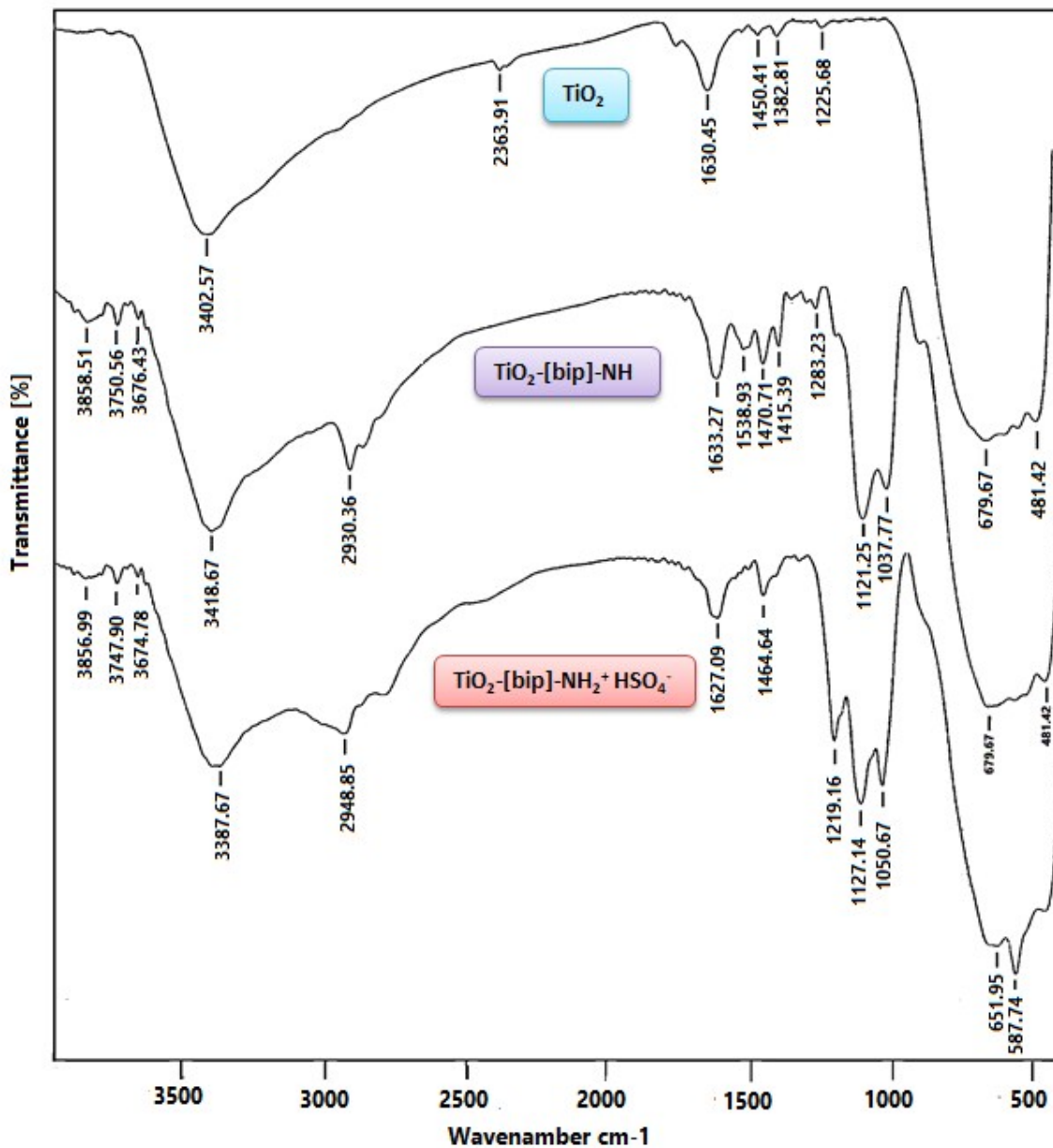


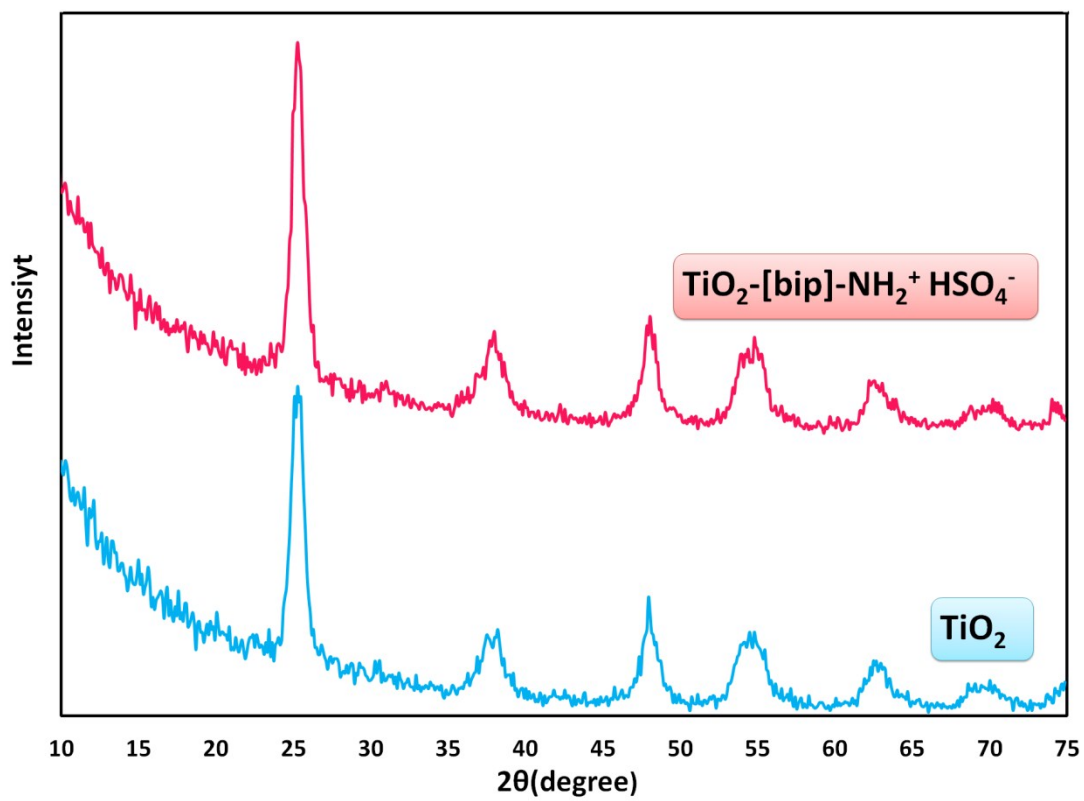
**Nanoporous TiO<sub>2</sub> containing an ionic liquid bridge as an efficient and reusable catalyst for the synthesis of *N,N'*-diarylformamidines, benzoxazoles, benzothiazoles and benzimidazoles**

