

# ***Enantioselective Copper –Catalyzed Alkynylation of Benzopyranyl Oxocarbenium Ions***

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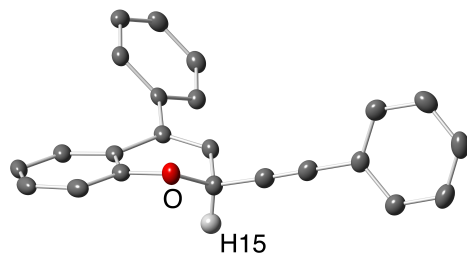
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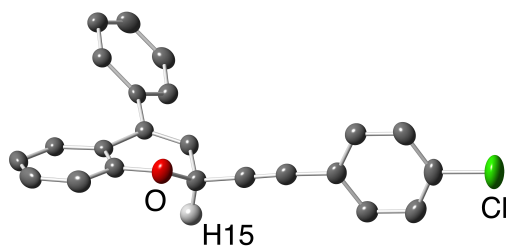
## Supporting Information

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## Crystal Structures of **8ea** and **8eo**



**Figure 1.** Crystal Structure of **8ea**. Molecular diagram with ellipsoids at 30% probability. H-atoms except for H15, with arbitrary radius, omitted for clarity.

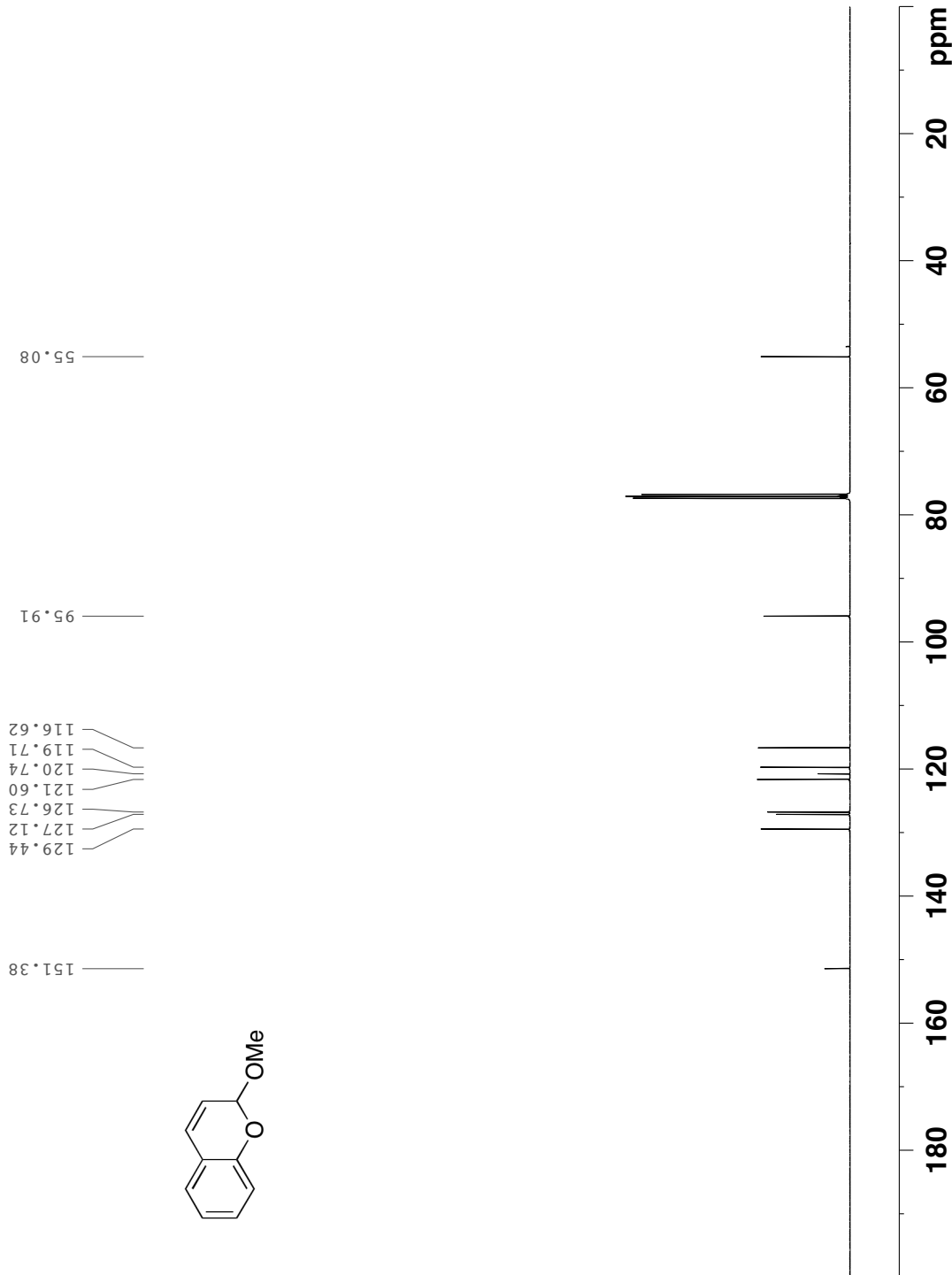
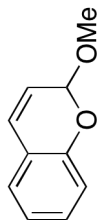


**Figure 2.** Crystal Structure of **8eo**. Molecular diagram with ellipsoids at 30% probability. H-atoms except for H15, with arbitrary radius, omitted for clarity.





Compound 5a 13C  
NMR



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EXPNO 3  
PROCNO 1

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Date\_ 20120828  
Time 21.03  
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PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 1024  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664756 sec  
RG 512  
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TE 18.00 usec  
D1 298.1 K  
D11 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

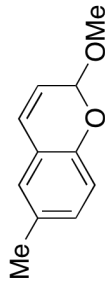
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NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.08120718 W  
SFO2 400.1316005 MHz

F2 - Processing parameters  
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PC 1.40



Compound 5b 1H  
NMR



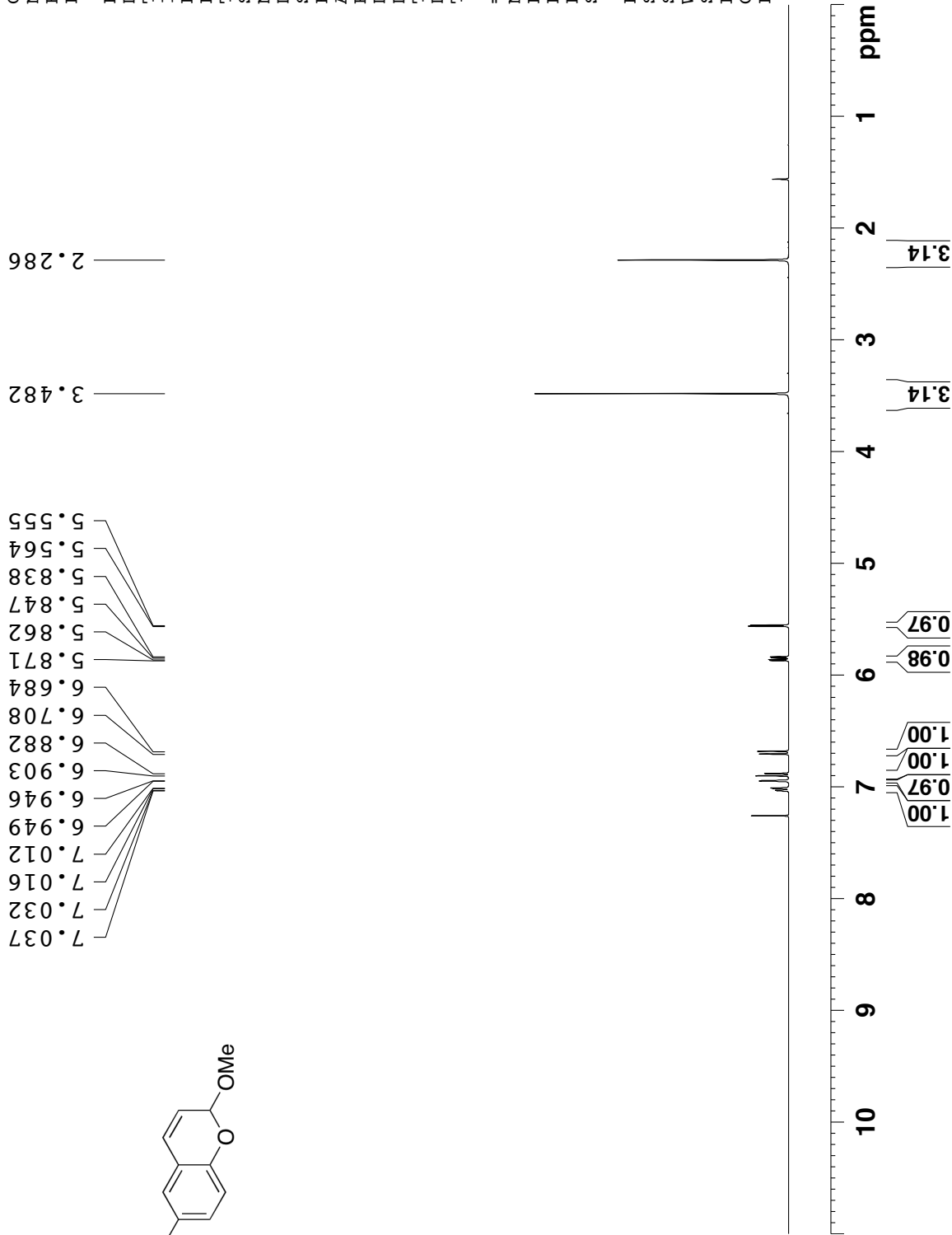
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5.862  
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5.555

3.482  
2.286

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 Time\_ 12.04  
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 PULPROG zg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 16  
 DS 2  
 SWH 8278.146 Hz  
 FIDRES 0.126314 Hz  
 AQ 3.9584243 sec  
 RG 10.1  
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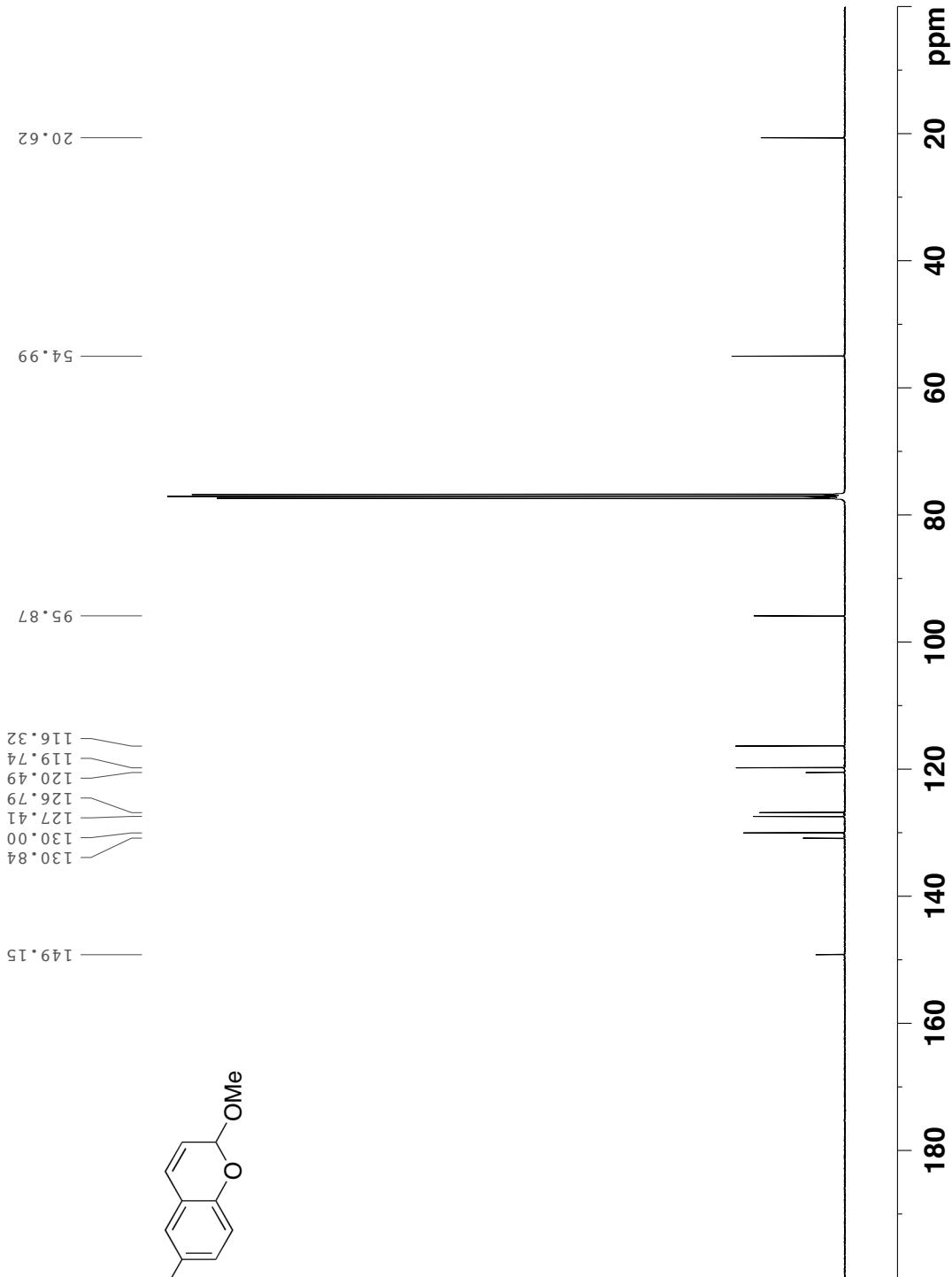
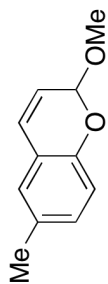
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 PL1W 3.30822015 W  
 SFO1 400.1324710 MHz

F2 - Processing parameters  
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 SF 400.1300097 MHz  
 EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00





Compound 5b 13CNMR



Current Data Parameters  
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EXPNO 1  
PROCNO 1

F2 - Acquisition Parameters  
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PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 1024  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664756 sec  
RG 512  
DW 20.850 usec  
DE 18.00 usec  
TE 298.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

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PL1 0.55 dB  
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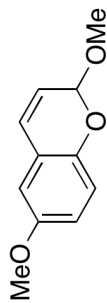
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PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.08120718 W  
SFO2 400.1316005 MHz

F2 - Processing parameters  
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Compound 5c 1H NMR

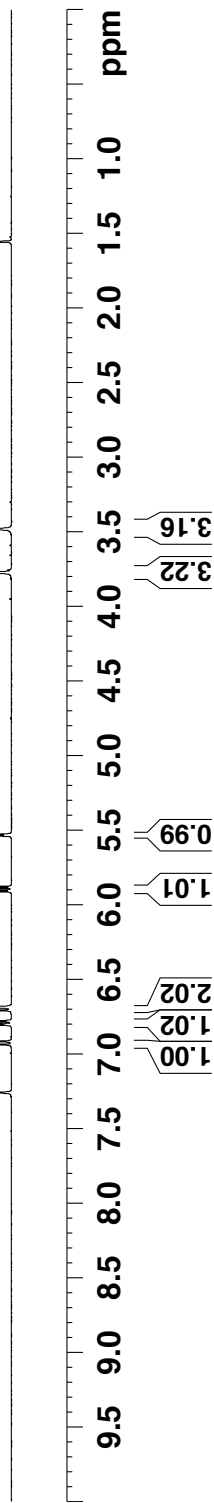


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 6.786  
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 6.710  
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 5.913  
 5.903  
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 5.879  
 5.538  
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 3.483



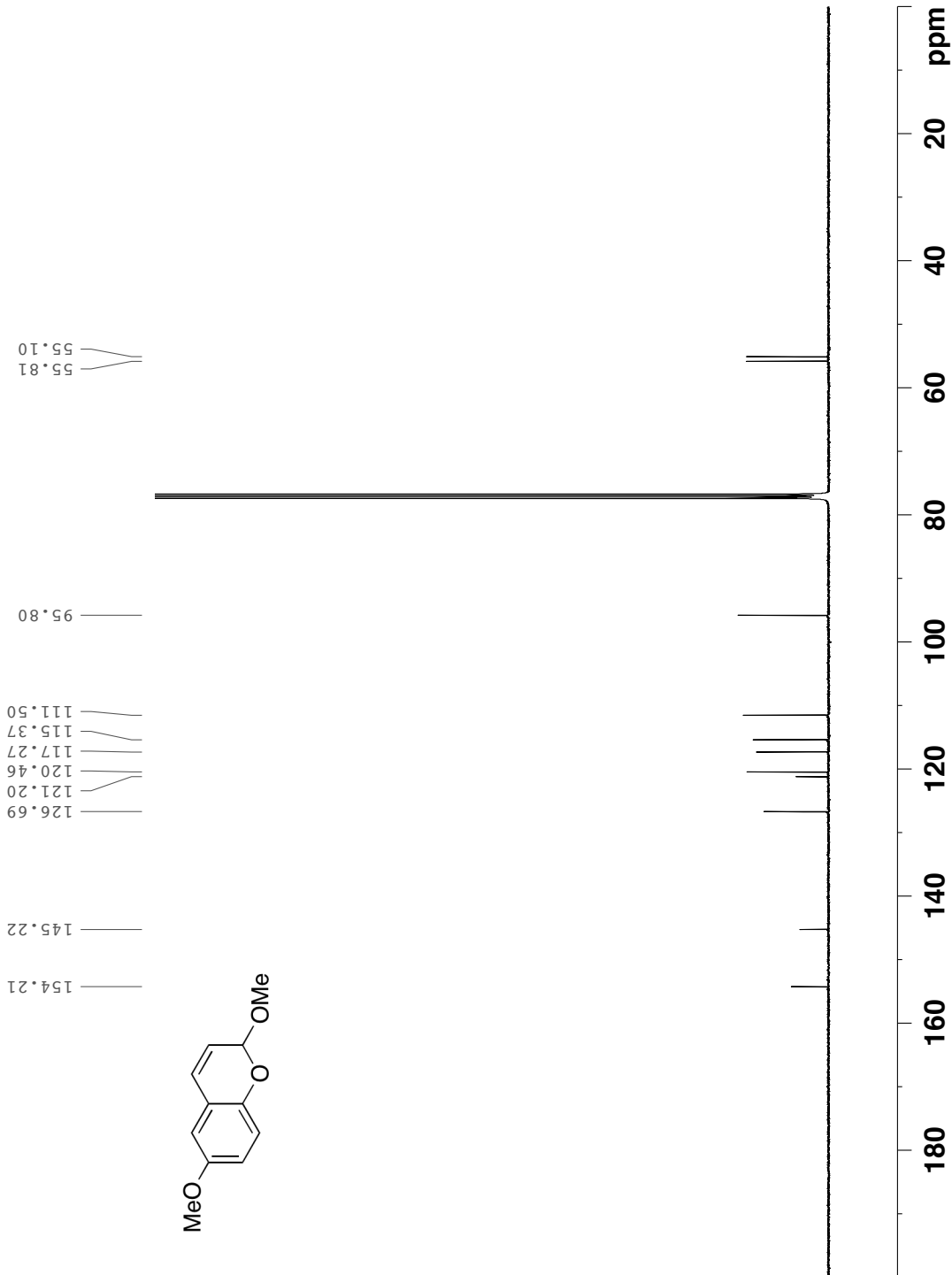
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 PROBHD 5 mm CPQNP 1H/  
 PULPROG zg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 16  
 DS 2  
 SWH 8278.146 Hz  
 FIDRES 0.126314 Hz  
 AQ 3.9584243 sec  
 RG 9  
 DW 60.400 usec  
 DE 6.00 usec  
 TE 298.2 K  
 D1 1.00000000 sec  
 TD0 1

===== CHANNEL f1 =====  
 NUC1 1H  
 P1 15.00 usec  
 PL1 4.90 dB  
 PL1W 3.30822015 W  
 SF01 400.1324710 MHz  
 F2 - Processing parameters  
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 SF 400.1300097 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00





Compound 5c 13C NMRR



Current Data Parameters  
NAME HH-3-113aug14  
EXPNO 2  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120815  
Time 1.50  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 1024  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664756 sec  
RG 512  
DE 20.850 usec  
TE 18.00 usec  
D1 298.1 K  
D11 2.00000000 sec  
D12 0.03000000 sec  
D13 0.03000000 sec  
D14 0.03000000 sec  
D15 0.03000000 sec  
D16 0.03000000 sec  
D17 0.03000000 sec  
D18 0.03000000 sec  
D19 0.03000000 sec  
D20 0.03000000 sec  
D21 0.03000000 sec  
D22 0.03000000 sec  
D23 0.03000000 sec  
D24 0.03000000 sec  
D25 0.03000000 sec  
D26 0.03000000 sec  
D27 0.03000000 sec  
D28 0.03000000 sec  
D29 0.03000000 sec  
D30 0.03000000 sec  
D31 0.03000000 sec  
D32 0.03000000 sec  
D33 0.03000000 sec  
D34 0.03000000 sec  
D35 0.03000000 sec  
D36 0.03000000 sec  
D37 0.03000000 sec  
D38 0.03000000 sec  
D39 0.03000000 sec  
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D45 0.03000000 sec  
D46 0.03000000 sec  
D47 0.03000000 sec  
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D49 0.03000000 sec  
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D64 0.03000000 sec  
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D70 0.03000000 sec

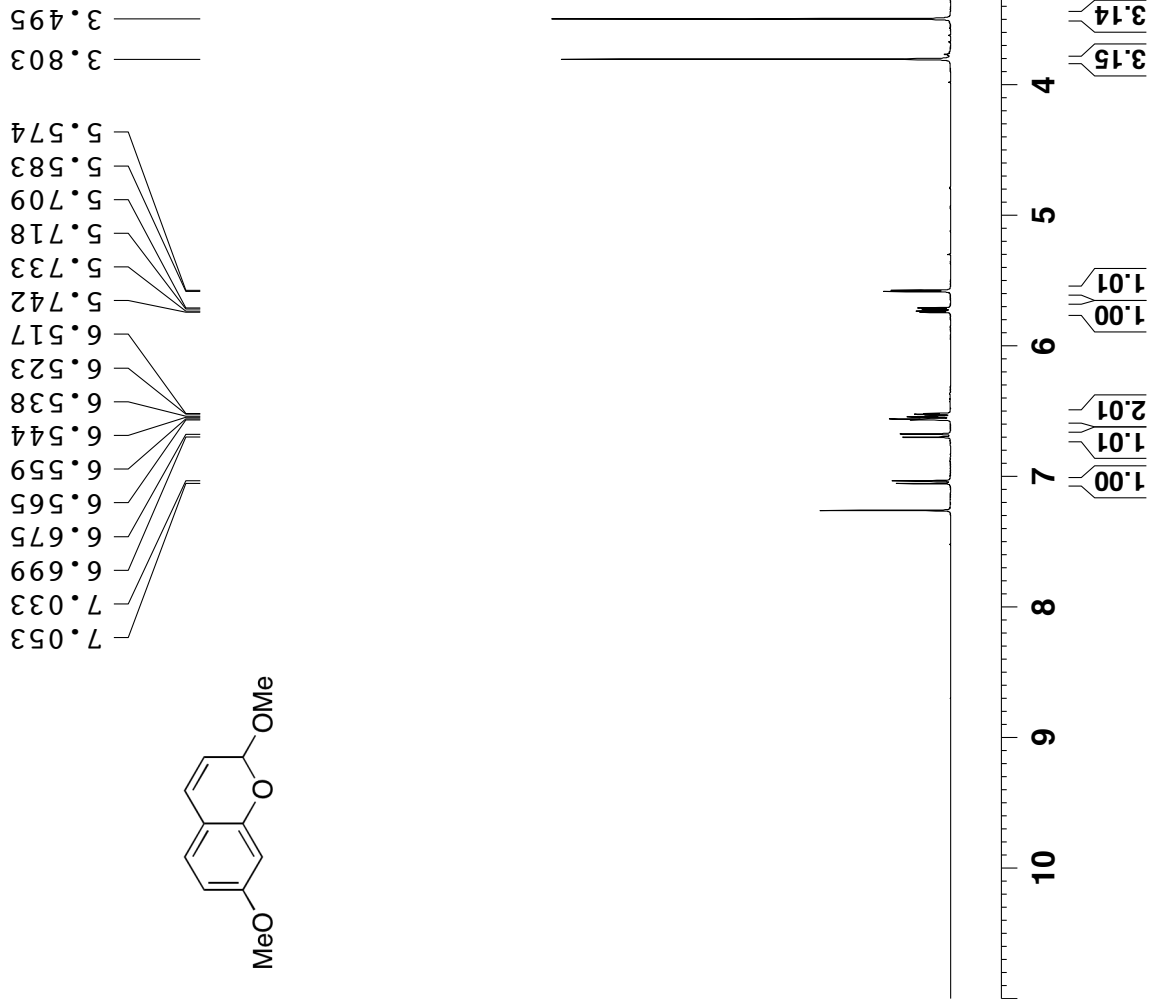
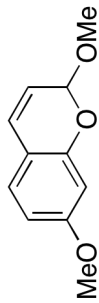
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NUC1 13C  
P1 9.25 usec  
PL1 0.55 dB  
PL1W 35.18820572 W  
SFO1 100.6228298 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.09120718 W  
SFO2 400.1316005 MHz

F2 - Processing parameters  
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SF 100.6127690 MHz  
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SSB 0  
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PC 1.40



Compound 5d 1H  
NMR



Current Data Parameters  
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PROCNO 1

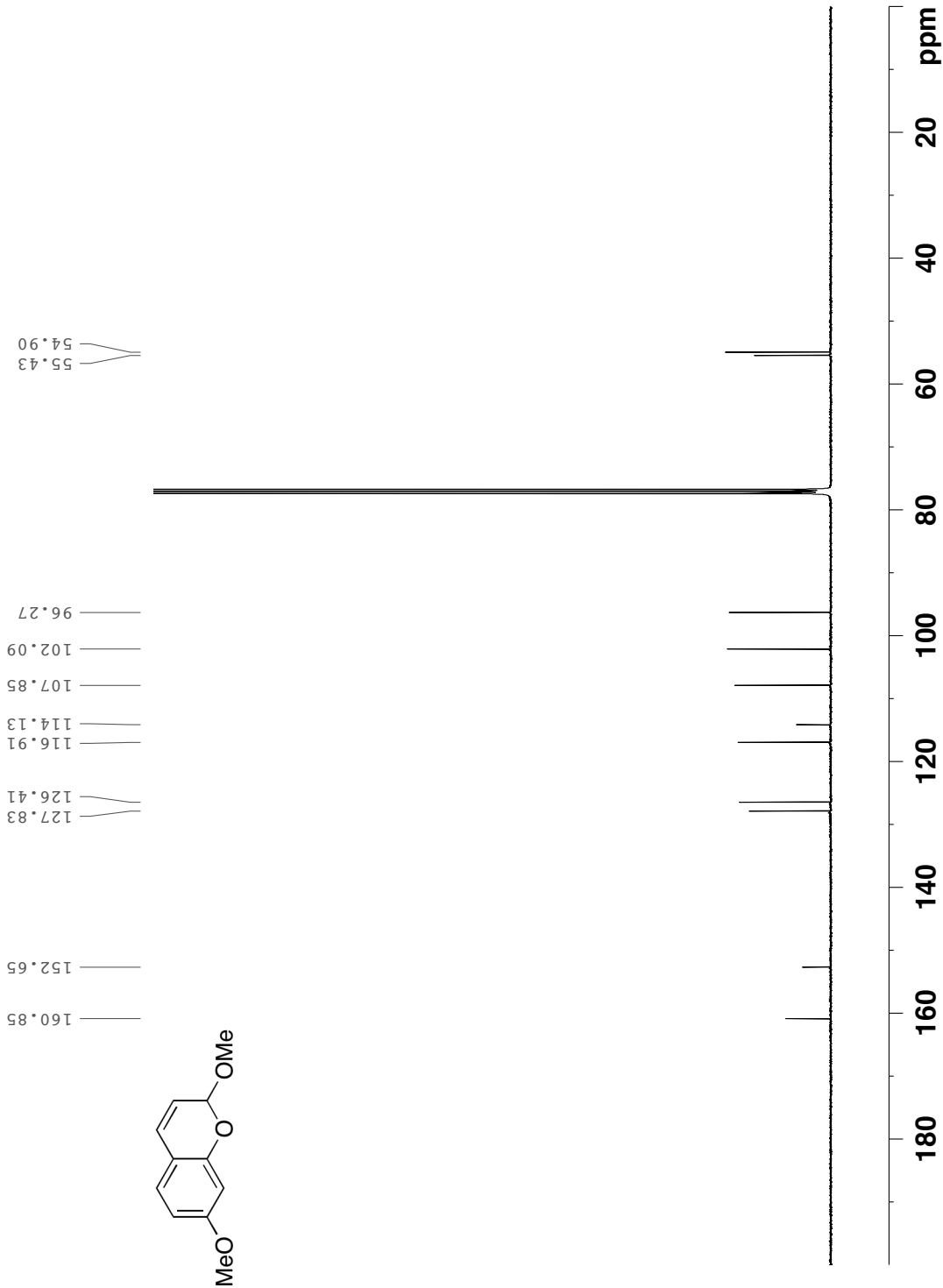
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TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8278.146 Hz  
FIDRES 0.126314 Hz  
AQ 3.9584243 sec  
RG 9  
DW 60.400 usec  
DE 6.00 usec  
TE 298.2 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 15.00 usec  
PL1 4.90 dB  
PL1W 3.30822015 W  
SFO1 400.1324710 MHz

F2 - Processing parameters  
SI 32768  
SF 400.1300099 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



Compound 5d 13C NMR



Current Data Parameters  
NAME HH-3-107aug14  
EXPNO 2  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120815  
Time 2.53  
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PROBHD 5 mm CPQNP 1H/  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 1024  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664756 sec  
RG 512  
DW 20.850 usec  
DE 18.00 usec  
TE 298.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 9.25 usec  
PL1 0.55 dB  
PL1W 35.18820572 W  
SFO1 100.6228298 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.08120718 W  
SFO2 400.1316005 MHz

F2 - Processing parameters  
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SF 100.6127690 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

Compound 5e 1H NMR



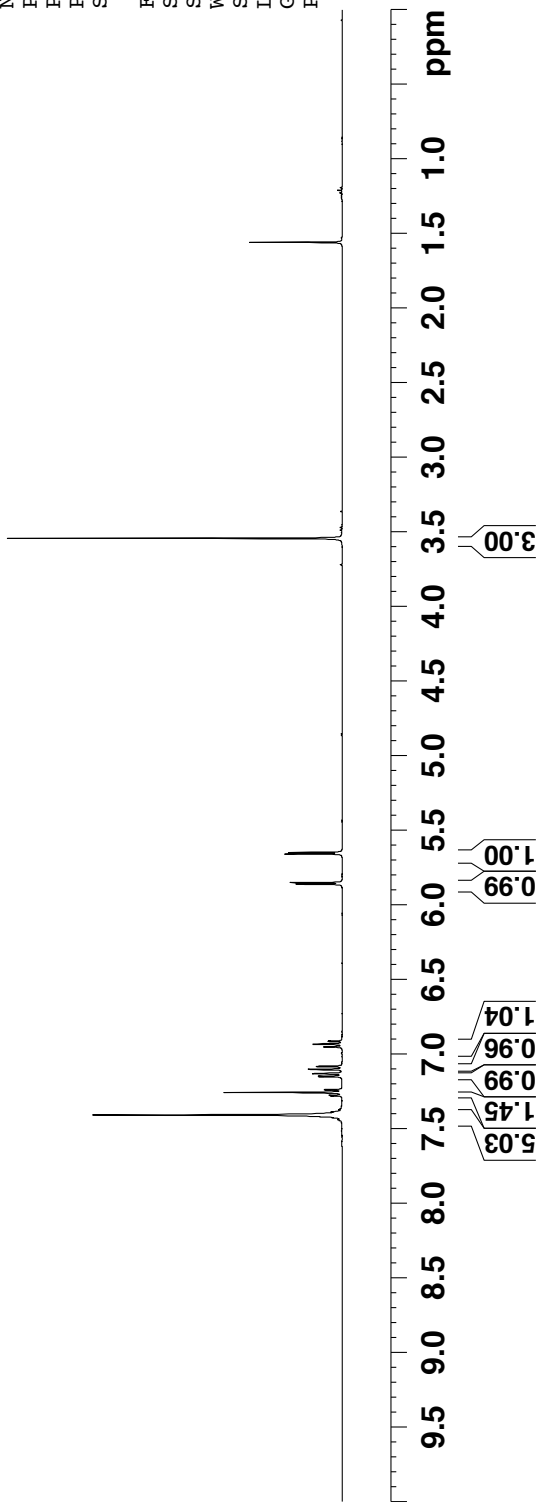
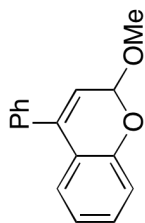
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 PROCNO 1

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 PULPROG zg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 16  
 DS 2  
 SWH 8278.146 Hz  
 FIDRES 0.126314 Hz  
 AQ 3.9584243 sec  
 RG 12.7  
 DW 60.400 usec  
 DE 6.00 usec  
 TE 298.2 K  
 D1 1.00000000 sec  
 TDO 1

==== CHANNEL f1 =====  
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 PL1 4.90 dB  
 PL1W 3.30822015 W  
 SFO1 400.1324710 MHz

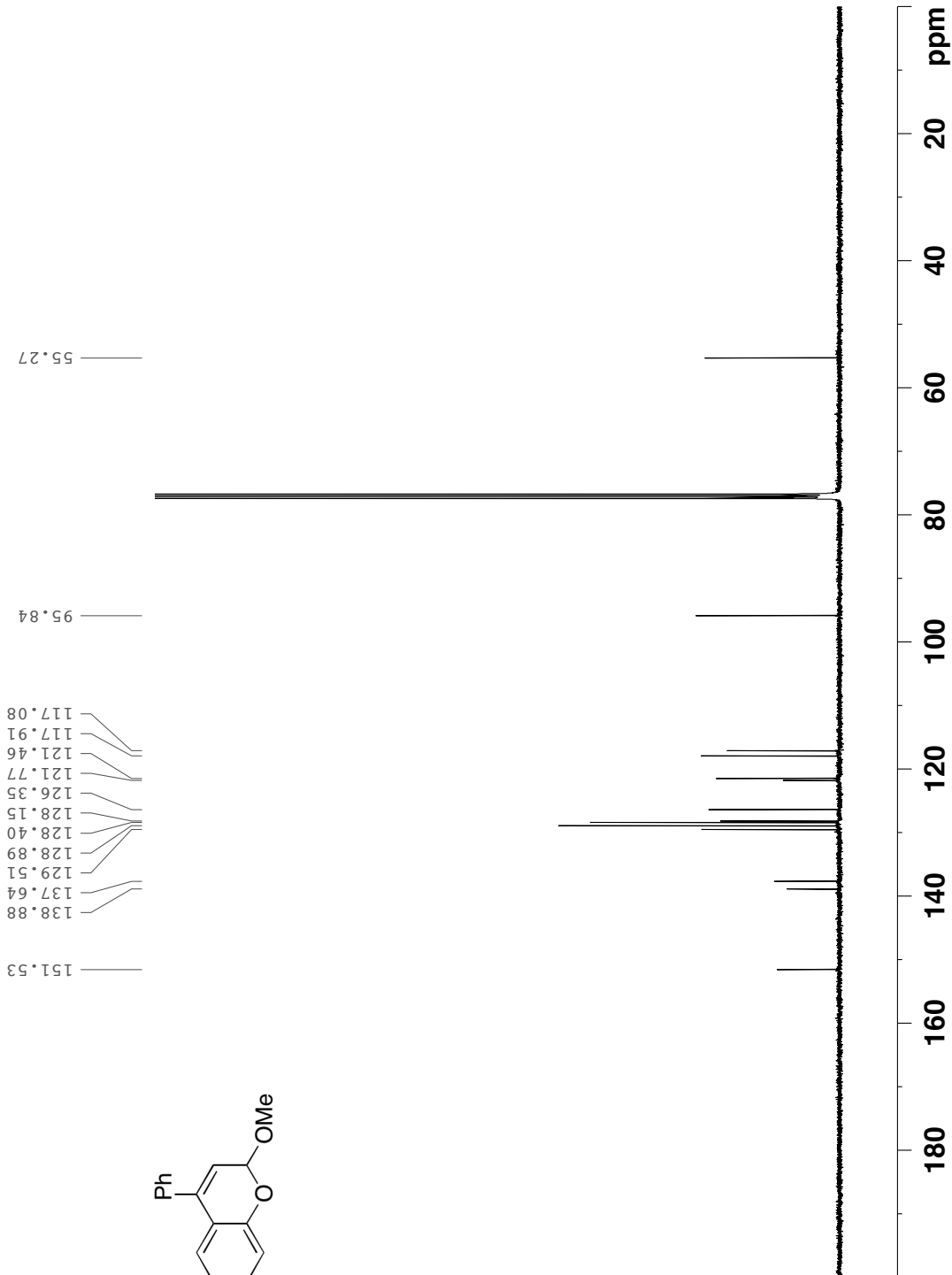
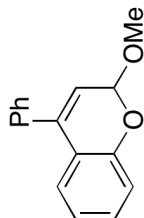
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 GB 0  
 PC 1.00

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7.240  
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7.135  
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5.545





Compound 5e 13C NMR



Current Data Parameters  
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EXPNO 2  
PROCNO 1

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PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 256  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664756 sec  
RG 512  
DE 20.850 usec  
TE 18.00 usec  
D1 298.2 K  
D11 2.00000000 sec  
D12 0.03000000 sec  
D13 0.03000000 sec  
D14 0.03000000 sec  
D15 0.03000000 sec  
D16 0.03000000 sec  
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D65 0.03000000 sec  
D66 0.03000000 sec  
D67 0.03000000 sec  
D68 0.03000000 sec  
D69 0.03000000 sec  
D70 0.03000000 sec

==== CHANNEL f1 =====  
NUC1 13C  
P1 9.25 usec  
PL1 0.55 dB  
PL1W 35.18820572 W  
SFO1 100.6228298 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.09120718 W  
SFO2 400.1316005 MHz

F2 - Processing parameters  
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SF 100.6127690 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



Compound 5f 1H NMR

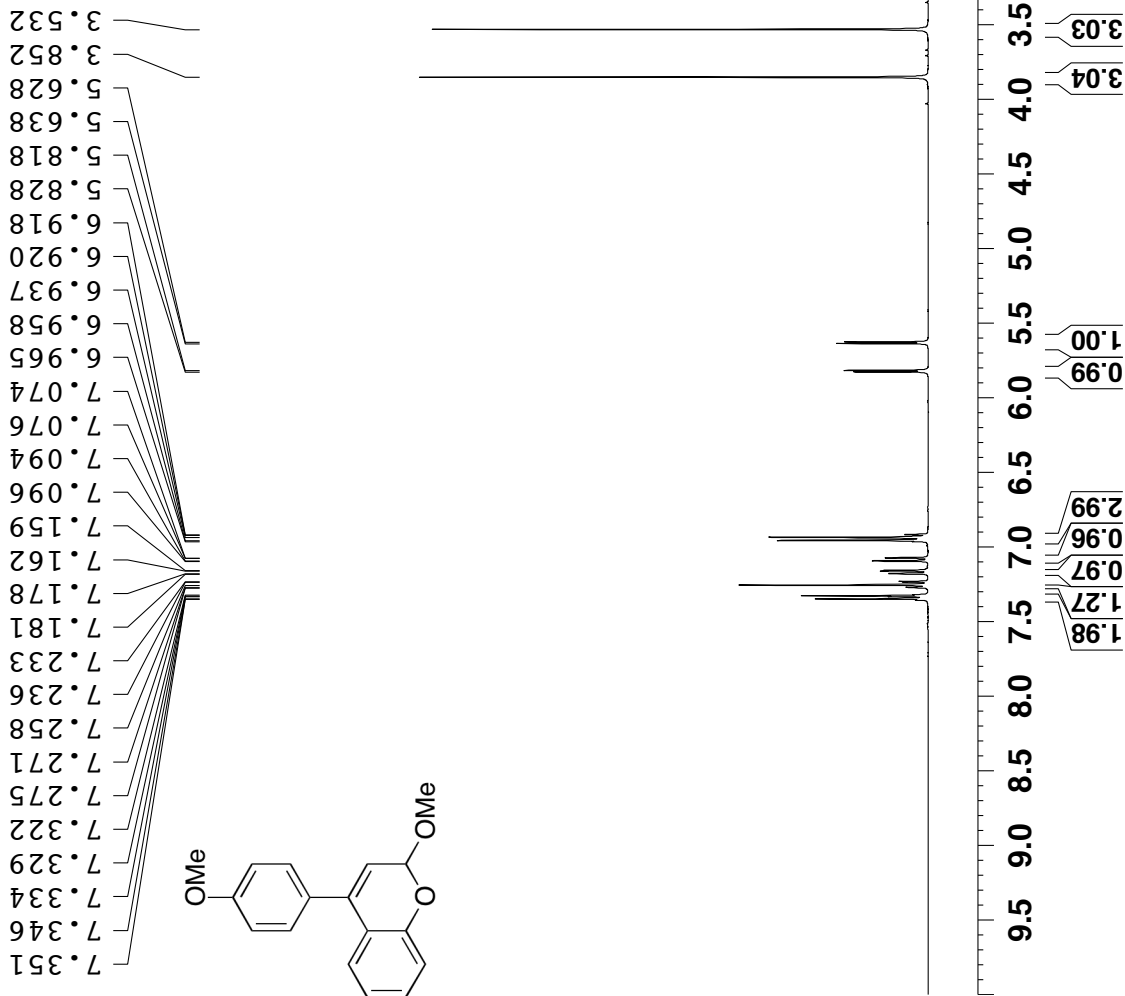


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 PROCNO 1

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 PULPROG zg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 16  
 DS 2  
 SWH 8278.146 Hz  
 FIDRES 0.126314 Hz  
 AQ 3.9584243 sec  
 RG 10.1  
 DW 60.400 usec  
 DE 6.00 usec  
 TE 298.2 K  
 D1 1.00000000 sec  
 TDO 1

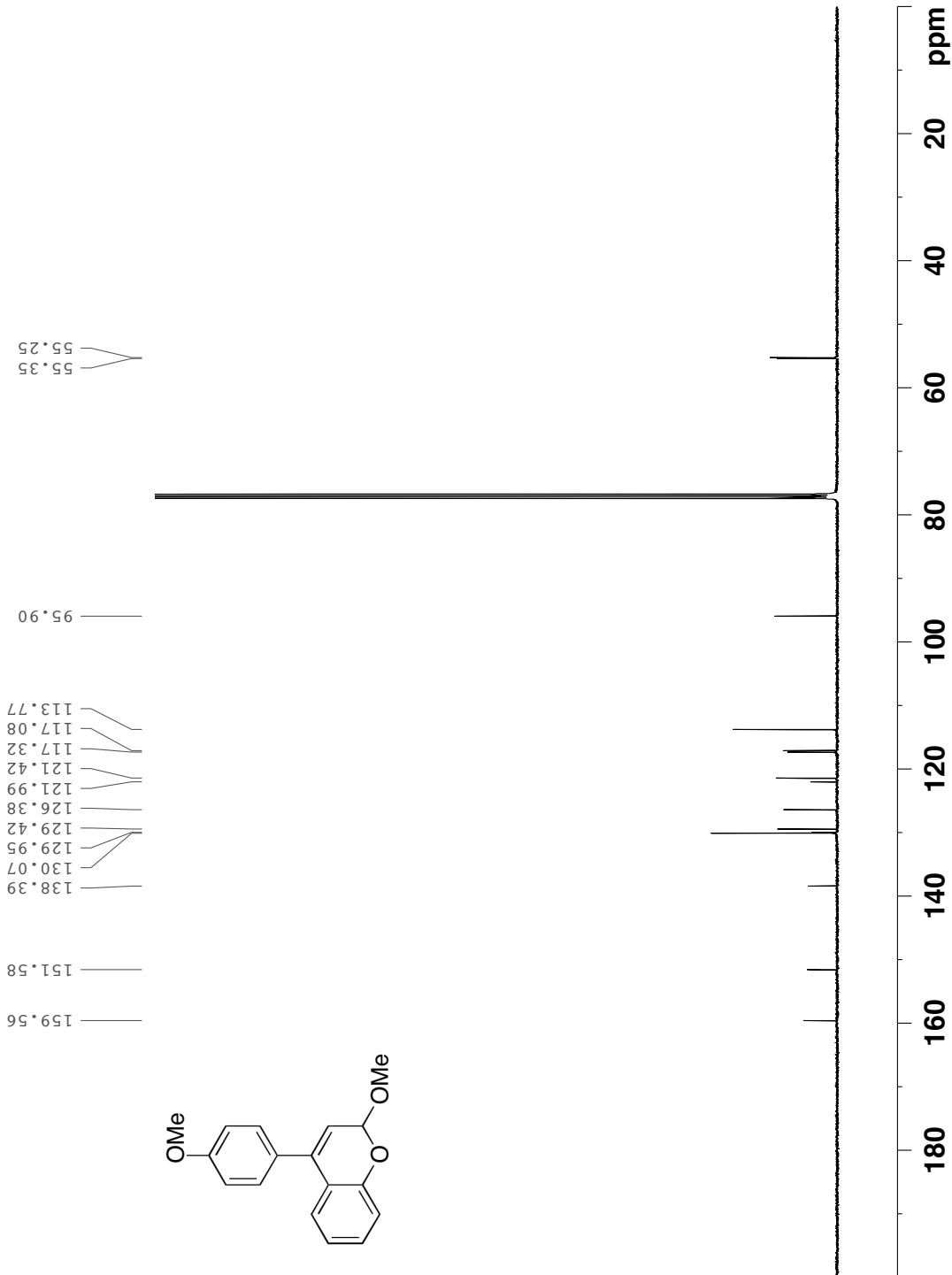
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 P1 15.00 usec  
 PL1 4.90 dB  
 PL1W 3.30822015 W  
 SFO1 400.1324710 MHz

F2 - Processing parameters  
 SI 32768  
 SF 400.1300108 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00





Compound 5f 13C NMR



Current Data Parameters  
NAME HH-3-191aug14  
EXPNO 2  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120814  
Time 20.08  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 256  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664756 sec  
RG 512  
DW 20.850 usec  
DE 18.00 usec  
TE 298.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TDO 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 9.25 usec  
PL1 0.55 dB  
PL1W 35.18820572 W  
SFO1 100.6228298 MHz

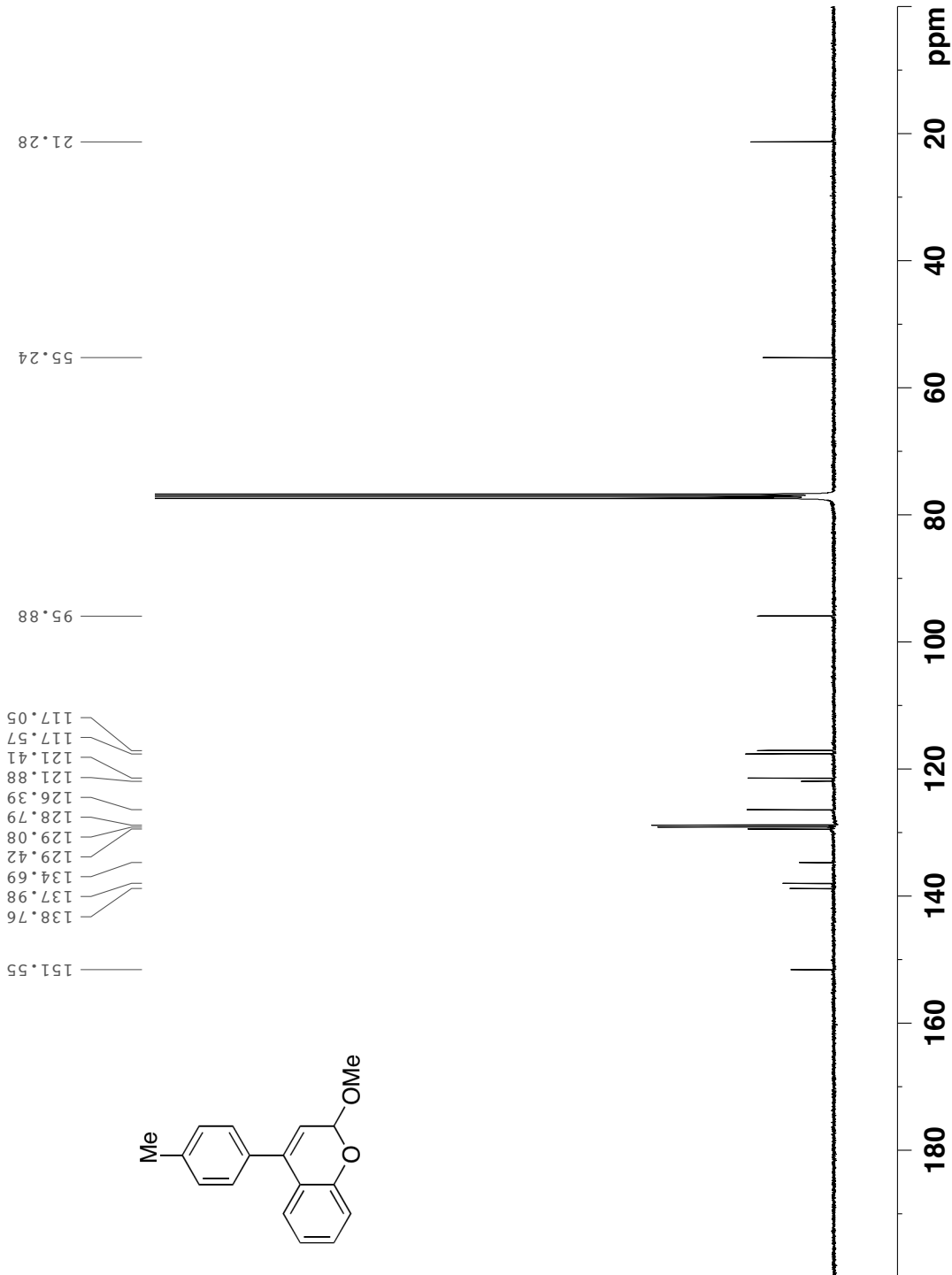
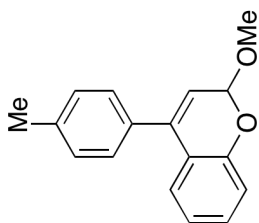
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CPDPRG2 waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.08120718 W  
SFO2 400.1316005 MHz

F2 - Processing parameters  
SI 32768  
SF 100.6127690 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40





Compound 5g 13C NMR



Current Data Parameters  
NAME HH-3-201  
EXPNO 2  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120429  
Time 2.44  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 1024  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664756 sec  
RG 512  
DW 20.850 usec  
DE 18.00 usec  
TE 298.1 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 9.25 usec  
PL1 0.55 dB  
PL1W 35.18820572 W  
SFO1 100.6228298 MHz

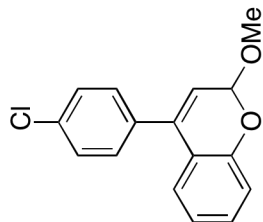
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CPDPRG2 waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.08120718 W  
SFO2 400.1316005 MHz

F2 - Processing parameters  
SI 32768  
SF 100.6127690 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

Compound 5h 1H NMR



7.412  
7.407  
7.395  
7.390  
7.355  
7.350  
7.338  
7.334  
7.295  
7.292  
7.273  
7.264  
7.253  
7.108  
7.101  
7.086  
7.082  
6.966  
6.964  
6.947  
6.929  
6.926  
5.853  
5.842  
5.646  
5.635  
3.541

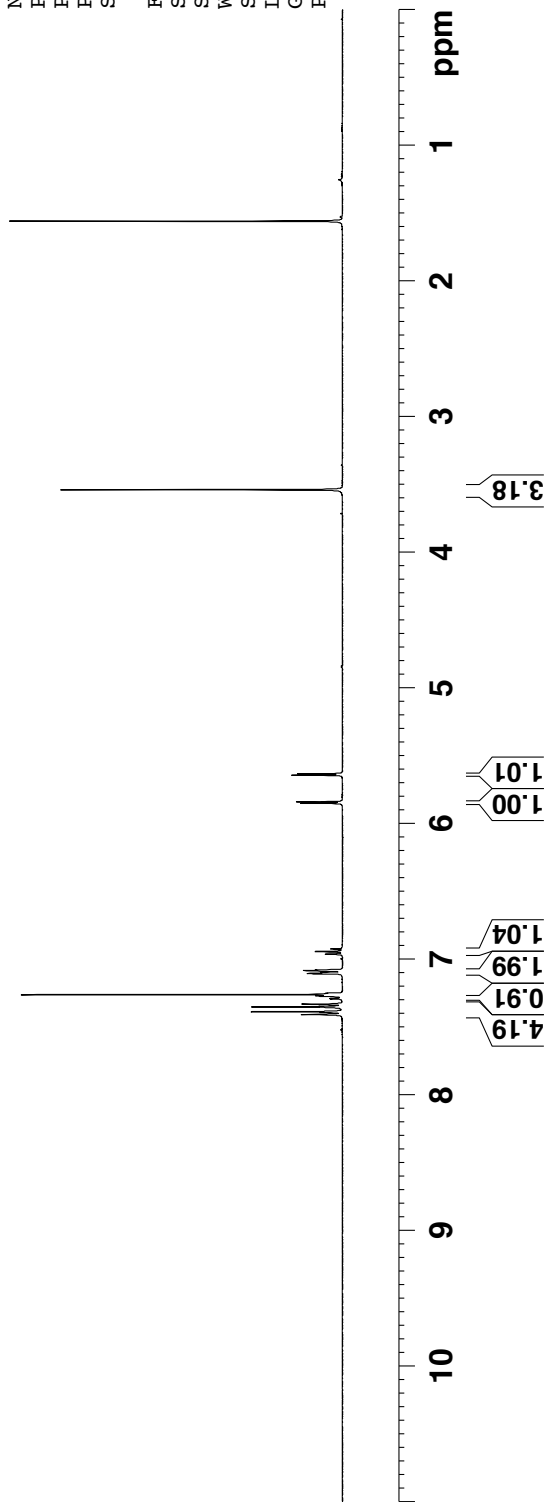


Current Data Parameters  
 NAME HH-3-247aug14  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120814  
 Time\_ 11.41  
 INSTRUM spect  
 PROBHD 5 mm CPQNP 1H/  
 PULPROG zg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 16  
 DS 2  
 SWH 8278.146 Hz  
 FIDRES 0.126314 Hz  
 AQ 3.9584243 sec  
 RG 9  
 DW 60.400 usec  
 DE 6.00 usec  
 TE 298.2 K  
 D1 1.00000000 sec  
 TD0 1

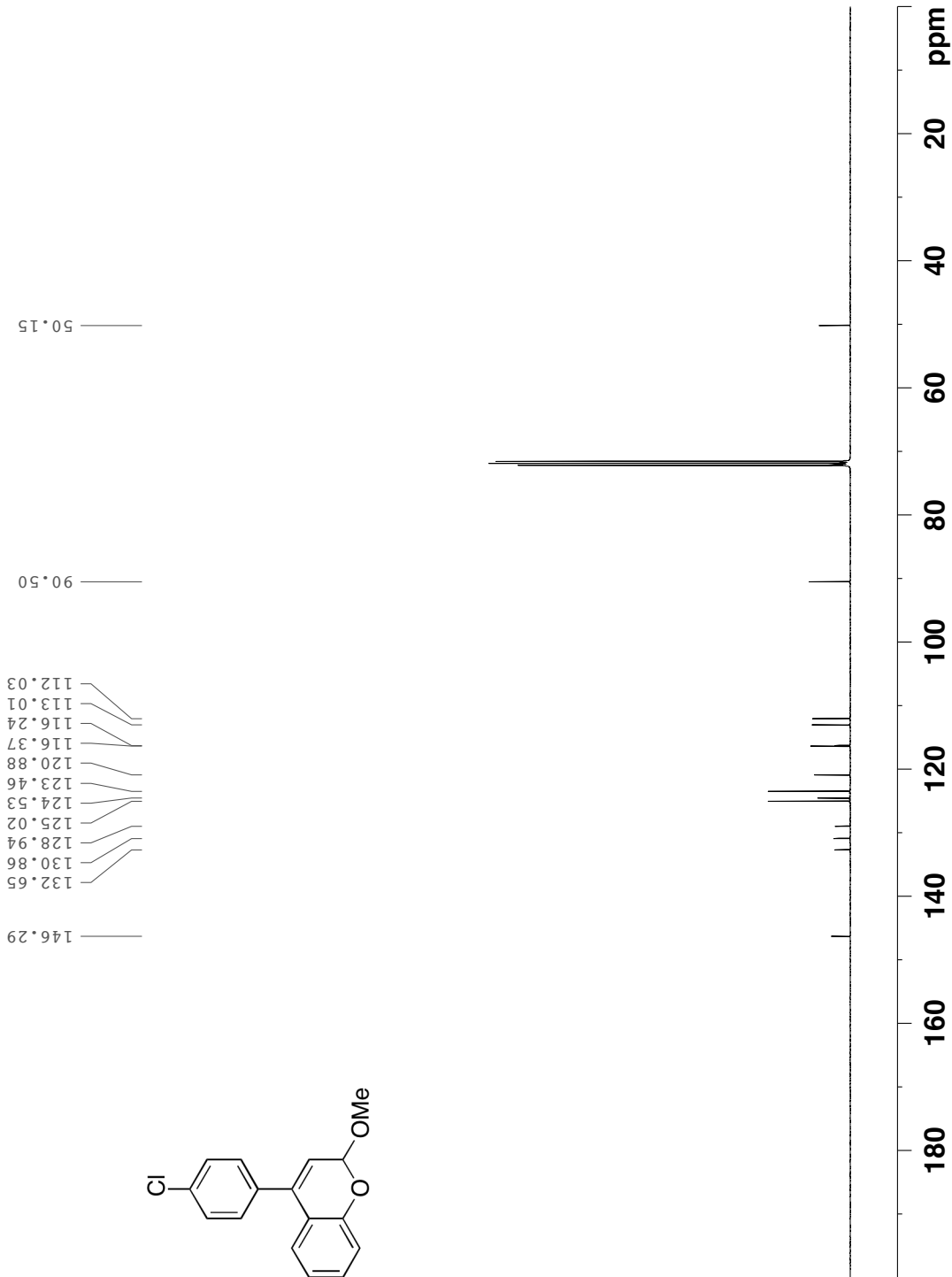
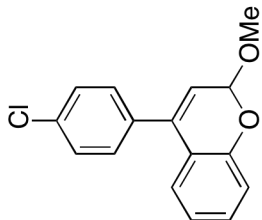
==== CHANNEL f1 =====  
 NUC1 1H  
 P1 15.00 usec  
 PL1 4.90 dB  
 PL1W 3.30822015 W  
 SF01 400.1324710 MHz

F2 - Processing parameters  
 SI 32768  
 SF 400.1300082 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00





Compound 5h 13C NMR



Current Data Parameters  
NAME HH-3-241aug14  
EXPNO 1  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120815  
Time 5.01  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zgpg30  
TD 65536  
SOLVENT Acetone  
NS 1024  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664756 sec  
RG 512  
DW 20.850 usec  
DE 18.00 usec  
TE 298.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TDO 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 9.25 usec  
PL1 0.55 dB  
PL1W 35.18820572 W  
SFO1 100.6228298 MHz

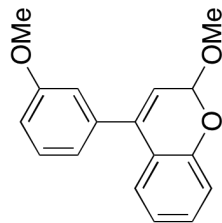
==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.08120718 W  
SFO2 400.1316005 MHz

F2 - Processing parameters  
SI 32768  
SF 100.6127690 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

Compound 5i 1H NMR



7.347  
7.328  
7.313  
7.306  
7.277  
7.259  
7.242  
7.238  
7.178  
7.174  
7.159  
7.155  
7.098  
7.078  
6.994  
6.975  
6.949  
6.938  
6.934  
6.919  
5.871  
5.861  
5.653  
5.643  
3.820  
3.543

