Preparation of alkyl alkynyl sulfones and cyclic vinyl sulfones from alkynyl(aryl)iodonium salts

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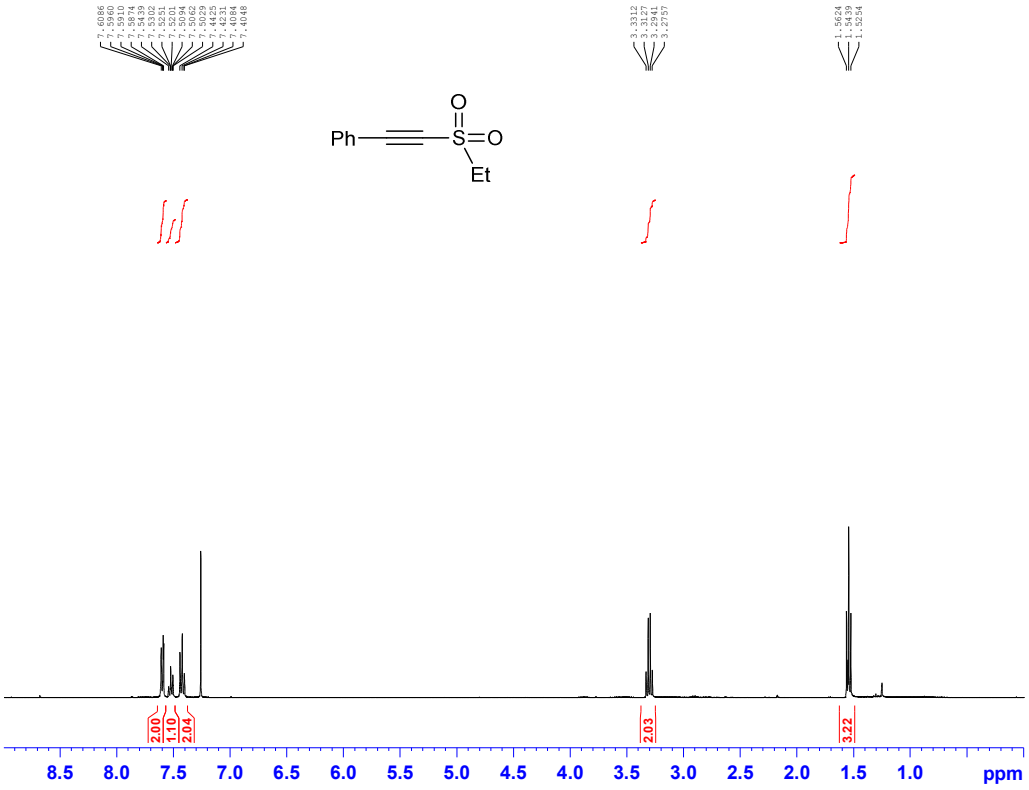
NMR spectra of ((ethylsulfonyl)ethynyl)benzene 5a



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EXPNO                 20
PROCNO                 1

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Date_           20160226
Time_              14.33
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG            zg30
TD                65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH             8223.685 Hz
FIDRES          0.125483 Hz
AQ              3.9845889 sec
RG                147.88
DW                60.800 usec
DE                10.69 usec
TE                293.6 K
D1             2.00000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1          400.1324710 MHz
NUC1                  1H
P1                 8.00 usec
PLW1          24.00000000 W

F2 - Processing parameters
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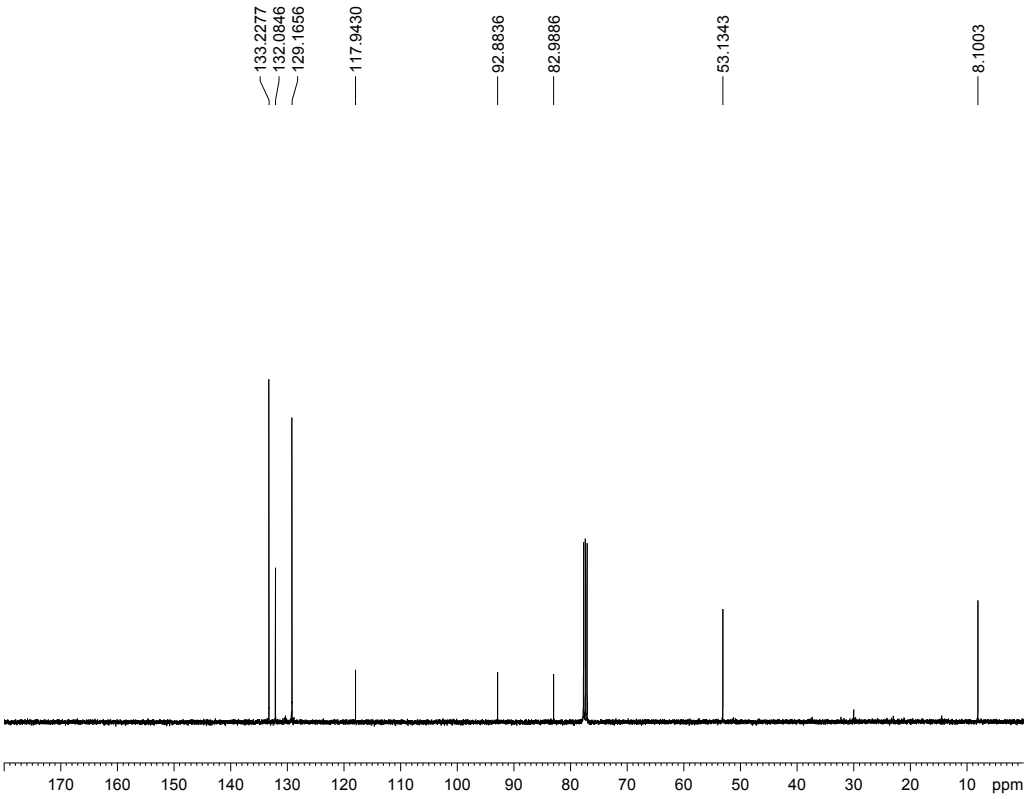

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Current Data Parameters
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EXPNO                 51
PROCNO                 1

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Time_              16.00
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PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                   256
DS                     4
SWH            24038.461 Hz
FIDRES          0.366798 Hz
AQ              1.3631488 sec
RG                181.72
DW                20.800 usec
DE                 8.18 usec
TE                294.4 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1          100.6228284 MHz
NUC1                  13C
P1                 9.00 usec
PLW1          77.00000000 W

======== CHANNEL f2 ========
SFO2          400.1316005 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2             90.00 usec
PLW2          24.00000000 W
PLW12          0.17567000 W
PLW13          0.14229999 W

F2 - Processing parameters
SI                 65536
SF            100.6127363 MHz
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LB                 0.50 Hz
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PC                 1.40
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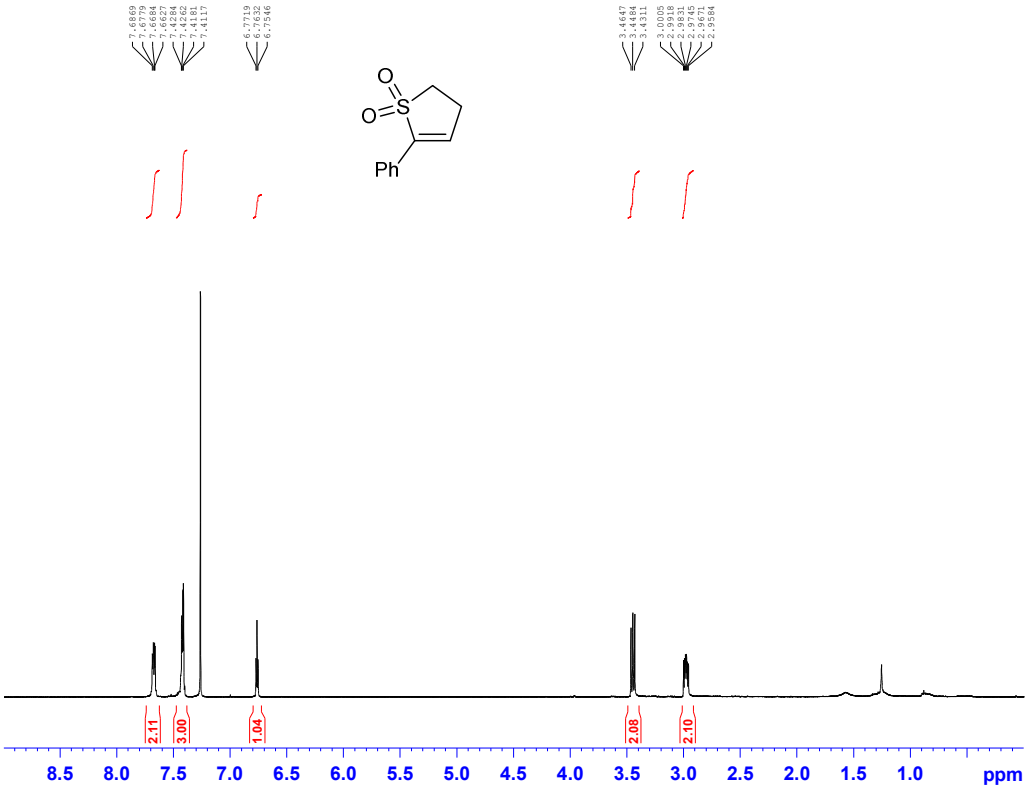
NMR spectra of 5-phenyl-2,3-dihydrothiophene 1,1-dioxide 6a



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PROCNO                  1

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PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH             8223.685 Hz
FIDRES          0.125483 Hz
AQ              3.9845889 sec
RG                 147.88
DW                 60.800 usec
DE                 10.69 usec
TE                 293.6 K
D1            2.00000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1          400.1324710 MHz
NUC1                   1H
P1                  8.00 usec
PLW1         24.00000000 W

F2 - Processing parameters
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LB                  0.30 Hz
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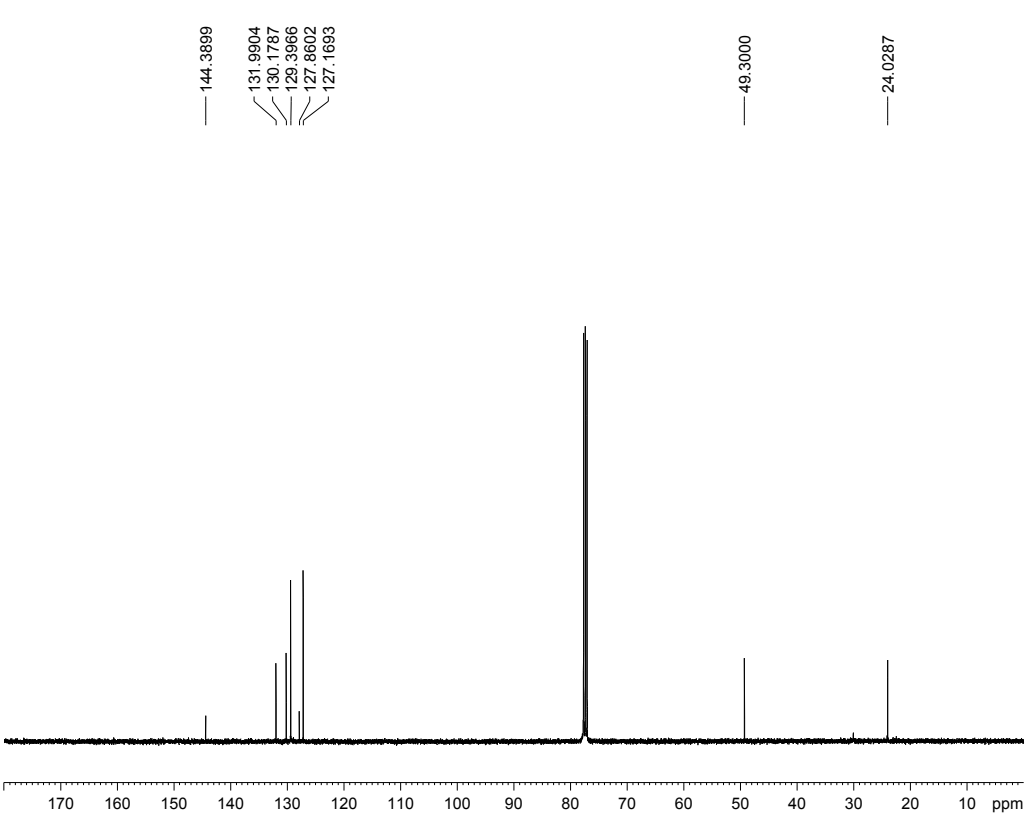

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EXPNO                    61
PROCNO                    1

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Time_               1.04
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                  1024
DS                     4
SWH            24038.461 Hz
FIDRES          0.366798 Hz
AQ              1.3631488 sec
RG                 181.72
DW                 20.800 usec
DE                  8.18 usec
TE                 294.4 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1          100.6228284 MHz
NUC1                  13C
P1                  9.00 usec
PLW1         77.00000000 W

======== CHANNEL f2 ========
SFO2          400.1316005 MHz
NUC2                   1H
CPDPRG[2          waltz16
PCPD2              90.00 usec
PLW2         24.00000000 W
PLW12         0.17567000 W
PLW13         0.14229999 W

F2 - Processing parameters
SI                 65536
SF            100.6127329 MHz
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SSB       0
LB                  0.50 Hz
GB        0
PC                  1.40
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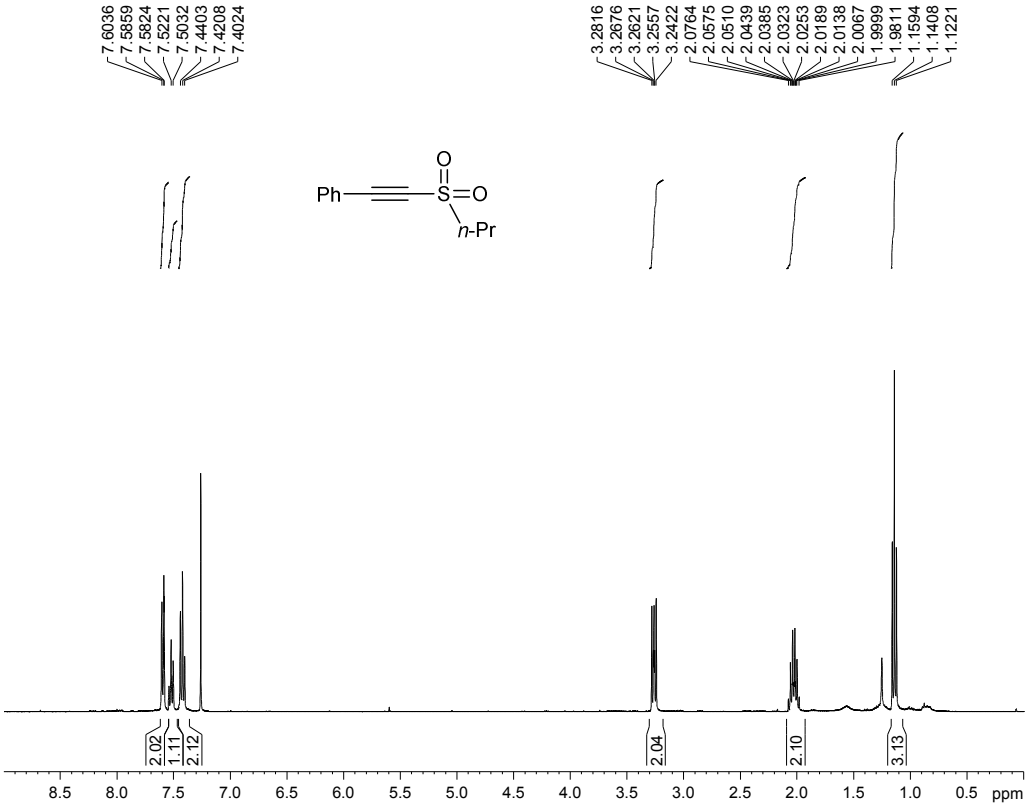
NMR spectra of ((propylsulfonyl)ethynyl)benzene 5b



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PROCNO                    1

F2 - Acquisition Parameters
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Time_                 16.05
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG              zg30
TD                  65536
SOLVENT              CDCl3
NS                      16
DS                       2
SWH               8223.685 Hz
FIDRES            0.125483 Hz
AQ                3.9845889 sec
RG                   147.88
DW                  60.800 usec
DE                  10.69 usec
TE                  294.0 K
D1                2.00000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1            400.1324710 MHz
NUC1                     1H
P1                    8.00 usec
PLW1           24.00000000 W

F2 - Processing parameters
SI                    32768
SF              400.1300096 MHz
WDW                     EM
SSB          0
LB                    0.30 Hz
GB           0
PC                    1.50
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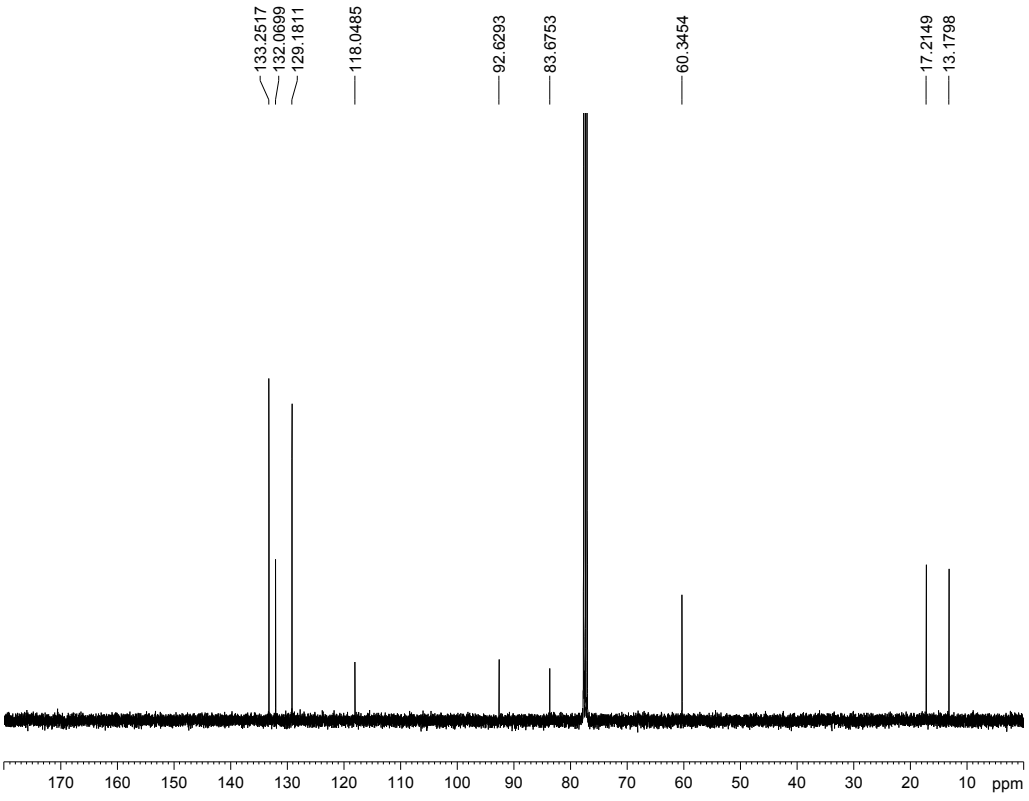

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Current Data Parameters
NAME                 ATX-21
EXPNO                    91
PROCNO                    1

F2 - Acquisition Parameters
Date_              20140514
Time_                  1.15
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG            zgpg30
TD                  65536
SOLVENT              CDCl3
NS                    1024
DS                       4
SWH              24038.461 Hz
FIDRES            0.366798 Hz
AQ                1.3631488 sec
RG                   181.72
DW                  20.800 usec
DE                   8.18 usec
TE                  294.5 K
D1                2.00000000 sec
D11               0.03000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1            100.6228284 MHz
NUC1                    13C
P1                    9.00 usec
PLW1           77.00000000 W

======== CHANNEL f2 ========
SFO2            400.1316005 MHz
NUC2                     1H
CPDPRG[2          waltz16
PCPD2                90.00 usec
PLW2           24.00000000 W
PLW12           0.17567000 W
PLW13           0.14229999 W

F2 - Processing parameters
SI                    65536
SF              100.6127328 MHz
WDW                     EM
SSB          0
LB                    0.50 Hz
GB           0
PC                    1.40
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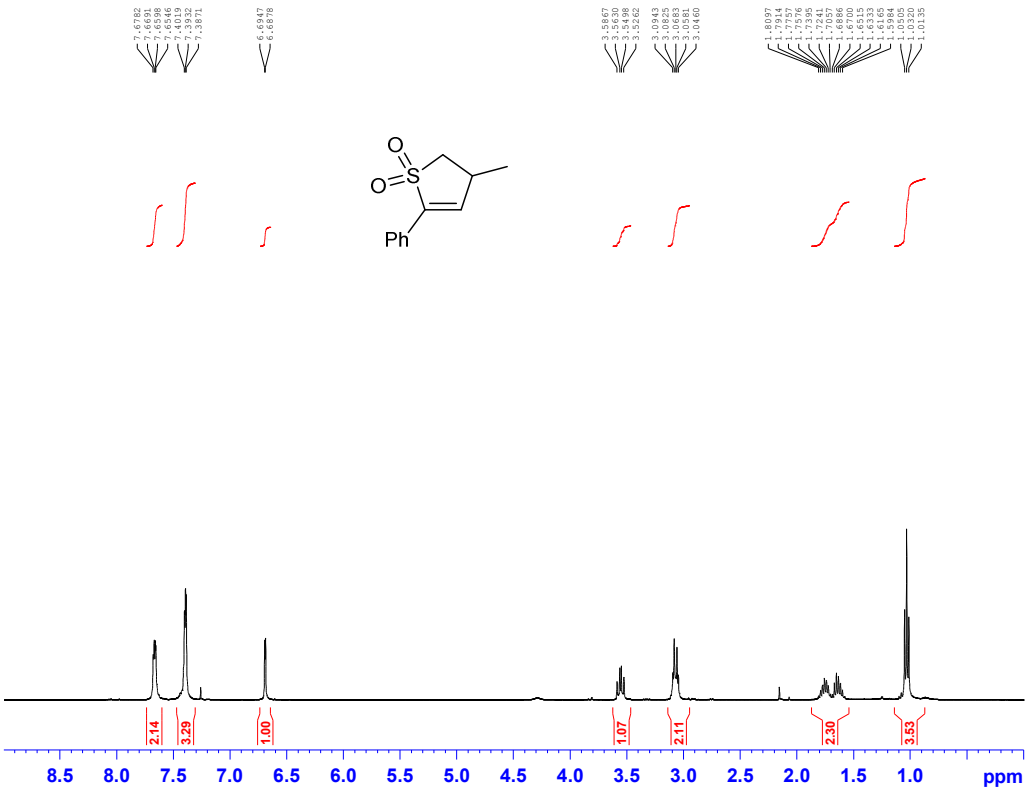
NMR spectra of 3-methyl-5-phenyl-2,3-dihydrothiophene 1,1-dioxide 6b



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EXPNO                      50
PROCNO                      1

F2 - Acquisition Parameters
Date_              20150202
Time_                  16.46
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                8223.685 Hz
FIDRES            0.125483 Hz
AQ                 3.9845889 sec
RG                     32.09
DW                   60.800 usec
DE                   10.69 usec
TE                    293.7 K
D1                 2.00000000 sec
TD0                         1

======== CHANNEL f1 ========
SFO1             400.1324710 MHz
NUC1                       1H
P1                       8.00 usec
PLW1            24.00000000 W

