

## Supporting Information

### New D-D- $\pi$ -A type organic dyes having carbazol-N-yl phenothiazine moiety as a donor (D-D) unit for efficient dye-sensitized solar cells: Experimental and theoretical studies

D. Muenmart,<sup>a</sup> N. Prachumrak,<sup>a</sup> R. Tarsang,<sup>b</sup> S. Namungruk,<sup>c</sup> S. Jungsuttiwong,<sup>b</sup> T. Sudyoadsuk,<sup>a</sup>  
P. Pattanasattayavong<sup>a</sup> and V. Promarak<sup>a</sup> \*

<sup>a</sup> Department of Material Science and Engineering, School of Molecular Science and Engineering, Vidyasirimedhi Institute of Science and Technology, Wangchan, Rayong, 21210 Thailand.

<sup>b</sup> Department of Chemistry, Faculty of Science, Ubon Ratchathani University, Warinchumrap, Ubon Ratchathani, 34190 Thailand.

<sup>c</sup> NANOTEC, National Science and Technology Development Agency, 111 Phahonyothin Road, Khlong Luang, Pathum Thani, 12120 Thailand

#### Quantum chemical calculation

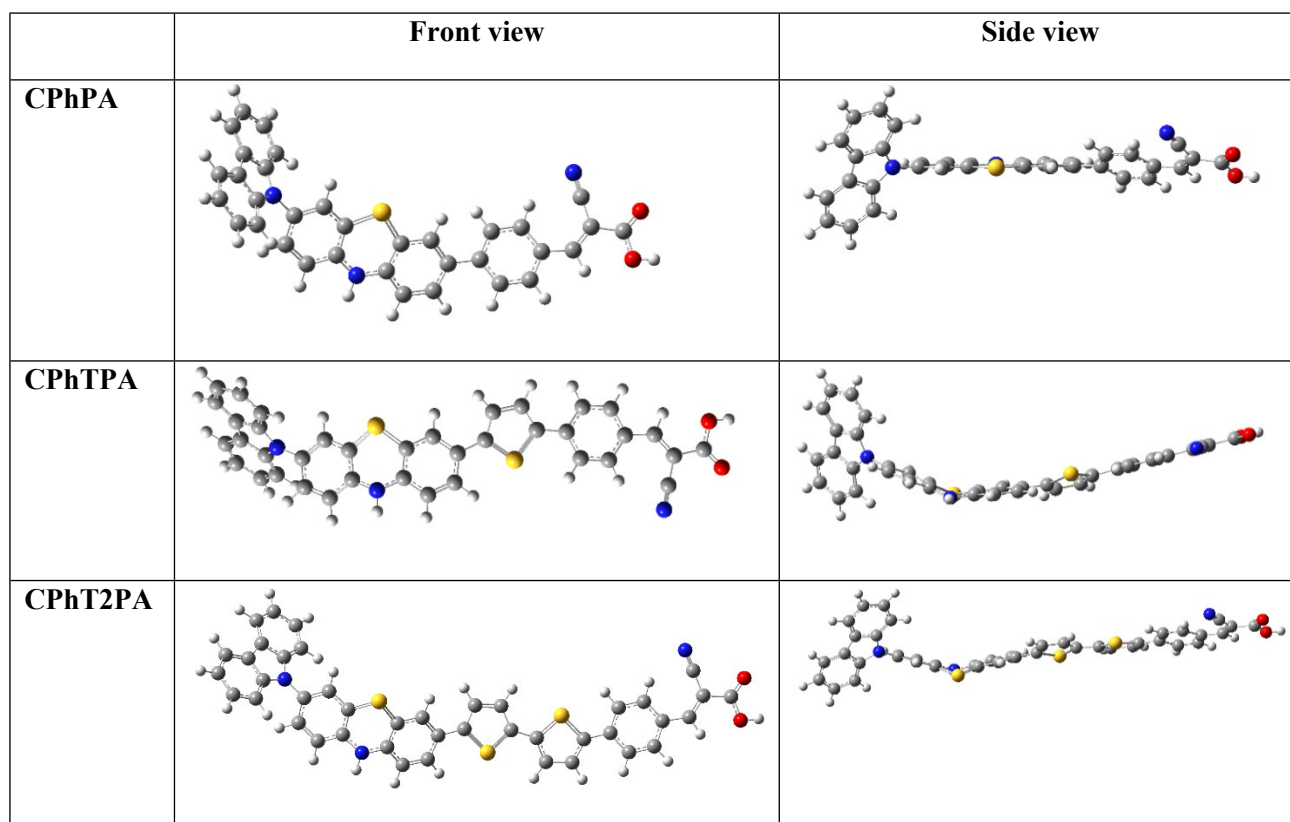
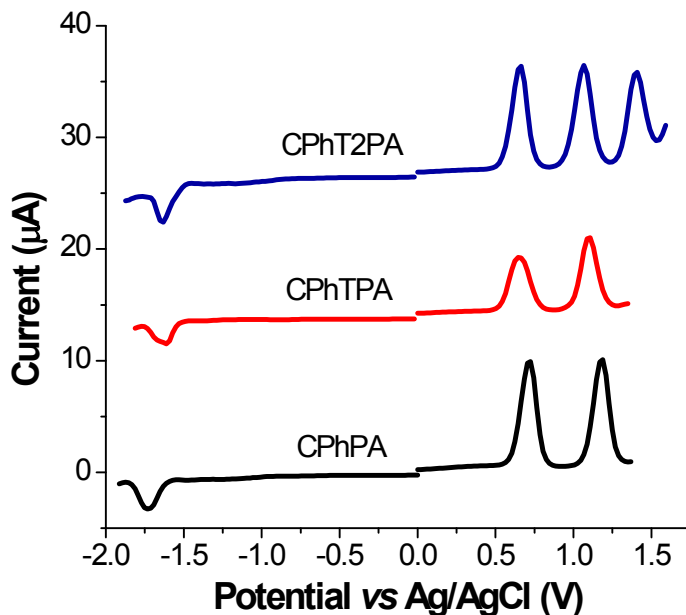


Figure S1. Optimized structures of the dyes calculated by B3LYP/6-31G(d,p) in CH<sub>2</sub>Cl<sub>2</sub> solvent.

**Table S1** Excitation energy (eV), oscillator strength ( $f$ ) and transition composition of the dyes at the 20 lowest transitions ( $f > 0.200$ ) were calculated by TD CAM-B3LYP/6-31G(d,p) in CH<sub>2</sub>Cl<sub>2</sub> (C-PCM model).

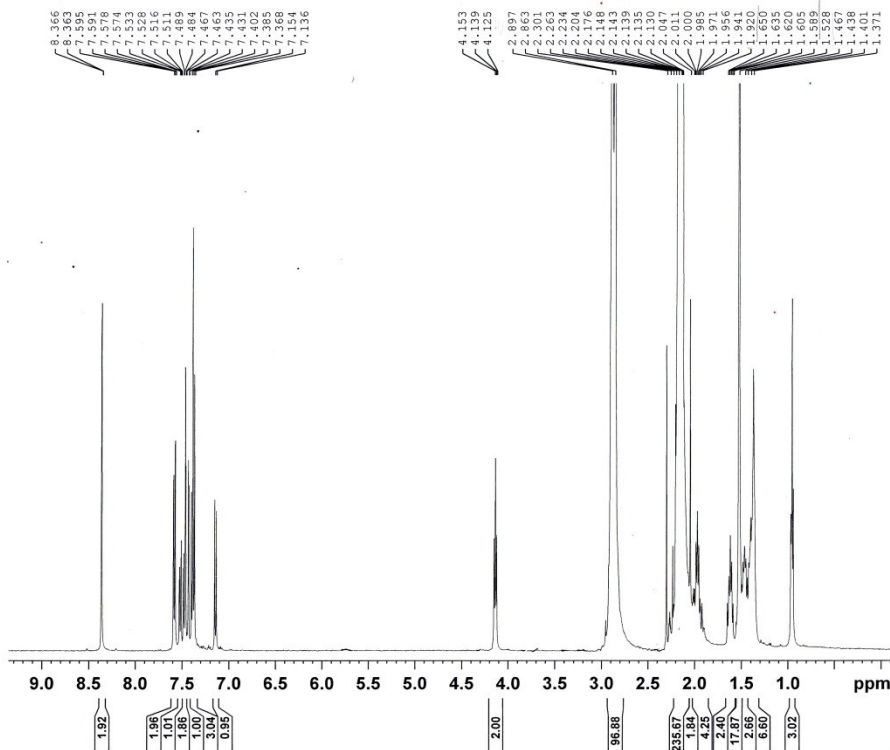
Dye		$E_{\text{ex}}$ [eV, nm]	$f$	Transition contribution
<b>CPhPA</b>	$S_0 \rightarrow S_1$	3.04 (407)	0.9708	0.61 (H $\rightarrow$ L) + 0.25 (H $\rightarrow$ L+1)
	$S_0 \rightarrow S_2$	3.82 (324)	0.2670	0.54 (H $\rightarrow$ L+1) + 0.24 (H-3 $\rightarrow$ L)
	$S_0 \rightarrow S_3$	4.06 (305)	0.3284	0.52 (H-3 $\rightarrow$ L+2) + 0.21 (H $\rightarrow$ L)
<b>CPhTPA</b>	$S_0 \rightarrow S_1$	3.00 (413)	1.7595	0.52 (H $\rightarrow$ L) + 0.27 (H-3 $\rightarrow$ L)
	$S_0 \rightarrow S_4$	4.31 (287)	0.2981	0.35 (H $\rightarrow$ L+3)
	$S_0 \rightarrow S_{10}$	4.81 (257)	0.2607	0.64 (H-2 $\rightarrow$ L+2)
<b>CPhT2PA</b>	$S_0 \rightarrow S_1$	2.82 (440)	2.1499	0.51 (H $\rightarrow$ L) + 0.24 (H $\rightarrow$ L+1)
	$S_0 \rightarrow S_{13}$	4.81 (257)	0.2505	0.57 (H-3 $\rightarrow$ L+2)

Note: H = HOMO, L = LUMO, L+1 = LUMO+1,...



