

Construction of carbazole unnatural amino acid scaffolds *via* Pd(II)-catalyzed C(sp³)-H functionalization

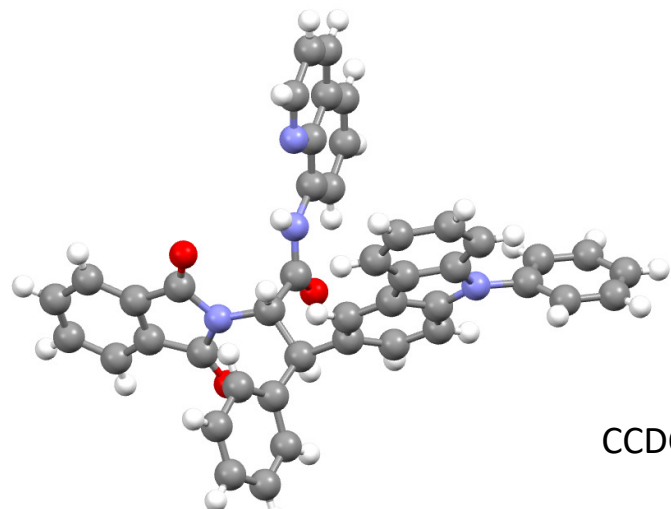
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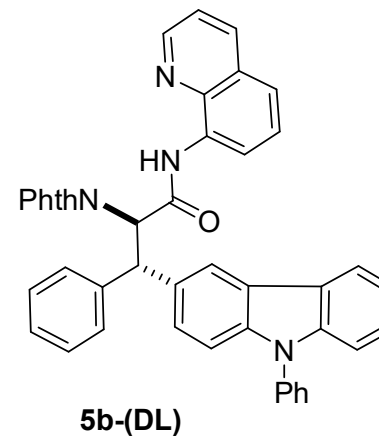
Supporting Information Contents

X-ray structure and brief crystal data of compounds 5b-(DL) and 7c(DL)	= page 2-5
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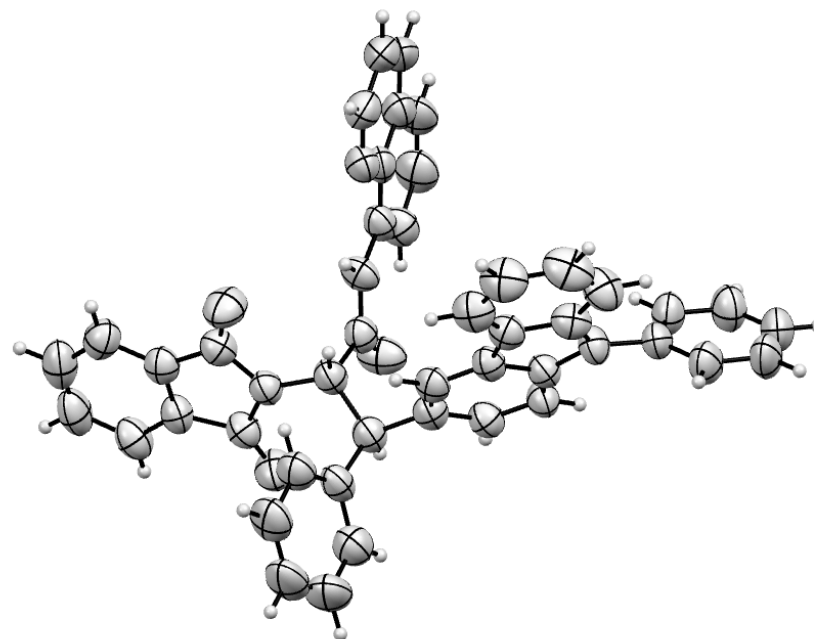
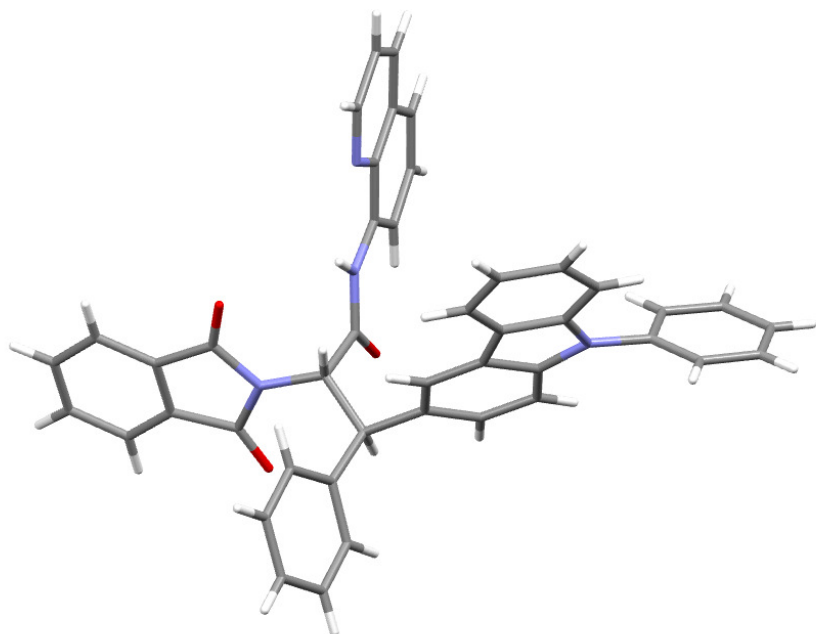
X-ray structure of **5b-(DL)**



CCDC 2164606

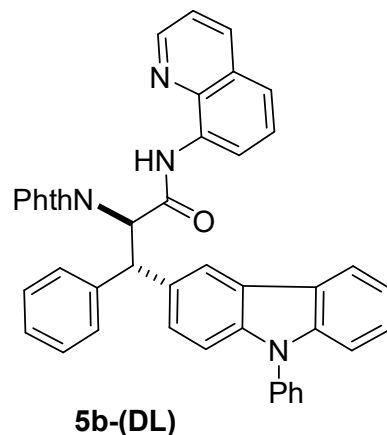


5b-(DL)



Ellipsoid probability 50%

Brief crystal data of compound **5b-(DL)**



Datablock: rd46

Bond precision: C-C = 0.0046 Å Wavelength=0.71073

Cell: a=11.1250 (4) b=13.0700 (6) c=14.0121 (6)
 alpha=77.779 (4) beta=79.315 (3) gamma=84.970 (3)

Temperature: 296 K

	Calculated	Reported
Volume	1954.23 (15)	1954.23 (15)
Space group	P -1	P -1
Hall group	-P 1	-P 1
Moiety formula	C44 H30 N4 O3 [+ solvent]	C44 H30 N4 O3
Sum formula	C44 H30 N4 O3 [+ solvent]	C44 H30 N4 O3
Mr	662.72	662.72
Dx, g cm ⁻³	1.126	1.126
Z	2	2
Mu (mm ⁻¹)	0.072	0.072
F000	692.0	692.0
F000'	692.28	
h, k, lmax	16, 19, 21	15, 19, 21
Nref	14457	12475
Tmin, Tmax	0.974, 0.982	0.788, 1.000
Tmin'	0.972	

Correction method= # Reported T Limits: Tmin=0.788 Tmax=1.000
 AbsCorr = MULTI-SCAN

Data completeness= 0.863 Theta (max)= 32.789

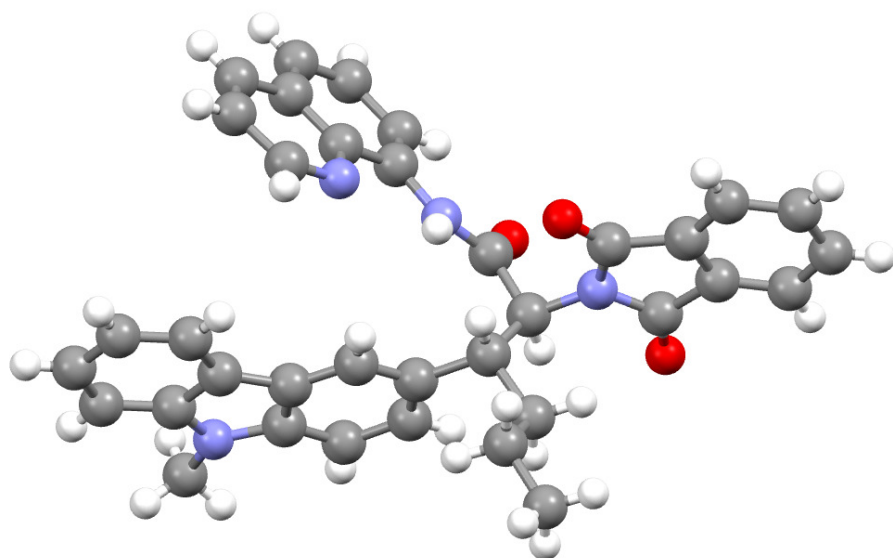
R(reflections)= 0.0744 (3673) wR2(reflections)= 0.2895 (12475)
 S = 0.897 Npar= 460

Explanation for an observed 'A' alert:

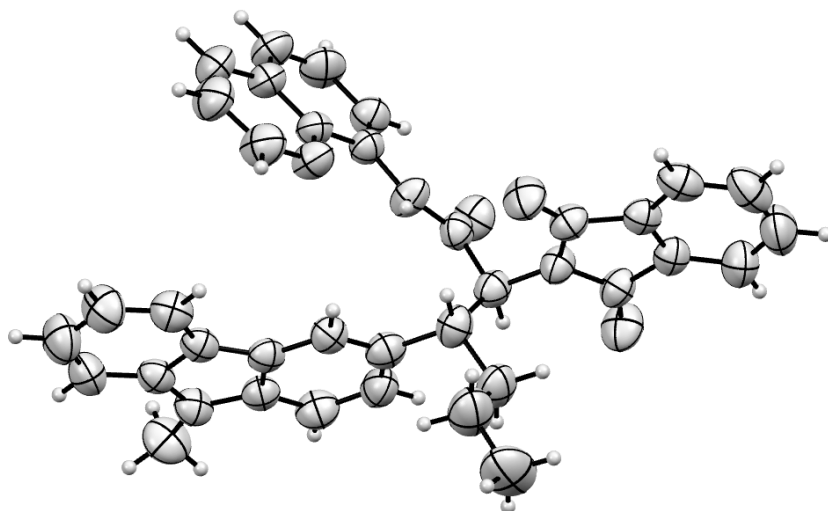
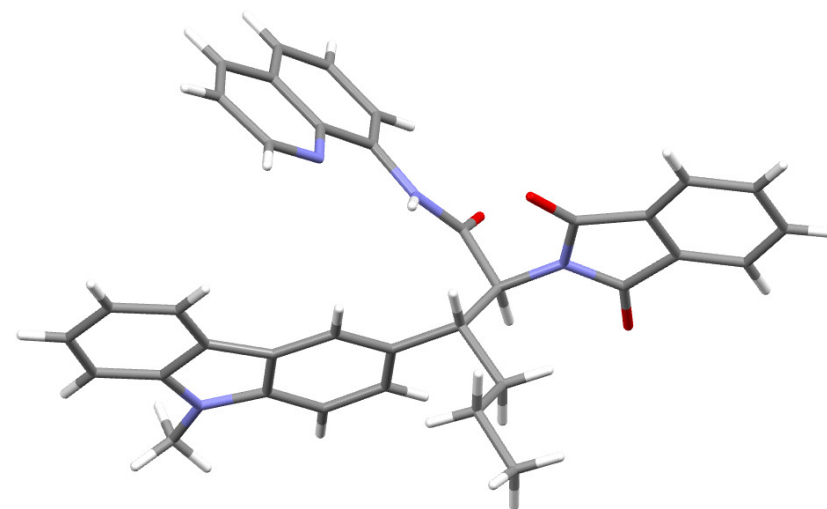
Out of all the trials of crystallization to obtain a suitable crystal for X-ray structure analysis, a suitable and best available crystal was identified and subjected to X-ray structure analysis and it was diffracting at just an acceptable level.

Hence, one of the 'A' level alert is indicated in the checkcif data. We tried to get the structure to establish the stereochemistry, we used the best available crystal to collect the data. However, as indicated by a crystallographer, the existing data seems to be good enough for the structure establishment, which is the main aim of this SCXRD experiment using the compound **5b-(DL)**.

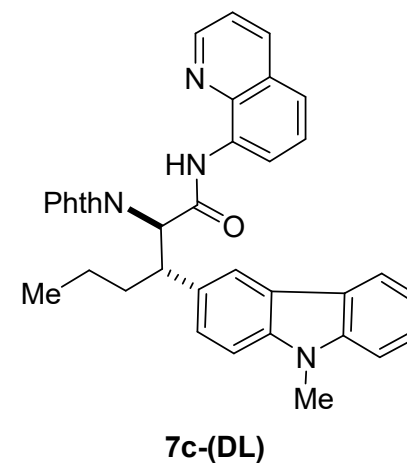
X-ray structure of **7c-(DL)**



CCDC 2164605



Ellipsoid probability 50%



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 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 7

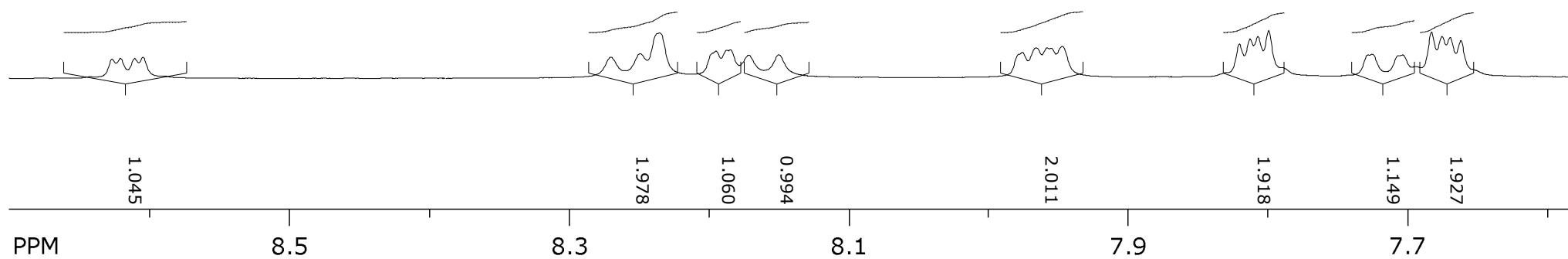
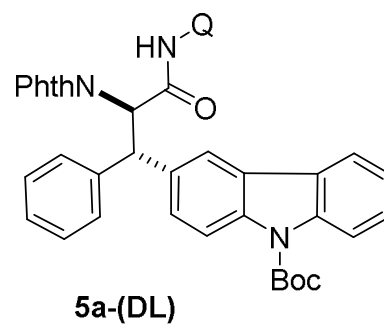
8.6052
 8.6113
 8.6214
 8.6274

8.1500
 8.1717
 8.1873
 8.1950
 8.2351
 8.2493
 8.2703

7.9471
 7.9581
 7.9657
 7.9755

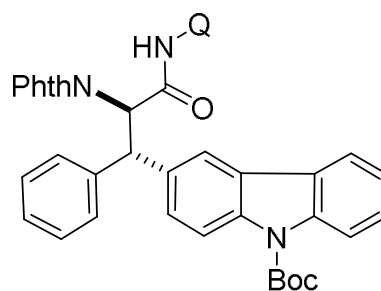
7.7992
 7.8069
 7.8126
 7.8202

7.6616
 7.6693
 7.6752
 7.6827
 7.7033
 7.7064
 7.7250
 7.7282

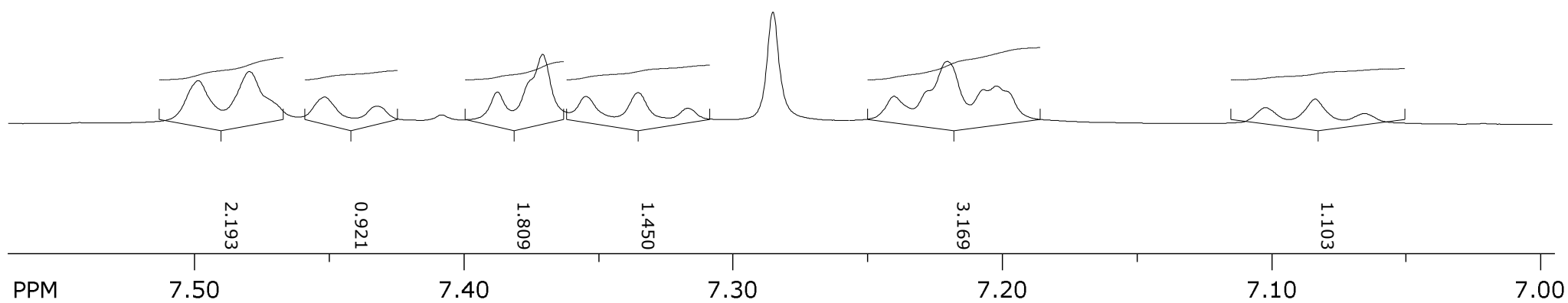


SpinWorks 4; RD 106
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 7

7.4323	7.3877	7.3548	7.3354	7.3244	7.3168	7.2852	7.2402	7.2205	7.2069	7.2021	7.1020	7.0837	7.0652
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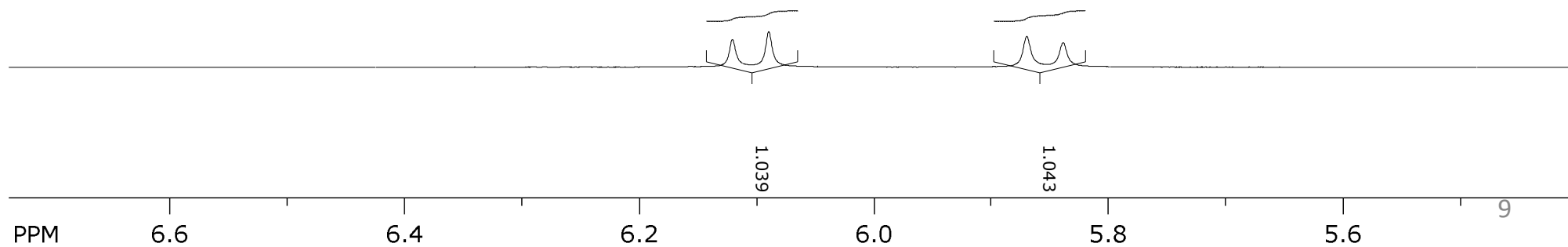
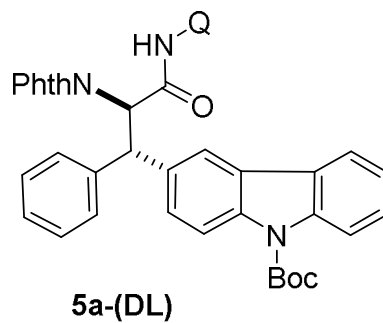


5a-(DL)



SpinWorks 4: RD 106
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 7

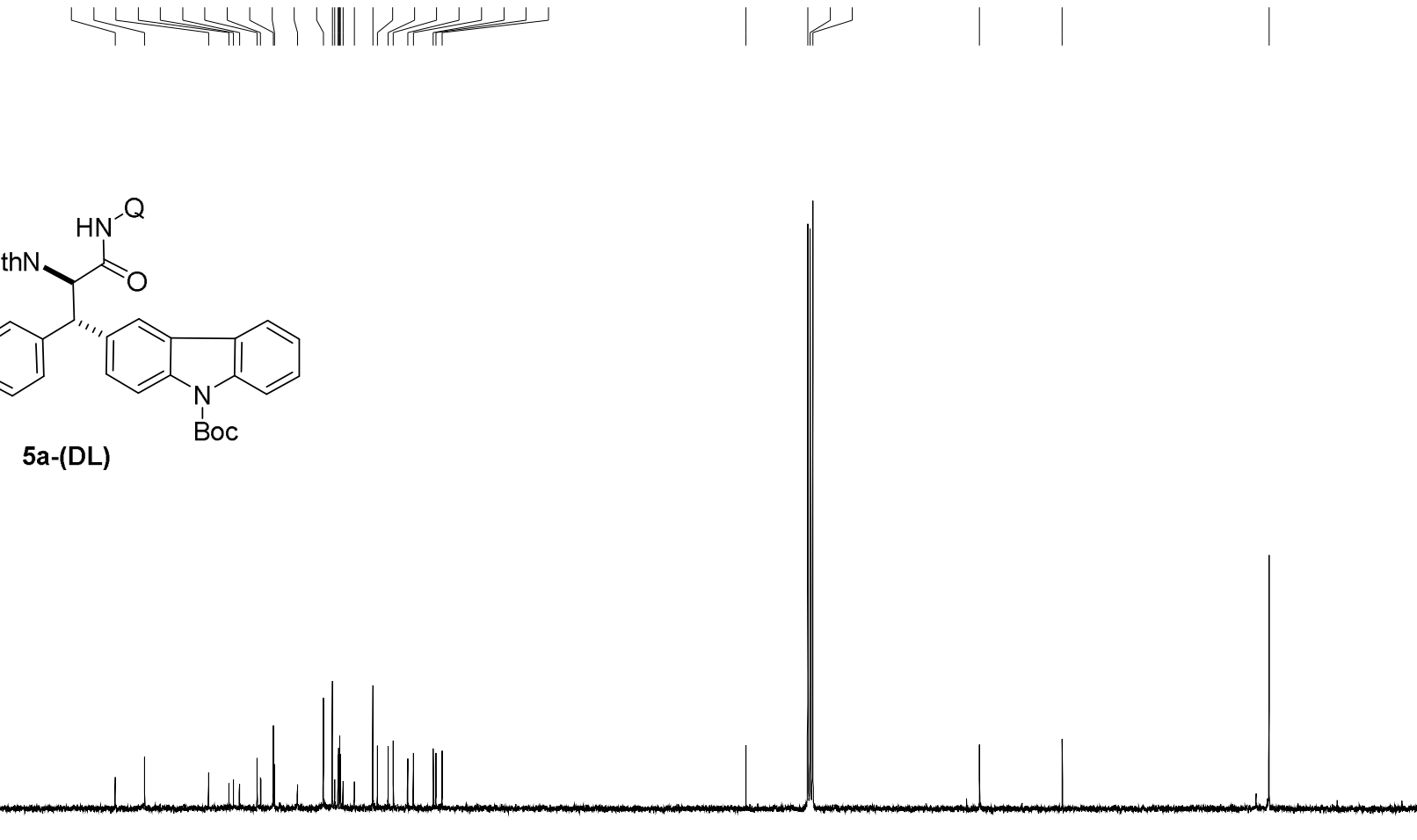
6.1204
6.0895
5.8386
5.8695



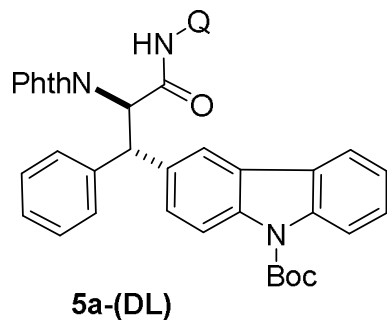
Chemical structure of **5a-(DL)** is shown above the spectrum. The structure is a complex molecule featuring a central benzene ring substituted with a Boc-protected indole group, a phenyl group, and a chiral center bearing a PhthN group and a Q group.

The ¹³C NMR spectrum (CDCl₃) displays the following chemical shifts (ppm):

Chemical Shift (ppm)
167.960
165.878
150.815
147.676
140.896
138.251
137.623
135.730
135.355
134.006
133.885
131.458
128.701
128.400
128.300
128.200
122.965
121.825
121.268
119.750
119.156
117.017
116.752
116.091
83.828
77.255
77.000
76.746
59.032
50.234
28.296

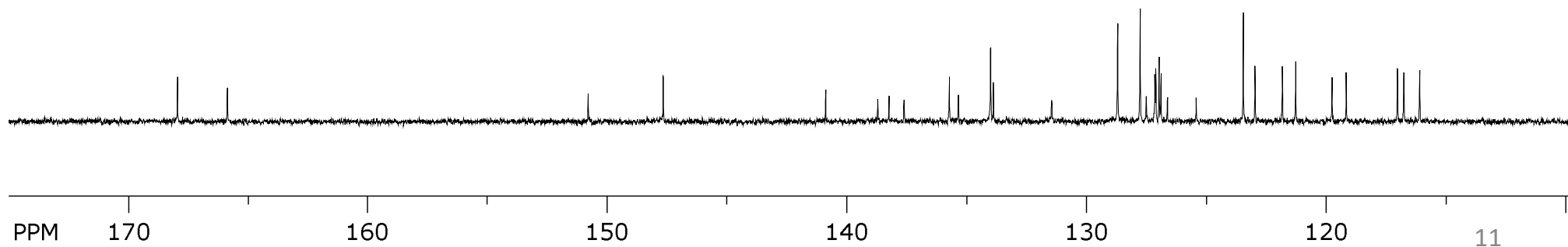
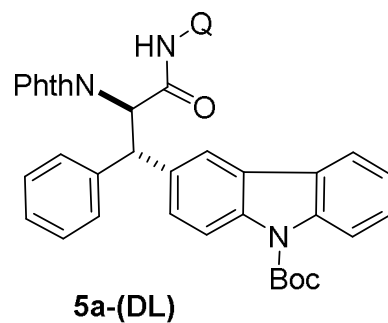


PPM

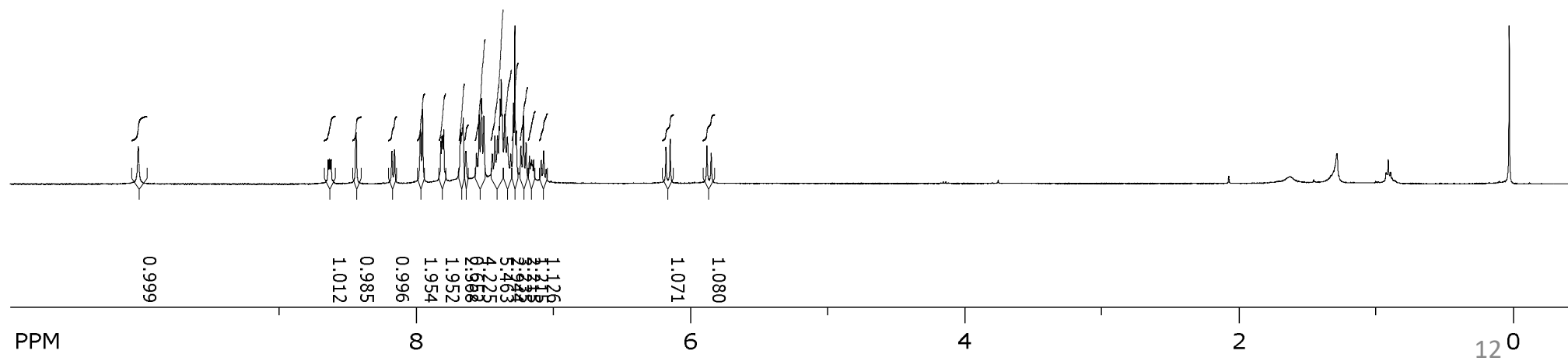
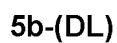


SpinWorks 4: SAB170713
C13CPD CDCl3 {D:\Spectra} nmr 23

167.960	165.878	150.815	147.676	140.896	138.721	137.623	135.730	134.006	133.885	131.458	128.701	127.765	127.508	127.148	127.108	126.974	126.894	126.626	125.422	123.459	122.965	121.825	121.268	119.750	119.156	117.017	116.752	116.091
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—



10.0311 —



SpinWorks 4: rd 45 r1

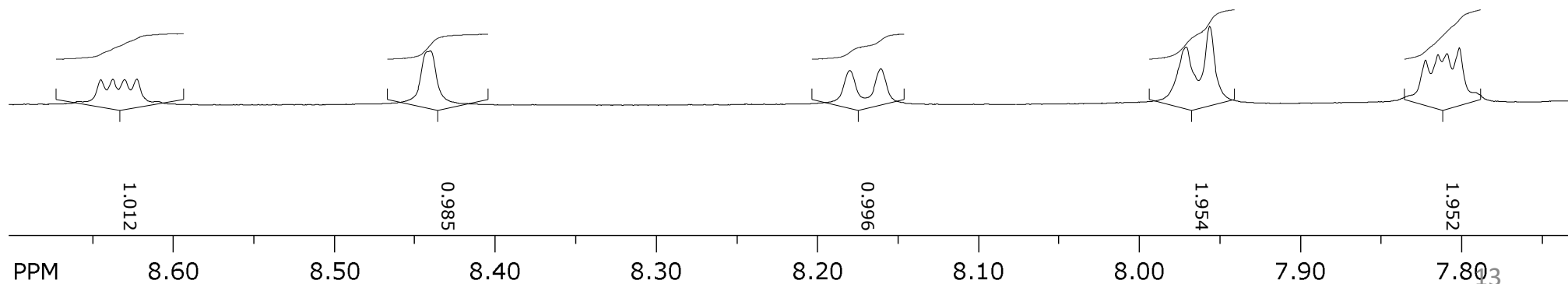
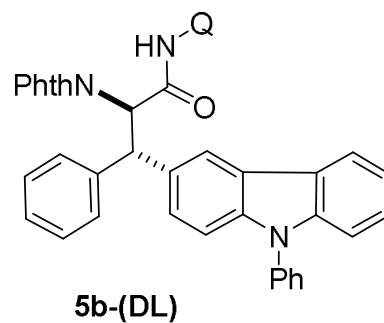
8.6228
8.6303
8.6378
8.6452

8.4404

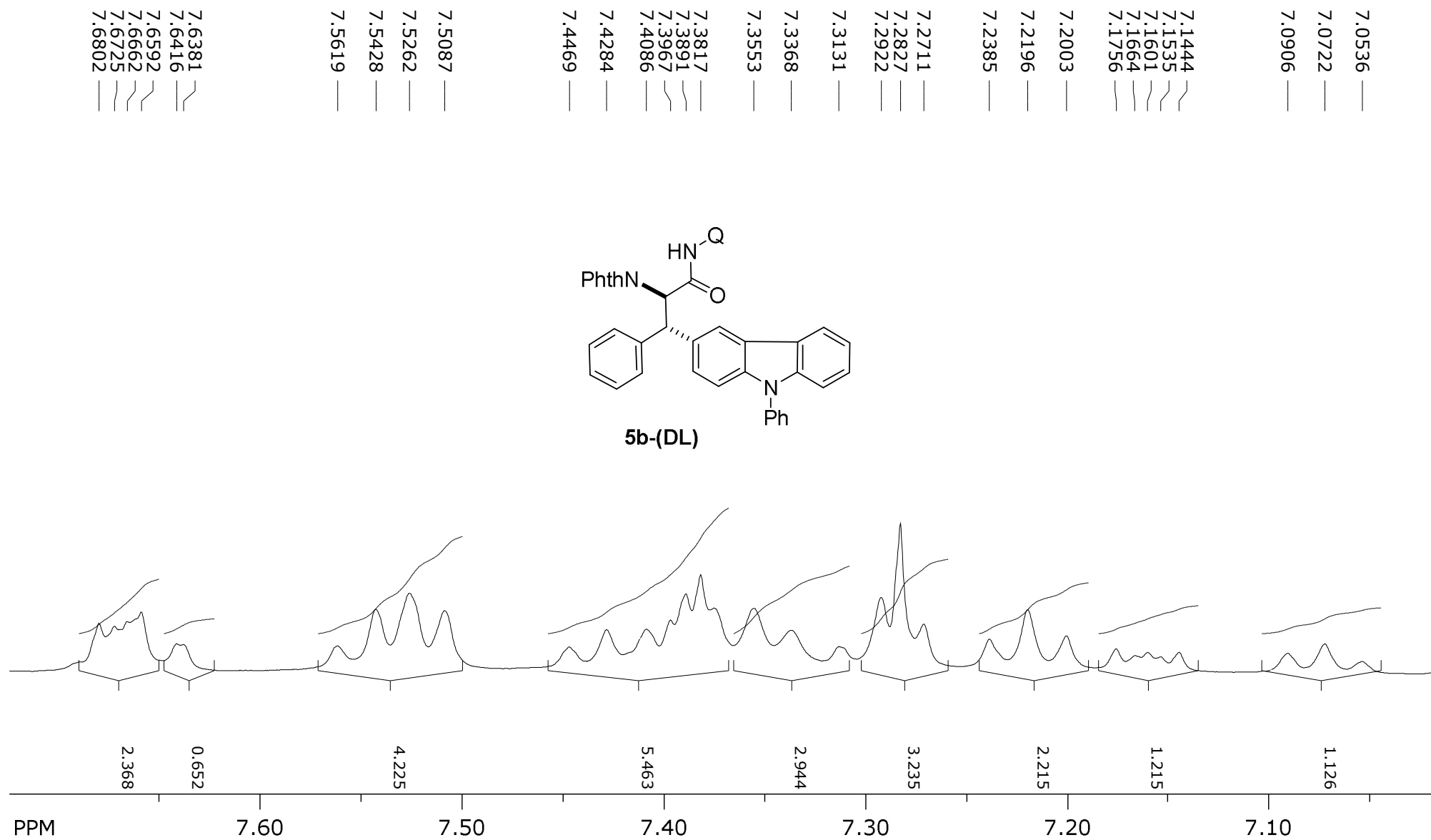
8.1604
8.1798

7.9564
7.9709

7.8011
7.8087
7.8145
7.8222

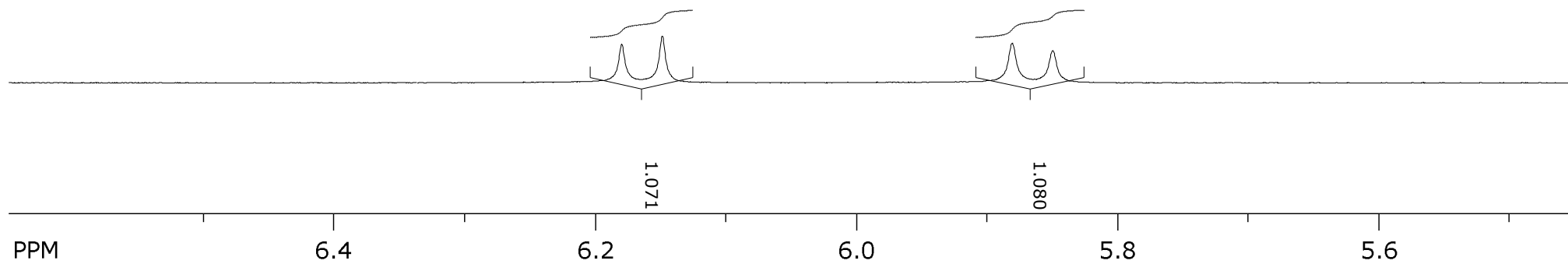
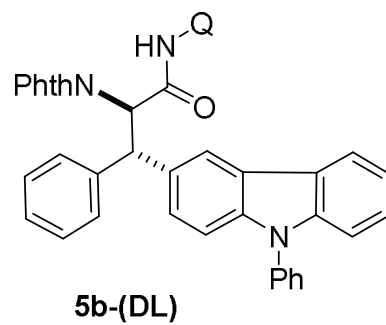


SpinWorks 4: rd 45 r1

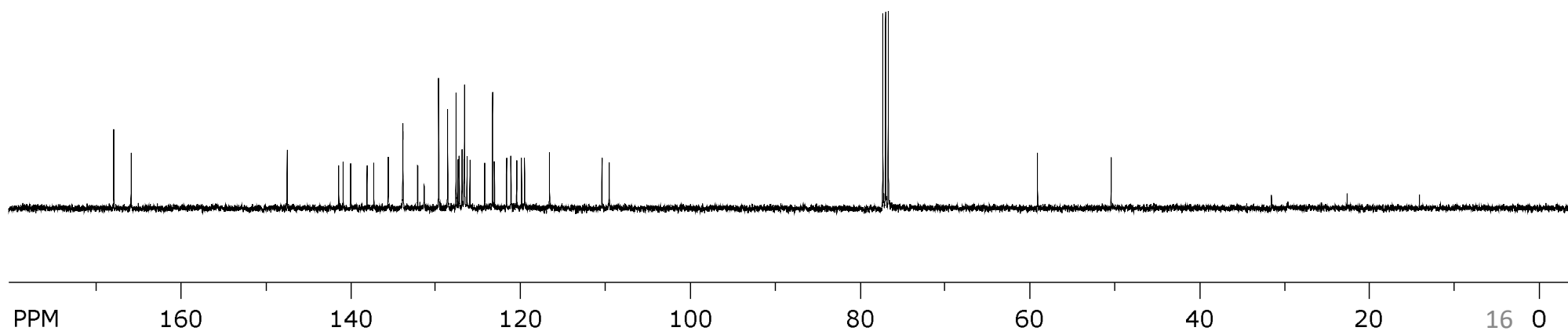
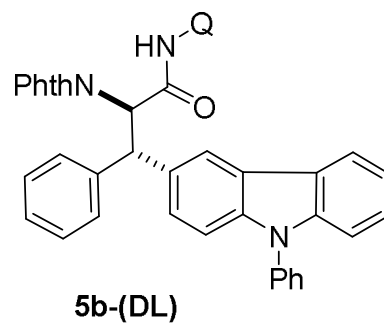
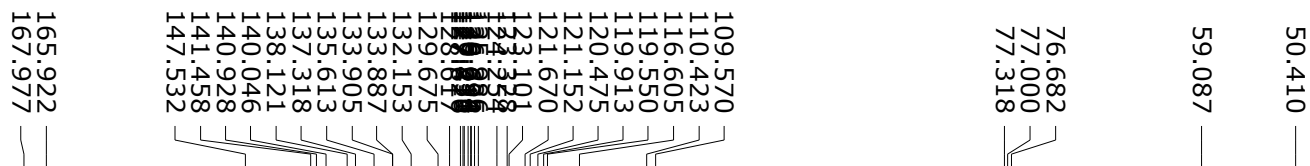


6.1488
6.1798

5.8496
5.8807



SpinWorks 4: RD 46
13C



SpinWorks 4: RD 46
13C

147.532 —

140.046 —
140.928 —
141.458 —

138.121 —
137.318 —

135.613 —

133.887 —
133.905 —

132.153 —
131.421 —

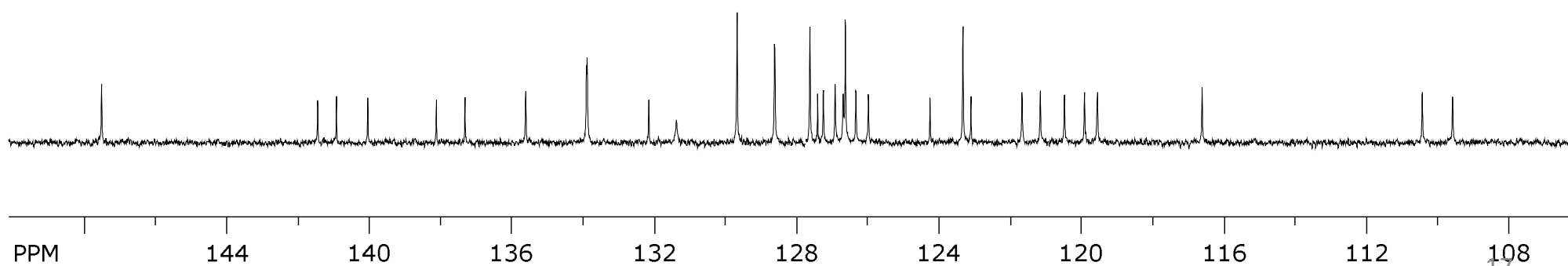
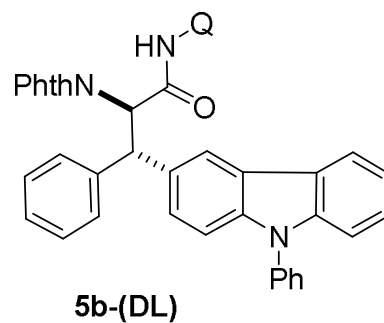
129.675 —
128.617 —
127.626 —
127.410 —
127.251 —
126.916 —
126.691 —
126.634 —
126.335 —
125.986 —
124.254 —

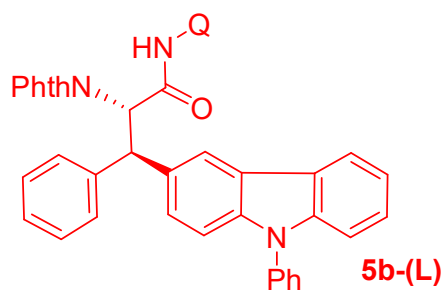
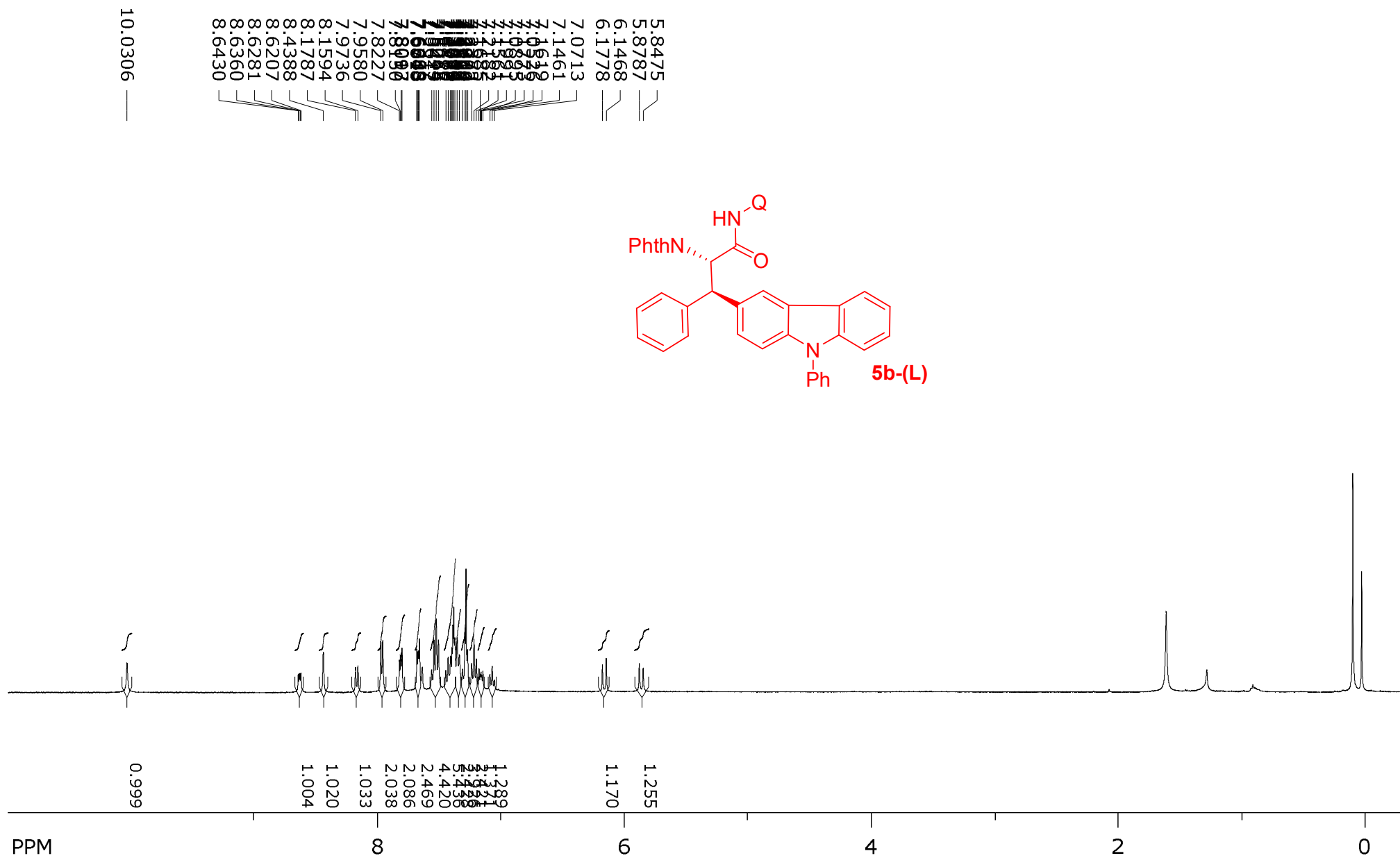
123.328 —
123.101 —

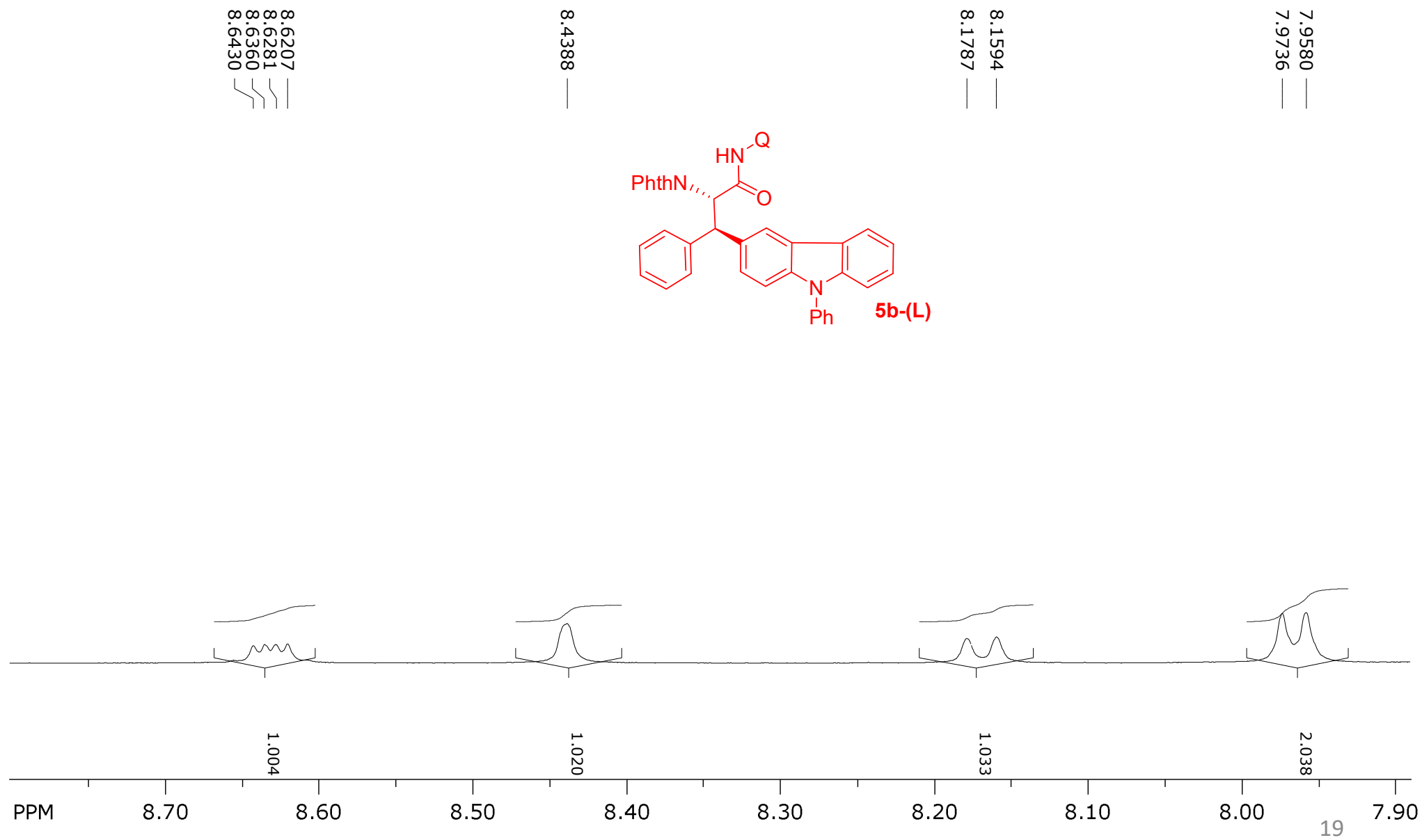
121.670 —
121.152 —
120.475 —
119.913 —
119.550 —

