Electronic Supporting Information (ESI)

Pentafluorosulfanylated Polymers as Electrets in Nonvolatile Organic Field-Effect Transistor Memory Devices

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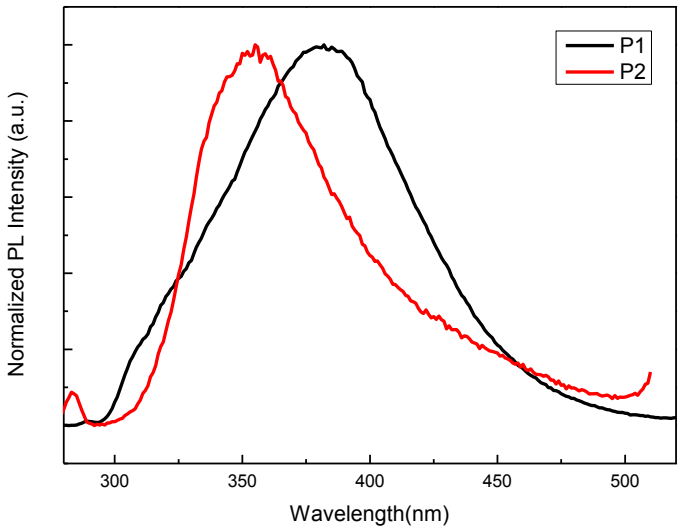

Figure S1. Fluorescence spectra of polymers **P1** and **P2**.

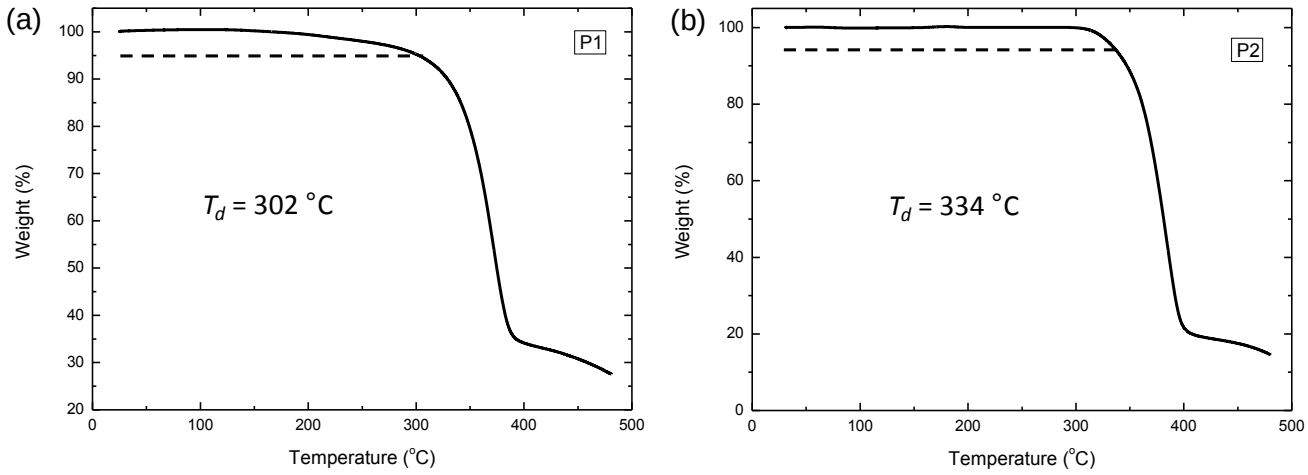

Figure S2. Thermogravimetric analysis of pentafluorosulfanylated polymers (a) **P1** and (b) **P2**.

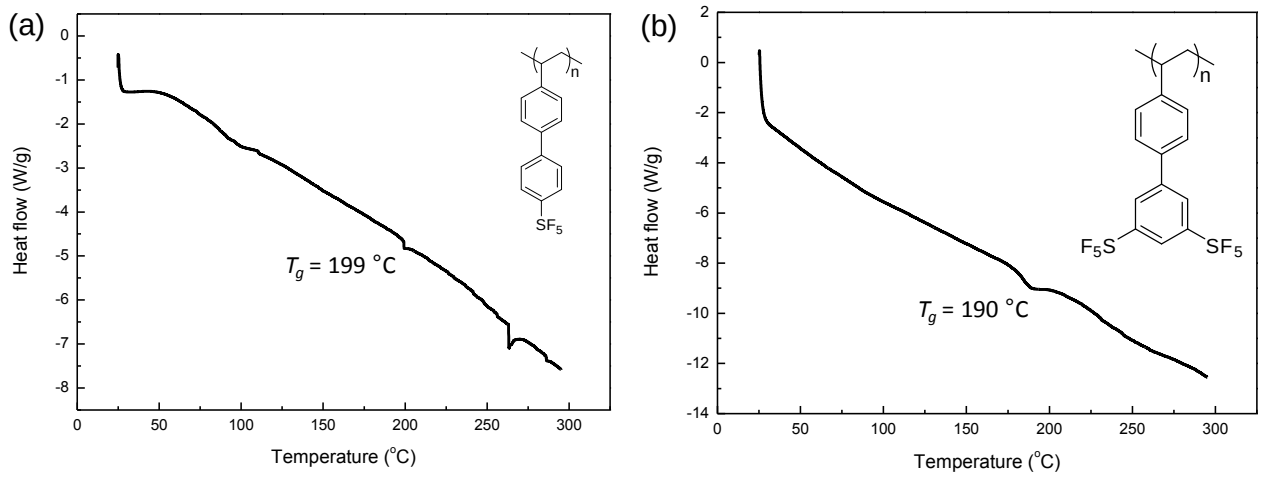

Figure S3. DSC curves of the pentafluorosulfanylated polymers (a) **P1** and (b) **P2**.

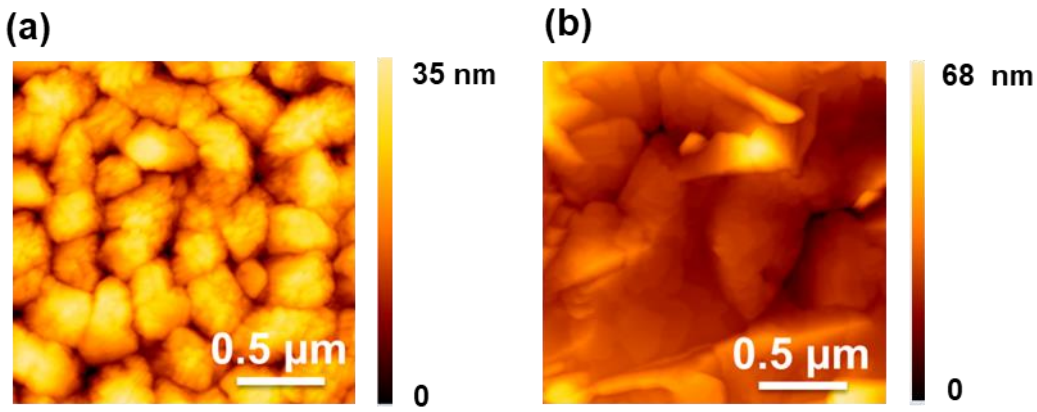

Figure S4. AFM topographic images of pentacene on (a) **P1** and (b) **P2** surface.