F2 - Processing parameters
SI                        32768
SF               400.1300096 MHz
WDW                       EM
SSB          0
LB                       0.30 Hz
GB           0
PC                       1.50
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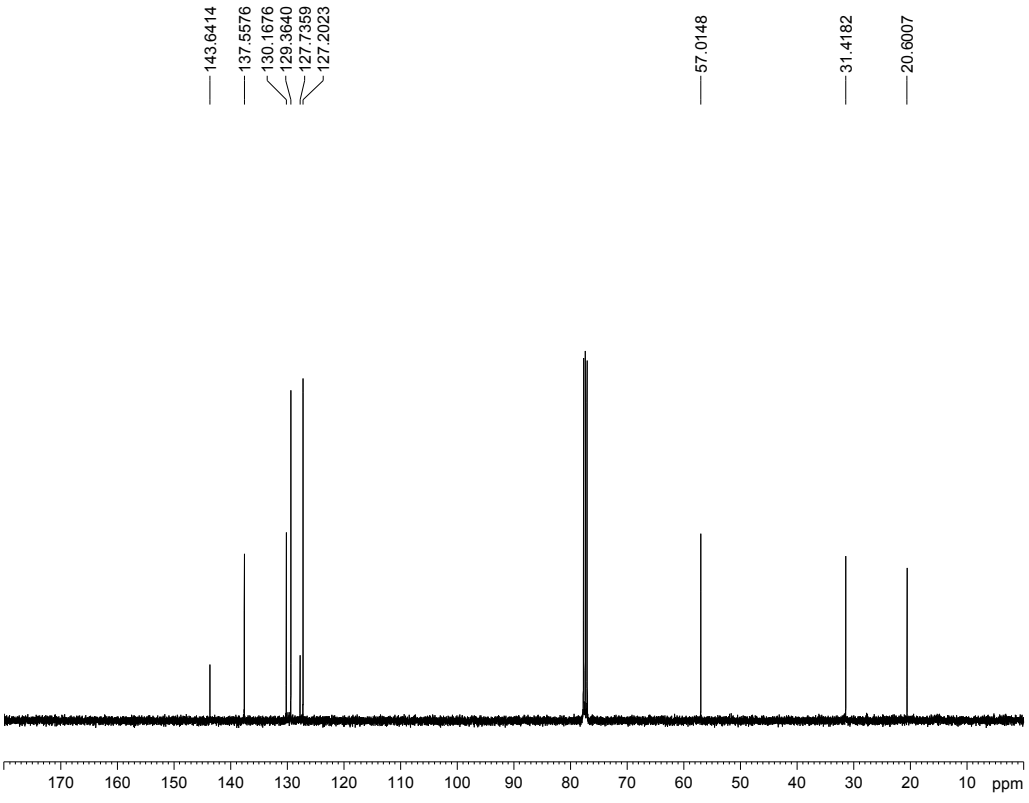

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EXPNO                      50
PROCNO                      1

F2 - Acquisition Parameters
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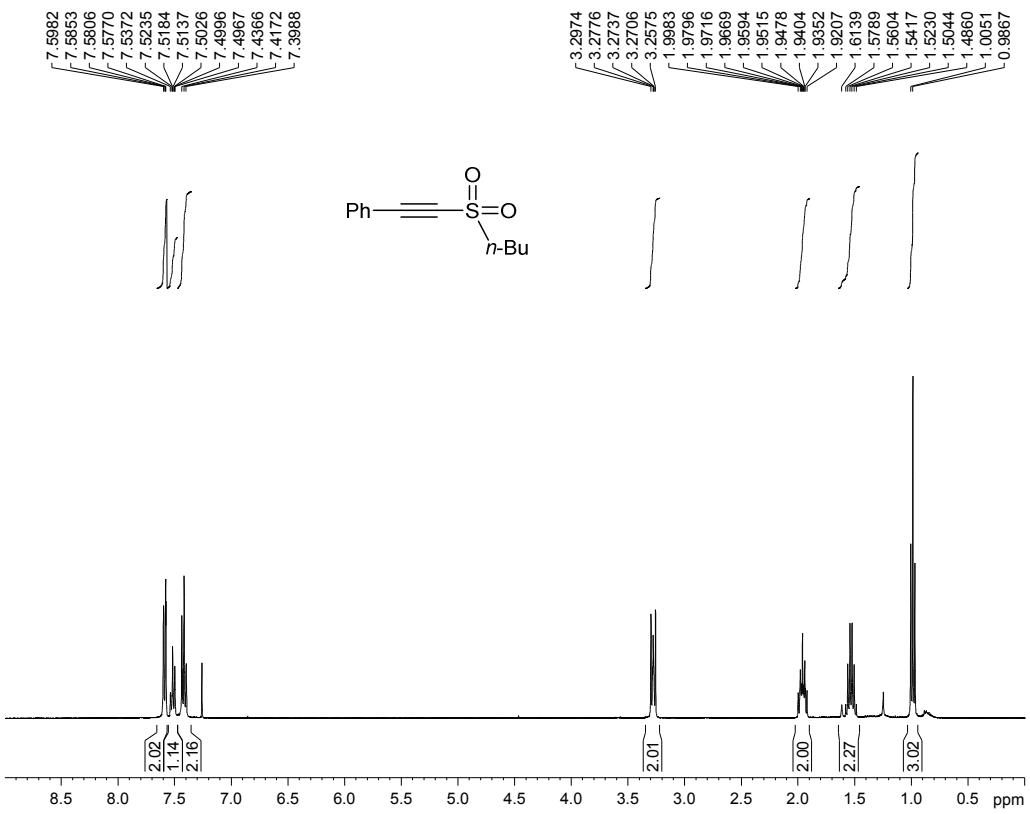
Time_                  12.15
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                    65536
SOLVENT               CDCl3
NS                      256
DS                        4
SWH               24038.461 Hz
FIDRES            0.366798 Hz
AQ                 1.3631488 sec
RG                    181.72
DW                   20.800 usec
DE                    8.18 usec
TE                    294.7 K
D1                 2.00000000 sec
D11                0.03000000 sec
TD0                         1

======== CHANNEL f1 ========
SFO1             100.6228284 MHz
NUC1                      13C
P1                       9.00 usec
PLW1            77.00000000 W

======== CHANNEL f2 ========
SFO2             400.1316005 MHz
NUC2                       1H
CPDPRG[2              waltz16
PCPD2                   90.00 usec
PLW2            24.00000000 W
PLW12            0.17567000 W
PLW13            0.14229999 W

F2 - Processing parameters
SI                        65536
SF               100.6127346 MHz
WDW                       EM
SSB          0
LB                       0.50 Hz
GB           0
PC                       1.40
```

NMR spectra of ((butylsulfonyl)ethynyl)benzene 5c



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EXPNO                     30
PROCNO                     1

F2 - Acquisition Parameters
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Time_                   9.36
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                8223.685 Hz
FIDRES             0.125483 Hz
AQ                 3.9845889 sec
RG                     46.39
DW                   60.800 usec
DE                   10.69 usec
TE                   293.5 K
D1                2.00000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1             400.1324710 MHz
NUC1                       1H
P1                       8.00 usec
PLW1             24.00000000 W

F2 - Processing parameters
SI                        32768
SF               400.1300096 MHz
WDW                       EM
SSB          0
LB                       0.30 Hz
GB           0
PC                       1.50
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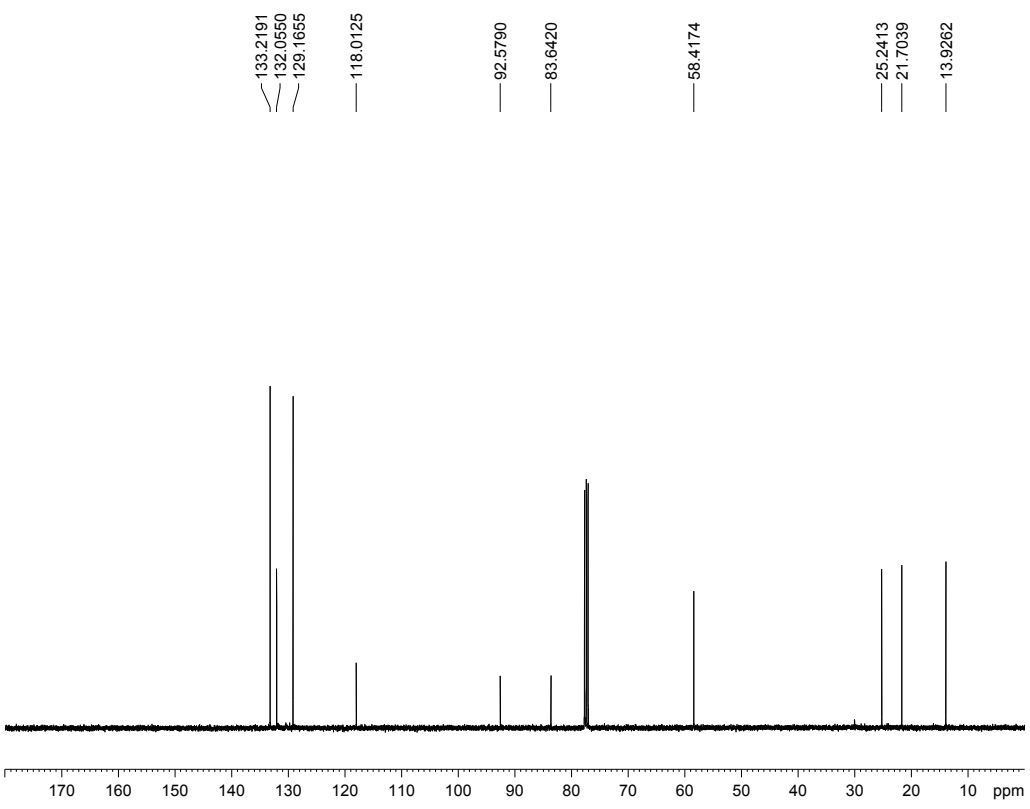

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PROCNO                     1

F2 - Acquisition Parameters
Date_               20141110
Time_                   9.52
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                    65536
SOLVENT               CDCl3
NS                      256
DS                        4
SWH               24038.461 Hz
FIDRES             0.366798 Hz
AQ                 1.3631488 sec
RG                    181.72
DW                   20.800 usec
DE                    8.18 usec
TE                   293.9 K
D1                2.00000000 sec
D11               0.03000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1             100.6228284 MHz
NUC1                      13C
P1                       9.00 usec
PLW1             77.00000000 W

======== CHANNEL f2 ========
SFO2             400.1316005 MHz
NUC2                       1H
CPDPRG[2            waltz16
PCPD2                   90.00 usec
PLW2             24.00000000 W
PLW12             0.17567000 W
PLW13             0.14229999 W

F2 - Processing parameters
SI                        65536
SF               100.6127354 MHz
WDW                       EM
SSB          0
LB                       0.50 Hz
GB           0
PC                       1.40
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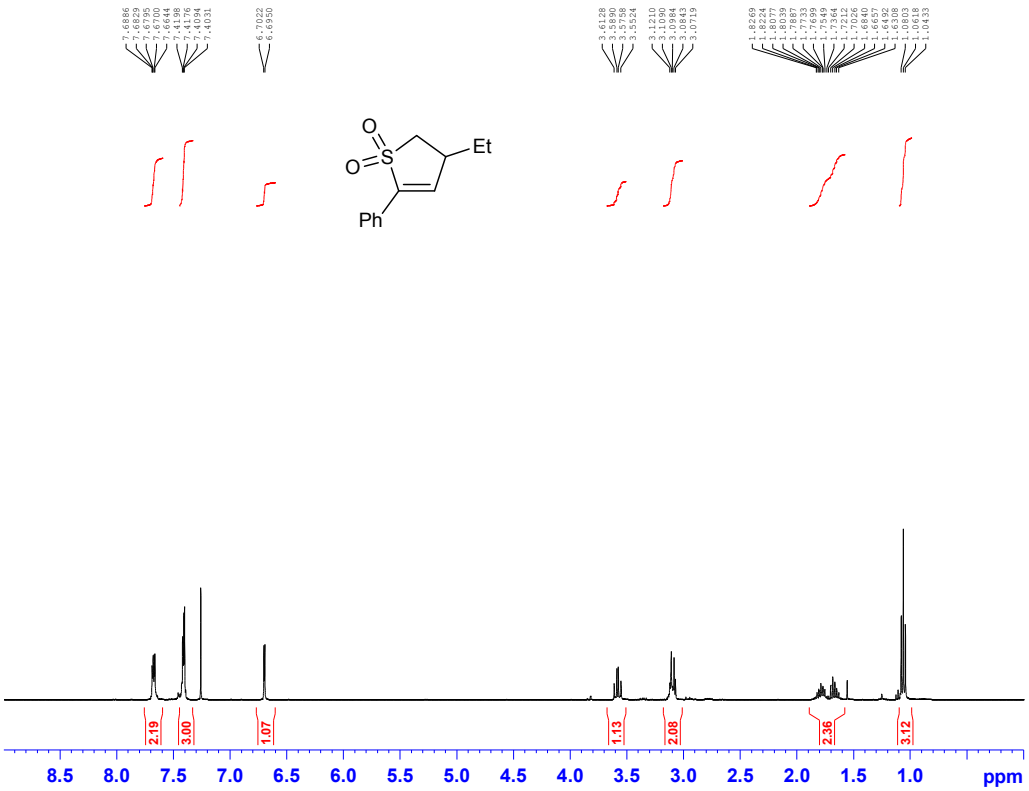
NMR spectra of 3-ethyl-5-phenyl-2,3-dihydrothiophene 1,1-dioxide 6c



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PROCNO               1

F2 - Acquisition Parameters
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Time_            14.43
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PROBHD   5 mm PABBO BB/
PULPROG          zg30
TD              65536
SOLVENT         CDCl3
NS                 16
DS                  2
SWH          8223.685 Hz
FIDRES       0.125483 Hz
AQ           3.9845889 sec
RG               147.88
DW               60.800 usec
DE               10.69 usec
TE               293.6 K
D1          2.00000000 sec
TD0                 1

======== CHANNEL f1 ========
SFO1       400.1324710 MHz
NUC1               1H
P1                8.00 usec
PLW1      24.00000000 W

F2 - Processing parameters
SI              32768
SF         400.1300099 MHz
WDW                EM
SSB       0
LB               0.30 Hz
GB        0
PC               1.50
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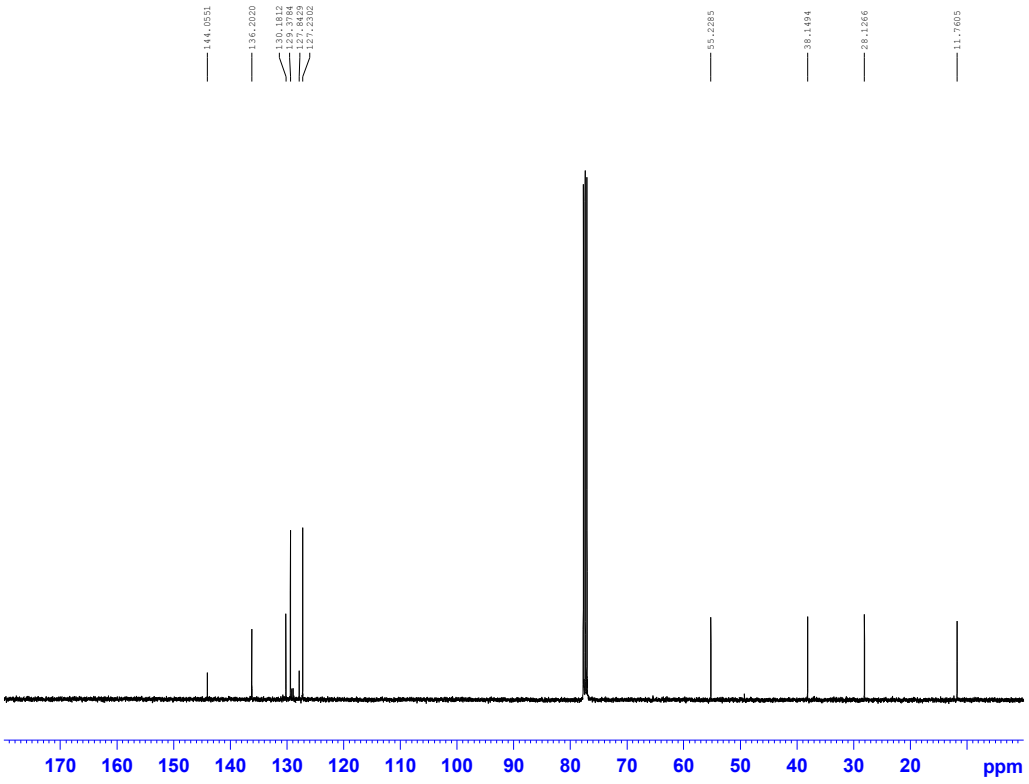

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EXPNO               11
PROCNO               1

F2 - Acquisition Parameters
Date_         20160220
Time_            23.31
INSTRUM          spect
PROBHD   5 mm PABBO BB/
PULPROG        zgpg30
TD              65536
SOLVENT         CDCl3
NS                1024
DS                  4
SWH         24038.461 Hz
FIDRES       0.366798 Hz
AQ           1.3631488 sec
RG               181.72
DW               20.800 usec
DE                8.18 usec
TE               294.4 K
D1          2.00000000 sec
D11         0.03000000 sec
TD0                 1

======== CHANNEL f1 ========
SFO1       100.6228303 MHz
NUC1               13C
P1                9.00 usec
PLW1      77.00000000 W

======== CHANNEL f2 ========
SFO2       400.1316005 MHz
NUC2               1H
CPDPRG[2        waltz16
PCPD2             90.00 usec
PLW2      24.00000000 W
PLW12      0.17567000 W
PLW13      0.14229999 W

F2 - Processing parameters
SI              65536
SF         100.6127322 MHz
WDW                EM
SSB       0
LB               1.00 Hz
GB        0
PC               1.40
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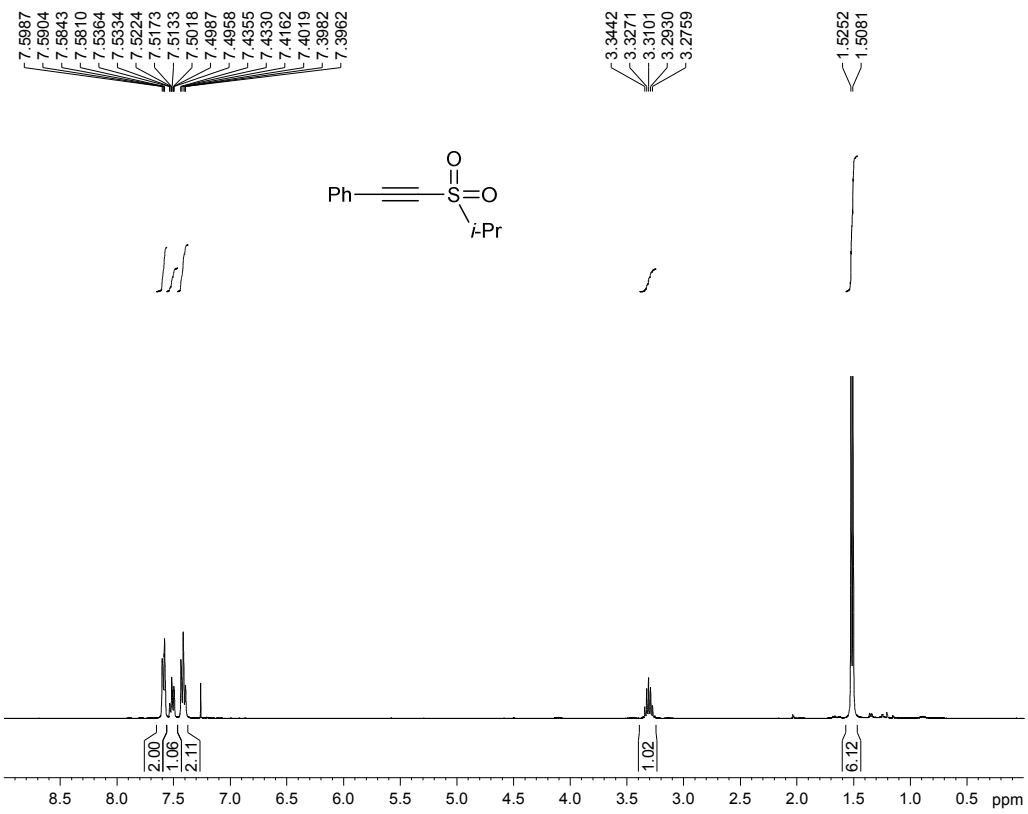
NMR spectra of ((isopropylsulfonyl)ethynyl)benzene 5d



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Current Data Parameters
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EXPNO                     20
PROCNO                     1

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Time_                 11.22
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG             zg30
TD                    65536
SOLVENT             CDCl3
NS                       16
DS                        2
SWH                8223.685 Hz
FIDRES             0.125483 Hz
AQ                 3.9845889 sec
RG                    46.39
DW                   60.800 usec
DE                   10.69 usec
TE                   293.8 K
D1                2.00000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1             400.1324710 MHz
NUC1                     1H
P1                    8.00 usec
PLW1             24.00000000 W

F2 - Processing parameters
SI                       32768
SF               400.1300087 MHz
WDW                      EM
SSB          0
LB                    0.30 Hz
GB           0
PC                    1.50
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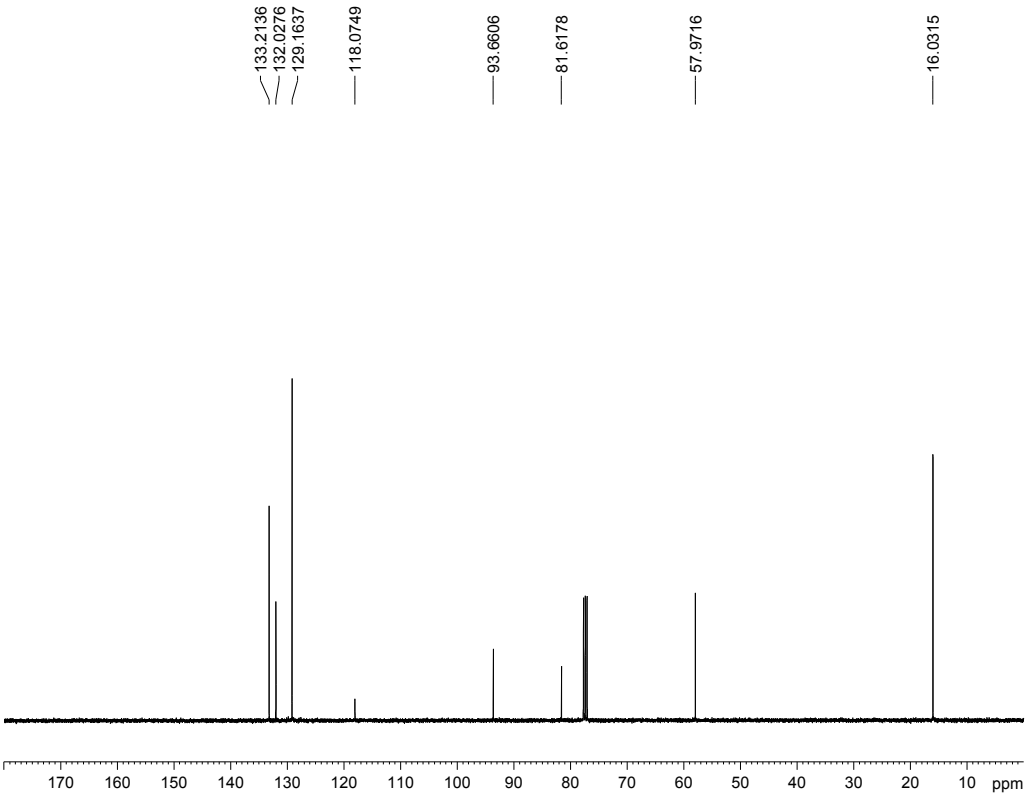

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Current Data Parameters
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EXPNO                     21
PROCNO                     1

F2 - Acquisition Parameters
Date_              20141117
Time_                 11.38
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG           zgpg30
TD                    65536
SOLVENT             CDCl3
NS                      256
DS                        4
SWH               24038.461 Hz
FIDRES             0.366798 Hz
AQ                 1.3631488 sec
RG                   181.72
DW                   20.800 usec
DE                    8.18 usec
TE                   294.2 K
D1                2.00000000 sec
D11               0.03000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1             100.6228284 MHz
NUC1                     13C
P1                    9.00 usec
PLW1             77.00000000 W

======== CHANNEL f2 ========
SFO2             400.1316005 MHz
NUC2                     1H
CPDPRG[2          waltz16
PCPD2                90.00 usec
PLW2             24.00000000 W
PLW12             0.17567000 W
PLW13             0.14229999 W

F2 - Processing parameters
SI                       65536
SF               100.6127362 MHz
WDW                      EM
SSB          0
LB                    0.50 Hz
GB           0
PC                    1.40
```
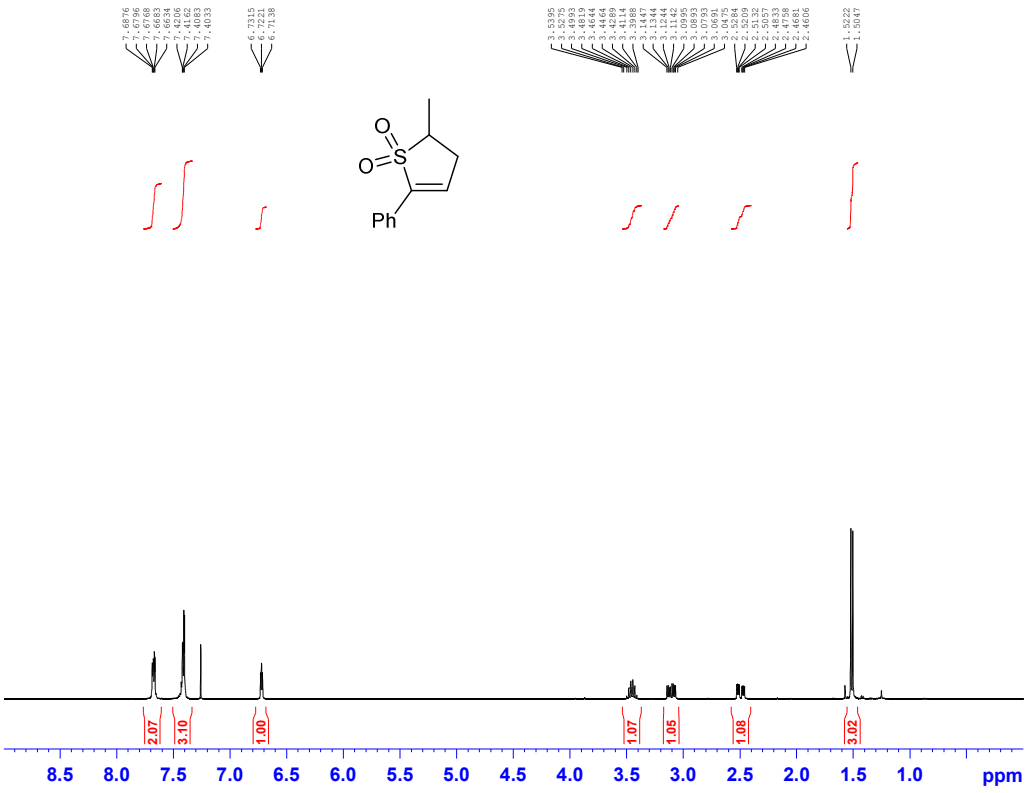

