Supporting Information

$CuFe_2O_4$ magnetic nanoparticles catalyzed odorless synthesis of sulfides using phenylboronic acid, aryl halides in the presence of S_8

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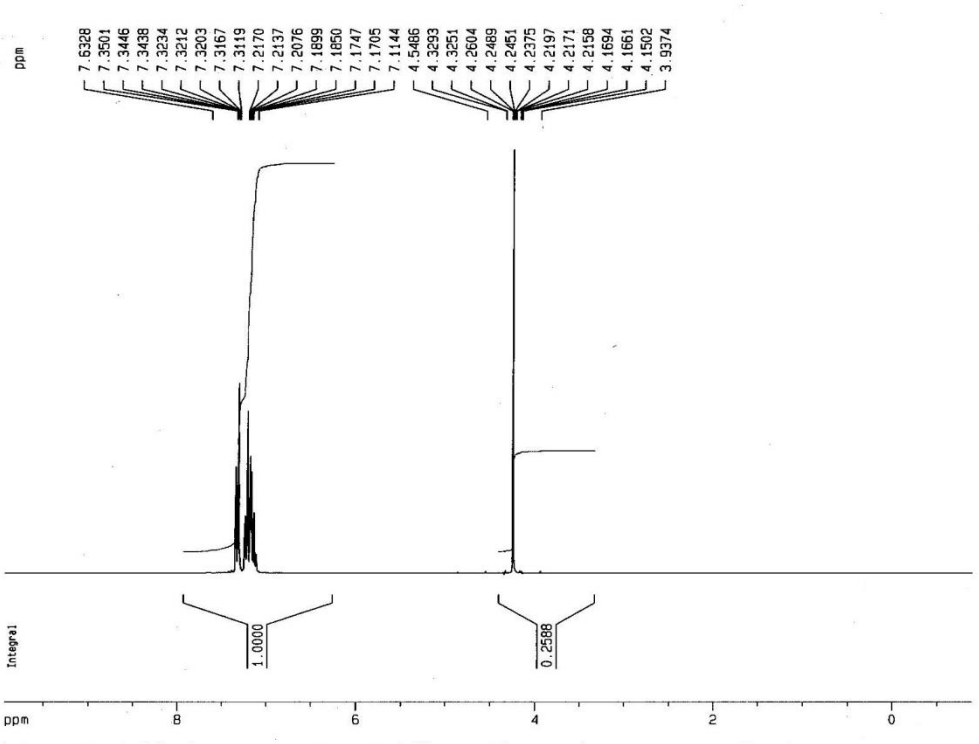
New Journal of Chemistry

1. General information

All chemicals were purchased from commercial suppliers and used without further purification**.** ^{1}H and ^{13}C NMR spectra were collected on 250 or 400 MHz NMR spectrometers using $CDCl_3$ as solvent. Chemical shifts for protons are reported in parts per million downfield and are referenced to residual protium in the NMR solvent ($CHCl_3$ = δ 7.26). Chemical shifts for carbon are reported in parts per million downfield and are referenced to the carbon resonances of the solvent ($CDCl_3$ = δ 77.0).

The ^{1}H NMR and ^{13}C NMR spectra of 4-methoxy diphenyl sulfide (Table 2, entry 2) [4]

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PROCNO                   1

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Time                 11.09
INSTRUM              spect
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PULPROG                zg
TD                  31054
SOLVENT             CDCl3
NS                     10
DS                      0
SWH              5175.983 Hz
FIDRES           0.166677 Hz
AQ               2.9998685 sec
RG                   71.8
DW                 96.600 usec
DE                  6.00 usec
TE                   0.0 K
D1               1.50000000 sec
MCREST           0.00000000 sec
MCWRK            0.01500000 sec

======== CHANNEL f1 ========
NUC1                   1H
P1                  11.70 usec
PL1                 -3.00 dB
SFO1           250.1315447 MHz

F2 - Processing parameters
SI                    32768
SF             250.1300326 MHz
WDW                      EM
SSB                       0
LB                     0.00 Hz
GB                        0
PC                     1.50

1D NMR plot parameters
CX                    20.00 cm
CY                    10.00 cm
F1P                    9.939 ppm
F1                  2486.08 Hz
F2P                   -0.895 ppm
F2                  -223.74 Hz
PPMCM                 0.54168 ppm/cm
HZCM                135.49117 Hz/cm
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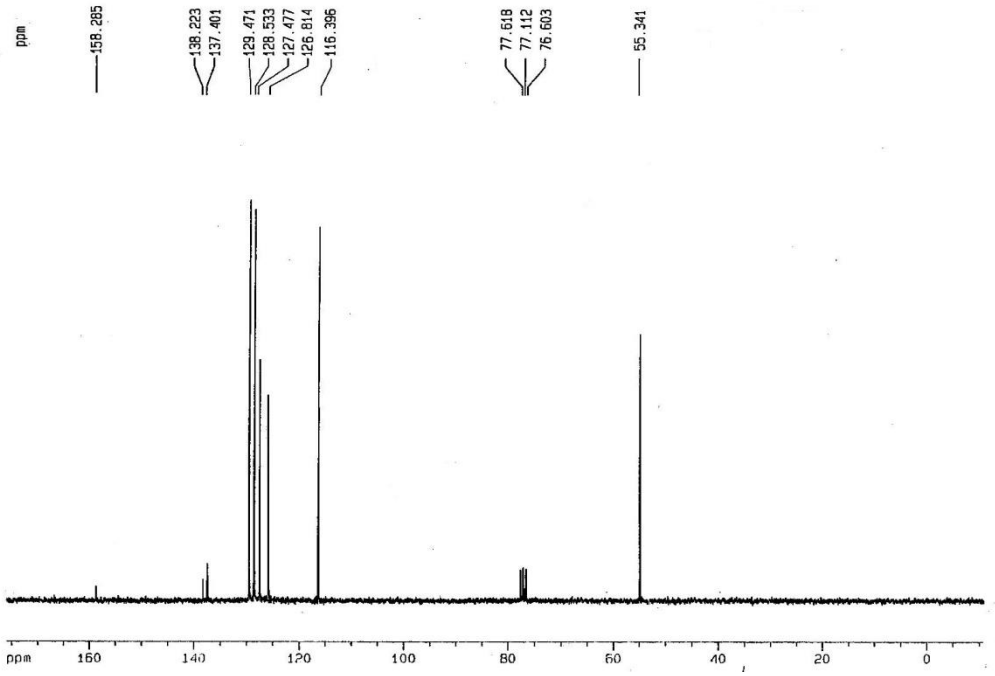


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PROCNO                   1

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Time                 11.10
INSTRUM              spect
PROBHD   5 mm Dual 13C/
PULPROG              zgpg
TD                  39154
SOLVENT             CDCl3
NS                    100
DS                      0
SWH              15060.241 Hz
FIDRES           0.384641 Hz
AQ               1.2999628 sec
RG                   32768
DW                 33.200 usec
DE                  6.00 usec
TE                   0.0 K
D1               1.29999995 sec
d11              0.03000000 sec
DELTA            1.19999993 sec
MCREST           0.00000000 sec
MCWRK            0.01500000 sec

