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Semiaromatic Polyamides with Enhanced Charge Carrier Mobility

Supplementary Information

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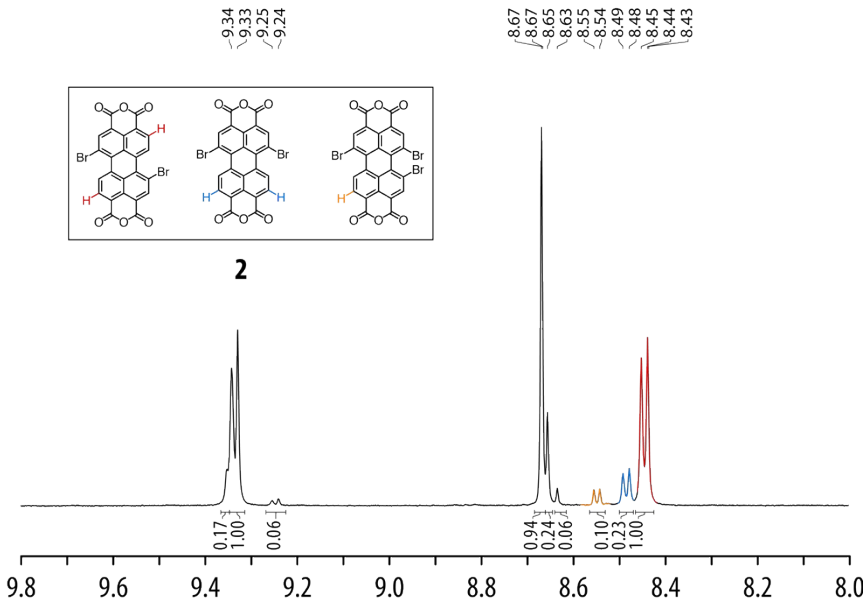
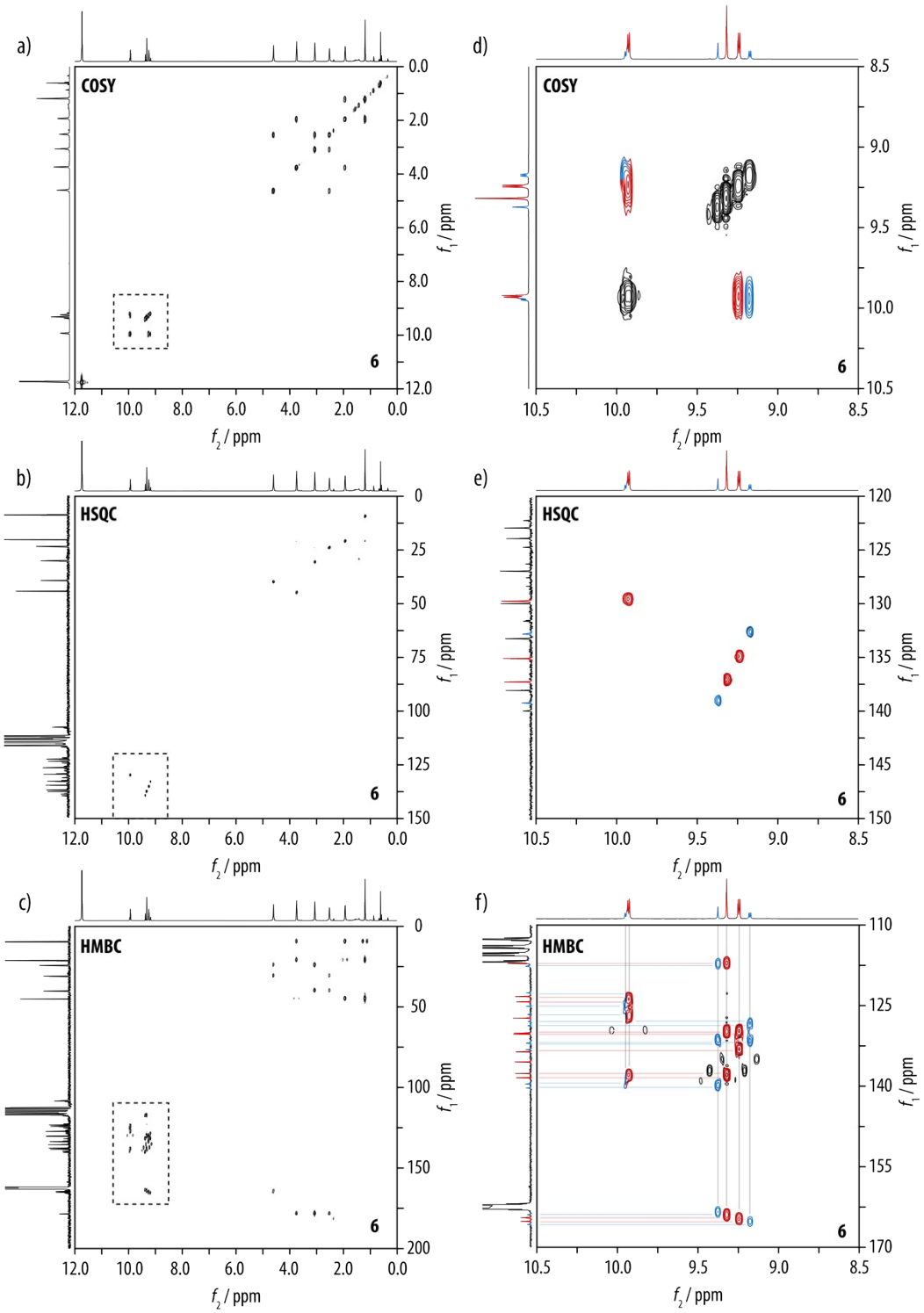
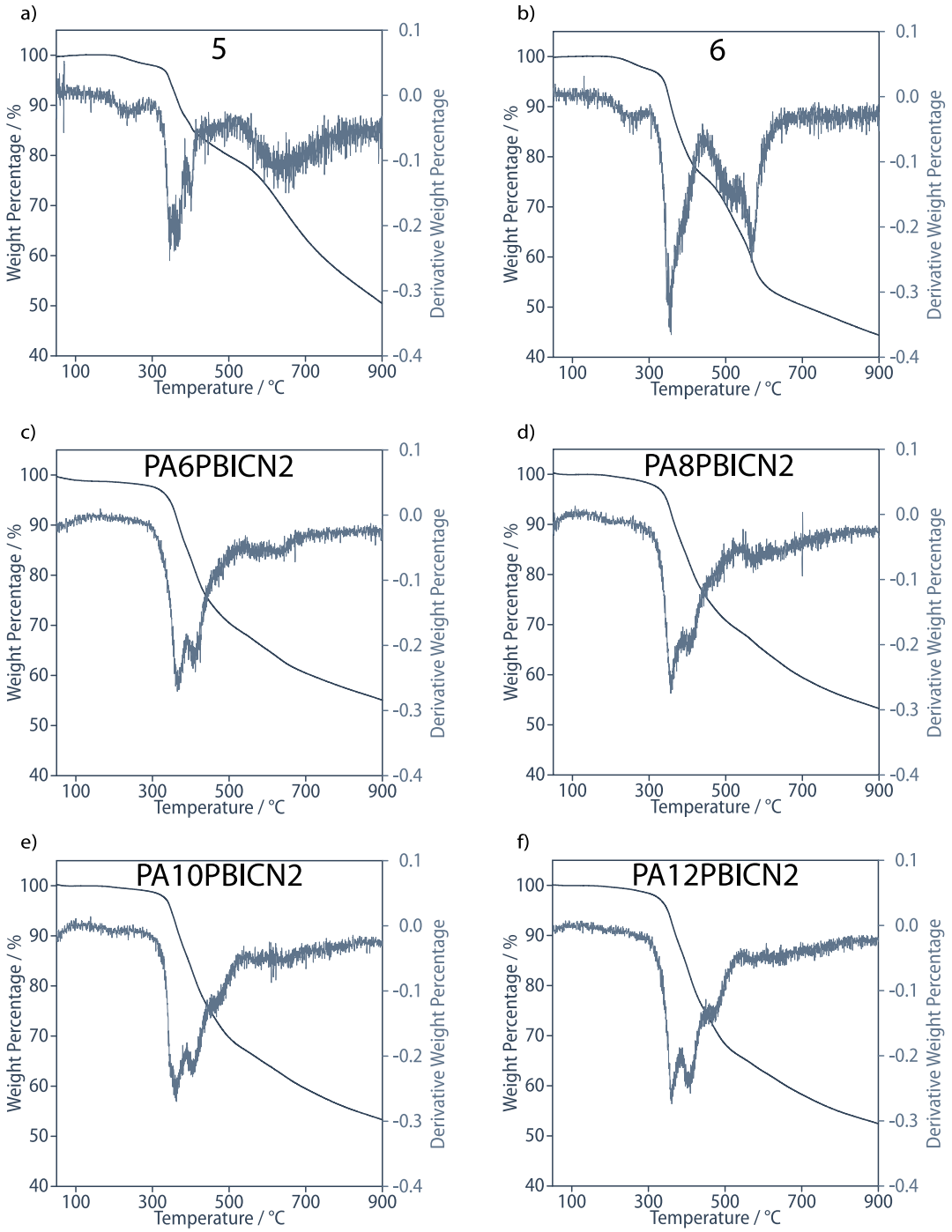
1. Supplementary Figures



