Supplementary Information for

Symmetric and unsymmetric thienyl-substituted fluorenone dyes: static excimer-induced emission enhancement

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1. Single-Crystal Structure

Table S1. Selected Crystallographic Data for **ATPF**.

Compound	**ATPF**
Empirical formula	$C_{19}H_{12}O_2S$
Formula mass	304.35
Crystal color	yellow
crystal size (mm^3)	0.48×0.31×0.10
Crystal system	Triclinic
Space group	*P-1*
a [Å]	6.1090(6)
c [Å]	15.5179(14)
V [$Å^3$]	699.34(11)
Z	2
ρ (calcd, g/cm^3)	1.445
μ [mm^{-1}]	0.235
F (000)	316
θ_{min}-θ_{max} [°]	2.702-23.81
T / K	298(2)
Collected reflections	2387
Unique reflections	1549
R/*wR*	0.1030/0.2690

2. Theoretical Calculation

Table S2. The graphic representations of the frontier molecular orbits of **ATPF single-molecule**.

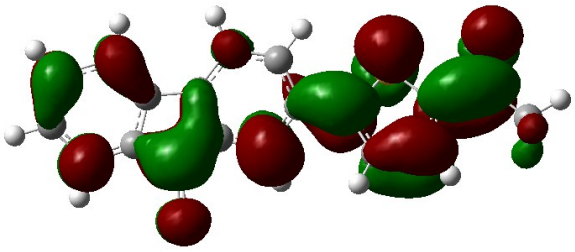
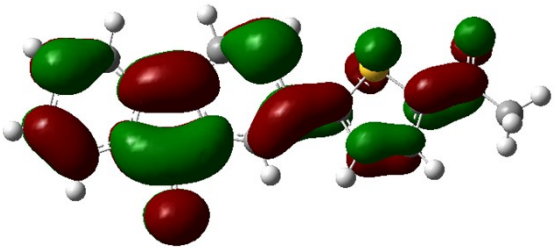
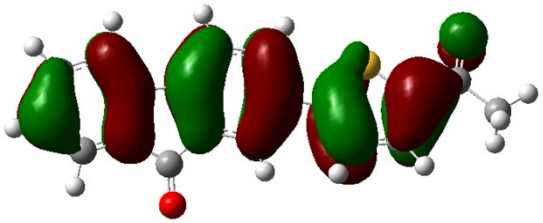
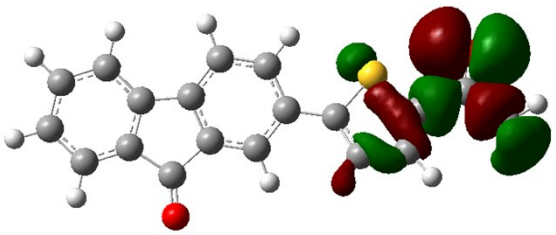
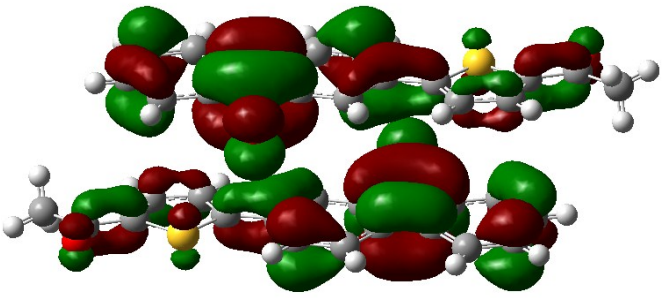
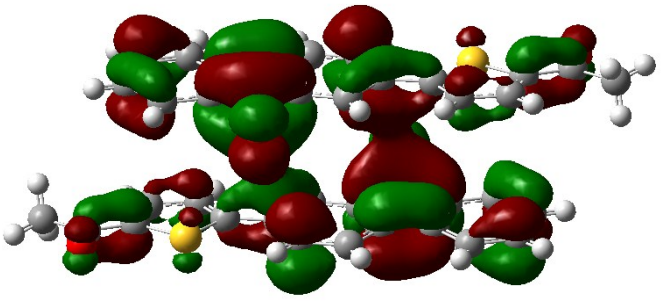
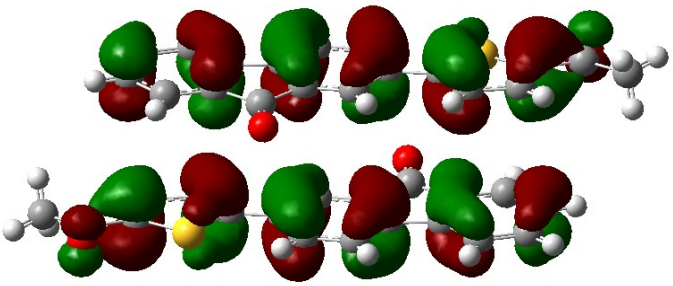
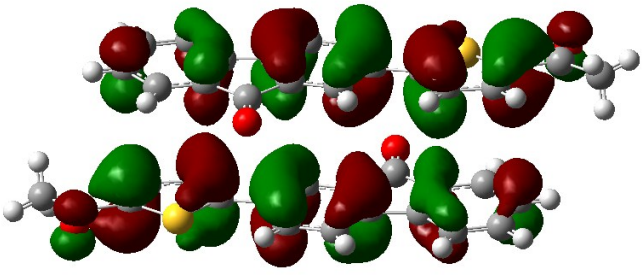
ATPF single-molecule **LUMO+1** No.81 -0.07190 au		Excited State 1: Singlet-A 2.8624 eV 433.14 nm f=0.0969 79 -> 80 0.67617 79 -> 81 0.16283 Excited State 2: Singlet-A 3.1201 eV 397.38 nm f=0.0002 76 -> 80 0.25725 77 -> 80 0.61396 77 -> 81 0.20303 Excited State 3: Singlet-A 3.5296 eV 351.27 nm f=0.0074 78 -> 80 -0.46549 78 -> 81 0.47593 78 -> 82 -0.18960
LUMO No.80 -0.09260 au		
HOMO No.79 -0.21924 au		Excited State 4: Singlet-A 3.6165 eV 342.83 nm f=0.5596 74 -> 80 0.11681 76 -> 80 0.13770 79 -> 80 -0.14466 79 -> 81 0.65138
HOMO-1 No.78 -0.25309 au		

