

Supplementary Information

[Et₃NH][HSO₄]-catalyzed eco-friendly and expeditious synthesis of thiazolidine and oxazolidine derivatives

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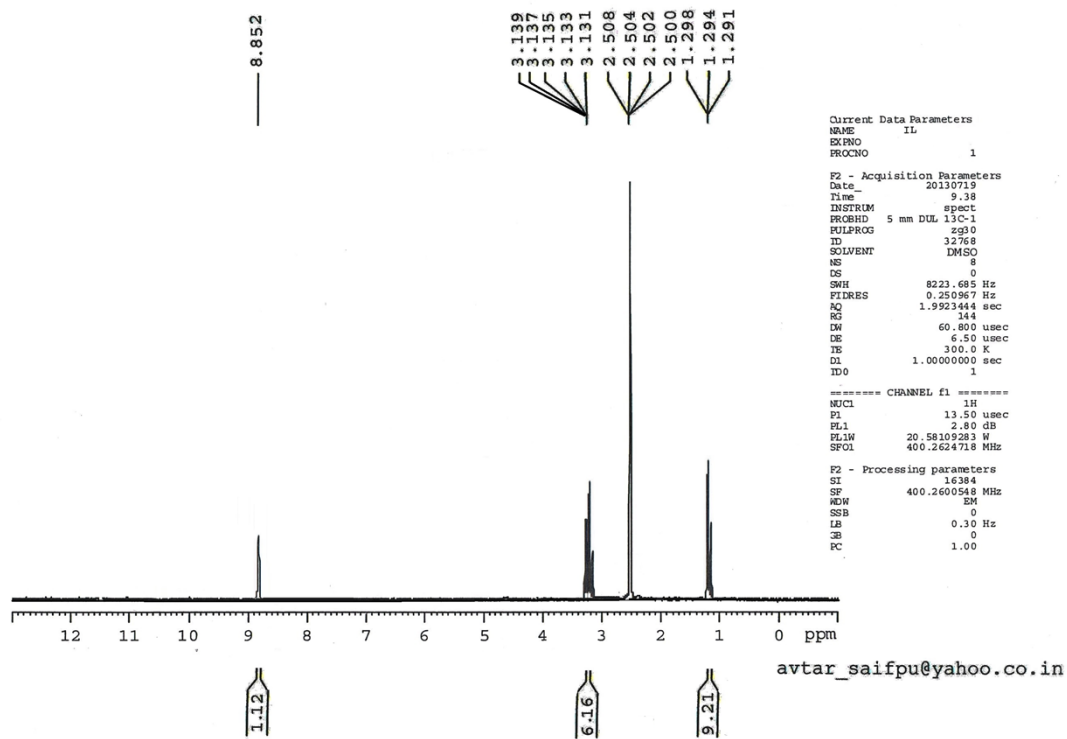
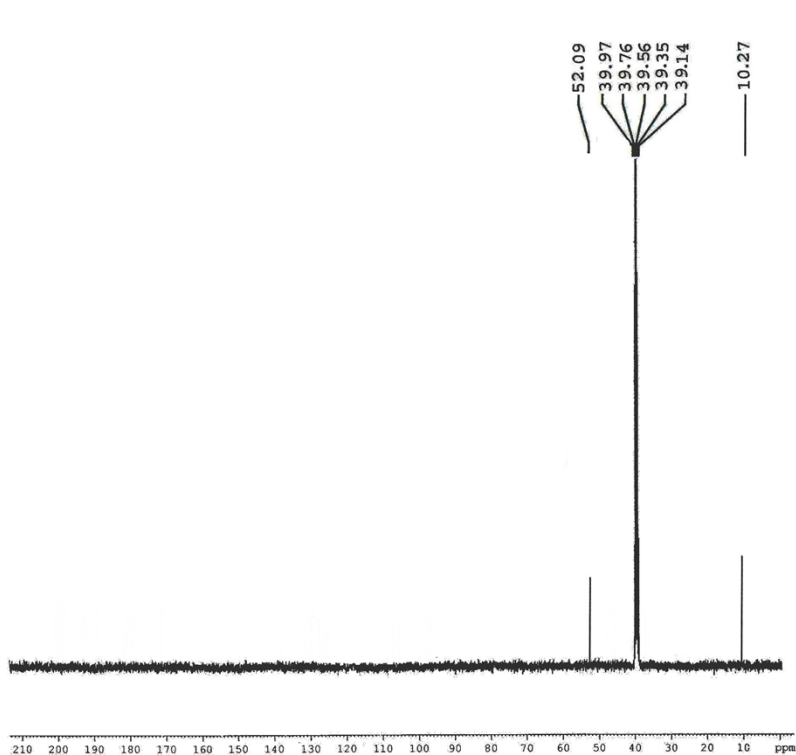


Fig. S1 ^1H NMR spectrum of ionic liquid $[\text{Et}_3\text{NH}][\text{HSO}_4]$



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Current Data Parameters
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EXPNO     1
PROCNO    1

F2 - Acquisition Parameters
Date_     20130719
Time      10.54
INSTRUM   spect
PROBHD    5 mm F4BBO BB-
PULPROG   zgpg30
TD        65536
SOLVENT   DMSO
NS        400
DS        4
SWH        29761.04 Hz
FIDRES     0.454131 Hz
AQ         1.1010548 sec
RG         575
DW         16.800 usec
DE         6.00 usec
TE         296.3 K
D1         2.00000000 sec
d11        0.03000000 sec
DELTA     1.89999998 sec
TD0        1

===== CHANNEL f1 =====
NUC1       13C
P1         9.60 usec
PL1        -2.00 dB
SFO1       100.6228298 MHz

===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2       1H
PCPD2     80.00 usec
PL2        -3.00 dB
PL12       14.31 dB
PL13       18.00 dB
SFO2       400.1316005 MHz

F2 - Processing parameters
SI         32768
SF         100.6128193 MHz
WDW        EM
SSB        0
LB         1.00 Hz
GB         0
PC         1.40
  
```

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Fig. S2 ^{13}C NMR spectrum of ionic liquid $[\text{Et}_3\text{NH}][\text{HSO}_4]$

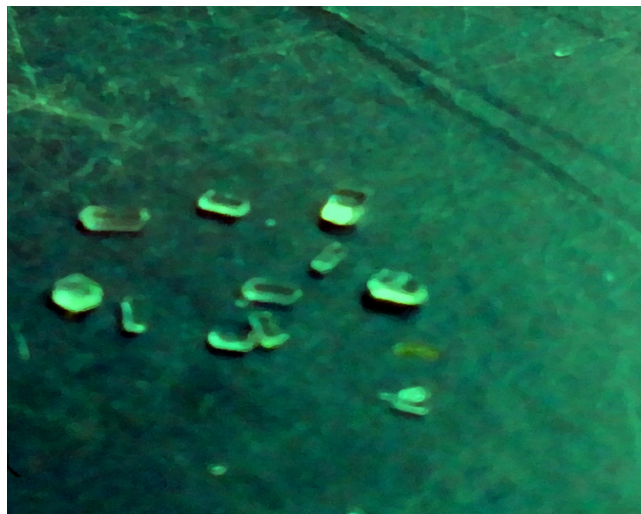


Fig. S3 Crystals of intermediate compound (5)

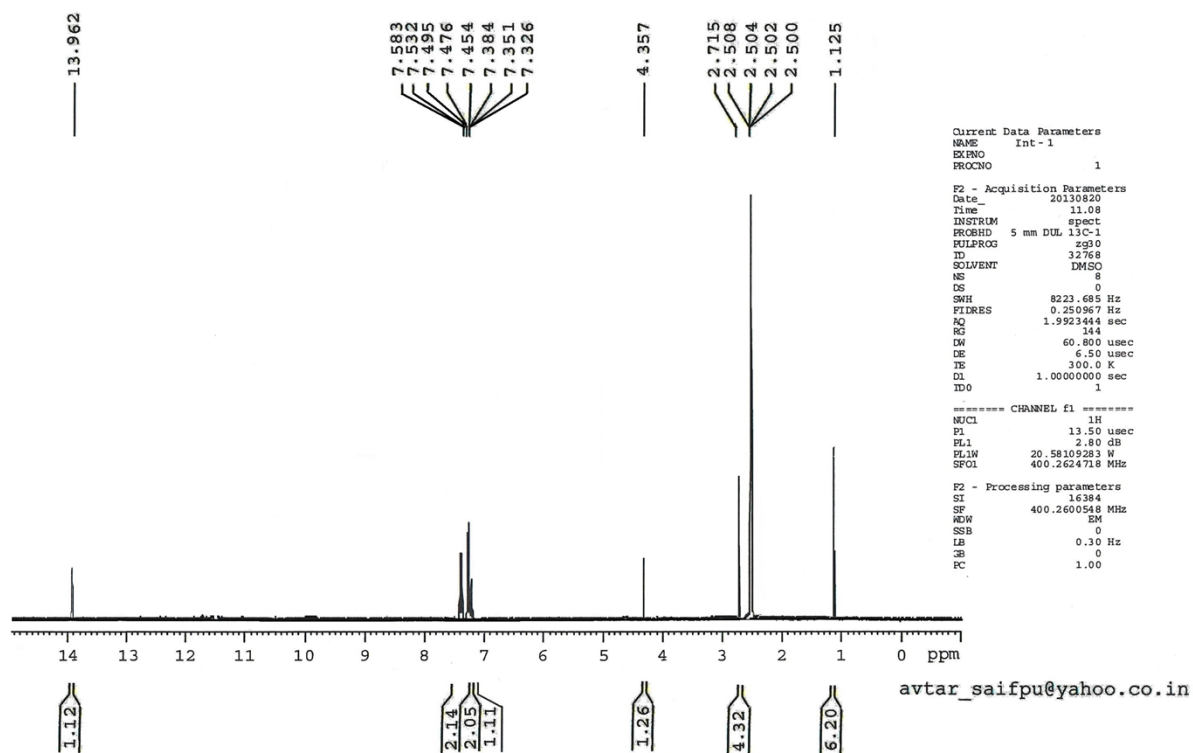
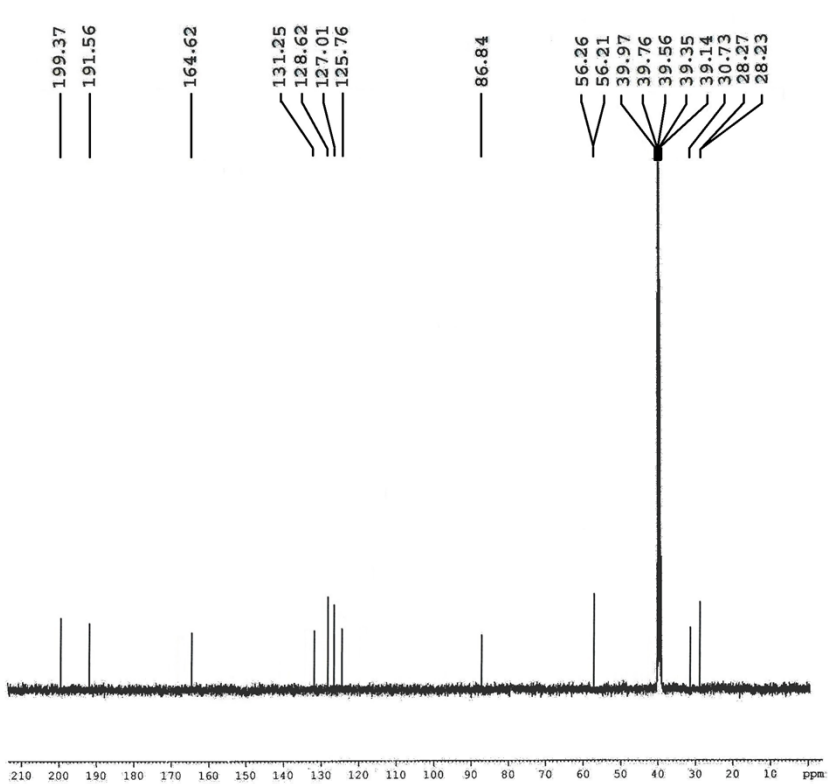


