

Supporting materials

Synthesis of quinoxalines and assessment of their inhibitory effects against human non-small-cell lung cancer cells

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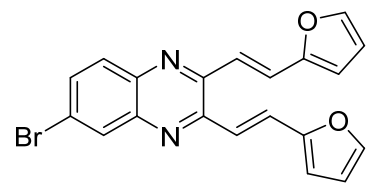
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¹³ C NMR (150 MHz, CDCl ₃) for compound 5l	S51
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¹³ C NMR (150 MHz, DMSO- <i>d</i> ₆) for compound 5m	S53

¹H
 8.153f
 8.150 JSZ2-144
 7.835
 7.829
 7.812
 7.705
 7.702
 7.690
 7.687
 7.557
 7.552
 7.532
 7.260
 6.630
 6.624
 6.616
 6.512
 6.509



4a

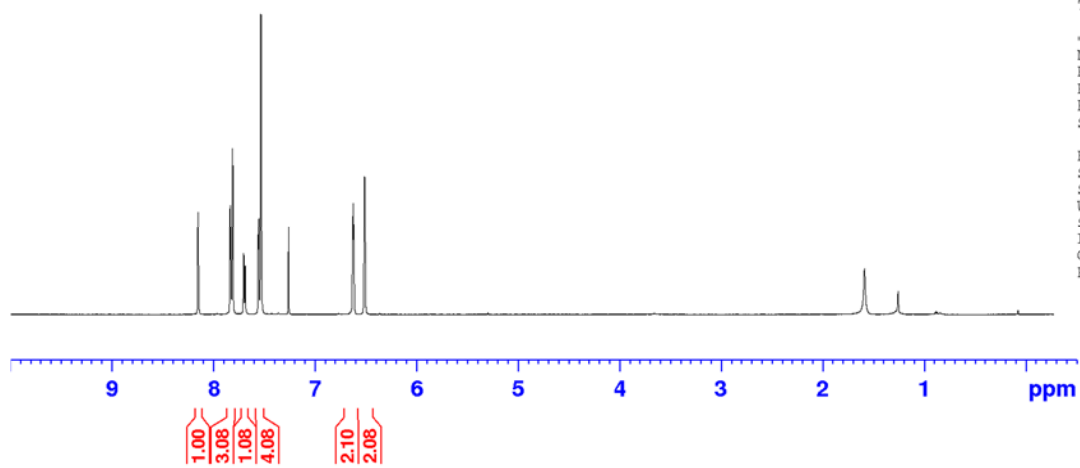


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 PROCNO 1

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 TD 32768
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 6313.131 Hz
 FIDRES 0.192661 Hz
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 RG 2050
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 DE 6.00 usec
 TE 299.9 K
 D1 2.0000000 sec
 TD0 1

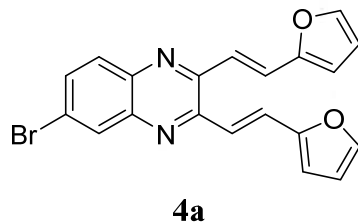
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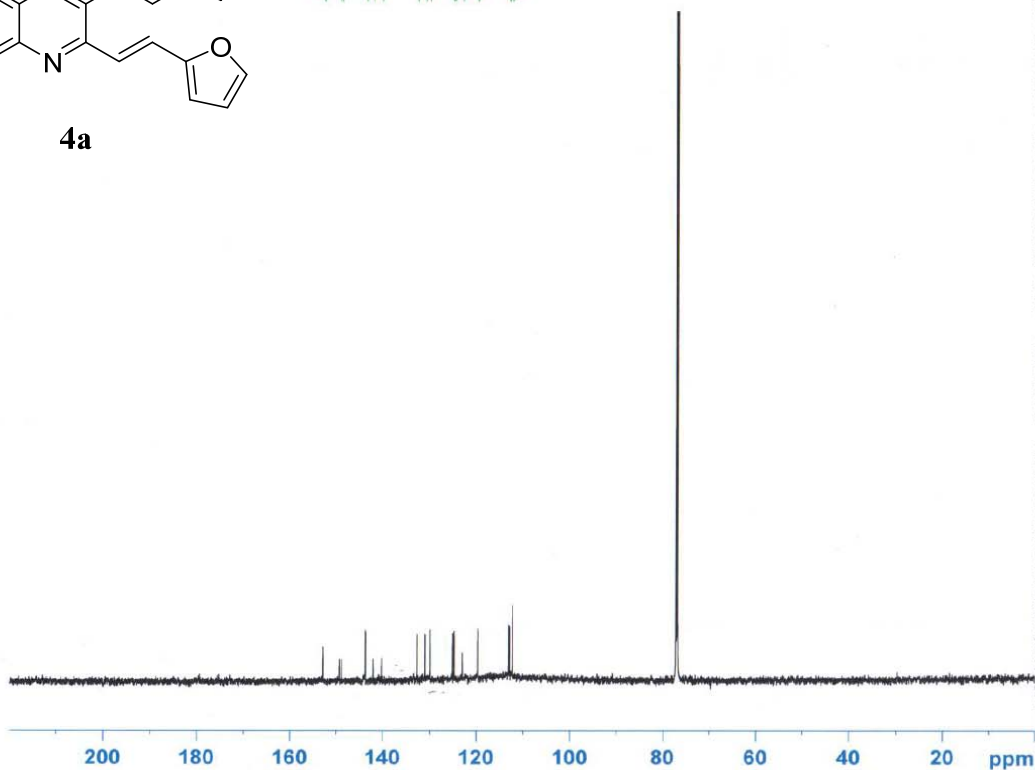


¹H NMR (600 MHz, CDCl₃) for compound **4a**

¹³C of JSZ2-144



152.87
152.82
149.36
148.94
143.75
143.70
142.11
140.31
132.68
130.88
129.89
125.06
124.79
123.05
119.76
119.66
113.07
112.50
112.28

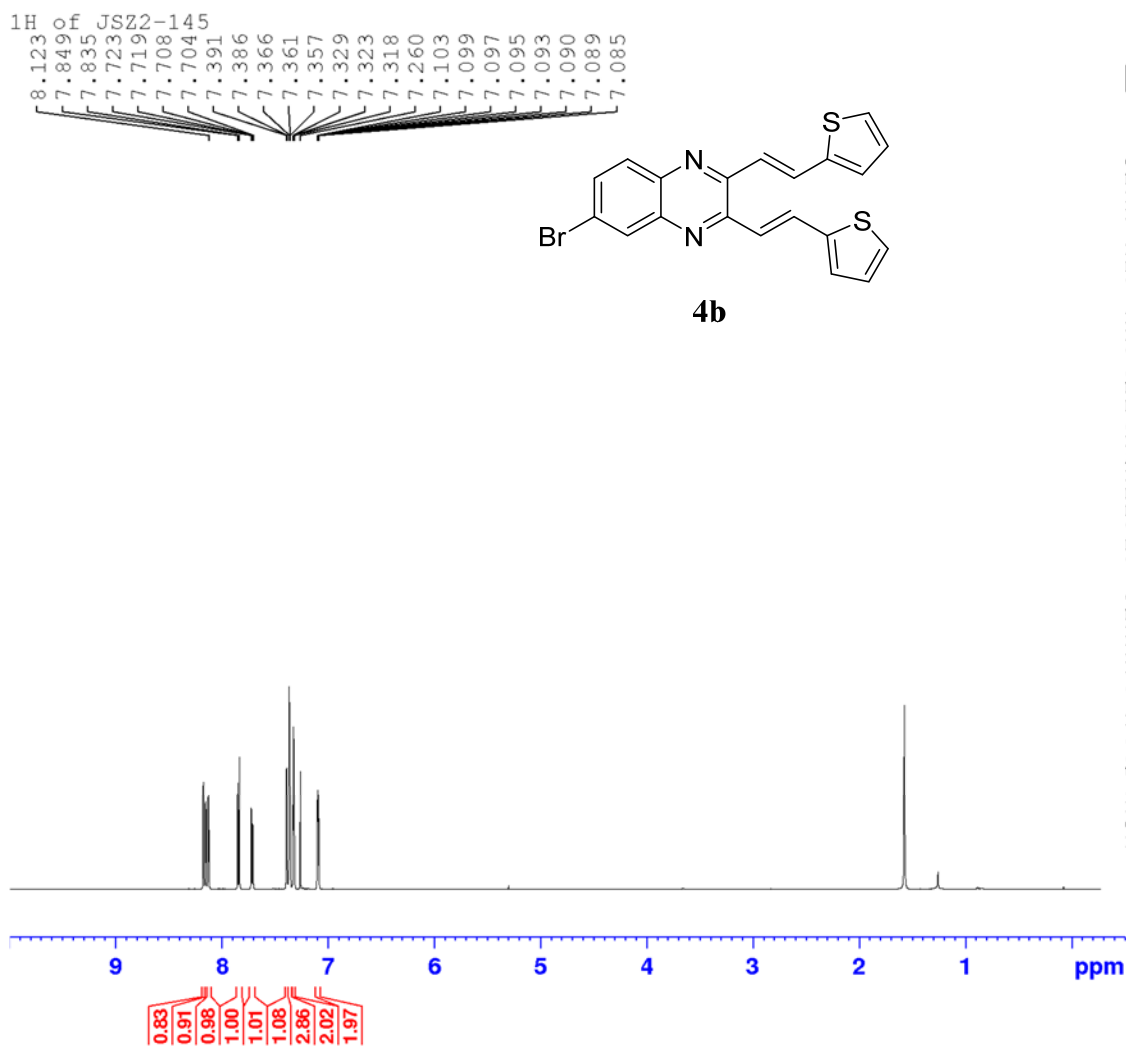


NAME JSZ2-144
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PROCNO 1
Date_ 20220419
Time_ 10.51
INSTRUM spect
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PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 608
DS 0
SWH 34013.605 Hz
FIDRES 0.519006 Hz
AQ 0.9634439 sec
RG 46300
DW 14.700 usec
DE 6.00 usec
TE 300.1 K
D1 2.4000010 sec
D11 0.03000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 13C
P1 10.95 usec
PL1 -4.00 dB
PL1W 236.60900879 W
SFO1 150.9194083 MHz

===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 2.00 dB
PL12 19.00 dB
PL13 21.00 dB
PL2W 12.67914581 W
PL12W 0.25298220 W
PL13W 0.15962099 W
SFO2 600.1339008 MHz
SI 32768
SF 150.9028108 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00

¹³C NMR (150 MHz, CDCl₃) for compound **4a**



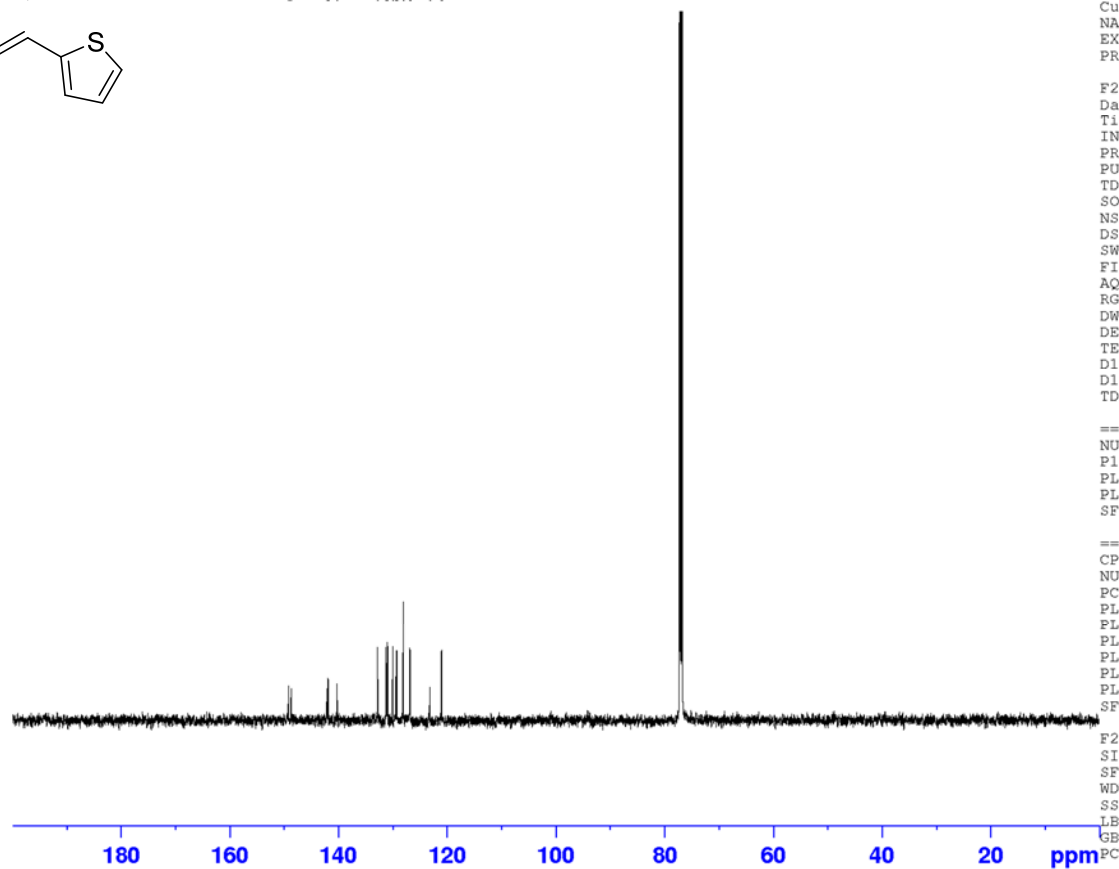
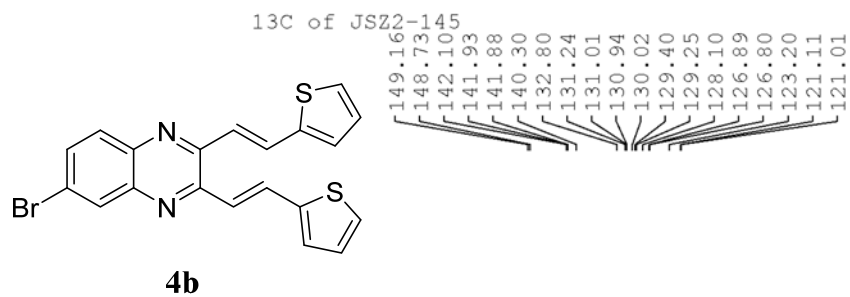
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EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
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INSTRUM spect
PROBHD 5 mm TXI 1H/D-
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 16
DS 0
SWH 6313.131 Hz
FIDRES 0.192661 Hz
AQ 2.5952256 sec
RG 912
DW 79.200 usec
DE 6.00 usec
TE 300.0 K
D1 2.0000000 sec
TD0 1

----- CHANNEL f1 -----
NUC1 1H
P1 15.00 usec
PL1 -0.80 dB
PL1W 24.15961456 W
SFO1 600.1330006 MHz

F2 - Processing parameters
SI 32768
SF 600.1300108 MHz
WDW no
SSB 0
LB 0 Hz
GB 0
PC 1.00

¹H NMR (600 MHz, CDCl₃) for compound **4b**



Current Data Parameters
 NAME JSZ2-145
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20220420
 Time 16.24
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 381
 DS 0
 SWH 33333.332 Hz
 FIDRES 0.508626 Hz
 AQ 0.9830400 sec
 RG 46300
 DW 15.000 usec
 DE 6.00 usec
 TE 300.9 K
 D1 2.40000010 sec
 D11 0.03000000 sec
 TD0 1

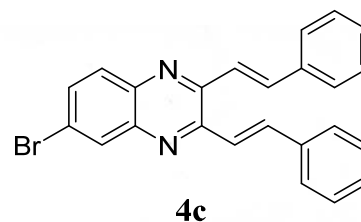
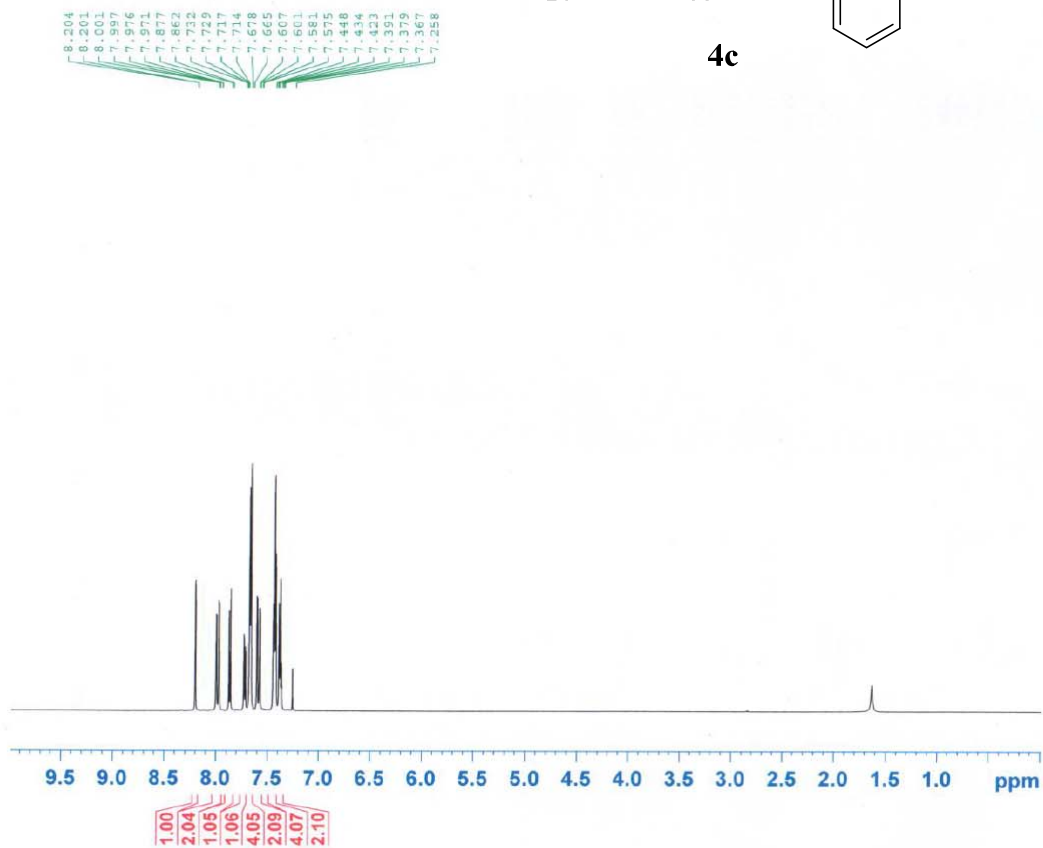
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 P1 10.00 usec
 PL1 -1.60 dB
 PL1W 136.15426636 W
 SFO1 150.9194083 MHz

===== CHANNEL f2 =====
 CPDPRG[2] waltz16
 NUC2 1H
 PCPD2 90.00 usec
 PL2 -1.50 dB
 PL12 13.20 dB
 PL13 16.20 dB
 PL2W 28.38507080 W
 PL12W 0.96181160 W
 PL13W 0.48204759 W
 SFO2 600.1339008 MHz

F2 - Processing parameters
 SI 32768
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 WDW EM
 SSB 0
 LB 3.00 Hz
 GB 0
 PC 1.00

^{13}C NMR (150 MHz, CDCl_3) for compound **4b**

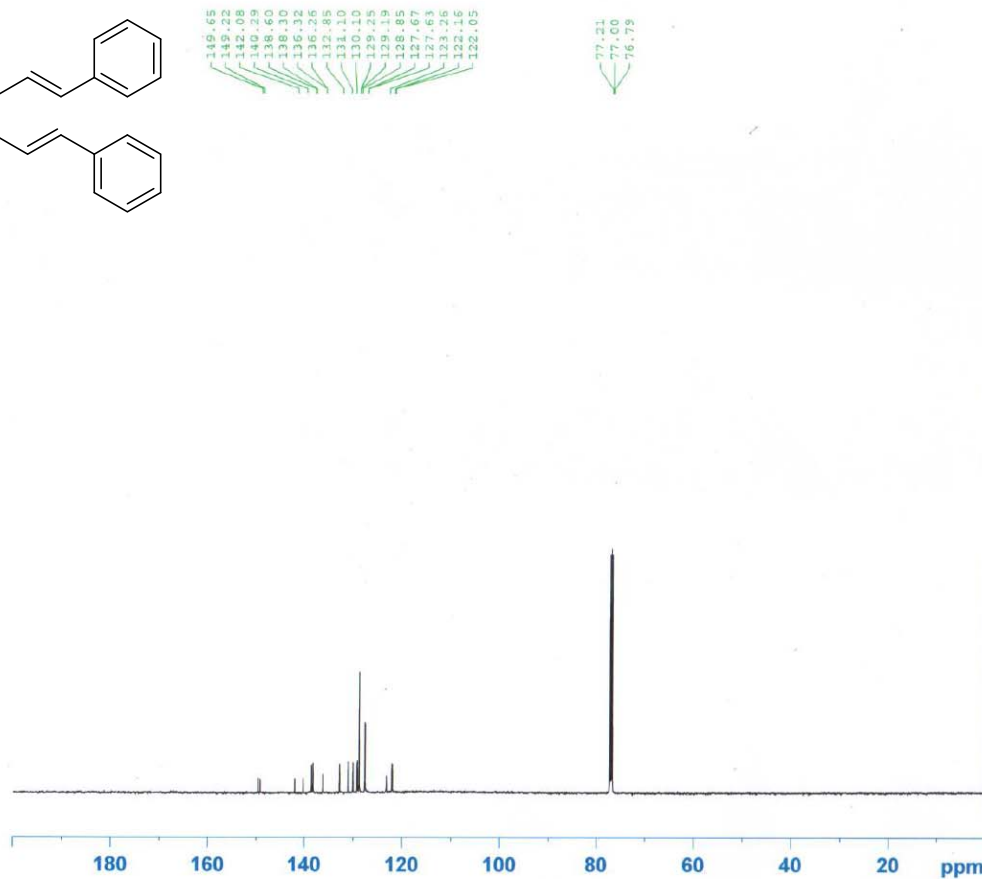
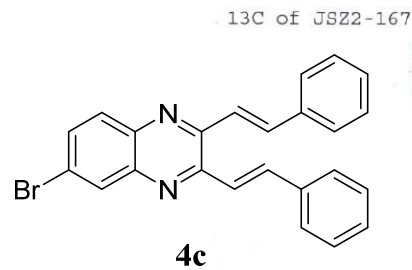
1H of JSZ2-167



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PROCNO 1
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PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 1
DS 0
SWH 6009.615 Hz
FIDRES 0.183399 Hz
AQ 2.7264309 sec
RG 456
DW 83.200 usec
DE 6.00 usec
TE 299.9 K
D1 2.00000000 sec
TD0 1
```