Table S3. The graphic representations of the frontier molecular orbits of **ATPF Dimer**.

ATPF Dimer $^-$ **LUMO+1** No.160 -0.08993 au		Excited State 1: Singlet-A 2.5338 eV 489.31 nm f=0.0725 158 ->159 0.69393 Excited State 2: Singlet-A 2.7157 eV 456.55 nm f=0.0000 158 ->160 0.68739 158 ->161 0.11667
LUMO No.159 -0.09861 au		Excited State 3: Singlet-A 2.9084 eV 426.30 nm f=0.0000 157 ->159 0.68538 Excited State 4: Singlet-A 3.0151 eV 411.22 nm f=0.0002 151 ->159 -0.10268 152 ->160 0.37633 152 ->161 0.14694 153 ->159 0.51728 153 ->162 0.12183 154 ->160 0.10303
HOMO No.158 -0.20216 au		
HOMO-1 No.157 --0.21476 au		

3. ^{1}H NMR and ^{13}C NMR of CTPF, ATPF, BTPF and ETPF

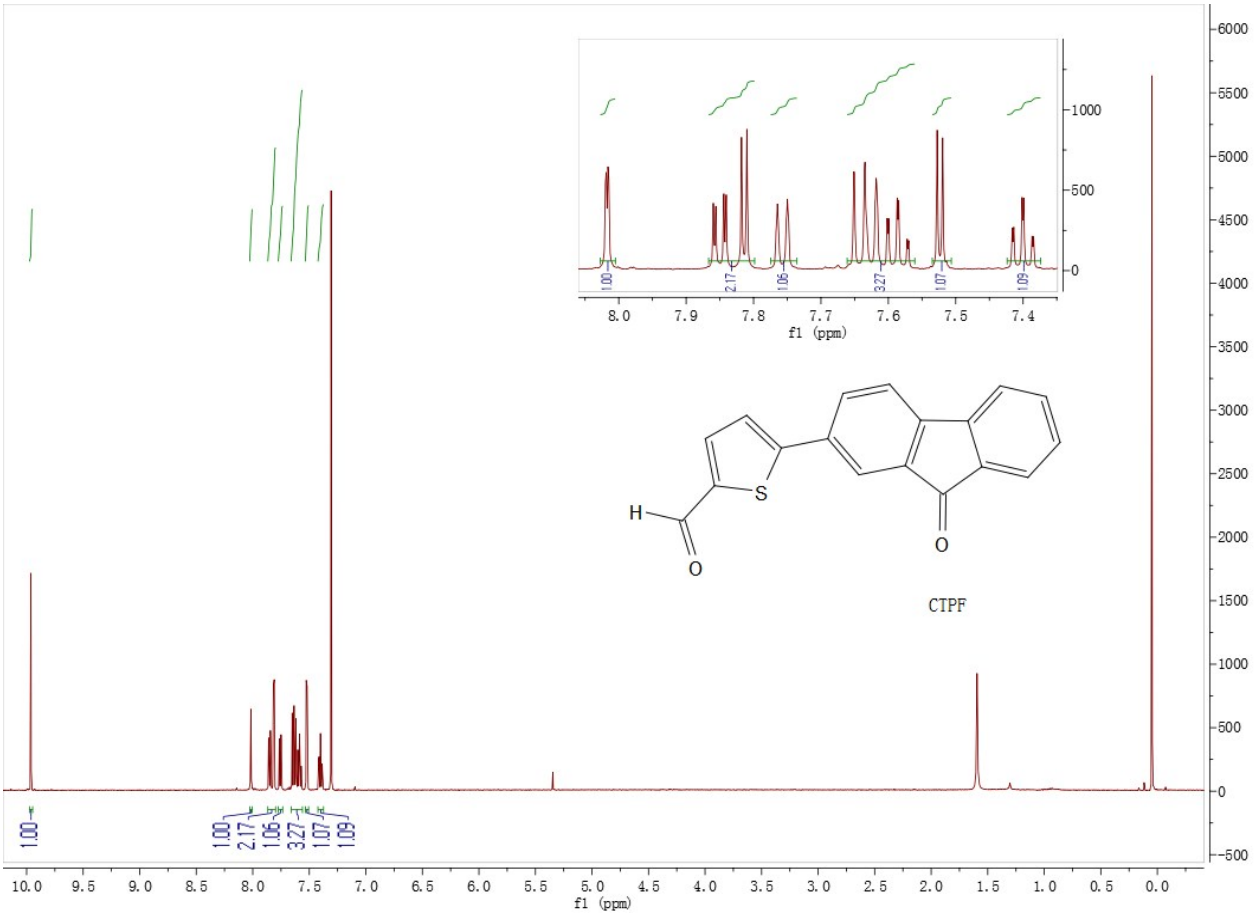


Figure S1. ^{1}H NMR spectrum (500 MHz, $CDCl_3$) of compound **CTPF**.