Fig. S4 ¹H NMR spectrum of intermediate compound (5)



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Current Data Parameters
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EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
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Time 11.34
INSTRUM spect
PROBHD 5 mm FAPBBO BB-
PULPROG zgpg30
TD 65536
SOLVENT DMSO
NS 400
DS 4
SWH 29761.904 Hz
FIDRES 0.454131 Hz
AQ 1.1010548 sec
RG 575
DW 16.800 usec
DE 6.00 usec
TE 296.3 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1

===== CHANNEL f1 =====
NUC1 13C
P1 9.60 usec
PL1 -2.00 dB
SFO1 100.6228298 MHz

===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -3.00 dB
PL12 14.31 dB
PL13 18.00 dB
SFO2 400.1316005 MHz

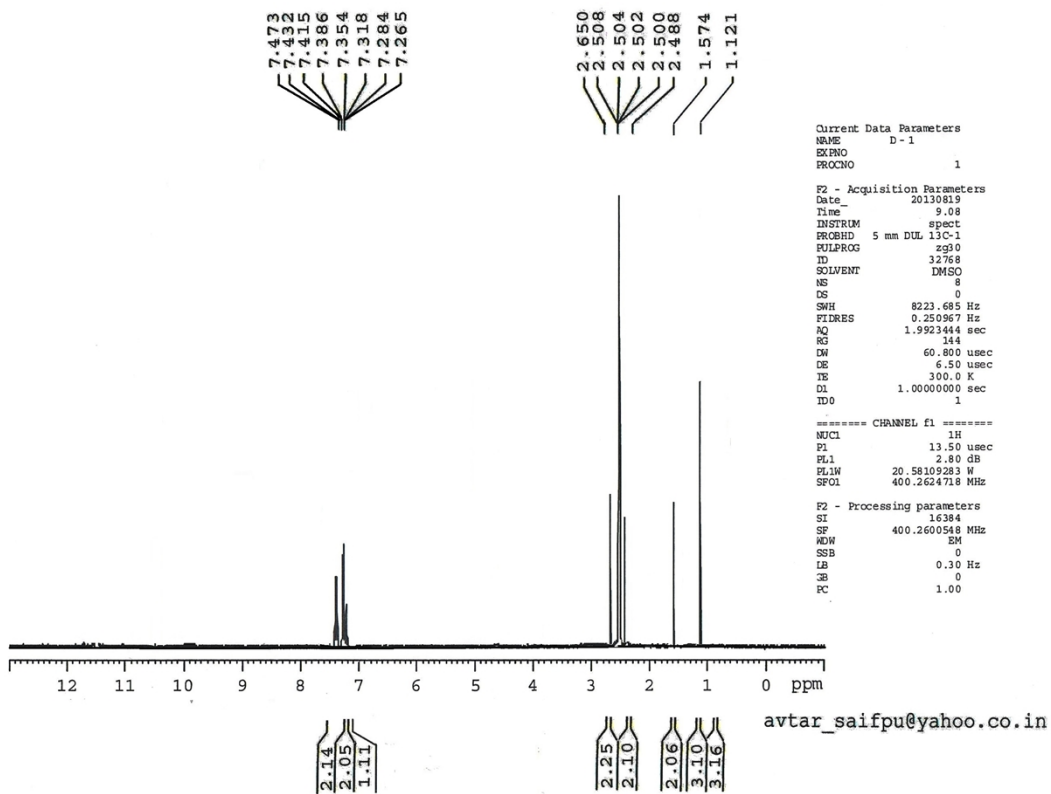
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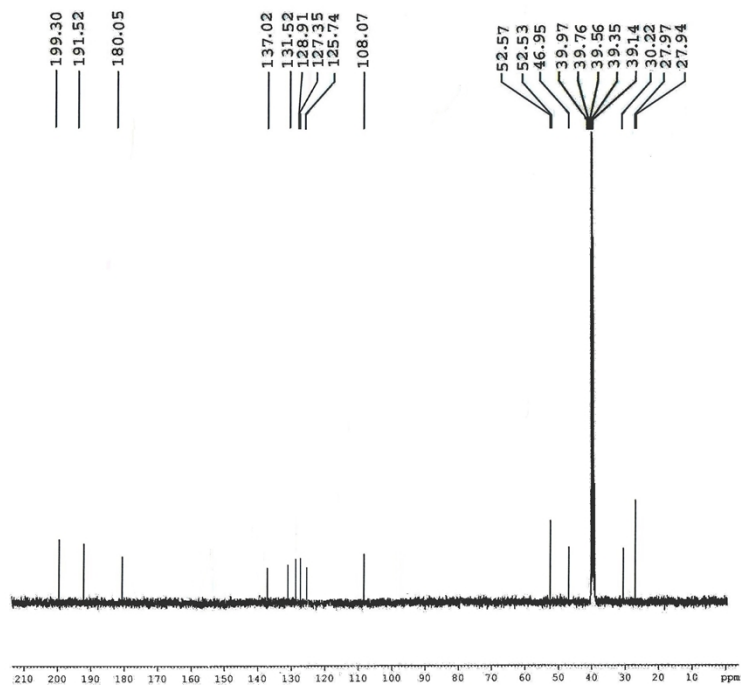
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Fig. S5 ¹³C NMR spectrum of intermediate compound (5)

¹H NMR and ¹³C spectrum of some selected Compounds



¹H NMR spectrum of compound (4a)



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Current Data Parameters
NAME      D-1
EXPNO     1
PROCNO    1

F2 - Acquisition Parameters
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Time      9.34
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PULPROG   zgpg30
TD         65536
SOLVENT   DMSO
NS         4
DS         4
SWH        29761.904 Hz
FIDRES     0.454131 Hz
AQ         1.1010348 sec
RG         575
DW         16.800 usec
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TE         296.3 K
D1         2.0000000 sec
d11        0.0300000 sec
DELTA      1.8999999 sec
TD0        1

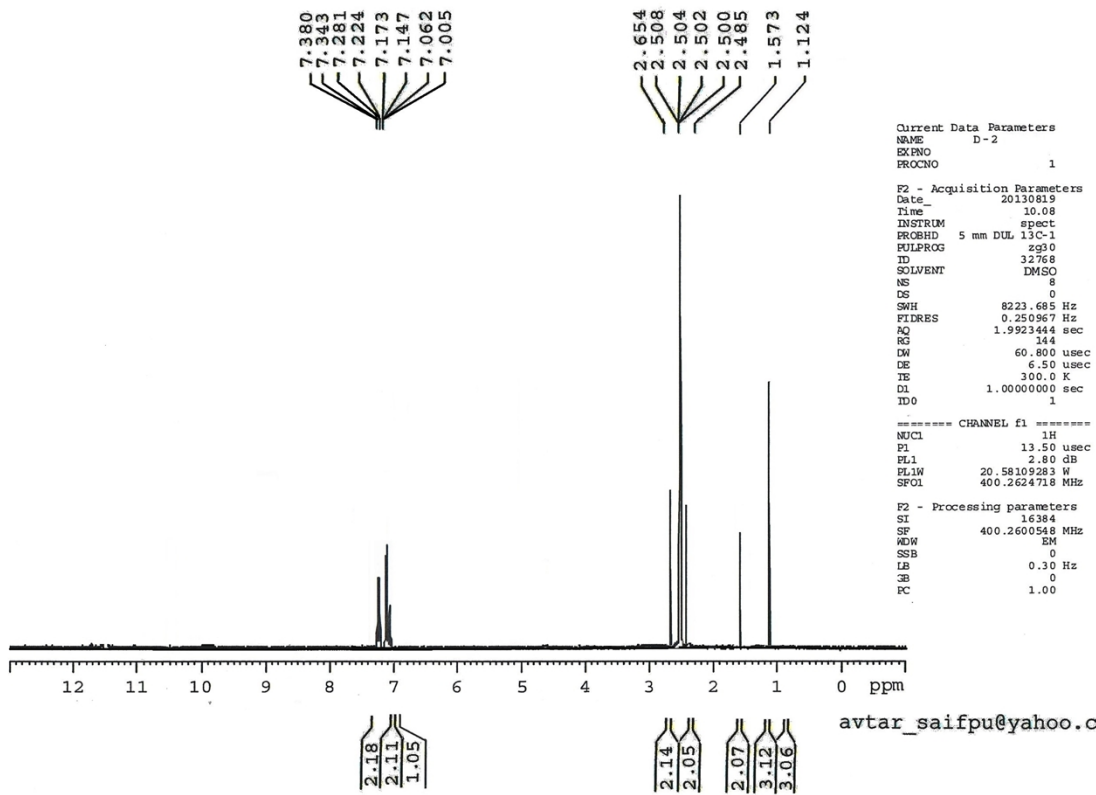
