



2D-NFA / 19+% PCE

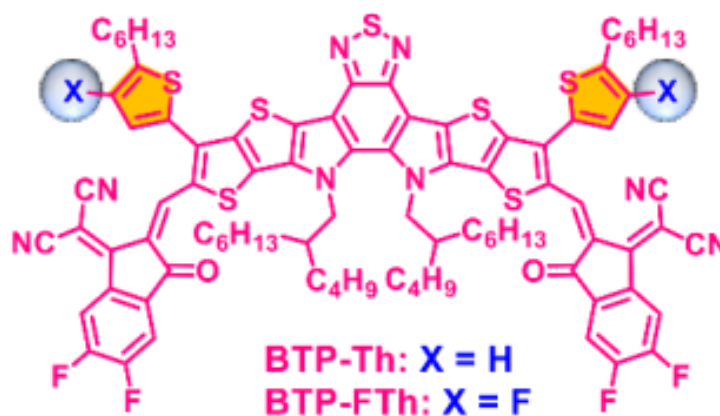
1-Material Inc

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Organic Nano Electronic(ONE=1) Materials for these who understand

Technical Data Sheet

2D-NFA: BTP-Th, BTP-FTh, Custom Made for Laboratory Research
Application: Two-dimensional conjugated Non-Fullerene Acceptor (NFA)
Remark: PCE =19.05% / Single junction polymer solar cell
Chemical Structure:



Specification	BTP-Th	BTP-FTh
Molecular Formulae	C ₈₈ H ₈₄ F ₆ N ₈ O ₂ S ₇	C ₈₈ H ₈₄ F ₆ N ₈ O ₂ S ₇
Appearance	Dark solid	Dark solid
Purity	99+%	99+%
1M code	OS1586	OS1623
Availability	Custom made	Custom made

Reference: DOI: 10.1002/adma.202109516

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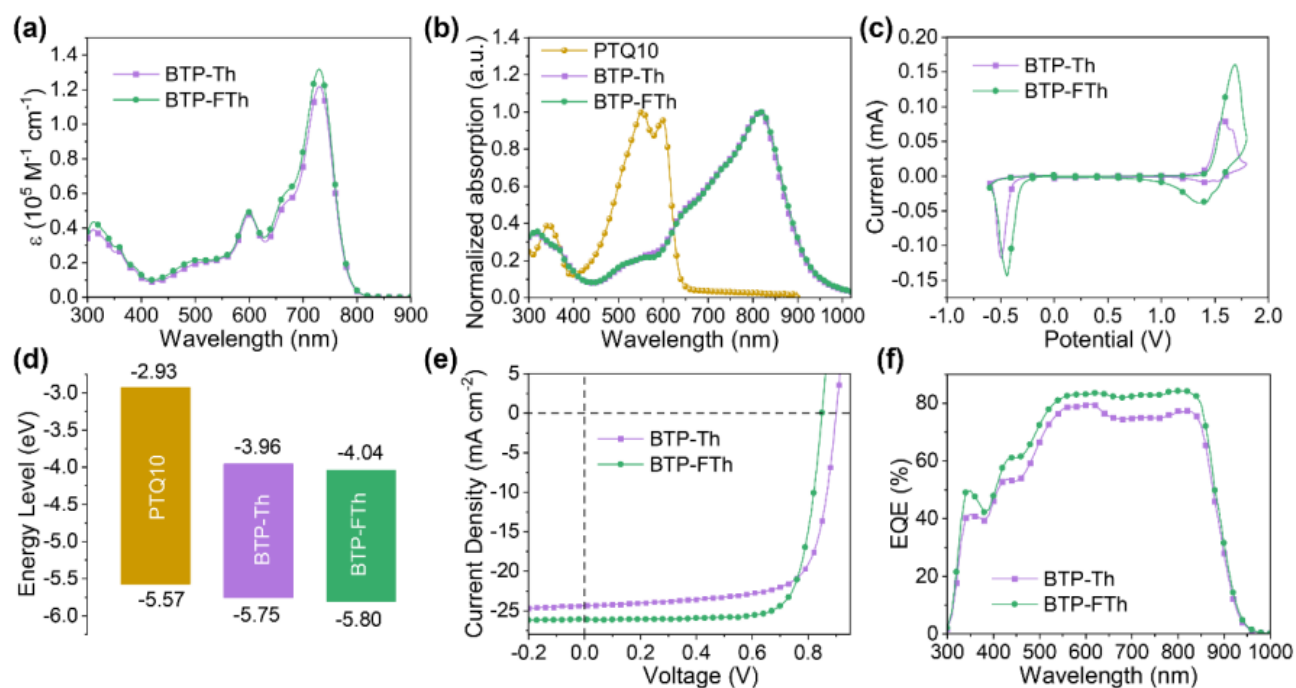
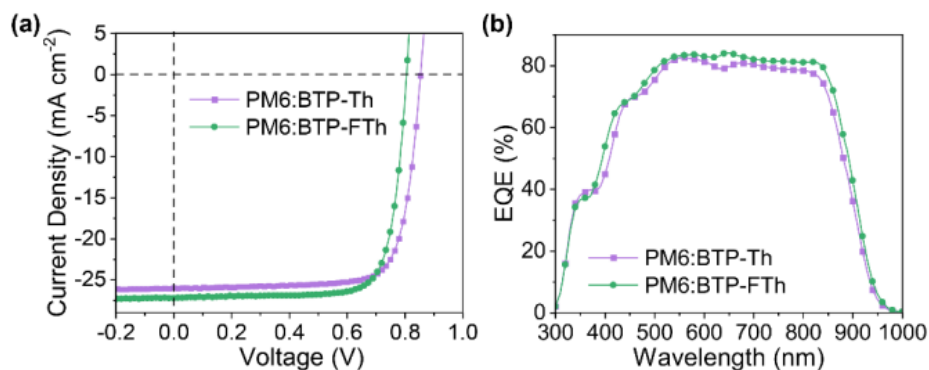


