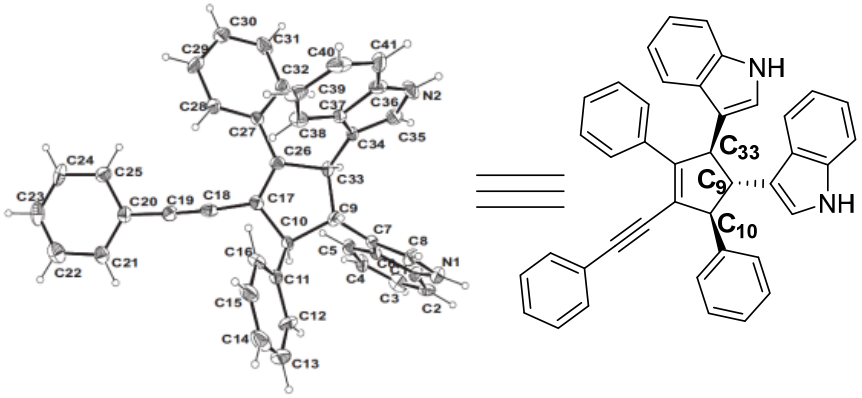
Synthesis of Polysubstituted Cyclopentene and Cyclopenta[*b*]carbazole Analogues from Unsymmetrical 4-Arylidene-3,6-diarylhex-2-en-5-ynal and Indole Derivatives via an Iodine Mediated Electrocyclization Reaction

Vijayalakshmi Bandi,[†] Veerababurao Kavala,[†] Ashok Konala,[†] Che-Hao Hsu,[†] Bharath Kumar Villuri,[†] Sabbasani Rajasekhara Reddy,[†,‡] Lichun Lin,[†] Chun-Wei Kuo[†] and Ching-Fa Yao [†]*

[†]Department of Chemistry, National Taiwan Normal University, 88, Sec. 4, Ting-Chow Road, Taipei-116, Taiwan R.O.C.

[†,‡]Department of Chemistry, School of Advanced Sciences, Vellore Institute of Technology (VIT), Vellore 632014, India

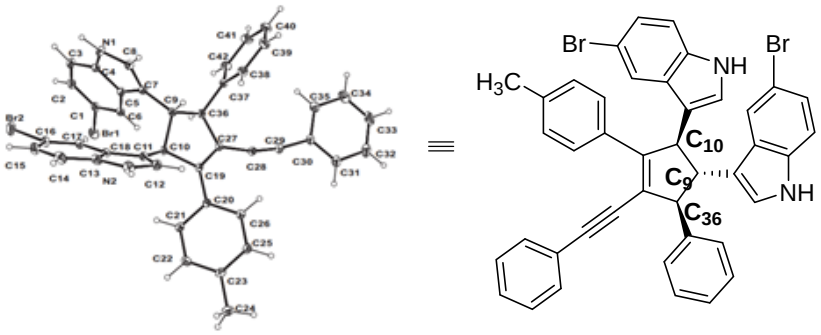
Table S1. Crystal data and structure refinement for **3a**.



Identification code	d20433a	
Empirical formula	C_{41} H_{30} N_2	
Formula weight	550.67	
Temperature	200(2) K	
Wavelength	0.71073 Å	
Crystal system	Monoclinic	
Space group	P 21/c	
Unit cell dimensions	a = 9.1373(13) Å	α= 90°.
	b = 18.993(3) Å	β= 100.289(4)°.
	c = 18.606(2) Å	γ = 90°.
Volume	3177.0(8) $Å^3$	
Z	4	
Density (calculated)	1.151 Mg/m^3	
Absorption coefficient	0.067 mm^{-1}	
F(000)	1160	
Crystal size	0.10 x 0.08 x 0.02 mm^3	
Theta range for data collection	2.27 to 25.06°.	
Index ranges	-10<=h<=10, -22<=k<=22, -22<=l<=22	
Reflections collected	43966	
Independent reflections	5621 [R(int) = 0.1105]	
Completeness to theta = 25.06°	99.8 % Absorption correction	multi-scan
Max. and min. transmission	0.9987 and 0.9934	
Refinement method	Full-matrix least-squares on F^2	
Data / restraints / parameters	5621 / 0 / 388	
Goodness-of-fit on F^2	1.017	
Final R indices [I>2sigma(I)]	R1 = 0.0601, wR2 = 0.1310	

R indices (all data)	R1 = 0.1142, wR2 = 0.1498
Largest diff. peak and hole	0.159 and -0.174 e.Å^{-3}

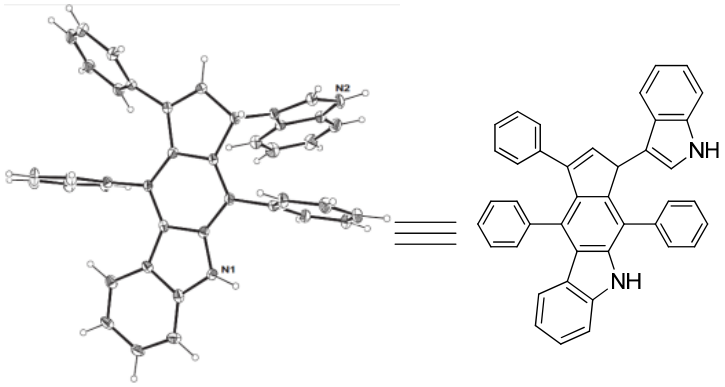
Table S2. Crystal data and structure refinement for **3o** (ORTEP diagram with ellipsoid contour 30% probability).



Identification code	d20250	
Empirical formula	C_{42} H_{30} Br_2 N_2	
Formula weight	722.50	
Temperature	200(2) K	
Wavelength	0.71073 Å	
Crystal system	Triclinic	
Space group	P -1	
Unit cell dimensions	a = 9.4052(4) Å	α= 80.4220(10)°.
	b = 12.5506(5) Å	β= 80.6500(10)°.
	c = 16.5291(7) Å	γ = 89.9930(10)°.
Volume	1897.63(14) Å^3	
Z	2	
Density (calculated)	1.264 Mg/m^3	
Absorption coefficient	2.165 mm^{-1}	
F(000)	732	
Crystal size	0.34 x 0.04 x 0.02 mm^3	
Theta range for data collection	2.24 to 25.04°.	
Index ranges	-11<=h<=11, -14<=k<=14, -19<=l<=19	
Reflections collected	67740	
Independent reflections	6691 [R(int) = 0.0677]	
Completeness to theta = 25.04°	99.8 %	
Absorption correction	multi-scan	
Max. and min. transmission	0.9580 and 0.5264	

Refinement method	Full-matrix least-squares on F^2
Data / restraints / parameters	6691 / 0 / 416
Goodness-of-fit on F^2	1.082
Final R indices [I>2sigma(I)]	R1 = 0.0374, wR2 = 0.0906
R indices (all data)	R1 = 0.0526, wR2 = 0.0971
Largest diff. peak and hole	0.222 and -0.562 e.$Å^{-3}$

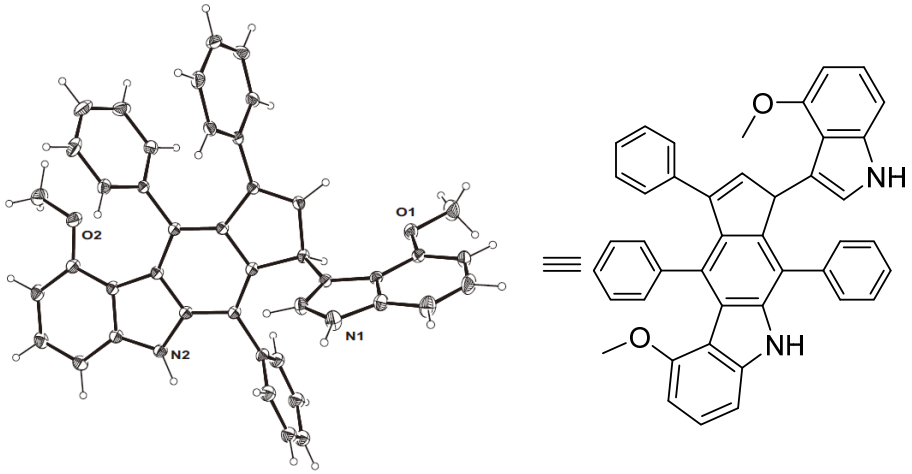
Table S3. Crystal data and structure refinement for **4a (**ORTEP diagram with ellipsoid contour 30% probability)



Identification code	a16363	
Empirical formula	C_{45} H_{36} N_2 O_2($C_{41}H_{28}N_2$+$C_4H_8O_2$ (Ethylacetate))	
Formula weight	636.76	
Temperature	200(2) K	
Wavelength	0.71073 Å	
Crystal system	Triclinic	
Space group	P -1	
Unit cell dimensions	a = 11.134(2) Å	α= 83.142(7)°.
	b = 12.176(3) Å	β= 77.790(7)°.
	c = 13.759(3) Å	γ = 67.611(8)°.
Volume	1684.1(7) Å3	
Z	2	
Density (calculated)	1.256 Mg/m3	
Absorption coefficient	0.076 mm-1	
F(000)	672	
Crystal size	0.13 x 0.11 x 0.05 mm3	
Theta range for data collection	2.01 to 25.10°.	
Index ranges	-13<=h<=13, -11<=k<=14, -16<=l<=16	
Reflections collected	13220	
Independent reflections	5954 [R(int) = 0.0957]	
Completeness to theta	= 25.10° 99.2 %	

Absorption correction	multi-scan
Max. and min. transmission	0.9962 and 0.9901
Refinement method	Full-matrix least-squares on F2
Data / restraints / parameters	5954 / 0 / 442
Goodness-of-fit on F2	0.947
Final R indices [I>2sigma(I)]	R1 = 0.0681, wR2 = 0.1581
R indices (all data)	R1 = 0.1791, wR2 = 0.2229
Largest diff. peak and hole	0.765 and -0.337 e.Å-3

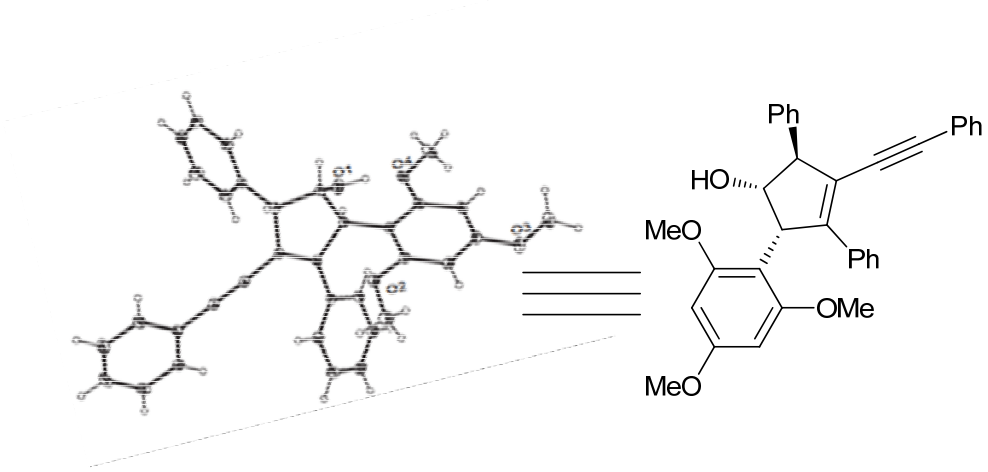
Table S4. Crystal data and structure refinement for **4q (**ORTEP diagram with ellipsoid contour 30% probability)



Identification code	d19307	
Empirical formula	C_{43} H_{32} N_2 O_2	
Formula weight	608.71	
Temperature	200(2) K	
Wavelength	0.71073 Å	
Crystal system	Triclinic	
Space group	P -1	
Unit cell dimensions	a = 7.0575(5) Å	α= 88.791(3)°.
	b = 10.2773(8) Å	β= 88.610(3)°.
	c = 22.134(2) Å	γ = 81.318(2)°.
Volume	1586.3(2) Å3	
Z	2	
Density (calculated)	1.274 Mg/m3	
Absorption coefficient	0.078 mm-1	
F(000)	640	
Crystal size	0.24 x 0.12 x 0.02 mm3	
Theta range for data collection	2.19 to 25.06°.	

Index ranges	-8<=h<=8, -12<=k<=12, -26<=l<=26
Reflections collected	49319
Independent reflections	5617 [R(int) = 0.0733]
Completeness to theta	= 25.06° 99.6 %
Absorption correction	multi-scan
Max. and min. transmission	0.9984 and 0.9815
Refinement method	Full-matrix least-squares on F2
Data / restraints / parameters	5617 / 4 / 420
Goodness-of-fit on F2	1.052
Final R indices [I>2sigma(I)]	R1 = 0.0540, wR2 = 0.1117
R indices (all data)	R1 = 0.0836, wR2 = 0.1279
Extinction coefficient	0.0141(14)
Largest diff. peak and hole	0.352 and -0.306 e.Å-3

Table S5. Crystal data and structure refinement for **5a (**ORTEP diagram with ellipsoid contour 30% probability)

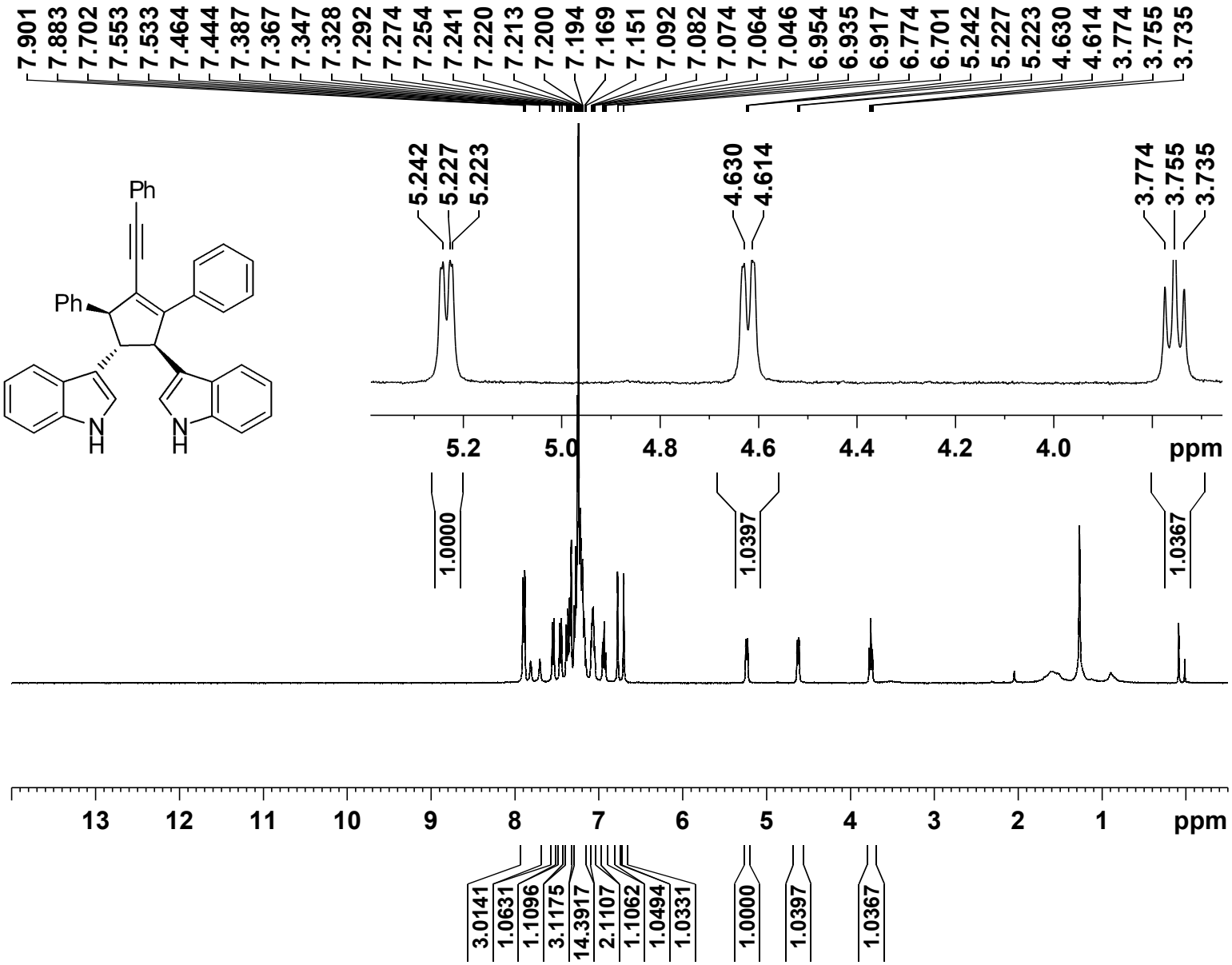


Identification code	d20430	
Empirical formula	C34 H30 O4	
Formula weight	502.58	
Temperature	238(2) K	
Wavelength	0.71073 Å	
Crystal system	Triclinic	
Space group	P -1	
Unit cell dimensions	a = 10.044(3) Å	α= 81.343(7)°.
	b = 12.223(3) Å	β= 71.583(7)°.
	c = 12.450(3) Å	γ = 66.010(7)°.
Volume	1324.6(6) Å^3	

Z	2
Density (calculated)	1.260 Mg/m^3
Absorption coefficient	0.081 mm^{-1}
F(000)	532
Crystal size	0.32 x 0.26 x 0.07 mm^3
Theta range for data collection	2.31 to 25.25°.
Index ranges	-11<=h<=11, -14<=k<=14, -14<=l<=14
Reflections collected	43775
Independent reflections	4710 [R(int) = 0.0684]
Completeness to theta = 25.25°	98.5 %
Absorption correction	multi-scan
Max. and min. transmission	0.9943 and 0.9744
Refinement method	Full-matrix least-squares on F^2
Data / restraints / parameters	4710 / 0 / 347
Goodness-of-fit on F^2	1.070
Final R indices [I>2sigma(I)]	R1 = 0.0476, wR2 = 0.1053
R indices (all data)	R1 = 0.0656, wR2 = 0.1165
Extinction coefficient	0.018(3)
Largest diff. peak and hole	0.432 and -0.436 $e.Å^{-3}$

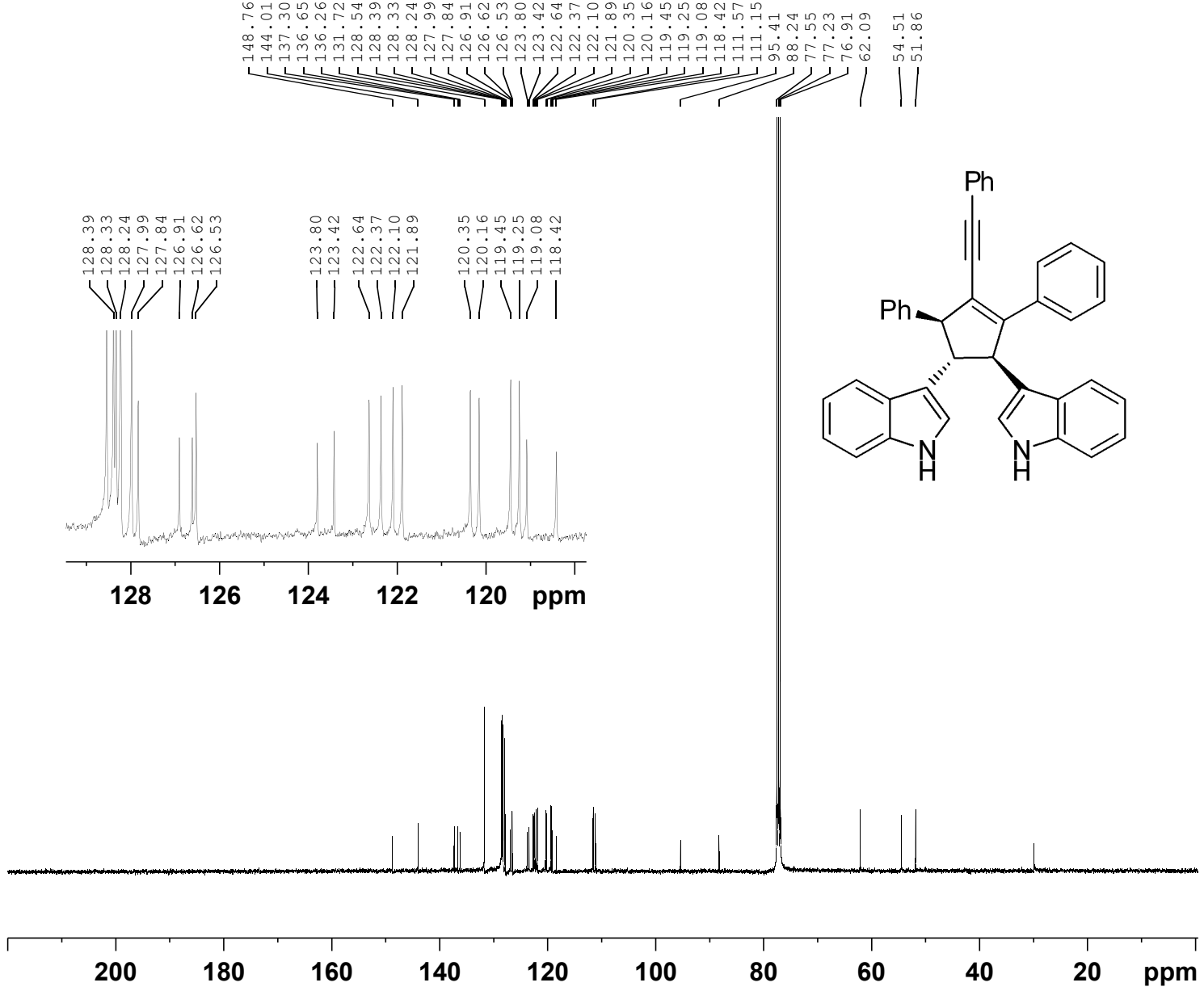
^{1}H NMR and ^{13}C NMR Spectra copies

3,3'-(3,5-diphenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(1H-indole) (3a)




```
Current Data Parameters
NAME                  try
EXPNO                 101
PROCNO                  1

F2 - Acquisition Parameters
Date_           20130805
Time                0.59
INSTRUM            spect
PROBHD   5 mm BBO BB-1H
PULPROG             zg30
TD                 32768
SOLVENT            CDCl3
NS                    16
DS                     0
SWH             7246.377 Hz
FIDRES          0.221142 Hz
AQ              2.2609921 sec
RG                   181
DW                69.000 usec
DE                 6.50 usec
TE                298.2 K
D1             2.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                 11.90 usec
PL1                 3.00 dB
SFO1          400.1324008 MHz

F2 - Processing parameters
SI                 16384
SF            400.1300118 MHz
WDW                   EM
SSB       0
LB        0 Hz
GB        0
PC                 1.00
```

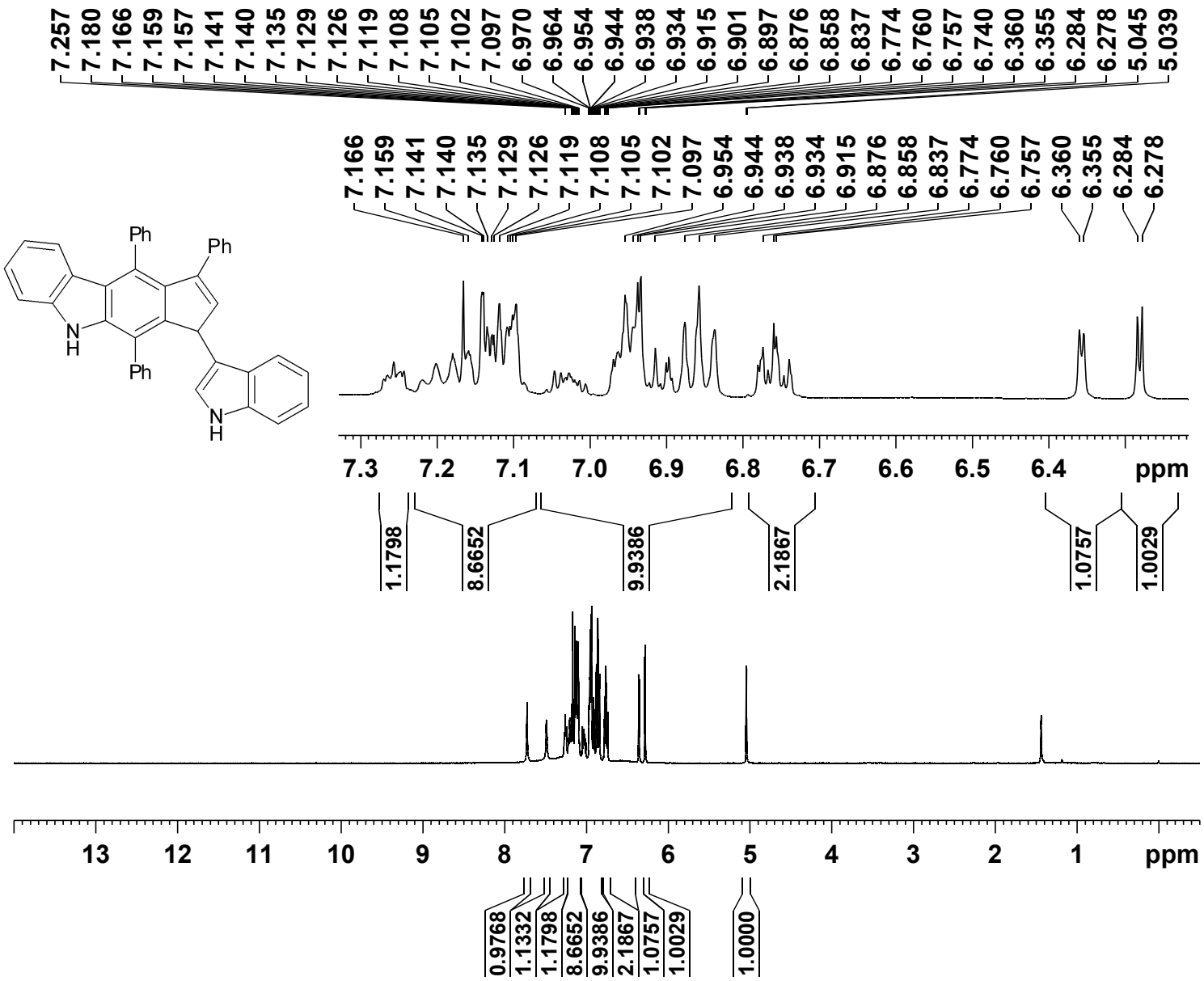
3,3'-(3,5-diphenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(1H-indole) (3a)