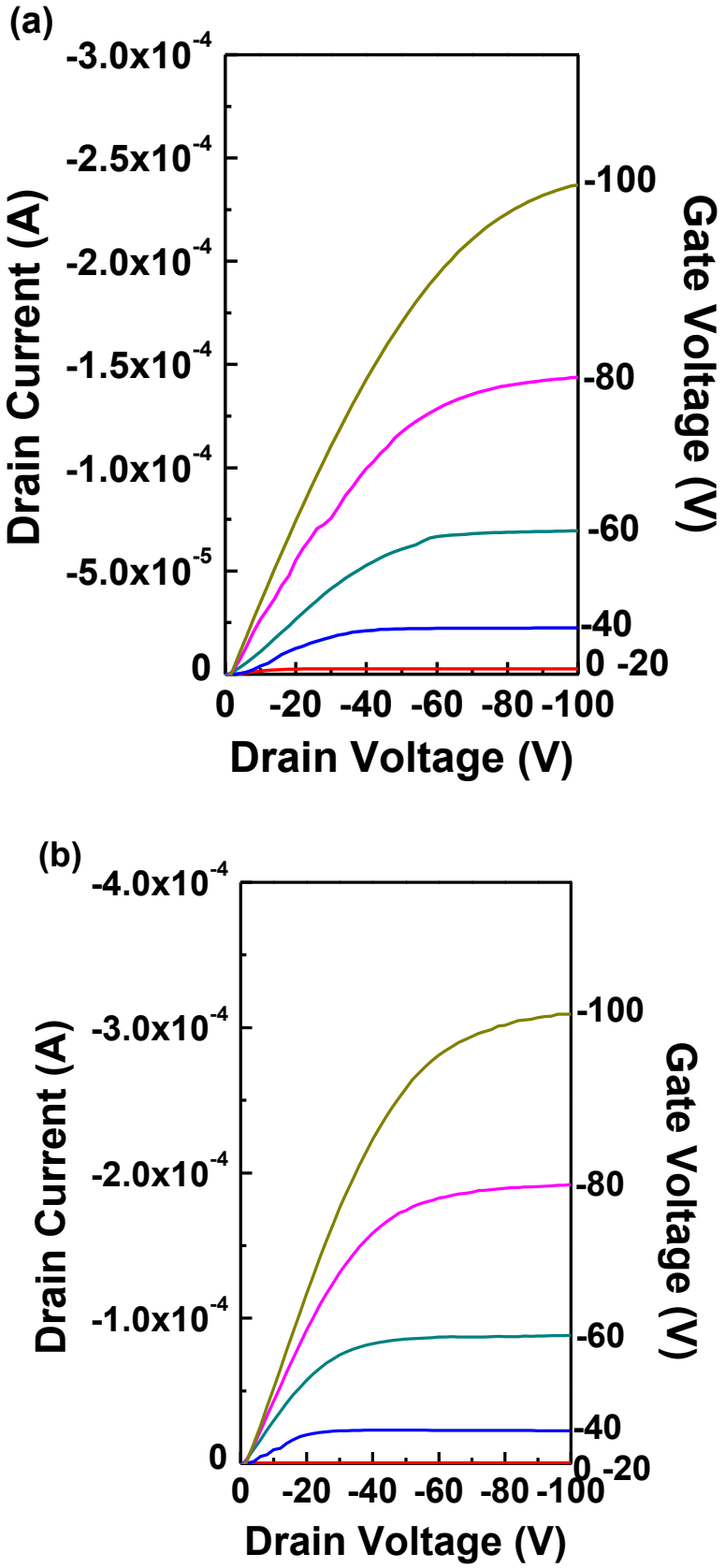

Figure S5. Output characteristics of OFET memories based on (a) **P1** and (b) **P2** electrets.

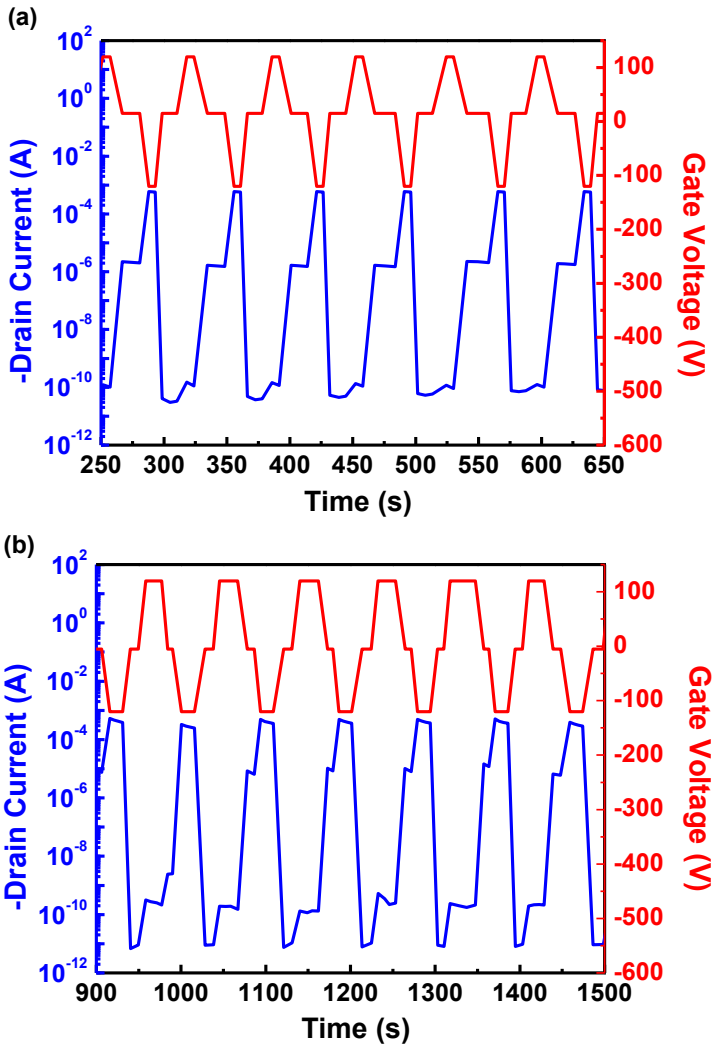

Figure S6. I_d response for the repeated pulse bias of PRER operations of OFET memories based on (a) **P1** and (b) **P2** electrets.

