

## Supplementary Material

### Antioxidant activity of $\alpha$ -pyridoin and its derivatives: possible mechanism

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## 1. HPLC purity analysis

Table 1. HPLC analysis data for key compounds.

Compounds	Eluent	HPLC analysis* data
1	70 : 30 <sup>a</sup>	t <sub>R</sub> = 8.031 min (98.02 % purity)
2	70 : 30 <sup>a</sup>	t <sub>R</sub> = 7.384 min (99.03 % purity)
3	70 : 30 <sup>a</sup>	t <sub>R</sub> = 6.509 min (98.07 % purity)
4	70 : 30 <sup>a</sup>	t <sub>R</sub> = 6.529 min (99.17 % purity)
5	70 : 30 <sup>a</sup>	t <sub>R</sub> = 8.510 min (98.04 % purity)
6	90 : 10 <sup>b</sup>	t <sub>R</sub> = 5.485 min (95.71 % purity)
7	70: 30 <sup>a</sup>	t <sub>R</sub> = 6.802 min (96.87 % purity)

\* HPLC analysis was performed using a Waters 600 instrument, with Photodiode Array detector, and a Symmetry Shield™ RP18 (3.9×150mm, 5µm particle size, Waters)<sup>a</sup> or a Nova-Pak® silica 60Å (3.9×150mm, 4µm particle size, Waters)<sup>b</sup>. The flow rate was set at 0.5mL/min<sup>a</sup> or 1mL/min<sup>b</sup>.

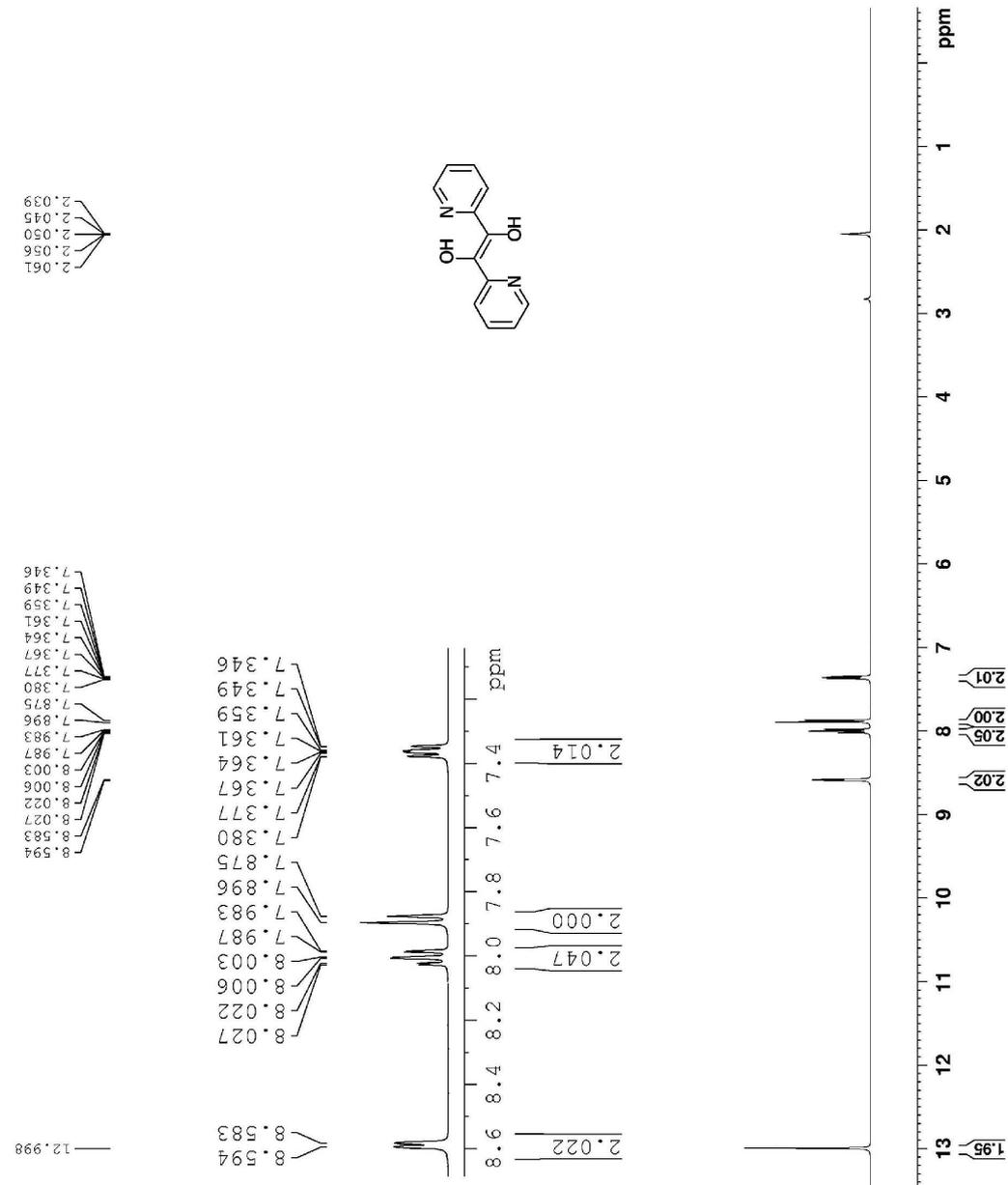
[a] : eluent: methanol: water.

[b] : eluent: n-hexane: isopropanol.

## 2. $^1\text{H}$ , $^{13}\text{C}$ NMR and MS (EI) spectrum

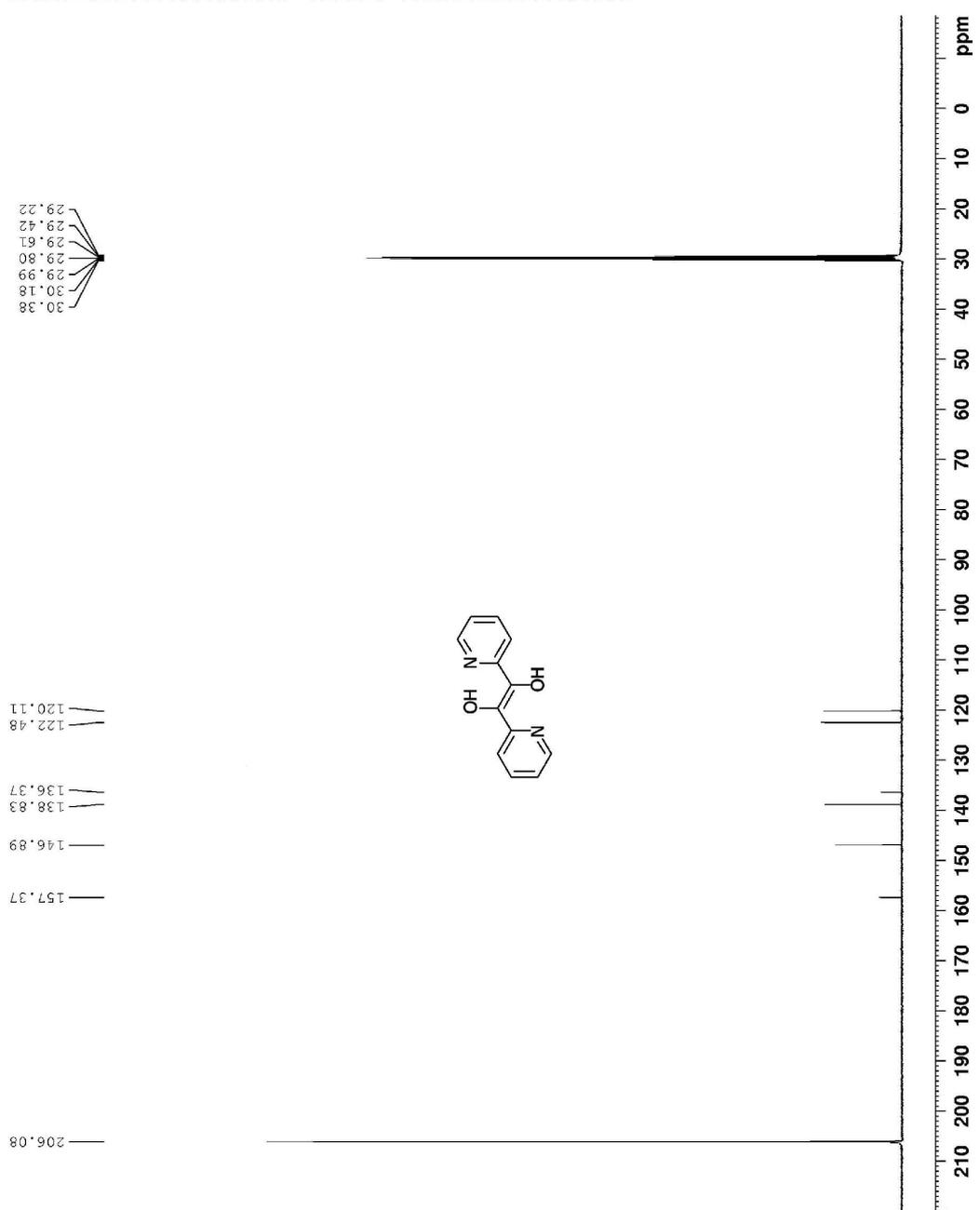
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AQ: 0.63297 sec
RG: 2.776827 Hz
BC: 257 Hz
DW: 41.600 usec
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TE: 292.0 K
D1: 1.00000000 sec
TD: 1
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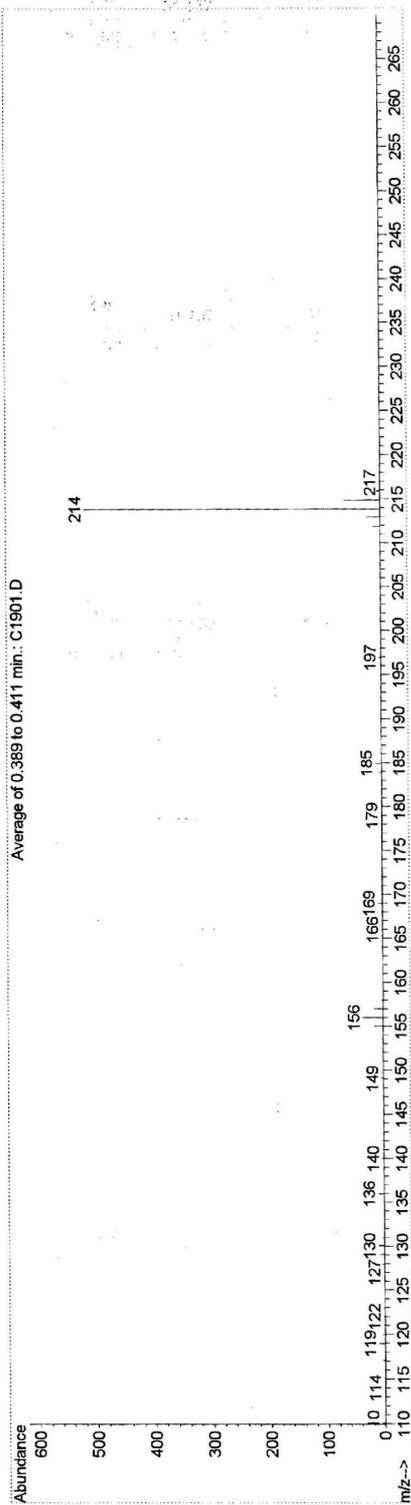
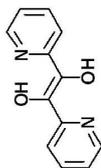
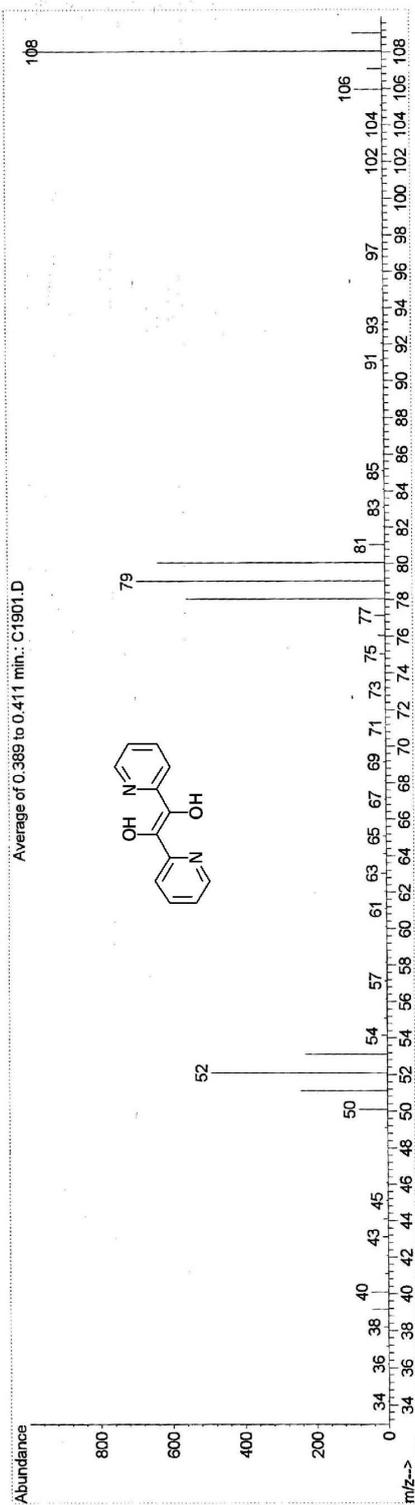