**Figure S2.** DPV curves measured in CH<sub>2</sub>Cl<sub>2</sub> with *n*-Bu<sub>4</sub>NPF<sub>6</sub> as a supporting electrolyte at a scan rate of 50 mV s<sup>-1</sup>.

# <sup>1</sup>H and <sup>13</sup>C-NMR spectra Compound 3



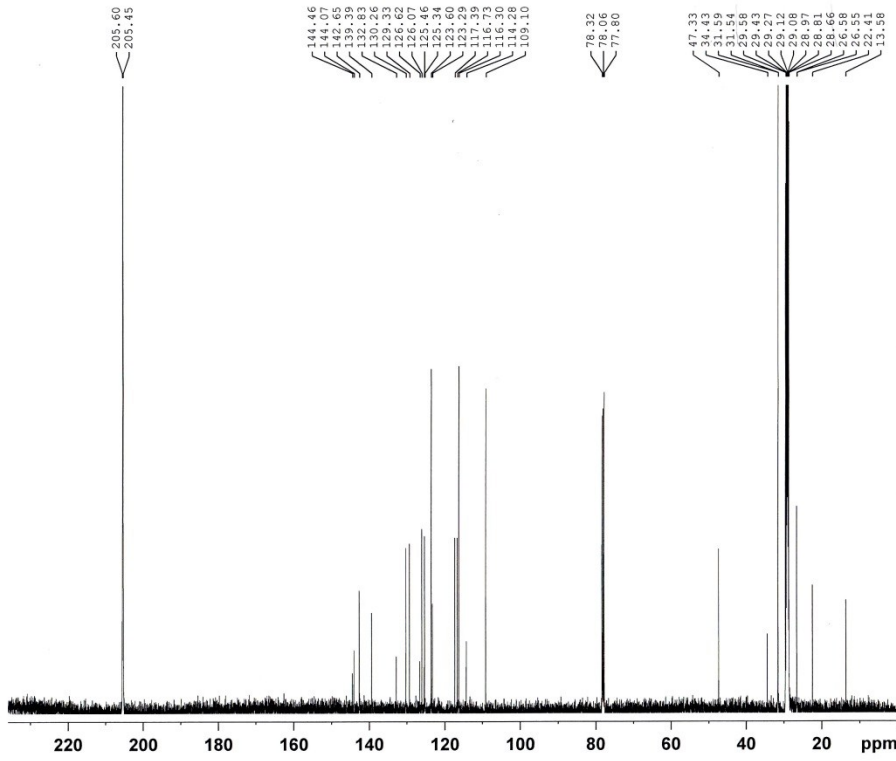
Current Data Parameters  
 NAME Ex-8  
 EXPNO 7  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20150320  
 Time 15.47  
 INSTRUM spect  
 PROBHD 5 mm CPPBBO BB  
 PULPROG zg30  
 TD 65536  
 SOLVENT Acetone  
 NS 16  
 DS 0  
 SWH 8012.820 Hz  
 FIDRES 0.122266 Hz  
 AQ 4.0894465 sec  
 RG 44.22  
 DW 62.400 usec  
 DE 10.00 usec  
 TE 303.2 K  
 D1 1.00000000 sec  
 TD0 1

===== CHANNEL f1 =====  
 SF01 500.3660022 MHz  
 NUC1 <sup>1</sup>H  
 P1 11.30 usec  
 PLW1 13.39999962 W

F2 - Processing parameters  
 SI 65536  
 SF 500.3629657 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.00

Acetone



Current Data Parameters  
 NAME Ex-8  
 EXPNO 6  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20150320  
 Time 14.02  
 INSTRUM spect  
 PROBHD 5 mm CPPBBO BB  
 PULPROG zgdc  
 TD 65536  
 SOLVENT Acetone  
 NS 500  
 DS 4  
 SWH 29761.904 Hz  
 FIDRES 0.454131 Hz  
 AQ 1.1010048 sec  
 RG 195.01  
 DW 16.800 usec  
 DE 18.00 usec  
 TE 303.1 K  
 D1 1.50000000 sec  
 D11 0.03000000 sec  
 TD0 1

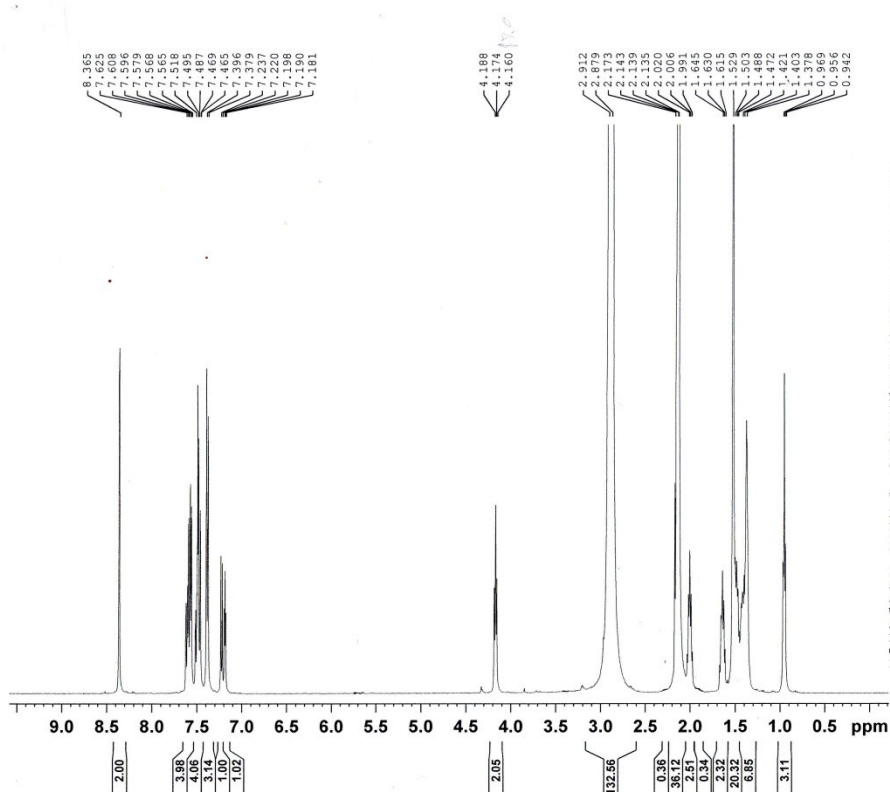
===== CHANNEL f1 =====  
 SFO1 125.8312223 MHz  
 NUC1 13C  
 P1 9.00 usec  
 PLW1 69.00000000 W

===== CHANNEL f2 =====  
 SFO2 500.3650015 MHz  
 NUC2 1H  
 CPDPRG[2] waltz16  
 EPCPD2 80.00 usec  
 PLW2 13.39999962 W  
 PLW12 0.26734999 W

F2 - Processing parameters  
 SI 32768  
 SF 125.8163760 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

3

# Compound 4



Current Data Parameters  
 NAME Ex-10  
 EXPNO 5  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20150324  
 Time 10.12  
 INSTRUM spect  
 PROBHD 5 mm CPPBBO BB  
 PULPROG zg30  
 TD 65536  
 SOLVENT Acetone  
 NS 32  
 DS 0  
 SWH 8012.820 Hz  
 FIDRES 0.122266 Hz  
 AQ 4.0894465 sec  
 RG 48.32  
 DW 62.400 usec  
 DE 10.00 usec  
 TE 303.1 K  
 D1 1.00000000 sec  
 TDO 1

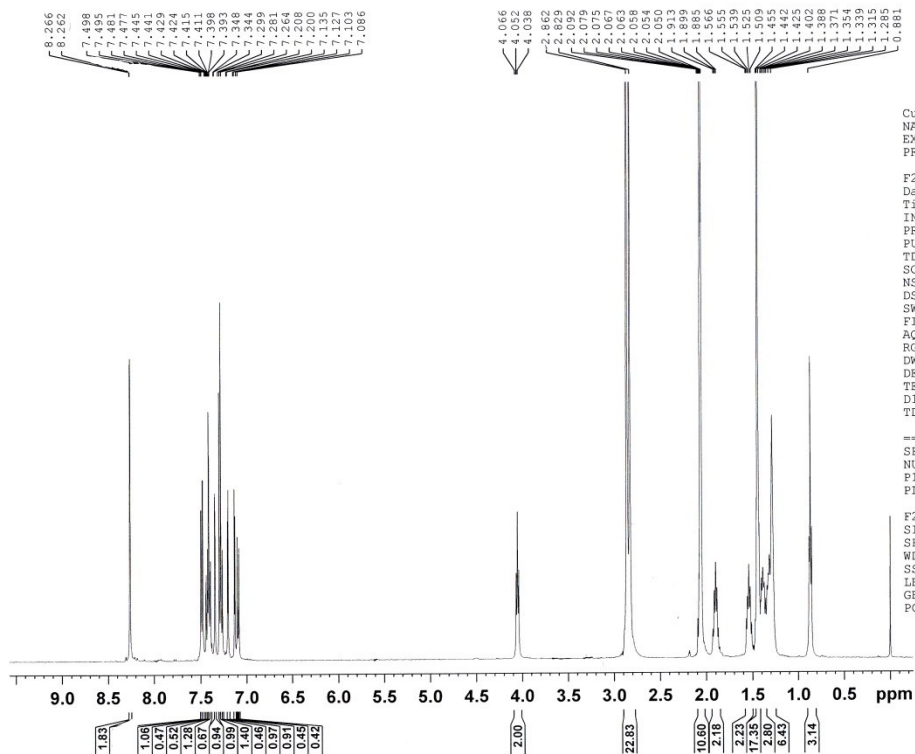
===== CHANNEL f1 =====  
 SF01 500.366022 MHz  
 NUCL 1H  
 P1 11.30 usec  
 PLW1 13.39999962 W