6S

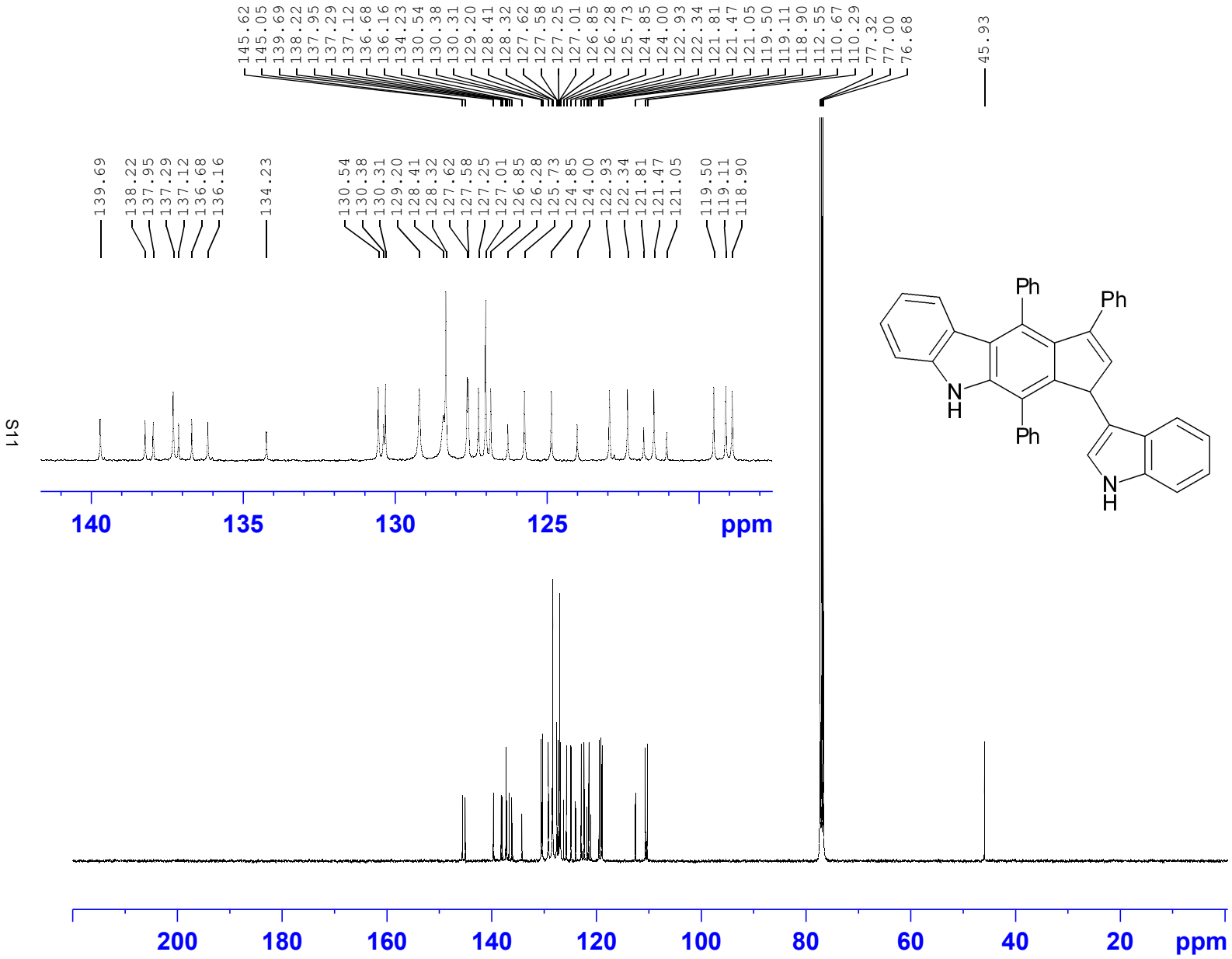
```
Current Data Parameters
NAME                  try
EXPNO                 102
PROCNO                  1

F2 - Acquisition Parameters
Date_            20130803
Time                23.33
INSTRUM             spect
PROBHD   5 mm BBO BB-1H
PULPROG            zgpg30
TD                  32768
SOLVENT             CDCl3
NS                  14722
DS                      0
SWH           24038.461 Hz
FIDRES         0.733596 Hz
AQ            0.6815744 sec
RG                   8192
DW                20.800 usec
DE                 6.50 usec
TE                297.7 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                     1

======== CHANNEL f1 ========
NUC1                  13C
P1                  9.40 usec
PL1                 7.00 dB
SFO1        100.6233325 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2              90.00 usec
PL2                 3.00 dB
PL12                20.70 dB
PL13                23.70 dB
SFO2        400.1316005 MHz

F2 - Processing parameters
SI                  32768
SF          100.6127484 MHz
WDW                    EM
SSB       0
LB                  1.00 Hz
GB        0
PC                  1.00
```

3-(1H-indol-3-yl)-1,4,10-triphenyl-3,5-dihydrocyclopenta[b]carbazole (4a)



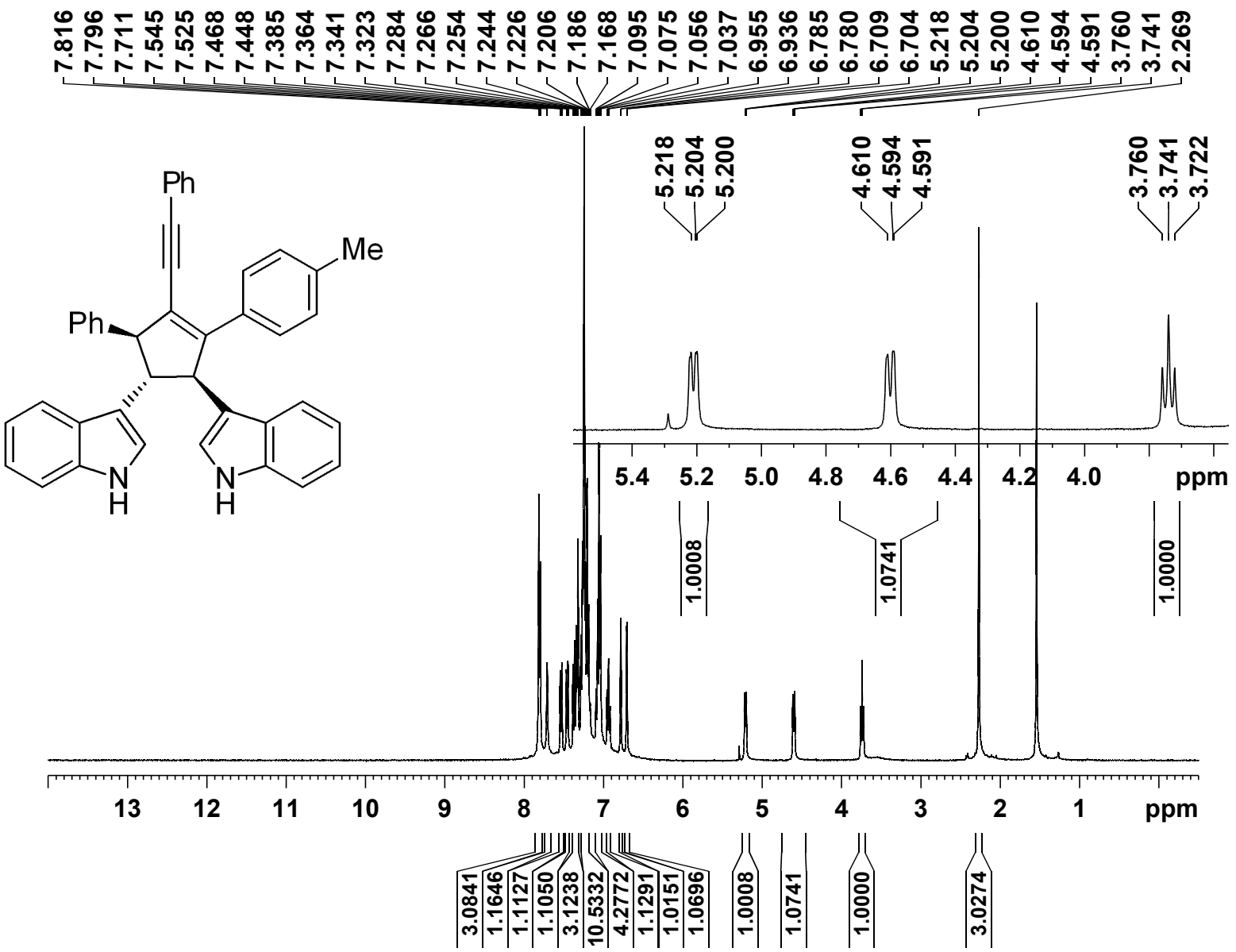

```
Current Data Parameters
NAME                      try
EXPNO                       1
PROCNO                      1

F2 - Acquisition Parameters
Date_              20140716
Time                  22.24
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG                zg30
TD                    32768
SOLVENT               CDCl3
NS                      100
DS                        0
SWH                7211.539 Hz
FIDRES            0.220079 Hz
AQ                2.2719147 sec
RG                   158.74
DW                   69.333 usec
DE                   10.52 usec
TE                   298.4 K
D1              2.00000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1           400.1324008 MHz
NUC1                     1H
P1                   12.80 usec
PLW1           15.00000000 W

F2 - Processing parameters
SI                    16384
SF             400.1300470 MHz
WDW                      EM
SSB         0
LB          0 Hz
GB          0
PC                    1.00
```

3-(1H-indol-3-yl)-1,4,10-triphenyl-3,5-dihydrocyclopenta[b]carbazole (4a)



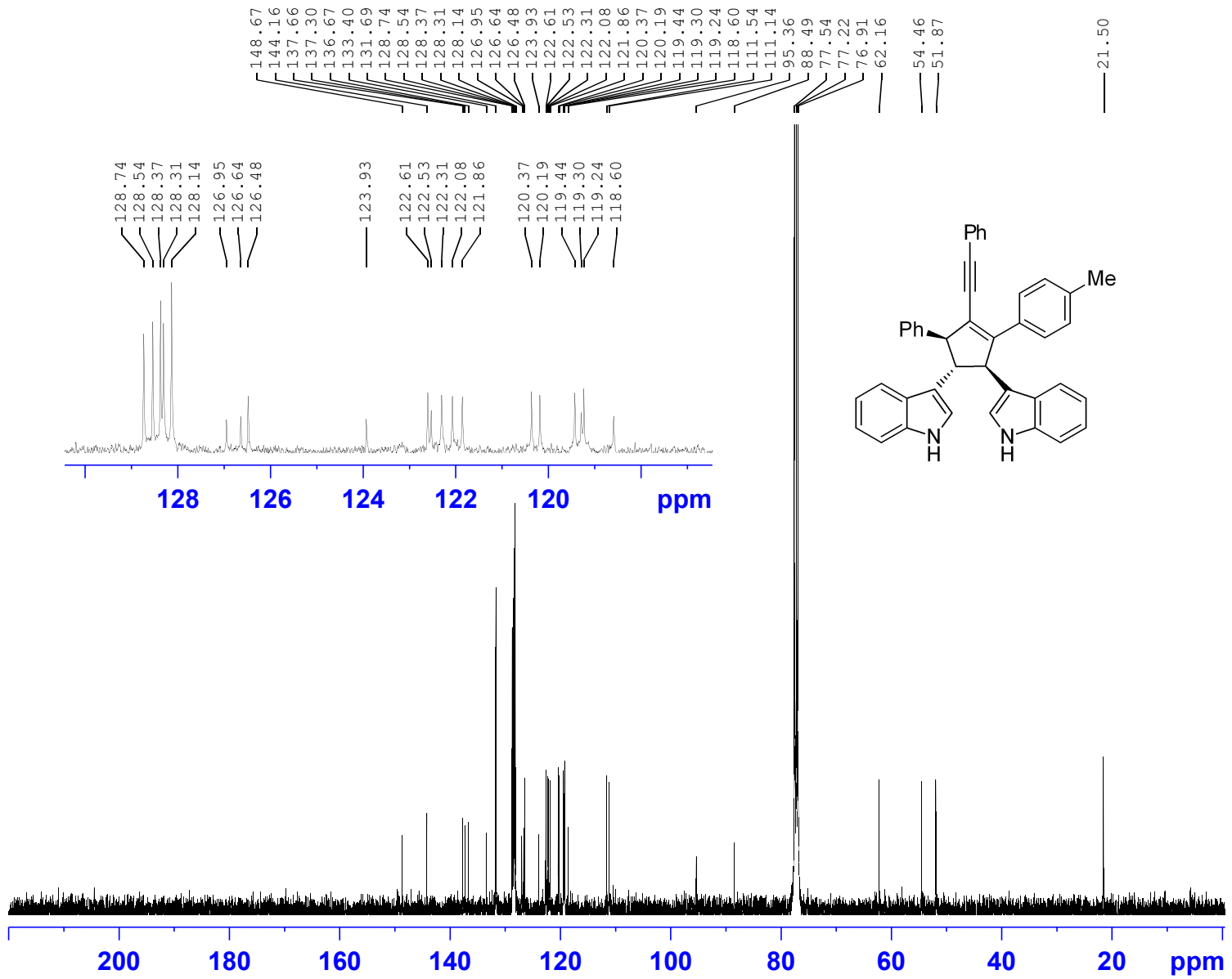

```
C                                   .
NAME                              try
EXPNO                               2
PROCNO                              1

F2 - Acquisition Parameters
Date_                        20140716
Time                            22.32
INSTRUM                         spect
PROBHD    5 mm PABBO BB/
PULPROG                       zgpg30
TD                              32768
SOLVENT                         CDCl3
NS                              14836
DS                                  0
SWH                      24038.461 Hz
FIDRES                    0.733596 Hz
AQ                        0.6815744 sec
RG                            198.09
DW                           20.800 usec
DE                            6.50 usec
TE                            298.5 K
D1                     2.00000000 sec
D11                    0.03000000 sec
TD0                                 1

======== CHANNEL f1 ========
SFO1                 100.6233319 MHz
NUC1                           13C
P1                          10.00 usec
PLW1                46.00000000 W

======== CHANNEL f2 ========
SFO2                 400.1316005 MHz
NUC2                           1H
CPDPRG[2                 waltz16
PCPD2                       90.00 usec
PLW2                15.00000000 W
PLW12                0.34252000 W
PLW13                0.27744001 W

F2 - Processing parameters
SI                              32768
SF                   100.6127711 MHz
WDW                            EM
SSB             0
LB                           2.00 Hz
GB              0
PC                           1.00
```

3,3'-(5-phenyl-4-(phenylethynyl)-3-(p-tolyl)cyclopent-3-ene-1,2-diyl)bis(1H-indole) (3b)




```
Current Data Parameters
NAME                  test
EXPNO                   11
PROCNO                   1

F2 - Acquisition Parameters
Date_              20170710
Time                 17.25
INSTRUM              spect
PROBHD    5 mm BBO BB-1H
PULPROG                zg30
TD                    32768
SOLVENT               CDCl3
NS                       32
DS                        0
SWH                7246.377 Hz
FIDRES            0.221142 Hz
AQ                2.2609921 sec
RG                      181
DW                 69.000 usec
DE                  6.50 usec
TE                  300.1 K
D1              2.00000000 sec
TD0                       1

======== CHANNEL f1 ========
NUC1                     1H
P1                   16.80 usec
PL1                   1.80 dB
SFO1          400.1324008 MHz

F2 - Processing parameters
SI                    16384
SF            400.1300118 MHz
WDW                      EM
SSB       0
LB        0 Hz
GB        0
PC                    1.00
```

3,3'-(5-phenyl-4-(phenylethynyl)-3-(p-tolyl)cyclopent-3-ene-1,2-diyl)bis(1H-indole) (3b)



Current Data Parameters
NAME test
EXPNO 12
PROCNO 1

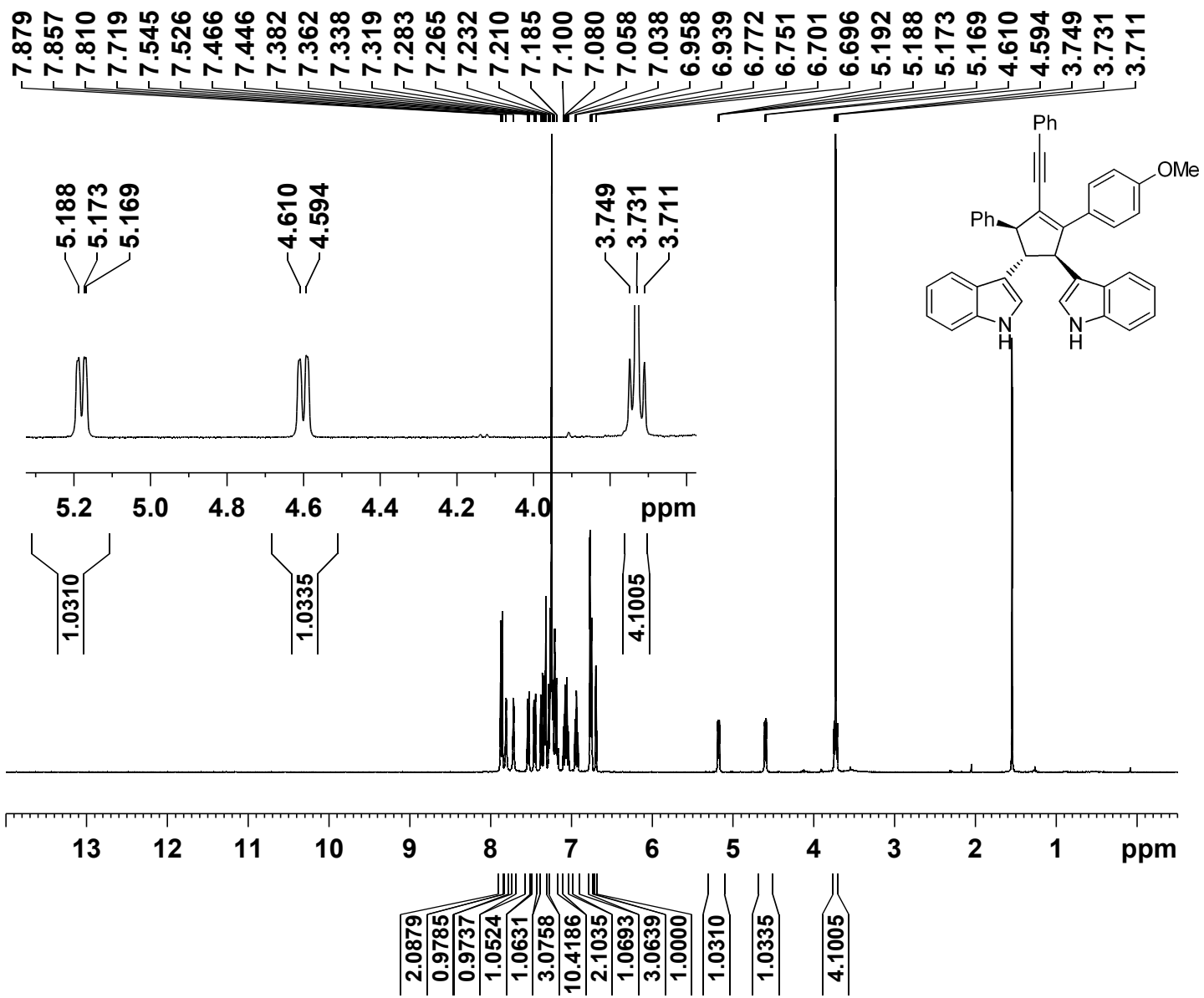
F2 - Acquisition Parameters
Date_ 20170710
Time 17.28
INSTRUM spect
PROBHD 5 mm BBO BB-1H
PULPROG zgpg30
TD 32768
SOLVENT CDCl3
NS 1000
DS 0
SWH 24038.461 Hz
FIDRES 0.733596 Hz
AQ 0.6815744 sec
RG 5792.6
DW 20.800 usec
DE 6.50 usec
TE 300.2 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

======== CHANNEL f1 ========
NUC1 13C
P1 10.45 usec
PL1 7.00 dB
SFO1 100.6233325 MHz

======== CHANNEL f2 ========
CPDPRG[2 waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 1.80 dB
PL12 15.68 dB
PL13 20.00 dB
SFO2 400.1316005 MHz

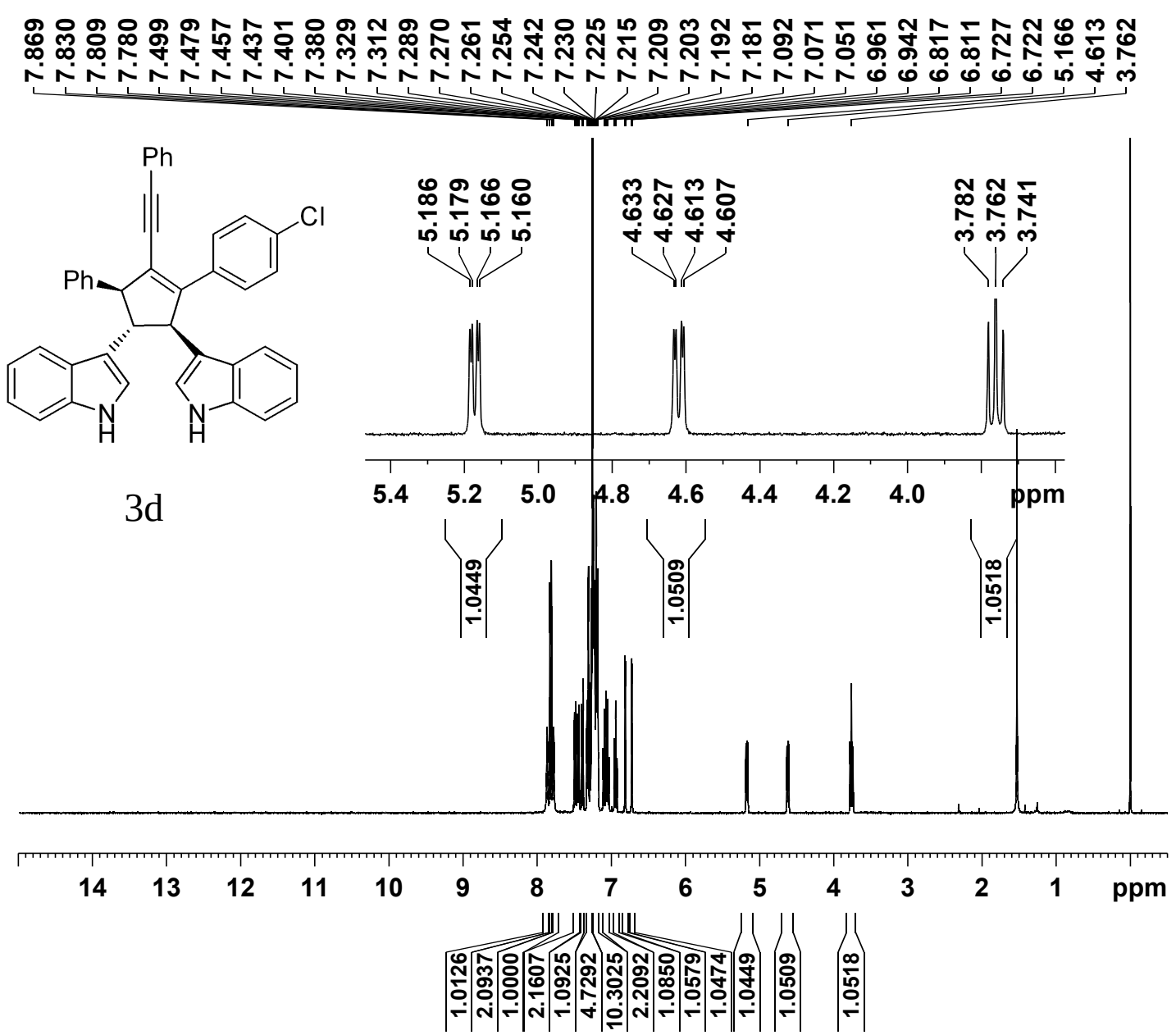
F2 - Processing parameters
SI 32768
SF 100.6127481 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.00

3,3'-(3-(4-methoxyphenyl)-5-phenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(1H-indole) (3c)



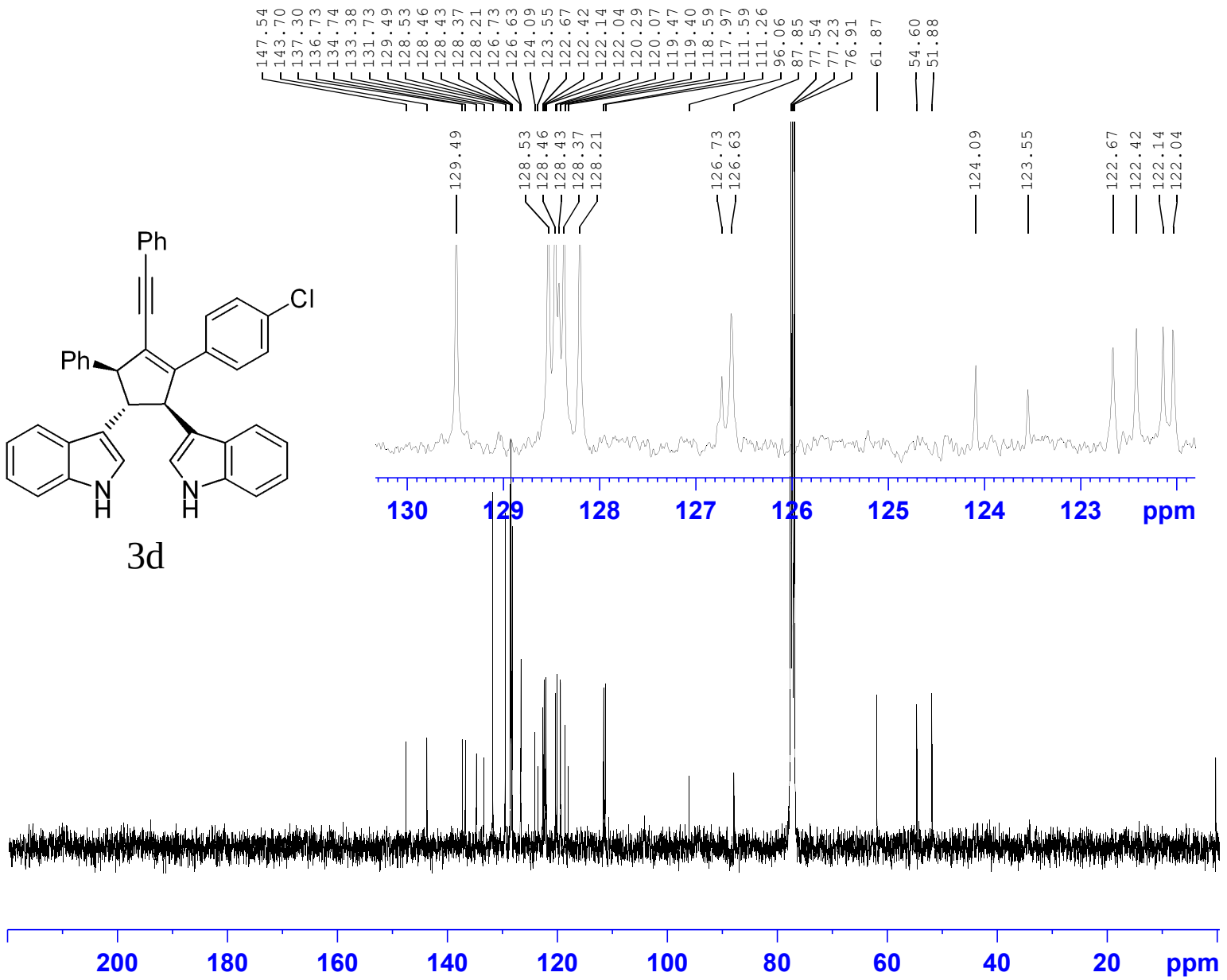

```
Current Data Parameters
NAME                  test
EXPNO                   13
PROCNO                   1

F2 - Acquisition Parameters
Date_              20170711
Time                  15.12
INSTRUM               spect
PROBHD   5 mm BBO BB-1H
PULPROG                zg30
TD                    32768
SOLVENT               CDCl3
NS                       32
DS                        0
SWH                7246.377 Hz
FIDRES            0.221142 Hz
AQ                2.2609921 sec
RG                    161.3
DW                   69.000 usec
DE                    6.50 usec
TE                   298.1 K
D1              2.00000000 sec
TD0                      1

======== CHANNEL f1 ========
NUC1                     1H
P1                   16.80 usec
PL1                   1.80 dB
SFO1          400.1324008 MHz

F2 - Processing parameters
SI                    16384
SF            400.1300118 MHz
WDW                      EM
SSB       0
LB        0 Hz
GB        0
PC                    1.00
```

3,3'-(3-(4-chlorophenyl)-5-phenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(1H-indole) (3d)




```
Current Data Parameters
NAME                      try
EXPNO                      88
PROCNO                      1

F2 - Acquisition Parameters
Date_              20180718
Time                  19.09
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG                zg30
TD                    32768
SOLVENT               CDCl3
NS                       33
DS                        0
SWH                7211.539 Hz
FIDRES            0.220079 Hz
AQ                2.2719147 sec
RG                   198.09
DW                   69.333 usec
DE                   10.50 usec
TE                   299.5 K
D1              2.00000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1          400.1324008 MHz
NUC1                    1H
P1                   12.90 usec
PLW1          15.00000000 W

F2 - Processing parameters
SI                    16384
SF            400.1300116 MHz
WDW                     EM
SSB       0
LB        0 Hz
GB        0
PC                    1.00
```

3,3'-(3-(4-chlorophenyl)-5-phenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(1H-indole) (3d)



Current Data Parameters

NAME	try
EXPNO	91
PROCNO	1

F2 - Acquisition Parameters

Date_	20180718
Time	21.59
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	32768
SOLVENT	CDCl3
NS	2772
DS	0
SWH	24038.461 Hz
FIDRES	0.733596 Hz
AQ	0.6815744 sec
RG	198.09
DW	20.800 usec
DE	6.50 usec
TE	299.5 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1

