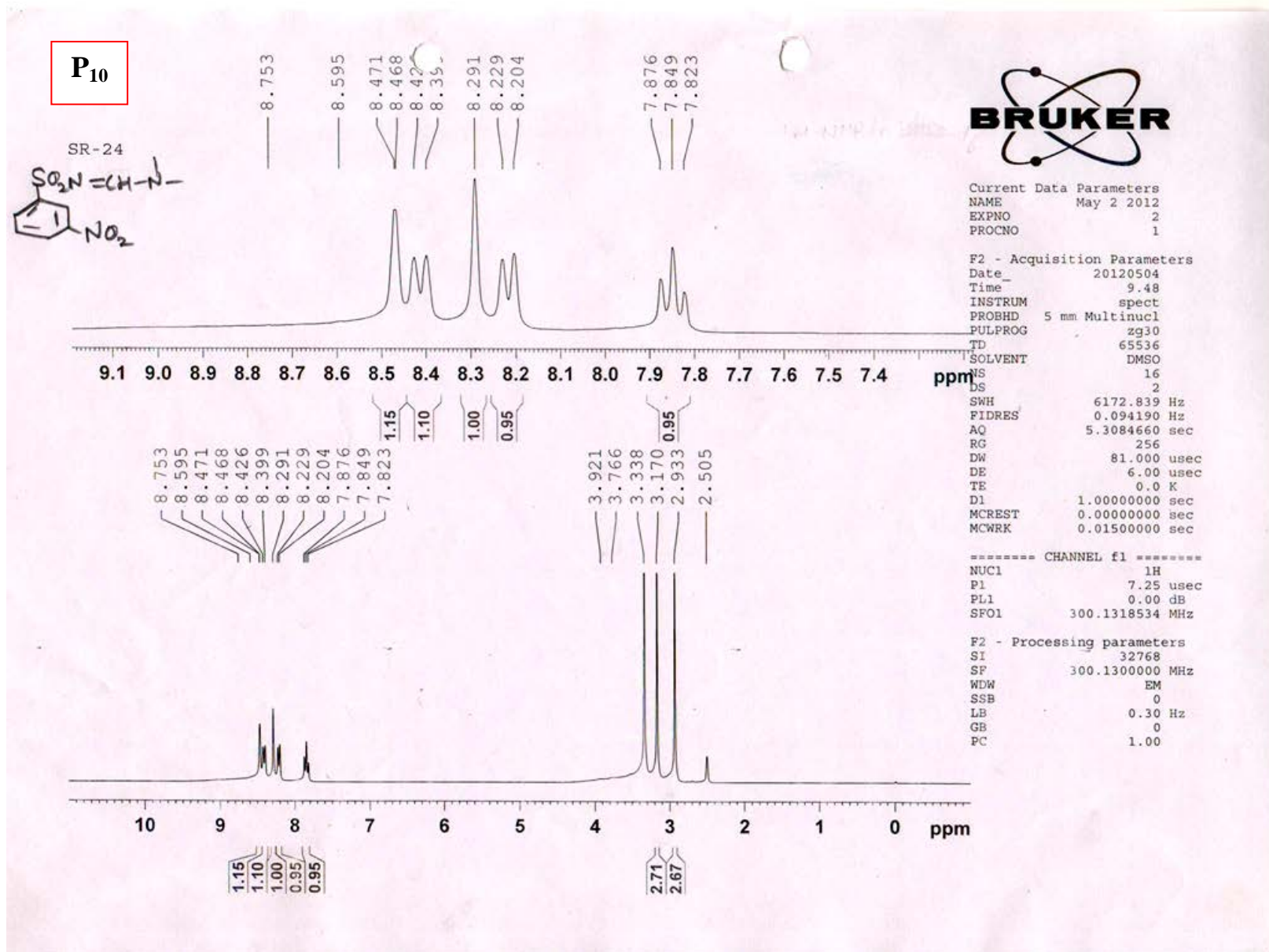
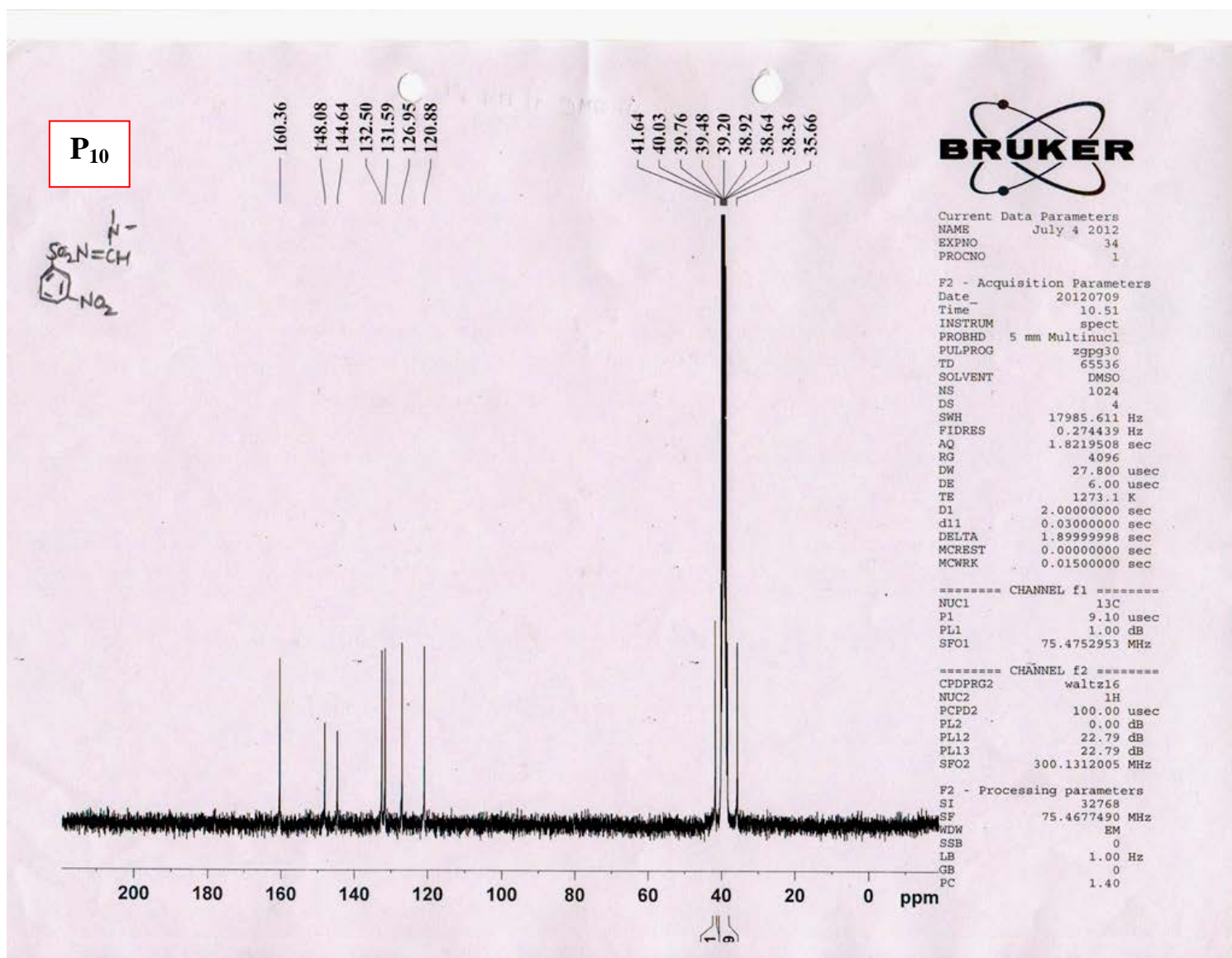


# Metal and solvent free synthesis of N-sulfonylformamidines

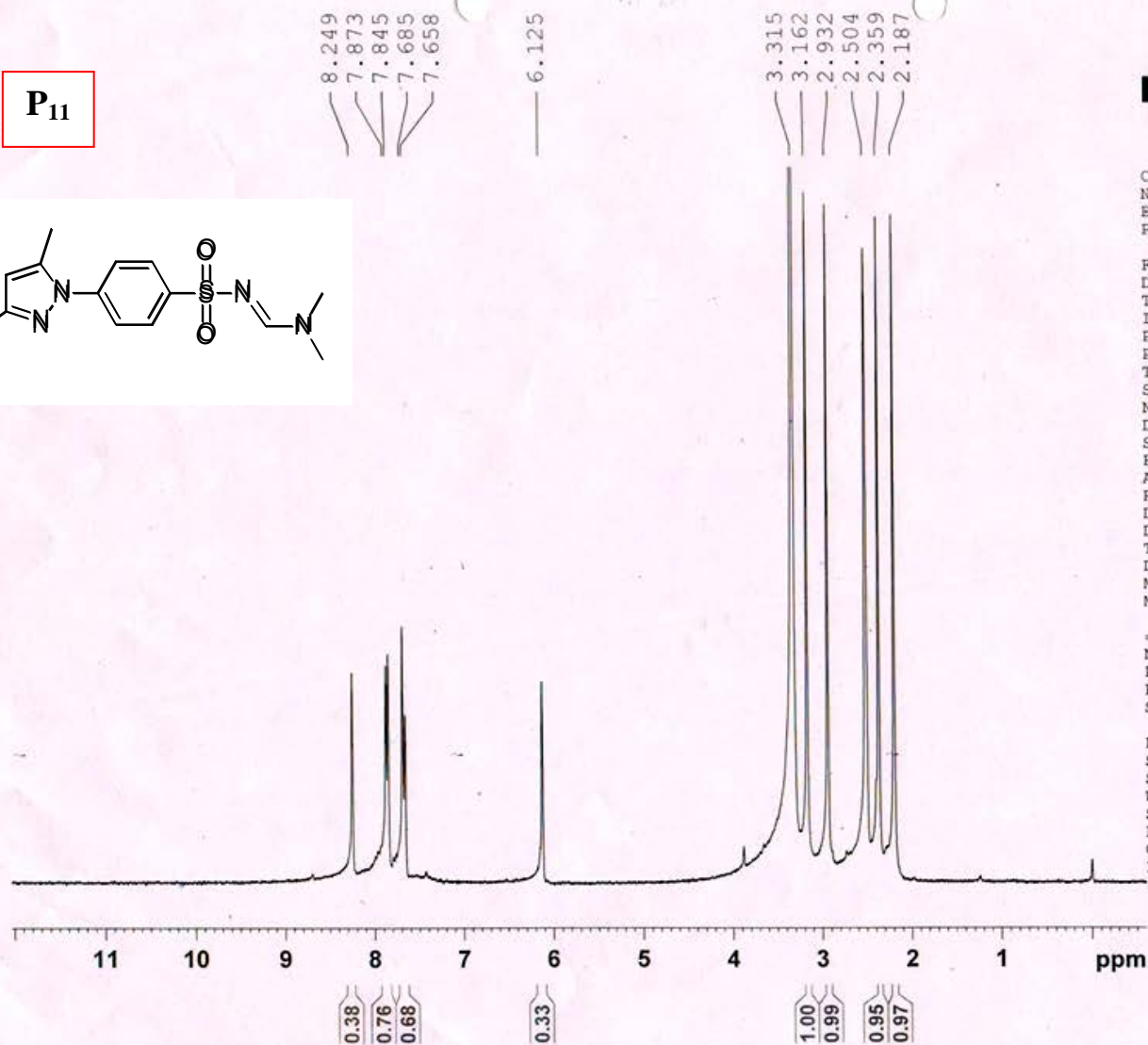
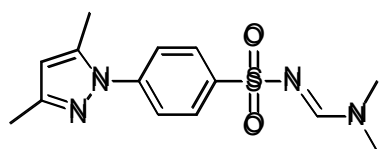
Nisha Chandna, Navneet Chandak, Pawan Kumar, Jitander Kapoor, Pawan K. Sharma\*