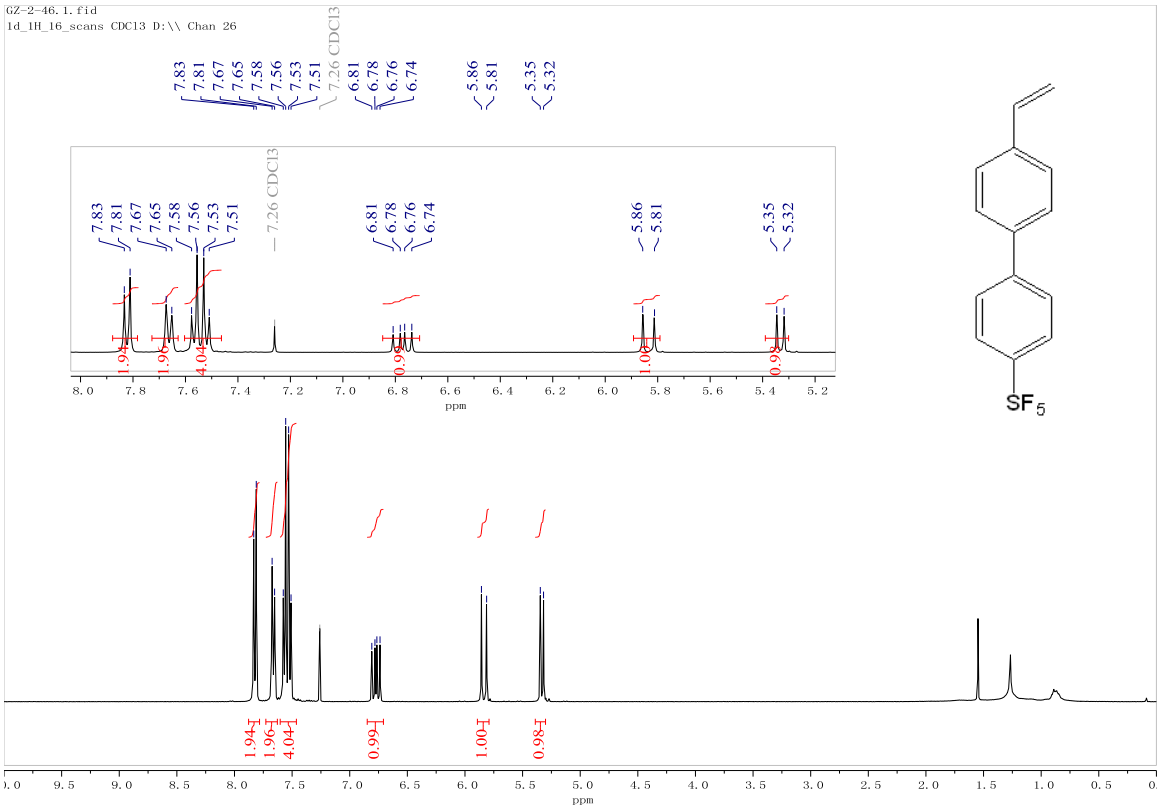

Figure S7. ^{1}H NMR spectrum of compound **2**.

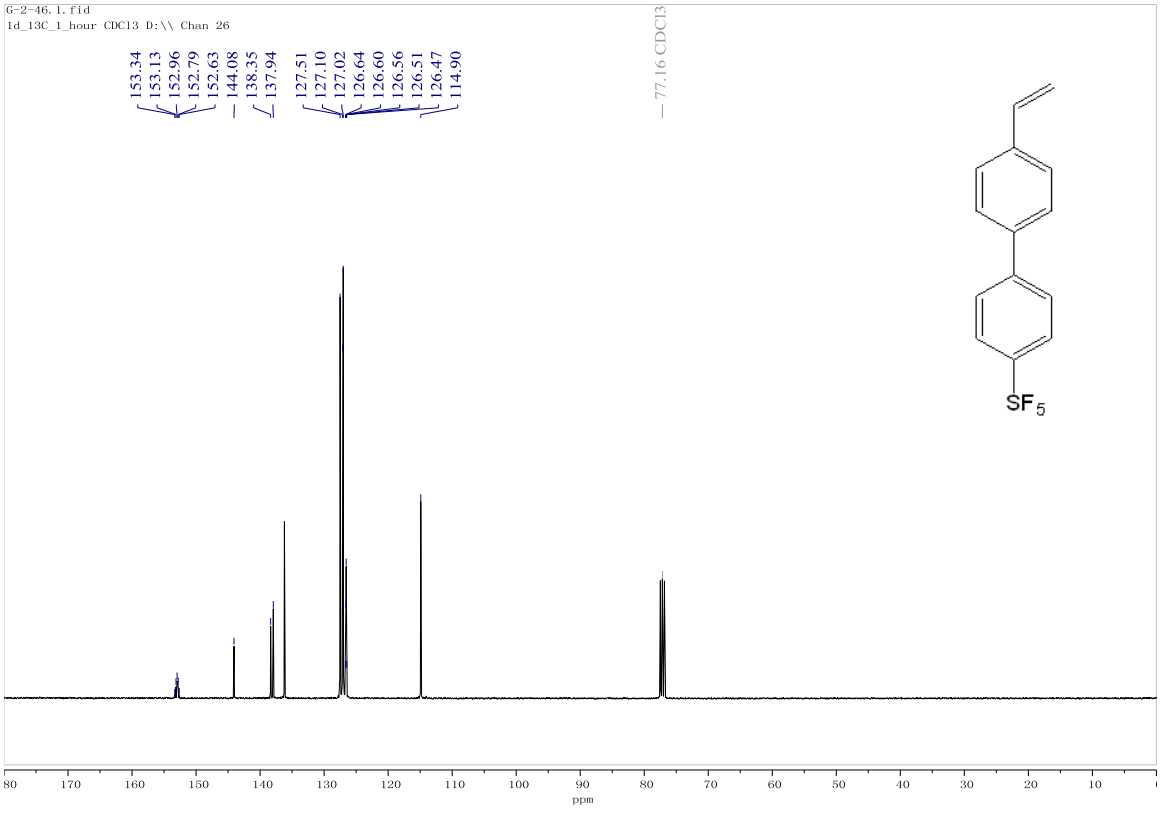

Figure S8. ^{13}C NMR spectrum of compound **2**.

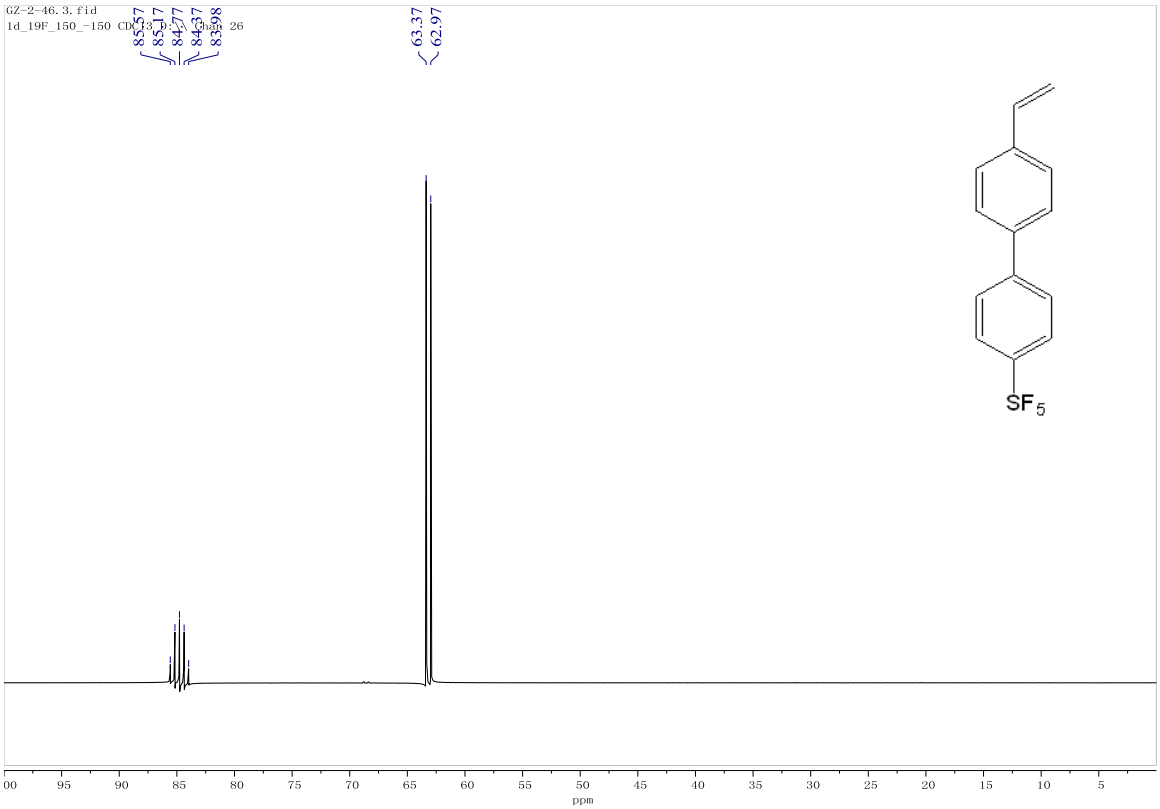

Figure S9. ^{19}F NMR spectrum of compound **2**.

