Electronic Supplementary Material (ESI) for Green Chemistry

Palladium Nanoparticle Catalysis: Borylation of Aryl and Benzyl Halides and One-Pot Biphenyl Synthesis *via* Sequential Borylation-Suzuki-Miyaura Coupling

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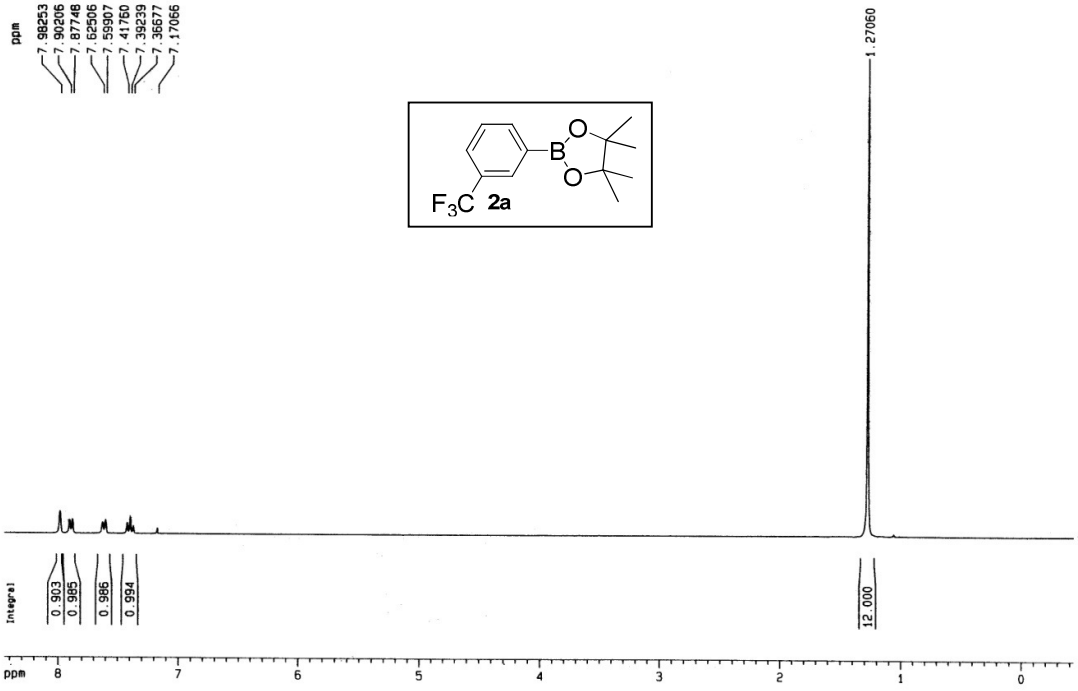
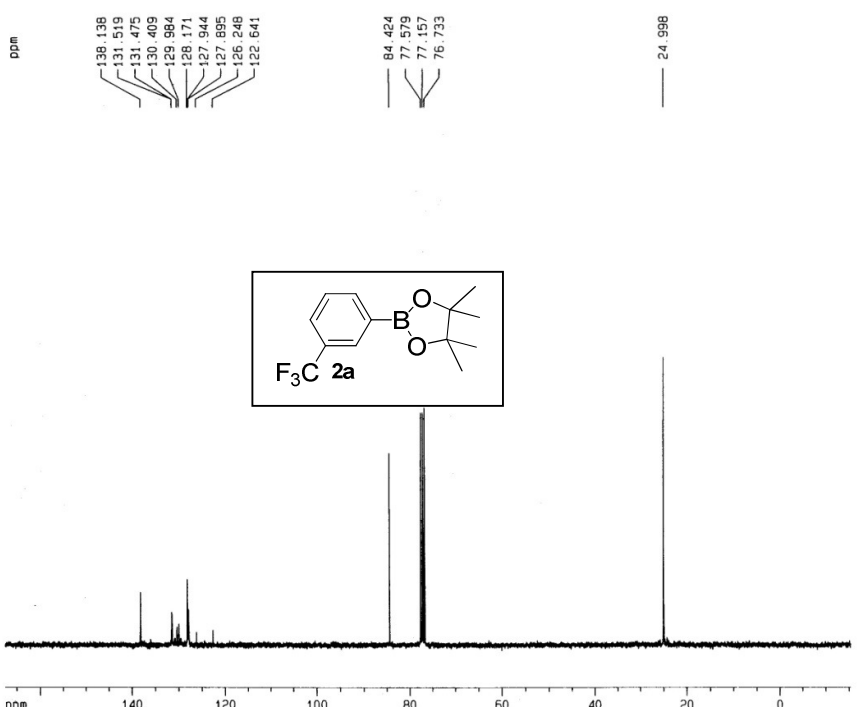
Figures reproducing ^{1}H and ^{13}C NMR spectra



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MCWRK                0.01500000 sec

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PL1                      0.00 dB
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PL12                     8.00 dB
PL13                    12.00 dB
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1D NMR plot parameters
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F2P                   -15.372 ppm
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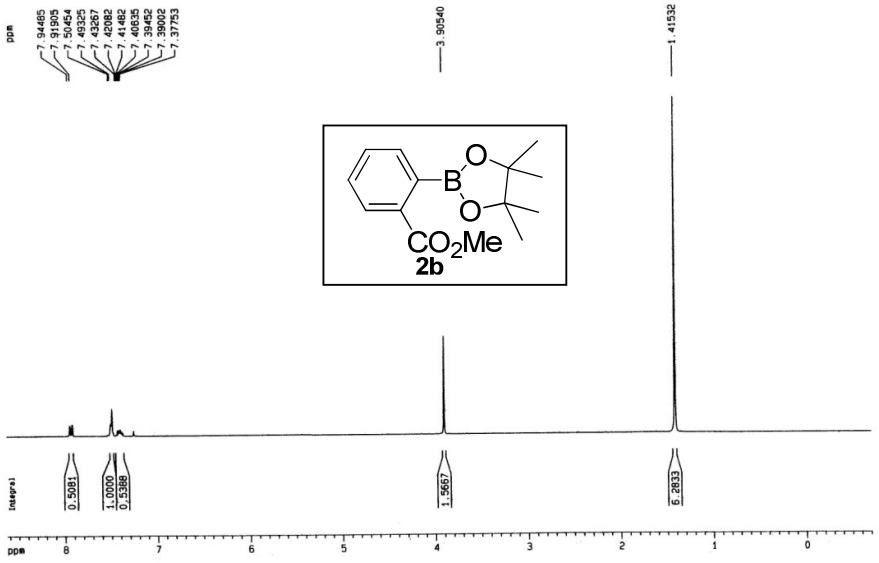

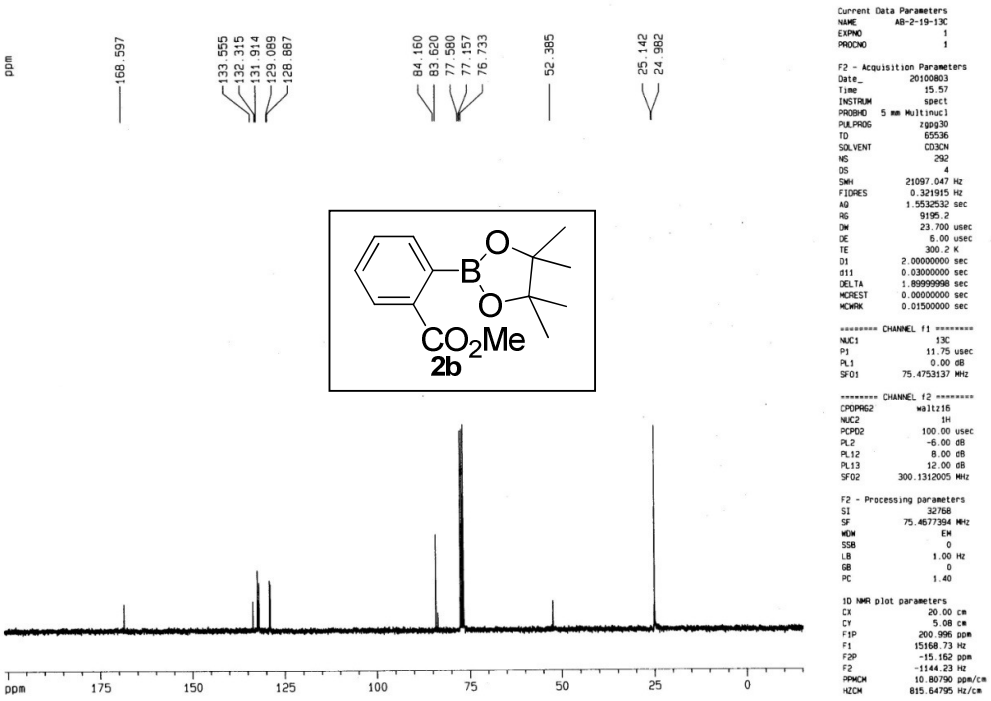
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129.089
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77.580
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25.142
24.982
CO2Me
2b
ppm
175
150
125
100
75
50
25
0
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TD 65536
SOLVENT CD3CN
NS 292
DS 4
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FIDRES 0.321915 Hz
AQ 1.5532532 sec
RG 9195.2
DW 23.700 usec
DE 6.00 usec
TE 300.2 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
MCREST 0.00000000 sec
MCWRK 0.01500000 sec
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NUC1 13C
P1 11.75 usec
PL1 0.00 dB
SFO1 75.4753137 MHz
======== CHANNEL f2 ========
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NUC2 1H
PCPD2 100.00 usec
PL2 -6.00 dB
PL12 8.00 dB
PL13 12.00 dB
SFO2 300.1312005 MHz
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WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
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CY 5.08 cm
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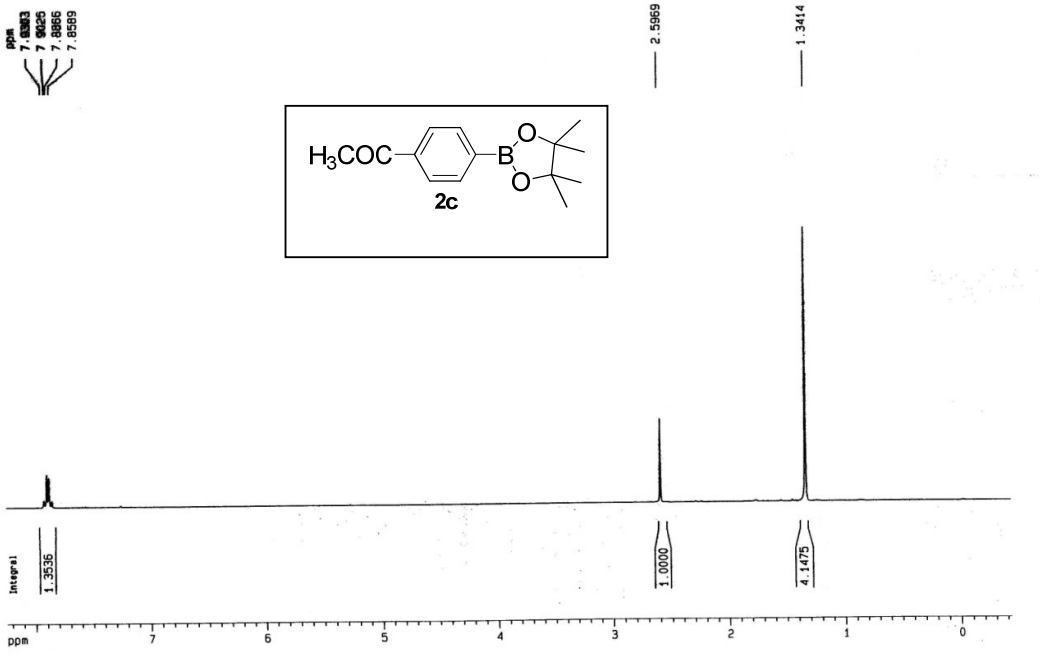
HZCM 815.64795 Hz/cm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B
O
O
2c
Integral
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ppm
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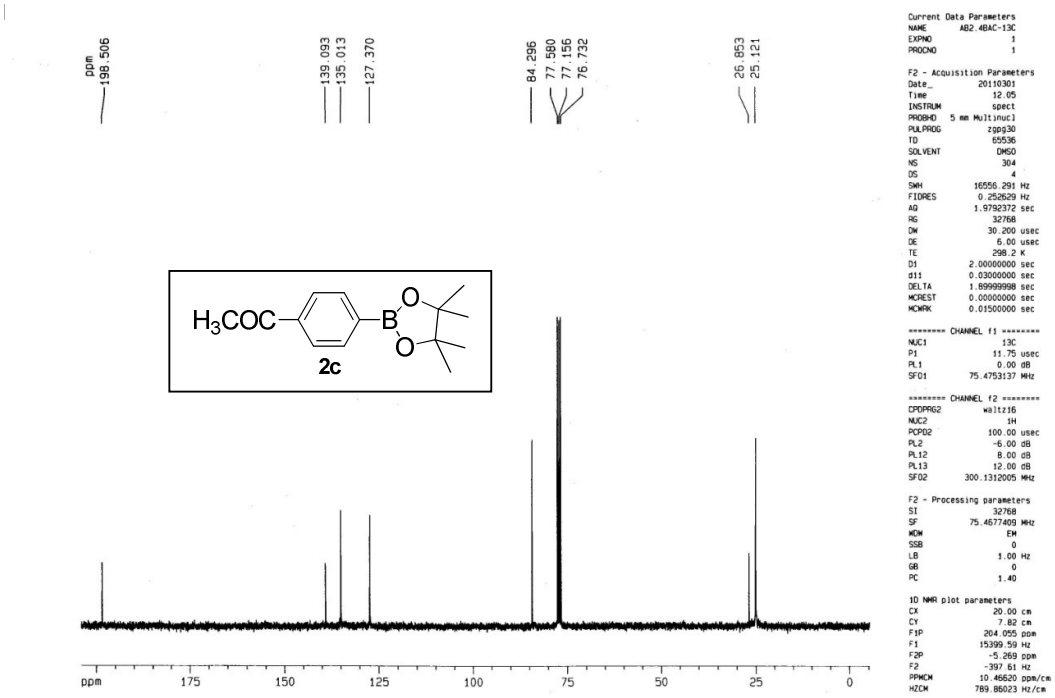
6
5
4
3
2
1
0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25.053
25.121
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B
O
O
2c
ppm
175
150
125
100
75
50
25
0
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SOLVENT DMSO
NS 304
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RG 32768
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DE 6.00 usec
TE 298.2 K
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d11 0.03000000 sec
DELTA 1.89999998 sec
MCREST 0.00000000 sec
MCWRK 0.01500000 sec
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NUC1 13C
P1 11.75 usec
PL1 0.00 dB
SFO1 75.4753137 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 100.00 usec
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PL12 8.00 dB
PL13 12.00 dB
SFO2 300.1312005 MHz
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SF 75.4677409 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
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CY 7.82 cm
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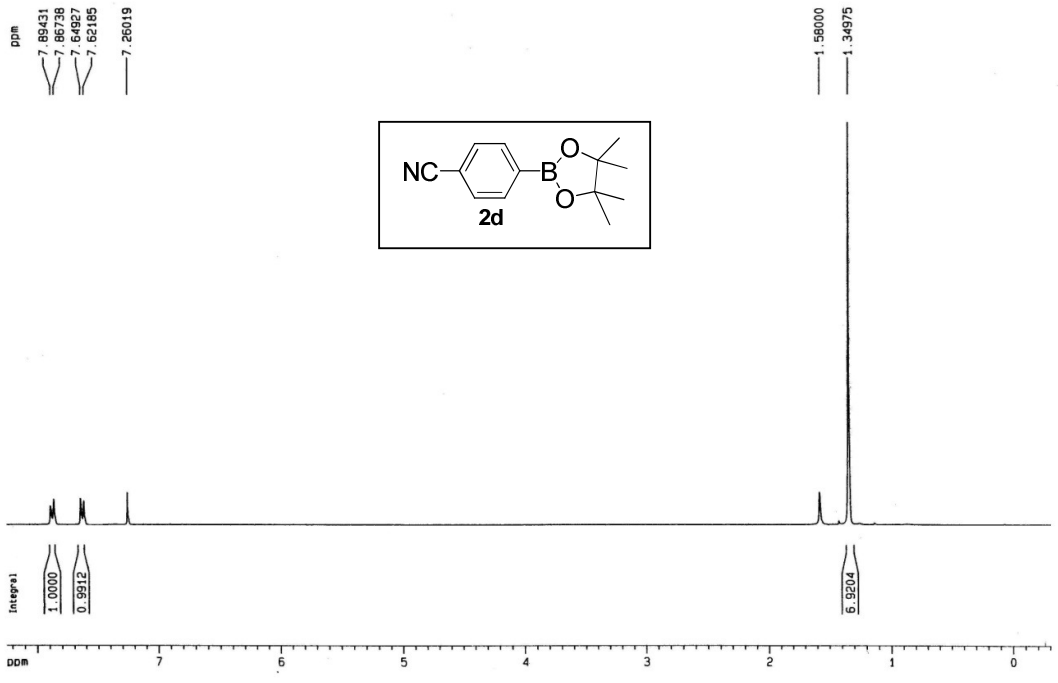
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1.58000
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NC
B
O
O
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Integral
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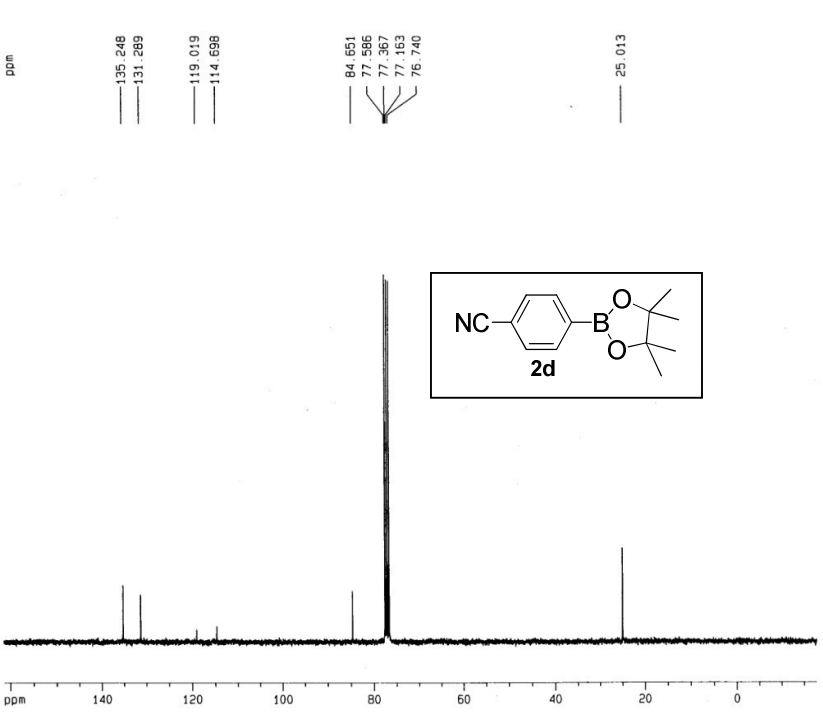
7
6
5
4
3
2
1
0

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PULPROG                  zgpg30
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SOLVENT                    CD3CN
NS                           798
DS                             4
SWH                  21097.047 Hz
FIDRES               0.321915 Hz
AQ                   1.5532532 sec
RG                        9195.2
DW                     23.700 usec
DE                      6.00 usec
TE                      300.2 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                        11.75 usec
PL1                        0.00 dB
SFO1                75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2                  waltz16
NUC2                         1H
PCPD2                   100.00 usec
PL2                       -6.00 dB
PL12                       8.00 dB
PL13                      12.00 dB
SFO2               300.1312005 MHz

F2 - Processing parameters
SI                           32768
SF                  75.4677375 MHz
WDW                             EM
SSB                              0
LB                          1.00 Hz
GB                               0
PC                            1.40

1D NMR plot parameters
CX                         20.00 cm
CY                          8.90 cm
F1P                       161.521 ppm
F1                      12189.60 Hz
F2P                       -17.749 ppm
F2                      -1339.46 Hz
PPMCM                  8.96348 ppm/cm
HZCM                  676.45319 Hz/cm
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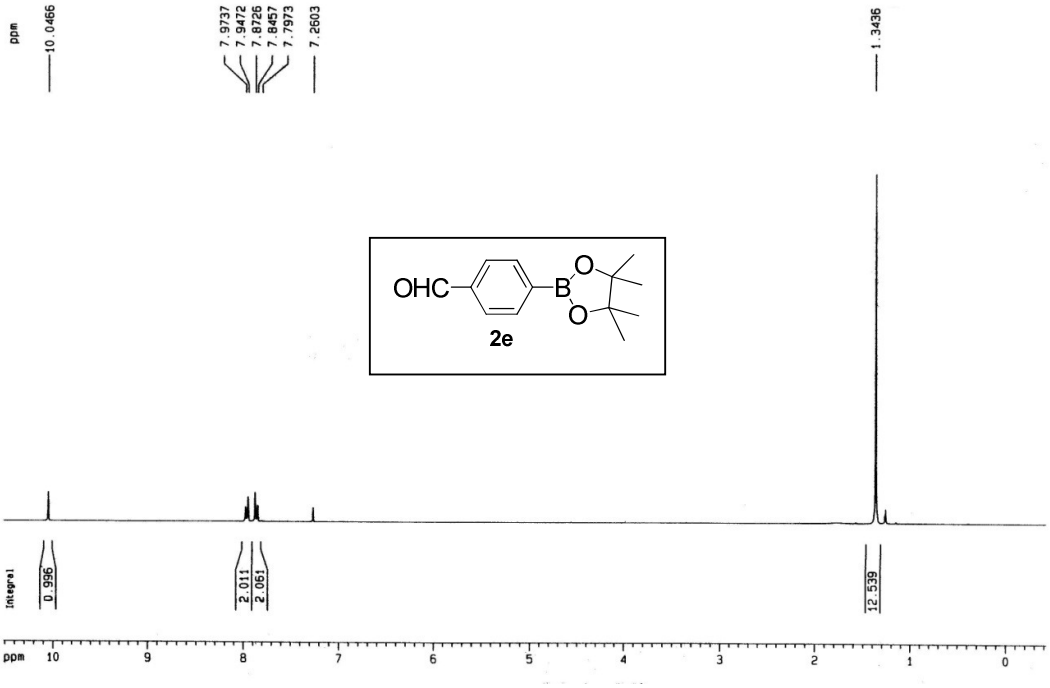

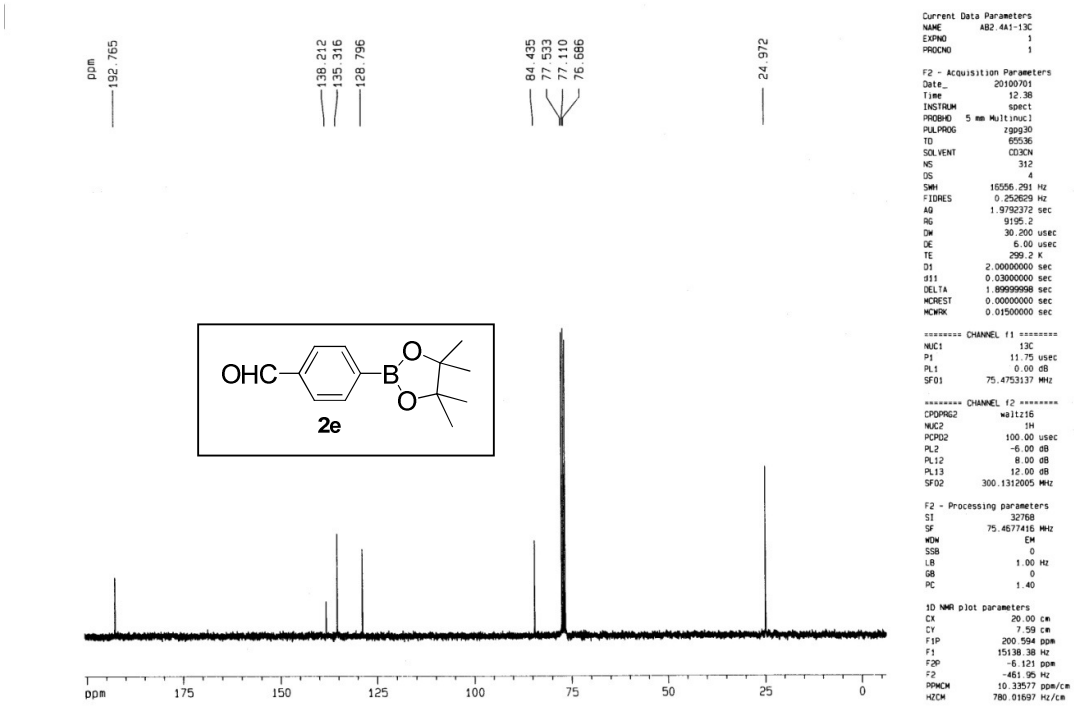


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PROCNO                  1

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PULPROG          zgpg30
TD                 65536
SOLVENT            CD3CN
NS                   312
DS                     4
SWH           16556.291 Hz
FIDRES        0.252629 Hz
AQ            1.9792372 sec
RG               9195.2
DW              30.200 usec
DE               6.00 usec
TE              299.2 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                11.75 usec
PL1                0.00 dB
SF01         75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2         waltz16
NUC2                1H
PCPD2           100.00 usec
PL2               -6.00 dB
PL12               8.00 dB
PL13              12.00 dB
SF02         300.1312005 MHz

F2 - Processing parameters
SI                 32768
SF           75.4677416 MHz
WDW                   EM
SSB                    0
LB                1.00 Hz
GB                     0
PC                1.40

1D NMR plot parameters
CX                20.00 cm
CY                 7.59 cm
F1P             200.594 ppm
F1             15138.38 Hz
F2P              -6.121 ppm
F2              -461.95 Hz
PPMCM          10.33577 ppm/cm
HZCM           780.01697 Hz/cm
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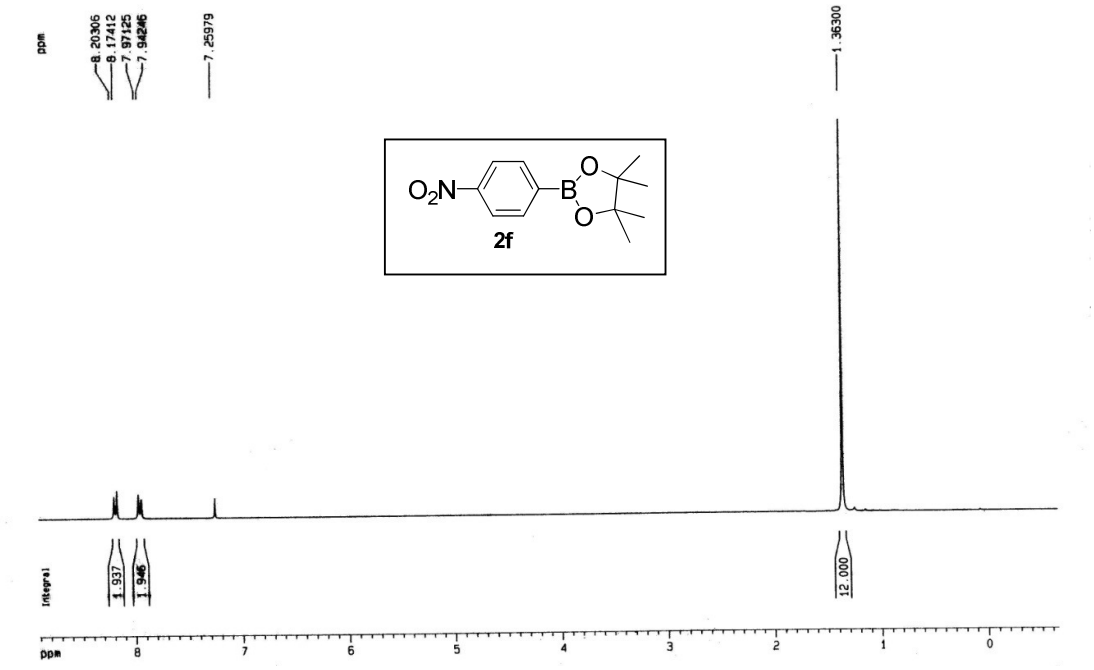