F2 - Processing parameters  
 SI 65536  
 SF 500.3629657 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.00

Acetone



# Compound 5



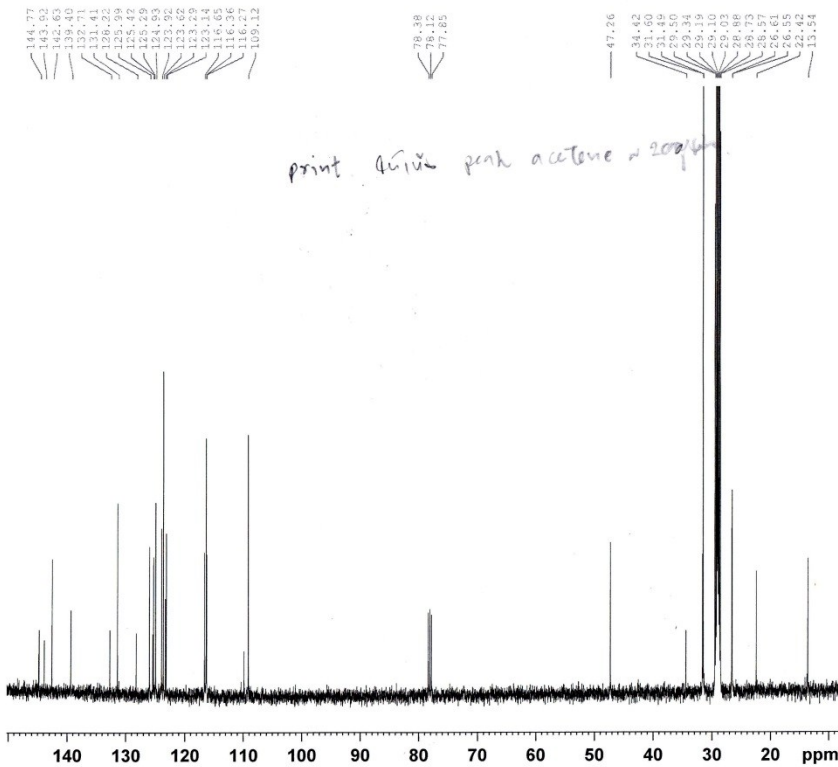
Current Data Parameters  
NAME DM-EX-12  
EXPNO 1  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20140220  
Time 12.36  
INSTRUM spect  
PROBHD 5 mm CPPBBO HB  
PULPROG zg  
TD 65536  
SOLVENT Acetone  
NS 1  
DS 0  
SWH 8012.820 Hz  
FIDRES 0.122266 Hz  
AQ 4.0894465 sec  
RG 20.07  
DW 62.400 usec  
DE 10.00 usec  
TE 298.1 K  
D1 1.00000000 sec  
TDO 1

===== CHANNEL f1 =====  
SF01 500.3660022 MHz  
NUC1 1H  
P1 11.30 usec  
PLW1 13.39999962 W

F2 - Processing parameters  
SI 65536  
SF 500.3630058 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.00

5



Current Data Parameters  
 NAME DM-EX-12  
 EXPNO 2  
 PROCNO 1

F2 - Acquisition Parameters  
 Date 20140220  
 Time 12.49  
 INSTRUM spect  
 PROBHD 5 mm CPPBBO BB  
 PULPROG zgdc  
 TD 65536  
 SOLVENT Acetone  
 NS 256  
 DS 4  
 SWH 25252.525 Hz  
 FIDRES 0.385323 Hz  
 AQ 1.2976128 sec  
 RG 195.01  
 DW 19.800 usec  
 DE 18.00 usec  
 TE 298.2 K  
 D1 1.5000000 sec  
 D11 0.0300000 sec  
 TDO 1

===== CHANNEL f1 =====  
 SFO1 125.8276995 MHz  
 NUC1 13C  
 P1 9.50 usec  
 PLW1 69.0000000 W

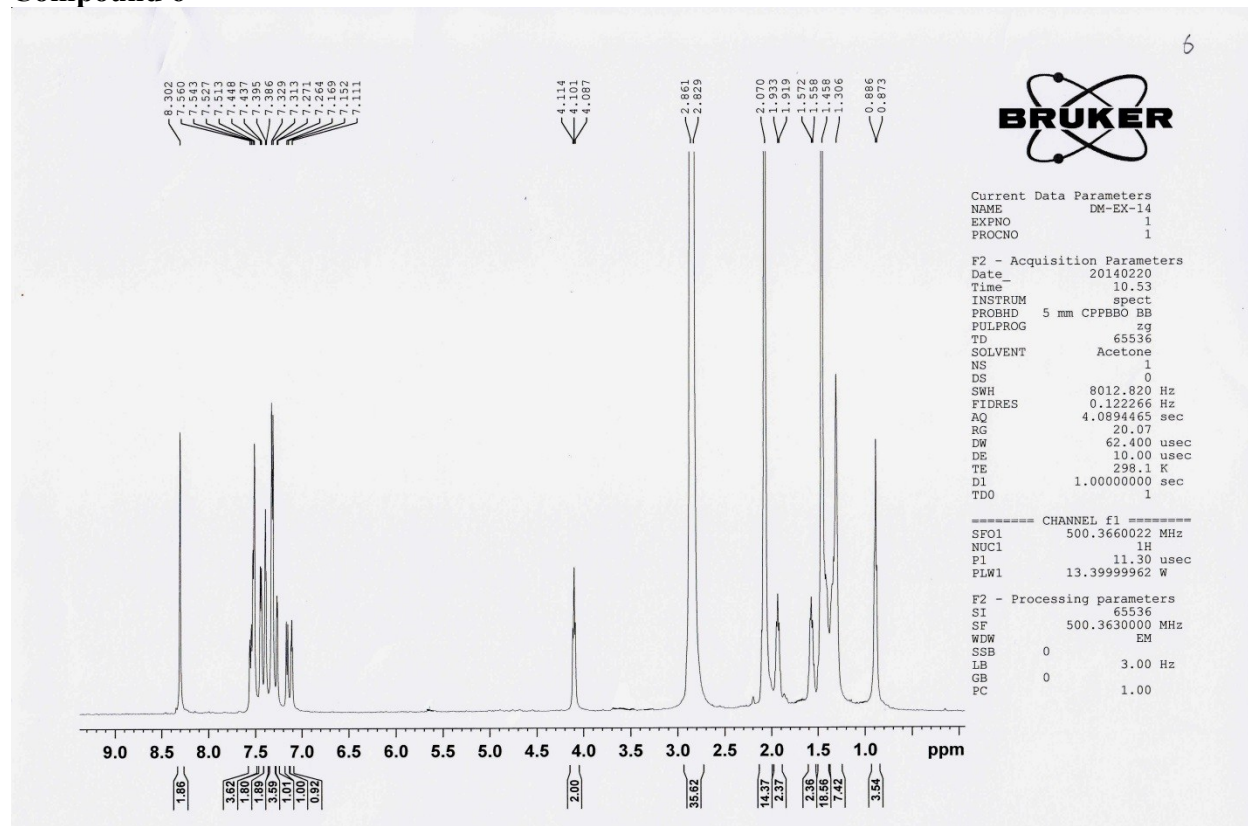
===== CHANNEL f2 =====  
 SFO2 500.3650015 MHz  
 NUC2 1H  
 CPDPRG[2] waltz16  
 PCPD2 80.00 usec  
 PLW2 13.3999962 W  
 PLW12 0.26734999 W

F2 - Processing parameters  
 SI 32768  
 SF 125.8163760 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