NMR spectra of 2-methyl-5-phenyl-2,3-dihydrothiophene 1,1-dioxide 6d



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Current Data Parameters
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EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_              20160226
Time                  14.53
INSTRUM               spect
PROBHD   5 mm PABBO BB/
PULPROG               zg30
TD                   65536
SOLVENT             CDCl3
NS                     16
DS                      2
SWH                8223.685 Hz
FIDRES             0.125483 Hz
AQ                 3.9845889 sec
RG                   147.88
DW                  60.800 usec
DE                  10.69 usec
TE                  293.6 K
D1                2.00000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1          400.1324710 MHz
NUC1                   1H
P1                   8.00 usec
PLW1         24.00000000 W

F2 - Processing parameters
SI                    32768
SF            400.1300099 MHz
WDW                    EM
SSB       0
LB                   0.30 Hz
GB        0
PC                   1.50
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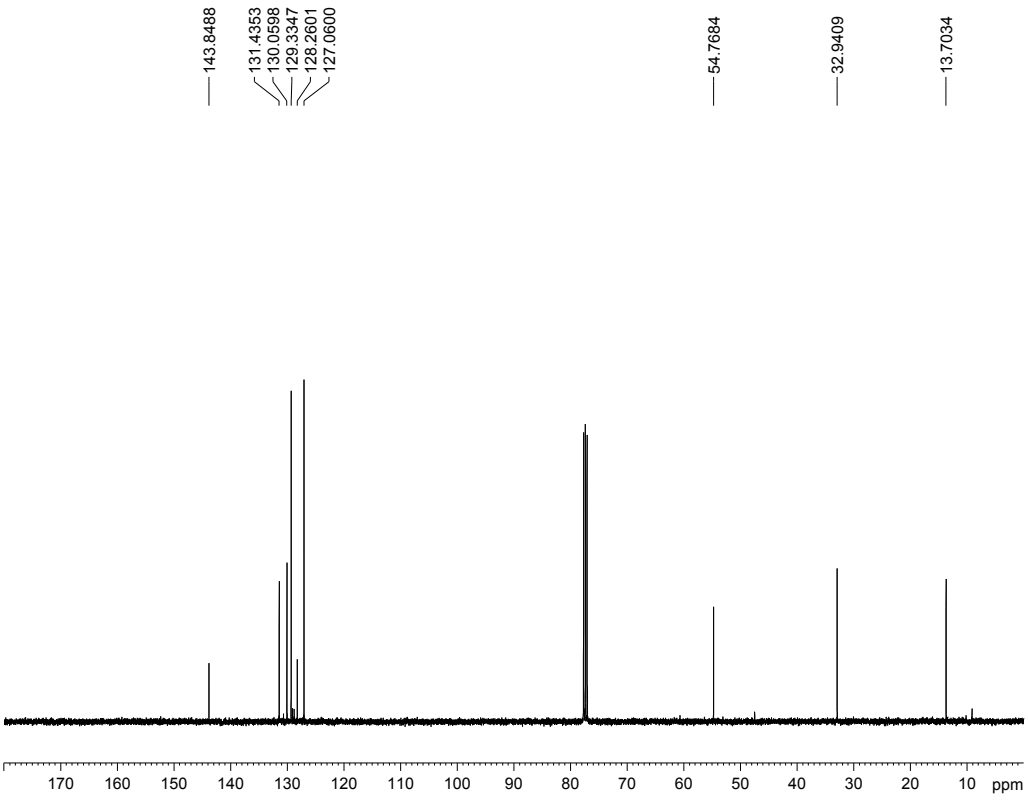

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Current Data Parameters
NAME                ATX-140
EXPNO                    51
PROCNO                    1

F2 - Acquisition Parameters
Date_              20150202
Time                  21.32
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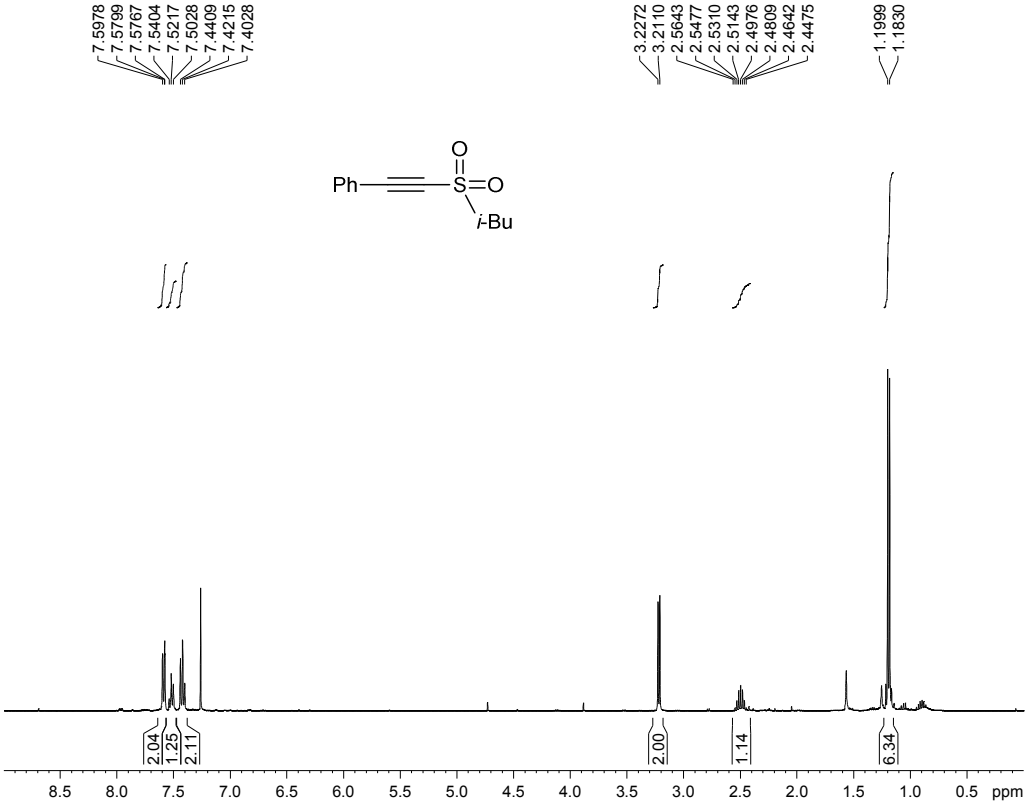
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                   65536
SOLVENT             CDCl3
NS                     256
DS                       4
SWH               24038.461 Hz
FIDRES             0.366798 Hz
AQ                 1.3631488 sec
RG                   181.72
DW                  20.800 usec
DE                   8.18 usec
TE                  294.2 K
D1                2.00000000 sec
D11               0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1          100.6228284 MHz
NUC1                  13C
P1                   9.00 usec
PLW1         77.00000000 W

======== CHANNEL f2 ========
SFO2          400.1316005 MHz
NUC2                   1H
CPDPRG[2          waltz16
PCPD2                90.00 usec
PLW2         24.00000000 W
PLW12         0.17567000 W
PLW13         0.14229999 W

F2 - Processing parameters
SI                    65536
SF            100.6127358 MHz
WDW                    EM
SSB       0
LB                   0.50 Hz
GB        0
PC                   1.40
```

NMR spectra of ((isobutylsulfonyl)ethynyl)benzene 5e



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Current Data Parameters
NAME                  ATX-53
EXPNO                     20
PROCNO                     1

F2 - Acquisition Parameters
Date_              20140604
Time                  12.47
INSTRUM                spect
PROBHD   5 mm PABBO BB/
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                8223.685 Hz
FIDRES             0.125483 Hz
AQ                 3.9845889 sec
RG                     147.88
DW                   60.800 usec
DE                   10.69 usec
TE                   293.6 K
D1              2.00000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1            400.1324710 MHz
NUC1                      1H
P1                     8.00 usec
PLW1           24.00000000 W

F2 - Processing parameters
SI                        32768
SF              400.1300087 MHz
WDW                       EM
SSB          0
LB                     0.30 Hz
GB           0
PC                     1.50
```

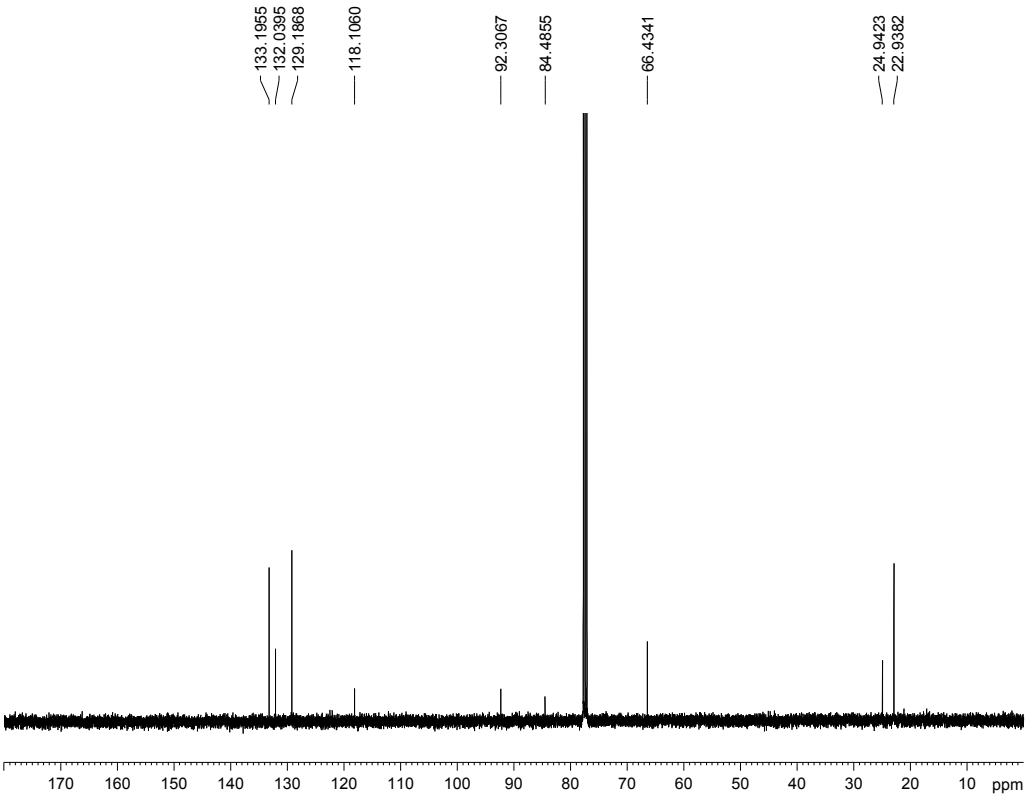

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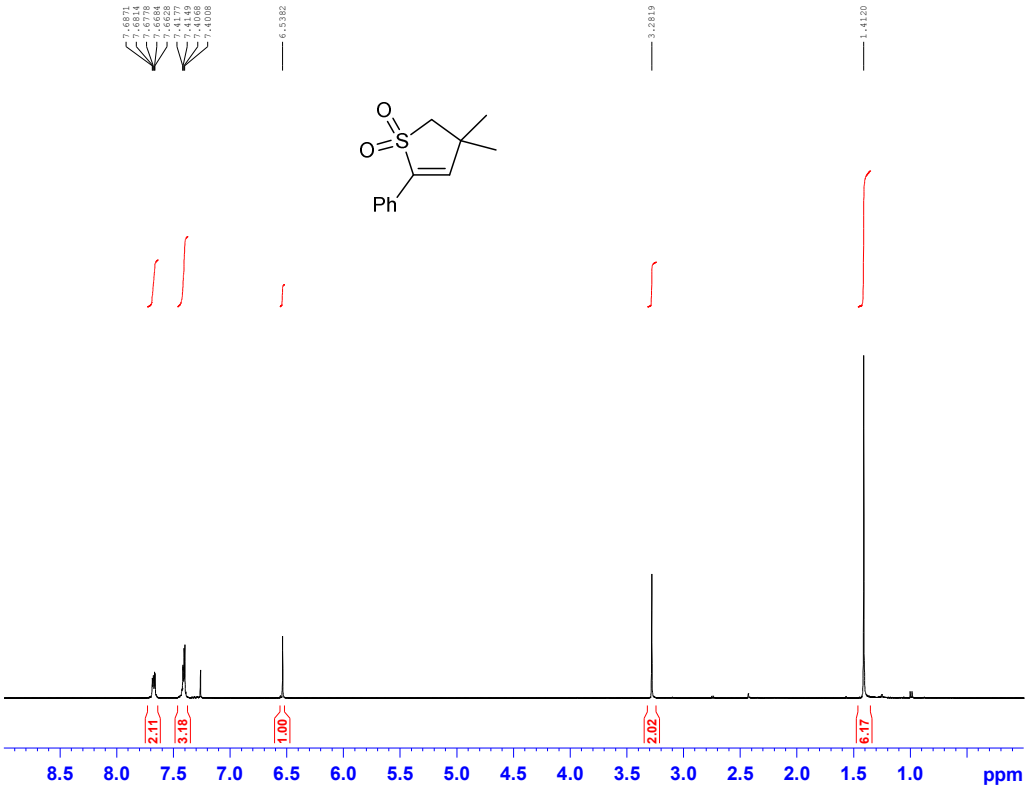
```
Current Data Parameters
NAME                  ATX-53
EXPNO                     21
PROCNO                     1

F2 - Acquisition Parameters
Date_              20140605
Time                   8.52
INSTRUM                spect
PROBHD   5 mm PABBO BB/
PULPROG            zgpg30
TD                    65536
SOLVENT               CDCl3
NS                      256
DS                        4
SWH               24038.461 Hz
FIDRES             0.366798 Hz
AQ                 1.3631488 sec
RG                     181.72
DW                   20.800 usec
DE                    8.18 usec
TE                   294.2 K
D1              2.00000000 sec
D11             0.03000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1            100.6228284 MHz
NUC1                      13C
P1                     9.00 usec
PLW1           77.00000000 W

======== CHANNEL f2 ========
SFO2            400.1316005 MHz
NUC2                      1H
CPDPRG[2           waltz16
PCPD2                 90.00 usec
PLW2           24.00000000 W
PLW12           0.17567000 W
PLW13           0.14229999 W

F2 - Processing parameters
SI                        65536
SF              100.6127321 MHz
WDW                       EM
SSB          0
LB                     0.50 Hz
GB           0
PC                     1.40
```

NMR spectra of 3,3-dimethyl-5-phenyl-2,3-dihydrothiophene 1,1-dioxide 6e



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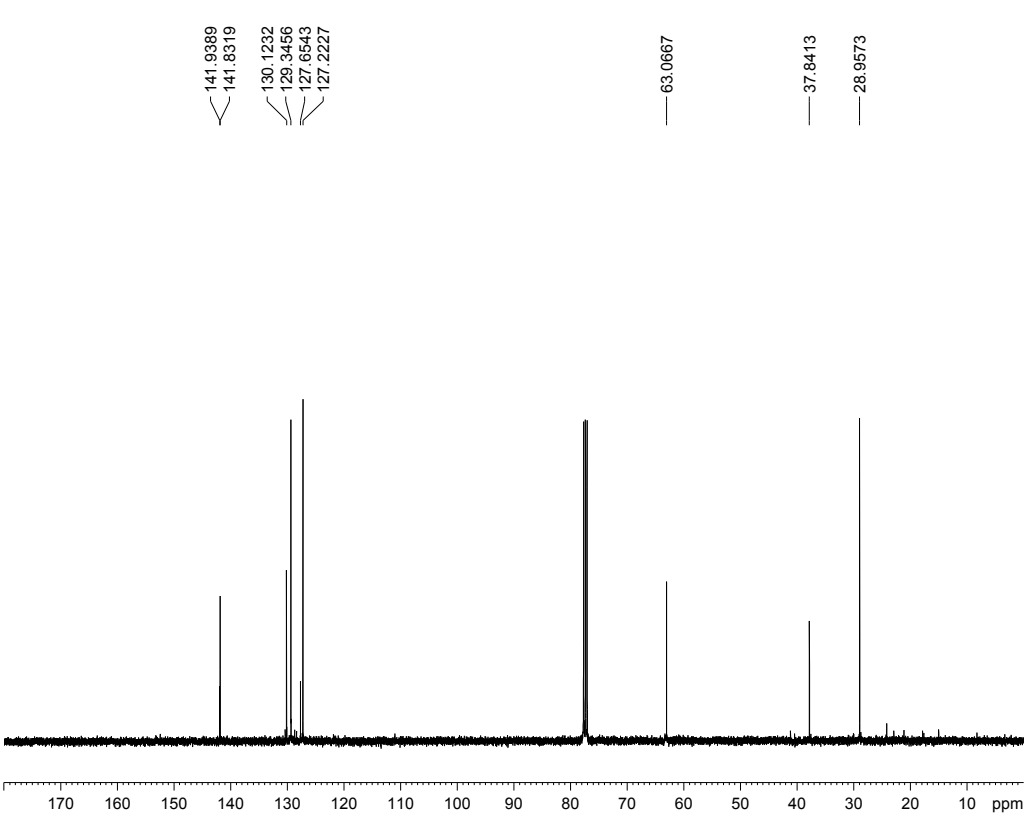
```
Current Data Parameters
NAME       ATX-53 t 14-21
EXPNO              10
PROCNO              1

F2 - Acquisition Parameters
Date_        20160223
Time_           11.54
INSTRUM         spect
PROBHD  5 mm PABBO BB/
PULPROG         zg30
TD             65536
SOLVENT        CDCl3
NS                16
DS                 2
SWH          8223.685 Hz
FIDRES       0.125483 Hz
AQ           3.9845889 sec
RG              104.33
DW              60.800 usec
DE              10.69 usec
TE              293.6 K
D1         2.00000000 sec
TD0                1

======== CHANNEL f1 ========
SFO1       400.1324710 MHz
NUC1               1H
P1              8.00 usec
PLW1      24.00000000 W

F2 - Processing parameters
SI             32768
SF        400.1300087 MHz
WDW              EM
SSB       0
LB            0.30 Hz
GB        0
PC            1.50
```



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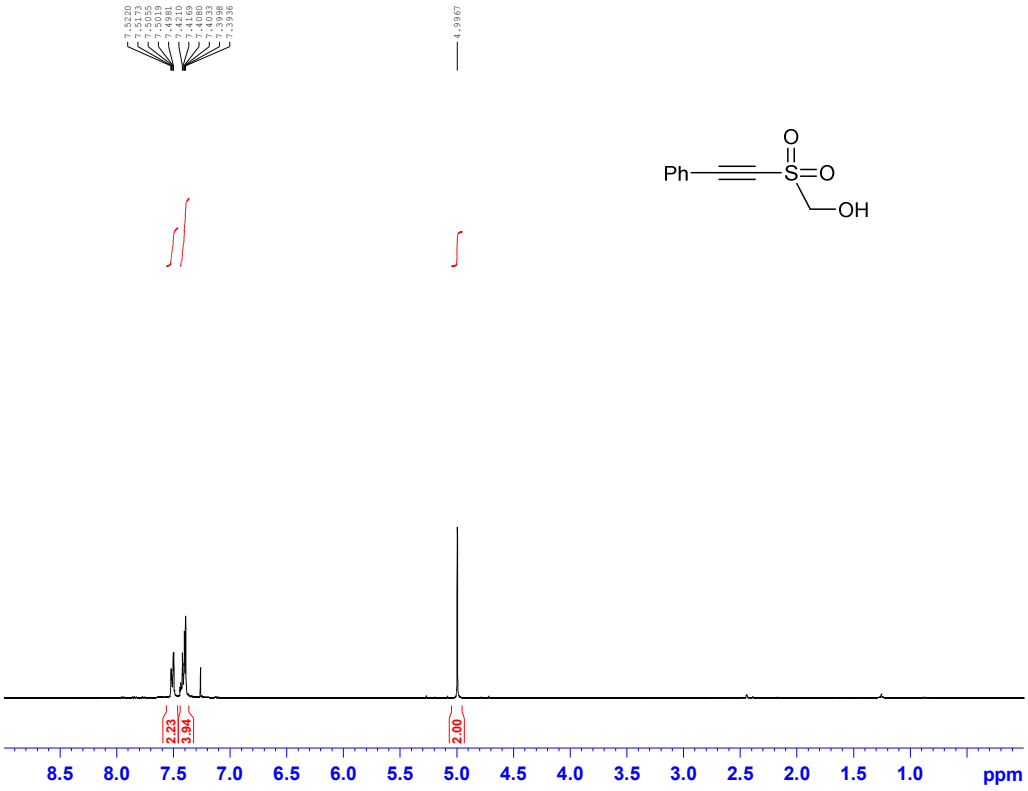
```
Current Data Parameters
NAME             ATX-53
EXPNO                31
PROCNO                1

F2 - Acquisition Parameters
Date_        20140605
Time_           10.30
INSTRUM         spect
PROBHD  5 mm PABBO BB/
PULPROG        zgpg30
TD             65536
SOLVENT        CDCl3
NS               256
DS                 4
SWH         24038.461 Hz
FIDRES       0.366798 Hz
AQ           1.3631488 sec
RG              181.72
DW              20.800 usec
DE               8.18 usec
TE              294.2 K
D1         2.00000000 sec
D11        0.03000000 sec
TD0                1

======== CHANNEL f1 ========
SFO1       100.6228284 MHz
NUC1              13C
P1              9.00 usec
PLW1       77.00000000 W

======== CHANNEL f2 ========
SFO2       400.1316005 MHz
NUC2               1H
CPDPRG[2        waltz16
PCPD2           90.00 usec
PLW2       24.00000000 W
PLW12       0.17567000 W
PLW13       0.14229999 W

F2 - Processing parameters
SI             65536
SF        100.6127350 MHz
WDW              EM
SSB       0
LB            0.50 Hz
GB        0
PC            1.40
```