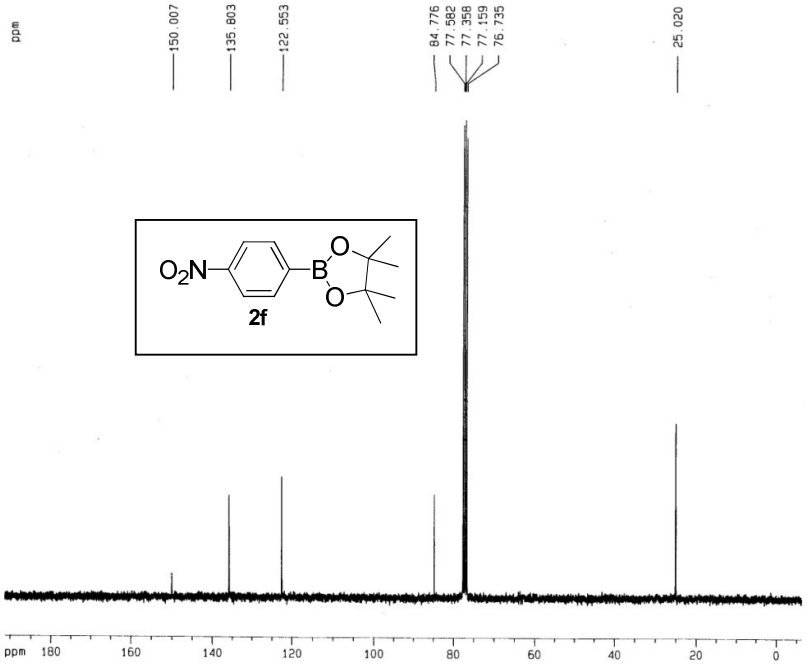


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PROCNO                   1

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PULPROG             zgpg30
TD                   65536
SOLVENT               DMSO
NS                     592
DS                       4
SWH              16556.291 Hz
FIDRES            0.252629 Hz
AQ                1.9792372 sec
RG                   9195.2
DW                  30.200 usec
DE                   6.00 usec
TE                  300.2 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                   11.75 usec
PL1                   0.00 dB
SFO1             75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2              waltz16
NUC2                     1H
PCPD2               100.00 usec
PL2                  -6.00 dB
PL12                  8.00 dB
PL13                 12.00 dB
SFO2            300.1312005 MHz

F2 - Processing parameters
SI                      32768
SF               75.4677379 MHz
WDW                        EM
SSB                         0
LB                       1.00 Hz
GB                          0
PC                       1.40

1D NMR plot parameters
CX                      20.00 cm
CY                      11.88 cm
F1P                   191.319 ppm
F1                  14438.38 Hz
F2P                    -6.316 ppm
F2                   -476.64 Hz
PPMCM                9.88172 ppm/cm
HZCM                745.75116 Hz/cm
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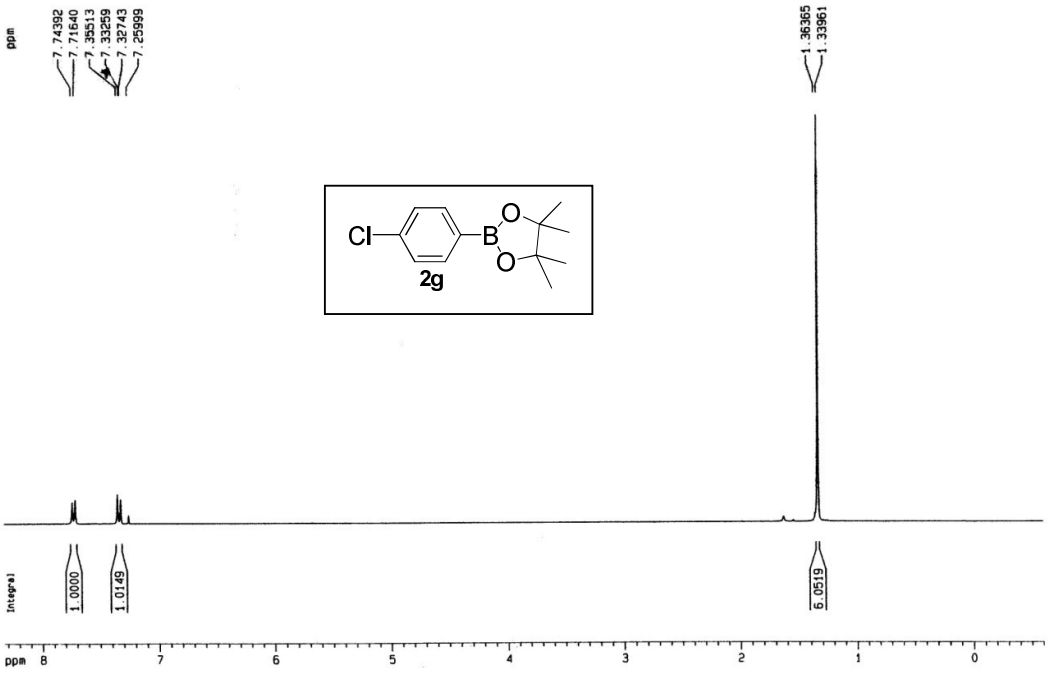

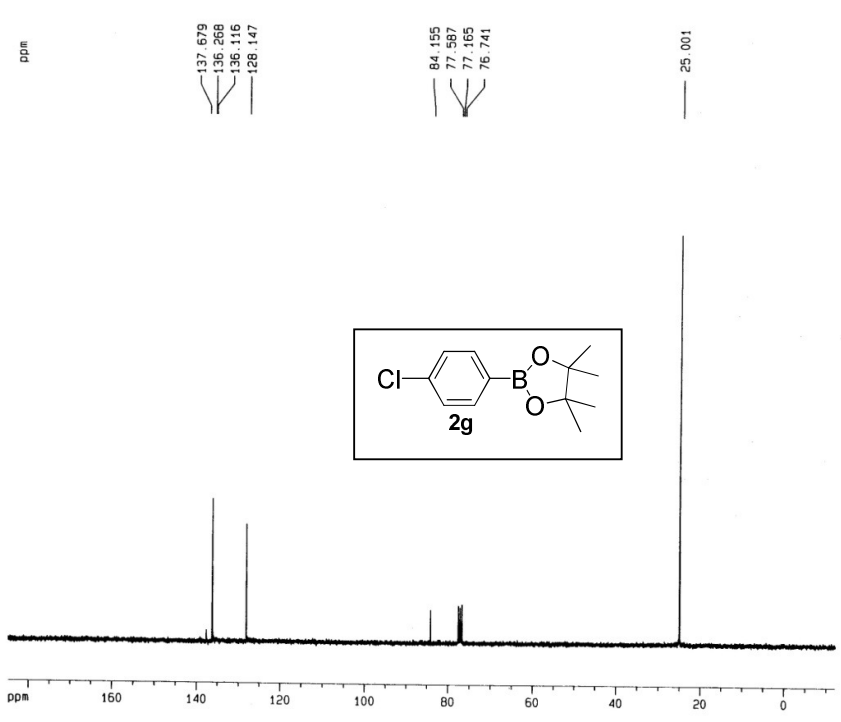


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TD                          65536
SOLVENT                       D2O
NS                             94
DS                              4
SWH                     19841.270 Hz
FIDRES                      0.302754 Hz
AQ                      1.6515572 sec
RG                          32768
DW                         25.200 usec
DE                          6.00 usec
TE                          300.2 K
D1                      2.00000000 sec
d11                     0.03000000 sec
MCREST                  0.00000000 sec
MCWRK                   0.01500000 sec

======== CHANNEL f1 ========
NUC1                          13C
P1                         13.00 usec
PL1                         0.00 dB
SFO1                   75.4763276 MHz

======== CHANNEL f2 ========
CPDPRG2                   waltz16
NUC2                          1H
PCPD2                     100.00 usec
PL2                        -6.00 dB
PL12                        7.00 dB
SFO2                 300.1312005 MHz

F2 - Processing parameters
SI                          32768
SF                     75.4677380 MHz
WDW                            EM
SSB                             0
LB                          1.00 Hz
GB                              0
PC                           1.00

1D NMR plot parameters
CX                         20.00 cm
CY                          9.84 cm
F1P                       184.876 ppm
F1                      13952.16 Hz
F2P                       -12.145 ppm
F2                       -916.60 Hz
PPMCM                   9.85107 ppm/cm
HZCM                  743.43823 Hz/cm
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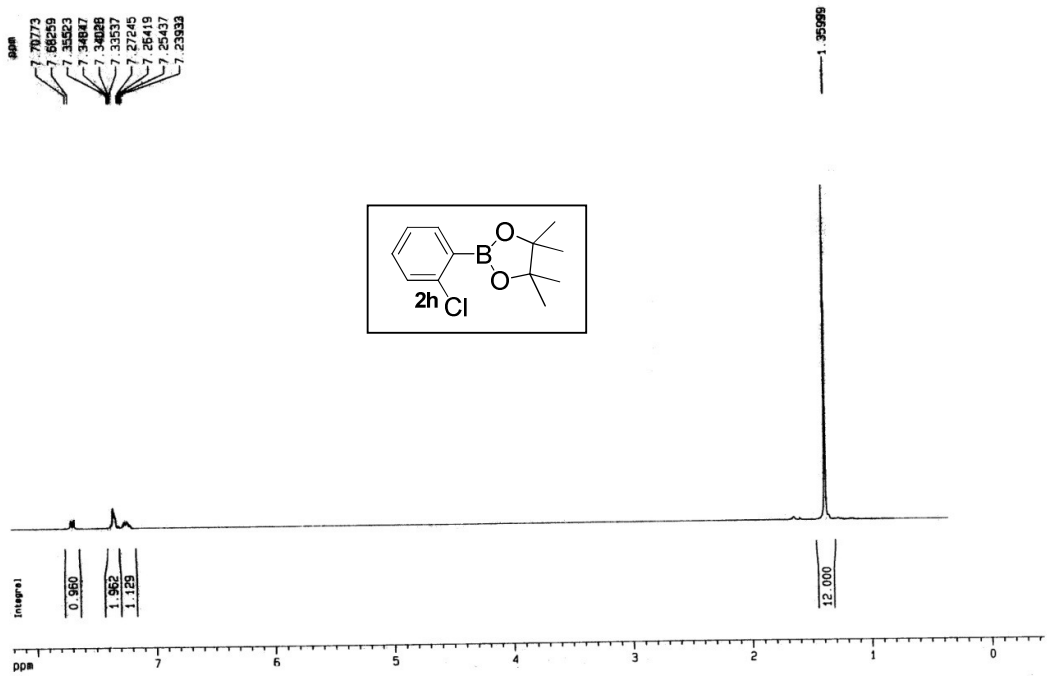

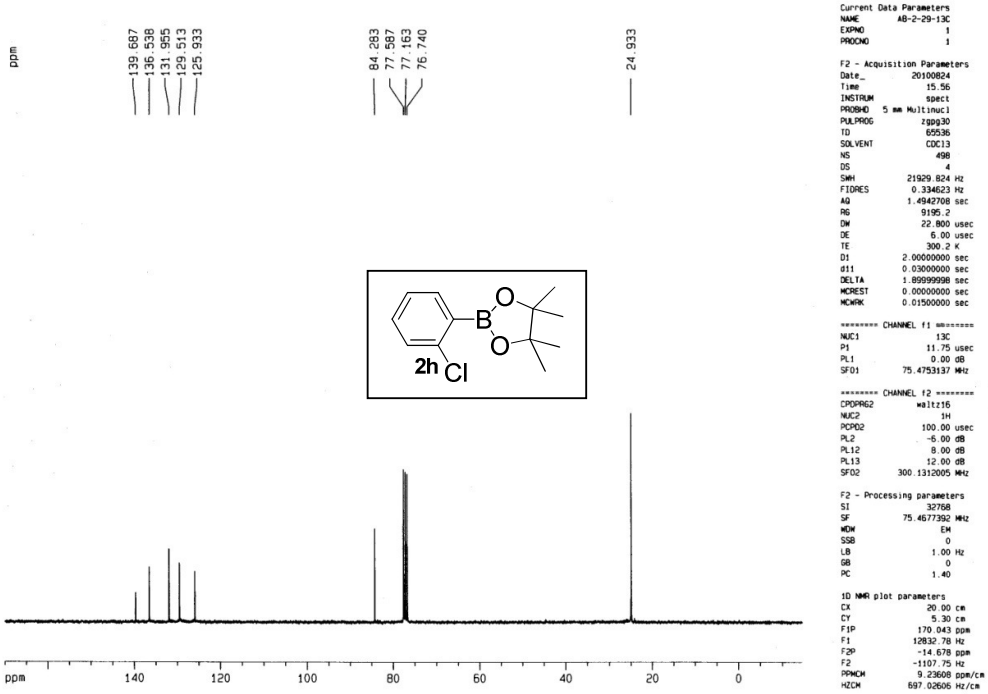


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TD                         65536
SOLVENT                     CDCl3
NS                            498
DS                              4
SWH                     21929.824 Hz
FIDRES                  0.334623 Hz
AQ                      1.4942708 sec
RG                         9195.2
DW                         22.800 usec
DE                          6.00 usec
TE                         300.2 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                          11.75 usec
PL1                          0.00 dB
SFO1                  75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2                   waltz16
NUC2                          1H
PCPD2                     100.00 usec
PL2                         -6.00 dB
PL12                         8.00 dB
PL13                        12.00 dB
SFO2                300.1312005 MHz

F2 - Processing parameters
SI                           32768
SF                    75.4677392 MHz
WDW                             EM
SSB                              0
LB                            1.00 Hz
GB                               0
PC                            1.40

1D NMR plot parameters
CX                           20.00 cm
CY                            5.30 cm
F1P                         170.043 ppm
F1                        12832.78 Hz
F2P                        -14.678 ppm
F2                        -1107.75 Hz
PPMCM                      9.23608 ppm/cm
HZCM                     697.02606 Hz/cm
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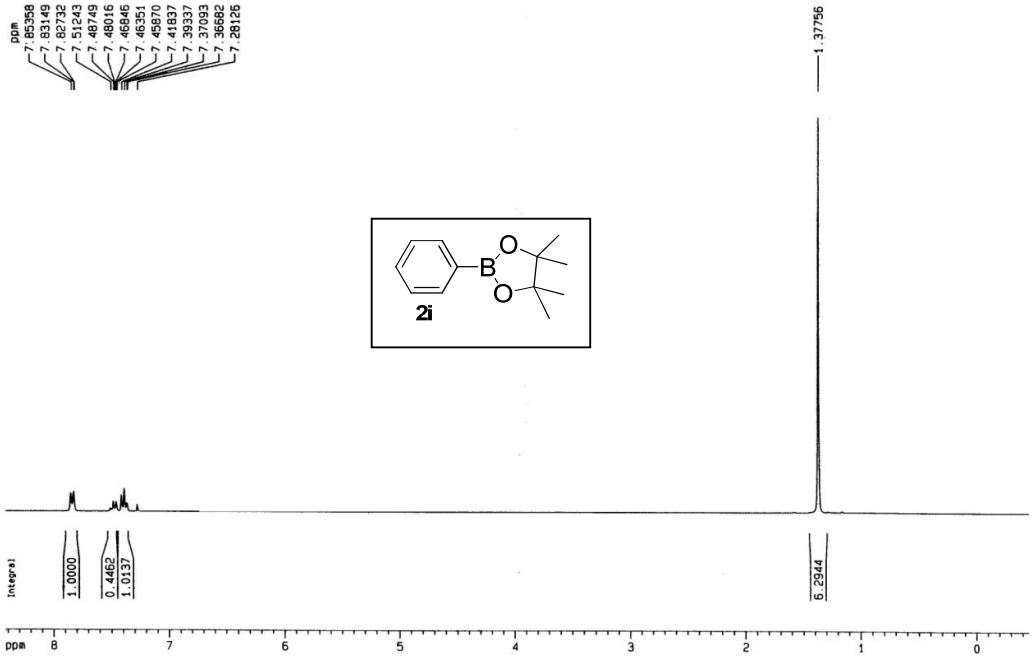

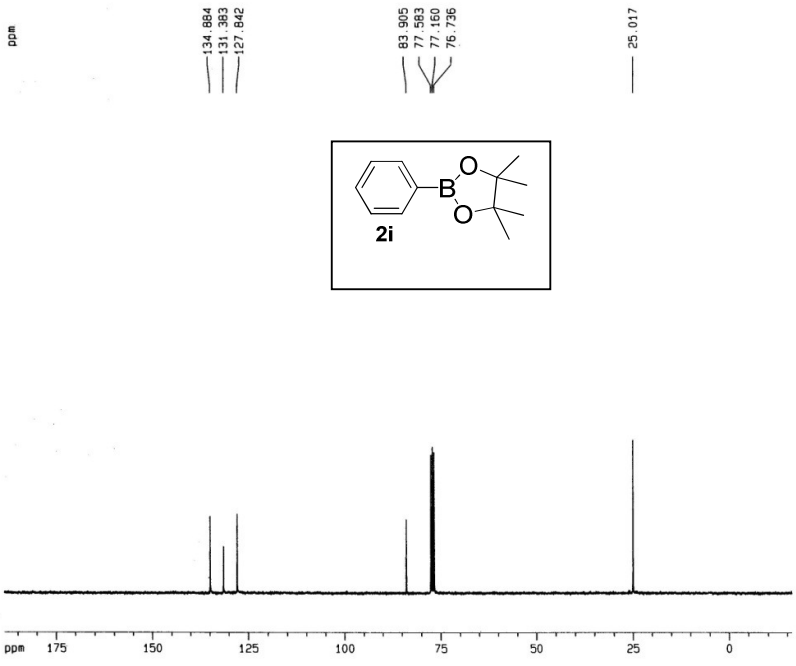


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PROCNO                          1

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PULPROG                   zgpg30
TD                         65536
SOLVENT                     CDCl3
NS                            651
DS                              4
SWH                     21097.047 Hz
FIDRES                   0.321915 Hz
AQ                       1.5532532 sec
RG                          9195.2
DW                         23.700 usec
DE                          6.00 usec
TE                         300.2 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                          11.75 usec
PL1                          0.00 dB
SFO1                 75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2                   waltz16
NUC2                           1H
PCPD2                     100.00 usec
PL2                         -6.00 dB
PL12                         8.00 dB
PL13                        12.00 dB
SFO2                300.1312005 MHz

F2 - Processing parameters
SI                            32768
SF                   75.4677388 MHz
WDW                              EM
SSB                               0
LB                             1.00 Hz
GB                                0
PC                             1.40

1D NMR plot parameters
CX                            20.00 cm
CY                             3.87 cm
F1P                          188.534 ppm
F1                         14228.24 Hz
F2P                         -16.193 ppm
F2                         -1222.01 Hz
PPMCM                     10.23633 ppm/cm
HZCM                     772.51263 Hz/cm
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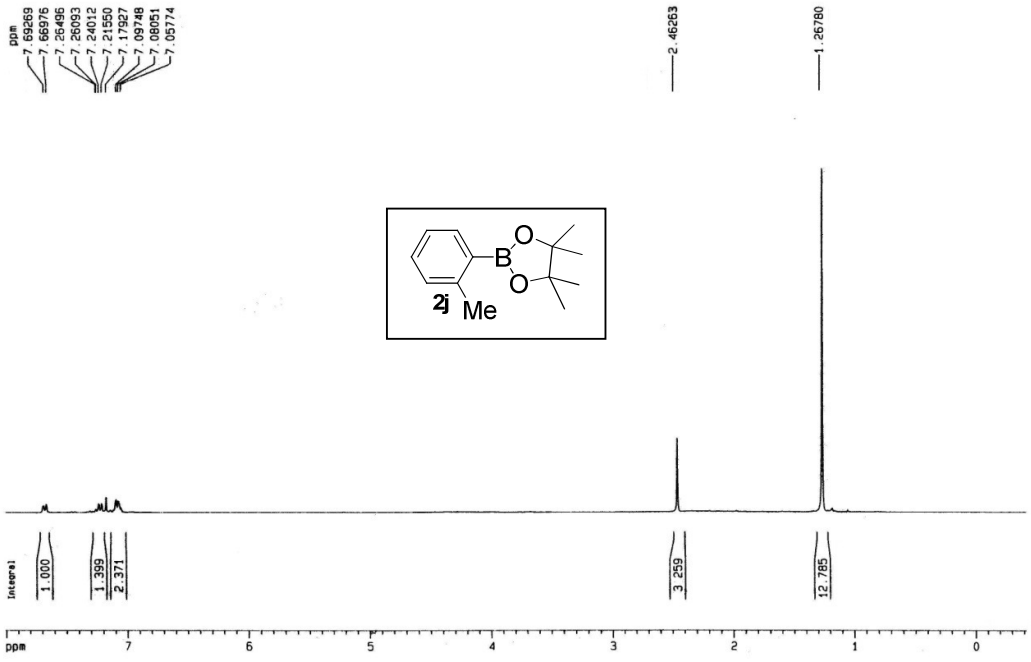

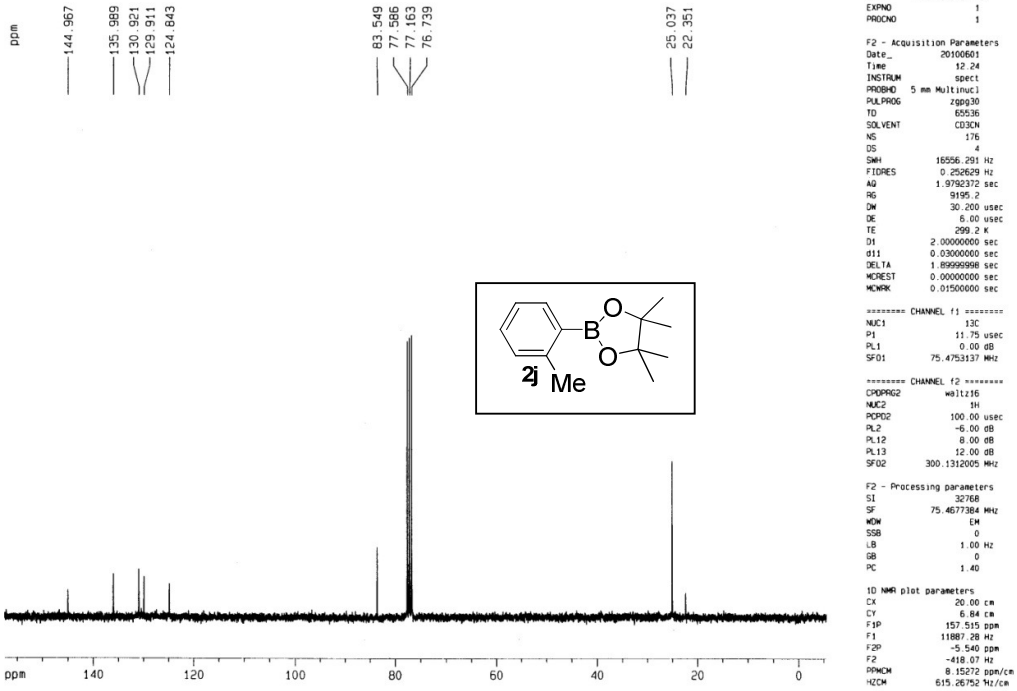


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PROCNO                   1

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TD                   65536
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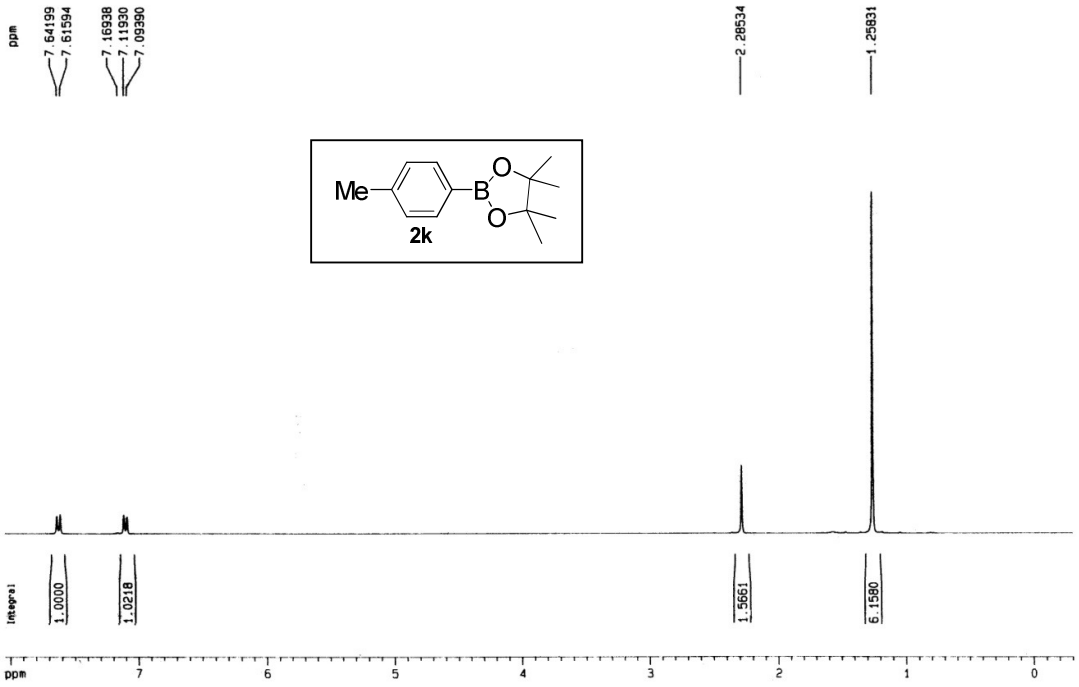
NS                     176
DS                       4
SWH              16556.291 Hz
FIDRES           0.252629 Hz
AQ               1.9792372 sec
RG                  9195.2
DW                 30.200 usec
DE                  6.00 usec
TE                 299.2 K
D1              2.00000000 sec
d11             0.03000000 sec
DELTA           1.89999998 sec
MCREST          0.00000000 sec
MCWRK           0.01500000 sec