M. Mazloumi, F. Shirini,<sup>a\*</sup> O. Goli-Jolodar, M. Seddighi

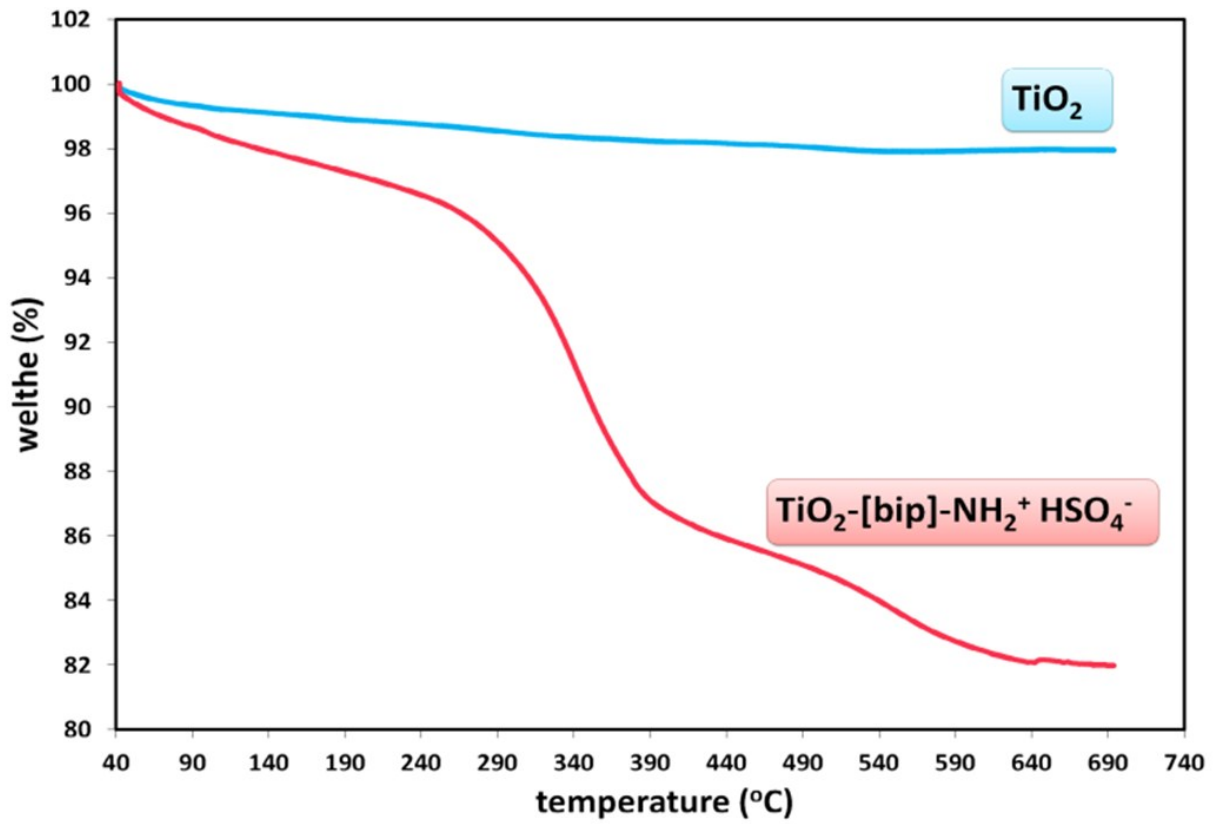
<sup>a</sup>Department of Chemistry, College of Sciences, University of Guilan, Rasht, 41335-19141, Iran. E-mail: shirini@guilan.ac.ir; Fax: +98 131 3233262; Tel: +981313233262.



