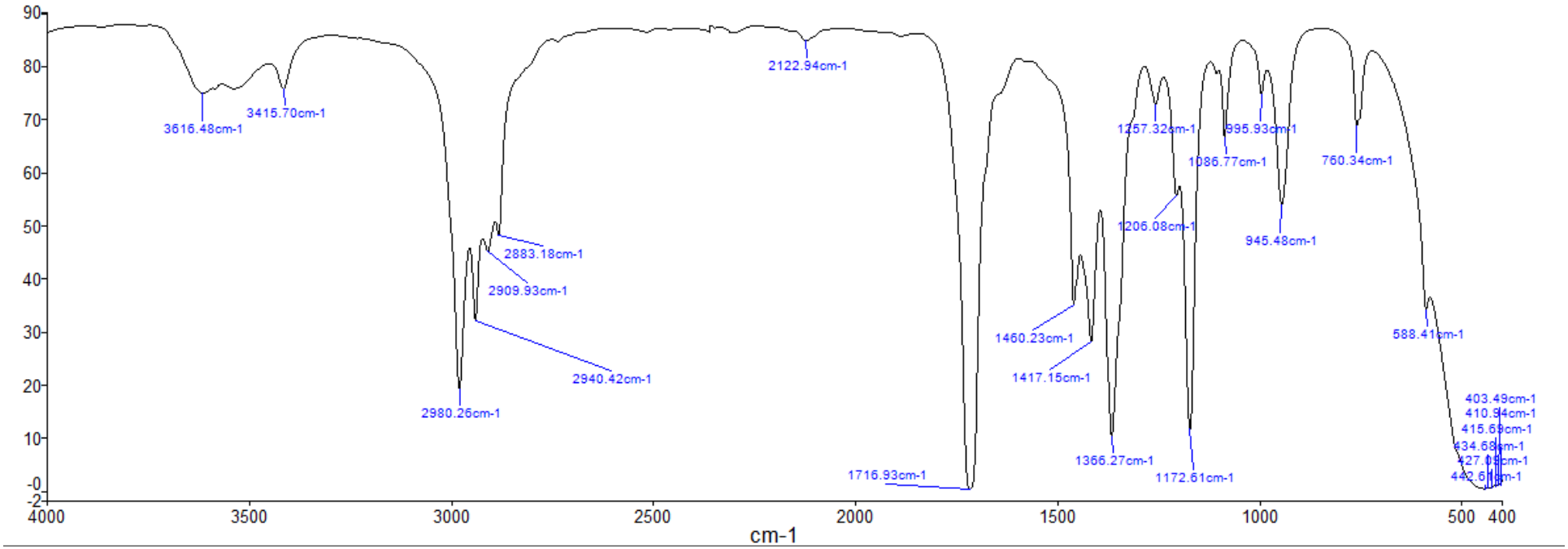
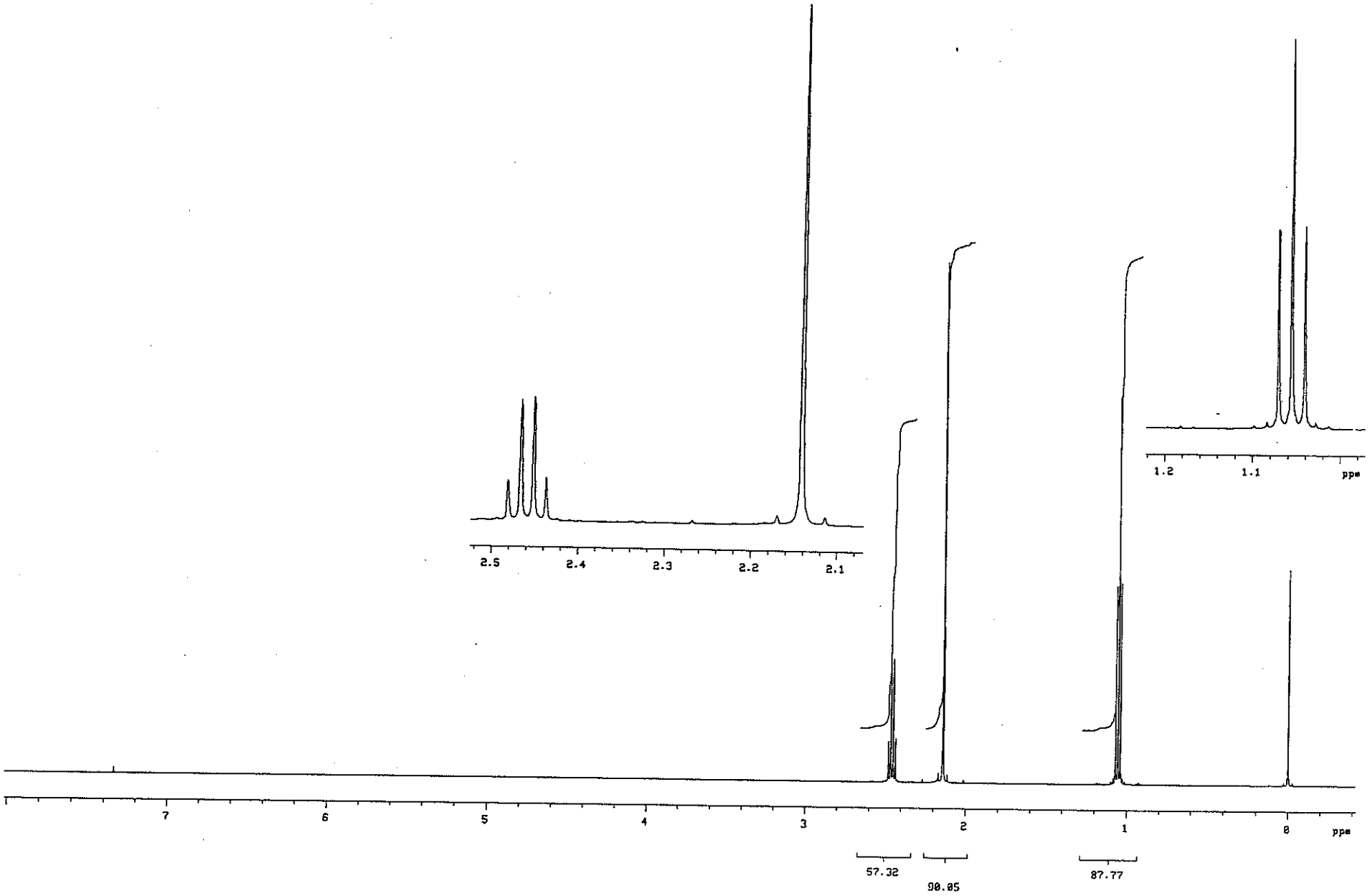
CHEM 146A Experiment 1 – Unknown Chemical Test Results

Unknown #1

Test	Results / Observations	Interpretation
Lucas	- no precipitate or color change observed	
2,4-dinitrophenylhydrazine (DNPH)	- yellow-orange precipitate observed	
Fehling's	- solution quickly turns ~~blue~~ red	
NaI in Acetone	- no precipitate or color change observed	
$AgNO_3$ in EtOH	- no precipitate or color change observed	

Conclusion (Functional Group Identification, incorporating IR spectrum):


3616.48cm-1
3415.70cm-1
2980.26cm-1
2940.42cm-1
2909.93cm-1
2883.18cm-1
2122.94cm-1
1716.93cm-1
1460.23cm-1
1417.15cm-1
1366.27cm-1
1257.32cm-1
1206.08cm-1
1172.61cm-1
1086.77cm-1
995.93cm-1
945.48cm-1
760.34cm-1
588.41cm-1
403.49cm-1
410.94cm-1
415.69cm-1
434.68cm-1
442.61cm-1
90
80
70
60
50
40
30
20
10
-0
-2
4000
3500
3000
2500
2000
1500
1000
500
400
cm-1



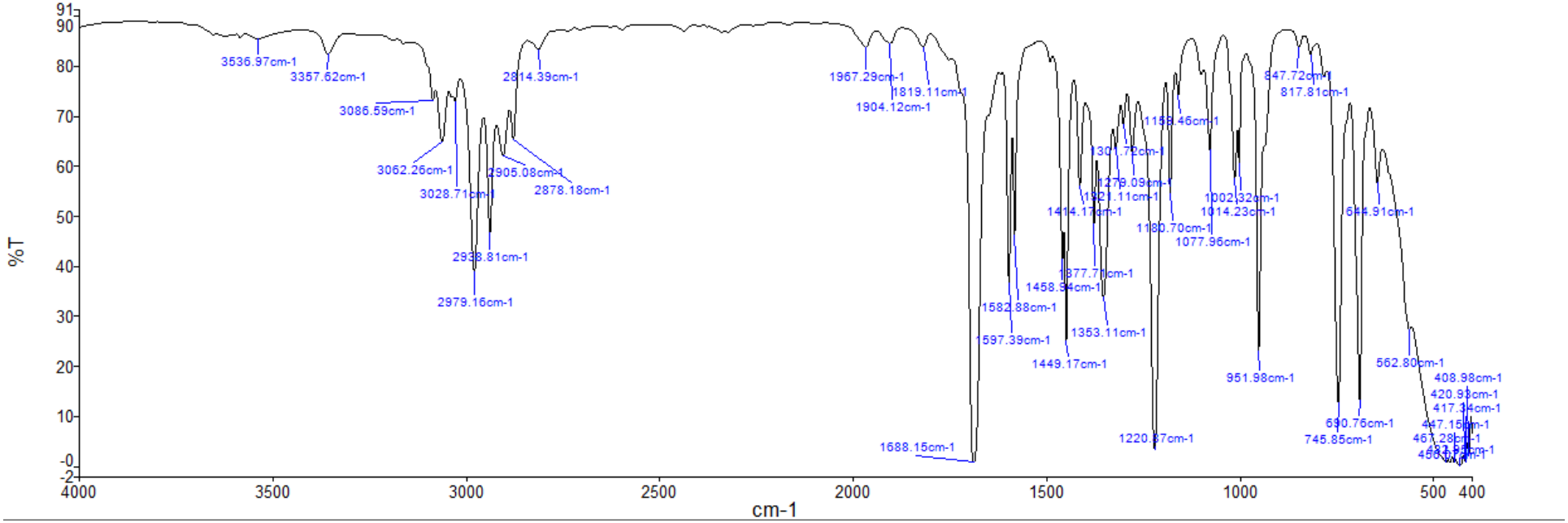
500-MHz ^{1}H-NMR spectrum in $CDCl_3$.

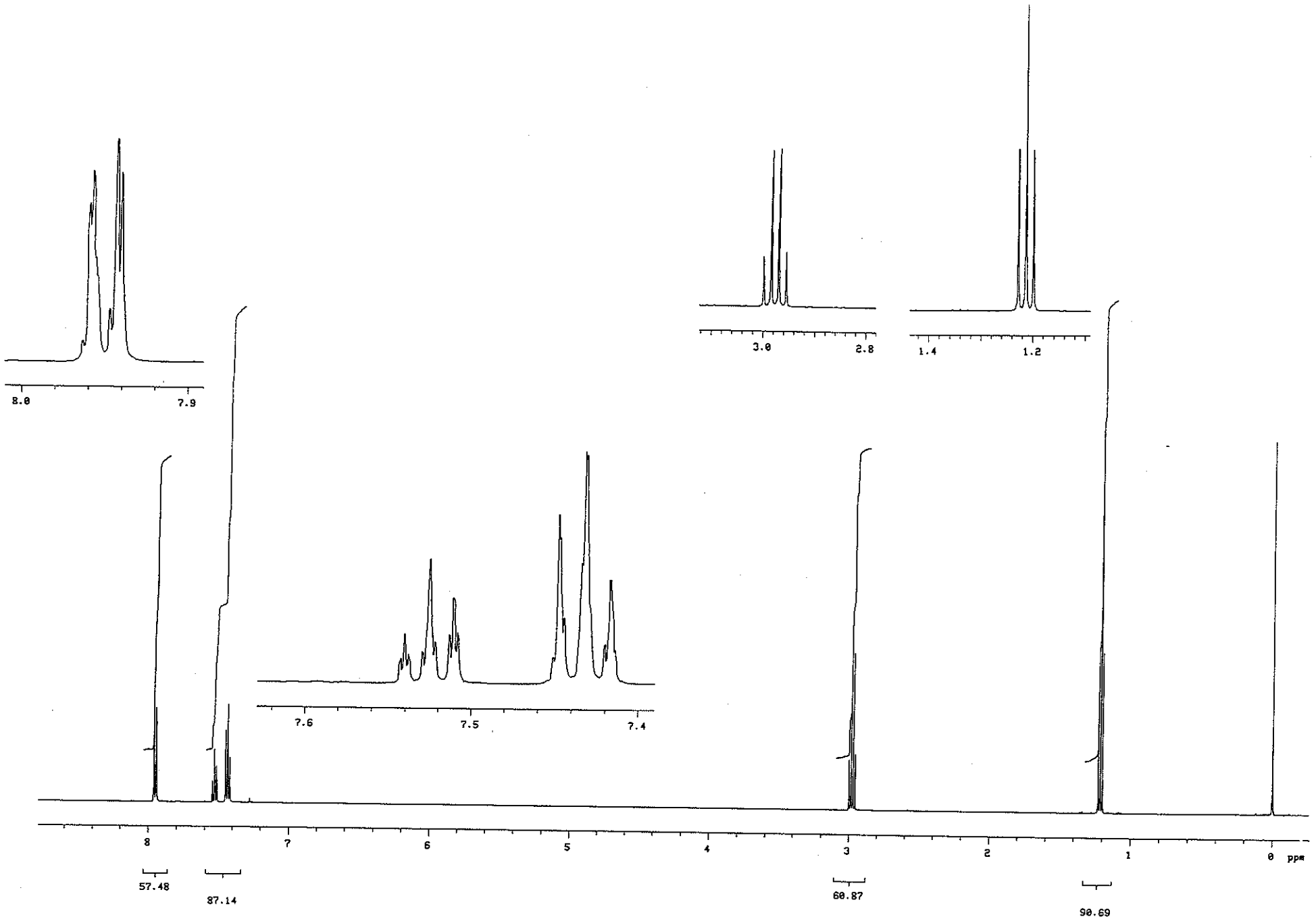
CHEM 146A Experiment 1 – Unknown Chemical Test Results

Unknown #2

Test	Results / Observations	Interpretation
Lucas	- no precipitate or color change observed	
2,4-dinitrophenylhydrazine (DNPH)	- yellow-orange precipitate observed	
Fehling's	- solution turns ~~blue~~ red slowly (1 min)	
NaI in Acetone	- no precipitate or color change observed	
$AgNO_3$ in EtOH	- no precipitate or color change observed	

Conclusion (Functional Group Identification, incorporating IR spectrum):


%T
cm-1
3536.97cm-1
3357.62cm-1
3086.59cm-1
3062.26cm-1
3028.71cm-1
2979.16cm-1
2938.81cm-1
2905.08cm-1
2878.18cm-1
2814.39cm-1
1967.29cm-1
1904.12cm-1
1819.11cm-1
1688.15cm-1
1582.88cm-1
1597.39cm-1
1458.94cm-1
1449.17cm-1
1414.17cm-1
1377.71cm-1
1353.11cm-1
1321.11cm-1
1279.09cm-1
1301.72cm-1
1193.46cm-1
1180.70cm-1
1077.96cm-1
1014.23cm-1
1002.32cm-1
951.98cm-1
847.72cm-1
817.81cm-1
745.85cm-1
690.76cm-1
644.91cm-1
562.80cm-1
408.98cm-1
420.93cm-1
417.14cm-1
447.15cm-1
467.28cm-1
1220.87cm-1



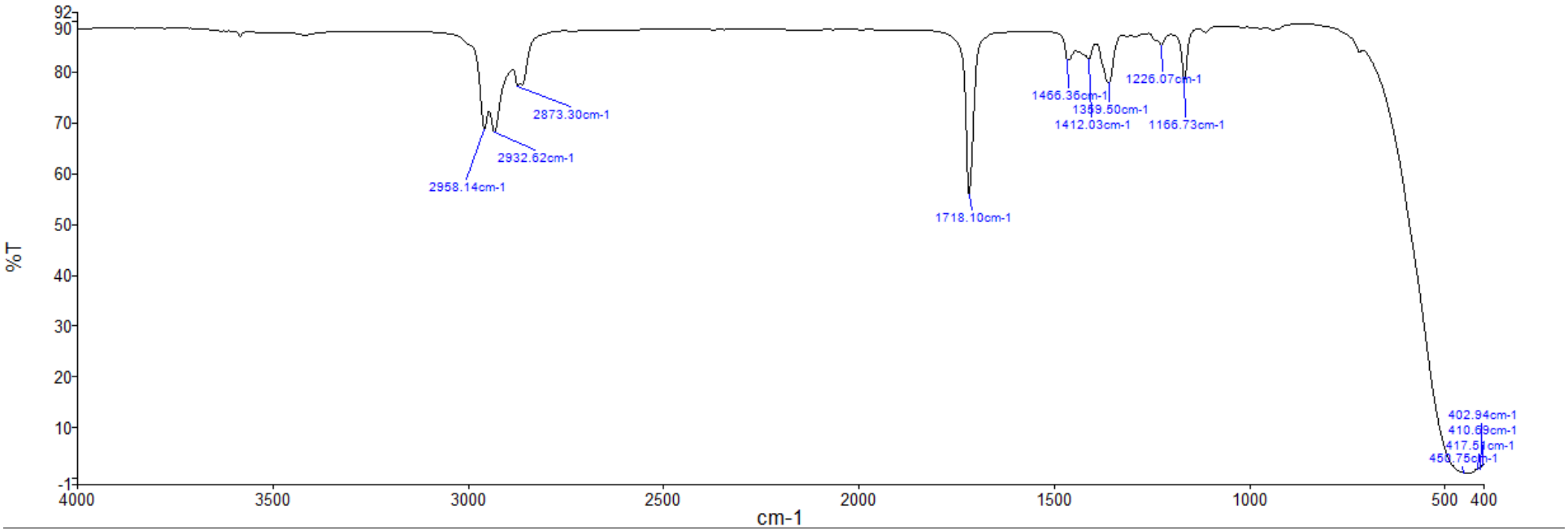
500-MHz ^{1}H-NMR spectrum in $CDCl_3$.

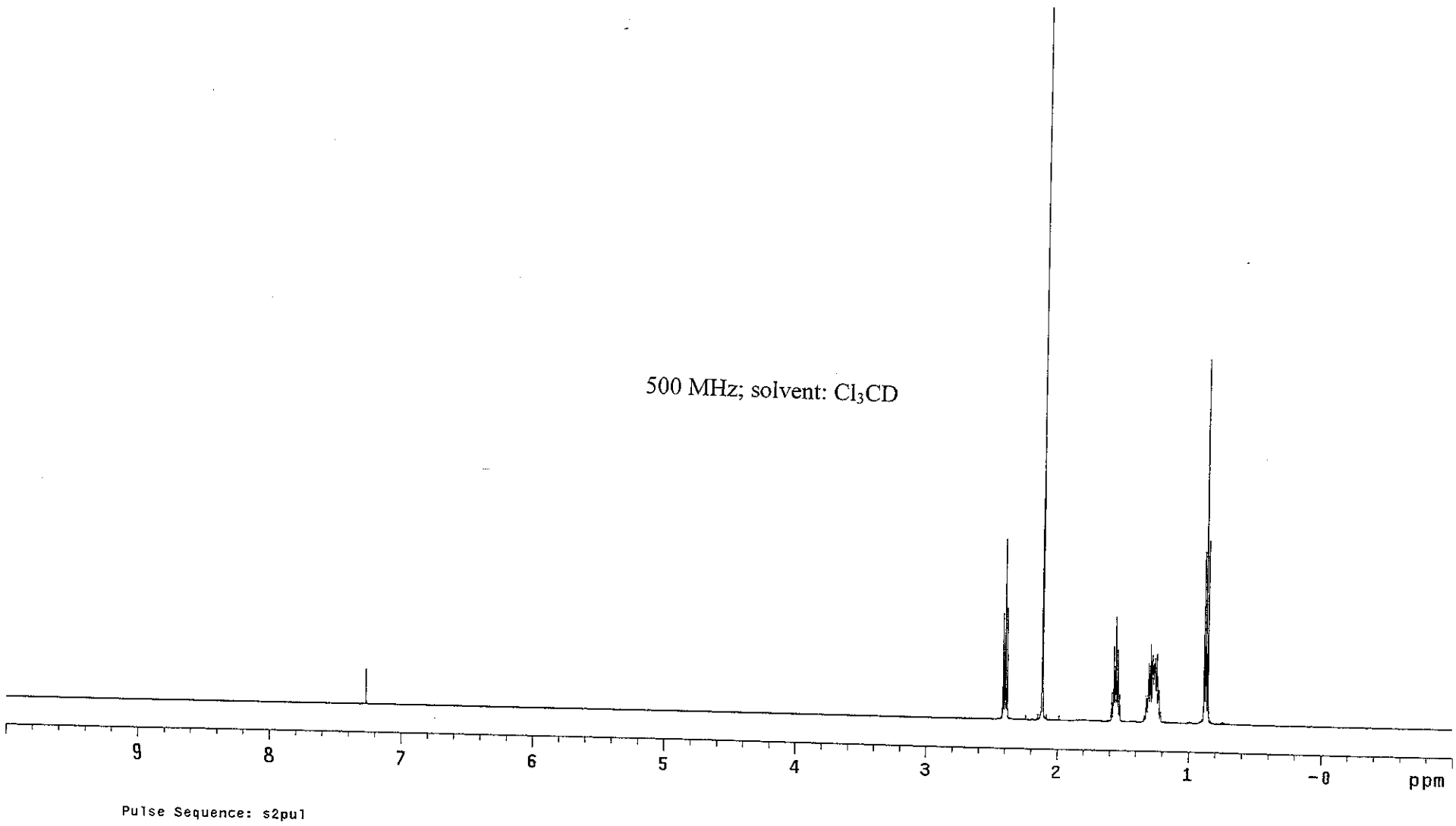
CHEM 146A Experiment 1 – Unknown Chemical Test Results