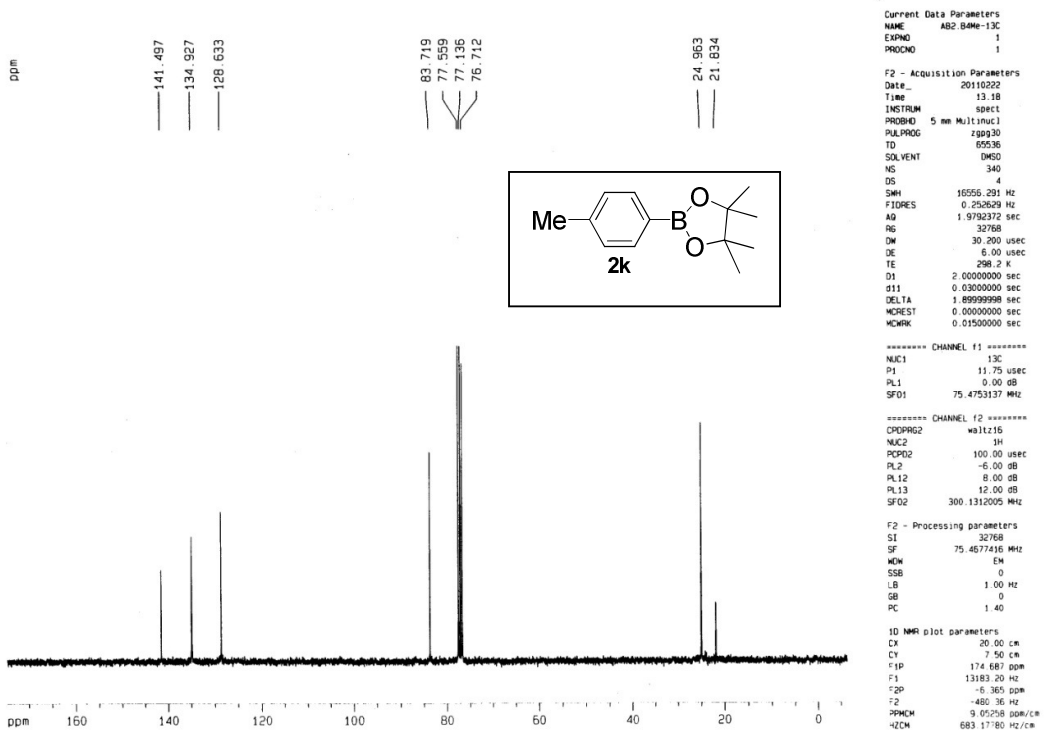
======== CHANNEL f1 ========
NUC1                   13C
P1                  11.75 usec
PL1                  0.00 dB
SF01           75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2            waltz16
NUC2                    1H
PCPD2              100.00 usec
PL2                 -6.00 dB
PL12                 8.00 dB
PL13                12.00 dB
SF02          300.1312005 MHz

F2 - Processing parameters
SI                     32768
SF             75.4677384 MHz
WDW                       EM
SSB                        0
LB                    1.00 Hz
GB                         0
PC                      1.40

1D NMR plot parameters
CX                   20.00 cm
CY                    6.84 cm
F1P                157.515 ppm
F1                 11887.28 Hz
F2P                 -5.540 ppm
F2                 -418.07 Hz
PPMCM              8.15272 ppm/cm
HZCM              615.26752 Hz/cm
```






```
Current Data Parameters
NAME          AB2.84Me-13C
EXPNO                    1
PROCNO                   1

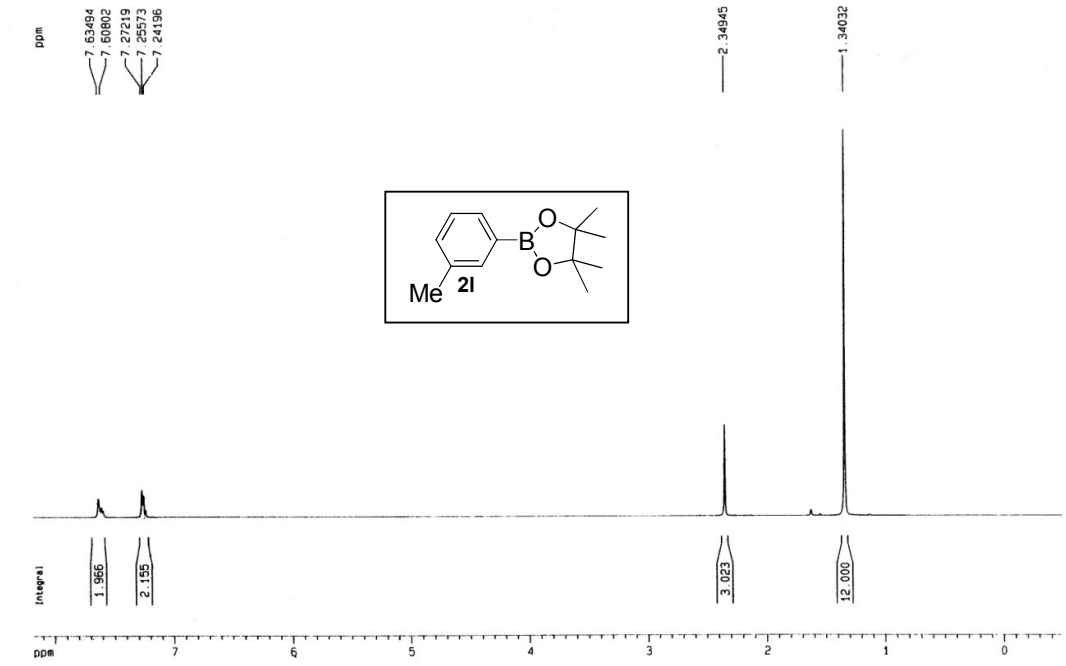
F2 - Acquisition Parameters
Date_              20110222
Time                 13.18
INSTRUM              spect
PROBHD   5 mm Multinucl
PULPROG            zgpg30
TD                  65536
SOLVENT              DMSO
NS                    340
DS                      4
SWH              16556.291 Hz
FIDRES           0.252629 Hz
AQ               1.9792372 sec
RG                   32768
DW                30.200 usec
DE                 6.00 usec
TE                 298.2 K
D1              2.00000000 sec
d11             0.03000000 sec
DELTA           1.89999998 sec
MCREST          0.00000000 sec
MCWRK           0.01500000 sec

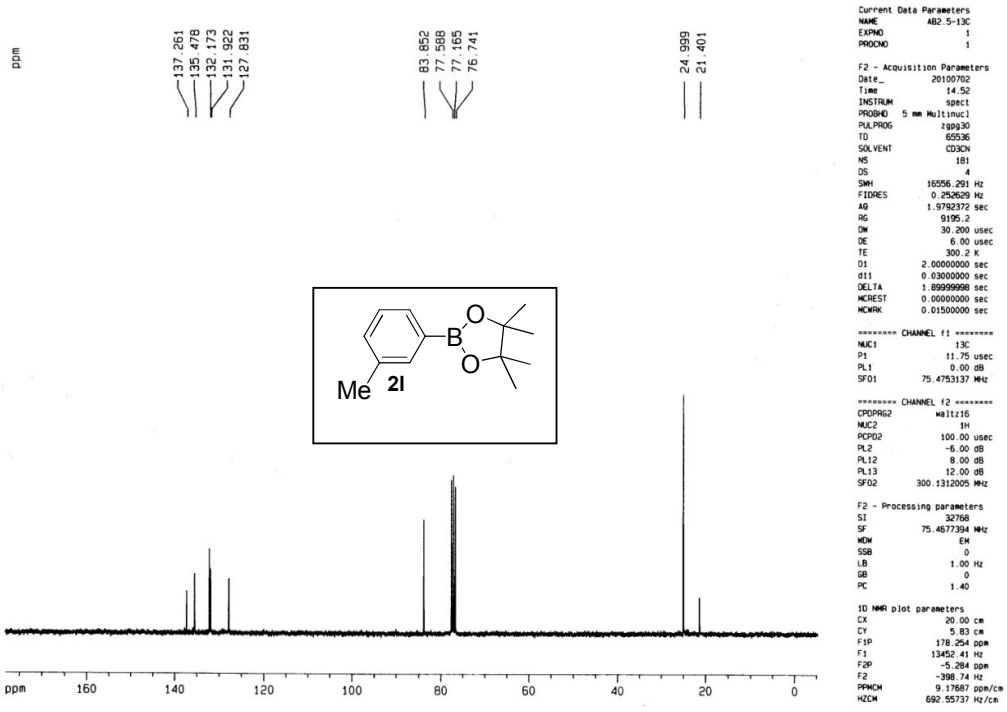
======== CHANNEL f1 ========
NUC1                   13C
P1                 11.75 usec
PL1                 0.00 dB
SFO1           75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2            waltz16
NUC2                    1H
PCPD2              100.00 usec
PL2                 -6.00 dB
PL12                8.00 dB
PL13               12.00 dB
SFO2          300.1312005 MHz

F2 - Processing parameters
SI                   32768
SF             75.4677416 MHz
WDW                     EM
SSB                      0
LB                  1.00 Hz
GB                       0
PC                    1.40

1D NMR plot parameters
CX                 20.00 cm
CY                  7.50 cm
F1P               174.687 ppm
F1              13183.20 Hz
F2P                -6.365 ppm
F2               -480.36 Hz
PPMCM             9.05258 ppm/cm
HZCM            683.17780 Hz/cm
```






```
Current Data Parameters
NAME                  A82.5-13C
EXPNO                         1
PROCNO                        1

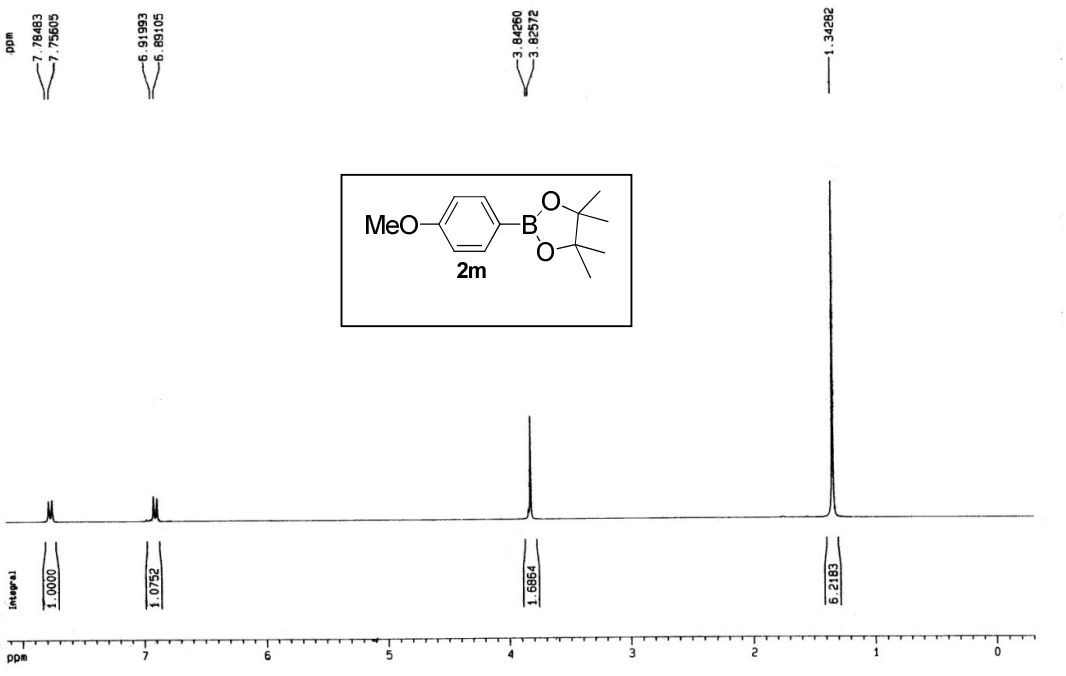
F2 - Acquisition Parameters
Date_               20100702
Time                   14.52
INSTRUM                spect
PROBHD   5 mm Multinucl
PULPROG             zgpg30
TD                     65536
SOLVENT                CD3CN
NS                       181
DS                         4
SWH                16556.291 Hz
FIDRES             0.252629 Hz
AQ                 1.9792372 sec
RG                    9195.2
DW                   30.200 usec
DE                    6.00 usec
TE                   300.2 K
D1                 2.00000000 sec
d11                0.03000000 sec
DELTA              1.89999998 sec
MCREST             0.00000000 sec
MCWRK              0.01500000 sec

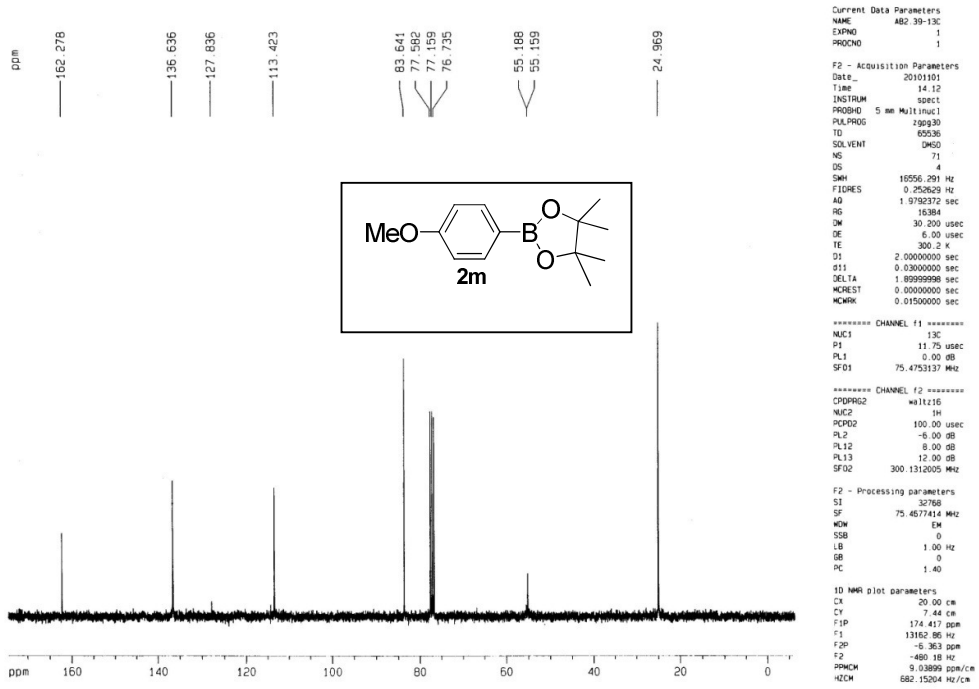
======== CHANNEL f1 ========
NUC1                      13C
P1                      11.75 usec
PL1                      0.00 dB
SFO1               75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                       1H
PCPD2                  100.00 usec
PL2                     -6.00 dB
PL12                     8.00 dB
PL13                    12.00 dB
SFO2              300.1312005 MHz

F2 - Processing parameters
SI                        32768
SF                 75.4677394 MHz
WDW                          EM
SSB                           0
LB                       1.00 Hz
GB                            0
PC                         1.40

1D NMR plot parameters
CX                       20.00 cm
CY                        5.83 cm
F1P                    178.254 ppm
F1                    13452.41 Hz
F2P                     -5.284 ppm
F2                     -398.74 Hz
PPMCM                 9.17687 ppm/cm
HZCM                 692.55737 Hz/cm
```






```
Current Data Parameters
NAME                  AB2.39-13C
EXPNO                          1
PROCNO                         1

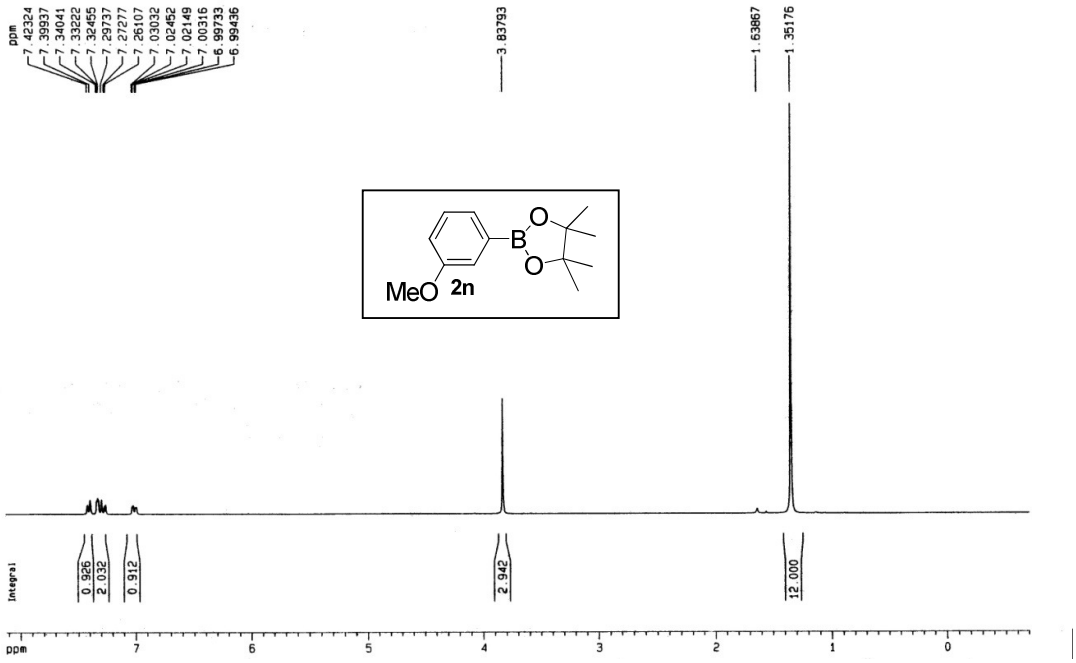
F2 - Acquisition Parameters
Date_              20101101
Time                      14.12
INSTRUM                   spect
PROBHD   5 mm Multinucl
PULPROG                zgpg30
TD                      65536
SOLVENT                  DMSO
NS                           71
DS                            4
SWH                16556.291 Hz
FIDRES              0.252629 Hz
AQ                  1.9792372 sec
RG                       16384
DW                    30.200 usec
DE                     6.00 usec
TE                     300.2 K
D1                 2.00000000 sec
d11                0.03000000 sec
DELTA              1.89999998 sec
MCREST             0.00000000 sec
MCWRK              0.01500000 sec

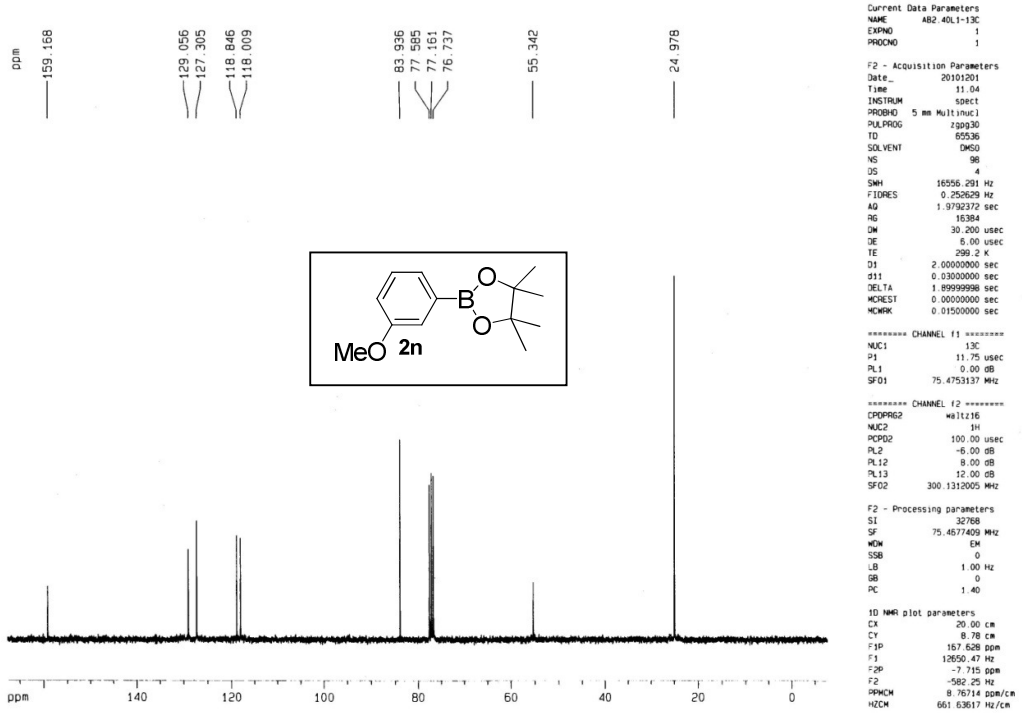
======== CHANNEL f1 ========
NUC1                      13C
P1                      11.75 usec
PL1                      0.00 dB
SFO1               75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                        1H
PCPD2                 100.00 usec
PL2                     -6.00 dB
PL12                     8.00 dB
PL13                    12.00 dB
SFO2              300.1312005 MHz

F2 - Processing parameters
SI                        32768
SF                 75.4677414 MHz
WDW                          EM
SSB                           0
LB                         1.00 Hz
GB                            0
PC                         1.40

1D NMR plot parameters
CX                        20.00 cm
CY                         7.44 cm
F1P                      174.417 ppm
F1                      13162.86 Hz
F2P                       -6.363 ppm
F2                      -480.18 Hz
PPMCM                  9.03899 ppm/cm
HZCM                  682.15204 Hz/cm
```






```
Current Data Parameters
NAME                  AB2.40L1-13C
EXPNO                            1
PROCNO                           1

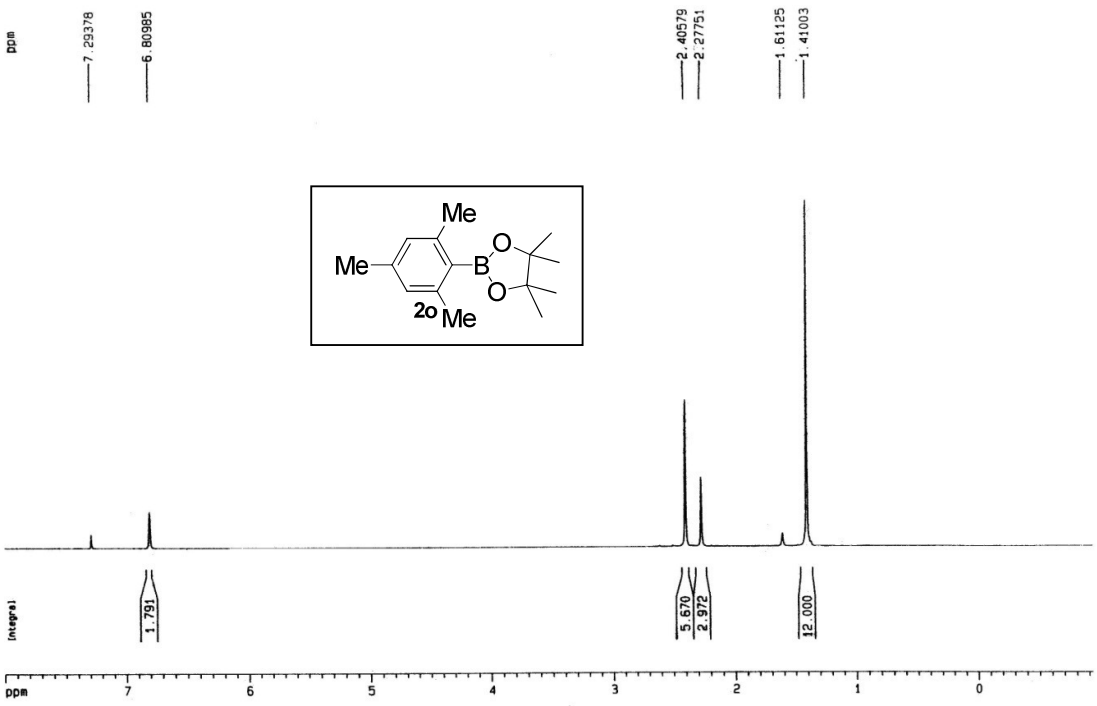
F2 - Acquisition Parameters
Date_                     20101201
Time                         11.04
INSTRUM                      spect
PROBHD     5 mm Multinucl
PULPROG                   zgpg30
TD                            65536
SOLVENT                        DMSO
NS                               98
DS                                4
SWH                       16556.291 Hz
FIDRES                    0.252629 Hz
AQ                        1.9792372 sec
RG                            16384
DW                           30.200 usec
DE                            6.00 usec
TE                           299.2 K
D1                        2.00000000 sec
D11                       0.03000000 sec
DELTA                     1.89999998 sec
MCREST                    0.00000000 sec
MCWRK                     0.01500000 sec

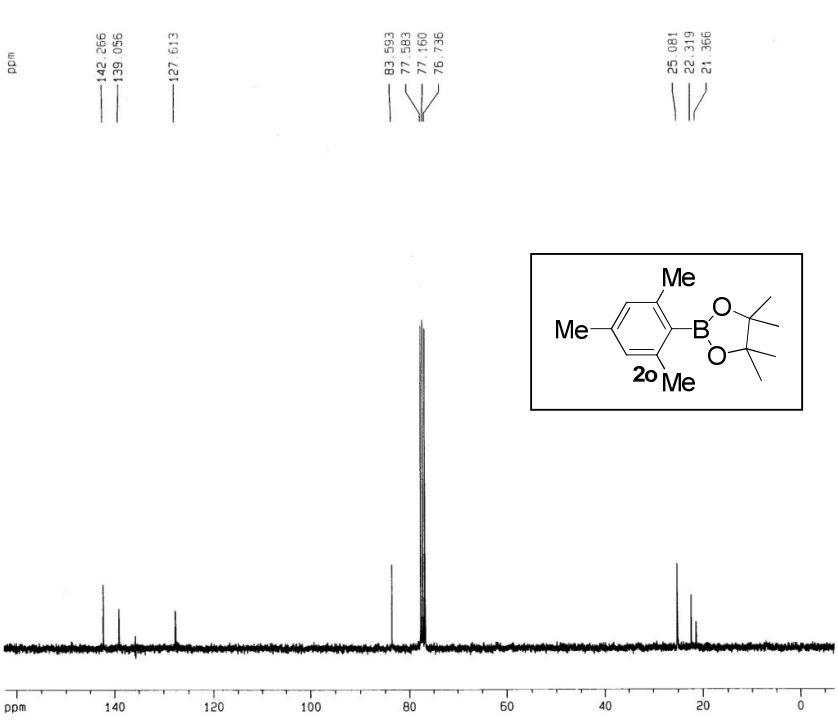
======== CHANNEL f1 ========
NUC1                            13C
P1                           11.75 usec
PL1                           0.00 dB
SFO1                    75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2                     waltz16
NUC2                            1H
PCPD2                       100.00 usec
PL2                           -6.00 dB
PL12                           8.00 dB
PL13                          12.00 dB
SFO2                   300.1312005 MHz

F2 - Processing parameters
SI                            32768
SF                      75.4677409 MHz
WDW                             EM
SSB                              0
LB                            1.00 Hz
GB                               0
PC                            1.40

1D NMR plot parameters
CX                           20.00 cm
CY                            8.78 cm
F1P                       167.628 ppm
F1                        12650.47 Hz
F2P                        -7.715 ppm
F2                         -582.25 Hz
PPMCM                   8.76714 ppm/cm
HZCM                    661.63617 Hz/cm
```






```
Current Data Parameters
NAME                  AB2.38-13C
EXPNO                          1
PROCNO                         1

