

# LEWIS ACID MEDIATED SYNTHESIS OF INDOLIZIDINE DERIVATIVES

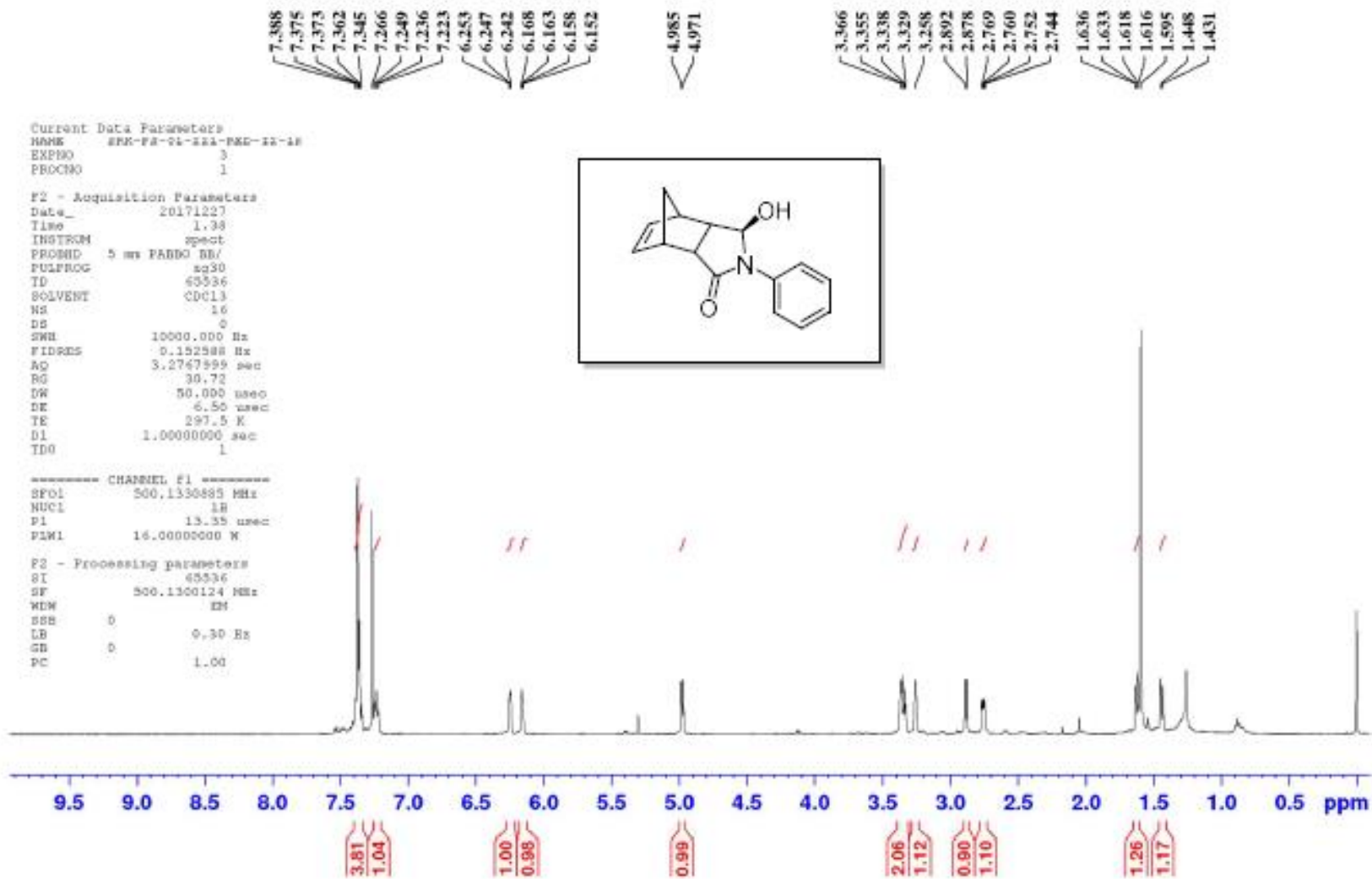
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India. Fax: +91(22)-2572 7152; E-mail: [srk@chem.iitb.ac.in](mailto:srk@chem.iitb.ac.in)

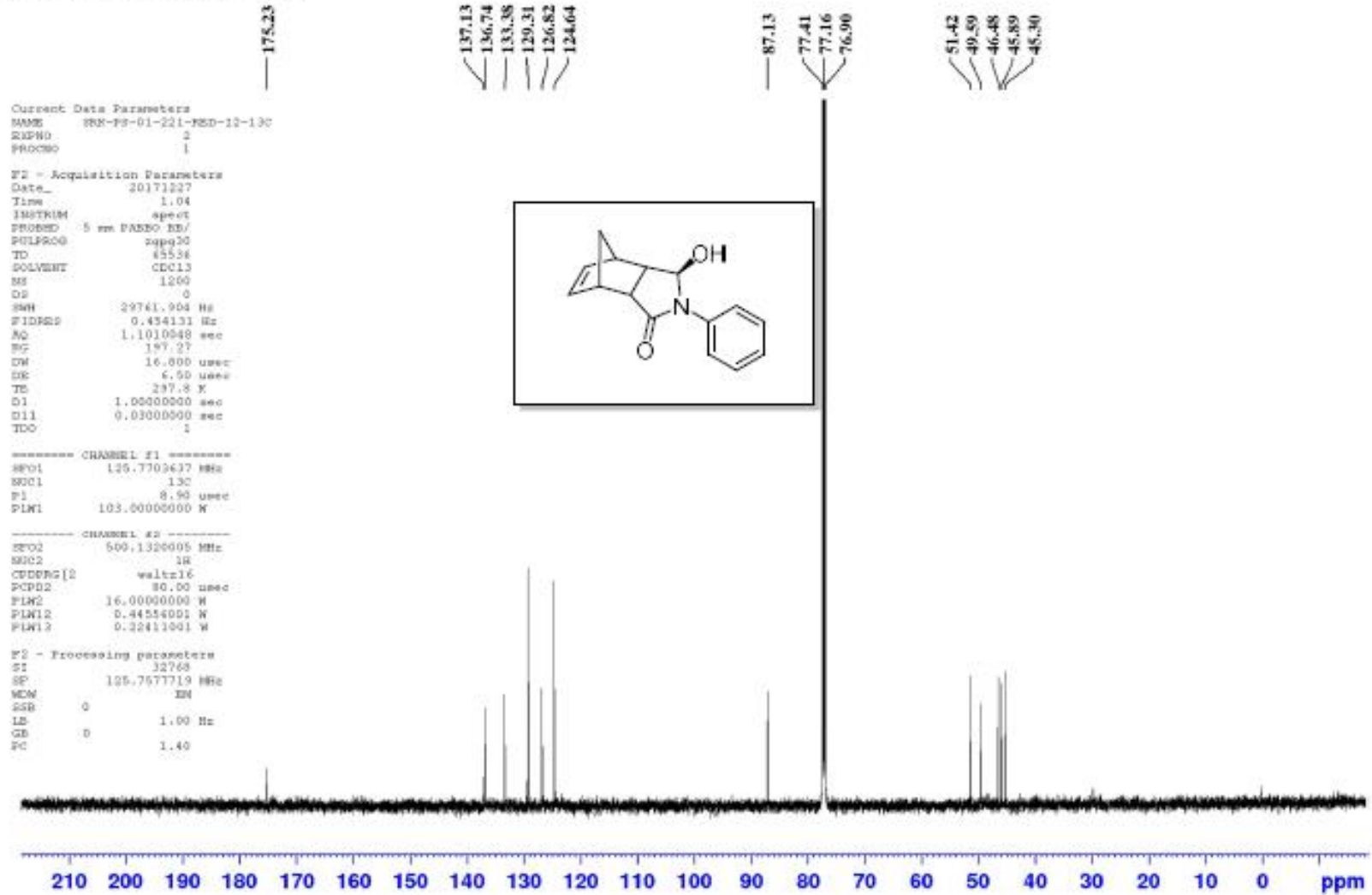
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SRK-PS-01-221-RED-I2-1H



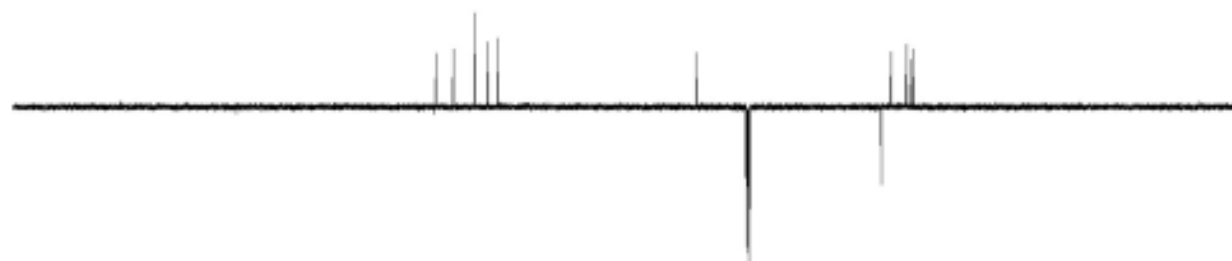
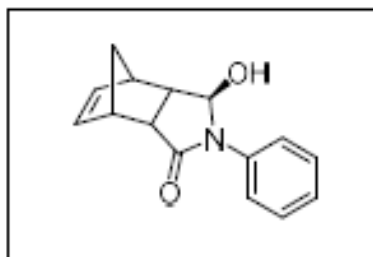
SRK-PS-01-221-RED-I2-13C



SRK-PS-01-221-RED-I2-APT

136.75  
133.38  
129.31  
126.81  
124.64

87.13  
77.41  
77.16  
76.90  
51.41  
49.59  
46.48  
45.89  
45.30



Current Data Parameters  
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PROCNO 1