======== CHANNEL f1 ========

SFO1	100.6228298 MHz
NUC1	13C
P1	10.00 usec
PLW1	47.50000000 W

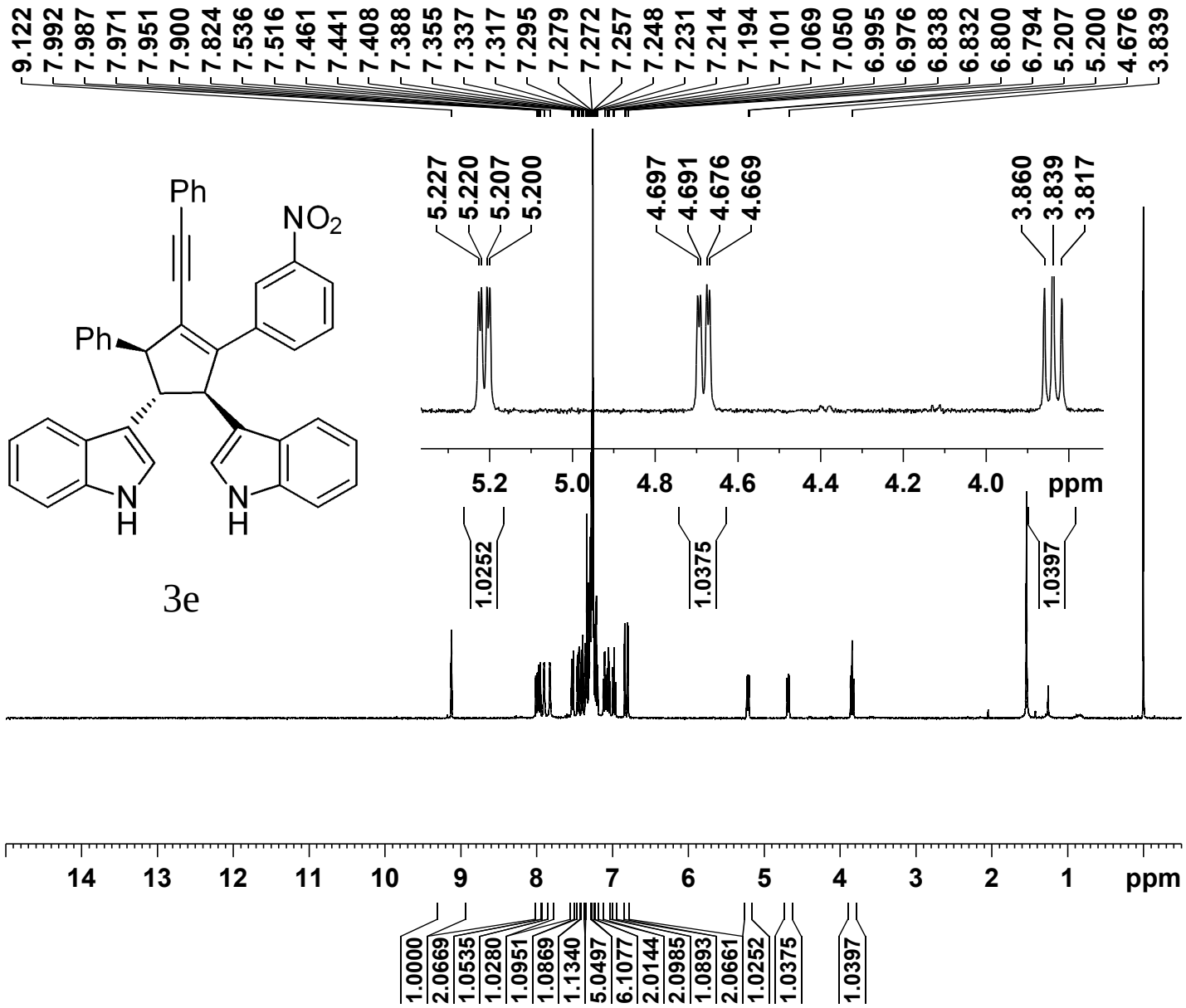
======== CHANNEL f2 ========

SFO2	400.1316005 MHz
NUC2	1H
CPDPRG[2	waltz16
PCPD2	90.00 usec
PLW2	15.00000000 W
PLW12	0.33750001 W
PLW13	0.27338001 W

F2 - Processing parameters

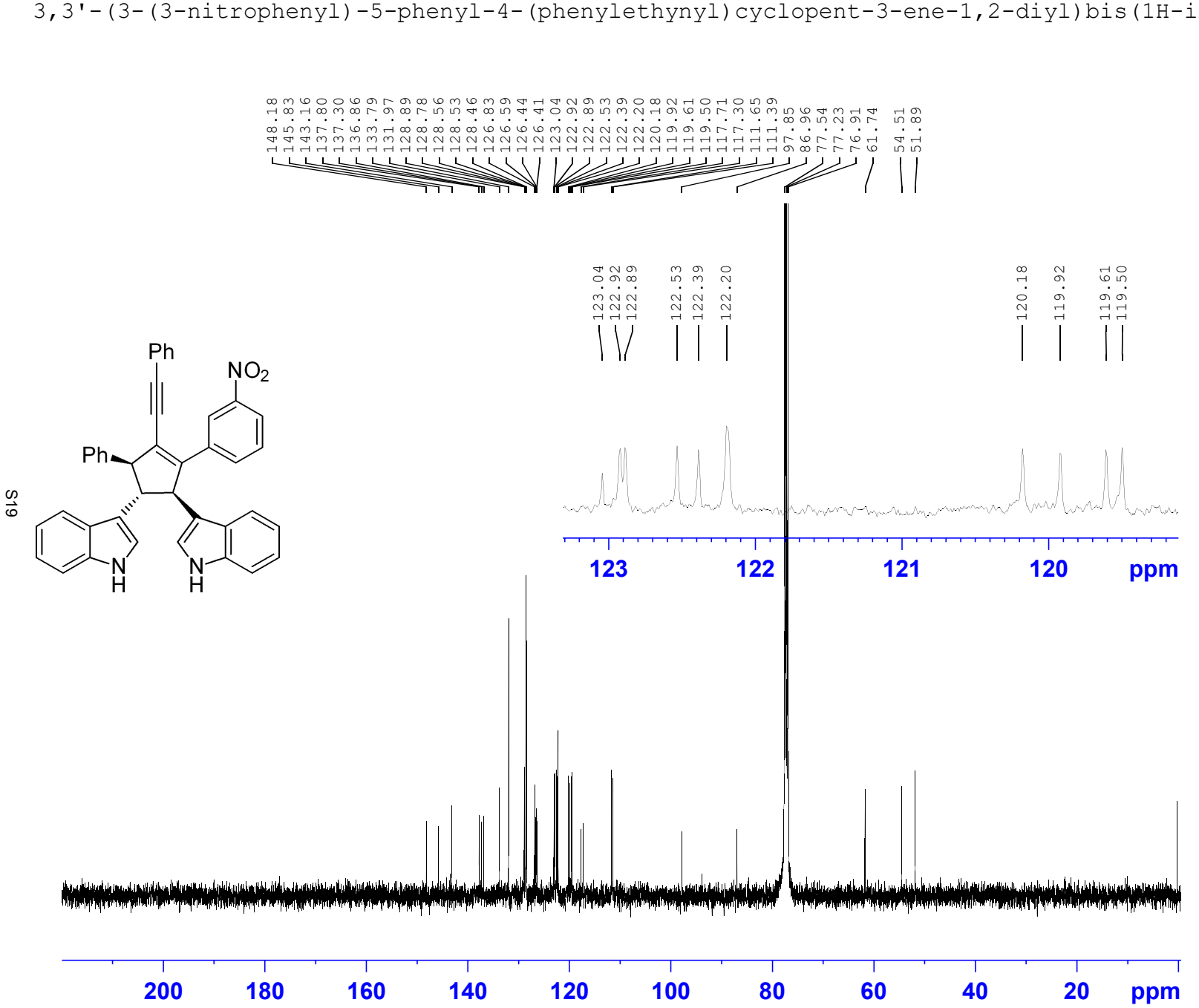
SI	32768
SF	100.6127468 MHz
WDW	EM
SSB	0
LB	2.00 Hz
GB	0
PC	1.00

3,3'-(3-(3-nitrophenyl)-5-phenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(1H-indole) (3e)




```
Current Data Parameters
NAME                  try
EXPNO                 101
PROCNO                  1

F2 - Acquisition Parameters
Date_            20180807
Time                14.43
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  32768
SOLVENT             CDCl3
NS                     32
DS                      0
SWH              7211.539 Hz
FIDRES           0.220079 Hz
AQ               2.2719147 sec
RG                 198.09
DW                69.333 usec
DE                10.50 usec
TE                297.6 K
D1             2.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1         400.1324008 MHz
NUC1                   1H
P1                  12.90 usec
PLW1         15.00000000 W

F2 - Processing parameters
SI                  16384
SF           400.1300107 MHz
WDW                    EM
SSB       0
LB        0 Hz
GB        0
PC                   1.00
```

3,3'-(3-(3-nitrophenyl)-5-phenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(1H-indole) (3e)



Current Data Parameters
NAME test
EXPNO 57
PROCNO 1

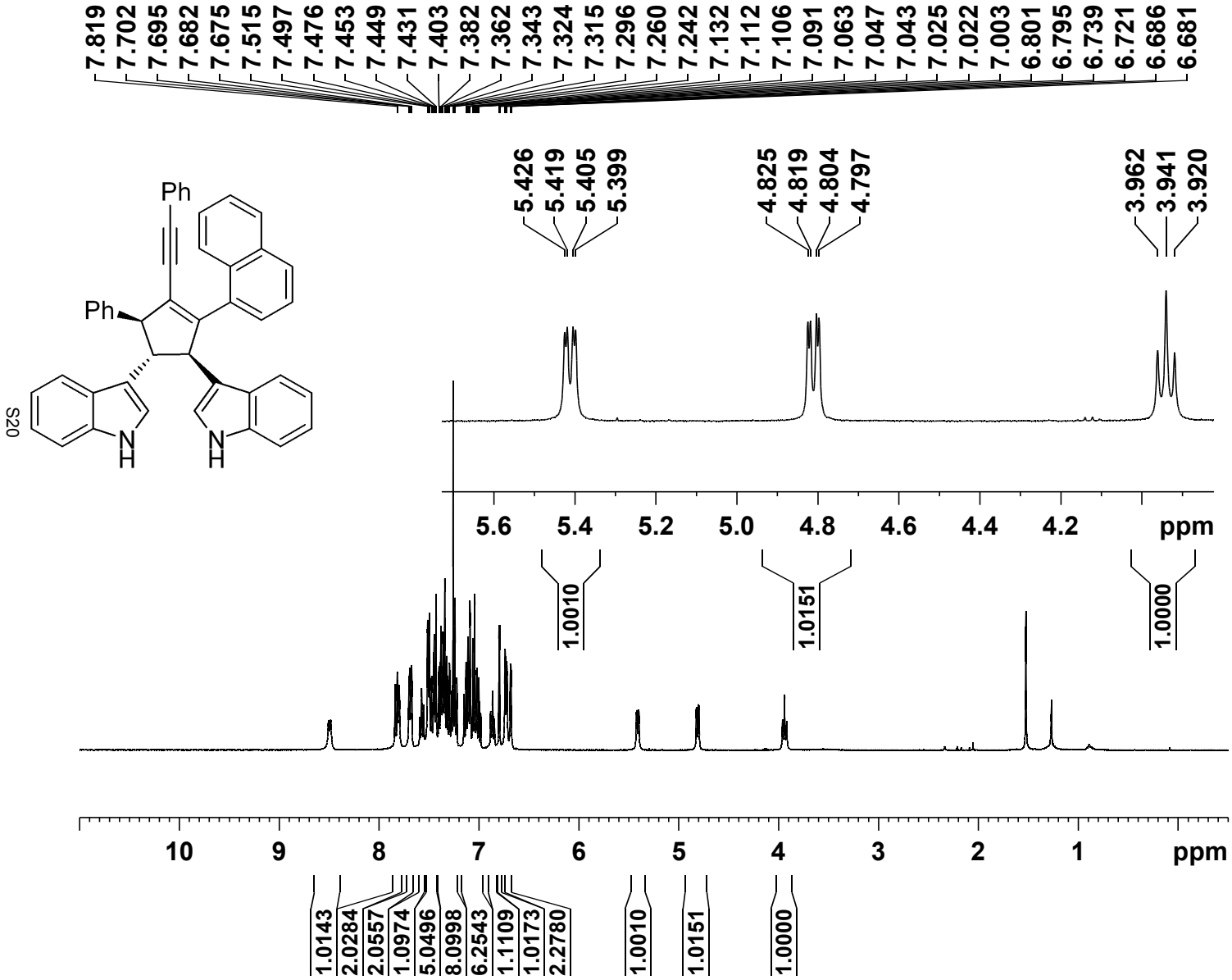
F2 - Acquisition Parameters
Date_ 20170928
Time 22.37
INSTRUM spect
PROBHD 5 mm BBO BB-1H
PULPROG zgpg30
TD 32768
SOLVENT CDCl3
NS 10000
DS 0
SWH 24038.461 Hz
FIDRES 0.733596 Hz
AQ 0.6815744 sec
RG 5792.6
DW 20.800 usec
DE 6.50 usec
TE 298.2 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

======== CHANNEL f1 ========
NUC1 13C
P1 10.45 usec
PL1 7.00 dB
SFO1 100.6233325 MHz

======== CHANNEL f2 ========
CPDPRG[2 waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 0 dB
PL12 15.00 dB
PL13 20.00 dB
SFO2 400.1316005 MHz

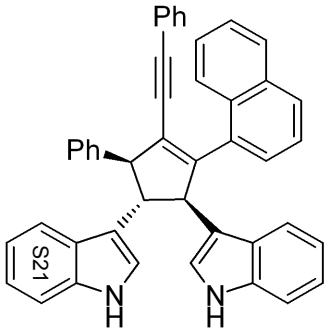
F2 - Processing parameters
SI 32768
SF 100.6127474 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.00

3,3'-(3-(naphthalen-1-yl)-5-phenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(1H-indole) (3f)




```
Current Data Parameters
NAME                  try
EXPNO                 892
PROCNO                  1

F2 - Acquisition Parameters
Date_           20170810
Time              22.45
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                   64
DS                    0
SWH            7211.539 Hz
FIDRES         0.220079 Hz
AQ            2.2719147 sec
RG                128.9
DW               69.333 usec
DE                10.50 usec
TE                298.6 K
D1           2.00000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         400.1324008 MHz
NUC1                 1H
P1                12.90 usec
PLW1         15.00000000 W

F2 - Processing parameters
SI                16384
SF           400.1300100 MHz
WDW                  EM
SSB       0
LB        0 Hz
GB        0
PC                 1.00
```

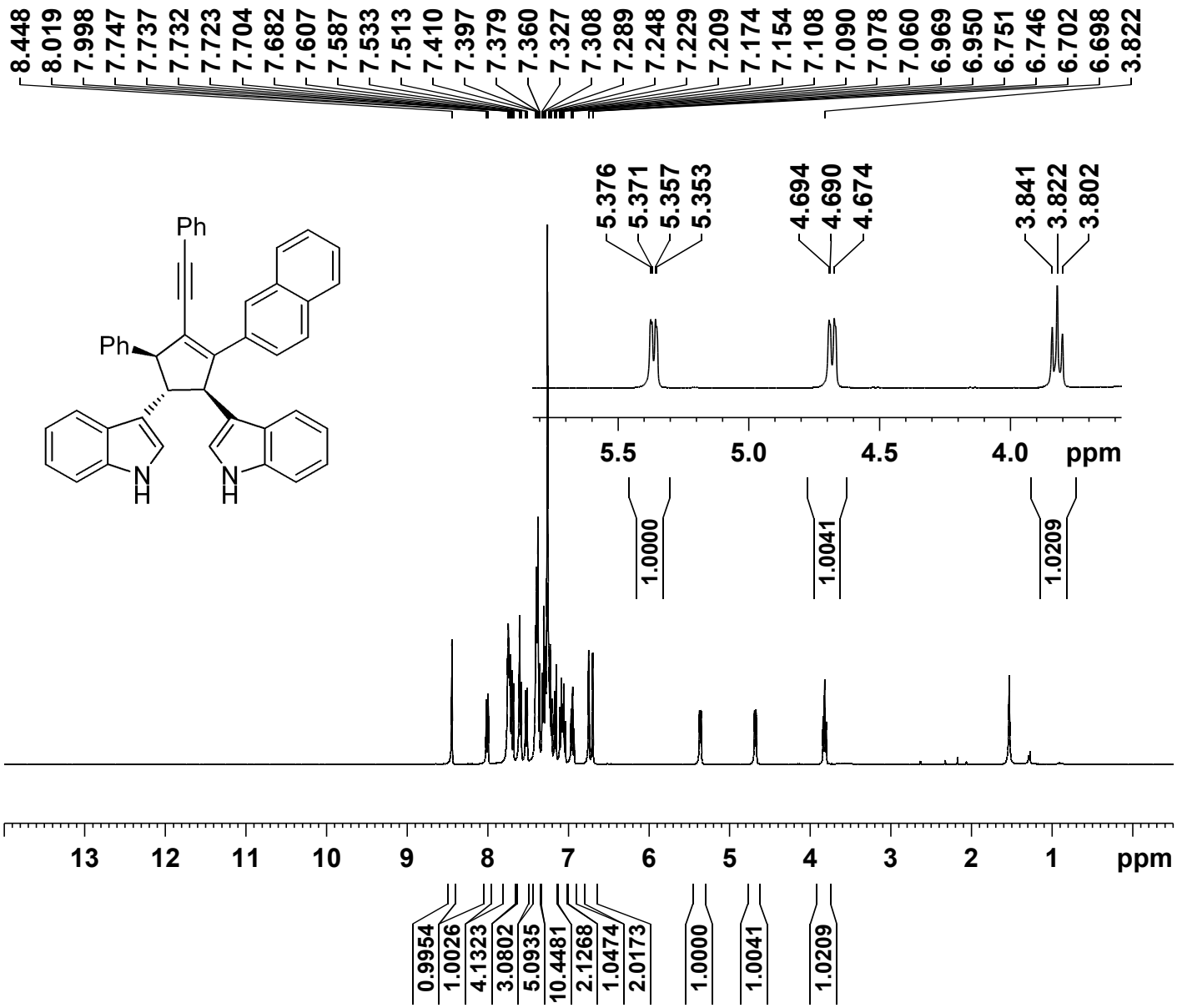
3,3'-(3-(naphthalen-1-yl)-5-phenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(1H-indole) (3f)



BRUKER

```
Current Data Parameters
NAME                  try
EXPNO                 893
PROCNO                  1

F2 - Acquisition Parameters
Date_            20170810
Time                22.50
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 32768
SOLVENT            CDCl3
NS                  1500
DS                     0
SWH           24038.461 Hz
FIDRES         0.733596 Hz
AQ             0.6815744 sec
RG                198.09
DW                20.800 usec
DE                 6.50 usec
TE                298.7 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         100.6228298 MHz
NUC1                13C
P1                10.00 usec
PLW1         47.50000000 W

======== CHANNEL f2 ========
SFO2         400.1316005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2         15.00000000 W
PLW12         0.33750001 W
PLW13         0.27338001 W

F2 - Processing parameters
SI                 32768
SF           100.6127479 MHz
WDW                  EM
SSB       0
LB                 2.00 Hz
GB        0
PC                 1.00
```

3,3'-(3-(naphthalen-2-yl)-5-phenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(1H-indole) (3g)



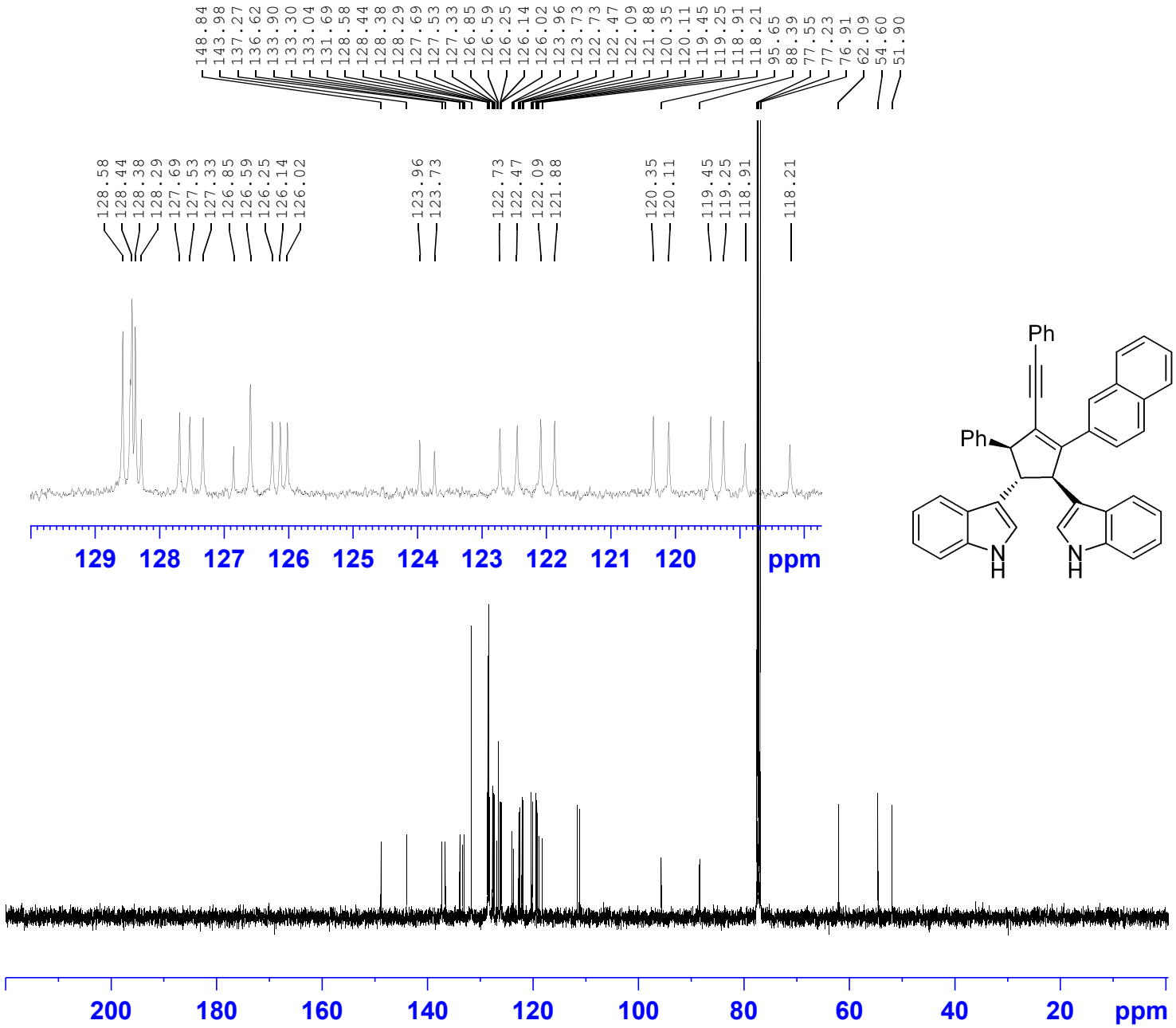
Current Data Parameters
NAME test
EXPNO 36
PROCNO 1

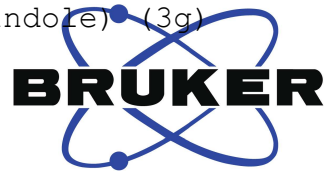
F2 - Acquisition Parameters
Date_ 20170901
Time 16.30
INSTRUM spect
PROBHD 5 mm BBO BB-1H
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 64
DS 0
SWH 7246.377 Hz
FIDRES 0.221142 Hz
AQ 2.2609921 sec
RG 114
DW 69.000 usec
DE 6.50 usec
TE 297.5 K
D1 2.00000000 sec
TD0 1

======== CHANNEL f1 ========
NUC1 1H
P1 15.00 usec
PL1 0 dB
SFO1 400.1324008 MHz

F2 - Processing parameters
SI 16384
SF 400.1300118 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00

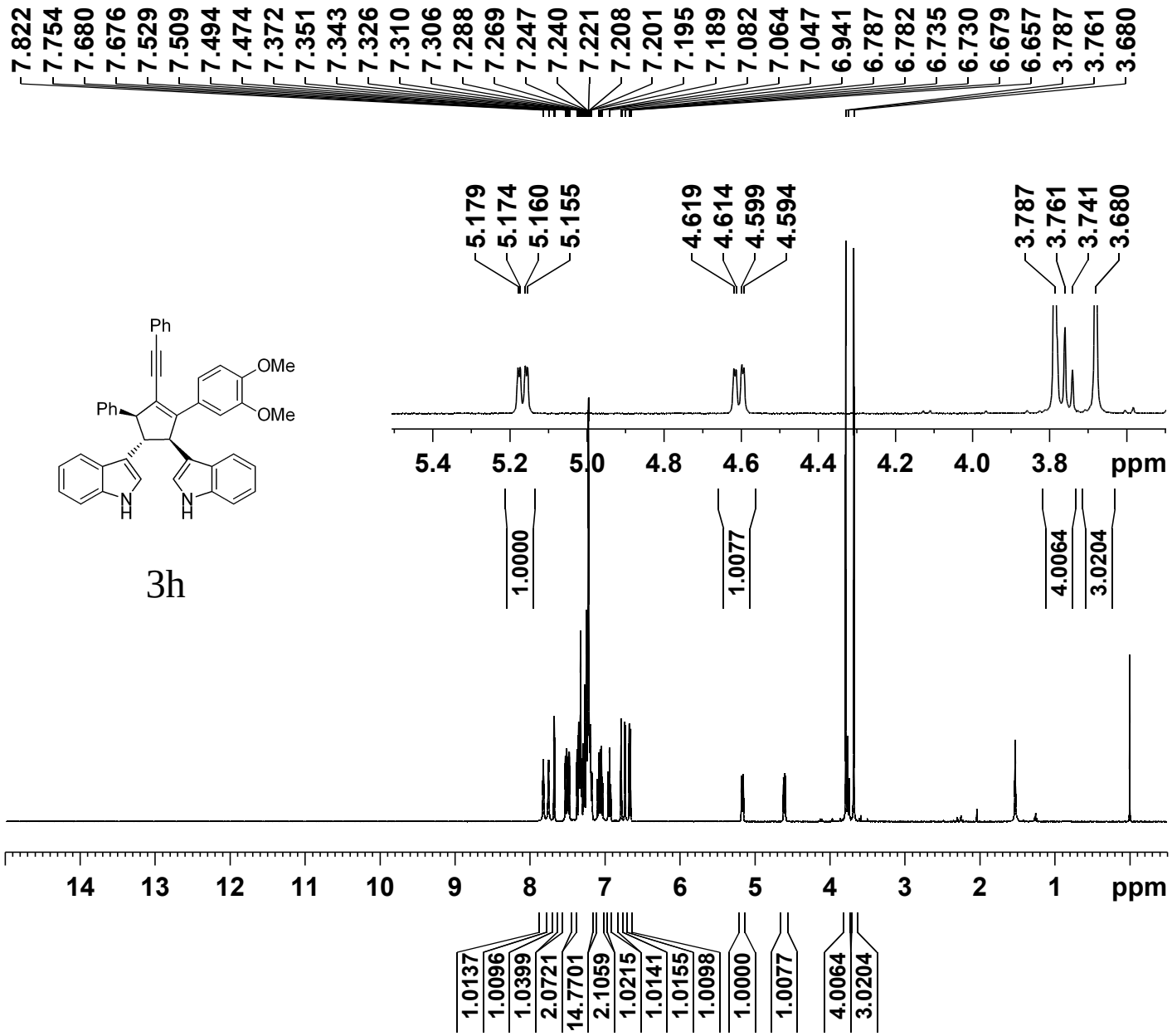
3,3'-(3-(naphthalen-2-yl)-5-phenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(1H-indole) (3g)






```
Current Data Parameters
NAME                  test
EXPNO                   37
PROCNO                   1

F2 - Acquisition Parameters
Date_              20170901
Time                 16.34
INSTRUM              spect
PROBHD    5 mm BBO BB-1H
PULPROG             zgpg30
TD                   32768
SOLVENT              CDCl3
NS                     372
DS                       0
SWH              24038.461 Hz
FIDRES           0.733596 Hz
AQ               0.6815744 sec
RG                  5792.6
DW                   20.800 usec
DE                    6.50 usec
TE                   297.6 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
NUC1                   13C
P1                   10.45 usec
PL1                   7.00 dB
SFO1         100.6233325 MHz

======== CHANNEL f2 ========
CPDPRG[2           waltz16
NUC2                   1H
PCPD2                90.00 usec
PL2        0 dB
PL12                 15.00 dB
PL13                 20.00 dB
SFO2         400.1316005 MHz

F2 - Processing parameters
SI                   32768
SF           100.6127521 MHz
WDW                    EM
SSB        0
LB                    1.00 Hz
GB         0
PC                    1.00
```

