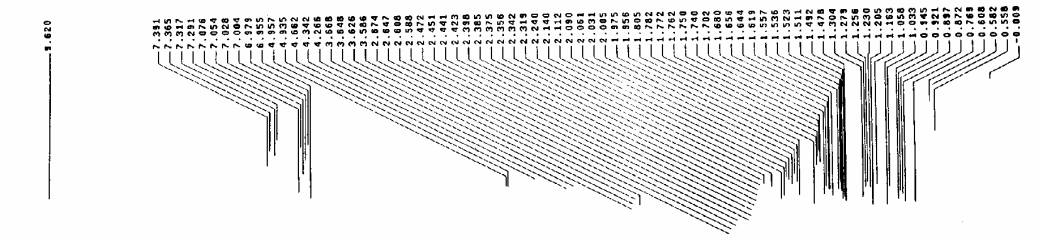
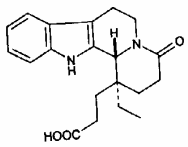
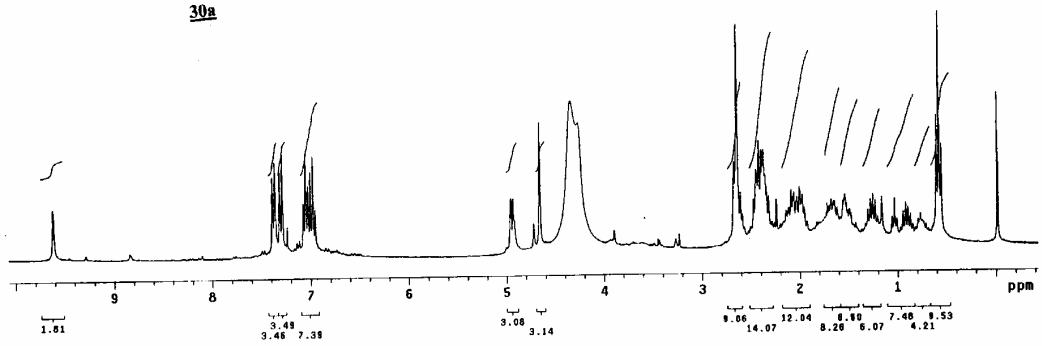
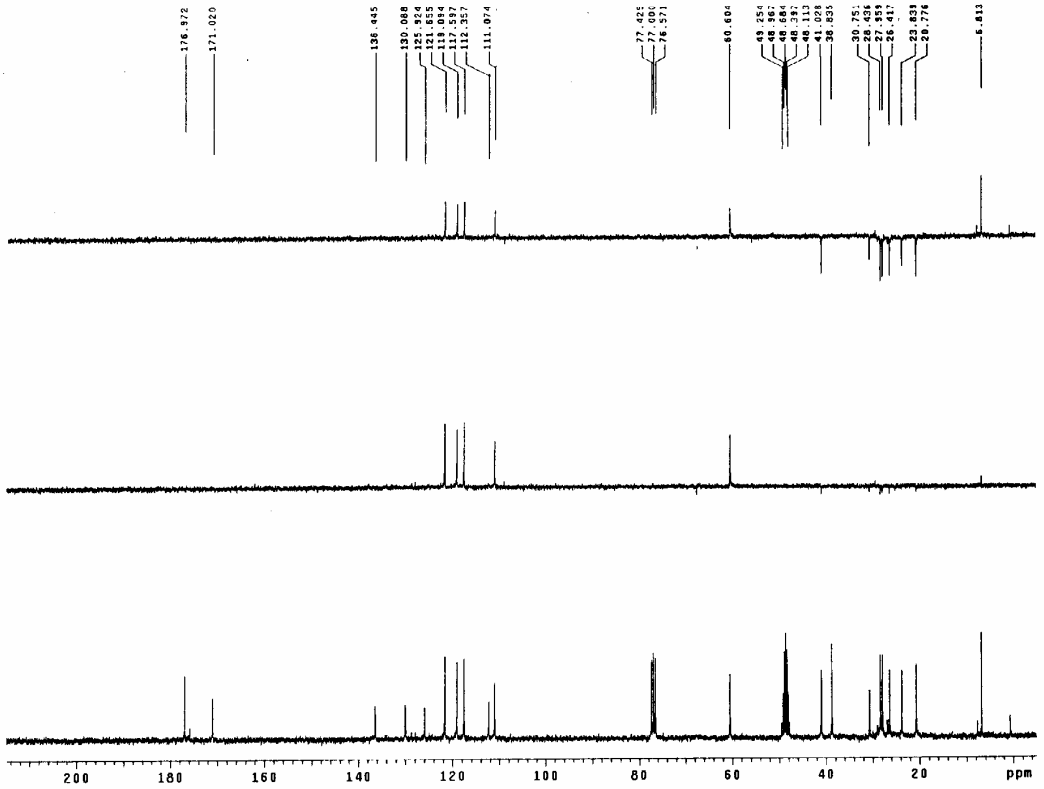



