

Supplementary Information for

A Hydrophilic Monodisperse Conjugated Starburst Macromolecule with Multidimensional Topology as Electron Transport/Injection Layer for Organic Electronics

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1.1 Optical properties of TrOH in various solvents.

Table S1. Optical properties of TrOH in various solvents.

Compound	$\lambda_{(\text{abs})}^a$ (nm)						$\lambda_{(\text{em})}^b$ (nm)					
	THF	DMSO	DMF	EtOH	MeOH	Film	THF	DMSO	DMF	EtOH	MeOH	Film
TrOH	364	368	365	360	359	368	404, 427	409, 431	407, 429	402, 424	402, 424	414, 434

^a Absorption peak. ^b Emission peak.

1.2 Device performance with TrOH/Al as cathode

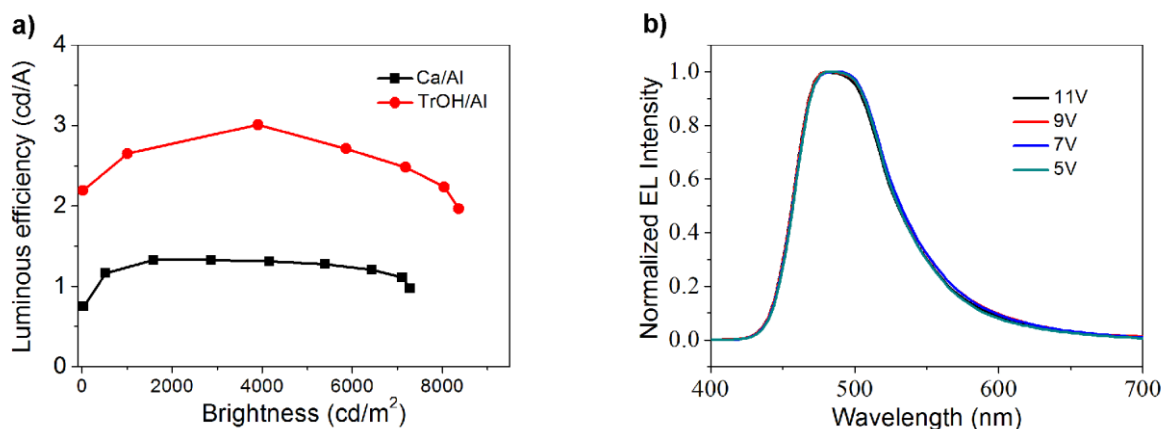


Fig. S1 a) Current efficiency vs. brightness; b) EL spectra of the devices with TrOH/Al at varying

driving voltages.

1.3 Device performance with TrOH/Ag as cathode

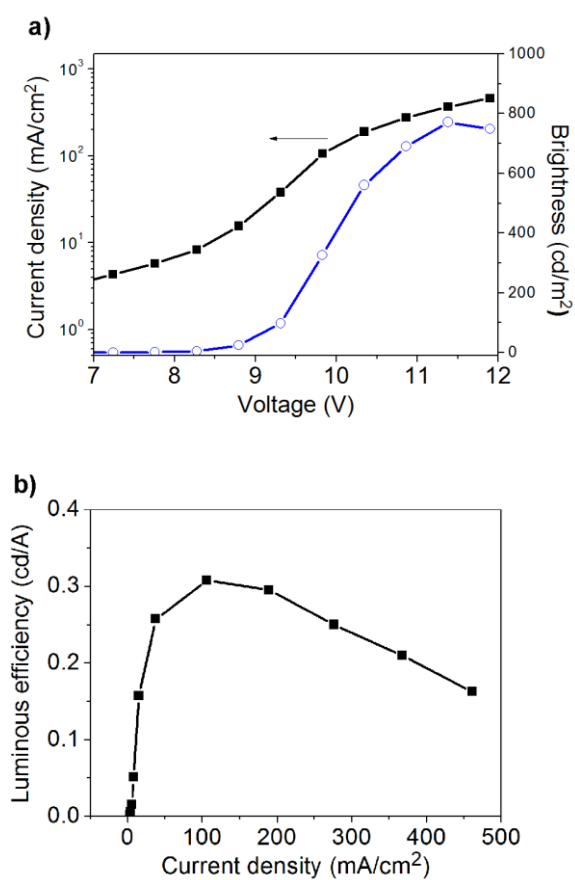


Fig. S2 Device performance of ITO/PEDOT:PSS/F3Py/TrOH/Ag: a) Current density and brightness vs. voltage; b) luminous efficiency vs. current density.