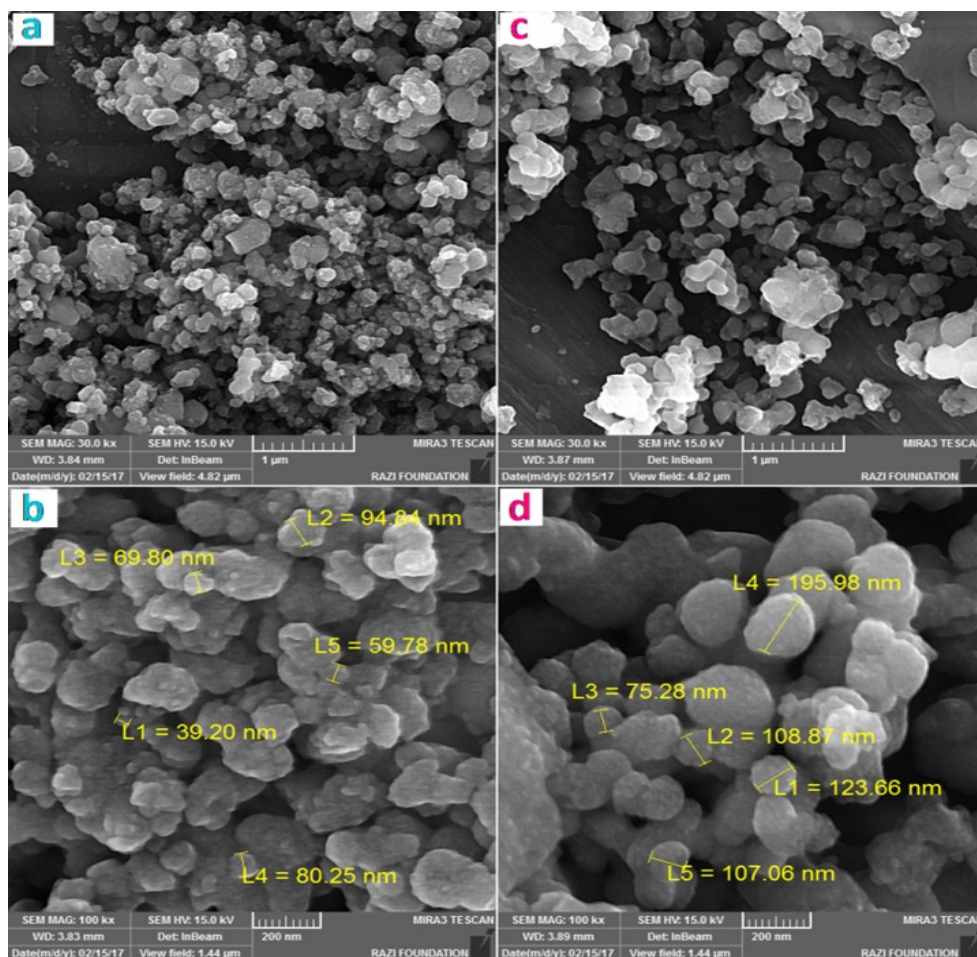
**Fig. 1.** FT-IR spectra of TiO<sub>2</sub>, TiO<sub>2</sub>-[bip]-NH and TiO<sub>2</sub>-[bip]-NH<sub>2</sub><sup>+</sup> HSO<sub>4</sub><sup>-</sup>.



