

## Supplementary data

### Environmental friendly domino multicomponent strategy for the synthesis of pyrroloquinolinone hybrid heterocycles

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# Selected <sup>1</sup>H and <sup>13</sup>C NMR spectra



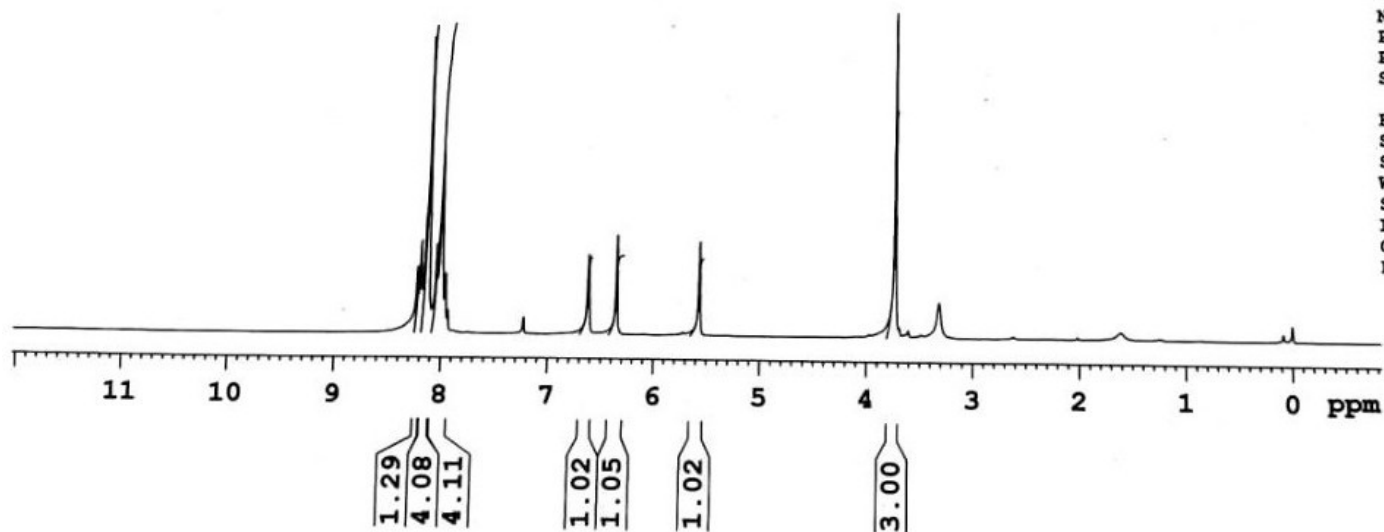
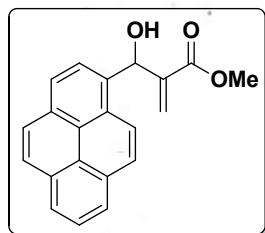
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EXPNO 4  
PROCNO 1

F2 - Acquisition Parameters  
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PROBHD 5 mm DUL 13C-1  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 6172.839 Hz  
FIDRES 0.094190 Hz  
AQ 5.3084660 sec  
RG 101.6  
DW 81.000 usec  
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TE 300.0 K  
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TD0 1

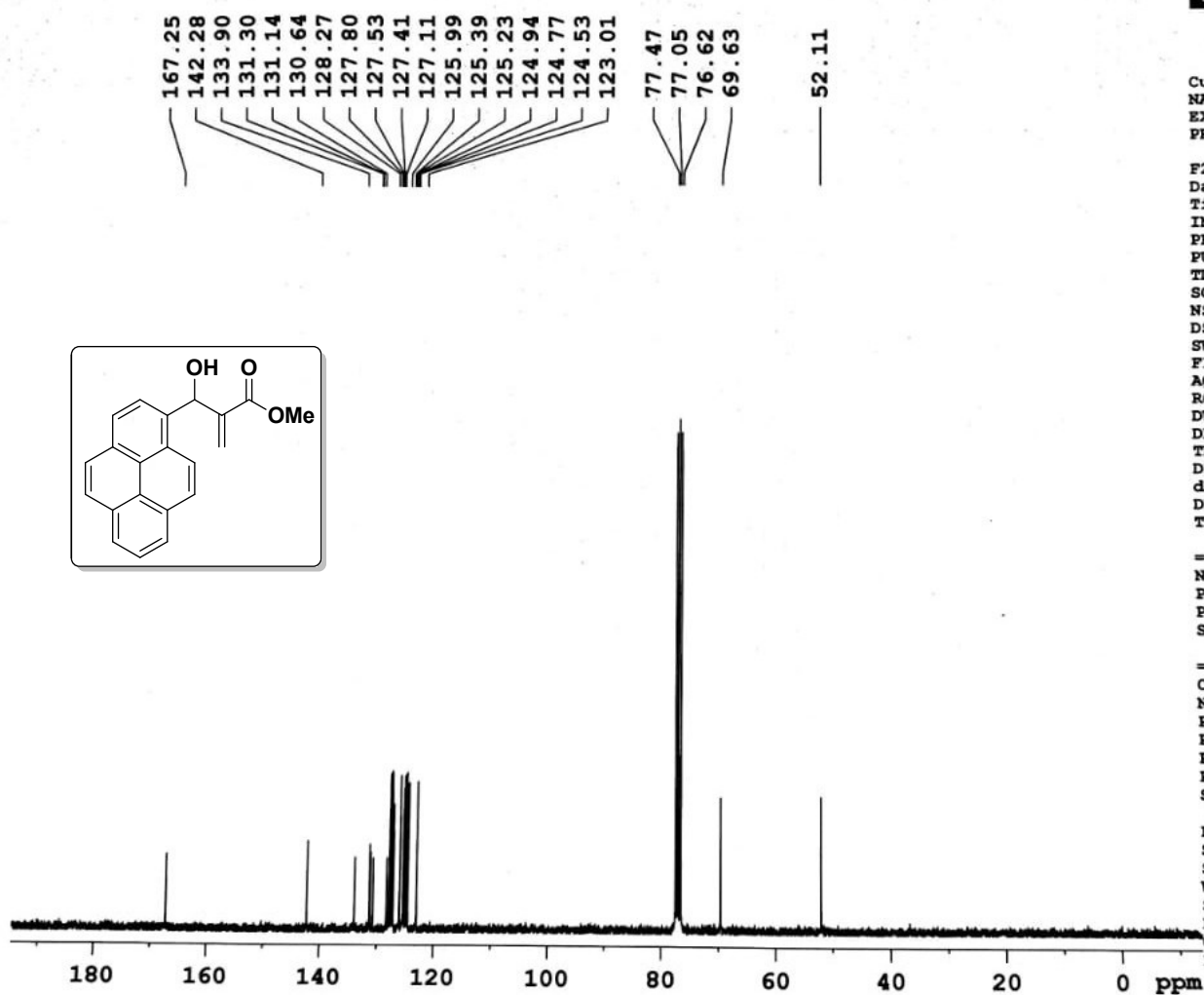
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SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

8.232  
8.201  
8.132  
8.054  
8.008  
7.967  
7.941  
7.230  
6.620  
6.351  
5.569  
3.728



$^1\text{H-NMR}$  spectrum of compound 3



Current Data Parameters  
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 EXPNO 6  
 PROCNO 1

F2 - Acquisition Parameters  
 Date 20140430  
 Time 20.21  
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 PULPROG zgpg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 445  
 DS 4  
 SWH 17985.611 Hz  
 FIDRES 0.274439 Hz  
 AQ 1.8219508 sec  
 RG 2298.8  
 DW 27.800 usec  
 DE 6.00 usec  
 TE 300.0 K  
 D1 2.00000000 sec  
 d11 0.03000000 sec  
 DELTA 1.89999998 sec  
 TD0 1

===== CHANNEL f1 =====  
 NUC1 13C  
 P1 9.30 usec  
 PL1 0.00 dB  
 SFO1 75.4752953 MHz

===== CHANNEL f2 =====  
 CPDPRG2 waltz16  
 NUC2 1H  
 PCPD2 80.00 usec  
 PL2 0.00 dB  
 PL12 15.68 dB  
 PL13 16.00 dB  
 SFO2 300.1312005 MHz

F2 - Processing parameters  
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 GB 0  
 PC 1.40

<sup>13</sup>C-NMR spectrum of compound 3



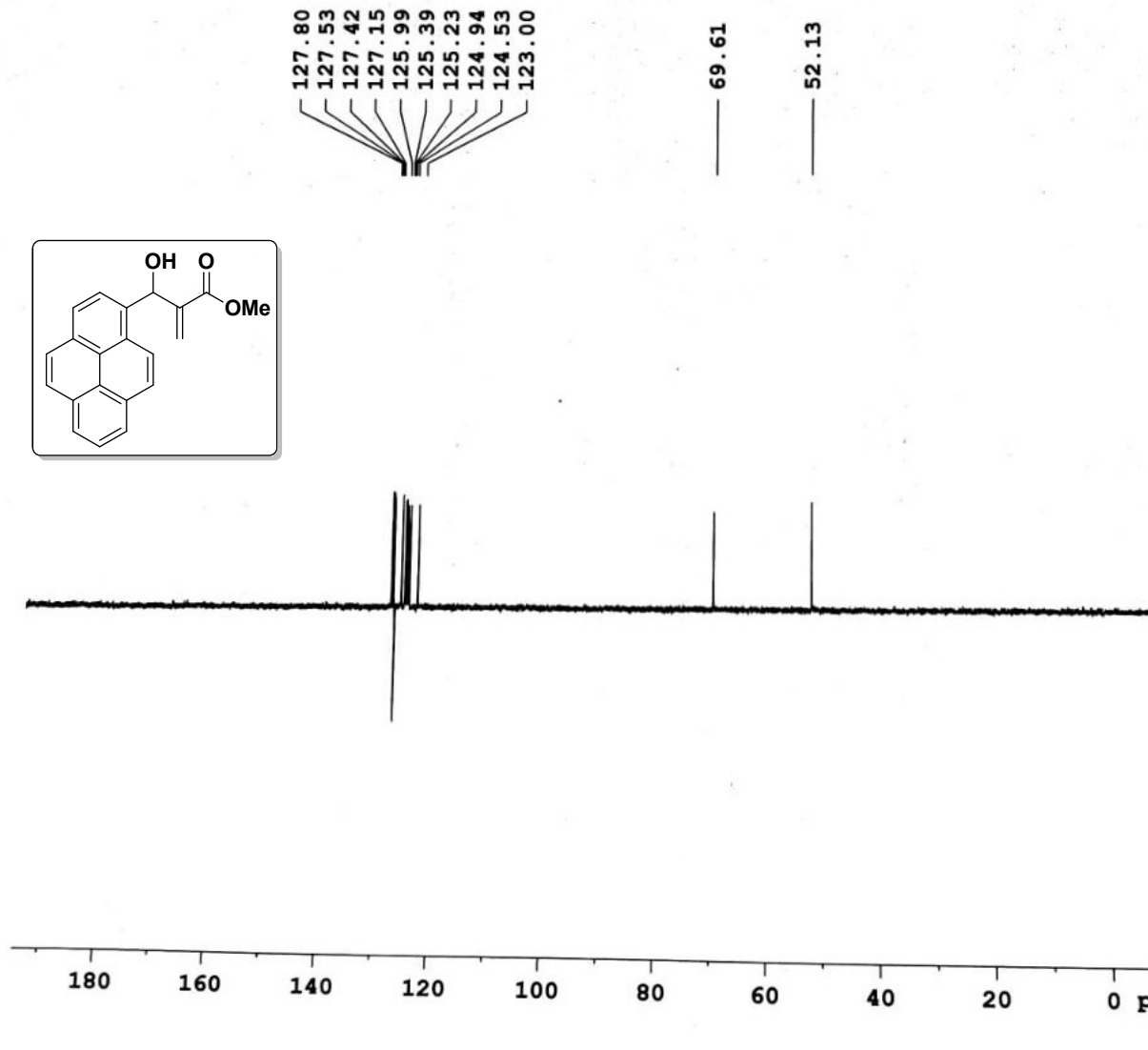
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TD 65536  
SOLVENT CDCl3  
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DS 4  
SWH 17985.611 Hz  
FIDRES 0.274439 Hz  
AQ 1.8219508 sec  
RG 16384  
DW 27.800 usec  
DE 6.00 usec  
TE 300.0 K  
CNST2 145.0000000  
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d2 0.00344828 sec  
d12 0.00002000 sec  
DELTA 0.00001184 sec  
TD0 1

CHANNEL f1  
NUC1 13C  
P1 9.30 usec  
p2 18.60 usec  
PL1 0.00 dB  
SFO1 75.4752953 MHz

CHANNEL f2  
CPDPRG2 waltz16  
NUC2 1H  
P3 13.15 usec  
p4 26.30 usec  
PCPD2 80.00 usec  
PL2 0.00 dB  
PL12 15.68 dB  
SFO2 300.1312005 MHz

F2 - Processing parameters  
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SF 75.4677490 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0