Supplementary Figure S1. ^{1}H NMR spectrum (600 MHz, calibrated with 4,4-dimethyl-4-silapentane-1-sulfonic acid) of **2** in conc. D_2SO_4 indicating the presence of the 1,7-dibromo, 1,6-dibromo, and 1,7,6-tribromo perylene bisimide regioisomers.

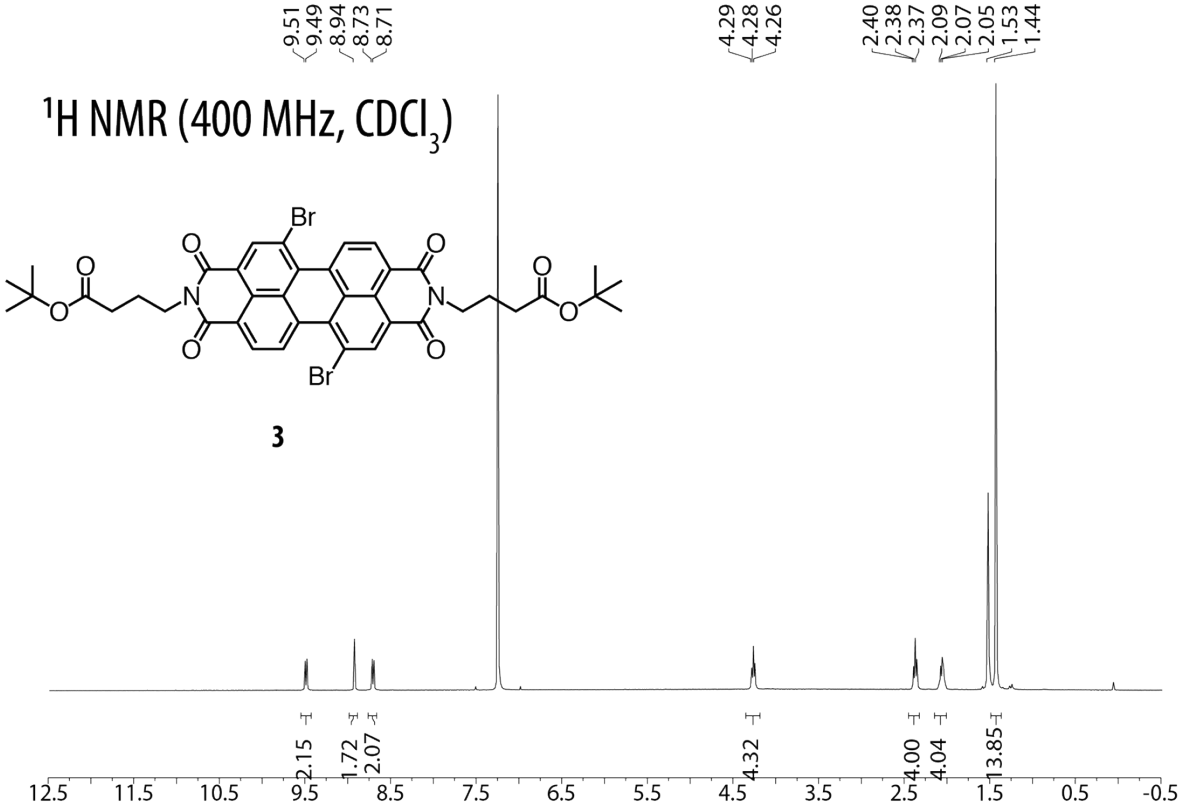


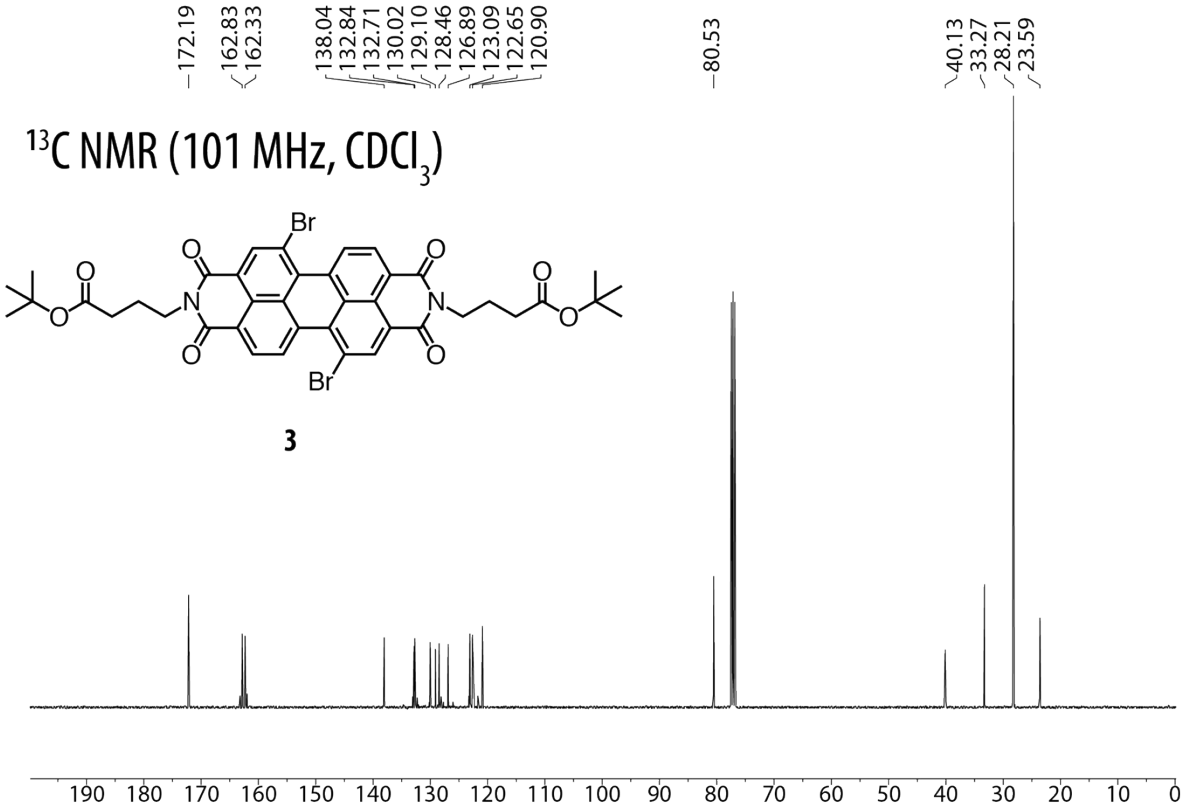
Supplementary Figure S2. *a–c*) 2D NMR spectra (800 MHz, TFA–*d*) of the model compound **6** and the corresponding ^{1}H and ^{13}C NMR spectra. *d–f*) Expanded views of the dashed area of the full spectrum in *a–c)* confirmed the presence of 1,6-dicyano regioisomer (blue) as a side product in addition to the 1,7-dcyanoperylene bisimide **6** as the main component (red).