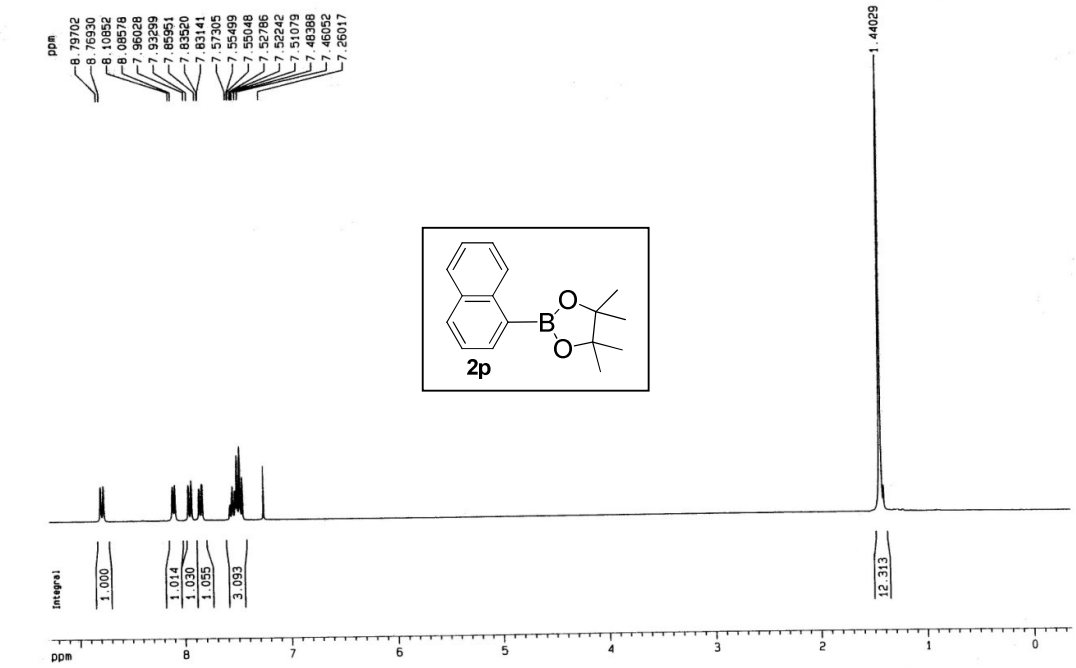
F2 - Acquisition Parameters
Date_               20101027
Time                     13.37
INSTRUM                  spect
PROBHD    5 mm Multinucl
PULPROG                 zgpg30
TD                       65536
SOLVENT                   DMSO
NS                         274
DS                           4
SWH                 16556.291 Hz
FIDRES              0.252629 Hz
AQ                  1.9792372 sec
RG                      9195.2
DW                     30.200 usec
DE                      6.00 usec
TE                     300.2 K
D1                  2.00000000 sec
d11                 0.03000000 sec
DELTA               1.89999998 sec
MCREST              0.00000000 sec
MCWRK               0.01500000 sec

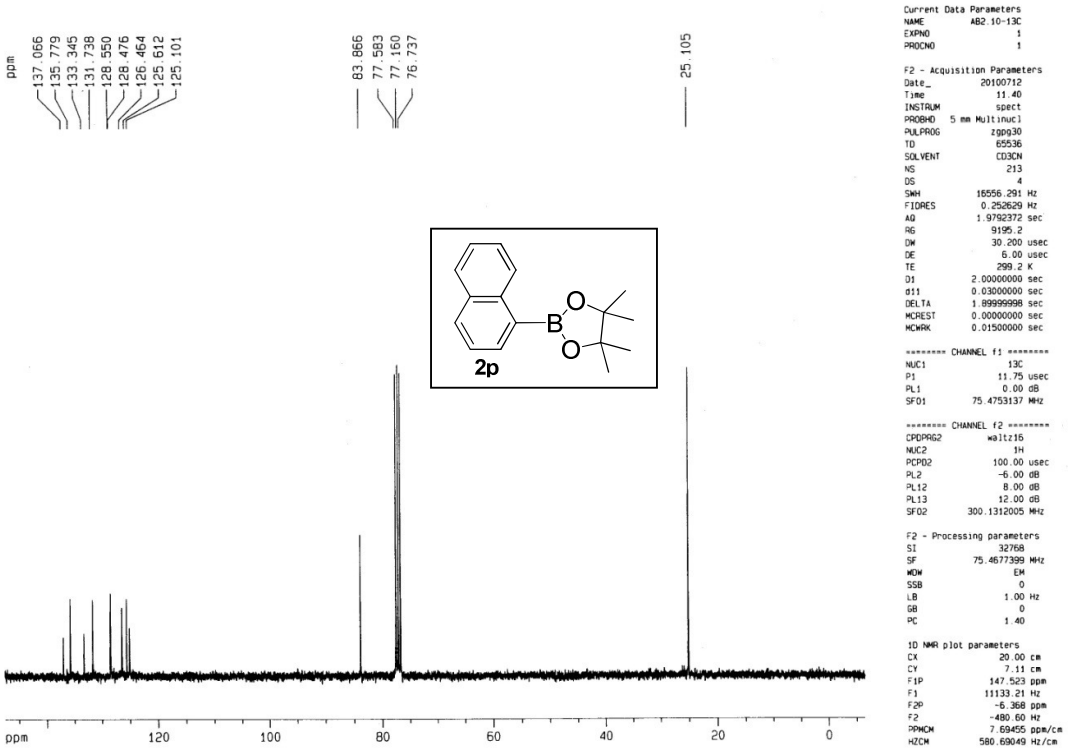
======== CHANNEL f1 ========
NUC1                      13C
P1                      11.75 usec
PL1                      0.00 dB
SFO1                75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                       1H
PCPD2                 100.00 usec
PL2                    -6.00 dB
PL12                    8.00 dB
PL13                   12.00 dB
SFO2                300.1312005 MHz

F2 - Processing parameters
SI                        32768
SF                  75.4677384 MHz
WDW                          EM
SSB                           0
LB                       1.00 Hz
GB                            0
PC                         1.40

1D NMR plot parameters
CX                       20.00 cm
CY                        7.82 cm
F1P                    162.496 ppm
F1                   12263.20 Hz
F2P                    -6.866 ppm
F2                    -518.18 Hz
PPMCM                 8.46811 ppm/cm
HZCM                639.06873 Hz/cm
```






```
Current Data Parameters
NAME            AB2.10-13C
EXPNO                    1
PROCNO                   1

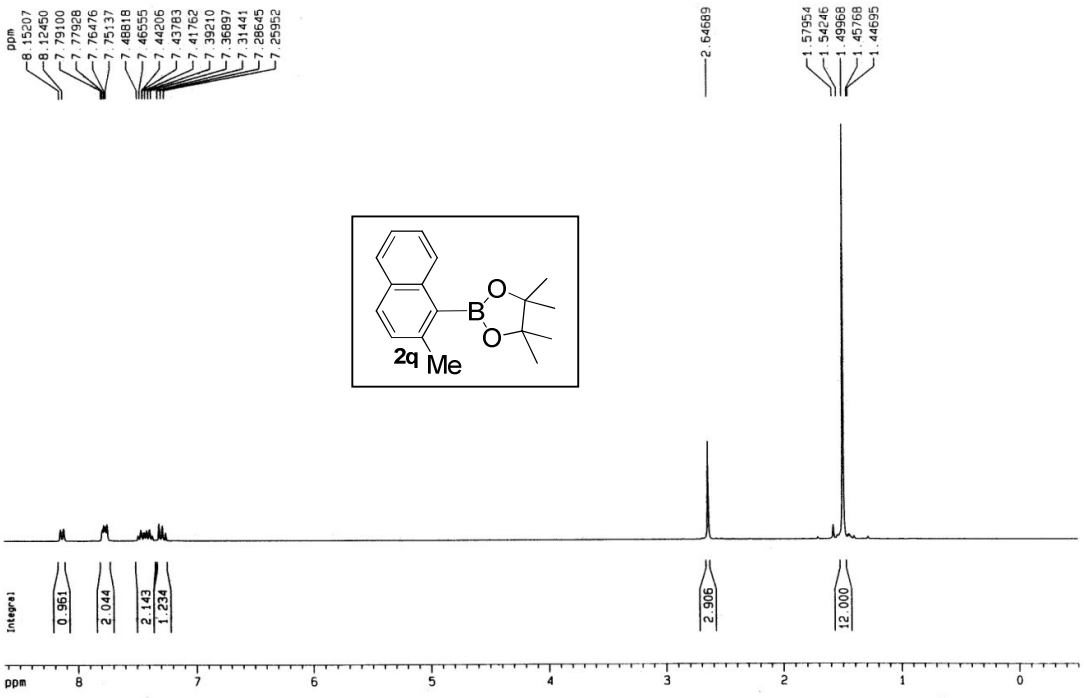
F2 - Acquisition Parameters
Date_              20100712
Time                  11.40
INSTRUM               spect
PROBHD   5 mm Multinucl
PULPROG             zgpg30
TD                   65536
SOLVENT              CD3CN
NS                     213
DS                       4
SWH               16556.291 Hz
FIDRES            0.252629 Hz
AQ                1.9792372 sec
RG                   9195.2
DW                  30.200 usec
DE                   6.00 usec
TE                  299.2 K
D1                2.00000000 sec
d11               0.03000000 sec
DELTA             1.89999998 sec
MCREST            0.00000000 sec
MCWRK             0.01500000 sec

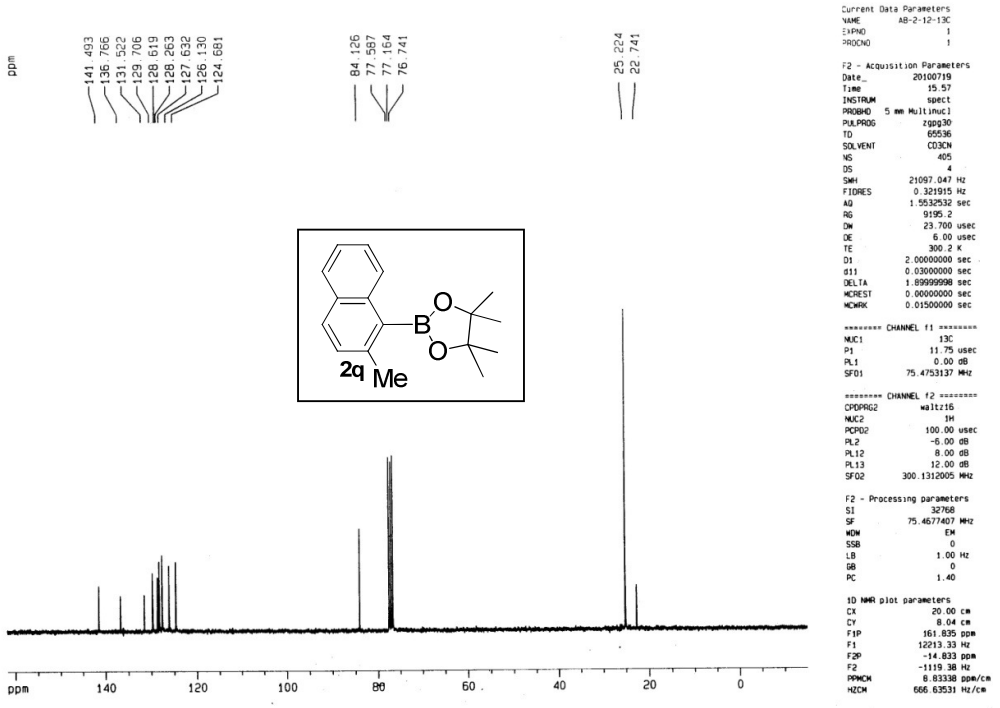
======== CHANNEL f1 ========
NUC1                    13C
P1                   11.75 usec
PL1                   0.00 dB
SFO1             75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2             waltz16
NUC2                    1H
PCPD2               100.00 usec
PL2                   -6.00 dB
PL12                   8.00 dB
PL13                  12.00 dB
SFO2            300.1312005 MHz

F2 - Processing parameters
SI                      32768
SF                75.4677399 MHz
WDW                        EM
SSB                         0
LB                     1.00 Hz
GB                          0
PC                       1.40

1D NMR plot parameters
CX                     20.00 cm
CY                      7.11 cm
F1P                  147.523 ppm
F1                  11133.21 Hz
F2P                   -6.368 ppm
F2                   -480.60 Hz
PPMCM                7.69455 ppm/cm
HZCM               580.69049 Hz/cm
```






```
Current Data Parameters
NAME                  AB-2-12-13C
EXPNO                           1
PROCNO                          1

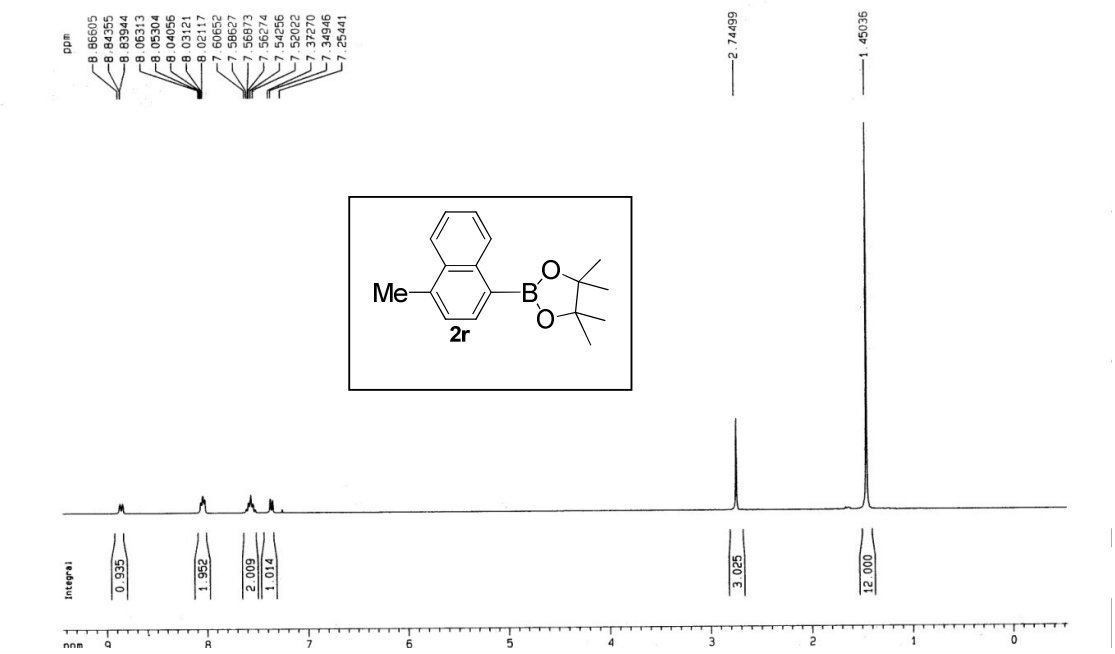
F2 - Acquisition Parameters
Date_               20100719
Time                      15.57
INSTRUM                   spect
PROBHD   5 mm Multinucl
PULPROG                 zgpg30
TD                       65536
SOLVENT                  CDCN
NS                         405
DS                           4
SWH                  21097.047 Hz
FIDRES                0.321915 Hz
AQ                    1.5532532 sec
RG                       9195.2
DW                     23.700 usec
DE                      6.00 usec
TE                      300.2 K
D1                   2.00000000 sec
d11                  0.03000000 sec
DELTA                1.89999998 sec
MCREST               0.00000000 sec
MCWRK                0.01500000 sec

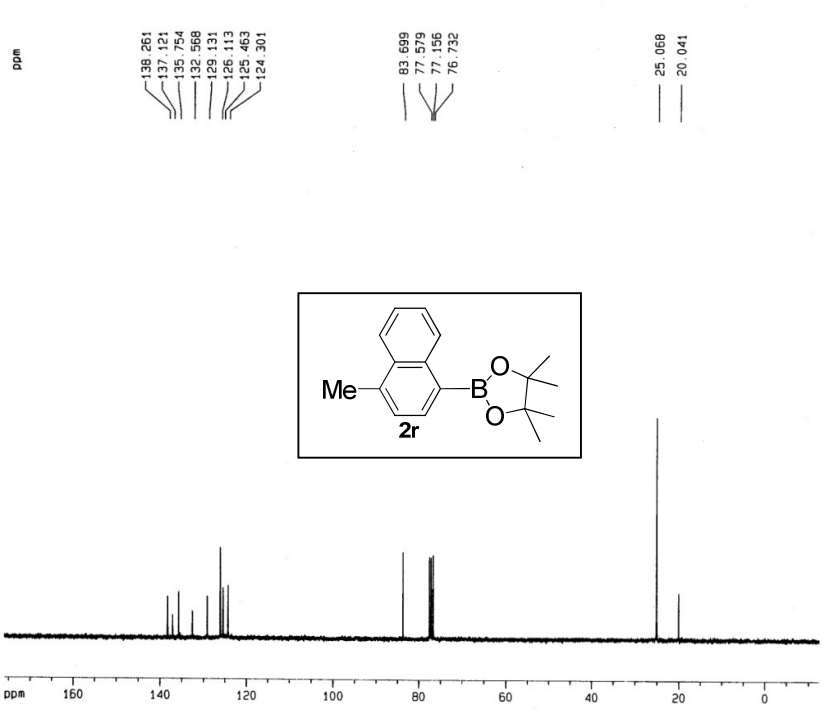
======== CHANNEL f1 ========
NUC1                       13C
P1                      11.75 usec
PL1                      0.00 dB
SF01                75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                       1H
PCPD2                  100.00 usec
PL2                      -6.00 dB
PL12                      8.00 dB
PL13                     12.00 dB
SF02               300.1312005 MHz

F2 - Processing parameters
SI                         32768
SF                  75.4677407 MHz
WDW                           EM
SSB                            0
LB                          1.00 Hz
GB                             0
PC                          1.40

1D NMR plot parameters
CX                         20.00 cm
CY                          8.04 cm
F1P                       161.835 ppm
F1                      12213.33 Hz
F2P                       -14.833 ppm
F2                      -1119.38 Hz
PPMCM                  6.83338 ppm/cm
HZCM                 666.63531 Hz/cm
```






```
Current Data Parameters
NAME          AB-2-12-13C
EXPNO                   1
PROCNO                  1

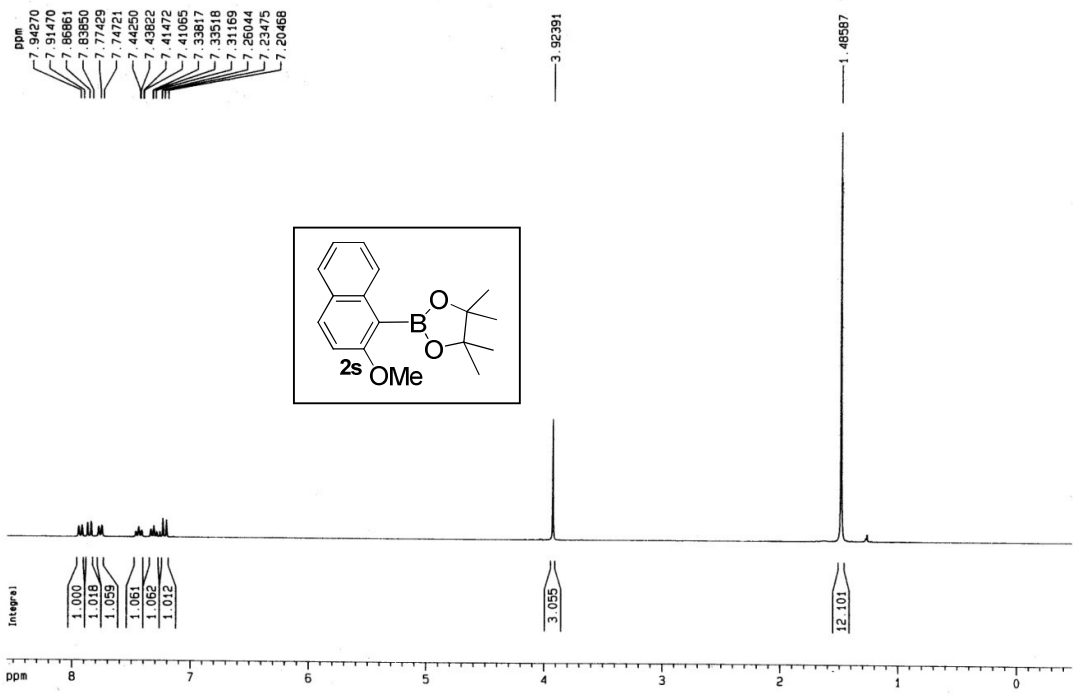
F2 - Acquisition Parameters
Date_              20100726
Time                  15.29
INSTRUM               spect
PROBHD   5 mm Multinuc1
PULPROG             zgpg30
TD                   65536
SOLVENT              CD3CN
NS                      70
DS                       4
SWH               21097.047 Hz
FIDRES            0.321915 Hz
AQ                1.5532532 sec
RG                   9195.2
DW                  23.700 usec
DE                   6.00 usec
TE                  300.2 K
D1              2.00000000 sec
d11             0.03000000 sec
DELTA           1.89999998 sec
MCREST          0.00000000 sec
MCWRK           0.01500000 sec

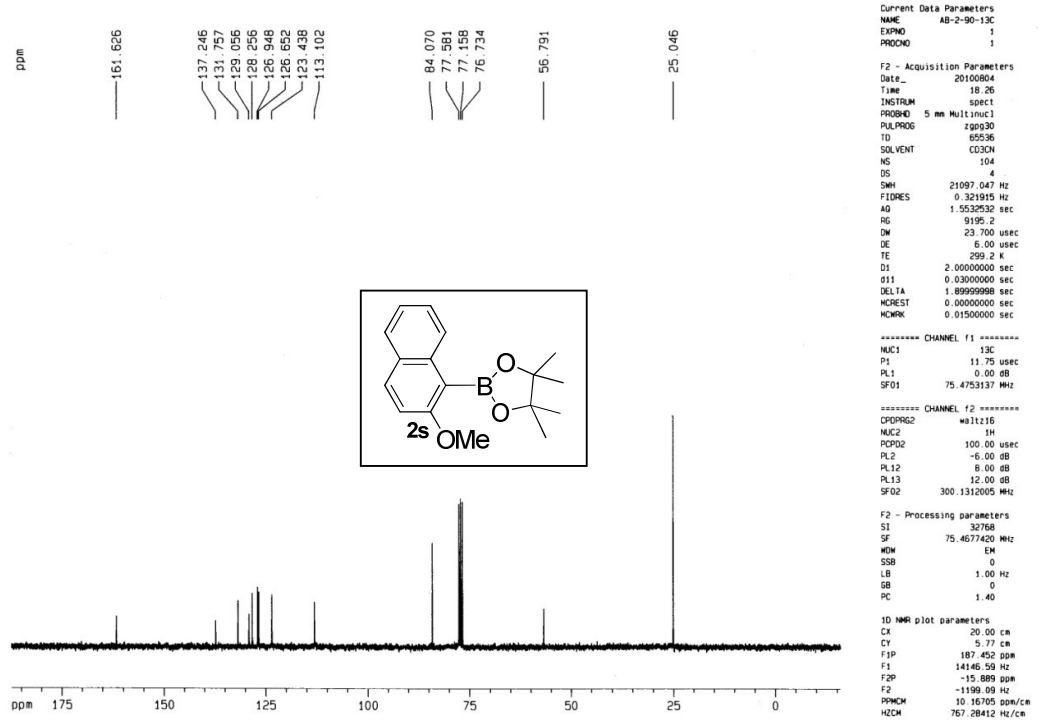
======== CHANNEL f1 ========
NUC1                   13C
P1                  11.75 usec
PL1                  0.00 dB
SFO1           75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2            waltz16
NUC2                   1H
PCPD2              100.00 usec
PL2                 -6.00 dB
PL12                 8.00 dB
PL13                12.00 dB
SFO2          300.1312005 MHz

F2 - Processing parameters
SI                     32768
SF             75.4677433 MHz
WDW                       EM
SSB                        0
LB                    1.00 Hz
GB                         0
PC                      1.40

1D NMR plot parameters
CX                   20.00 cm
CY                    5.39 cm
F1P                 176.004 ppm
F1                13282.59 Hz
F2P                 -12.442 ppm
F2                 -938.96 Hz
PPMCM              9.42227 ppm/cm
HZCM             711.07764 Hz/cm
```






```
Current Data Parameters
NAME            AB-2-90-13C
EXPNO                     1
PROCNO                    1

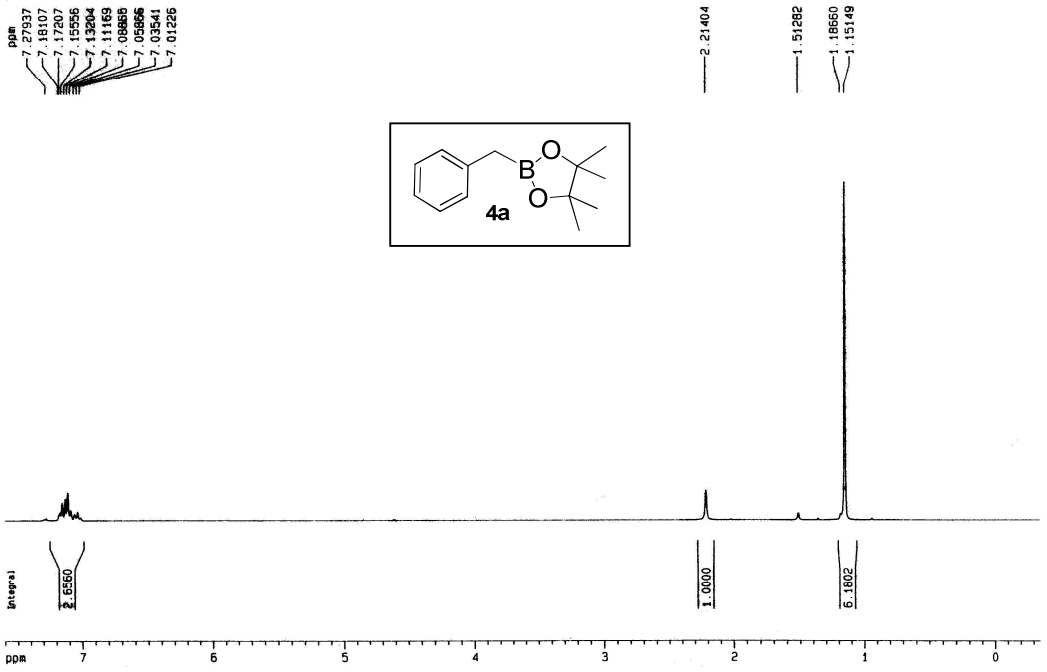
F2 - Acquisition Parameters
Date_          20100804
Time              18.26
INSTRUM           spect
PROBHD  5 mm Multinucl
PULPROG          zgpg30
TD                65536
SOLVENT           CD3CN
NS                  104
DS                    4
SWH           21097.047 Hz
FIDRES        0.321915 Hz
AQ            1.5532532 sec
RG               9195.2
DW              23.700 usec
DE               6.00 usec
TE              299.2 K
D1            2.00000000 sec
D11           0.03000000 sec
DELTA         1.89999998 sec
MCREST        0.00000000 sec
MCWRK         0.01500000 sec

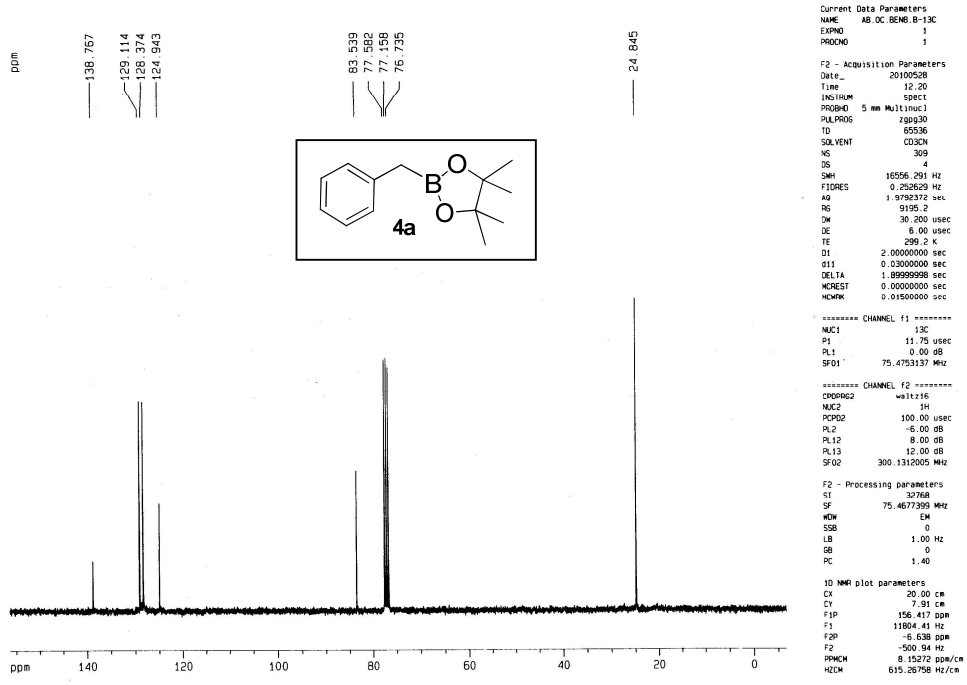
======== CHANNEL f1 ========
NUC1                 13C
P1                11.75 usec
PL1               0.00 dB
SFO1         75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                 1H
PCPD2           100.00 usec
PL2              -6.00 dB
PL12              8.00 dB
PL13             12.00 dB
SFO2        300.1312005 MHz