NMR spectra of ((phenylethynyl)sulfonyl)methanol 5f



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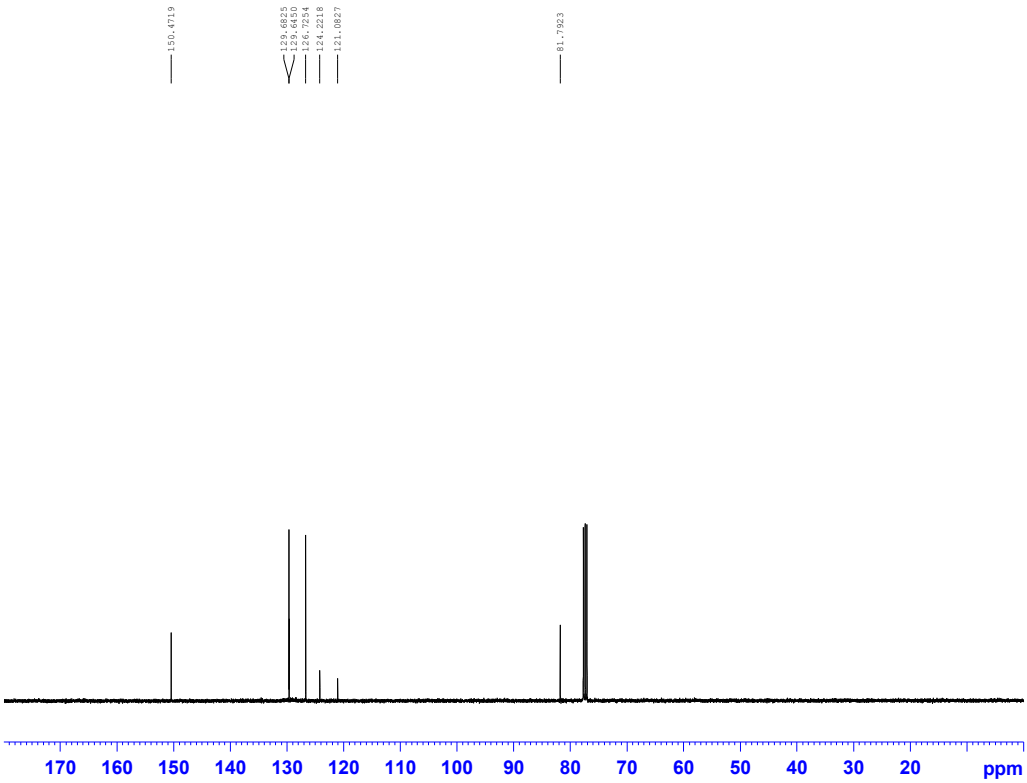
```
Current Data Parameters
NAME        ATX-41 t 13-18
EXPNO               10
PROCNO               1

F2 - Acquisition Parameters
Date_         20160223
Time_            11.59
INSTRUM          spect
PROBHD   5 mm PABBO BB/
PULPROG          zg30
TD              65536
SOLVENT          CDCl3
NS                  16
DS                   2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9845889 sec
RG              104.33
DW               60.800 usec
DE               10.69 usec
TE               293.6 K
D1          2.00000000 sec
TD0                  1

======== CHANNEL f1 ========
SFO1        400.1324710 MHz
NUC1               1H
P1                8.00 usec
PLW1       24.00000000 W

F2 - Processing parameters
SI                32768
SF          400.1300087 MHz
WDW                EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.50
```



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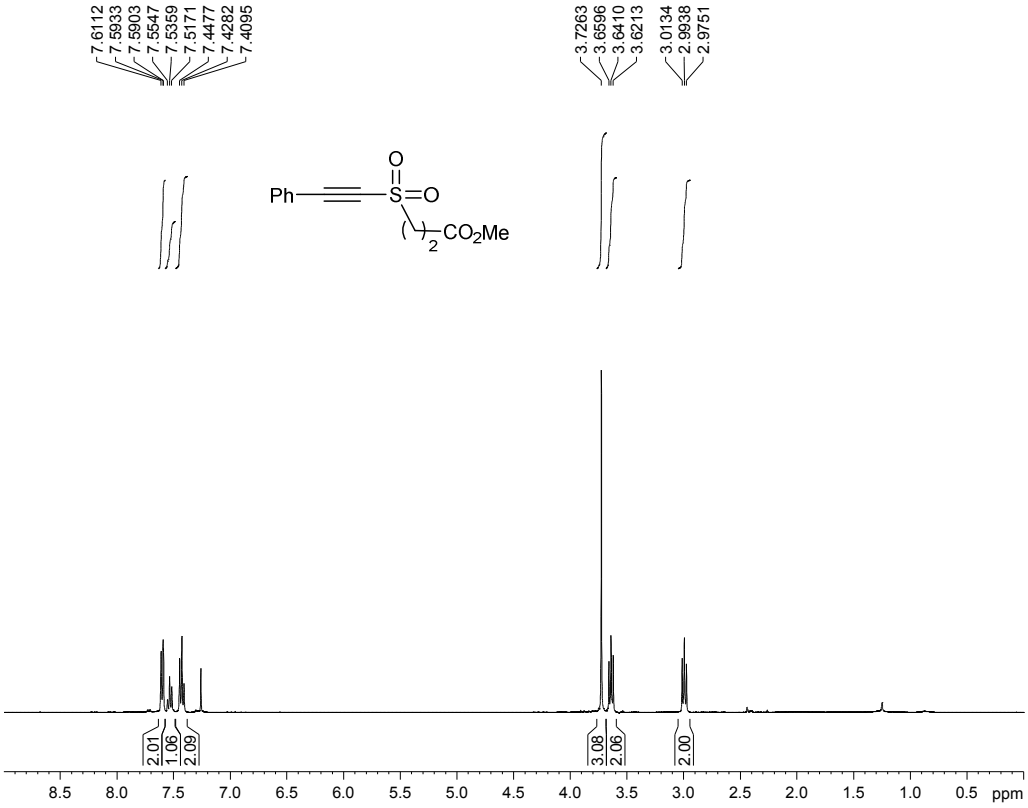
```
Current Data Parameters
NAME             ATX-41
EXPNO                31
PROCNO                1

F2 - Acquisition Parameters
Date_         20140521
Time_            15.52
INSTRUM          spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD              65536
SOLVENT          CDCl3
NS                 256
DS                   4
SWH          24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631488 sec
RG              181.72
DW               20.800 usec
DE                8.18 usec
TE               294.2 K
D1          2.00000000 sec
D11         0.03000000 sec
TD0                  1

======== CHANNEL f1 ========
SFO1        100.6228284 MHz
NUC1               13C
P1                9.00 usec
PLW1       77.00000000 W

======== CHANNEL f2 ========
SFO2        400.1316005 MHz
NUC2               1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2       24.00000000 W
PLW12       0.17567000 W
PLW13       0.14229999 W

F2 - Processing parameters
SI                65536
SF          100.6127346 MHz
WDW                EM
SSB       0
LB                0.50 Hz
GB        0
PC                1.40
```

NMR spectra of methyl 3-((phenylethynyl)sulfonyl)propanoate 5g



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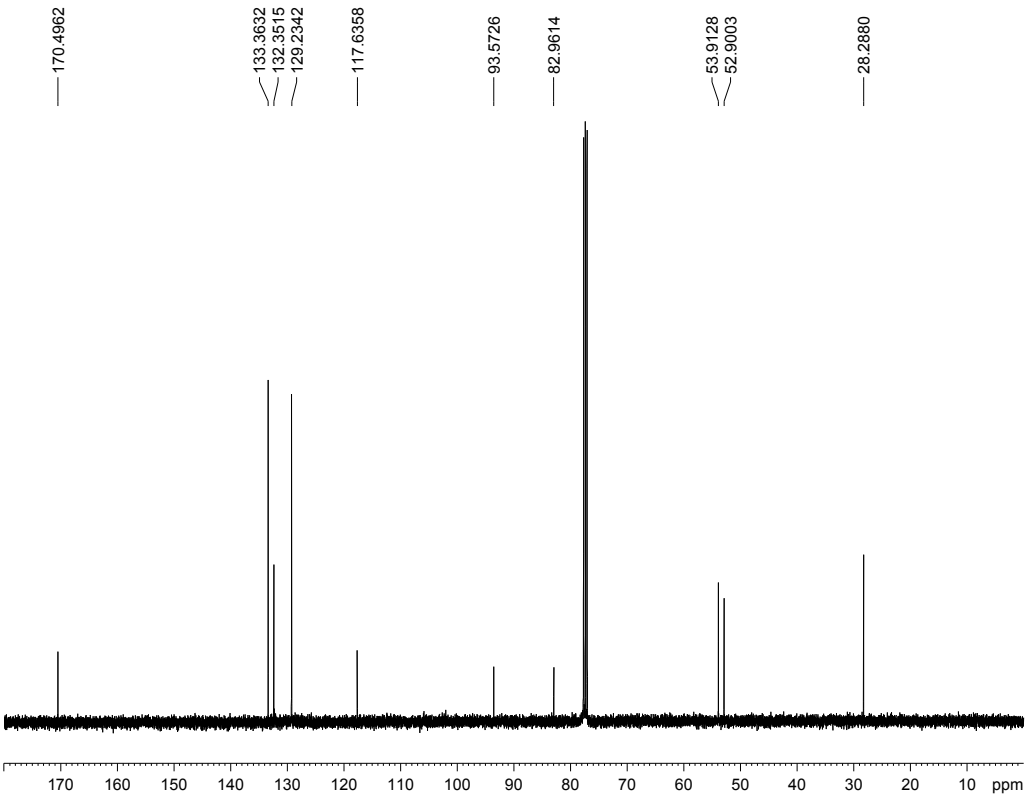
```
Current Data Parameters
NAME                  ATX-15
EXPNO                     40
PROCNO                     1

F2 - Acquisition Parameters
Date_              20140429
Time_                  9.55
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH               8223.685 Hz
FIDRES            0.125483 Hz
AQ                3.9845889 sec
RG                   147.88
DW                  60.800 usec
DE                  10.69 usec
TE                  294.0 K
D1                2.00000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1            400.1324710 MHz
NUC1                      1H
P1                     8.00 usec
PLW1           24.00000000 W

F2 - Processing parameters
SI                        32768
SF              400.1300096 MHz
WDW                       EM
SSB          0
LB                     0.30 Hz
GB           0
PC                     1.50
```



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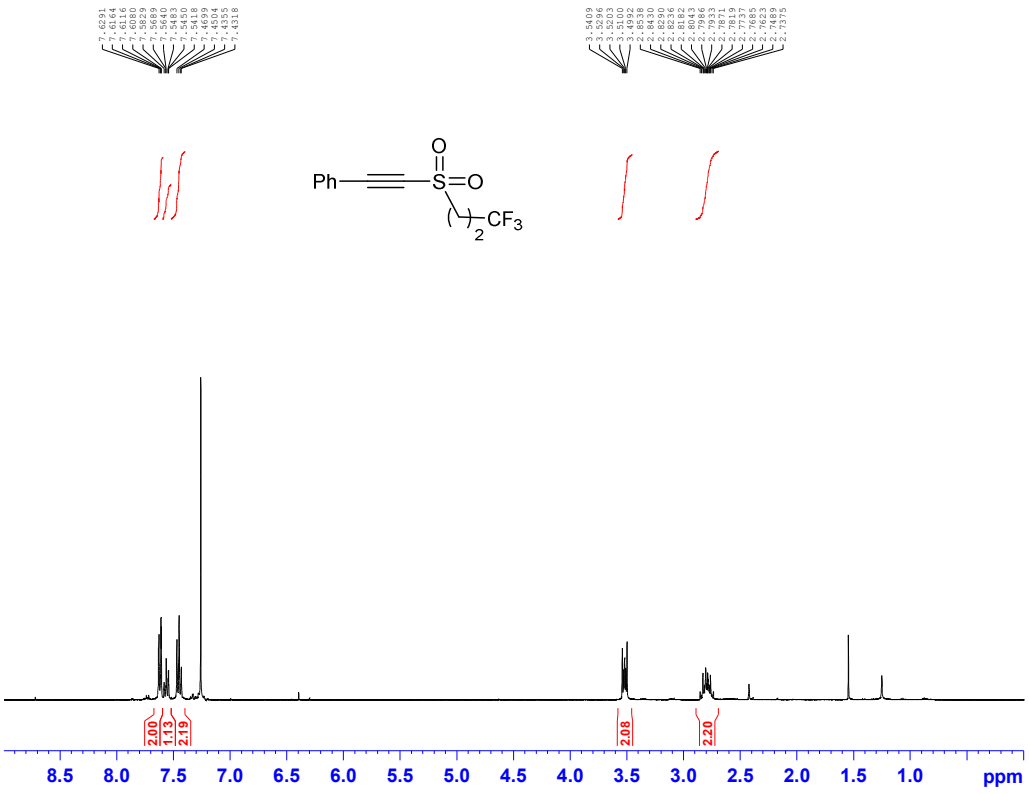
```
Current Data Parameters
NAME                  ATX-15
EXPNO                     41
PROCNO                     1

F2 - Acquisition Parameters
Date_              20140429
Time_                 10.10
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                    65536
SOLVENT               CDCl3
NS                      256
DS                        4
SWH              24038.461 Hz
FIDRES            0.366798 Hz
AQ                1.3631488 sec
RG                   181.72
DW                  20.800 usec
DE                   8.18 usec
TE                  294.3 K
D1                2.00000000 sec
D11               0.03000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1            100.6228284 MHz
NUC1                      13C
P1                     9.00 usec
PLW1           77.00000000 W

======== CHANNEL f2 ========
SFO2            400.1316005 MHz
NUC2                      1H
CPDPRG[2            waltz16
PCPD2                 90.00 usec
PLW2           24.00000000 W
PLW12           0.17567000 W
PLW13           0.14229999 W

F2 - Processing parameters
SI                        65536
SF              100.6127333 MHz
WDW                       EM
SSB          0
LB                     0.50 Hz
GB           0
PC                     1.40
```

NMR spectra of (((3,3,3-trifluoropropyl)sulfonyl)ethynyl)benzene 5h



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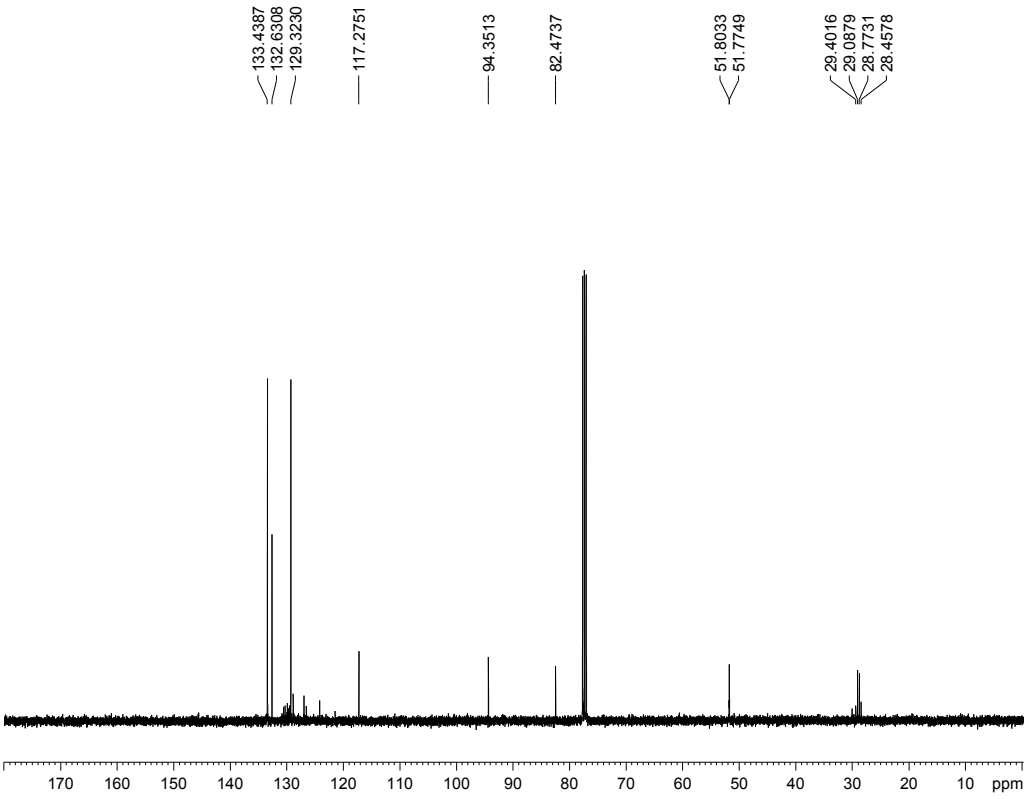
```
Current Data Parameters
NAME                 ATX-63 prep
EXPNO                      30
PROCNO                      1

F2 - Acquisition Parameters
Date_               20160226
Time                   14.38
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                 8223.685 Hz
FIDRES              0.125483 Hz
AQ                  3.9845889 sec
RG                     147.88
DW                     60.800 usec
DE                     10.69 usec
TE                     293.6 K
D1                  2.00000000 sec
TD0                         1

======== CHANNEL f1 ========
SFO1           400.1324710 MHz
NUC1                      1H
P1                     8.00 usec
PLW1           24.00000000 W

F2 - Processing parameters
SI                       32768
SF              400.1300099 MHz
WDW                         EM
SSB          0
LB                     0.30 Hz
GB           0
PC                     1.50
```



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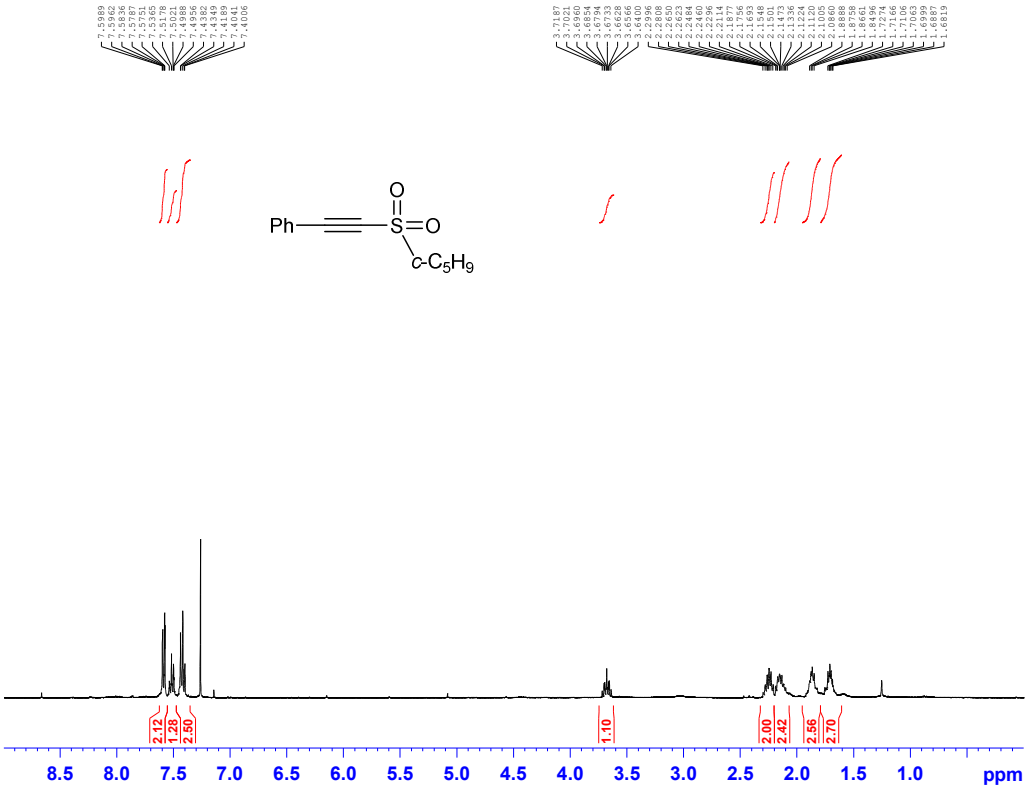
```
Current Data Parameters
NAME                   ATX-63
EXPNO                      71
PROCNO                      1

F2 - Acquisition Parameters
Date_               20150218
Time                   17.26
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                    65536
SOLVENT               CDCl3
NS                      256
DS                        4
SWH                24038.461 Hz
FIDRES              0.366798 Hz
AQ                  1.3631488 sec
RG                     181.72
DW                     20.800 usec
DE                      8.18 usec
TE                     294.1 K
D1                  2.00000000 sec
D11                 0.03000000 sec
TD0                         1

======== CHANNEL f1 ========
SFO1           100.6228284 MHz
NUC1                      13C
P1                     9.00 usec
PLW1           77.00000000 W

======== CHANNEL f2 ========
SFO2           400.1316005 MHz
NUC2                      1H
CPDPRG[2           waltz16
PCPD2                 90.00 usec
PLW2           24.00000000 W
PLW12           0.17567000 W
PLW13           0.14229999 W

F2 - Processing parameters
SI                       65536
SF              100.6127333 MHz
WDW                         EM
SSB          0
LB                     0.50 Hz
GB           0
PC                     1.40
```

NMR spectra of ((cyclopentylsulfonyl)ethynyl)benzene 5i



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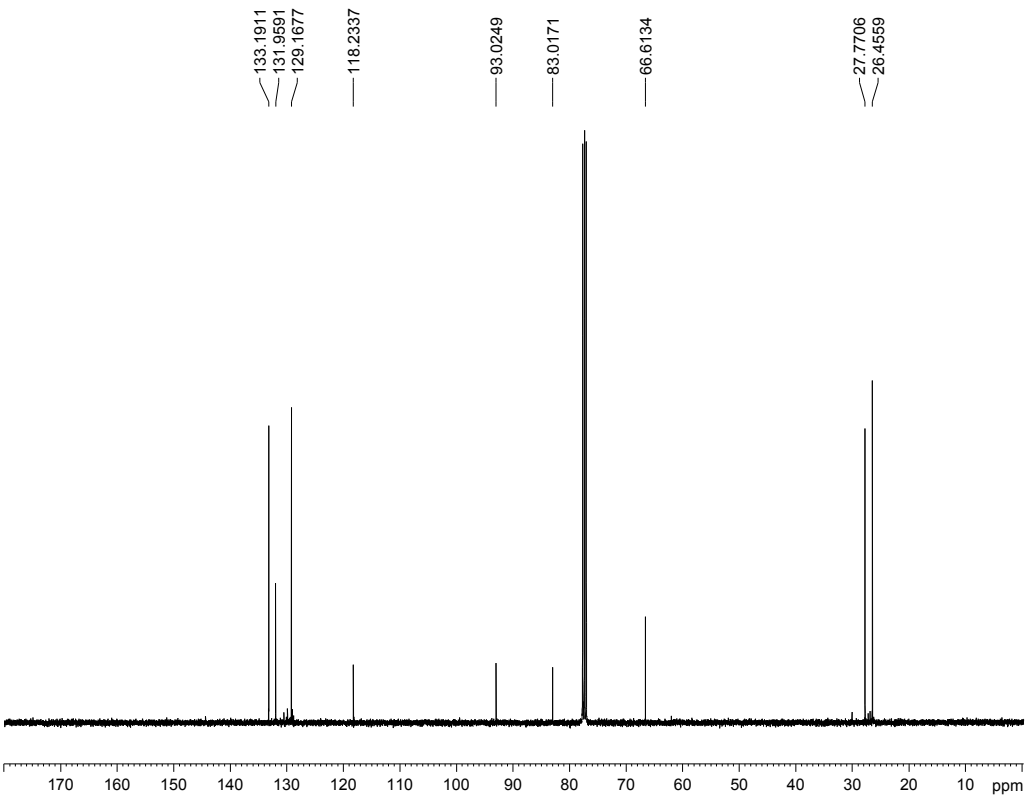
```
Current Data Parameters
NAME         ATX-54 t 8-9
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20160223
Time_              12.04
INSTRUM            spect
PROBHD  5 mm PABBO BB/
PULPROG          zg30
TD              65536
SOLVENT          CDCl3
NS                 16
DS                  2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9845889 sec
RG               147.88
DW               60.800 usec
DE               10.69 usec
TE               293.6 K
D1          2.00000000 sec
TD0                 1

======== CHANNEL f1 ========
SFO1        400.1324710 MHz
NUC1               1H
P1                8.00 usec
PLW1       24.00000000 W

F2 - Processing parameters
SI                 32768
SF          400.1300087 MHz
WDW                EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.50
```