DEPT-NMR spectrum of compound 3

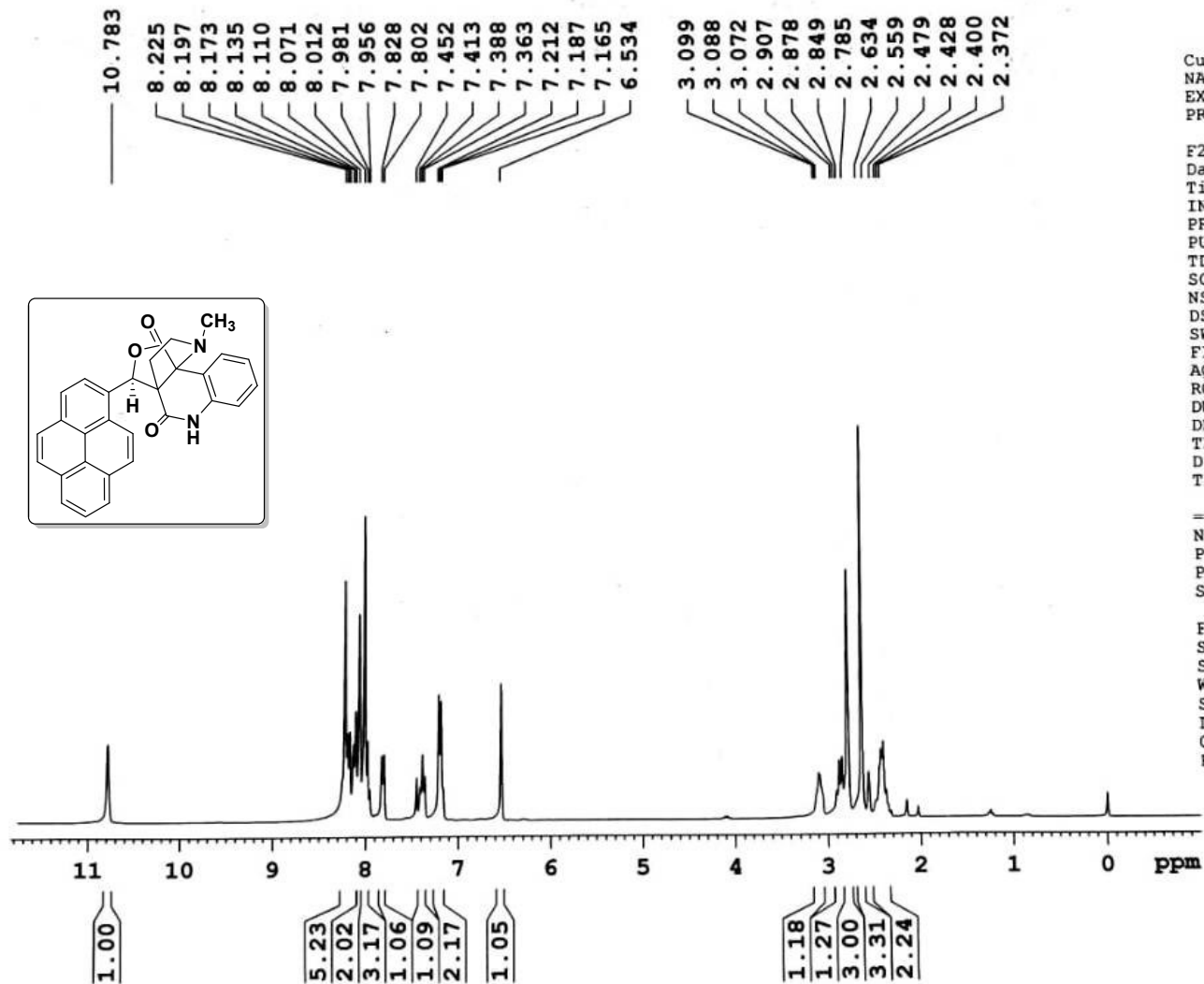


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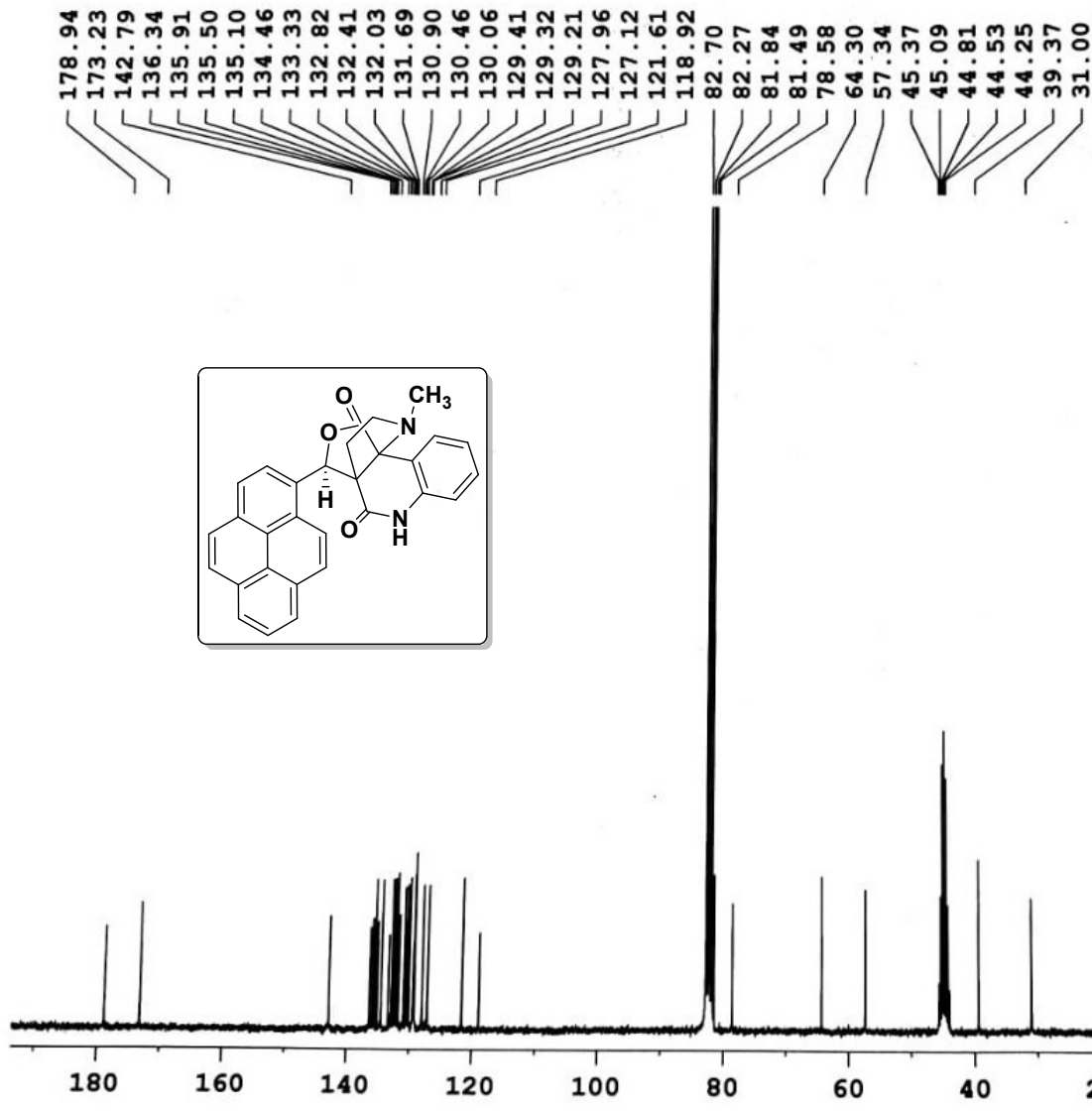
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TD 65536  
SOLVENT CDC13  
NS 18  
DS 2  
SWH 6172.839 Hz  
FIDRES 0.094190 Hz  
AQ 5.3084660 sec  
RG 128  
DW 81.000 usec  
DE 6.00 usec  
TE 300.0 K  
D1 1.00000000 sec  
TD0 1

----- CHANNEL f1 -----  
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P1 13.15 usec  
PL1 0.00 dB  
SFO1 300.1318534 MHz

F2 - Processing parameters  
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PC 1.00



<sup>1</sup>H NMR spectrum of compound 9a



Current Data Parameters  
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EXPNO 3  
PROCNO 1

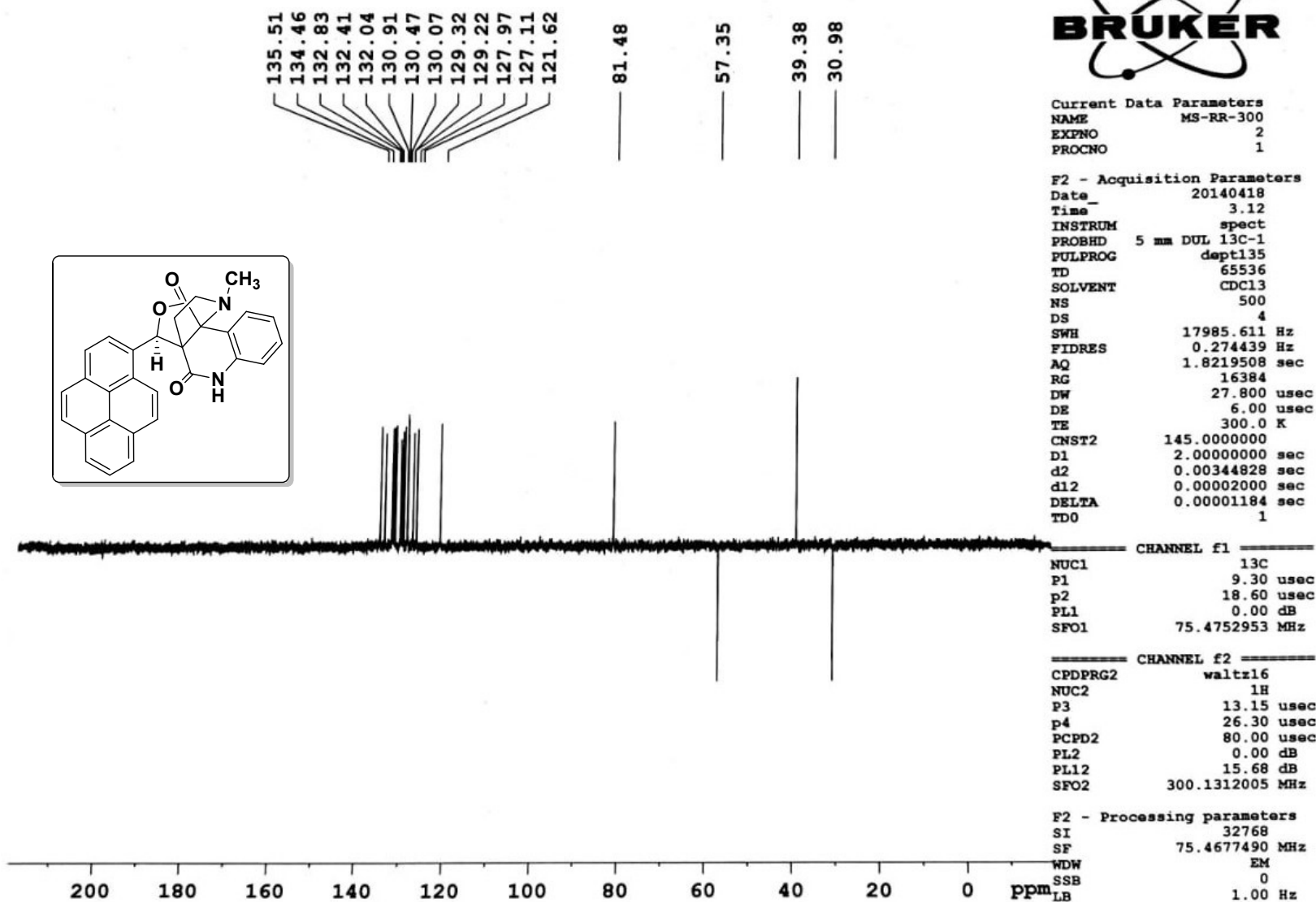
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PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 4926  
DS 4  
SWH 17985.611 Hz  
FIDRES 0.274439 Hz  
AQ 1.8219508 sec  
RG 2896.3  
DW 27.800 usec  
DE 6.00 usec  
TE 300.0 K  
D1 2.00000000 sec  
d11 0.03000000 sec  
DELTA 1.89999998 sec  
TD0 1

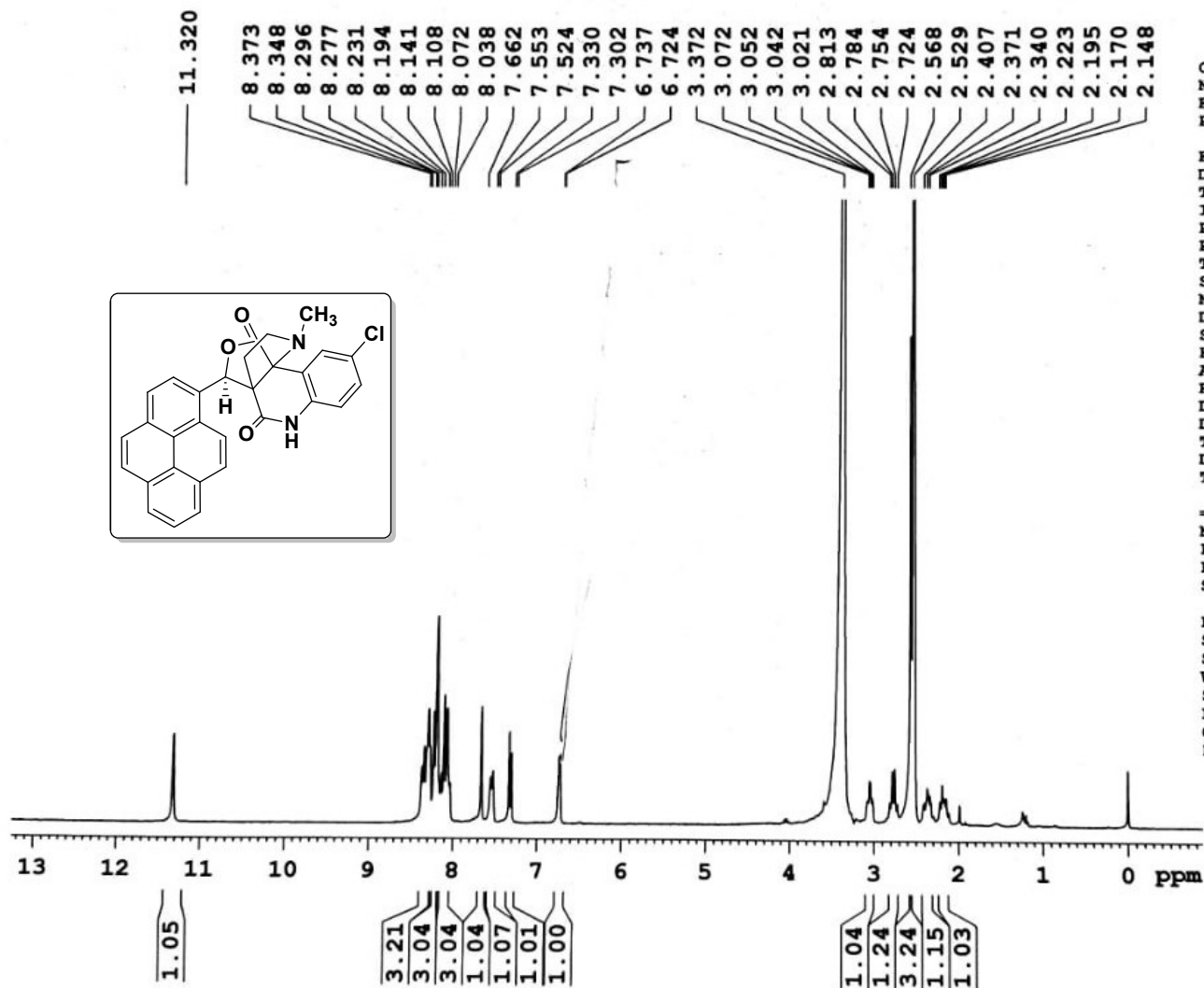
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NUC1 13C  
P1 9.30 usec  
PL1 0.00 dB  
SFO1 75.4752953 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 0.00 dB  
PL12 15.68 dB  
PL13 16.00 dB  
SFO2 300.1312005 MHz

F2 - Processing parameters  
SI 32768  
SF 75.4677490 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

$^{13}\text{C}$  NMR spectrum of compound 9a





Current Data Parameters  
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EXPNO 3  
PROCNO 1

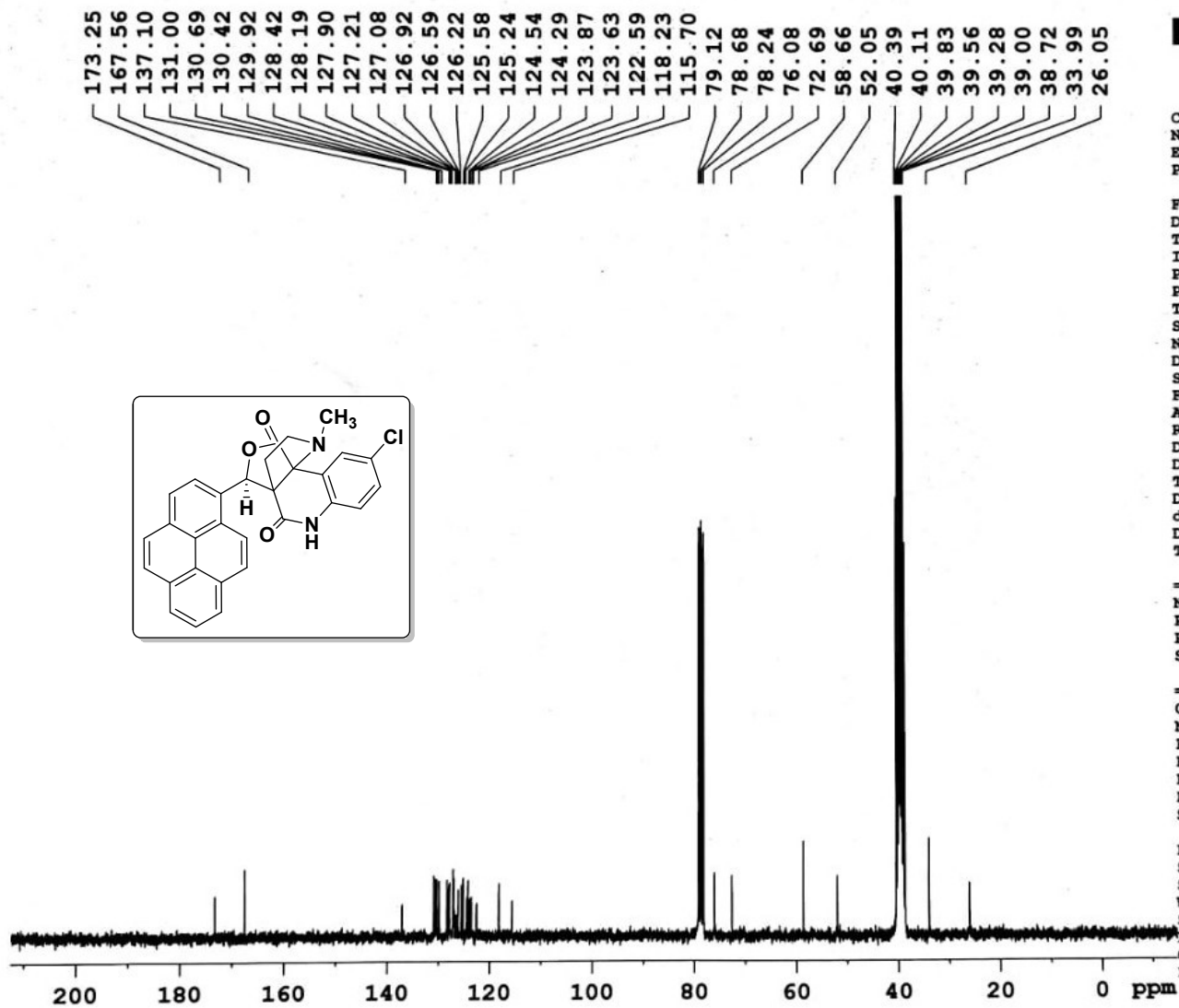
F2 - Acquisition Parameters  
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Time 9.45  
INSTRUM spect  
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PULPROG zg30  
TD 65536  
SOLVENT DMSO  
NS 16  
DS 2  
SWH 6172.839 Hz  
FIDRES 0.094190 Hz  
AQ 5.3084660 sec  
RG 128  
DW 81.000 usec  
DE 6.00 usec  
TE 300.0 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.15 usec  
PL1 0.00 dB  
SFO1 300.1318534 MHz

F2 - Processing parameters  
SI 32768  
SF 300.1299940 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

<sup>1</sup>H NMR spectrum of compound 9b





Current Data Parameters  
 NAME MS-RR-308  
 EXPNO 2  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20140411  
 Time\_ 4.46  
 INSTRUM spect  
 PROBHD 5 mm DUL 13C-1  
 PULPROG zgpg30  
 TD 65536  
 SOLVENT DMSO  
 NS 5915  
 DS 4  
 SWH 17985.611 Hz  
 FIDRES 0.274439 Hz  
 AQ 1.8219508 sec  
 RG 9195.2  
 DW 27.800 usec  
 DE 6.00 usec  
 TE 300.0 K  
 D1 2.00000000 sec  
 d11 0.03000000 sec  
 DELTA 1.89999998 sec  
 TD0 1

CHANNEL f1  
 NUC1 13C  
 P1 9.30 usec  
 PL1 0.00 dB  
 SFO1 75.4752953 MHz

CHANNEL f2  
 CPDPRG2 waltz16  
 NUC2 1H  
 PCPD2 80.00 usec  
 PL2 0.00 dB  
 PL12 15.68 dB  
 PL13 16.00 dB  
 SFO2 300.1312005 MHz

F2 - Processing parameters  
 SI 32768  
 SF 75.4677867 MHz  
 WDW EM  
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 LB 1.00 Hz  
 GB 0  
 PC 1.40