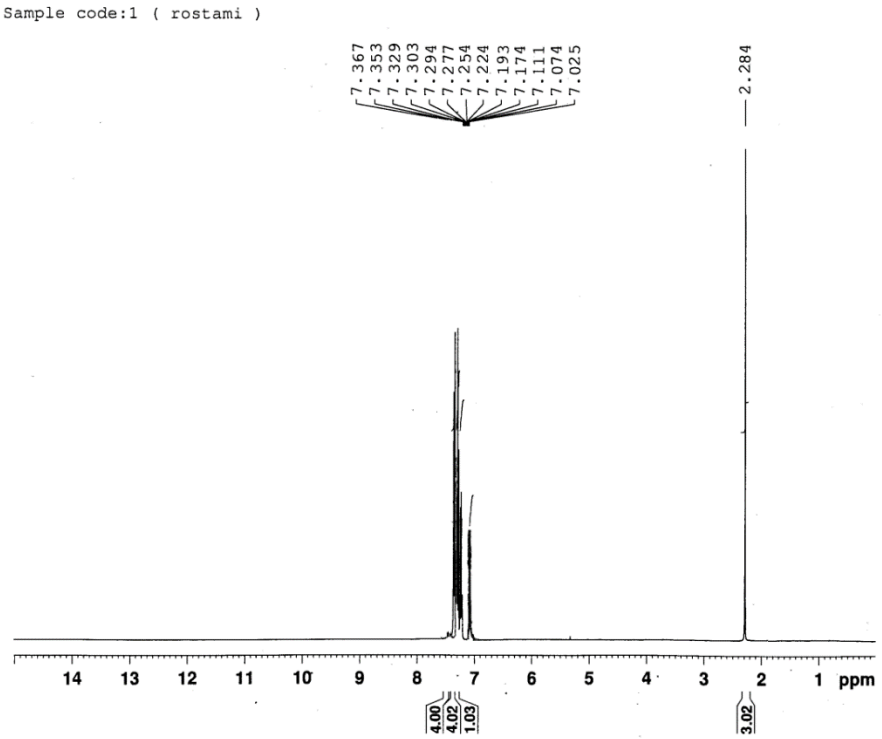
======== CHANNEL f1 ========
NUC1                   13C
P1                  10.50 usec
PL1                 -1.00 dB
SFO1           62.9015280 MHz

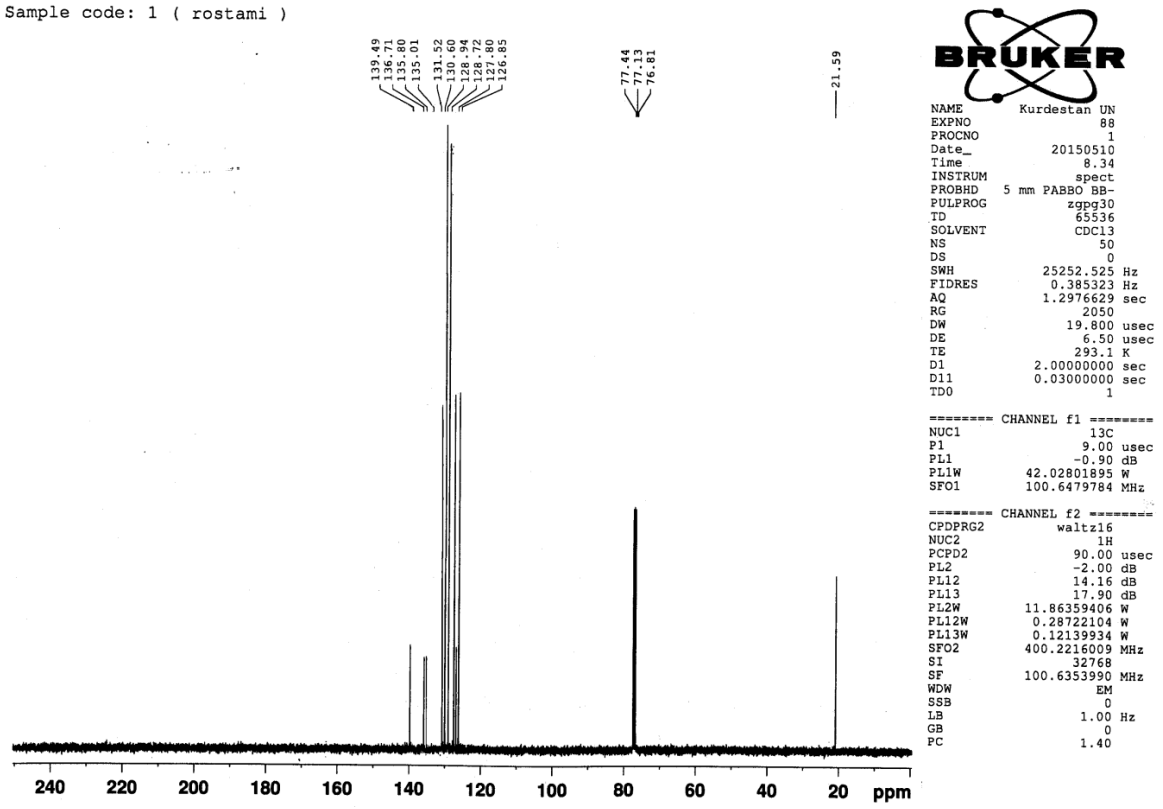
======== CHANNEL f2 ========
CPDPRG2             waltz16
NUC2                   1H
PCPD2               97.00 usec
PL2                 -3.00 dB
PL12                17.00 dB
PL13                17.00 dB
SFO2           250.1310005 MHz

F2 - Processing parameters
SI                    32768
SF             62.8952390 MHz
WDW                      EM
SSB                       0
LB                     1.00 Hz
GB                        0
PC                     1.50

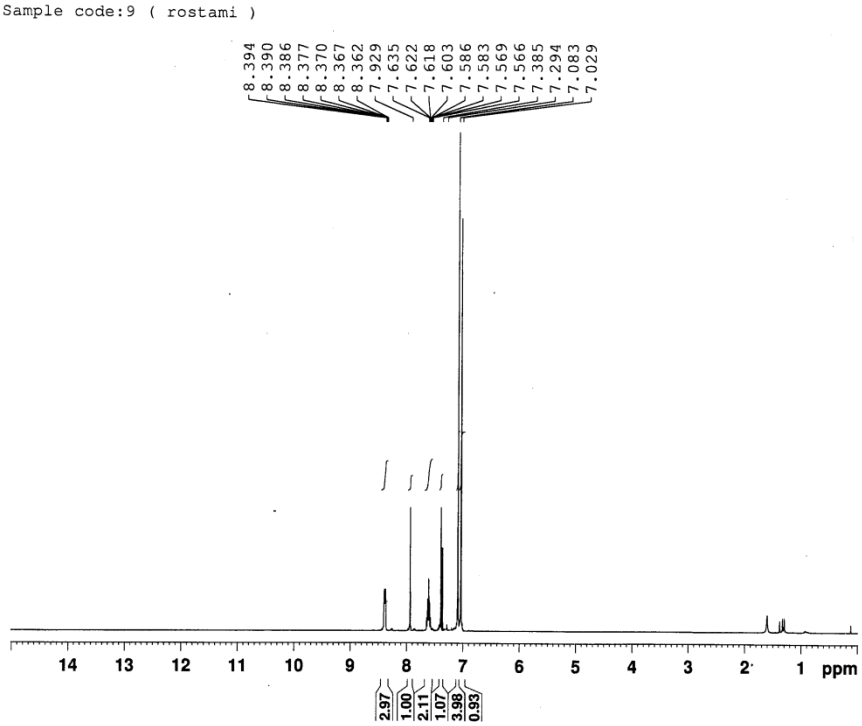
1D NMR plot parameters
CX                    20.00 cm
CY                    10.00 cm
F1P                  175.895 ppm
F1                 11069.23 Hz
F2P                  -10.851 ppm
F2                  -682.49 Hz
PPMCM                 9.34229 ppm/cm
HZCM
```

The ^{1}H-NMR and ^{13}C-NMR spectra of phenyl *p*-tolyl sulfide (Table 2, entry 3) [1]





The ^{1}H-NMR and ^{13}C-NMR spectra of 1-naphthyl phenyl sulfide (Table 2, entry 9) [2]