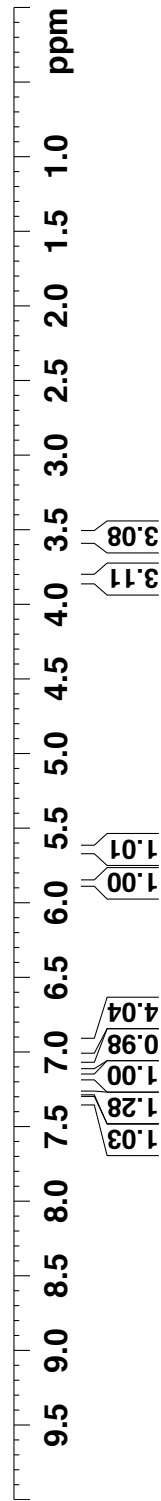


Current Data Parameters  
 NAME HH-3-237Baug14  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120814  
 Time\_ 12.29  
 INSTRUM spect  
 PROBHD 5 mm CPQNP 1H/  
 PULPROG zg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 16  
 DS 2  
 SWH 8278.146 Hz  
 FIDRES 0.126314 Hz  
 AQ 3.9584243 sec  
 RG 9  
 DW 60.400 usec  
 DE 6.00 usec  
 TE 298.2 K  
 D1 1.00000000 sec  
 TD0 1

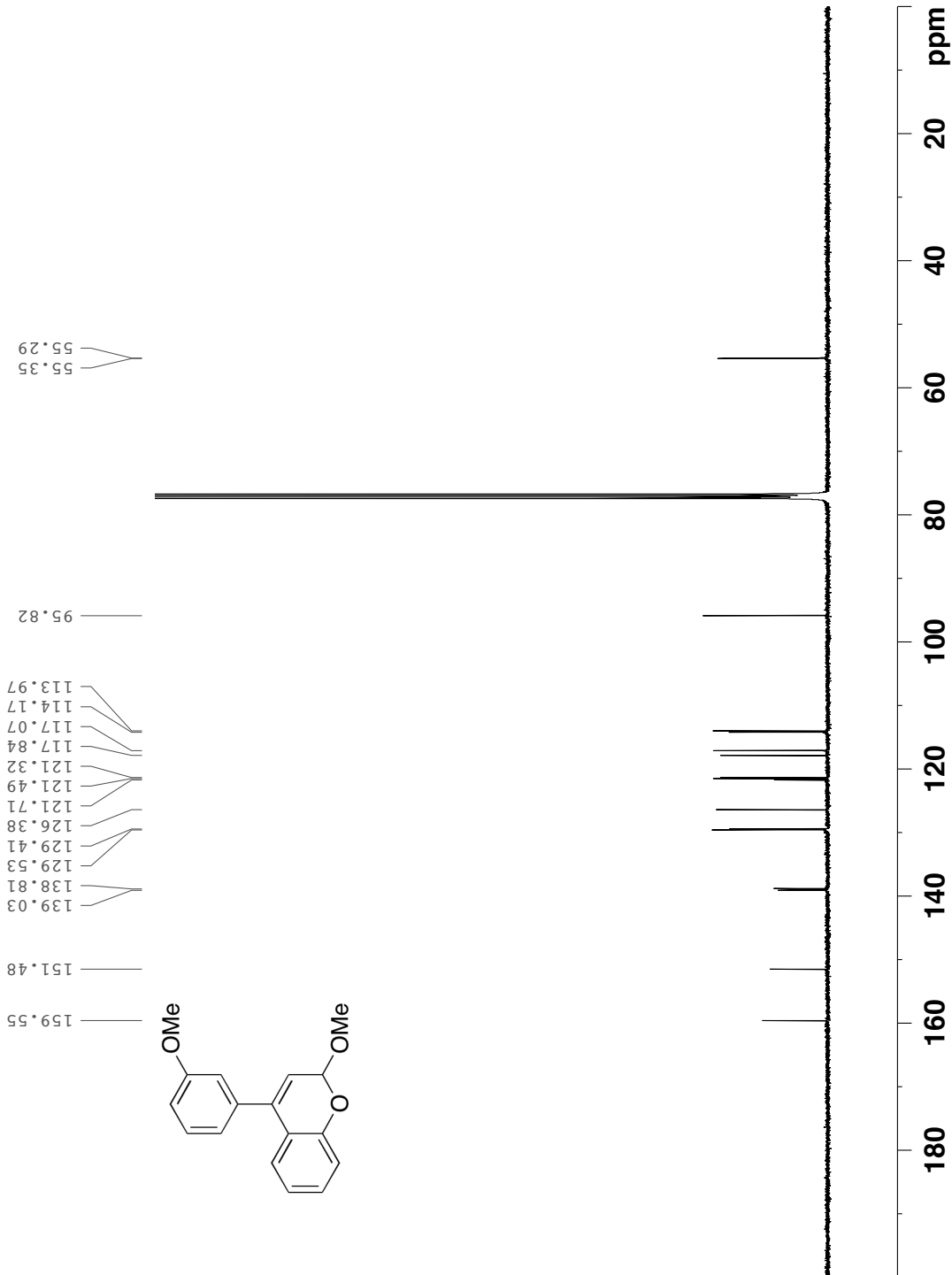
==== CHANNEL f1 =====  
 NUC1 1H  
 P1 15.00 usec  
 PL1 4.90 dB  
 PL1W 3.30822015 W  
 SFO1 400.1324710 MHz

F2 - Processing parameters  
 SI 32768  
 SF 400.1300101 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00





Compound 5i 13C NMR



Current Data Parameters  
 NAME HH-3-237Baug14  
 EXPNO 2  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120814  
 Time 22.40  
 INSTRUM spect  
 PROBHD 5 mm CPQNP 1H/  
 PULPROG zgpg30  
 TD 65536  
 SOLVENT CDC13  
 NS 1024  
 DS 4  
 SWH 23980.814 Hz  
 FIDRES 0.365918 Hz  
 AQ 1.3664756 sec  
 RG 512  
 DW 20.850 usec  
 DE 18.00 usec  
 TE 298.2 K  
 D1 2.00000000 sec  
 D11 0.03000000 sec  
 TDO 1

==== CHANNEL f1 =====  
 NUC1 13C  
 P1 9.25 usec  
 PL1 0.55 dB  
 PL1W 35.18820572 W  
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====  
 CPDPRG2 waltz16  
 NUC2 1H  
 PCPD2 90.00 usec  
 PL2 4.90 dB  
 PL12 20.46 dB  
 PL13 21.00 dB  
 PL2W 3.30822015 W  
 PL12W 0.09195905 W  
 PL13W 0.08120718 W  
 SFO2 400.1316005 MHz

F2 - Processing parameters  
 SI 32768  
 SF 100.6127690 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

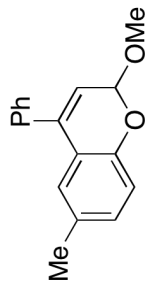




Compound 5j 1H NMR

7.472  
7.452  
7.440  
7.437  
7.422  
7.406  
7.099  
7.079  
7.028  
7.008  
6.954  
5.871  
5.860  
5.646  
5.635

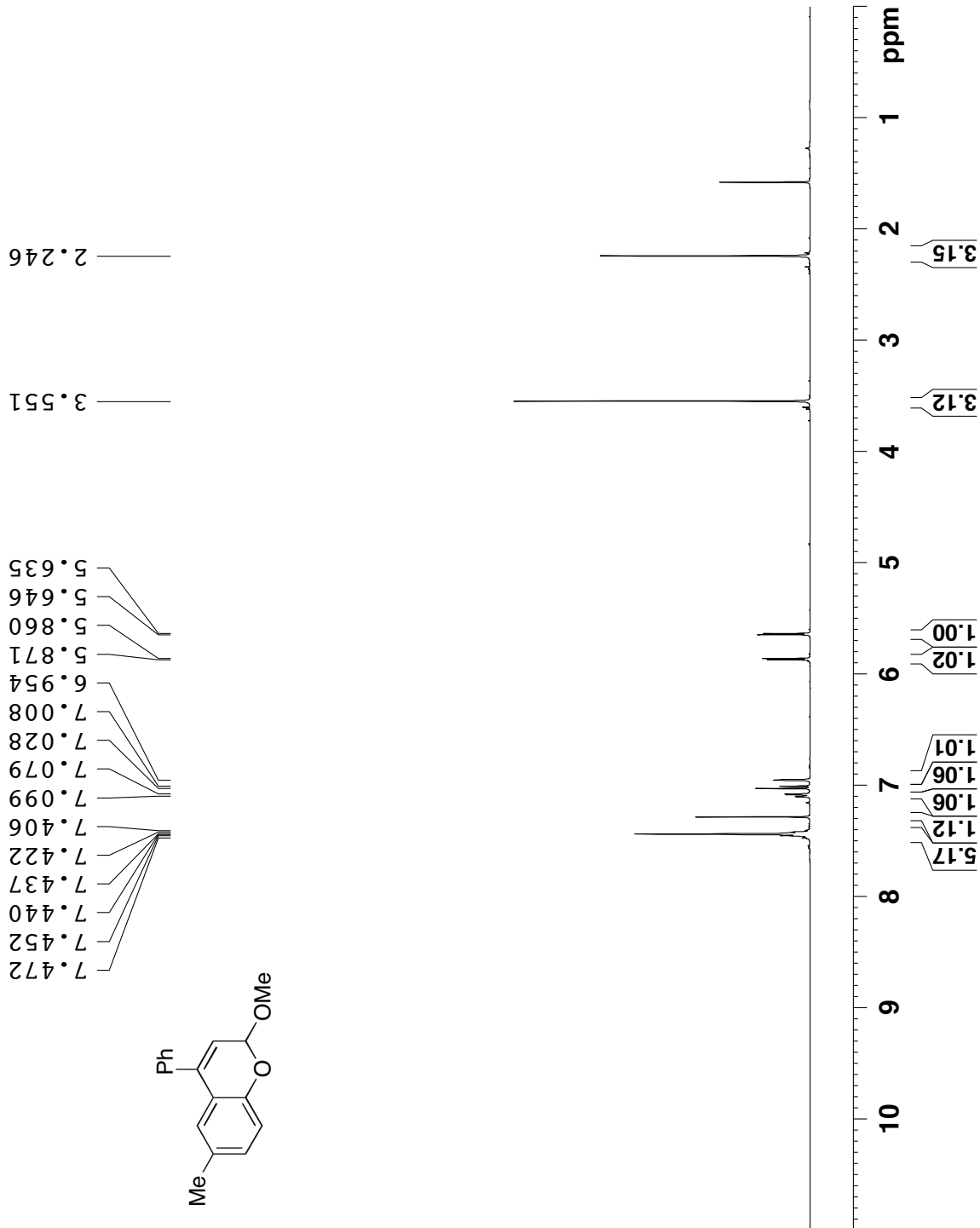
3.551  
2.246



F2 - Acquisition Parameters  
Date\_ 20120814  
Time\_ 11.35  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8278.146 Hz  
FIDRES 0.126314 Hz  
AQ 3.9584243 sec  
RG 9  
DW 60.400 usec  
DE 6.00 usec  
TE 298.2 K  
D1 1.00000000 sec  
TD0 1

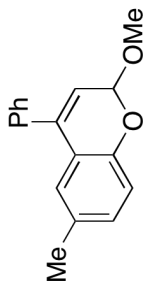
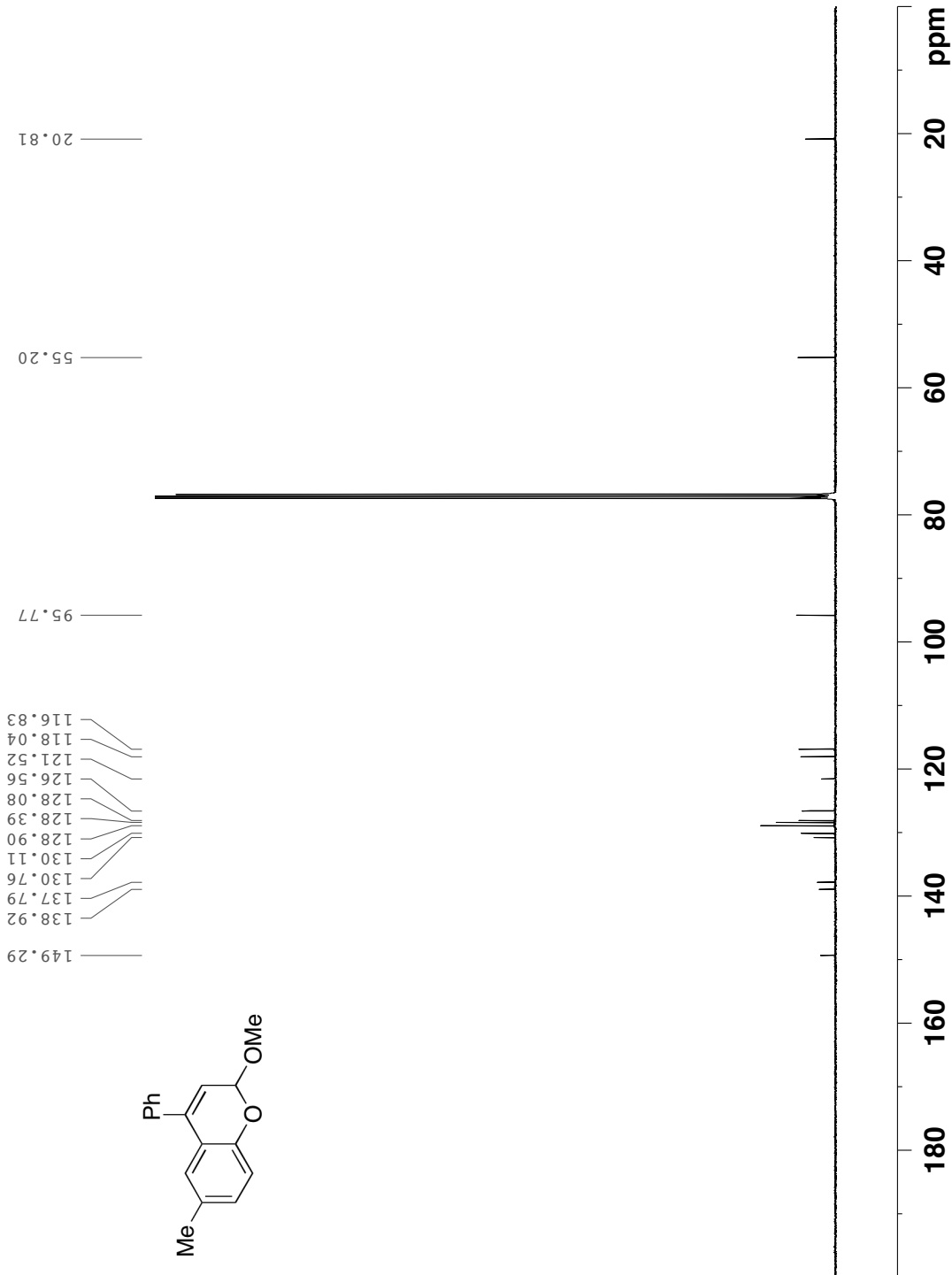
==== CHANNEL f1 =====  
NUC1 1H  
P1 15.00 usec  
PL1 4.90 dB  
PL1W 3.30822015 W  
SFO1 400.1324710 MHz

F2 - Processing parameters  
SI 32768  
SF 400.1300000 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00





Compound 5j 13C NMR



Current Data Parameters  
NAME HH-3-214aug14  
EXPNO 2  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120814  
Time 18.07  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 256  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664756 sec  
RG 512  
DE 20.850 usec  
TE 18.00 usec  
D1 298.1 K  
D11 2.00000000 sec  
TD0 0.03000000 sec  
1

==== CHANNEL f1 =====  
NUC1 13C  
P1 9.25 usec  
PL1 0.55 dB  
PL1W 35.18820572 W  
SFO1 100.6228298 MHz

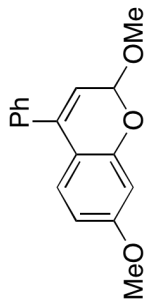
==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.08120718 W  
SFO2 400.1316005 MHz

F2 - Processing parameters  
SI 32768  
SF 100.6127690 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

Compound 5k 1H NMR



7.441  
7.431  
7.085  
7.063  
6.685  
6.678  
6.538  
6.532  
6.517  
6.510  
5.746  
5.735  
5.673  
5.663  
3.844  
3.567

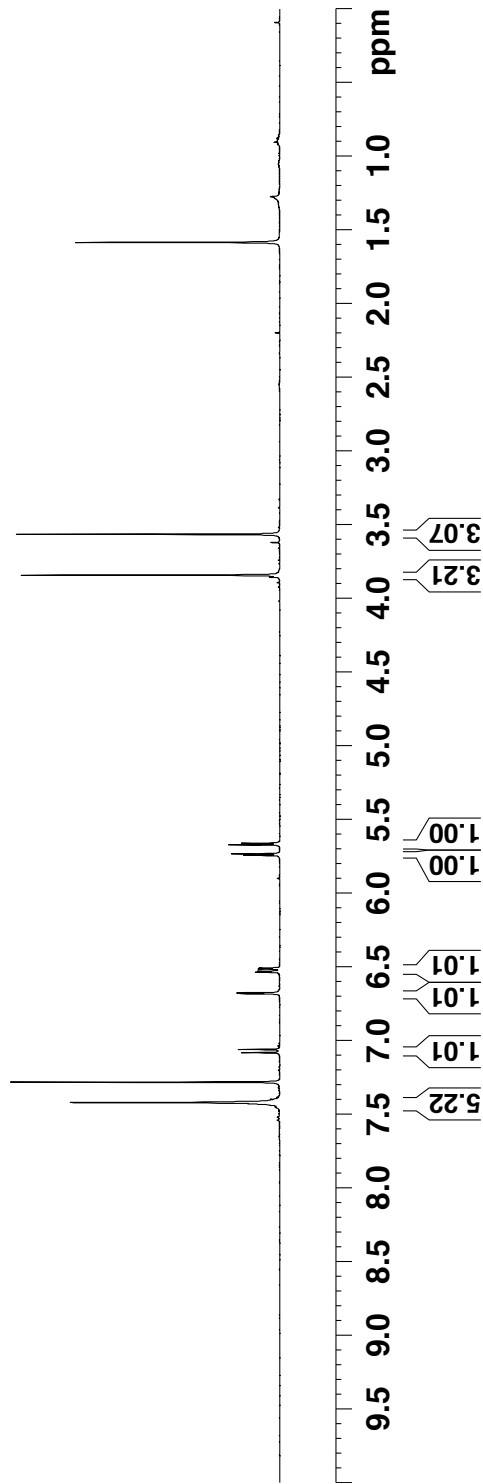


Current Data Parameters  
 NAME HH-3-175aug22  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120823  
 Time\_ 0.11  
 INSTRUM spect  
 PROBHD 5 mm CPQNP 1H/  
 PULPROG zg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 16  
 DS 2  
 SWH 8278.146 Hz  
 FIDRES 0.126314 Hz  
 AQ 3.9584243 sec  
 RG 6.3  
 DW 60.400 usec  
 DE 6.00 usec  
 TE 298.2 K  
 D1 1.0000000 sec  
 TD0 1

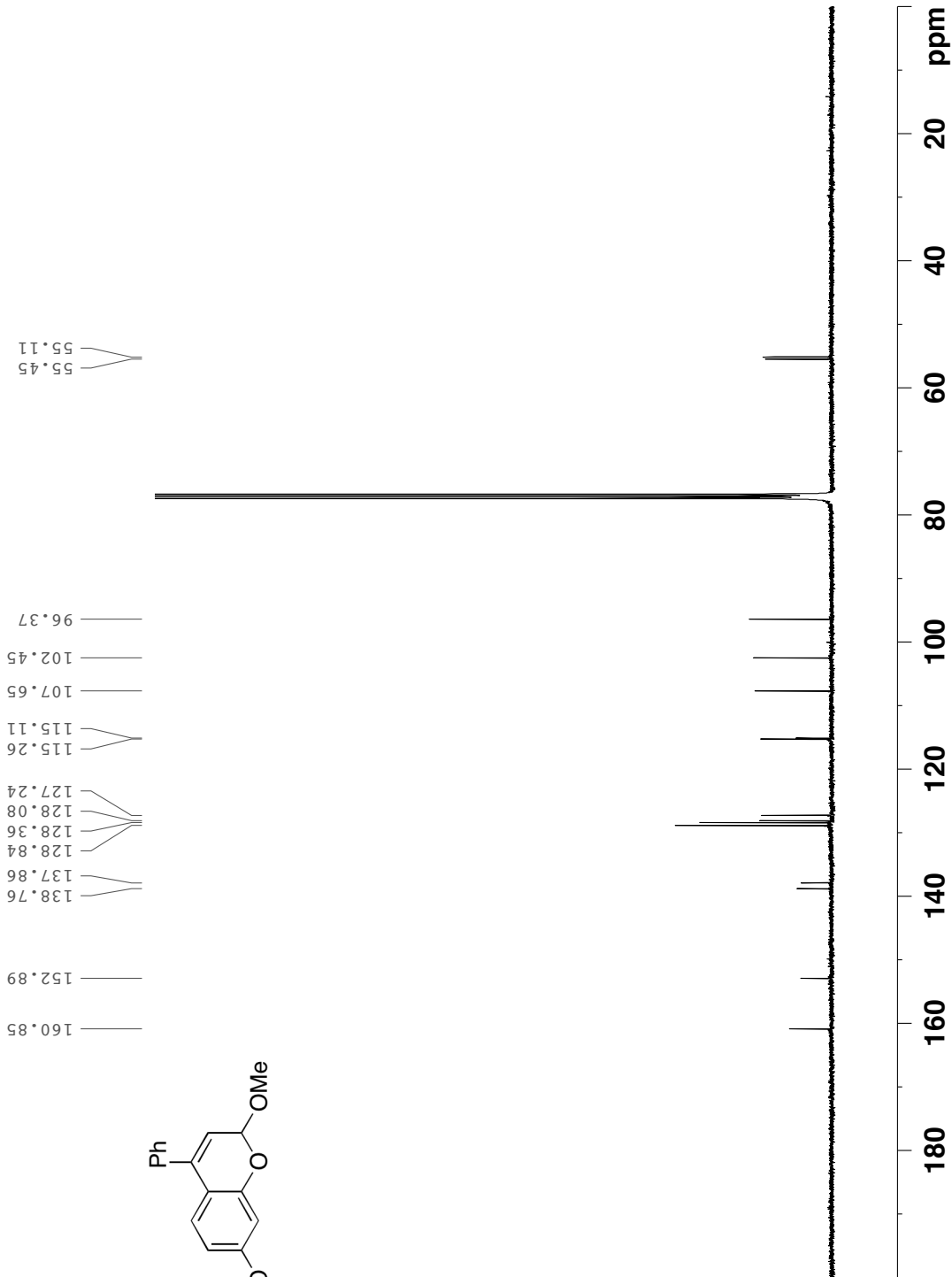
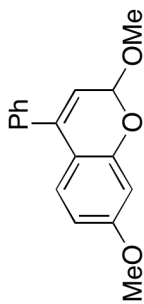
==== CHANNEL f1 =====  
 NUC1 1H  
 P1 15.00 usec  
 PL1 4.90 dB  
 PL1W 3.30822015 W  
 SF01 400.1324710 MHz

F2 - Processing parameters  
 SI 32768  
 SF 400.1300000 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00





Compound 5k 13C NMR



Current Data Parameters  
NAME HH-3-175aug22  
EXPNO 2  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120823  
Time 2.19  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 1024  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664756 sec  
RG 512  
DW 20.850 usec  
DE 18.00 usec  
TE 298.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 9.25 usec  
PL1 0.55 dB  
PL1W 35.18820572 W  
SFO1 100.6228298 MHz

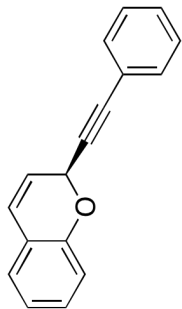
==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.09120718 W  
SFO2 400.1316005 MHz

F2 - Processing parameters  
SI 32768  
SF 100.6127690 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



Compound 8aa 1H NMR

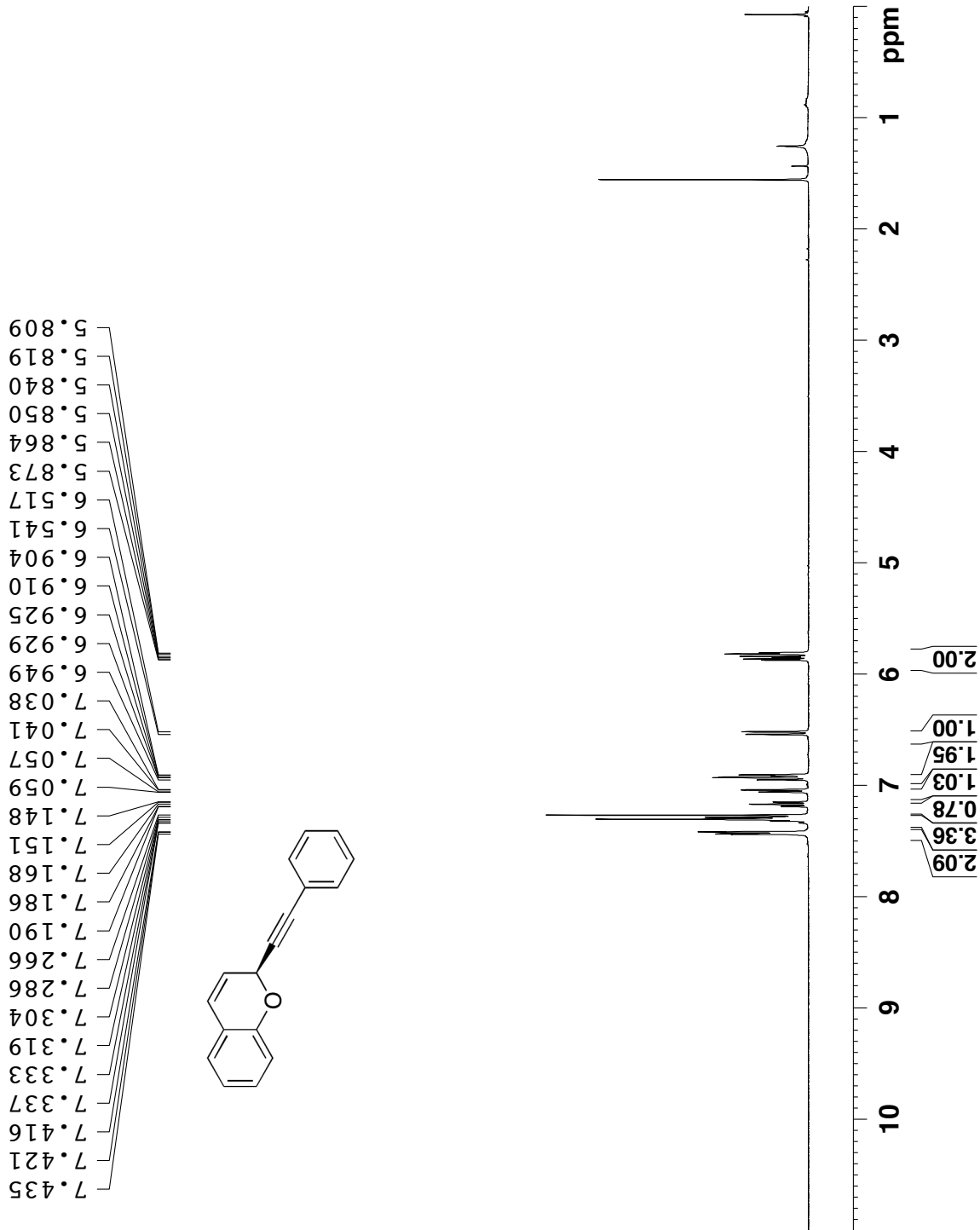
7.435  
7.421  
7.416  
7.337  
7.333  
7.319  
7.304  
7.286  
7.266  
7.190  
7.186  
7.168  
7.151  
7.148  
7.059  
7.057  
7.041  
7.038  
6.949  
6.929  
6.925  
6.910  
6.904  
6.541  
6.517  
5.873  
5.864  
5.850  
5.840  
5.819  
5.809



F2 - Acquisition Parameters  
Date\_ 20120723  
Time\_ 16.10  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8278.146 Hz  
FIDRES 0.126314 Hz  
AQ 3.9584243 sec  
RG 11.3  
DW 60.400 usec  
DE 6.00 usec  
TE 298.2 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 15.00 usec  
PL1 4.90 dB  
PL1W 3.30822015 W  
SFO1 400.1324710 MHz

F2 - Processing parameters  
SI 32768  
SF 400.1300073 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00





Compound 8aa 13C NMR



Current Data Parameters  
 NAME HH-3-246E1  
 EXPNO 2  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120724  
 Time\_ 21.19  
 INSTRUM spect  
 PROBHD 5 mm CPQNP 1H/  
 PULPROG zgpg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 1024  
 DS 4  
 SWH 23980.814 Hz  
 FIDRES 0.365918 Hz  
 AQ 1.3664756 sec  
 RG 512  
 DW 20.850 usec  
 DE 18.00 usec  
 TE 298.2 K  
 D1 2.00000000 sec  
 D11 0.03000000 sec  
 TD0 1

==== CHANNEL f1 =====  
 NUC1 13C  
 P1 9.25 usec  
 PL1 0.55 dB  
 PL1W 35.18820572 W  
 SFO1 100.6228298 MHz

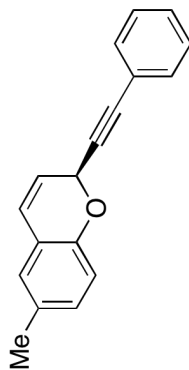
==== CHANNEL f2 =====  
 CPDPRG2 waltz16  
 NUC2 1H  
 PCPD2 90.00 usec  
 PL2 4.90 dB  
 PL12 20.46 dB  
 PL13 21.00 dB  
 PL2W 3.30822015 W  
 PL12W 0.09195905 W  
 PL13W 0.08120718 W  
 SFO2 400.1316005 MHz

F2 - Processing parameters  
 SI 32768  
 SF 100.6127690 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

Compound 8ba 1H NMR



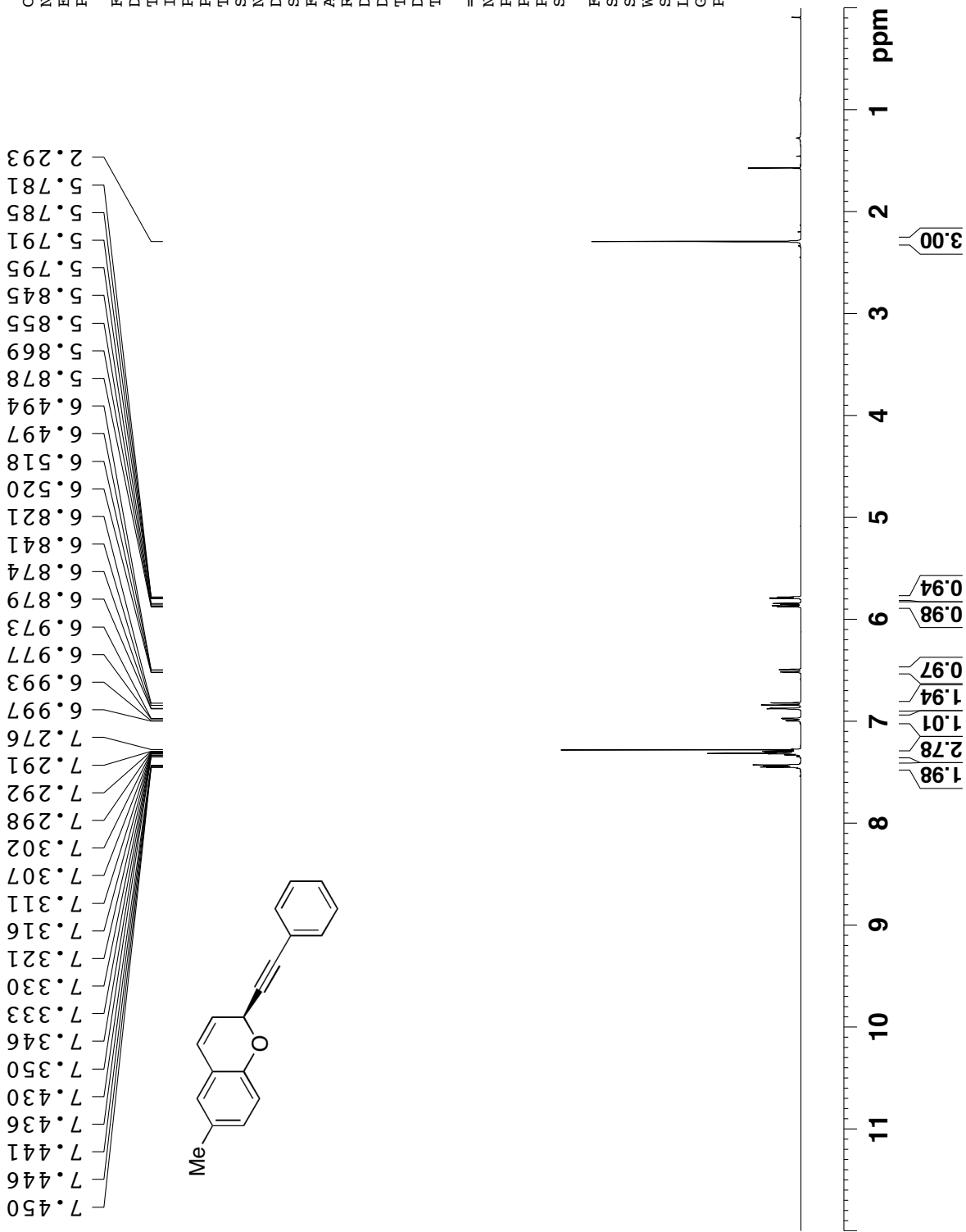
7.450  
7.446  
7.441  
7.436  
7.430  
7.350  
7.346  
7.333  
7.330  
7.321  
7.316  
7.311  
7.307  
7.302  
7.298  
7.292  
7.291  
7.276  
6.997  
6.993  
6.977  
6.973  
6.879  
6.874  
6.841  
6.821  
6.520  
6.518  
6.497  
6.494  
5.878  
5.869  
5.855  
5.845  
5.795  
5.791  
5.785  
5.781  
2.293



F2 - Acquisition Parameters  
Date\_ 20120511  
Time\_ 4.23  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8278.146 Hz  
FIDRES 0.126314 Hz  
AQ 3.9584243 sec  
RG 16  
DW 60.400 usec  
DE 6.00 usec  
TE 298.2 K  
D1 1.00000000 sec  
TD0 1

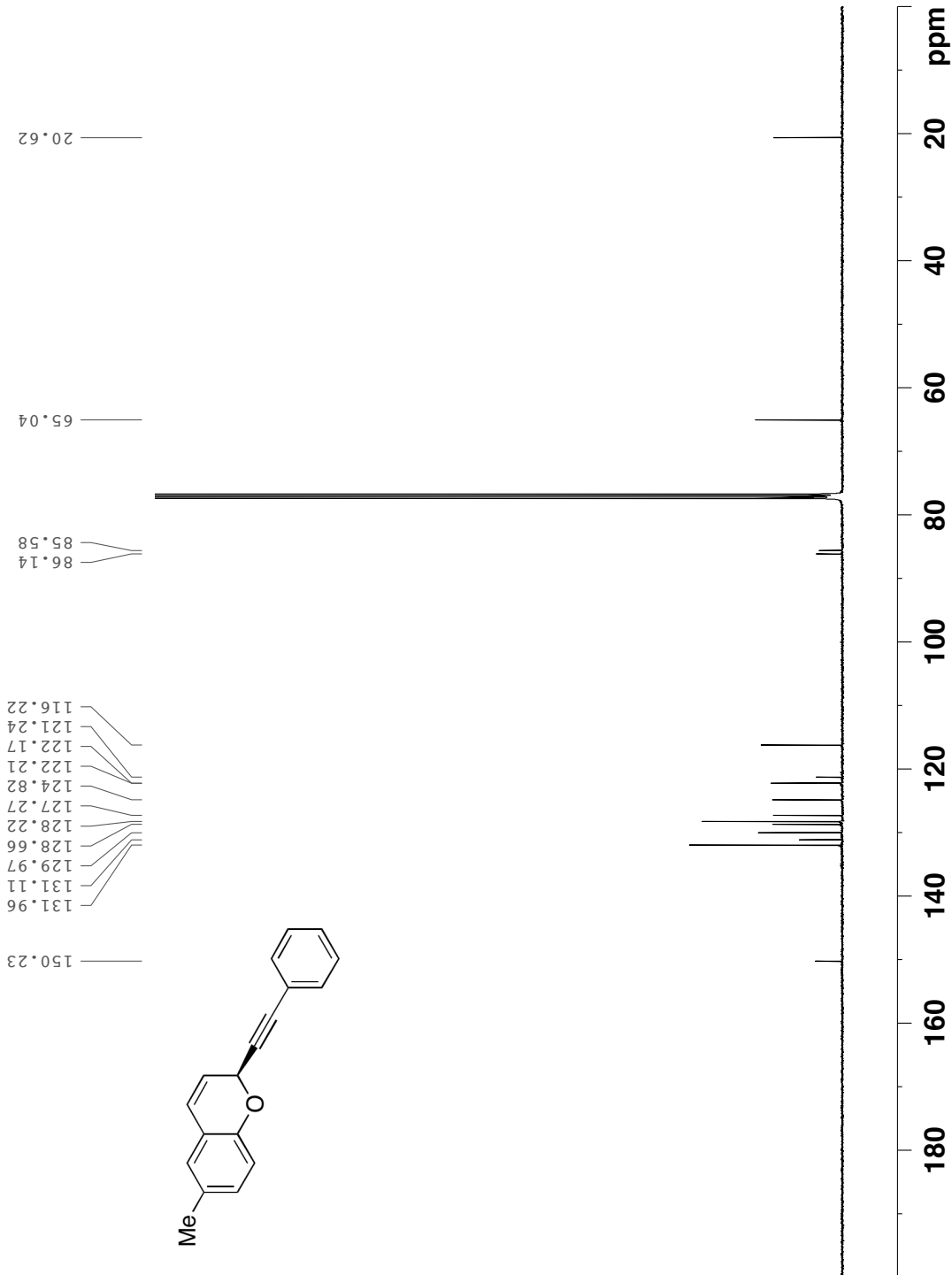
==== CHANNEL f1 =====  
NUC1 1H  
P1 15.00 usec  
PL1 4.90 dB  
PL1W 3.30822015 W  
SFO1 400.1324710 MHz

F2 - Processing parameters  
SI 32768  
SF 400.1300000 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00





Compound 8ba 13C NMR



Current Data Parameters  
NAME HH-3-207A2  
EXPNO 2  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120511  
Time 5.23  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 1024  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664756 sec  
RG 512  
DW 20.850 usec  
DE 18.00 usec  
TE 298.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 9.25 usec  
PL1 0.55 dB  
PL1W 35.18820572 W  
SFO1 100.6228298 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.08120718 W  
SFO2 400.1316005 MHz

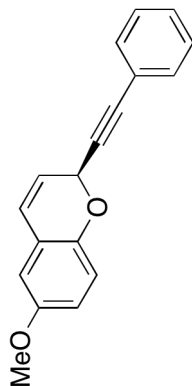
F2 - Processing parameters  
SI 32768  
SF 100.6127690 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



Compound 8ca 1H NMR



7.420  
7.409  
7.294  
7.289  
7.277  
7.260  
6.856  
6.842  
6.730  
6.725  
6.715  
6.710  
6.614  
6.609  
6.497  
6.481  
5.898  
5.891  
5.882  
5.875  
5.738  
5.733  
3.772

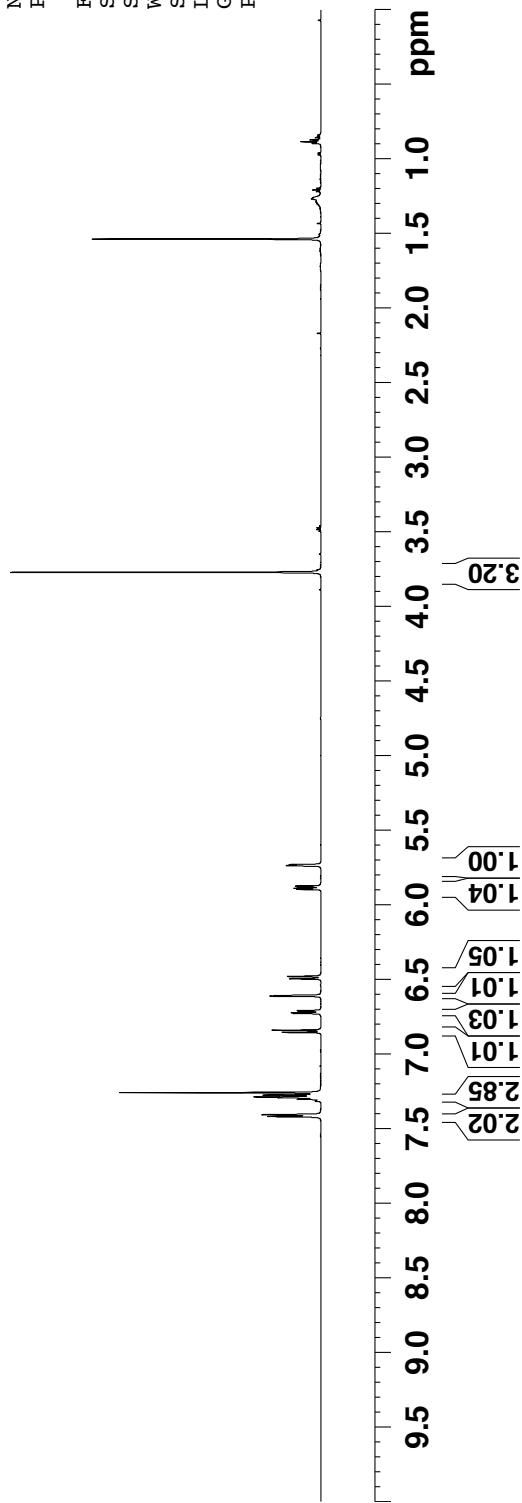


Current Data Parameters  
 NAME HH-3-253A2\_2  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120719  
 Time\_ 23.52  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB/  
 PULPROG zg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 8  
 DS 2  
 SWH 8403.361 Hz  
 FIDRES 0.128225 Hz  
 AQ 3.8994420 sec  
 RG 228  
 DW 59.500 usec  
 DE 17.39 usec  
 TE 300.2 K  
 D1 1.00000000 sec  
 TD0 1

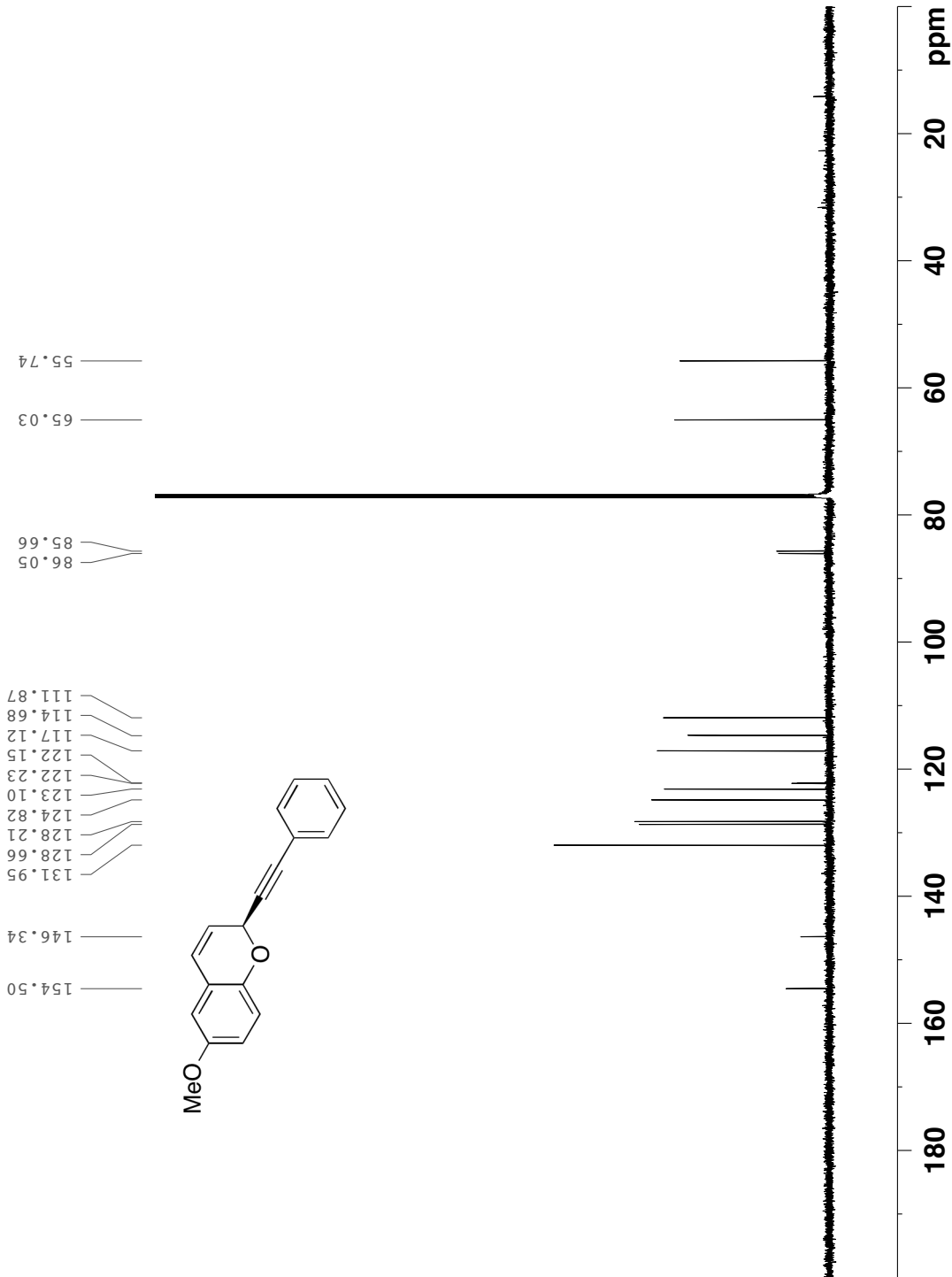
==== CHANNEL f1 =====  
 SFO1 600.3233018 MHz  
 NUC1 1H  
 P1 10.77 usec

F2 - Processing parameters  
 SI 65536  
 SF 600.3200159 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00





Compound 8ca 13C NMR



Current Data Parameters  
NAME HH-3-253A2\_2  
EXPNO 2  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120720  
Time\_ 1.05  
INSTRUM spect  
PROBHD 5 mm PABBO BB/  
PULPROG zgpg55  
TD 65536  
SOLVENT CDCl3  
NS 2048  
DS 4  
SWH 34722.223 Hz  
FIDRES 0.529819 Hz  
AQ 0.9437684 sec  
RG 2050  
DW 14.400 usec  
DE 19.34 usec  
TE 300.2 K  
D1 1.10000002 sec  
D11 0.03000000 sec  
TD0 1

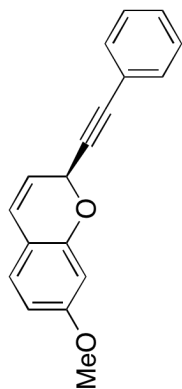
==== CHANNEL f1 =====  
SF01 150.9656784 MHz  
NUC1 13C  
P1 10.63 usec

F2 - Processing parameters  
SI 32768  
SF 150.9505840 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

Compound 8da 1H NMR



7.455  
7.442  
7.343  
7.331  
7.316  
7.304  
7.293  
7.282  
6.981  
6.968  
6.524  
6.516  
6.504  
6.489  
5.802  
5.796  
5.740  
5.734  
5.725  
5.718  
3.809

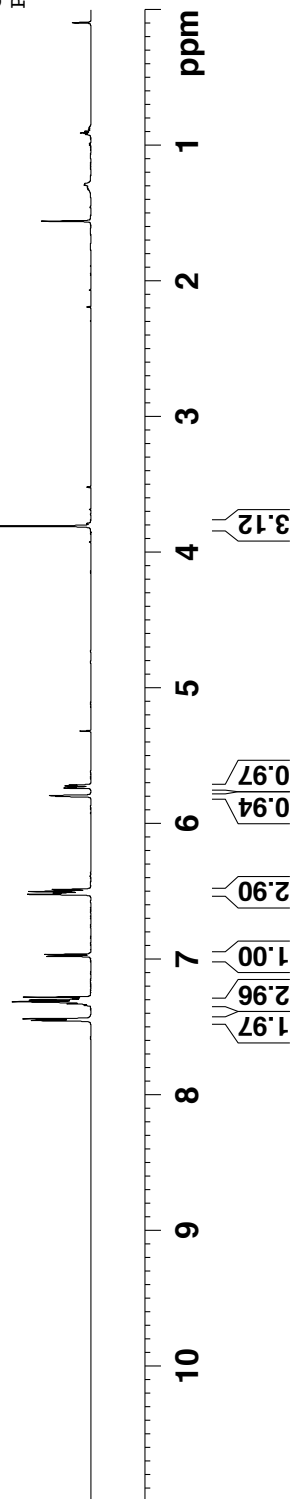


Current Data Parameters  
 NAME HH-3-232\_2  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120708  
 Time\_ 1.34  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB/  
 PULPROG zg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 8  
 DS 2  
 SWH 8403.361 Hz  
 FIDRES 0.128225 Hz  
 AQ 3.8994420 sec  
 RG 161  
 DW 59.500 usec  
 DE 17.39 usec  
 TE 300.2 K  
 D1 1.00000000 sec  
 TDO 1

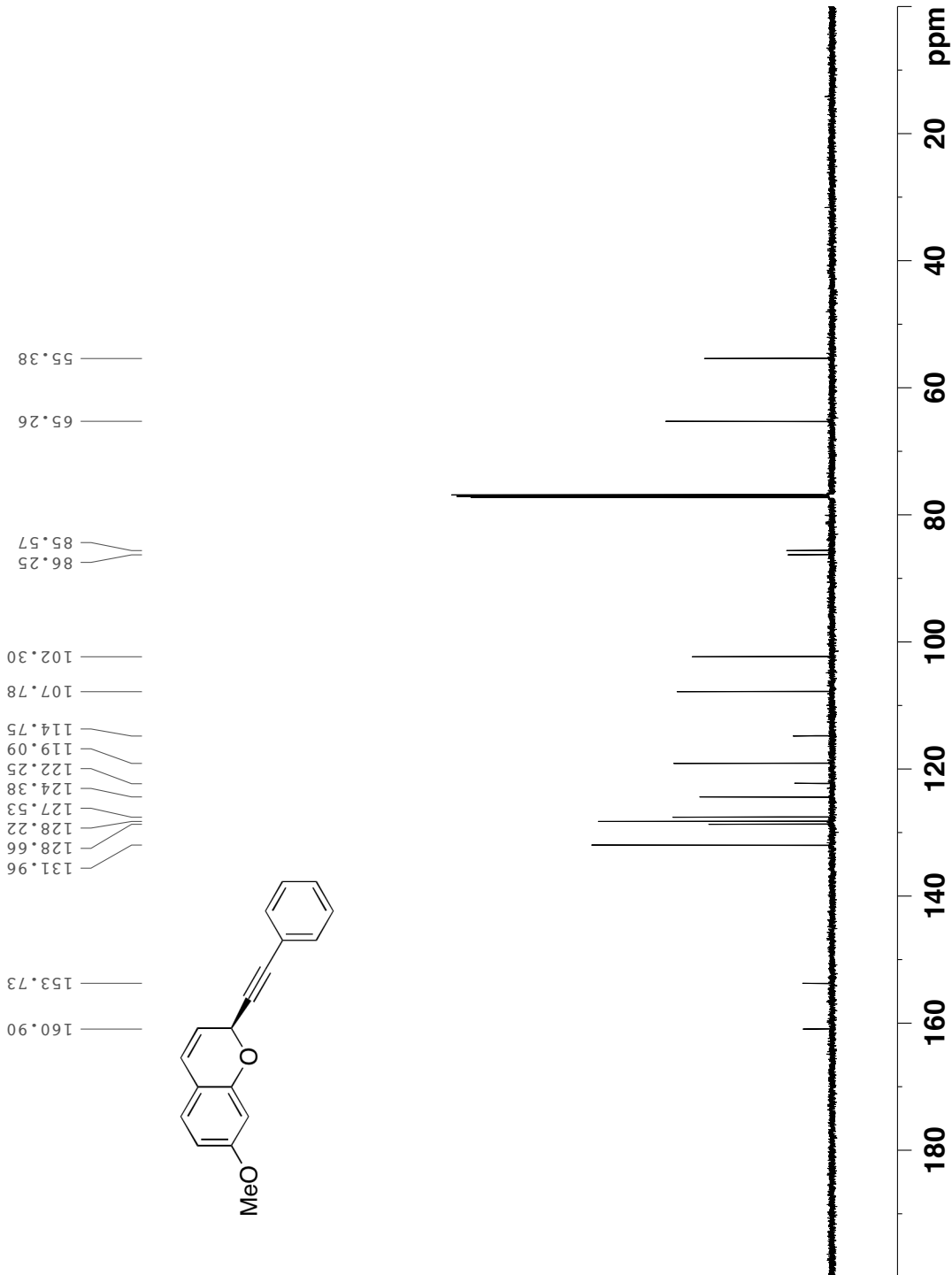
==== CHANNEL f1 =====  
 SFO1 600.3233018 MHz  
 NUC1 1H  
 P1 10.77 usec

F2 - Processing parameters  
 SI 65536  
 SF 600.3200026 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00





Compound 8da 13C NMR



Current Data Parameters  
NAME HH-3-232july8  
EXPNO 3  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120708  
Time\_ 15.31  
INSTRUM spect  
PROBHD 5 mm PABBO BB/  
PULPROG zgpg55  
TD 65536  
SOLVENT CDCl3  
NS 256  
DS 4  
SWH 34722.223 Hz  
FIDRES 0.529819 Hz  
AQ 0.9437684 sec  
RG 2050  
DW 14.400 usec  
DE 19.34 usec  
TE 300.2 K  
D1 1.10000002 sec  
D11 0.03000000 sec  
TD0 1

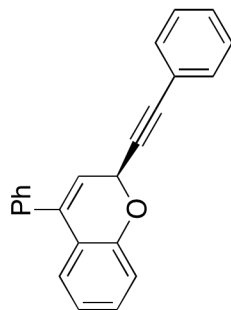
==== CHANNEL f1 =====  
SF01 150.9656784 MHz  
NUC1 13C  
P1 10.63 usec

F2 - Processing parameters  
SI 32768  
SF 150.9505840 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



Compound 8ea 1H NMR

7.479  
7.467  
7.454  
7.437  
7.425  
7.410  
7.399  
7.376  
7.361  
7.349  
7.338  
7.264  
7.252  
7.239  
7.047  
7.035  
7.004  
6.990  
6.960  
6.947  
6.935  
5.986  
5.978  
5.956  
5.949

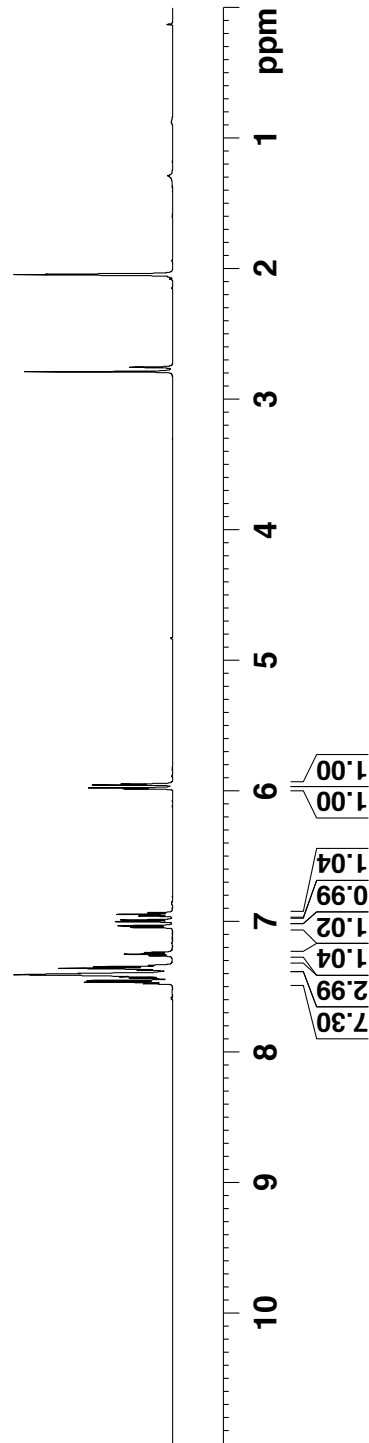


Current Data Parameters  
NAME HH-3-192A1\_3  
EXPNO 1  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120731  
Time\_ 10.57  
INSTRUM spect  
PROBHD 5 mm PABBO BB/  
PULPROG zg30  
TD 65536  
SOLVENT Acetone  
NS 8  
DS 2  
SWH 8403.361 Hz  
FIDRES 0.128225 Hz  
AQ 3.8994420 sec  
RG 181  
DW 59.500 usec  
DE 17.39 usec  
TE 300.2 K  
D1 1.00000000 sec  
TD0 1

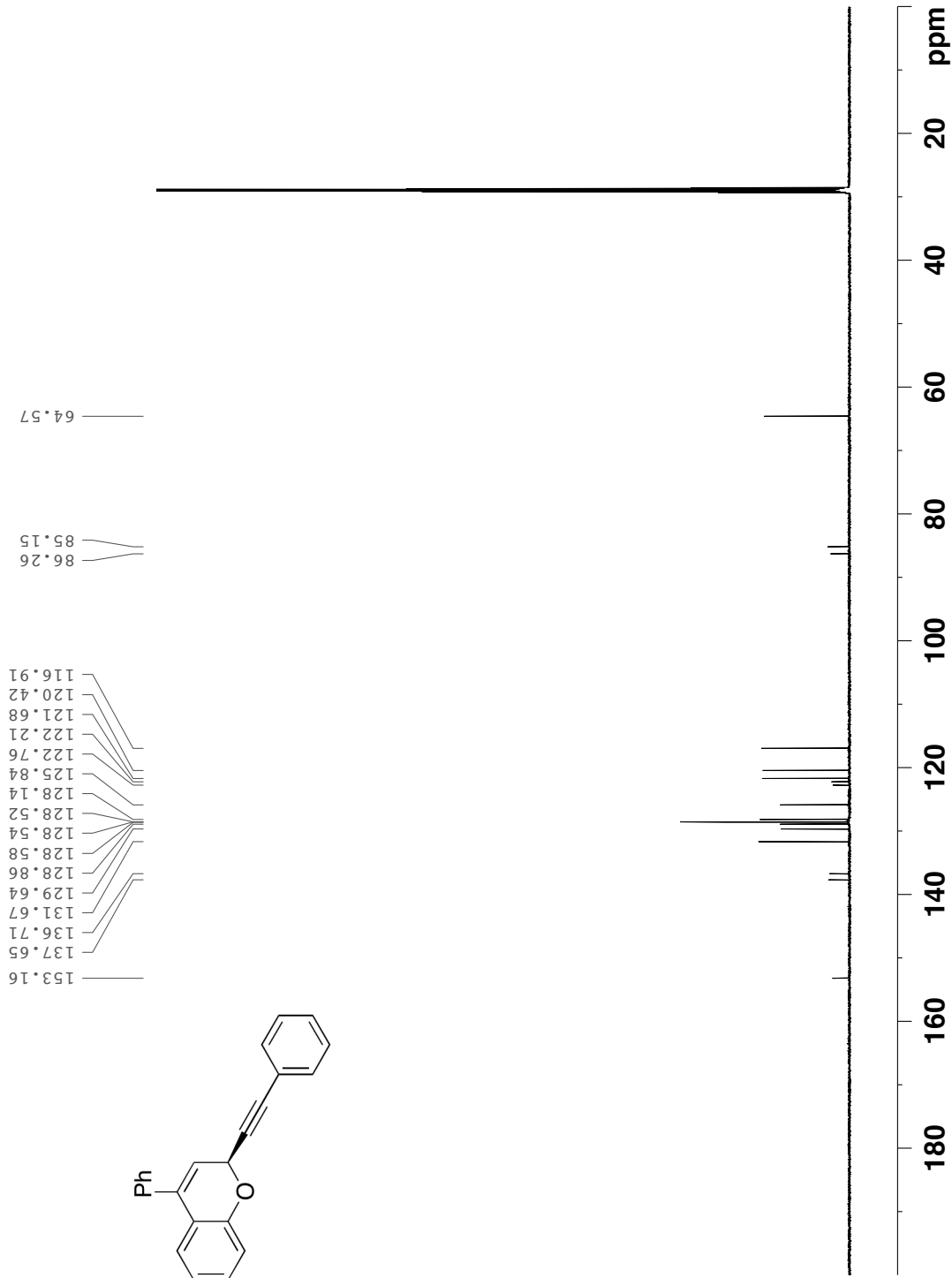
==== CHANNEL f1 =====  
SFO1 600.3233018 MHz  
NUC1 1H  
P1 10.77 usec

