Electronic Supplementary Information (ESI) for Molecules

Mechanofluorochromic properties of 1,4-diphenylanthracene derivatives with hypsochromic shift

Fumihiro Kannen[1], Tadatoshi Adachi[1], Manato Nishimura[1], Kenji Yoza[2]

and Takahiro Kusukawa[*1]*

[1]Faculty of Molecular Chemistry and Engineering,
Graduate School of Science and Technology, Kyoto Institute of Technology,
Matsugasaki, Sakyo-ku Kyoto 606-8585, Japan
[2]Bruker Japan K.K., 3-9 Moriya-cho, Kanagawa-ku, Yokohama 221-0022, Japan

Outline

1. Supplementary figures and tables

1.1 Fluorescence spectra of the pristine, ground and stored (5 min. after grinding) samples of 1,4-diphenylanthracene derivatives

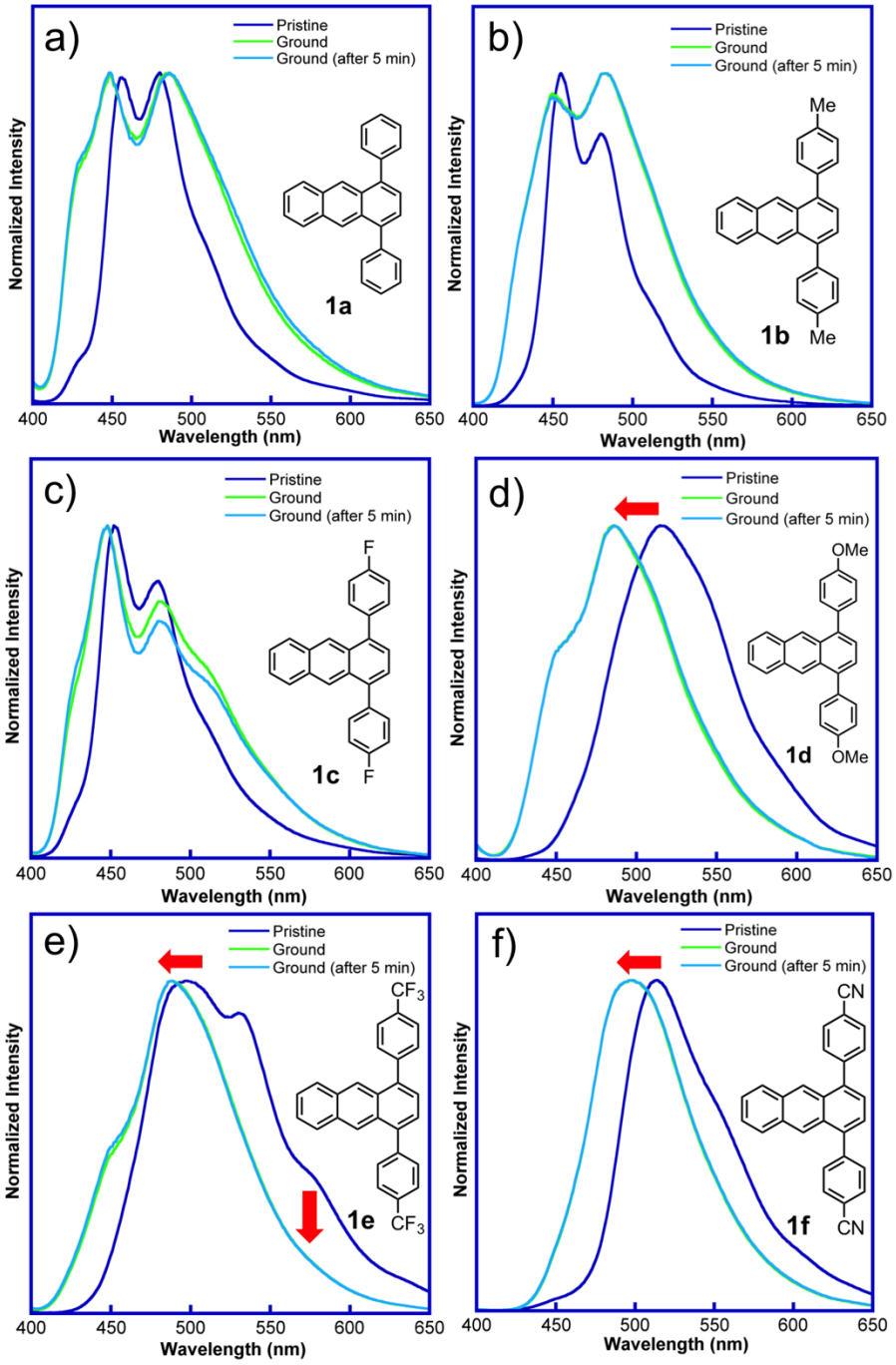


Figure S1. Normalized fluorescence spectra of pristine, ground and stored (5 min. after grinding) samples (λ_{ex} =365 nm), a) **1a** (R=H), b) **1b** (R=Me), c) **1c** (R=F), d) **1d** (R=OMe), e) **1e** (R=CF_3), f) **1f** (R=CN).

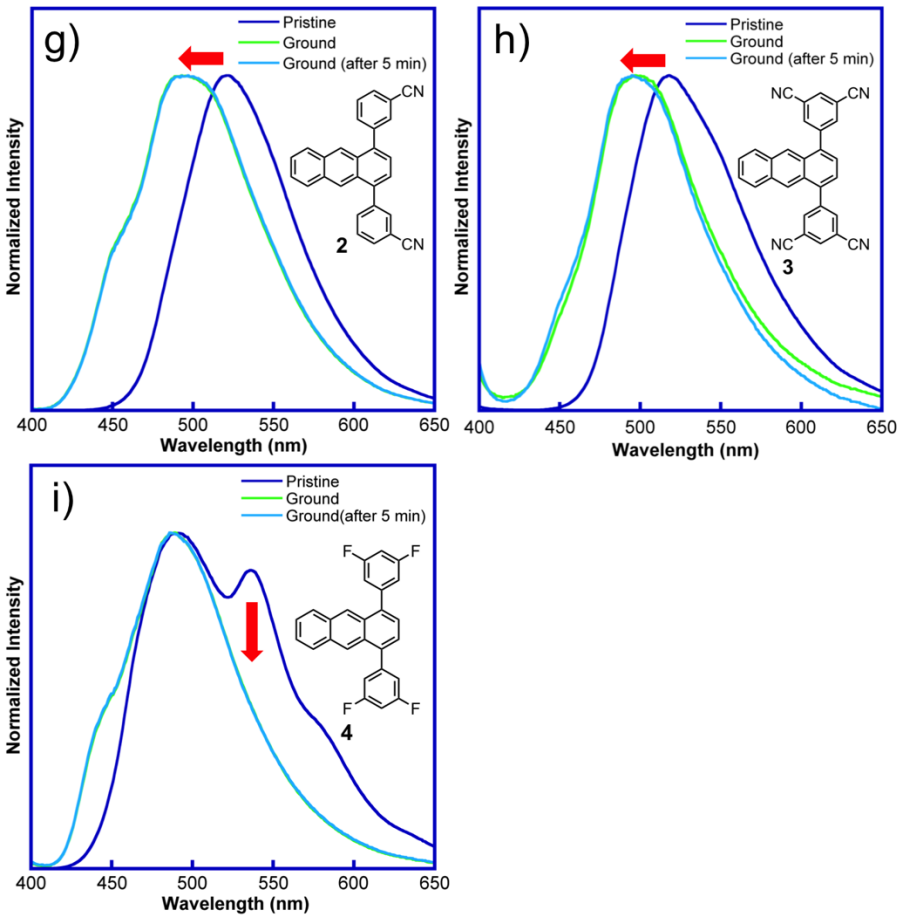


Figure S1 (contd.). Normalized fluorescence spectra of pristine, ground and stored (5 min. after grinding) samples (λ_{ex} =365 nm), g) **2** (3-CN), h) **3** (3,5-CN_2, R'=CN), i) **4** (3,5-F_2, R'=F).

1.2 Fluorescence images of the pristine, ground, stored (5 min after grinding) samples, heated and fumed samples of 1,4-diphenylanthracene derivatives

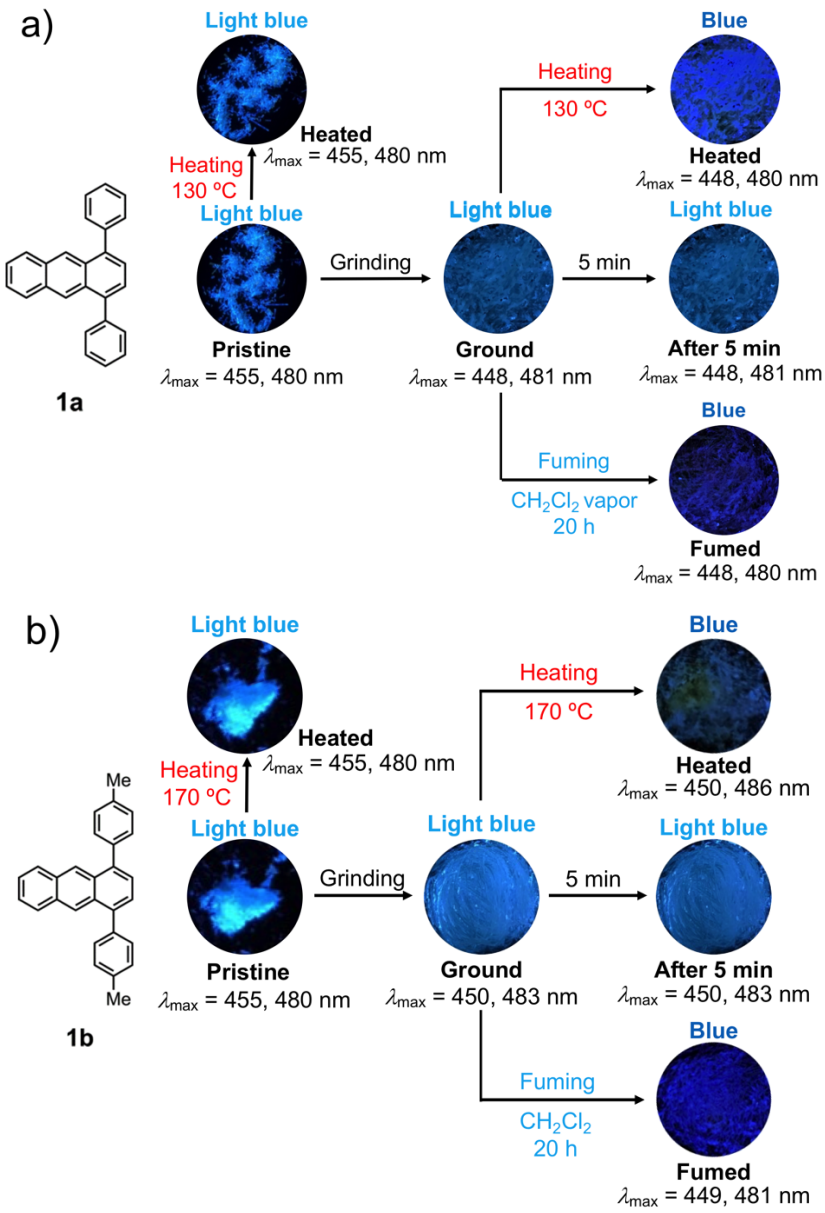


Figure S2. Fluorescence images of 1,4-diphenylanthracene derivatives pristine, ground, stored (5 min after grinding), heated and fumed samples during a 365 nm UV irradiation, a) **1a** (R=H), b) **1b** (R=Me).

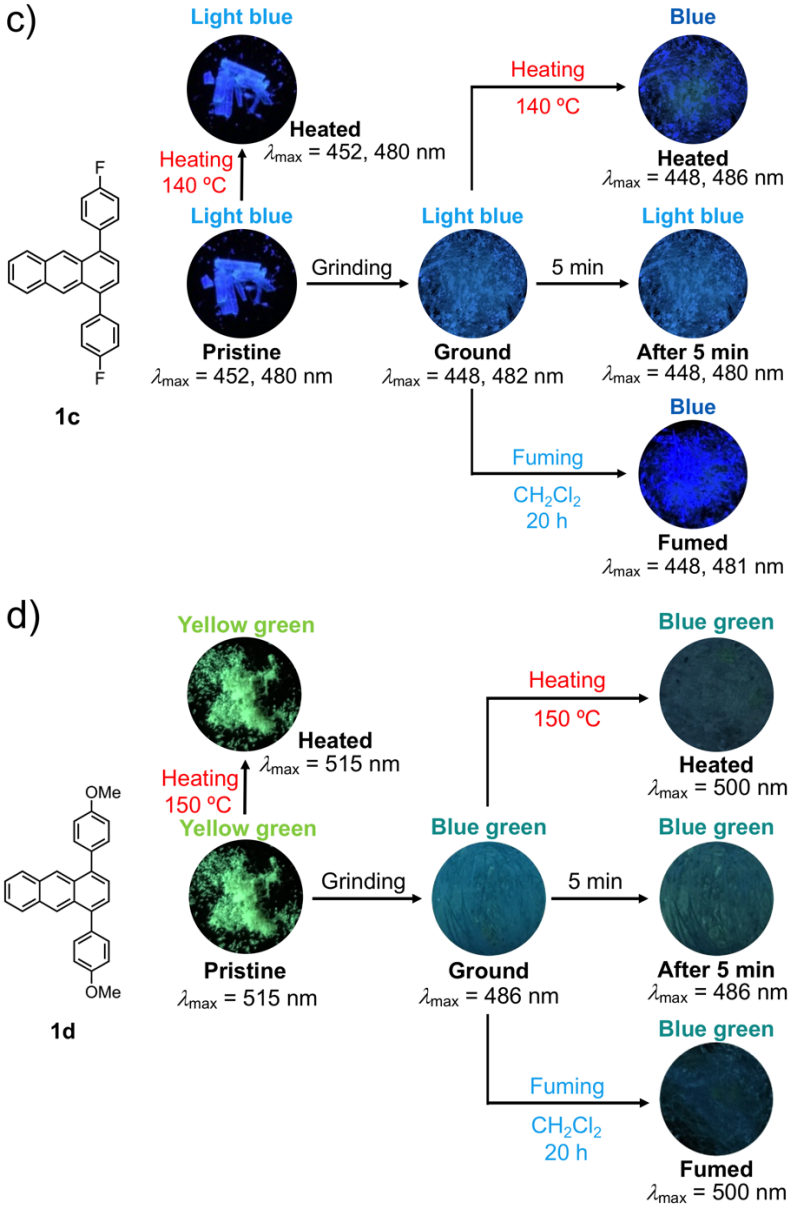


Figure S2 (contd.). Fluorescence images of 1,4-diphenylanthracene derivatives pristine, ground, stored (5 min after grinding), heated and fumed samples during a 365 nm UV irradiation, c) **1c** (R=F), b) **1d** (R=OMe).

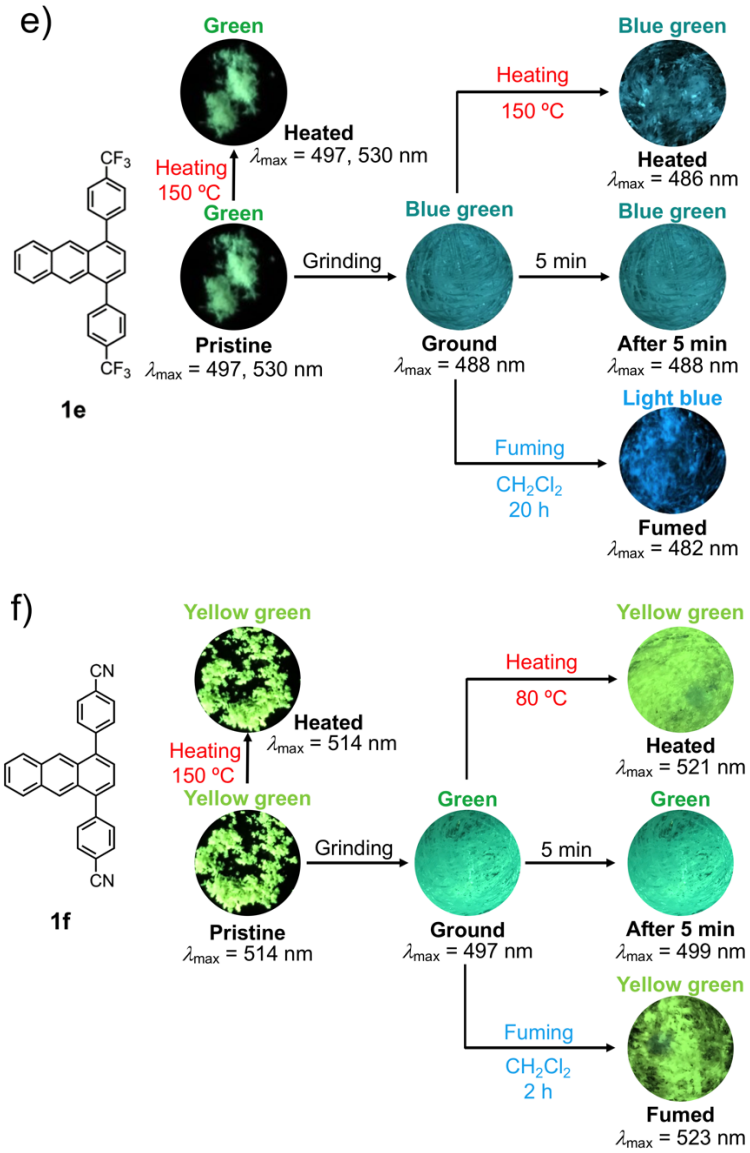


Figure S2 (contd.). Fluorescence images of 1,4-diphenylanthracene derivatives pristine, ground, stored (5 min after grinding), heated and fumed samples during a 365 nm UV irradiation, e) **1e** (R=CF_3), f) **1f** (R=CN).

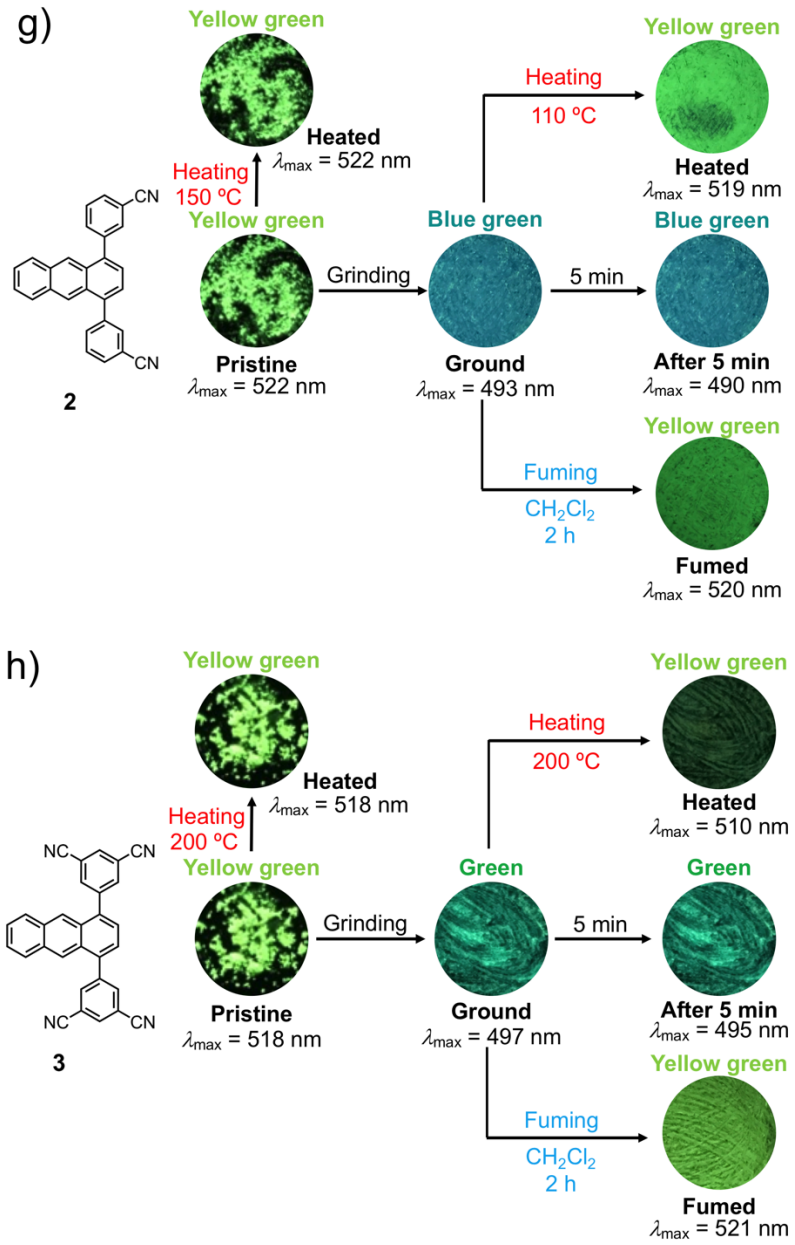


Figure S2 (contd.). Fluorescence images of 1,4-diphenylanthracene derivatives pristine, ground, stored (5 min after grinding), heated and fumed samples during a 365 nm UV irradiation, g) **2** (3-CN), h) **3** (3,5-CN_2, R'=CN).

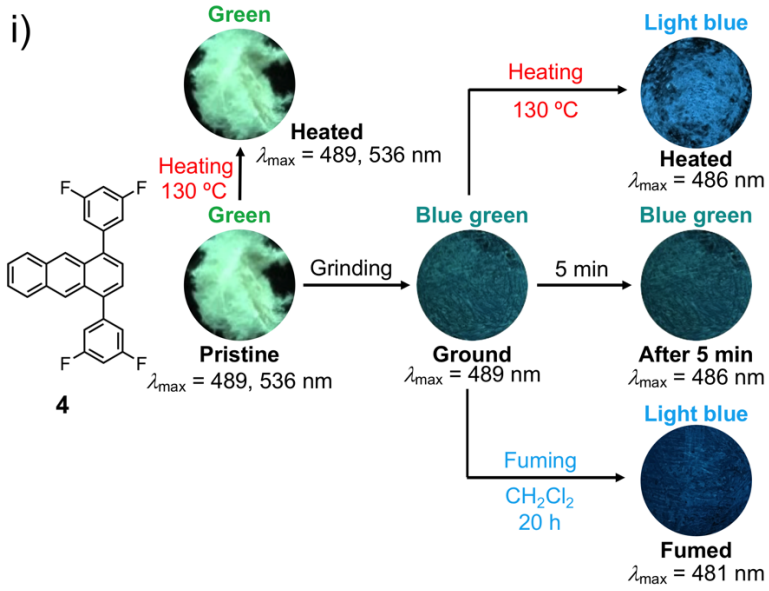


Figure S2 (contd.). Fluorescence images of 1,4-diphenylanthracene derivatives pristine, ground, stored (5 min after grinding), heated and fumed samples during a 365 nm UV irradiation, i) **4** (3,5-F_2, R'=F).

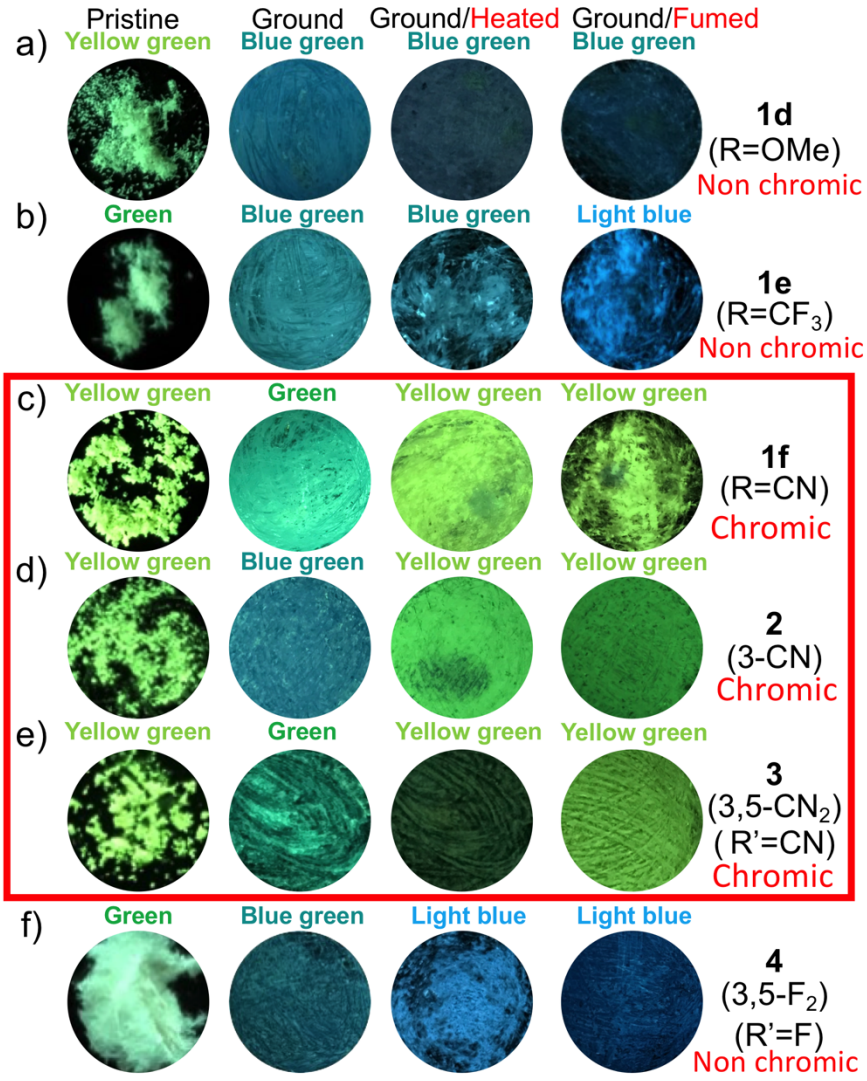


Figure S3. Fluorescent images of the pristine, ground, heated and fumed (CH_2Cl_2 vapor) samples of 1,4-diphenylanthracene derivatives **1d**-**1f**, and **2**-**4** during a 365 nm UV irradiation, a) **1d** (R=OMe, heated at 150 °C for 5 min., fumed with CH_2Cl_2 vapor for 20 h), b) **1e** (R=CF_3, heated at 150 °C for 5 min., fumed with CH_2Cl_2 vapor for 20 h), c) **1f** (R=CN, heated at 80 °C for 5 min., fumed with CH_2Cl_2 vapor for 2 h), d) **2** (3-CN, heated at 110 °C for 5 min., fumed with CH_2Cl_2 vapor for 2 h), e) **3** (3,5-CN_2, R'=CN, heated at 200 °C for 5 min., fumed with CH_2Cl_2 vapor for 2 h), f) **4** (3,5-F_2, R'=F, heated at 130 °C for 5 min., fumed with CH_2Cl_2 vapor for 20 h).

1.3 Fluorescence spectra of the pristine, ground, ground-fumed and ground-heated samples of 1,4-diphenylanthracene derivatives

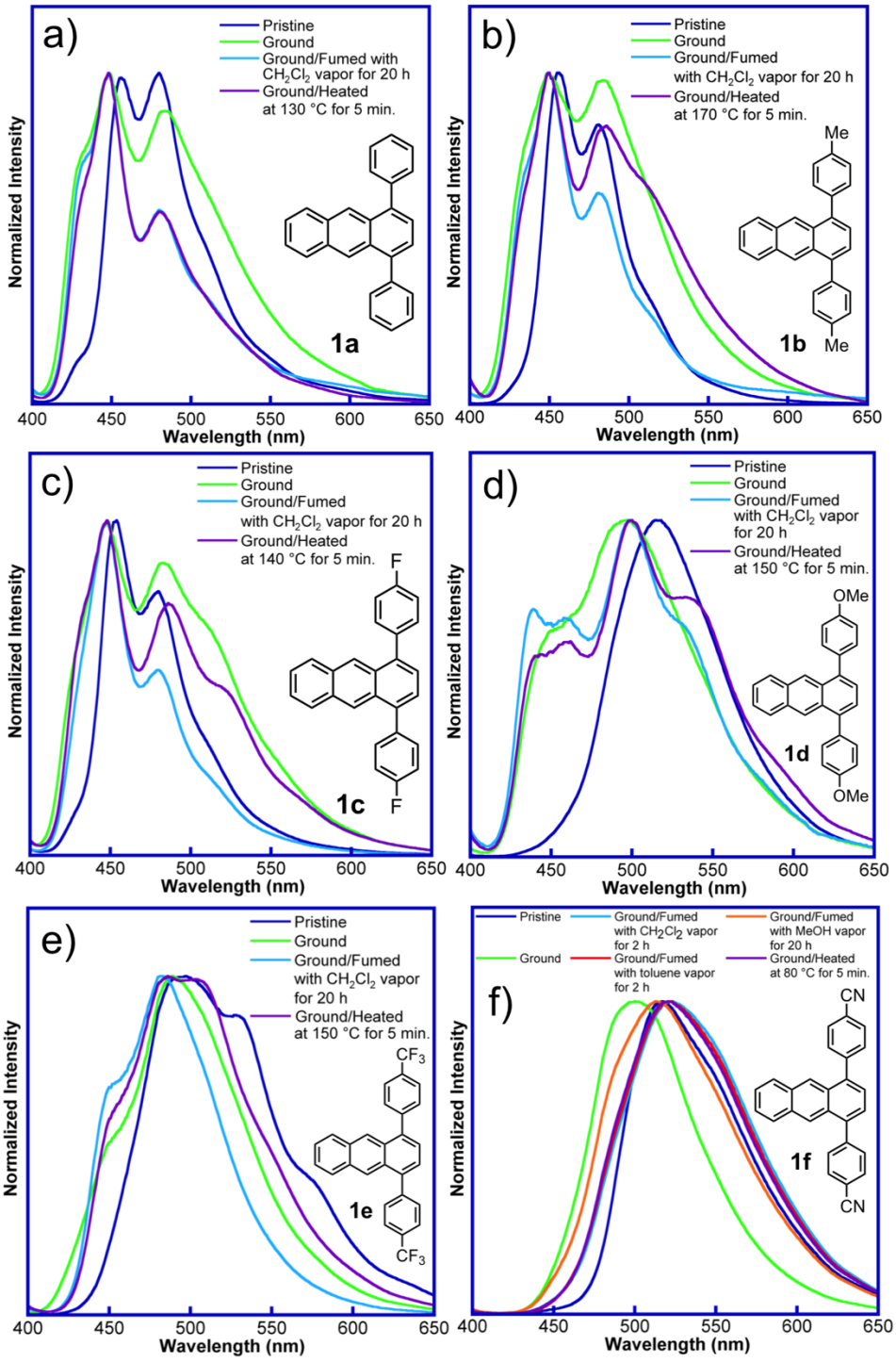


Figure S4. Normalized fluorescence spectra of the pristine, ground, ground-fumed and ground-heated samples (λ_{ex}=365 nm), a) **1a** (R=H), b) **1b** (R=Me), c) **1c** (R=F), d) **1d** (R=OMe), e) **1e** (R=CF_3), f) **1f** (R=CN).

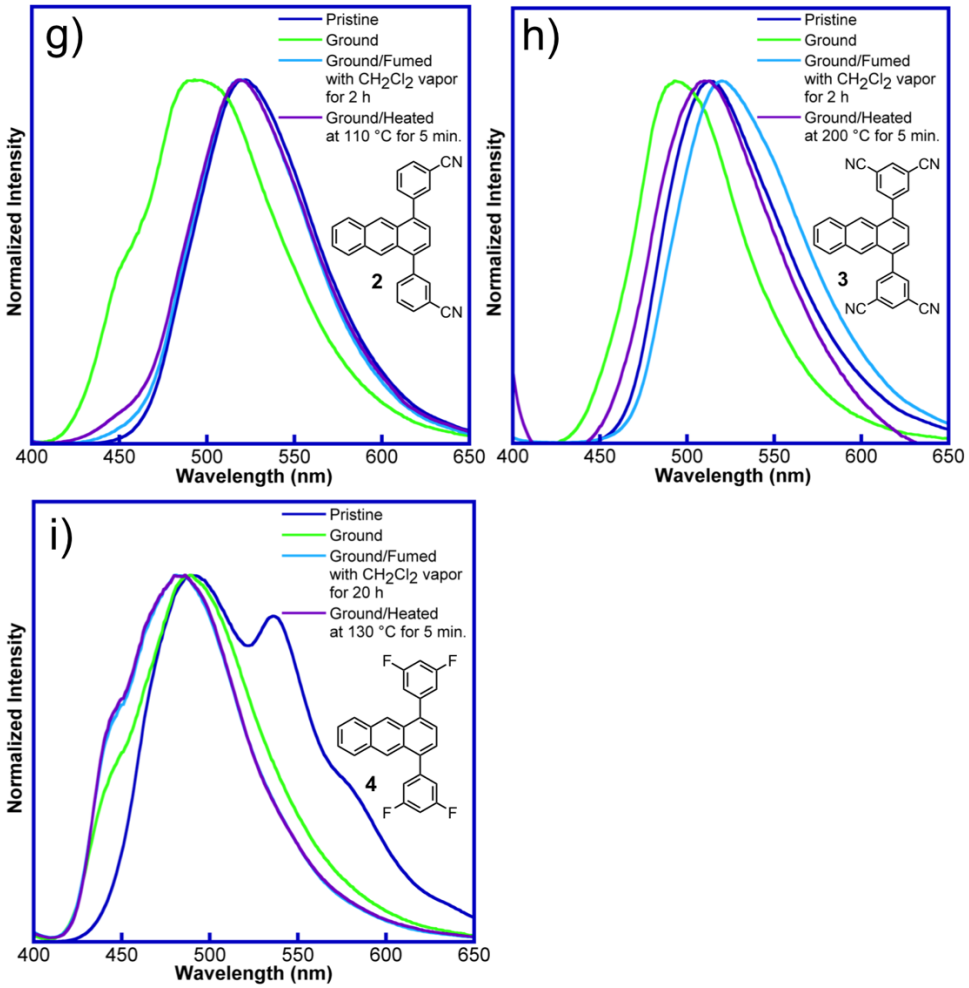


Figure S4 (contd.). Normalized fluorescence spectra of the pristine, ground, ground-fumed and ground-heated samples (λ_{ex}=365 nm), g) **2** (3-CN), h) **3** (3,5-CN_2, R'=CN), i) **4** (3,5-F_2, R'=F).

1.4 Vapochromic properties of 1,4-diphenylanthracene derivatives

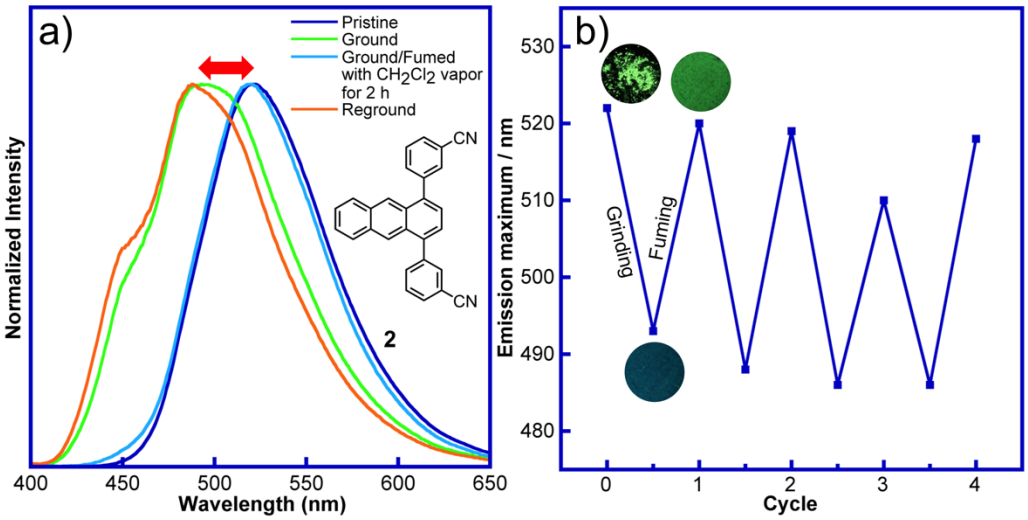


Figure S5. Vapochromic properties of 1,4-diphenylanthracene derivative **2** (3-CN), a) fluorescence spectra of pristine, ground, ground-fumed (CH_2Cl_2 vapor, 2 h) and reground samples, b) repeated grinding-fuming cycles.

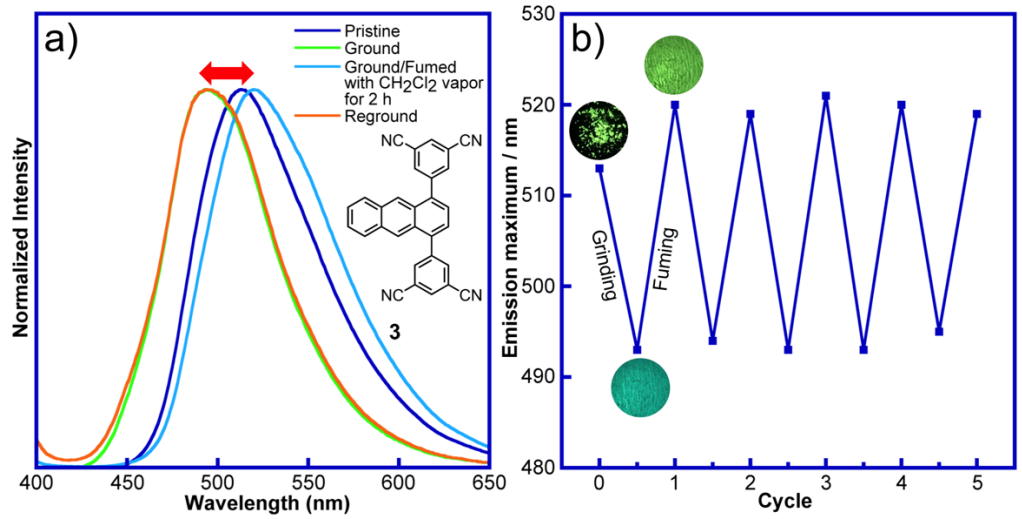


Figure S6. Vapochromic properties of 1,4-diphenylanthracene derivative **3** (3,5-CN_2, R'=CN), a) fluorescence spectra of pristine, ground, ground-fumed (CH_2Cl_2 vapor, 2 h) and reground samples, b) repeated grinding-fuming cycles.

1.5 Thermochromic properties of 1,4-diphenylanthracene derivatives

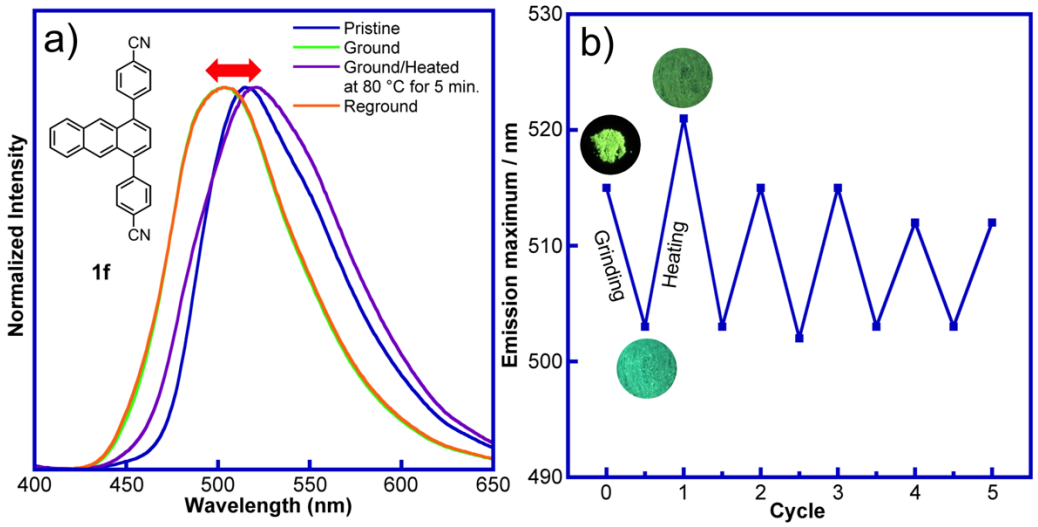


Figure S7. Thermochromic properties of 1,4-diphenylanthracene derivative **1f** (R=CN), a) fluorescence spectra of pristine, ground, ground-heated (80 °C for 5 min.) and reground samples, b) repeated grinding-heating cycles.

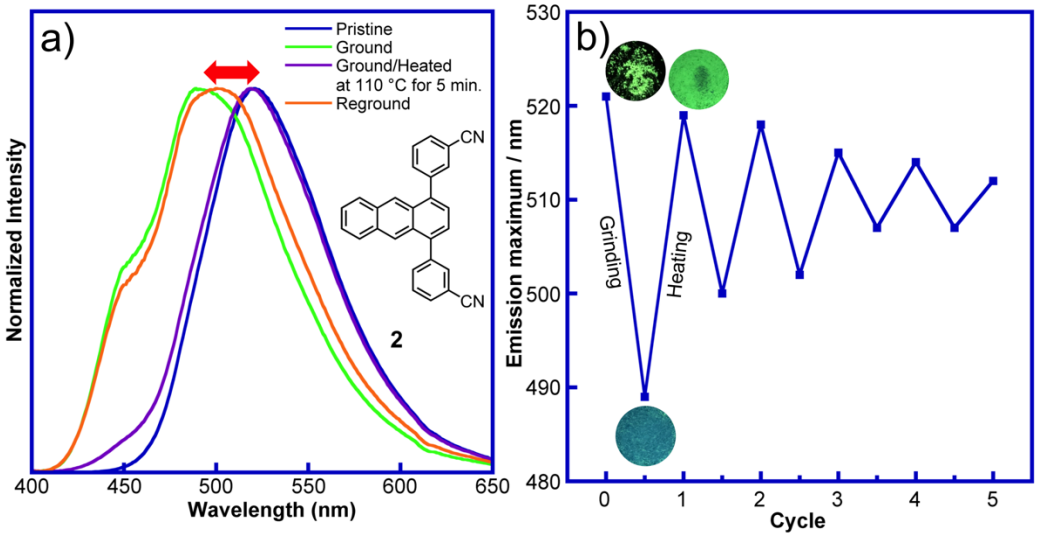


Figure S8. Thermochromic properties of 1,4-diphenylanthracene derivative **2** (3-CN), a) fluorescence spectra of pristine, ground, ground-heated (110 °C for 5 min.) and reground samples, b) repeated grinding-heating cycles.

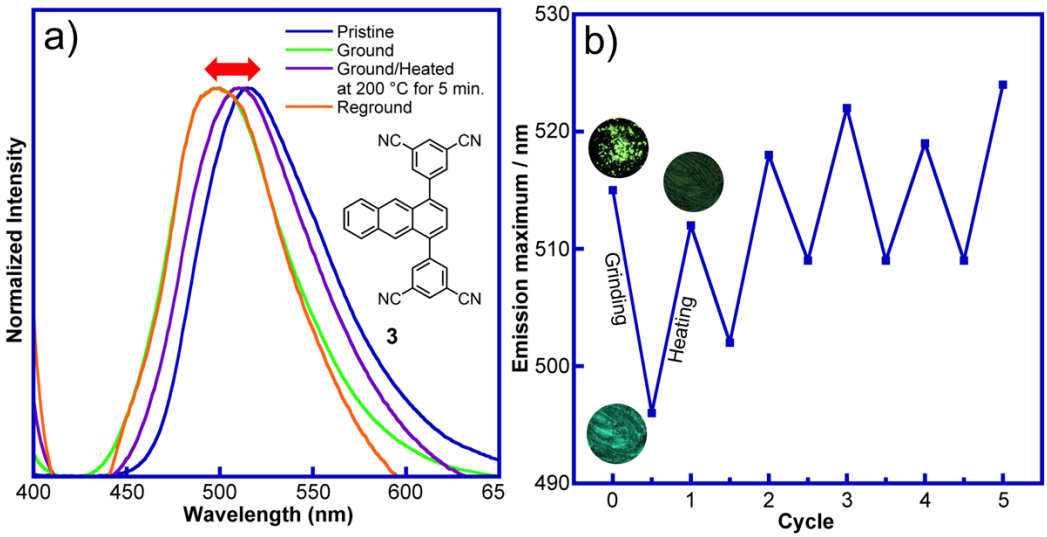


Figure S9. Thermochromic properties of 1,4-diphenylanthracene derivative **3** (3,5-CN_2, R'=CN), a) fluorescence spectra of pristine, ground, ground-heated (200 °C for 5 min.) and reground samples, b) repeated grinding-heating cycles.

1.6 IR spectra of the CN-substituted 1,4-diphenylanthracene derivatives 1f, 2

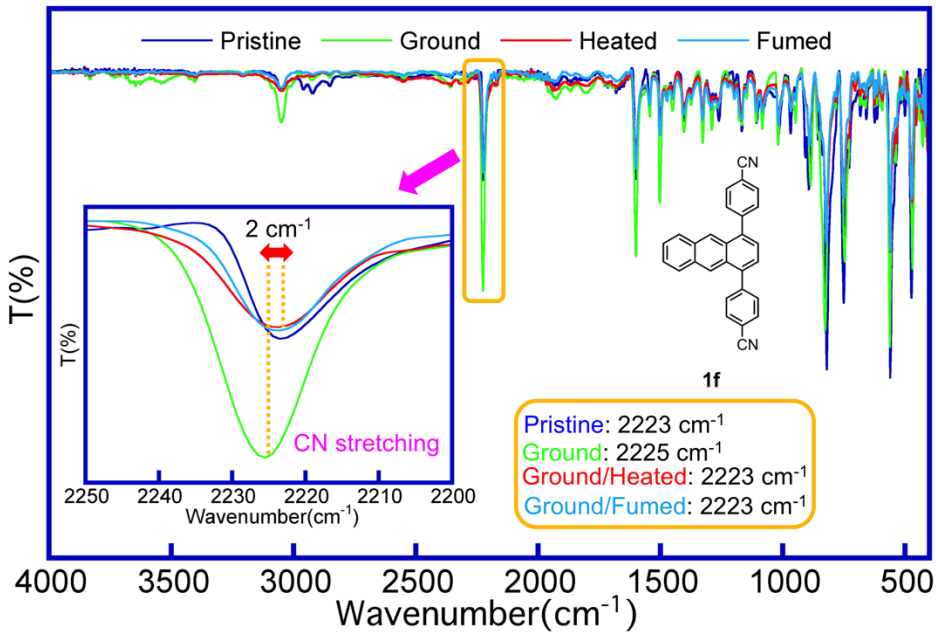


Figure S10. IR spectra of the CN-substituted 1,4-diphenylanthracene derivative **1f** before grinding (pristine), after grinding (ground), ground-heated (80 °C for 5 min) and ground-fumed (with CH_2Cl_2 vapor for 2 h) samples in the CN stretching region.