```
----- CHANNEL f1 -----
NUC1 1H
P1 8.00 usec
PL1 -0.57 dB
PL1W 22.91342354 W
SFO1 600.1330006 MHz
SI 16384
SF 600.1300120 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
```

¹H NMR (600 MHz, CDCl₃) for compound **4c**



149.65
149.22
142.08
140.29
138.60
138.50
136.32
136.26
132.85
131.10
130.10
129.25
129.19
128.85
127.67
127.63
127.16
122.05

77.31
77.00
76.79

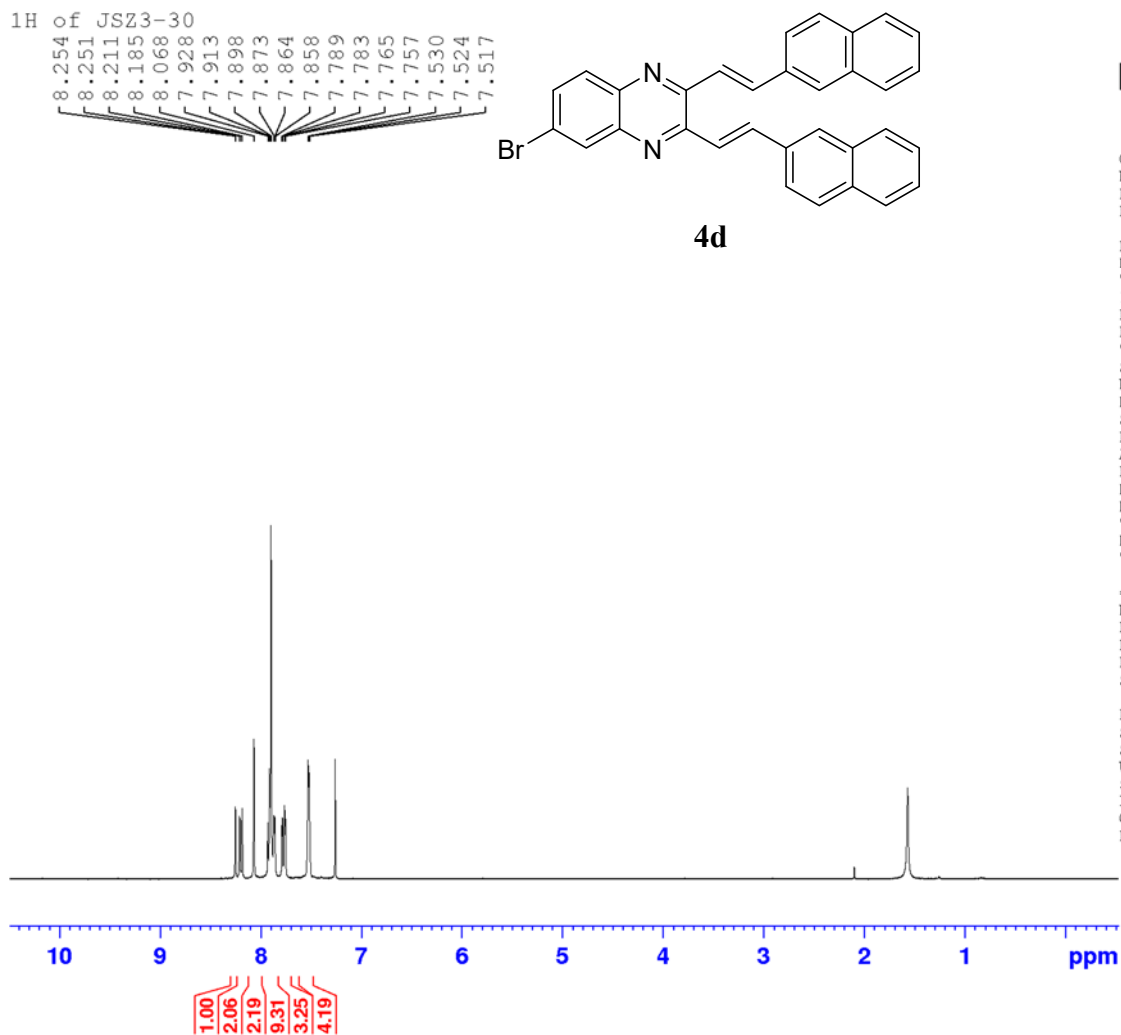


NAME JSZ2-167
EXPNO 2
PROCNO 1
Date_ 20210722
Time 8.59
INSTRUM spect
PROBHD 5 mm TXI 1H/D-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 443
DS 0
SWH 33333.332 Hz
FIDRES 0.508626 Hz
AQ 0.9831050 sec
RG 46300
DW 15.000 usec
DE 6.00 usec
TE 300.1 K
D1 2.40000010 sec
D11 0.03000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 13C
P1 12.00 usec
PL1 -3.00 dB
PL1W 187.94520569 W
SFO1 150.9194083 MHz

===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -3.00 dB
PL12 17.00 dB
PL13 20.00 dB
PL2W 40.09497833 W
PL12W 0.40094978 W
PL13W 0.20095092 W
SFO2 600.1339008 MHz
SI 32768
SF 150.9028152 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00

^{13}C NMR (150 MHz, CDCl_3) for compound **4c**



Current Data Parameters
 NAME JSZ3-30
 EXPNO 1
 PROCNO 1

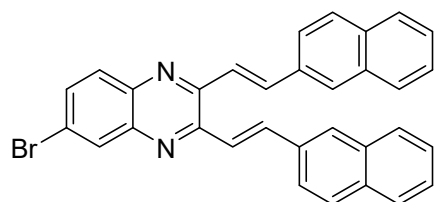
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 PULPROG zg30
 TD 32768
 SOLVENT CDC13
 NS 16
 DS 0
 SWH 6613.757 Hz
 FIDRES 0.201836 Hz
 AQ 2.4772608 sec
 RG 5790
 DW 75.600 usec
 DE 6.00 usec
 TE 297.8 K
 D1 2.0000000 sec
 TD0 1

----- CHANNEL f1 -----
 NUC1 1H
 P1 10.00 usec
 PL1 -2.70 dB
 PL1W 37.41881180 W
 SFO1 600.1330006 MHz

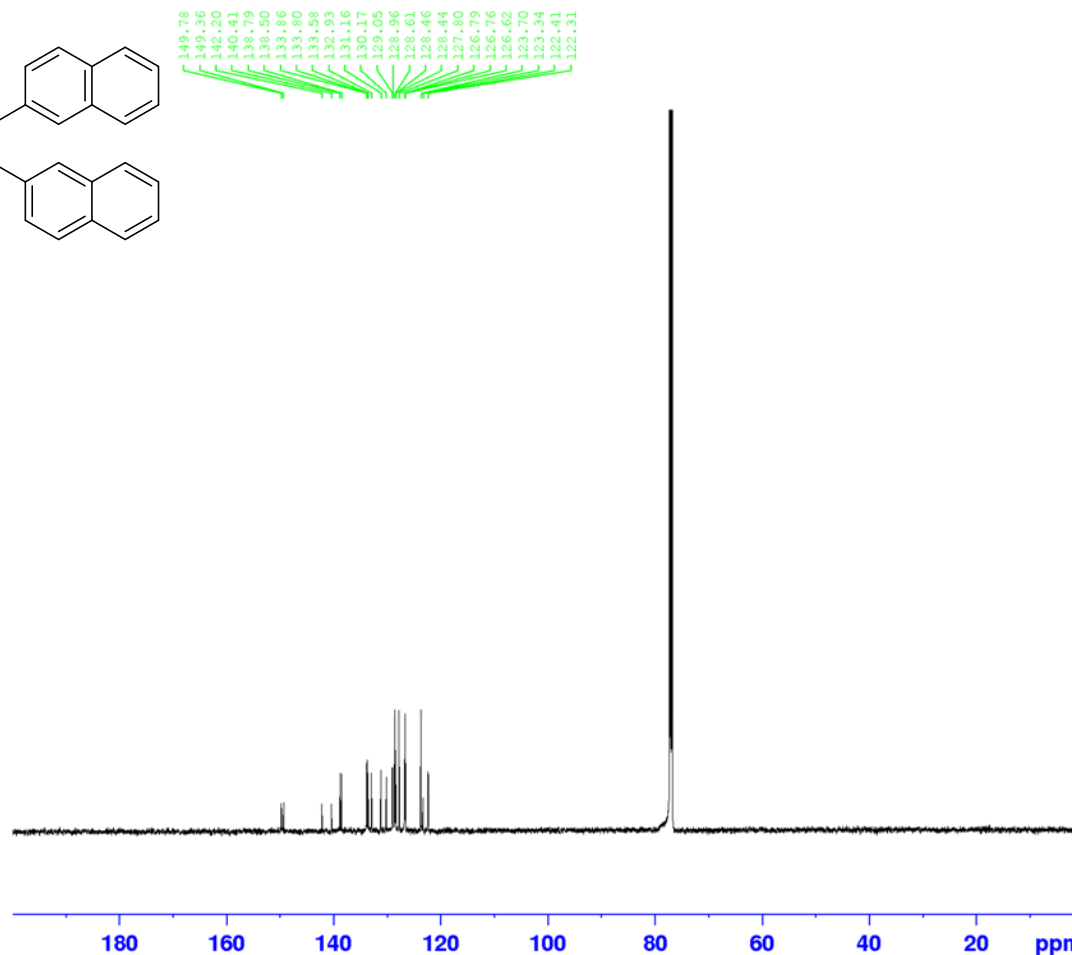
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 WDW no
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 LB 0 Hz
 GB 0
 PC 1.00

¹H NMR (600 MHz, CDCl₃) for compound **4d**

13C of JSZ3-30



4d



Current Data Parameters
NAME JSZ3-30
EXPNO 2
PROCNO 1

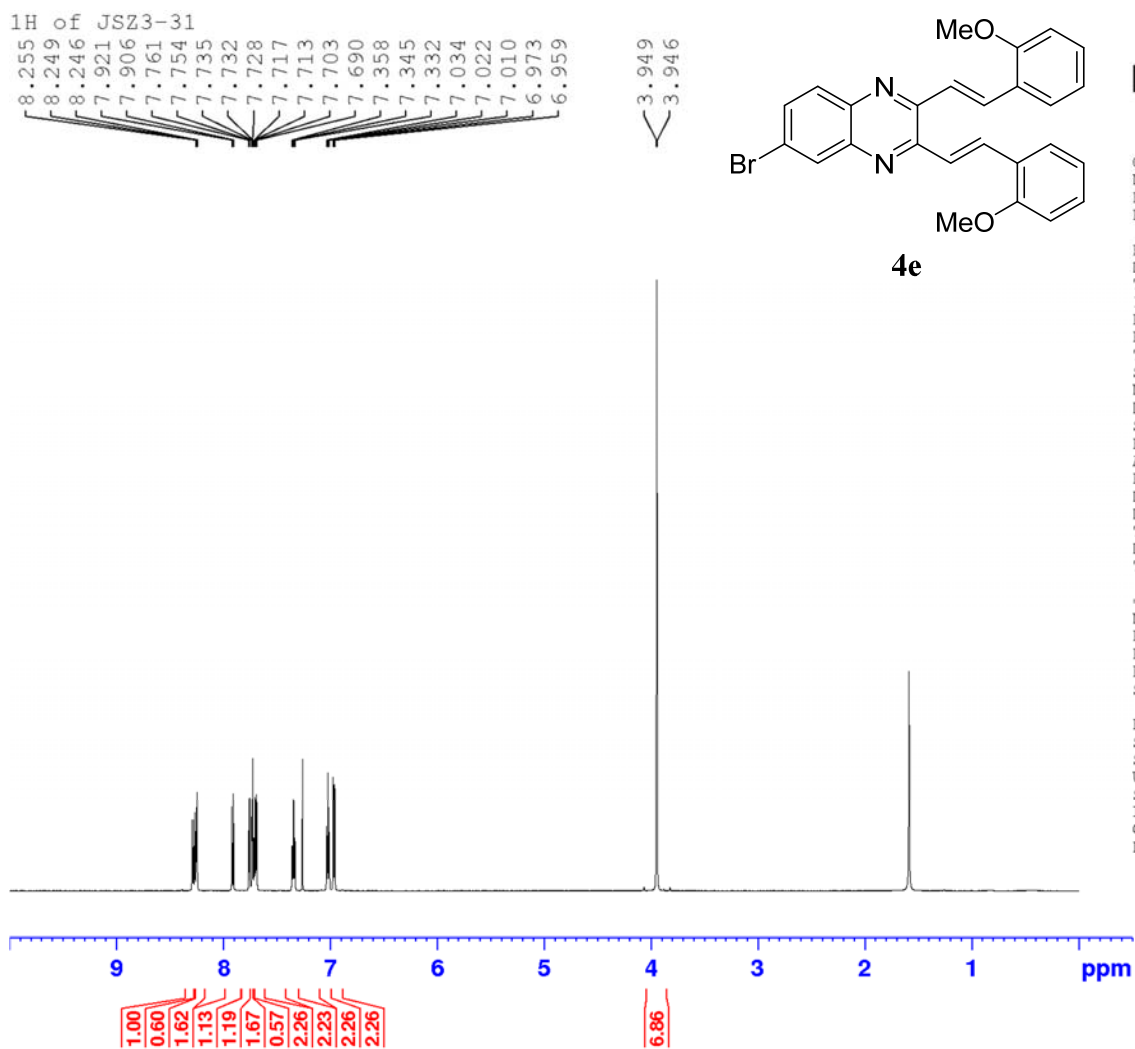
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Time 8.56
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PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 3001
DS 0
SWH 33333.332 Hz
FIDRES 0.508626 Hz
AQ 0.9830400 sec
RG 46300
DW 15.000 usec
DE 6.00 usec
TE 299.3 K
D1 2.40000010 sec
D11 0.03000000 sec
TDO 1

===== CHANNEL f1 =====
NUC1 13C
P1 10.00 usec
PL1 -1.60 dB
PL1W 136.15426636 W
SFO1 150.9194083 MHz

===== CHANNEL f2 =====
CPDPRG[2] waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -1.50 dB
PL12 13.20 dB
PL13 16.20 dB
PL2W 28.38507080 W
PL12W 0.96181160 W
PL13W 0.48204759 W
SFO2 600.1339008 MHz

F2 - Processing parameters
SI 32768
SF 150.9028098 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00

^{13}C NMR (150 MHz, CDCl_3) for compound 4d



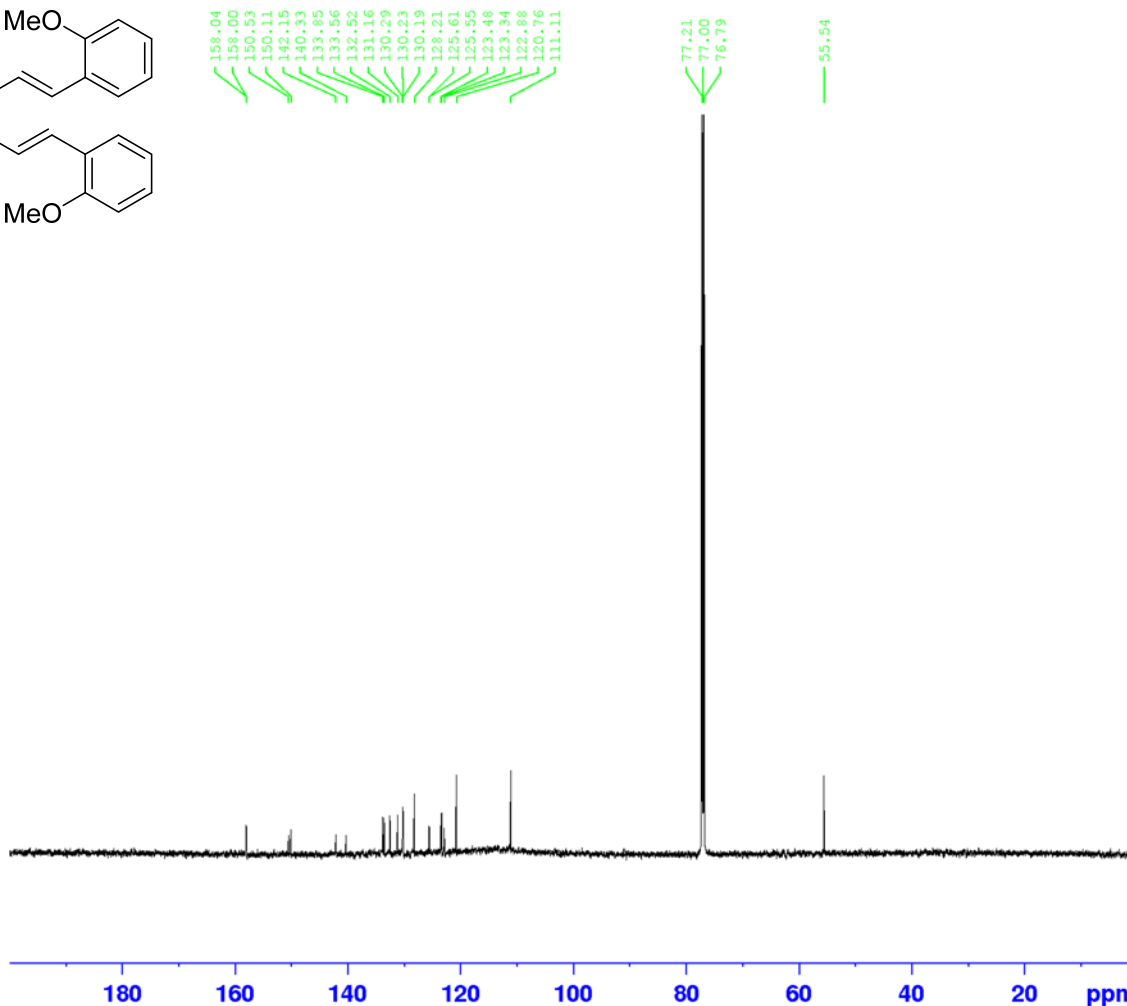
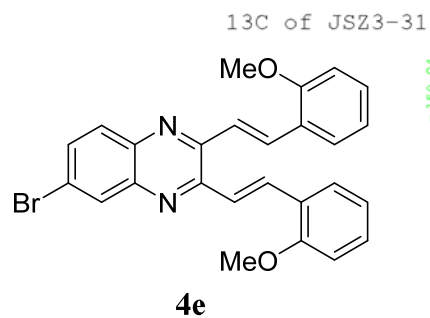
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 PULPROG zg30
 TD 32768
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 7183.908 Hz
 FIDRES 0.219235 Hz
 AQ 2.2806528 sec
 RG 1150
 DW 69.600 usec
 DE 6.00 usec
 TE 300.0 K
 D1 2.0000000 sec
 TD0 1

----- CHANNEL f1 -----
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 P1 8.00 usec
 PL1 0.20 dB
 PL1W 19.19066429 W
 SF01 600.1336008 MHz

F2 - Processing parameters
 SI 32768
 SF 600.1300106 MHz
 WDW no
 SSB 0
 LB 0 Hz
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¹H NMR (600 MHz, CDCl₃) for compound 4e



Current Data Parameters
 NAME JSZ3-31
 EXPNO 12
 PROCNO 1

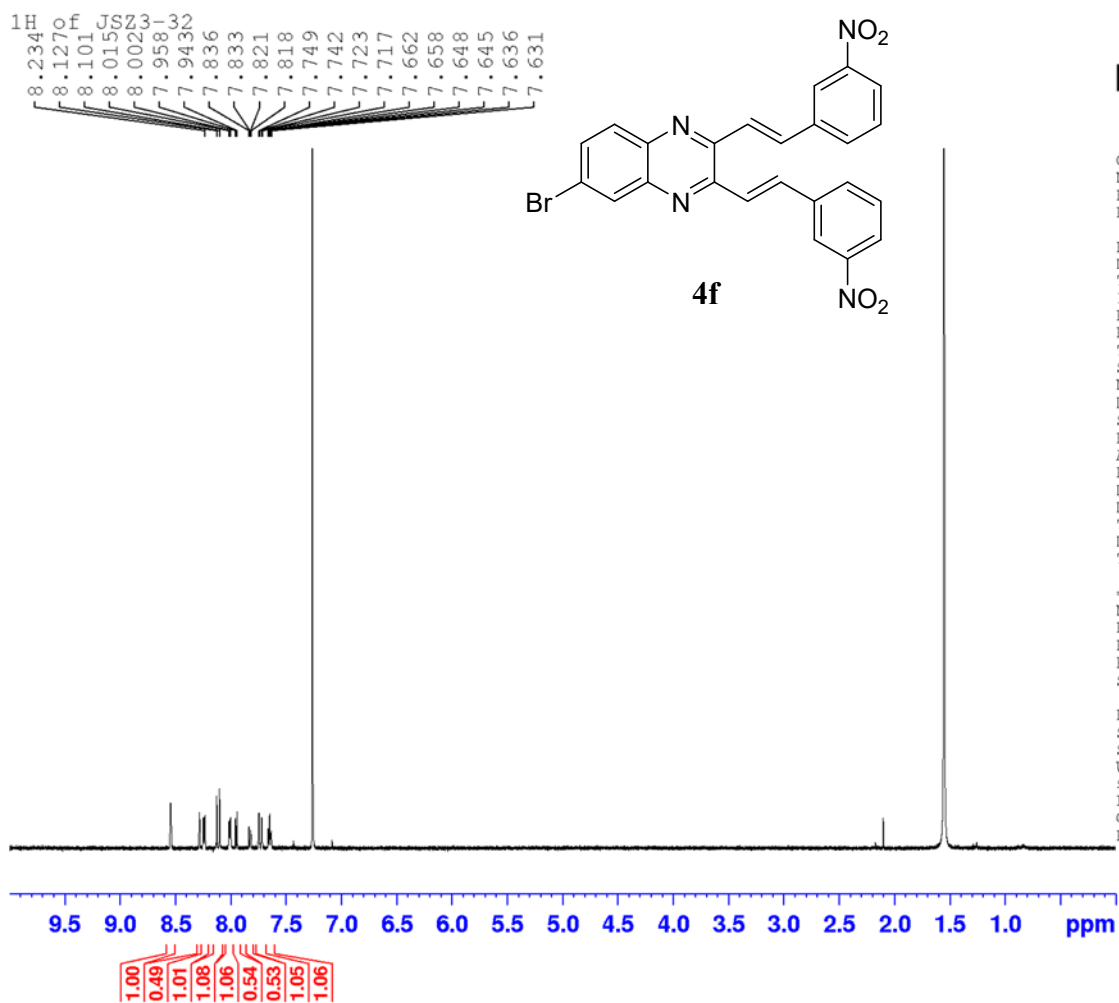
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 Time 15.49
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 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 1015
 DS 0
 SWH 33333.332 Hz
 FIDRES 0.508626 Hz
 AQ 0.9830400 sec
 RG 41200
 DW 15.000 usec
 DE 6.00 usec
 TE 300.1 K
 D1 2.40000010 sec
 D11 0.03000000 sec
 TDO 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 12.00 usec
 PL1 -5.20 dB
 PL1W 311.91140747 W
 SFO1 150.9194083 MHz

==== CHANNEL f2 =====
 CPDPRG[2] waltz16
 NUC2 1H
 PCPD2 90.00 usec
 PL2 -2.00 dB
 PL12 10.00 dB
 PL13 21.00 dB
 PL2W 31.84857368 W
 PL12W 0.31848574 W
 PL13W 0.15962099 W
 SFO2 600.1339008 MHz

F2 - Processing parameters
 SI 32768
 SF 150.9028106 MHz
 WDW EM
 SSB 0
 LB 3.00 Hz
 GB 0
 PC 1.00

¹³C NMR (150 MHz, CDCl₃) for compound **4e**



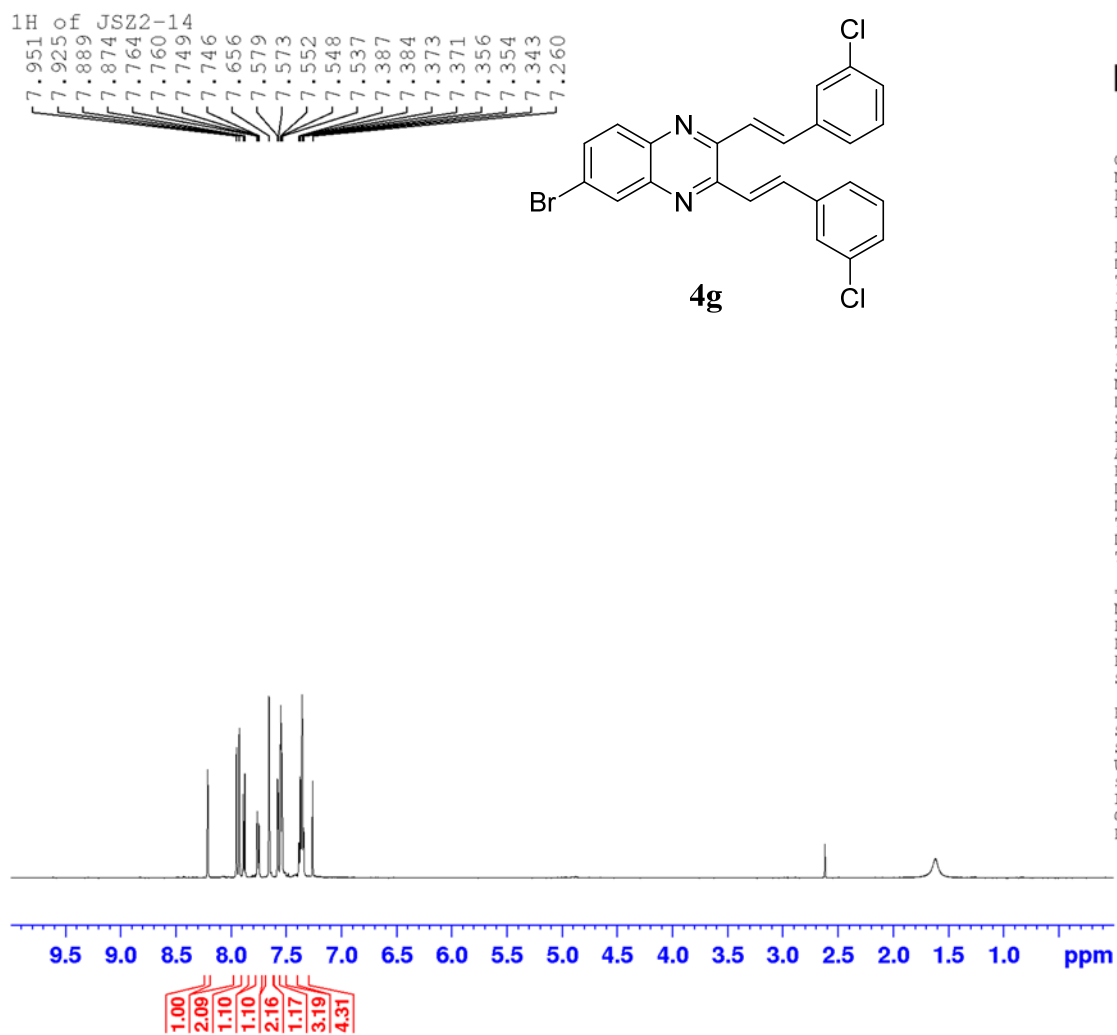
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 PROCNO 1

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 PULPROG zg30
 TD 32768
 SOLVENT CDCl3
 NS 32
 DS 0
 SWH 6613.757 Hz
 FIDRES 0.201836 Hz
 AQ 2.4772608 sec
 RG 16400
 DW 75.600 usec
 DE 6.00 usec
 TE 297.4 K
 D1 2.0000000 sec
 TD0 1

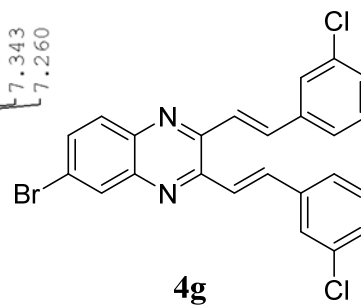
----- CHANNEL f1 -----
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 P1 10.00 usec
 PL1 -2.70 dB
 PL1W 37.41881180 W
 SFO1 600.1330006 MHz

F2 - Processing parameters
 SI 32768
 SF 600.1300101 MHz
 WDW no
 SSB 0
 LB 0 Hz
 GB 0
 PC 1.00

¹H NMR (600 MHz, CDCl₃) for compound **4f**



7.951
7.925
7.889
7.874
7.764
7.760
7.749
7.746
7.656
7.579
7.573
7.552
7.548
7.537
7.387
7.384
7.373
7.371
7.356
7.354
7.343
7.260



Current Data Parameters
NAME JSZ2-14
EXPNO 1
PROCNO 1

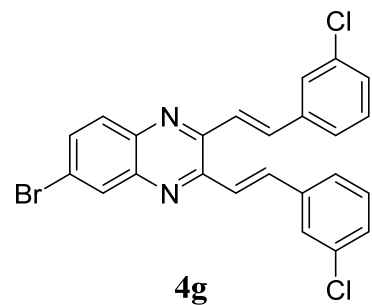
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PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 16
DS 0
SWH 6613.757 Hz
FIDRES 0.201836 Hz
AQ 2.4772608 sec
RG 3250
DW 75.600 usec
DE 6.00 usec
TE 297.1 K
D1 2.00000000 sec
TDO 1

===== CHANNEL f1 =====
NUC1 1H
P1 10.00 usec
PL1 -2.70 dB
PLIW 37.41881180 W
SFO1 600.1330006 MHz

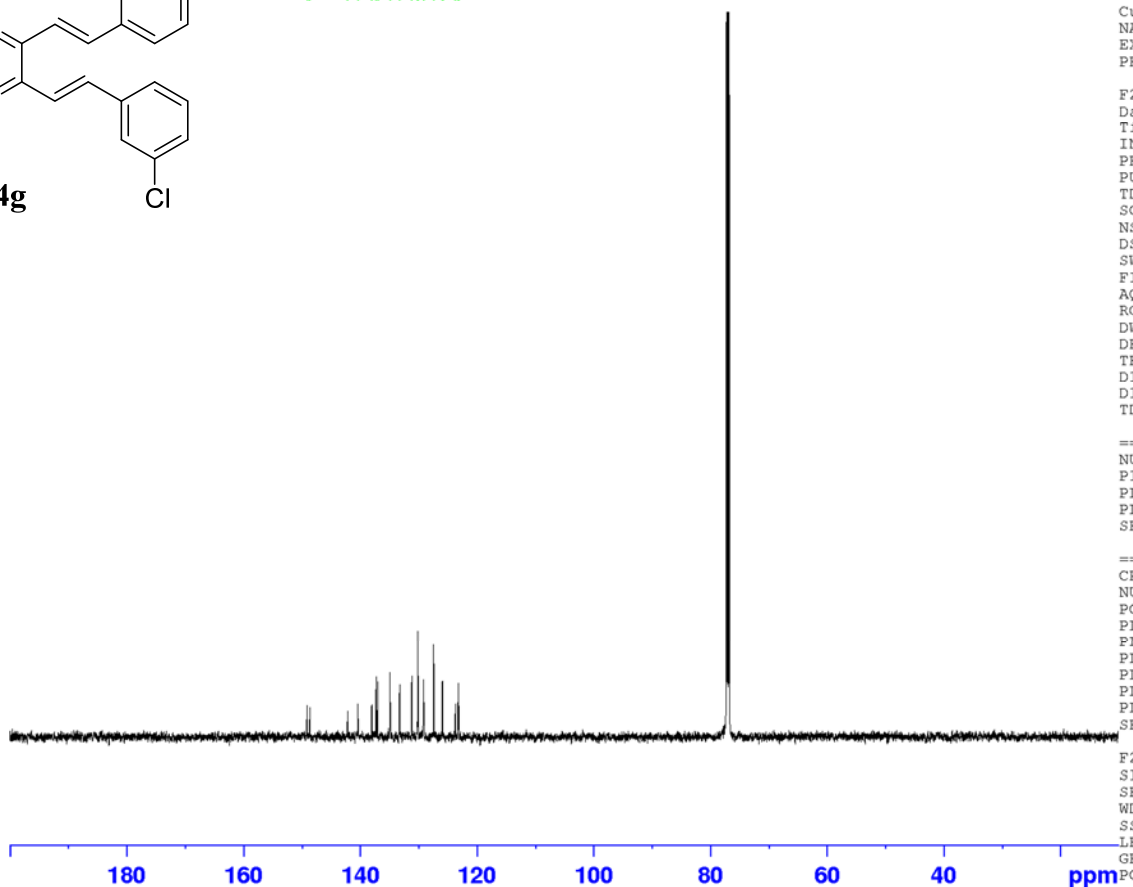
F2 - Processing parameters
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SF 600.1300100 MHz
WDW no
SSB 0
LB 0 Hz
GB 0
PC 1.00

¹H NMR (600 MHz, CDCl₃) for compound **4g**

13C of JSZ2-14



149.11
148.67
142.19
140.42
138.10
138.04
137.31
137.02
134.91
133.27
131.20
130.20
130.12
129.21
129.15
127.42
125.84
123.87
123.73
123.23
123.14



Current Data Parameters
NAME JSZ2-14
EXPNO 2
PROCNO 1

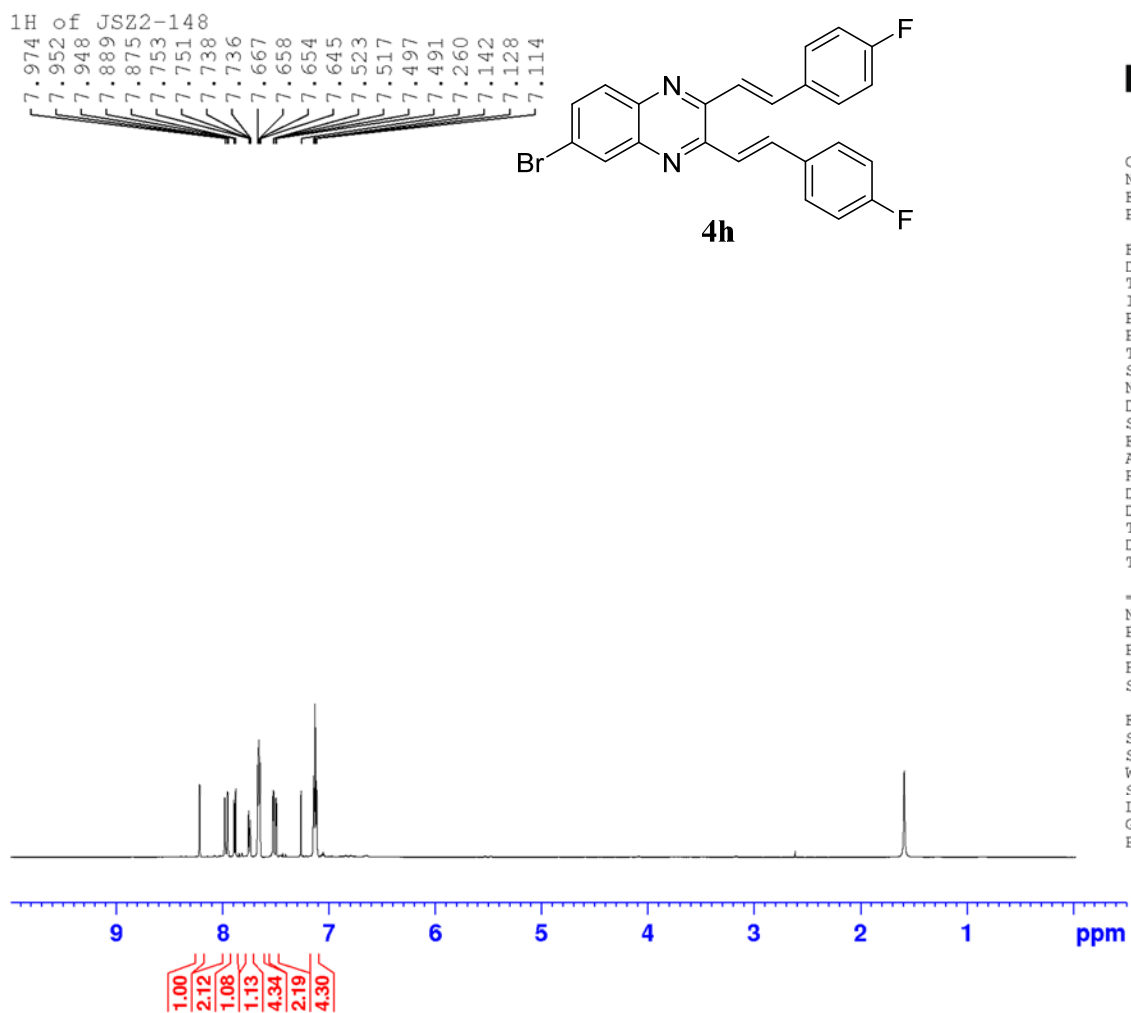
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Time_ 16.35
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PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 866
DS 0
SWH 33333.332 Hz
FIDRES 0.508626 Hz
AQ 0.9830400 sec
RG 46300
DW 15.000 usec
DE 6.00 usec
TE 300.4 K
D1 2.4000010 sec
D11 0.03000000 sec
TD0 1

=====
CHANNEL f1
NUC1 13C
P1 10.00 usec
PL1 -1.60 dB
PL1W 136.15426636 W
SFO1 150.9194083 MHz

=====
CHANNEL f2
CPDPRG[2] waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -1.50 dB
PL12 13.20 dB
PL13 16.20 dB
PL2W 28.38507080 W
PL12W 0.96181160 W
PL13W 0.48204759 W
SFO2 600.1339008 MHz

F2 - Processing parameters
SI 32768
SF 150.9028097 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00

¹³C NMR (150 MHz, CDCl₃) for compound 4g



Current Data Parameters
 NAME JSZ2-148
 EXPNO 1
 PROCNO 1

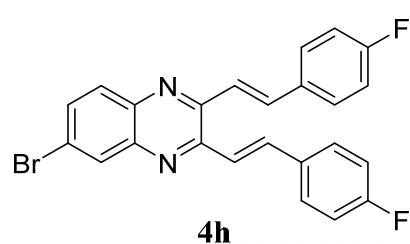