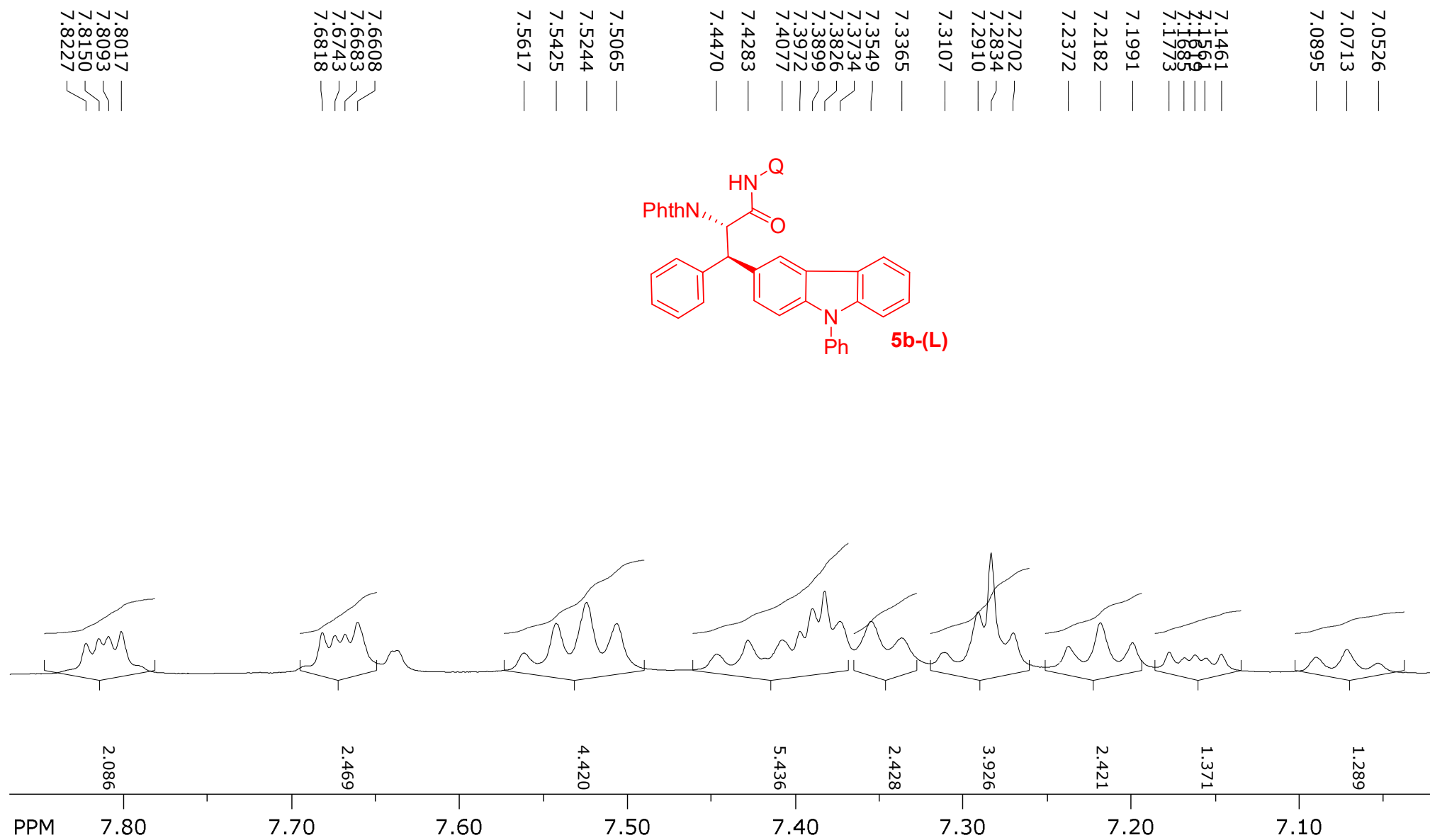
116.605 —

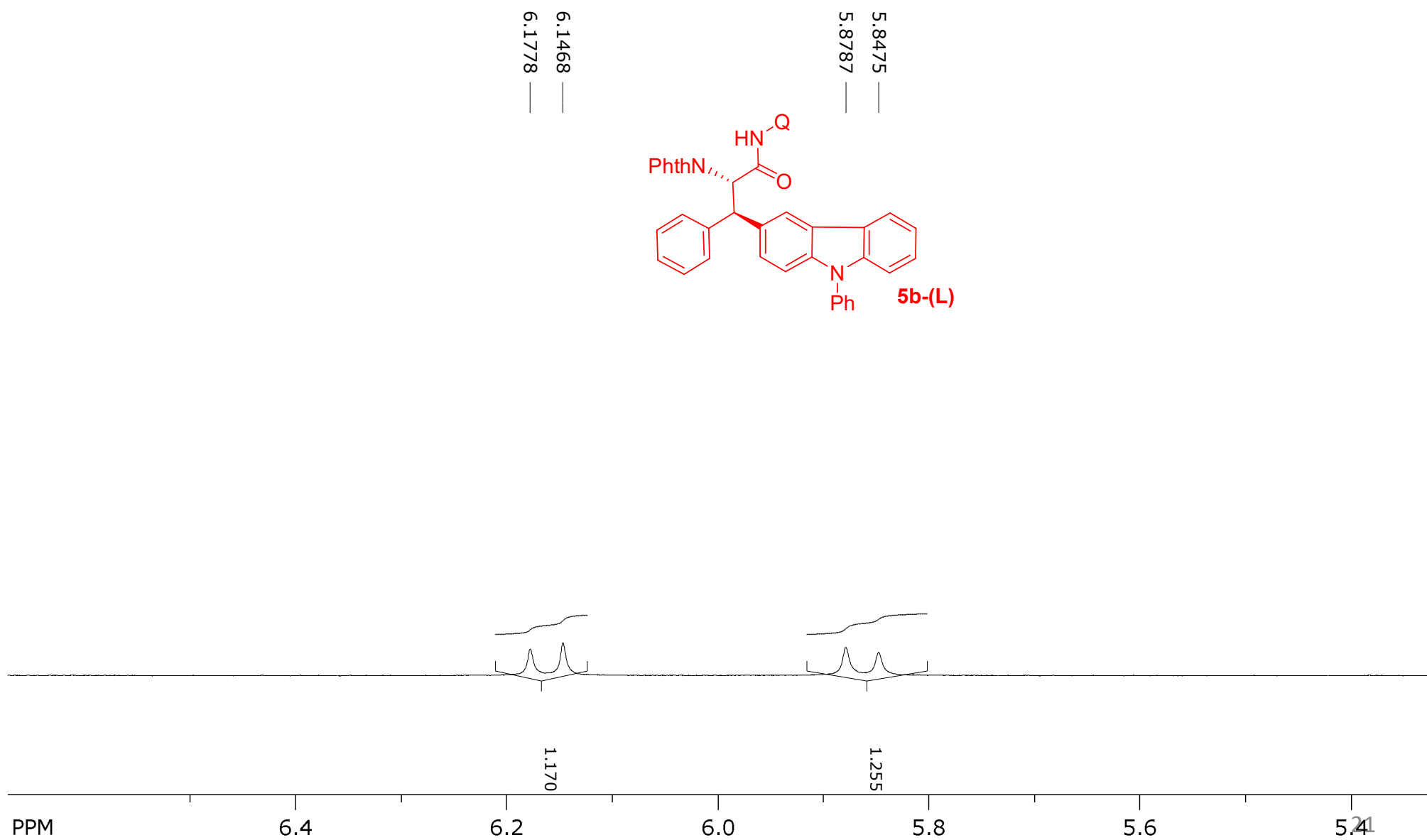
110.423 —
109.570 —







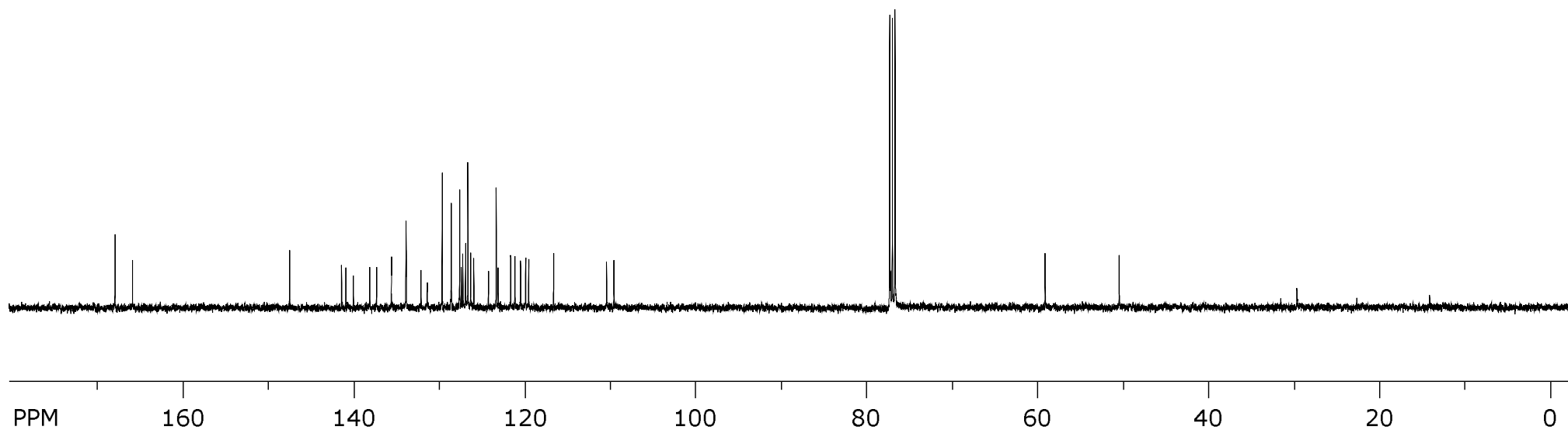
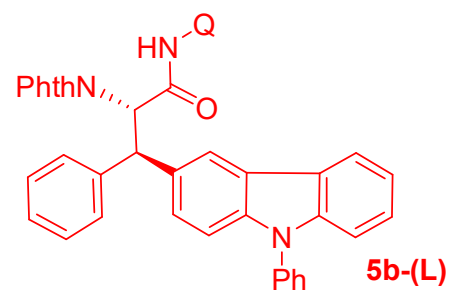




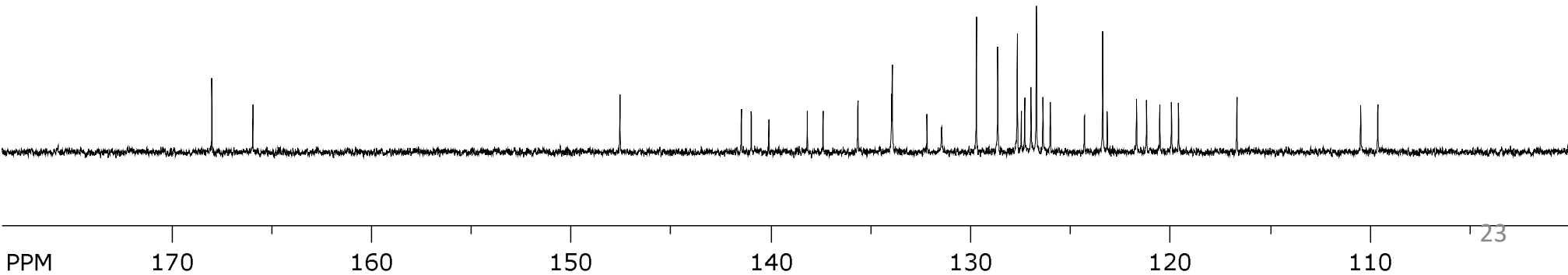
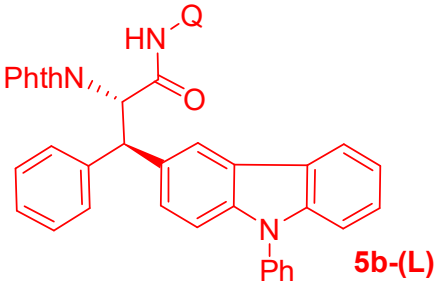
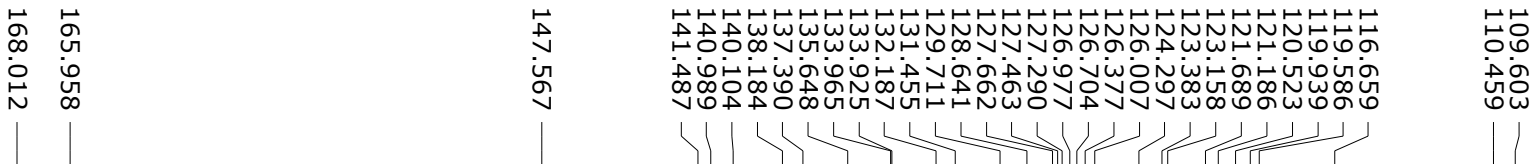
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168.012
 165.958
 147.567
 141.487
 140.989
 140.104
 138.184
 137.390
 135.648
 133.965
 133.925
 132.187
 131.455
 129.944
 129.007
 128.007
 127.397
 123.158
 121.689
 121.186
 120.523
 119.939
 119.586
 116.659
 110.459
 109.603

76.682
 77.000
 77.317
 59.121
 50.450



SpinWorks 4: RD 378 REP 2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 16



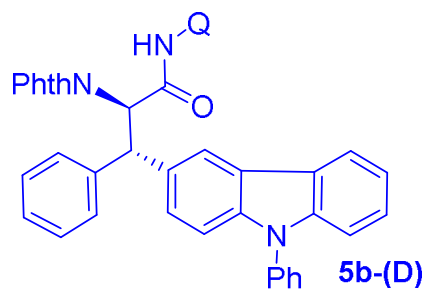
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1H

8.6226
8.6300
8.6377
8.6451

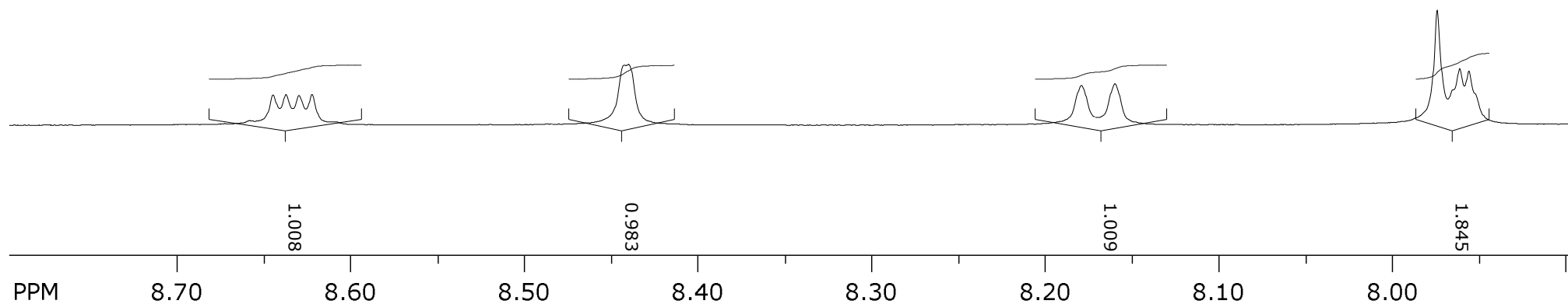
8.4427

8.1599
8.1792

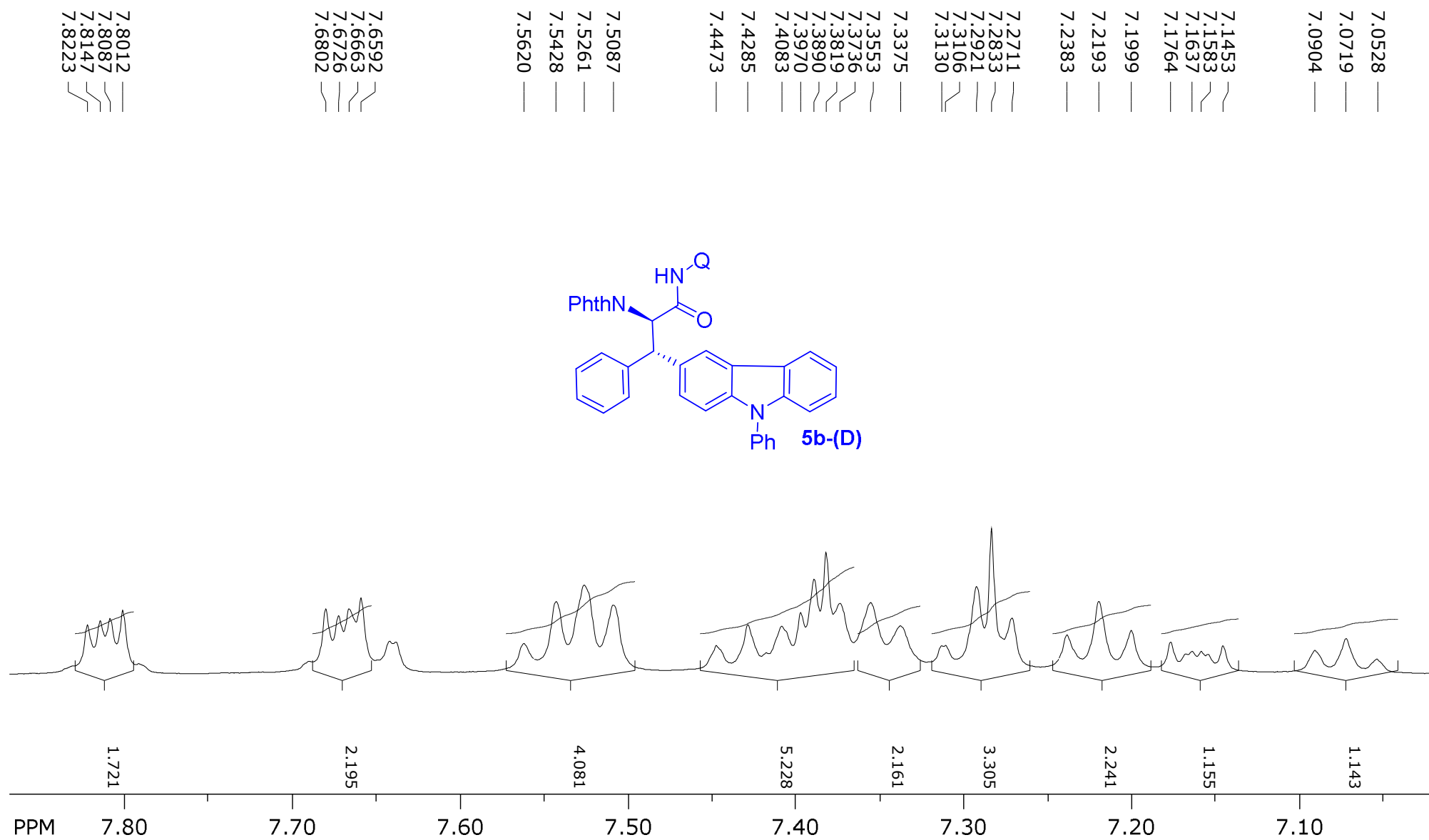
7.9560
7.9613
7.9742



5b-(D)



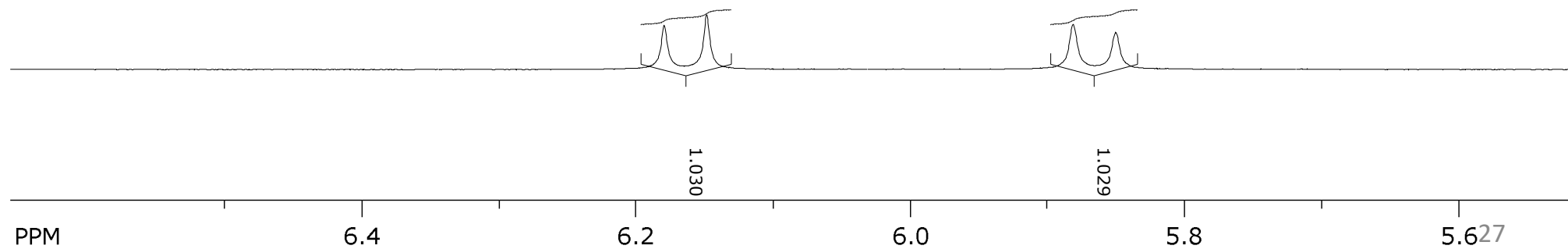
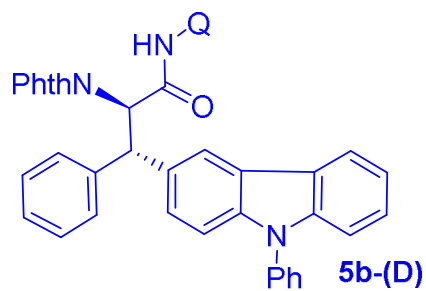
SpinWorks 4: RD 377 D R2
1H



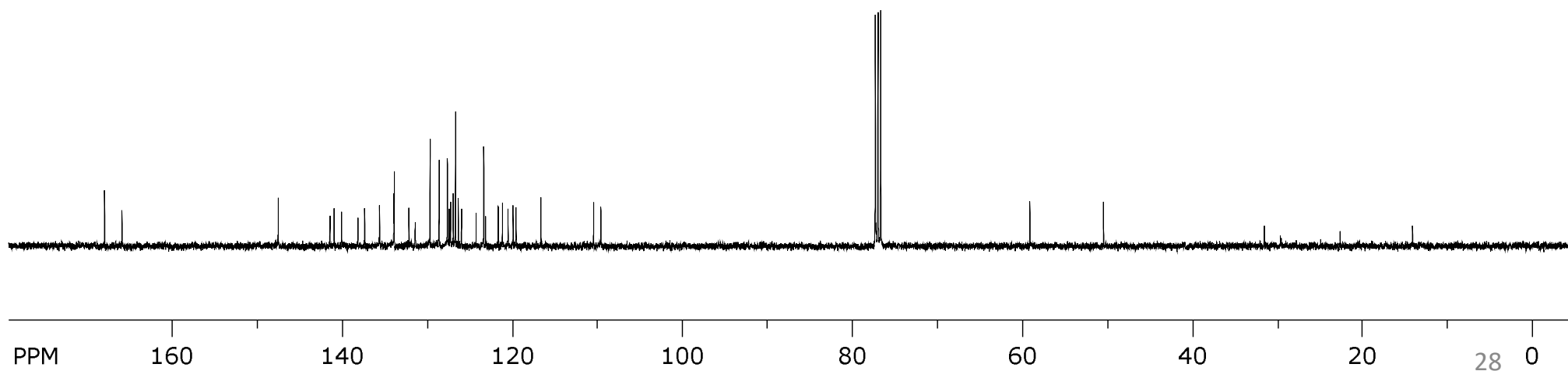
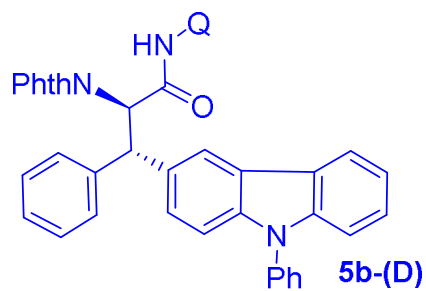
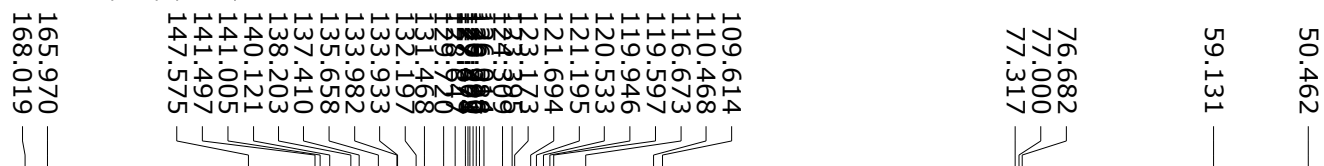
SpinWorks 4: RD 377 D R2
1H

6.1486
6.1797
—
—

5.8499
5.8810
—
—

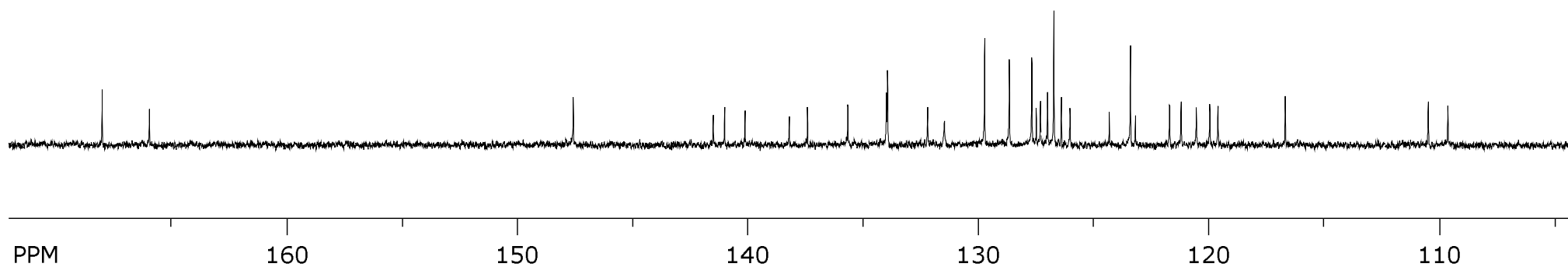
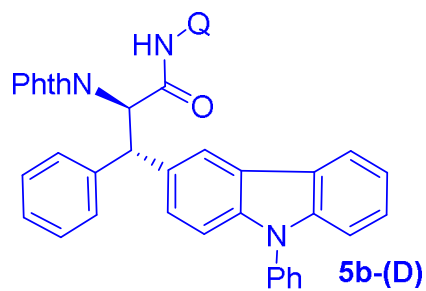


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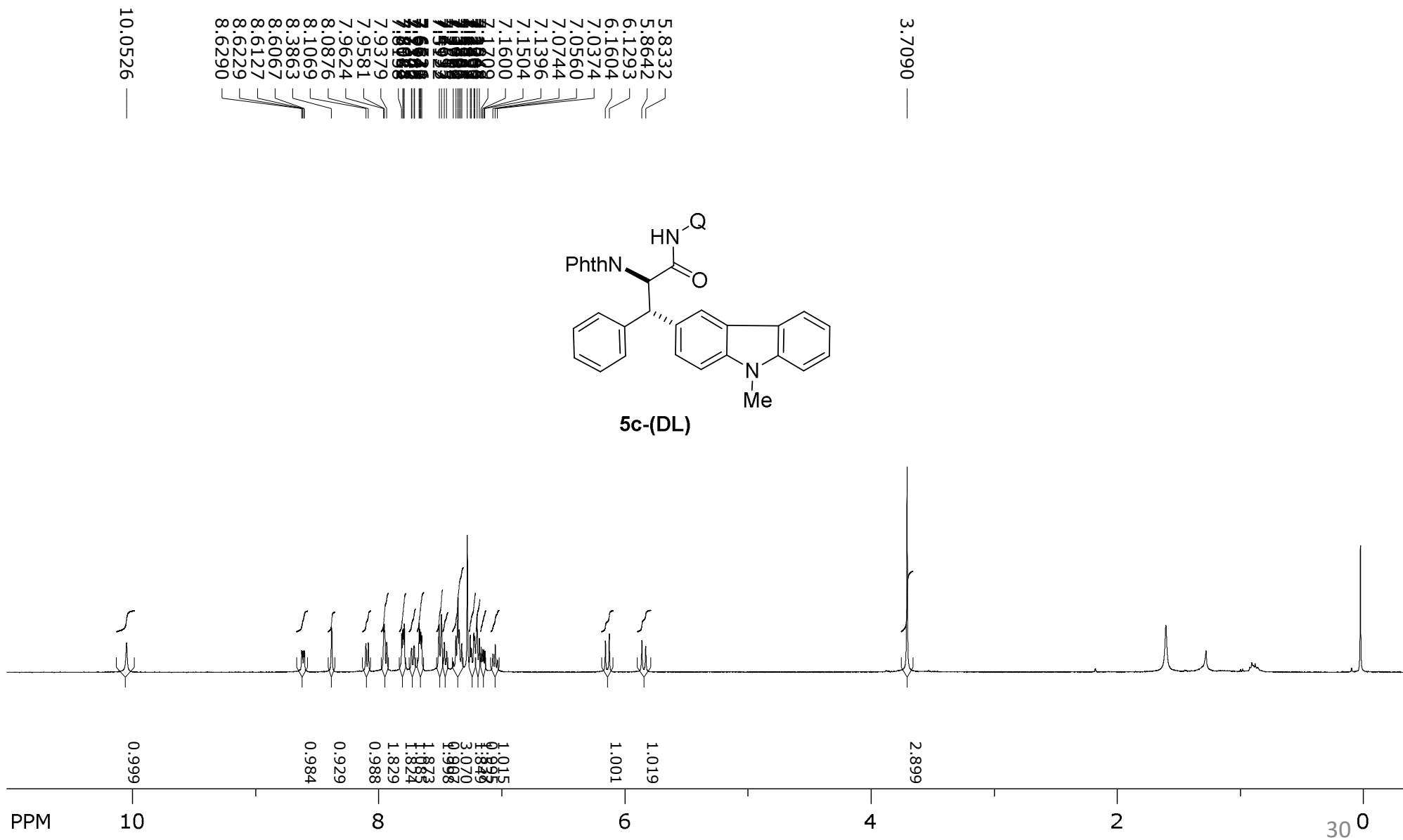


SpinWorks 4: rd-377
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 47

109.614	110.468	116.673	119.597	119.946	120.533	121.195	121.694	123.173	123.395	124.309	126.014	126.388	126.720	126.990	127.301	127.478	127.674	128.647	129.720	131.468	132.197	133.933	133.982	135.658	137.410	138.203	140.121	141.005	141.497	147.575	165.970	168.019
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—



SpinWorks 4: rd-174-rep-8



SpinWorks 4: rd-174-rep-8

8.6067
8.6127
8.6229
8.6290

8.3863

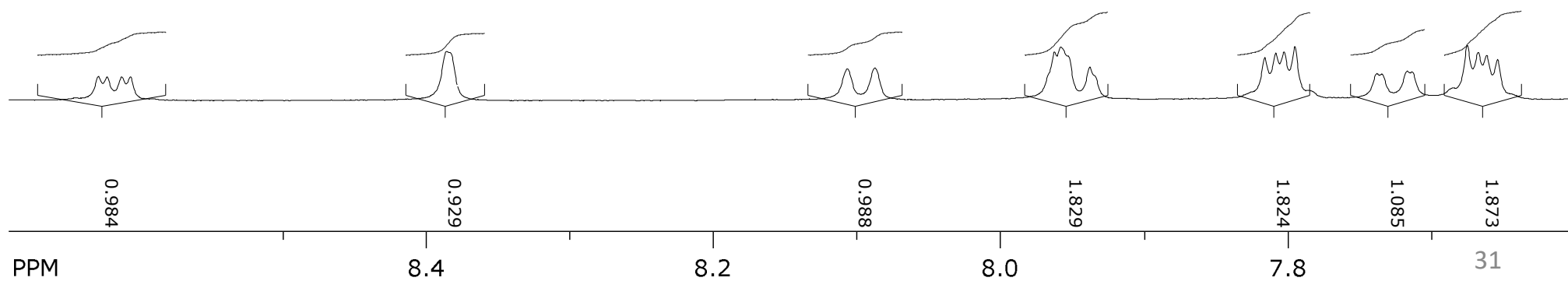
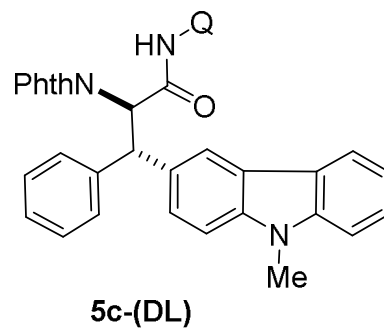
8.0876
8.1069

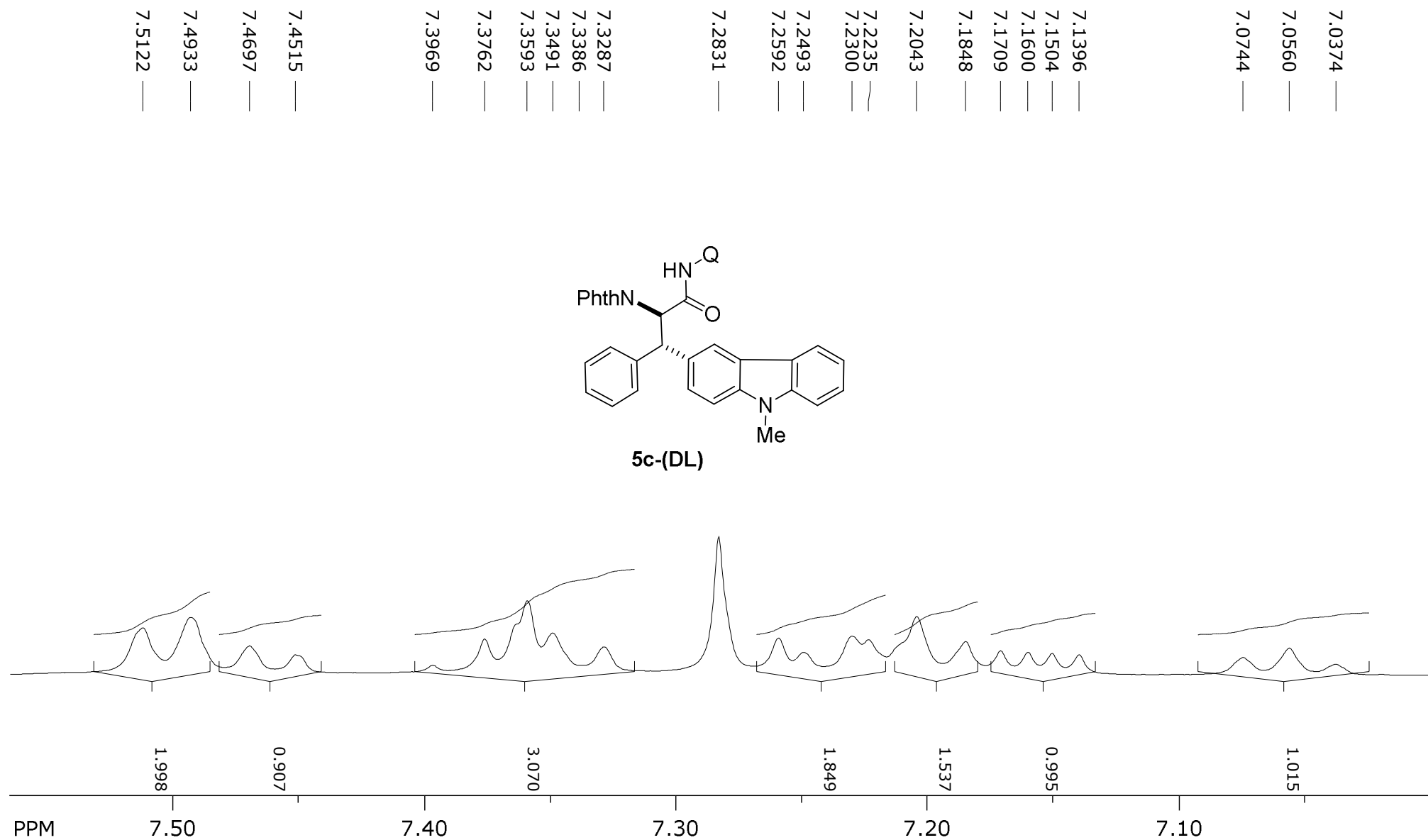
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7.9581
7.9624

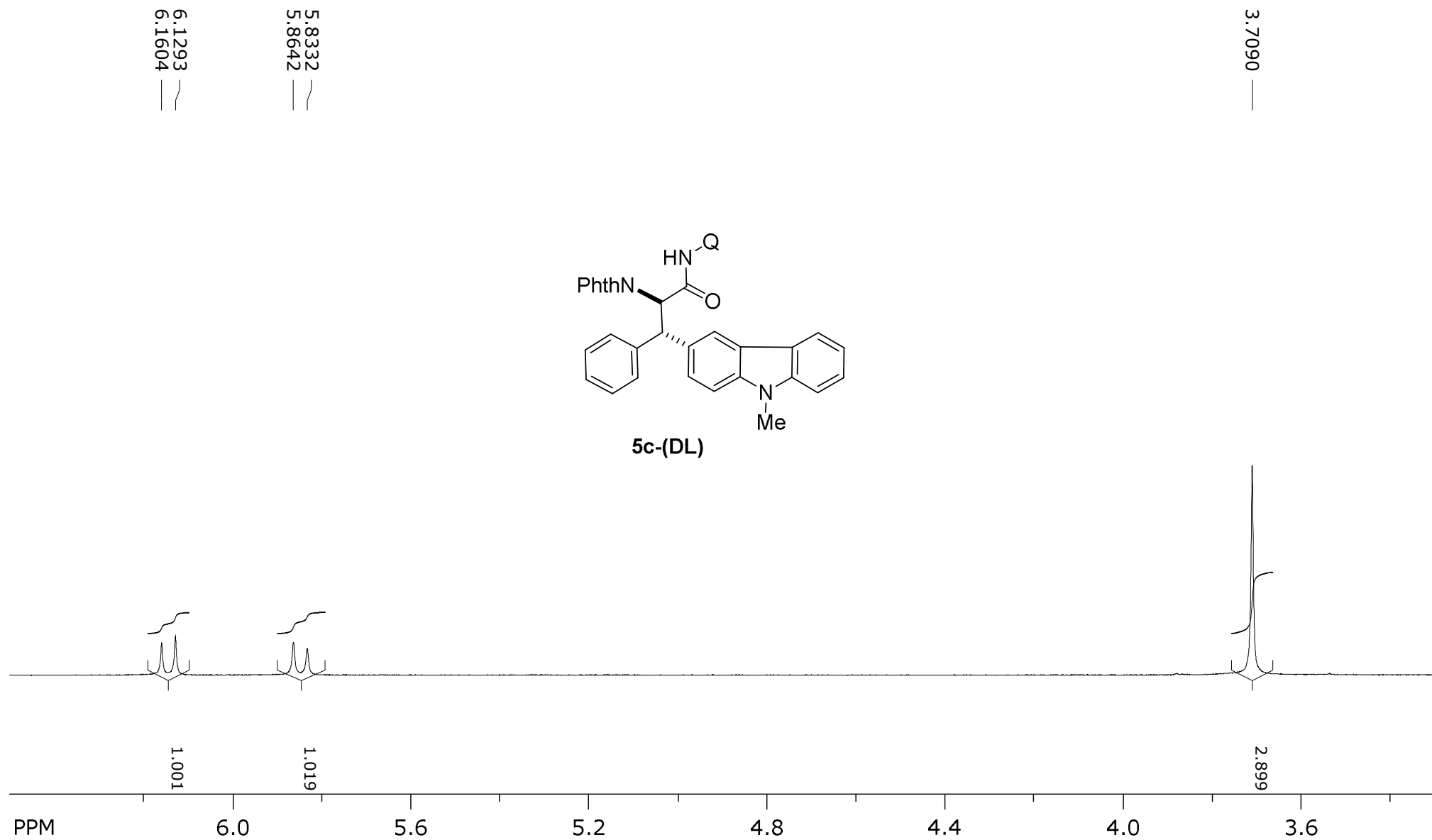
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7.8024
7.8082
7.8158

7.7133
7.7166
7.7342
7.7377

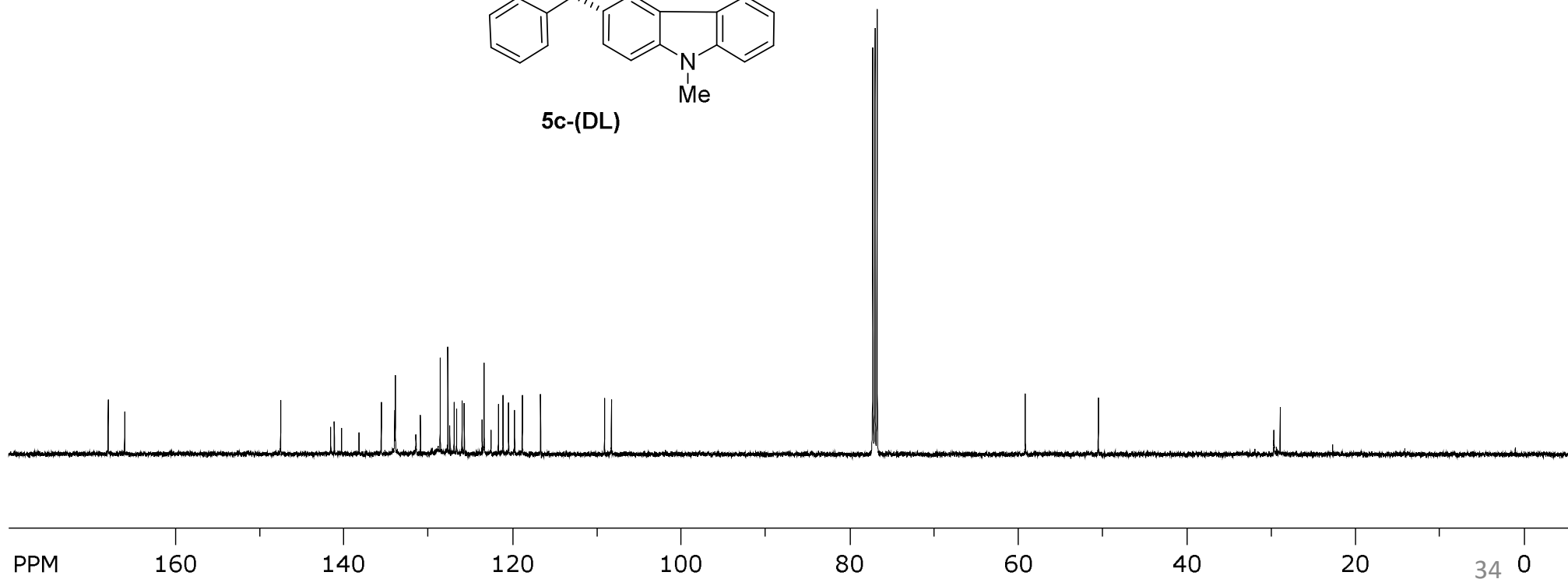
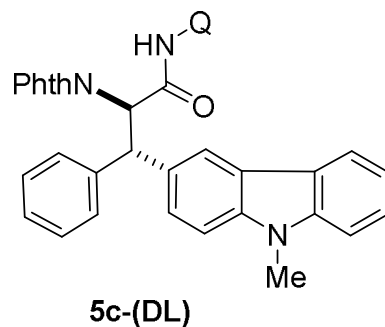
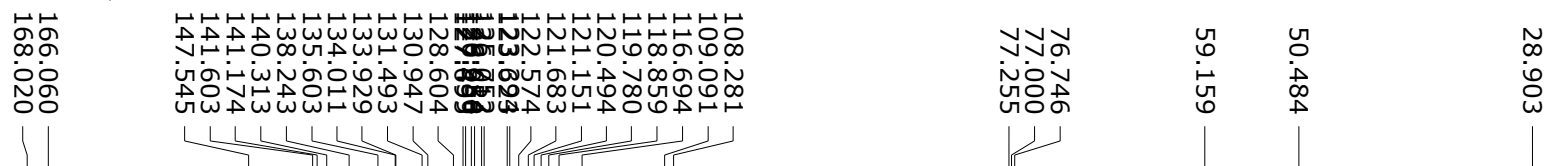
7.6536
7.6612
7.6671
7.6747



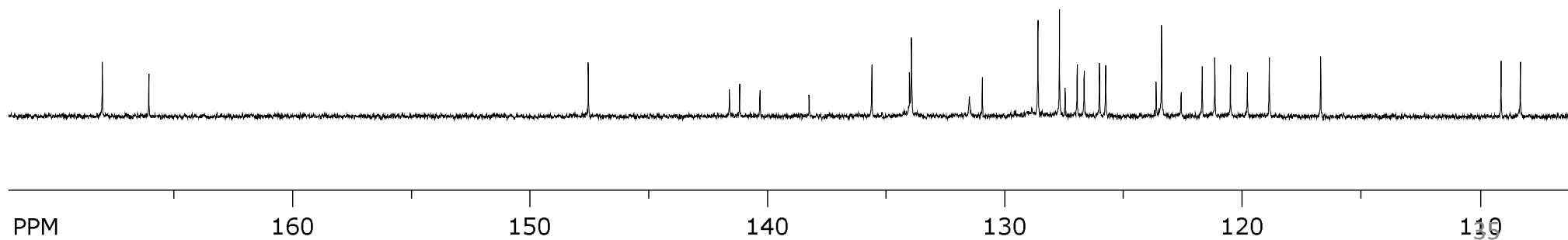
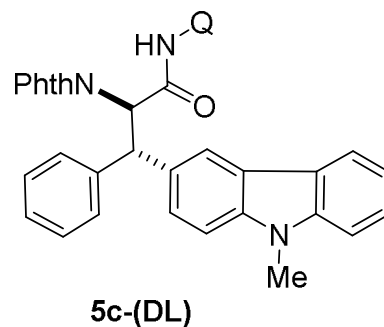
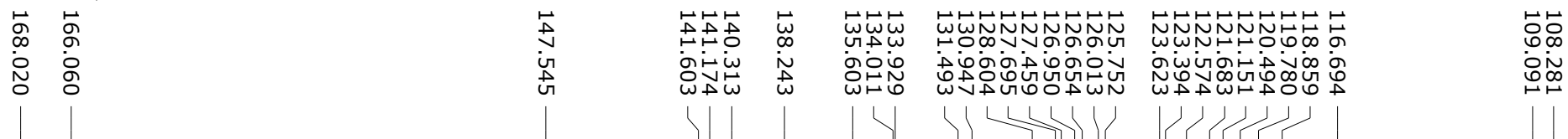




SpinWorks 4: SAB100706
C13CPD CDCl3 {D:\Spectra} nmr 15



SpinWorks 4: SAB100706
C13CPD CDCl3 {D:\Spectra} nmr 15



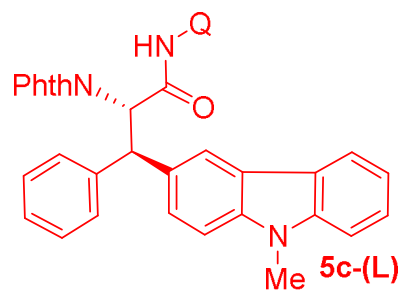
SpinWorks 4: RD 1007
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 15

8.6156
8.6202
8.6332
8.6375

8.4065

8.1012
8.1205

7.9641
7.9743
7.9781
7.9850



1.230

1.135

1.248

2.355

37

PPM

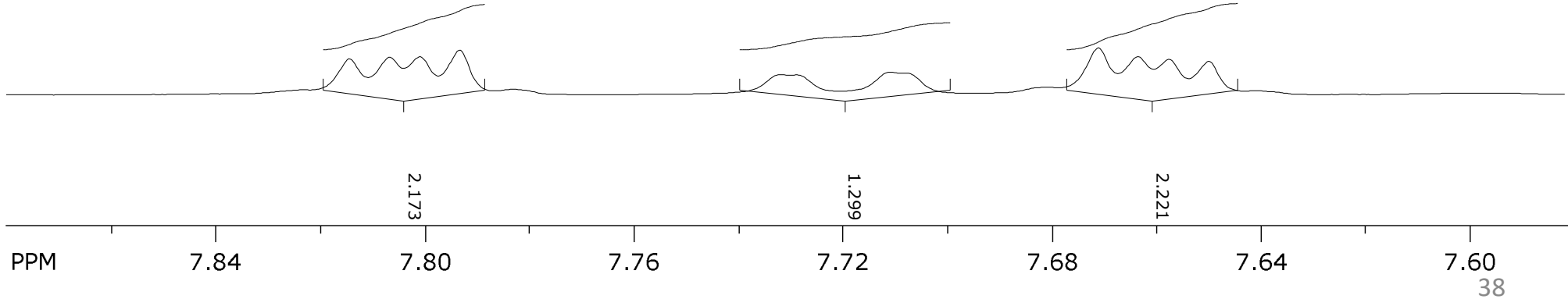
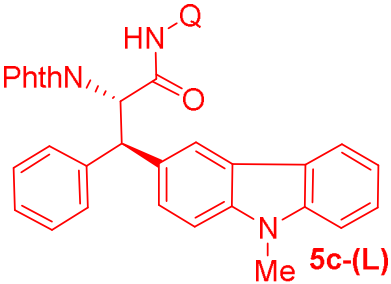
SpinWorks 4: RD 1007
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 15

7.7934 —
7.8010 —
7.8069 —
7.8146 —

7.7289 —
7.7320 —

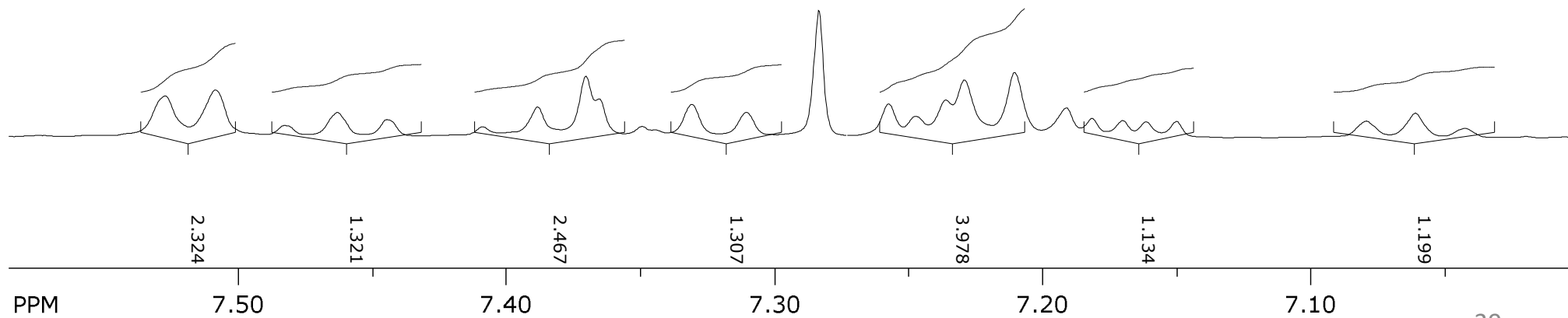
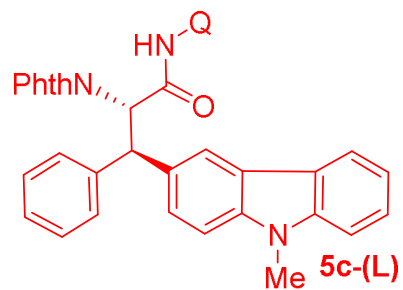
7.7081 —
7.7110 —

7.6711 —
7.6636 —
7.6576 —
7.6500 —



SpinWorks 4: RD 1007
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 15

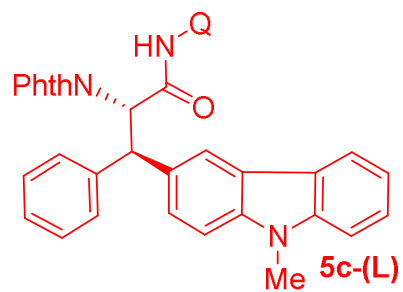
7.5274 —
7.5087 —
7.4828 —
7.4632 —
7.4447 —
7.4090 —
7.3978 —
7.3884 —
7.3704 —
7.3655 —
7.3309 —
7.3105 —
7.2835 —
7.2574 —
7.2474 —
7.2360 —
7.2292 —
7.2104 —
7.1815 —
7.1701 —
7.1614 —
7.1500 —
7.0792 —
7.0608 —
7.0424 —



SpinWorks 4: RD 1007
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 15

6.1737 —
6.2047 —

5.8513 —
5.8822 —

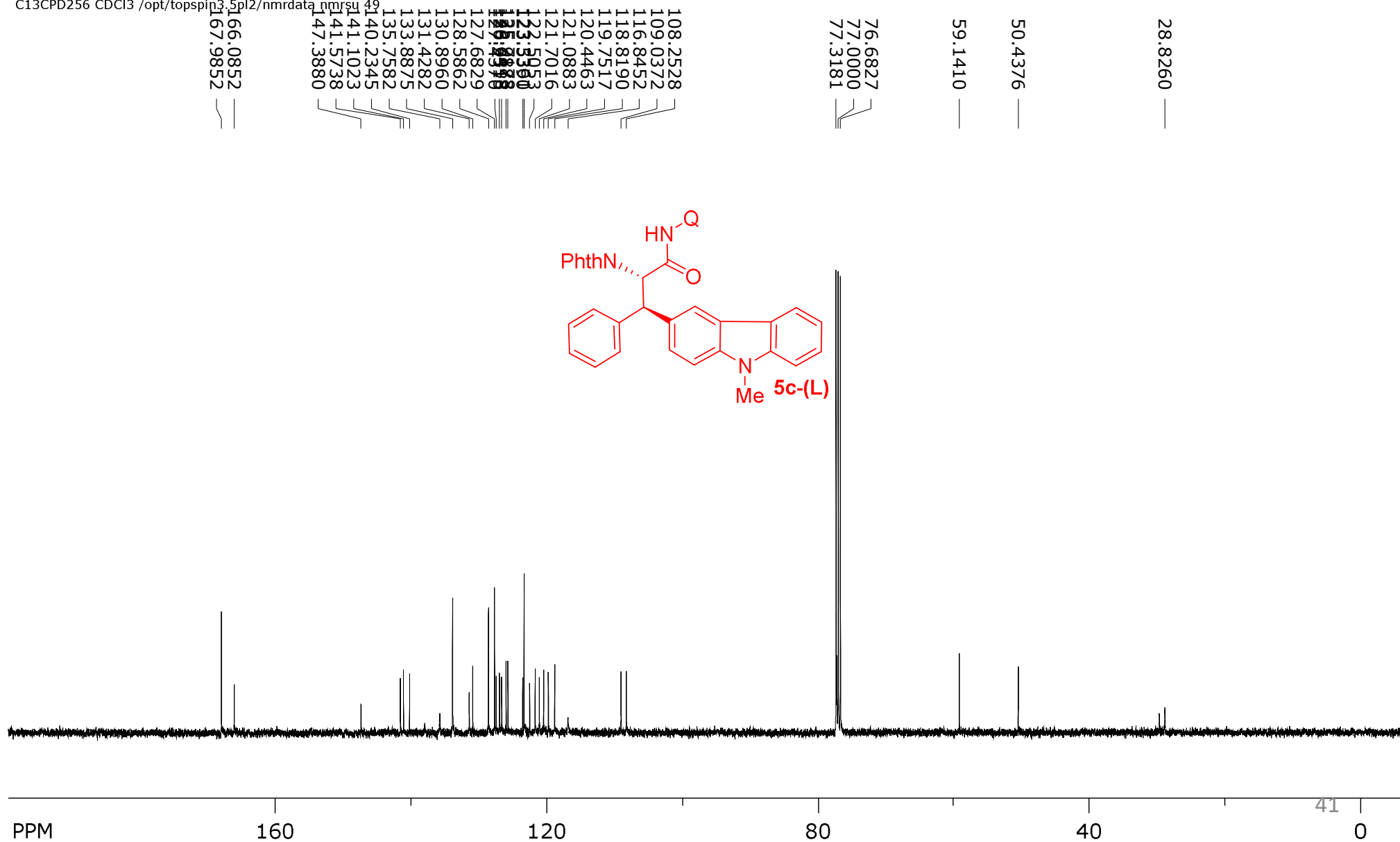


1.147

1.178

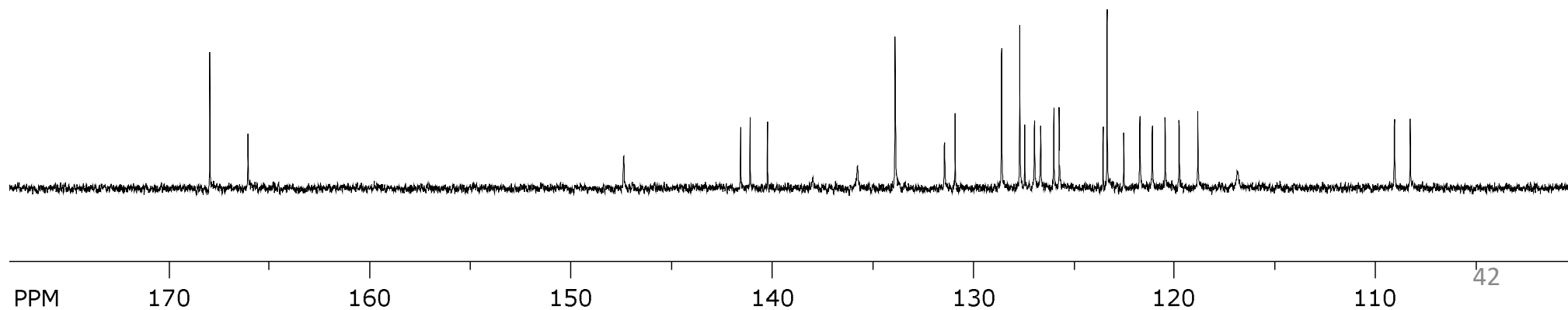
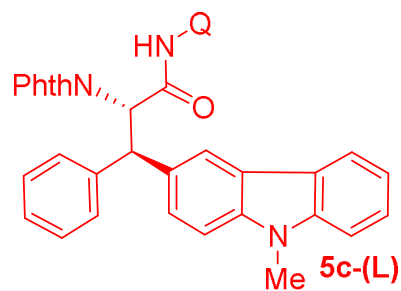
PPM 6.40 6.30 6.20 6.10 6.00 5.90 5.80 40 5.70