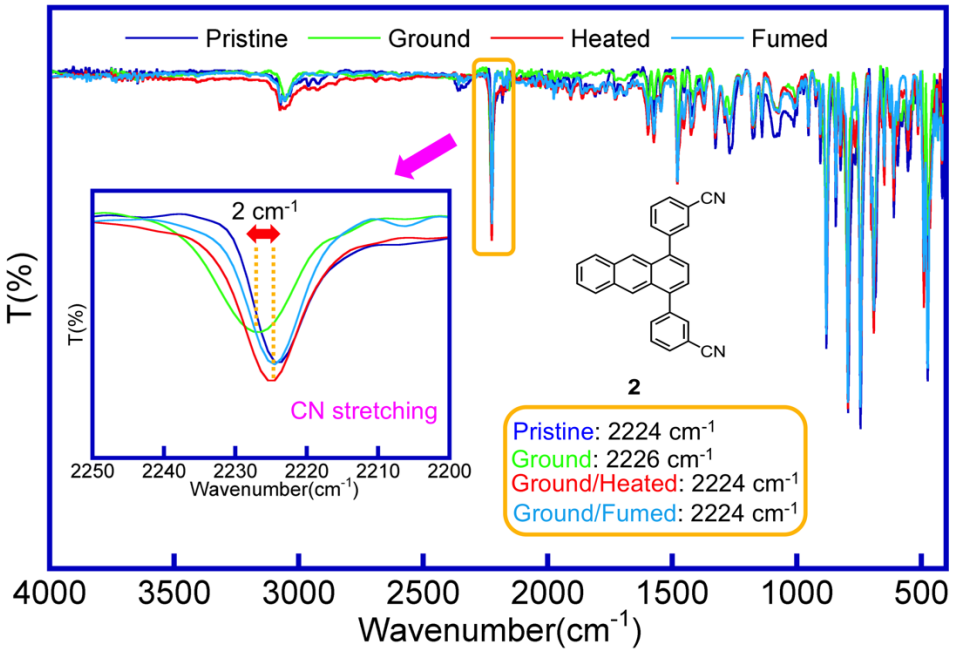


Figure S11. IR spectra of the CN-substituted 1,4-diphenylanthracene derivative **2** before grinding (pristine), after grinding (ground), ground-heated (110 °C for 5 min) and ground-fumed (with CH_2Cl_2 vapor for 2 h) samples in the CN stretching region.

1.7 DSC profiles of 1,4-diphenylanthracene derivatives

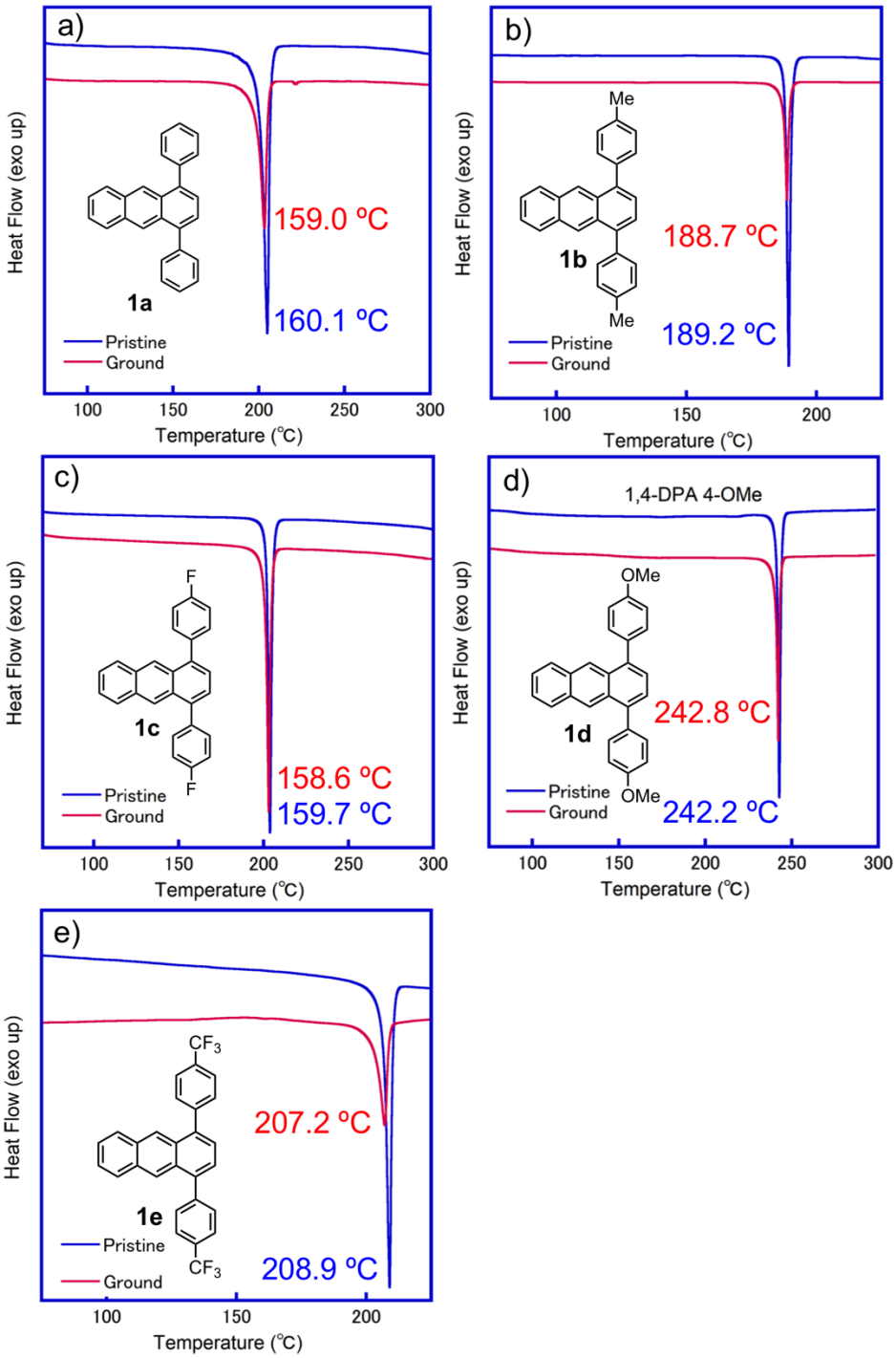


Figure S12. DSC profiles of 1,4-diphenylanthracene derivatives before grinding (pristine) and after grinding (ground), a) **1a** (R=H), b) **1b** (R=Me), c) **1c** (R=F), d) **1d** (R=OMe), e) **1e** (R=CF_3).

1.8 UV-vis absorption spectra of the pristine and ground samples

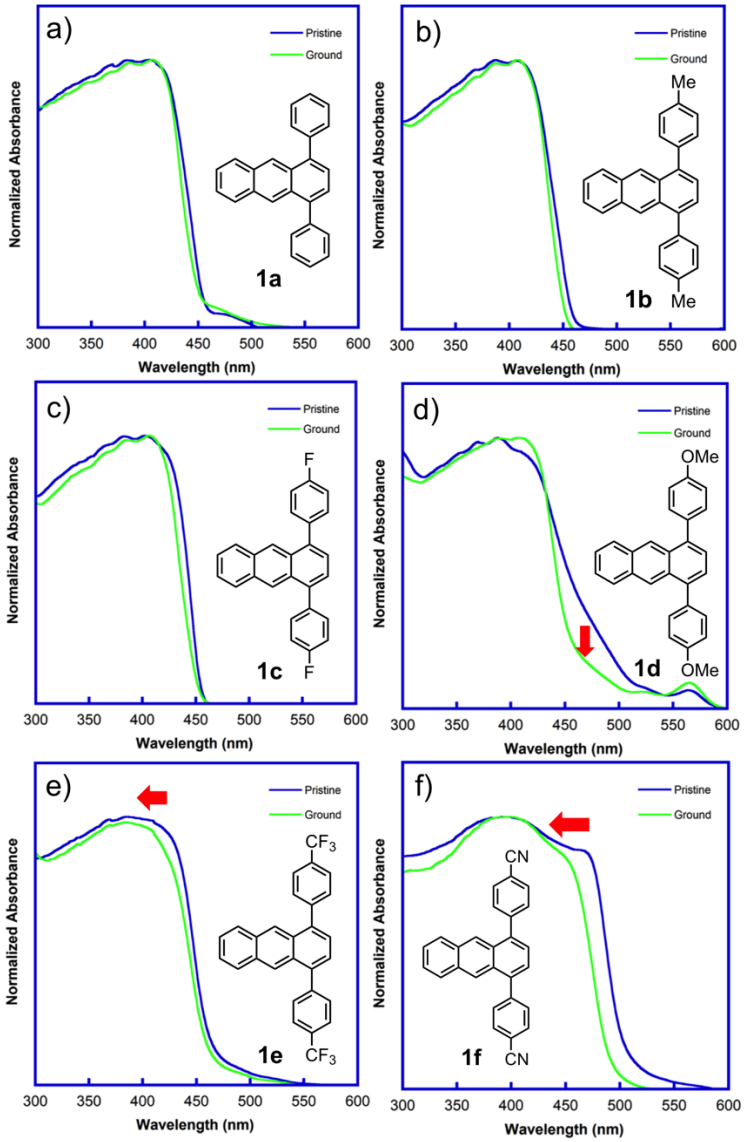


Figure S13. UV-vis absorption spectra of the pristine and ground samples of the 1,4-diphenylanthracene derivatives, a) **1a** (R=H), b) **1b** (R=Me), c) **1c** (R=F), d) **1d** (R=OMe), e) **1e** (R=CF_3), f) **1f** (R=CN).

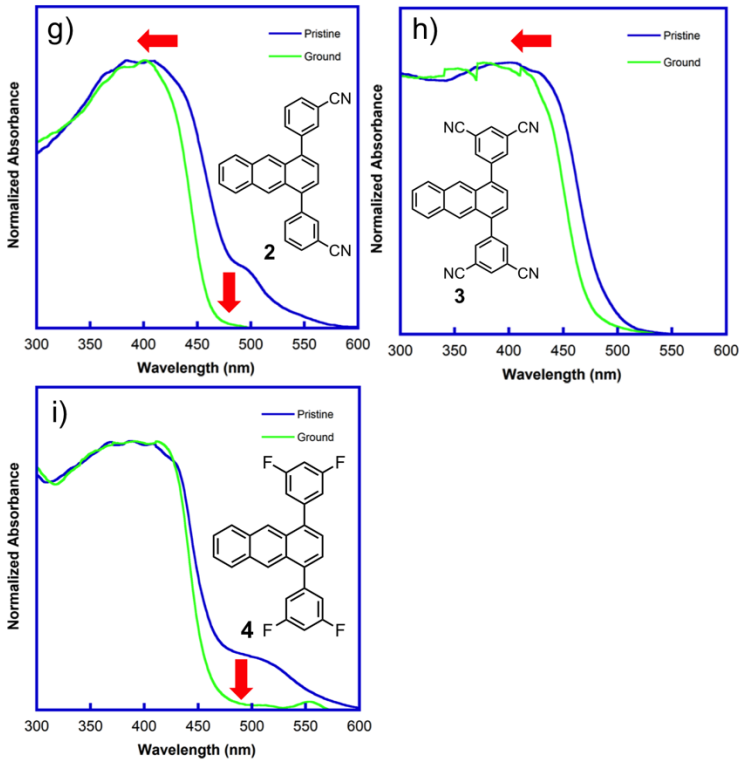


Figure S13 (contd.). UV-vis absorption spectra of the pristine and ground samples of the 1,4-diphenylanthracene derivatives, g) **2** (3-CN), h) **3** (3,5-CN_2, R'=CN), i) **4** (3,5-F_2, R'=F).

1.9 UV-vis absorption spectra of 1,4-diphenylanthracene derivatives (in $CHCl_3$)

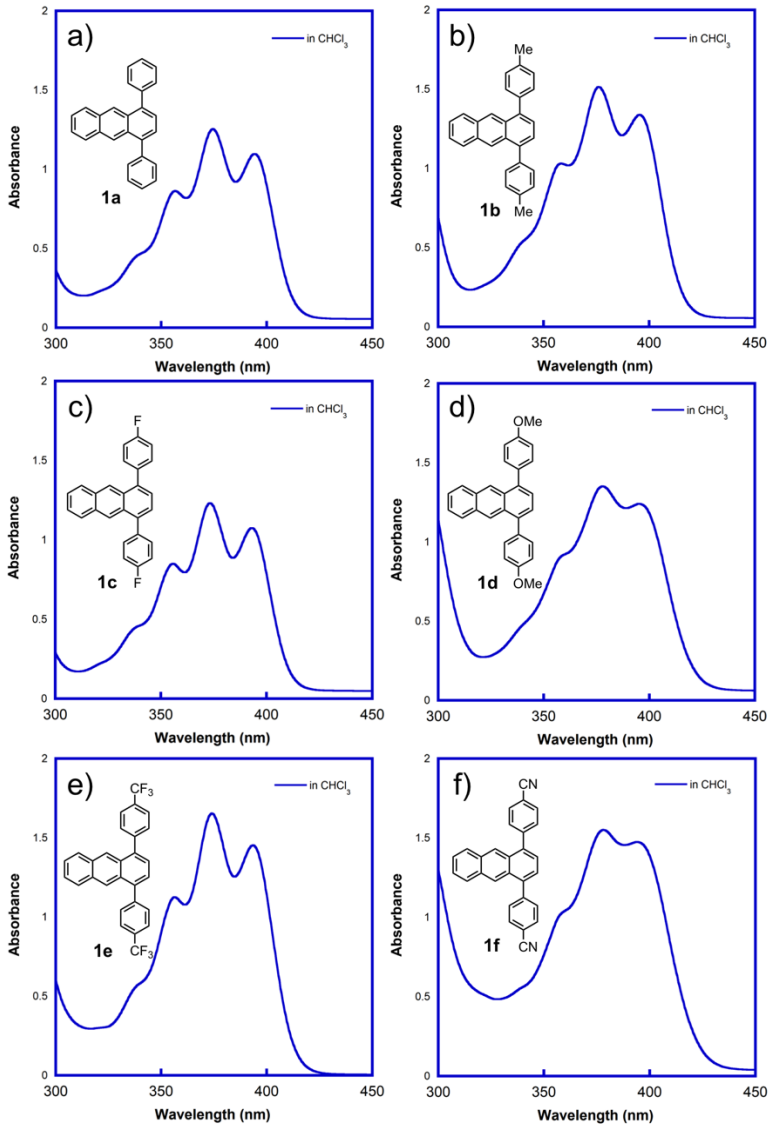


Figure S14. UV-vis absorption spectra of 1,4-diphenylanthracene derivatives (0.1 mM in $CHCl_3$), a) **1a** (R=H), b) **1b** (R=Me), c) **1c** (R=F), d) **1d** (R=OMe), e) **1e** (R=CF_3), f) **1f** (R=CN).

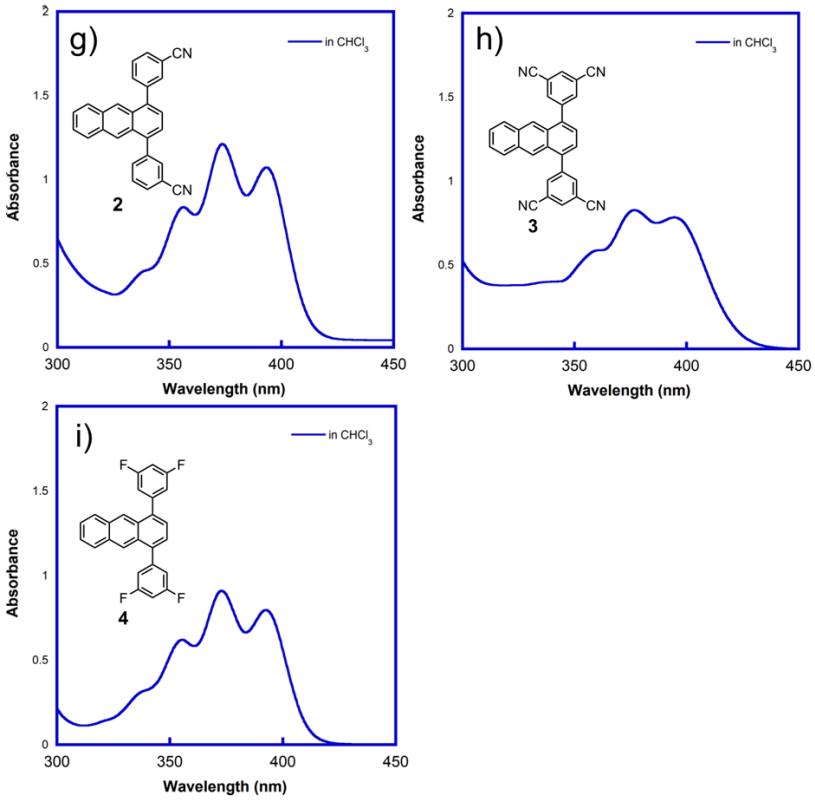


Figure S14 (contd.). UV-vis absorption spectra of 1,4-diphenylanthracene derivatives (0.1 mM in $CHCl_3$), g) **2** (3-CN), h) **3** (3,5-CN_2, R'=CN), i) **4** (3,5-F_2, R'=F).

1.10 Fluorescence spectra of 1,4-diphenylanthracene derivatives (in $CHCl_3$)

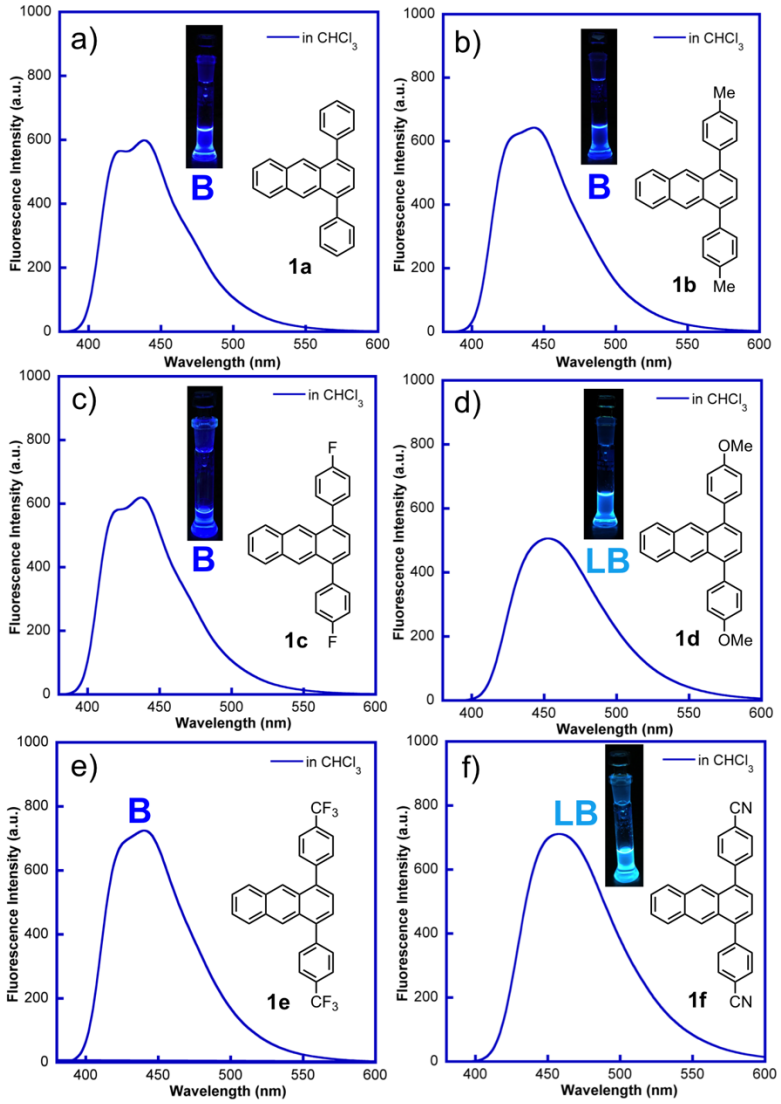


Figure S15. Fluorescence spectra of 1,4-diphenylanthracene derivatives (25 μM in $CHCl_3$, λ_{ex} = 365 nm): a) **1a** (R=H), b) **1b** (R=Me), c) **1c** (R=F), d) **1d** (R=OMe), e) **1e** (R=CF_3), f) **1f** (R=CN).

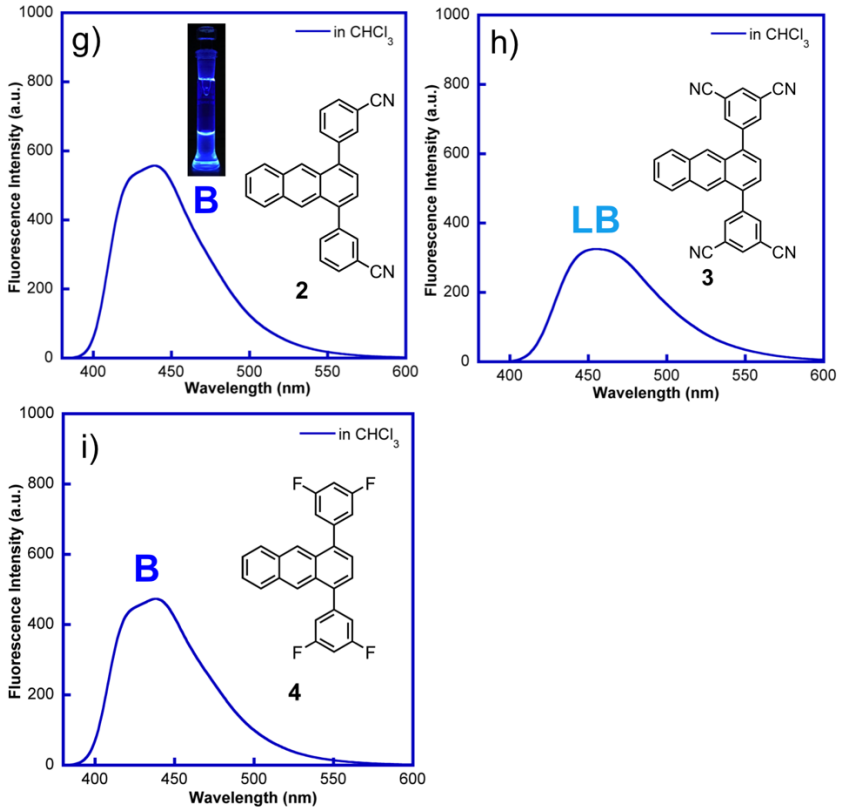


Figure S15 (contd.). Fluorescence spectra of 1,4-diphenylanthracene derivatives (25 μM in $CHCl_3$, λ_{ex} = 365 nm): g) **2** (3- CN), h) **3** (3,5-CN_2, R'=CN), i) **4** (3,5-F_2, R'=F).

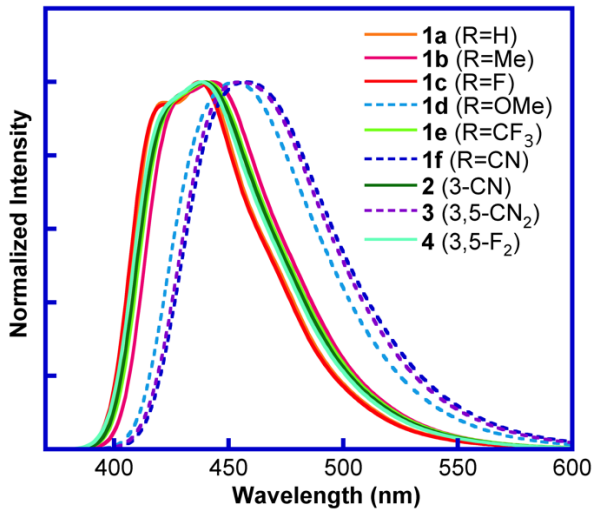


Figure S16. Fluorescence spectra of 1,4-diphenylanthracene derivatives (25 μM in $CHCl_3$, λ_{ex} = 365 nm).

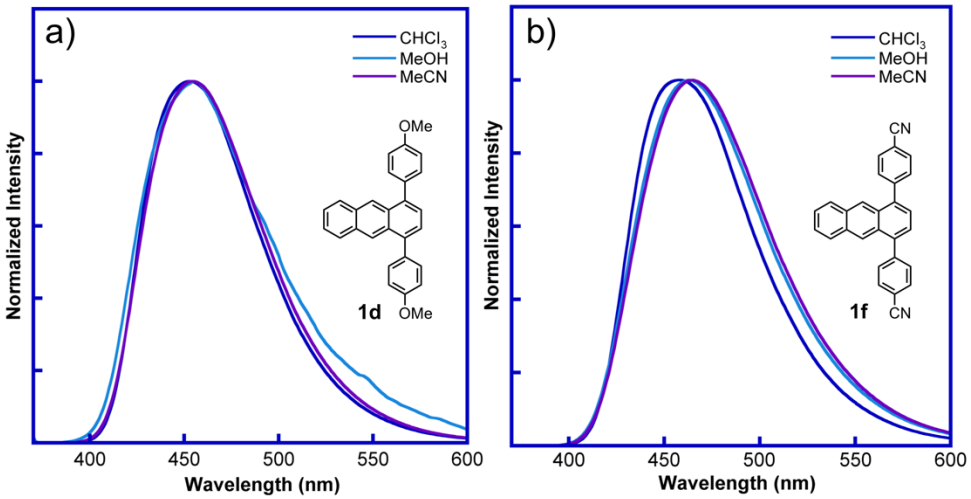


Figure S17. Fluorescence spectra of 1,4-diphenylanthracene derivatives (25 μM in different solvents, λ_{ex} = 365 nm): a) **1d** (R=OMe), b) **1f** (R=CN).

1.11 Fluorescence spectra of 1,4-diphenylanthracene derivatives in PMMA film

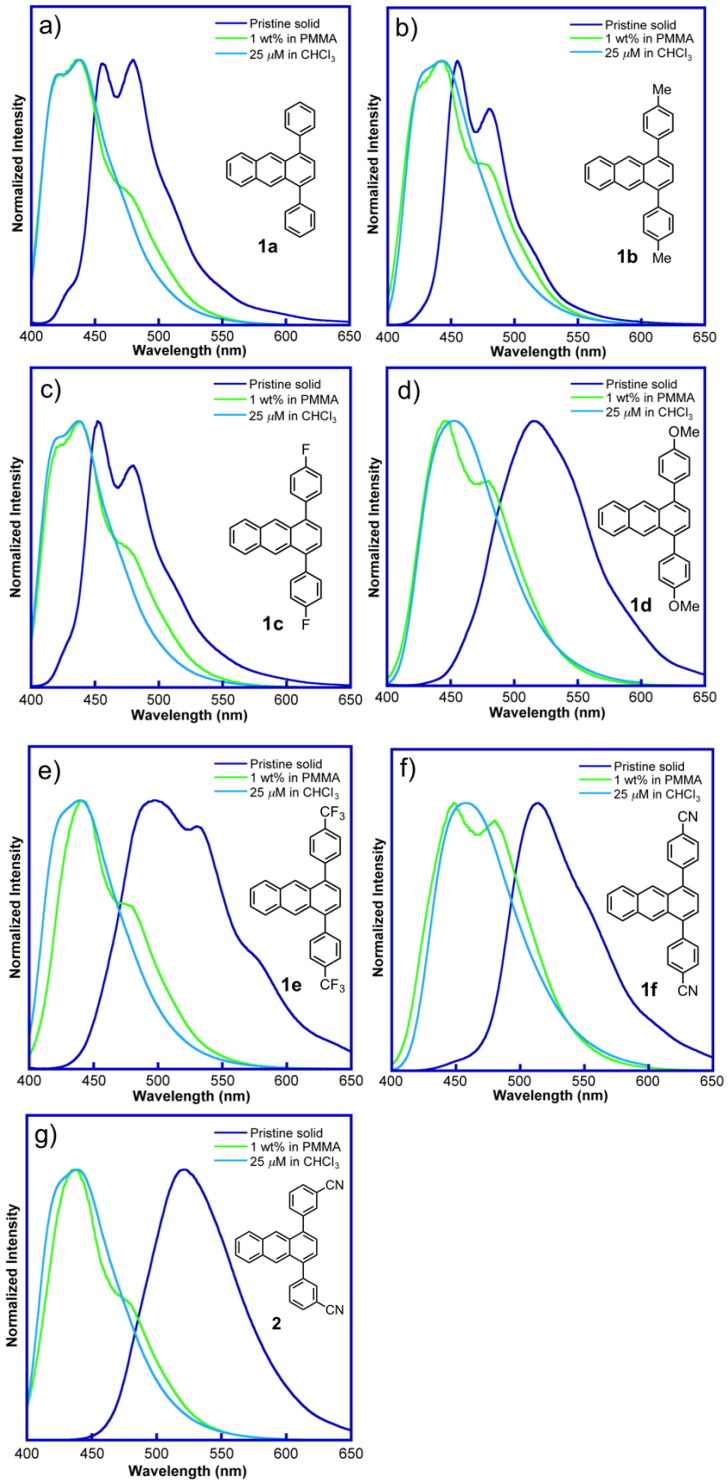


Figure S18. Fluorescence spectra of 1,4-diphenylanthracene derivatives in pristine solid, 25 μM in $CHCl_3$ solution, 1 wt% in PMMA film (λ_{ex} = 365 nm), a) **1a** (R=H), b) **1b** (R=Me), c) **1c** (R=F), d) **1d** (R=OMe), e) **1e** (R=CF_3), f) **1f** (R=CN), g) **2** (3-CN).

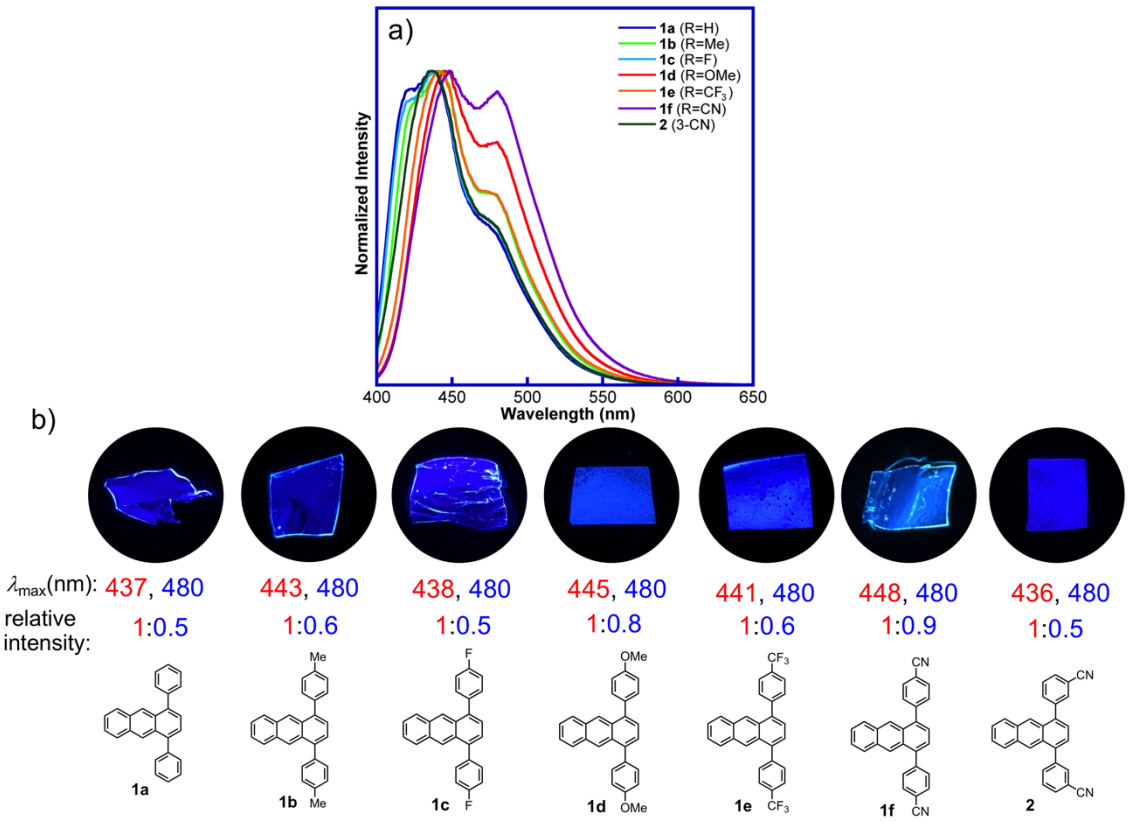


Figure S19. Fluorescence spectra and photographs of 1,4-diphenylanthracene derivatives in PMMA film (1 wt%), a) comparison of normalized fluorescence spectra (λ_{ex} = 365 nm), b) photographs in PMMA film (under 365 nm UV light) and relative intensities of fluorescence spectra.

1.12 Fluorescence lifetime decay profiles of pristine, ground, ground-heated and ground-fumed samples of 1,4-diphenylanthracene derivatives

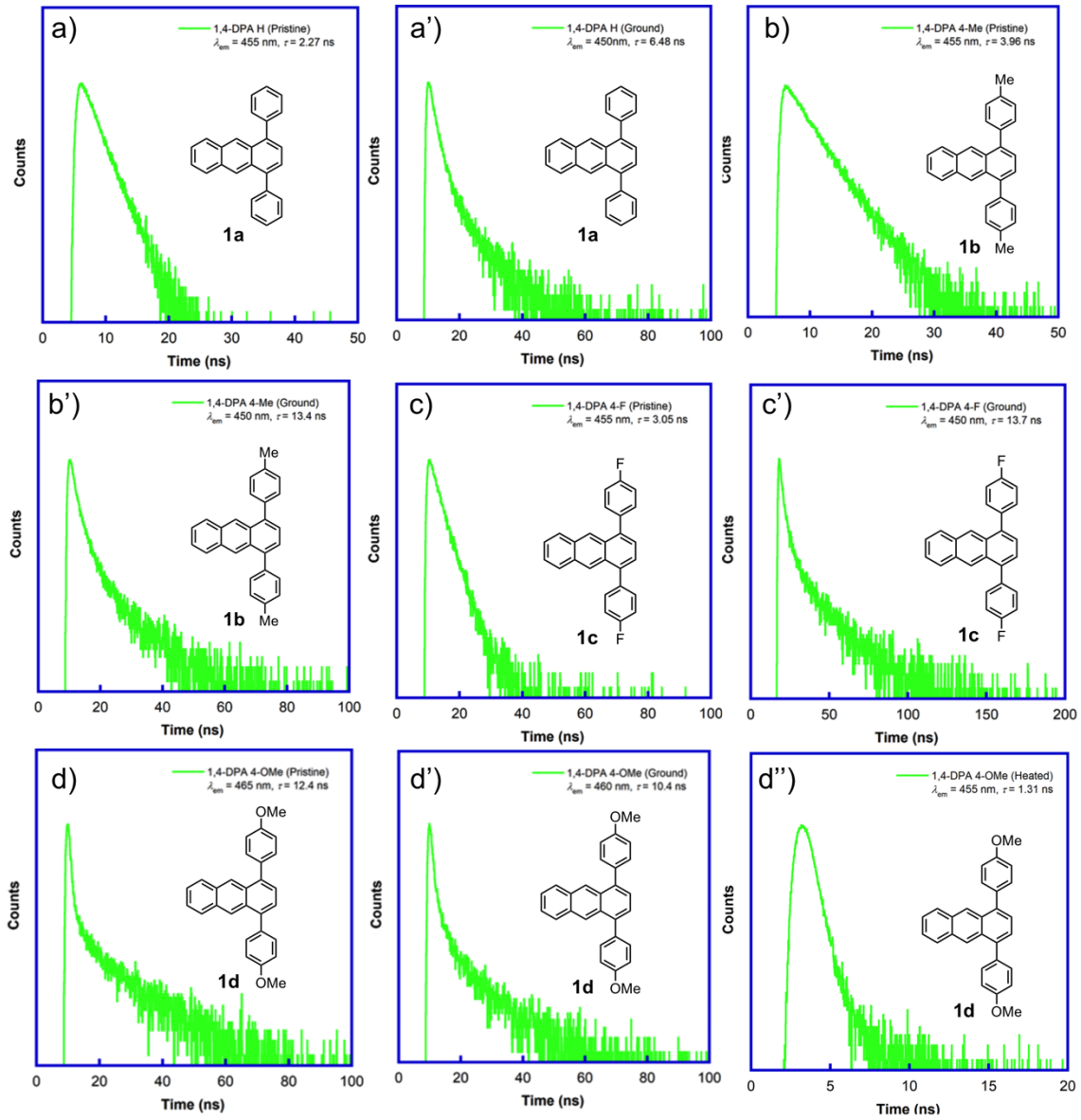


Figure S20. Fluorescence lifetime decay profile of pristine, ground, ground-heated and ground-fumed samples of 1,4-diphenylanthracene derivatives (λ_{ex} = 365 nm): a) **1a** (R=H, pristine), a') **1a** (R=H, ground), b) **1b** (R=Me, pristine), b') **1b** (R=Me, ground), c) **1c** (R=F, pristine), c') **1c** (R=F, ground), d) **1d** (R=OMe, pristine), d') **1c** (R=OMe, ground), d'') **1d** (R=OMe, ground-heated, 150 °C for 5 min.).

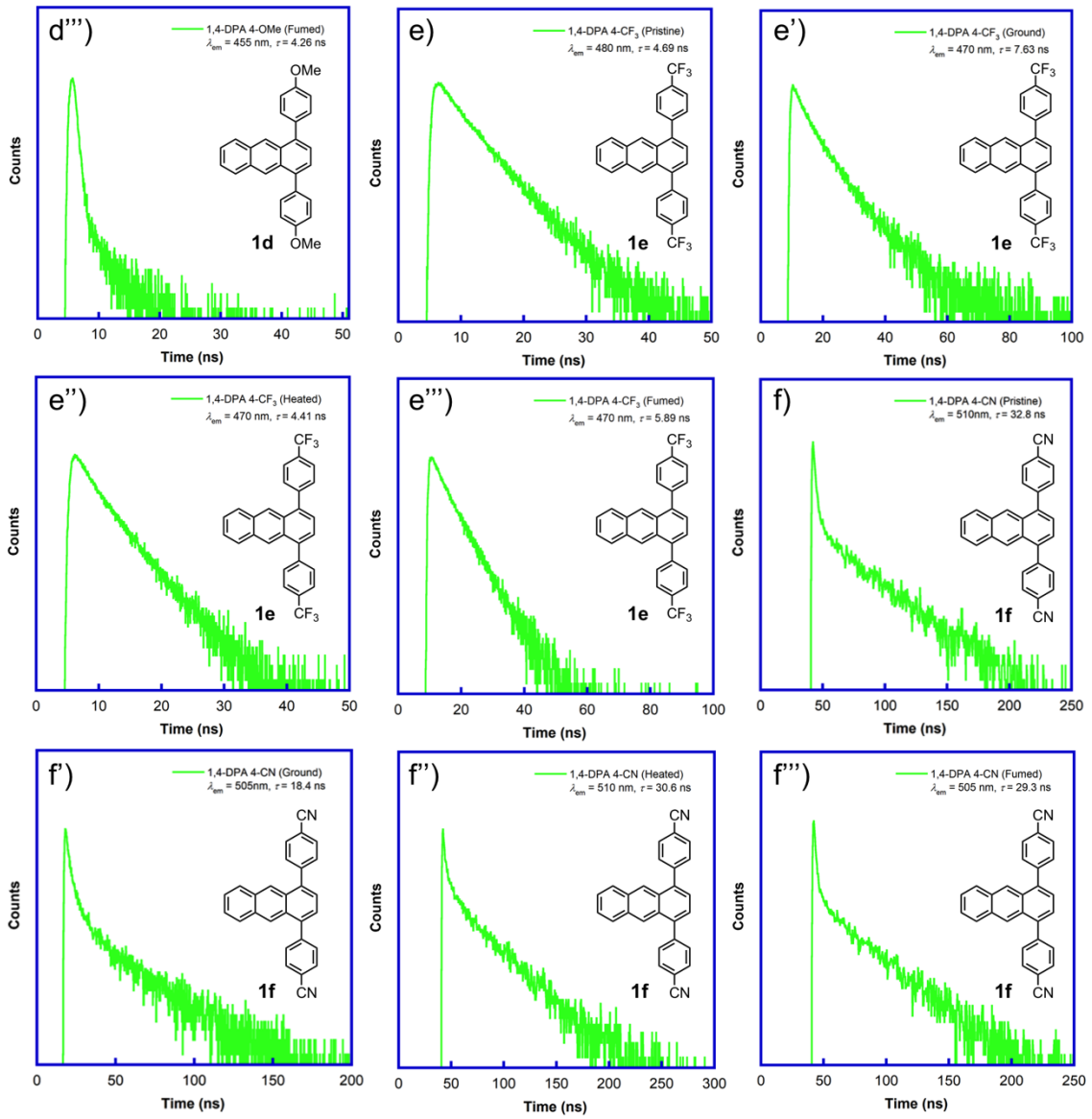


Figure S20 (contd.). Fluorescence lifetime decay profile of pristine, ground, ground-heated and ground-fumed samples of 1,4-diphenylanthracene derivatives (λ_{ex} = 365 nm): d''') **1c** (R=OMe, ground-fumed, CH_2Cl_2 vapor for 20 h), e) **1e** (R=CF_3, pristine), e') **1e** (R=CF_3, ground), e'') **1e** (R=CF_3, ground-heated, 150 °C, 5 min.), e''') **1e** (R=CF_3, ground-fumed, CH_2Cl_2 vapor for 20 h), f) **1f** (R=CN, pristine), f') **1f** (R=CN, ground), f'') **1f** (R=CN, ground-heated, 80 °C, 5 min.), f''') **1f** (4-CN, ground-fumed, CH_2Cl_2 vapor for 2 h).

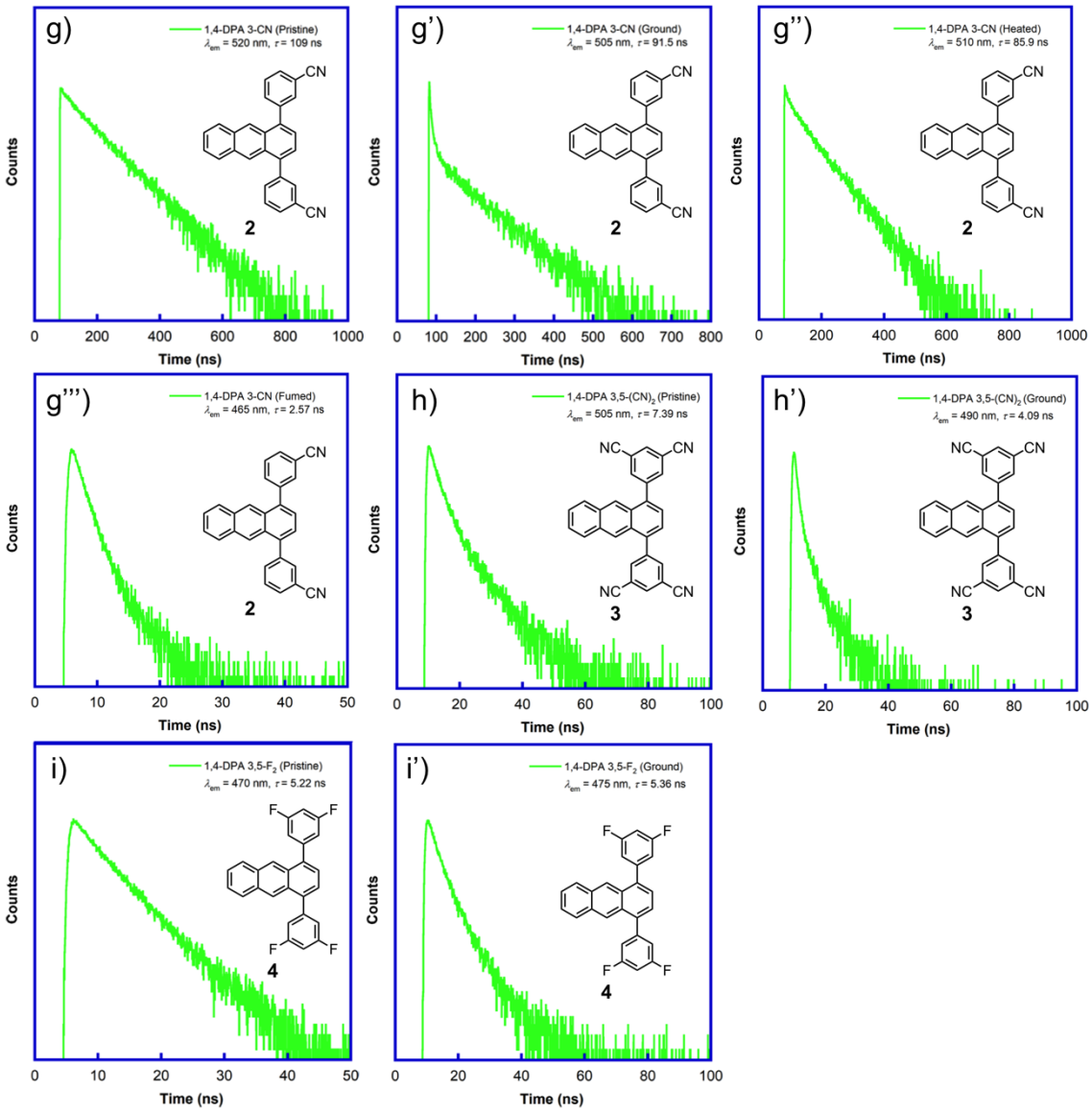


Figure S20 (cont.). Fluorescence lifetime decay profile of pristine, ground, ground-heated and ground-fumed samples of 1,4-diphenylanthracene derivatives (λ_{ex} = 365 nm): g) **2** (3-CN, pristine), g') **2** (3-CN, ground), g'') **2** (3-CN, ground-heated, 110 °C, 5 min.), g''') **2** (3-CN, ground-fumed, CH_2Cl_2 vapor for 2h), h) **3** (3,5-CN_2, R'=CN, pristine), h') **3** (3,5-CN_2, R'=CN, ground), i) **4** (3,5-F_2, R'=F, pristine), i') **4** (3,5-F_2, R'=F, ground).

