

Supporting Information

COPPER-MEDIATED TRIFLUOROMETHYLATION OF BORYLPORPHYRINS USING AN IN SITU-GENERATED CF₃ RADICAL FROM NaSO₂CF₃ AND *tert*-BUTYL HYDROPEROXIDE

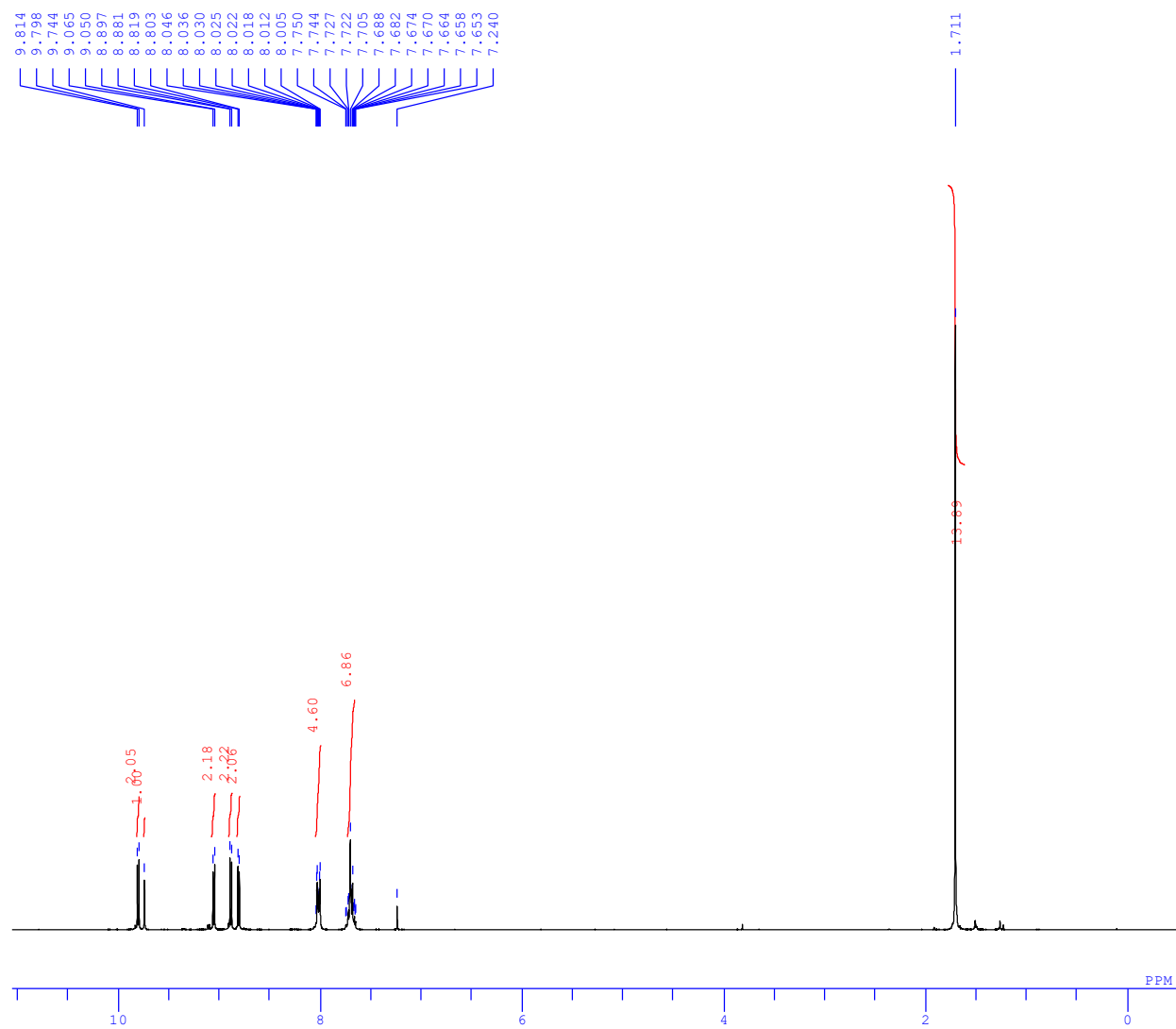
Satoshi Hayashi*, Daisuke Yamazaki, and Toshikatsu Takanami*

Meiji Pharmaceutical University, 2-522-1 Noshio, Kiyose, Tokyo 204-8588, Japan.
E-mail: shayashi@my-pharm.ac.jp; and takanami@my-pharm.ac.jp

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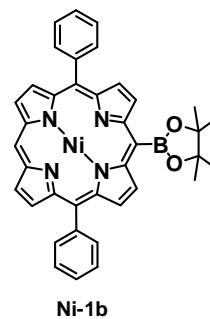
¹ H, and ¹³ C NMR charts of borylporphyrins Ni-1b-Ni-1i, Ni-3	S-2
¹ H, ¹³ C and ¹⁹ F NMR charts of trifluoromethylporphyrins Ni-2a-Ni-2i, Ni-4	S-20

¹H NMR spectrum of Ni-1b

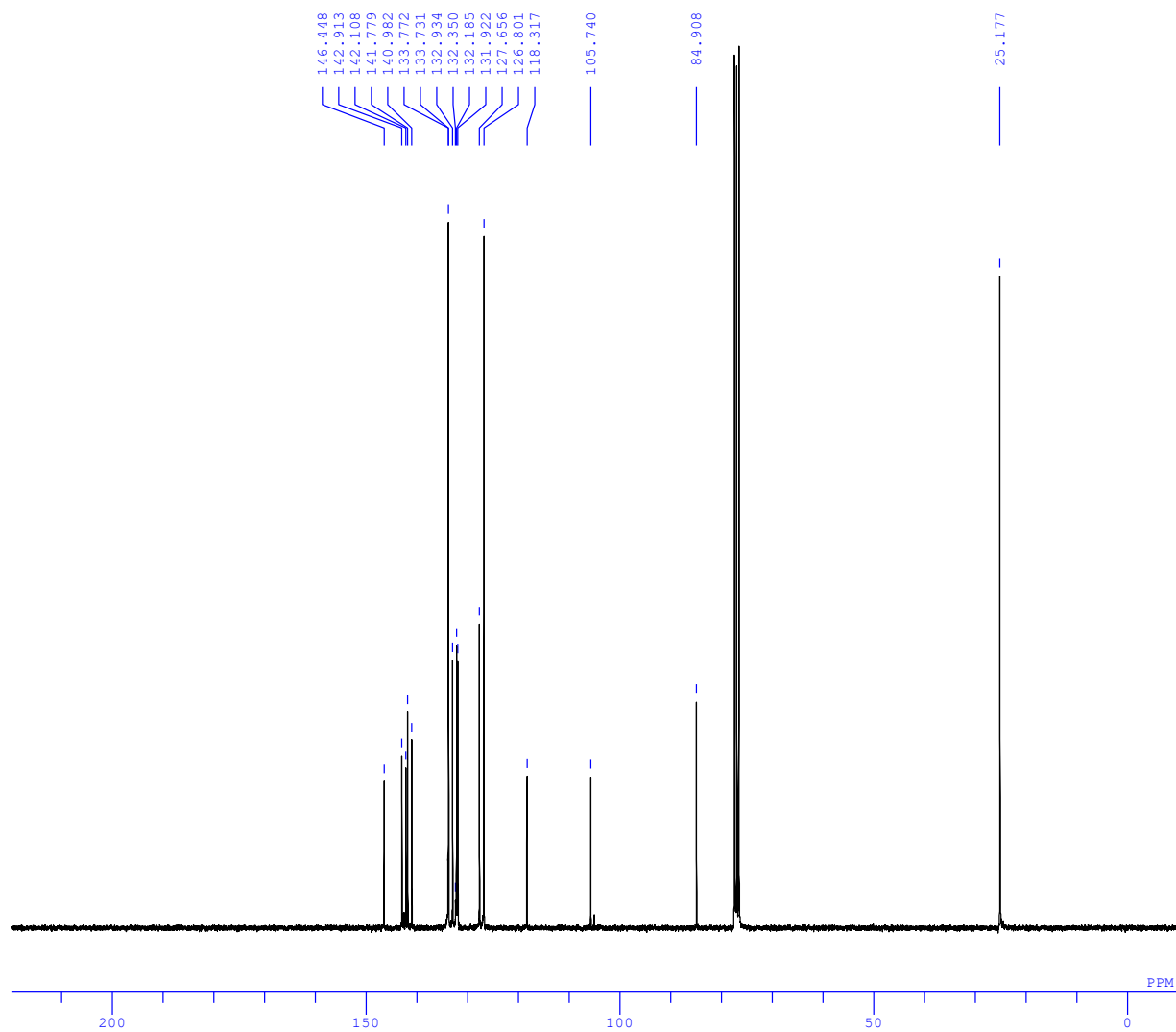


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DATIM Fri Jan 09 22:34:23 2015
OBNUC 1H
EXMOD NON
OBFRQ 300.40 MHz
OBSET 130.00 KHz
OBPIN 1150.00 Hz
POINT 32768
FREQU 6006.01 Hz
SCANS 8
ACQTM 5.4559 sec
PD 1.5440 sec
PW1 5.30 usec
IRNUC 1H
CTEMP 26.1 c
SLVNT CDCL3
EXREF 7.24 ppm
BF 0.01 Hz
RGAIN 15
```

¹H-NMR (CDCl₃) δ :
9.81 (2H, d, J = 4.9 Hz),
9.74 (1H, s),
9.06 (2H, d, J = 4.8 Hz),
8.89 (2H, d, J = 4.9 Hz),
8.81 (2H, d, J = 4.8 Hz),
8.04-8.02 (4H, m),
7.73-7.67 (6H, m),
1.70 (12H, s).



¹³C NMR spectrum of Ni-1b

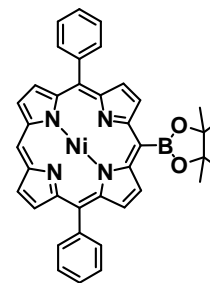


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COMNT  DY-DPP(Ni)-Bpin
DATIM   Sat Jan 10 08:24:53 2015
OBNUC   13C
EXMOD   BCM
OBFRQ   75.45 MHz
OBSET   124.00 KHz
OBFIN   1840.00 Hz
POINT   32768
FREQU   20356.23 Hz
SCANS   11800
ACQTM   1.6097 sec
PD      1.3900 sec
PWL     4.30 usec
IRNUC   1H
CTEMP   25.2 c
SLVNT   CDCL3
EXREF   77.00 ppm
BF      1.20 Hz
RGAIN   24
    
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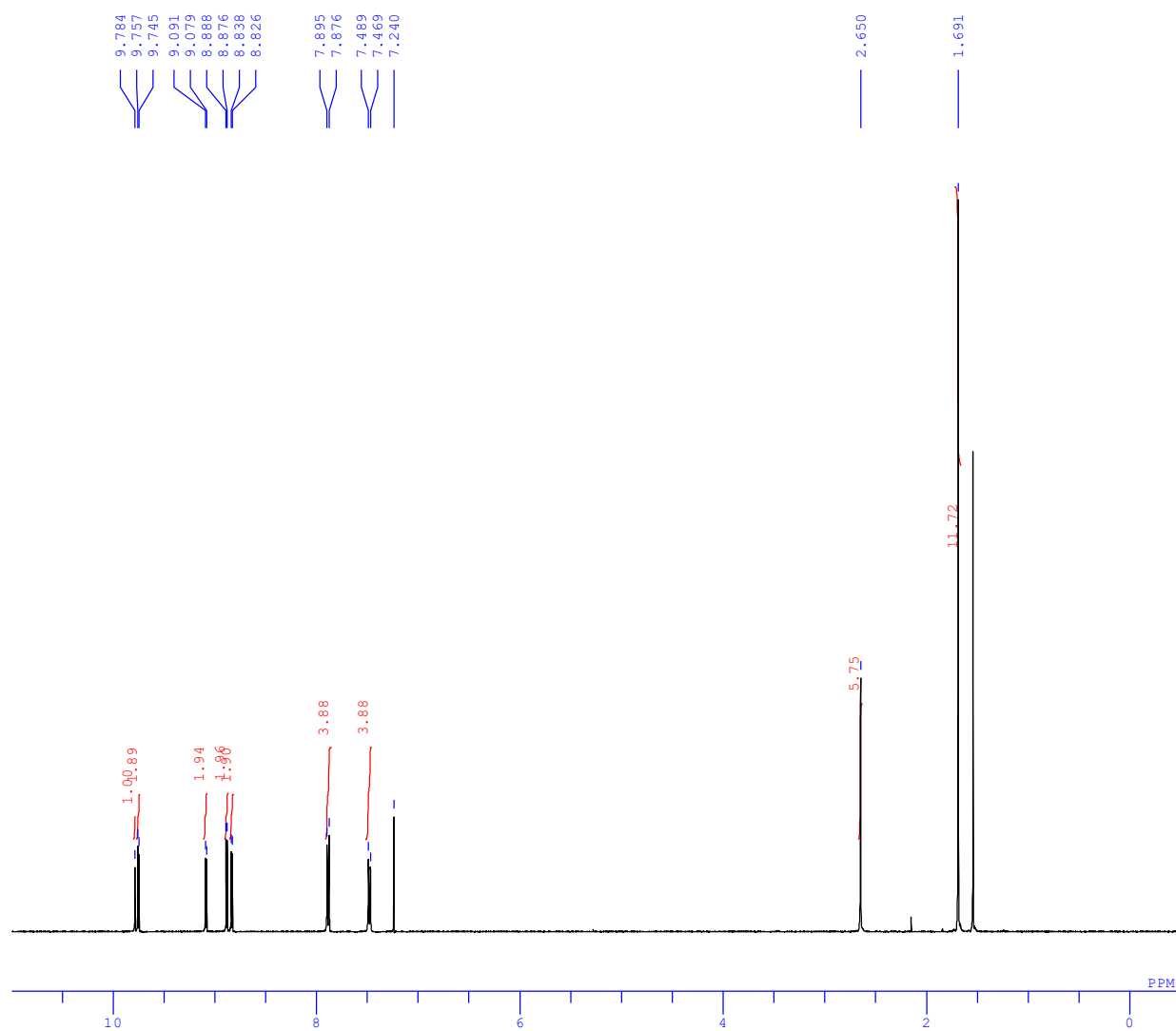
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13C-NMR (CDCl3) δ :
146.45 (OH, s),
142.91 (OH, s),
142.11 (OH, s),
141.78 (OH, s),
140.98 (OH, s),
133.77 (OH, s),
133.73 (OH, s),
132.93 (OH, s),
132.19 (OH, s),
131.92 (OH, s),
127.66 (OH, s),
126.80 (OH, s),
118.32 (OH, s),
105.74 (OH, s),
84.91 (OH, s),
25.18 (OH, s).
    
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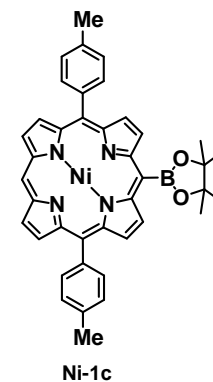
Ni-1b

¹H NMR spectrum of Ni-1c

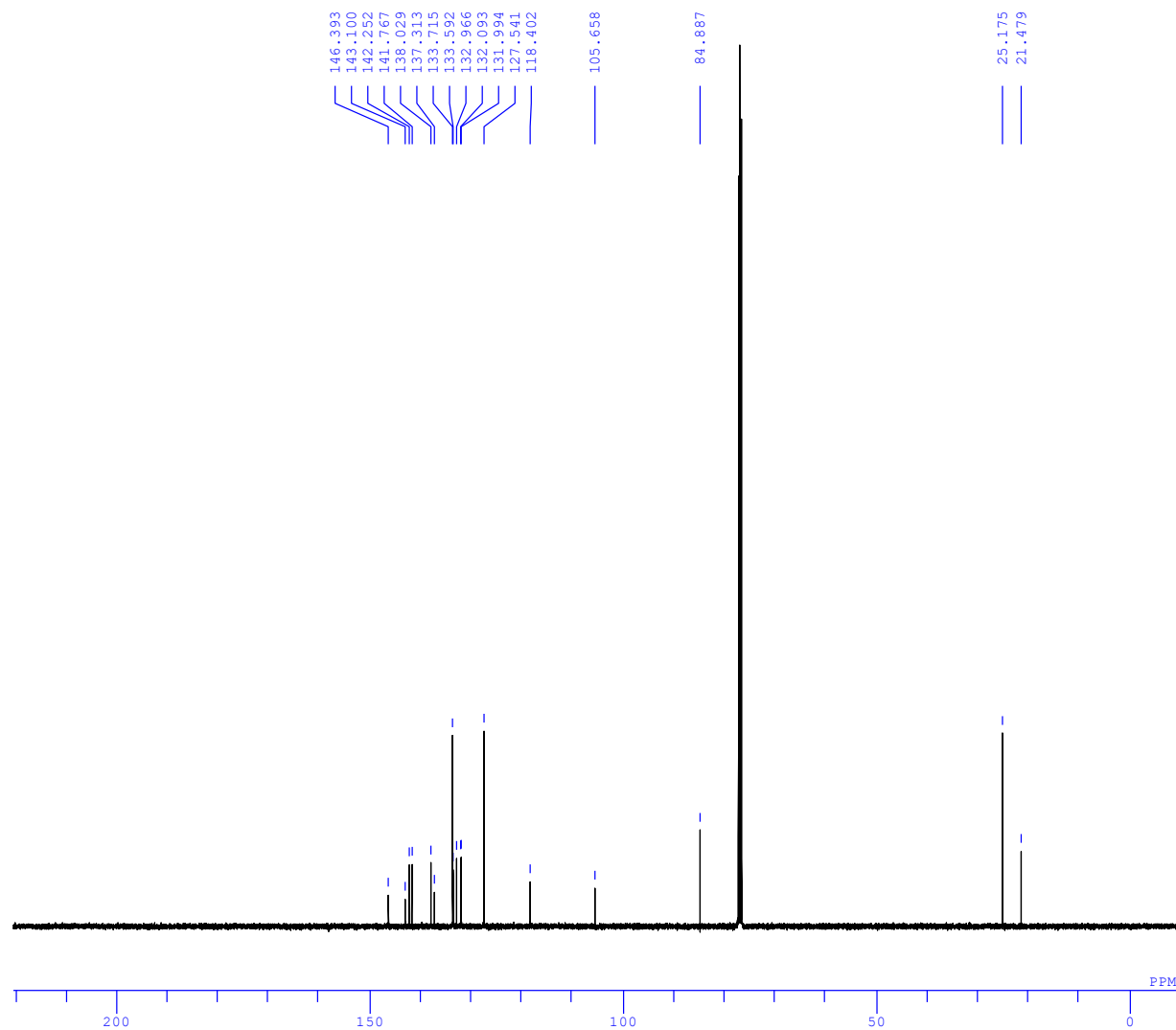


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COMNT DY-06-36-p-tol(Ni)-Bpin  
DATIM Mon May 13 22:34:59 2013  
OBNUC 1H  
EXMOD NON  
OBFRO 399.65 MHz  
OBSST 124.00 KHz  
OBFIN 10500.00 Hz  
POINT 16384  
FREQU 7992.01 Hz  
SCANS 8  
ACQTM 2.0500 sec  
PD 4.9500 sec  
PW1 5.80 usec  
IRNUC 1H  
CTEMP 23.6 c  
SLVNT CDCL3  
EXREF 7.24 ppm  
BF 0.01 Hz  
RGAIN 20
```

¹H-NMR (CDCl₃) δ :
9.78 (1H, s),
9.75 (2H, d, J = 4.9 Hz),
9.08 (2H, d, J = 4.9 Hz),
8.88 (2H, d, J = 4.9 Hz),
8.83 (2H, d, J = 4.9 Hz),
7.89 (4H, d, J = 7.8 Hz),
7.48 (4H, d, J = 7.8 Hz),
2.65 (6H, s),
1.69 (12H, s).



¹³C NMR spectrum of Ni-1c

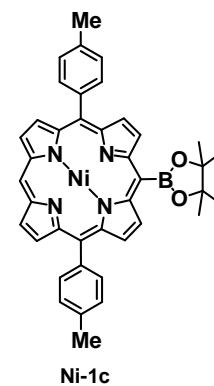


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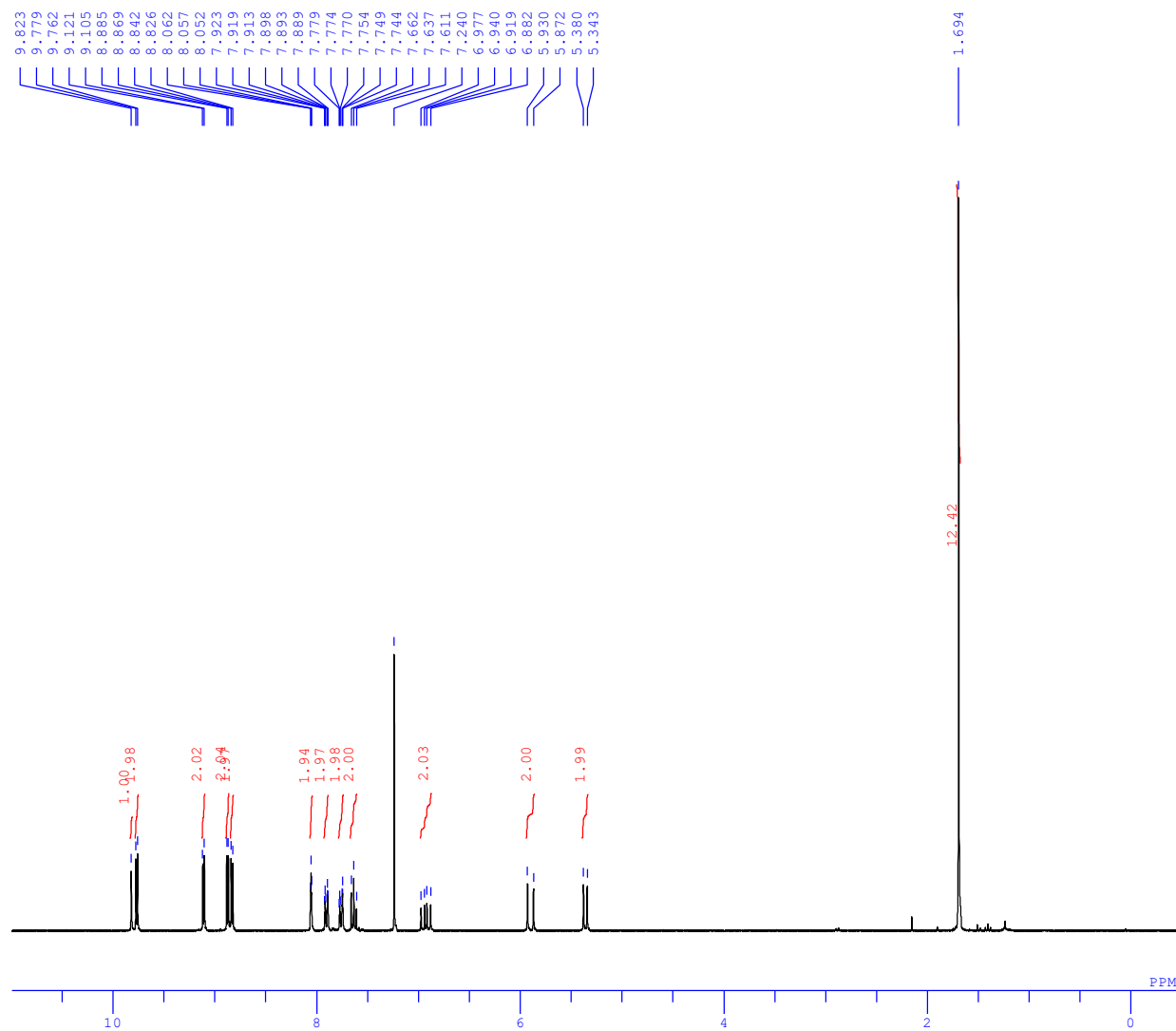
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COMNT  DY-06-36-p-tol(Ni)-Bpin
DATIM   Tue May 14 09:27:52 2013
OBNUC   13C
EXMOD   BCM
OBFREQ  100.40 MHz
OBSET   125.00 KHz
OBFIN   10500.00 Hz
POINT   32768
FREQU   27118.64 Hz
SCANS   13000
ACQTM   1.2083 sec
PD       1.7920 sec
PWL     6.00 usec
IRNUC   1H
CTEMP   24.5 c
SLVNT   CDCL3
EXREF   77.00 ppm
BF       0.12 Hz
RGAIN   25
    
```

```

13C-NMR (CDC13) δ :
146.39 (OH, s),
143.10 (OH, s),
142.25 (OH, s),
141.77 (OH, s),
138.03 (OH, s),
137.31 (OH, s),
133.72 (OH, s),
133.59 (OH, s),
132.97 (OH, s),
132.09 (OH, s),
131.99 (OH, s),
127.54 (OH, s),
118.40 (OH, s),
105.66 (OH, s),
84.89 (OH, s),
25.18 (OH, s),
21.48 (OH, s).
    
```



¹H NMR spectrum Ni-1d

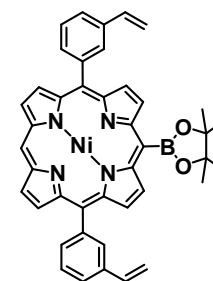


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DFILE  DY-08-35-m-vinyl(Ni)-Bpin.ØWI,Ý (for pa
COMNT  DY-08-35-m-vinyl(Ni)-Bpin
DATIM  Thu Sep 05 13:37:48 2013
OBNUC  1H
EXMOD  NON
OBFRQ  300.40 MHz
OBSET  130.00 KHz
OBFIN  1150.00 Hz
POINT  32768
FREQU  6006.01 Hz
SCANS  16
ACQTM  5.4559 sec
PD      1.5440 sec
PWL    5.30 usec
IRNUC  1H
CTEMP  25.8 c
SLVNT  CDCL3
EXREF  7.24 ppm
BF      0.12 Hz
RGAIN  22
    
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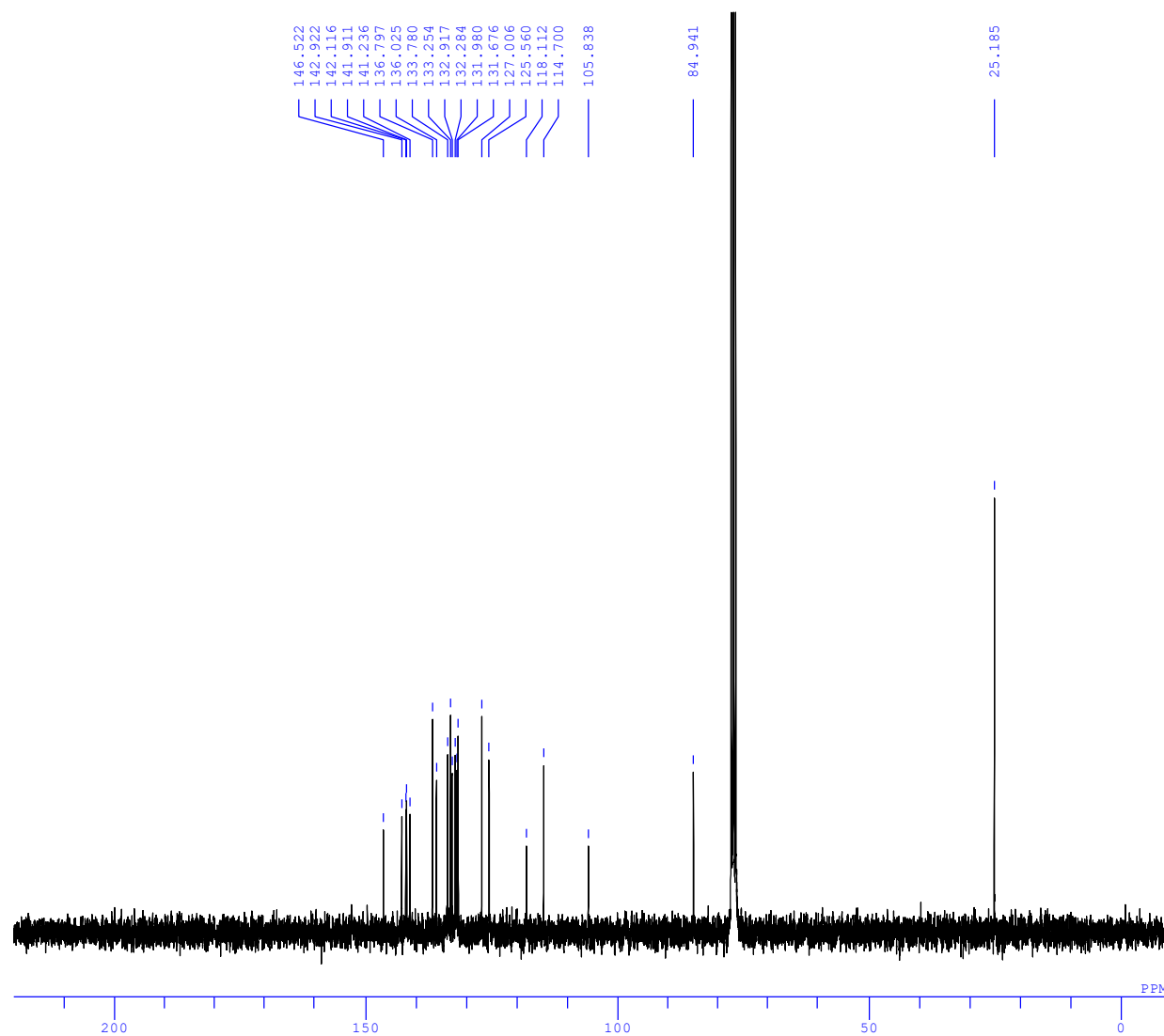
¹H-NMR (CDCl₃) δ:

- 9.82 (1H, s),
- 9.77 (2H, d, J = 4.9 Hz),
- 9.11 (2H, d, J = 4.9 Hz),
- 8.88 (2H, d, J = 4.9 Hz),
- 8.83 (2H, d, J = 4.9 Hz),
- 8.06 (2H, t, J = 1.5 Hz),
- 7.91 (2H, dt, J = 7.6, 1.4 Hz),
- 7.76 (2H, dt, J = 7.6, 1.4 Hz),
- 7.64 (2H, t, J = 7.6 Hz),
- 6.93 (2H, dd, J = 17.4, 11.0 Hz),
- 5.90 (2H, d, J = 17.4 Hz),
- 5.36 (2H, d, J = 11.0 Hz),
- 1.69 (12H, s).



Ni-1d

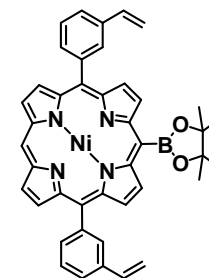
¹³C NMR spectrum of Ni-1d