## Supplementary information





P<sub>11</sub>



Current Data Parameters  
NAME July 4 2012  
EXPNO 21  
PROCNO 1

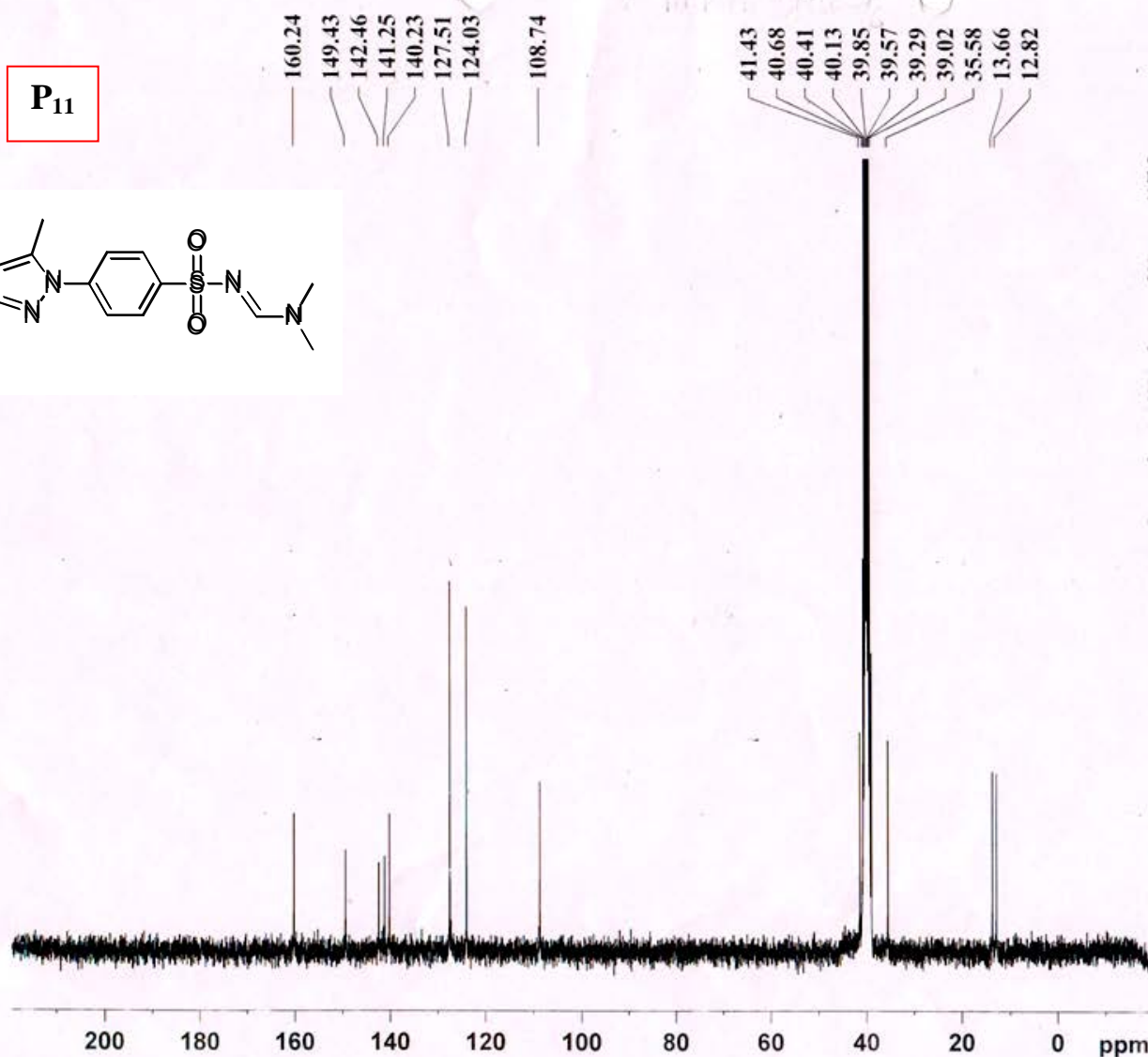
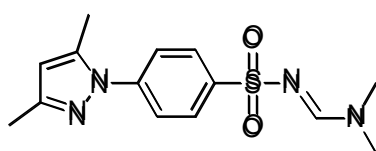
F2 - Acquisition Parameters  
Date\_ 20120706  
Time\_ 11.45  
INSTRUM spect  
PROBHD 5 mm Multinucl  
PULPROG zg30  
TD 65536  
SOLVENT DMSO  
NS 8  
DS 2  
SWH 6172.839 Hz  
FIDRES 0.094190 Hz  
AQ 5.3084660 sec  
RG 645.1  
DW 81.000 usec  
DE 6.00 usec  
TE 1273.1 K  
D1 1.00000000 sec  
MCREST 0.00000000 sec  
MCWRK 0.01500000 sec

===== CHANNEL f1 =====  
NUC1 1H  
P1 7.25 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



P<sub>11</sub>



Current Data Parameters  
NAME July 12 2012  
EXPNO 27  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120716  
Time 16.10  
INSTRUM spect  
PROBHD 5 mm Multinucl  
PULPROG zgpg30  
TD 65536  
SOLVENT DMSO  
NS 1024  
DS 4  
SWH 17985.611 Hz  
FIDRES 0.274439 Hz  
AQ 1.8219508 sec  
RG 4096  
DW 27.800 usec  
DE 6.00 usec  
TE 1273.1 K  
D1 2.00000000 sec  
d11 0.03000000 sec  
DELTA 1.89999998 sec  
MCREST 0.00000000 sec  
MCWRK 0.01500000 sec

===== CHANNEL f1 =====  
NUC1 13C  
P1 9.10 usec  
PL1 1.00 dB  
SFO1 75.4752953 MHz

===== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 100.00 usec  
PL2 0.00 dB  
PL12 22.79 dB  
PL13 22.79 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 1.00

P<sub>12</sub>

8.534  
8.248  
7.997  
7.965  
7.936  
7.846  
7.817

6.309

3.309  
3.159  
3.103  
2.925  
2.725  
2.671  
2.506  
2.502  
2.242

-0.002

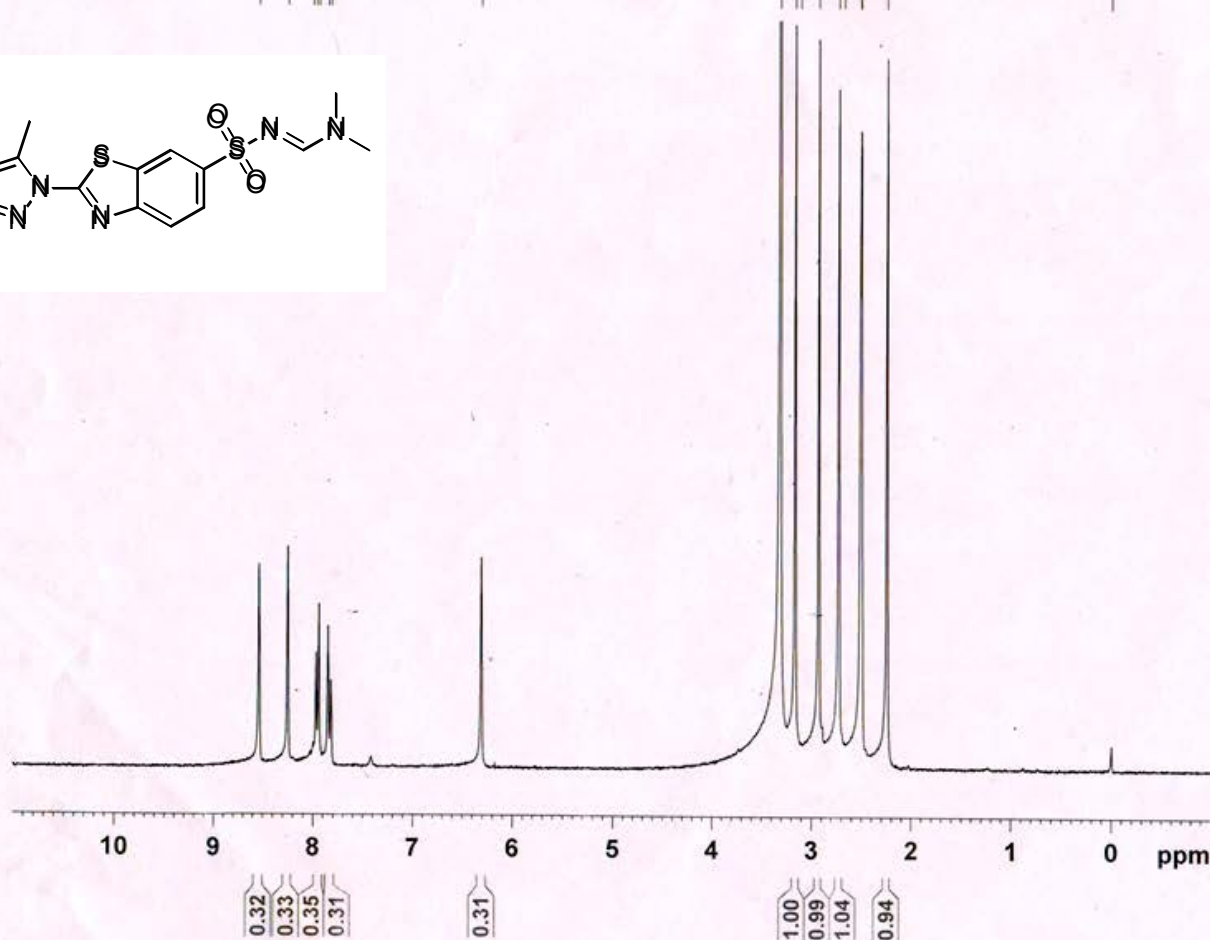
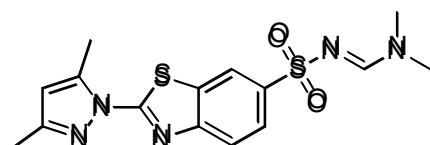


Current Data Parameters  
NAME July 4 2012  
EXPNO 20  
PROCNO 1

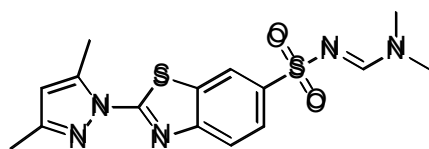
F2 - Acquisition Parameters  
Date\_ 20120706  
Time 11.40  
INSTRUM spect  
PROBHD 5 mm Multinucl  
PULPROG zg30  
TD 65536  
SOLVENT DMSO  
NS 8  
DS 2  
SWH 6172.839 Hz  
FIDRES 0.094190 Hz  
AQ 5.3084660 sec  
RG 724.1  
DW 81.000 usec  
DE 6.00 usec  
TE 1273.1 K  
D1 1.00000000 sec  
MCREST 0.00000000 sec  
MCWRK 0.01500000 sec

===== CHANNEL f1 =====  
NUC1 1H  
P1 7.25 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



P<sub>12</sub>



164.33  
160.19  
153.53  
153.17  
142.95  
139.46  
132.95  
124.86  
122.51  
121.12  
111.66

41.58  
41.44  
40.76  
40.48  
40.20  
39.93  
39.65  
39.37  
39.09  
35.58  
13.93  
13.68



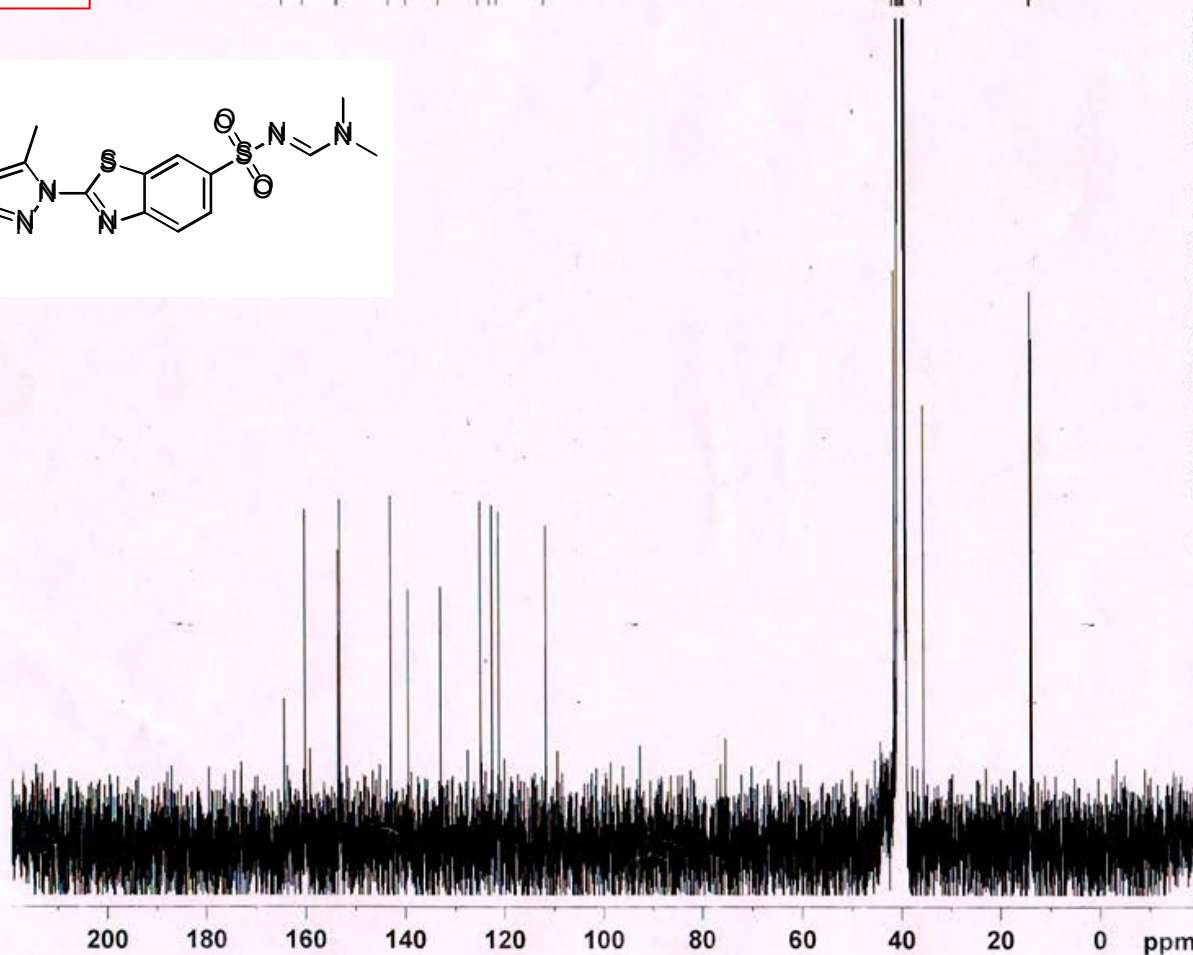
Current Data Parameters  
NAME July 12 2012  
EXPNO 29  
PROCNO 1