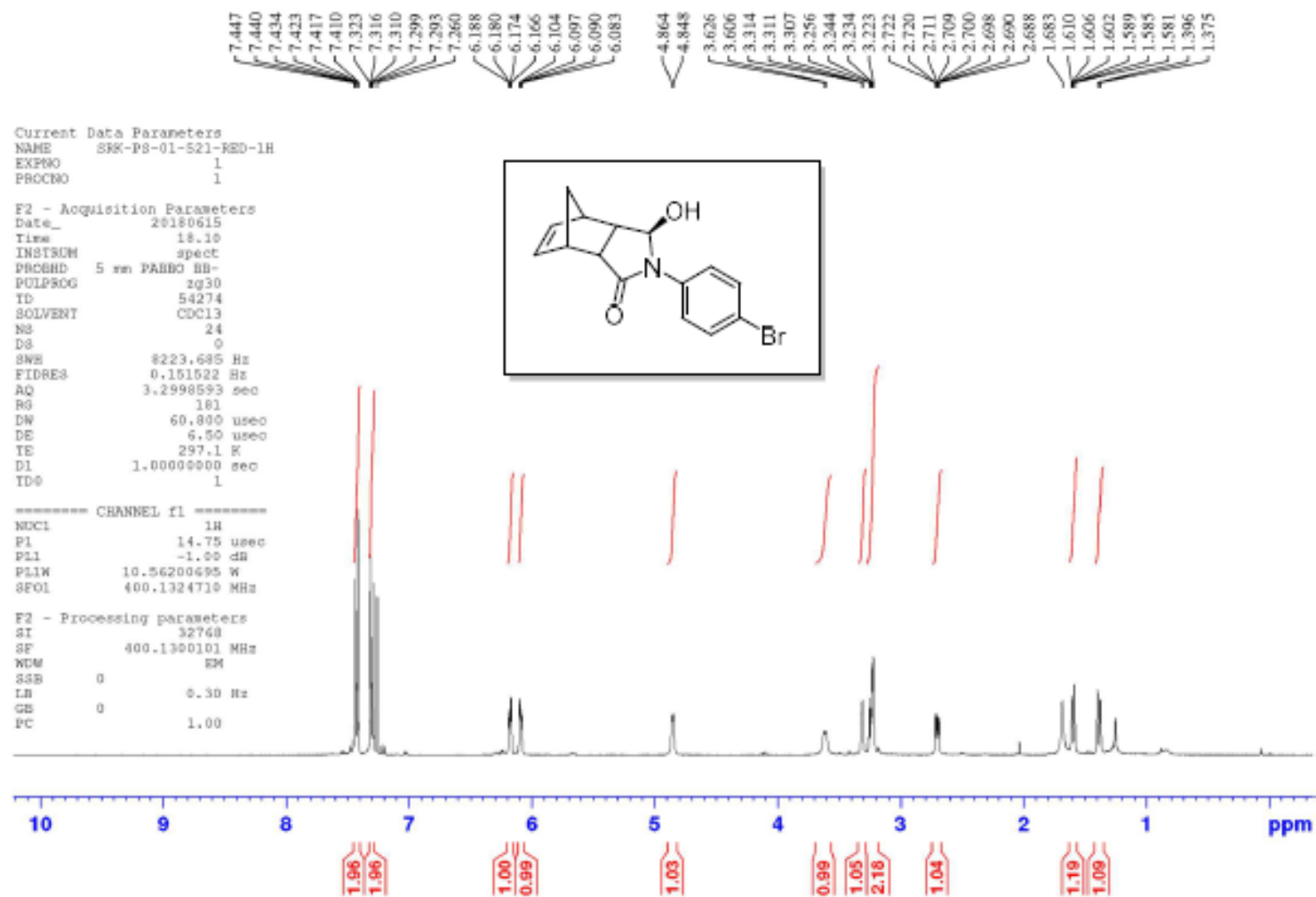
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DS 0  
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FIDRES 0.484131 Hz  
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RG 197.27  
DW 14.800 usec  
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TE 297.8 K  
CHST2 145.000000  
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D1 1.0000000 sec  
D20 0.00409455 sec  
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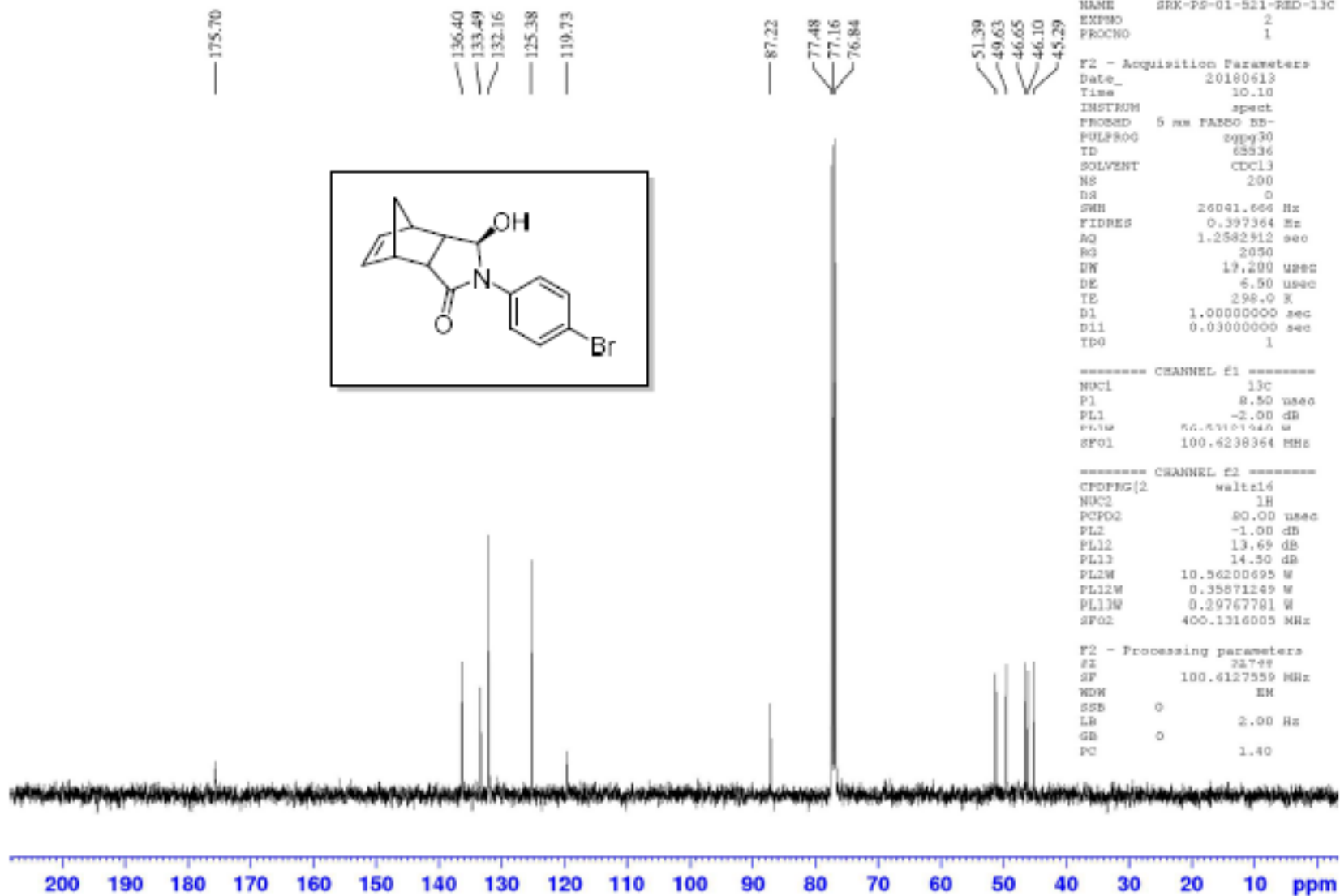
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PLN12 0.44556001 W

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GB 0  
PC 1.40

SRK-PS-01-521-RED-1H

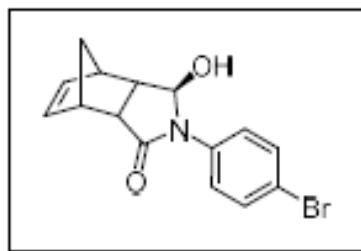


SRK-PS-01-521-RED-13C



SRK-PS-01-521-RED-DEPT

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133.48  
132.16  
125.37  
  
87.21  
  
51.39  
49.63  
46.65  
46.10  
45.29



200 180 160 140 120 100 80 60 40 20 0 ppm

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PROCNO 1

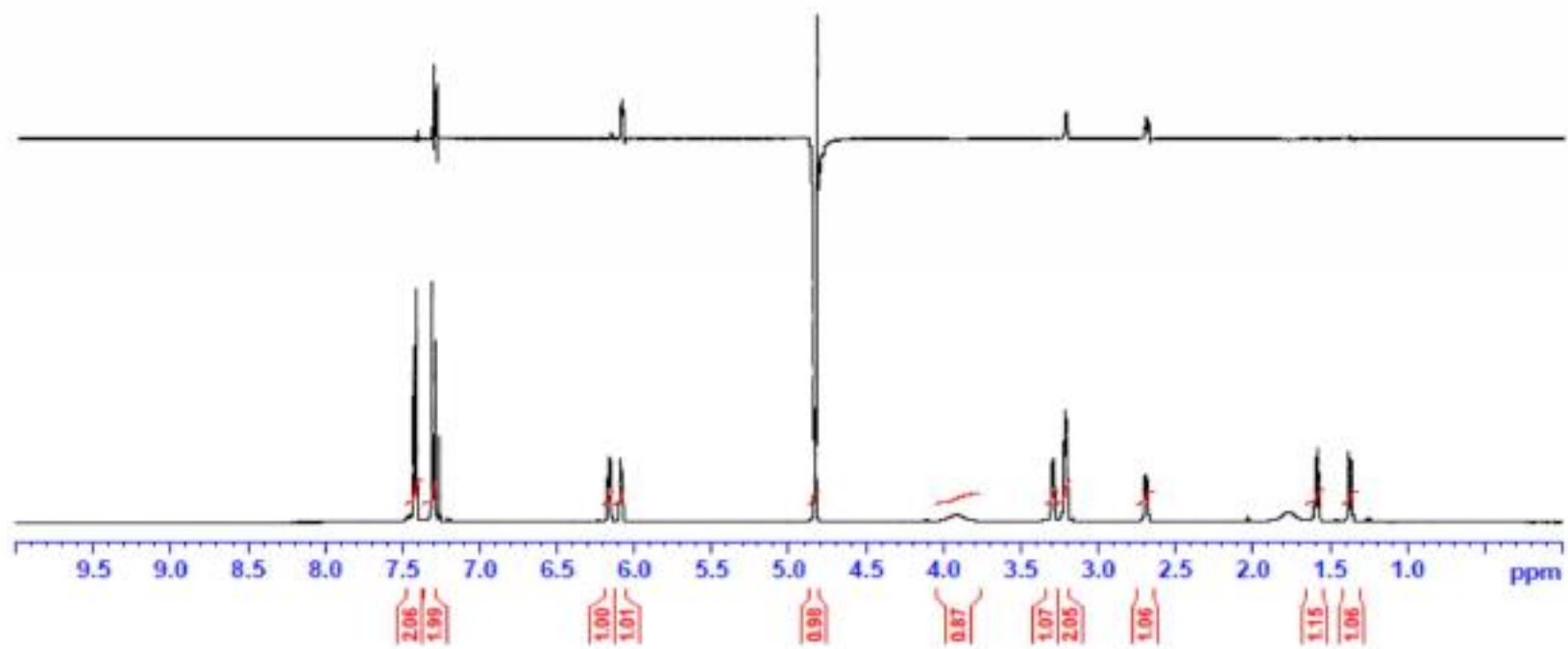
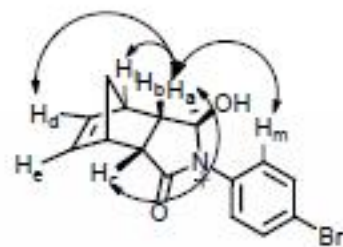
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DS 0  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631488 sec  
RG 2050  
DW 20.880 usec  
DE 6.50 usec  
TE 298.1 K  
CHST2 145.000000  
D1 1.0000000 sec  
D2 0.00344828 sec  
D12 0.0002000 sec  
TDO 1

----- CHANNEL f1 -----  
NUC1 13C  
P1 8.50 usec  
P2 17.00 usec  
PL1 -2.00 dB  
PL1W 59.53121248 W  
SFO1 100.6228298 MHz

----- CHANNEL f2 -----  
CPDPRG2 waltz16  
NUC2 1H  
P3 14.75 usec  
P4 29.50 usec  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 13.69 dB  
PL2W 10.56208695 W  
PL12W 0.35871249 W  
SFO2 400.1316005 MHz

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SRK-PS-OH-PHBr-1H



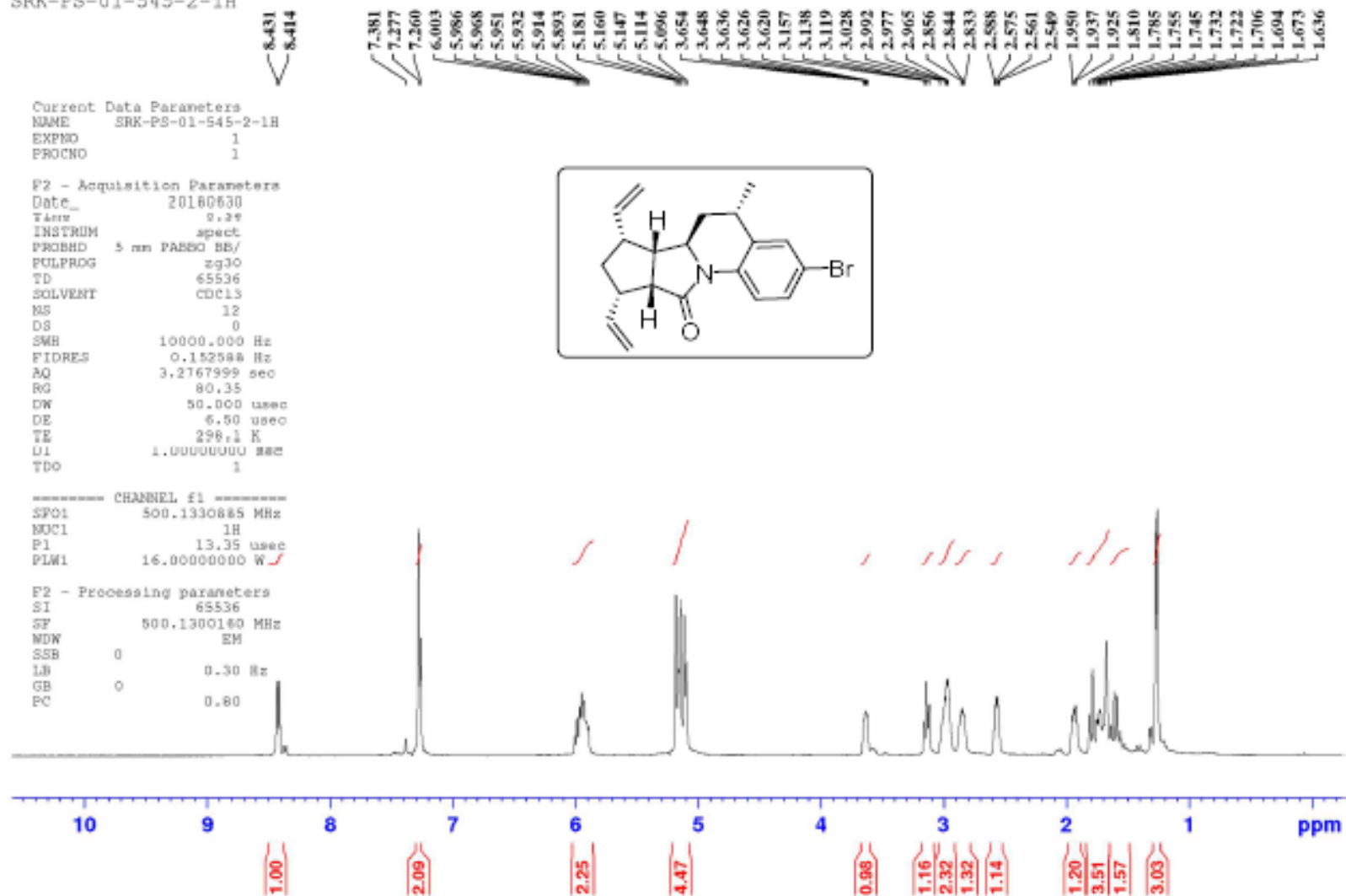
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PROCNO 1