```
DFILE auto2BCM_E1•0W1.Y.als
COMNT
DATIM Fri Sep 06 06:07:12 2013
OBNUC 13C
EXMOD BCM
OBFREQ 75.45 MHz
OBSET 124.00 KHz
OBFIN 1840.00 Hz
POINT 32768
FREQU 20356.23 Hz
SCANS 9000
ACQTM 1.6097 sec
PD 1.3900 sec
PW1 4.30 usec
IRNUC 1H
CTEMP 24.8 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 1.20 Hz
RGAIN 24
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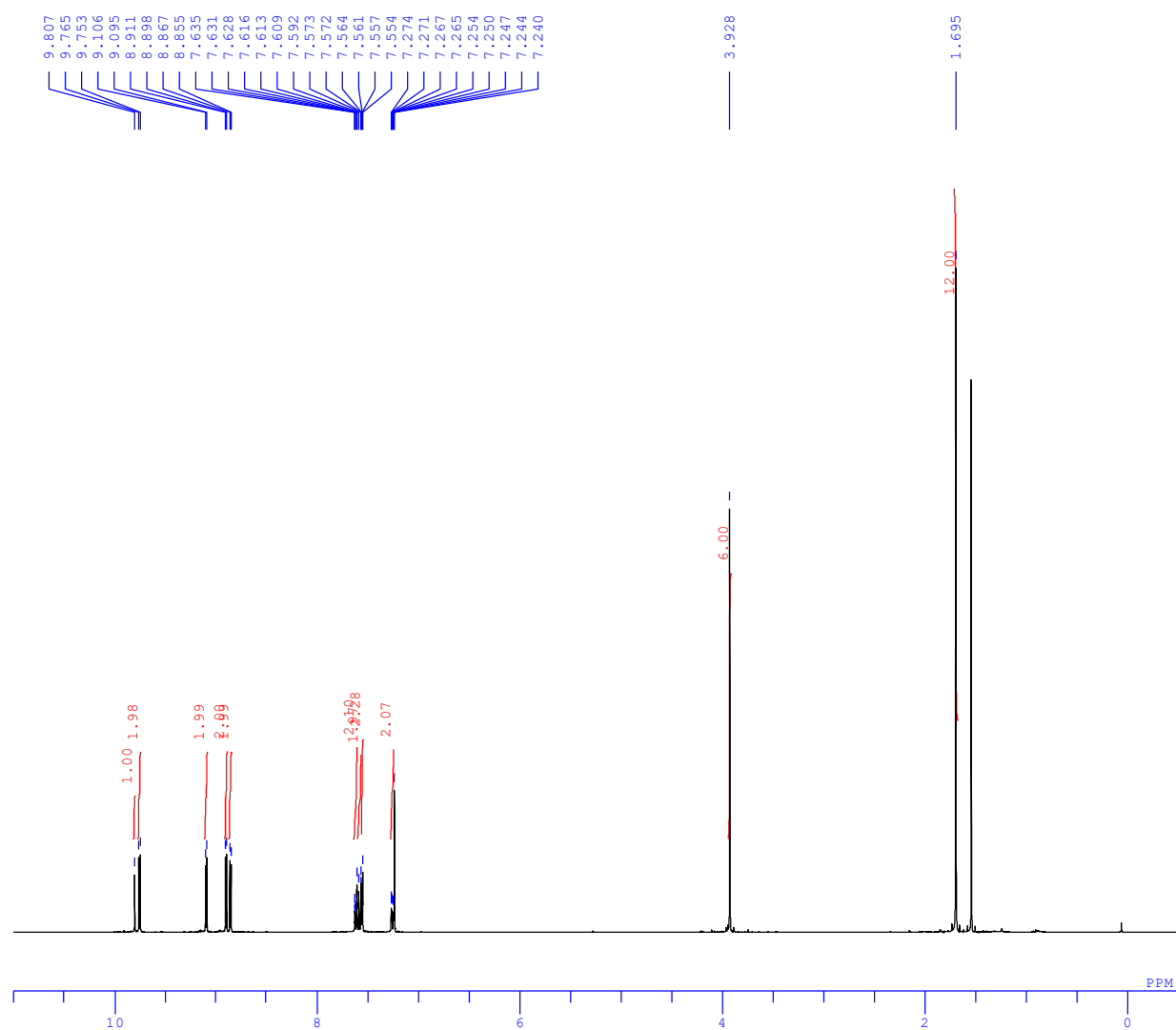
¹³C-NMR (CDCl₃) δ :

146.52 (OH, s),
142.92 (OH, s),
142.12 (OH, s),
141.91 (OH, s),
141.24 (OH, s),
136.80 (OH, s),
136.02 (OH, s),
133.78 (OH, s),
133.25 (OH, s),
132.92 (OH, s),
132.28 (OH, s),
131.98 (OH, s),
131.68 (OH, s),
127.01 (OH, s),
125.56 (OH, s),
118.11 (OH, s),
114.70 (OH, s),
105.84 (OH, s),
84.94 (OH, s),
25.18 (OH, s).



Ni-1d

¹H NMR spectrum of Ni-1e

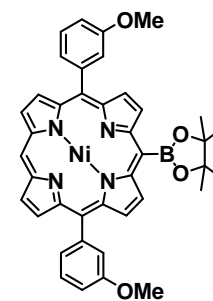


```

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COMMT single_pulse
DATIM 2013-08-30 21:07:41
OBNUC 1H
EXMOD single_pulse.jxp
OBFRQ 399.78 MHz
OBSET 4.19 KHz
OBFIN 7.29 Hz
POINT 26214
FREQU 6002.40 Hz
SCANS 16
ACQTM 4.3673 sec
PD 2.0000 sec
PW1 3.07 usec
IRNUC 1H
CTEMP 22.4 c
SLVNT CDCL3
EXREF 7.24 ppm
BF 0.12 Hz
RGAIN 44
  
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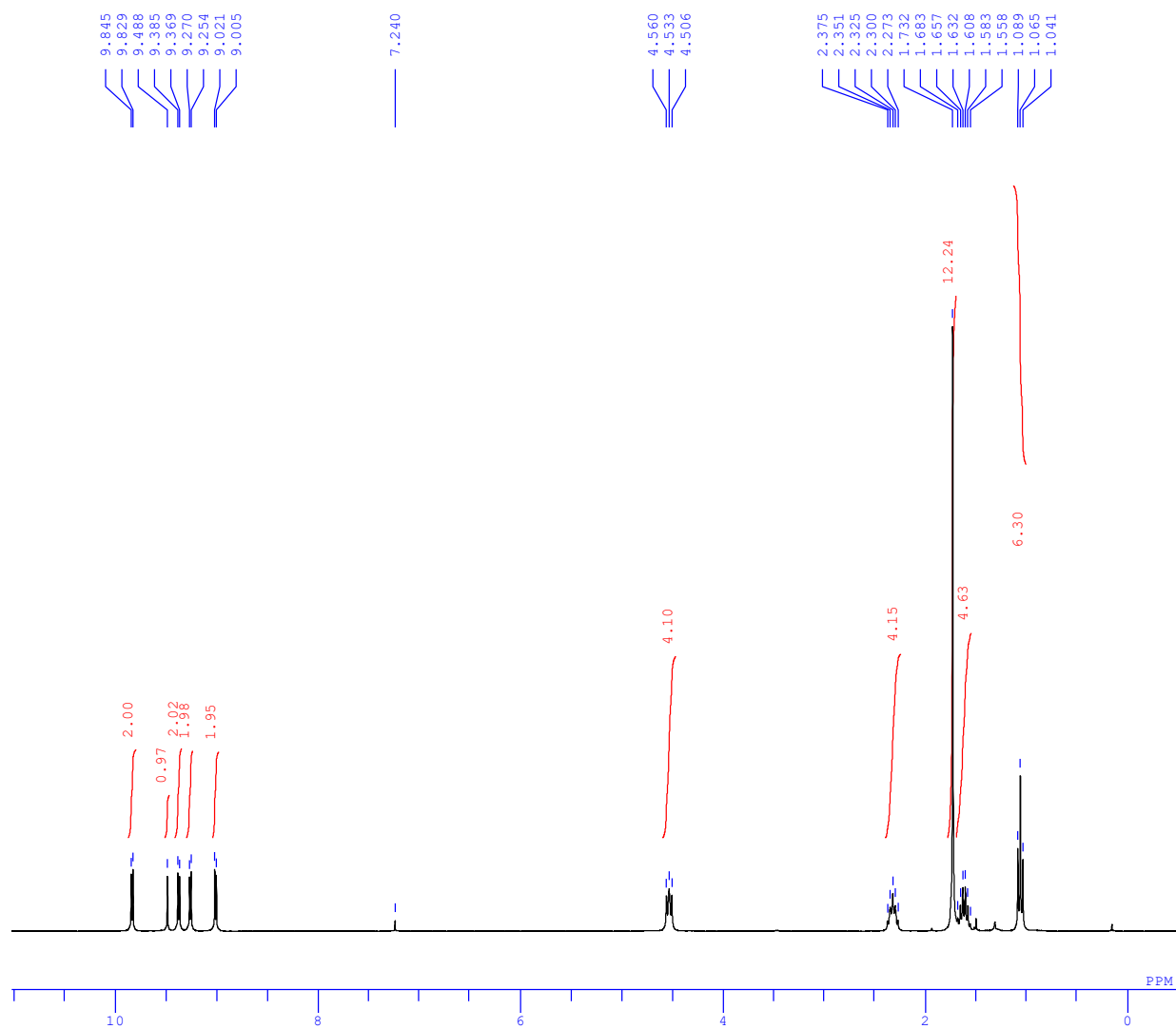
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1H-NMR (CDCl3) δ :
9.81 (1H, s),
9.76 (2H, d, J = 5.0 Hz),
9.10 (2H, d, J = 4.6 Hz),
8.90 (2H, d, J = 5.0 Hz),
8.86 (2H, d, J = 4.6 Hz),
7.62 (2H, dt, J = 7.4, 1.4 Hz),
7.57 (2H, dd, J = 7.9, 7.4 Hz),
7.56 (2H, dd, J = 2.5, 1.4 Hz),
7.26 (2H, ddd, J = 7.9, 2.5, 1.4 Hz),
3.93 (6H, s),
1.70 (12H, s).
  
```



Ni-1e

¹H NMR spectrum of Ni-1f

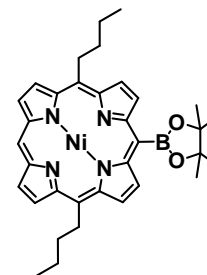


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DFILE DY-n-Bu(Ni)-BpinNON_E1-0WLT, Y(for pape
COMNT DY-n-Bu(Ni)-Bpin
DATIM Wed Feb 04 21:35:15 2015
OBNUC 1H
EXMOD NON
OBFREQ 300.40 MHz
OBSET 130.00 KHz
OBFIN 1150.00 Hz
POINT 32768
FREQU 6006.01 Hz
SCANS 8
ACQTM 5.4559 sec
PD 1.5440 sec
PW1 5.30 usec
IRNUC 1H
CTEMP 26.2 c
SLVNT CDCL3
EXREF 7.24 ppm
BF 0.12 Hz
RGAIN 12
    
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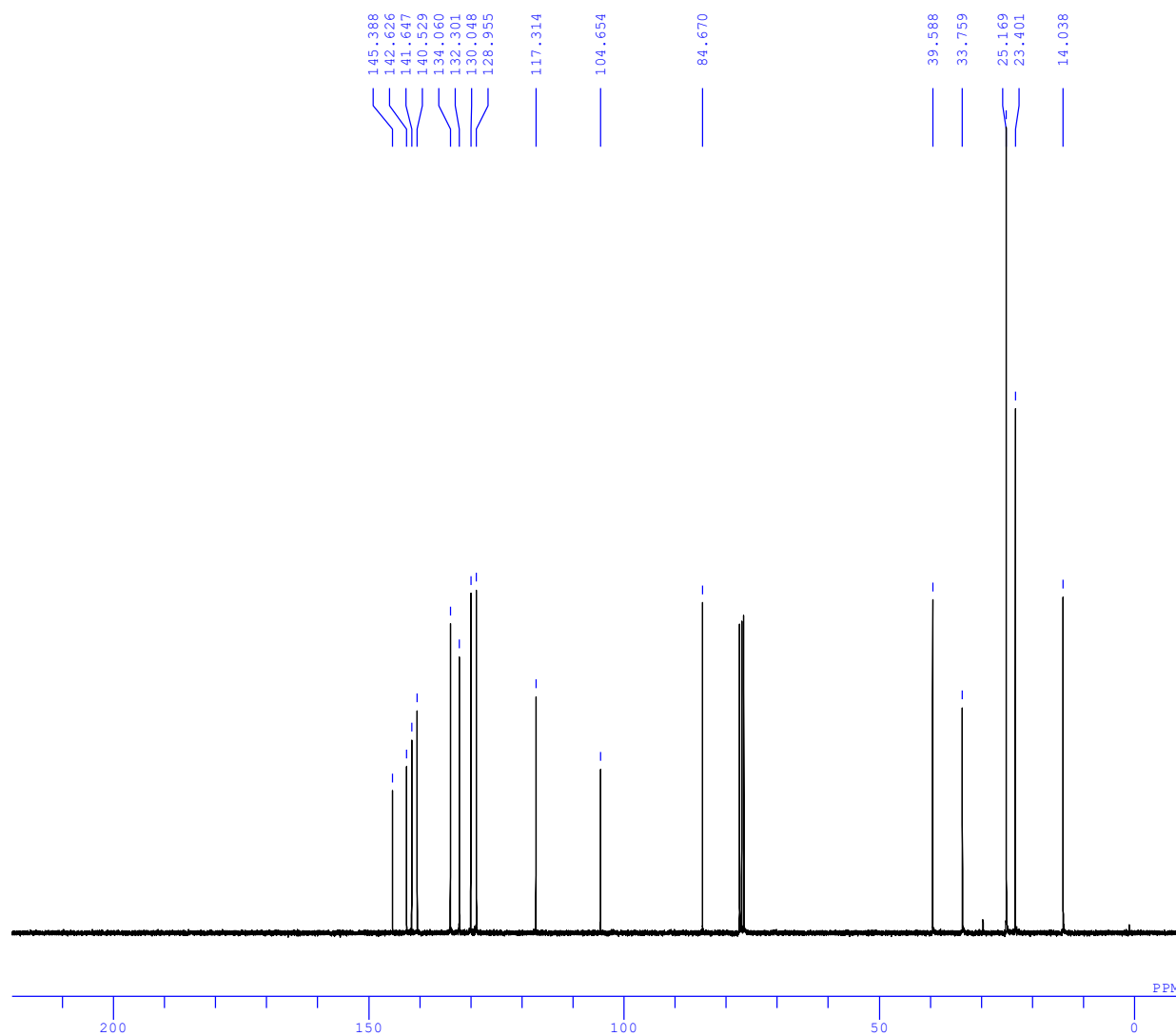
¹H-NMR (CDCl₃) δ :

- 9.84 (2H, d, J = 4.9 Hz),
- 9.49 (1H, s),
- 9.38 (2H, d, J = 4.9 Hz),
- 9.26 (2H, d, J = 4.8 Hz),
- 9.01 (2H, d, J = 4.8 Hz),
- 4.53 (4H, t, J = 8.0 Hz),
- 2.37-2.27 (4H, m),
- 1.73 (12H, s),
- 1.65-1.60 (4H, m),
- 1.06 (6H, t, J = 7.3 Hz).



Ni-1f

¹³C NMR spectrum of Ni-1f

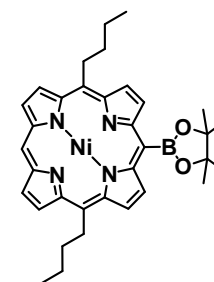


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DFILE DY-n-Bu(Ni)-Bpin2BCM_0W1.Y.als
COMNT DY-n-Bu(Ni)-Bpin
DATIM Thu Feb 05 08:25:43 2015
OBNUC 13C
EXMOD BCM
OBFRO 75.45 MHz
OBSET 124.00 KHz
OBFIN 1840.00 Hz
POINT 32768
FREQU 20356.23 Hz
SCANS 13000
ACQTM 1.6097 sec
PD 1.3900 sec
PW1 4.30 usec
IRNUC 1H
CTEMP 25.0 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.10 Hz
RGAIN 25
    
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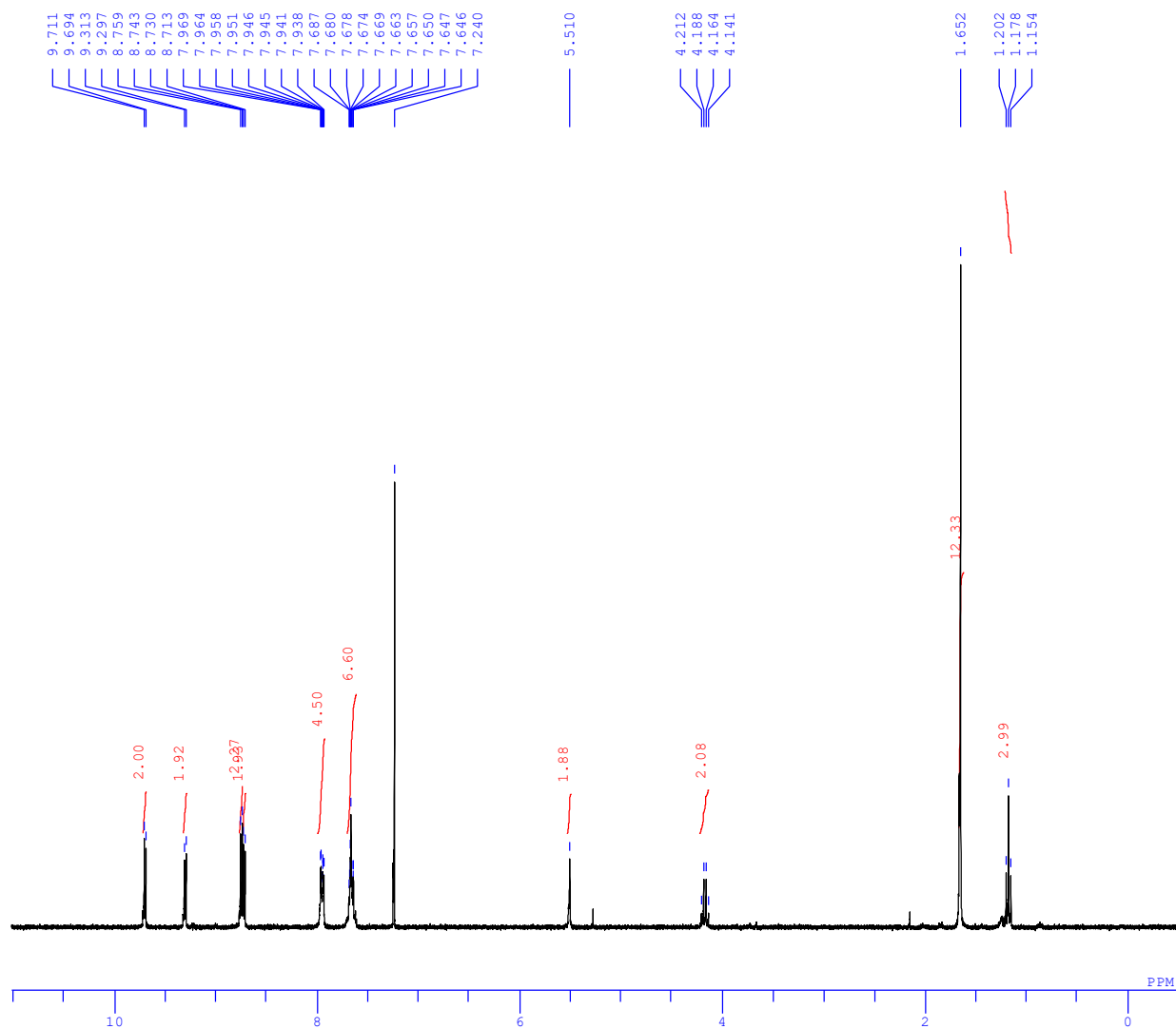
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13C-NMR (CDC13) δ :
145.39 (OH, s),
142.63 (OH, s),
141.65 (OH, s),
140.53 (OH, s),
134.06 (OH, s),
132.30 (OH, s),
130.05 (OH, s),
128.95 (OH, s),
117.31 (OH, s),
104.65 (OH, s),
84.67 (OH, s),
39.59 (OH, s),
33.76 (OH, s),
25.17 (OH, s),
23.40 (OH, s),
14.04 (OH, s).
    
```



Ni-1f

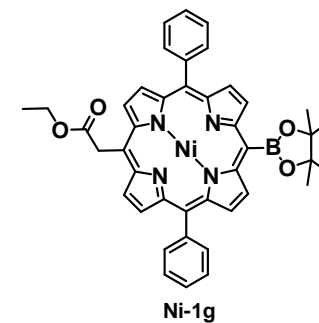
¹H NMR spectrum of Ni-1g



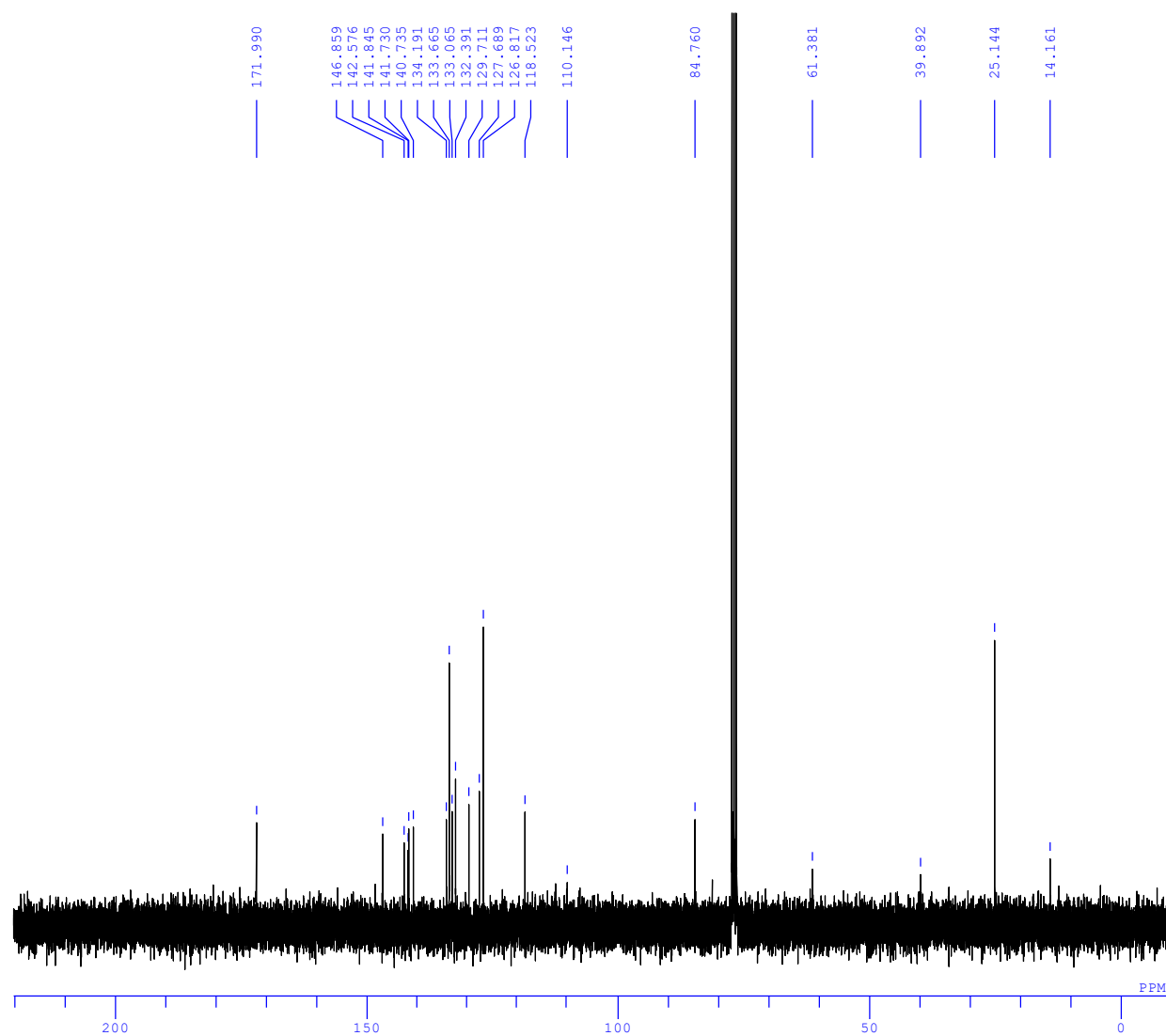
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COMNT DY-EtO2CCH2-DPP(Ni)-Bpin
DATIM Mon Sep 30 23:05:43 2013
OBNUC 1H
EXMOD NON
OBFREQ 300.40 MHz
OBSSET 130.00 KHz
OBFIN 1150.00 Hz
POINT 32768
FREQU 6006.01 Hz
SCANS 8
ACQTM 5.4559 sec
PD 1.5440 sec
PW1 5.30 usec
IRNUC 1H
CTEMP 26.1 c
SLVNT CDCL3
EXREF 7.24 ppm
BF 0.01 Hz
RGAIN 22
    
```

¹H-NMR (CDCl₃) δ :
 9.70 (2H, d, J = 4.9 Hz),
 9.30 (2H, d, J = 4.9 Hz),
 8.75 (2H, d, J = 4.9 Hz),
 8.72 (2H, d, J = 4.9 Hz),
 7.96-7.94 (4H, m),
 7.69-7.65 (6H, m),
 5.51 (2H, s),
 4.18 (2H, q, J = 7.1 Hz),
 1.66 (12H, s),
 1.18 (3H, t, J = 7.1 Hz).