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ET           0.366736 Hz
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AQ           101
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DW           6.50 usec
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D14          0.5300000 sec
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Vial Number: 1



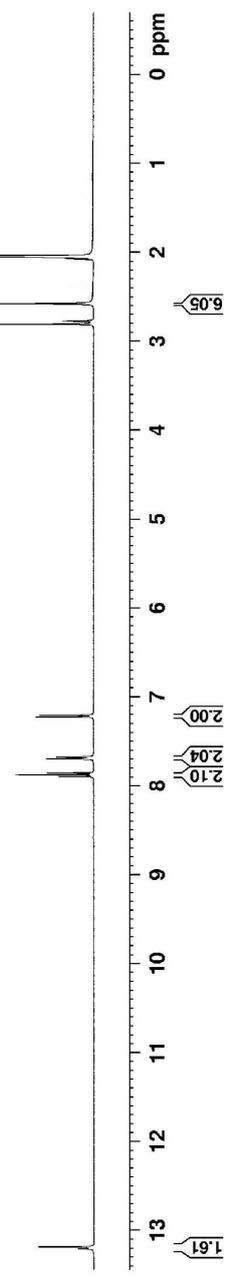
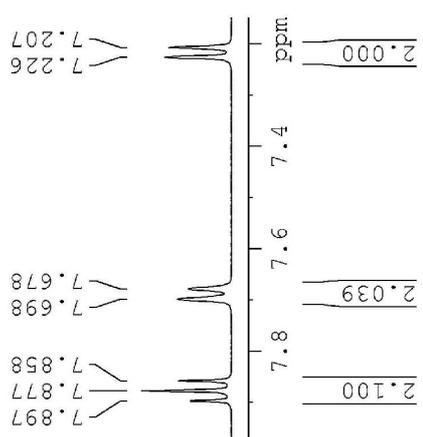
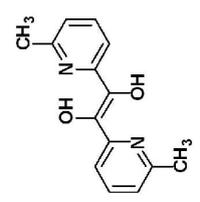
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2.050  
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2.039