SpinWorks 4: RD 1007
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 49



SpinWorks 4: RD 1007
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 49

167.9852	147.3880	135.7582	109.0372	108.2528
166.0852	141.1023	133.8875		
	140.2345	131.4282		
	141.5738	130.8960		
		128.5862		
		127.6829		
		127.4370		
		126.9513		
		126.6418		
		125.9883		
		125.7178		
		123.5390		
		123.3361		
		122.5053		
		121.7016		
		121.0883		
		120.4463		
		119.7517		
		118.8190		
		116.8452		



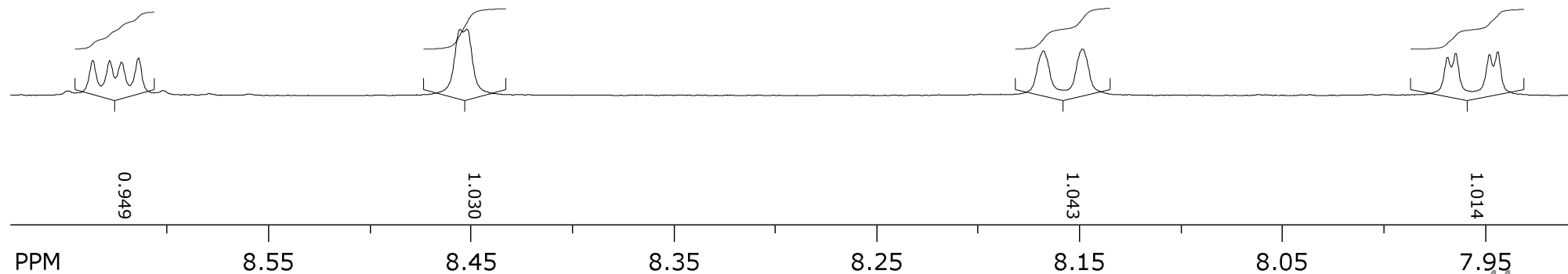
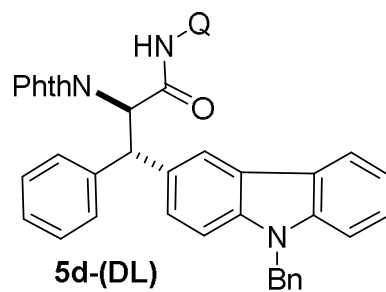
SpinWorks 4: RD 970
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 10

8.6144
8.6228
8.6286
8.6370

8.4524
8.4557

8.1485
8.1677

7.9435
7.9476
7.9642
7.9683



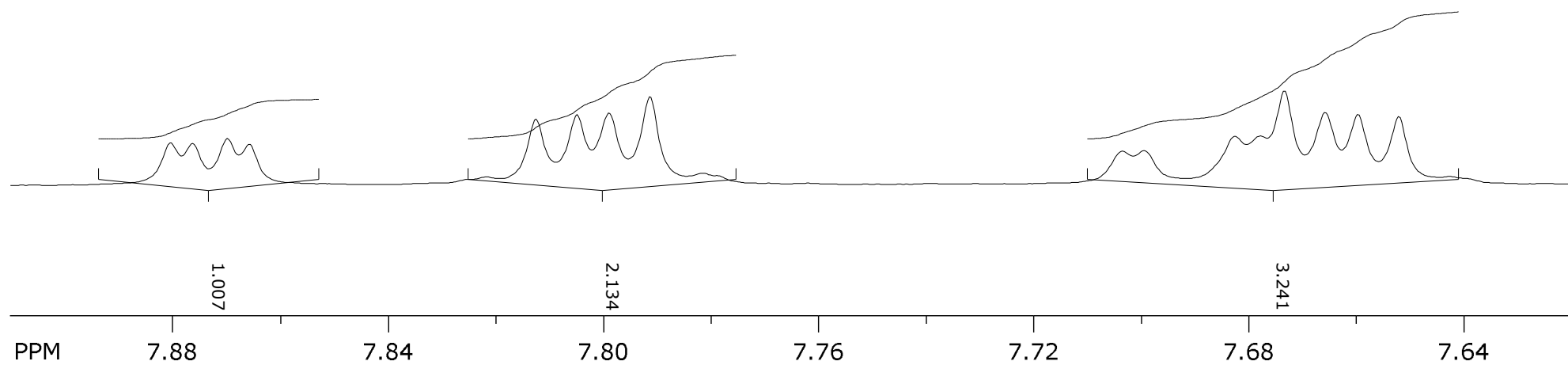
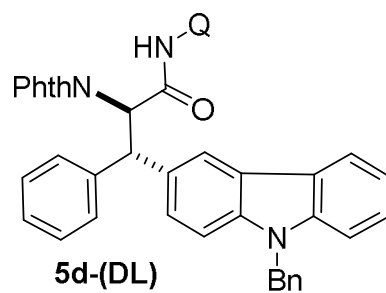
SpinWorks 4: RD 970
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 10

7.8659 —
 7.8700 —
 7.8764 —
 7.8805 —

7.8126 —
 7.8049 —
 7.7989 —
 7.7913 —

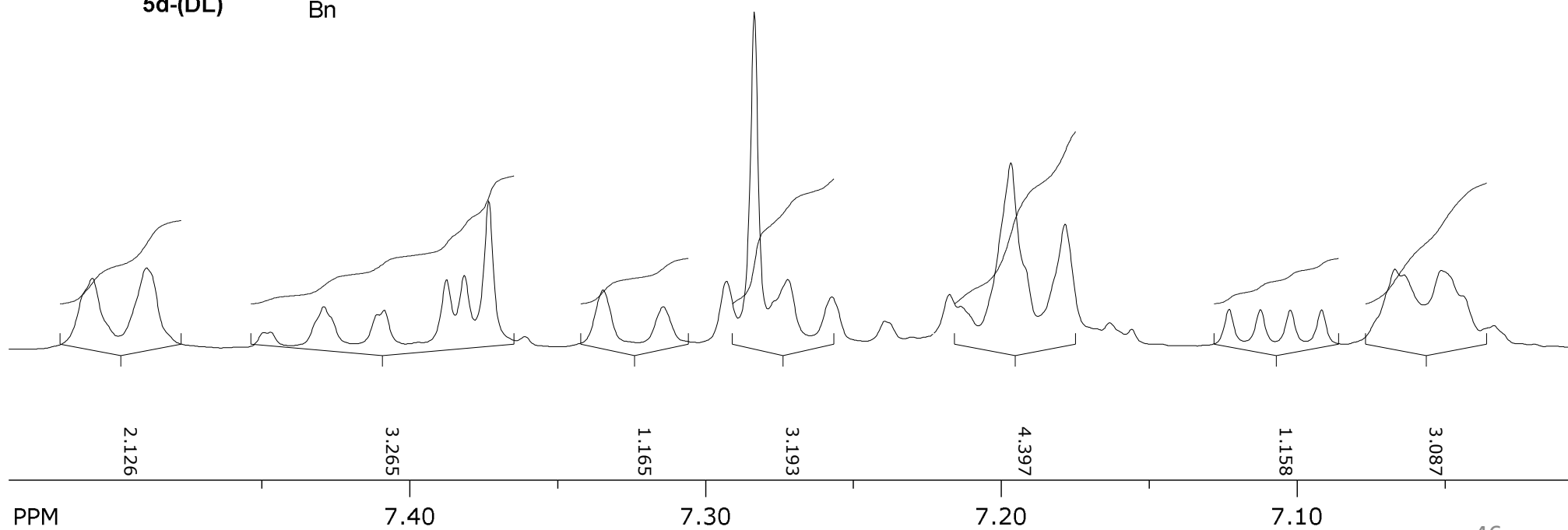
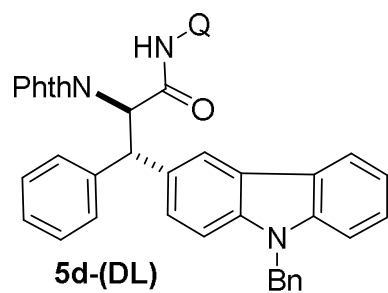
7.6994 —
 7.7035 —

7.6825 —
 7.6777 —
 7.6733 —
 7.6657 —
 7.6597 —
 7.6521 —



SpinWorks 4: RD 970
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 10

7.5075	7.4891	7.4472	7.4494	7.4292	7.4111	7.4087	7.3876	7.3816	7.3734	7.3347	7.3143	7.2929	7.2835	7.2722	7.2573	7.2175	7.2138	7.1968	7.1785	7.1229	7.1124	7.1023	7.0917	7.0669	7.0637	7.0511	7.0442
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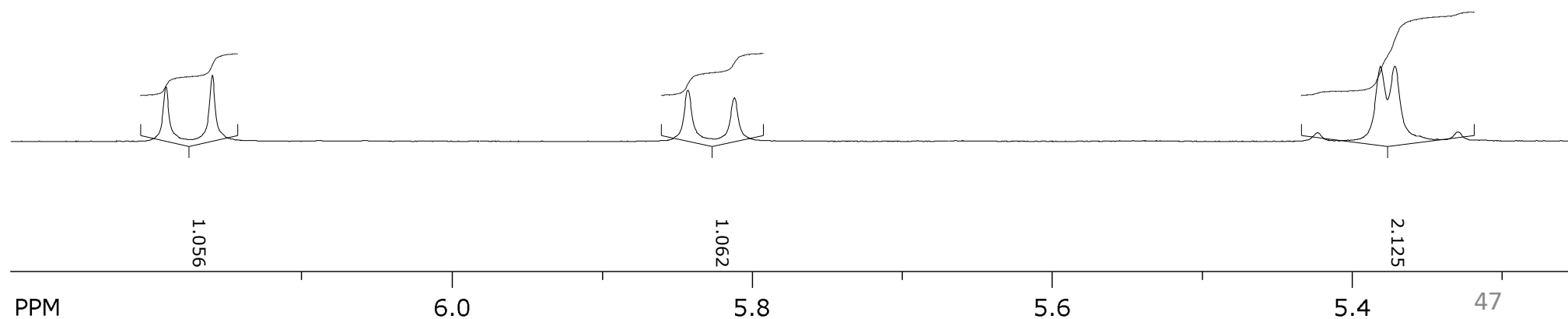
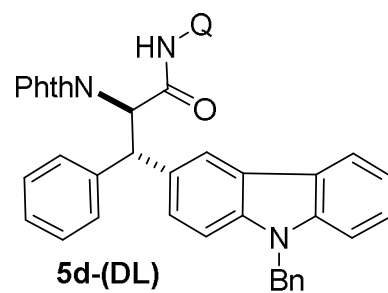


SpinWorks 4: RD 970
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 10

6.1909
6.1600
—
—

5.8428
5.8118
—
—

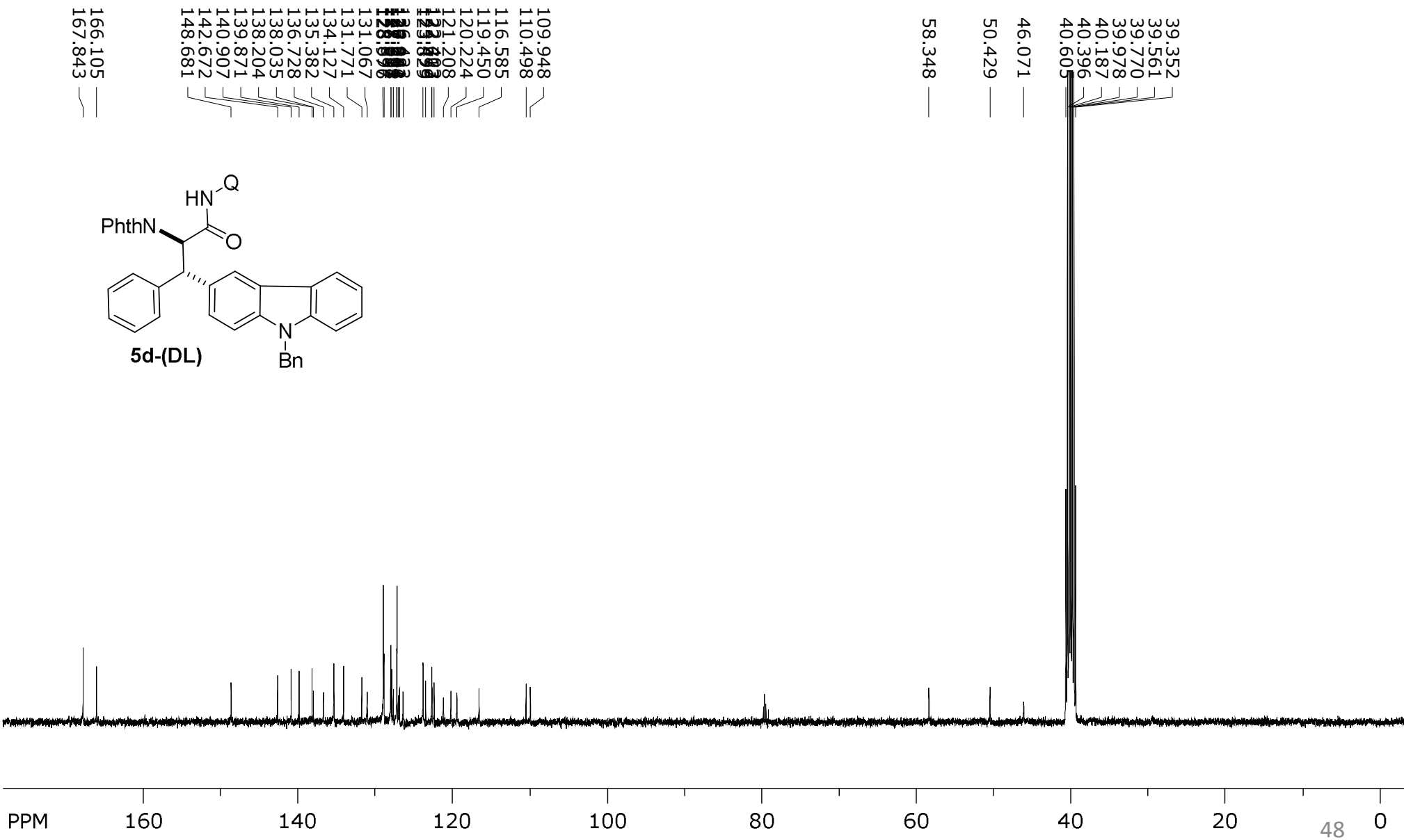
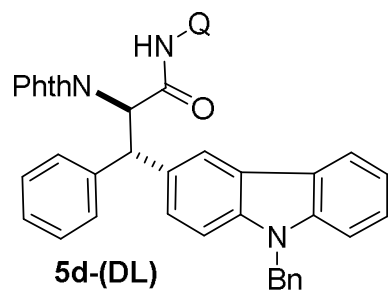
5.3294
5.3712
5.3808
5.4224
—
—
—
—



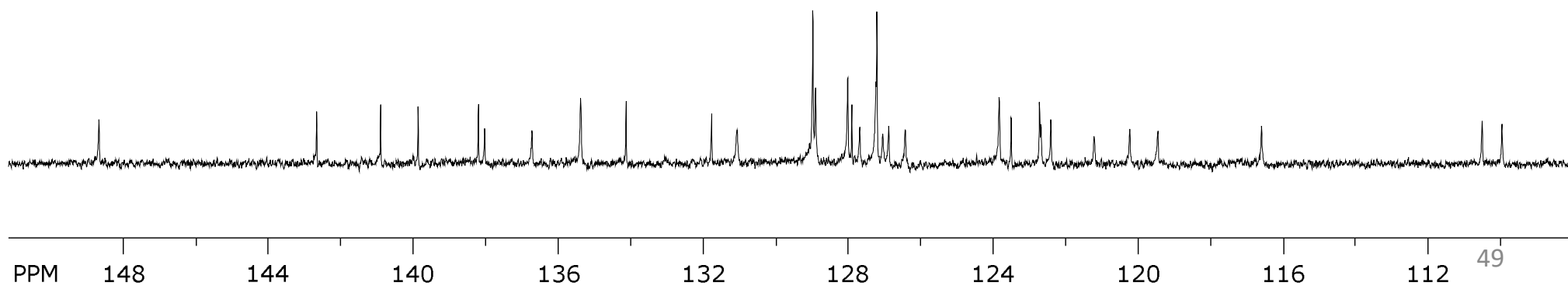
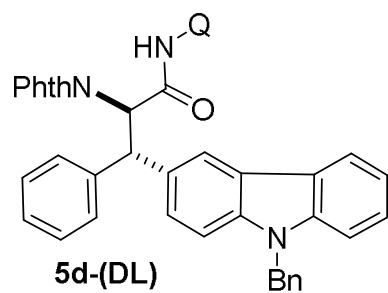
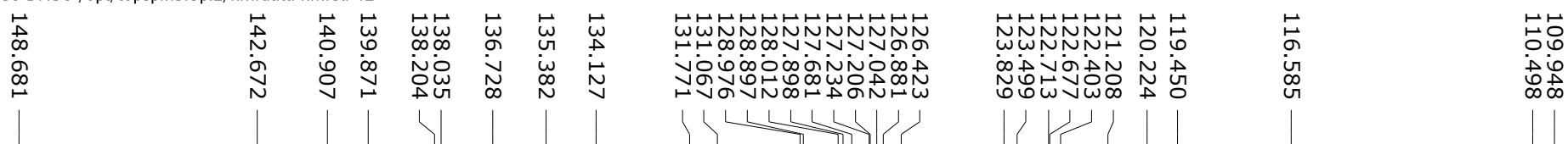
Chemical structure of **5d-(DL)** is shown, which is a derivative of a tryptophan-like molecule. The structure features an indole ring system with a benzyl group (Bn) attached to the nitrogen atom. The indole ring is substituted with a phenyl group (PhthN) and a chiral center (DL) at the 2-position. The structure is labeled **5d-(DL)**.

The ¹³C NMR spectrum (CDCl₃) shows the following chemical shifts (ppm):

- 167.843
- 166.105
- 148.681
- 142.672
- 140.907
- 139.871
- 138.204
- 138.035
- 136.728
- 135.382
- 134.127
- 131.771
- 131.067
- 129.829
- 129.709
- 129.689
- 129.669
- 129.649
- 129.629
- 129.609
- 129.589
- 129.569
- 129.549
- 129.529
- 129.509
- 129.489
- 129.469
- 129.449
- 129.429
- 129.409
- 129.389
- 129.369
- 129.349
- 129.329
- 129.309
- 129.289
- 129.269
- 129.249
- 129.229
- 129.209
- 129.189
- 129.169
- 129.149
- 129.129
- 129.109
- 129.089
- 129.069
- 129.049
- 129.029
- 129.009
- 128.989
- 128.969
- 128.949
- 128.929
- 128.909
- 128.889
- 128.869
- 128.849
- 128.829
- 128.809
- 128.789
- 128.769
- 128.749
- 128.729
- 128.709
- 128.689
- 128.669
- 128.649
- 128.629
- 128.609
- 128.589
- 128.569
- 128.549
- 128.529
- 128.509
- 128.489
- 128.469
- 128.449
- 128.429
- 128.409
- 128.389
- 128.369
- 128.349
- 128.329
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- 128.229
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- 128.169
- 128.149
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- 128.109
- 128.089
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- 128.049
- 128.029
- 128.009
- 127.989
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- 127.929
- 127.909
- 127.889
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- 127.849
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- 127.789
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- 127.729
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- 126.729
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- 126.169
- 126.149
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- 126.109
- 126.089
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- 126.029
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- 125.749
- 125.729
- 125.709
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- 125.629
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- 125.189
- 125.169
- 125.149
- 125.129
- 125.109
- 125.089
- 125.069
- 125.049
- 125.029
- 125.009
- 124.989
- 124.969
- 124.949
- 124.929
- 124.909
- 124.889
- 124.869
- 124.849
- 124.829
- 124.809
- 124.789
- 124.769
- 124.749
- 124.729
- 124.709
- 124.689
- 124.669
- 124.649
- 124.629
- 124.609
- 124.589
- 124.569
- 124.549
- 124.529
- 124.509
- 124.489
- 124.469
- 124.449
- 124.429
- 124.409
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- 124.229
- 124.209
- 124.189
- 124.169
- 124.149
- 124.129
- 124.109
- 124.089
- 124.069
- 124.049
- 124.029
- 124.009
- 123.989
- 123.969
- 123.949
- 123.929
- 123.909
- 123.889
- 123.869
- 123.849
- 123.829
- 123.809
- 123.789
- 123.769
- 123.749
- 123.729
- 123.709
- 123.689
- 123.669
- 123.649
- 123.629
- 123.609
- 123.589
- 123.569
- 123.549
- 123.529
- 123.509
- 123.489
- 123.469
- 123.449
- 123.429
- 123.409</



SpinWorks 4: RD-970
C13CPD256 DMSO /opt/topspin3.5pl2/nmrdata nmrsu 42



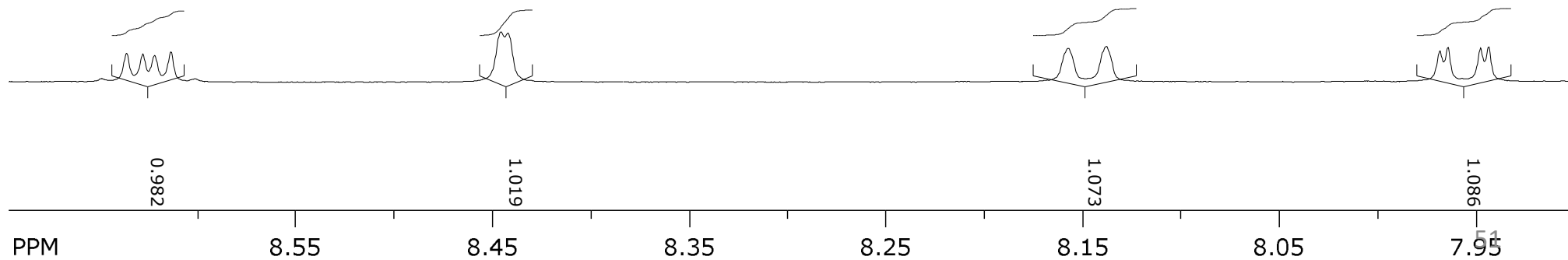
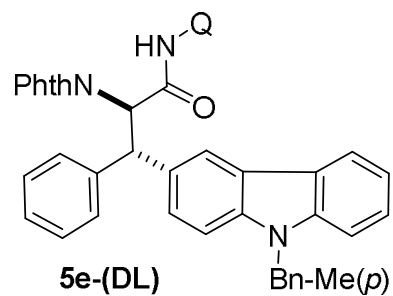
SpinWorks 4: RD-973
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 31

8.6137
8.6220
8.6280
8.6362

8.4423
8.4459

8.1379
8.1573

7.9434
7.9476
7.9641
7.9683

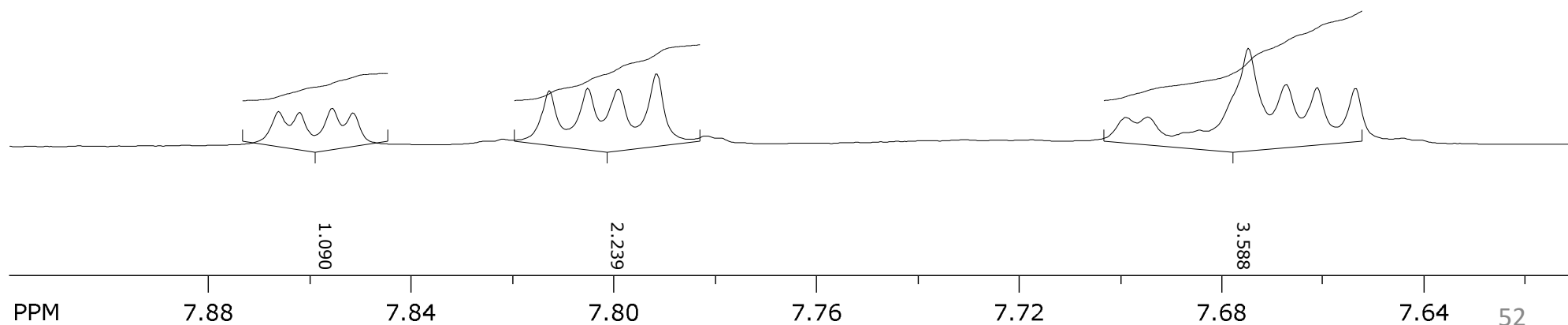
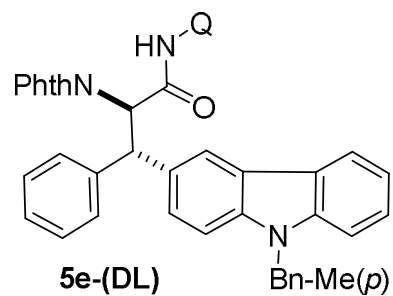


SpinWorks 4: RD-973
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 31

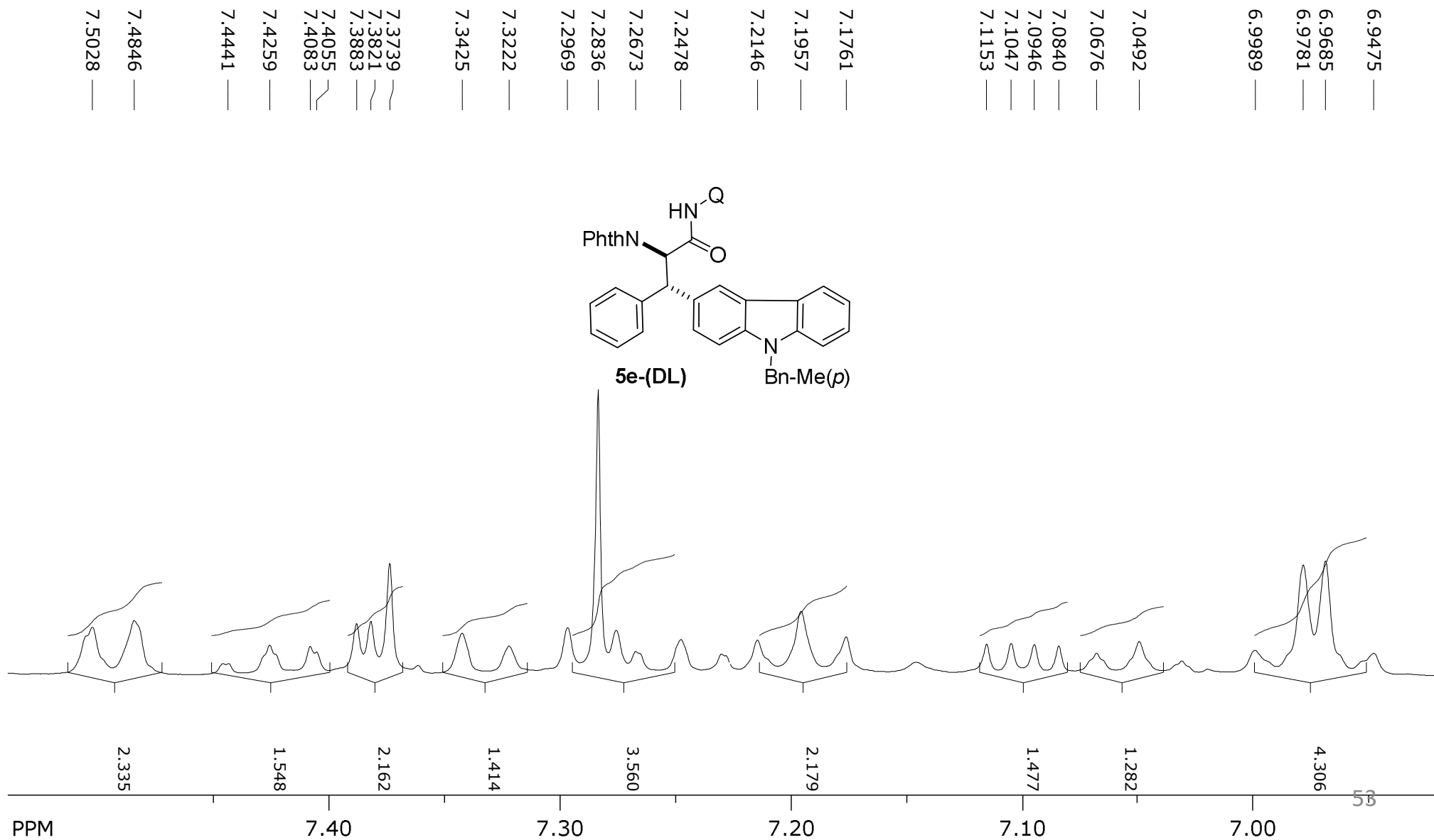
7.8516 —
7.8557 —
7.8621 —
7.8663 —

7.8128 —
7.8052 —
7.7992 —
7.7916 —

7.6535 —
7.6611 —
7.6672 —
7.6747 —
7.6829 —
7.6876 —
7.6946 —
7.6989 —



SpinWorks 4: RD-973
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 31

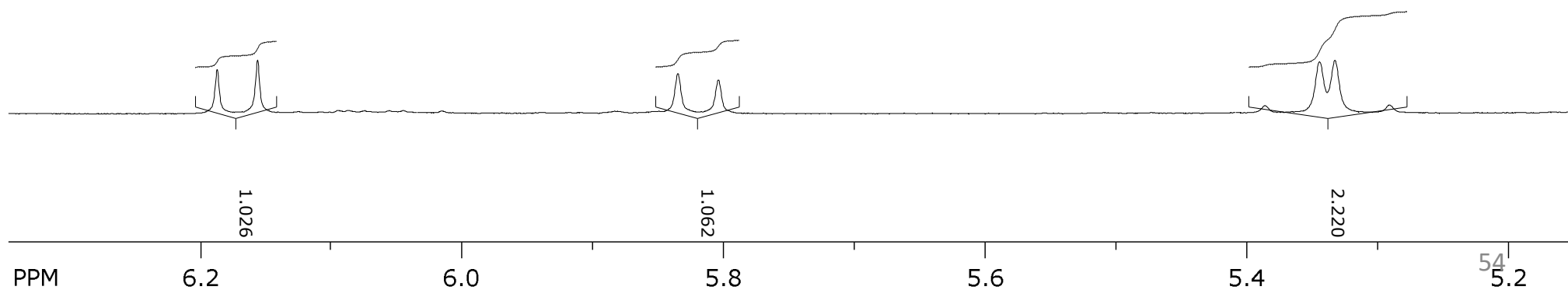
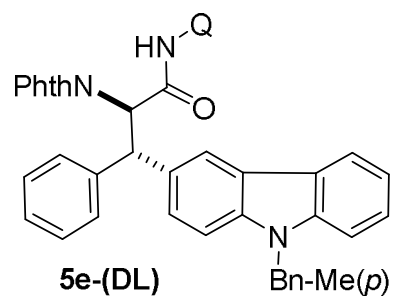


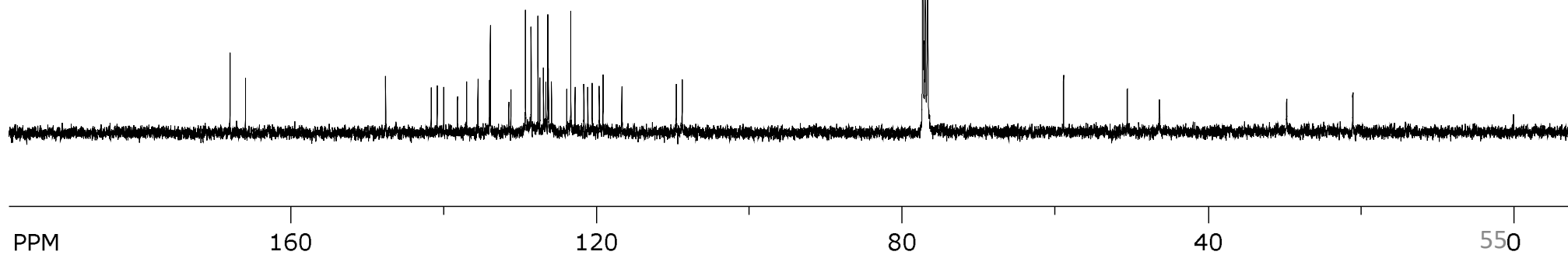
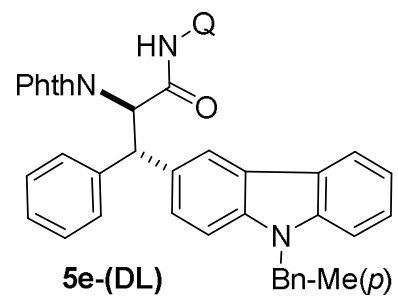
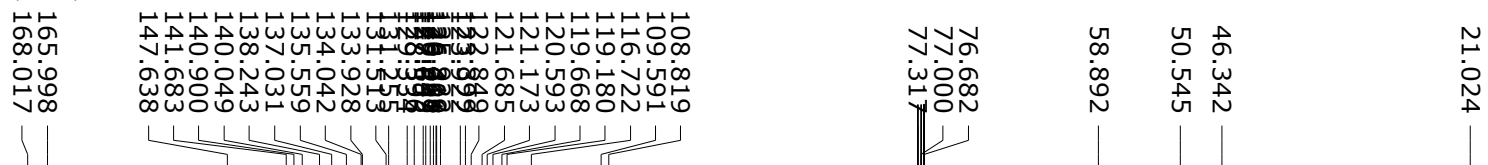
SpinWorks 4: RD-973
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 31

6.1874 —
6.1564 —

5.8350 —
5.8041 —

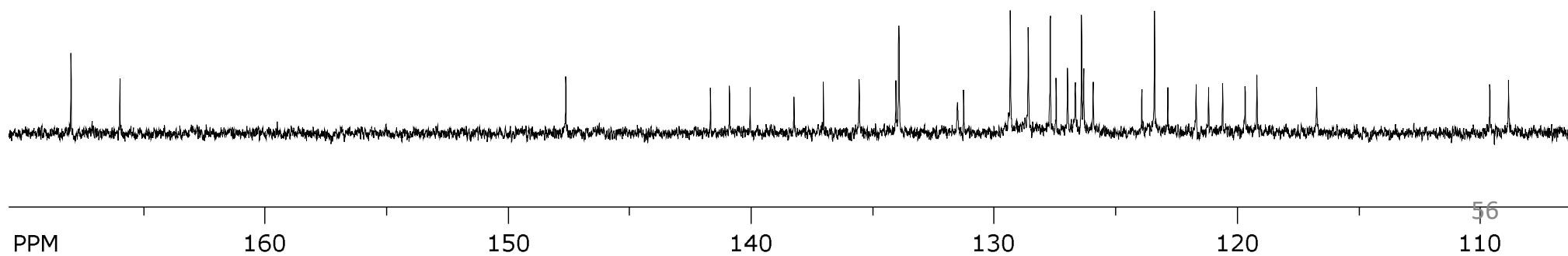
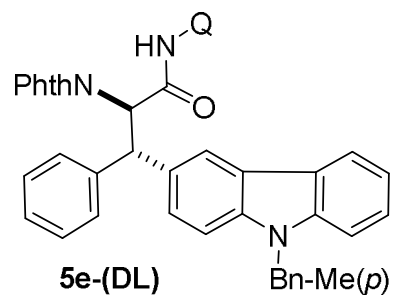
5.3860 —
5.3443 —
5.3325 —
5.2913 —





SpinWorks 4: RD-973
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 29

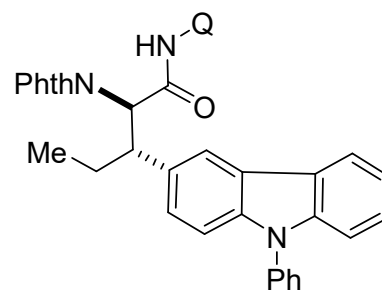
168.017	165.998	147.638	141.683	140.900	140.049	138.243	137.031	135.559	134.042	133.928	131.513	129.334	128.596	127.693	127.449	126.977	126.661	126.406	126.319	125.922	123.922	123.399	122.849	121.685	121.173	120.593	119.668	119.180	116.722	109.591	108.819
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—



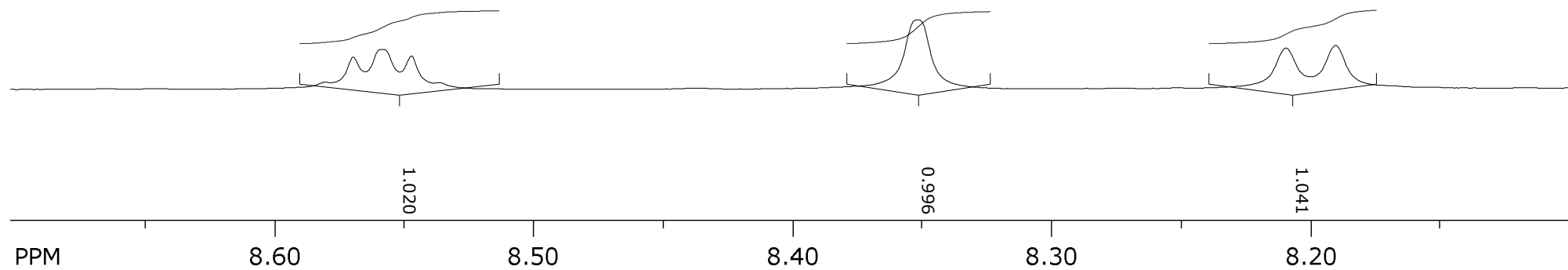
8.5474
8.5590
8.5698

8.3514

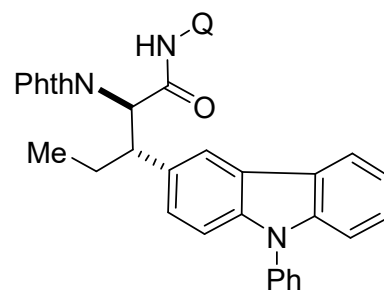
8.1901
8.2094



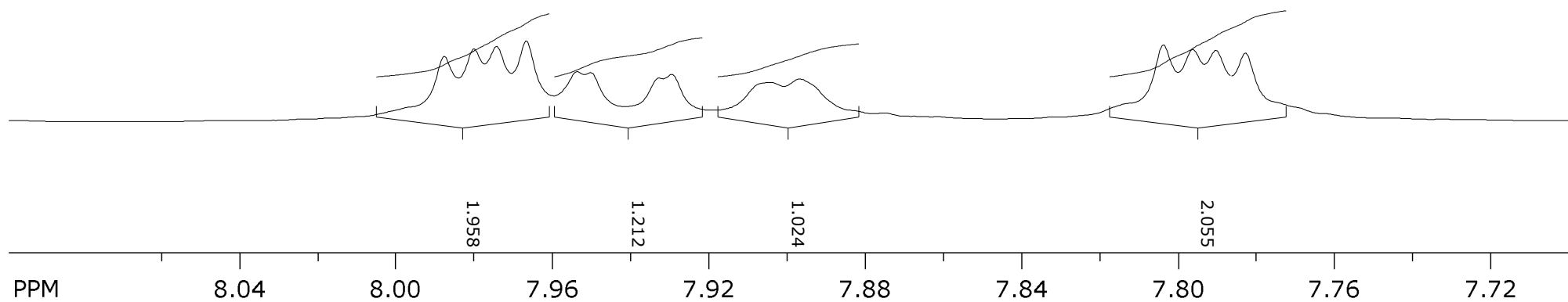
6a-(DL)



7.9877 —
 7.9801 —
 7.9743 —
 7.9667 —
 7.9537 —
 7.9504 —
 7.9328 —
 7.9295 —
 7.9044 —
 7.8969 —
 7.8037 —
 7.7962 —
 7.7903 —
 7.7827 —



6a-(DL)



7.1180 —
7.1286 —
7.1386 —
7.1492 —

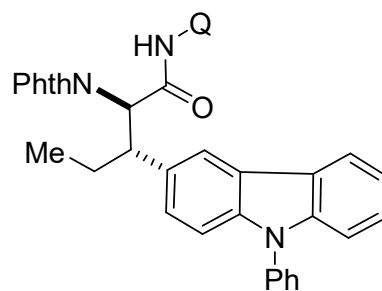
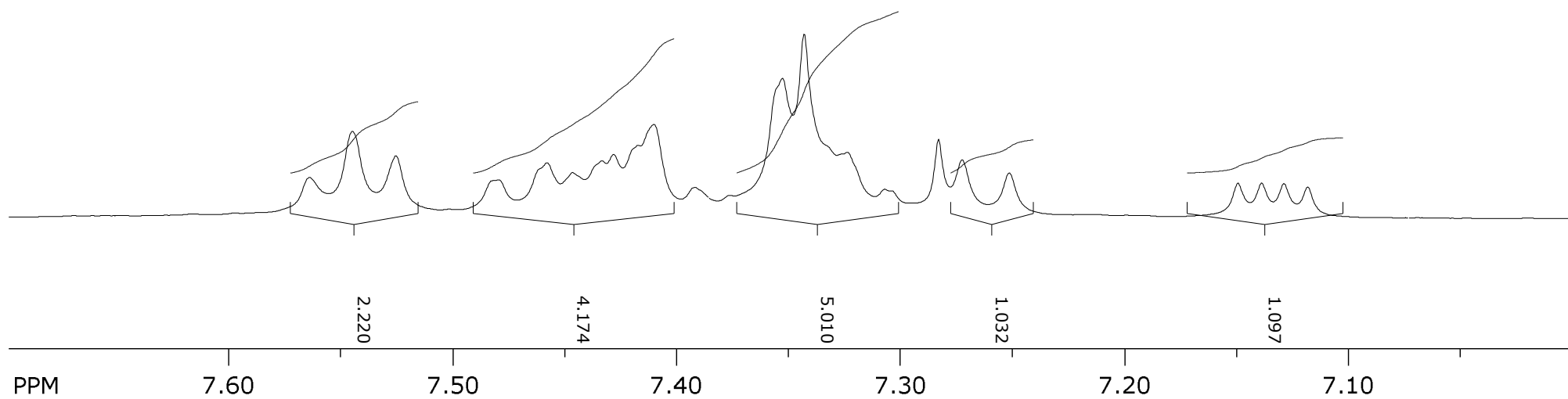
7.2514 —
7.2725 —

7.3041 —
7.3071 —
7.3237 —
7.3263 —
7.3431 —
7.3528 —

7.4103 —
7.4172 —
7.4283 —
7.4335 —
7.4466 —
7.4580 —

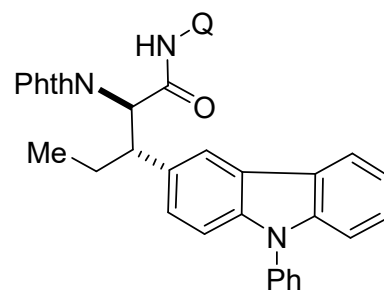
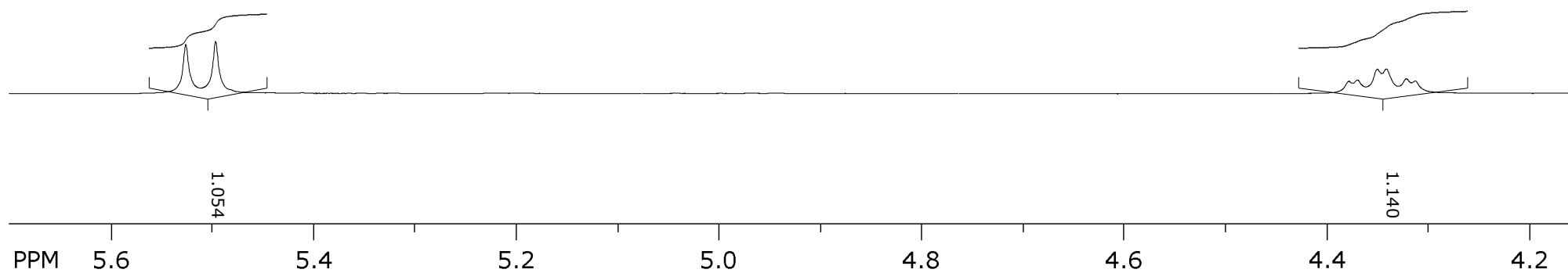
7.4797 —
7.4822 —

7.5256 —
7.5450 —
7.5642 —

**6a-(DL)**

5.4972 —
5.5266 —

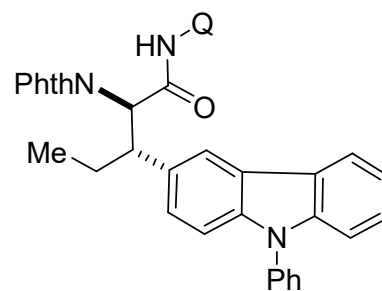
4.3125
4.3211
4.3410
4.3498
4.3695
4.3779

**6a-(DL)**

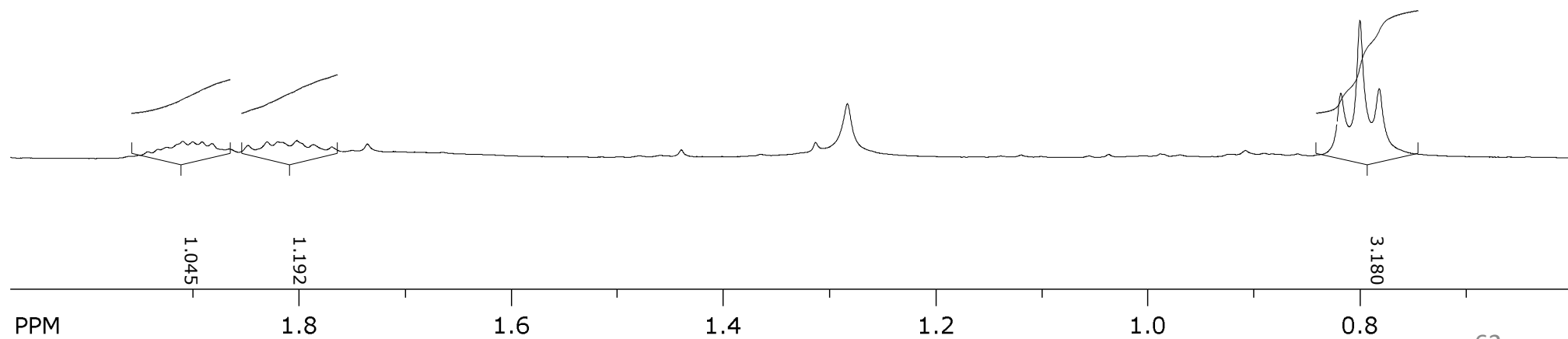
SpinWorks 4: rd-57-rep-1

1.7770
1.7870
1.8027
1.8205
1.8306
1.8487
1.8827
1.8920
1.9008
1.9101
1.9303
1.9439

0.7816
0.7998
0.8178



6a-(DL)



SpinWorks 4: RD 57

C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 47

166.402 —
168.544 —
147.494 —
140.978 —
140.219 —
138.136 —
137.505 —
135.616 —
134.196 —
133.982 —
133.851 —
131.585 —
129.705 —
127.455 —
127.455 —
126.863 —
126.863 —
123.946 —
123.232 —
121.503 —
120.548 —
119.931 —
119.542 —
116.493 —
110.222 —
109.630 —