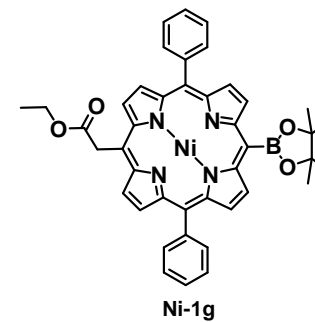
¹³C NMR spectrum of Ni-1g



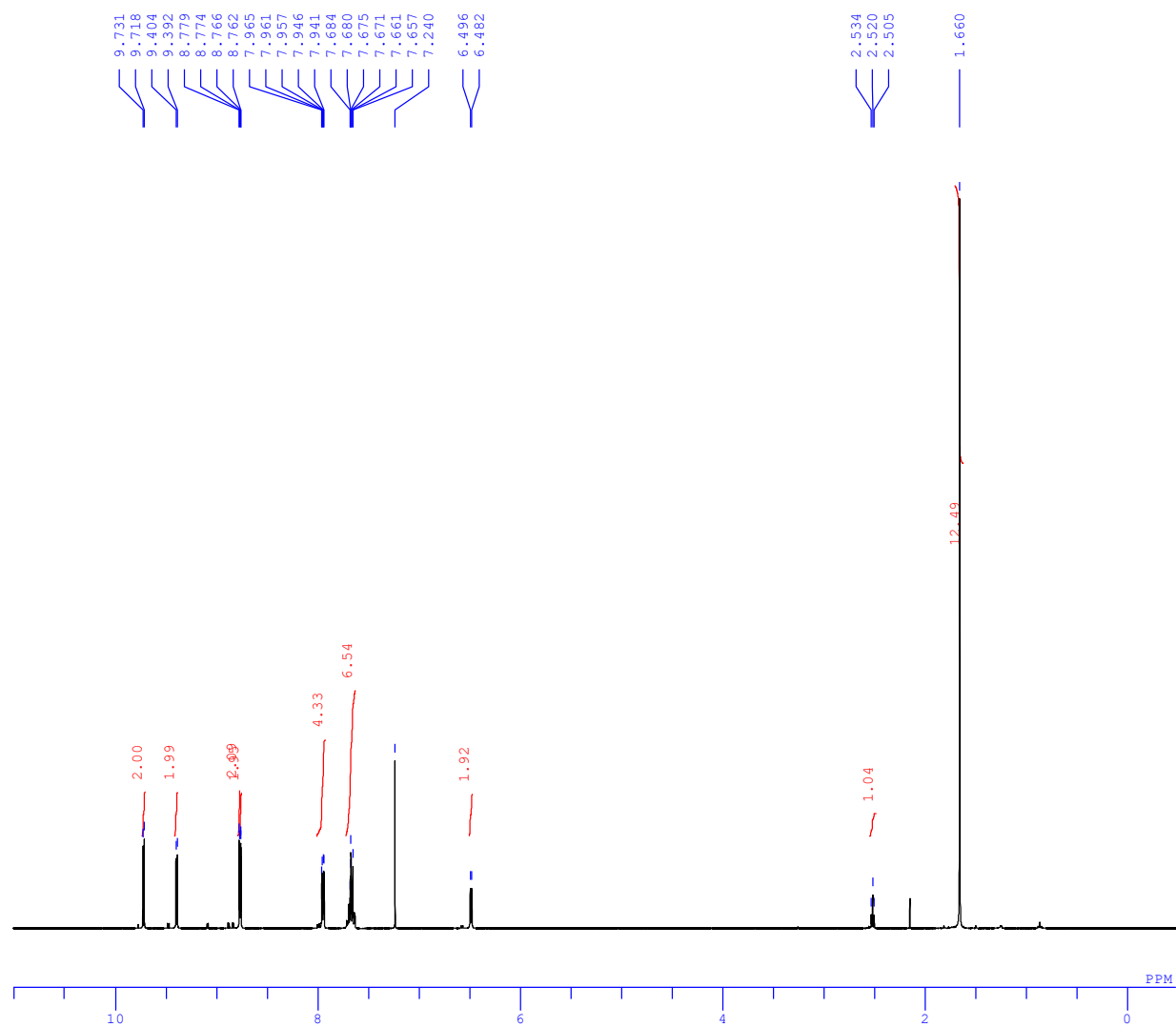
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COMNT DY-EtO2CCH2-DPP(Ni)-Bpin
DATIM Tue Oct 01 08:26:11 2013
OBNUC 13C
EXMOD BCM
OBFRQ 75.45 MHz
OBSET 124.00 KHz
OBFIN 1840.00 Hz
POINT 32768
FREQU 20356.23 Hz
SCANS 11200
ACQTM 1.6097 sec
PD 1.3900 sec
PWL 4.30 usec
IRNUC 1H
CTEMP 24.7 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.01 Hz
RGAIN 25
```

¹³C-NMR (CDCl₃) δ:

- 171.99 (OH, s),
- 146.86 (OH, s),
- 142.58 (OH, s),
- 141.84 (OH, s),
- 141.73 (OH, s),
- 140.74 (OH, s),
- 134.19 (OH, s),
- 133.67 (OH, s),
- 133.07 (OH, s),
- 132.39 (OH, s),
- 129.71 (OH, s),
- 127.69 (OH, s),
- 126.82 (OH, s),
- 118.52 (OH, s),
- 110.15 (OH, s),
- 84.76 (OH, s),
- 61.49 (OH, s),
- 39.92 (OH, s),
- 25.14 (OH, s),
- 14.16 (OH, s).

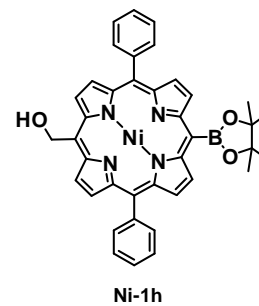


¹H NMR spectrum of Ni-1h

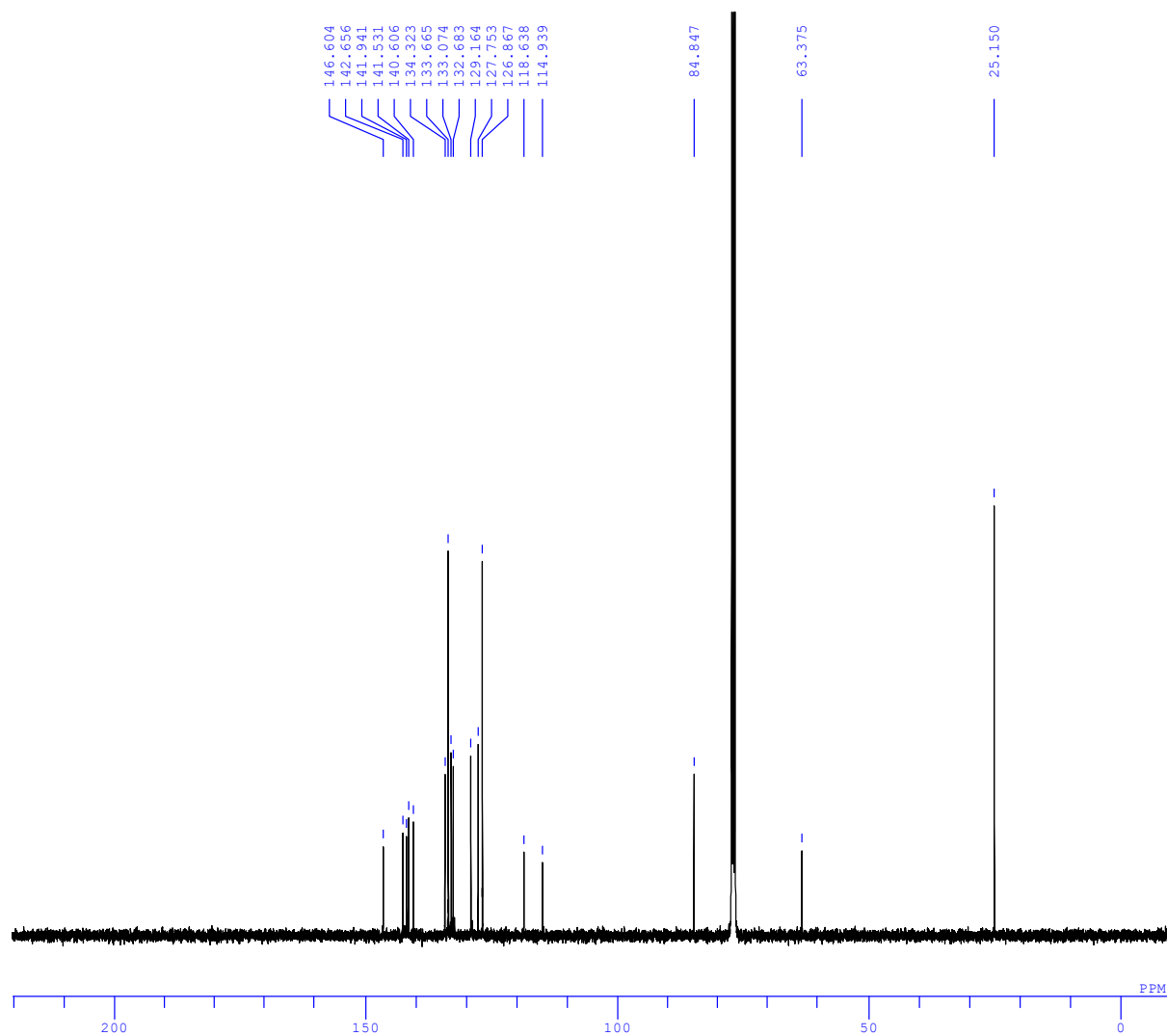


DFILE DY-10-02-HOCH2-DPP(Ni)-Bpin_E1H •ÖWÜ,Ý
COMNT single_pulse
DATIM 2014-09-29 21:46:14
OBNUC 1H
EXMOD single_pulse.jxp
OBFRQ 399.78 MHz
OBSEF 4.19 KHz
OBFIN 7.29 Hz
POINT 26214
FREQU 6002.40 Hz
SCANS 16
ACQTM 4.3673 sec
PD 2.0000 sec
PW1 3.00 usec
IRNUC 1H
CTEMP 21.6 c
SLVNT CDCL3
EXREF 7.24 ppm
BF 0.01 Hz
RGAIN 46

¹H-NMR (CDCl₃) δ:
9.725 (2H, d, J = 5.0 Hz),
9.398 (2H, d, J = 4.8 Hz),
8.773 (2H, d, J = 5.0 Hz),
8.768 (2H, d, J = 4.8 Hz),
7.965-7.941 (4H, m),
7.679-7.662 (6H, m),
6.489 (2H, d, J = 5.8 Hz),
2.520 (1H, t, J = 5.8 Hz),
1.660 (12H, s).

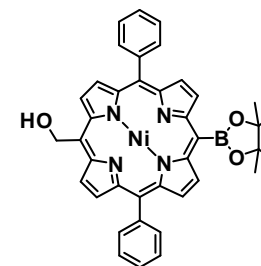


¹³C NMR spectrum of Ni-1h



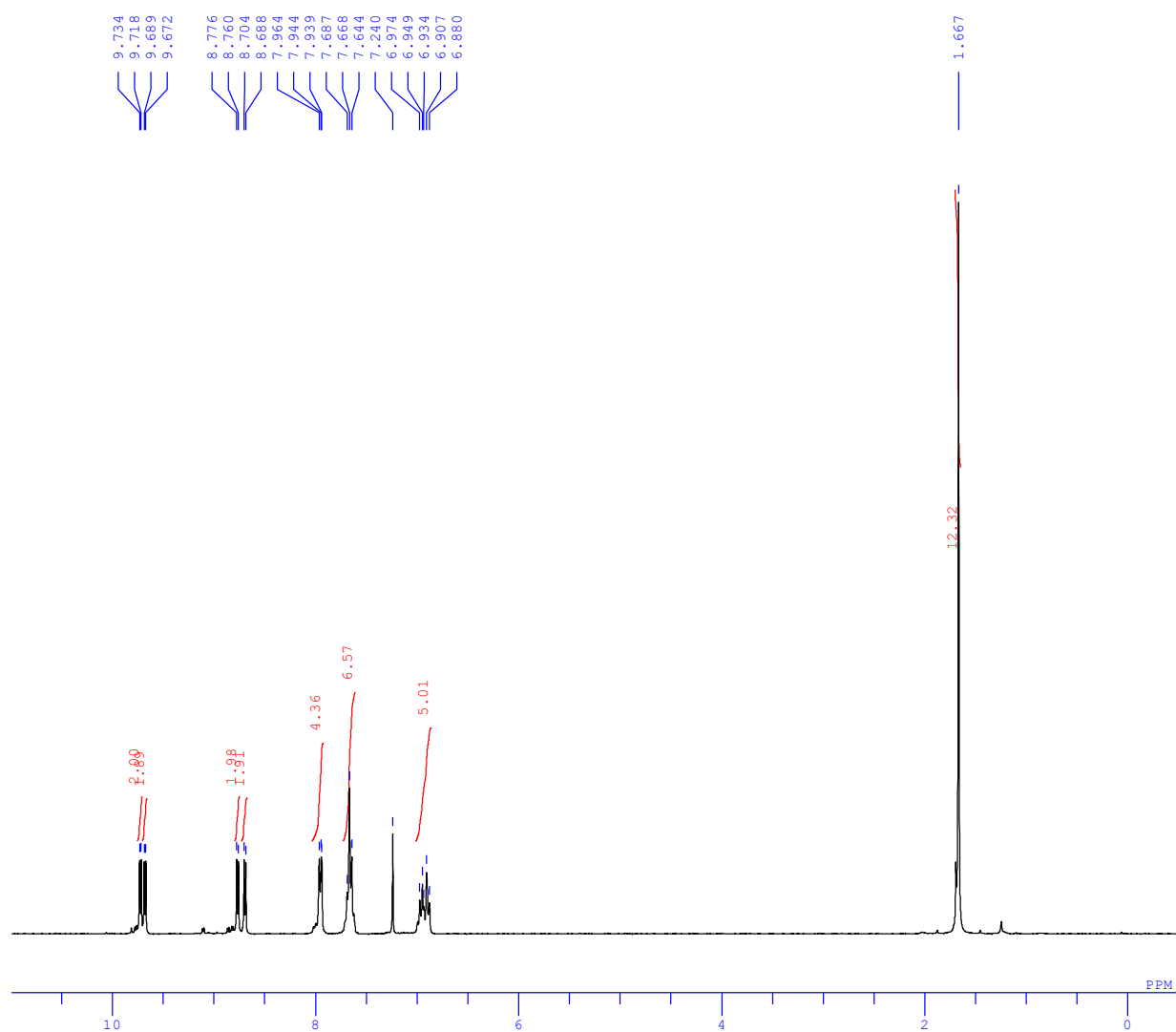
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COMNT single pulse decoupled gated NOE  
DATIM 2014-09-29 21:48:27  
OBNUC 13C  
EXMOD single_pulse_dec  
OBFRQ 100.53 MHz  
OBSET 5.35 KHz  
OBFIN 5.86 Hz  
POINT 26214  
FREQU 25125.63 Hz  
SCANS 16400  
ACQTM 1.0433 sec  
PD 1.7000 sec  
PWL 3.70 usec  
IRNUC 1H  
CTEMP 21.9 c  
SLVNT CDCL3  
EXREF 77.00 ppm  
BF 1.20 Hz  
RGAIN 60
```

```
13C-NMR (CDCl3) δ :  
146.60 (OH, s),  
142.66 (OH, s),  
141.94 (OH, s),  
141.53 (OH, s),  
140.61 (OH, s),  
134.32 (OH, s),  
133.66 (OH, s),  
133.07 (OH, s),  
132.68 (OH, s),  
129.16 (OH, s),  
127.75 (OH, s),  
126.87 (OH, s),  
118.64 (OH, s),  
114.94 (OH, s),  
84.85 (OH, s),  
63.38 (OH, s),  
25.15 (OH, s).
```



Ni-1h

¹H NMR spectrum of Ni-1i

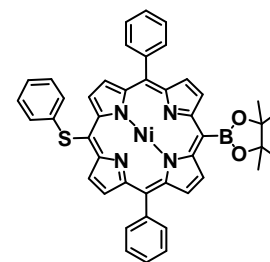


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DFILE DY-Phs-DPP(Ni)-Bpin1NON-0WU, Y (for pape
COMNT DY-Phs-DPP(Ni)-Bpin
DATIM Wed Jul 09 22:57:32 2014
OBNUC 1H
EXMOD NON
OBFRQ 300.40 MHz
OBSET 130.00 KHz
OBFIN 1150.00 Hz
POINT 32768
FREQU 6006.01 Hz
SCANS 8
ACQTM 5.4559 sec
PD 1.5440 sec
FW1 5.30 usec
IRNUC 1H
CTEMP 26.2 c
SLVNT CDCL3
EXREF 7.24 ppm
BF 1.20 Hz
RGAIN 20
    
```

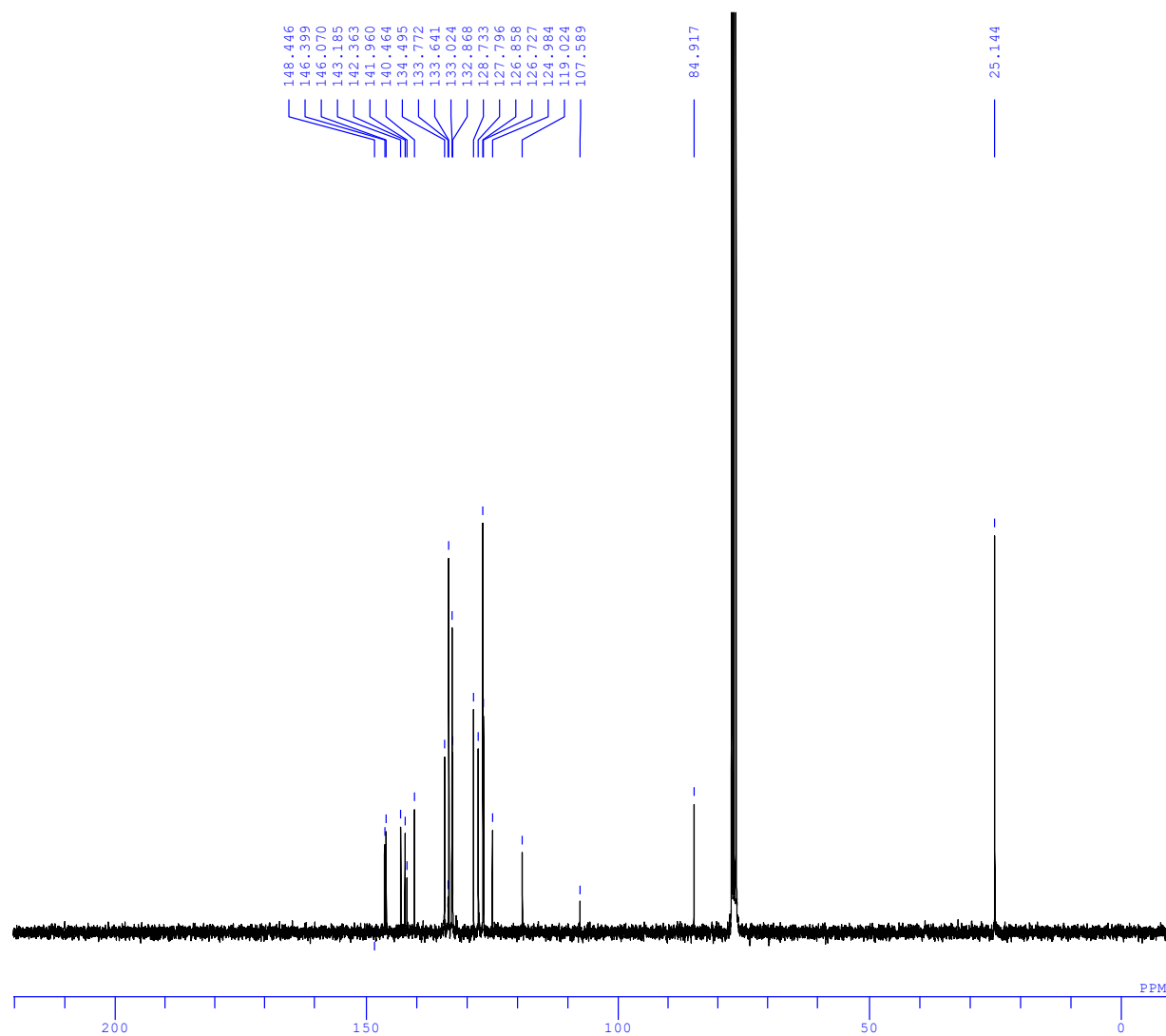
```

1H-NMR (CDCl3) δ :
9.73 (2H, d, J = 4.9 Hz),
9.68 (2H, d, J = 4.9 Hz),
8.77 (2H, d, J = 4.9 Hz),
8.70 (2H, d, J = 4.9 Hz),
7.96-7.95 (4H, m),
7.68-7.65 (6H, m),
6.97-6.88 (5H, m),
1.67 (12H, s).
    
```



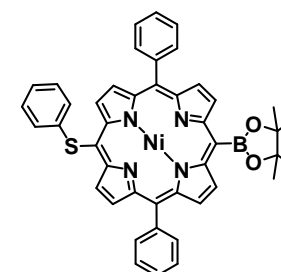
Ni-1i

¹³C NMR spectrum of Ni-1i



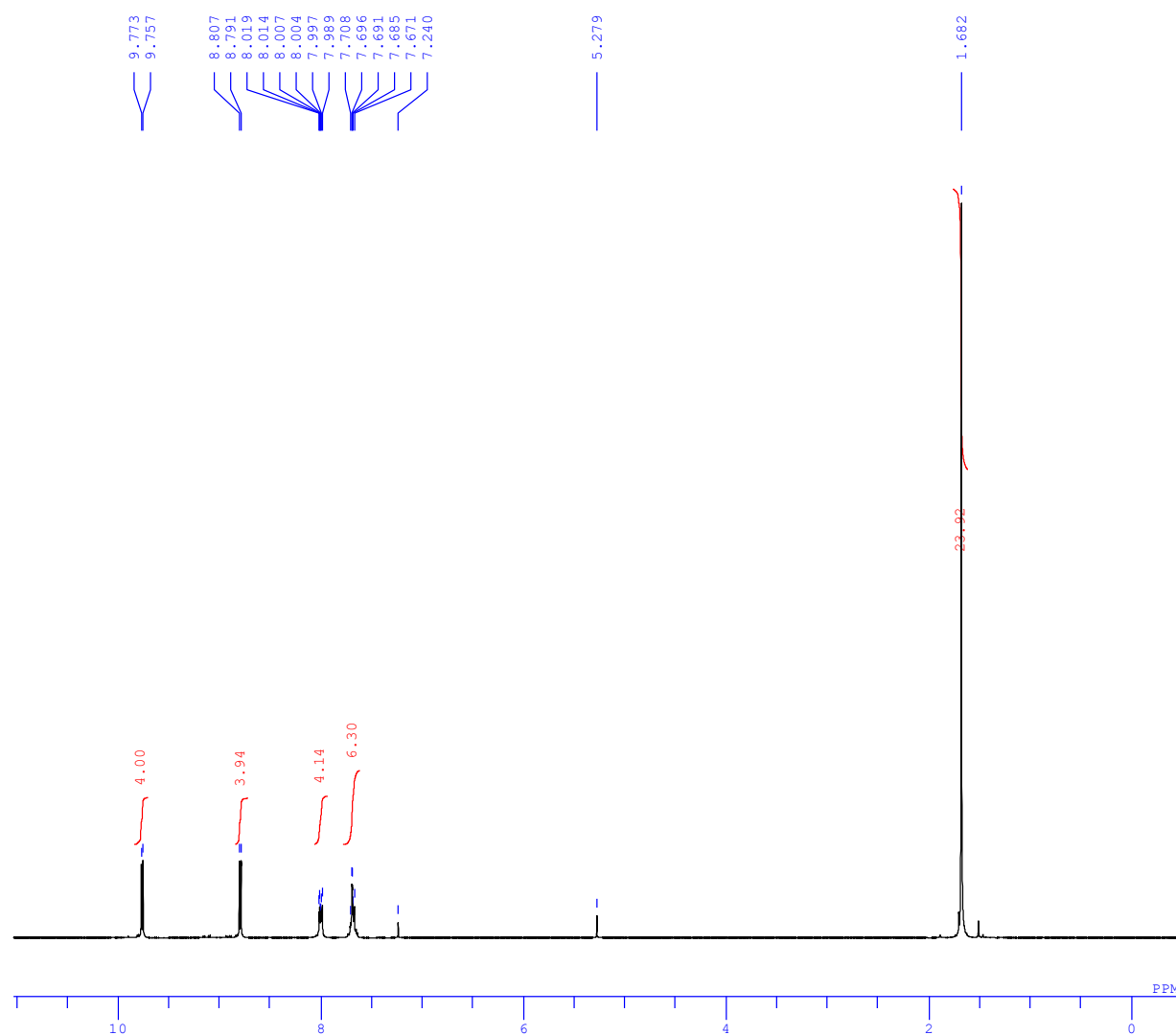
DFILE DY-PhS-DPP(Ni)-Bpin2BCM•O₂W₂Y(for pape
COMNT DY-PhS-DPP(Ni)-Bpin
DATIM Thu Jul 10 07:18:04 2014
OBNUC 13C
EXMOD BCM
OBFRO 75.45 MHz
OBSET 124.00 KHz
OBFIN 1840.00 Hz
POINT 32768
FREQU 20356.23 Hz
SCANS 10000
ACQTM 1.6097 sec
PD 1.3900 sec
PWL 4.30 usec
IRNUC 1H
CTEMP 24.7 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 1.20 Hz
RGAIN 25

¹³C-NMR (CDC13) δ :
146.40 (OH, s),
146.07 (OH, s),
143.18 (OH, s),
142.36 (OH, s),
141.96 (OH, s),
140.46 (OH, s),
134.50 (OH, s),
133.77 (OH, s),
133.64 (OH, s),
133.02 (OH, s),
132.87 (OH, s),
128.73 (OH, s),
127.80 (OH, s),
126.86 (OH, s),
126.73 (OH, s),
124.98 (OH, s),
119.02 (OH, s),
107.59 (OH, s),
84.92 (OH, s),
25.14 (OH, s).



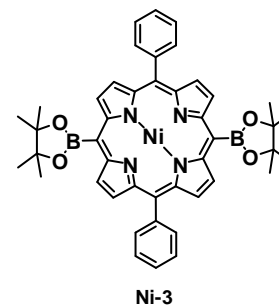
Ni-1i

¹H NMR spectrum of Ni-3

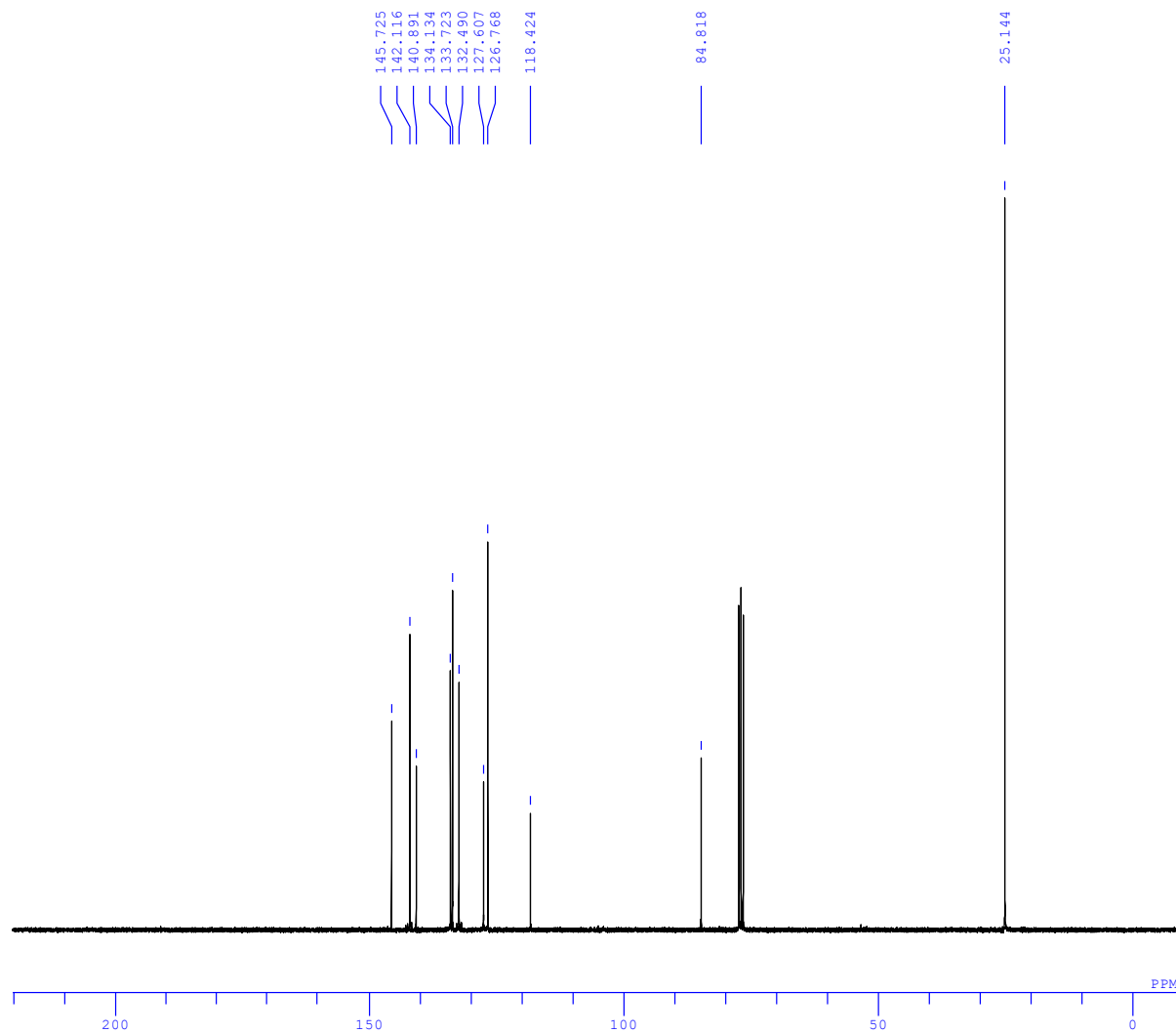