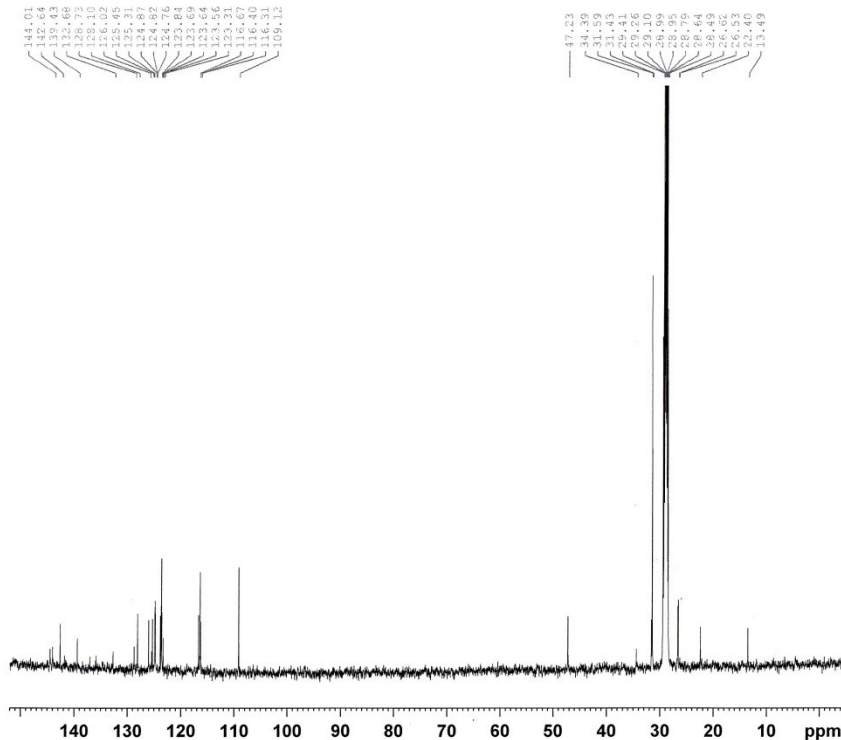


# Compound 6

6



6



Current Data Parameters  
 NAME DM-EX-14  
 EXPNO 2  
 PROCNO 1

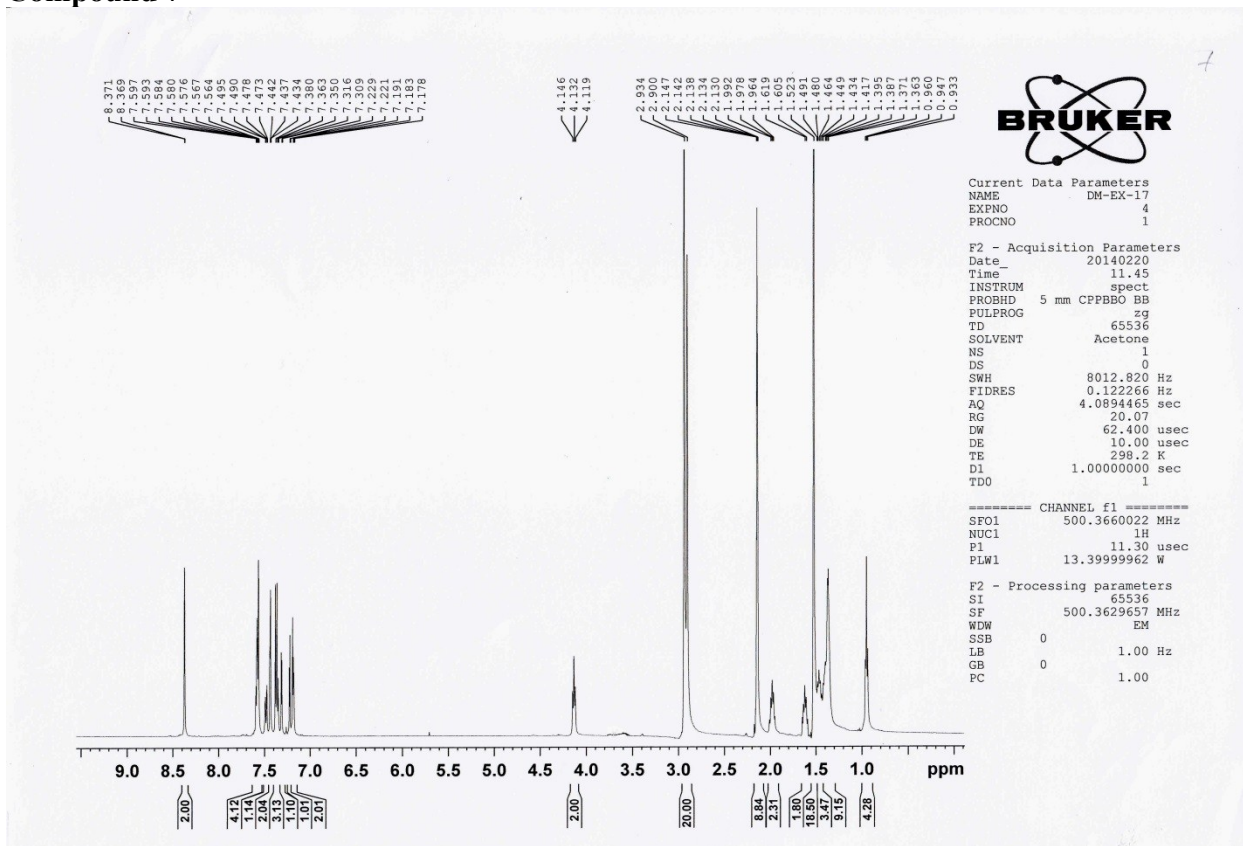
F2 - Acquisition Parameters  
 Date 20140220  
 Time 11.02  
 INSTRUM spect  
 PROBHD 5 mm CPPBBO BB  
 PULPROG zgdc  
 TD 65536  
 SOLVENT Acetone  
 NS 256  
 DS 4  
 SWH 25252.525 Hz  
 FIDRES 0.385323 Hz  
 AQ 1.2976128 sec  
 RG 195.01  
 DW 19.800 usec  
 DE 18.00 usec  
 TE 298.1 K  
 D1 1.50000000 sec  
 D11 0.03000000 sec  
 TDO 1

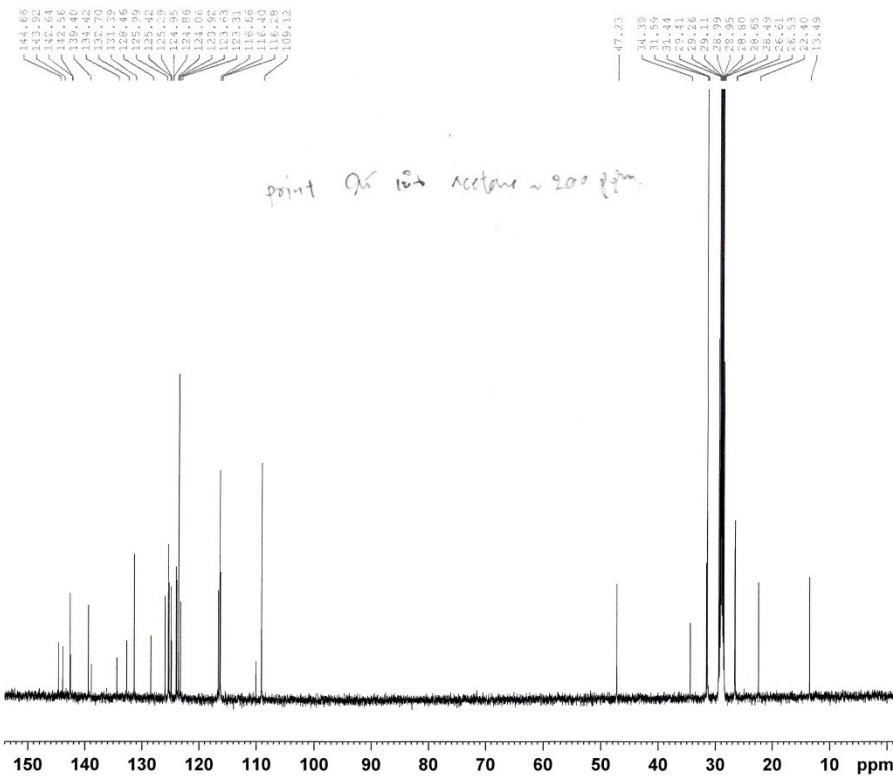
===== CHANNEL f1 =====  
 SFO1 125.8276995 MHz  
 NUC1 13C  
 P1 9.50 usec  
 PLW1 69.00000000 W

===== CHANNEL f2 =====  
 SFO2 500.3650015 MHz  
 NUC2 1H  
 CPDPRG[2] waltz16  
 PCPD2 80.00 usec  
 PLW2 13.39999962 W  
 PLW12 0.26734999 W

F2 - Processing parameters  
 SI 32768  
 SF 125.8163760 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

# Compound 7





144.65  
143.97  
142.54  
139.40  
134.42  
132.79  
128.46  
125.99  
125.42  
123.98  
124.66  
124.06  
123.97  
123.31  
116.66  
116.40  
116.29  
109.12