Unknown #3

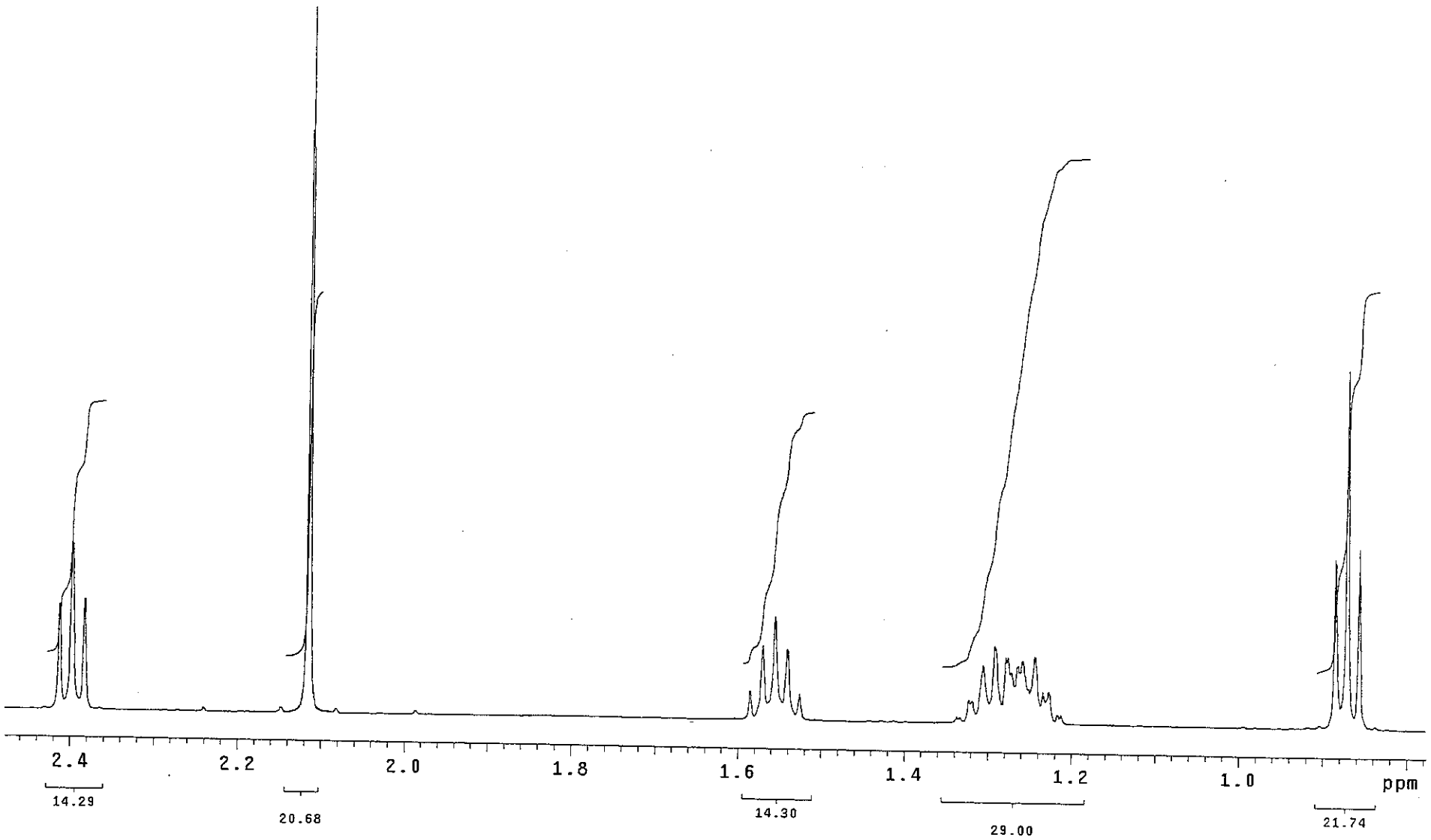
Test	Results / Observations	Interpretation
Lucas	- no precipitate or color change observed	
2,4-dinitrophenylhydrazine (DNPH)	- yellow-orange precipitate observed	
Fehling's	- solution quickly turns ~~blue~~ red	
NaI in Acetone	- no precipitate or color change observed	
$AgNO_3$ in EtOH	- no precipitate or color change observed	

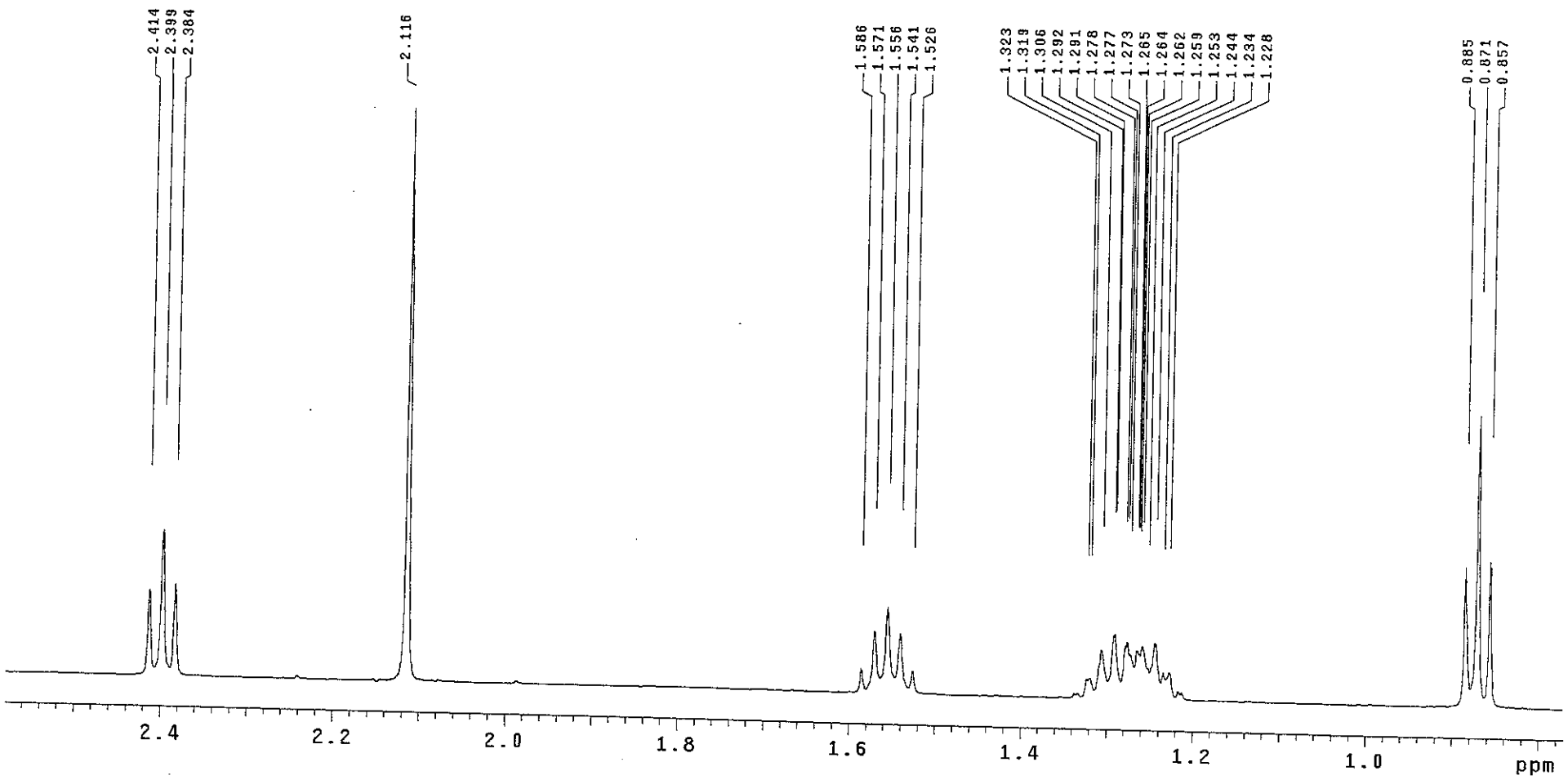
Conclusion (Functional Group Identification, incorporating IR spectrum):


92
90
80
70
60
50
40
30
20
10
-1
%T
4000
3500
3000
2500
2000
1500
1000
500
400
cm-1
2958.14cm-1
2932.62cm-1
2873.30cm-1
1718.10cm-1
1466.36cm-1
1412.03cm-1
1359.50cm-1
1226.07cm-1
1166.73cm-1
458.75cm-1
417.51cm-1
410.69cm-1
402.94cm-1


500 MHz; solvent: Cl_3CD
9
8
7
6
5
4
3
2
1
-0
ppm
Pulse Sequence: s2pul

Pulse Sequence: s2pul





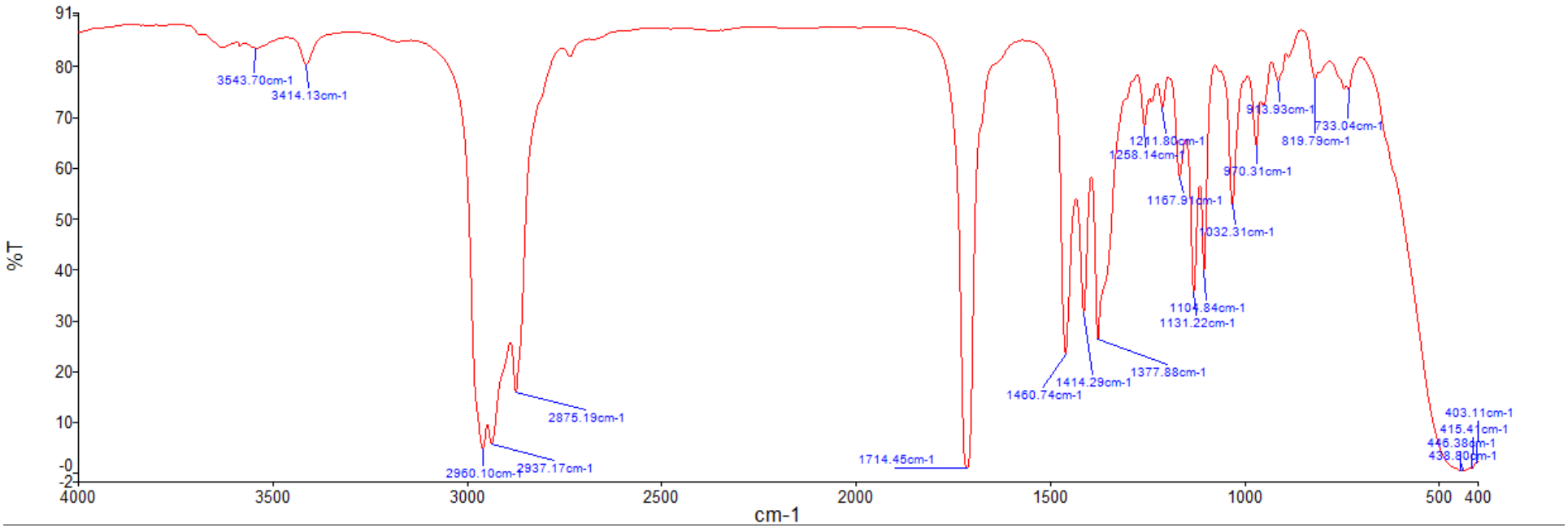
Pulse Sequence: s2pul

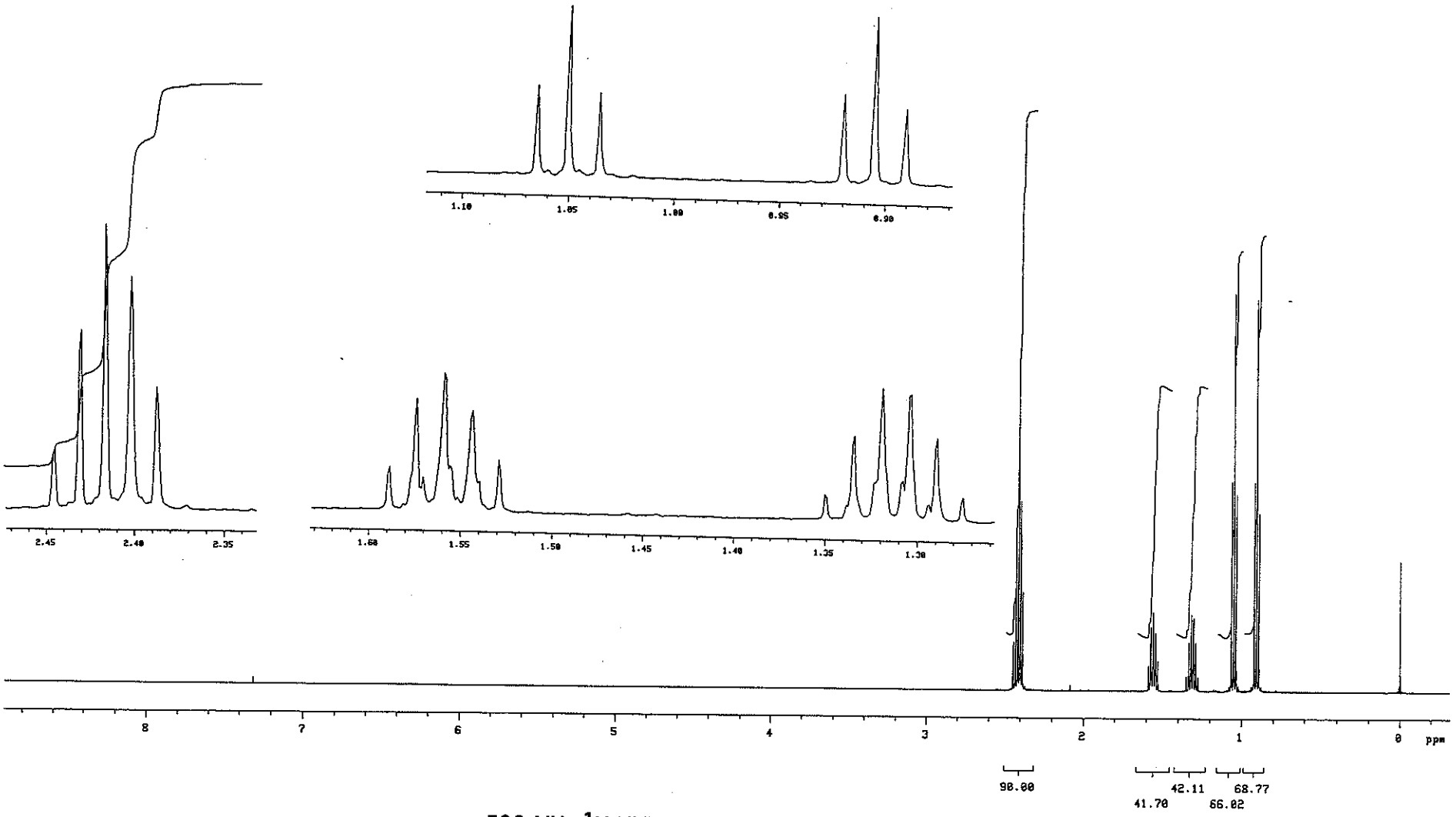
CHEM 146A Experiment 1 – Unknown Chemical Test Results

Unknown #4

Test	Results / Observations	Interpretation
Lucas	- no precipitate or color change observed	
2,4-dinitrophenylhydrazine (DNPH)	- yellow-orange precipitate observed	
Fehling's	- solution quickly turns ~~blue~~ red	
NaI in Acetone	- no precipitate or color change observed	
$AgNO_3$ in EtOH	- no precipitate or color change observed	

Conclusion (Functional Group Identification, incorporating IR spectrum):


%T
cm-1
3543.70cm-1
3414.13cm-1
2960.10cm-1
2937.17cm-1
2875.19cm-1
1714.45cm-1
1460.74cm-1
1414.29cm-1
1377.88cm-1
1258.14cm-1
1211.80cm-1
1167.91cm-1
1131.22cm-1
1104.84cm-1
1032.31cm-1
970.31cm-1
913.93cm-1
819.79cm-1
733.04cm-1
403.11cm-1
415.41cm-1
446.38cm-1
438.80cm-1



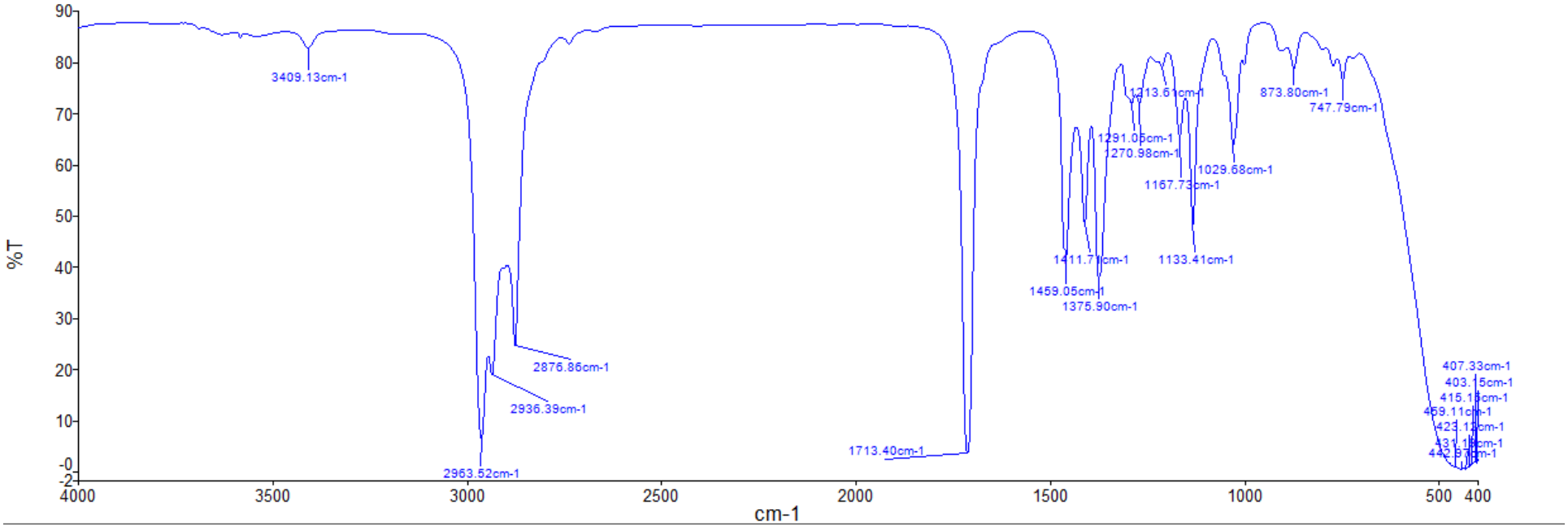
500-MHz ^{1}H-NMR spectrum in $CDCl_3$.

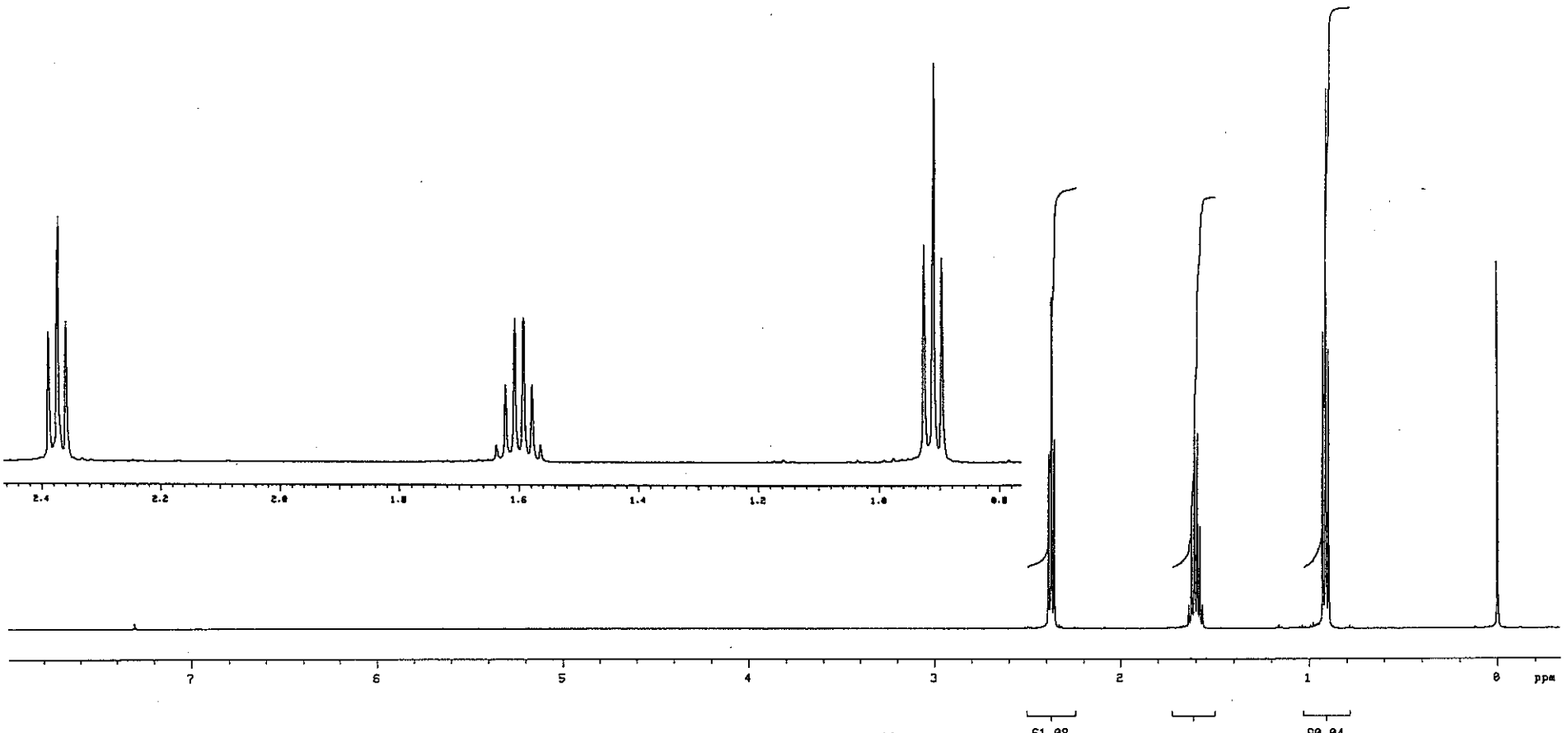
CHEM 146A Experiment 1 – Unknown Chemical Test Results

Unknown #5

Test	Results / Observations	Interpretation
Lucas	- no precipitate or color change observed	
2,4-dinitrophenylhydrazine (DNPH)	- yellow-orange precipitate observed	
Fehling's	- solution quickly turns ~~blue~~ red	
NaI in Acetone	- no precipitate or color change observed	
$AgNO_3$ in EtOH	- no precipitate or color change observed	

Conclusion (Functional Group Identification, incorporating IR spectrum):


%T
cm-1
3409.13cm-1
2963.52cm-1
2936.39cm-1
2876.86cm-1
1713.40cm-1
1459.05cm-1
1375.90cm-1
1133.41cm-1
1029.68cm-1
873.80cm-1
747.79cm-1
407.33cm-1



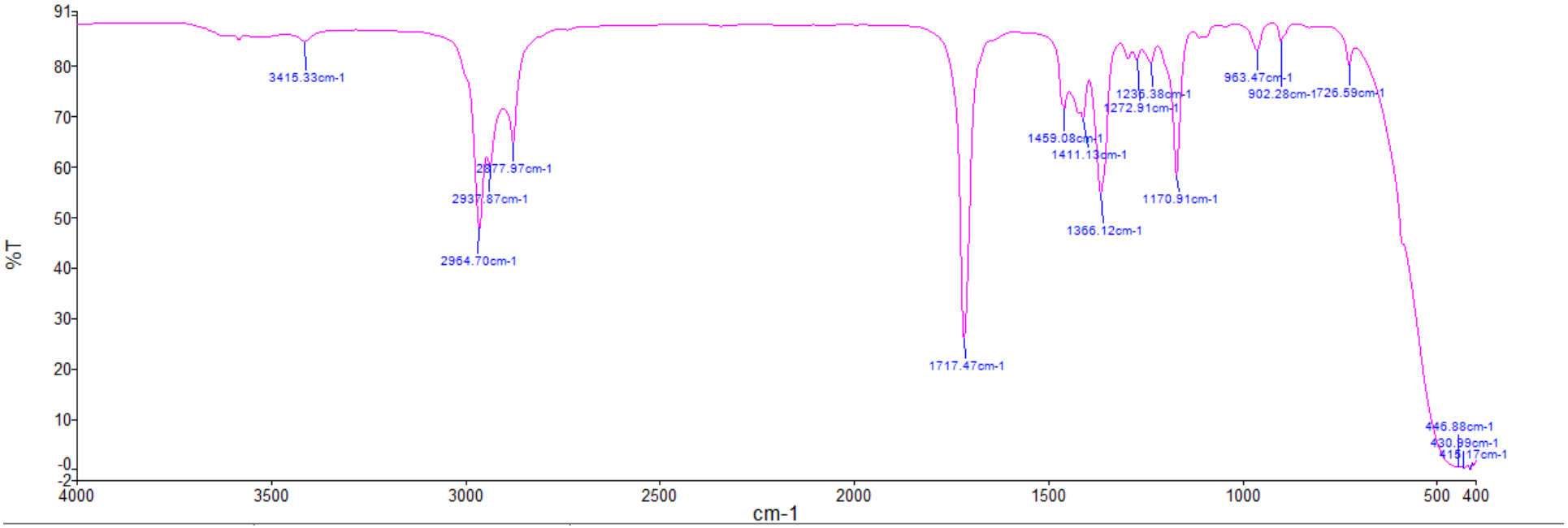
500-MHz ^{1}H-NMR spectrum in $CDCl_3$.