F2 - Processing parameters  
SI 65536  
SF 600.3200143 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00





Compound 8ea 13C NMR



Current Data Parameters  
NAME HH-3-192A2\_2  
EXPNO 2  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120731  
Time\_ 21.35  
INSTRUM spect  
PROBHD 5 mm PABBO BB/  
PULPROG zgpg55  
TD 65536  
SOLVENT Acetone  
NS 2048  
DS 4  
SWH 34722.223 Hz  
FIDRES 0.529819 Hz  
AQ 0.9437684 sec  
RG 2050  
DW 14.400 usec  
DE 19.34 usec  
TE 300.2 K  
D1 1.10000002 sec  
D11 0.03000000 sec  
TD0 1

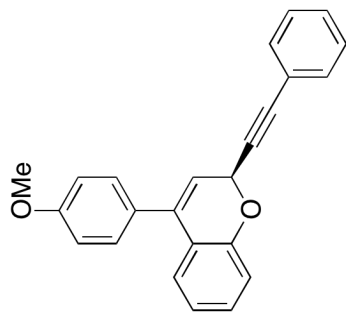
==== CHANNEL f1 =====  
SF01 150.9656784 MHz  
NUC1 13C  
P1 10.63 usec

F2 - Processing parameters  
SI 32768  
SF 150.9505840 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

Compound 8fa 1H NMR



7.432  
7.429  
7.423  
7.417  
7.399  
7.390  
7.386  
7.367  
7.362  
7.357  
7.351  
7.345  
7.290  
7.285  
7.270  
7.267  
7.251  
7.247  
7.113  
7.109  
7.094  
7.090  
7.058  
7.051  
7.046  
7.034  
7.029  
7.021  
7.019  
7.001  
6.998  
6.995  
6.992  
6.976  
6.973  
6.957  
6.954  
5.964  
5.952  
5.948  
5.937  
3.870

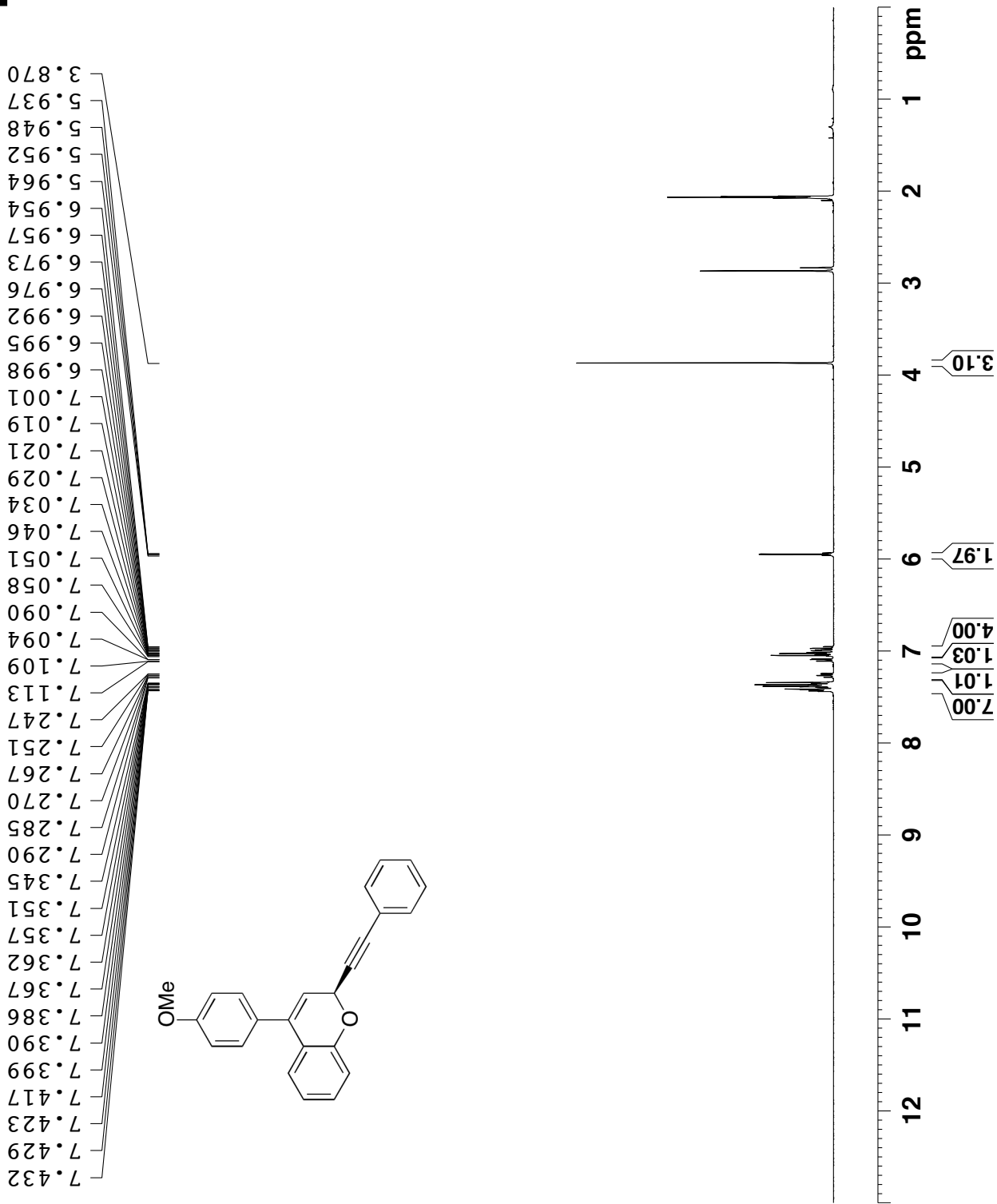


Current Data Parameters  
 NAME HH-3-209Alrs  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120725  
 Time 7.49  
 INSTRUM spect  
 PROBHD 5 mm CPQNP 1H/  
 PULPROG zg30  
 TD 65536  
 SOLVENT Acetone  
 NS 16  
 DS 2  
 SWH 8278.146 Hz  
 FIDRES 0.126314 Hz  
 AQ 3.9584243 sec  
 RG 9  
 DW 60.400 usec  
 DE 6.00 usec  
 TE 298.1 K  
 D1 1.00000000 sec  
 TD0 1

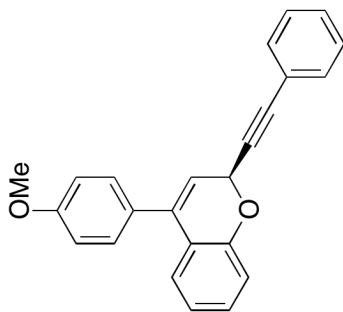
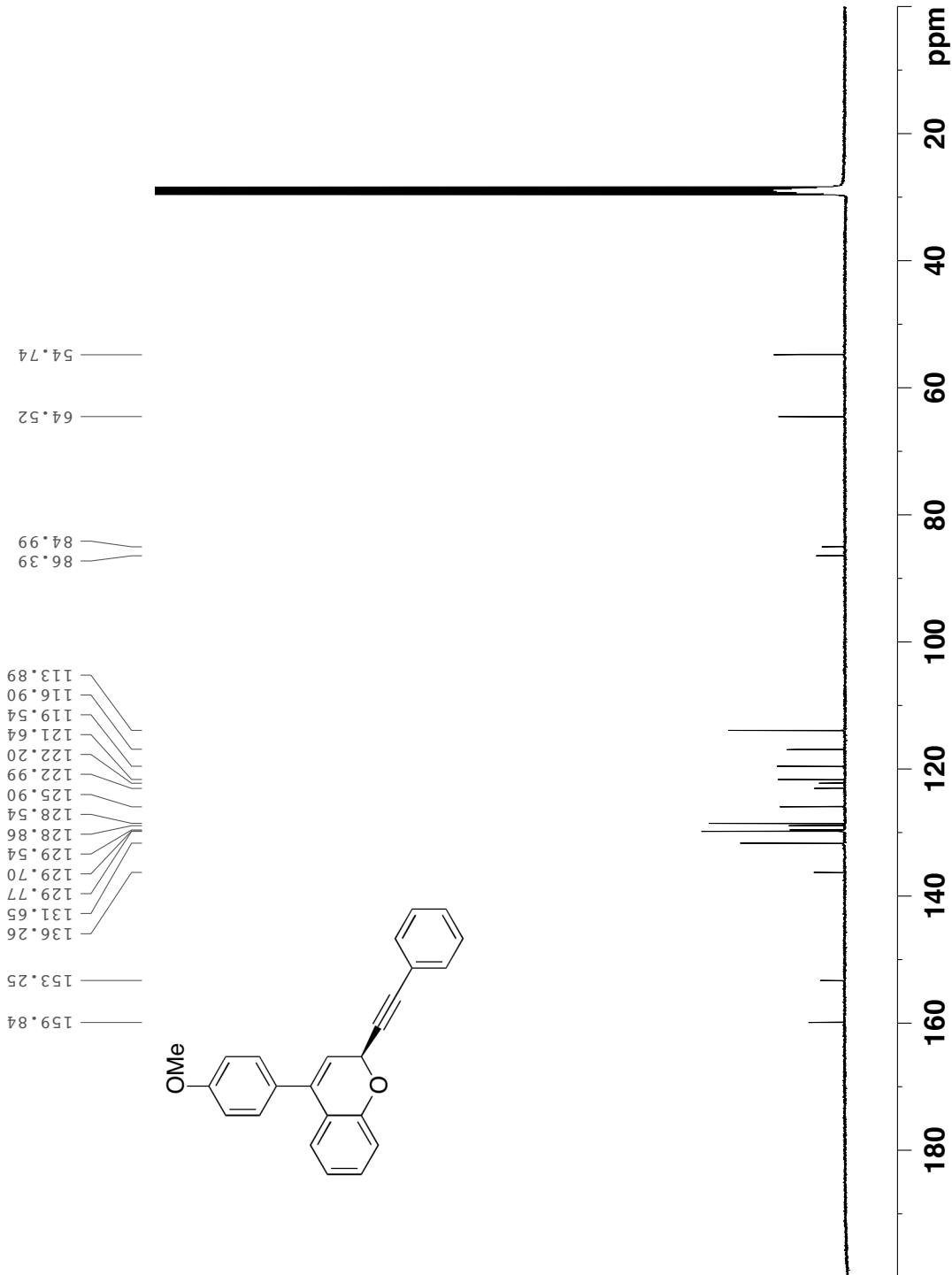
==== CHANNEL f1 =====  
 NUC1 1H  
 P1 15.00 usec  
 PL1 4.90 dB  
 PL1W 3.30822015 W  
 SFO1 400.1324710 MHz

F2 - Processing parameters  
 SI 32768  
 SF 400.1300000 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00





Compound 8fa 13C NMR



Current Data Parameters  
 NAME HH-3-209A2rs  
 EXPNO 2  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120726  
 Time 1.17  
 INSTRUM spect  
 PROBHD 5 mm CPQNP 1H/  
 PULPROG zgpg30  
 TD 65536  
 SOLVENT Acetone  
 NS 1024  
 DS 4  
 SWH 23980.814 Hz  
 FIDRES 0.365918 Hz  
 AQ 1.3664756 sec  
 RG 512  
 DW 20.850 usec  
 DE 18.00 usec  
 TE 298.1 K  
 D1 2.00000000 sec  
 D11 0.03000000 sec  
 TDO 1

==== CHANNEL f1 =====  
 NUC1 13C  
 P1 9.25 usec  
 PL1 0.55 dB  
 PL1W 35.18820572 W  
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====  
 CPDPRG2 waltz16  
 NUC2 1H  
 PCPD2 90.00 usec  
 PL2 4.90 dB  
 PL12 20.46 dB  
 PL13 21.00 dB  
 PL2W 3.30822015 W  
 PL12W 0.09195905 W  
 PL13W 0.08120718 W  
 SFO2 400.1316005 MHz

F2 - Processing parameters  
 SI 32768  
 SF 100.6127690 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40



Compound 8ga 1H NMR



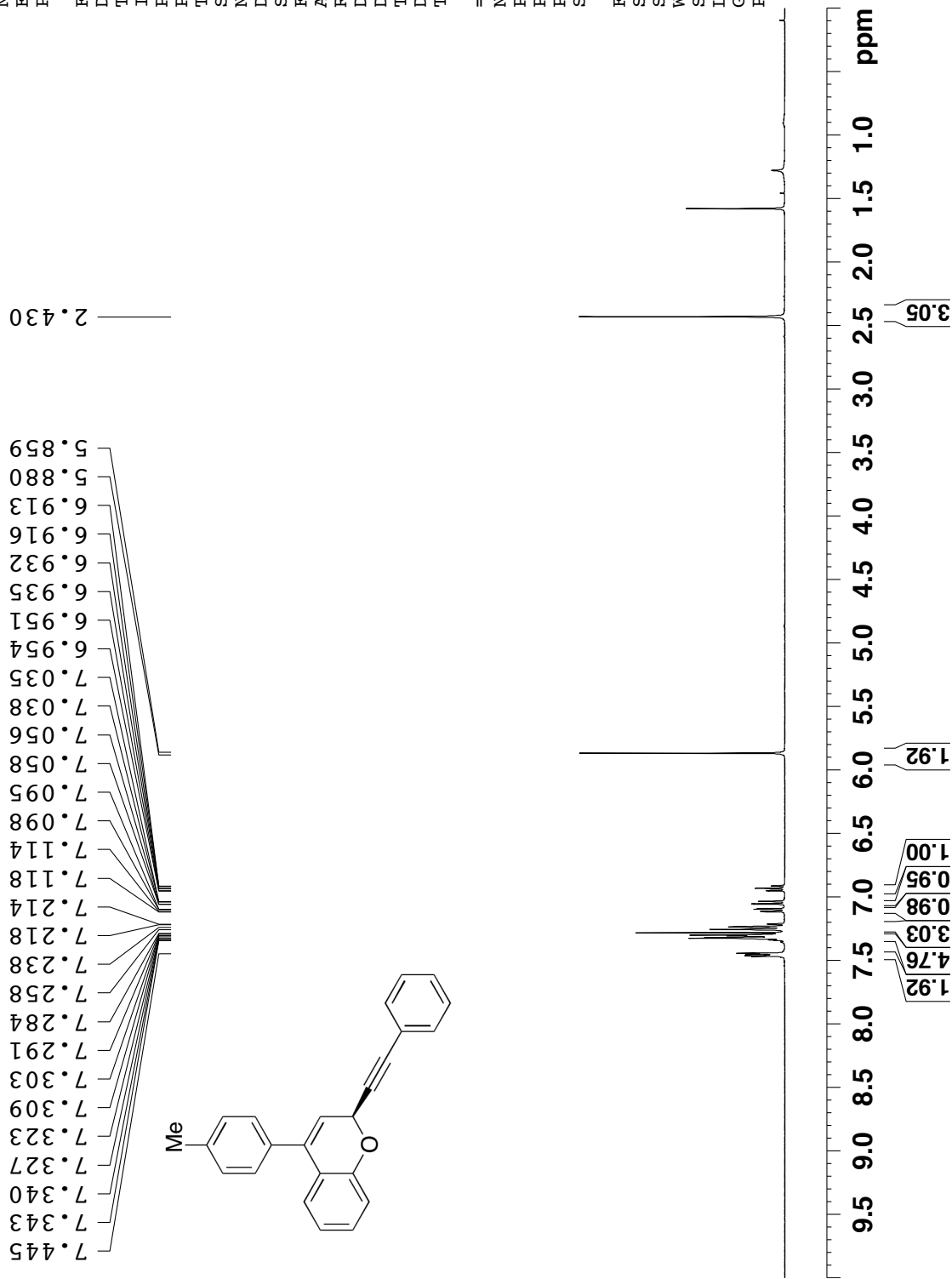
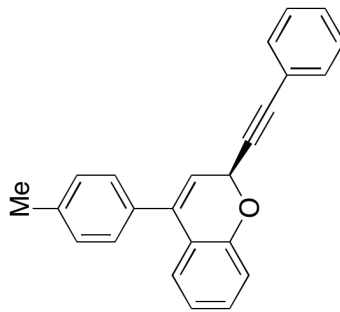
Current Data Parameters  
 NAME HH-3-203B1july29  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120729  
 Time\_ 16.04  
 INSTRUM spect  
 PROBHD 5 mm CPQNP 1H/  
 PULPROG zg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 16  
 DS 2  
 SWH 8278.146 Hz  
 FIDRES 0.126314 Hz  
 AQ 3.9584243 sec  
 RG 11.3  
 DW 60.400 usec  
 DE 6.00 usec  
 TE 298.2 K  
 D1 1.00000000 sec  
 TDO 1

==== CHANNEL f1 =====  
 NUC1 1H  
 P1 15.00 usec  
 PL1 4.90 dB  
 PL1W 3.30822015 W  
 SFO1 400.1324710 MHz

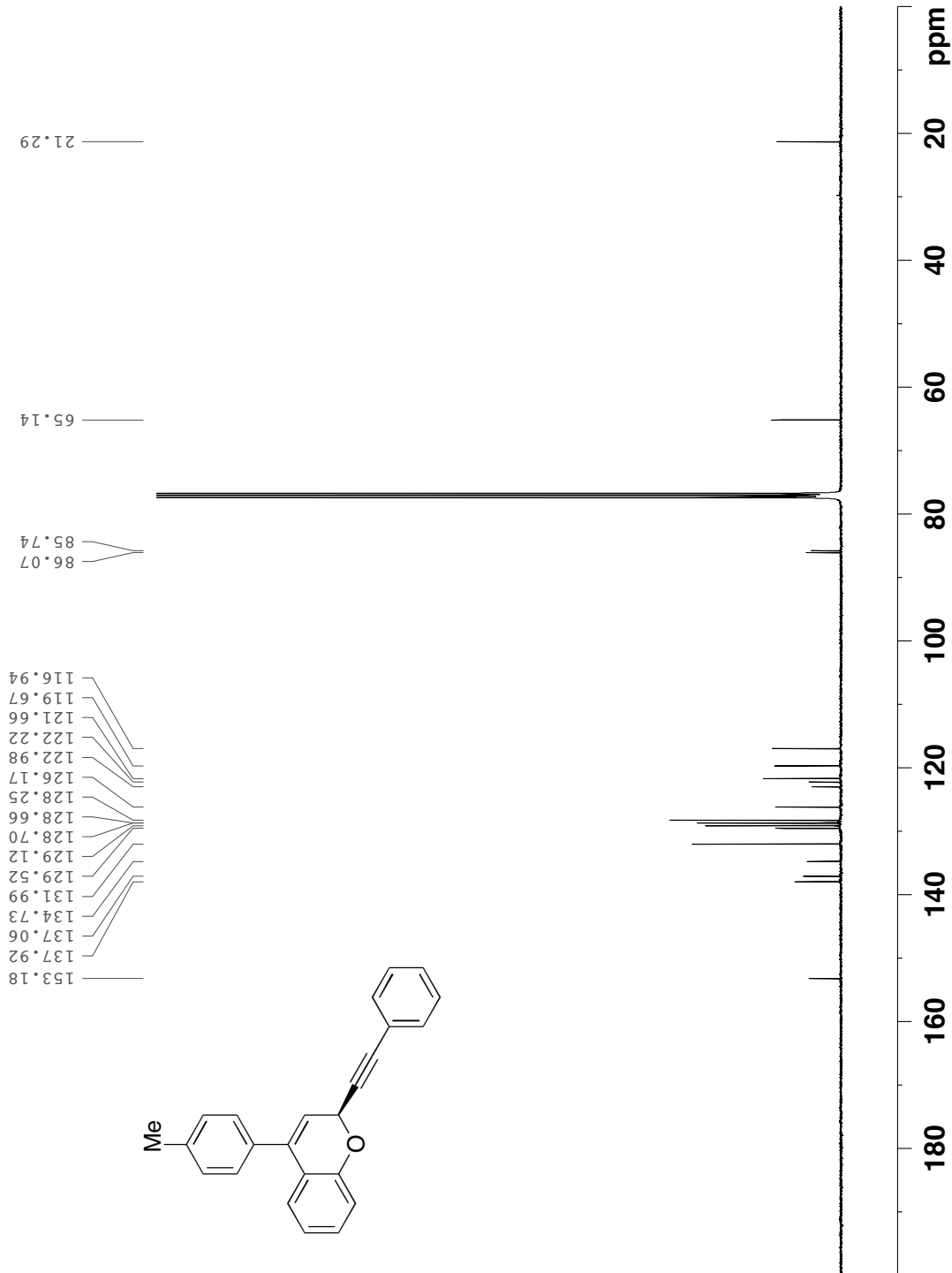
F2 - Processing parameters  
 SI 32768  
 SF 400.1300000 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00

7.445  
7.343  
7.340  
7.327  
7.323  
7.309  
7.303  
7.291  
7.284  
7.258  
7.238  
7.218  
7.214  
7.118  
7.114  
7.098  
7.095  
7.058  
7.056  
7.038  
7.035  
6.954  
6.951  
6.935  
6.932  
6.916  
6.913  
5.880  
5.859





Compound 8ga 13C NMR



Current Data Parameters  
NAME HH-3-203B1july29  
EXPNO 2  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120729  
Time\_ 17.58  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 1500  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664756 sec  
RG 512  
DW 20.850 usec  
DE 18.00 usec  
TE 298.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

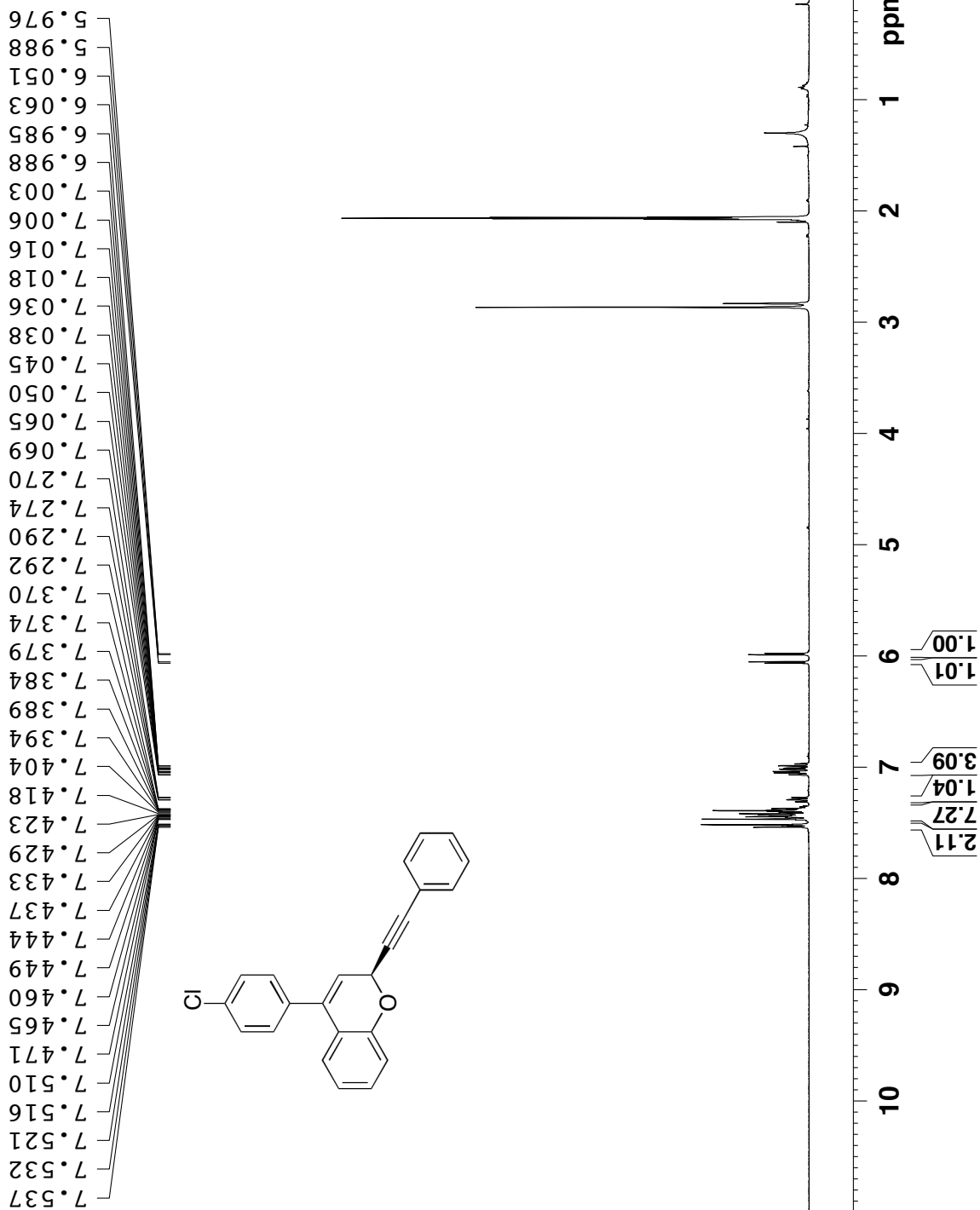
==== CHANNEL f1 =====  
NUC1 13C  
P1 9.25 usec  
PL1 0.55 dB  
PL1W 35.18820572 W  
SFO1 100.6228298 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.08120718 W  
SFO2 400.1316005 MHz

F2 - Processing parameters  
SI 32768  
SF 100.6127690 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



Compound 8ha 1H NMR



Current Data Parameters  
NAME HH-3-243A2july28  
EXPNO 1  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120727  
Time\_ 4.44  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zg30  
TD 65536  
SOLVENT Acetone  
NS 16  
DS 2  
SWH 8278.146 Hz  
FIDRES 0.126314 Hz  
AQ 3.9584243 sec  
RG 12.7  
DW 60.400 usec  
DE 6.00 usec  
TE 298.1 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 15.00 usec  
PL1 4.90 dB  
PL1W 3.30822015 W  
SFO1 400.1324710 MHz

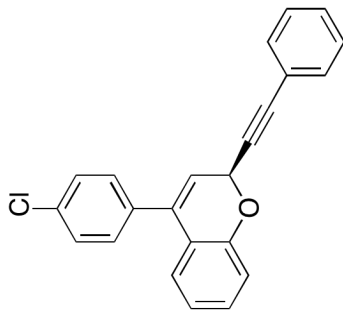
F2 - Processing parameters  
SI 32768  
SF 400.1300000 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

Compound 8ha 13C NMR



153.10  
136.38  
135.57  
133.56  
131.67  
130.33  
129.86  
128.93  
128.68  
128.55  
125.69  
122.39  
122.09  
121.82  
120.97  
117.02

86.03  
85.21  
64.44



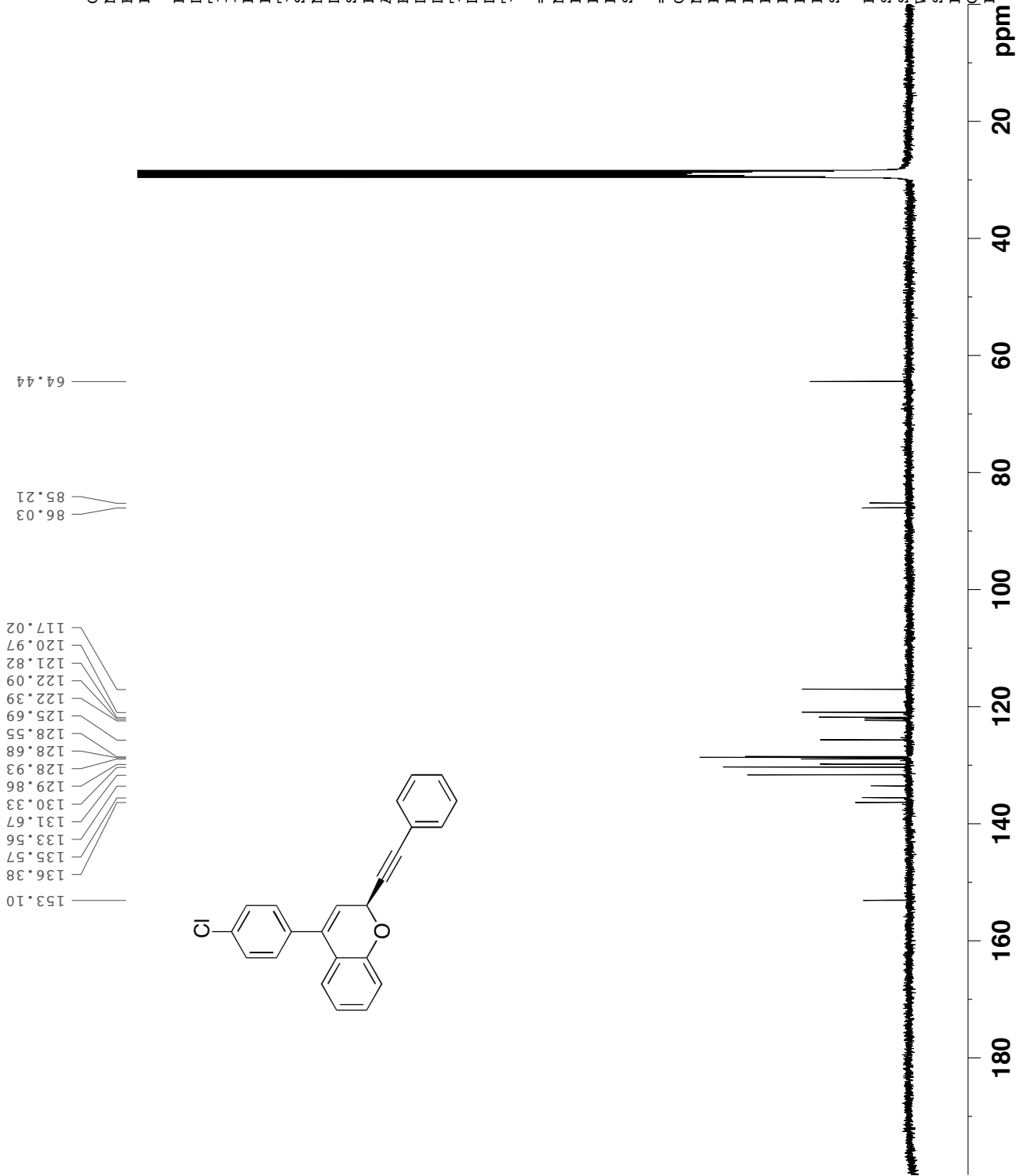
Current Data Parameters  
 NAME HH-3-243A2july28  
 EXPNO 2  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120727  
 Time 5.44  
 INSTRUM spect  
 PROBHD 5 mm CPQNP 1H/  
 PULPROG zgpg30  
 TD 65536  
 SOLVENT Acetone  
 NS 1024  
 DS 4  
 SWH 23980.814 Hz  
 FIDRES 0.365918 Hz  
 AQ 1.3664756 sec  
 RG 512  
 DW 20.850 usec  
 DE 18.00 usec  
 TE 298.1 K  
 D1 2.00000000 sec  
 D11 0.03000000 sec  
 TD0 1

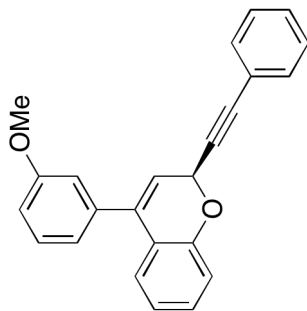
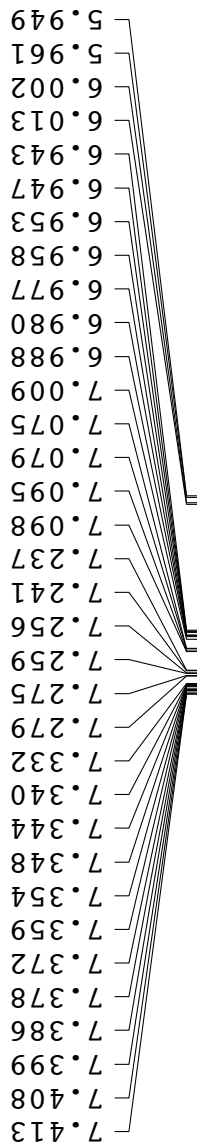
==== CHANNEL f1 =====  
 NUC1 13C  
 P1 9.25 usec  
 PL1 0.55 dB  
 PL1W 35.18820572 W  
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====  
 CPDPRG2 waltz16  
 NUC2 1H  
 PCPD2 90.00 usec  
 PL2 4.90 dB  
 PL12 20.46 dB  
 PL13 21.00 dB  
 PL2W 3.30822015 W  
 PL12W 0.09195905 W  
 PL13W 0.08120718 W  
 SFO2 400.1316005 MHz

F2 - Processing parameters  
 SI 32768  
 SF 100.6127690 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40



Compound 8ia 1H NMR



Current Data Parameters  
 NAME HH-3-238A1  
 EXPNO 1  
 PROCNO 1

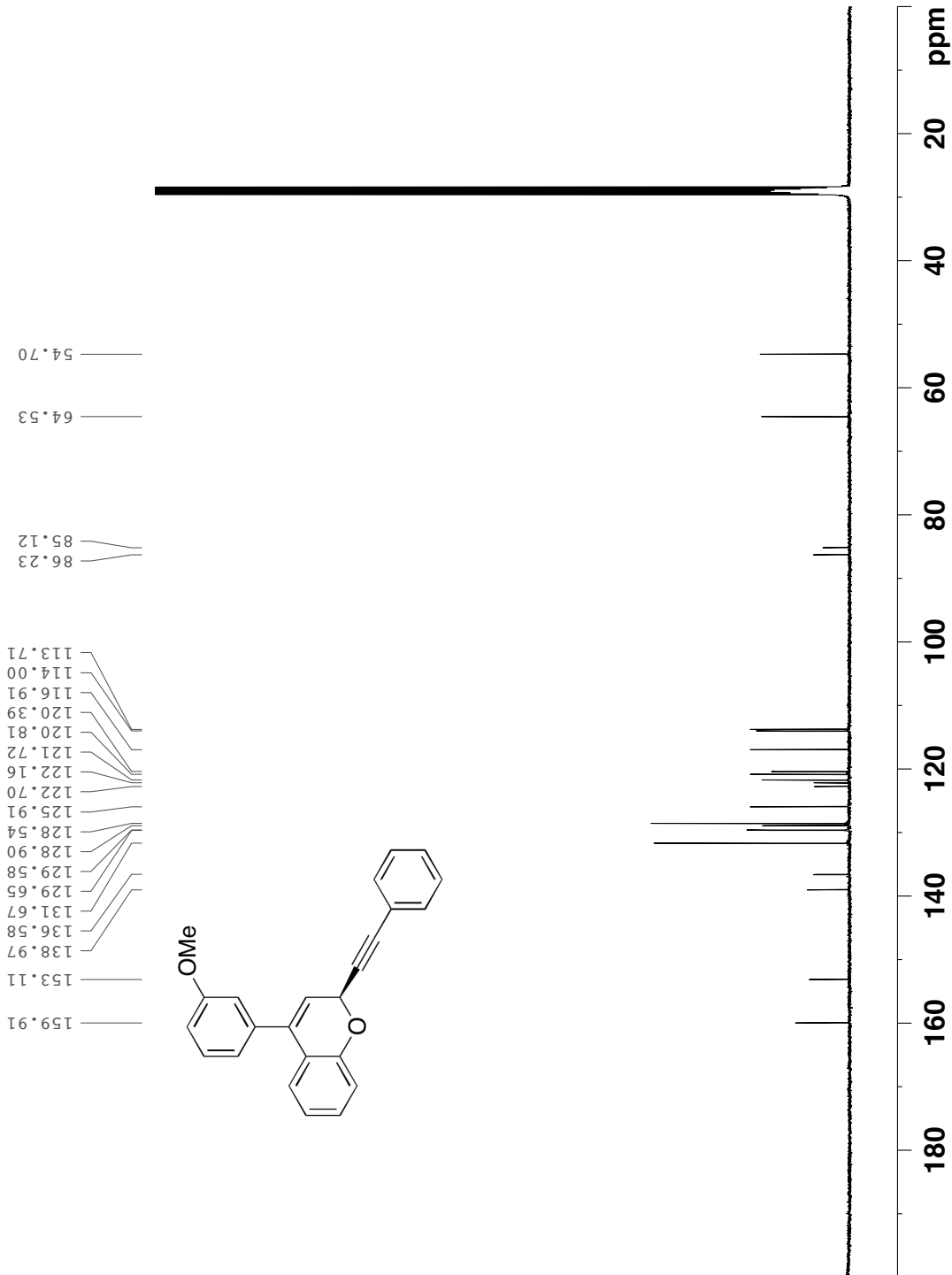
F2 - Acquisition Parameters  
 Date\_ 20120723  
 Time\_ 15.52  
 INSTRUM spect  
 PROBHD 5 mm CPQNP 1H/  
 PULPROG zg30  
 TD 65536  
 SOLVENT Acetone  
 NS 16  
 DS 2  
 SWH 8278.146 Hz  
 FIDRES 0.126314 Hz  
 AQ 3.9584243 sec  
 RG 10.1  
 DW 60.400 usec  
 DE 6.00 usec  
 TE 298.1 K  
 D1 1.00000000 sec  
 TDO 1

==== CHANNEL f1 =====  
 NUC1 1H  
 P1 15.00 usec  
 PL1 4.90 dB  
 PL1W 3.30822015 W  
 SFO1 400.1324710 MHz

F2 - Processing parameters  
 SI 32768  
 SF 400.1300066 MHz  
 EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00



Compound 8ia 13C NMR



159.91  
153.11  
138.97  
136.58  
131.67  
129.65  
129.58  
128.90  
128.54  
125.91  
122.70  
122.16  
121.72  
120.81  
120.39  
116.91  
114.00  
113.71

86.23  
85.12

64.53  
54.70

Current Data Parameters  
NAME HH-3-238A1  
EXPNO 2  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120724  
Time 4.55  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zgpg30  
TD 65536  
SOLVENT Acetone  
NS 1024  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664756 sec  
RG 512  
DW 20.850 usec  
DE 18.00 usec  
TE 298.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 9.25 usec  
PL1 0.55 dB  
PL1W 35.18820572 W  
SFO1 100.6228298 MHz

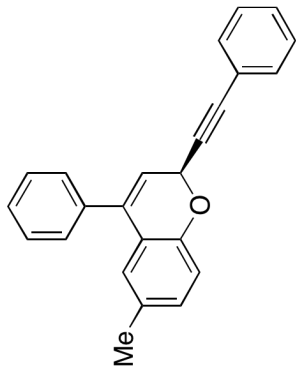
==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.08120718 W  
SFO2 400.1316005 MHz

F2 - Processing parameters  
SI 32768  
SF 100.6127690 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

Compound 8ja 1H NMR



7.480  
7.469  
7.456  
7.439  
7.422  
7.411  
7.399  
7.379  
7.366  
7.354  
7.343  
7.068  
7.054  
6.900  
6.887  
6.855  
5.967  
5.960  
5.908  
5.900



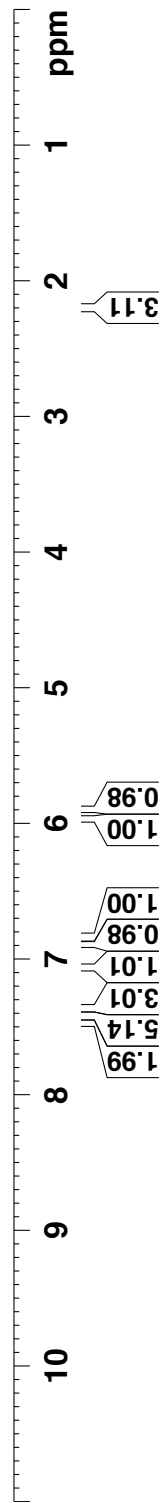
2.193

Current Data Parameters  
 NAME HH-3-216A2rs  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120730  
 Time 16.03  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB/  
 PULPROG zg30  
 TD 65536  
 SOLVENT Acetone  
 NS 8  
 DS 2  
 SWH 8403.361 Hz  
 FIDRES 0.128225 Hz  
 AQ 3.8994420 sec  
 RG 181  
 DW 59.500 usec  
 DE 17.39 usec  
 TE 300.2 K  
 D1 1.00000000 sec  
 TDO 1

==== CHANNEL f1 =====  
 SFO1 600.3233018 MHz  
 NUC1 1H  
 P1 10.77 usec

F2 - Processing parameters  
 SI 65536  
 SF 600.3200113 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00



Compound 8ja 13C NMR



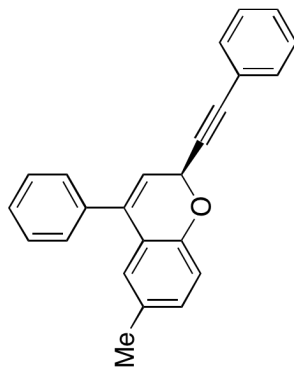
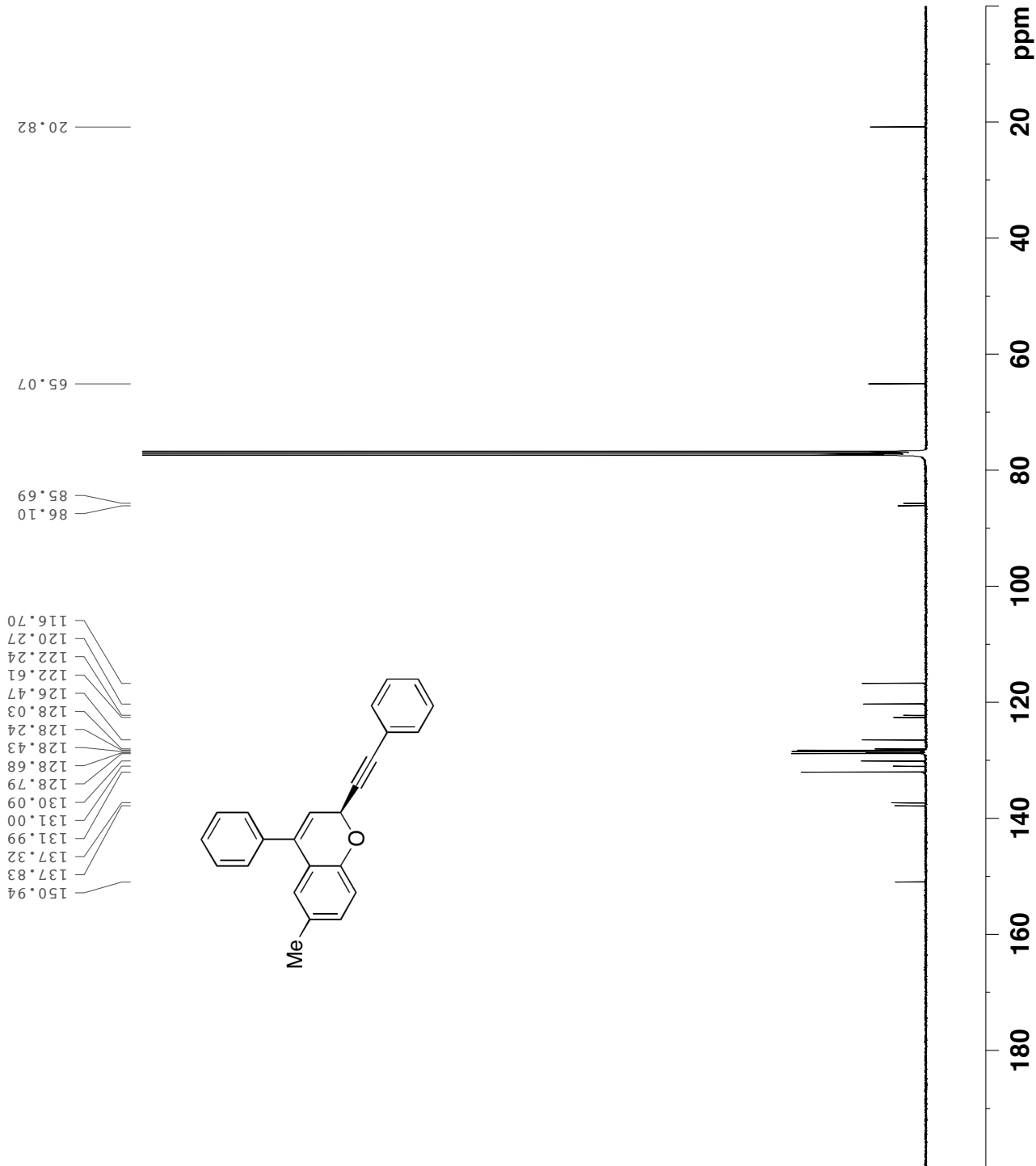
Current Data Parameters  
 NAME HH-3-216A2 Dec2013  
 EXPNO 2  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20131219  
 Time 1.32  
 INSTRUM spect  
 PROBHID 5 mm CPQNP 1H/  
 PULPROG zgpg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 1024  
 DS 4  
 SWH 23980.814 Hz  
 FIDRES 0.365918 Hz  
 AQ 1.3664756 sec  
 RG 512  
 DW 20.850 usec  
 DE 18.00 usec  
 TE 298.2 K  
 D1 2.00000000 sec  
 D11 0.03000000 sec  
 TD0 1

==== CHANNEL f1 =====  
 NUC1 13C  
 P1 9.25 usec  
 PL1 0.55 dB  
 PL1W 35.18820572 W  
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====  
 CPDPRG2 waltz16  
 NUC2 1H  
 PCPD2 90.00 usec  
 PL2 4.90 dB  
 PL12 20.46 dB  
 PL13 21.00 dB  
 PL2W 3.30822015 W  
 PL12W 0.09195905 W  
 PL13W 0.08120718 W  
 SFO2 400.1316005 MHz

F2 - Processing parameters  
 SI 32768  
 SF 100.6127690 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

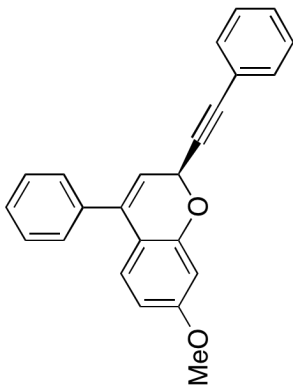




Compound 8ka 1H NMR



7.447  
7.436  
7.434  
7.418  
7.403  
7.394  
7.387  
7.376  
7.372  
7.364  
7.361  
7.329  
7.316  
7.302  
7.290  
7.279  
7.276  
6.986  
6.972  
6.615  
6.611  
6.481  
6.477  
6.466  
6.462  
5.840  
5.833  
5.730  
5.723  
3.808

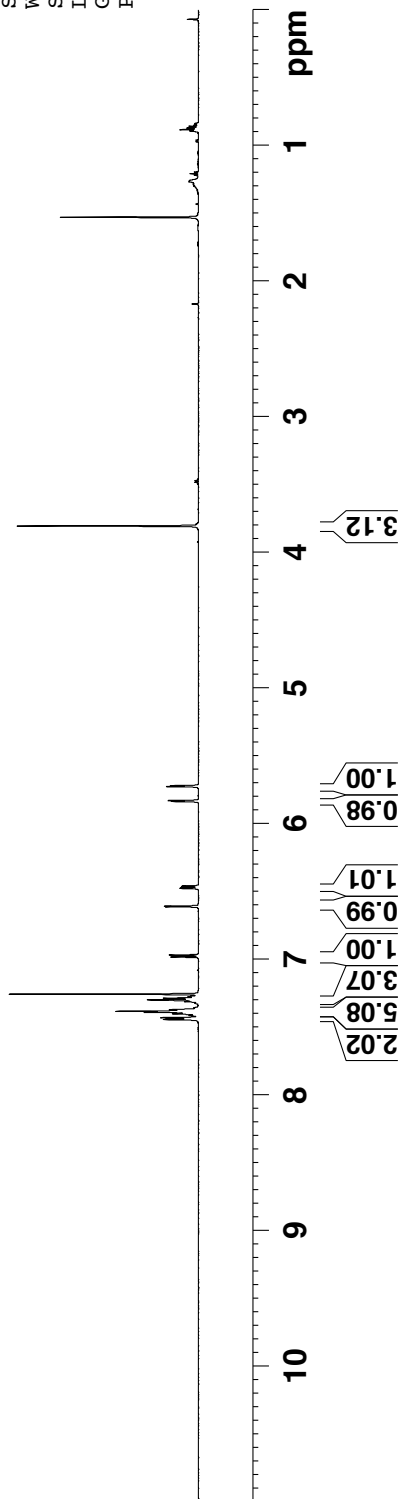


Current Data Parameters  
 NAME HH-3-255A1rs  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120722  
 Time\_ 0.04  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB/  
 PULPROG zg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 8  
 DS 2  
 SWH 8403.361 Hz  
 FIDRES 0.128225 Hz  
 AQ 3.8994420 sec  
 RG 228  
 DW 59.500 usec  
 DE 17.39 usec  
 TE 300.2 K  
 D1 1.00000000 sec  
 TD0 1

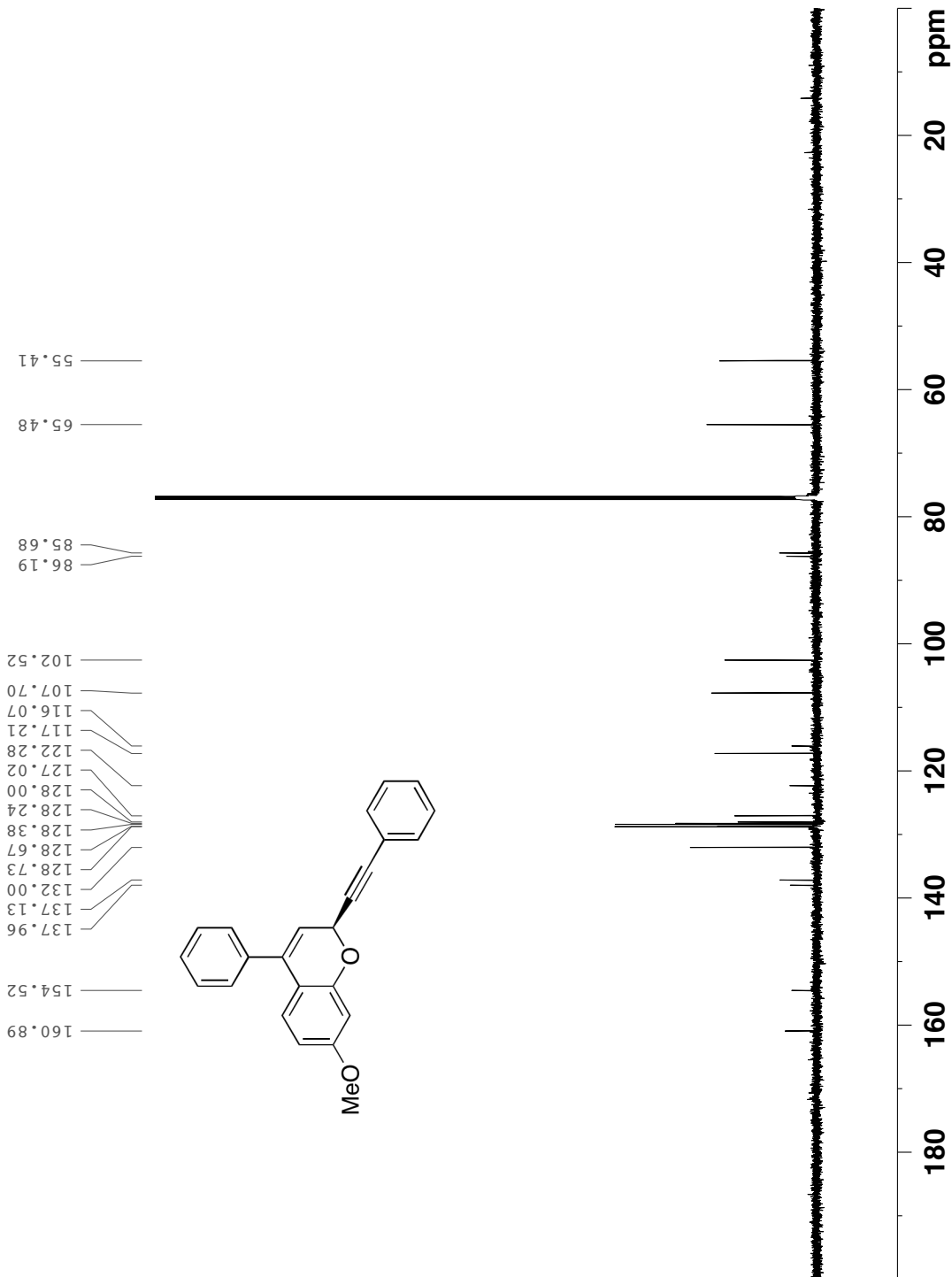
==== CHANNEL f1 =====  
 SFO1 600.3233018 MHz  
 NUC1 1H  
 P1 10.77 usec

F2 - Processing parameters  
 SI 65536  
 SF 600.3200158 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00





Compound 8ka 13C NMR



Current Data Parameters  
NAME HH-3-255A1rs  
EXPNO 2  
PROCNO 1

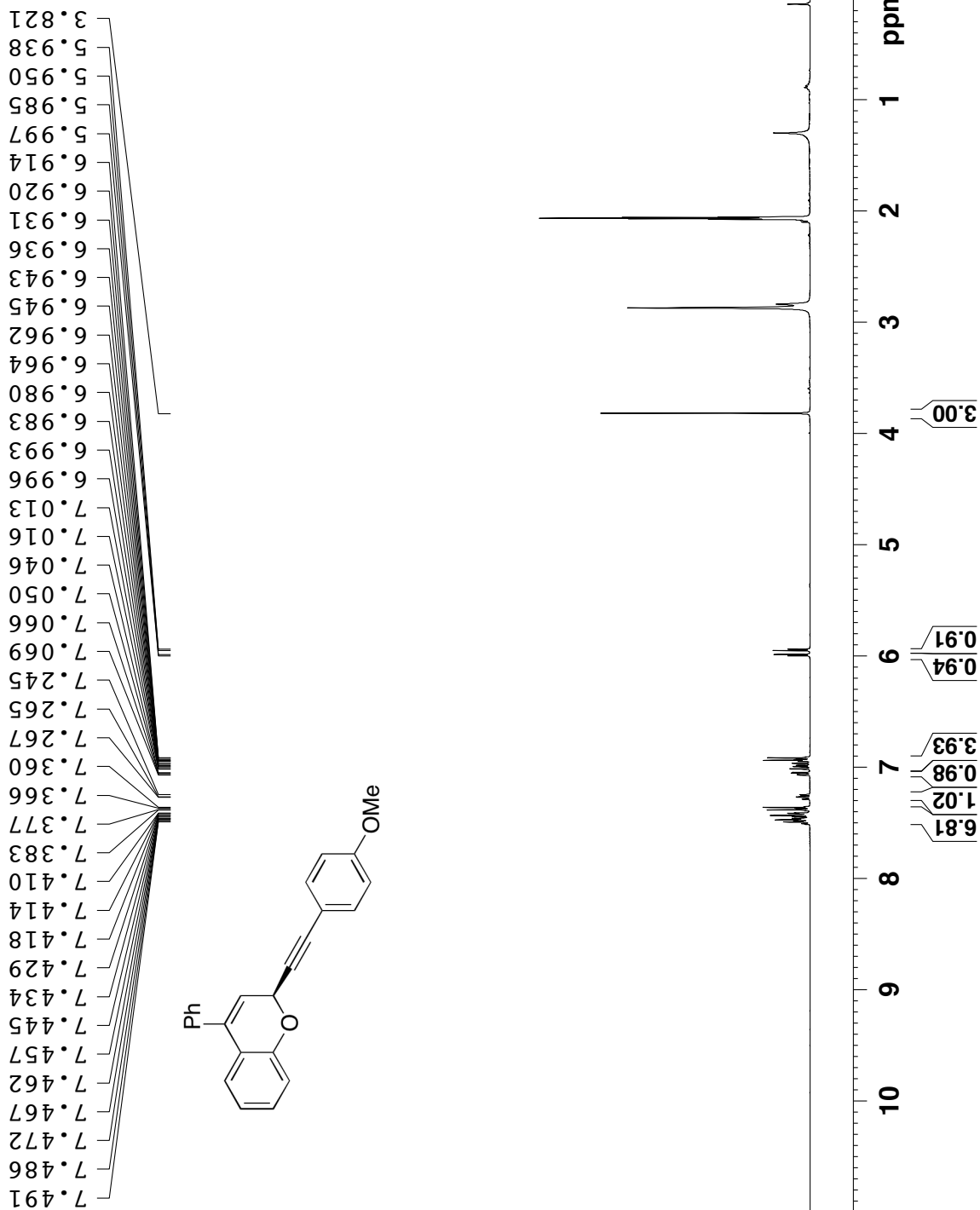
F2 - Acquisition Parameters  
Date\_ 20120722  
Time\_ 3.23  
INSTRUM spect  
PROBHD 5 mm PABBO BB/  
PULPROG zgpg55  
TD 65536  
SOLVENT CDCl3  
NS 2048  
DS 4  
SWH 34722.223 Hz  
FIDRES 0.529819 Hz  
AQ 0.9437684 sec  
RG 2050  
DW 14.400 usec  
DE 19.34 usec  
TE 300.2 K  
D1 1.10000002 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
SF01 150.9656784 MHz  
NUC1 13C  
P1 10.63 usec

F2 - Processing parameters  
SI 32768  
SF 150.9505840 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



Compound 8em 1H NMR



Current Data Parameters  
NAME HH-3-211A2aug13\_2  
EXPNO 1  
PROCNO 1

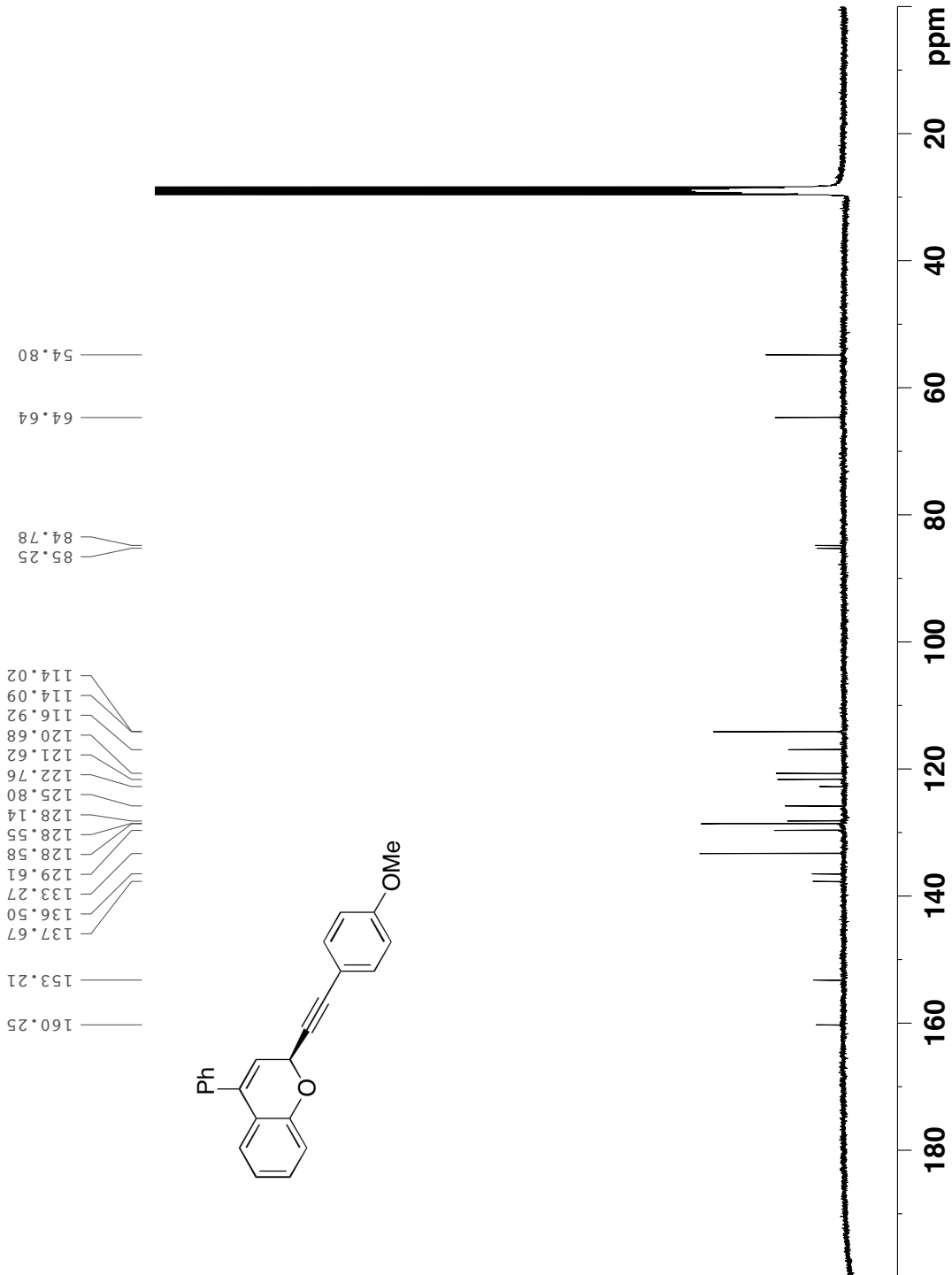
F2 - Acquisition Parameters  
Date\_ 20120813  
Time\_ 15.49  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zg30  
TD 65536  
SOLVENT Acetone  
NS 16  
DS 2  
SWH 8278.146 Hz  
FIDRES 0.126314 Hz  
AQ 3.9584243 sec  
RG 12.7  
DW 60.400 usec  
DE 6.00 usec  
TE 298.2 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 15.00 usec  
PL1 4.90 dB  
PL1W 3.30822015 W  
SFO1 400.1324710 MHz