47.23  
31.59  
31.44  
31.44  
28.41  
28.26  
28.26  
28.09  
28.95  
28.80  
28.65  
28.61  
28.53  
28.40  
13.49



```

Current Data Parameters
NAME          DM-EX-17
EXPNO         3
PROCNO        1

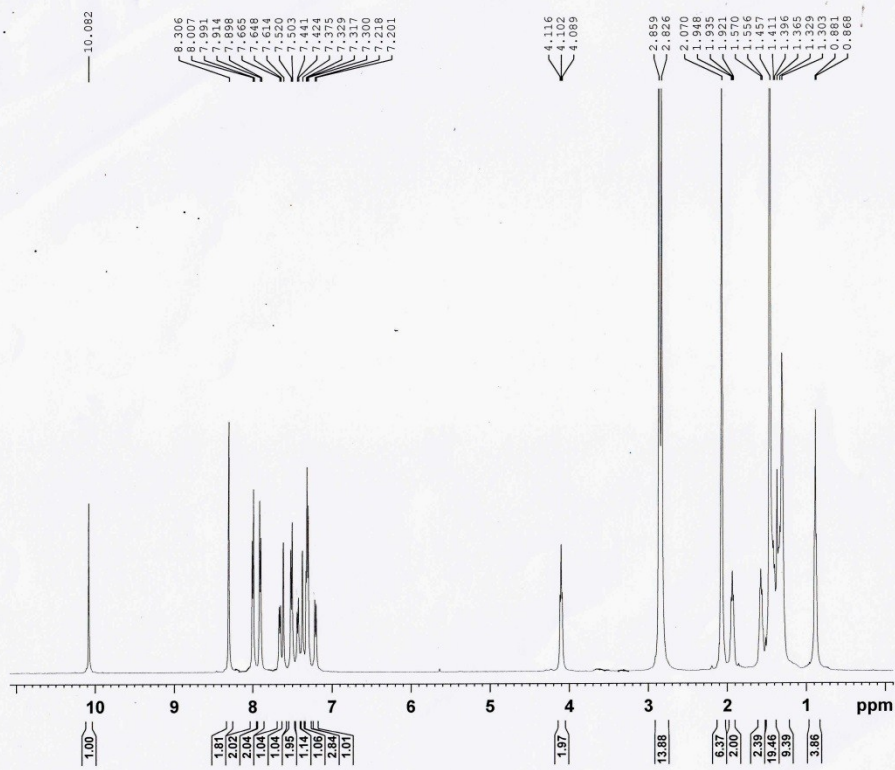
F2 - Acquisition Parameters
Date_         20140220
Time          11.34
INSTRUM       spect
PROBHD        5 mm CXPBBO BB
PULPROG       zgdc
TD            65536
SOLVENT       Acetone
NS            256
DS            4
SWH           25252.525 Hz
FIDRES        0.385323 Hz
AQ            1.2976128 sec
RG            195.01
DW            19.800 usec
DE            18.00 usec
TE            298.2 K
D1            1.50000000 sec
D11           0.03000000 sec
TDO           1

===== CHANNEL f1 =====
SFO1          125.8276995 MHz
NUC1           13C
P1             9.50 usec
PLW1          69.00000000 W

===== CHANNEL f2 =====
SFO2          500.3650015 MHz
NUC2           1H
CPDPRG[2]     waltz16
PCPD2         80.00 usec
PLW2          13.39999962 W
PLW12         0.26734999 W

F2 - Processing parameters
SI            32768
SF            125.8163760 MHz ✓
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40
  
```

# Compound 8



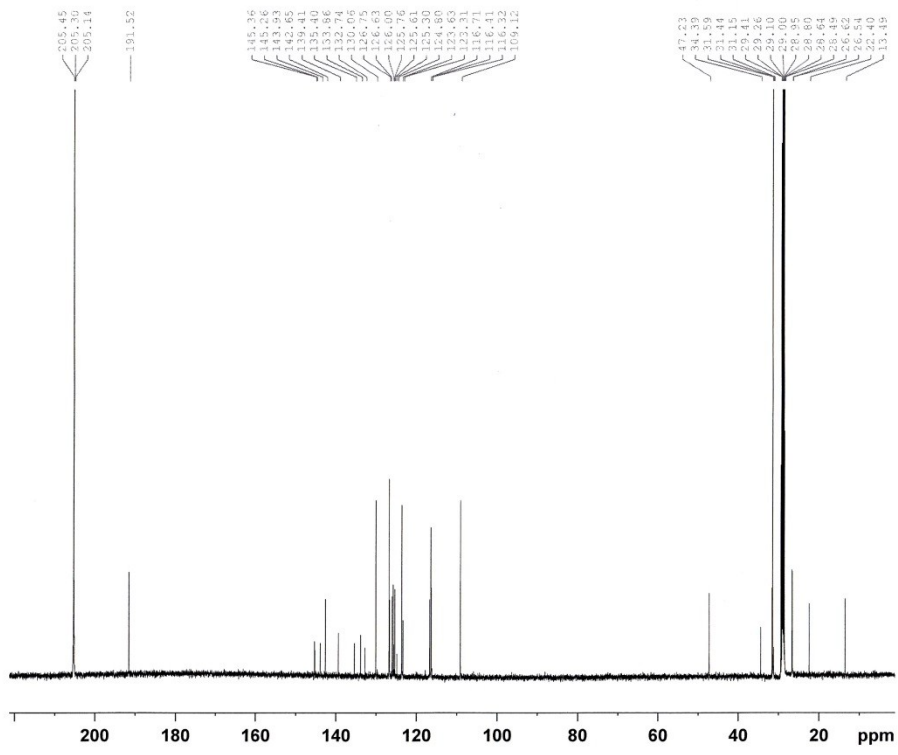
```

Current Data Parameters
NAME          DM-EX-9
EXPNO         1
PROCNO        1

F2 - Acquisition Parameters
Date_         20140220
Time          10.39
INSTRUM       spect
PROBHD        5 mm CPPBBO BB
PULPROG       zg
TD            65536
SOLVENT       Acetone
NS            1
DS            0
SWH           8012.820 Hz
FIDRES        0.122266 Hz
AQ            4.0894465 sec
RG            20.07
DW            62.400 usec
DE            10.00 usec
TE            298.2 K
D1            1.00000000 sec
TDO           1

===== CHANNEL f1 =====
SFO1          500.3660022 MHz
NUC1          1H
P1            11.30 usec
PLW1          13.39999962 W

F2 - Processing parameters
SI            65536
SF            500.3630000 MHz
WDW           EM
SSB           0
LB            3.00 Hz
GB            0
PC            1.00
    
```



```

Current Data Parameters
NAME          DM-EX-9
EXPNO         4
PROCNO        1

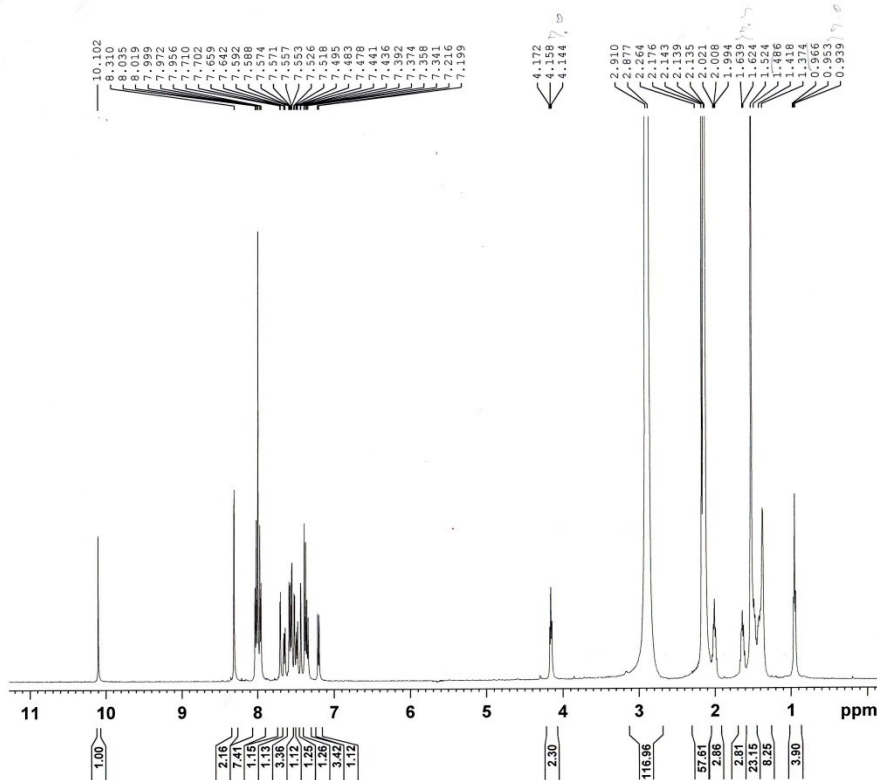
F2 - Acquisition Parameters
Date_         20140220
Time          12.22
INSTRUM       spect
PROBHD        5 mm CPPBBO BB
PULPROG       zgdc
TD            65536
SOLVENT       Acetone
NS            256
DS            4
SWH           31250.000 Hz
FIDRES        0.476837 Hz
AQ            1.0485760 sec
RG            195.01
DW            16.000 usec
DE            18.00 usec
TE            298.1 K
DL            1.50000000 sec
Dl1           0.03000000 sec
TD0           1

===== CHANNEL f1 =====
SF01          125.8321030 MHz
NUC1          13C
P1            9.50 usec
PLW1          69.00000000 W

===== CHANNEL f2 =====
SF02          500.3650015 MHz
NUC2          1H
CPDPRG[2]    waltz16
PCPD2        80.00 usec
PLW2          13.39999962 W
PLW12         0.26734999 W

F2 - Processing parameters
SI            32768
SF           125.8163760 MHz
WDW          EM
SSB          0
LB           1.00 Hz
GB           0
PC           1.40
  