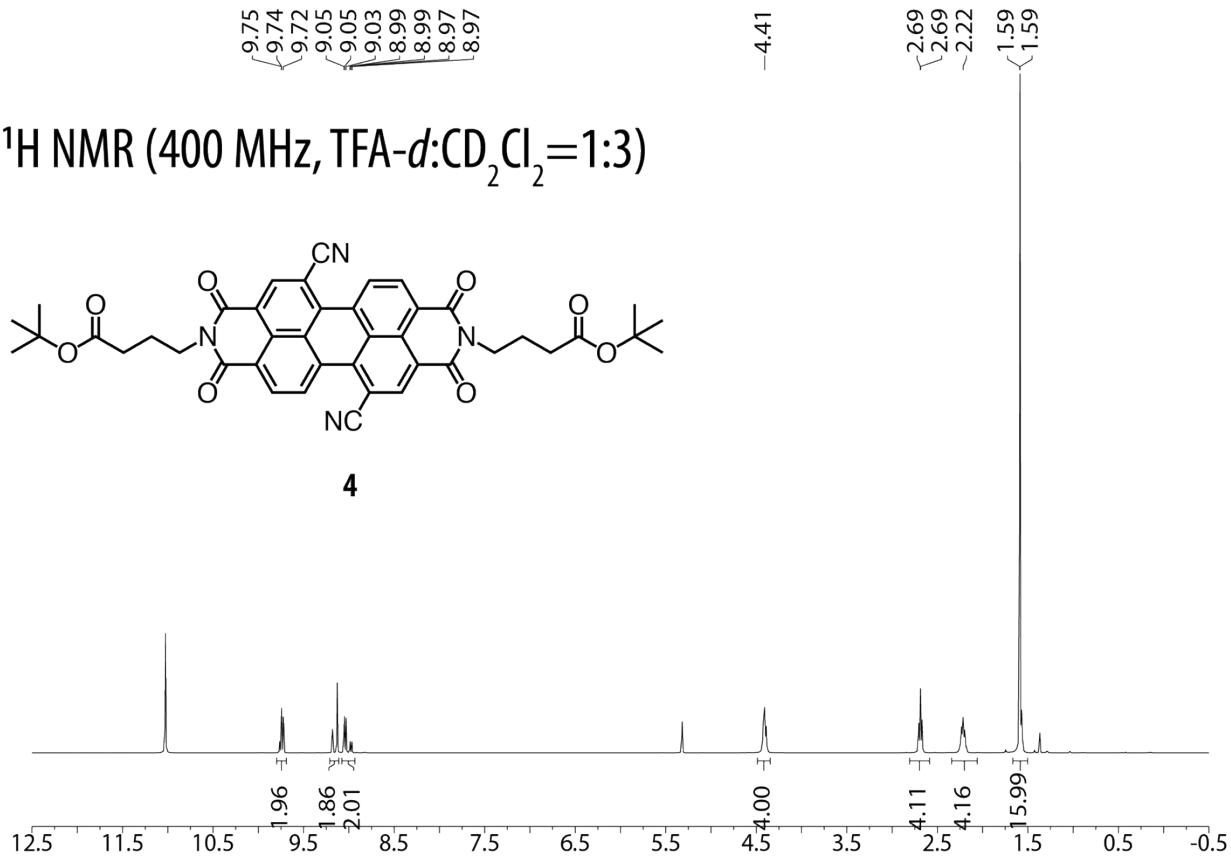


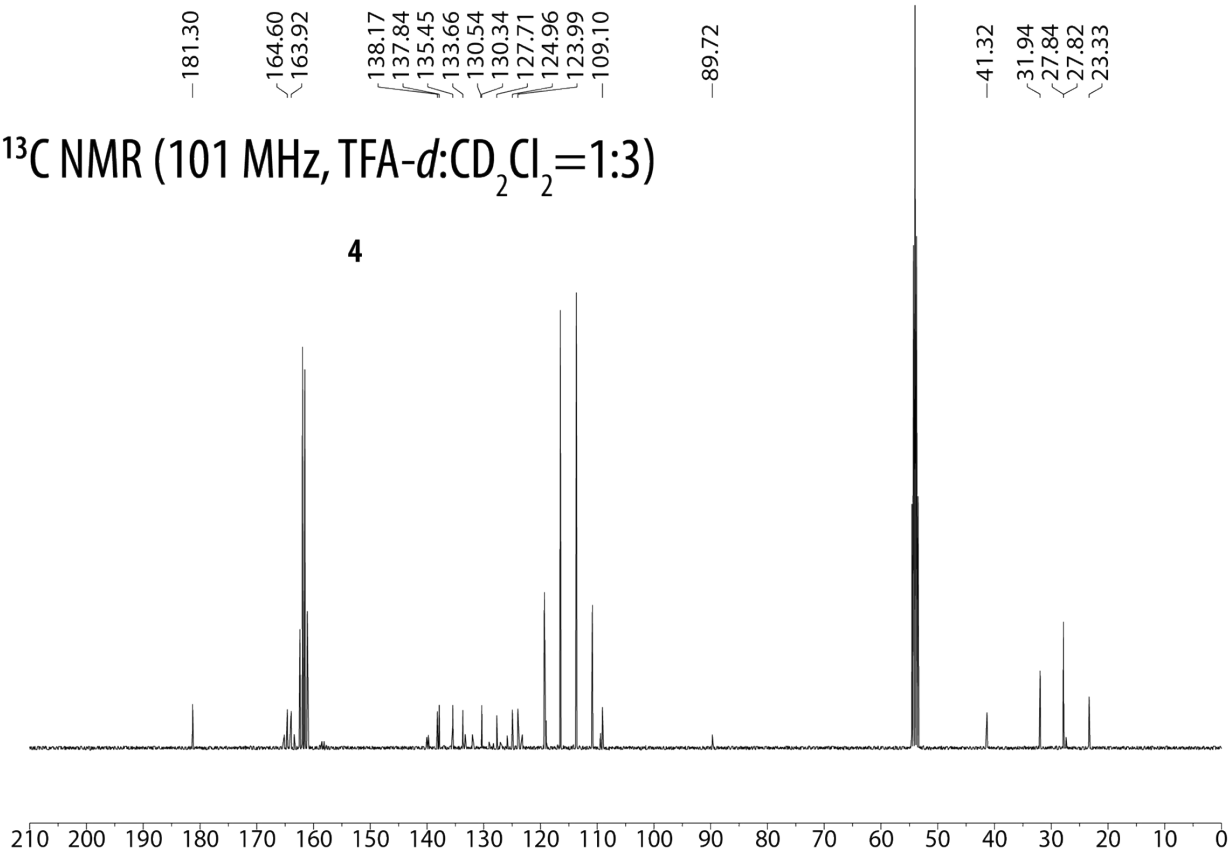
Supplementary Figure S3. TGA and derivative plots of *a)* Monomer **5**. *b)* Model compound **6**. *c)* **PA6PBICN2**. d*)* **PA8PBICN2**. e*)* **PA10PBICN2**. f*)* **PA12PBICN2**.