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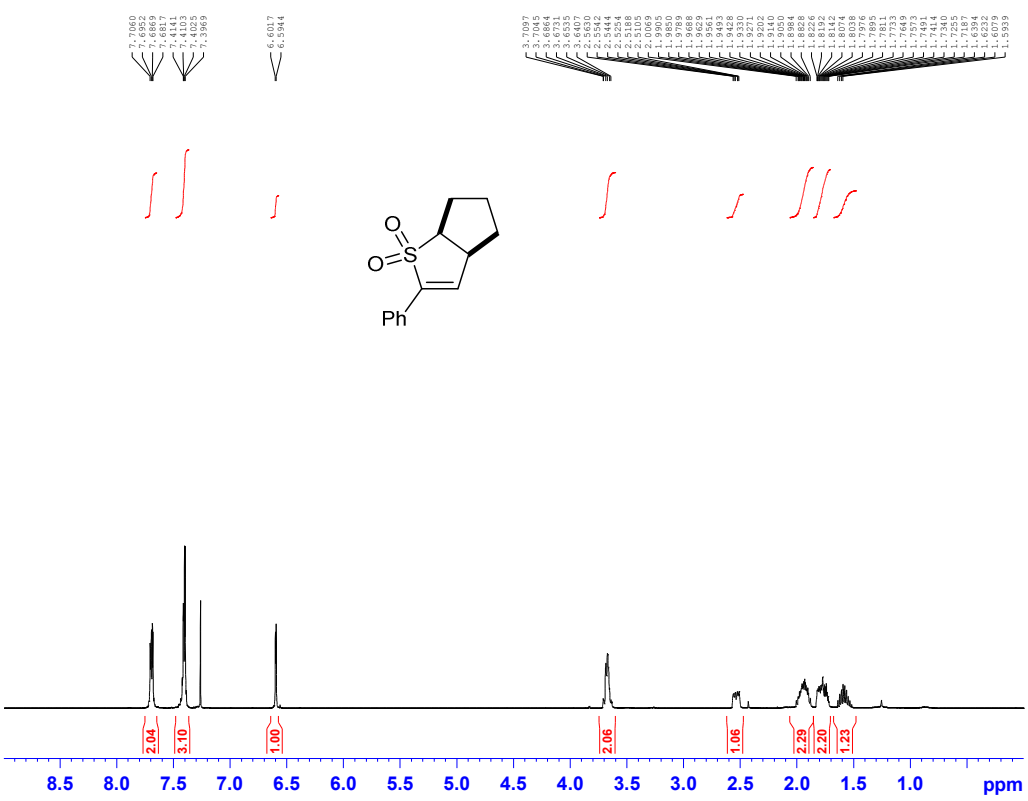
```
Current Data Parameters
NAME              ATX-54
EXPNO                 60
PROCNO                 1

F2 - Acquisition Parameters
Date_           20140610
Time_              2.57
INSTRUM            spect
PROBHD  5 mm PABBO BB/
PULPROG          zgpg30
TD              65536
SOLVENT          CDCl3
NS                1024
DS                   4
SWH          24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631488 sec
RG               181.72
DW               20.800 usec
DE                8.18 usec
TE               294.5 K
D1          2.00000000 sec
D11         0.03000000 sec
TD0                 1

======== CHANNEL f1 ========
SFO1        100.6228284 MHz
NUC1               13C
P1                9.00 usec
PLW1       77.00000000 W

======== CHANNEL f2 ========
SFO2        400.1316005 MHz
NUC2               1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2       24.00000000 W
PLW12       0.17567000 W
PLW13       0.14229999 W

F2 - Processing parameters
SI                 65536
SF          100.6127333 MHz
WDW                EM
SSB       0
LB                0.50 Hz
GB        0
PC                1.40
```

NMR spectra of (3aS,6aS)-2-phenyl-3a,5,6,6a-tetrahydro-4H-cyclopenta[b]thiophene 1,1-dioxide 6i



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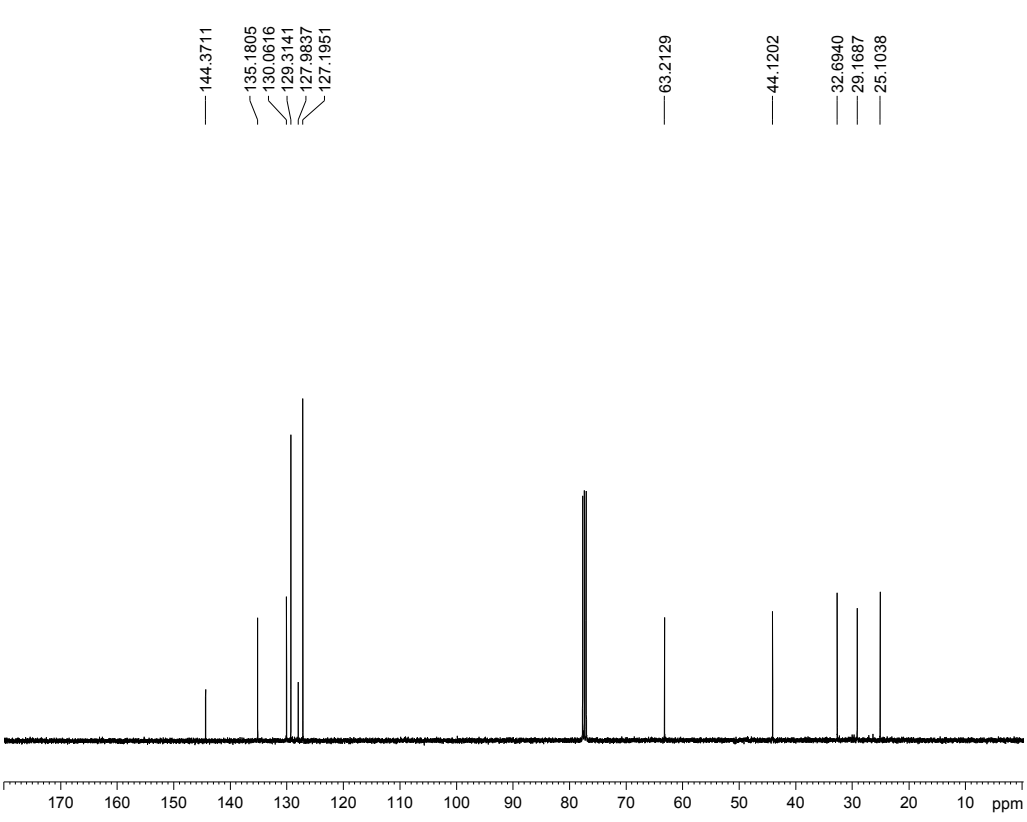
```
Current Data Parameters
NAME      ATX-54 t 19-32
EXPNO              10
PROCNO              1

F2 - Acquisition Parameters
Date_          20160223
Time              12.08
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG           zg30
TD               65536
SOLVENT          CDCl3
NS                  16
DS                   2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9845889 sec
RG               147.88
DW               60.800 usec
DE               10.69 usec
TE               293.6 K
D1            2.00000000 sec
TD0                 1

======== CHANNEL f1 ========
SFO1         400.1324710 MHz
NUC1               1H
P1                8.00 usec
PLW1         24.00000000 W

F2 - Processing parameters
SI                 32768
SF           400.1300087 MHz
WDW                EM
SSB       0
LB               0.30 Hz
GB        0
PC                 1.50
```



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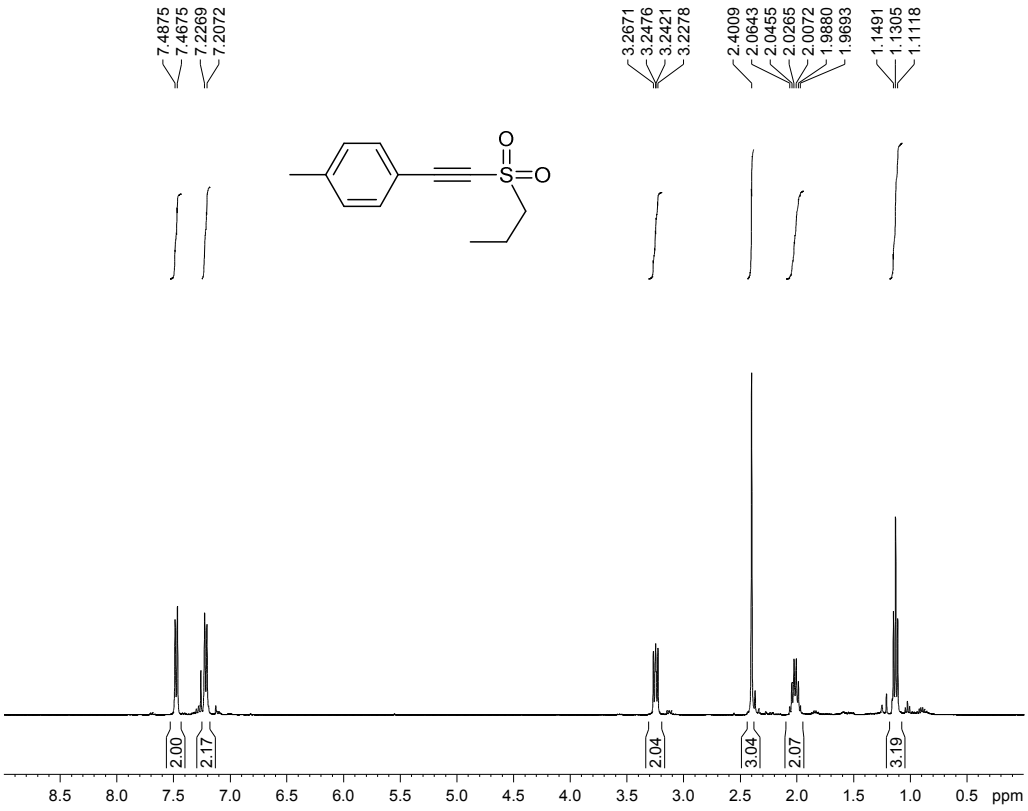
```
Current Data Parameters
NAME              ATX-54
EXPNO                 51
PROCNO                 1

F2 - Acquisition Parameters
Date_          20140609
Time              15.42
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD               65536
SOLVENT          CDCl3
NS                 256
DS                   4
SWH          24038.461 Hz
FIDRES         0.366798 Hz
AQ            1.3631488 sec
RG               181.72
DW               20.800 usec
DE                8.18 usec
TE               294.4 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                 1

======== CHANNEL f1 ========
SFO1         100.6228284 MHz
NUC1               13C
P1                9.00 usec
PLW1         77.00000000 W

======== CHANNEL f2 ========
SFO2         400.1316005 MHz
NUC2               1H
CPDPRG[2         waltz16
PCPD2             90.00 usec
PLW2         24.00000000 W
PLW12         0.17567000 W
PLW13         0.14229999 W

F2 - Processing parameters
SI                 65536
SF           100.6127355 MHz
WDW                EM
SSB       0
LB               0.50 Hz
GB        0
PC                 1.40
```

NMR spectra of 1-methyl-4-((propylsulfonyl)ethynyl)benzene 8



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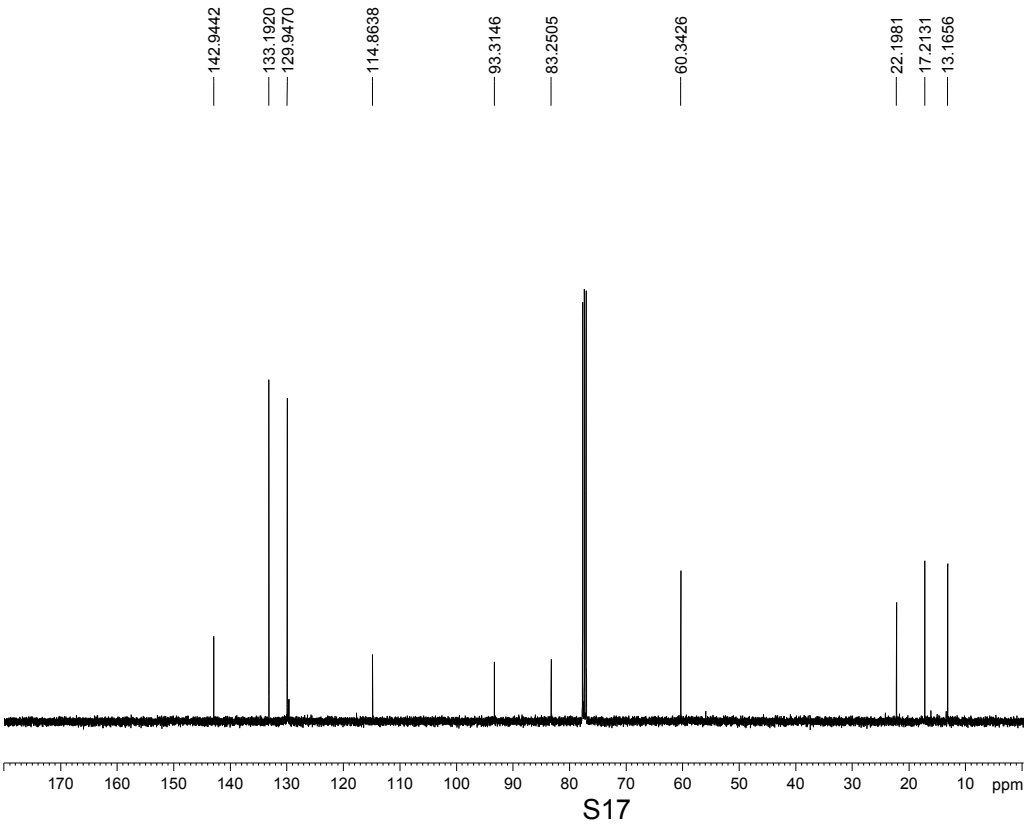
```
Current Data Parameters
NAME                 ATX-193
EXPNO                     20
PROCNO                     1

F2 - Acquisition Parameters
Date_              20150217
Time                  11.46
INSTRUM               spect
PROBHD   5 mm PABBO BB/
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                8223.685 Hz
FIDRES            0.125483 Hz
AQ                 3.9845889 sec
RG                     81.67
DW                   60.800 usec
DE                   10.69 usec
TE                   293.7 K
D1                 2.00000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1            400.1324710 MHz
NUC1                      1H
P1                     8.00 usec
PLW1           24.00000000 W

F2 - Processing parameters
SI                       32768
SF              400.1300095 MHz
WDW                      EM
SSB          0
LB                     0.30 Hz
GB           0
PC                     1.50
```



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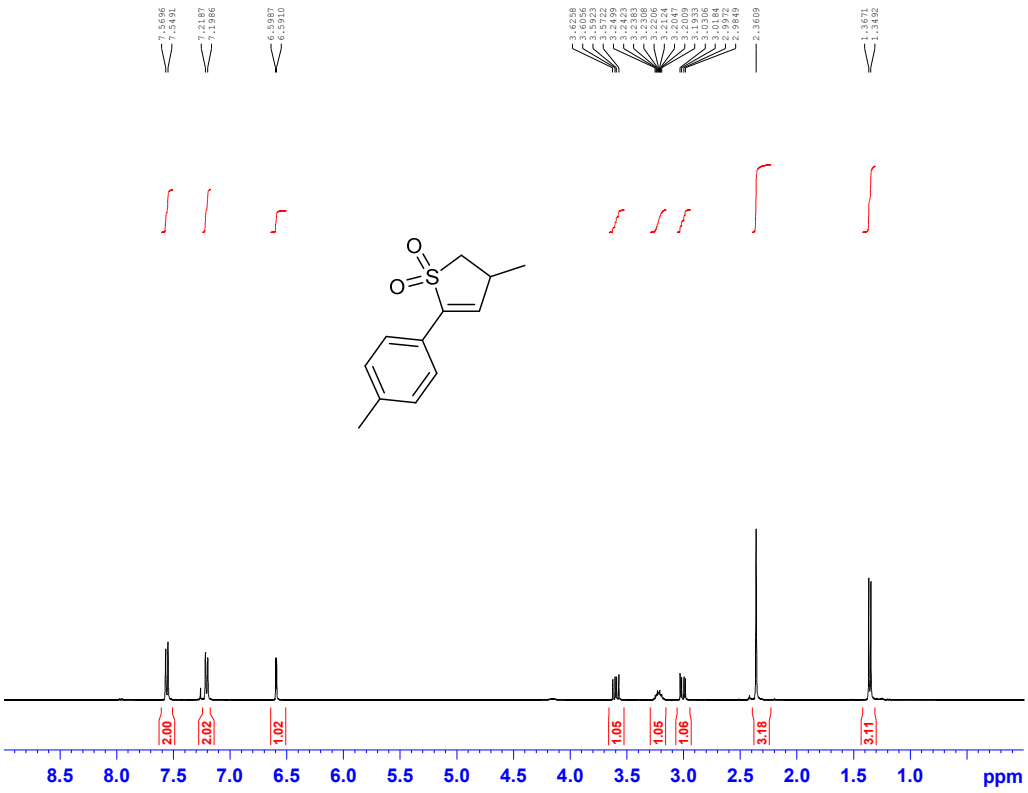
```
Current Data Parameters
NAME                 ATX-193
EXPNO                     21
PROCNO                     1

F2 - Acquisition Parameters
Date_              20150217
Time                  12.02
INSTRUM               spect
PROBHD   5 mm PABBO BB/
PULPROG             zgpg30
TD                    65536
SOLVENT               CDCl3
NS                      256
DS                        4
SWH               24038.461 Hz
FIDRES            0.366798 Hz
AQ                 1.3631488 sec
RG                    181.72
DW                   20.800 usec
DE                    8.18 usec
TE                   294.2 K
D1                 2.00000000 sec
D11                0.03000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1            100.6228284 MHz
NUC1                      13C
P1                     9.00 usec
PLW1           77.00000000 W

======== CHANNEL f2 ========
SFO2            400.1316005 MHz
NUC2                      1H
CPDPRG[2            waltz16
PCPD2                 90.00 usec
PLW2           24.00000000 W
PLW12           0.17567000 W
PLW13           0.14229999 W

F2 - Processing parameters
SI                       65536
SF              100.6127343 MHz
WDW                      EM
SSB          0
LB                     0.50 Hz
GB           0
PC                     1.40
```

NMR spectra of Synthesis of 3-methyl-5-(p-tolyl)-2,3-dihydrothiophene 1,1-dioxide 9



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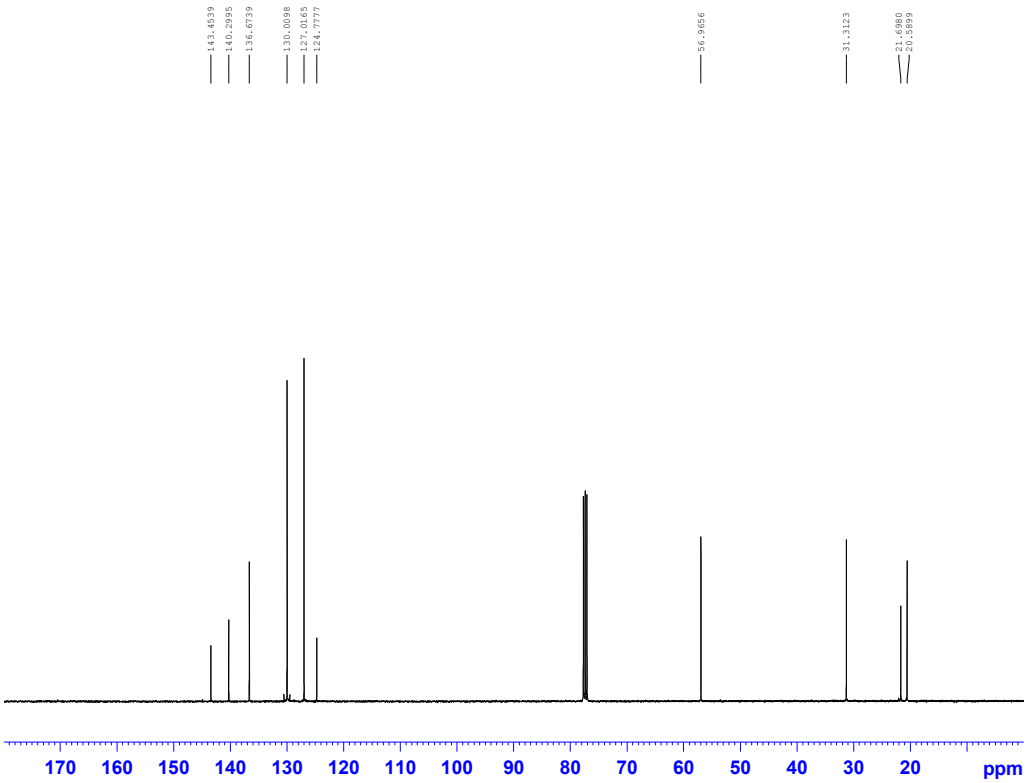
```
Current Data Parameters
NAME       ATX-193 t 16-32
EXPNO              10
PROCNO              1

F2 - Acquisition Parameters
Date_          20160223
Time               12.14
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG            zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH            8223.685 Hz
FIDRES         0.125483 Hz
AQ             3.9845889 sec
RG                40.16
DW               60.800 usec
DE               10.69 usec
TE                293.6 K
D1           2.00000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         400.1324710 MHz
NUC1                 1H
P1                 8.00 usec
PLW1        24.00000000 W

F2 - Processing parameters
SI                32768
SF           400.1300087 MHz
WDW                  EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.50
```