```
DFILE DY-DPP(Ni)-(Bpin)21NON_E1•0W0, Y(for pa
COMMT DY-DPP(Ni)-(Bpin)2
DATIM Thu Feb 05 22:39:35 2015
OBNUC 1H
EXMOD NON
OBFRQ 300.40 MHz
OBSET 130.00 KHz
OBFIN 1150.00 Hz
POINT 32768
FREQU 6006.01 Hz
SCANS 8
ACQTM 5.4559 sec
PD 1.5440 sec
FW1 5.30 usec
IRNUC 1H
CTEMP 26.5 c
SLVNT CDCL3
EXREF 7.24 ppm
BF 0.12 Hz
RGAIN 13
```

¹H-NMR (CDCl₃) δ :
9.77 (4H, d, J = 4.9 Hz),
8.80 (4H, d, J = 4.9 Hz),
8.01-8.00 (4H, m),
7.71-7.67 (6H, m),
1.68 (24H, s).

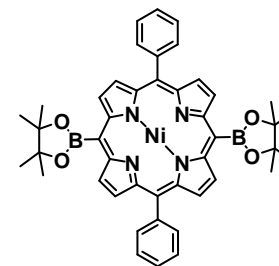


¹³C NMR spectrum of Ni-3



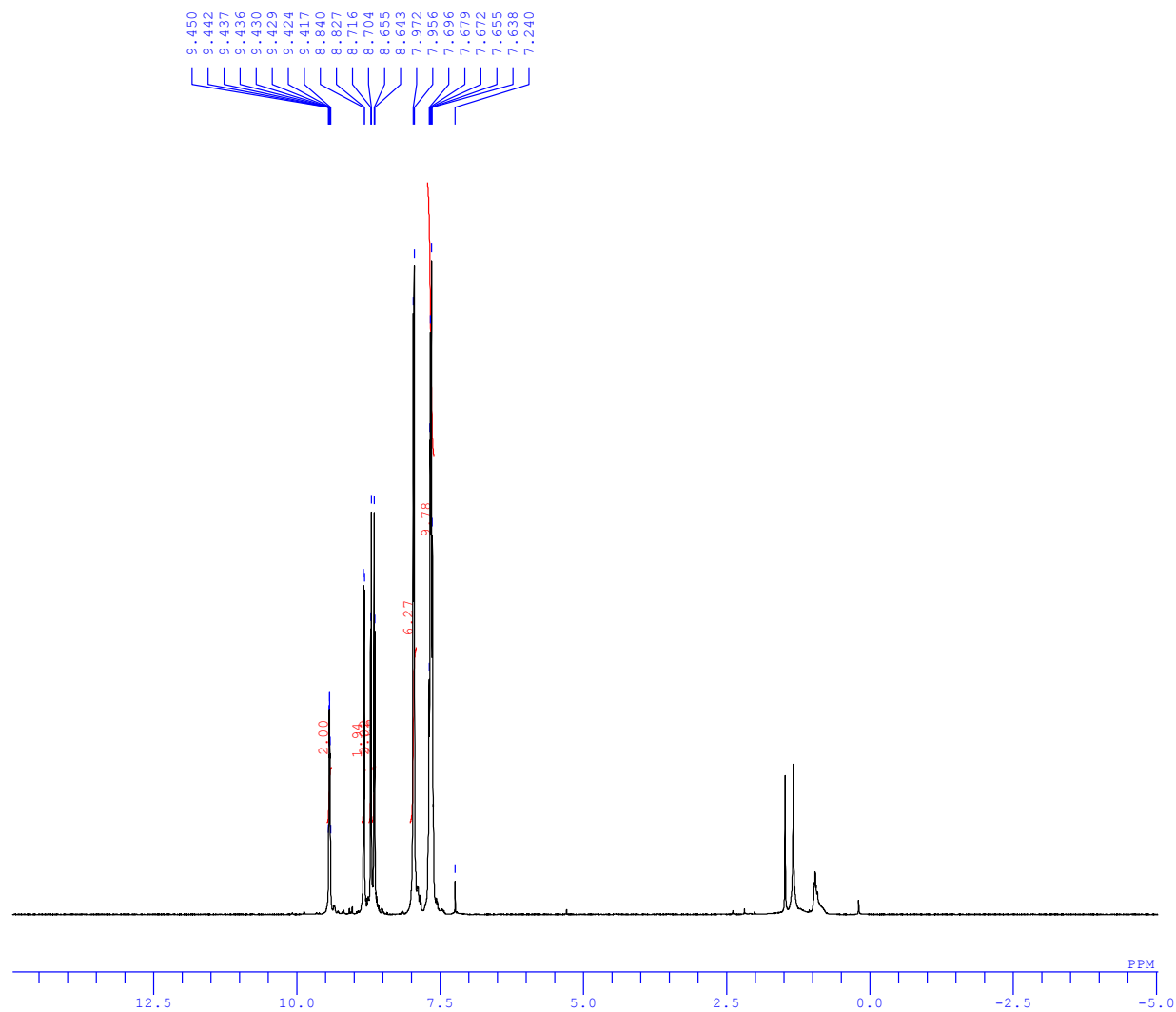
DFILE DY-DPP(Ni)-(Bpin)22BCM_E1•0WI,Ŷ(for pa
COMNT DY-DPP(Ni)-(Bpin)2
DATIM Fri Feb 06 07:59:59 2015
OBNUC 13C
EXMOD BCM
OBFRQ 75.45 MHz
OBSET 124.00 KHz
OBFIN 1840.00 Hz
POINT 32768
FREQU 20356.23 Hz
SCANS 11200
ACQTM 1.6097 sec
PD 1.3900 sec
PW1 4.30 usec
IRNUC 1H
CTEMP 25.2 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 23

¹³C-NMR (CDCl₃) δ :
145.72 (OH, s),
142.12 (OH, s),
140.89 (OH, s),
134.13 (OH, s),
133.72 (OH, s),
132.49 (OH, s),
127.61 (OH, s),
126.77 (OH, s),
118.42 (OH, s),
84.82 (OH, s),
25.14 (OH, s).



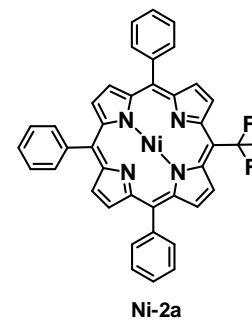
Ni-3

¹H NMR spectrum of Ni-2a

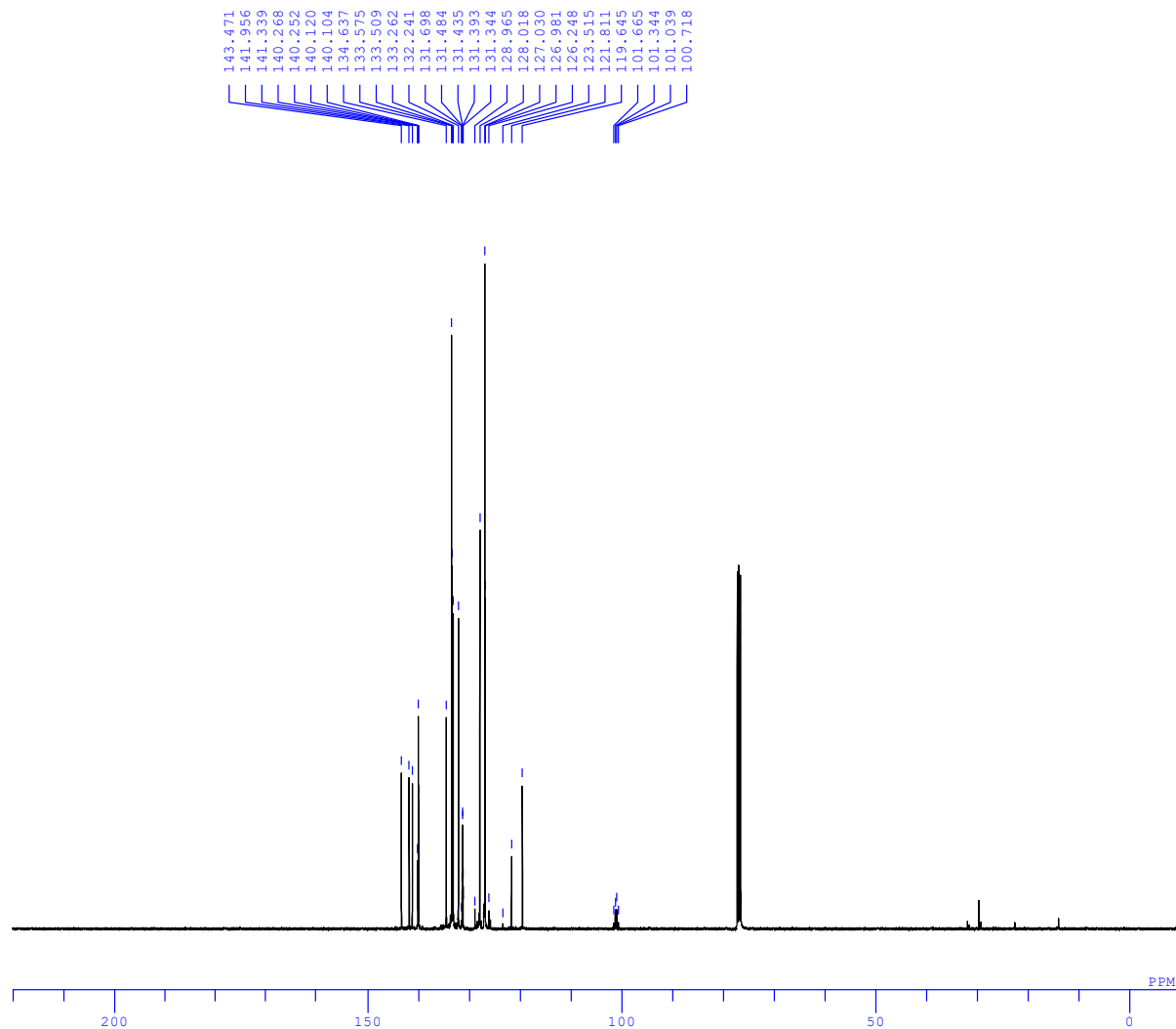


```
DFILE DY-4-33-TPP(Ni)-CF31NON*OW(for paper) .  
COMNT DY-4-33-TPP(Ni)-CF3  
DATIM Tue Apr 16 19:37:09 2013  
OBNUC 1H  
EXMOD NON  
OBFRQ 399.65 MHz  
OBSET 124.00 KHz  
OBFIN 10500.00 Hz  
POINT 16384  
FREQU 7992.01 Hz  
SCANS 8  
ACQTM 2.0500 sec  
PD 4.9500 sec  
PW1 5.80 usec  
IRNUC 1H  
CTEMP 55.2 c  
SLVNT CDCL3  
EXREF 7.24 ppm  
BF 1.20 Hz  
RGAIN 13
```

¹H-NMR (CDCl₃) δ :
9.43 (2H, dq, J = 4.9, 2.8 Hz),
8.83 (2H, d, J = 4.9 Hz),
8.71 (2H, d, J = 4.9 Hz),
8.65 (2H, d, J = 4.9 Hz),
7.97-7.96 (6H, m),
7.70-7.64 (9H, m).



¹³C NMR spectrum of Ni-2a

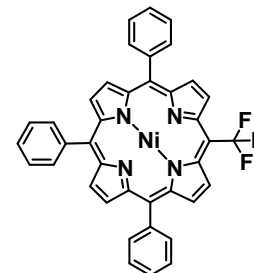


```

DFILE DY-4-33-TPP(Ni)-CF32BCM*0W0, (for pape
COMNT DY-4-33-TPP(Ni)-CF3
DATIM Wed Apr 17 10:40:03 2013
OBNUC 13C
EXMOD BCM
OBFREQ 100.40 MHz
OBSETE 125.00 KHz
OBFIN 10500.00 Hz
POINT 32768
FREQU 27118.64 Hz
SCANS 18000
ACQTM 1.2083 sec
PD 1.7920 sec
PW1 6.00 usec
IRNUC 1H
CTEMP 55.2 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 1.20 Hz
RGAIN 24
    
```

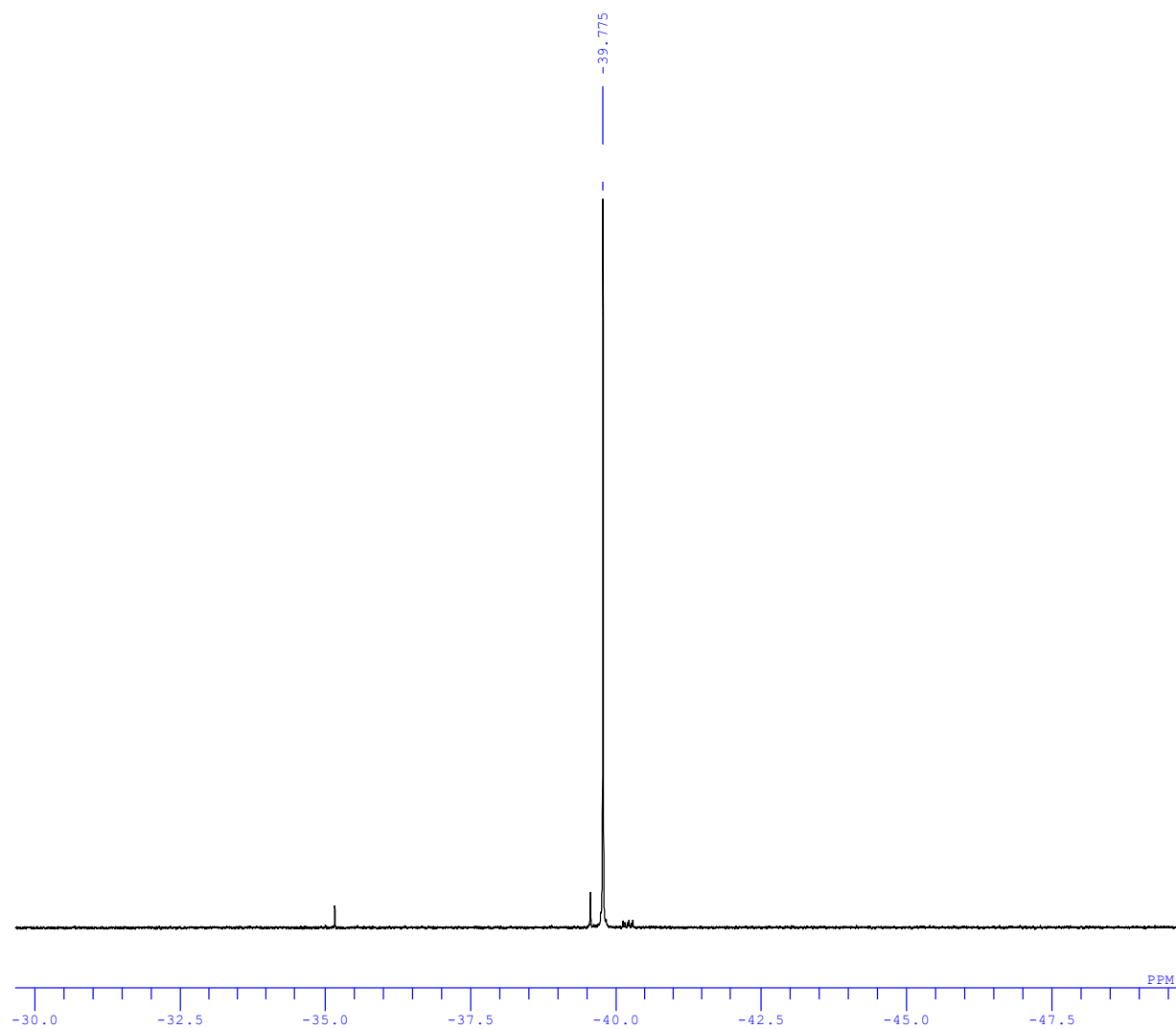
13C-NMR (CDCl₃) δ:

- 143.47 (OH, s),
- 141.96 (OH, s),
- 141.34 (OH, s),
- 140.27 (OH, s),
- 140.25 (OH, s),
- 140.12 (OH, s),
- 140.10 (OH, s),
- 134.64 (OH, s),
- 133.58 (OH, s),
- 133.51 (OH, s),
- 133.26 (OH, s),
- 132.24 (OH, s),
- 131.41 (OH, q, J = 4.7 Hz),
- 128.02 (OH, s),
- 127.61 (OH, q, J = 274.8 Hz),
- 127.03 (OH, s),
- 126.98 (OH, s),
- 121.81 (OH, s),
- 119.65 (OH, s),
- 101.19 (OH, q, J = 31.7 Hz).



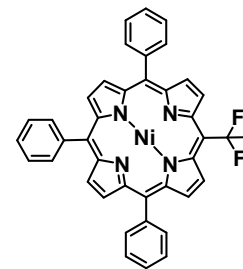
Ni-2a

¹⁹F NMR spectrum of Ni-2a



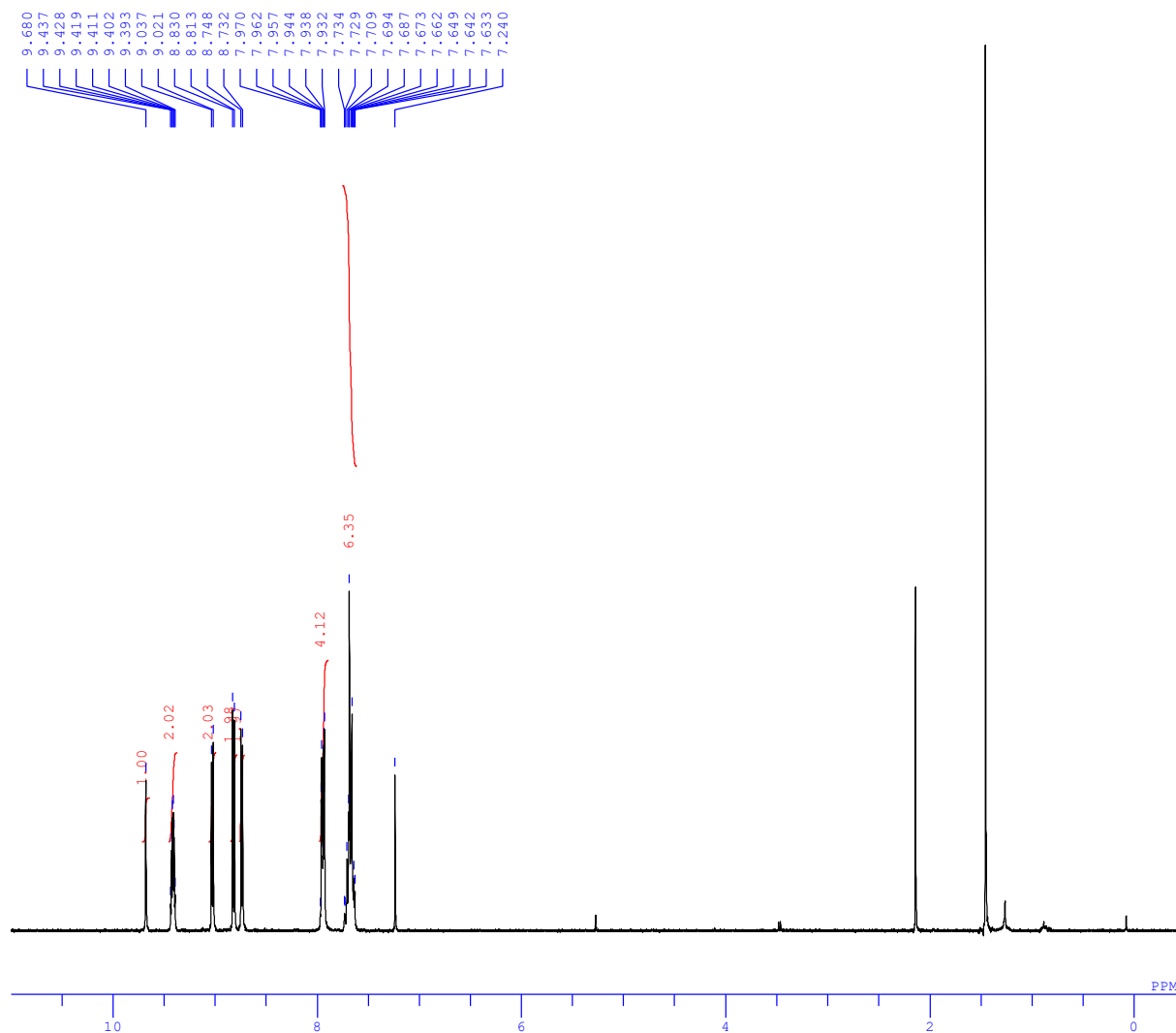
```
DFILE DY-4TPP(Ni)-CF3_E19F-2-1(for paper).a1
COMNT single_pulse
DATIM 2015-01-22 14:19:36
OBNUC 19F
EXMOD single_pulse.jxp
OBFRQ 376.15 MHz
OBSET 1.49 KHz
OBFIN 3.03 Hz
POINT 13107
FREQU 7530.12 Hz
SCANS 16
ACQTM 1.7406 sec
PD 5.0000 sec
PWL 3.76 usec
IRNUC 19F
CTEMP 20.6 c
SLVNT CDCL3
EXREF -39.70 ppm
BF 1.20 Hz
RGAIN 54
```

¹⁹F-NMR (CDCl₃) δ :
-39.77 (OH, s).



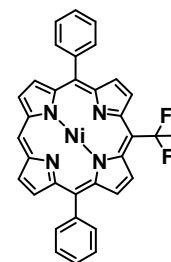
Ni-2a

¹H NMR spectrum of Ni-2b



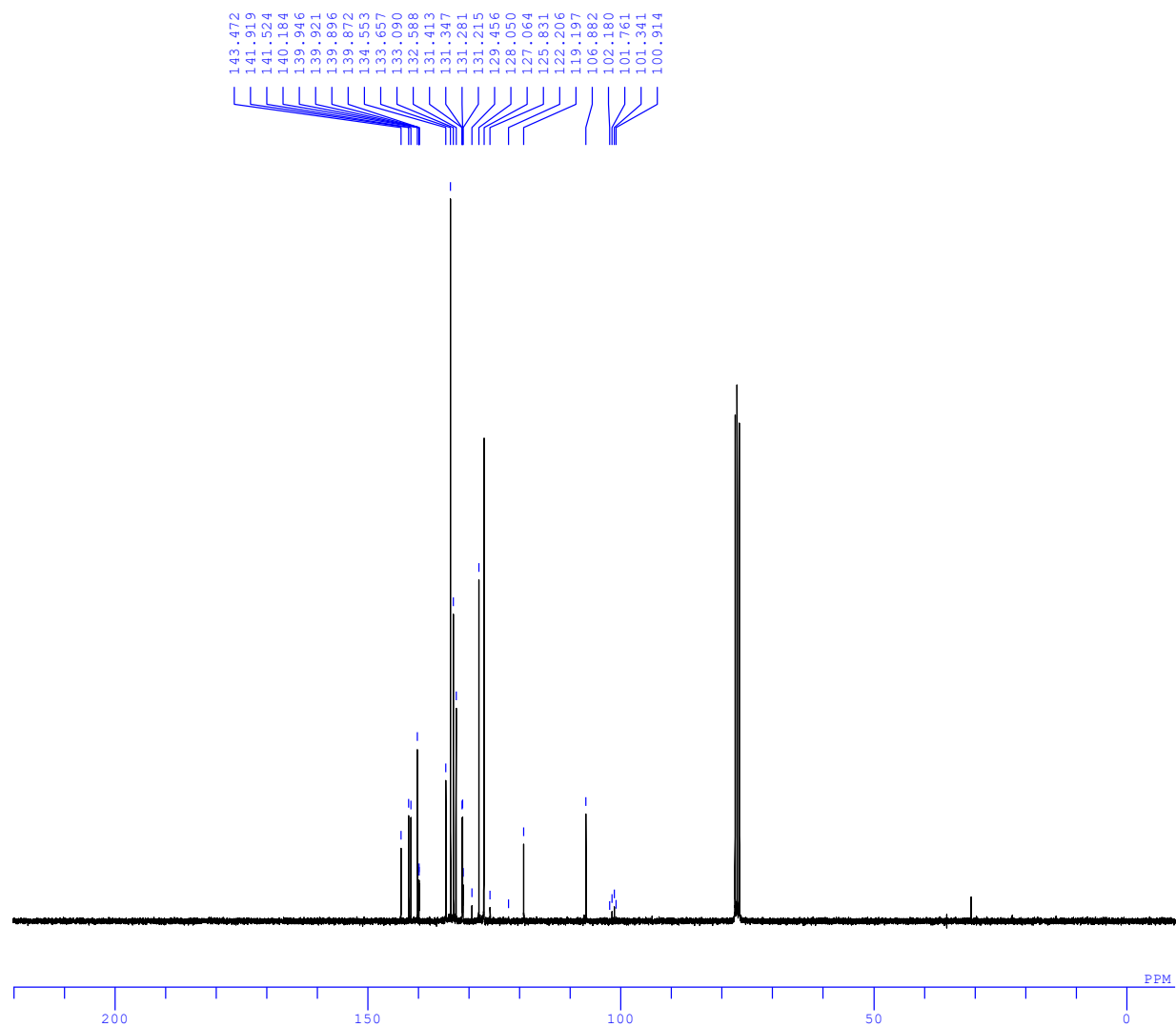
```
DFILE DY-07-01-DPP(Ni)-CF31-0W11,(for paper)
COMNT DY-07-01-DPP(Ni)-CF3
DATIM Fri May 17 22:12:31 2013
OBNUC 1H
EXMOD NON
OBFREQ 300.40 MHz
OBSET 130.00 KHz
OBFIN 1150.00 Hz
POINT 32768
FREQU 6006.01 Hz
SCANS 8
ACQTM 5.4559 sec
PD 1.5440 sec
PW1 5.30 usec
IRNUC 1H
CTEMP 55.5 c
SLVNT CDCL3
EXREF 7.24 ppm
BF 0.12 Hz
RGAIN 20
```

¹H-NMR (CDCl₃) δ :
9.68 (1H, s),
9.41 (2H, dq, J = 5.1, 2.6 Hz),
9.03 (2H, d, J = 4.8 Hz),
8.82 (2H, d, J = 5.1 Hz),
8.74 (2H, d, J = 4.8 Hz),
7.96-7.94 (4H, m),
7.73-7.63 (6H, m).



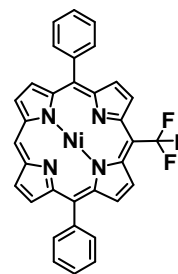
Ni-2b

¹³C NMR spectrum of Ni-2b



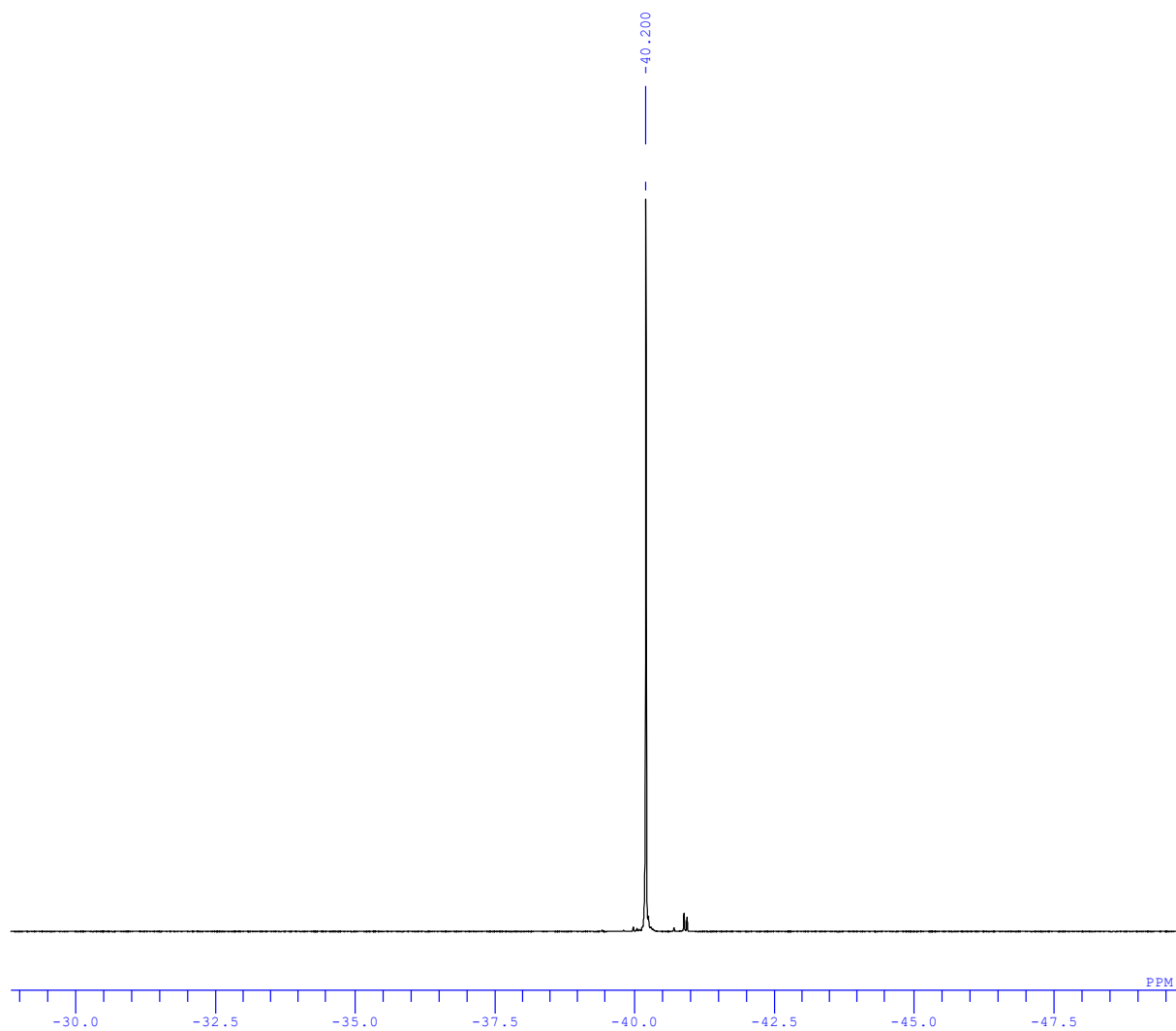
DFILE DY-07-01-DPP(Ni)-CF32BCM•0W11, Y (for pap
COMNT DY-07-01-DPP(Ni)-CF3
DATIM Mon May 20 08:32:57 2013
OBNUC ¹³C
EXMOD BCM
OBFREQ 75.45 MHz
OBSET 124.00 KHz
OBFIN 1840.00 Hz
POINT 32768
FREQU 20356.23 Hz
SCANS 70000
ACQTM 1.6097 sec
PD 1.3900 sec
PWL 4.30 usec
IRNUC ¹H
CTEMP 55.7 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 25

¹³C-NMR (CDCl₃) δ :
143.47 (OH, s),
141.92 (OH, s),
141.52 (OH, s),
140.18 (OH, s),
139.91 (OH, q, J = 1.9 Hz),
134.55 (OH, s),
133.66 (OH, s),
133.09 (OH, s),
132.59 (OH, s),
131.31 (OH, q, J = 5.0 Hz),
128.05 (OH, s),
127.64 (OH, q, J = 274.0 Hz),
127.05 (OH, s),
119.20 (OH, s),
106.88 (OH, s),
101.55 (OH, q, J = 31.7 Hz).



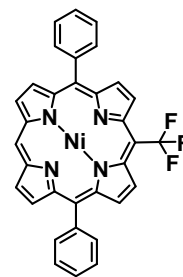
Ni-2b

¹⁹F NMR spectrum Ni-2b



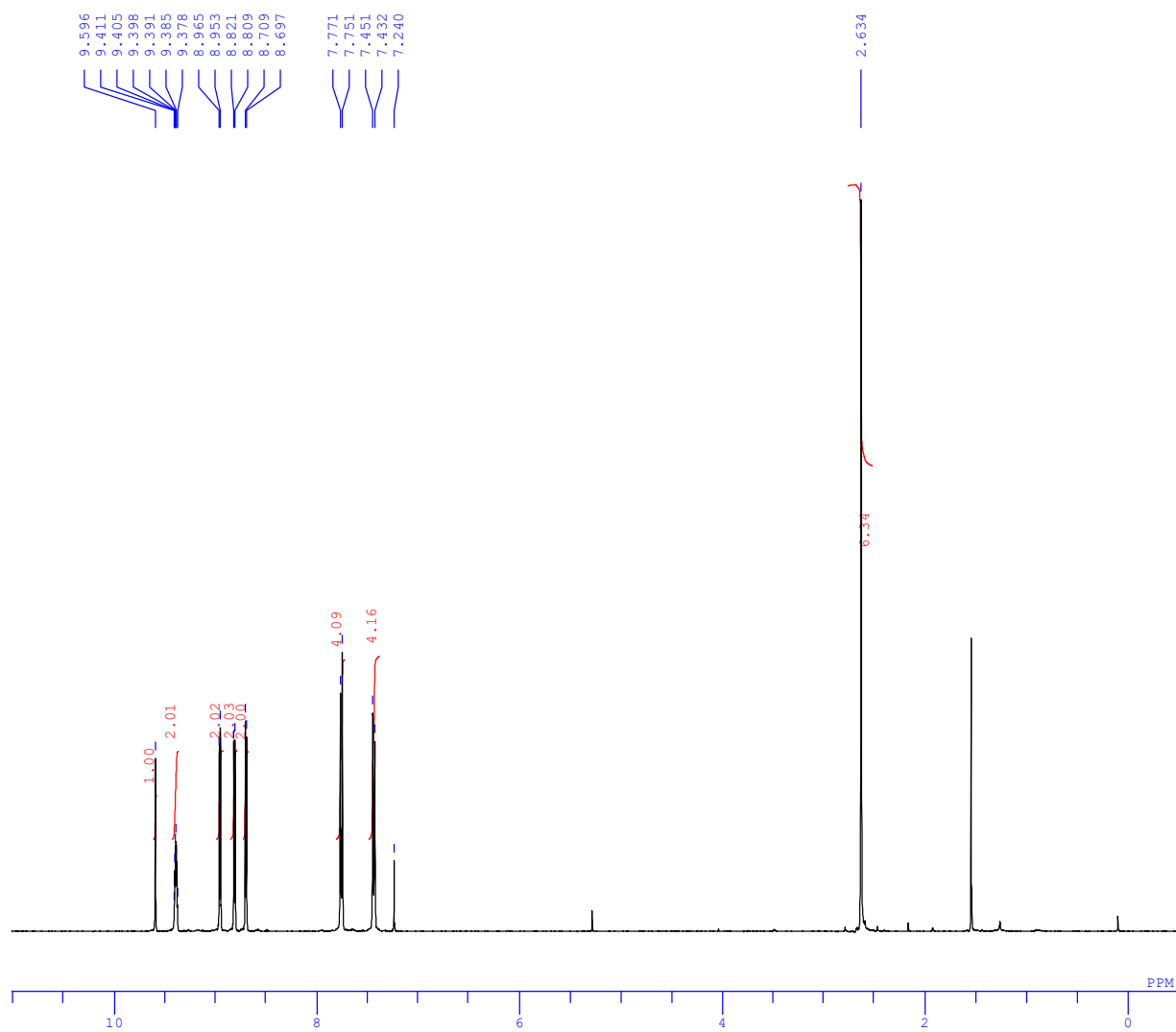
```
DFILE DY-DPP(Ni)-(CF3)2_E19F-2-1*0WT, Y(for p
COMNT single_pulse
DATIM 2014-11-10 15:21:05
OBNUC 19F
EXMOD single_pulse.jxp
OBFRQ 376.15 MHz
OBSET 6.38 KHz
OBFIN 3.25 Hz
POINT 13107
FREQU 15060.24 Hz
SCANS 32
ACQTM 0.8703 sec
PD 5.0000 sec
PW1 3.76 usec
IRNUC 19F
CTEMP 21.9 c
SLVNT CDCL3
EXREF -40.20 ppm
BF 1.20 Hz
RGAIN 48
```

¹⁹F-NMR (CDCl₃) δ :
-40.20 (OH, s).



Ni-2b

¹H NMR spectrum of Ni-2c

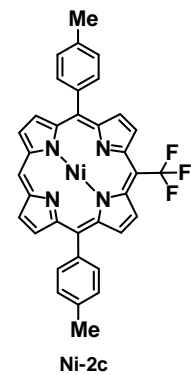