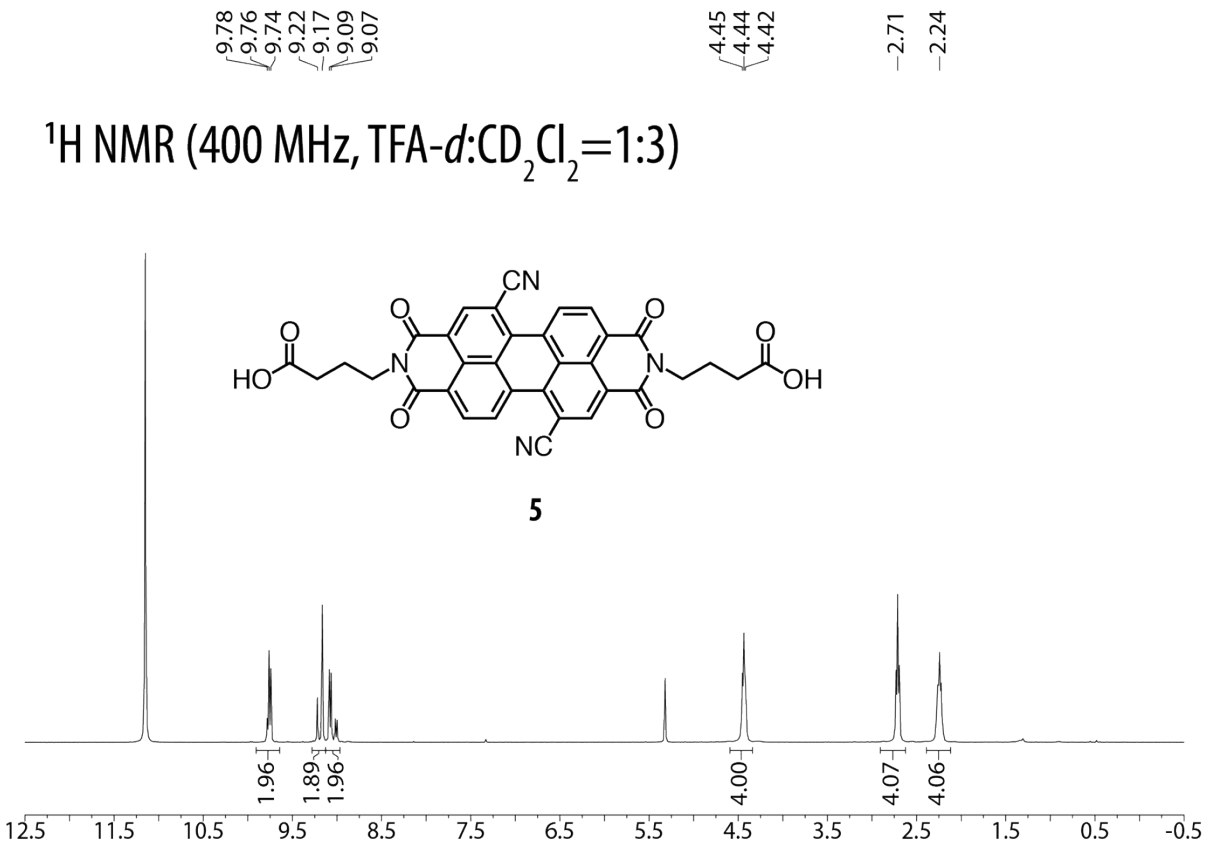
2. NMR Spectra



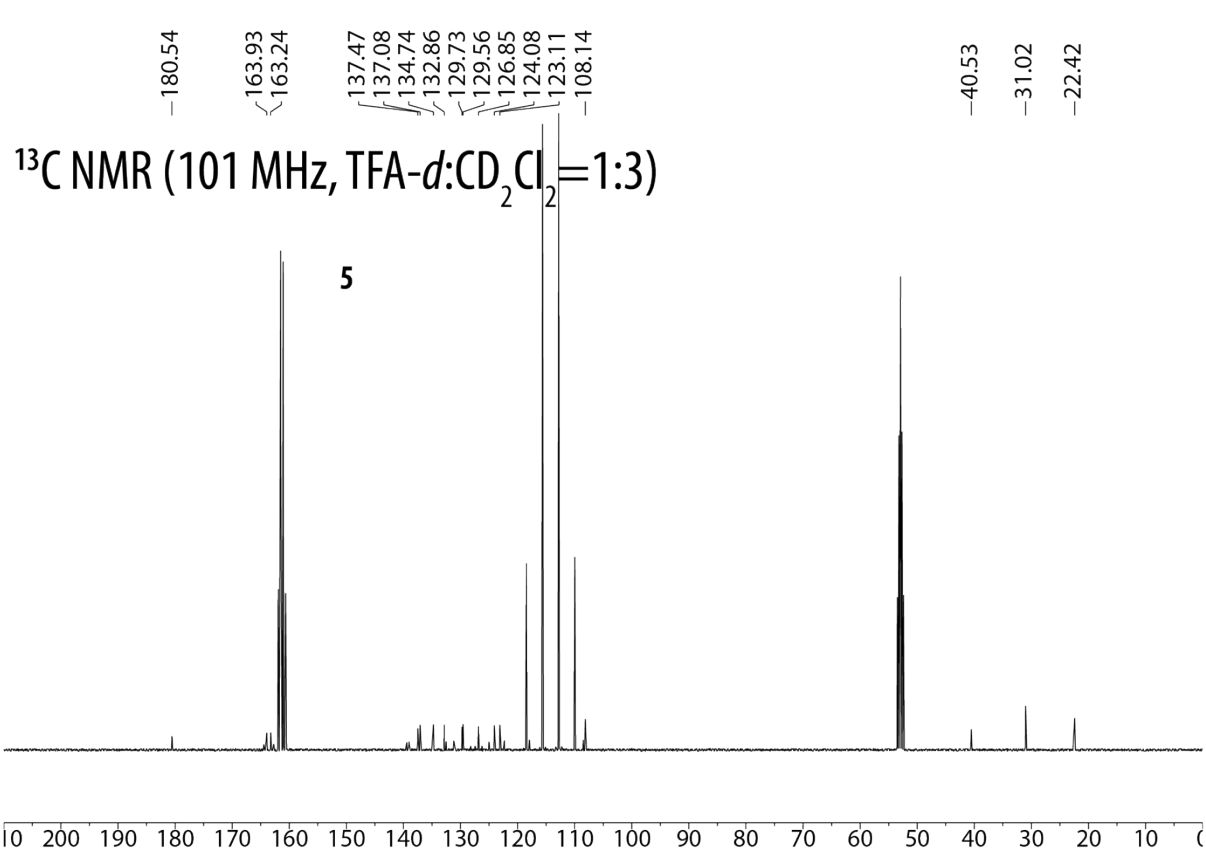



9.75
9.74
9.72
9.05
9.05
9.03
8.99
8.99
8.97
8.97
4.41
2.69
2.69
2.22
1.59
1.59
1H NMR (400 MHz, TFA-d:CD2Cl2=1:3)
CN
NC
4
1.96
1.86
2.01
4.00
4.11
4.16
15.99
12.5
11.5
10.5
9.5
8.5
7.5
6.5
5.5
4.5
3.5
2.5
1.5
0.5
-0.5