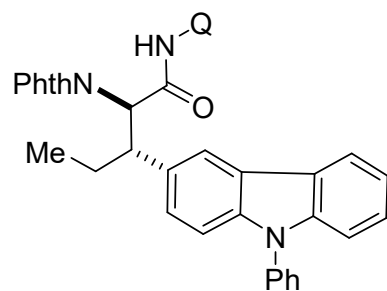
76.682 —
77.000 —
77.317 —

61.795 —

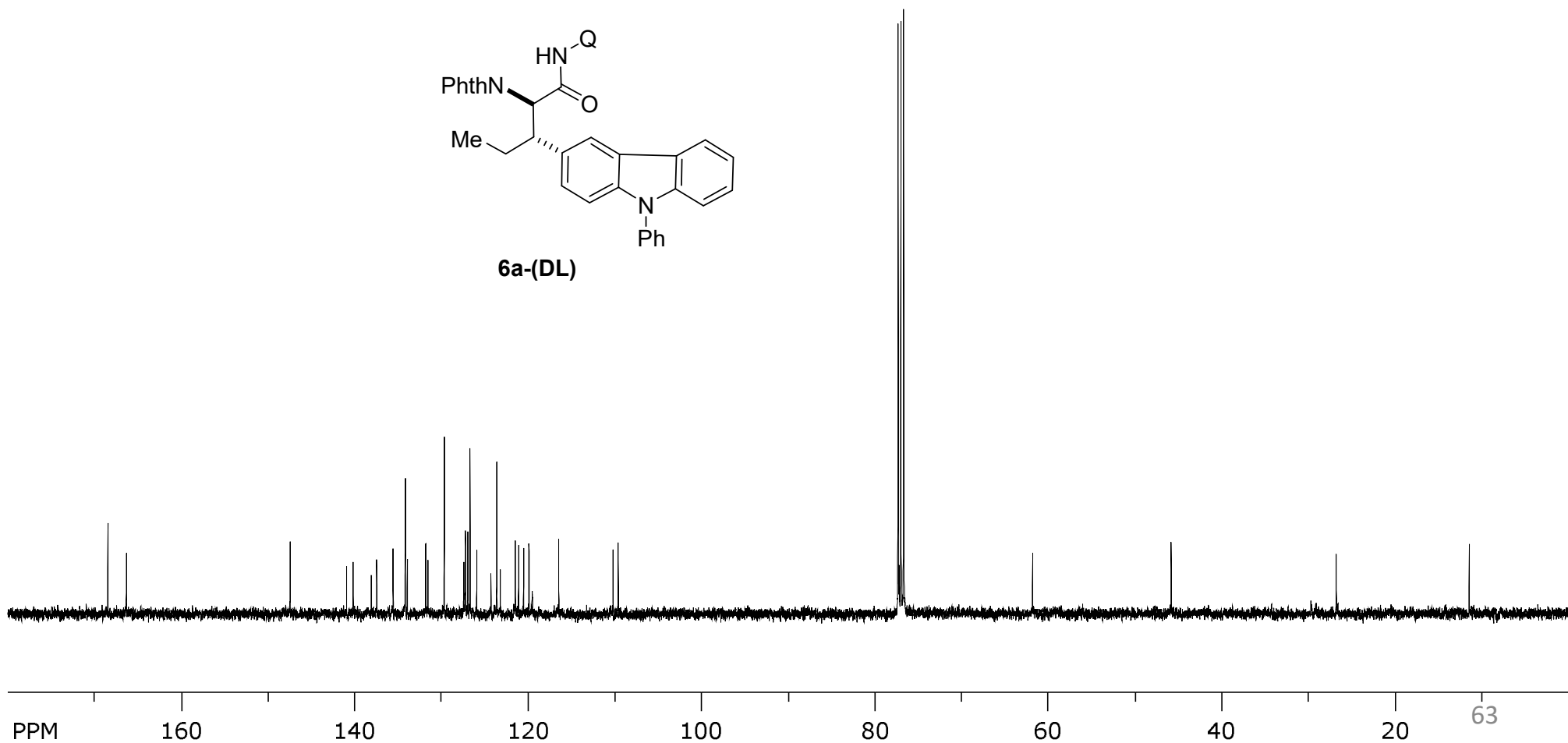
45.796 —

26.749 —

11.391 —



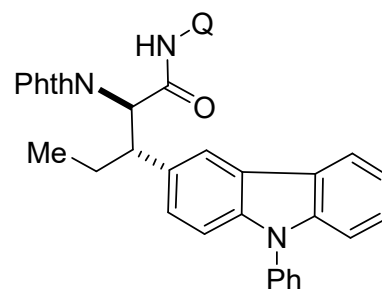
6a-(DL)



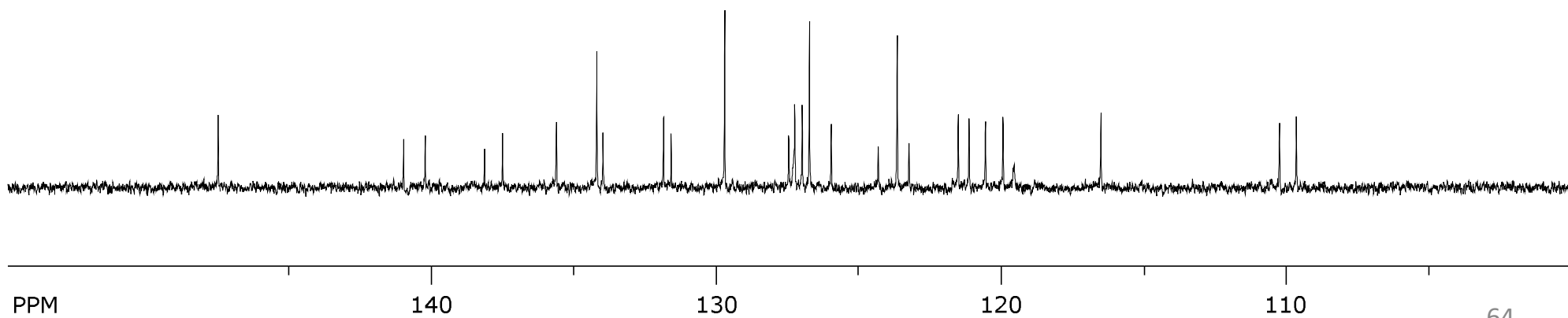
SpinWorks 4: RD 57

C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 47

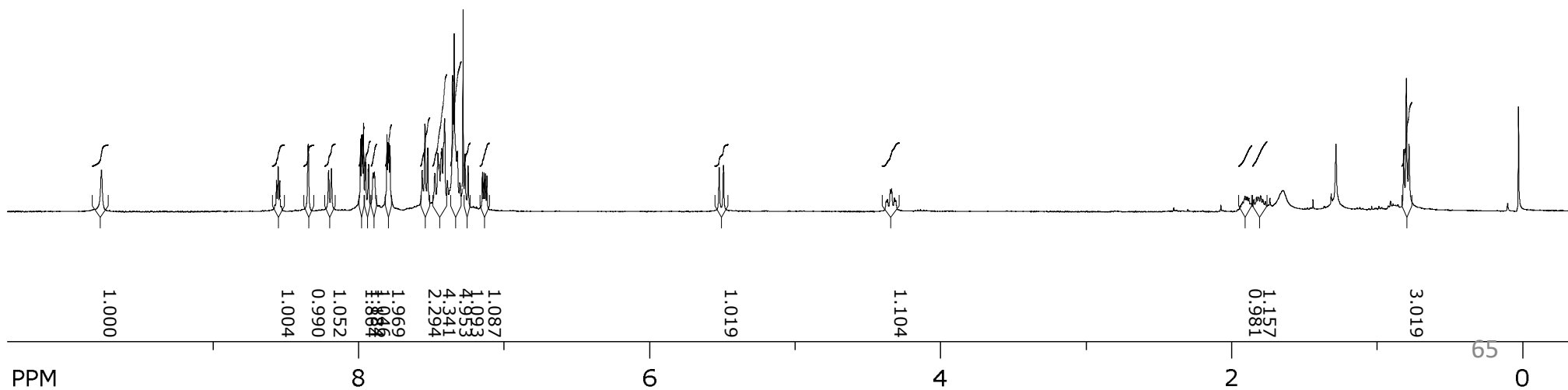
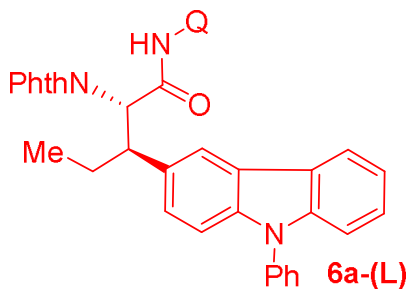
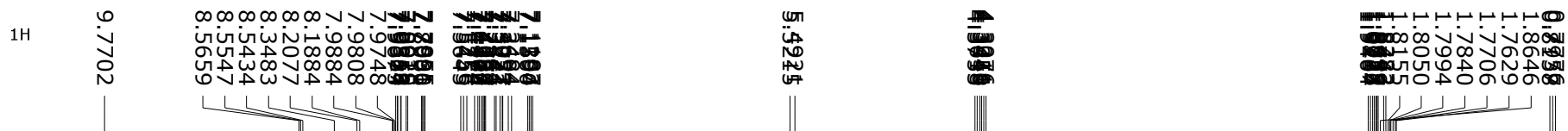
147.494 —
140.219 —
140.978 —
138.136 —
137.505 —
135.616 —
134.196 —
133.982 —
131.851 —
131.585 —
129.705 —
127.455 —
127.314 —
126.984 —
126.730 —
125.963 —
124.311 —
123.646 —
123.232 —
121.503 —
121.123 —
120.548 —
119.931 —
119.542 —
116.493 —
109.630 —
110.222 —



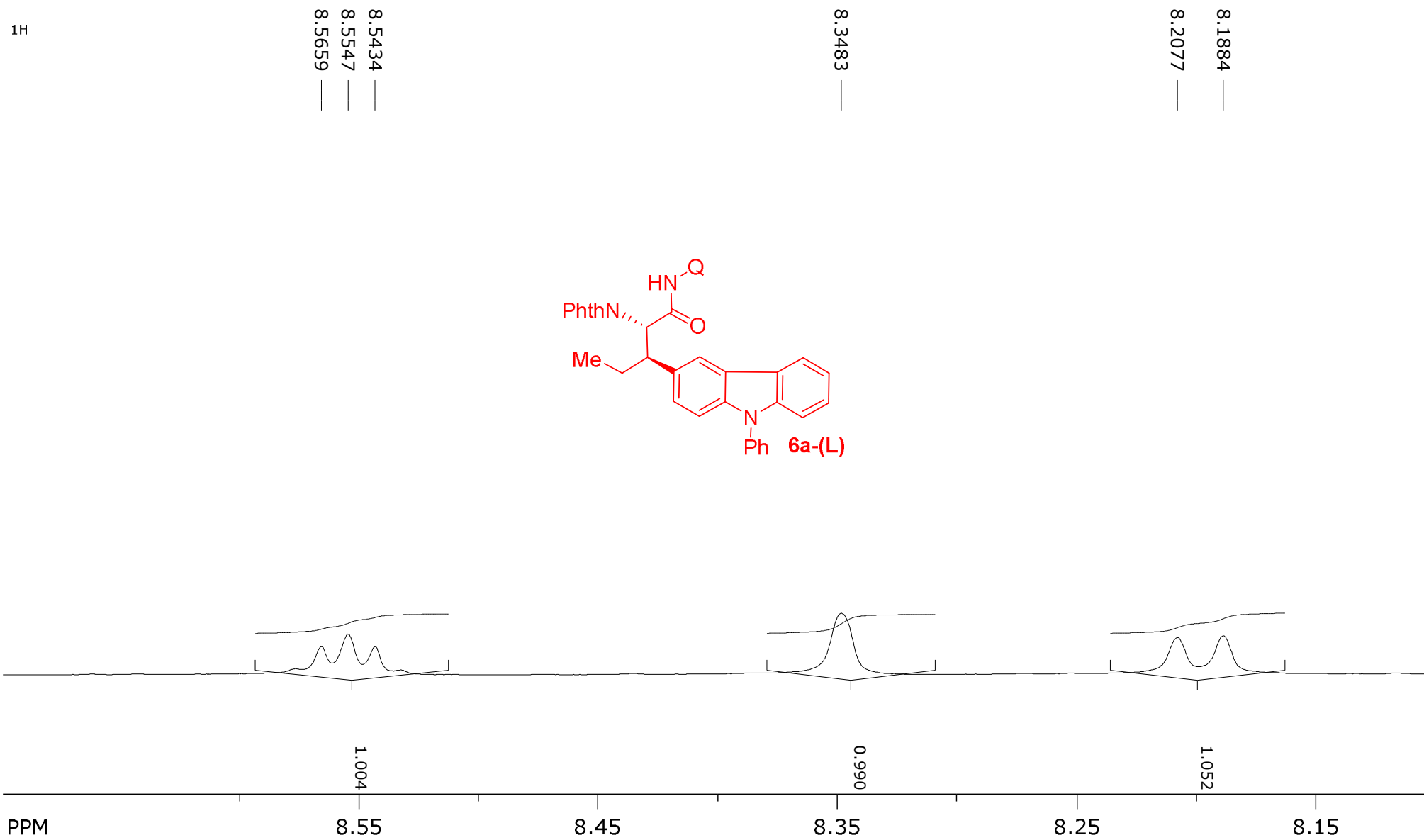
6a-(DL)



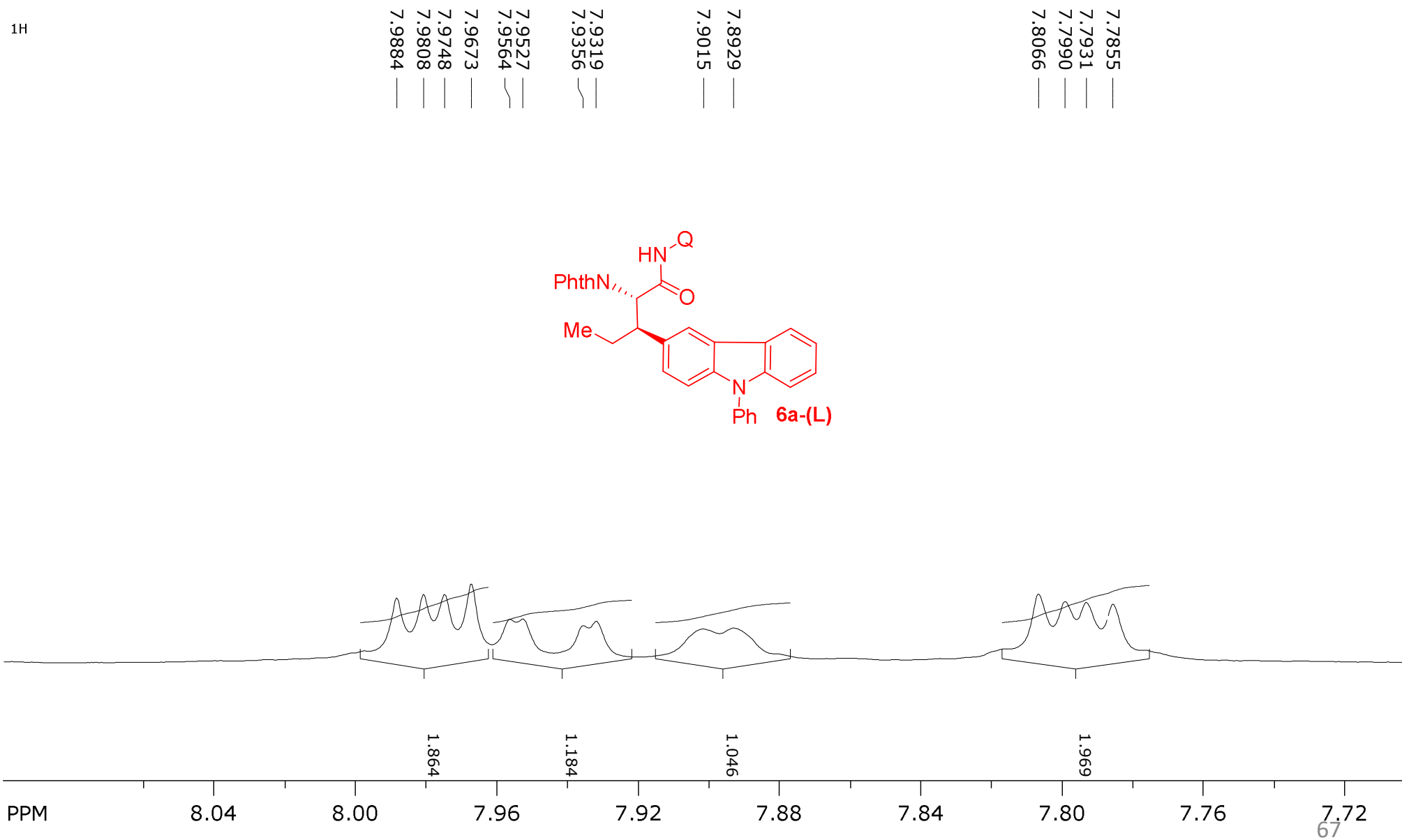
SpinWorks 4: rd-478-rep-2



SpinWorks 4: rd-478-rep-2

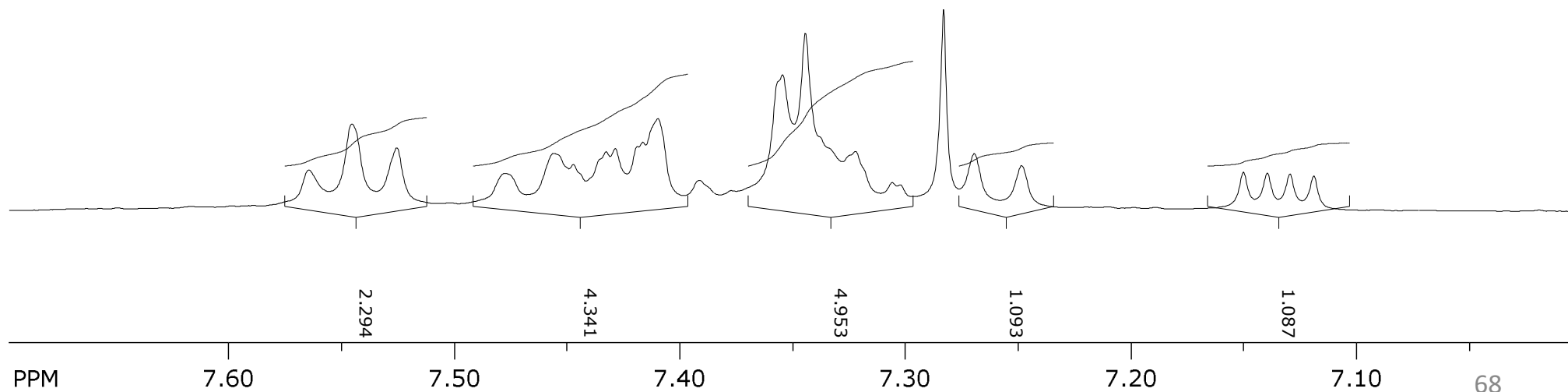
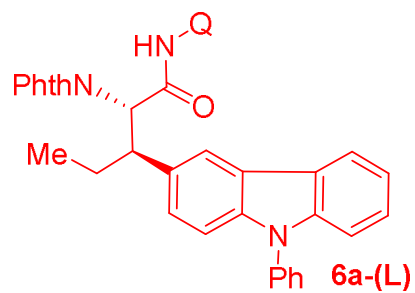


SpinWorks 4: rd-478-rep-2



SpinWorks 4: rd-478-rep-2

1H	7.5645	7.5455	7.5256	7.4774	7.4560	7.4472	7.4327	7.4287	7.4189	7.4164	7.4097	7.3544	7.3443	7.3221	7.3057	7.3022	7.2694	7.2484	7.1500	7.1394	7.1293	7.1187
----	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------

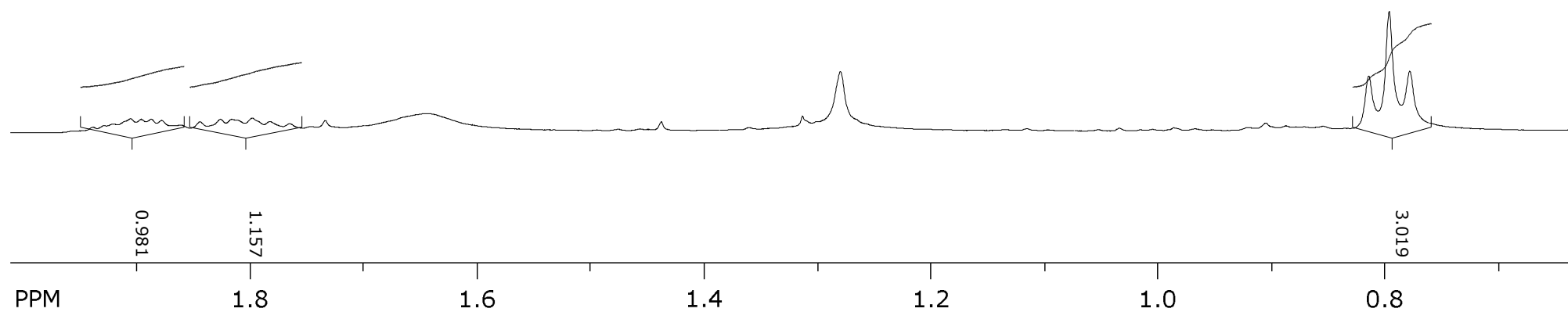
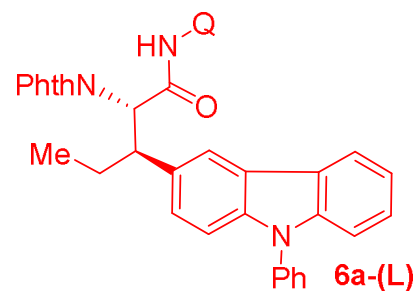


SpinWorks 4: rd-478-rep-2

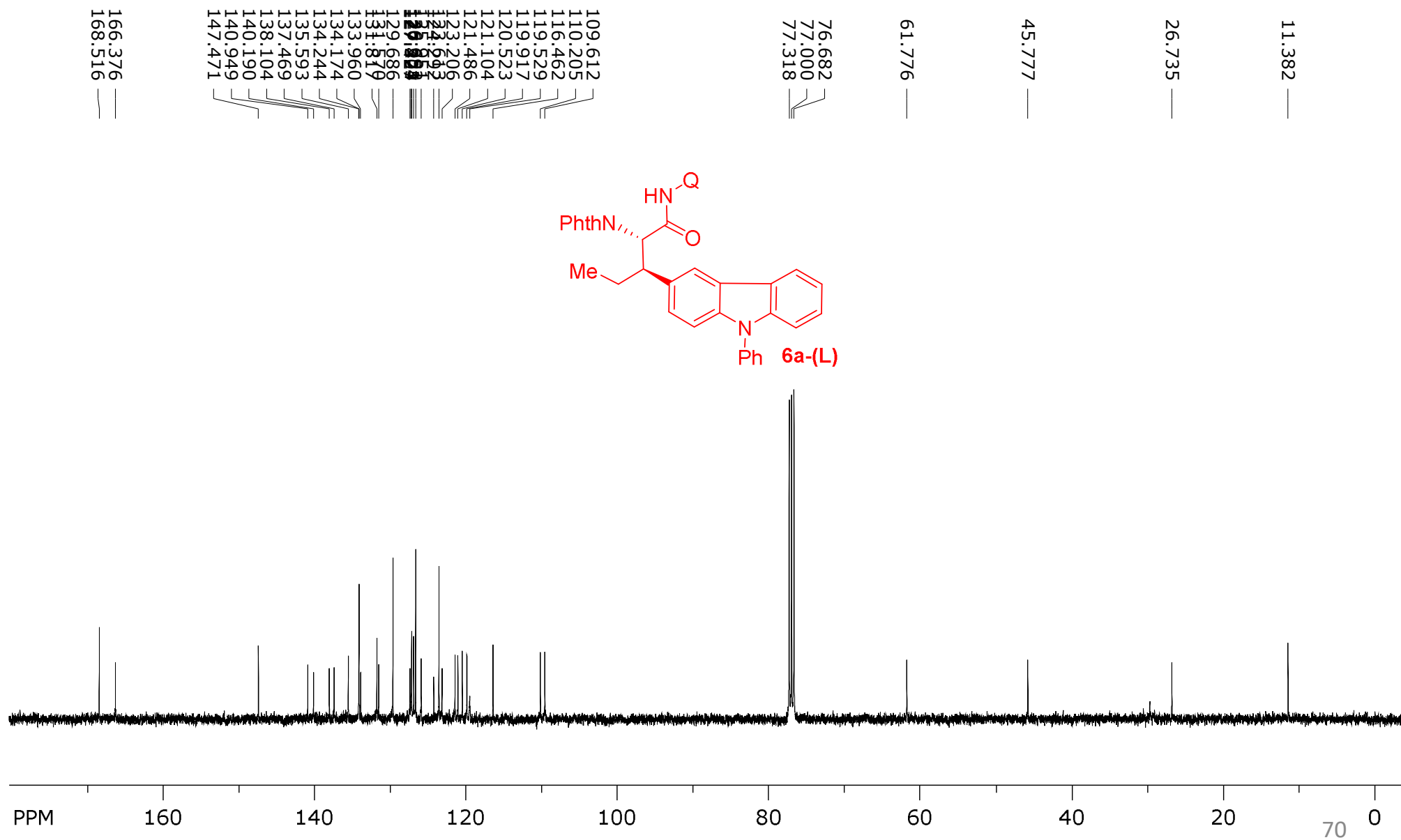
¹H

1.7654	└─┘
1.7809	└─┘
1.8008	└─┘
1.8141	└─┘
1.8274	└─┘
1.8440	└─┘
1.8650	└─┘
1.8761	└─┘
1.8905	└─┘
1.9071	└─┘
1.9204	└─┘
1.9392	└─┘

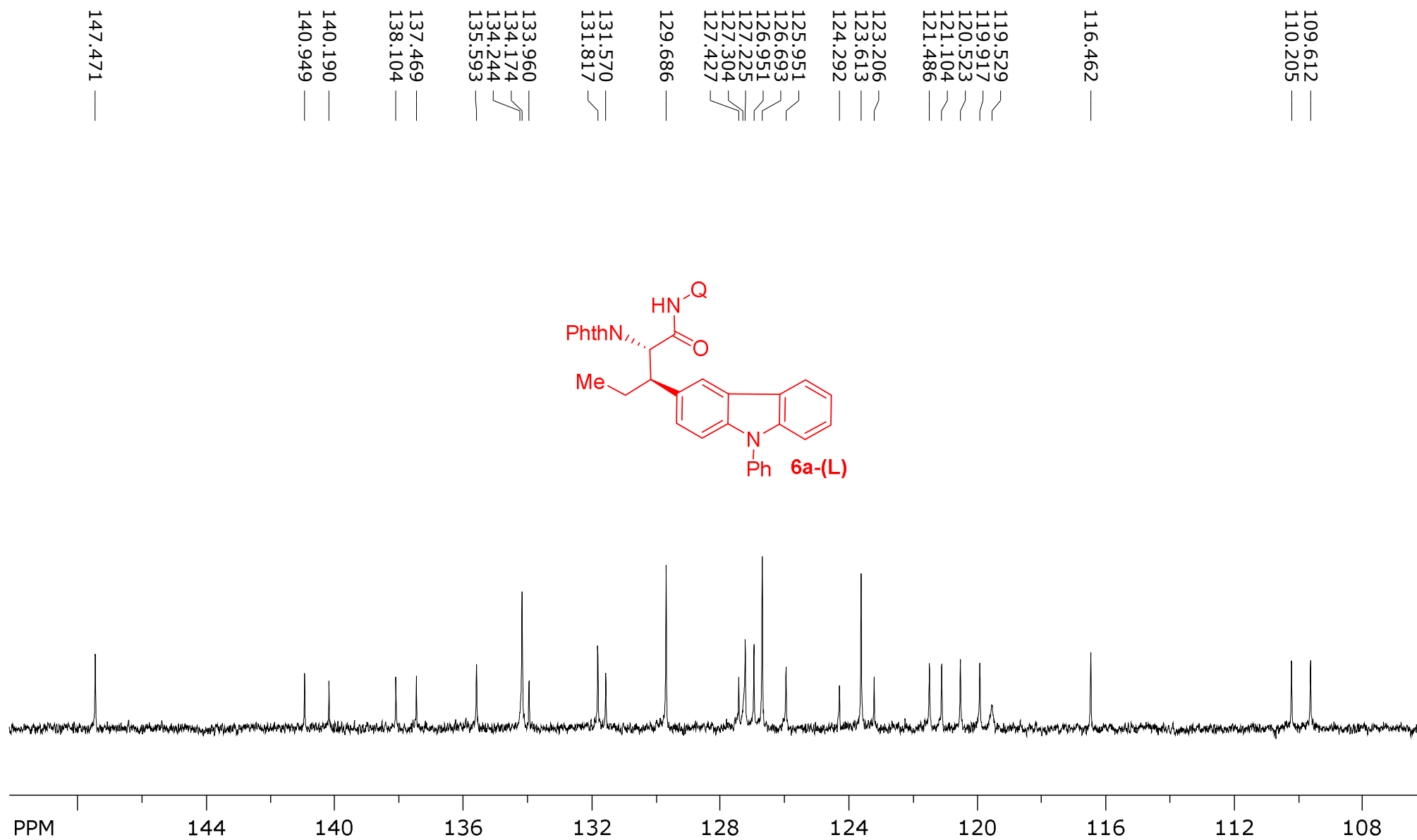
0.7776	└─┘
0.7957	└─┘
0.8138	└─┘



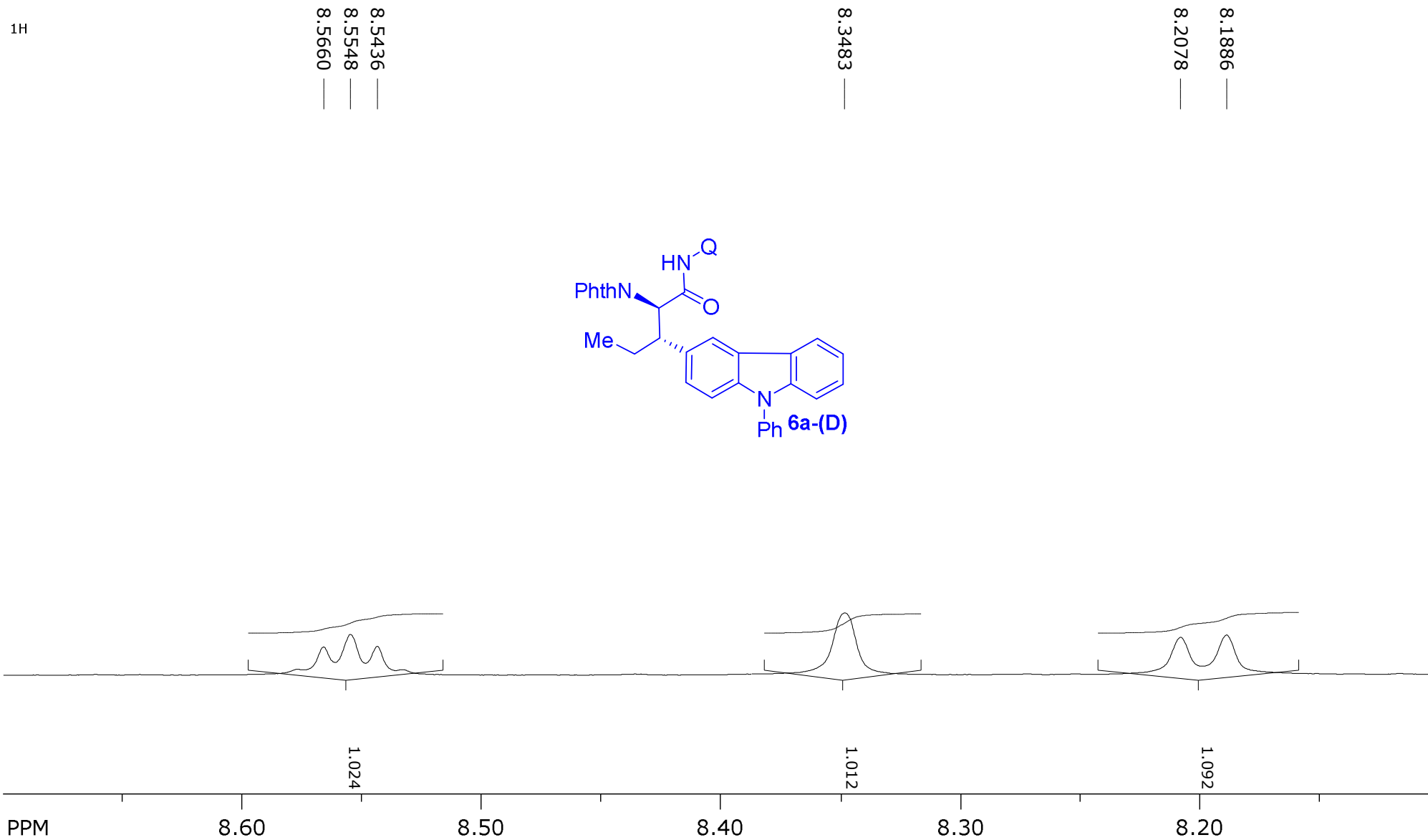
SpinWorks 4: rd 478



SpinWorks 4: rd 478

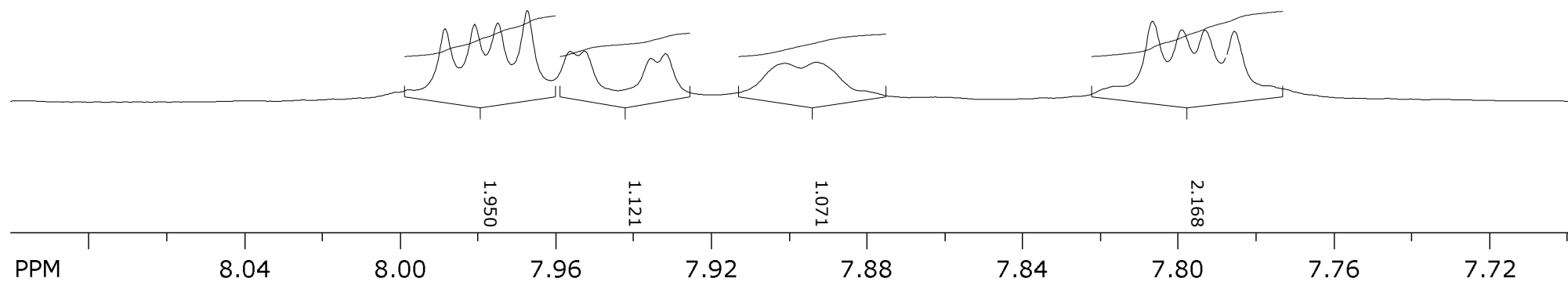
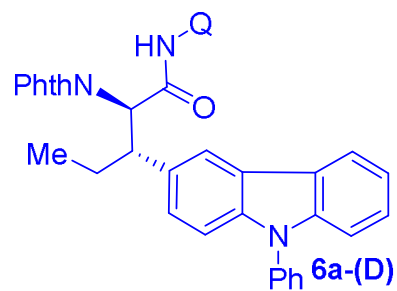


SpinWorks 4: rd-245-rep-3



SpinWorks 4: rd-245-rep-3

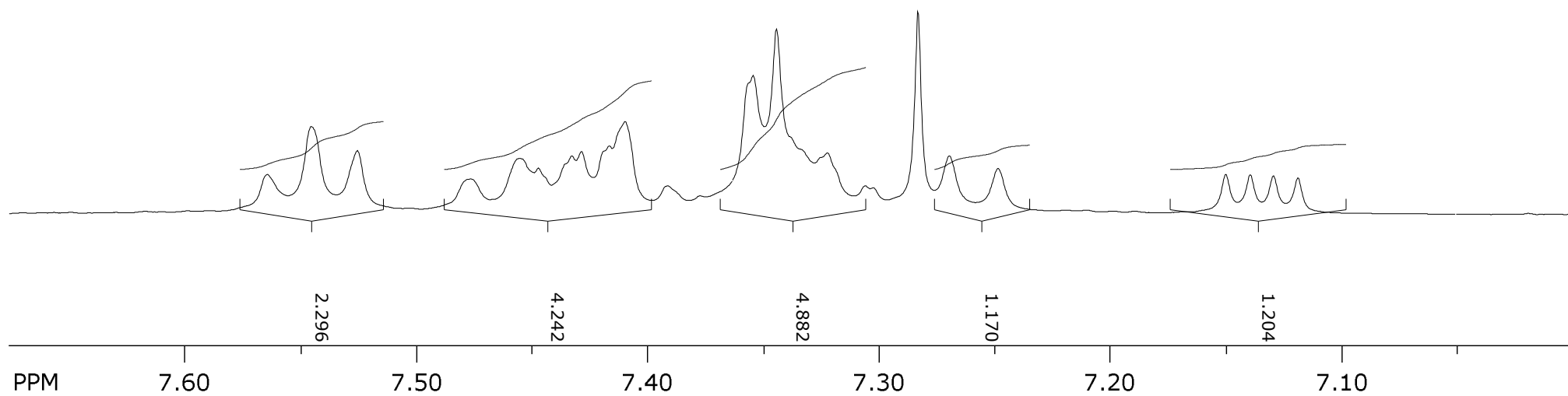
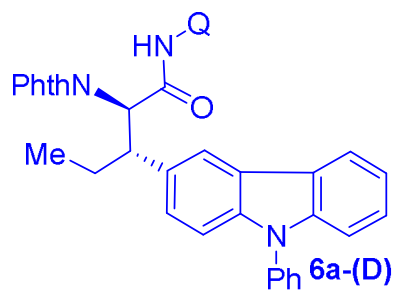
1H	7.9885	7.9809	7.9750	7.9674	7.9526	7.9563	7.9318	7.9356	7.9012	7.8931	7.8066	7.7990	7.7930	7.7855
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SpinWorks 4: rd-245-rep-3

¹H

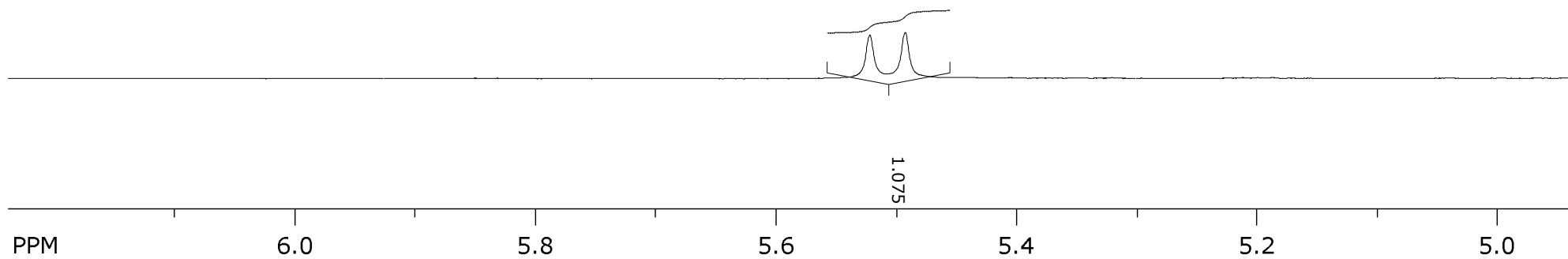
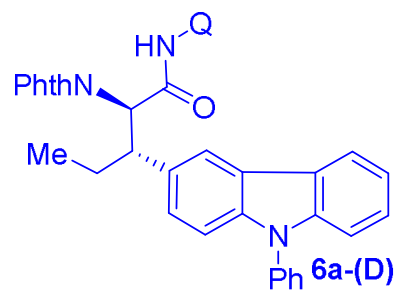
7.5646 —
7.5456 —
7.5257 —
7.4767 —
7.4673 —
7.4474 —
7.4329 —
7.4288 —
7.4167 —
7.4099 —
7.3545 —
7.3444 —
7.3224 —
7.3060 —
7.2696 —
7.2486 —
7.1501 —
7.1395 —
7.1294 —
7.1188 —



SpinWorks 4: rd-245-rep-3

¹H

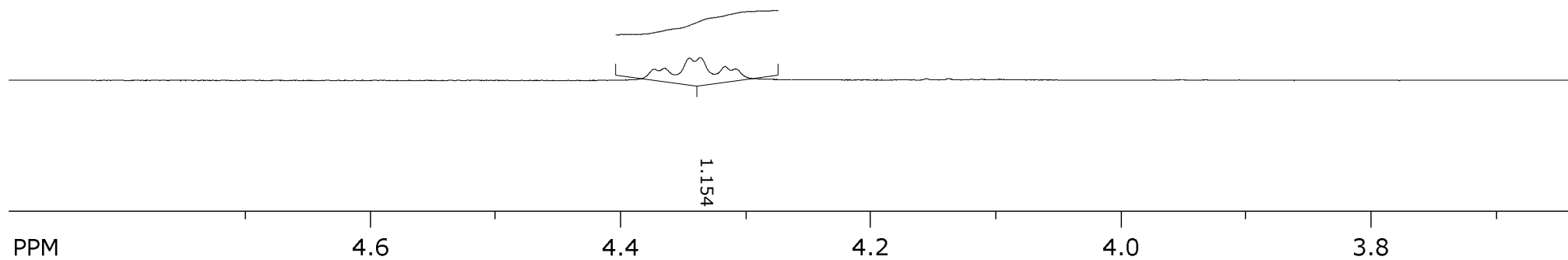
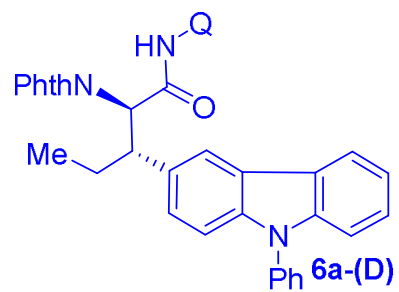
5.4923
5.5218



SpinWorks 4: rd-245-rep-3

¹H

4.3012
4.3163
4.3359
4.3451
4.3613
4.3763
|
|
|
|
|
|

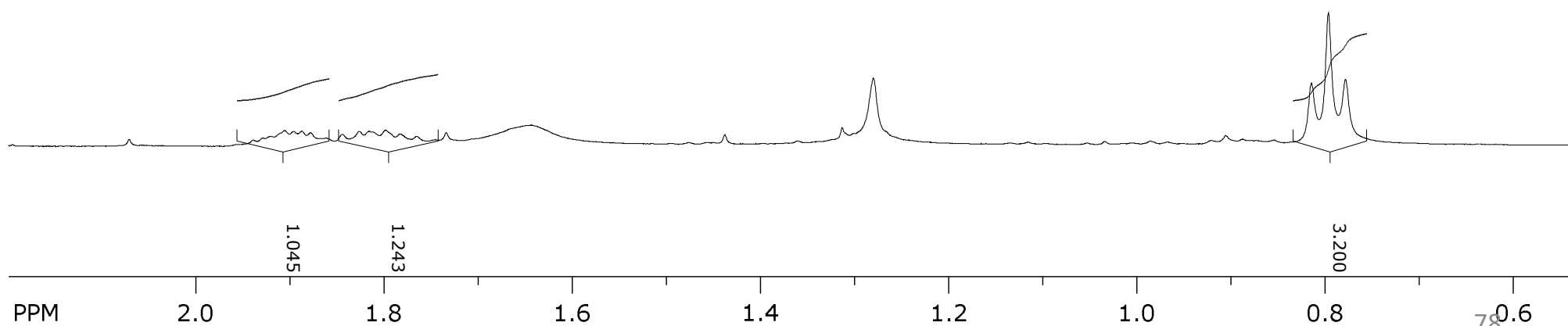
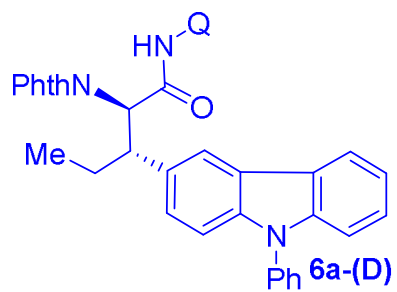


SpinWorks 4: rd-245-rep-3

¹H

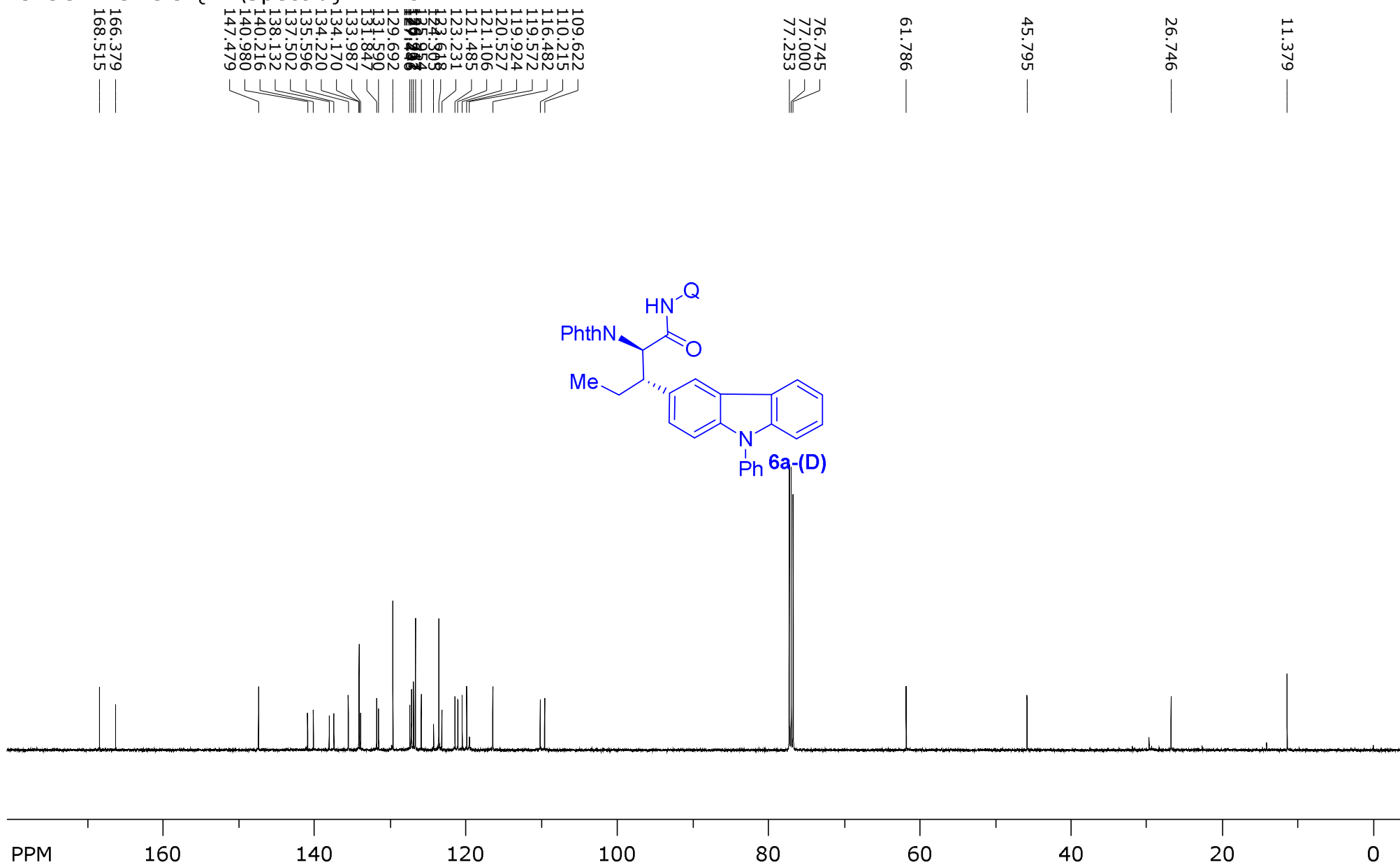
1.7577
1.7774
1.7991
1.8167
1.8390
1.8611
1.8790
1.8966
1.9203
1.9375

0.7779
0.7960
0.8141



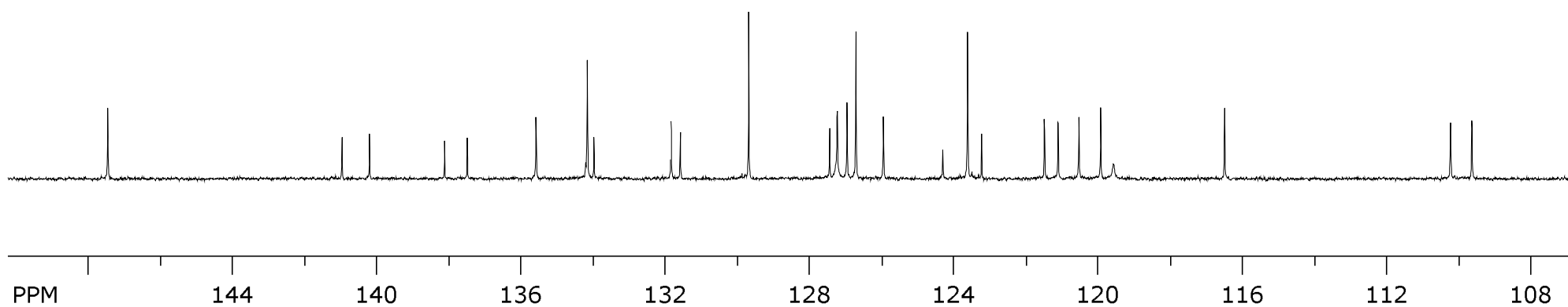
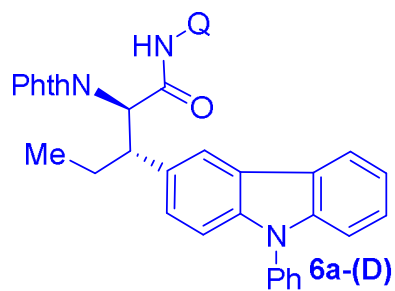
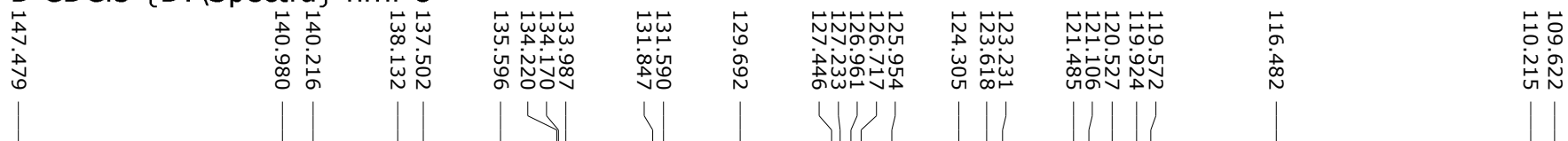
SpinWorks 4: SAB108