```
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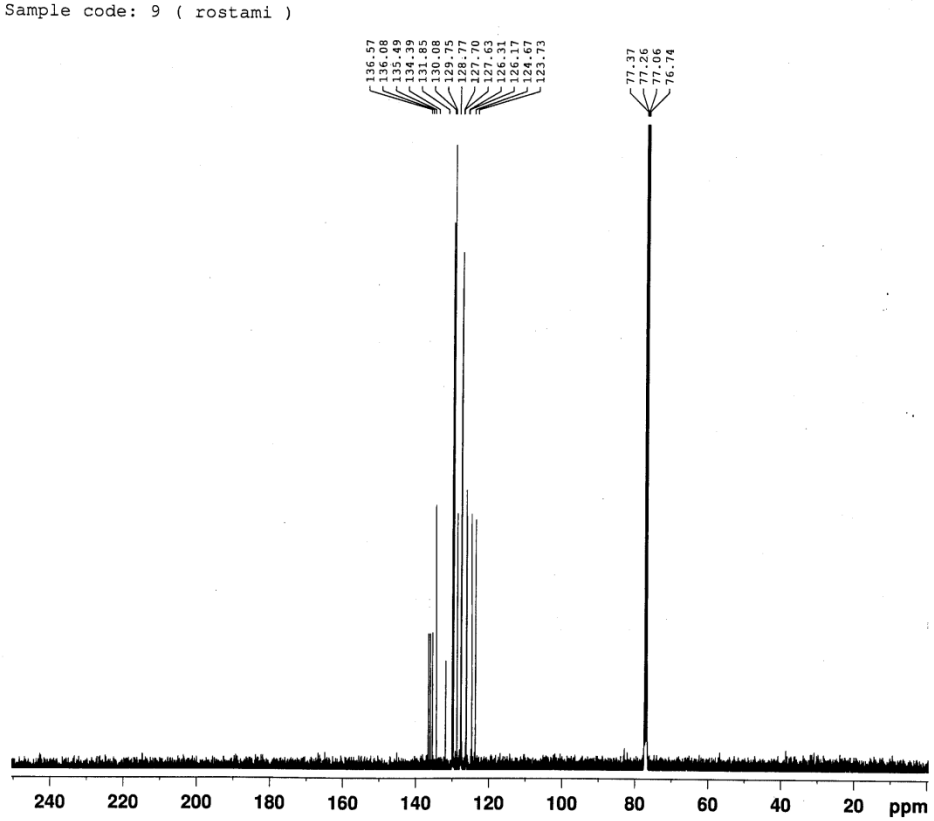
EXPNO                  100
PROCNO                   1
Date_             20150510
Time                 10.10
INSTRUM              spect
PROBHD   5 mm PABBO BB-
PULPROG               zg30
TD                   65536
SOLVENT              CDCl3
NS                      16
DS                       0
SWH               8012.820 Hz
FIDRES            0.122266 Hz
AQ                4.0894966 sec
RG                     181
DW                  62.400 usec
DE                   6.50 usec
TE                  293.2 K
D1              4.00000000 sec
TD0                      1

======== CHANNEL f1 ========
NUC1                   1H
P1                  14.00 usec
PL1                 -2.00 dB
PL1W           11.86359406 W
SFO1           400.2236020 MHz
SI                   32768
SF             400.2200000 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00
```

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EXPNO                  101
PROCNO                   1
Date_             20150510
Time                 10.12
INSTRUM              spect
PROBHD   5 mm PABBO BB-
PULPROG            zgpg30
TD                   65536
SOLVENT              CDCl3
NS                    1010
DS                       0
SWH              25252.525 Hz
FIDRES            0.385323 Hz
AQ                1.2976629 sec
RG                    2050
DW                  19.800 usec
DE                   6.50 usec
TE                  293.4 K
D1              2.00000000 sec
D11             0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
NUC1                  13C
P1                   9.00 usec
PL1                 -0.90 dB
PL1W           42.02801895 W
SFO1           100.6479784 MHz

======== CHANNEL f2 ========
CPDPRG2           waltz16
NUC2                   1H
PCPD2               90.00 usec
PL2                 -2.00 dB
PL12                14.16 dB
PL13                17.90 dB
PL2W           11.86359406 W
PL12W           0.28722104 W
PL13W           0.12139934 W
SFO2           400.2216009 MHz
SI                   32768
SF             100.6353990 MHz
WDW                    EM
SSB                     0
LB                   1.00 Hz
GB                      0
PC                   1.40
```
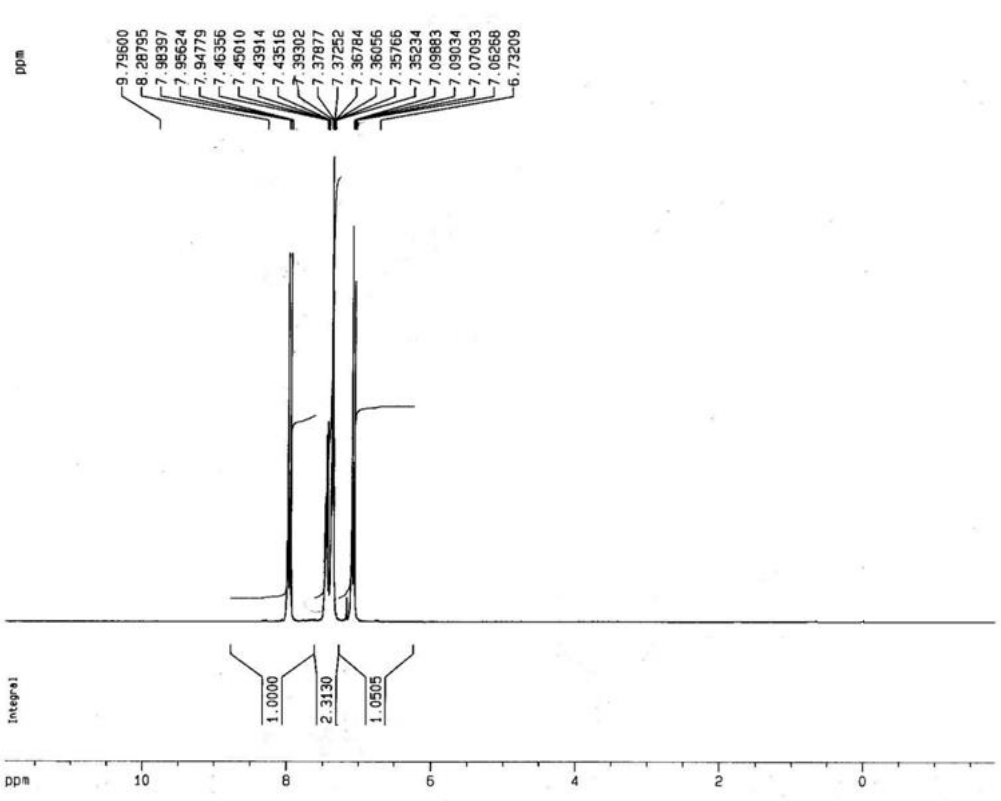

The ^{1}H NMR and ^{13}C NMR spectra of phenyl 4-nitro phenyl sulfide (Table 2, entry 12) [4]