H
N
O
N
H
HOOC

30a


9
8
7
6
5
4
3
2
1
ppm
1.81
3.49
3.48 7.38
3.08
3.14
9.06
14.07
12.04
8.20 6.07
7.48 9.53
4.21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160
140
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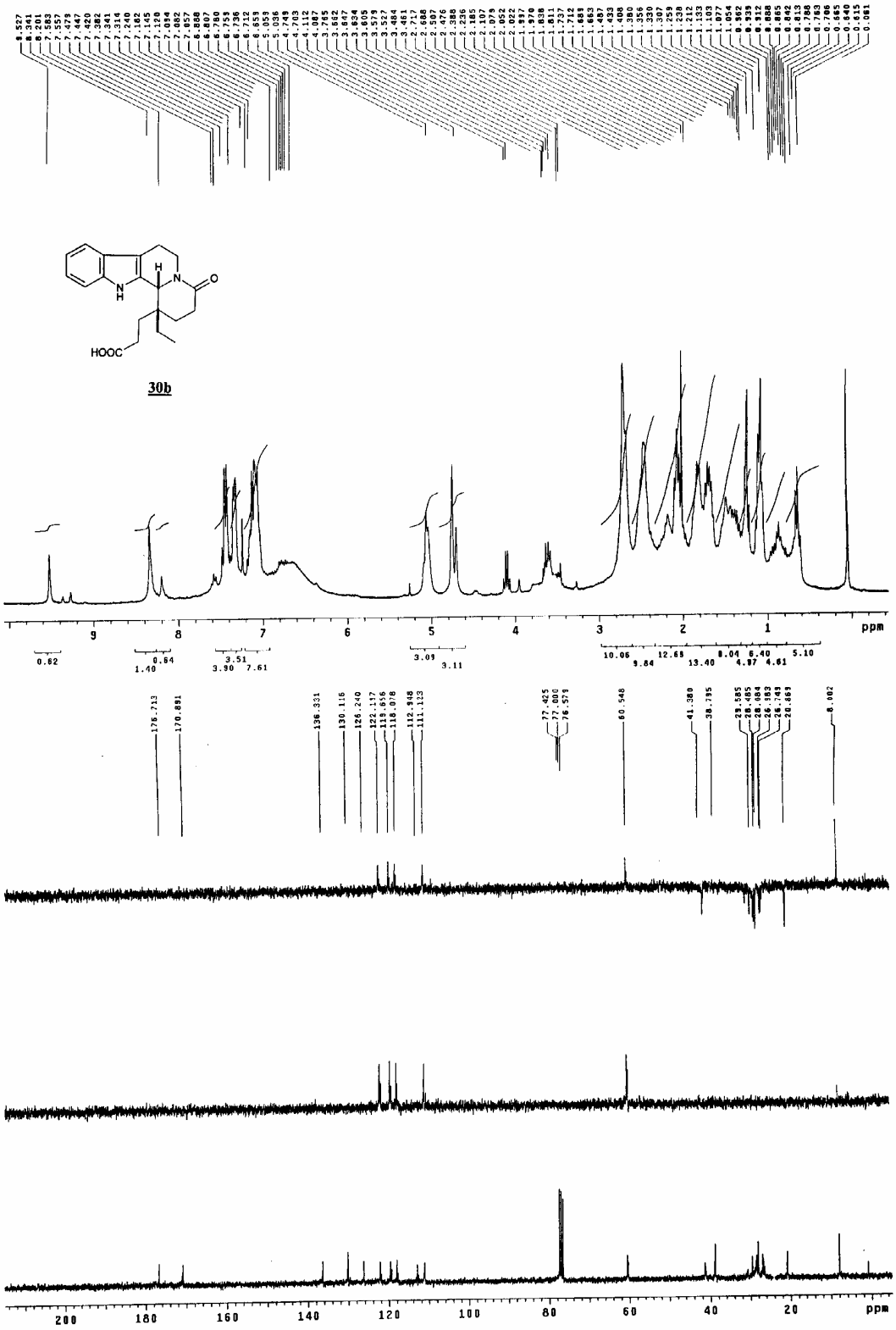
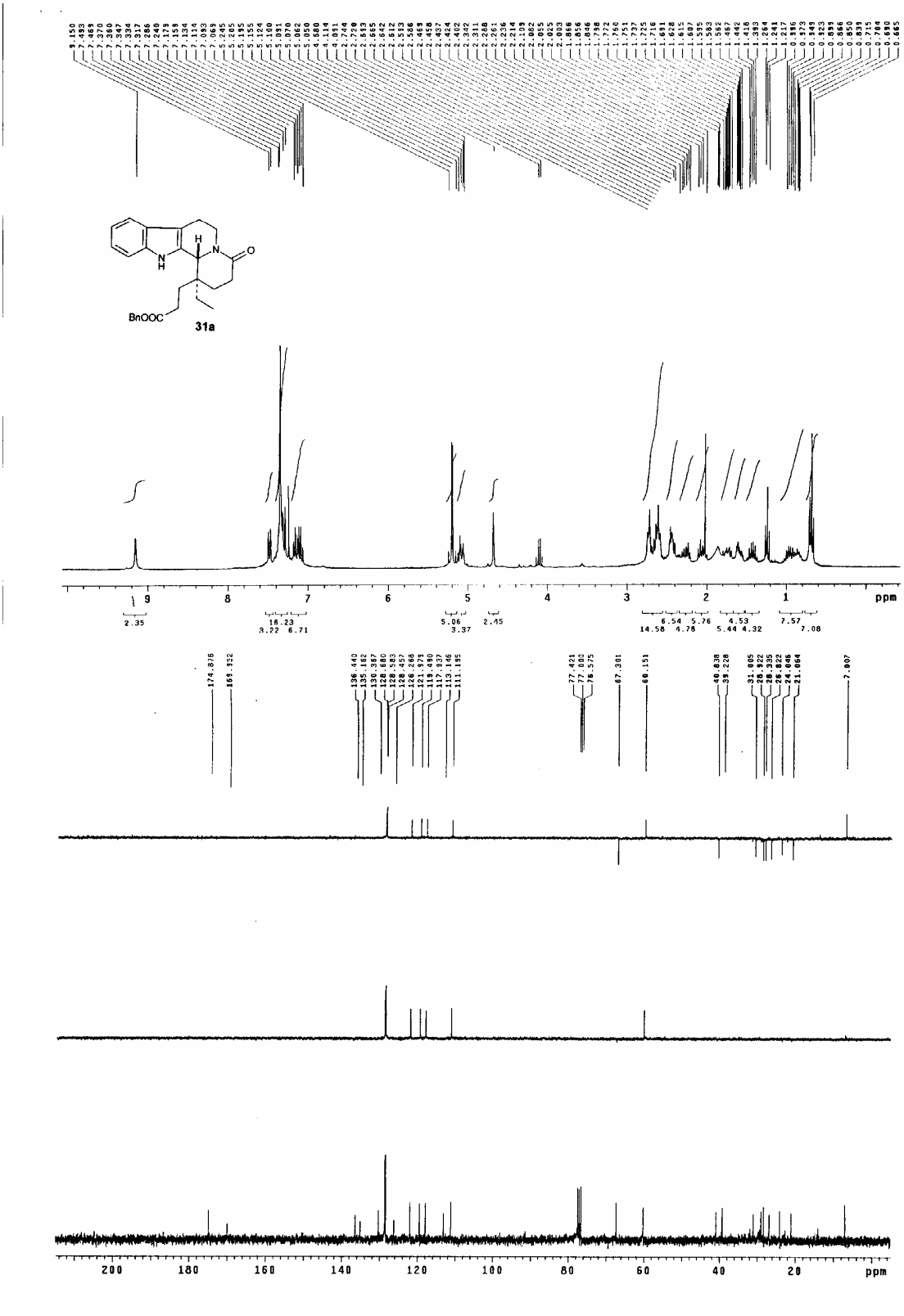
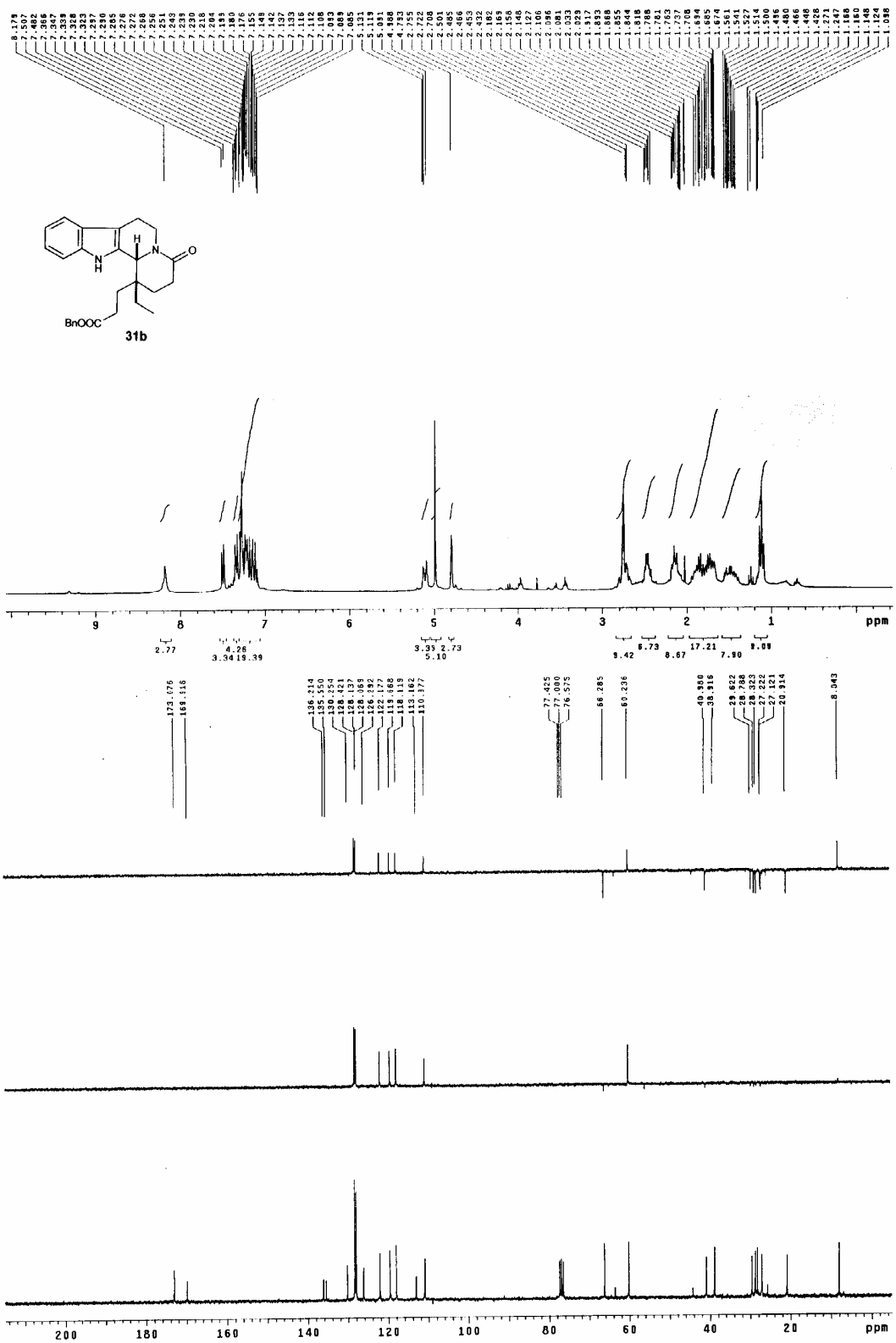
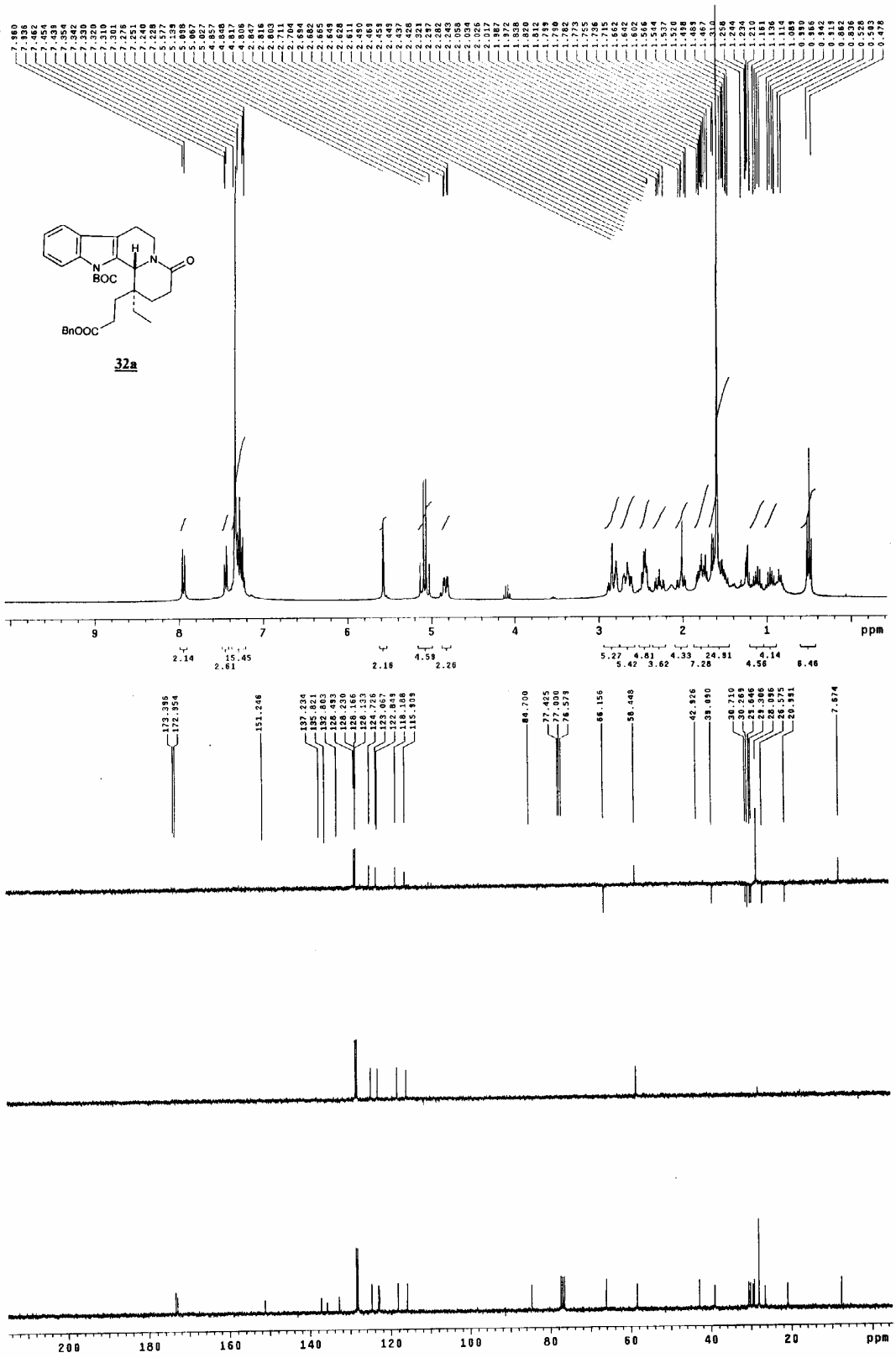
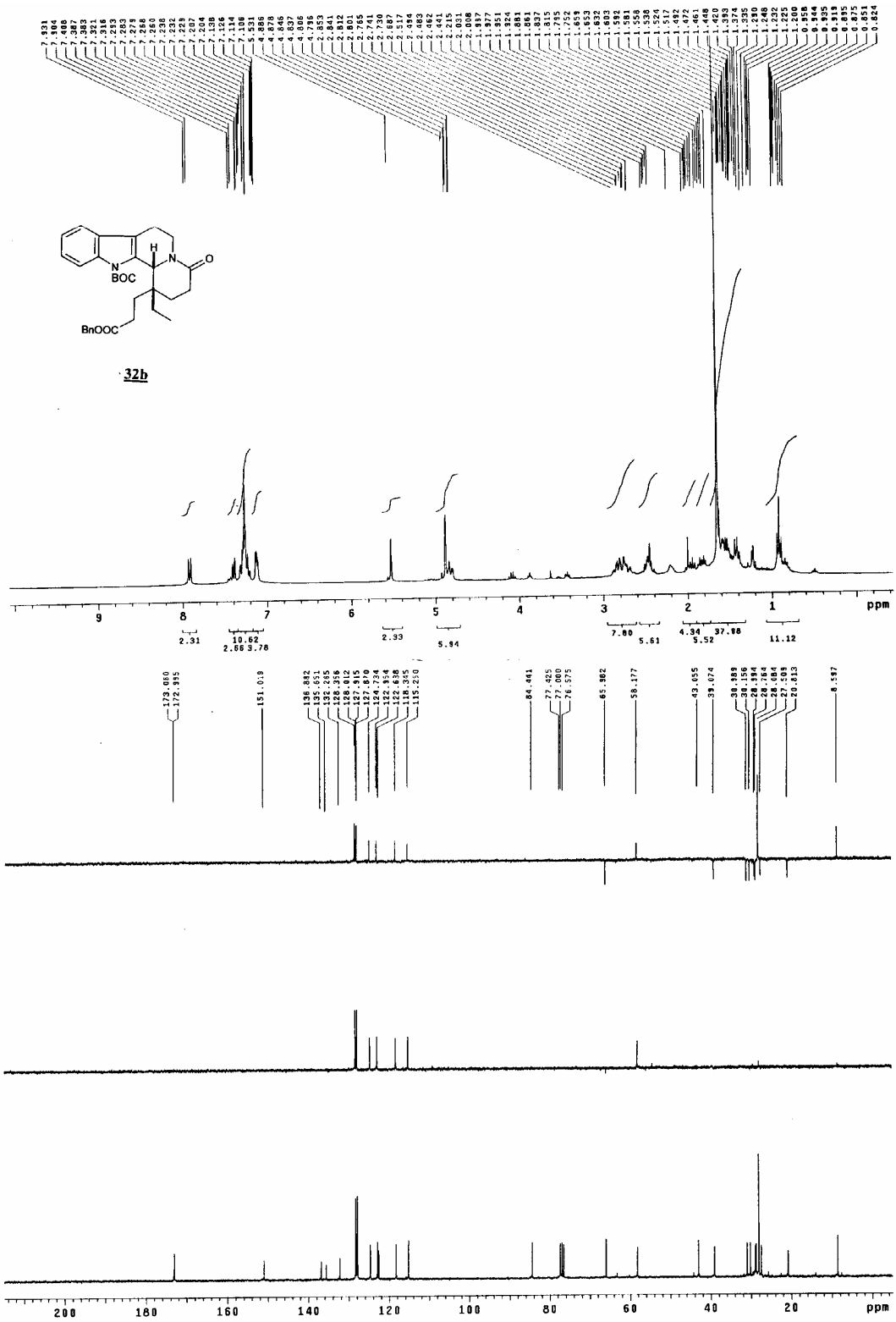
80
60
40
20
ppm