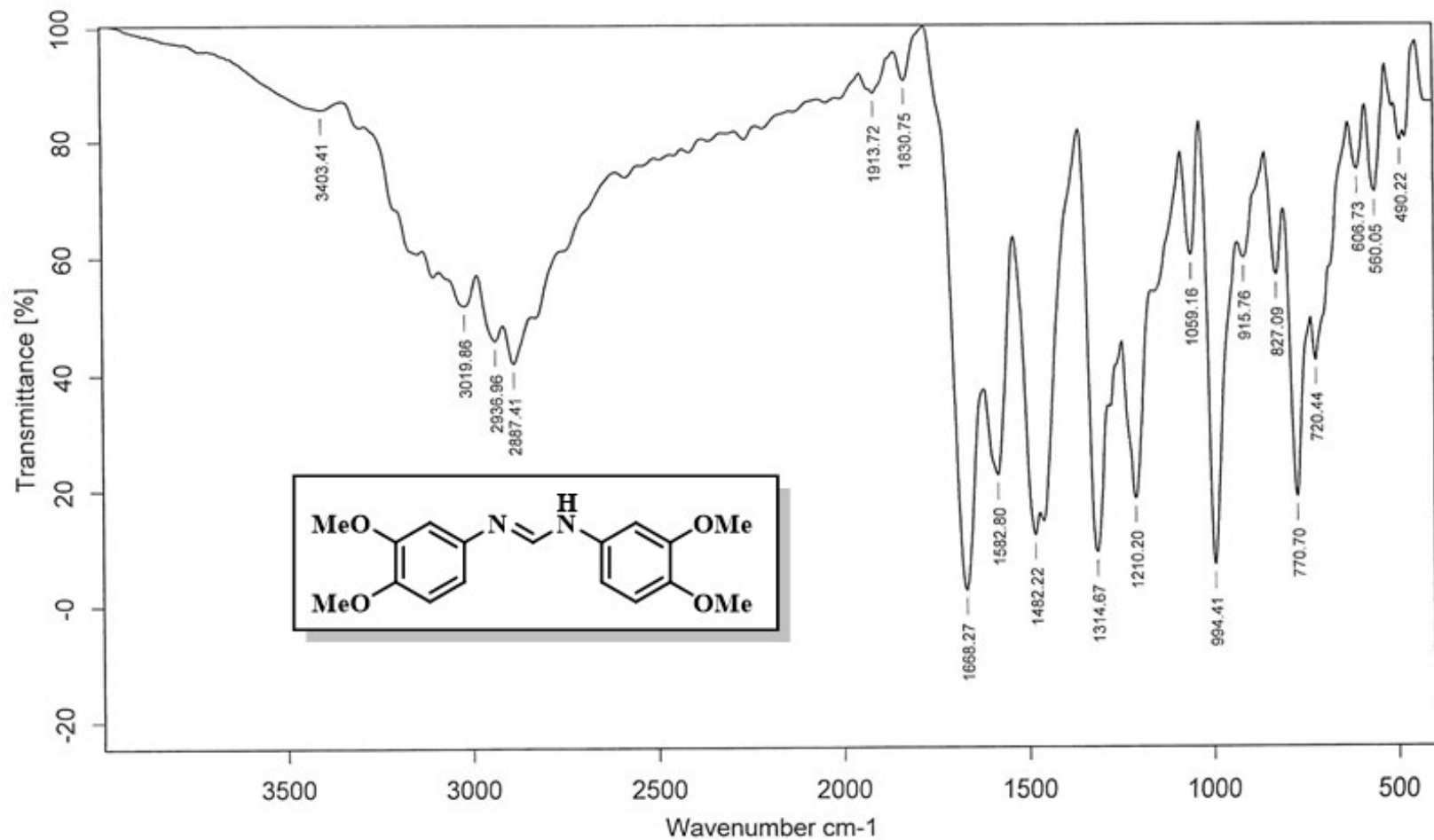
**Fig. 2.** XRD patterns of  $\text{TiO}_2$  and  $\text{TiO}_2\text{-[bip]-NH}_2^+ \text{HSO}_4^-$ .



**Fig. 3.** TGA curves of  $\text{TiO}_2$  and  $\text{TiO}_2\text{-[bip]-NH}_2^+ \text{HSO}_4^-$ .



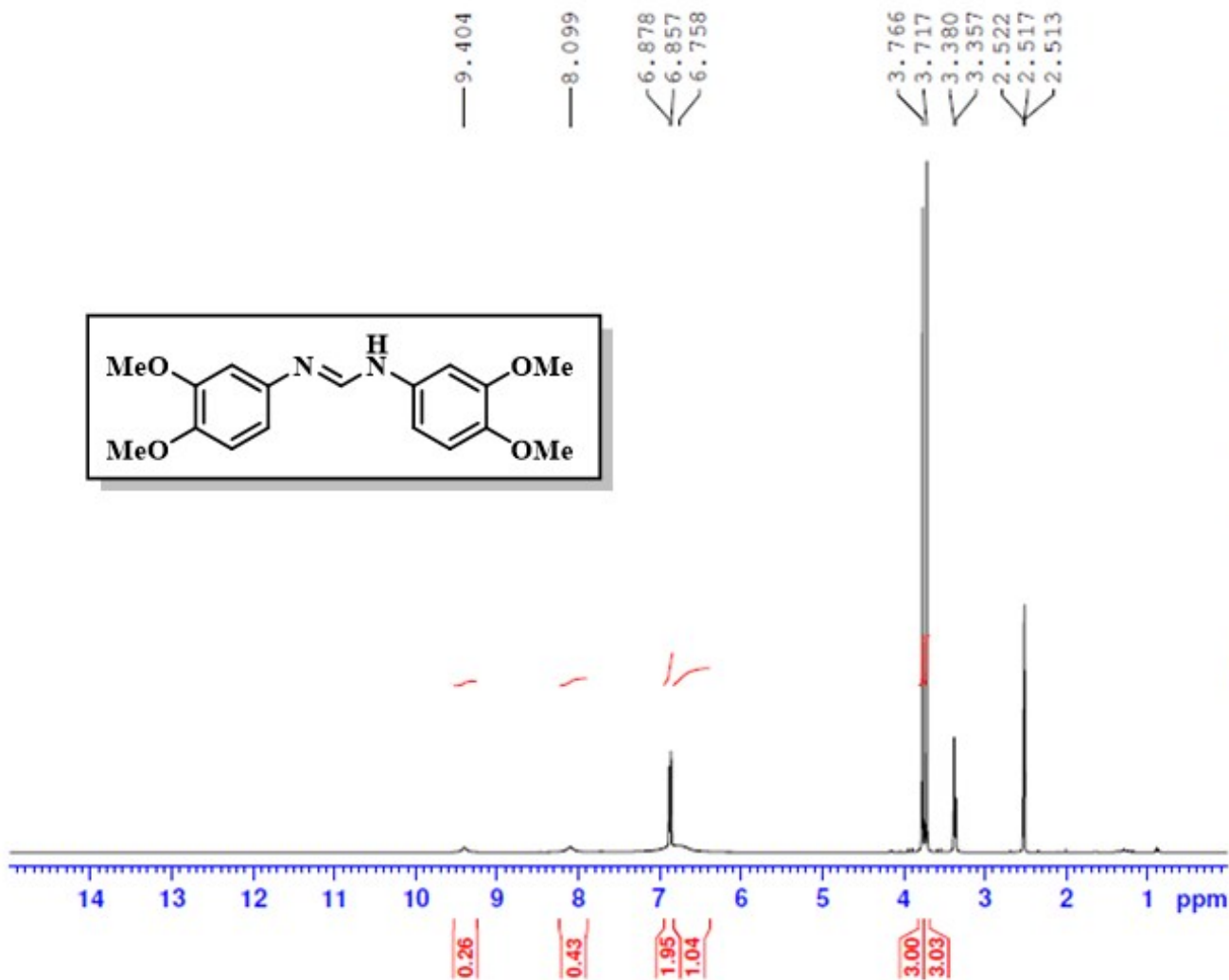
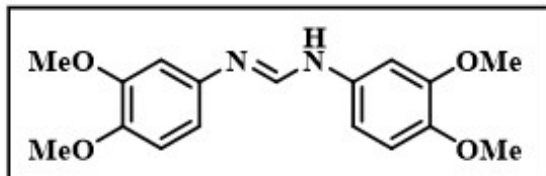
**Fig. 4.** FESEM images of  $\text{TiO}_2$  (a,b) and  $\text{TiO}_2$ -[bip]- $\text{NH}_2^+$   $\text{HSO}_4^-$  (c,d).