F2 - Acquisition Parameters
 Date_ 20220315
 Time 13.37
 INSTRUM spect
 PROBHD 5 mm TXI 1H/D-
 PULPROG zg30
 TD 32768
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 6009.615 Hz
 FIDRES 0.183399 Hz
 AQ 2.7262976 sec
 RG 1290
 DW 83.200 usec
 DE 6.00 usec
 TE 299.9 K
 D1 2.0000000 sec
 TD0 1

----- CHANNEL f1 -----
 NUC1 1H
 P1 8.00 usec
 PL1 0.20 dB
 PL1W 19.19066429 W
 SFO1 600.1330006 MHz

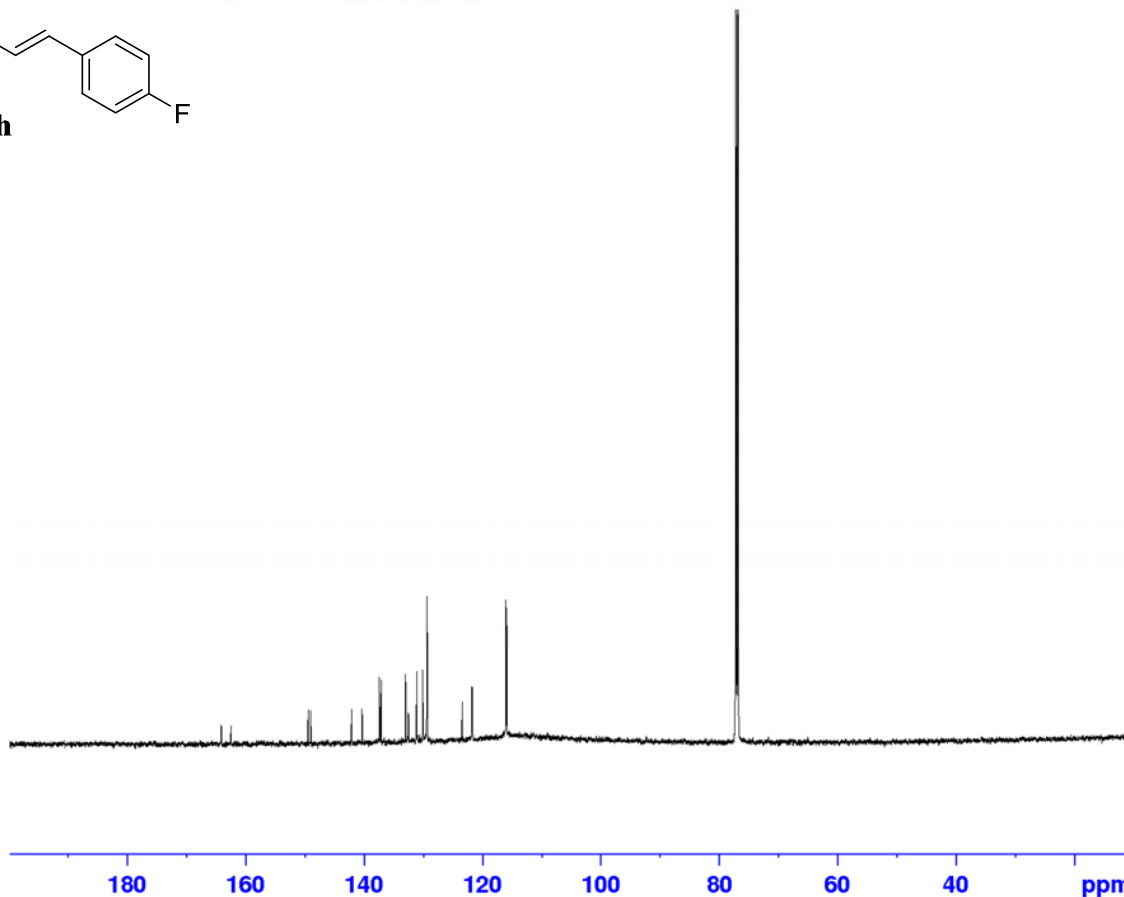
F2 - Processing parameters
 SI 32768
 SF 600.1300110 MHz
 WDW no
 SSB 0
 LB 0 Hz
 GB 0
 PC 1.00

^1H NMR (600 MHz, CDCl_3) for compound **4h**

13C of JSZ2-148



164.17
164.13
162.51
149.47
149.04
145.12
140.33
137.43
137.14
133.00
132.54
131.50
131.11
130.11
129.42
129.37
129.31
125.41
121.80
121.69
116.05
115.90



Current Data Parameters
NAME JSZ2-148
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20220315
Time 15.16
INSTRUM spect
PROBHD 5 mm TXI 1H/D-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 2068
DS 0
SWH 33333.332 Hz
FIDRES 0.508626 Hz
AQ 0.9830400 sec
RG 41200
DW 15.000 usec
DE 6.00 usec
TE 300.1 K
D1 2.4000010 sec
D11 0.03000000 sec
TD0 1

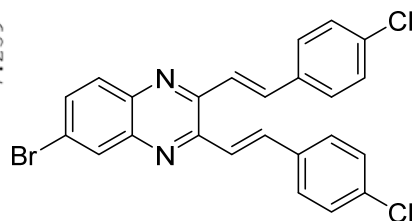
===== CHANNEL f1 =====
NUC1 13C
P1 12.00 usec
PL1 -5.20 dB
PL1W 311.91140747 W
SFO1 150.9194083 MHz

===== CHANNEL f2 =====
CPDPRG[2] waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -2.00 dB
PL12 18.00 dB
PL13 21.00 dB
PL2W 31.84857368 W
PL12W 0.31848574 W
PL13W 0.15962099 W
SFO2 600.1339008 MHz

F2 - Processing parameters
SI 32768
SF 150.9028108 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00

¹³C NMR (150 MHz, CDCl₃) for compound **4h**

¹H
 8.222
 7.970
 7.944
 7.897
 7.882
 7.766
 7.763
 7.751
 7.748
 7.613
 7.599
 7.576
 7.570
 7.550
 7.544
 7.415
 7.413
 7.401
 7.259



4i

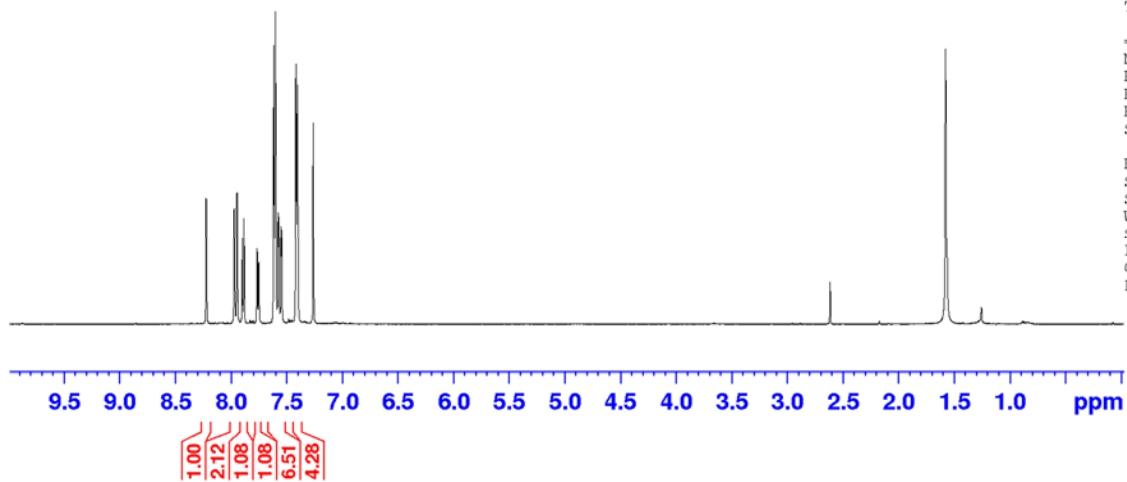


Current Data Parameters
 NAME JSZ3-9
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20220329
 Time 15.31
 INSTRUM spect
 PROBHD 5 mm TXI 1H/D-
 PULPROG zg30
 TD 32768
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 6613.757 Hz
 FIDRES 0.201836 Hz
 AQ 2.4772608 sec
 RG 2890
 DW 75.600 usec
 DE 6.00 usec
 TE 334.1 K
 D1 2.0000000 sec
 TD0 1

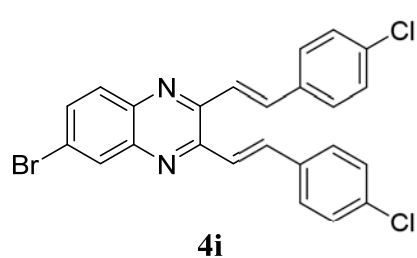
----- CHANNEL f1 -----
 NUC1 1H
 P1 8.00 usec
 PL1 0.20 dB
 PL1W 19.19066429 W
 SF01 600.1330006 MHz

F2 - Processing parameters
 SI 32768
 SF 600.1300113 MHz
 WDW EM
 SSR 0
 LB 0 Hz
 GB 0
 PC 1.00

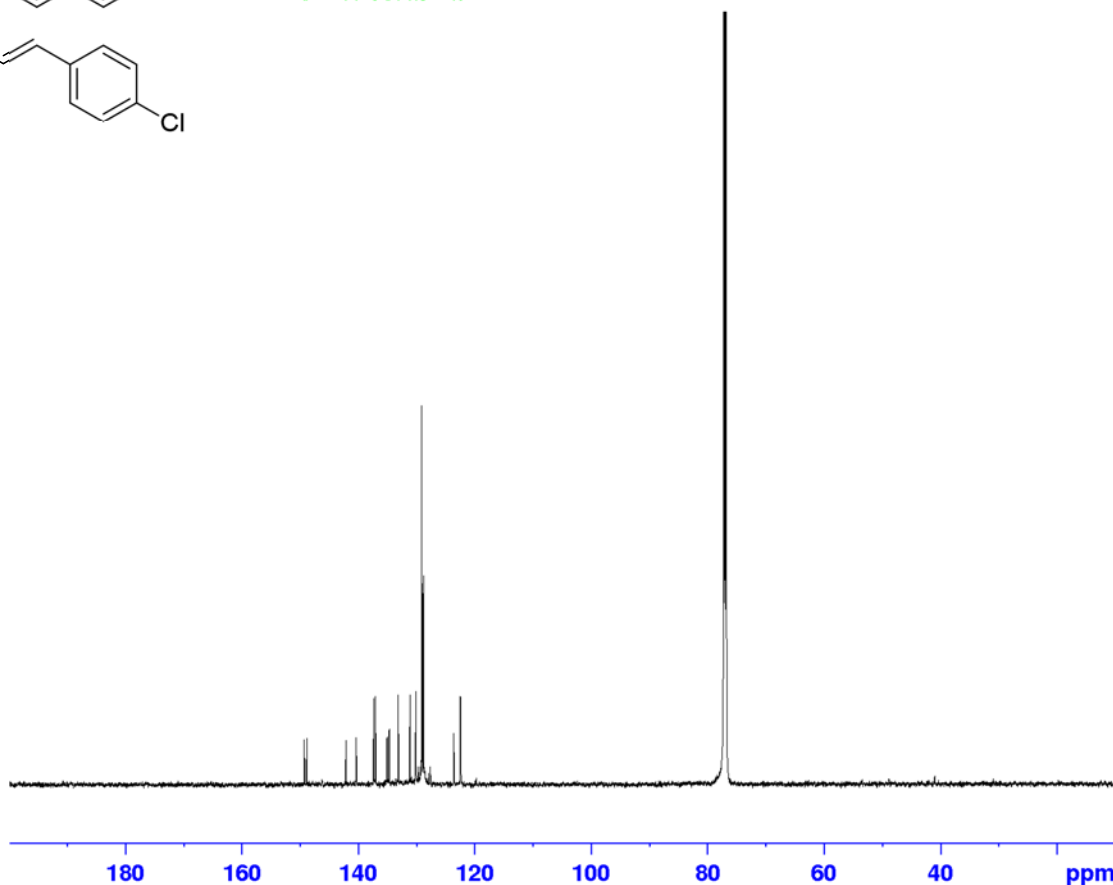


¹H NMR (600 MHz, CDCl₃) for compound **4i**

13C of JSZ3-9



149.30
148.87
142.15
140.37
137.36
137.07
135.13
135.06
134.76
134.70
133.16
131.14
130.14
129.14
128.83
128.79
123.60
122.50
122.40



Current Data Parameters
NAME JSZ3-9
EXPNO 2
PROCNO 1

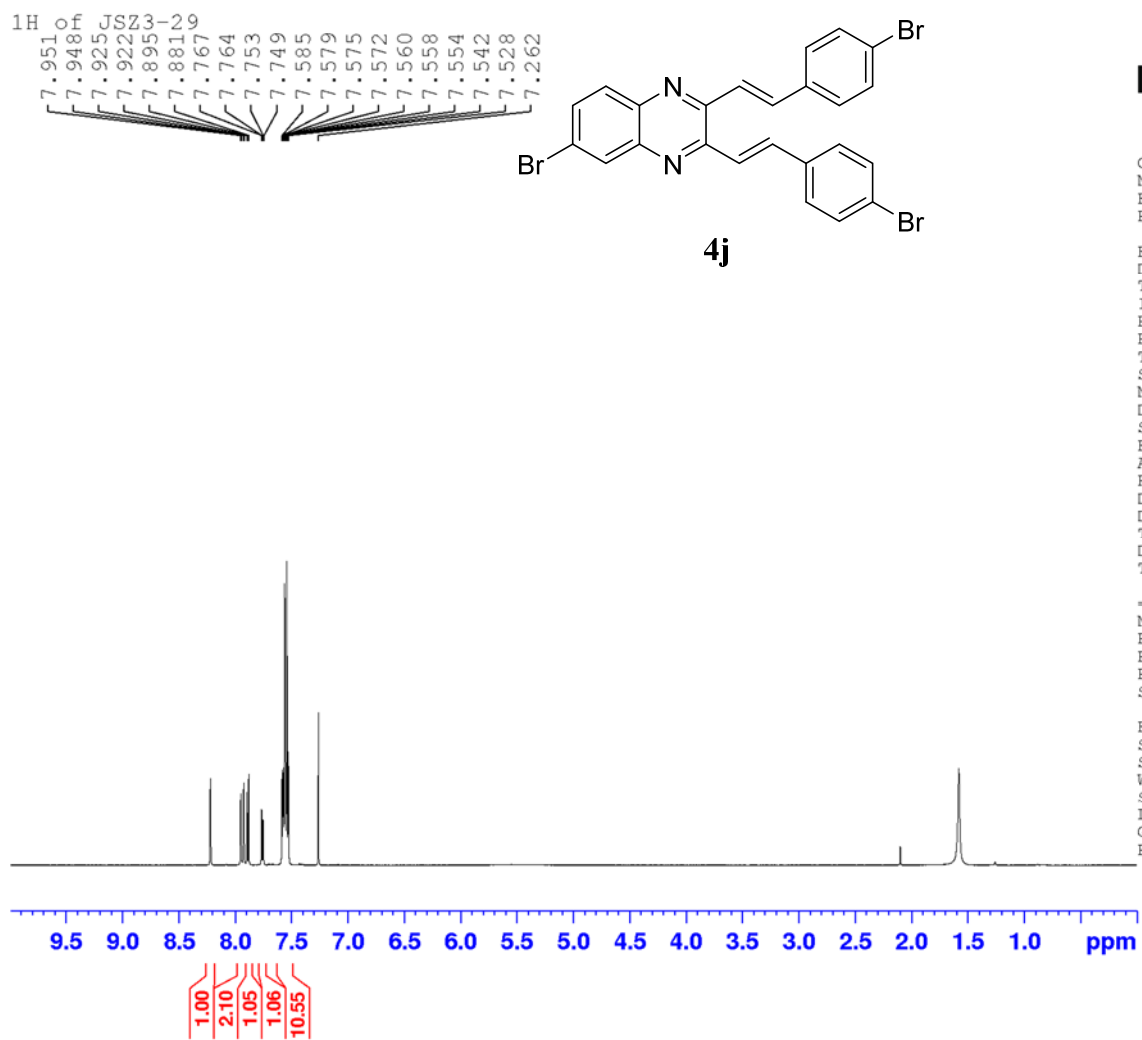
F2 - Acquisition Parameters
Date_ 20220326
Time 7.41
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 16000
DS 0
SWH 33333.332 Hz
FIDRES 0.508626 Hz
AQ 0.9830400 sec
RG 46300
DW 15.000 usec
DE 6.00 usec
TE 674.0 K
D1 2.40000010 sec
D11 0.03000000 sec
TD0 1

==== CHANNEL f1 =====
NUC1 13C
P1 9.00 usec
PL1 2.50 dB
PL1W 52.97015762 W
SFO1 150.9194083 MHz

==== CHANNEL f2 =====
CPDPRG[2] waltz16
NUC2 1H
PCPD2 100.00 usec
PL2 -2.60 dB
PL12 15.50 dB
PL13 18.00 dB
PL2W 36.56705475 W
PL12W 0.56635660 W
PL13W 0.31848574 W
SFO2 600.1339008 MHz

F2 - Processing parameters
SI 32768
SF 150.9028109 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00

¹³C NMR (150 MHz, CDCl₃) for compound **4i**



Current Data Parameters
 NAME JSZ3-29
 EXPNO 1
 PROCNO 1

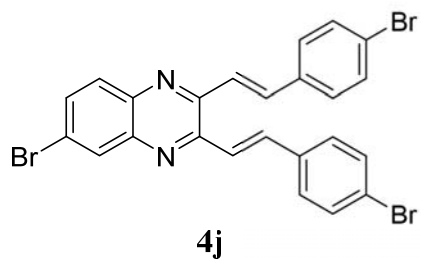
F2 - Acquisition Parameters
 Date_ 20220330
 Time 16.21
 INSTRUM spect
 PROBHD 5 mm TXI 1H/D-
 PULPROG zg30
 TD 32768
 SOLVENT CDC13
 NS 16
 DS 0
 SWH 6613.757 Hz
 FIDRES 0.201836 Hz
 AQ 2.4772608 sec
 RG 2890
 DW 75.600 usec
 DE 6.00 usec
 TE 300.0 K
 D1 2.00000000 sec
 TDO 1

----- CHANNEL f1 -----
 NUC1 1H
 P1 8.00 usec
 PL1 0.20 dB
 PL1W 19.19066429 W
 SFO1 600.1330006 MHz

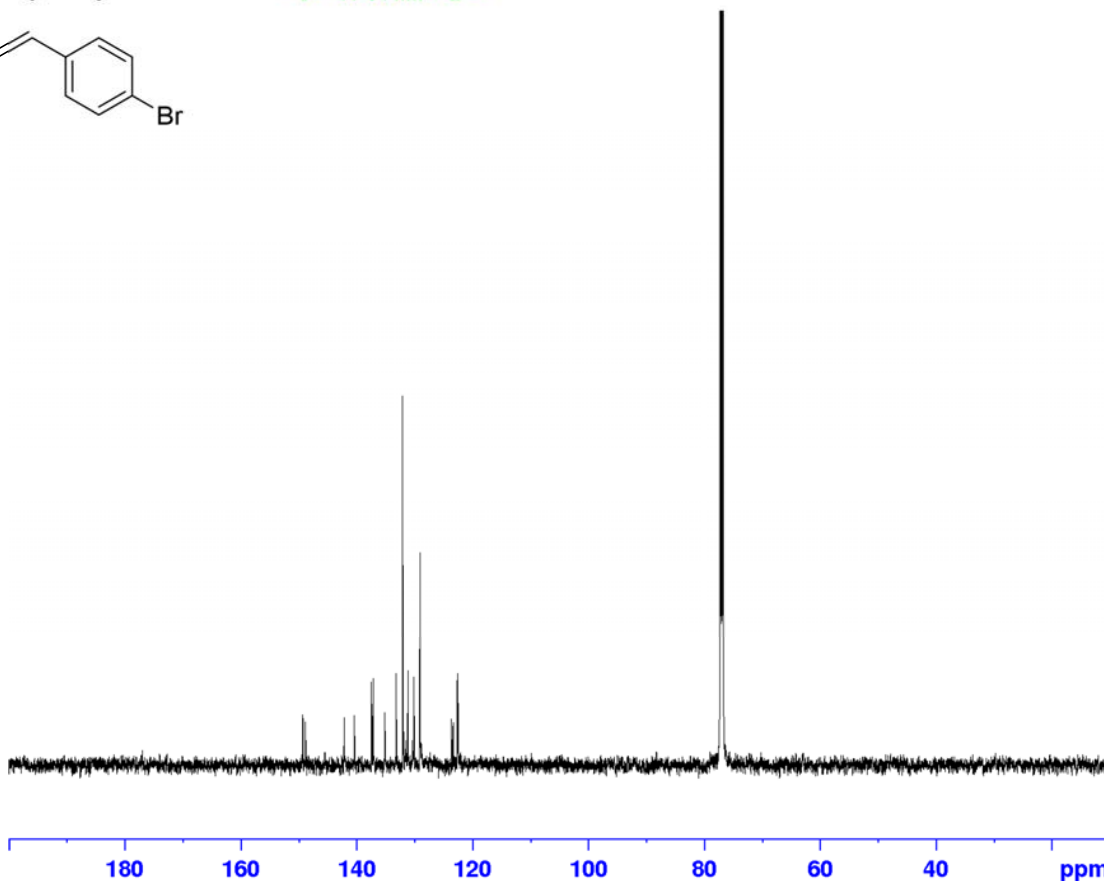
F2 - Processing parameters
 SI 32768
 SF 600.1330099 MHz
 WDW no
 SSB 0
 LB 0 Hz
 GB 0
 PC 1.00

¹H NMR (600 MHz, CDCl₃) for compound **4j**

13C of JSZ3-29



149.31
148.87
142.19
140.41
137.46
137.17
135.20
135.14
133.21
132.10
131.17
131.16
129.08
129.04
123.64
123.42
123.34
122.63
122.53



Current Data Parameters
NAME JSZ3-29
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20220318
Time 9.29
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDC13
NS 1204
DS 0
SWH 33333.332 Hz
FIDRES 0.508626 Hz
AQ 0.9830400 sec
RG 46300
DW 15.000 usec
DE 6.00 usec
TE 299.6 K
D1 2.4000010 sec
D11 0.03000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 13C
P1 10.00 usec
PL1 -1.60 dB
PL1W 136.15426636 W
SFO1 150.9194083 MHz

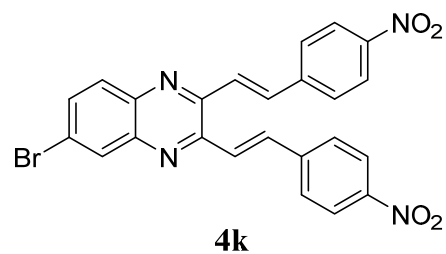
===== CHANNEL f2 =====
CPDPRG[2] waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -1.50 dB
PL12 13.20 dB
PL13 16.20 dB
PL2W 28.38507080 W
PL12W 0.96181160 W
PL13W 0.48204759 W
SFO2 600.1339008 MHz

F2 - Processing parameters
SI 32768
SF 150.9028098 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00

¹³C NMR (150 MHz, CDCl₃) for compound **4j**

¹H OF

8.320
8.307
8.285
8.120
8.095
7.959
7.944
7.842
7.829
7.805
7.765
7.738

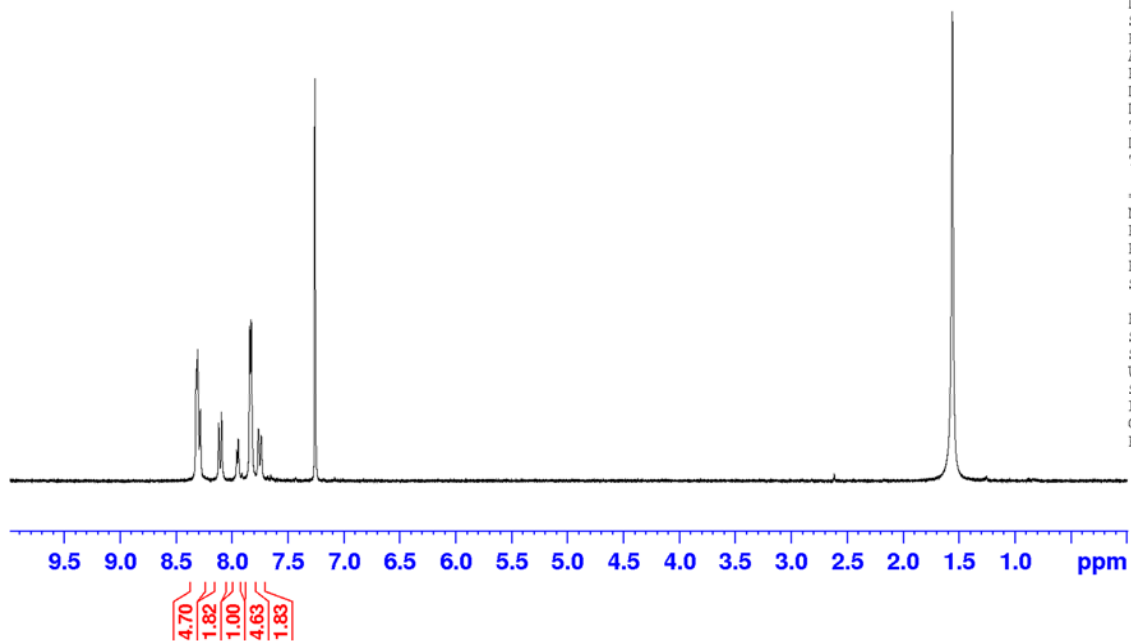


Current Data Parameters
NAME JSZ2-154
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20220421
Time 13.33
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 32
DS 0
SWH 6613.757 Hz
FIDRES 0.201836 Hz
AQ 2.4772608 sec
RG 16400
DW 75.600 usec
DE 6.00 usec
TE 297.1 K
D1 2.00000000 sec
TD0 1

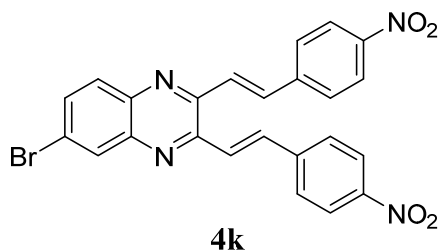
----- CHANNEL f1 -----
NUC1 1H
P1 15.00 usec
PL1 -0.80 dB
PL1W 24.15961456 W
SFO1 600.1330006 MHz

F2 - Processing parameters
SI 32768
SF 600.1300118 MHz
WDW no
SSB 0
LB 0 Hz
GB 0
PC 1.00

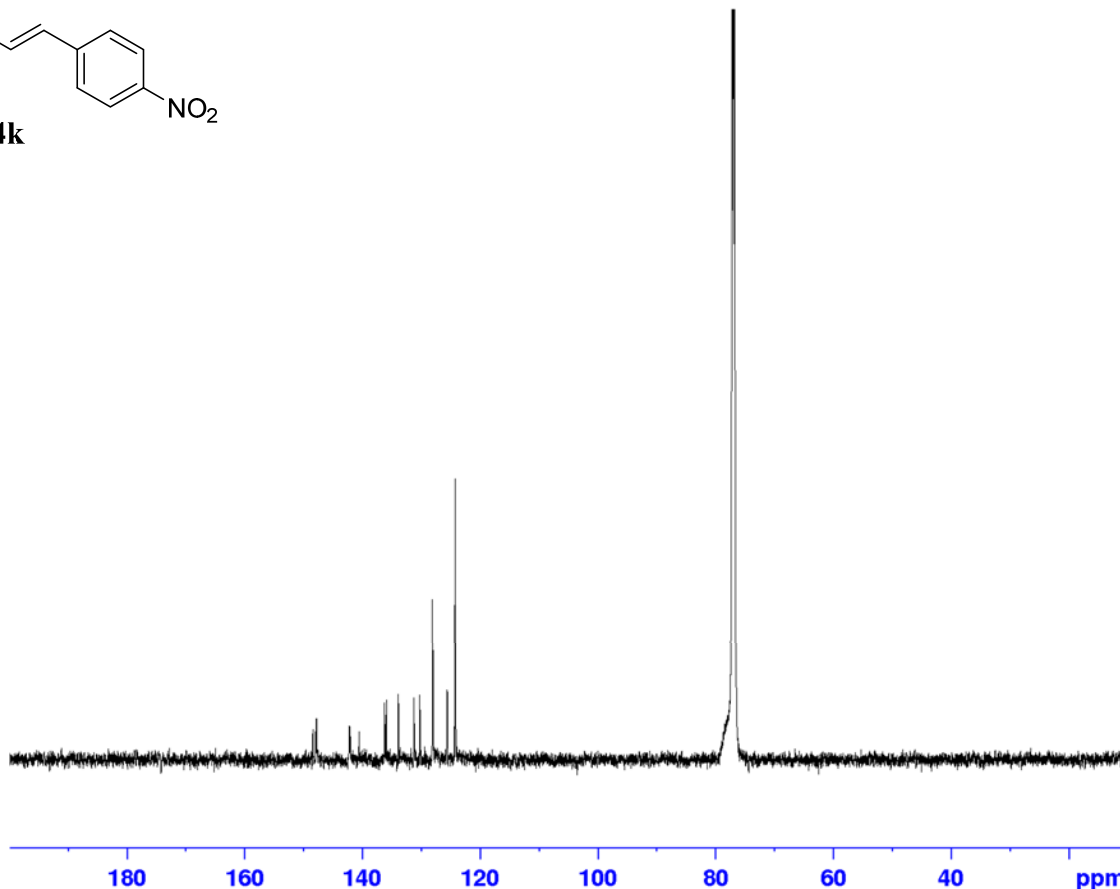


¹H NMR (600 MHz, CDCl₃) for compound **4k**

13C of JSZ2-154



148.40
147.94
147.82
142.66
142.19
142.12
140.53
136.23
135.94
133.88
131.24
130.22
128.09
128.03
125.65
125.56
124.43
124.17



Current Data Parameters
NAME JSZ2-154
EXPNO 2
PROCNO 1

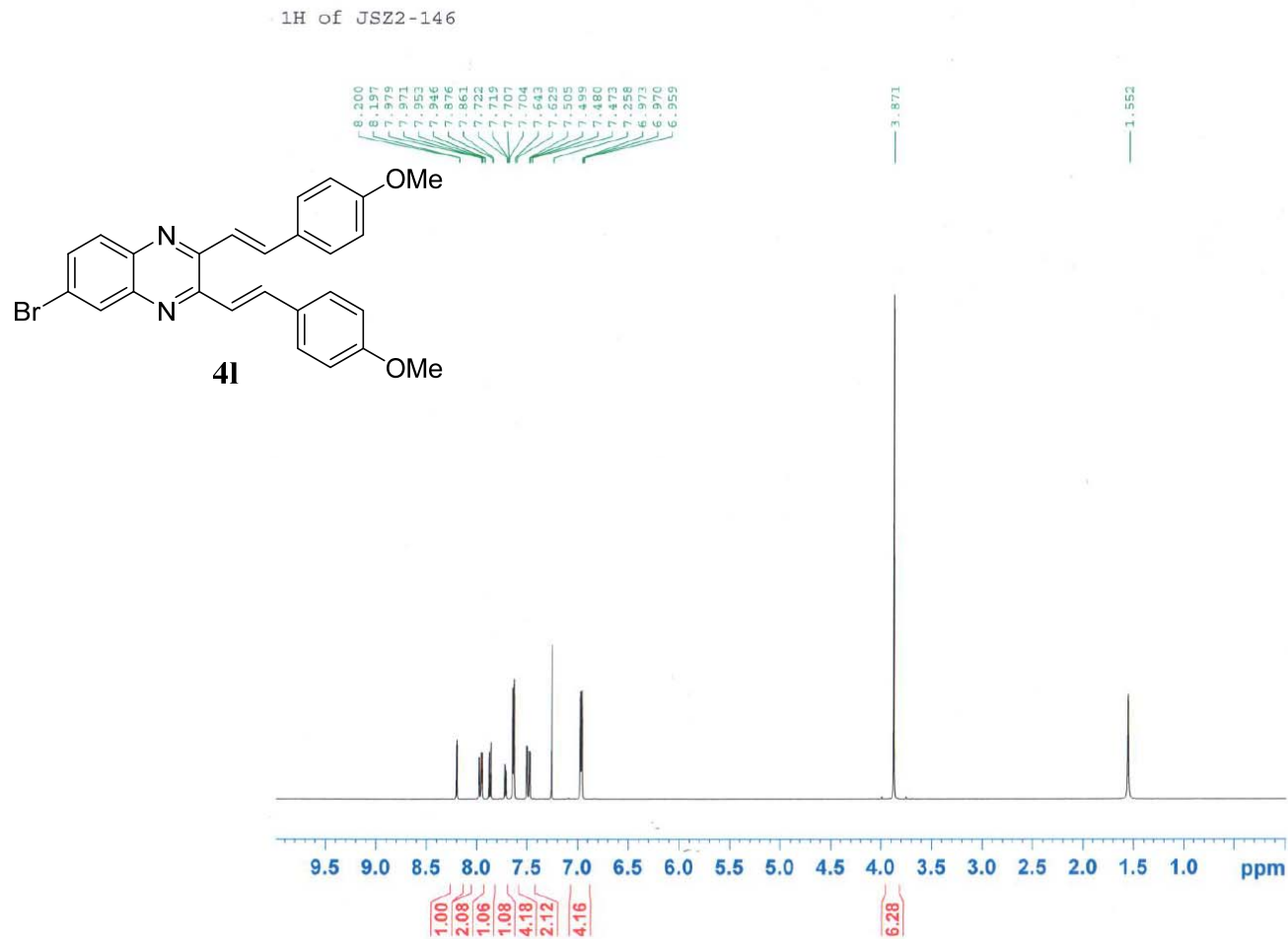
F2 - Acquisition Parameters
Date_ 20220421
Time 15.32
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 20785
DS 0
SWH 33333.332 Hz
FIDRES 0.508626 Hz
AQ 0.9830400 sec
RG 46300
DW 15.000 usec
DE 6.00 usec
TE 299.3 K
D1 2.40000010 sec
D11 0.03000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 13C
P1 10.00 usec
PL1 -1.60 dB
PL1W 136.15426636 W
SFO1 150.9194083 MHz

===== CHANNEL f2 =====
CPDPRG[2] waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -1.50 dB
PL12 13.20 dB
PL13 16.20 dB
PL2W 28.38507080 W
PL12W 0.96181160 W
PL13W 0.48204759 W
SFO2 600.1348880 MHz

F2 - Processing parameters
SI 32768
SF 150.9028294 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00

¹³C NMR (150 MHz, CDCl₃) for compound 4k



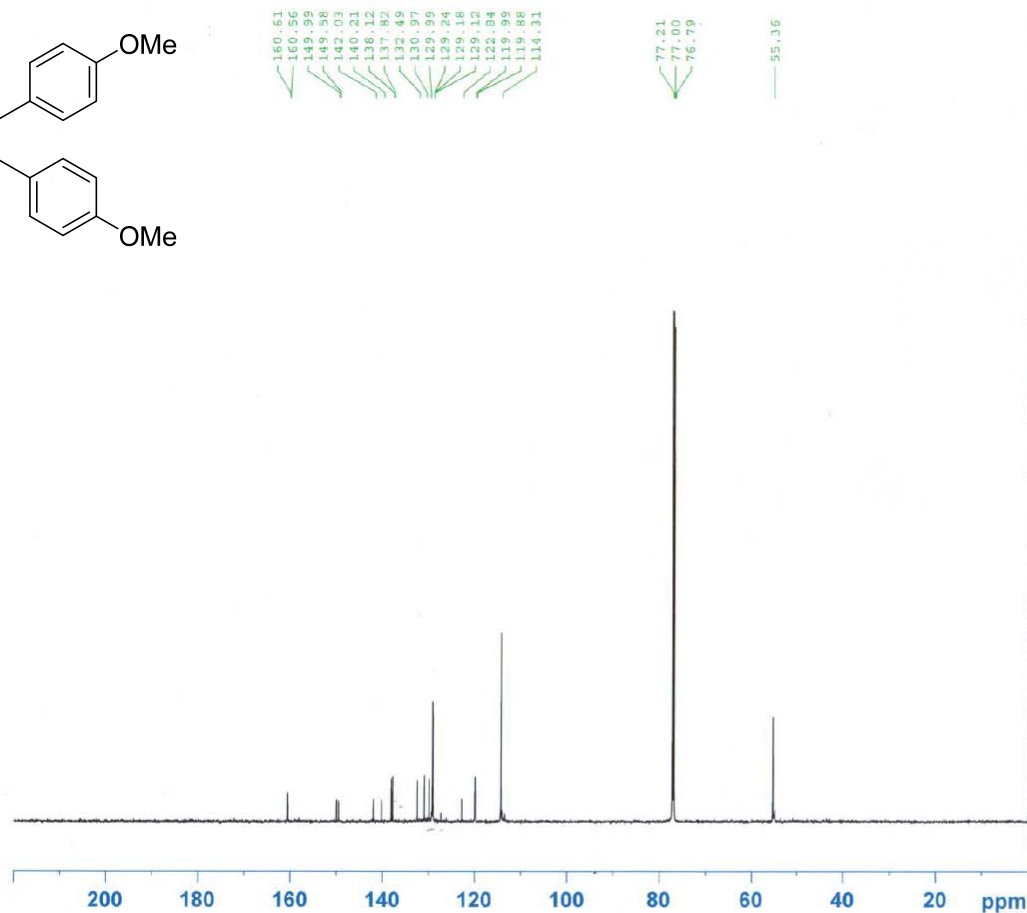
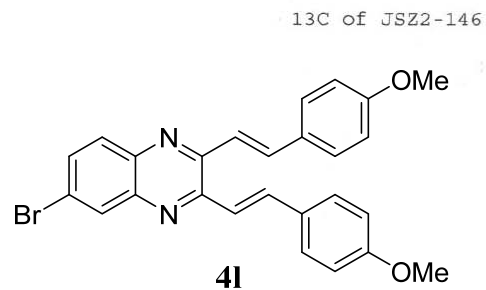
```