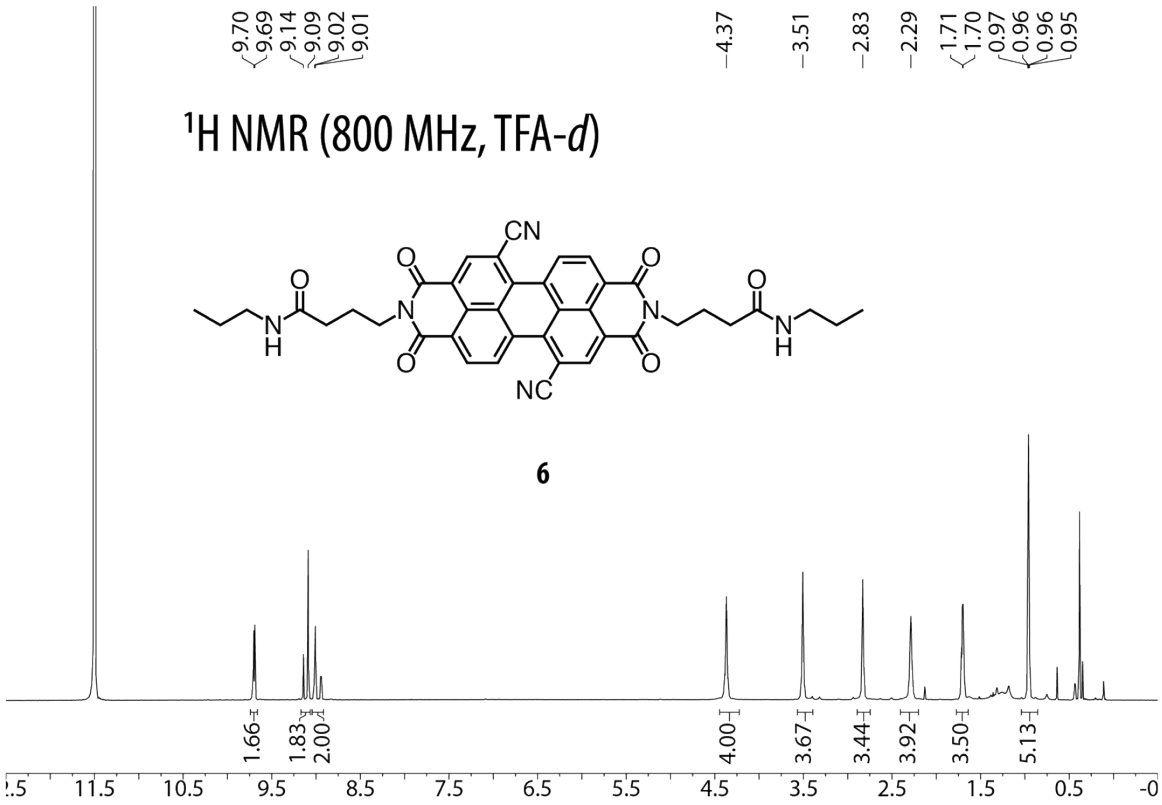

181.30
164.60
163.92
138.17
137.84
135.45
133.66
130.54
130.34
127.71
124.96
123.99
109.10
89.72
41.32
31.94
27.84
27.82
23.33
13C NMR (101 MHz, TFA-d:CD2Cl2=1:3)