Table S2 Device performance of ITO/PEDOT:PSS/F3Py/TrOH/Ag

Cathode	V_{on}^{a} (V)	Luminance (max) (cd m ⁻²)	LE_{max} (cd A ⁻¹)
TrOH/Ag	7.7	771	0.31

^aTurn-on voltage at a brightness of 1 cd m⁻²

1.4 Device performance of TrOH as ETL in comparison with those of its polymer counterpart PFN-OH with varying batches and small-molecule counterpart DIFN-OH

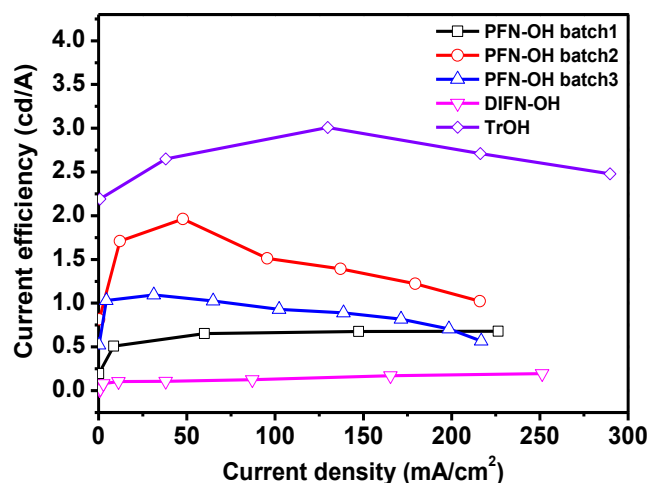


Fig. S3 Device performance with configuration of ITO/PEDOT:PSS/F3Py/ PFN-OH (from different batch), or DIFN-OH, or TrOH/Al

Table S3. Device performance with configuration of ITO/PEDOT:PSS/F3Py/ PFN-OH (from different batch), or DIFN-OH, or TrOH/Al

	Mn (g/mol)	Mw (g/mol)	PDI	V _{on} (V)	LE _{max} (cd/A)	L _{max} (cd/m ²)
PFN-OH Batch 1	17900	63300	3.54	3.1	0.68 (at 5.2 V)	2636 (at 8.3 V)
PFN-OH Batch 2	18000	32300	1.80	3.1	1.96 (at 5.2 V)	2208 (at 7.2 V)
PFN-OH Batch 3	14400	44800	3.11	3.2	1.10 (at 5.2 V)	1399 (at 7.2 V)
DIFN-OH	1078.8	1079.5	1.00	3.8	0.33 (at 7.7V)	2210 (at 8.3 V)
TrOH	3908.8	3911.6	1.00	3.6	3.01 (at 6.2 V)	8360 (at 7.2 V)