1.13 Fluorescence lifetime decay profiles of 1,4-diphenylanthracene derivatives in $CHCl_3$ solution

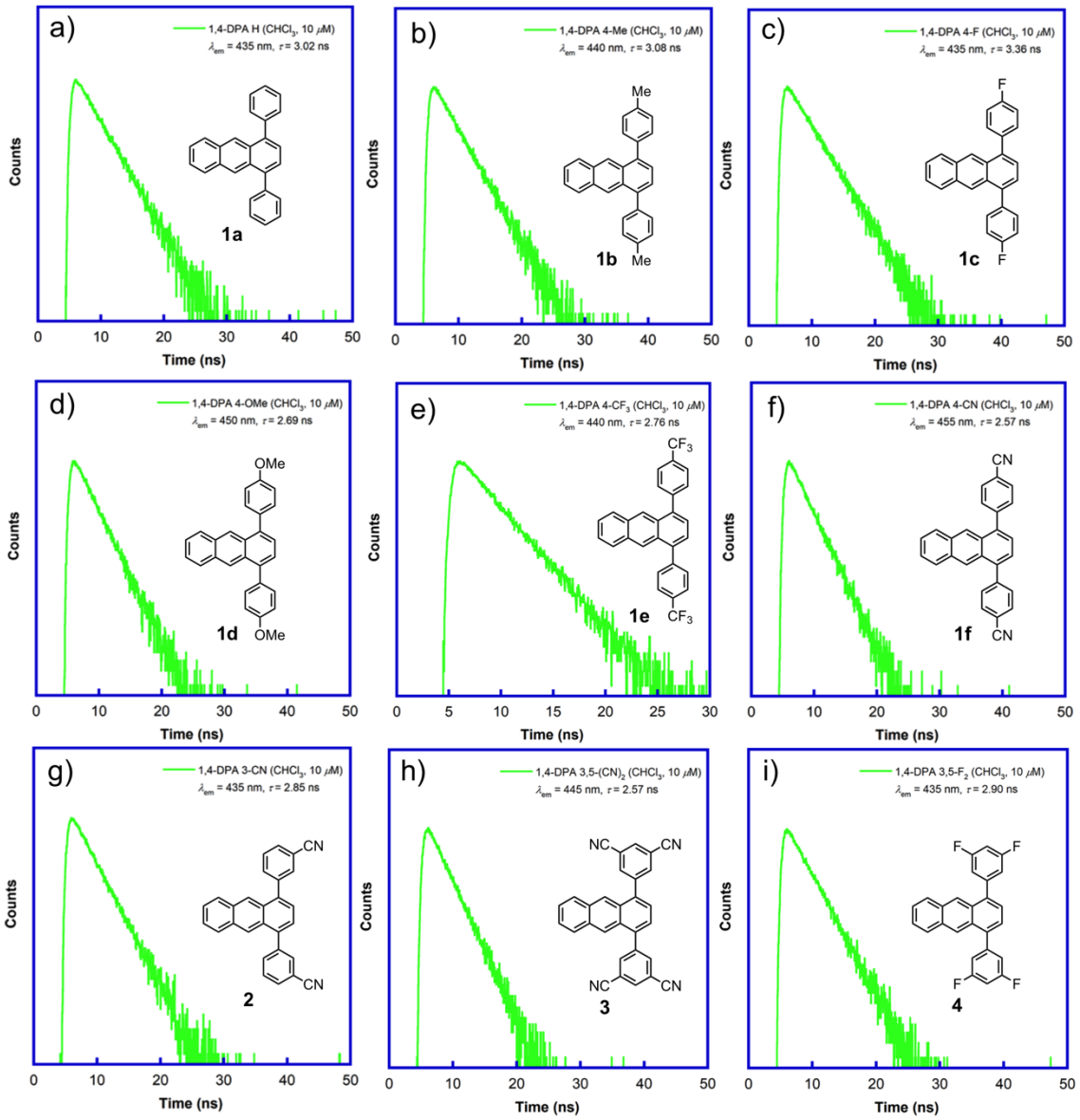


Figure S21. Fluorescence lifetime decay profile of 1,4-diphenylanthracene derivatives in $CHCl_3$ (10 μM, λ_{ex} = 365 nm) after Ar bubbling: a) **1a** (R=H), b) **1b** (R=Me), c) **1c** (R=F), d) **1d** (R=OMe), e) **1e** (R=CF_3), f) **1f** (R=CN), g) **2** (3-CN), h) **3** (3,5-CN_2, R'=CN), i) **4** (3,5-F_2, R'=F).

1.14 Fluorescence lifetime decay profiles of 1,4-diphenylanthracene derivatives in PMMA film

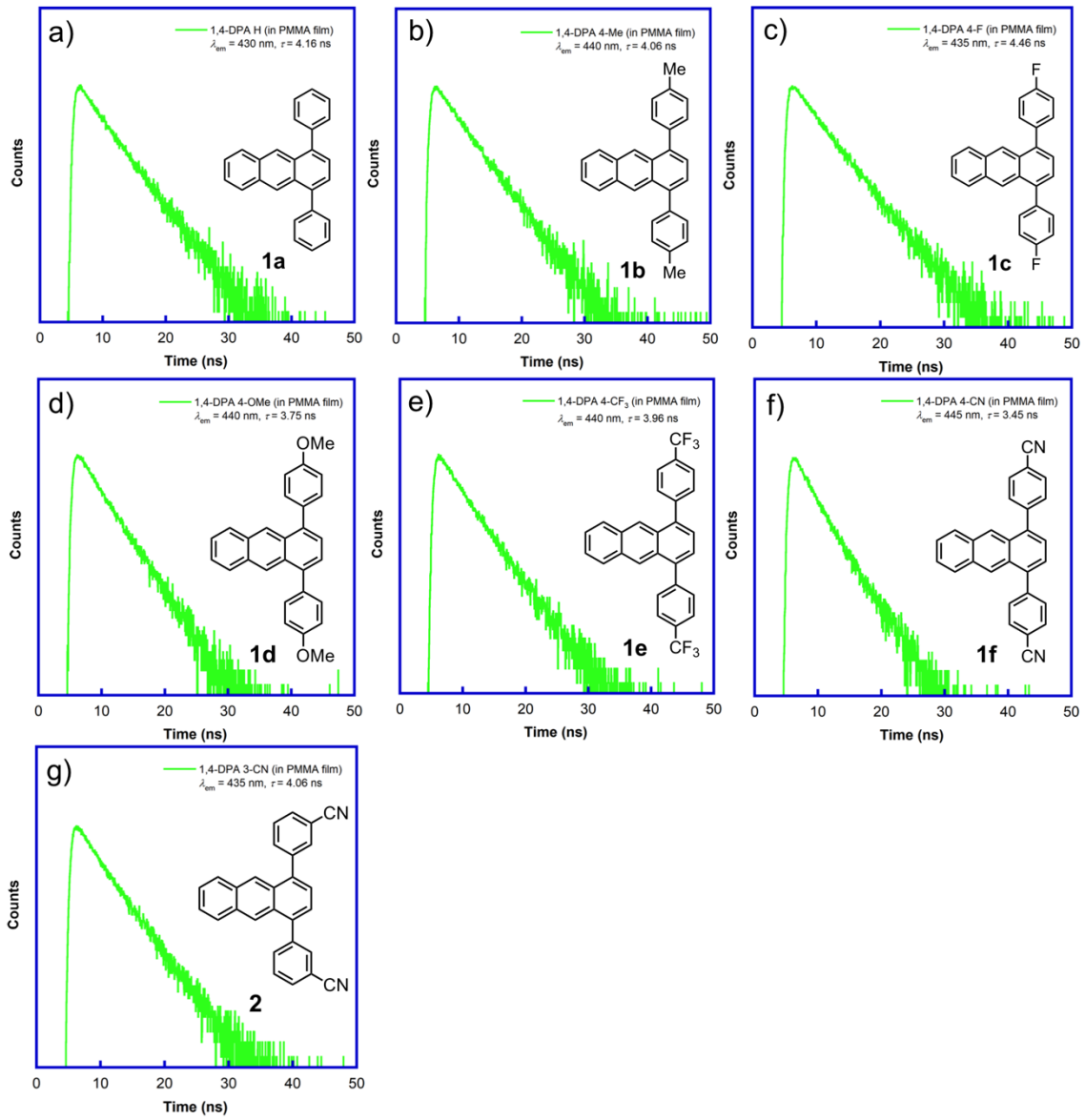


Figure S22. Fluorescence lifetime decay profiles of 1,4-diphenylanthracene derivatives in PMMA film (1 wt%, λ_{ex} = 365 nm): a) **1a** (R=H), b) **1b** (R=Me), c) **1c** (R=F), d) **1d** (R=OMe), e) **1e** (R=CF_3), f) **1f** (R=CN), g) **2** (3-CN).

1.15 Photophysical properties of 1,4-diphenylanthracene derivatives

Table S1. Photophysical properties of 1,4-diphenylanthracene derivatives

compds.	ϕ_f[a]		τ[b] / ns		k_f / ns^{-1}		k_{nr} / ns^{-1}	
	soln.[c]	pristine (ground)	soln.[c]	pristine (ground)	soln.	pristine (ground)	soln.	pristine (ground)
1a (R=H)	0.47	0.20 (0.23)	3.02	2.27 (6.48)	0.156	0.088 (0.035)	0.175	0.352 (0.119)
1b (R=Me)	0.49	0.31 (0.21)	3.08	3.96 (13.4)	0.159	0.078 (0.016)	0.166	0.174 (0.059)
1c (R=F)	0.49	0.24 (0.25)	3.36	3.05 (13.7)	0.146	0.079 (0.018)	0.152	0.249 (0.055)
1d (R=OMe)	0.40	0.15 (0.18)	2.69	12.4 (10.4)	0.149	0.012 (0.017)	0.223	0.069 (0.079)
1e (R=CF_3)	0.51	0.37 (0.33)	2.76	4.69 (7.63)	0.185	0.079 (0.043)	0.178	0.134 (0.088)
1f (R=CN)	0.55	0.26 (0.33)	2.57	32.8 (18.4)	0.214	0.008 (0.018)	0.175	0.023 (0.036)
2 (3-CN)	0.46	0.71 (0.37)	2.85	109 (91.5)	0.161	0.007 (0.004)	0.189	0.003 (0.007)
3 (3,5-CN_2)	0.41	0.15 (0.05)	2.57	7.39 (4.09)	0.160	0.020 (0.012)	0.230	0.115 (0.232)
4 (3,5-F_2)	0.50	0.44 (0.22)	2.90	5.22 (5.36)	0.172	0.084 (0.041)	0.172	0.107 (0.146)

[a] Fluorescence quantum yield determined by a calibrated integrating sphere, [b] Averaged fluorescence lifetimes, [c] $CHCl_3$ solution (10 μM) after Ar bubbling.

Table S2. Photophysical properties of 1,4-diphenylanthracene derivatives in PMMA film

PMMA films	λ_{max}/nm[a], Luminous color[b]		ϕ_f[c]	τ[d] / ns	k_f[e] / ns^{-1}	k_{nr}[f] / ns^{-1}
1a (R=H)	437	B	0.64	4.16	0.154	0.087
1b (R=Me)	443	B	0.66	4.06	0.163	0.084
1c (R=F)	438	B	0.63	4.42	0.143	0.084
1d (R=OMe)	445	B	0.67	3.75	0.179	0.088
1e (R=CF_3)	441	B	0.64	3.96	0.162	0.091
1f (R=CN)	448	LB	0.71	3.45	0.206	0.084
2 (3-CN)	436	B	0.62	4.06	0.153	0.094

[a]Solid-state (1wt% in PMMA film) emission (λ_{ex}=365 nm), [b]Luminous color under 365 nm UV irradiation, B: blue, LB: light blue, [c]Fluorescence quantum yield determined by a calibrated integrating sphere at λ_{ex}=365 nm, [d]Averaged fluorescence lifetime at λ_{ex}=365 nm, [e]Rate constant for fluorescence, [f]Rate constant for nonradiative decay.

2. X-ray analysis of 1,4-diphenylanthracene derivatives

2.1. Single crystal X-ray analysis

Table S3. Crystallographic data for **1a-1d**

Compounds	**1a** (R=H)	**1b** (R=Me)	**1c** (R=F)	**1d** (R=OMe)
Chemical formula	$C_{26}H_{18}$	$C_{28}H_{22}$	$C_{26}H_{16}F_2$	$C_{28}H_{22}O_2$
Temperature /K	293	100	100	100
Crystal system	orthorhombic	orthorhombic	triclinic	orthorhombic
Space group	$P2_12_12_1$	$P2_12_12_1$	P-1	$P2_12_12_1$
a /Å	5.8982(11)	5.9154(2)	5.8772(2)	5.9797(3)
b /Å	14.477(4)	13.6349(3)	11.5283(6)	13.9553(7)
c /Å	20.400(4)	23.8451(6)	14.1198(7)	23.2841(10)
α /°			113.856(2)	
β /°			95.664(2)	
γ /°			90.875(2)	
V /Å^3	1741.9(7)	1923.25(9)	869.07(7)	1943.02(16)
Z	4	4	2	4
Radiation type	MoK_α	MoK_α	MoK_α	MoK_α
$D_{calcd.}$ /Mgm^{-3}	1.260	1.238	1.400	1.335
Collected reflections	5485	19998	11351	23611
Unique reflections	3191	3916	3032	3959
R_{int}	0.0488	0.0485	0.0369	0.0794
R_1 ($I > 2\sigma(I)$)	0.0712	0.0395	0.0393	0.0476
R_1 (all data)	0.1368	0.0425	0.0452	0.0585
R_w (all data)	0.2276	0.1045	0.1067	0.1186
Goodness-of fit	1.007	1.018	1.029	1.046

Table S4. Crystallographic data for **1f** and **2**

Compounds	**1f** (R=CN)	**2** (3-CN)
Chemical formula	$C_{28}H_{16}N_2$	$C_{28}H_{16}N_2$
Temperature /K	100	293
Crystal system	triclinic	triclinic
Space group	*P*-1	*P*-1
a /Å	11.0734(2)	8.2867(7)
b /Å	12.9373(2)	10.2528(8)
c /Å	14.2271(2)	12.4967(11)
α /°	80.5840(10)	75.726(7)
β /°	86.7280(10)	78.035(7)
γ /°	75.6040(10)	82.179(7)
V /Å^3	1974.29(5)	1002.56(15)
Z	4	2
Radiation type	CuK_α	MoK_α
$D_{calcd.}$ /Mgm^{-3}	1.298	1.260
Collected reflections	18220	6102
Unique reflections	6871	4100
R_{int}	0.0513	0.0254
R_1 ($I > 2\sigma(I)$)	0.0470	0.0579
R_1 (all data)	0.0633	0.1105
R_w (all data)	0.1327	0.1691
Goodness-of fit	1.016	1.031

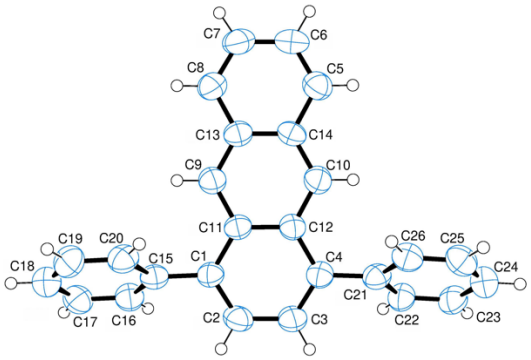


Figure S23. ORTEP drawing of **1a** (R=H).

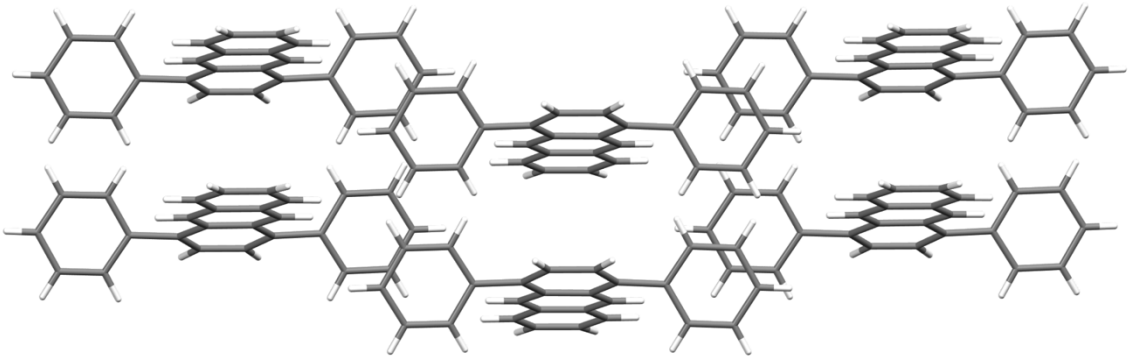


Figure S24. Crystal packing of **1a** (R=H).

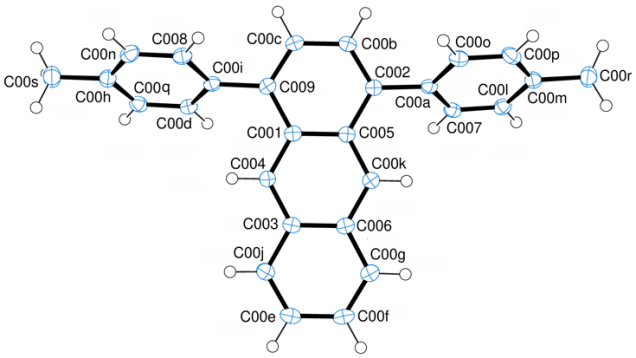


Figure S25. ORTEP drawing of **1b** (R=Me).

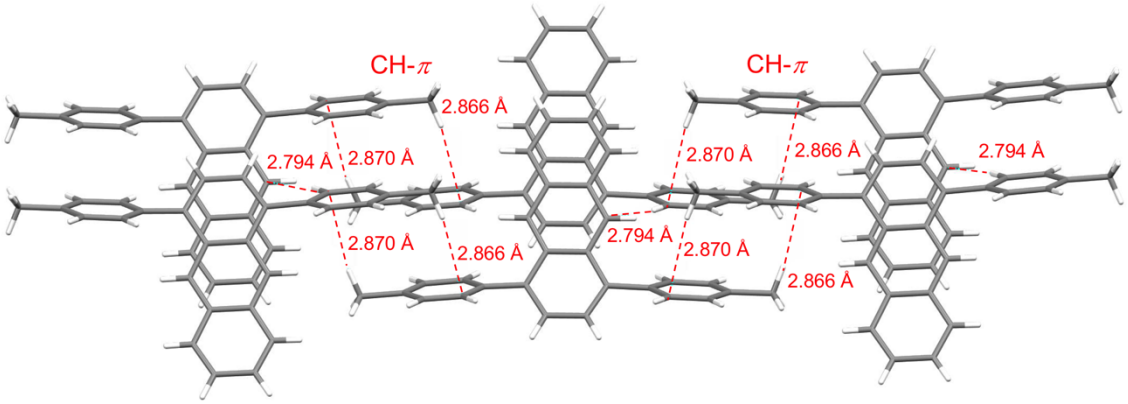


Figure S26. Crystal packing of **1b** (R=Me).

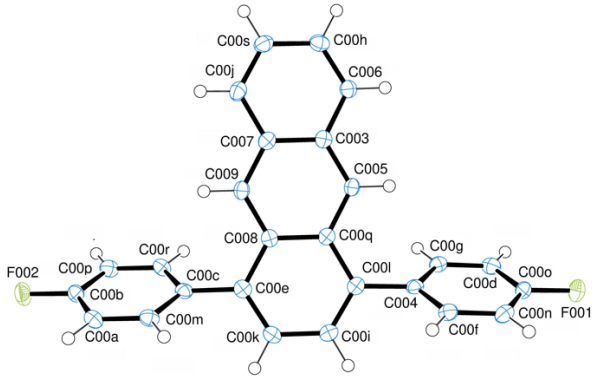


Figure S27. ORTEP drawing of **1c** (R=F).

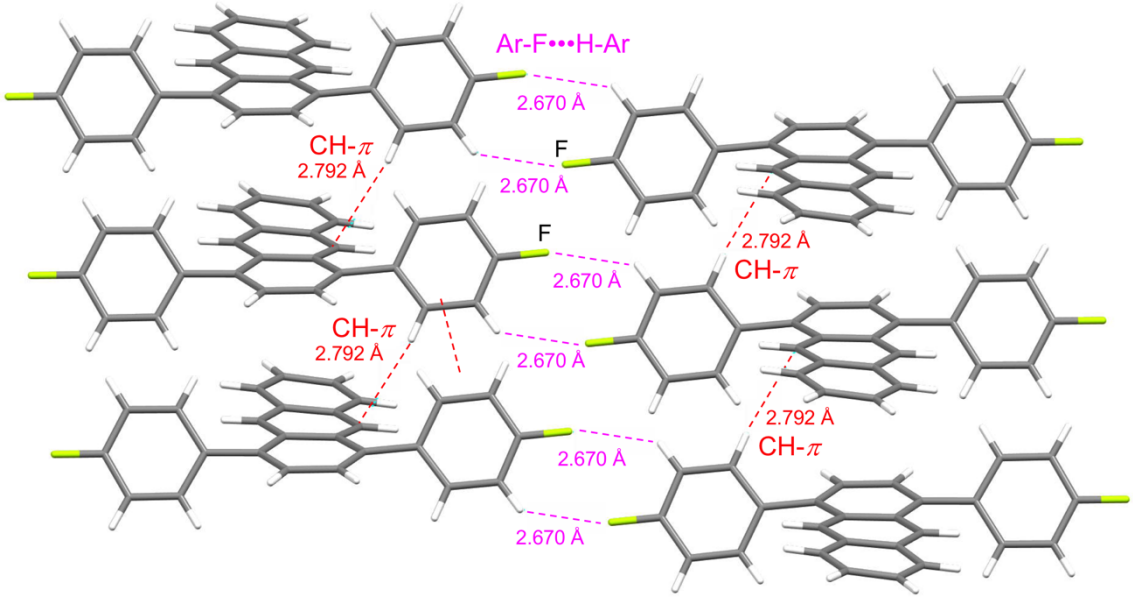


Figure S28. Crystal packing of **1c** (R=F).

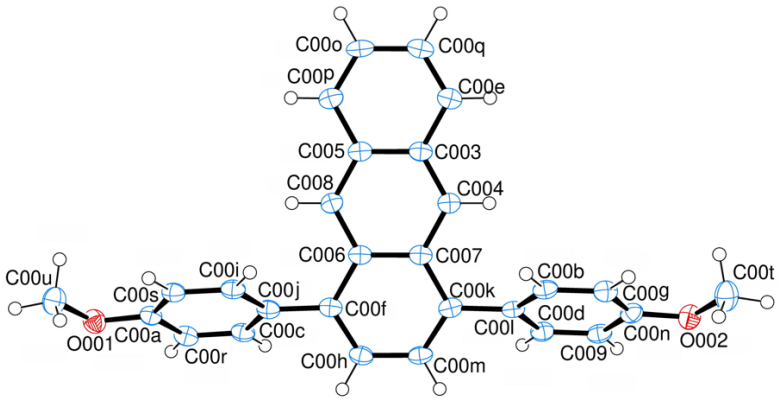


Figure S29. ORTEP drawing of **1d** (R=OMe).

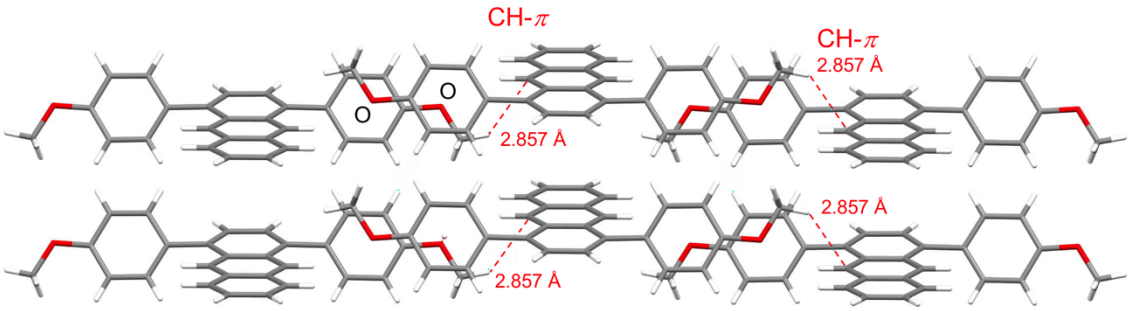


Figure S30. Crystal packing of **1d** (R=OMe).

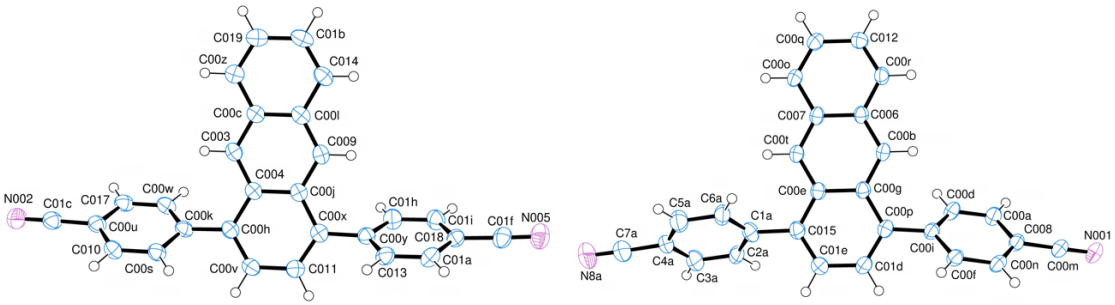


Figure S31. ORTEP drawing of **1f** (R=CN).

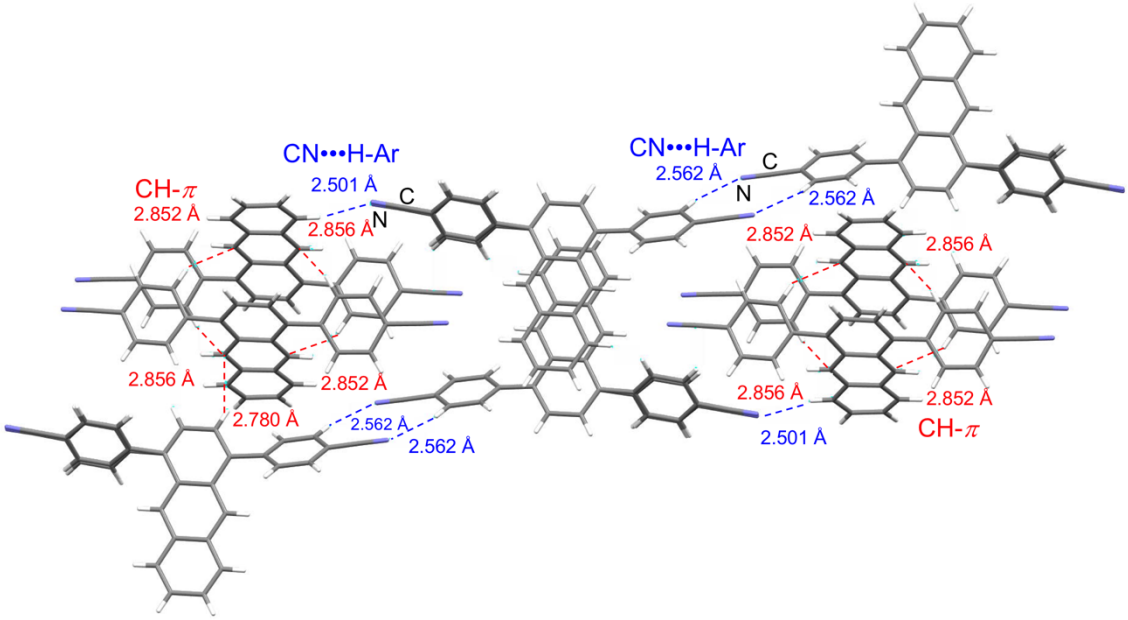


Figure S32. Crystal packing of **1f** (R=CN).

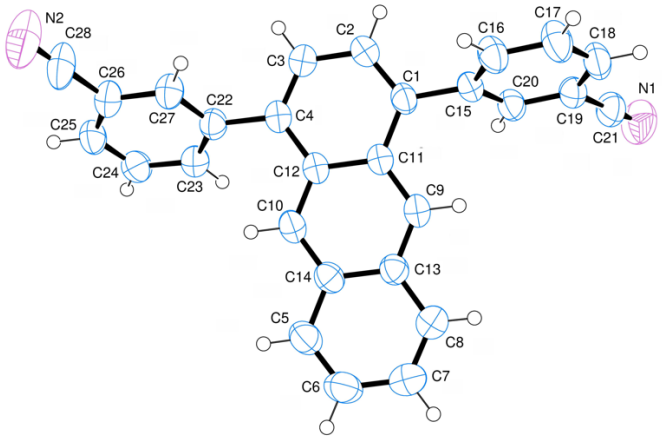


Figure S33. ORTEP drawing of **2** (3-CN).

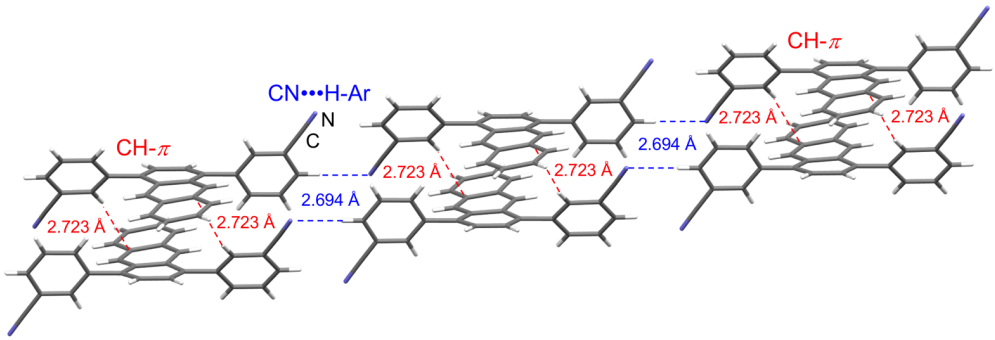


Figure S34. Crystal packing of **2** (3-CN).

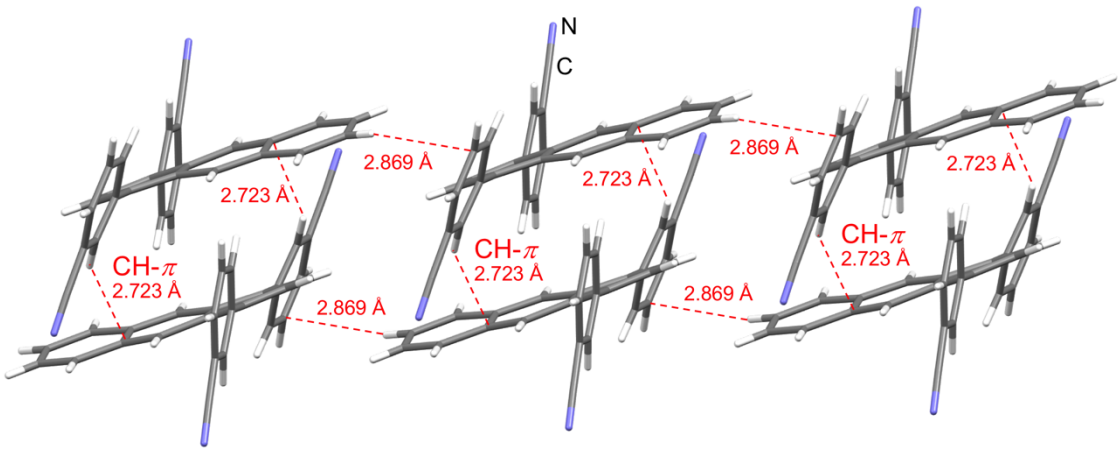


Figure S35. Crystal packing of **2** (3-CN).

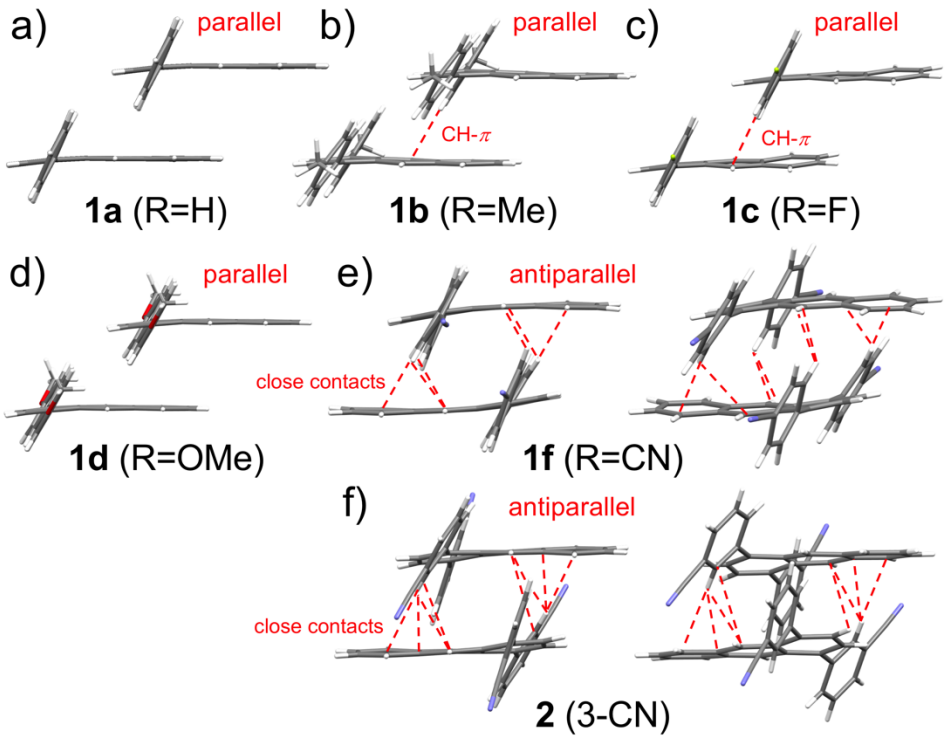


Figure S36. Crystal packing of 1,4-diphenylanthracene derivatives showing bimolecular interactions, a) **1a** (R=H), b) **1b** (R=Me), c) **1c** (R=F), d) **1d** (R=OMe), e) **1f** (R=CN), f) **2** (3-CN).

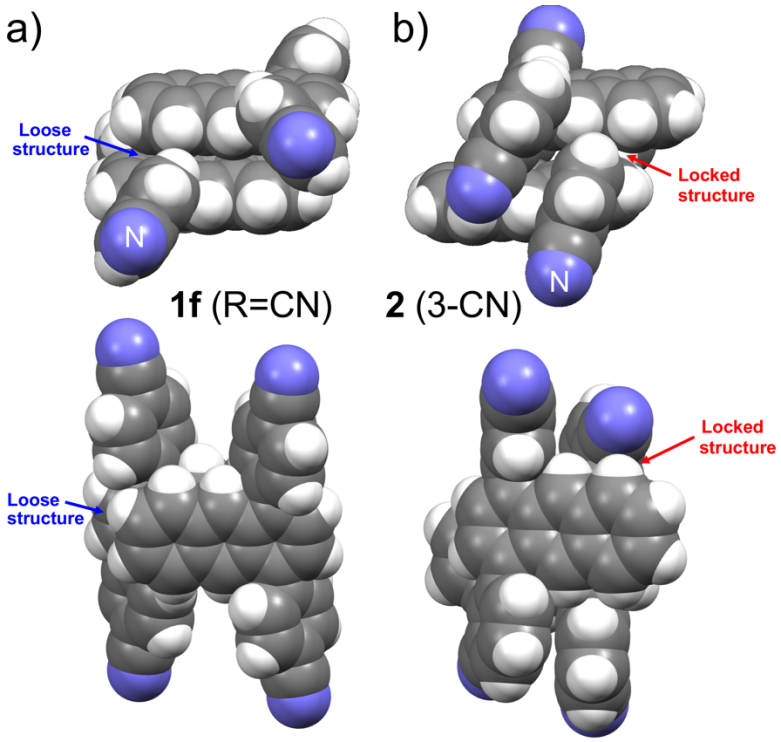


Figure S37. Crystal packing structure of 1,4-diphenylanthracene derivatives showing bimolecular interactions, a) **1f** (R=CN), b) **2** (3-CN).

2.2. Powder X-ray diffraction (PXRD) pattern of 1,4-diphenylanthracence derivatives

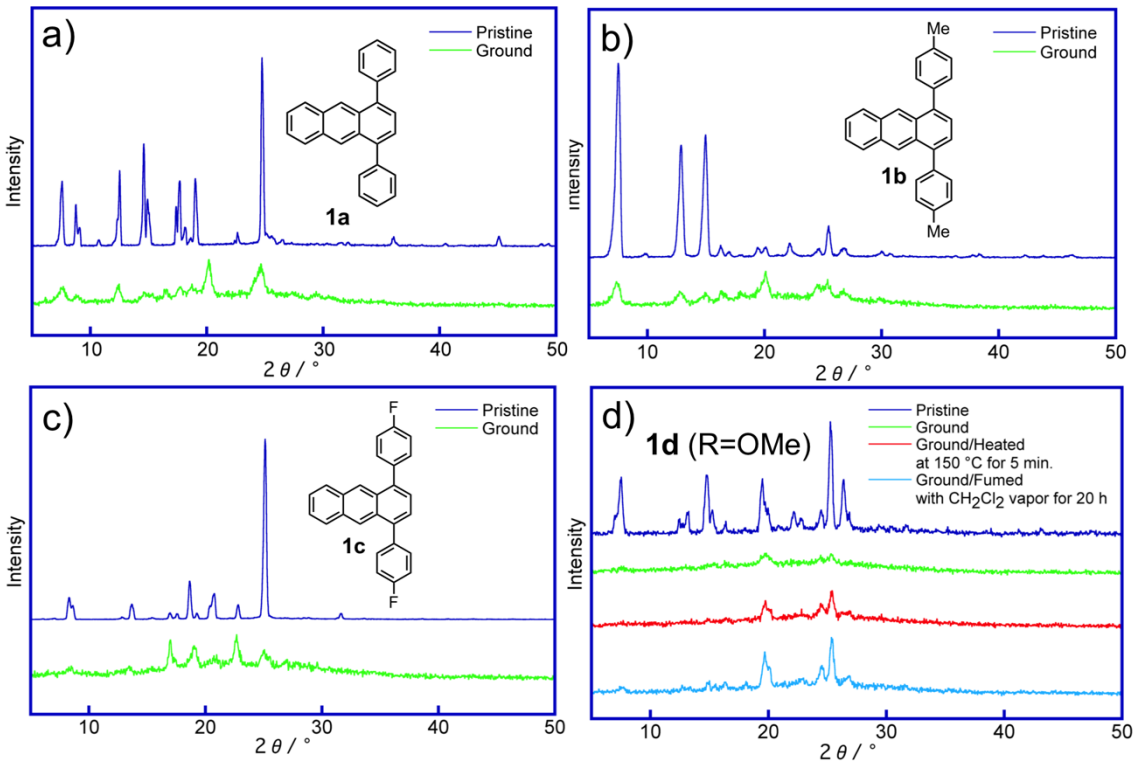


Figure S38. Powder X-ray diffraction (PXRD) patterns of 1,4-diphenylanthracene derivatives in pristine, ground, ground-fumed and ground-heated state, a) **1a** (R=H), b) **1b** (R=Me), c) **1c** (R=F), d) **1d** (R=OMe).

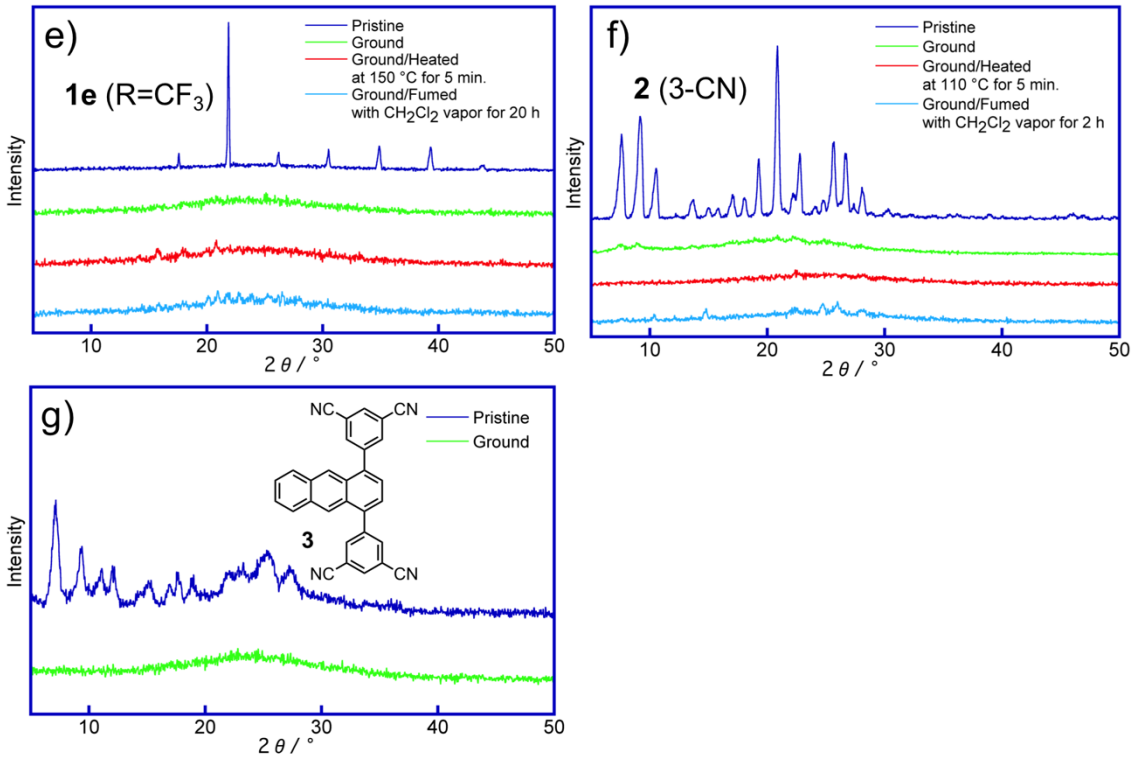


Figure S38 (contd.). Powder X-ray diffraction (PXRD) patterns of 1,4-diphenylanthracene derivatives in pristine, ground, ground-fumed and ground-heated state, e) **1e** (R= CF_3), f) **2** (3-CN), g) **3** (3,5-CN_2, R'=CN).

3. DFT calculation of the obtained crystal structures

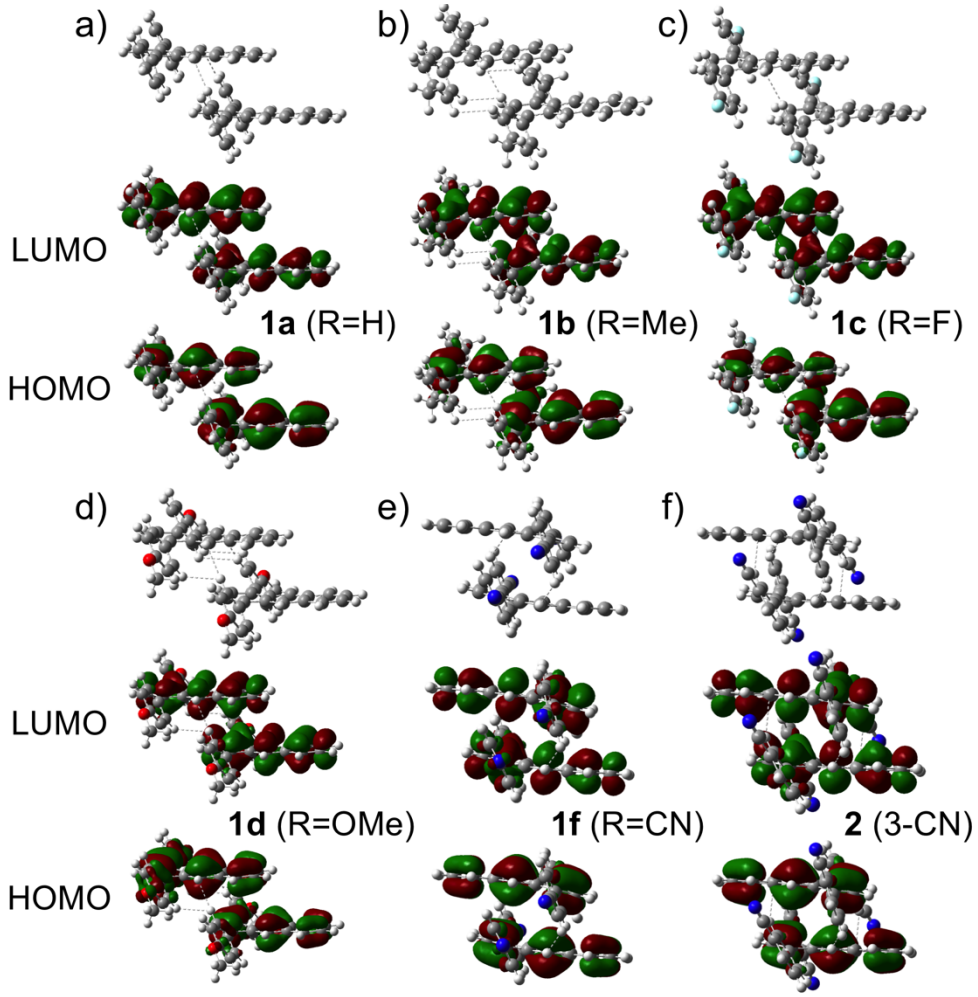


Figure S39. Electron cloud distribution of HOMO and LUMO from crystal structures (2 molecules) of 1,4-diphenylanthracene derivatives calculated by B3LYP-D3/6-31G*, a) **1a** (R=H), b) **1b** (R=Me), c) **1c** (R=F), d) **1d** (R=OMe), e) **1f** (R=CN), f) **2** (3-CN).