```

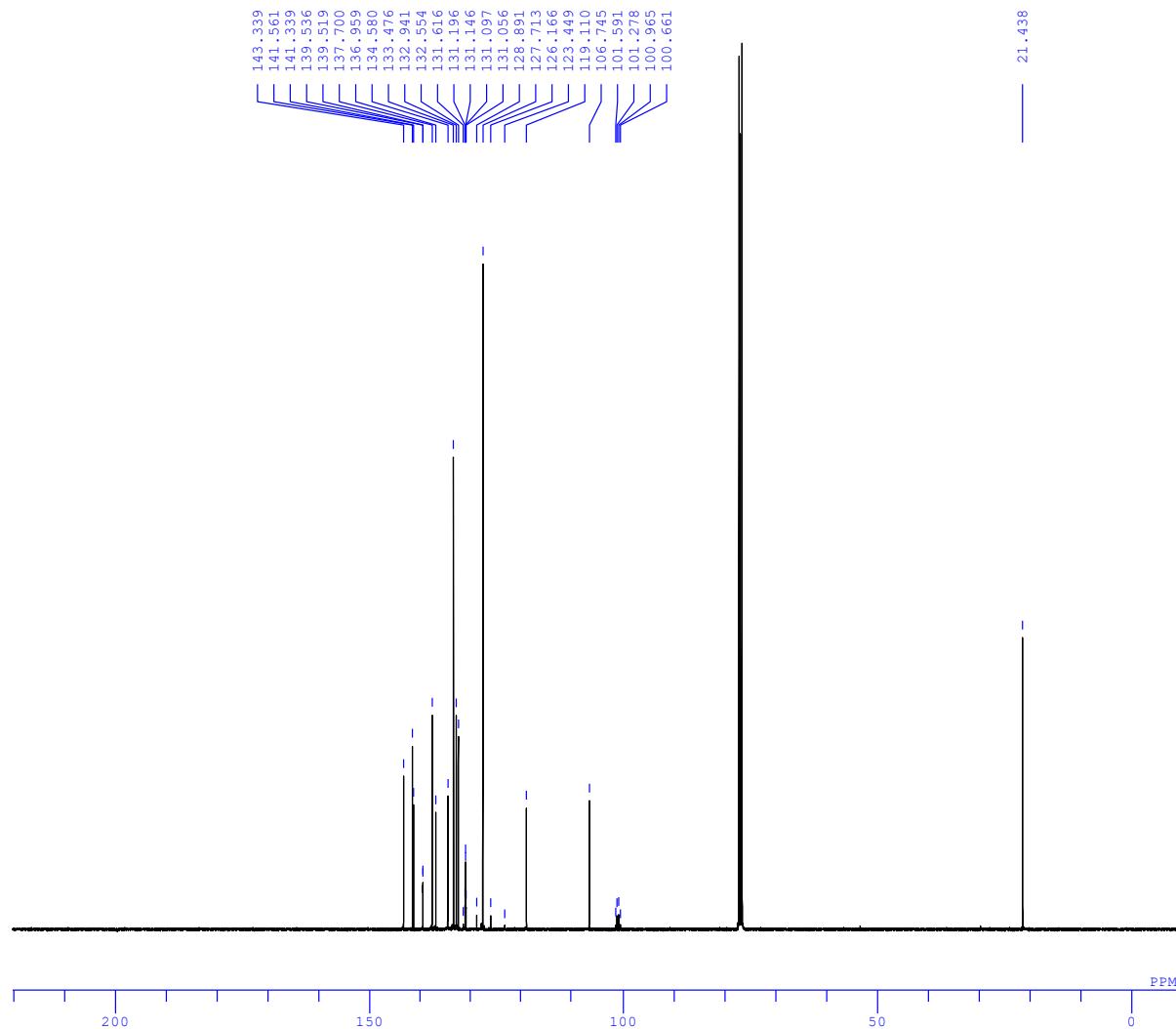
DFILE  DY-07-02-p-tolyl(Ni)-CF3-0M1, Y(for pap
COMNT  DY-07-02-p-tolyl(Ni)-CF3
DATIM  Fri May 17 21:19:28 2013
OBNUC  1H
EXMOD  NON
OBFRQ  399.65 MHz
OBSET  124.00 KHz
OBFIN  10500.00 Hz
POINT  16384
FREQU  7992.01 Hz
SCANS  8
ACQTM  2.0500 sec
PD     4.9500 sec
PWL    5.80 usec
IRNUC  1H
CTEMP  23.9 c
SLVNT  CDCL3
EXREF  7.24 ppm
BF     0.12 Hz
RGAIN  18
    
```

¹H-NMR (CDCl₃) δ:

- 9.60 (1H, s),
- 9.39 (2H, dq, J = 4.9, 2.6 Hz),
- 8.96 (2H, d, J = 4.9 Hz),
- 8.82 (2H, d, J = 4.9 Hz),
- 8.70 (2H, d, J = 4.9 Hz),
- 7.76 (4H, d, J = 7.8 Hz),
- 7.44 (4H, d, J = 7.8 Hz),
- 2.63 (6H, s).



¹³C NMR spectrum of Ni-2c

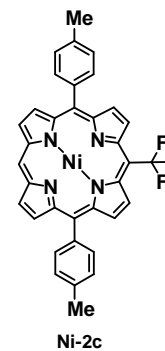


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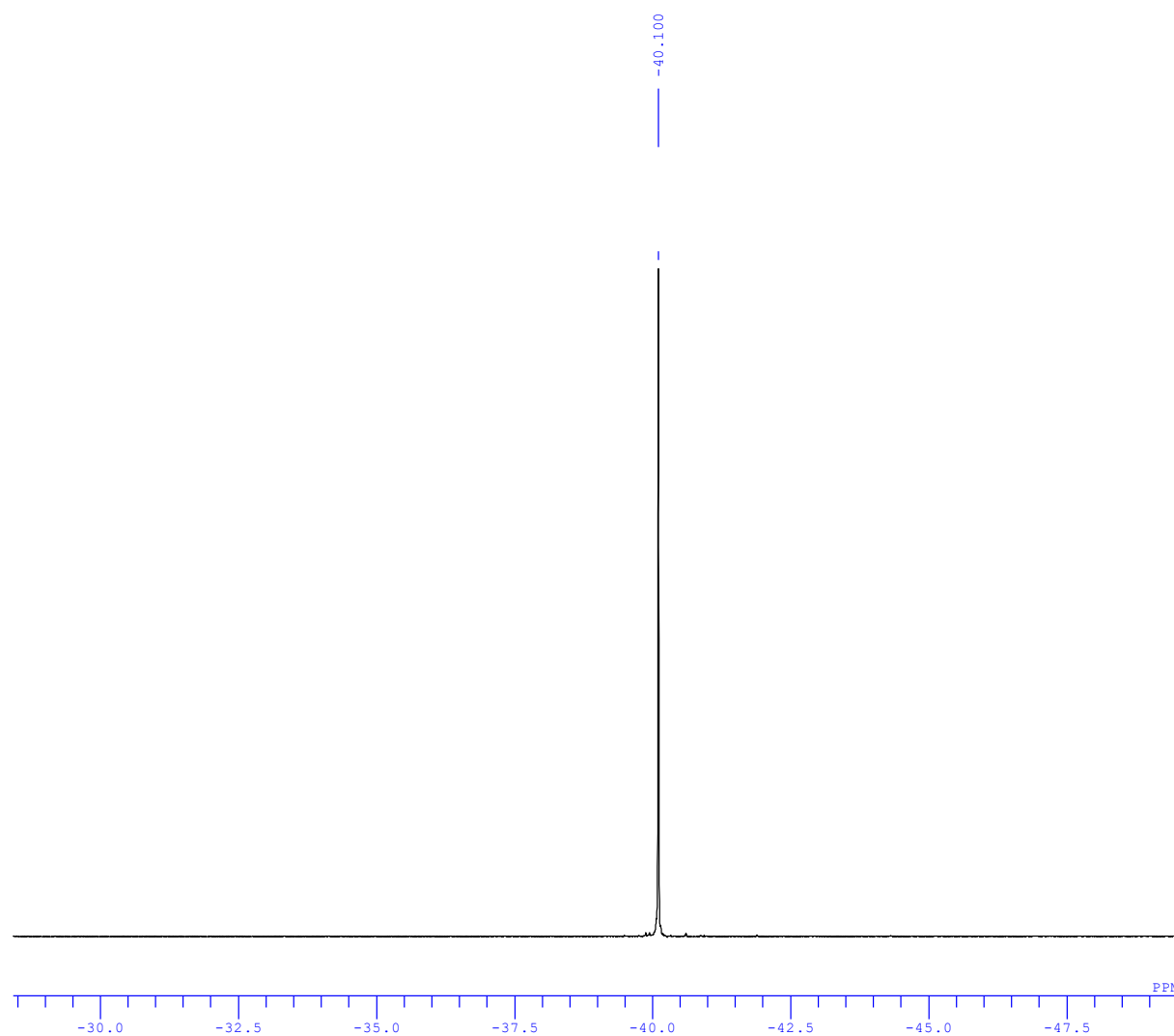
DFILE DY-07-02-p-tolyl(Ni)-CF32BCM_•OMI,Y(fo
COMNT DY-07-02-p-tolyl(Ni)-CF3
DATIM Mon May 20 07:43:20 2013
OBNUC 13C
EXMOD BCM
OBFRQ 100.40 MHz
OBSET 125.00 KHz
OBFIN 10500.00 Hz
POINT 32768
FREQU 27118.64 Hz
SCANS 70000
ACQTM 1.2083 sec
PD 1.7920 sec
PWL 6.00 usec
IRNUC 1H
CTEMP 23.9 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 24
    
```

¹³C-NMR (CDCl₃) δ:

143.34 (OH, s),
 141.56 (OH, s),
 141.34 (OH, s),
 139.53 (OH, q, J = 1.7 Hz),
 137.70 (OH, s),
 136.96 (OH, s),
 134.58 (OH, s),
 133.48 (OH, s),
 132.94 (OH, s),
 132.55 (OH, s),
 131.13 (OH, q, J = 4.7 Hz),
 127.71 (OH, s),
 127.53 (OH, q, J = 273.9 Hz),
 119.11 (OH, s),
 106.74 (OH, s),
 101.12 (OH, q, J = 31.4 Hz),
 21.44 (OH, s).

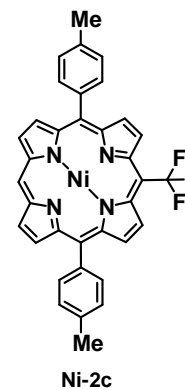


¹⁹F NMR spectrum Ni-2c

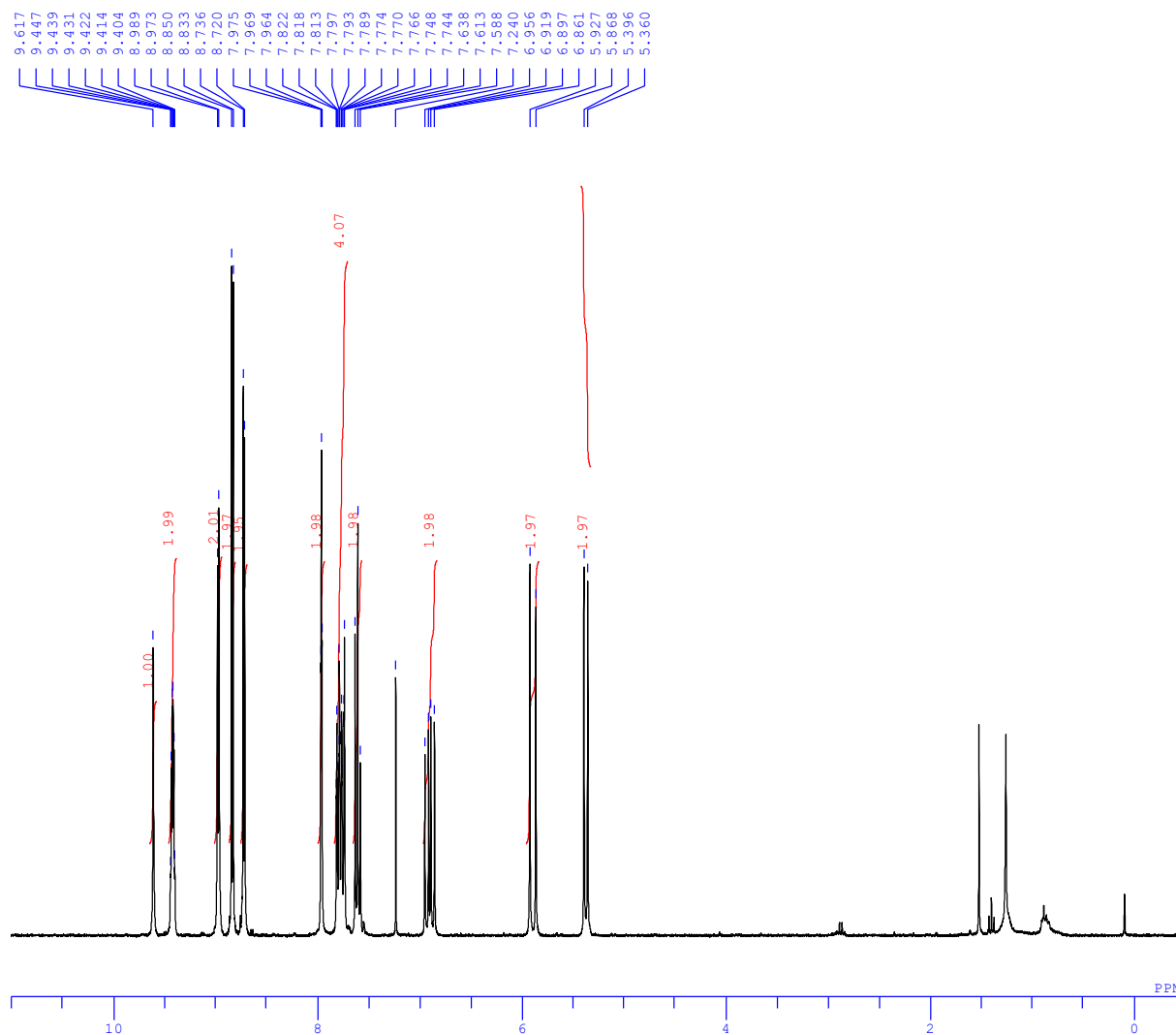


```
DFILE 19F(for paper).als
COMNT single_pulse
DATIM 2013-08-24 21:01:35
OBNUC 19F
EXMOD single_pulse.jxp
OBFRQ 376.15 MHz
OBSET 6.00 KHz
OBFIN 7.08 Hz
POINT 13107
FREQU 11286.68 Hz
SCANS 16
ACQTM 1.1613 sec
PD 5.0000 sec
PW1 3.76 usec
IRNUC 19F
CTEMP 23.2 c
SLVNT CDCL3
EXREF -40.10 ppm
BF 1.20 Hz
RGAIN 50
```

¹⁹F-NMR (CDCl₃) δ :
-40.10 (OH, s).

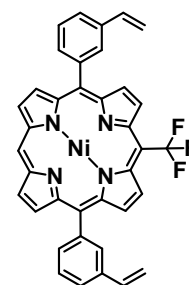


¹H NMR spectrum of Ni-2d



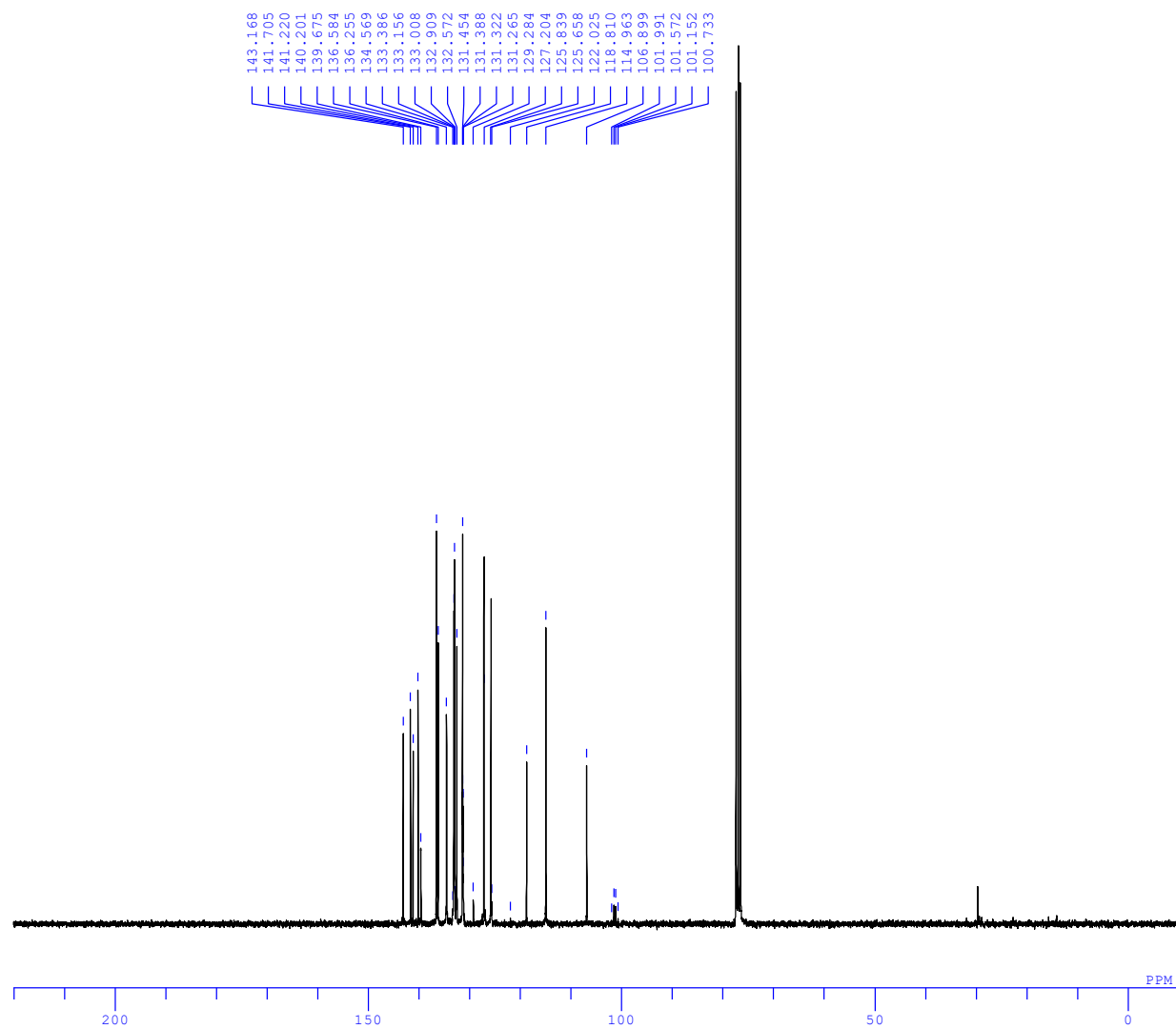
```
DFILE DY-m-vinyl(Ni)-CF31NON_E1•ÔWÏ,Ý(for pa
COMNT DY-m-vinyl(Ni)-CF3
DATIM Mon Feb 16 22:31:57 2015
OBNUC 1H
EXMOD NON
OBFREQ 300.40 MHz
OBSETE 130.00 KHz
OBFIN 1150.00 Hz
POINT 32768
FREQU 6006.01 Hz
SCANS 8
ACQTM 5.4559 sec
PD 1.5440 sec
PW1 5.30 usec
IRNUC 1H
CTEMP 25.5 c
SLVNT CDCL3
EXREF 7.24 ppm
BF 0.12 Hz
RGAIN 17
```

¹H-NMR (CDCl₃) δ :
9.62 (1H, s),
9.43 (2H, dq, J = 5.1, 2.6 Hz),
8.98 (2H, d, J = 4.8 Hz),
8.84 (2H, d, J = 5.1 Hz),
8.73 (2H, d, J = 4.8 Hz),
7.97 (2H, t, J = 1.6 Hz),
7.82-7.74 (4H, m),
7.61 (2H, t, J = 7.6 Hz),
6.91 (2H, dd, J = 17.6, 11.0 Hz),
5.90 (2H, d, J = 17.6 Hz),
5.38 (2H, d, J = 11.0 Hz).



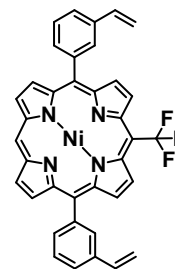
Ni-2d

¹³C NMR spectrum of Ni-2d



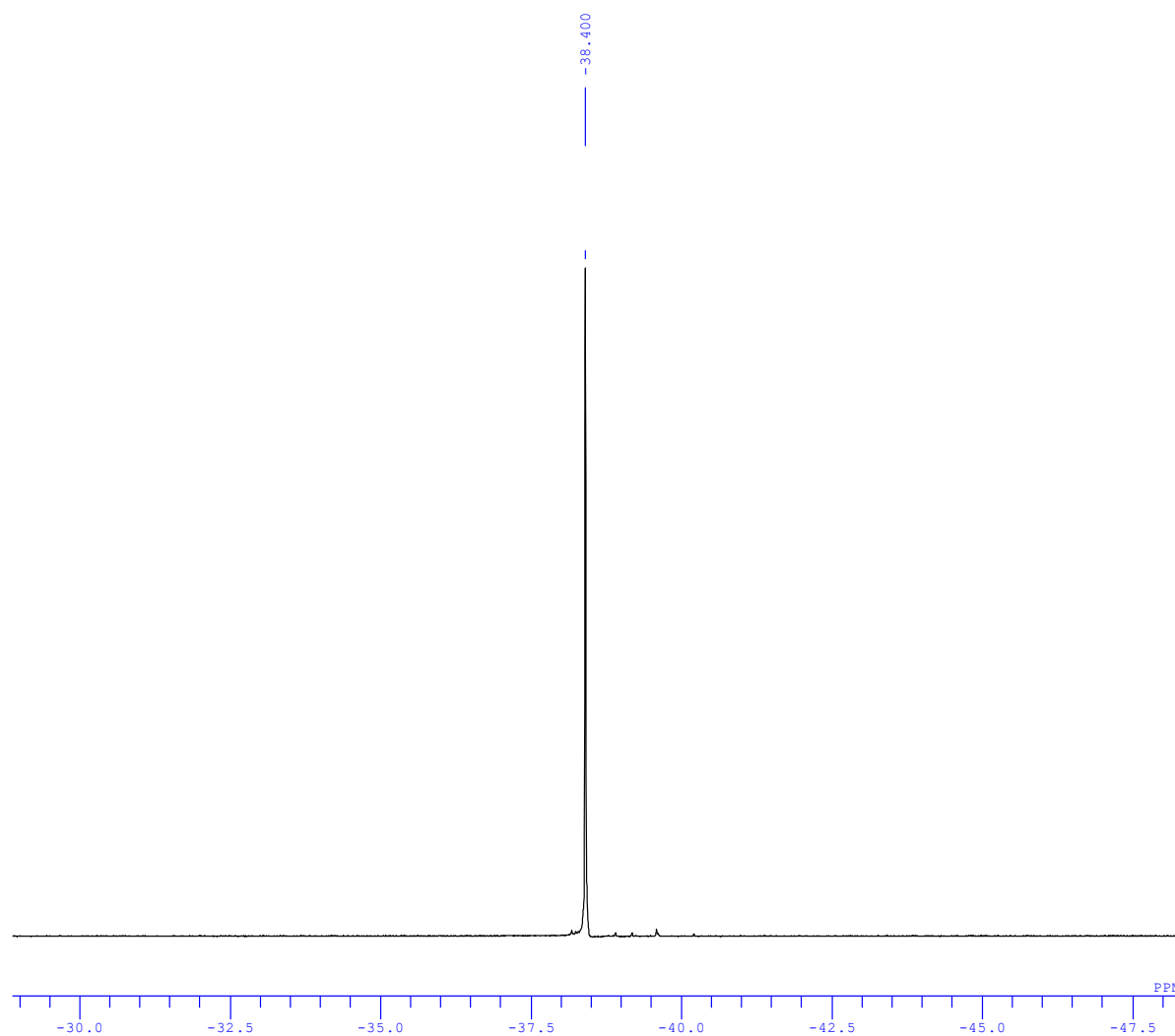
DFILE DY-m-vinyl(Ni)-CF32BCM*0W1, Y.als
COMNT DY-m-vinyl(Ni)-CF3
DATIM Tue Feb 17 08:31:23 2015
OBNUC ¹³C
EXMOD BCM
OBFRQ 75.45 MHz
OBSET 124.00 KHz
OBFIN 1840.00 Hz
POINT 32768
FREQU 20356.23 Hz
SCANS 11980
ACQTM 1.6097 sec
PD 1.3900 sec
FW1 4.30 usec
IRNUC 1H
CTEMP 25.2 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 1.20 Hz
RGAIN 23

¹³C-NMR (CDC13) δ :
143.17 (OH, s),
141.71 (OH, s),
141.22 (OH, s),
140.20 (OH, s),
139.67 (OH, s),
136.58 (OH, s),
136.25 (OH, s),
134.57 (OH, s),
133.16 (OH, s),
133.01 (OH, s),
132.57 (OH, s),
131.45 (OH, s),
131.36 (OH, q, J = 4.4 Hz),
127.47 (OH, q, J = 274.0 Hz),
127.20 (OH, s),
125.84 (OH, s),
118.81 (OH, s),
114.96 (OH, s),
106.90 (OH, s),
101.36 (OH, q, J = 31.7 Hz).