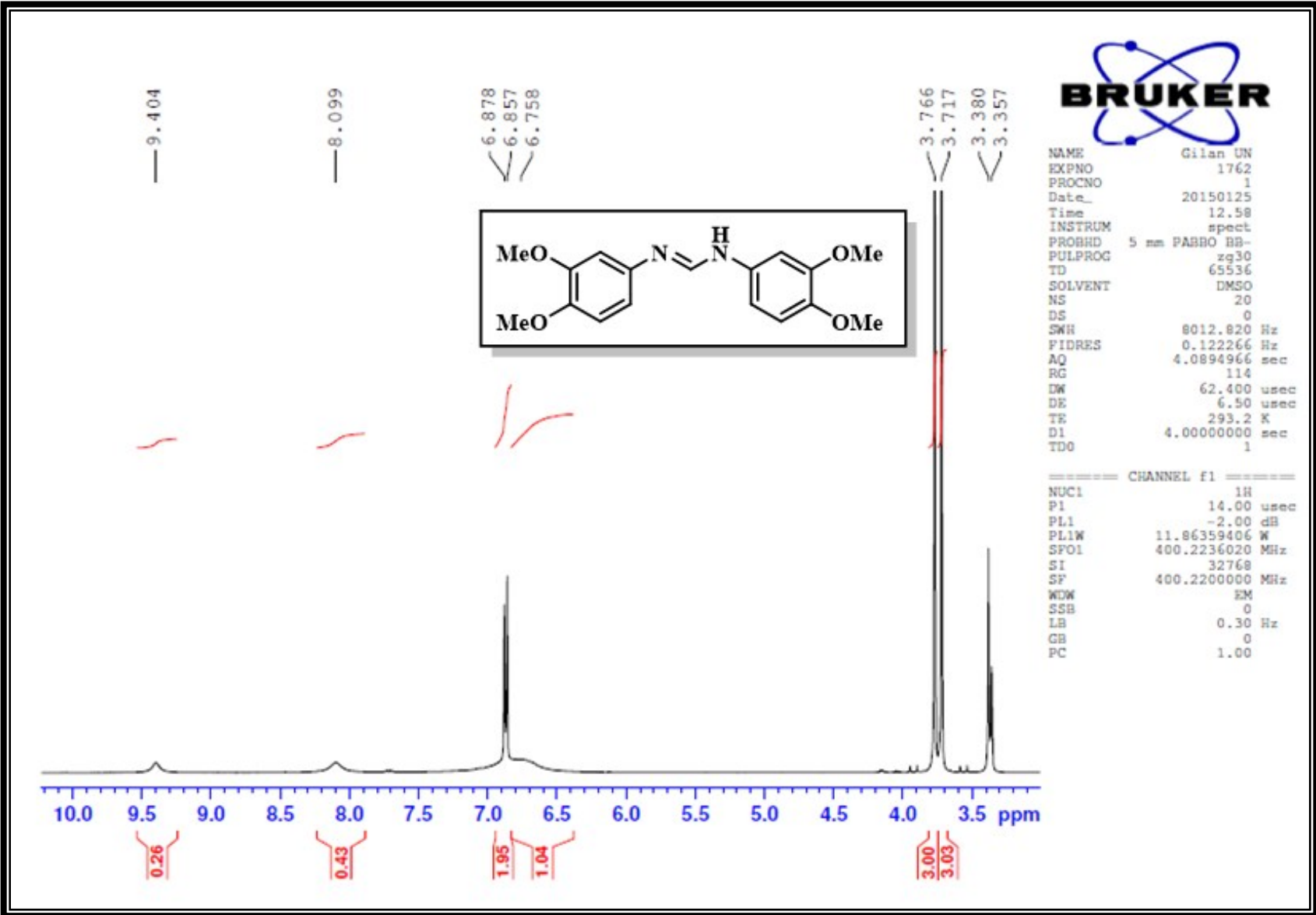


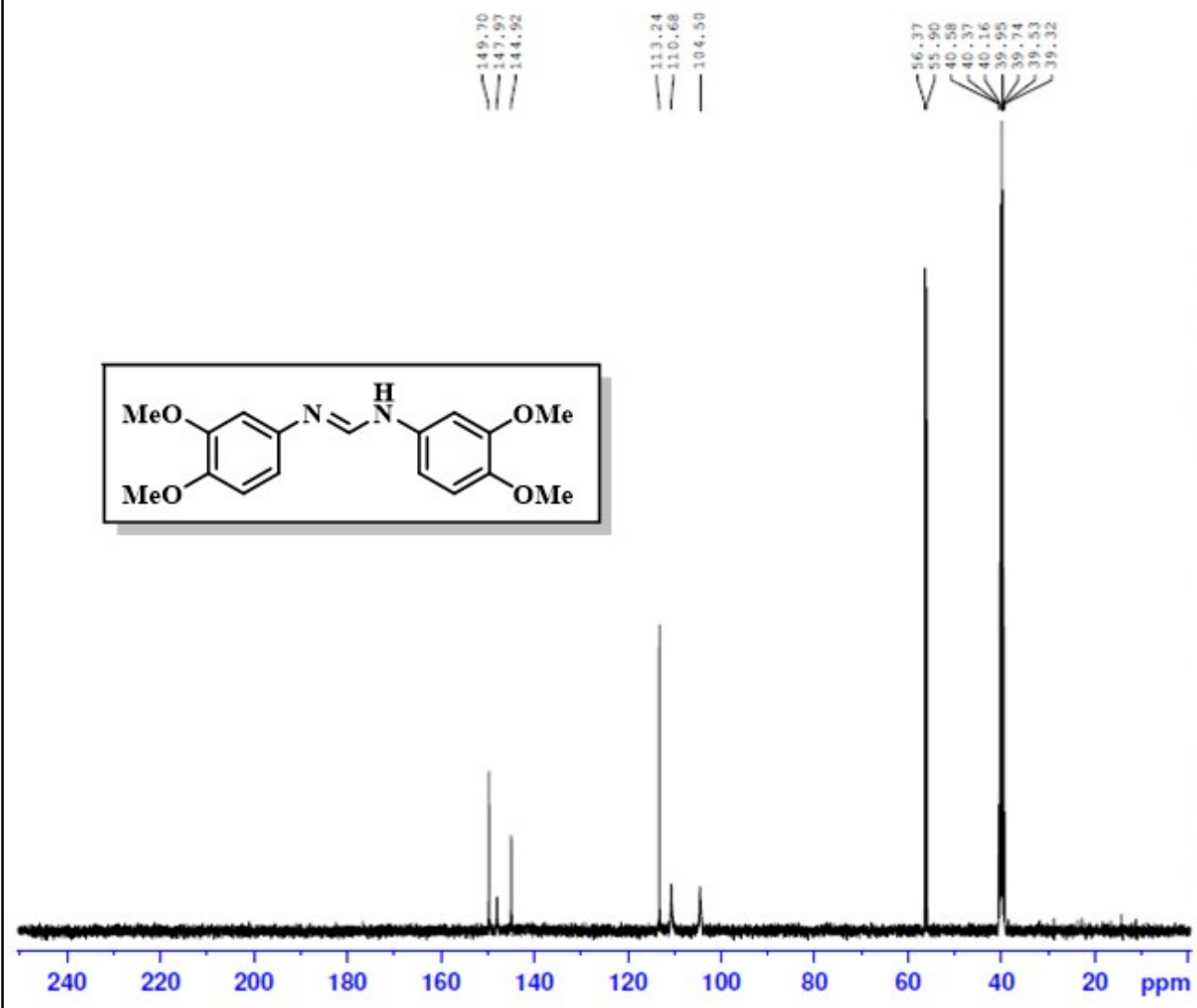
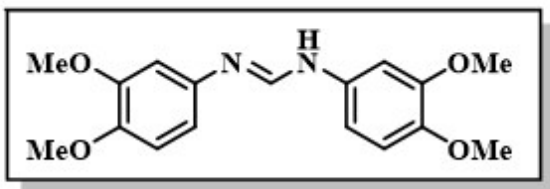


NAME Gilan UN  
EXPNO 1762  
PROCNO 1  
Date\_ 20150125  
Time 12.58  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT DMSO  
NS 20  
DS 0  
SWH 8012.820 Hz  
FIDRES 0.122266 Hz  
AQ 4.0894966 sec  
RG 114  
DW 62.400 usec  
DE 6.50 usec  
TE 293.2 K  
D1 4.00000000 sec  
TDO 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







```

NAME      Gilan UN
EXPNO     1790
PROCNO    1
Date_     20150204
Time      9.43
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zgpg30