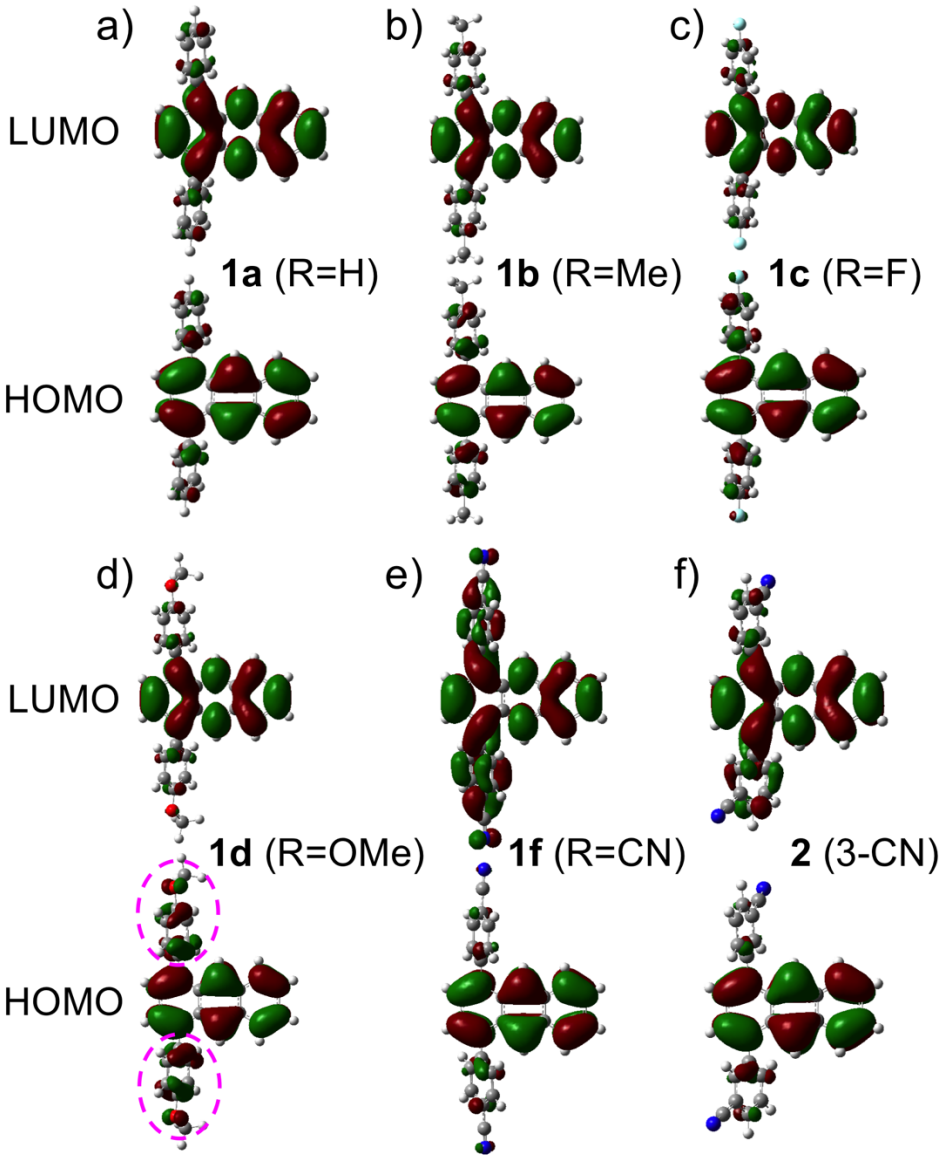


Figure S40. Electron cloud distribution of HOMO and LUMO from crystal structures (1 molecule) of 1,4-diphenylanthracene derivatives calculated by B3LYP-D3/6-31G*, a) **1a** (R=H), b) **1b** (R=Me), c) **1c** (R=F), d) **1d** (R=OMe), e) **1f** (R=CN), f) **2** (3-CN).

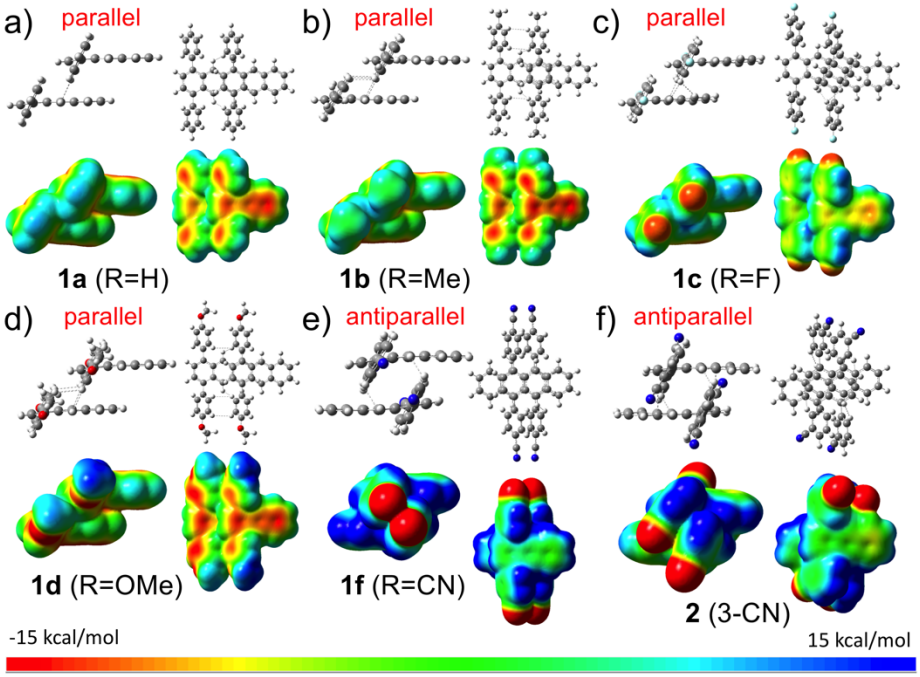


Figure S41. Electrostatic potential maps of 1,4-diphenylanthracene derivatives (bimolecular packing structures) calculated using B3LYP-D3/6-31G* from the obtained crystal data, a) **1a** (R=H), b) **1b** (R=Me), c) **1c** (R=F), d) **1d** (R=OMe), e) **1f** (R=CN), f) **2** (3-CN).

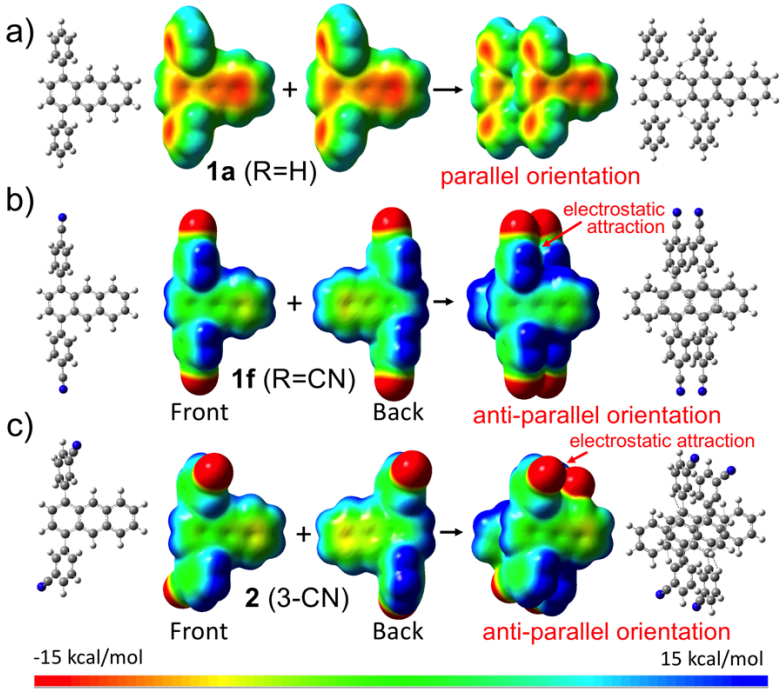


Figure S42. Schematic representation of the electrostatic potential maps for the bimolecular packing structure formation of 1,4-diphenylanthracene derivatives calculated using B3LYP-D3/6-31G* from the obtained crystal data, a) **1a** (R=H), b) **1f** (R=CN), c) **2** (3-CN).

4. UV irradiation experiments for 1,4-diphenylanthracene derivatives

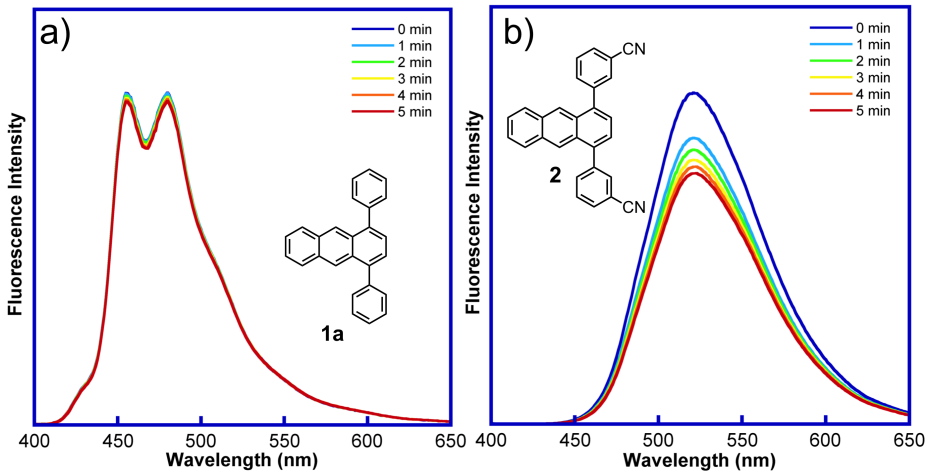


Figure S43. Fluorescence spectra of 1,4-diphenylanthracene derivatives after 365 nm UV irradiation in the solid state (λ_{ex} =365 nm), a) **1a** (R=H), b) **2** (3-CN).

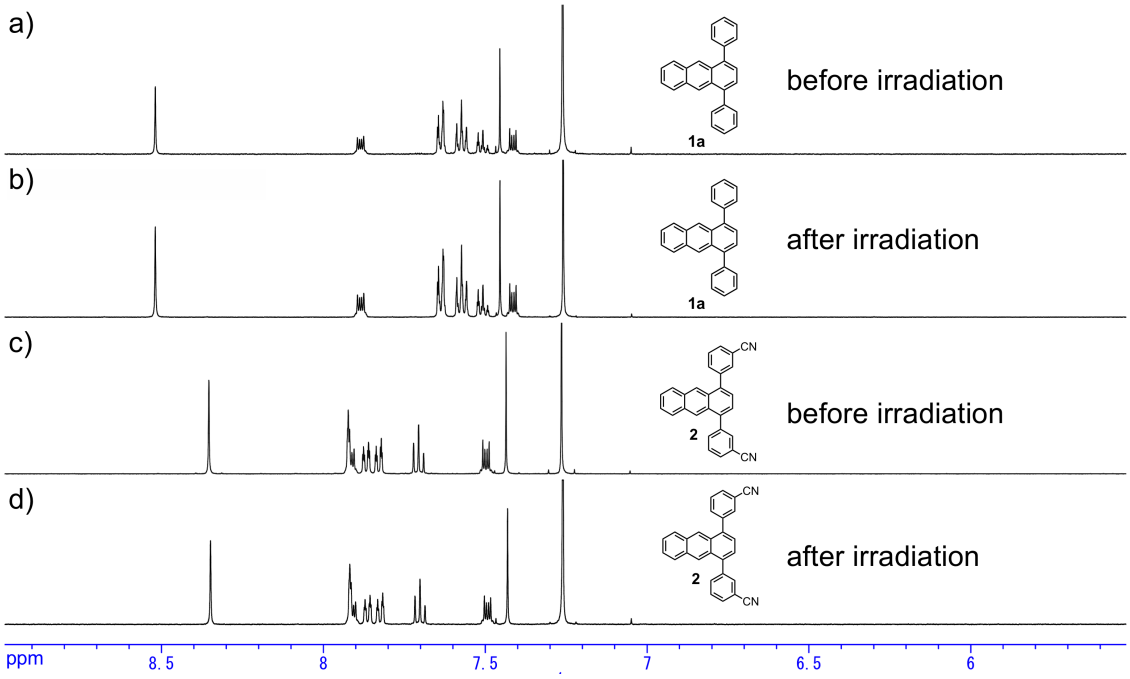
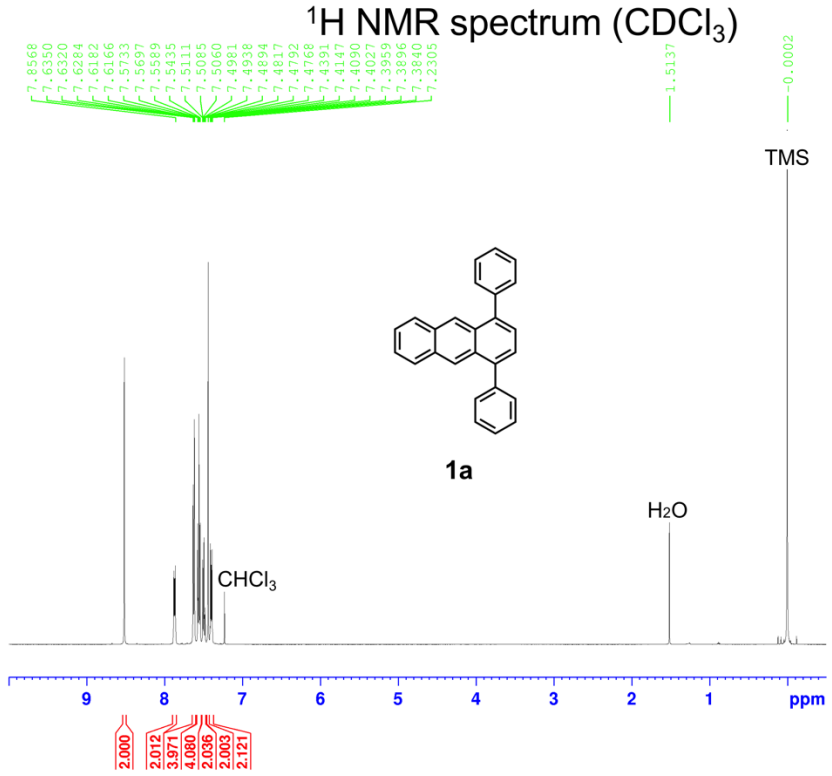


Figure S44. ^{1}H NMR spectra ($CDCl_3$) of 1,4-diphenylanthracene derivatives before and after 365 nm UV irradiation (5 min) in the solid state (λ_{ex} =365 nm), a) **1a** (R=H, before irradiation), b) **1a** (R=H, after irradiation of 365 nm UV light, 5 min), c) **2** (3-CN, before irradiation), d) **2** (3-CN, after irradiation of 365 nm UV light, 5 min).

5. NMR spectra of new compounds

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PROCNO                      1

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PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                        8
DS                        2
SWH               10330.578 Hz
FIDRES             0.157632 Hz
AQ                 3.1719425 sec
RG                       96
DW                   48.400 usec
DE                    6.50 usec
TE                   298.2 K
D1                1.00000000 sec

======== CHANNEL f1 ========
NUC1                     1H
P1                   11.00 usec
PLW1            20.51199913 W
SFO1           500.1330885 MHz

F2 - Processing parameters
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WDW                      EM
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GB                        0
PC                     1.00
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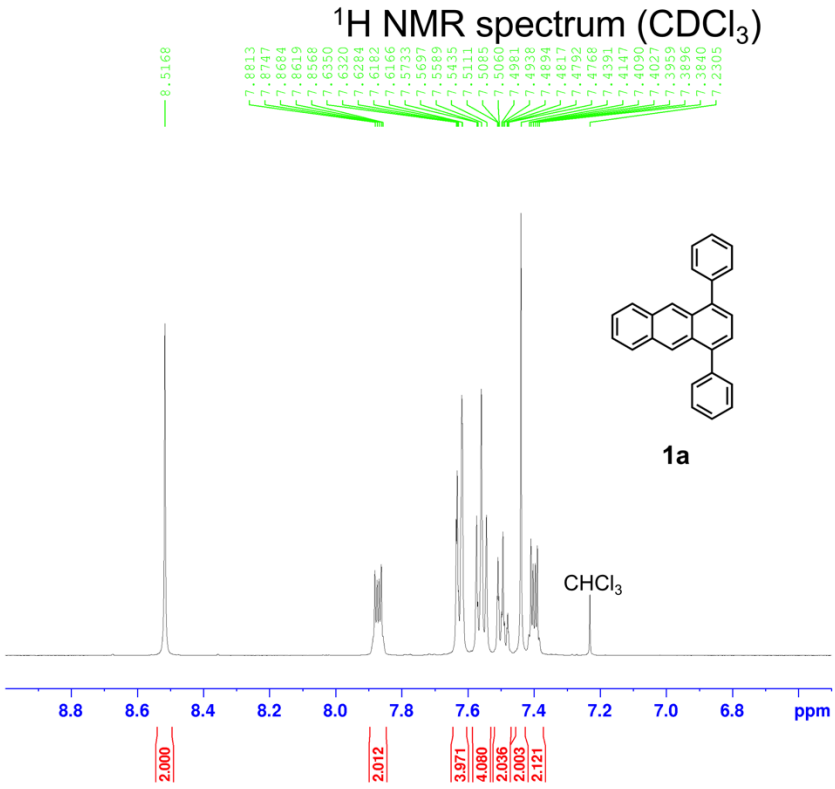


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PROCNO                      1

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Time                   13.15
INSTRUM                spect
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PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                        8
DS                        2
SWH               10330.578 Hz
FIDRES             0.157632 Hz
AQ                 3.1719425 sec
RG                       96
DW                   48.400 usec
DE                    6.50 usec
TE                   298.2 K
D1                1.00000000 sec

======== CHANNEL f1 ========
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P1                   11.00 usec
PLW1            20.51199913 W
SFO1           500.1330885 MHz

F2 - Processing parameters
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WDW                      EM
SSB                       0
LB                     0.30 Hz
GB                        0
PC                     1.00
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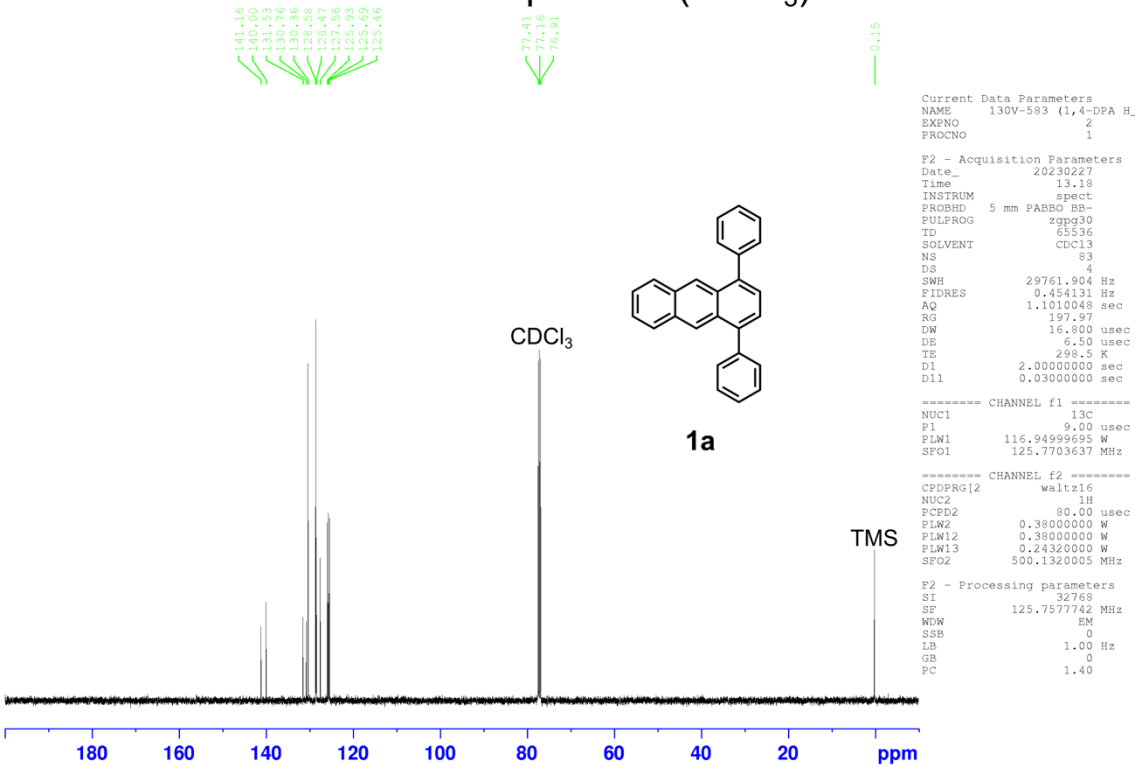
^{13}C NMR spectrum ($CDCl_3$)

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PROCNO               1

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TD               65536
SOLVENT          CDCl3
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DS                  4
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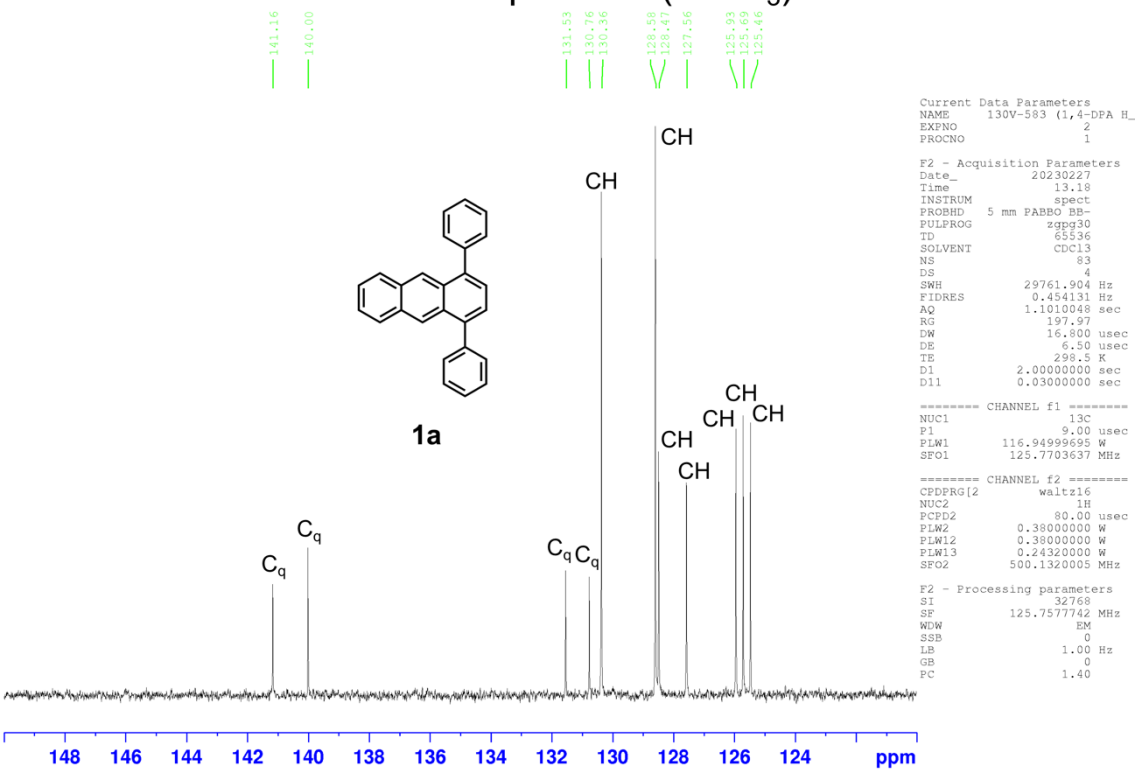
FIDRES        0.454131 Hz
AQ            1.1010048 sec
RG               197.97
DW               16.800 usec
DE                6.50 usec
TE              298.5 K
D1           2.00000000 sec
D11          0.03000000 sec

======== CHANNEL f1 ========
NUC1               13C
P1                9.00 usec
PLW1       116.94999695 W
SFO1       125.7703637 MHz

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2               1H
PCPD2            80.00 usec
PLW2        0.38000000 W
PLW12       0.38000000 W
PLW13       0.24320000 W
SFO2       500.1320005 MHz

F2 - Processing parameters
SI               32768
SF         125.7577742 MHz
WDW                EM
SSB                 0
LB               1.00 Hz
GB                  0
PC               1.40
```

^{13}C NMR spectrum ($CDCl_3$)

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Current Data Parameters
NAME      130V-583 (1,4-DPA H_
EXPNO                2
PROCNO               1

F2 - Acquisition Parameters
Date_          20230227
Time             13.18
INSTRUM          spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD               65536
SOLVENT          CDCl3
NS                 83
DS                  4
SWH          29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010048 sec
RG               197.97
DW               16.800 usec
DE                6.50 usec
TE              298.5 K
D1           2.00000000 sec
D11          0.03000000 sec

======== CHANNEL f1 ========
NUC1               13C
P1                9.00 usec
PLW1       116.94999695 W
SFO1       125.7703637 MHz

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2               1H
PCPD2            80.00 usec
PLW2        0.38000000 W
PLW12       0.38000000 W
PLW13       0.24320000 W
SFO2       500.1320005 MHz

F2 - Processing parameters
SI               32768
SF         125.7577742 MHz
WDW                EM
SSB                 0
LB               1.00 Hz
GB                  0
PC               1.40
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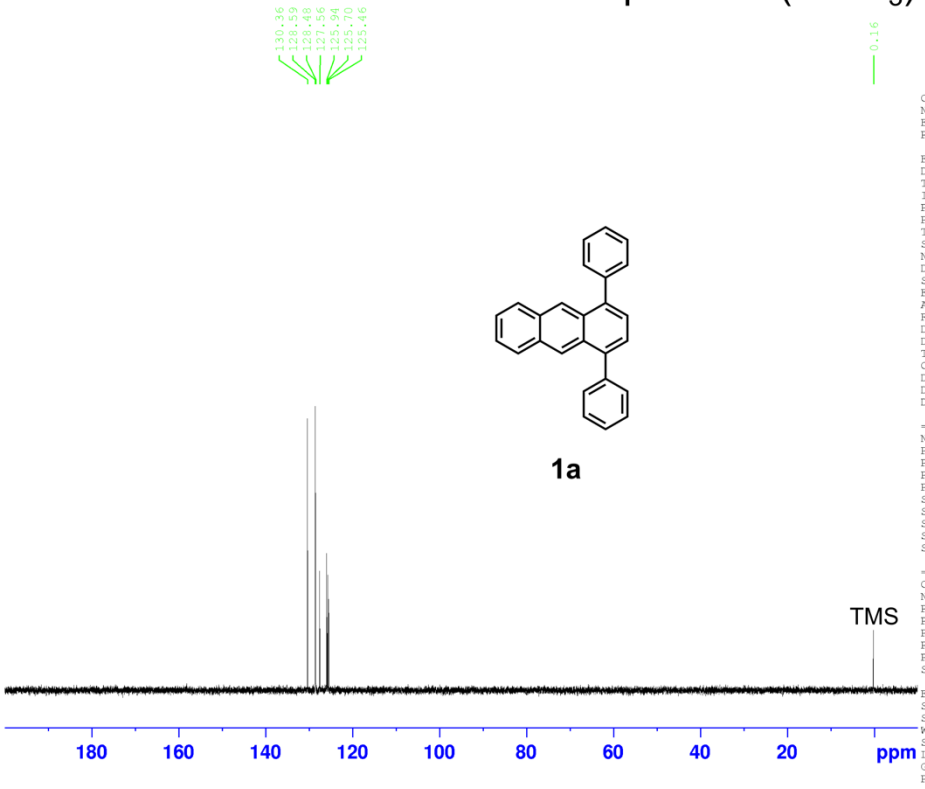
DEPT 135 NMR spectrum ($CDCl_3$)

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Current Data Parameters
NAME      130V-583 (1,4-DPA H_
EXPNO                3
PROCNO               1

F2 - Acquisition Parameters
Date_          20230227
Time             13.23
INSTRUM          spect
PROBHD   5 mm PABBO BB-
PULPROG       deptsp135
TD               65536
SOLVENT          CDCl3
NS                 51
DS                  4
SWH          27573.529 Hz
FIDRES        0.420739 Hz
AQ            1.1883861 sec
RG              197.97
DW              18.133 usec
DE               6.50 usec
TE              298.0 K
CNST2       145.0000000
D1            2.00000000 sec
D2            0.00344828 sec
D12           0.00002000 sec

======== CHANNEL f1 ========
NUC1               13C
P1                9.00 usec
P13            2000.00 usec
PLW0               0 W
PLW1       116.94999695 W
SFO1        125.7697360 MHz
SPNAM[5]    Crp60comp.4
SPOAL5           0.500
SPOFFS5            0 Hz
SPW5       14.47399998 W

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2               1H
P3                80.00 usec
P4               160.00 usec
PCPD2             80.00 usec
PLW2        0.38000000 W
PLW12       0.38000000 W
SFO2        500.1315995 MHz

F2 - Processing parameters
SI               32768
SF          125.7577738 MHz
WDW                EM
SSB                0
LB              1.00 Hz
GB                 0
PC              1.40
```
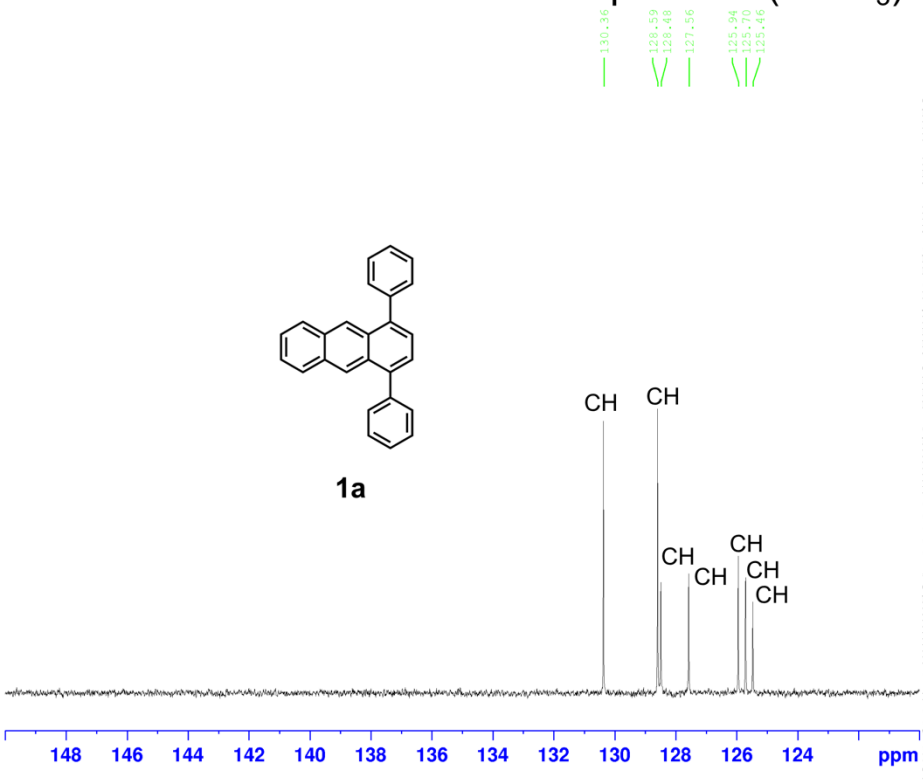

DEPT 135 NMR spectrum ($CDCl_3$)




```
Current Data Parameters
NAME      130V-583 (1,4-DPA H_
EXPNO                3
PROCNO               1

F2 - Acquisition Parameters
Date_          20230227
Time             13.23
INSTRUM          spect
PROBHD   5 mm PABBO BB-
PULPROG       deptsp135
TD               65536
SOLVENT          CDCl3
NS                 51
DS                  4
SWH          27573.529 Hz
FIDRES        0.420739 Hz
AQ            1.1883861 sec
RG              197.97
DW              18.133 usec
DE               6.50 usec
TE              298.0 K
CNST2       145.0000000
D1            2.00000000 sec
D2            0.00344828 sec
D12           0.00002000 sec

======== CHANNEL f1 ========
NUC1               13C
P1                9.00 usec
P13            2000.00 usec
PLW0               0 W
PLW1       116.94999695 W
SFO1        125.7697360 MHz
SPNAM[5]    Crp60comp.4
SPOAL5           0.500
SPOFFS5            0 Hz
SPW5       14.47399998 W

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2               1H
P3                80.00 usec
P4               160.00 usec
PCPD2             80.00 usec
PLW2        0.38000000 W
PLW12       0.38000000 W
SFO2        500.1315995 MHz

F2 - Processing parameters
SI               32768
SF          125.7577738 MHz
WDW                EM
SSB                0
LB              1.00 Hz
GB                 0
PC              1.40
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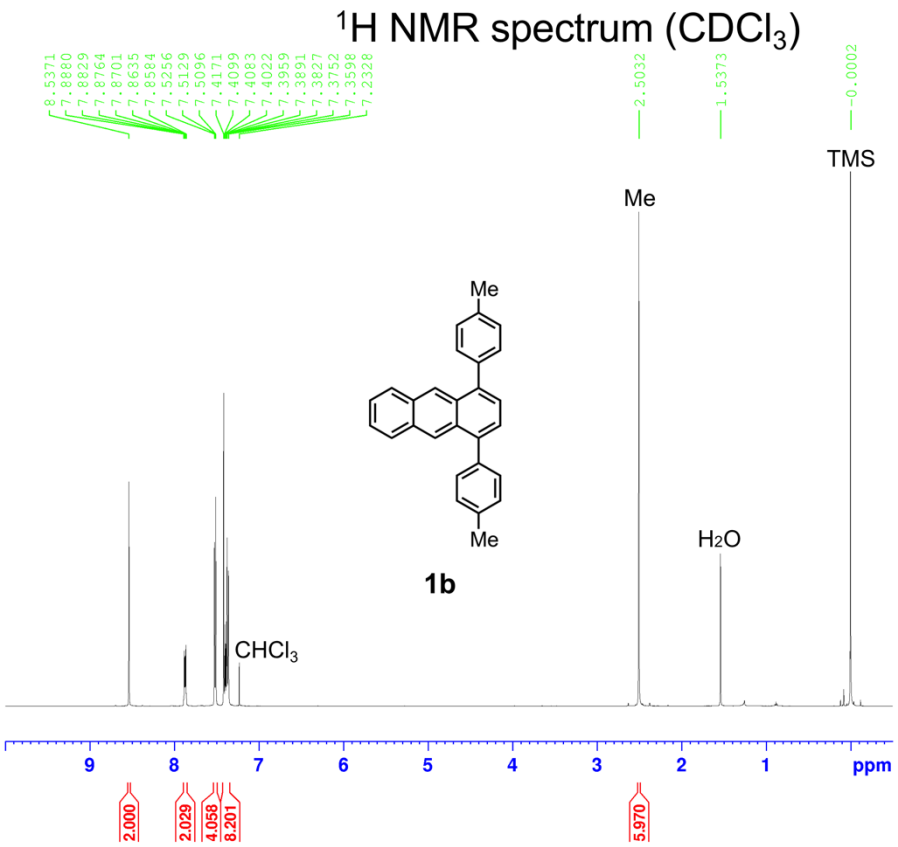
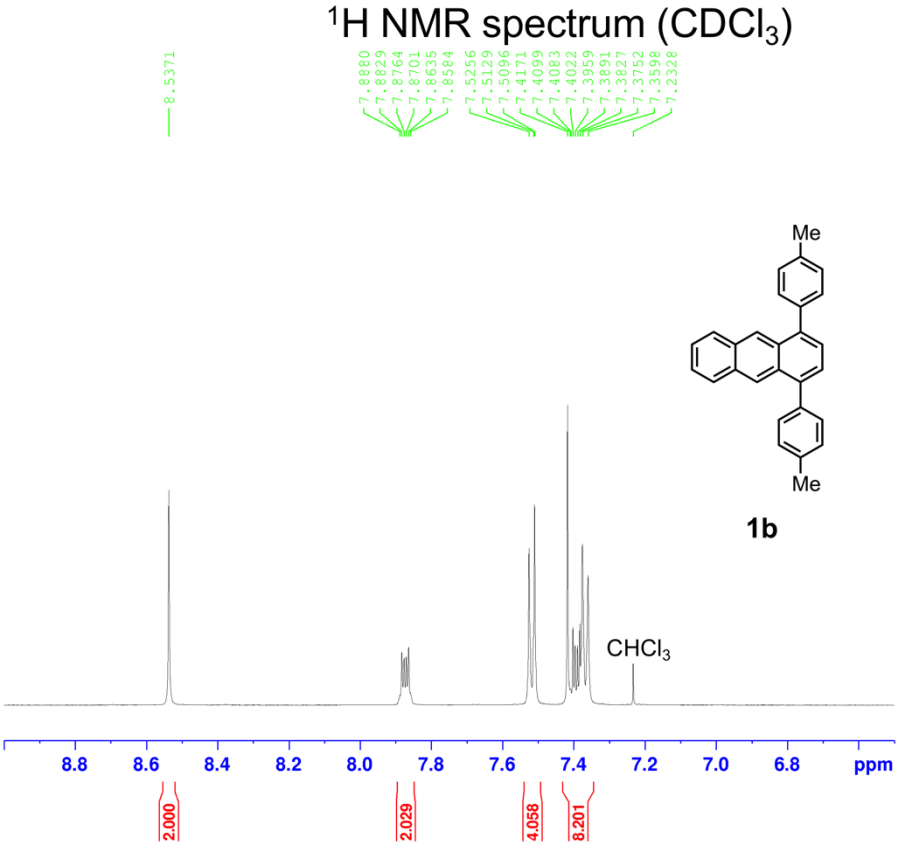


Current Data Parameters
NAME 130V-397 (1,4-DPA 4-
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20220915
Time 17.51
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 10330.578 Hz
FIDRES 0.157632 Hz
AQ 3.1719425 sec
RG 69.22
DW 48.400 usec
DE 6.50 usec
TE 298.2 K
D1 1.00000000 sec

======== CHANNEL f1 ========
NUC1 1H
P1 11.00 usec
PLW1 20.51199913 W
SFO1 500.1330885 MHz

F2 - Processing parameters
SI 65536
SF 500.1300268 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

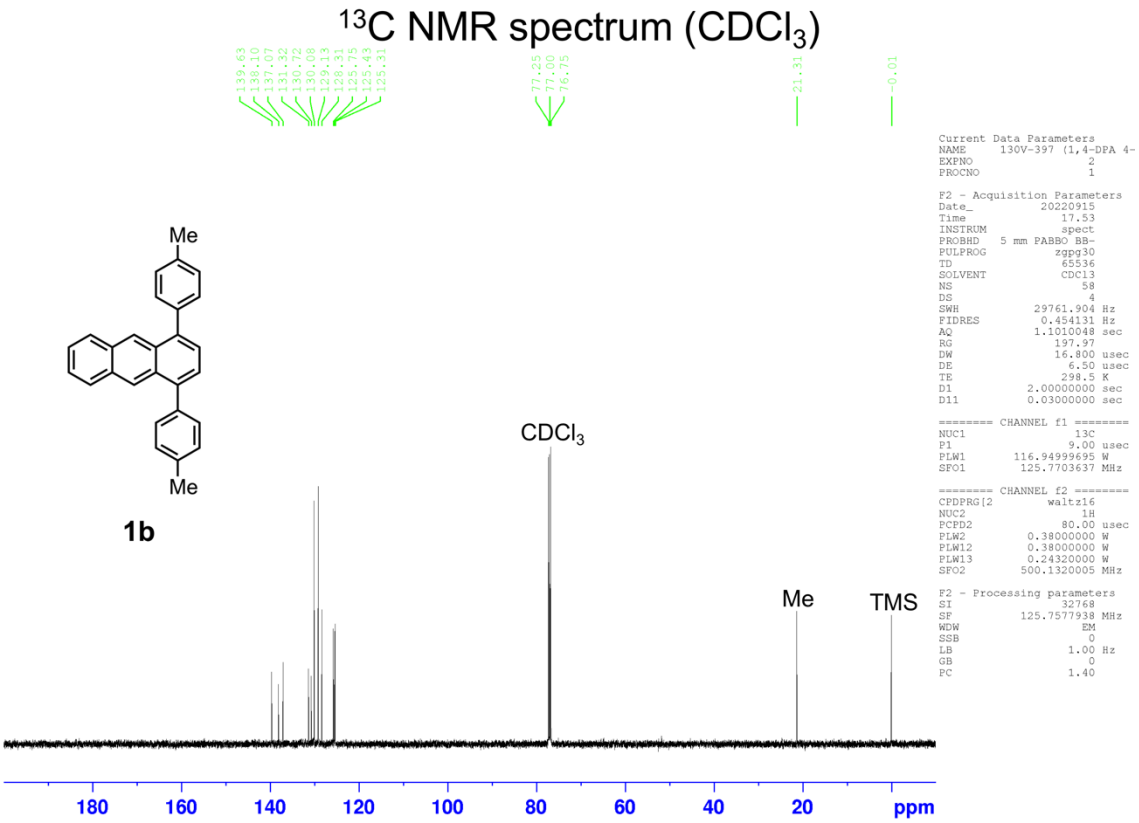


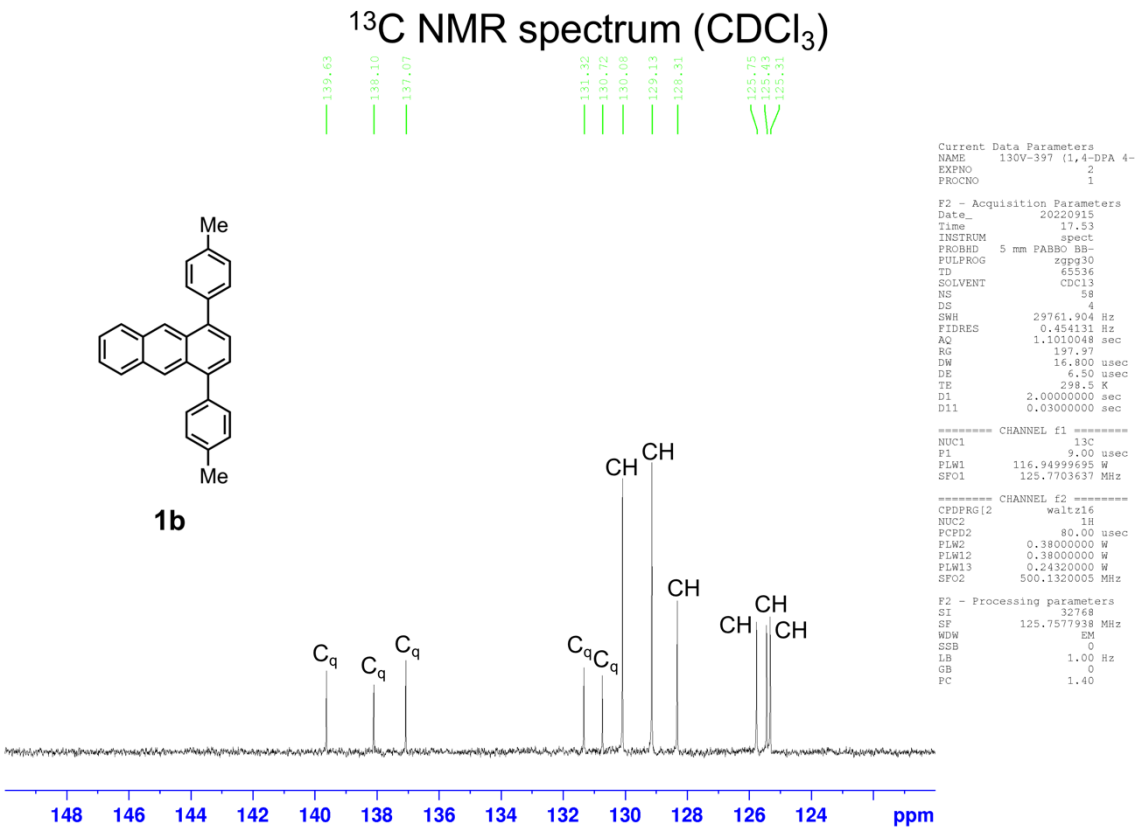
Current Data Parameters
NAME 130V-397 (1,4-DPA 4-
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20220915
Time 17.51
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 10330.578 Hz
FIDRES 0.157632 Hz
AQ 3.1719425 sec
RG 69.22
DW 48.400 usec
DE 6.50 usec
TE 298.2 K
D1 1.00000000 sec

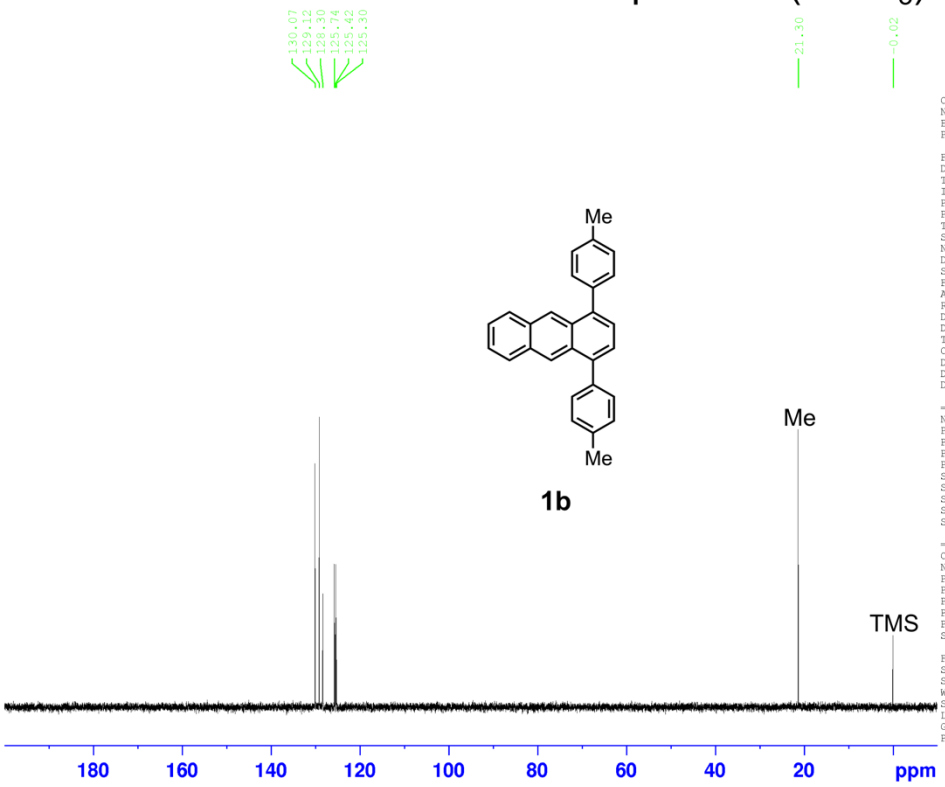
======== CHANNEL f1 ========
NUC1 1H
P1 11.00 usec
PLW1 20.51199913 W
SFO1 500.1330885 MHz

F2 - Processing parameters
SI 65536
SF 500.1300268 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00


13C NMR spectrum (CDCl3)
139.63
138.10
137.07
131.32
130.72
130.08
129.13
128.31
125.75
125.43
125.31
77.25
77.00
76.75
21.31
-0.01
Me
Me
1b
CDCl3
Me
TMS
180
160
140
120
100
80
60
40
20
ppm
Current Data Parameters
NAME 130V-397 (1,4-DPA 4-
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220915
Time 17.53
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 58
DS 4
SWH 29761.904 Hz
FIDRES 0.454131 Hz
AQ 1.1010048 sec
RG 197.97
DW 16.800 usec
DE 6.50 usec
TE 298.5 K
D1 2.00000000 sec
D11 0.03000000 sec
======== CHANNEL f1 ========
NUC1 13C
P1 9.00 usec
PLW1 116.94999695 W
SFO1 125.7703637 MHz
======== CHANNEL f2 ========
CPDPRG[2 waltz16
NUC2 1H
PCPD2 80.00 usec
PLW2 0.38000000 W
PLW12 0.38000000 W
PLW13 0.24320000 W
SFO2 500.1320005 MHz
F2 - Processing parameters
SI 32768
SF 125.7577938 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40


13C NMR spectrum (CDCl3)
139.63
138.10
137.07
131.32
130.72
130.08
129.13
128.31
125.75
125.43
125.31
Me
Me
1b
Cq
Cq
Cq
Cq
Cq
CH
CH
CH
CH
CH
CH
148
146
144
142
140
138
136
134
132
130
128
126
124
ppm
Current Data Parameters
NAME 130V-397 (1,4-DPA 4-
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220915
Time 17.53
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 58
DS 4
SWH 29761.904 Hz
FIDRES 0.454131 Hz
AQ 1.1010048 sec
RG 197.97
DW 16.800 usec
DE 6.50 usec
TE 298.5 K
D1 2.00000000 sec
D11 0.03000000 sec
======== CHANNEL f1 ========
NUC1 13C
P1 9.00 usec
PLW1 116.94999695 W
SFO1 125.7703637 MHz
======== CHANNEL f2 ========
CPDPRG[2 waltz16
NUC2 1H
PCPD2 80.00 usec
PLW2 0.38000000 W
PLW12 0.38000000 W
PLW13 0.24320000 W
SFO2 500.1320005 MHz
F2 - Processing parameters
SI 32768
SF 125.7577938 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

DEPT 135 NMR spectrum ($CDCl_3$)