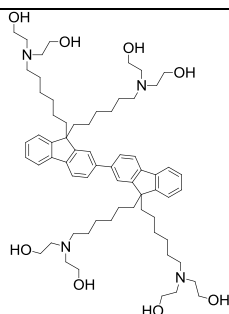


Fig. S4 Structure of DIFN-OH

1.5 Film morphology

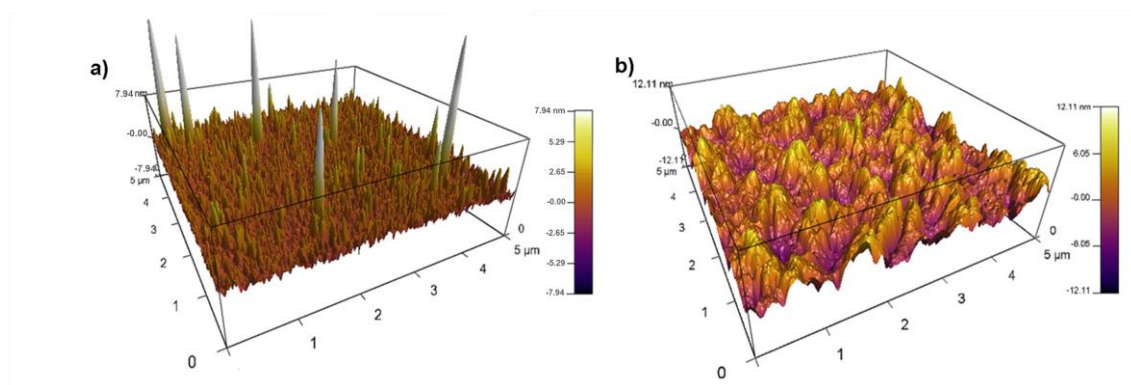


Fig. S5 3D atomic force microscopy (AFM) image of (a)PFN-OH atop F3Py/PEDOT:PSS/ITO (b)TrOH atop F3Py/PEDOT:PSS/ITO. The size of the image is $5\ \mu\text{m} \times 5\ \mu\text{m}$.

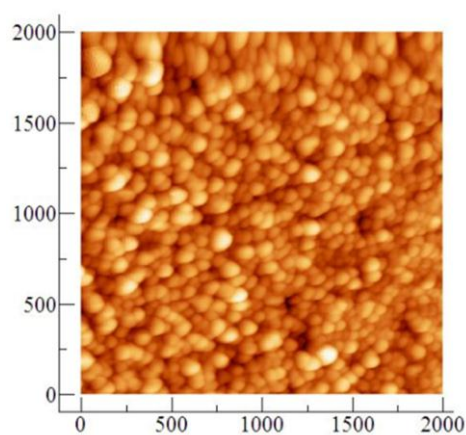


Fig. S6 Atomic force microscopy (AFM) image image TrOH atop ITO. The size of the image is $2\ \mu\text{m} \times 2\ \mu\text{m}$.

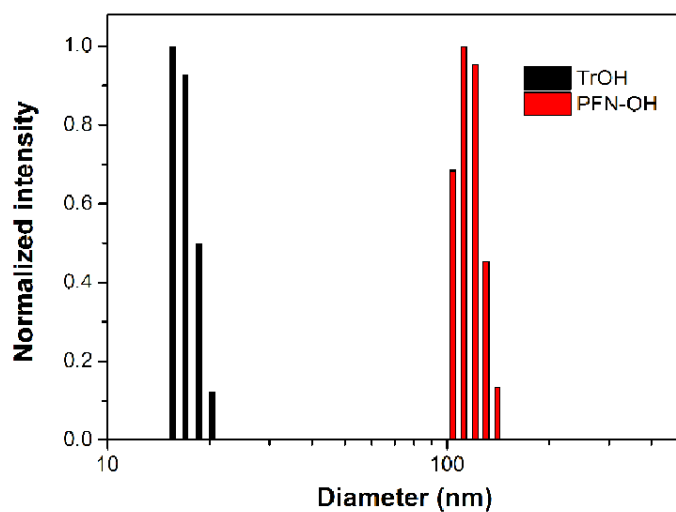


Fig. S7 Dynamic light scattering (DLS) of PFN-OH (0.2 mg/mL) and TrOH (3 mg/mL) in ethanol
1.5 NMR and Mass spectra