3,3'-(3-(3,4-dimethoxyphenyl)-5-phenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(1H-indole) (3h)



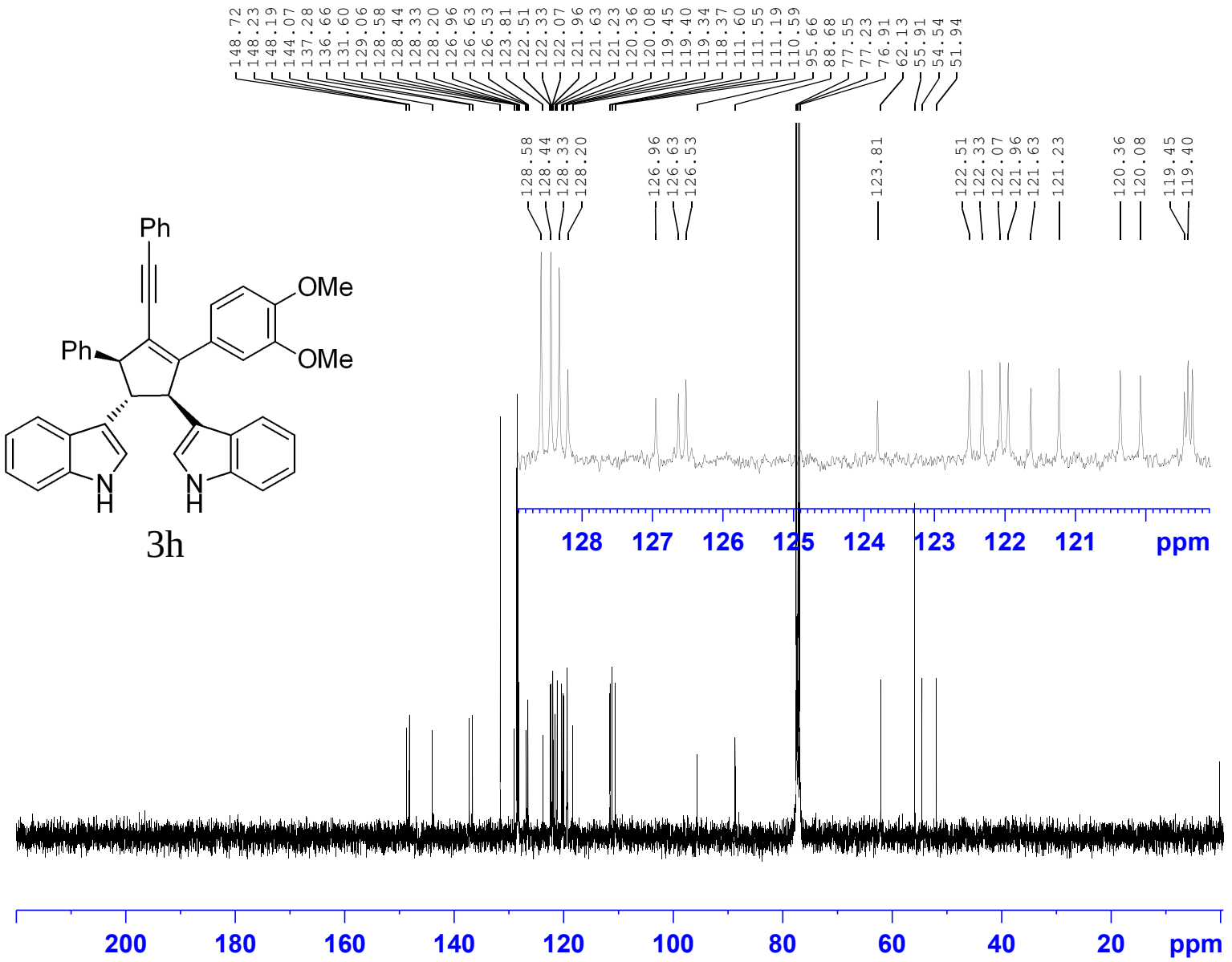
Current Data Parameters
NAME try
EXPNO 85
PROCNO 1

F2 - Acquisition Parameters
Date_ 20180717
Time 19.40
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 32
DS 0
SWH 7211.539 Hz
FIDRES 0.220079 Hz
AQ 2.2719147 sec
RG 177.16
DW 69.333 usec
DE 10.50 usec
TE 298.9 K
D1 2.00000000 sec
TD0 1

======== CHANNEL f1 ========
SFO1 400.1324008 MHz
NUC1 1H
P1 12.90 usec
PLW1 15.00000000 W

F2 - Processing parameters
SI 16384
SF 400.1300147 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00

3,3'-(3-(3,4-dimethoxyphenyl)-5-phenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(1H-indole) (3h)



S25

BRUKER

Current Data Parameters
NAME test
EXPNO 69
PROCNO 1

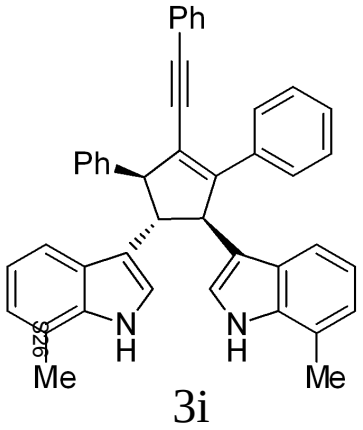
F2 - Acquisition Parameters
Date_ 20180102
Time 23.09
INSTRUM spect
PROBHD 5 mm BBO BB-1H
PULPROG zgpg30
TD 32768
SOLVENT CDCl3
NS 965
DS 0
SWH 24038.461 Hz
FIDRES 0.733596 Hz
AQ 0.6815744 sec
RG 5792.6
DW 20.800 usec
DE 6.50 usec
TE 298.6 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

======== CHANNEL f1 ========
NUC1 13C
P1 10.45 usec
PL1 7.00 dB
SFO1 100.6233325 MHz

======== CHANNEL f2 ========
CPDPRG[2 waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 0 dB
PL12 15.00 dB
PL13 20.00 dB
SFO2 400.1316005 MHz

F2 - Processing parameters
SI 32768
SF 100.6127484 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.00

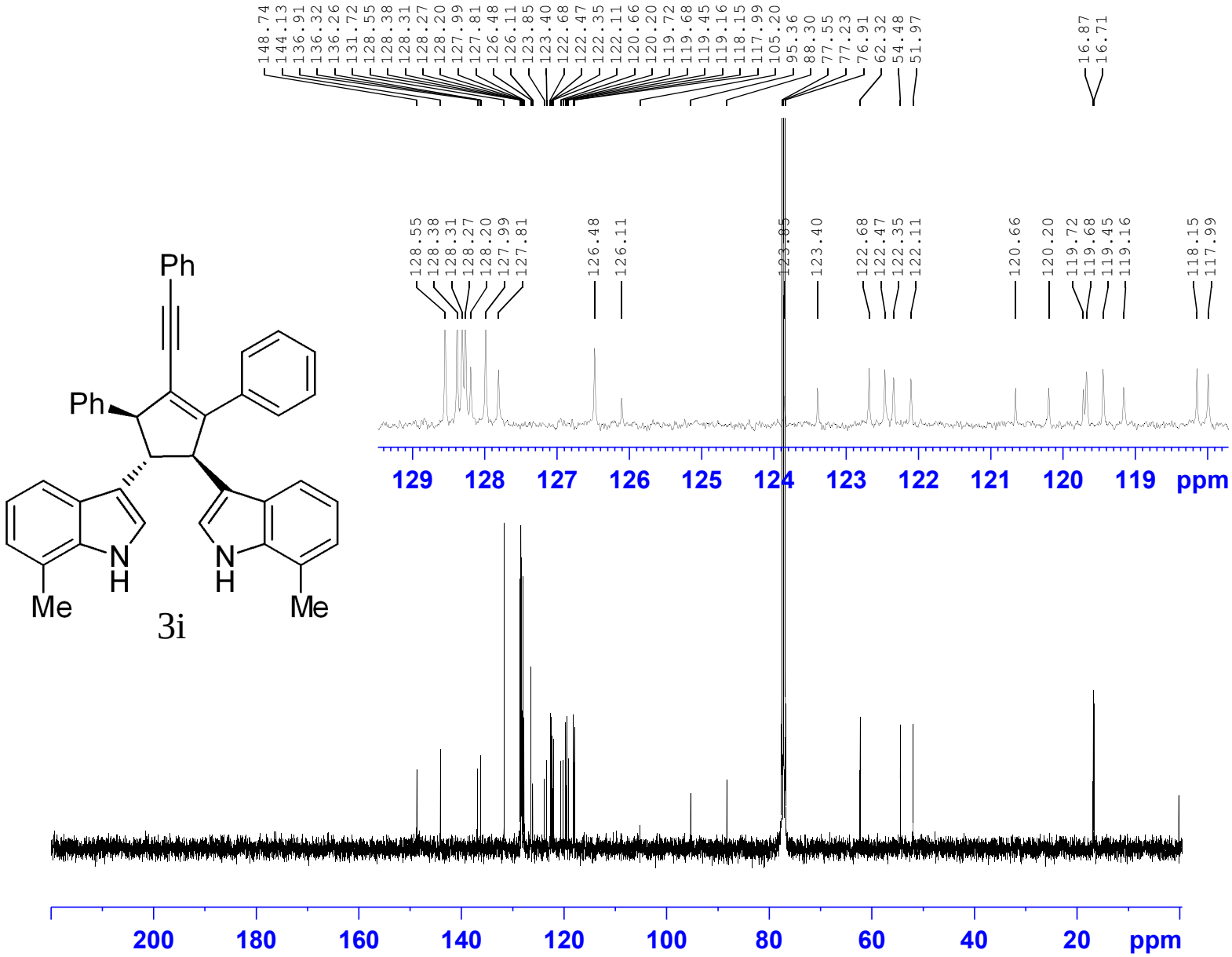
3,3'-(3,5-diphenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(7-methyl-1H-indole) (3i)



3i


```
Current Data Parameters
NAME                  test
EXPNO                  118
PROCNO                   1

F2 - Acquisition Parameters
Date_              20180606
Time                 15.18
INSTRUM              spect
PROBHD   5 mm BBO BB-1H
PULPROG               zg30
TD                   32768
SOLVENT              CDCl3
NS                      64
DS                       0
SWH               7246.377 Hz
FIDRES            0.221142 Hz
AQ                2.2609921 sec
RG                     181
DW                  69.000 usec
DE                   6.50 usec
TE                  300.1 K
D1              2.00000000 sec
TD0                      1

======== CHANNEL f1 ========
NUC1                    1H
P1                   15.00 usec
PL1       0 dB
SFO1          400.1324008 MHz

F2 - Processing parameters
SI                   16384
SF            400.1300118 MHz
WDW                     EM
SSB       0
LB        0 Hz
GB        0
PC                    1.00
```

3,3'-(3,5-diphenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(7-methyl-1H-indole) (3i)



NAME	test
EXPNO	67
PROCNO	1

F2 - Acquisition Parameters

Date_	20180102
Time	21.57
INSTRUM	spect
PROBHD	5 mm BBO BB-1H
PULPROG	zgpg30
TD	32768
SOLVENT	CDCl3
NS	1319
DS	0
SWH	24038.461 Hz
FIDRES	0.733596 Hz
AQ	0.6815744 sec
RG	5792.6
DW	20.800 usec
DE	6.50 usec
TE	298.5 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1

======== CHANNEL f1 ========

NUC1	13C
P1	10.45 usec
PL1	7.00 dB
SFO1	100.6233325 MHz

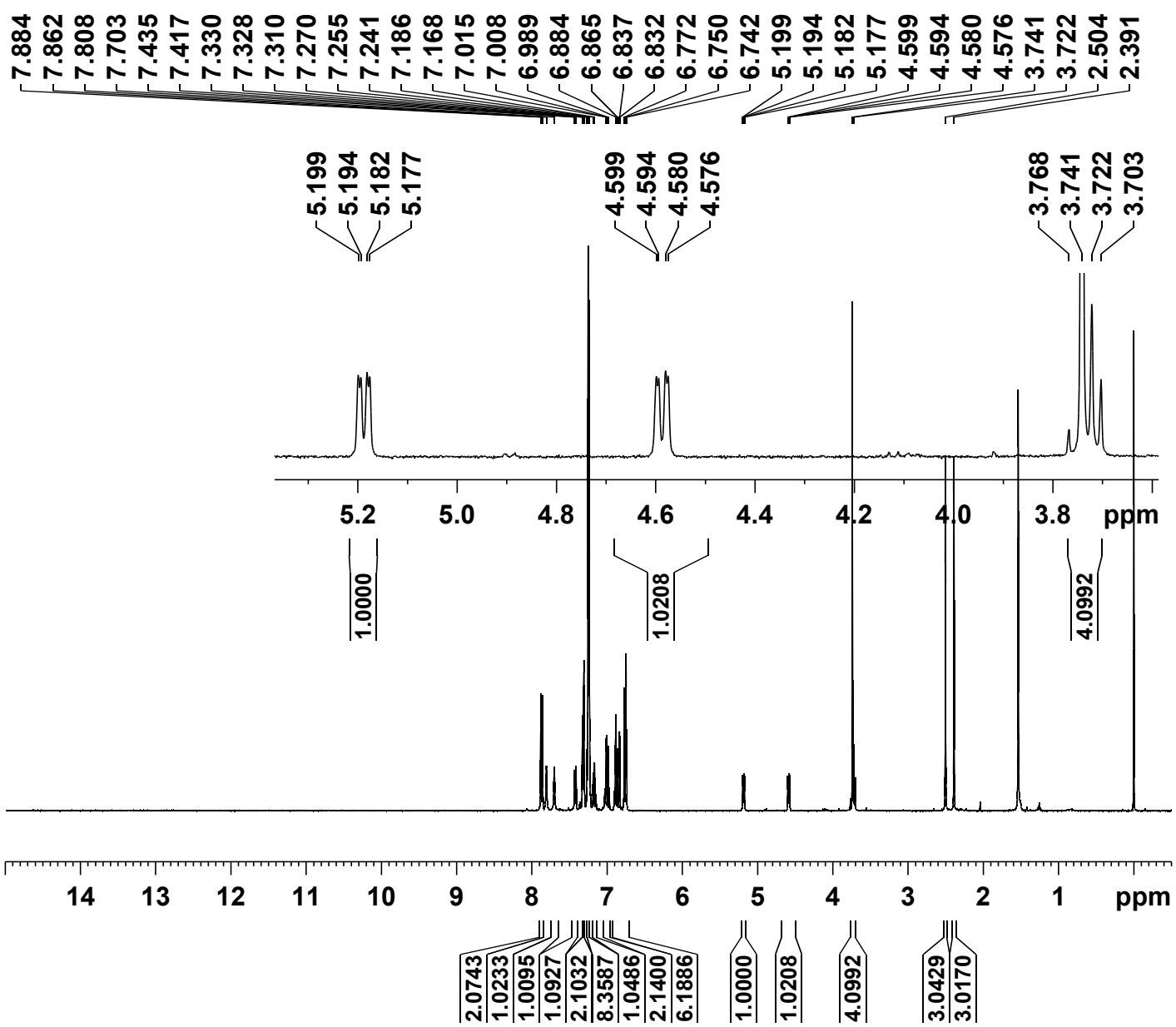
======== CHANNEL f2 ========

CPDPRG[2	waltz16
NUC2	1H
PCPD2	90.00 usec
PL2	0 dB
PL12	15.00 dB
PL13	20.00 dB
SFO2	400.1316005 MHz

F2 - Processing parameters

SI	32768
SF	100.6127477 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.00

3,3'-(3-(4-methoxyphenyl)-5-phenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(7-methyl-1H-indole) (3j)



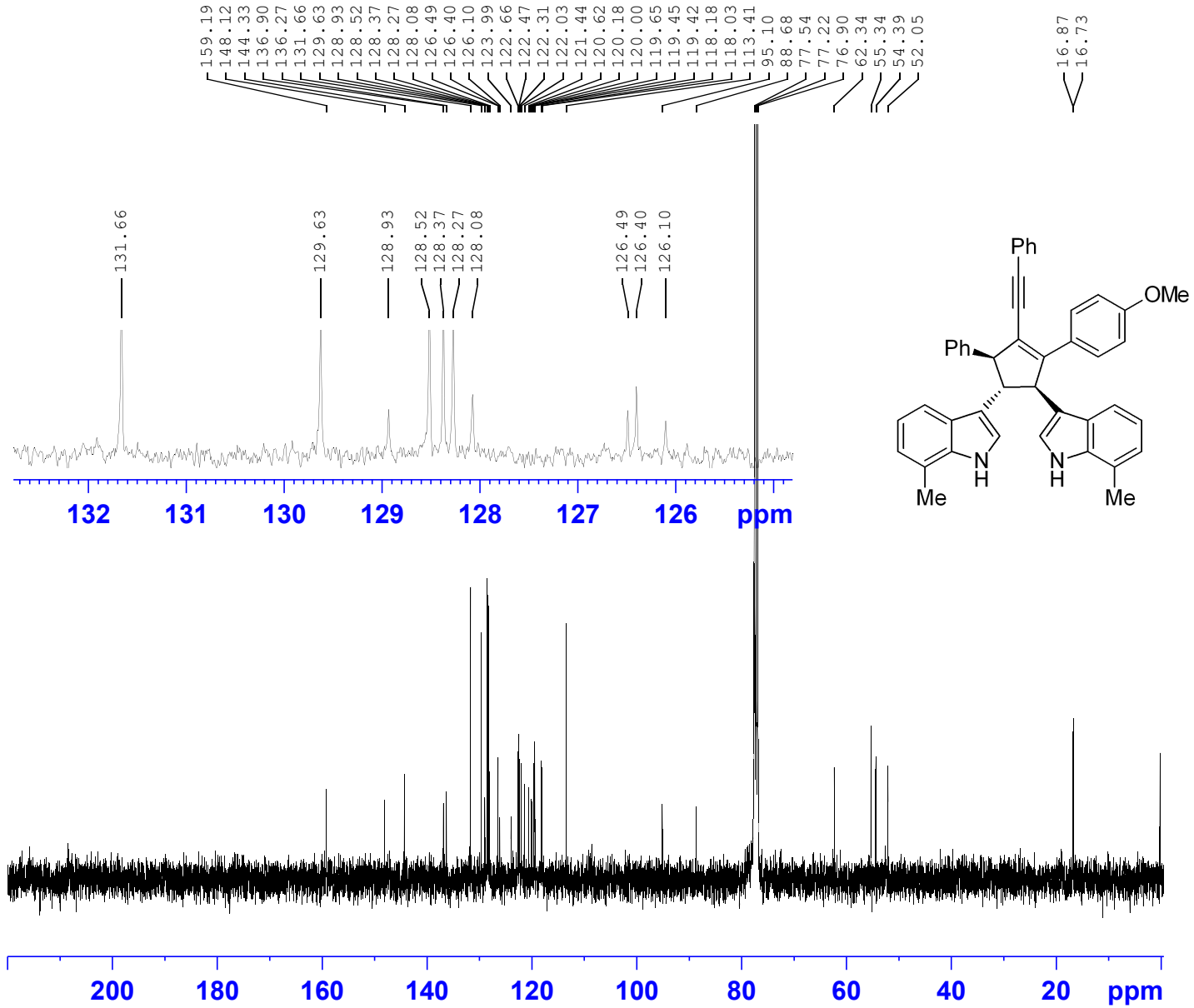
Current Data Parameters
NAME try
EXPNO 84
PROCNO 1

F2 - Acquisition Parameters
Date_ 20180717
Time 19.35
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 30
DS 0
SWH 7211.539 Hz
FIDRES 0.220079 Hz
AQ 2.2719147 sec
RG 198.09
DW 69.333 usec
DE 10.50 usec
TE 299.0 K
D1 2.00000000 sec
TD0 1

======== CHANNEL f1 ========
SFO1 400.1324008 MHz
NUC1 1H
P1 12.90 usec
PLW1 15.00000000 W

F2 - Processing parameters
SI 16384
SF 400.1300112 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00

3,3'-(3-(4-methoxyphenyl)-5-phenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(7-methyl-1H-indole) (3j)



Current Data Parameters
NAME test
EXPNO 80
PROCNO 1

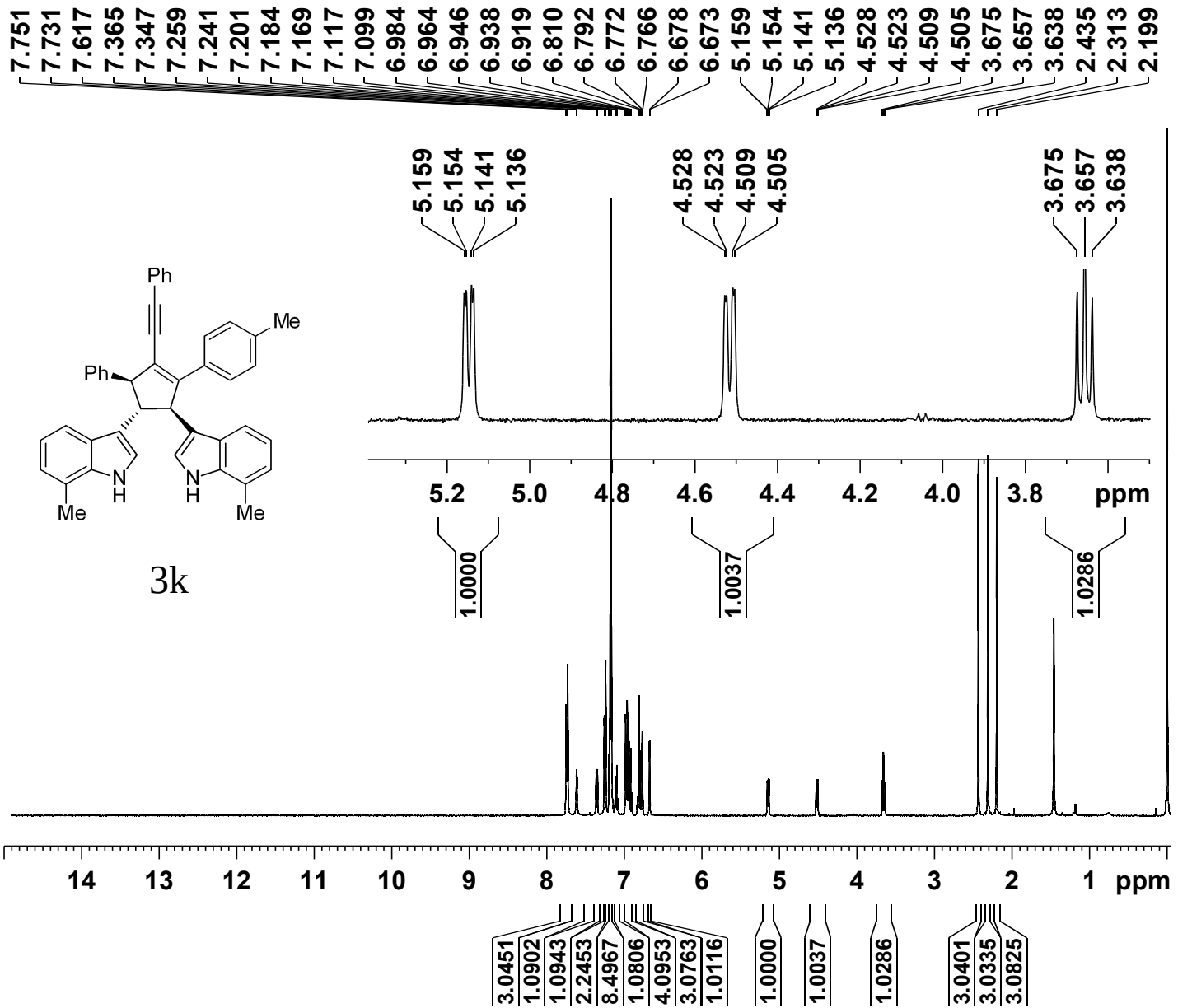
F2 - Acquisition Parameters
Date_ 20180114
Time 20.25
INSTRUM spect
PROBHD 5 mm BBO BB-1H
PULPROG zgpg30
TD 32768
SOLVENT CDCl3
NS 2000
DS 0
SWH 24038.461 Hz
FIDRES 0.733596 Hz
AQ 0.6815744 sec
RG 8192
DW 20.800 usec
DE 6.50 usec
TE 298.6 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

======== CHANNEL f1 ========
NUC1 13C
P1 10.45 usec
PL1 7.00 dB
SFO1 100.6233325 MHz

======== CHANNEL f2 ========
CPDPRG[2 waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 0 dB
PL12 15.00 dB
PL13 20.00 dB
SFO2 400.1316005 MHz

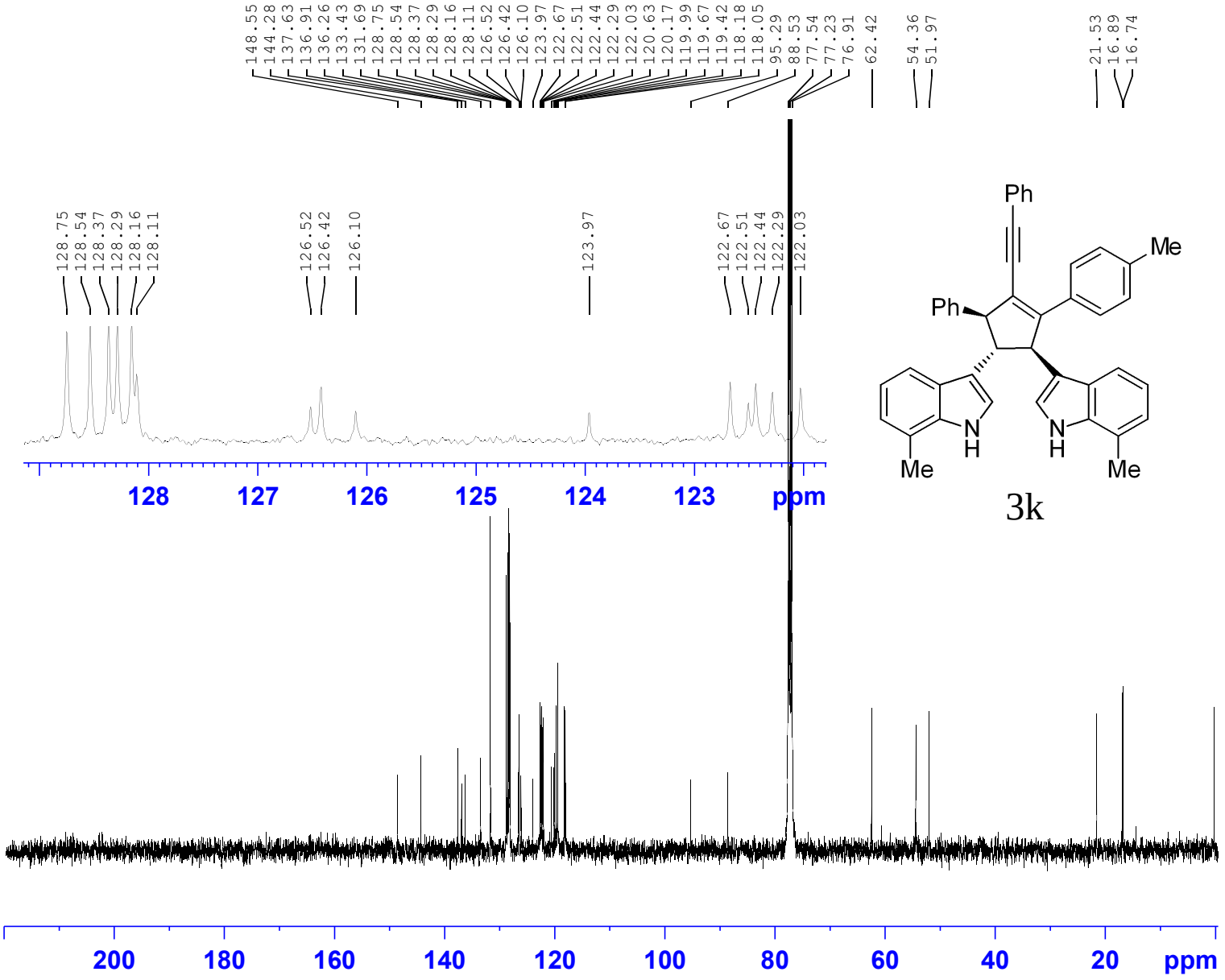
F2 - Processing parameters
SI 32768
SF 100.6127477 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.00