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NUC1       13C
P1         9.60 usec
PL1        -2.00 dB
SFO1       100.6228298 MHz

===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2       1H
PCPD2     80.00 usec
PL2        -3.00 dB
PL12       14.31 dB
PL13       18.00 dB
SFO2       400.1316005 MHz

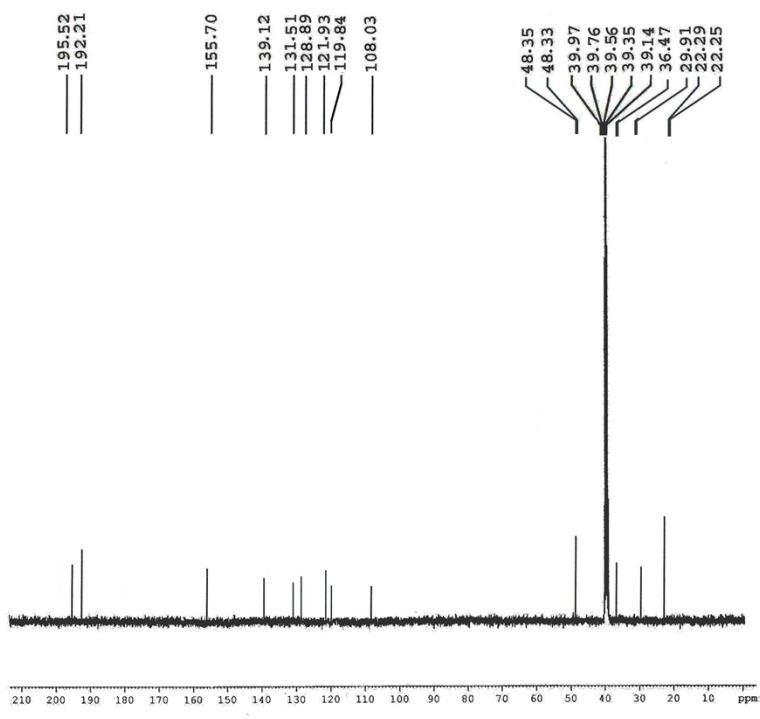
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SF         100.6128193 MHz
WDW        EM
SSB        0
LB         1.00 Hz
GB         0
PC         1.40
  
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¹³C NMR spectrum of compound (4a)



^1H NMR spectrum of compound (4b)



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Current Data Parameters
NAME      D-2
EXPNO     1
PROCNO    1

F2 - Acquisition Parameters
Date      20130819
Time      10.34
INSTRUM   spect
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PULPROG   zgpg30
TD         65536
SOLVENT   DMSO
NS         400
DS         4
SWH        29761.904 Hz
FIDRES     0.454131 Hz
AQ         1.1010548 sec
RG         575
DW         16.800 usec
DE         6.00 usec
TE         296.3 K
D1         2.00000000 sec
d11        0.03000000 sec
DELTA     1.89999998 sec
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----- CHANNEL f1 -----
NUC1       13C
P1         9.60 usec
PL1        -2.00 dB
SFO1       100.6228298 MHz

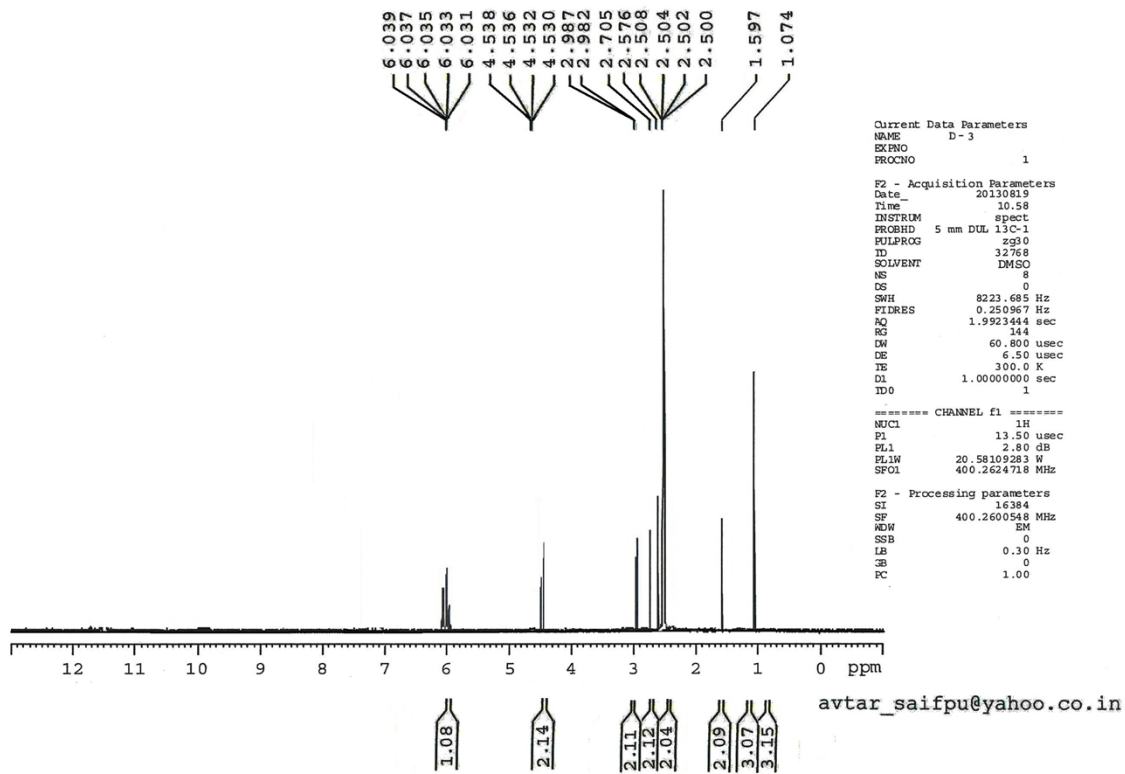
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NUC2       1H
PCPD2     80.00 usec
PL2        -3.00 dB
PL12       14.31 dB
PL13       18.00 dB
SFO2       400.1316005 MHz

F2 - Processing parameters
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SF         100.6128193 MHz