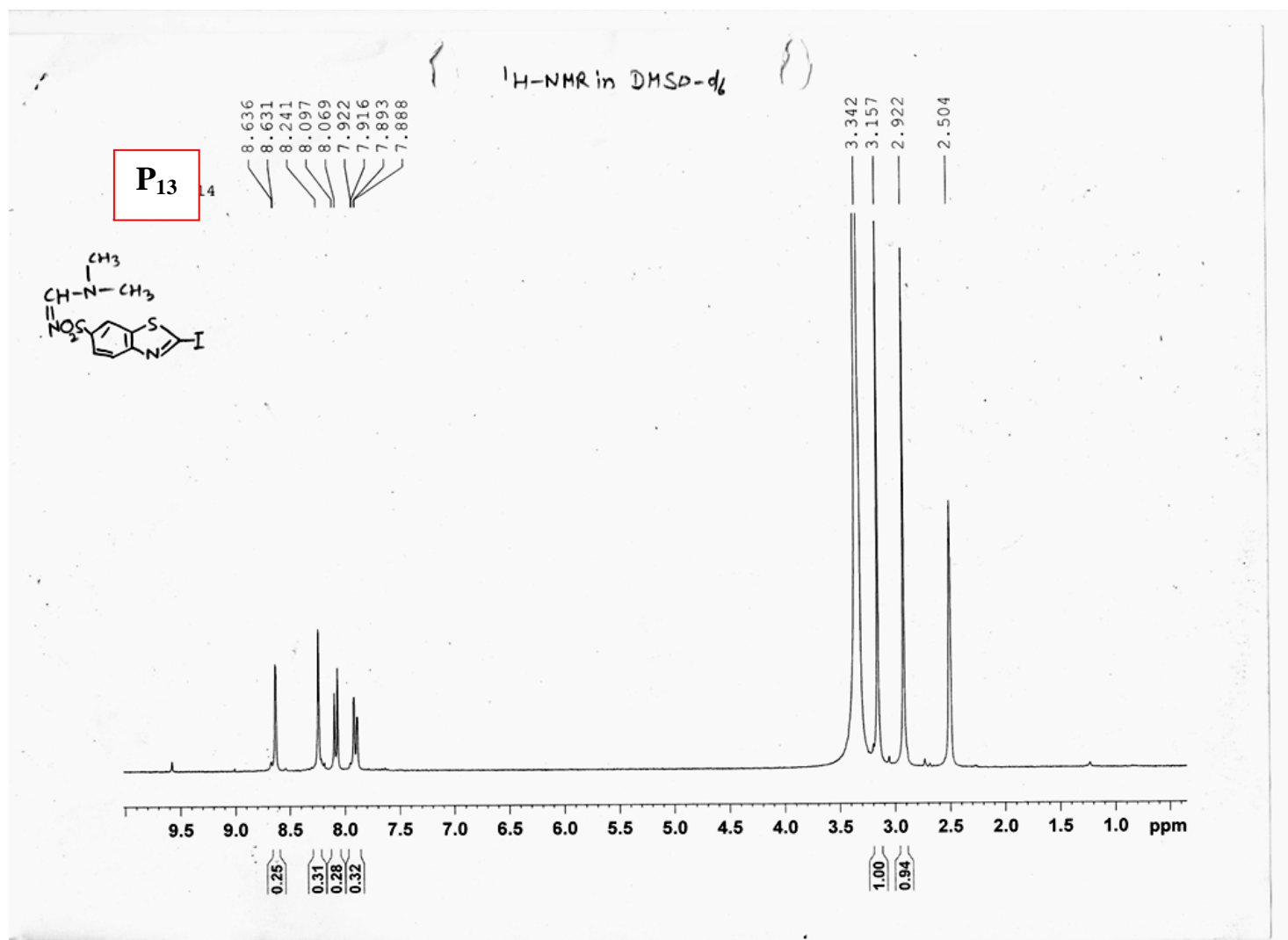
F2 - Acquisition Parameters  
Date\_ 20120717  
Time 13.22  
INSTRUM spect  
PROBHD 5 mm Multinucl  
PULPROG zgpg30  
TD 65536  
SOLVENT DMSO  
NS 1024  
DS 4  
SWH 17985.611 Hz  
FIDRES 0.274439 Hz  
AQ 1.8219508 sec  
RG 4096  
DW 27.800 usec  
DE 6.00 usec  
TE 1273.1 K  
D1 2.00000000 sec  
d11 0.03000000 sec  
DELTA 1.89999998 sec  
MCREST 0.00000000 sec  
MCWRK 0.01500000 sec

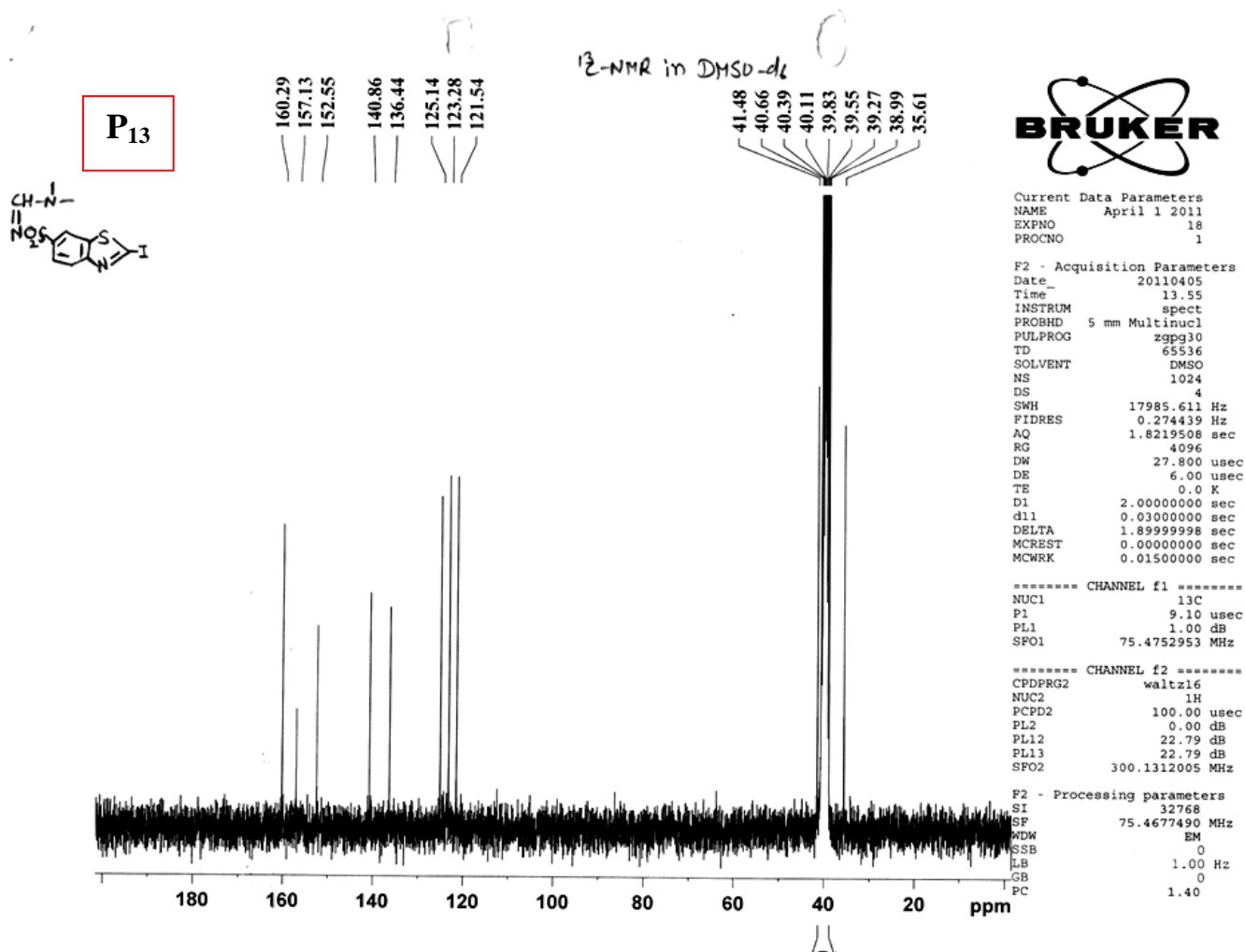
===== CHANNEL f1 =====  
NUC1 13C  
P1 9.10 usec  
PL1 1.00 dB  
SFO1 75.4752953 MHz

===== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 100.00 usec  
PL2 0.00 dB  
PL12 22.79 dB  
PL13 22.79 dB  
SFO2 300.1312005 MHz

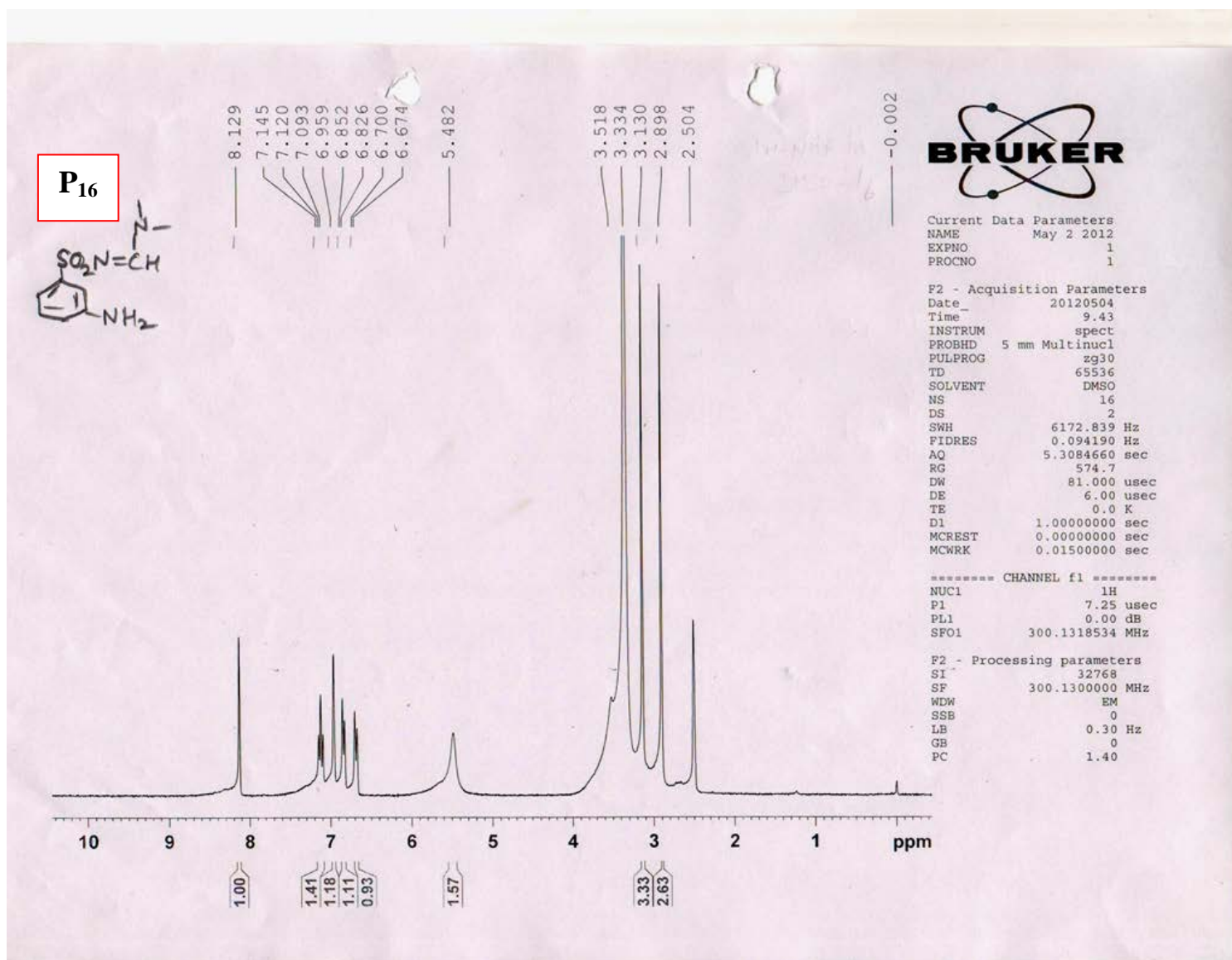
F2 - Processing parameters  
SI 32768  
SF 75.4677490 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