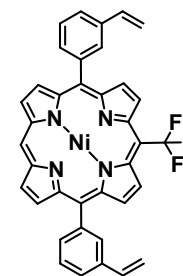
Ni-2d

¹⁹F NMR spectrum Ni-2d



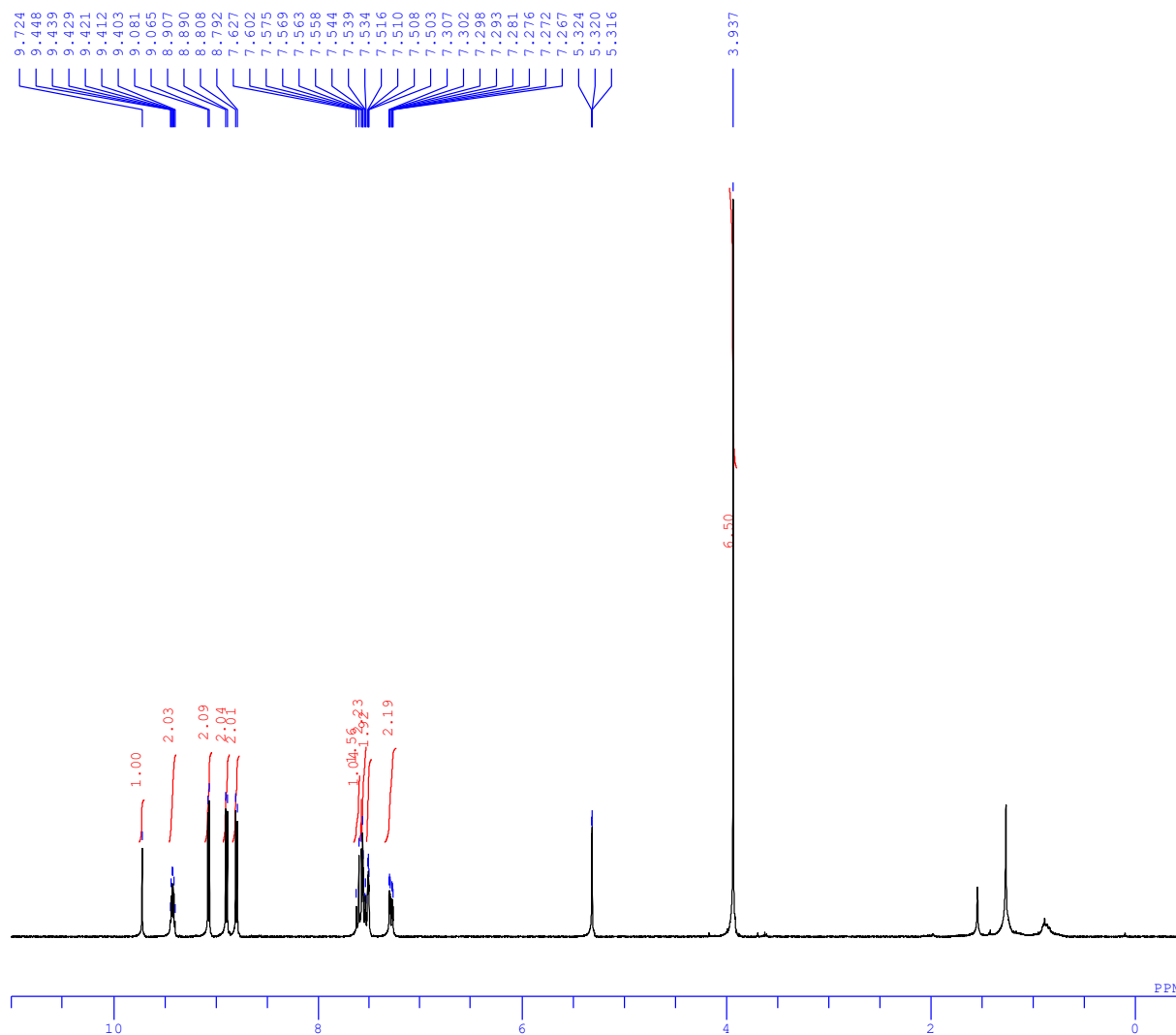
```
DFILE 19F(for paper).als
COMNT single_pulse
DATIM 2013-08-24 18:47:54
OBNUC 19F
EXMOD single_pulse.jxp
OBFRQ 376.15 MHz
OBSET 2.24 KHz
OBFIN 5.37 Hz
POINT 13107
FREQU 22624.44 Hz
SCANS 16
ACQTM 0.5793 sec
PD 5.0000 sec
PW1 3.76 usec
IRNUC 19F
CTEMP 23.0 c
SLVNT CDCL3
EXREF -38.40 ppm
BF 1.20 Hz
RGAIN 44
```

¹⁹F-NMR (CDCl₃) δ :
-38.40 (OH, s).



Ni-2d

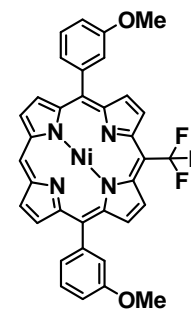
¹H NMR spectrum of Ni-2e



```

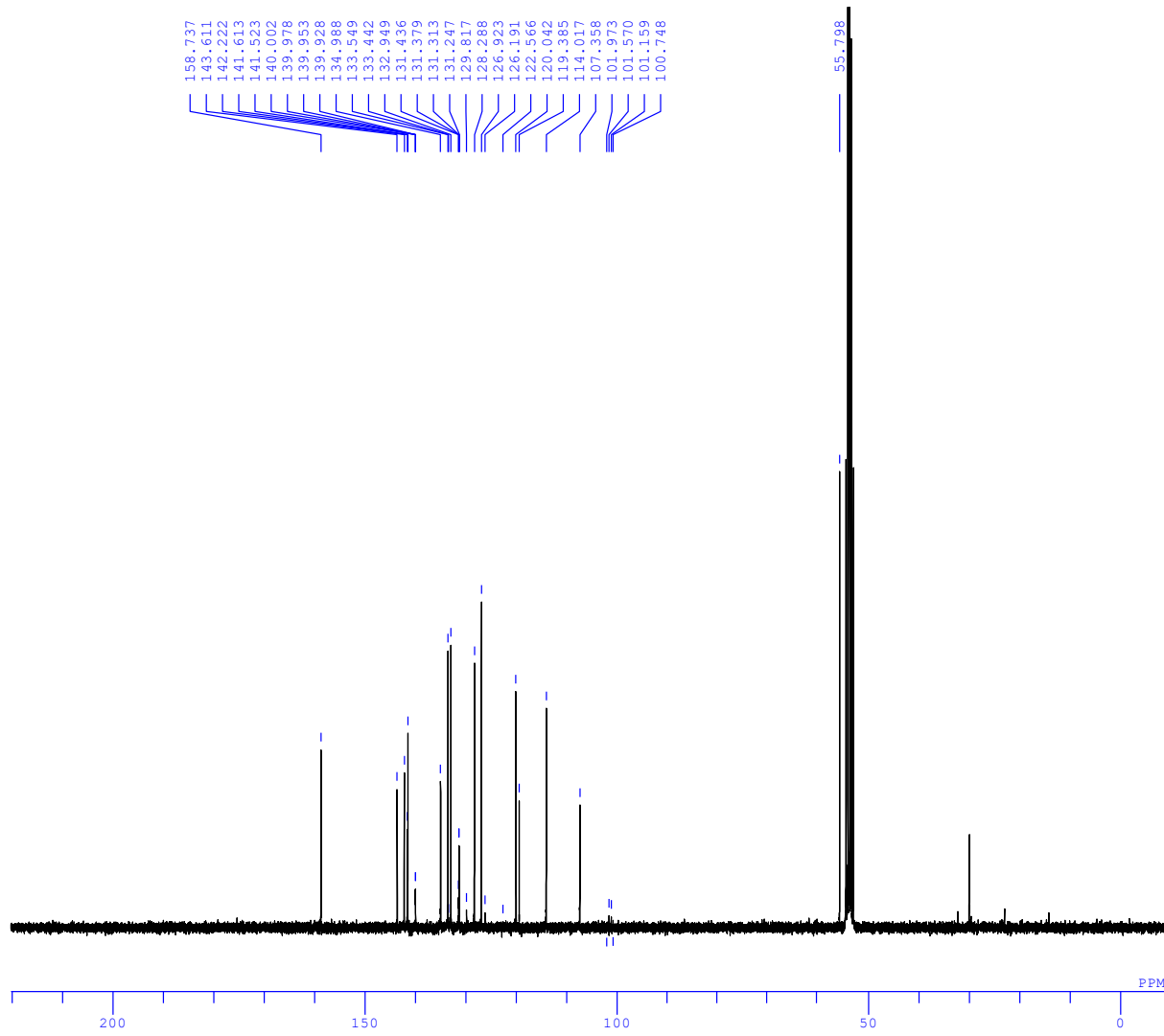
DFILE  DY-m-methoxy(Ni)-CF31NON•OW(for paper)
COMNT  DY-m-methoxy(Ni)-CF3
DATIM  Sat Sep 07 21:30:26 2013
OBNUC  1H
EXMOD  NON
OBFRQ  300.40 MHz
OBSET  130.00 KHz
OBFIN  1150.00 Hz
POINT  32768
FREQU  6006.01 Hz
SCANS  8
ACQTM  5.4559 sec
PD     1.5440 sec
PW1    5.30 usec
IRNUC  1H
CTEMP  26.9 c
SLVNT  CD2CL2
EXREF  5.32 ppm
BF     0.12 Hz
RGAIN  19
    
```

¹H-NMR (CD₂Cl₂) δ :
 9.72 (1H, s),
 9.43 (2H, dq, J = 5.3, 2.7 Hz),
 9.07 (2H, d, J = 4.8 Hz),
 8.90 (2H, d, J = 5.3 Hz),
 8.80 (2H, d, J = 4.8 Hz),
 7.63-7.50 (6H, m),
 7.30-7.27 (2H, m),
 3.94 (6H, s).



Ni-2e

¹³C NMR spectrum of Ni-2e

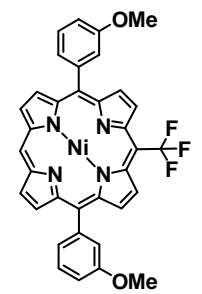


```

DFILE metoxy•OWI, Y(for paper).als
COMNT DY-m-methoxy(Ni)-CF3
DATIM Mon Sep 09 00:35:56 2013
OBNUC 13C
EXMOD BCM
OBFRQ 75.45 MHz
OBSET 124.00 KHz
OBFIN 1840.00 Hz
POINT 32768
FREQU 20356.23 Hz
SCANS 32500
ACQTM 1.6097 sec
PD 1.3900 sec
PW1 4.30 usec
IRNUC 1H
CTEMP 25.3 c
SLVNT CD2CL2
EXREF 53.80 ppm
BF 0.12 Hz
RGAIN 24
    
```

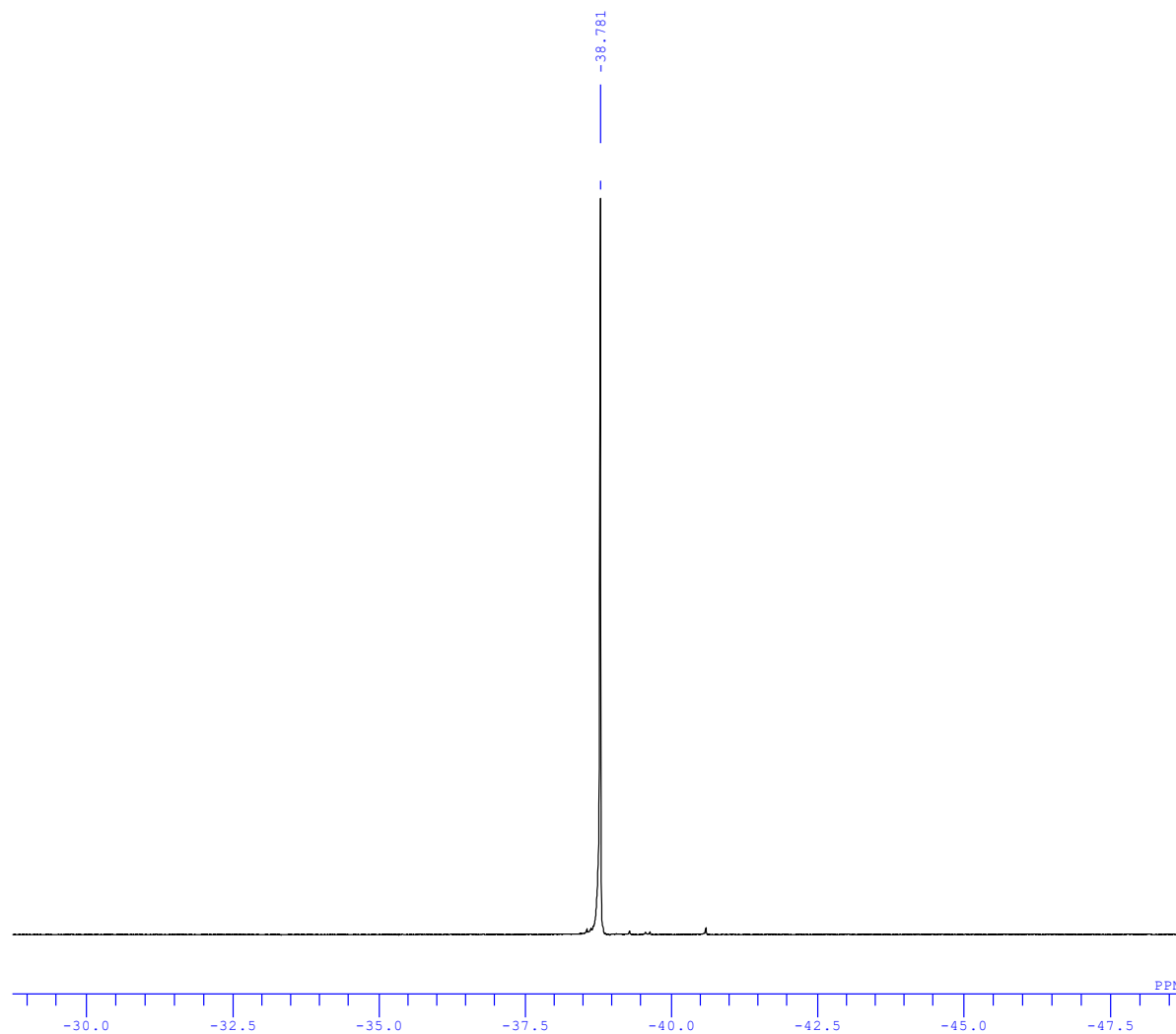
```

13C-NMR (CD2Cl2) δ :
158.74 (OH, s),
143.61 (OH, s),
142.22 (OH, s),
141.61 (OH, s),
141.52 (OH, s),
139.97 (OH, q, J = 1.9 Hz),
134.99 (OH, s),
133.55 (OH, s),
132.95 (OH, s),
131.34 (OH, q, J = 4.8 Hz),
128.29 (OH, s),
128.00 (OH, q, J = 274.0 Hz),
126.92 (OH, s),
120.04 (OH, s),
119.38 (OH, s),
114.02 (OH, s),
107.36 (OH, s),
101.36 (OH, q, J = 31.1 Hz),
55.80 (OH, s).
    
```



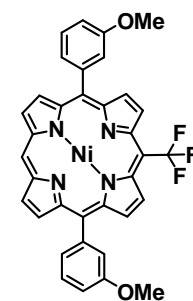
Ni-2e

¹⁹F NMR spectrum Ni-2e



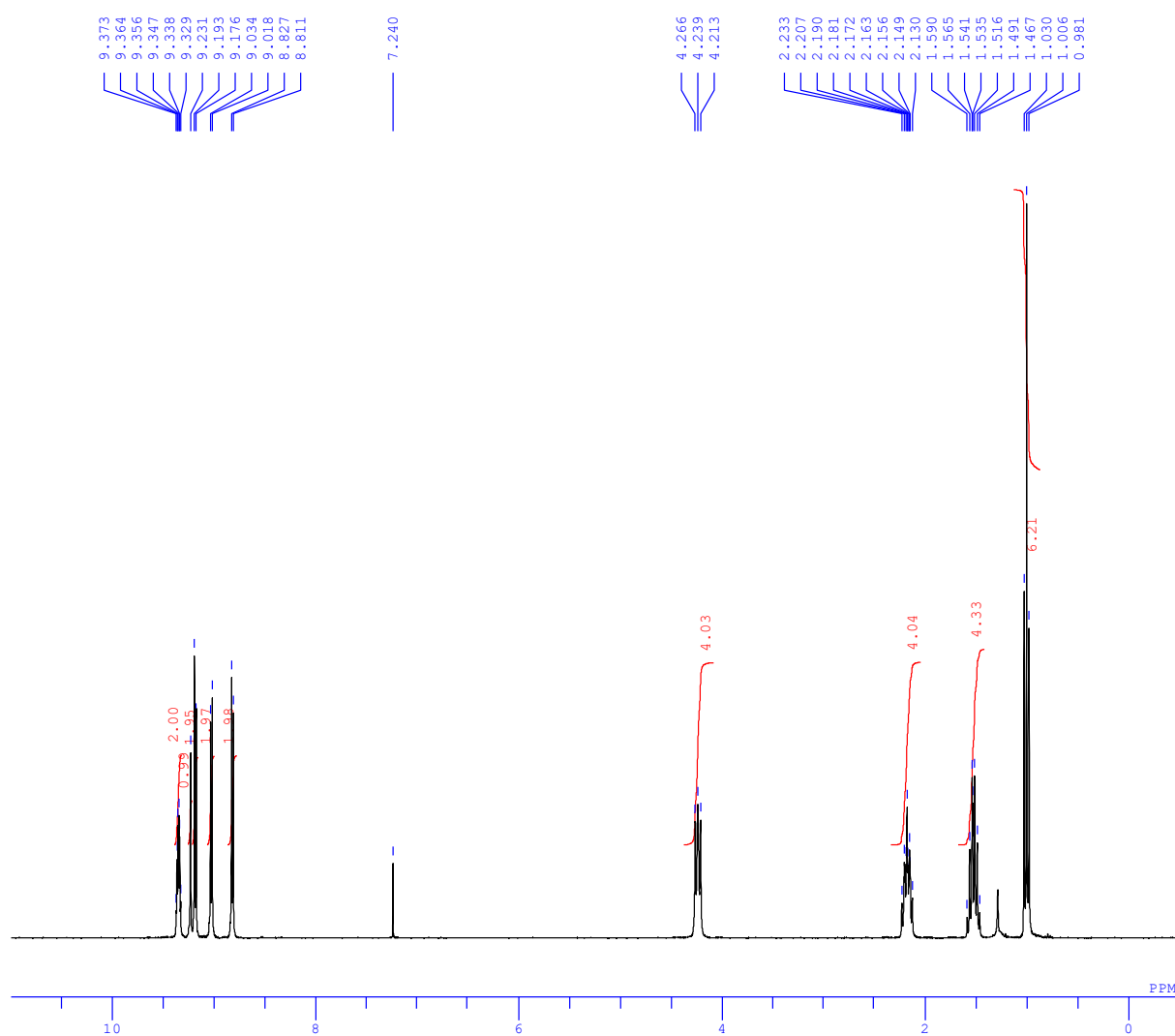
```
DFILE DY-OMe(Ni)-CF3_E19F.OMT,(for paper).a
COMNT single_pulse
DATIM 2013-10-01 14:32:43
OBNUC 19F
EXMOD single_pulse.jxp
OBFRQ 376.15 MHz
OBSET 7.51 KHz
OBFIN 1.77 Hz
POINT 13107
FREQU 18867.93 Hz
SCANS 16
ACQTM 0.6947 sec
PD 5.0000 sec
PW1 3.76 usec
IRNUC 19F
CTEMP 21.5 c
SLVNT CDCL3
EXREF -38.80 ppm
BF 1.20 Hz
RGAIN 50
```

¹⁹F-NMR (CDCl₃) δ :
-38.78 (OH, s).



Ni-2e

¹H NMR spectrum of Ni-2f

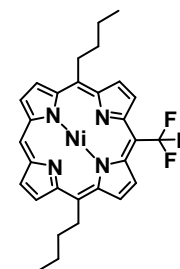


```

DFILE  DY-n-Bu(Ni)-CF31NON_E1•OMI, Y (for paper
COMNT  DY-n-Bu(Ni)-CF3
DATIM  Thu Feb 12 22:09:17 2015
OBNUC  1H
EXMOD  NON
OBFREQ 300.40 MHz
OBSETE 130.00 KHz
OBFIN  1150.00 Hz
POINT  32768
FREQU  6006.01 Hz
SCANS  8
ACQTM  5.4559 sec
PD      1.5440 sec
PW1     5.30 usec
IRNUC  1H
CTEMP  25.5 c
SLVNT  CDCL3
EXREF  7.24 ppm
BF      0.12 Hz
RGAIN  15
    
```

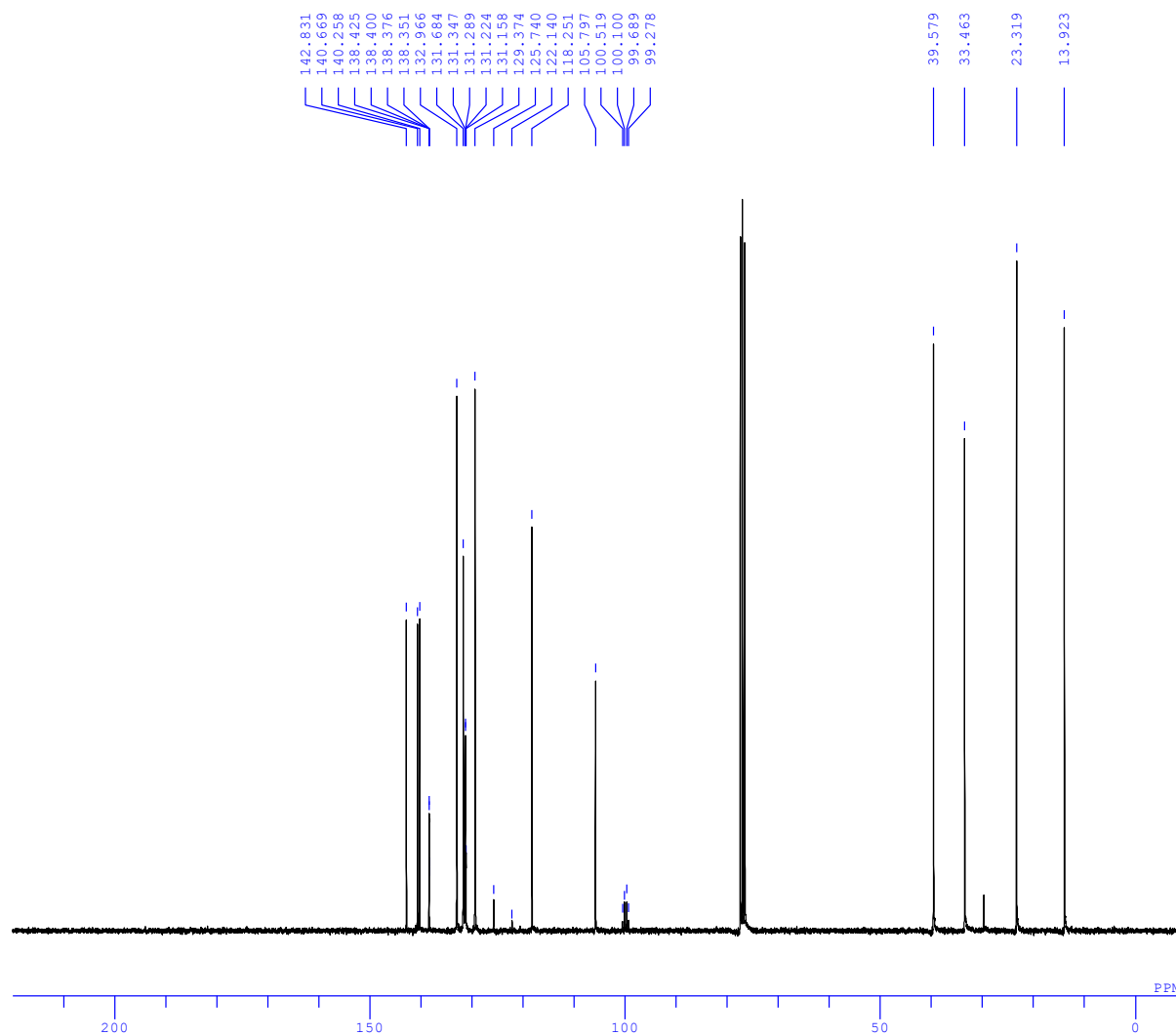
¹H-NMR (CDCl₃) δ :

- 9.35 (2H, dq, J = 5.2, 2.6 Hz),
- 9.23 (1H, s),
- 9.18 (2H, d, J = 5.1 Hz),
- 9.03 (2H, d, J = 4.8 Hz),
- 8.82 (2H, d, J = 4.8 Hz),
- 4.24 (4H, t, J = 8.1 Hz),
- 2.23-2.13 (4H, m),
- 1.59-1.47 (4H, m),
- 1.01 (6H, t, J = 7.3 Hz).



Ni-2f

¹³C NMR spectrum of Ni-2f

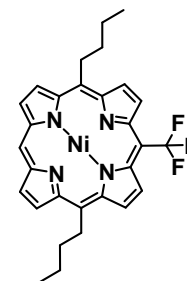


```

DFILE DY-n-Bu(Ni)-CF32BCM-0W1,Y (for paper) .a
COMNT DY-n-Bu(Ni)-CF3
DATIM Fri Feb 13 08:09:50 2015
OBNUC 13C
EXMOD BCM
OBFRQ 75.45 MHz
OBSET 124.00 KHz
OBFIN 1840.00 Hz
POINT 32768
FREQU 20356.23 Hz
SCANS 12000
ACQTM 1.6097 sec
PD 1.3900 sec
PWL 4.30 usec
IRNUC 1H
CTEMP 25.1 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 1.20 Hz
RGAIN 24
    
```

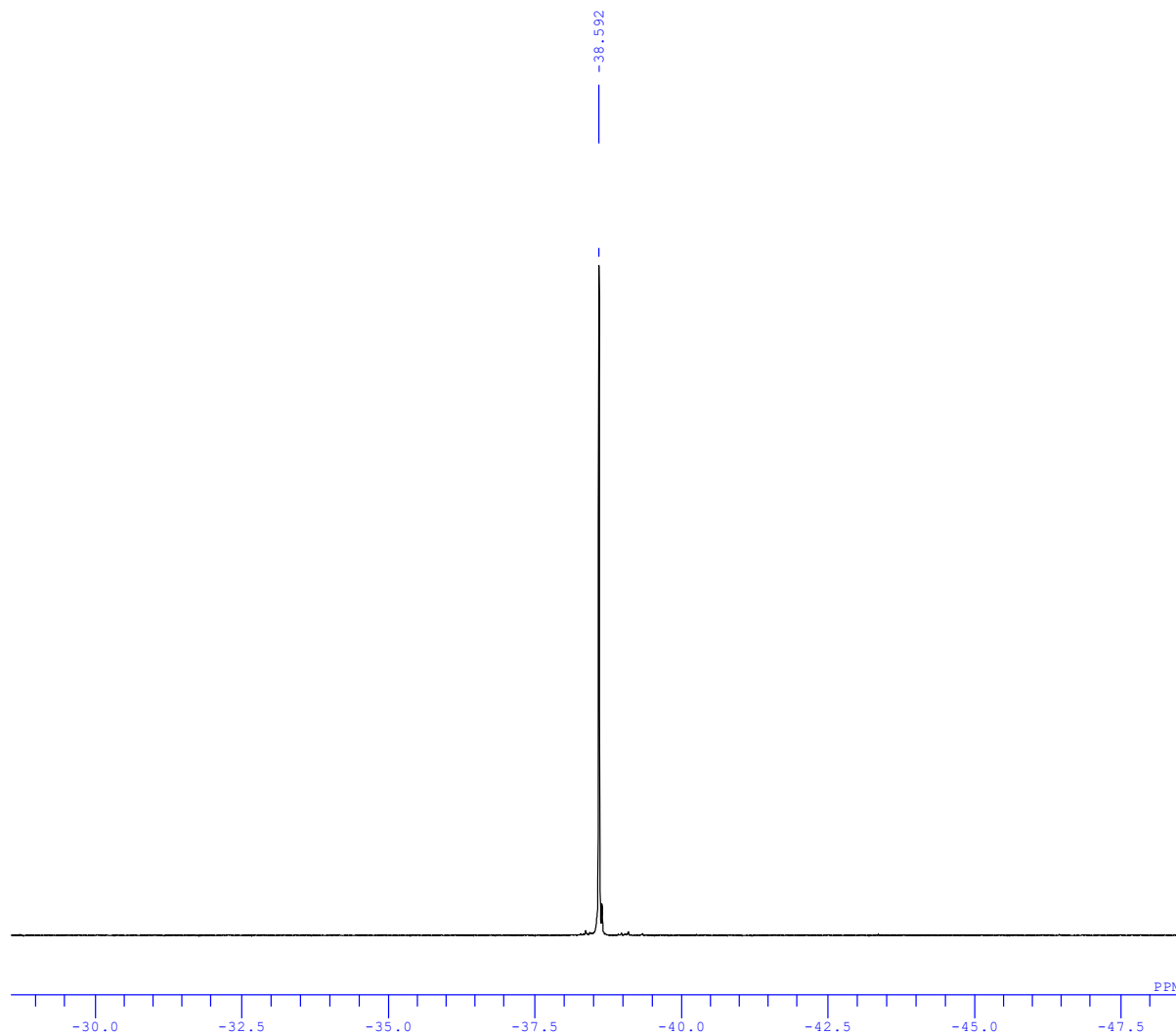
```

13C-NMR (CDC13) δ :
142.83 (OH, s),
140.67 (OH, s),
140.26 (OH, s),
138.39 (OH, q, J = 1.9 Hz),
132.97 (OH, s),
131.68 (OH, s),
131.25 (OH, q, J = 4.8 Hz),
129.37 (OH, s),
127.56 (OH, q, J = 274.6 Hz),
118.25 (OH, s),
105.80 (OH, s),
99.90 (OH, q, J = 31.3 Hz),
39.58 (OH, s),
33.46 (OH, s),
23.32 (OH, s),
13.92 (OH, s).
    
```



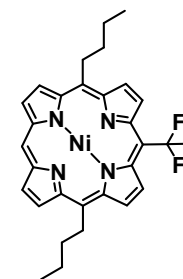
Ni-2f

¹⁹F NMR spectrum Ni-2f



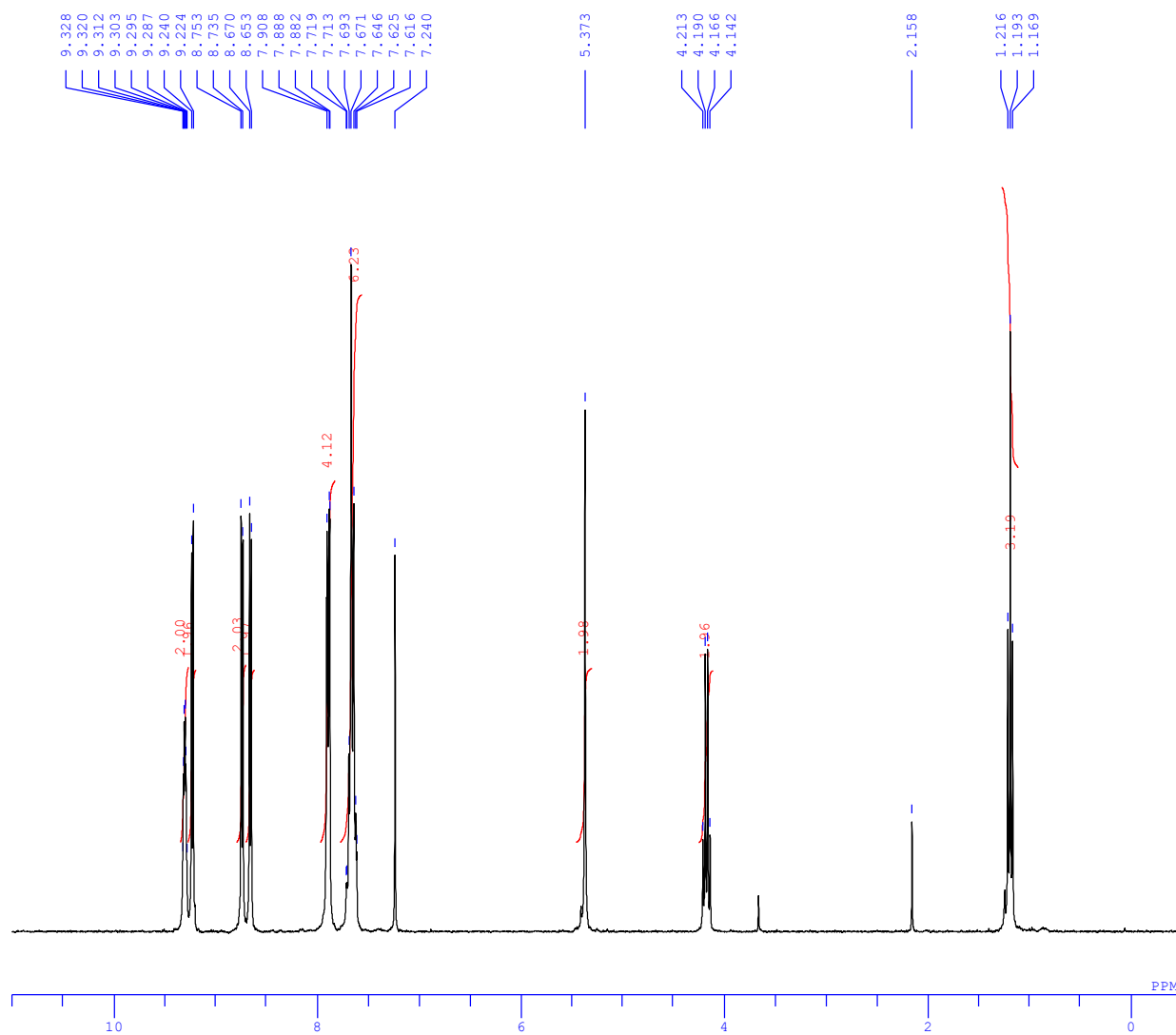
```
DFILE DY-n-Bu(Ni)-CF3_E19F •ÖWI, Y.als
COMNT single_pulse
DATIM 2013-10-01 14:15:07
QBNUC 19F
EXMOD single_pulse.jxp
OBFRQ 376.15 MHz
OBSET 6.00 KHz
OBFIN 7.08 Hz
POINT 13107
FREQU 18867.93 Hz
SCANS 16
ACQTM 0.6947 sec
PD 5.0000 sec
PWL 3.76 usec
IRNUC 19F
CTEMP 21.4 c
SLVNT CDCL3
EXREF -38.60 ppm
BF 1.20 Hz
RGAIN 50
```

¹⁹F-NMR (CDCl₃) δ :
-38.59 (OH, s).