WDW        EM
SSB        0
LB         1.00 Hz
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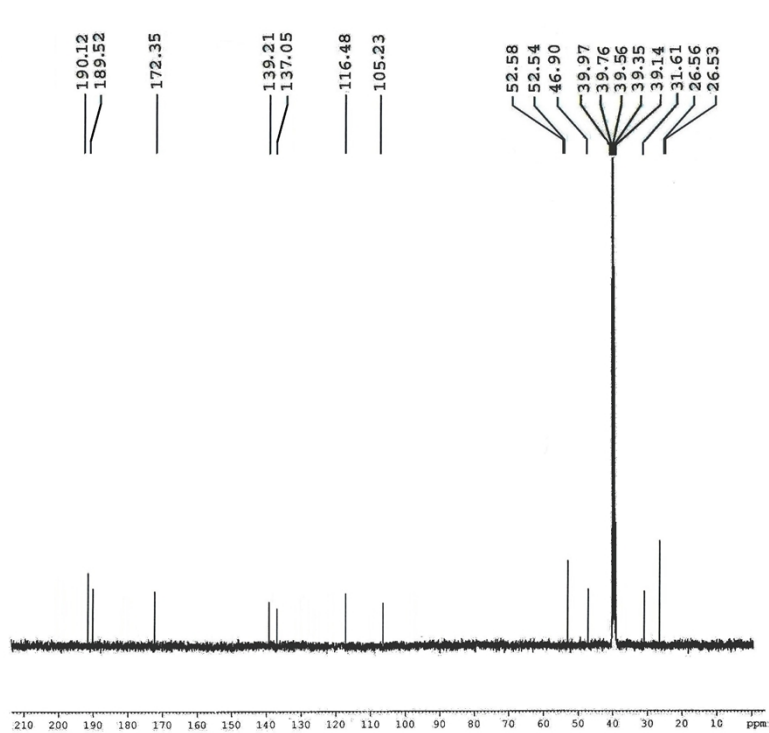
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¹³C NMR spectrum of compound (4b)



¹H NMR spectrum of compound (4c)



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Current Data Parameters
 NAME D-3
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20130819
 Time 11.24
 INSTRUM spect
 PROBHD 5 mm FAPBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT DMSO
 NS 400
 DS 4
 SWH 29761.904 Hz
 FIDRES 0.454131 Hz
 AQ 1.1010548 sec
 RG 575
 DW 16.800 usec
 DE 6.00 usec
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 d11 0.0300000 sec
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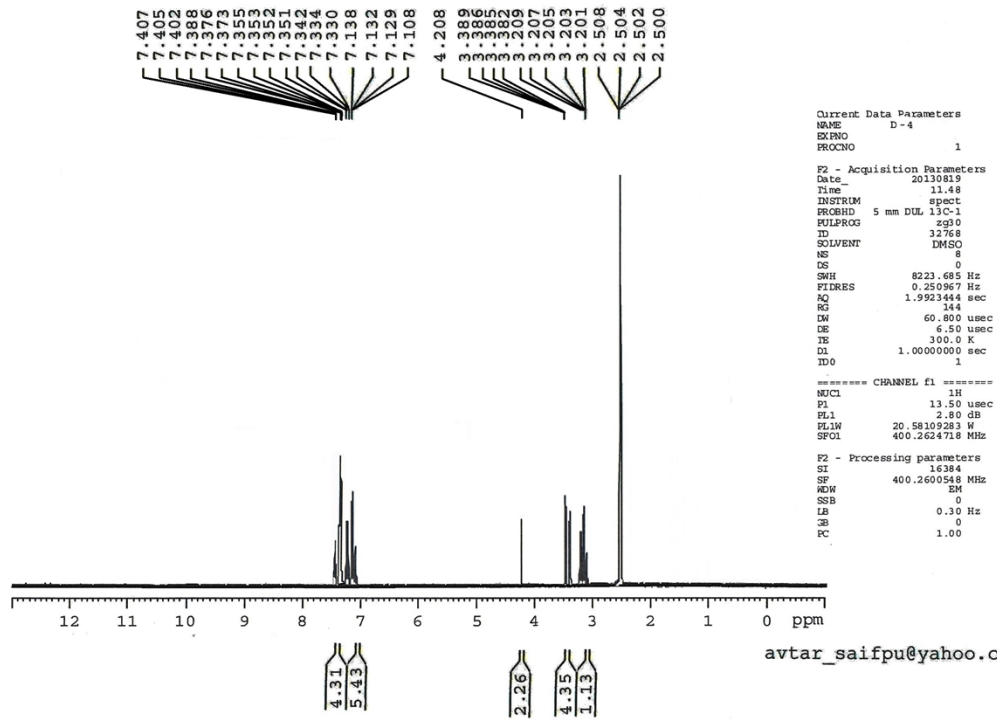
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 SFO1 100.6228298 MHz

===== CHANNEL f2 =====
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 NUC2 1H
 PCPD2 80.00 usec
 PL2 -3.00 dB
 PL12 14.31 dB
 PL1 18.00 dB
 SFO2 400.1316005 MHz

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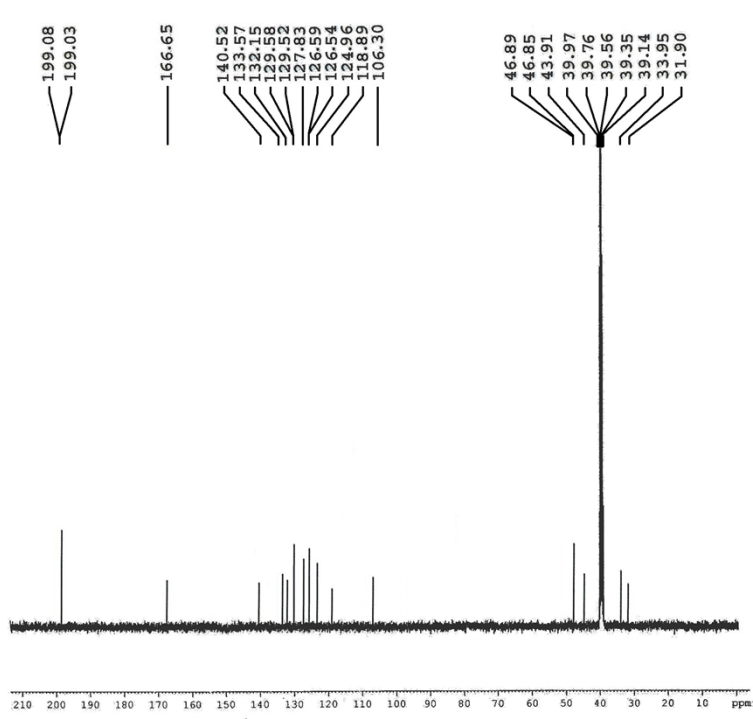
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¹³C NMR spectrum of compound (4c)



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¹H NMR spectrum of compound (4d)



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Current Data Parameters
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EXPNO     1
PROCNO    1

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Time      11:59
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TD         65536
SOLVENT   DMSO
NS         400
DS         4
SWH        29761.904 Hz
FIDRES     0.454131 Hz