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13.186



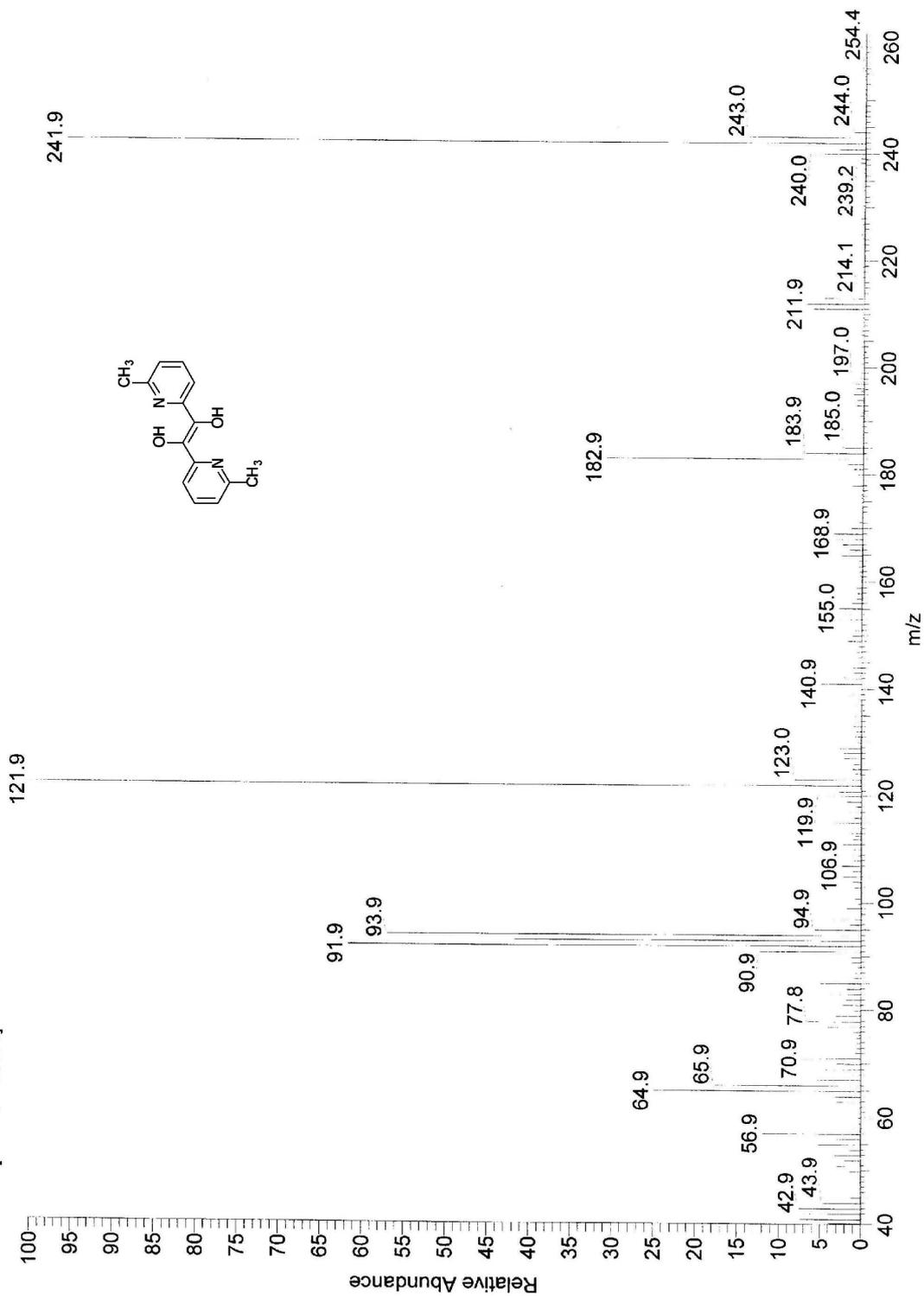


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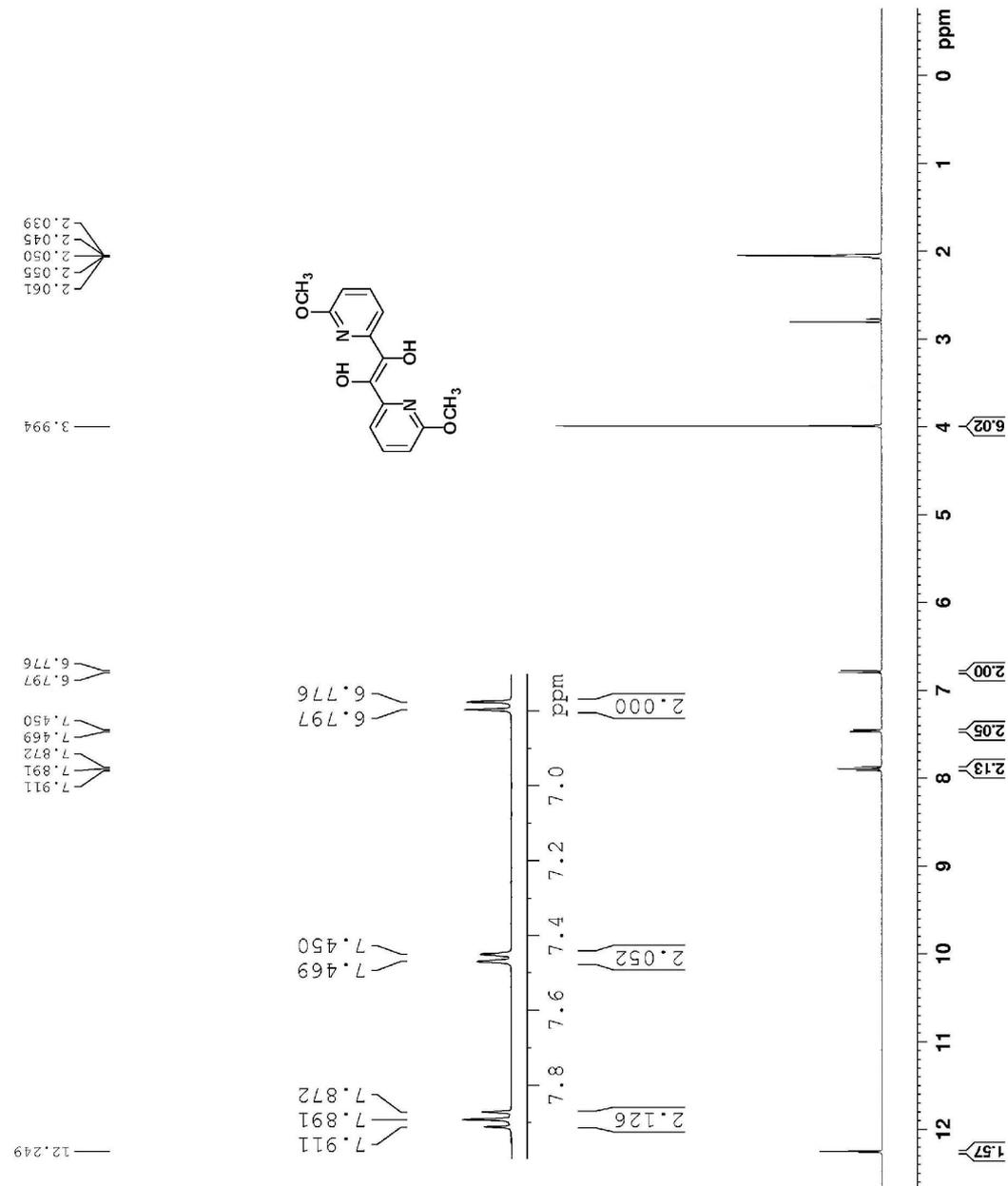
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PL61          2.00 dB
SFO61         400.1338001 MHz

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SFO62         400.1338001 MHz

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SFO70         400.1338001 MHz

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PCPD71        30.00 usec
PL71          2.00 dB
SFO71         400.1338001 MHz

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PL72          2.00 dB
SFO72         400.1338001 MHz

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SFO74         400.1338001 MHz

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SFO75         400.1338001 MHz

===== CHANNEL f76 =====
NAME76        NS1t216
NUC76         1H
PCPD76        30.00 usec
PL76          2.00 dB
SFO76         400.1338001 MHz

===== CHANNEL f77 =====
NAME77        NS1t216
NUC77         1H
PCPD77        30.00 usec
PL77          2.00 dB
SFO77         400.1338001 MHz

===== CHANNEL f78 =====
NAME78        NS1t216
NUC78         1H
PCPD78        30.00 usec
PL78          2.00 dB
SFO78         400.1338001 MHz

===== CHANNEL f79 =====
NAME79        NS1t216
NUC79         1H
PCPD79        30.00 usec
PL79          2.00 dB
SFO79         400.1338001 MHz

===== CHANNEL f80 =====
NAME80        NS1t216
NUC80         1H
PCPD80        30.00 usec
PL80          2.00 dB
SFO80         400.1338001 MHz

===== CHANNEL f81 =====
NAME81        NS1t216
NUC81         1H
PCPD81        30.00 usec
PL81          2.00 dB
SFO81         400.1338001 MHz

===== CHANNEL f82 =====
NAME82        NS1t216
NUC82         1H
PCPD82        30.00 usec
PL82          2.00 dB
SFO82         400.1338001 MHz

===== CHANNEL f83 =====
NAME83        NS1t216
NUC83         1H
PCPD83        30.00 usec
PL83          2.00 dB
SFO83         400.1338001 MHz

===== CHANNEL f84 =====
NAME84        NS1t216
NUC84         1H
PCPD84        30.00 usec
PL84          2.00 dB
SFO84         400.1338001 MHz

===== CHANNEL f85 =====
NAME85        NS1t216
NUC85         1H
PCPD85        30.00 usec
PL85          2.00 dB
SFO85         400.1338001 MHz

===== CHANNEL f86 =====
NAME86        NS1t216
NUC86         1H
PCPD86        30.00 usec
PL86          2.00 dB
SFO86         400.1338001 MHz

===== CHANNEL f87 =====
NAME87        NS1t216
NUC87         1H
PCPD87        30.00 usec
PL87          2.00 dB
SFO87         400.1338001 MHz

===== CHANNEL f88 =====
NAME88        NS1t216
NUC88         1H
PCPD88        30.00 usec
PL88          2.00 dB
SFO88         400.1338001 MHz

===== CHANNEL f89 =====
NAME89        NS1t216
NUC89         1H
PCPD89        30.00 usec
PL89          2.00 dB
SFO89         400.1338001 MHz

===== CHANNEL f90 =====
NAME90        NS1t216
NUC90         1H
PCPD90        30.00 usec
PL90          2.00 dB
SFO90         400.1338001 MHz

===== CHANNEL f91 =====
NAME91        NS1t216
NUC91         1H
PCPD91        30.00 usec
PL91          2.00 dB
SFO91         400.1338001 MHz

===== CHANNEL f92 =====
NAME92        NS1t216
NUC92         1H
PCPD92        30.00 usec
PL92          2.00 dB
SFO92         400.1338001 MHz

===== CHANNEL f93 =====
NAME93        NS1t216
NUC93         1H
PCPD93        30.00 usec
PL93          2.00 dB
SFO93         400.1338001 MHz

===== CHANNEL f94 =====
NAME94        NS1t216
NUC94         1H
PCPD94        30.00 usec
PL94          2.00 dB
SFO94         400.1338001 MHz

===== CHANNEL f95 =====
NAME95        NS1t216
NUC95         1H
PCPD95        30.00 usec
PL95          2.00 dB
SFO95         400.1338001 MHz

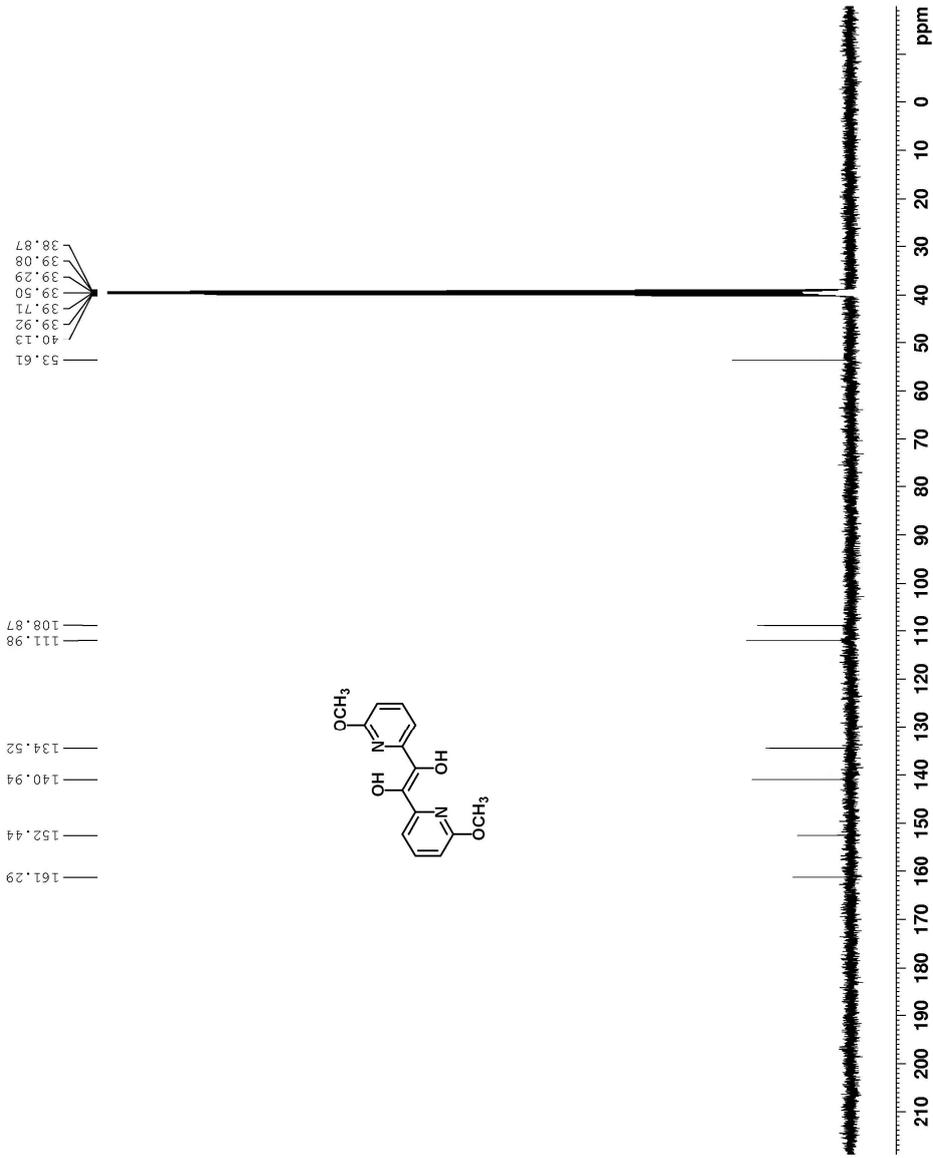
===== CHANNEL f96 =====
NAME96        NS1t216
NUC96         1H
PCPD96        30.00 usec
PL96          2.00 dB
SFO96         400.1338001 MHz