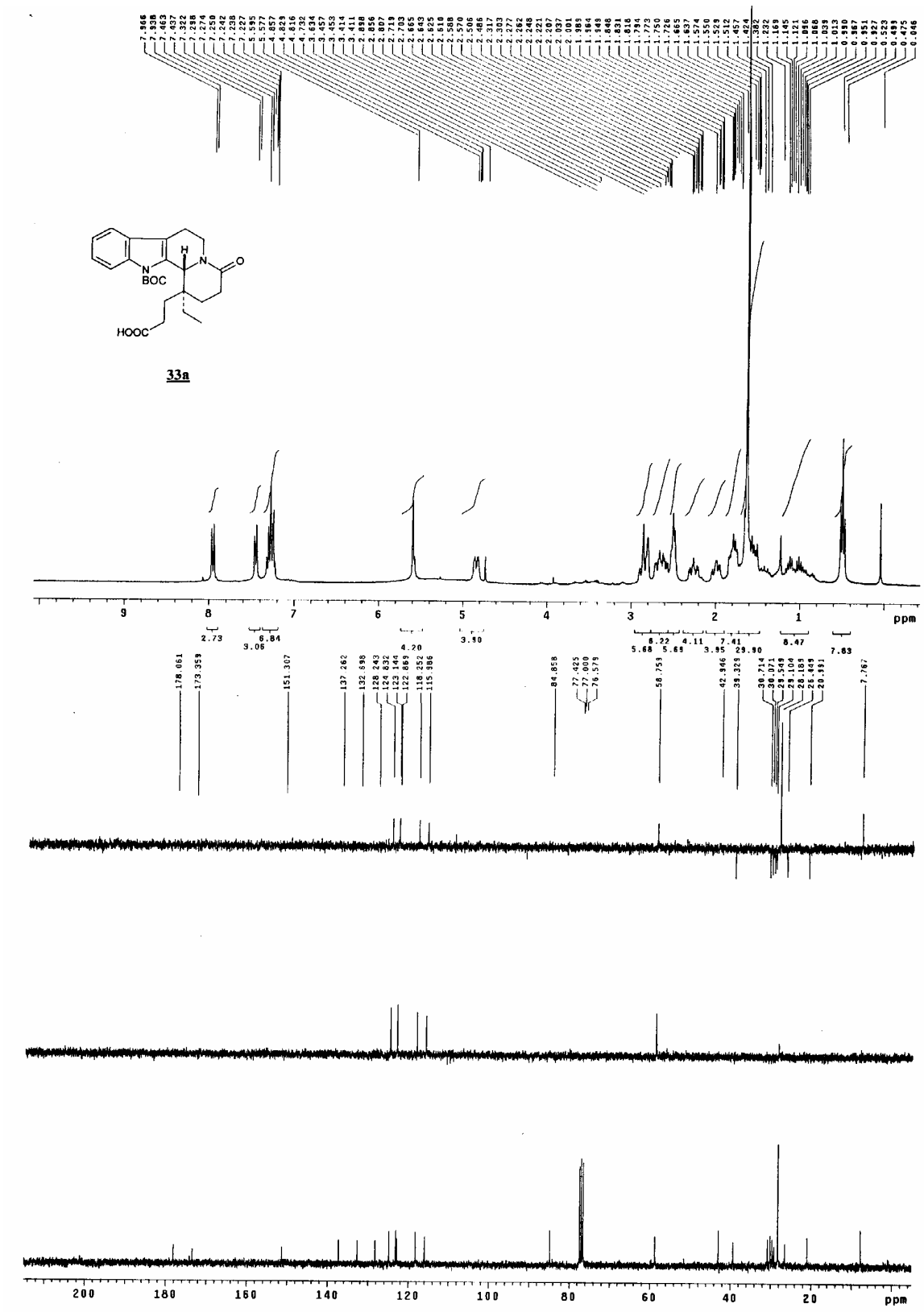

HOOC
30b
ppm

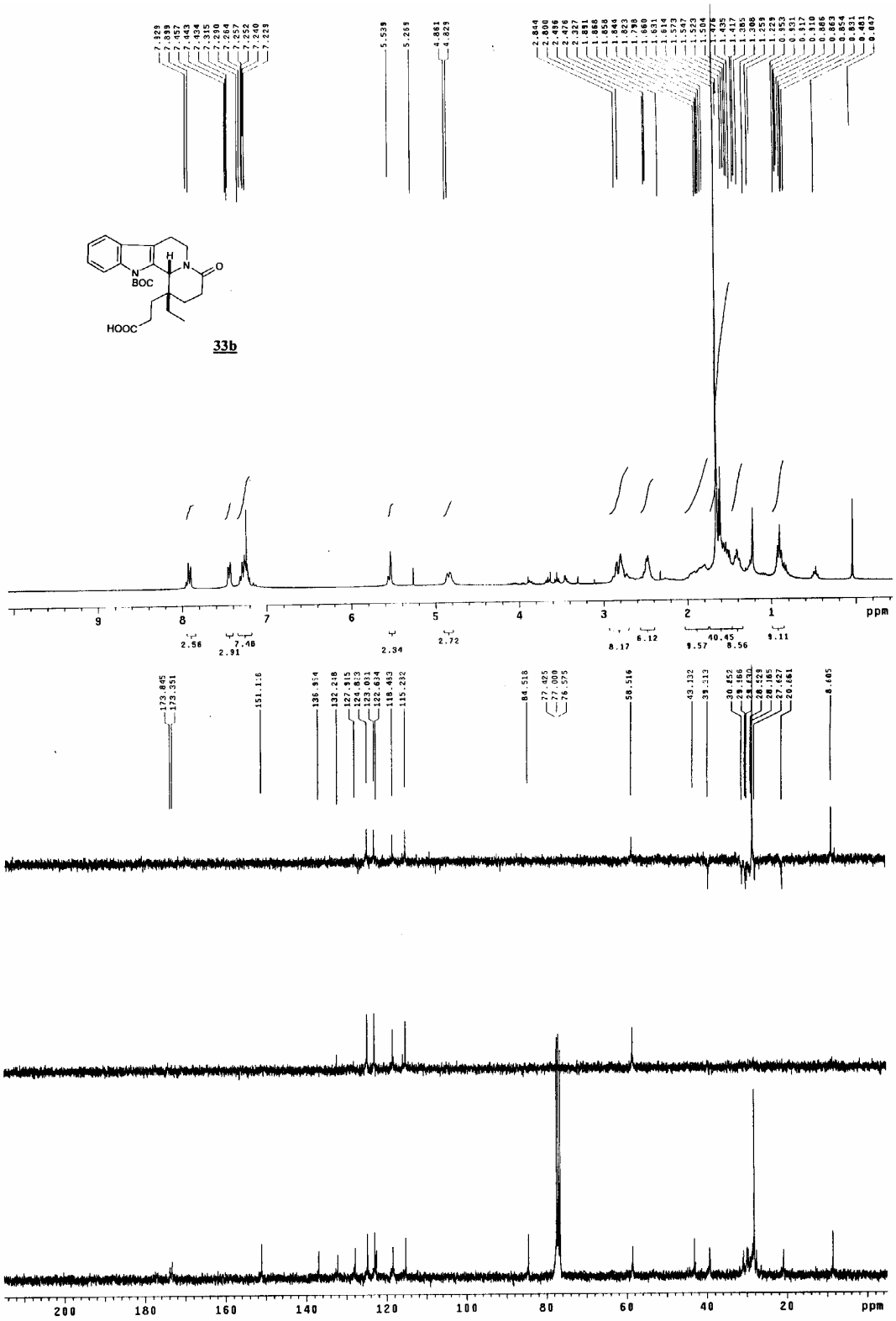

BnOOC
31a
ppm

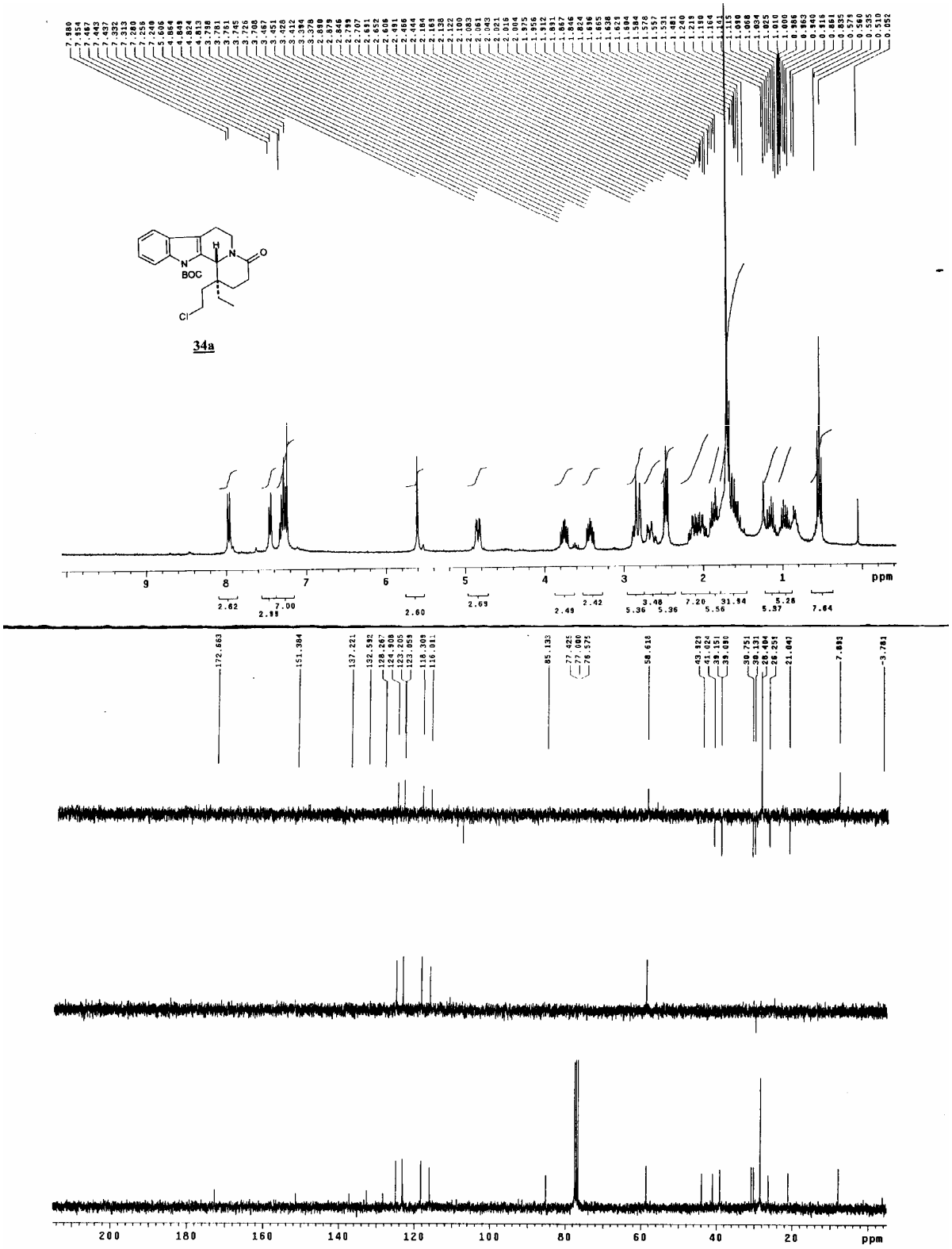