AQ         1.1010548 sec
RG         375
DW         16.800 usec
DE         6.00 usec
TE         296.3 K
D1         2.0000000 sec
d11        0.0300000 sec
DELTA     1.89999998 sec
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PL1        -2.00 dB
SFO1       100.6228298 MHz

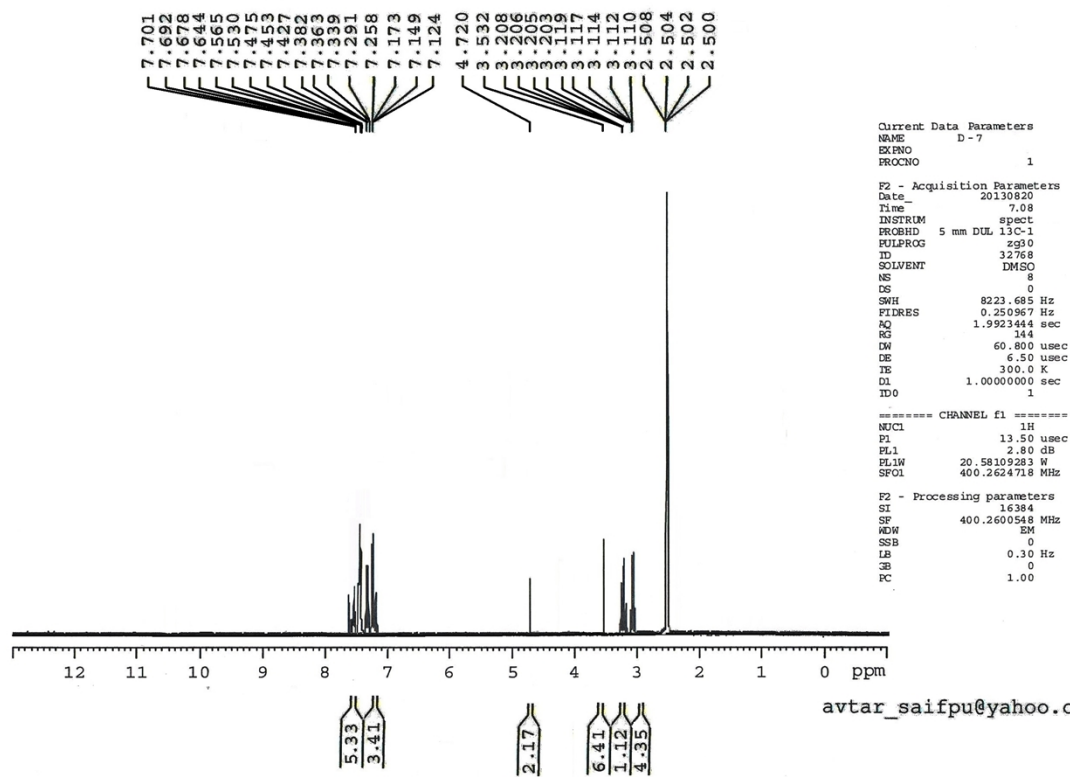
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SFO2       400.1316005 MHz

F2 - Processing parameters
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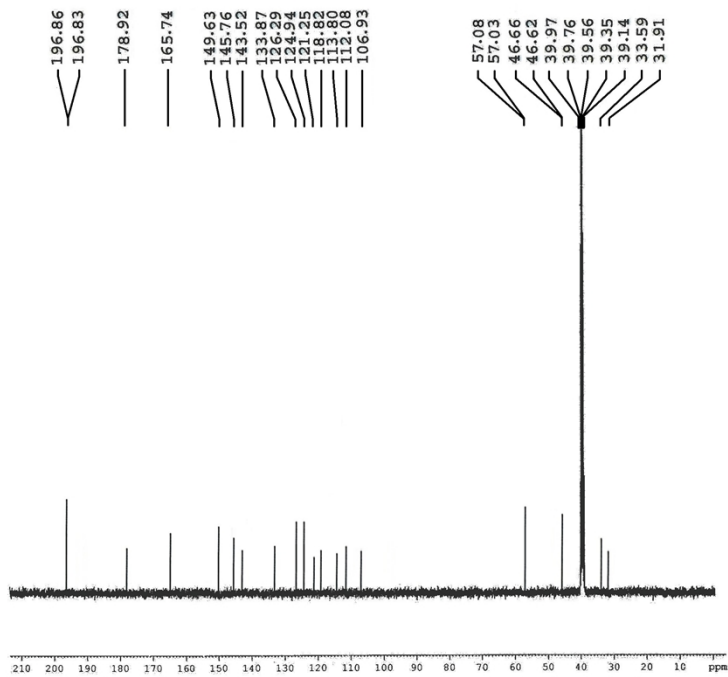
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¹³C NMR spectrum of compound (4d)



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¹H NMR spectrum of compound (4g)



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Current Data Parameters
NAME      D-7
EXPNO     1
PROCNO    1

F2 - Acquisition Parameters
Date_     20130820
Time      7.24
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SOLVENT   DMSO
NS         400
DS         4
SWH        29761.904 Hz
FIDRES     0.454131 Hz
AQ         1.1010548 sec
RG         575
DW         16.800 usec
DE         6.00 usec
TE         296.3 K
D1         2.00000000 sec
d11        0.03000000 sec
DELTA     1.89999998 sec
TD0        1

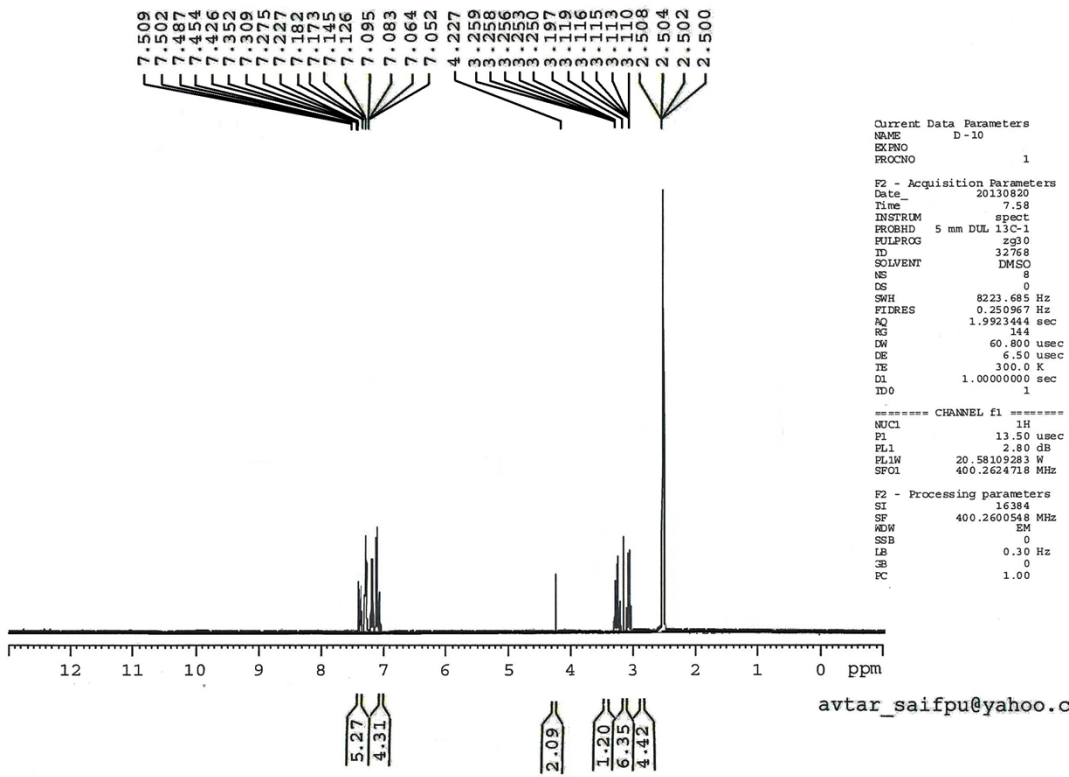
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PL1        -2.00 dB
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----- CHANNEL f2 -----
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NUC2       1H
PCPD2     80.00 usec
PL2        -3.00 dB
PL12       14.31 dB
PL13       18.00 dB
SFO2       400.1316005 MHz

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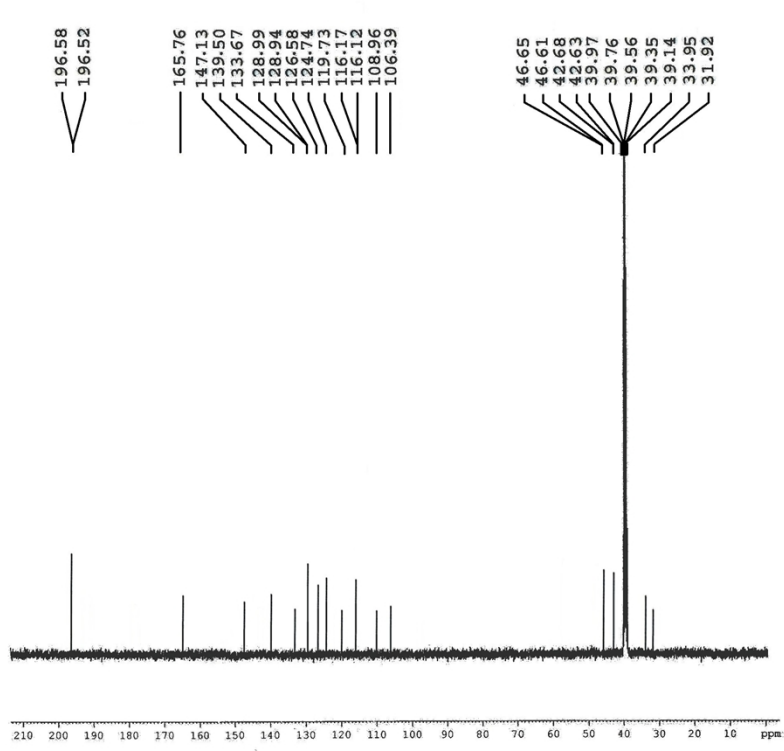