===== CHANNEL f97 =====
NAME97        NS1t216
NUC97         1H
PCPD97        30.00 usec
PL97          2.00 dB
SFO97         400.1338001 MHz

===== CHANNEL f98 =====
NAME98        NS1t216
NUC98         1H
PCPD98        30.00 usec
PL98          2.00 dB
SFO98         400.1338001 MHz

===== CHANNEL f99 =====
NAME99        NS1t216
NUC99         1H
PCPD99        30.00 usec
PL99          2.00 dB
SFO99         400.1338001 MHz

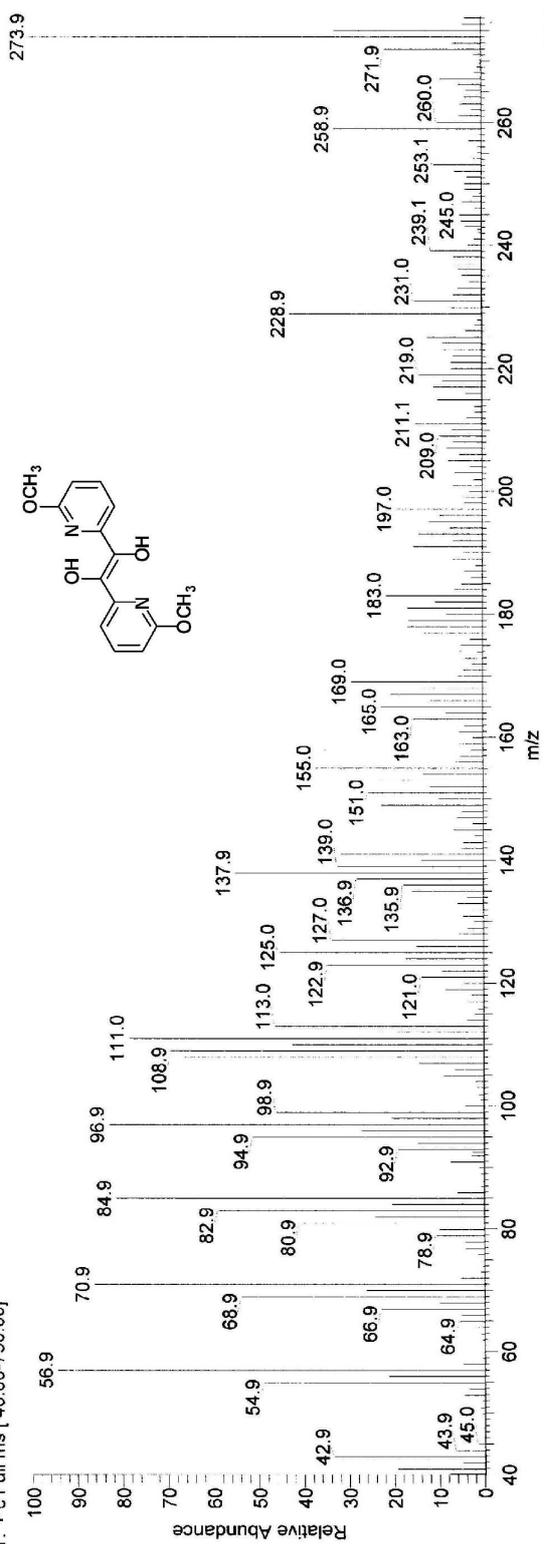
===== CHANNEL f100 =====
NAME100       NS1t216
NUC100        1H
PCPD100       30.00 usec
PL100         2.00 dB
SFO100        400.1338001 MHz
    