NAME      JSZ2-146
EXPNO     1
PROCNO    1
Date_     20220309
Time      16.27
INSTRUM   spect
PROBHD    5 mm TXI 1H/D-
PULPROG   zg30
TD         32768
SOLVENT   CDCl3
NS         16
DS         0
SWH        6009.615 Hz
FIDRES     0.183399 Hz
AQ         2.7264309 sec
RG         2050
DW         83.200 usec
DE         6.00 usec
TE         300.0 K
D1         2.0000000 sec
TDO        1
  
```

```

===== CHANNEL f1 =====
NUC1      1H
P1         8.00 usec
PL1        0.20 dB
PL1W      19.19066429 W
SF01      600.1330006 MHz
SI         32768
SF         600.1300117 MHz
WDW        no
SSB        0
LB         0.00 Hz
GB         0
PC         1.00
  
```

¹H NMR (600 MHz, CDCl₃) for compound **4I**



```

NAME          JSZ2-146
EXPNO         2
PROCNO        1
Date_         20220304
Time          16.07
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            787
DS            0
SWH           33333.332 Hz
FIDRES        0.508626 Hz
AQ            0.9831050 sec
RG            46300
DW            15.000 usec
DE            6.00 usec
TE            301.1 K
D1            2.40000010 sec
D11           0.03000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          13C
P1            10.00 usec
PL1           -1.60 dB
PL1W          136.15426636 W
SFO1          150.9194083 MHz
  
```

```

===== CHANNEL f2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         90.00 usec
PL2           -1.50 dB
PL12          13.20 dB
PL13          16.20 dB
PL2W          28.38507080 W
PL12W         0.96181160 W
PL13W         0.48204759 W
SFO2          600.1339008 MHz
SI            32768
SF            150.9028108 MHz
WDW           EM
SSB           0
LB            3.00 Hz
GB            0
PC            1.00
  
```

¹³C NMR (150 MHz, CDCl₃) for compound **4I**

1H of JSZ3-26

10.122
10.117
8.183
8.181
7.946
7.920
7.905
7.890
7.880
7.865
7.854
7.843
7.830
7.821
7.687
7.681
7.674
7.668

2.073

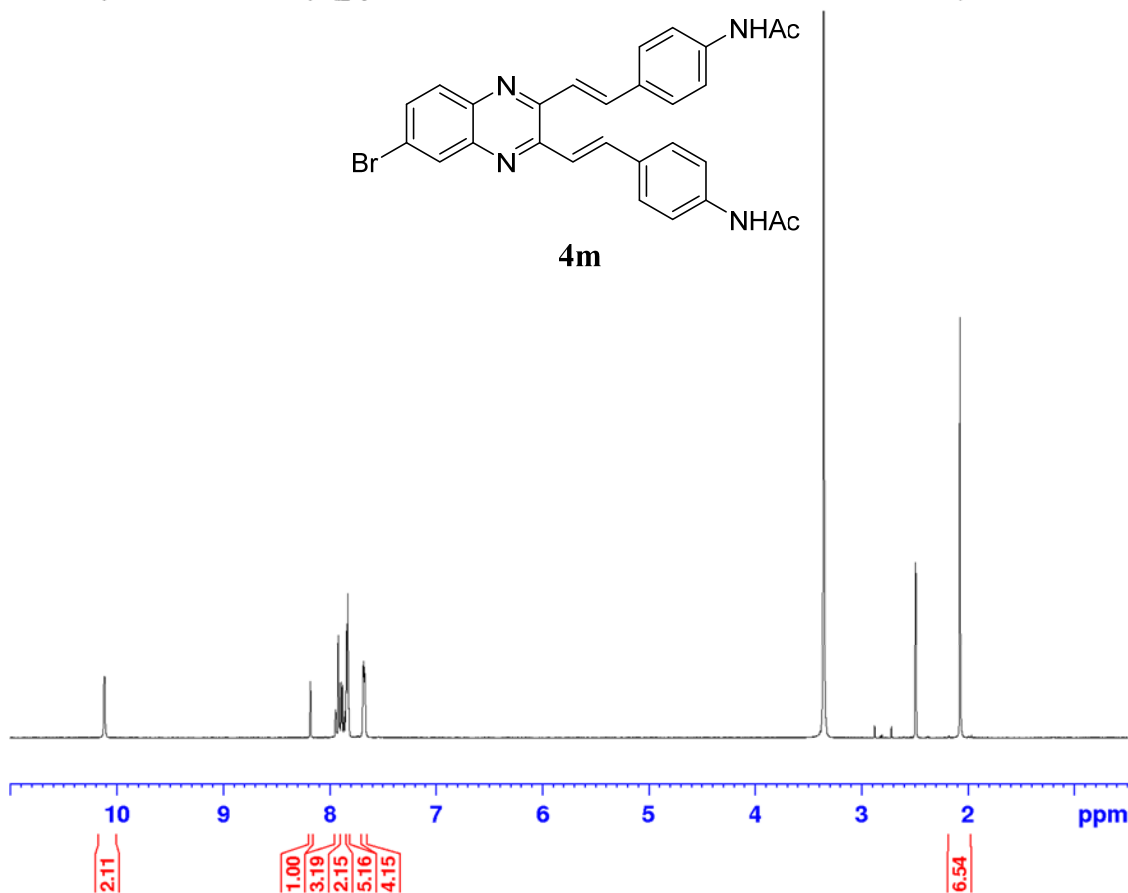
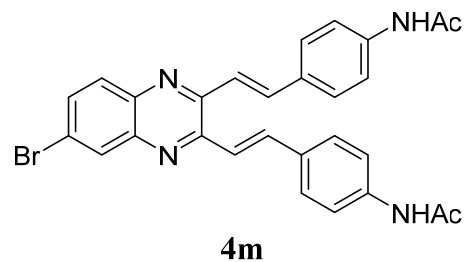


Current Data Parameters
NAME JSZ3-26
EXPNO 1
PROCNO 1

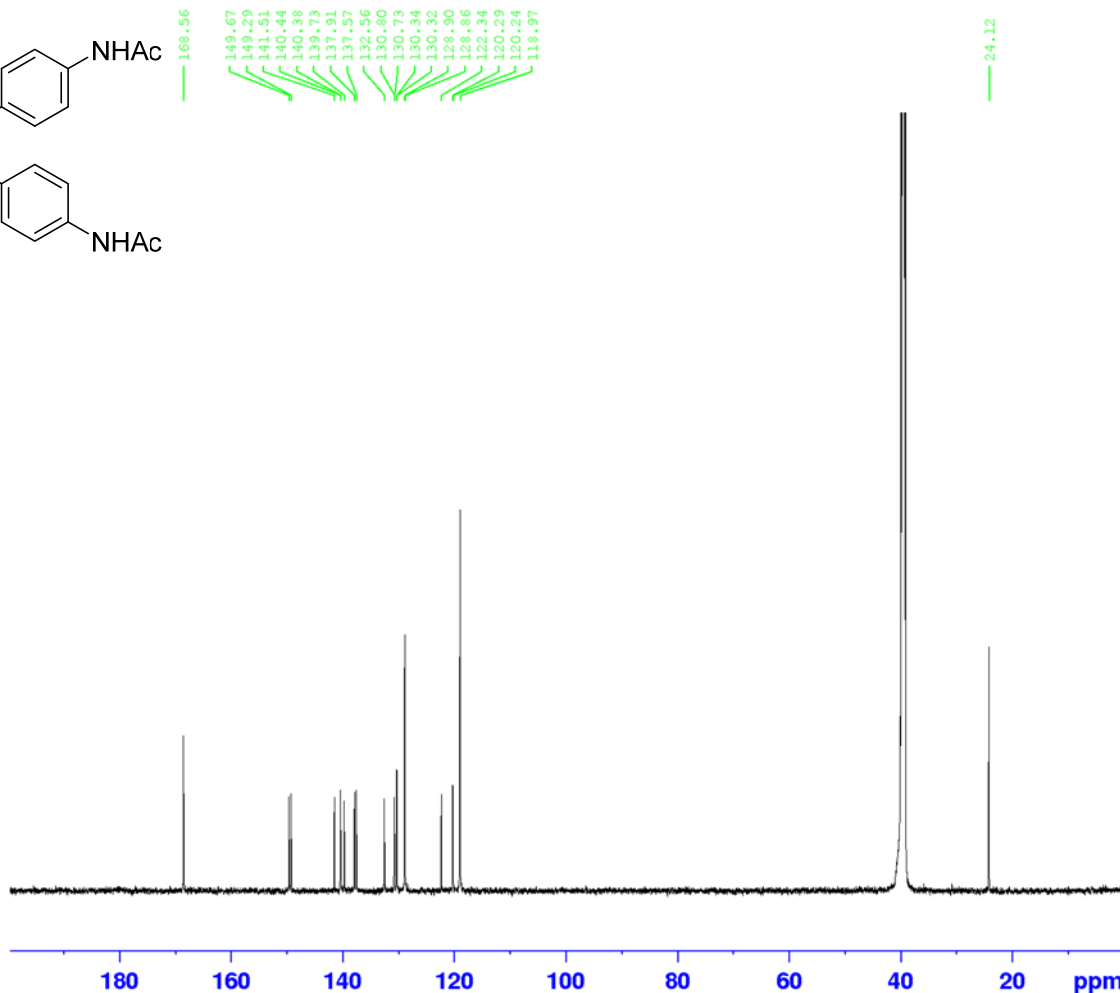
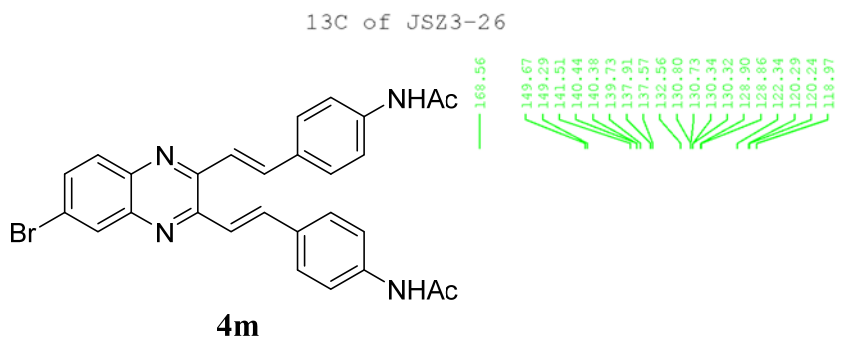
F2 - Acquisition Parameters
Date_ 20220414
Time 16.43
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 32768
SOLVENT DMSO
NS 16
DS 0
SWH 7183.908 Hz
FIDRES 0.219235 Hz
AQ 2.2806528 sec
RG 1150
DW 69.600 usec
DE 6.00 usec
TE 300.1 K
D1 2.0000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 15.00 usec
PL1 -0.80 dB
PL1W 24.15961456 W
SF01 600.1336008 MHz

F2 - Processing parameters
SI 32768
SF 600.1300062 MHz
WDW no
SSB 0
LB 0 Hz
GB 0
PC 1.00



¹H NMR (600 MHz, DMSO-*d*₆) for compound **4m**



Current Data Parameters
NAME JSZ3-26
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20220415
Time 9.01
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT DMSO
NS 17100
DS 0
SWH 34013.605 Hz
FIDRES 0.519006 Hz
AQ 0.9633792 sec
RG 46300
DW 14.700 usec
DE 6.00 usec
TE 300.0 K
D1 2.40000010 sec
D11 0.03000000 sec
TD0 1

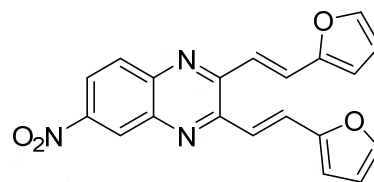
===== CHANNEL f1 =====
NUC1 13C
P1 10.00 usec
PL1 -1.60 dB
PL1W 136.15426636 W
SFO1 150.9194083 MHz

===== CHANNEL f2 =====
CPDPRG[2] waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -1.50 dB
PL12 13.20 dB
PL13 16.20 dB
PL2W 28.38507080 W
PL12W 0.96181160 W
PL13W 0.48204759 W
SFO2 600.1339008 MHz

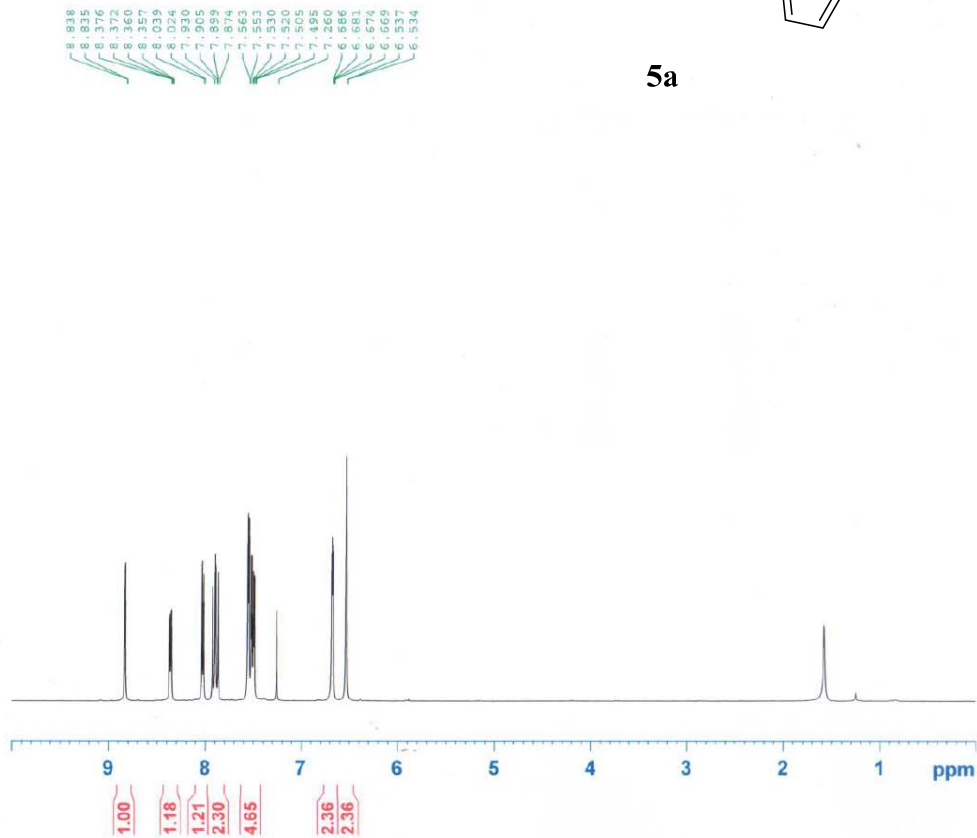
F2 - Processing parameters
SI 32768
SF 150.9028764 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00

¹³C NMR (150 MHz, DMSO-*d*₆) for compound **4m**

1H of JSZ2-196



5a

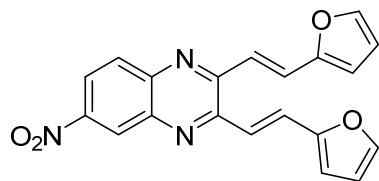