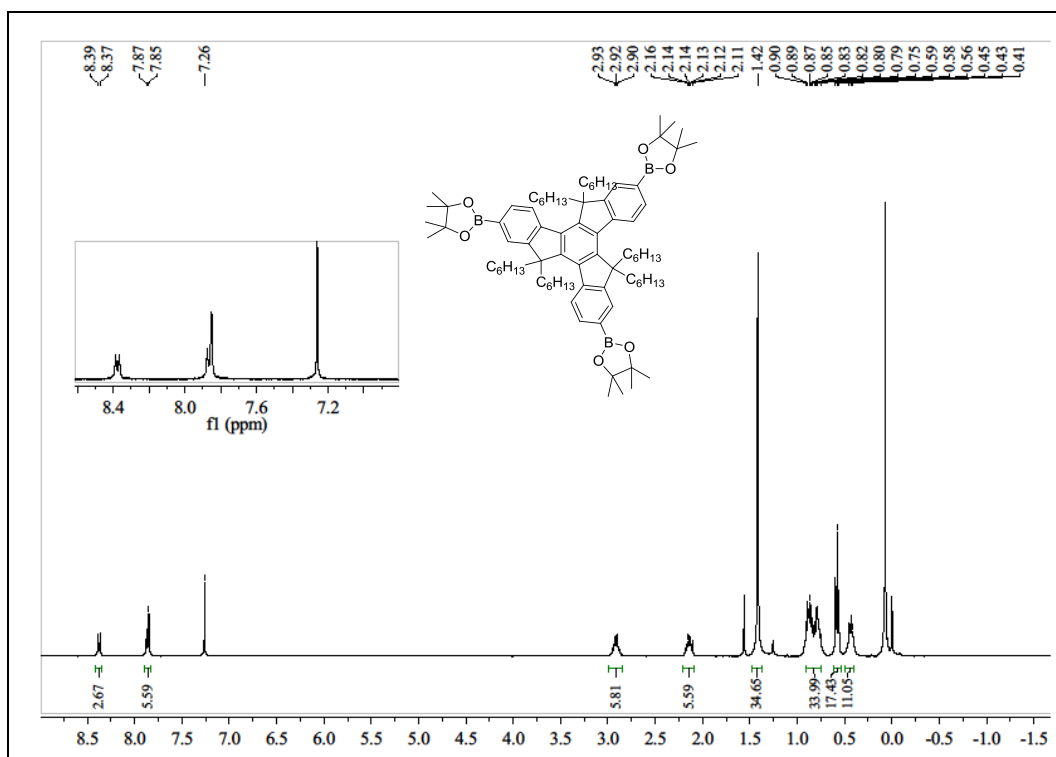


Fig. S8 ^1H NMR spectra of 6.