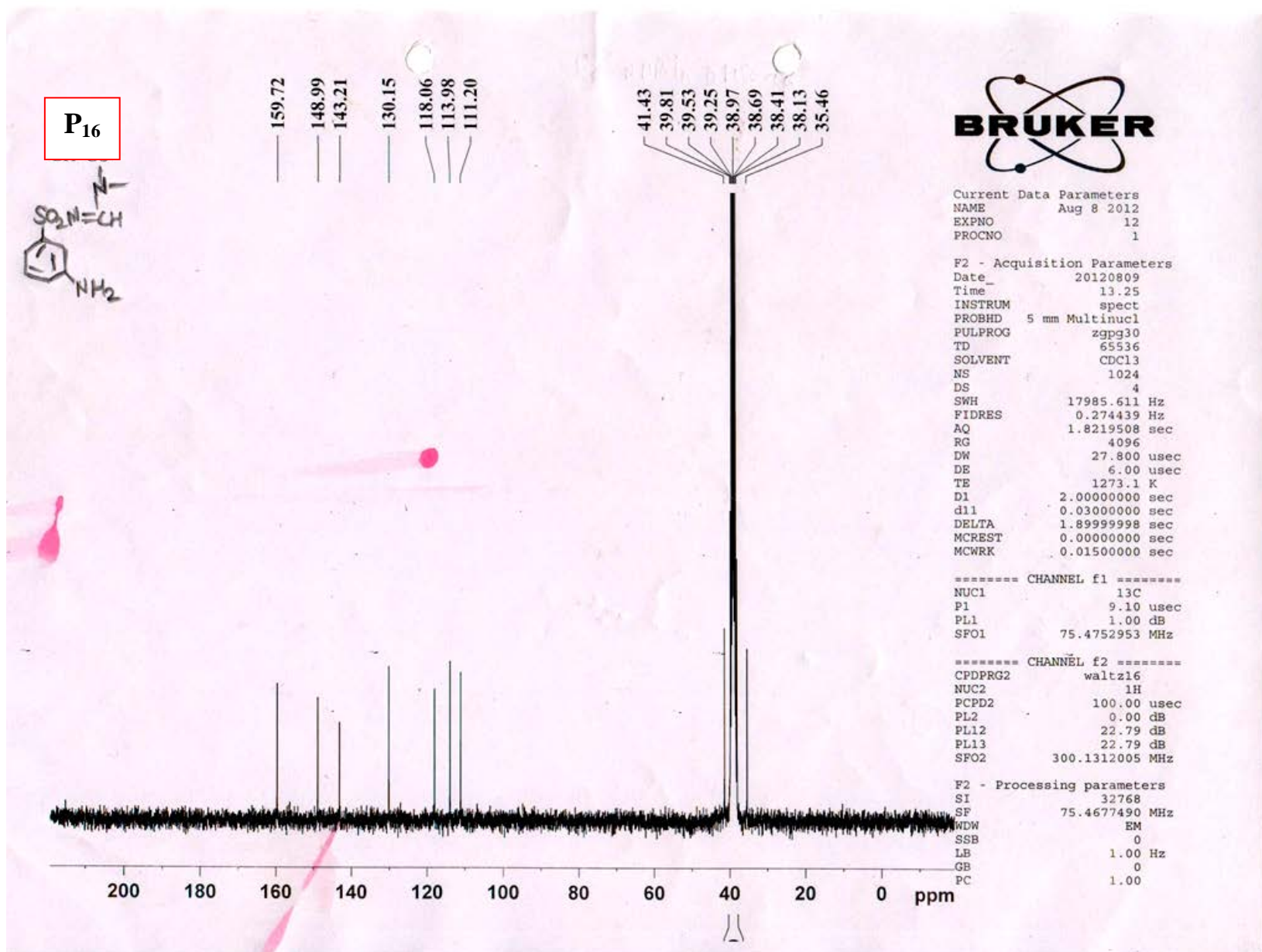




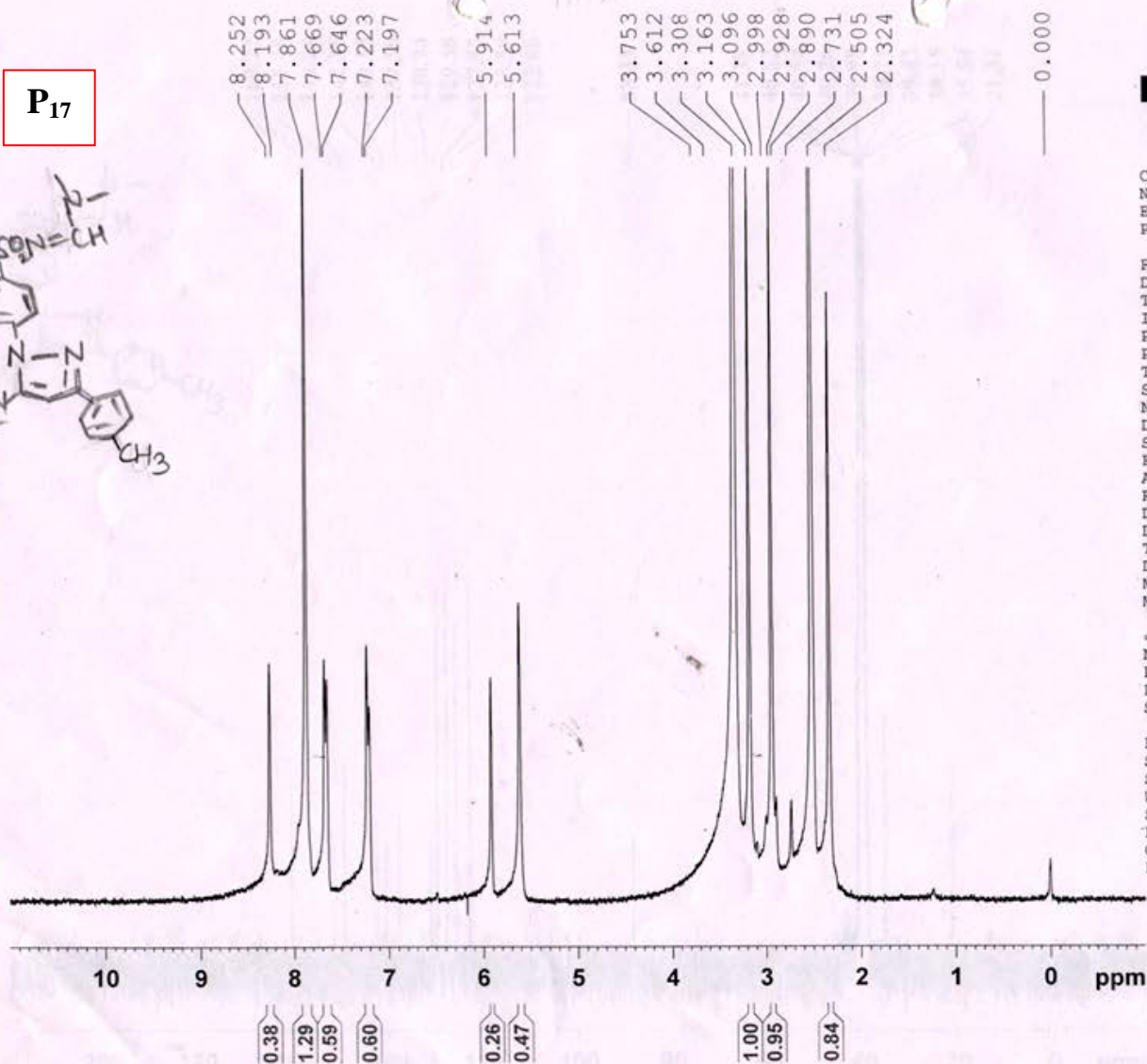
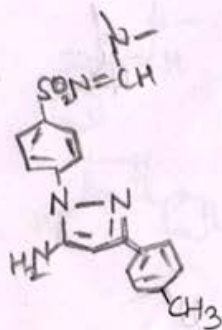








P<sub>17</sub>



**BRUKER**

16

Current Data Parameters  
NAME July 4 2012  
EXPNO 22  
PROCNO 1

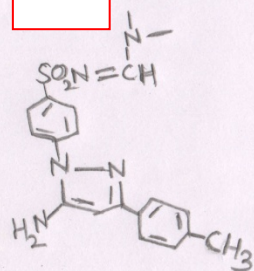
F2 - Acquisition Parameters  
Date\_ 20120706  
Time 14.55  
INSTRUM spect  
PROBHD 5 mm Multinucl  
PULPROG zg30  
TD 65536  
SOLVENT DMSO  
NS 8  
DS 2  
SWH 6172.839 Hz  
FIDRES 0.094190 Hz  
AQ 5.3084660 sec  
RG 574.7  
DW 81.000 usec  
DE 6.00 usec  
TE 1273.1 K  
D1 1.00000000 sec  
MCREST 0.00000000 sec  
MCWRK 0.01500000 sec

===== CHANNEL f1 =====  
NUC1 1H  
P1 7.25 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



**P<sub>17</sub>**



160.22  
151.45  
149.24  
142.35  
140.35  
137.59  
130.94  
129.58  
127.57  
125.59  
122.66

88.33

41.38  
40.82  
40.54  
40.26  
39.98  
39.71  
39.43  
39.15  
35.54  
21.31



Current Data Parameters  
NAME Dec 3 2012  
EXPNO 22  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20121205  
Time 11.39  
INSTRUM spect  
PROBHD 5 mm Multinucl  
PULPROG zgpg30  
TD 65536  
SOLVENT DMSO  
NS 1024  
DS 4  
SWH 17985.611 Hz  
FIDRES 0.274439 Hz  
AQ 1.8219508 sec  
RG 4096  
DW 27.800 usec  
DE 6.00 usec  
TE 0.0 K  
D1 2.00000000 sec  
d11 0.03000000 sec  
DELTA 1.89999998 sec  
MCREST 0.00000000 sec  
MCWRK 0.01500000 sec

===== CHANNEL f1 =====  
NUC1 13C  
P1 9.10 usec  
PL1 1.00 dB  
SFO1 75.4752953 MHz

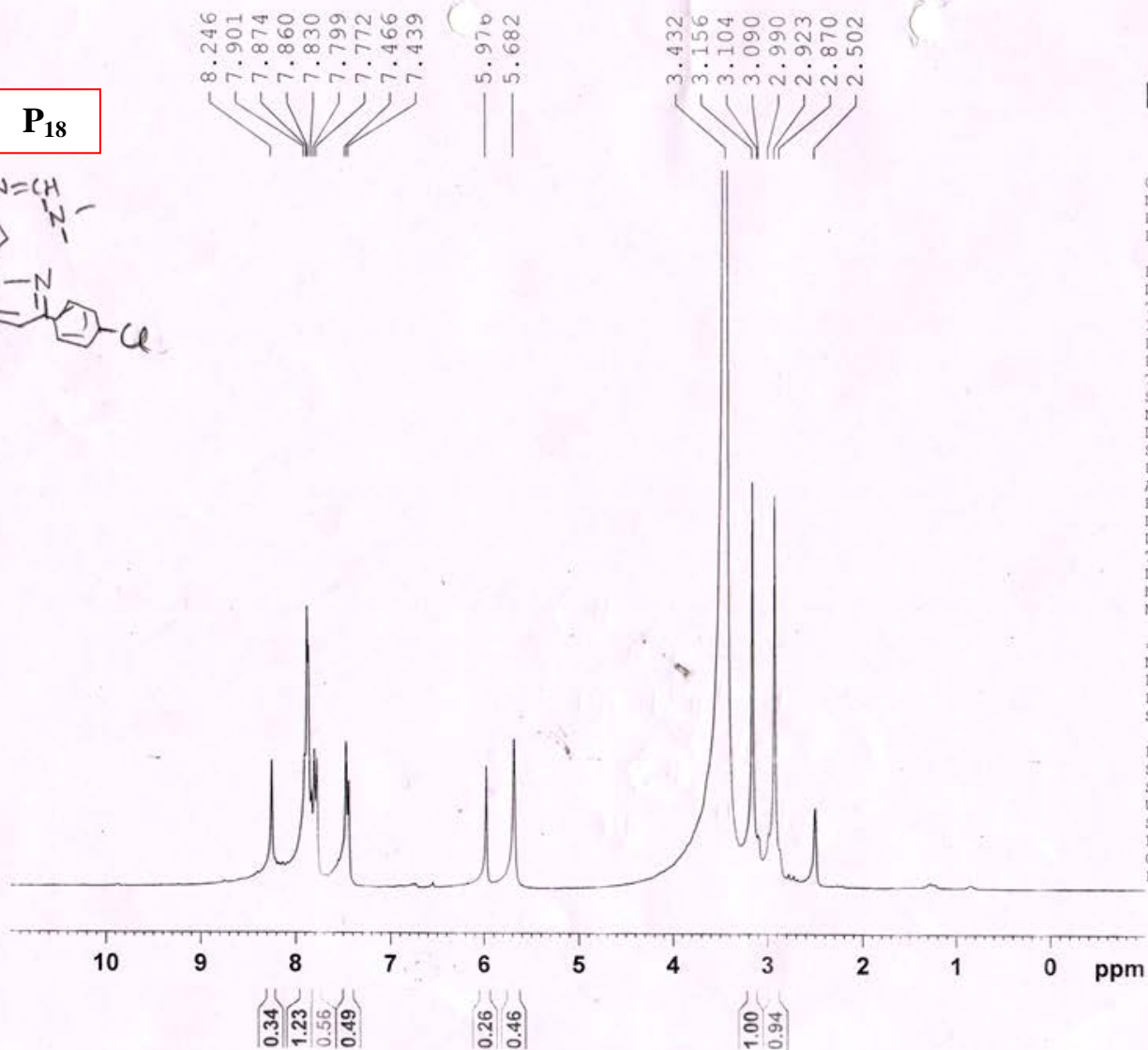
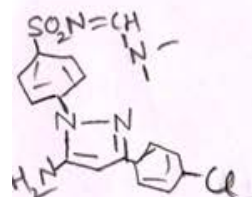
===== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 100.00 usec  
PL2 0.00 dB  
PL12 22.79 dB  
PL13 22.79 dB  
SFO2 300.1312005 MHz

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

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



P<sub>18</sub>



Current Data Parameters  
NAME Dec 7 2012  
EXPNO 12  
PROCNO 1

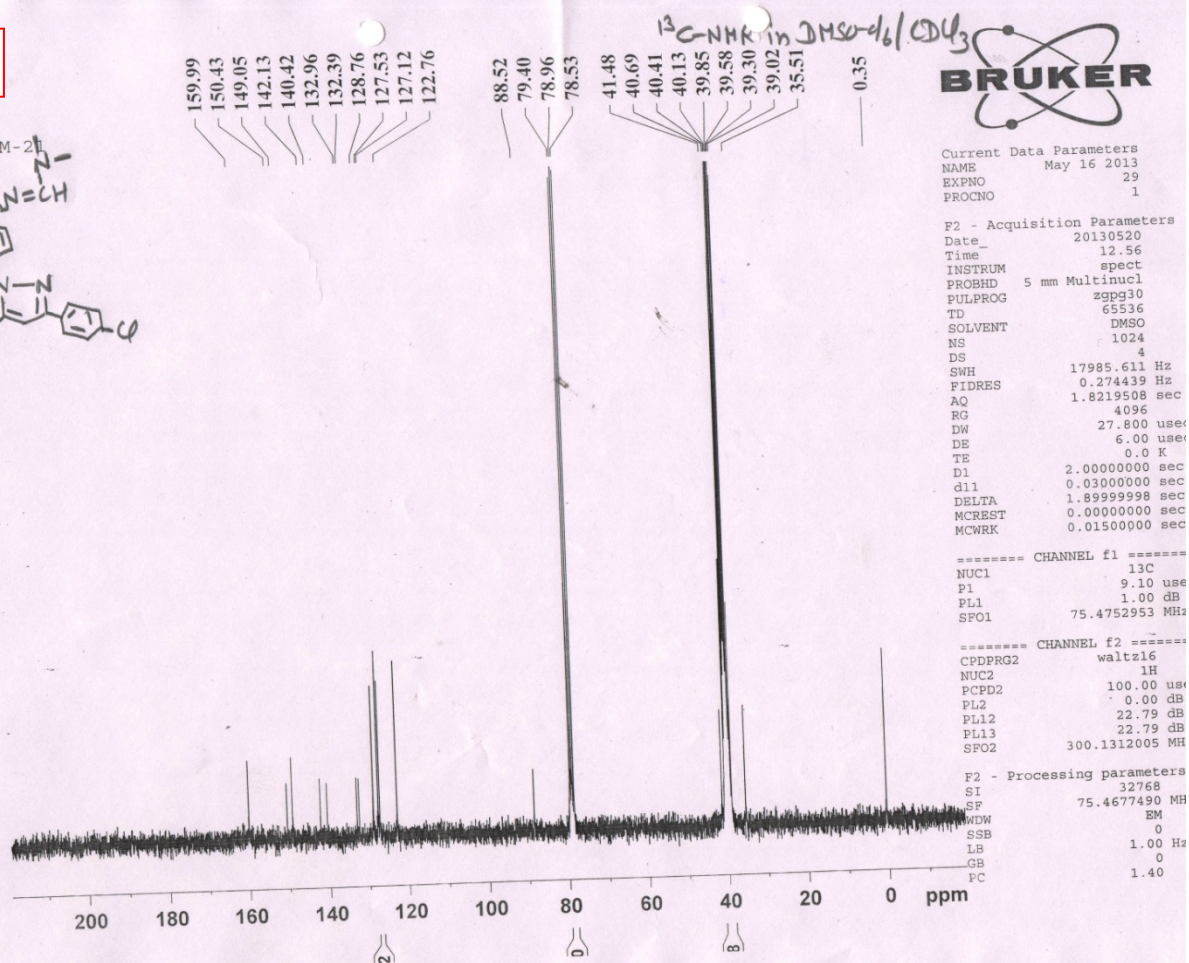
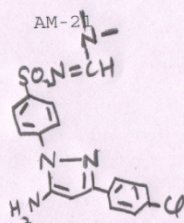
F2 - Acquisition Parameters  
Date\_ 20121210  
Time 15.19  
INSTRUM spect  
PROBHD 5 mm Multinucl  
PULPROG zg30  
TD 65536  
SOLVENT DMSO  
NS 8  
DS 2  
SWH 6172.839 Hz  
FIDRES 0.094190 Hz  
AQ 5.3084660 sec  
RG 143.7  
DW 81.000 usec  
DE 6.00 usec  
TE 0.0 K  
D1 1.00000000 sec  
MCREST 0.00000000 sec  
MCWRK 0.01500000 sec