F2 - Processing parameters
SI                32768
SF          75.4677420 MHz
WDW                  EM
SSB                   0
LB                1.00 Hz
GB                    0
PC                 1.40

1D NMR plot parameters
CX                20.00 cm
CY                 5.77 cm
F1P             187.452 ppm
F1             14146.59 Hz
F2P             -15.889 ppm
F2             -1199.09 Hz
PPMCM          10.16705 ppm/cm
HZCM           767.28412 Hz/cm
```






```
Current Data Parameters
NAME      AB.OC.BENB.B-13C
EXPNO                    1
PROCNO                   1

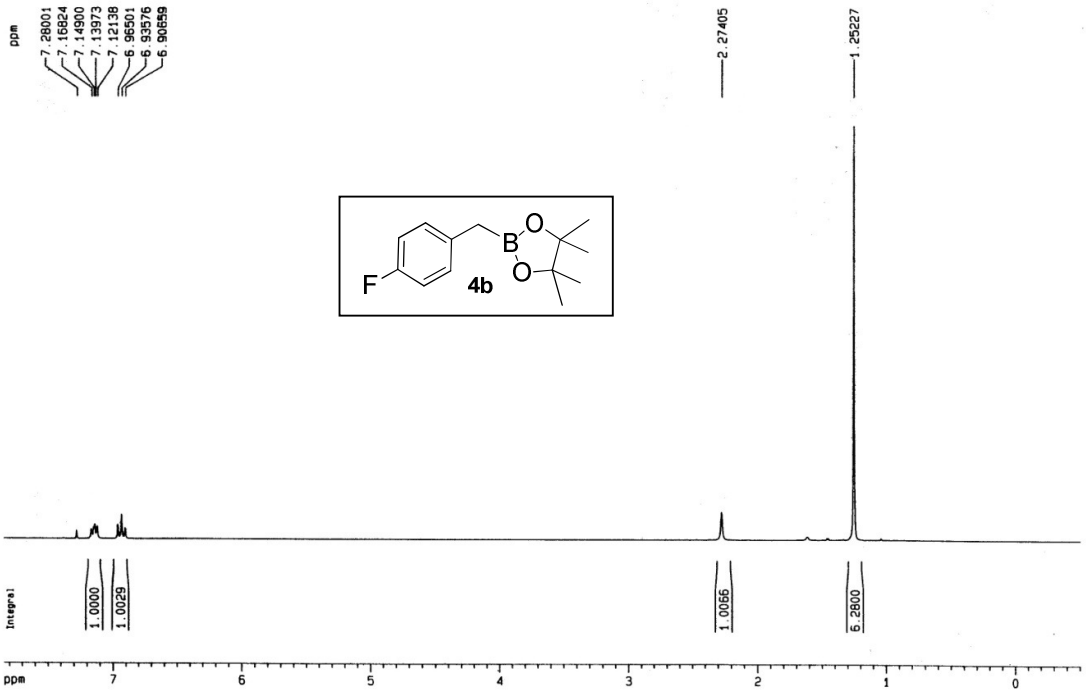
F2 - Acquisition Parameters
Date_          20100528
Time              12.20
INSTRUM           spect
PROBHD  5 mm Multinucl
PULPROG          zgpg30
TD                65536
SOLVENT           CD3CN
NS                  309
DS                    4
SWH           16556.291 Hz
FIDRES        0.252629 Hz
AQ            1.9792372 sec
RG               9195.2
DW              30.200 usec
DE               6.00 usec
TE              299.2 K
D1            2.00000000 sec
d11           0.03000000 sec
DELTA         1.89999998 sec
MCREST        0.00000000 sec
MCWRK         0.01500000 sec

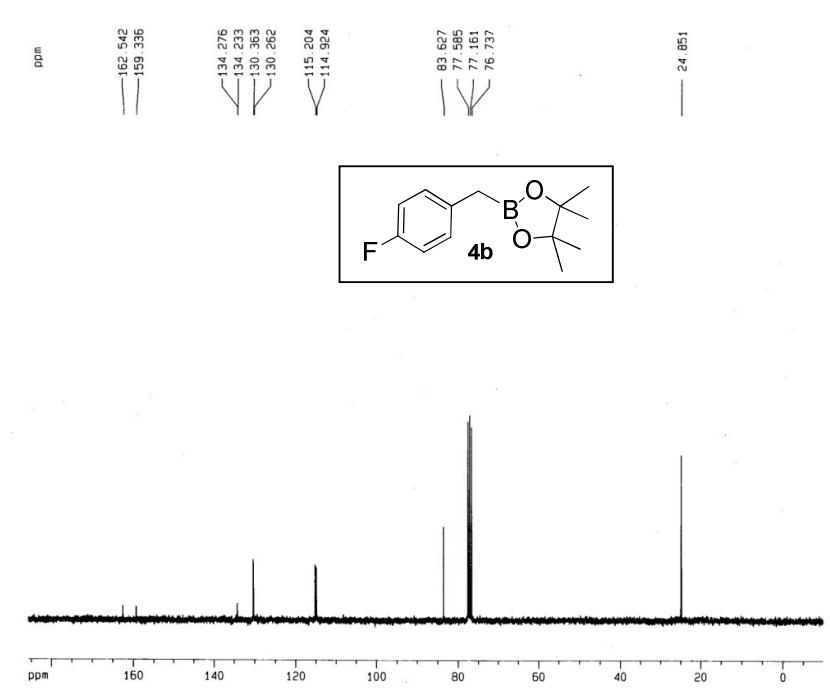
======== CHANNEL f1 ========
NUC1                13C
P1               11.75 usec
PL1               0.00 dB
SFO1        75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2         waltz16
NUC2                1H
PCPD2          100.00 usec
PL2             -6.00 dB
PL12             8.00 dB
PL13            12.00 dB
SFO2       300.1312005 MHz

F2 - Processing parameters
SI                32768
SF          75.4677399 MHz
WDW                  EM
SSB                   0
LB               1.00 Hz
GB                    0
PC                 1.40

1D NMR plot parameters
CX               20.00 cm
CY                7.91 cm
F1P             156.417 ppm
F1             11804.41 Hz
F2P              -6.638 ppm
F2             -500.94 Hz
PPMCM          8.15272 ppm/cm
HZCM        615.26758 Hz/cm
```






```
Current Data Parameters
NAME          AB-2-2Z-13C
EXPNO                   1
PROCNO                  1

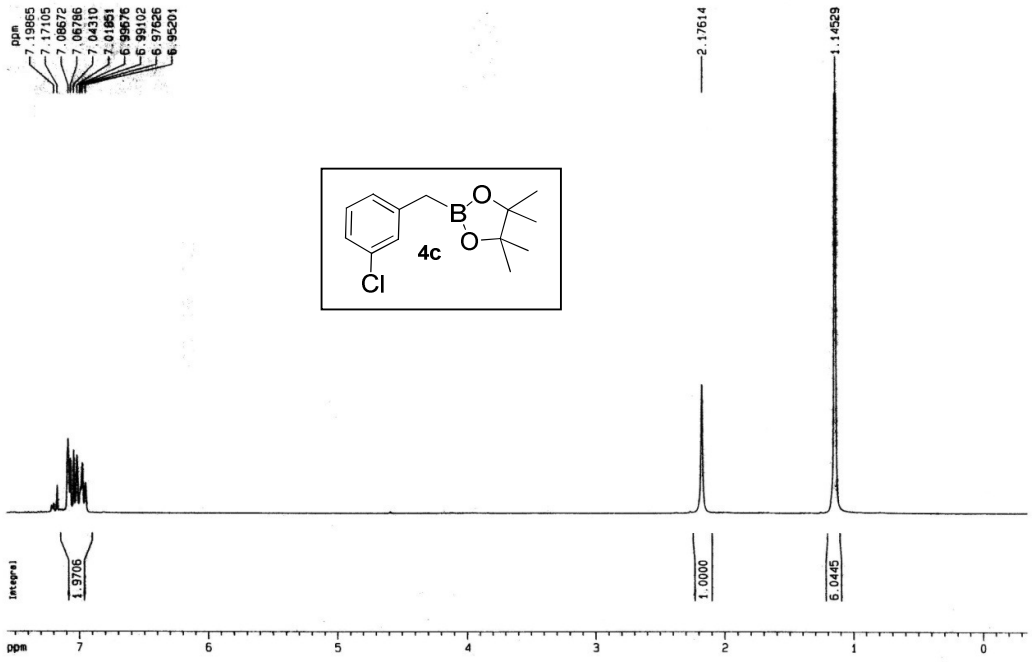
F2 - Acquisition Parameters
Date_          20100830
Time              15.16
INSTRUM           spect
PROBHD  5 mm Multinucl
PULPROG         zgpg30
TD               65536
SOLVENT          CDCl3
NS                 176
DS                   4
SWH          21097.047 Hz
FIDRES        0.321915 Hz
AQ            1.5532532 sec
RG               9195.2
DW              23.700 usec
DE               6.00 usec
TE              300.2 K
D1           2.00000000 sec
d11          0.03000000 sec
DELTA        1.89999998 sec
MCREST       0.00000000 sec
MCWRK        0.01500000 sec

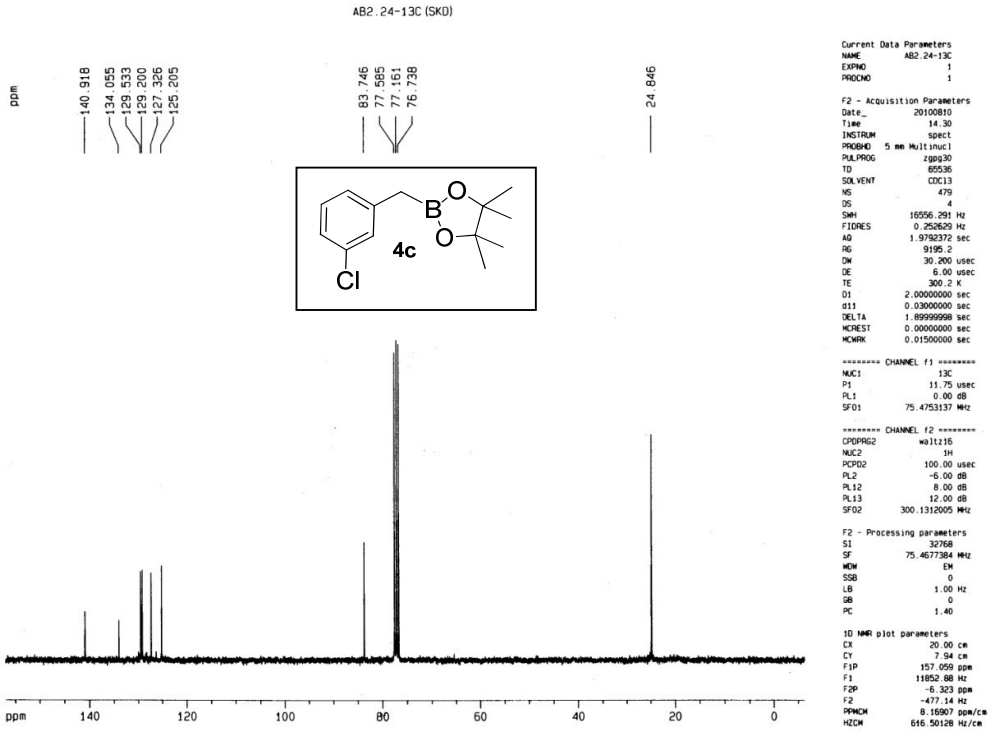
======== CHANNEL f1 ========
NUC1               13C
P1               11.75 usec
PL1               0.00 dB
SF01        75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2         waltz16
NUC2                1H
PCPD2          100.00 usec
PL2             -6.00 dB
PL12             8.00 dB
PL13            12.00 dB
SF02       300.1312005 MHz

F2 - Processing parameters
SI                32768
SF          75.4677381 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40

1D NMR plot parameters
CX                20.00 cm
CY                 5.11 cm
F1P              185.771 ppm
F1             14019.74 Hz
F2P              -9.949 ppm
F2             -750.81 Hz
PPMCM          9.78600 ppm/cm
HZCM         738.52740 Hz/cm
```






```
Current Data Parameters
NAME                  AB2.24-13C
EXPNO                          1
PROCNO                         1

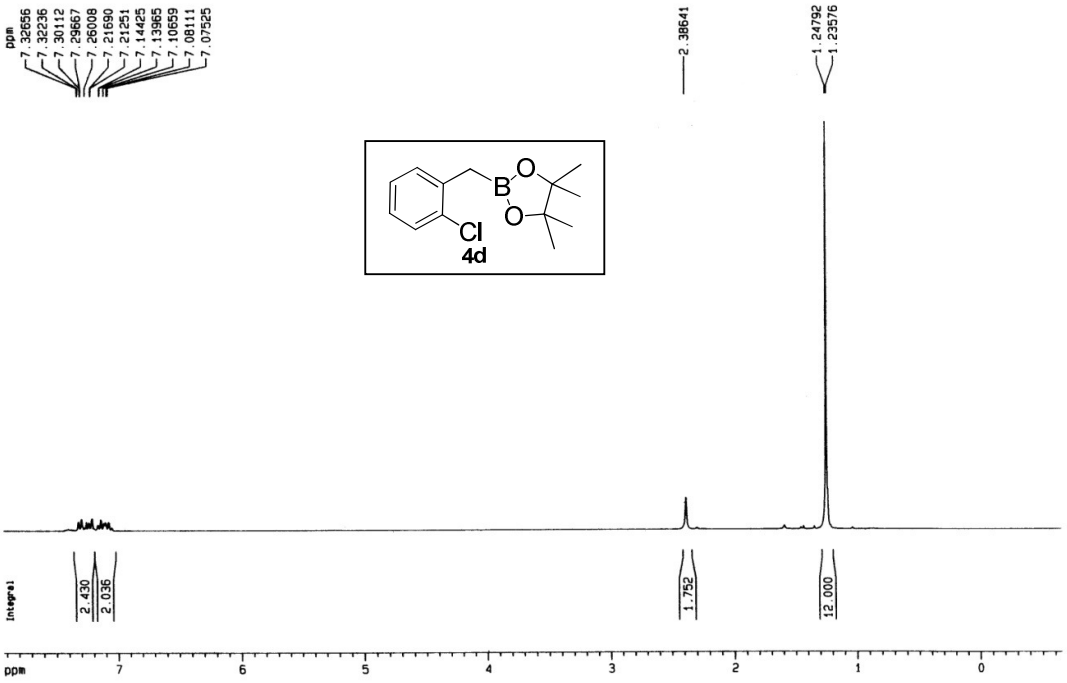
F2 - Acquisition Parameters
Date_              20100810
Time                      14.30
INSTRUM                   spect
PROBHD     5 mm Multinucl
PULPROG                 zgpg30
TD                       65536
SOLVENT                  CDCl3
NS                         479
DS                           4
SWH                  16556.291 Hz
FIDRES                0.252629 Hz
AQ                    1.9792372 sec
RG                       9195.2
DW                      30.200 usec
DE                       6.00 usec
TE                      300.2 K
D1                    2.00000000 sec
d11                   0.03000000 sec
DELTA                 1.89999998 sec
MCREST                0.00000000 sec
MCWRK                 0.01500000 sec

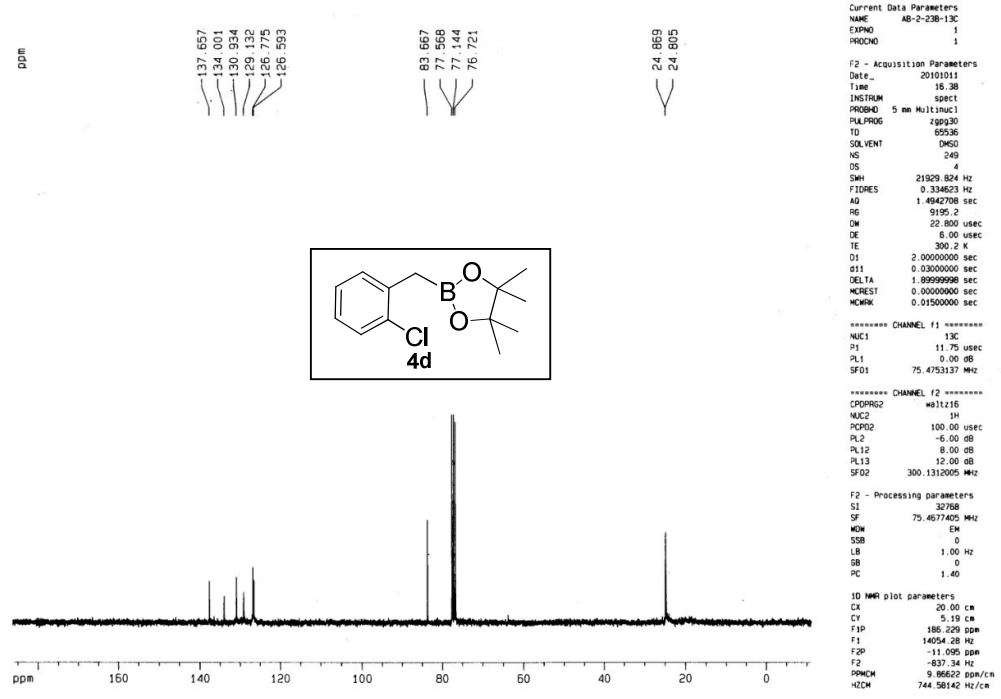
======== CHANNEL f1 ========
NUC1                        13C
P1                        11.75 usec
PL1                        0.00 dB
SFO1                 75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2                 waltz16
NUC2                        1H
PCPD2                    100.00 usec
PL2                       -6.00 dB
PL12                       8.00 dB
PL13                      12.00 dB
SFO2                300.1312005 MHz

F2 - Processing parameters
SI                         32768
SF                   75.4677384 MHz
WDW                           EM
SSB                            0
LB                          1.00 Hz
GB                             0
PC                          1.40

1D NMR plot parameters
CX                         20.00 cm
CY                          7.94 cm
F1P                       157.059 ppm
F1                      11852.88 Hz
F2P                        -6.323 ppm
F2                       -477.14 Hz
PPMCM                  8.16907 ppm/cm
HZCM                 616.50128 Hz/cm
```






```
Current Data Parameters
NAME          AB-2-23B-13C
EXPNO                    1
PROCNO                   1

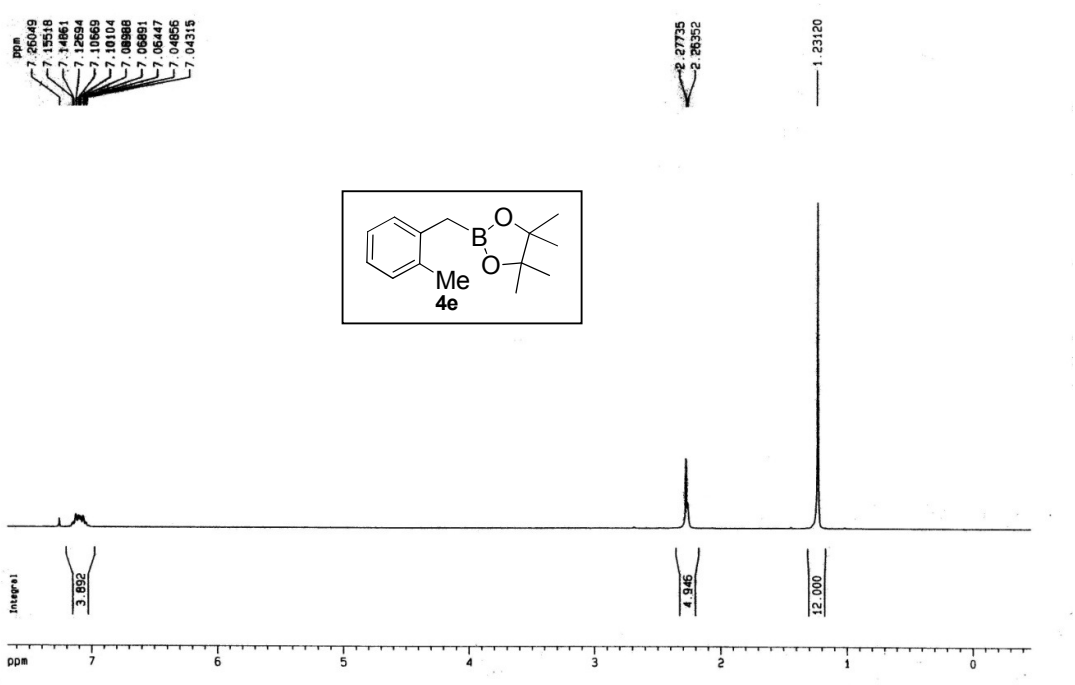
F2 - Acquisition Parameters
Date_              20101011
Time                  16.38
INSTRUM                spect
PROBHD   5 mm Multinucl
PULPROG             zgpg30
TD                   65536
SOLVENT               DMSO
NS                     249
DS                       4
SWH              21929.824 Hz
FIDRES           0.334523 Hz
AQ               1.4942708 sec
RG                  9195.2
DW                 22.800 usec
DE                  6.00 usec
TE                 300.2 K
D1              2.00000000 sec
d11             0.03000000 sec
DELTA           1.89999998 sec
MCREST          0.00000000 sec
MCWRK           0.01500000 sec

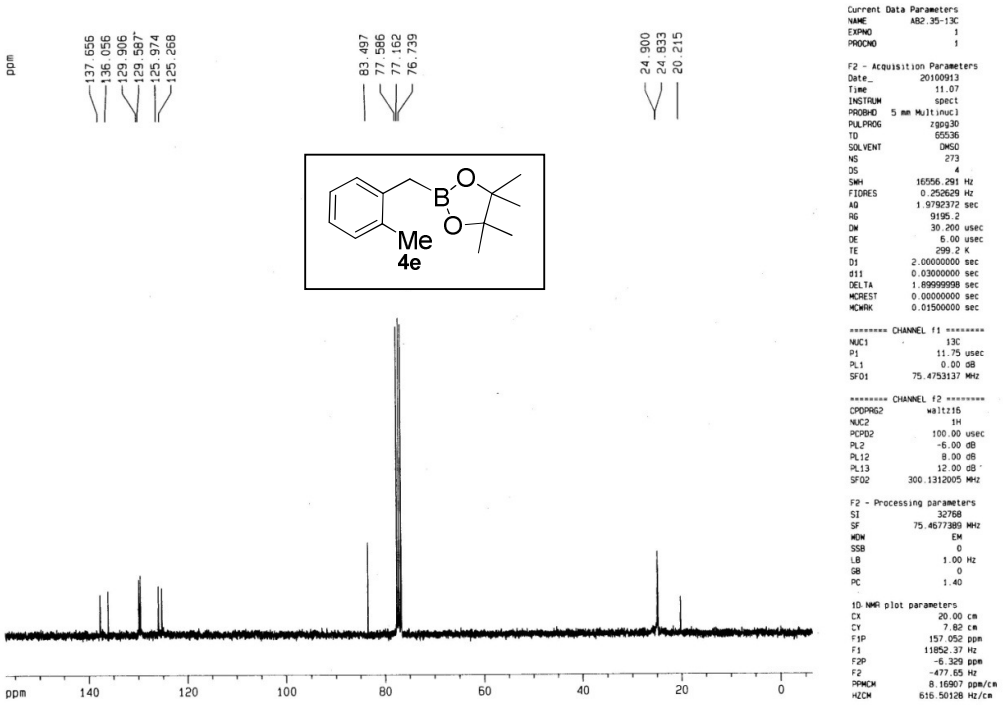
======== CHANNEL f1 ========
NUC1                   13C
P1                 11.75 usec
PL1                 0.00 dB
SFO1           75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2            waltz16
NUC2                    1H
PCPD2             100.00 usec
PL2                -6.00 dB
PL12                8.00 dB
PL13               12.00 dB
SFO2          300.1312005 MHz

F2 - Processing parameters
SI                     32768
SF             75.4677405 MHz
WDW                       EM
SSB                        0
LB                  1.00 Hz
GB                         0
PC                      1.40

1D NMR plot parameters
CX                 20.00 cm
CY                  5.19 cm
F1P               186.229 ppm
F1              14054.28 Hz
F2P               -11.095 ppm
F2               -837.34 Hz
PPMCM             9.86622 ppm/cm
HZCM            744.58142 Hz/cm
```






```
Current Data Parameters
NAME            AB2.35-13C
EXPNO                    1
PROCNO                   1

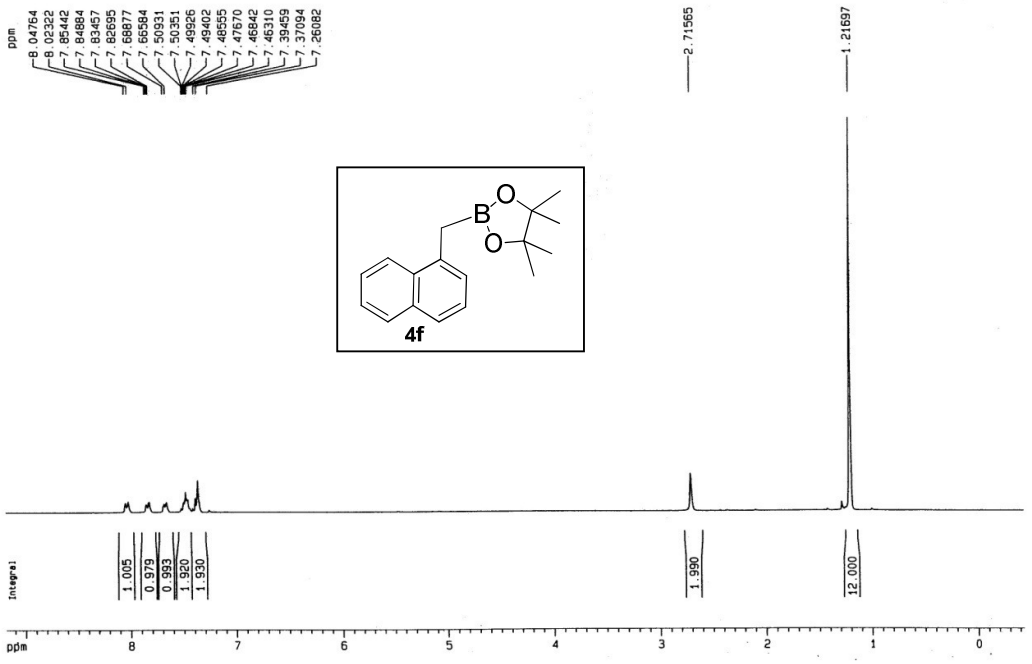
F2 - Acquisition Parameters
Date_              20100913
Time                  11.07
INSTRUM               spect
PROBHD   5 mm Multinucl
PULPROG           zgpg30
TD                 65536
SOLVENT             DMSO
NS                   273
DS                     4
SWH              16556.291 Hz
FIDRES            0.252629 Hz
AQ                1.9792372 sec
RG                   9195.2
DW                  30.200 usec
DE                   6.00 usec
TE                  299.2 K
D1                2.00000000 sec
d11               0.03000000 sec
DELTA             1.89999998 sec
MCREST            0.00000000 sec
MCWRK             0.01500000 sec

