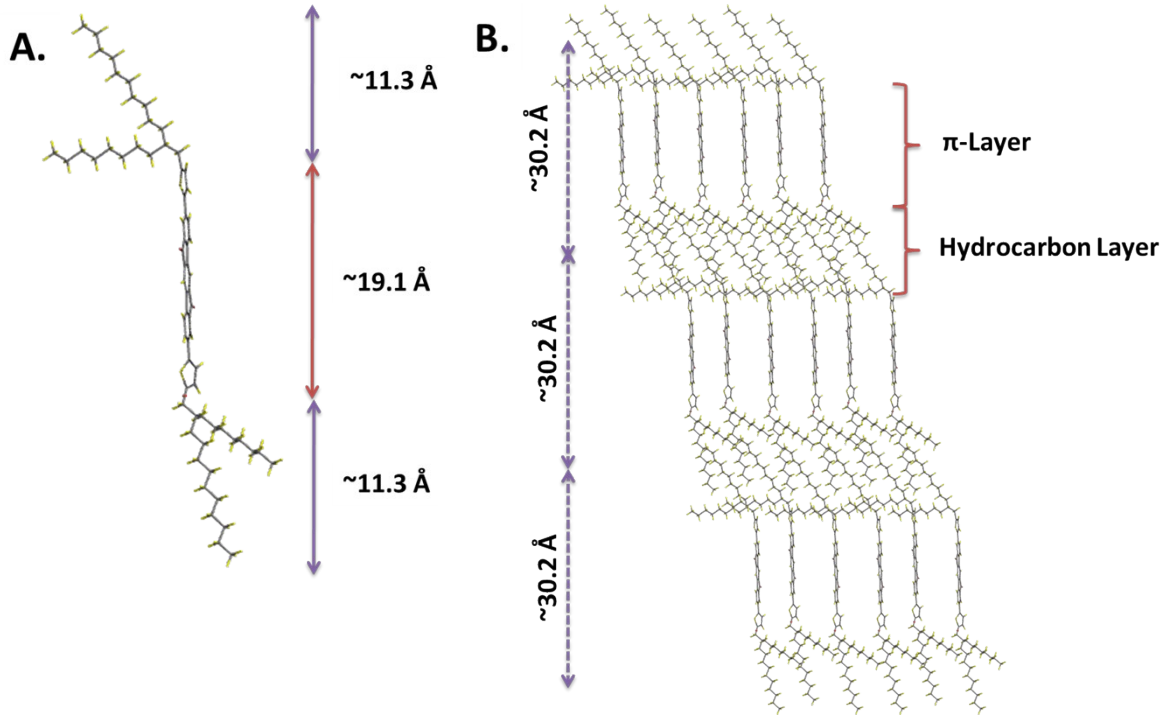

Figure S14. A. The computed molecular dimensions, and B. Proposed thin-film phase packing motif for **2OD-TIFDKT**.

Table S1. Electrical performances of OTFTs based on Indeno[1,2-b]fluorene-6,12-dione-thiophene derivatives, **2EH-TIFDKT** and **2OD-TIFDKT** measured under ambient condition.

Material	Method	N-channel			P-channel		
		μ_e (cm^2/Vs)	V_T (V)	I_{on}/I_{off}	μ_h (cm^2/Vs)	V_T (V)	I_{on}/I_{off}
2EH-TIFDKT	DC	-	-	-	2.7×10^{-4}	-33	6.3×10^{6}
	DPC	-	-	-	1.6×10^{-4}	-38	2.6×10^{4}
	SS	-	-	-	2.2×10^{-3}	2.8	4.8×10^{2}
2OD-TIFDKT	DC	-	-	-	2.9×10^{-4}	-12	2.0×10^{5}
	DPC	-	-	-	8.0×10^{-4}	-14	8.1×10^{2}
	SS	-	-	-	5.4×10^{-4}	-9.7	5.2×10^{4}

Supplementary crystallographic material.

CCDC 1420110 (for **Compound 2** (***IFDK-BR2)***) contains the supplementary crystallographic data for this paper. These data can be obtained free of charge from The Cambridge Crystallographic Data Centre via www.ccdc.cam.ac.uk/data_request/cif.

Table S2. Crystal data and refinement parameters for ***IFDK-BR2***.

Empirical Formula	$C_{20}H_8Br_2O_2$
Formula weight (g. mol^{-1})	440.08
Temperature (K)	300.(2)
Wavelength (Å)	0.71073
Crystal system	Monoclinic
Space group	$P\ 2_1/c$
a (Å)	3.8828(3)
b (Å)	13.5879(11)
c (Å)	14.1314(13)
α(°)	90
β(°)	95.032(6)
γ(°)	90
Crystal size (mm)	0.139 x 0.146 x 0.525
V (Å3)	742.69(11)
Z	2
ρcalcd (g. cm^{-3})	1.968
μ (mm^{-1})	5.467
F(000)	428

θ range for data collection (°)	3.00-25.68
h/k/l	-4/4, -15/16, -15/17
Reflections collected	5701
Independent reflections	1408 [R(int) = 0.0764]
Absorption correction	Multi-scan
Data/restraints/parameters	1408 / 0 / 109
Goodness-of-fit on F^2	1.009
Final R indices [I > 2σ(I)]	R_1= 0.0454, wR_2= 0.1093
R indices (all data)	R_1= 0.0566, wR_2= 0.1159
Largest diff. peak and hole (e.Å^{-3})	0.771 and -0.702