3,3'-(5-phenyl-4-(phenylethynyl)-3-(p-tolyl)cyclopent-3-ene-1,2-diyl)bis(7-methyl-1H-indole) (3k)




```
Current Data Parameters
NAME                      try
EXPNO                     129
PROCNO                      1

F2 - Acquisition Parameters
Date_              20180815
Time                  22.12
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG                zg30
TD                    32768
SOLVENT               CDCl3
NS                       33
DS                        0
SWH                7211.539 Hz
FIDRES            0.220079 Hz
AQ                2.2719147 sec
RG                   198.09
DW                   69.333 usec
DE                   10.50 usec
TE                   298.0 K
D1              2.00000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1          400.1324008 MHz
NUC1                    1H
P1                   12.90 usec
PLW1          15.00000000 W

F2 - Processing parameters
SI                    16384
SF            400.1300398 MHz
WDW                     EM
SSB       0
LB        0 Hz
GB        0
PC                    1.00
```

3,3'-(5-phenyl-4-(phenylethynyl)-3-(p-tolyl)cyclopent-3-ene-1,2-diyl)bis(7-methyl-1H-indole) (3k)



3k

S31

Current Data Parameters

NAME	try
EXPNO	12
PROCNO	1

F2 - Acquisition Parameters

Date_	20180121
Time	7.33
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zgpg30
TD	32768
SOLVENT	CDCl3
NS	4784
DS	0
SWH	24038.461 Hz
FIDRES	0.733596 Hz
AQ	0.6815744 sec
RG	198.09
DW	20.800 usec
DE	6.50 usec
TE	298.2 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1

======== CHANNEL f1 ========

SFO1	100.6228298 MHz
NUC1	13C
P1	10.00 usec
PLW1	47.50000000 W

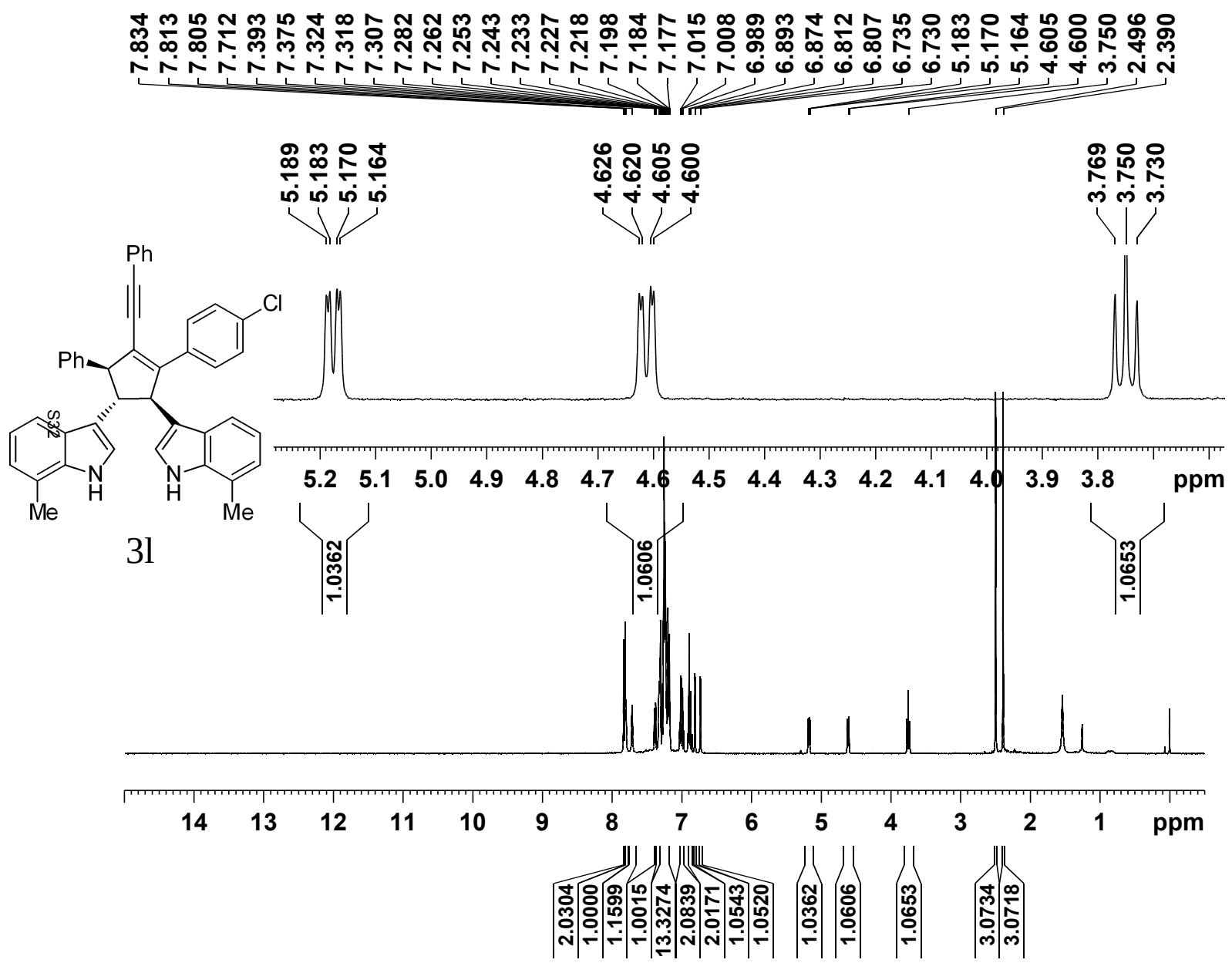
======== CHANNEL f2 ========

SFO2	400.1316005 MHz
NUC2	1H
CPDPRG[2	waltz16
PCPD2	90.00 usec
PLW2	15.00000000 W
PLW12	0.33750001 W
PLW13	0.27338001 W

F2 - Processing parameters

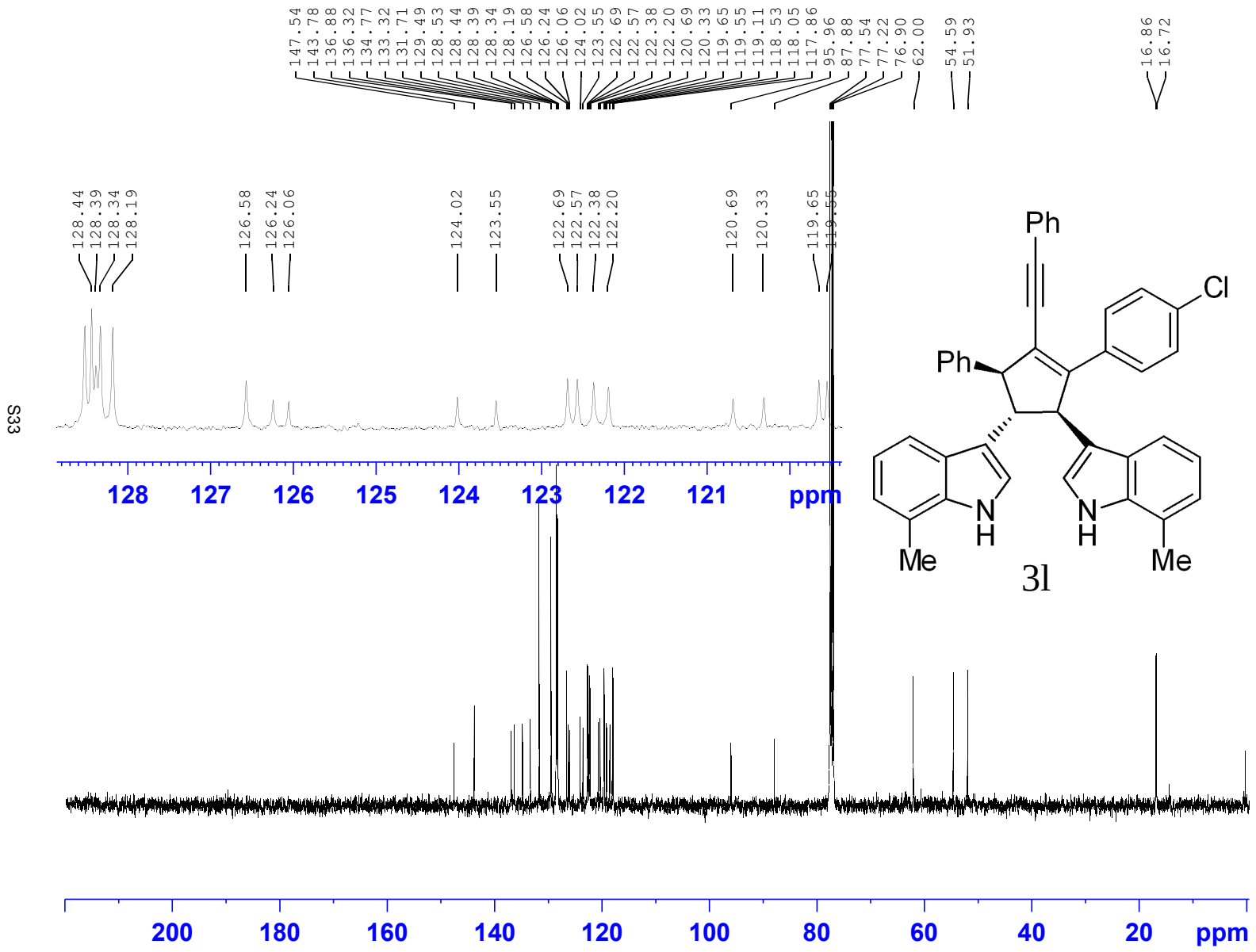
SI	32768
SF	100.6127473 MHz
WDW	EM
SSB	0
LB	2.00 Hz
GB	0
PC	1.00

3,3'-(3-(4-chlorophenyl)-5-phenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(7-methyl-1H-indole) (3l)

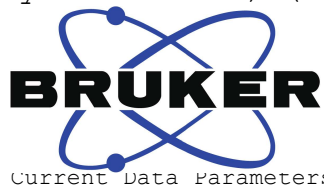



```
Current Data Parameters
NAME                      try
EXPNO                     132
PROCNO                      1

F2 - Acquisition Parameters
Date_              20180817
Time                  20.57
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG                zg30
TD                    32768
SOLVENT               CDCl3
NS                       64
DS                        0
SWH                7211.539 Hz
FIDRES            0.220079 Hz
AQ                2.2719147 sec
RG                   198.09
DW                   69.333 usec
DE                   10.50 usec
TE                   297.9 K
D1               2.00000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1           400.1324008 MHz
NUC1                     1H
P1                    12.90 usec
PLW1           15.00000000 W

F2 - Processing parameters
SI                    16384
SF             400.1300121 MHz
WDW                      EM
SSB       0
LB        0 Hz
GB        0
PC                     1.00
```

3,3'-(3-(4-chlorophenyl)-5-phenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(7-methyl-1H-indole) (3l)

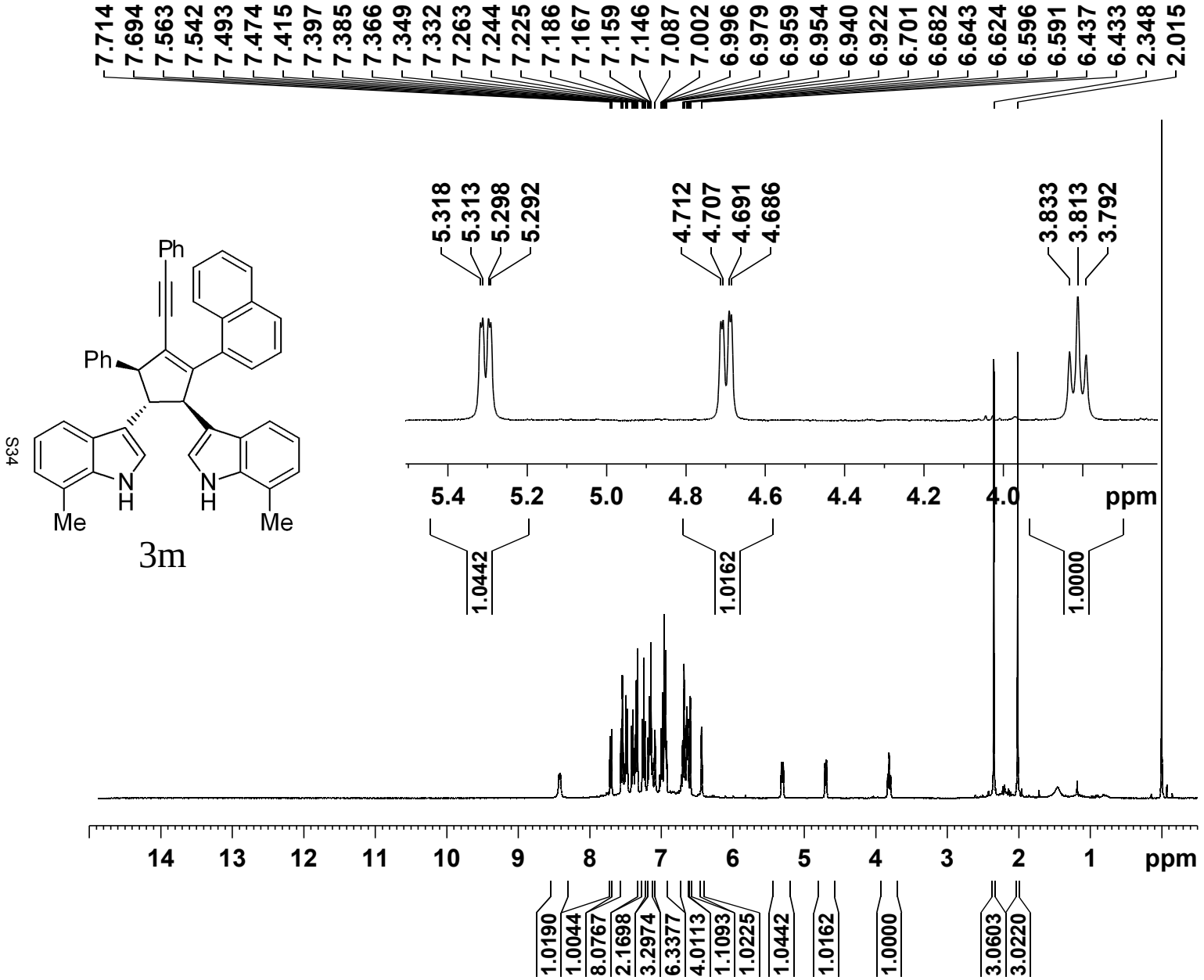


S33



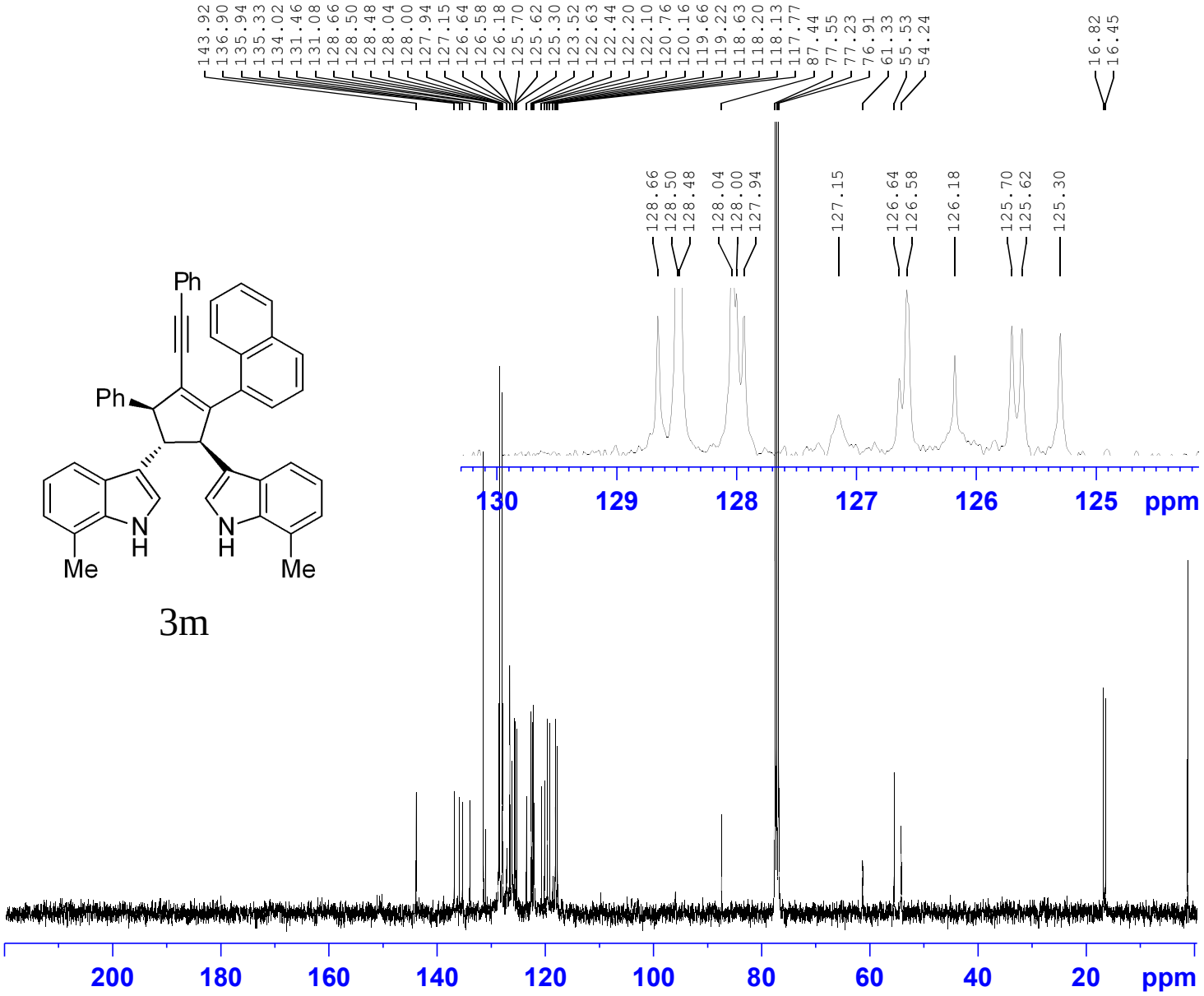
```
Current Data Parameters
NAME                      try
EXPNO                      49
PROCNO                      1

F2 - Acquisition Parameters
Date_              20180224
Time                  21.47
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG              zgpg30
TD                    32768
SOLVENT               CDCl3
NS                     1779
DS                        0
SWH               24038.461 Hz
FIDRES             0.733596 Hz
AQ                 0.6815744 sec
RG                    198.09
DW                    20.800 usec
DE                     6.50 usec
TE                    297.9 K
D1              2.00000000 sec
D11             0.03000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1           100.6228298 MHz
NUC1                    13C
P1                    10.00 usec
PLW1           47.50000000 W

======== CHANNEL f2 ========
SFO2           400.1316005 MHz
NUC2                    1H
CPDPRG[2           waltz16
PCPD2                 90.00 usec
PLW2           15.00000000 W
PLW12           0.33750001 W
PLW13           0.27338001 W

F2 - Processing parameters
SI                    32768
SF               100.6127494 MHz
WDW                      EM
SSB          0
LB                     2.00 Hz
GB           0
PC                     1.00
```

3,3'-(3-(naphthalen-1-yl)-5-phenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(7-methyl-1H-indole) (3m)



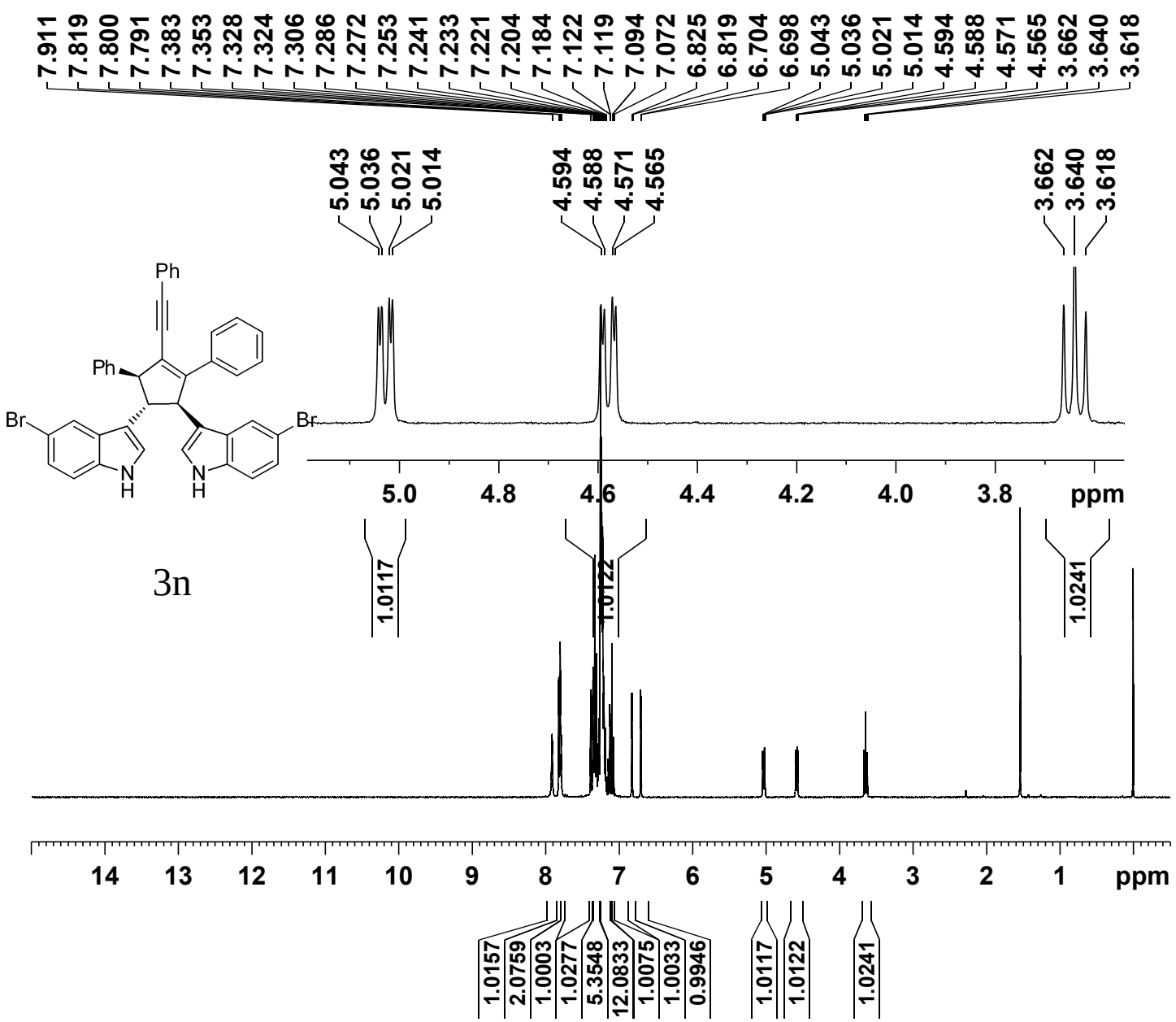

```
Current Data Parameters
NAME                  try
EXPNO                 122
PROCNO                  1

F2 - Acquisition Parameters
Date_            20180812
Time                20.52
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  32768
SOLVENT             CDCl3
NS                     64
DS                      0
SWH              7211.539 Hz
FIDRES           0.220079 Hz
AQ              2.2719147 sec
RG                  63.58
DW                69.333 usec
DE                10.50 usec
TE                297.8 K
D1             2.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1         400.1324008 MHz
NUC1                   1H
P1                  12.90 usec
PLW1         15.00000000 W

F2 - Processing parameters
SI                  16384
SF           400.1300551 MHz
WDW                    EM
SSB       0
LB        0 Hz
GB        0
PC                   1.00
```

3,3'-(3-(naphthalen-1-yl)-5-phenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(7-methyl-1H-indole) (3m)




```
Current Data Parameters
NAME                   try
EXPNO                  123
PROCNO                   1

F2 - Acquisition Parameters
Date_           20180812
Time                20.58
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 32768
SOLVENT            CDCl3
NS                   536
DS                     0
SWH            24038.461 Hz
FIDRES          0.733596 Hz
AQ              0.6815744 sec
RG                 198.09
DW                 20.800 usec
DE                  6.50 usec
TE                 298.0 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         100.6228298 MHz
NUC1                 13C
P1                 10.00 usec
PLW1         47.50000000 W

======== CHANNEL f2 ========
SFO2         400.1316005 MHz
NUC2                 1H
CPDPRG[2          waltz16
PCPD2              90.00 usec
PLW2         15.00000000 W
PLW12         0.33750001 W
PLW13         0.27338001 W

F2 - Processing parameters
SI                 32768
SF           100.6127516 MHz
WDW                  EM
SSB       0
LB                 2.00 Hz
GB        0
PC                 1.00
```

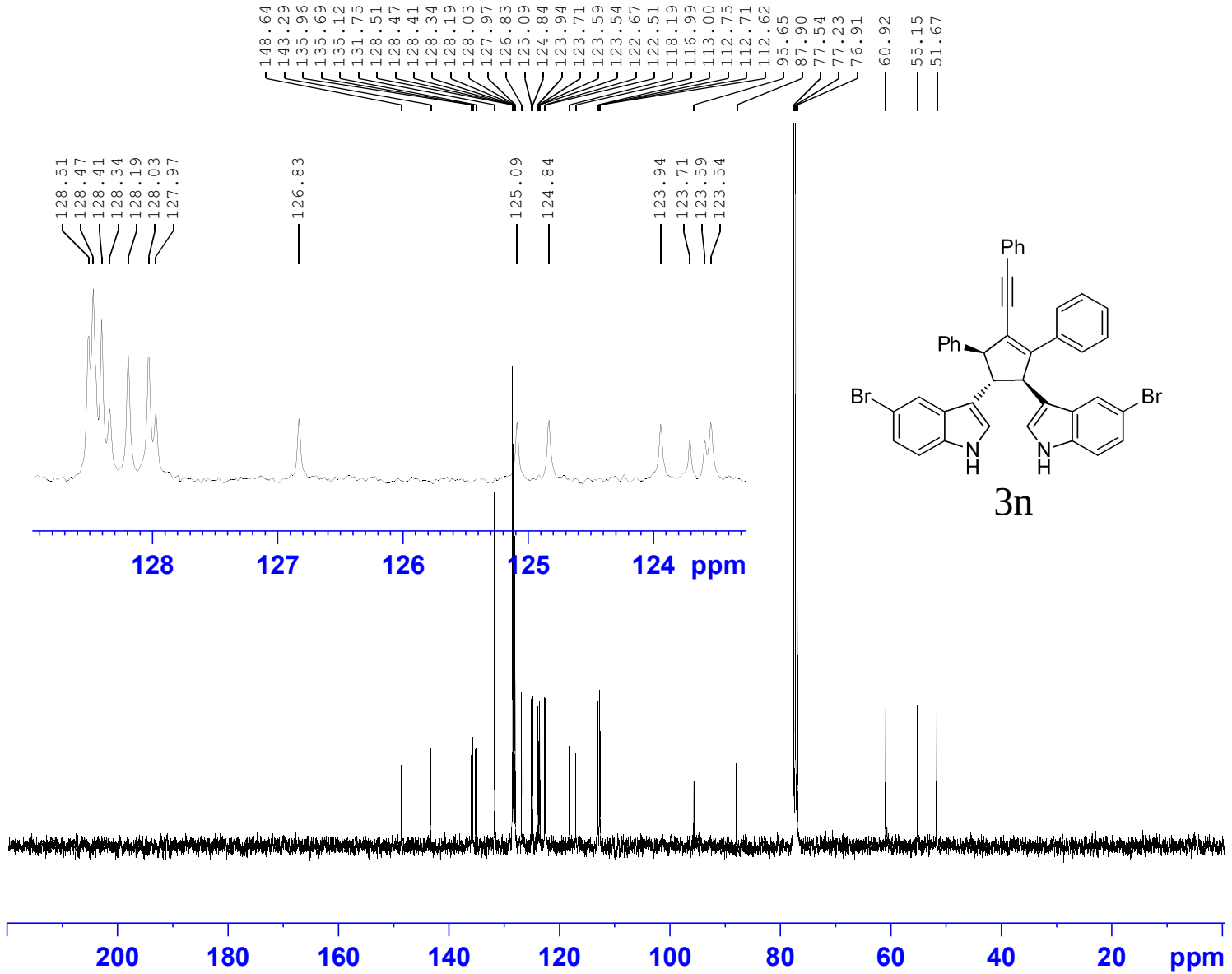
3,3'-(3,5-diphenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(5-bromo-1H-indole) (3n)