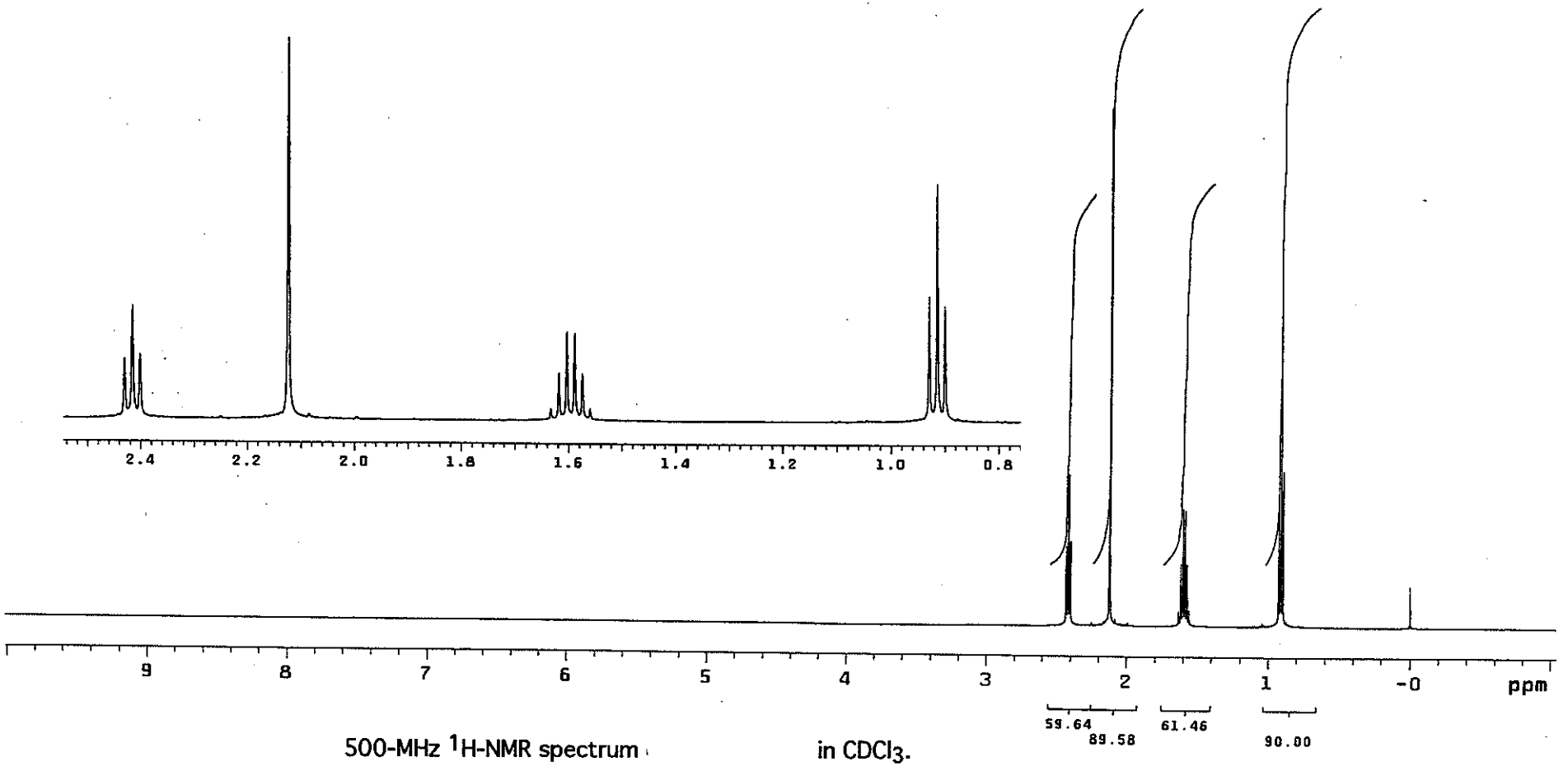
CHEM 146A Experiment 1 – Unknown Chemical Test Results

Unknown #6

Test	Results / Observations	Interpretation
Lucas	- no precipitate or color change observed	
2,4-dinitrophenylhydrazine (DNPH)	- yellow-orange precipitate observed	
Fehling's	- solution quickly turns ~~blue~~ red	
NaI in Acetone	- no precipitate or color change observed	
$AgNO_3$ in EtOH	- no precipitate or color change observed	

Conclusion (Functional Group Identification, incorporating IR spectrum):


%T
cm-1
3415.33cm-1
2964.70cm-1
2937.87cm-1
2877.97cm-1
1717.47cm-1
1459.08cm-1
1411.13cm-1
1366.12cm-1
1272.91cm-1
1235.38cm-1
1170.91cm-1
963.47cm-1
902.28cm-1
726.59cm-1
446.88cm-1
430.39cm-1



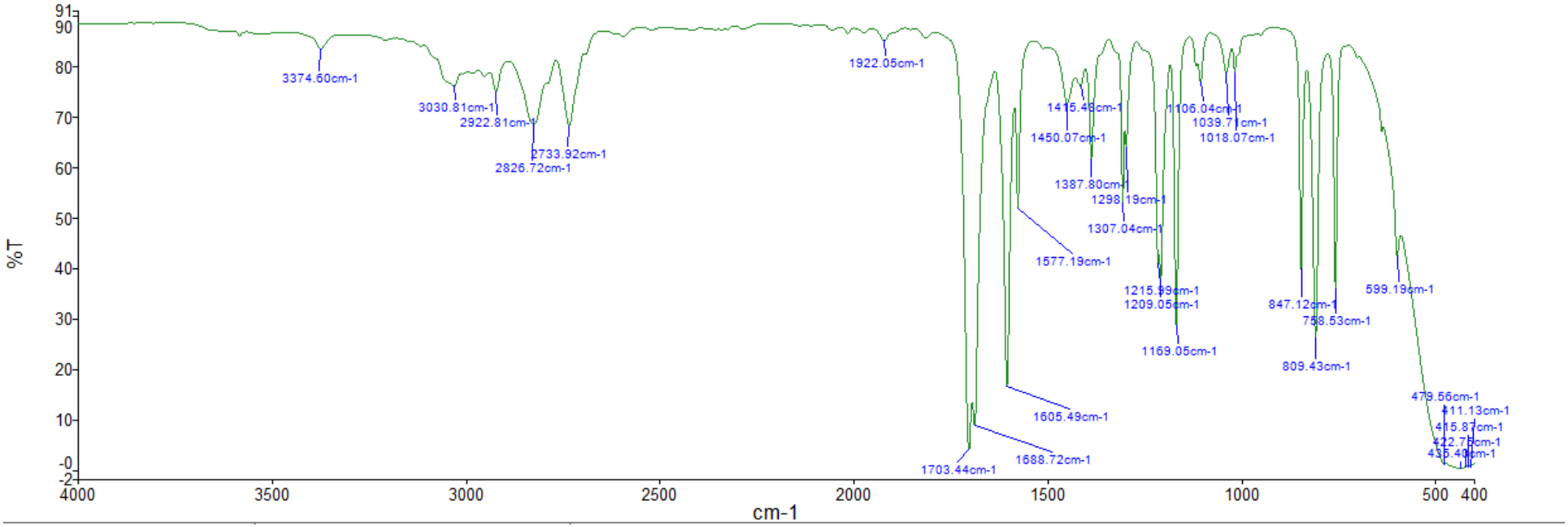
500-MHz ^{1}H-NMR spectrum in $CDCl_3$.

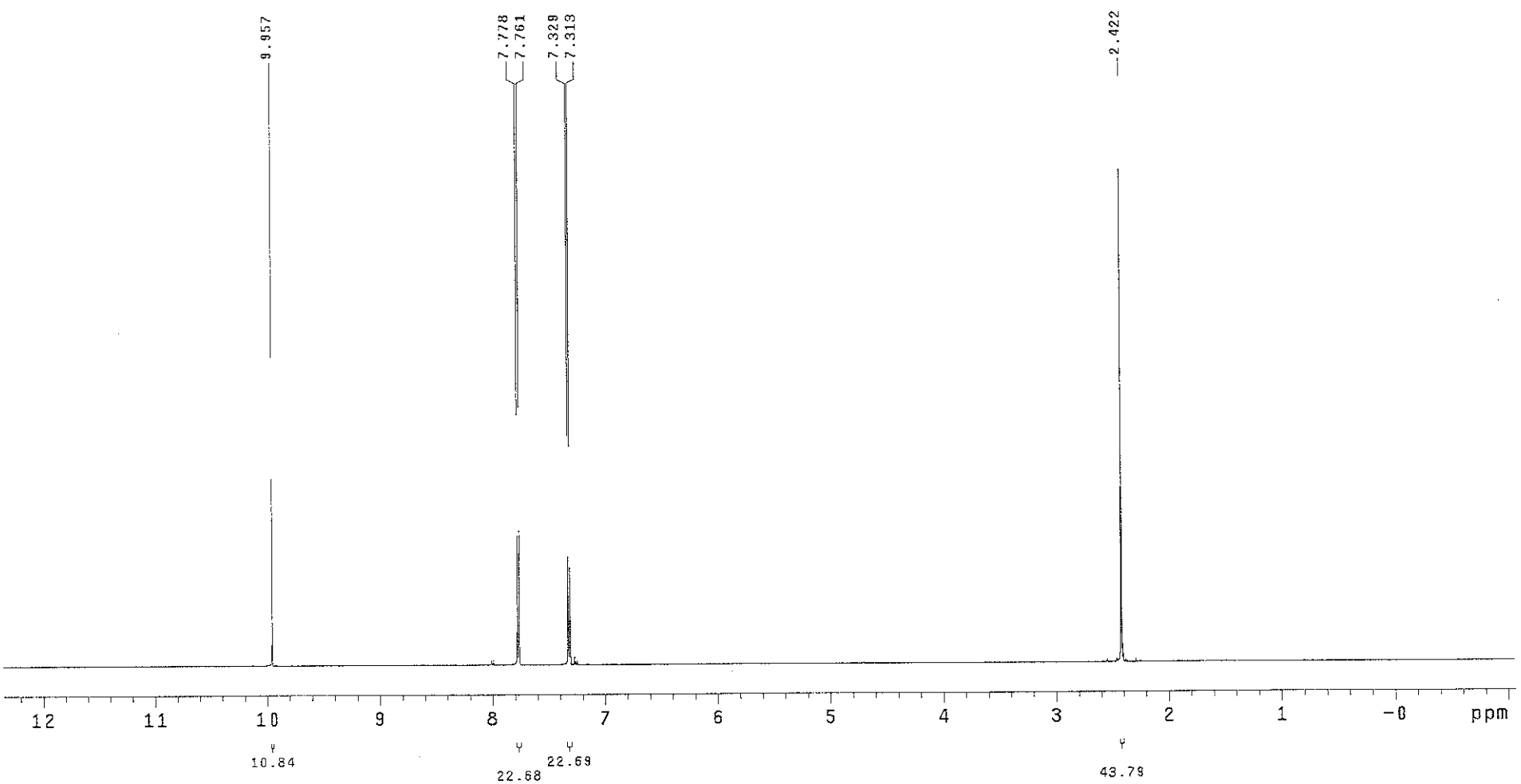
CHEM 146A Experiment 1 – Unknown Chemical Test Results

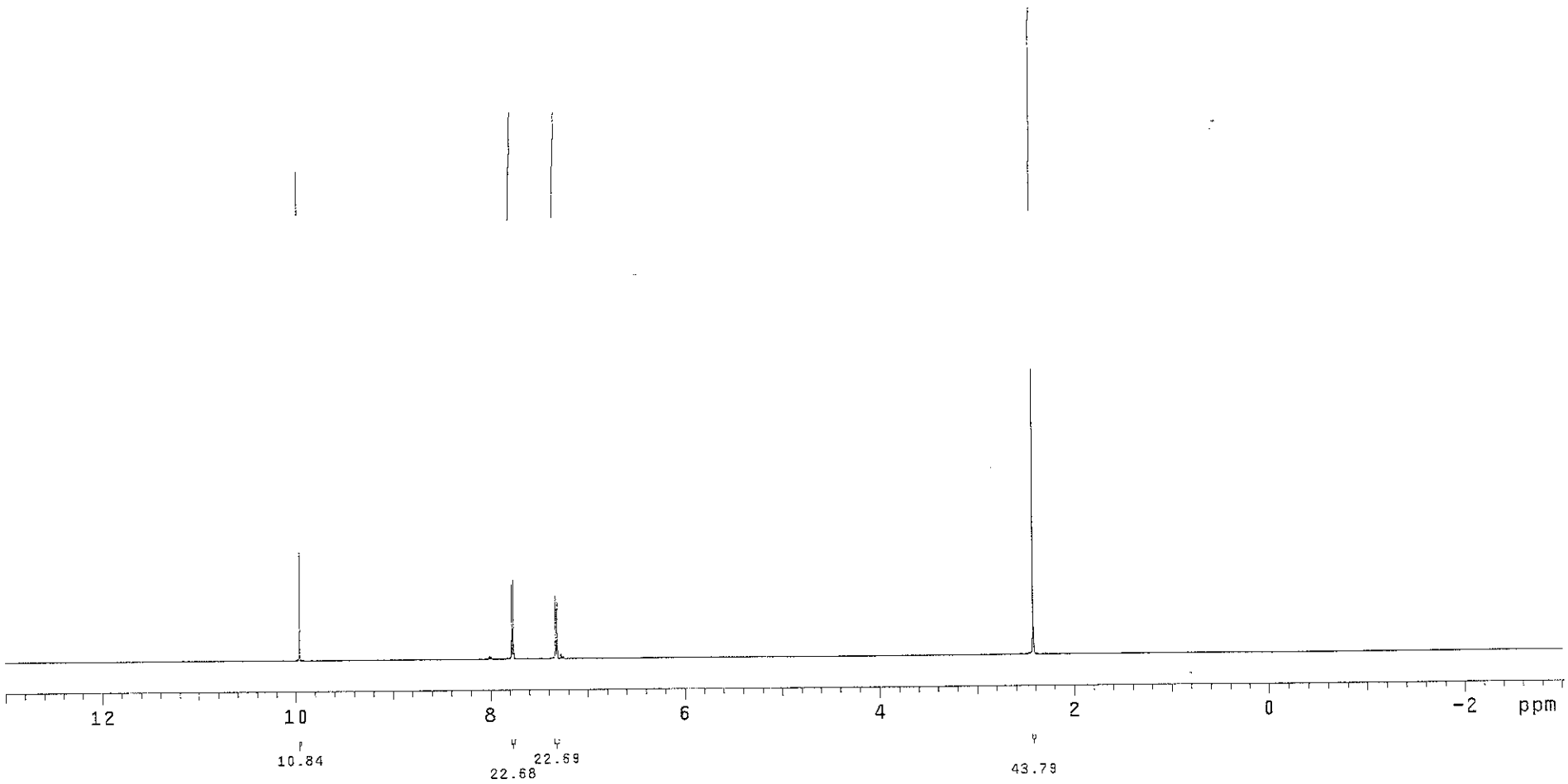
Unknown #7

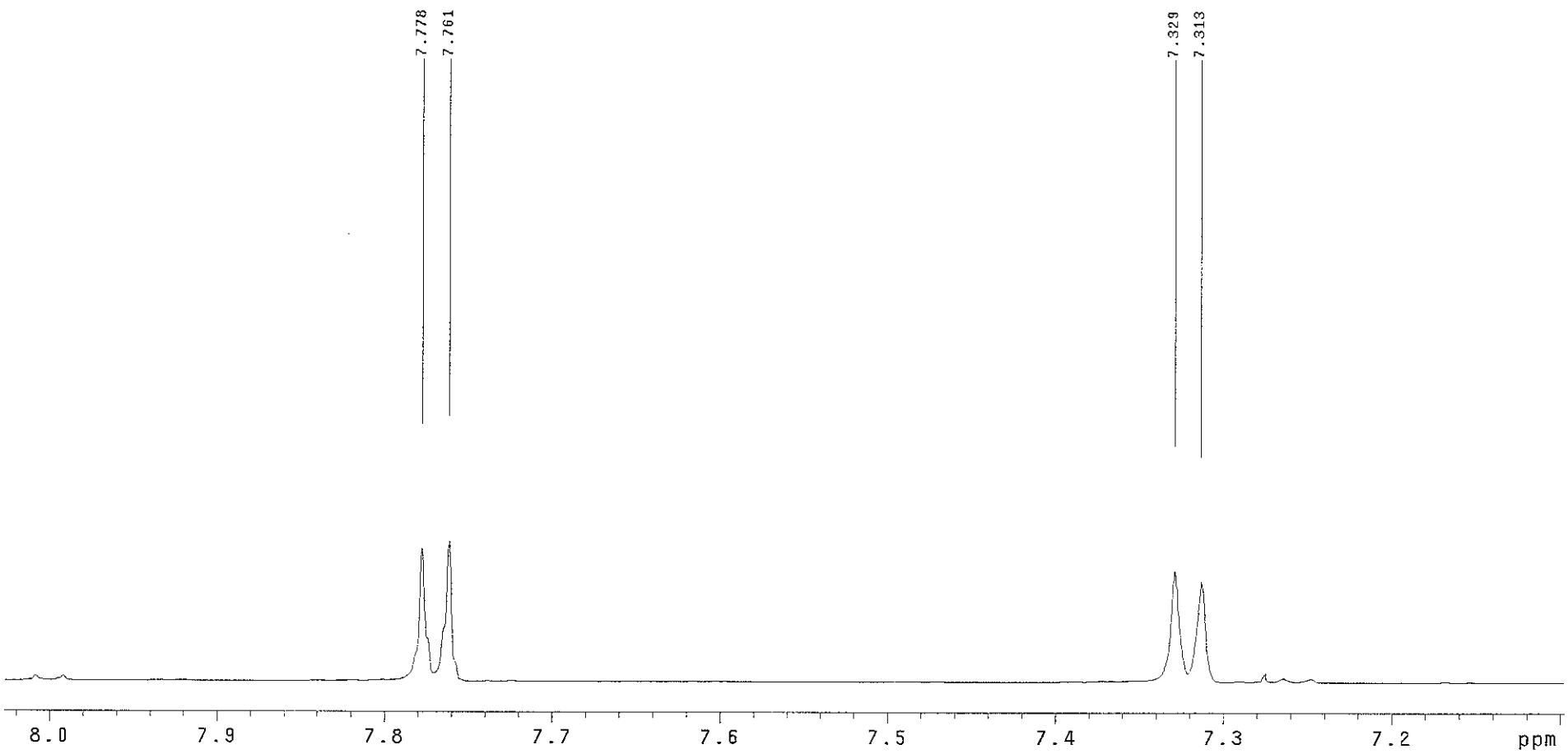
Test	Results / Observations	Interpretation
Lucas	- no precipitate or color change observed	
2,4-dinitrophenylhydrazine (DNPH)	- yellow-orange precipitate observed	
Fehling's	- solution turns ~~blue~~ red slowly (1 min)	
NaI in Acetone	- no precipitate or color change observed	
$AgNO_3$ in EtOH	- no precipitate or color change observed	

Conclusion (Functional Group Identification, incorporating IR spectrum):


%T
cm-1
3374.60cm-1
3030.81cm-1
2922.81cm-1
2826.72cm-1
2733.92cm-1
1922.05cm-1
1703.44cm-1
1688.72cm-1
1605.49cm-1
1577.19cm-1
1450.07cm-1
1387.80cm-1
1307.04cm-1
1169.05cm-1
1106.04cm-1
1039.71cm-1
1018.07cm-1
847.12cm-1
809.43cm-1
758.53cm-1
599.19cm-1
479.56cm-1
411.13cm-1


9.957
7.778
7.761
7.329
7.313
2.422
12
11
10
9
8
7
6
5
4
3
2
1
-0
ppm
10.84
22.68
22.69
43.79