===== CHANNEL f1 =====  
NUC1 1H  
P1 7.25 usec  
PL1 0.00 dB  
SFO1 300.1318534 MHz

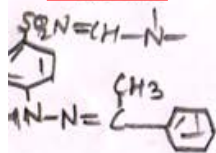
F2 - Processing parameters  
SI 32768  
SF 300.1300000 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

17

P<sub>18</sub>



P<sub>19</sub>



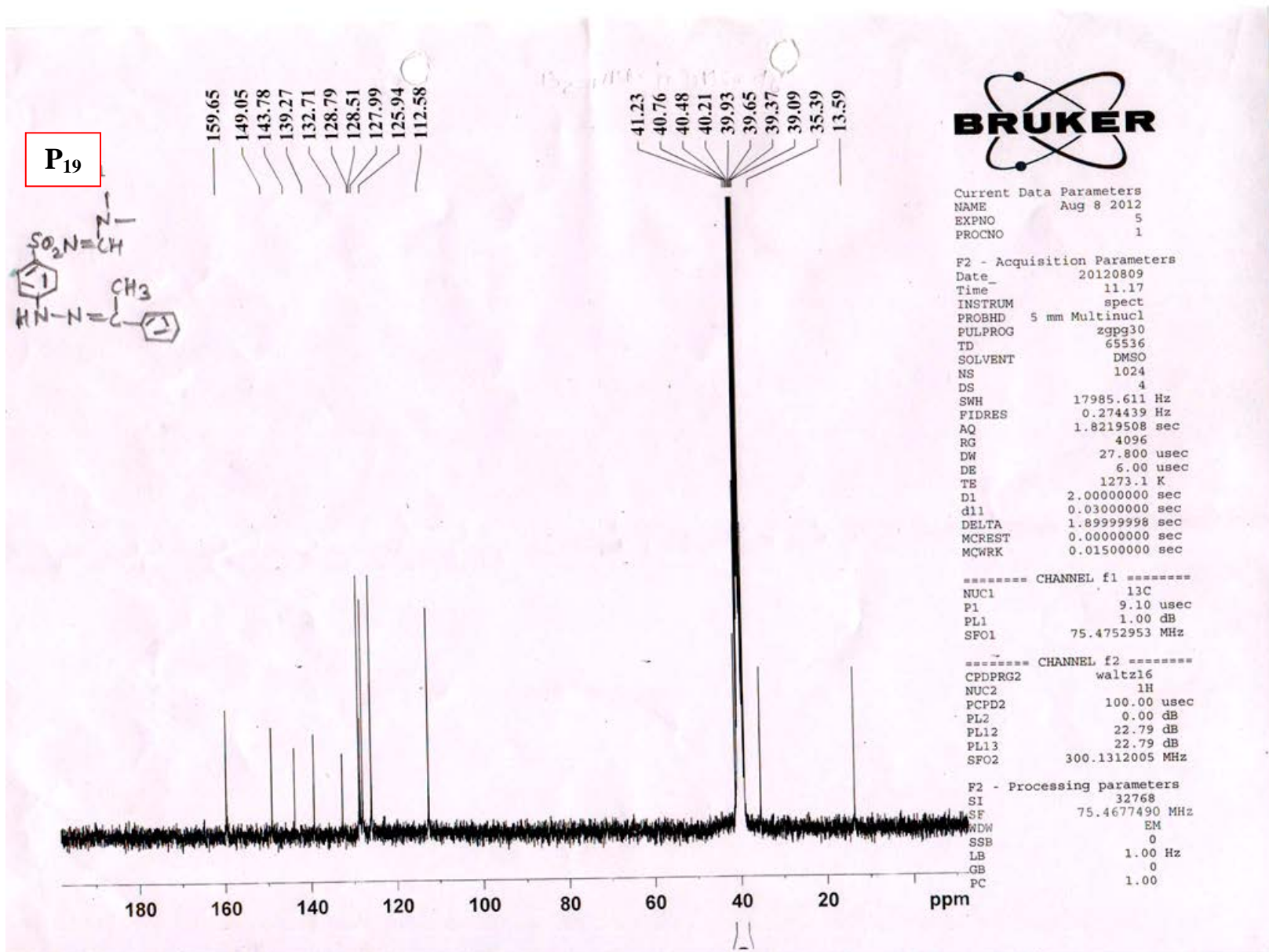
Current Data Parameters  
NAME July 30 2012  
EXPNO 18  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120806  
Time 10.13  
INSTRUM spect  
PROBHD 5 mm Multinucl  
PULPROG zg30  
TD 65536  
SOLVENT DMSO  
NS 8  
DS 2  
SWH 6172.839 Hz  
FIDRES 0.094190 Hz  
AQ 5.3084660 sec  
RG 362  
DW 81.000 usec  
DE 6.00 usec  
TE 1273.1 K  
D1 1.00000000 sec  
MCREST 0.00000000 sec  
MCWRK 0.01500000 sec

\*\*\*\*\* CHANNEL f1 \*\*\*\*\*  
NUC1 1H  
P1 7.25 usec  
PL1 0.00 dB  
SFO1 300.1318534 MHz

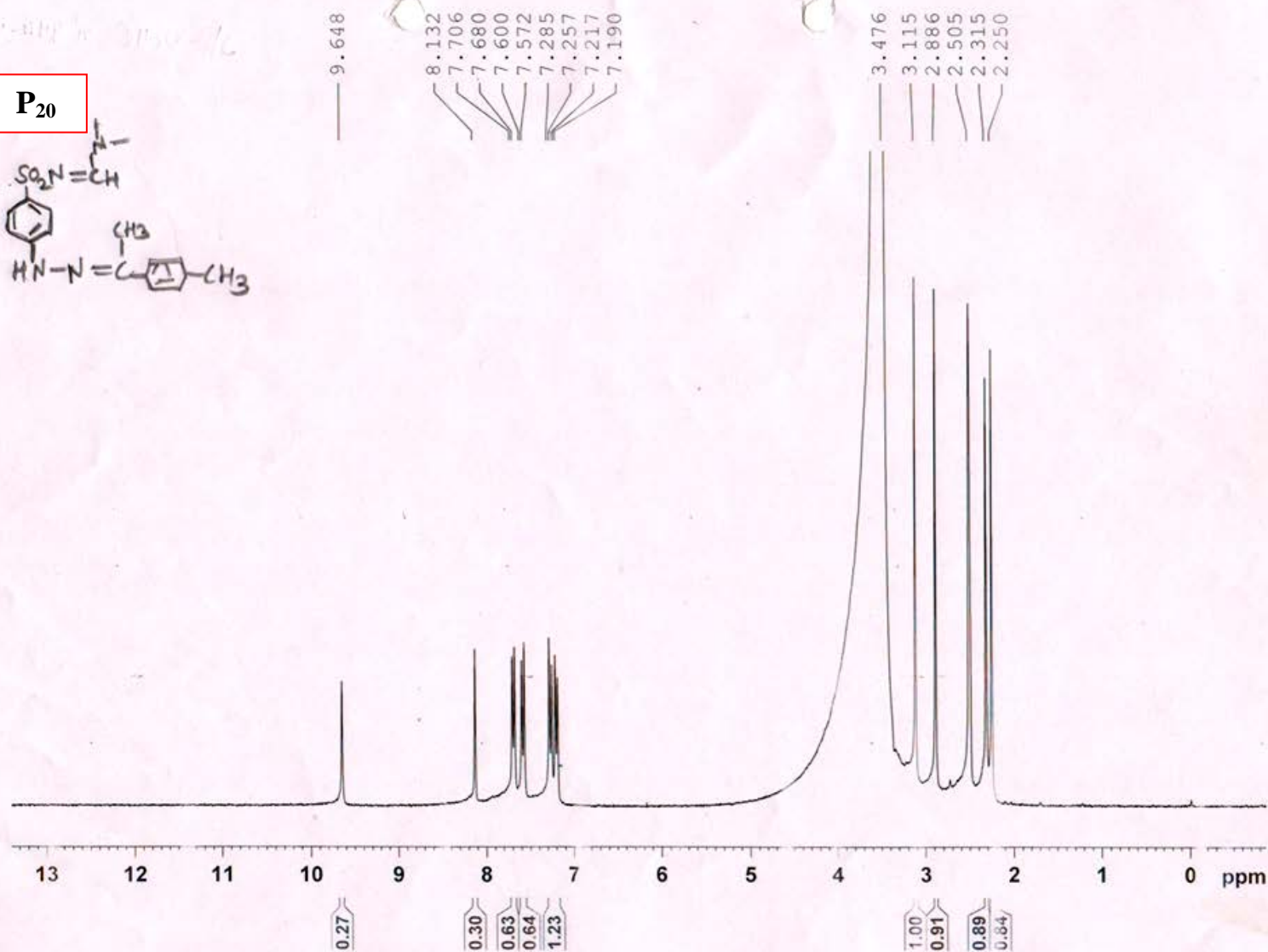
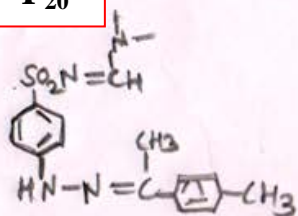
F2 - Processing parameters  
SI 32768  
SF 300.1300000 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