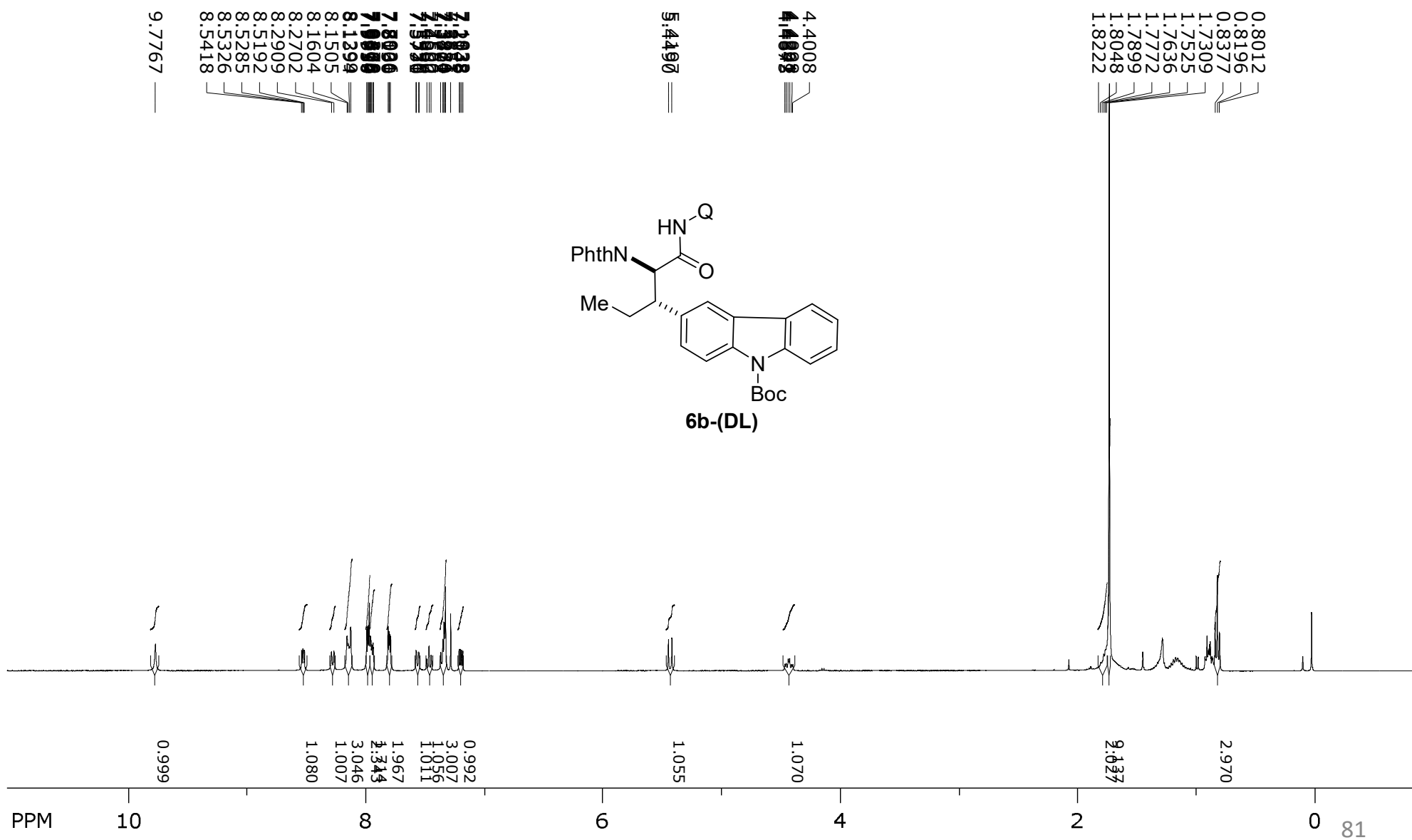
C13CPD CDCl3 {D:\Spectra} nmr 8



SpinWorks 4: SAB108

C13CPD CDCl3 {D:\Spectra} nmr 8





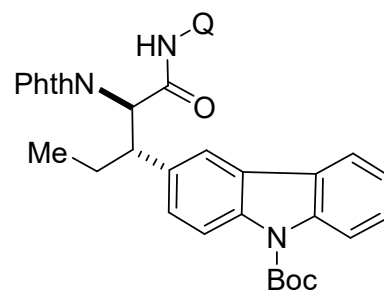
8.5192
8.5285
8.5326
8.5418

8.2702
8.2909

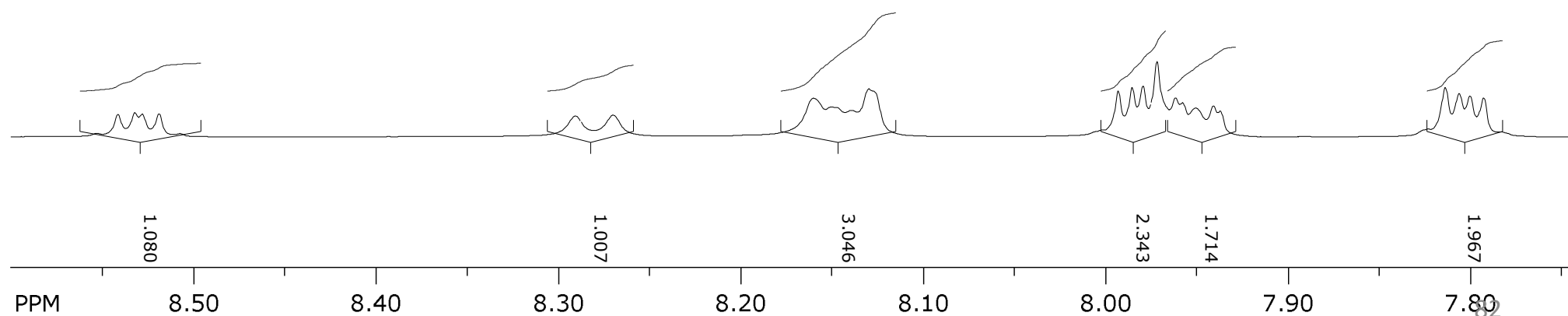
8.1299
8.1394
8.1505
8.1604

7.9370
7.9408
7.9506
7.9578
7.9616
7.9717
7.9794
7.9853
7.9930

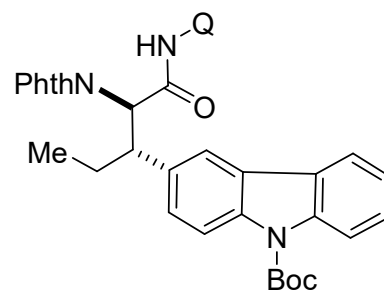
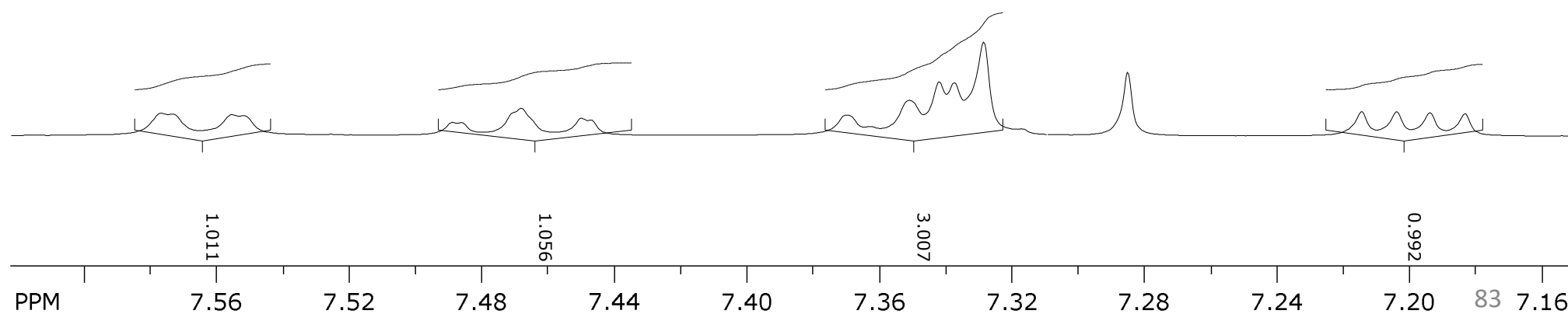
7.7926
7.8001
7.8060
7.8136



6b-(DL)

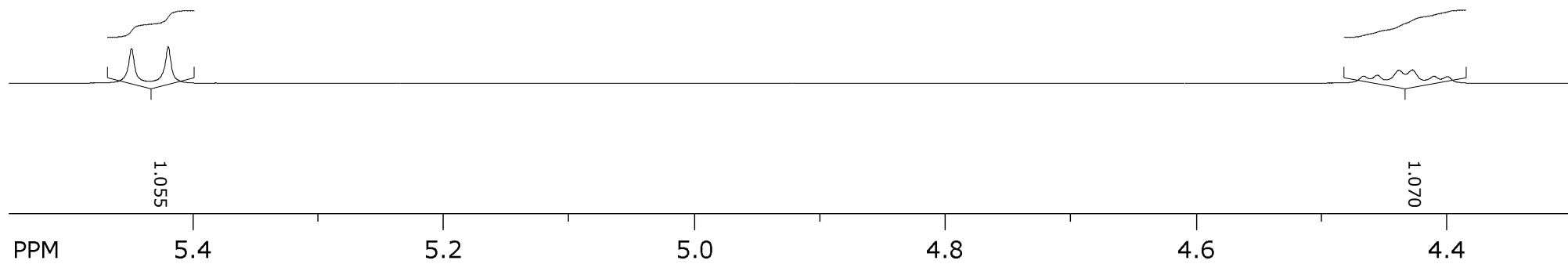
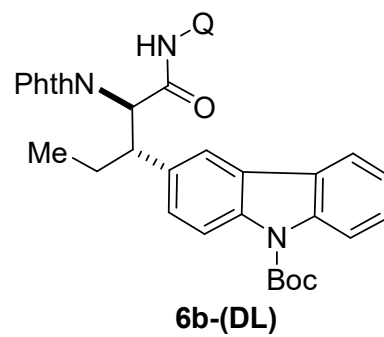


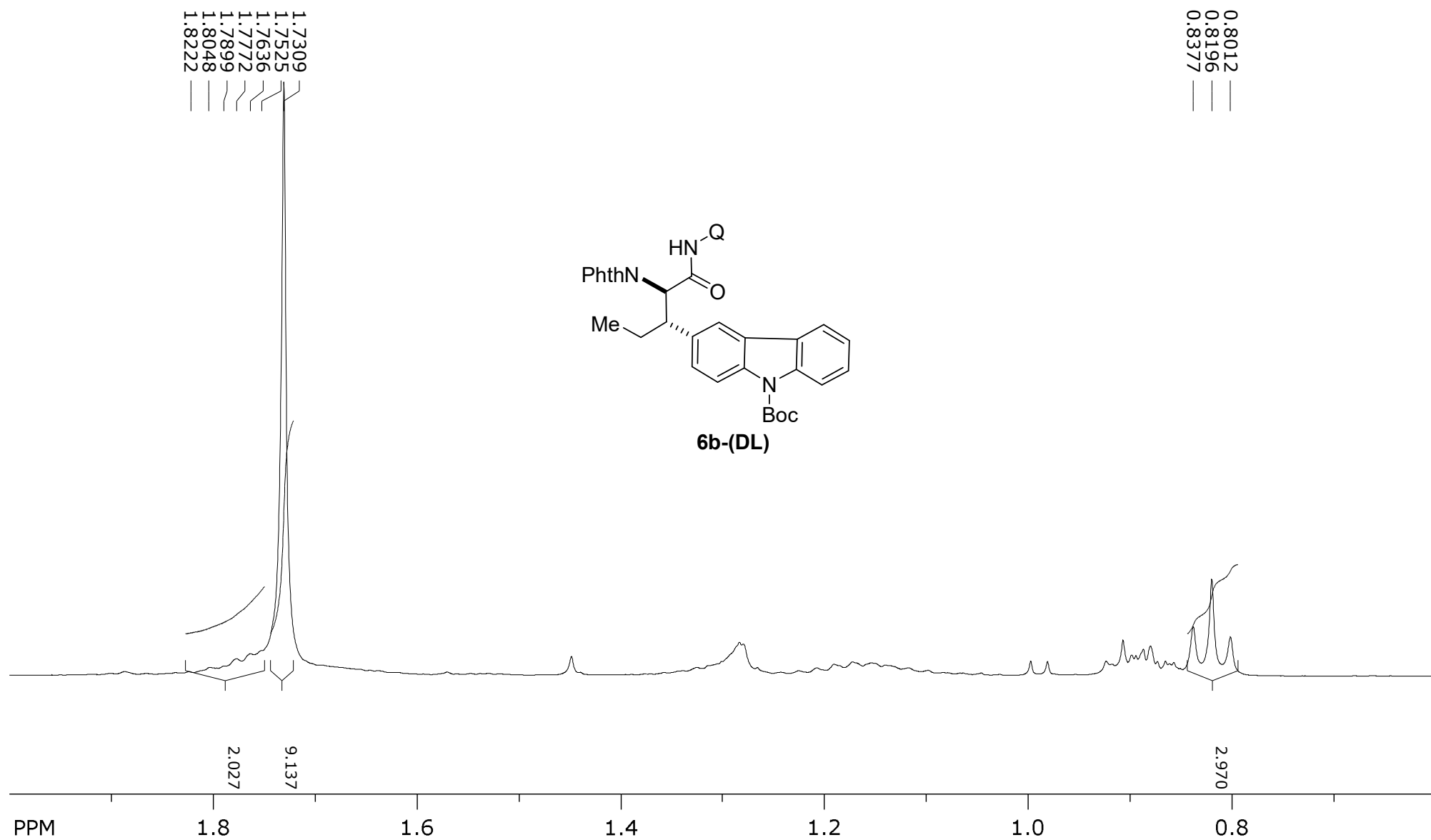
7.1832 —
7.1938 —
7.2038 —
7.2145 —
7.2851 —
7.3286 —
7.3374 —
7.3420 —
7.3511 —
7.3702 —
7.4500 —
7.4682 —
7.4866 —
7.5520 —
7.5556 —
7.5736 —
7.5771 —

**6b-(DL)**

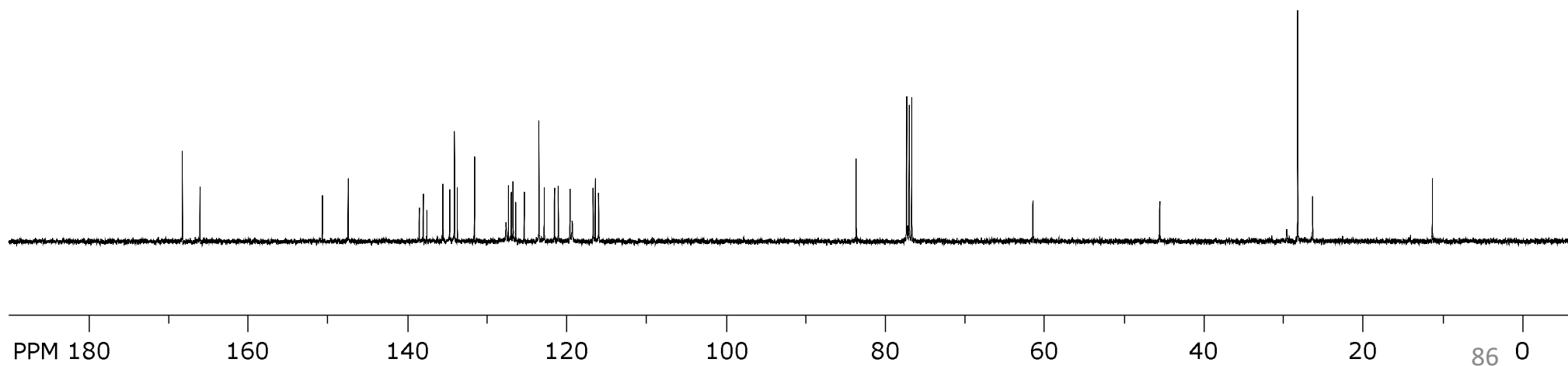
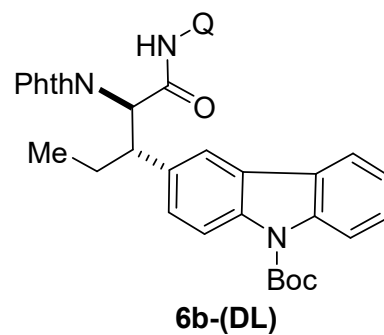
5.4197
5.4490

4.4008
4.4098
4.4261
4.4397
4.4542
4.4673

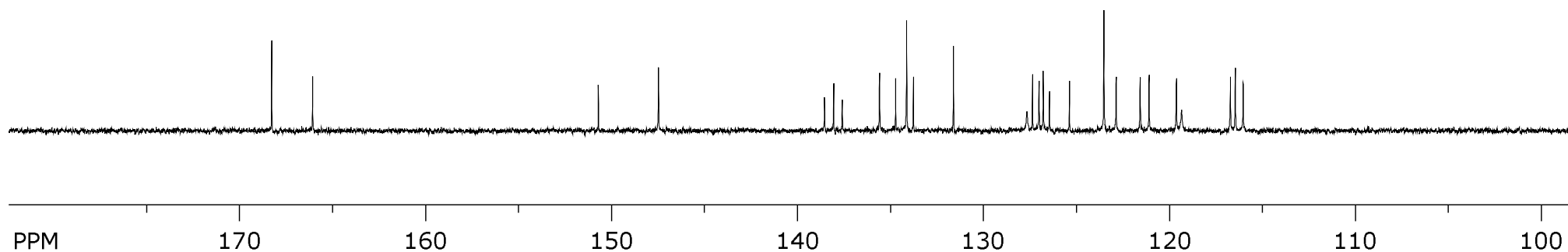
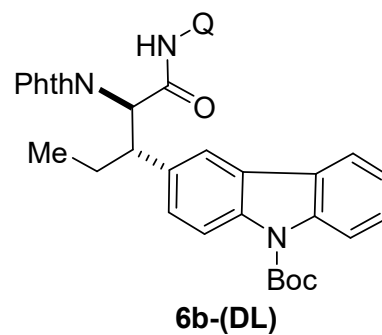
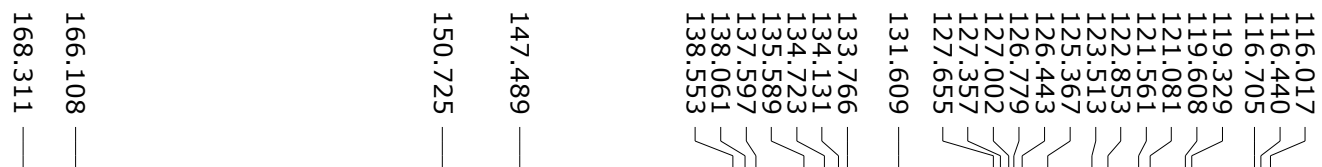




SpinWorks 4: rd 103-re-2



SpinWorks 4: rd 103-re-2



SpinWorks 4: RD 1008
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 16

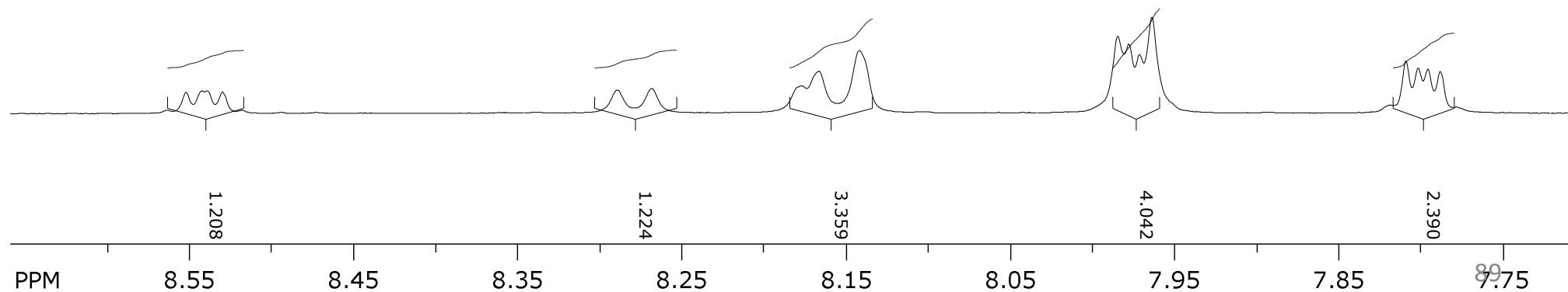
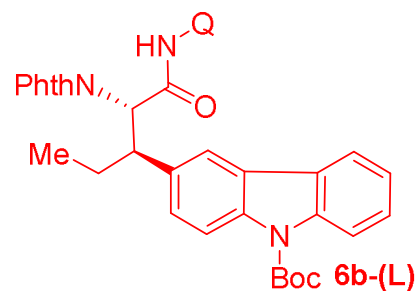
8.5298
8.5393
8.5426
8.5523

8.2686
8.2876

8.1420
8.1665
8.1770

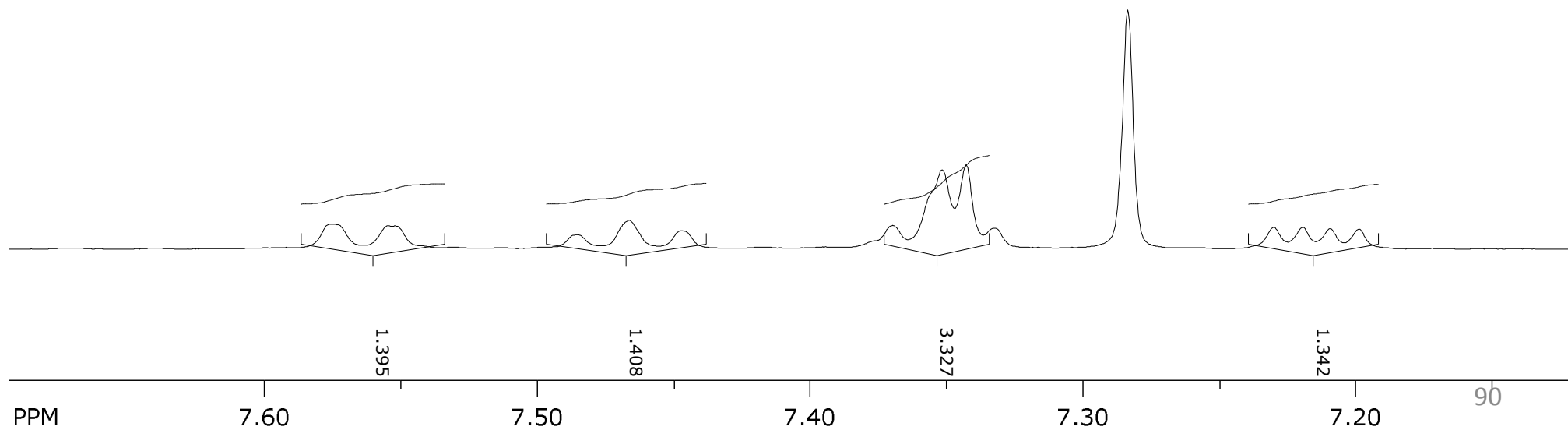
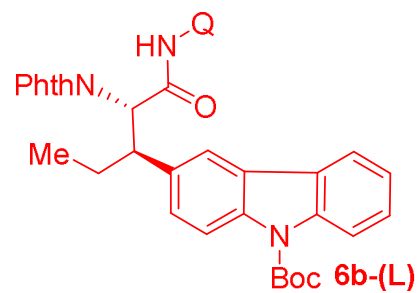
7.9636
7.9712
7.9778
7.9846

7.7879
7.7955
7.8014
7.8090



SpinWorks 4: RD 1008
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 16

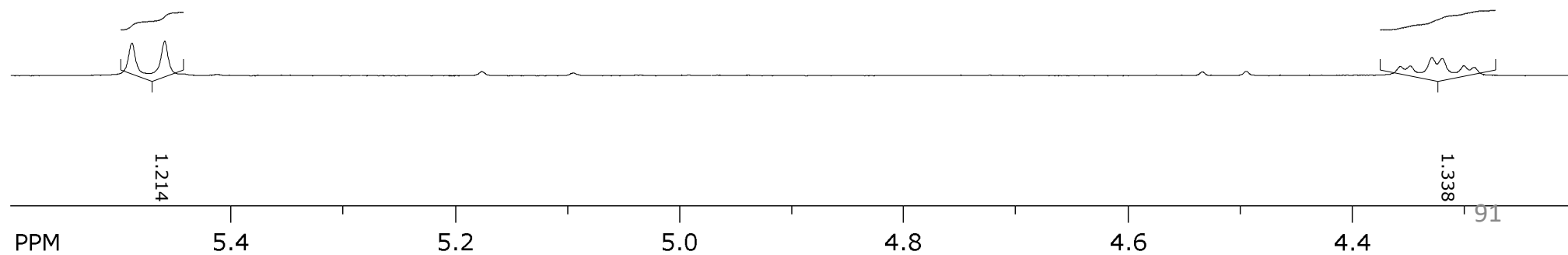
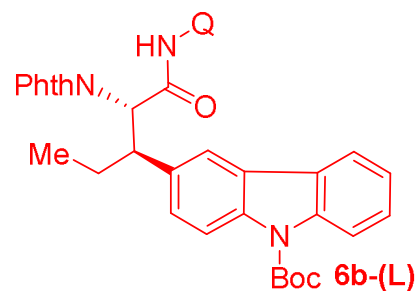
7.5522	7.4474	7.3325	7.2835	7.1988
7.5549	7.4665	7.3428		7.2093
7.5743		7.3516		7.2194
7.5763	7.4837	7.3698		7.2299



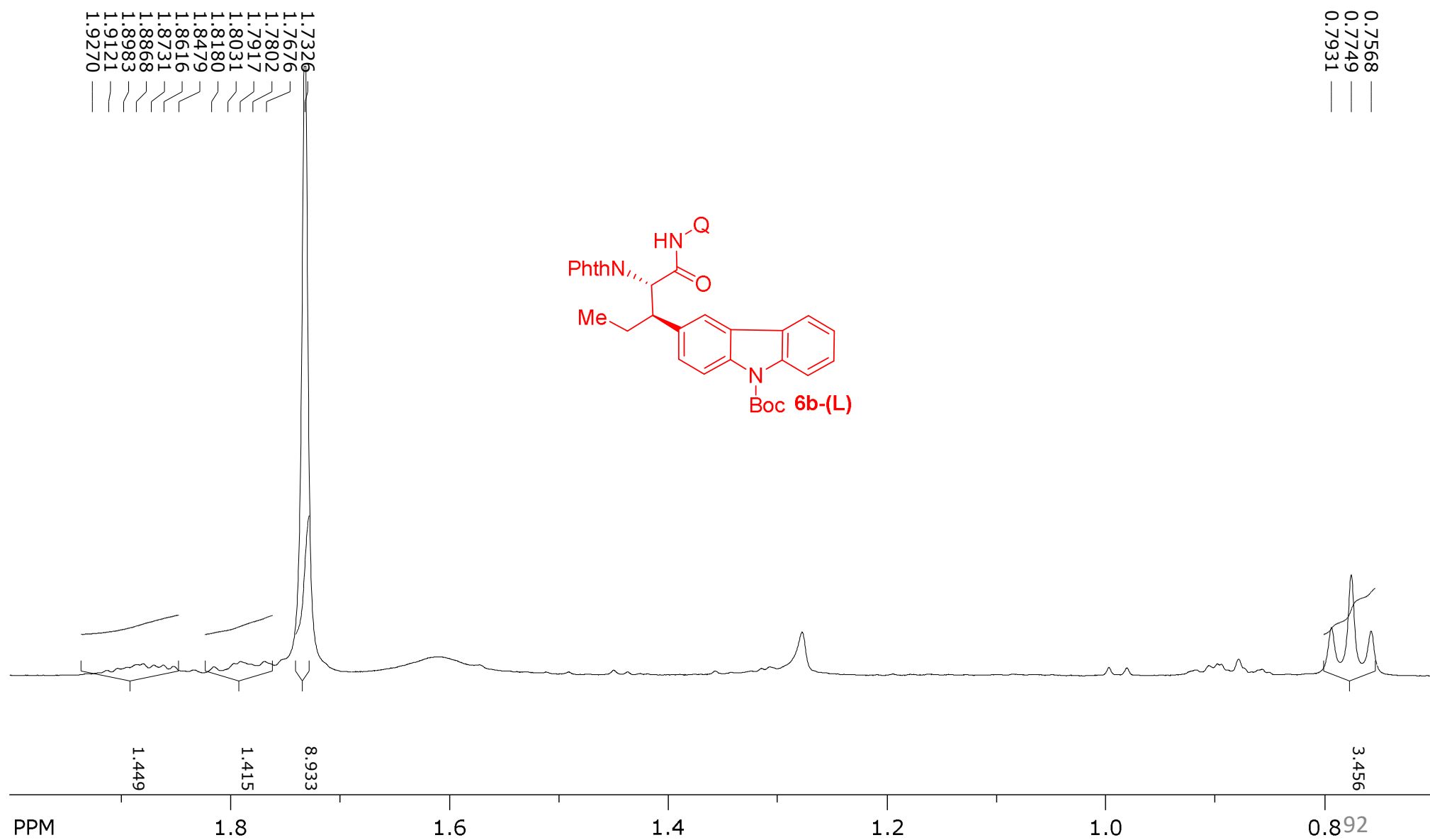
SpinWorks 4: RD 1008
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 16

5.4597 —
5.4889 —

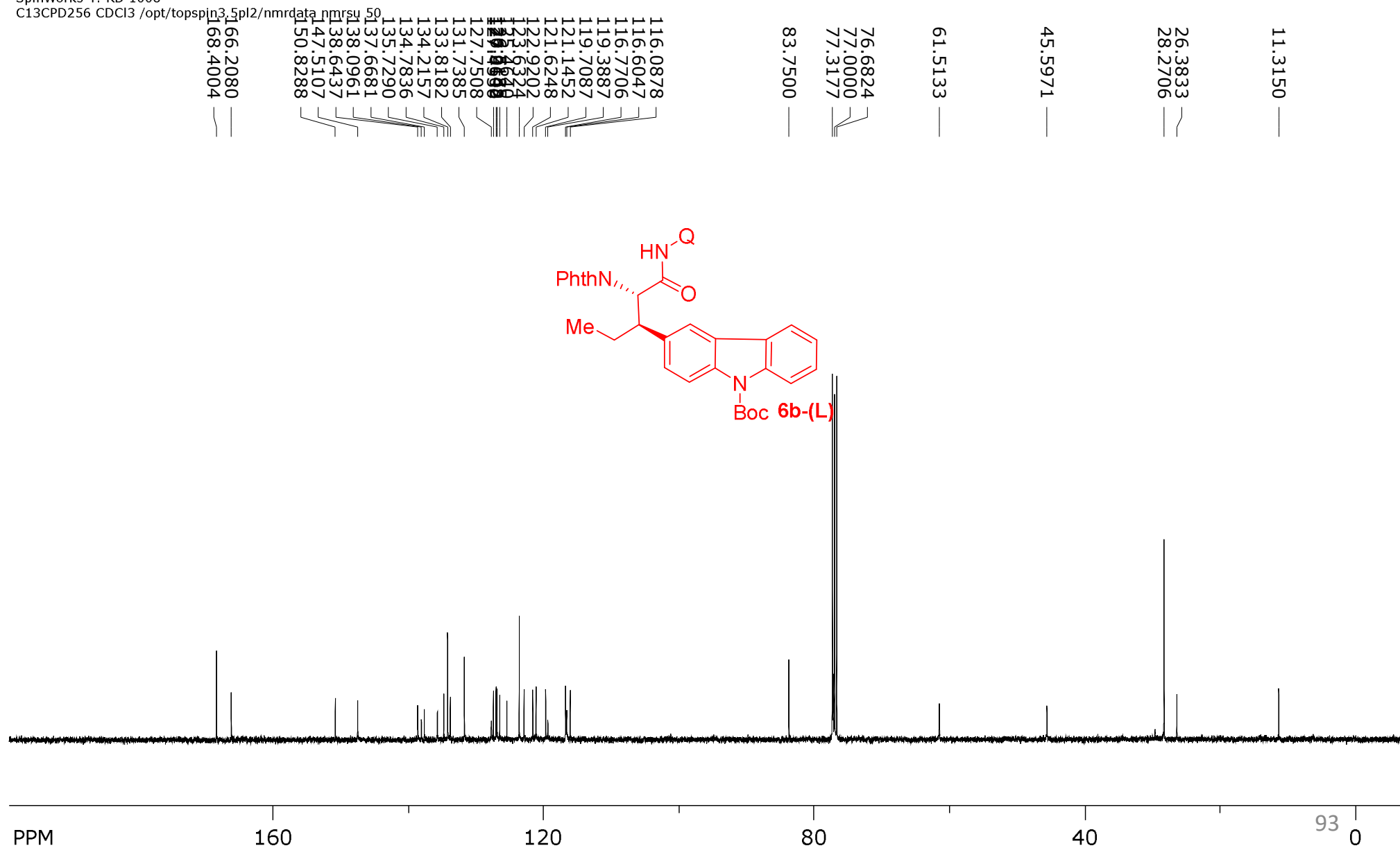
4.2889
4.2983
4.3205
4.3285
4.3455
4.3578



SpinWorks 4: RD 1008
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 16

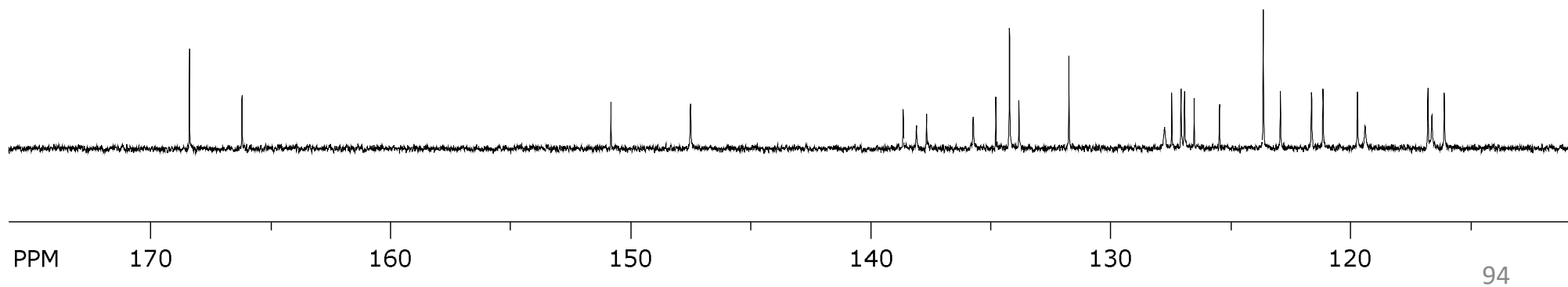
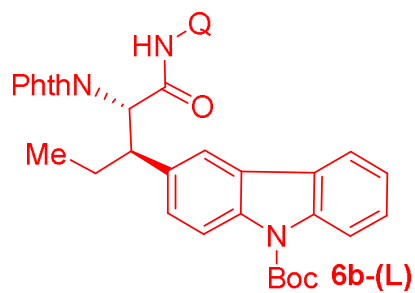


SpinWorks 4: RD 1008
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata/nmr50



SpinWorks 4: RD 1008
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 50

116.0878
116.6047
116.7706
119.3887
119.7087
121.1452
121.6248
122.9202
123.6324
125.4640
126.5185
126.9148
127.0602
127.4530
127.7508
131.7385
133.8182
134.2157
134.7836
135.7290
137.6681
138.0961
138.6437
147.5107
150.8288



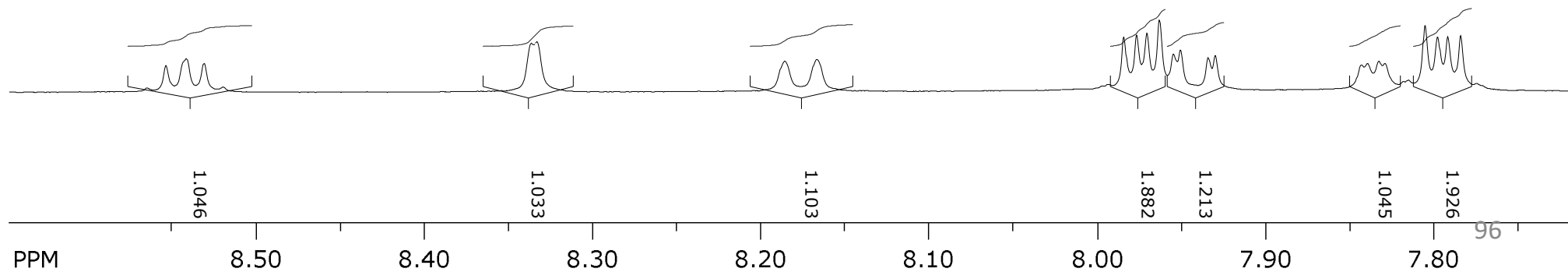
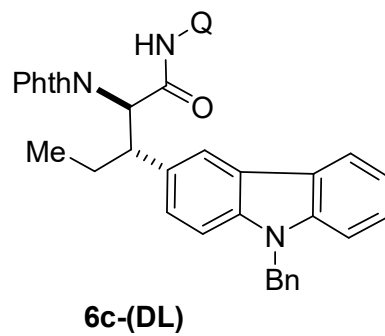
8.5185
8.5311
8.5416
8.5537
8.5646

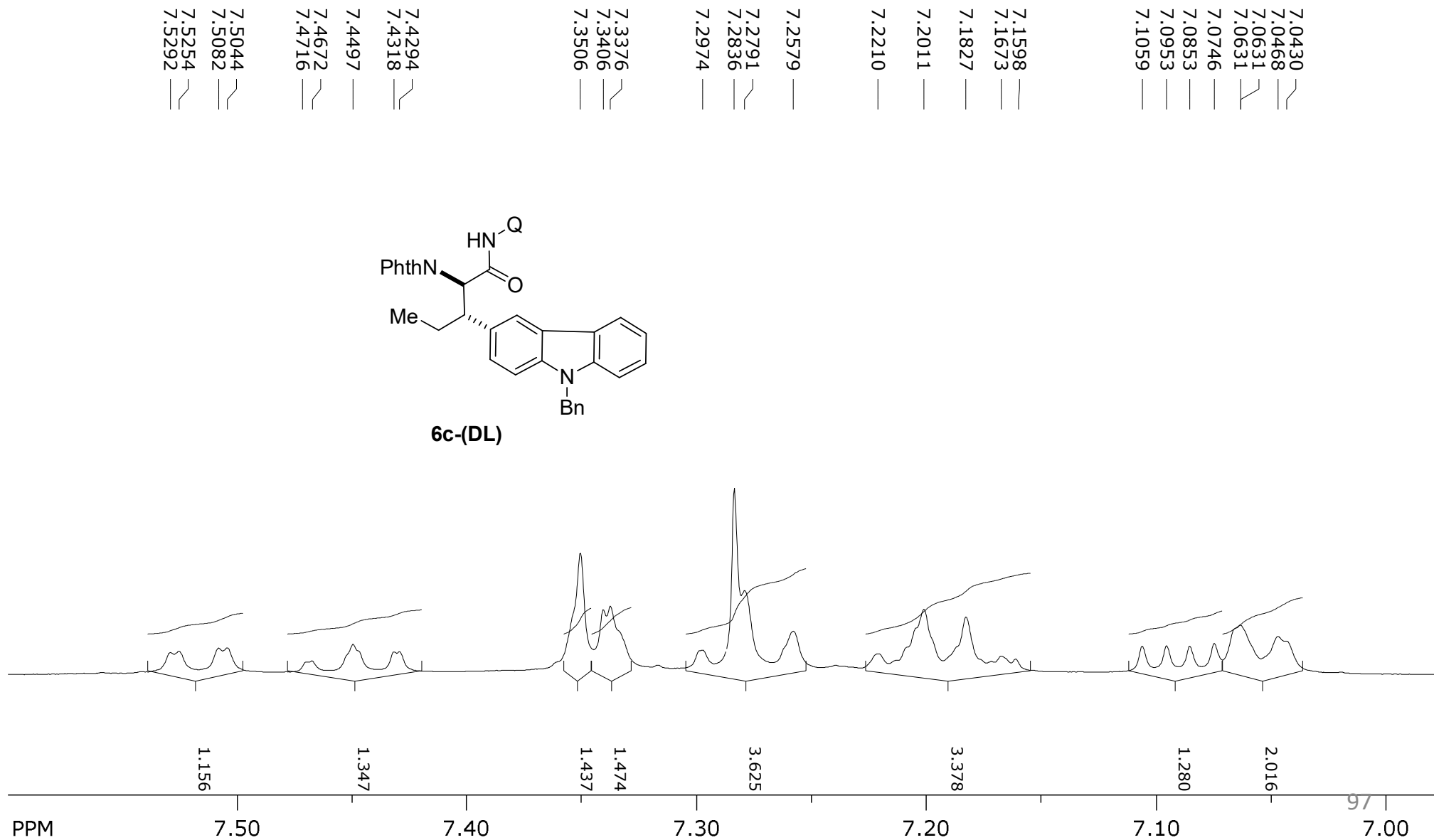
8.3333
8.3363

8.1666
8.1858

7.9297
7.9338
7.9504
7.9545
7.9629
7.9704
7.9765
7.9841

7.7838
7.7914
7.7974
7.8050
7.8287
7.8324
7.8391
7.8429

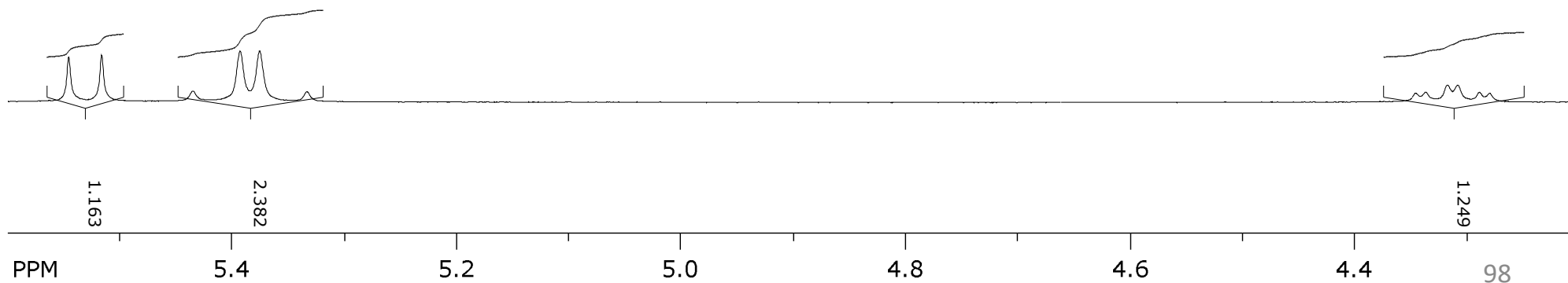
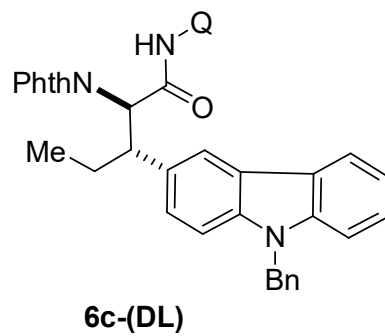




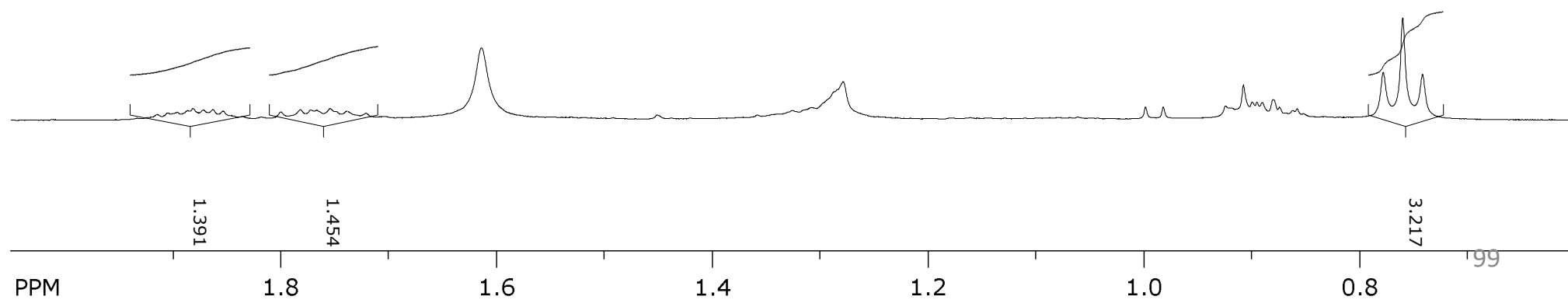
SpinWorks 4: RD 135 REP 3

5.3317 —
5.3756 —
5.3931 —
5.4372 —
5.5165 —
5.5459 —

4.2804
4.2890
4.3070
4.3181
4.3349
4.3485



Chemical structure of **6c-(DL)** is shown. It features a 1-benzyl-9H-fluoren-2-yl group attached to a chiral center. The chiral center is also bonded to a methyl group (Me), a benzylthio group (PhthN), and a carbonyl group (C=O) which is further substituted with an HN-Q group.



SpinWorks 4: SAB100707
C13CPD CDCl3 {D:\Spectra} nmr 16

166.385
168.489
147.540
140.854
140.142
138.122
137.016
135.501
134.139
133.969
131.793
130.760
128.621
126.999
126.999
126.999
122.869
121.485
121.108
120.531
119.842
119.179
116.497
109.238
108.792

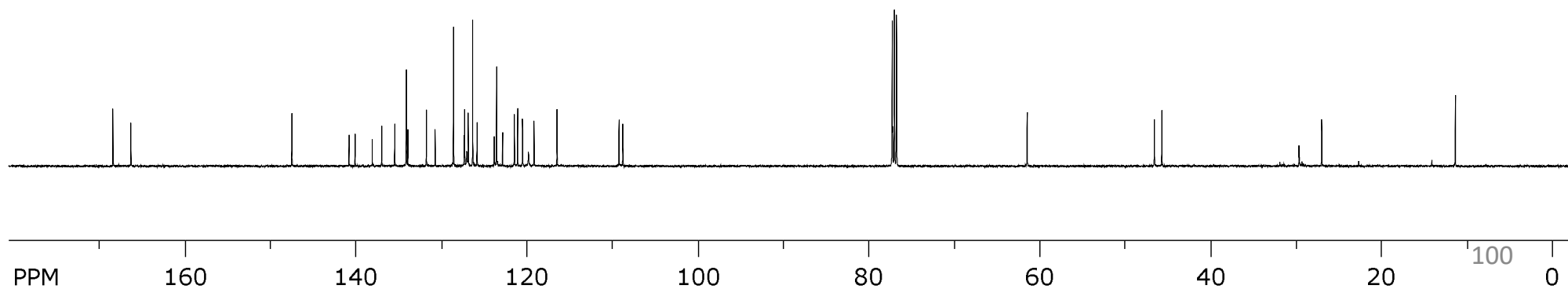
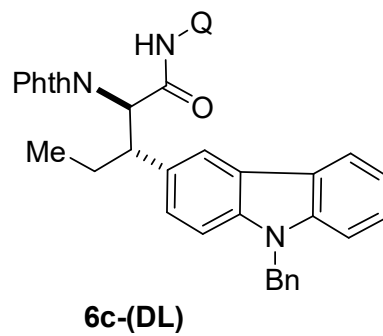
76.747
77.000
77.254

61.453

45.688
46.559

26.959

11.323



SpinWorks 4: SAB100707
C13CPD CDCl3 {D:\Spectra} nmr 16

147.540

140.854

140.142

138.122

137.016

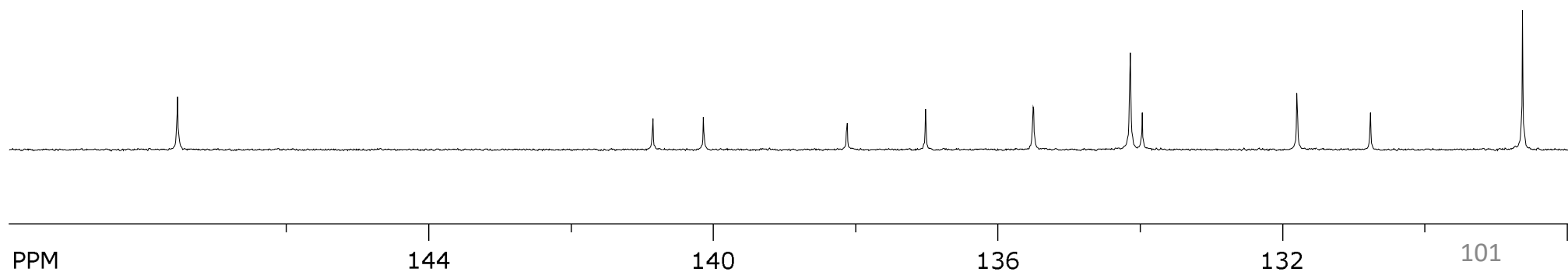
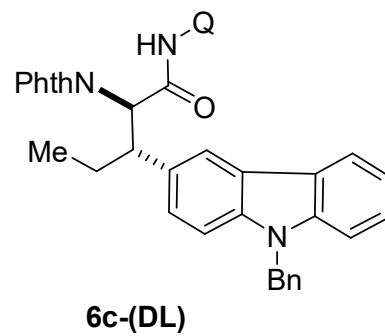
135.501

133.969
134.139

131.793

130.760

128.621



SpinWorks 4: SAB100707
C13CPD CDCl3 {D:\Spectra} nmr 16

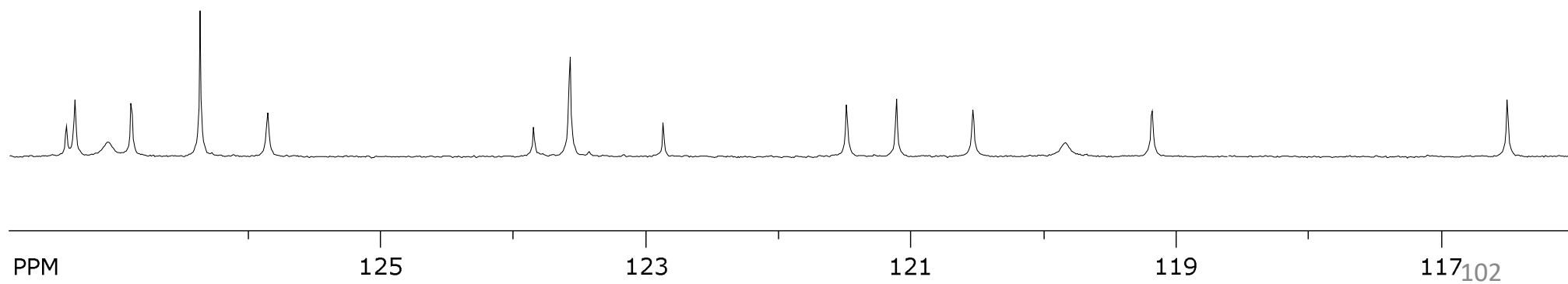
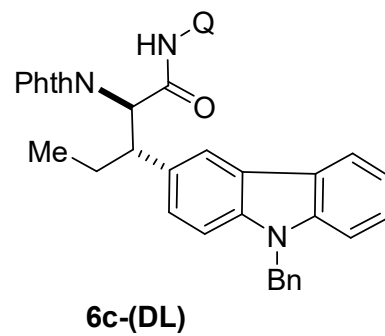
125.855 —
126.365 —
126.884 —
127.067 —
127.310 —
127.374 —

122.869 —
123.573 —
123.848 —

120.531 —
121.108 —
121.485 —

119.179 —
119.842 —

116.497 —



SpinWorks 4: SAB100707
C13CPD CDCl3 {D:\Spectra} nmr 16

108.792
109.238

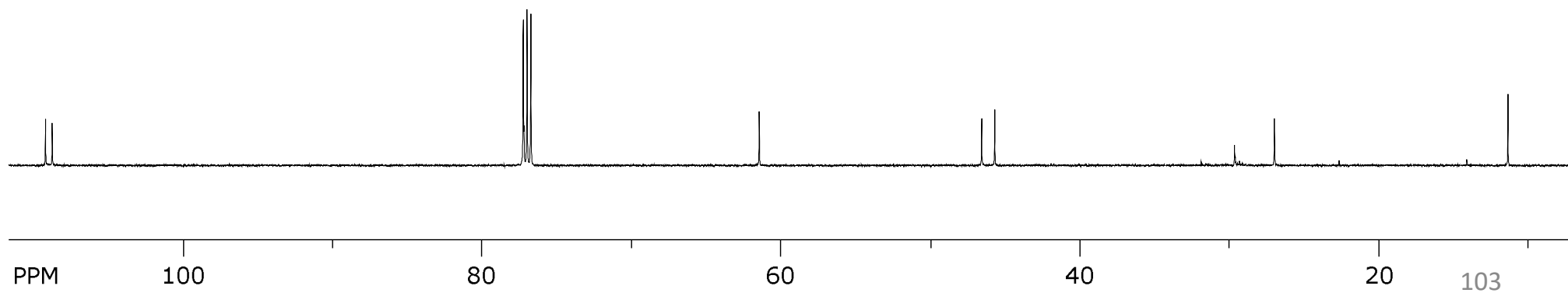
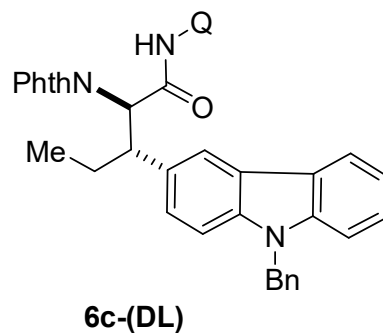
76.747
77.000
77.254