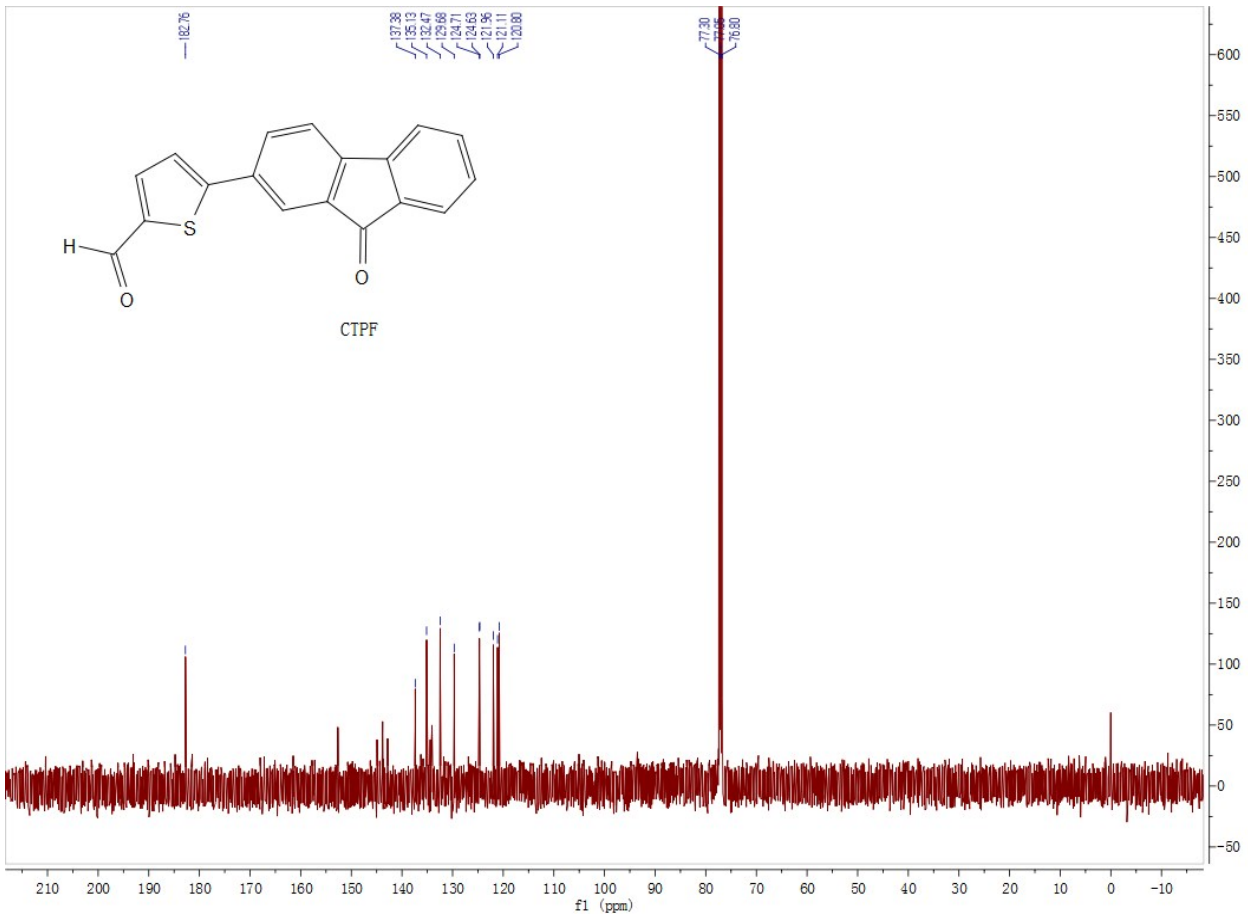


Figure S2. ^{13}C NMR spectrum (125 MHz, $CDCl_3$) of compound **CTPF**.