```
Current Data Parameters
NAME      130V-397 (1,4-DPA 4-
EXPNO                        3
PROCNO                       1

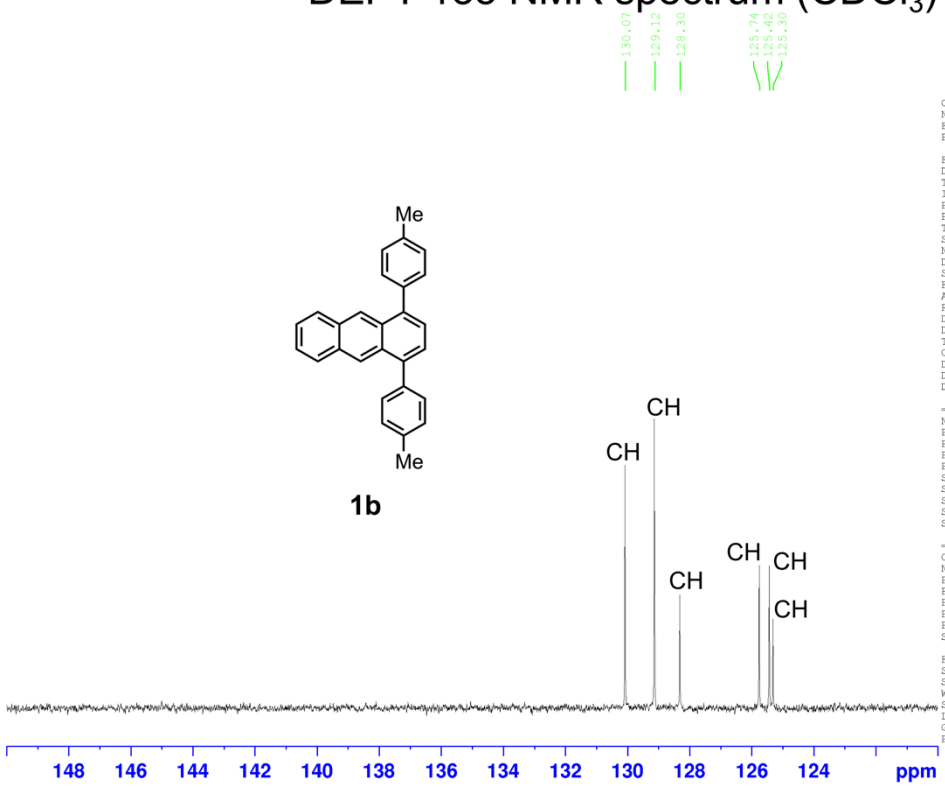
F2 - Acquisition Parameters
Date_              20220915
Time                 18.00
INSTRUM              spect
PROBHD    5 mm PABBO BB-
PULPROG          deptsp135
TD                   65536
SOLVENT              CDCl3
NS                      59
DS                       4
SWH              27573.529 Hz
FIDRES           0.420739 Hz
AQ               1.1883861 sec
RG                   197.97
DW                 18.133 usec
DE                   6.50 usec
TE                  298.5 K
CNST2          145.0000000
D1               2.00000000 sec
D2               0.00344828 sec
D12              0.00002000 sec

======== CHANNEL f1 ========
NUC1                   13C
P1                    9.00 usec
P13                2000.00 usec
PLW0                    0 W
PLW1          116.94999695 W
SFO1           125.7697360 MHz
SPNAM[5]      Crp60comp.4
SPOAL5               0.500
SPOFFS5                 0 Hz
SPW5          14.47399998 W

======== CHANNEL f2 ========
CPDPRG[2            waltz16
NUC2                   1H
P3                   80.00 usec
P4                  160.00 usec
PCPD2                80.00 usec
PLW2          0.38000000 W
PLW12         0.38000000 W
SFO2          500.1315995 MHz

F2 - Processing parameters
SI                   32768
SF             125.7577948 MHz
WDW                     EM
SSB                      0
LB                    1.00 Hz
GB                       0
PC                    1.40
```

DEPT 135 NMR spectrum ($CDCl_3$)



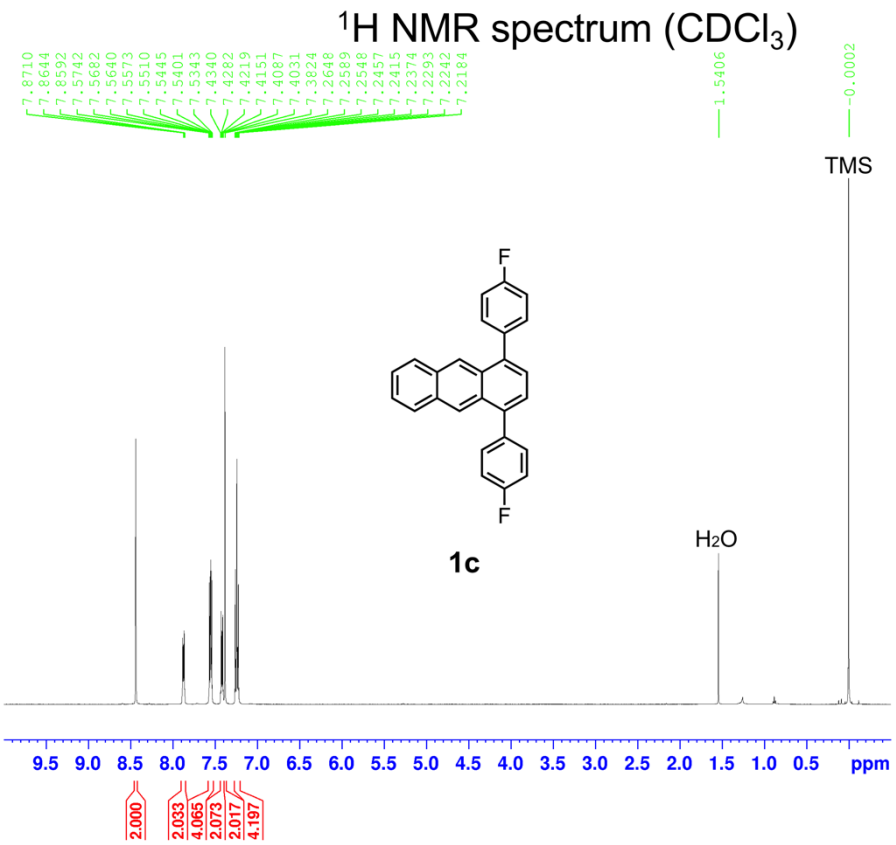

```
Current Data Parameters
NAME      130V-397 (1,4-DPA 4-
EXPNO                        3
PROCNO                       1

F2 - Acquisition Parameters
Date_              20220915
Time                 18.00
INSTRUM              spect
PROBHD    5 mm PABBO BB-
PULPROG          deptsp135
TD                   65536
SOLVENT              CDCl3
NS                      59
DS                       4
SWH              27573.529 Hz
FIDRES           0.420739 Hz
AQ               1.1883861 sec
RG                   197.97
DW                 18.133 usec
DE                   6.50 usec
TE                  298.5 K
CNST2          145.0000000
D1               2.00000000 sec
D2               0.00344828 sec
D12              0.00002000 sec

======== CHANNEL f1 ========
NUC1                   13C
P1                    9.00 usec
P13                2000.00 usec
PLW0                    0 W
PLW1          116.94999695 W
SFO1           125.7697360 MHz
SPNAM[5]      Crp60comp.4
SPOAL5               0.500
SPOFFS5                 0 Hz
SPW5          14.47399998 W

======== CHANNEL f2 ========
CPDPRG[2            waltz16
NUC2                   1H
P3                   80.00 usec
P4                  160.00 usec
PCPD2                80.00 usec
PLW2          0.38000000 W
PLW12         0.38000000 W
SFO2          500.1315995 MHz

F2 - Processing parameters
SI                   32768
SF             125.7577948 MHz
WDW                     EM
SSB                      0
LB                    1.00 Hz
GB                       0
PC                    1.40
```




```
Current Data Parameters
NAME      130V-408 (1,4-DPA 4-
EXPNO                1
PROCNO               1

F2 - Acquisition Parameters
Date_           20220928
Time              15.22
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG           zg30
TD               65536
SOLVENT          CDCl3
NS                   8
DS                   2
SWH          10330.578 Hz
FIDRES        0.157632 Hz
AQ            3.1719425 sec
RG                59.13
DW               48.400 usec
DE                6.50 usec
TE              298.2 K
D1           1.00000000 sec

======== CHANNEL f1 ========
NUC1                 1H
P1                11.00 usec
PLW1         20.51199913 W
SFO1        500.1330885 MHz

F2 - Processing parameters
SI                65536
SF          500.1300283 MHz
WDW                  EM
SSB                  0
LB                0.30 Hz
GB                   0
PC                1.00
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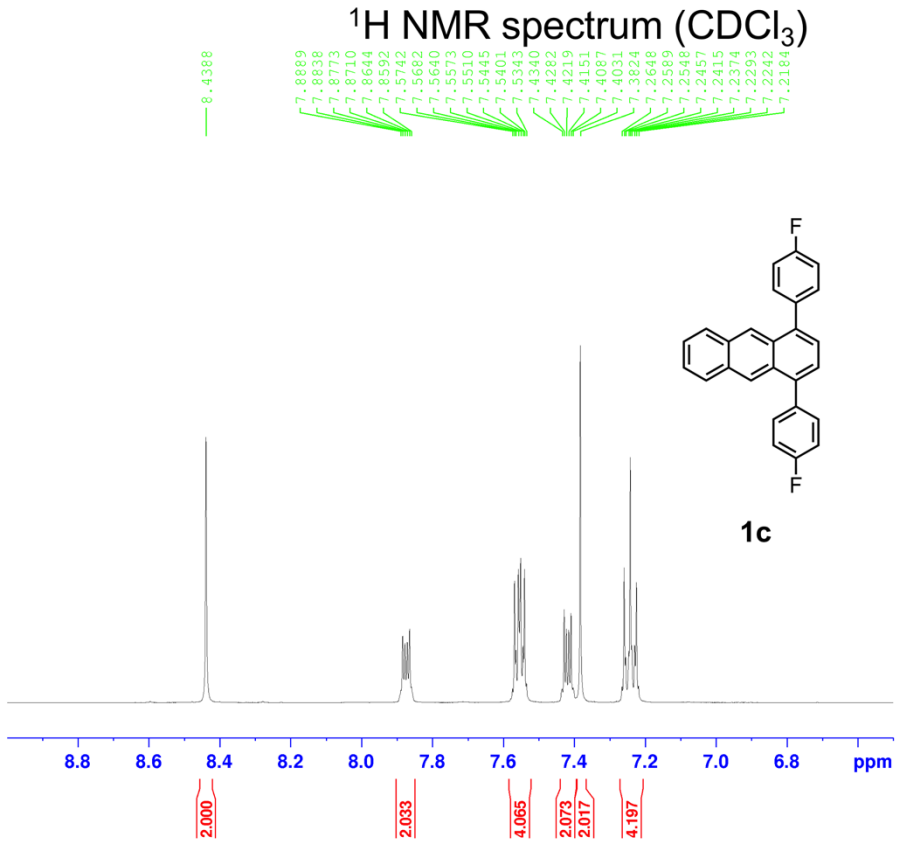


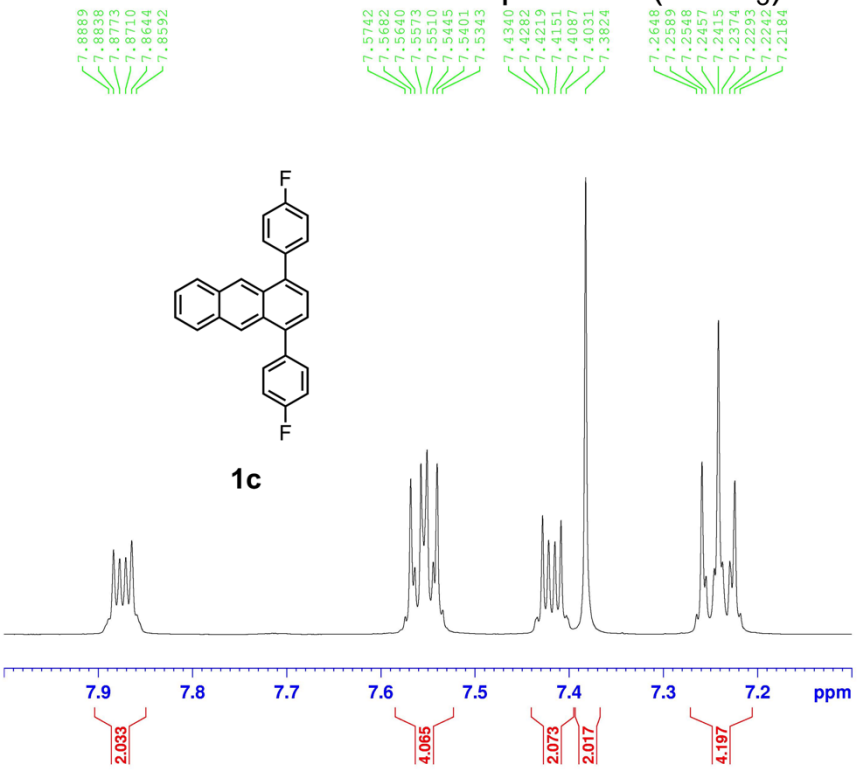

```
Current Data Parameters
NAME      130V-408 (1,4-DPA 4-
EXPNO                1
PROCNO               1

F2 - Acquisition Parameters
Date_           20220928
Time              15.22
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG           zg30
TD               65536
SOLVENT          CDCl3
NS                   8
DS                   2
SWH          10330.578 Hz
FIDRES        0.157632 Hz
AQ            3.1719425 sec
RG                59.13
DW               48.400 usec
DE                6.50 usec
TE              298.2 K
D1           1.00000000 sec

======== CHANNEL f1 ========
NUC1                 1H
P1                11.00 usec
PLW1         20.51199913 W
SFO1        500.1330885 MHz

F2 - Processing parameters
SI                65536
SF          500.1300283 MHz
WDW                  EM
SSB                  0
LB                0.30 Hz
GB                   0
PC                1.00
```

^{1}H NMR spectrum ($CDCl_3$)



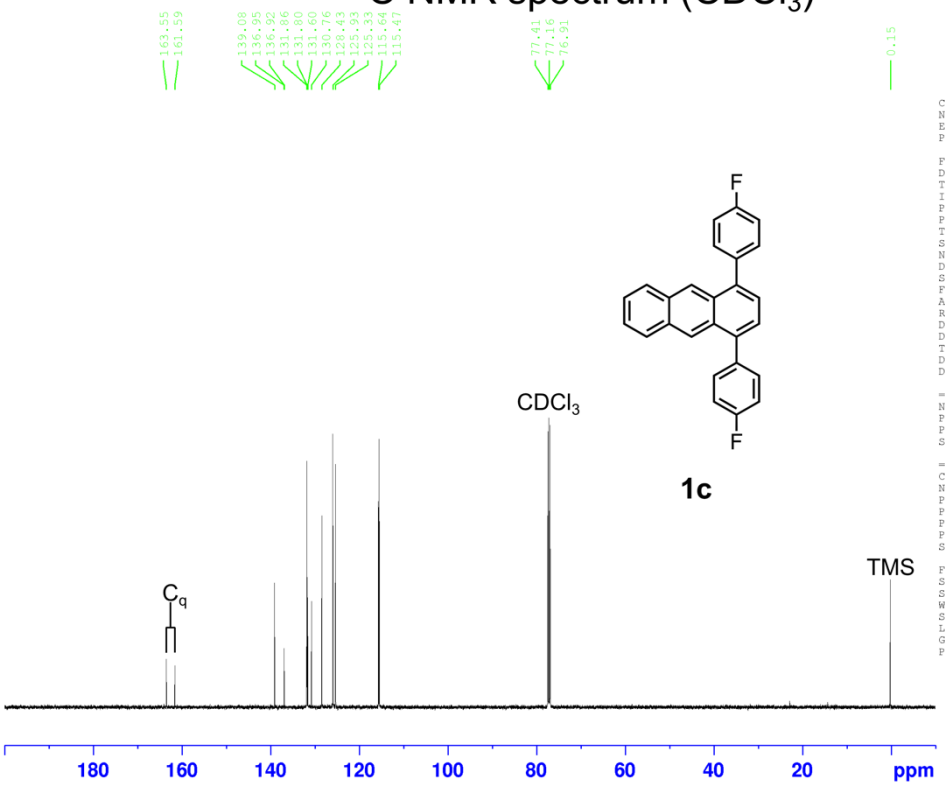

```
Current Data Parameters
NAME                  130V-408
EXPNO                        1
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20220927
Time                     23.22
INSTRUM                  spect
PROBHD    5 mm PABBO BB-
PULPROG                  zg30
TD                      65536
SOLVENT                  CDCl3
NS                           8
DS                           2
SWH                10330.578 Hz
FIDRES              0.157632 Hz
AQ                  3.1719923 sec
RG                       59.13
DW                      48.400 usec
DE                       6.50 usec
TE                      298.2 K
D1                 1.00000000 sec

======== CHANNEL f1 ========
NUC1                        1H
P1                       11.00 usec
PLW1               20.51199913 W
SFO1              500.1330885 MHz

F2 - Processing parameters
SI                          65536
SF                500.1300283 MHz
WDW                           EM
SSB                0
LB                           0.30 Hz
GB                 0
PC                           1.00
```

^{13}C NMR spectrum ($CDCl_3$)

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Current Data Parameters
NAME      130V-408 (1,4-DPA 4-
EXPNO                        2
PROCNO                       1

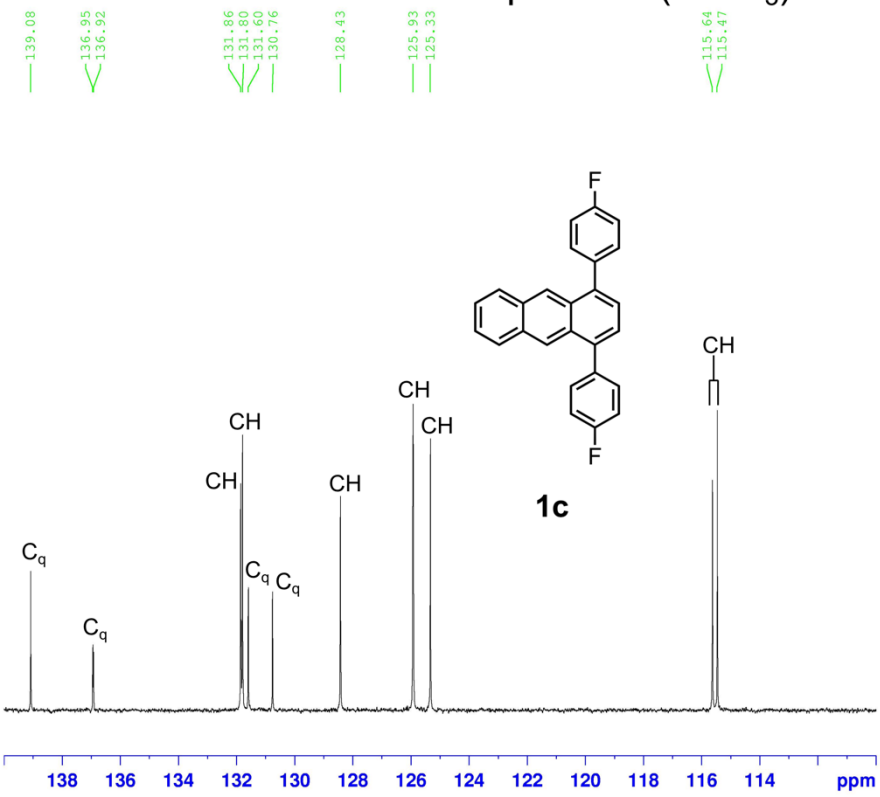
F2 - Acquisition Parameters
Date_                 20220928
Time                     15.25
INSTRUM                  spect
PROBHD    5 mm PABBO BB-
PULPROG                zgpg30
TD                      65536
SOLVENT                  CDCl3
NS                         257
DS                           4
SWH                29761.904 Hz
FIDRES              0.454131 Hz
AQ                  1.1010048 sec
RG                       197.97
DW                      16.800 usec
DE                       6.50 usec
TE                      298.5 K
D1                 2.00000000 sec
D11                0.03000000 sec

======== CHANNEL f1 ========
NUC1                        13C
P1                        9.00 usec
PLW1              116.94999695 W
SFO1              125.7703637 MHz

======== CHANNEL f2 ========
CPDPRG[2                waltz16
NUC2                        1H
PCPD2                    80.00 usec
PLW2               0.38000000 W
PLW12              0.38000000 W
PLW13              0.24320000 W
SFO2              500.1320005 MHz

F2 - Processing parameters
SI                          32768
SF                125.7577742 MHz
WDW                           EM
SSB                          0
LB                           1.00 Hz
GB                           0
PC                           1.40
```

^{13}C NMR spectrum ($CDCl_3$)




```
Current Data Parameters
NAME                 130V-408
EXPNO                       2
PROCNO                      1

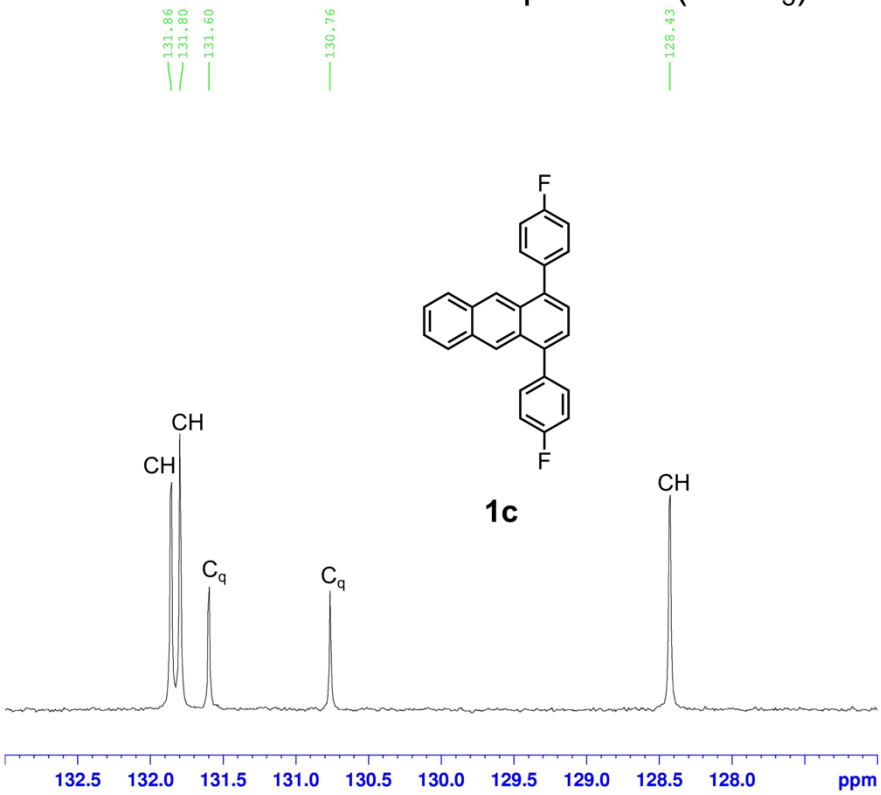
F2 - Acquisition Parameters
Date_               20220927
Time                   23.25
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG             zgpg30
TD                   65536
SOLVENT              CDCl3
NS                     257
DS                       4
SWH              29761.904 Hz
FIDRES            0.454131 Hz
AQ                1.1010548 sec
RG                   197.97
DW                   16.800 usec
DE                    6.50 usec
TE                   298.5 K
D1                2.00000000 sec
D11               0.03000000 sec

======== CHANNEL f1 ========
NUC1                   13C
P1                    9.00 usec
PLW1          116.94999695 W
SFO1           125.7703637 MHz

======== CHANNEL f2 ========
CPDPRG2             waltz16
NUC2                   1H
PCPD2                80.00 usec
PLW2            0.38000000 W
PLW12           0.38000000 W
PLW13           0.24320000 W
SFO2          500.1320005 MHz

F2 - Processing parameters
SI                     32768
SF             125.7577742 MHz
WDW                       EM
SSB          0
LB                    1.00 Hz
GB           0
PC                    1.40
```

^{13}C NMR spectrum ($CDCl_3$)




```
Current Data Parameters
NAME                 130V-408
EXPNO                       2
PROCNO                      1

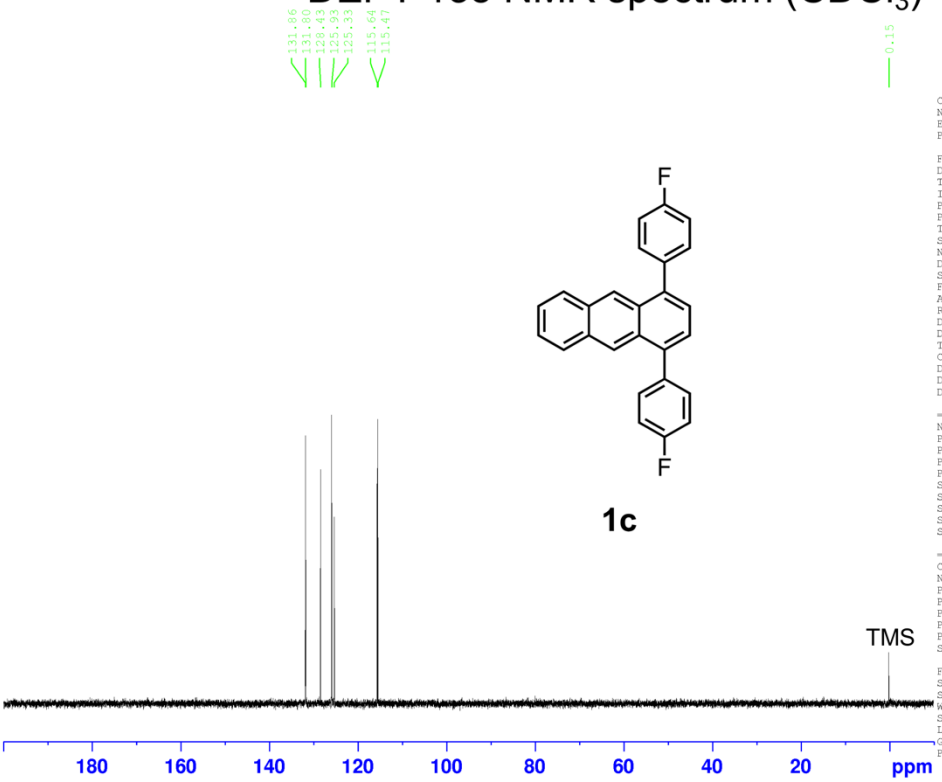
F2 - Acquisition Parameters
Date_               20220927
Time                   23.25
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG             zgpg30
TD                   65536
SOLVENT              CDCl3
NS                     257
DS                       4
SWH              29761.904 Hz
FIDRES            0.454131 Hz
AQ                1.1010548 sec
RG                   197.97
DW                   16.800 usec
DE                    6.50 usec
TE                   298.5 K
D1                2.00000000 sec
D11               0.03000000 sec

======== CHANNEL f1 ========
NUC1                   13C
P1                    9.00 usec
PLW1          116.94999695 W
SFO1           125.7703637 MHz

======== CHANNEL f2 ========
CPDPRG2             waltz16
NUC2                   1H
PCPD2                80.00 usec
PLW2            0.38000000 W
PLW12           0.38000000 W
PLW13           0.24320000 W
SFO2          500.1320005 MHz

F2 - Processing parameters
SI                     32768
SF             125.7577742 MHz
WDW                       EM
SSB          0
LB                    1.00 Hz
GB           0
PC                    1.40
```

DEPT 135 NMR spectrum ($CDCl_3$)




```
Current Data Parameters
NAME      130V-408 (1,4-DPA 4-
EXPNO                        3
PROCNO                       1

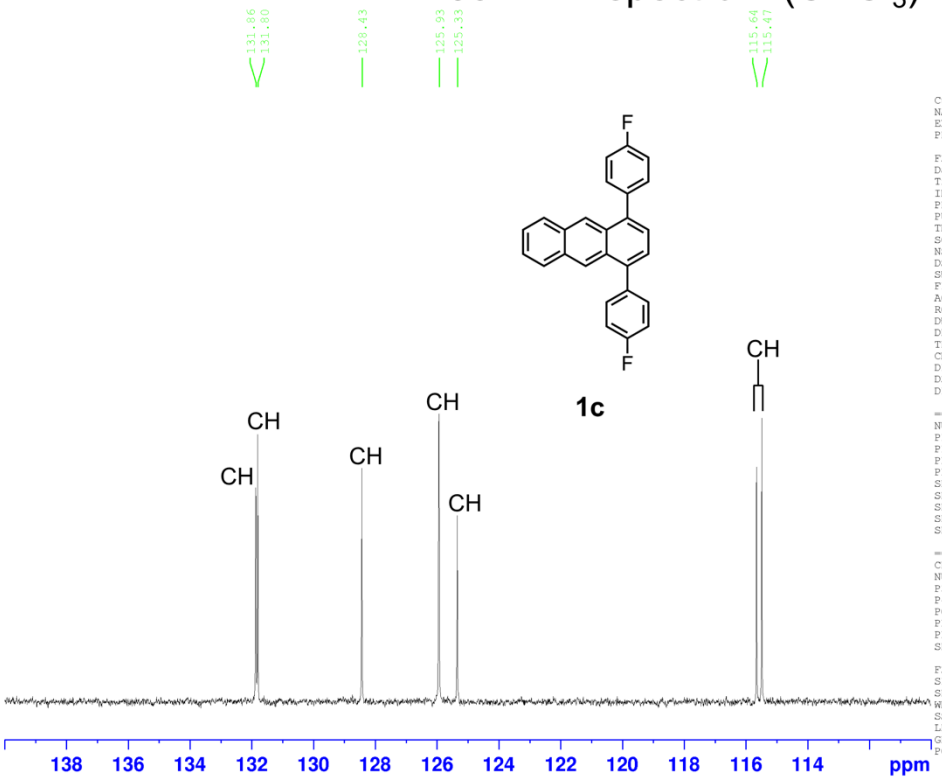
F2 - Acquisition Parameters
Date_              20220928
Time                  15.41
INSTRUM               spect
PROBHD    5 mm PABBO BB-
PULPROG          deptsp135
TD                   65536
SOLVENT              CDCl3
NS                      64
DS                       4
SWH               27573.529 Hz
FIDRES             0.420739 Hz
AQ                1.1883861 sec
RG                   197.97
DW                   18.133 usec
DE                     6.50 usec
TE                   298.4 K
CNST2           145.0000000
D1                2.00000000 sec
D2                0.00344828 sec
D12               0.00002000 sec

========== CHANNEL f1 ==========
NUC1                    13C
P1                     9.00 usec
P13                 2000.00 usec
PLW0                      0 W
PLW1           116.94999695 W
SFO1           125.7697360 MHz
SPNAM[5]       Crp60comp.4
SPOAL5               0.500
SPOFFS5                   0 Hz
SPW5           14.47399998 W

========== CHANNEL f2 ==========
CPDPRG[2              waltz16
NUC2                      1H
P3                     80.00 usec
P4                    160.00 usec
PCPD2                  80.00 usec
PLW2             0.38000000 W
PLW12            0.38000000 W
SFO2           500.1315995 MHz

F2 - Processing parameters
SI                       32768
SF             125.7577742 MHz
WDW                         EM
SSB                          0
LB                        1.00 Hz
GB                           0
PC                        1.40
```

DEPT 135 NMR spectrum ($CDCl_3$)




```
Current Data Parameters
NAME      130V-408 (1,4-DPA 4-
EXPNO                        3
PROCNO                       1

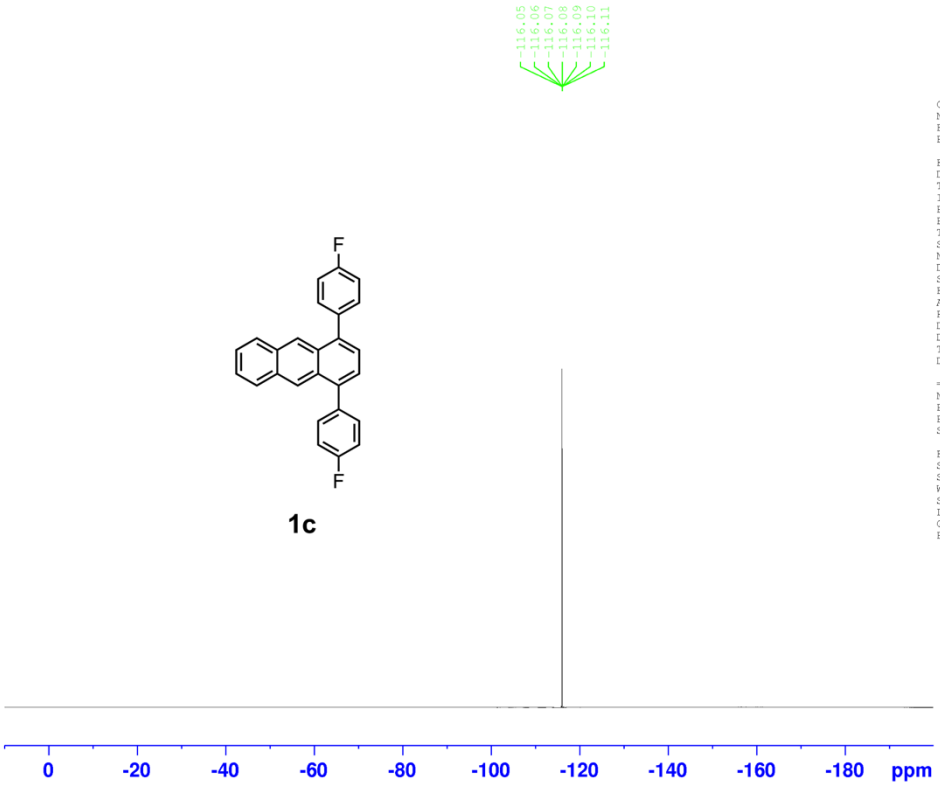
F2 - Acquisition Parameters
Date_              20220928
Time                  15.41
INSTRUM               spect
PROBHD    5 mm PABBO BB-
PULPROG          deptsp135
TD                   65536
SOLVENT              CDCl3
NS                      64
DS                       4
SWH               27573.529 Hz
FIDRES             0.420739 Hz
AQ                1.1883861 sec
RG                   197.97
DW                   18.133 usec
DE                     6.50 usec
TE                   298.4 K
CNST2           145.0000000
D1                2.00000000 sec
D2                0.00344828 sec
D12               0.00002000 sec

========== CHANNEL f1 ==========
NUC1                    13C
P1                     9.00 usec
P13                 2000.00 usec
PLW0                      0 W
PLW1           116.94999695 W
SFO1           125.7697360 MHz
SPNAM[5]       Crp60comp.4
SPOAL5               0.500
SPOFFS5                   0 Hz
SPW5           14.47399998 W

========== CHANNEL f2 ==========
CPDPRG[2              waltz16
NUC2                      1H
P3                     80.00 usec
P4                    160.00 usec
PCPD2                  80.00 usec
PLW2             0.38000000 W
PLW12            0.38000000 W
SFO2           500.1315995 MHz

F2 - Processing parameters
SI                       32768
SF             125.7577742 MHz
WDW                         EM
SSB                          0
LB                        1.00 Hz
GB                           0
PC                        1.40
```

^{19}F NMR spectrum ($CDCl_3$)



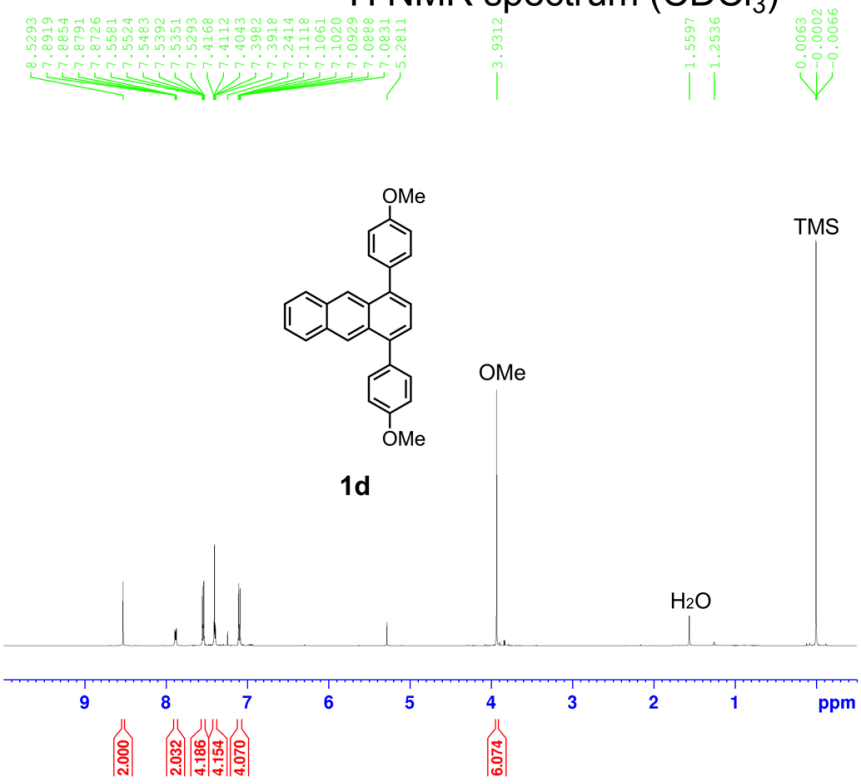

```
Current Data Parameters
NAME      130V-408 (1,4-DPA 4-
EXPNO                        5
PROCNO                       1

F2 - Acquisition Parameters
Date_               20220928
Time                   15.51
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG              zgflqn
TD                   131072
SOLVENT                CDCl3
NS                        64
DS                         4
SWH             113636.367 Hz
FIDRES            0.866977 Hz
AQ                0.5767168 sec
RG                     86.8
DW                 4.400 usec
DE                 6.50 usec
TE                   298.2 K
D1              1.00000000 sec

======== CHANNEL f1 ========
NUC1                    19F
P1                  14.00 usec
PLW1          53.95100021 W
SFO1         470.5453180 MHz

F2 - Processing parameters
SI                     65536
SF           470.5929072 MHz
WDW                       EM
SSB                        0
LB                  0.30 Hz
GB                         0
PC                      1.00
```

^{1}H NMR spectrum ($CDCl_3$)



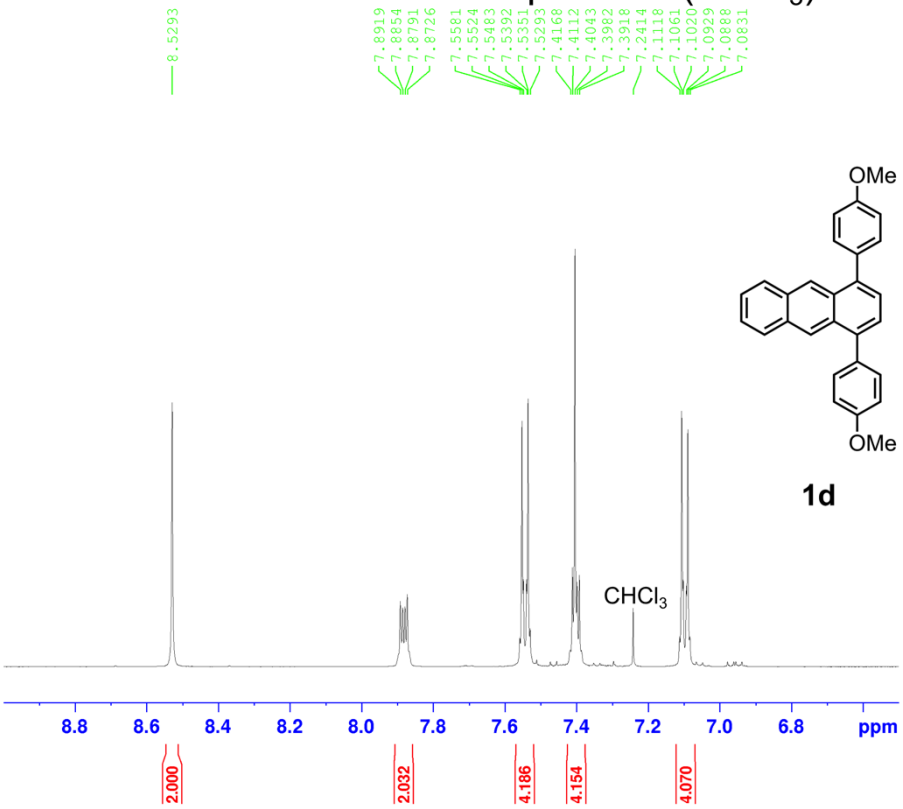

```
Current Data Parameters
NAME      130V-405 (1,4-DPA 4-
EXPNO                        1
PROCNO                       1