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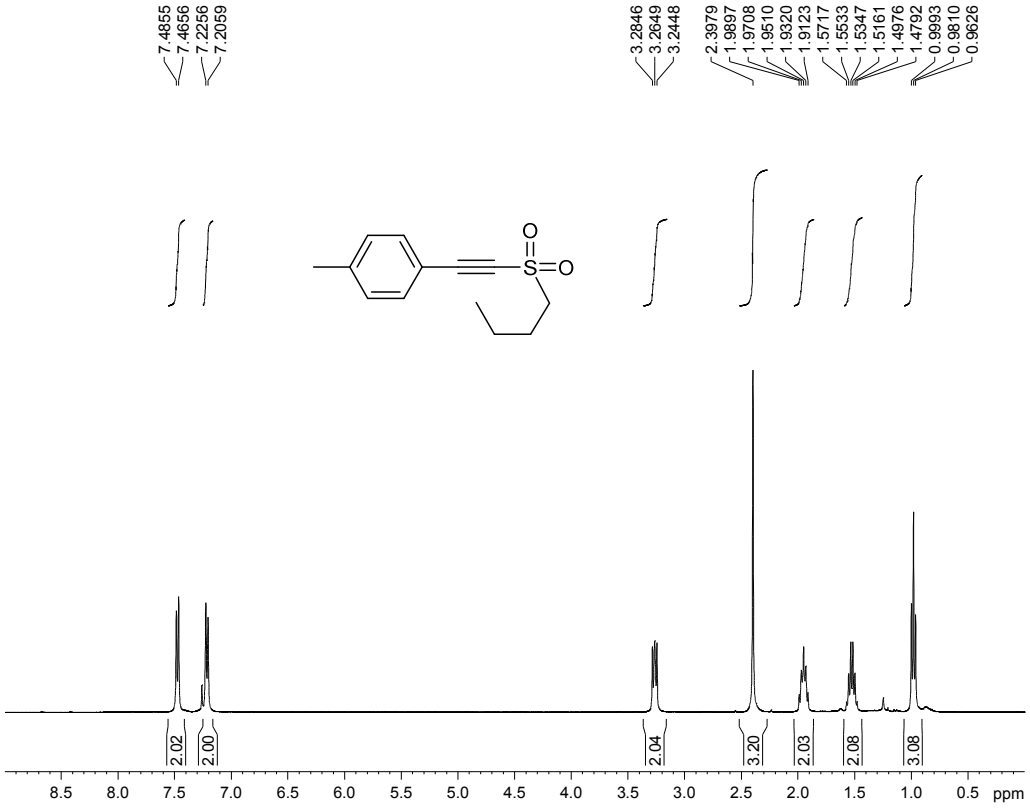
```
Current Data Parameters
NAME       ATX-193 t 16-32
EXPNO              20
PROCNO              1

F2 - Acquisition Parameters
Date_          20160224
Time               5.09
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1024
DS                    4
SWH           24038.461 Hz
FIDRES         0.366798 Hz
AQ             1.3631488 sec
RG                181.72
DW               20.800 usec
DE                8.18 usec
TE                294.1 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         100.6228303 MHz
NUC1                13C
P1                 9.00 usec
PLW1        77.00000000 W

======== CHANNEL f2 ========
SFO2         400.1316005 MHz
NUC2                 1H
CPDPRG[2          waltz16
PCPD2             90.00 usec
PLW2        24.00000000 W
PLW12        0.17567000 W
PLW13        0.14229999 W

F2 - Processing parameters
SI                65536
SF           100.6127381 MHz
WDW                  EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```

NMR spectra of 1-((butylsulfonyl)ethynyl)-4-methylbenzene 10



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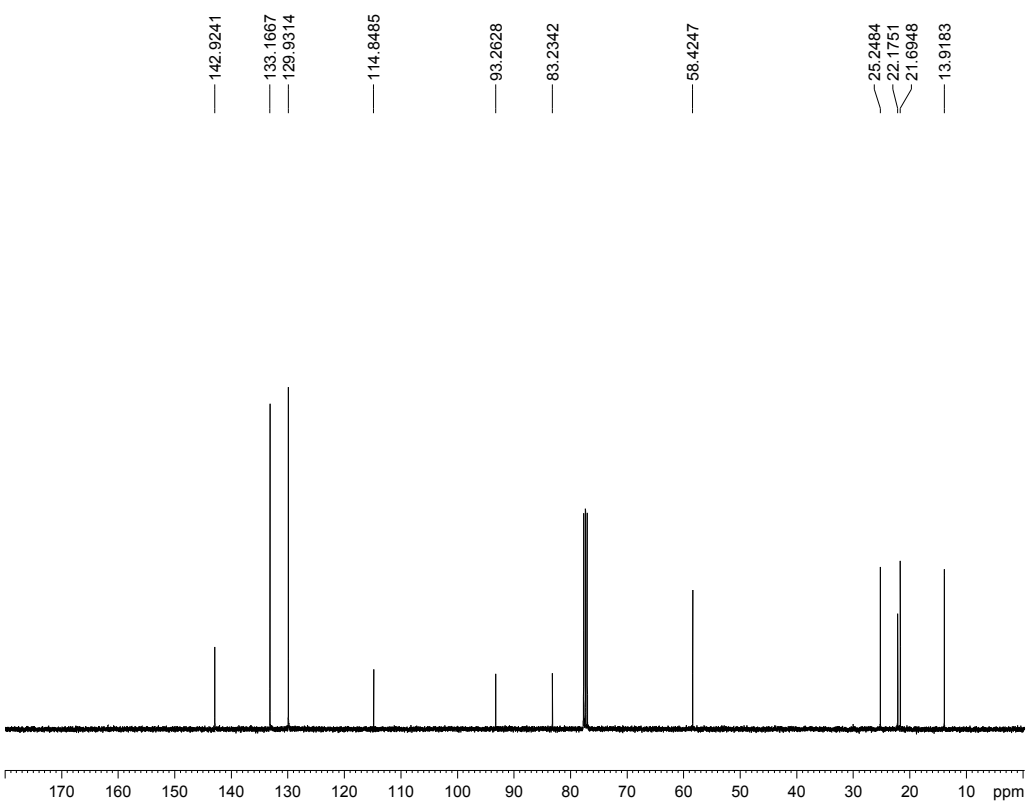
```
Current Data Parameters
NAME                 ATX-194
EXPNO                     70
PROCNO                     1

F2 - Acquisition Parameters
Date_               20150218
Time                   16.50
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                        16
DS                         2
SWH                 8223.685 Hz
FIDRES              0.125483 Hz
AQ                  3.9845889 sec
RG                     40.16
DW                    60.800 usec
DE                    10.69 usec
TE                    293.6 K
D1                 2.00000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1               400.1324710 MHz
NUC1                       1H
P1                        8.00 usec
PLW1              24.00000000 W

F2 - Processing parameters
SI                        32768
SF                 400.1300095 MHz
WDW                       EM
SSB          0
LB                        0.30 Hz
GB           0
PC                        1.50
```



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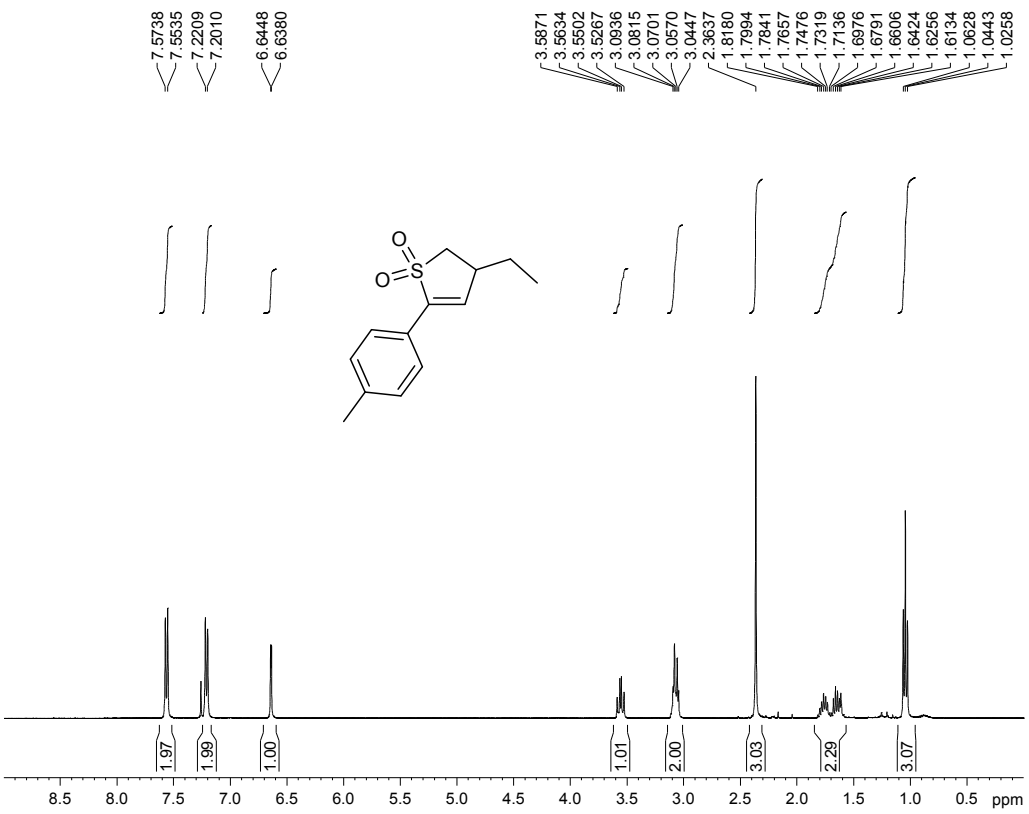
```
Current Data Parameters
NAME                 ATX-194
EXPNO                     71
PROCNO                     1

F2 - Acquisition Parameters
Date_               20150218
Time                   17.06
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                    65536
SOLVENT               CDCl3
NS                       256
DS                         4
SWH                24038.461 Hz
FIDRES              0.366798 Hz
AQ                  1.3631488 sec
RG                     181.72
DW                    20.800 usec
DE                     8.18 usec
TE                    294.1 K
D1                 2.00000000 sec
D11                0.03000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1               100.6228284 MHz
NUC1                      13C
P1                        9.00 usec
PLW1              77.00000000 W

======== CHANNEL f2 ========
SFO2               400.1316005 MHz
NUC2                       1H
CPDPRG[2             waltz16
PCPD2                    90.00 usec
PLW2              24.00000000 W
PLW12              0.17567000 W
PLW13              0.14229999 W

F2 - Processing parameters
SI                        65536
SF                 100.6127364 MHz
WDW                       EM
SSB          0
LB                        0.50 Hz
GB           0
PC                        1.40
```

NMR spectra of 3-ethyl-5-(p-tolyl)-2,3-dihydrothiophene 1,1-dioxide 11



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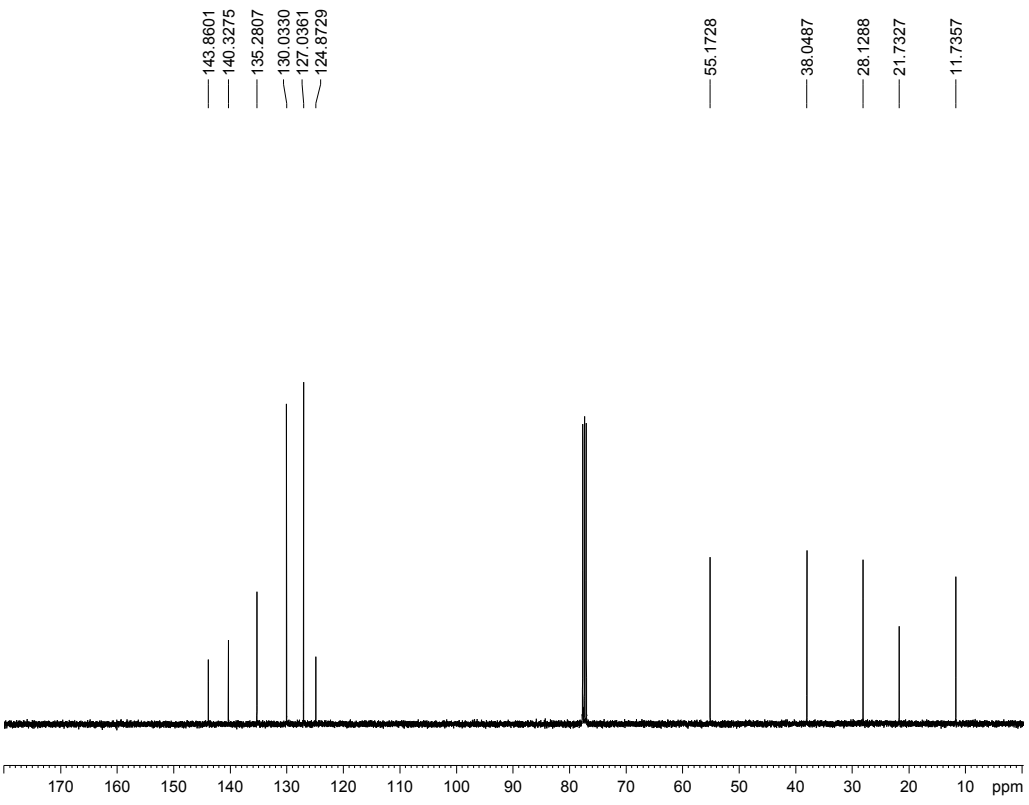
```
Current Data Parameters
NAME                 ATX-194
EXPNO                     30
PROCNO                     1

F2 - Acquisition Parameters
Date_               20150216
Time                   17.42
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                8223.685 Hz
FIDRES            0.125483 Hz
AQ                 3.9845889 sec
RG                     50.36
DW                   60.800 usec
DE                   10.69 usec
TE                   293.7 K
D1                2.00000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1            400.1324710 MHz
NUC1                      1H
P1                     8.00 usec
PLW1           24.00000000 W

F2 - Processing parameters
SI                        32768
SF              400.1300095 MHz
WDW                       EM
SSB          0
LB                     0.30 Hz
GB           0
PC                     1.50
```



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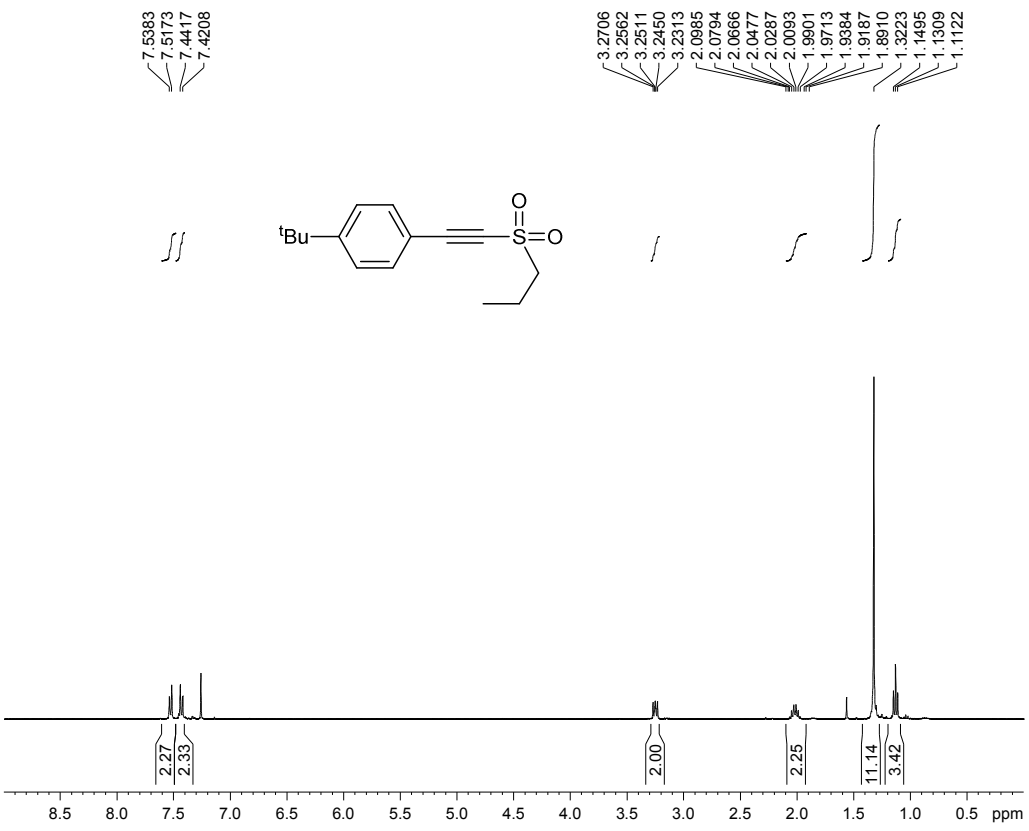
```
Current Data Parameters
NAME                 ATX-194
EXPNO                     31
PROCNO                     1

F2 - Acquisition Parameters
Date_               20150216
Time                   17.57
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                    65536
SOLVENT               CDCl3
NS                      256
DS                        4
SWH               24038.461 Hz
FIDRES            0.366798 Hz
AQ                 1.3631488 sec
RG                     181.72
DW                   20.800 usec
DE                    8.18 usec
TE                   294.1 K
D1                2.00000000 sec
D11               0.03000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1            100.6228284 MHz
NUC1                      13C
P1                     9.00 usec
PLW1           77.00000000 W

======== CHANNEL f2 ========
SFO2            400.1316005 MHz
NUC2                      1H
CPDPRG[2             waltz16
PCPD2                 90.00 usec
PLW2           24.00000000 W
PLW12           0.17567000 W
PLW13           0.14229999 W

F2 - Processing parameters
SI                        65536
SF              100.6127358 MHz
WDW                       EM
SSB          0
LB                     0.50 Hz
GB           0
PC                     1.40
```

NMR spectra of 1-(tert-butyl)-4-((propylsulfonyl)ethynyl)benzene 13



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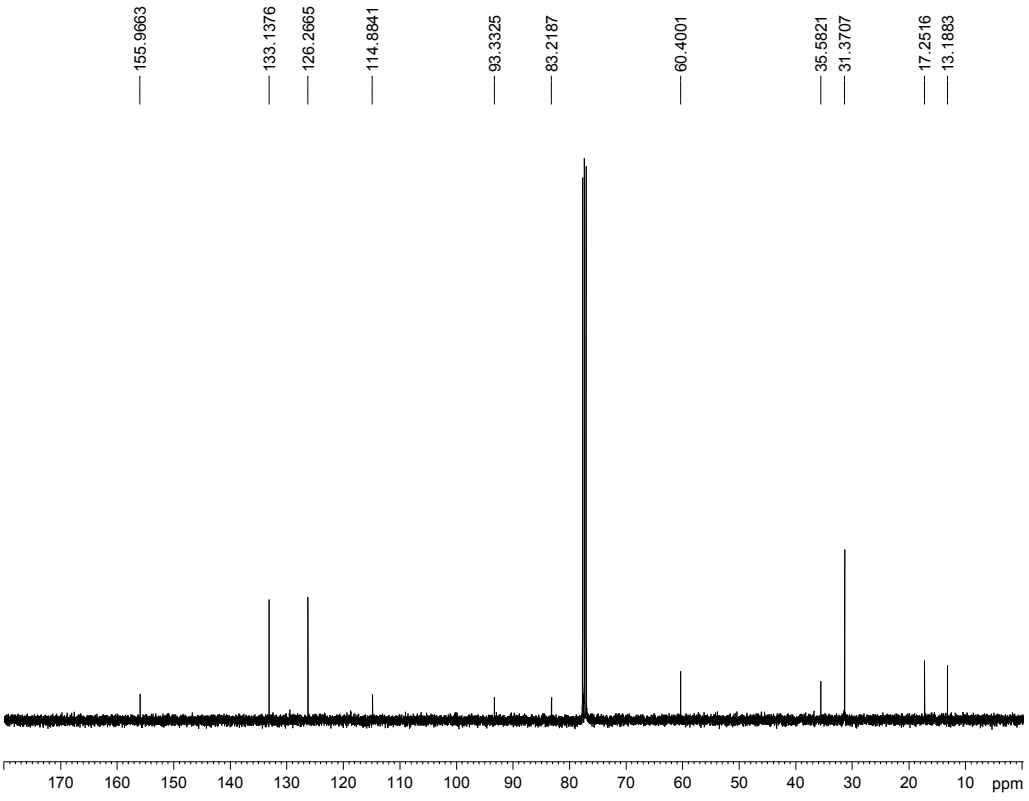
```
Current Data Parameters
NAME                 ATX-187
EXPNO                     20
PROCNO                     1

F2 - Acquisition Parameters
Date_               20150209
Time                   11.40
INSTRUM                spect
PROBHD     5 mm PABBO BB/
PULPROG             zg30
TD                     65536
SOLVENT              CDCl3
NS                        16
DS                         2
SWH                 8223.685 Hz
FIDRES              0.125483 Hz
AQ                  3.9845889 sec
RG                     147.88
DW                     60.800 usec
DE                     10.69 usec
TE                     293.5 K
D1                  2.00000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1              400.1324710 MHz
NUC1                       1H
P1                      8.00 usec
PLW1             24.00000000 W

F2 - Processing parameters
SI                         32768
SF                400.1300097 MHz
WDW                        EM
SSB          0
LB                      0.30 Hz
GB           0
PC                      1.50
```



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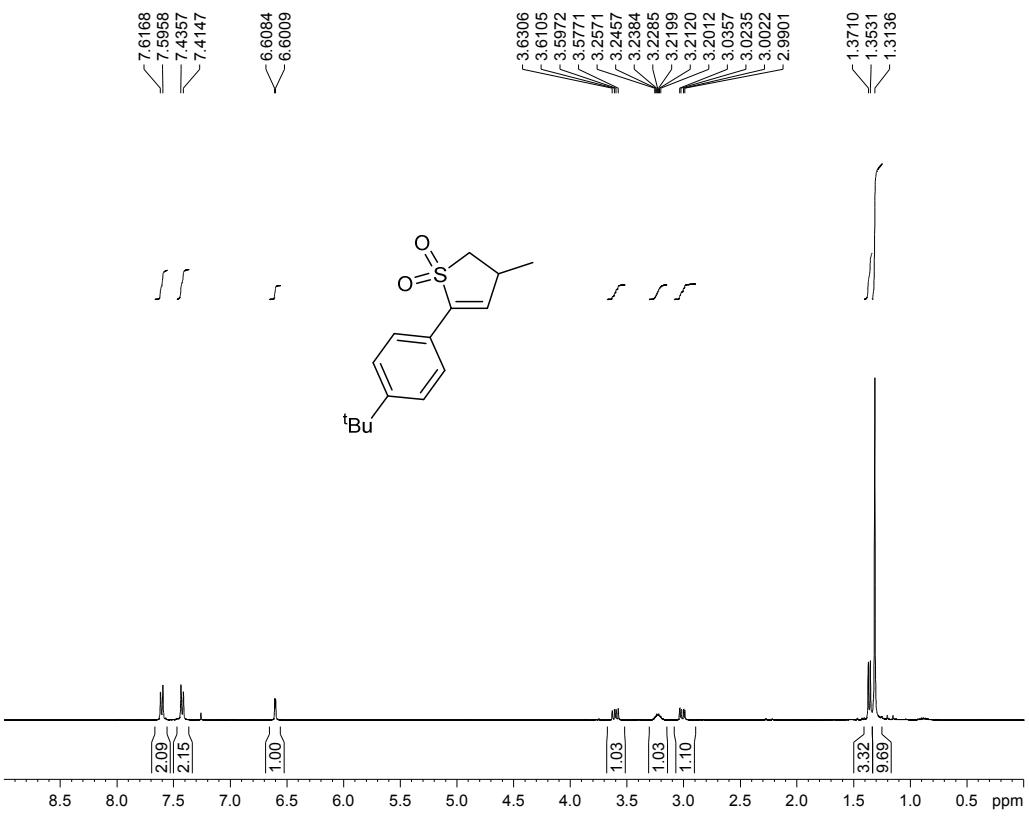
```
Current Data Parameters
NAME                 ATX-187
EXPNO                     50
PROCNO                     1

F2 - Acquisition Parameters
Date_               20150209
Time                   13.22
INSTRUM                spect
PROBHD     5 mm PABBO BB/
PULPROG             zgpg30
TD                     65536
SOLVENT              CDCl3
NS                       256
DS                         4
SWH                24038.461 Hz
FIDRES              0.366798 Hz
AQ                  1.3631488 sec
RG                     181.72
DW                     20.800 usec
DE                     8.18 usec
TE                     294.1 K
D1                  2.00000000 sec
D11                 0.03000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1              100.6228284 MHz
NUC1                      13C
P1                      9.00 usec
PLW1             77.00000000 W