```
NAME JSZ2-196
EXPNO 1
PROCNO 1
Date_ 20220518
Time 11.34
INSTRUM spect
PROBHD 5 mm TXI 1H/D-
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 16
DS 0
SWH 6613.757 Hz
FIDRES 0.201836 Hz
AQ 2.4773865 sec
RG 1150
DW 75.600 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
TDO 1
```

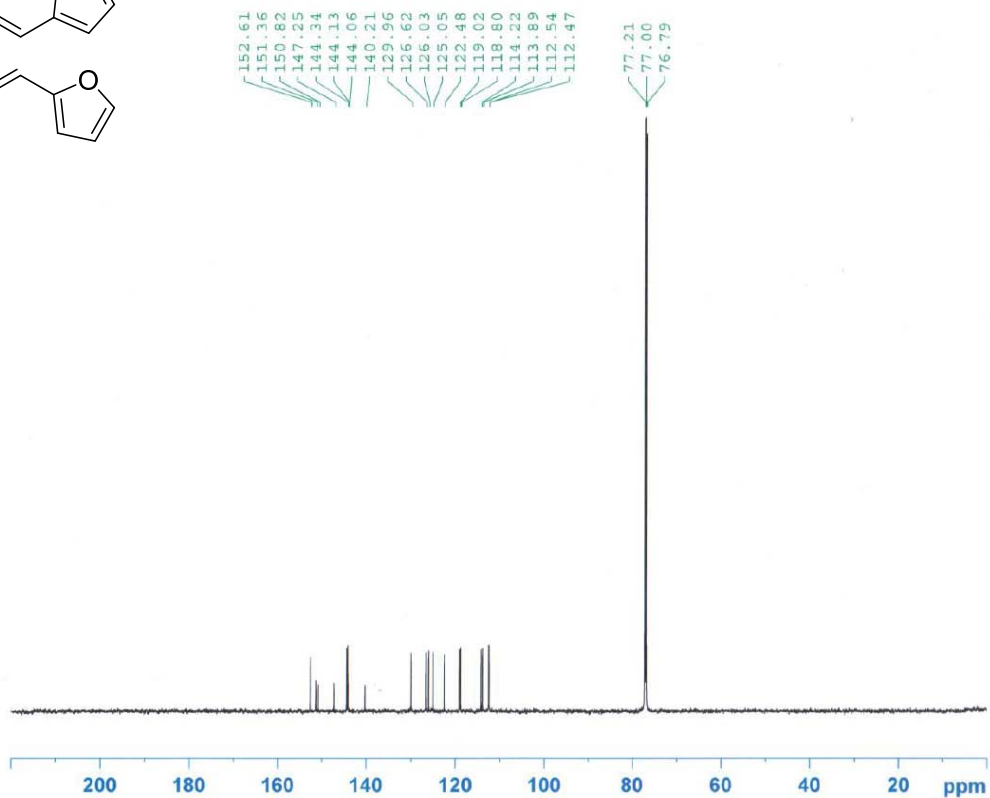
```
----- CHANNEL f1 -----
NUC1 1H
P1 8.00 usec
PL1 0.20 dB
PL1W 19.19066429 W
SFO1 600.1330006 MHz
SI 32768
SF 600.1300109 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
```

^1H NMR (600 MHz, CDCl_3) for compound 5a

13C of JSZ2-196



5a



```
NAME JSZ2-196
EXPNO 2
PROCNO 1
Date_ 20220518
Time 10.54
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 601
DS 0
SWH 33333.332 Hz
FIDRES 0.508626 Hz
AQ 0.9831050 sec
RG 16400
DW 15.000 usec
DE 6.00 usec
TE 299.3 K
D1 2.40000010 sec
D11 0.03000000 sec
TDO 1
```

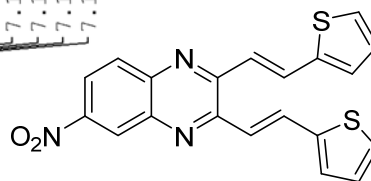
```
===== CHANNEL f1 =====
NUC1 13C
P1 10.00 usec
PL1 -1.60 dB
PL1W 136.15426636 W
SFO1 150.9194083 MHz
```

```
===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -1.50 dB
PL12 13.20 dB
PL13 16.20 dB
PL2W 28.38507080 W
PL12W 0.96181160 W
PL13W 0.48204759 W
SFO2 600.1339008 MHz
SI 32768
SF 150.9028089 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00
```

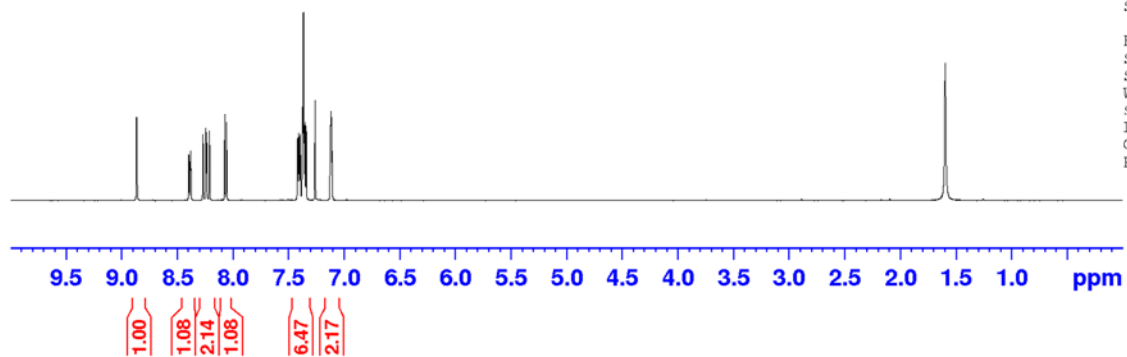
^{13}C NMR (150 MHz, CDCl_3) for compound 5a

1H of JSZ3-135

8.378
8.269
8.243
8.237
8.211
8.072
8.057
7.418
7.410
7.403
7.394
7.375
7.372
7.366
7.358
7.351
7.341
7.260
7.126
7.122
7.120
7.117
7.114
7.108



5b



Current Data Parameters
NAME JSZ3-135
EXPNO 1
PROCNO 1

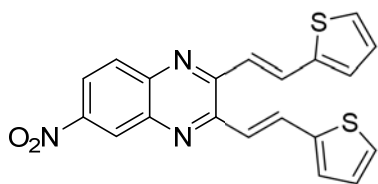
F2 - Acquisition Parameters
Date_ 20220513
Time 13.21
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 16
DS 0
SWH 6613.757 Hz
FIDRES 0.201836 Hz
AQ 2.4772608 sec
RG 3640
DW 75.600 usec
DE 6.00 usec
TE 297.6 K
D1 2.00000000 sec
TD0 1

----- CHANNEL f1 -----
NUC1 1H
P1 15.00 usec
PL1 -0.80 dB
PL1W 24.15961456 W
SFO1 600.1330006 MHz

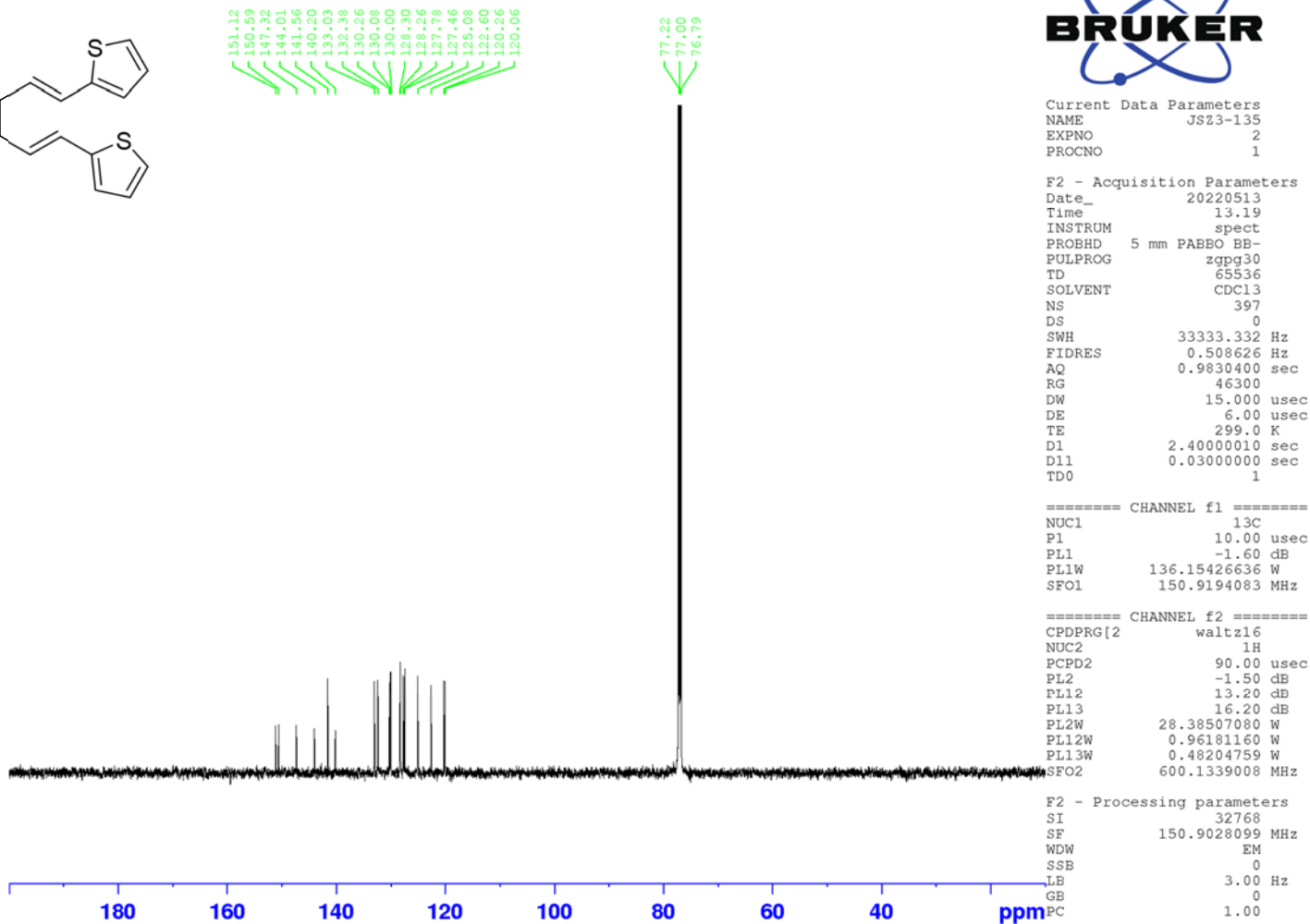
F2 - Processing parameters
SI 32768
SF 600.1300100 MHz
WDW no
SSB 0
LB 0 Hz
GB 0
PC 1.00

¹H NMR (600 MHz, CDCl₃) for compound **5b**

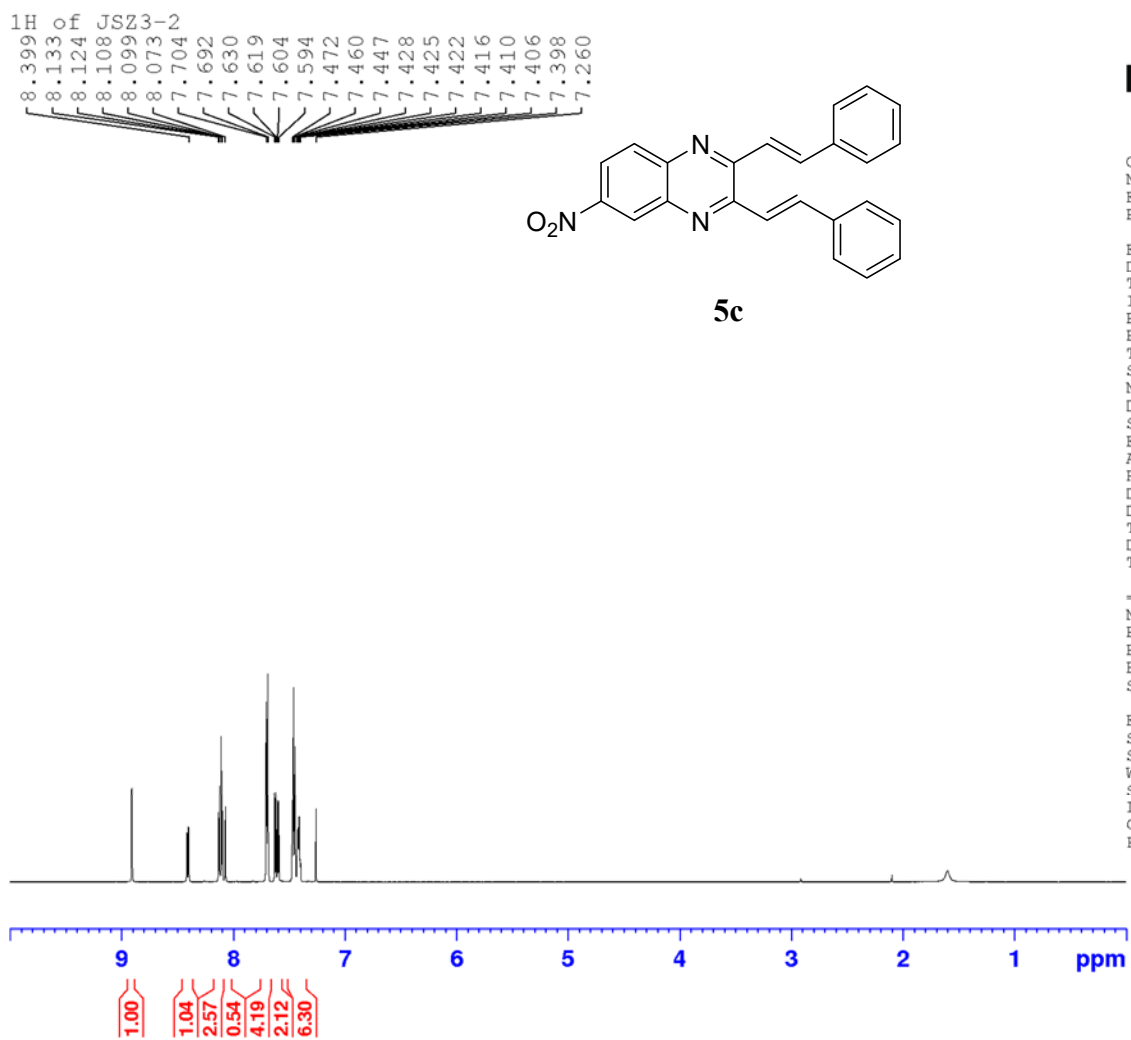
13C of JSZ3-135



5b



¹³C NMR (150 MHz, CDCl₃) for compound **5b**



Current Data Parameters
NAME JSZ3-2
EXPNO 1
PROCNO 1

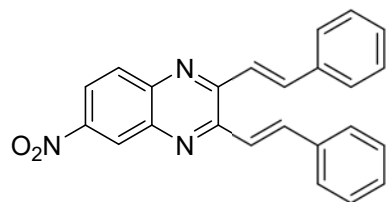
F2 - Acquisition Parameters
Date_ 20220523
Time 11.27
INSTRUM spect
PROBHD 5 mm TXI 1H/D-
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 16
DS 0
SWH 6613.757 Hz
FIDRES 0.201836 Hz
AQ 2.4772608 sec
RG 2300
DW 75.600 usec
DE 6.00 usec
TE 300.1 K
D1 2.00000000 sec
TD0 1

----- CHANNEL f1 -----
NUC1 1H
P1 8.00 usec
PL1 0.20 dB
PL1W 19.19066429 W
SFO1 600.1330006 MHz

F2 - Processing parameters
SI 32768
SF 600.1300107 MHz
WDW no
SSB 0
LB 0 Hz
GB 0
EC 1.00

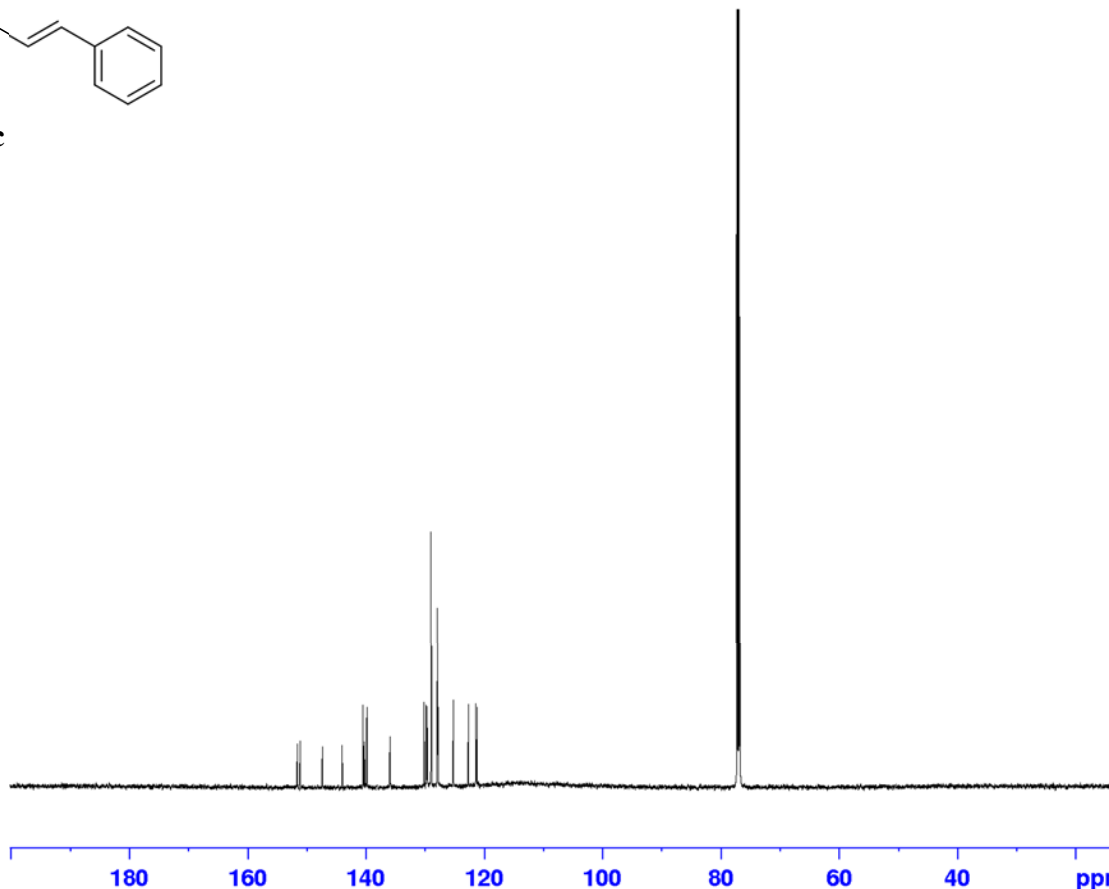
¹H NMR (600 MHz, CDCl₃) for compound **5c**

13C of JSZ3-2



5c

151.64
151.12
147.39
144.03
140.52
139.86
135.96
130.18
129.81
129.67
128.97
127.92
127.84
125.22
122.68
121.44
121.23



```
Current Data Parameters
NAME          JSZ3-2
EXPNO         2
PROCNO        1

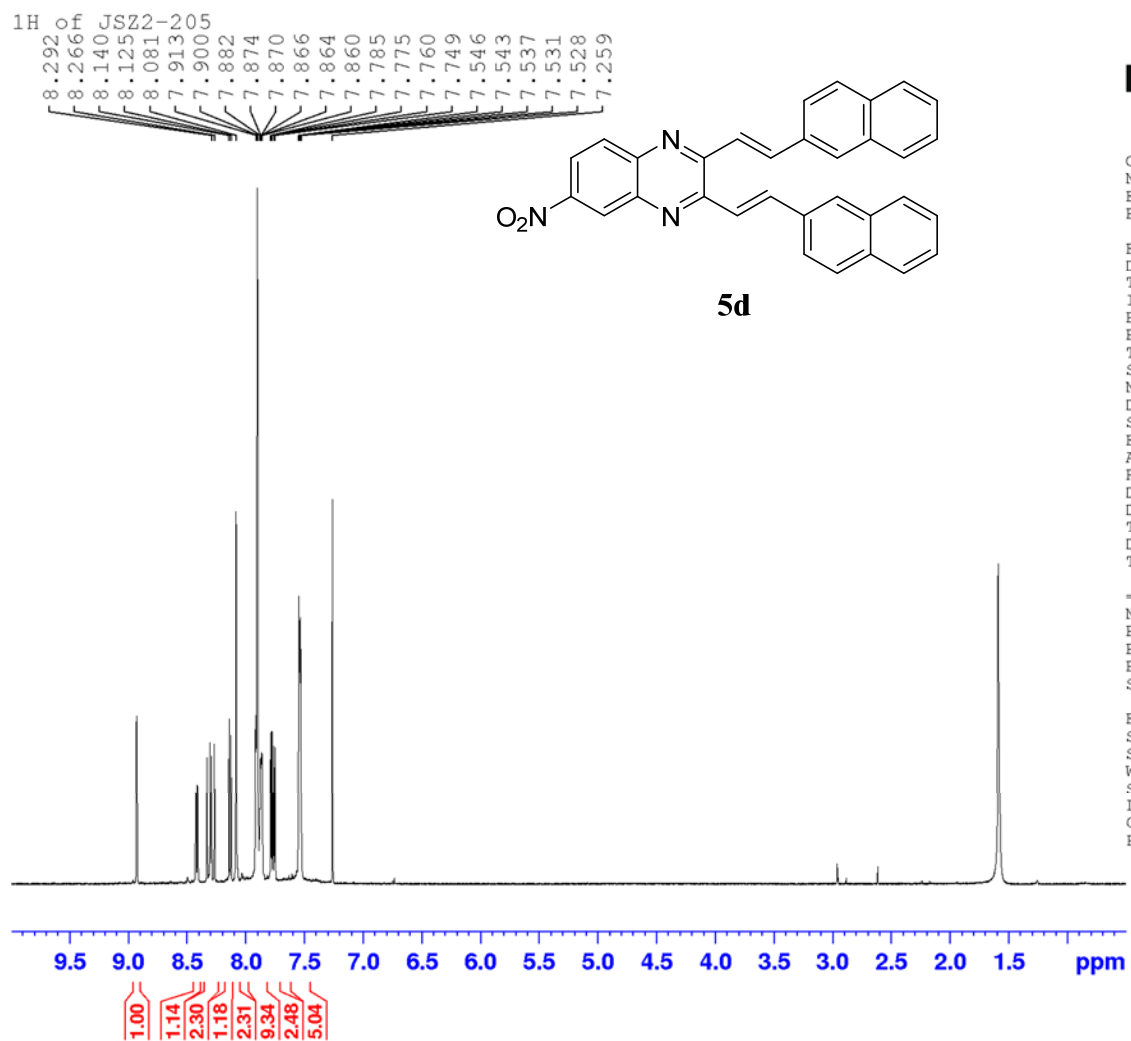
F2 - Acquisition Parameters
Date_         20220523
Time          12.38
INSTRUM       spect
PROBHD        5 mm TXI 1H/D-
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            1183
DS            0
SWH           34013.605 Hz
FIDRES        0.519006 Hz
AQ            0.9633792 sec
RG            46300
DW            14.700 usec
DE            6.00 usec
TE            300.1 K
D1            2.40000010 sec
D11           0.03000000 sec
TD0           1