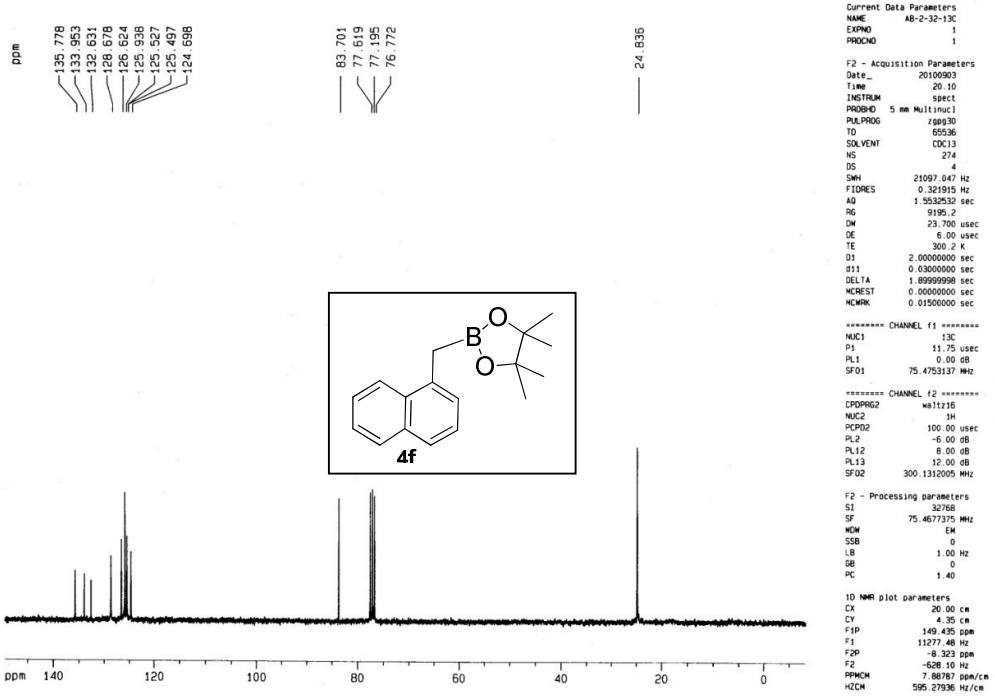
======== CHANNEL f1 ========
NUC1                    13C
P1                    11.75 usec
PL1                    0.00 dB
SFO1           75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2             waltz16
NUC2                    1H
PCPD2                100.00 usec
PL2                   -6.00 dB
PL12                   8.00 dB
PL13                  12.00 dB
SFO2          300.1312005 MHz

F2 - Processing parameters
SI                     32768
SF             75.4677389 MHz
WDW                       EM
SSB                        0
LB                      1.00 Hz
GB                         0
PC                      1.40

1D NMR plot parameters
CX                     20.00 cm
CY                      7.82 cm
F1P                  157.052 ppm
F1                 11852.37 Hz
F2P                 -6.329 ppm
F2                  -477.65 Hz
PPMCM              8.16907 ppm/cm
HZCM              616.50128 Hz/cm
```






```
Current Data Parameters
NAME                  AB-2-32-13C
EXPNO                           1
PROCNO                          1

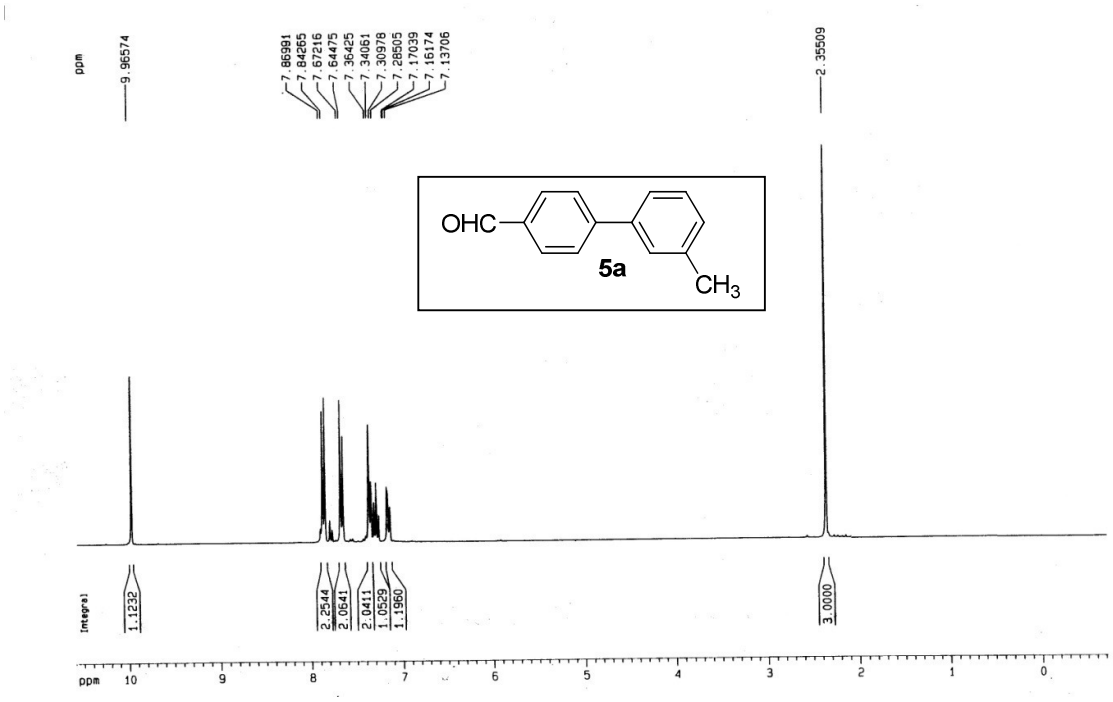
F2 - Acquisition Parameters
Date_               20100903
Time                   20.10
INSTRUM                spect
PROBHD   5 mm Multinucl
PULPROG                zgpg30
TD                      65536
SOLVENT                CDCl3
NS                        274
DS                          4
SWH                21097.047 Hz
FIDRES             0.321915 Hz
AQ                 1.5532532 sec
RG                      9195.2
DW                    23.700 usec
DE                     6.00 usec
TE                     300.2 K
D1                 2.00000000 sec
d11                0.03000000 sec
DELTA              1.89999998 sec
MCREST             0.00000000 sec
MCWRK              0.01500000 sec

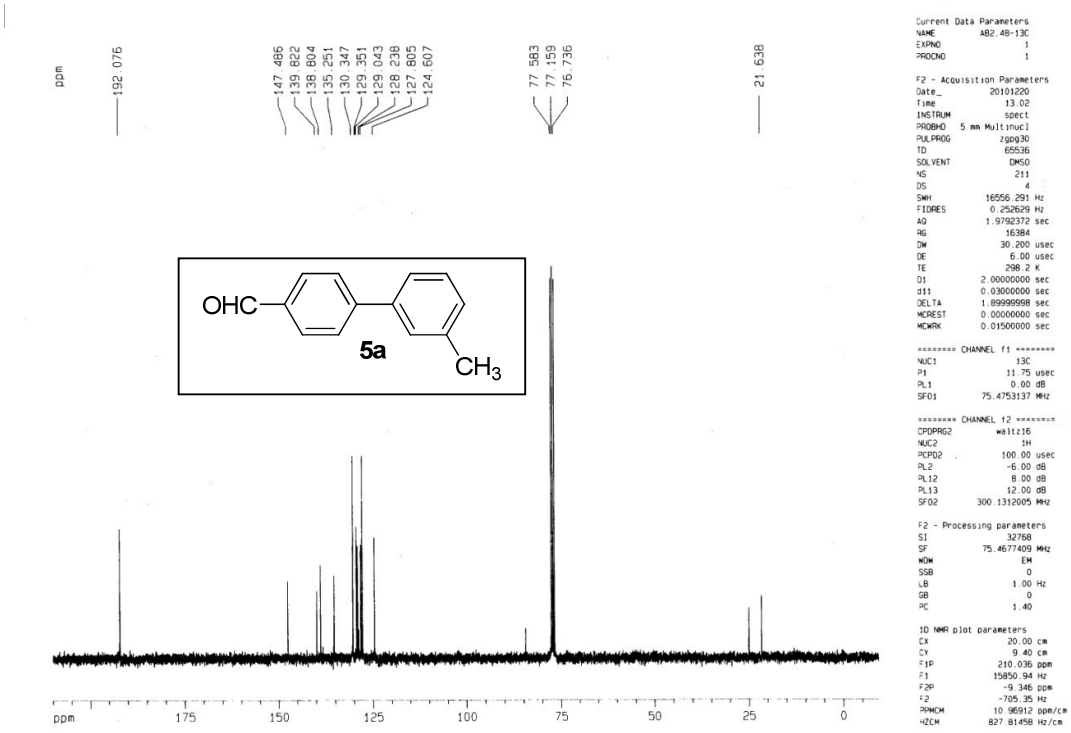
======== CHANNEL f1 ========
NUC1                      13C
P1                     11.75 usec
PL1                     0.00 dB
SFO1               75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                       1H
PCPD2                100.00 usec
PL2                     -6.00 dB
PL12                     8.00 dB
PL13                    12.00 dB
SFO2              300.1312005 MHz

F2 - Processing parameters
SI                        32768
SF                 75.4677375 MHz
WDW                          EM
SSB                           0
LB                         1.00 Hz
GB                            0
PC                         1.40

1D NMR plot parameters
CX                        20.00 cm
CY                         4.35 cm
F1P                      149.435 ppm
F1                     11277.48 Hz
F2P                       -8.323 ppm
F2                      -628.10 Hz
PPMCM                7.86787 ppm/cm
HZCM               595.27936 Hz/cm
```






```
Current Data Parameters
NAME          AB2.48-13C
EXPNO                  1
PROCNO                 1

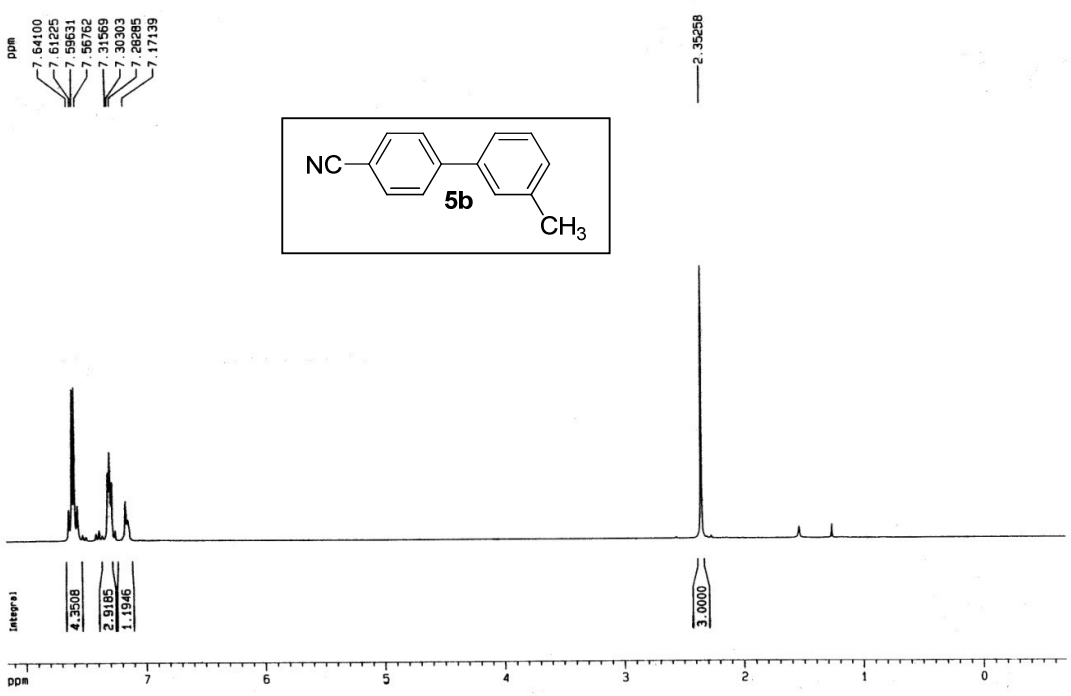
F2 - Acquisition Parameters
Date_           20101220
Time               13.02
INSTRUM            spect
PROBHD  5 mm Multinucl
PULPROG          zgpg30
TD                65536
SOLVENT            DMSO
NS                  211
DS                    4
SWH           16556.291 Hz
FIDRES        0.252629 Hz
AQ            1.9792372 sec
RG                16384
DW             30.200 usec
DE              6.00 usec
TE              298.2 K
D1           2.00000000 sec
d11          0.03000000 sec
DELTA        1.89999998 sec
MCREST       0.00000000 sec
MCWRK        0.01500000 sec

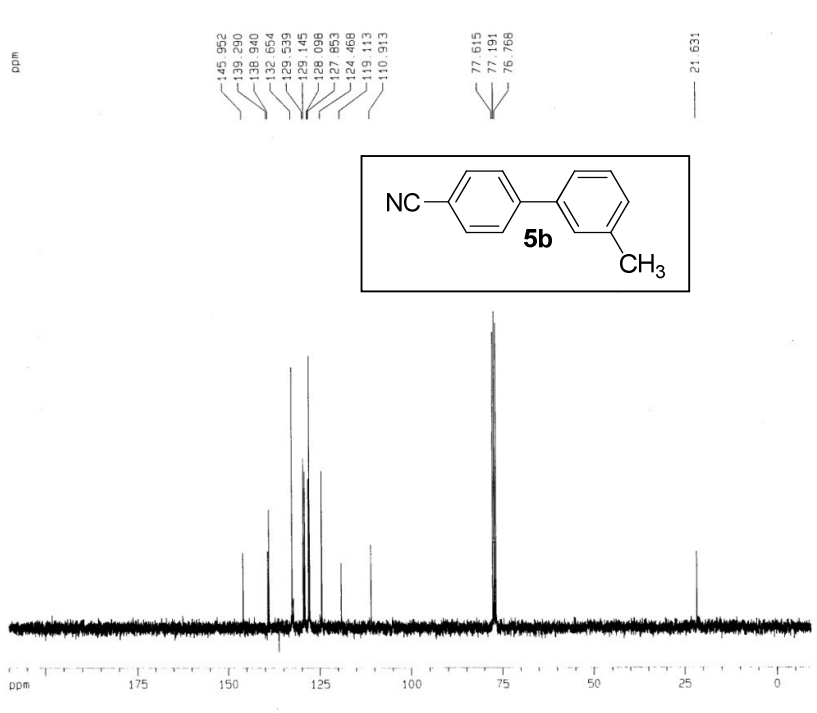
======== CHANNEL f1 ========
NUC1               13C
P1               11.75 usec
PL1               0.00 dB
SFO1        75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2         waltz16
NUC2                1H
PCPD2          100.00 usec
PL2             -6.00 dB
PL12             8.00 dB
PL13            12.00 dB
SFO2       300.1312005 MHz

F2 - Processing parameters
SI                32768
SF          75.4677409 MHz
WDW                EM
SSB                 0
LB               1.00 Hz
GB                  0
PC                1.40

1D NMR plot parameters
CX               20.00 cm
CY                9.40 cm
F1P             210.036 ppm
F1            15850.94 Hz
F2P            -9.346 ppm
F2             -705.35 Hz
PPMCM        10.96912 ppm/cm
HZCM        827.81458 Hz/cm
```






```
Current Data Parameters
NAME                  AB_A.47-13C
EXPNO                           1
PROCNO                          1

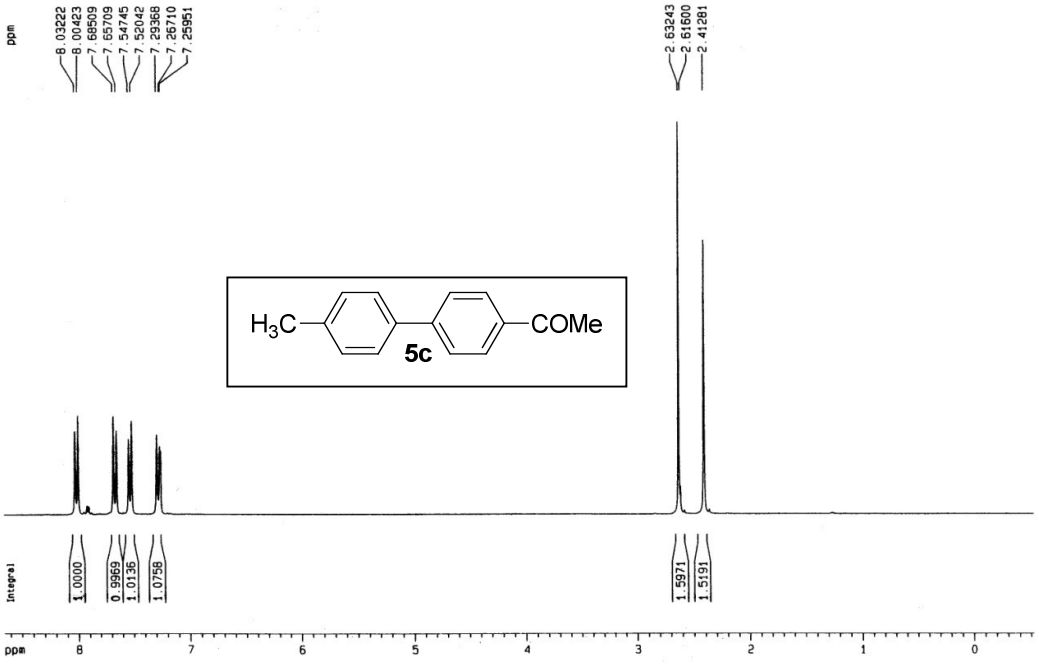
F2 - Acquisition Parameters
Date_                    20101129
Time                        14.08
INSTRUM                      spect
PROBHD     5 mm Multinucl
PULPROG                   zgpg30
TD                             65536
SOLVENT                      DMSO
NS                              91
DS                               4
SWH                      16556.291 Hz
FIDRES                    0.252629 Hz
AQ                        1.9792372 sec
RG                             16384
DW                        30.200 usec
DE                         6.00 usec
TE                            300.2 K
D1                        2.00000000 sec
d11                       0.03000000 sec
DELTA                     1.89999998 sec
MCREST                    0.00000000 sec
MCWRK                     0.01500000 sec

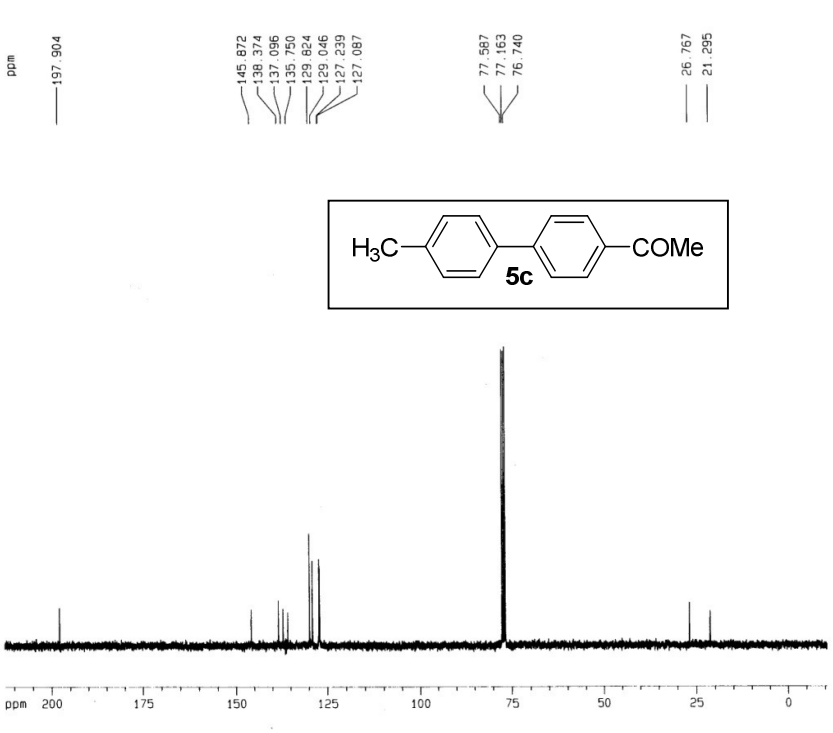
======== CHANNEL f1 ========
NUC1                            13C
P1                           11.75 usec
PL1                           0.00 dB
SF01                   75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2                     waltz16
NUC2                            1H
PCPD2                      100.00 usec
PL2                          -6.00 dB
PL12                          8.00 dB
PL13                         12.00 dB
SF02                  300.1312005 MHz

F2 - Processing parameters
SI                             32768
SF                    75.4677402 MHz
WDW                               EM
SSB                                0
LB                            1.00 Hz
GB                                 0
PC                             1.40

1D NMR plot parameters
CX                           20.00 cm
CY                            7.82 cm
F1P                        210.046 ppm
F1                        15851.69 Hz
F2P                         -9.336 ppm
F2                         -704.60 Hz
PPMCM                   10.96912 ppm/cm
HZCM                   827.81458 Hz/cm
```






```
Current Data Parameters
NAME                  AB-2-42-13C
EXPNO                           1
PROCNO                          1

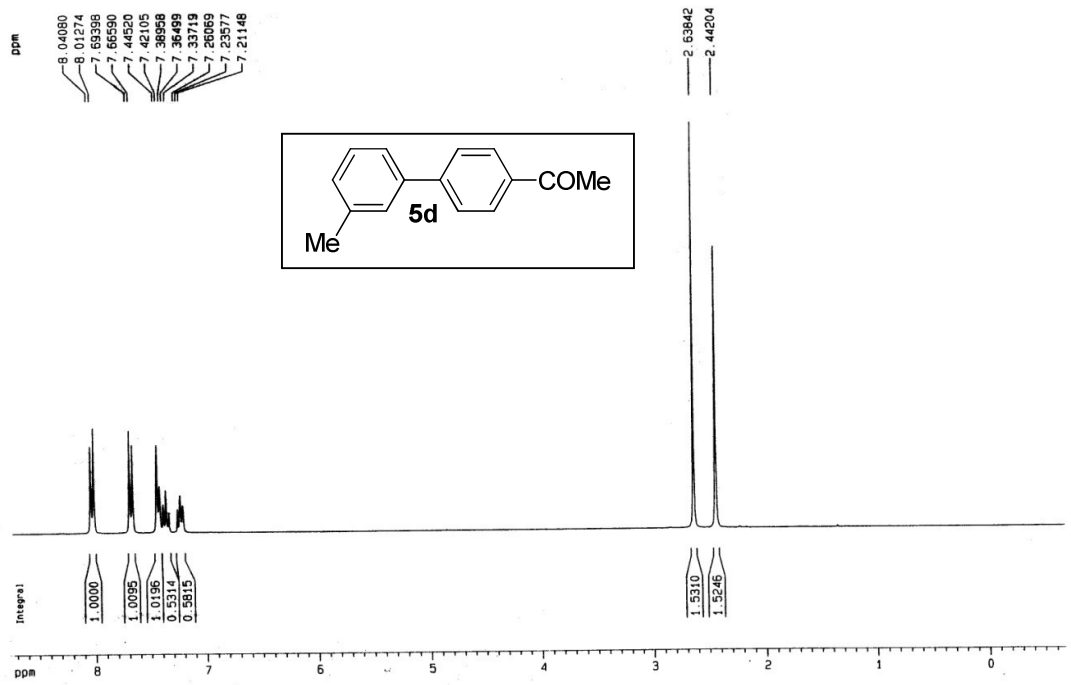
F2 - Acquisition Parameters
Date_              20101110
Time                      16.48
INSTRUM                   spect
PROBHD    5 mm Multinucl
PULPROG                 zgpg30
TD                       65536
SOLVENT                  CD3CN
NS                         256
DS                           4
SWH                  19607.844 Hz
FIDRES                0.299192 Hz
AQ                    1.6712180 sec
RG                       9195.2
DW                     25.500 usec
DE                      6.00 usec
TE                      299.2 K
D1                    2.00000000 sec
d11                   0.03000000 sec
DELTA                 1.89999998 sec
MCREST                0.00000000 sec
MCWRK                 0.01500000 sec

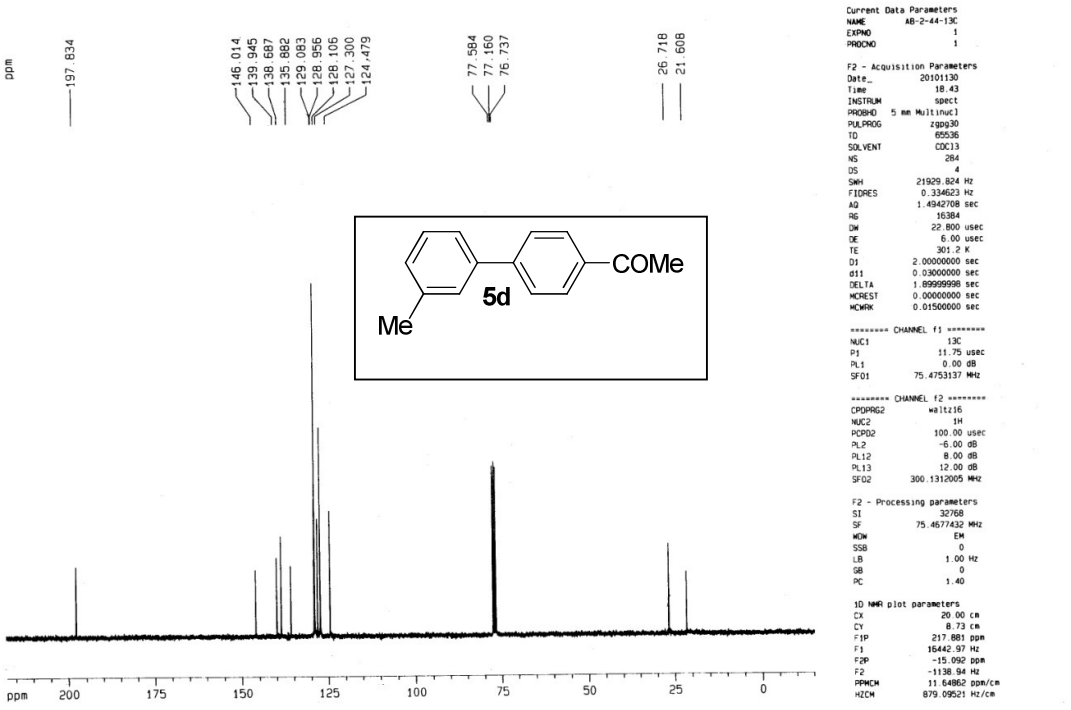
======== CHANNEL f1 ========
NUC1                        13C
P1                        11.75 usec
PL1                        0.00 dB
SFO1                 75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2                 waltz16
NUC2                        1H
PCPD2                   100.00 usec
PL2                       -6.00 dB
PL12                       8.00 dB
PL13                      12.00 dB
SFO2                300.1312005 MHz

F2 - Processing parameters
SI                         32768
SF                   75.4677391 MHz
WDW                           EM
SSB                            0
LB                          1.00 Hz
GB                             0
PC                          1.40