Ni-2f

¹H NMR spectrum of Ni-2g

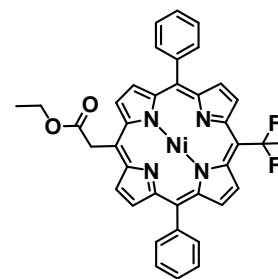


```

DFILE EtCO2CH2-DPP(Ni)-CF31NON•0W1,Ý(for pap
COMNT EtCO2CH2-DPP(Ni)-CF3
DATIM Sat Sep 27 23:29:59 2014
OBNUC 1H
EXMOD NON
OBFRQ 300.40 MHz
OBSET 130.00 KHz
OBFIN 1150.00 Hz
POINT 32768
FREQU 6006.01 Hz
SCANS 8
ACQTM 5.4559 sec
PD 1.5440 sec
PW1 5.30 usec
IRNUC 1H
CTEMP 26.1 c
SLVNT CDCL3
EXREF 7.24 ppm
BF 1.20 Hz
RGAIN 20
    
```

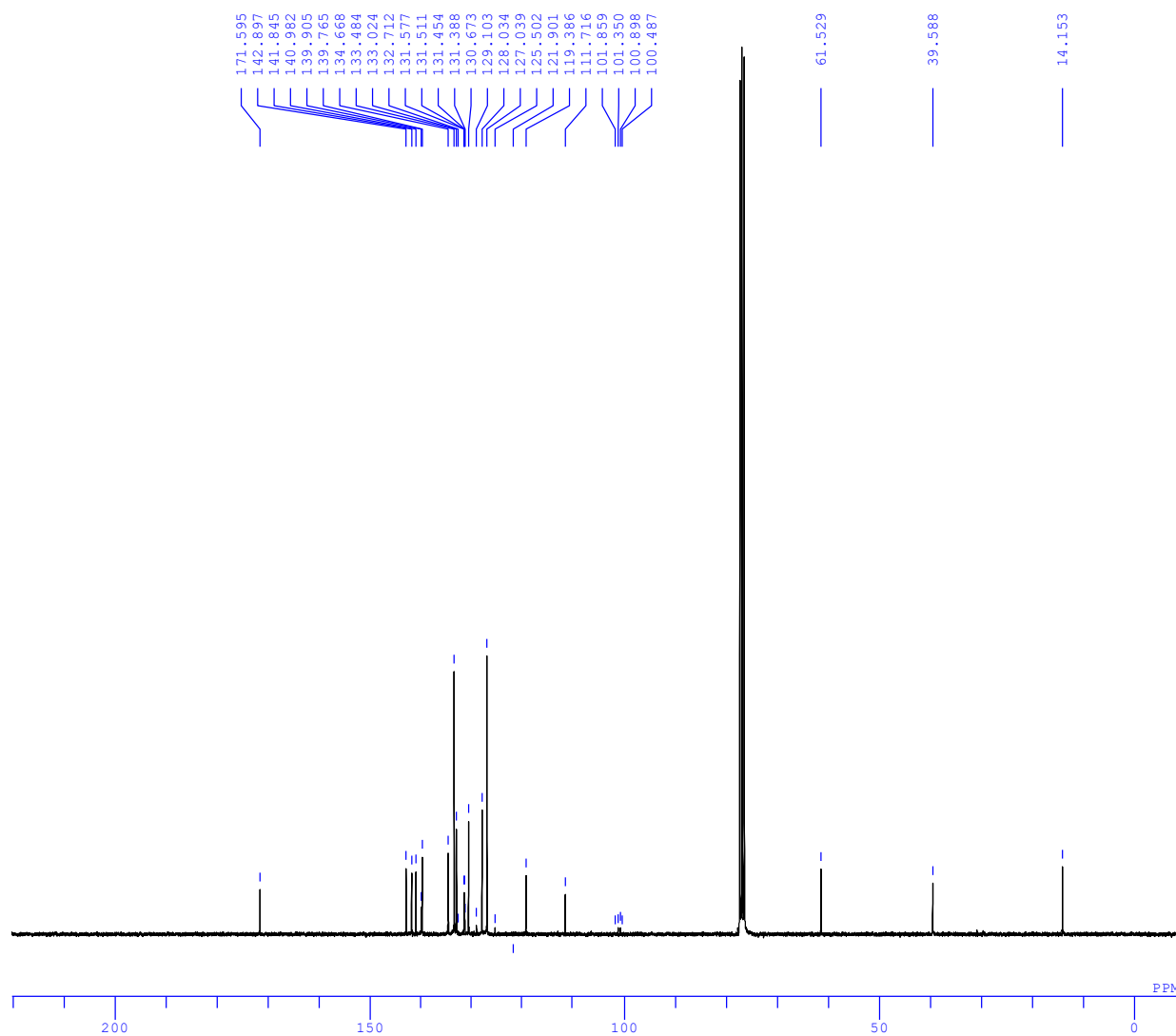
¹H-NMR (CDCl₃) δ :

- 9.31 (2H, dq, J = 4.9, 2.4 Hz),
- 9.23 (2H, d, J = 4.9 Hz),
- 8.74 (2H, d, J = 5.1 Hz),
- 8.66 (2H, d, J = 5.1 Hz),
- 7.90–7.89 (4H, m),
- 7.72–7.62 (6H, m),
- 5.37 (2H, s),
- 4.18 (2H, q, J = 7.1 Hz),
- 1.19 (3H, t, J = 7.1 Hz).



Ni-2g

¹³C NMR spectrum of Ni-2g

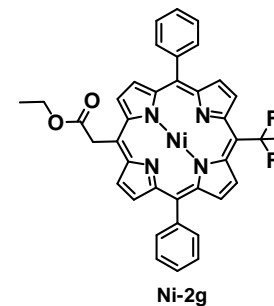


```

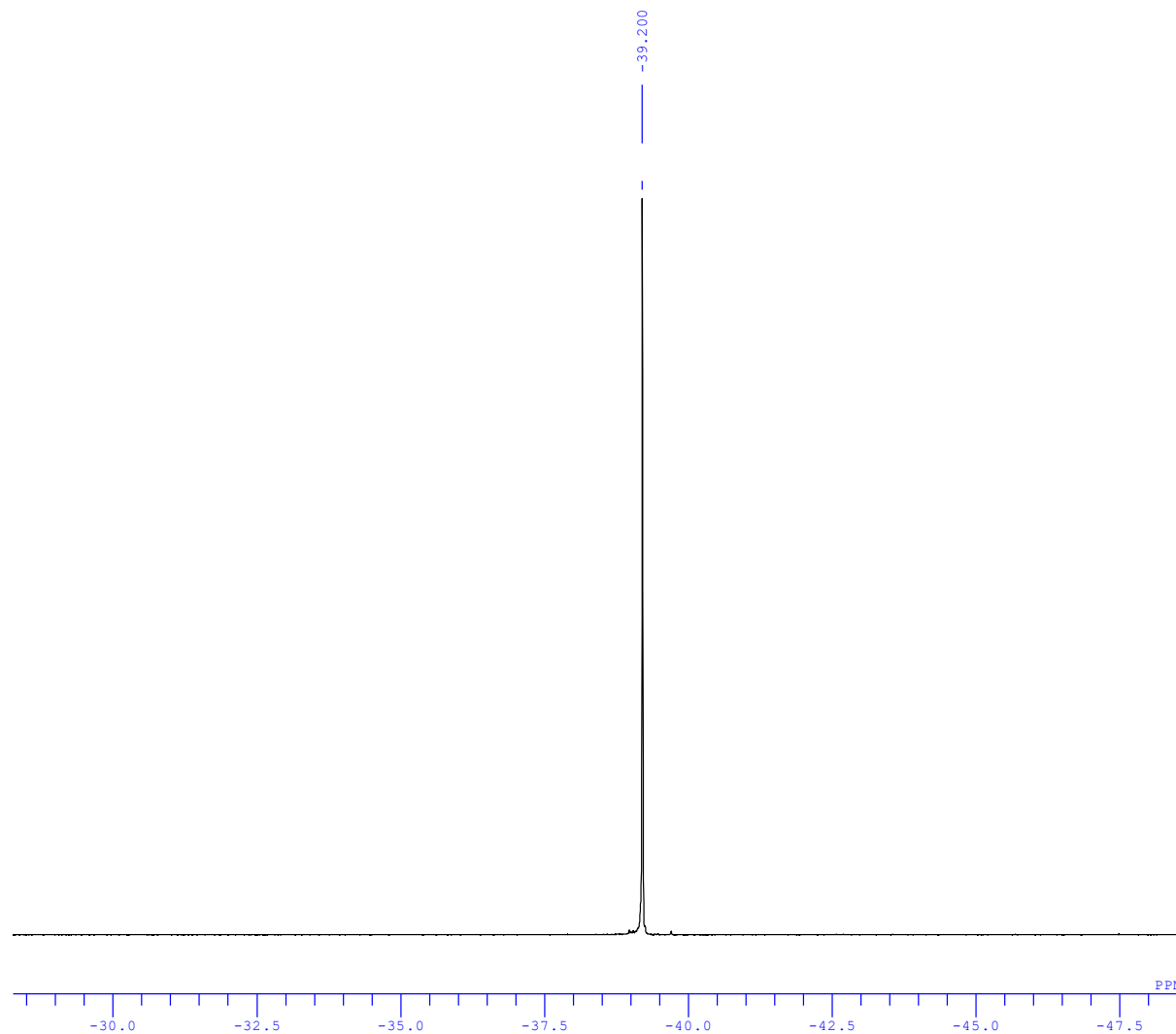
DFILE EtCO2CH2-DPP(Ni)-CF32BCM•0W1, Y(for pap
COMNT EtCO2CH2-DPP(Ni)-CF3
DATIM Mon Sep 29 08:20:25 2014
OBNUC 13C
EXMOD BCM
OBFREQ 75.45 MHz
OBSET 124.00 KHz
OBFIN 1840.00 Hz
POINT 32768
FREQU 20356.23 Hz
SCANS 39400
ACQTM 1.6097 sec
PD 1.3900 sec
PW1 4.30 usec
IRNUC 1H
CTEMP 24.1 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 1.20 Hz
RGAIN 25
    
```

¹³C-NMR (CDC13) δ :

- 171.60 (OH, s),
- 142.90 (OH, s),
- 141.84 (OH, s),
- 140.98 (OH, s),
- 139.90 (OH, s),
- 139.76 (OH, s),
- 134.67 (OH, s),
- 133.48 (OH, s),
- 133.02 (OH, s),
- 131.48 (OH, q, J = 4.8 Hz),
- 130.67 (OH, s),
- 128.03 (OH, s),
- 127.30 (OH, q, J = 272.1 Hz),
- 127.04 (OH, s),
- 119.39 (OH, s),
- 111.72 (OH, s),
- 101.12 (OH, q, J = 34.2 Hz),
- 61.53 (OH, s),
- 39.59 (OH, s),
- 14.15 (OH, s).

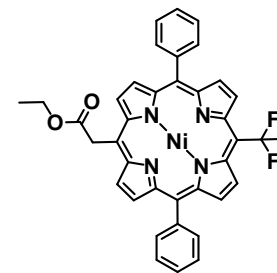


¹⁹F NMR spectrum Ni-2g



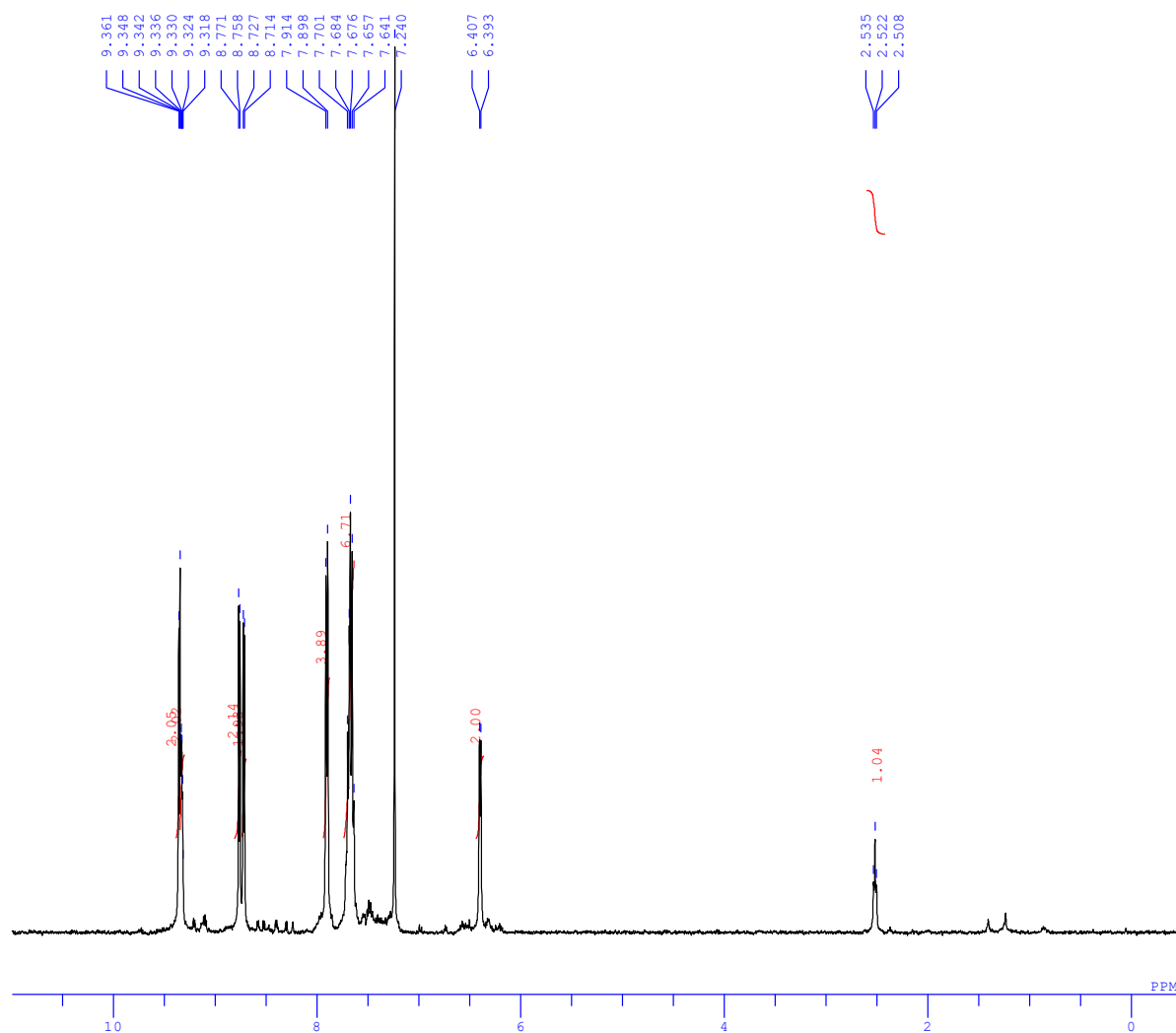
```
DFILE DY-EtCO2CH2-DPP(Ni)-CF3_E19F-2-1•OMT.Y
COMNT single_pulse
DATIM 2014-09-29 14:15:52
OBNUC 19F
EXMOD single_pulse.jxp
OBFRQ 376.15 MHz
OBSET 6.38 KHz
OBFIN 3.25 Hz
POINT 13107
FREQU 15060.24 Hz
SCANS 16
ACQTM 0.8703 sec
PD 5.0000 sec
PW1 3.76 usec
IRNUC 19F
CTEMP 22.9 c
SLVNT CDCL3
EXREF -39.20 ppm
BF 1.20 Hz
RGAIN 48
```

¹⁹F-NMR (CDCl₃) δ:
-39.20 (OH, s).



Ni-2g

¹H NMR spectrum of Ni-2h

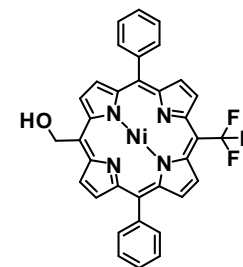


```

DFILE DY-HOCH2-DPP(Ni)-CF31NON-OWM, Y(for pap
COMNT DY-HOCH2-DPP(Ni)-CF3
DATIM Sat Oct 04 15:59:42 2014
OBNUC 1H
EXMOD NON
OBFRQ 399.65 MHz
OBSET 124.00 KHz
OBFIN 10500.00 Hz
POINT 16384
FREQU 7992.01 Hz
SCANS 8
ACQTM 2.0500 sec
PD 4.9500 sec
PW1 5.80 usec
IRNUC 1H
CTEMP 23.5 c
SLVNT CDCL3
EXREF 7.24 ppm
BF 1.20 Hz
RGAIN 23
    
```

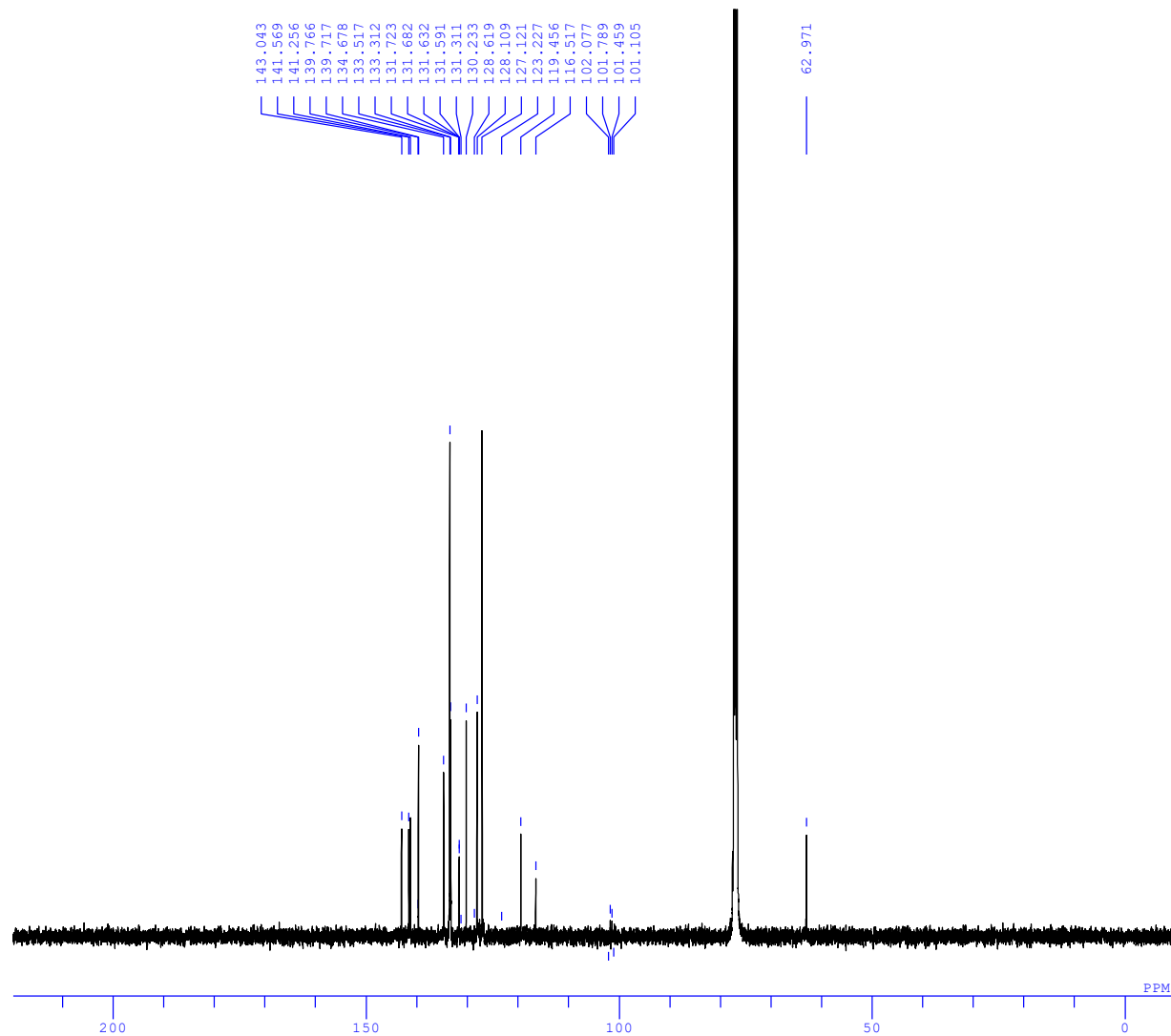
¹H-NMR (CDCl₃) δ :

- 9.35 (2H, d, J = 4.9 Hz),
- 9.33 (2H, dq, J = 4.9, 2.4 Hz),
- 8.76 (2H, d, J = 5.4 Hz),
- 8.72 (2H, d, J = 5.4 Hz),
- 7.91-7.90 (4H, m),
- 7.70-7.64 (6H, m),
- 6.40 (2H, d, J = 5.4 Hz),
- 2.52 (1H, t, J = 5.4 Hz).



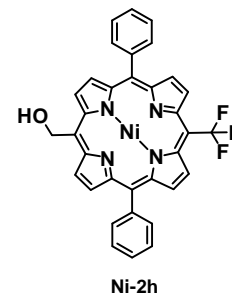
Ni-2h

¹³C NMR spectrum of Ni-2h

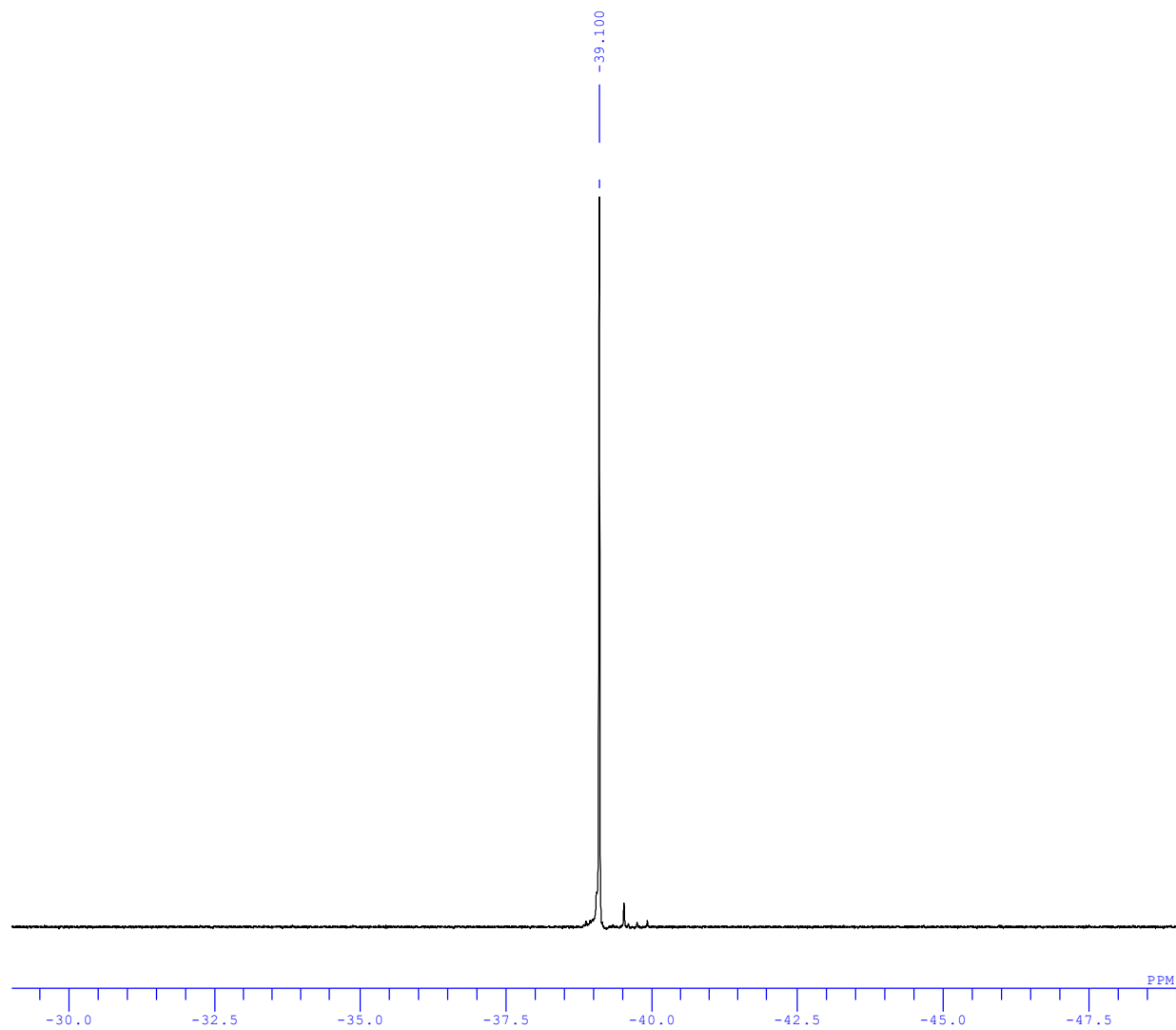


DFILE DY-HOCH2-DPP(Ni)-CF32BCM•OH, Y(for pap
COMNT DY-HOCH2-DPP(Ni)-CF3
DATIM Mon Oct 06 08:00:35 2014
OBNUC 13C
EXMOD BCM
OBFRO 100.40 MHz
OBSET 125.00 KHz
OBFIN 10500.00 Hz
POINT 32768
FREQU 27118.64 Hz
SCANS 48000
ACQTM 1.2083 sec
PD 1.7920 sec
PW1 6.00 usec
IRNUC 1H
CTEMP 23.9 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 1.20 Hz
RGAIN 25

¹³C-NMR (CDCl₃) δ :
143.04 (OH, s),
141.57 (OH, s),
141.26 (OH, s),
139.77 (OH, s),
139.72 (OH, s),
134.68 (OH, s),
133.52 (OH, s),
133.31 (OH, s),
131.66 (OH, q, J = 4.4 Hz),
130.23 (OH, s),
128.11 (OH, s),
127.27 (OH, q, J = 271.5 Hz),
127.12 (OH, s),
119.46 (OH, s),
116.52 (OH, s),
101.62 (OH, q, J = 33.1 Hz),
62.97 (OH, s).