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TD 65536  
SOLVENT CDCl3  
NS 12  
DS 0  
SWH 10000.000 Hz  
FIDRES 0.152588 Hz  
AQ 3.2767999 sec  
RG 80.35  
DW 50.000 usec  
DE 6.50 usec  
TE 298.1 K  
U1 1.0000000000000000  
TDO 1

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NUC1 1H  
P1 13.35 usec  
PLW1 16.00000000 W

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SRK-PS-01-545-2-13C

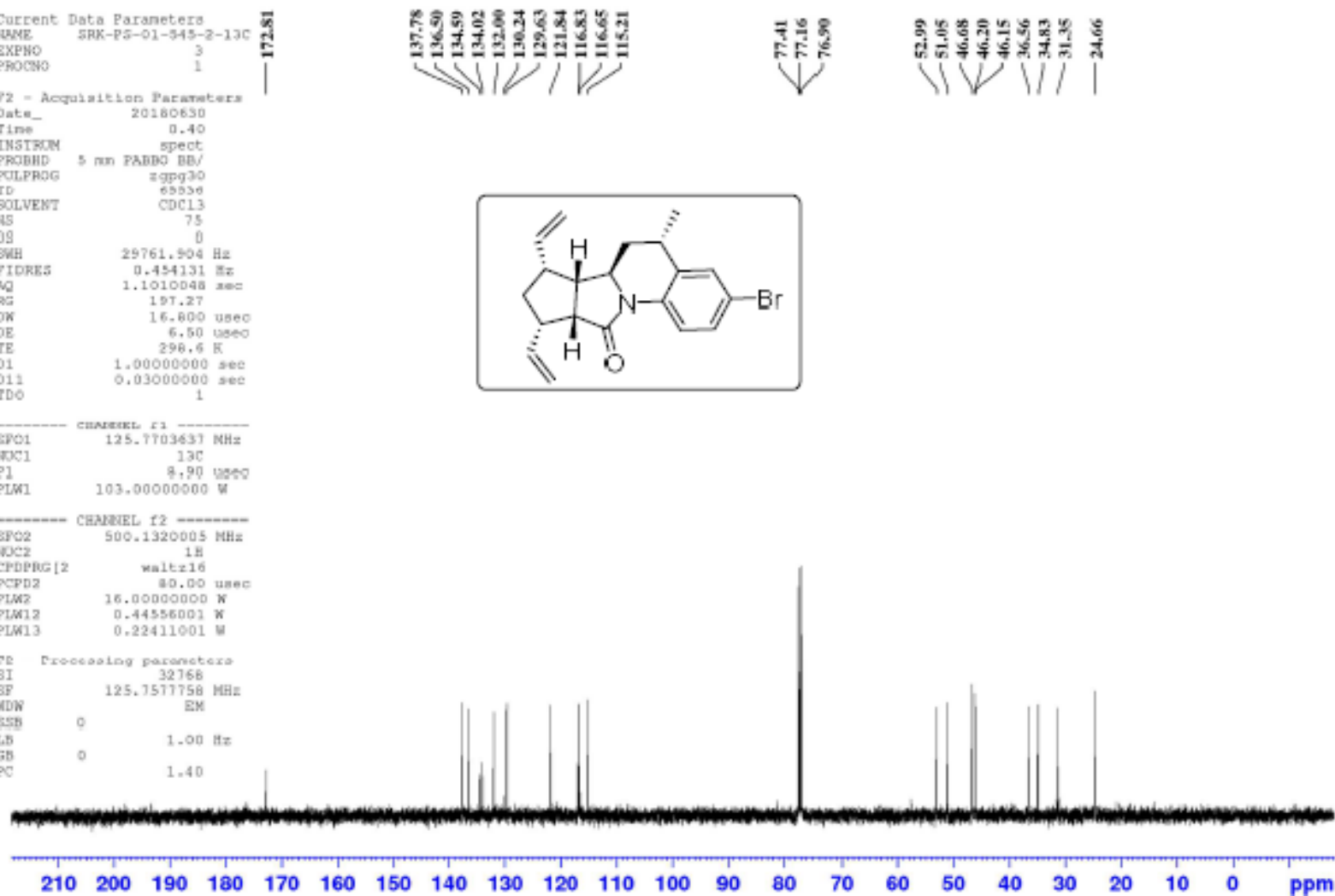
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SOLVENT CDCl3  
NS 75  
DS 0  
SWH 29761.904 Hz  
FIDRES 0.454131 Hz  
AQ 1.1010048 sec  
RG 197.27  
DW 16.800 usec  
DE 6.50 usec  
TE 298.6 K  
D1 1.00000000 sec  
D11 0.03000000 sec  
TDO 1

----- CHANNEL f1 -----  
SFO1 125.7703637 MHz  
NUC1 13C  
P1 8.90 usec  
PLW1 103.00000000 W

----- CHANNEL f2 -----  
SFO2 500.1320005 MHz  
NUC2 1H  
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PCPD2 80.00 usec  
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PLW12 0.44556001 W  
PLW13 0.22411001 W

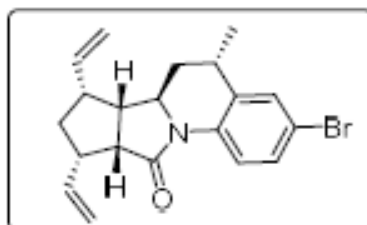
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SRK-PS-01-545-2-DEPT