12
10
8
6
4
2
0
-2
ppm
10.84
22.68
22.69
43.79

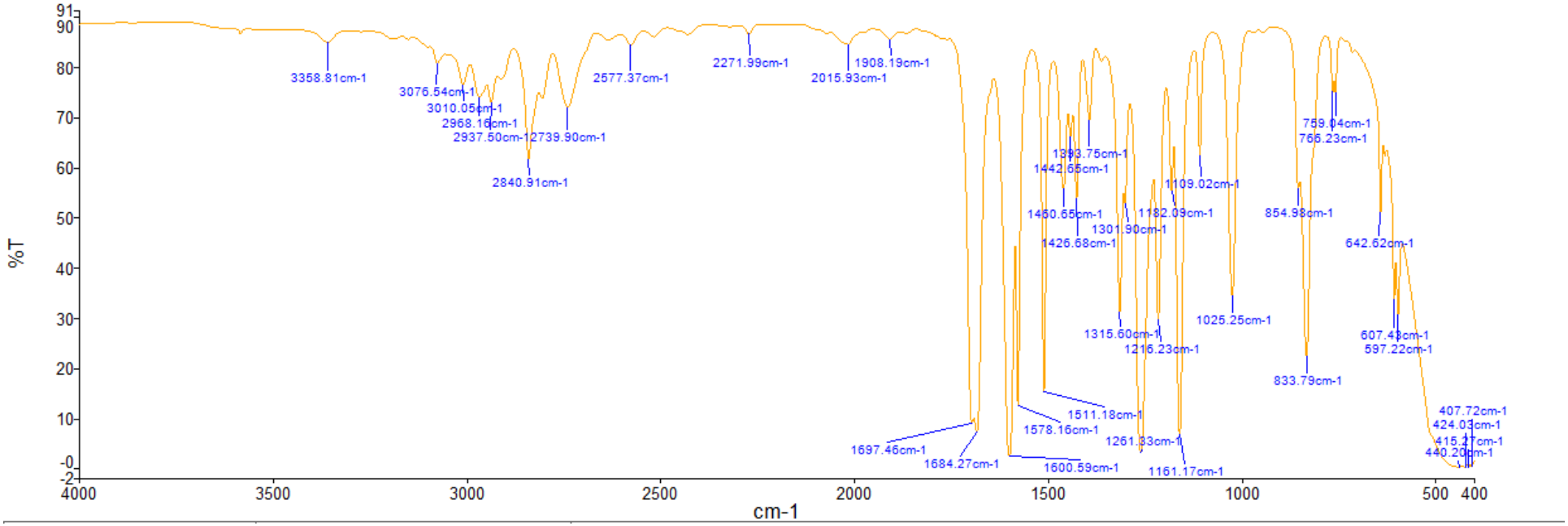

7.778
7.761
7.329
7.313
8.0
7.9
7.8
7.7
7.6
7.5
7.4
7.3
7.2
ppm

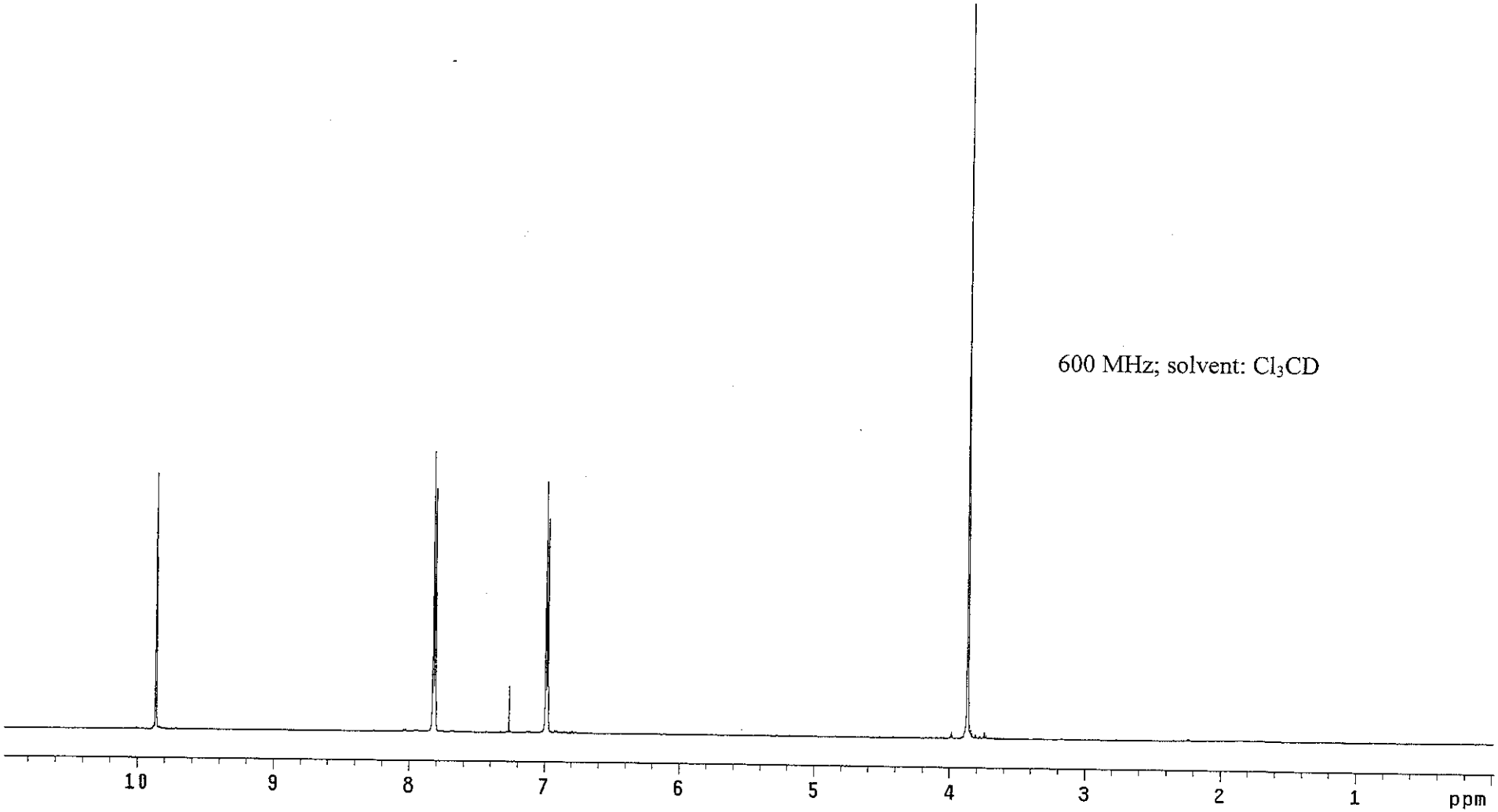
CHEM 146A Experiment 1 – Unknown Chemical Test Results

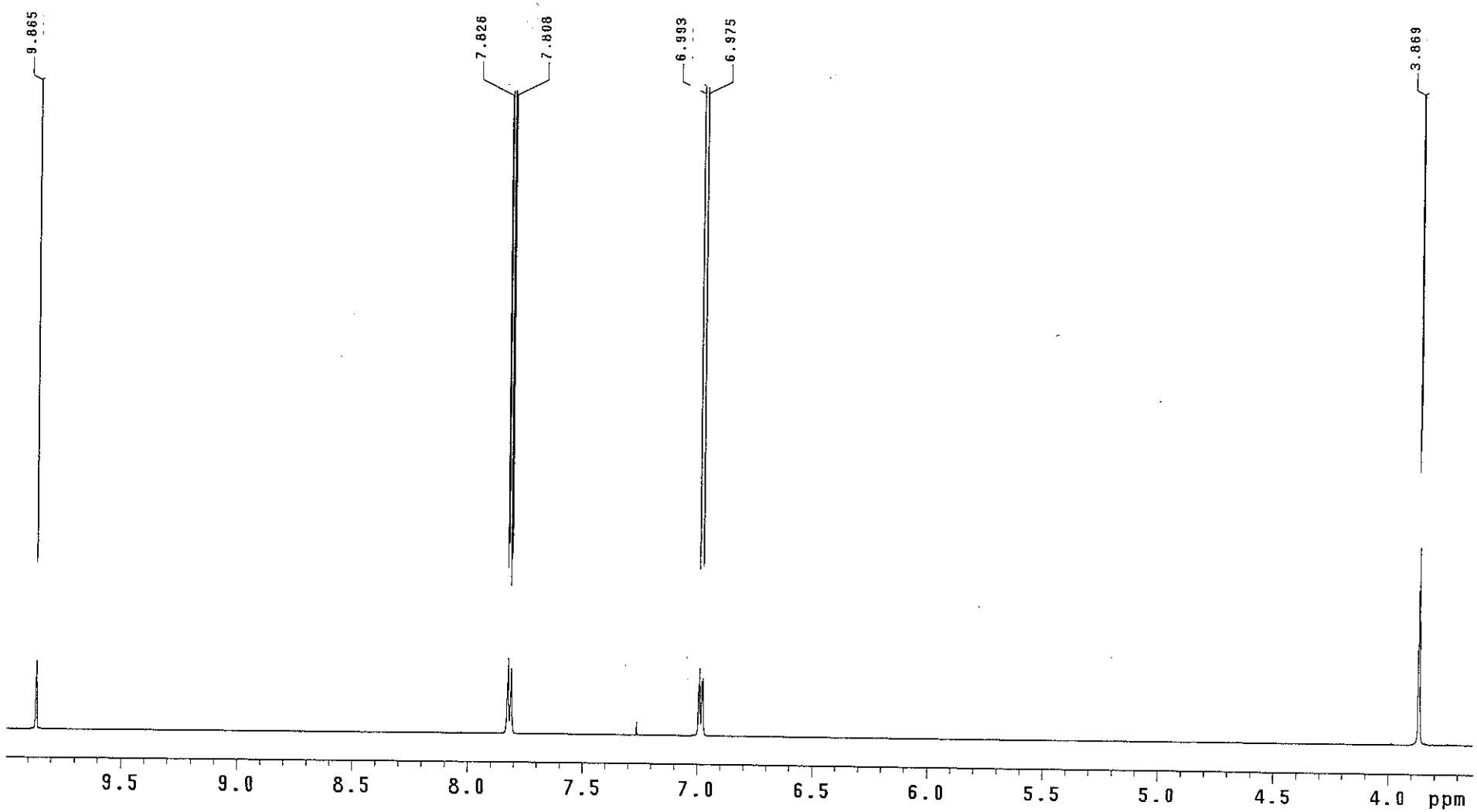
Unknown #8

Test	Results / Observations	Interpretation
Lucas	- no precipitate or color change observed	
2,4-dinitrophenylhydrazine (DNPH)	- yellow-orange precipitate observed	
Fehling's	- solution quickly turns ~~blue~~ red	
NaI in Acetone	- no precipitate or color change observed	
$AgNO_3$ in EtOH	- no precipitate or color change observed	

Conclusion (Functional Group Identification, incorporating IR spectrum):


%T
cm-1
3358.81cm-1
3076.54cm-1
3010.05cm-1
2968.16cm-1
2937.50cm-1
2840.91cm-1
2739.90cm-1
2577.37cm-1
2271.99cm-1
2015.93cm-1
1908.19cm-1
1697.46cm-1
1684.27cm-1
1600.59cm-1
1578.16cm-1
1511.18cm-1
1460.65cm-1
1442.65cm-1
1426.68cm-1
1393.75cm-1
1315.60cm-1
1301.90cm-1
1261.33cm-1
1216.23cm-1
1182.09cm-1
1161.17cm-1
1109.02cm-1
1025.25cm-1
854.98cm-1
833.79cm-1
766.23cm-1
759.04cm-1
642.62cm-1
607.43cm-1
597.22cm-1
440.20cm-1
415.27cm-1
424.03cm-1
407.72cm-1


600 MHz; solvent: Cl_3CD
10
9
8
7
6
5
4
3
2
1
ppm
Archive directory:
Sample directory:
File: presat
Pulse Sequence: presat

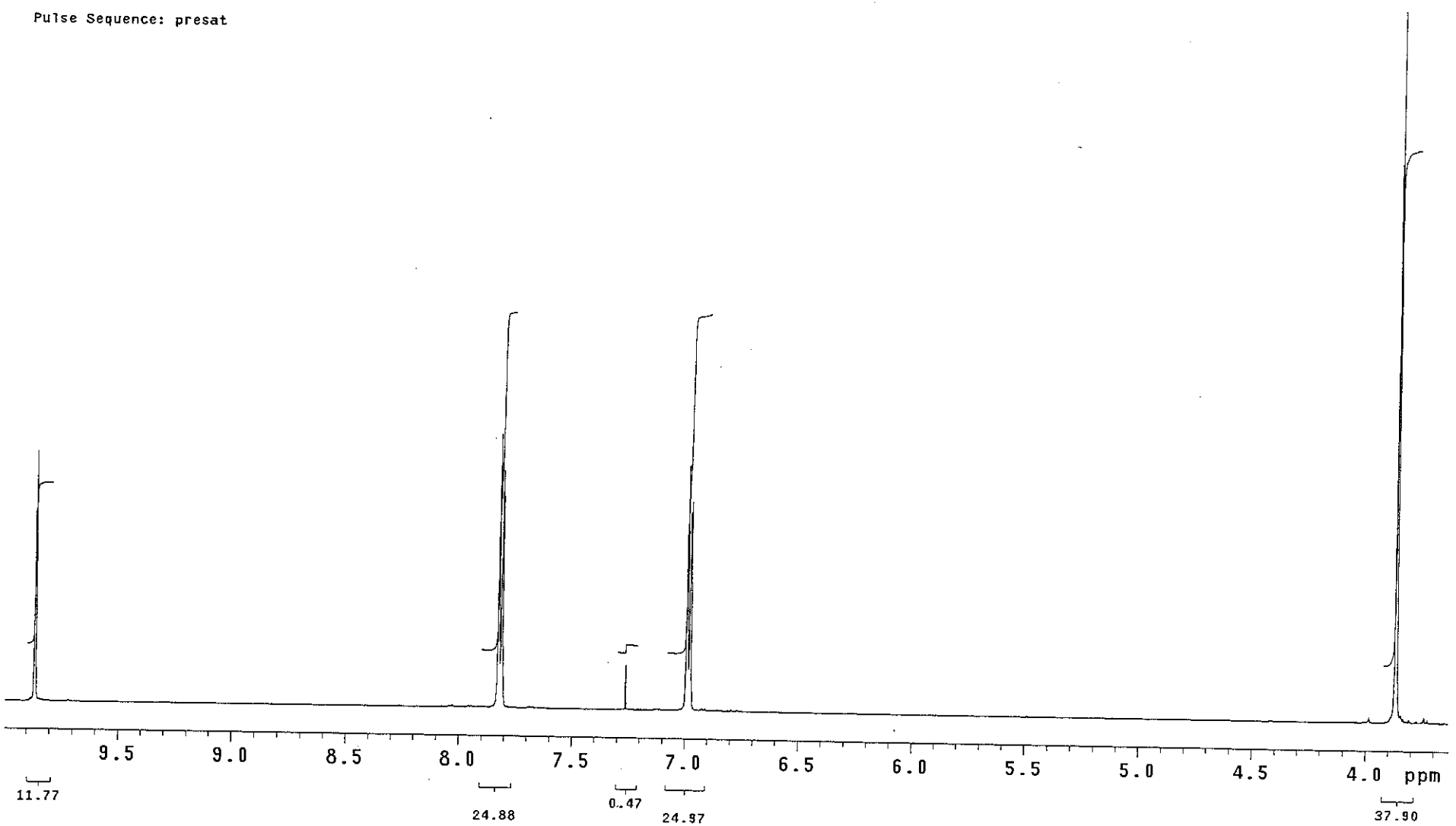


Archive directory:
Sample directory:
File: presat

Pulse Sequence: presat

Archive directory:
Sample directory:
File: presat

Pulse Sequence: presat

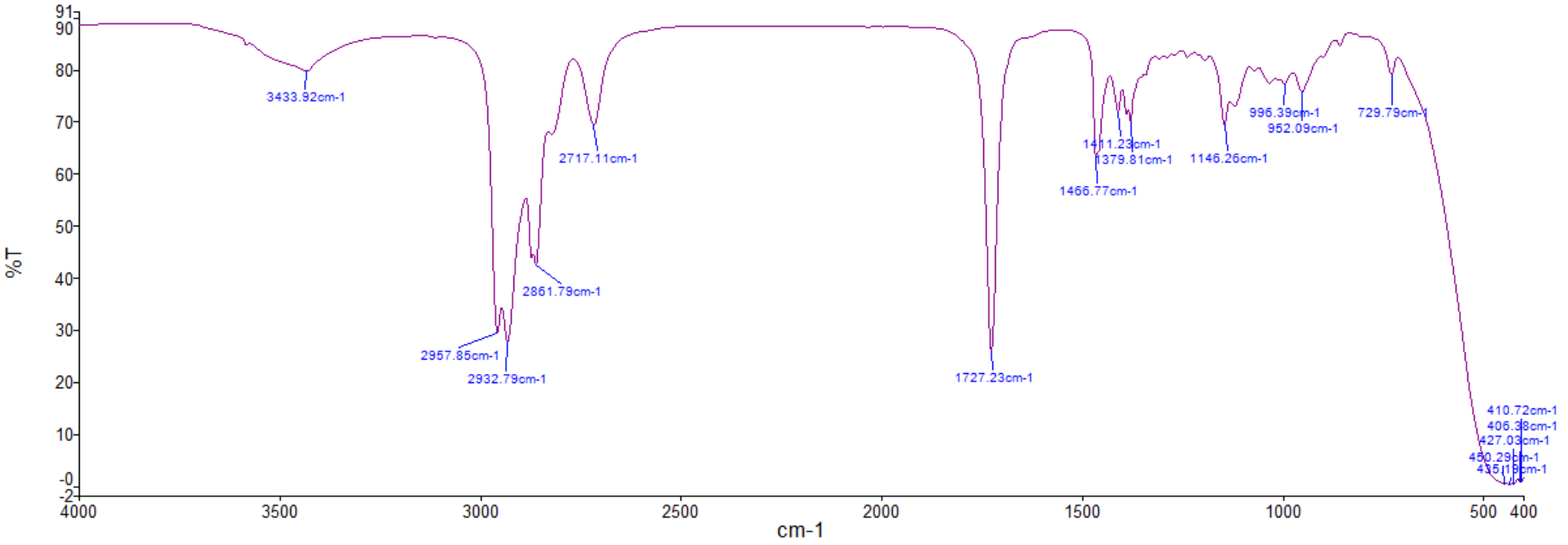


CHEM 146A Experiment 1 – Unknown Chemical Test Results

Unknown #9

Test	Results / Observations	Interpretation
Lucas	- no precipitate or color change observed	
2,4-dinitrophenylhydrazine (DNPH)	- yellow-orange precipitate observed	
Fehling's	- solution quickly turns blue ~~blue~~ red	
NaI in Acetone	- no precipitate or color change observed	
$AgNO_3$ in EtOH	- no precipitate or color change observed	

Conclusion (Functional Group Identification, incorporating IR spectrum):


%T
cm-1
3433.92cm-1
2957.85cm-1
2932.79cm-1
2861.79cm-1
2717.11cm-1
1727.23cm-1
1466.77cm-1
1411.23cm-1
1379.81cm-1
1146.26cm-1
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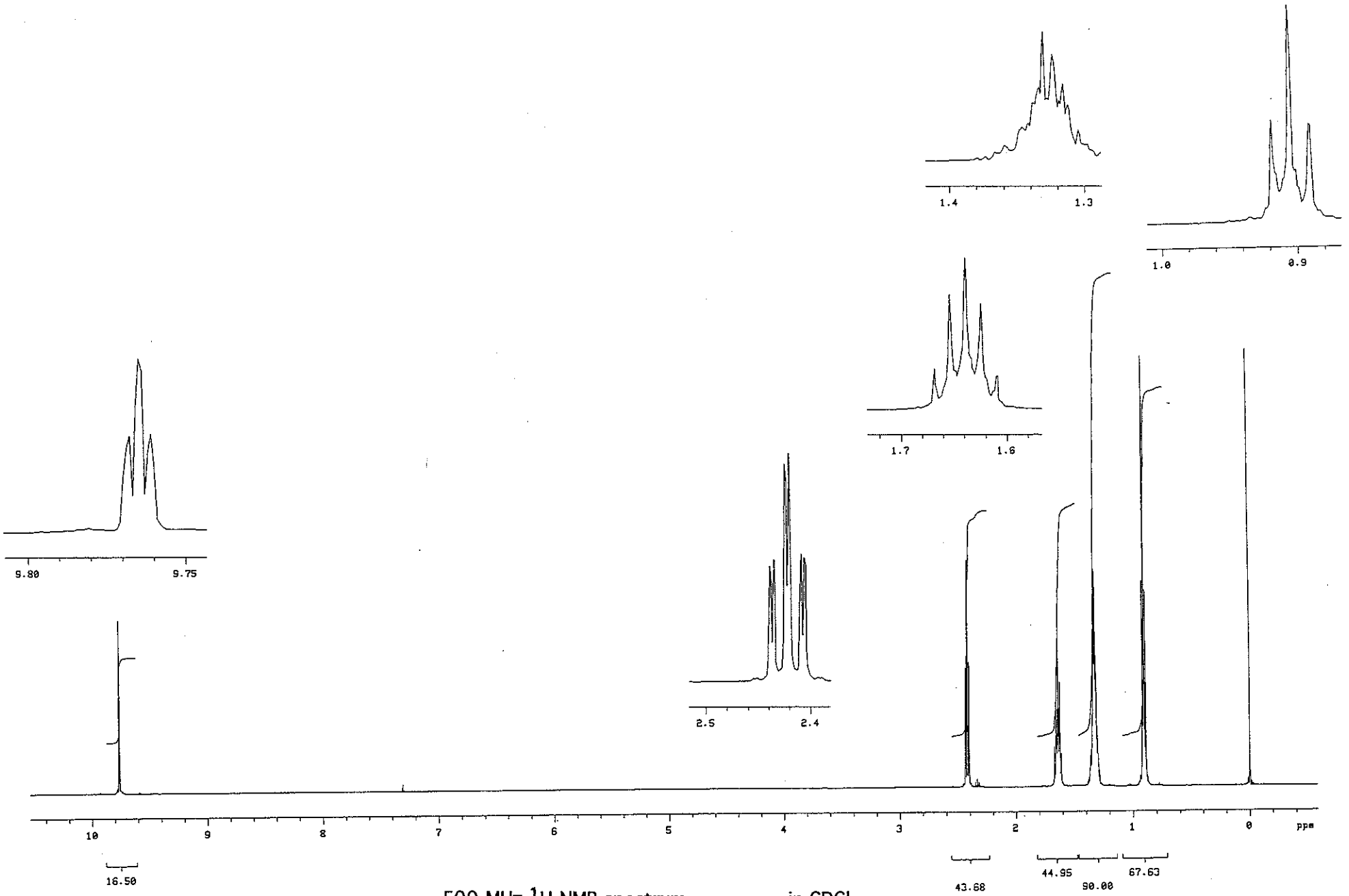
952.09cm-1
729.79cm-1
410.72cm-1
406.38cm-1
427.03cm-1
435.18cm-1



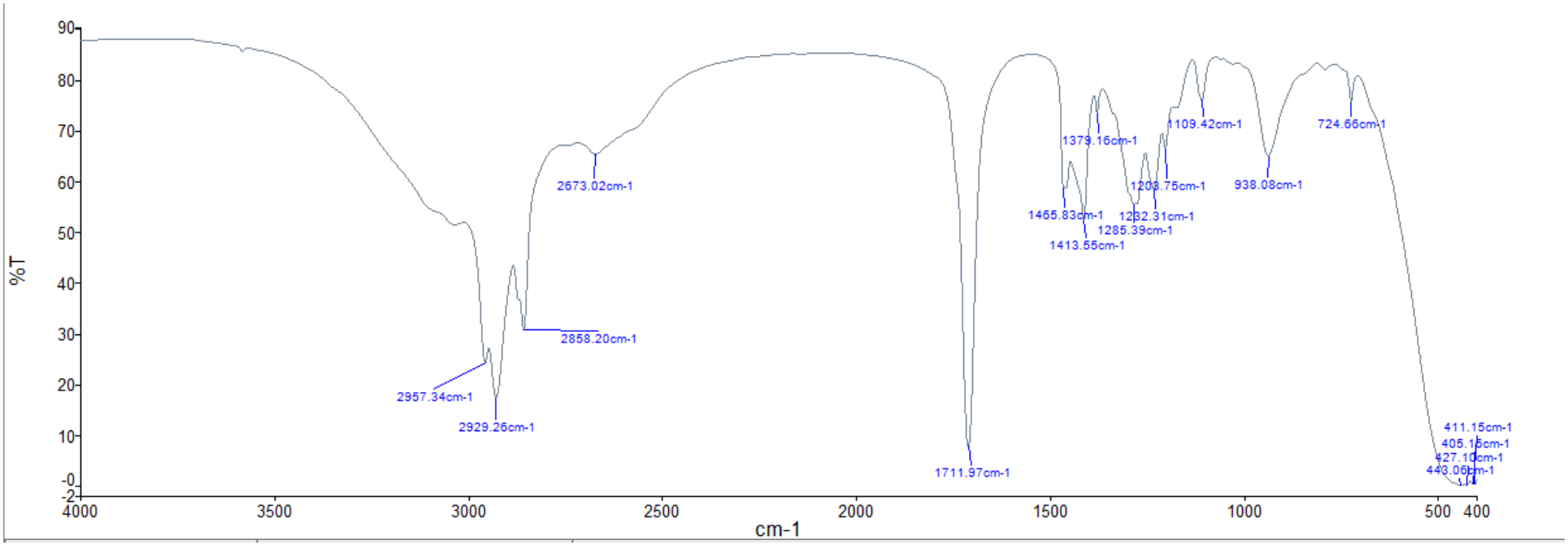
500-MHz ^{1}H-NMR spectrum in $CDCl_3$.