F2 - Acquisition Parameters
Date_               20220921
Time                   10.54
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                 zg30
TD                     65536
SOLVENT                CDCl3
NS                         8
DS                         2
SWH             10330.578 Hz
FIDRES            0.157632 Hz
AQ                3.1719425 sec
RG                        96
DW                 48.400 usec
DE                 6.50 usec
TE                   298.2 K
D1              1.00000000 sec

======== CHANNEL f1 ========
NUC1                     1H
P1                  11.00 usec
PLW1          20.51199913 W
SFO1         500.1330885 MHz

F2 - Processing parameters
SI                     65536
SF           500.1300225 MHz
WDW                       EM
SSB                        0
LB                  0.30 Hz
GB                         0
PC                      1.00
```

^{1}H NMR spectrum ($CDCl_3$)



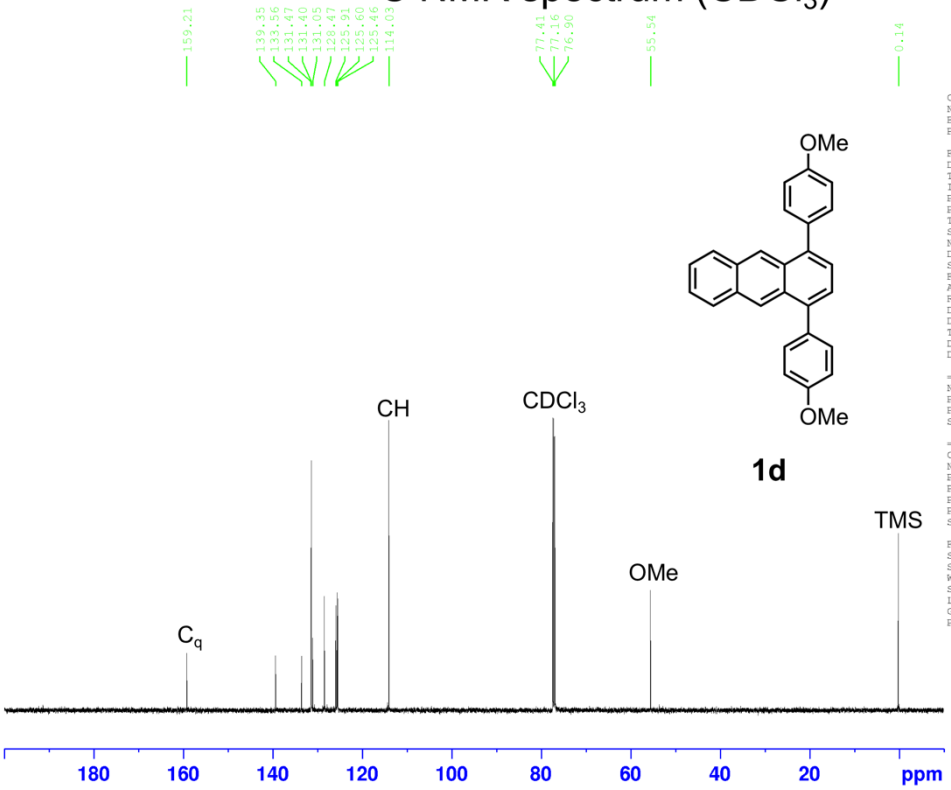

```
Current Data Parameters
NAME      130V-405 (1,4-DPA 4-
EXPNO                        1
PROCNO                       1

F2 - Acquisition Parameters
Date_            20220921
Time                10.54
INSTRUM             spect
PROBHD    5 mm PABBO BB-
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                     8
DS                     2
SWH            10330.578 Hz
FIDRES          0.157632 Hz
AQ              3.1719425 sec
RG                    96
DW                48.400 usec
DE                 6.50 usec
TE                298.2 K
D1             1.00000000 sec

======== CHANNEL f1 ========
NUC1                  1H
P1                 11.00 usec
PLW1          20.51199913 W
SFO1         500.1330885 MHz

F2 - Processing parameters
SI                 65536
SF           500.1300225 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```

^{13}C NMR spectrum ($CDCl_3$)




```
Current Data Parameters
NAME      130V-405 (1,4-DPA 4-
EXPNO                        2
PROCNO                       1

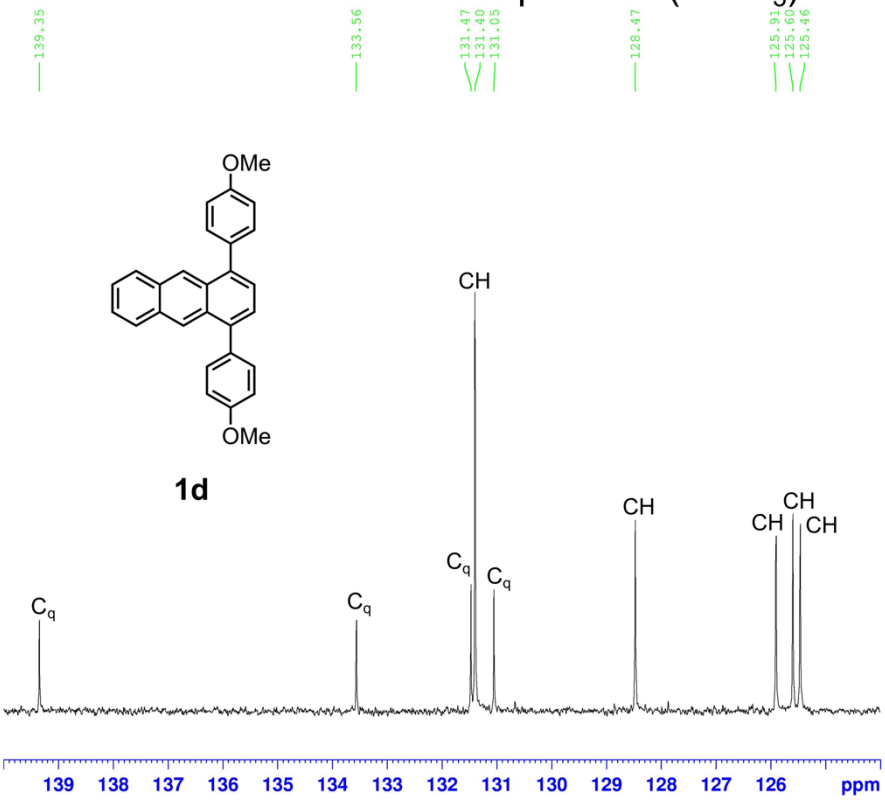
F2 - Acquisition Parameters
Date_            20220921
Time                10.58
INSTRUM             spect
PROBHD    5 mm PABBO BB-
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   171
DS                     4
SWH            29761.904 Hz
FIDRES          0.454131 Hz
AQ              1.1010048 sec
RG                 197.97
DW                16.800 usec
DE                 6.50 usec
TE                298.4 K
D1             2.00000000 sec
D11            0.03000000 sec

======== CHANNEL f1 ========
NUC1                 13C
P1                  9.00 usec
PLW1         116.94999695 W
SFO1         125.7703637 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2              80.00 usec
PLW2           0.38000000 W
PLW12          0.38000000 W
PLW13          0.24320000 W
SFO2         500.1320005 MHz

F2 - Processing parameters
SI                 32768
SF           125.7577733 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```

^{13}C NMR spectrum ($CDCl_3$)




```
Current Data Parameters
NAME                 130V-405
EXPNO                       2
PROCNO                      1

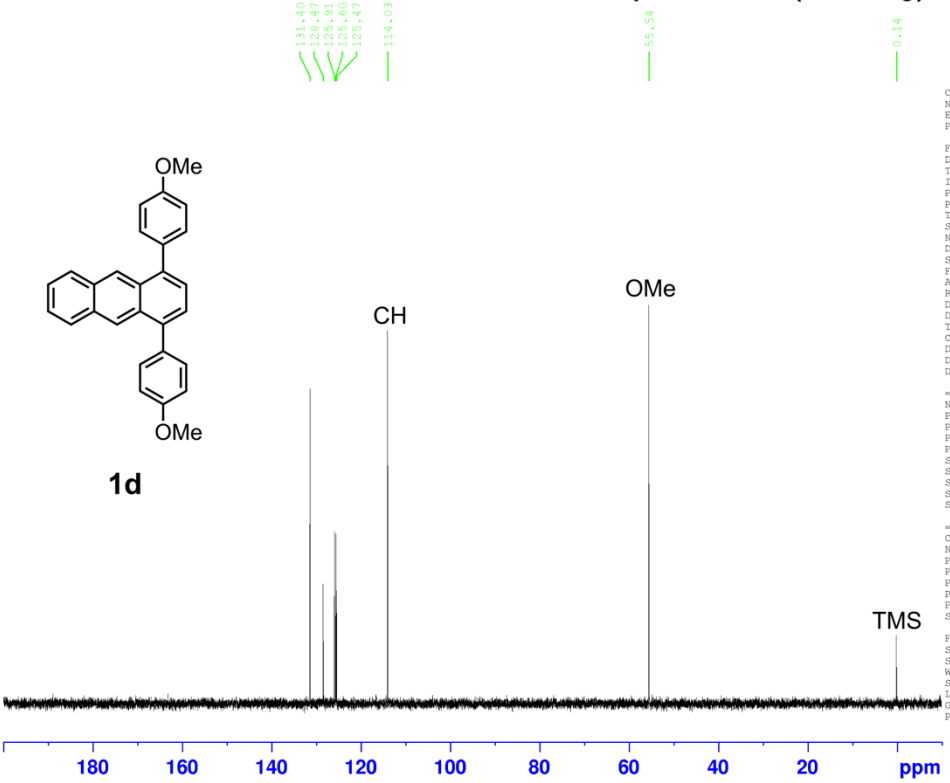
F2 - Acquisition Parameters
Date_               20220920
Time                   18.58
INSTRUM                spect
PROBHD     5 mm PABBO BB-
PULPROG             zgpg30
TD                     65536
SOLVENT                CDCl3
NS                       171
DS                         4
SWH                29761.904 Hz
FIDRES             0.454131 Hz
AQ                 1.1010548 sec
RG                     197.97
DW                     16.800 usec
DE                      6.50 usec
TE                     298.4 K
D1                 2.00000000 sec
D11                0.03000000 sec

======== CHANNEL f1 ========
NUC1                     13C
P1                      9.00 usec
PLW1            116.94999695 W
SFO1             125.7703637 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                       1H
PCPD2                  80.00 usec
PLW2               0.38000000 W
PLW12              0.38000000 W
PLW13              0.24320000 W
SFO2              500.1320005 MHz

F2 - Processing parameters
SI                       32768
SF                 125.7577733 MHz
WDW                         EM
SSB             0
LB                      1.00 Hz
GB              0
PC                      1.40
```

DEPT 135 NMR spectrum ($CDCl_3$)




```
Current Data Parameters
NAME      130V-405 (1,4-DPA 4-
EXPNO                       3
PROCNO                      1

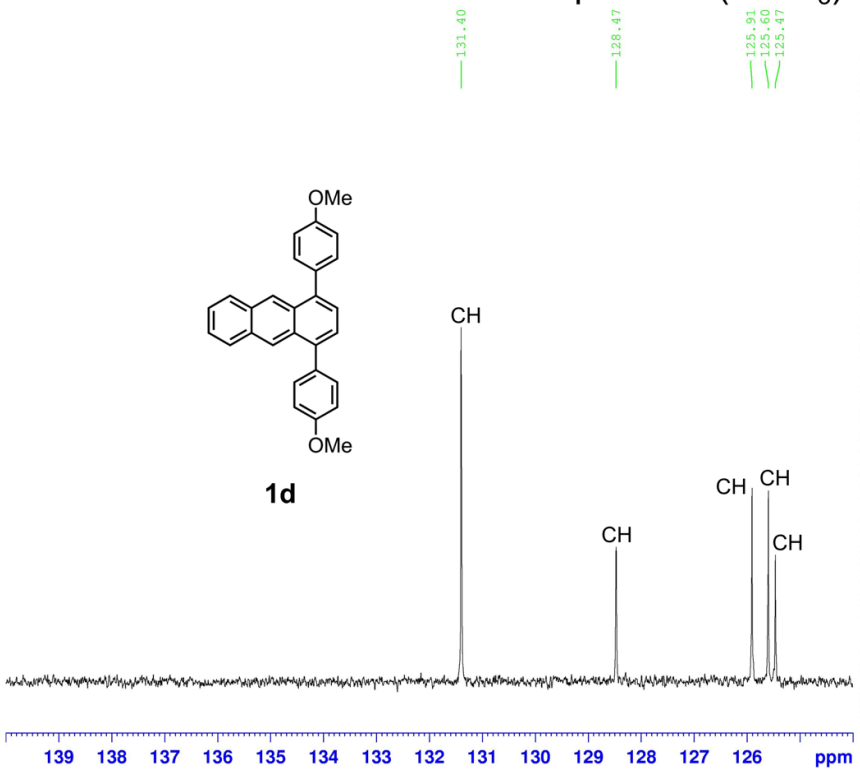
F2 - Acquisition Parameters
Date_               20220921
Time                   11.12
INSTRUM                spect
PROBHD     5 mm PABBO BB-
PULPROG           deptsp135
TD                     65536
SOLVENT                CDCl3
NS                        65
DS                         4
SWH                27573.529 Hz
FIDRES             0.420739 Hz
AQ                 1.1883861 sec
RG                     197.97
DW                     18.133 usec
DE                      6.50 usec
TE                     298.4 K
CNST2             145.0000000
D1                 2.00000000 sec
D2                 0.00344828 sec
D12                0.00002000 sec

======== CHANNEL f1 ========
NUC1                     13C
P1                      9.00 usec
P13                  2000.00 usec
PLW0                       0 W
PLW1            116.94999695 W
SFO1             125.7697360 MHz
SPNAM[5]      Crp60comp.4
SPOAL5                 0.500
SPOFFS5                    0 Hz
SPW5            14.47399998 W

======== CHANNEL f2 ========
CPDPRG[2               waltz16
NUC2                       1H
P3                     80.00 usec
P4                    160.00 usec
PCPD2                  80.00 usec
PLW2               0.38000000 W
PLW12              0.38000000 W
SFO2              500.1315995 MHz

F2 - Processing parameters
SI                       32768
SF                 125.7577734 MHz
WDW                         EM
SSB                         0
LB                      1.00 Hz
GB                          0
PC                      1.40
```

DEPT 135 NMR spectrum ($CDCl_3$)




```
Current Data Parameters
NAME            130V-405
EXPNO                  3
PROCNO                 1

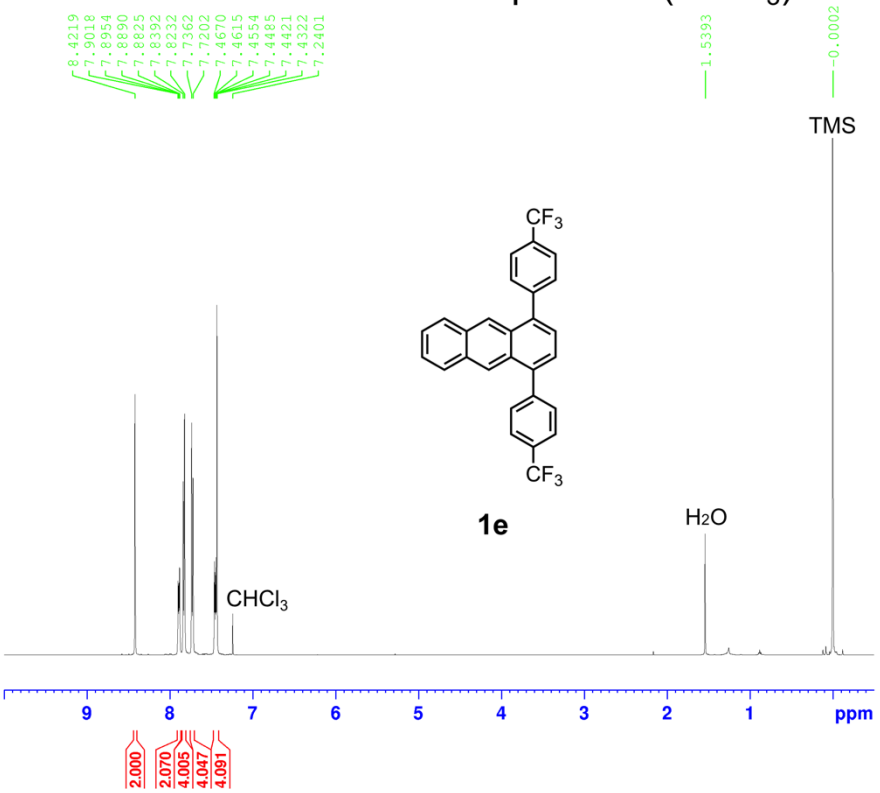
F2 - Acquisition Parameters
Date_            20220920
Time                19.12
INSTRUM             spect
PROBHD   5 mm PABBO BB-
PULPROG        deptsp135
TD                 65536
SOLVENT              CDCl3
NS                      65
DS                       4
SWH              27573.529 Hz
FIDRES           0.420739 Hz
AQ               1.1884362 sec
RG                  197.97
DW                  18.133 usec
DE                    6.50 usec
TE                  298.4 K
CNST2           145.0000000
D1                2.00000000 sec
D2                0.00344828 sec
D12               0.00002000 sec

======== CHANNEL f1 ========
NUC1                   13C
P1                    9.00 usec
P13                2000.00 usec
PLW0       0 W
PLW1         116.94999695 W
SFO1          125.7697360 MHz
SPNAM5        Crp60comp.4
SPOAL5              0.500
SPOFFS5    0 Hz
SPW5           14.47399998 W

======== CHANNEL f2 ========
CPDPRG2             waltz16
NUC2                    1H
P3                   80.00 usec
P4                  160.00 usec
PCPD2                80.00 usec
PLW2           0.38000000 W
PLW12          0.38000000 W
SFO2          500.1315995 MHz

F2 - Processing parameters
SI                     32768
SF            125.7577734 MHz
WDW                       EM
SSB        0
LB                    1.00 Hz
GB         0
PC                    1.40
```

^{1}H NMR spectrum ($CDCl_3$)



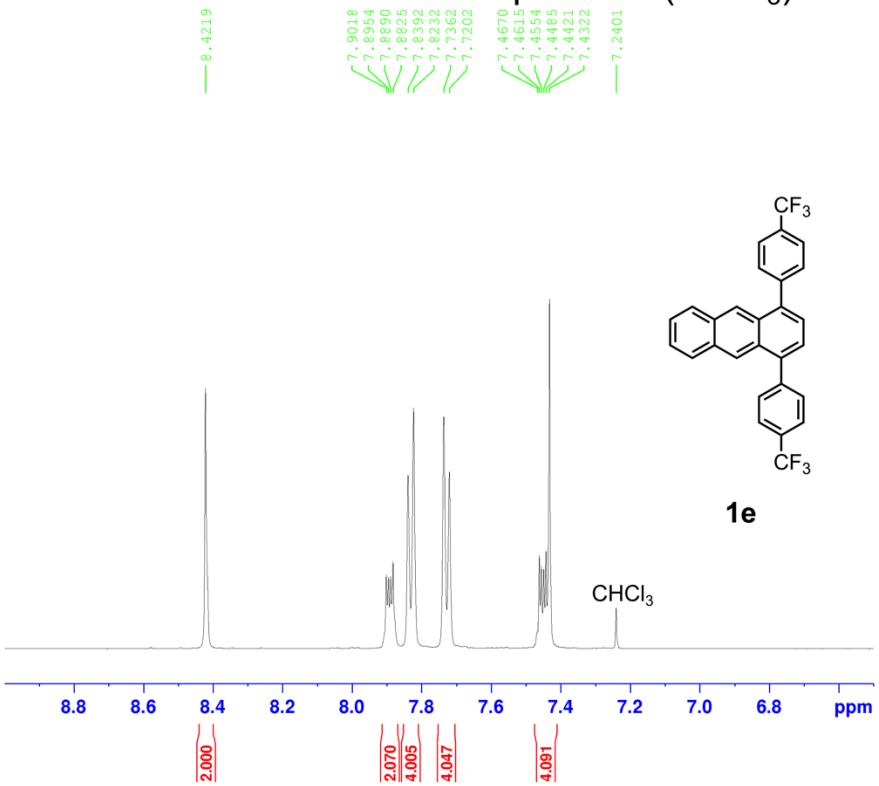

```
Current Data Parameters
NAME      130V-404 (1,4-DPA 4-(
EXPNO                    1
PROCNO                   1

F2 - Acquisition Parameters
Date_              20220917
Time                  10.38
INSTRUM               spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                        8
DS                        2
SWH              10330.578 Hz
FIDRES           0.157632 Hz
AQ               3.1719425 sec
RG                       96
DW                   48.400 usec
DE                    6.50 usec
TE                  298.2 K
D1               1.00000000 sec

======== CHANNEL f1 ========
NUC1                    1H
P1                   11.00 usec
PLW1          20.51199913 W
SFO1          500.1330885 MHz

F2 - Processing parameters
SI                    65536
SF            500.1300231 MHz
WDW                       EM
SSB                        0
LB                    0.30 Hz
GB                         0
PC                    1.00
```

^{1}H NMR spectrum ($CDCl_3$)



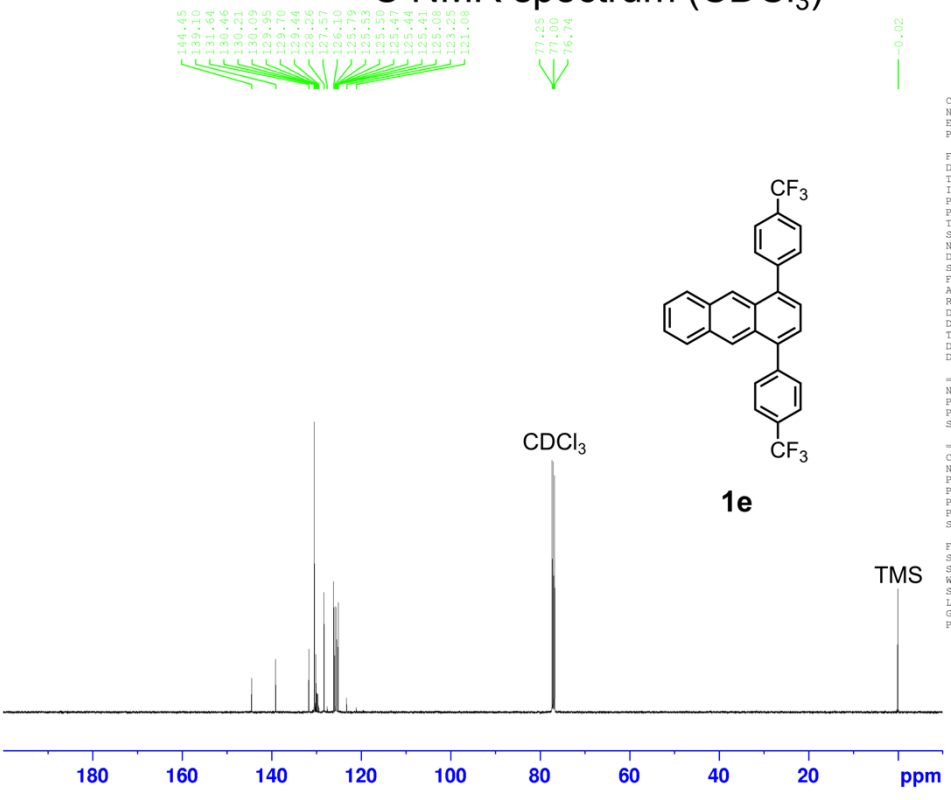

```
Current Data Parameters
NAME      130V-404 (1,4-DPA 4-(
EXPNO              1
PROCNO             1

F2 - Acquisition Parameters
Date_          20220917
Time             10.38
INSTRUM          spect
PROBHD   5 mm PABBO BB-
PULPROG          zg30
TD              65536
SOLVENT          CDCl3
NS                  8
DS                  2
SWH          10330.578 Hz
FIDRES        0.157632 Hz
AQ            3.1719425 sec
RG                 96
DW              48.400 usec
DE               6.50 usec
TE              298.2 K
D1           1.00000000 sec

======== CHANNEL f1 ========
NUC1               1H
P1              11.00 usec
PLW1       20.51199913 W
SFO1      500.1330885 MHz

F2 - Processing parameters
SI              65536
SF         500.1300231 MHz
WDW                EM
SSB                 0
LB              0.30 Hz
GB                  0
PC              1.00
```

^{13}C NMR spectrum ($CDCl_3$)




```
Current Data Parameters
NAME      130V-404 (1,4-DPA 4-
EXPNO              2
PROCNO             1

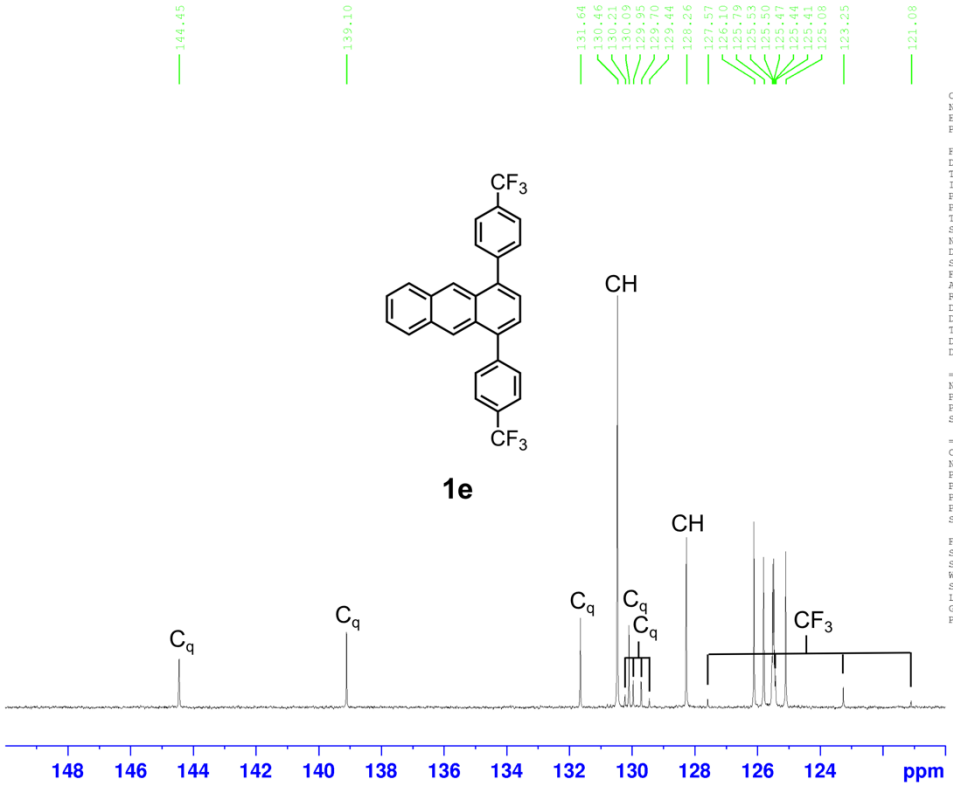
F2 - Acquisition Parameters
Date_          20220917
Time             10.43
INSTRUM          spect
PROBHD   5 mm PABBO BB-
PULPROG        zgpg30
TD              65536
SOLVENT          CDCl3
NS                750
DS                  4
SWH          29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010048 sec
RG               197.97
DW              16.800 usec
DE               6.50 usec
TE              298.6 K
D1           2.00000000 sec
D11          0.03000000 sec

======== CHANNEL f1 ========
NUC1               13C
P1               9.00 usec
PLW1      116.94999695 W
SFO1      125.7703637 MHz

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2               1H
PCPD2           80.00 usec
PLW2         0.38000000 W
PLW12        0.38000000 W
PLW13        0.24320000 W
SFO2       500.1320005 MHz

F2 - Processing parameters
SI              32768
SF         125.7577916 MHz
WDW                EM
SSB                 0
LB              1.00 Hz
GB                  0
PC              1.40
```

^{13}C NMR spectrum ($CDCl_3$)




```
Current Data Parameters
NAME      130V-404 (1,4-DPA 4-
EXPNO             2
PROCNO            1

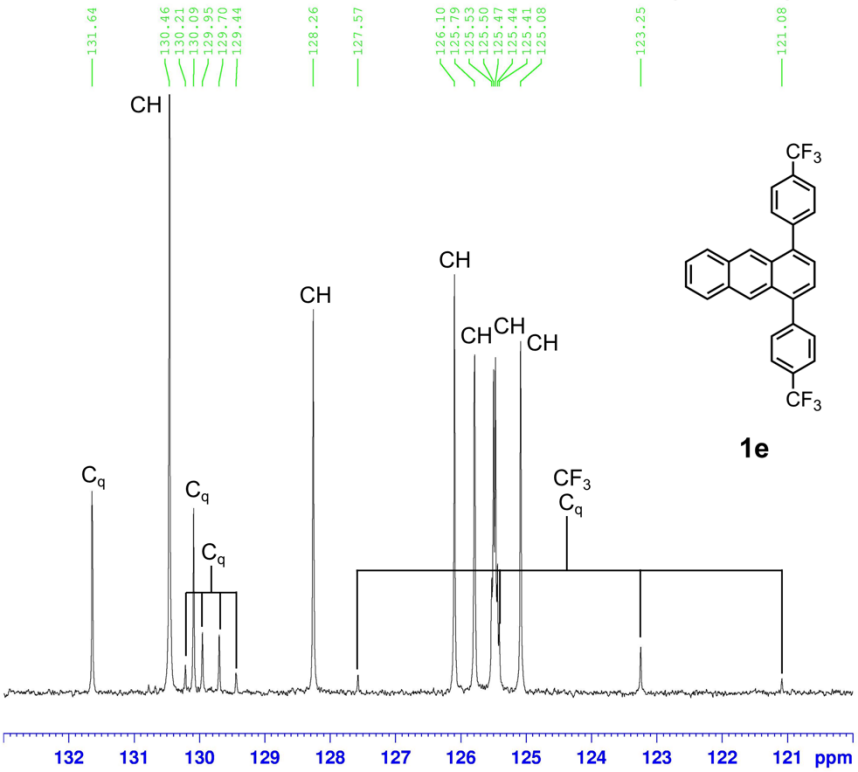
F2 - Acquisition Parameters
Date_      20220917
Time         10.43
INSTRUM      spect
PROBHD   5 mm PABBO BB-
PULPROG      zgpg30
TD           65536
SOLVENT      CDCl3
NS             750
DS               4
SWH        29761.904 Hz
FIDRES         0.454131 Hz
AQ          1.1010048 sec
RG           197.97
DW           16.800 usec
DE            6.50 usec
TE           298.6 K
D1        2.00000000 sec
D11       0.03000000 sec

======== CHANNEL f1 ========
NUC1           13C
P1             9.00 usec
PLW1      116.94999695 W
SFO1      125.7703637 MHz

======== CHANNEL f2 ========
CPDPRG[2       waltz16
NUC2           1H
PCPD2          80.00 usec
PLW2       0.38000000 W
PLW12      0.38000000 W
PLW13      0.24320000 W
SFO2      500.1320005 MHz

F2 - Processing parameters
SI             32768
SF        125.7577916 MHz
WDW            EM
SSB            0
LB             1.00 Hz
GB             0
PC             1.40
```

^{13}C NMR spectrum ($CDCl_3$)




```
Current Data Parameters
NAME            130V-404
EXPNO                 2
PROCNO                1

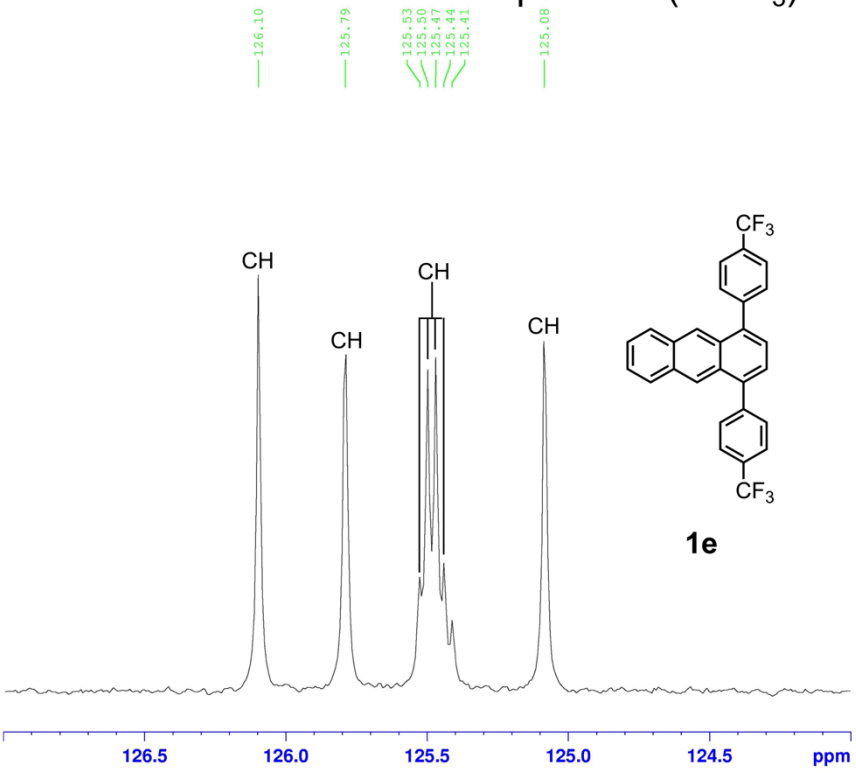
F2 - Acquisition Parameters
Date_          20220916
Time             18.43
INSTRUM          spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD               65536
SOLVENT          CDCl3
NS                 750
DS                   4
SWH          29761.904 Hz
FIDRES         0.454131 Hz
AQ          1.1010548 sec
RG               197.97
DW               16.800 usec
DE                6.50 usec
TE               298.6 K
D1            2.00000000 sec
D11           0.03000000 sec

======== CHANNEL f1 ========
NUC1               13C
P1                 9.00 usec
PLW1          116.94999695 W
SFO1          125.7703637 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2               1H
PCPD2              80.00 usec
PLW2           0.38000000 W
PLW12          0.38000000 W
PLW13          0.24320000 W
SFO2          500.1320005 MHz

F2 - Processing parameters
SI                 32768
SF            125.7577916 MHz
WDW                EM
SSB        0
LB                 1.00 Hz
GB         0
PC                 1.40
```

^{13}C NMR spectrum ($CDCl_3$)




```
Current Data Parameters
NAME            130V-404
EXPNO                  2
PROCNO                 1

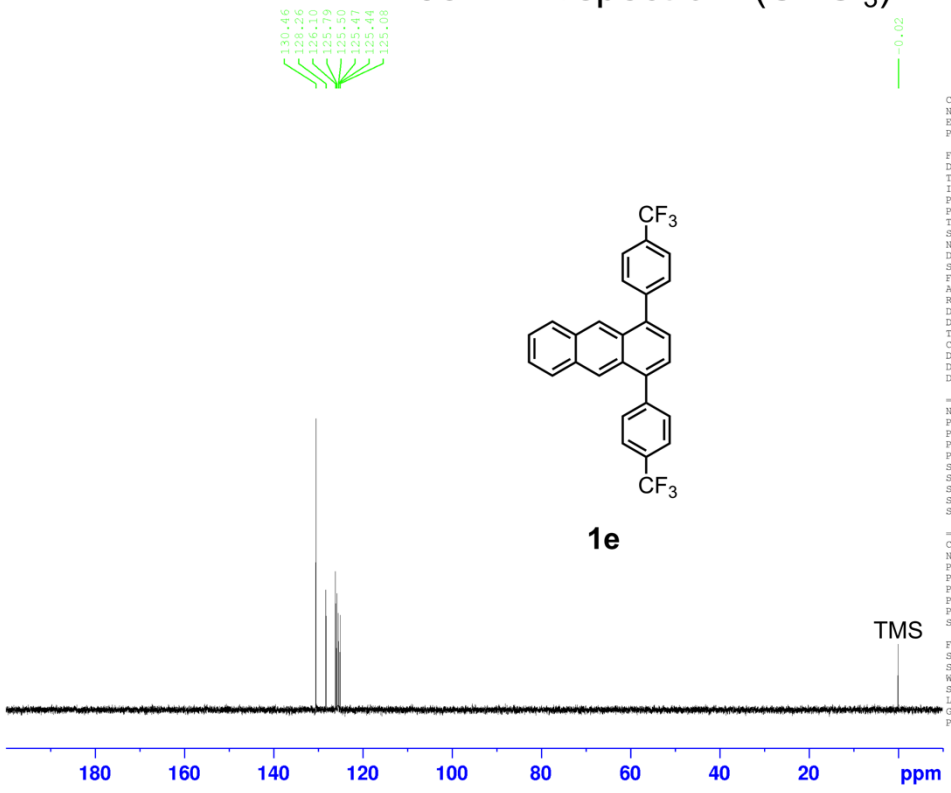
F2 - Acquisition Parameters
Date_           20220916
Time               18.43
INSTRUM            spect
PROBHD    5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  750
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ             1.1010548 sec
RG                197.97
DW                16.800 usec
DE                 6.50 usec
TE                298.6 K
D1            2.00000000 sec
D11           0.03000000 sec

======== CHANNEL f1 ========
NUC1                13C
P1                 9.00 usec
PLW1        116.94999695 W
SFO1         125.7703637 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                1H
PCPD2              80.00 usec
PLW2          0.38000000 W
PLW12         0.38000000 W
PLW13         0.24320000 W
SFO2         500.1320005 MHz

F2 - Processing parameters
SI                 32768
SF           125.7577916 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```

DEPT 135 NMR spectrum ($CDCl_3$)




```
Current Data Parameters
NAME     130V-404 (1,4-DPA 4-
EXPNO                  3
PROCNO                 1

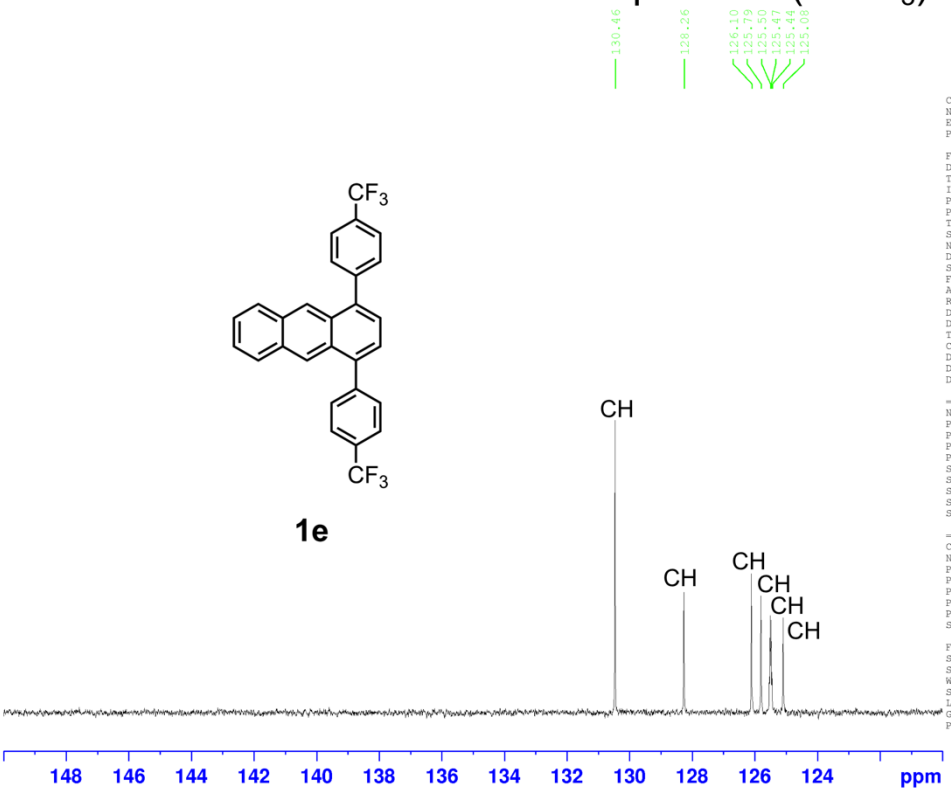
F2 - Acquisition Parameters
Date_           20220917
Time               11.25
INSTRUM            spect
PROBHD    5 mm PABBO BB-
PULPROG        deptsp135
TD                65536
SOLVENT           CDCl3
NS                   83
DS                    4
SWH           27573.529 Hz
FIDRES         0.420739 Hz
AQ             1.1883861 sec
RG                197.97
DW                18.133 usec
DE                 6.50 usec
TE                298.4 K
CNST2         145.0000000
D1            2.00000000 sec
D2            0.00344828 sec
D12           0.00002000 sec

======== CHANNEL f1 ========
NUC1                13C
P1                 9.00 usec
P13             2000.00 usec
PLW0                  0 W
PLW1        116.94999695 W
SFO1         125.7697360 MHz
SPNAM[5]     Crp60comp.4
SPOAL5             0.500
SPOFFS5                0 Hz
SPW5         14.47399998 W

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2                1H
P3                80.00 usec
P4               160.00 usec
PCPD2              80.00 usec
PLW2          0.38000000 W
PLW12         0.38000000 W
SFO2         500.1315995 MHz

F2 - Processing parameters
SI                 32768
SF           125.7577917 MHz
WDW                   EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```

DEPT 135 NMR spectrum ($CDCl_3$)




```
Current Data Parameters
NAME      130V-404 (1,4-DPA 4-
EXPNO                        3
PROCNO                       1

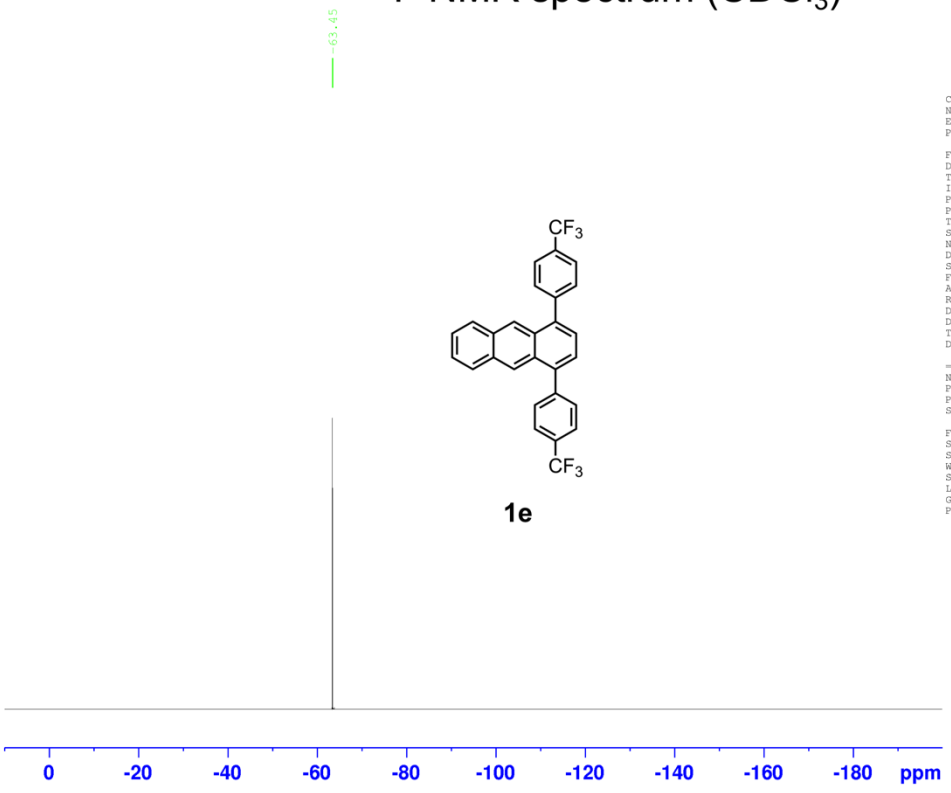
F2 - Acquisition Parameters
Date_              20220917
Time                  11.25
INSTRUM               spect
PROBHD    5 mm PABBO BB-
PULPROG         deptsp135
TD                    65536
SOLVENT             CDCl3
NS                       83
DS                        4
SWH              27573.529 Hz
FIDRES               0.420739 Hz
AQ                1.1883861 sec
RG                   197.97
DW                   18.133 usec
DE                     6.50 usec
TE                   298.4 K
CNST2           145.0000000
D1                2.00000000 sec
D2                0.00344828 sec
D12               0.00002000 sec

======== CHANNEL f1 ========
NUC1                    13C
P1                     9.00 usec
P13                 2000.00 usec
PLW0                      0 W
PLW1           116.94999695 W
SFO1            125.7697360 MHz
SPNAM[5]      Crp60comp.4
SPOAL5                0.500
SPOFFS5                   0 Hz
SPW5           14.47399998 W

======== CHANNEL f2 ========
CPDPRG[2             waltz16
NUC2                    1H
P3                    80.00 usec
P4                   160.00 usec
PCPD2                 80.00 usec
PLW2             0.38000000 W
PLW12            0.38000000 W
SFO2           500.1315995 MHz