```



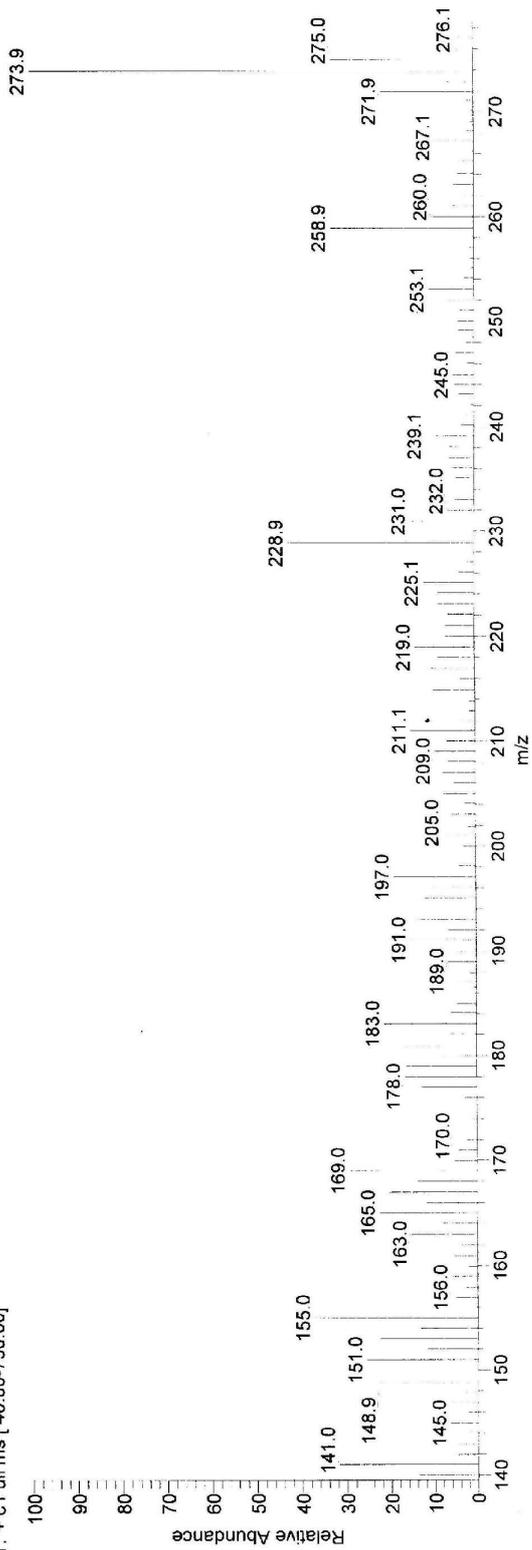
D:\data\chenlixia071107-01

2007-11-7 14:54:50

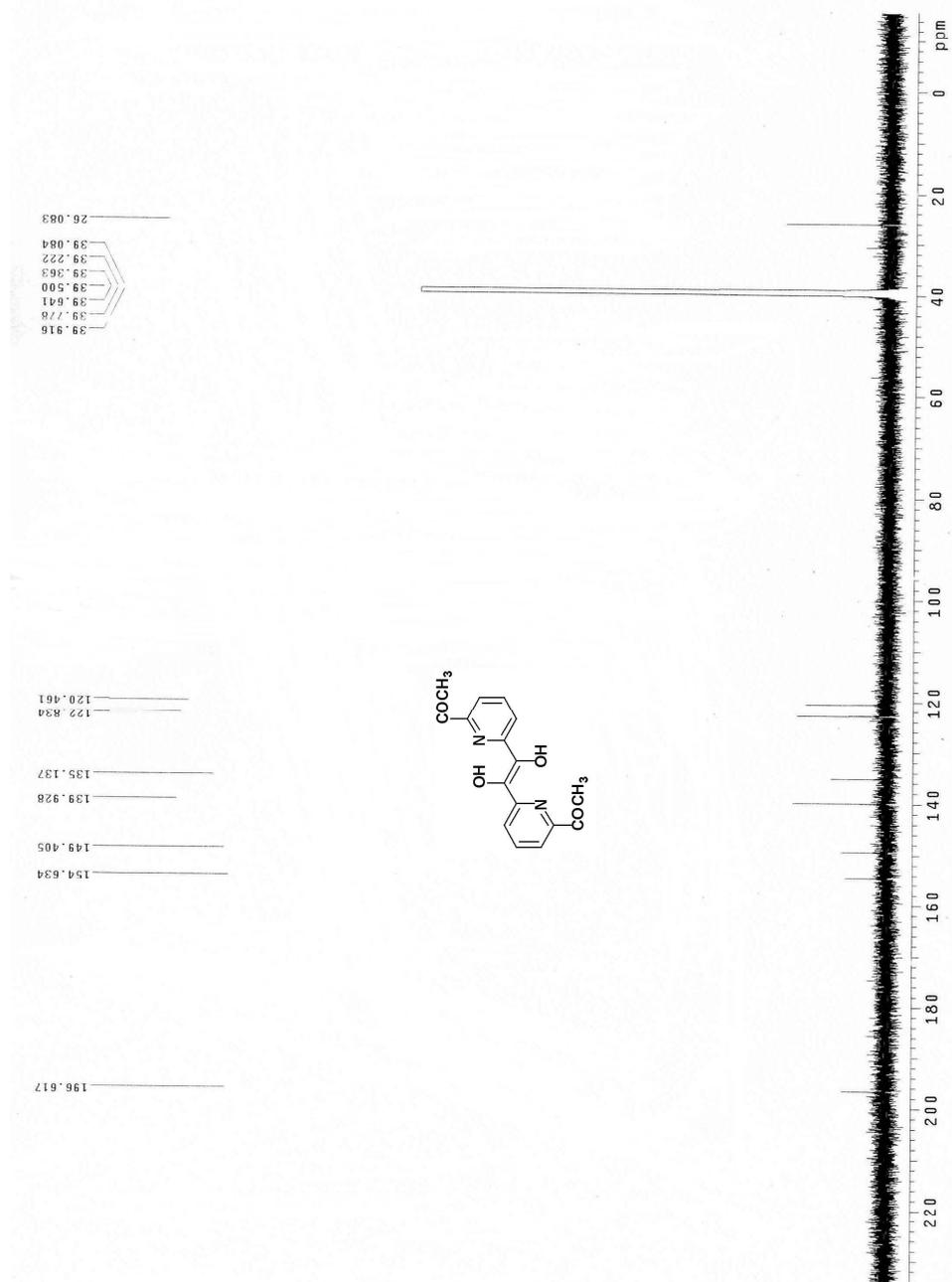
chenlixia071107-01 #77 RT: 0.53 AV: 1 NL: 6.70E5  
T: + c Full ms [40.00-750.00]



chenlixia071107-01 #77 RT: 0.53 AV: 1 NL: 6.70E5  
T: + c Full ms [40.00-750.00]



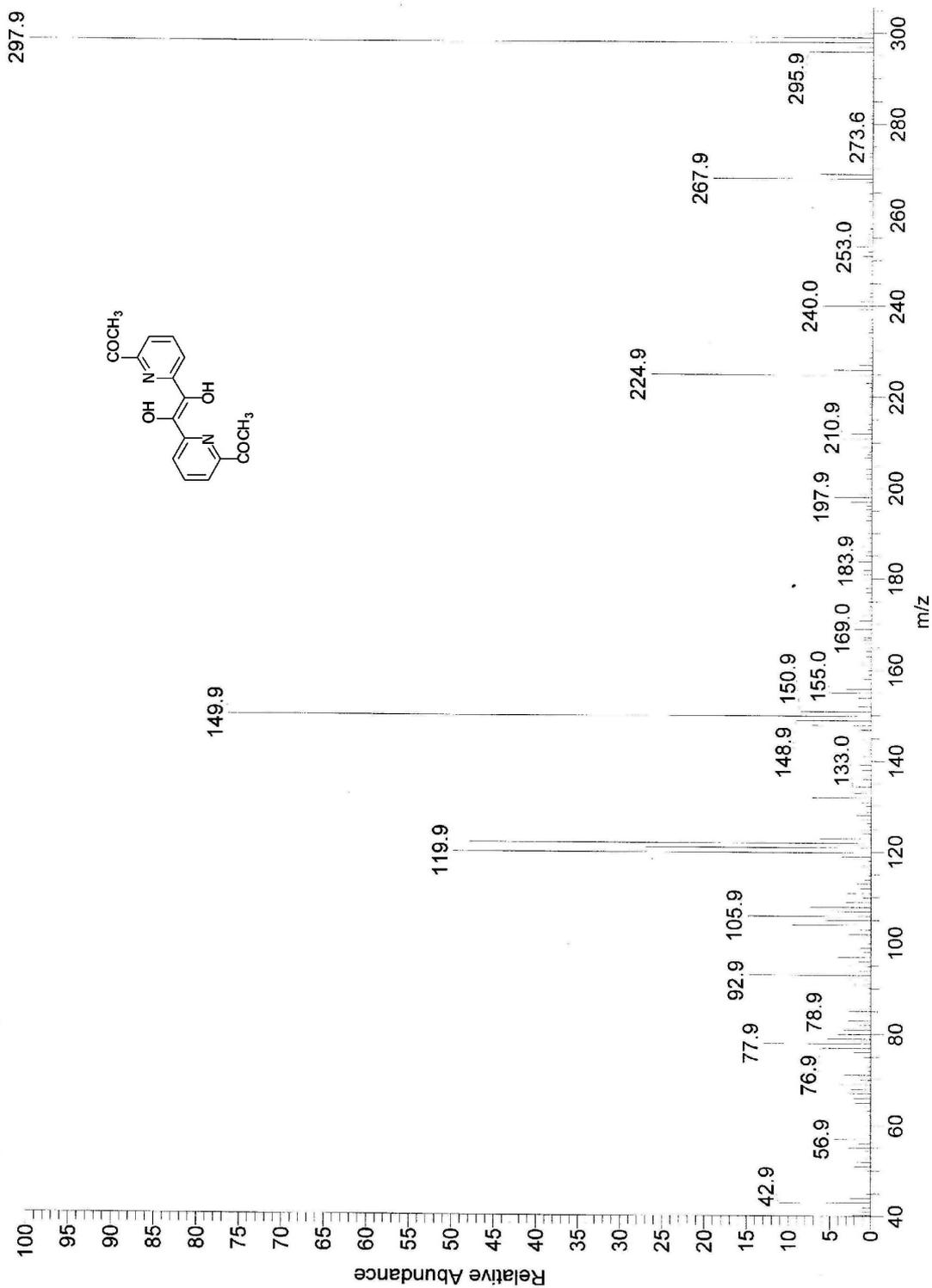




D:\data\chenlixia071108-01  
2007-11-8 17:50:20

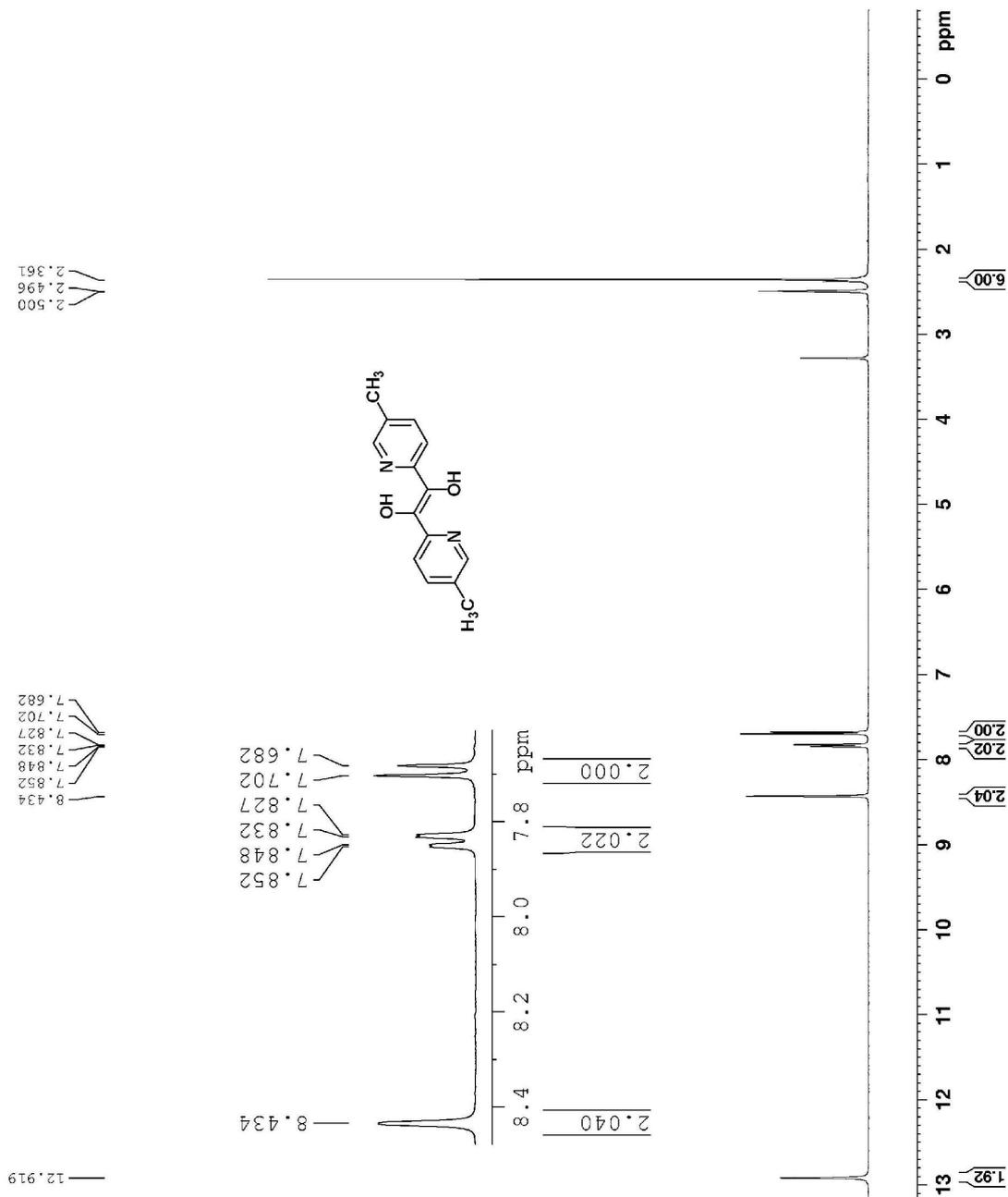
chenlixia071108-01 #182 RT: 1.20 AV: 1 NL: 5.99E5

T: + c Full ms [ 40.00-750.00]

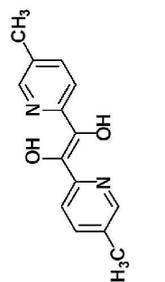