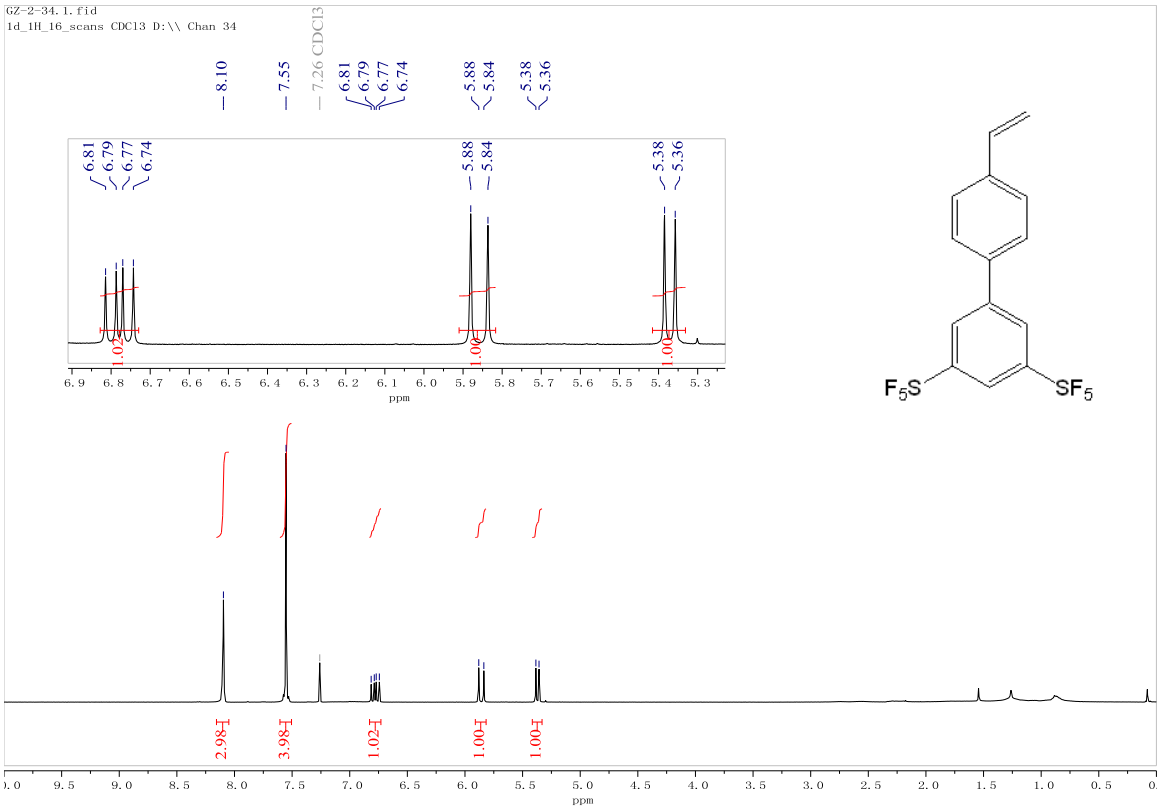

Figure S10. ^{1}H NMR spectrum of compound **3**.

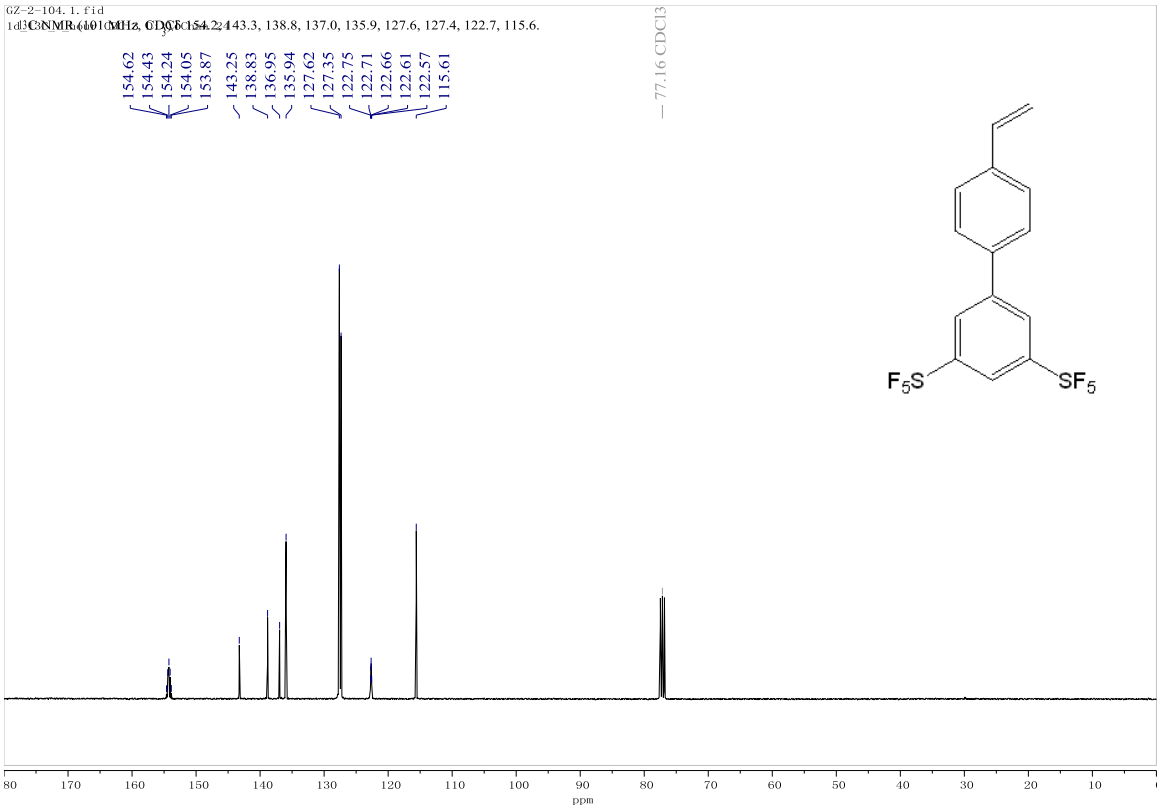

Figure S11. ^{13}C NMR spectrum of compound **3**.