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PROCNO              1

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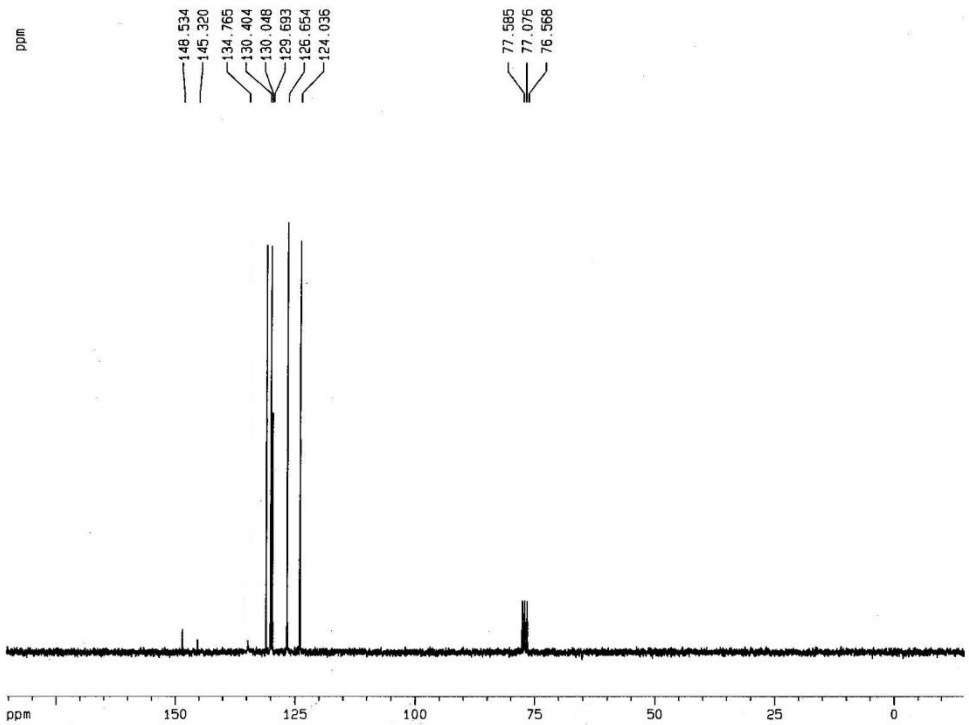
Time               9.57
INSTRUM           spect
PROBHD   5 mm Dual 13C/
PULPROG             zg
TD              20702
SOLVENT          CDCl3
NS                 10
DS                  0
SWH          7485.030 Hz
FIDRES       0.361561 Hz
AQ           1.3829436 sec
RG               161.3
DW              66.800 usec
DE               6.00 usec
TE                0.0 K
D1          1.00000000 sec
MCREST      0.00000000 sec
MCWRK       0.01500000 sec

======== CHANNEL f1 ========
NUC1               1H
P1             11.70 usec
PL1             -3.00 dB
SF01       250.1315447 MHz

F2 - Processing parameters
SI              32768
SF         250.1300225 MHz
WDW                EM
SSB                 0
LB              0.00 Hz
GB                  0
PC                1.50