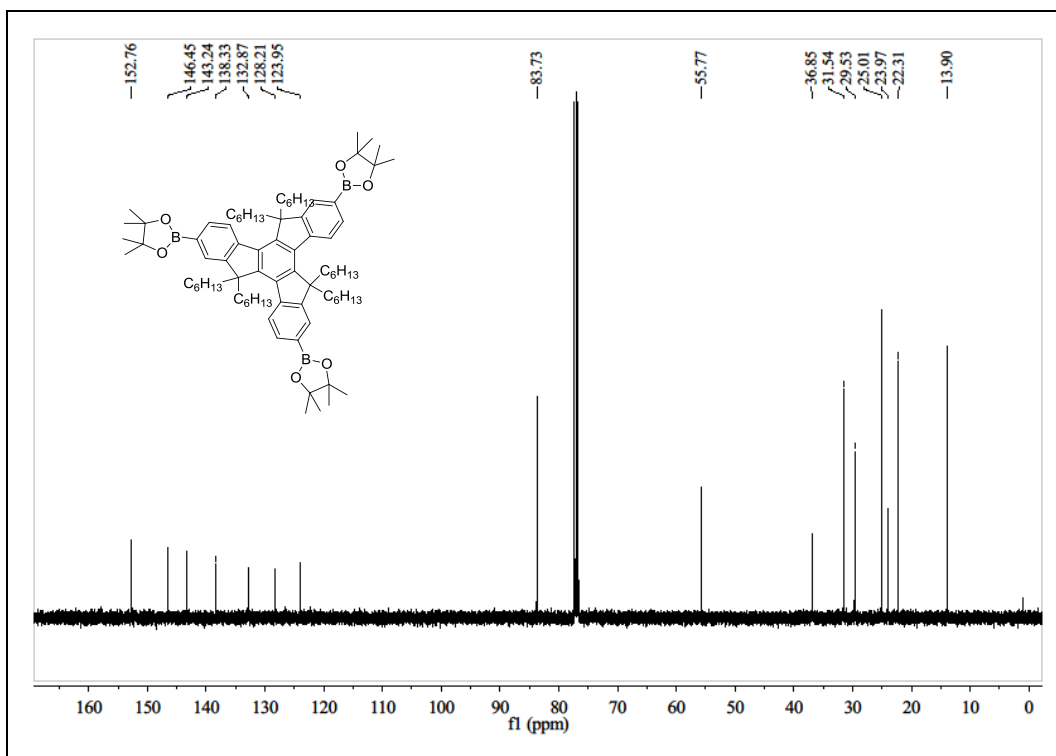


Fig. S9 ^{13}C NMR spectra of 6.

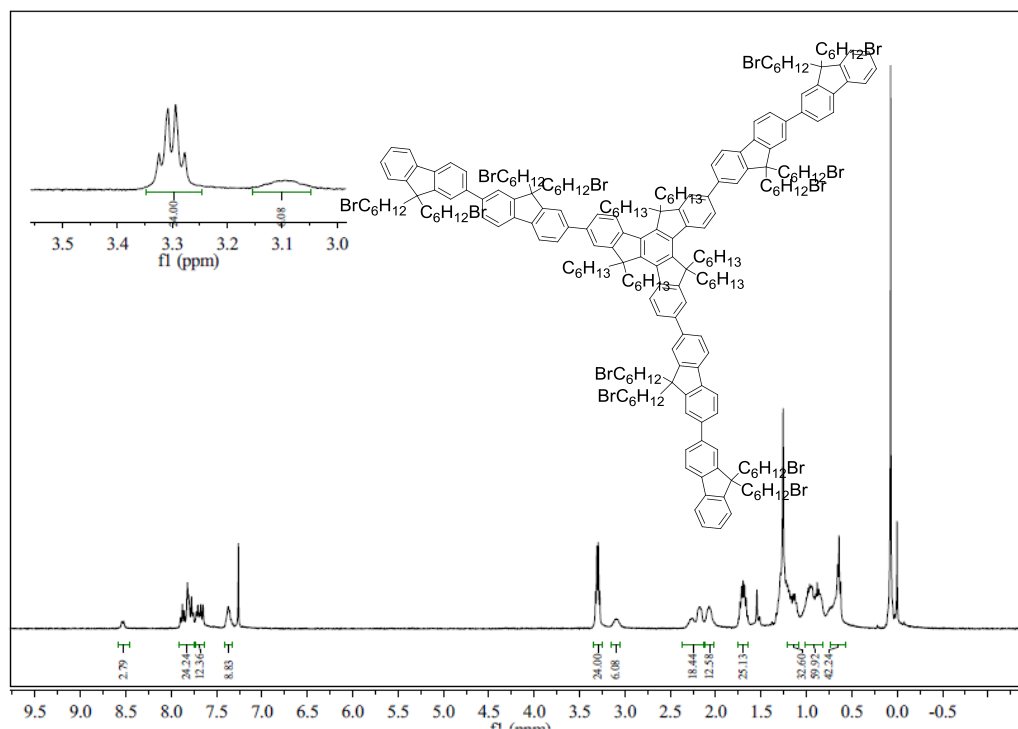


Fig. S10 ^1H NMR spectra of PreTF2.