4
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0

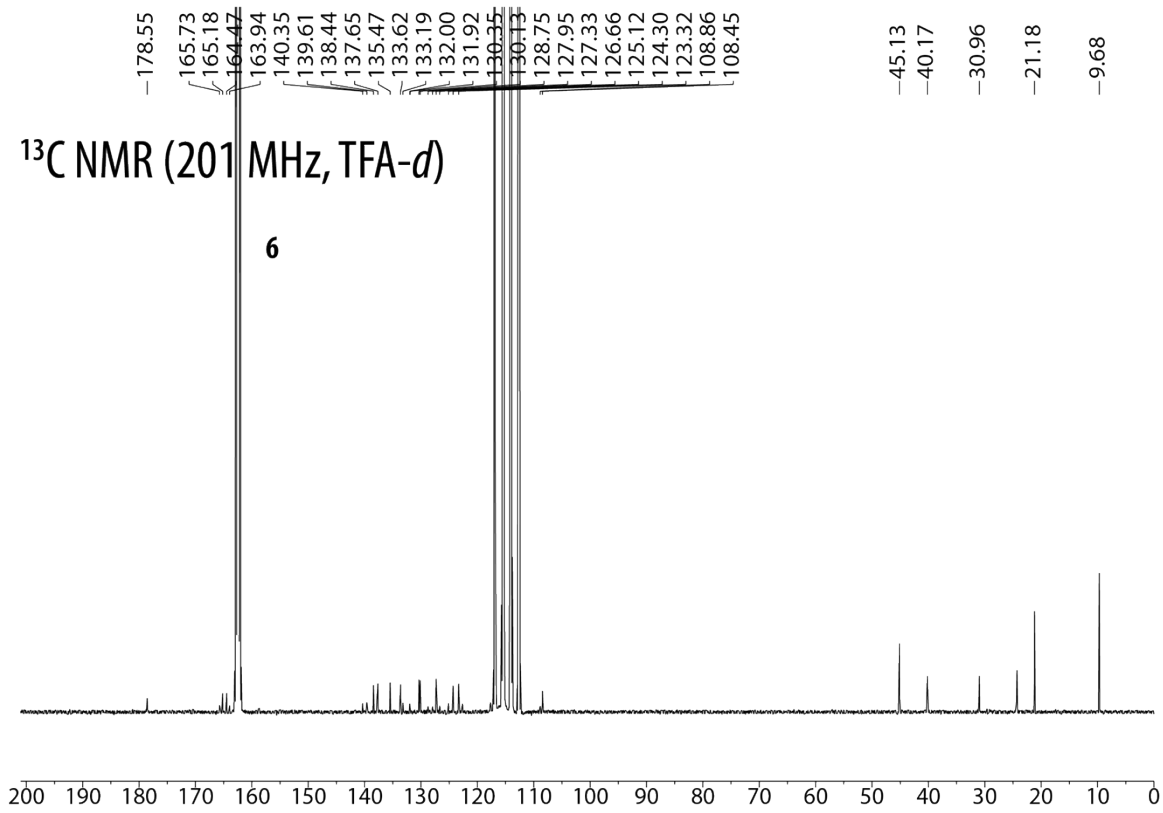


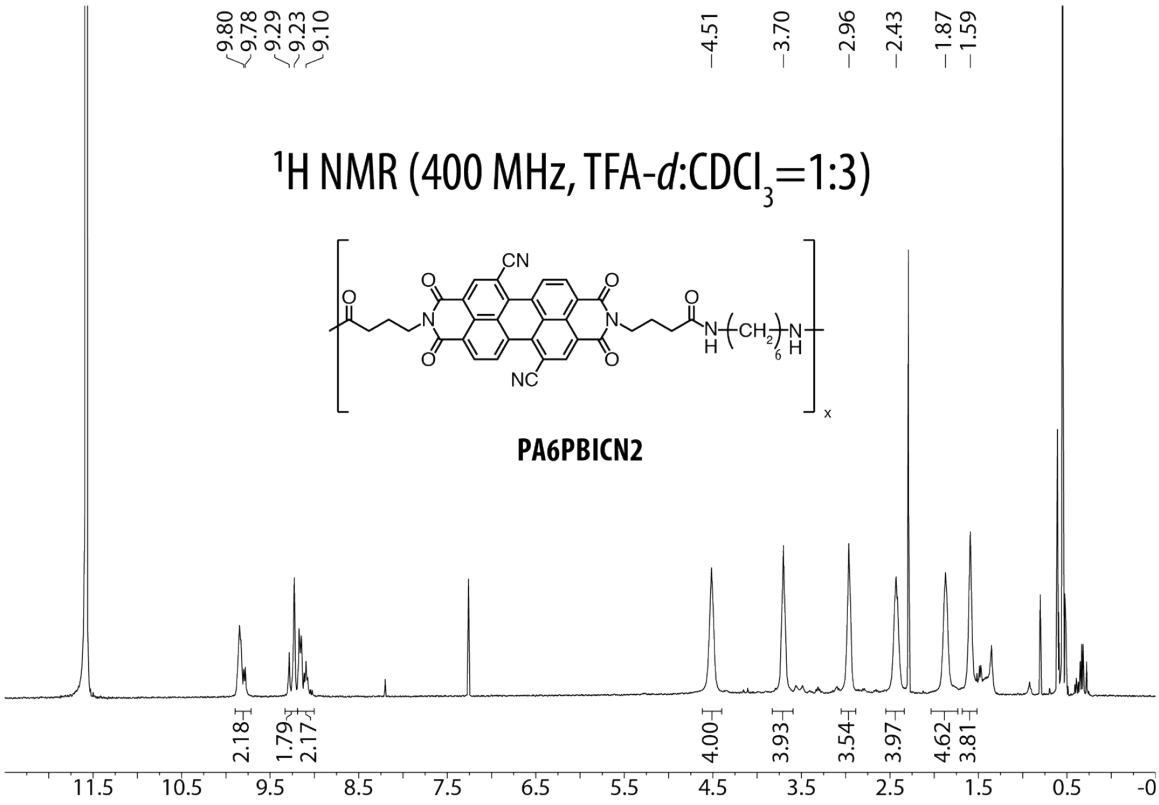
^{1}H NMR (400 MHz, TFA-*d*:CD_2Cl_2=1:3)