1D NMR plot parameters
CX             20.36 cm
CY             10.00 cm
F1P           11.912 ppm
F1           2979.53 Hz
F2P           -1.834 ppm
F2           -458.68 Hz
PPMCM         0.67505 ppm/cm
HZCM        168.85123 Hz/cm
```

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Current Data Parameters
NAME        Rostami-C-78
EXPNO               1
PROCNO              1

F2 - Acquisition Parameters
Date_          20150703
Time              10.25
INSTRUM           spect
PROBHD   5 mm Dual 13C/
PULPROG          zgpg
TD              65536
SOLVENT          CDCl3
NS                100
DS                  0
SWH         16339.869 Hz
FIDRES       0.250013 Hz
AQ           1.9999436 sec
RG              32768
DW             30.600 usec
DE              6.00 usec
TE                0.0 K
D1          1.00000000 sec
d11         0.03000000 sec
DELTA       0.89999998 sec
MCREST      0.00000000 sec
MCWRK       0.01500000 sec

======== CHANNEL f1 ========
NUC1               13C
P1             10.50 usec
PL1             -1.00 dB
SF01       62.9015280 MHz

======== CHANNEL f2 ========
CPDPRG2         waltz16
NUC2               1H
PCPD2          97.00 usec
PL2             -3.00 dB
PL12            17.00 dB
PL13            17.00 dB
SF02       250.1310005 MHz

F2 - Processing parameters
SI              32768
SF         62.8952390 MHz
WDW                EM
SSB                 0
LB              1.00 Hz
GB                  0
PC                1.50

1D NMR plot parameters
CX             20.00 cm
CY              9.85 cm
F1P          185.417 ppm
F1          11661.86 Hz
F2P          -14.710 ppm
F2           -925.20 Hz
PPMCM        10.00637 ppm/cm
HZCM        629.35309 Hz/cm
```
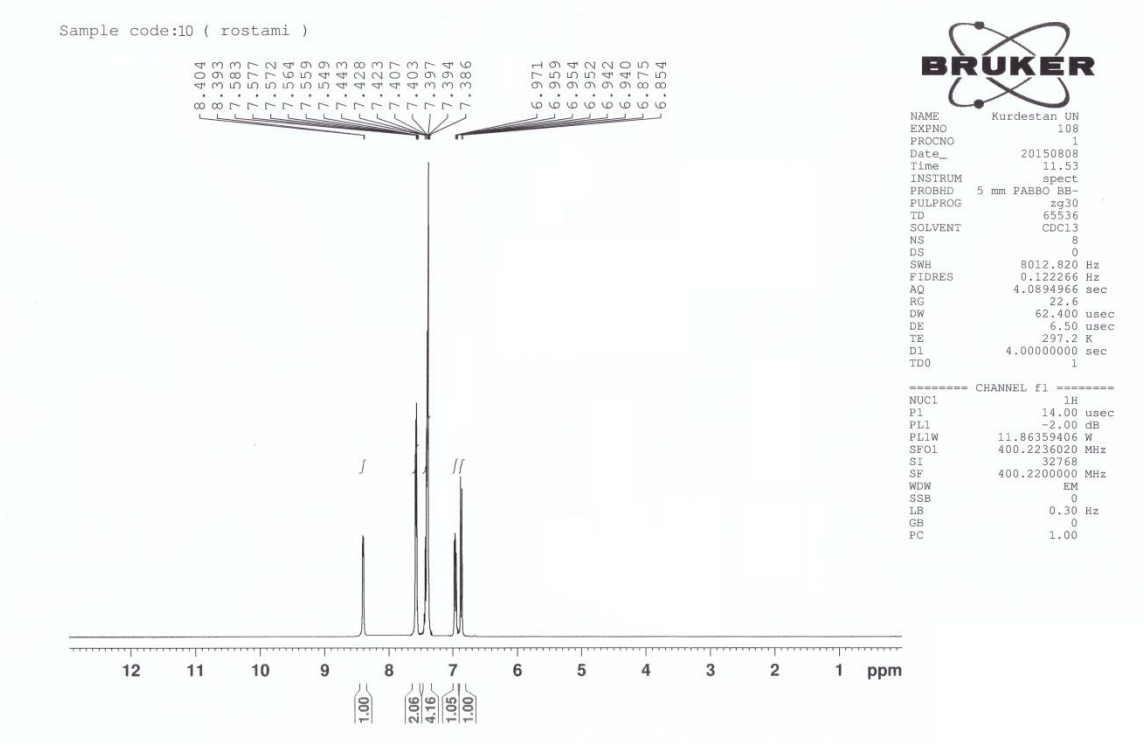
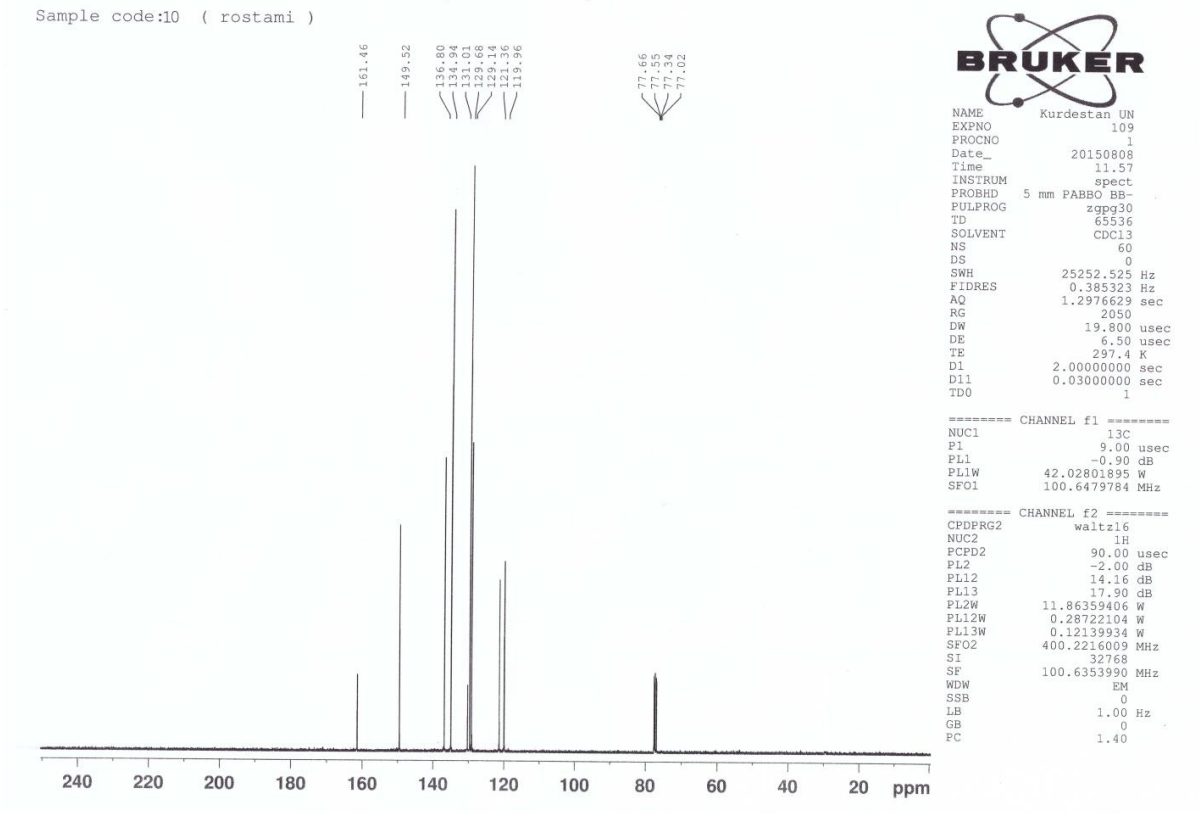
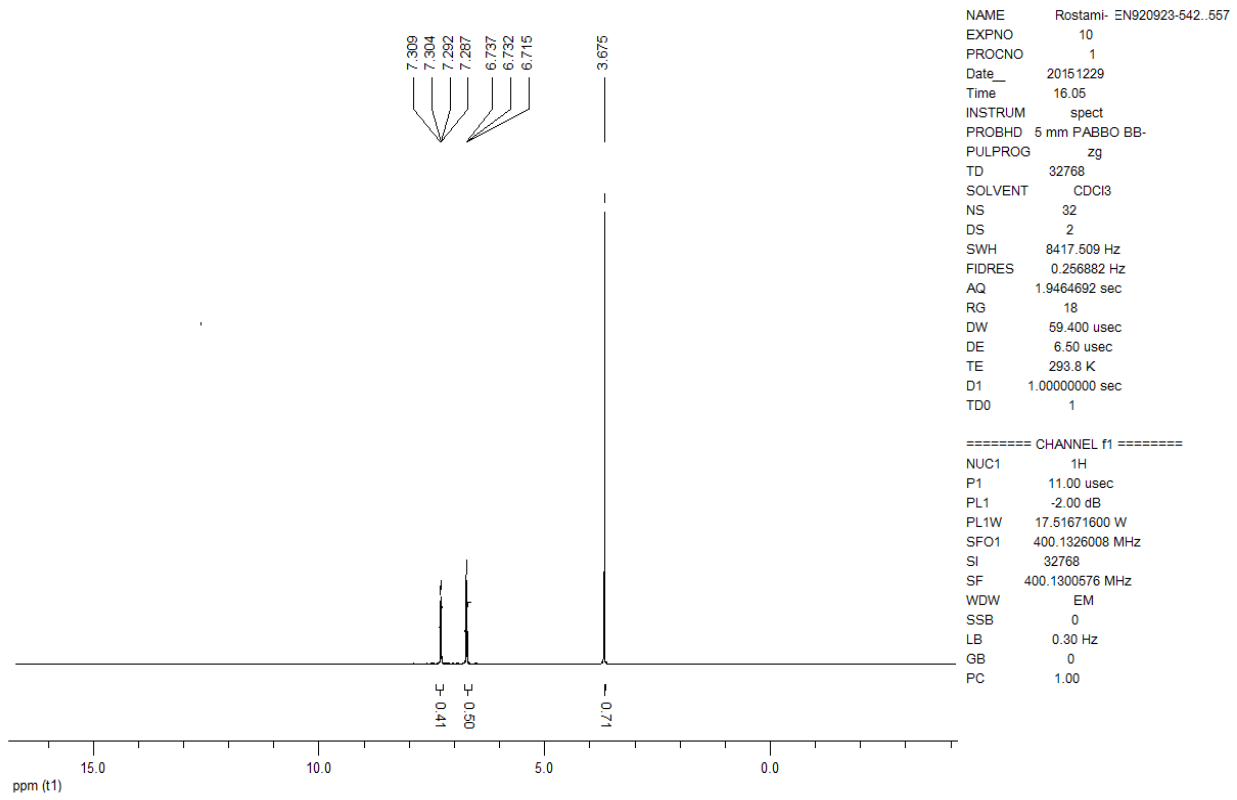
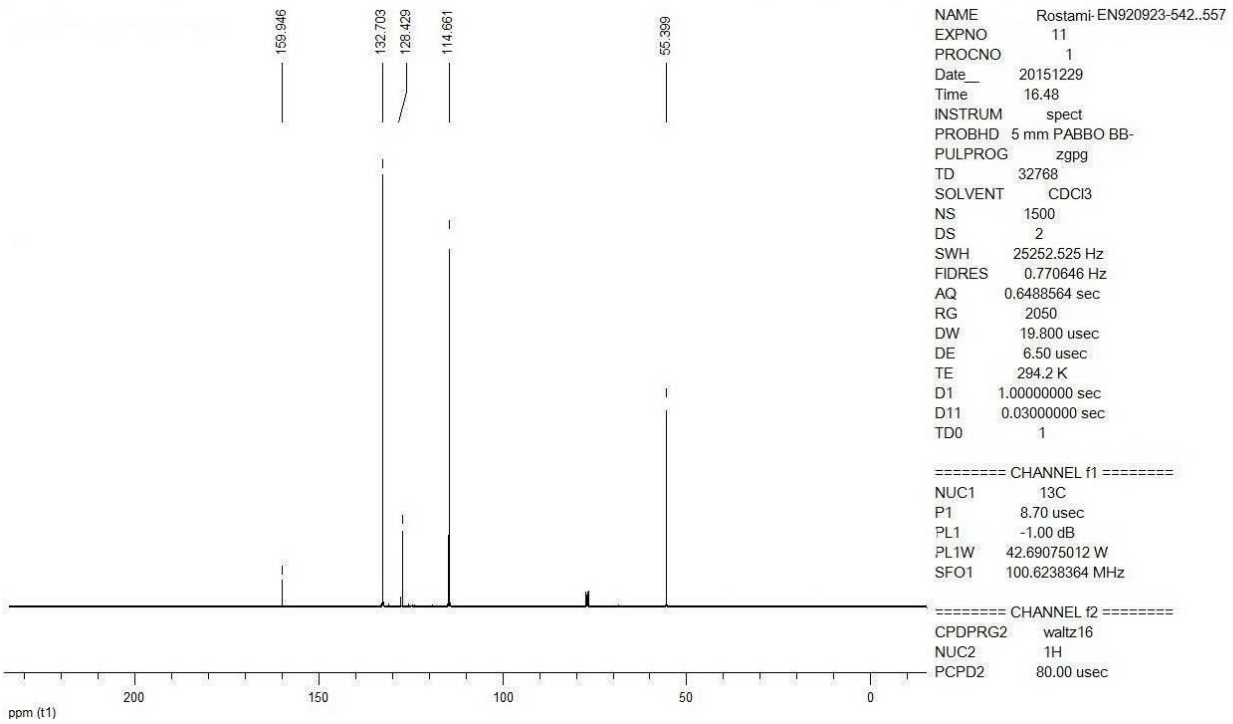