```

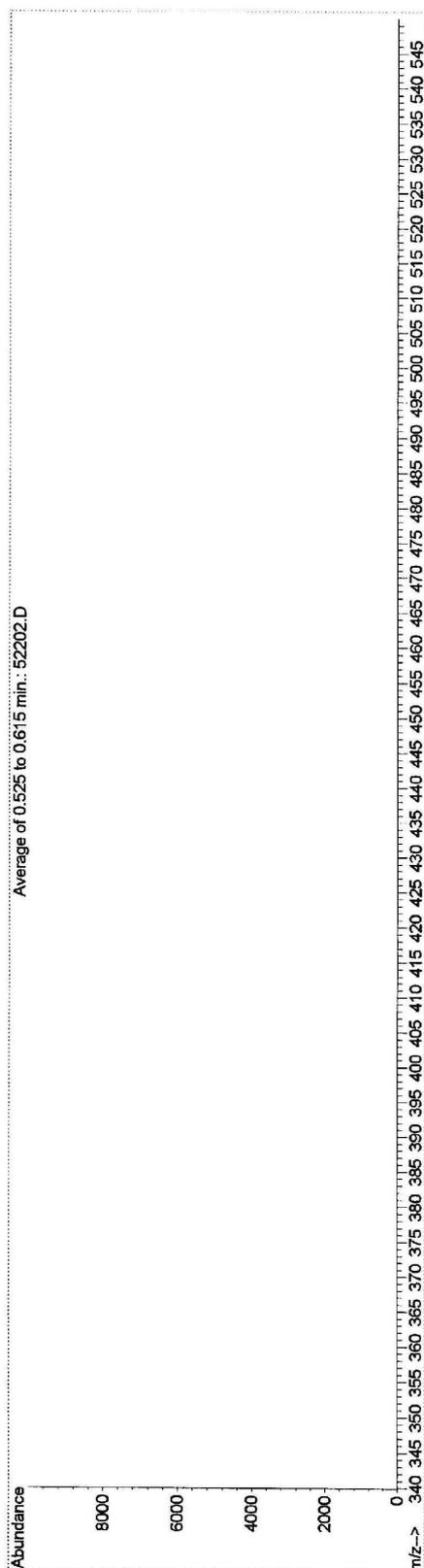
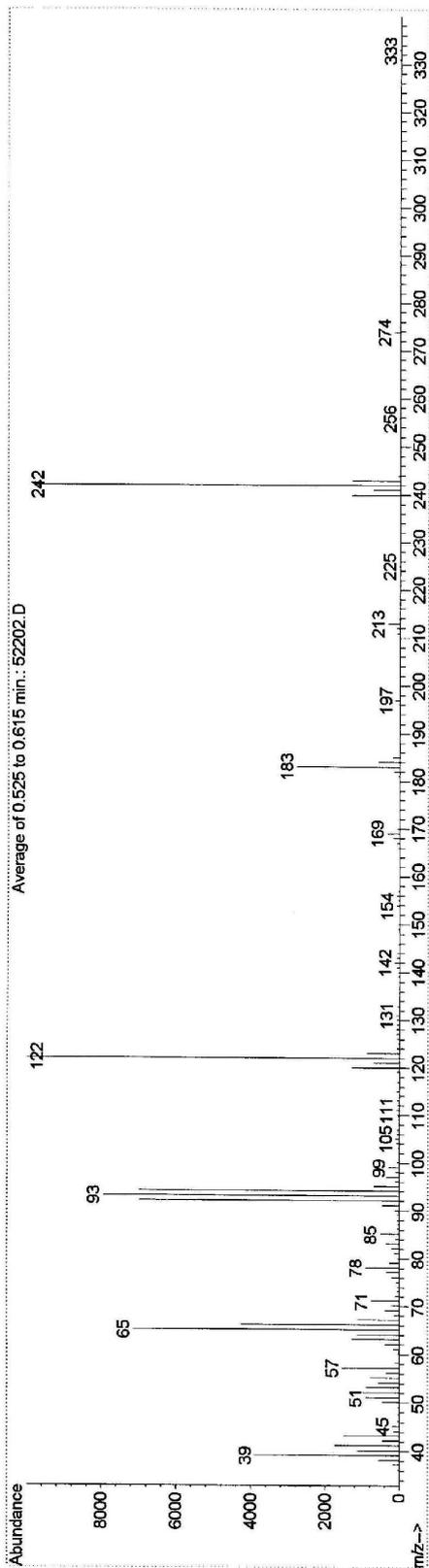
NAME          chenglx
EXPNO         10
PROCNO        1
Date_         20080522
Time          9.43
INSTRUM       F2
PROBHD        5 mm PABBO-1
PULPROG       zg30
TD            65536
SOLVENT       DMSO
NS            8
DS            2
SWH           8223.655 Hz
AQ           0.24537 sec
RG           3.384637
PC           322
DC           60.800 usec
DE           6.50 usec
TE           302.0 K
D1           1.00000000 sec
TD0          1
----- CHANNEL f1 -----
NUCL1         1H
PC1           14.60 usec
PL1           0.00 dB
FL1           0.00 GHz
FLLW         11.47932053 W
SFO1         400.1324710 MHz
SI           32768
SF           400.1324710 MHz
WDW          EM
SSB          0
GB           0
PC           1.00
  
```





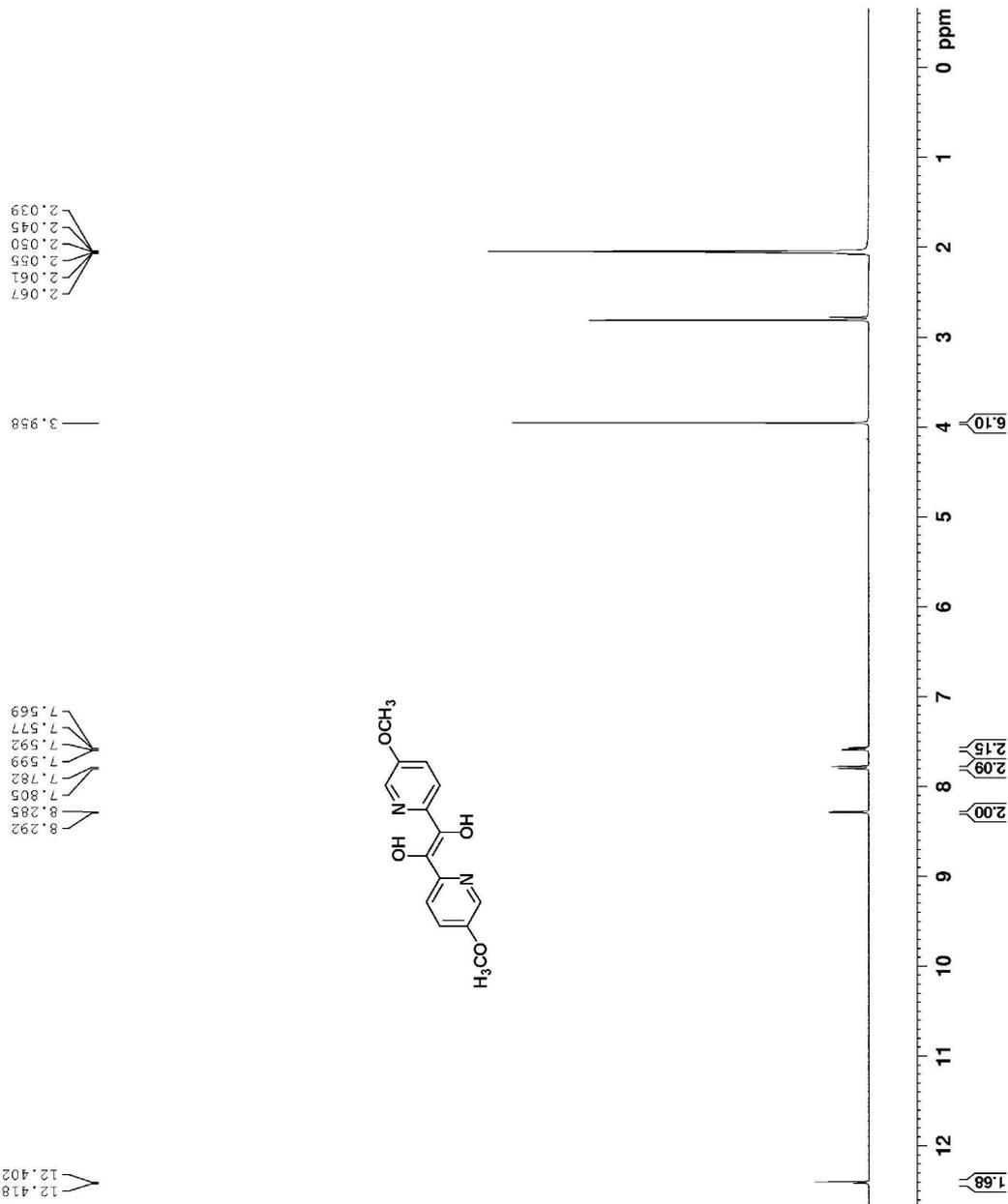


File : C:\HPCHEM\1\DATA\52202.D  
Operator :  
Acquired : 22 May 2008 9:34 using AcqMethod DIP550  
Instrument : HP 5988  
Sample Name: Chen Ji-xia, 242  
Misc Info : StateKeyLab of Applied OrgChem, Lanzhou Unive  
Vial Number: 1