===== CHANNEL f1 =====
NUC1           13C
P1             12.00 usec
PL1            -5.20 dB
PL1W           311.91140747 W
SFO1           150.9194083 MHz

===== CHANNEL f2 =====
CPDPRG[2]     waltz16
NUC2           1H
PCPD2          90.00 usec
PL2            -2.00 dB
PL12           16.00 dB
PL13           21.00 dB
PL2W           31.84857368 W
PL12W          0.31848574 W
PL13W          0.15962099 W
SFO2           600.1339008 MHz

F2 - Processing parameters
SI             32768
SF            150.9028121 MHz
WDW            EM
SSB            0
LB             3.00 Hz
GB            0
PC             1.00
```

¹³C NMR (150 MHz, CDCl₃) for compound 5c



Current Data Parameters
 NAME JSZ2-205
 EXPNO 1
 PROCNO 1

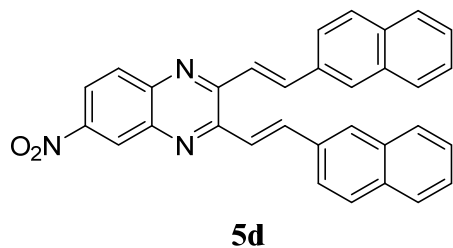
F2 - Acquisition Parameters
 Date_ 20220428
 Time 14.57
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 32768
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 7183.908 Hz
 FIDRES 0.219235 Hz
 AQ 2.2806528 sec
 RG 2890
 DW 69.600 usec
 DE 6.00 usec
 TE 296.4 K
 D1 2.0000000 sec
 TD0 1

----- CHANNEL f1 -----
 NUC1 1H
 P1 15.00 usec
 PL1 -0.80 dB
 PL1W 24.15961456 W
 SF01 600.1336008 MHz

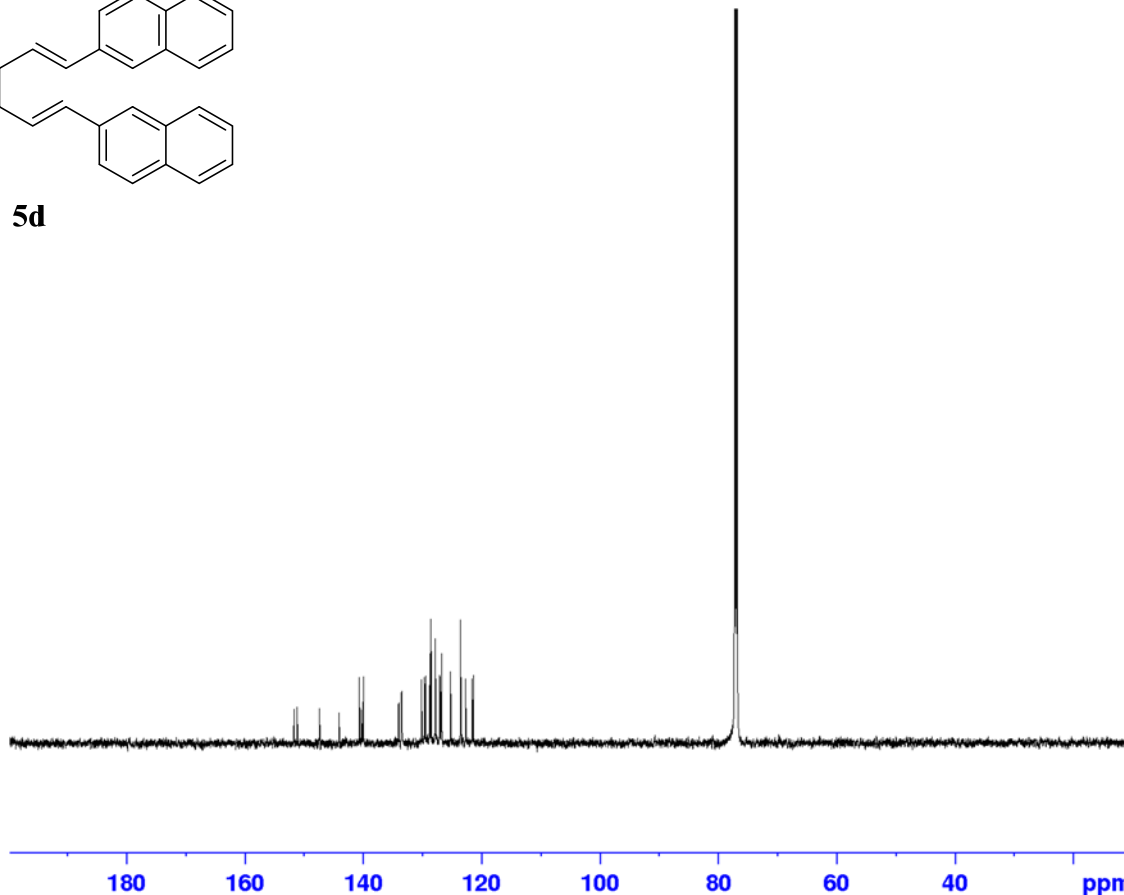
F2 - Processing parameters
 SI 32768
 SF 600.1300104 MHz
 WDW no
 SSR 0
 LB 0 Hz
 GB 0
 PC 1.00

¹H NMR (600 MHz, CDCl₃) for compound **5d**

13C of JSZ2-205



151.71
151.19
147.41
144.10
140.66
140.31
139.99
134.04
133.97
133.52
133.47
133.44
130.18
129.65
129.49
128.75
128.72
128.53
127.83
127.11
127.03
126.77
126.74
125.23
123.58
122.69
121.61
121.41



¹³C NMR (150 MHz, CDCl₃) for compound **5d**



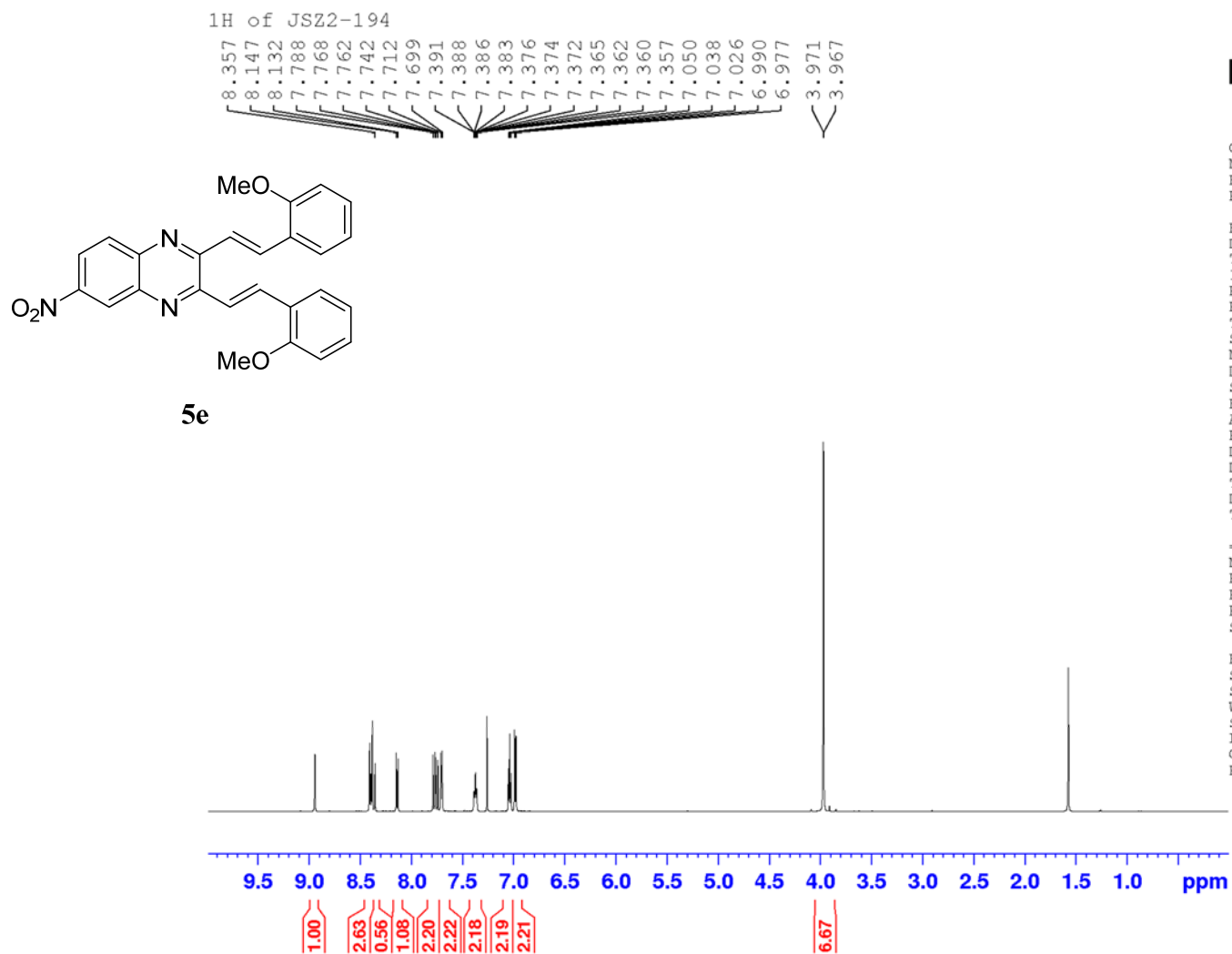
Current Data Parameters
NAME JSZ2-205
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20220428
Time 14.14
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 1509
DS 0
SWH 34013.605 Hz
FIDRES 0.519006 Hz
AQ 0.9633792 sec
RG 46300
DW 14.700 usec
DE 6.00 usec
TE 299.1 K
D1 2.4000010 sec
D11 0.03000000 sec
TD0 1

=====
CHANNEL f1
NUC1 13C
P1 10.00 usec
PL1 -1.60 dB
PL1W 136.15426636 W
SFO1 150.9194083 MHz

=====
CHANNEL f2
CPDPRG[2] waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -1.50 dB
PL12 13.20 dB
PL13 16.20 dB
PL2W 28.38507080 W
PL12W 0.96181160 W
PL13W 0.48204759 W
SFO2 600.1339008 MHz

F2 - Processing parameters
SI 32768
SF 150.9028099 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00



Current Data Parameters
 NAME JSZ2-194
 EXPNO 1
 PROCNO 1

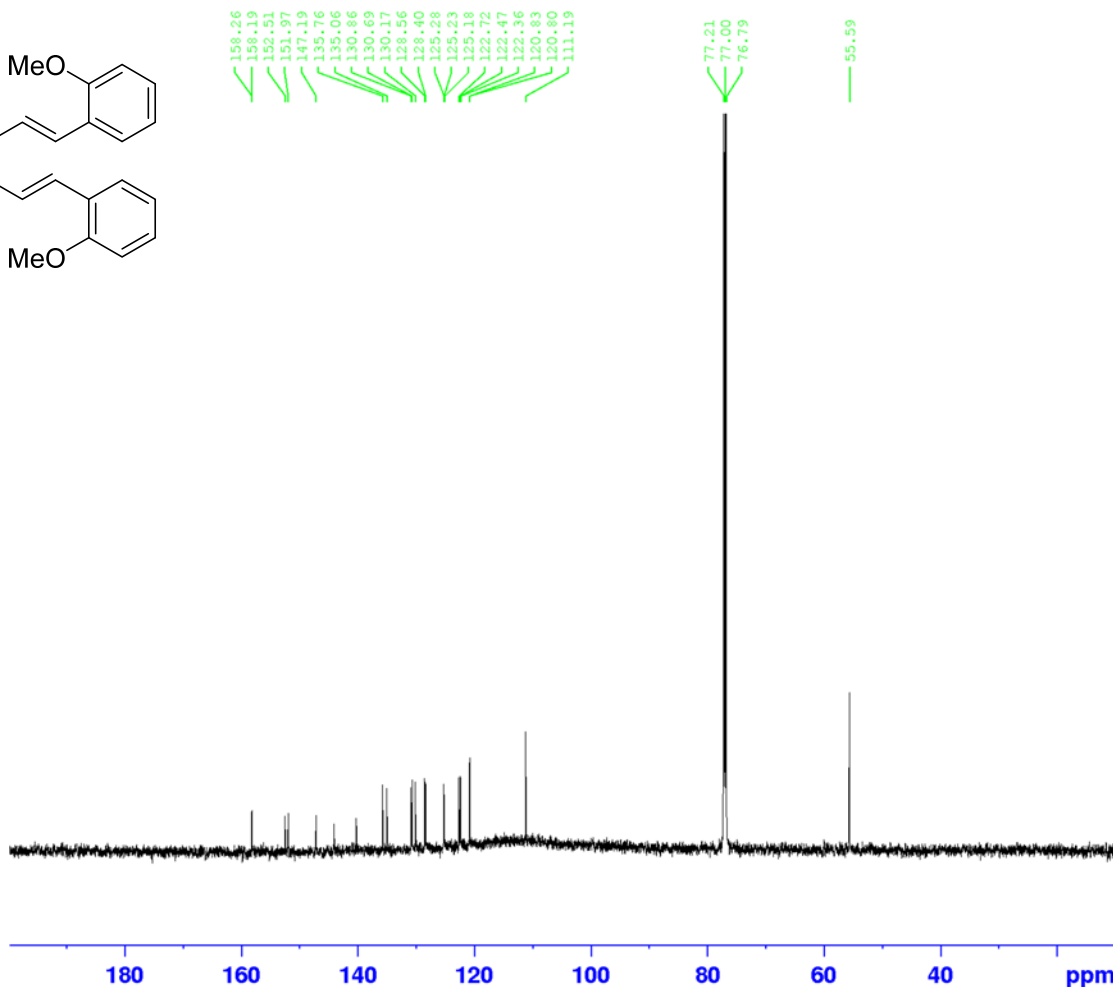
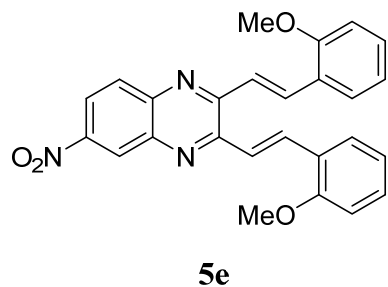
F2 - Acquisition Parameters
 Date_ 20220509
 Time 10.40
 INSTRUM spect
 PROBHD 5 mm TXI 1H/D-
 PULPROG zg30
 TD 32768
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 6613.757 Hz
 FIDRES 0.201836 Hz
 AQ 2.4772608 sec
 RG 1150
 DW 75.600 usec
 DE 6.00 usec
 TE 300.0 K
 D1 2.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 8.00 usec
 PL1 0.20 dB
 PL1W 19.19066429 W
 SFO1 600.1330006 MHz

F2 - Processing parameters
 SI 32768
 SF 600.1300108 MHz
 WDW EM
 SSB 0
 LB 0 Hz
 GB 0
 PC 1.00

¹H NMR (600 MHz, CDCl₃) for compound **5e**

13C of JSZ2-194



Current Data Parameters
NAME JSZ2-194
EXPNO 2
PROCNO 1

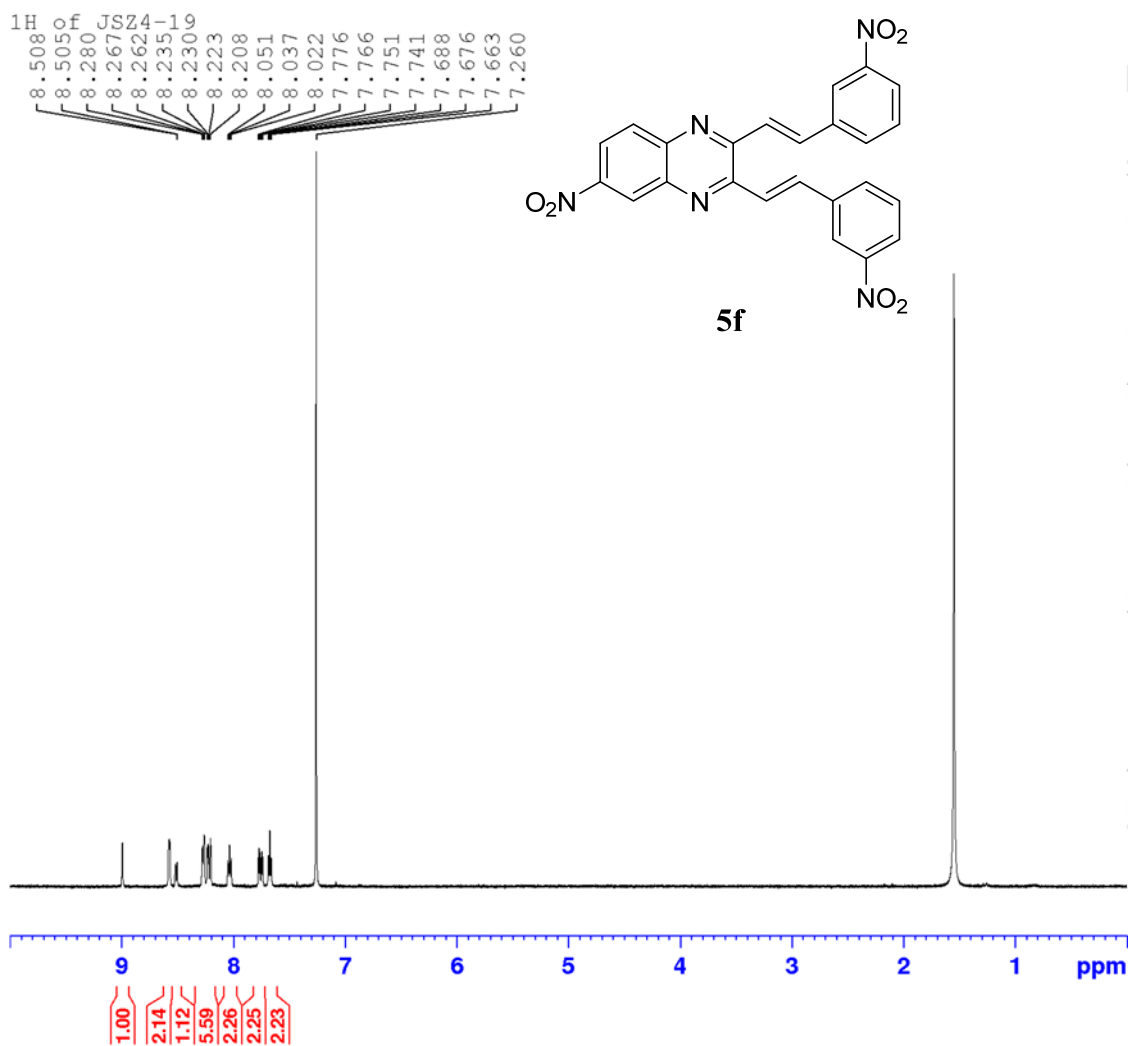
F2 - Acquisition Parameters
Date_ 20220509
Time 10.51
INSTRUM spect
PROBHD 5 mm TXI 1H/D-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 691
DS 0
SWH 34013.605 Hz
FIDRES 0.519006 Hz
AQ 0.9633792 sec
RG 23100
DW 14.700 usec
DE 6.00 usec
TE 300.0 K
D1 2.4000010 sec
D11 0.03000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 13C
P1 12.00 usec
PL1 -5.20 dB
PL1W 311.91140747 W
SFO1 150.9194083 MHz

===== CHANNEL f2 =====
CPDPRG[2] waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -2.00 dB
PL12 10.00 dB
PL13 21.00 dB
PL2W 31.84857368 W
PL12W 0.31848574 W
PL13W 0.15962099 W
SFO2 600.1339008 MHz

F2 - Processing parameters
SI 32768
SF 150.9028110 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00

¹³C NMR (150 MHz, CDCl₃) for compound **5e**



Current Data Parameters
 NAME JS24-19
 EXPNO 11
 PROCNO 1

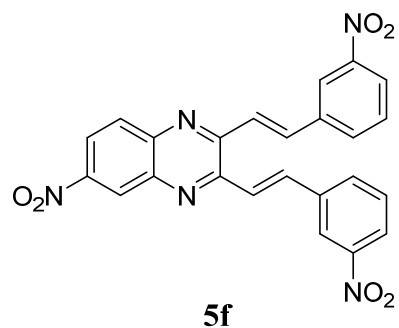
F2 - Acquisition Parameters
 Date_ 20220606
 Time 13.38
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 32768
 SOLVENT CDC13
 NS 32
 DS 0
 SWH 6613.757 Hz
 FIDRES 0.201836 Hz
 AQ 2.4772608 sec
 RG 16400
 DW 75.600 usec
 DE 6.00 usec
 TE 297.7 K
 D1 2.00000000 sec
 TD0 1

----- CHANNEL f1 -----
 NUC1 1H
 P1 15.00 usec
 PL1 -0.80 dB
 PL1W 24.15961456 W
 SFO1 600.1330006 MHz

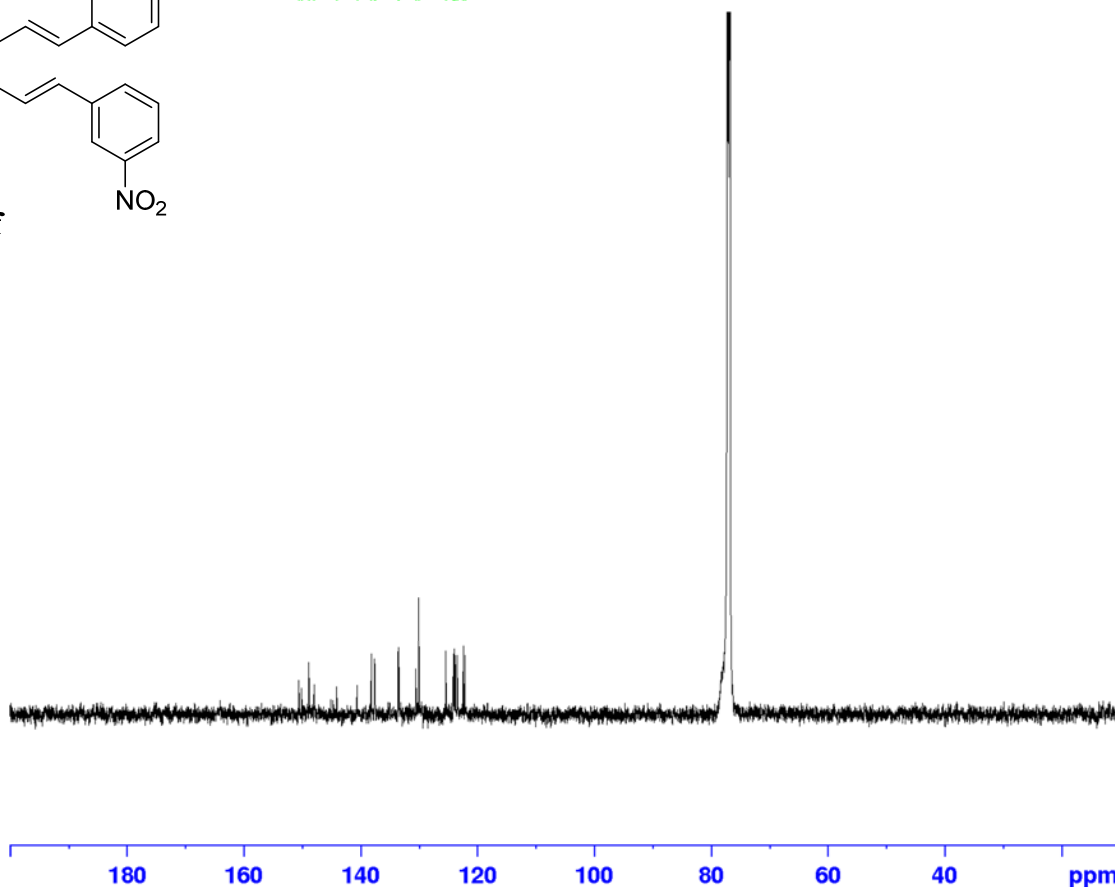
F2 - Processing parameters
 SI 32768
 SF 600.1300099 MHz
 WDW EM
 SSB 0
 LB 0 Hz
 GB 0
 PC 1.00

¹H NMR (600 MHz, CDCl₃) for compound **5f**

13C of JSZ3-2



150.64
150.13
148.89
148.00
144.14
140.60
138.20
137.62
137.53
133.65
133.49
130.57
130.08
125.44
124.15
124.04
124.00
123.82
123.47
122.44
122.18



Current Data Parameters
NAME JSZ4-19
EXPNO 12
PROCNO 1

F2 - Acquisition Parameters
Date_ 20220607
Time 8.10
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 19354
DS 0
SWH 33333.332 Hz
FIDRES 0.508626 Hz
AQ 0.9830400 sec
RG 46300
DW 15.000 usec
DE 6.00 usec
TE 300.1 K
D1 2.4000010 sec
D11 0.03000000 sec
TD0 1

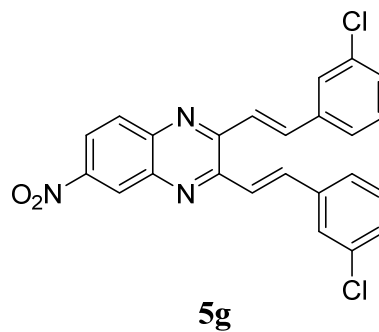
==== CHANNEL f1 =====
NUC1 13C
P1 10.00 usec
PL1 -1.60 dB
PL1W 136.15426636 W
SFO1 150.9194083 MHz

==== CHANNEL f2 =====
CPDPRG[2] waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -1.50 dB
PL12 13.20 dB
PL13 16.20 dB
PL2W 28.38507080 W
PL12W 0.96181160 W
PL13W 0.48204759 W
SFO2 600.1339008 MHz

F2 - Processing parameters
SI 32768
SF 150.9028076 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00

¹³C NMR (150 MHz, CDCl₃) for compound 5f

1H
 8.928
 8.453
 8.438
 8.151
 8.136
 8.095
 8.069
 8.062
 8.035
 7.688
 7.615
 7.604
 7.587
 7.577
 7.441
 7.399
 7.387
 7.258



— 1.583

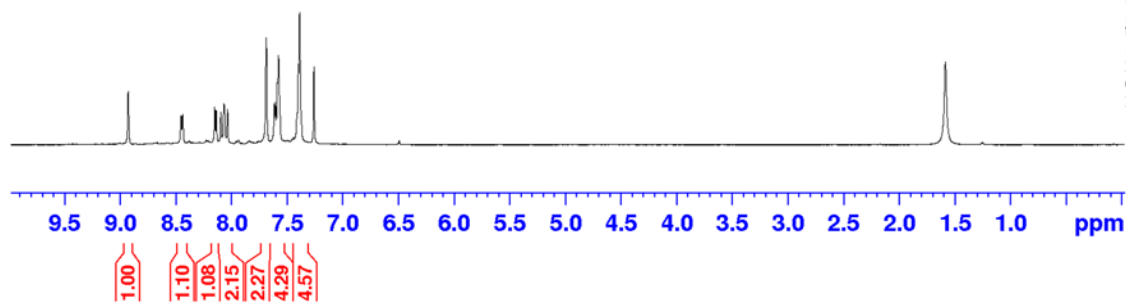


Current Data Parameters
 NAME JSZ3-17
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20220513
 Time 11.20
 INSTRUM spect
 PROBHD 5 mm TXI 1H/D-
 PULPROG zg30
 TD 32768
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 6009.615 Hz
 FIDRES 0.183399 Hz
 AQ 2.7262976 sec
 RG 2050
 DW 83.200 usec
 DE 6.00 usec
 TE 300.1 K
 D1 2.00000000 sec
 TD0 1

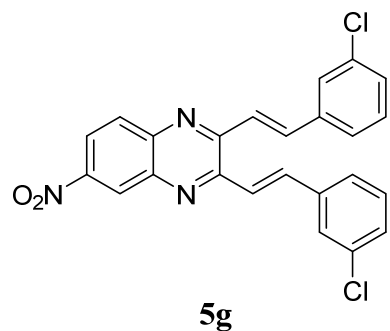
----- CHANNEL f1 -----
 NUC1 1H
 P1 8.00 usec
 PL1 0.20 dB
 PL1W 19.19066429 W
 SFO1 600.1330006 MHz

F2 - Processing parameters
 SI 32768
 SF 600.1300121 MHz
 WDW no
 SSB 0
 LB 0 Hz
 GB 0
 PC 1.00

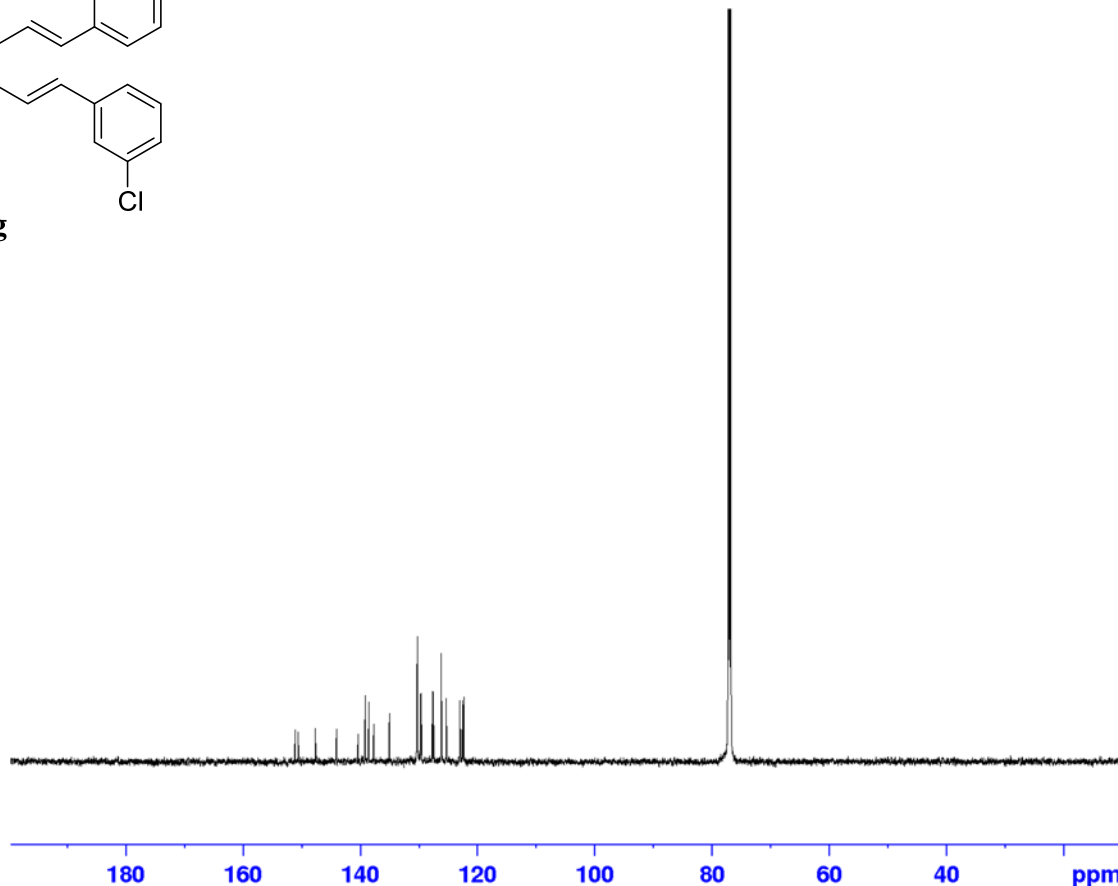


¹H NMR (600 MHz, CDCl₃) for compound **5g**

¹³C of JSZ3-17



151.12
150.60
147.65
144.06
140.39
139.17
138.55
137.72
137.67
135.03
130.35
130.23
129.71
129.59
127.67
127.52
126.17
125.31
123.02
122.55
122.35



Current Data Parameters
NAME JSZ3-17
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20220513
Time 13.09
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 1643
DS 0
SWH 33333.332 Hz
FIDRES 0.508626 Hz
AQ 0.9830400 sec
RG 46300
DW 15.000 usec
DE 6.00 usec
TE 299.3 K
D1 2.40000010 sec
D11 0.03000000 sec
TD0 1

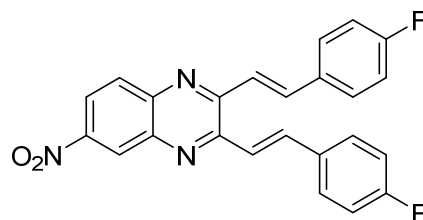
=====
CHANNEL f1
NUC1 13C
P1 10.00 usec
PL1 -1.60 dB
PL1W 136.15426636 W
SFO1 150.9194083 MHz

=====
CHANNEL f2
CPDPRG[2] waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -1.50 dB
PL12 13.20 dB
PL13 16.20 dB
PL2W 28.38507080 W
PL12W 0.96181160 W
PL13W 0.48204759 W
SFO2 600.1339008 MHz

F2 - Processing parameters
SI 32768
SF 150.9028099 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00

¹³C NMR (150 MHz, CDCl₃) for compound **5g**

1H
 8.9460
 8.4566
 8.440
 8.157
 8.140
 8.111
 8.101
 8.075
 7.703
 7.572
 7.559
 7.547
 7.534
 7.260
 7.173
 7.159
 7.145



5h

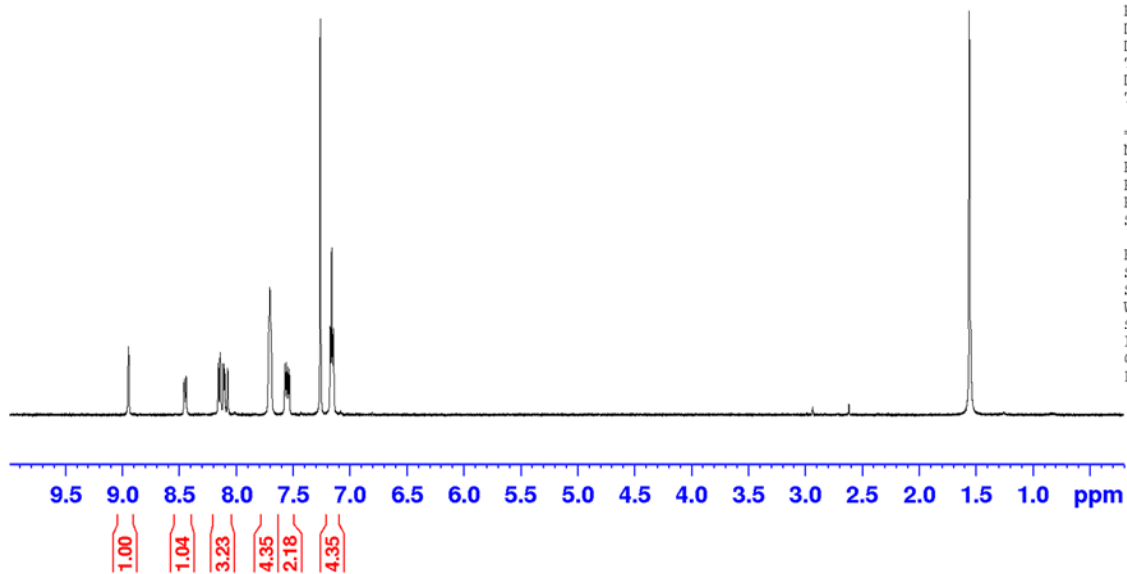


Current Data Parameters
 NAME JSZ3-11
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20220530
 Time 14.31
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 32768
 SOLVENT CDCl3
 NS 32
 DS 0
 SWH 6613.757 Hz
 FIDRES 0.201836 Hz
 AQ 2.4772608 sec
 RG 11500
 DW 75.600 usec
 DE 6.00 usec
 TE 297.5 K
 D1 2.00000000 sec
 TD0 1

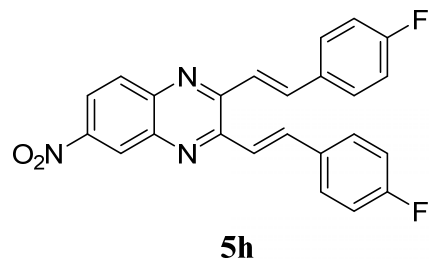
----- CHANNEL f1 -----
 NUC1 1H
 P1 15.00 usec
 PL1 -0.80 dB
 PL1W 24.15961456 W
 SF01 600.1330006 MHz

F2 - Processing parameters
 SI 32768
 SF 600.1300102 MHz
 WDW no
 SSR 0
 LB 0 Hz
 GB 0
 PC 1.00

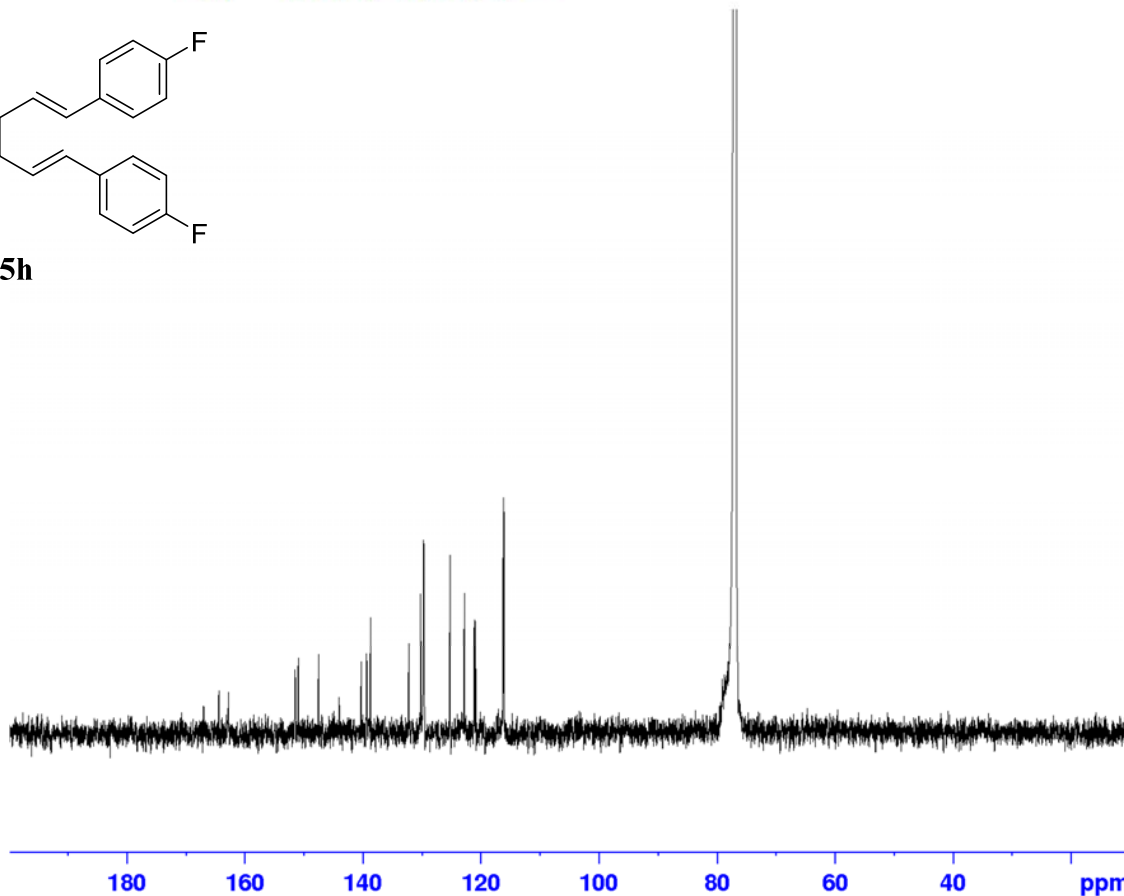


¹H NMR (600 MHz, CDCl₃) for compound **5h**

¹³C of JSZ3-11



167.01
164.49
164.41
162.83
162.75
151.48
150.88
147.53
144.04
140.32
139.40
138.72
132.22
130.21
129.75
129.70
129.65
129.59
125.23
122.83
121.12
120.93
118.21
116.18
116.07
116.04



Current Data Parameters
NAME JSZ3-11
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20220530
Time 14.55
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 18400
DS 0
SWH 33333.332 Hz
FIDRES 0.508626 Hz
AQ 0.9830400 sec
RG 46300
DW 15.000 usec
DE 6.00 usec
TE 299.9 K
D1 2.40000010 sec
D11 0.03000000 sec
TD0 1

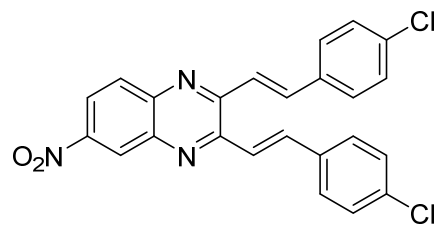
===== CHANNEL f1 =====
NUC1 13C
P1 10.00 usec
PL1 -1.60 dB
PL1W 136.15426636 W
SFO1 150.9194083 MHz

===== CHANNEL f2 =====
CPDPRG[2] waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -1.50 dB
PL12 13.20 dB
PL13 16.20 dB
PL2W 28.38507080 W
PL12W 0.96181160 W
PL13W 0.48204759 W
SFO2 600.1339008 MHz

F2 - Processing parameters
SI 32768
SF 150.9028099 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00

¹³C NMR (150 MHz, CDCl₃) for compound **5h**

¹H
 8.932
 8.450
 8.437
 8.147
 8.132
 8.110
 8.084
 8.077
 8.051
 7.643
 7.631
 7.603
 7.591
 7.577
 7.566
 7.438
 7.426
 7.259



5i

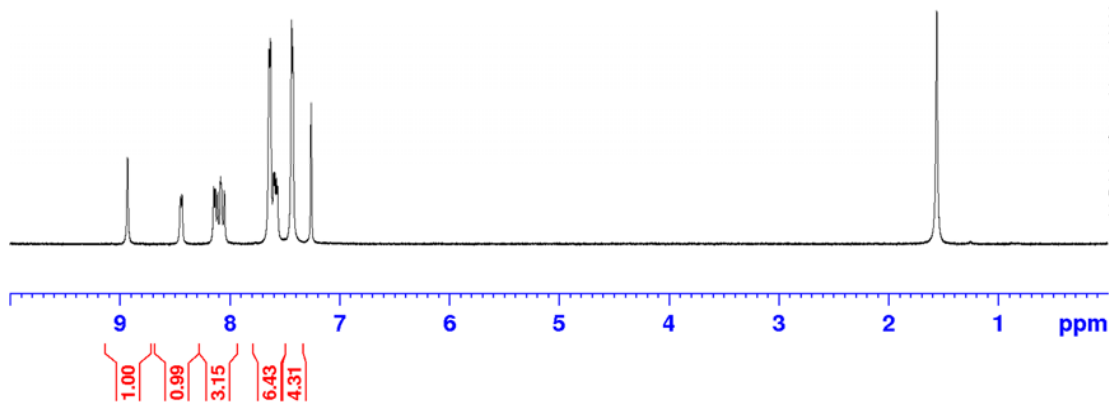


Current Data Parameters
 NAME JSZ3-16
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20220606
 Time 10.35
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 32768
 SOLVENT CDC13
 NS 16
 DS 0
 SWH 6613.757 Hz
 FIDRES 0.201836 Hz
 AQ 2.4772608 sec
 RG 5790
 DW 75.600 usec
 DE 6.00 usec
 TE 298.9 K
 D1 2.00000000 sec
 TD0 1

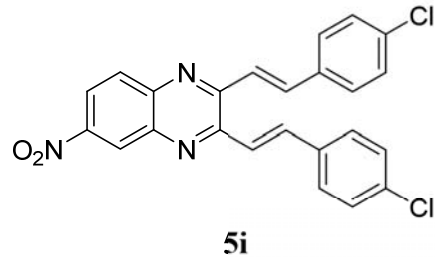
CHANNEL f1
 NUC1 ¹H
 P1 10.00 usec
 PL1 -2.70 dB
 PL1W 37.41881180 W
 SFO1 600.1330006 MHz

F2 - Processing parameters
 SI 32768
 SF 600.1300098 MHz
 WDW no
 SSB 0
 LB 0 Hz
 GB 0
 PC 1.00

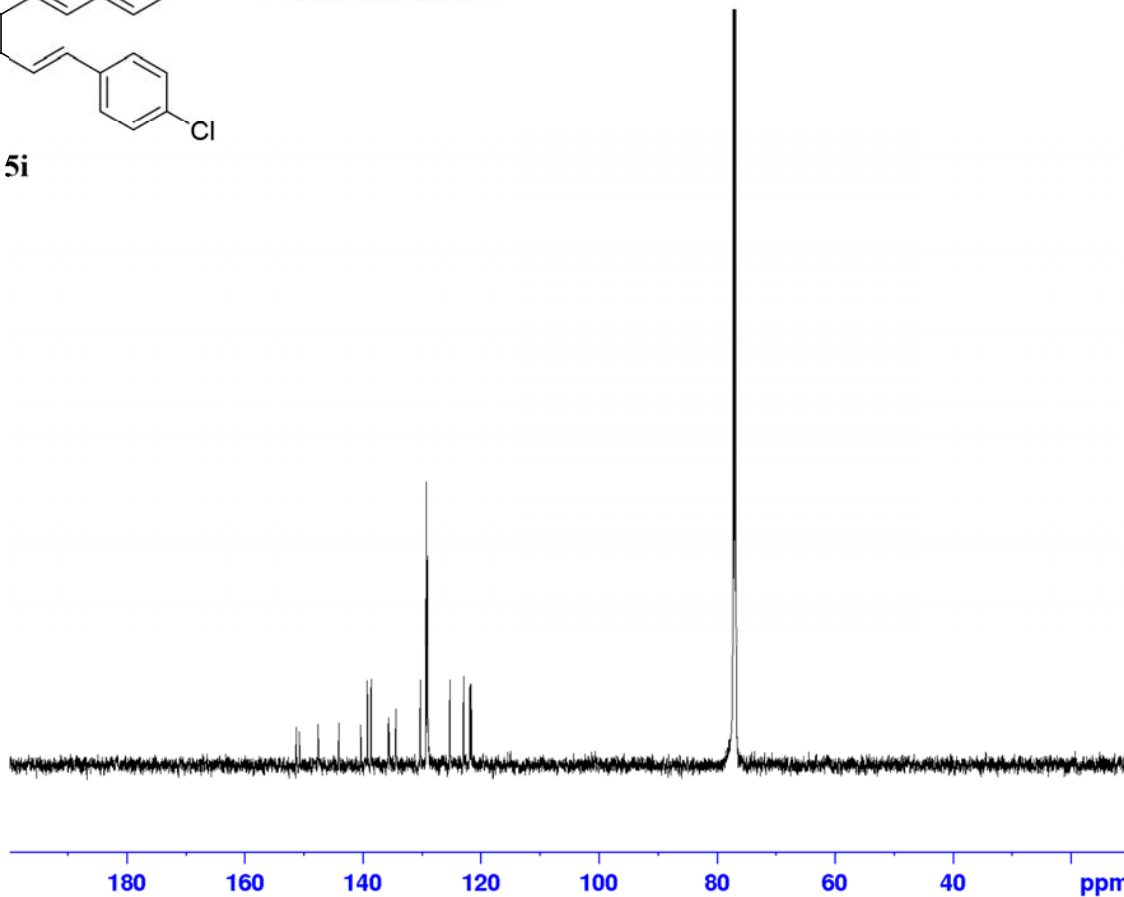


¹H NMR (600 MHz, CDCl₃) for compound **5i**

13C of JSZ3-16



151.32
150.80
147.61
146.07
146.97
139.25
136.62
135.74
135.59
134.44
130.28
129.27
129.08
129.01
128.27
122.94
121.86