```

# Compound 9



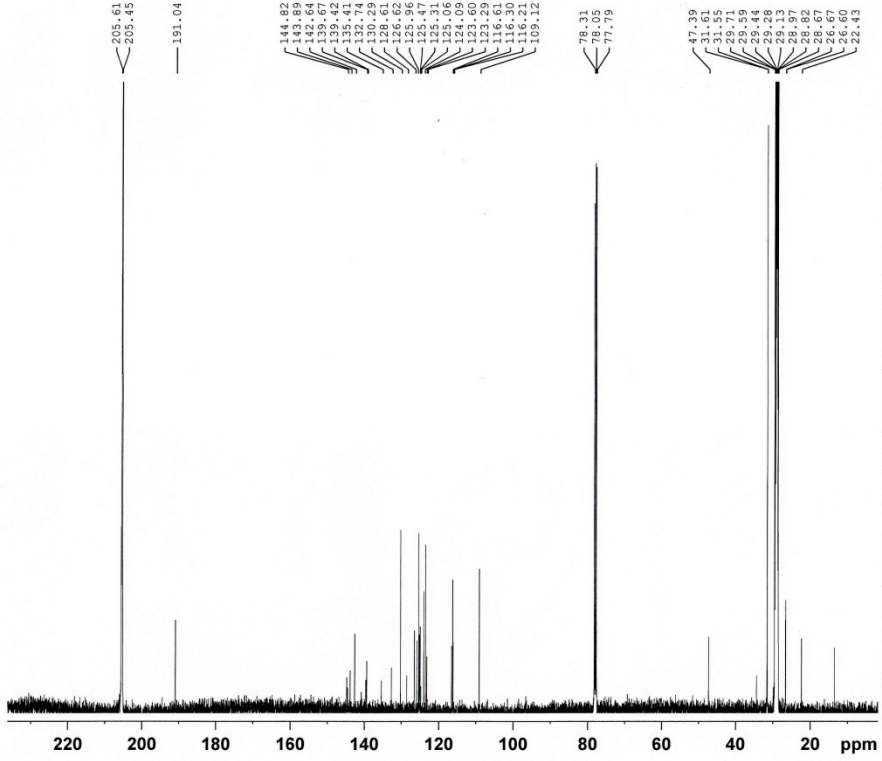
Current Data Parameters  
 NAME Ex-13  
 EXPNO 9  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20150320  
 Time 12.10  
 INSTRUM spect  
 PROBHD 5 mm CPPBBO BB  
 PULPROG zg30  
 TD 65536  
 SOLVENT Acetone  
 NS 32  
 DS 0  
 SWH 8012.820 Hz  
 FIDRES 0.122266 Hz  
 AQ 4.0894465 sec  
 RG 44.22  
 DW 62.400 usec  
 DE 10.00 usec  
 TE 303.1 K  
 DI 1.00000000 sec  
 TDO 1

===== CHANNEL f1 =====  
 SF01 500.366022 MHz  
 NUC1 1H  
 P1 11.30 usec  
 PLW1 13.39999962 W

F2 - Processing parameters  
 SI 65536  
 SF 500.3629657 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.00

Acetone + CDCl<sub>3</sub>



```

Current Data Parameters
NAME          Ex-13
EXPNO         10
PROCNO        1

F2 - Acquisition Parameters
Date_         20150320
Time_         13.39
INSTRUM       spect
PROBHD        5 mm CPPBBO BB
PULPROG       zgdc
TD            65536
SOLVENT       Acetone
NS            1714
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010048 sec
RG            195.01
DW            16.800 usec
DE            18.00 usec
TE            303.1 K
D1            1.50000000 sec
D11           0.03000000 sec
TDO           1

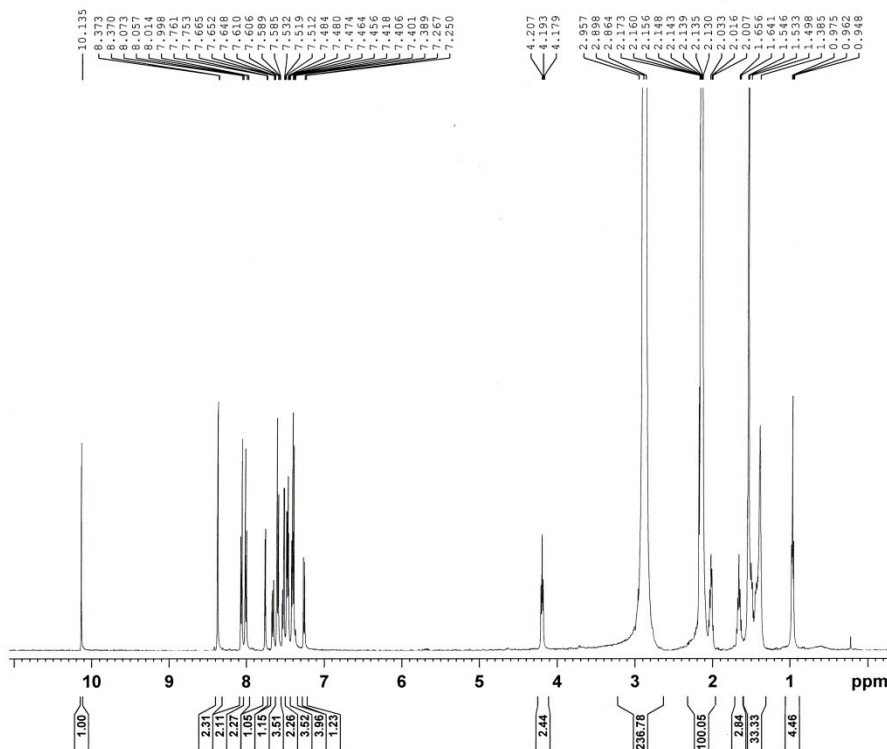
===== CHANNEL f1 =====
SFO1          125.8312223 MHz
NUC1          13C
P1            9.00 usec
PLW1          69.00000000 W

===== CHANNEL f2 =====
SFO2          500.3650015 MHz
NUC2          1H
CPDPRG[2]    waltz16
PCPD2        80.00 usec
PLW2         13.39999962 W
PLW12        0.26734999 W

F2 - Processing parameters
SI            32768
SF            125.8163760 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40
  
```



# Compound 10

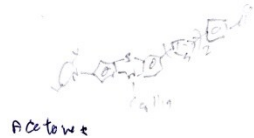


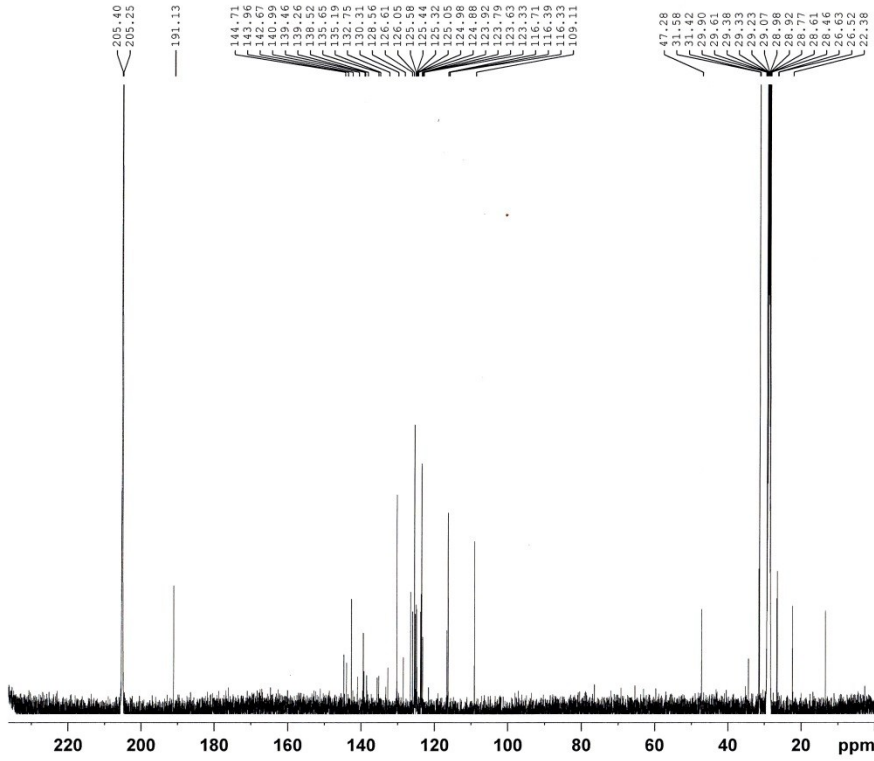
Current Data Parameters  
 NAME Ek-18  
 EXPNO 3  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20150320  
 Time\_ 15.02  
 INSTRUM spect  
 PROBHD 5 mm CPPBBO BB  
 PULPROG zg30  
 TD 65536  
 SOLVENT Acetone  
 NS 16  
 DS 0  
 SWH 8012.820 Hz  
 FIDRES 0.122266 Hz  
 AQ 4.0894465 sec  
 RG 48.32  
 DW 62.400 usec  
 DE 10.00 usec  
 TE 303.1 K  
 D1 1.00000000 sec  
 TDO 1

===== CHANNEL f1 =====  
 SFO1 500.366022 MHz  
 NUCL1 1H  
 P1 11.30 usec  
 PLW1 13.39999962 W