137.77  
136.49  
132.00  
129.63  
121.83  
116.82  
115.20

52.98  
51.04  
46.67  
46.19  
46.14  
36.85  
34.82  
31.34  
24.66



150 140 130 120 110 100 90 80 70 60 50 40 30 20 ppm

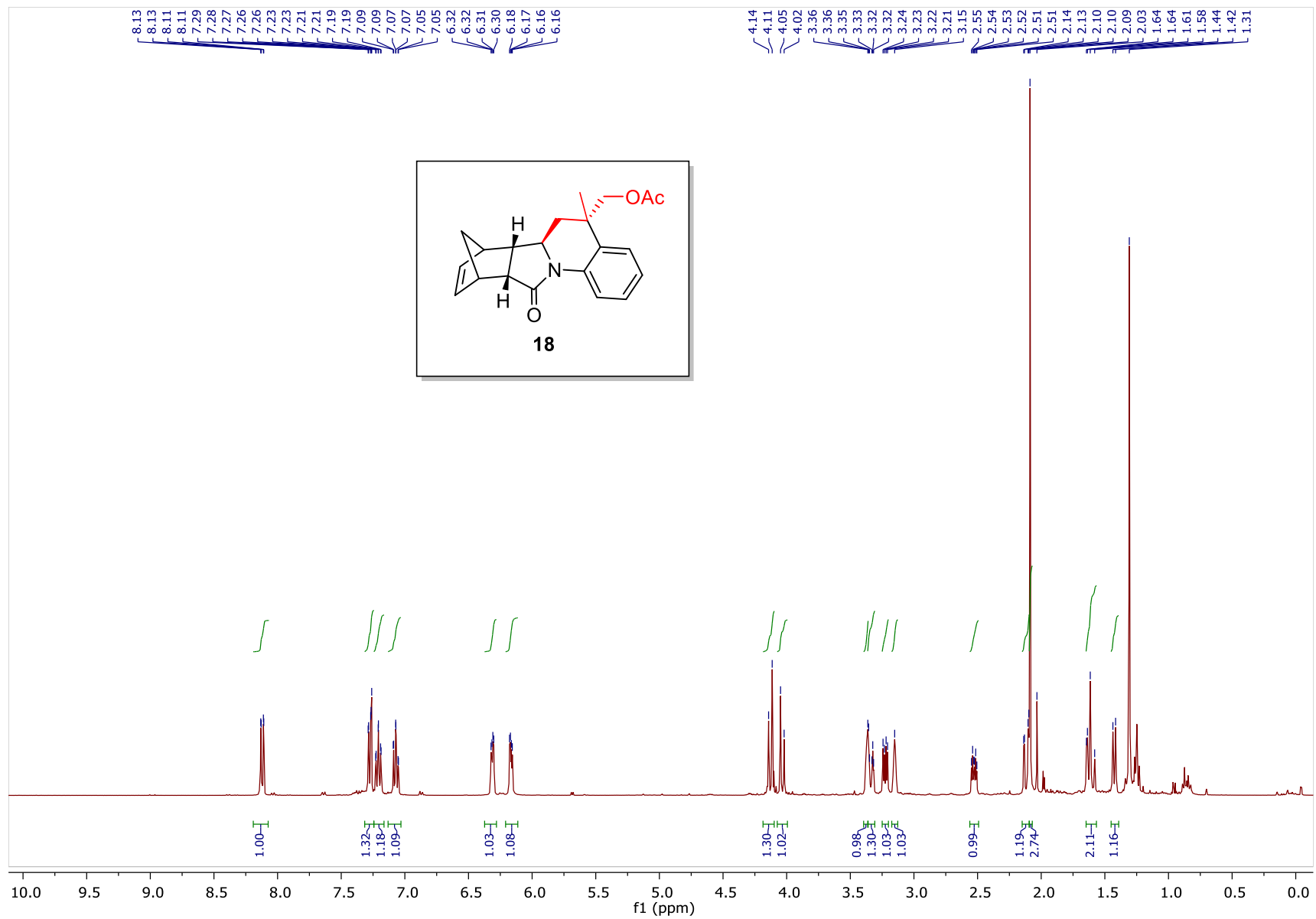
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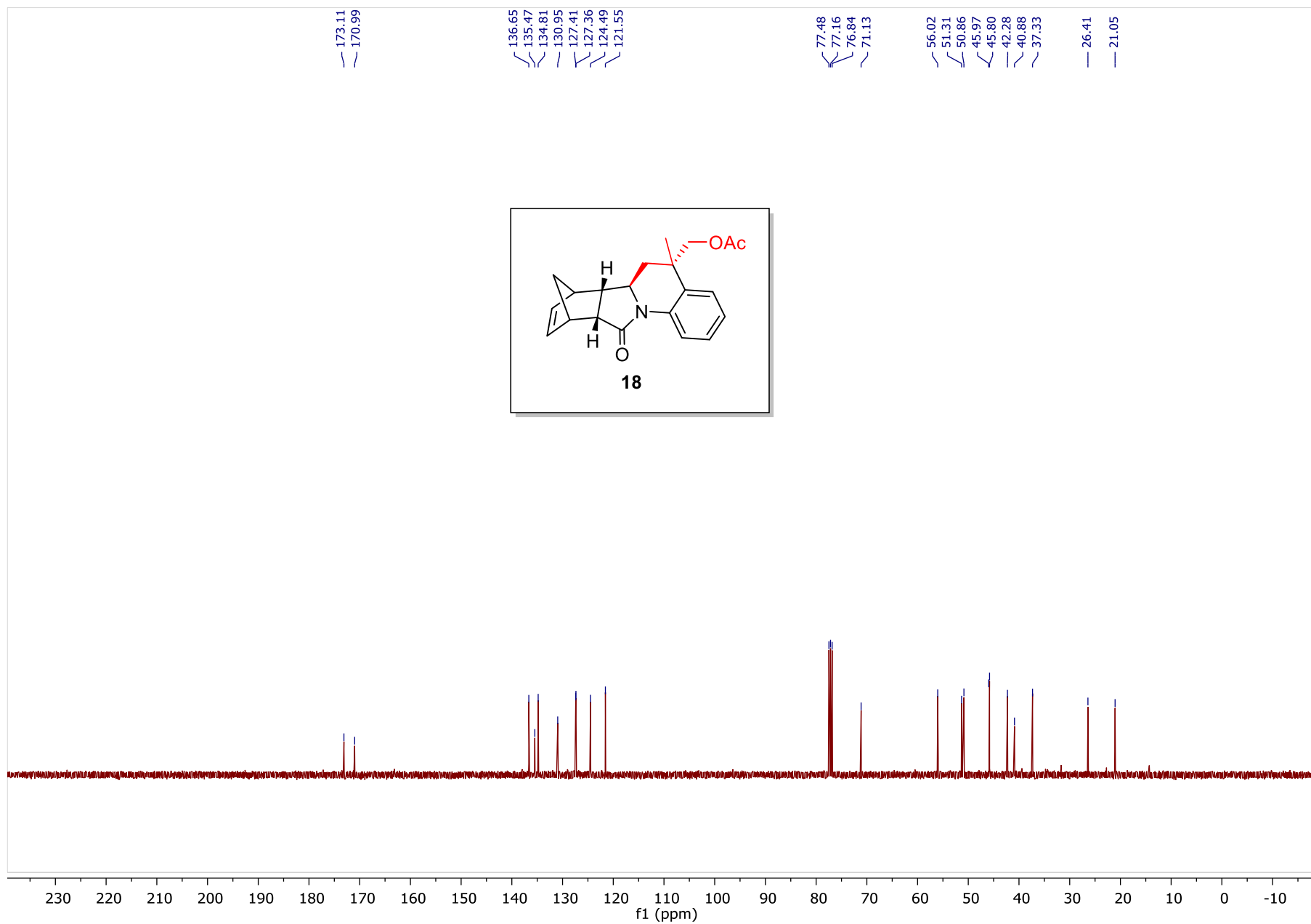
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PULPROG deptsp135  
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SOLVENT CDCl3  
NS 50  
DS 0  
SWH 20161.291 Hz  
FIDRES 0.307637 Hz  
AQ 1.6252928 sec  
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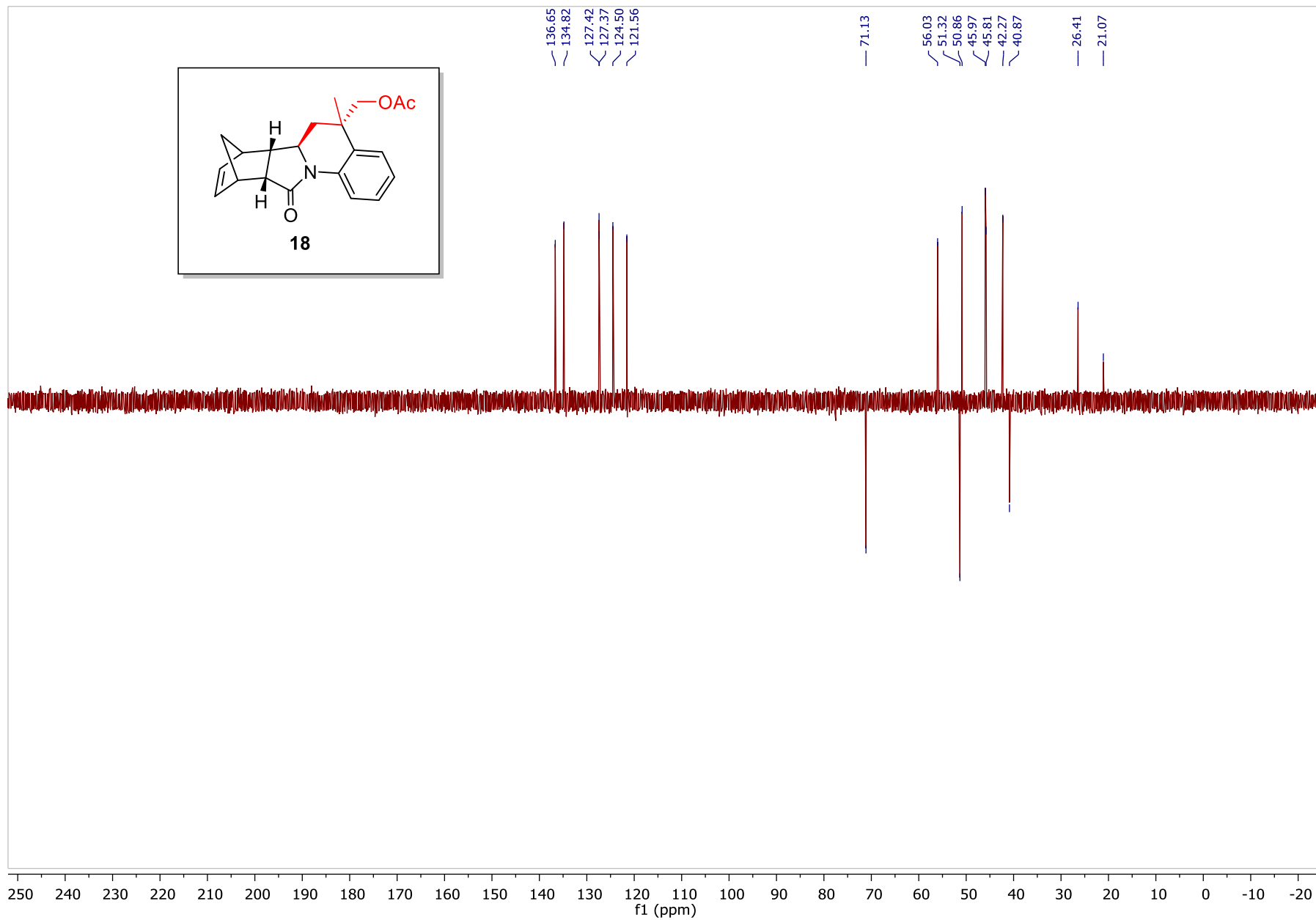
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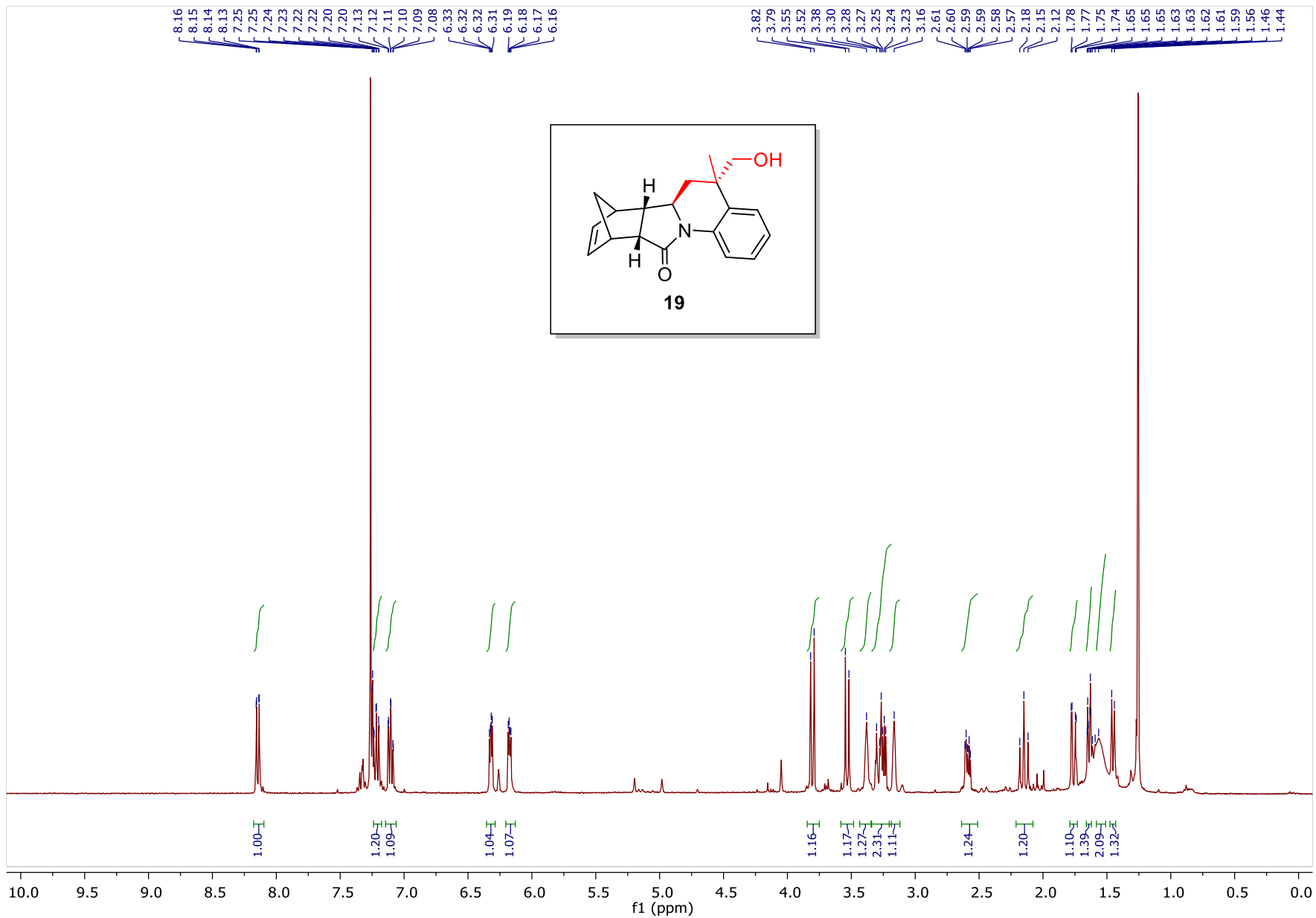
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CPDPRG(2) waltz16  
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PRN? 80.00 usec  
PLW2 16.0000000 W  
PLW12 0.44556001 W