Figure 1. (a) Molar extinction coefficient profiles of the NFAs in chloroform solution. (b) Normalized UV-vis-NIR absorption spectra of the donor and acceptor materials. (c) Cyclic voltammetry (CV) curves of the NFA films. (d) Energy level diagram of the donor and acceptor materials. (e) $J-V$ curves of the PSCs using PTQ10 donor and the newly developed acceptors. (f) EQE spectra of the PSCs using PTQ10 donor and the newly developed acceptors.

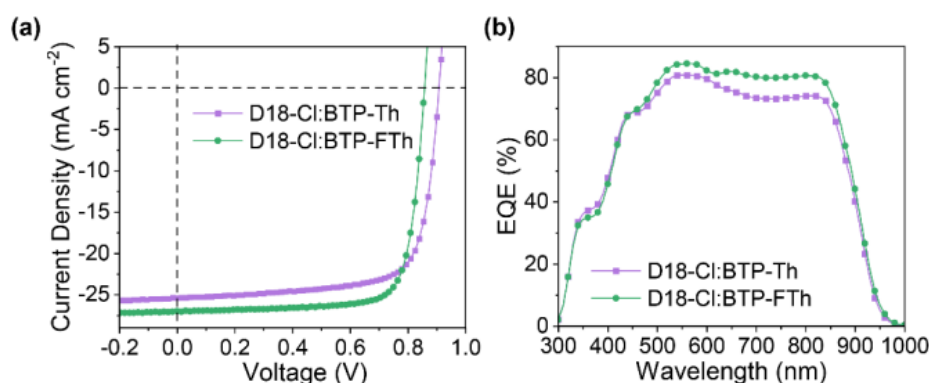
Acceptor(s)	V_{oc} [V]	J_{sc} [mA cm^{-2}]	FF [%]	PCE [%]
PM6:BTP-eC9	0.86	26.51	79.22	18.05
D18:Y6	0.859	27.70	76.6	18.22
PM6:L8-BO	0.89	26.11	80.60	18.74
PTQ10:m-BTP-PhC6:PC ₇₁ BM	0.869	26.99	80.6	18.89
PTQ10:BTP-FTh:IDIC	0.867	26.97	78.6	18.39
PTQ10:BTP-FTh:IDIC	0.870	27.17	80.6	19.05

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(a) $J-V$ curves and (b) EQE spectra of PSCs based on PM6 donor.



(a) $J-V$ curves and (b) EQE spectra of PSCs based on D18-Cl donor.

Photovoltaic parameters of the PSCs using PM6 or D18-Cl as the electron donor.