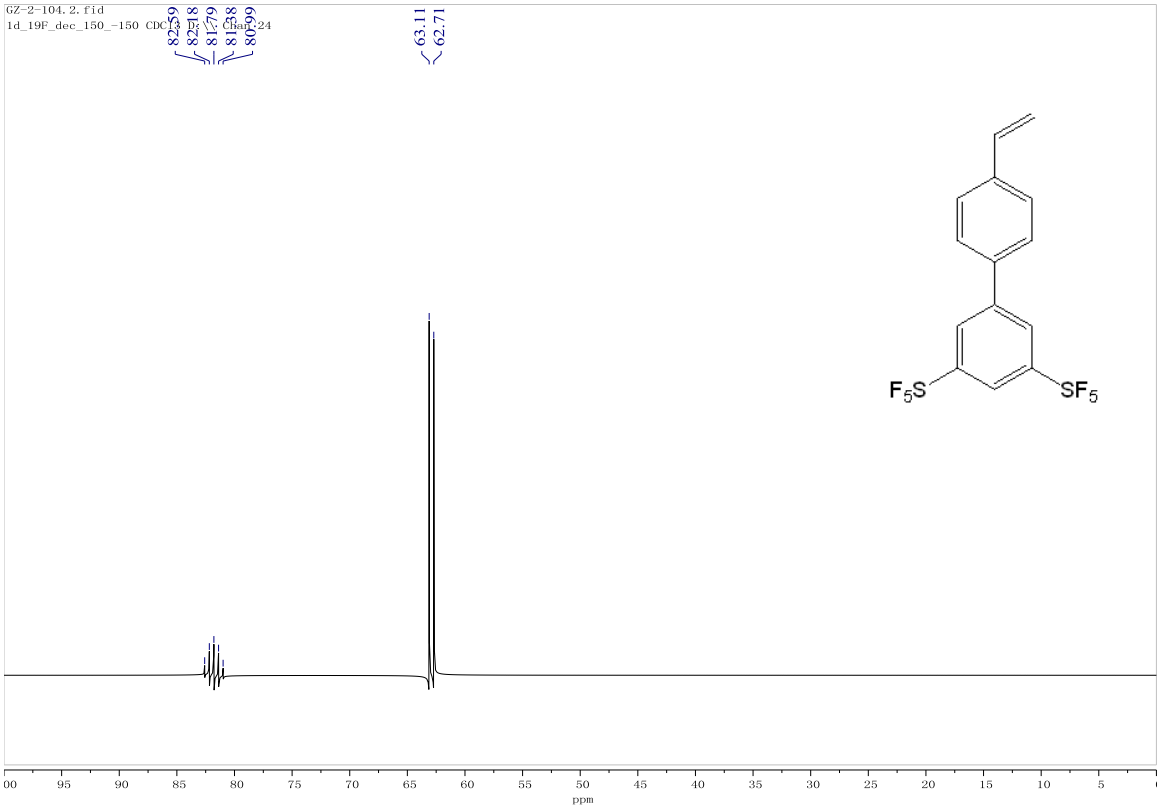

Figure S12. ^{19}F NMR spectrum of compound **3**.

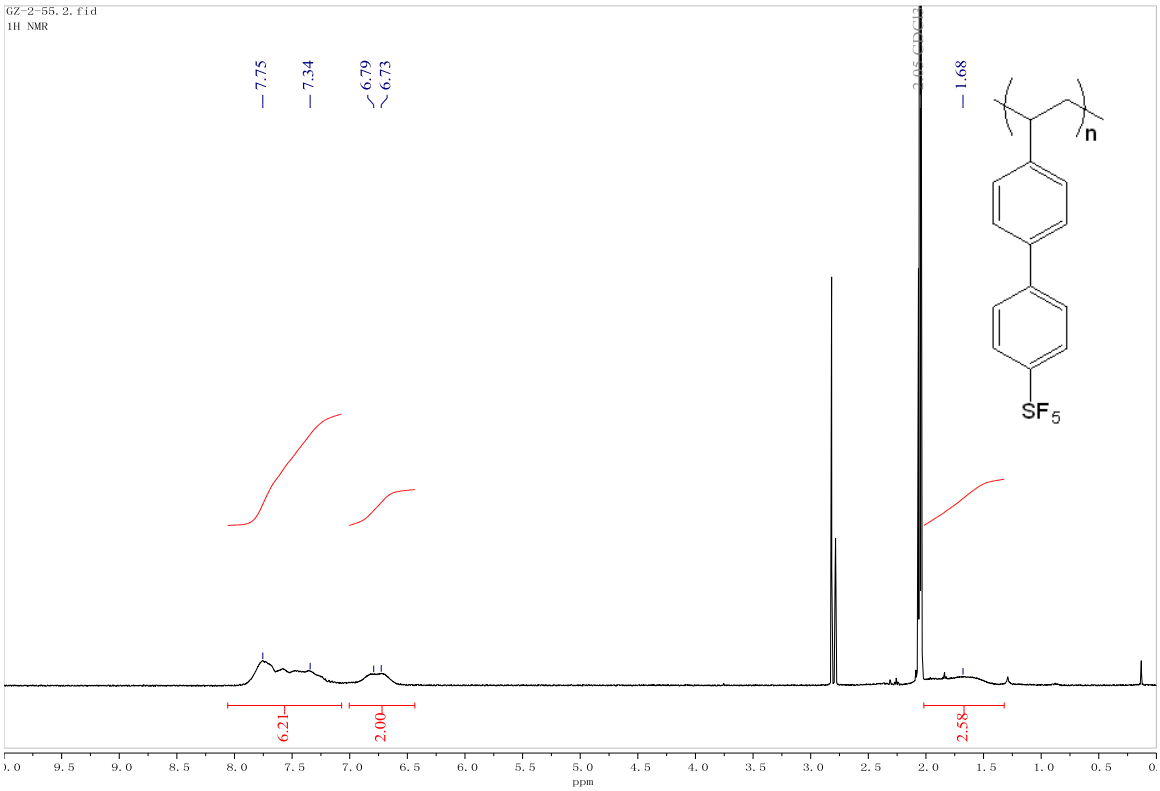

Figure S13. ^{1}H NMR spectrum of polymer **P1**.