The ^{1}H-NMR and ^{13}C-NMR spectra of phenyl (2-pyridyl) sulfide (Table 2, entry 14) [3]



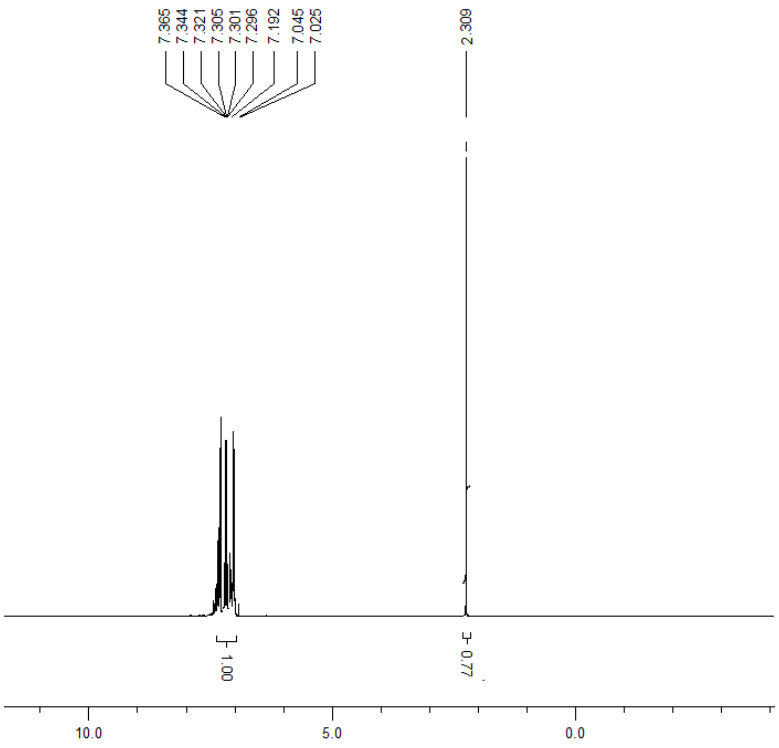


The ^{1}H NMR and ^{13}C NMR spectra of 4,4 ′-dimethoxy diphenyl sulfide (Table 4, entry 2) [7]



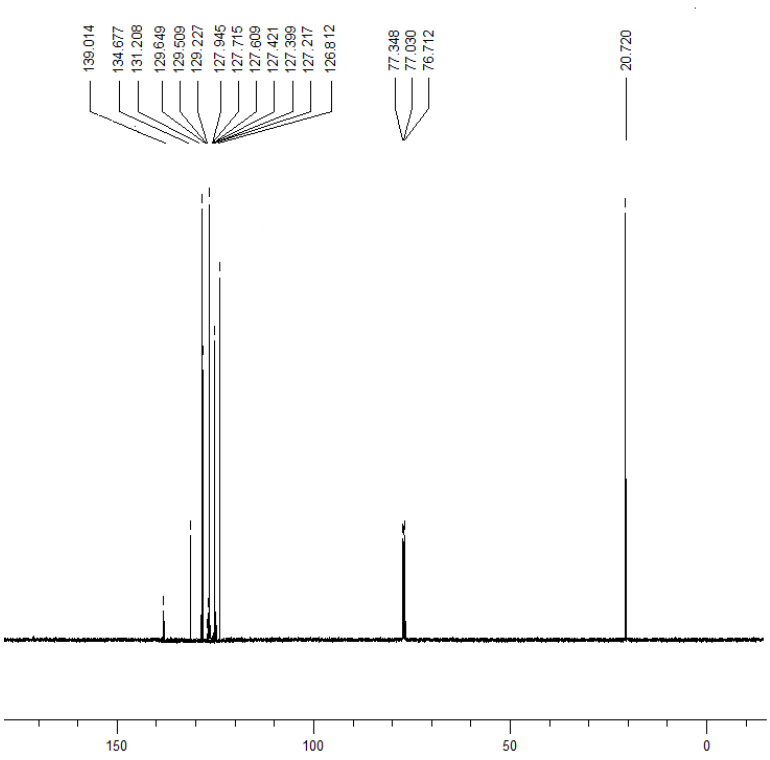


The ^{1}H-NMR and ^{13}C-NMR spectra of di-*o*-tolyl sulfide (Table 4, entry 7) [5]



NAME Rostami-Abed-EN920923-54
EXPNO 50
PROCNO 1
Date_ 20151229
Time 19.19
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg
TD 32768
SOLVENT CDCl3
NS 32
DS 2
SWH 8417.509 Hz
FIDRES 0.256882 Hz
AQ 1.9464692 sec
RG 80.6
DW 59.400 usec
DE 6.50 usec
TE 293.4 K
D1 1.00000000 sec
TD0 1

======== CHANNEL f1 ========
NUC1 1H
P1 11.00 usec
PL1 -2.00 dB
PL1W 17.51671600 W
SFO1 400.1326008 MHz
SI 32768
SF 400.1300362 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