TD         65536
SOLVENT   DMSO
NS         131
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         296.4 K
D1         2.00000000 sec
D11        0.03000000 sec
TDO       1
  
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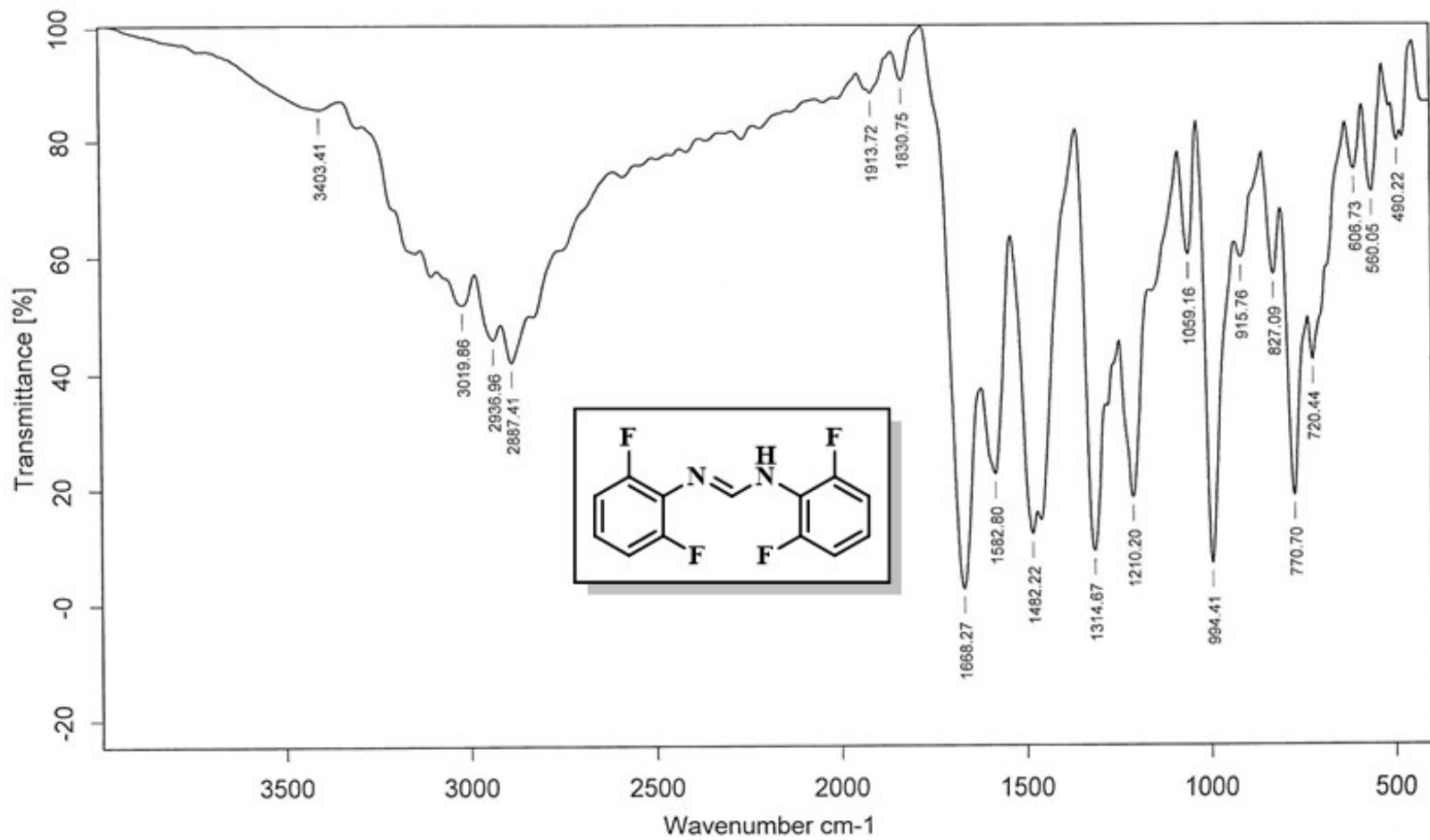
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===== CHANNEL f1 =====
NUC1       13C
P1         9.00 usec
PL1        -0.90 dB
PL1W       42.02801895 W
SFO1       100.6479784 MHz
  
```

```

===== CHANNEL f2 =====
CPDPRG2    waltz16
NUC2       1H
PCPD2      90.00 usec
PL2         -2.00 dB