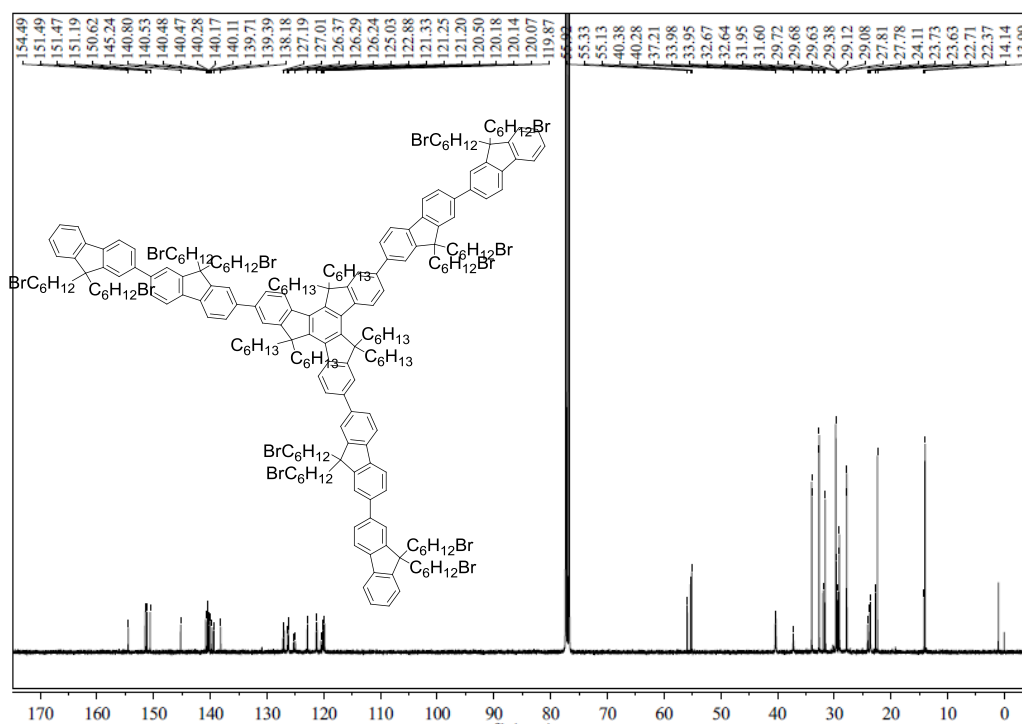


Fig. S11 ^{13}C NMR spectra of PreTF2.