F2 - Processing parameters  
 SI 65536  
 SF 500.3629657 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.00





```

Current Data Parameters
NAME          Ex-18
EXPNO         6
PROCNO        1

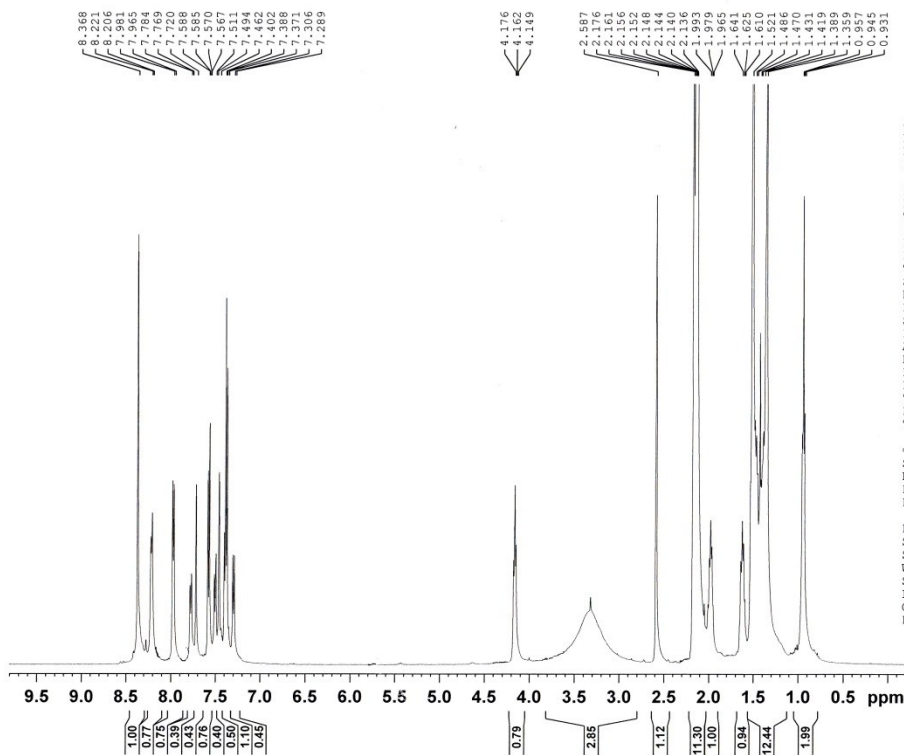
F2 - Acquisition Parameters
Date_         20150324
Time          12.58
INSTRUM       spect
PROBHD        5 mm CPPBBO BB
PULPROG       zgdc
TD            65536
SOLVENT       Acetone
NS            1013
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010048 sec
RG            195.01
DW            16.800 usec
DE            18.00 usec
TE            303.1 K
D1            1.50000000 sec
D11           0.03000000 sec
TDO           1

===== CHANNEL f1 =====
SFO1          125.8312223 MHz
NUC1          13C
P1            9.00 usec
PLW1          69.00000000 W

===== CHANNEL f2 =====
SFO2          500.3650015 MHz
NUC2          1H
CPDPRG[2]    waltr16
PCPD2         80.00 usec
PLW2          13.39999962 W
PLW12         0.26734999 W

F2 - Processing parameters
SI            32768
SF            125.8163760 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40
  
```

CPhPA



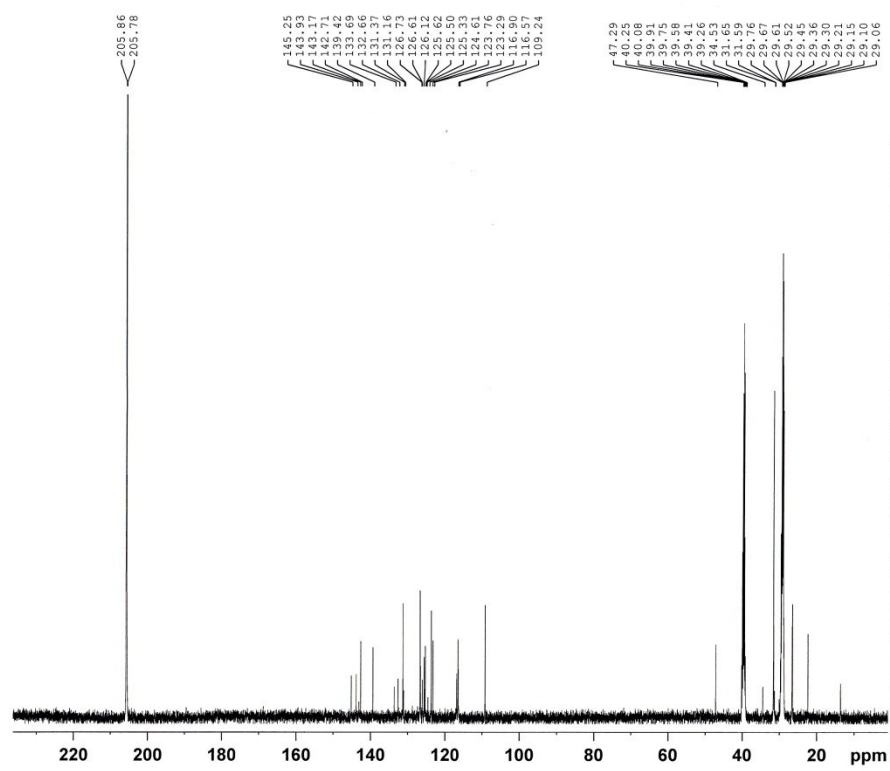
Current Data Parameters  
 NAME Ex-21  
 EXPNO 5  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20150320  
 Time\_ 16.13  
 INSTRUM spect  
 PROBHD 5 mm CPPBBO BB  
 PULPROG zg30  
 TD 65536  
 SOLVENT Acetone  
 NS 16  
 DS 0  
 SWH 8012.820 Hz  
 FIDRES 0.122266 Hz  
 AQ 4.0894465 sec  
 RG 38.43  
 DW 62.400 usec  
 DE 10.00 usec  
 TE 303.2 K  
 D1 1.00000000 sec  
 TDO 1

----- CHANNEL f1 -----  
 SFO1 500.3660022 MHz  
 NUC1 1H  
 P1 11.30 usec  
 PLW1 13.39999962 W

F2 - Processing parameters  
 SI 65536  
 SF 500.3629657 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.00

*Handwritten notes:*  
 CPhPA  
 Acetone + DMSO



Current Data Parameters  
NAME Ex-21  
EXPNO 7  
PROCNO 1

F2 - Acquisition Parameters  
Date 20150320  
Time 16.24  
INSTRUM spect  
PROBHD 5 mm CPPBBO BB  
PULPROG zgpg  
TD 65536  
SOLVENT Acetone  
NS 256  
DS 4  
SWH 29761.904 Hz  
FIDRES 0.454131 Hz  
AQ 1.1010048 sec  
RG 195.01  
DW 16.800 usec  
DE 18.00 usec  
TE 303.2 K  
D1 1.5000000 sec  
D11 0.0300000 sec  
TDO 1

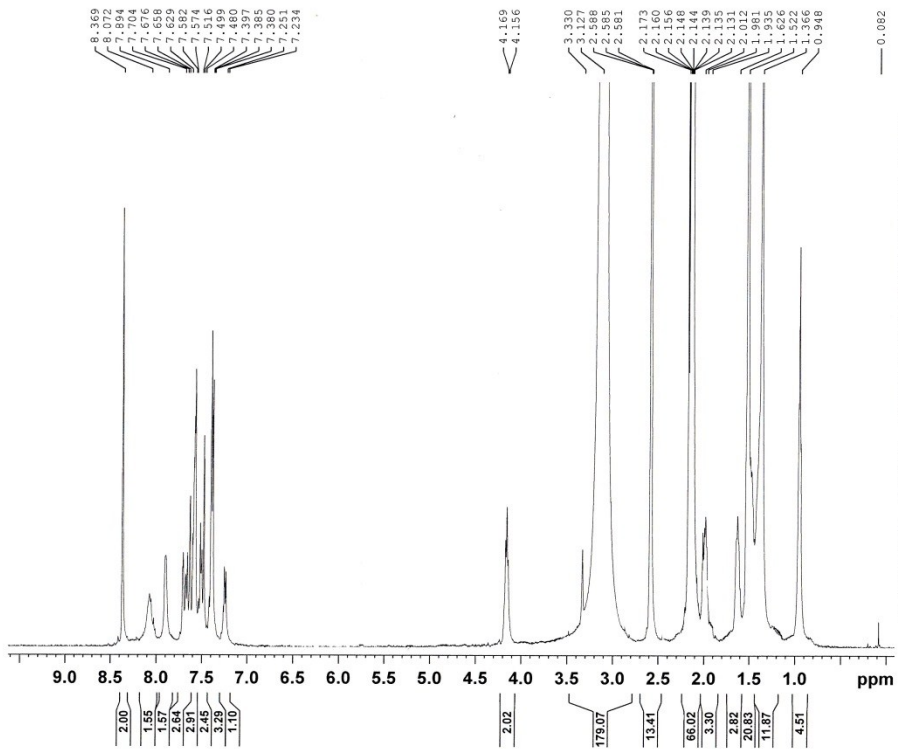
===== CHANNEL f1 =====  
SF01 125.8312223 MHz  
NUC1 13C  
P1 9.00 usec  
PLW1 69.00000000 W

===== CHANNEL f2 =====  
SF02 500.3650015 MHz  
NUC2 1H  
CPDPRG[2] waltz16  
PCPD2 80.00 usec  
PLW2 13.39999962 W  
PLW12 0.26734999 W

F2 - Processing parameters  
SI 32768  
SF 125.8163760 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