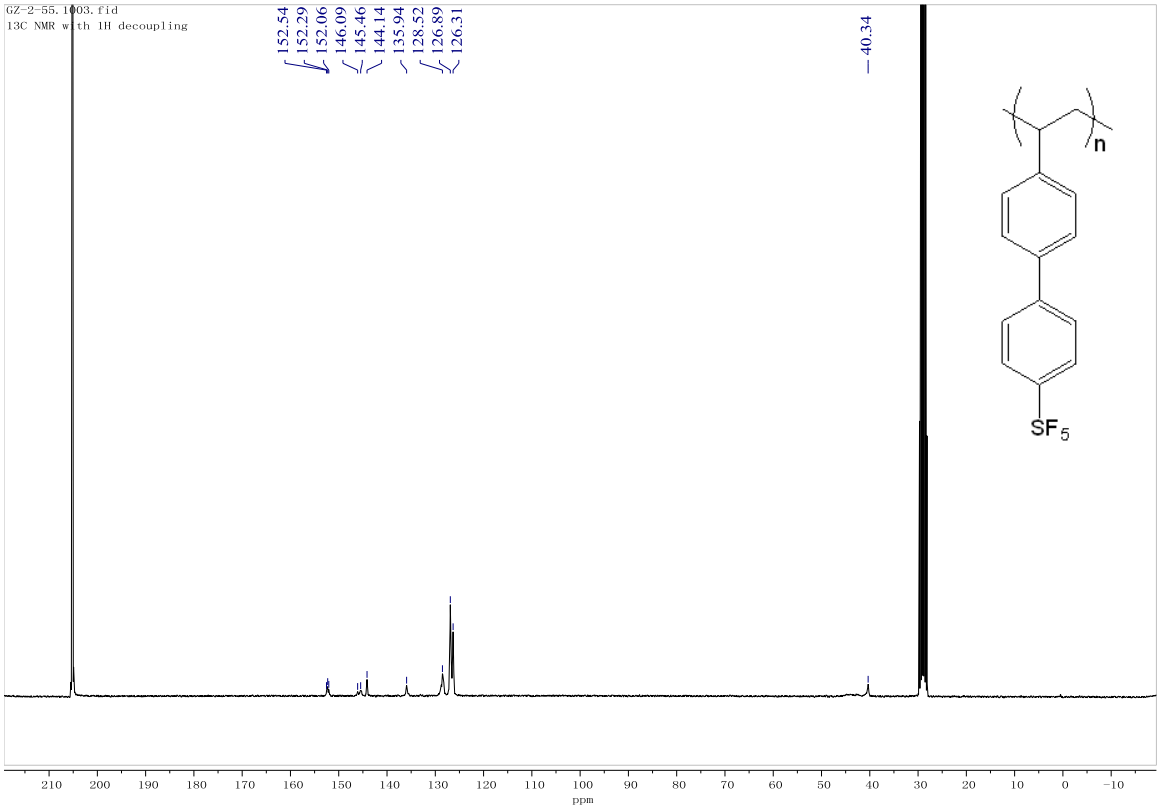

Figure S14. ^{13}C NMR spectrum of polymer **P1**.

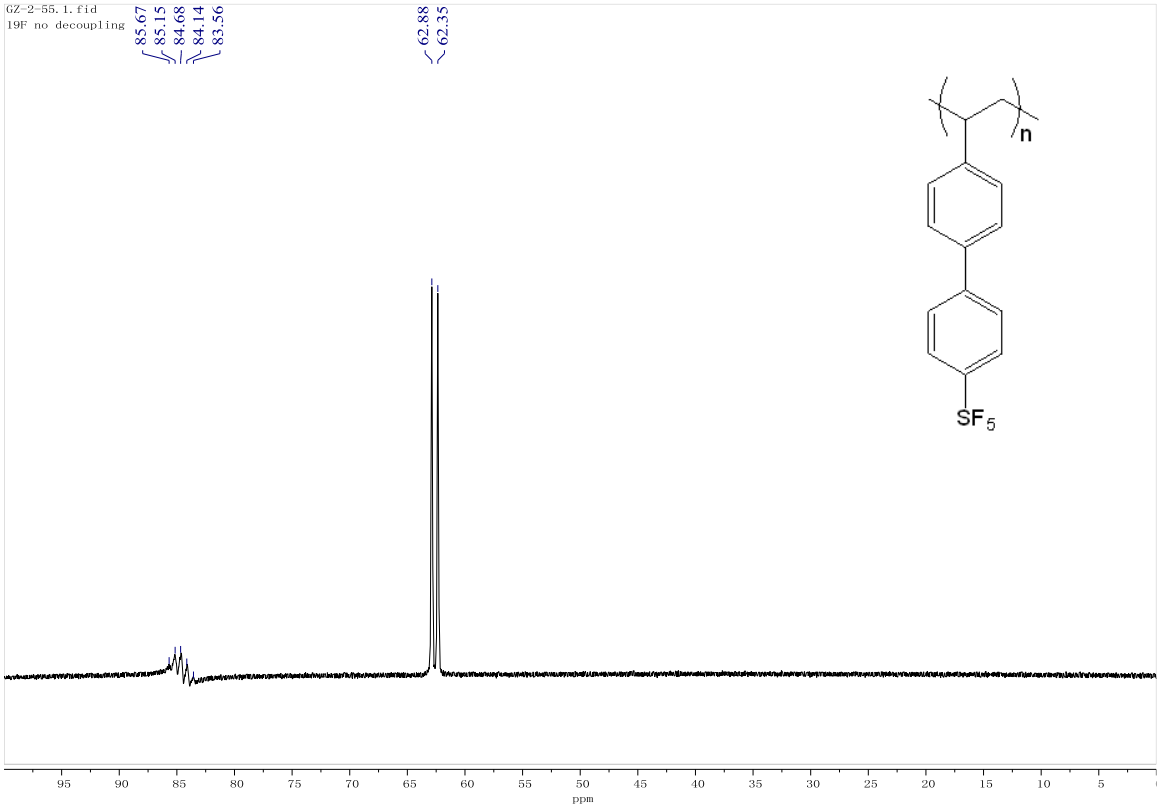

Figure S15. ^{19}F NMR spectrum of polymer **P1**.

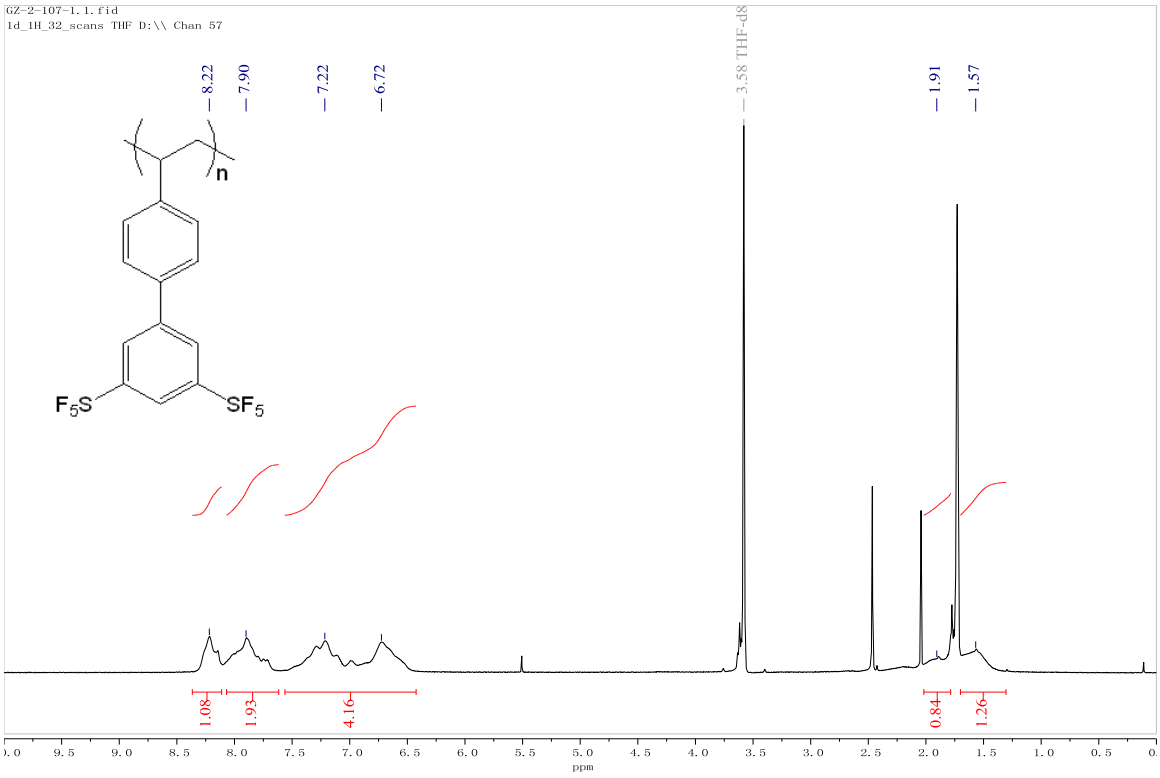

Figure S16. ^{1}H NMR spectrum of polymer **P2**.