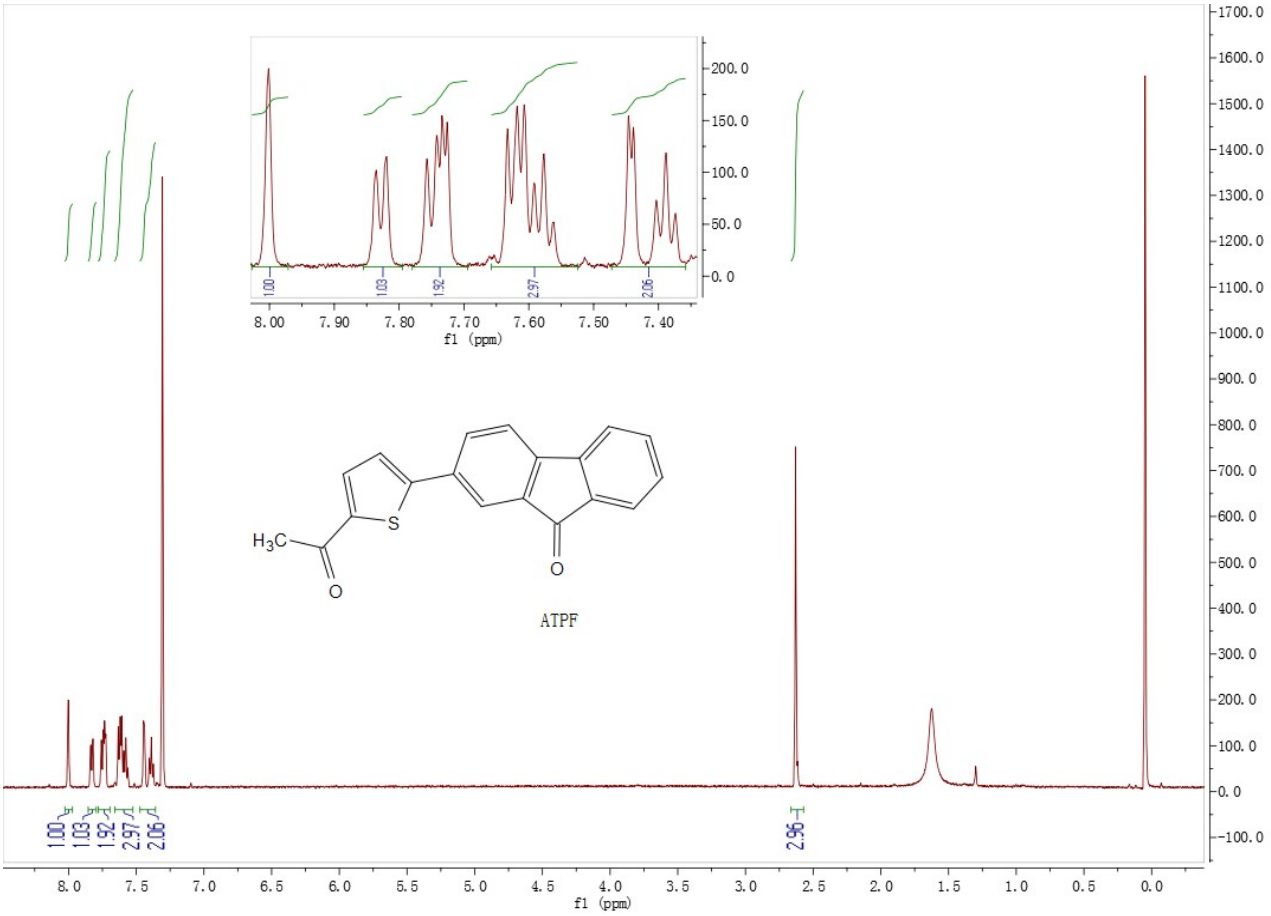


Figure S3. ^{1}H NMR spectrum (500 MHz, $CDCl_3$) of compound **ATPF**.