<sup>13</sup>C NMR spectrum of compound 9b



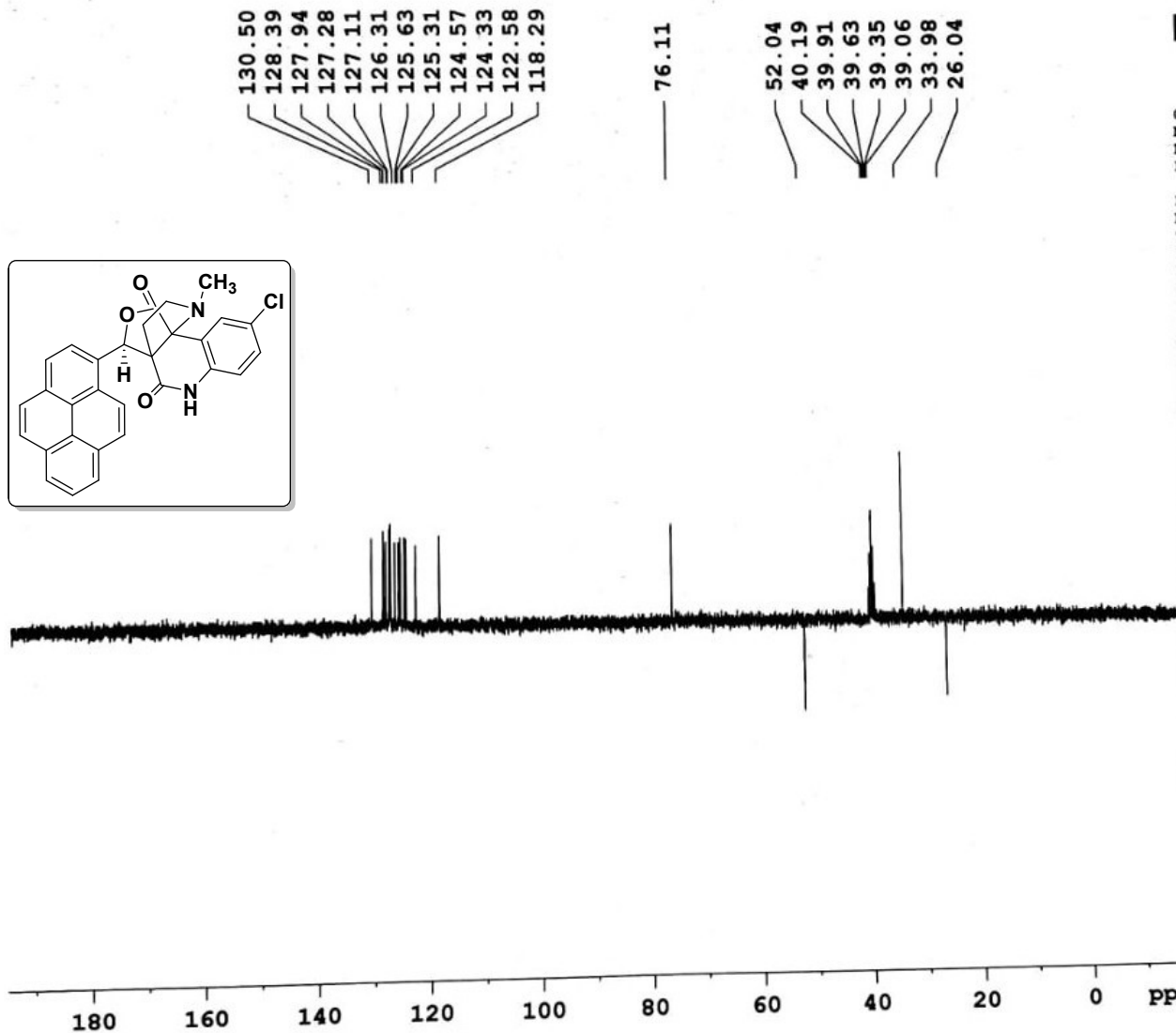
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PROCNO 1

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PULPROG dept135  
TD 65536  
SOLVENT DMSO  
NS 1947  
DS 4  
SWH 17985.611 Hz  
FIDRES 0.274439 Hz  
AQ 1.8219508 sec  
RG 16384  
DW 27.800 usec  
DE 6.00 usec  
TE 300.0 K  
CNST2 145.0000000  
D1 2.0000000 sec  
d2 0.00344828 sec  
d12 0.00002000 sec  
DELTA 0.00001184 sec  
TD0 1

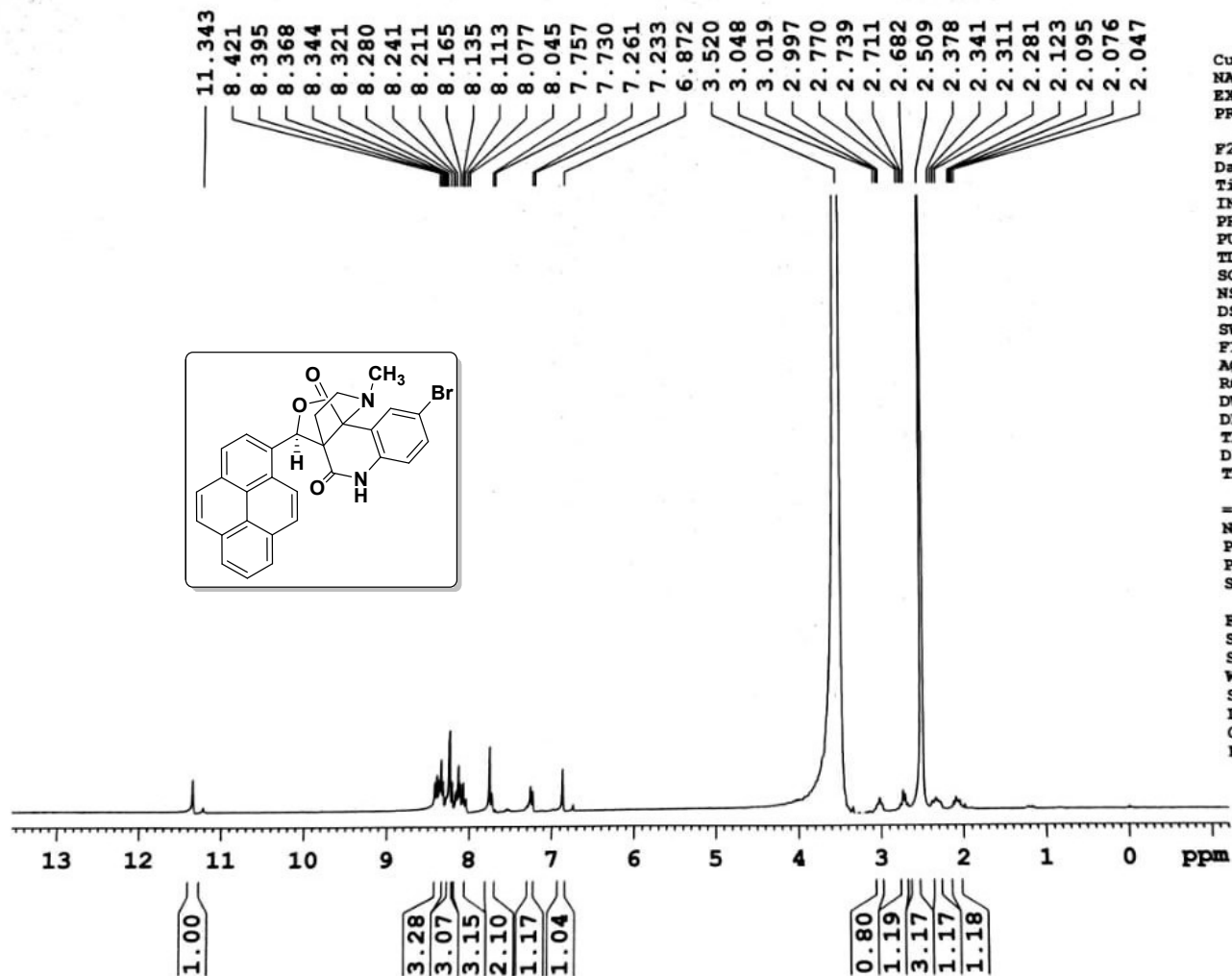
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p2 18.60 usec  
PL1 0.00 dB  
SFO1 75.4752953 MHz

CHANNEL f2  
CPDPRG2 waltz16  
NUC2 1H  
P3 13.15 usec  
p4 26.30 usec  
PCPD2 80.00 usec  
PL2 0.00 dB  
PL12 15.68 dB  
SFO2 300.1312005 MHz

F2 - Processing parameters  
SI 32768  
SF 75.4677867 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
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DEPT 135 NMR spectrum of compound 9b



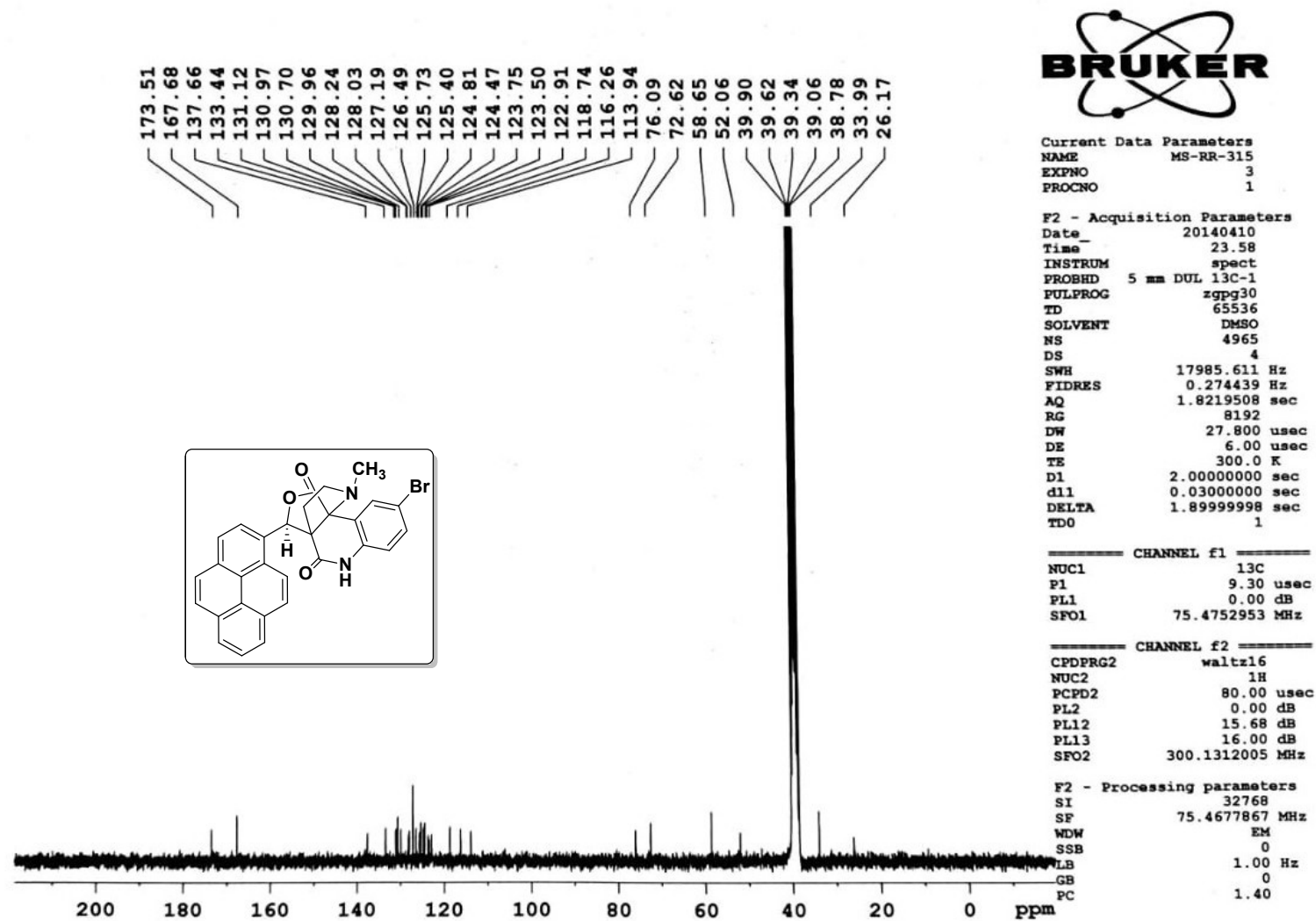
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EXPNO 1  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20140410  
Time 21.07  
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PULPROG zg30  
TD 65536  
SOLVENT DMSO  
NS 16  
DS 2  
SWH 6172.839 Hz  
FIDRES 0.094190 Hz  
AQ 5.3084660 sec  
RG 50.8  
DW 81.000 usec  
DE 6.00 usec  
TE 300.0 K  
D1 1.00000000 sec  
TD0 1

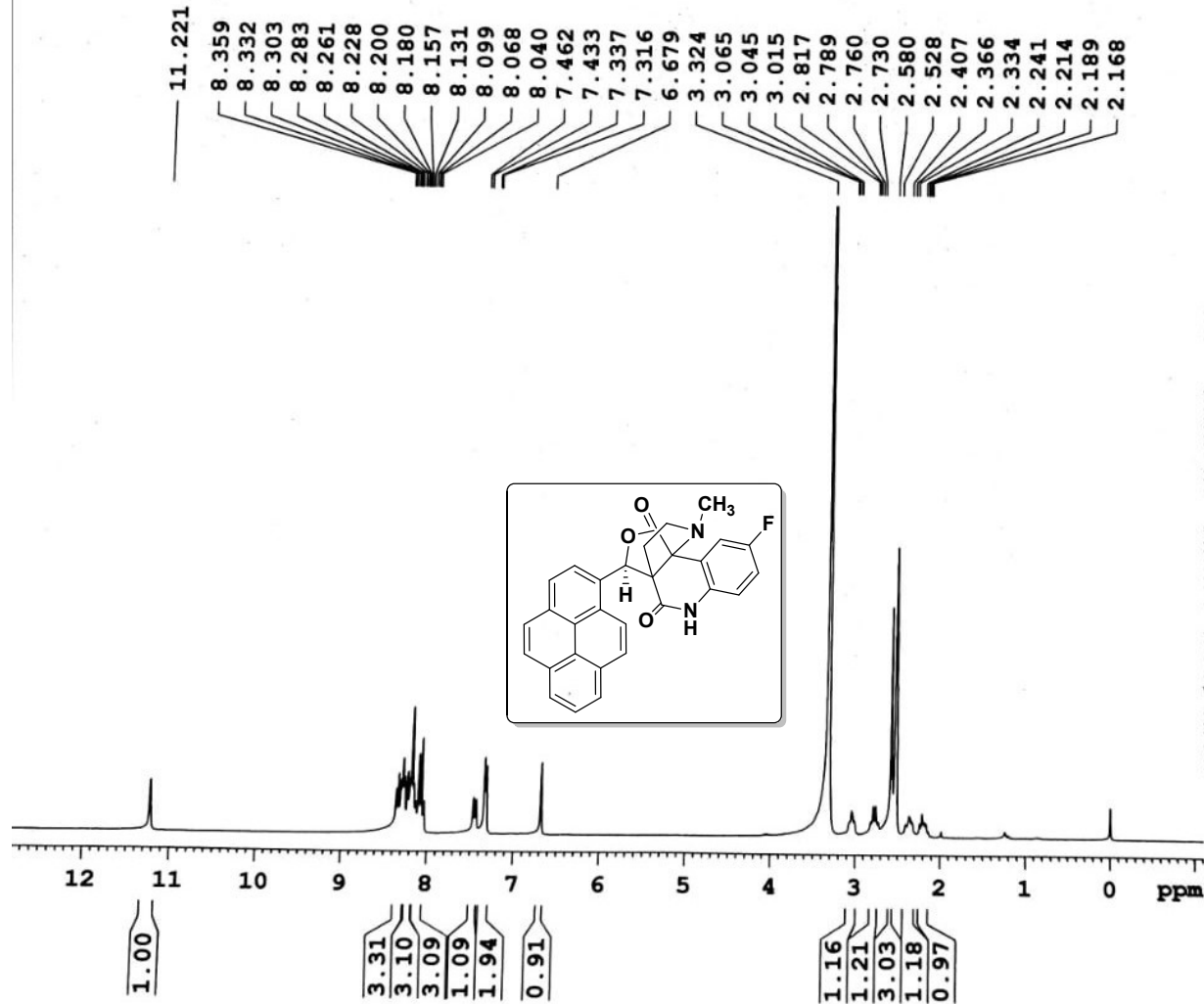
CHANNEL f1  
NUC1 1H  
P1 13.15 usec  
PL1 0.00 dB  
SFO1 300.1318534 MHz

F2 - Processing parameters  
SI 32768  
SF 300.1300000 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