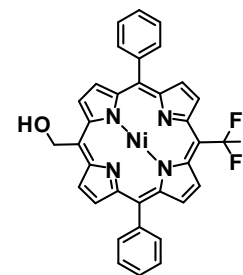


¹⁹F NMR spectrum Ni-2h



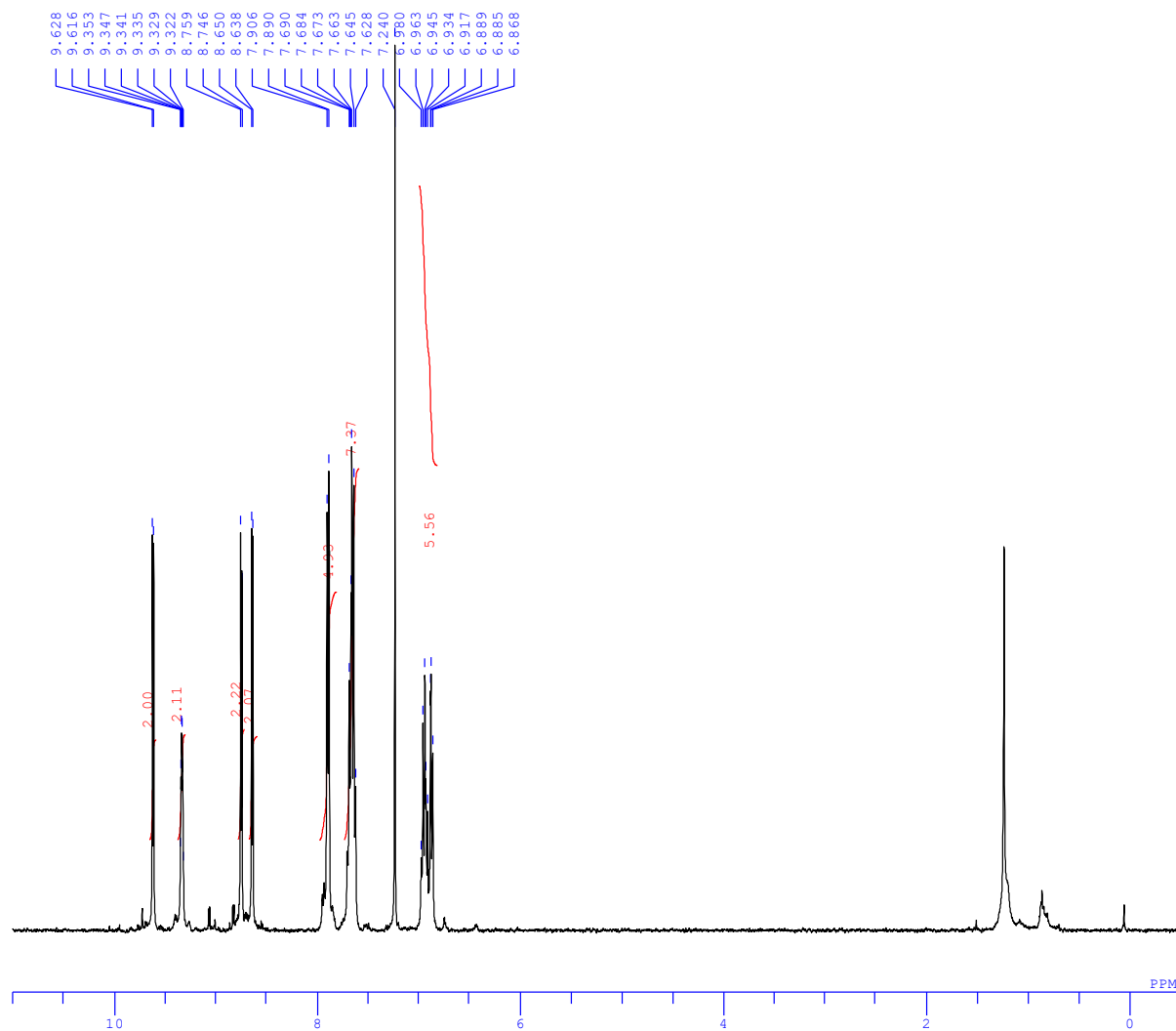
```
DFILE DY-HOCH2-DPP(Ni)-CF3_E19F•ÖWÜ,Ý(for pa
COMNT single_pulse
DATIM 2014-10-07 10:47:50
OBNUC 19F
EXMOD single_pulse.jxp
OBFREQ 376.15 MHz
OBSSET 6.38 KHz
OBFIN 3.25 Hz
POINT 13107
FREQU 7530.12 Hz
SCANS 16
ACQTM 1.7406 sec
PD 5.0000 sec
PW1 3.76 usec
IRNUC 19F
CTEMP 21.4 c
SLVNT CDCL3
EXREF -39.10 ppm
BF 1.20 Hz
RGAIN 54
```

¹⁹F-NMR (CDCl₃) δ :
-39.10 (OH, s).



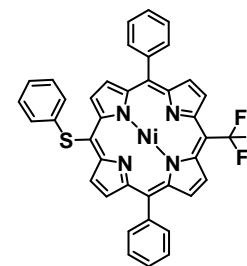
Ni-2h

¹H NMR spectrum of Ni-2i



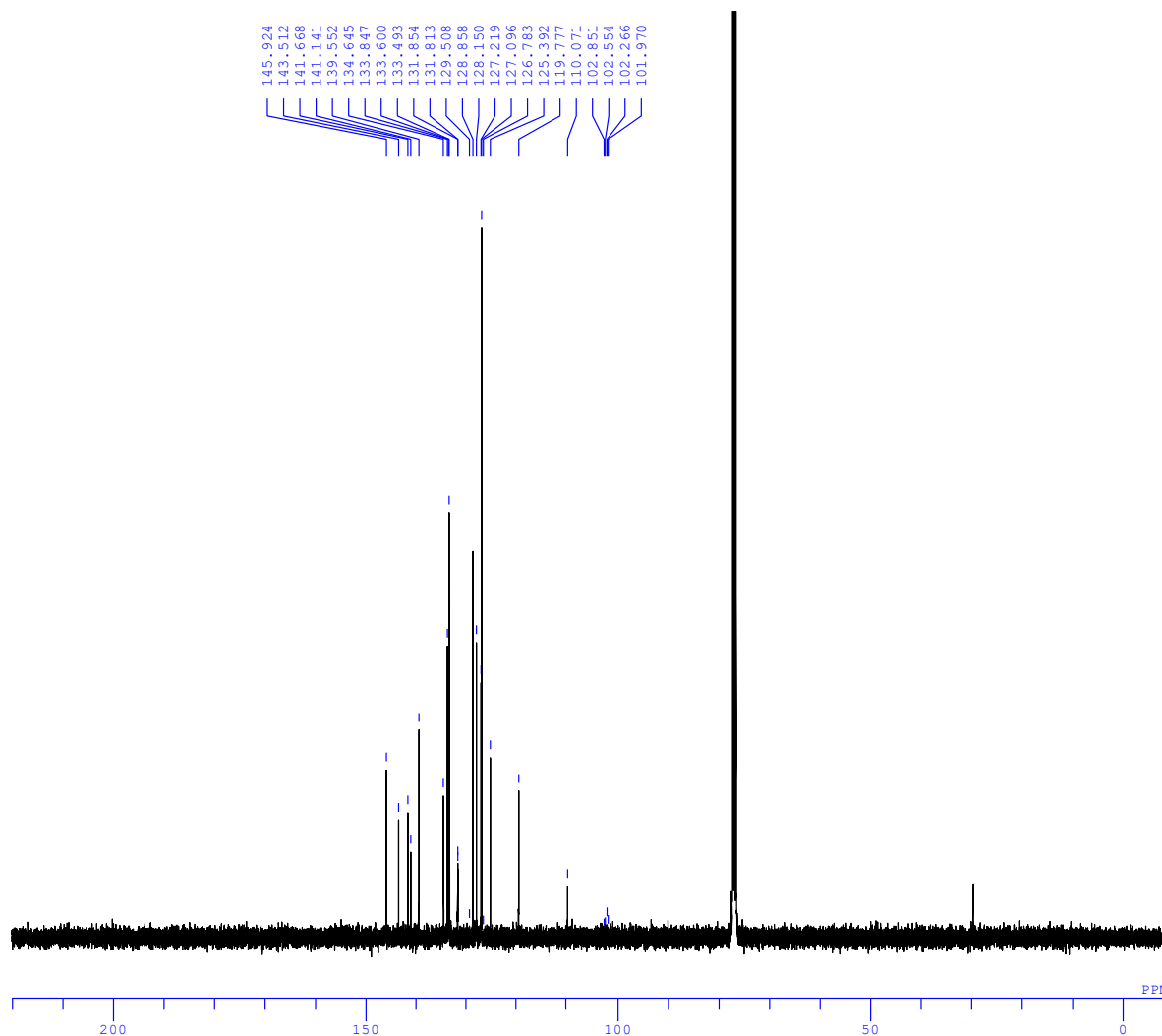
```
DFILE DY-11-27-Phs-DPP(Ni)-CF31NON-0W1, Y (for
COMNT DY-11-27-Phs-DPP(Ni)-CF3
DATIM Sat Sep 27 20:35:03 2014
OBNUC 1H
EXMOD NON
OBFRQ 399.65 MHz
OBSET 124.00 KHz
OBFIN 10500.00 Hz
POINT 16384
FREQU 7992.01 Hz
SCANS 8
ACQTM 2.0500 sec
PD 4.9500 sec
PWL 5.80 usec
IRNUC 1H
CTEMP 23.4 c
SLVNT CDCL3
EXREF 7.24 ppm
BF 1.20 Hz
RGAIN 23
```

¹H-NMR (CDCl₃) δ :
9.62 (2H, d, J = 4.9 Hz),
9.34 (2H, dq, J = 5.0, 2.5 Hz),
8.75 (2H, d, J = 4.9 Hz),
8.64 (2H, d, J = 4.9 Hz),
7.91-7.89 (4H, m),
7.68-7.64 (6H, m),
6.96-6.89 (5H, m).



Ni-2i

¹³C NMR spectrum of Ni-2i

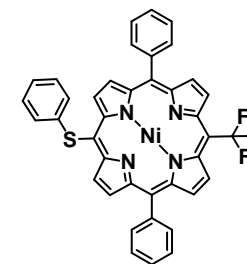


```

DFILE DY-11-27-Phs-DPP(Ni)-CF32BCM_E1.0W11.Y(
COMNT DY-11-27-Phs-DPP(Ni)-CF3
DATIM Mon Sep 29 09:15:54 2014
OBNUC 13C
EXMOD BCM
OBFRQ 100.40 MHz
OBSET 125.00 KHz
OBFIN 10500.00 Hz
POINT 32768
FREQU 27118.64 Hz
SCANS 44000
ACQTM 1.2083 sec
PD 1.7920 sec
PW1 6.00 usec
IRNUC 1H
CTEMP 24.3 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 25
    
```

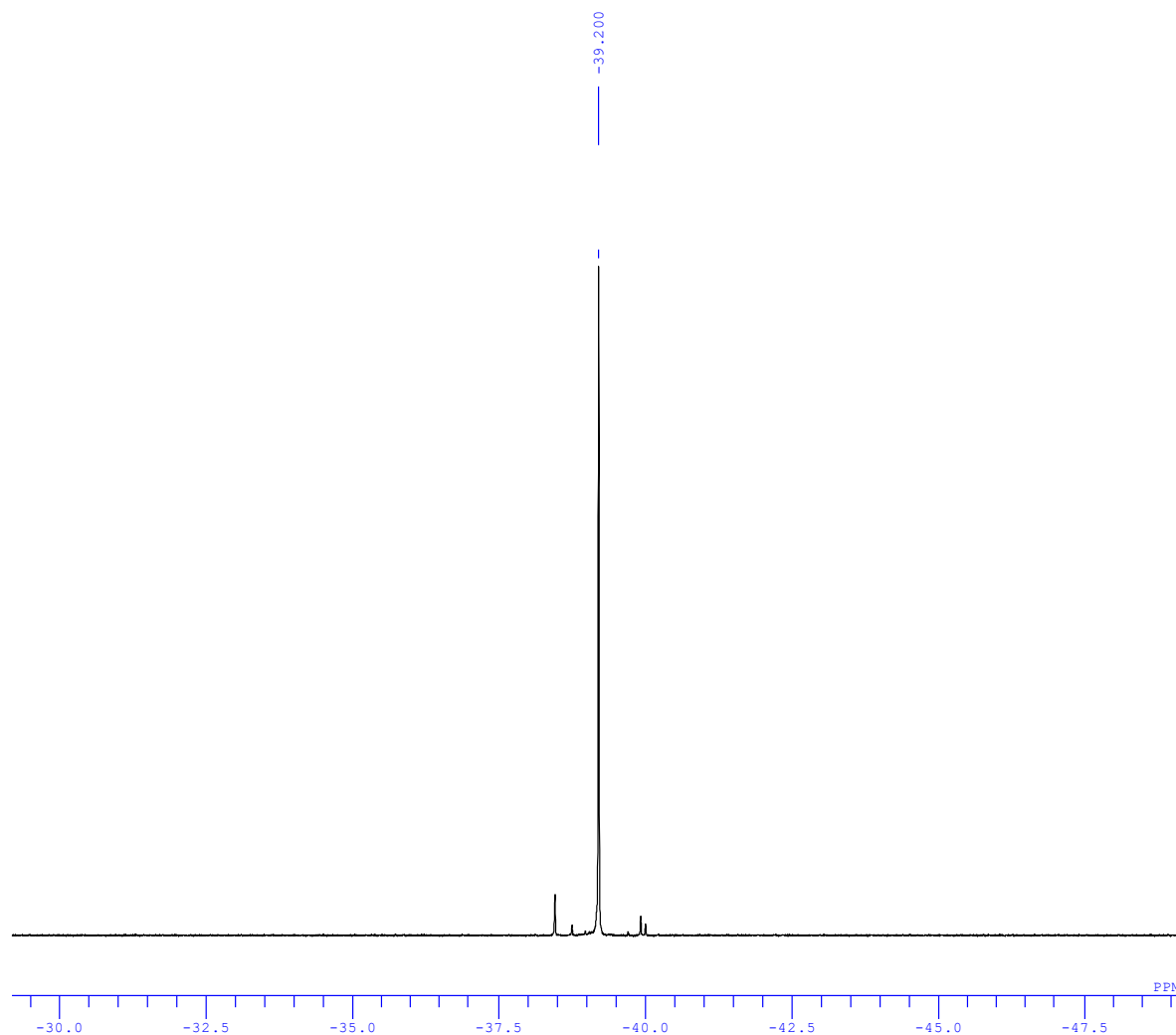
```

13C-NMR (CDCl3) δ :
145.92 (OH, s),
143.51 (OH, s),
141.67 (OH, s),
141.14 (OH, s),
139.55 (OH, s),
134.65 (OH, s),
133.85 (OH, s),
133.60 (OH, s),
133.49 (OH, s),
131.83 (OH, q, J = 4.1 Hz),
128.85 (OH, s),
128.15 (OH, s),
128.15 (OH, q, J = 273.9 Hz),
127.22 (OH, s),
127.10 (OH, s),
127.05 (OH, s),
125.39 (OH, s),
119.78 (OH, s),
110.07 (OH, s),
102.41 (OH, q, J = 29.0 Hz).
    
```



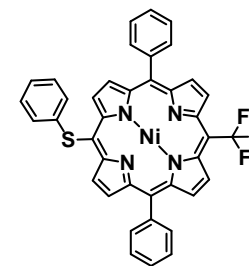
Ni-2i

¹⁹F NMR spectrum of Ni-2i



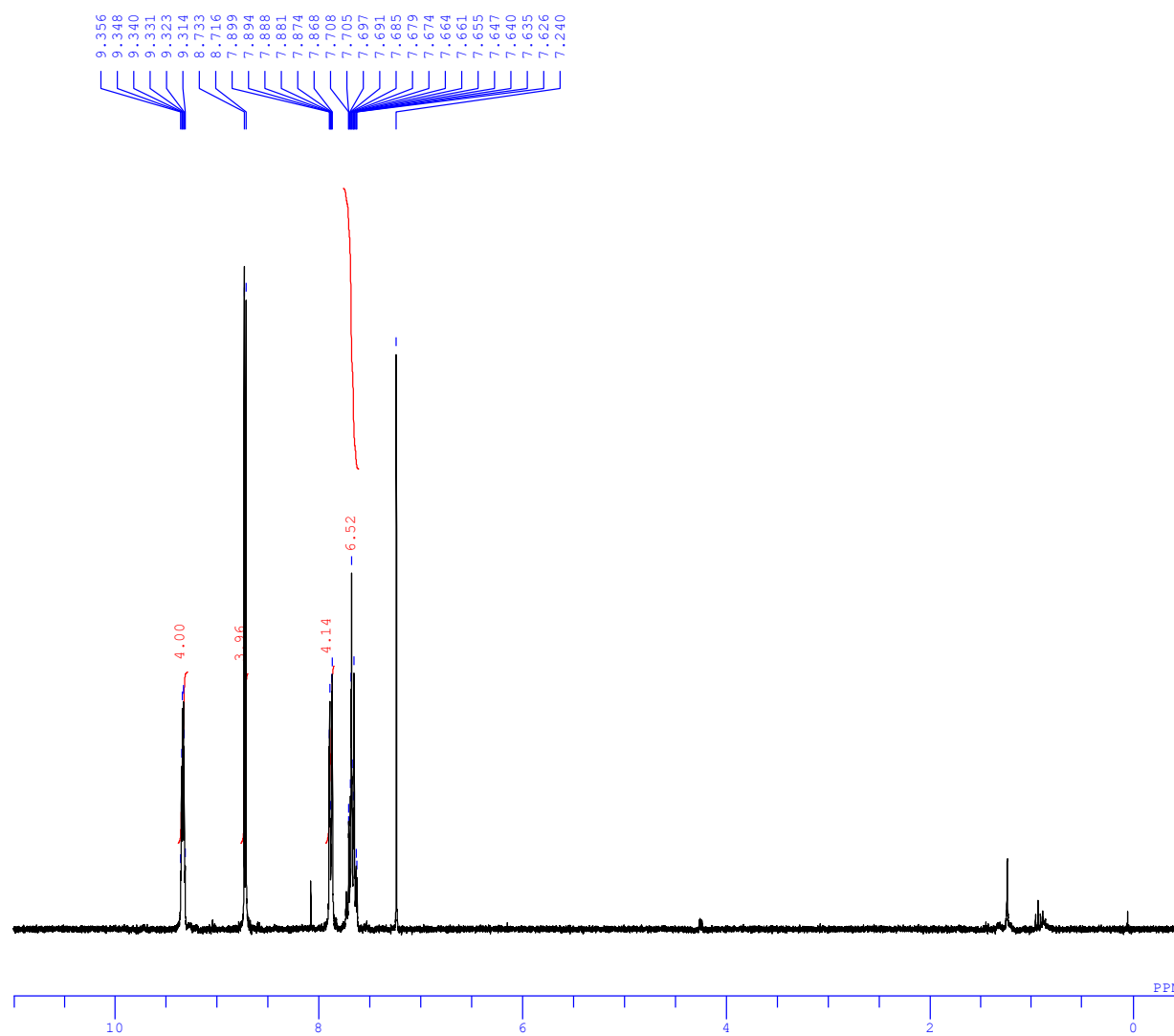
```
DFILE DY-11-27-PhS-DPP(Ni)-CF3_E19F-2*OML, Y (
COMNT single_pulse
DATIM 2014-09-29 14:37:48
OBNUC 19F
EXMOD single_pulse.jxp
OBFRQ 376.15 MHz
OBSET 6.30 KHz
OBFIN 8.02 Hz
POINT 13107
FREQU 7530.12 Hz
SCANS 16
ACQTM 1.7406 sec
PD 5.0000 sec
PW1 3.76 usec
IRNUC 19F
CTEMP 23.0 c
SLVNT CDCL3
EXREF -39.20 ppm
BF 1.20 Hz
RGAIN 54
```

¹⁹F-NMR (CDCl₃) δ :
-39.20 (OH, s).



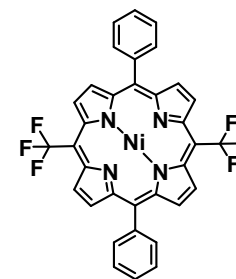
Ni-2i

¹H NMR spectrum of Ni-4



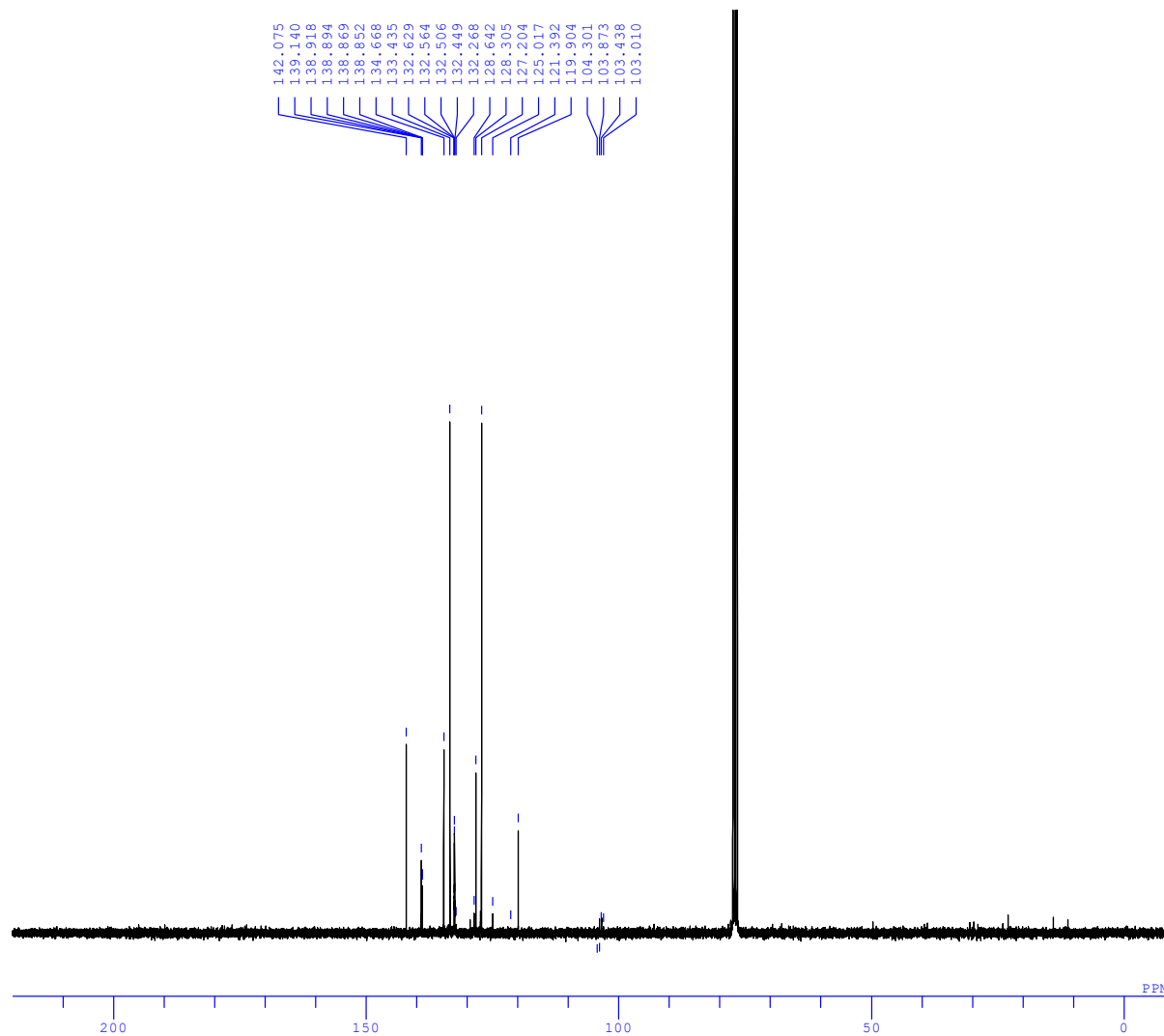
```
DFILE DY-DPP(Ni)-(CF3)21NON-00WT, Y (for paper)
COMNT DY-DPP(Ni)-(CF3)2
DATIM Fri Nov 07 23:08:28 2014
OBNUC 1H
EXMOD NON
OBFRQ 300.40 MHz
OBSET 130.00 KHz
OBFIN 1150.00 Hz
POINT 32768
FREQU 6006.01 Hz
SCANS 8
AQTM 5.4559 sec
PD 1.5440 sec
PW1 5.30 usec
IRNUC 1H
CTEMP 27.8 c
SLVNT CDCL3
EXREF 7.24 ppm
BF 0.01 Hz
RGAIN 21
```

¹H-NMR (CDCl₃) δ :
9.34 (4H, dq, J = 5.0, 2.5 Hz),
8.72 (4H, d, J = 5.1 Hz),
7.89-7.88 (4H, m),
7.74-7.62 (6H, m).



Ni-4

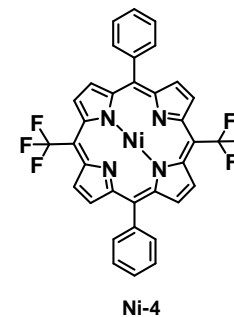
¹³C NMR spectrum of Ni-4



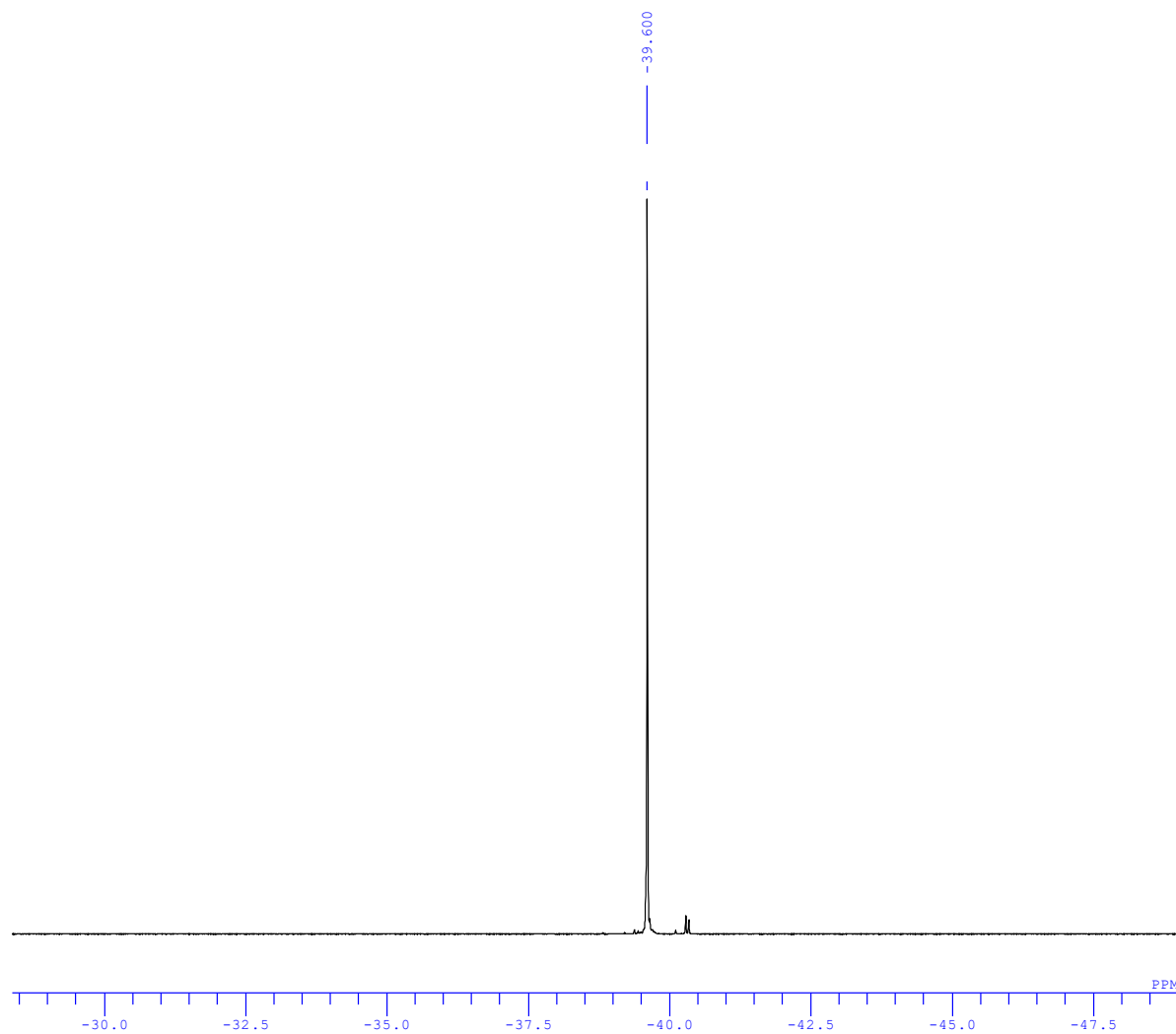
```
DFILE DY-DPP(Ni)-(CF3)22BCM•ØWI, Y.als
COMNT DY-DPP(Ni)-(CF3)2
DATIM Mon Nov 10 08:28:50 2014
OBNUC 13C
EXMOD BCM
OBFRQ 75.45 MHz
OBSET 124.00 KHz
OBFIN 1840.00 Hz
POINT 32768
FREQU 20356.23 Hz
SCANS 68800
ACQTM 1.6097 sec
PD 1.3900 sec
PWL 4.30 usec
IRNUC 1H
CTEMP 26.1 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.01 Hz
RGAIN 23
```

¹³C-NMR (CDC13) δ :

- 142.07 (OH, s),
- 139.14 (OH, s),
- 138.88 (OH, q, J = 1.9 Hz),
- 134.67 (OH, s),
- 133.44 (OH, s),
- 132.54 (OH, q, J = 4.6 Hz),
- 128.31 (OH, s),
- 127.20 (OH, s),
- 126.83 (OH, q, J = 274.0 Hz),
- 119.90 (OH, s),
- 103.66 (OH, q, J = 32.9 Hz).

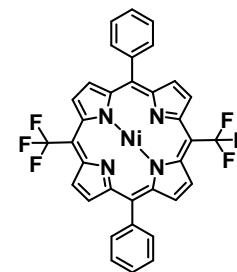


¹⁹F NMR spectrum Ni-4



```
DFILE DY-DPP(Ni)-(CF3)2_E19F-2-1.0W1,5(for p
COMNT single_pulse
DATIM 2014-11-10 15:21:05
OBNUC 19F
EXMOD single_pulse.jxp
OBFRQ 376.15 MHz
OBSET 6.38 KHz
OBFIN 3.25 Hz
POINT 13107
FREQU 15060.24 Hz
SCANS 32
ACQTM 0.8703 sec
PD 5.0000 sec
PW1 3.76 usec
IRNUC 19F
CTEMP 21.9 c
SLVNT CDCL3
EXREF -39.60 ppm
BF 1.20 Hz
RGAIN 48
```

¹⁹F-NMR (CDCl₃) δ :
-39.60 (OH, s).



Ni-4