CHEM 146A Experiment 1 – Unknown Chemical Test Results

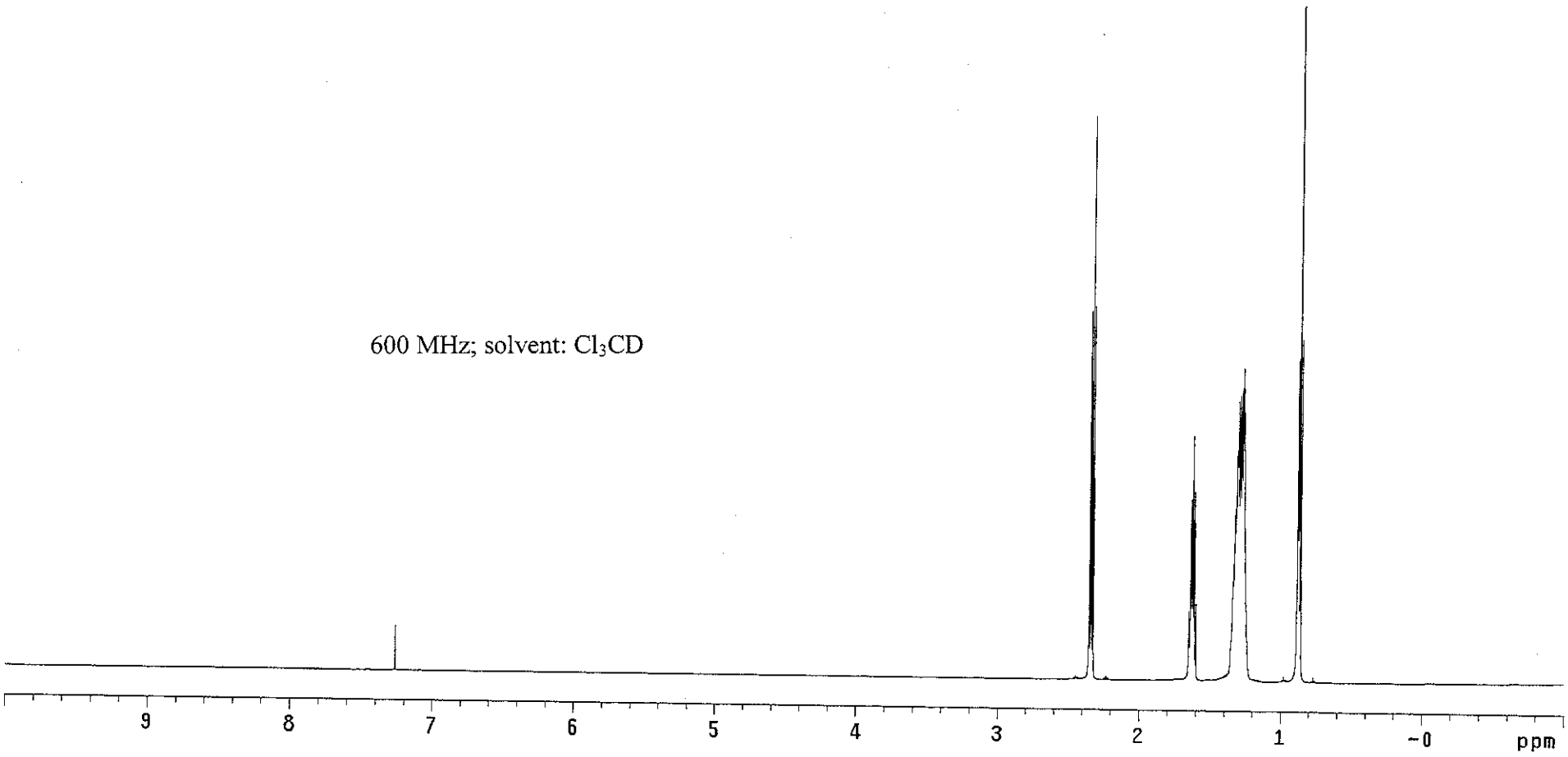
Unknown #10

Test	Results / Observations	Interpretation
Lucas	- no precipitate or color change observed	
2,4-dinitrophenylhydrazine (DNPH)	- no precipitate or color change observed	
Fehling's	- no precipitate or color change observed	
NaI in Acetone	- no precipitate or color change observed	
$AgNO_3$ in EtOH	- silver precipitate observed	

Conclusion (Functional Group Identification, incorporating IR spectrum):


%T
cm-1
2957.34cm-1
2929.26cm-1
2858.20cm-1
2673.02cm-1
1711.97cm-1
1465.83cm-1
1413.55cm-1
1379.16cm-1
1285.39cm-1
1232.31cm-1
1203.75cm-1
1109.42cm-1
938.08cm-1
724.66cm-1
411.15cm-1

600 MHz; solvent: Cl_3CD

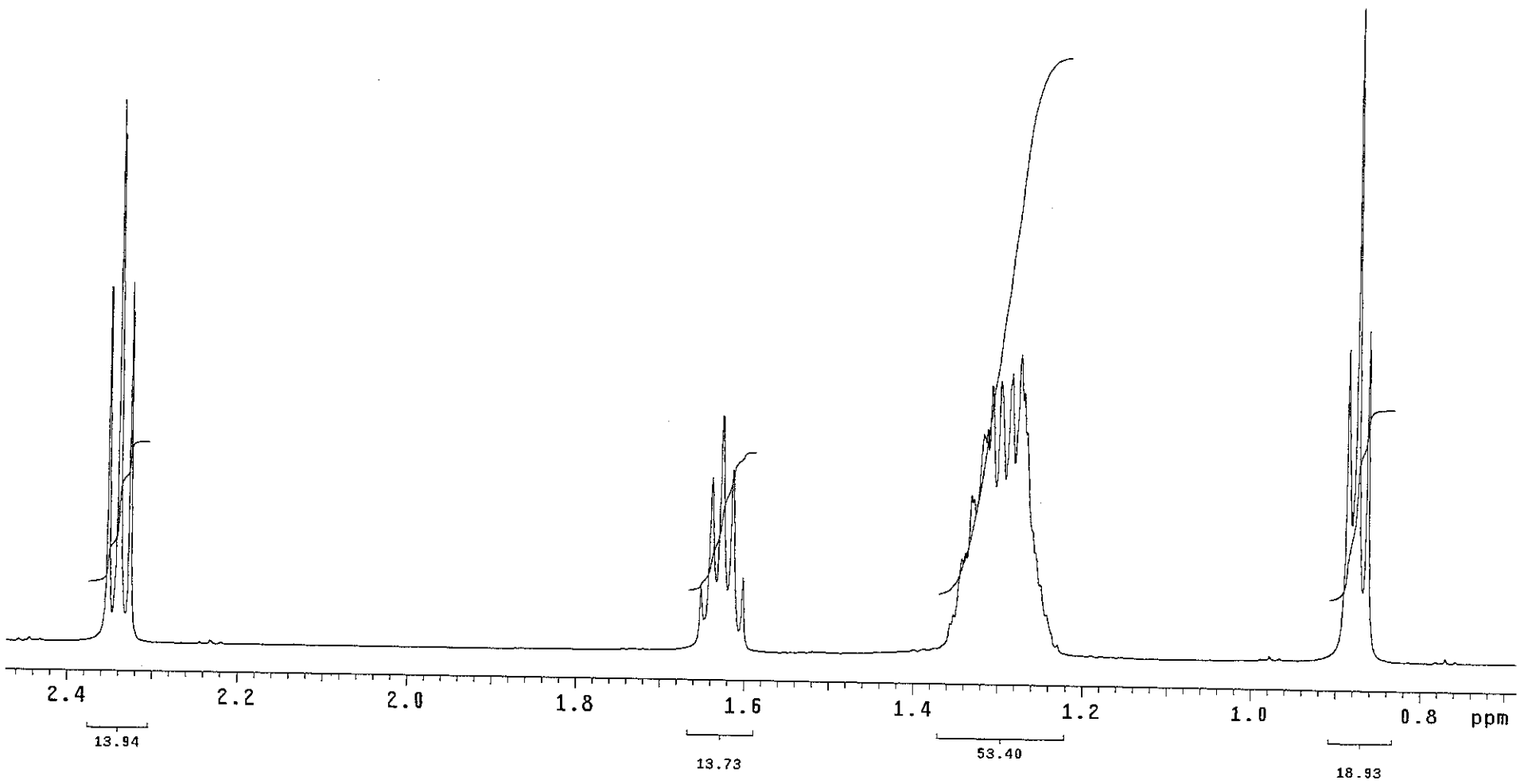


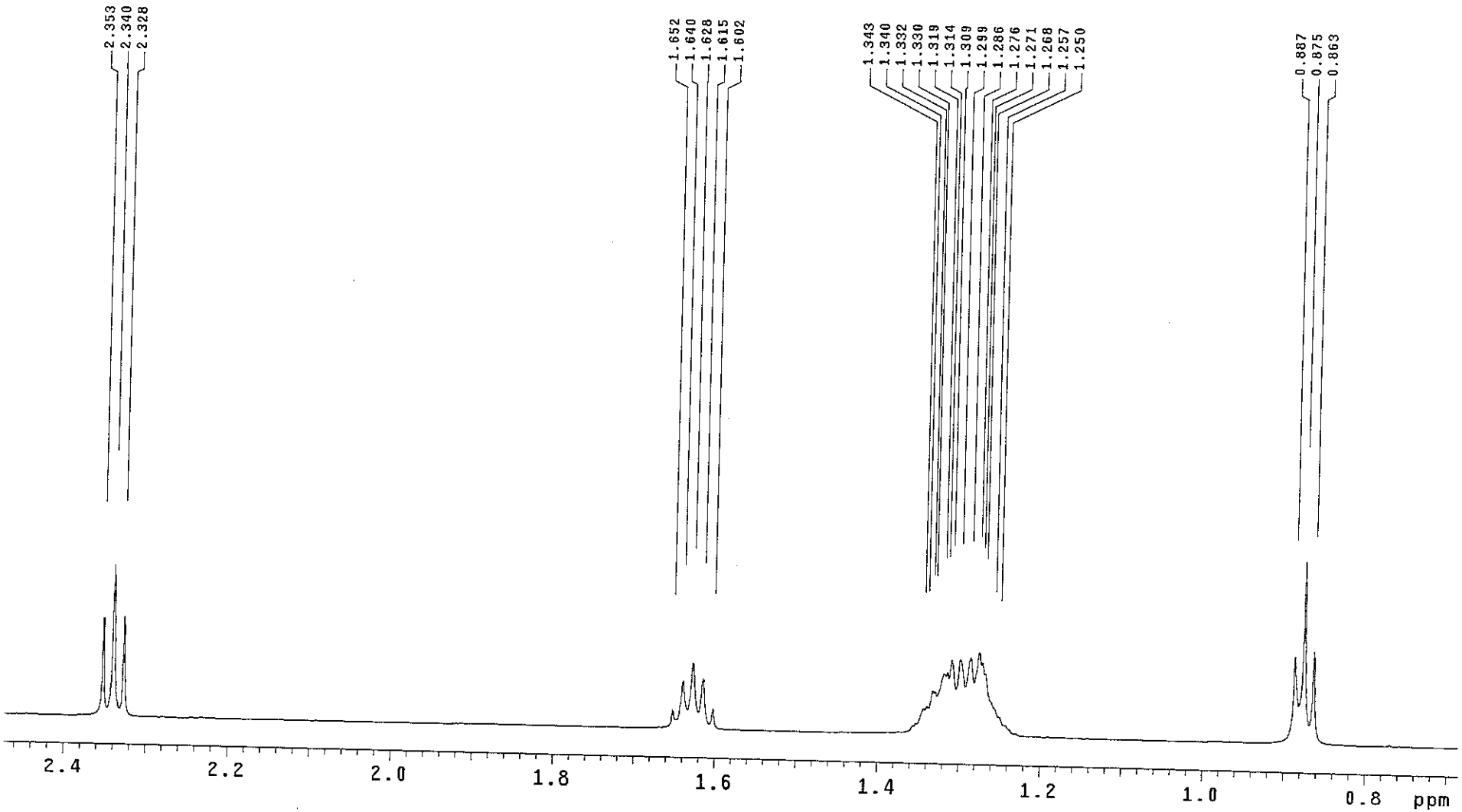
Archive directory:
Sample directory:
File: presat

Pulse Sequence: presat

Archive directory:
Sample directory:
File: presat

Pulse Sequence: presat





Archive directory:
Sample directory:
File: presat

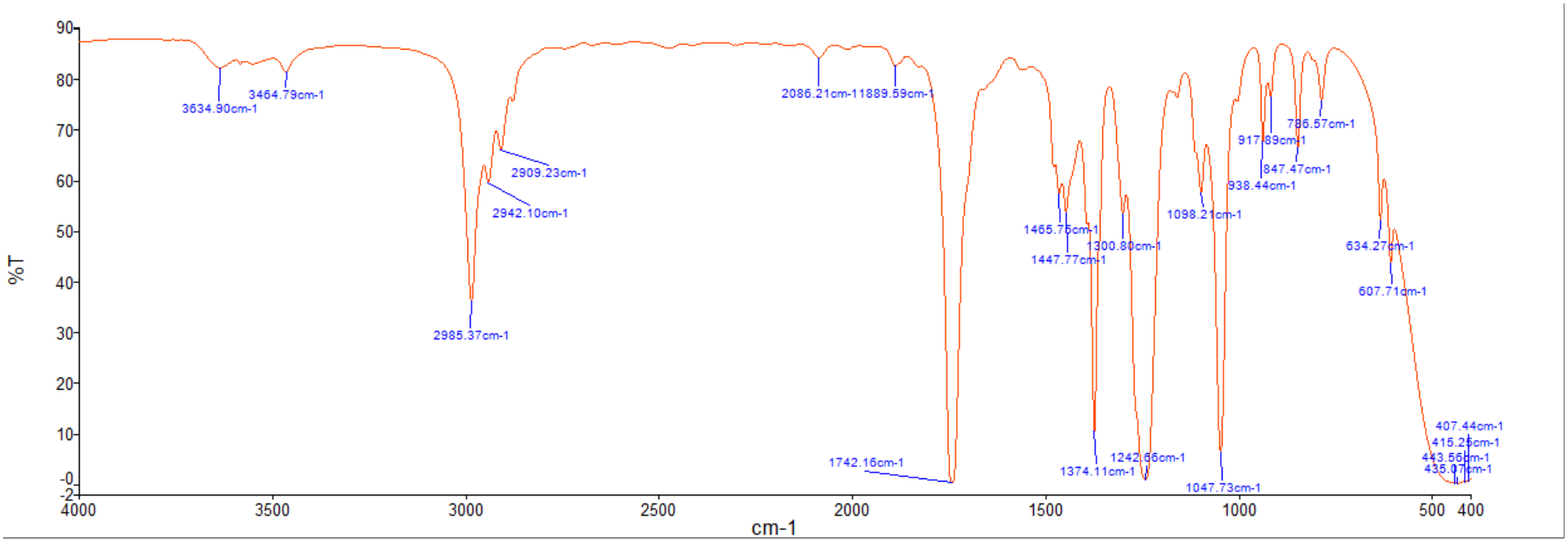
Pulse Sequence: presat

CHEM 146A Experiment 1 – Unknown Chemical Test Results

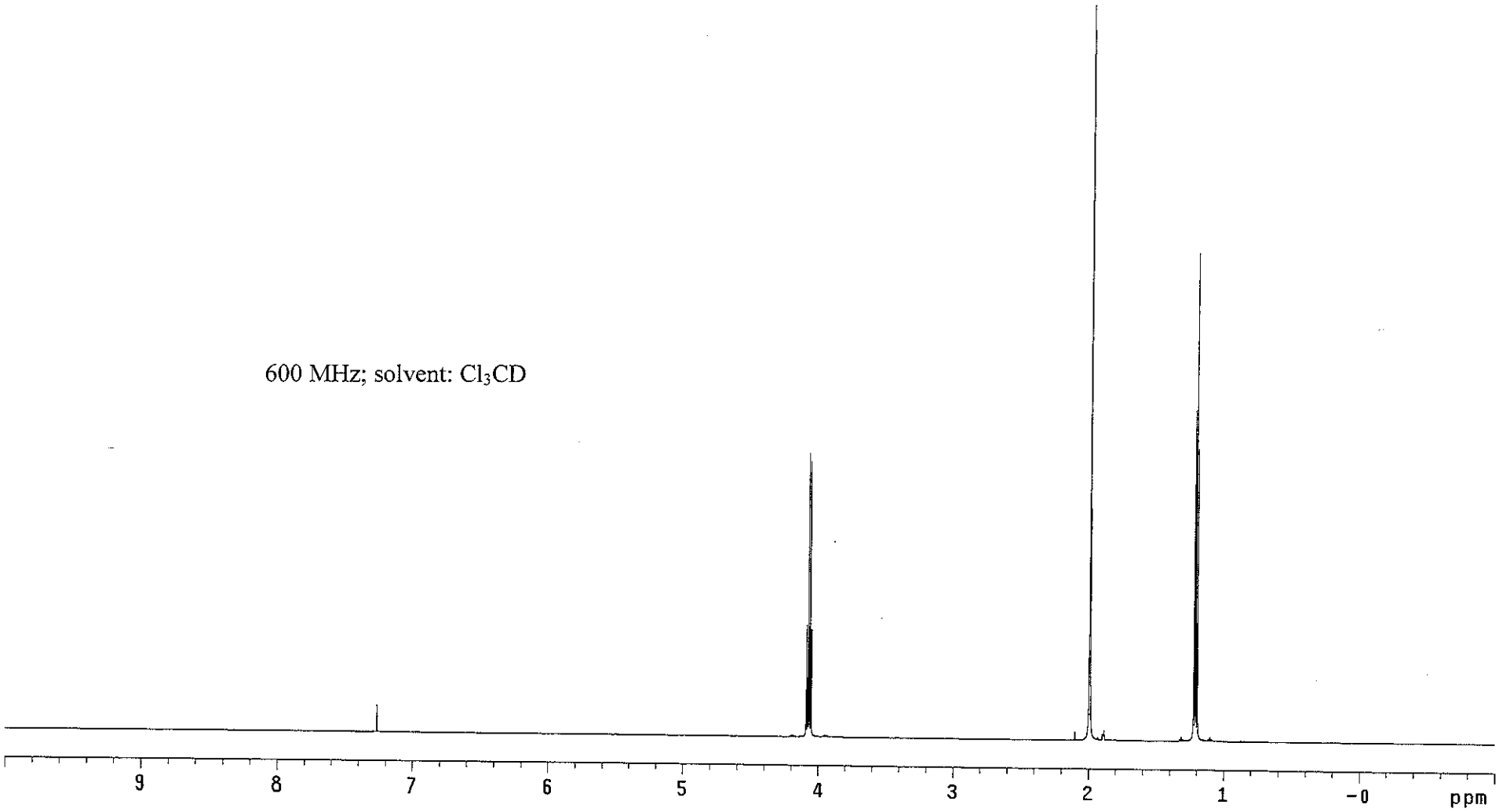
Unknown #11

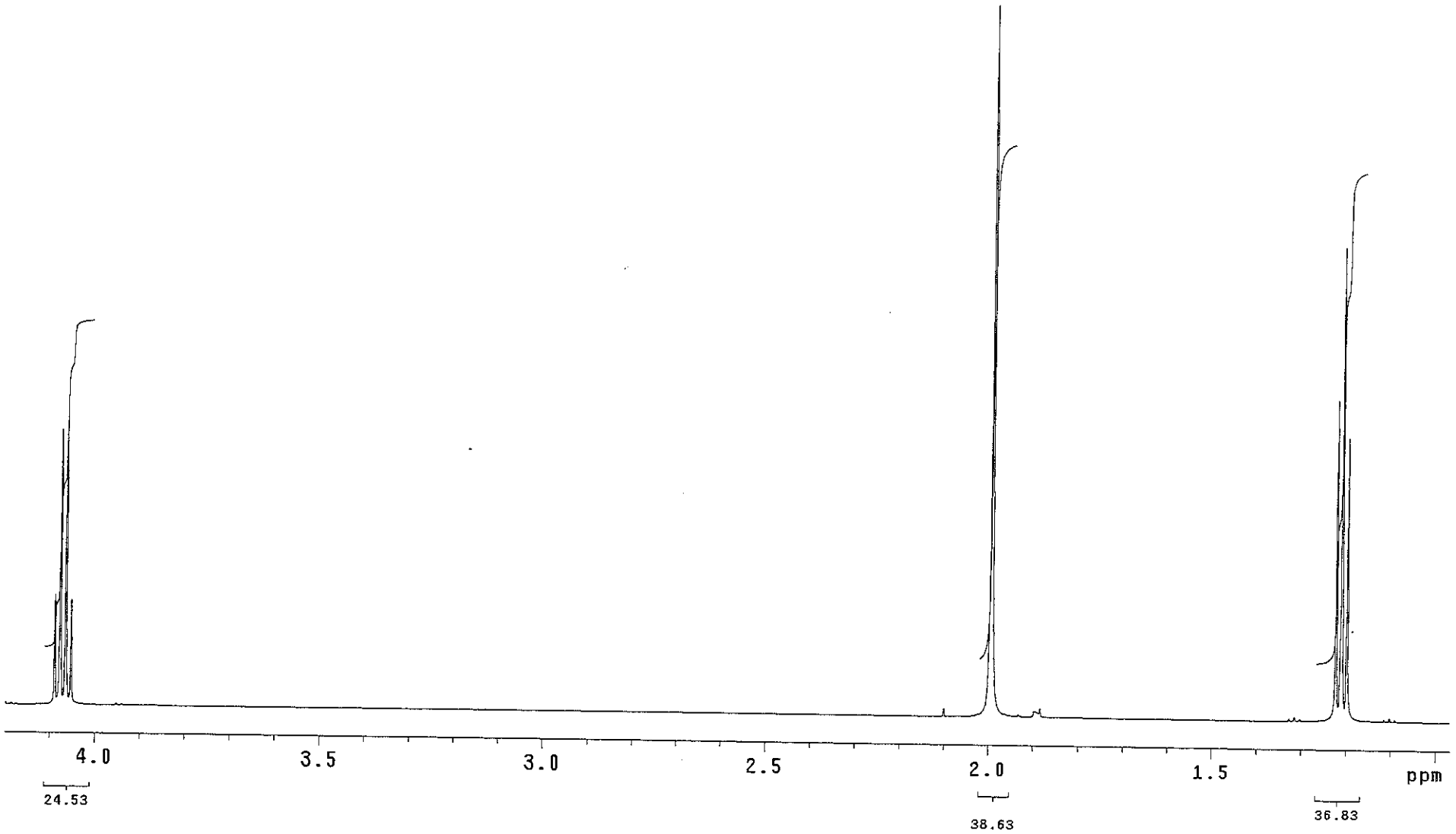
Test	Results / Observations	Interpretation
Lucas	- no precipitate or color change observed	
2,4-dinitrophenylhydrazine (DNPH)	- no precipitate or color change observed	
Fehling's	- no precipitate or color change observed	
NaI in Acetone	- no precipitate or color change observed	
$AgNO_3$ in EtOH	- no precipitate or color change observed	