F2 - Processing parameters  
SI 32768  
SF 400.1300000 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



Compound 8em 13C NMR



Current Data Parameters  
NAME HH-3-211A2aug13  
EXPNO 2  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120814  
Time 0.26  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zgpg30  
TD 65536  
SOLVENT Acetone  
NS 1024  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664756 sec  
RG 512  
DW 20.850 usec  
DE 18.00 usec  
TE 298.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 9.25 usec  
PL1 0.55 dB  
PL1W 35.18820572 W  
SFO1 100.6228298 MHz

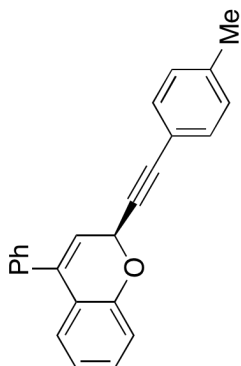
==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.08120718 W  
SFO2 400.1316005 MHz

F2 - Processing parameters  
SI 32768  
SF 100.6127690 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



Compound 8en 1H NMR

7.477  
7.465  
7.453  
7.434  
7.423  
7.408  
7.395  
7.302  
7.289  
7.258  
7.245  
7.232  
7.172  
7.159  
7.043  
7.030  
6.993  
6.980  
6.954  
6.941  
6.929  
5.973  
5.966  
5.936  
5.928



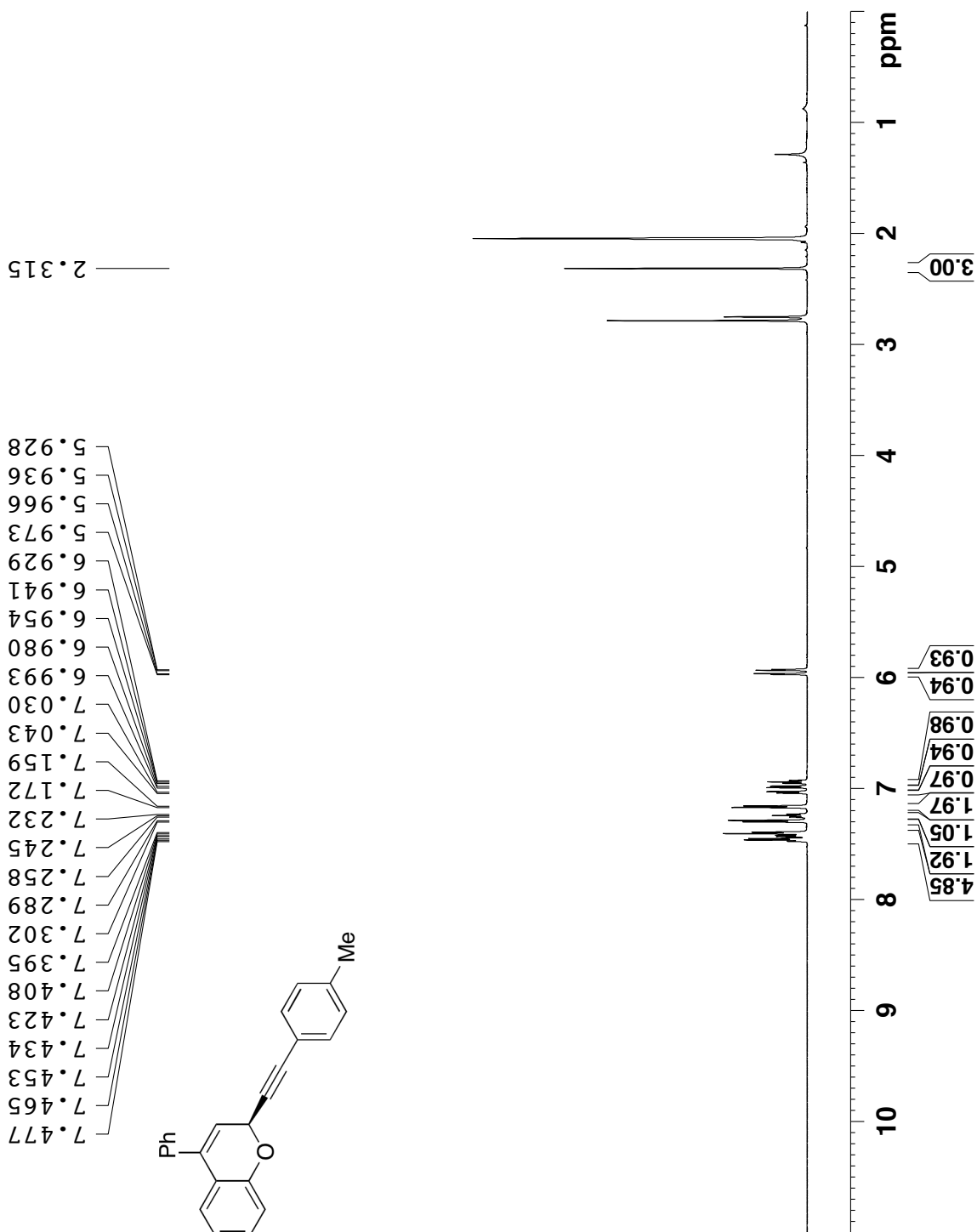
2.315

Current Data Parameters  
NAME HH-3-197a1JULY30  
EXPNO 1  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120731  
Time\_ 16.34  
INSTRUM spect  
PROBHD 5 mm PABBO BB/  
PULPROG zg30  
TD 65536  
SOLVENT Acetone  
NS 8  
DS 2  
SWH 8403.361 Hz  
FIDRES 0.128225 Hz  
AQ 3.8994420 sec  
RG 228  
DW 59.500 usec  
DE 17.39 usec  
TE 300.2 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
SFO1 600.3233018 MHz  
NUC1 1H  
P1 10.77 usec

F2 - Processing parameters  
SI 65536  
SF 600.3200144 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00





Compound 8en 13C NMR

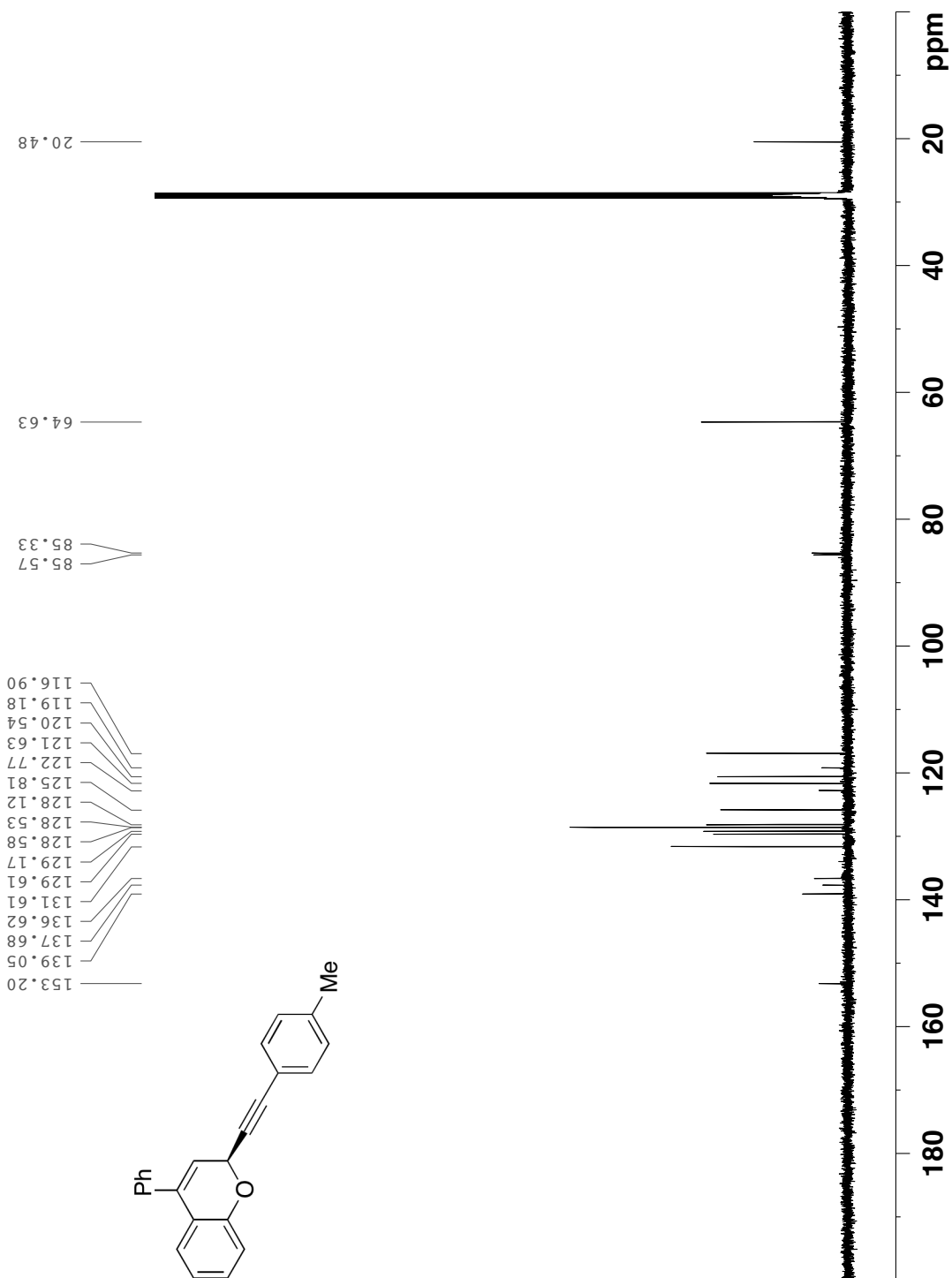
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Current Data Parameters
NAME      HH-3-197a1JULY30
EXPNO     2
PROCNO    1

F2 - Acquisition Parameters
Date_     20120731
Time_     20.14
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zgpg55
TD         65536
SOLVENT   Acetone
NS         2048
DS         4
SWH        34722.223 Hz
FIDRES     0.529819 Hz
AQ          0.9437684 sec
RG          2050
DW          14.400 usec
DE          19.34 usec
TE          300.2 K
D1          1.10000002 sec
D11         0.03000000 sec
TD0         1

===== CHANNEL f1 =====
SF01       150.9656784 MHz
NUC1        13C
P1          10.63 usec

F2 - Processing parameters
SI          32768
SF          150.9505840 MHz
WDW         EM
SSB         0
LB          1.00 Hz
GB          0
PC          1.40
  
```



Compound 8eo 1H NMR

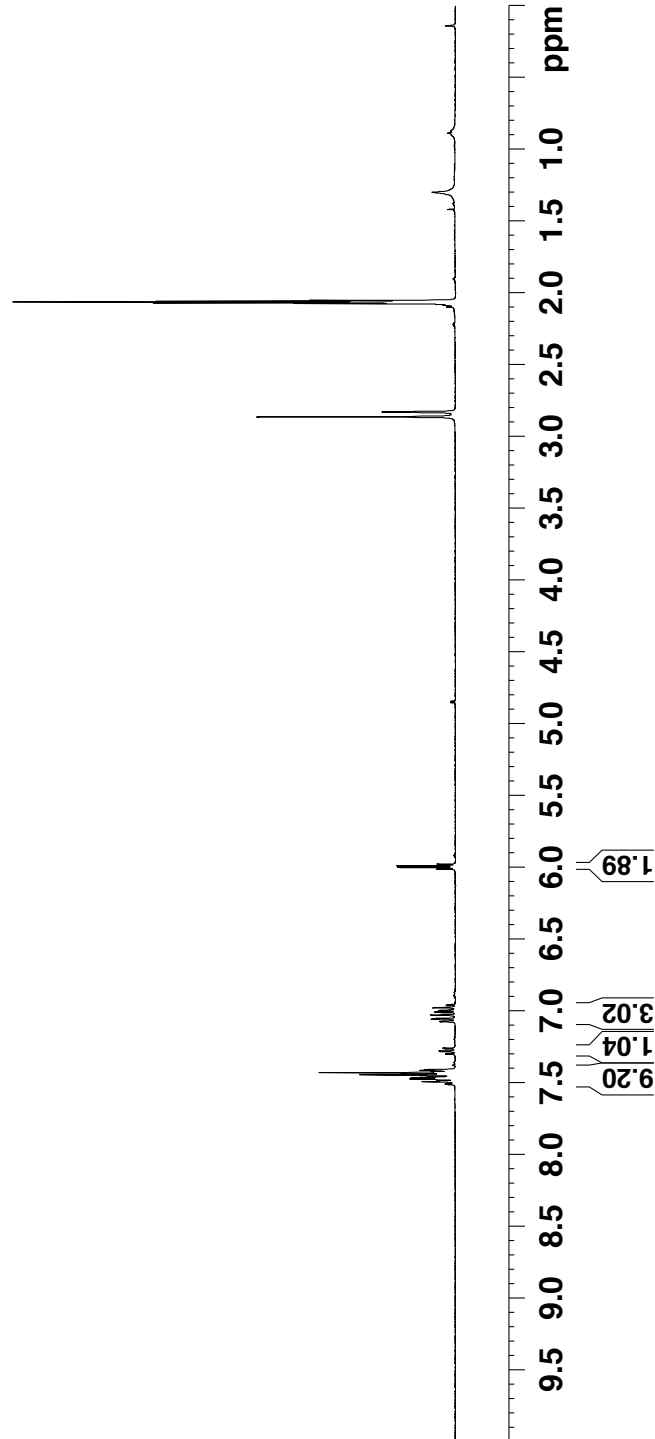
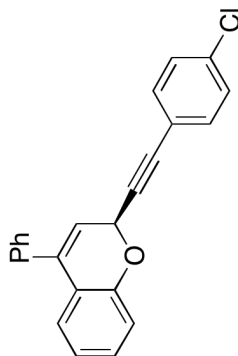
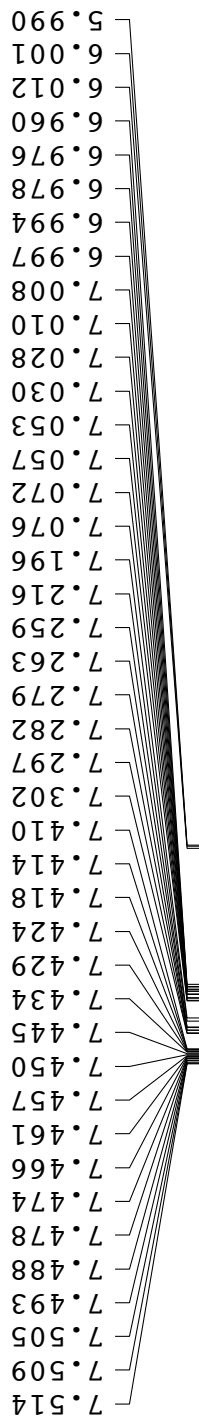


Current Data Parameters  
 NAME HH-3-204A1rs  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120725  
 Time\_ 7.36  
 INSTRUM spect  
 PROBHD 5 mm CPQNP 1H/  
 PULPROG zg30  
 TD 65536  
 SOLVENT Acetone  
 NS 16  
 DS 2  
 SWH 8278.146 Hz  
 FIDRES 0.126314 Hz  
 AQ 3.9584243 sec  
 RG 10.1  
 DW 60.400 usec  
 DE 6.00 usec  
 TE 298.2 K  
 D1 1.00000000 sec  
 TD0 1

==== CHANNEL f1 =====  
 NUC1 1H  
 P1 15.00 usec  
 PL1 4.90 dB  
 PL1W 3.30822015 W  
 SFO1 400.1324710 MHz

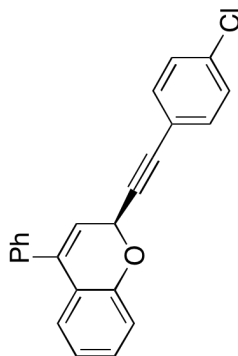
F2 - Processing parameters  
 SI 32768  
 SF 400.1300000 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00



Compound 8eo 13C NMR



153.06  
137.55  
136.77  
134.39  
133.29  
129.71  
128.80  
128.57  
128.56  
128.20  
125.87  
122.70  
121.77  
120.92  
120.17  
116.93



```

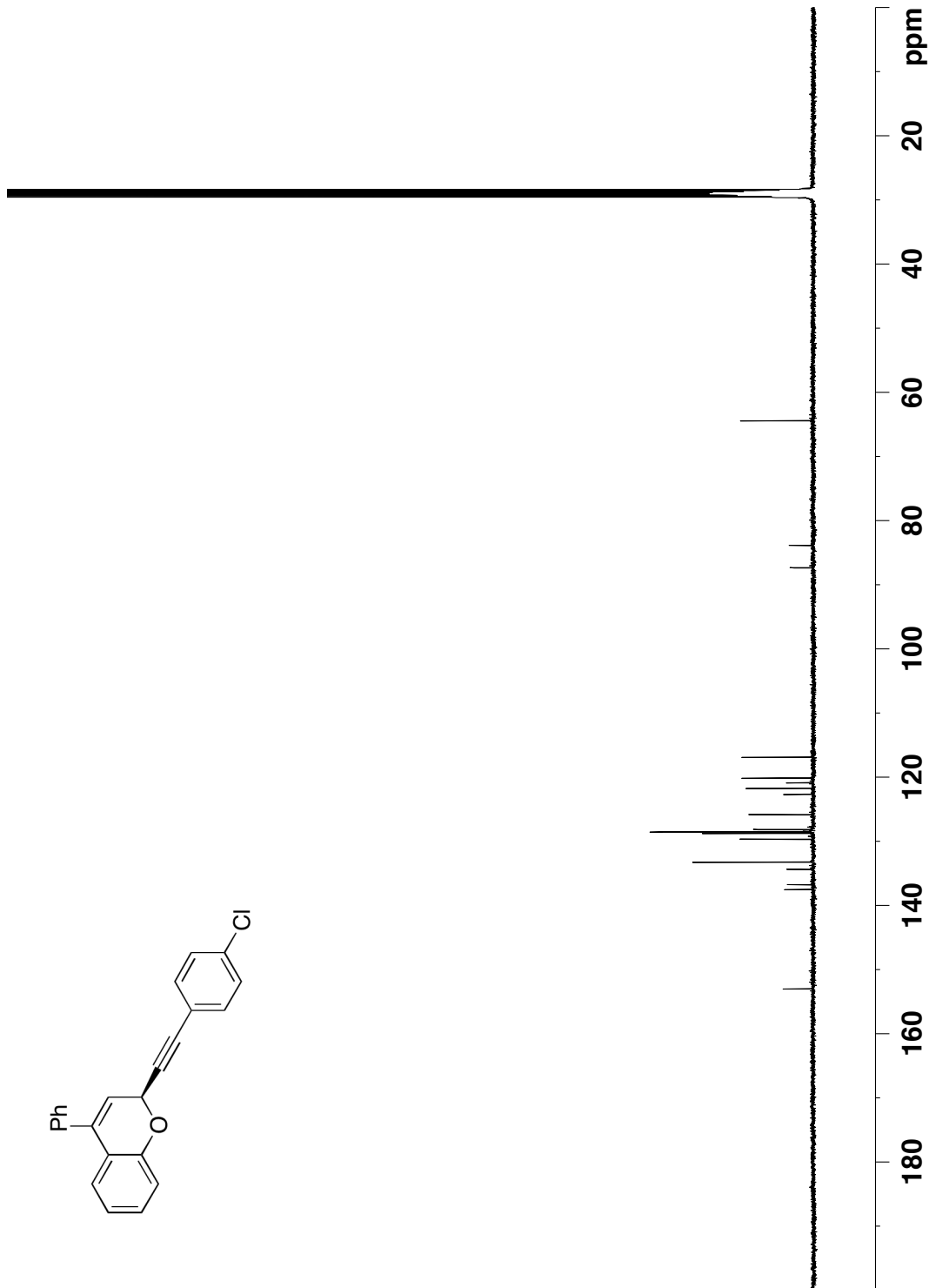
Current Data Parameters
NAME      HH-3-204A1
EXPNO     2
PROCNO    1

F2 - Acquisition Parameters
Date_     20120509
Time      7.03
INSTRUM   spect
PROBHD    5 mm CPQNP 1H/
PULPROG   zgpg30
TD         65536
SOLVENT   Acetone
NS         1024
DS         4
SWH        23980.814 Hz
FIDRES     0.365918 Hz
AQ          1.3664756 sec
RG          512
DW          20.850 usec
DE          18.00 usec
TE          298.2 K
D1          2.00000000 sec
D11         0.03000000 sec
TD0         1

===== CHANNEL f1 =====
NUC1       13C
P1         9.25 usec
PL1        0.55 dB
PL1W       35.18820572 W
SFO1       100.6228298 MHz

===== CHANNEL f2 =====
CPDPRG2    waltz16
NUC2        1H
PCPD2      90.00 usec
PL2         4.90 dB
PL12       20.46 dB
PL13       21.00 dB
PL2W       3.30822015 W
PL12W      0.09195905 W
PL13W      0.08120718 W
SFO2       400.1316005 MHz

F2 - Processing parameters
SI          32768
SF          100.6127690 MHz
WDW         EM
SSB         0
LB          1.00 Hz
GB          0
PC          1.40
    