F2 - Processing parameters
SI                       32768
SF              125.7577917 MHz
WDW                      EM
SSB                       0
LB                     1.00 Hz
GB                        0
PC                     1.40
```

^{19}F NMR spectrum ($CDCl_3$)

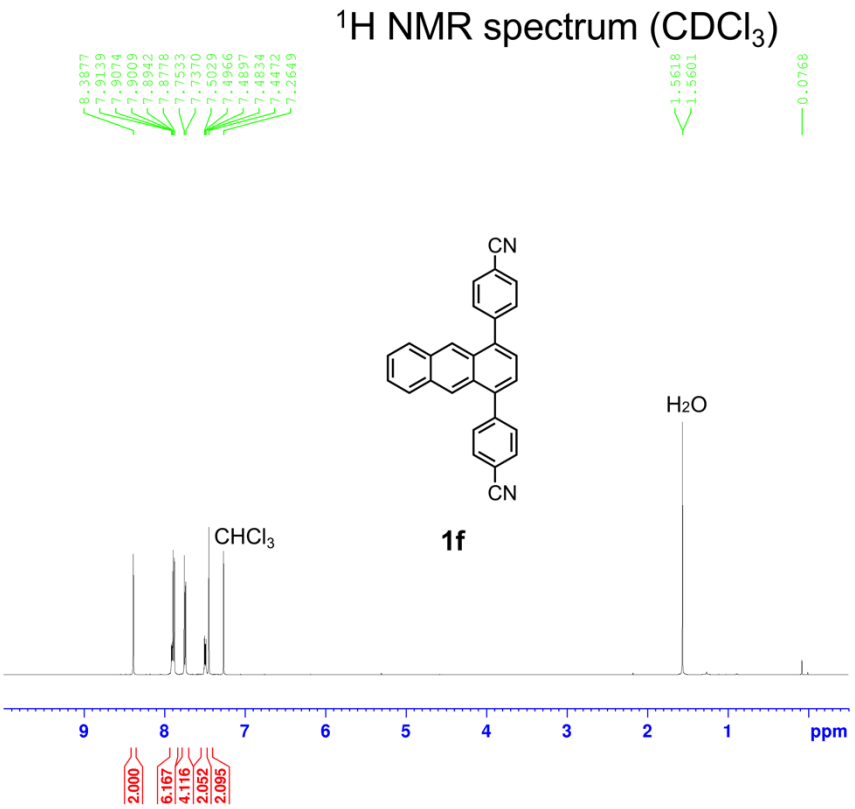



```
Current Data Parameters
NAME      130V-404 (1,4-DPA 4-
EXPNO                        4
PROCNO                       1

F2 - Acquisition Parameters
Date_              20220917
Time                  13.54
INSTRUM               spect
PROBHD    5 mm PABBO BB-
PULPROG             zgflqn
TD                   131072
SOLVENT             CDCl3
NS                       16
DS                        4
SWH             113636.367 Hz
FIDRES               0.866977 Hz
AQ                0.5767168 sec
RG                   197.97
DW                    4.400 usec
DE                     6.50 usec
TE                   298.2 K
D1                1.00000000 sec

======== CHANNEL f1 ========
NUC1                    19F
P1                    14.00 usec
PLW1            53.95100021 W
SFO1           470.5453180 MHz

F2 - Processing parameters
SI                       65536
SF              470.5929072 MHz
WDW                      EM
SSB                       0
LB                     0.30 Hz
GB                        0
PC                     1.00
```

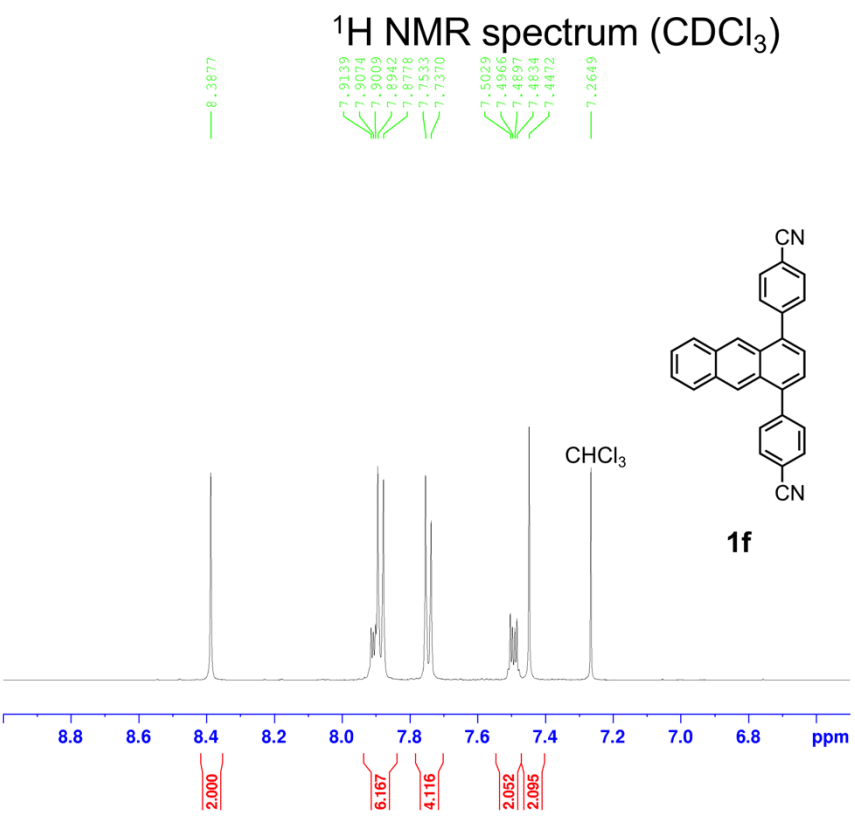



```
Current Data Parameters
NAME      13C 14-DPA 4-CN
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_            20231209
Time               13.05
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH          10330.578 Hz
FIDRES        0.157632 Hz
AQ           3.1719425 sec
RG              197.97
DW              48.400 usec
DE               6.50 usec
TE              298.2 K
D1          1.00000000 sec

======== CHANNEL f1 ========
NUC1                   1H
P1                 11.00 usec
PLW1        20.51199913 W
SFO1        500.1330885 MHz

F2 - Processing parameters
SI                 65536
SF         500.1300107 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```



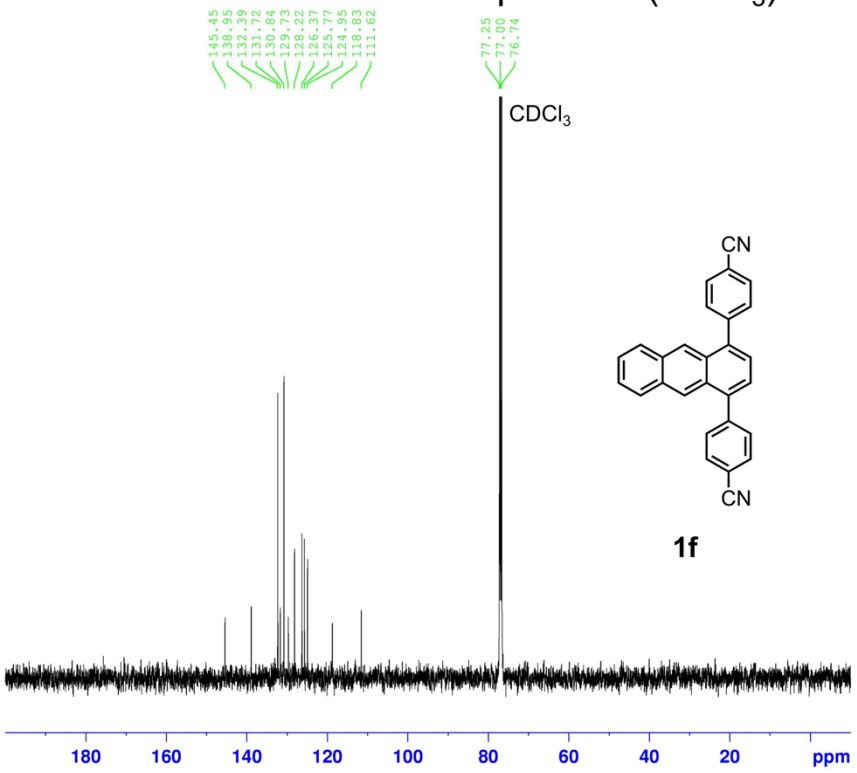

```
Current Data Parameters
NAME      13C 14-DPA 4-CN
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_            20231209
Time               13.05
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH          10330.578 Hz
FIDRES        0.157632 Hz
AQ           3.1719425 sec
RG              197.97
DW              48.400 usec
DE               6.50 usec
TE              298.2 K
D1          1.00000000 sec

======== CHANNEL f1 ========
NUC1                   1H
P1                 11.00 usec
PLW1        20.51199913 W
SFO1        500.1330885 MHz

F2 - Processing parameters
SI                 65536
SF         500.1300107 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```

^{13}C NMR spectrum ($CDCl_3$)




```
Current Data Parameters
NAME      13C 14-DPA 4-CN
EXPNO                   2
PROCNO                  1

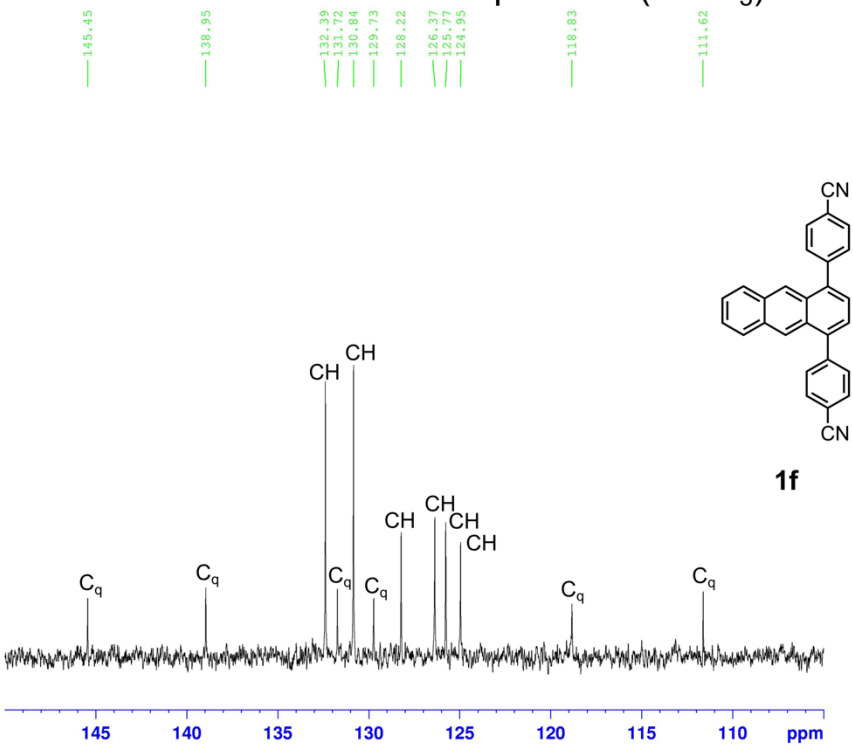
F2 - Acquisition Parameters
Date_           20231208
Time               20.13
INSTRUM            spect
PROBHD    5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  297
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010548 sec
RG                197.97
DW                16.800 usec
DE                 6.50 usec
TE                298.6 K
D1           2.00000000 sec
D11          0.03000000 sec

======== CHANNEL f1 ========
NUC1                13C
P1                 9.00 usec
PLW1       116.94999695 W
SFO1        125.7703637 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                1H
PCPD2            80.00 usec
PLW2         0.38000000 W
PLW12        0.38000000 W
PLW13        0.24320000 W
SFO2        500.1320005 MHz

F2 - Processing parameters
SI                 32768
SF          125.7577916 MHz
WDW                   EM
SSB       0
LB                 3.00 Hz
GB        0
PC                 1.40
```

^{13}C NMR spectrum ($CDCl_3$)




```
Current Data Parameters
NAME      13C 14-DPA 4-CN
EXPNO                   2
PROCNO                  1

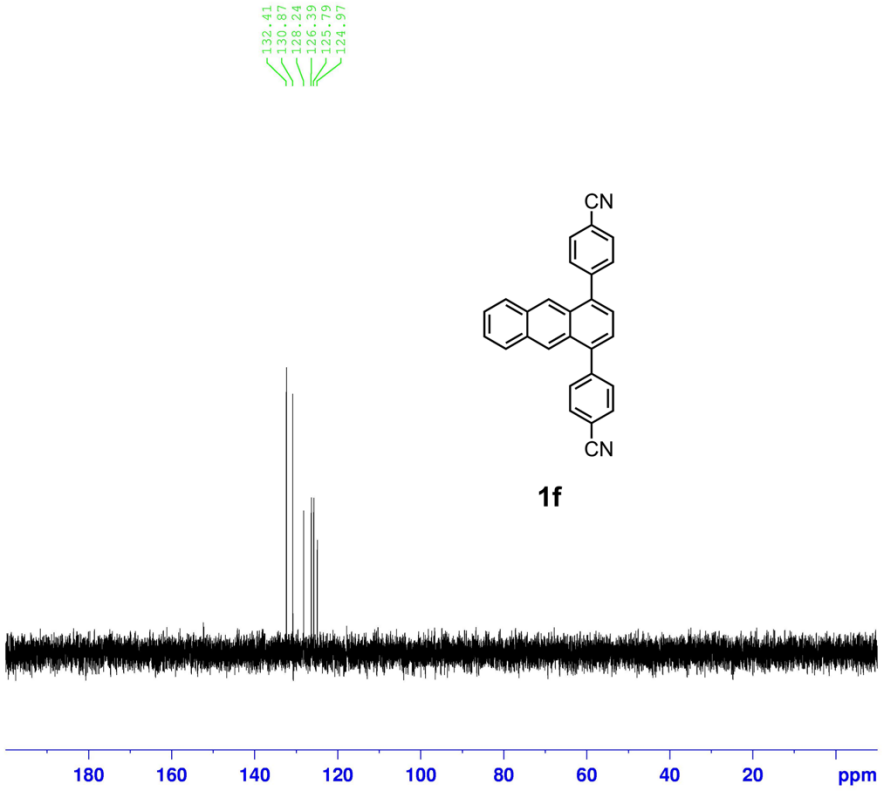
F2 - Acquisition Parameters
Date_           20231208
Time               20.13
INSTRUM            spect
PROBHD    5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  297
DS                    4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010548 sec
RG                197.97
DW                16.800 usec
DE                 6.50 usec
TE                298.6 K
D1           2.00000000 sec
D11          0.03000000 sec

======== CHANNEL f1 ========
NUC1                13C
P1                 9.00 usec
PLW1       116.94999695 W
SFO1        125.7703637 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                1H
PCPD2            80.00 usec
PLW2         0.38000000 W
PLW12        0.38000000 W
PLW13        0.24320000 W
SFO2        500.1320005 MHz

F2 - Processing parameters
SI                 32768
SF          125.7577916 MHz
WDW                   EM
SSB       0
LB                 3.00 Hz
GB        0
PC                 1.40
```

DEPT 135 NMR spectrum ($CDCl_3$)




```
Current Data Parameters
NAME      13C 14-DPA 4-CN
EXPNO                   3
PROCNO                  1

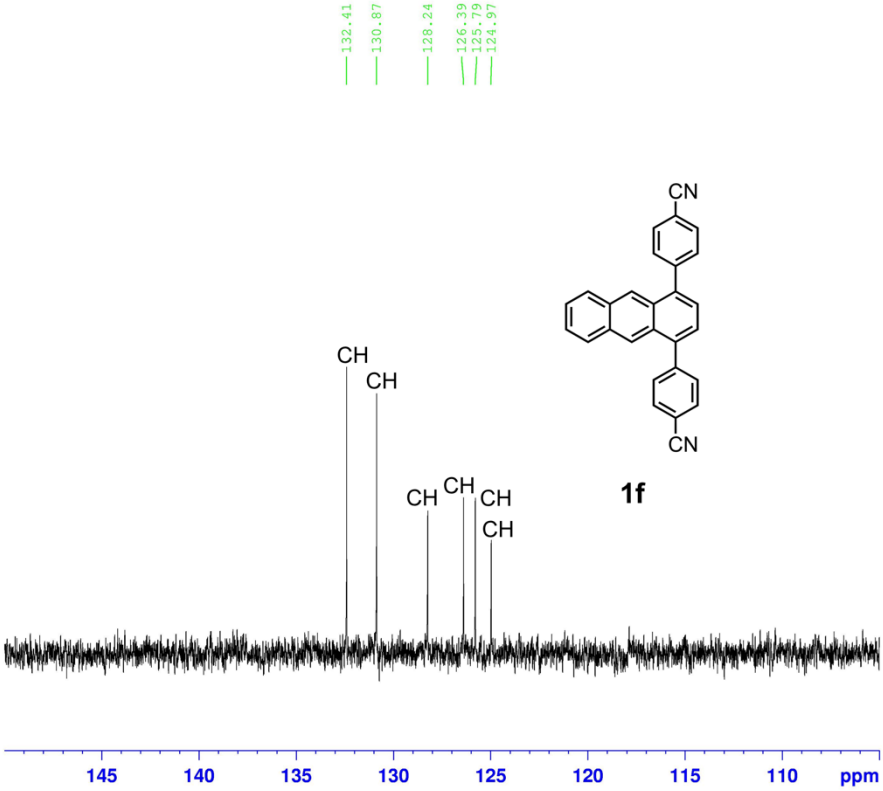
F2 - Acquisition Parameters
Date_           20231208
Time              20.35
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG       deptsp135
TD                65536
SOLVENT           CDCl3
NS                  173
DS                    4
SWH           27573.529 Hz
FIDRES         0.420739 Hz
AQ            1.1884362 sec
RG                197.97
DW                18.133 usec
DE                 6.50 usec
TE                298.3 K
CNST2        145.0000000
D1            2.00000000 sec
D2            0.00344828 sec
D12           0.00002000 sec

======== CHANNEL f1 ========
NUC1                13C
P1                 9.00 usec
P13             2000.00 usec
PLW0      0 W
PLW1       116.94999695 W
SFO1        125.7697360 MHz
SPNAM5       Crp60comp.4
SPOAL5             0.500
SPOFFS5   0 Hz
SPW5        14.47399998 W

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                1H
P3                80.00 usec
P4               160.00 usec
PCPD2             80.00 usec
PLW2          0.38000000 W
PLW12         0.38000000 W
SFO2        500.1315995 MHz

F2 - Processing parameters
SI                 32768
SF          125.7577890 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```

DEPT 135 NMR spectrum ($CDCl_3$)



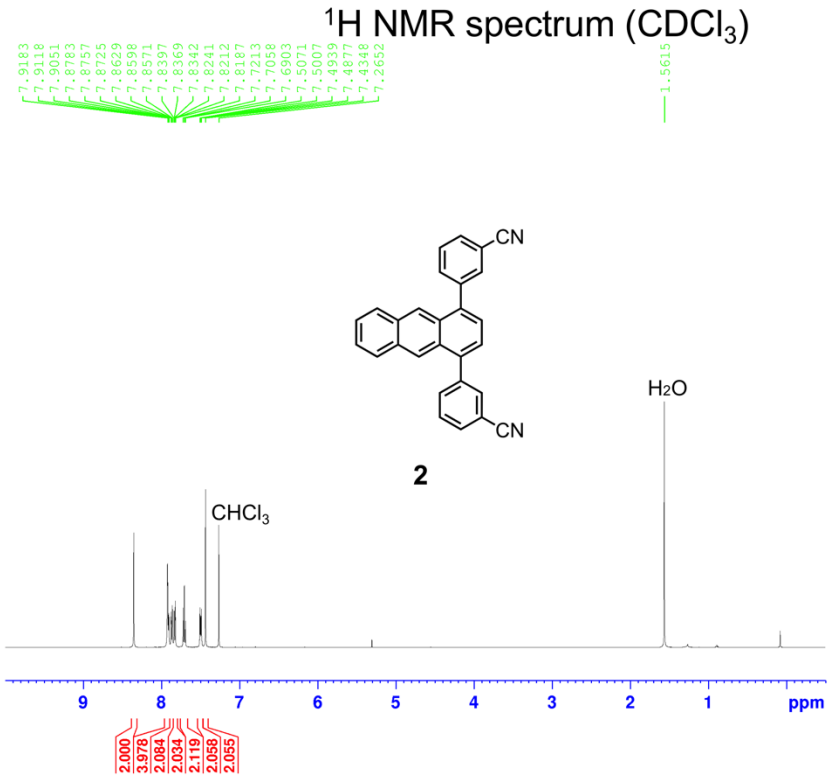

```
Current Data Parameters
NAME      13C 14-DPA 4-CN
EXPNO                   3
PROCNO                  1

F2 - Acquisition Parameters
Date_           20231208
Time              20.35
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG       deptsp135
TD                65536
SOLVENT           CDCl3
NS                  173
DS                    4
SWH           27573.529 Hz
FIDRES         0.420739 Hz
AQ            1.1884362 sec
RG                197.97
DW                18.133 usec
DE                 6.50 usec
TE                298.3 K
CNST2        145.0000000
D1            2.00000000 sec
D2            0.00344828 sec
D12           0.00002000 sec

======== CHANNEL f1 ========
NUC1                13C
P1                 9.00 usec
P13             2000.00 usec
PLW0      0 W
PLW1       116.94999695 W
SFO1        125.7697360 MHz
SPNAM5       Crp60comp.4
SPOAL5             0.500
SPOFFS5   0 Hz
SPW5        14.47399998 W

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                1H
P3                80.00 usec
P4               160.00 usec
PCPD2             80.00 usec
PLW2          0.38000000 W
PLW12         0.38000000 W
SFO2        500.1315995 MHz

F2 - Processing parameters
SI                 32768
SF          125.7577890 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```

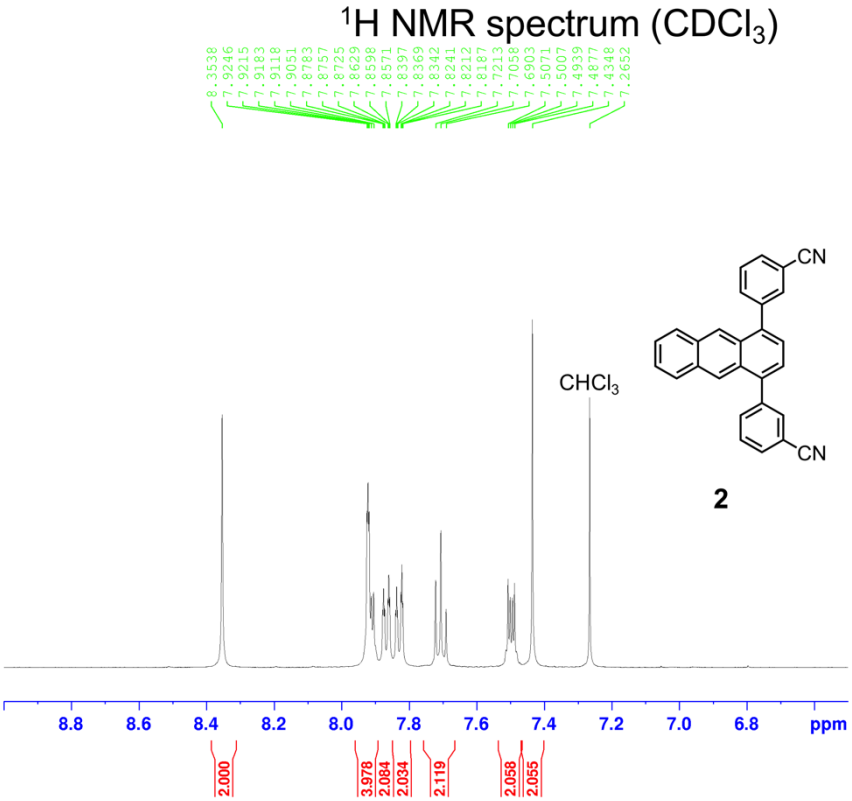



```
Current Data Parameters
NAME      13C 14-DPA 3-CN
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20231209
Time              15.09
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH           10330.578 Hz
FIDRES         0.157632 Hz
AQ            3.1719425 sec
RG                197.97
DW               48.400 usec
DE                6.50 usec
TE                298.2 K
D1           1.00000000 sec

======== CHANNEL f1 ========
NUC1                  1H
P1                11.00 usec
PLW1        20.51199913 W
SFO1       500.1330885 MHz

F2 - Processing parameters
SI                65536
SF          500.1300107 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00
```

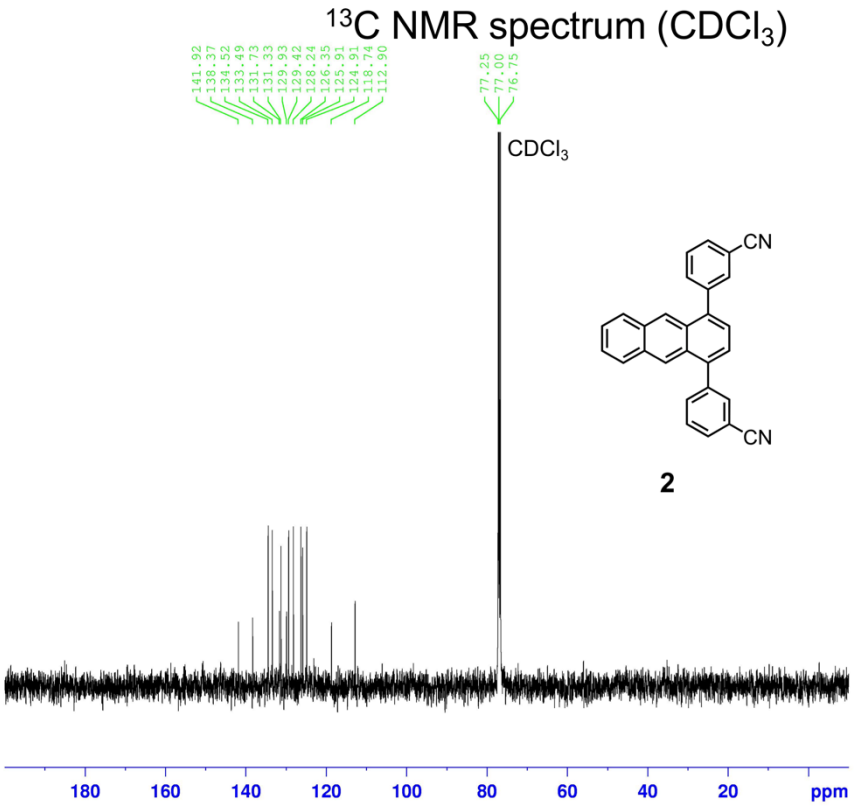



```
Current Data Parameters
NAME      13C 14-DPA 3-CN
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20231209
Time              15.09
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH           10330.578 Hz
FIDRES         0.157632 Hz
AQ            3.1719425 sec
RG                197.97
DW               48.400 usec
DE                6.50 usec
TE                298.2 K
D1           1.00000000 sec

======== CHANNEL f1 ========
NUC1                  1H
P1                11.00 usec
PLW1        20.51199913 W
SFO1       500.1330885 MHz

F2 - Processing parameters
SI                65536
SF          500.1300107 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00
```



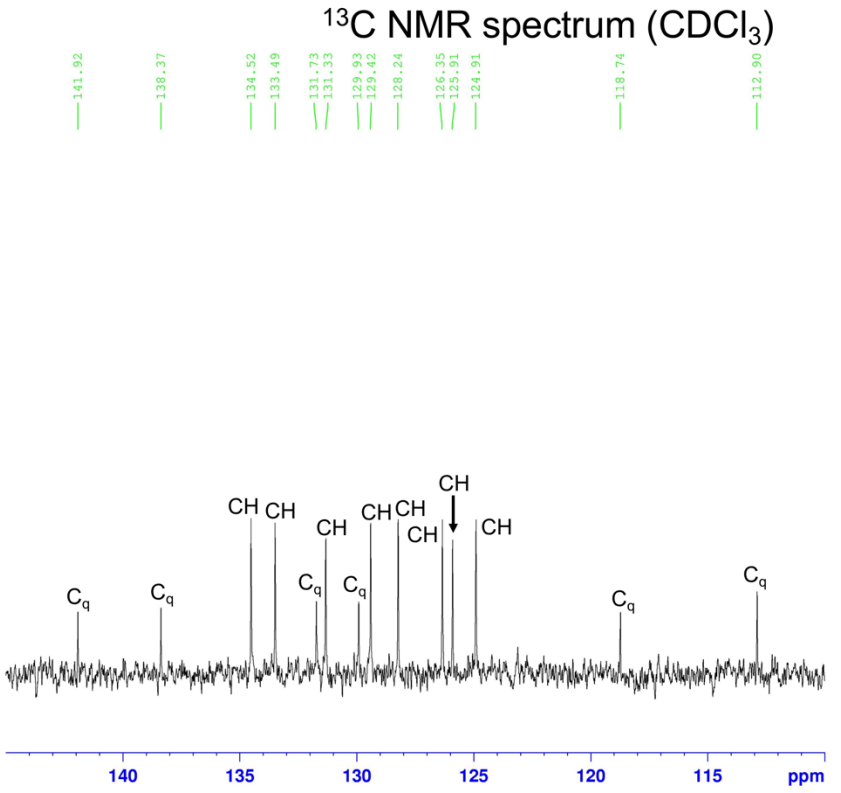

```
Current Data Parameters
NAME      13C 14-DPA 3-CN
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_            20231208
Time                22.17
INSTRUM             spect
PROBHD    5 mm PABBO BB-
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   174
DS                     4
SWH            29761.904 Hz
FIDRES          0.454131 Hz
AQ              1.1010548 sec
RG                 197.97
DW                 16.800 usec
DE                  6.50 usec
TE                 298.4 K
D1           2.00000000 sec
D11          0.03000000 sec

======== CHANNEL f1 ========
NUC1                  13C
P1                   9.00 usec
PLW1        116.94999695 W
SFO1         125.7703637 MHz

======== CHANNEL f2 ========
CPDPRG2           waltz16
NUC2                  1H
PCPD2              80.00 usec
PLW2          0.38000000 W
PLW12         0.38000000 W
PLW13         0.24320000 W
SFO2         500.1320005 MHz

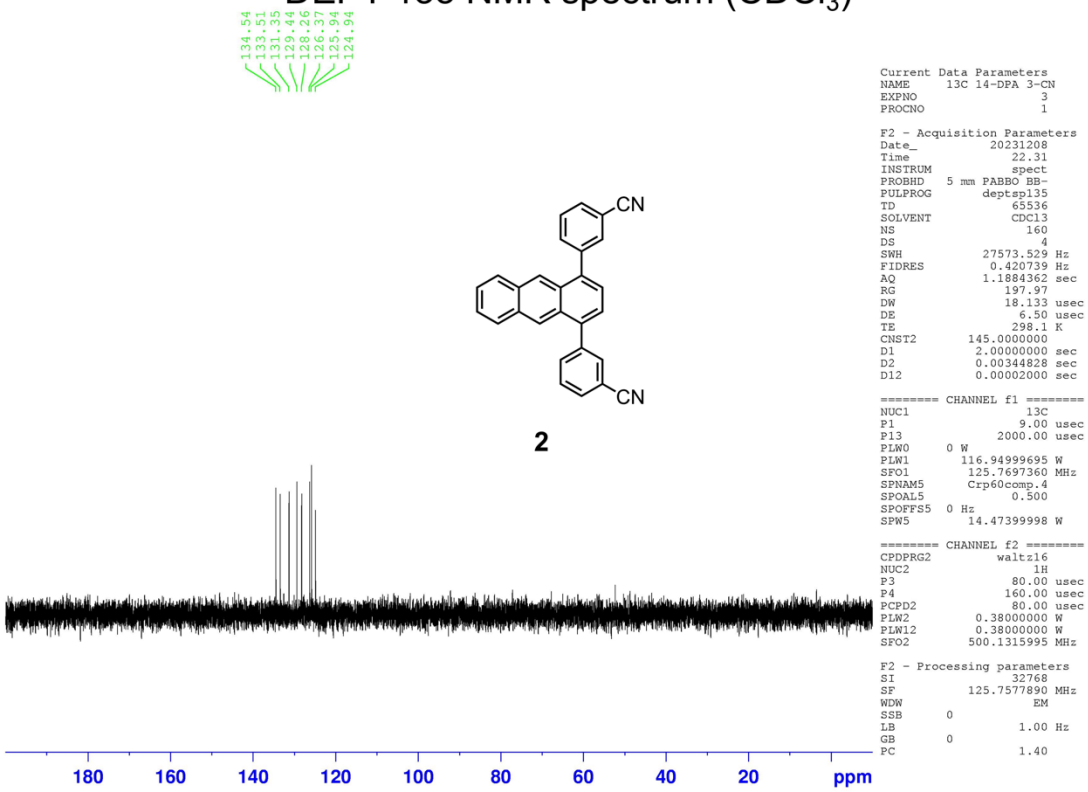
F2 - Processing parameters
SI                   32768
SF           125.7577916 MHz
WDW                     EM
SSB       0
LB                  3.00 Hz
GB        0
PC                  1.40
```




```
Current Data Parameters
NAME      13C 14-DPA 3-CN
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_            20231208
Time                22.17
INSTRUM             spect
PROBHD    5 mm PABBO BB-
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   174
DS                     4
SWH            29761.904 Hz
FIDRES          0.454131 Hz
AQ              1.1010548 sec
RG                 197.97
DW                 16.800 usec
DE                  6.50 usec
TE                 298.4 K
D1           2.00000000 sec
D11          0.03000000 sec
```

DEPT 135 NMR spectrum ($CDCl_3$)




```
Current Data Parameters
NAME      13C 14-DPA 3-CN
EXPNO                   3
PROCNO                  1

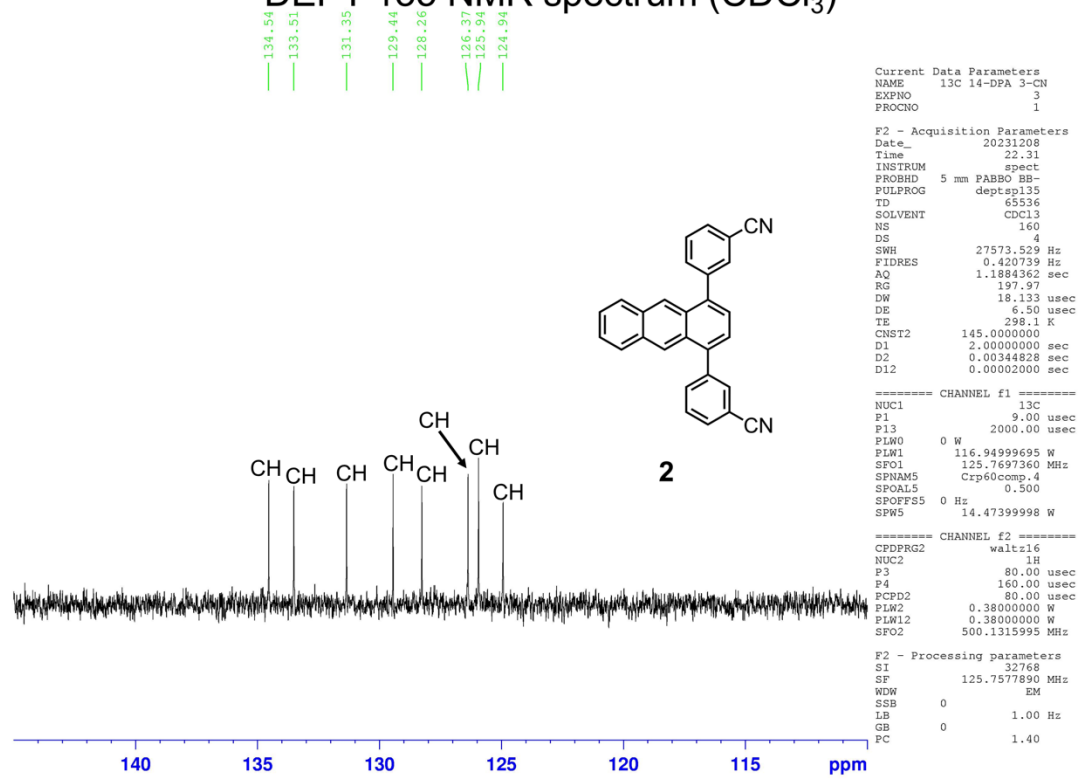
F2 - Acquisition Parameters
Date_            20231208
Time               22.31
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG        deptsp135
TD                 65536
SOLVENT            CDCl3
NS                   160
DS                     4
SWH            27573.529 Hz
FIDRES          0.420739 Hz
AQ              1.1884362 sec
RG                 197.97
DW                 18.133 usec
DE                  6.50 usec
TE                298.1 K
CNST2        145.0000000
D1             2.00000000 sec
D2             0.00344828 sec
D12            0.00002000 sec

======== CHANNEL f1 ========
NUC1                  13C
P1                   9.00 usec
P13               2000.00 usec
PLW0       0 W
PLW1        116.94999695 W
SFO1         125.7697360 MHz
SPNAM5       Crp60comp.4
SPOAL5             0.500
SPOFFS5    0 Hz
SPW5         14.47399998 W

======== CHANNEL f2 ========
CPDPRG2            waltz16
NUC2                   1H
P3                  80.00 usec
P4                 160.00 usec
PCPD2               80.00 usec
PLW2          0.38000000 W
PLW12         0.38000000 W
SFO2        500.1315995 MHz

F2 - Processing parameters
SI                 32768
SF           125.7577890 MHz
WDW                   EM
SSB        0
LB                  1.00 Hz
GB         0
PC                  1.40
```

DEPT 135 NMR spectrum ($CDCl_3$)



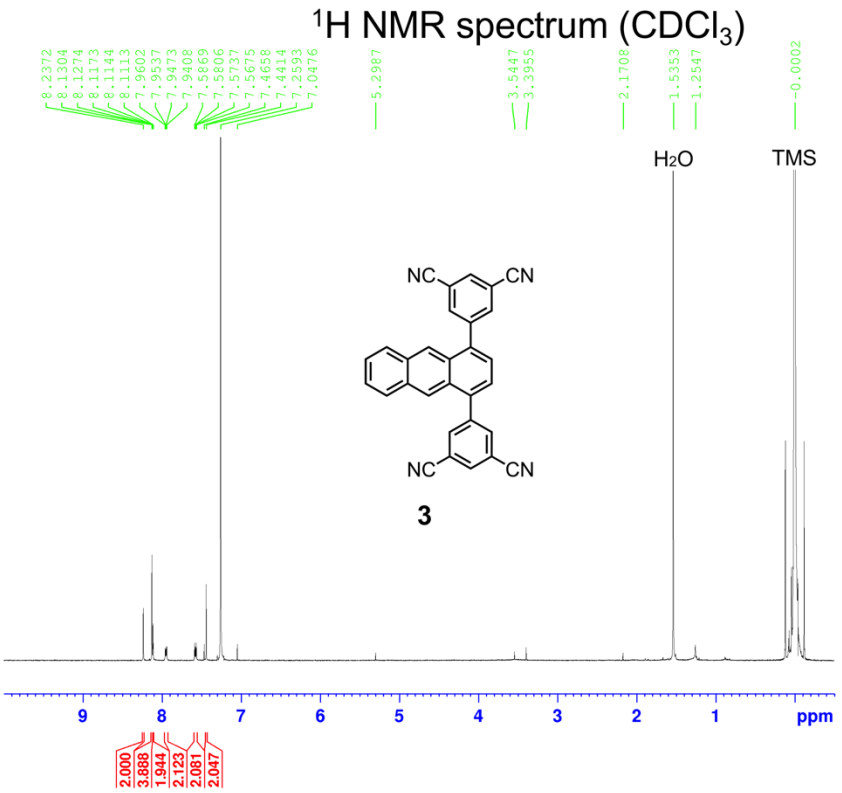

```
Current Data Parameters
NAME      13C 14-DPA 3-CN
EXPNO                   3
PROCNO                  1

F2 - Acquisition Parameters
Date_            20231208
Time               22.31
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG        deptsp135
TD                 65536
SOLVENT            CDCl3
NS                   160
DS                     4
SWH            27573.529 Hz
FIDRES          0.420739 Hz
AQ              1.1884362 sec
RG                 197.97
DW                 18.133 usec
DE                  6.50 usec
TE                298.1 K
CNST2        145.0000000
D1             2.00000000 sec
D2             0.00344828 sec
D12            0.00002000 sec

======== CHANNEL f1 ========
NUC1                  13C
P1                   9.00 usec
P13               2000.00 usec
PLW0       0 W
PLW1        116.94999695 W
SFO1         125.7697360 MHz
SPNAM5       Crp60comp.4
SPOAL5             0.500
SPOFFS5    0 Hz
SPW5         14.47399998 W

======== CHANNEL f2 ========
CPDPRG2            waltz16
NUC2                   1H
P3                  80.00 usec
P4                 160.00 usec
PCPD2               80.00 usec
PLW2          0.38000000 W
PLW12         0.38000000 W
SFO2        500.1315995 MHz

F2 - Processing parameters
SI                 32768
SF           125.7577890 MHz
WDW                   EM
SSB        0
LB                  1.00 Hz
GB         0
PC                  1.40
```

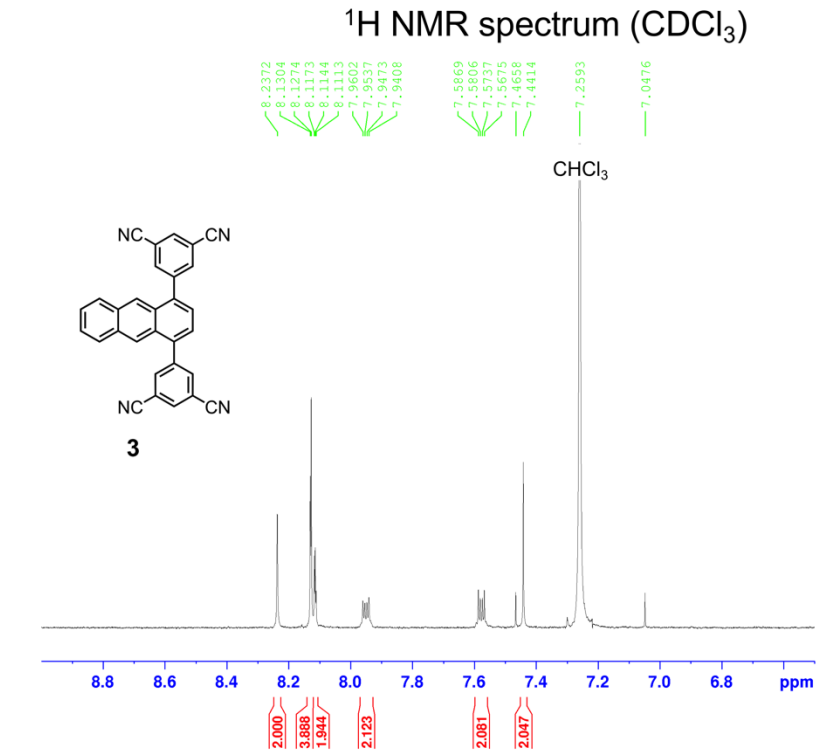



```
Current Data Parameters
NAME      136X-35(1,4-DPA 35-2
EXPNO                       5
PROCNO                      1

F2 - Acquisition Parameters
Date_            20221201
Time                12.47
INSTRUM             spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH            10330.578 Hz
FIDRES         0.157632 Hz
AQ             3.1719425 sec
RG                    96
DW               48.400 usec
DE                6.50 usec
TE                298.2 K
D1           1.00000000 sec

======== CHANNEL f1 ========
NUC1                  1H
P1                11.00 usec
PLW1         20.51199913 W
SFO1        500.1330885 MHz

F2 - Processing parameters
SI                 65536
SF          500.1300135 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```