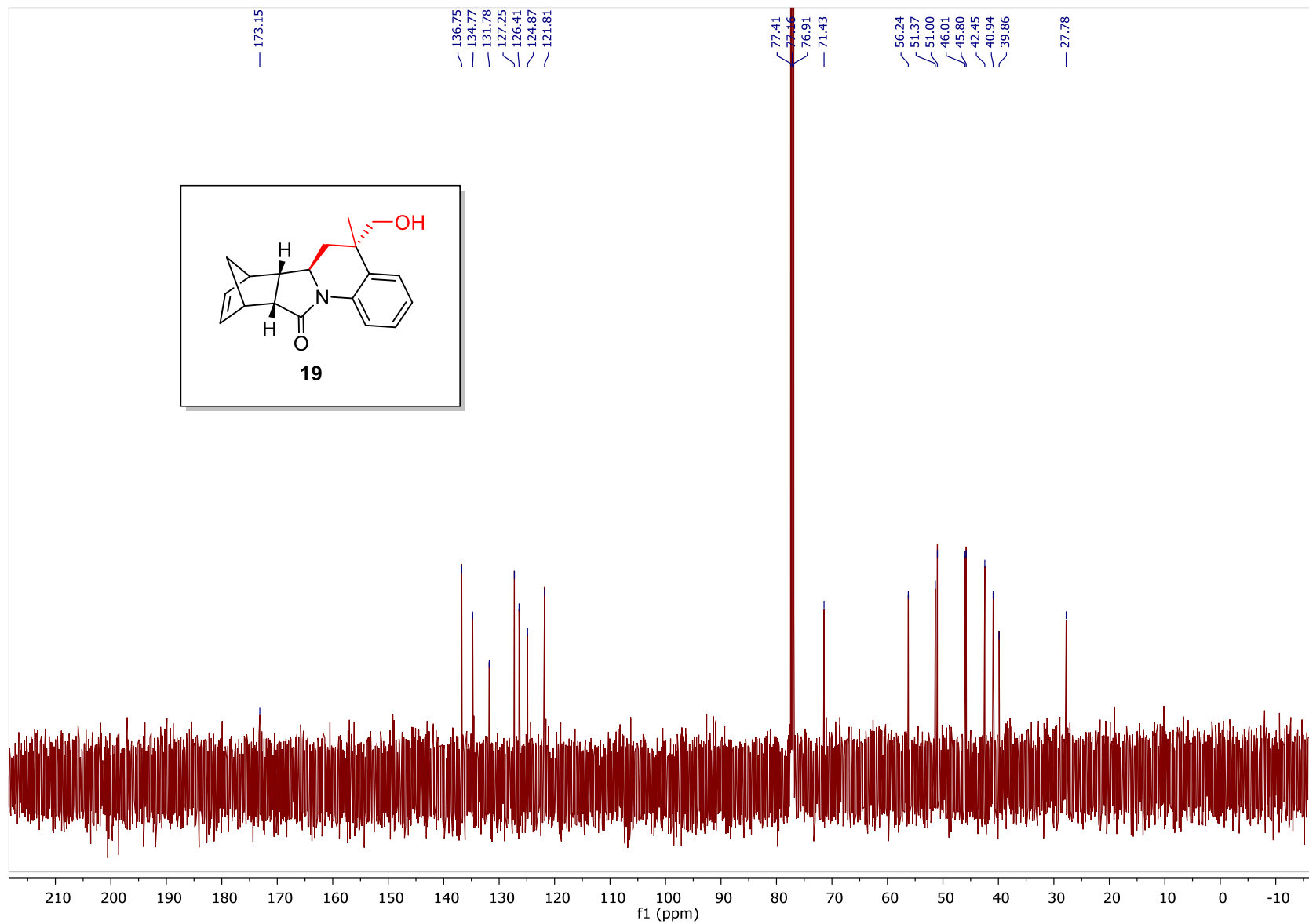
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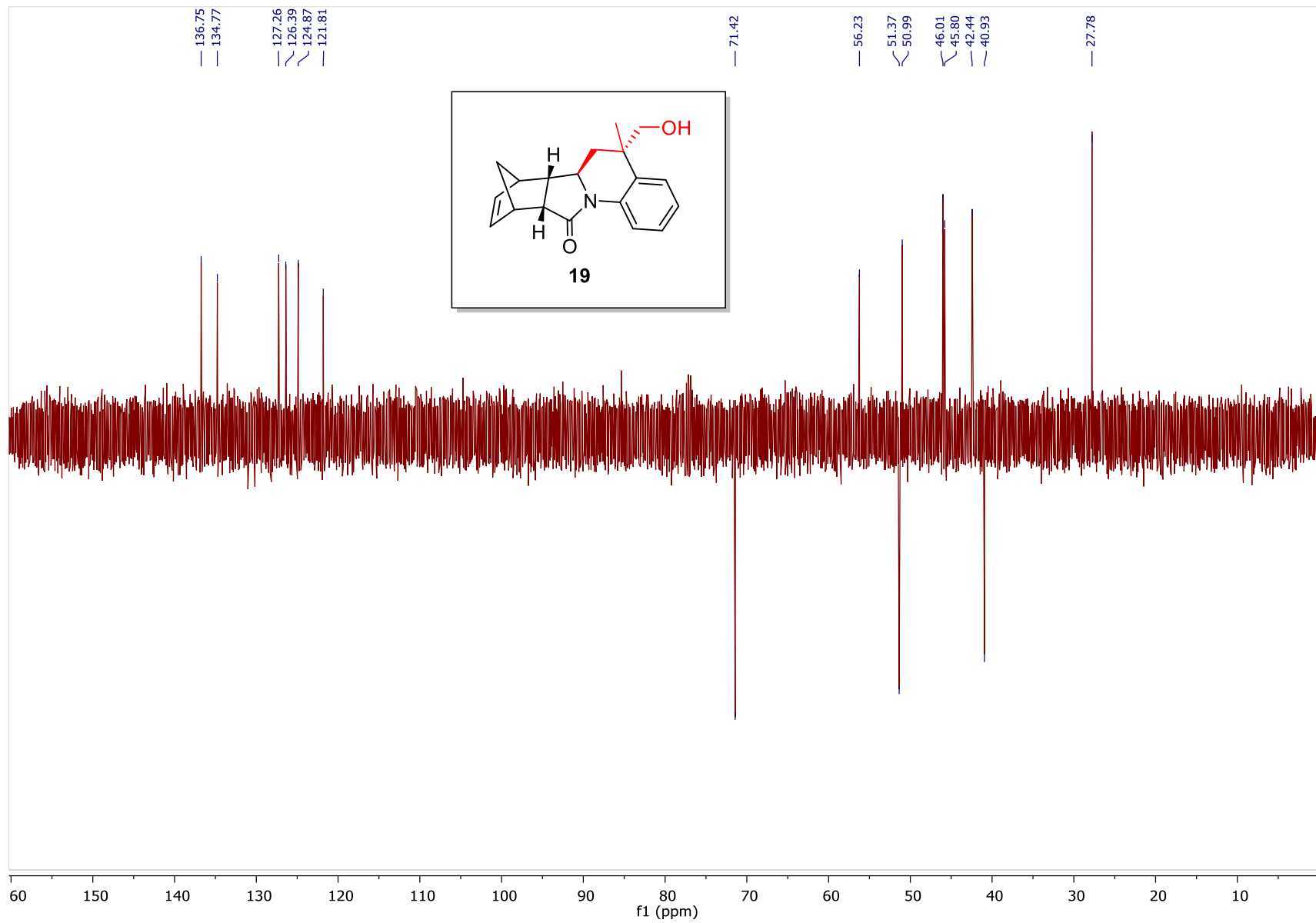