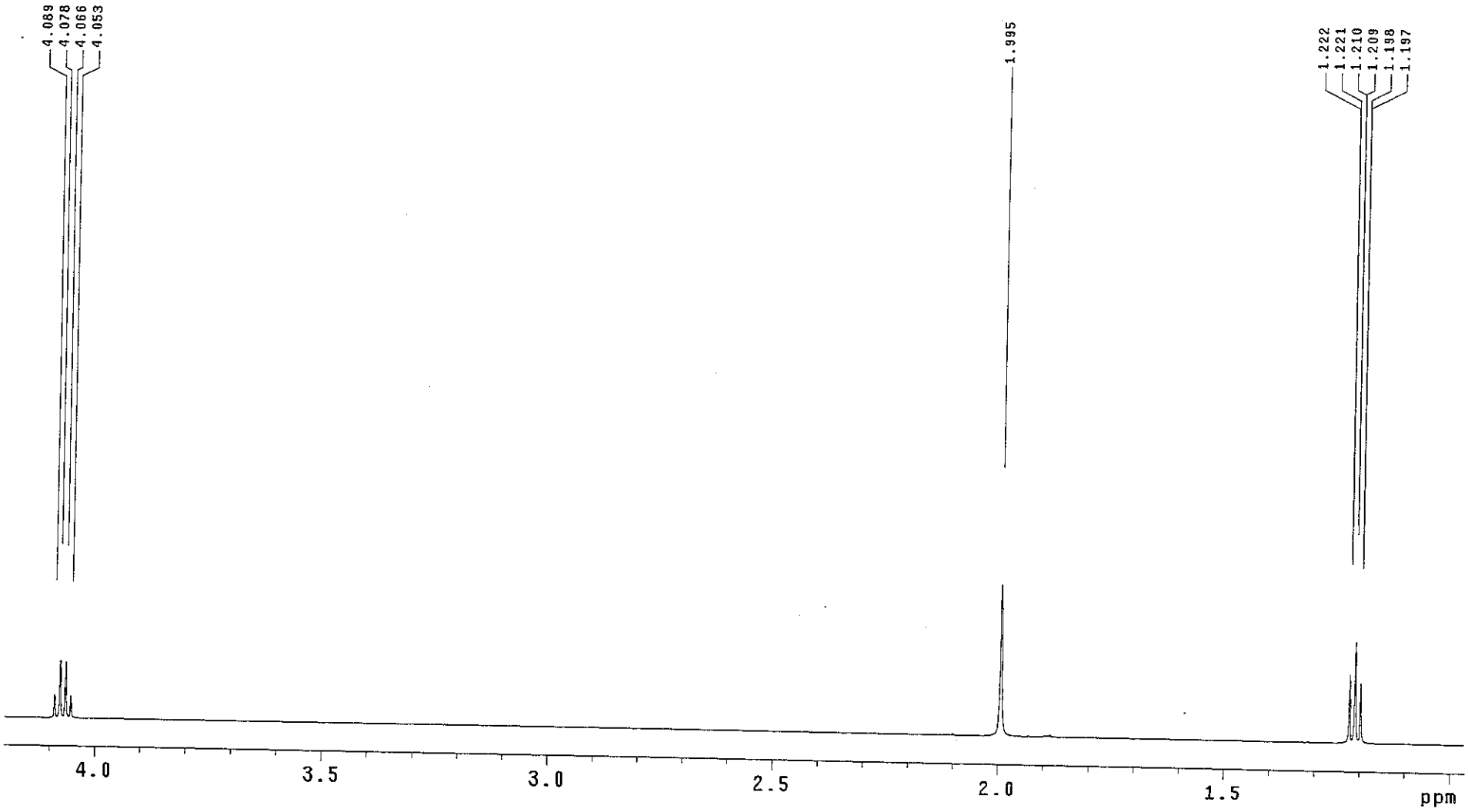
Conclusion (Functional Group Identification, incorporating IR spectrum):


%T
cm-1
3634.90cm-1
3464.79cm-1
2985.37cm-1
2942.10cm-1
2909.23cm-1
2086.21cm-1
1889.59cm-1
1742.16cm-1
1465.75cm-1
1447.77cm-1
1374.11cm-1
1300.80cm-1
1242.66cm-1
1098.21cm-1
1047.73cm-1
938.44cm-1
917.89cm-1
847.47cm-1
786.57cm-1
634.27cm-1
607.71cm-1
443.56cm-1
435.07cm-1
415.25cm-1
407.44cm-1

600 MHz; solvent: Cl_3CD




4.0
3.5
3.0
2.5
2.0
1.5
ppm
24.53
38.63
36.83

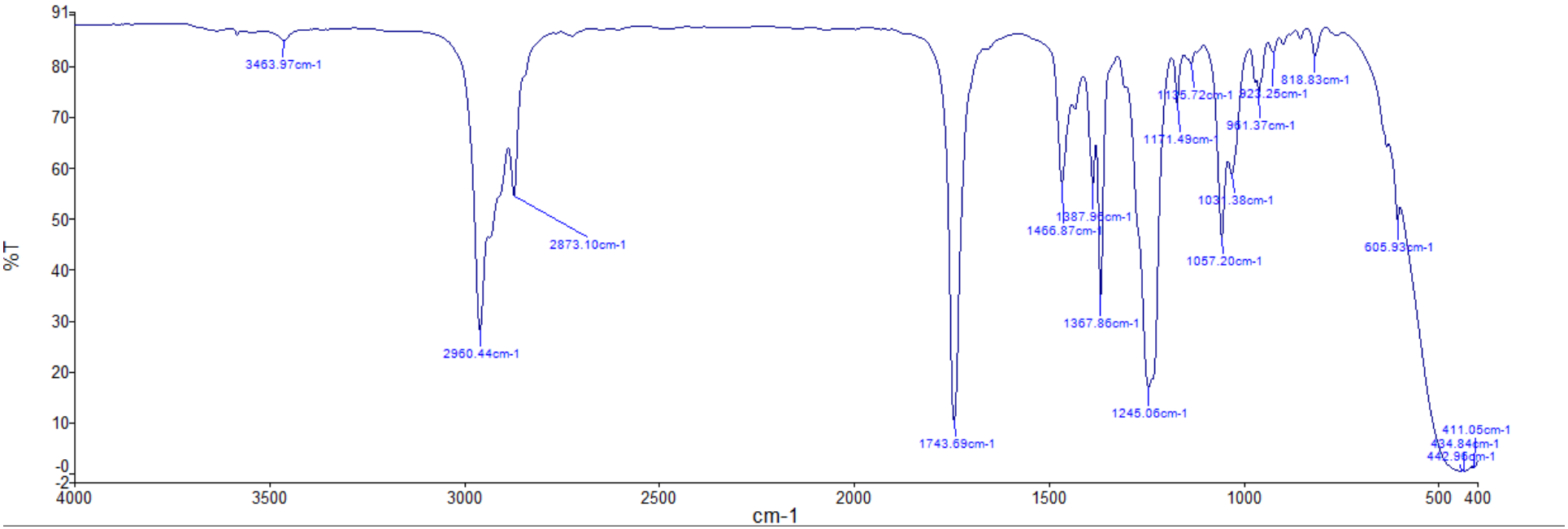

4.089
4.078
4.066
4.053
1.995
1.222
1.221
1.210
1.209
1.198
1.197
4.0
3.5
3.0
2.5
2.0
1.5
ppm

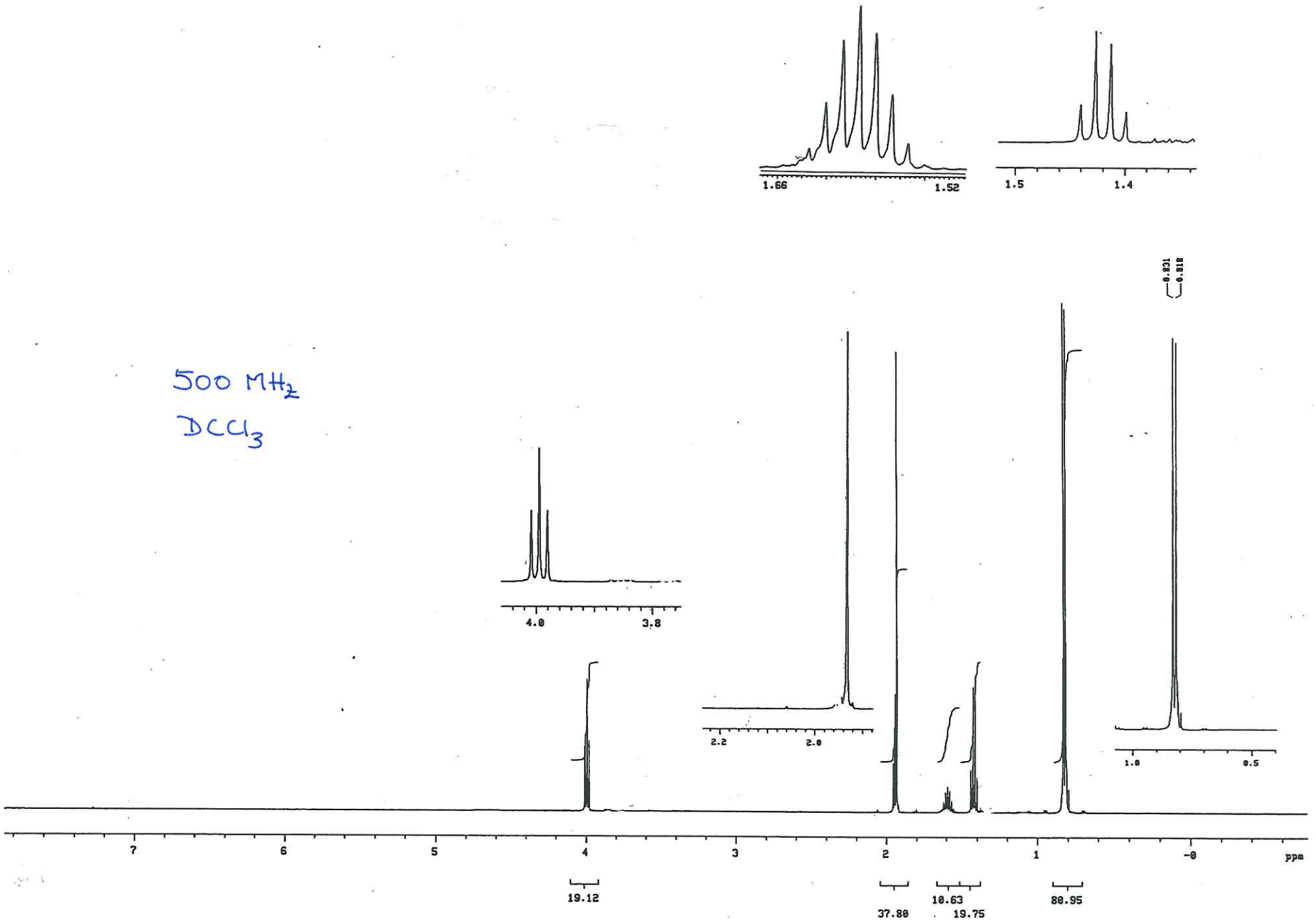
CHEM 146A Experiment 1 – Unknown Chemical Test Results

Unknown #12

Test	Results / Observations	Interpretation
Lucas	- no precipitate or color change observed	
2,4-dinitrophenylhydrazine (DNPH)	- no precipitate or color change observed	
Fehling's	- no precipitate or color change observed	
NaI in Acetone	- no precipitate or color change observed	
$AgNO_3$ in EtOH	- no precipitate or color change observed	

Conclusion (Functional Group Identification, incorporating IR spectrum):


%T
cm-1
3463.97cm-1
2960.44cm-1
2873.10cm-1
1743.69cm-1
1466.87cm-1
1387.95cm-1
1367.86cm-1
1245.06cm-1
1171.49cm-1
1135.72cm-1
1057.20cm-1
1031.38cm-1
961.37cm-1
923.25cm-1
818.83cm-1
605.93cm-1
411.05cm-1
434.84cm-1
442.96cm-1

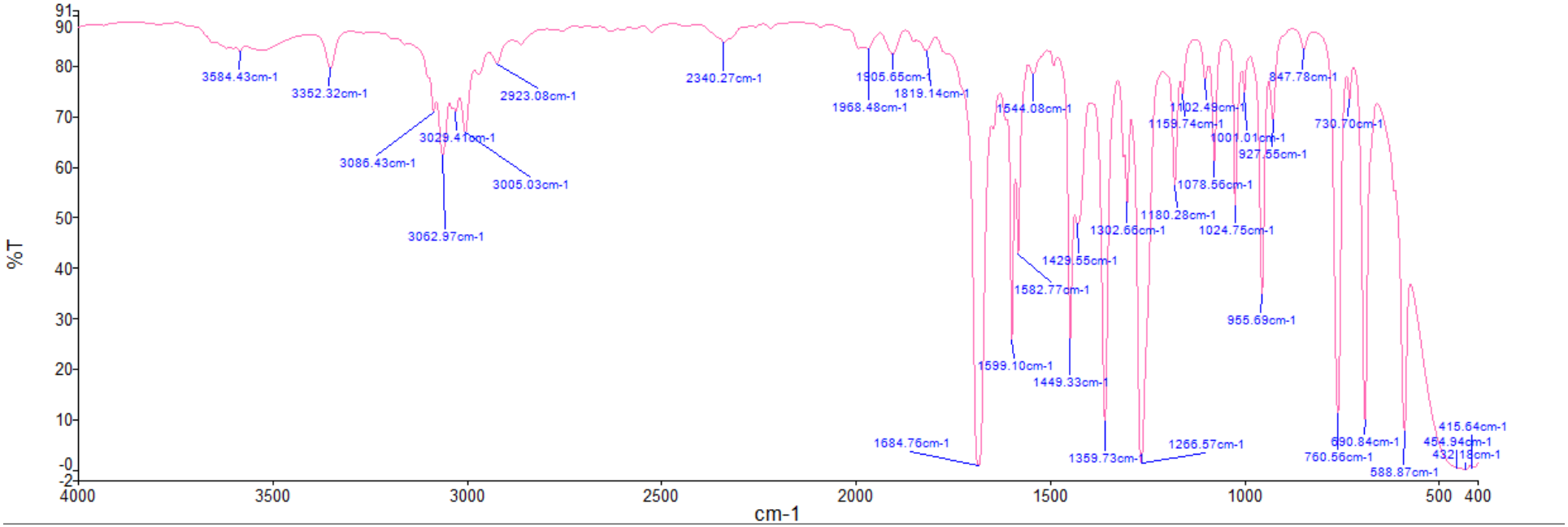

500 MHz
DCCl3
1.66
1.52
1.5
1.4
0.831
0.818
4.0
3.8
2.2
2.0
1.0
0.5
7
6
5
4
3
2
1
-0
ppm
19.12
37.80
10.63
19.75
80.95

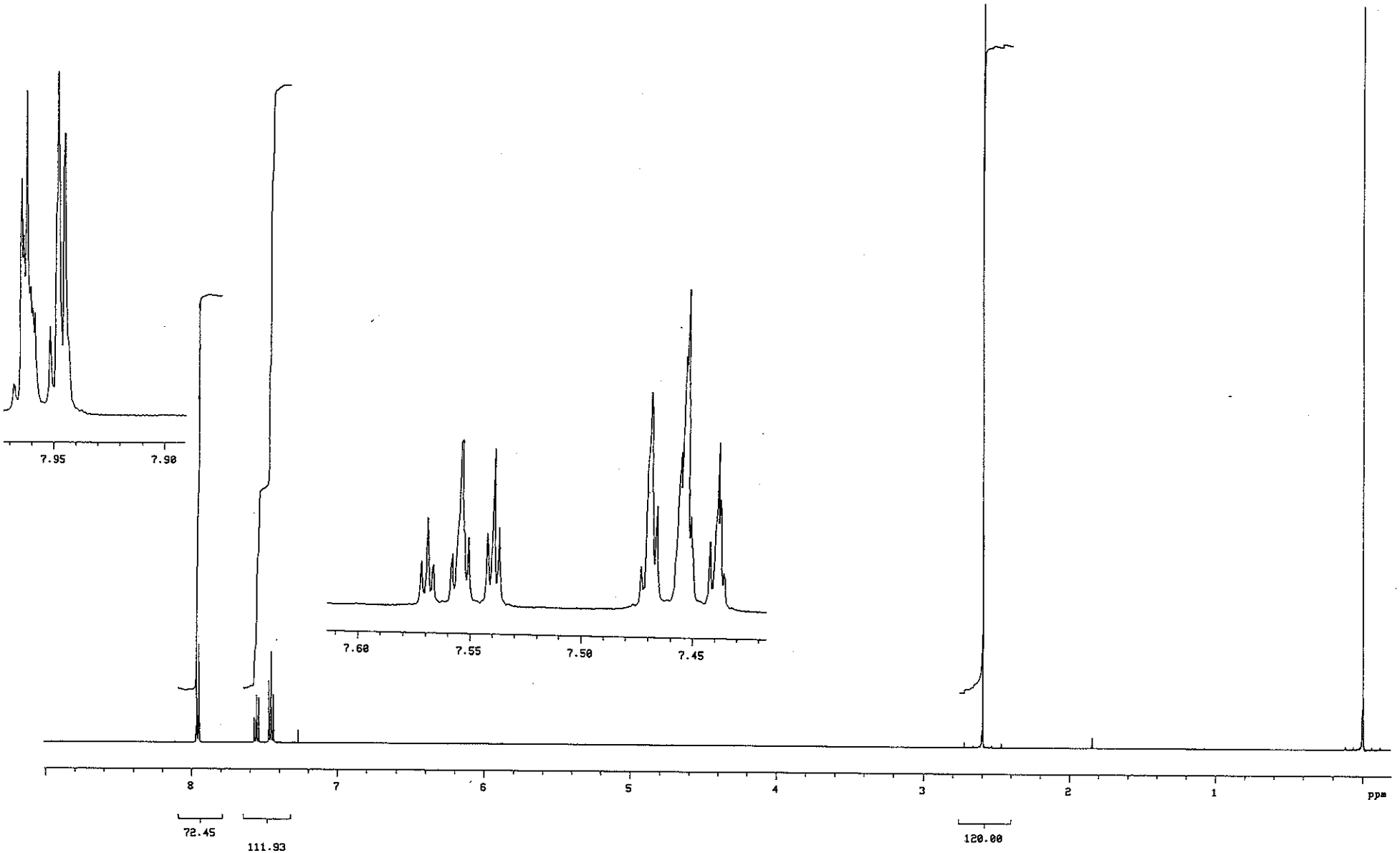
CHEM 146A Experiment 1 – Unknown Chemical Test Results

Unknown #13

Test	Results / Observations	Interpretation
Lucas	- no precipitate or color change observed	
2,4-dinitrophenylhydrazine (DNPH)	- yellow-orange precipitate observed	
Fehling's	- solution turns ~~blue~~ red slowly (1 min)	
NaI in Acetone	- no precipitate or color change observed	
$AgNO_3$ in EtOH	- no precipitate or color change observed	

Conclusion (Functional Group Identification, incorporating IR spectrum):


%T
cm-1
3584.43cm-1
3352.32cm-1
3086.43cm-1
3029.41cm-1
3062.97cm-1
3005.03cm-1
2923.08cm-1
2340.27cm-1
1968.48cm-1
1905.65cm-1
1819.14cm-1
1684.76cm-1
1599.10cm-1
1582.77cm-1
1544.08cm-1
1449.33cm-1
1429.55cm-1
1359.73cm-1
1302.66cm-1
1266.57cm-1
1180.28cm-1
1159.74cm-1
1102.48cm-1
1078.56cm-1
1024.75cm-1
1001.01cm-1
955.69cm-1
927.55cm-1
847.78cm-1
760.56cm-1
730.70cm-1
690.84cm-1
588.87cm-1
454.94cm-1
432.18cm-1
415.64cm-1



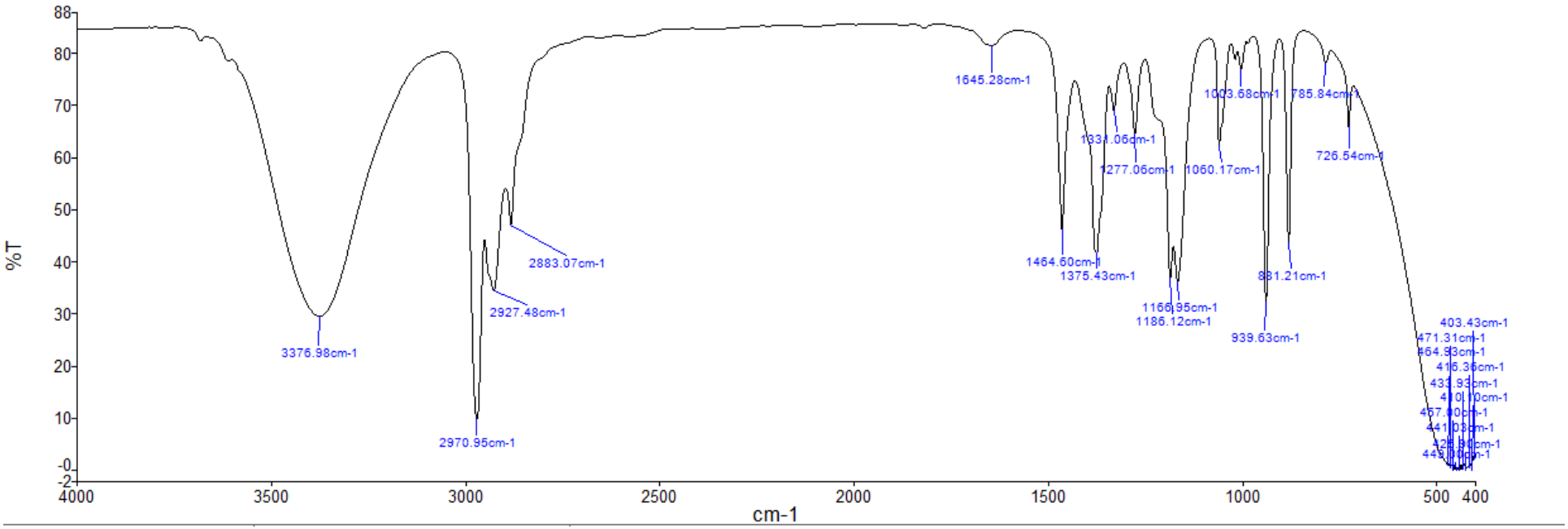
500-MHz ^{1}H-NMR spectrum in $CDCl_3$.