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¹³C NMR spectrum of compound (4g)



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¹H NMR spectrum of compound (4j)



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Current Data Parameters
NAME      D-10
EXPNO     1
PROCNO    1

F2 - Acquisition Parameters
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Time      8.14
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PULPROG   zgpg30
TD         65536
SOLVENT   DMSO
NS         400
DS         4
SWH        29761.904 Hz
FIDRES     0.454151 Hz
AQ         1.1010548 sec
RG         575
DW         16.800 usec
DE         6.00 usec
TE         296.3 K
D1         2.00000000 sec
d11        0.03000000 sec
DELTA     1.89999998 sec
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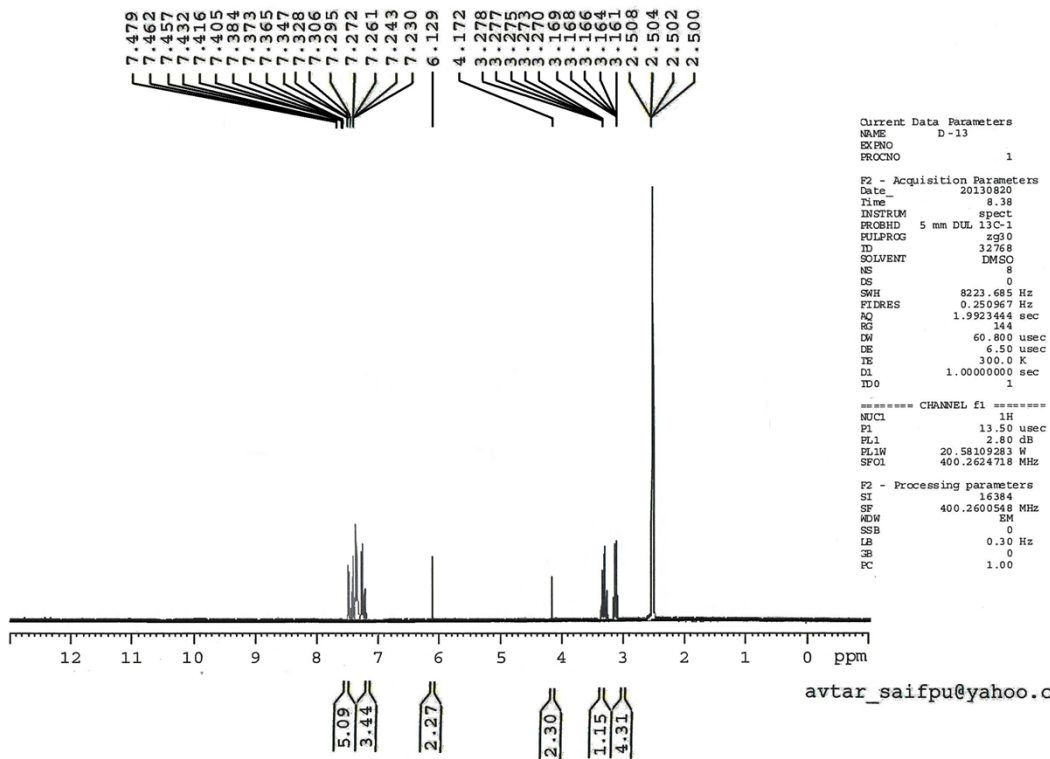
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PL1        -2.00 dB
SFO1       100.6228298 MHz

===== CHANNEL f2 =====
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NUC2       1H
PCPD2      90.00 usec
PL2         -3.00 dB
PL12       14.31 dB
PL13       18.00 dB
SFO2       400.1316005 MHz

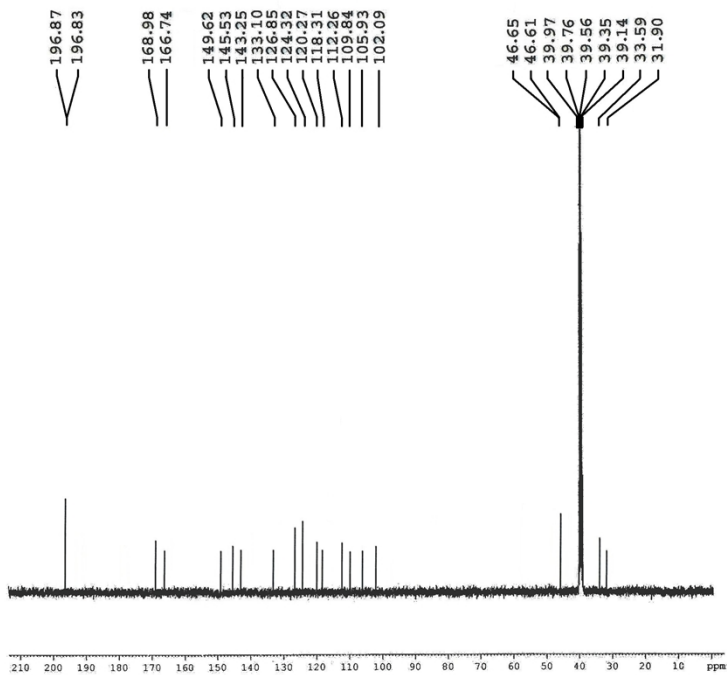
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SSB        0
LB         1.00 Hz
GB         0
PC         1.40
  
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¹³C NMR spectrum of compound (4j)



¹H NMR spectrum of compound (4m)



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Current Data Parameters
NAME      D-13
EXPNO     1
PROCNO    1

F2 - Acquisition Parameters
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Time      8.54
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PULPROG   zgpg30