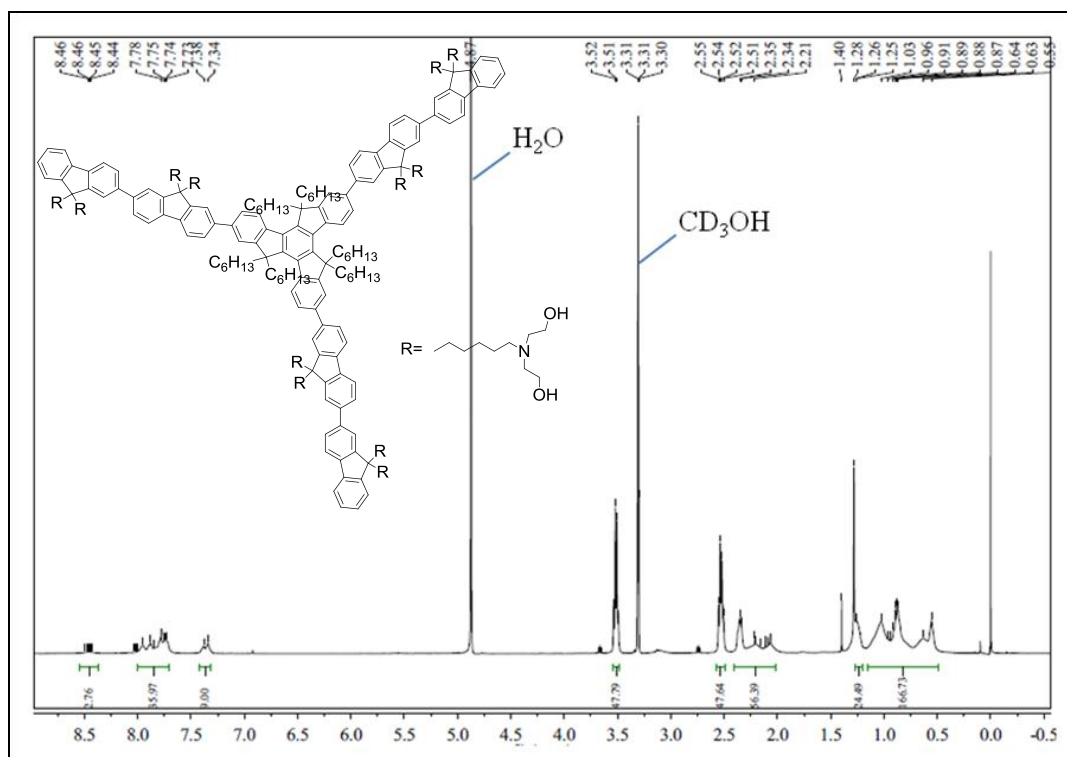


Fig. S12 ^1H NMR spectra of **TrOH**

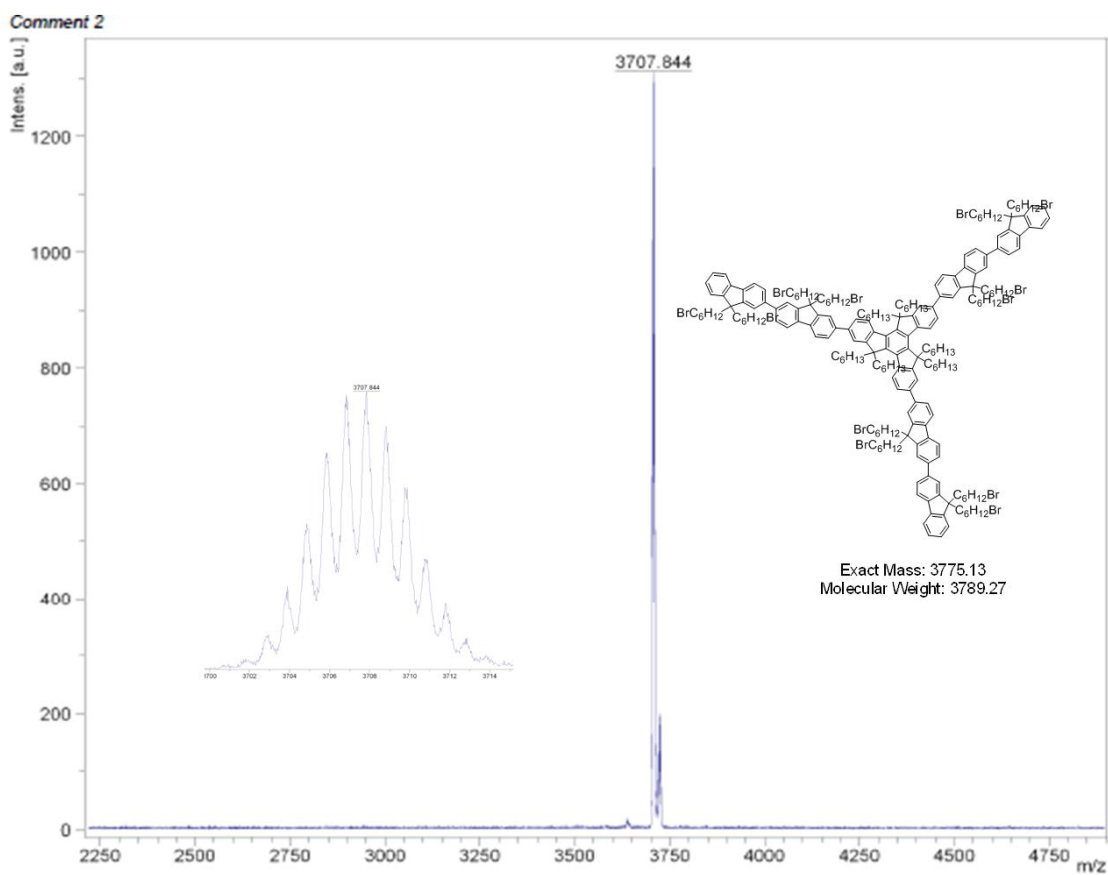


Fig. S13 MALDI-TOF-MS spectra of **PreTF2**.