CPhTPA

CPhTPA



0.082

```

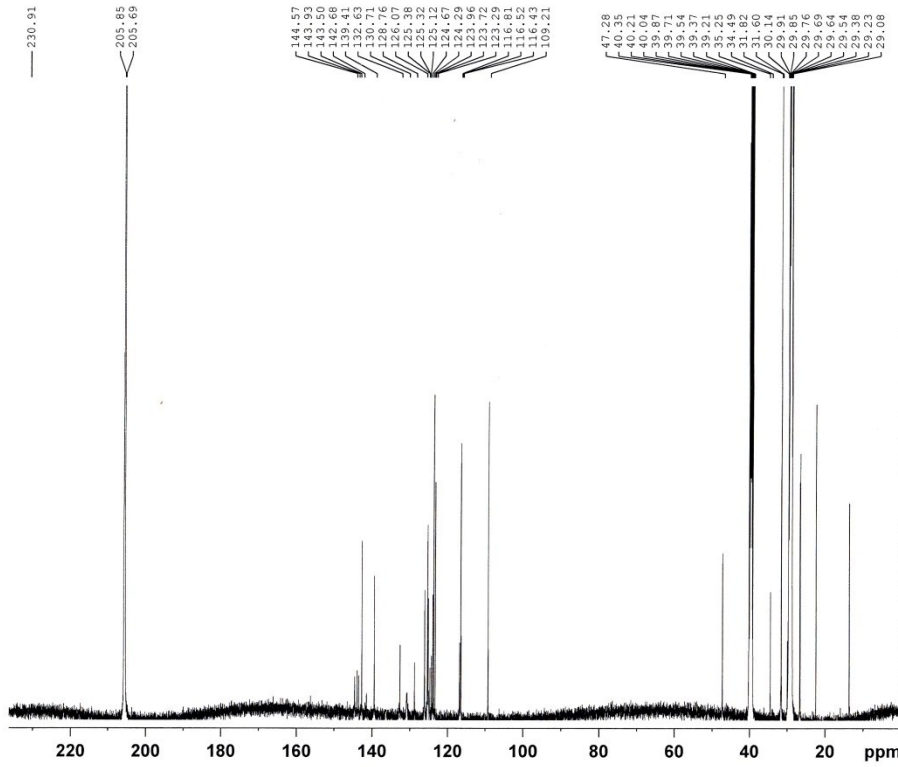
Current Data Parameters
NAME          Ex-15
EXPNO         4
PROCNO       1

F2 - Acquisition Parameters
Date_        20150324
Time         13.55
INSTRUM      spect
PROBHD       5 mm CPPBBO BB
PULPROG      zg30
TD           65536
SOLVENT      Acetone
NS           16
DS           0
SWH          8012.820 Hz
FIDRES       0.122266 Hz
AQ           4.0894465 sec
RG           48.32
DW           62.400 usec
DE           10.00 usec
TE           303.1 K
D1           1.00000000 sec
TDO          1

===== CHANNEL f1 =====
SF01         500.3660022 MHz
NUC1         1H
P1           11.30 usec
PLW1         13.39999962 W

F2 - Processing parameters
SI           65536
SF           500.3629657 MHz
WDW          EM
SSB          0
LB           1.00 Hz
GB           0
PC           1.00
    
```

*Acetone + DMSO*



Current Data Parameters  
NAME Ex-15  
EXPNO 5  
PROCNO 1

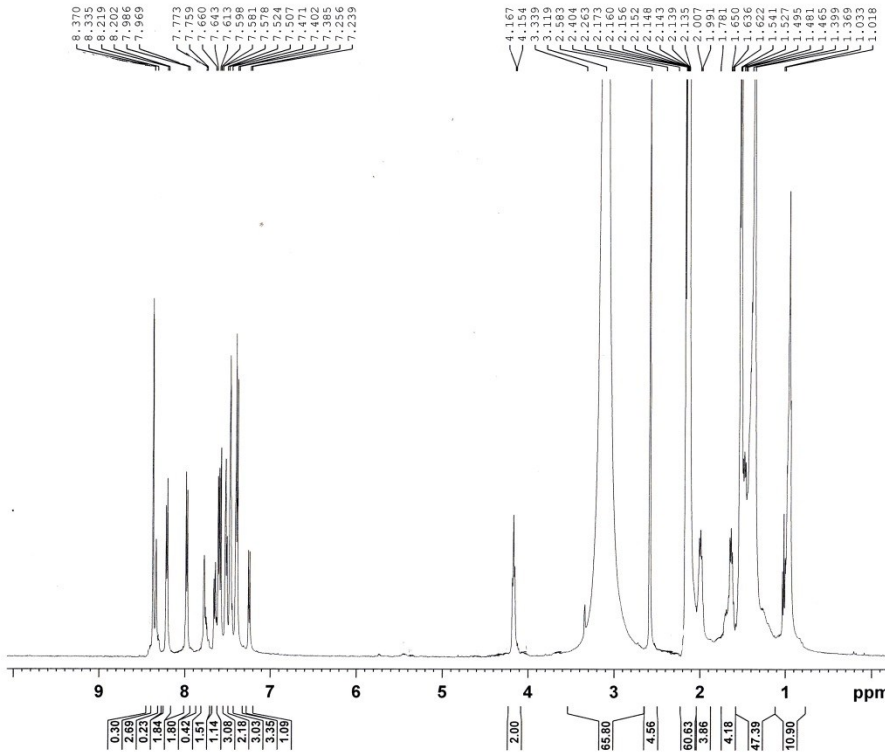
F2 - Acquisition Parameters  
Date\_ 20150324  
Time 19.09  
INSTRUM spect  
PROBHD 5 mm CPPBBO BB  
PULPROG zgdc  
TD 65536  
SOLVENT Acetone  
NS 18312  
DS 4  
SWH 29761.904 Hz  
FIDRES 0.454131 Hz  
AQ 1.1010048 sec  
RG 195.01  
DW 16.800 usec  
DE 18.00 usec  
TE 303.1 K  
D1 1.50000000 sec  
D11 0.03000000 sec  
TD0 1

===== CHANNEL f1 =====  
SFO1 125.8312223 MHz  
NUC1 13C  
P1 9.00 usec  
PLW1 69.00000000 W

===== CHANNEL f2 =====  
SFO2 500.3650015 MHz  
NUC2 1H  
CPDPRG2 waltz16  
PCPD2 80.00 usec  
PLW2 13.39999962 W  
PLW12 0.26734999 W

F2 - Processing parameters  
SI 32768  
SF 125.8163760 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

CPhT2PA

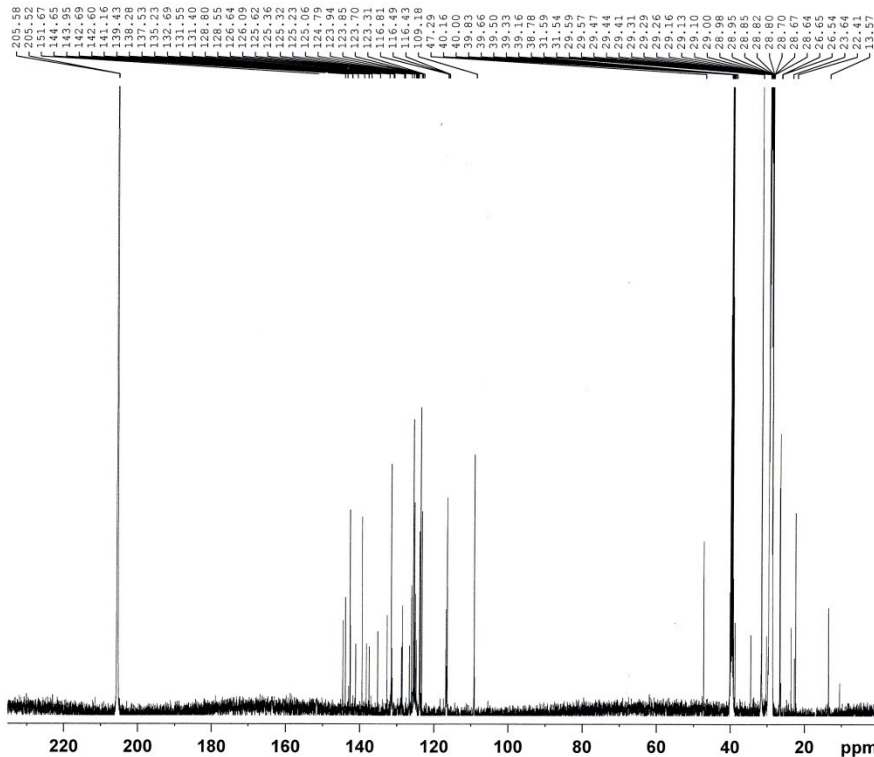


Current Data Parameters  
NAME Ex-23  
EXPNO 6  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20150324  
Time 14.13  
INSTRUM spect  
PROBHD 5 mm CPPBBO BB  
PULPROG zg30  
TD 65536  
SOLVENT Acetone  
NS 16  
DS 0  
SWH 8012.820 Hz  
FIDRES 0.122266 Hz  
AQ 4.0894465 sec  
RG 48.32  
DW 62.400 usec  
DE 10.00 usec  
TE 303.2 K  
D1 1.00000000 sec  
TDO 1

----- CHANNEL f1 -----  
SF01 500.3660022 MHz  
NUC1 1H  
P1 11.30 usec  
PLW1 13.39999962 W

F2 - Processing parameters  
SI 65536  
SF 500.3629657 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.00



Current Data Parameters  
NAME Ex-23  
EXPNO 7  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20150324  
Time 14.52  
INSTRUM spect  
PROBHD 5 mm CPPBBO BB  
PULPROG zgdc  
TD 65536  
SOLVENT Acetone  
NS 5595  
DS 4  
SWH 29761.904 Hz  
FIDRES 0.454131 Hz  
AQ 1.1010048 sec  
RG 195.01  
DW 16.800 usec  
DE 18.00 usec  
TE 303.1 K  
D1 1.50000000 sec  
D11 0.03000000 sec  
TDO 1

----- CHANNEL f1 -----  
SF01 125.8312223 MHz  
NUC1 13C  
P1 9.00 usec  
PLW1 69.00000000 W

----- CHANNEL f2 -----  
SF02 500.3650015 MHz  
NUC2 1H  
CPDPRG2 waltz16  
PCPD2 80.00 usec  
PLW2 13.39999962 W  
PLW12 0.26734999 W

F2 - Processing parameters  
SI 32768  
SF 125.8163760 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40