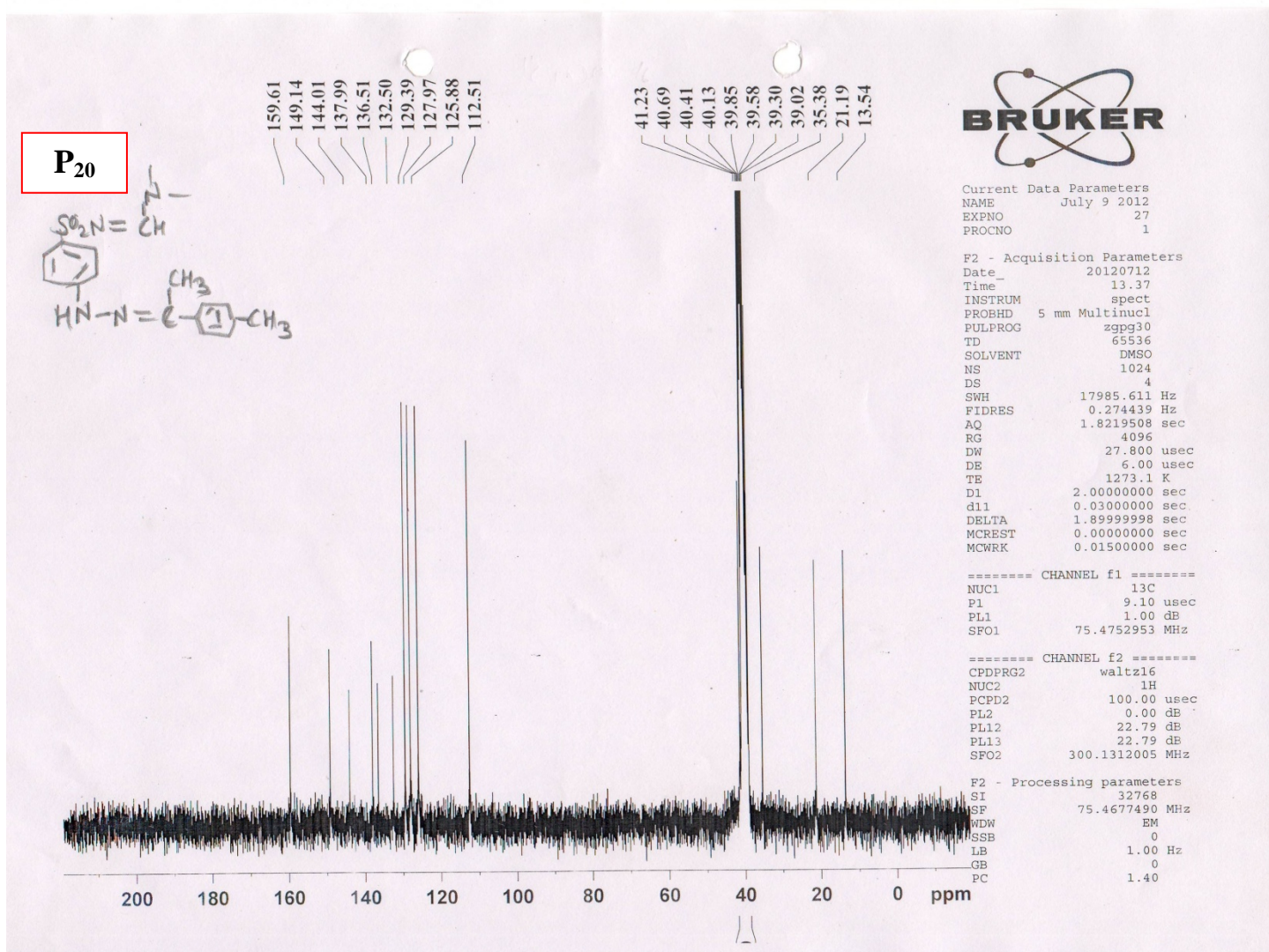


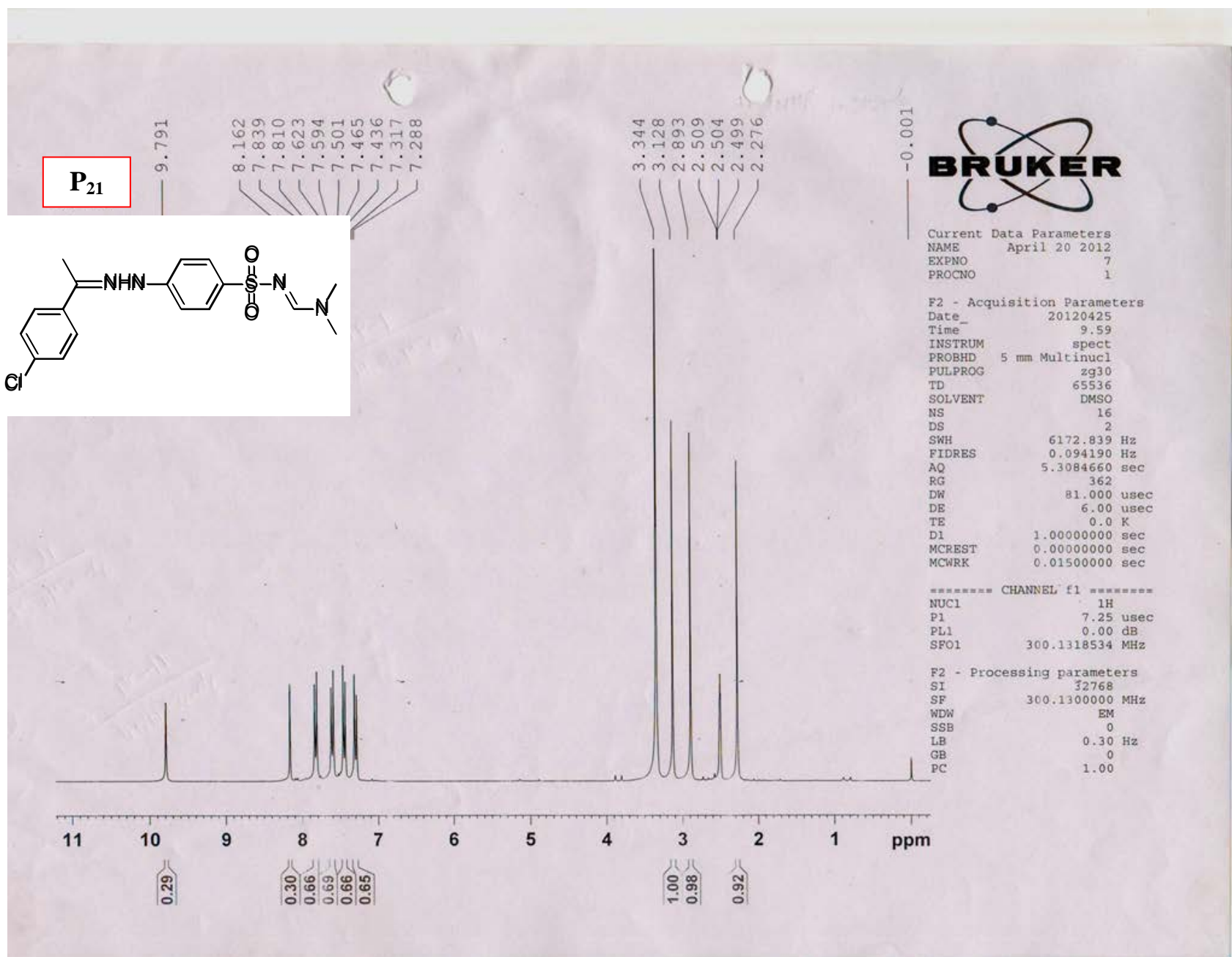




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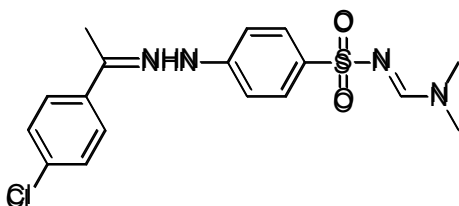








**P<sub>21</sub>**



59.69  
48.87  
42.50  
38.14  
33.07  
33.02  
128.75  
128.00  
127.61  
112.68

41.22  
40.87  
40.59  
40.32  
40.04  
39.76  
39.48  
39.20  
35.39  
13.46



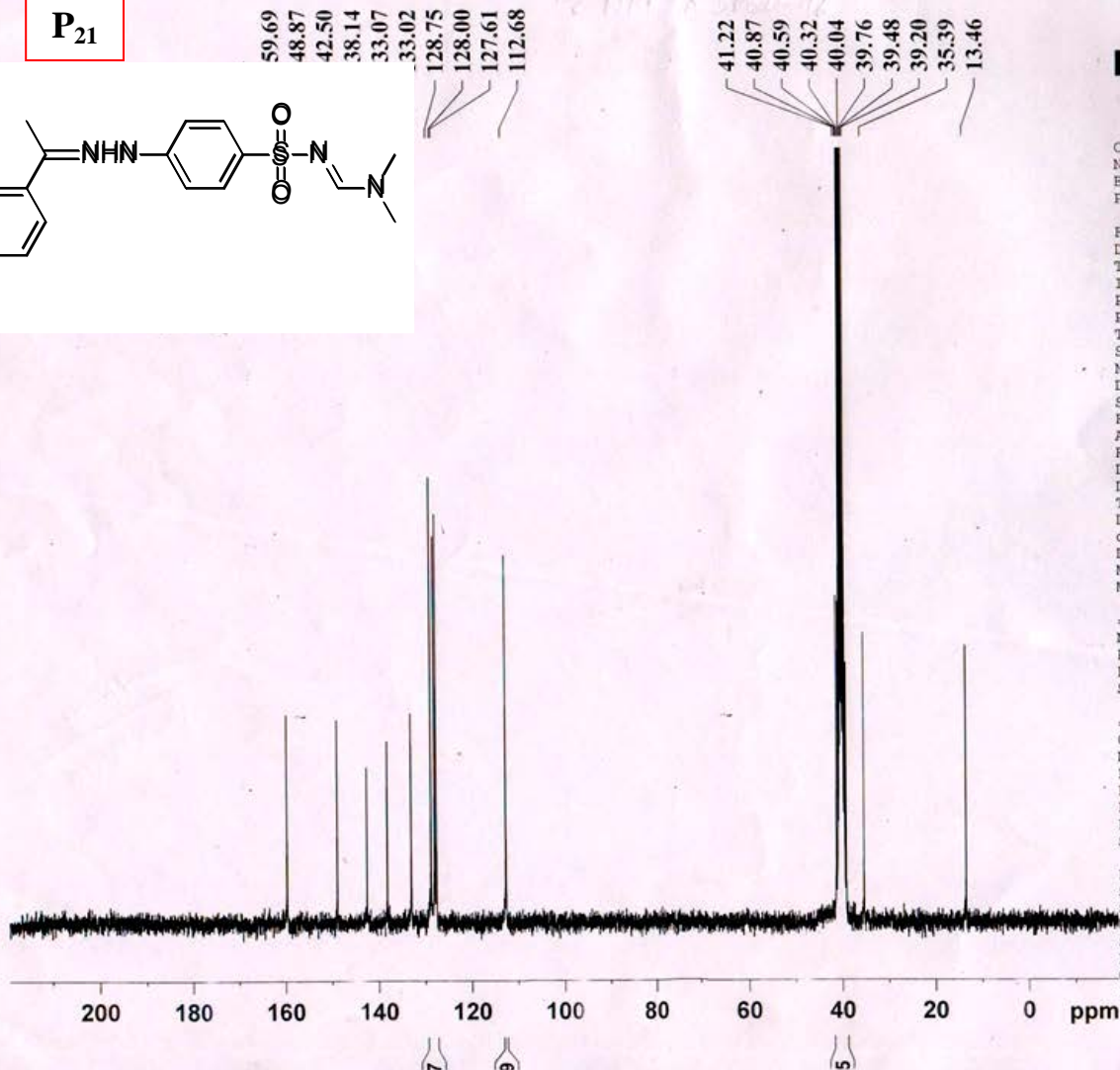
Current Data Parameters  
NAME July 24 2012  
EXPNO 29  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120726  
Time 13.59  
INSTRUM spect  
PROBHD 5 mm Multinucl  
PULPROG zgpg30  
TD 65536  
SOLVENT DMSO  
NS 1024  
DS 4  
SWH 17985.611 Hz  
FIDRES 0.274439 Hz  
AQ 1.8219508 sec  
RG 4096  
DW 27.800 usec  
DE 6.00 usec  
TE 0.0 K  
D1 2.00000000 sec  
d11 0.03000000 sec  
DELTA 1.89999998 sec  
MCREST 0.00000000 sec  
MCWRK 0.01500000 sec

===== CHANNEL f1 =====  
NUC1 13C  
P1 9.10 usec  
PL1 1.00 dB  
SFO1 75.4752953 MHz

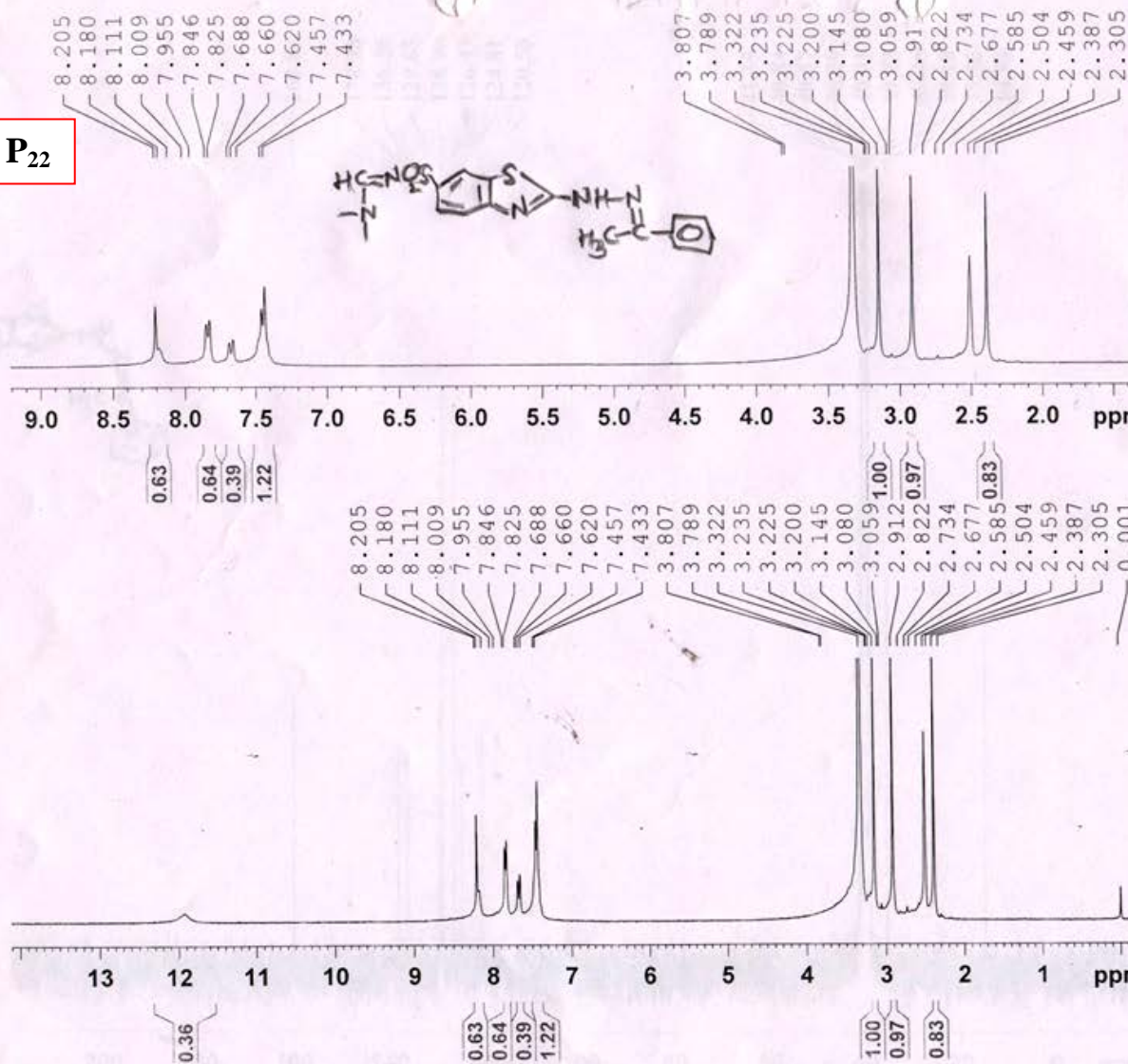
===== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 100.00 usec  
PL2 0.00 dB  
PL12 22.79 dB  
PL13 22.79 dB  
SFO2 300.1312005 MHz