<sup>1</sup>H NMR spectrum of compound 9c



$^{13}\text{C}$  NMR spectrum of compound **9c**



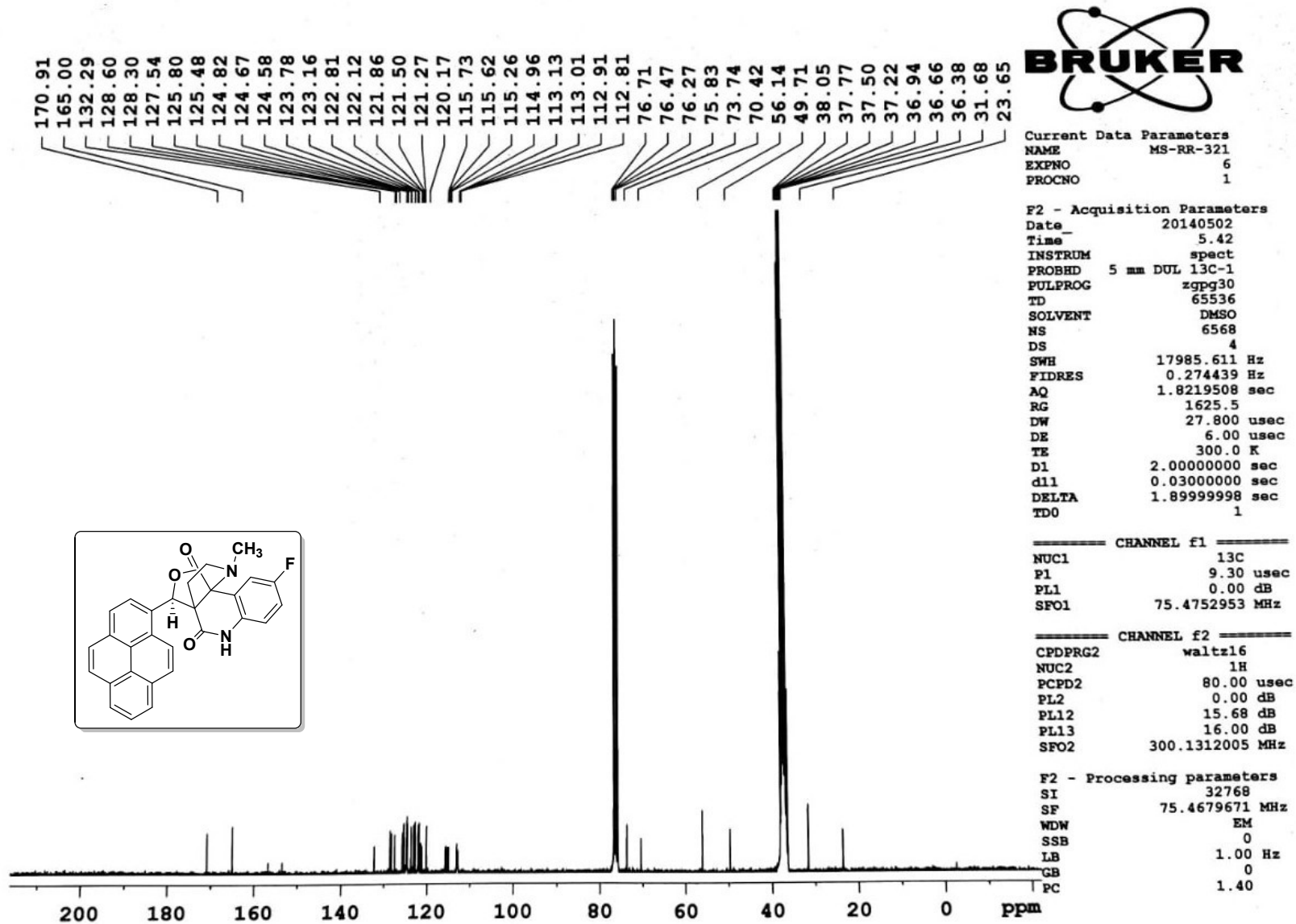
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NAME MS-RR-321  
EXPNO 7  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20140502  
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PROBHD 5 mm DUL 13C-1  
PULPROG zg30  
TD 65536  
SOLVENT DMSO  
NS 16  
DS 2  
SWH 6172.839 Hz  
FIDRES 0.094190 Hz  
AQ 5.3084660 sec  
RG 181  
DW 81.000 usec  
DE 6.00 usec  
TE 300.0 K  
D1 1.00000000 sec  
TD0 1

CHANNEL f1  
NUC1 1H  
P1 13.15 usec  
PL1 0.00 dB  
SFO1 300.1318534 MHz

F2 - Processing parameters  
SI 32768  
SF 300.1299947 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

$^1\text{H}$  NMR spectrum of compound 9d



$^{13}\text{C}$  NMR spectrum of compound 9d



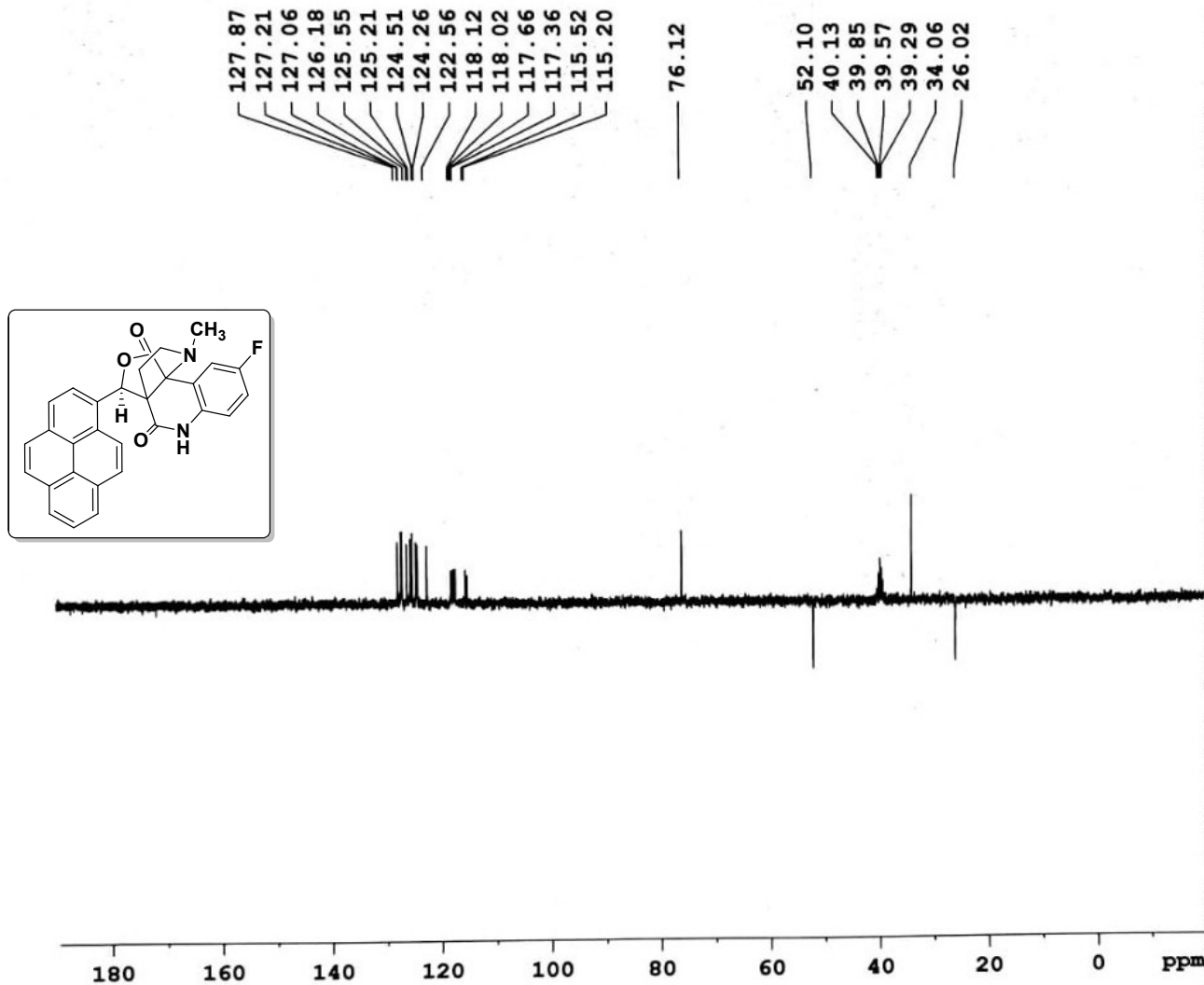
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EXPNO 8  
PROCNO 1

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Time\_ 8.50  
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PROBHD 5 mm DUL 13C-1  
PULPROG dept135  
TD 65536  
SOLVENT DMSO  
NS 1019  
DS 4  
SWH 17985.611 Hz  
FIDRES 0.274439 Hz  
AQ 1.8219508 sec  
RG 16384  
DW 27.800 usec  
DE 6.00 usec  
TE 300.0 K  
CNST2 145.0000000  
D1 2.0000000 sec  
d2 0.00344828 sec  
d12 0.00002000 sec  
DELTA 0.00001184 sec  
TD0 1

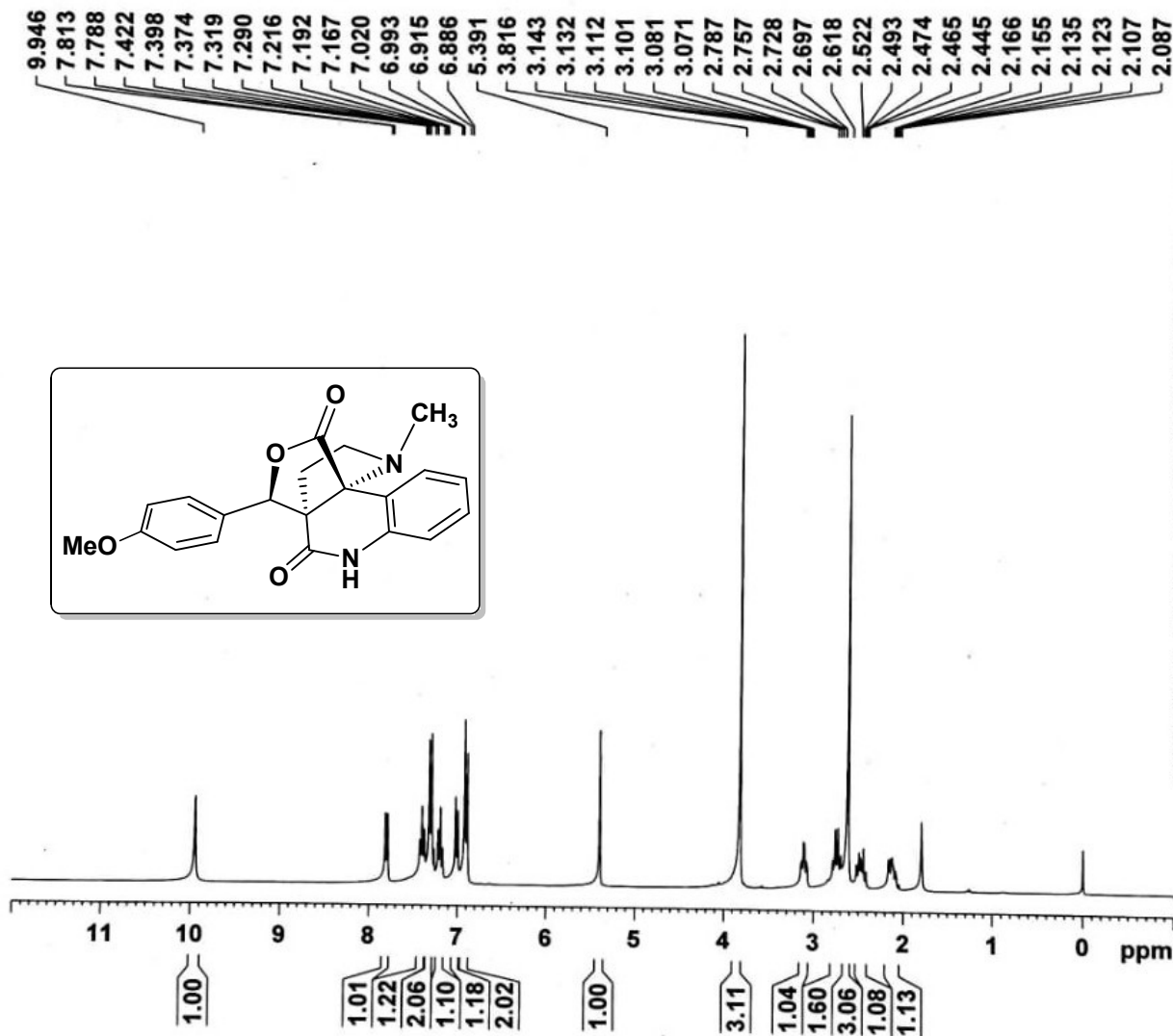
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NUC1 13C  
P1 9.30 usec  
P2 18.60 usec  
PL1 0.00 dB  
SFO1 75.4752953 MHz

CHANNEL f2  
CPDPRG2 waltz16  
NUC2 1H  
P3 13.15 usec  
P4 26.30 usec  
PCPD2 80.00 usec  
PL2 0.00 dB  
PL12 15.68 dB  
SFO2 300.1312005 MHz

F2 - Processing parameters  
SI 32768  
SF 75.4677867 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
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DEPT 135 NMR spectrum of compound 9d



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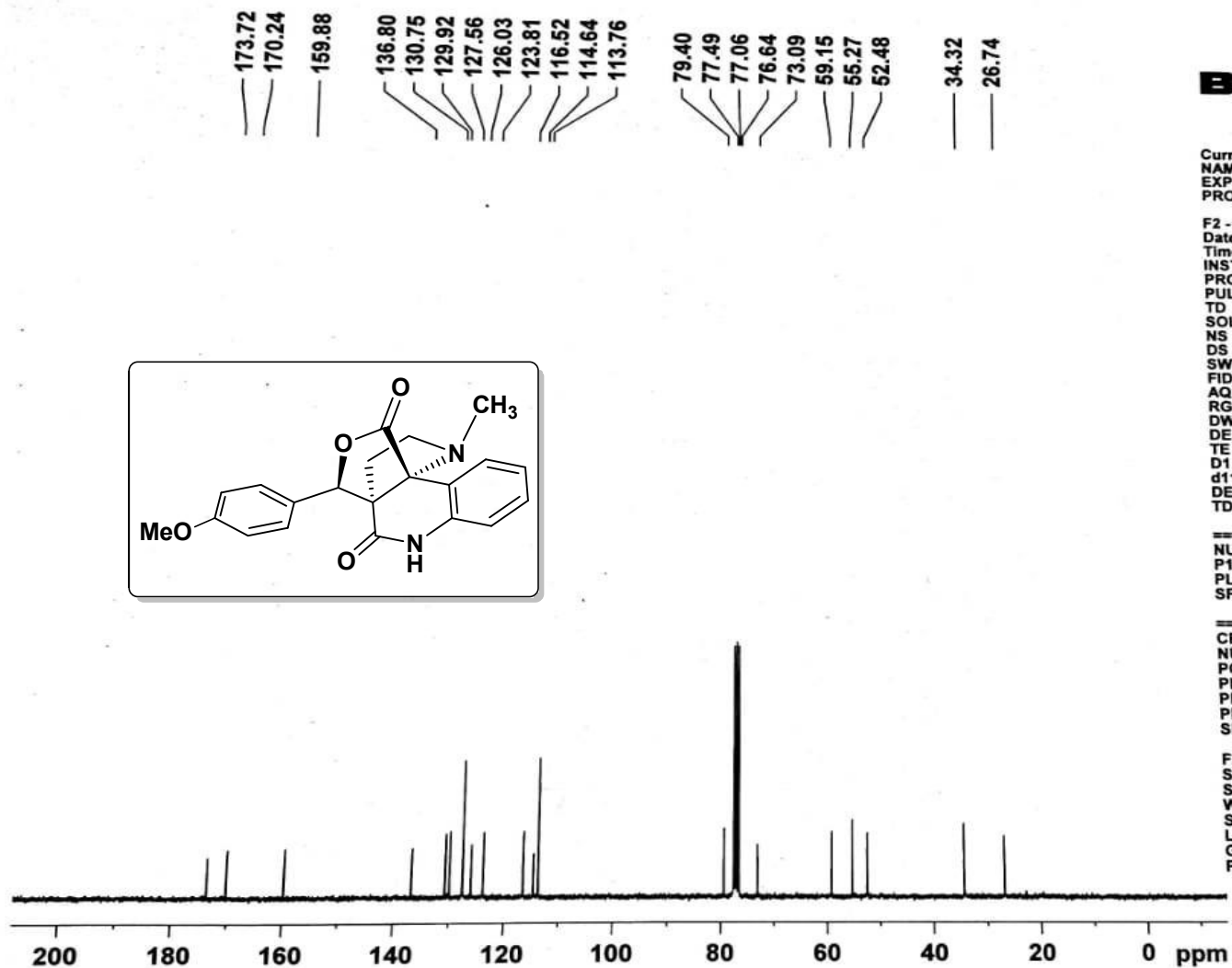
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 Time 12.29  
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 PULPROG zg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 16  
 DS 2  
 SWH 6172.839 Hz  
 FIDRES 0.094190 Hz  
 AQ 5.3084660 sec  
 RG 90.5  
 DW 81.000 usec  
 DE 6.00 usec  
 TE 300.0 K  
 D1 1.00000000 sec  
 TD0 1

===== CHANNEL f1 =====  
 NUC1 1H  
 P1 13.15 usec  
 PL1 0.00 dB  
 SFO1 300.1318534 MHz

F2 - Processing parameters  
 SI 32768  
 SF 300.1300060 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00

<sup>1</sup>H-NMR spectrum of compound 10a





Current Data Parameters  
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 PROCNO 1