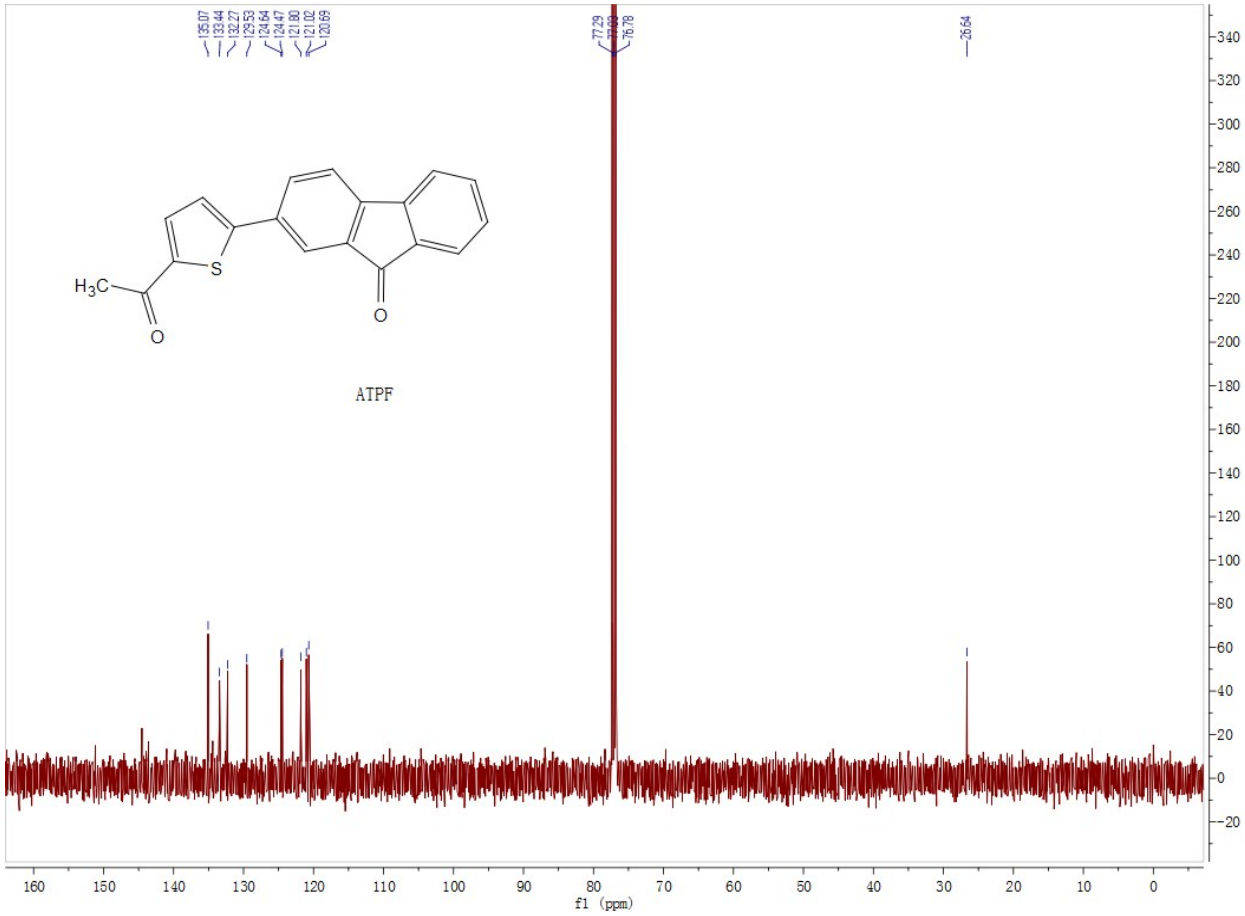


Figure S4. ^{13}C NMR spectrum (125 MHz, $CDCl_3$) of compound **ATPF**.

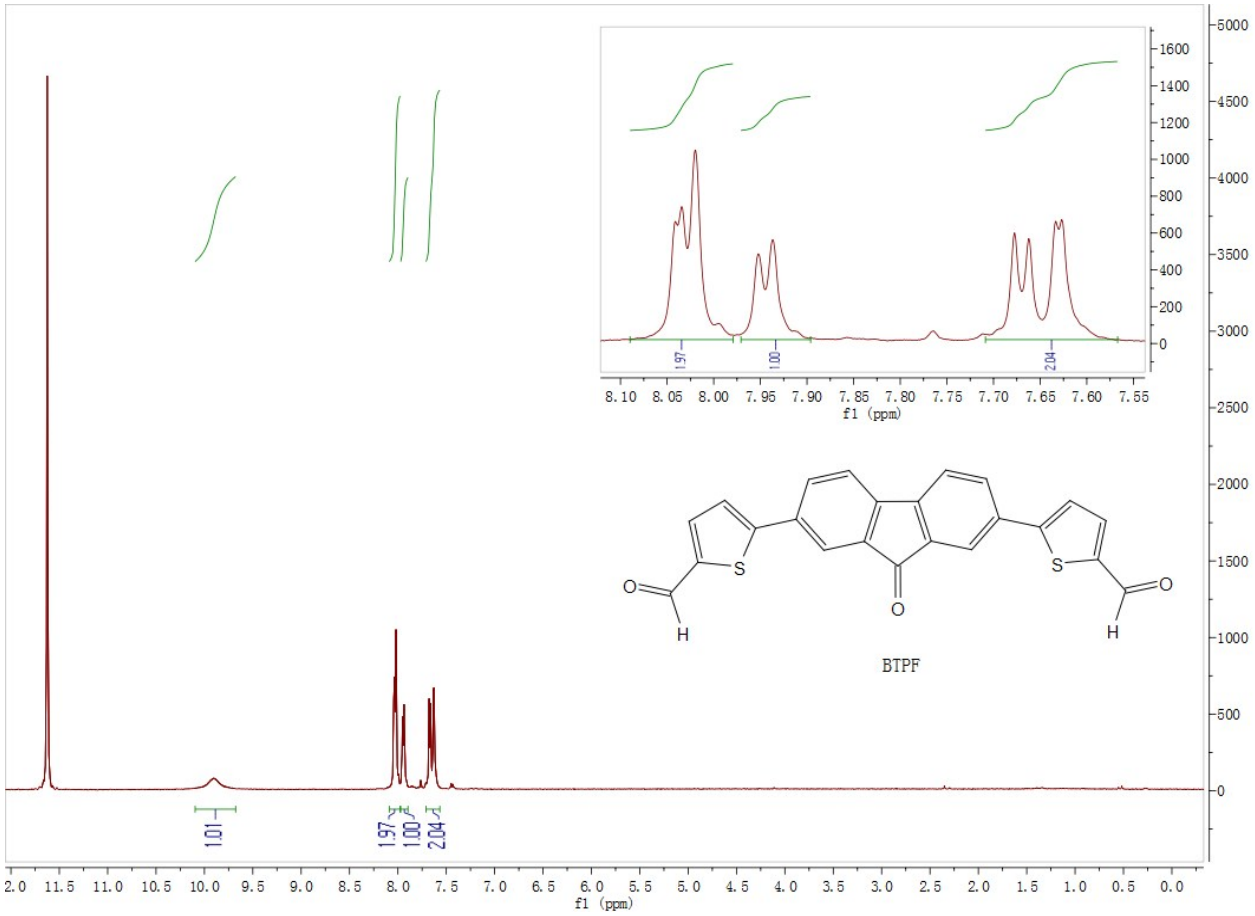


Figure S5. ^{1}H NMR spectrum (500 MHz, TFA) of compound **BTPF**.