PL12        14.48 dB
PL13        17.90 dB
PL2W       11.86359406 W
PL12W      0.26681873 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
  
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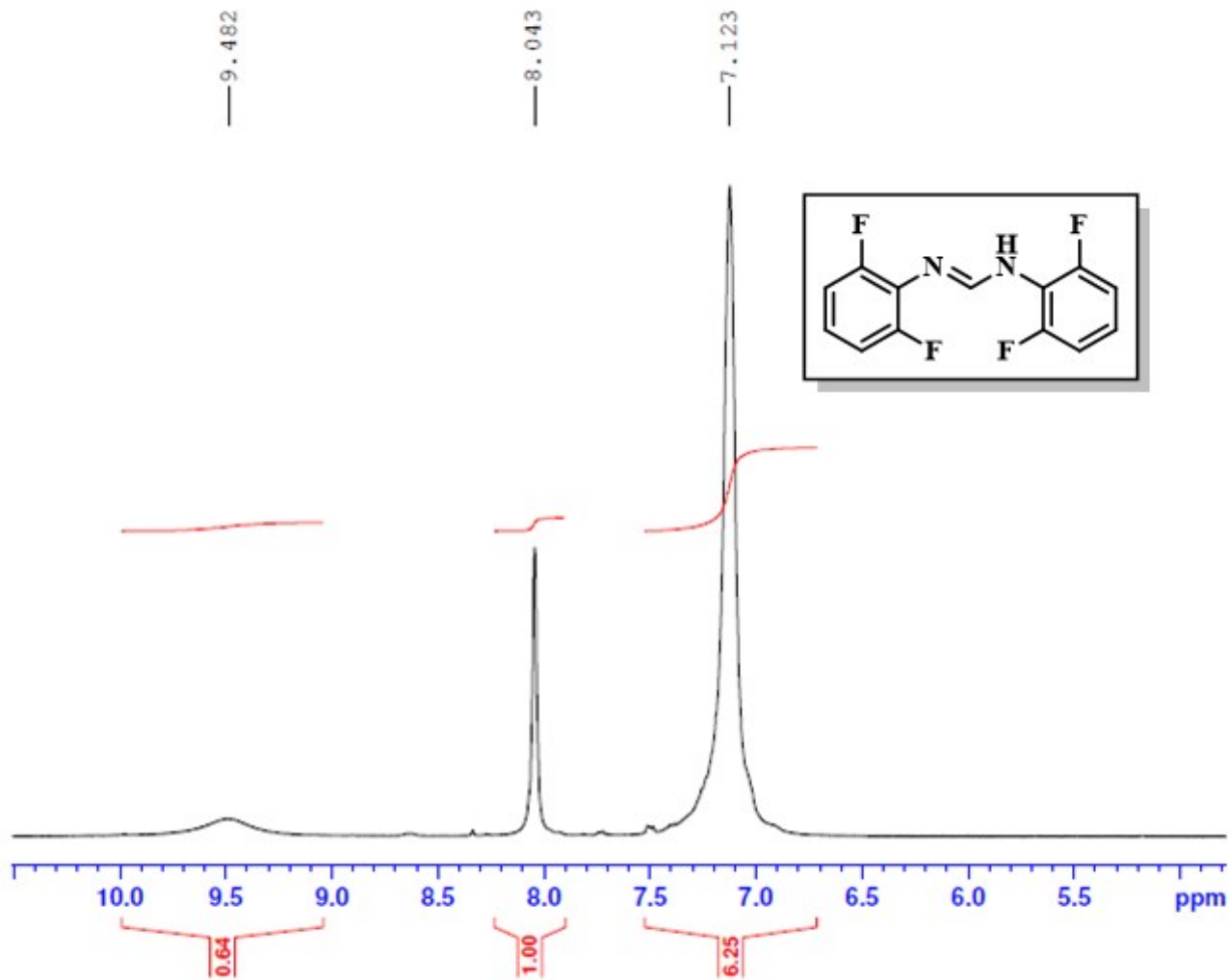
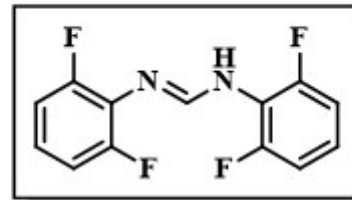


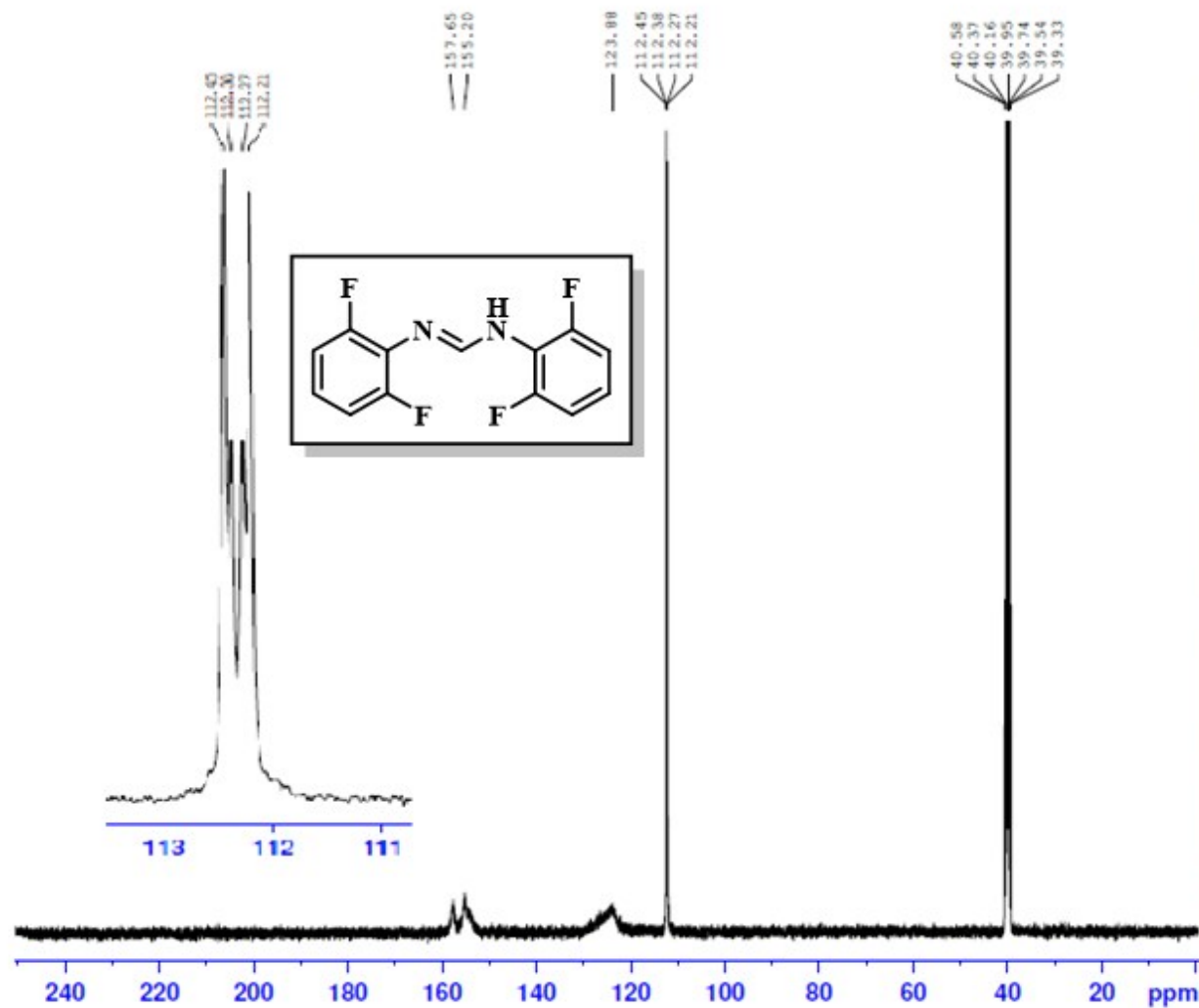




NAME Gilan UN  
EXPNO 1763  
PROCNO 1  
Date\_ 20150125  
Time 13.04  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT DMSO  
NS 20  
DS 0  
SWH 8012.820 Hz  
FIDRES 0.122266 Hz  
AQ 4.0894966 sec  
RG 114  
DW 62.400 usec  
DE 6.90 usec  
TE 293.2 K  
D1 4.00000000 sec  
TDO 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





```

NAME      Gilan UN
EXPNO     1791
PROCNO    1
Date_     20150204
Time      11.37
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zgpg30
TD         65536
SOLVENT   DMSO
NS         1300
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         296.5 K
D1         2.00000000 sec
D11        0.03000000 sec
TDO        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      14.48 dB
PL13      17.90 dB
PL2W      11.86359406 W
PL12W     0.26681873 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
  
```