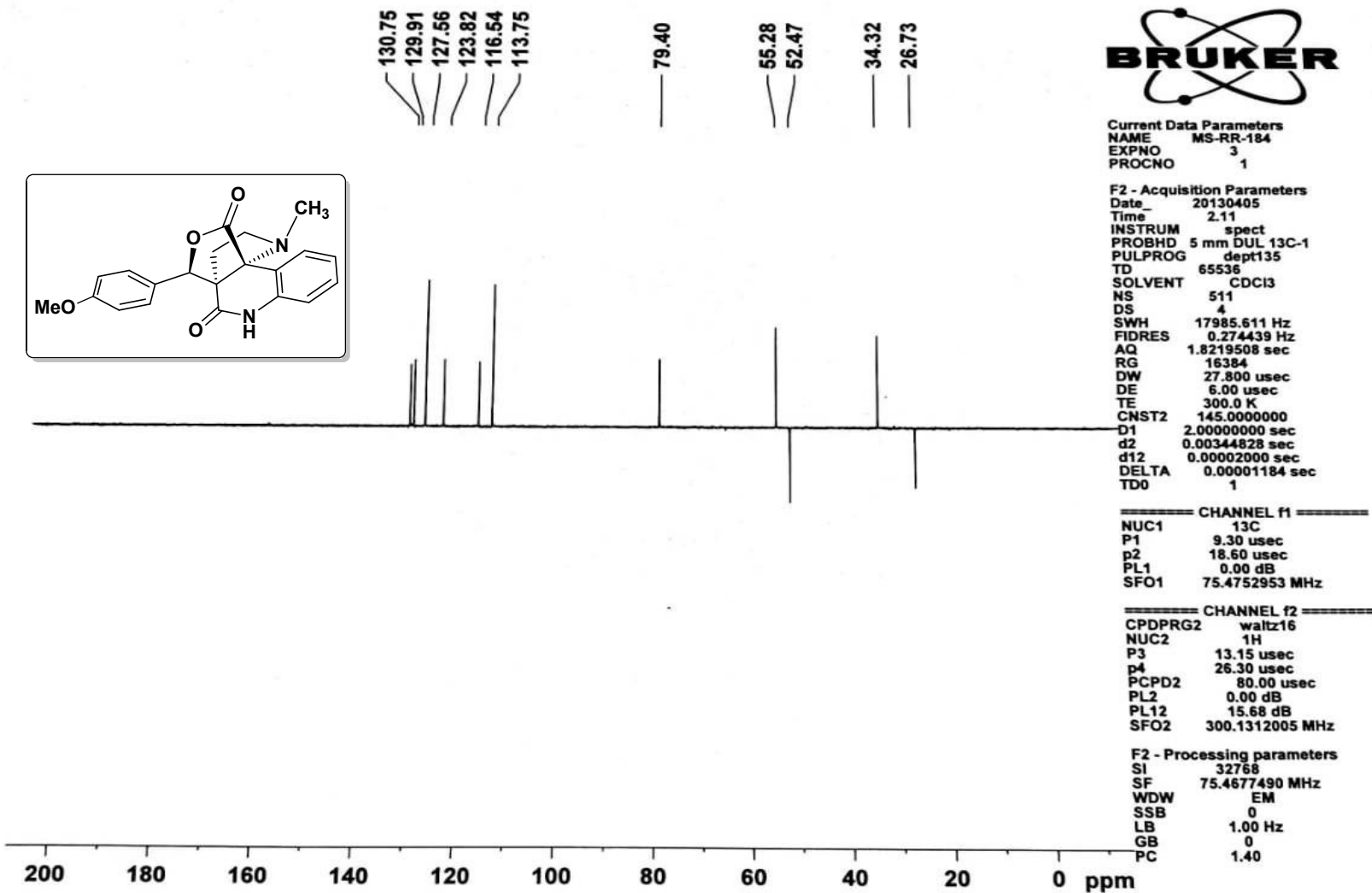
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 PULPROG zgpg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 937  
 DS 4  
 SWH 17985.611 Hz  
 FIDRES 0.274439 Hz  
 AQ 1.8219508 sec  
 RG 2580.3  
 DW 27.800 usec  
 DE 6.00 usec  
 TE 300.0 K  
 D1 2.00000000 sec  
 d11 0.03000000 sec  
 DELTA 1.89999998 sec  
 TD0 1

===== CHANNEL f1 =====  
 NUC1 13C  
 P1 9.30 usec  
 PL1 0.00 dB  
 SFO1 75.4752953 MHz

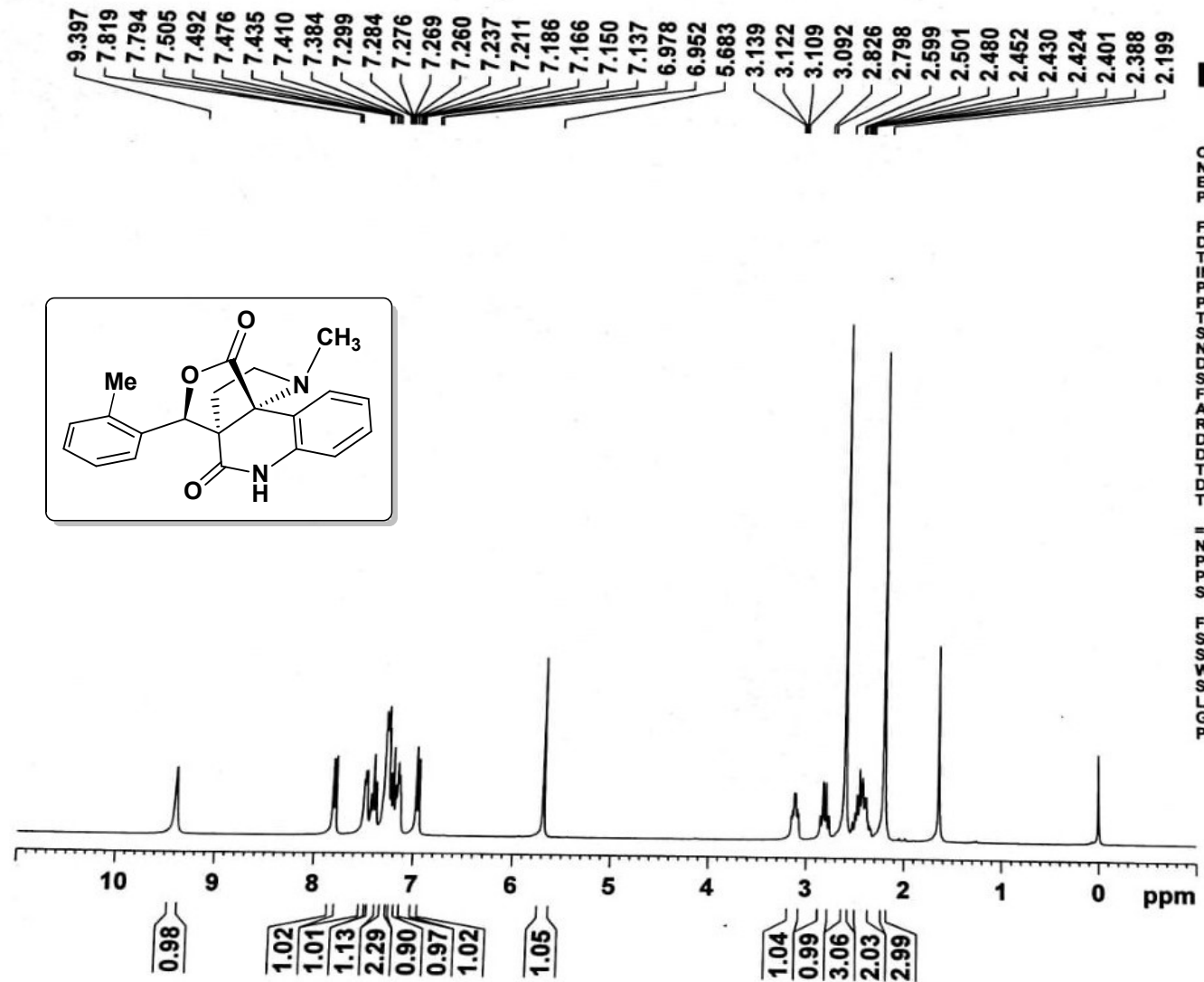
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 NUC2 1H  
 PCPD2 80.00 usec  
 PL2 0.00 dB  
 PL12 15.68 dB  
 PL13 16.00 dB  
 SFO2 300.1312005 MHz

F2 - Processing parameters  
 SI 32768  
 SF 75.4677490 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

<sup>13</sup>C-NMR spectrum of compound 10a



DEPT 135-NMR spectrum of compound 10a



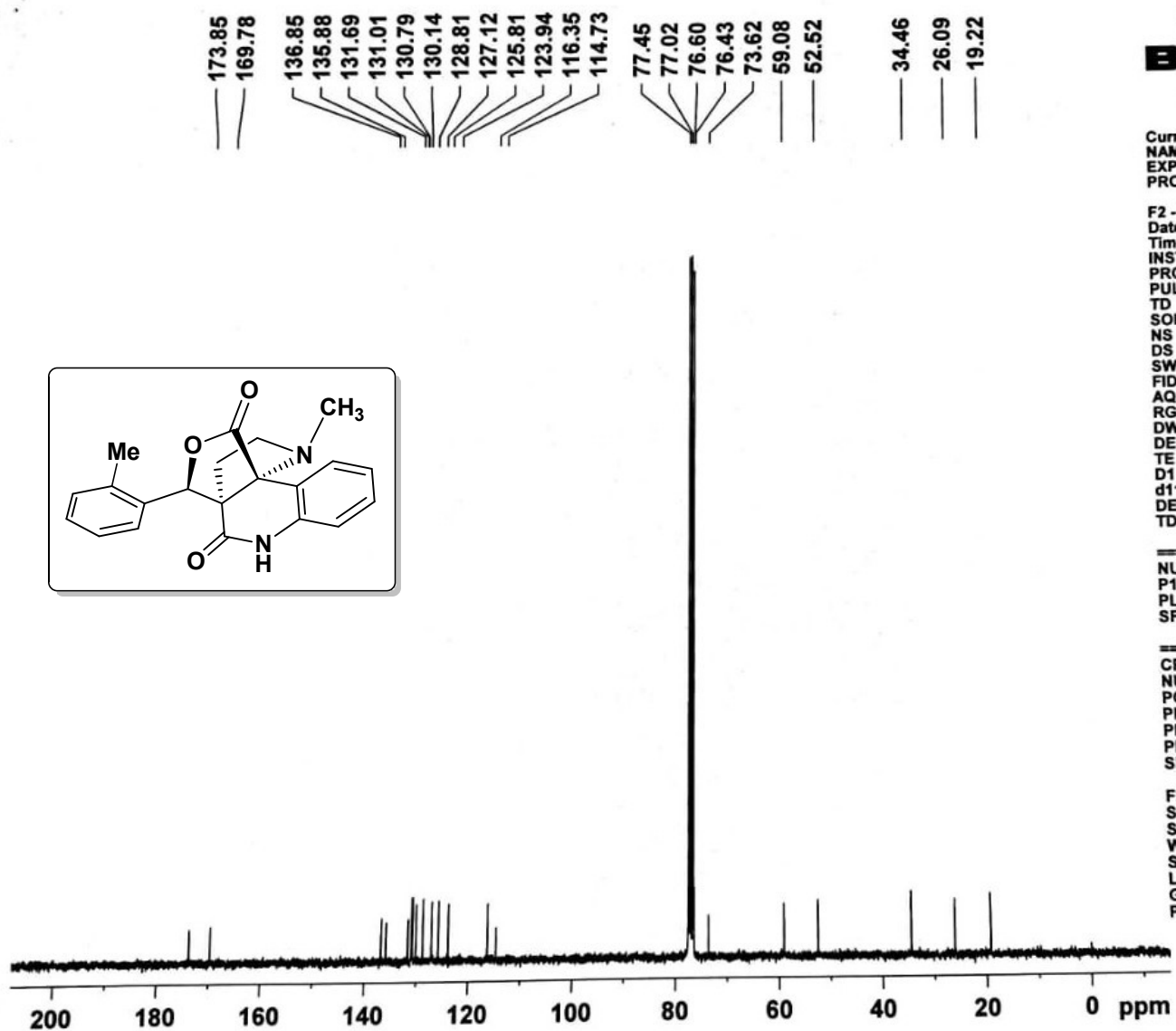
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 PROCNO 1

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 PULPROG zg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 16  
 DS 2  
 SWH 6172.839 Hz  
 FIDRES 0.094190 Hz  
 AQ 5.3084660 sec  
 RG 181  
 DW 81.000 usec  
 DE 6.00 usec  
 TE 300.0 K  
 D1 1.00000000 sec  
 TD0 1

===== CHANNEL f1 =====  
 NUC1 1H  
 P1 13.15 usec  
 PL1 0.00 dB  
 SFO1 300.1318534 MHz

F2 - Processing parameters  
 SI 32768  
 SF 300.1300068 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00

<sup>1</sup>H NMR spectrum of compound 10b



Current Data Parameters  
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 EXPNO 2  
 PROCNO 1

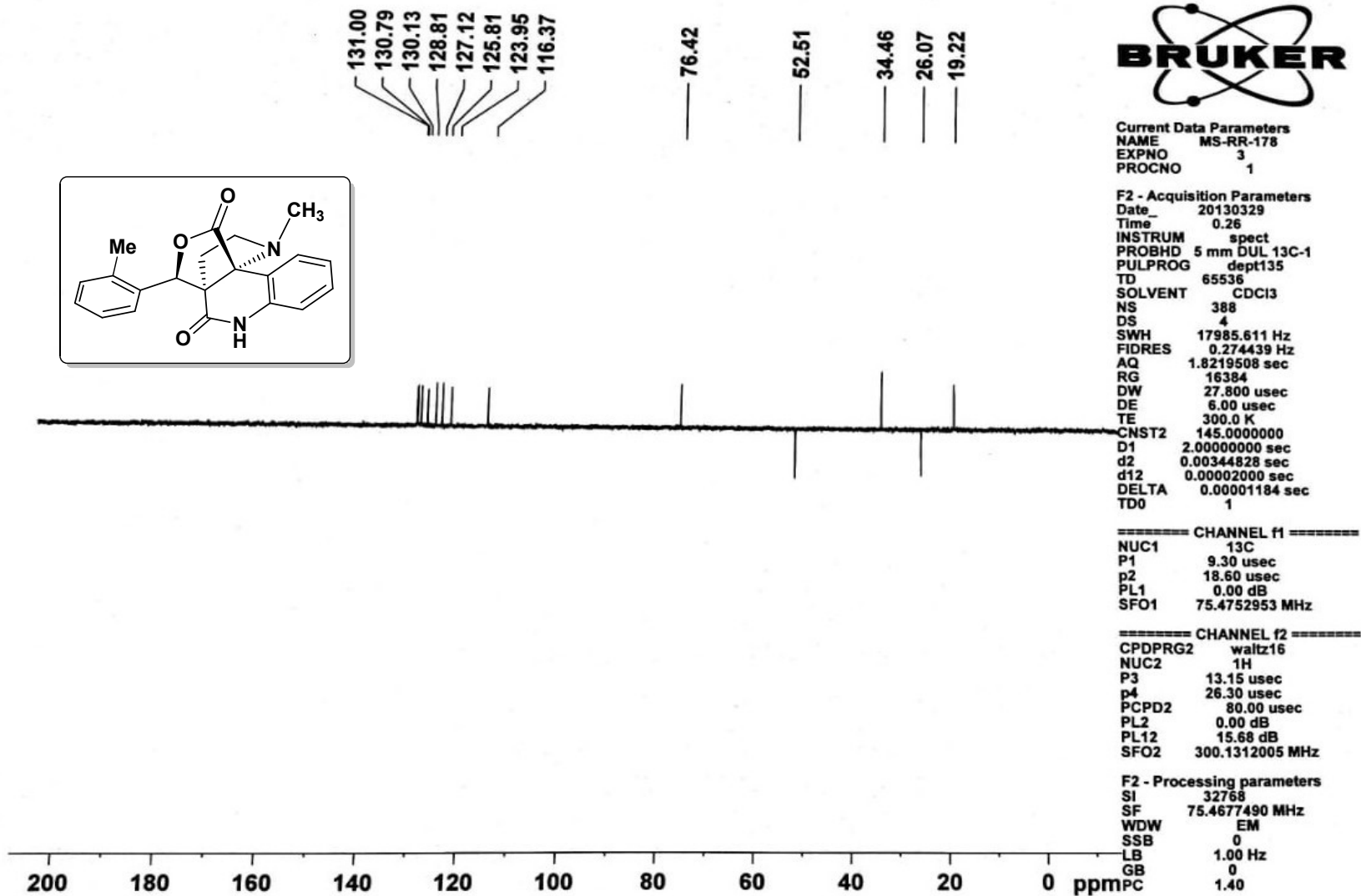
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 PULPROG zgpg30  
 TD 65536  
 SOLVENT CDCI3  
 NS 1024  
 DS 4  
 SWH 17985.611 Hz  
 FIDRES 0.274439 Hz  
 AQ 1.8219508 sec  
 RG 1290.2  
 DW 27.800 usec  
 DE 6.00 usec  
 TE 300.0 K  
 D1 2.00000000 sec  
 d11 0.03000000 sec  
 DELTA 1.89999998 sec  
 TD0 1

===== CHANNEL f1 =====  
 NUC1 13C  
 P1 9.30 usec  
 PL1 0.00 dB  
 SFO1 75.4752953 MHz