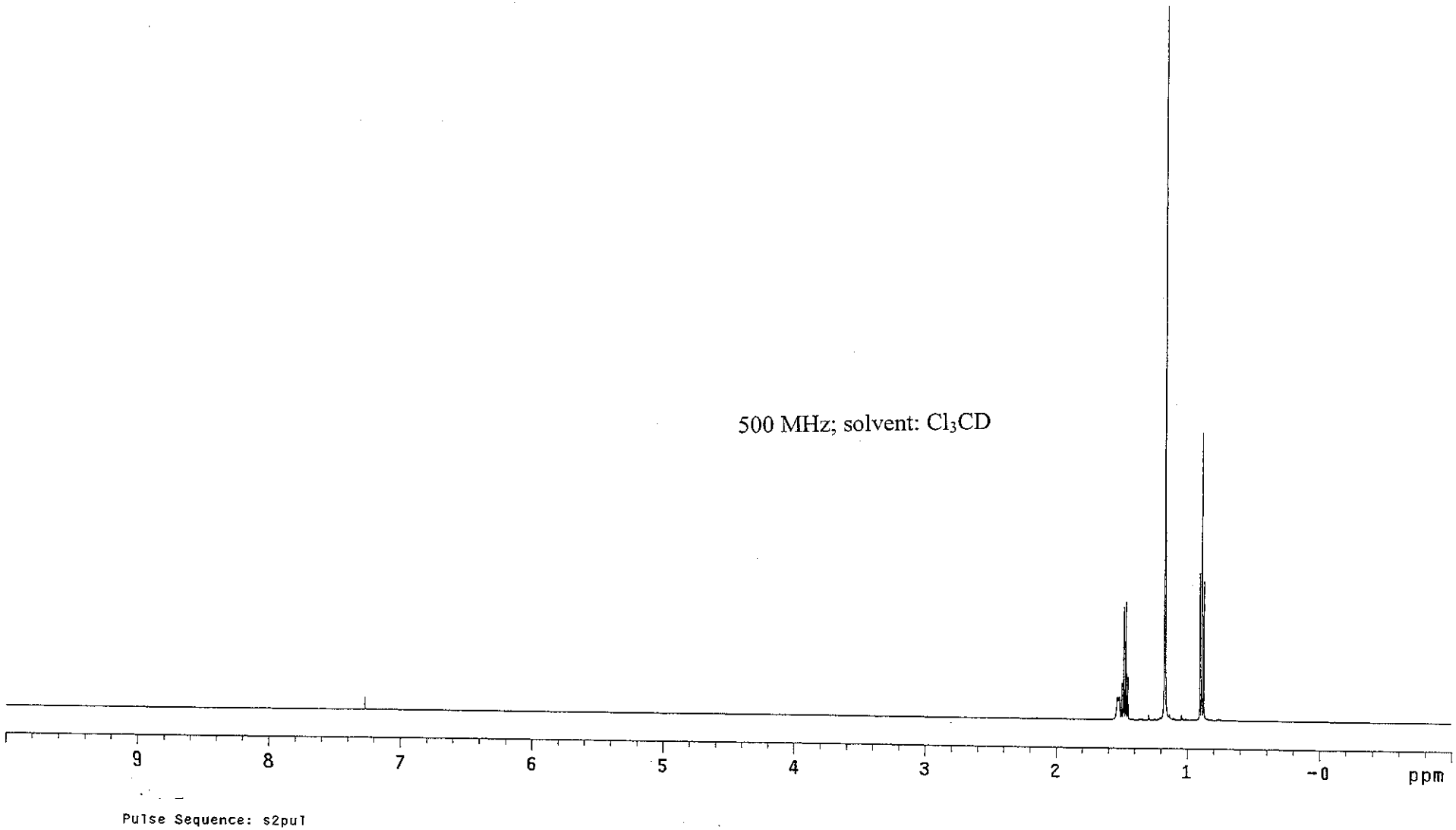
CHEM 146A Experiment 1 – Unknown Chemical Test Results

Unknown #14

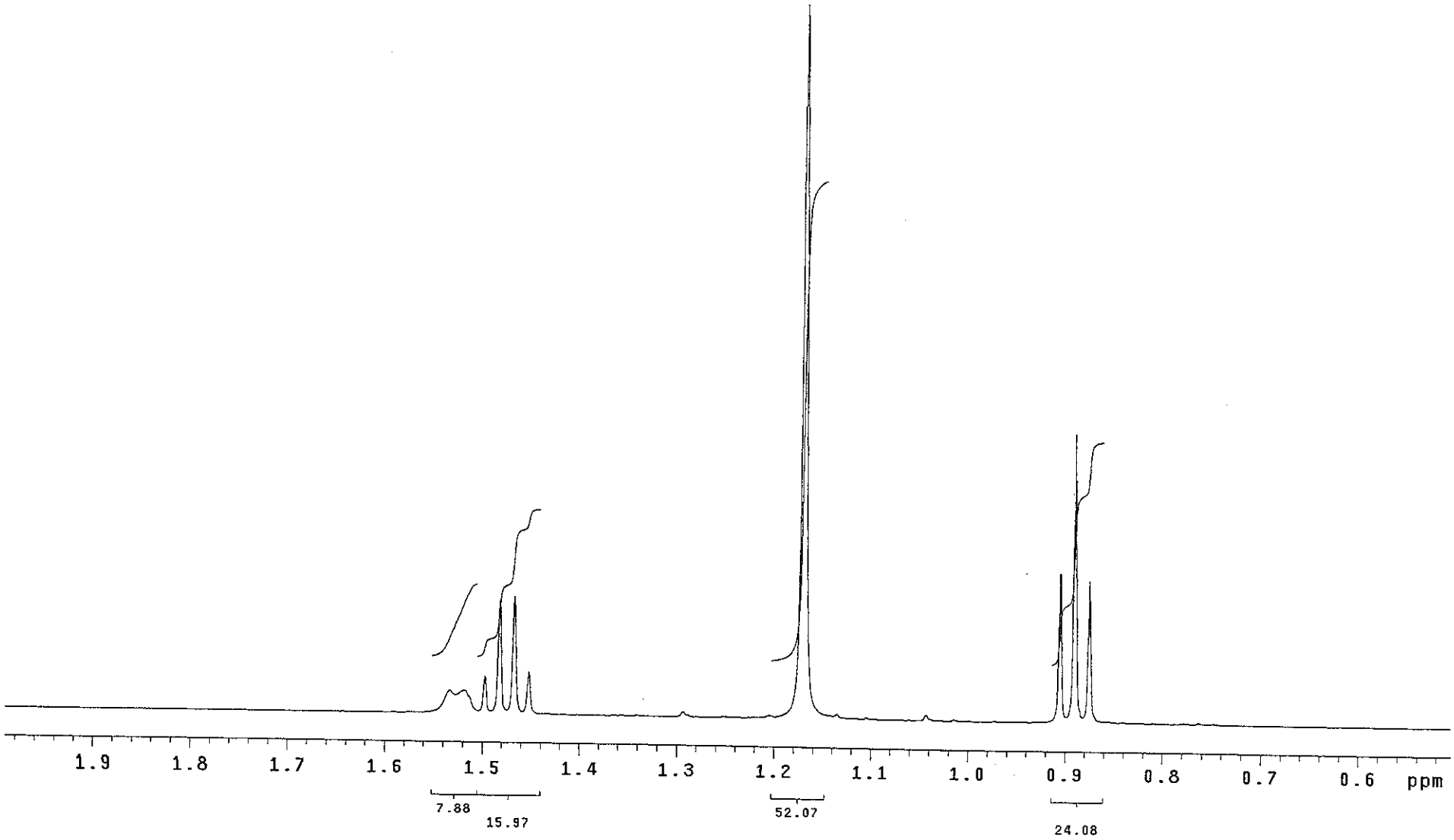
Test	Results / Observations	Interpretation
Lucas	- soluble in Lucas reagent - reacts immediately, immiscible layer on top of aqueous solution	
2,4-dinitrophenylhydrazine (DNPH)	- no precipitate or color change observed	
Fehling's	- no precipitate or color change observed	
NaI in Acetone	- no precipitate or color change observed	
$AgNO_3$ in EtOH	- no precipitate or color change observed	

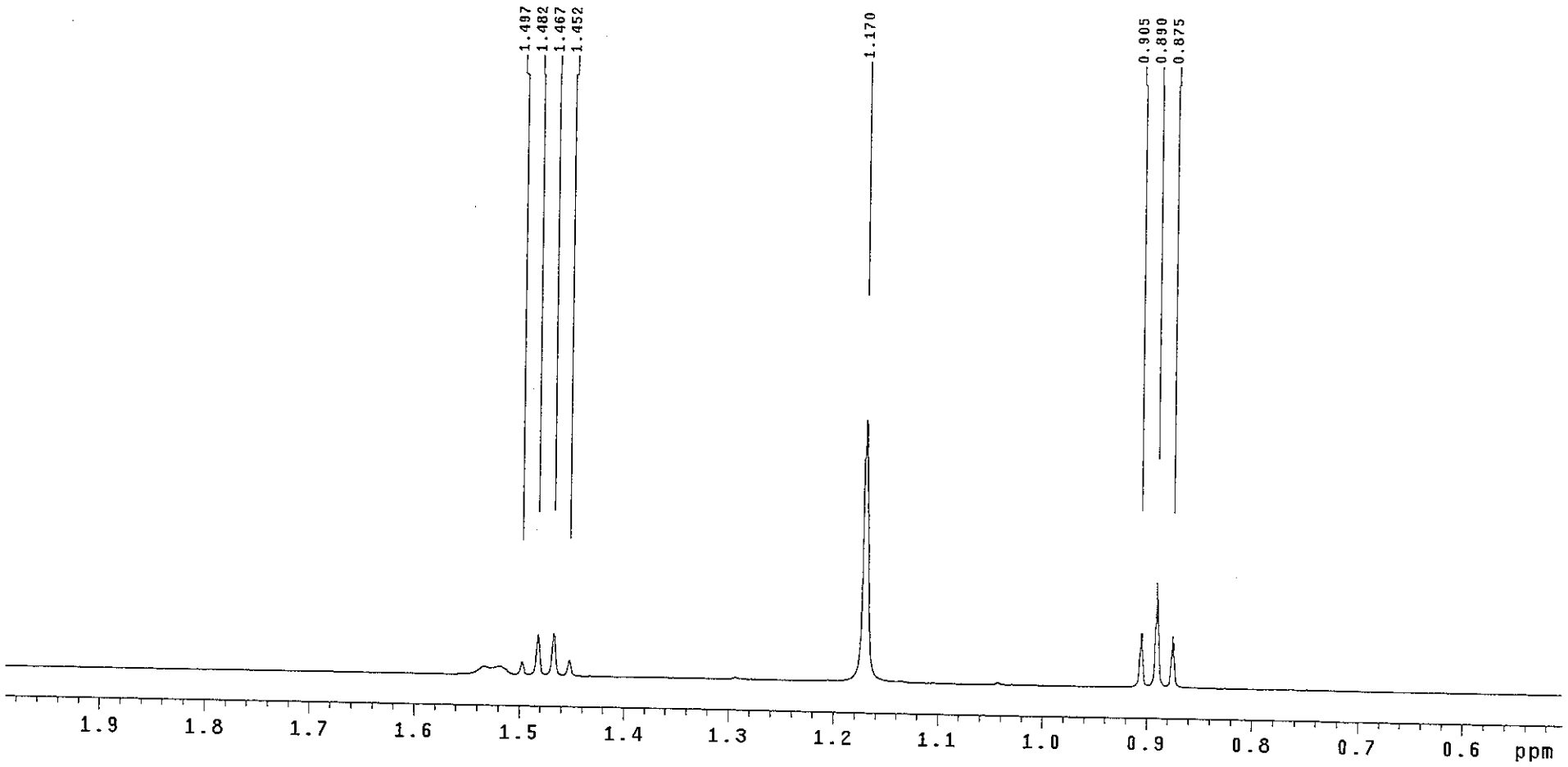
Conclusion (Functional Group Identification, incorporating IR spectrum):


%T
cm-1
3376.98cm-1
2970.95cm-1
2927.48cm-1
2883.07cm-1
1645.28cm-1
1464.60cm-1
1375.43cm-1
1277.06cm-1
1060.17cm-1
1003.68cm-1
939.63cm-1
881.21cm-1
785.84cm-1
726.54cm-1
1186.12cm-1
403.43cm-1
471.31cm-1


500 MHz; solvent: Cl_3CD
9
8
7
6
5
4
3
2
1
-0
ppm
Pulse Sequence: s2pul

Pulse Sequence: s2pul





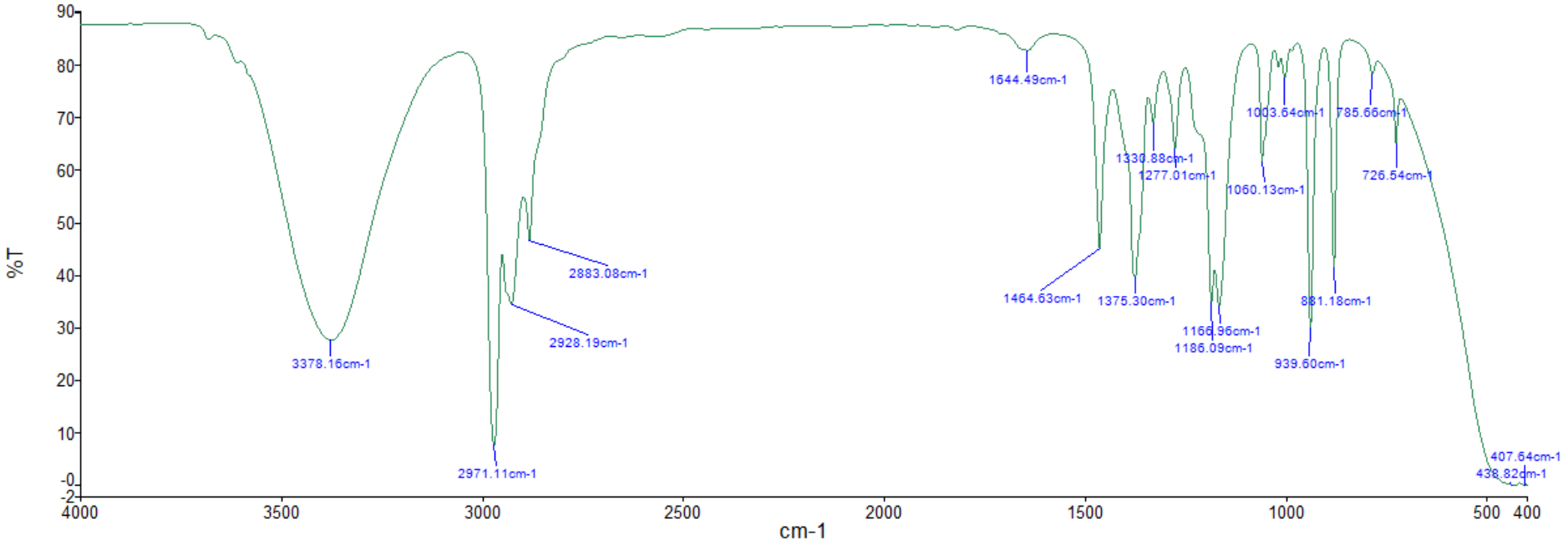
Pulse Sequence: s2pul

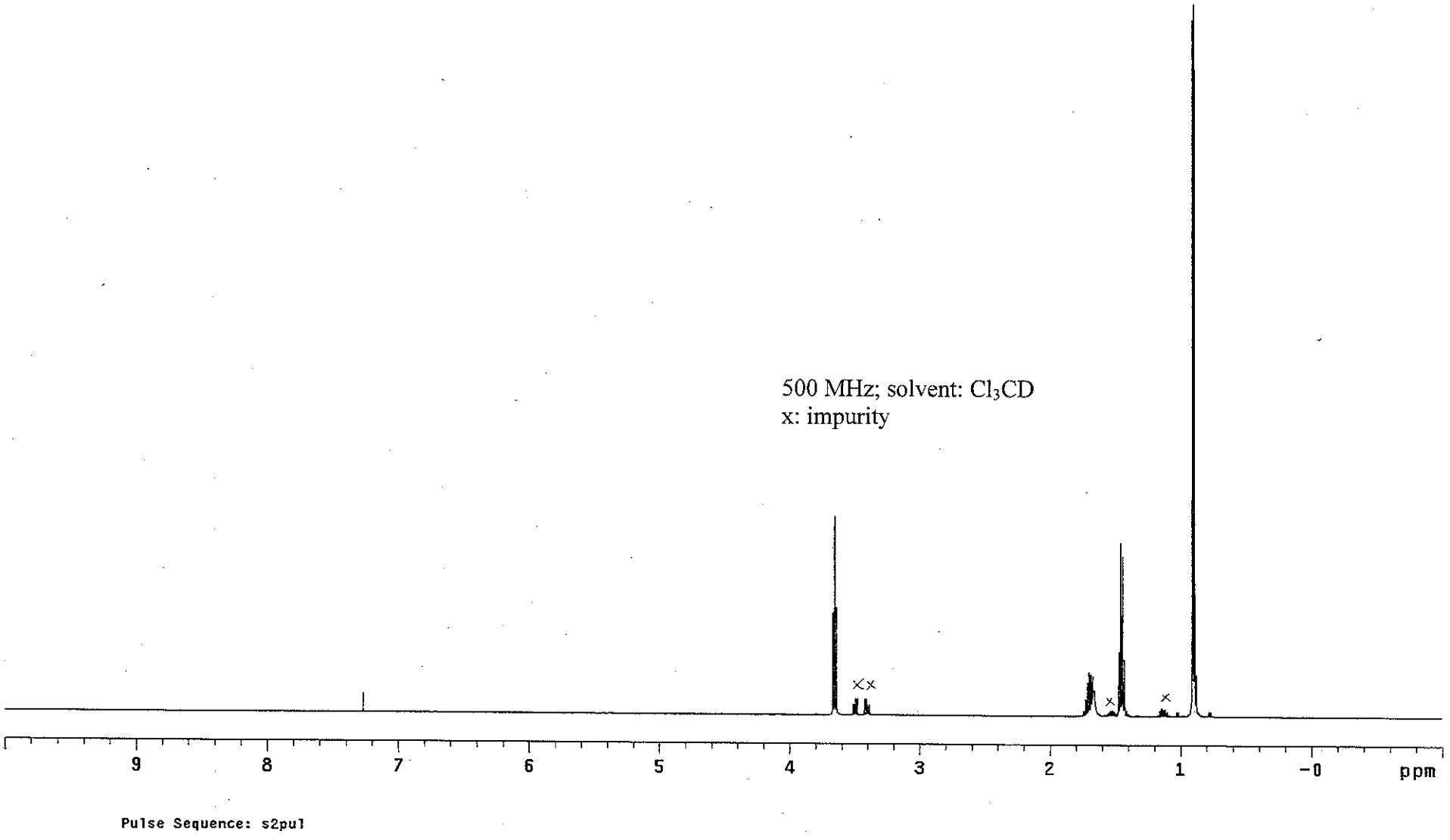
CHEM 146A Experiment 1 – Unknown Chemical Test Results