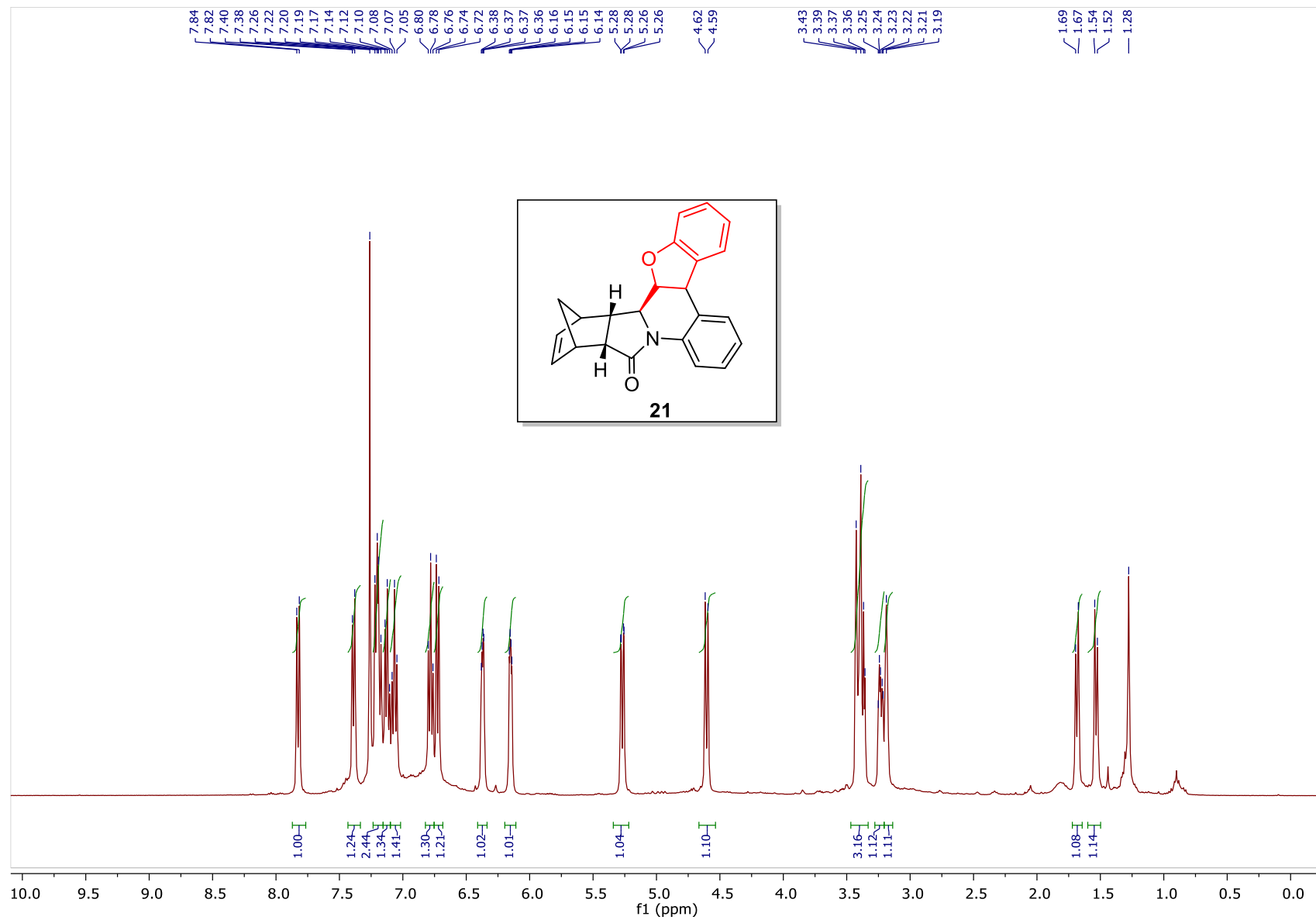


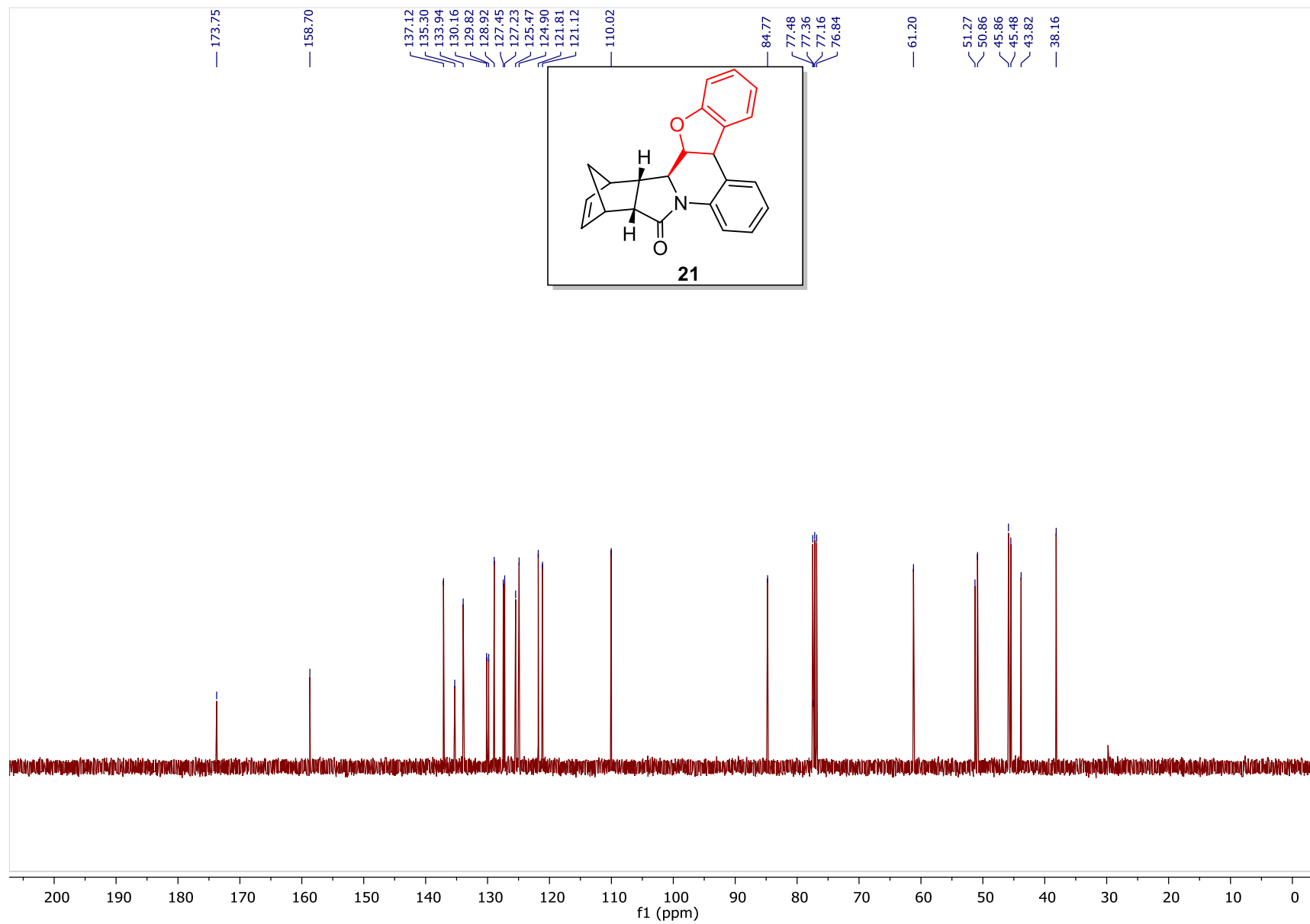


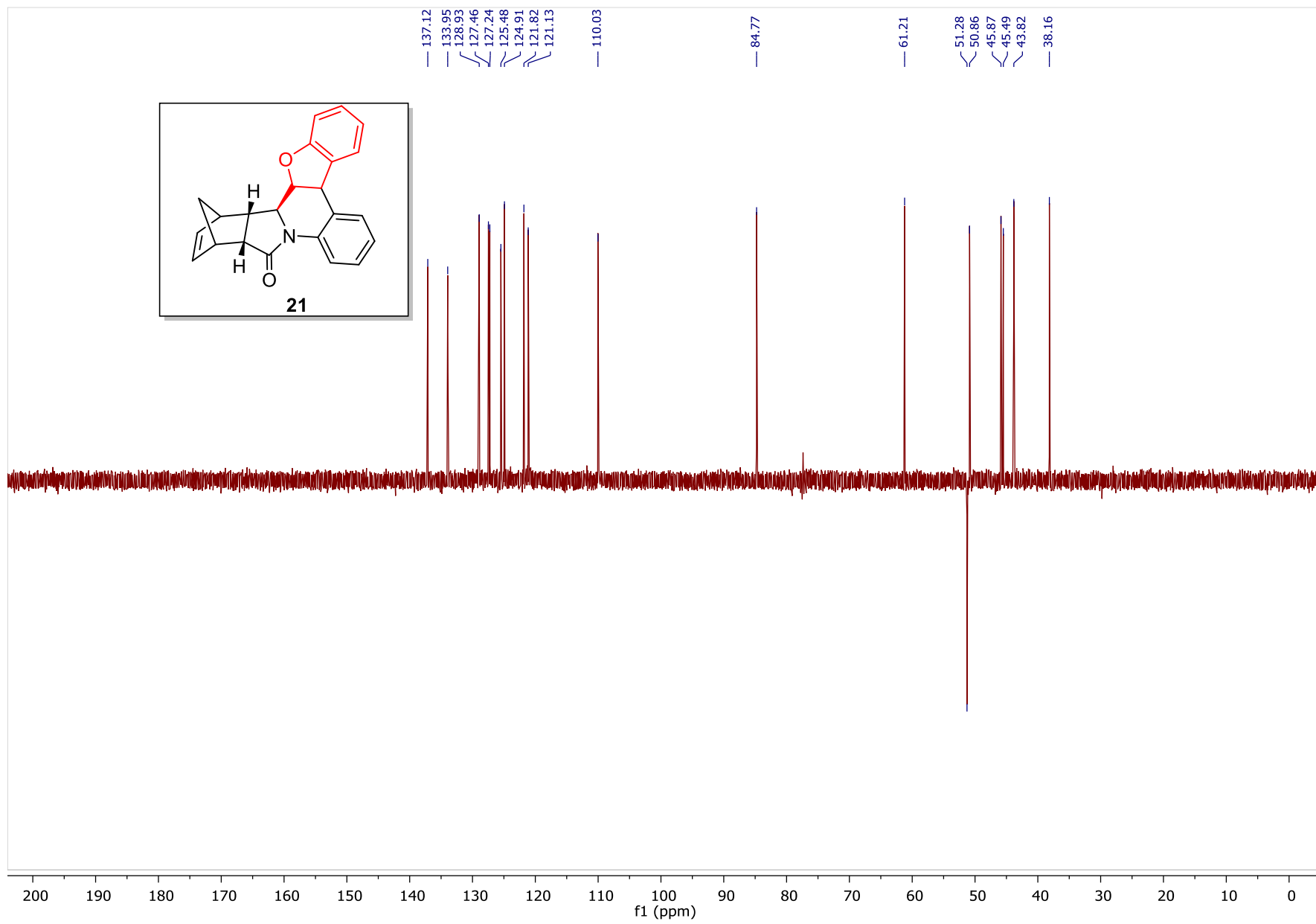




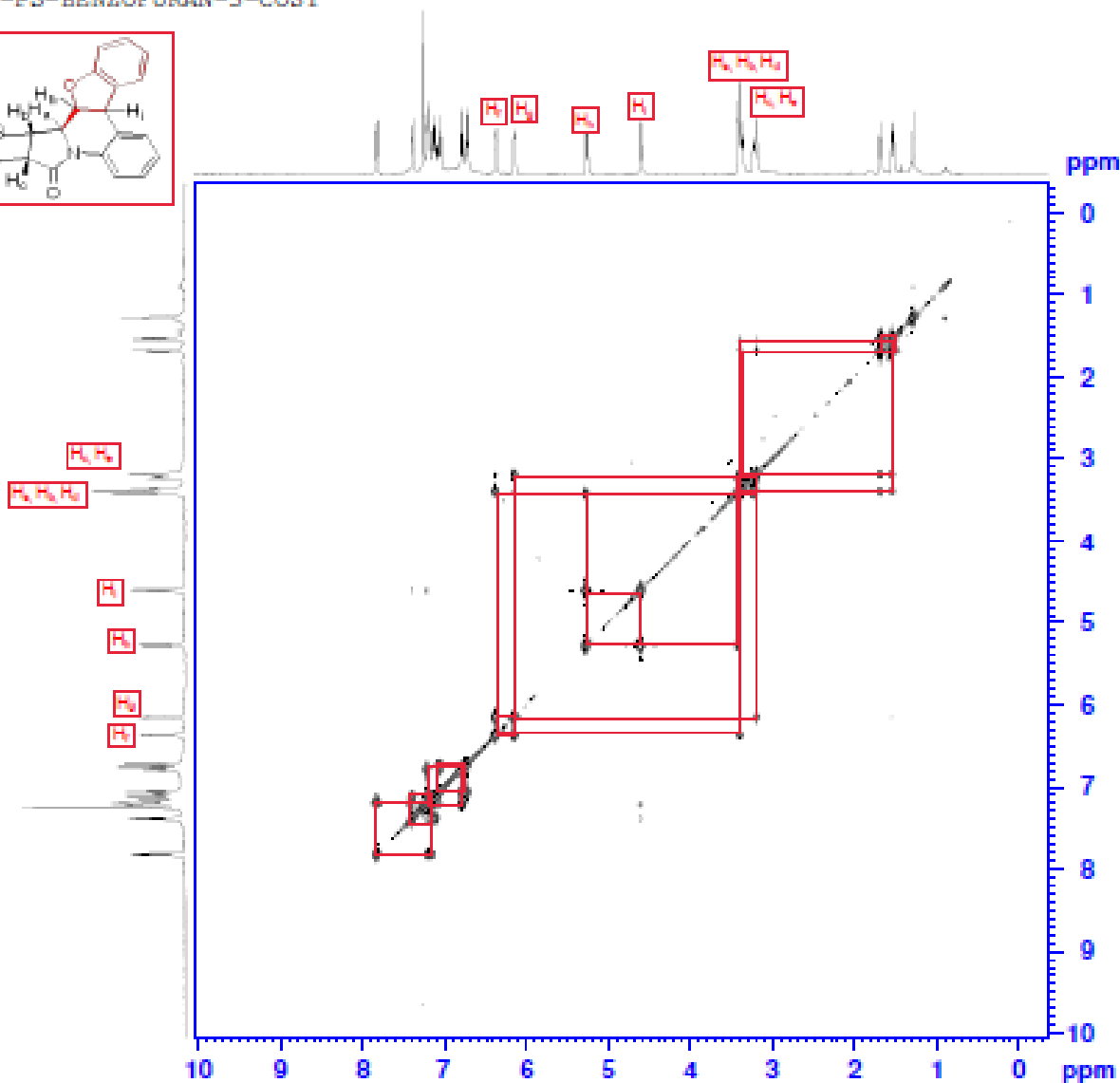
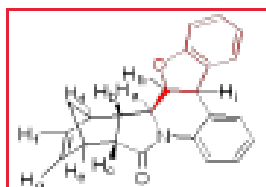








SRK-PS-BENZOFURAN-3-COSY

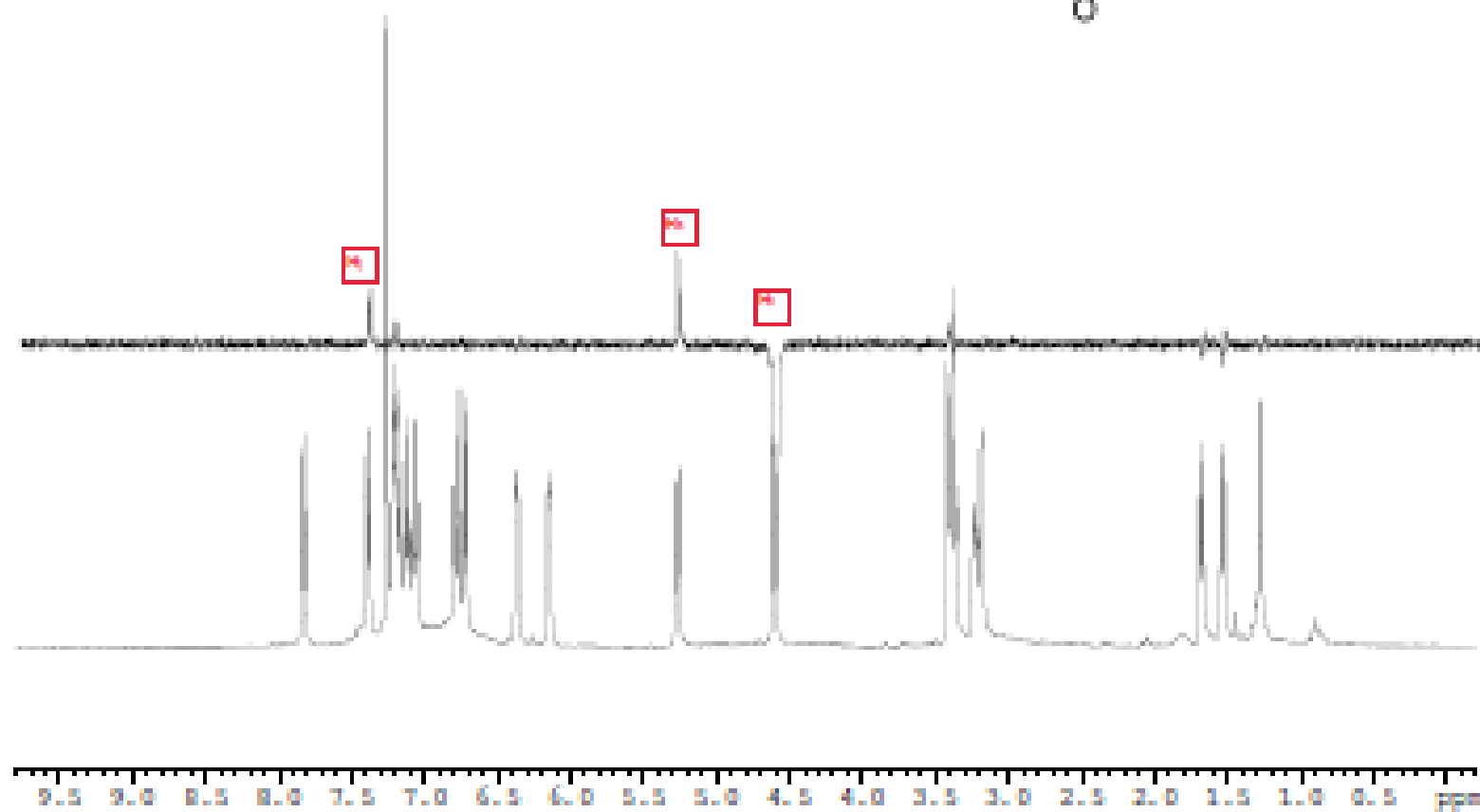
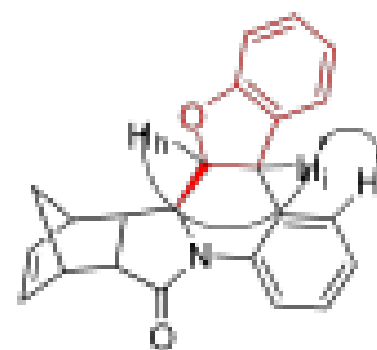