S36

```
Current Data Parameters
NAME                      try
EXPNO                      92
PROCNO                      1

F2 - Acquisition Parameters
Date_              20180719
Time                  18.14
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG                zg30
TD                    32768
SOLVENT               CDCl3
NS                       34
DS                        0
SWH                7211.539 Hz
FIDRES            0.220079 Hz
AQ                2.2719147 sec
RG                   198.09
DW                   69.333 usec
DE                   10.50 usec
TE                   297.5 K
D1              2.00000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1          400.1324008 MHz
NUC1                    1H
P1                   12.90 usec
PLW1          15.00000000 W

F2 - Processing parameters
SI                    16384
SF            400.1300121 MHz
WDW                     EM
SSB       0
LB        0 Hz
GB        0
PC                    1.00
```

3,3'-(3,5-diphenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(5-bromo-1H-indole) (3n)



3n

S37

Current Data Parameters
NAME try
EXPNO 72
PROCNO 1

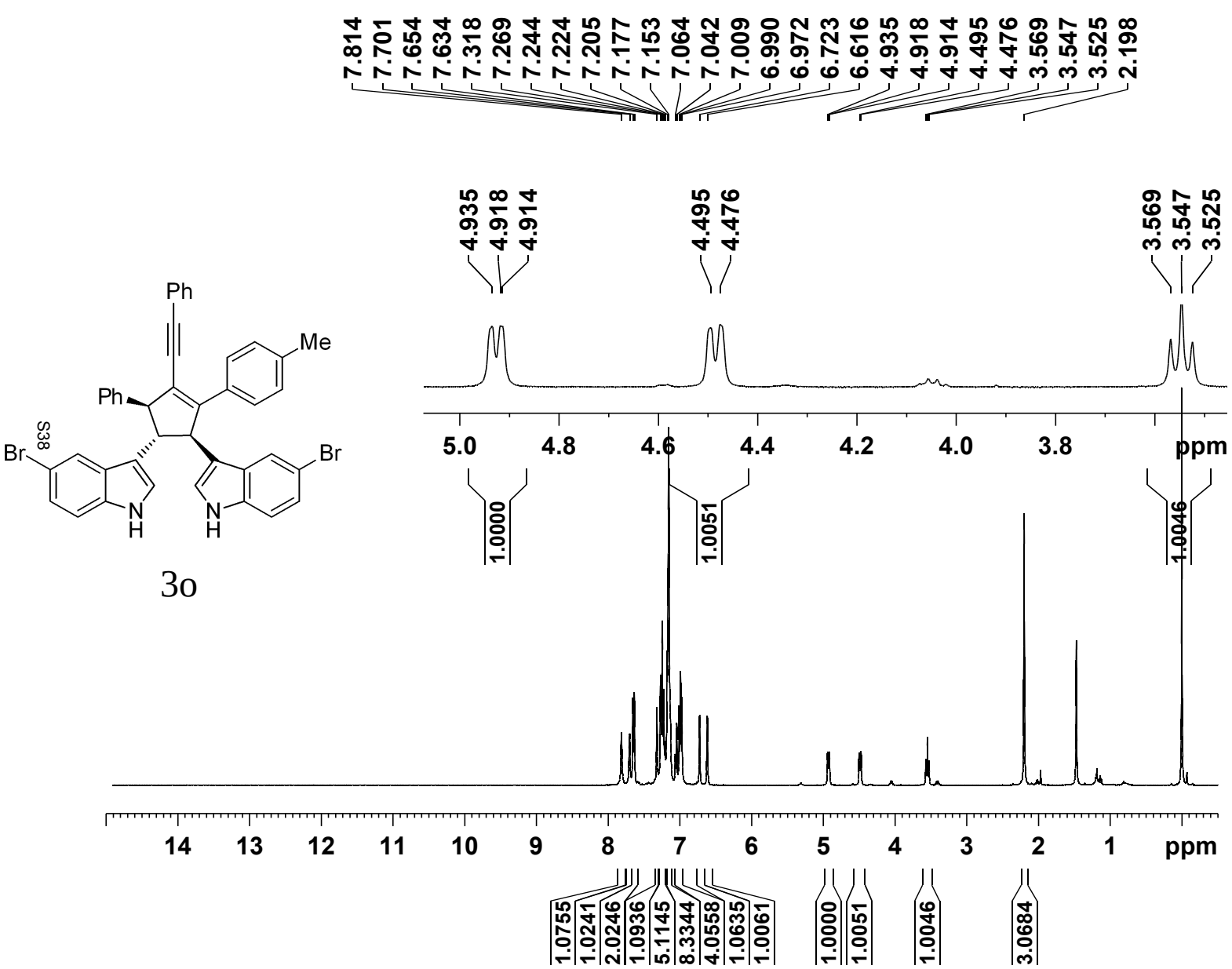
F2 - Acquisition Parameters
Date_ 20180418
Time 8.00
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
TD 32768
SOLVENT CDCl3
NS 428
DS 0
SWH 24038.461 Hz
FIDRES 0.733596 Hz
AQ 0.6815744 sec
RG 198.09
DW 20.800 usec
DE 6.50 usec
TE 298.1 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

======== CHANNEL f1 ========
SFO1 100.6228298 MHz
NUC1 13C
P1 10.00 usec
PLW1 47.50000000 W

======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 15.00000000 W
PLW12 0.33750001 W
PLW13 0.27338001 W

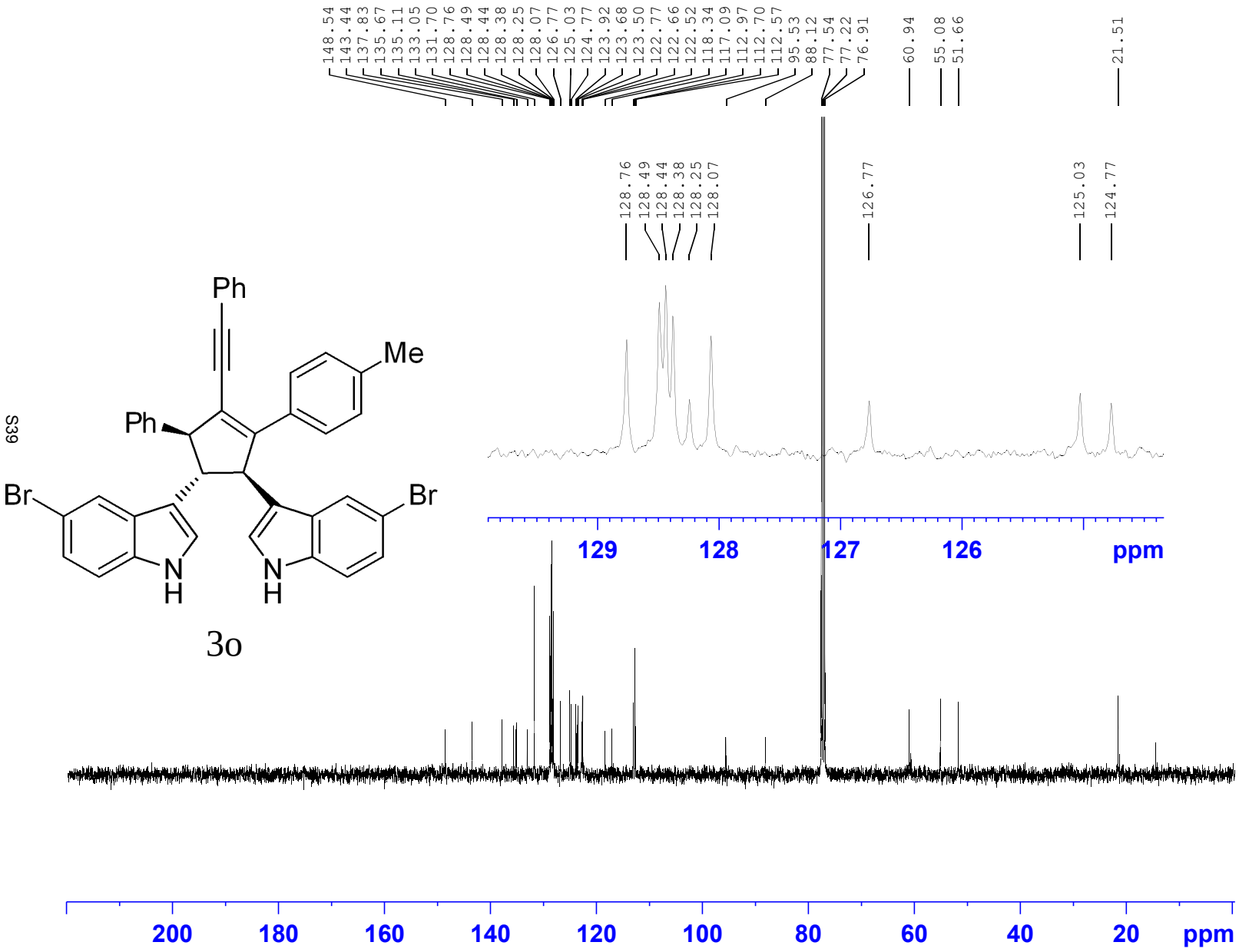
F2 - Processing parameters
SI 32768
SF 100.6127498 MHz
WDW EM
SSB 0
LB 2.00 Hz
GB 0
PC 1.00

3,3'-(5-phenyl-4-(phenylethynyl)-3-(p-tolyl)cyclopent-3-ene-1,2-diyl)bis(5-bromo-1H-indole) (3o)




```
Current Data Parameters
NAME                  try
EXPNO                 128
PROCNO                  1

F2 - Acquisition Parameters
Date_            20180815
Time                22.05
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  32768
SOLVENT             CDCl3
NS                     54
DS                      0
SWH              7211.539 Hz
FIDRES           0.220079 Hz
AQ               2.2719147 sec
RG                 113.31
DW                 69.333 usec
DE                 10.50 usec
TE                 298.1 K
D1              2.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1         400.1324008 MHz
NUC1                   1H
P1                  12.90 usec
PLW1         15.00000000 W

F2 - Processing parameters
SI                  16384
SF           400.1300426 MHz
WDW                    EM
SSB       0
LB        0 Hz
GB        0
PC                   1.00
```

3,3'-(5-phenyl-4-(phenylethynyl)-3-(p-tolyl)cyclopent-3-ene-1,2-diyl)bis(5-bromo-1H-indole) (3o)



Current Data Parameters
NAME try
EXPNO 67
PROCNO 1

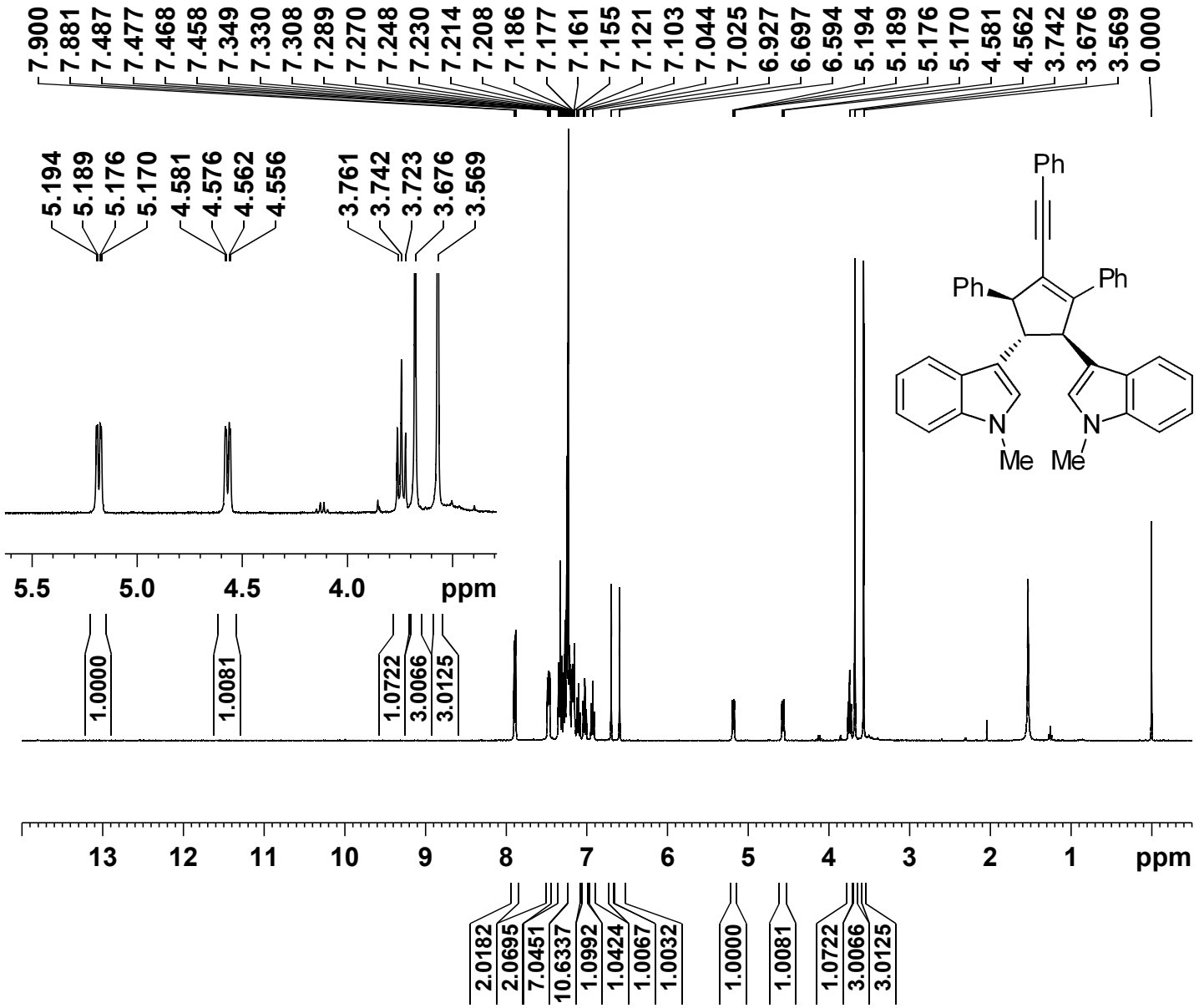
F2 - Acquisition Parameters
Date_ 20180416
Time 11.31
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
TD 32768
SOLVENT CDCl3
NS 134
DS 0
SWH 24038.461 Hz
FIDRES 0.733596 Hz
AQ 0.6815744 sec
RG 198.09
DW 20.800 usec
DE 6.50 usec
TE 297.2 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

======== CHANNEL f1 ========
SFO1 100.6228298 MHz
NUC1 13C
P1 10.00 usec
PLW1 47.50000000 W

======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 15.00000000 W
PLW12 0.33750001 W
PLW13 0.27338001 W

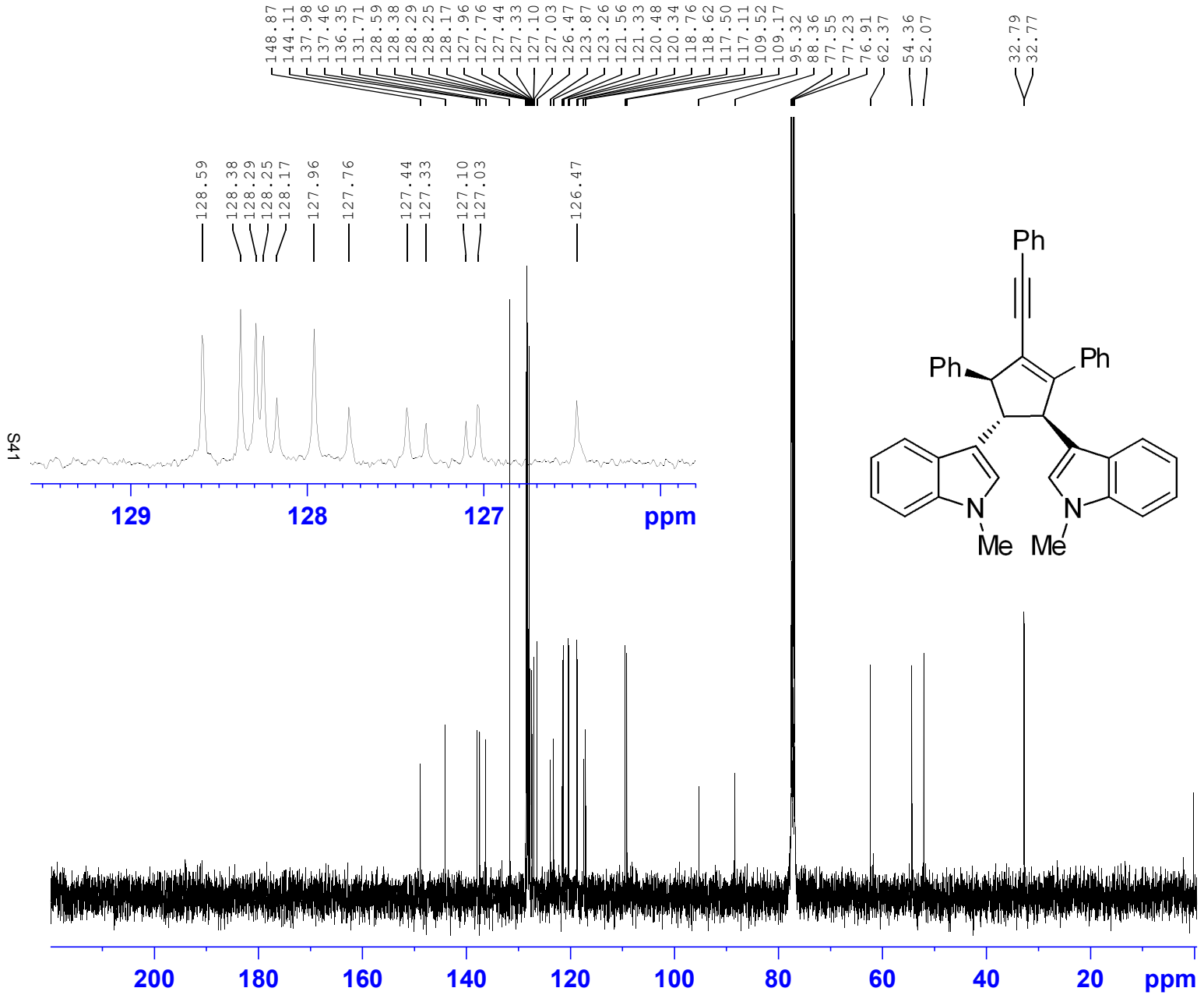
F2 - Processing parameters
SI 32768
SF 100.6127516 MHz
WDW EM
SSB 0
LB 2.00 Hz
GB 0
PC 1.00

3,3'-(3,5-diphenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(1-methyl-1H-indole) (3t)




```
Current Data Parameters
NAME                  test
EXPNO                   60
PROCNO                   1

F2 - Acquisition Parameters
Date_           20180103
Time_     0
INSTRUM              spect
PROBHD   5 mm BBO BB-1H
PULPROG               zg30
TD                   32768
SOLVENT              CDCl3
NS                      32
DS                       0
SWH               7246.377 Hz
FIDRES            0.221142 Hz
AQ               2.2609921 sec
RG                     181
DW                  69.000 usec
DE                   6.50 usec
TE                  298.7 K
D1             2.00000000 sec
TD0                      1

======== CHANNEL f1 ========
NUC1                    1H
P1                   15.00 usec
PL1       0 dB
SFO1          400.1324008 MHz

F2 - Processing parameters
SI                    16384
SF            400.1300141 MHz
WDW                     EM
SSB       0
LB        0 Hz
GB        0
PC                    1.00
```

3,3'-(3,5-diphenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(1-methyl-1H-indole) (3t)



Current Data Parameters

NAME	test
EXPNO	61
PROCNO	1

F2 - Acquisition Parameters

Date_	20180103
Time	0.03
INSTRUM	spect
PROBHD	5 mm BBO BB-1H
PULPROG	zgpg30
TD	32768
SOLVENT	CDCl3
NS	1239
DS	0
SWH	24038.461 Hz
FIDRES	0.733596 Hz
AQ	0.6815744 sec
RG	5792.6
DW	20.800 usec
DE	6.50 usec
TE	298.7 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1

======== CHANNEL f1 ========

NUC1	13C
P1	10.45 usec
PL1	7.00 dB
SFO1	100.6233325 MHz

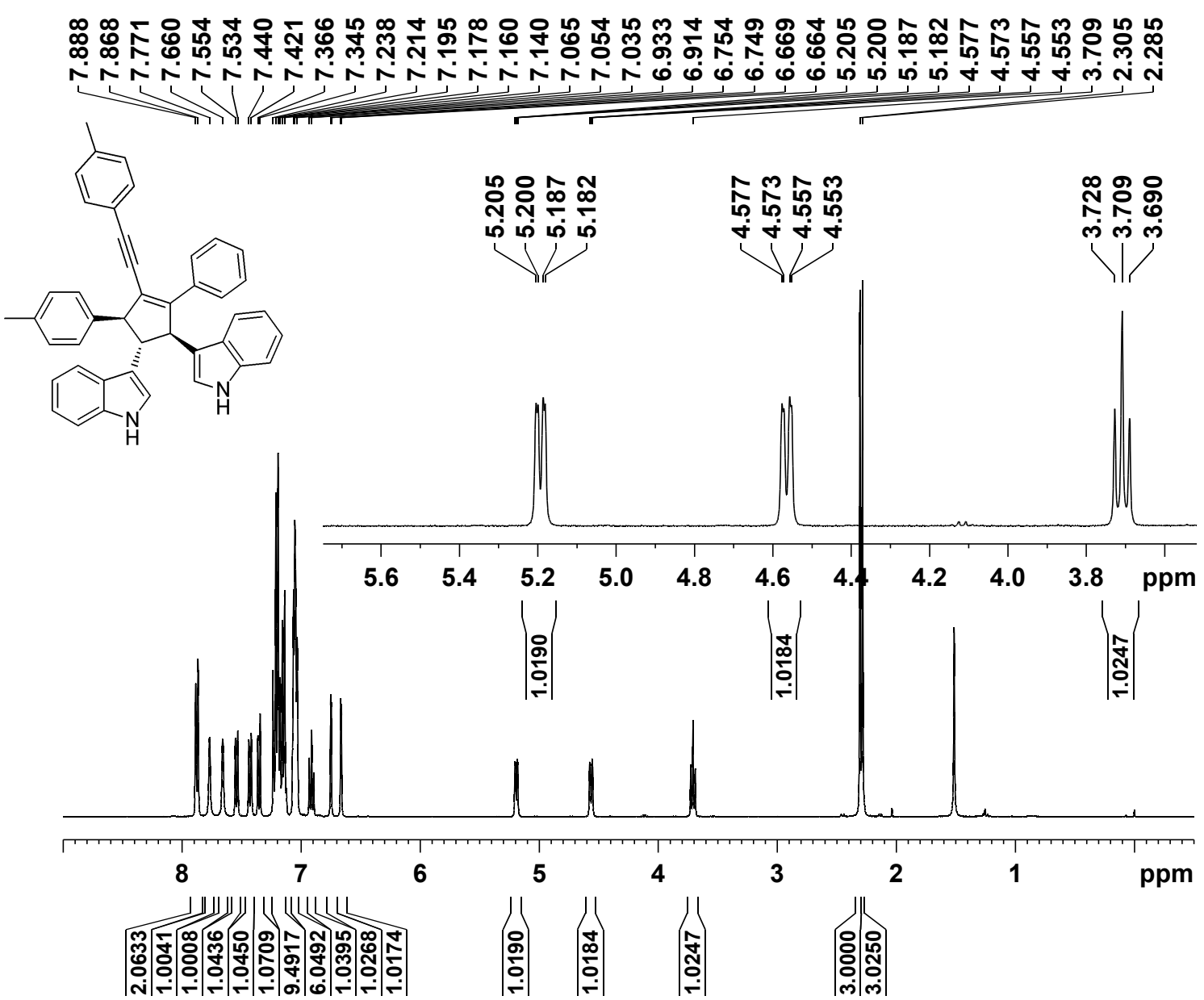
======== CHANNEL f2 ========

CPDPRG[2	waltz16
NUC2	1H
PCPD2	90.00 usec
PL2	0 dB
PL12	15.00 dB
PL13	20.00 dB
SFO2	400.1316005 MHz

F2 - Processing parameters

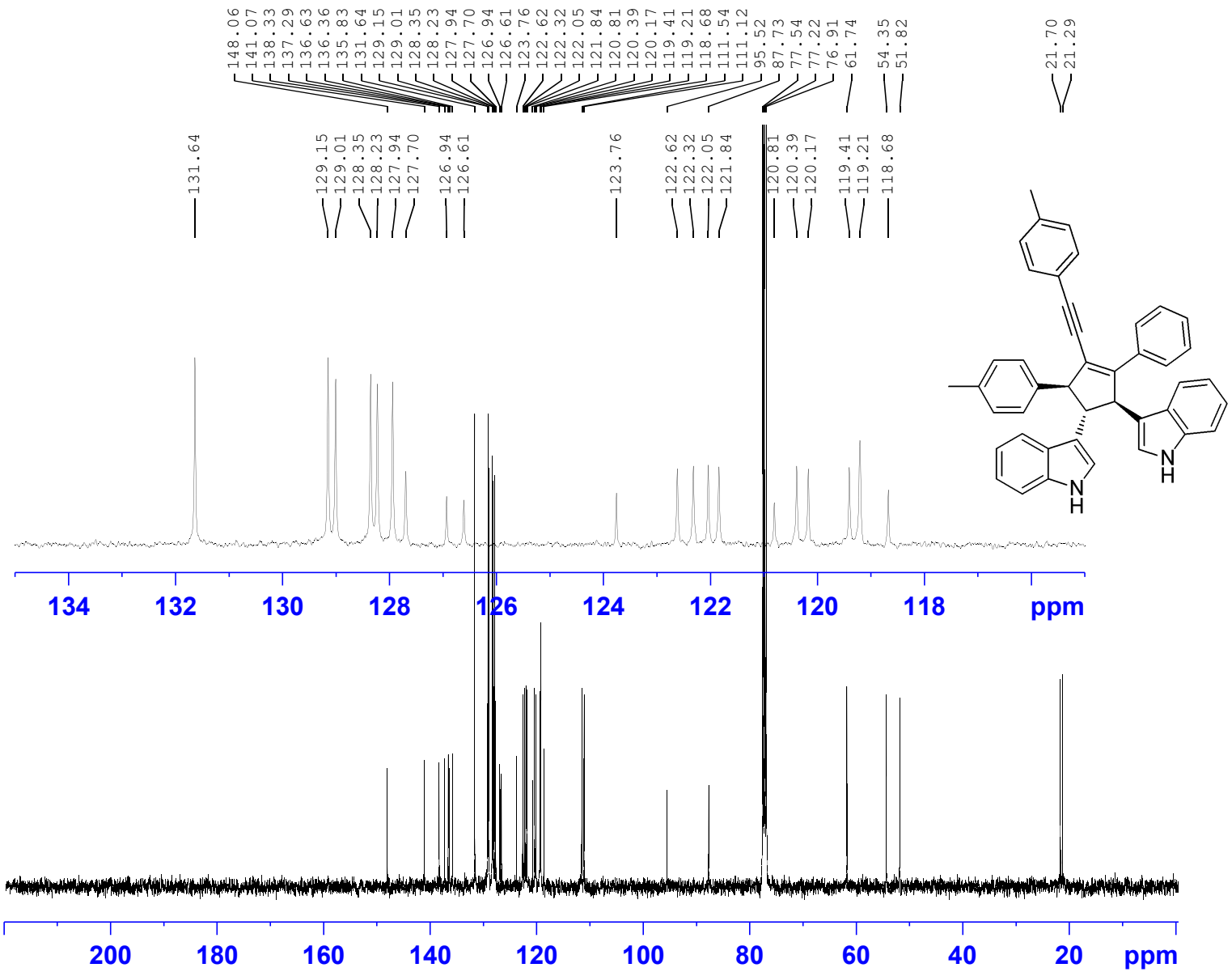
SI	32768
SF	100.6127477 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.00