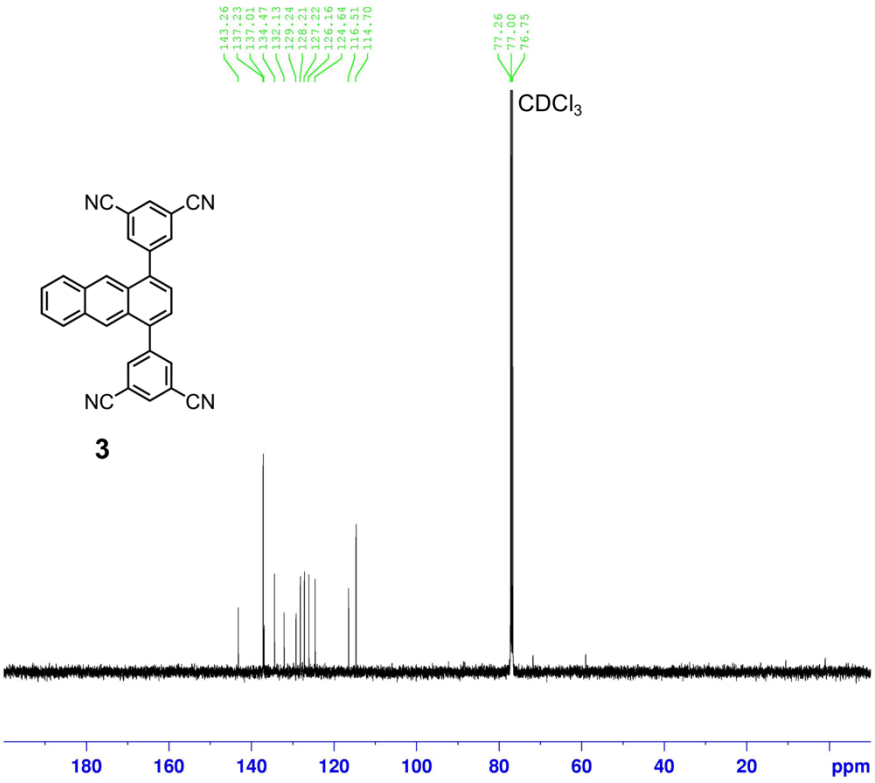

```
Current Data Parameters
NAME      136X-35(1,4-DPA 35-2
EXPNO                       5
PROCNO                      1

F2 - Acquisition Parameters
Date_            20221201
Time                12.47
INSTRUM             spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH            10330.578 Hz
FIDRES         0.157632 Hz
AQ             3.1719425 sec
RG                    96
DW               48.400 usec
DE                6.50 usec
TE                298.2 K
D1           1.00000000 sec

======== CHANNEL f1 ========
NUC1                  1H
P1                11.00 usec
PLW1         20.51199913 W
SFO1        500.1330885 MHz

F2 - Processing parameters
SI                 65536
SF          500.1300135 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```

^{13}C NMR spectrum ($CDCl_3$)

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Current Data Parameters
NAME         kannen231123
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_             20231123
Time                 20.30
INSTRUM              spect
PROBHD   5 mm PABBO BB-
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                  1121
DS                     4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010548 sec
RG                197.97
DW                16.800 usec
DE                 6.50 usec
TE                298.2 K
D1           2.00000000 sec
D11          0.03000000 sec

======== CHANNEL f1 ========
NUC1                13C
P1                 9.00 usec
PLW1       116.94999695 W
SFO1        125.7703637 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                1H
PCPD2              80.00 usec
PLW2          0.38000000 W
PLW12         0.38000000 W
PLW13         0.24320000 W
SFO2        500.1320005 MHz

F2 - Processing parameters
SI                 32768
SF          125.7577909 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```
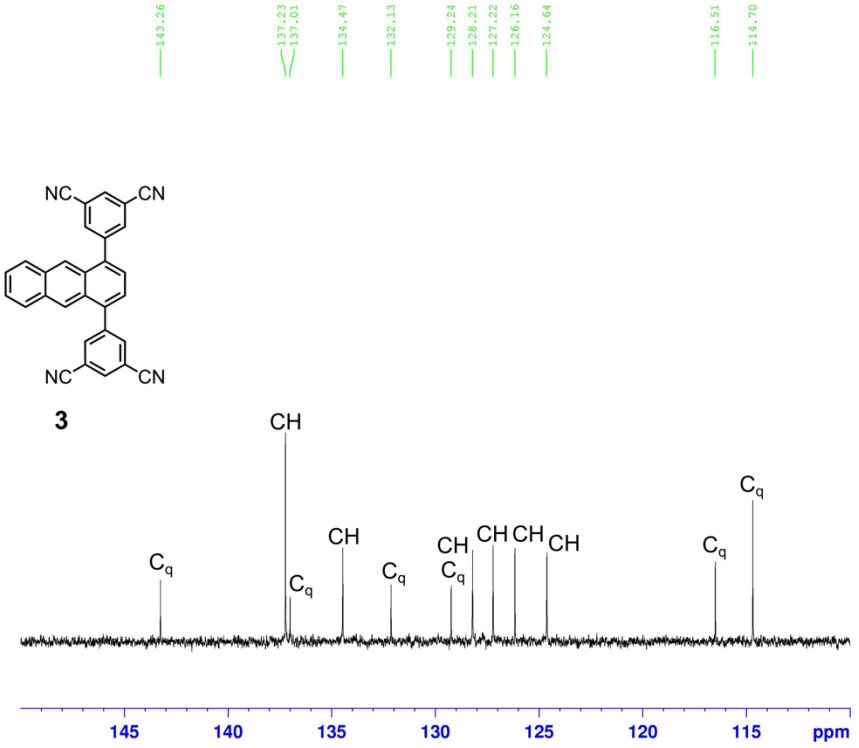
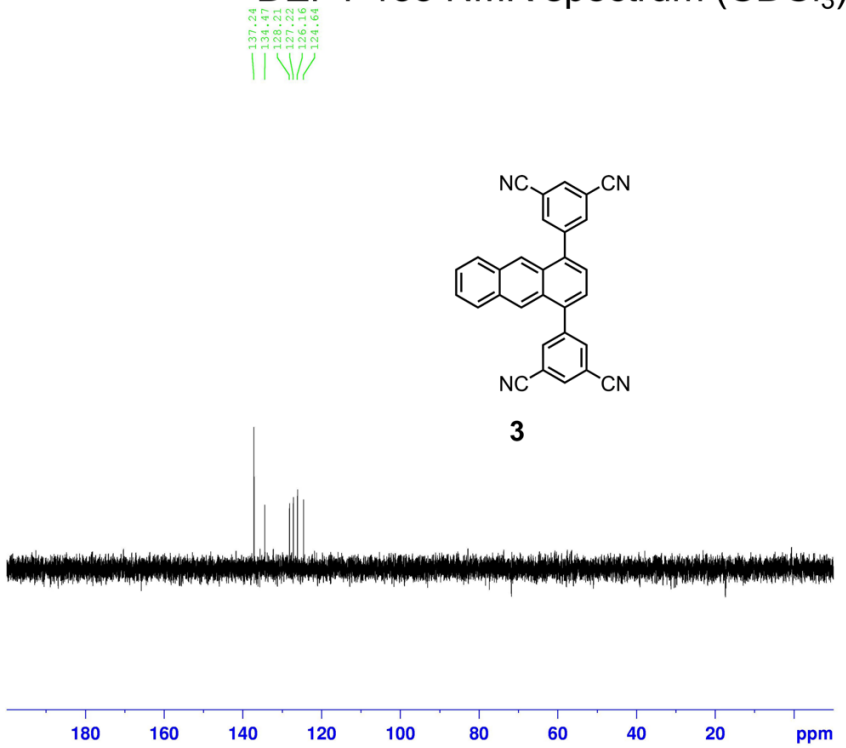

^{13}C NMR spectrum ($CDCl_3$)



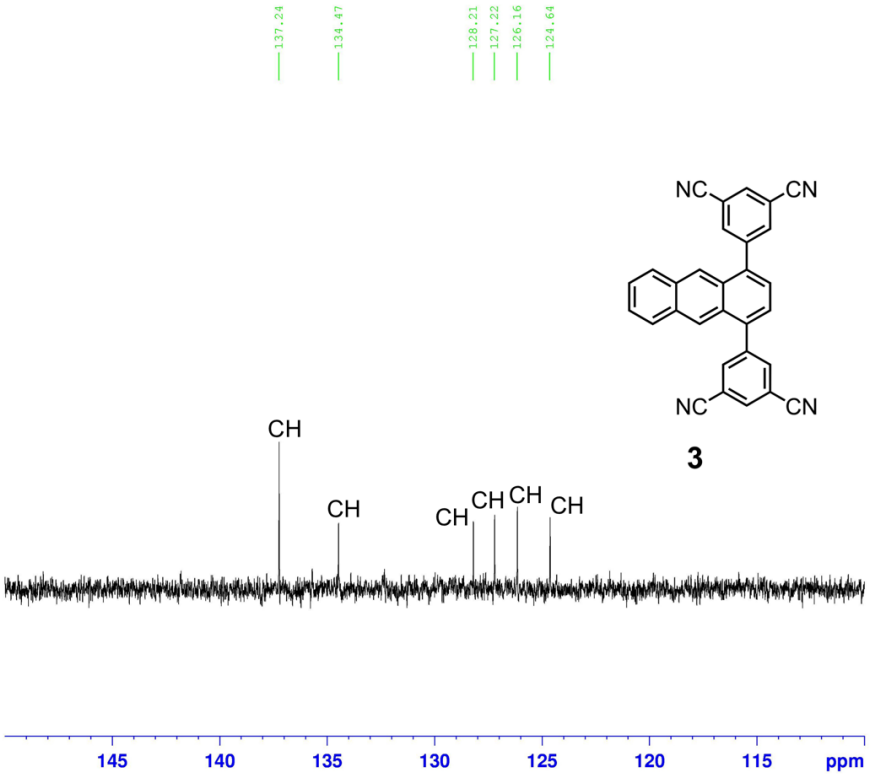

```
Current Data Parameters
NAME         kannen231123
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_             20231123
Time                 20.30
INSTRUM              spect
PROBHD   5 mm PABBO BB-
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                  1121
DS                     4
SWH           29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010548 sec
RG                197.97
DW                16.800 usec
DE                 6.50 usec
TE                298.2 K
D1           2.00000000 sec
D11          0.03000000 sec

======== CHANNEL f1 ========
NUC1                13C
P1                 9.00 usec
PLW1       116.94999695 W
SFO1        125.7703637 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                1H
PCPD2              80.00 usec
PLW2          0.38000000 W
PLW12         0.38000000 W
PLW13         0.24320000 W
SFO2        500.1320005 MHz

F2 - Processing parameters
SI                 32768
SF          125.7577909 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```

DEPT 135 NMR spectrum ($CDCl_3$)

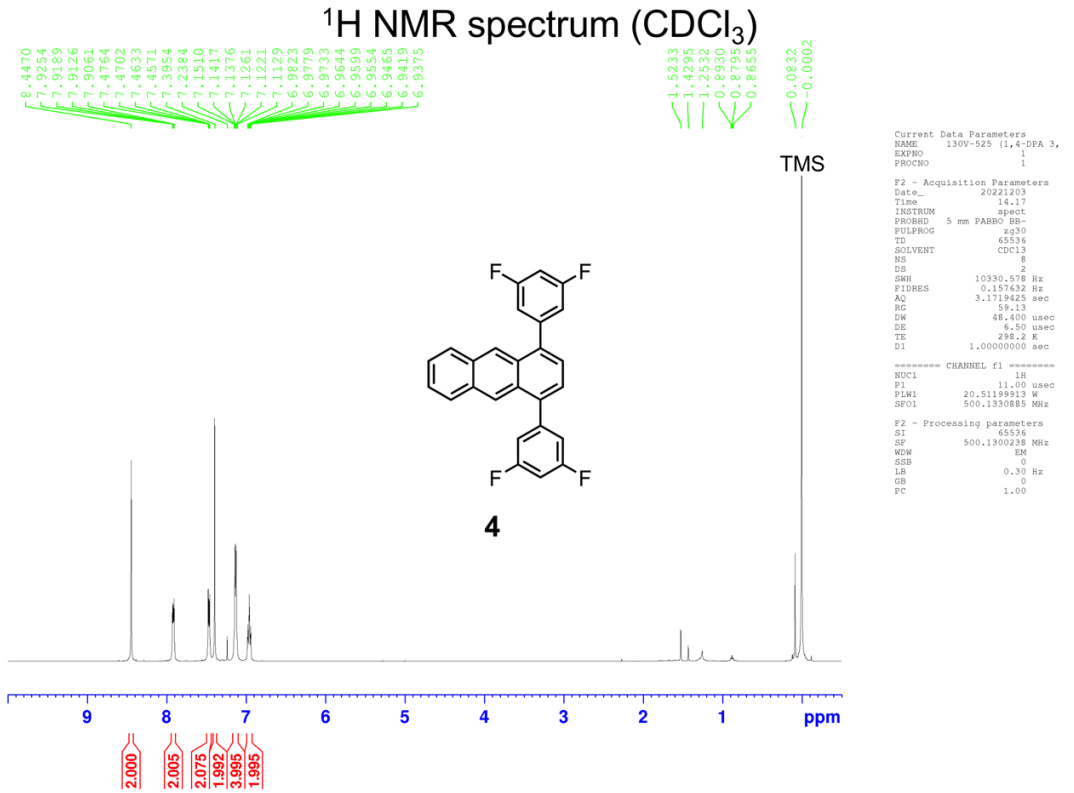


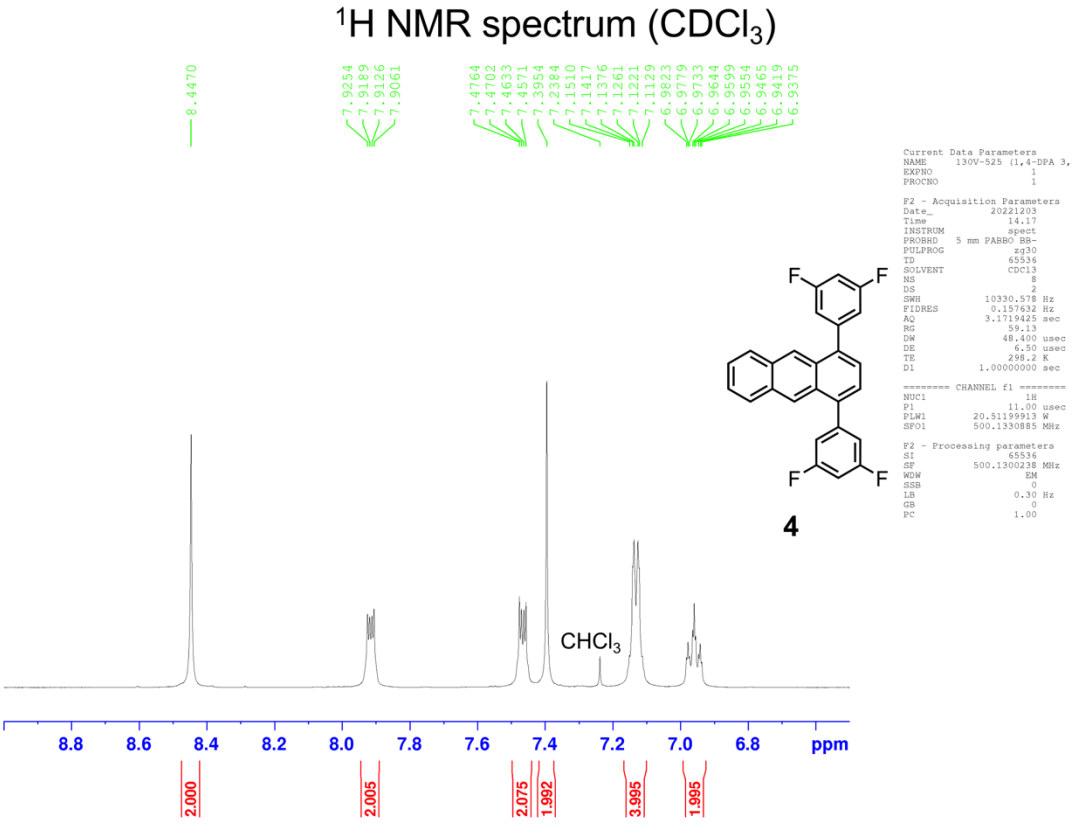

```
Current Data Parameters
NAME         kannen231123
EXPNO                   3
PROCNO                  1

F2 - Acquisition Parameters
Date_           20231123
Time               21.34
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG        deptsp135
TD                 65536
SOLVENT            CDCl3
NS                   198
DS                     4
SWH            27573.529 Hz
FIDRES          0.420739 Hz
AQ             1.1884362 sec
RG                 197.97
DW                 18.133 usec
DE                   6.50 usec
TE                 298.2 K
CNST2         145.0000000
D1              2.00000000 sec
D2              0.00344828 sec
D12             0.00002000 sec

======== CHANNEL f1 ========
NUC1                 13C
P1                  9.00 usec
P13              2000.00 usec
PLW0       0 W
PLW1        116.94999695 W
SFO1         125.7697360 MHz
SPNAM5       Crp60comp.4
SPOAL5             0.500
SPOFFS5   0 Hz
SPW5         14.47399998 W

======== CHANNEL f2 ========
CPDPRG2           waltz16
NUC2                 1H
P3                 80.00 usec
P4                160.00 usec
PCPD2              80.00 usec
PLW2          0.38000000 W
PLW12         0.38000000 W
SFO2         500.1315995 MHz

F2 - Processing parameters
SI                  32768
SF           125.7577907 MHz
WDW                    EM
SSB        0
LB                  1.00 Hz
GB         0
PC                  1.40
```

DEPT 135 NMR spectrum ($CDCl_3$)

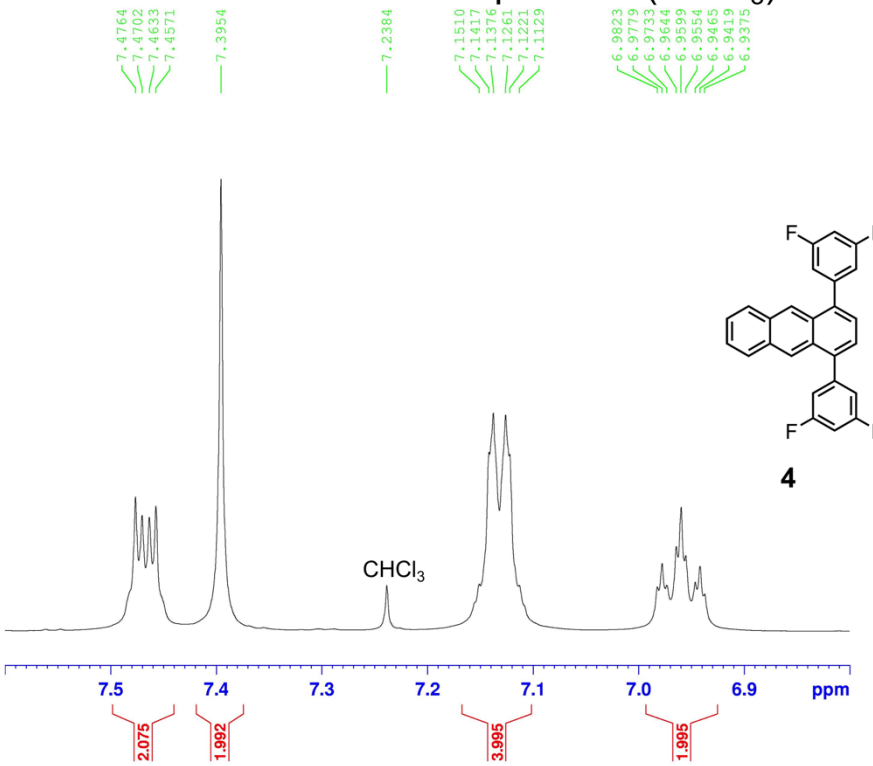



```
Current Data Parameters
NAME         kannen231123
EXPNO                   3
PROCNO                  1

F2 - Acquisition Parameters
Date_           20231123
Time               21.34
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG        deptsp135
TD                 65536
SOLVENT            CDCl3
NS                   198
DS                     4
SWH            27573.529 Hz
FIDRES          0.420739 Hz
AQ             1.1884362 sec
RG                 197.97
DW                 18.133 usec
DE                   6.50 usec
TE                 298.2 K
CNST2         145.0000000
D1              2.00000000 sec
D2              0.00344828 sec
D12             0.00002000 sec

======== CHANNEL f1 ========
NUC1                 13C
P1                  9.00 usec
P13              2000.00 usec
PLW0       0 W
PLW1        116.94999695 W
SFO1         125.7697360 MHz
SPNAM5       Crp60comp.4
SPOAL5             0.500
SPOFFS5   0 Hz
SPW5         14.47399998 W

======== CHANNEL f2 ========
CPDPRG2           waltz16
NUC2                 1H
P3                 80.00 usec
P4                160.00 usec
PCPD2              80.00 usec
PLW2          0.38000000 W
PLW12         0.38000000 W
SFO2         500.1315995 MHz

F2 - Processing parameters
SI                  32768
SF           125.7577907 MHz
WDW                    EM
SSB        0
LB                  1.00 Hz
GB         0
PC                  1.40
```


1H NMR spectrum (CDCl3)
8.4470
7.9254
7.9189
7.9126
7.9061
7.4764
7.4702
7.4633
7.4571
7.3954
7.2384
7.1510
7.1417
7.1376
7.1261
7.1221
7.1129
6.9823
6.9779
6.9733
6.9644
6.9599
6.9554
6.9465
6.9419
6.9375
1.5233
1.4295
1.2532
0.8930
0.8795
0.8655
0.0832
-0.0002
TMS
F
F
F
F
4
Current Data Parameters
NAME 130V-525 (1,4-DPA 3,
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20221203
Time 14.17
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 10330.578 Hz
FIDRES 0.157632 Hz
AQ 3.1719425 sec
RG 59.13
DW 48.400 usec
DE 6.50 usec
TE 298.2 K
D1 1.00000000 sec
======== CHANNEL f1 ========
NUC1 1H
P1 11.00 usec
PLW1 20.51199913 W
SFO1 500.1330885 MHz
F2 - Processing parameters
SI 65536
SF 500.1300238 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
9
8
7
6
5
4
3
2
1
ppm
2.000
2.005
2.075
1.992
3.995
1.995


1H NMR spectrum (CDCl3)
8.4470
7.9254
7.9189
7.9126
7.9061
7.4764
7.4702
7.4633
7.4571
7.3954
7.2384
7.1510
7.1417
7.1376
7.1261
7.1221
7.1129
6.9823
6.9779
6.9733
6.9644
6.9599
6.9554
6.9465
6.9419
6.9375
F
F
F
F
4
CHCl3
Current Data Parameters
NAME 130V-525 (1,4-DPA 3,
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20221203
Time 14.17
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 10330.578 Hz
FIDRES 0.157632 Hz
AQ 3.1719425 sec
RG 59.13
DW 48.400 usec
DE 6.50 usec
TE 298.2 K
D1 1.00000000 sec
======== CHANNEL f1 ========
NUC1 1H
P1 11.00 usec
PLW1 20.51199913 W
SFO1 500.1330885 MHz
F2 - Processing parameters
SI 65536
SF 500.1300238 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
8.8
8.6
8.4
8.2
8.0
7.8
7.6
7.4
7.2
7.0
6.8
ppm
2.000
2.005
2.075
1.992
3.995
1.995

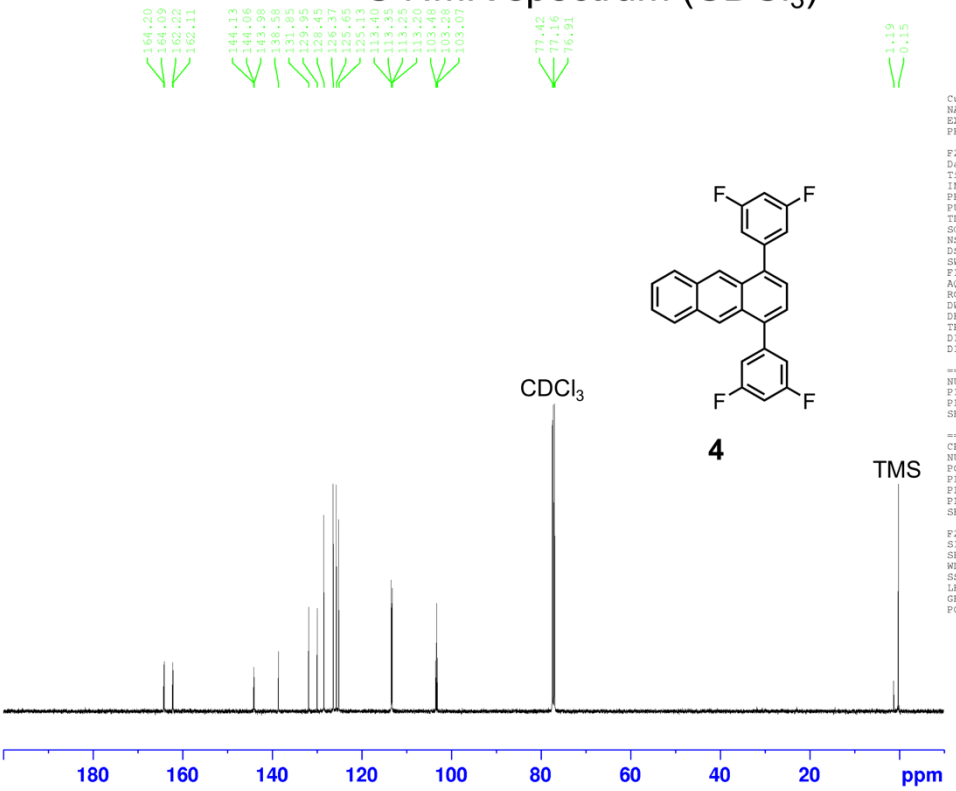
^{1}H NMR spectrum ($CDCl_3$)



4

```
Current Data Parameters
NAME                  130V-525
EXPNO                        1
PROCNO                       1

F2 - Acquisition Parameters
Date_               20221202
Time                   21.17
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                        8
DS                        2
SWH               10330.578 Hz
FIDRES             0.157632 Hz
AQ                 3.1719923 sec
RG                     59.13
DW                   48.400 usec
DE                    6.50 usec
TE                   298.2 K
D1                1.00000000 sec

======== CHANNEL f1 ========
NUC1                      1H
P1                     11.00 usec
PLW1             20.51199913 W
SFO1             500.1330885 MHz

F2 - Processing parameters
SI                        65536
SF               500.1300238 MHz
WDW                        EM
SSB          0
LB                      0.30 Hz
GB           0
PC                      1.00
```

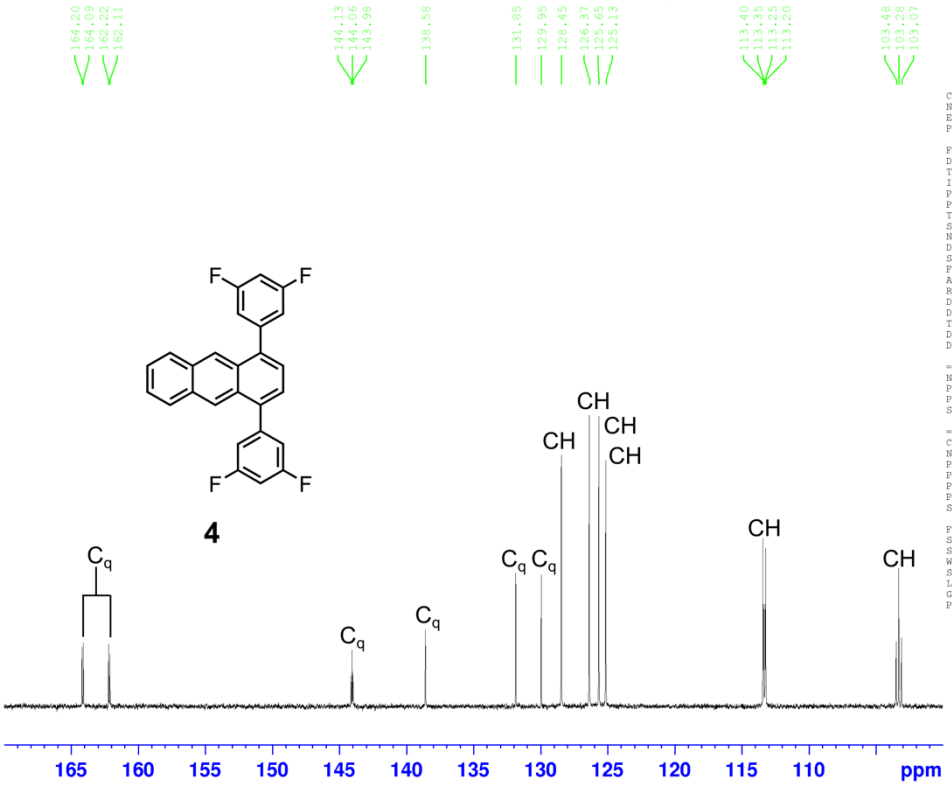
^{13}C NMR spectrum ($CDCl_3$)



4

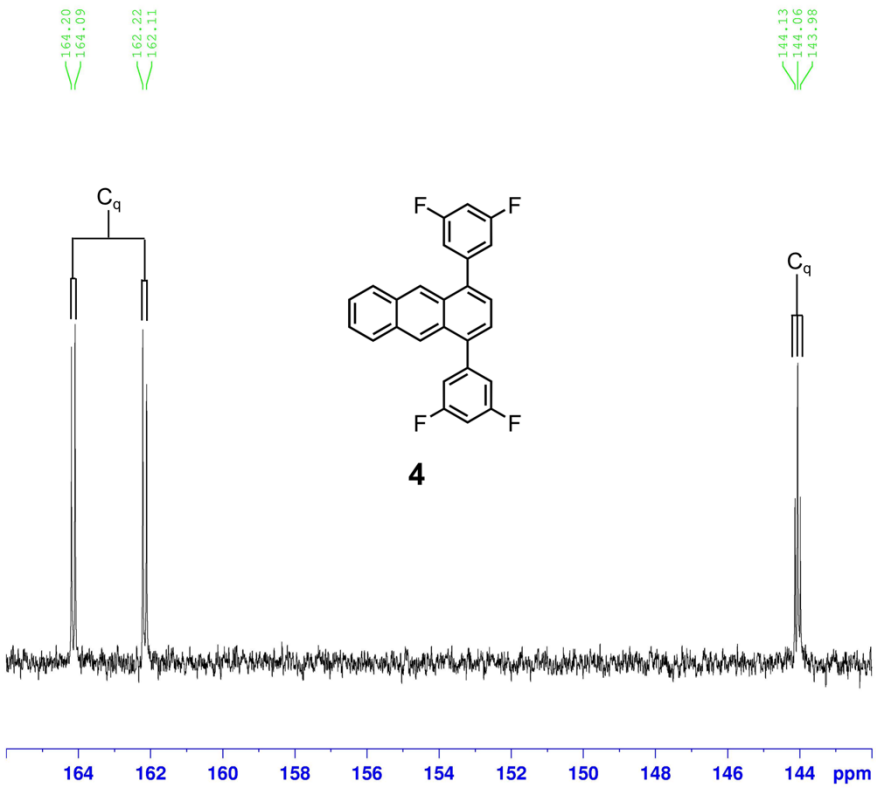
```
Current Data Parameters
NAME      130V-525 (1,4-DPA 3,
EXPNO                        2
PROCNO                       1

F2 - Acquisition Parameters
Date_               20221203
Time                   14.20
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG             zgpg30
TD                    65536
SOLVENT               CDCl3
NS                      416
DS                        4
SWH               29761.904 Hz
FIDRES             0.454131 Hz
AQ                 1.1010048 sec
RG                    197.97
DW                   16.800 usec
DE                    6.50 usec
TE                   298.6 K
D1                2.00000000 sec
D11               0.03000000 sec

======== CHANNEL f1 ========
NUC1                     13C
P1                     9.00 usec
PLW1            116.94999695 W
SFO1             125.7703637 MHz

======== CHANNEL f2 ========
CPDPRG[2             waltz16
NUC2                      1H
PCPD2                 80.00 usec
PLW2              0.38000000 W
PLW12             0.38000000 W
PLW13             0.24320000 W
SFO2              500.1320005 MHz

F2 - Processing parameters
SI                        32768
SF               125.7577715 MHz
WDW                        EM
SSB                         0
LB                       1.00 Hz
GB                          0
PC                       1.40
```

^{13}C NMR spectrum ($CDCl_3$)



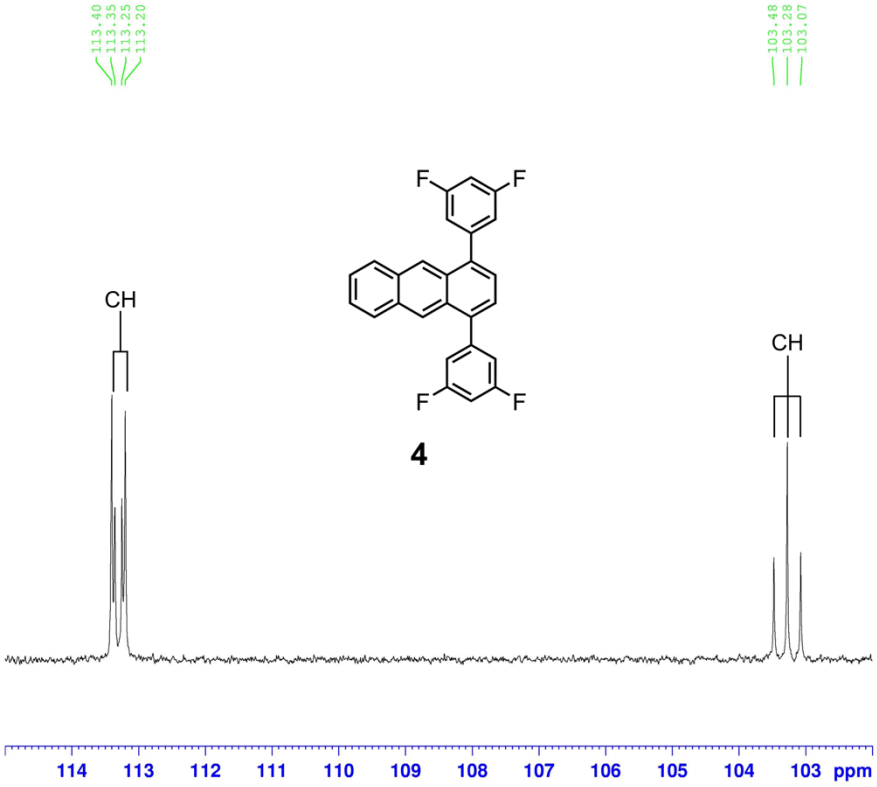

```
Current Data Parameters
NAME      130V-525 (1,4-DPA 3,
EXPNO             2
PROCNO            1

F2 - Acquisition Parameters
Date_          20221203
Time              14.20
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG         zgpg30
TD              65536
SOLVENT          CDCl3
NS                 416
DS                   4
SWH          29761.904 Hz
FIDRES         0.454131 Hz
AQ             1.1010048 sec
RG                197.97
DW               16.800 usec
DE                6.50 usec
TE              298.6 K
D1           2.00000000 sec
D11          0.03000000 sec

======== CHANNEL f1 ========
NUC1               13C
P1                9.00 usec
PLW1       116.94999695 W
SFO1        125.7703637 MHz

======== CHANNEL f2 ========
CPDPRG[2        waltz16
NUC2               1H
PCPD2            80.00 usec
PLW2        0.38000000 W
PLW12       0.38000000 W
PLW13       0.24320000 W
SFO2       500.1320005 MHz

F2 - Processing parameters
SI              32768
SF         125.7577715 MHz
WDW                EM
SSB                 0
LB               1.00 Hz
GB                  0
PC               1.40
```

^{13}C NMR spectrum ($CDCl_3$)



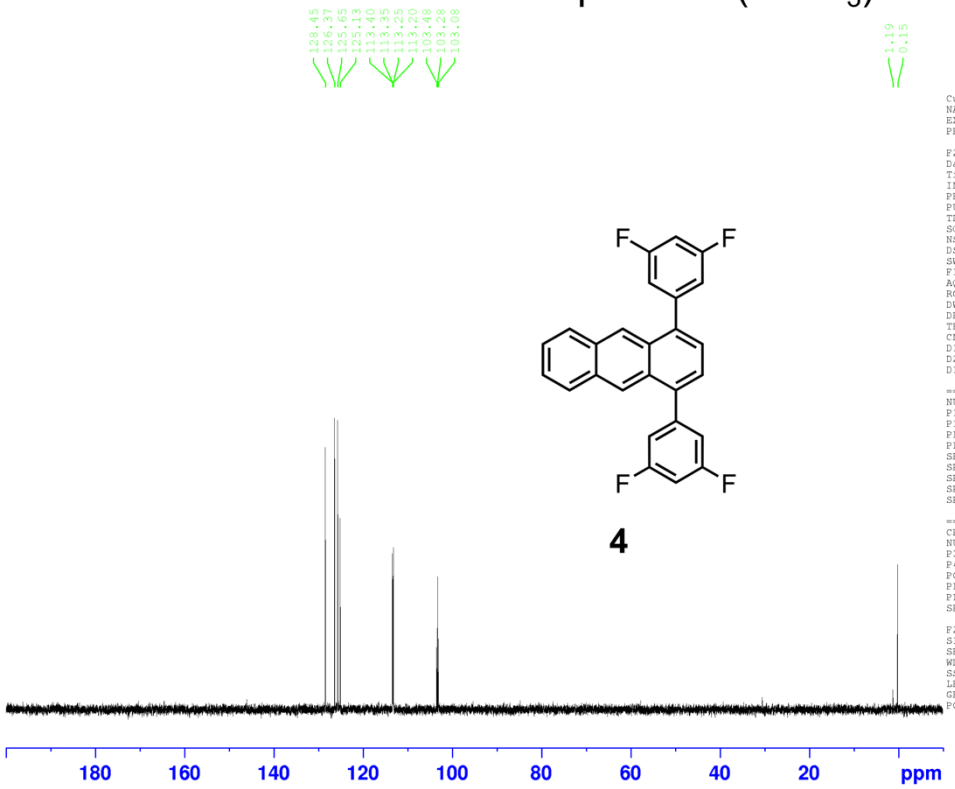

```
Current Data Parameters
NAME            130V-525
EXPNO                  2
PROCNO                 1

F2 - Acquisition Parameters
Date_          20221202
Time              21.20
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG         zgpg30
TD              65536
SOLVENT          CDCl3
NS                 416
DS                   4
SWH          29761.904 Hz
FIDRES         0.454131 Hz
AQ             1.1010548 sec
RG                197.97
DW               16.800 usec
DE                6.50 usec
TE              298.6 K
D1           2.00000000 sec
D11          0.03000000 sec

======== CHANNEL f1 ========
NUC1               13C
P1                9.00 usec
PLW1       116.94999695 W
SFO1        125.7703637 MHz

======== CHANNEL f2 ========
CPDPRG2         waltz16
NUC2               1H
PCPD2            80.00 usec
PLW2        0.38000000 W
PLW12       0.38000000 W
PLW13       0.24320000 W
SFO2       500.1320005 MHz

F2 - Processing parameters
SI              32768
SF         125.7577715 MHz
WDW                EM
SSB                 0
LB               1.00 Hz
GB                  0
PC               1.40
```

^{13}C NMR spectrum ($CDCl_3$)



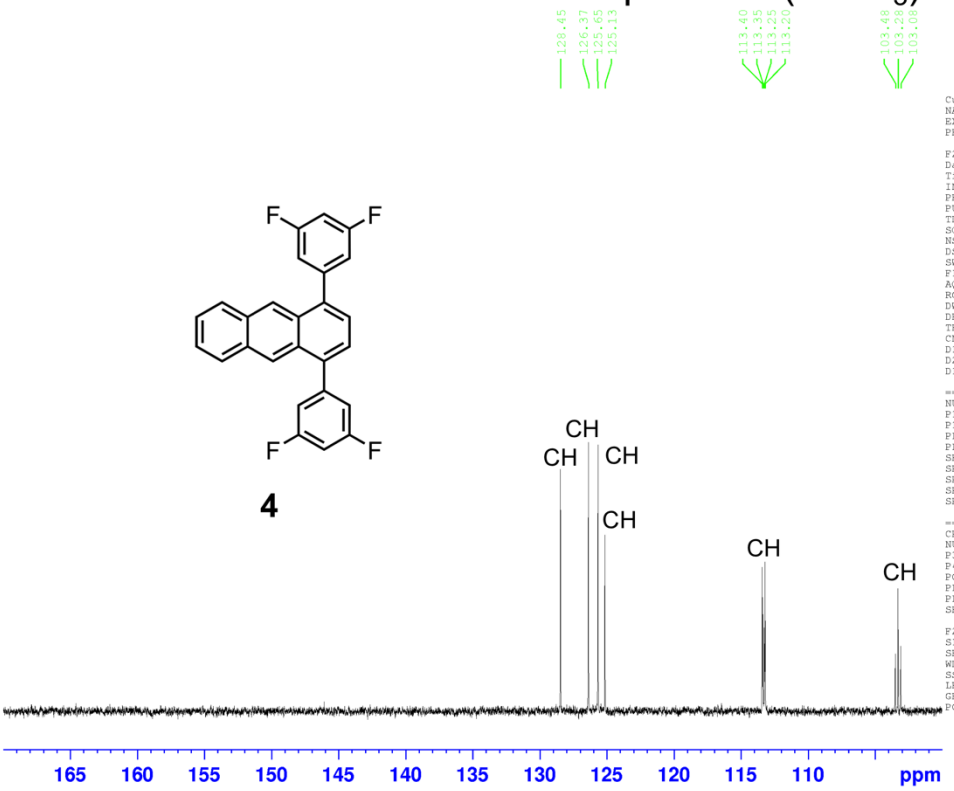

```
Current Data Parameters
NAME                  130V-525
EXPNO                        2
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20221202
Time                     21.20
INSTRUM                  spect
PROBHD    5 mm PABBO BB-
PULPROG                zgpg30
TD                      65536
SOLVENT                 CDCl3
NS                        416
DS                          4
SWH                 29761.904 Hz
FIDRES                0.454131 Hz
AQ                    1.1010548 sec
RG                       197.97
DW                       16.800 usec
DE                        6.50 usec
TE                       298.6 K
D1                  2.00000000 sec
D11                 0.03000000 sec

======== CHANNEL f1 ========
NUC1                       13C
P1                        9.00 usec
PLW1               116.94999695 W
SFO1               125.7703637 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                        1H
PCPD2                    80.00 usec
PLW2                0.38000000 W
PLW12               0.38000000 W
PLW13               0.24320000 W
SFO2               500.1320005 MHz

F2 - Processing parameters
SI                        32768
SF                 125.7577715 MHz
WDW                          EM
SSB          0
LB                        1.00 Hz
GB           0
PC                        1.40
```

DEPT 135 NMR spectrum ($CDCl_3$)



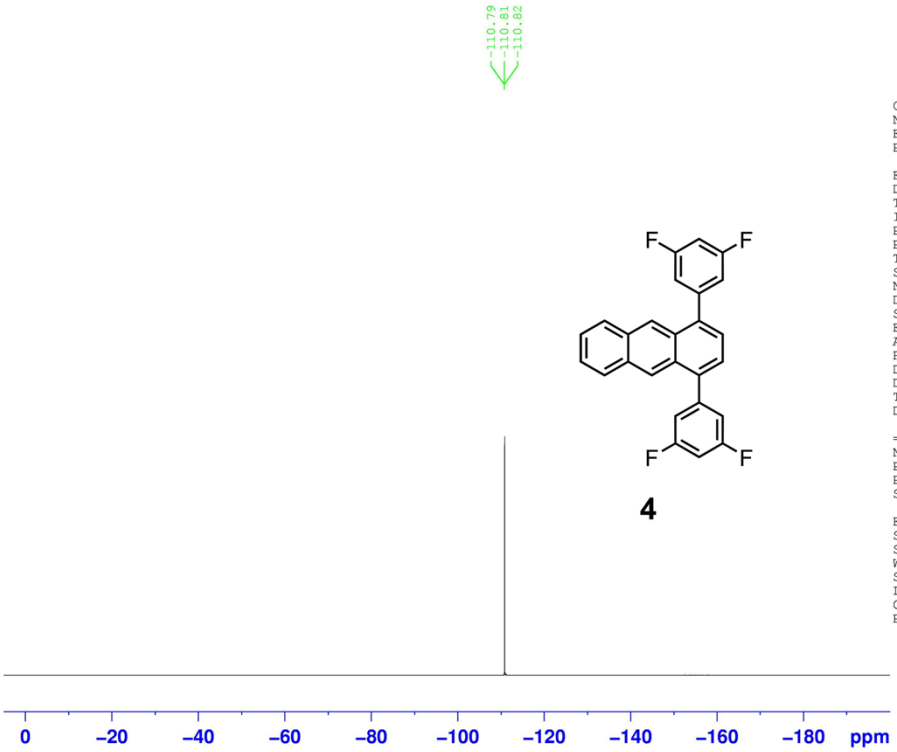

```
Current Data Parameters
NAME      130V-525 (1,4-DPA 3,
EXPNO                        3
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20221203
Time                     14.43
INSTRUM                  spect
PROBHD    5 mm PABBO BB-
PULPROG               deptsp135
TD                      65536
SOLVENT                 CDCl3
NS                        127
DS                          4
SWH                 27573.529 Hz
FIDRES                0.420739 Hz
AQ                    1.1883861 sec
RG                       197.97
DW                       18.133 usec
DE                        6.50 usec
TE                       298.0 K
CNST2              145.0000000
D1                  2.00000000 sec
D2                  0.00344828 sec
D12                 0.00002000 sec

======== CHANNEL f1 ========
NUC1                       13C
P1                        9.00 usec
P13                    2000.00 usec
PLW0                         0 W
PLW1               116.94999695 W
SFO1               125.7697360 MHz
SPNAM[5]           Crp60comp.4
SPOAL5                   0.500
SPOFFS5                      0 Hz
SPW5               14.47399998 W

======== CHANNEL f2 ========
CPDPRG[2               waltz16
NUC2                        1H
P3                       80.00 usec
P4                      160.00 usec
PCPD2                    80.00 usec
PLW2                0.38000000 W
PLW12               0.38000000 W
SFO2               500.1315995 MHz

F2 - Processing parameters
SI                        32768
SF                 125.7577717 MHz
WDW                          EM
SSB                          0
LB                        1.00 Hz
GB                           0
PC                        1.40
```

DEPT 135 NMR spectrum ($CDCl_3$)




```
Current Data Parameters
NAME      130V-525 (1,4-DPA 3,
EXPNO                3
PROCNO               1

F2 - Acquisition Parameters
Date_          20221203
Time              14.43
INSTRUM           spect
PROBHD    5 mm PABBO BB-
PULPROG       deptsp135
TD                65536
SOLVENT           CDCl3
NS                  127
DS                    4
SWH           27573.529 Hz
FIDRES        0.420739 Hz
AQ            1.1883861 sec
RG               197.97
DW               18.133 usec
DE                6.50 usec
TE                298.0 K
CNST2        145.0000000
D1             2.00000000 sec
D2             0.00344828 sec
D12            0.00002000 sec

======== CHANNEL f1 ========
NUC1                13C
P1                 9.00 usec
P13             2000.00 usec
PLW0               0 W
PLW1       116.94999695 W
SFO1       125.7697360 MHz
SPNAM[5]    Crp60comp.4
SPOAL5           0.500
SPOFFS5            0 Hz
SPW5       14.47399998 W

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2                1H
P3                80.00 usec
P4               160.00 usec
PCPD2             80.00 usec
PLW2          0.38000000 W
PLW12         0.38000000 W
SFO2       500.1315995 MHz

F2 - Processing parameters
SI                32768
SF         125.7577717 MHz
WDW                EM
SSB                0
LB              1.00 Hz
GB                 0
PC              1.40
```

^{19}F NMR spectrum ($CDCl_3$)




```
Current Data Parameters
NAME            130V-525
EXPNO                4
PROCNO               1

F2 - Acquisition Parameters
Date_          20221202
Time              21.52
INSTRUM           spect
PROBHD    5 mm PABBO BB-
PULPROG           zgflqn
TD                131072
SOLVENT           CDCl3
NS                   64
DS                    4
SWH          113636.367 Hz
FIDRES        0.866977 Hz
AQ            0.5767668 sec
RG               197.97
DW               4.400 usec
DE                6.50 usec
TE                298.2 K
D1            1.00000000 sec

======== CHANNEL f1 ========
NUC1                19F
P1                14.00 usec
PLW1        53.95100021 W
SFO1       470.5453180 MHz

F2 - Processing parameters
SI                65536
SF         470.5929072 MHz
WDW                EM
SSB       0
LB              0.30 Hz
GB        0
PC              1.00
```