61.453

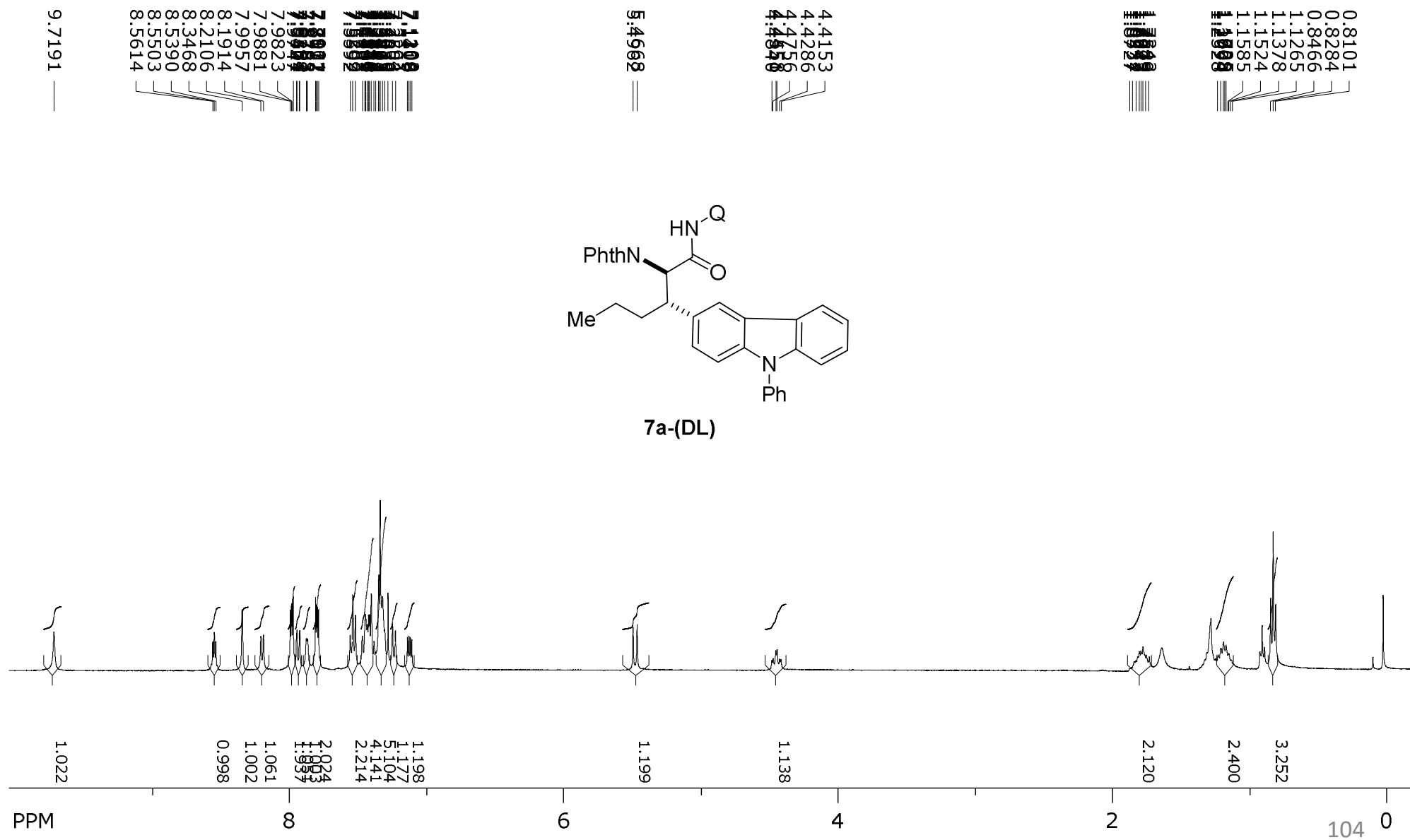
45.688
46.559

26.959

11.323



SpinWorks 4: rd 41 rep 4



SpinWorks 4: rd 41 rep 4

8.5390
8.5503
8.5614

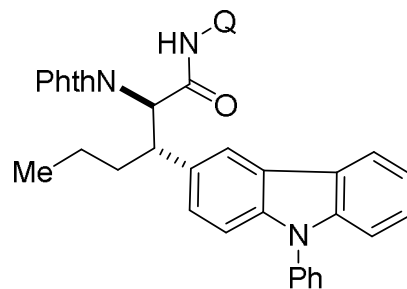
8.3468

8.1914
8.2106

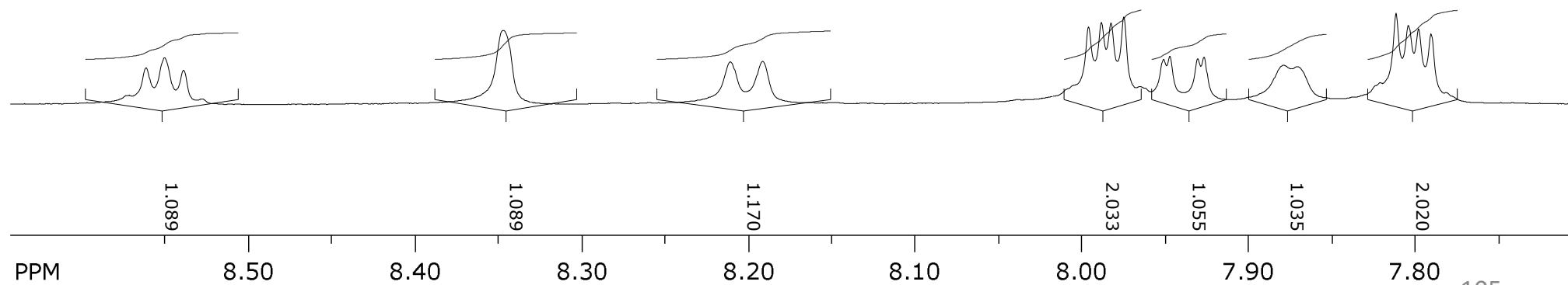
7.9264
7.9302
7.9471
7.9509
7.9747
7.9823
7.9881
7.9957

7.8703
7.8783
7.8788

7.7901
7.7977
7.8037
7.8112



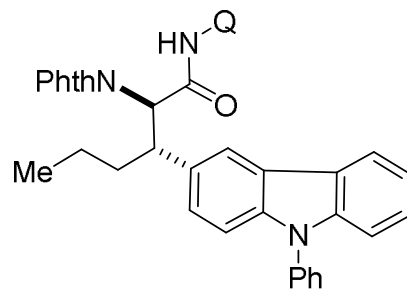
7a-(DL)



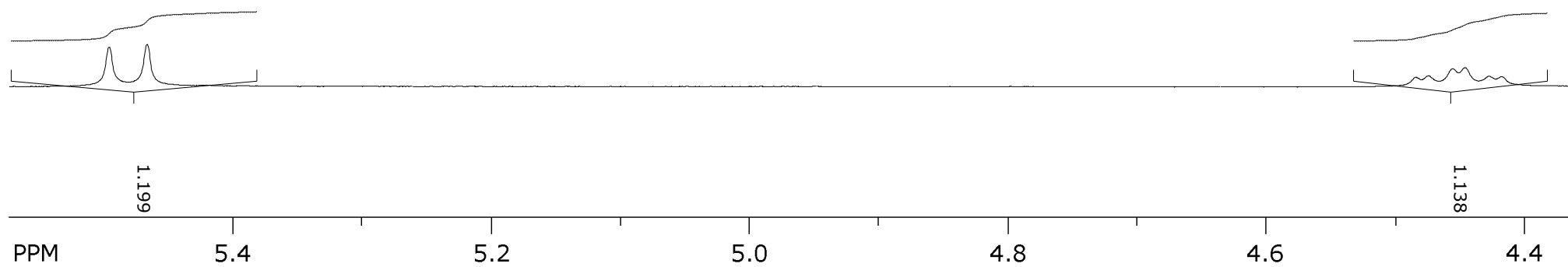


5.4668 —
5.4962 —

4.4153 —
4.4286 —
4.4458 —
4.4551 —
4.4756 —
4.4840 —



7a-(DL)

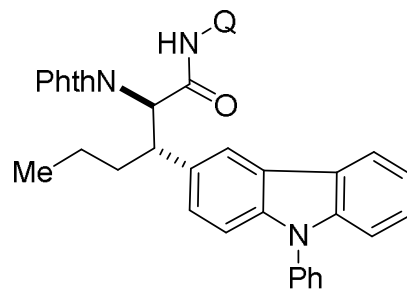


SpinWorks 4: rd 41 rep 4

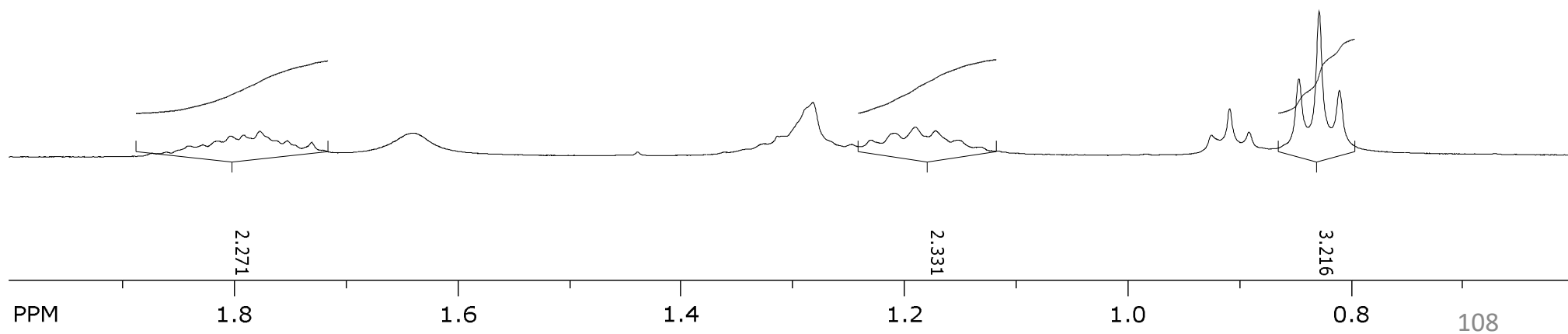
1.7343
1.7589
1.7779
1.7922
1.8043
1.8272
1.8537
1.8727

1.1265
1.1378
1.1524
1.1585
1.1725
1.1809
1.1908
1.2094
1.2328

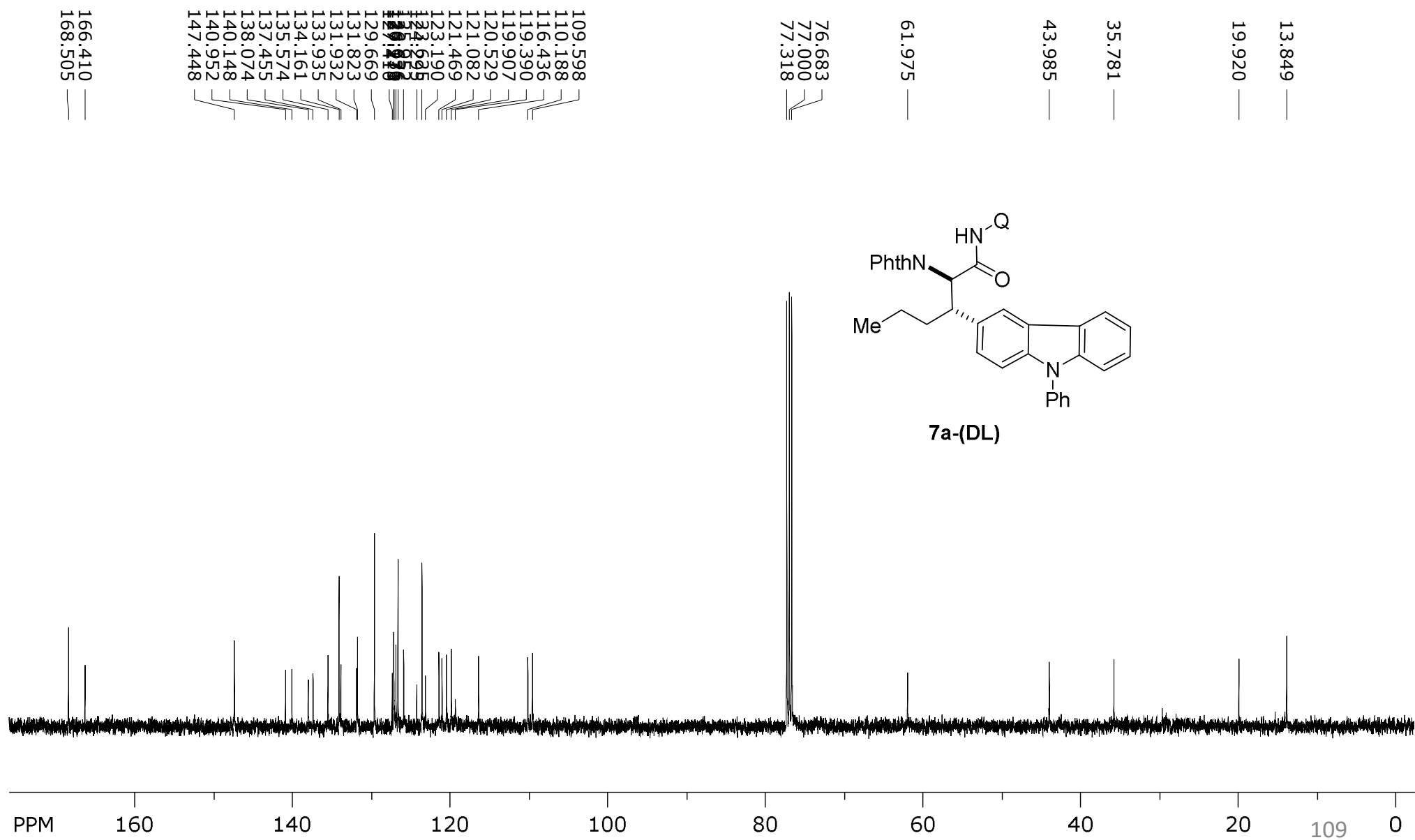
0.8101
0.8284
0.8466



7a-(DL)



SpinWorks 4: rd-41-rep-4



SpinWorks 4: rd-41-rep-4

147.448

140.148
140.952

138.074
137.455

135.574

134.161
133.935

131.823
131.932

129.669

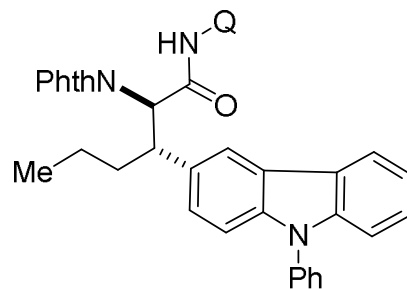
127.410
127.213
127.171
126.936
126.676
125.952

124.295
123.625
123.190

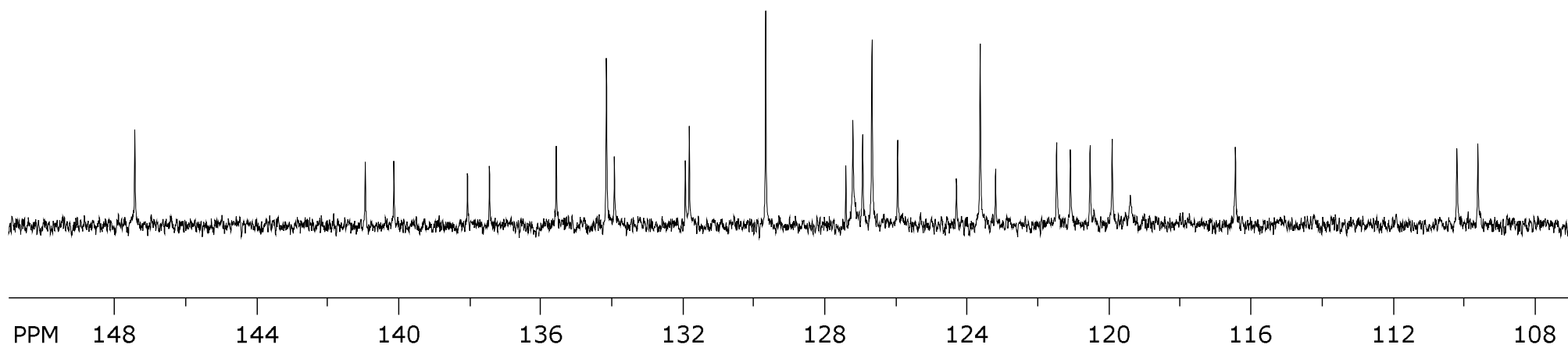
121.469
121.082
120.529
119.907
119.390

116.436

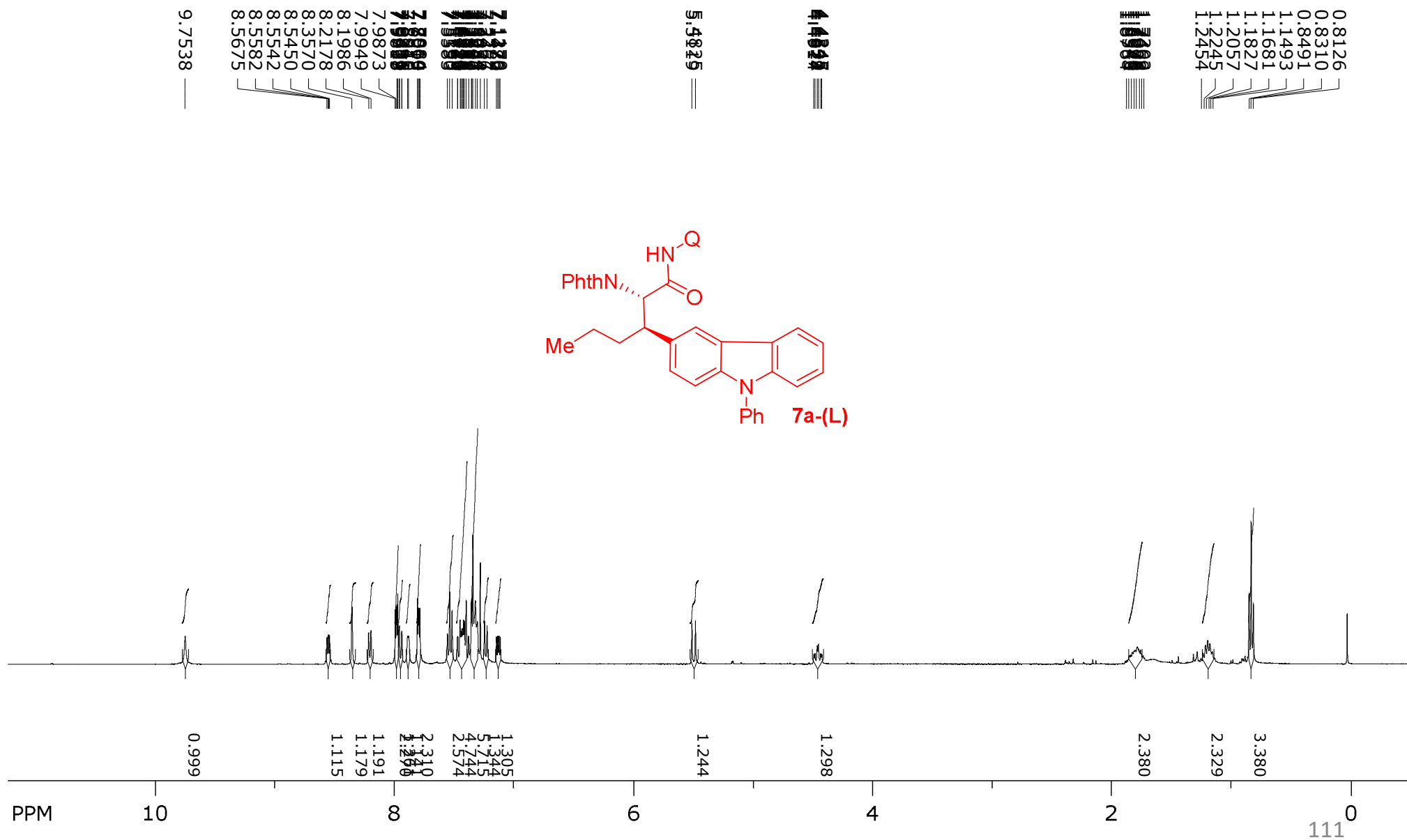
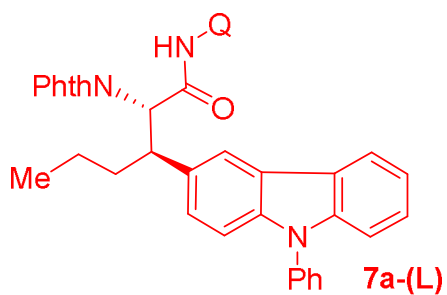
110.188
109.598



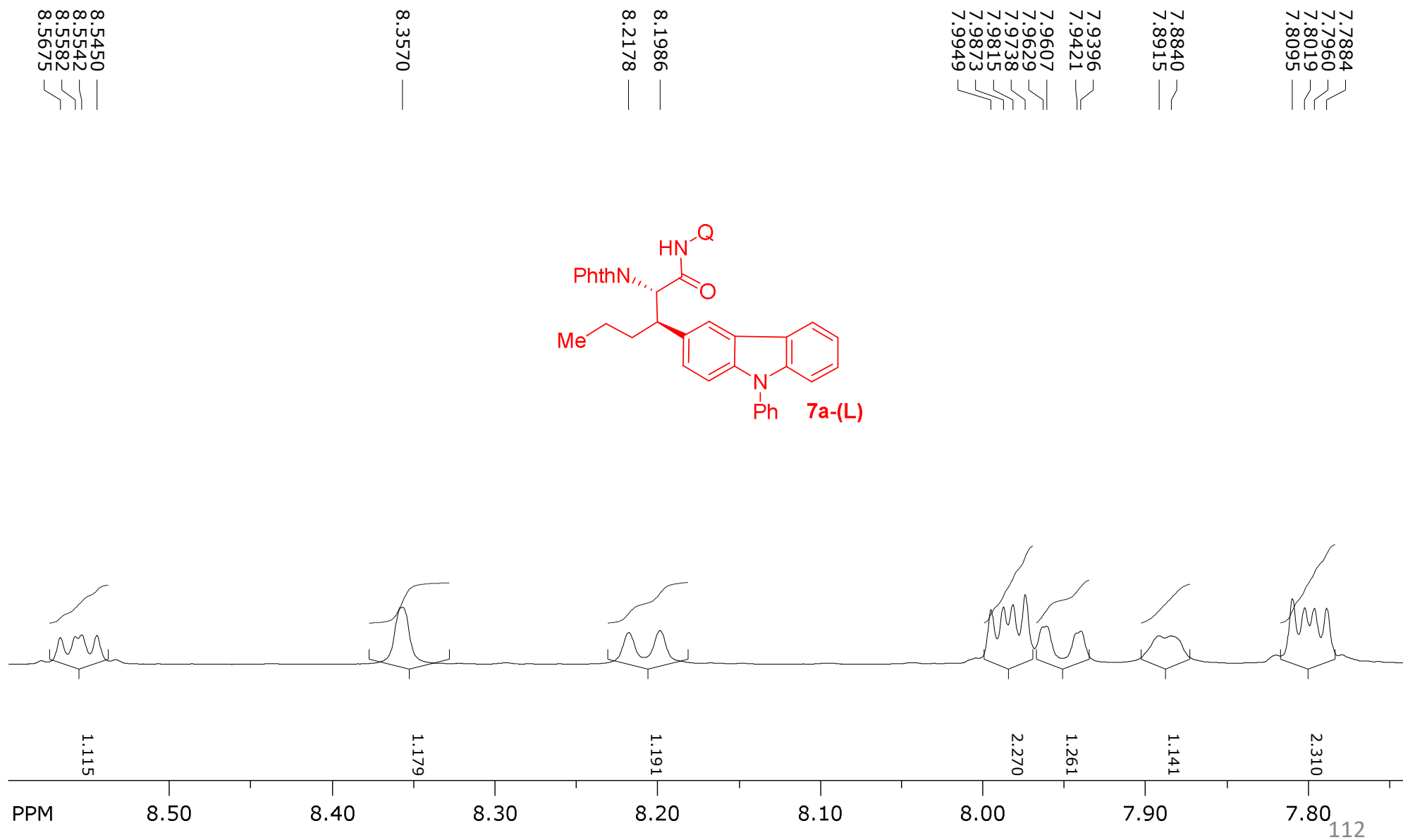
7a-(DL)



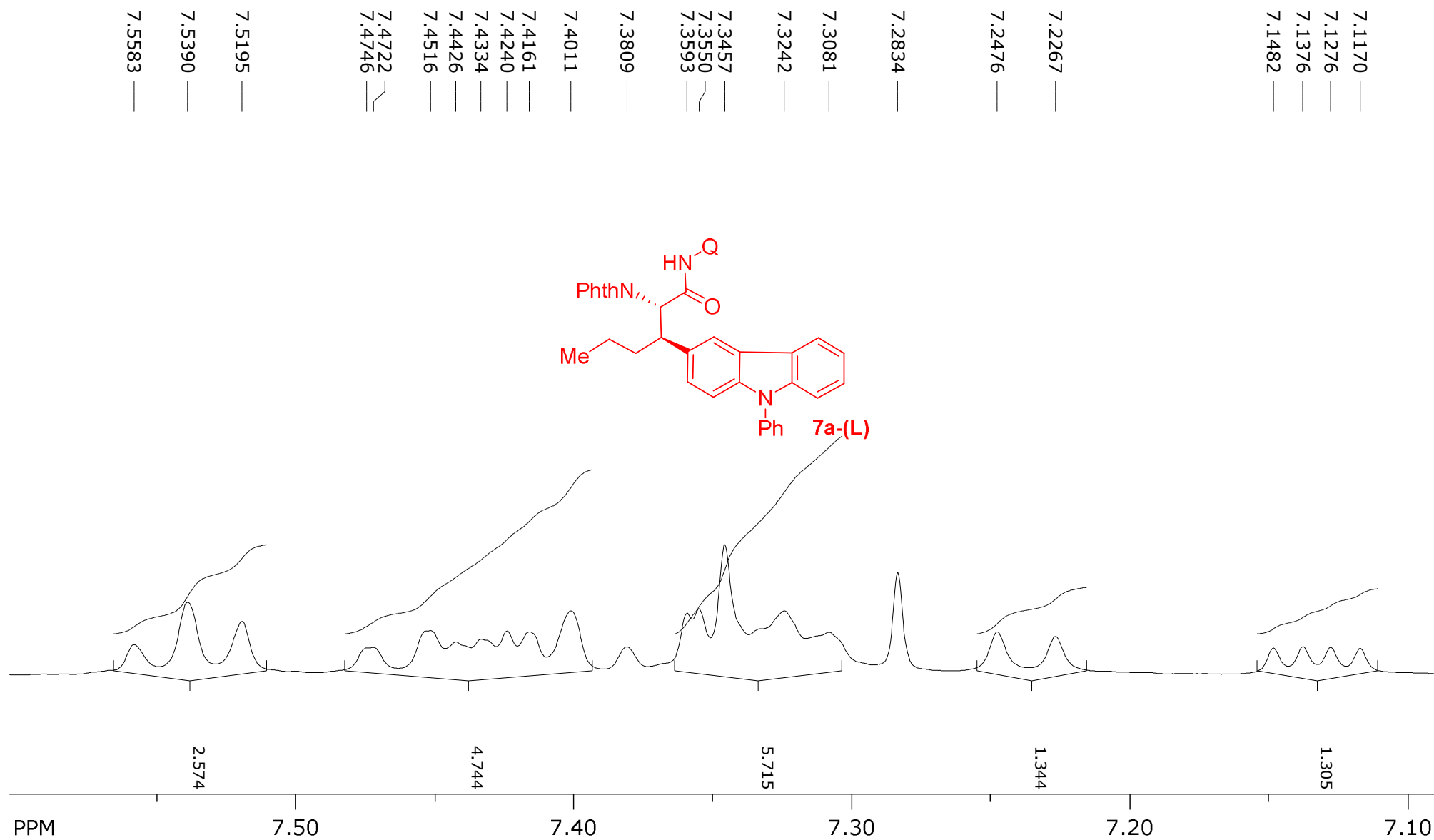
SpinWorks 4: RD 1009
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 17



SpinWorks 4: RD 1009
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 17



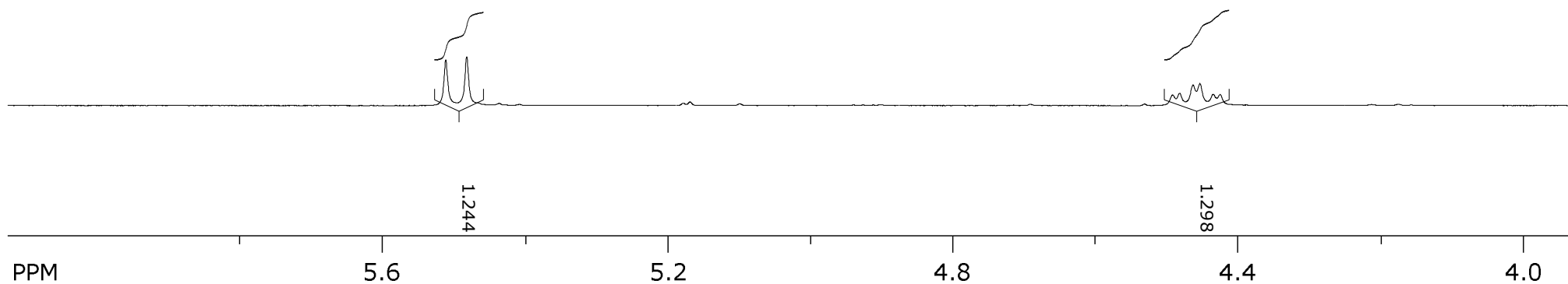
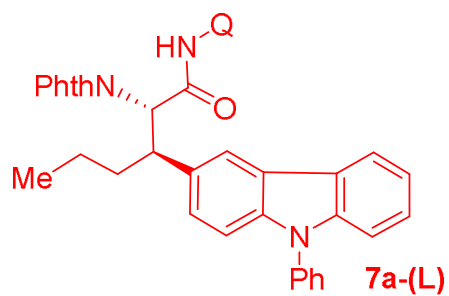
SpinWorks 4: RD 1009
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 17



SpinWorks 4: RD 1009
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 17

5.4825 —
5.5119 —

4.4247
4.4345
4.4532
4.4629
4.4817
4.4914

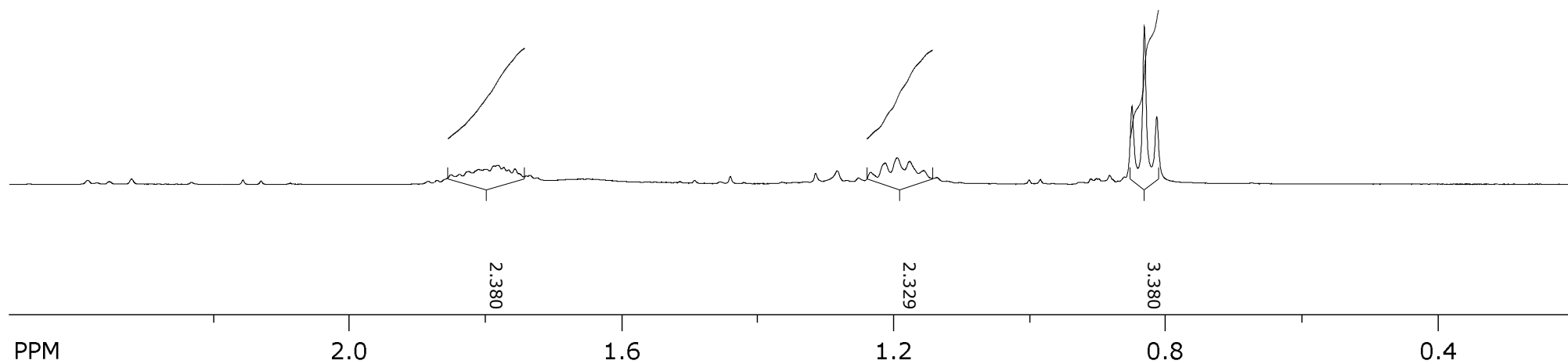
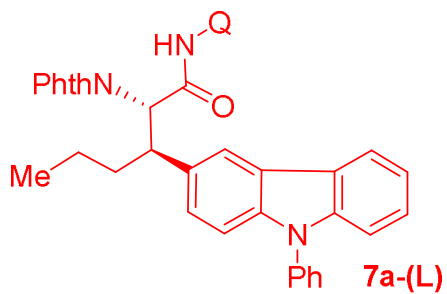


SpinWorks 4: RD 1009
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 17

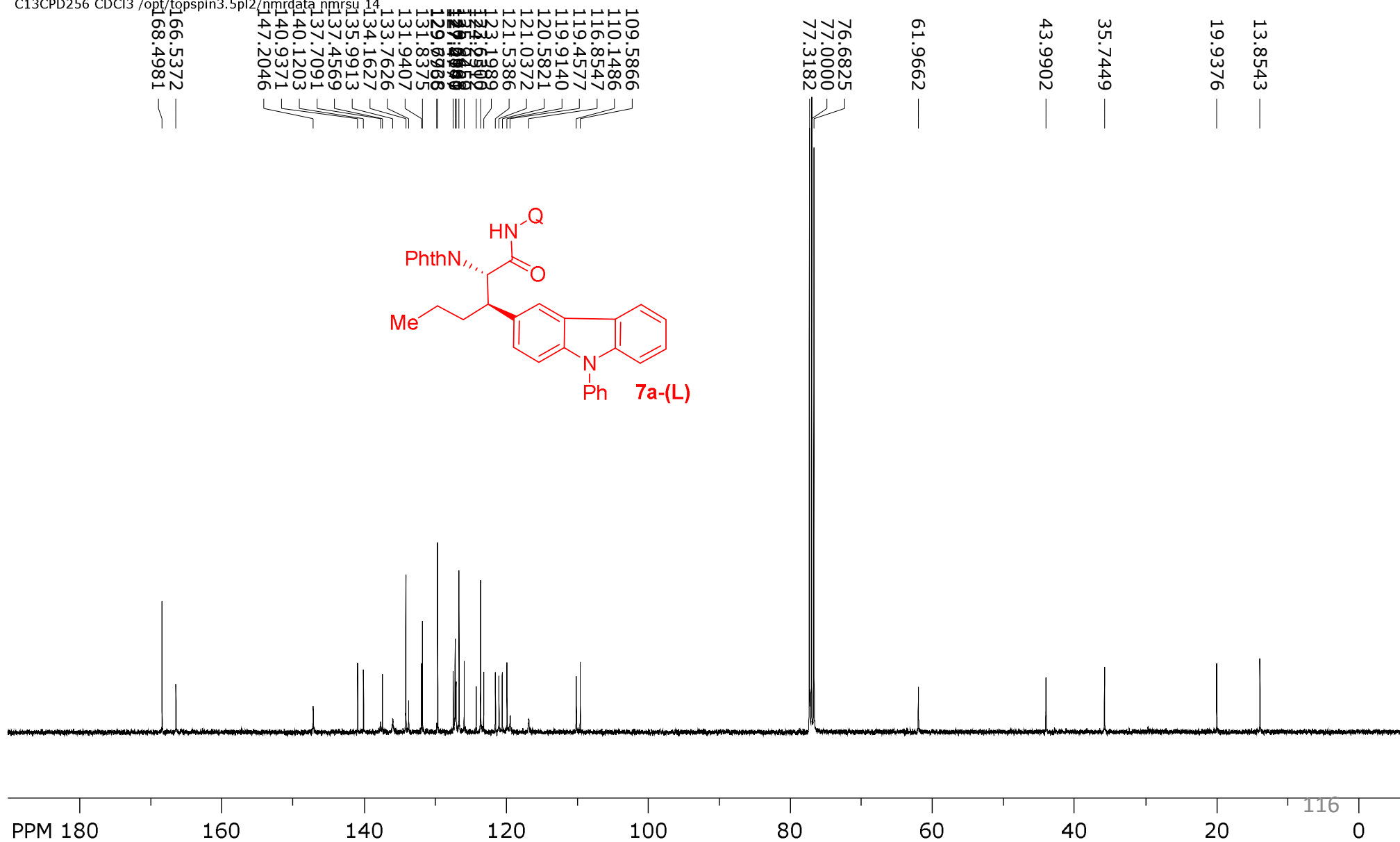
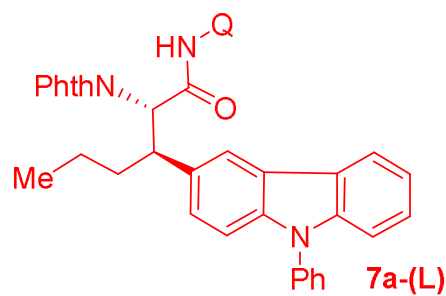
1.7302
1.7469
1.7678
1.7908
1.8096
1.8346
1.8555
1.8764

1.1493
1.1681
1.1827
1.2057
1.2245
1.2454

0.8126
0.8310
0.8491



SpinWorks 4: RD-1009
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 14



SpinWorks 4: RD-1009
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 14

168.4981 —
166.5372 —

147.2046 —

140.1203 —
140.9371 —

137.4569 —
137.7091 —

135.9913 —

134.1627 —

133.7626 —

131.9407 —

131.8375 —

129.7966 —

127.4777 —

127.2140 —

127.0881 —

126.6668 —

125.9459 —

124.2512 —

123.1989 —

121.5386 —

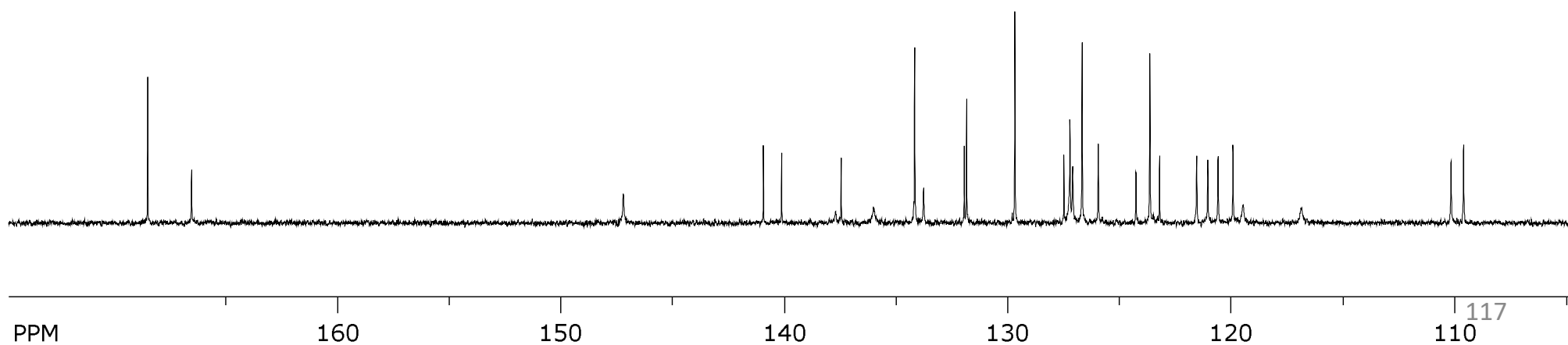
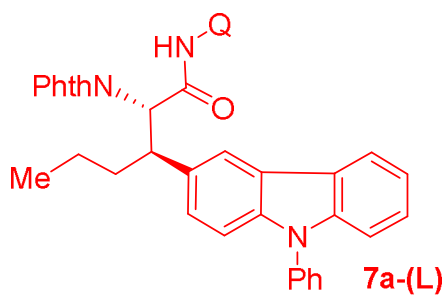
121.0372 —

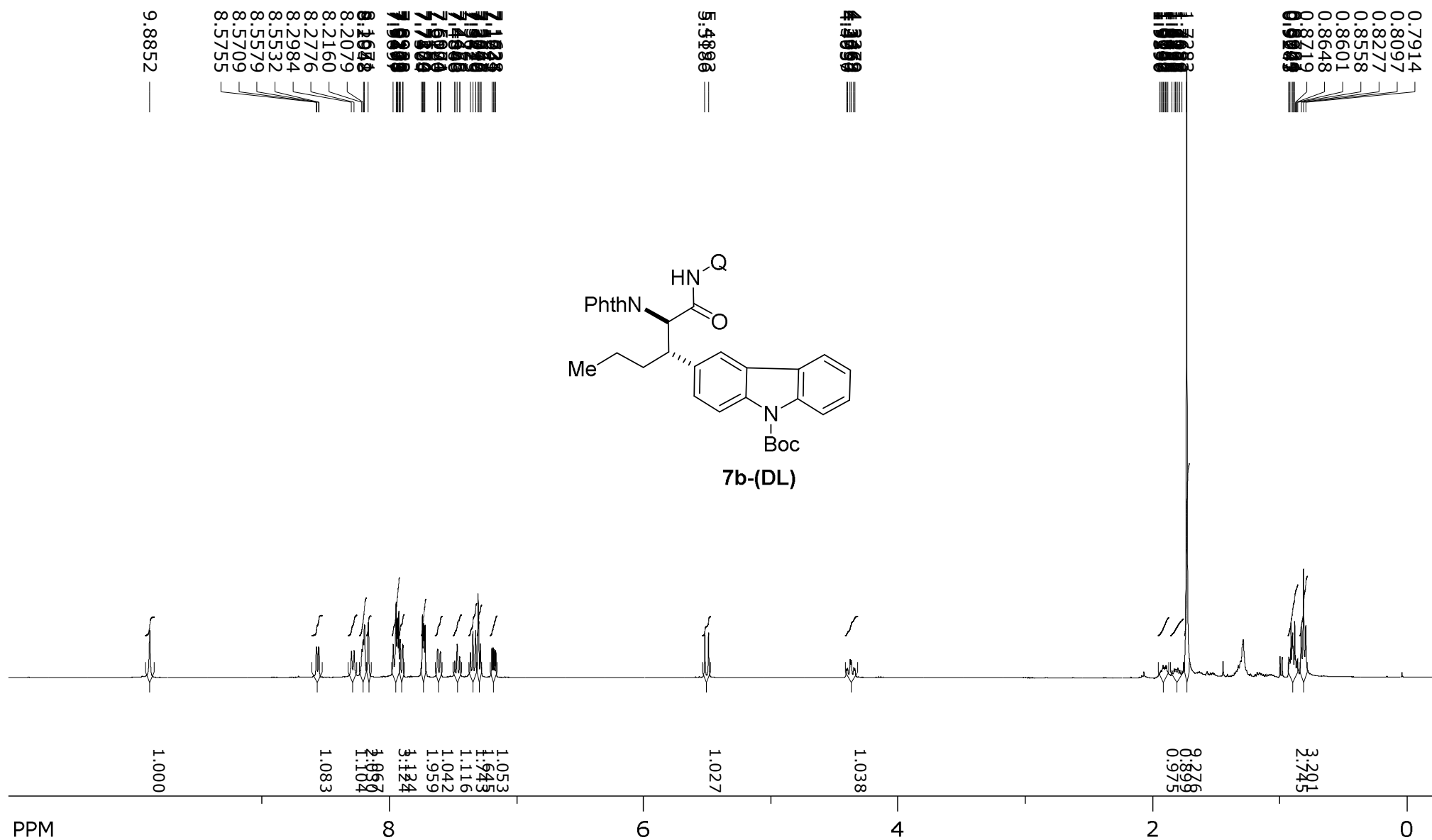
119.9140 —

119.4577 —

116.8547 —

109.5866 —
110.1486 —





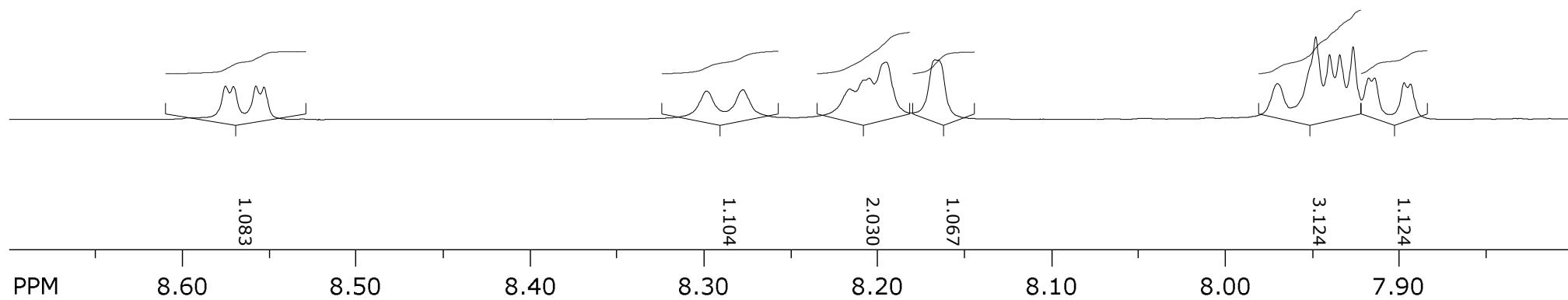
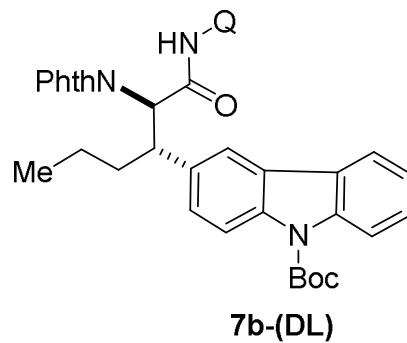
8.5532
8.5579
8.5709
8.5755

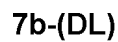
8.2776
8.2984

8.1952
8.2048
8.2079
8.2160

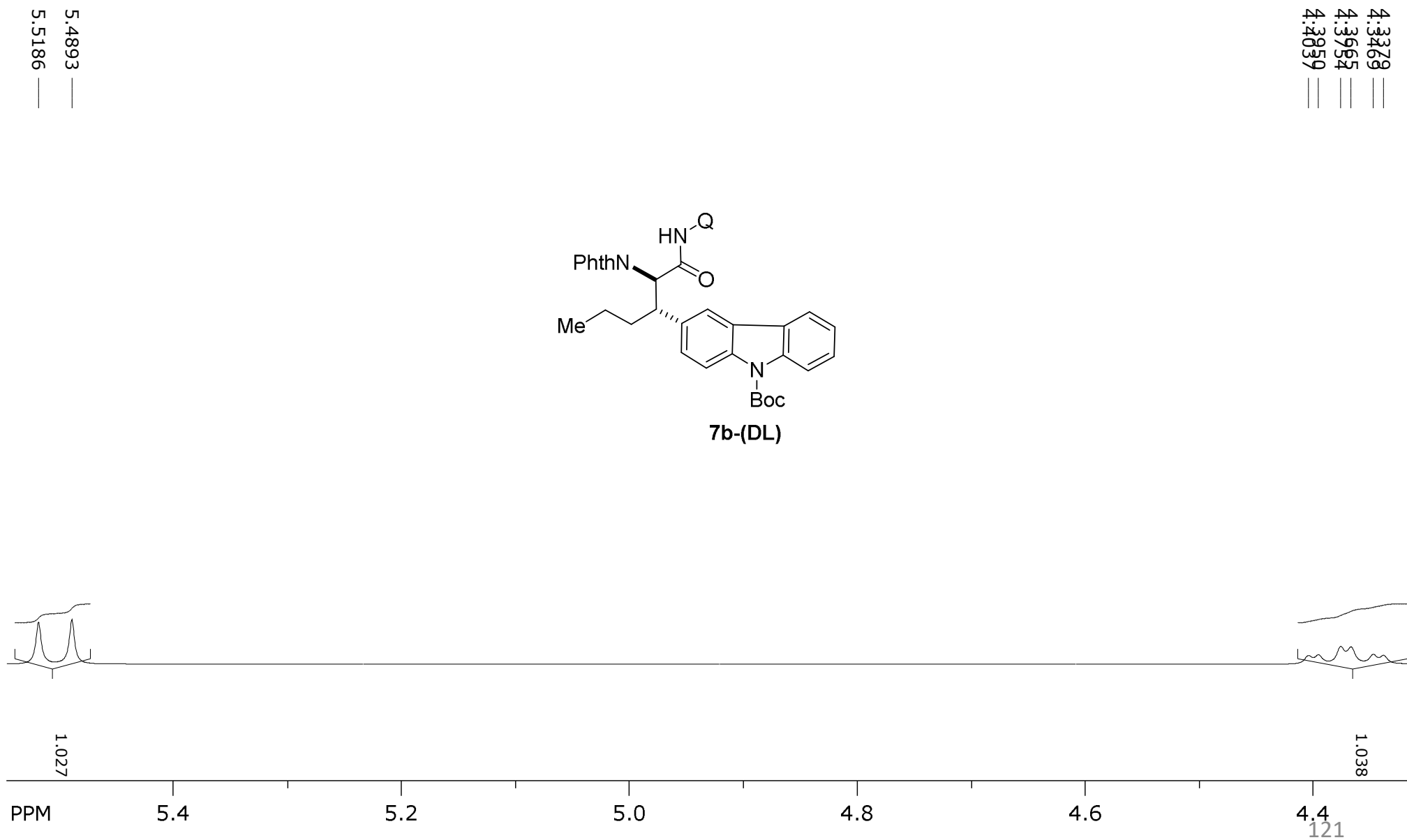
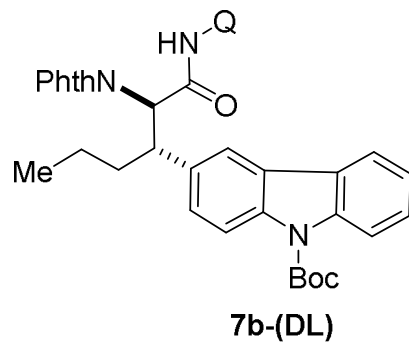
8.1671

7.8932
7.8968
7.9139
7.9173
7.9263
7.9338
7.9398
7.9477
7.9697





SpinWorks 4: rd 142

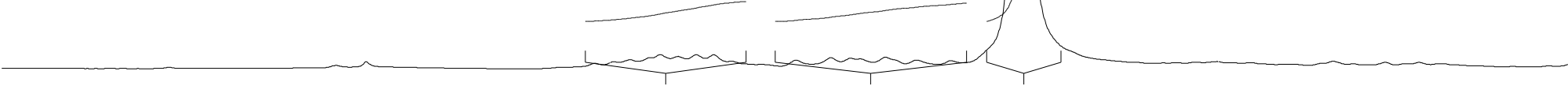
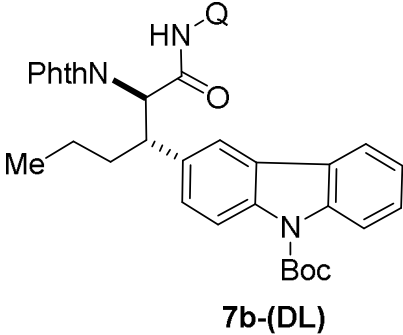


1.8758
1.8860
1.8952
1.9045
1.9137
1.9189
1.9296
1.9390

1.8432

1.8258
1.8157
1.8108
1.7978
1.7829
1.7652

1.7283

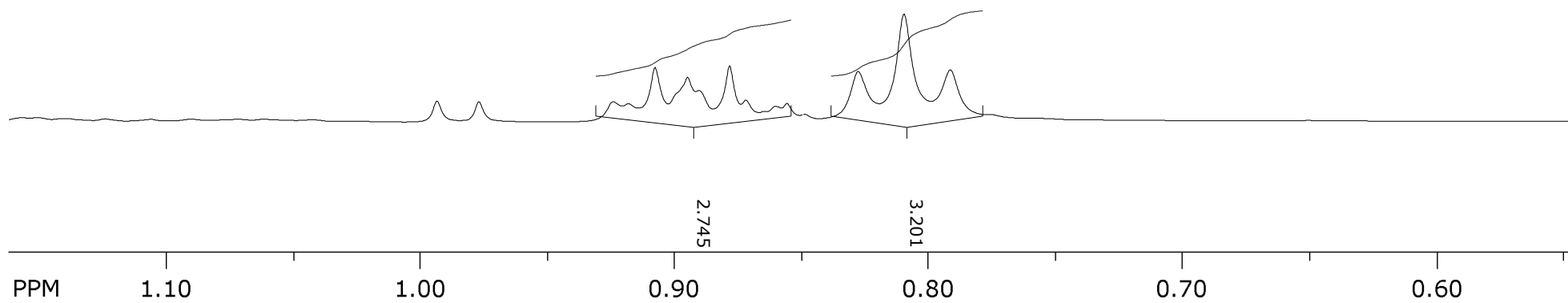
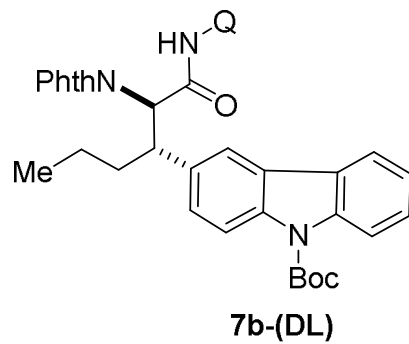