```

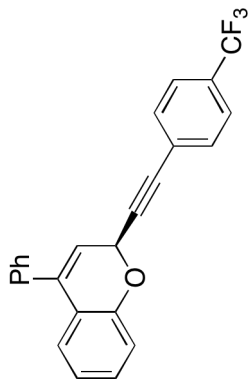






Compound 8ej 1H NMR

7.715  
7.702  
7.639  
7.626  
7.484  
7.472  
7.460  
7.445  
7.433  
7.415  
7.403  
7.282  
7.270  
7.258  
7.061  
7.048  
7.023  
7.010  
6.978  
6.966  
6.954  
6.057  
6.053  
6.003

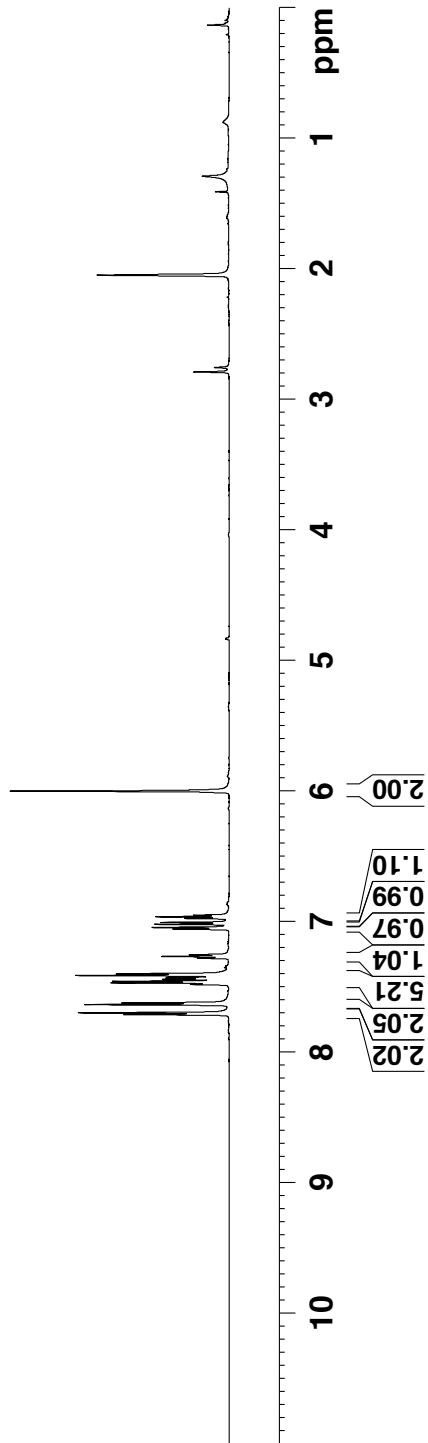


Current Data Parameters  
NAME HH-3-233C1  
EXPNO 1  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120828  
Time\_ 1.09  
INSTRUM spect  
PROBHD 5 mm PABBO BB/  
PULPROG zg30  
TD 65536  
SOLVENT Acetone  
NS 8  
DS 2  
SWH 8403.361 Hz  
FIDRES 0.128225 Hz  
AQ 3.8994420 sec  
RG 128  
DW 59.500 usec  
DE 17.39 usec  
TE 300.2 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
SFO1 600.3233018 MHz  
NUC1 1H  
P1 10.77 usec

F2 - Processing parameters  
SI 65536  
SF 600.3200120 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



Compound 8ej 13C NMR

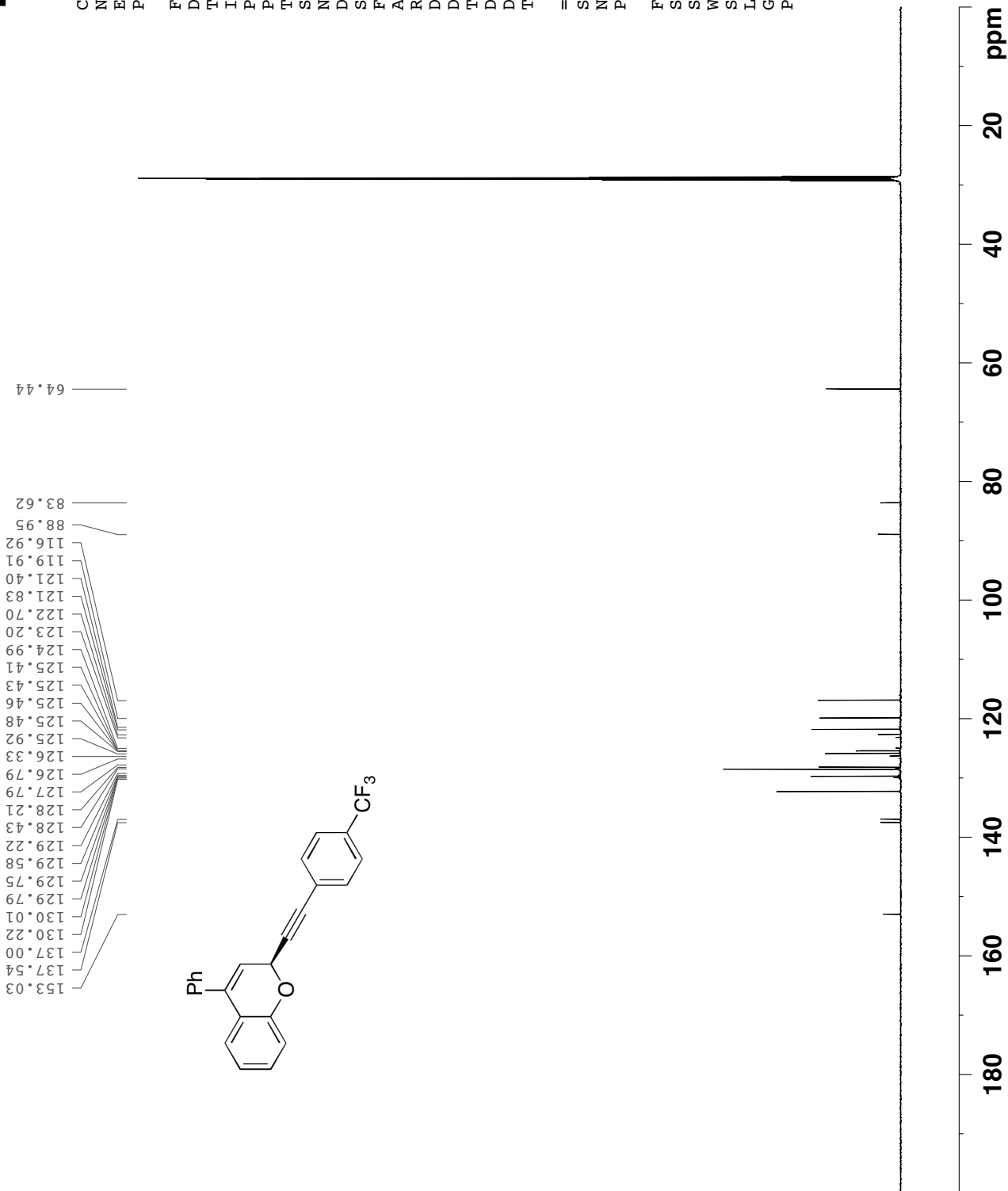


Current Data Parameters  
 NAME HH-3-233C1  
 EXPNO 2  
 PROCNO 1

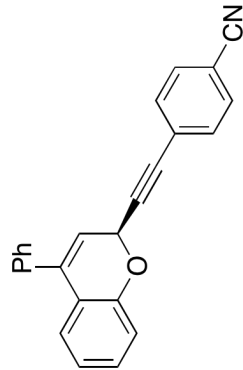
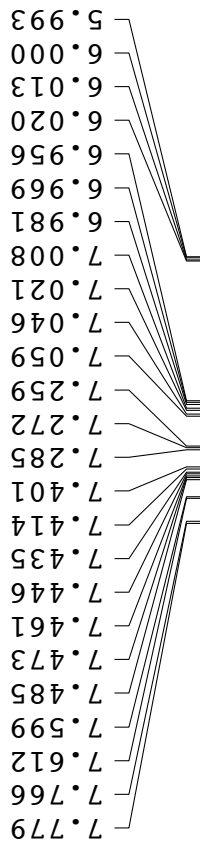
F2 - Acquisition Parameters  
 Date\_ 20120828  
 Time\_ 4.11  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB/  
 PULPROG zgpg55  
 TD 65536  
 SOLVENT Acetone  
 NS 5000  
 DS 4  
 SWH 34722.223 Hz  
 FIDRES 0.529819 Hz  
 AQ 0.9437684 sec  
 RG 2050  
 DW 14.400 usec  
 DE 19.34 usec  
 TE 300.2 K  
 D1 1.10000002 sec  
 D11 0.03000000 sec  
 TD0 1

==== CHANNEL f1 =====  
 SFO1 150.9656784 MHz  
 NUC1 13C  
 P1 10.63 usec

F2 - Processing parameters  
 SI 32768  
 SF 150.9505840 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40



Compound 8eq 1H NMR

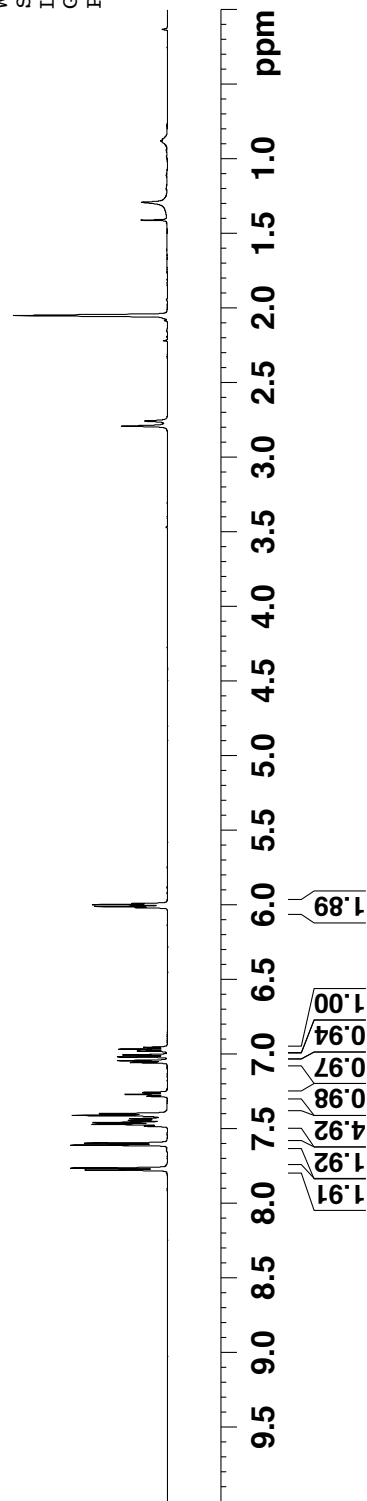


Current Data Parameters  
 NAME HH-3-222C1rs  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120730  
 Time\_ 15.10  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB/  
 PULPROG zg30  
 TD 65536  
 SOLVENT Acetone  
 NS 8  
 DS 2  
 SWH 8403.361 Hz  
 FIDRES 0.128225 Hz  
 AQ 3.8994420 sec  
 RG 181  
 DW 59.500 usec  
 DE 17.39 usec  
 TE 300.2 K  
 D1 1.00000000 sec  
 TD0 1

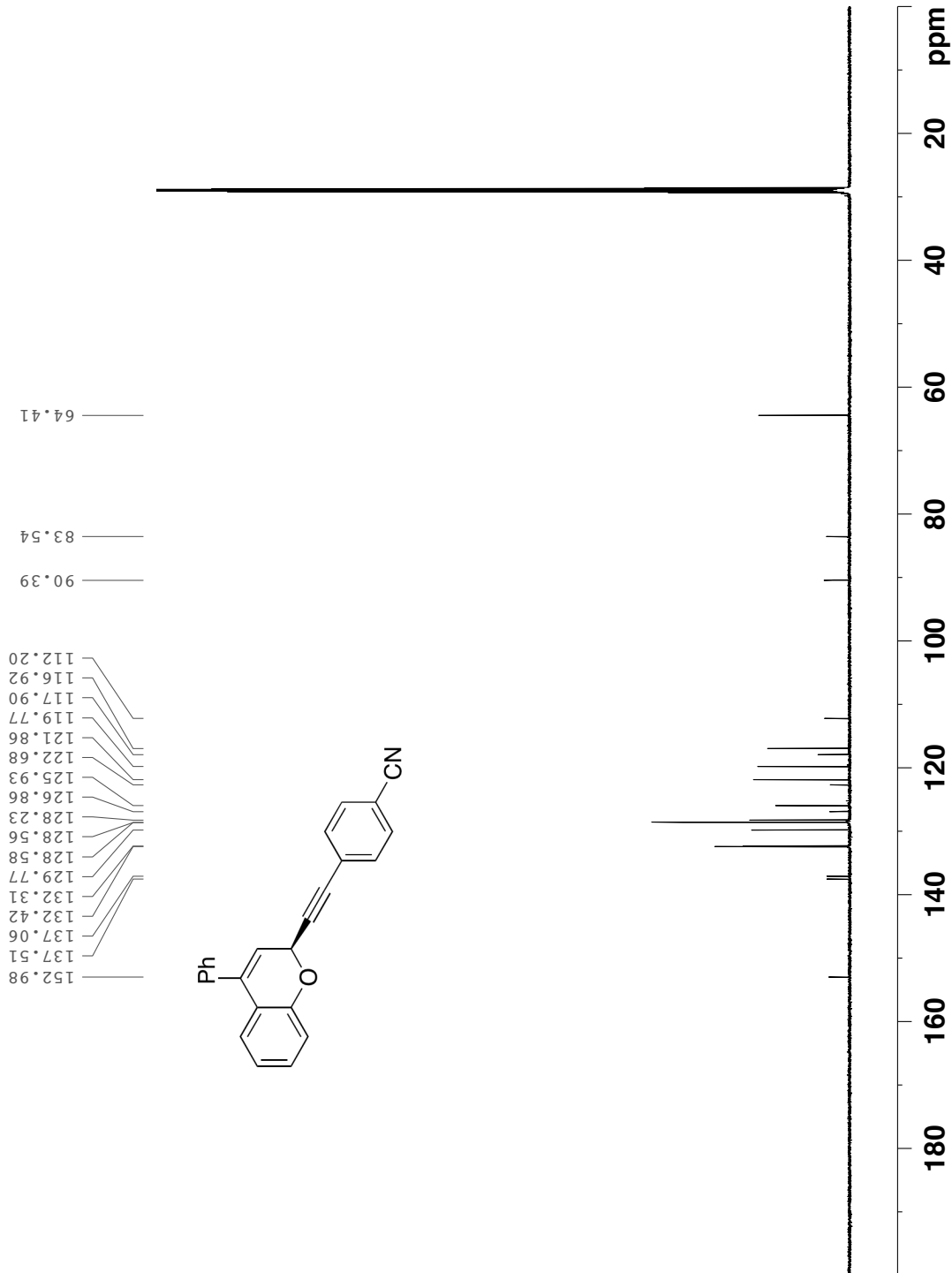
==== CHANNEL f1 =====  
 SFO1 600.3233018 MHz  
 NUC1 1H  
 P1 10.77 usec

F2 - Processing parameters  
 SI 65536  
 SF 600.3200113 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00





Compound 8eq 13C NMR



Current Data Parameters  
NAME HH-3-222C1rs  
EXPNO 2  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120730  
Time\_ 20.16  
INSTRUM spect  
PROBHD 5 mm PABBO BB/  
PULPROG zgpg55  
TD 65536  
SOLVENT Acetone  
NS 2048  
DS 4  
SWH 34722.223 Hz  
FIDRES 0.529819 Hz  
AQ 0.9437684 sec  
RG 2050  
DW 14.400 usec  
DE 19.34 usec  
TE 300.2 K  
D1 1.10000002 sec  
D11 0.03000000 sec  
TD0 1

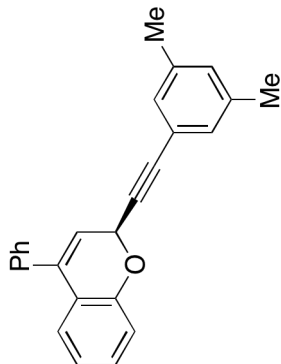
==== CHANNEL f1 =====  
SF01 150.9656784 MHz  
NUC1 13C  
P1 10.63 usec

F2 - Processing parameters  
SI 32768  
SF 150.9505840 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



Compound 8er 1H NMR

7.511  
7.506  
7.490  
7.471  
7.461  
7.457  
7.444  
7.431  
7.428  
7.412  
7.294  
7.290  
7.272  
7.255  
7.252  
7.073  
7.069  
7.054  
7.050  
7.033  
7.024  
7.002  
6.986  
6.967  
6.948  
6.000  
5.988  
5.962  
5.950



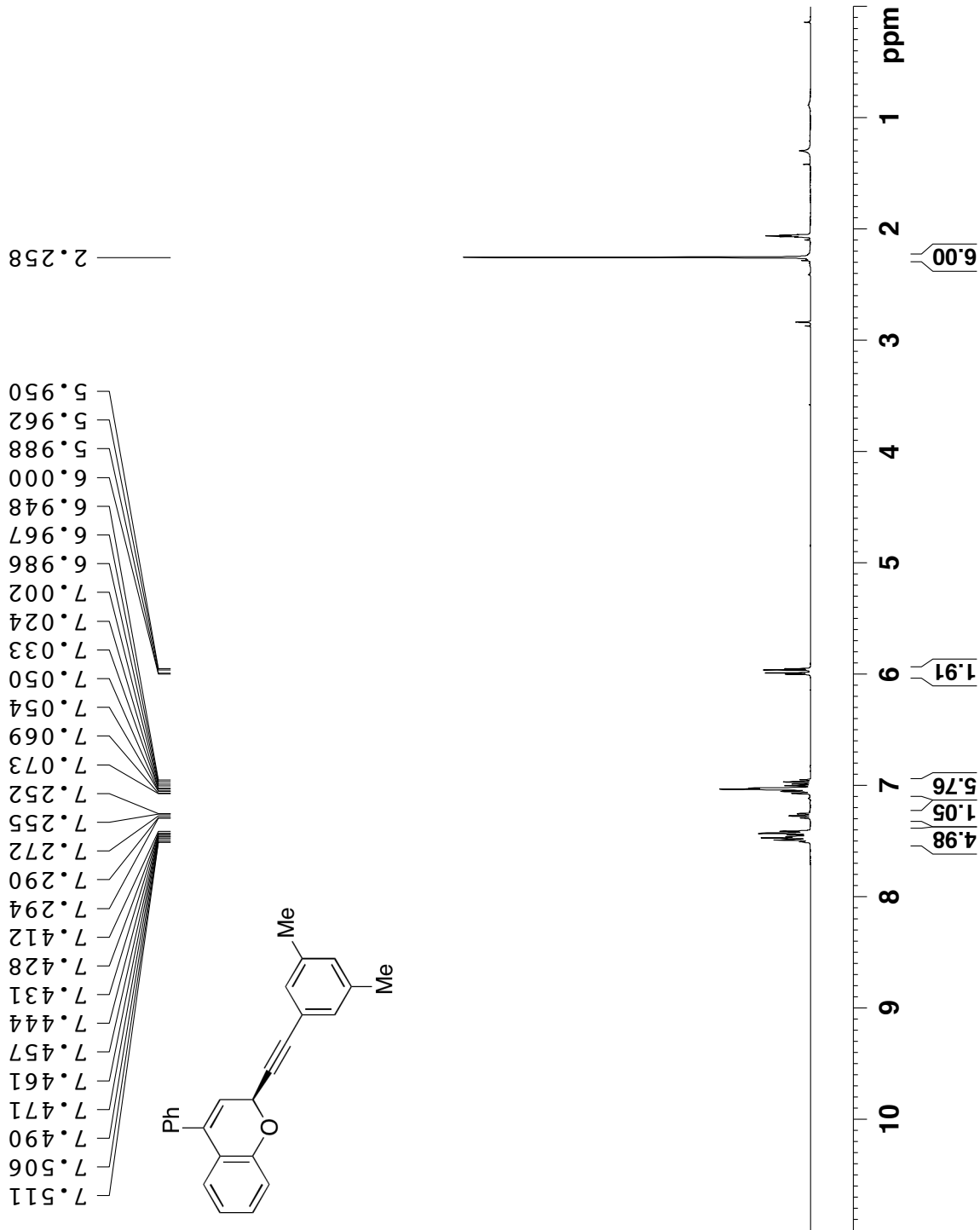
2.258

Current Data Parameters  
NAME HH-3-202A1fr2  
EXPNO 1  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120429  
Time\_ 21.51  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zg30  
TD 65536  
SOLVENT Acetone  
NS 16  
DS 2  
SWH 8278.146 Hz  
FIDRES 0.126314 Hz  
AQ 3.9584243 sec  
RG 6.3  
DW 60.400 usec  
DE 6.00 usec  
TE 298.1 K  
D1 1.00000000 sec  
TD0 1

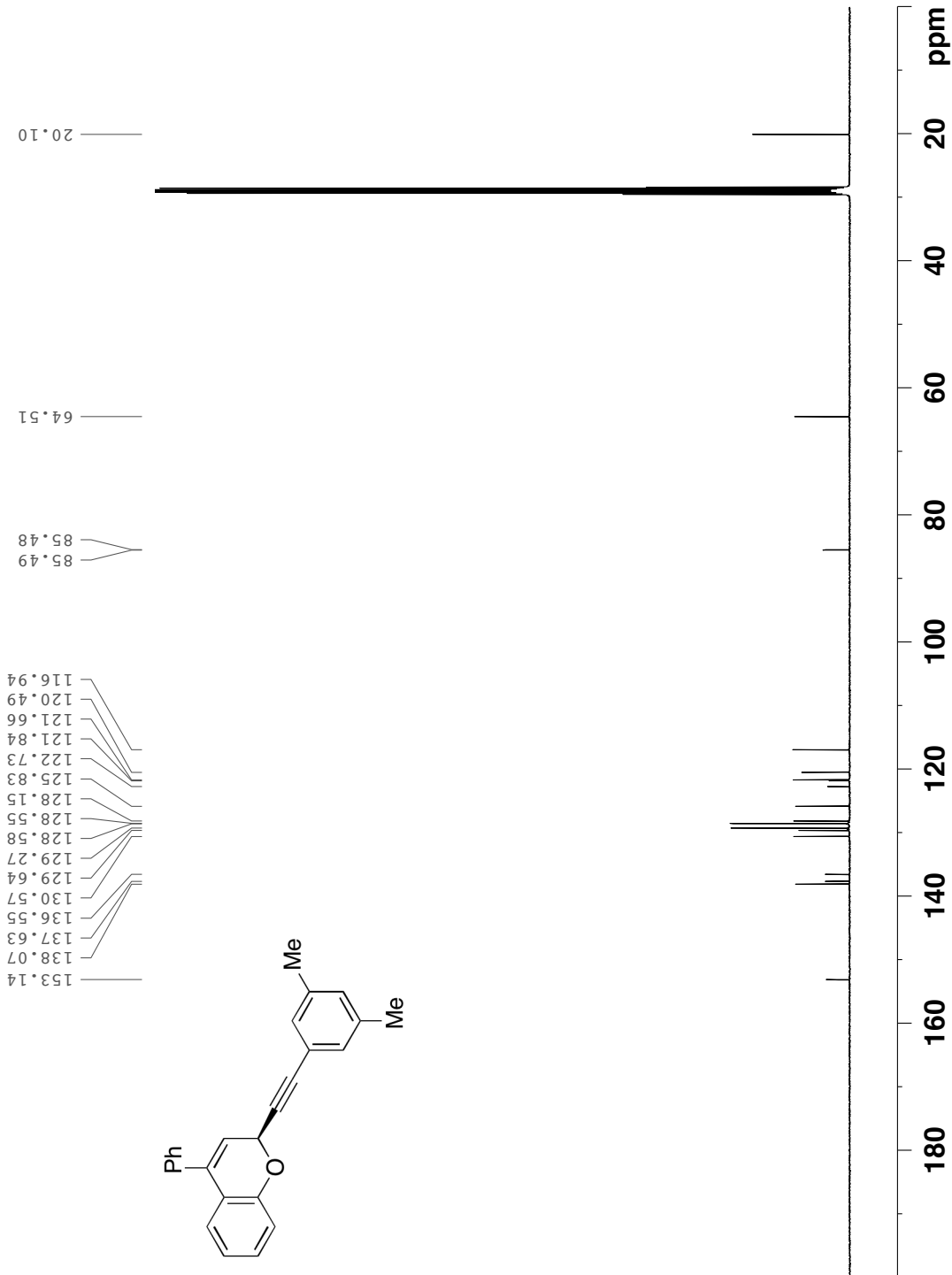
==== CHANNEL f1 =====  
NUC1 1H  
P1 15.00 usec  
PL1 4.90 dB  
PL1W 3.30822015 W  
SFO1 400.1324710 MHz

F2 - Processing parameters  
SI 32768  
SF 400.1300000 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00





Compound 8er 13C NMR



Current Data Parameters  
NAME HH-3-202A1fr2  
EXPNO 2  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120429  
Time\_ 22.51  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zgpg30  
TD 65536  
SOLVENT Acetone  
NS 1024  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664756 sec  
RG 512  
DW 20.850 usec  
DE 18.00 usec  
TE 298.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TDO 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 9.25 usec  
PL1 0.55 dB  
PL1W 35.18820572 W  
SFO1 100.6228298 MHz

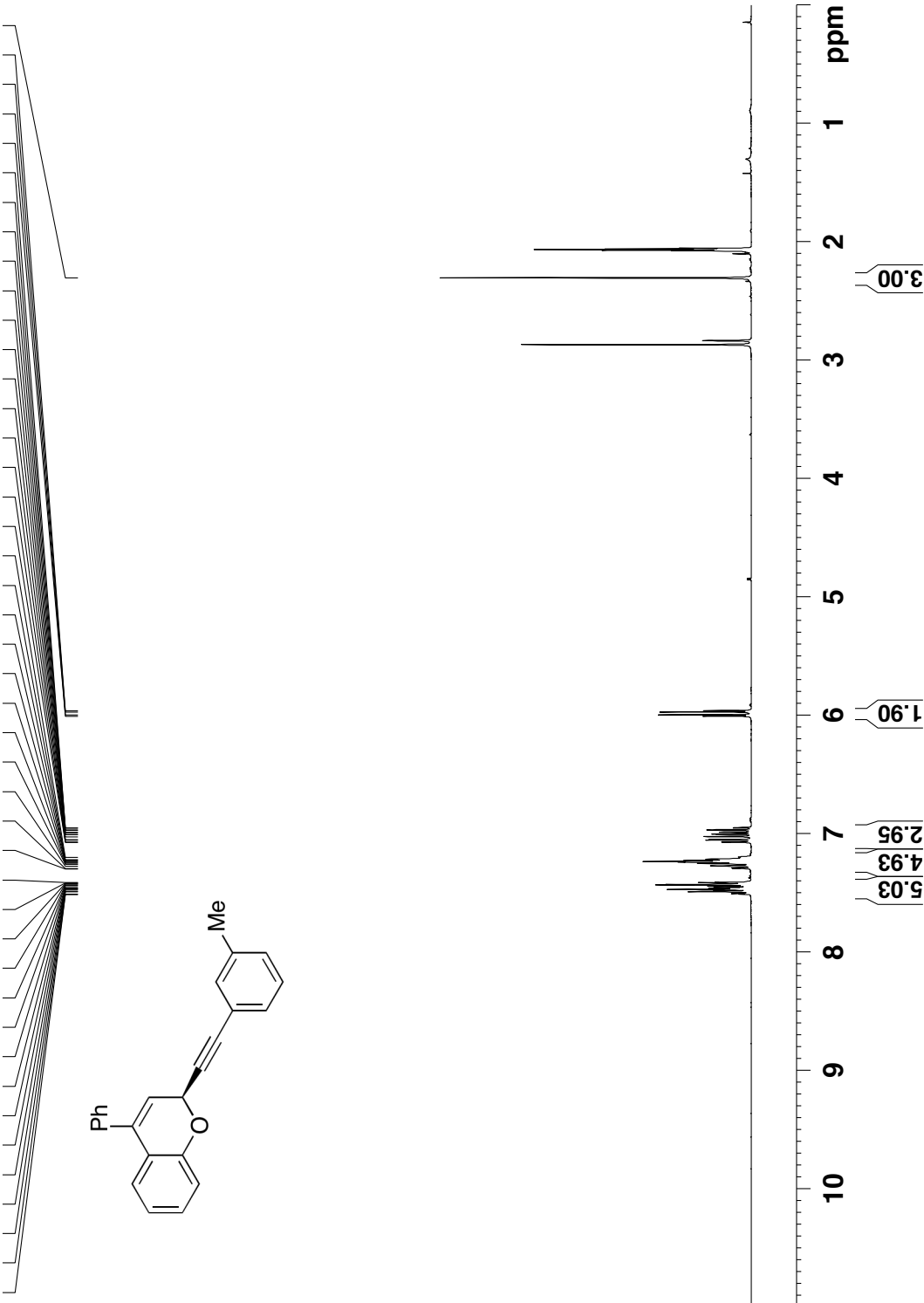
==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.08120718 W  
SFO2 400.1316005 MHz

F2 - Processing parameters  
SI 32768  
SF 100.6127690 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

Compound 8eh 1H NMR



7.514  
7.509  
7.493  
7.488  
7.475  
7.469  
7.464  
7.460  
7.447  
7.437  
7.432  
7.426  
7.420  
7.417  
7.413  
7.297  
7.293  
7.274  
7.258  
7.255  
7.243  
7.238  
7.230  
7.223  
7.218  
7.201  
7.076  
7.072  
7.056  
7.052  
7.026  
7.008  
7.006  
6.991  
6.989  
6.972  
6.970  
6.954  
6.951  
6.010  
5.998  
5.975  
5.963  
2.306



Current Data Parameters  
 NAME HH-3-206A1rs  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120725  
 Time 8.38  
 INSTRUM spect  
 PROBHD 5 mm CPQNP 1H/  
 PULPROG zg30  
 TD 65536  
 SOLVENT Acetone  
 NS 16  
 DS 2  
 SWH 8278.146 Hz  
 FIDRES 0.126314 Hz  
 AQ 3.9584243 sec  
 RG 9  
 DW 60.400 usec  
 DE 6.00 usec  
 TE 298.2 K  
 D1 1.00000000 sec  
 TD0 1

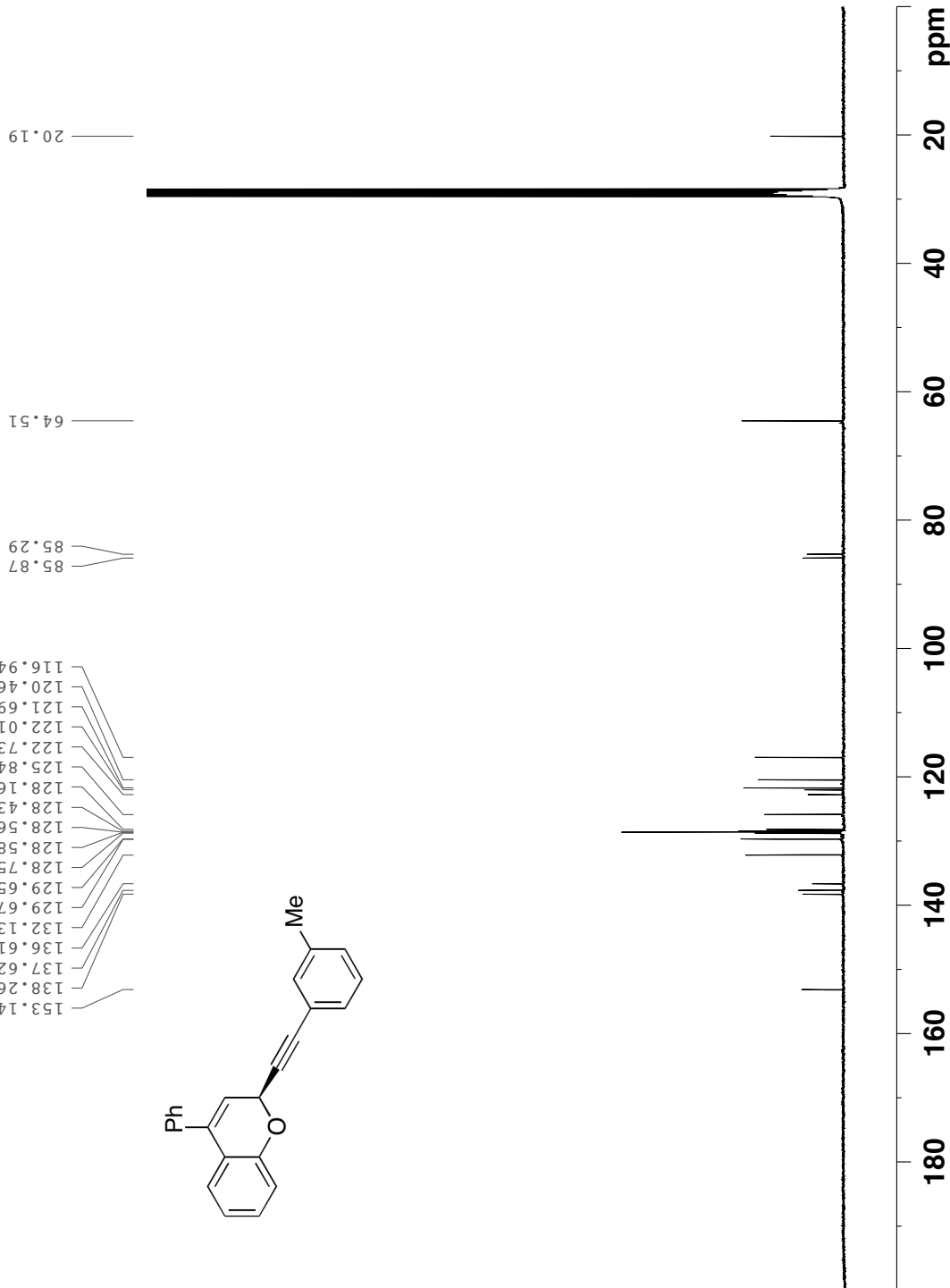
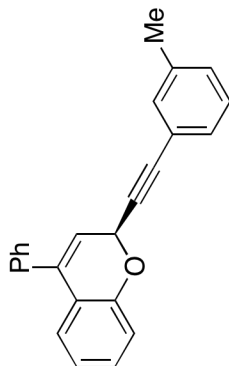
==== CHANNEL f1 =====  
 NUC1 1H  
 P1 15.00 usec  
 PL1 4.90 dB  
 PL1W 3.30822015 W  
 SF01 400.1324710 MHz

F2 - Processing parameters  
 SI 32768  
 SF 400.1300000 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00



Compound 8eh 13C NMR

153.14  
138.26  
137.62  
136.61  
132.13  
129.67  
129.65  
128.75  
128.58  
128.56  
128.43  
128.16  
125.84  
122.73  
122.01  
121.69  
120.46  
116.94



Current Data Parameters  
NAME HH-3-206A1rs  
EXPNO 2  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120726  
Time 21.07  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zgpg30  
TD 65536  
SOLVENT Acetone  
NS 1024  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664756 sec  
RG 512  
DW 20.850 usec  
DE 18.00 usec  
TE 298.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 9.25 usec  
PL1 0.55 dB  
PL1W 35.18820572 W  
SFO1 100.6228298 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.08120718 W  
SFO2 400.1316005 MHz

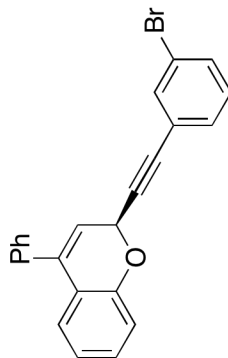
F2 - Processing parameters  
SI 32768  
SF 100.6127690 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



Compound 8es 1H NMR



7.580  
7.575  
7.566  
7.564  
7.487  
7.471  
7.453  
7.444  
7.440  
7.428  
7.416  
7.412  
7.396  
7.343  
7.322  
7.302  
7.284  
7.279  
7.261  
7.245  
7.241  
7.056  
7.052  
7.037  
7.032  
7.012  
6.991  
6.978  
6.976  
6.960  
6.941  
5.997  
5.985  
5.979  
5.967

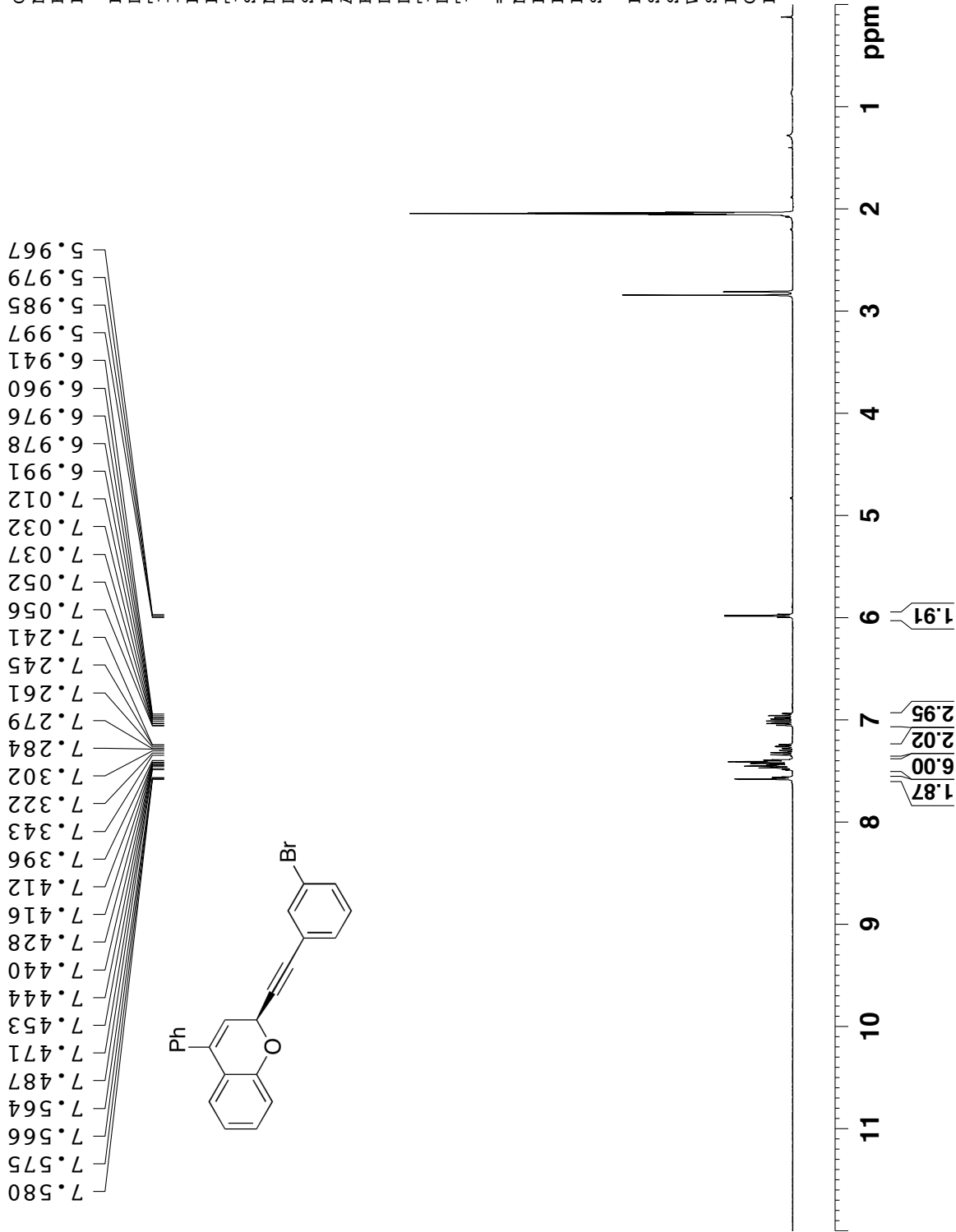


Current Data Parameters  
 NAME HH-3-222Ar  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120806  
 Time\_ 0.44  
 INSTRUM spect  
 PROBHD 5 mm CPQNP 1H/  
 PULPROG zg30  
 TD 65536  
 SOLVENT Acetone  
 NS 16  
 DS 2  
 SWH 8278.146 Hz  
 FIDRES 0.126314 Hz  
 AQ 3.9584243 sec  
 RG 11.3  
 DW 60.400 usec  
 DE 6.00 usec  
 TE 298.1 K  
 D1 1.00000000 sec  
 TD0 1

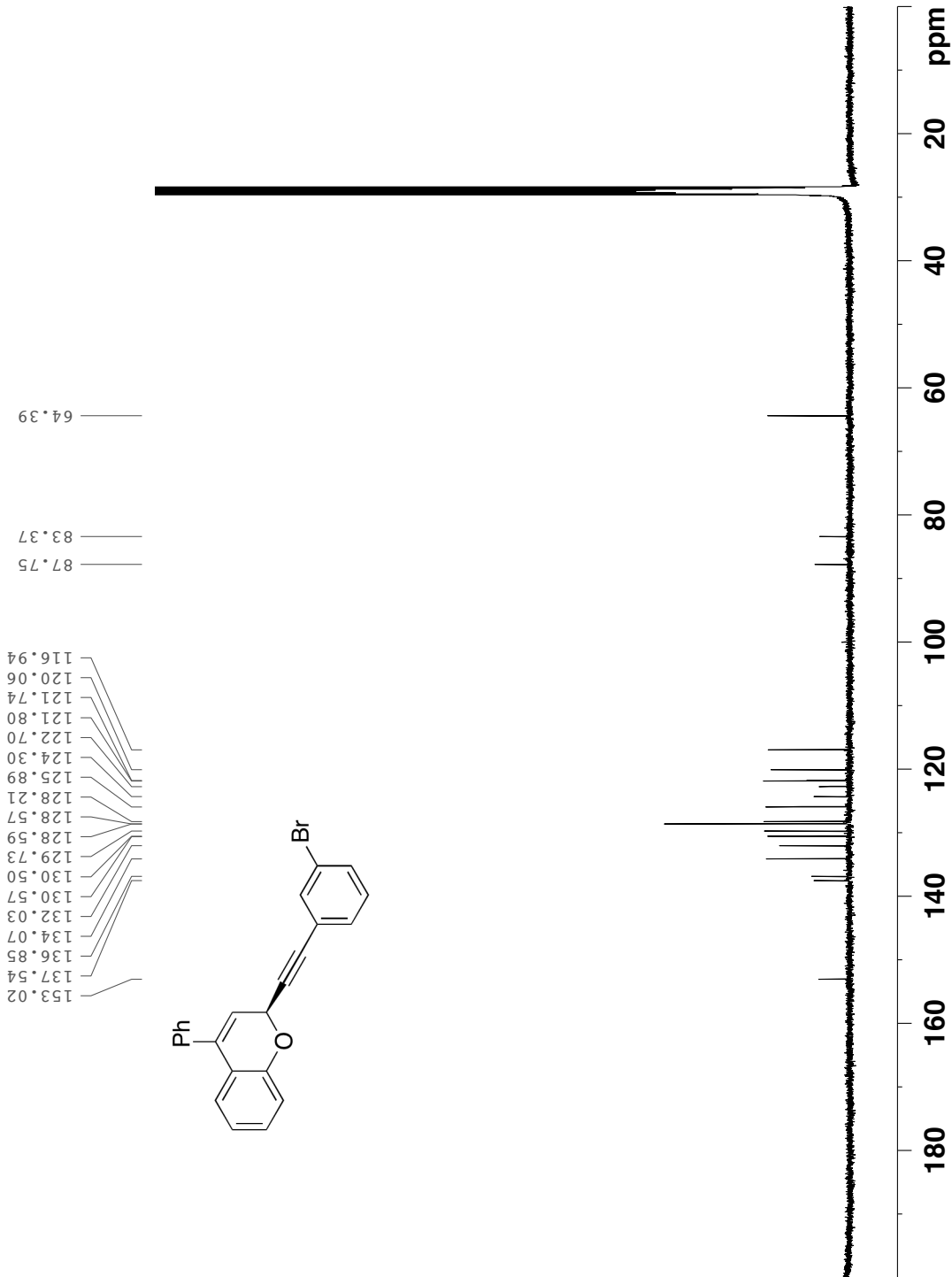
==== CHANNEL f1 =====  
 NUC1 1H  
 P1 15.00 usec  
 PL1 4.90 dB  
 PL1W 3.30822015 W  
 SFO1 400.1324710 MHz

F2 - Processing parameters  
 SI 32768  
 SF 400.1300090 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00





Compound 8es 13C NMR



Current Data Parameters  
NAME HH-3-222Ars  
EXPNO 2  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120806  
Time\_ 1.44  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zgpg30  
TD 65536  
SOLVENT Acetone  
NS 1024  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664756 sec  
RG 512  
DW 20.850 usec  
DE 18.00 usec  
TE 298.1 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TDO 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 9.25 usec  
PL1 0.55 dB  
PL1W 35.18820572 W  
SFO1 100.6228298 MHz

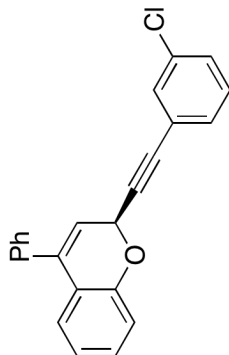
==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.08120718 W  
SFO2 400.1316005 MHz

F2 - Processing parameters  
SI 32768  
SF 100.6127690 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

Compound 8et 1H NMR



7.484  
7.472  
7.460  
7.444  
7.429  
7.416  
7.403  
7.388  
7.376  
7.365  
7.277  
7.264  
7.251  
7.054  
7.042  
7.013  
7.000  
6.973  
6.960  
6.948  
5.992  
5.984  
5.977  
5.970

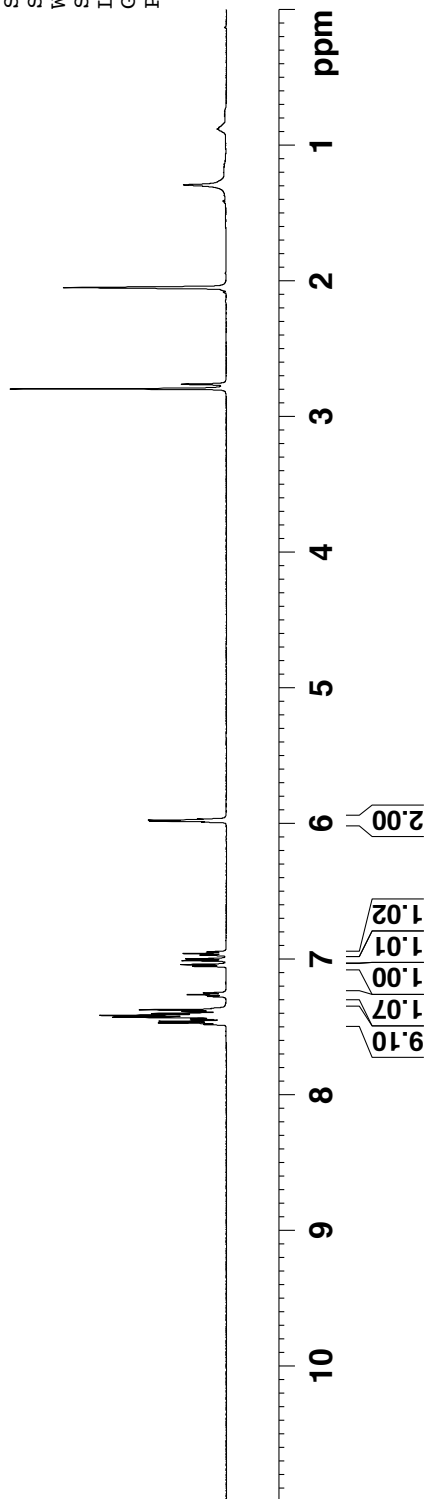


Current Data Parameters  
 NAME HH-3-196AlAug1  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120731  
 Time\_ 23.30  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB/  
 PULPROG zg30  
 TD 65536  
 SOLVENT Acetone  
 NS 8  
 DS 2  
 SWH 8403.361 Hz  
 FIDRES 0.128225 Hz  
 AQ 3.8994420 sec  
 RG 181  
 DW 59.500 usec  
 DE 17.39 usec  
 TE 300.2 K  
 D1 1.00000000 sec  
 TD0 1

==== CHANNEL f1 =====  
 SFO1 600.3233018 MHz  
 NUC1 1H  
 P1 10.77 usec

F2 - Processing parameters  
 SI 65536  
 SF 600.3200115 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00

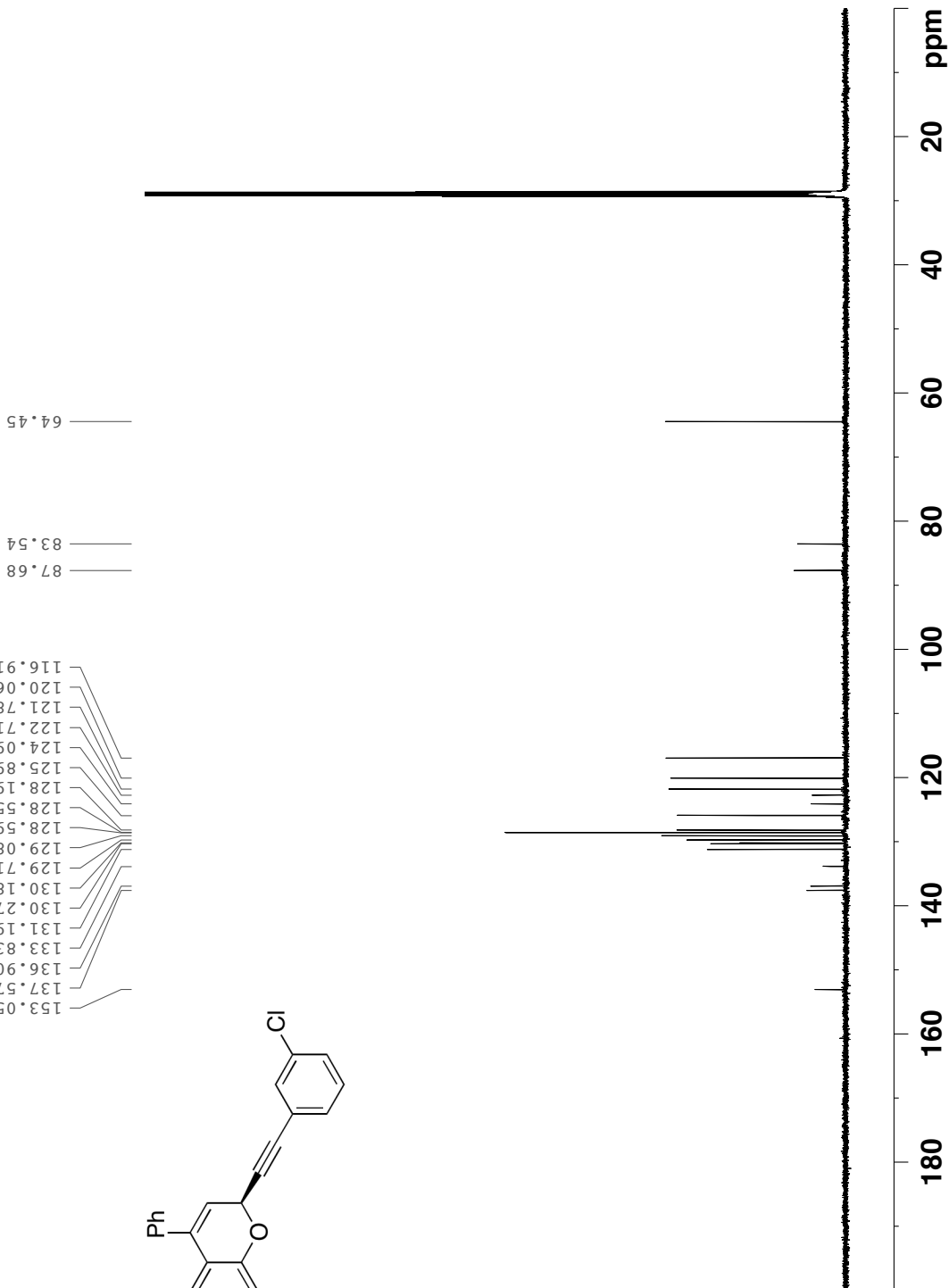
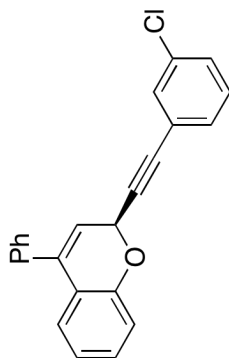




Compound 8et 13C NMR

153.05  
137.57  
136.90  
133.83  
133.83  
131.19  
130.27  
130.18  
129.71  
129.08  
128.59  
128.55  
128.19  
125.89  
124.09  
122.71  
121.78  
120.06  
116.91

87.68  
83.54  
64.45



Current Data Parameters  
NAME HH-3-196AlAug1  
EXPNO 2  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120801  
Time\_ 2.00  
INSTRUM spect  
PROBHD 5 mm PABBO BB/  
PULPROG zgpg55  
TD 65536  
SOLVENT Acetone  
NS 2048  
DS 4  
SWH 34722.223 Hz  
FIDRES 0.529819 Hz  
AQ 0.9437684 sec  
RG 2050  
DW 14.400 usec  
DE 19.34 usec  
TE 300.2 K  
D1 1.10000002 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
SF01 150.9656784 MHz  
NUC1 13C  
P1 10.63 usec

F2 - Processing parameters  
SI 32768  
SF 150.9505840 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



Compound 8eu 13C NMR

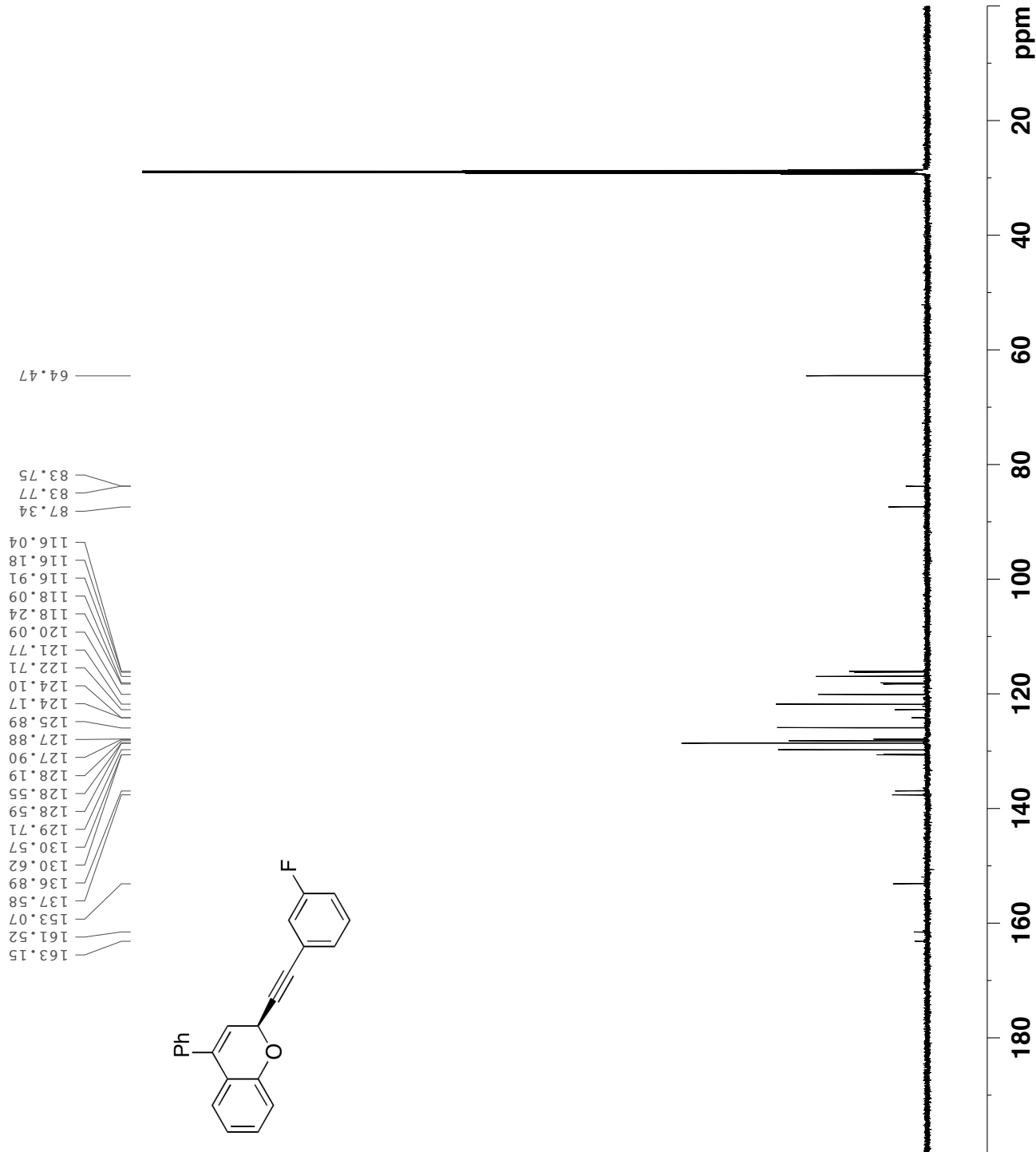


Current Data Parameters  
 NAME HH-3-200A1\_2  
 EXPNO 2  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120802  
 Time\_ 1.19  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB/  
 PULPROG zgpg55  
 TD 65536  
 SOLVENT Acetone  
 NS 256  
 DS 4  
 SWH 34722.223 Hz  
 FIDRES 0.529819 Hz  
 AQ 0.9437684 sec  
 RG 2050  
 DW 14.400 usec  
 DE 19.34 usec  
 TE 300.2 K  
 D1 1.10000002 sec  
 D11 0.03000000 sec  
 TD0 1

==== CHANNEL f1 =====  
 SF01 150.9656784 MHz  
 NUC1 13C  
 P1 10.63 usec

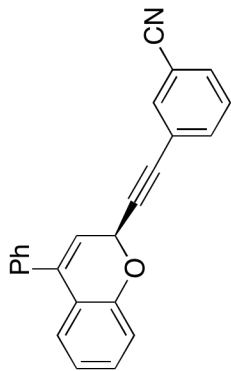
F2 - Processing parameters  
 SI 32768  
 SF 150.9505840 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40





Compound 8ev 1H NMR

7.815  
7.793  
7.780  
7.736  
7.723  
7.609  
7.596  
7.583  
7.486  
7.474  
7.462  
7.447  
7.435  
7.417  
7.405  
7.282  
7.270  
7.257  
7.058  
7.045  
7.020  
7.006  
6.979  
6.967  
6.955  
6.905  
6.005  
5.995  
5.987



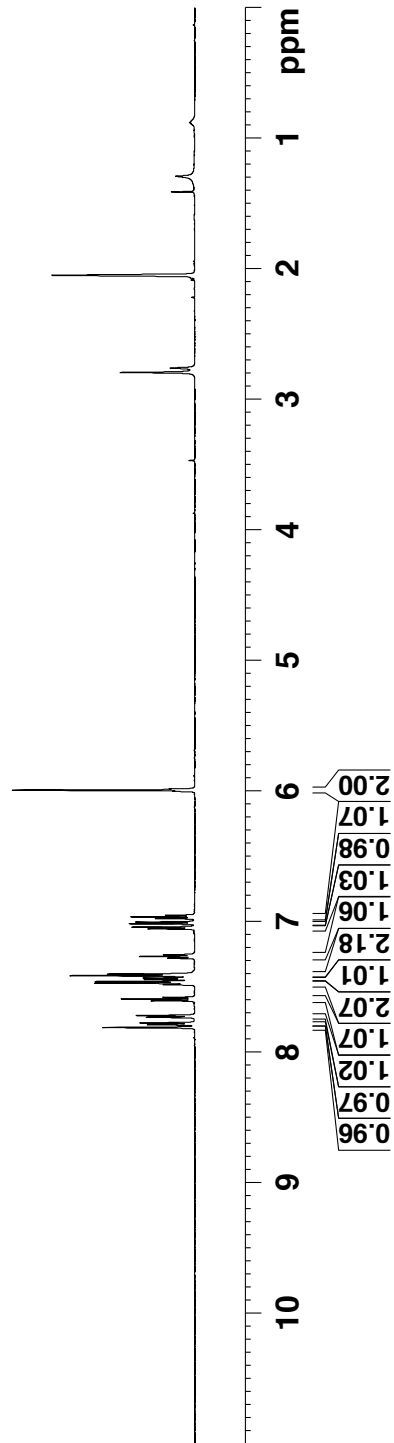
F2 - Acquisition Parameters

Date\_ 20120801  
Time\_ 12.13  
INSTRUM spect  
PROBHD 5 mm PABBO BB/  
PULPROG zg30  
TD 65536  
SOLVENT Acetone  
NS 8  
DS 2  
SWH 8403.361 Hz  
FIDRES 0.128225 Hz  
AQ 3.8994420 sec  
RG 161  
DW 59.500 usec  
DE 17.39 usec  
TE 300.2 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
SFO1 600.3233018 MHz  
NUC1 1H  
P1 10.77 usec

F2 - Processing parameters

SI 65536  
SF 600.3200111 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00





Compound 8ev 13C NMR



Current Data Parameters  
NAME HH-3-222Blaugl  
EXPNO 2  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120801  
Time\_ 12.45  
INSTRUM spect  
PROBHD 5 mm PABBO BB/  
PULPROG zgpg55  
TD 65536  
SOLVENT Acetone  
NS 256  
DS 4  
SWH 34722.223 Hz  
FIDRES 0.529819 Hz  