BnOOC
31b
ppm

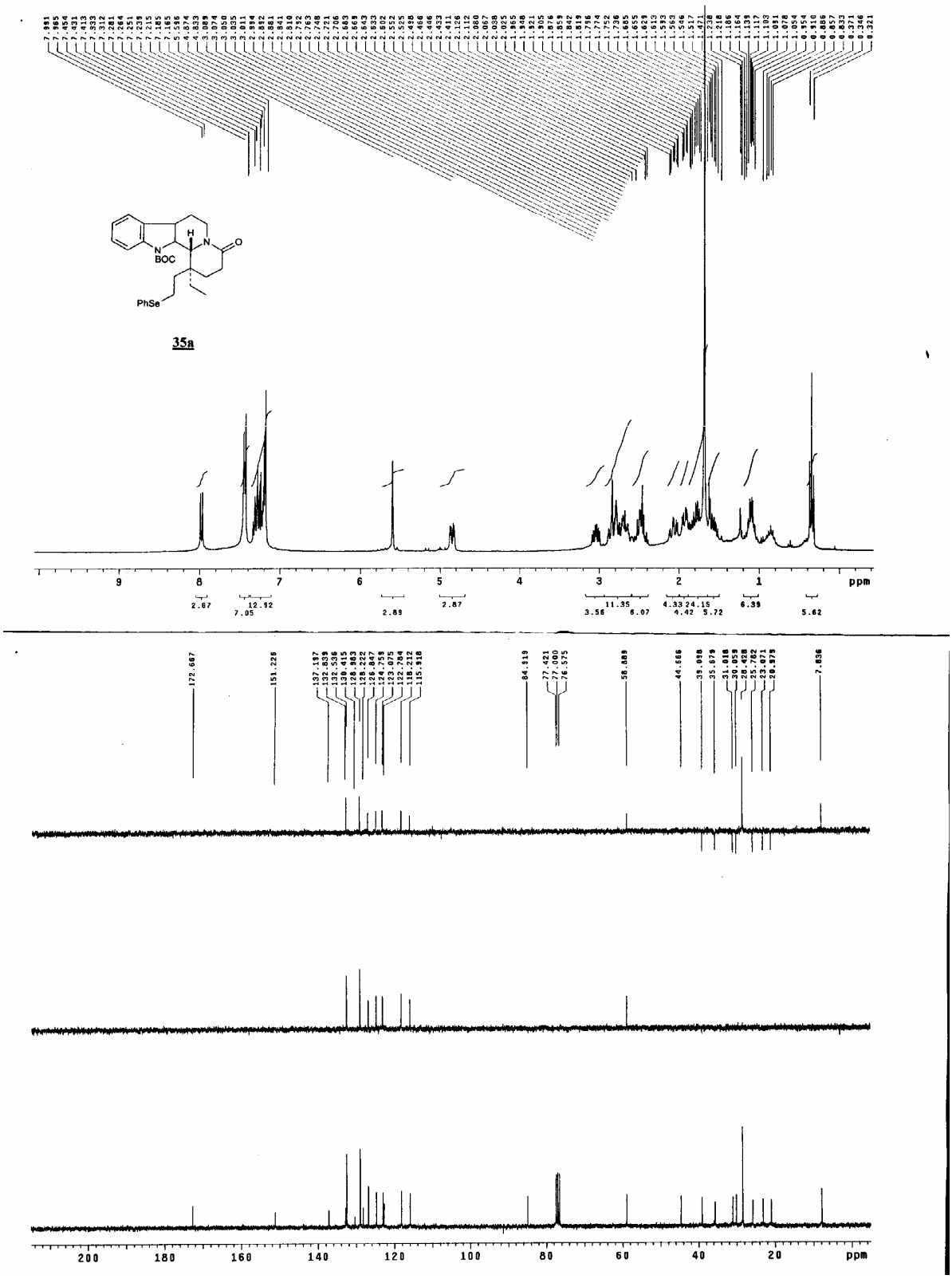

BOC
BnOOC
32a
ppm


BOC
BnOOC
32b
ppm


H
N
N
O
BOC
HOOC
33a
ppm
ppm


33b
BOC
HOOC
ppm


BOC
Cl