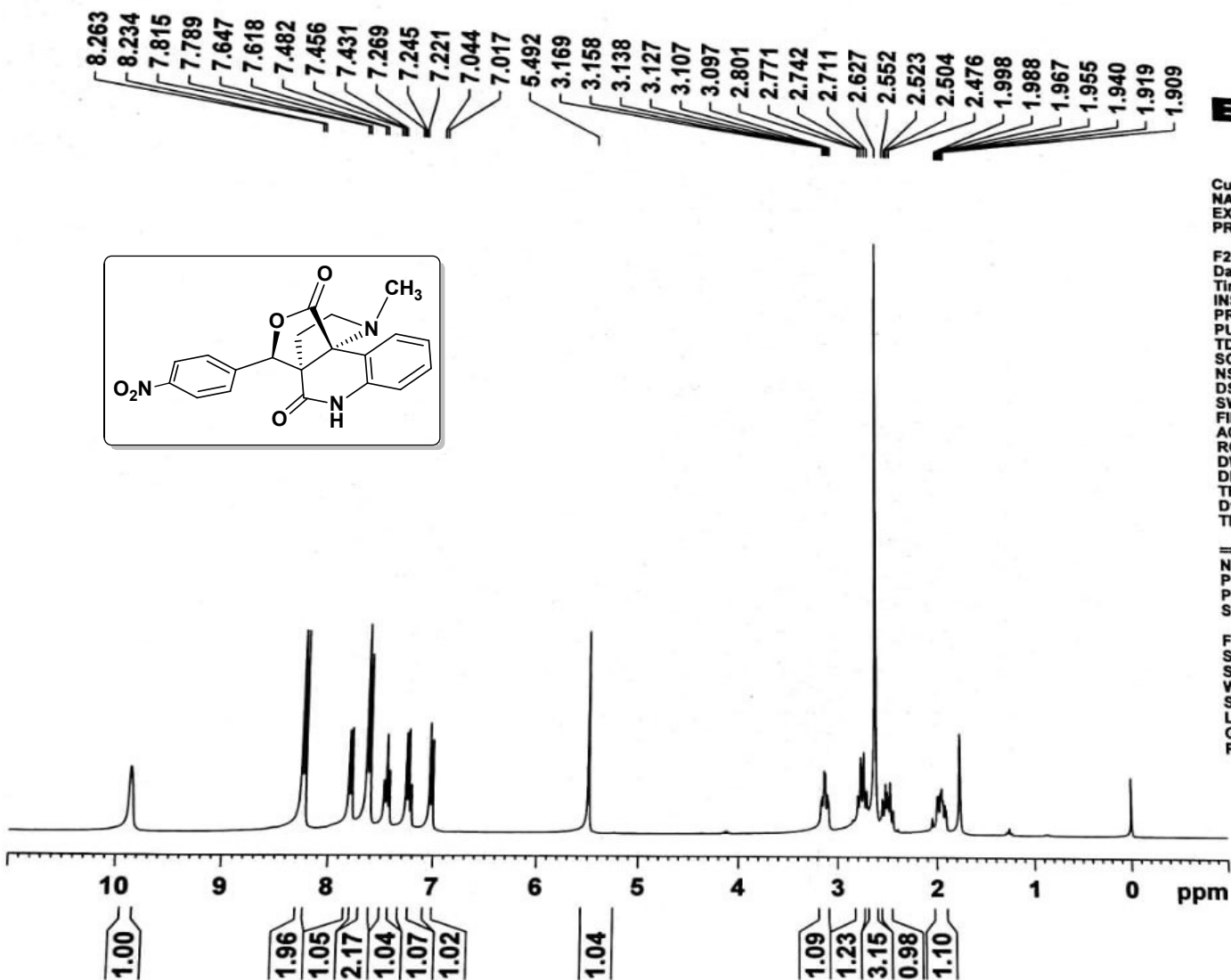
===== CHANNEL f2 =====  
 CPDPRG2 waltz16  
 NUC2 1H  
 PCPD2 80.00 usec  
 PL2 0.00 dB  
 PL12 15.68 dB  
 PL13 16.00 dB  
 SFO2 300.1312005 MHz

F2 - Processing parameters  
 SI 32768  
 SF 75.4677483 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

<sup>13</sup>C-NMR spectrum of compound 10b



DEPT 135-NMR spectrum of compound 10b



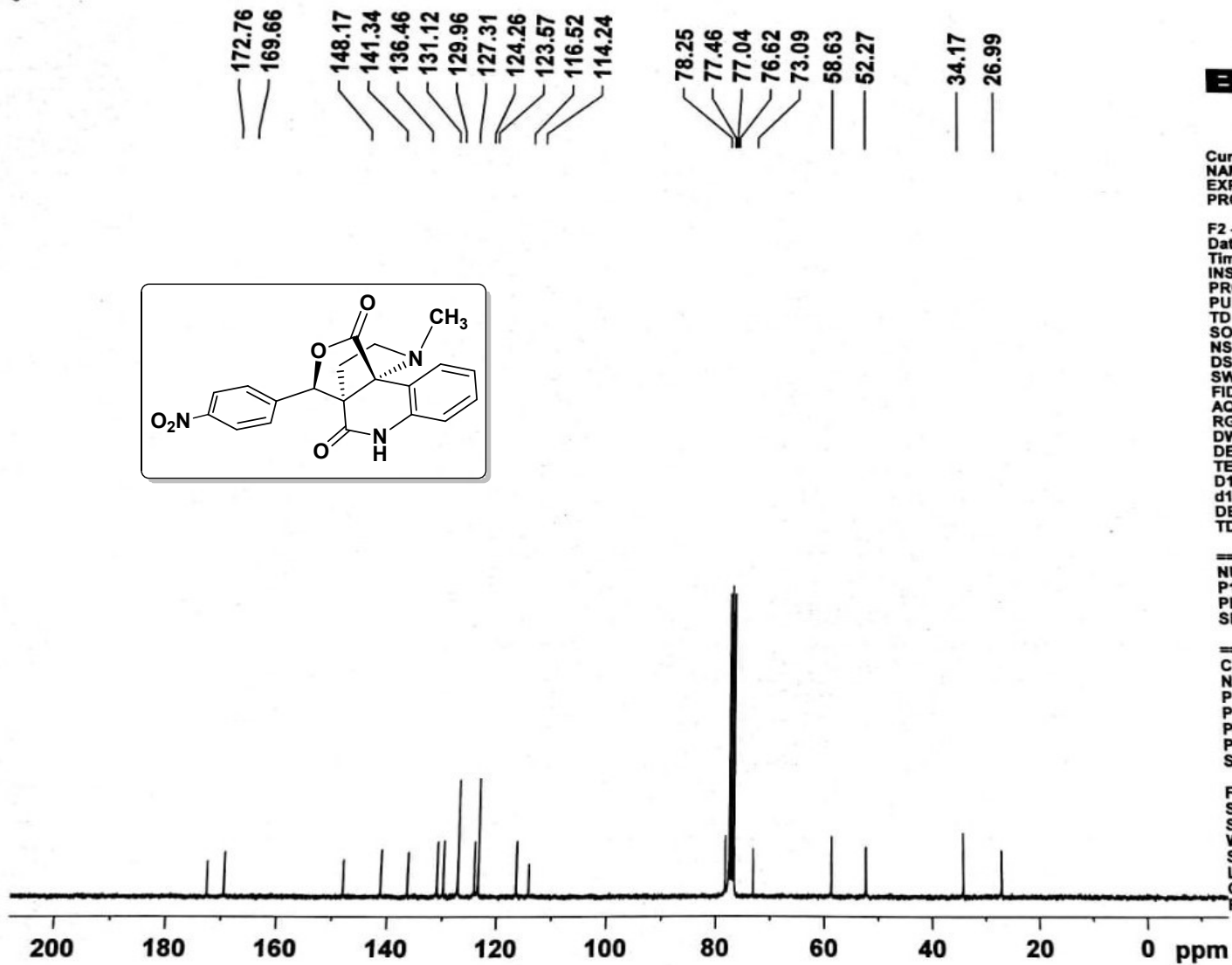
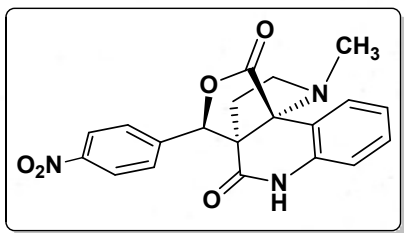
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 PULPROG zg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 16  
 DS 2  
 SWH 6172.839 Hz  
 FIDRES 0.094190 Hz  
 AQ 5.3084660 sec  
 RG 128  
 DW 81.000 usec  
 DE 6.00 usec  
 TE 300.0 K  
 D1 1.00000000 sec  
 TD0 1

CHANNEL f1  
 NUC1 1H  
 P1 13.15 usec  
 PL1 0.00 dB  
 SFO1 300.1318534 MHz

F2 - Processing parameters  
 SI 32768  
 SF 300.1300041 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00

<sup>1</sup>H NMR spectrum of compound 10c



Current Data Parameters  
 NAME MS-RR-282  
 EXPNO 2  
 PROCNO 1

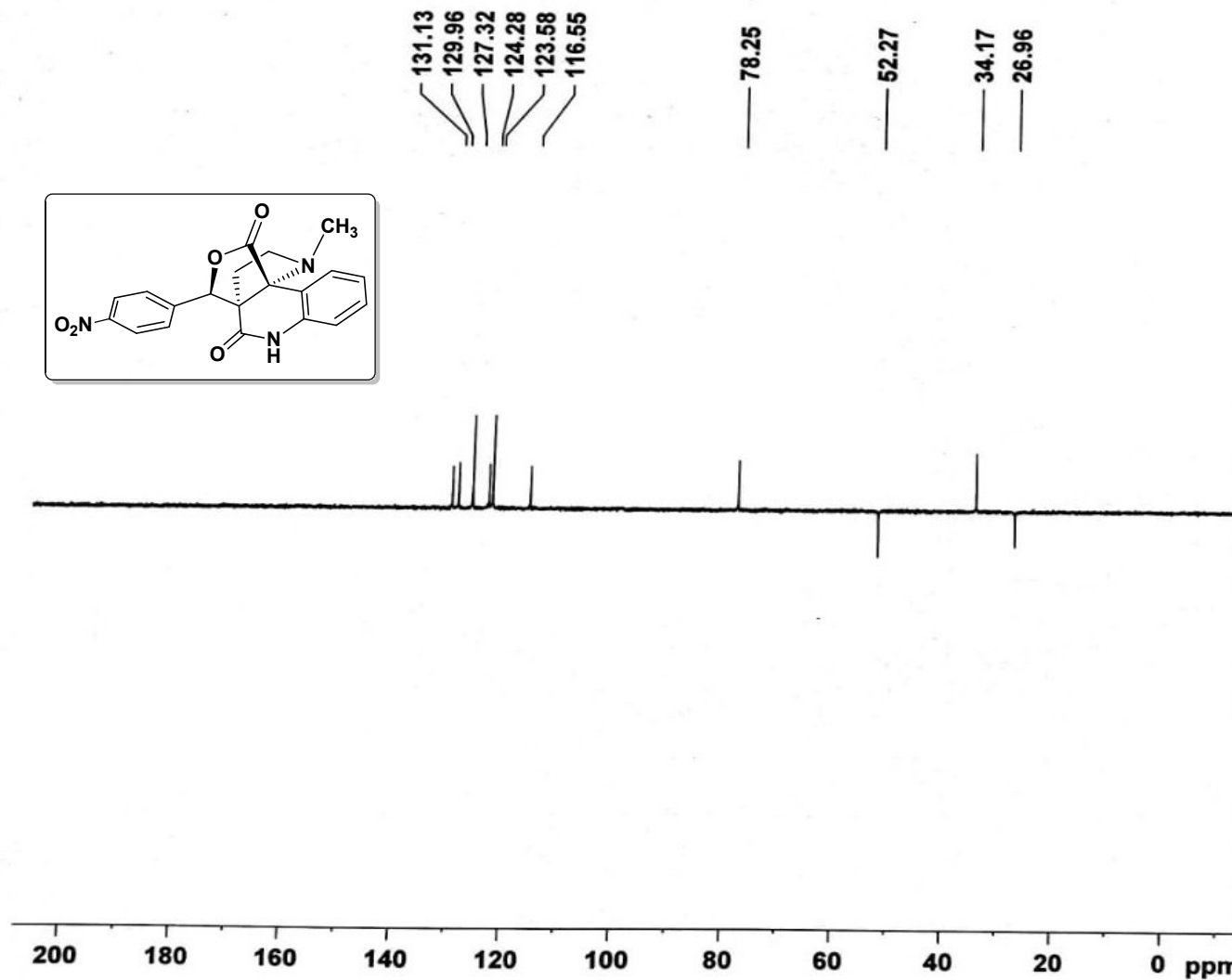
F2 - Acquisition Parameters  
 Date\_ 20131217  
 Time 9.40  
 INSTRUM spect  
 PROBHD 5 mm DUL 13C-1  
 PULPROG zgpg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 1024  
 DS 4  
 SWH 17985.611 Hz  
 FIDRES 0.274439 Hz  
 AQ 1.8219508 sec  
 RG 574.7  
 DW 27.800 usec  
 DE 6.00 usec  
 TE 300.0 K  
 D1 2.00000000 sec  
 d11 0.03000000 sec  
 DELTA 1.89999998 sec  
 TD0 1

===== CHANNEL f1 =====  
 NUC1 13C  
 P1 9.30 usec  
 PL1 0.00 dB  
 SFO1 75.4752953 MHz

===== CHANNEL f2 =====  
 CPDPRG2 waltz16  
 NUC2 1H  
 PCPD2 80.00 usec  
 PL2 0.00 dB  
 PL12 15.68 dB  
 PL13 16.00 dB  
 SFO2 300.1312005 MHz

F2 - Processing parameters  
 SI 32768  
 SF 75.4677490 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

<sup>13</sup>C-NMR spectrum of compound 10c



Current Data Parameters  
 NAME MS-RR-282  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20131217  
 Time 8.32  
 INSTRUM spect  
 PROBHD 5 mm DUL 13C-1  
 PULPROG dept135  
 TD 65536  
 SOLVENT CDCl3  
 NS 256  
 DS 4  
 SWH 17985.611 Hz  
 FIDRES 0.274439 Hz  
 AQ 1.8219508 sec  
 RG 16384  
 DW 27.800 usec  
 DE 6.00 usec  
 TE 300.0 K  
 CNST2 145.000000  
 D1 2.0000000 sec  
 d2 0.00344828 sec  
 d12 0.00002000 sec  
 DELTA 0.00001184 sec  
 TDO 1

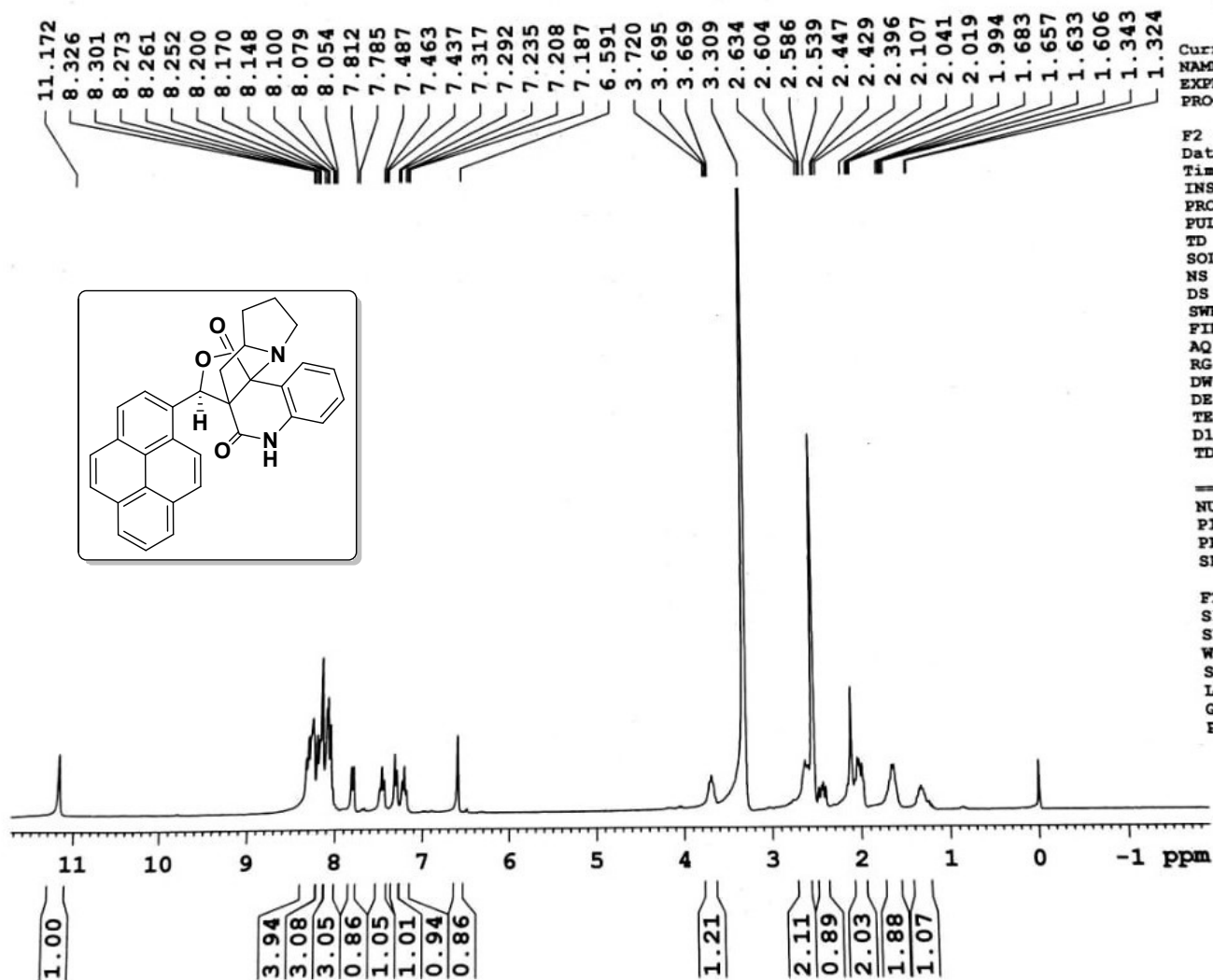
===== CHANNEL f1 =====  
 NUC1 13C  
 P1 9.30 usec  
 p2 18.60 usec  
 PL1 0.00 dB  
 SFO1 75.4752953 MHz

===== CHANNEL f2 =====  
 CPDPRG2 waltz16  
 NUC2 1H  
 P3 13.15 usec  
 p4 26.30 usec  
 PCPD2 80.00 usec  
 PL2 0.00 dB  
 PL12 15.68 dB  
 SFO2 300.1312005 MHz

F2 - Processing parameters  
 SI 32768  
 SF 75.4677490 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