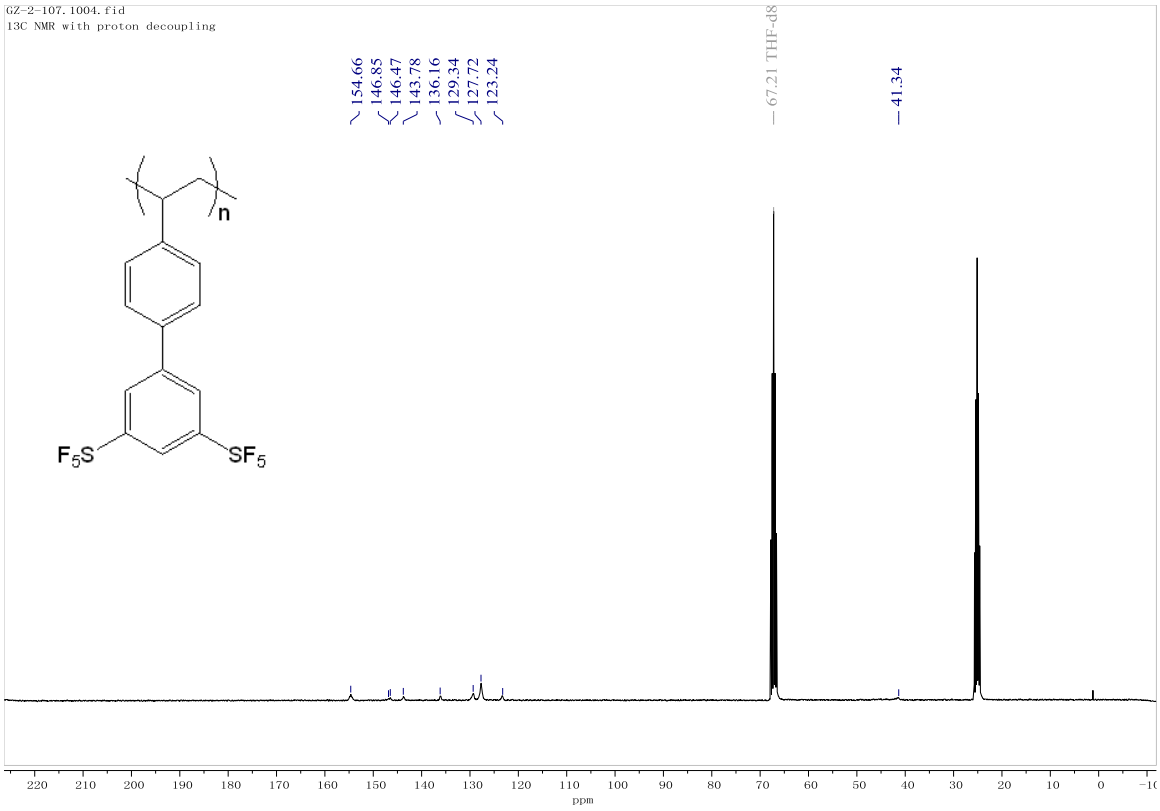

Figure S17. ^{13}C NMR spectrum of polymer **P2**.

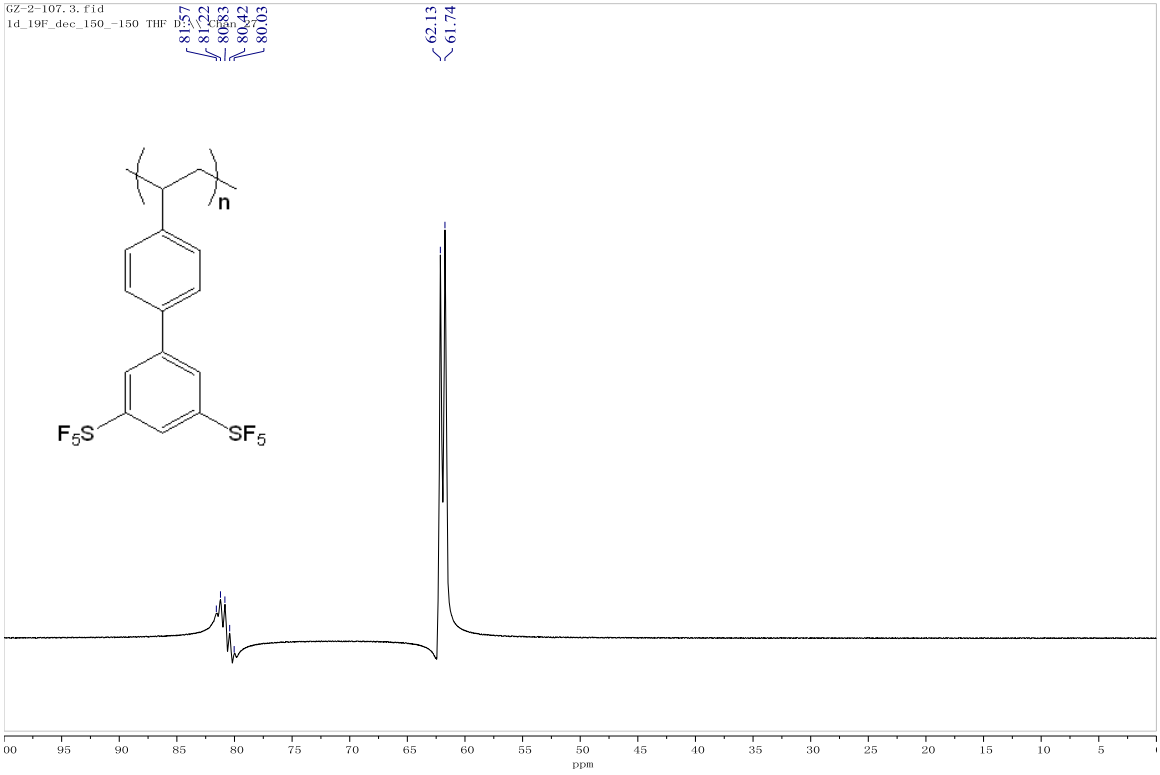

Figure S18. ^{19}F NMR spectrum of polymer **P2**.