1D NMR plot parameters
CX                         20.00 cm
CY                          7.21 cm
F1P                       212.569 ppm
F1                      16042.13 Hz
F2P                       -10.545 ppm
F2                       -795.83 Hz
PPMCM                  11.15573 ppm/cm
HZCM                   841.89807 Hz/cm
```






```
Current Data Parameters
NAME          AB-2-44-13C
EXPNO                   1
PROCNO                  1

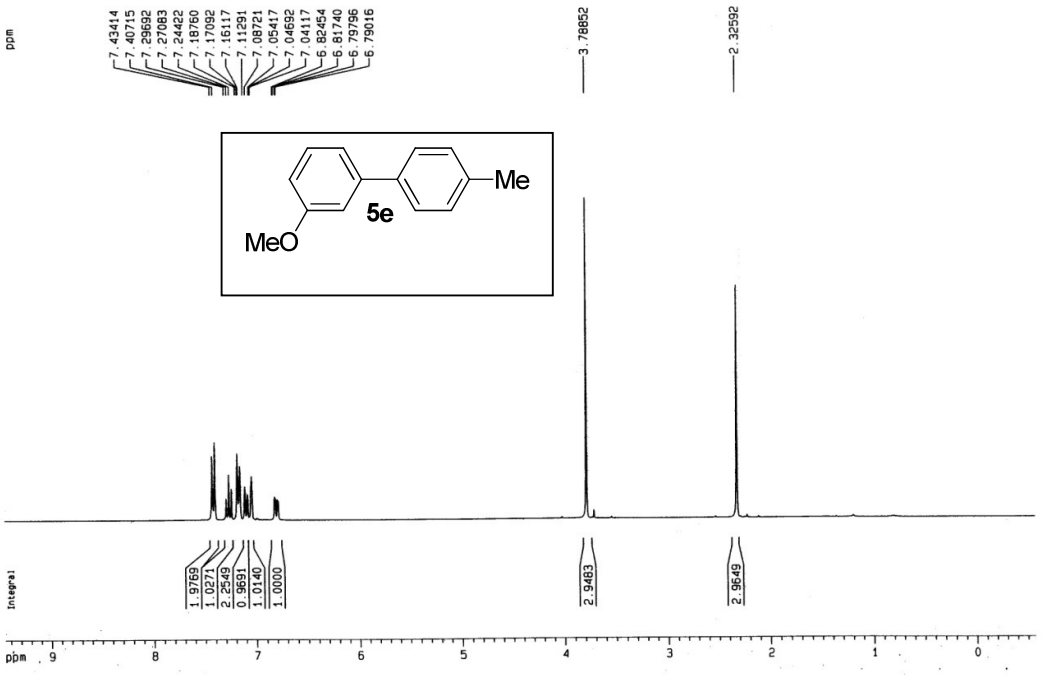
F2 - Acquisition Parameters
Date_              20101130
Time                  18.43
INSTRUM               spect
PROBHD   5 mm Multinucl
PULPROG            zgpg30
TD                  65536
SOLVENT             CDCl3
NS                    284
DS                      4
SWH              21929.824 Hz
FIDRES           0.334623 Hz
AQ               1.4942708 sec
RG                    16384
DW                 22.800 usec
DE                  6.00 usec
TE                  301.2 K
D1              2.00000000 sec
d11             0.03000000 sec
DELTA           1.89999998 sec
MCREST          0.00000000 sec
MCWRK           0.01500000 sec

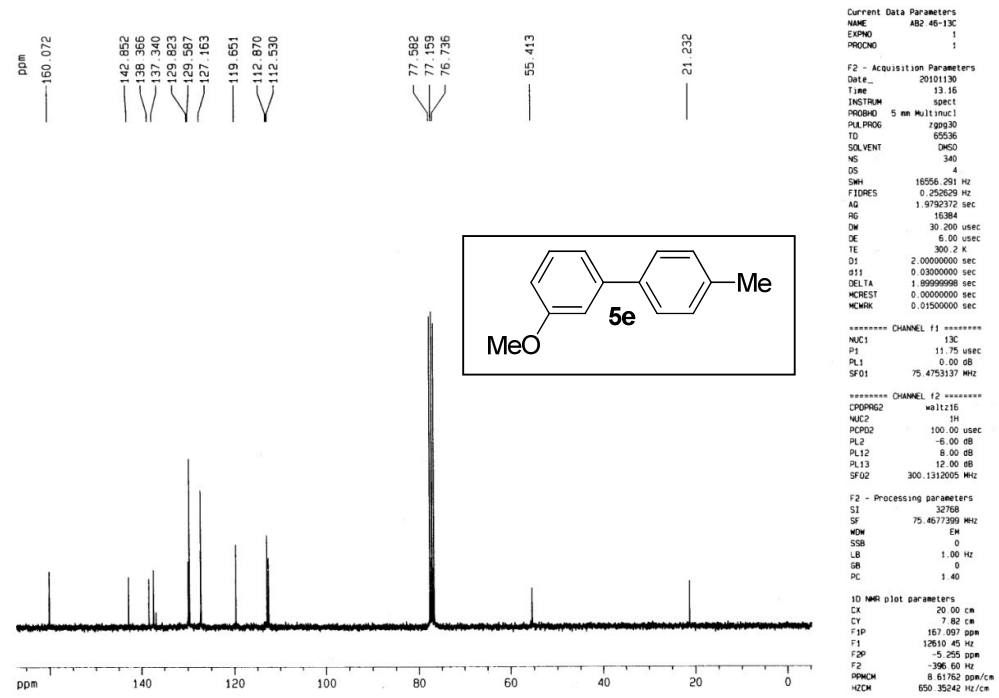
======== CHANNEL f1 ========
NUC1                   13C
P1                  11.75 usec
PL1                  0.00 dB
SFO1          75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2            waltz16
NUC2                    1H
PCPD2              100.00 usec
PL2                 -6.00 dB
PL12                 8.00 dB
PL13                12.00 dB
SFO2          300.1312005 MHz

F2 - Processing parameters
SI                     32768
SF            75.4677432 MHz
WDW                    EM
SSB                     0
LB                   1.00 Hz
GB                      0
PC                    1.40

1D NMR plot parameters
CX                  20.00 cm
CY                   8.73 cm
F1P               217.881 ppm
F1                15442.97 Hz
F2P               -15.092 ppm
F2                -1138.94 Hz
PPMCM             11.64862 ppm/cm
HZCM              879.09521 Hz/cm
```






```
Current Data Parameters
NAME                  AB2.46-13C
EXPNO                          1
PROCNO                         1

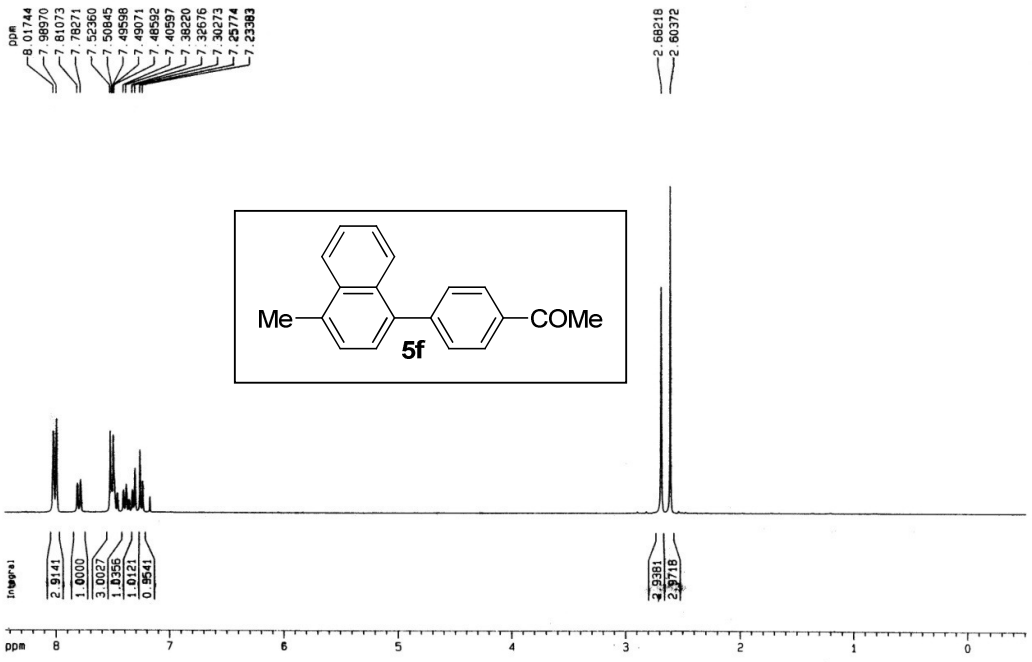
F2 - Acquisition Parameters
Date_                   20101130
Time                       13.16
INSTRUM                    spect
PROBHD     5 mm Multinucl
PULPROG                 zgpg30
TD                         65536
SOLVENT                    DMSO
NS                           340
DS                             4
SWH                    16556.291 Hz
FIDRES                 0.252629 Hz
AQ                     1.9792372 sec
RG                         16384
DW                        30.200 usec
DE                         6.00 usec
TE                         300.2 K
D1                     2.00000000 sec
d11                    0.03000000 sec
DELTA                  1.89999998 sec
MCREST                 0.00000000 sec
MCWRK                  0.01500000 sec

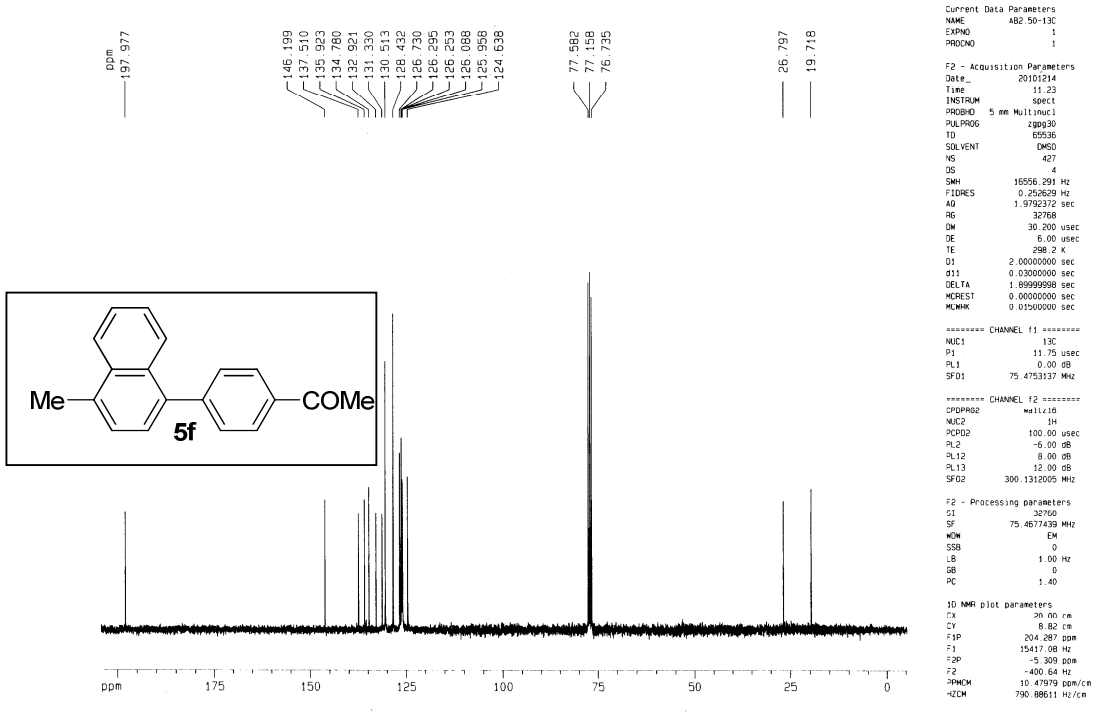
======== CHANNEL f1 ========
NUC1                         13C
P1                         11.75 usec
PL1                         0.00 dB
SFO1                  75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2                 waltz16
NUC2                         1H
PCPD2                     100.00 usec
PL2                        -6.00 dB
PL12                        8.00 dB
PL13                       12.00 dB
SFO2                  300.1312005 MHz

F2 - Processing parameters
SI                           32768
SF                    75.4677399 MHz
WDW                             EM
SSB                              0
LB                            1.00 Hz
GB                               0
PC                            1.40

1D NMR plot parameters
CX                           20.00 cm
CY                            7.82 cm
F1P                       167.097 ppm
F1                        12610.45 Hz
F2P                        -5.255 ppm
F2                         -396.60 Hz
PPMCM                   8.61762 ppm/cm
HZCM                    650.35242 Hz/cm
```






```
Current Data Parameters
NAME                  AB2.50-13C
EXPNO                          1
PROCNO                         1

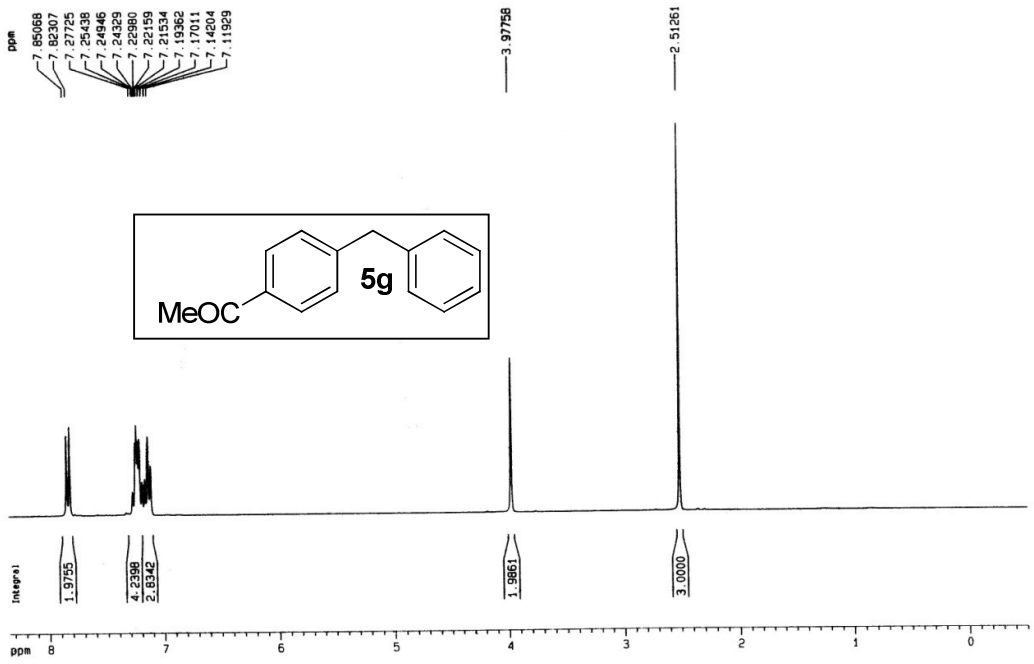
F2 - Acquisition Parameters
Date_                   20101214
Time                       11.23
INSTRUM                    spect
PROBHD    5 mm Multinucl
PULPROG                   zgpg30
TD                         65536
SOLVENT                     DMSO
NS                           427
DS                             4
SWH                    16556.291 Hz
FIDRES                  0.252629 Hz
AQ                      1.9792372 sec
RG                         32768
DW                        30.200 usec
DE                         6.00 usec
TE                        298.2 K
D1                     2.00000000 sec
d11                    0.03000000 sec
DELTA                  1.89999998 sec
MCREST                 0.00000000 sec
MCWRK                  0.01500000 sec

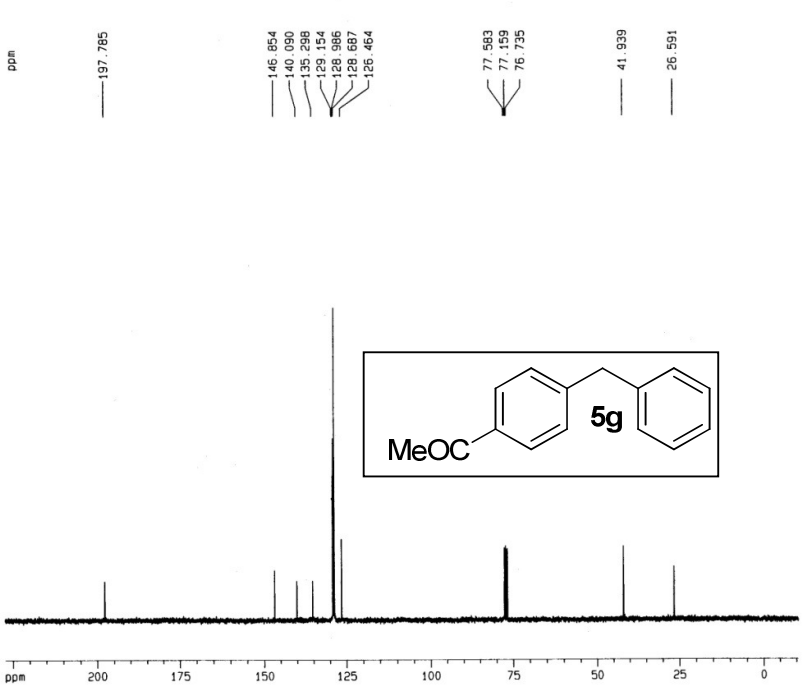
======== CHANNEL f1 ========
NUC1                         13C
P1                         11.75 usec
PL1                         0.00 dB
SFO1                  75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2                 waltz16
NUC2                         1H
PCPD2                     100.00 usec
PL2                        -6.00 dB
PL12                        8.00 dB
PL13                       12.00 dB
SFO2                300.1312005 MHz

F2 - Processing parameters
SI                         32768
SF                    75.4677439 MHz
WDW                           EM
SSB                            0
LB                          1.00 Hz
GB                             0
PC                          1.40

1D NMR plot parameters
CX                         20.00 cm
CY                          8.82 cm
F1P                       204.287 ppm
F1                      15417.08 Hz
F2P                        -5.309 ppm
F2                       -400.64 Hz
PPMCM                  10.47979 ppm/cm
HZCM                  790.88611 Hz/cm
```






```
Current Data Parameters
NAME          DKSI.CO-13C
EXPNO                   1
PROCNO                  1

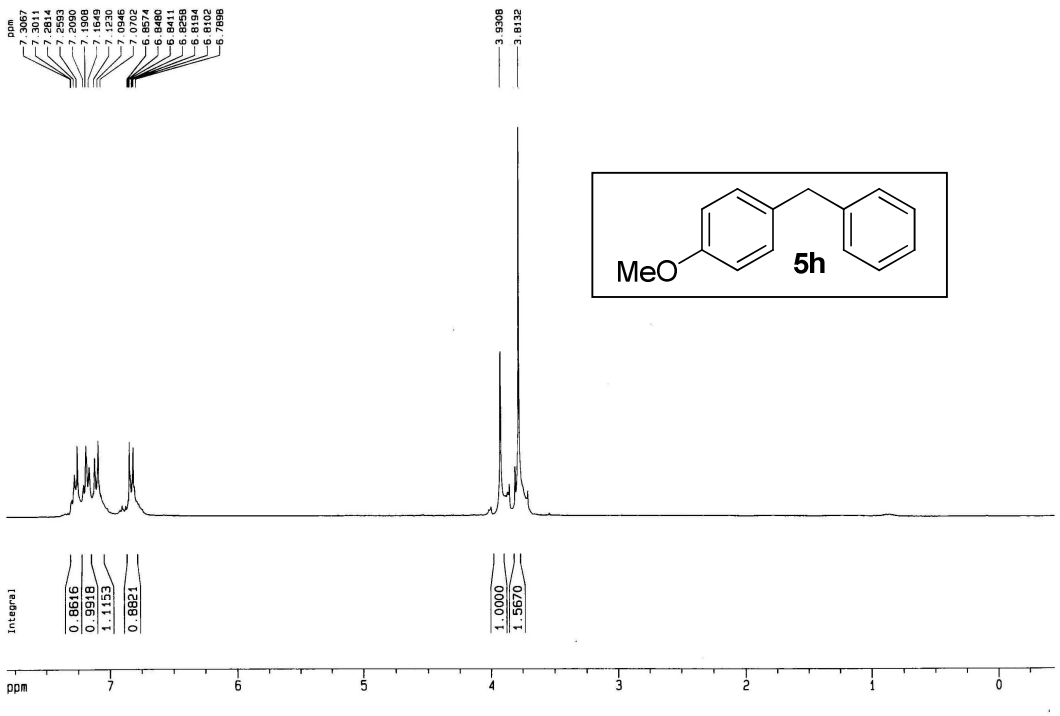
F2 - Acquisition Parameters
Date_              20100405
Time                  12.15
INSTRUM               spect
PROBHD  5 mm Multinucl
PULPROG           zgpg30
TD                 65536
SOLVENT            CD3CN
NS                    33
DS                     4
SWH               18939.395 Hz
FIDRES            0.288992 Hz
AQ                1.7302004 sec
RG                  9195.2
DW                 26.400 usec
DE                  6.00 usec
TE                  299.2 K
D1              2.00000000 sec
d11             0.03000000 sec
DELTA           1.89999998 sec
MCREST          0.00000000 sec
MCWRK           0.01500000 sec

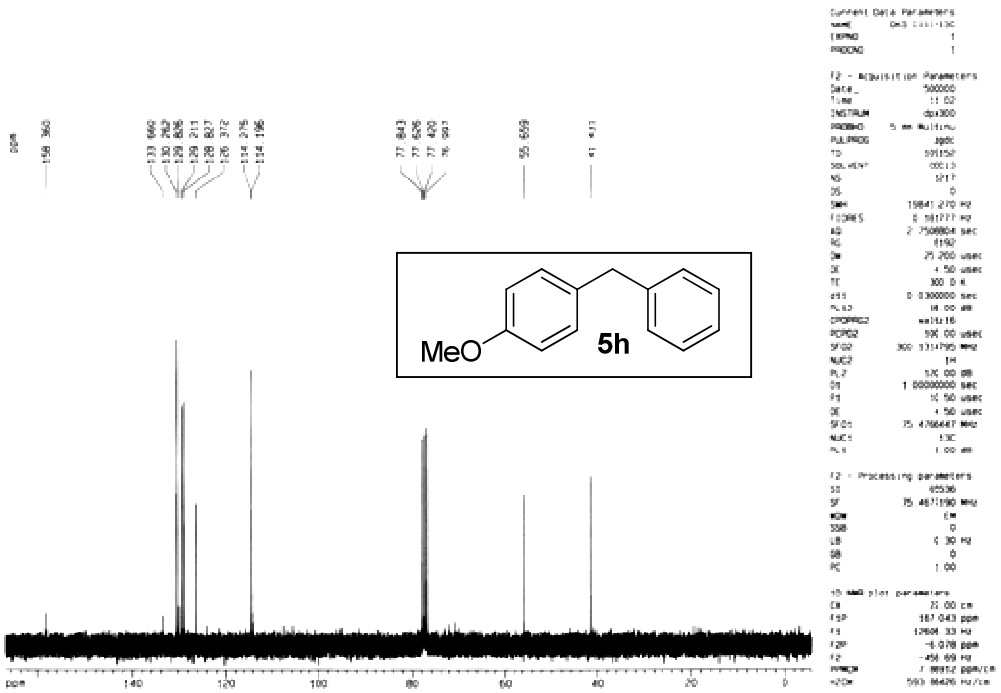
======== CHANNEL f1 ========
NUC1                  13C
P1                 11.75 usec
PL1                 0.00 dB
SFO1          75.4763276 MHz

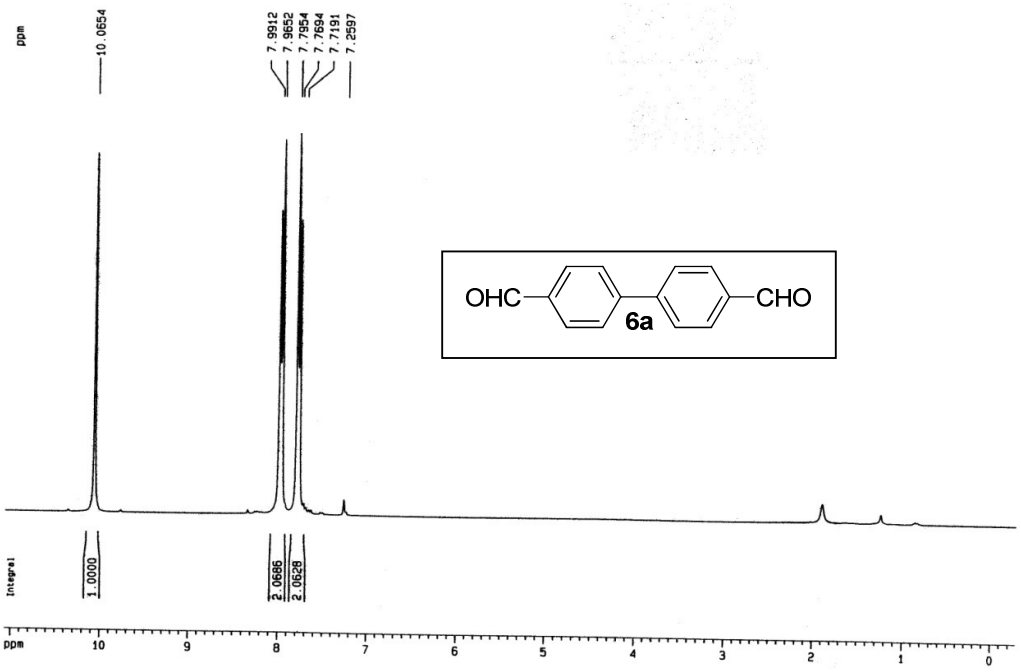
======== CHANNEL f2 ========
CPDPRG2           waltz16
NUC2                  1H
PCPD2             100.00 usec
PL2                -6.00 dB
PL12                8.00 dB
PL13               12.00 dB
SFO2          300.1312005 MHz

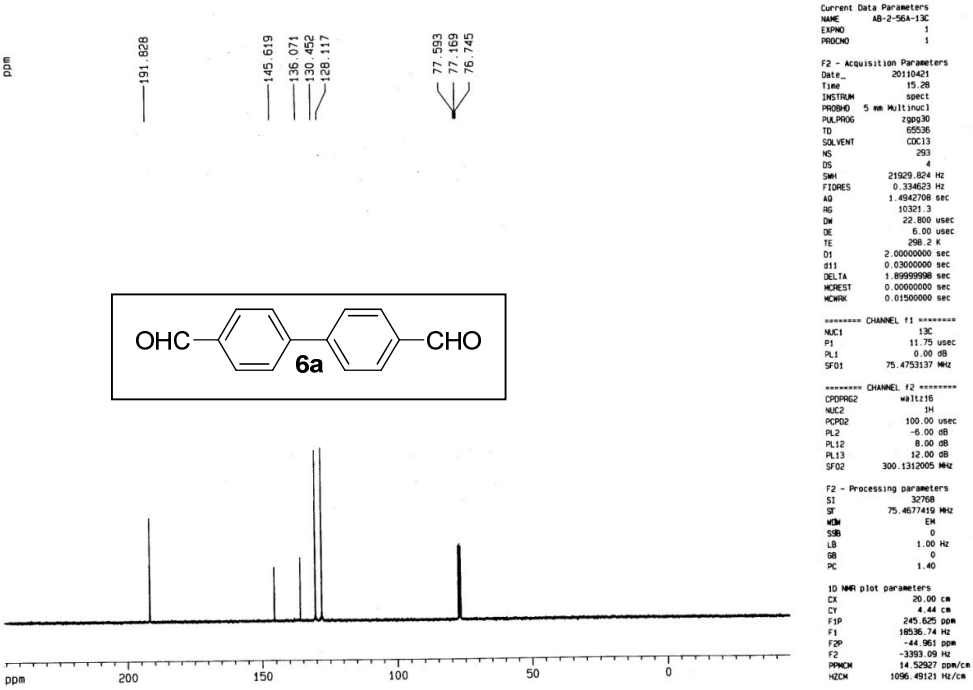
F2 - Processing parameters
SI                    32768
SF            75.4677487 MHz
WDW                     EM
SSB                      0
LB                  1.00 Hz
GB                       0
PC                    1.40