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





P<sub>22</sub>



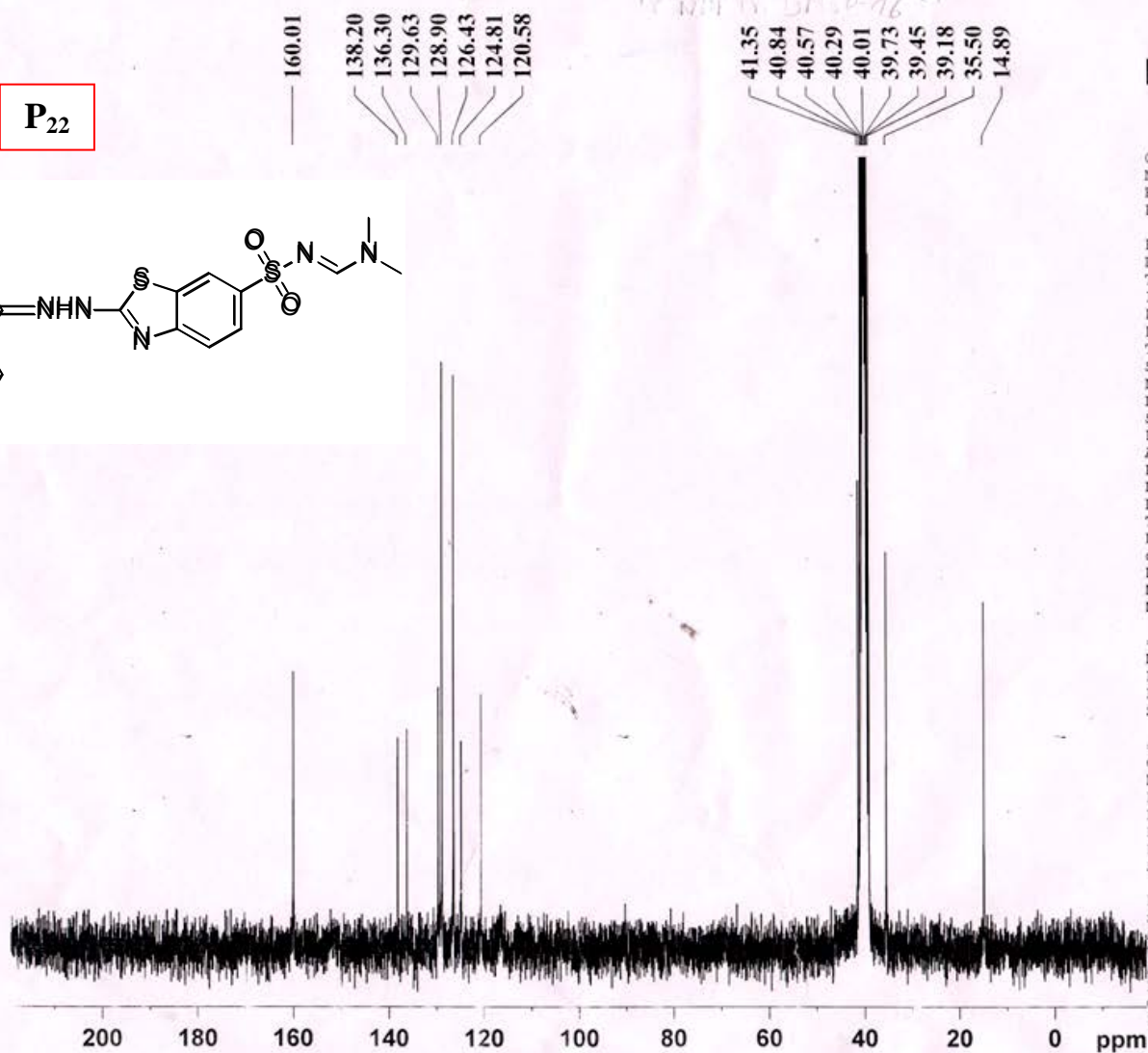
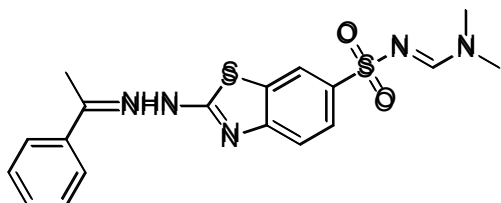
Current Data Parameters  
NAME Aug 16 2012  
EXPNO 12  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120821  
Time 13.28  
INSTRUM spect  
PROBHD 5 mm Multinucl  
PULPROG zg30  
TD 65536  
SOLVENT DMSO  
NS 8  
DS 2  
SWH 6172.839 Hz  
FIDRES 0.094190 Hz  
AQ 5.3084660 sec  
RG 645.1  
DW 81.000 usec  
DE 6.00 usec  
TE 1273.1 K  
D1 1.00000000 sec  
MCREST 0.00000000 sec  
MCWRK 0.01500000 sec

===== CHANNEL f1 =====  
NUC1 1H  
P1 7.25 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

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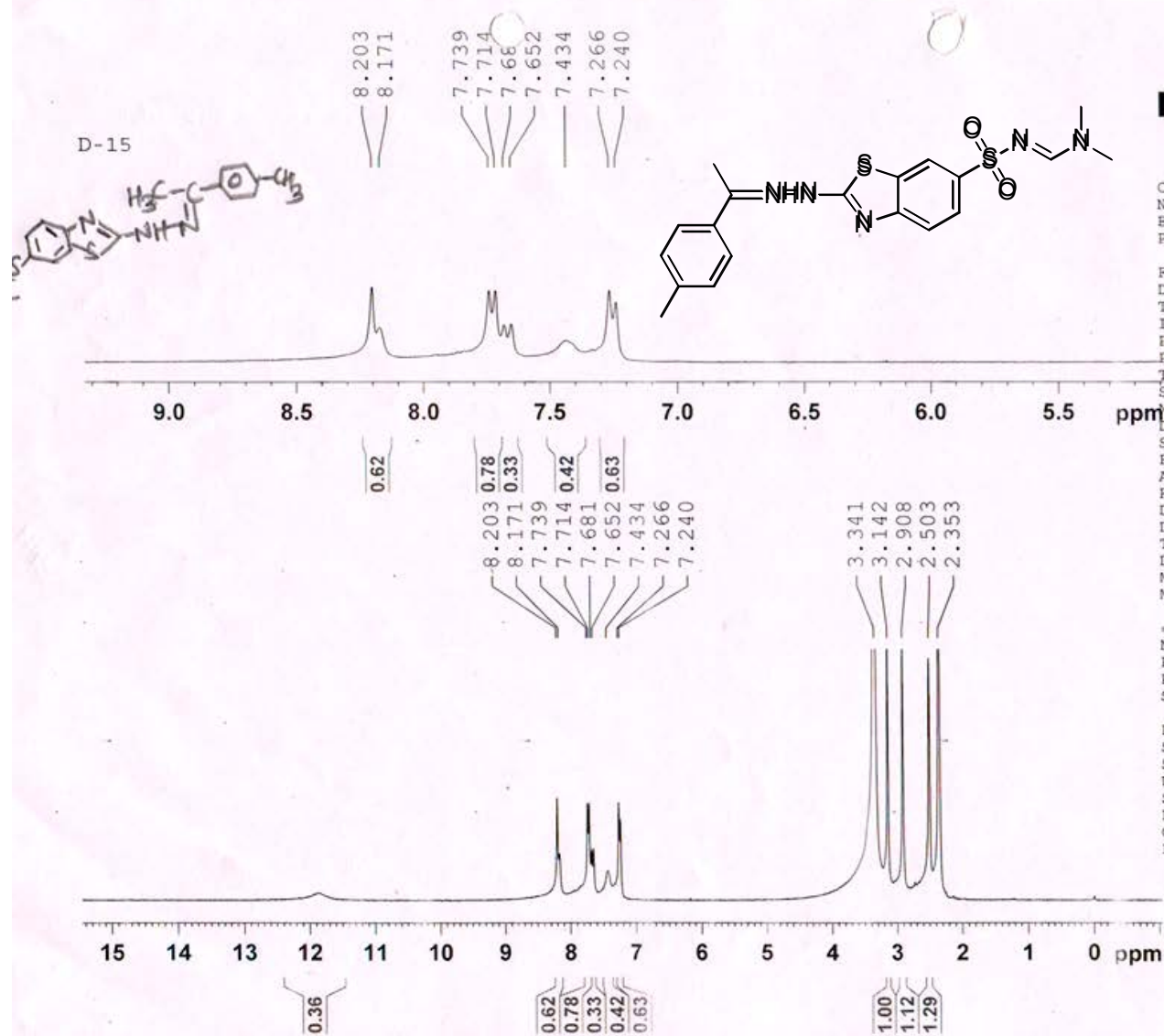
Current Data Parameters  
NAME Aug 22 2012  
EXPNO 3  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120823  
Time 12.46  
INSTRUM spect  
PROBHD 5 mm Multinucl  
PULPROG zgpg30  
TD 65536  
SOLVENT DMSO  
NS 1024  
DS 4  
SWH 17985.611 Hz  
FIDRES 0.274439 Hz  
AQ 1.8219508 sec  
RG 4096  
DW 27.800 usec  
DE 6.00 usec  
TE 1273.1 K  
D1 2.00000000 sec  
d11 0.03000000 sec  
DELTA 1.89999998 sec  
MCREST 0.00000000 sec  
MCWRK 0.01500000 sec

===== CHANNEL f1 =====  
NUC1 13C  
P1 9.10 usec  
PL1 1.00 dB  
SFO1 75.4752953 MHz

===== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 100.00 usec  
PL2 0.00 dB  
PL12 22.79 dB  
PL13 22.79 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 1.00



Current Data Parameters  
NAME June 25 2012  
EXPNO 20  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120704  
Time 9.44  
INSTRUM spect  
PROBHD 5 mm Multinucl  
PULPROG zg30  
TD 65536  
SOLVENT DMSO  
NS 8  
DS 2  
SWH 6172.839 Hz  
FIDRES 0.094190 Hz  
AQ 5.3084660 sec  
RG 256  
DW 81.000 usec  
DE 6.00 usec  
TE 0.0 K  
D1 1.00000000 sec  
MCREST 0.00000000 sec  
MCWRK 0.01500000 sec

\*\*\*\*\* CHANNEL f1 \*\*\*\*\*  
NUC1 1H  
P1 7.25 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



P<sub>23</sub>

160.01  
139.27  
136.22  
135.45  
129.49  
126.37  
124.78  
120.56

41.34  
40.86  
40.58  
40.30  
40.03  
39.75  
39.47  
39.19  
35.50  
21.29  
14.83



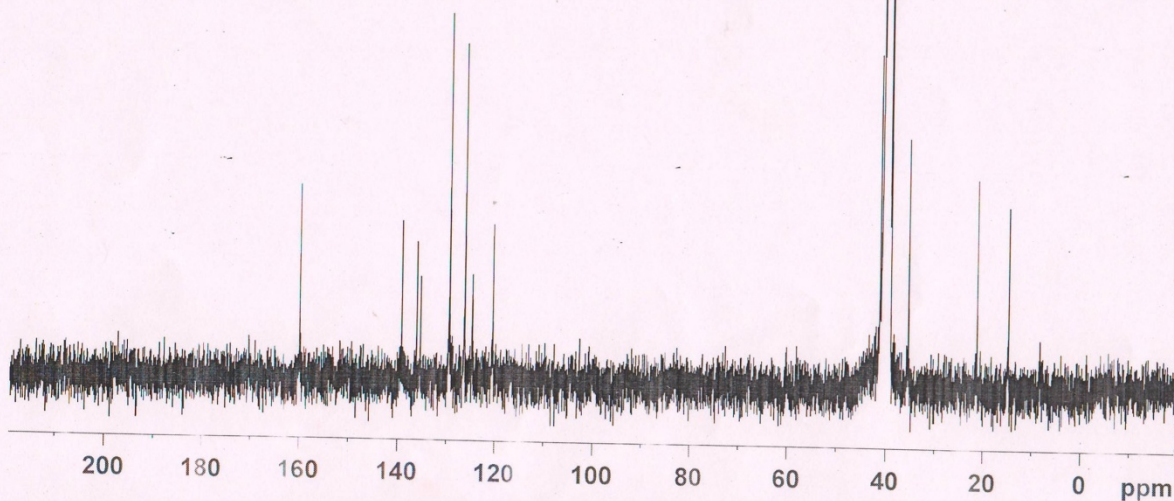
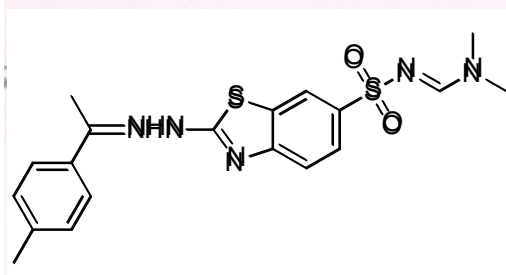
Current Data Parameters  
NAME Sept 24 2012  
EXPNO 15  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120926  
Time 10.19  
INSTRUM spect  
PROBHD 5 mm Multinucl  
PULPROG zgpg30  
TD 65536  
SOLVENT DMSO  
NS 1024  
DS 4  
SWH 17985.611 Hz  
FIDRES 0.274439 Hz  
AQ 1.8219508 sec  
RG 4096  
DW 27.800 usec  
DE 6.00 usec  
TE 1273.1 K  
D1 2.00000000 sec  
d11 0.03000000 sec  
DELTA 1.89999998 sec  
MCREST 0.00000000 sec  
MCWRK 0.01500000 sec

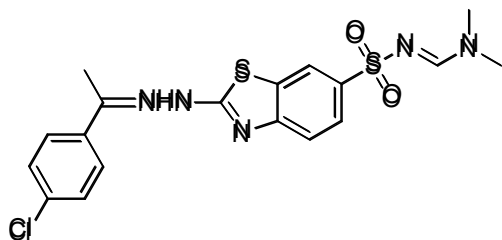
===== CHANNEL f1 =====  
NUC1 13C  
P1 9.10 usec  
PL1 1.00 dB  
SFO1 75.4752953 MHz

===== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 100.00 usec  
PL2 0.00 dB  
PL12 22.79 dB  
PL13 22.79 dB  
SFO2 300.1312005 MHz