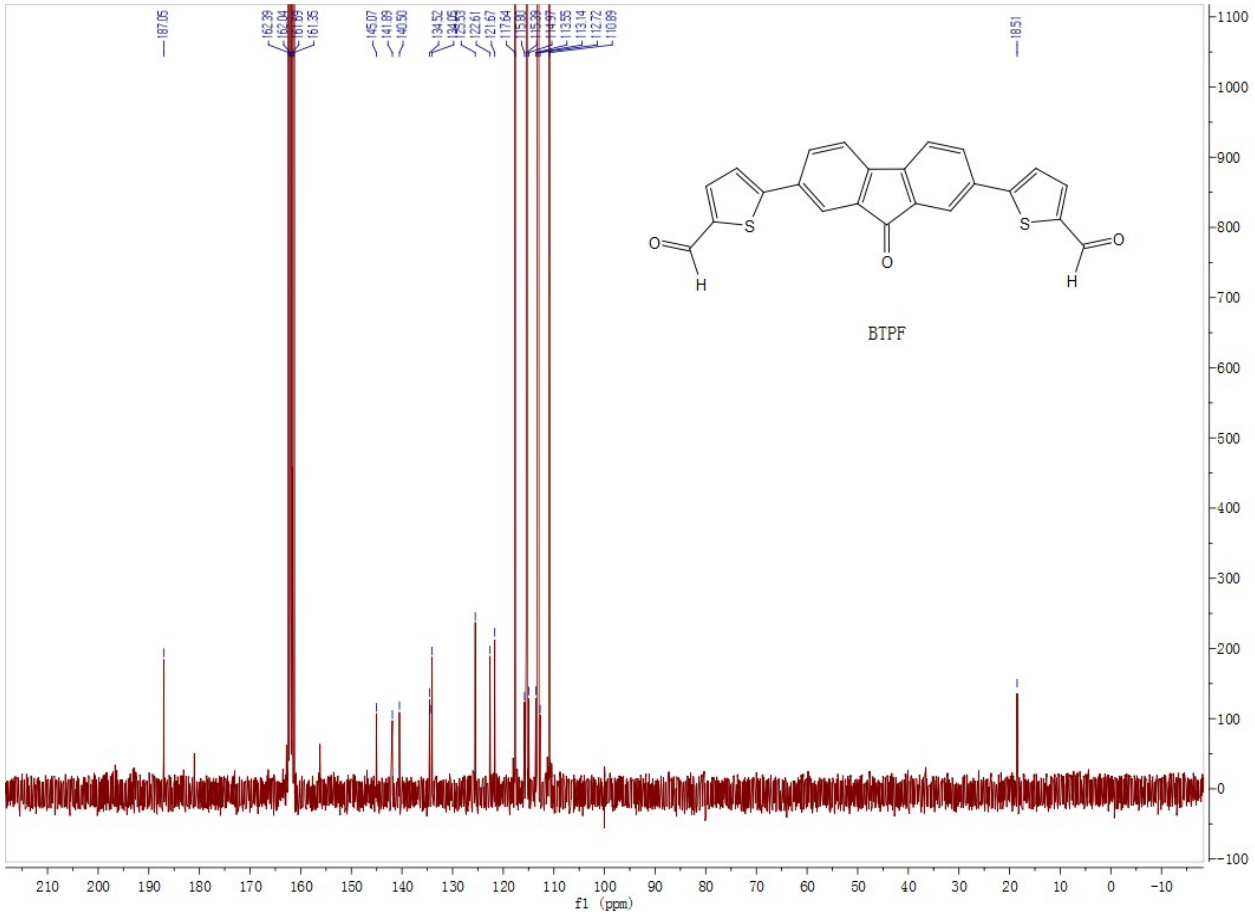


Figure S6. ^{13}C NMR spectrum (125 MHz, TFA) of compound **BTPF**.