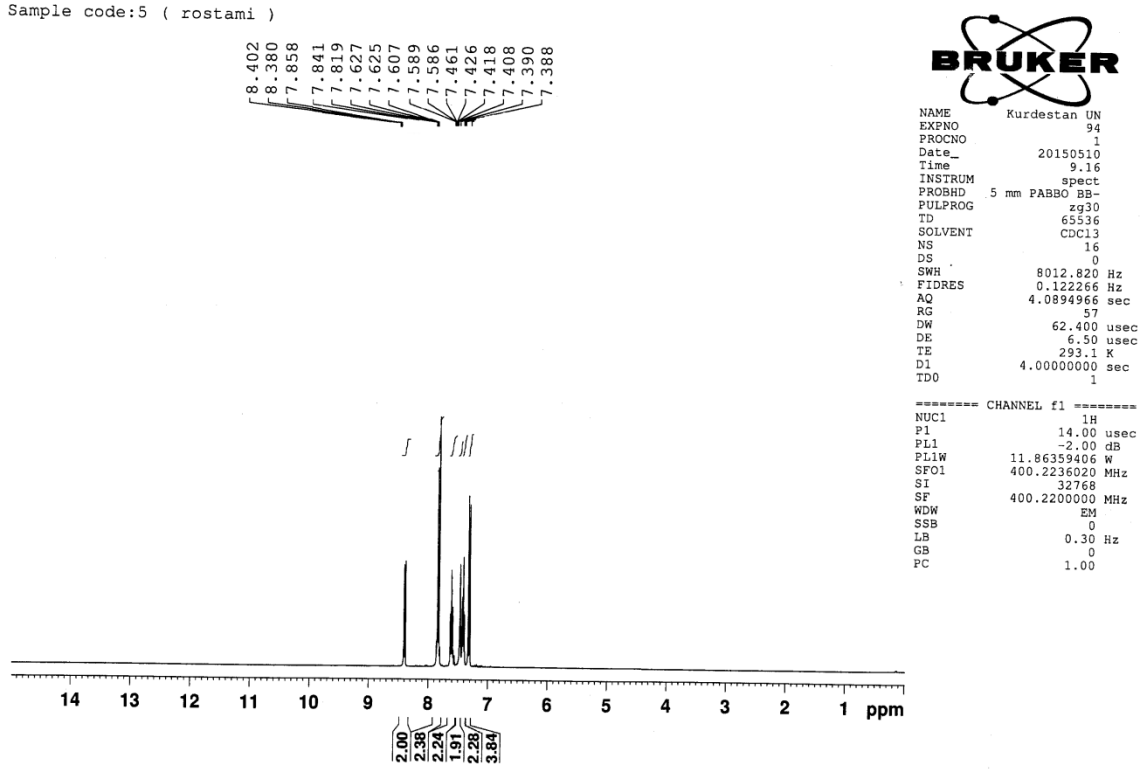


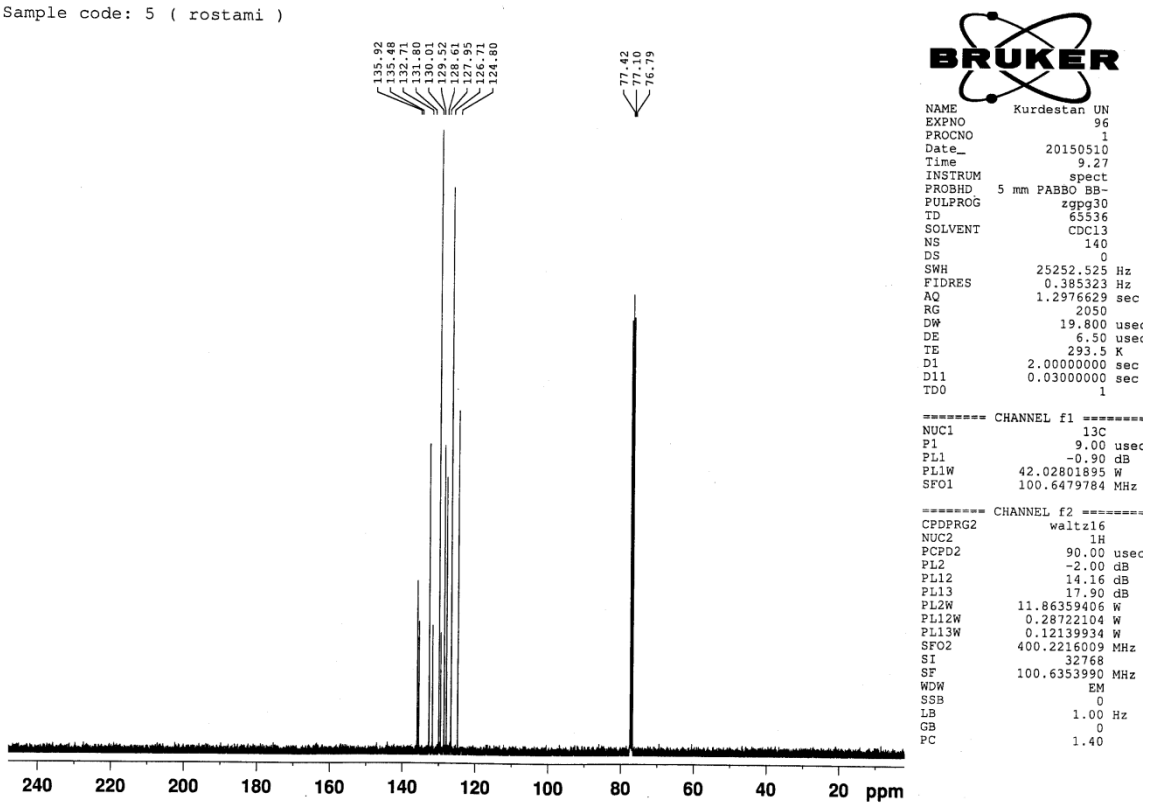
NAME Rostami-Abed-EN920923-542..557
EXPNO 51
PROCNO 1
Date_ 20151229
Time 20.03
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg
TD 32768
SOLVENT CDCl3
NS 1500
DS 2
SWH 25252.525 Hz
FIDRES 0.770646 Hz
AQ 0.6488564 sec
RG 2050
DW 19.800 usec
DE 6.50 usec
TE 294.0 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1

======== CHANNEL f1 ========
NUC1 13C
P1 8.70 usec
PL1 -1.00 dB
PL1W 42.69075012 W
SFO1 100.6238364 MHz

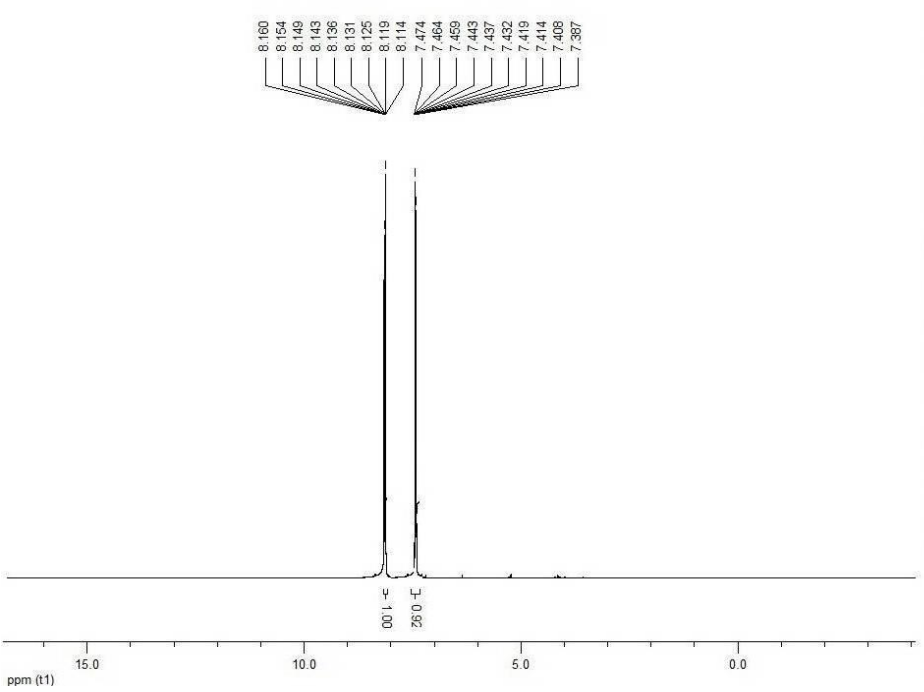
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 0.00 dB
PL12 15.26 dB
PL13 18.26 dB
PL2W 11.05230045 W
PL12W 0.32919458 W
PL13W 0.16498812 W
SFO2 400.1316005 MHz
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

The ^{1}H-NMR and ^{13}C-NMR spectra of di-1-naphthyl sulfide (Table 4, entry 9) [6]





The ^{1}H NMR and ^{13}C NMR spectra of 4, 4'-dinitro diphenyl sulfide (Table 4, entry 12) [8]



NAME Rostami- EN920923-542..557
EXPNO 20
PROCNO 1
Date_ 20151229
Time 16.53
INSTRUM spect
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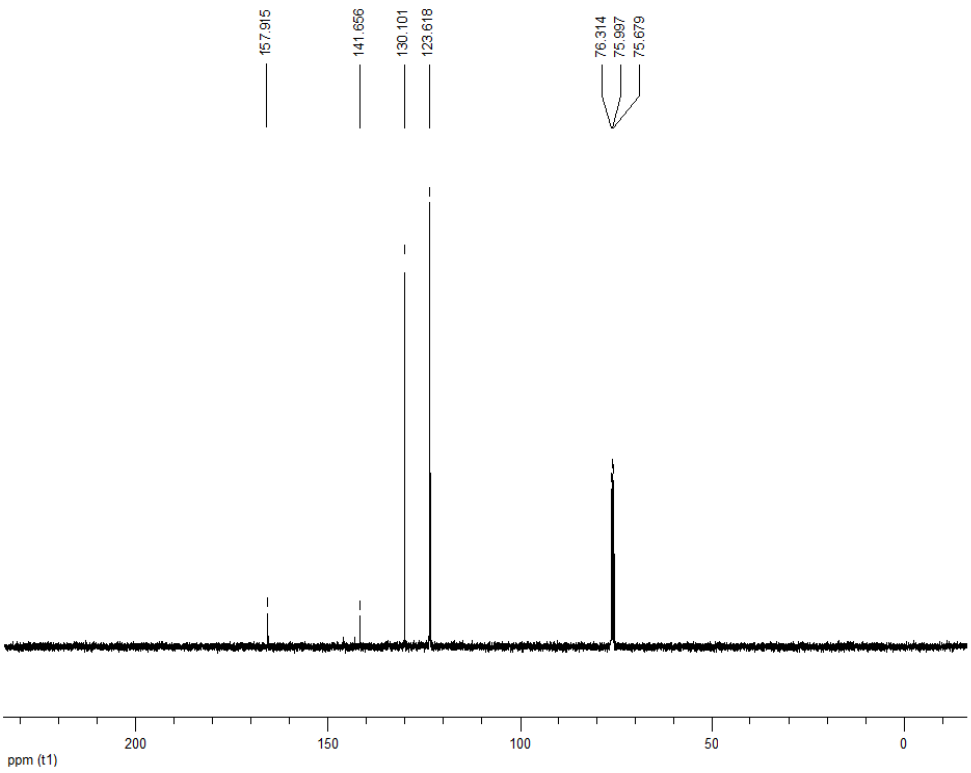
PULPROG zg
TD 32768
SOLVENT CDCl3
NS 32
DS 2
SWH 8417.509 Hz
FIDRES 0.256882 Hz
AQ 1.9464692 sec
RG 101
DW 59.400 usec
DE 6.50 usec
TE 293.6 K
D1 1.00000000 sec
TD0 1