Blend	V_{oc} [V]	J_{sc} [mA cm^{-2}]	$J_{EQE}^{a)}$ [mA cm^{-2}]	FF [%]	PCE [%]
PM6:BTP-Th	0.854	26.01	25.21	77.0	17.10
PM6:BTP-FTh	0.807	27.23	25.95	78.1	17.16
D18-Cl:BTP-Th	0.907	25.41	23.15	74.0	17.05
D18-Cl:BTP-FTh	0.858	27.00	26.03	78.2	18.11

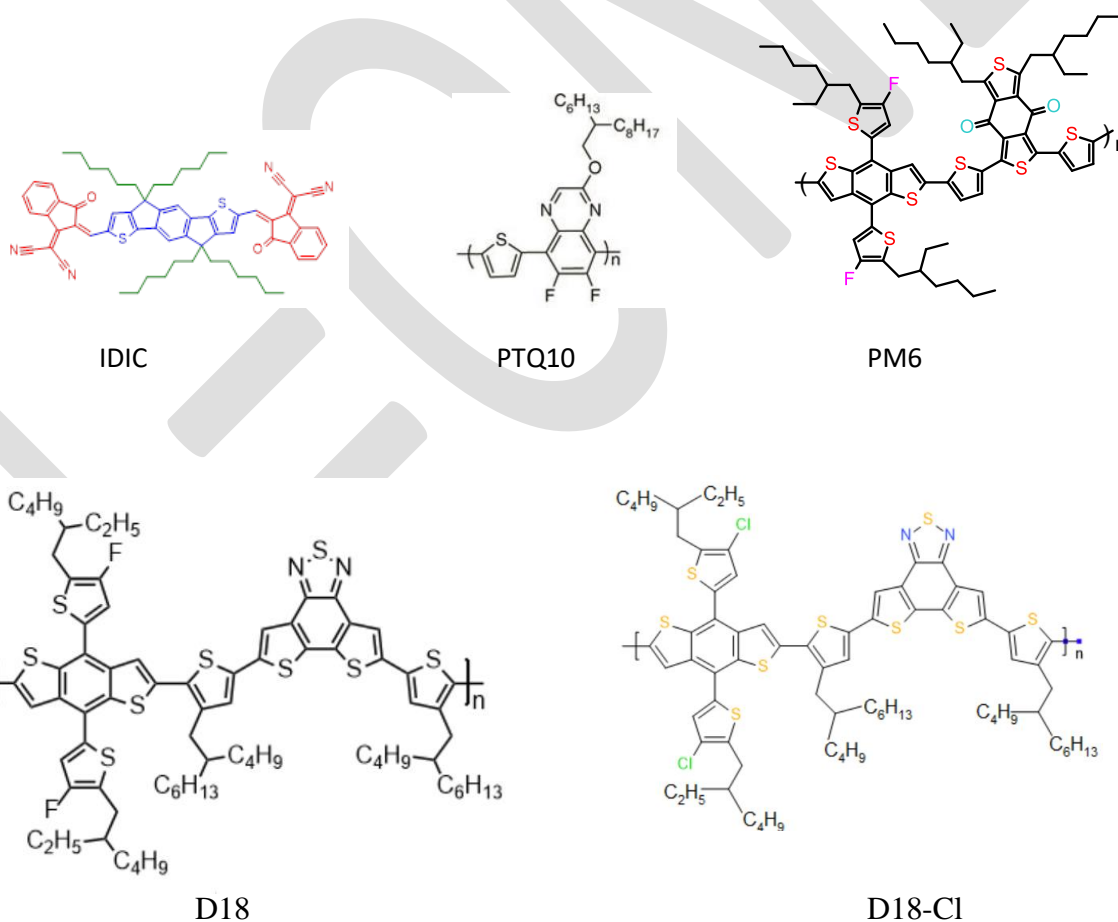
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Selected Materials

Common name	1M code	CAS No.
PTQ10	OS0127	2270233-86-6
PM6, PBDB-T-2F	OS0135, PCE135	1802013-83-7
D18, PBDBT2F-DTBT	PCE18	2433725-54-1
D18-Cl, PBDBTCl-DTBT	PCE18-Cl	n.a.; $(C_7H_{92}Cl_2N_2S_7)_n$
IDIC	OS0926	1883441-92-6

Structure:



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