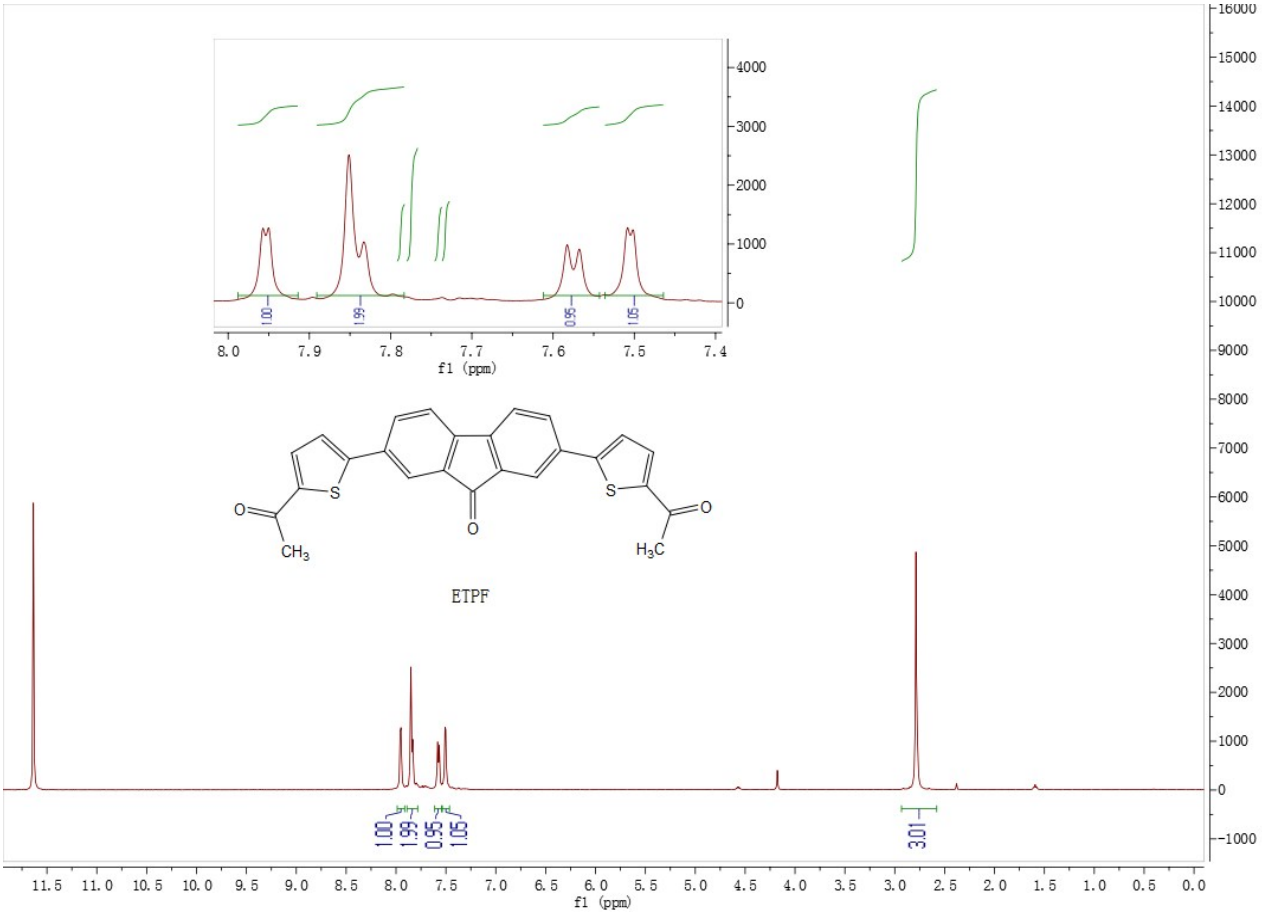


Figure S7. ^{1}H NMR spectrum (500 MHz, TFA) of compound **ETPF**.