TD         65536
SOLVENT   DMSO
NS         400
DS         4
SWH        29761.904 Hz
FIDRES     0.454131 Hz
AQ          1.1010548 sec
RG          575
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TE          296.3 K
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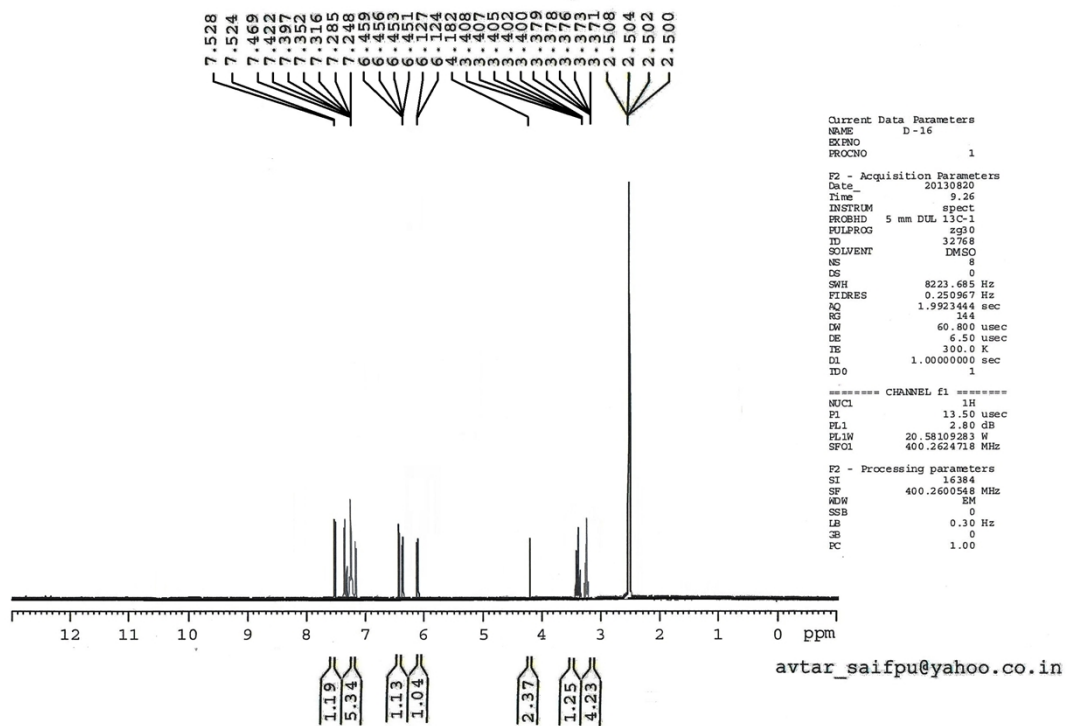
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SFO1       100.6228298 MHz

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PL13        18.00 dB
SFO2       400.1316005 MHz

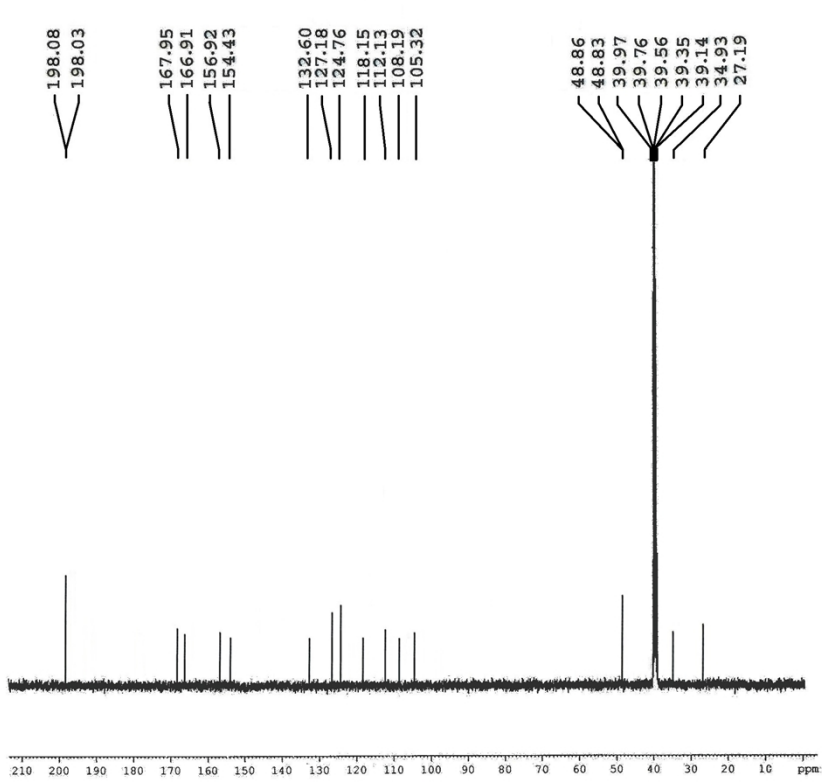
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LB          1.00 Hz
GB          0
PC          1.40
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^{13}C NMR spectrum of compound (4m)



¹H NMR spectrum of compound (4p)



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Current Data Parameters
 NAME D-16
 EXPNO 1
 PROCNO 1

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 PULPROG zgpg30
 TD 65536
 SOLVENT DMSO
 NS 400
 DS 4
 SWH 29761.904 Hz
 FIDRES 0.454131 Hz
 AQ 1.1010348 sec
 RG 575
 DW 16.800 usec
 DE 6.00 usec
 TE 296.3 K
 D1 2.0000000 sec
 d11 0.0300000 sec
 DELTA 1.89999998 sec
 TDO 1

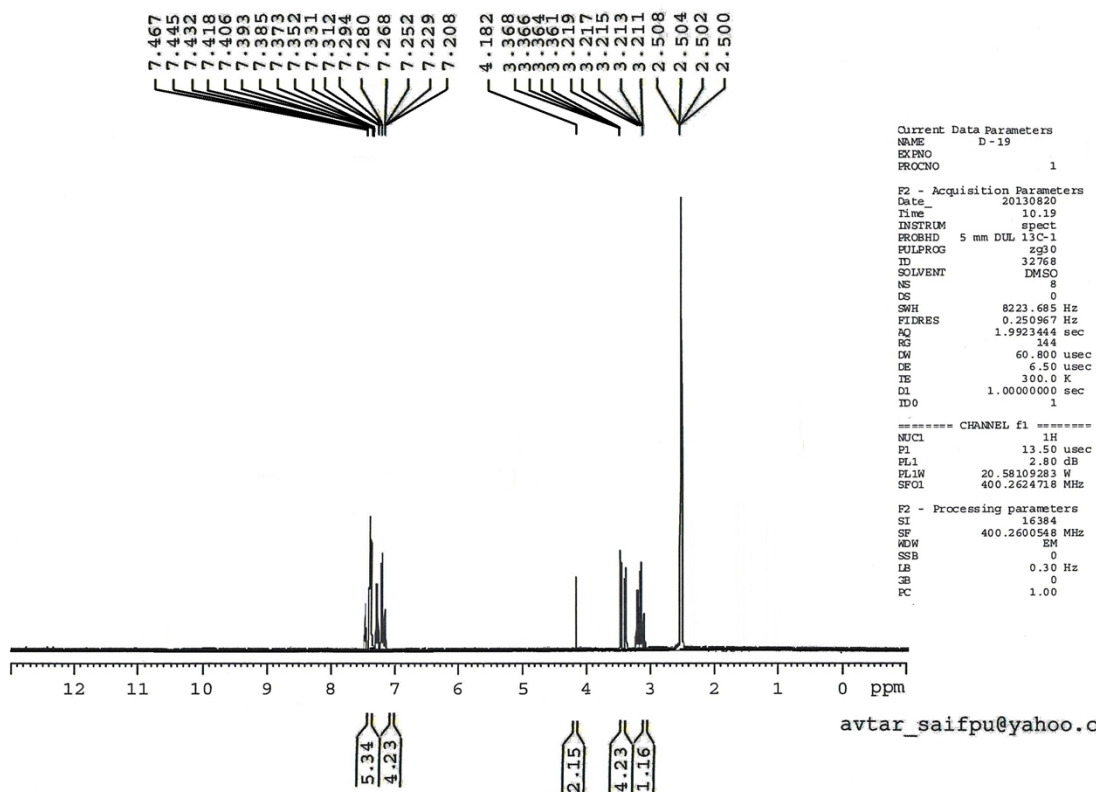
----- CHANNEL f1 -----
 NUC1 13C
 P1 9.60 usec
 PL1 -2.00 dB
 SFO1 100.6228298 MHz

----- CHANNEL f2 -----
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PL2 -3.00 dB
 PL12 14.31 dB
 PL13 18.00 dB
 SFO2 400.1316005 MHz

F2 - Processing parameters
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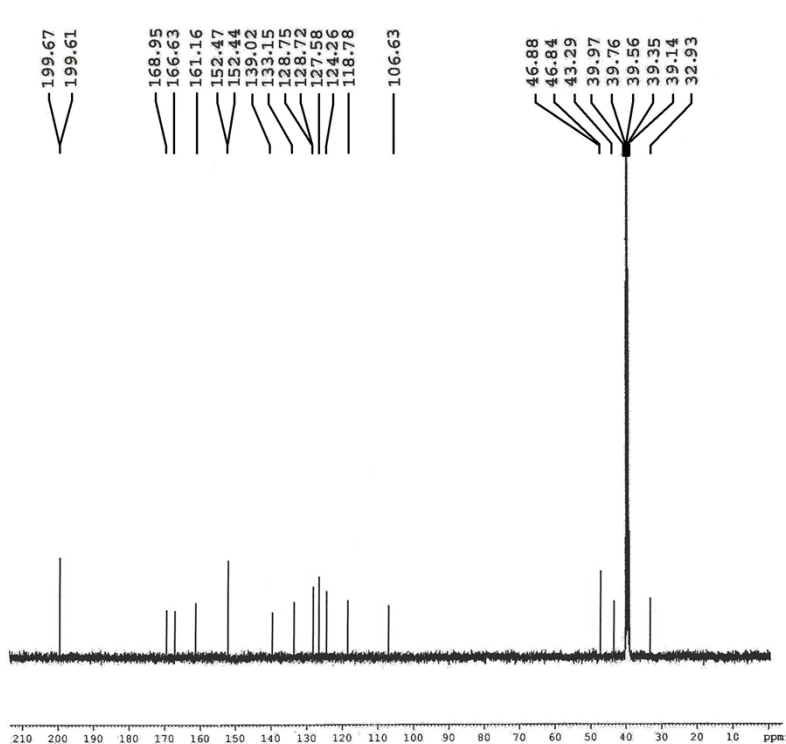
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¹³C NMR spectrum of compound (4p)



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¹H NMR spectrum of compound (4s)