34a
ppm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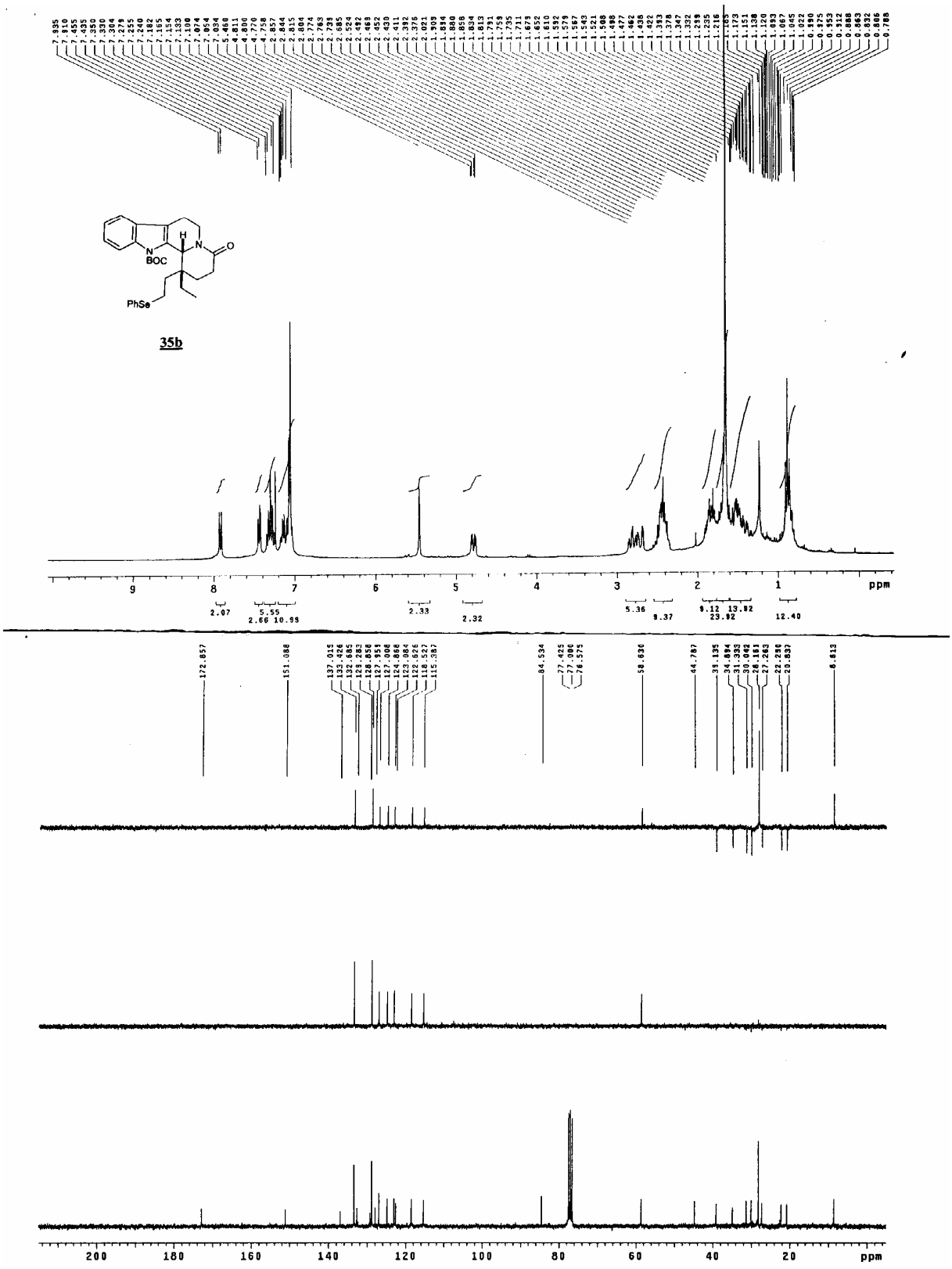
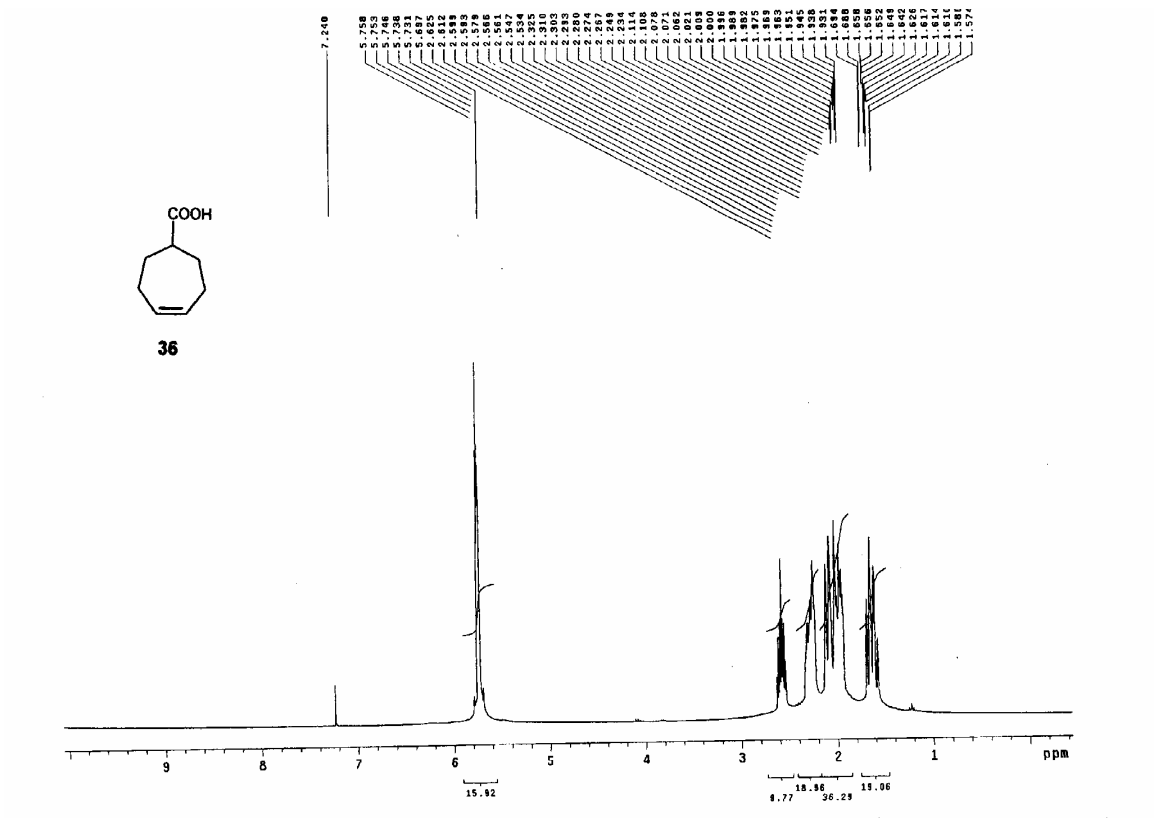
BOC
PhSe
ppm