======== CHANNEL f1 ========
NUC1 1H
P1 11.00 usec
PL1 -2.00 dB
PL1W 17.51671600 W
SFO1 400.1326008 MHz
SI 32768
SF 400.1300367 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00



NAME Rostami- EN920923-542..557
EXPNO 21
PROCNO 1
Date_ 20151229
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INSTRUM spect
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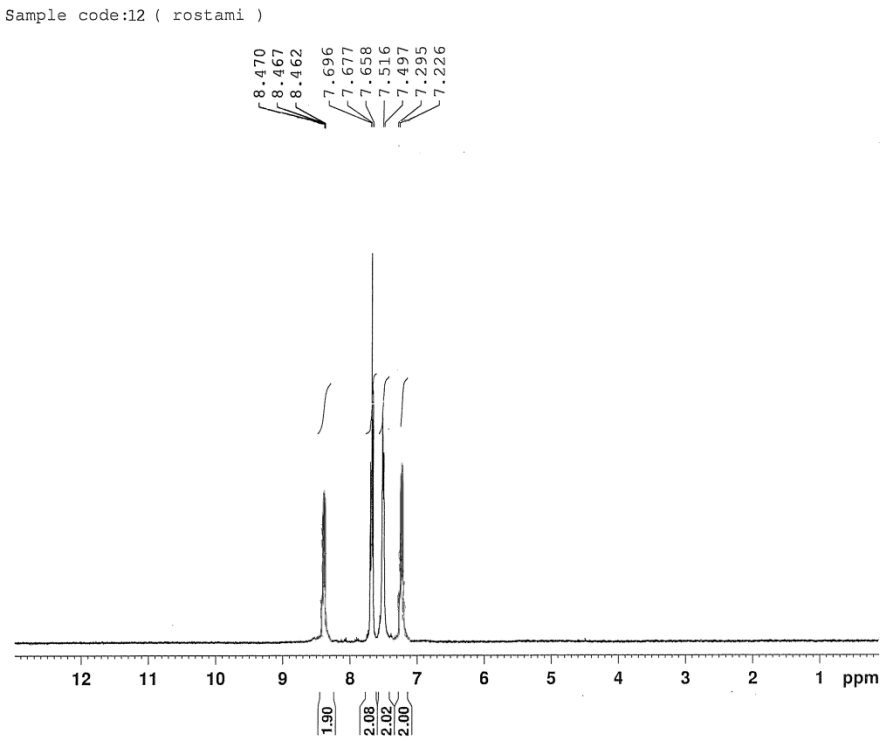
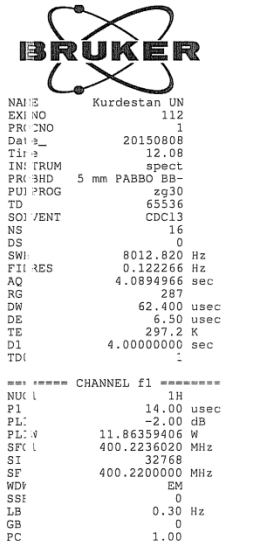
PULPROG zgpg
TD 32768
SOLVENT CDCl3
NS 1500
DS 2
SWH 25252.525 Hz
FIDRES 0.770646 Hz
AQ 0.6488564 sec
RG 2050
DW 19.800 usec
DE 6.50 usec
TE 294.2 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1

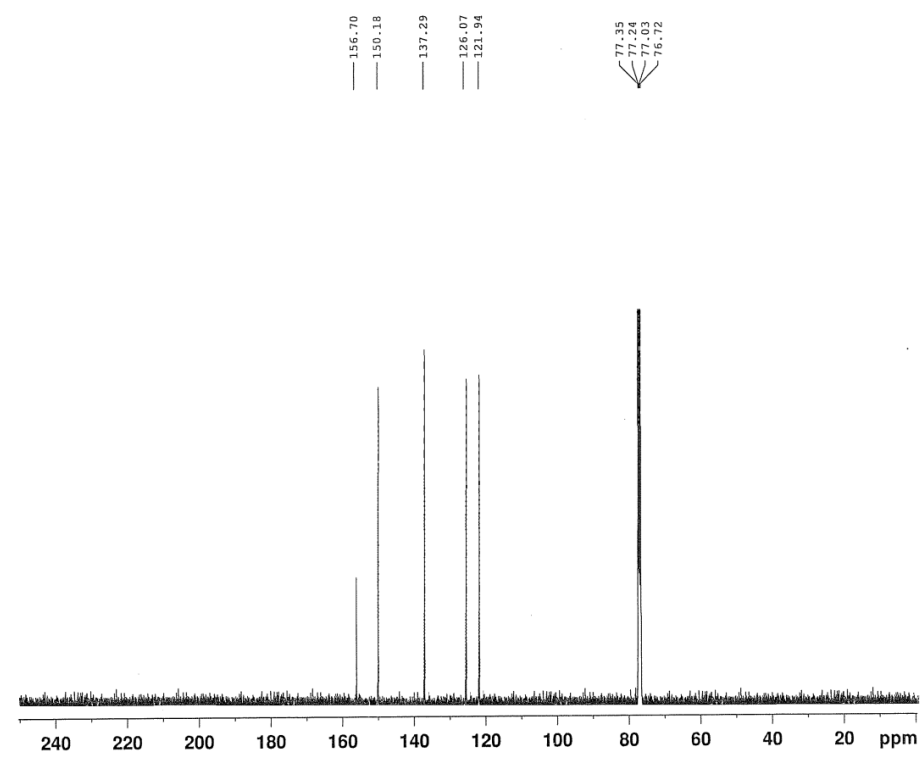
======== CHANNEL f1 ========
NUC1 13C
P1 8.70 usec
PL1 -1.00 dB
PL1W 42.69075012 W
SFO1 100.6238364 MHz

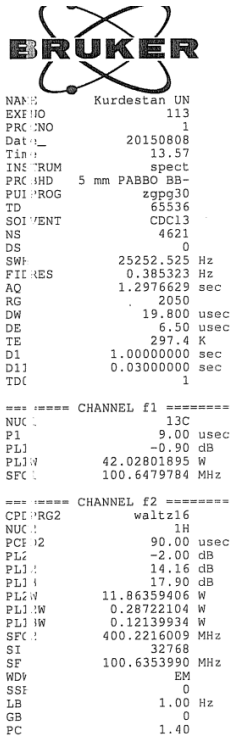
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 0.00 dB
PL12 15.26 dB
PL13 18.26 dB
PL2W 11.05230045 W
PL12W 0.32919458 W
PL13W 0.16498812 W
SFO2 400.1316005 MHz
SI 32768
SF 100.6128739 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

The ^{1}H-NMR and ^{13}C-NMR spectra of di-2-pyridyl sulfide (Table 4, entry 14) [5]









3. Reference

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4. A. Rostami, A. Rostami, A. Ghaderi and M. A. Zolfigol, *RSC Adv*. 2015, **5**, 37060.
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8. D. J. C. Prasad and G. Sekar, *Org. Lett*. 2011, **13**, 1008.