AQ 0.9437684 sec  
RG 2050  
DW 14.400 usec  
DE 19.34 usec  
TE 300.2 K  
D1 1.10000002 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
SF01 150.9656784 MHz  
NUC1 13C  
P1 10.63 usec

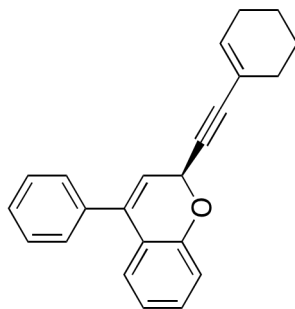
F2 - Processing parameters  
SI 32768  
SF 150.9505840 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



Compound 8e1 1H NMR



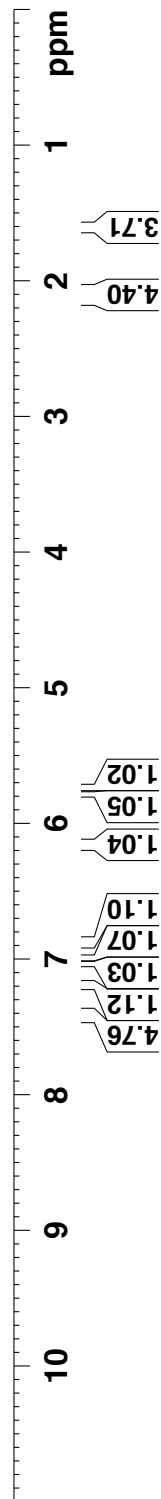
7.408  
7.404  
7.398  
7.386  
7.380  
7.372  
7.356  
7.351  
7.213  
7.209  
7.191  
7.175  
7.171  
7.045  
7.042  
7.026  
7.022  
7.000  
6.981  
6.907  
6.888  
6.870  
6.150  
6.145  
6.141  
6.136  
6.131  
5.792  
5.782  
5.742  
5.731  
2.093  
2.083  
2.078  
2.062  
1.619  
1.611  
1.606  
1.596  
1.592  
1.577  
1.553  
1.546  
1.539



F2 - Acquisition Parameters  
Date\_ 20120814  
Time\_ 18.20  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8278.146 Hz  
FIDRES 0.126314 Hz  
AQ 3.9584243 sec  
RG 10.1  
DW 60.400 usec  
DE 6.00 usec  
TE 298.2 K  
D1 1.00000000 sec  
TD0 1

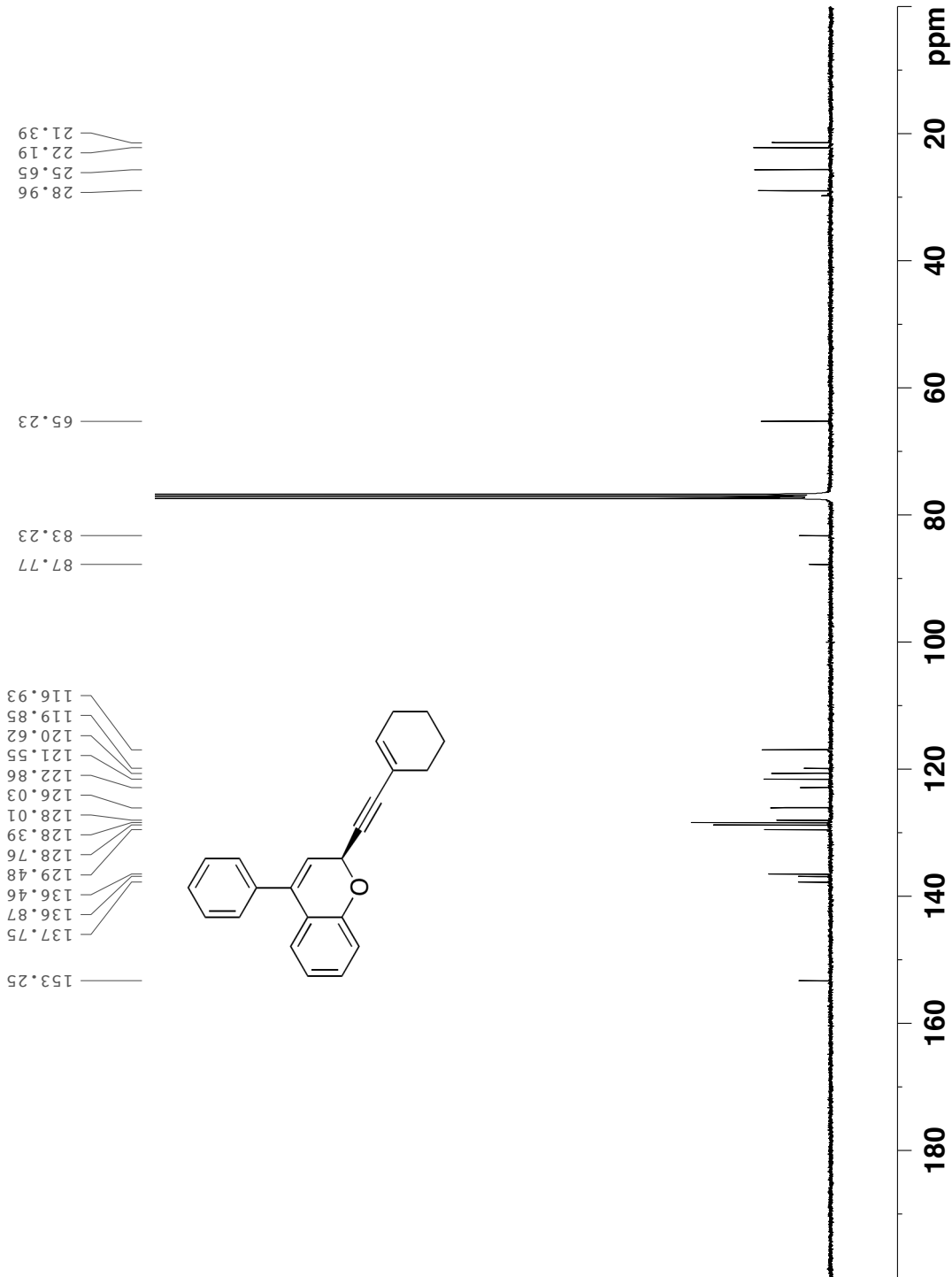
==== CHANNEL f1 =====  
NUC1 1H  
P1 15.00 usec  
PL1 4.90 dB  
PL1W 3.30822015 W  
SFO1 400.1324710 MHz

F2 - Processing parameters  
SI 32768  
SF 400.1300098 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00





Compound 8e1 13C NMR



Current Data Parameters  
NAME HH-3-256A2\_2  
EXPNO 2  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120814  
Time 18.50  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 500  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664756 sec  
RG 512  
DW 20.850 usec  
DE 18.00 usec  
TE 298.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

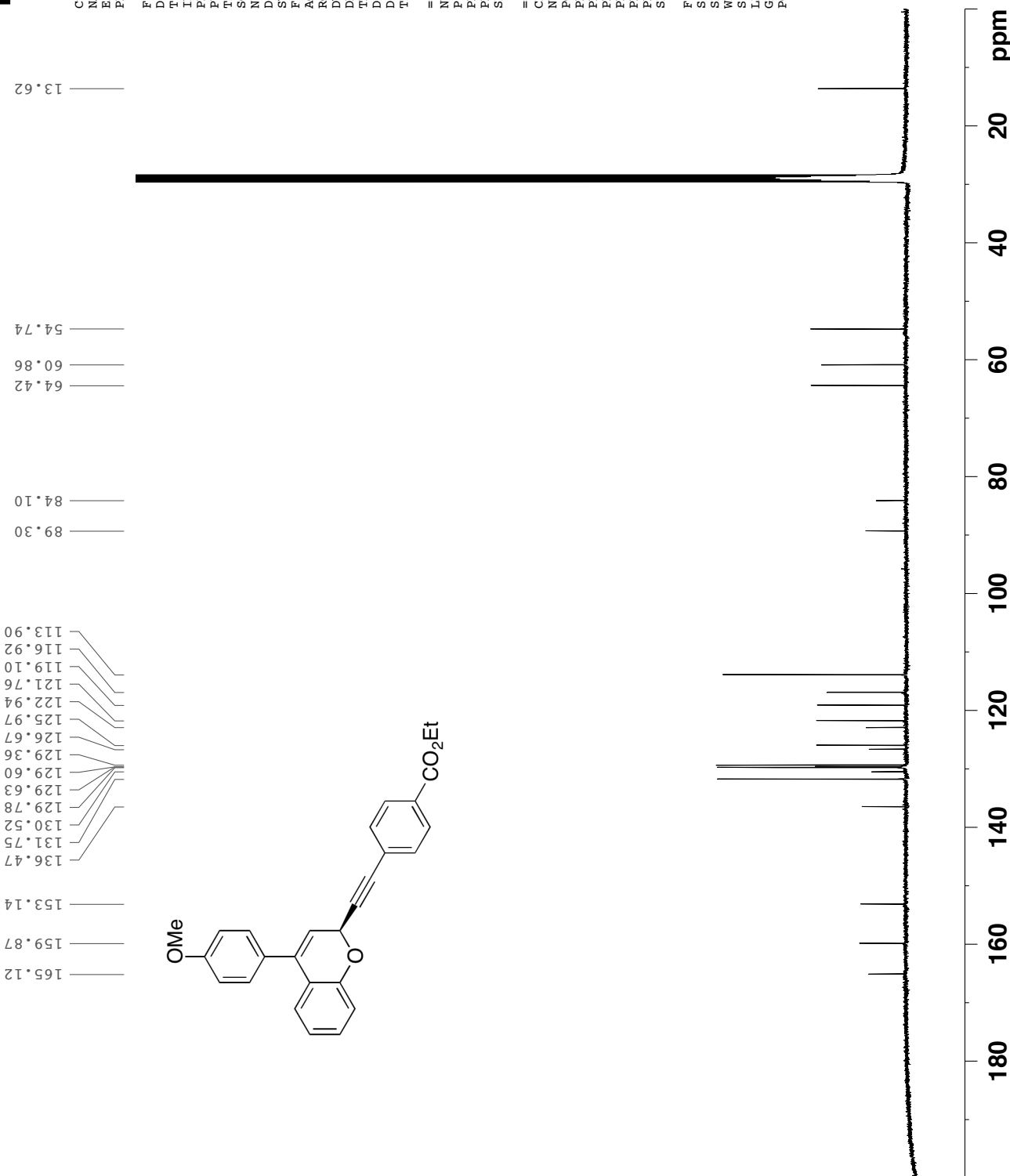
==== CHANNEL f1 =====  
NUC1 13C  
P1 9.25 usec  
PL1 0.55 dB  
PL1W 35.18820572 W  
SFO1 100.6228298 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.08120718 W  
SFO2 400.1316005 MHz

F2 - Processing parameters  
SI 32768  
SF 100.6127690 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



Compound 8fw 13C NMR



Current Data Parameters  
 NAME HH-3-2402frs\_2  
 EXPNO 2  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120807  
 Time\_ 3.11

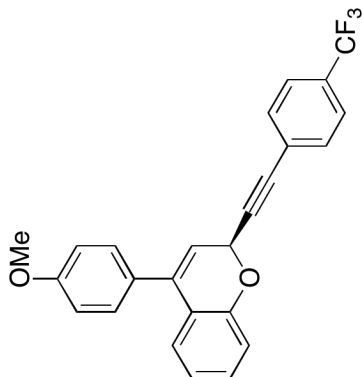
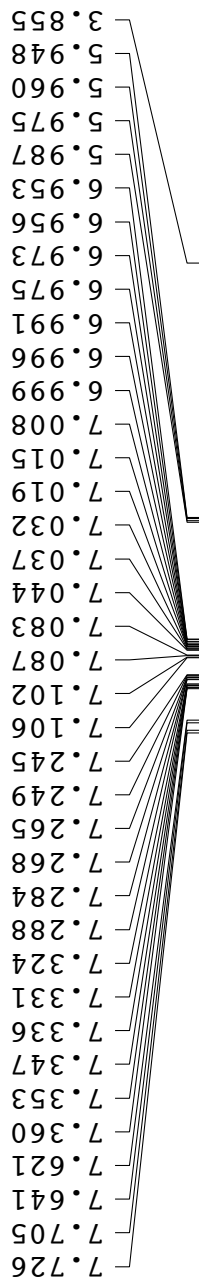
INSTRUM spect  
 PROBHD 5 mm CPQNP 1H/  
 PULPROG zgpg30  
 TD 65536  
 SOLVENT Acetone  
 NS 1024  
 DS 4  
 SWH 23980.814 Hz  
 FIDRES 0.365918 Hz  
 AQ 1.3664756 sec  
 RG 512  
 DW 20.850 usec  
 DE 18.00 usec  
 TE 298.2 K  
 D1 2.00000000 sec  
 D11 0.03000000 sec  
 TD0 1

==== CHANNEL f1 =====  
 NUC1 13C  
 P1 9.25 usec  
 PL1 0.55 dB  
 PL1W 35.18820572 W  
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====  
 CPDPRG2 waltz16  
 NUC2 1H  
 PCPD2 90.00 usec  
 PL2 4.90 dB  
 PL12 20.46 dB  
 PL13 21.00 dB  
 PL2W 3.30822015 W  
 PL12W 0.09195905 W  
 PL13W 0.08120718 W  
 SFO2 400.1316005 MHz

F2 - Processing parameters  
 SI 32768  
 SF 100.6127690 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

Compound 8fj 1H NMR

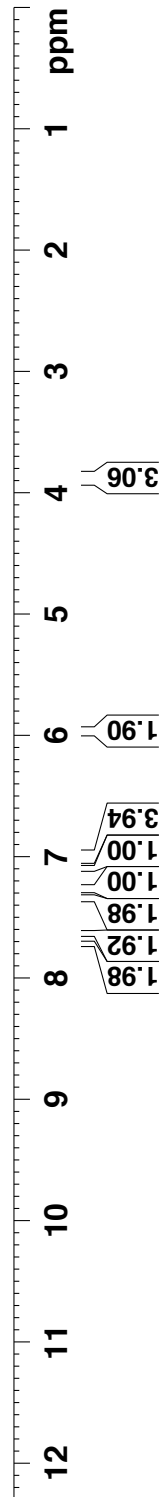


Current Data Parameters  
 NAME HH-3-233D1  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120723  
 Time 12.45  
 INSTRUM spect  
 PROBHD 5 mm CPQNP 1H/  
 PULPROG zg30  
 TD 65536  
 SOLVENT Acetone  
 NS 16  
 DS 2  
 SWH 8278.146 Hz  
 FIDRES 0.126314 Hz  
 AQ 3.9584243 sec  
 RG 11.3  
 DW 60.400 usec  
 DE 6.00 usec  
 TE 298.2 K  
 D1 1.00000000 sec  
 TDO 1

===== CHANNEL f1 =====  
 NUC1 1H  
 P1 15.00 usec  
 PL1 4.90 dB  
 PL1W 3.30822015 W  
 SF01 400.1324710 MHz

F2 - Processing parameters  
 SI 32768  
 SF 400.1300067 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00



Compound 8fj 13C NMR



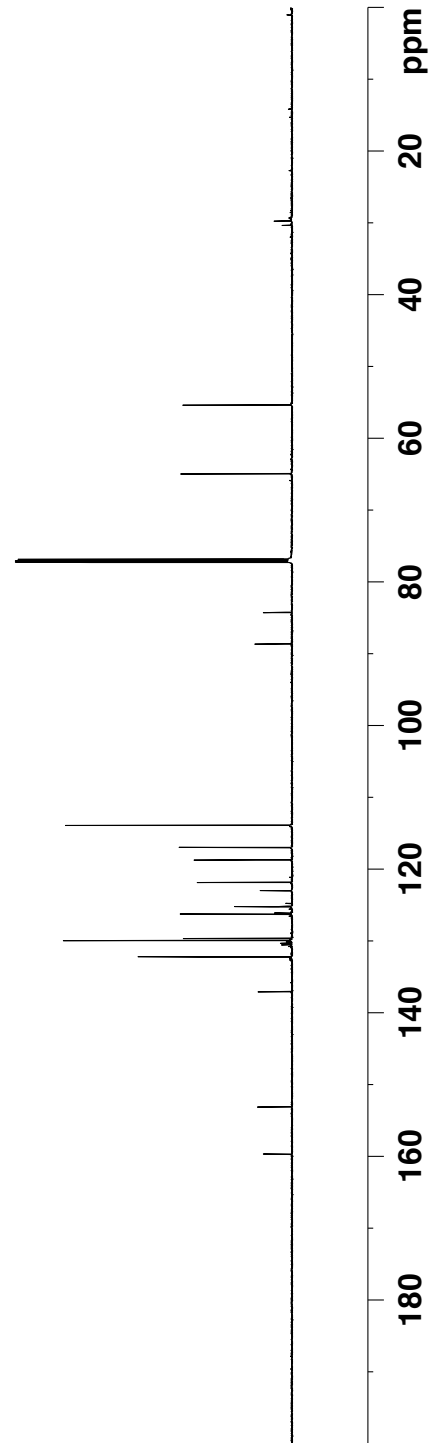
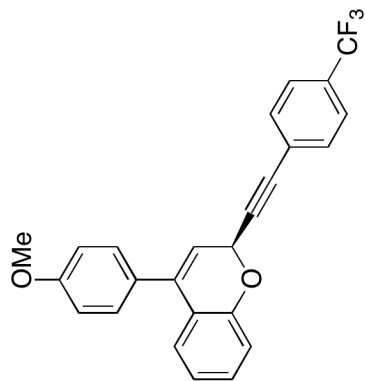
Current Data Parameters  
 NAME HH-3-233D sep8  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120908  
 Time\_ 22.03  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB/  
 PULPROG zgpg55  
 TD 65536  
 SOLVENT CDCl3  
 NS 5000  
 DS 4  
 SWH 34722.223 Hz  
 FIDRES 0.529819 Hz  
 AQ 0.9437684 sec  
 RG 2050  
 DW 14.400 usec  
 DE 19.34 usec  
 TE 298.0 K  
 D1 1.10000002 sec  
 D11 0.03000000 sec  
 TD0 1

==== CHANNEL f1 =====  
 SF01 150.9656784 MHz  
 NUC1 13C  
 P1 10.63 usec

F2 - Processing parameters  
 SI 32768  
 SF 150.9505840 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

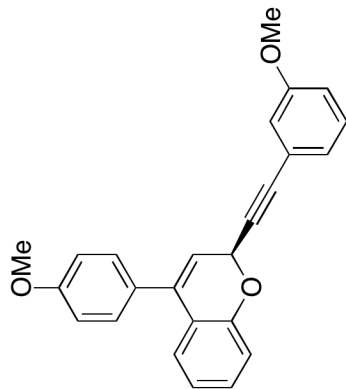
159.64  
 153.09  
 137.05  
 132.20  
 130.73  
 130.51  
 130.29  
 130.07  
 129.92  
 129.87  
 129.63  
 126.54  
 126.24  
 126.09  
 125.22  
 125.20  
 125.18  
 125.15  
 124.74  
 122.99  
 122.93  
 121.82  
 121.13  
 118.69  
 116.95  
 113.87  
 88.62  
 84.24  
 64.95  
 55.36



Compound 8fx 1H NMR



7.361  
7.350  
7.344  
7.337  
7.296  
7.291  
7.287  
7.277  
7.273  
7.269  
7.260  
7.253  
7.249  
7.114  
7.109  
7.094  
7.090  
7.059  
7.051  
7.046  
7.035  
7.029  
7.021  
7.019  
7.006  
7.003  
7.001  
6.998  
6.993  
6.987  
6.984  
6.977  
6.975  
6.961  
6.955  
6.953  
5.956  
5.944  
5.932  
5.870  
5.801

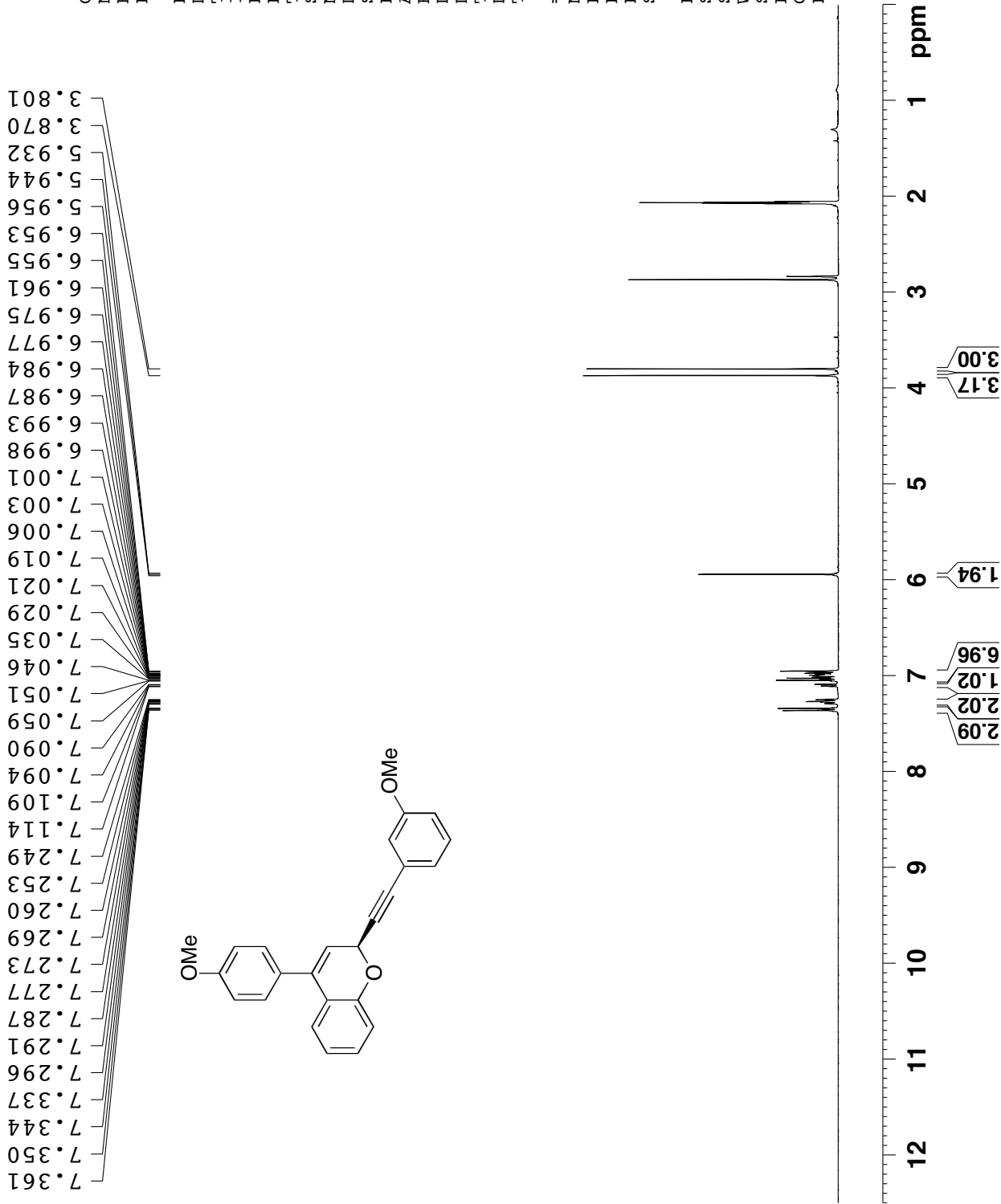


Current Data Parameters  
 NAME HH-3-233B2  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120723  
 Time\_ 15.46  
 INSTRUM spect  
 PROBHD 5 mm CPQNP 1H/  
 PULPROG zg30  
 TD 65536  
 SOLVENT Acetone  
 NS 16  
 DS 2  
 SWH 8278.146 Hz  
 FIDRES 0.126314 Hz  
 AQ 3.9584243 sec  
 RG 10.1  
 DW 60.400 usec  
 DE 6.00 usec  
 TE 298.1 K  
 D1 1.00000000 sec  
 TD0 1

==== CHANNEL f1 =====  
 NUC1 1H  
 P1 15.00 usec  
 PL1 4.90 dB  
 PL1W 3.30822015 W  
 SFO1 400.1324710 MHz

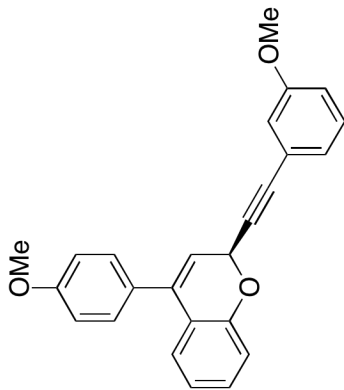
F2 - Processing parameters  
 SI 32768  
 SF 400.1300000 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00



Compound 8fx 13C NMR



159.53  
159.19  
153.25  
136.76  
129.98  
129.94  
129.53  
129.33  
126.16  
124.52  
123.19  
123.06  
121.69  
119.30  
116.96  
116.64  
115.42  
113.81  
85.92  
85.64  
65.13  
55.36  
55.31



Current Data Parameters  
 NAME HH-3-233B2 dec29  
 EXPNO 2  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20131229  
 Time 20.41  
 INSTRUM spect  
 PROBD 5 mm CPQNP 1H/  
 PULPROG zgpg30  
 TD 65536  
 SOLVENT CDC13  
 NS 1024  
 DS 4  
 SWH 23980.814 Hz  
 FIDRES 0.365918 Hz  
 AQ 1.3664756 sec  
 RG 512  
 DW 20.850 usec  
 DE 18.00 usec  
 TE 298.2 K  
 D1 2.00000000 sec  
 D11 0.03000000 sec  
 TD0 1

==== CHANNEL f1 =====  
 NUC1 13C  
 P1 9.25 usec  
 PL1 0.55 dB  
 PL1W 35.18820572 W  
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====  
 CPDPRG2 waltz16  
 NUC2 1H  
 PCPD2 90.00 usec  
 PL2 4.90 dB  
 PL12 20.46 dB  
 PL13 21.00 dB  
 PL2W 3.30822015 W  
 PL12W 0.09195905 W  
 PL13W 0.08120718 W  
 SFO2 400.1316005 MHz

F2 - Processing parameters  
 SI 32768  
 SF 100.6127690 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

180 160 140 120 100 80 60 40 20 ppm



Compound 8ft 1H NMR

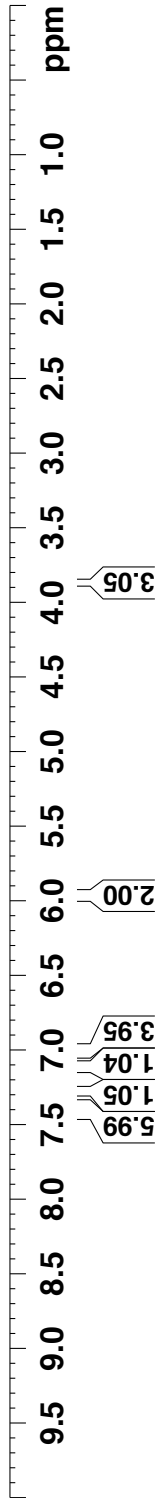
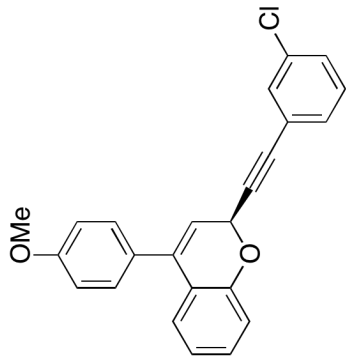


7.459  
7.454  
7.446  
7.437  
7.434  
7.428  
7.425  
7.421  
7.413  
7.407  
7.393  
7.389  
7.387  
7.384  
7.375  
7.371  
7.362  
7.350  
7.338  
7.297  
7.278  
7.277  
7.274  
7.273  
7.258  
7.254  
7.115  
7.111  
7.096  
7.092  
7.058  
7.045  
7.034  
7.023  
7.005  
7.003  
7.000  
6.984  
6.981  
6.965  
6.962  
6.970  
5.946

F2 - Acquisition Parameters  
 Date\_ 20120521  
 Time\_ 14.34  
 INSTRUM spect  
 PROBHD 5 mm CPQNP 1H/  
 PULPROG zg30  
 TD 65536  
 SOLVENT Acetone  
 NS 16  
 DS 2  
 SWH 8278.146 Hz  
 FIDRES 0.126314 Hz  
 AQ 3.9584243 sec  
 RG 11.3  
 DW 60.400 usec  
 DE 6.00 usec  
 TE 298.2 K  
 D1 1.00000000 sec  
 TD0 1

==== CHANNEL f1 =====  
 NUC1 1H  
 P1 15.00 usec  
 PL1 4.90 dB  
 PL1W 3.30822015 W  
 SFO1 400.1324710 MHz

F2 - Processing parameters  
 SI 32768  
 SF 400.1300000 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00

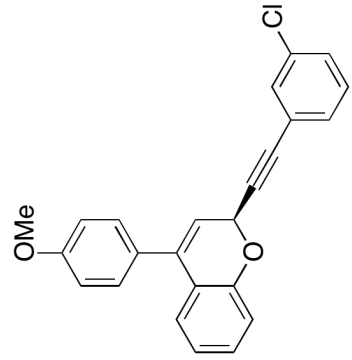


Compound 8ft 13C NMR



159.87  
153.14  
136.44  
133.81  
131.17  
130.30  
130.18  
129.78  
129.62  
129.61  
129.07  
125.95  
124.09  
122.94  
121.74  
119.18  
116.90  
113.90

87.81  
83.39  
64.39  
54.74



Current Data Parameters  
 NAME HH-3-212A1  
 EXPNO 2  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120522  
 Time 0.12  
 INSTRUM spect  
 PROBHD 5 mm CPQNP 1H/  
 PULPROG zgpg30  
 TD 65536  
 SOLVENT Acetone  
 NS 1024  
 DS 4  
 SWH 23980.814 Hz  
 FIDRES 0.365918 Hz  
 AQ 1.3664756 sec  
 RG 512  
 DW 20.850 usec  
 DE 18.00 usec  
 TE 298.2 K  
 D1 2.00000000 sec  
 D11 0.03000000 sec  
 TD0 1

==== CHANNEL f1 =====  
 NUC1 13C  
 P1 9.25 usec  
 PL1 0.55 dB  
 PL1W 35.18820572 W  
 SFO1 100.6228298 MHz

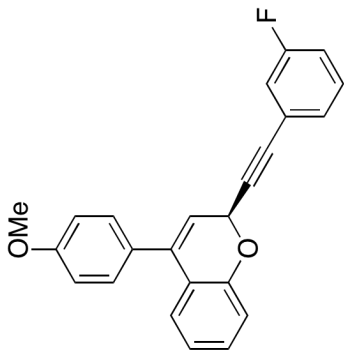
==== CHANNEL f2 =====  
 CPDPRG2 waltz16  
 NUC2 1H  
 PCPD2 90.00 usec  
 PL2 4.90 dB  
 PL12 20.46 dB  
 PL13 21.00 dB  
 PL2W 3.30822015 W  
 PL12W 0.09195905 W  
 PL13W 0.08120718 W  
 SFO2 400.1316005 MHz

F2 - Processing parameters  
 SI 32768  
 SF 100.6127690 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

Compound 8fu 1H NMR



7.450  
7.436  
7.426  
7.424  
7.413  
7.375  
7.361  
7.299  
7.285  
7.283  
7.281  
7.273  
7.268  
7.201  
7.187  
7.124  
7.111  
7.059  
7.046  
7.034  
7.021  
7.005  
6.993  
6.981  
5.986  
5.971  
5.963  
5.954  
3.885

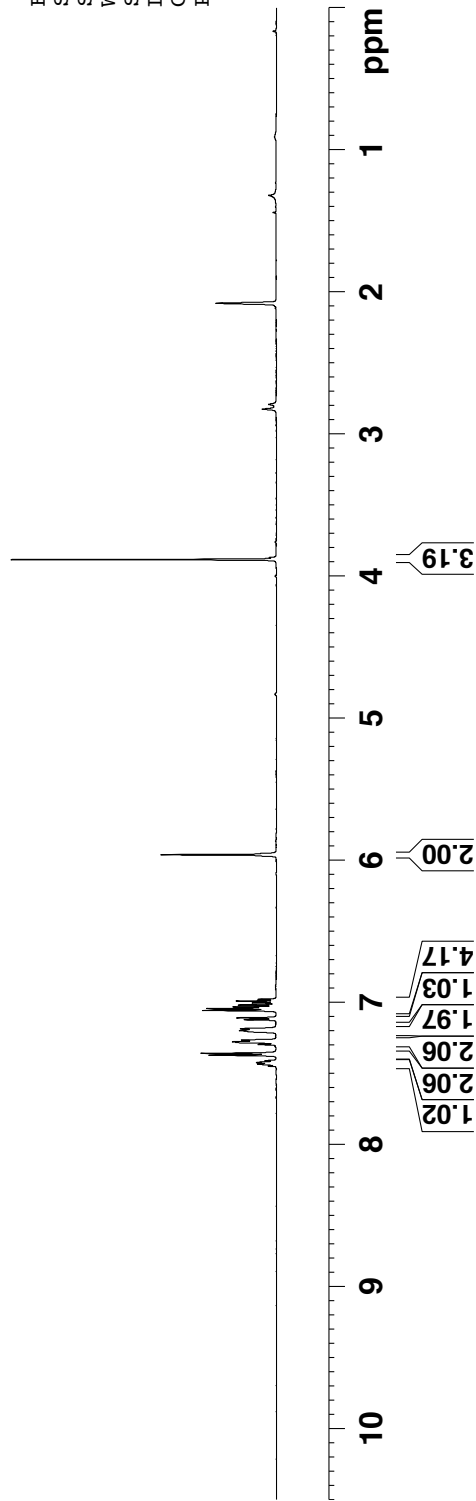


Current Data Parameters  
 NAME HH-3-212B1july31  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120731  
 Time\_ 23.23  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB/  
 PULPROG zg30  
 TD 65536  
 SOLVENT Acetone  
 NS 8  
 DS 2  
 SWH 8403.361 Hz  
 FIDRES 0.128225 Hz  
 AQ 3.8994420 sec  
 RG 144  
 DW 59.500 usec  
 DE 17.39 usec  
 TE 300.2 K  
 D1 1.00000000 sec  
 TD0 1

==== CHANNEL f1 =====  
 SFO1 600.3233018 MHz  
 NUC1 1H  
 P1 10.77 usec

F2 - Processing parameters  
 SI 65536  
 SF 600.3199926 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00



Compound 8fu 13C NMR

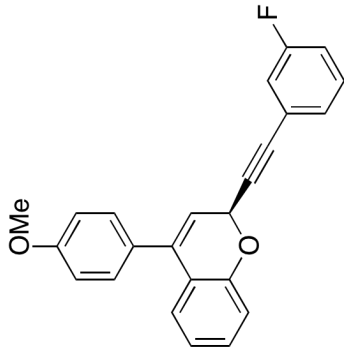
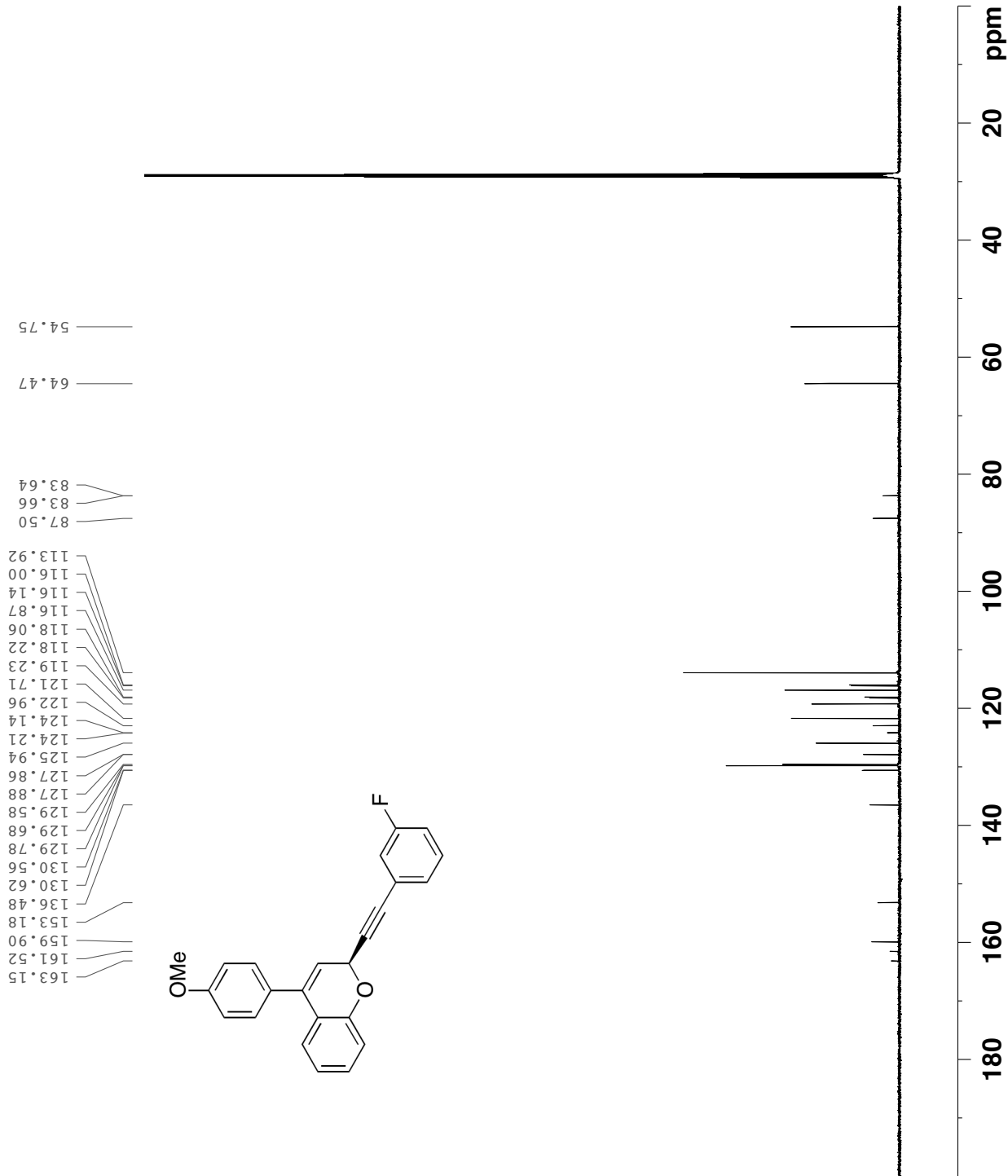


Current Data Parameters  
 NAME HH-3-212B2aug2  
 EXPNO 2  
 PROCNO 1

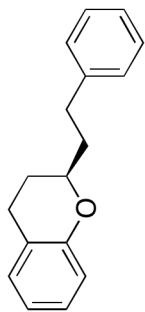
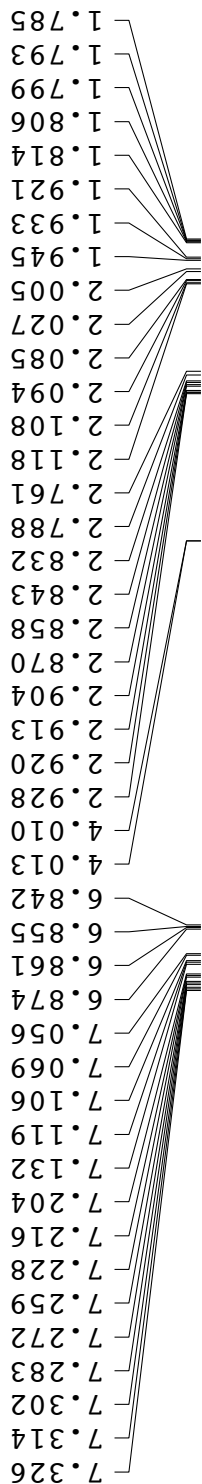
F2 - Acquisition Parameters  
 Date\_ 20120802  
 Time\_ 4.03  
 INSTRUM spect  
 PROBD 5 mm PABBO BB/  
 PULPROG zgpg55  
 TD 65536  
 SOLVENT Acetone  
 NS 2048  
 DS 4  
 SWH 34722.223 Hz  
 FIDRES 0.529819 Hz  
 AQ 0.9437684 sec  
 RG 2050  
 DW 14.400 usec  
 DE 19.34 usec  
 TE 300.2 K  
 D1 1.10000002 sec  
 D11 0.03000000 sec  
 TD0 1

==== CHANNEL f1 =====  
 SF01 150.9656784 MHz  
 NUC1 13C  
 P1 10.63 usec

F2 - Processing parameters  
 SI 32768  
 SF 150.9505840 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40



Compound 9 1H NMR

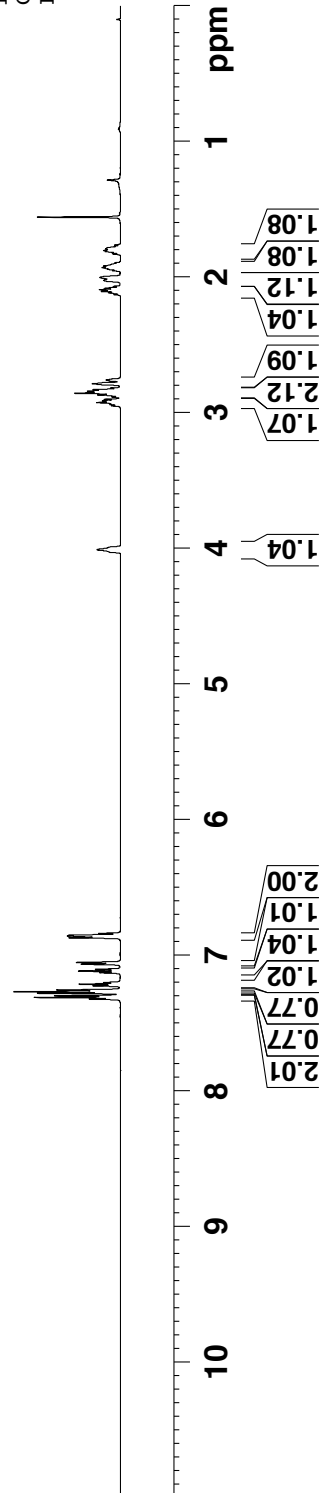


Current Data Parameters  
 NAME HH-3-248cp  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20120815  
 Time\_ 2.53  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB/  
 PULPROG zg30  
 TD 65536  
 SOLVENT CDC13  
 NS 8  
 DS 2  
 SWH 8403.361 Hz  
 FIDRES 0.128225 Hz  
 AQ 3.8994420 sec  
 RG 181  
 DW 59.500 usec  
 DE 17.39 usec  
 TE 300.2 K  
 D1 1.00000000 sec  
 TDO 1

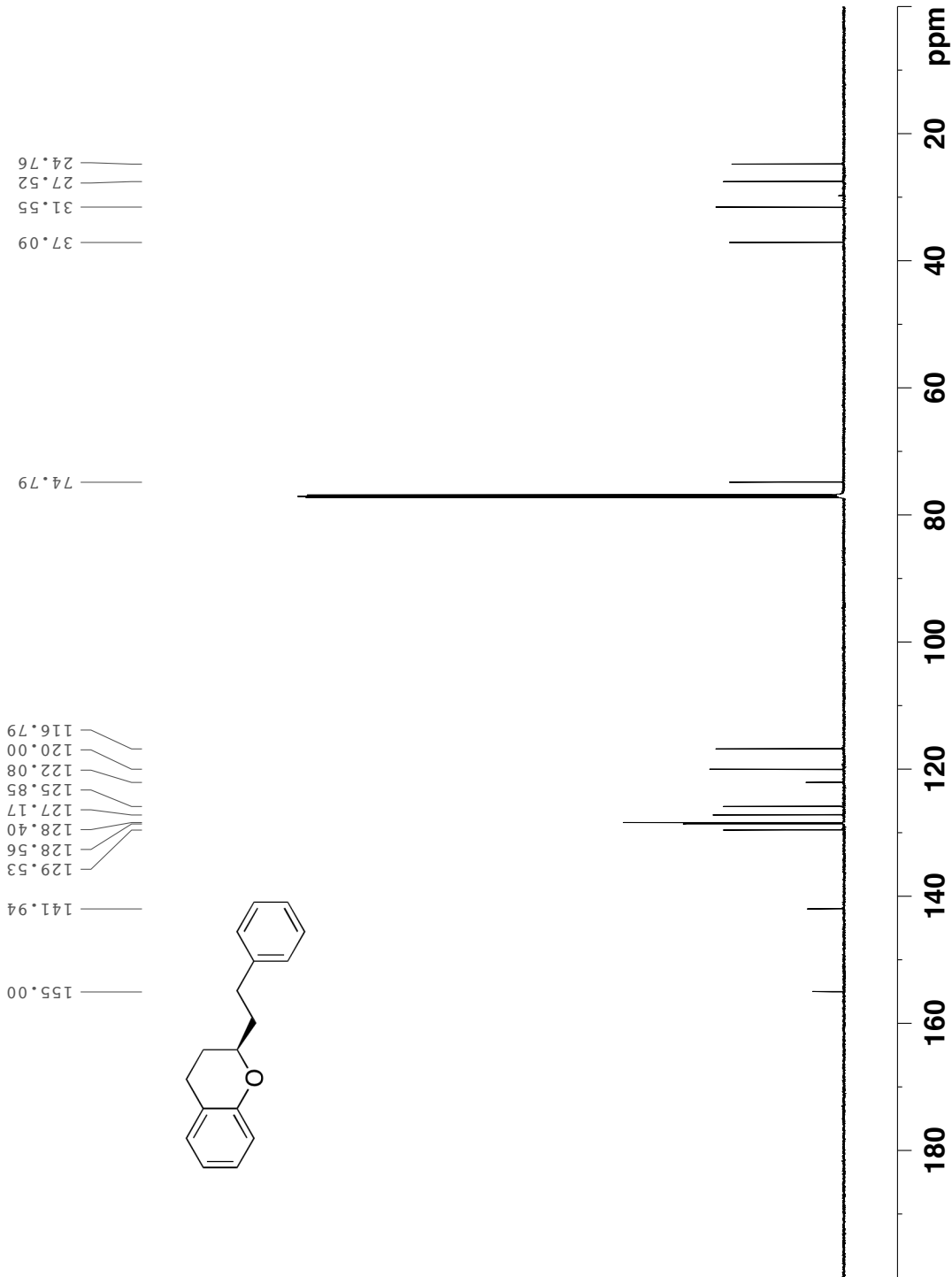
==== CHANNEL f1 =====  
 SFO1 600.3233018 MHz  
 NUC1 1H  
 P1 10.77 usec

F2 - Processing parameters  
 SI 65536  
 SF 600.3200019 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00





Compound 9 13C NMR

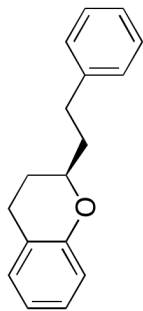


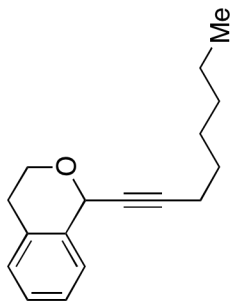
Current Data Parameters  
NAME HH-3-248cp  
EXPNO 2  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120815  
Time\_ 4.39  
INSTRUM spect  
PROBHD 5 mm PABBO BB/  
PULPROG zgpg55  
TD 65536  
SOLVENT CDC13  
NS 3000  
DS 4  
SWH 34722.223 Hz  
FIDRES 0.529819 Hz  
AQ 0.9437684 sec  
RG 2050  
DW 14.400 usec  
DE 19.34 usec  
TE 300.2 K  
D1 1.10000002 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
SF01 150.9656784 MHz  
NUC1 13C  
P1 10.63 usec

F2 - Processing parameters  
SI 32768  