======== CHANNEL f2 ========
SFO2              400.1316005 MHz
NUC2                       1H
CPDPRG[2             waltz16
PCPD2                  90.00 usec
PLW2             24.00000000 W
PLW12             0.17567000 W
PLW13             0.14229999 W

F2 - Processing parameters
SI                         65536
SF                100.6127321 MHz
WDW                        EM
SSB          0
LB                      0.50 Hz
GB           0
PC                      1.40
```

NMR spectra of 5-(4-(tert-butyl)phenyl)-3-methyl-2,3-dihydrothiophene 1,1-dioxide 14



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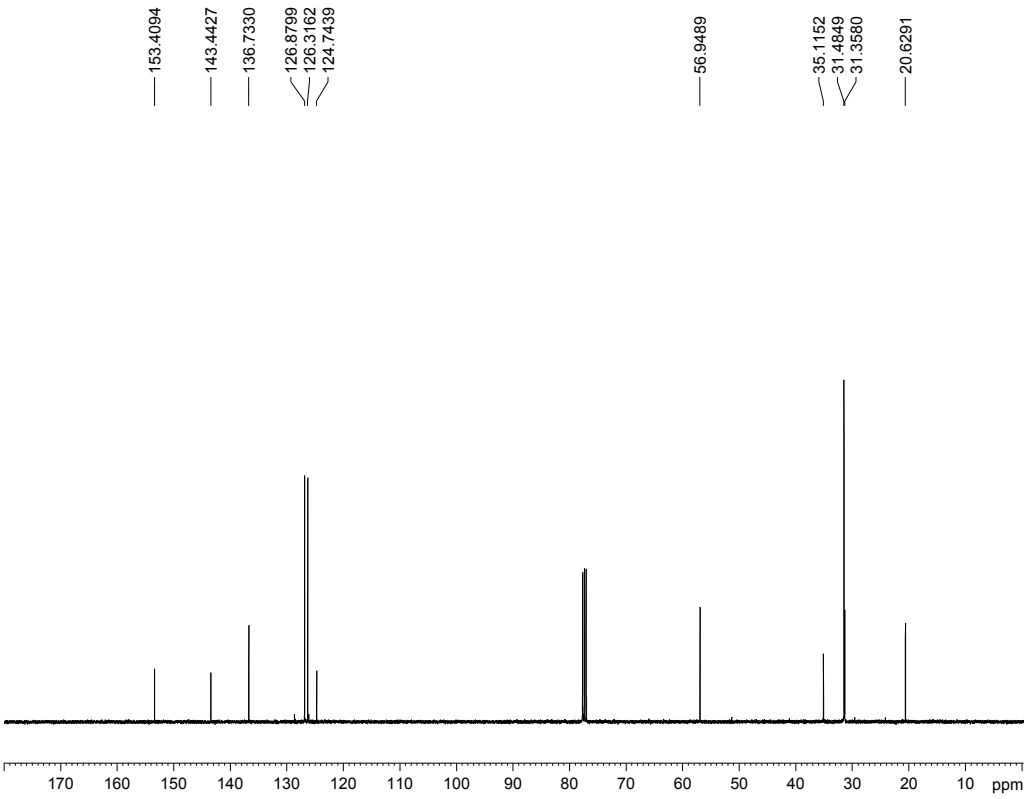
```
Current Data Parameters
NAME                 ATX-187
EXPNO                     40
PROCNO                     1

F2 - Acquisition Parameters
Date_              20150209
Time                  11.48
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                8223.685 Hz
FIDRES             0.125483 Hz
AQ                 3.9845889 sec
RG                      35.7
DW                   60.800 usec
DE                   10.69 usec
TE                   293.5 K
D1                 2.00000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1          400.1324710 MHz
NUC1                     1H
P1                    8.00 usec
PLW1          24.00000000 W

F2 - Processing parameters
SI                       32768
SF            400.1300096 MHz
WDW                      EM
SSB       0
LB                    0.30 Hz
GB        0
PC                    1.50
```



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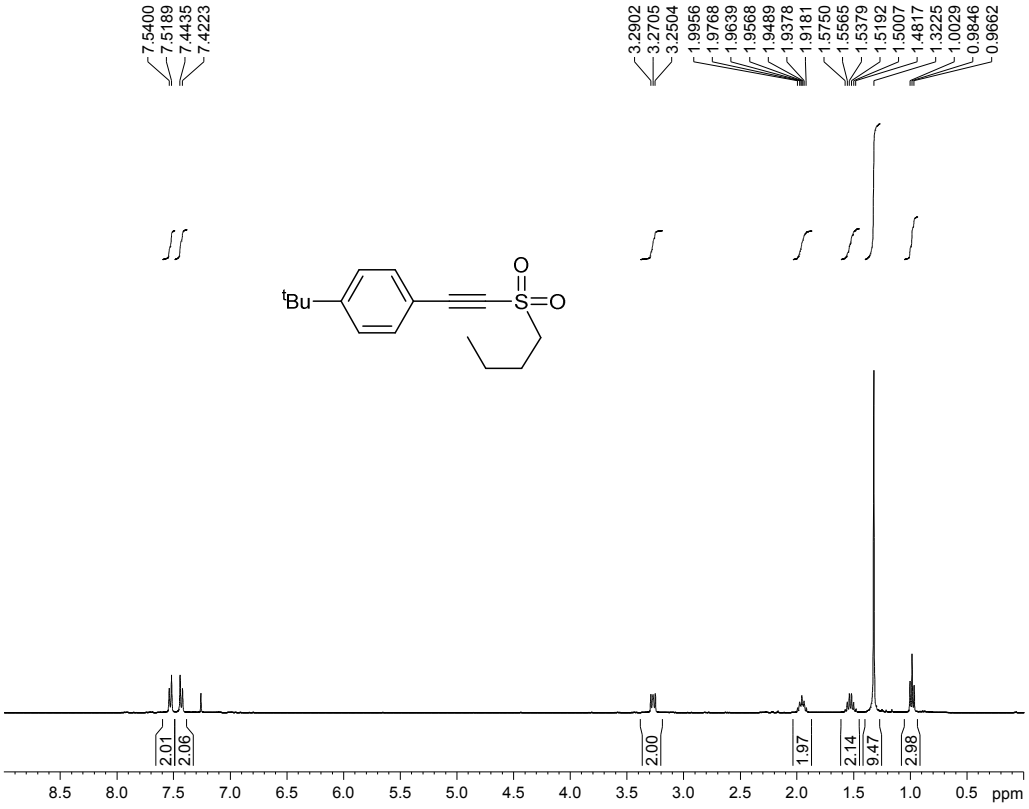
```
Current Data Parameters
NAME                 ATX-187
EXPNO                     41
PROCNO                     1

F2 - Acquisition Parameters
Date_              20150209
Time                  12.04
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                    65536
SOLVENT               CDCl3
NS                      256
DS                        4
SWH               24038.461 Hz
FIDRES             0.366798 Hz
AQ                 1.3631488 sec
RG                    181.72
DW                   20.800 usec
DE                    8.18 usec
TE                   294.0 K
D1                 2.00000000 sec
D11                0.03000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1          100.6228284 MHz
NUC1                     13C
P1                    9.00 usec
PLW1          77.00000000 W

======== CHANNEL f2 ========
SFO2          400.1316005 MHz
NUC2                     1H
CPDPRG[2          waltz16
PCPD2                90.00 usec
PLW2          24.00000000 W
PLW12          0.17567000 W
PLW13          0.14229999 W

F2 - Processing parameters
SI                       65536
SF            100.6127378 MHz
WDW                      EM
SSB       0
LB                    0.50 Hz
GB        0
PC                    1.40
```

NMR spectra of 1-(tert-butyl)-4-((butylsulfonyl)ethynyl)benzene 15



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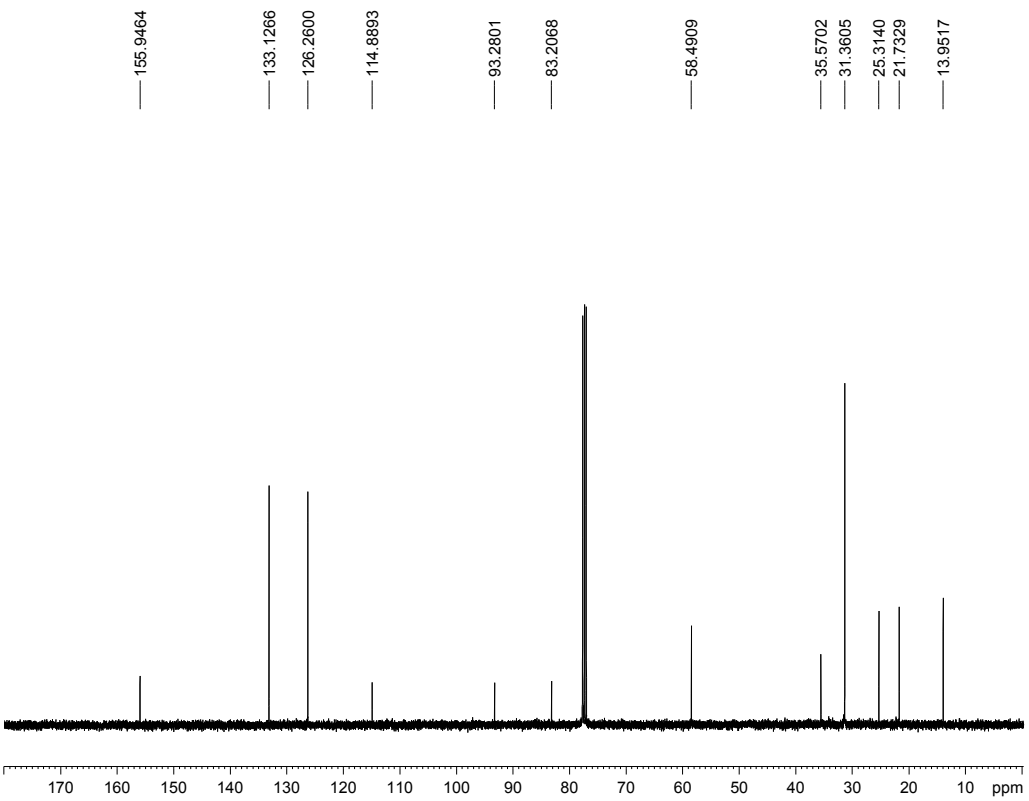
```
Current Data Parameters
NAME                 ATX-188
EXPNO                     40
PROCNO                     1

F2 - Acquisition Parameters
Date_              20150210
Time                   16.59
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                8223.685 Hz
FIDRES            0.125483 Hz
AQ                 3.9845889 sec
RG                     81.67
DW                   60.800 usec
DE                   10.69 usec
TE                   293.7 K
D1                2.00000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1             400.1324710 MHz
NUC1                       1H
P1                       8.00 usec
PLW1            24.00000000 W

F2 - Processing parameters
SI                        32768
SF               400.1300096 MHz
WDW                       EM
SSB          0
LB                       0.30 Hz
GB           0
PC                       1.50
```



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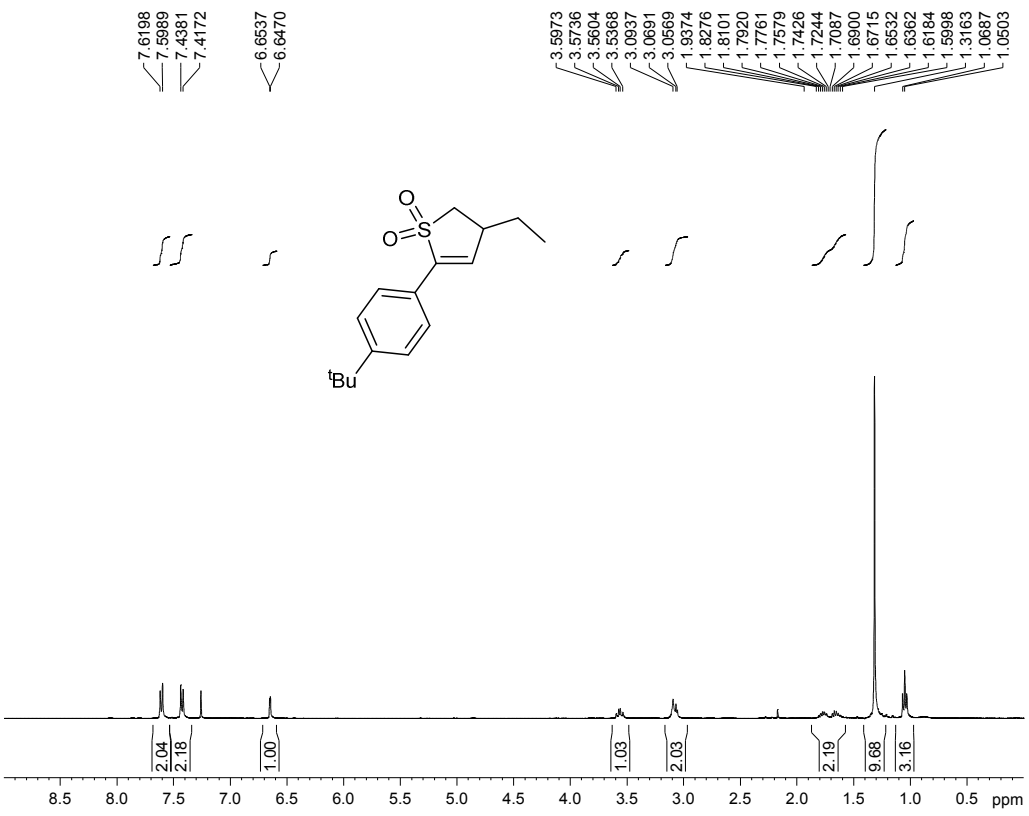
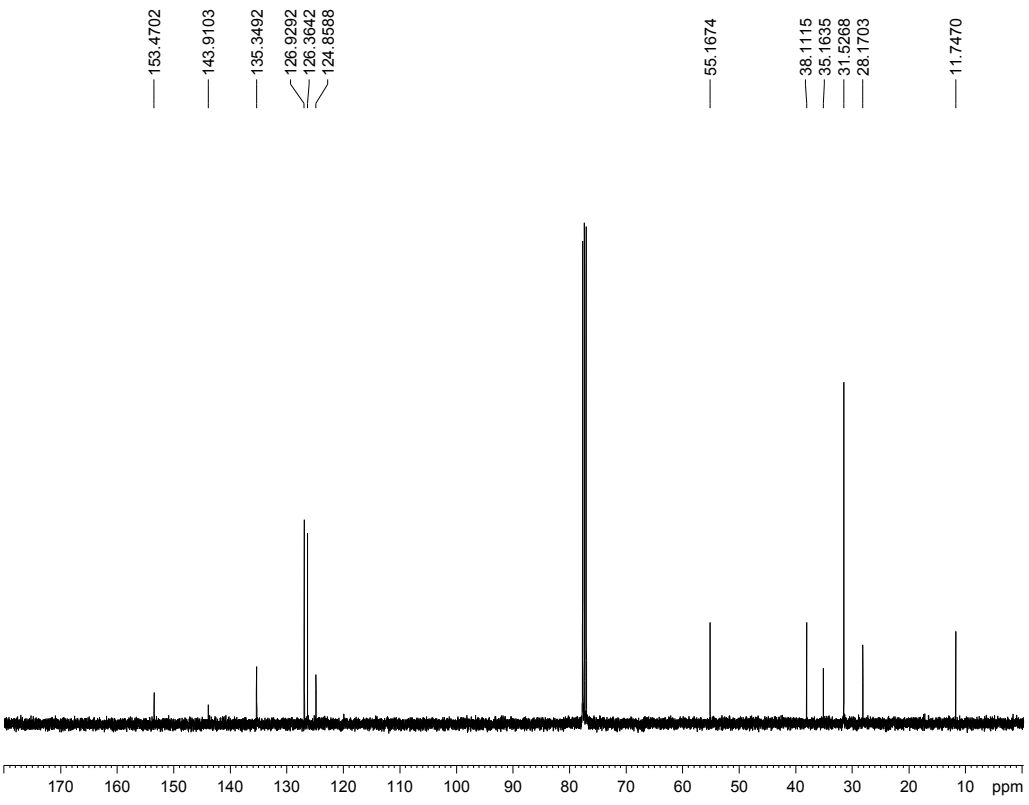
```
Current Data Parameters
NAME                 ATX-188
EXPNO                     41
PROCNO                     1

F2 - Acquisition Parameters
Date_              20150210
Time                   17.14
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG              zgpg30
TD                    65536
SOLVENT               CDCl3
NS                      256
DS                        4
SWH               24038.461 Hz
FIDRES            0.366798 Hz
AQ                 1.3631488 sec
RG                    181.72
DW                   20.800 usec
DE                    8.18 usec
TE                   294.1 K
D1                2.00000000 sec
D11               0.03000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1             100.6228284 MHz
NUC1                      13C
P1                       9.00 usec
PLW1            77.00000000 W

======== CHANNEL f2 ========
SFO2             400.1316005 MHz
NUC2                       1H
CPDPRG[2              waltz16
PCPD2                 90.00 usec
PLW2            24.00000000 W
PLW12            0.17567000 W
PLW13            0.14229999 W

F2 - Processing parameters
SI                        65536
SF               100.6127332 MHz
WDW                       EM
SSB          0
LB                       0.50 Hz
GB           0
PC                       1.40
```

NMR spectra of 5-(4-(tert-butyl)phenyl)-3-ethyl-2,3-dihydrothiophene 1,1-dioxide 16

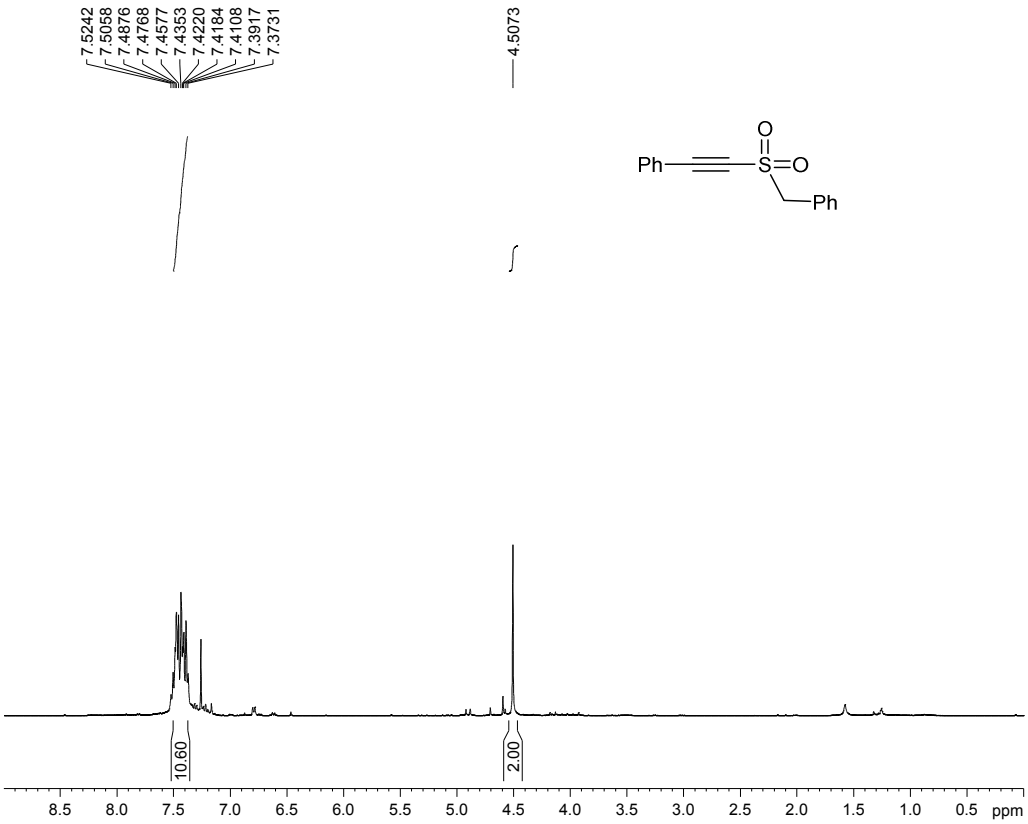



```
Current Data Parameters
NAME                 ATX-188
EXPNO                     50
PROCNO                     1

F2 - Acquisition Parameters
Date_              20150210
Time                  17.19
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                8223.685 Hz
FIDRES            0.125483 Hz
AQ                 3.9845889 sec
RG                    104.33
DW                  60.800 usec
DE                  10.69 usec
TE                    293.7 K
D1                2.00000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1            400.1324710 MHz
NUC1                      1H
P1                     8.00 usec
PLW1           24.00000000 W

F2 - Processing parameters
SI                        32768
SF              400.1300098 MHz
WDW                       EM
SSB          0
LB                     0.30 Hz
GB           0
PC                     1.50
```




```
Current Data Parameters
NAME                 ATX-188
EXPNO                     51
PROCNO                     1

F2 - Acquisition Parameters
Date_              20150210
Time                  17.34
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                    65536
SOLVENT               CDCl3
NS                      256
DS                        4
SWH               24038.461 Hz
FIDRES            0.366798 Hz
AQ                 1.3631488 sec
RG                    181.72
DW                  20.800 usec
DE                   8.18 usec
TE                    294.1 K
D1                2.00000000 sec
D11               0.03000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1            100.6228284 MHz
NUC1                      13C
P1                     9.00 usec
PLW1           77.00000000 W

======== CHANNEL f2 ========
SFO2            400.1316005 MHz
NUC2                      1H
CPDPRG[2             waltz16
PCPD2                 90.00 usec
PLW2           24.00000000 W
PLW12           0.17567000 W
PLW13           0.14229999 W

F2 - Processing parameters
SI                        65536
SF              100.6127329 MHz
WDW                       EM
SSB          0
LB                     0.50 Hz
GB           0
PC                     1.40
```

NMR spectra of ((benzylsulfonyl)ethynyl)benzene 5j



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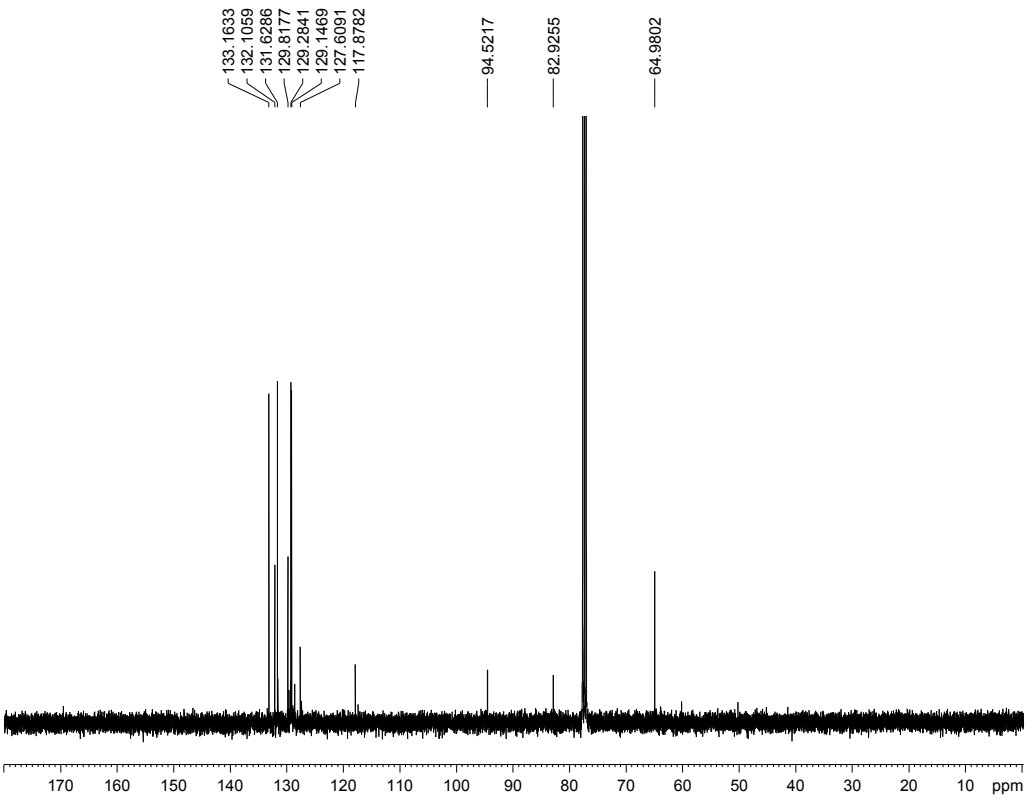
```
Current Data Parameters
NAME                 ATX-191
EXPNO                     60
PROCNO                     1