0.975

0.899

9.276

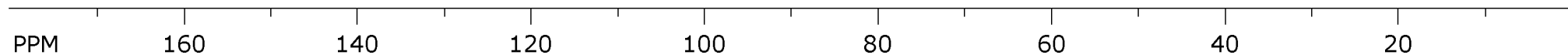
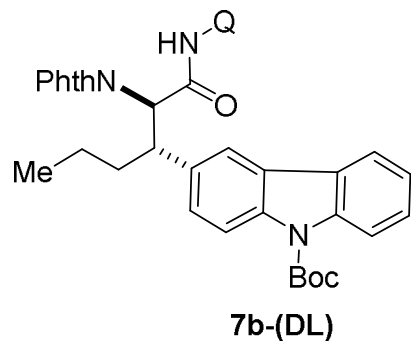
0.7914
0.8097
0.8277
0.8558
0.8601
0.8648
0.8719
0.8784
0.8904
0.8949
0.9077
0.9181
0.9243



SpinWorks 4: RD 103
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata/nmrslu 27

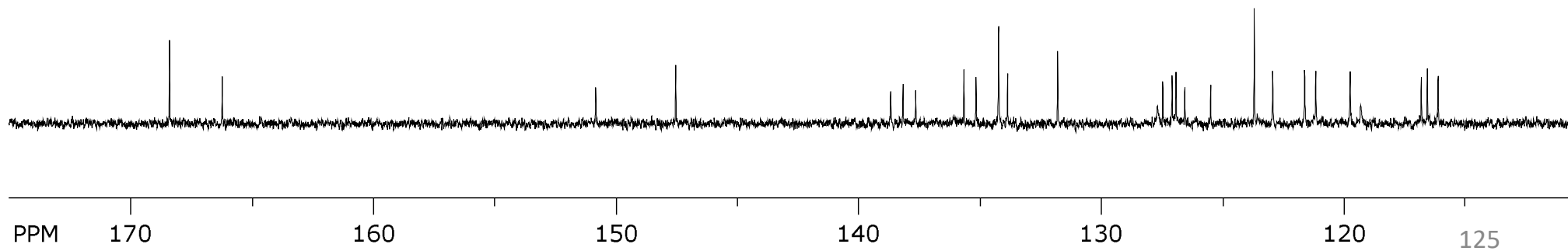
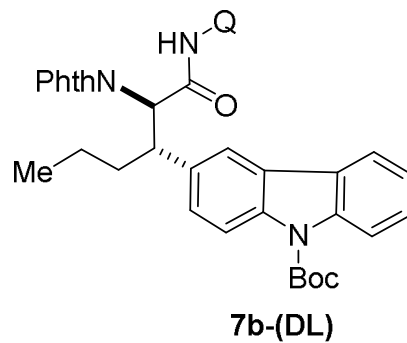
166.2513
166.4246
150.8452
147.5500
138.6828
138.1727
137.6534
135.6651
135.1614
134.2305
133.8633
133.7944
131.7944
127.6805
127.4598
126.9746
125.4857
123.6860
122.9275
121.6121
121.1534
119.7339
119.2959
116.7999
116.5476
116.1036

83.7630
77.3181
77.0000
76.6828
61.7320
43.8410
35.4239
28.2937
19.8950
13.8229

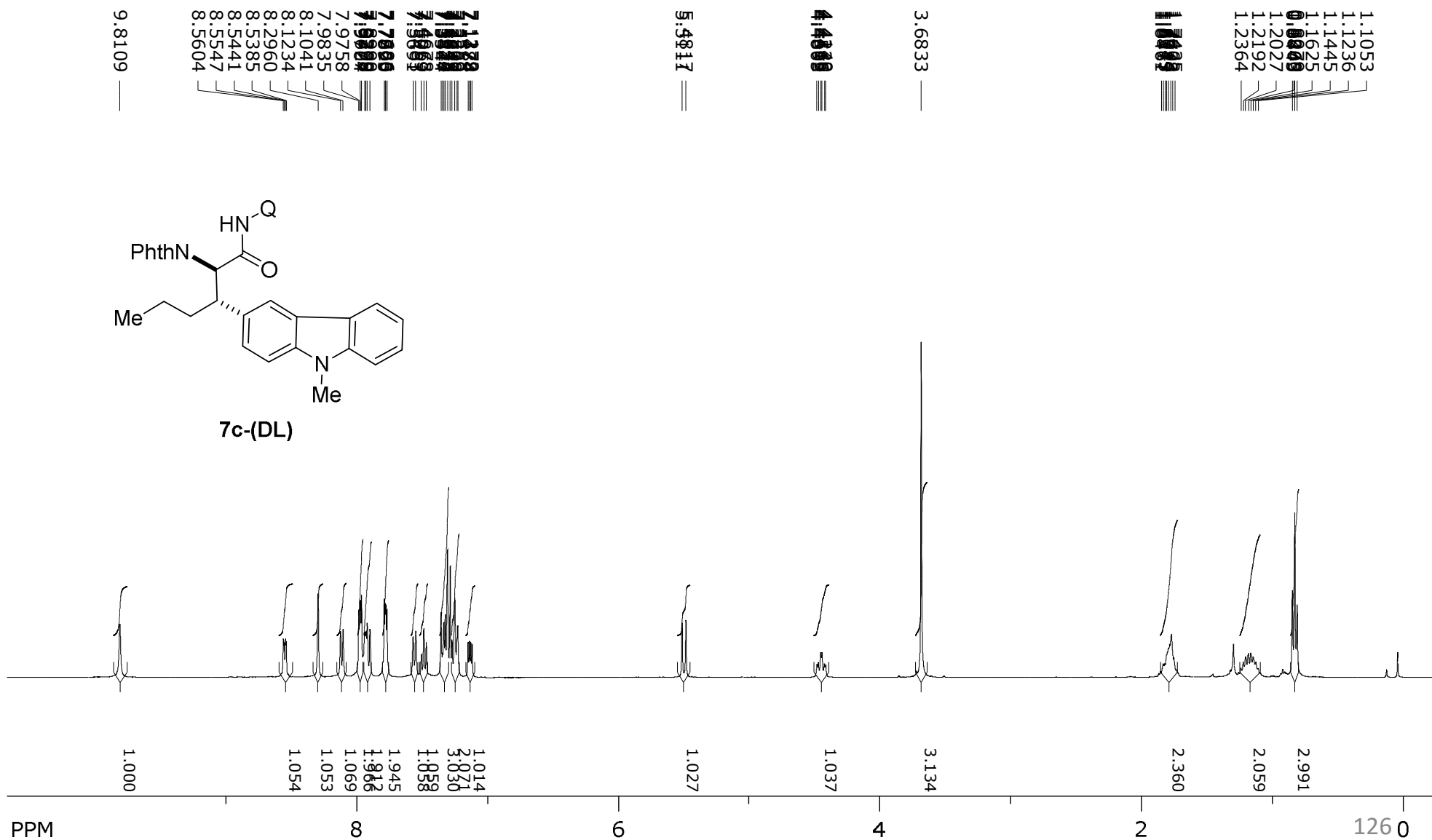


SpinWorks 4: RD 103
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 27

168.4246	150.8452	147.5500	138.6828	137.6534	135.6651	134.2305	133.8633	131.7944	127.6805	127.4596	127.0770	126.9144	126.5525	125.4857	123.6860	122.9275	121.6121	121.1534	119.7339	119.2959	116.7999	116.5476	116.1036
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—



SpinWorks 4: RD 134 REP
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 20



SpinWorks 4: RD 134 REP
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 20

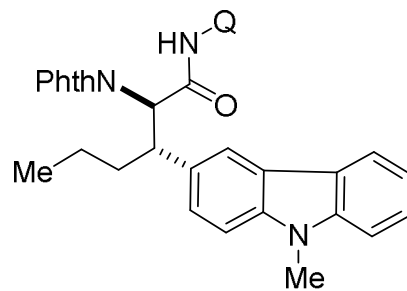
8.5385
 8.5441
 8.5547
 8.5604

8.2960

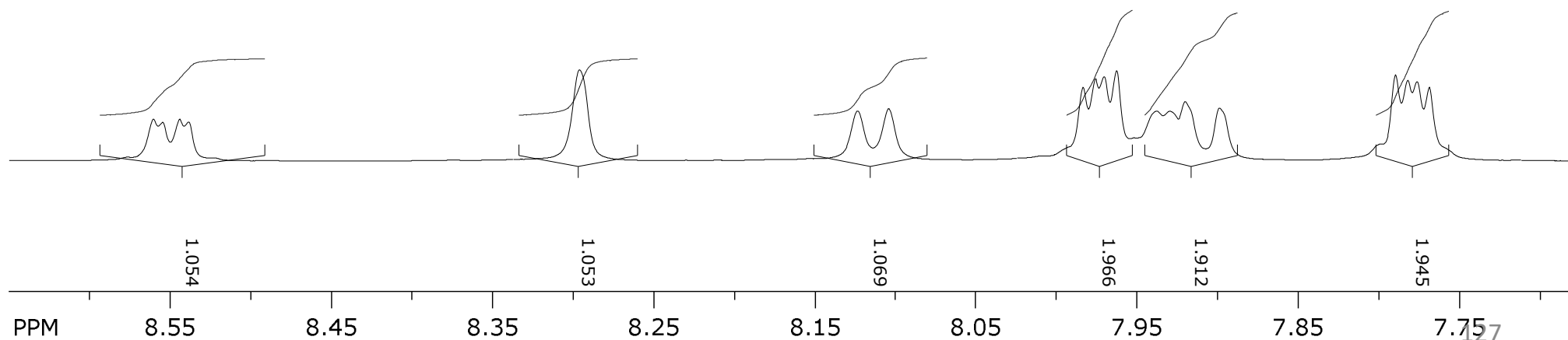
8.1041
 8.1234

7.8990
 7.9200
 7.9298
 7.9378
 7.9627
 7.9704
 7.9758
 7.9835

7.7686
 7.7763
 7.7820
 7.7895

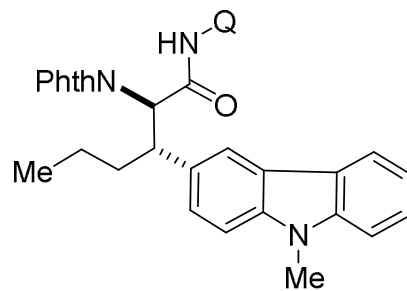


7c-(DL)

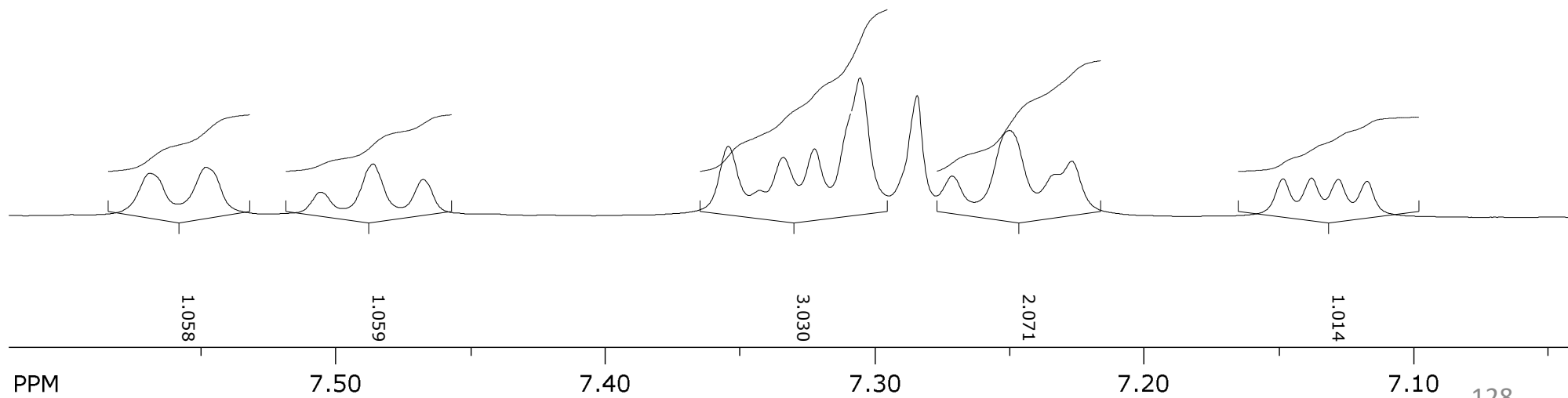


SpinWorks 4: RD 134 REP
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 20

7.1172 —
7.1279 —
7.1378 —
7.1484 —
7.2269 —
7.2322 —
7.2500 —
7.2713 —
7.2843 —
7.3055 —
7.3224 —
7.3340 —
7.3427 —
7.3544 —
7.4678 —
7.4863 —
7.5059 —
7.5483 —
7.5691 —



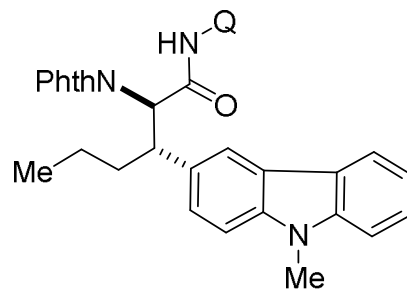
7c-(DL)



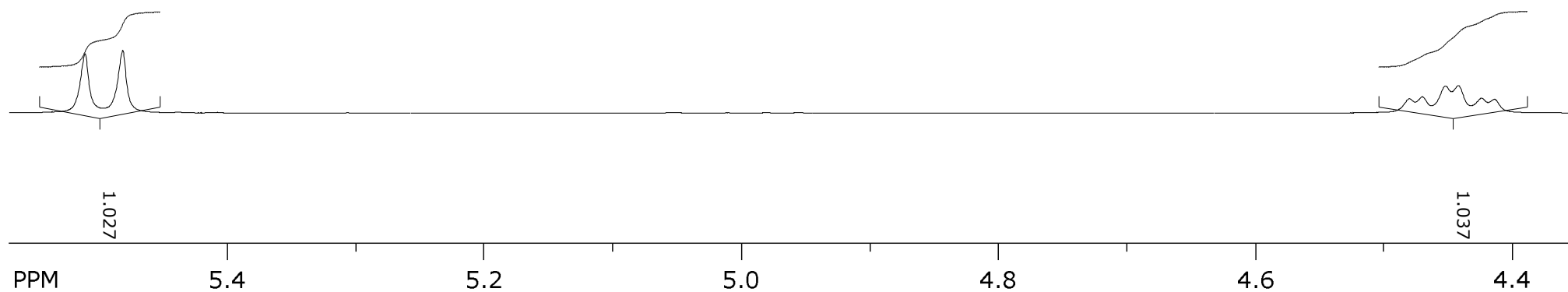
SpinWorks 4: RD 134 REP
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 20

5.5111
5.4817

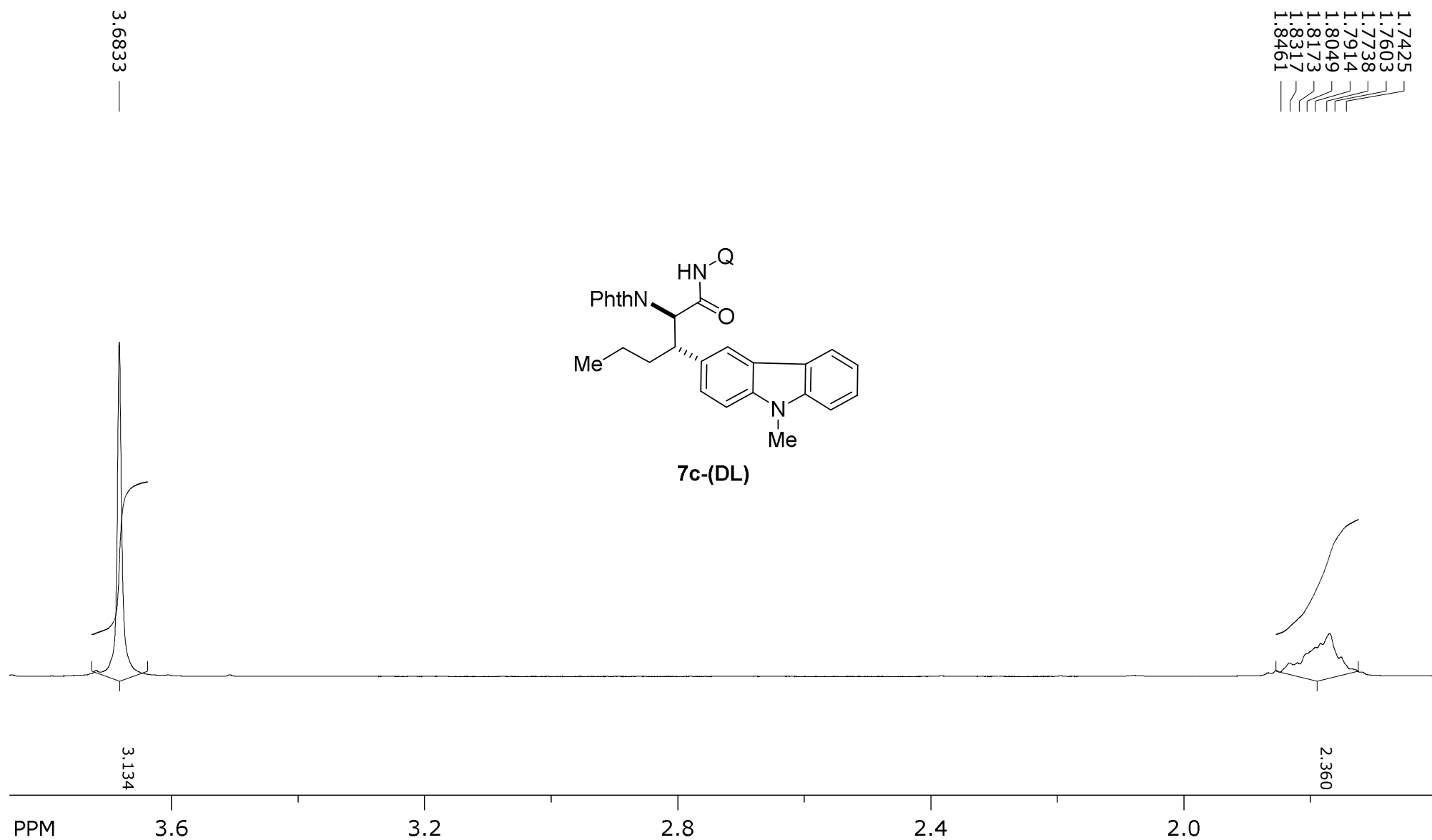
4.4140
4.4223
4.4416
4.4515
4.4692
4.4805



7c-(DL)



SpinWorks 4: RD 134 REP
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 20

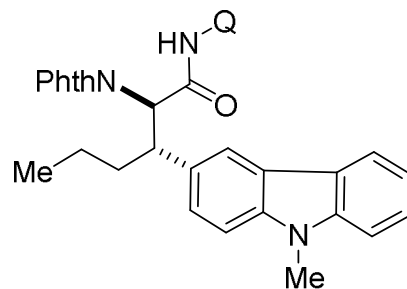


1.7425
1.7603
1.7738
1.7914
1.8049
1.8173
1.8317
1.8461

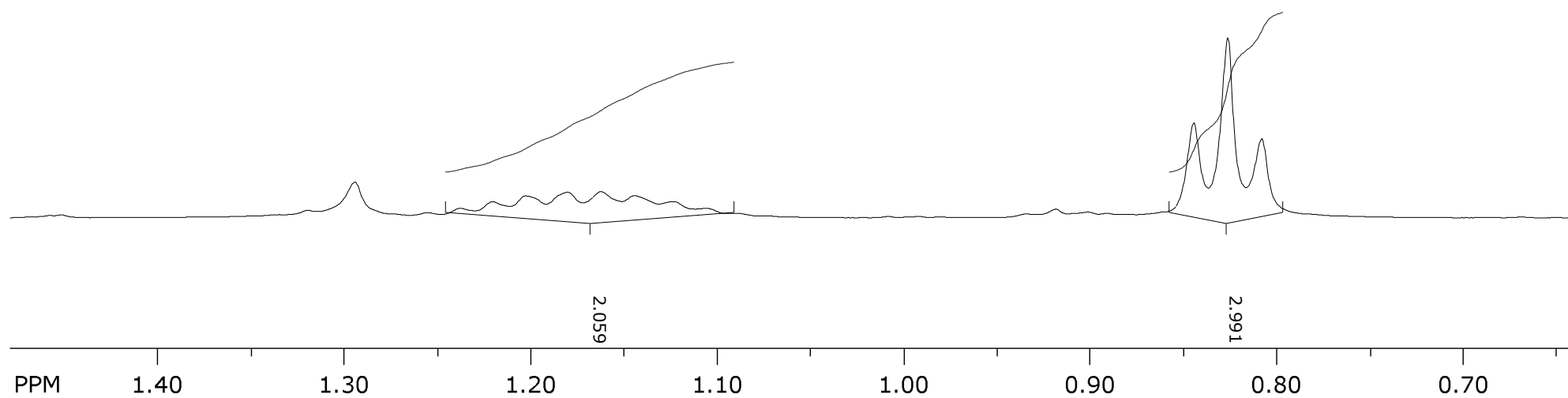
SpinWorks 4: RD 134 REP
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 20

1.1053 —
1.1236 —
1.1445 —
1.1625 —
1.1805 —
1.2027 —
1.2192 —
1.2364 —

0.8079 —
0.8260 —
0.8443 —

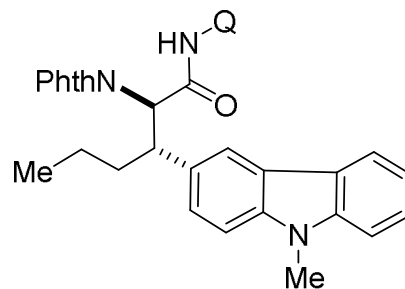


7c-(DL)

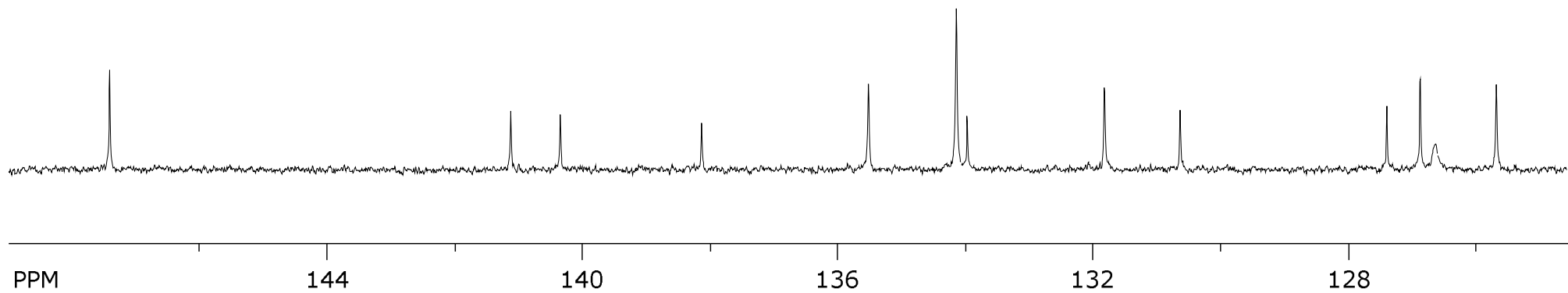
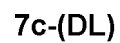


Chemical structure of **7c-(DL)** is shown above the spectrum. The structure is a triarylamine derivative with a central nitrogen atom bonded to a phenyl group, a 2-methyl-2-phenylpropan-1-yl group, and a 2-methyl-2-phenylpropan-1-yl group. The spectrum displays the ¹³C NMR peaks for this compound, with the following chemical shifts (ppm) labeled above the corresponding peaks:

Chemical Shift (ppm)
166.449
168.476
147.412
141.125
140.352
138.136
135.518
134.140
133.971
131.819
130.634
127.390
126.867
125.675
123.947
123.546
122.546
121.460
121.020
120.443
118.776
116.474
108.842
108.249
77.318
77.000
76.683
61.921
43.978
35.794
28.849
19.905
13.841



7c-(DL)

[illegible]

SpinWorks 4: RD 134 REP
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2

123.547
123.602
—
—

122.546
—

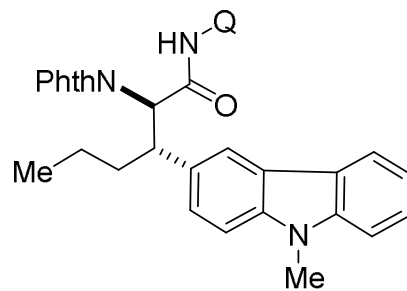
121.460
—

121.020
—

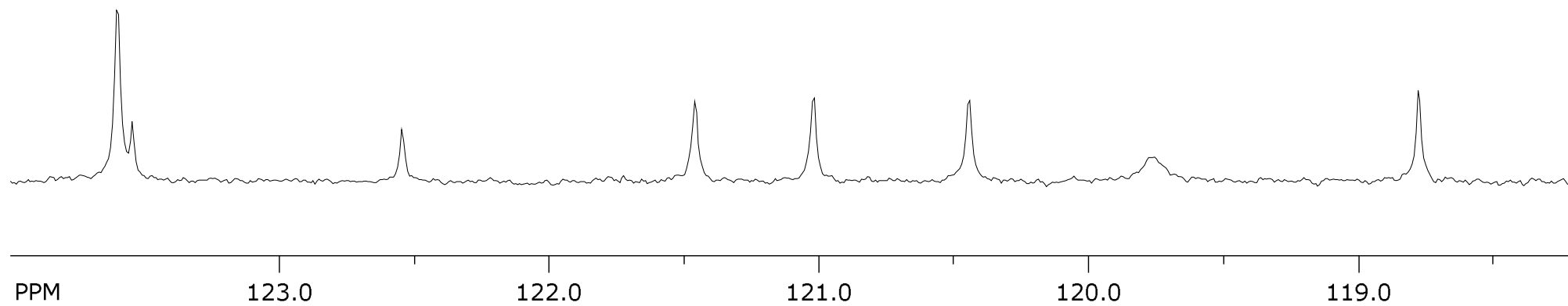
120.443
—

119.757
—

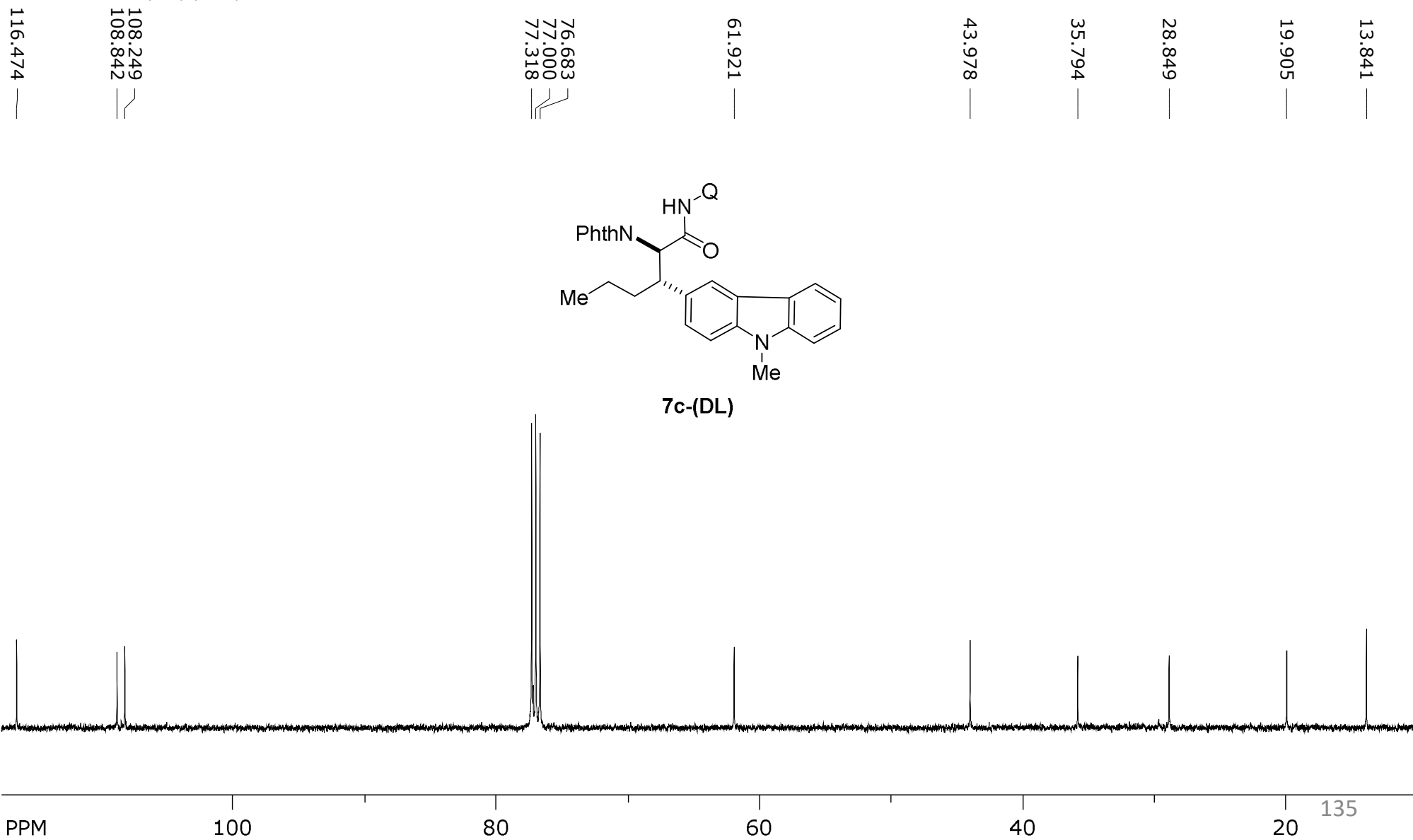
118.776
—



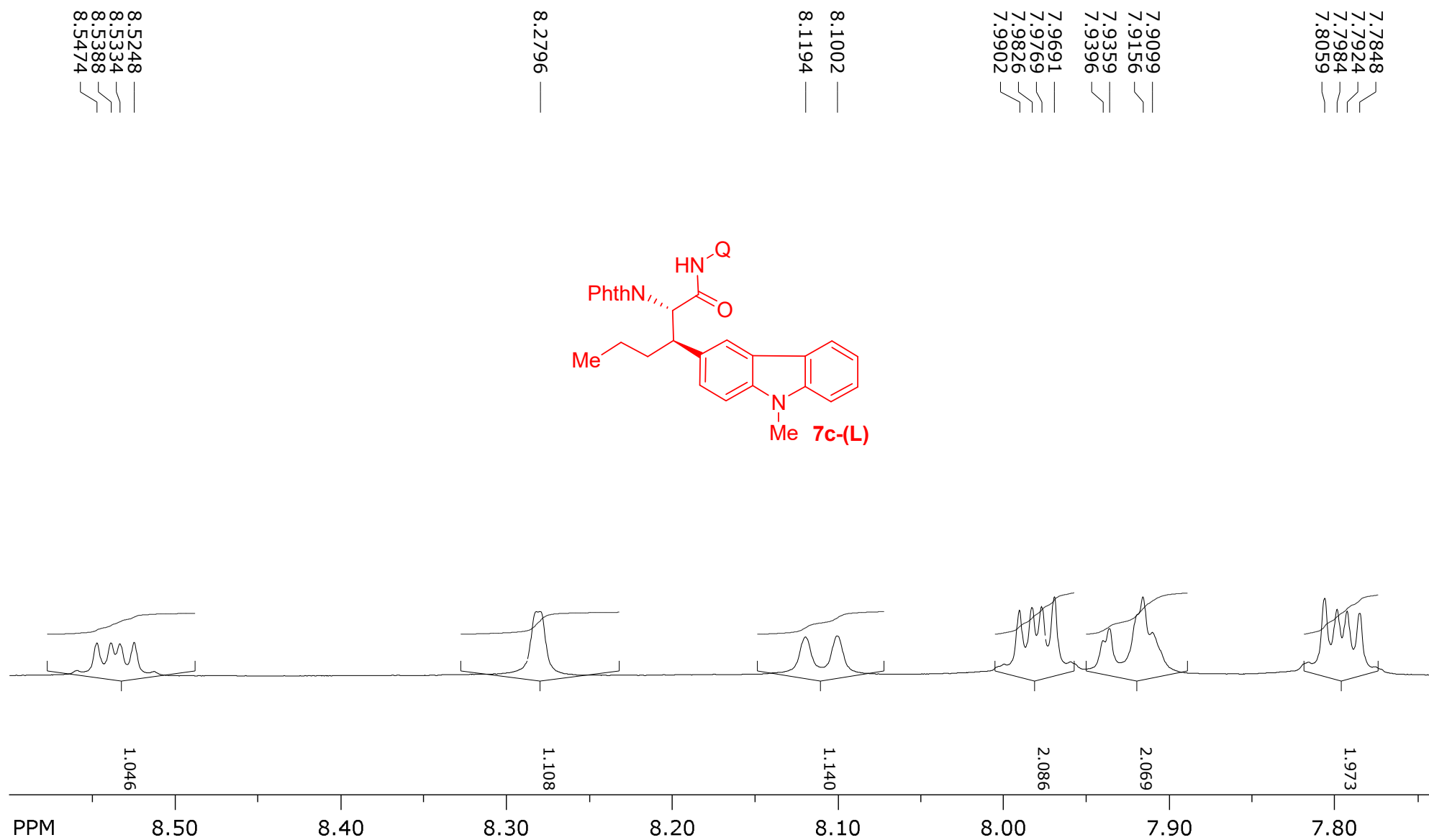
7c-(DL)



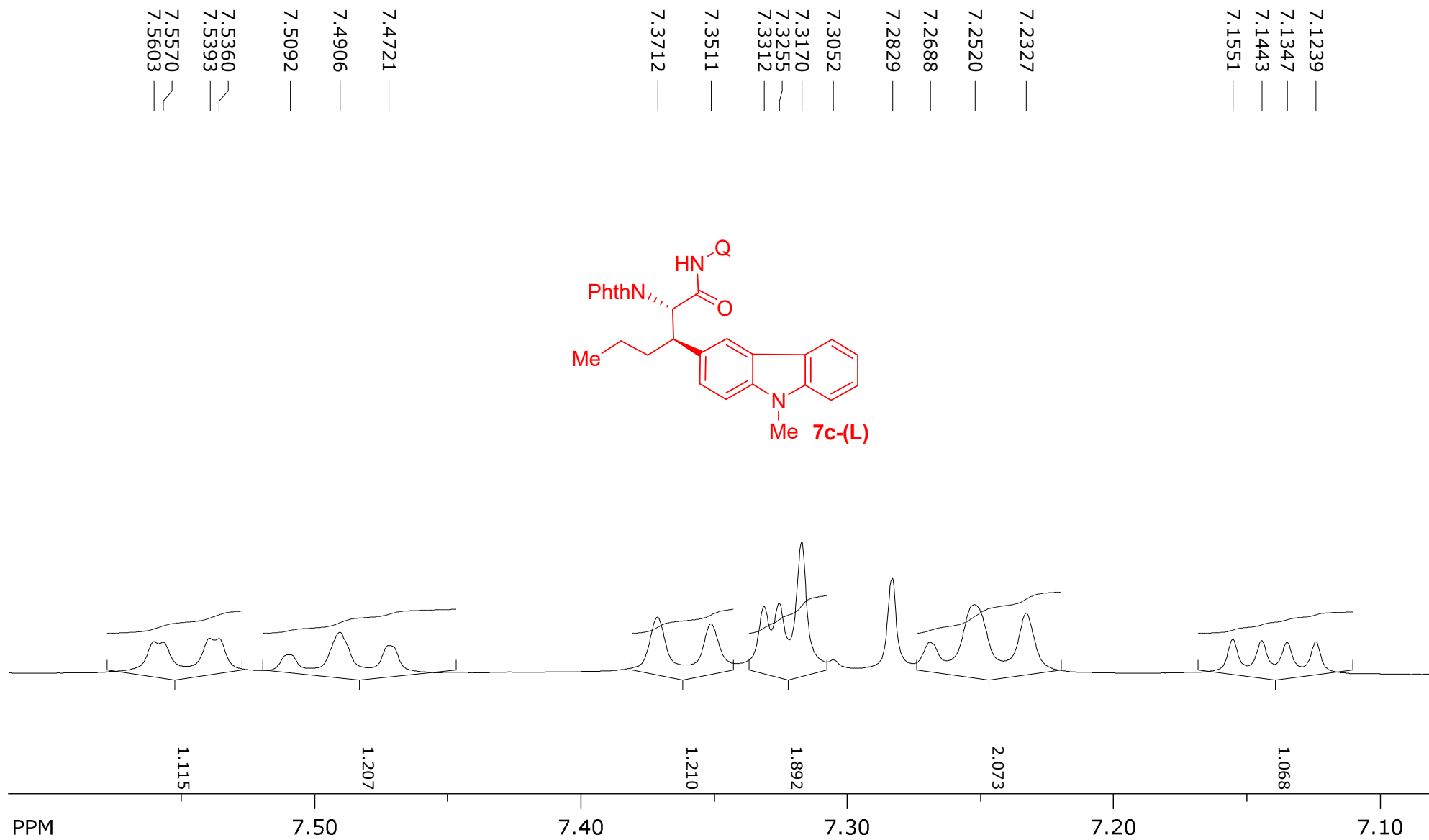
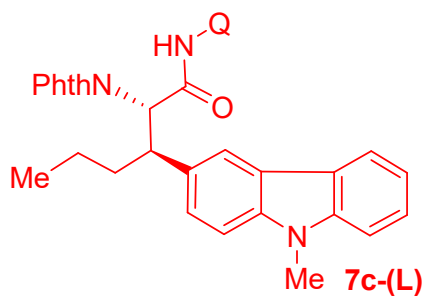
SpinWorks 4: RD 134 REP
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2



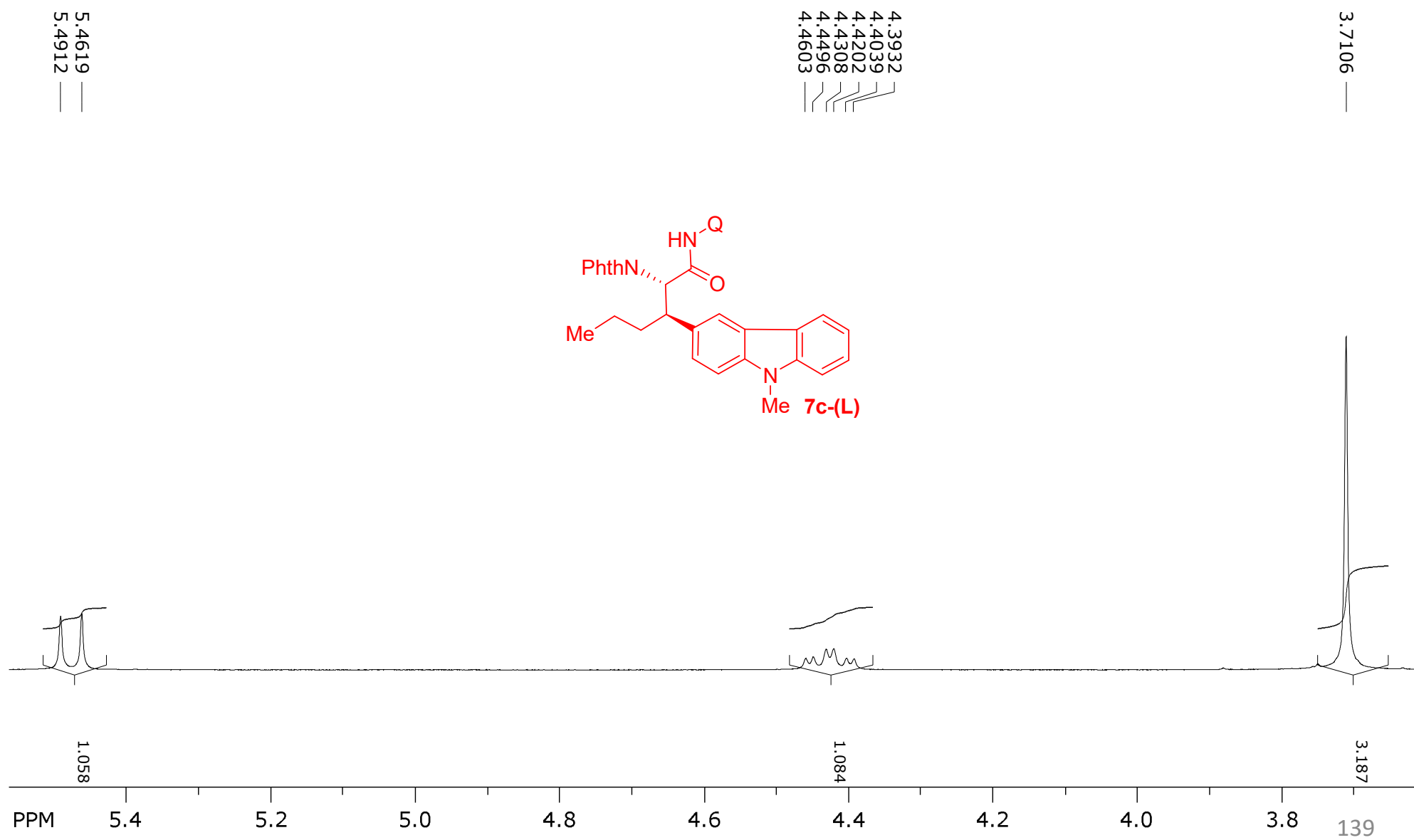
SpinWorks 4: rd 476 rep 1



SpinWorks 4: rd 476 rep 1



SpinWorks 4: rd 476 rep 1

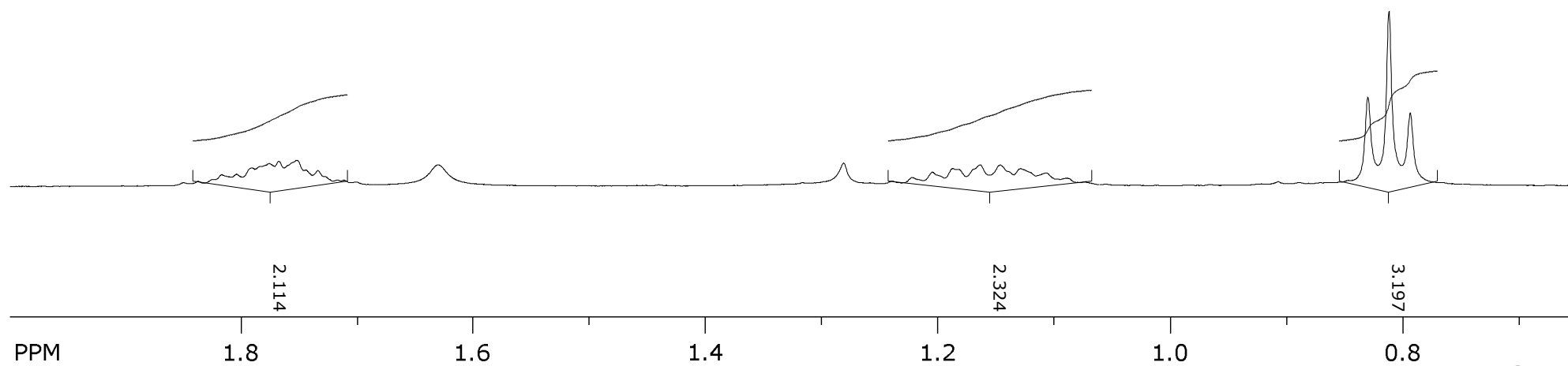
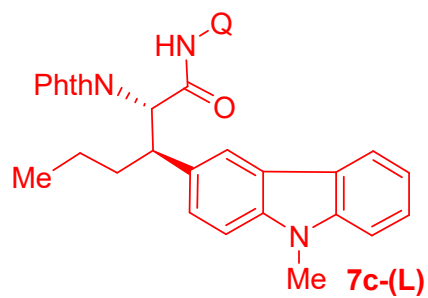


SpinWorks 4: rd 476 rep 1

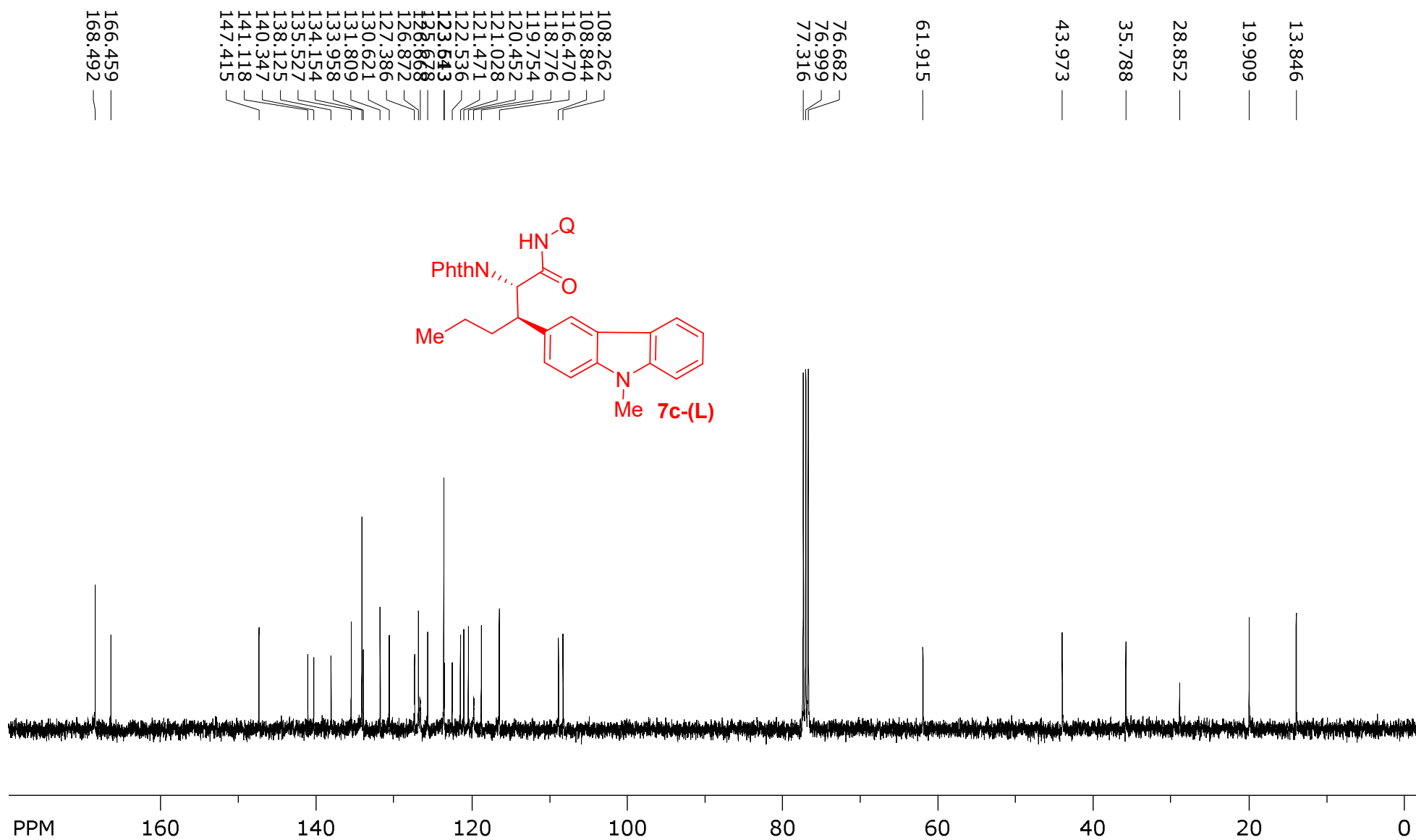
1.7265
1.7443
1.7611
1.7757
1.7917
1.8065
1.8204

1.0899
1.1087
1.1284
1.1459
1.1632
1.1828
1.1996
1.2184

0.7927
0.8110
0.8293

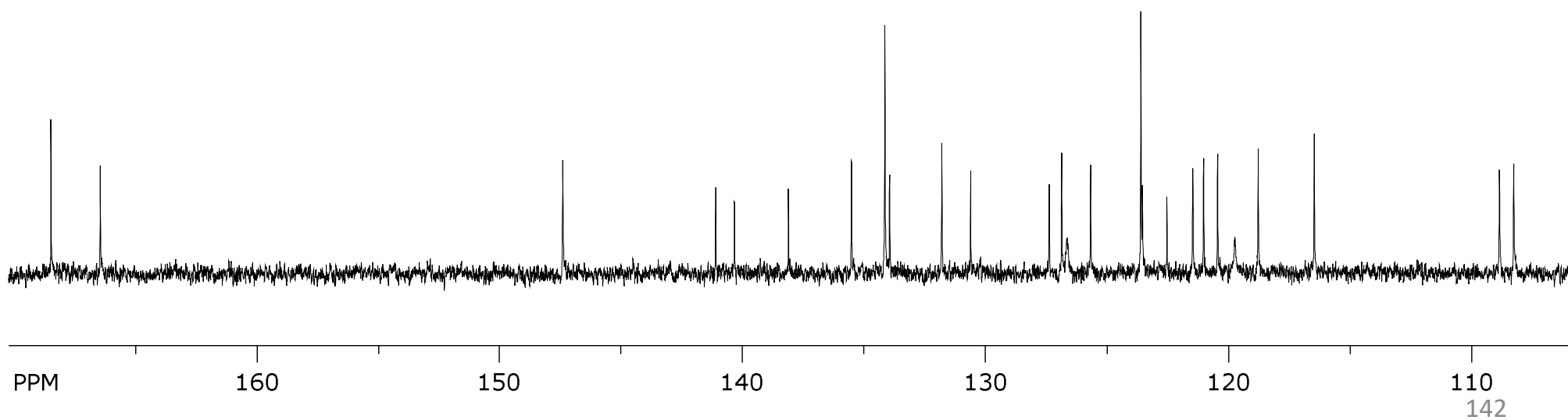
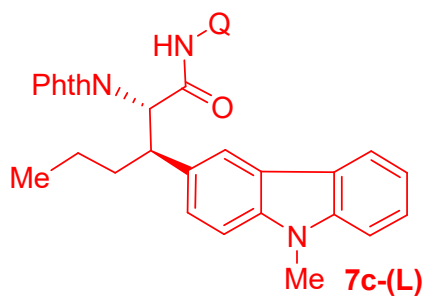