```
Current Data Parameters
NAME      JSZ3-16
EXPNO    2
PROCNO   1

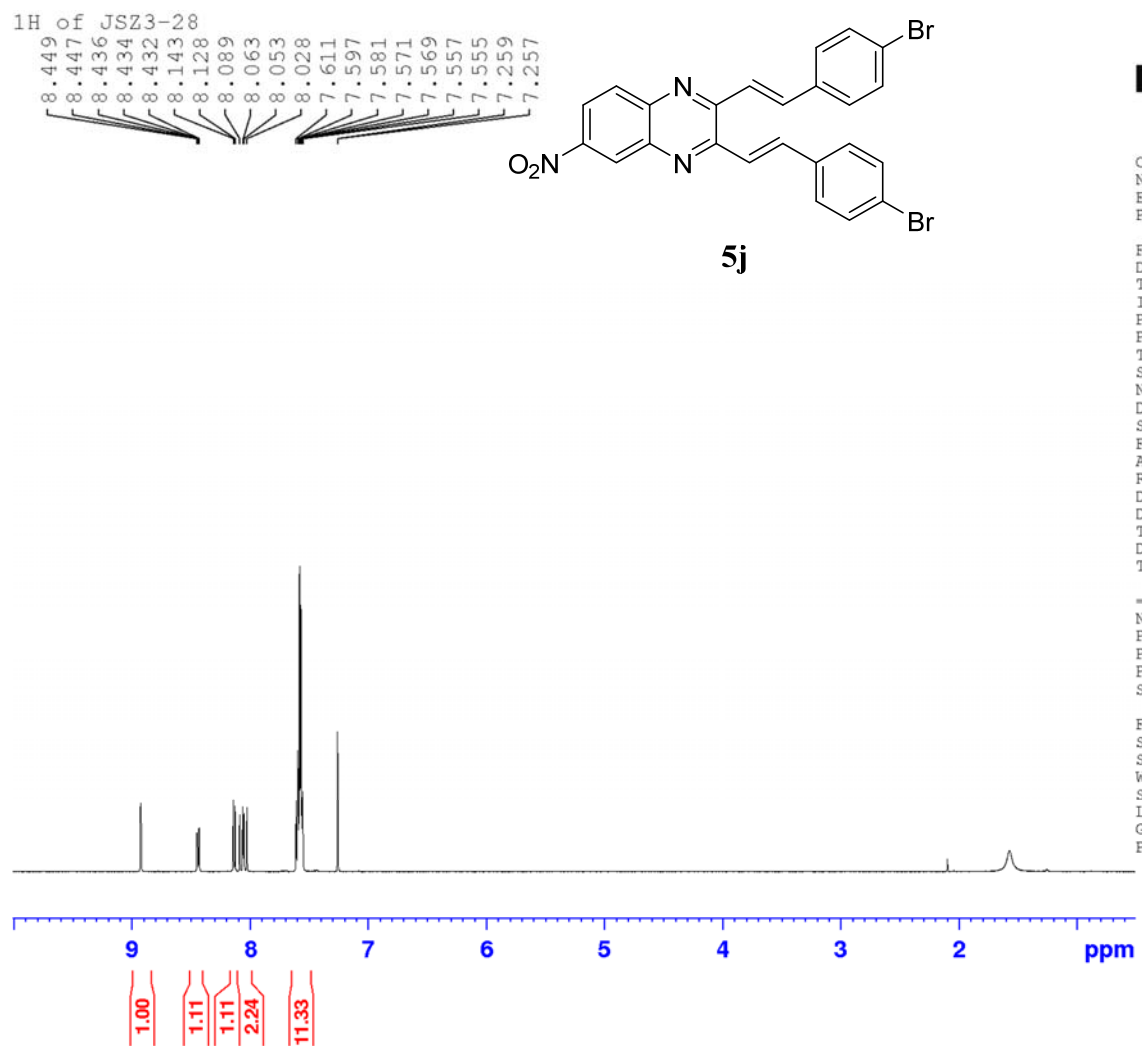
F2 - Acquisition Parameters
Date_    20220606
Time     10.53
INSTRUM  spect
PROBHD   5 mm PABBO BB-
PULPROG  zgpg30
TD       65536
SOLVENT  CDCl3
NS       2338
DS       0
SWH      33333.332 Hz
FIDRES   0.508626 Hz
AQ       0.9830400 sec
RG       46300
DW       15.000 usec
DE       6.00 usec
TE       302.5 K
D1       2.40000010 sec
D11      0.03000000 sec
TD0      1

===== CHANNEL f1 =====
NUC1     13C
P1       10.00 usec
PL1      -1.60 dB
PL1W    136.15426636 W
SFO1    150.9194083 MHz

===== CHANNEL f2 =====
CPDPRG[2] waltz16
NUC2     1H
PCPD2    90.00 usec
PL2      -1.50 dB
PL12     13.20 dB
PL13     16.20 dB
PL2W    28.38507080 W
PL12W   0.96181160 W
PL13W   0.48204759 W
SFO2    600.1339008 MHz