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Current Data Parameters
 NAME D-19
 EXPNO 1
 PROCNO 1
 F2 - Acquisition Parameters
 Date_ 20130820
 Time_ 10.47
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 PULPROG zgpg30
 TD 65536
 SOLVENT DMSO
 NS 400
 DS 4
 SWH 29761.904 Hz
 FIDRES 0.454131 Hz
 AQ 1.1010548 sec
 RG 275
 DW 16.800 usec
 DE 6.00 usec
 TE 296.3 K
 D1 2.0000000 sec
 d11 0.0300000 sec
 DELTA 1.89999998 sec
 TDO 1

===== CHANNEL f1 =====
 NUC1 ¹³C
 P1 9.60 usec
 PL1 -2.00 dB
 SFO1 100.6228298 MHz

===== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 ¹H
 PCPD2 80.00 usec
 PL2 -3.00 dB
 PL12 14.31 dB
 PL13 18.00 dB
 SFO2 400.1316005 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6128193 MHz
 NDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

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¹³C NMR spectrum of compound (4s)

Table S1 Crystal and structure refinement data for intermediate compound **(5)**

Compound	(5)
Empirical formula	C ₁₅ H ₁₇ NO ₂ S
Formula wt.	274.35
Crystal system	Triclinic
Space group	<i>P</i> -1
<i>a</i> , Å	7.298(5)
<i>b</i> , Å	9.090(3)
<i>c</i> , Å	10.762(5)
α (°)	75.500
β (°)	78.979(5)
γ (°)	89.218(5)
<i>U</i> , Å ³	678.0(7)
<i>Z</i>	2
ρ_{calc} Mg/m ³	1.349
μ , mm ⁻¹	0.236
<i>F</i> (000)	292
Refl. collected	3515
Independent refl.	2240
GooF	1.166
Final R indices [<i>I</i> > 2 σ (<i>I</i>)]	<i>R</i> 1 = 0.0543 w <i>R</i> 2 = 0.1554
<i>R</i> indices (all data)	<i>R</i> 1 = 0.0626 w <i>R</i> 2 = 0.1974

$$R_1 = \frac{\sum ||F_o| - |F_c||}{\sum |F_o|} \text{ with } F_o^2 > 2\sigma(F_o^2). \quad wR_2 = [\frac{\sum w(|F_o^2| - |F_c^2|)^2}{\sum |F_o^2|^2}]^{1/2}$$