SF 150.9505840 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

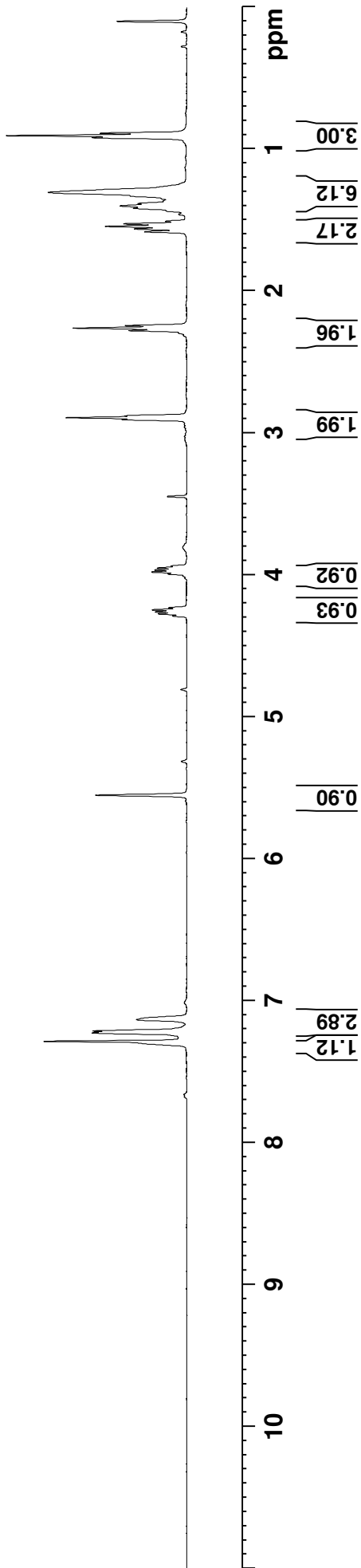




Compound 7ab 1H NMR

7.288  
7.228  
7.220  
7.213  
7.134  
5.552  
4.275  
4.260  
4.247  
4.232  
3.981  
3.966  
3.952  
2.906  
2.892  
2.879  
2.279  
2.261  
2.244  
1.583  
1.562  
1.544  
1.526  
1.417  
1.400  
1.383  
1.367  
1.304  
0.919  
0.905  
0.888

Current Data Parameters  
 NAME HH-5-219rs  
 EXENO 1  
 PROCNO 1  
 F2 - Acquisition Parameters  
 Date\_ 20140718  
 Time\_ 17:55  
 INSTRUM spect  
 PROBH1 5 mm CPQNP-1H/  
 PULPROG zg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 16  
 DS 2  
 SWH 8278.146 Hz  
 FWH 0.156318 Hz  
 FIDRES 3.9583745 sec  
 AQ 7.1  
 RG 60.400 usec  
 DW 56.00 usec  
 DE 239.2 K  
 TE 1.00000000 sec  
 D1 1  
 TD0  
 ===== CHANNEL f1 =====  
 NUC1 1H  
 P1 15.00 usec  
 PL1 4.90 dB  
 FLLW 3.30822015 W  
 SFOL 400.1324710 MHz  
 F2 - Processing Parameters  
 SI 32768  
 SF 400.1300000 MHz  
 WDW EM  
 SSB 0



HH-5-219rs  
C13CPD1024 CDC13 /opt/topspin/hari 29

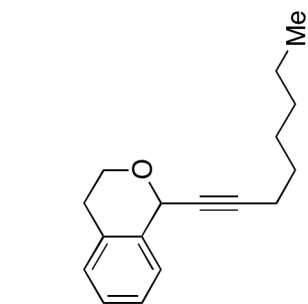


Time 1.19  
ameters 719

INSTRUM spect  
PROBHD 5 mm CPNP 1H/  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 1024  
DS 4  
SMH 23980.814 Hz  
FIDRES 0.364918 Hz  
AQ 1.3664256 sec  
RG 512  
DW 20.850 usec  
DE 18.00 usec  
TE 299.2 K  
D1 2.0000000 sec  
D11 0.0300000 sec  
TD0 1

86.71  
79.03  
67.22  
62.66

135.6  
132.6  
128.8  
127.0  
126.2  
125.9

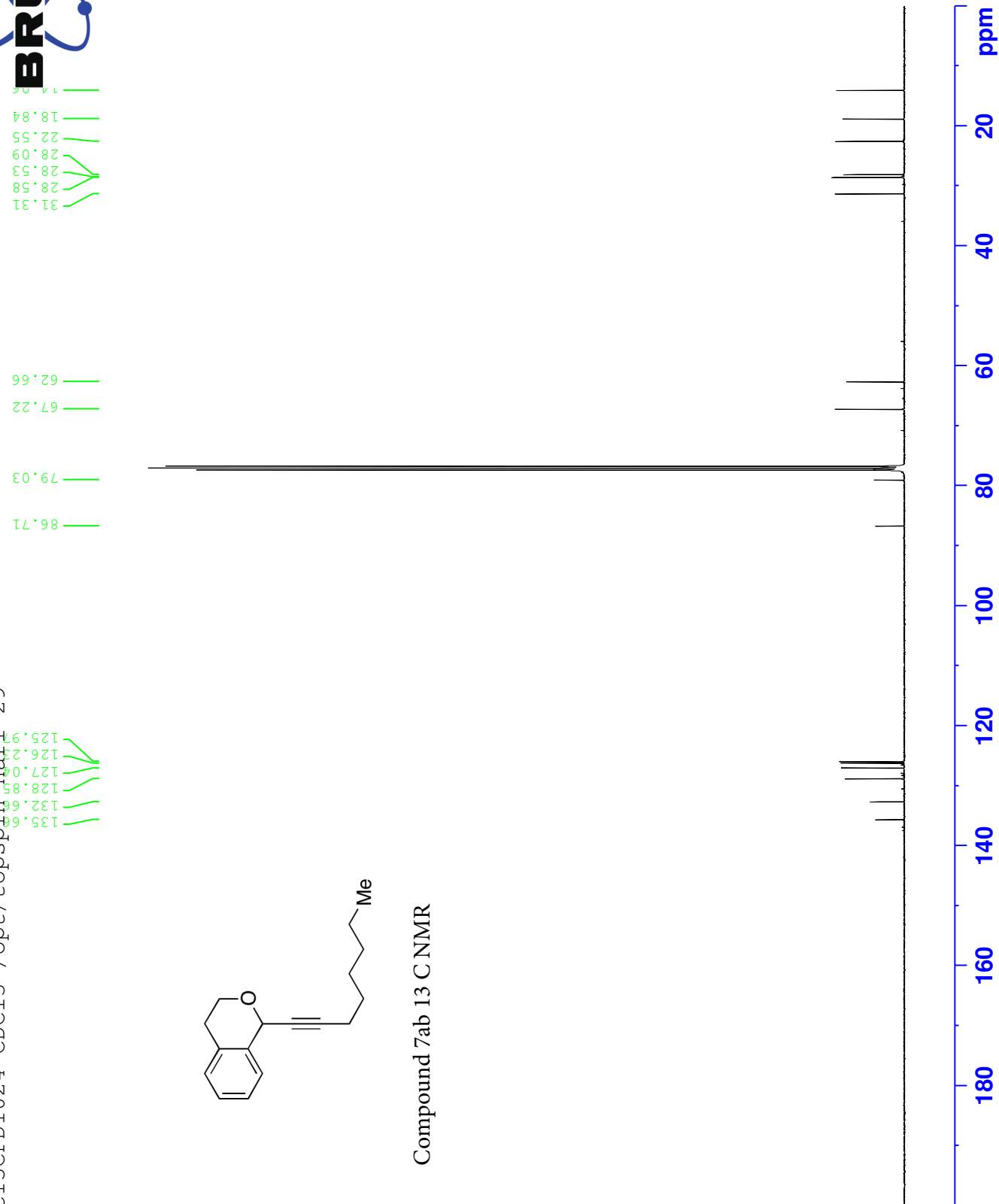


Compound 7ab 13 C NMR

==== CHANNEL f1 =====  
NUC1 13C  
P1 9.25 usec  
PL1 0.55 dB  
PL1W 35.18820572 W  
SF01 100.6228298 MHz

==== CHANNEL f2 =====  
CPDPRG[2] waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.08120718 W  
SFO2 400.1316005 MHz

F2 - Processing parameters  
SI 32768  
SF 100.6127690 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40









a Parameters  
HH-5-223rs\_2  
1  
1

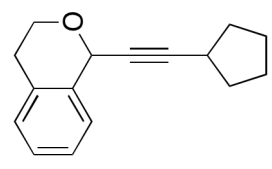
f2 - Acquisition Parameters

Date\_ 20140726  
Time 5.17  
INSTRUM spect  
PROBHD 5 mm PABBO BB/  
PULPROG zgpg35  
TD 65536  
SOLVENT CDC13  
NS 2048  
DS 4  
SWH 34722.223 Hz  
FIDRES 0.529819 Hz  
AQ 0.9437184 sec  
RG 2050  
DW 14.400 usec  
DE 19.34 usec  
TE 299.6 K  
D1 1.1000002 sec  
D11 0.0300000 sec  
TD0 1

=====  
CHANNEL f1  
SFO1 150.9656784 MHz  
NUC1 13C  
P1 10.63 usec  
PLW1 110.0000000 W

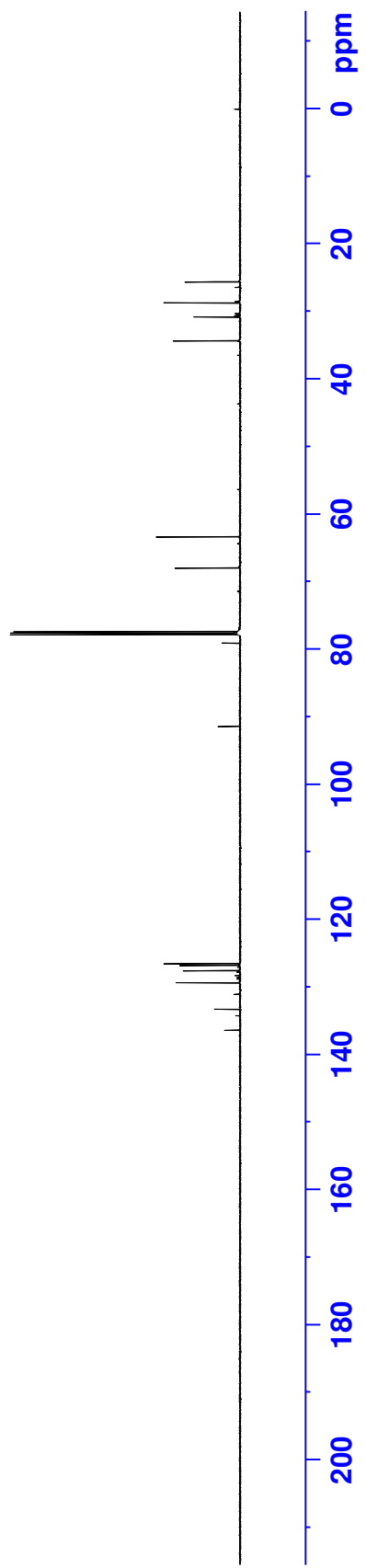
=====  
CHANNEL f2  
SFO2 600.3224013 MHz  
NUC2 1H  
CPDPRG2 waltz16  
PCPD2 70.00 usec  
PLW2 22.0000000 W  
PLW12 0.51885003 W  
PLW13 0.25424001 W

F2 - Processing parameters  
SI 32768  
SF 150.9504993 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



Compound 7ac 13C NMR

126.52  
126.76  
127.54  
129.34  
133.24  
136.36  
91.37  
79.05  
67.93  
63.34  
34.31  
30.75  
28.67  
25.55





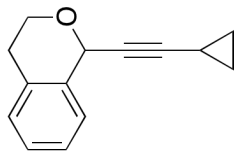
Current Data Parameters  
NAME HH-5-222f+2  
EXPNO 1  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20140722  
Time 13.08  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8278.146 Hz  
FIDRES 0.126314 Hz  
AQ 3.9583745 sec  
RG 10.1  
DW 60.400 usec  
DE 6.00 usec  
TE 298.2 K  
D1 1.00000000 sec  
TD0 1

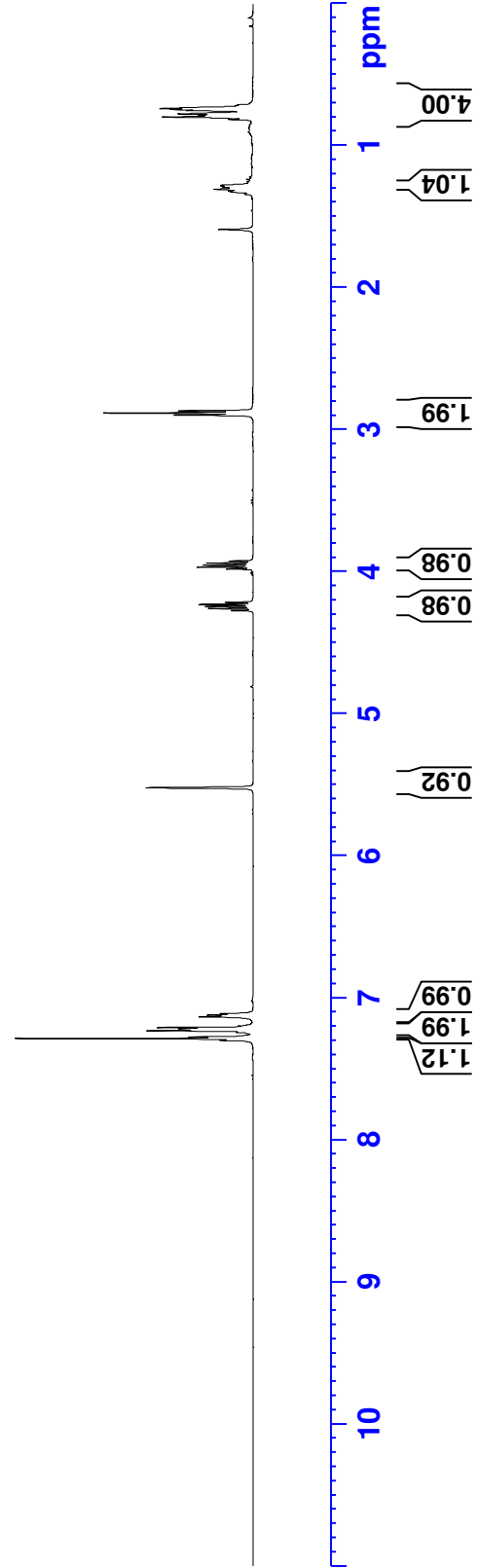
==== CHANNEL f1 =====  
NUC1 1H  
P1 15.00 usec  
PL1 4.90 dB  
PL1W 3.30822015 W  
SFO1 400.1324710 MHz

F2 - Processing parameters  
SI 32768  
SF 400.1300000 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

7.297  
7.285  
7.274  
7.230  
7.223  
7.218  
7.215  
7.207  
7.132  
7.120  
7.110  
5.519  
4.272  
4.257  
4.243  
4.228  
4.213  
3.979  
3.965  
3.951  
3.936  
3.923  
2.895  
2.880  
2.866  
1.588  
1.323  
1.317  
1.304  
1.289  
1.283  
1.277  
0.813  
0.796  
0.785



Compound 7ad 1H NMR



C13CPD2048 CDCl3 /opt/nmrdata/bari 1



Current Data Parameters  
NAME HH-5-222rs\_2  
EXPNO 1  
PROCNO 1

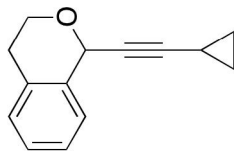
F2 - Acquisition Parameters  
Date\_ 20140726  
Time 4.02  
INSTRUM spect  
PROBHD 5 mm PABBO BB/  
PULPROG zgpg55  
TD 65536  
SOLVENT CDCl3  
NS 2048  
DS 4  
SWH 34722.223 Hz  
FIDRES 0.529819 Hz  
AQ 0.9437184 sec  
RG 2050  
DW 14.400 usec  
DE 19.34 usec  
TE 299.6 K  
D1 1.10000002 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
SFO1 150.9656784 MHz  
NUC1 13C  
P1 10.63 usec  
PLW1 110.0000000 W

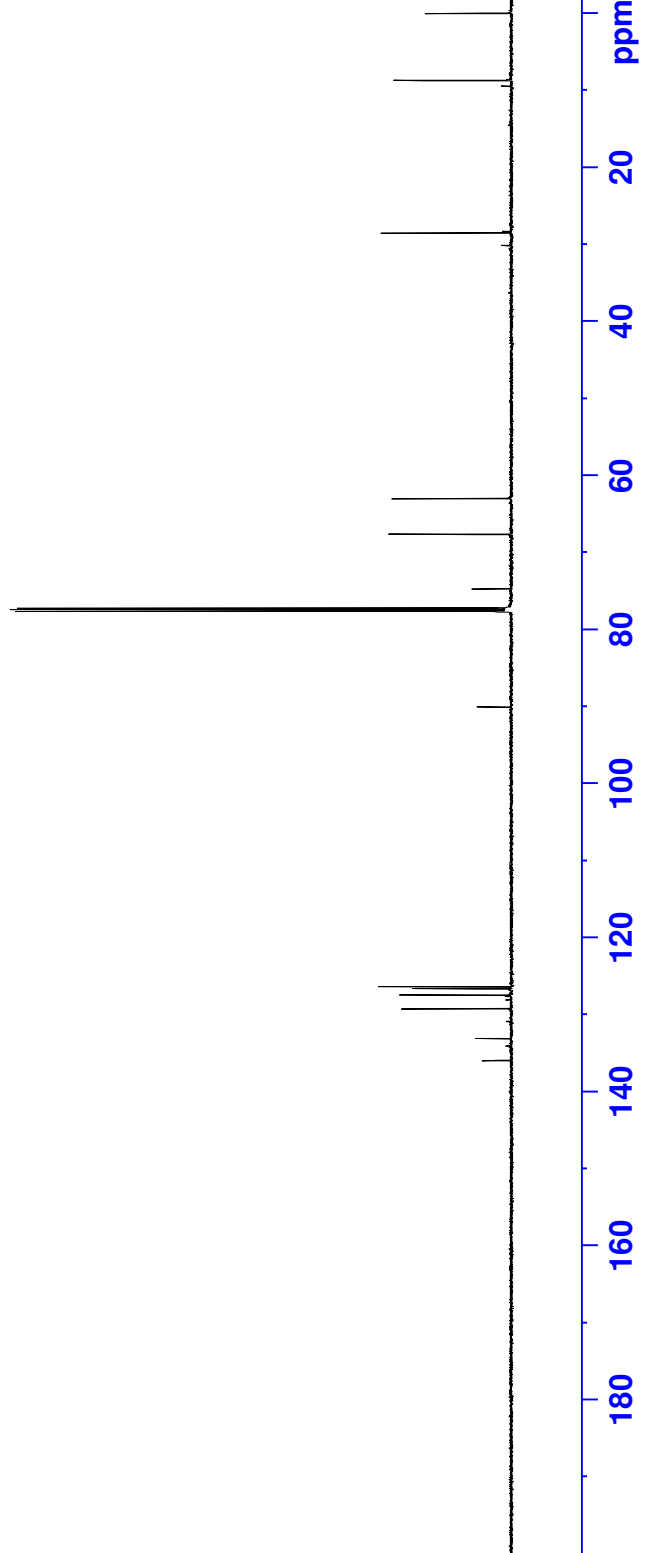
==== CHANNEL f2 =====  
SFO2 600.3224013 MHz  
NUC2 1H  
CPDPRG[2] waltz16  
PCPD2 70.00 usec  
PLW2 22.00000000 W  
PLW12 0.51885003 W  
PLW13 0.25424001 W

F2 - Processing parameters  
SI 32768  
SF 150.9505161 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

90.09  
74.76  
67.66  
63.03  
28.52  
8.75  
8.69  
-0.00



Compound 7ad 13C NMR



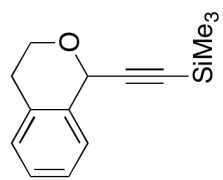


Current Data Parameters  
NAME HH-5-220rs  
EXPNO 1  
PROCNO 1

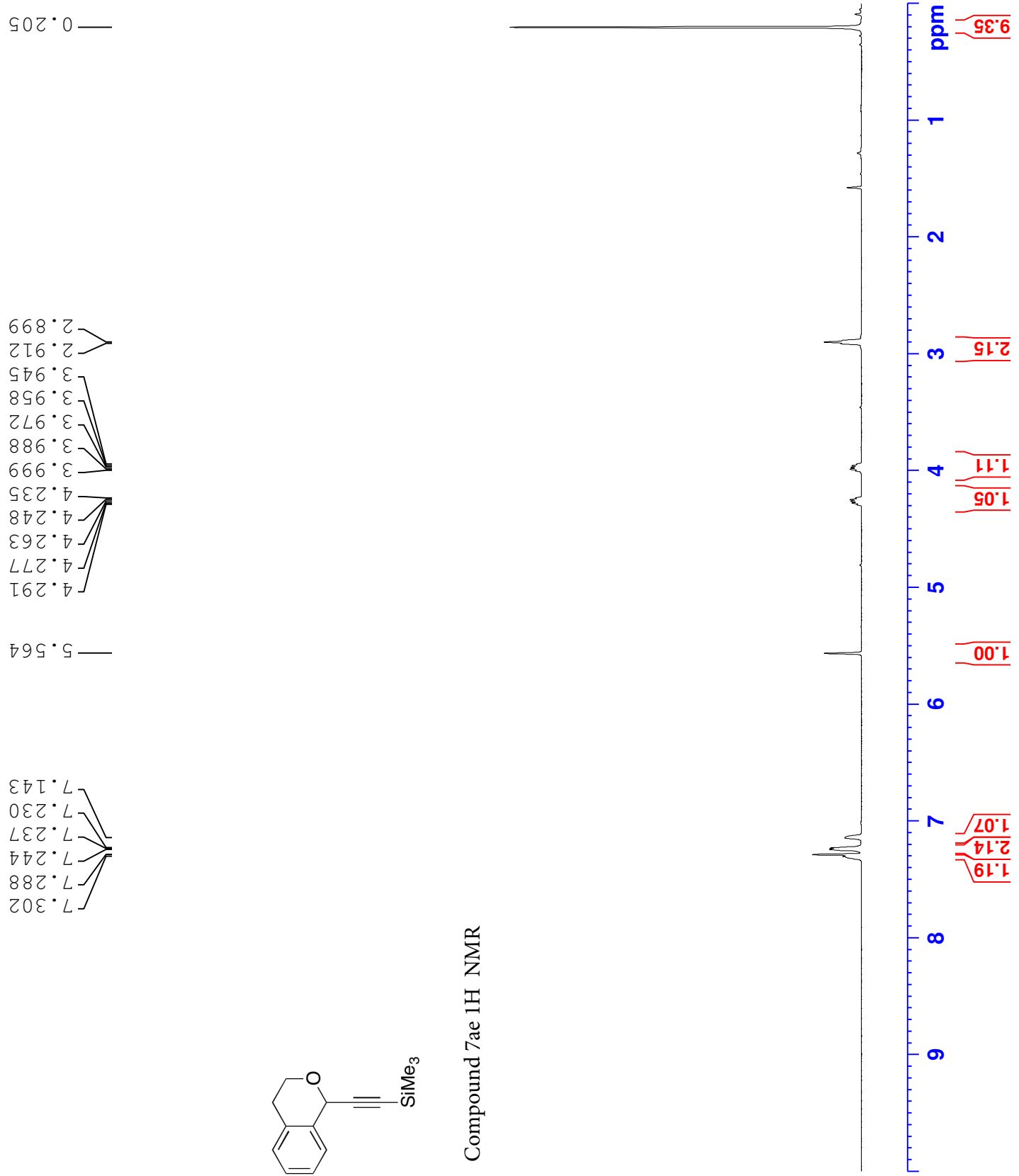
F2 - Acquisition Parameters  
Date\_ 20140718  
Time 18.01  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8278.146 Hz  
FIDRES 0.126314 Hz  
AQ 3.9583745 sec  
RG 10.1  
DM 60.400 usec  
DE 6.00 usec  
TE 299.1 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 15.00 usec  
PL1 4.90 dB  
PL1W 3.30822015 W  
SFO1 400.1324710 MHz

F2 - Processing parameters  
SI 32768  
SF 400.1300000 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



Compound 7ae 1H NMR





Parameters  
5-220rs  
2  
1

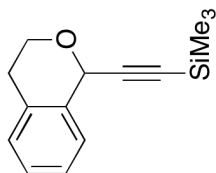
Parameters  
Date\_ 20140719  
Time 2.24  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 1024  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664256 sec  
RG 512  
DE 20.850 usec  
TE 18.00 usec  
TE 299.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

=====  
CHANNEL f1 =====  
NUC1 13C  
P1 9.25 usec  
PL1 0.55 dB  
PL1W 35.18820572 W  
SFO1 100.6228298 MHz

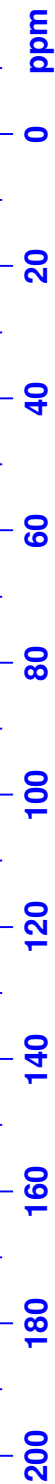
=====  
CHANNEL f2 =====  
CPDPRG[2] waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.08120718 W  
SFO2 400.1316005 MHz

F2 - Processing parameters  
SI 32768  
SF 100.6127690 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

126.01  
126.34  
127.20  
128.89  
132.74  
134.68  
104.05  
90.46  
67.42  
62.90  
28.00  
-0.14



Compound 7ae 13C NMR







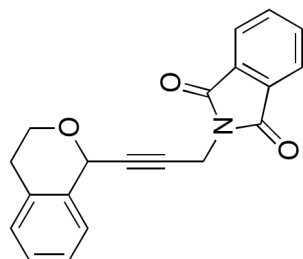
27.88  
27.39

62.48  
66.63

79.26  
82.10

123.55  
126.00  
126.39  
127.28  
128.93  
132.03  
132.73  
134.18  
134.35

167.04



Compound 7af 13C NMR

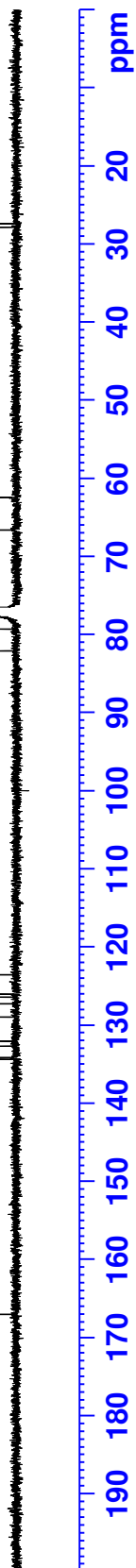
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NAME HH-5-221  
EXPNO 2  
PROCNO 1

F2 - Acquisition Parameters  
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INSTRUM spect  
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PULPROG zgpg30  
TD 65336  
SOLVENT CDCl3  
NS 1024  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664256 sec  
RG 512  
DE 20.850 usec  
TE 298.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 9.25 usec  
PL1 0.55 dB  
PL1W 35.18820572 W  
SFO1 100.6228298 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PLI2 20.46 dB  
PLI3 21.00 dB  
PLI2W 3.30822015 W  
PLI3W 0.09195905 W  
SFO2 400.1316005 MHz

F2 - Processing parameters  
SI 32768  
SF 100.6127690 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
FC 1.40







HH-2-061acetone  
C13CPD32 Acetone /opt/topspin/hari 7



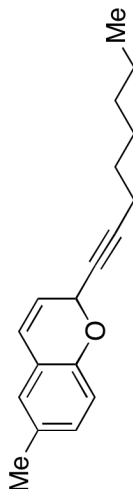
rameters  
61acetone  
2  
1

13.41  
18.11  
19.65  
22.30  
28.15  
28.27  
31.10

64.29  
77.74  
85.98

115.96  
121.61  
123.37  
123.75  
127.08  
129.58  
130.61

150.33



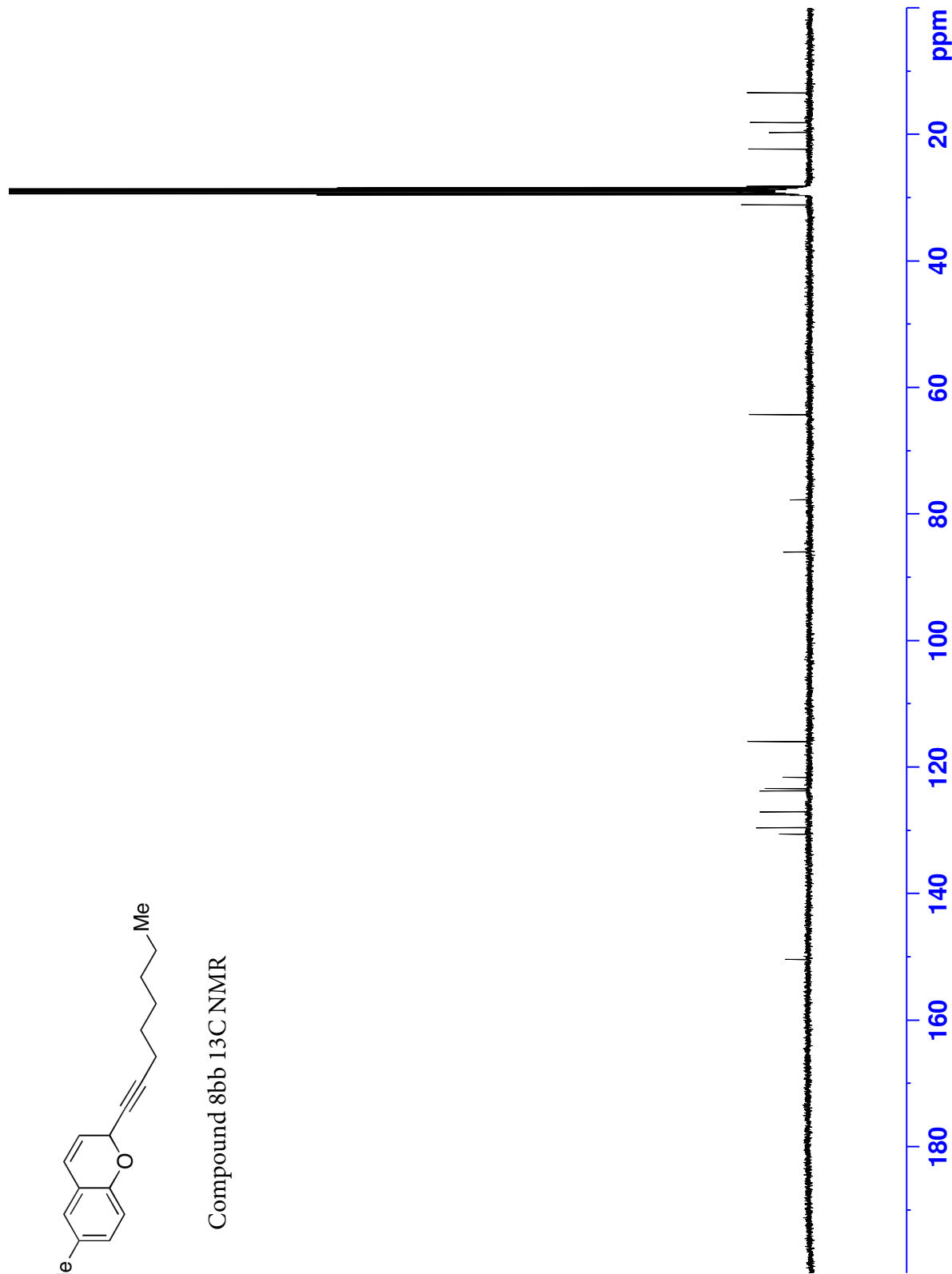
Compound 8bb 13C NMR

F2 - Acquisition Parameters  
Date\_ 20140416  
Time 12.14  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zgpg30  
TD 65536  
SOLVENT Acetone  
NS 32  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664256 sec  
RG 512  
DW 20.850 usec  
DE 18.00 usec  
TE 298.2 K  
D1 2.0000000 sec  
D11 0.0300000 sec  
TD0 1

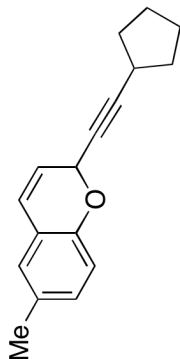
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CHANNEL f1  
NUC1 13C  
P1 9.25 usec  
PL1 0.55 dB  
PL1W 35.18820572 W  
SFO1 100.6228298 MHz

=====  
CHANNEL f2  
CPDPRG[2] waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.08120718 W  
SFO2 400.1316005 MHz

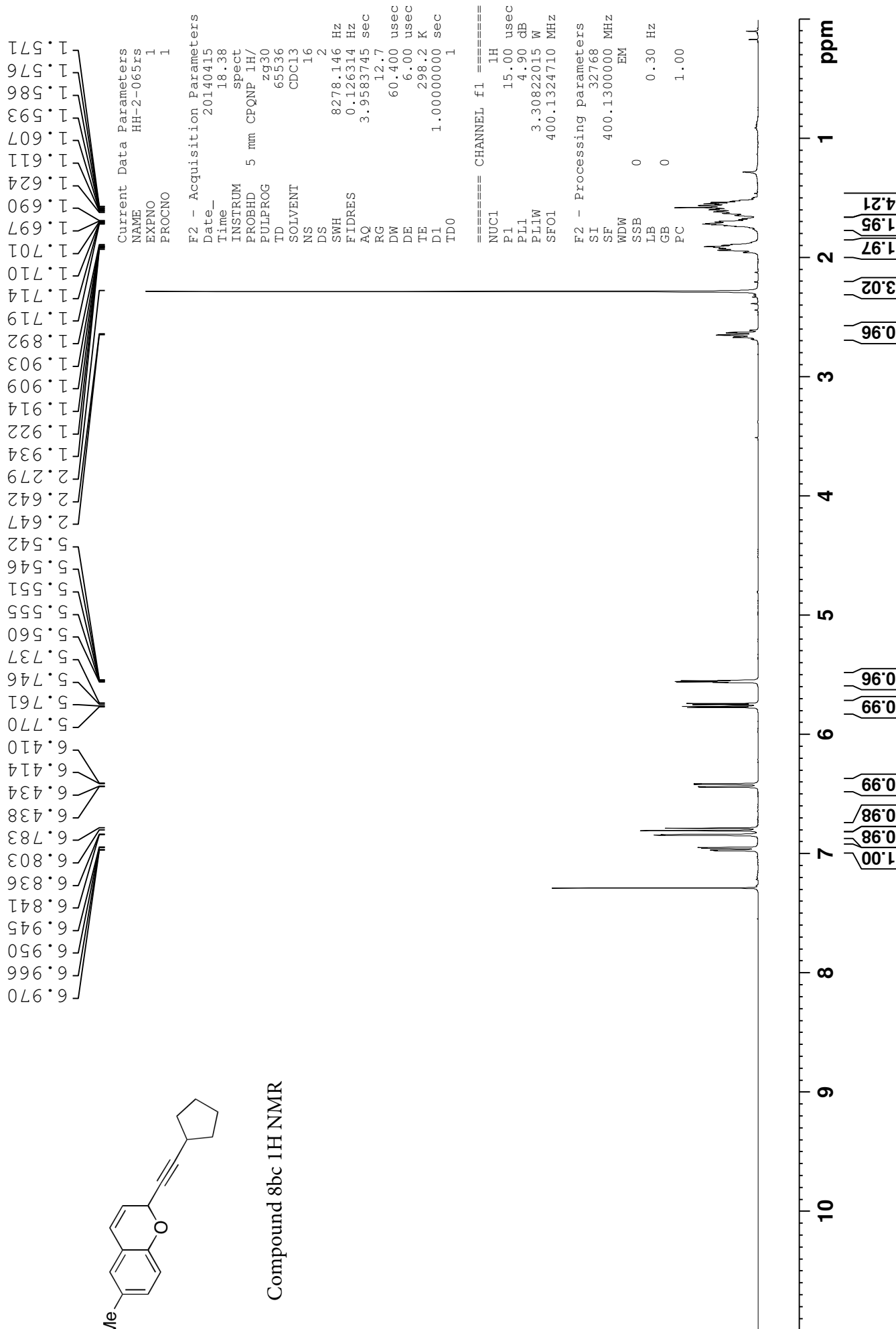
F2 - Processing parameters  
SI 32768  
SF 100.6127690 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



HH-2-065rs  
PROTON\_16 CDCl3 /opt/topspin hari 7

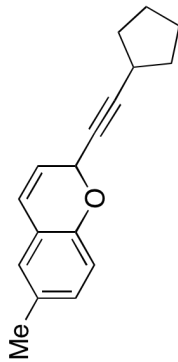


Compound 8bc 1H NMR

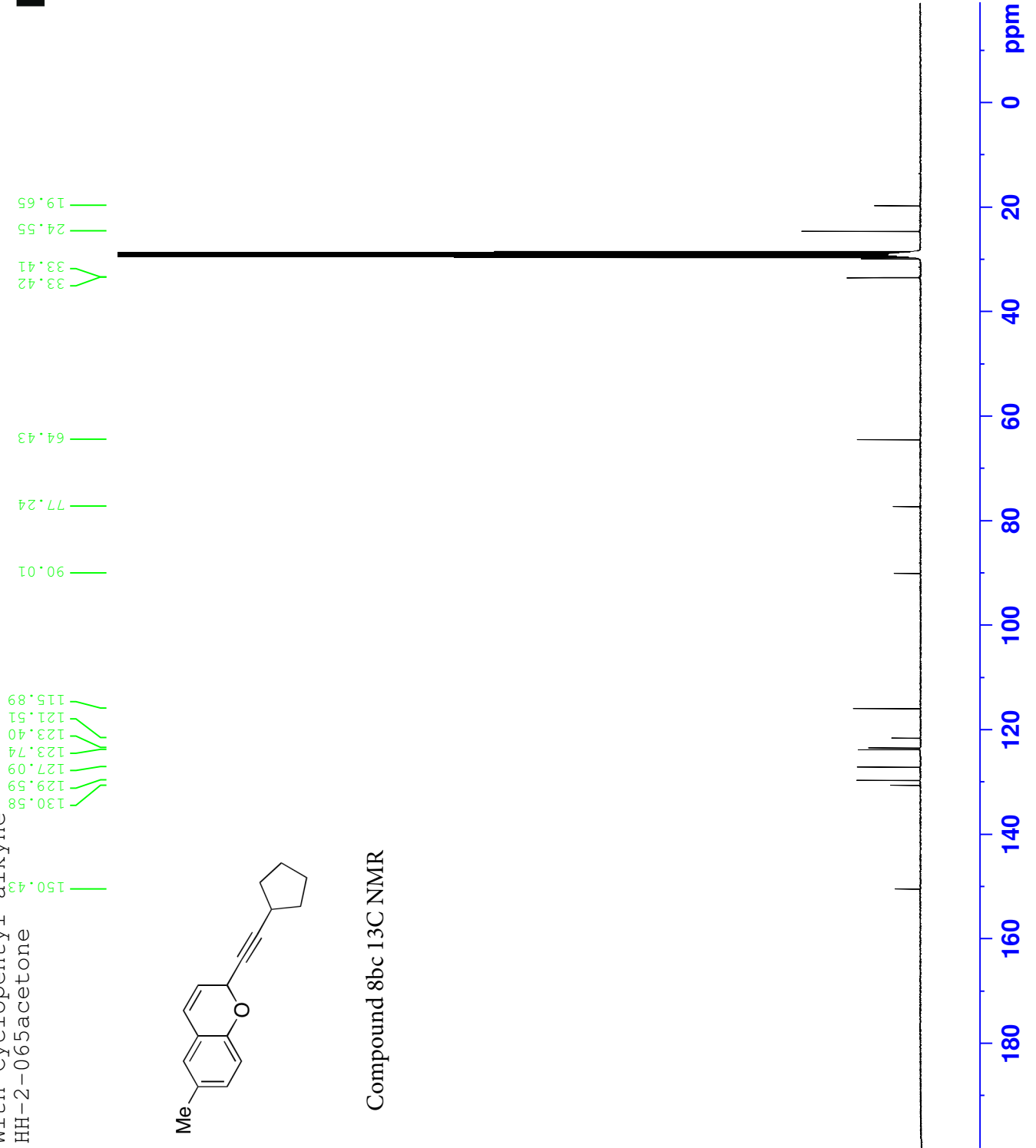




With Cyclopentyl alkyne  
HH-2-065acetone



Compound 8bc 13C NMR



Current Data Parameters  
NAME HH-2-065acetone  
EXPNO 1  
PROCNO 1

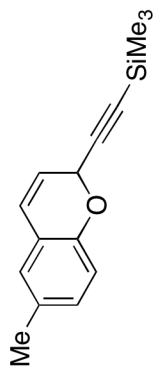
F2 - Acquisition Parameters  
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Time 6.01  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zgpg30  
TD 65536  
SOLVENT Acetone  
NS 1024  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664256 sec  
RG 512  
DW 20.850 usec  
DE 18.00 usec  
TE 298.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 9.25 usec  
PL1 0.55 dB  
PL1W 35.18820572 W  
SFO1 100.6228298 MHz

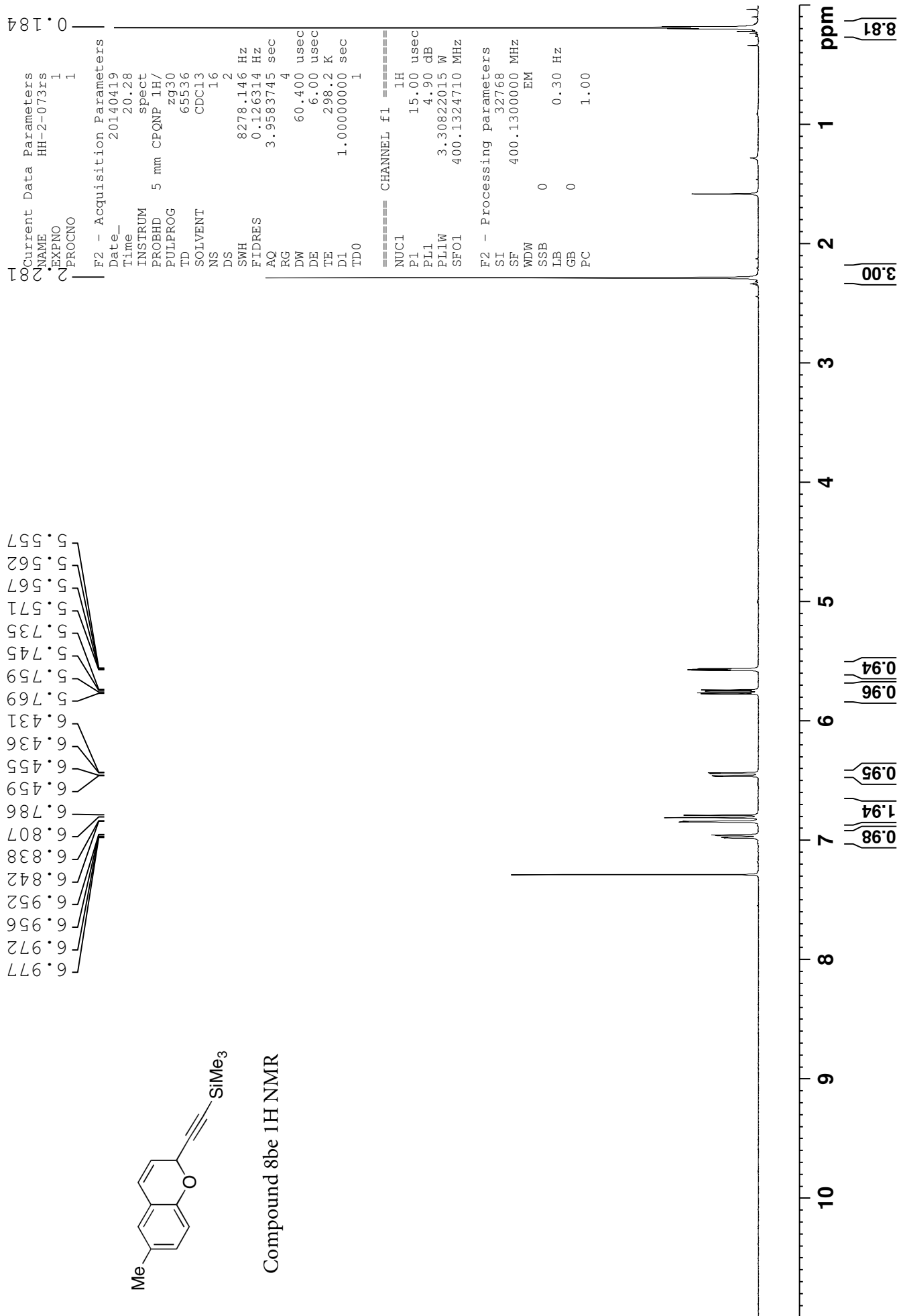
==== CHANNEL f2 =====  
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NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.08120718 W  
SFO2 400.1316005 MHz

F2 - Processing parameters  
SI 32768  
SF 100.6127690 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

HH-2-073rs  
PROTON\_16 CDCl3 /opt/topspin hari 6



Compound 8be 1H NMR



HH-2-073rs  
C13CPD1024 CDC13 /opt/topspin/bari 6



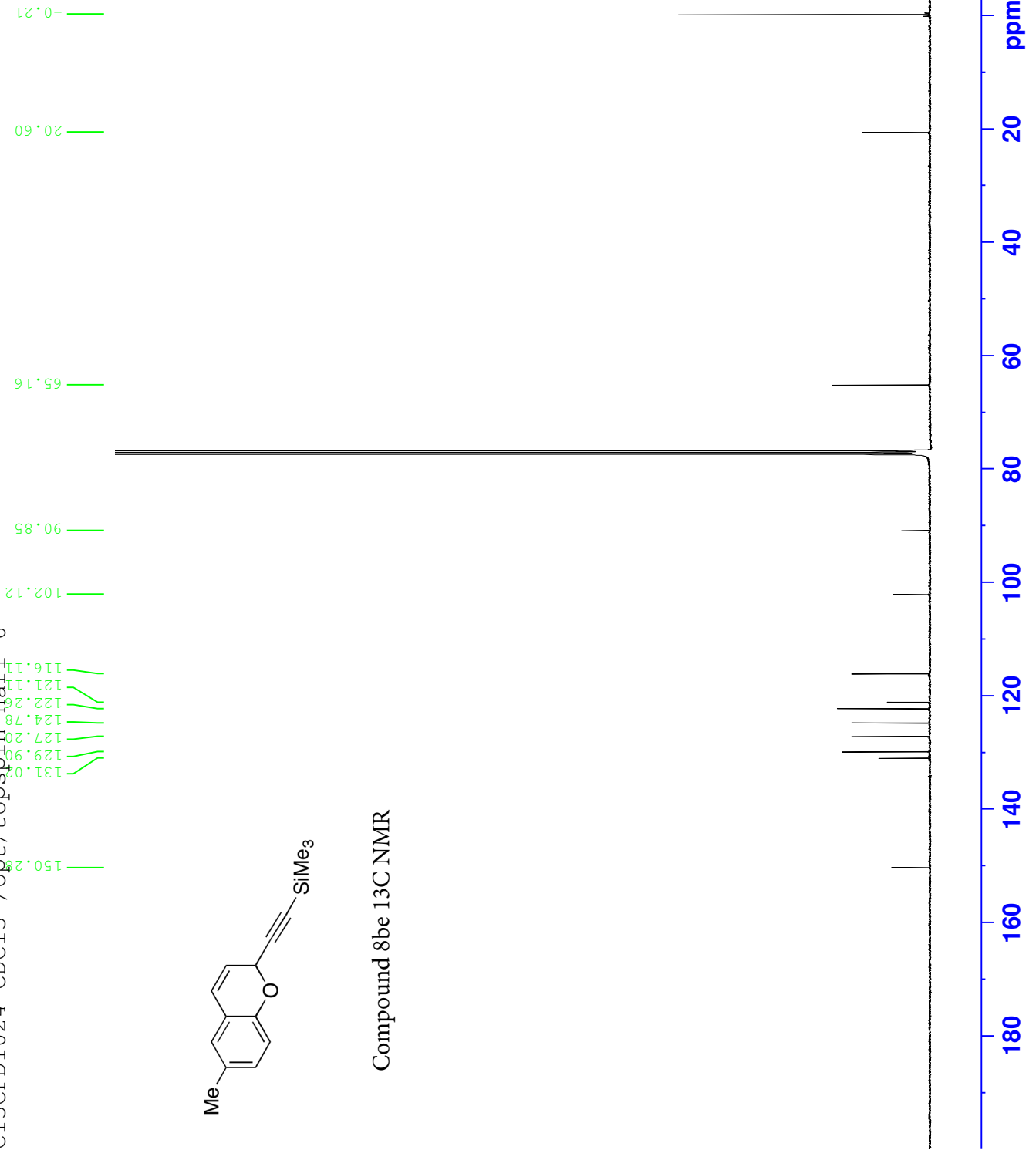
Current Data Parameters  
NAME HH-2-073rs  
EXPNO 3  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20140419  
Time 21.32  
INSTRUM spect  
PROBHD 5 mm CPQNP 1H/  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 1024  
DS 4  
SWH 23980.814 Hz  
FIDRES 0.365918 Hz  
AQ 1.3664256 sec  
RG 512  
DW 20.850 usec  
DE 18.00 usec  
TE 298.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 9.25 usec  
PL1 0.55 dB  
PL1W 35.18820572 W  
SF01 100.6228298 MHz

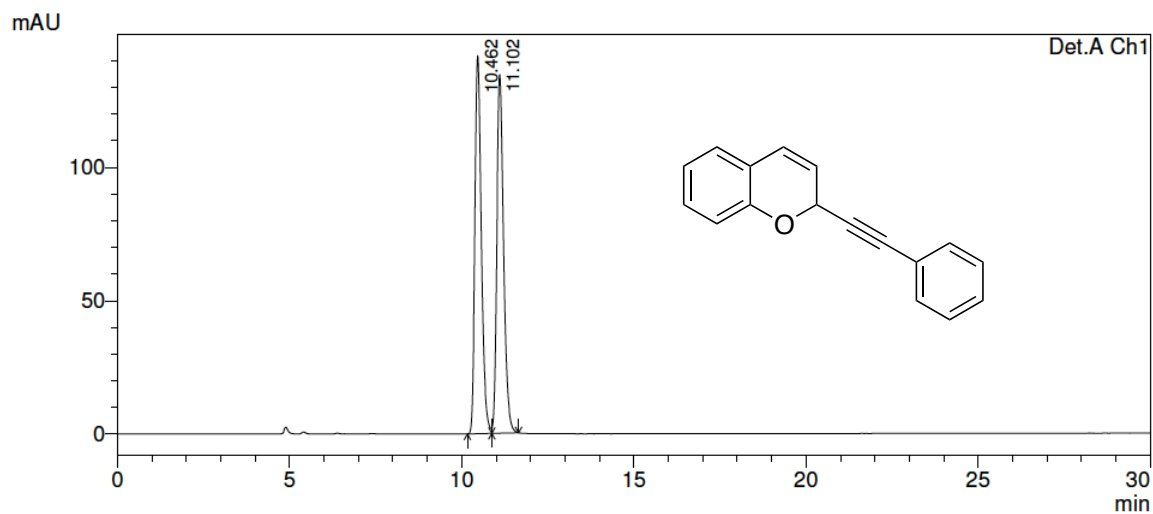
==== CHANNEL f2 =====  
CPDPRG[2] waltz16  
NUC2 1H  
PCPD2 90.00 usec  
PL2 4.90 dB  
PL12 20.46 dB  
PL13 21.00 dB  
PL2W 3.30822015 W  
PL12W 0.09195905 W  
PL13W 0.08120718 W  
SF02 400.1316005 MHz

F2 - Processing parameters  
SI 32768  
SF 100.6127690 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



Compound 8be 13C NMR

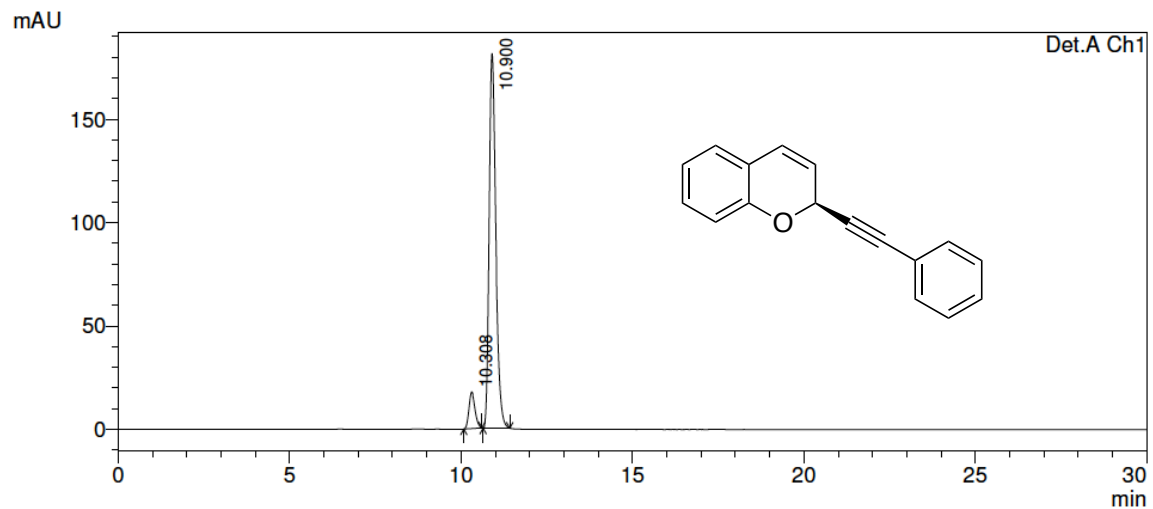
### Compound 8aa, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	10.462	1837045	141778	50.039	51.312
2	11.102	1834150	134529	49.961	48.688
Total		3671194	276307	100.000	100.000

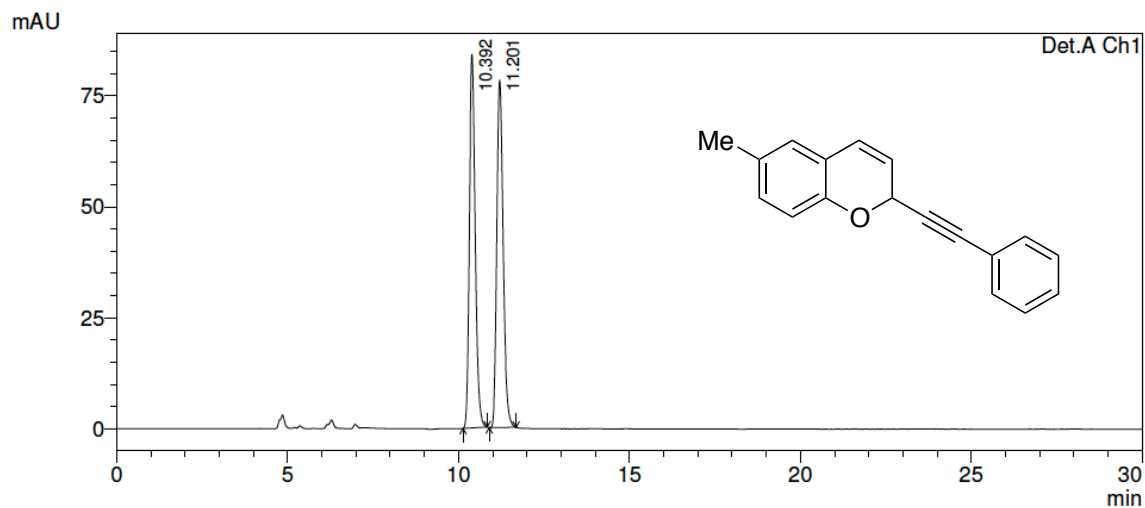
### Compound 8aa, 84% ee



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	10.308	217673	17761	8.210	8.923
2	10.900	2433526	181291	91.790	91.077
Total		2651199	199052	100.000	100.000

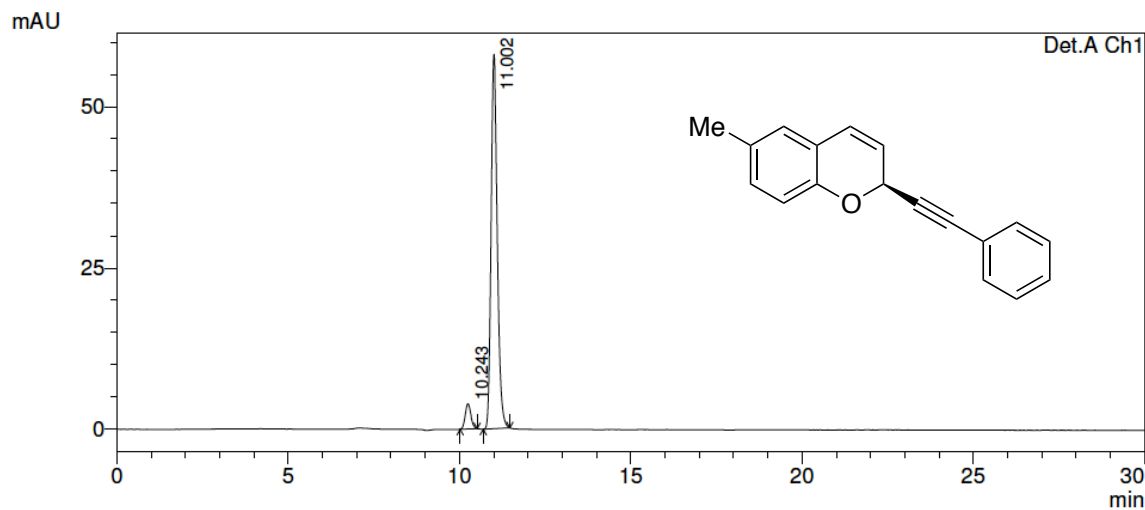
### Compound 8ba, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	10.392	1006345	84176	50.104	51.809
2	11.201	1002161	78296	49.896	48.191
Total		2008506	162472	100.000	100.000

### Compound 8ba, 89% ee

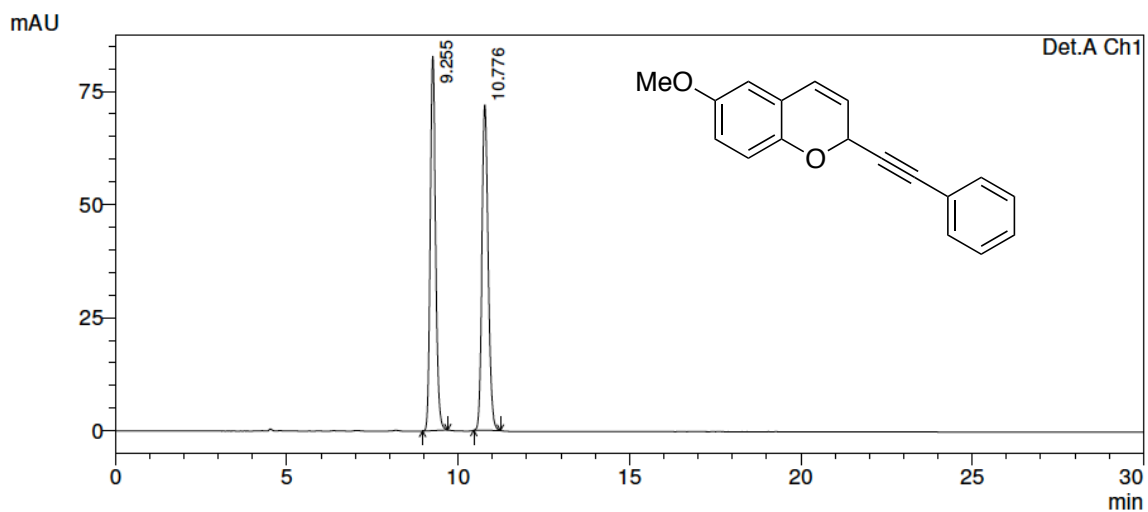


Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	10.243	44728	3916	5.744	6.322
2	11.002	733922	58036	94.256	93.678
Total		778650	61952	100.000	100.000



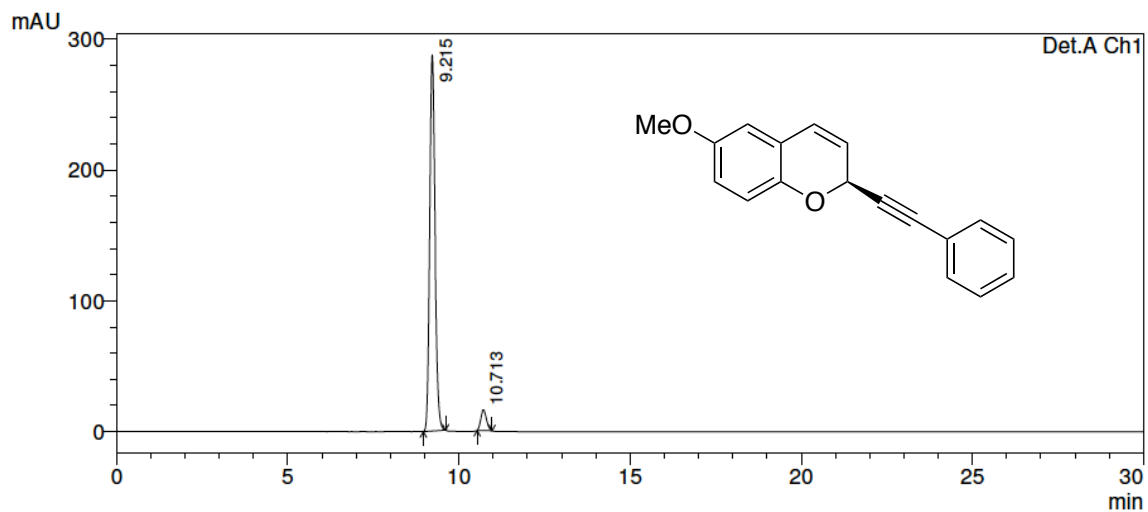
### Compound 8ca, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	9.255	908040	82694	49.956	53.493
2	10.776	909650	71894	50.044	46.507
Total		1817689	154589	100.000	100.000

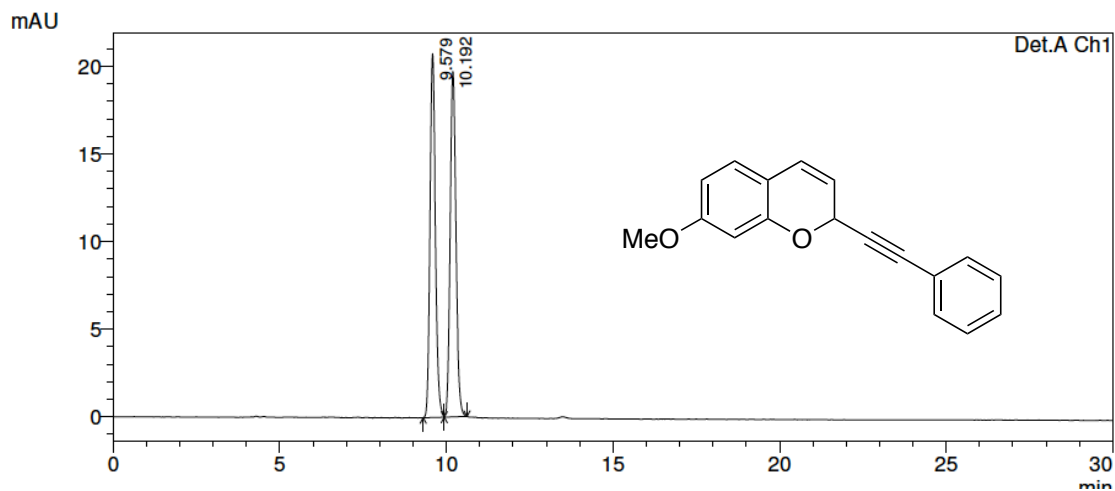
### Compound 8ca, 89% ee



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	9.215	3120669	287374	94.440	94.770
2	10.713	183709	15858	5.560	5.230
Total		3304378	303231	100.000	100.000

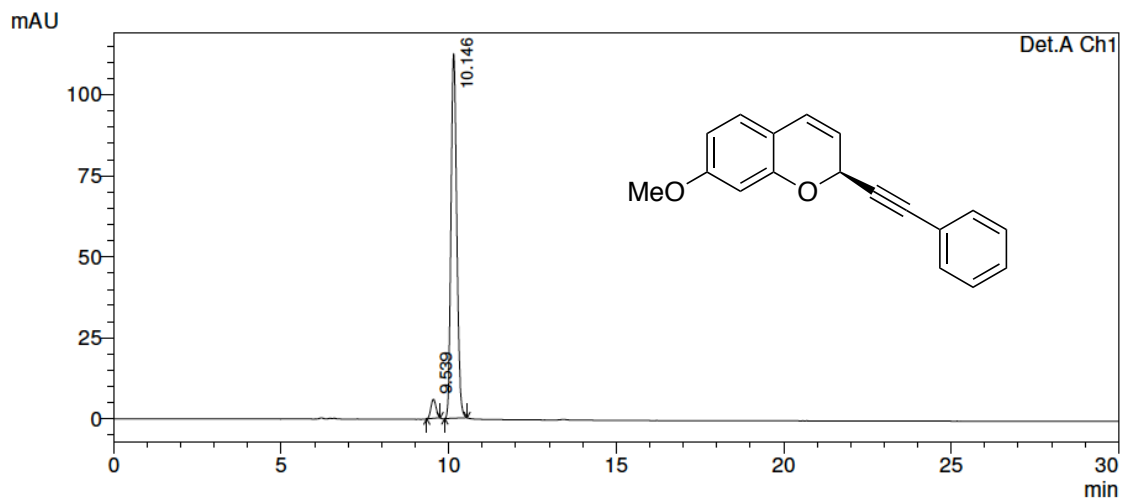
### Compound 8da, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	9.579	235878	20757	50.009	51.305
2	10.192	235796	19701	49.991	48.695