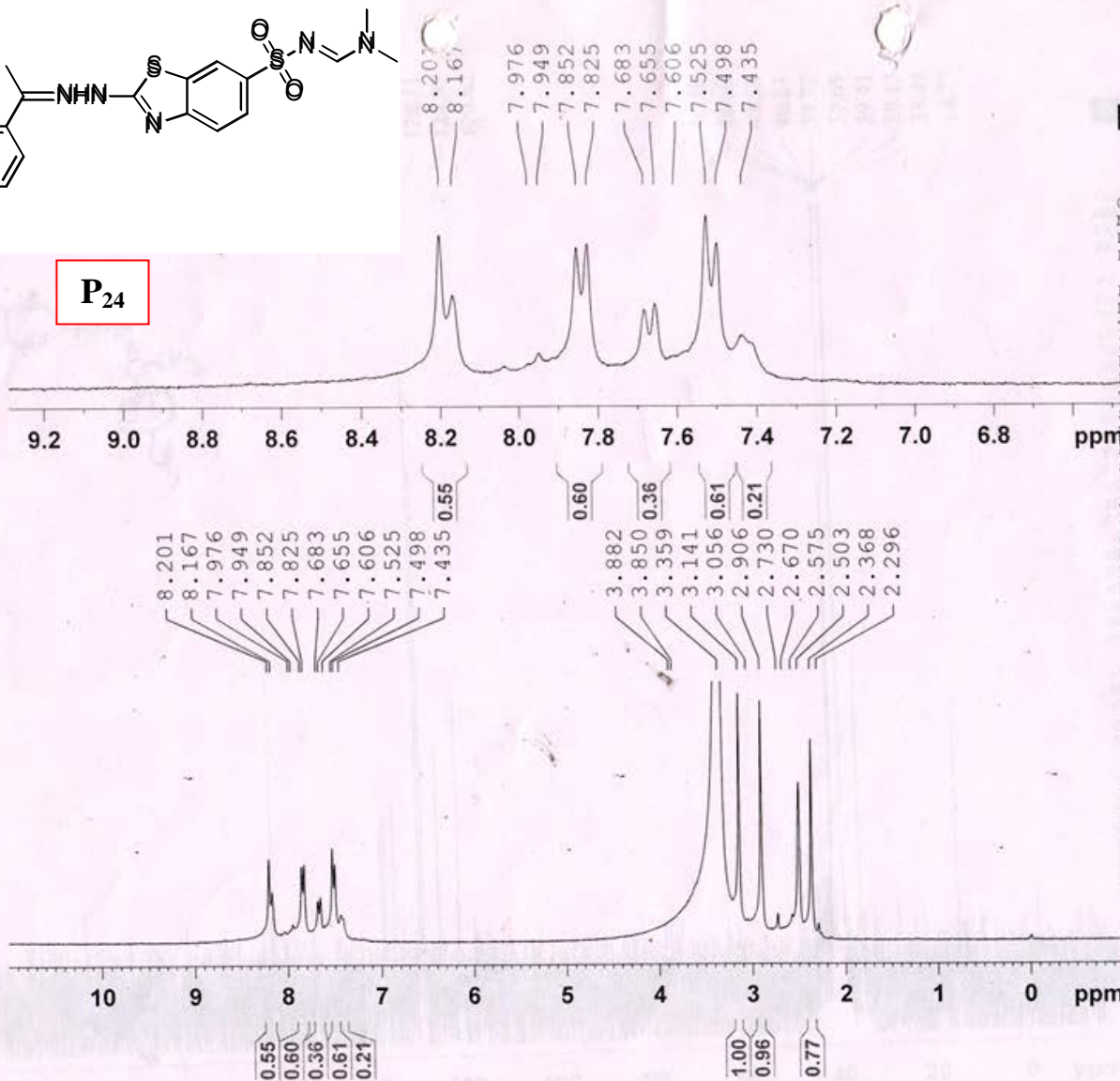
F2 - Processing parameters  
SI 32768  
SF 75.4677490 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40







**P<sub>24</sub>**



**BRUKER**

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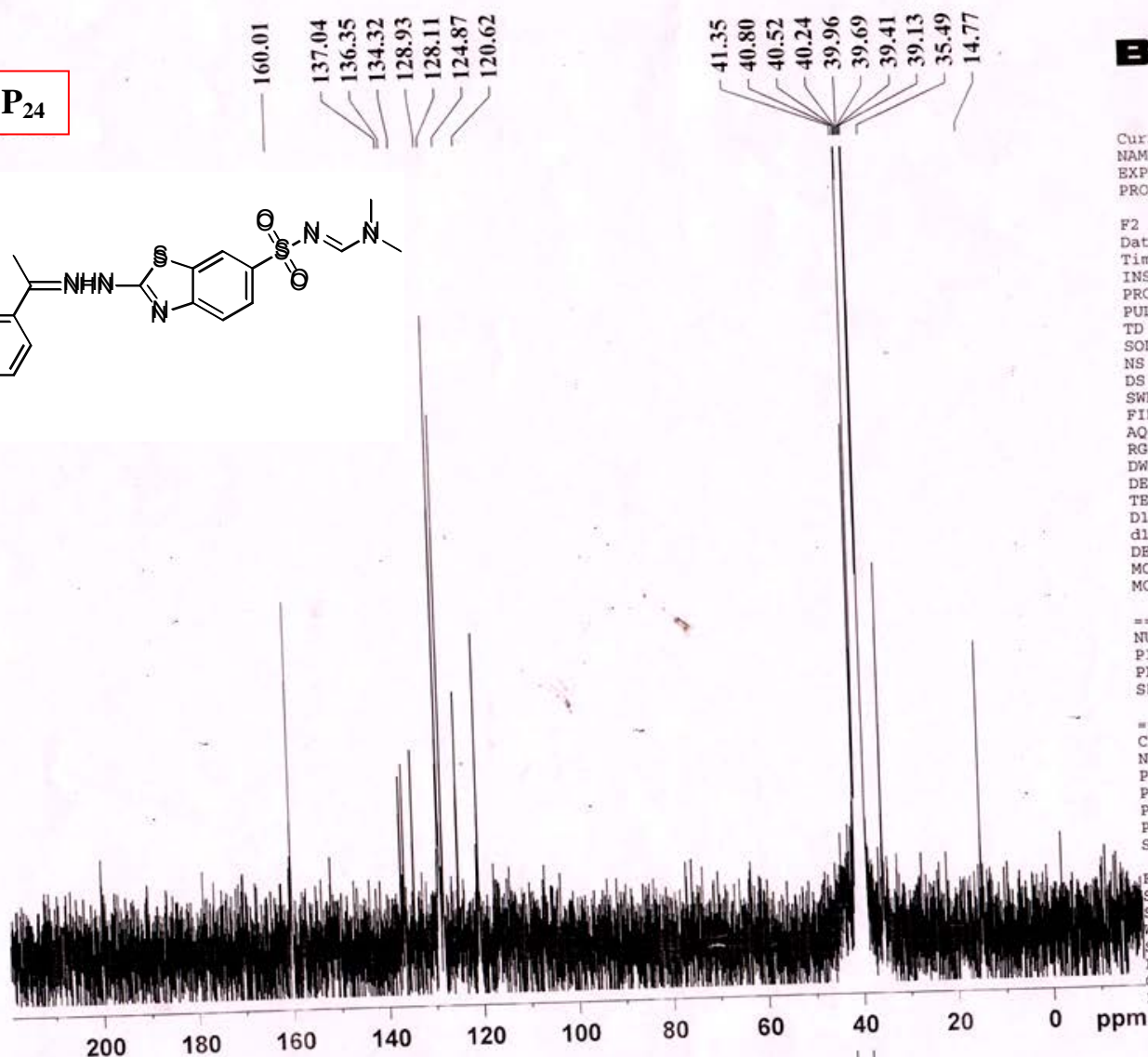
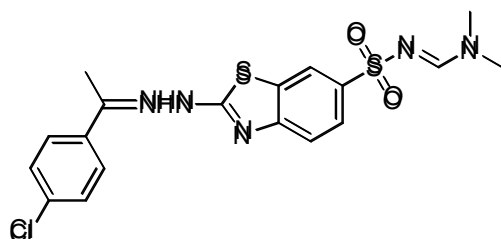
Current Data Parameters  
NAME Aug 22 2012  
EXPNO 6  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120830  
Time\_ 10.16  
INSTRUM spect  
PROBHD 5 mm Multinucl  
PULPROG zg30  
TD 65536  
SOLVENT DMSO  
NS 8  
DS 2  
SWH 6172.839 Hz  
FIDRES 0.094190 Hz  
AQ 5.3084660 sec  
RG 362  
DW 81.000 usec  
DE 6.00 usec  
TE 1273.1 K  
D1 1.00000000 sec  
MCREST 0.00000000 sec  
MCWRK 0.01500000 sec

===== CHANNEL f1 =====  
NUC1 1H  
P1 7.25 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

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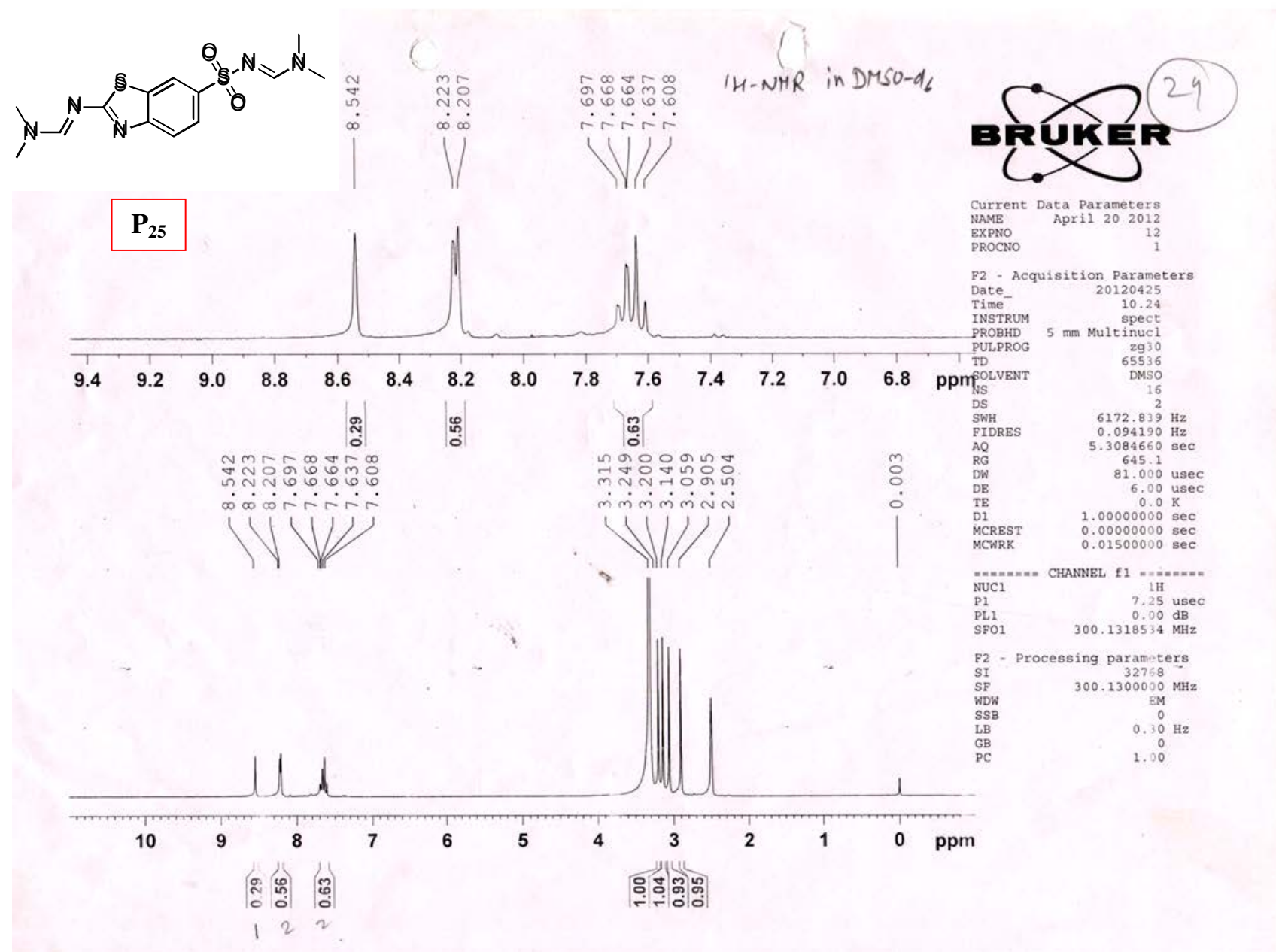
Current Data Parameters  
NAME Sept 14 2012  
EXPNO 7  
PROCNO 1

F2 - Acquisition Parameters  
Date 20120920  
Time 12.02  
INSTRUM spect  
PROBHD 5 mm Multinucl  
PULPROG zgpg30  
TD 65536  
SOLVENT DMSO  
NS 1024  
DS 4  
SWH 17985.611 Hz  
FIDRES 0.274439 Hz  
AQ 1.8219508 sec  
RG 4096  
DW 27.800 usec  
DE 6.00 usec  
TE 1273.1 K  
D1 2.00000000 sec  
d11 0.03000000 sec  
DELTA 1.89999998 sec  
MCREST 0.00000000 sec  
MCWRK 0.01500000 sec

===== CHANNEL f1 =====  
NUC1 13C  
P1 9.10 usec  
PL1 1.00 dB  
SFO1 75.4752953 MHz

===== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 100.00 usec  
PL2 0.00 dB  
PL12 22.79 dB  
PL13 22.79 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 1.00





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171.23  
166.63  
153.56  
150.50  
147.88  
139.10  
131.61  
131.23  
130.21  
129.53  
129.18  
129.05  
128.18  
119.75  
114.86

40.52  
40.25  
39.97  
39.69  
39.41  
39.13  
38.85  
17.13



Current Data Parameters  
NAME July 26 2012  
EXPNO 27  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20120731  
Time 13.14  
INSTRUM spect  
PROBHD 5 mm Multinucl  
PULPROG zgpg30  
TD 65536  
SOLVENT DMSO  
NS 1024  
DS 4  
SWH 17985.611 Hz  
FIDRES 0.274439 Hz  
AQ 1.8219508 sec  
RG 4096  
DW 27.800 usec  
DE 6.00 usec  
TE 1273.1 K  
D1 2.00000000 sec  
d11 0.03000000 sec  
DELTA 1.89999998 sec  
MCREST 0.00000000 sec  
MCWRK 0.01500000 sec

===== CHANNEL f1 =====  
NUC1 13C  
P1 9.10 usec  
PL1 1.00 dB  
SFO1 75.4752953 MHz

===== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 100.00 usec  
PL2 0.00 dB  
PL12 22.79 dB  
PL13 22.79 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