35b
BOC
PhSe
ppm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36
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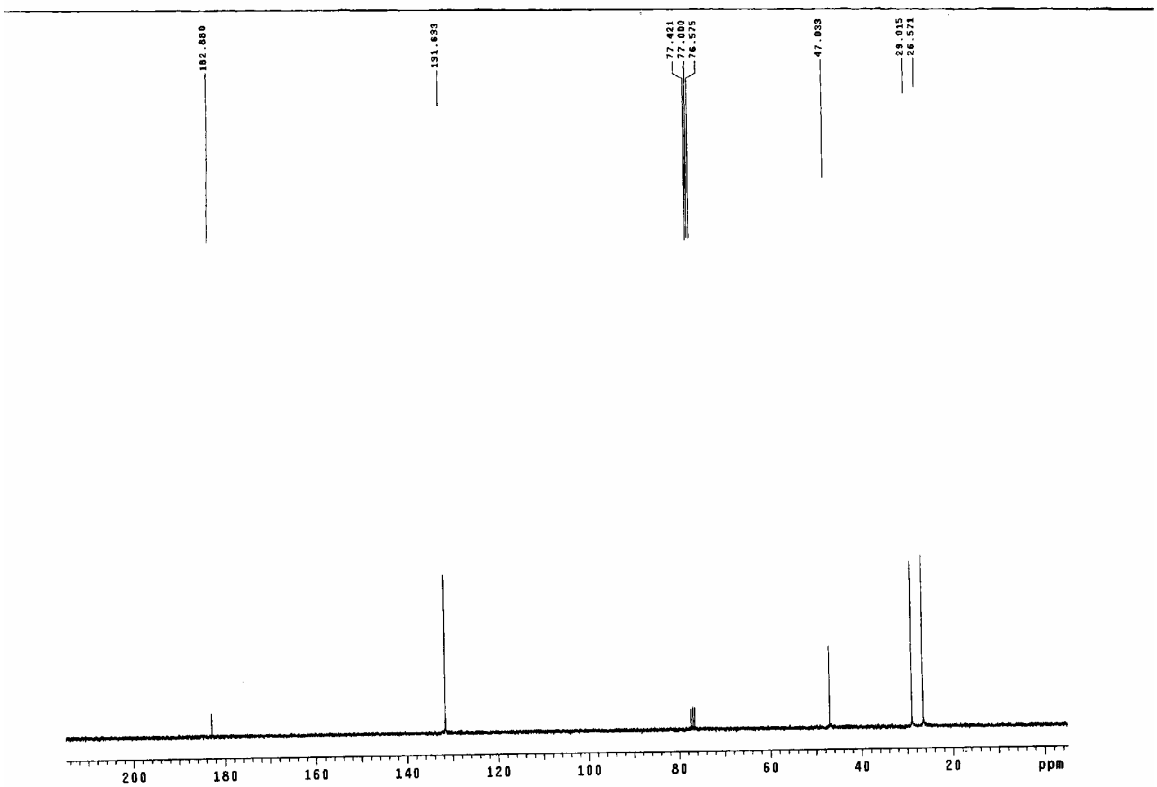
18.96
36.29
15.06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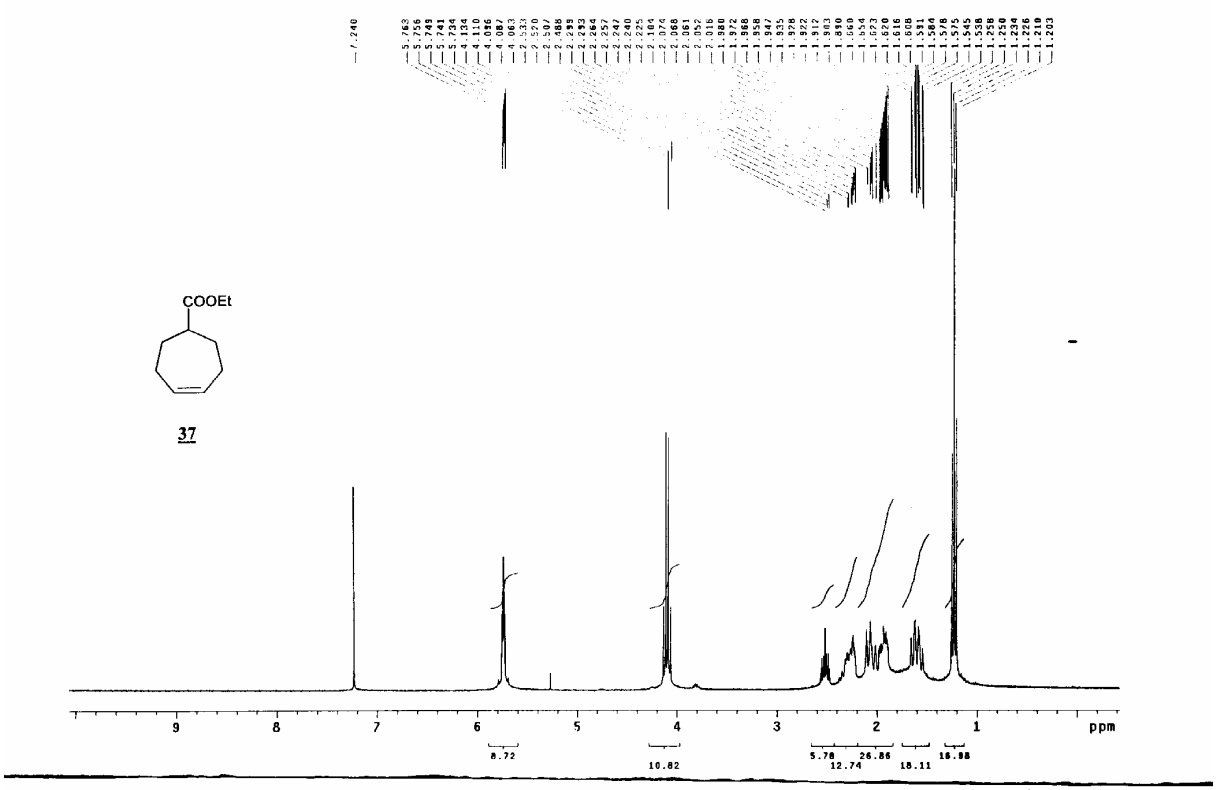
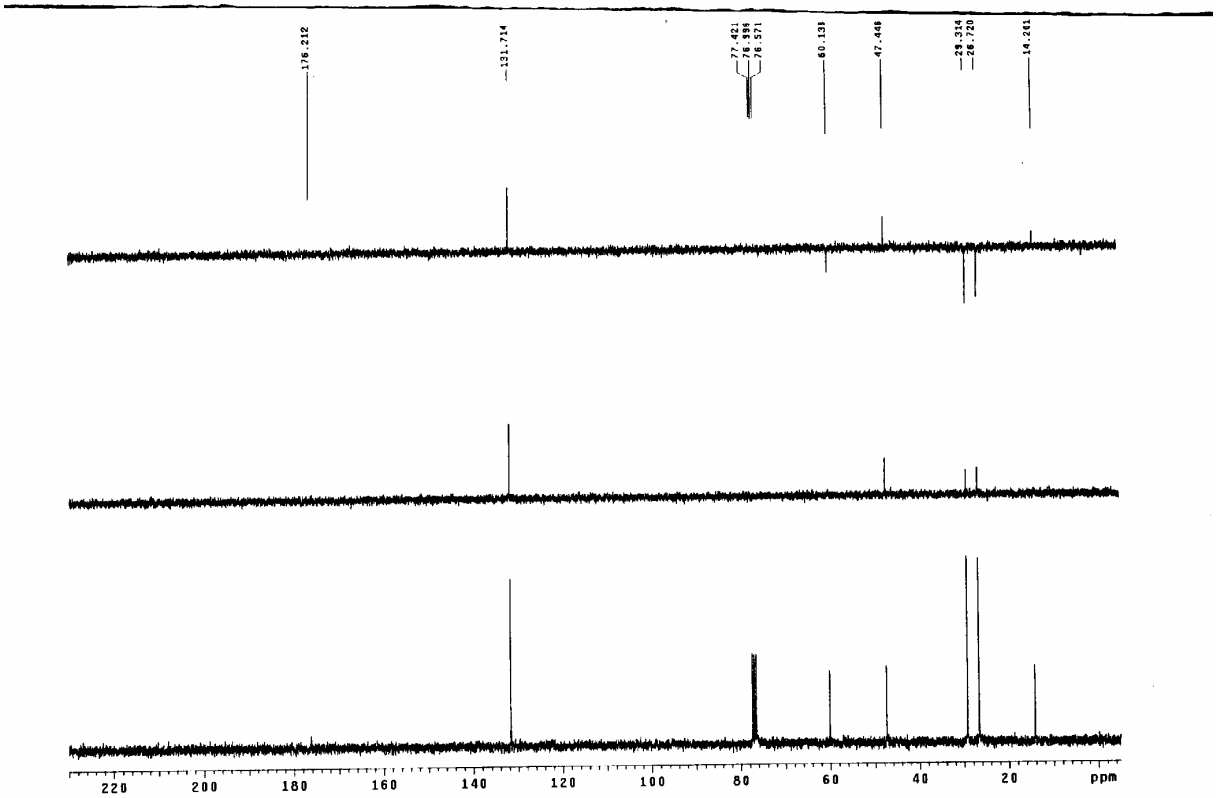
131.633
77.421
77.000
76.575
47.833
29.015
26.571
ppm