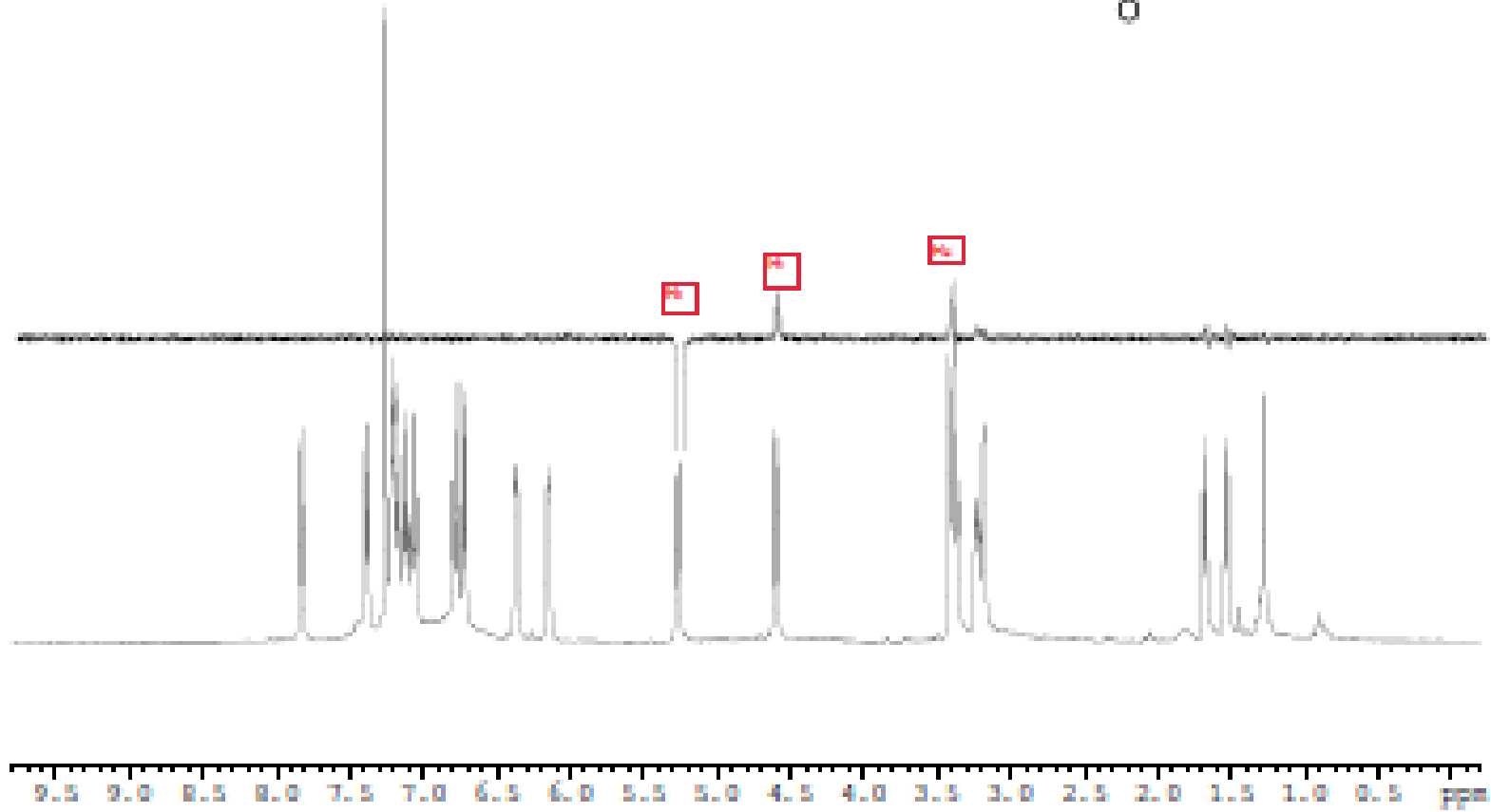
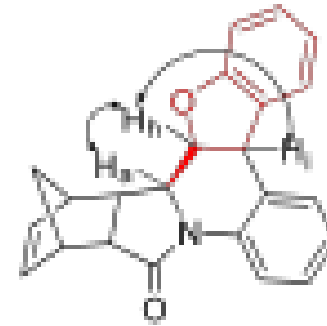
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PULPROG  cosyypgpgf
TD        2048
SOLVENT  CDCl3
NS        16
DS        4
SWH       4166.667 Hz
FIDRES    2.034505 Hz
AQ        0.2458100 sec
RG        64
DW        120.000 usec
DE        6.50 usec
TE        296.0 K
DQ        0.00000000 sec
DI        1.00000000 sec
DI2       0.00000400 sec
DI3       0.00020000 sec
IR0       0.00024000 sec

----- CHANNEL f1 -----
NUC1      1H
PQ        13.50 usec
PI        13.50 usec
PL1       -1.00 dB
PL12      10.56200600 W
SFO1      400.1310404 MHz

----- GRADIENT CHANNEL -----
CPMGPRG1  SINE.100
CPO1      10.00 %
PL12      1000.00 usec
NUC2      1
TD        256
SFO2      400.1310 MHz
FIDRES    16.275991 Hz
SW        10.413 ppm
F2A0DC    QF
SI        1024
SF        400.1300102 MHz
WDM       SINE
SSB       0
LA        0.00 Hz
GB        0
PC        1.40
SI        1024
NUC2      QF
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WDM       SINE
SSB       0
LA        0.00 Hz
GB        0
    