F2 - Processing parameters
SI       32768
SF       150.9028076 MHz
WDW      EM
SSB      0
LB       3.00 Hz
GB       0
PC       1.00
```

¹³C NMR (150 MHz, CDCl₃) for compound **5i**

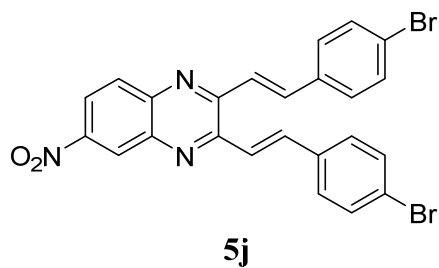


Current Data Parameters
 NAME JSZ3-28
 EXPNO 1
 PROCNO 1

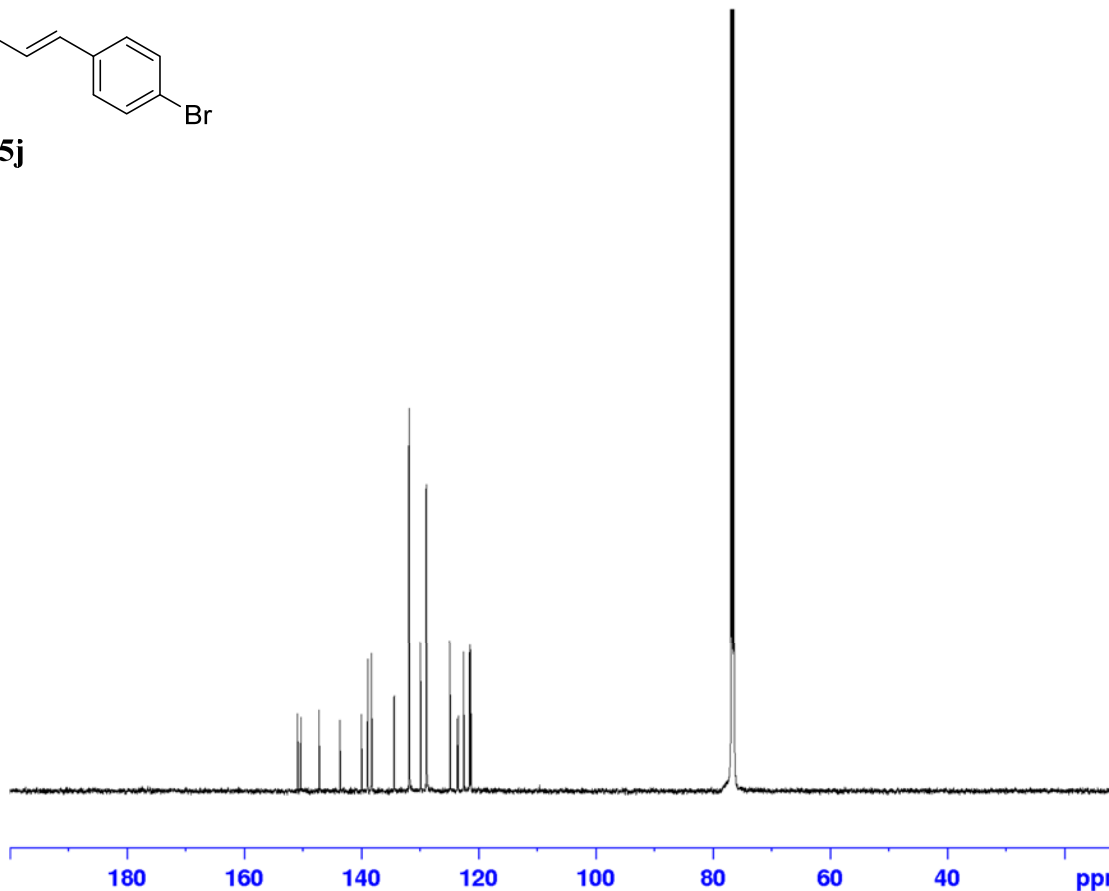
F2 - Acquisition Parameters
 Date_ 20220531
 Time 17.18
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 32768
 SOLVENT CDC13
 NS 16
 DS 0
 SWH 7183.908 Hz
 FIDRES 0.219235 Hz
 AQ 2.2806528 sec
 RG 2890
 DW 69.600 usec
 DE 6.00 usec
 TE 297.5 K
 D1 2.00000000 sec
 TD0 1

^1H NMR (600 MHz, CDCl_3) for compound **5j**

13C of JS23-28



150.90
150.38
147.23
143.67
139.99
138.93
138.30
134.46
134.42
131.86
131.84
129.90
128.91
126.85
124.88
123.66
123.49
122.57
121.54
121.34



Current Data Parameters
NAME JS23-28
EXPNO 2
PROCNO 1

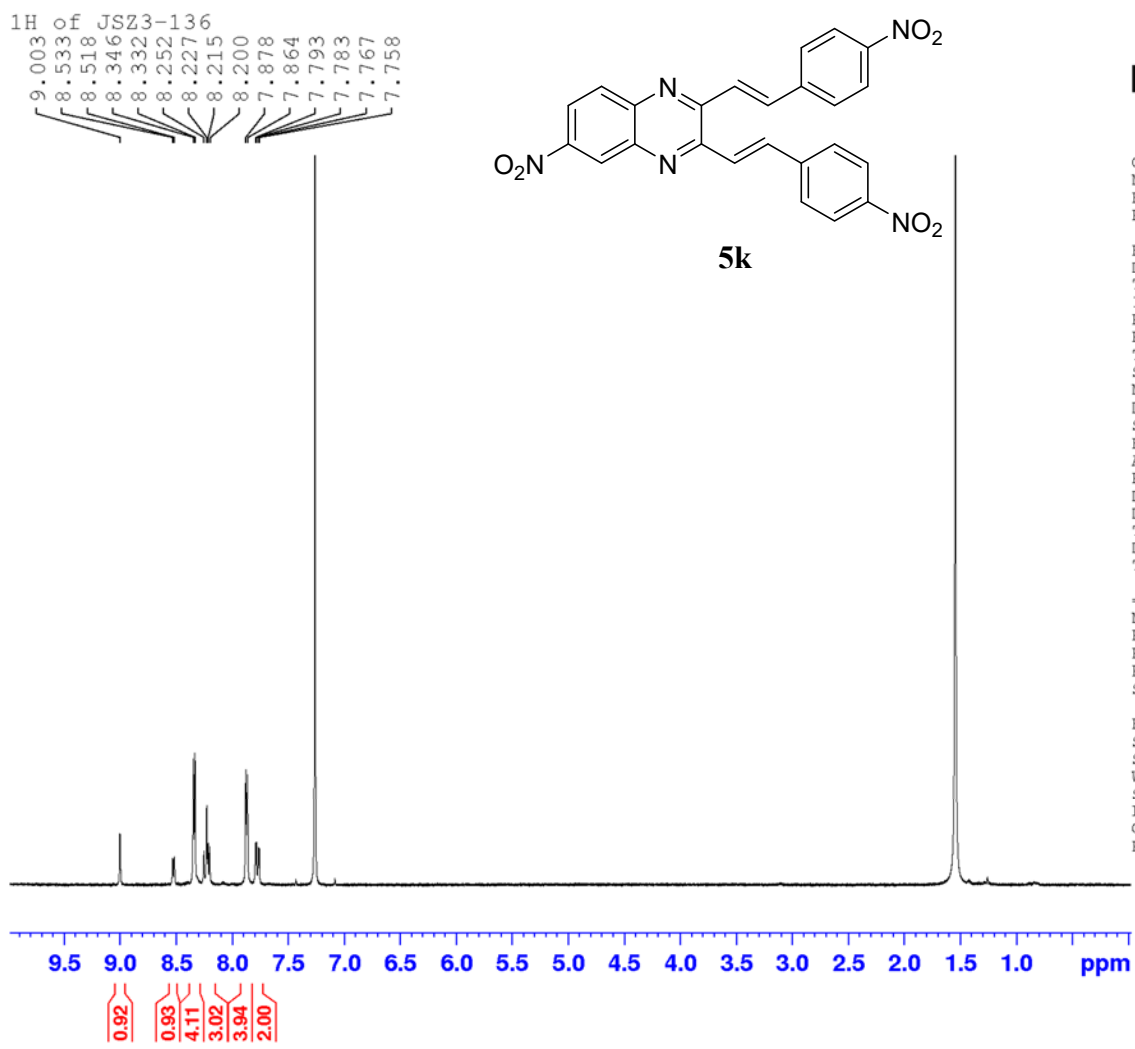
F2 - Acquisition Parameters
Date_ 20220601
Time 8.07
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 15498
DS 0
SWH 33557.047 Hz
FIDRES 0.512040 Hz
AQ 0.9764864 sec
RG 46300
DW 14.900 usec
DE 6.00 usec
TE 301.0 K
D1 2.40000010 sec
D11 0.03000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 13C
P1 10.00 usec
PL1 -1.60 dB
PL1W 136.15426636 W
SFO1 150.9194083 MHz

===== CHANNEL f2 =====
CPDPRG[2] waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -1.50 dB
PL12 13.20 dB
PL13 16.20 dB
PL2W 28.38507080 W
PL12W 0.96181160 W
PL13W 0.48204759 W
SFO2 600.1339008 MHz

F2 - Processing parameters
SI 32768
SF 150.9028662 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00

¹³C NMR (150 MHz, CDCl₃) for compound **5j**



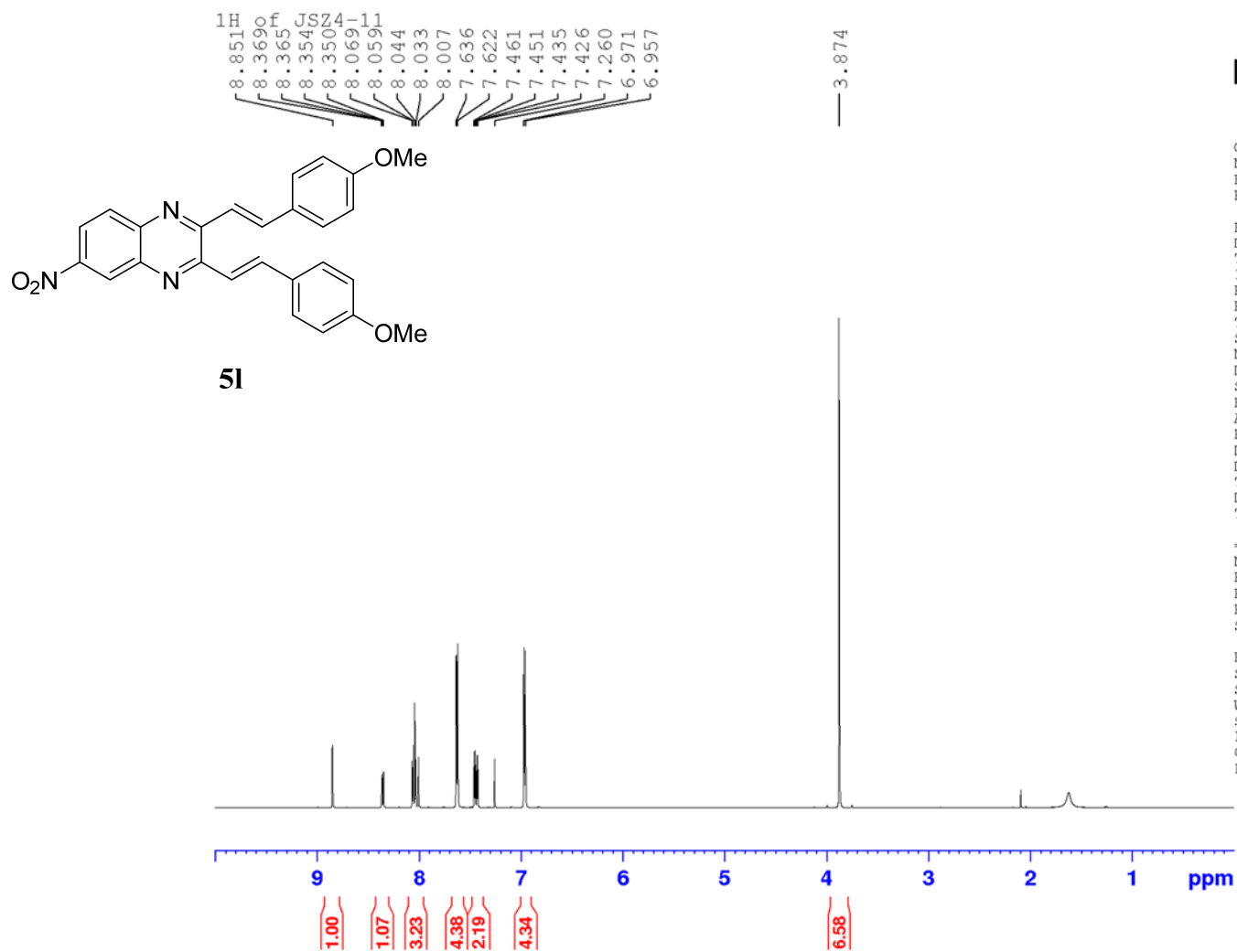
Current Data Parameters
 NAME JSZ3-136
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20220516
 Time 15.27
 INSTRUM spect
 PROBHD 5 mm TXI 1H/D-
 PULPROG zg30
 TD 32768
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 6009.615 Hz
 FIDRES 0.183399 Hz
 AQ 2.7262976 sec
 RG 2050
 DW 83.200 usec
 DE 6.00 usec
 TE 300.0 K
 D1 2.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 8.00 usec
 PL1 0.20 dB
 PL1W 19.19066429 W
 SFO1 600.1330006 MHz

F2 - Processing parameters
 SI 32768
 SF 600.1300110 MHz
 WDW no
 SSB 0
 LB 0 Hz
 GB 0
 PC 1.00

¹H NMR (600 MHz, CDCl₃) for compound **5k**



Current Data Parameters
 NAME JS24-11
 EXPNO 1
 PROCNO 1

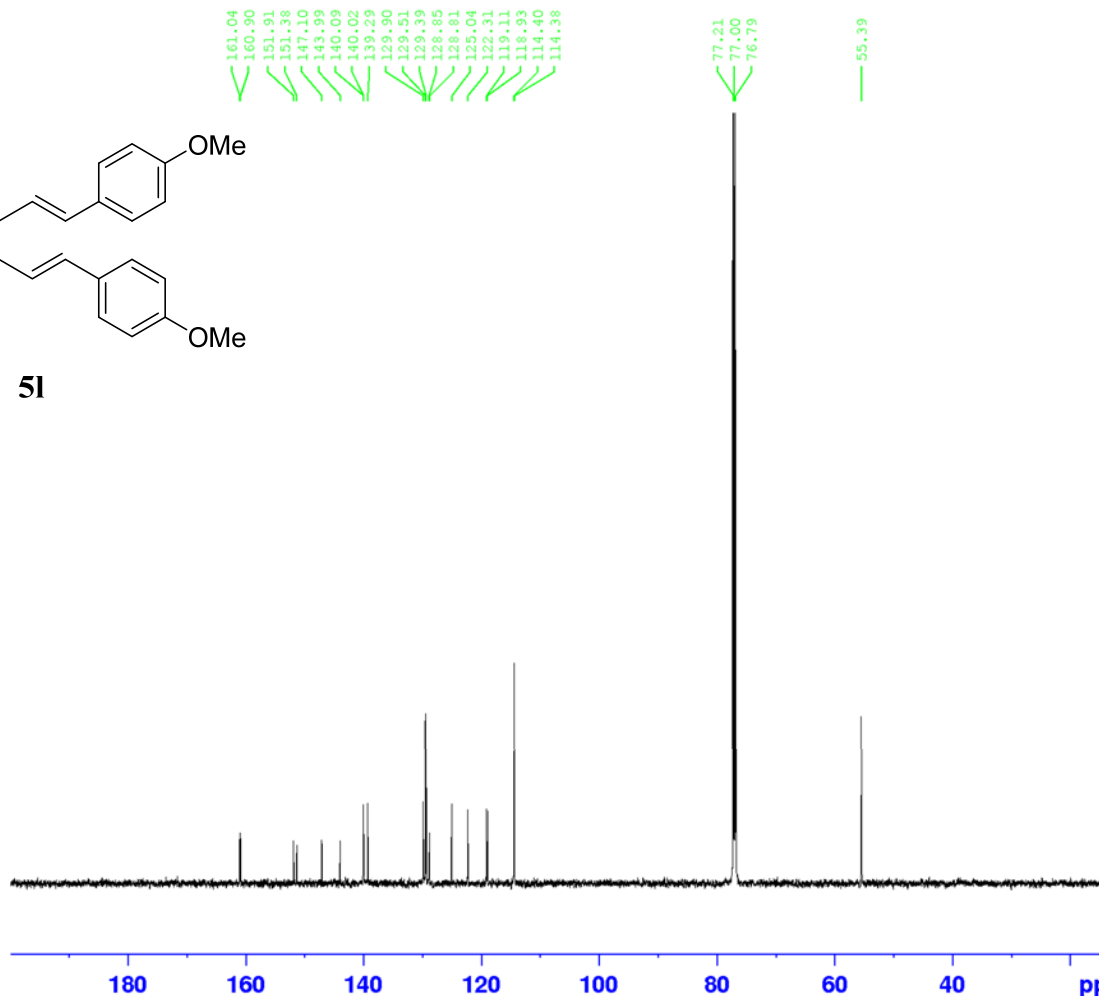
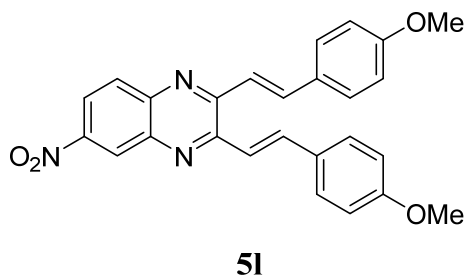
F2 - Acquisition Parameters
 Date_ 20220530
 Time 13.36
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 32768
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 6613.757 Hz
 FIDRES 0.201836 Hz
 AQ 2.4772608 sec
 RG 1620
 DW 75.600 usec
 DE 6.00 usec
 TE 297.9 K
 D1 2.00000000 sec
 TD0 1

----- CHANNEL f1 -----
 NUC1 1H
 P1 15.00 usec
 PL1 -0.80 dB
 PL1W 24.15961456 W
 SF01 600.1330006 MHz

F2 - Processing parameters
 SI 32768
 SF 600.1300102 MHz
 WDW no
 SSR 0
 LB 0 Hz
 GB 0
 PC 1.00

^1H NMR (600 MHz, CDCl_3) for compound **51**

¹³C of JS24-11



Current Data Parameters
NAME JS24-11
EXPNO 2
PROCNO 1

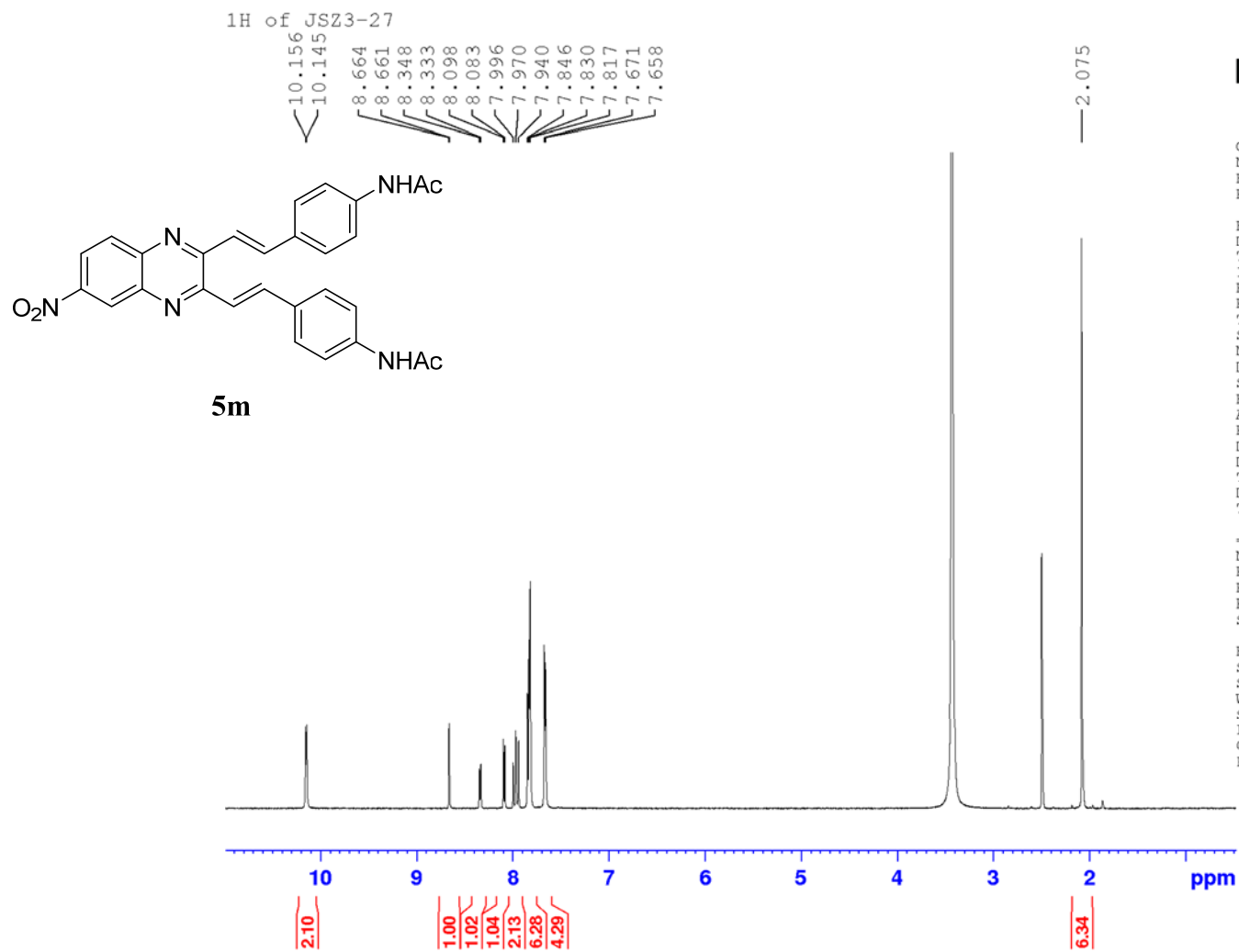
F2 - Acquisition Parameters
Date_ 20220530
Time 13.35
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 355
DS 0
SWH 34013.605 Hz
FIDRES 0.519006 Hz
AQ 0.9633792 sec
RG 46300
DW 14.700 usec
DE 6.00 usec
TE 298.9 K
D1 2.40000010 sec
D11 0.03000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 13C
P1 10.00 usec
PL1 -1.60 dB
PL1W 136.15426636 W
SFO1 150.9194083 MHz

===== CHANNEL f2 =====
CPDPRG[2] waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -1.50 dB
PL12 13.20 dB
PL13 16.20 dB
PL2W 28.38507080 W
PL12W 0.96181160 W
PL13W 0.48204759 W
SFO2 600.1339008 MHz

F2 - Processing parameters
SI 32768
SF 150.9028121 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00

¹³C NMR (150 MHz, CDCl₃) for compound **51**



Current Data Parameters
NAME JSZ3-27
EXPNO 1
PROCNO 1

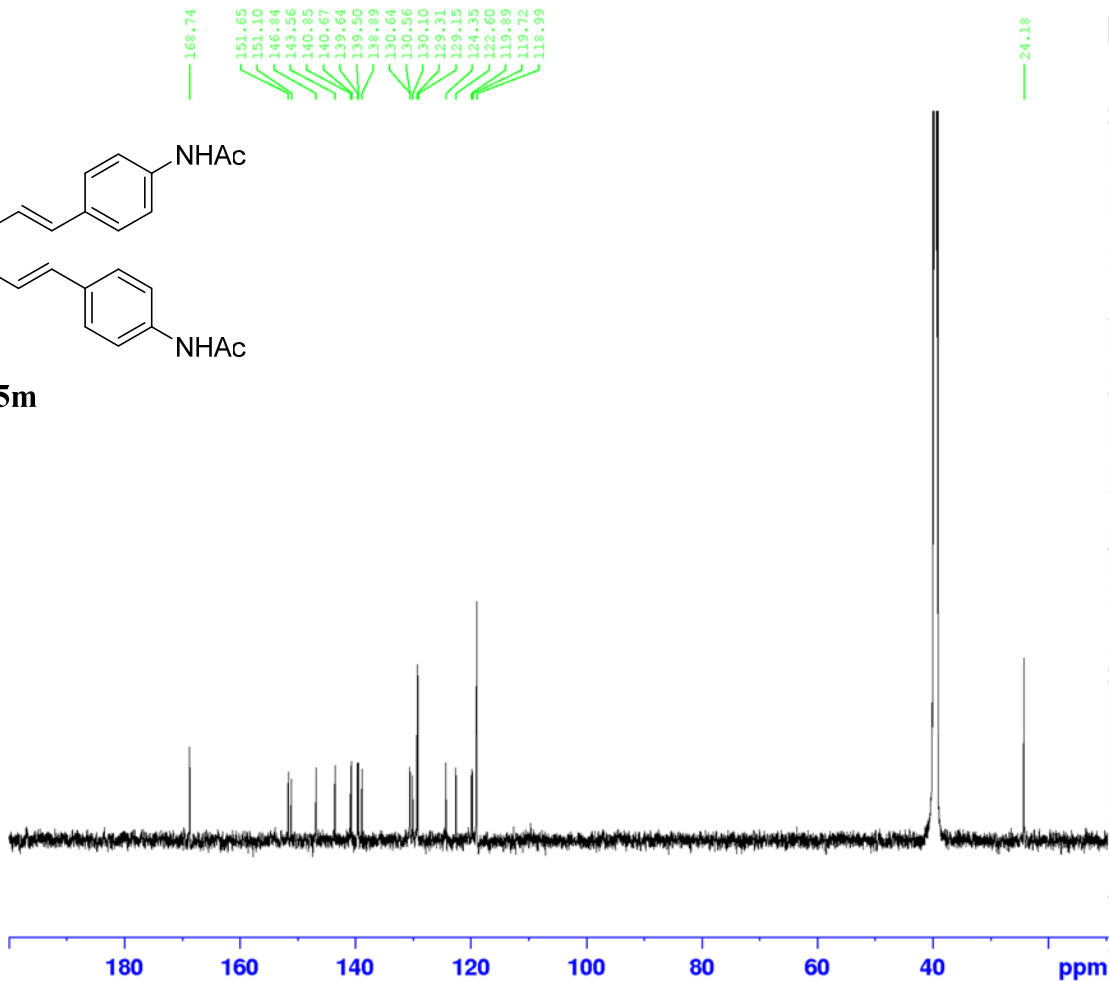
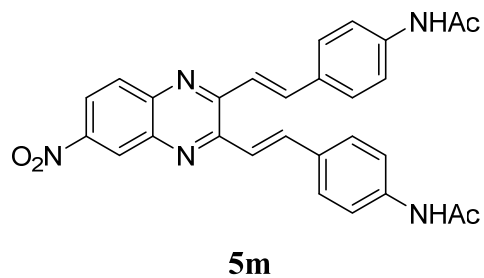
F2 - Acquisition Parameters
Date_ 20220531
Time 14.17
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 32768
SOLVENT DMSO
NS 16
DS 0
SWH 7183.908 Hz
FIDRES 0.219235 Hz
AQ 2.2806528 sec
RG 812
DW 69.600 usec
DE 6.00 usec
TE 297.7 K
D1 2.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 15.00 usec
PL1 -0.80 dB
PL1W 24.15961456 W
SFO1 600.1336008 MHz

F2 - Processing parameters
SI 32768
SF 600.1300064 MHz
WDW no
SSB 0
LB 0 Hz
GB 0
PC 1.00

¹H NMR (600 MHz, DMSO-*d*₆) for compound **5m**

13C of JSZ3-27



Current Data Parameters
NAME JSZ3-27
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20220531
Time 14.15
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT DMSO
NS 1080
DS 0
SWH 33557.047 Hz
FIDRES 0.512040 Hz
AQ 0.9764864 sec
RG 46300
DW 14.900 usec
DE 6.00 usec
TE 298.4 K
D1 2.40000010 sec
D11 0.03000000 sec
TD0 1

==== CHANNEL f1 =====
NUC1 13C
P1 10.00 usec
PL1 -1.60 dB
PL1W 136.15426636 W
SFO1 150.9194083 MHz

==== CHANNEL f2 =====
CPDPRG[2] waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 -1.50 dB
PL12 13.20 dB
PL13 16.20 dB
PL2W 28.38507080 W
PL12W 0.96181160 W
PL13W 0.48204759 W
SFO2 600.1339008 MHz

F2 - Processing parameters
SI 32768
SF 150.9028662 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.00

¹³C NMR (150 MHz, DMSO-*d*₆) for compound **5m**