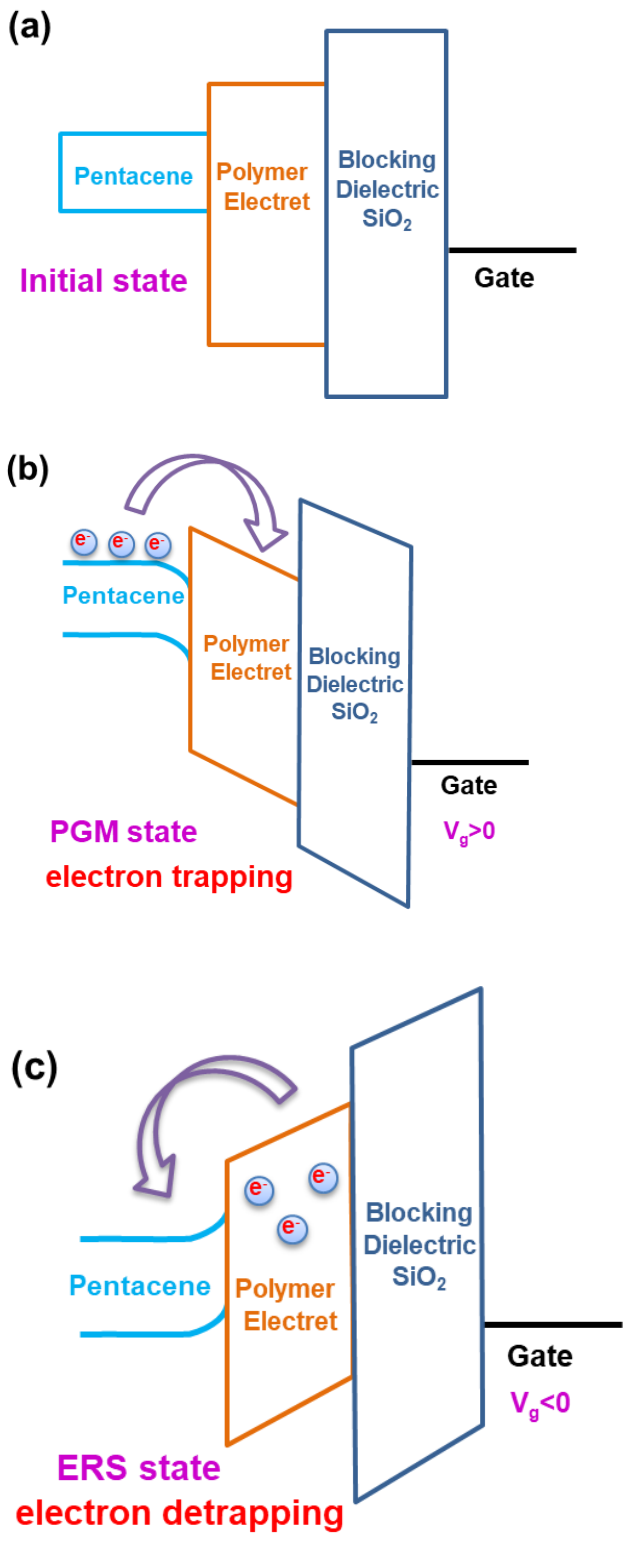

Figure S19. A schematic energy band diagram during (a) initial, (b) PGM, and (c) ERS operations for the charge trapping/detrapping mechanistic description.

DFT Calculation Method: Gaussian09 at the B3LYP/6-31G(d) level for C, N, S, and H

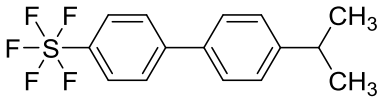

Table S1. Atomic coordinates for the representative model structure of the **P1** repeat unit.

Center Number	Atomic Number	Atomic Type	Coordinates (Angstroms) X	Y	Z
1	6	0	-4.124064	-0.906091	0.459260
2	6	0	-2.732954	-0.943278	0.482130
3	6	0	-1.971380	0.107299	-0.057122
4	6	0	-2.659831	1.192663	-0.619882
5	6	0	-4.052832	1.220889	-0.644708
6	6	0	-4.814585	0.176061	-0.107238
7	1	0	-4.679088	-1.732038	0.897165
8	1	0	-2.229347	-1.785050	0.949841
9	1	0	-2.100955	2.008818	-1.069824
10	1	0	-4.558861	2.069845	-1.099144
11	6	0	-0.488750	0.069676	-0.034332
12	6	0	0.260845	1.233126	0.208005
13	6	0	0.208835	-1.129500	-0.256803
14	6	0	1.652555	1.208497	0.227722
15	1	0	-0.251704	2.168752	0.409498
16	6	0	1.600275	-1.172907	-0.241200
17	1	0	-0.343367	-2.039158	-0.472069
18	6	0	2.309800	0.001160	0.001469
19	1	0	2.211040	2.115004	0.424558
20	1	0	2.118690	-2.105627	-0.424780
21	16	0	4.130587	-0.041819	0.021019
22	6	0	-6.335776	0.226406	-0.134686
23	1	0	-6.617136	1.143824	-0.669489
24	6	0	-6.939221	-0.961356	-0.907536
25	1	0	-8.029895	-0.867240	-0.966702
26	1	0	-6.544851	-1.012873	-1.928147
27	1	0	-6.715392	-1.914430	-0.413835
28	6	0	-6.927061	0.321483	1.285103
29	1	0	-6.528296	1.187989	1.823606
30	1	0	-8.018372	0.417943	1.242262
31	1	0	-6.694598	-0.573867	1.873858
32	9	0	4.203247	0.802076	1.415463
33	9	0	4.242462	1.352400	-0.819810
34	9	0	4.160075	-1.439344	0.863251
35	9	0	4.193704	-0.889045	-1.371836
36	9	0	5.753578	-0.079149	0.038020

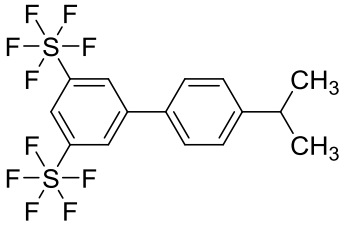

Table S2. Atomic coordinates for the representative model structure of the **P2** repeat unit.

Center Number	Atomic Number	Atomic Type	Coordinates (Angstroms) X	Y	Z
1	6	0	1.317305	1.208146	-0.014111
2	6	0	-0.071400	1.161246	-0.045631
3	6	0	-0.732285	-0.077342	-0.043894
4	6	0	0.043246	-1.247174	-0.014488
5	6	0	1.430099	-1.161201	0.006470
6	6	0	2.099991	0.058193	0.009739
7	1	0	-0.646120	2.076806	-0.093673
8	1	0	-0.442666	-2.213537	0.013980
9	1	0	3.178432	0.109476	0.030240
10	6	0	-2.213690	-0.148211	-0.072376
11	6	0	-2.876194	-1.153801	-0.792069
12	6	0	-2.996299	0.790054	0.620965
13	6	0	-4.268022	-1.215300	-0.814643
14	1	0	-2.302046	-1.877917	-1.363787
15	6	0	-4.385692	0.721517	0.593803
16	1	0	-2.513682	1.564027	1.211715
17	6	0	-5.052359	-0.282892	-0.124292
18	1	0	-4.754667	-2.000449	-1.388670
19	1	0	-4.957479	1.459407	1.150295
20	6	0	-6.571958	-0.362942	-0.158904
21	1	0	-6.833725	-1.234769	-0.773596
22	6	0	-7.165768	-0.591882	1.244069
23	1	0	-8.254063	-0.709520	1.185341
24	1	0	-6.749876	-1.491665	1.710111
25	1	0	-6.958914	0.255583	1.908297
26	6	0	-7.193772	0.877624	-0.828424
27	1	0	-6.800830	1.022078	-1.840593
28	1	0	-8.282754	0.771616	-0.896301
29	1	0	-6.983708	1.788082	-0.254617
30	16	0	2.415423	-2.700503	0.046066
31	16	0	2.150843	2.835286	-0.018501
32	9	0	1.459525	-3.356615	1.191140
33	9	0	3.401003	-2.113582	1.202635
34	9	0	3.435008	-2.146106	-1.097189
35	9	0	3.287261	-4.064395	0.078228
36	9	0	1.493640	-3.389895	-1.108504
37	9	0	3.228314	2.350329	-1.139386
38	9	0	3.178046	2.378065	1.160272
39	9	0	2.887486	4.277416	-0.019536
40	9	0	1.126592	3.427959	1.102604
41	9	0	1.176749	3.399942	-1.196607