Unknown #15

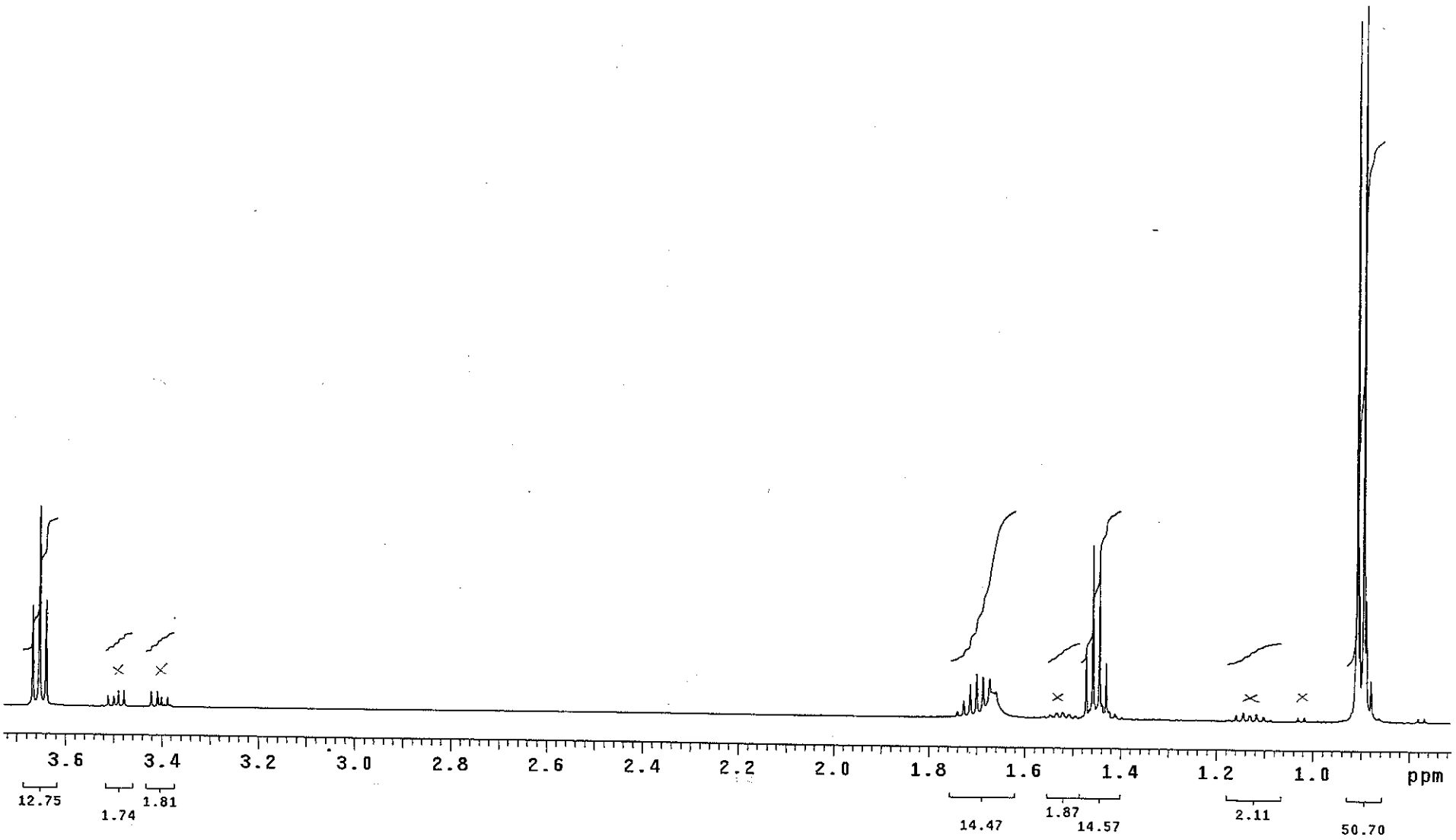
Test	Results / Observations	Interpretation
Lucas	- soluble in Lucas reagent - solution turns cloudy after 10 minutes	
2,4-dinitrophenylhydrazine (DNPH)	- no precipitate or color change observed	
Fehling's	- no precipitate or color change observed	
NaI in Acetone	- no precipitate or color change observed	
$AgNO_3$ in EtOH	- no precipitate or color change observed	

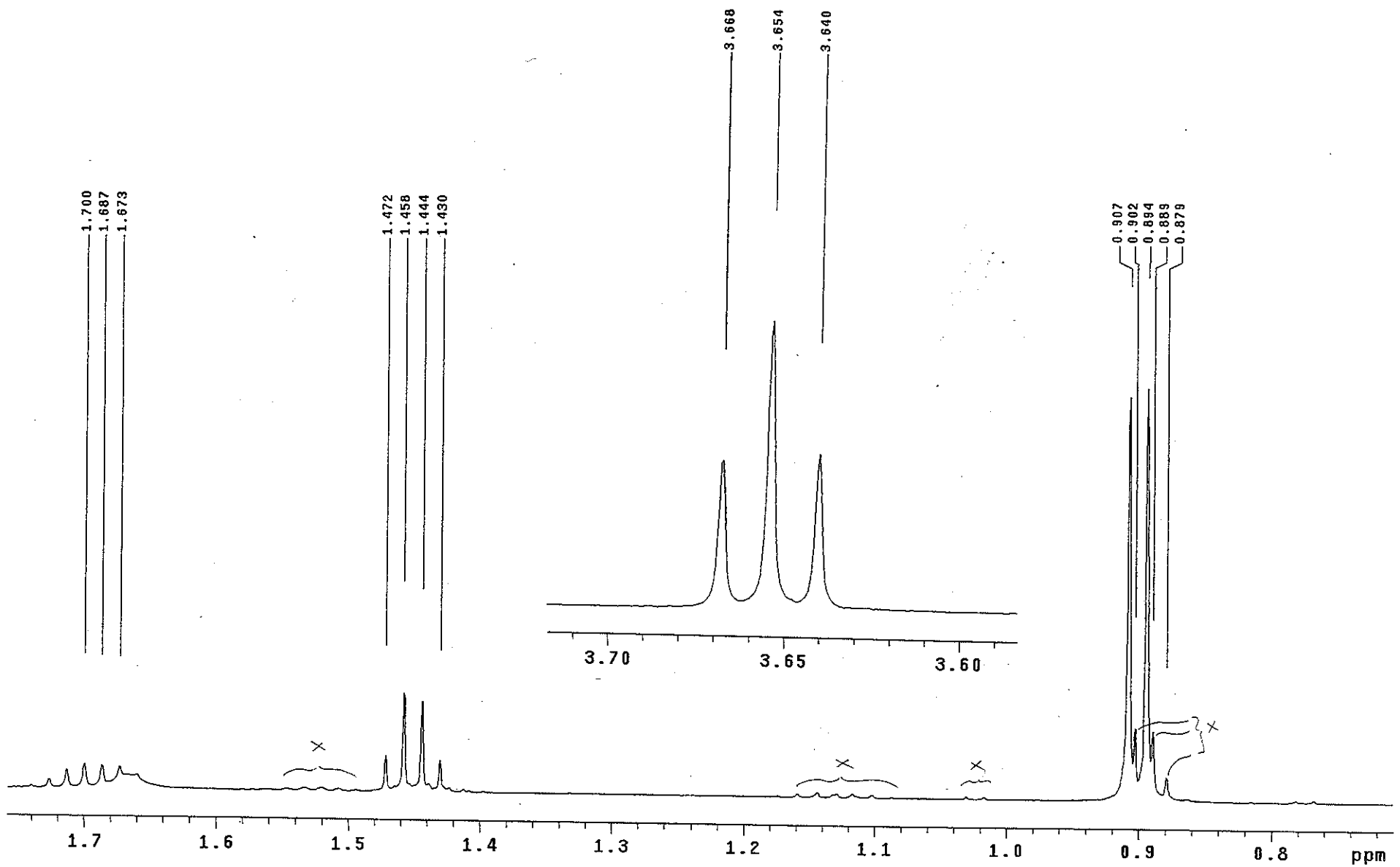
Conclusion (Functional Group Identification, incorporating IR spectrum):


%T
cm-1
3378.16cm-1
2971.11cm-1
2928.19cm-1
2883.08cm-1
1644.49cm-1
1464.63cm-1
1375.30cm-1
1330.88cm-1
1277.01cm-1
1186.09cm-1
1166.96cm-1
1060.13cm-1
1003.64cm-1
939.60cm-1
881.18cm-1
785.66cm-1
726.54cm-1
438.82cm-1
407.64cm-1


500 MHz; solvent: Cl_3CD
x: impurity
x x
x
x
9
8
7
6
5
4
3
2
1
-0
ppm
Pulse Sequence: s2pul

Pulse Sequence: s2pul





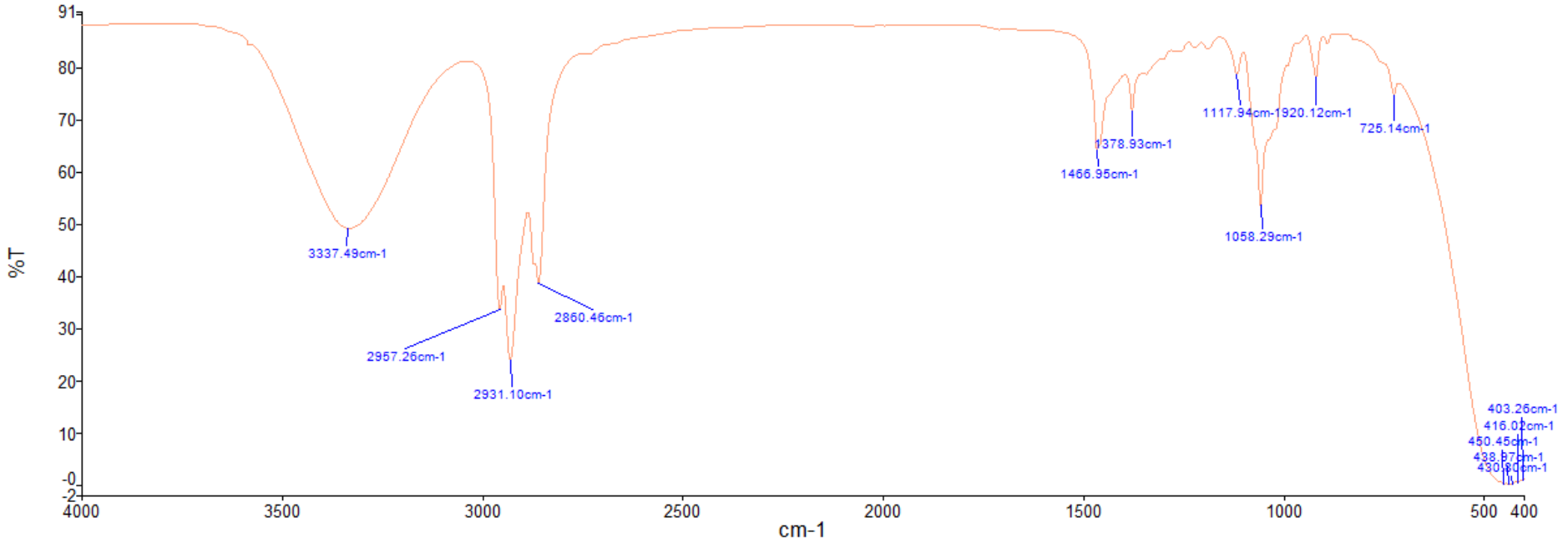
Pulse Sequence: s2pul

CHEM 146A Experiment 1 – Unknown Chemical Test Results

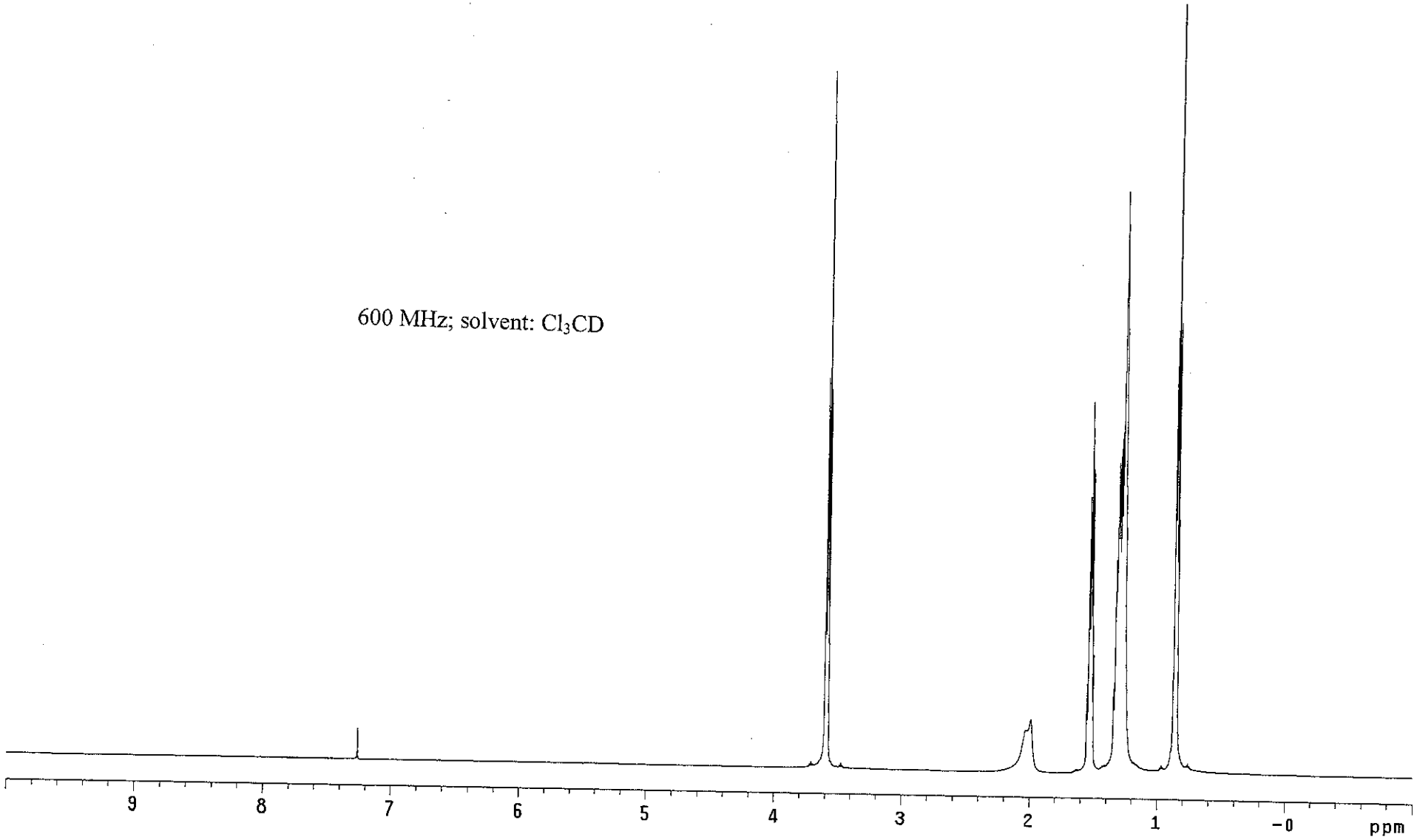
Unknown #16

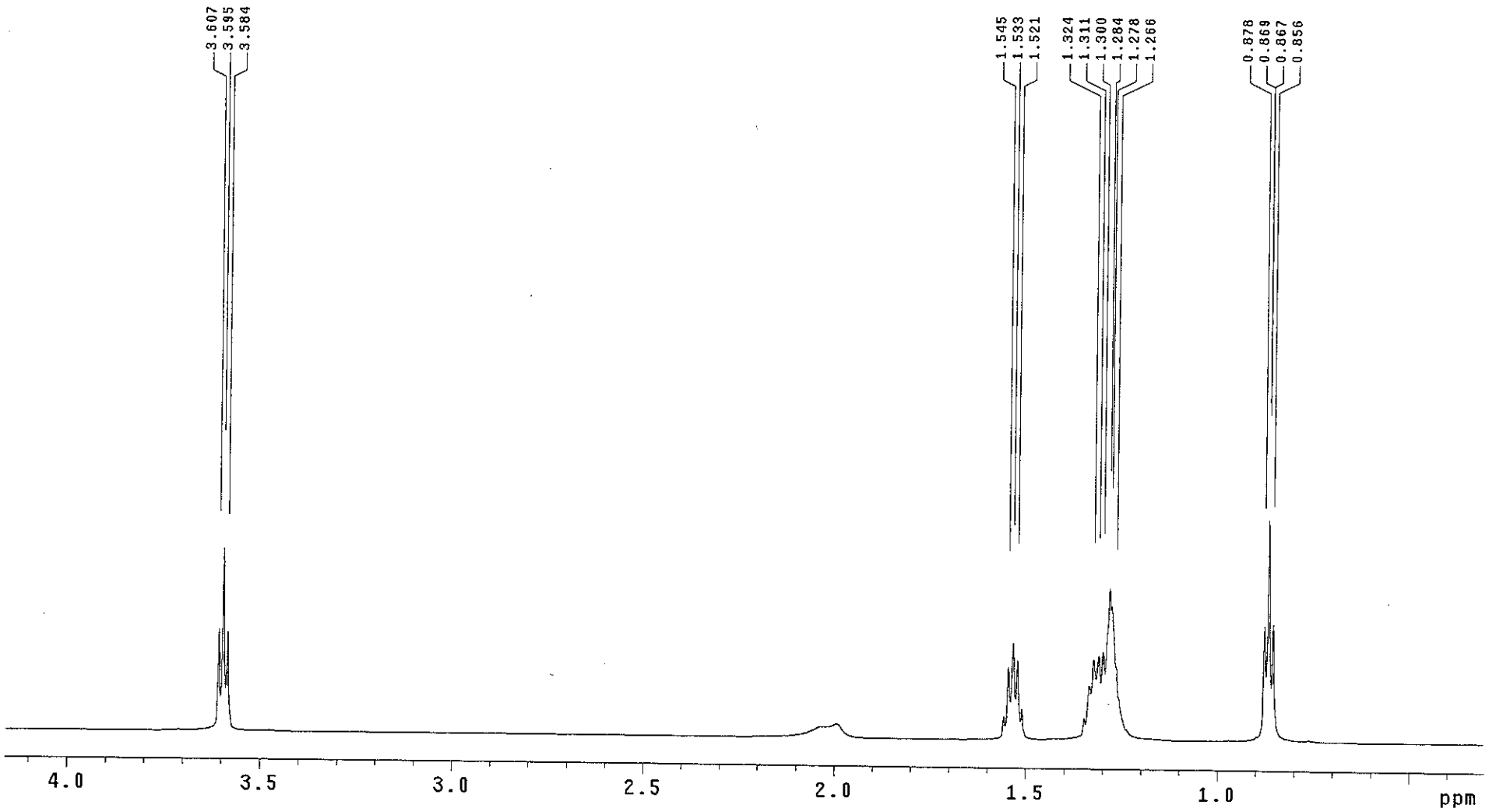
Test	Results / Observations	Interpretation
Lucas	- insoluble in Lucas reagent	
2,4-dinitrophenylhydrazine (DNPH)	- no precipitate or color change observed	
Fehling's	- no precipitate or color change observed	
NaI in Acetone	- no precipitate or color change observed	
$AgNO_3$ in EtOH	- no precipitate or color change observed	

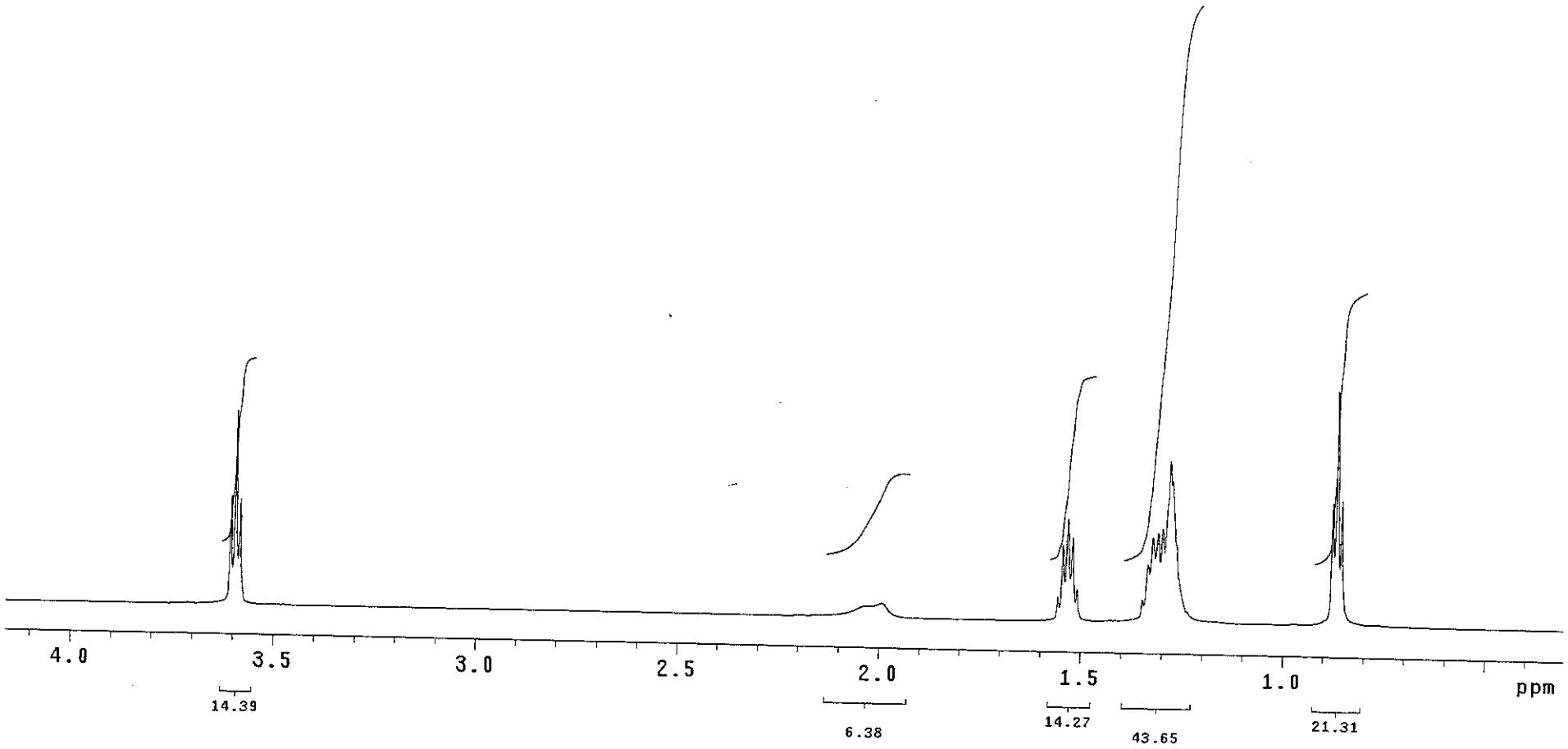
Conclusion (Functional Group Identification, incorporating IR spectrum):


%T
cm-1
3337.49cm-1
2957.26cm-1
2931.10cm-1
2860.46cm-1
1466.95cm-1
1378.93cm-1
1117.94cm-1
1058.29cm-1
1920.12cm-1
725.14cm-1
403.26cm-1
450.45cm-1

600 MHz; solvent: Cl_3CD




3.607
3.595
3.584
1.545
1.533
1.521
1.324
1.311
1.300
1.284
1.278
1.266
0.878
0.869
0.867
0.856
4.0
3.5
3.0
2.5
2.0
1.5
1.0
ppm


4.0
3.5
3.0
2.5
2.0
1.5
1.0
ppm
14.39
6.38
14.27
43.65
21.31