Total		471674	40458	100.000	100.000

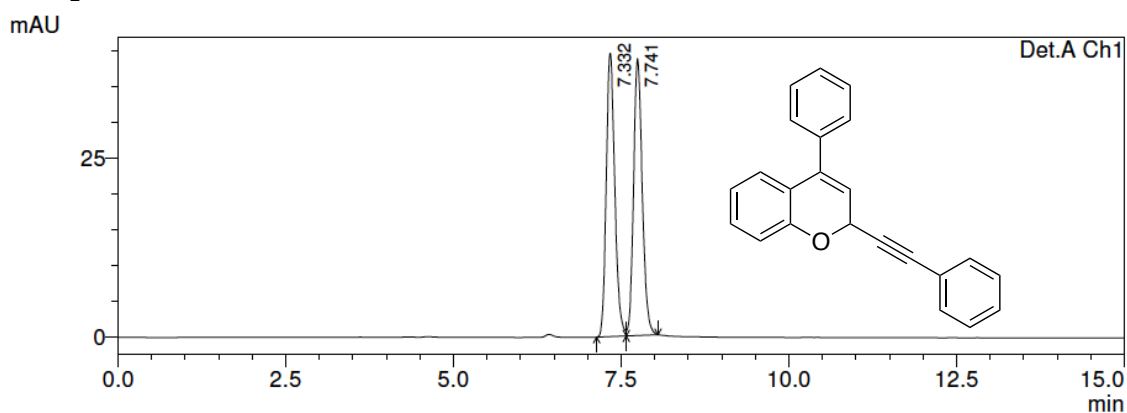
### Compound 8da, 91% ee



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	9.539	62346	5912	4.470	4.995
2	10.146	1332316	112456	95.530	95.005
Total		1394662	118368	100.000	100.000

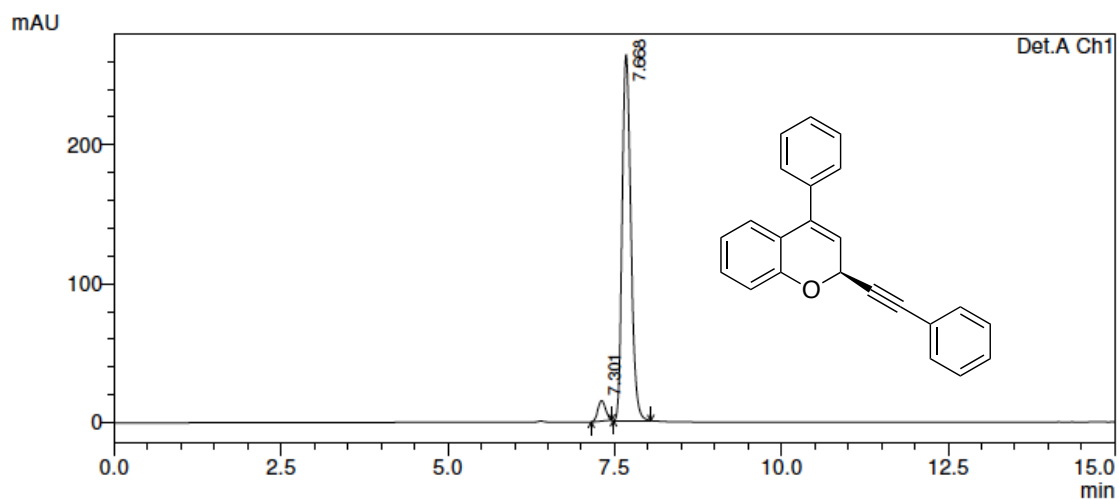
### Compound 8ea, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.332	349615	39485	50.117	50.566
2	7.741	347986	38601	49.883	49.434
Total		697601	78086	100.000	100.000

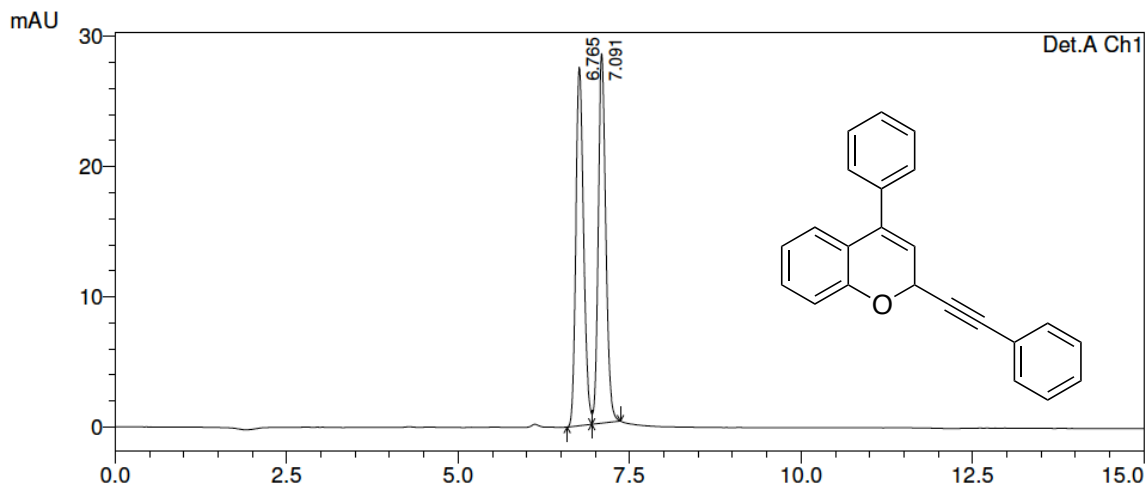
### Compound 8ea, 91% ee (Inside glove box reaction)



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.301	118382	14695	4.740	5.288
2	7.668	2379159	263179	95.260	94.712
Total		2497541	277875	100.000	100.000

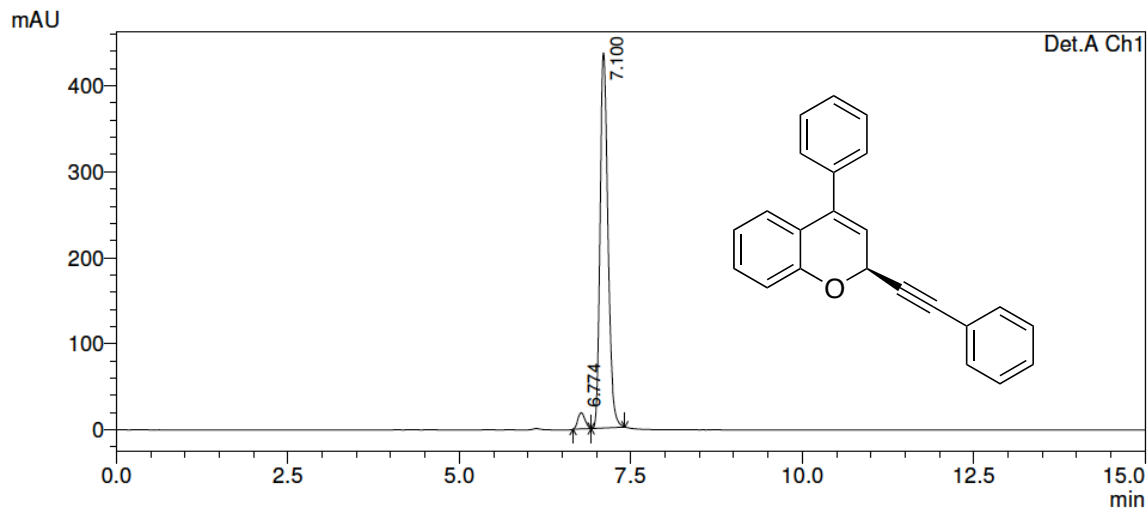
### Compound 8ea, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	6.765	216346	27565	49.786	49.233
2	7.091	218206	28424	50.214	50.767
Total		434552	55989	100.000	100.000

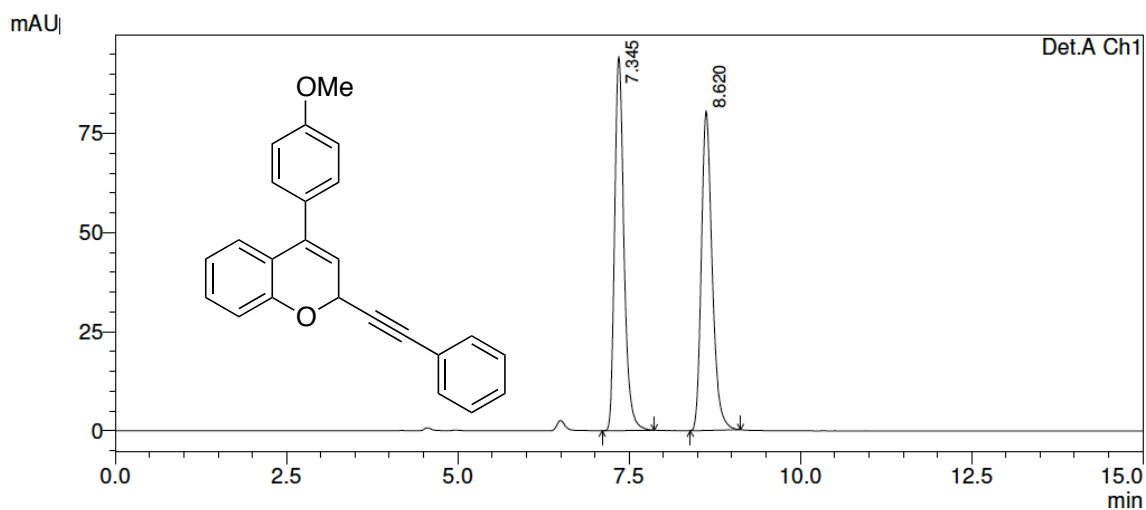
### Compound 8ea, 93% ee (Outside the glove box reaction)



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	6.774	136766	18775	3.747	4.129
2	7.100	3513228	435927	96.253	95.871
Total		3649994	454702	100.000	100.000

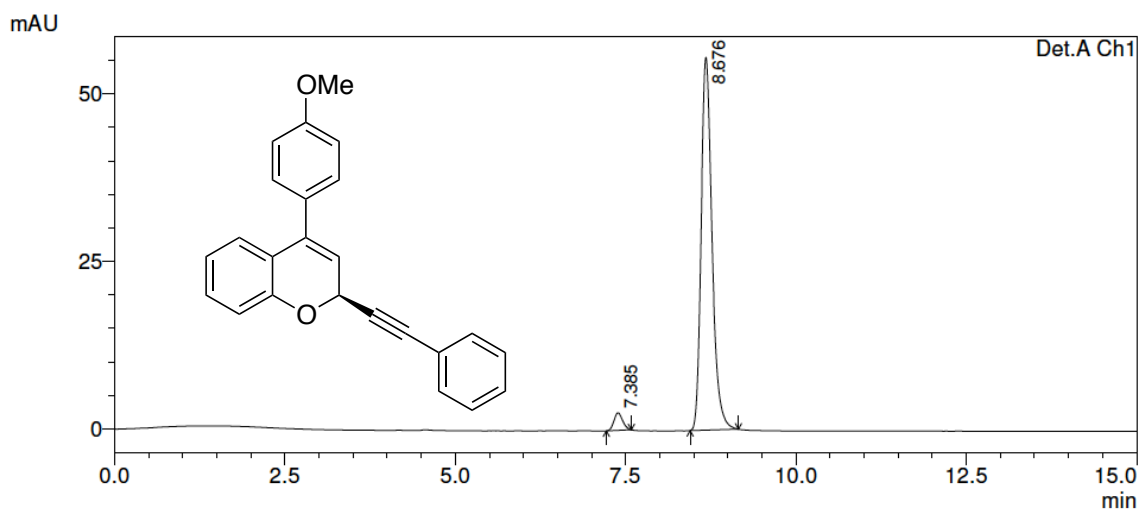
### Compound 8fa, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.345	892914	94461	50.135	53.930
2	8.620	888091	80694	49.865	46.070
Total		1781005	175155	100.000	100.000

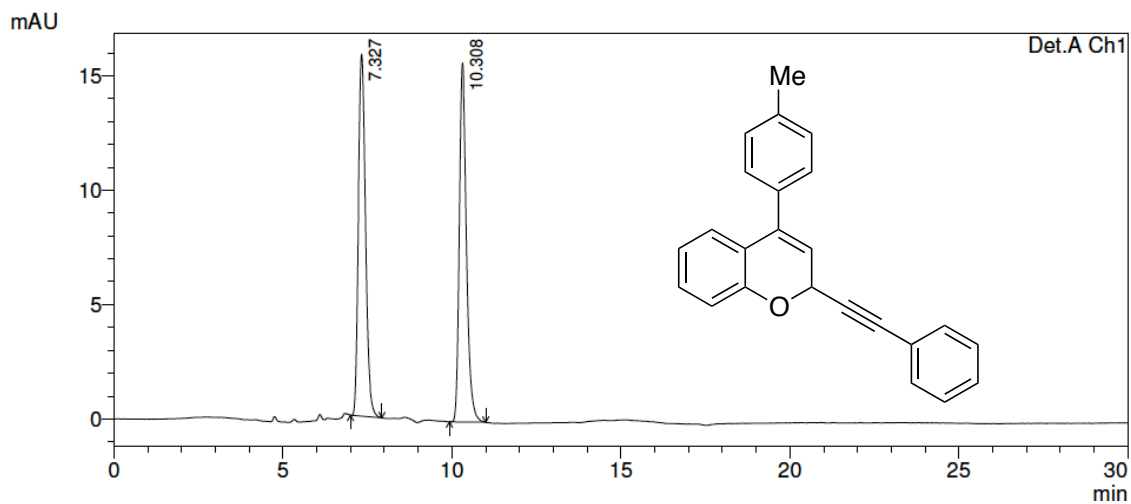
### Compound 8fa, 93% ee



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.385	23133	2621	3.622	4.501
2	8.676	615525	55600	96.378	95.499
Total		638658	58221	100.000	100.000

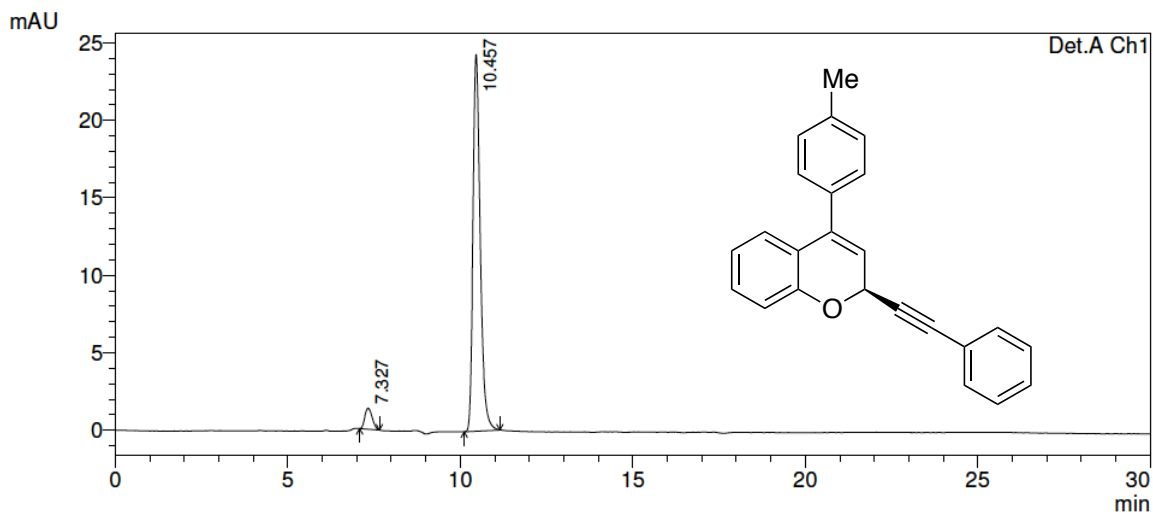
### Compound 8ga, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.327	232299	15824	50.137	50.204
2	10.308	231034	15696	49.863	49.796
Total		463333	31520	100.000	100.000

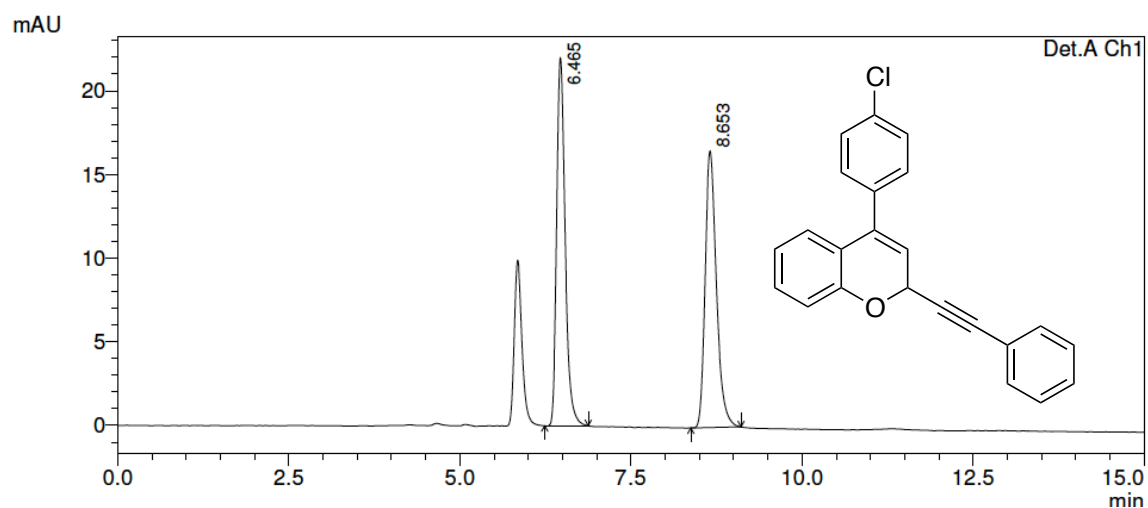
### Compound 8ga, 89% ee



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.327	20110	1354	5.378	5.278
2	10.457	353811	24308	94.622	94.722
Total		373921	25663	100.000	100.000

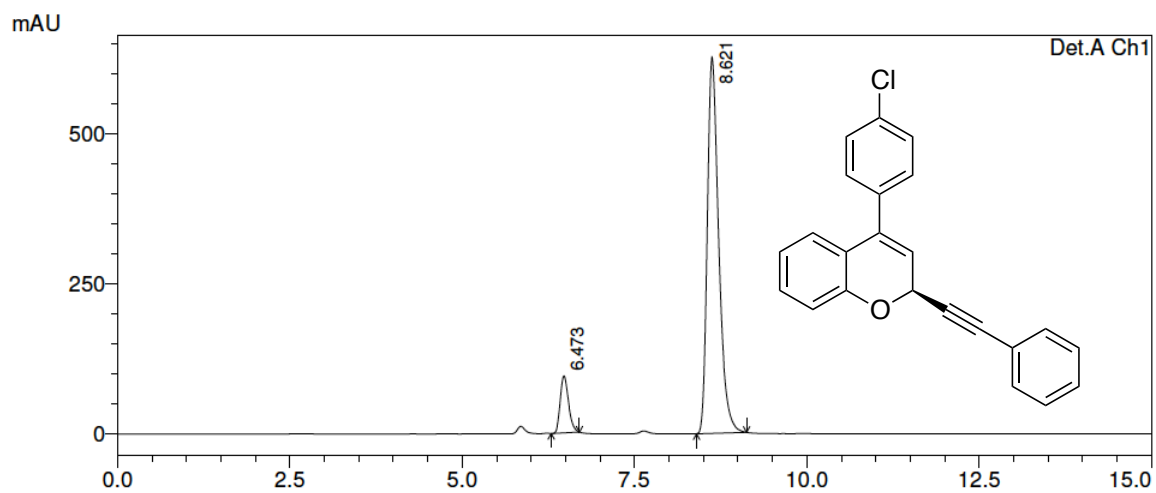
### Compound 8ha, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	6.465	189285	22002	50.013	57.082
2	8.653	189188	16542	49.987	42.918
Total		378473	38544	100.000	100.000

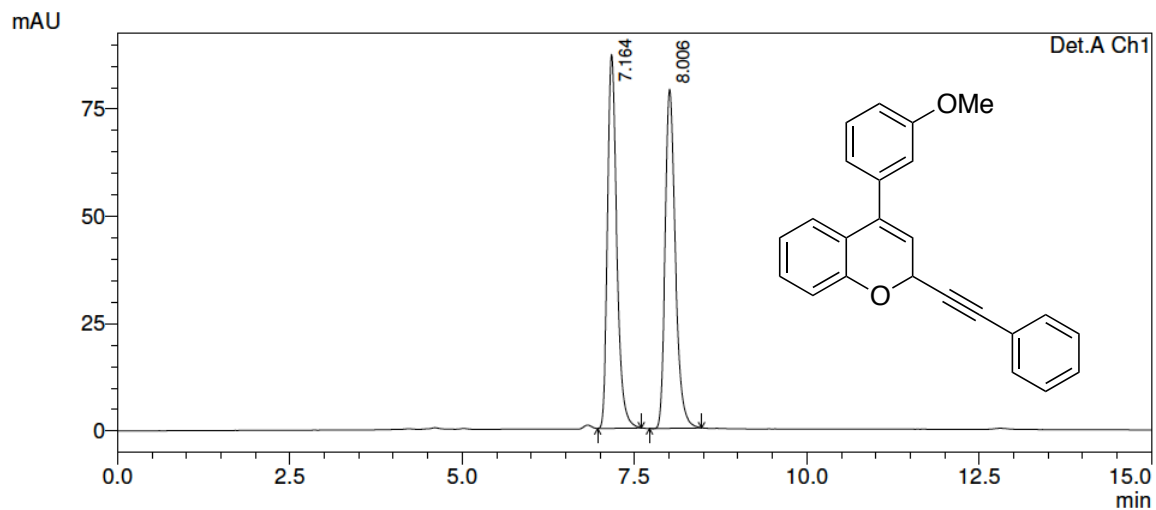
### Compound 8ha, 80% ee



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	6.473	792784	95100	9.879	13.149
2	8.621	7232308	628166	90.121	86.851
Total		8025092	723266	100.000	100.000

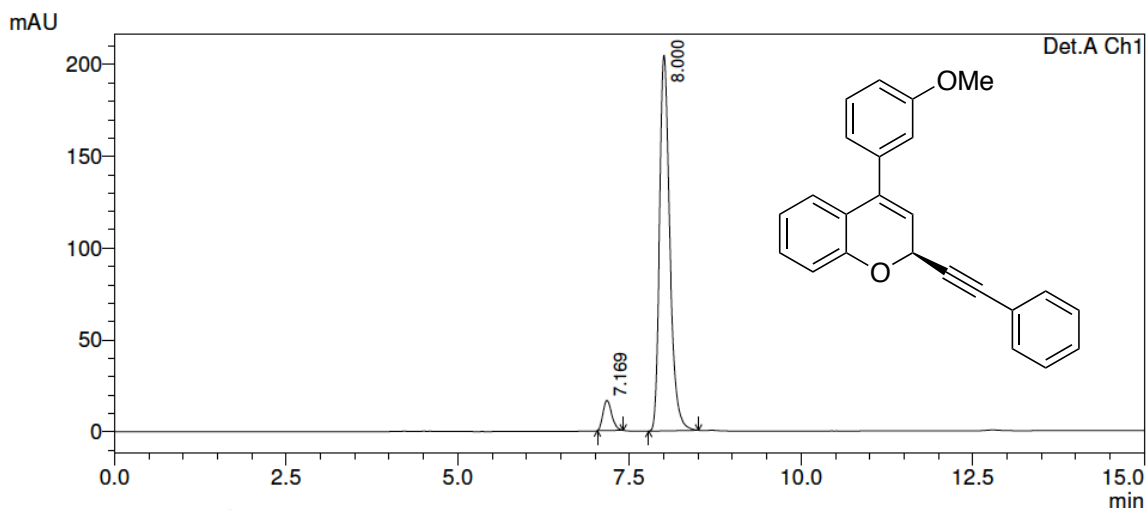
### Compound 8ia, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.164	818415	87198	50.098	52.462
2	8.006	815209	79012	49.902	47.538
Total		1633624	166210	100.000	100.000

### Compound 8ia, 87% ee

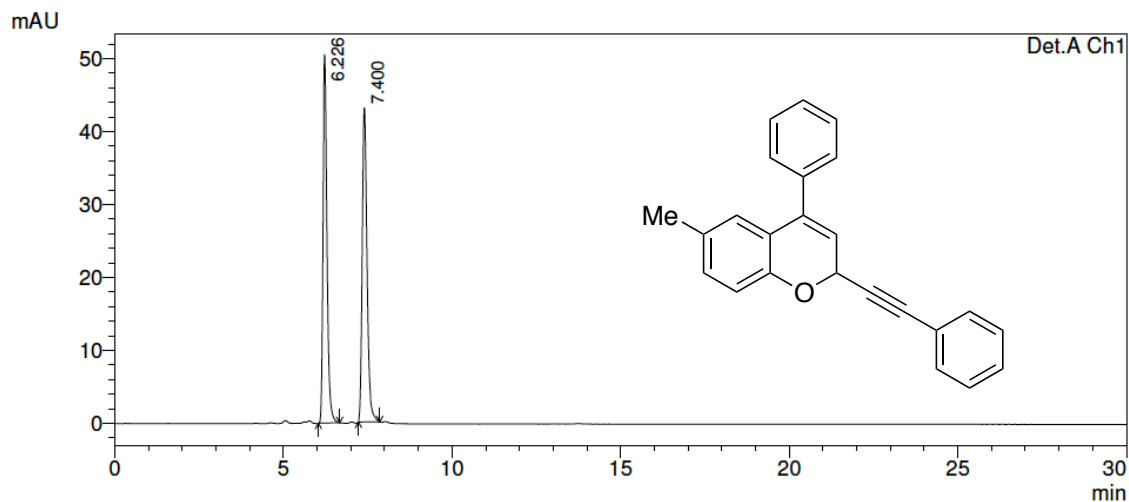


Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.169	145620	16405	6.414	7.420
2	8.000	2124877	204686	93.586	92.580
Total		2270497	221091	100.000	100.000



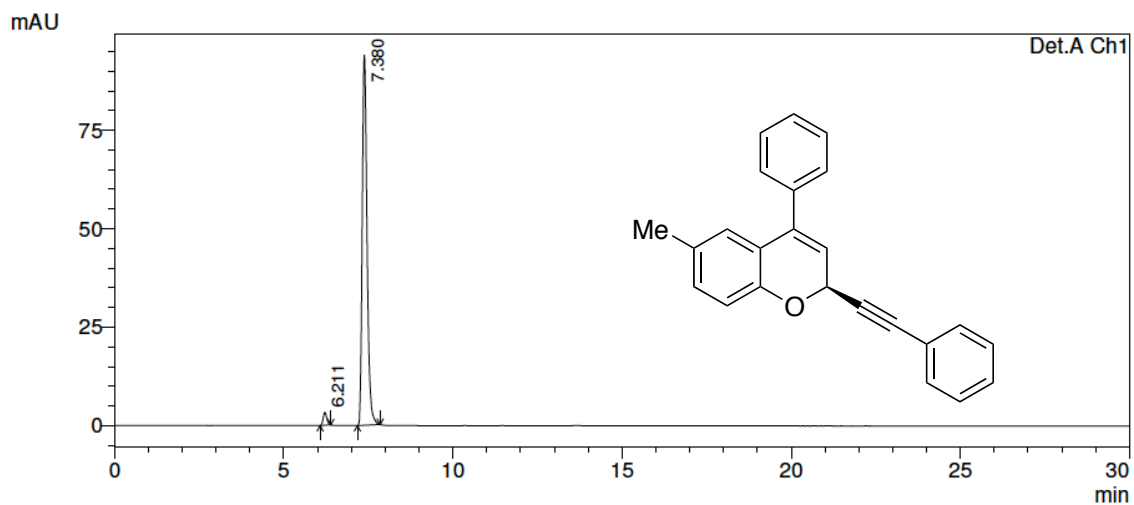
### Compound 8ja, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	6.226	423424	50545	50.271	54.010
2	7.400	418864	43038	49.729	45.990
Total		842288	93583	100.000	100.000

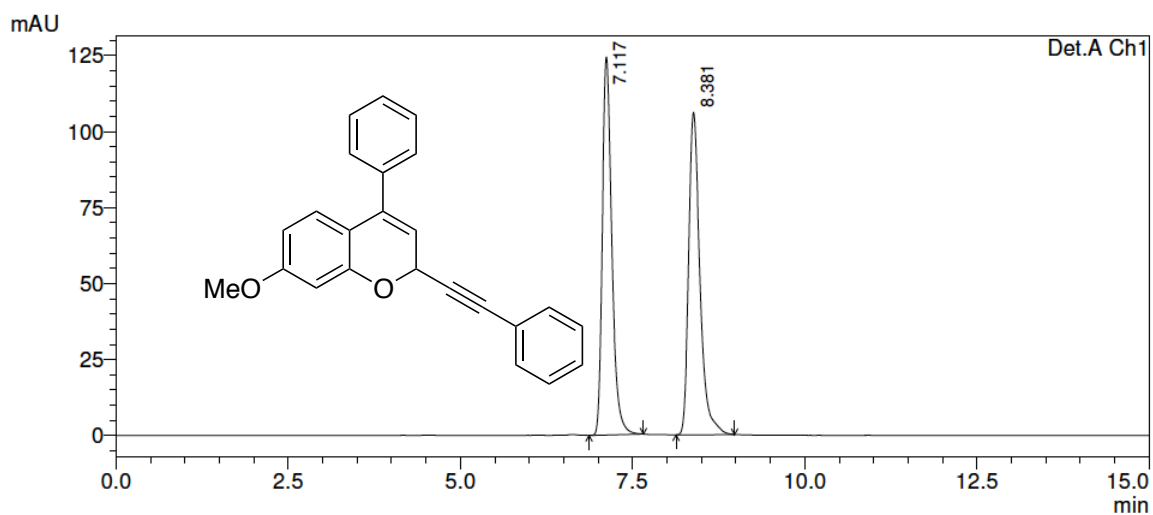
### Compound 8ja, 95% ee



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	6.211	25497	3300	2.720	3.392
2	7.380	912033	93987	97.280	96.608
Total		937529	97287	100.000	100.000

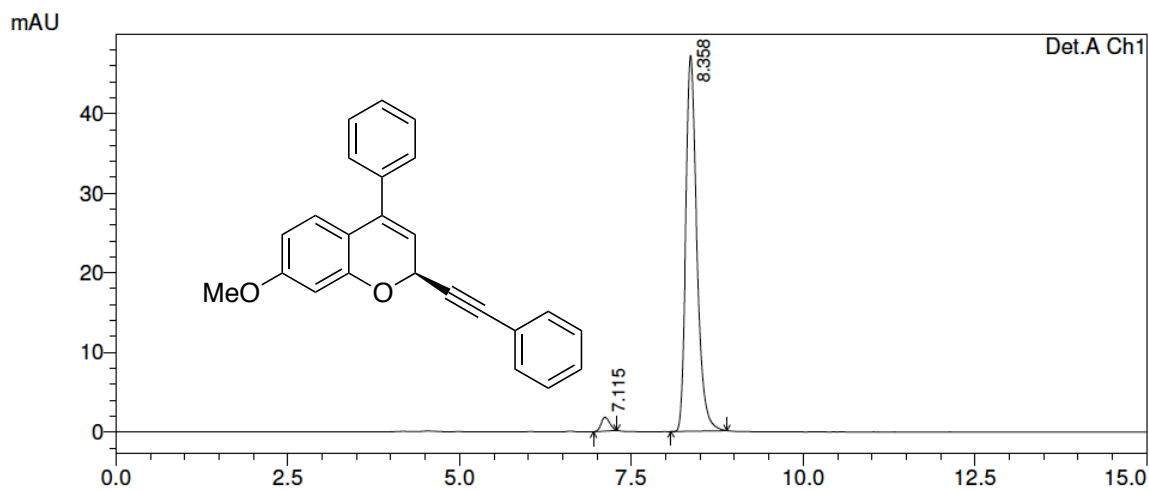
### Compound 8ka, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.117	1192314	124339	49.700	53.965
2	8.381	1206695	106069	50.300	46.035
Total		2399008	230408	100.000	100.000

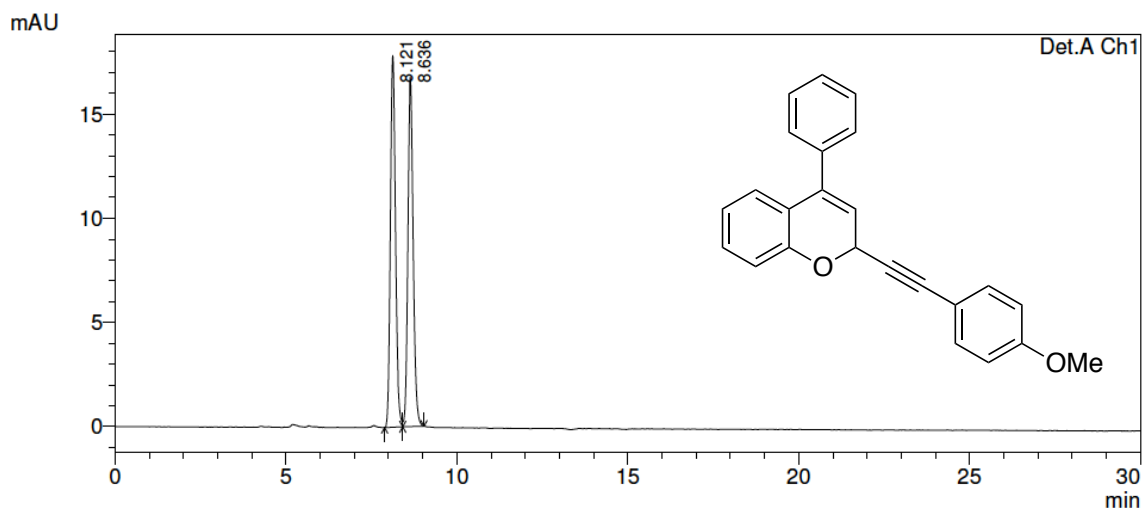
### Compound 8ka, 95% ee



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.115	14955	1724	2.750	3.521
2	8.358	528968	47234	97.250	96.479
Total		543923	48958	100.000	100.000

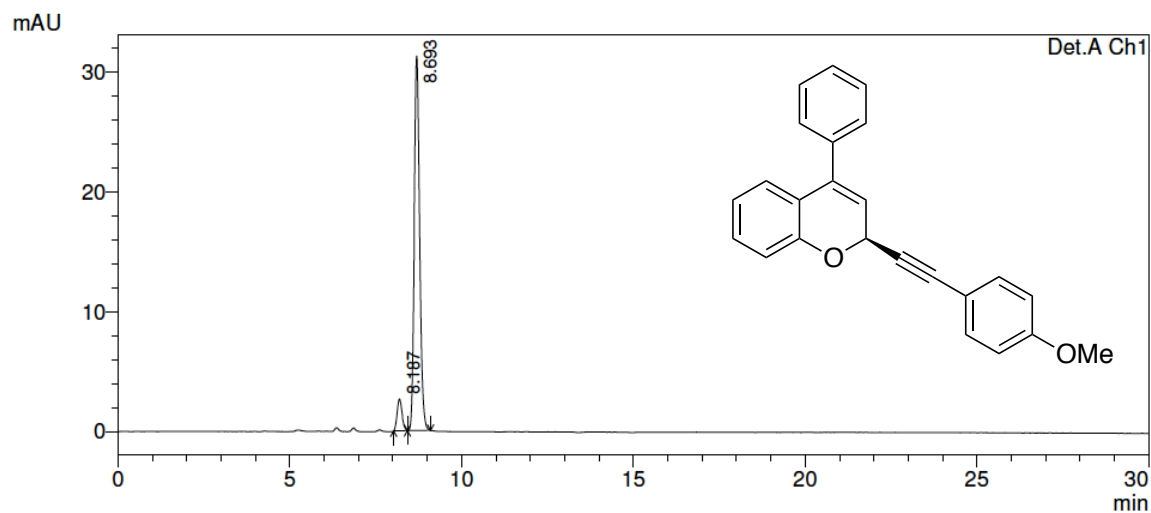
### Compound 8em, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	8.121	183164	17854	49.957	51.523
2	8.636	183481	16798	50.043	48.477
Total		366646	34652	100.000	100.000

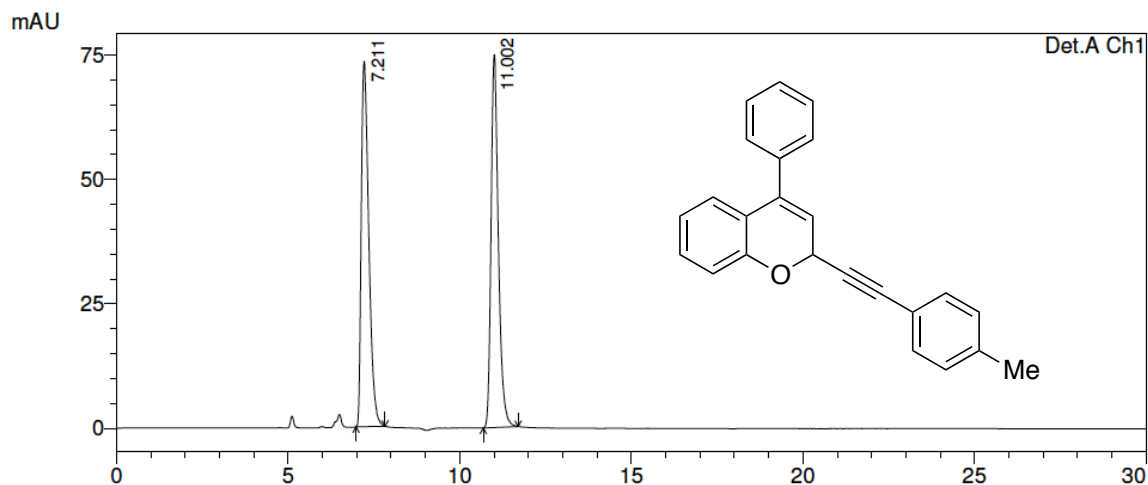
### Compound 8em, 86% ee



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	8.187	26302	2651	7.143	7.816
2	8.693	341909	31269	92.857	92.184
Total		368212	33920	100.000	100.000

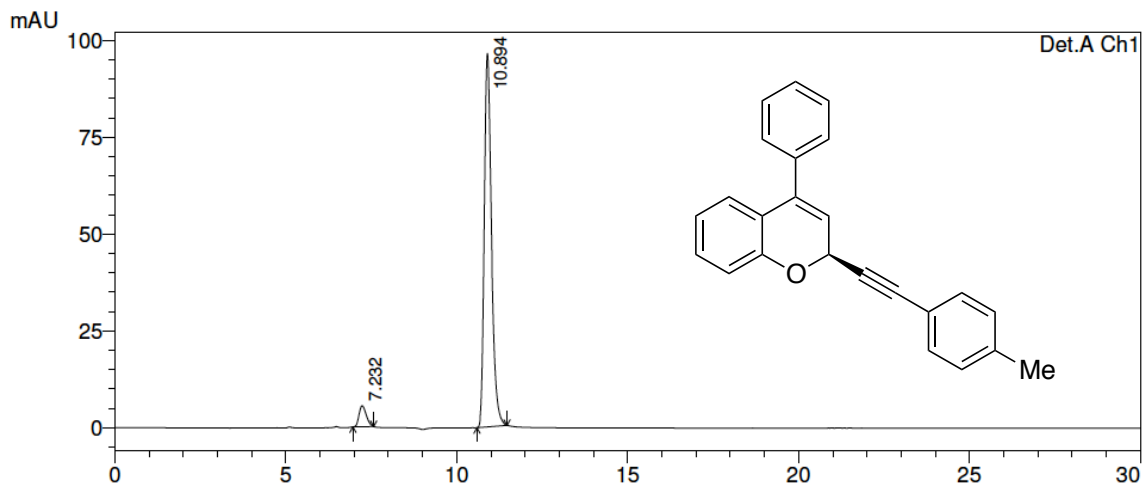
### Compound 8en, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.211	1125459	73453	50.187	49.475
2	11.002	1117056	75011	49.813	50.525
Total		2242516	148464	100.000	100.000

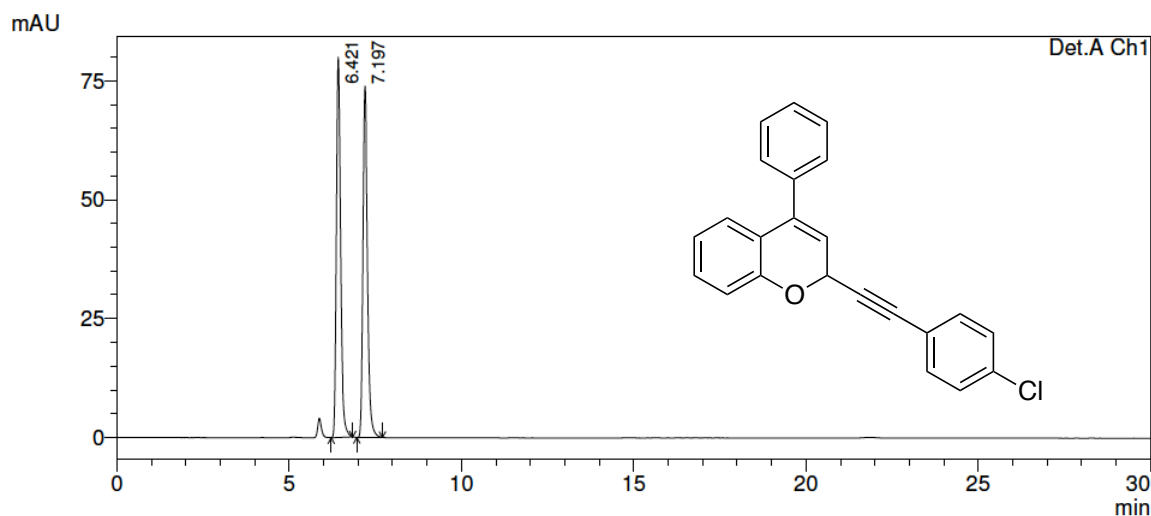
### Compound 8en, 89% ee



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.232	80270	5425	5.400	5.324
2	10.894	1406204	96475	94.600	94.676
Total		1486474	101900	100.000	100.000

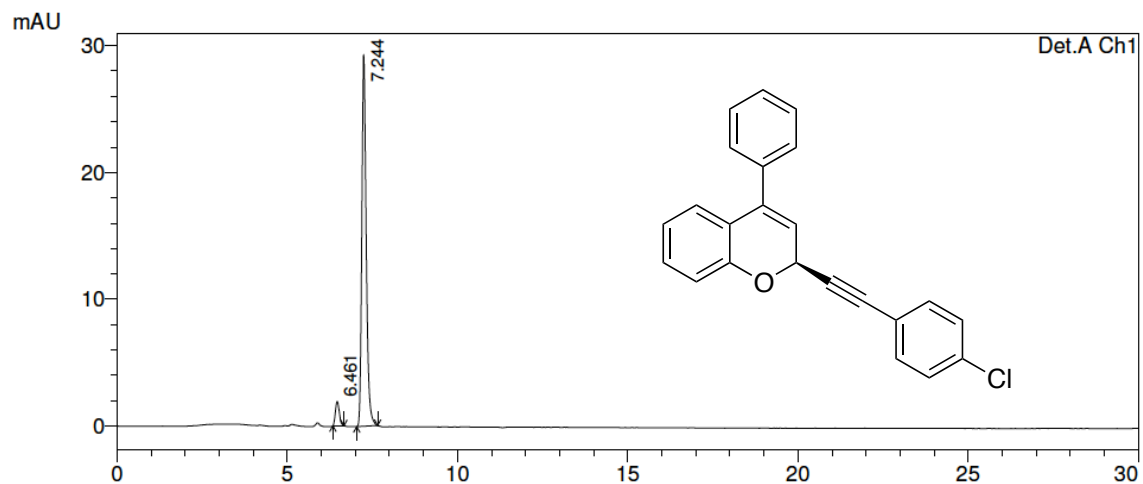
### Compound 8eo, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	6.421	678626	79947	49.927	51.977
2	7.197	680606	73864	50.073	48.023
Total		1359232	153812	100.000	100.000

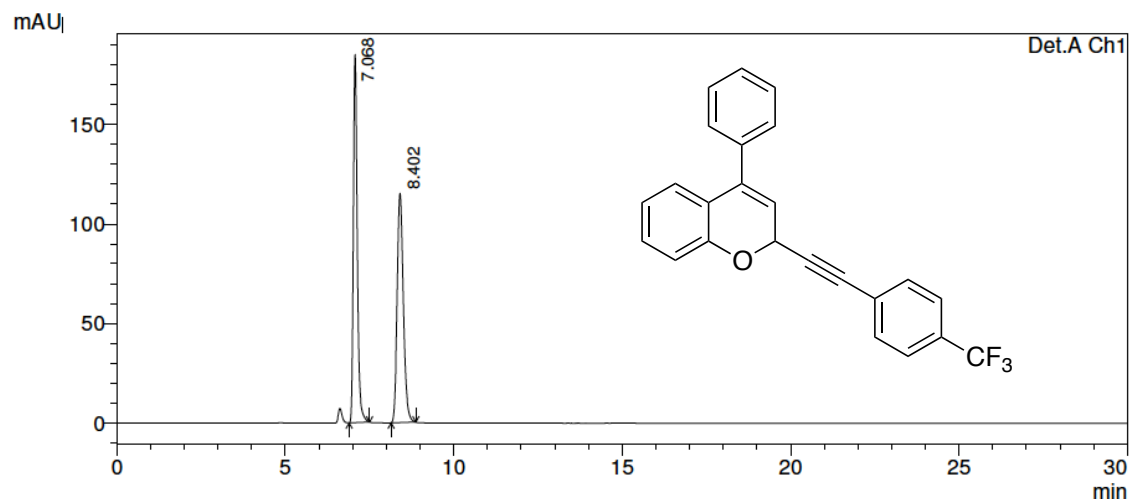
### Compound 8eo, 89% ee



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	6.461	15248	1916	5.340	6.138
2	7.244	270303	29305	94.660	93.862
Total		285551	31222	100.000	100.000

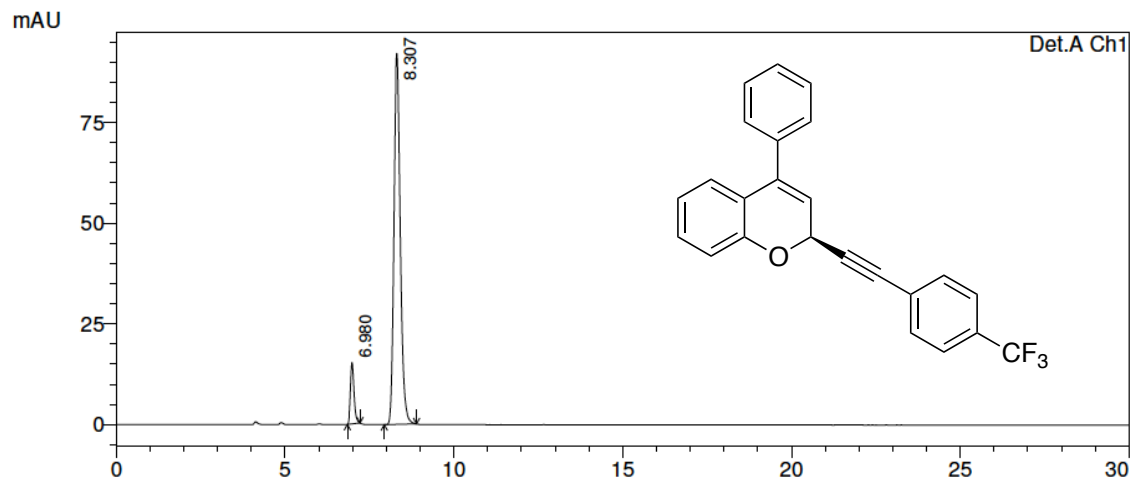
### Compound 8ej, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.068	1464746	184723	50.061	61.641
2	8.402	1461160	114951	49.939	38.359
Total		2925906	299674	100.000	100.000

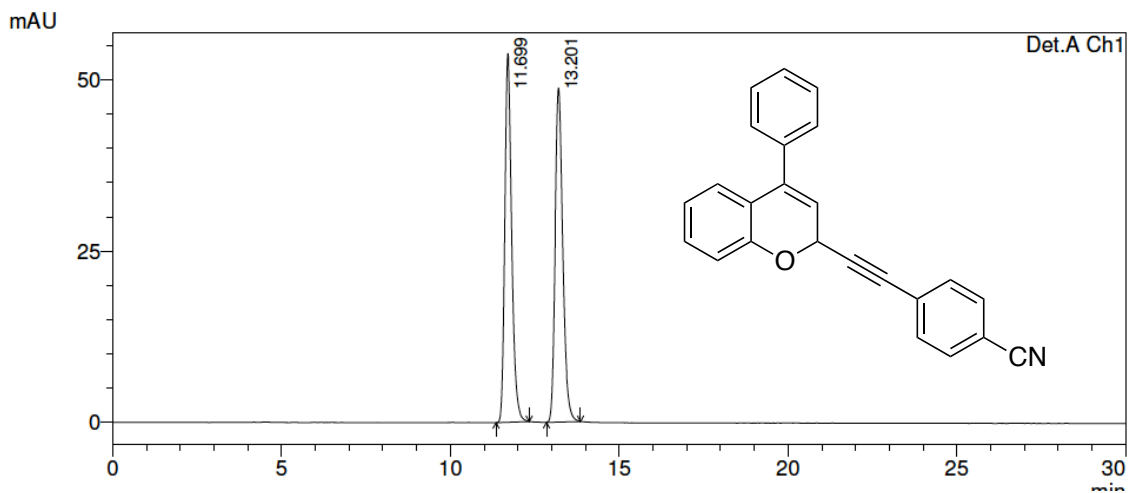
### Compound 8ej, 83% ee



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	6.980	113246	15241	8.567	14.195
2	8.307	1208628	92127	91.433	85.805
Total		1321873	107368	100.000	100.000

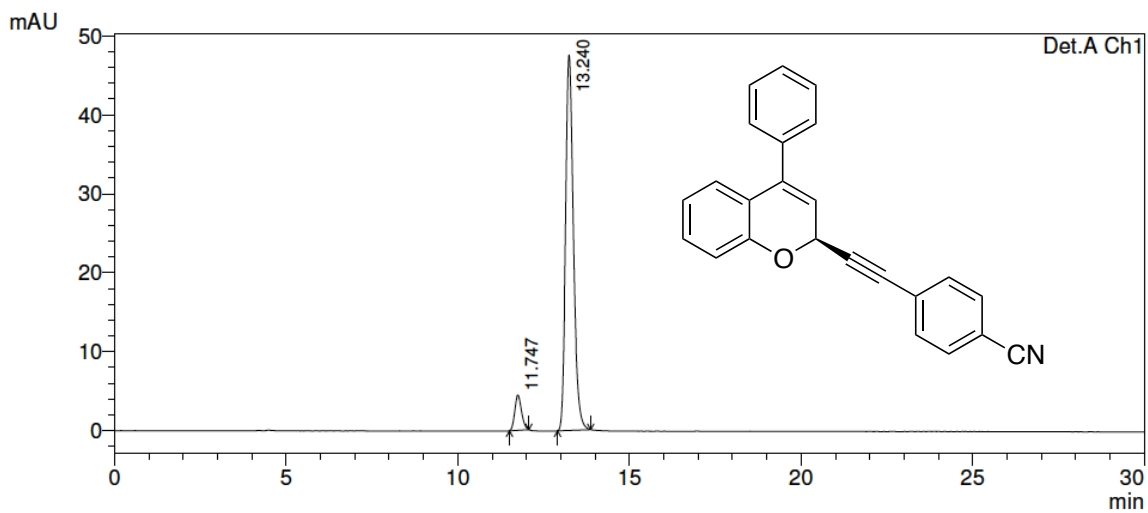
### Compound 8eq, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	11.699	769004	53848	50.036	52.480
2	13.201	767907	48759	49.964	47.520
Total		1536911	102607	100.000	100.000

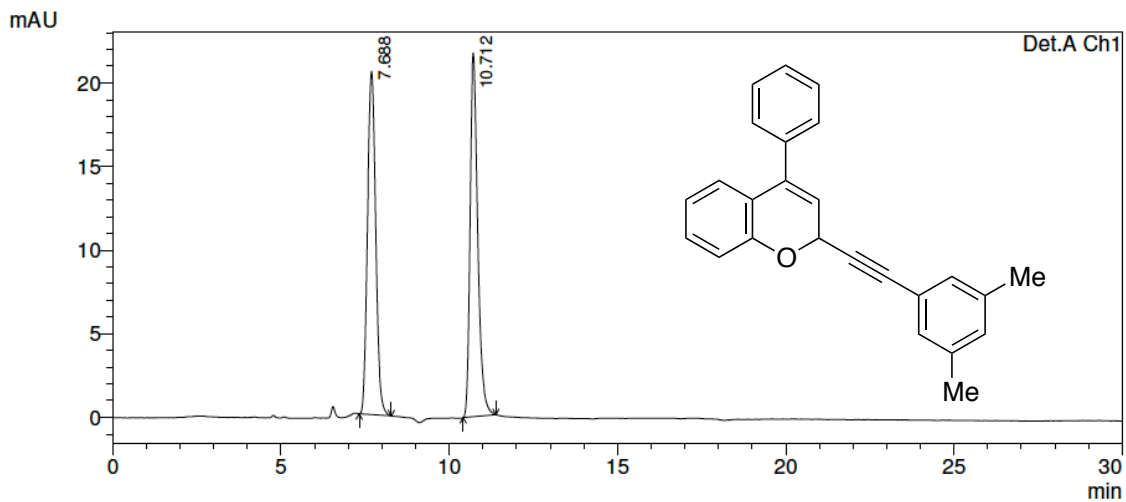
### Compound 8eq, 85% ee



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	11.747	61059	4468	7.519	8.586
2	13.240	751058	47573	92.481	91.414
Total		812117	52041	100.000	100.000

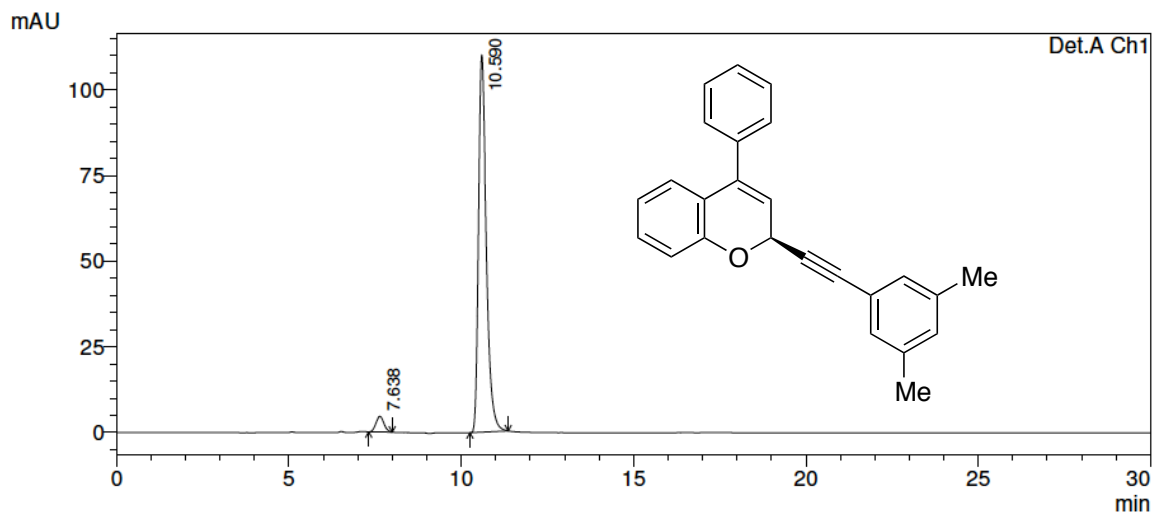
### Compound 8er, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.688	348241	20523	50.226	48.533
2	10.712	345108	21764	49.774	51.467
Total		693349	42287	100.000	100.000

### Compound 8er, 92% ee

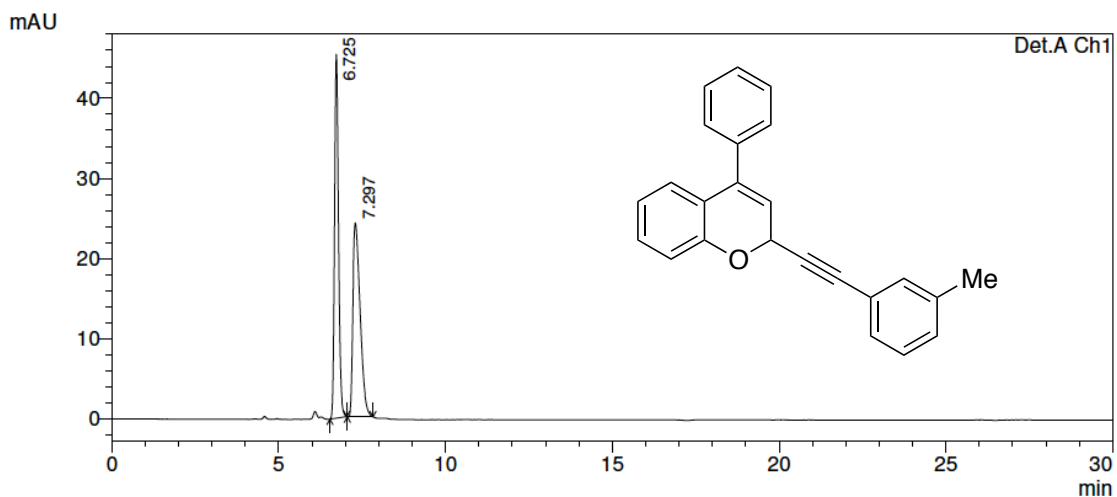


Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.638	73356	4560	4.059	3.972
2	10.590	1733974	110241	95.941	96.028
Total		1807330	114801	100.000	100.000



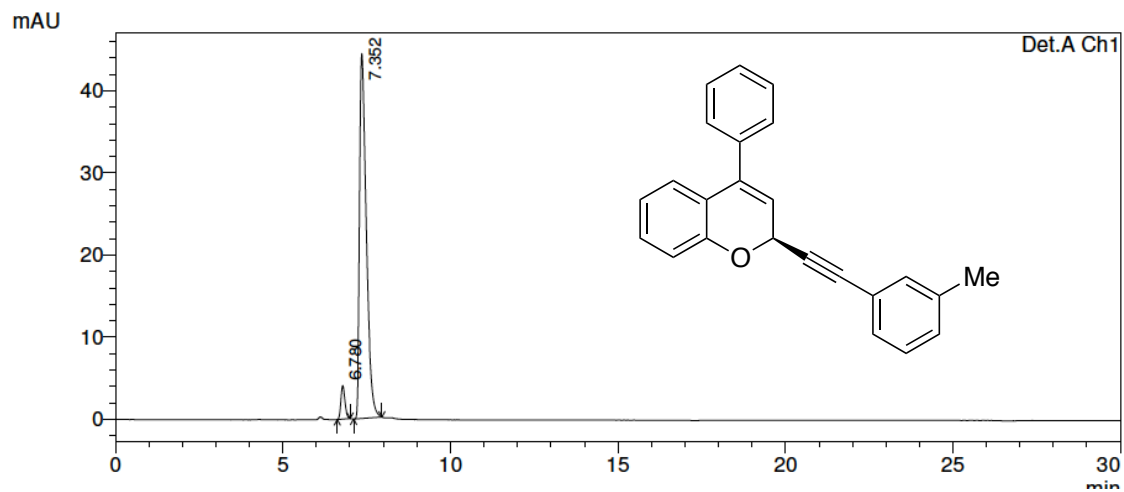
### Compound 8eh, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	6.725	367661	45393	50.075	65.219
2	7.297	366558	24209	49.925	34.781
Total		734219	69602	100.000	100.000

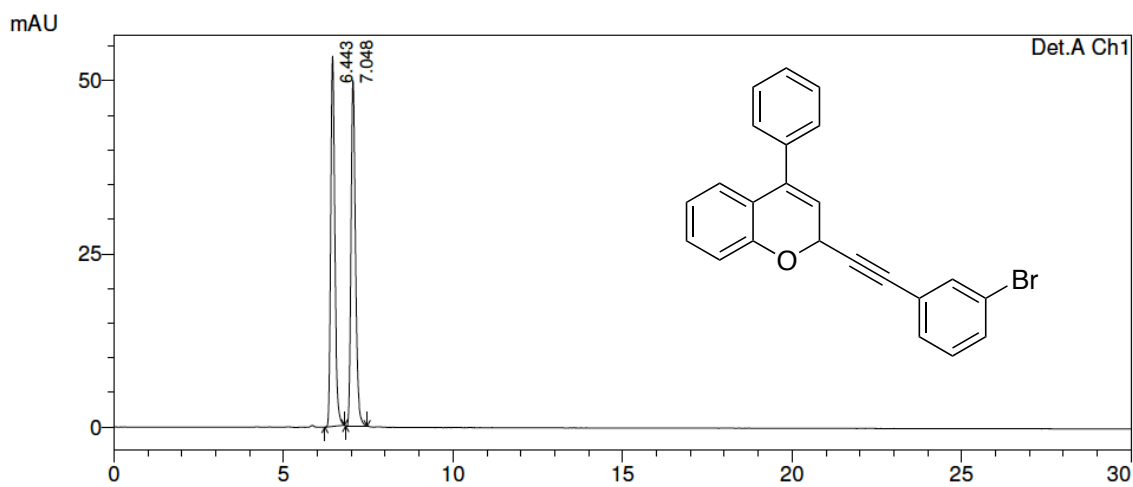
### Compound 8eh, 90% ee



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	6.780	33597	4092	5.135	8.433
2	7.352	620657	44428	94.865	91.567
Total		654254	48520	100.000	100.000

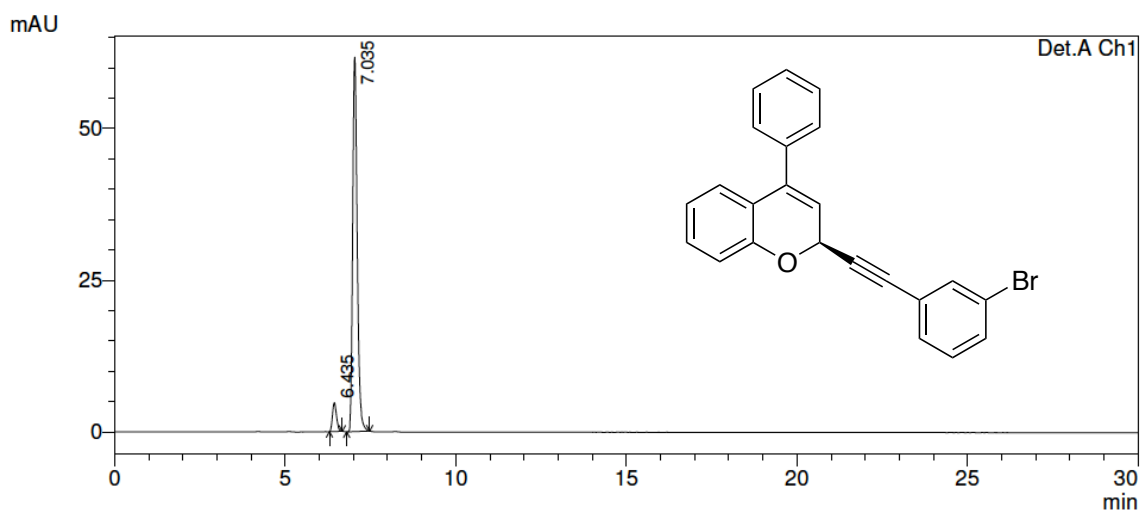
**Compound 8es, racemic**



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	6.443	450129	53435	49.989	51.713
2	7.048	450327	49895	50.011	48.287
Total		900456	103330	100.000	100.000

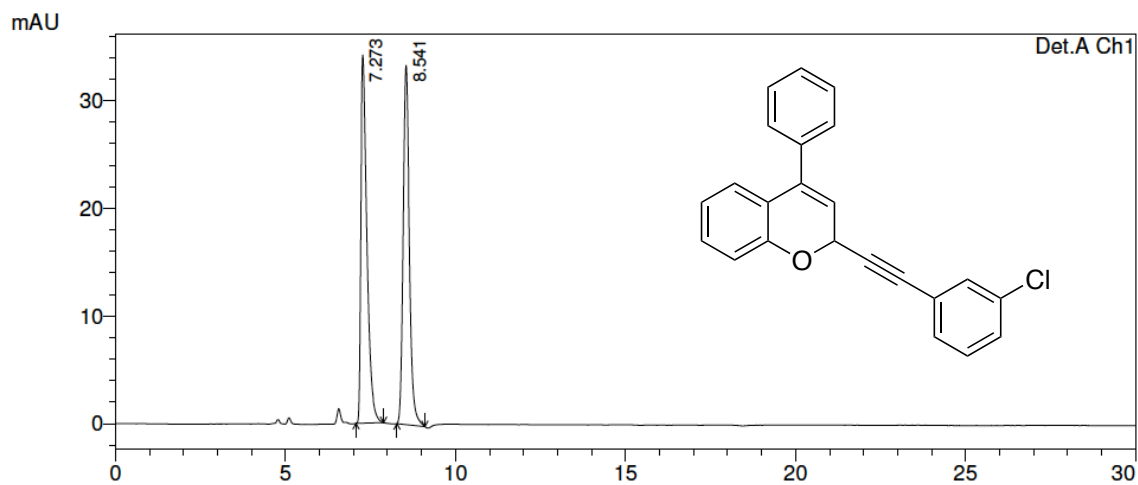
**Compound 8es, 87% ee**



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	6.435	38637	4744	6.446	7.133
2	7.035	560769	61760	93.554	92.867
Total		599406	66504	100.000	100.000

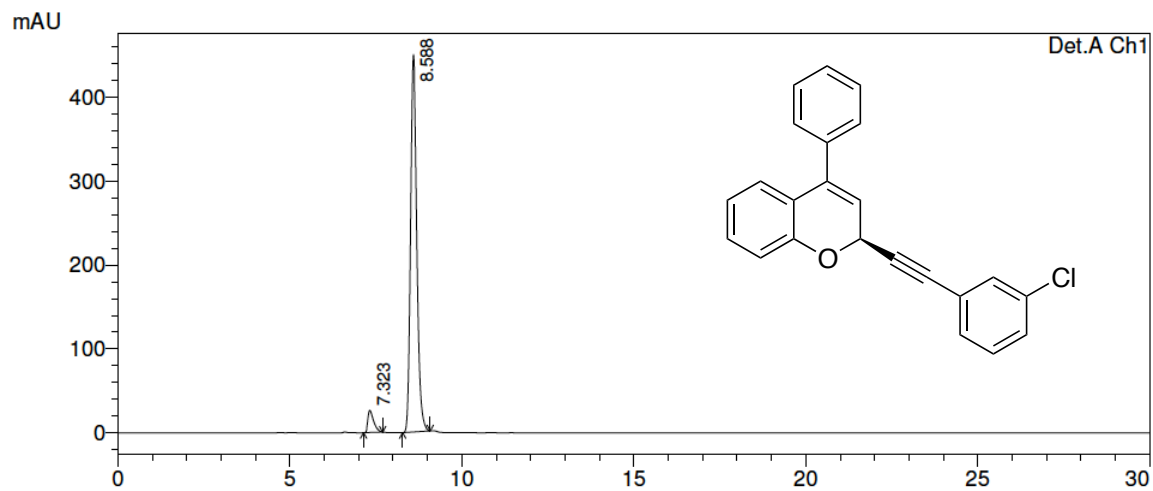
### Compound 8et, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.273	425044	34189	50.130	50.634
2	8.541	422837	33332	49.870	49.366
Total		847881	67521	100.000	100.000

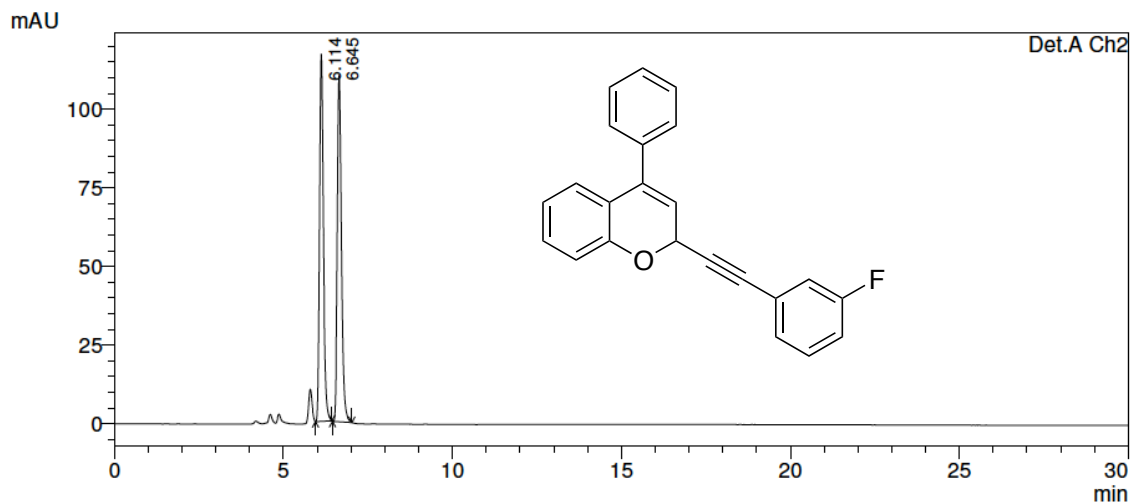
### Compound 8et, 90% ee



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.323	305261	26436	5.086	5.549
2	8.588	5697204	449967	94.914	94.451
Total		6002465	476402	100.000	100.000

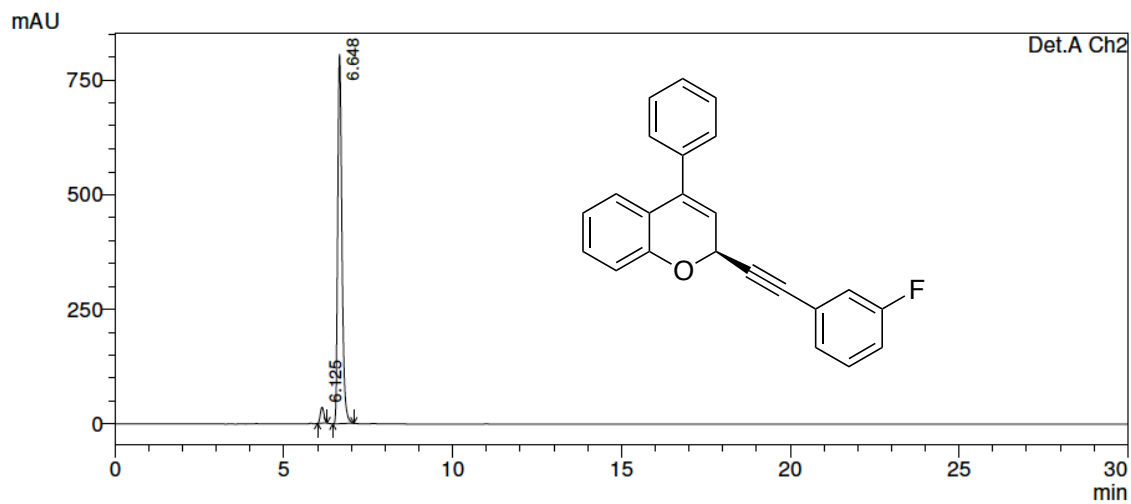
**Compound 8eu, racemic**



Detector A Ch2 220nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	6.114	936018	116766	49.862	51.460
2	6.645	941217	110140	50.138	48.540
Total		1877235	226905	100.000	100.000

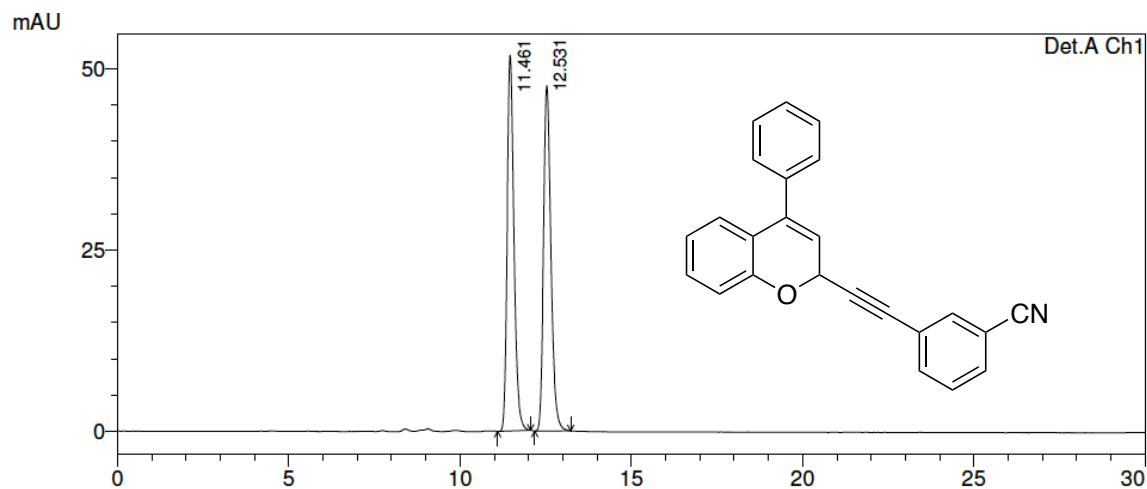
**Compound 8eu, 93% ee**



Detector A Ch2 220nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	6.125	257229	34556	3.579	4.115
2	6.648	6929224	805180	96.421	95.885
Total		7186453	839735	100.000	100.000

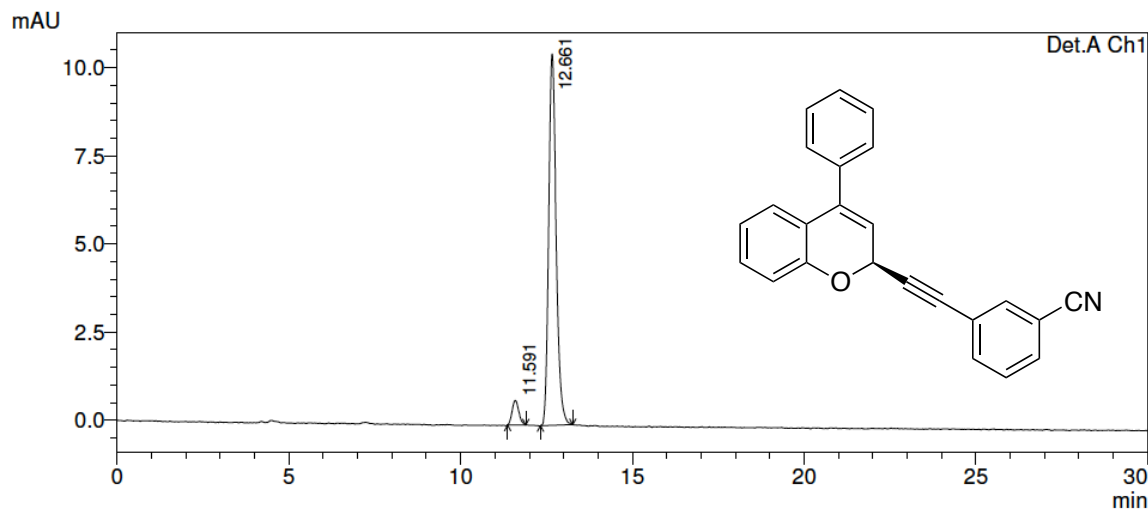
### Compound 8ev, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	11.461	712903	51848	50.034	52.099
2	12.531	711940	47670	49.966	47.901
Total		1424843	99518	100.000	100.000

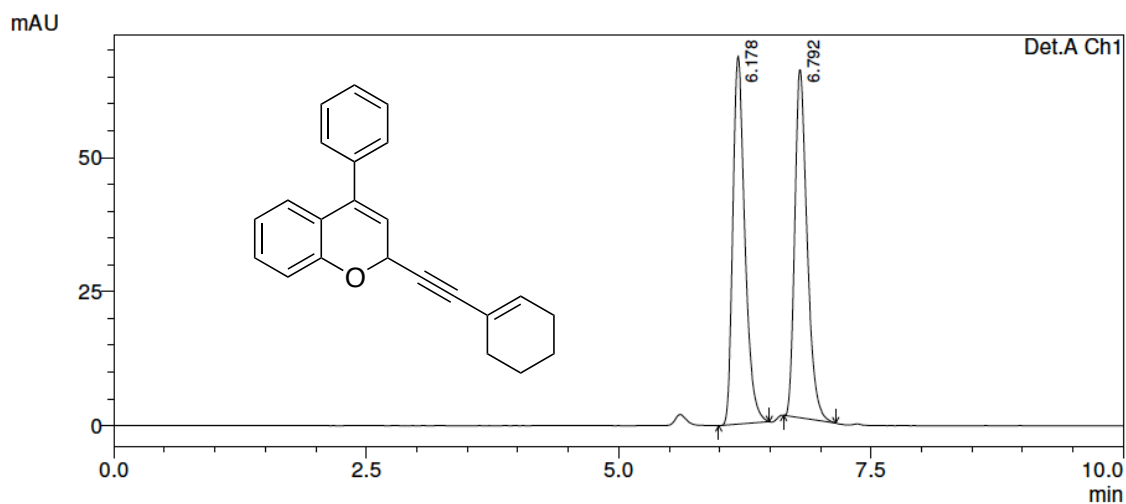
### Compound 8ev, 89% ee



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	11.591	9464	703	5.618	6.254
2	12.661	158992	10533	94.382	93.746
Total		168456	11236	100.000	100.000

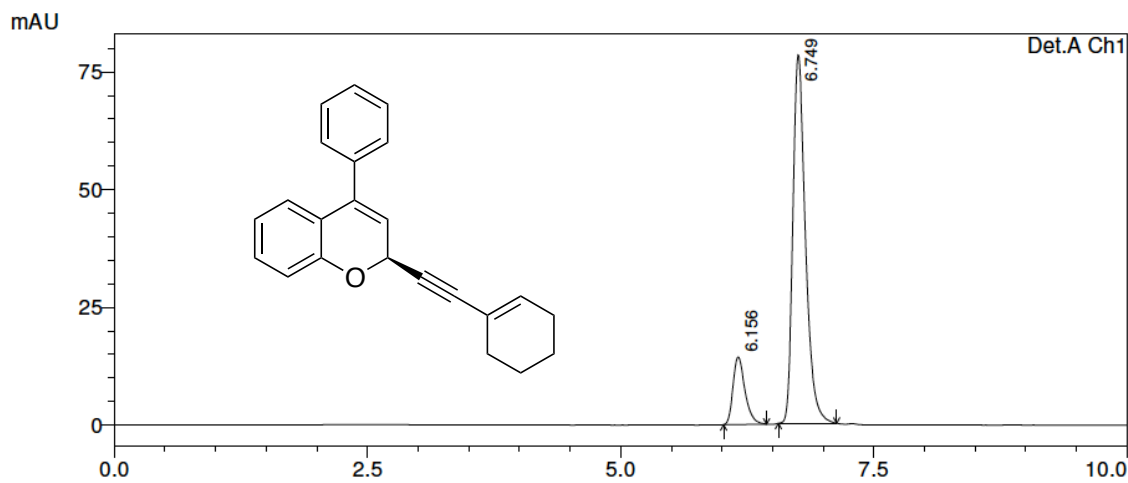
### Compound 8el, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	6.178	571073	68718	50.794	51.418
2	6.792	553212	64928	49.206	48.582
Total		1124285	133646	100.000	100.000

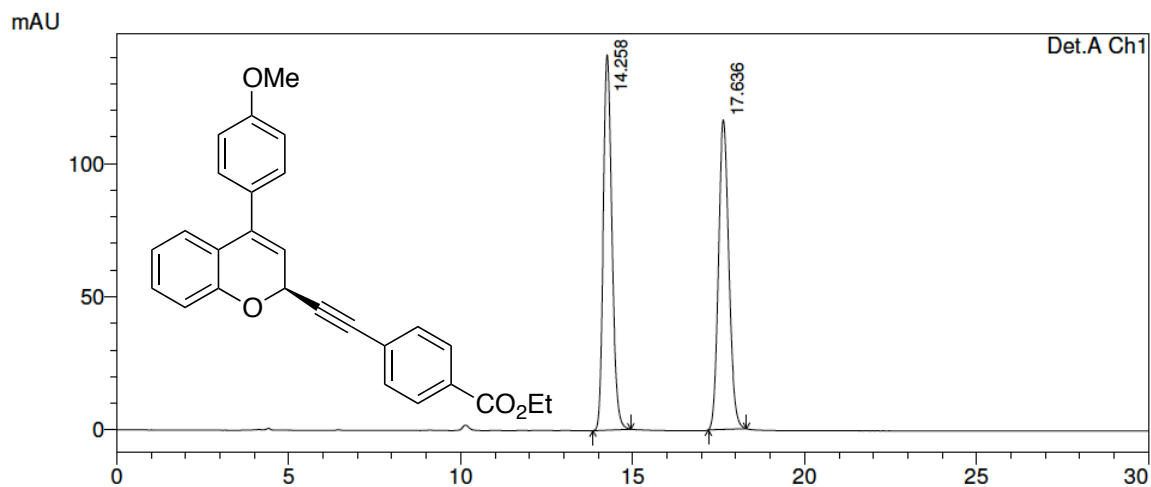
### Compound 8el, 70% ee



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	6.156	118018	14380	14.854	15.512
2	6.749	676481	78324	85.146	84.488
Total		794499	92704	100.000	100.000

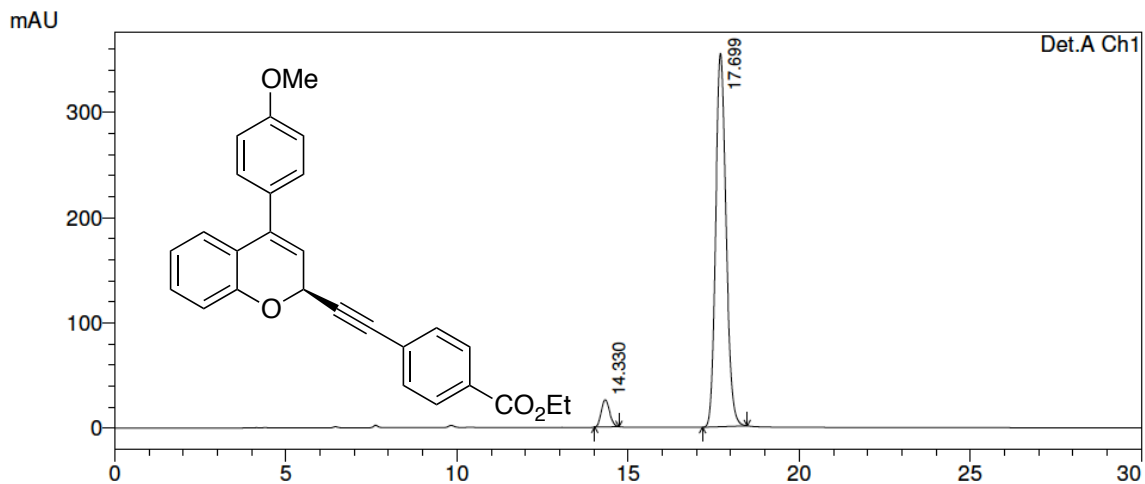
### Compound 8fw, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	14.258	2462334	141006	50.190	54.790
2	17.636	2443684	116349	49.810	45.210
Total		4906018	257355	100.000	100.000

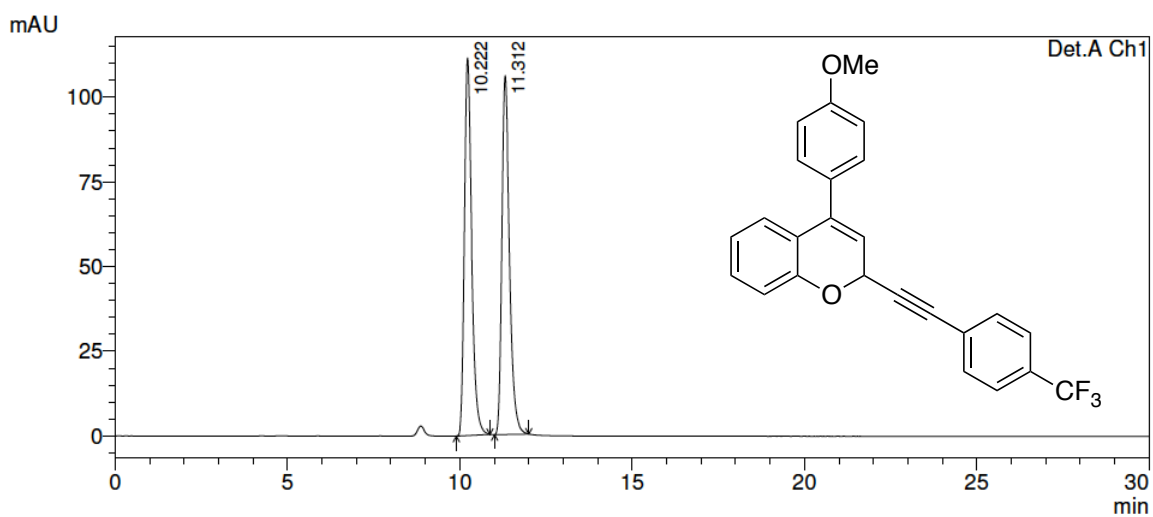
### Compound 8fw, 89% ee



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	14.330	437319	25854	5.490	6.787
2	17.699	7527731	355085	94.510	93.213
Total		7965050	380939	100.000	100.000

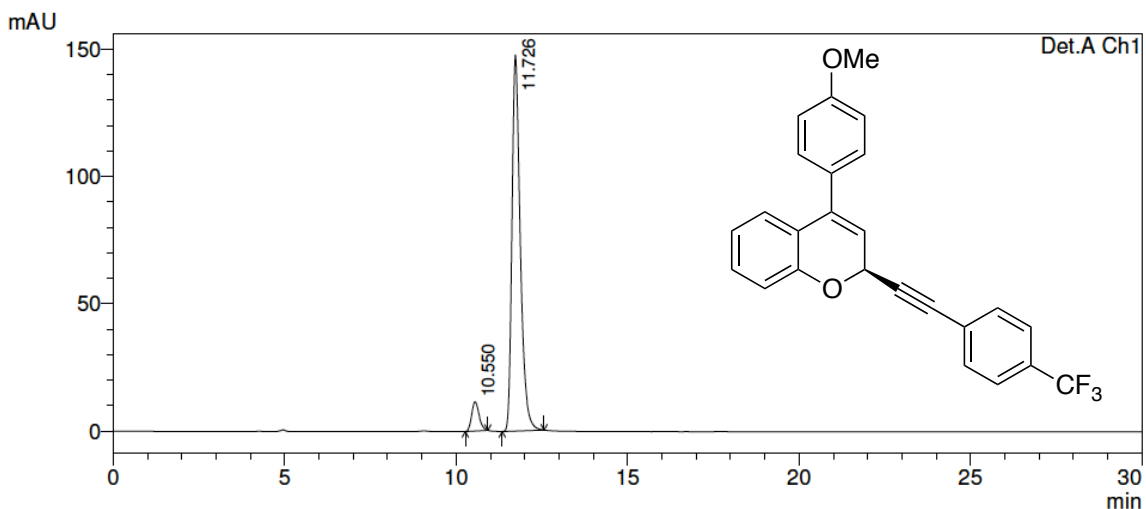
### Compound 8fj, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	10.222	1626626	111427	50.105	51.266
2	11.312	1619783	105924	49.895	48.734
Total		3246410	217351	100.000	100.000

### Compound 8fj, enantioenriched (87% ee)

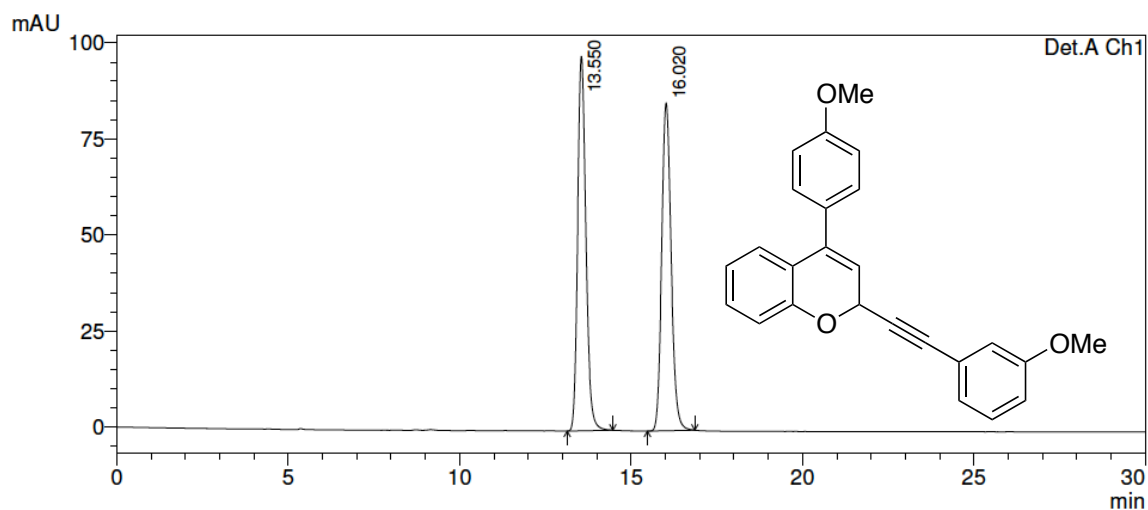


Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	10.550	171369	11467	6.390	7.204
2	11.726	2510376	147708	93.610	92.796
Total		2681745	159175	100.000	100.000



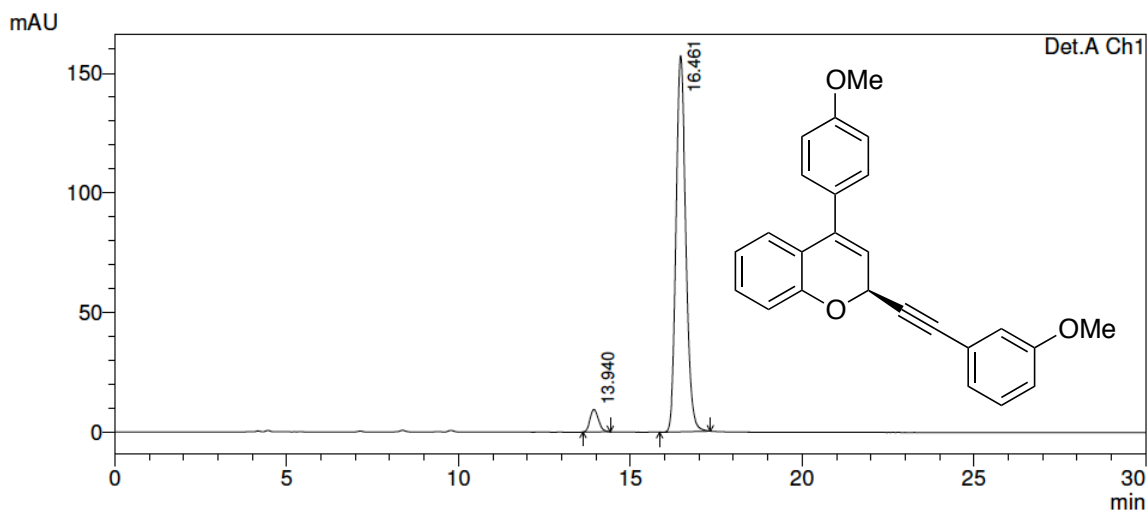
### Compound 8fx, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	13.550	1631840	97481	50.030	53.329
2	16.020	1629909	85310	49.970	46.671
Total		3261749	182791	100.000	100.000

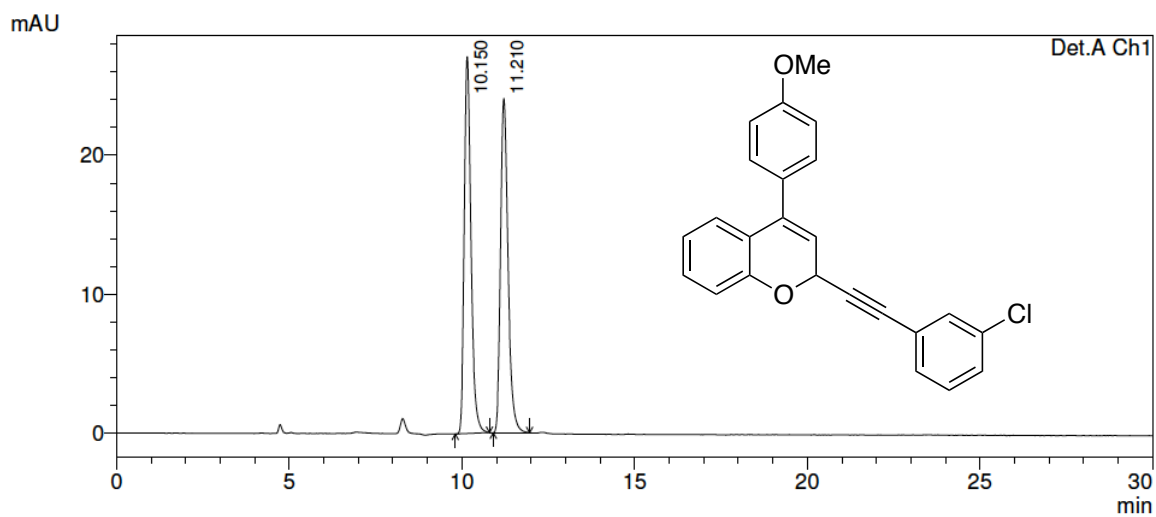
### Compound 8fx, 90% ee



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	13.940	160970	9422	4.923	5.648
2	16.461	3108980	157408	95.077	94.352
Total		3269950	166830	100.000	100.000

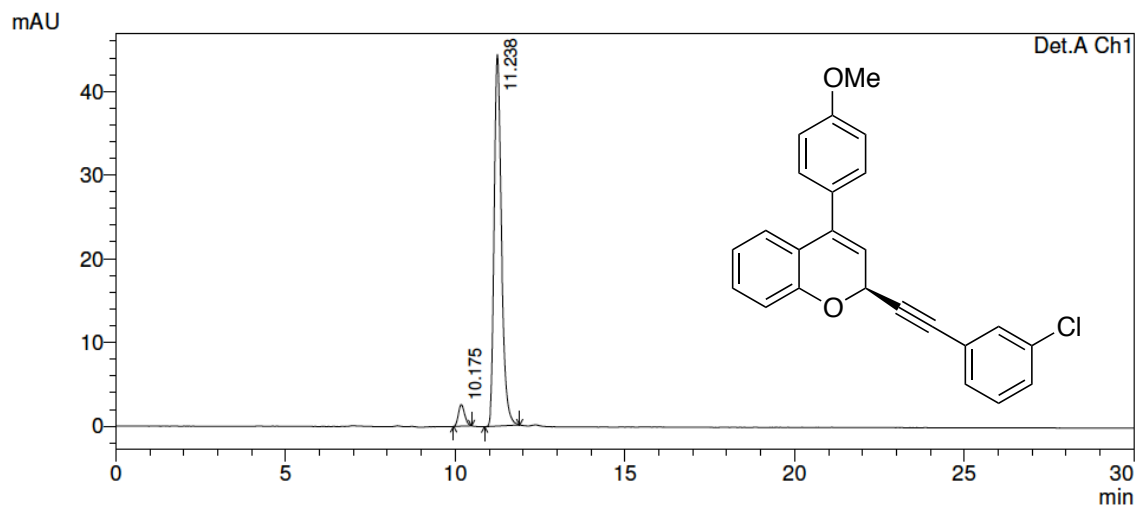
### Compound 8ft, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	10.150	365887	27135	50.281	52.991
2	11.210	361794	24072	49.719	47.009
Total		727680	51208	100.000	100.000

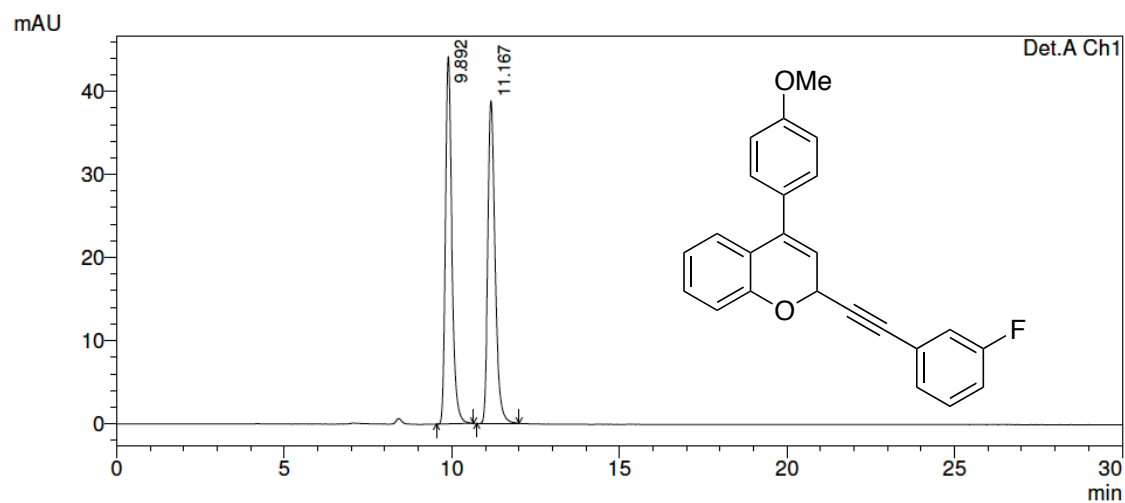
### Compound 8ft, 91% ee



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	10.175	32790	2580	4.697	5.491
2	11.238	665297	44405	95.303	94.509
Total		698087	46985	100.000	100.000

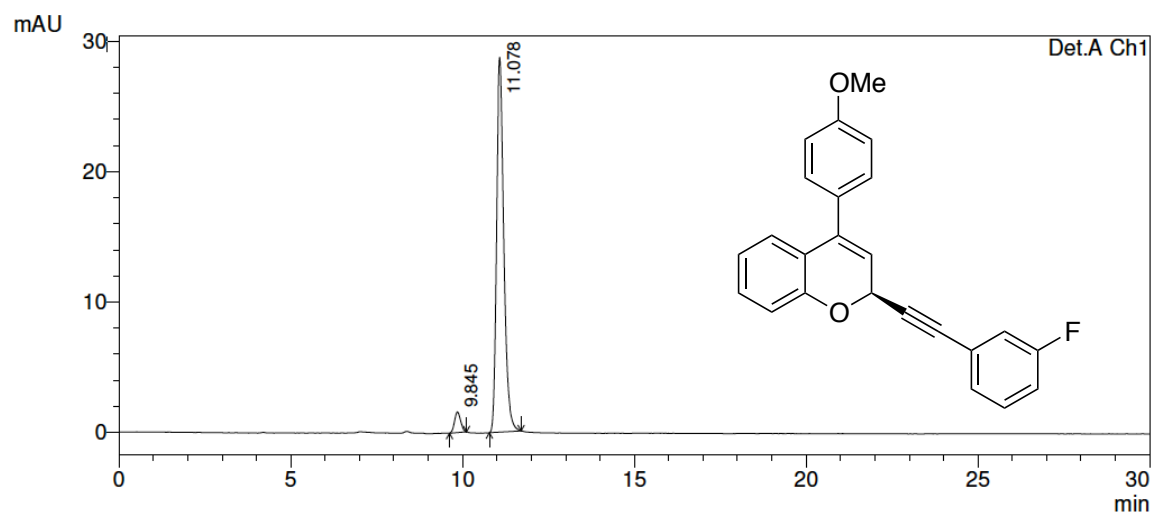
### Compound 8fu, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	9.892	586543	44180	50.120	53.231
2	11.167	583725	38817	49.880	46.769
Total		1170268	82997	100.000	100.000

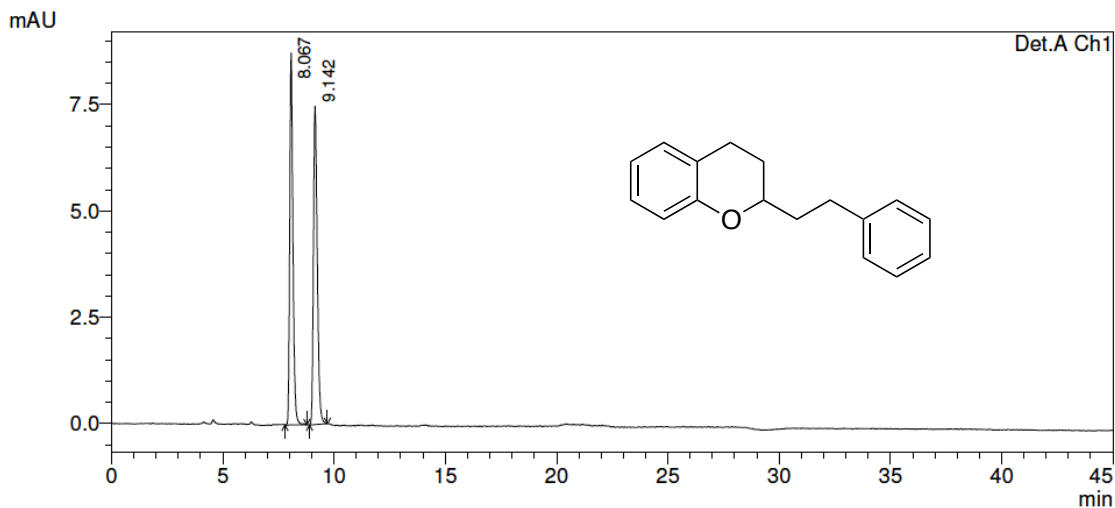
### Compound 8fu, 91% ee



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	9.845	19164	1580	4.344	5.201
2	11.078	421983	28799	95.656	94.799
Total		441147	30379	100.000	100.000

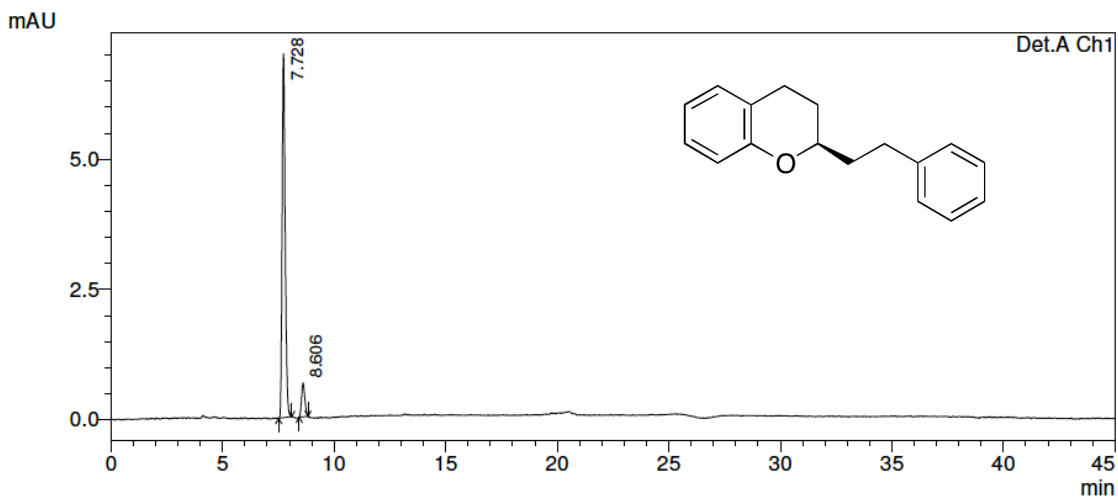
### Compound 9, racemic



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	8.067	89714	8746	50.154	53.886
2	9.142	89164	7485	49.846	46.114
Total		178878	16231	100.000	100.000

### Compound 9, 82% ee



Detector A Ch1 254nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.728	67071	6999	91.101	91.522
2	8.606	6551	648	8.899	8.478
Total		73622	7648	100.000	100.000