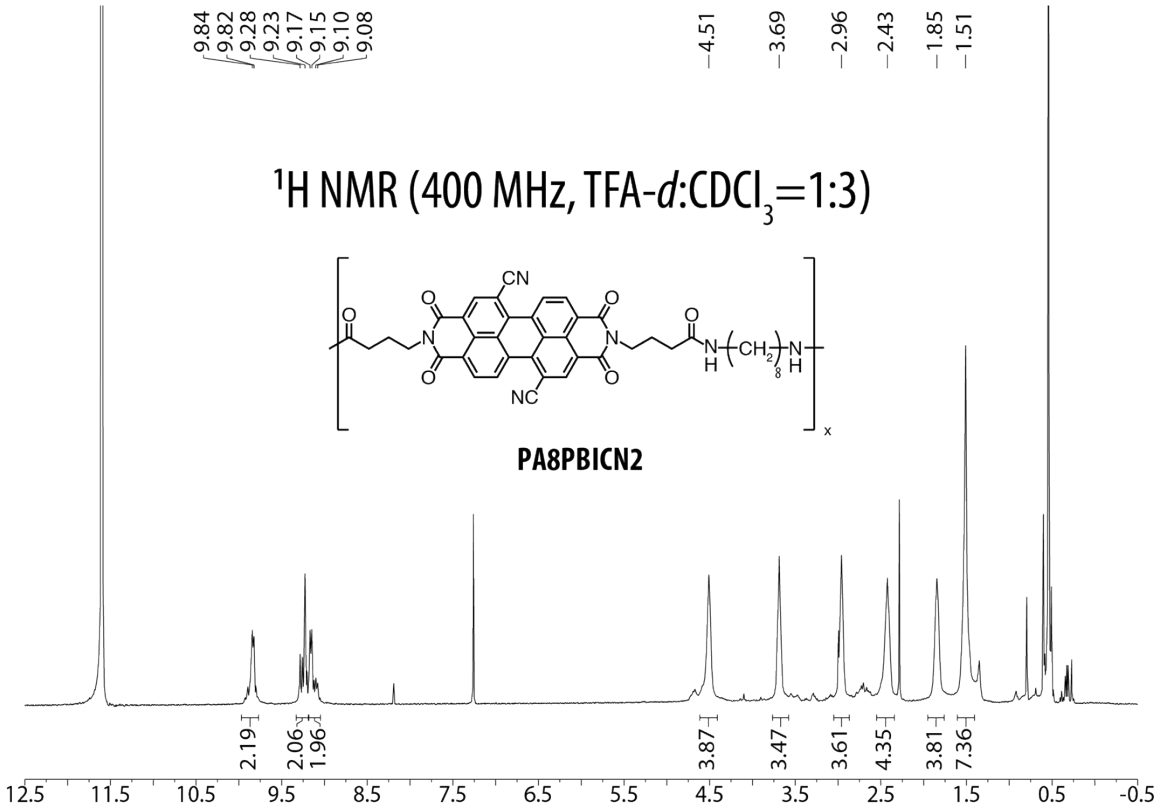


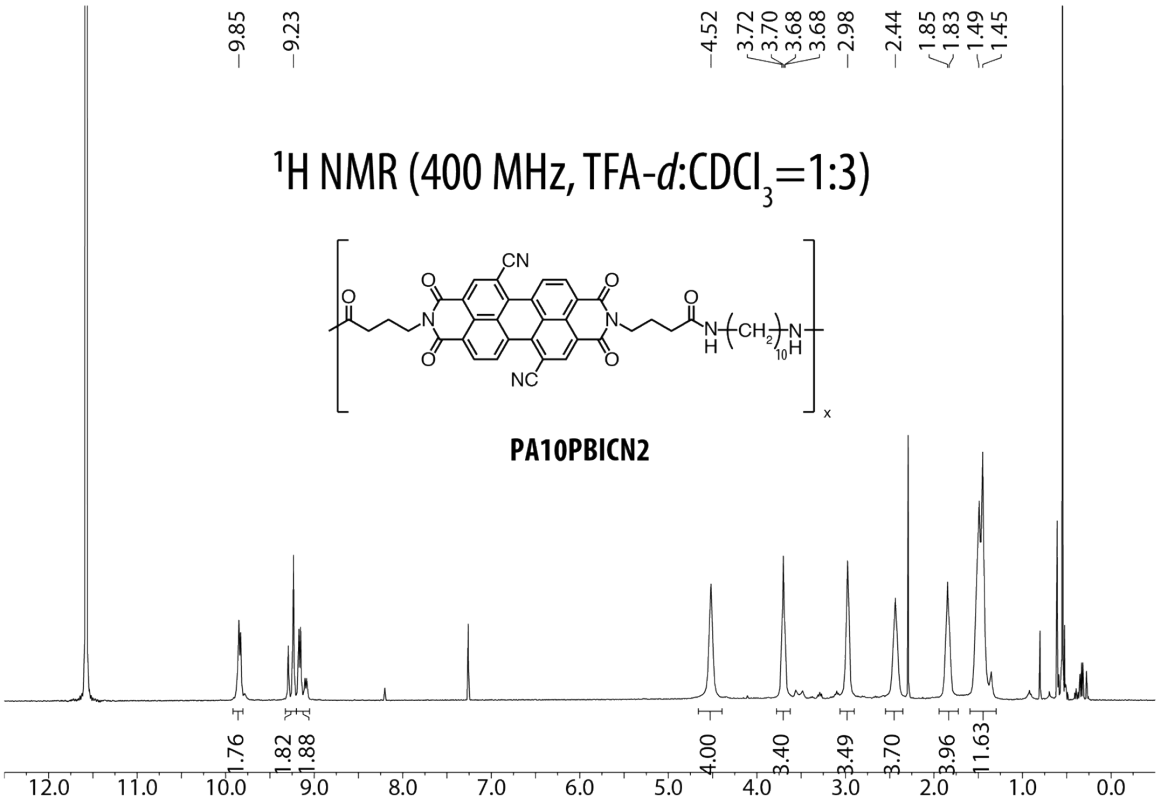
^{13}C NMR (101 MHz, TFA-*d*:CD_2Cl_2=1:3)