```

NAME chere1x2008-10-17-1
EXPNO 10
PROCNO 10
Date_ 2008-10-17
Time 9.32
INSTRUM spect
PROBHD 5 mm F4BBO BE-
PULPROG zgpg30
AQ 65536
RG 32
DELTA 2
SOLVENT Acetone-d6
NS 2
DS 2
SWH 12079.230 K
F2 DMS
F1 DMS
AQ 0.63399 K
RG 2.726377 rec
RG 41.626 sec
DE 6.50 sec
TE 292.8 K
TD 1.0000000 sec
TD0 1
----- CHANNEL f1 -----
NUC1 1H
P1 14.70 sec
PC 1.00 dB
PFL 13.735908001 W
SFO1 400.1324710 MHz
SC 32768
WDW EM
SSB 0
LB 0.30 K
GB 0
EC 1.00
    
```

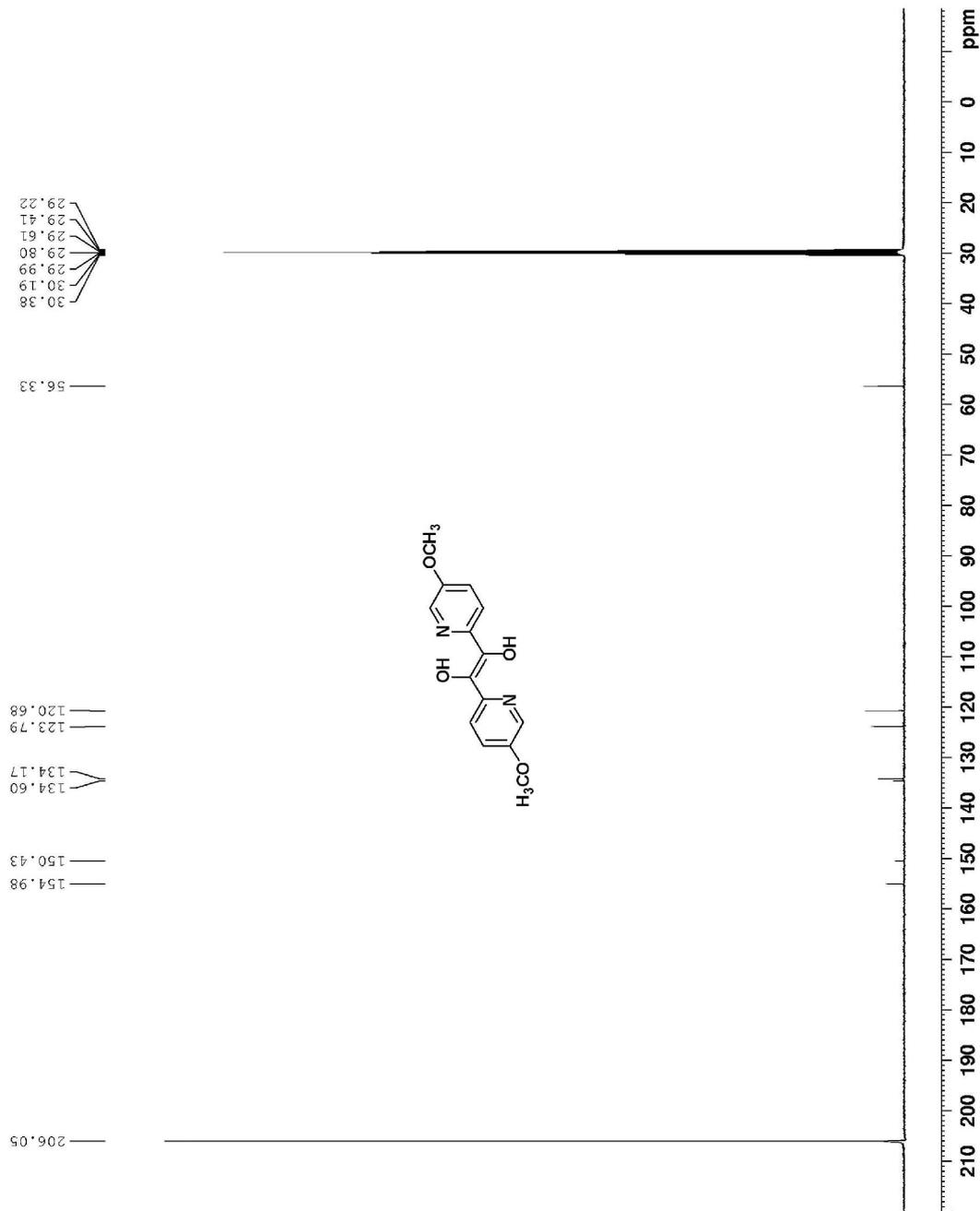


```

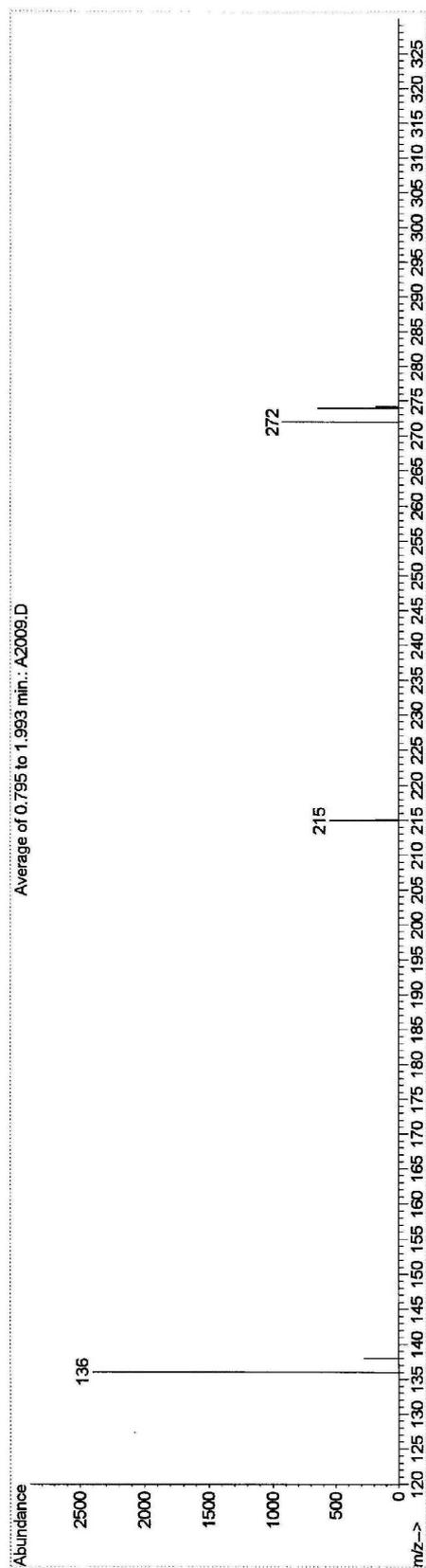
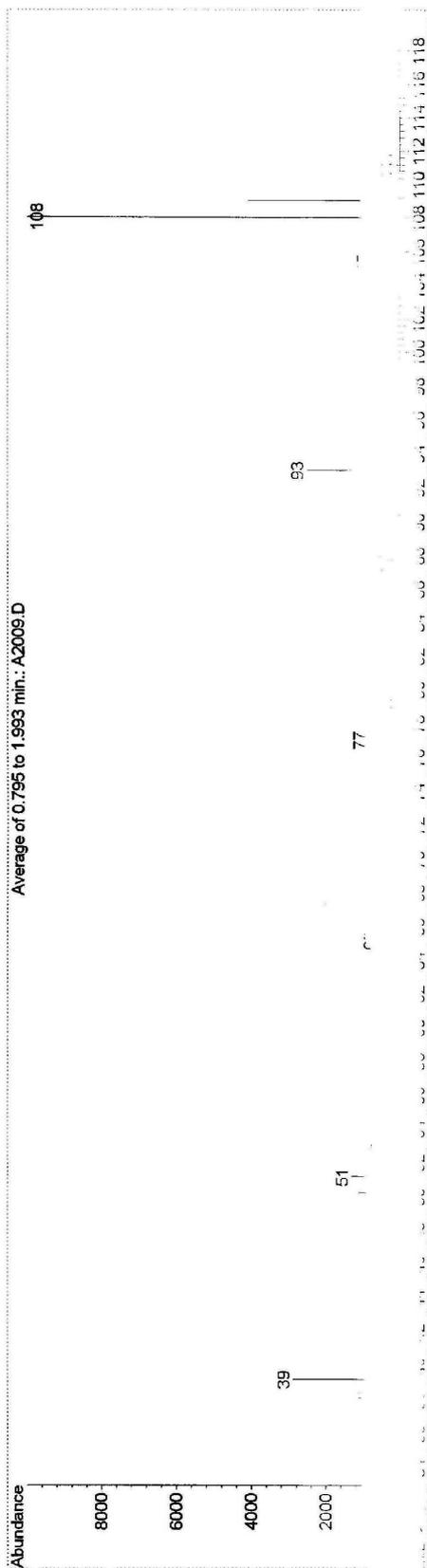
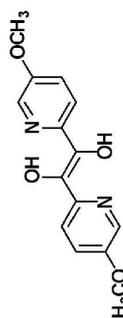
NAME      chco-g' x2008-7-3
EXPNO     1
PROCNO    1
Date_     20080703
Time      10:51
INSTRUM   spect
PROBHD    5 mm PABBO-1
PULPROG   zgpg30
RG         655.36
SD_VENI   Acetone
NS         768
DS         4
SWH        21038.461 Hz
FIDRES     0.536608 Hz
AQ         1.365608 sec
RG         255.0
DW         20.500 usec
DE         6.50 usec
TE         297.3 K
D1         2.0000000 sec
D11        0.0300000 sec
--DO      1

===== CHANNEL #1 =====
NUC1       13C
P1         9.40 usec
PL1        -2.00 dB
PT1W       57.32743373 W
SFO1       100.6282298 MHz