1D NMR plot parameters
CX                  20.00 cm
CY                   7.83 cm
F1P               227.541 ppm
F1                17172.01 Hz
F2P               -10.581 ppm
F2                -798.50 Hz
PPMCM             11.90609 ppm/cm
HZCM              898.52545 Hz/cm
```


MeO
5h
ppm
Integral


MeO
5h
ppm






```
Current Data Parameters
NAME          AB-2-56A-13C
EXPNO                    1
PROCNO                   1

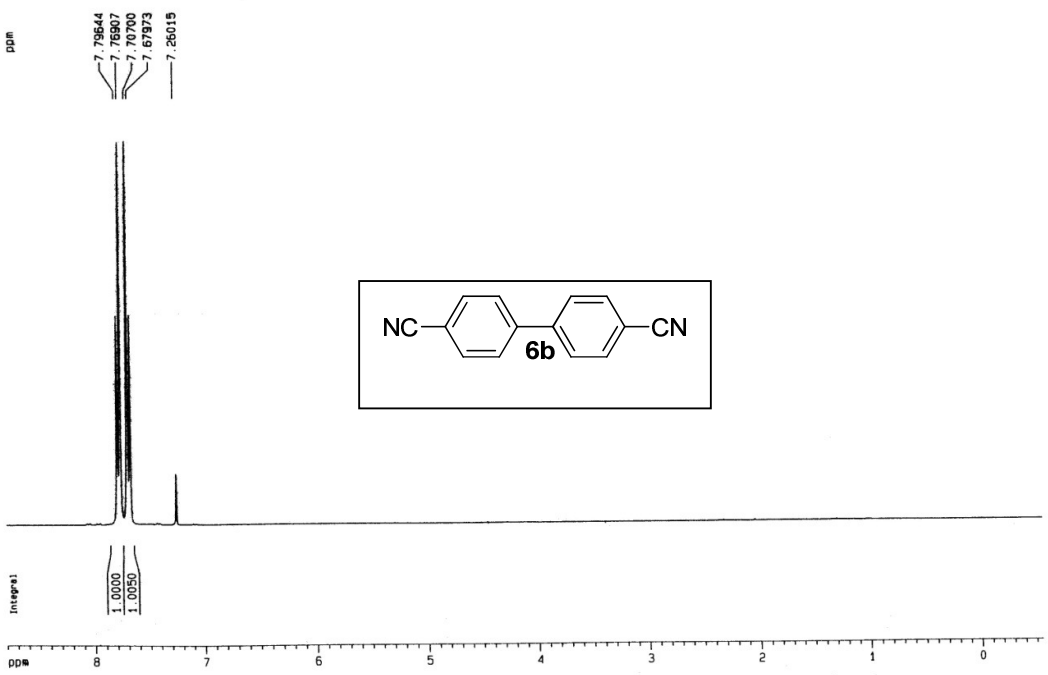
F2 - Acquisition Parameters
Date_              20110421
Time                  15.28
INSTRUM               spect
PROBHD   5 mm Multinucl
PULPROG           zgpg30
TD                 65536
SOLVENT             CDCl3
NS                    293
DS                      4
SWH               21929.824 Hz
FIDRES             0.334623 Hz
AQ                1.4942708 sec
RG                 10321.3
DW                   22.800 usec
DE                    6.00 usec
TE                  298.2 K
D1                2.00000000 sec
d11               0.03000000 sec
DELTA             1.89999998 sec
MCREST            0.00000000 sec
MCWRK             0.01500000 sec

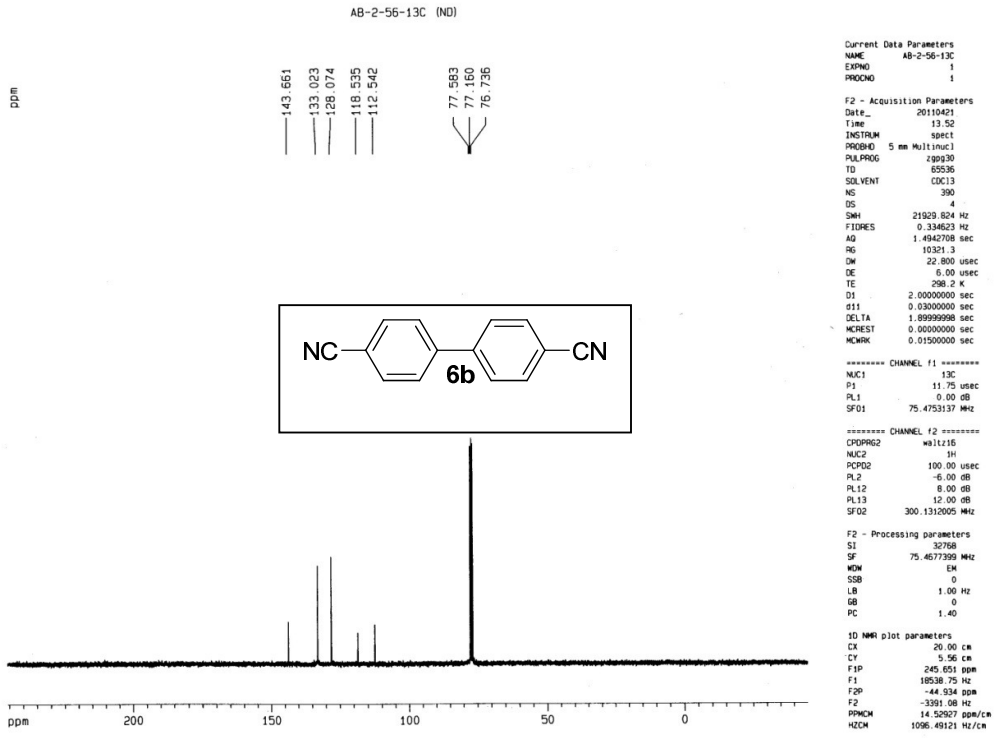
======== CHANNEL f1 ========
NUC1                   13C
P1                   11.75 usec
PL1                   0.00 dB
SFO1           75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                   1H
PCPD2               100.00 usec
PL2                  -6.00 dB
PL12                  8.00 dB
PL13                 12.00 dB
SFO2          300.1312005 MHz

F2 - Processing parameters
SI                    32768
SF             75.4677419 MHz
WDW                      EM
SSB                       0
LB                     1.00 Hz
GB                        0
PC                     1.40

1D NMR plot parameters
CX                    20.00 cm
CY                     4.44 cm
F1P                  245.625 ppm
F1                 18536.74 Hz
F2P                 -44.961 ppm
F2                 -3393.09 Hz
PPMCM              14.52927 ppm/cm
HZCM               1096.49121 Hz/cm
```






```
Current Data Parameters
NAME          AB-2-56-13C
EXPNO                   1
PROCNO                  1

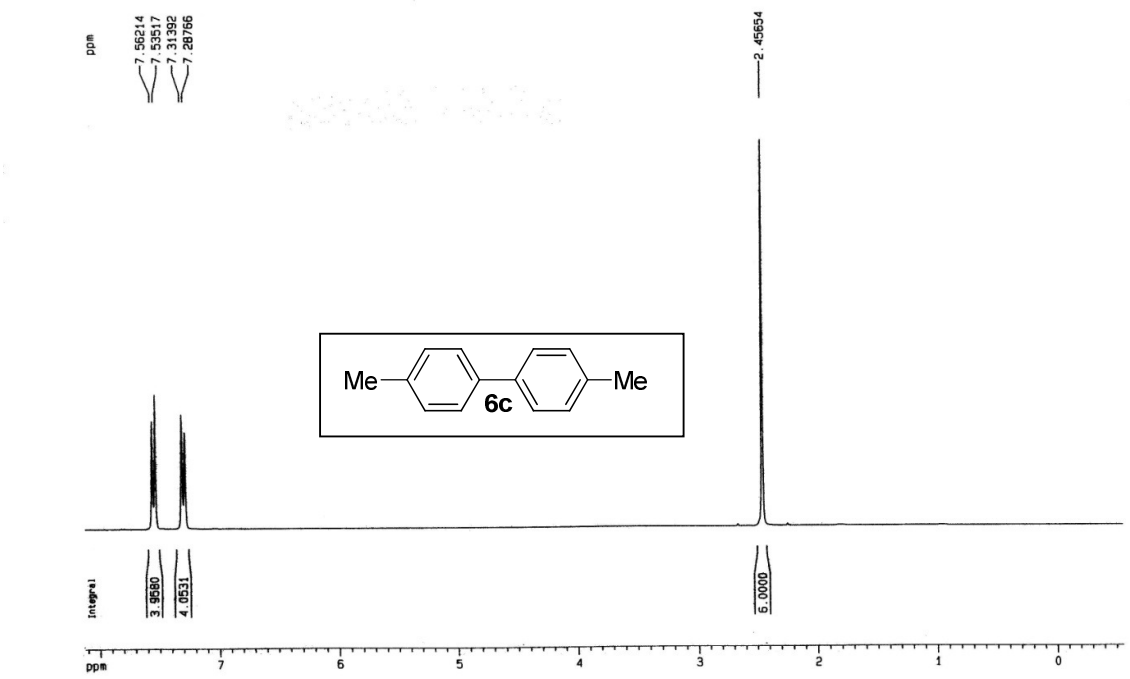
F2 - Acquisition Parameters
Date_          20110421
Time             13.52
INSTRUM          spect
PROBHD   5 mm Multinucl
PULPROG          zgpg30
TD              65536
SOLVENT          CDCl3
NS                 390
DS                   4
SWH          21929.824 Hz
FIDRES        0.334623 Hz
AQ            1.4942708 sec
RG              10321.3
DW              22.800 usec
DE               6.00 usec
TE              298.2 K
D1           2.00000000 sec
d11          0.03000000 sec
DELTA        1.89999998 sec
MCREST       0.00000000 sec
MCWRK        0.01500000 sec

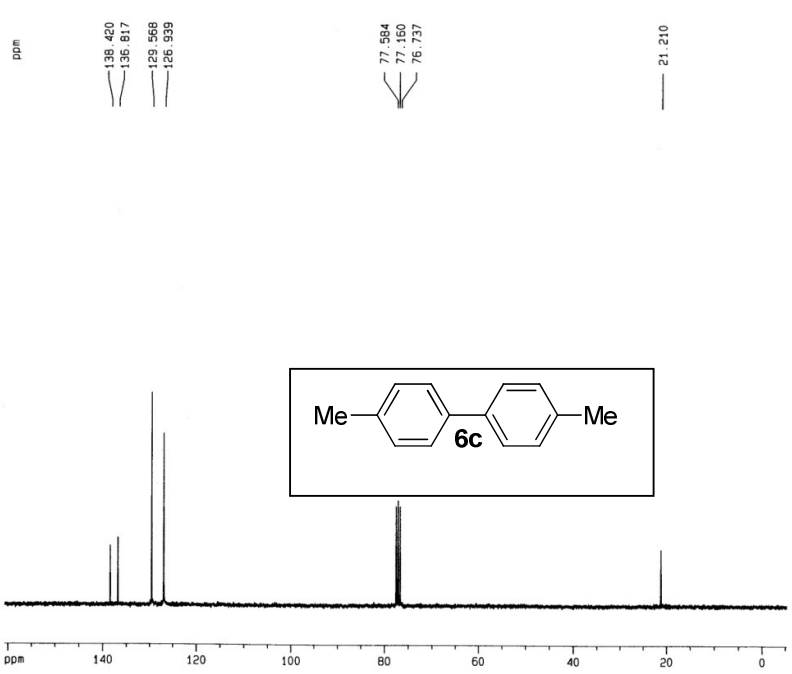
======== CHANNEL f1 ========
NUC1               13C
P1               11.75 usec
PL1               0.00 dB
SF01        75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2         waltz16
NUC2               1H
PCPD2           100.00 usec
PL2              -6.00 dB
PL12              8.00 dB
PL13             12.00 dB
SF02       300.1312005 MHz

F2 - Processing parameters
SI                32768
SF          75.4677399 MHz
WDW                EM
SSB                 0
LB               1.00 Hz
GB                  0
PC                1.40

1D NMR plot parameters
CX               20.00 cm
CY                5.56 cm
F1P             245.651 ppm
F1             18538.75 Hz
F2P             -44.934 ppm
F2              -3391.08 Hz
PPMCM          14.52927 ppm/cm
HZCM         1096.49121 Hz/cm
```






```
Current Data Parameters
NAME                  AB-2-54A-13C
EXPNO                            2
PROCNO                           1

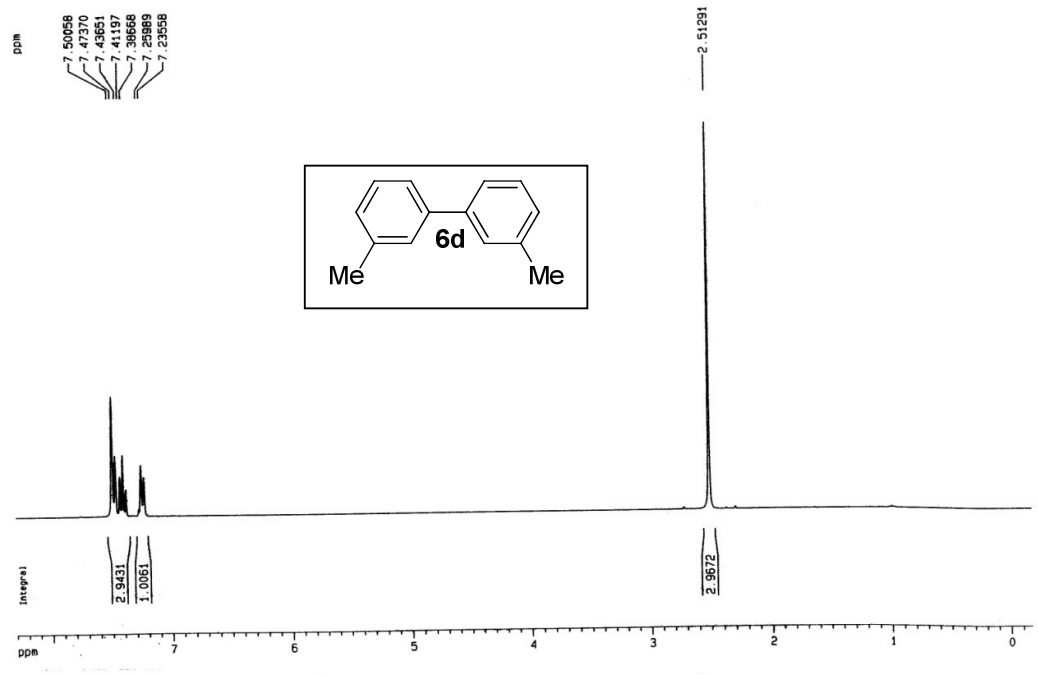
F2 - Acquisition Parameters
Date_                     20110519
Time                         17.07
INSTRUM                      spect
PROBHD    5 mm Multinucl
PULPROG                   zgpg30
TD                             65536
SOLVENT                      CDCl3
NS                             105
DS                               4
SWH                      21929.824 Hz
FIDRES                    0.334623 Hz
AQ                        1.494270 sec
RG                             9195.2
DW                           22.800 usec
DE                            6.00 usec
TE                           298.2 K
D1                        2.00000000 sec
d11                       0.03000000 sec
DELTA                     1.89999998 sec
MCREST                    0.00000000 sec
MCWRK                     0.01500000 sec

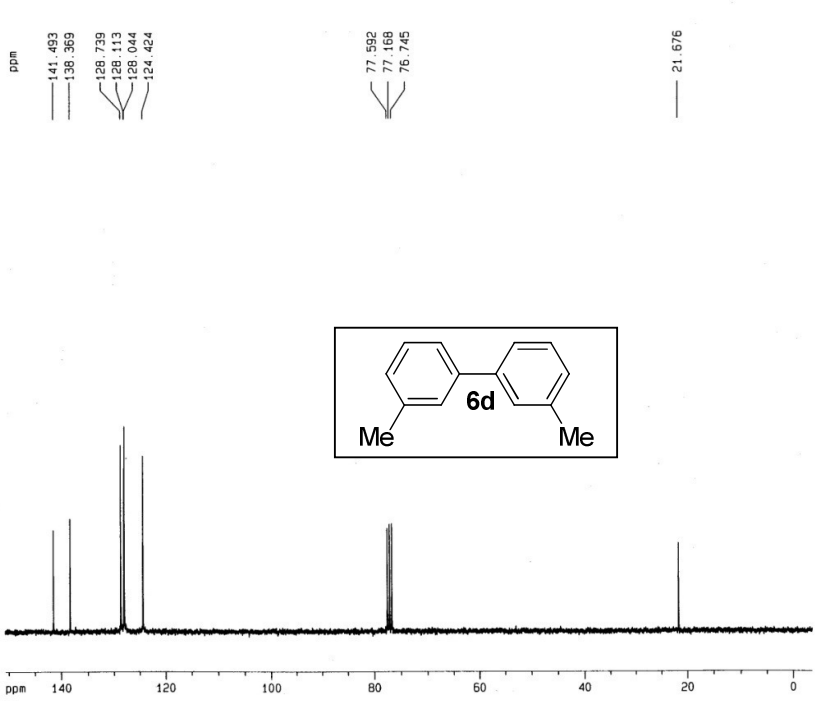
======== CHANNEL f1 ========
NUC1                           13C
P1                           11.75 usec
PL1                           0.00 dB
SFO1                  75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2                    waltz16
NUC2                           1H
PCPD2                       100.00 usec
PL2                          -6.00 dB
PL12                          8.00 dB
PL13                         12.00 dB
SFO2                  300.1312005 MHz

F2 - Processing parameters
SI                             32768
SF                    75.4677425 MHz
WDW                            EM
SSB                             0
LB                            1.00 Hz
GB                              0
PC                            0.30

1D NMR plot parameters
CX                           20.00 cm
CY                            5.41 cm
F1P                         160.733 ppm
F1                        12130.18 Hz
F2P                          -5.267 ppm
F2                         -397.45 Hz
PPMCM                    8.29999 ppm/cm
HZCM                   626.38184 Hz/cm
```






```
Current Data Parameters
NAME                  AB-2-55-13C
EXPNO                           1
PROCNO                          1

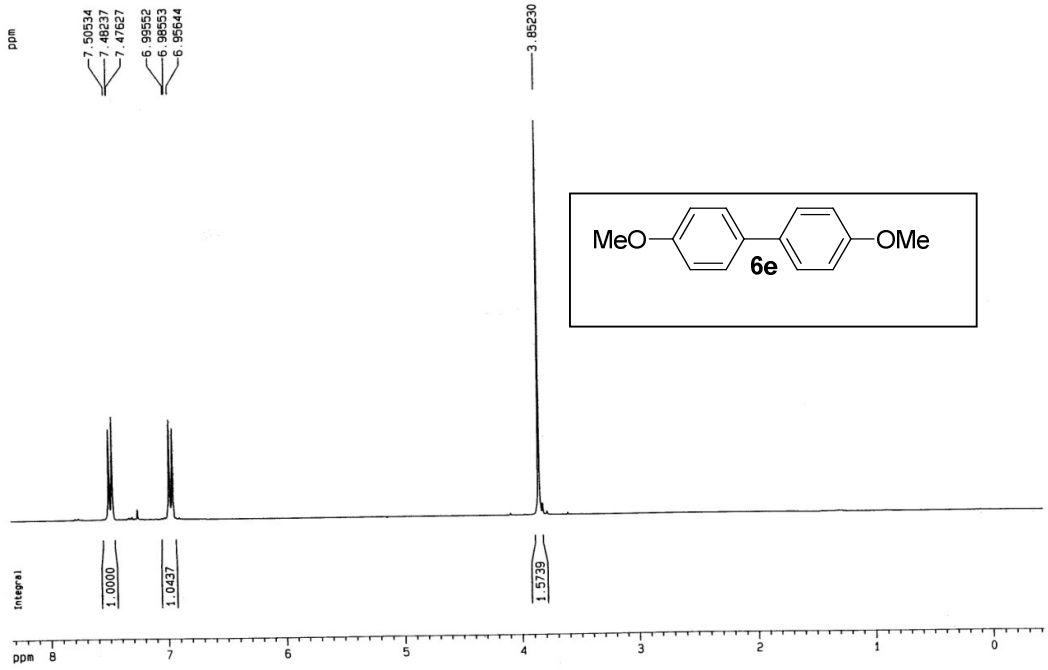
F2 - Acquisition Parameters
Date_               20110412
Time                      16.59
INSTRUM                   spect
PROBHD     5 mm Multinucl
PULPROG                 zgpg30
TD                       65536
SOLVENT                   DMSO
NS                          70
DS                           4
SWH                16556.291 Hz
FIDRES              0.252629 Hz
AQ                  1.9792372 sec
RG                       32768
DW                    30.200 usec
DE                     6.00 usec
TE                     298.2 K
D1                 2.00000000 sec
d11                0.03000000 sec
DELTA              1.89999998 sec
MCREST             0.00000000 sec
MCWRK              0.01500000 sec

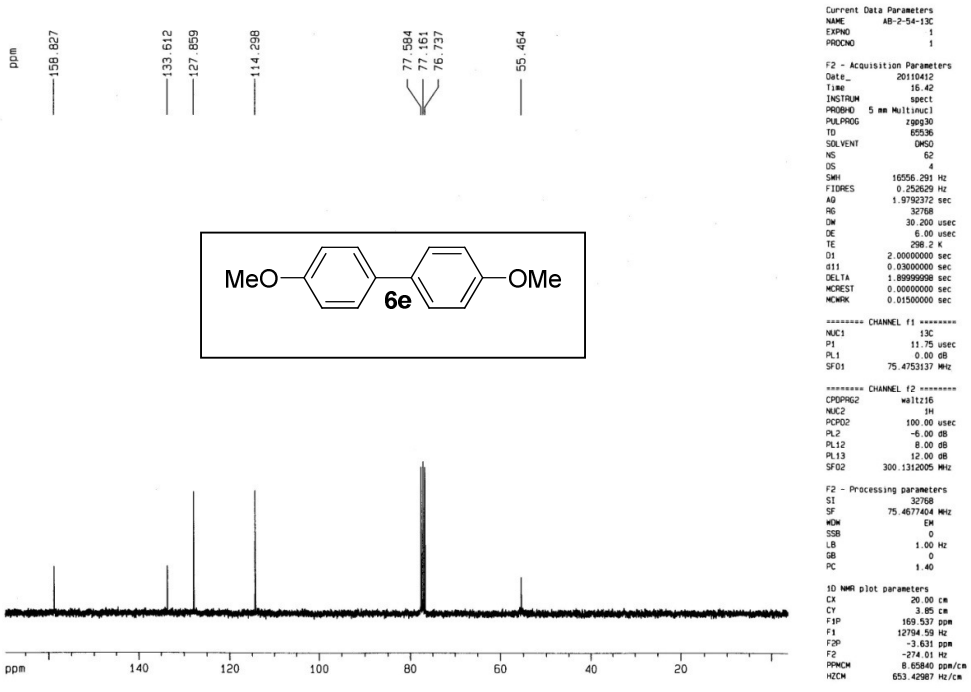
======== CHANNEL f1 ========
NUC1                       13C
P1                      11.75 usec
PL1                      0.00 dB
SFO1               75.4753137 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                       1H
PCPD2                  100.00 usec
PL2                      -6.00 dB
PL12                      8.00 dB
PL13                     12.00 dB
SFO2              300.1312005 MHz

F2 - Processing parameters
SI                       32768
SF                 75.4677444 MHz
WDW                        EM
SSB                         0
LB                       1.00 Hz
GB                          0
PC                       1.40

1D NMR plot parameters
CX                      20.00 cm
CY                       5.14 cm
F1P                    150.726 ppm
F1                   11374.95 Hz
F2P                   -3.684 ppm
F2                   -278.05 Hz
PPMCM                 7.72052 ppm/cm
HZCM                582.65021 Hz/cm
```






```
Current Data Parameters
NAME              AB-2-54-13C
EXPNO                       1
PROCNO                      1

F2 - Acquisition Parameters
Date_            20110412
Time                16.42
INSTRUM             spect
PROBHD   5 mm Multinucl
PULPROG             zgpg30
TD                   65536
SOLVENT               DMSO
NS                      62
DS                       4
SWH              16556.291 Hz
FIDRES           0.252629 Hz
AQ               1.9792372 sec
RG                   32768
DW                  30.200 usec
DE                   6.00 usec
TE                  298.2 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                  11.75 usec
PL1                  0.00 dB
SFO1           75.4753137 MHz

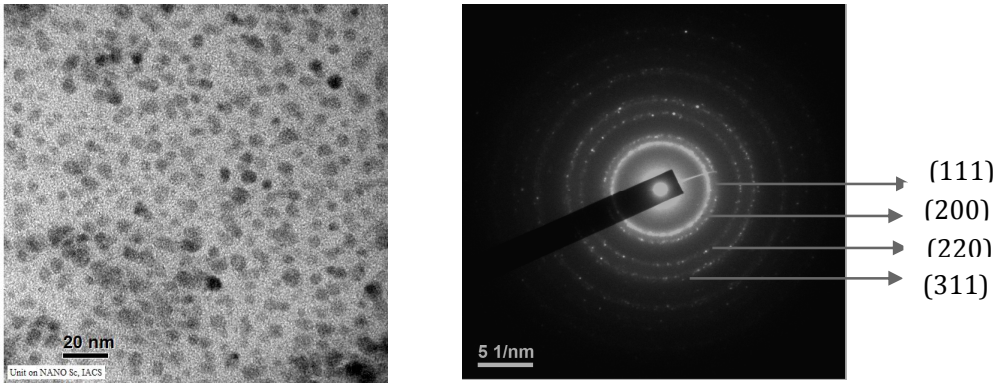
======== CHANNEL f2 ========
CPDPRG2             waltz16
NUC2                    1H
PCPD2              100.00 usec
PL2                 -6.00 dB
PL12                 8.00 dB
PL13                12.00 dB
SFO2           300.1312005 MHz

F2 - Processing parameters
SI                   32768
SF             75.4677404 MHz
WDW                     EM
SSB                      0
LB                    1.00 Hz
GB                       0
PC                    1.40

1D NMR plot parameters
CX                   20.00 cm
CY                    3.85 cm
F1P                169.537 ppm
F1                 12794.59 Hz
F2P                 -3.631 ppm
F2                  -274.01 Hz
PPMCM             8.65840 ppm/cm
HZCM             653.42987 Hz/cm
```

5. TEM image of nanoparticle:

The nanoparticle formed is characterized by Transmission electron microscopy (TEM). The average size of the nanoparticle formed was 6 nm. The selected area electron diffraction (SAED) pattern shows four diffused rings corresponds to (200), (220) and (311) reflections of *fcc* Pd (Figure-1)



(a) (b)

Figure 1: (a) TEM image of palladium nanoparticle and (b) selected area electron diffraction (SAED) image.

6. Recycling study:

The organic product was extracted five times with ether after each run and the reaction was continued with a fresh batch of substrate (3-bromotoluene, 1 mmol scale) added to the separated nanoparticle suspension.