3,3'-(3-phenyl-5-(p-tolyl)-4-(p-tolylethynyl)cyclopent-3-ene-1,2-diyl)bis(1H-indole) (3u)




```
Current Data Parameters
NAME                  try
EXPNO                 163
PROCNO                  1

F2 - Acquisition Parameters
Date_            20180927
Time                12.55
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG              zg30
TD                  32768
SOLVENT             CDCl3
NS                     27
DS                      0
SWH              7211.539 Hz
FIDRES           0.220079 Hz
AQ              2.2719147 sec
RG                 144.49
DW                 69.333 usec
DE                 10.50 usec
TE                 297.8 K
D1            2.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1         400.1324008 MHz
NUC1                   1H
P1                  12.90 usec
PLW1         15.00000000 W

F2 - Processing parameters
SI                  16384
SF           400.1300182 MHz
WDW                    EM
SSB       0
LB        0 Hz
GB        0
PC                   1.00
```

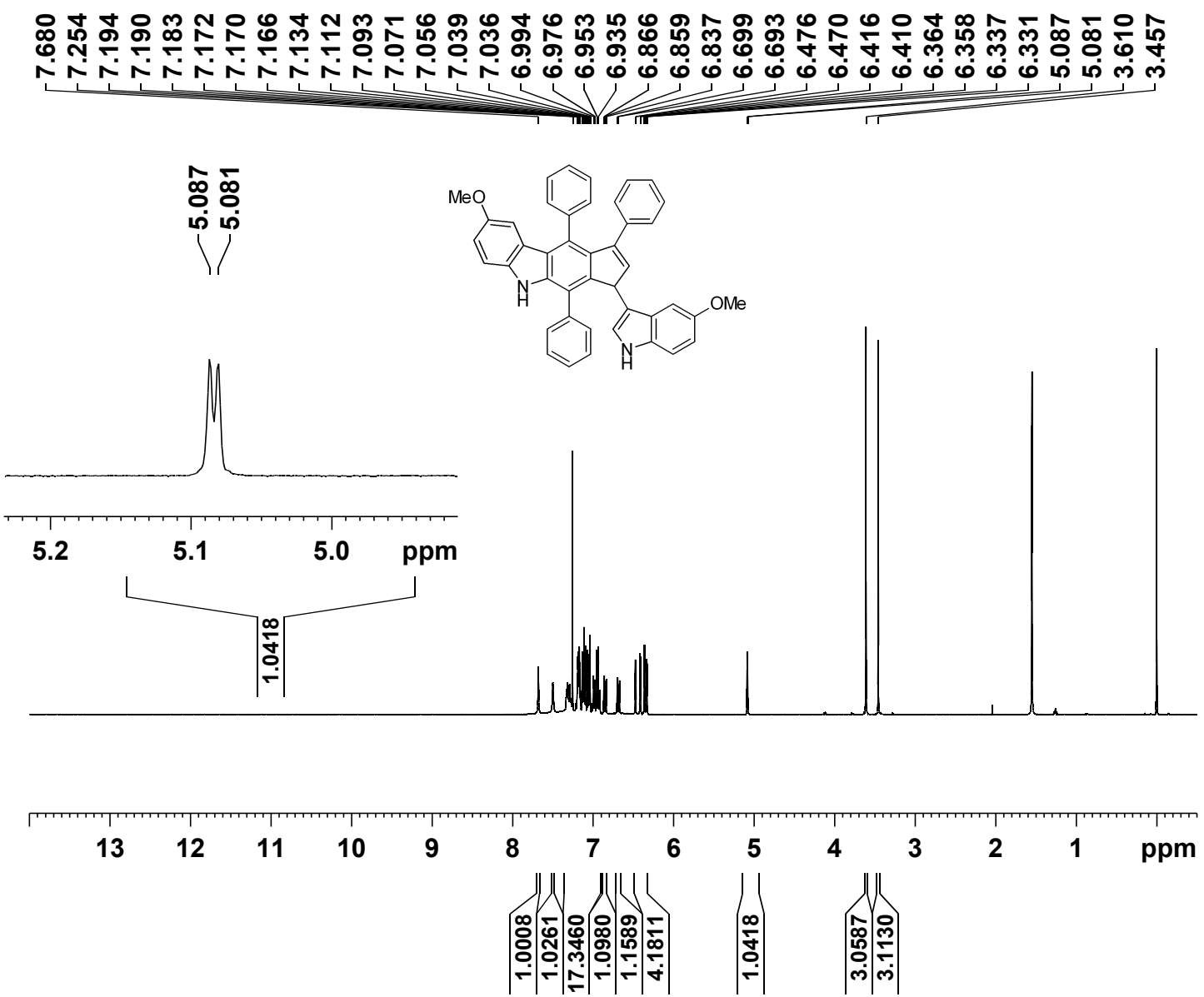
3,3'-(3-phenyl-5-(p-tolyl)-4-(p-tolylethynyl)cyclopent-3-ene-1,2-diyl)bis(1H-indole) (3u)



BRUKER

```
Cur
NAME                try
EXPNO               164
PROCNO              1

F2 - Acquisition Parameters
Date_            20180927
Time                12.59
INSTRUM             spect
PROBHD    5 mm PABBO BB/
PULPROG          zgpg30
TD                 32768
SOLVENT            CDCl3
NS                  1359
DS                     0
SWH           24038.461 Hz
FIDRES         0.733596 Hz
AQ             0.6815744 sec
RG                198.09
DW                20.800 usec
DE                 6.50 usec
TE                298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         100.6228298 MHz
NUC1                13C
P1                10.00 usec
PLW1         47.50000000 W

======== CHANNEL f2 ========
SFO2         400.1316005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2         15.00000000 W
PLW12         0.33750001 W
PLW13         0.27338001 W

F2 - Processing parameters
SI                 32768
SF           100.6127494 MHz
WDW                  EM
SSB       0
LB                 2.00 Hz
GB        0
PC                 1.00
```

8-methoxy-3-(5-methoxy-1H-indol-3-yl)-1,4,10-triphenyl-3,5-dihydrocyclopenta[b]carbazole (4p)



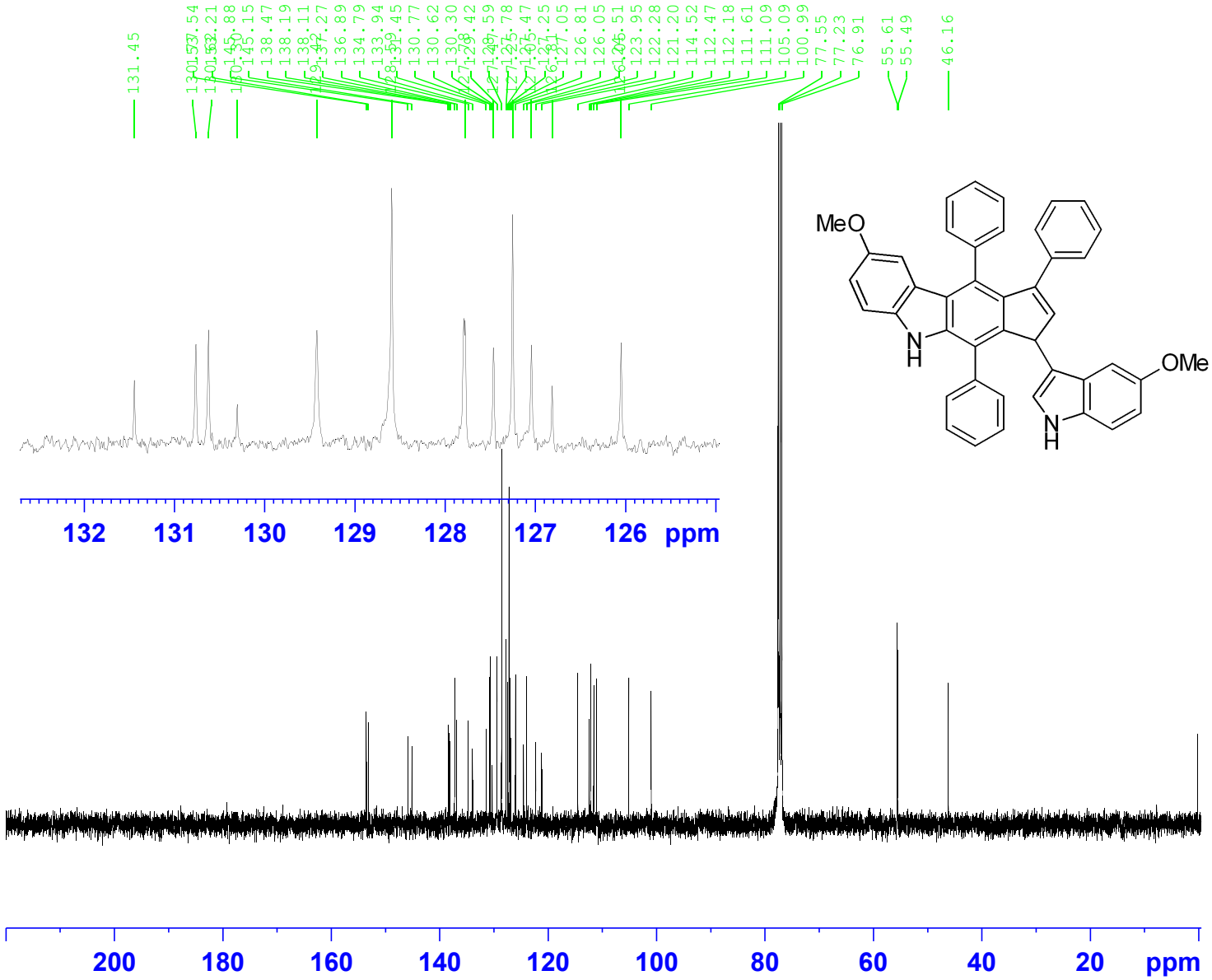
Current Data Parameters
NAME try
EXPNO 13
PROCNO 1

F2 - Acquisition Parameters
Date_ 20180121
Time 12.39
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 33
DS 0
SWH 7211.539 Hz
FIDRES 0.220079 Hz
AQ 2.2719147 sec
RG 198.09
DW 69.333 usec
DE 10.50 usec
TE 297.5 K
D1 2.00000000 sec
TD0 1

======== CHANNEL f1 ========
SFO1 400.1324008 MHz
NUC1 1H
P1 12.90 usec
PLW1 15.00000000 W

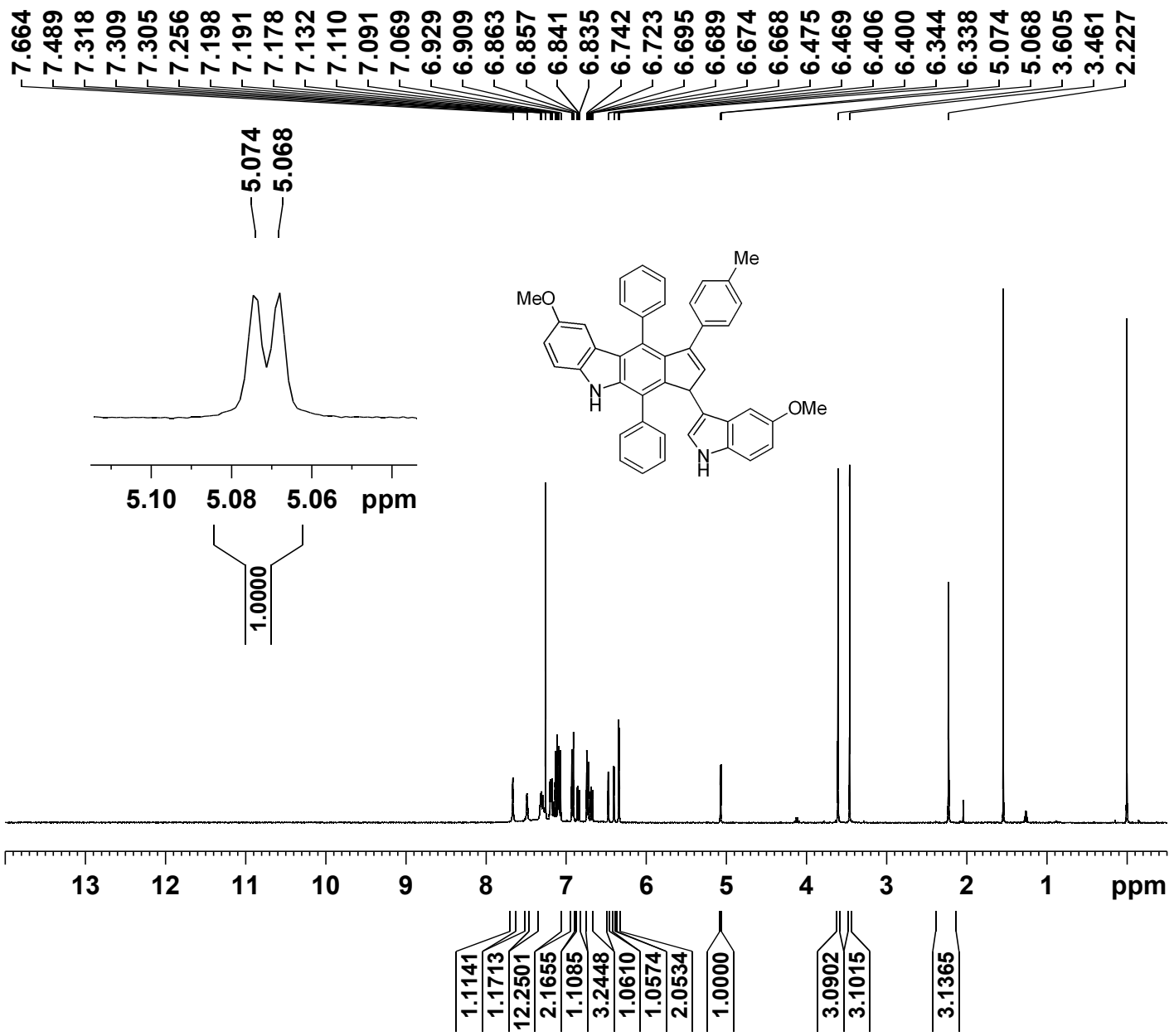
F2 - Processing parameters
SI 16384
SF 400.1300120 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00

8-methoxy-3-(5-methoxy-1H-indol-3-yl)-1,4,10-triphenyl-3,5-dihydrocyclopenta[b]carbazole (4p)



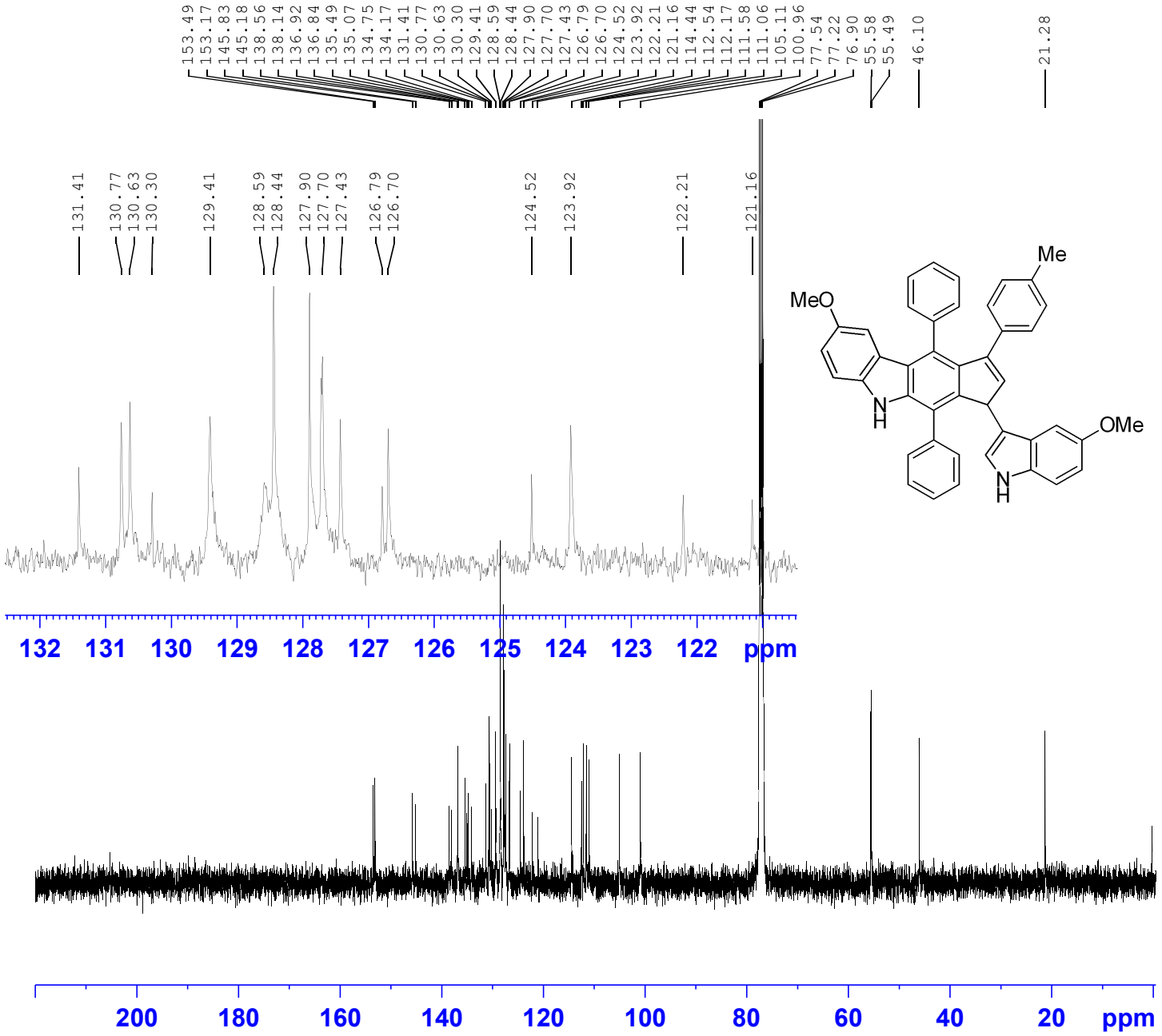

```
Current Data Parameters
NAME                  test
EXPNO                   86
PROCNO                   1

F2 - Acquisition Parameters
Date_              20180122
Time                 22.11
INSTRUM              spect
PROBHD    5 mm BBO BB-1H
PULPROG             zgpg30
TD                   32768
SOLVENT              CDCl3
NS                    3069
DS                       0
SWH             24038.461 Hz
FIDRES           0.733596 Hz
AQ               0.6815744 sec
RG                  5792.6
DW                  20.800 usec
DE                   6.50 usec
TE                  298.1 K
D1              2.00000000 sec
D11             0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
NUC1                   13C
P1                  10.45 usec
PL1                  7.00 dB
SFO1         100.6233325 MHz

======== CHANNEL f2 ========
CPDPRG[2           waltz16
NUC2                   1H
PCPD2                90.00 usec
PL2        0 dB
PL12                15.00 dB
PL13                20.00 dB
SFO2         400.1316005 MHz

F2 - Processing parameters
SI                   32768
SF           100.6127470 MHz
WDW                    EM
SSB        0
LB                   1.00 Hz
GB         0
PC                   1.00
```

8-methoxy-3-(5-methoxy-1H-indol-3-yl)-4,10-diphenyl-1-(p-tolyl)-3,5-dihydrocyclopenta[b]carbazole (4q)



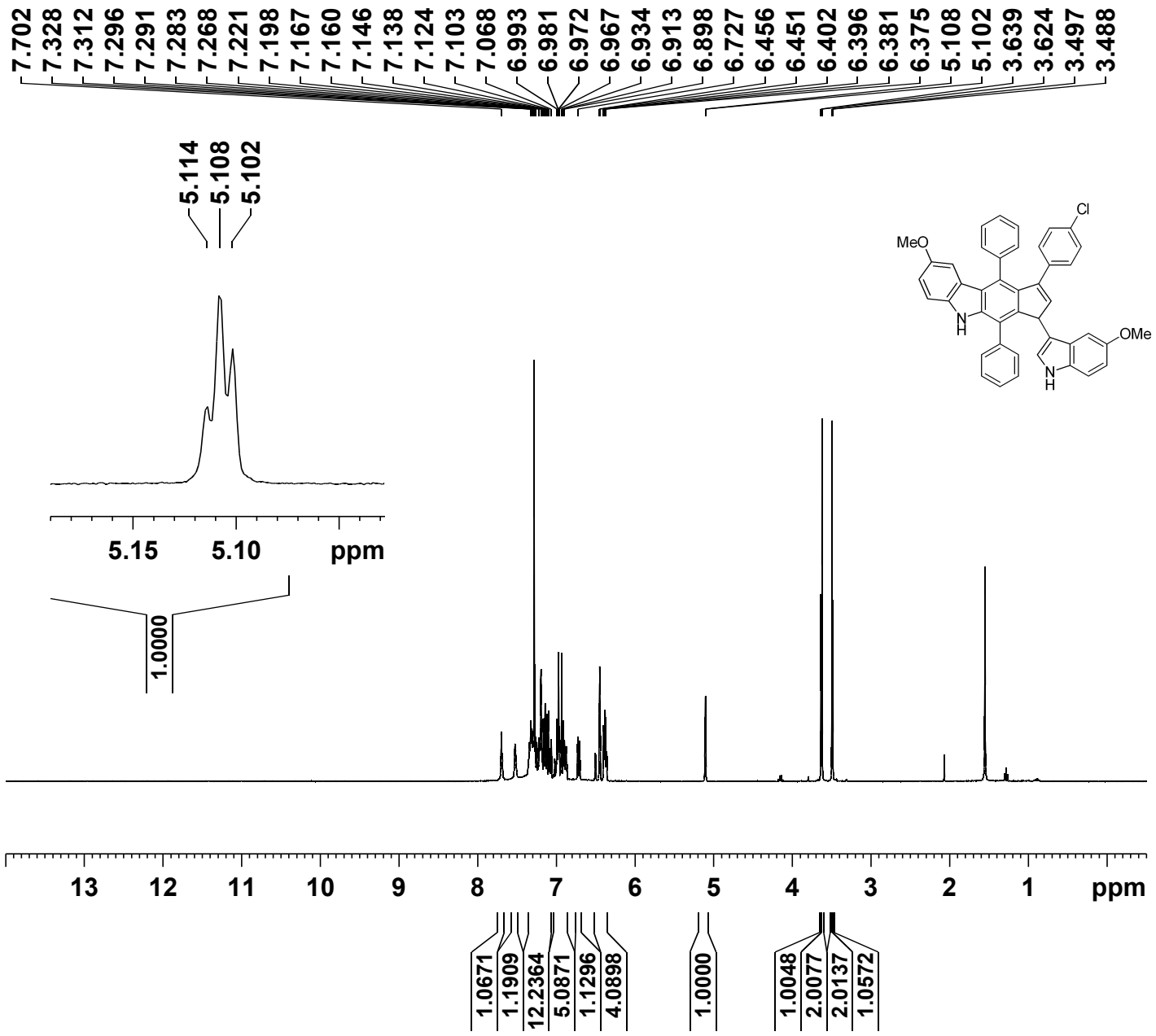

```
Current Data Parameters
NAME                      try
EXPNO                      22
PROCNO                      1

F2 - Acquisition Parameters
Date_              20180124
Time                  21.38
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG                zg30
TD                    32768
SOLVENT               CDCl3
NS                       16
DS                        0
SWH                7211.539 Hz
FIDRES            0.220079 Hz
AQ                2.2719147 sec
RG                   198.09
DW                   69.333 usec
DE                   10.50 usec
TE                   297.7 K
D1              2.00000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1           400.1324008 MHz
NUC1                     1H
P1                   12.90 usec
PLW1           15.00000000 W

F2 - Processing parameters
SI                    16384
SF             400.1300113 MHz
WDW                      EM
SSB          0
LB           0 Hz
GB           0
PC                     1.00
```

8-methoxy-3-(5-methoxy-1H-indol-3-yl)-4,10-diphenyl-1-(p-tolyl)-3,5-dihydrocyclopenta[b]carbazole (4q)




```
Current Data Parameters
NAME                   test
EXPNO                    96
PROCNO                    1

F2 - Acquisition Parameters
Date_               20180127
Time                   23.15
INSTRUM                spect
PROBHD    5 mm BBO BB-1H
PULPROG             zgpg30
TD                     32768
SOLVENT                CDCl3
NS                      2977
DS                         0
SWH              24038.461 Hz
FIDRES            0.733596 Hz
AQ                0.6815744 sec
RG                   5792.6
DW                  20.800 usec
DE                   6.50 usec
TE                  296.5 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                        1

======== CHANNEL f1 ========
NUC1                     13C
P1                   10.45 usec
PL1                   7.00 dB
SFO1          100.6233325 MHz

======== CHANNEL f2 ========
CPDPRG[2           waltz16
NUC2                     1H
PCPD2                90.00 usec
PL2        0 dB
PL12                 15.00 dB
PL13                 20.00 dB
SFO2          400.1316005 MHz

F2 - Processing parameters
SI                     32768
SF            100.6127484 MHz
WDW                       EM
SSB        0
LB                    1.00 Hz
GB         0
PC                    1.00
```

1-(4-chlorophenyl)-8-methoxy-3-(5-methoxy-1H-indol-3-yl)-4,10-diphenyl-3,5-dihydrocyclopenta[b]carbazole (4r)



Current Data Parameters

NAME	try
EXPNO	37
PROCNO	1

F2 - Acquisition Parameters

Date_	20180221
Time	15.29
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	32768
SOLVENT	CDCl3
NS	40
DS	0
SWH	7211.539 Hz
FIDRES	0.220079 Hz
AQ	2.2719147 sec
RG	198.09
DW	69.333 usec
DE	10.50 usec
TE	302.4 K
D1	2.00000000 sec
TD0	1