DEPT 135-NMR Spectrum of compound 10c





Current Data Parameters  
NAME MS-RR-324  
EXPNO 6  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20140425  
Time\_ 6.28  
INSTRUM spect  
PROBHD 5 mm DUL 13C-1  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 6172.839 Hz  
FIDRES 0.094190 Hz  
AQ 5.3084660 sec  
RG 203.2  
DW 81.000 usec  
DE 6.00 usec  
TE 300.0 K  
D1 1.00000000 sec  
TD0 1

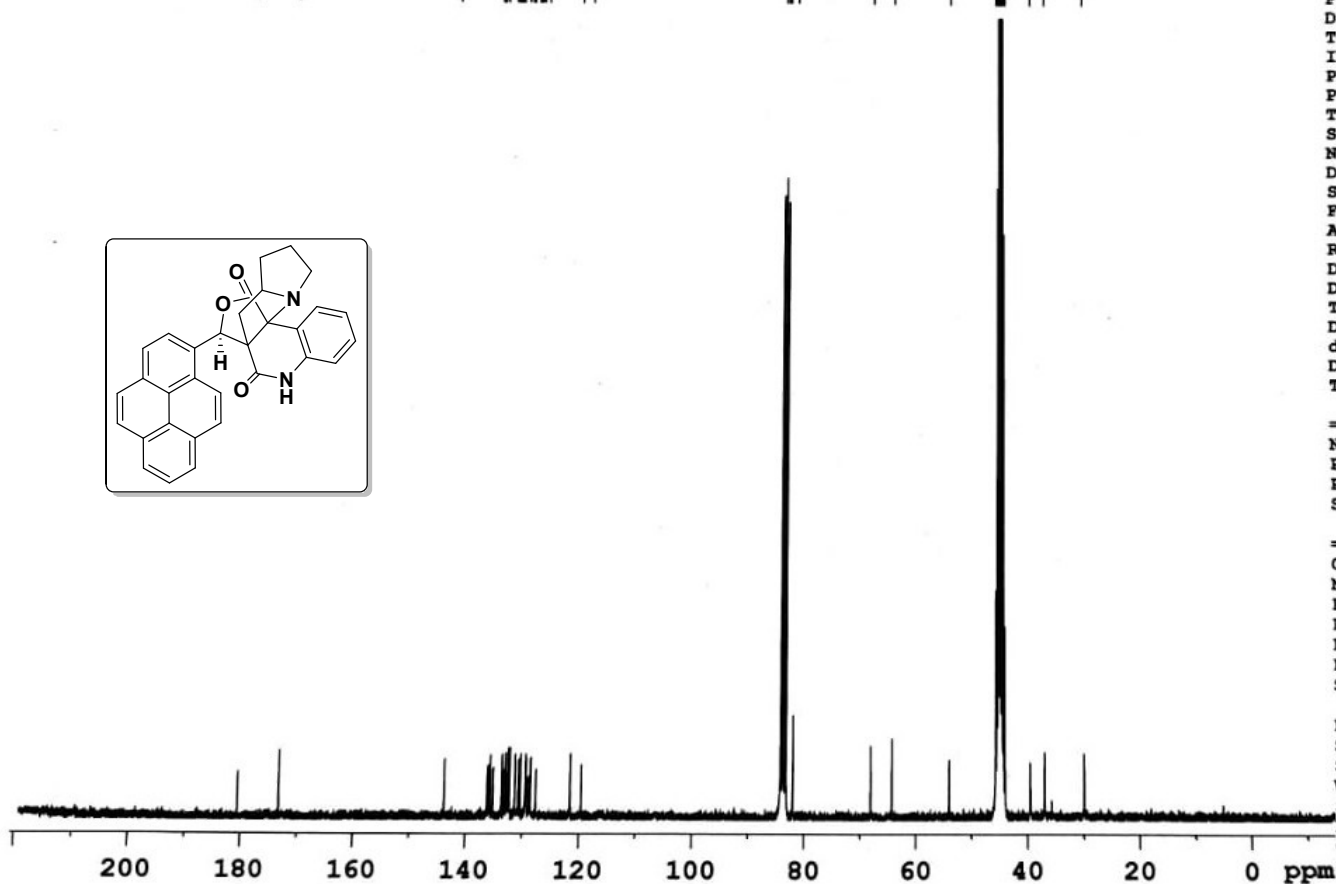
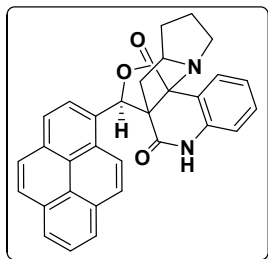
CHANNEL f1  
NUC1 1H  
P1 13.15 usec  
PL1 0.00 dB  
SFO1 300.1318534 MHz

F2 - Processing parameters  
SI 32768  
SF 300.1314174 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

$^1\text{H}$  NMR spectrum of compound 12a



180.51  
173.21  
143.80  
136.19  
135.94  
135.66  
135.16  
133.64  
133.32  
133.02  
132.73  
132.52  
132.25  
131.31  
130.71  
130.33  
129.50  
129.36  
129.23  
128.97  
128.57  
127.60  
121.57  
119.60  
84.11  
83.68  
83.24  
81.96  
68.12  
64.34  
53.99  
45.71  
45.44  
45.16  
44.88  
44.60  
44.32  
44.05  
39.52  
36.96  
29.97



Current Data Parameters  
NAME MS-RR-324  
EXPNO 5  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20140425  
Time\_ 0.18  
INSTRUM spect  
PROBHD 5 mm DUL 13C-1  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 5704  
DS 4  
SWH 17985.611 Hz  
FIDRES 0.274439 Hz  
AQ 1.8219508 sec  
RG 574.7  
DW 27.800 usec  
DE 6.00 usec  
TE 300.0 K  
D1 2.00000000 sec  
d11 0.03000000 sec  
DELTA 1.89999998 sec  
TDO 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 9.30 usec  
PL1 0.00 dB  
SFO1 75.4752953 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 0.00 dB  
PL12 15.68 dB  
PL13 16.00 dB  
SFO2 300.1312005 MHz

F2 - Processing parameters  
SI 32768  
SF 75.4677490 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

$^{13}\text{C}$  NMR spectrum of compound 12a



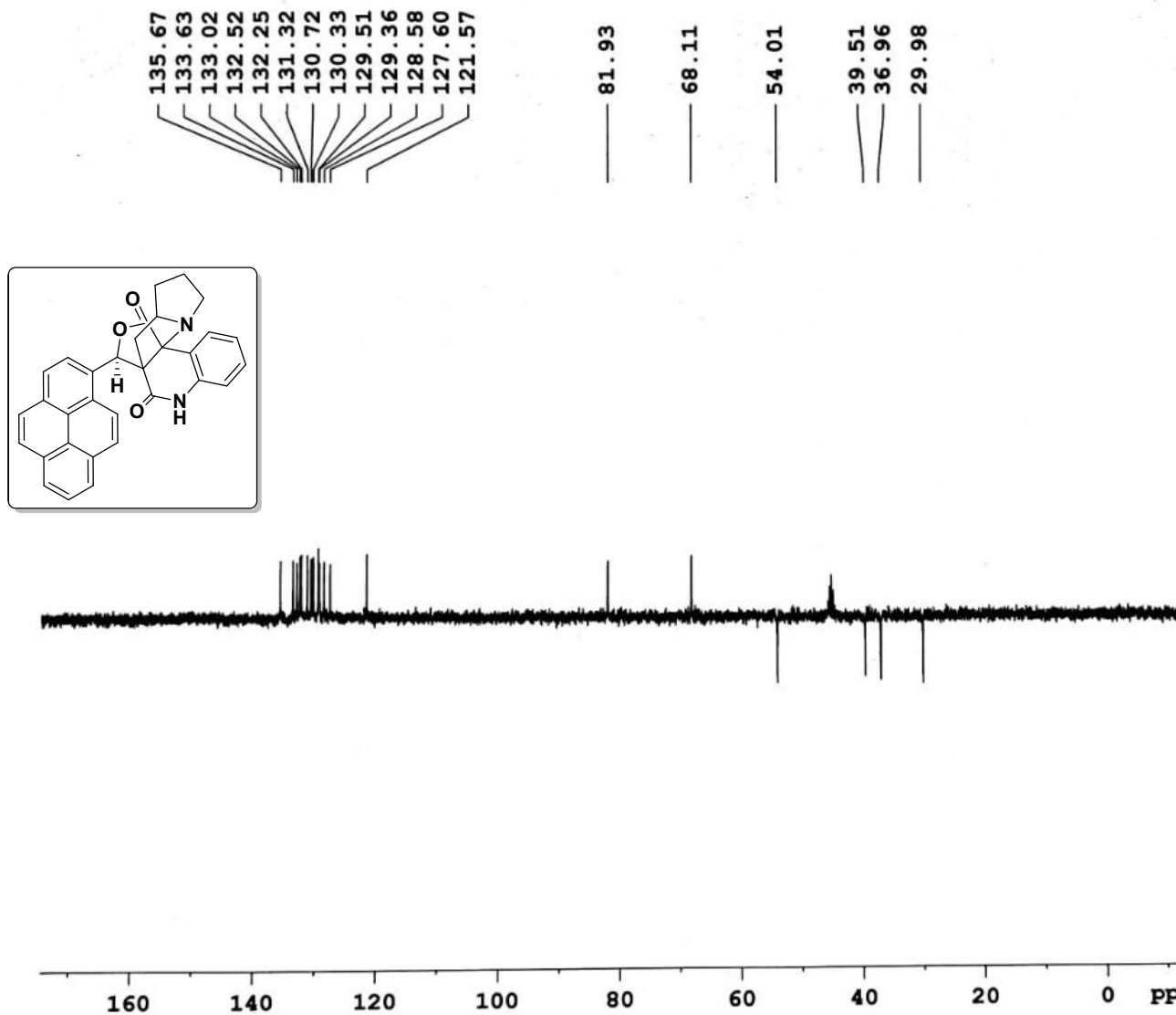
Current Data Parameters  
NAME MS-RR-324  
EXPNO 4  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20140424  
Time 22.54  
INSTRUM spect  
PROBHD 5 mm DUL 13C-1  
PULPROG dept135  
TD 65536  
SOLVENT CDCl3  
NS 1276  
DS 4  
SWH 17985.611 Hz  
FIDRES 0.274439 Hz  
AQ 1.8219508 sec  
RG 16384  
DW 27.800 usec  
DE 6.00 usec  
TE 300.0 K  
CNST2 145.0000000  
D1 2.00000000 sec  
d2 0.00344828 sec  
d12 0.00002000 sec  
DELTA 0.00001184 sec  
TD0 1

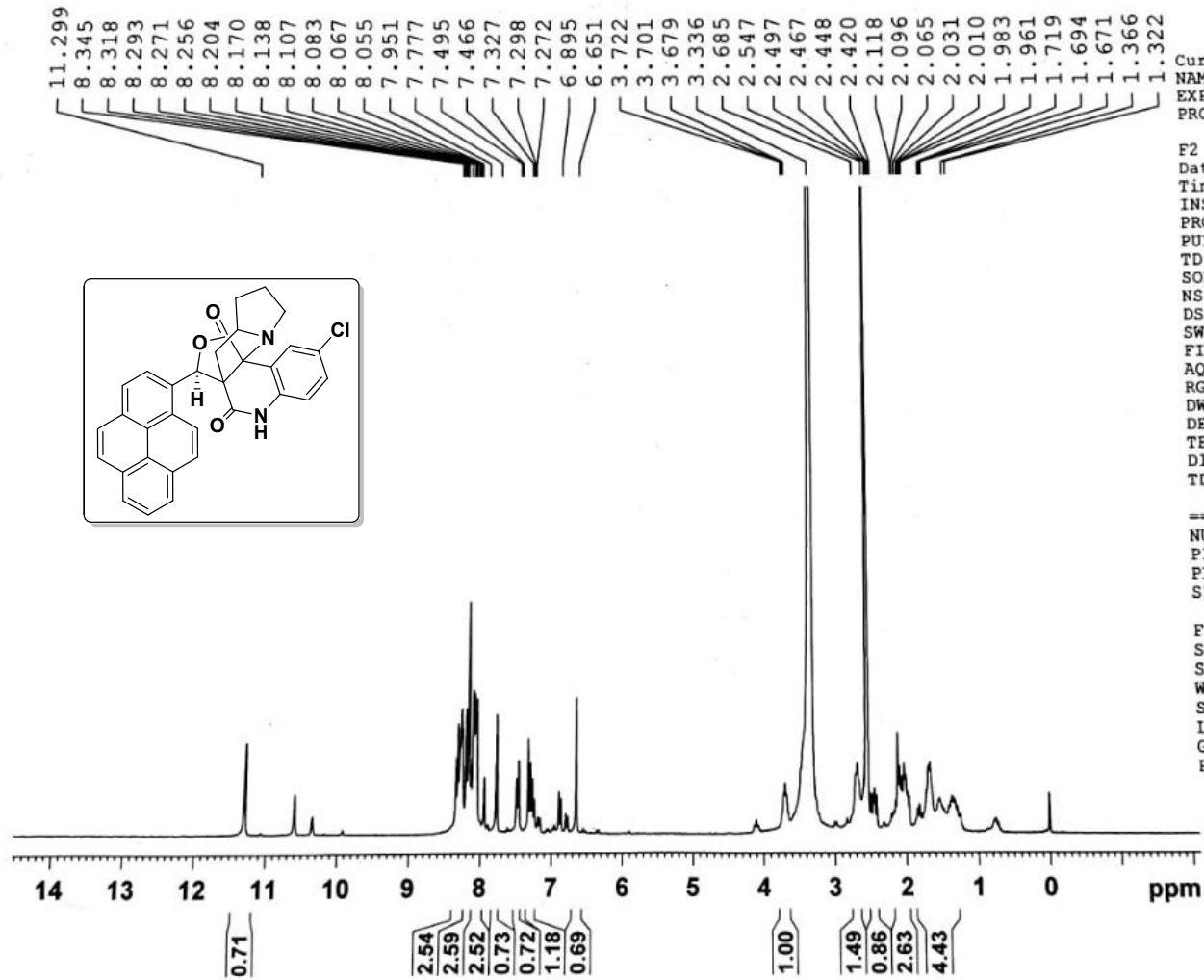
==== CHANNEL f1 =====  
NUC1 13C  
P1 9.30 usec  
p2 18.60 usec  
PL1 0.00 dB  
SFO1 75.4752953 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
P3 13.15 usec  
p4 26.30 usec  
PCPD2 80.00 usec  
PL2 0.00 dB  
PL12 15.68 dB  
SFO2 300.1312005 MHz

F2 - Processing parameters  
SI 32768  
SF 75.4677490 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0



DEPT 135 NMR spectrum of compound 12a



Current Data Parameters

NAME MS-RR-325  
EXPNO 4  
PROCNO 1

F2 - Acquisition Parameters

Date\_ 20140503  
Time 12.57  
INSTRUM spect  
PROBHD 5 mm DUL 13C-1  
PULPROG zg30  
TD 65536  
SOLVENT DMSO  
NS 30  
DS 2  
SWH 6172.839 Hz  
FIDRES 0.094190 Hz  
AQ 5.3084660 sec  
RG 161.3  
DW 81.000 usec  
DE 6.00 usec  
TE 300.0 K  
D1 1.00000000 sec  
TD0 1