```







SRK-PS-BF3-INDOLE-3-1H

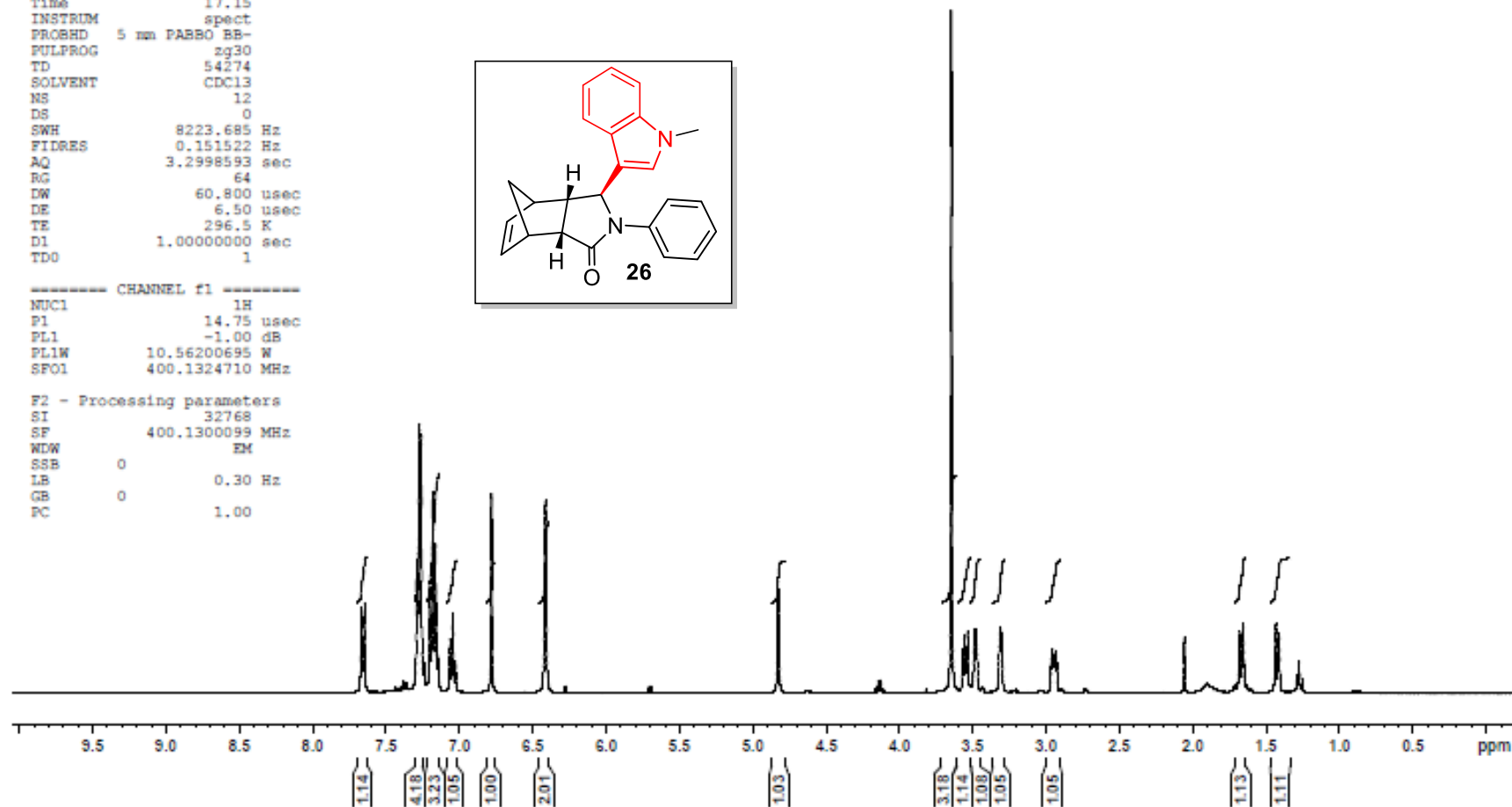
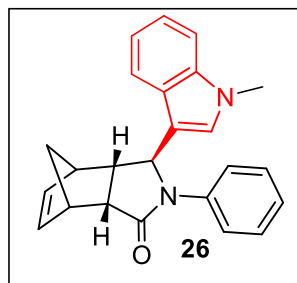
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 PROCNO 1

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 PULPROG zg30  
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 SOLVENT CDC13  
 NS 12  
 DS 0  
 SWH 8223.685 Hz  
 FIDRES 0.151522 Hz  
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 RG 64  
 DW 60.800 usec  
 DE 6.50 usec  
 TE 296.5 K  
 D1 1.0000000 sec  
 TDO 1

----- CHANNEL f1 -----  
 NUC1 1H  
 P1 14.75 usec  
 PL1 -1.00 dB  
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 SFO1 400.1324710 MHz

F2 - Processing parameters  
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 LB 0.30 Hz  
 GB 0  
 PC 1.00

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1.434  
1.413



SRK-PS-BF3-INDOLE-3-13C

Current Data Parameters  
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 EXPNO 2  
 PROCNO 1

F2 - Acquisition Parameters  
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 Time\_ 17.17  
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 PROBHD 5 mm PABBO BB-  
 PULPROG zgpg30  
 TD 65536  
 SOLVENT CDC13  
 NS 150  
 DS 0  
 SWH 26041.666 Hz  
 FIDRES 0.397364 Hz  
 AQ 1.2582912 sec  
 RG 1030  
 LW 19.200 usec  
 DE 6.50 usec  
 TE 297.0 K  
 D1 1.00000000 sec  
 D11 0.03000000 sec  
 TDO 1

----- CHANNEL f1 -----  
 NUC1 13C  
 P1 8.50 usec  
 PL1 -2.00 dB  
 PL1W 56.53121948 W  
 SFO1 100.6238364 MHz

----- CHANNEL f2 -----  
 CPDPRG2 waltz16  
 NUC2 1H  
 PCPD2 80.00 usec  
 PL2 -1.00 dB  
 PL12 13.69 dB  
 PL13 14.50 dB  
 PL2W 10.56200695 W  
 PL12W 0.35871249 W  
 PL13W 0.29767781 W  
 SFO2 400.1316005 MHz

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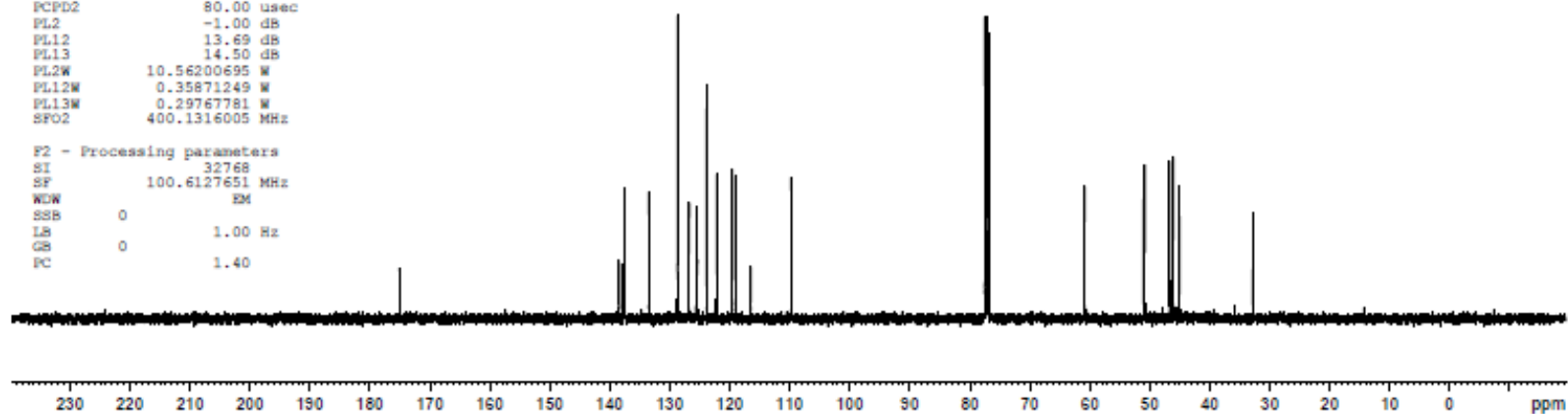
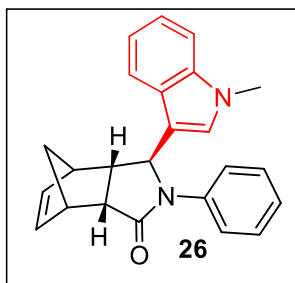
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 109.73

77.48  
 77.16  
 76.84

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 46.65  
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 45.07

32.75





SRK-PS-769-G1-1H

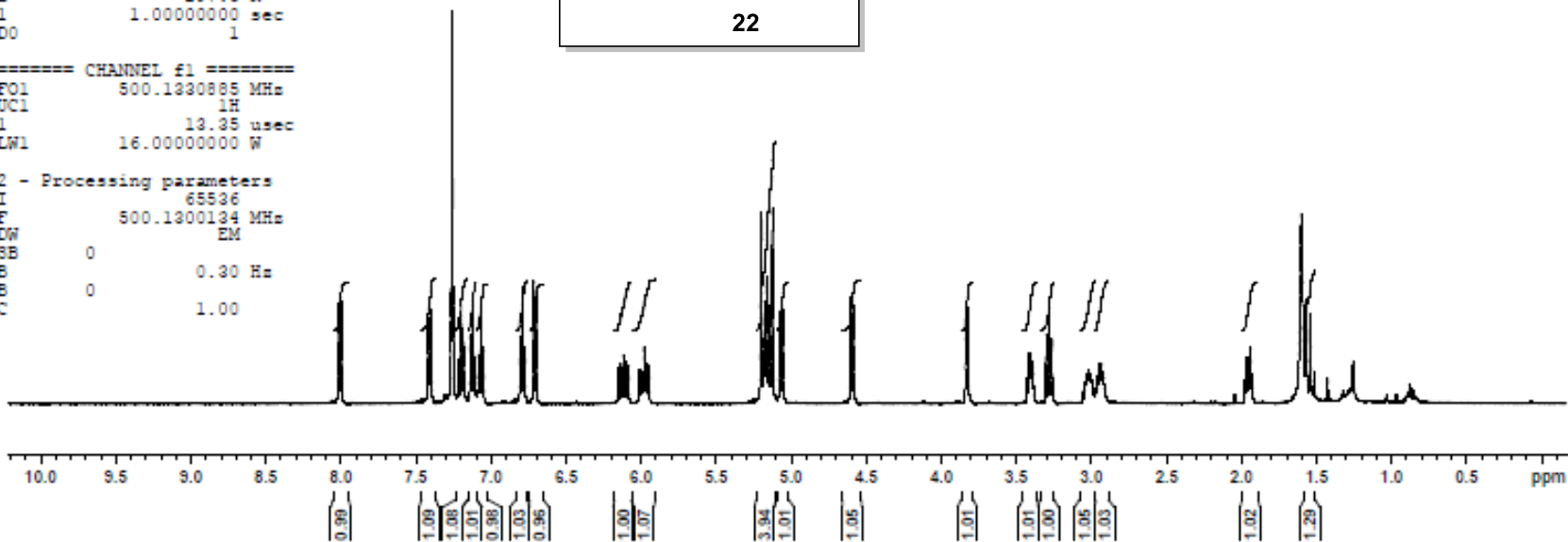
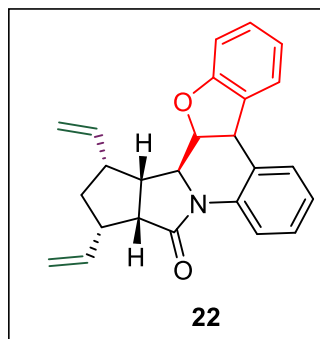
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Current Data Parameters  
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PROCNO 1

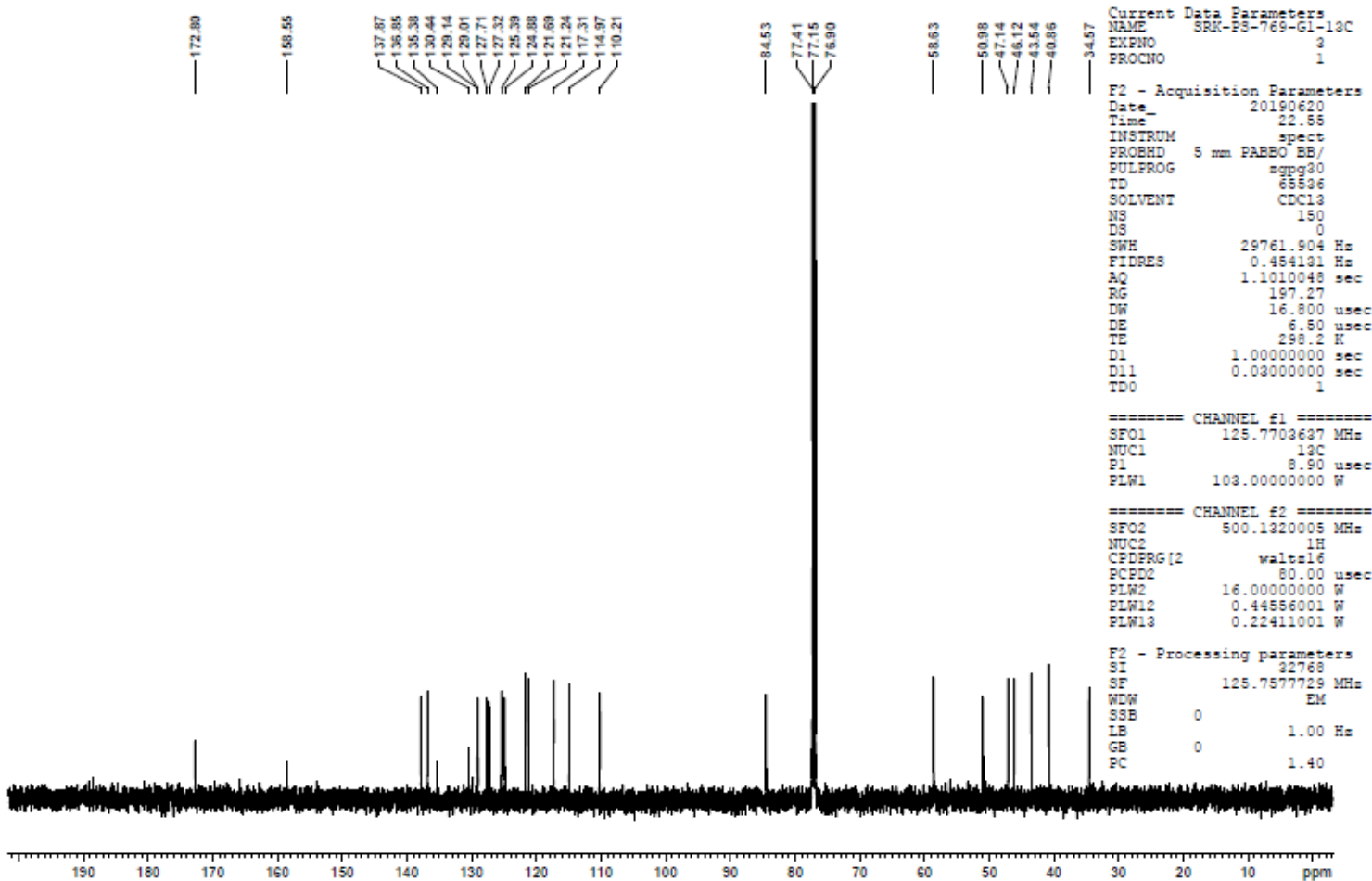
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FIDRES 0.152588 Hz  
AQ 3.2767999 sec  
RG 119.07  
DW 50.000 usec  
DE 6.50 usec  
TE 297.5 K  
D1 1.00000000 sec  
TDO 1

===== CHANNEL f1 =====  
SFO1 500.1330885 MHz  
NUC1 1H  
P1 13.35 usec  
PLW1 16.00000000 W

F2 - Processing parameters  
SI 65536  
SF 500.1300134 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



SRK-PS-769-G1-13C



SRK-PS-769-G1-DEPT

137.87  
136.85  
129.01  
127.71  
127.32  
125.39  
124.87  
121.68  
121.24  
117.31  
114.97  
110.21

84.53

58.63

50.98

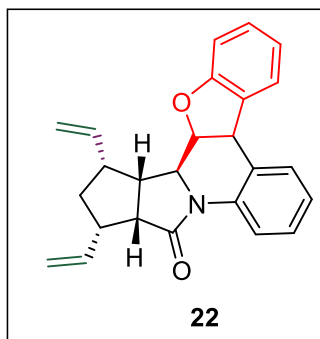
47.14

46.11

43.54

40.86

34.57



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

Current Data Parameters  
NAME SRK-PS-769-G1-DEPT  
EXPNO 2  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20190620  
Time 22.52  
INSTRUM spect  
PROBHD 5 mm PASPO BB/  
PULPROG deptspl35  
TD 65536  
SOLVENT CDC13  
NS 80  
DS 0  
SWH 20161.291 Hz  
FIDRES 0.307637 Hz  
AQ 1.6252928 sec  
RG 197.27  
DM 24.800 usec  
DE 6.50 usec  
TE 298.0 K  
CHST2 145.0000000  
D1 1.00000000 sec  
D2 0.00344828 sec  
D12 0.00002000 sec  
TDO 1

----- CHANNEL f1 -----  
SF01 125.7678486 MHz  
NUC1 13C  
P1 8.90 usec  
P13 2000.00 usec  
PLW0 0 W  
PLW1 103.00000000 W  
SPNAM[5] Ccp60comp.4  
SPOALS 0.500  
SPOFFS5 0 Hz  
SPW5 12.46500015 W

----- CHANNEL f2 -----  
SF02 500.1315995 MHz  
NUC2 1H  
CPDPRG[2] waltz16  
P3 13.35 usec  
P4 26.70 usec  
PCPD2 80.00 usec  
PLW2 16.00000000 W  
PLW12 0.44556001 W

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