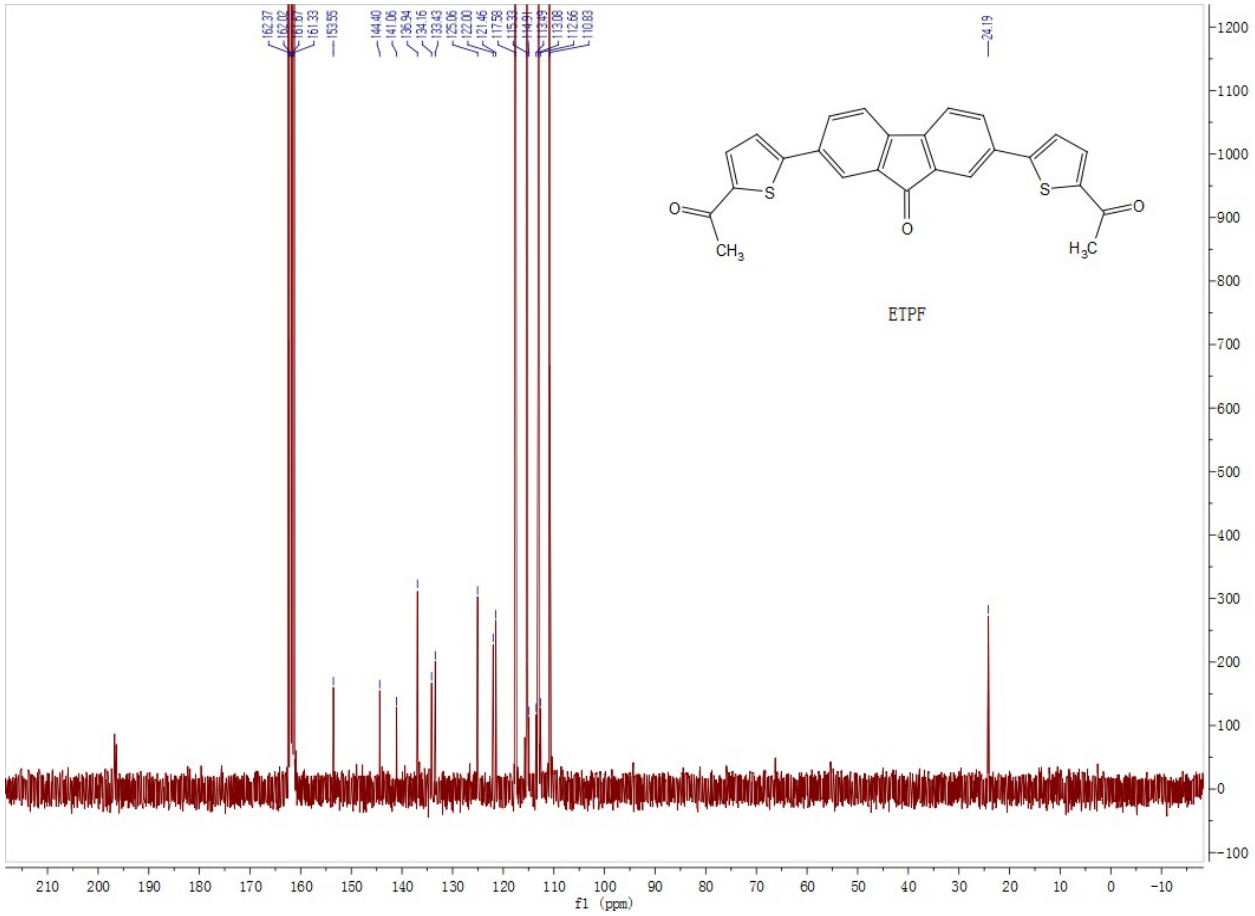


Figure S8. ^{13}C NMR spectrum (125 MHz, TFA) of compound **ETPF**.

4. TOF-MS-EI

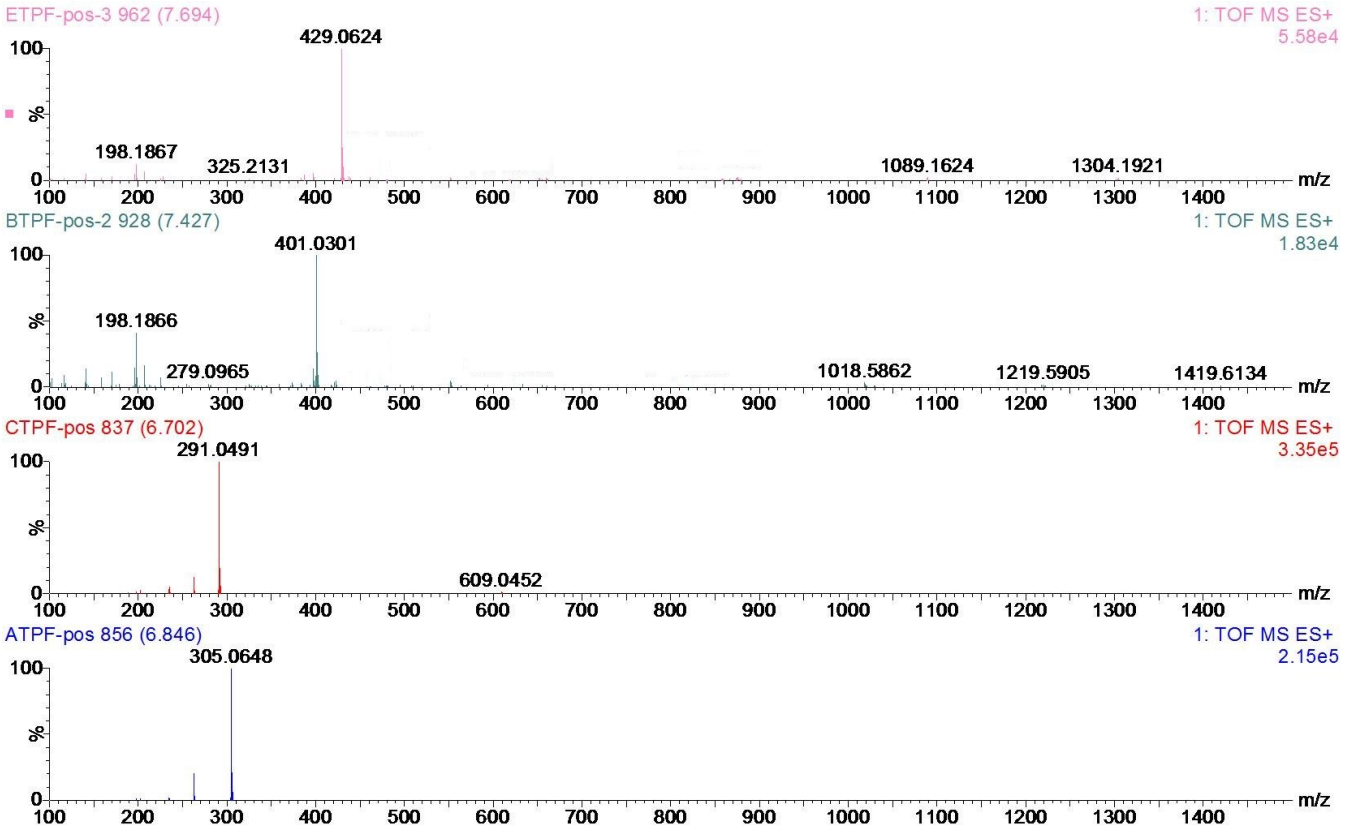


Figure S9. The TOF-MS-EI pictures of compounds **CTPF**, **ATPF**, **BTPF** and **ETPF**.