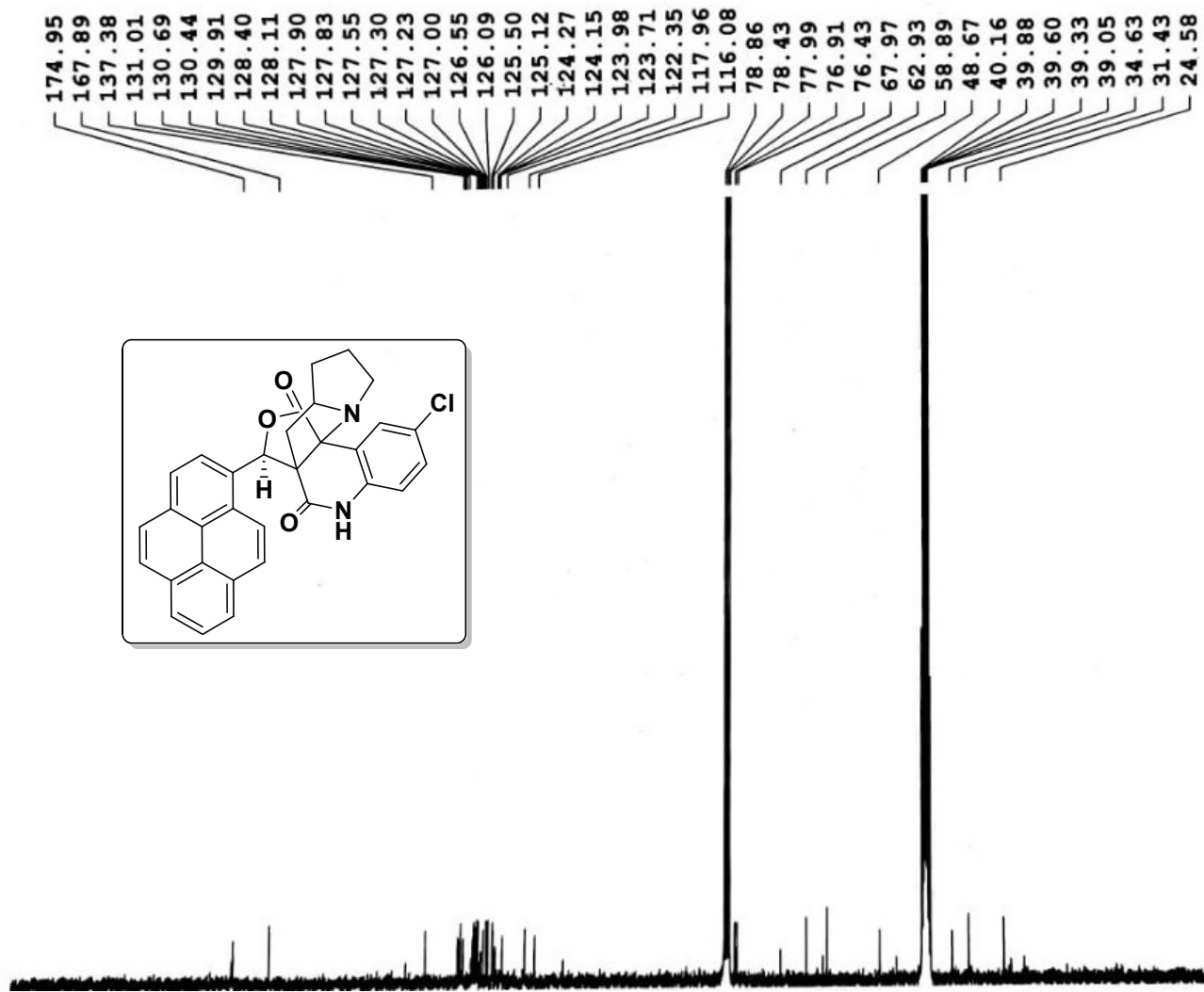
===== CHANNEL f1 =====

NUC1 1H  
P1 13.15 usec  
PL1 0.00 dB  
SFO1 300.1318534 MHz

F2 - Processing parameters

SI 32768  
SF 300.1299889 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

$^1\text{H}$  NMR spectrum of compound 12b



Current Data Parameters  
 NAME MS-RR-325  
 EXPNO 3  
 PROCNO 1

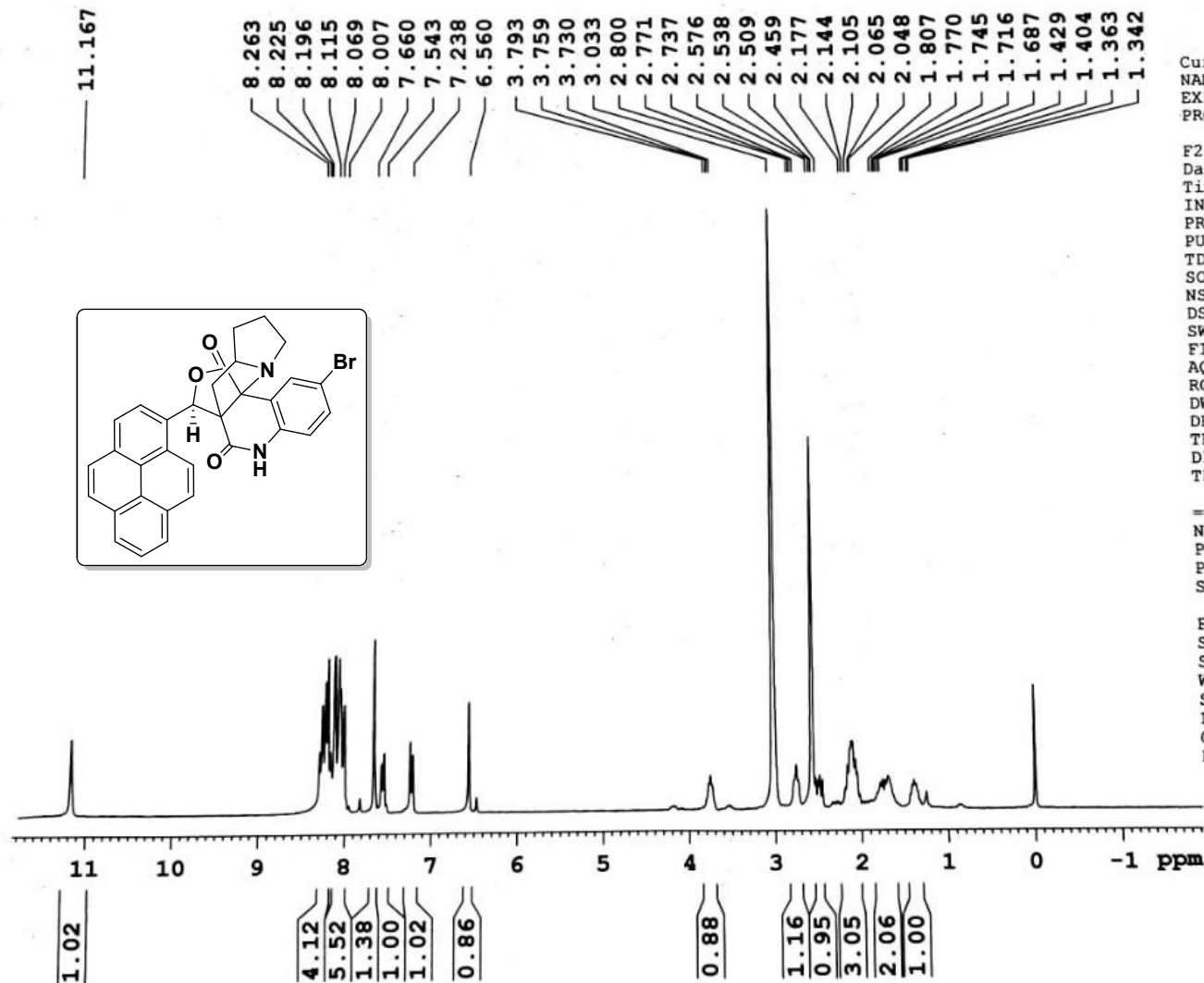
F2 - Acquisition Parameters  
 Date 20140503  
 Time 10.22  
 INSTRUM spect  
 PROBHD 5 mm DUL 13C-1  
 PULPROG zgpg30  
 TD 65536  
 SOLVENT DMSO  
 NS 3603  
 DS 4  
 SWH 17985.611 Hz  
 FIDRES 0.274439 Hz  
 AQ 1.8219508 sec  
 RG 812.7  
 DW 27.800 usec  
 DE 6.00 usec  
 TE 300.0 K  
 D1 2.00000000 sec  
 d11 0.03000000 sec  
 DELTA 1.89999998 sec  
 TDO 1

===== CHANNEL f1 =====  
 NUC1 13C  
 P1 9.30 usec  
 PL1 0.00 dB  
 SFO1 75.4752953 MHz

===== CHANNEL f2 =====  
 CPDPRG2 waltz16  
 NUC2 1H  
 PCPD2 80.00 usec  
 PL2 0.00 dB  
 PL12 15.68 dB  
 PL13 16.00 dB  
 SFO2 300.1312005 MHz

F2 - Processing parameters  
 SI 32768  
 SF 75.4677867 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz

<sup>13</sup>C NMR spectrum of compound 12b



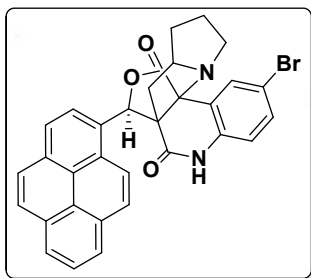
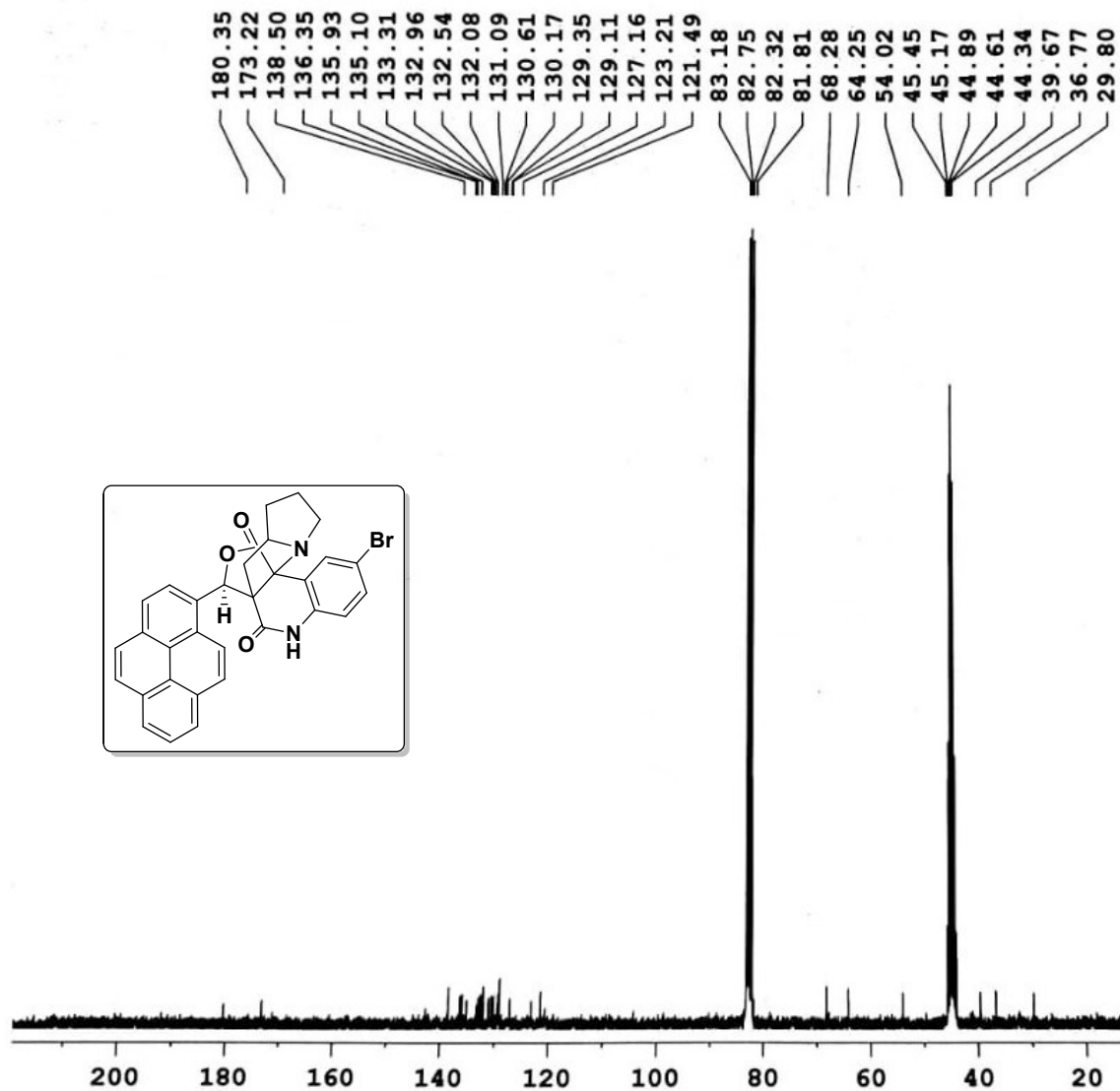
Current Data Parameters  
NAME MS-RR-326  
EXPNO 3  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20140504  
Time\_ 17.03  
INSTRUM spect  
PROBHD 5 mm DUL 13C-1  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 30  
DS 2  
SWH 6172.839 Hz  
FIDRES 0.094190 Hz  
AQ 5.3084660 sec  
RG 456.1  
DW 81.000 usec  
DE 6.00 usec  
TE 300.0 K  
D1 1.00000000 sec  
TD0 1

===== CHANNEL f1 =====  
NUC1 1H  
P1 13.15 usec  
PL1 0.00 dB  
SFO1 300.1318534 MHz

F2 - Processing parameters  
SI 32768  
SF 300.1314065 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

$^1\text{H}$  NMR spectrum of compound 12c



Current Data Parameters  
NAME MS-RR-326  
EXPNO 2  
PROCNO 1

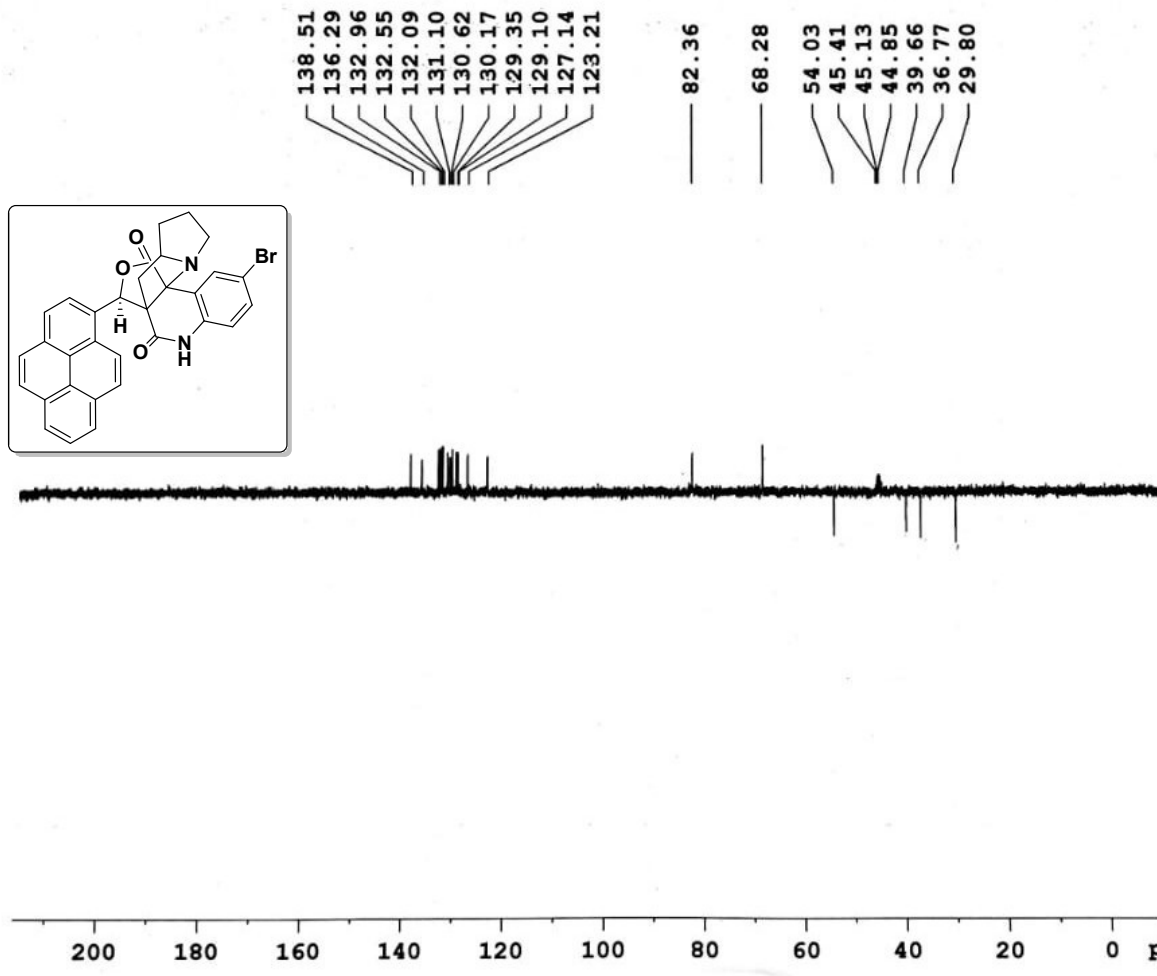
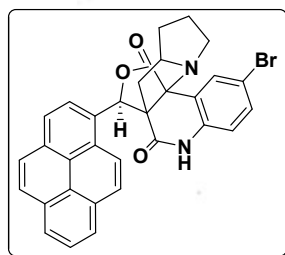
F2 - Acquisition Parameters  
Date\_ 20140504  
Time\_ 15.04  
INSTRUM spect  
PROBHD 5 mm DUL 13C-1  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 2000  
DS 4  
SWH 17985.611 Hz  
FIDRES 0.274439 Hz  
AQ 1.8219508 sec  
RG 2298.8  
DW 27.800 usec  
DE 6.00 usec  
TE 300.0 K  
D1 2.00000000 sec  
d11 0.03000000 sec  
DELTA 1.89999998 sec  
TDO 1

----- CHANNEL f1 -----  
NUC1 13C  
P1 9.30 usec  
PL1 0.00 dB  
SFO1 75.4752953 MHz

----- CHANNEL f2 -----  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 0.00 dB  
PL12 15.68 dB  
PL13 16.00 dB  
SFO2 300.1312005 MHz

F2 - Processing parameters  
SI 32768  
SF 75.4677490 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

$^{13}\text{C}$  NMR spectrum of compound 12c



Current Data Parameters  
NAME MS-RR-326  
EXPNO 4  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20140504  
Time 17.43  
INSTRUM spect  
PROBHD 5 mm DUL 13C-1  
PULPROG dept135  
TD 65536  
SOLVENT CDCl3  
NS 1517  
DS 4  
SWH 17985.611 Hz  
FIDRES 0.274439 Hz  
AQ 1.8219508 sec  
RG 23170.5  
DW 27.800 usec  
DE 6.00 usec  
TE 300.0 K  
CNST2 145.0000000  
D1 2.00000000 sec  
d2 0.00344828 sec  
d12 0.00002000 sec  
DELTA 0.00001184 sec  
TD0 1

===== CHANNEL f1 =====  
NUC1 13C  
P1 9.30 usec  
p2 18.60 usec  
PL1 0.00 dB  
SFO1 75.4752953 MHz

===== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
P3 13.15 usec  
p4 26.30 usec  
PCPD2 80.00 usec  
PL2 0.00 dB  
PL12 15.68 dB  
SFO2 300.1312005 MHz

F2 - Processing parameters  
SI 32768  
SF 75.4677490 MHz  
WDW EM  
SSB 0  
GB 1.00 Hz  
-- 0

DEPT 135 NMR spectrum of compound 12c