F2 - Acquisition Parameters
Date_              20150213
Time                  16.27
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                8223.685 Hz
FIDRES             0.125483 Hz
AQ                 3.9845889 sec
RG                    147.88
DW                    60.800 usec
DE                    10.69 usec
TE                    293.7 K
D1                 2.00000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1             400.1324710 MHz
NUC1                       1H
P1                      8.00 usec
PLW1            24.00000000 W

F2 - Processing parameters
SI                        32768
SF               400.1300096 MHz
WDW                       EM
SSB          0
LB                      0.30 Hz
GB           0
PC                      1.50
```



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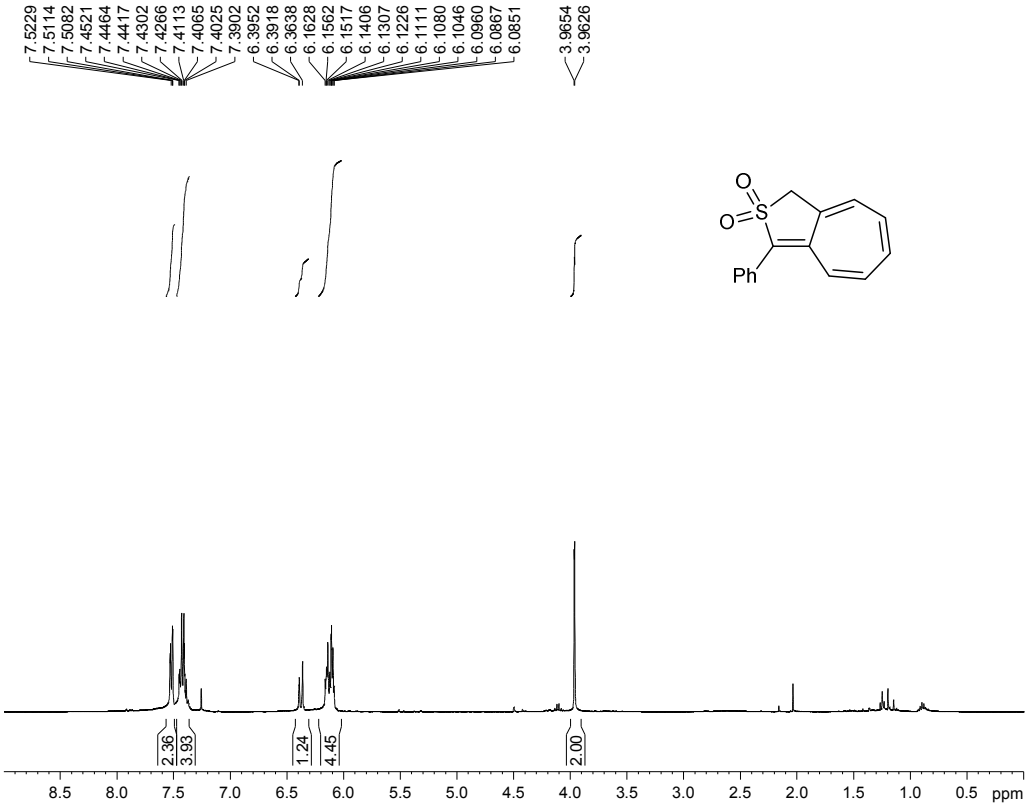
```
Current Data Parameters
NAME                 ATX-191
EXPNO                     61
PROCNO                     1

F2 - Acquisition Parameters
Date_              20150213
Time                  16.42
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                    65536
SOLVENT               CDCl3
NS                      256
DS                        4
SWH               24038.461 Hz
FIDRES             0.366798 Hz
AQ                 1.3631488 sec
RG                    181.72
DW                    20.800 usec
DE                     8.18 usec
TE                    294.0 K
D1                 2.00000000 sec
D11                0.03000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1             100.6228284 MHz
NUC1                      13C
P1                      9.00 usec
PLW1            77.00000000 W

======== CHANNEL f2 ========
SFO2             400.1316005 MHz
NUC2                       1H
CPDPRG[2              waltz16
PCPD2                  90.00 usec
PLW2            24.00000000 W
PLW12            0.17567000 W
PLW13            0.14229999 W

F2 - Processing parameters
SI                        65536
SF               100.6127332 MHz
WDW                       EM
SSB          0
LB                      0.50 Hz
GB           0
PC                      1.40
```

NMR spectra of 3-phenyl-1H-cycloheptа[c]thiophene 2,2-dioxide 17



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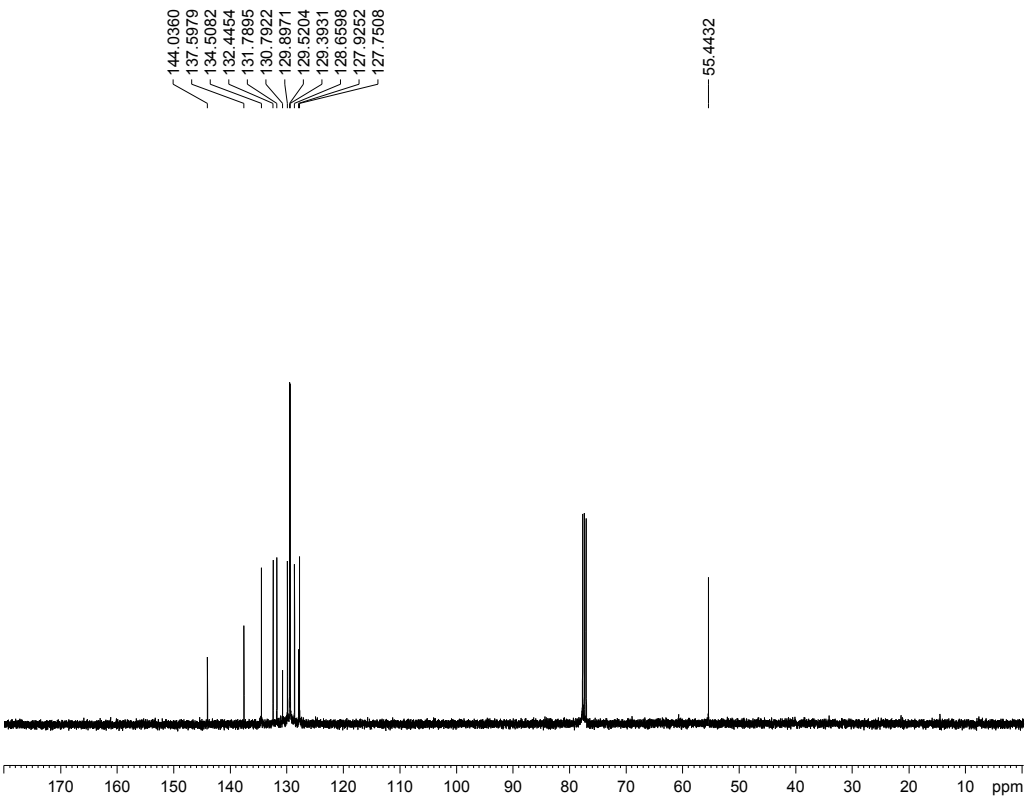
```
Current Data Parameters
NAME                 ATX-146
EXPNO                     20
PROCNO                     1

F2 - Acquisition Parameters
Date_              20141119
Time_                 15.45
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG               zg30
TD                   65536
SOLVENT              CDCl3
NS                      16
DS                       2
SWH               8223.685 Hz
FIDRES            0.125483 Hz
AQ                3.9845889 sec
RG                   46.39
DW                 60.800 usec
DE                 10.69 usec
TE                   294.0 K
D1              2.00000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          400.1324710 MHz
NUC1                     1H
P1                    8.00 usec
PLW1          24.00000000 W

F2 - Processing parameters
SI                   32768
SF            400.1300111 MHz
WDW                     EM
SSB       0
LB                    0.30 Hz
GB        0
PC                    1.50
```



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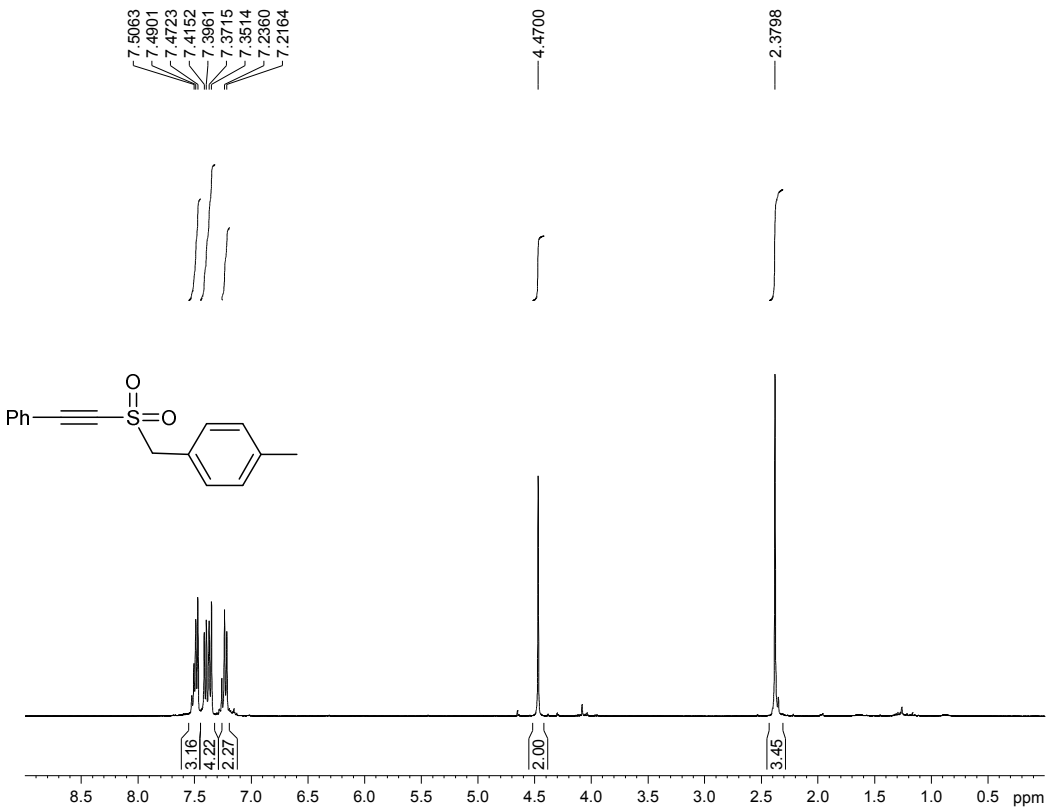
```
Current Data Parameters
NAME                 ATX-146
EXPNO                     21
PROCNO                     1

F2 - Acquisition Parameters
Date_              20141119
Time_                 16.01
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG            zgpg30
TD                   65536
SOLVENT              CDCl3
NS                     256
DS                       4
SWH              24038.461 Hz
FIDRES            0.366798 Hz
AQ                1.3631488 sec
RG                   181.72
DW                 20.800 usec
DE                  8.18 usec
TE                   294.4 K
D1              2.00000000 sec
D11             0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          100.6228284 MHz
NUC1                     13C
P1                    9.00 usec
PLW1          77.00000000 W

======== CHANNEL f2 ========
SFO2          400.1316005 MHz
NUC2                     1H
CPDPRG[2          waltz16
PCPD2                90.00 usec
PLW2          24.00000000 W
PLW12          0.17567000 W
PLW13          0.14229999 W

F2 - Processing parameters
SI                   65536
SF            100.6127368 MHz
WDW                     EM
SSB       0
LB                    0.50 Hz
GB        0
PC                    1.40
```

NMR spectra of 1-methyl-4-(((phenylethynyl)sulfonyl)methyl)benzene 5k



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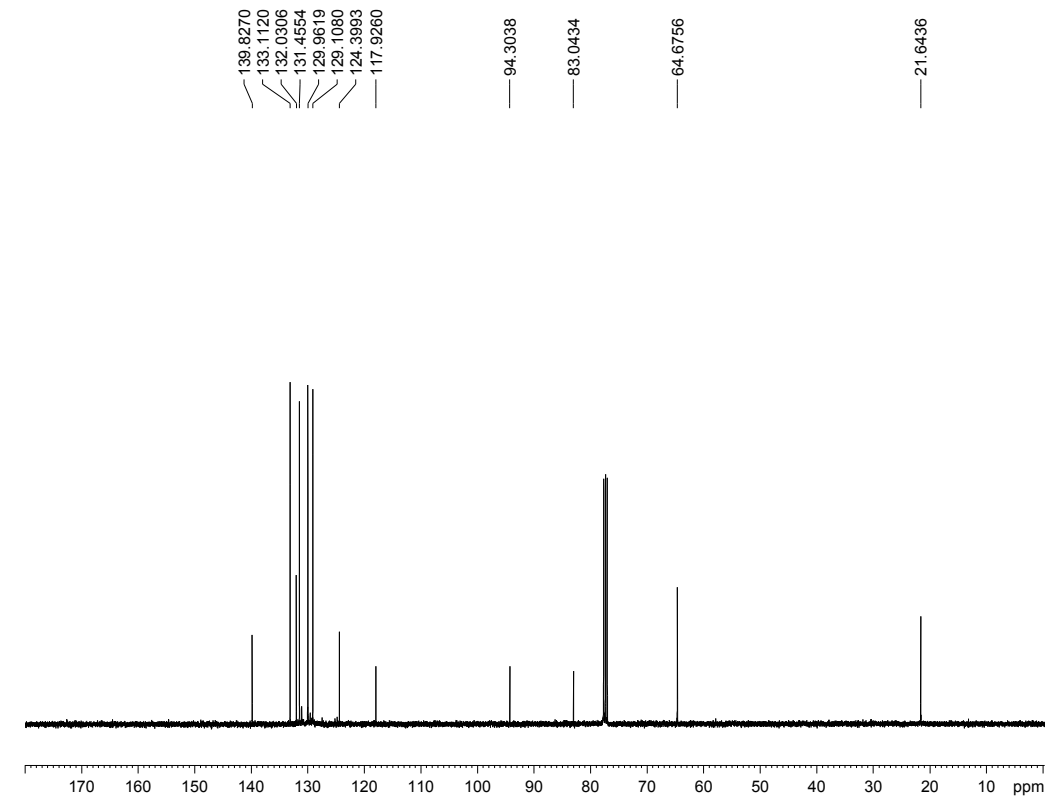
```
Current Data Parameters
NAME                 ATX-169
EXPNO                     20
PROCNO                     1

F2 - Acquisition Parameters
Date_              20141205
Time                   10.13
INSTRUM                spect
PROBHD   5 mm PABBO BB/
PULPROG                zg30
TD                    65536
SOLVENT              CDCl3
NS                        16
DS                         2
SWH               8223.685 Hz
FIDRES           0.125483 Hz
AQ                3.9845889 sec
RG                     46.39
DW                   60.800 usec
DE                   10.69 usec
TE                   293.9 K
D1                2.00000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1            400.1324710 MHz
NUC1                      1H
P1                     8.00 usec
PLW1           24.00000000 W

F2 - Processing parameters
SI                        32768
SF              400.1300098 MHz
WDW                       EM
SSB          0
LB                     0.30 Hz
GB           0
PC                     1.50
```



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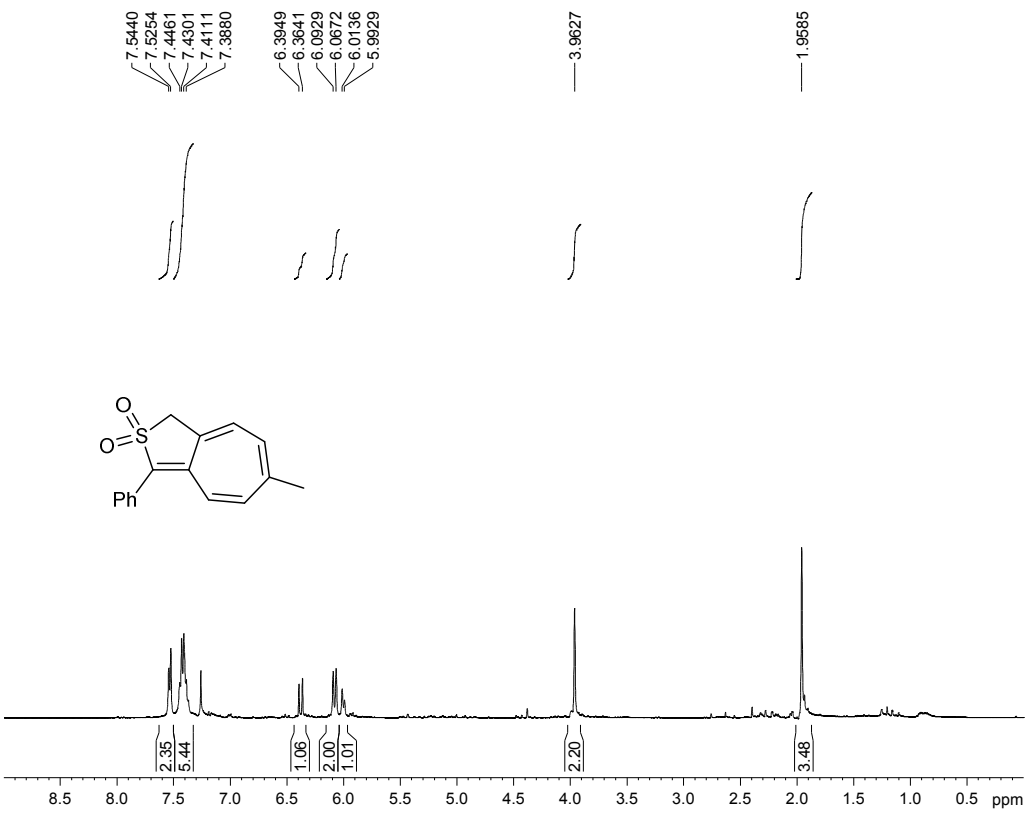
```
Current Data Parameters
NAME                 ATX-169
EXPNO                     21
PROCNO                     1

F2 - Acquisition Parameters
Date_              20141205
Time                   11.29
INSTRUM                spect
PROBHD   5 mm PABBO BB/
PULPROG             zgpg30
TD                    65536
SOLVENT              CDCl3
NS                       256
DS                         4
SWH              24038.461 Hz
FIDRES           0.366798 Hz
AQ                1.3631488 sec
RG                    181.72
DW                   20.800 usec
DE                    8.18 usec
TE                   294.2 K
D1                2.00000000 sec
D11               0.03000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1            100.6228284 MHz
NUC1                      13C
P1                     9.00 usec
PLW1           77.00000000 W

======== CHANNEL f2 ========
SFO2            400.1316005 MHz
NUC2                      1H
CPDPRG[2           waltz16
PCPD2                 90.00 usec
PLW2           24.00000000 W
PLW12           0.17567000 W
PLW13           0.14229999 W

F2 - Processing parameters
SI                        65536
SF              100.6127374 MHz
WDW                       EM
SSB          0
LB                     0.50 Hz
GB           0
PC                     1.40
```

NMR spectra of 6-methyl-3-phenyl-1H-cyclohepta[c]thiophene 2,2-dioxide 18



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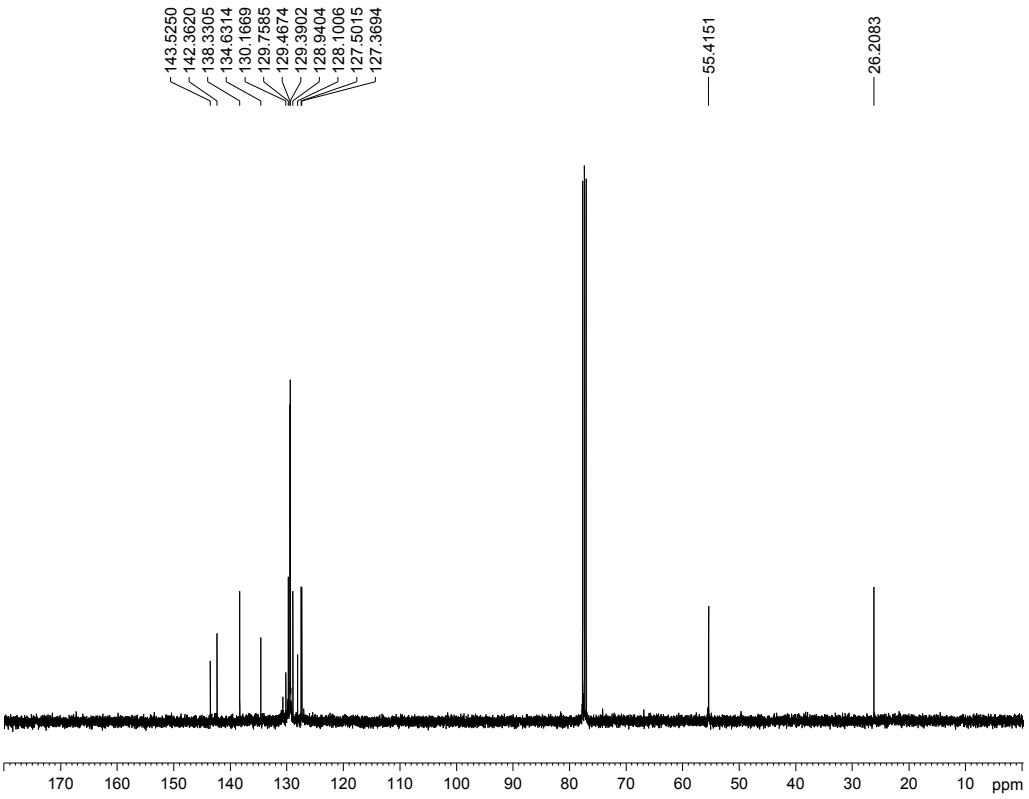
```
Current Data Parameters
NAME                 ATX-197
EXPNO                     80
PROCNO                     1

F2 - Acquisition Parameters
Date_              20150220
Time_                 11.55
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                8223.685 Hz
FIDRES            0.125483 Hz
AQ                3.9845889 sec
RG                    65.91
DW                   60.800 usec
DE                   10.69 usec
TE                   293.8 K
D1                2.00000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1             400.1324710 MHz
NUC1                       1H
P1                       8.00 usec
PLW1             24.00000000 W

F2 - Processing parameters
SI                        32768
SF               400.1300094 MHz
WDW                       EM
SSB          0
LB                       0.30 Hz
GB           0
PC                       1.50
```



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```
Current Data Parameters
NAME                 ATX-197
EXPNO                     81
PROCNO                     1

F2 - Acquisition Parameters
Date_              20150220
Time_                 12.10
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                    65536
SOLVENT               CDCl3
NS                      256
DS                        4
SWH               24038.461 Hz
FIDRES            0.366798 Hz
AQ                1.3631488 sec
RG                   181.72
DW                   20.800 usec
DE                    8.18 usec
TE                   294.2 K
D1                2.00000000 sec
D11               0.03000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1             100.6228284 MHz
NUC1                      13C
P1                       9.00 usec
PLW1             77.00000000 W

======== CHANNEL f2 ========
SFO2             400.1316005 MHz
NUC2                       1H
CPDPRG[2              waltz16
PCPD2                   90.00 usec
PLW2             24.00000000 W
PLW12             0.17567000 W
PLW13             0.14229999 W

F2 - Processing parameters
SI                        65536
SF               100.6127369 MHz
WDW                       EM
SSB          0
LB                       0.50 Hz
GB           0
PC                       1.40
```