===== CHANNEL #2 =====
SFO2       400.1460000 MHz
WALTZ16    waltz16
NUC2       1H
PCPD2      90.00 usec
PL2        -2.00 dB
PL12       15.50 dB
PL13       15.50 dB
PL14       15.50 dB
PL15       15.50 dB
PL16       18.19343861 W
PL17       0.32333121 W
PL18       0.32333121 W
PL19       0.32333121 W
PL20       400.1460000 MHz
SFO3       300.1360000 MHz
SFO4       100.6126793 MHz
WALTZ16    waltz16
NS2        0
SSB        0
LB         1.00 Hz
GB         0
PC         1.40
    
```

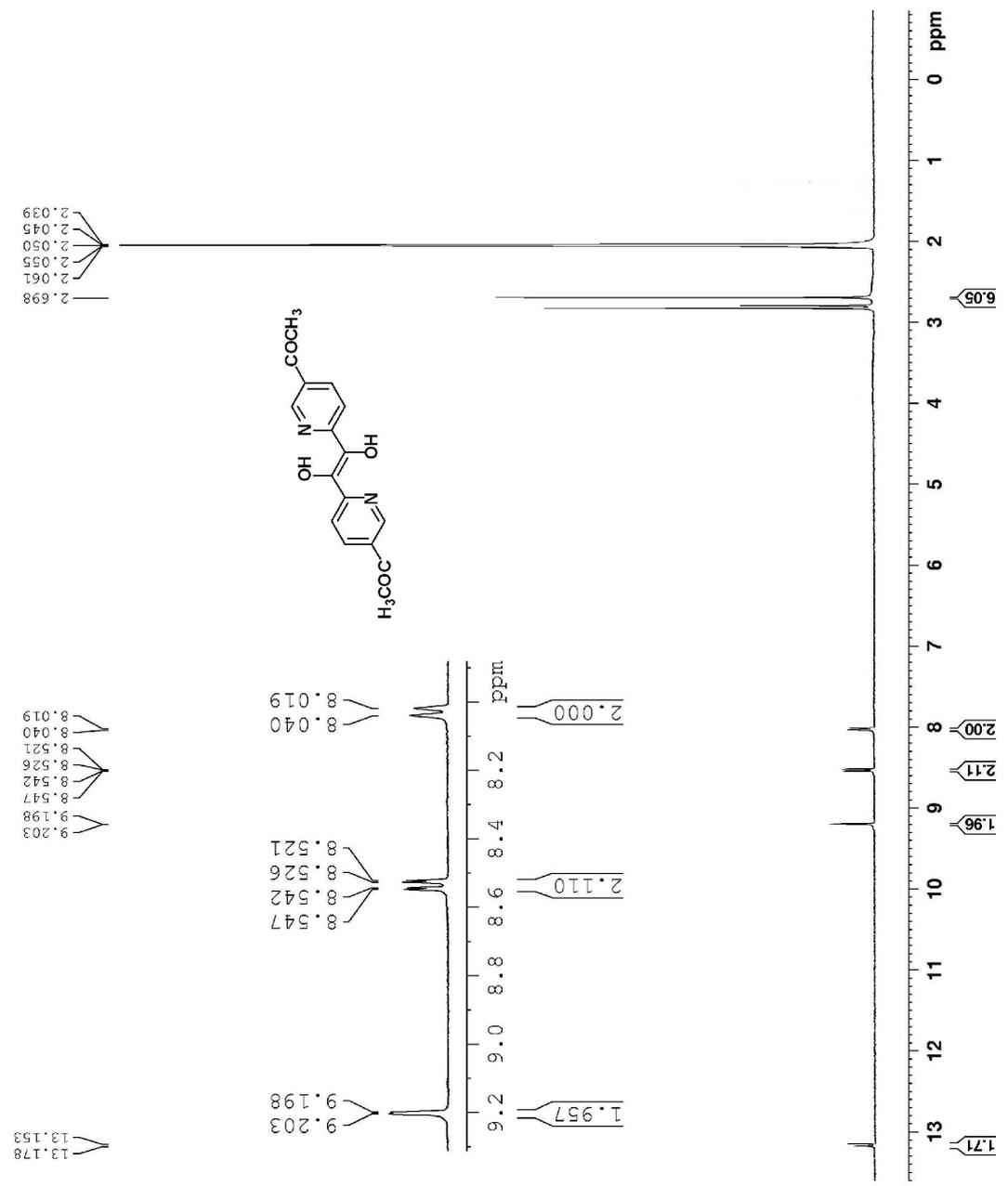


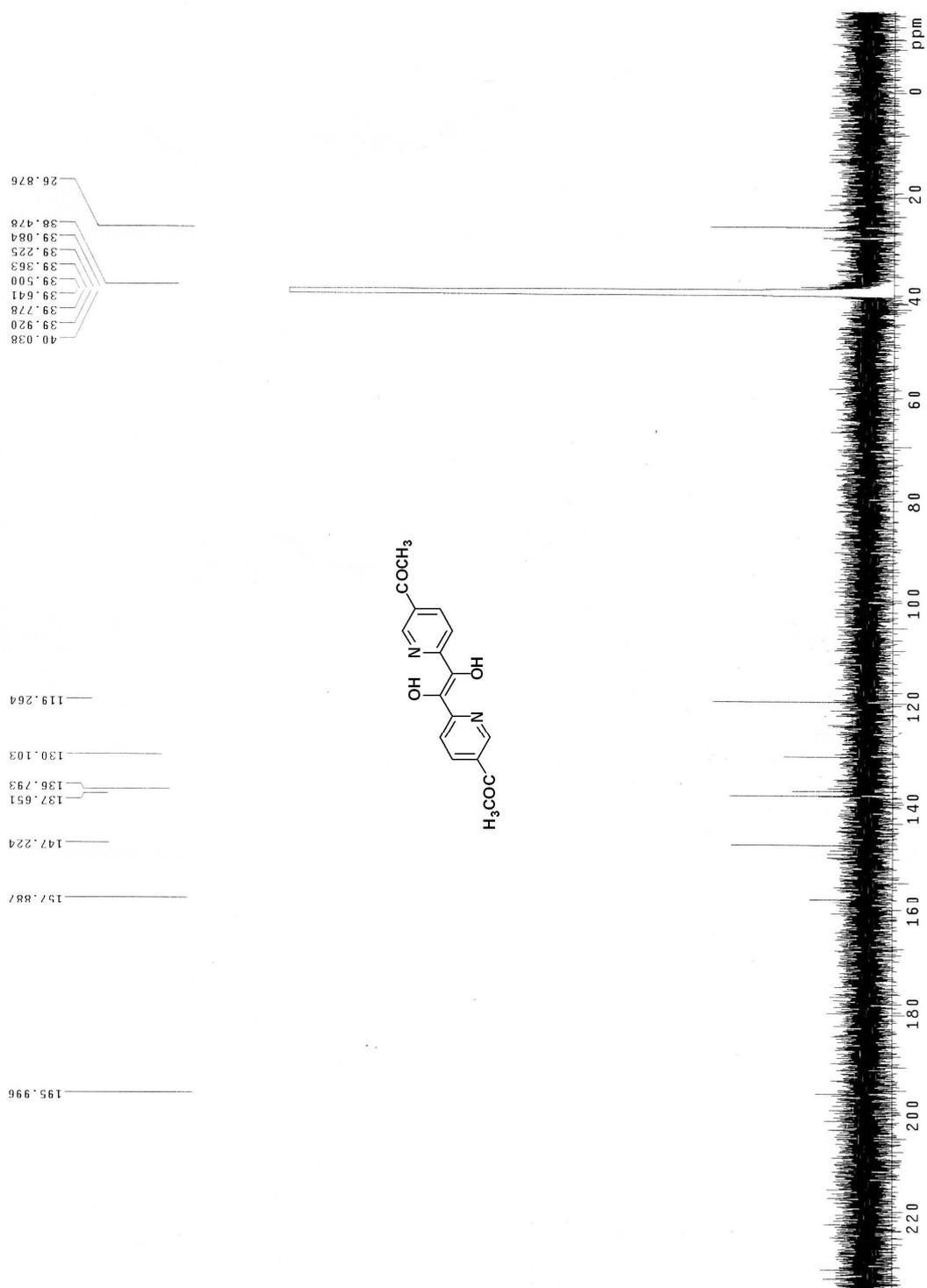
File : C:\HPCHEM\1\DATA\A2009.D  
Operator :  
Acquired : 20 Oct 2008 10:10 using AcqMethod DIP550  
Instrument : HP 5988  
Sample Name: Li Xiu-zhuang, 274, 1#  
Misc Info : StateKeyLab of Applied OrgChem, Lanzhou Univer  
Vial Number: 1



```

NAME                chern1a2008-12-24
EXPNO                1
PROCNO               1
PROCRES              1
F2                  10.42
INSTRUM              spect
PROBHD               5 mm PABBO B5-
PULPROG              zgpg30
TD                   65536
SOLVENT              Acetone
DS                   4
AQ                   1.2019230 sec
RG                   0.83393
AQ                   2.726377 sec
RC                   406
DE                   41.600 usec
TE                   300.2 K
D1                   2.000 usec
D2                   0.000 usec
D3                   1.00000000 sec
TD0                 1
----- CHANNEL f1 -----
NUC1                 1H
P1                   12.70 usec
PL1                  0.00 dB
RG1                  0.83393
RF1                   13.25596800 MHz
SFO1                 400.132610 MHz
SI                   32768
SF                   400.1330048 MHz
WDW                  EM
SSB                   0
LB                   0.30 Hz
GB                   0
PC                   1.00
    
```





D:\data\chenlixia081226-01

2008-12-26 11:14:48

chenlixia081226-01 #188 RT: 1.24 AV: 1 NL: 5.66E5  
T: + c Full ms [40.00-750.00]