COOEt
37
ppm
8.72
10.82
5.78
26.86
12.74
18.11
18.88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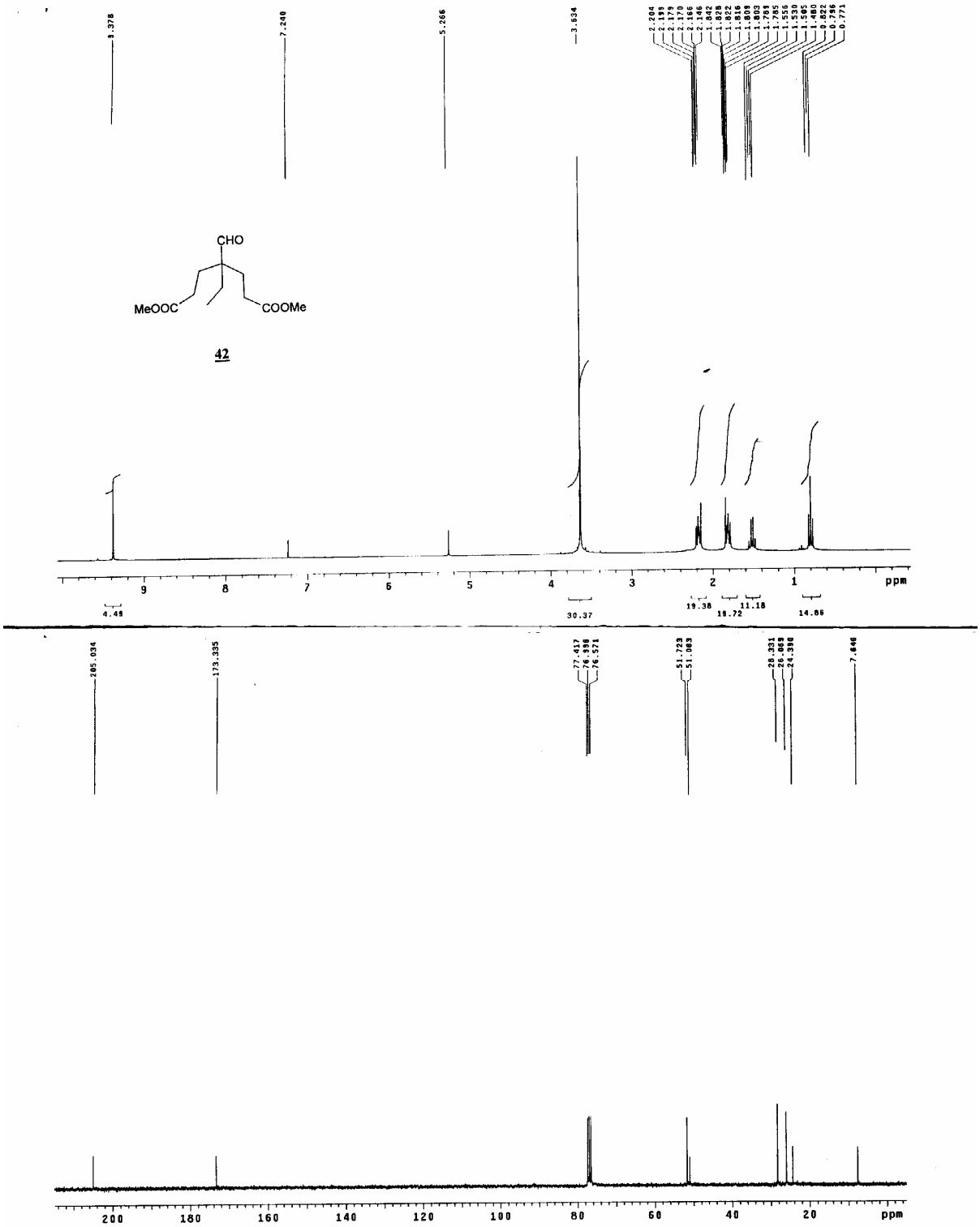
131.714
77.421
78.996
76.571
60.131
47.446
29.314
26.720
14.241
ppm


9.378
7.240
5.266
3.634
CHO
MeOOC
COOMe
42
9
8
7
6
5
4
3
2
1
ppm
4.48
30.37
19.38
18.72
11.18
14.88
205.034
173.335
77.417
76.998
76.571
51.723
51.063
28.331
26.065
24.398
7.646
200
180
160
140
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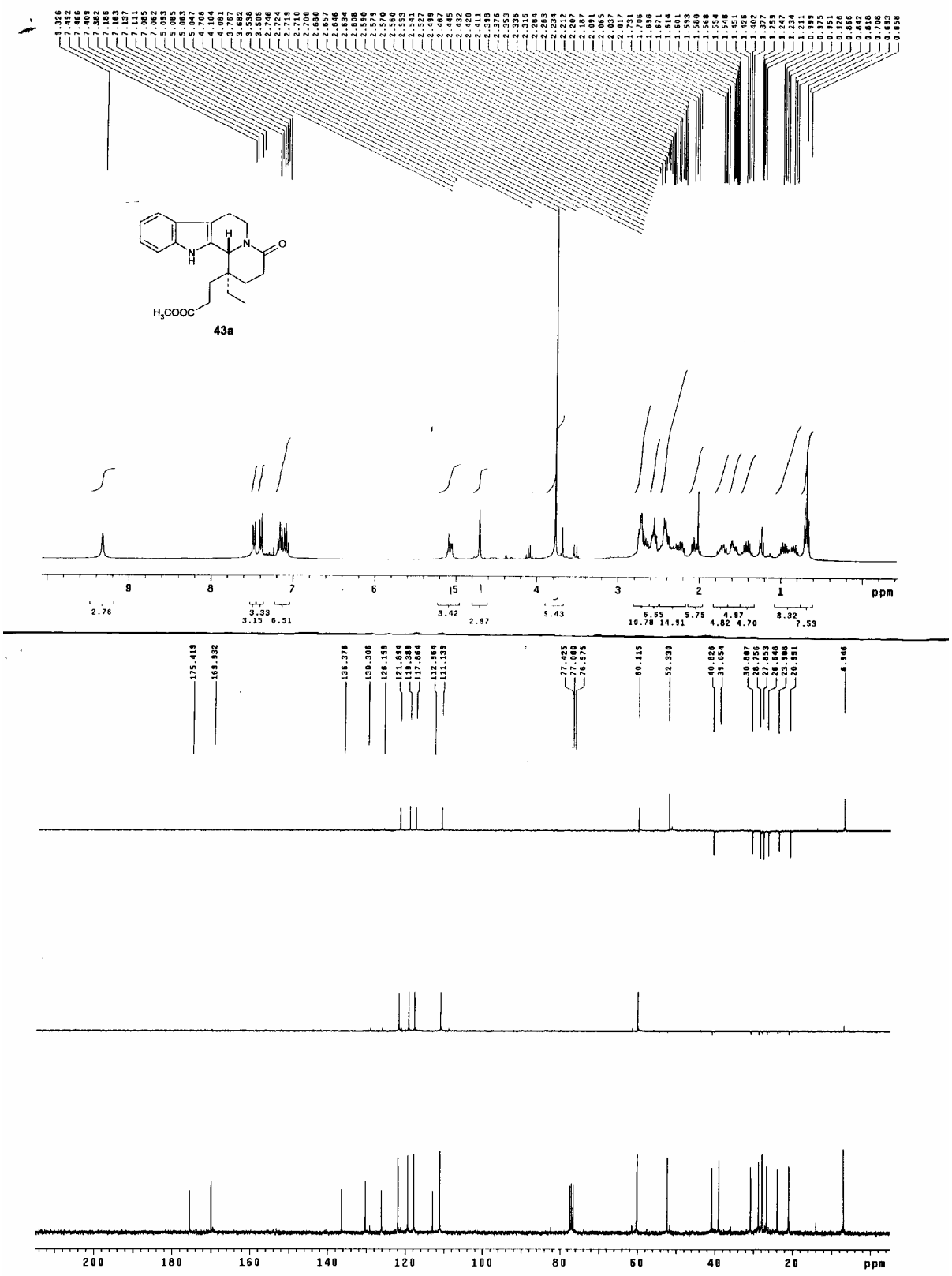
60
40
20
ppm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ppm
ppm