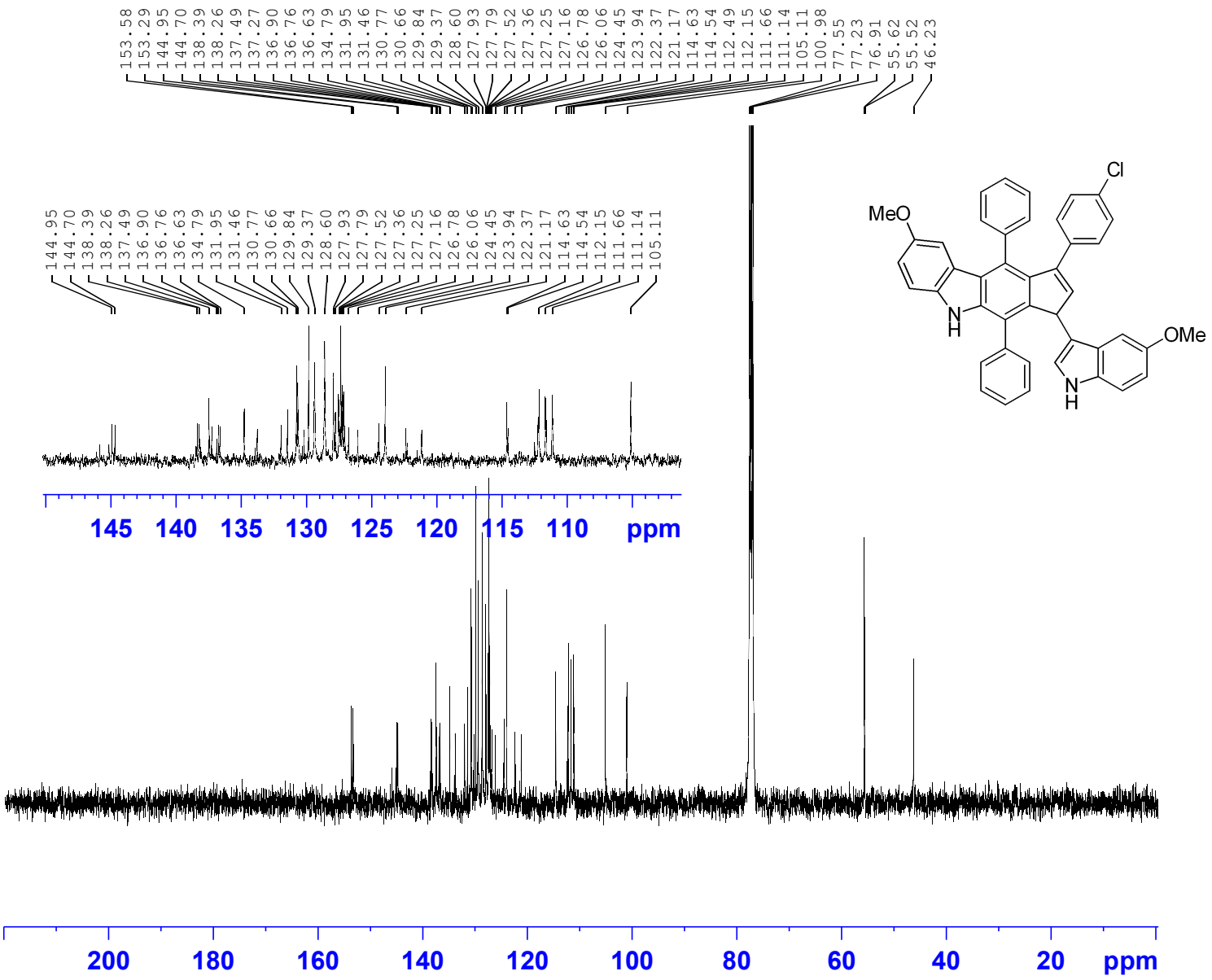
======== CHANNEL f1 ========

SFO1	400.1324008 MHz
NUC1	1H
P1	12.90 usec
PLW1	15.00000000 W

F2 - Processing parameters

SI	16384
SF	400.1300000 MHz
WDW	EM
SSB	0
LB	0 Hz
GB	0
PC	1.00

1-(4-chlorophenyl)-8-methoxy-3-(5-methoxy-1H-indol-3-yl)-4,10-diphenyl-3,5-dihydrocyclopenta[b]carbazole (4



Current Data Parameters
NAME try
EXPNO 38
PROCNO 1

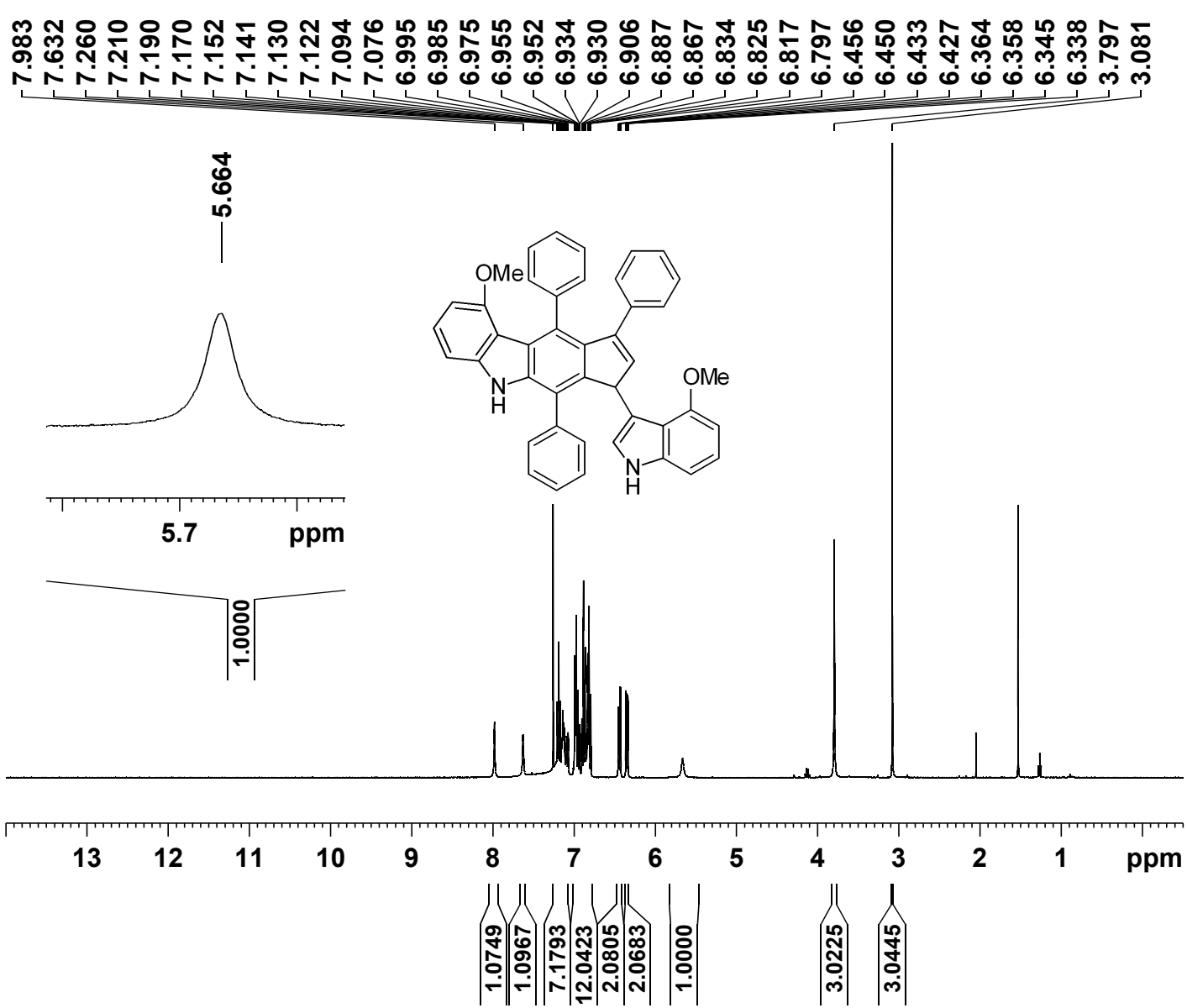
F2 - Acquisition Parameters
Date_ 20180221
Time 15.31
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
TD 32768
SOLVENT CDCl3
NS 5469
DS 0
SWH 24038.461 Hz
FIDRES 0.733596 Hz
AQ 0.6815744 sec
RG 198.09
DW 20.800 usec
DE 6.50 usec
TE 302.1 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

======== CHANNEL f1 ========
SFO1 100.6228298 MHz
NUC1 13C
P1 10.00 usec
PLW1 47.50000000 W

======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 15.00000000 W
PLW12 0.33750001 W
PLW13 0.27338001 W

F2 - Processing parameters
SI 32768
SF 100.6127464 MHz
WDW EM
SSB 0
LB 2.00 Hz
GB 0
PC 1.00

9-methoxy-3-(4-methoxy-1H-indol-3-yl)-1,4,10-triphenyl-3,5-dihydrocyclopenta[b]carbazole (4s)



Current Data Parameters

NAME	try
EXPNO	888
PROCNO	1

F2 - Acquisition Parameters

Date_	20170810
Time	13.21
INSTRUM	spect
PROBHD	5 mm PABBO BB/
PULPROG	zg30
TD	32768
SOLVENT	CDCl3
NS	64
DS	0
SWH	7211.539 Hz
FIDRES	0.220079 Hz
AQ	2.2719147 sec
RG	198.09
DW	69.333 usec
DE	10.50 usec
TE	298.2 K
D1	2.00000000 sec
TD0	1

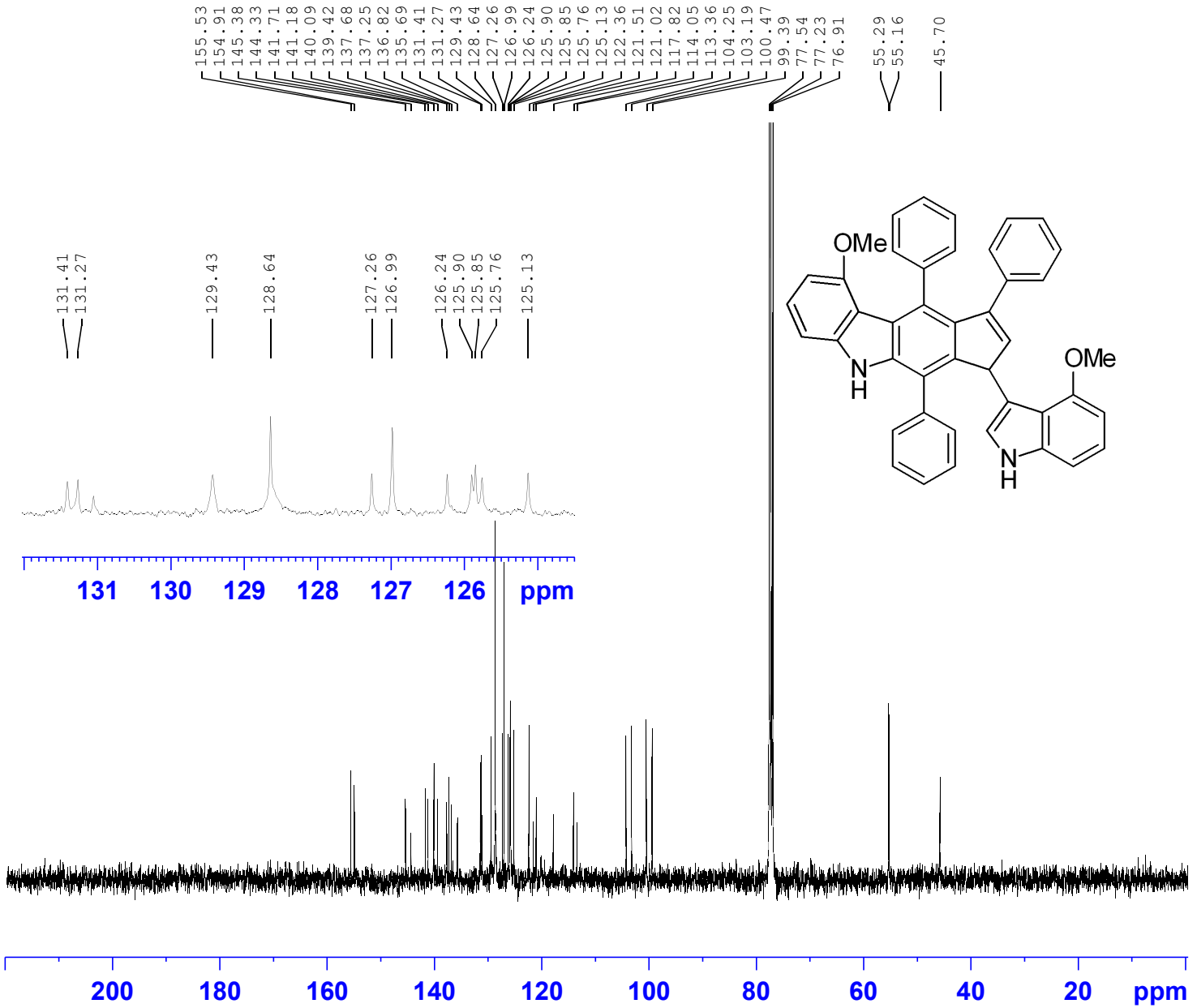
======== CHANNEL f1 ========

SFO1	400.1324008 MHz
NUC1	1H
P1	12.90 usec
PLW1	15.00000000 W

F2 - Processing parameters

SI	16384
SF	400.1300101 MHz
WDW	EM
SSB	0
LB	0 Hz
GB	0
PC	1.00

9-methoxy-3-(4-methoxy-1H-indol-3-yl)-1,4,10-triphenyl-3,5-dihydrocyclopenta[b]carbazole (4s)



Current Data Parameters
NAME try
EXPNO 889
PROCNO 1

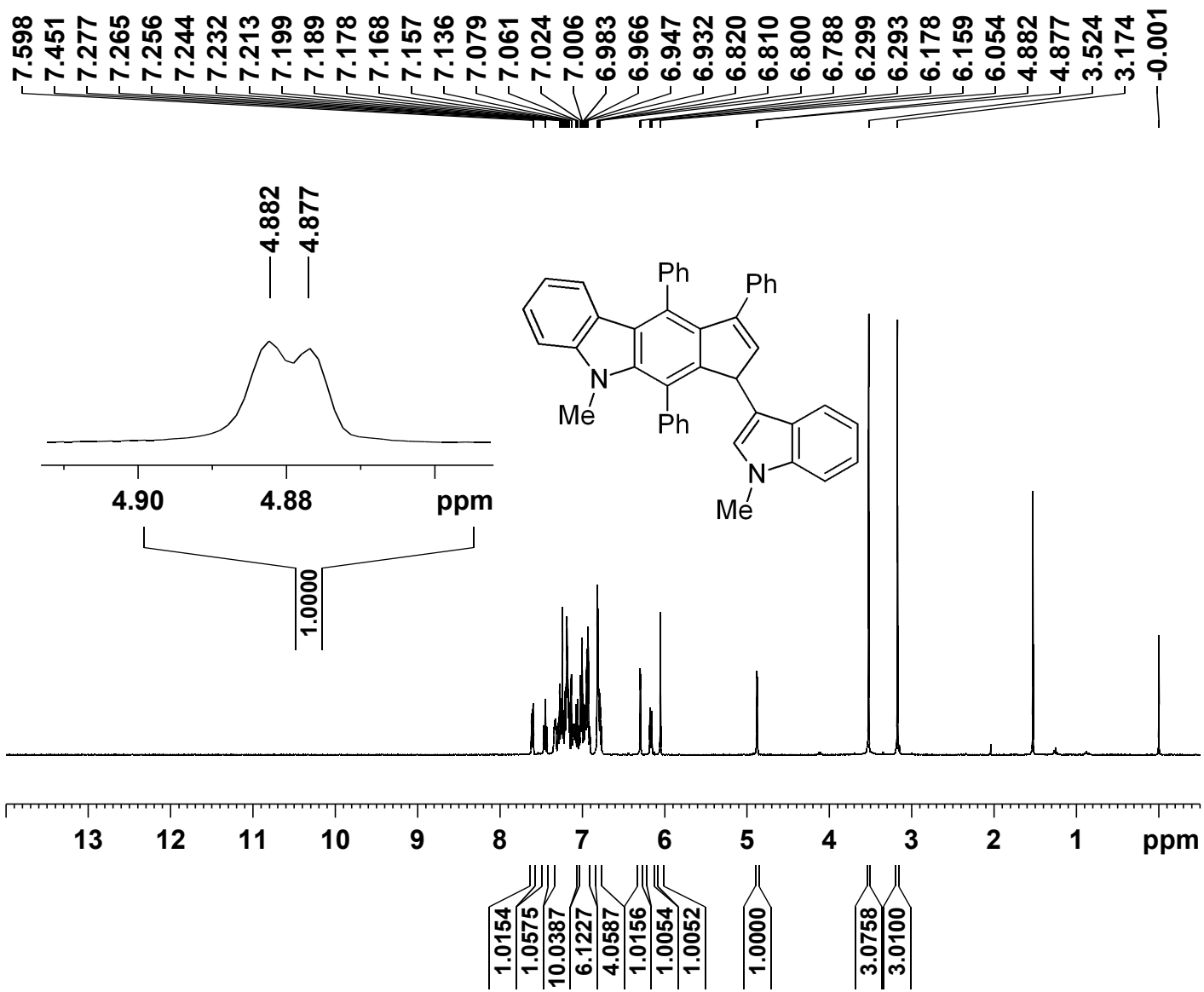
F2 - Acquisition Parameters
Date_ 20170810
Time 13.27
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
TD 32768
SOLVENT CDCl3
NS 904
DS 0
SWH 24038.461 Hz
FIDRES 0.733596 Hz
AQ 0.6815744 sec
RG 198.09
DW 20.800 usec
DE 6.50 usec
TE 298.3 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

======== CHANNEL f1 ========
SFO1 100.6228298 MHz
NUC1 13C
P1 10.00 usec
PLW1 47.50000000 W

======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 15.00000000 W
PLW12 0.33750001 W
PLW13 0.27338001 W

F2 - Processing parameters
SI 32768
SF 100.6127479 MHz
WDW EM
SSB 0
LB 2.00 Hz
GB 0
PC 1.00

5-methyl-3-(1-methyl-1H-indol-3-yl)-1,4,10-triphenyl-3,5-dihydrocyclopenta[b]carbazole (4t)



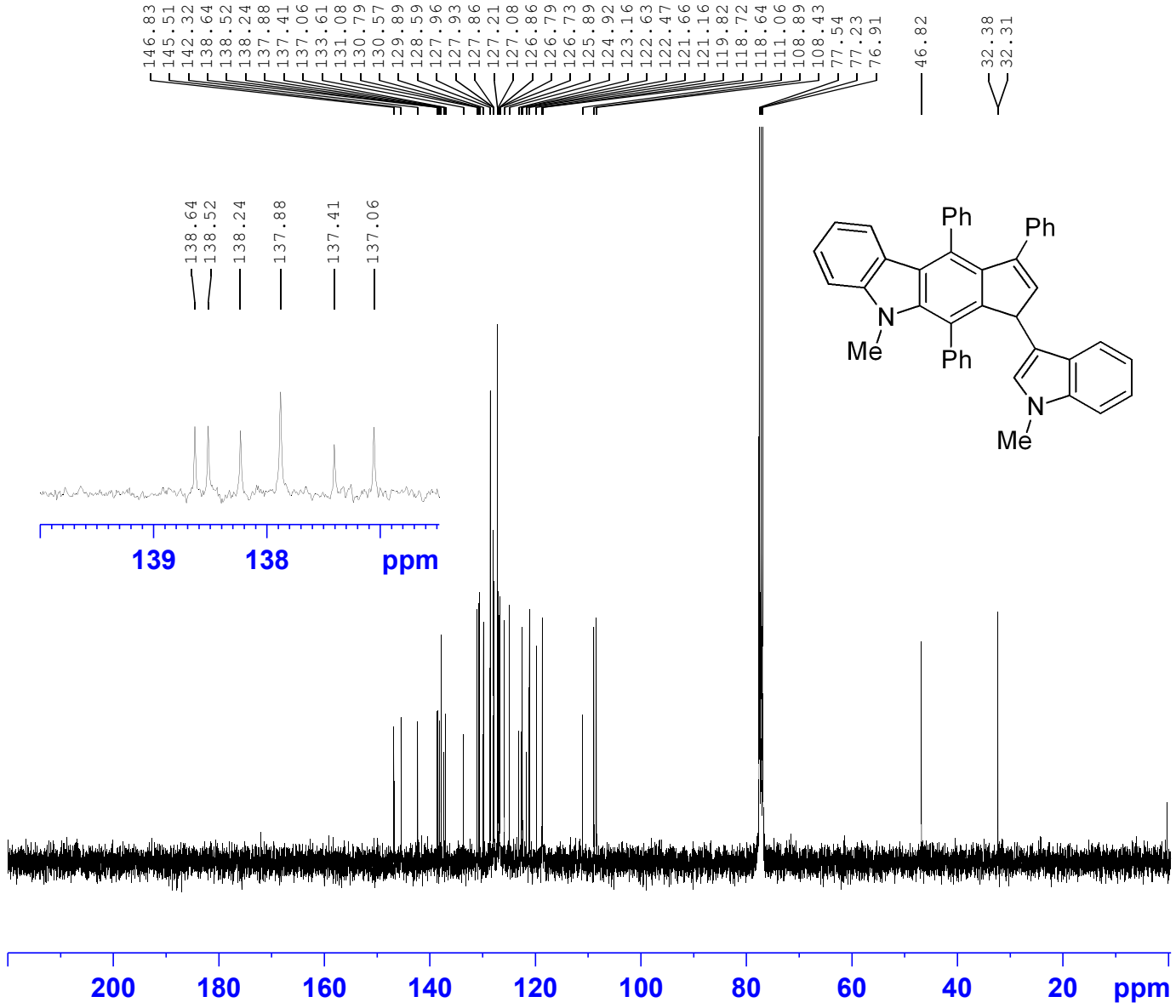
Current Data Parameters
NAME test
EXPNO 54
PROCNO 1

F2 - Acquisition Parameters
Date_ 20170928
Time 21.23
INSTRUM spect
PROBHD 5 mm BBO BB-1H
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 50
DS 0
SWH 7246.377 Hz
FIDRES 0.221142 Hz
AQ 2.2609921 sec
RG 181
DW 69.000 usec
DE 6.50 usec
TE 298.1 K
D1 2.00000000 sec
TD0 1

======== CHANNEL f1 ========
NUC1 1H
P1 15.00 usec
PL1 0 dB
SFO1 400.1324008 MHz

F2 - Processing parameters
SI 16384
SF 400.1300158 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00

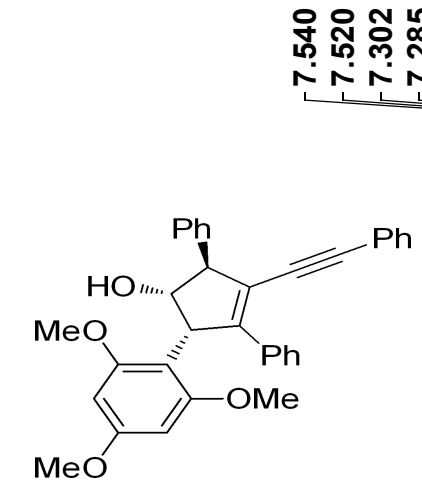
3,3'-(3,5-diphenyl-4-(phenylethynyl)cyclopent-3-ene-1,2-diyl)bis(1-methyl-1H-indole) (4l)



S51

```
Current Data Parameters
NAME                  test
EXPNO                   55
PROCNO                   1

F2 - Acquisition Parameters
Date_              20170928
Time                 21.28
INSTRUM              spect
PROBHD    5 mm BBO BB-1H
PULPROG             zgpg30
TD                   32768
SOLVENT              CDCl3
NS                    1149
DS                       0
SWH             24038.461 Hz
FIDRES           0.733596 Hz
AQ               0.6815744 sec
RG                  5792.6
DW                  20.800 usec
DE                   6.50 usec
TE                  298.2 K
D1              2.00000000 sec
D11             0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
NUC1                   13C
P1                  10.45 usec
PL1                  7.00 dB
SFO1          100.6233325 MHz

======== CHANNEL f2 ========
CPDPRG[2           waltz16
NUC2                   1H
PCPD2               90.00 usec
PL2       0 dB
PL12                15.00 dB
PL13                20.00 dB
SFO2          400.1316005 MHz

F2 - Processing parameters
SI                   32768
SF            100.6127484 MHz
WDW                    EM
SSB       0
LB                   1.00 Hz
GB        0
PC                   1.00
```

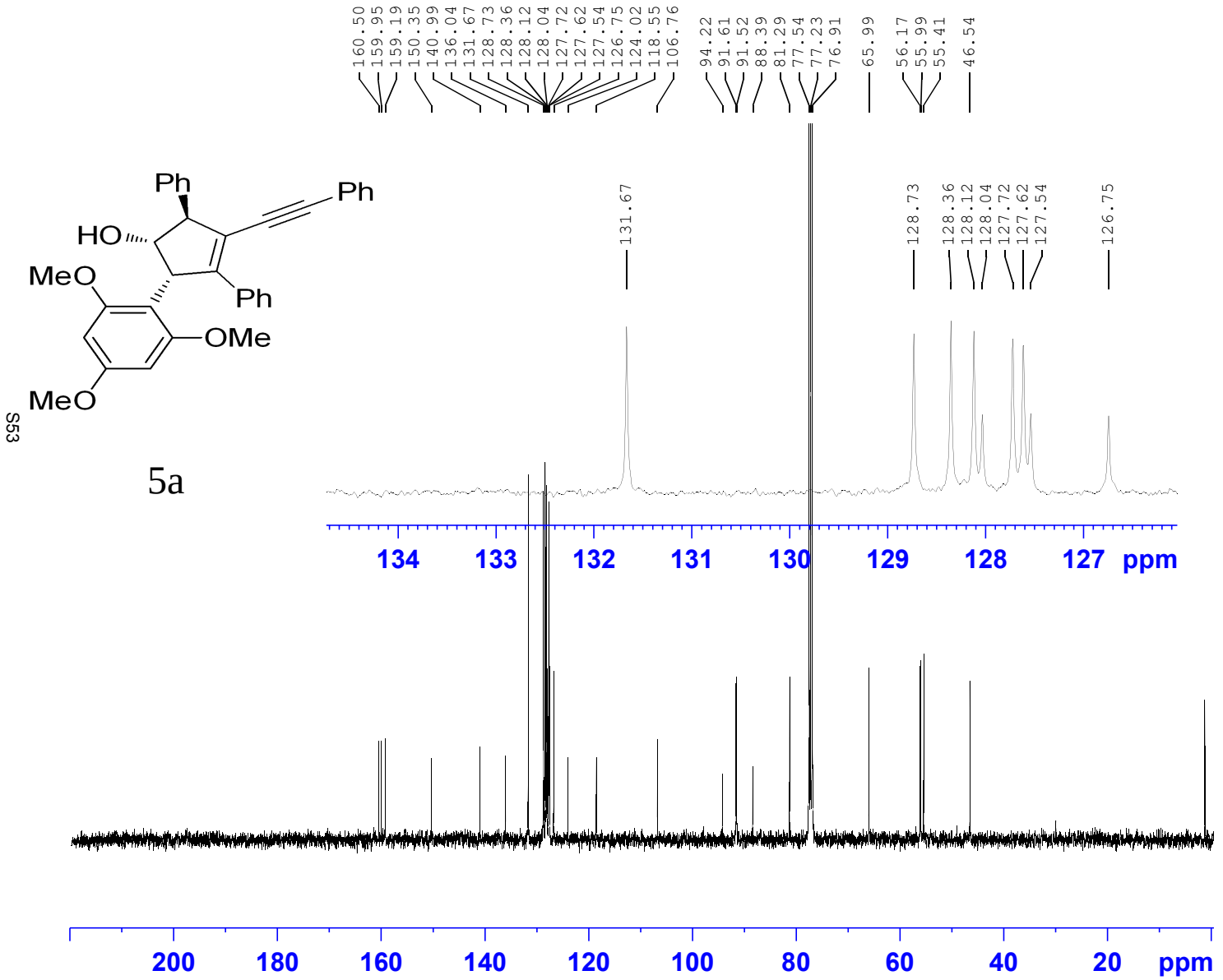
2,4-diphenyl-3-(phenylethynyl)-5-(2,4,6-trimethoxyphenyl)cyclopent-3-en-1-ol (5a)



5a


```
Current Data Parameters
NAME                   try
EXPNO                  117
PROCNO                   1

F2 - Acquisition Parameters
Date_             20180811
Time                 19.17
INSTRUM              spect
PROBHD   5 mm PABBO BB/
PULPROG               zg30
TD                   32768
SOLVENT              CDCl3
NS                      56
DS                       0
SWH               7211.539 Hz
FIDRES            0.220079 Hz
AQ               2.2719147 sec
RG                   89.08
DW                 69.333 usec
DE                 10.50 usec
TE                 297.5 K
D1              2.00000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          400.1324008 MHz
NUC1                    1H
P1                   12.90 usec
PLW1          15.00000000 W

F2 - Processing parameters
SI                   16384
SF            400.1300429 MHz
WDW                     EM
SSB       0
LB        0 Hz
GB        0
PC                    1.00
```

2,4-diphenyl-3-(phenylethynyl)-5-(2,4,6-trimethoxyphenyl)cyclopent-3-en-1-ol (5a)




```
Current Data Parameters
NAME                  try
EXPNO                 119
PROCNO                  1

F2 - Acquisition Parameters
Date_            20180811
Time                20.47
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 32768
SOLVENT            CDCl3
NS                   500
DS                     0
SWH           24038.461 Hz
FIDRES         0.733596 Hz
AQ             0.6815744 sec
RG                198.09
DW                20.800 usec
DE                 6.50 usec
TE                299.0 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1        100.6228298 MHz
NUC1                13C
P1                10.00 usec
PLW1        47.50000000 W

======== CHANNEL f2 ========
SFO2        400.1316005 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2        15.00000000 W
PLW12        0.33750001 W
PLW13        0.27338001 W

F2 - Processing parameters
SI                 32768
SF          100.6127490 MHz
WDW                  EM
SSB       0
LB                2.00 Hz
GB        0
PC                1.00
```