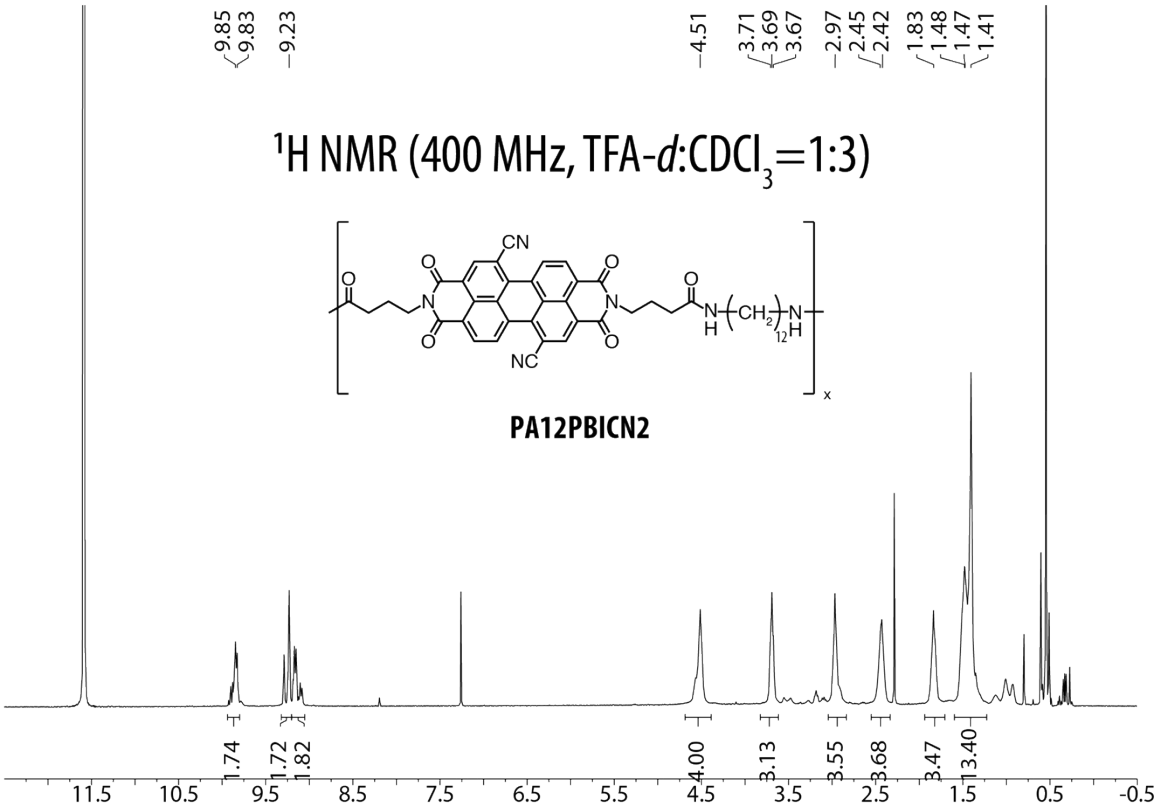

9.70
9.69
9.14
9.09
9.02
9.01
4.37
3.51
2.83
2.29
1.71
1.70
0.97
0.96
0.96
0.95
1H NMR (800 MHz, TFA-d)
CN
NC
6
1.66
1.83
2.00
4.00
3.67
3.44
3.92
3.50
5.13


178.55
165.73
165.18
164.47
163.94
140.35
139.61
138.44
137.65
135.47
133.62
133.19
132.00
131.92
130.35
130.13
128.75
127.95
127.33
126.66
125.12
124.30
123.32
108.86
108.45
45.13
40.17
30.96
21.18
9.68
13C NMR (201 MHz, TFA-d)
6


9.80
9.78
9.29
9.23
9.10
4.51
3.70
2.96
2.43
1.87
1.59
¹H NMR (400 MHz, TFA-d:CDCl3=1:3)
CN
NC
PA6PBICN2
2.18
1.79
2.17
4.00
3.93
3.54
3.97
4.62
3.81
11.5
10.5
9.5
8.5
7.5
6.5
5.5
4.5
3.5
2.5
1.5
0.5
-0


9.84
9.82
9.28
9.23
9.17
9.15
9.10
9.08
4.51
3.69
2.96
2.43
1.85
1.51
¹H NMR (400 MHz, TFA-d:CDCl3=1:3)
CN
NC
PA8PBICN2
2.19
2.06
1.96
3.87
3.47
3.61
4.35
3.81
7.36
12.5
11.5
10.5
9.5
8.5
7.5
6.5
5.5
4.5
3.5
2.5
1.5
0.5
-0.5


9.85
9.23
4.52
3.72
3.70
3.68
3.68
2.98
2.44
1.85
1.83
1.49
1.45
1H NMR (400 MHz, TFA-d:CDCl3=1:3)
CN
NC
PA10PBICN2
1.76
1.82
1.88
4.00
3.40
3.49
3.70
3.96
11.63
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0


9.85
9.83
9.23
4.51
3.71
3.69
3.67
2.97
2.45
2.42
1.83
1.48
1.47
1.41
1H NMR (400 MHz, TFA-d:CDCl3=1:3)
CN
NC
PA12PBICN2
1.74
1.72
1.82
4.00
3.13
3.55
3.68
3.47
3.40
11.5
10.5
9.5
8.5
7.5
6.5
5.5
4.5
3.5
2.5
1.5
0.5
-0.5