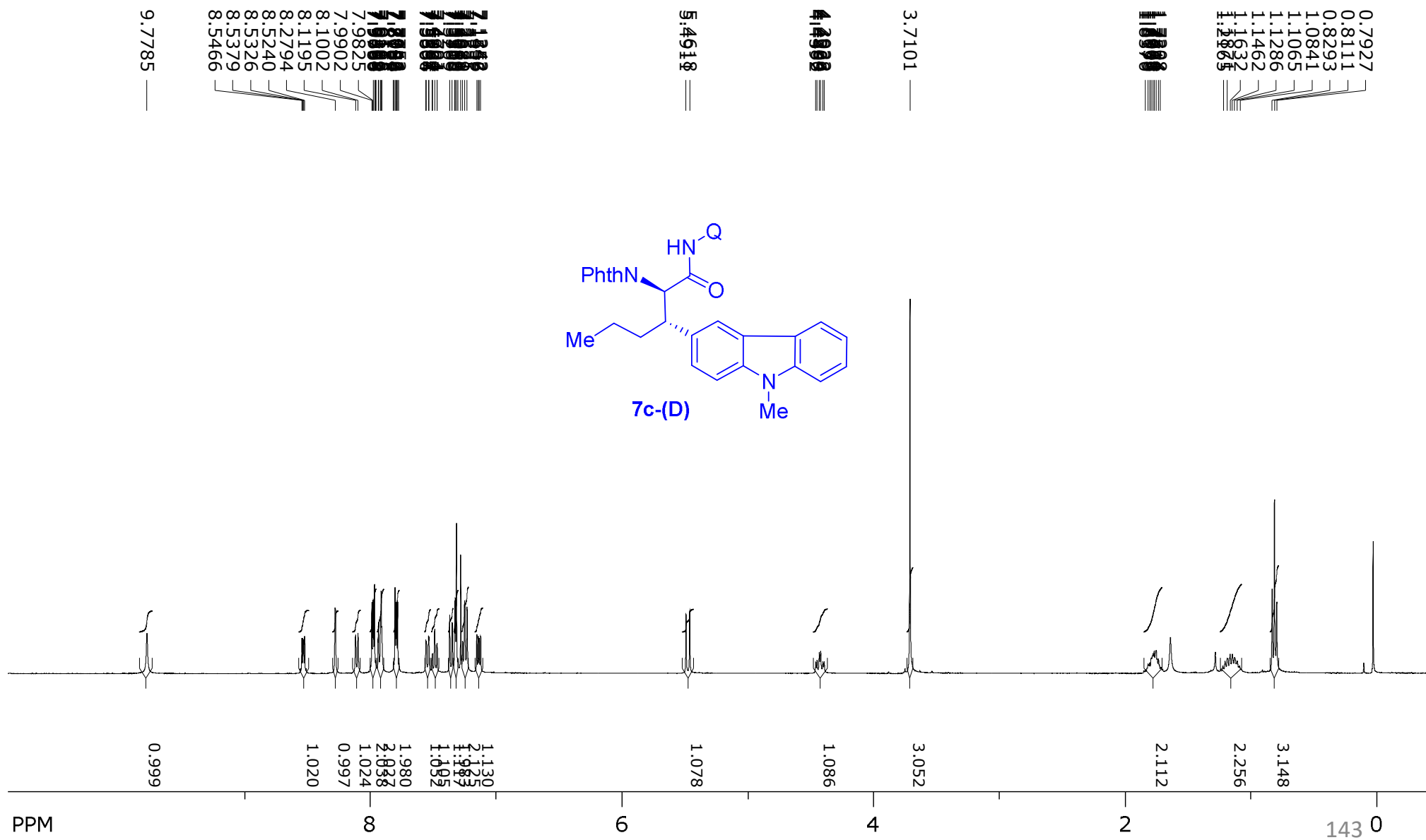
SpinWorks 4: rd 476



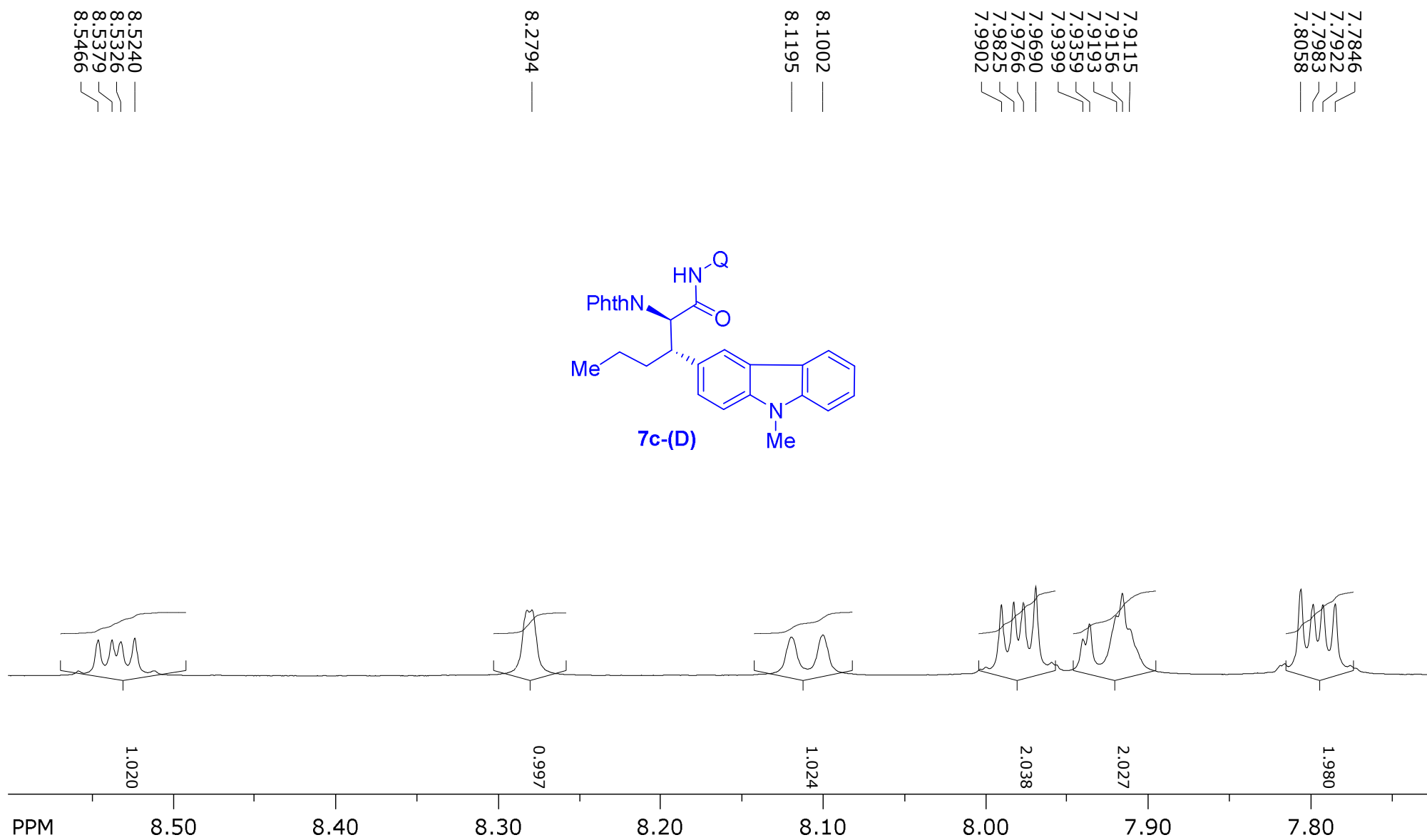
SpinWorks 4: rd 476

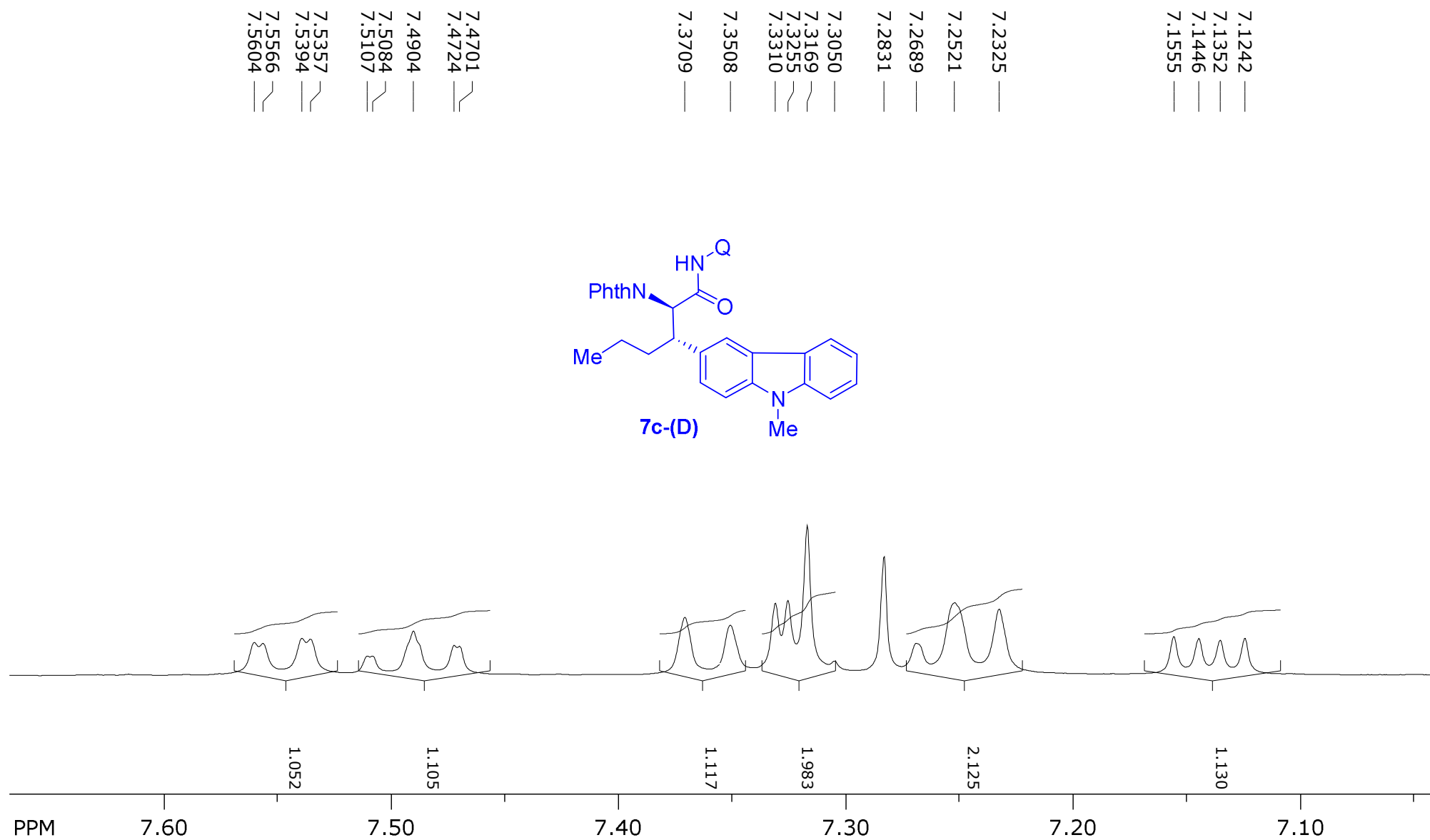
108.262 —
108.844 —
116.470 —
118.776 —
119.754 —
120.452 —
121.028 —
121.471 —
122.536 —
123.543 —
123.613 —
125.678 —
126.668 —
126.872 —
127.386 —
130.621 —
131.809 —
133.958 —
134.154 —
135.527 —
138.125 —
140.347 —
141.118 —
147.415 —
166.459 —
168.492 —

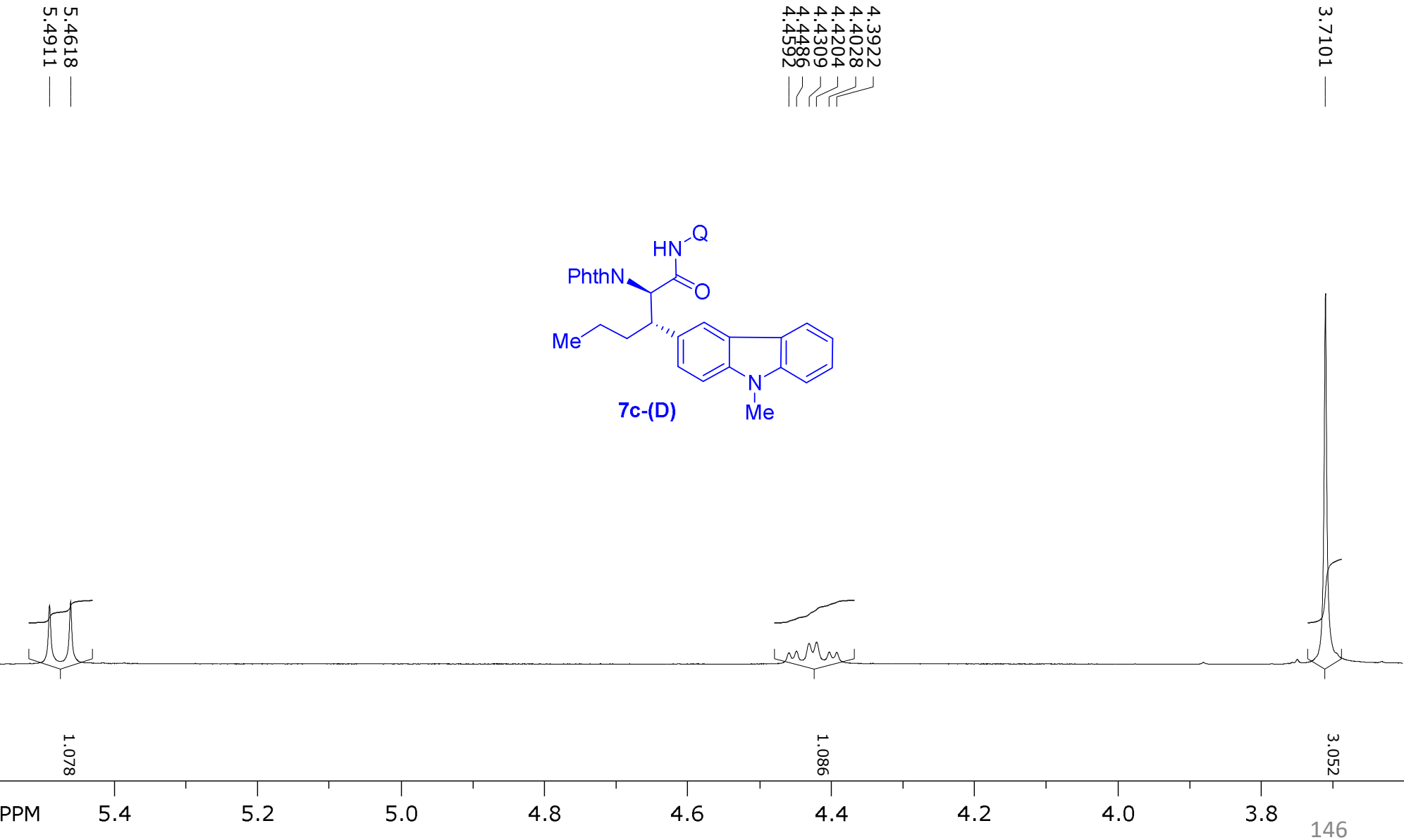




SpinWorks 4: rd-477-rep-1





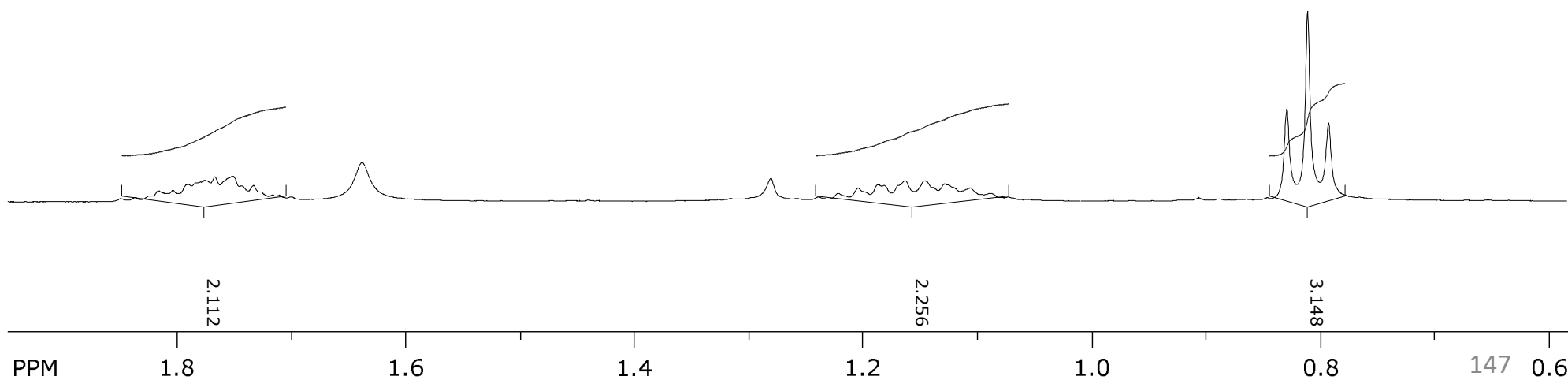
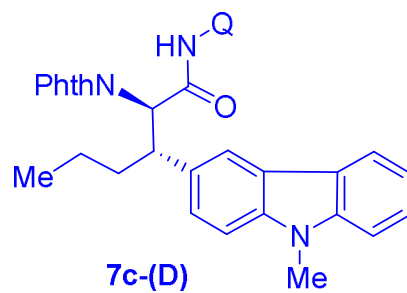


SpinWorks 4: rd-477-rep-1

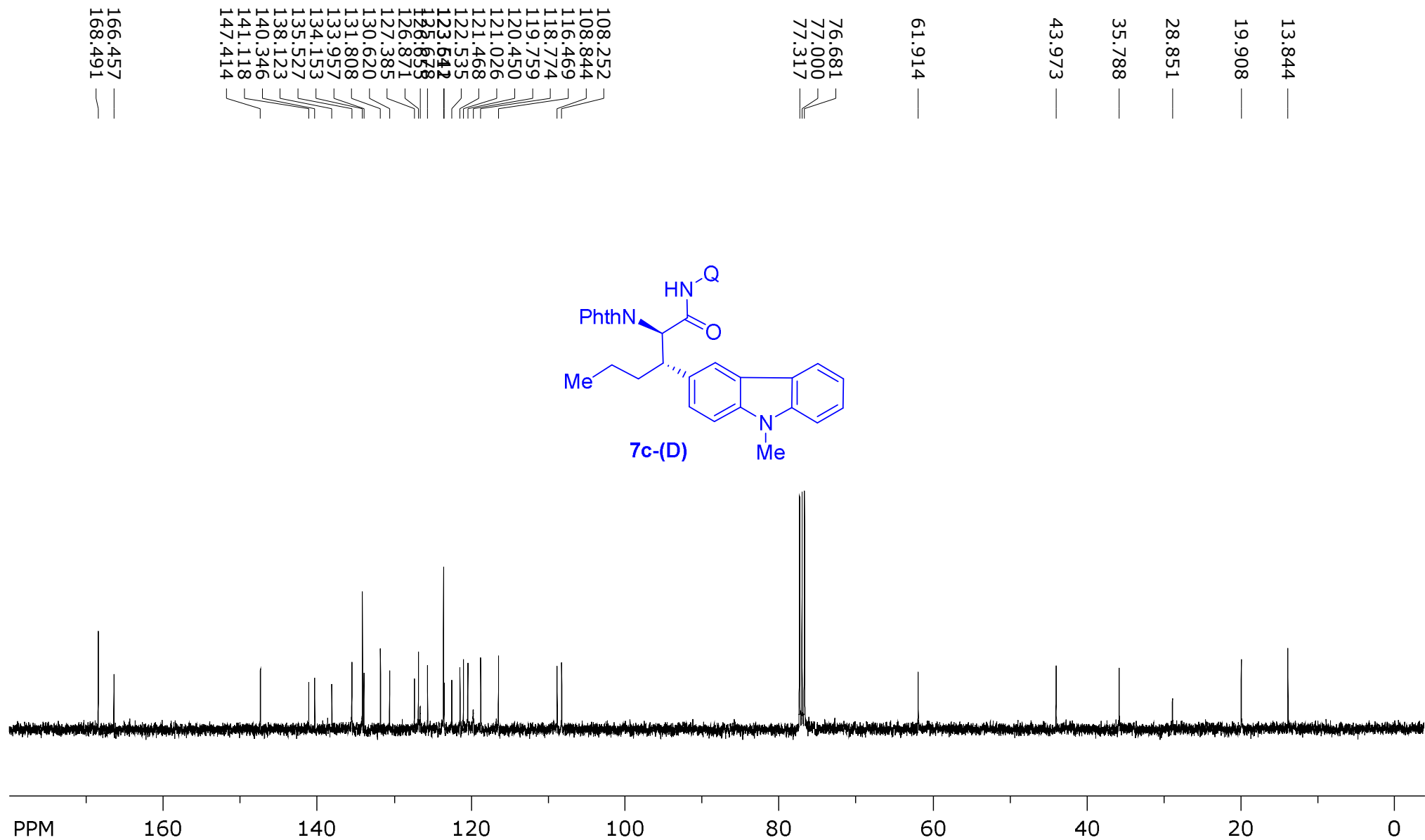
1.7208
1.7334
1.7514
1.7671
1.7760
1.7906
1.8038
1.8179
1.8370

1.2165
1.1871
1.1632
1.1462
1.1286
1.1065
1.0841

0.7927
0.8111
0.8293



SpinWorks 4: rd 477 re 1



SpinWorks 4: rd 477 re 1

166.457 —
168.491 —

147.414 —

140.346 —
141.118 —

138.123 —

135.527 —
134.153 —
133.957 —

131.808 —
130.620 —

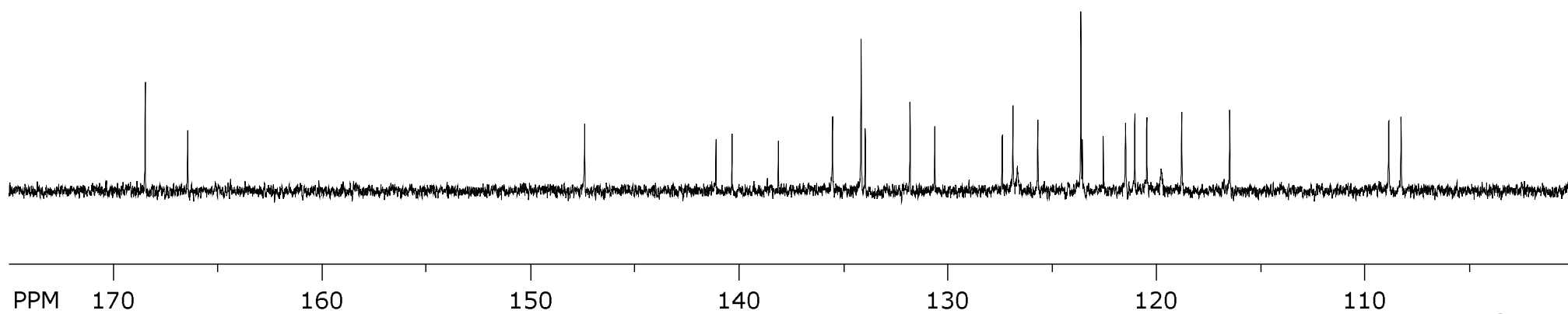
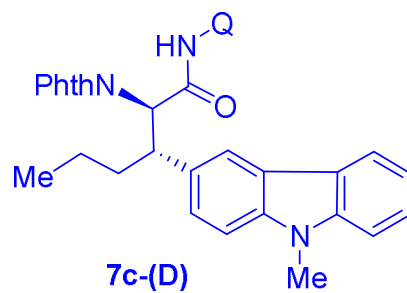
127.385 —
126.871 —
126.655 —

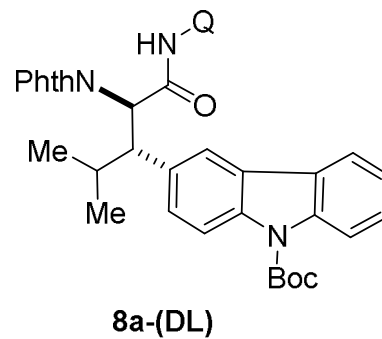
125.678 —
123.612 —
123.541 —

122.535 —
121.468 —
120.450 —

119.759 —
118.774 —
116.469 —

108.844 —
108.252 —



[illegible]

SpinWorks 4: RD 165
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 5

8.5311
 8.5423
 8.5533

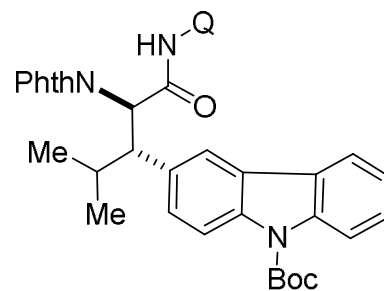
8.3372
 8.3161
 8.2828

8.2484

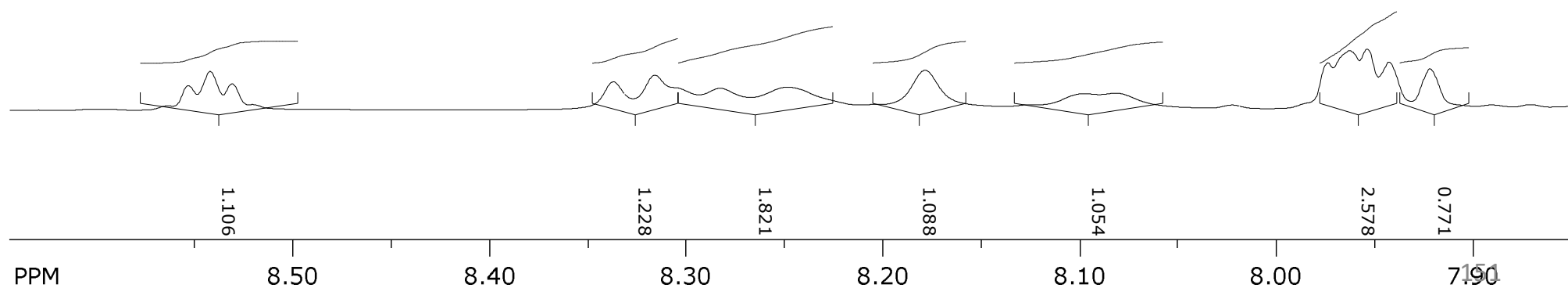
8.1786

8.1022
 8.0815

7.9217
 7.9424
 7.9537
 7.9626
 7.9735



8a-(DL)



SpinWorks 4: RD 165
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 5

7.7573 —
7.7664 —
7.7772 —

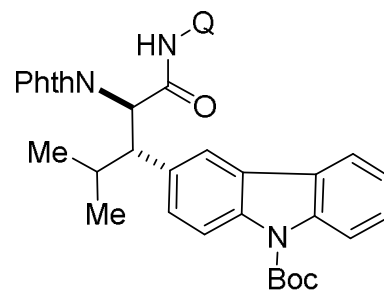
7.6238 —
7.6437 —

7.4712 —
7.4908 —
7.5097 —

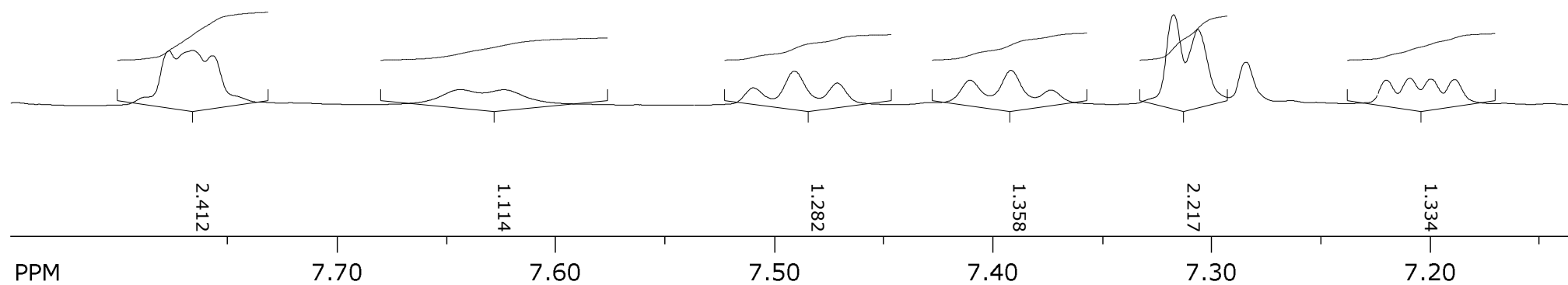
7.3733 —
7.3917 —
7.4104 —

7.2840 —
7.3061 —
7.3172 —

7.1886 —
7.1994 —
7.2091 —
7.2198 —



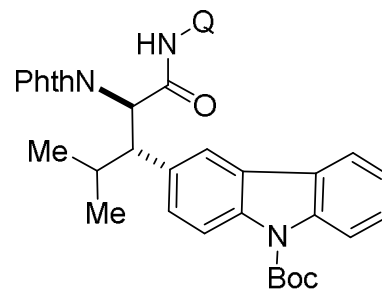
8a-(DL)



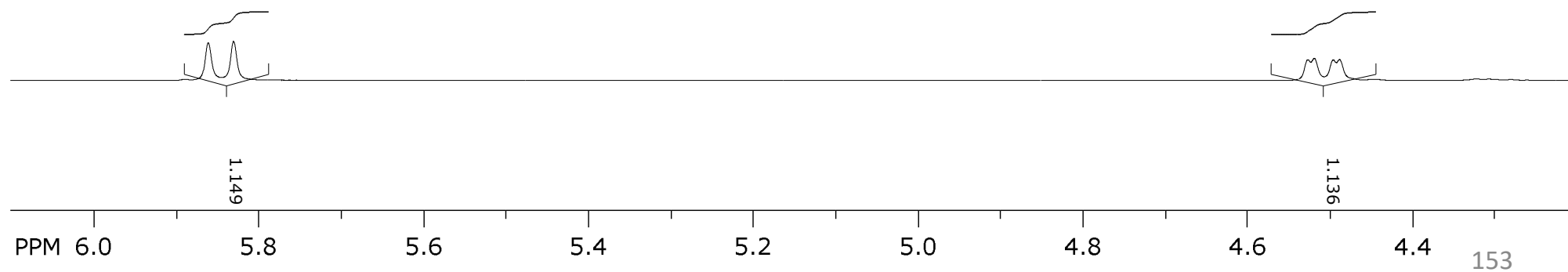
SpinWorks 4: RD 165
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 5

5.8310
5.8619

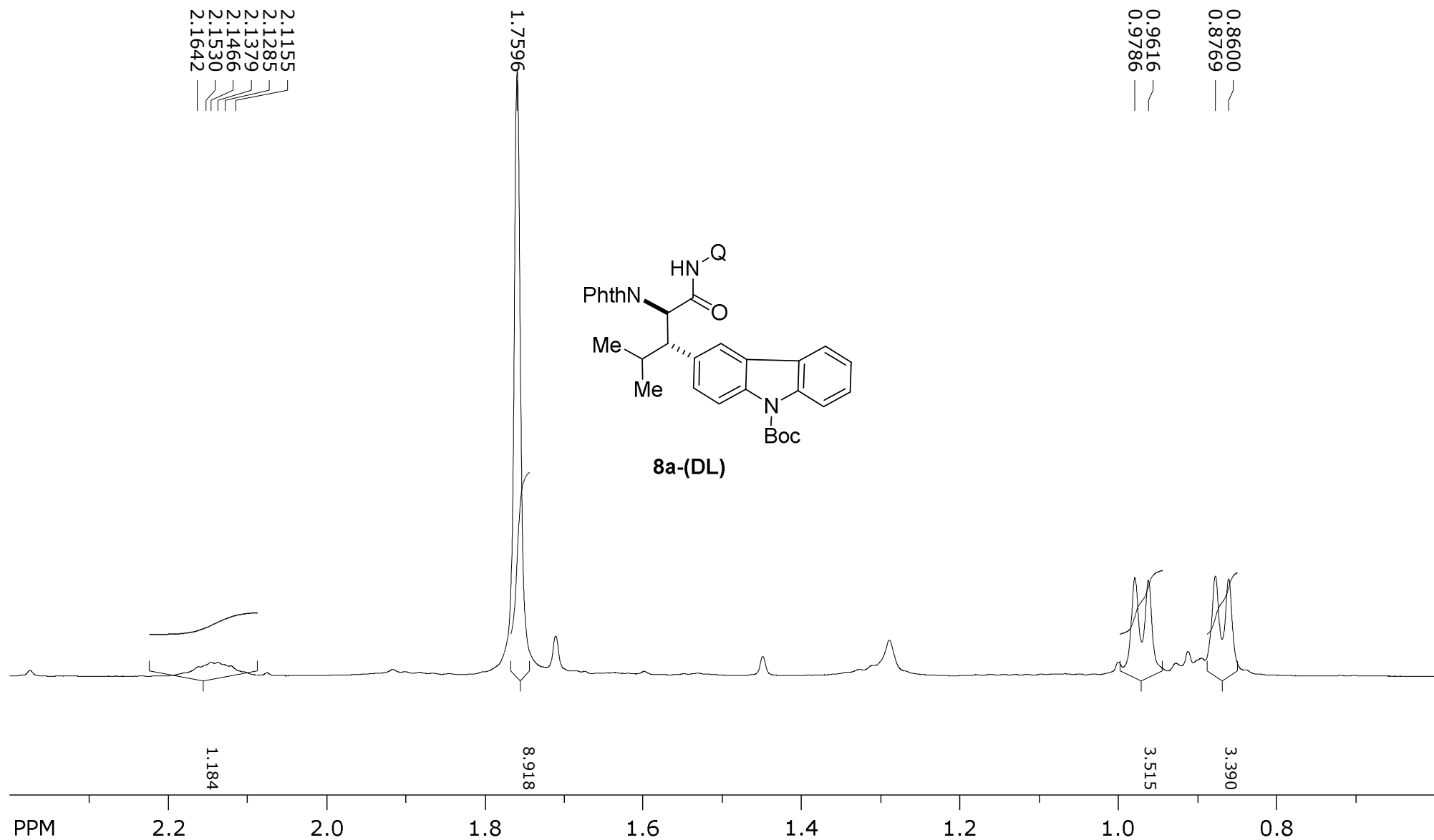
4.4878
4.4955
4.5187
4.5265



8a-(DL)



SpinWorks 4: RD 165
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 5



SpinWorks 4: SAB170712
C13CPD CDCl3 {D:\Spectra} nmr 22

166.349 —
168.562 —
150.976 —
147.676 —
138.676 —
138.339 —
137.813 —
135.705 —
134.226 —
134.026 —
131.851 —
131.260 —
127.519 —
126.119 —
125.950 —
125.908 —
123.696 —
122.998 —
121.653 —
121.264 —
119.786 —
116.730 —
116.226 —
116.198 —

83.878 —

77.254 —
77.000 —
76.744 —

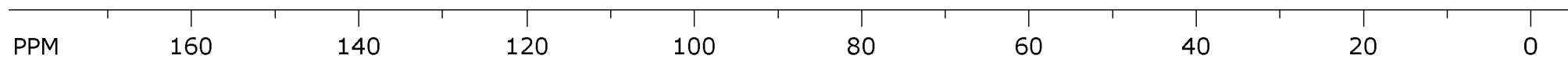
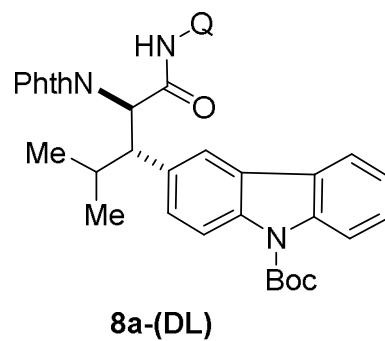
58.204 —

48.385 —

29.244 —
28.312 —

21.612 —

16.395 —



SpinWorks 4: SAB170712
C13CPD CDCl3 {D:\Spectra} nmr 22

168.562 —
166.349 —

150.976 —

147.676 —

137.813 —
138.339 —
138.676 —

134.026 —
134.226 —
135.705 —

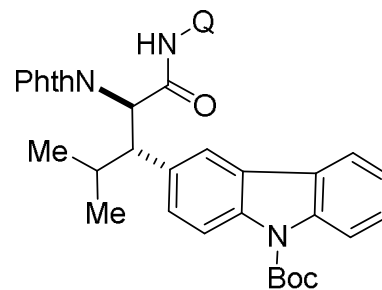
131.260 —
131.851 —

127.519 —
127.116 —
126.900 —
126.054 —

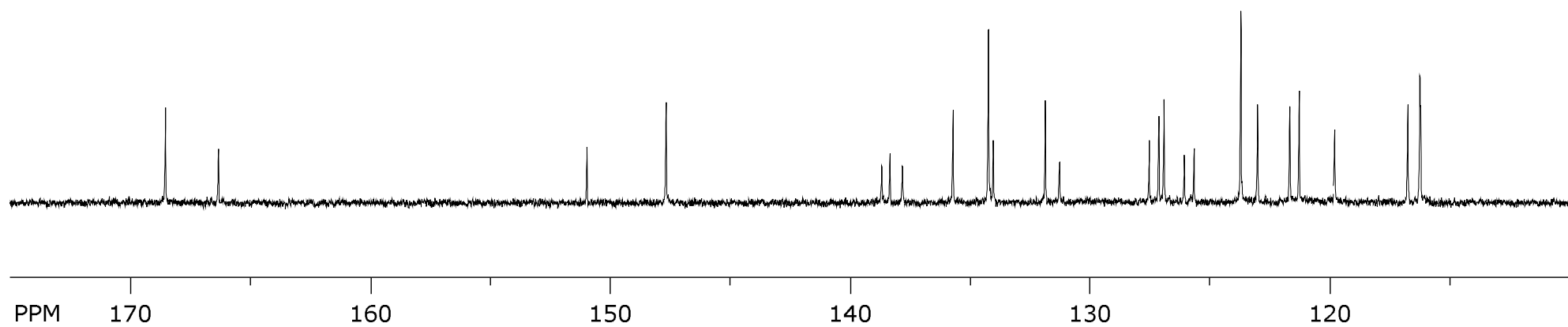
125.650 —
123.696 —

122.998 —
121.653 —
121.264 —

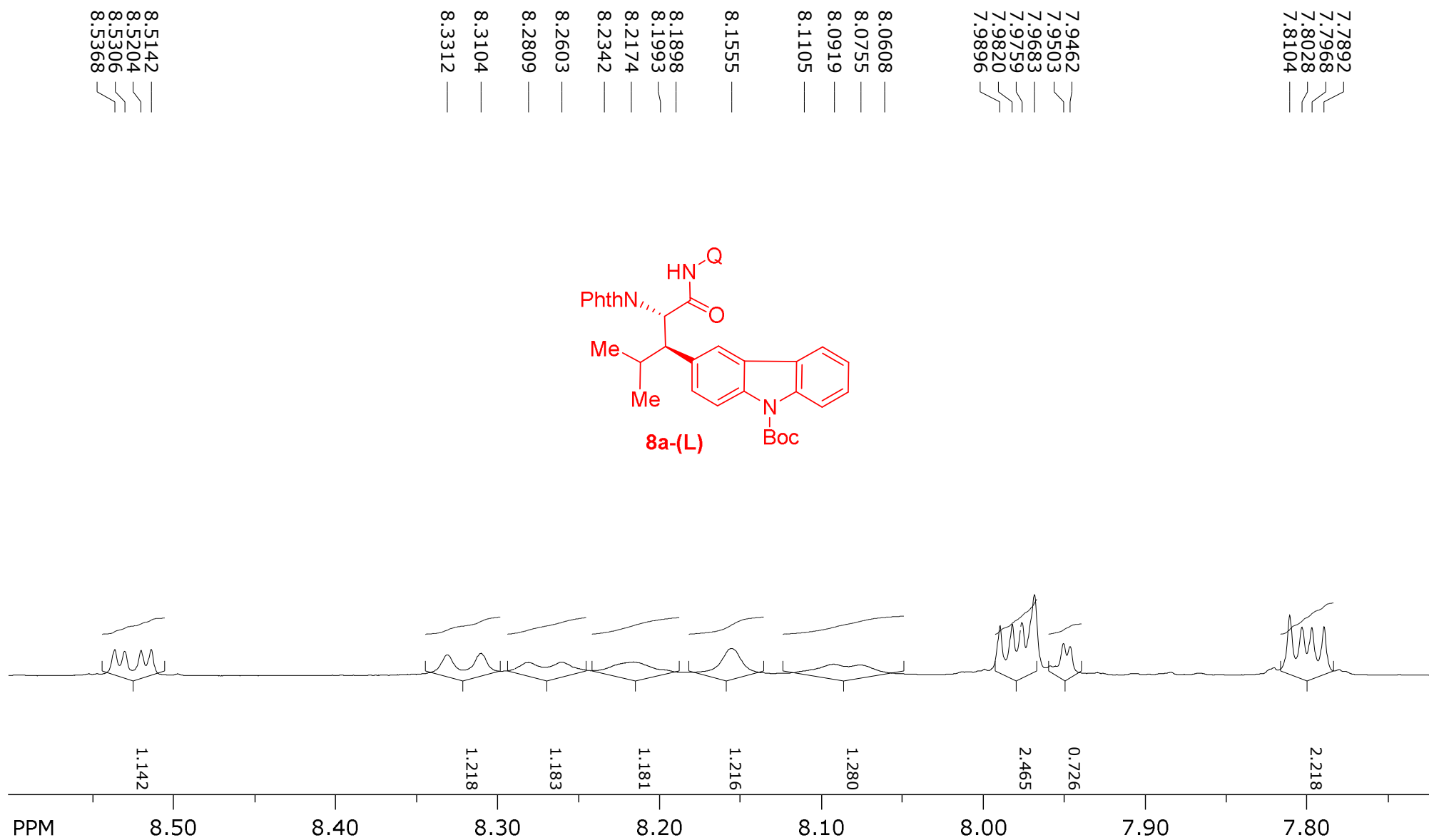
119.786 —
116.198 —
116.226 —
116.730 —



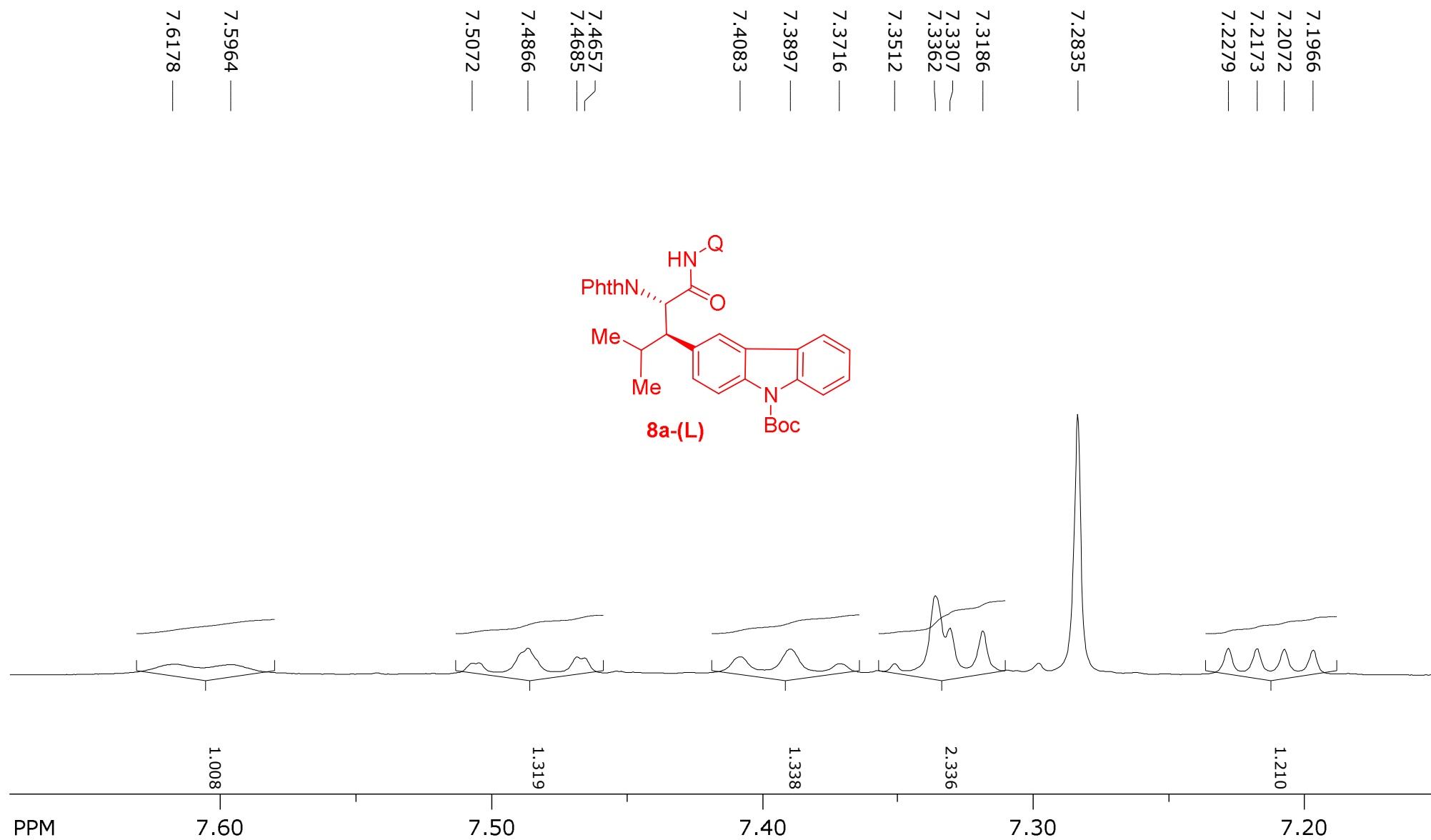
8a-(DL)



SpinWorks 4: RD 247 REP 5
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 41



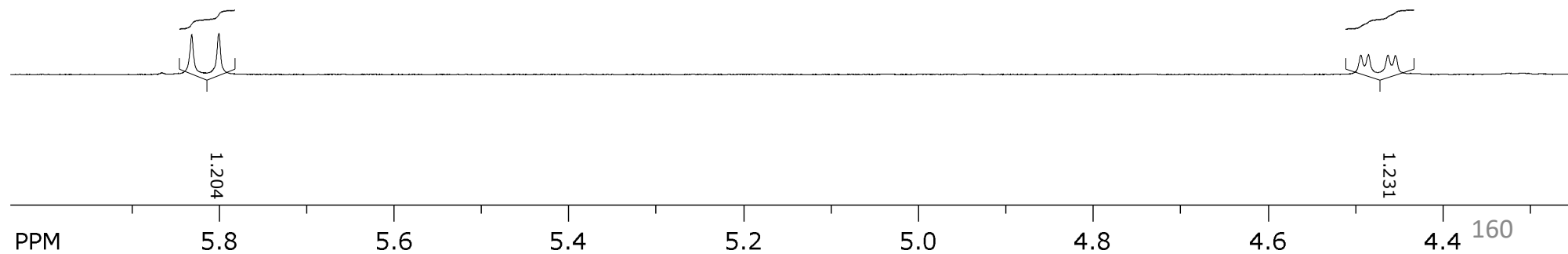
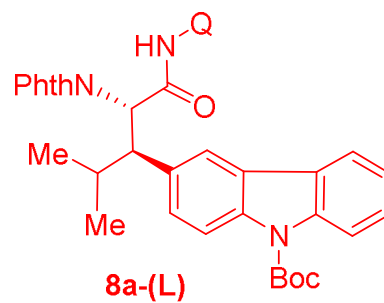
SpinWorks 4: RD 247 REP 5
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 41



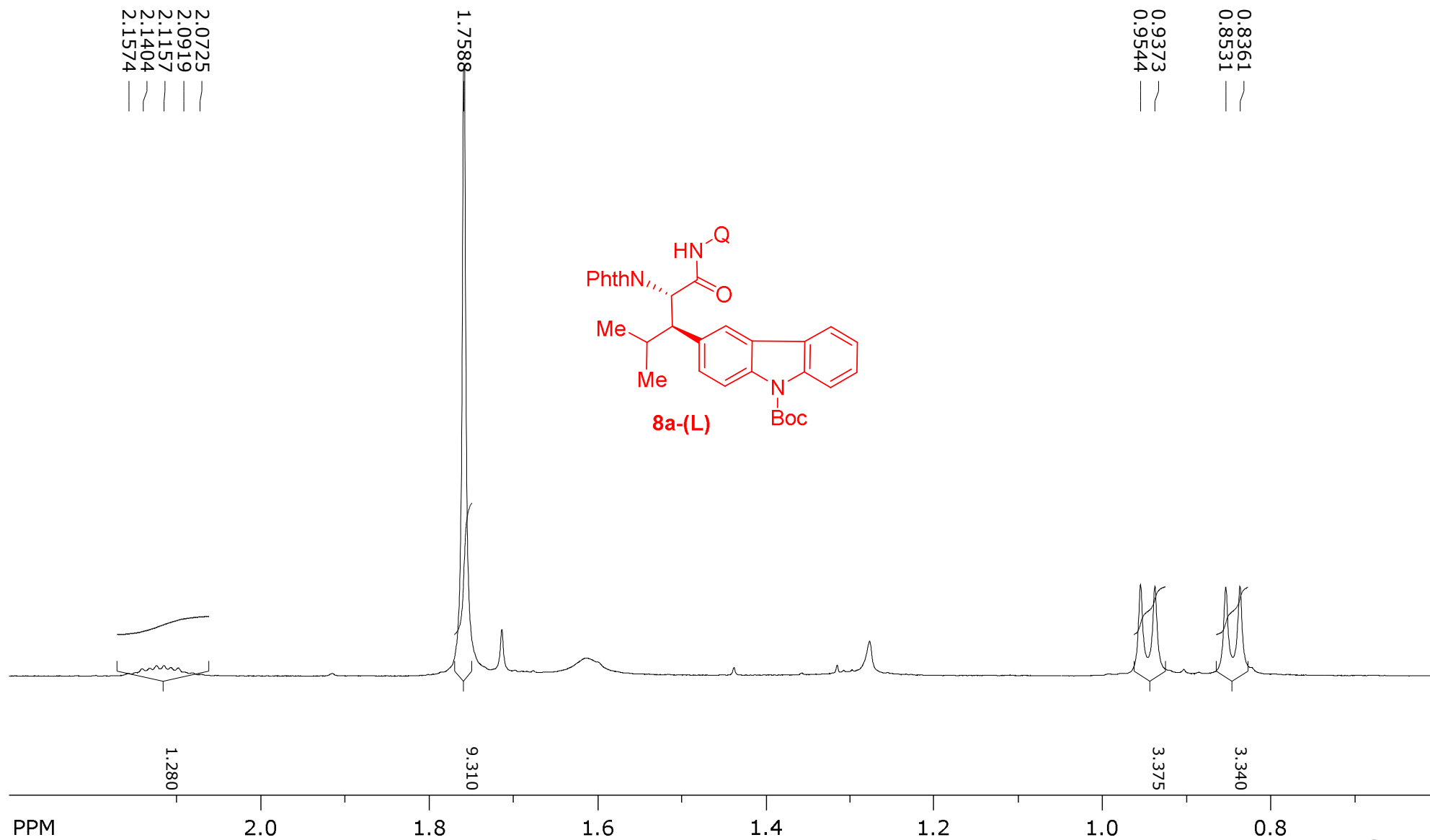
SpinWorks 4: RD 247 REP 5
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 41

5.8005
5.8316
—
—

4.4537
4.4624
4.4847
4.4934
—
—
—
—

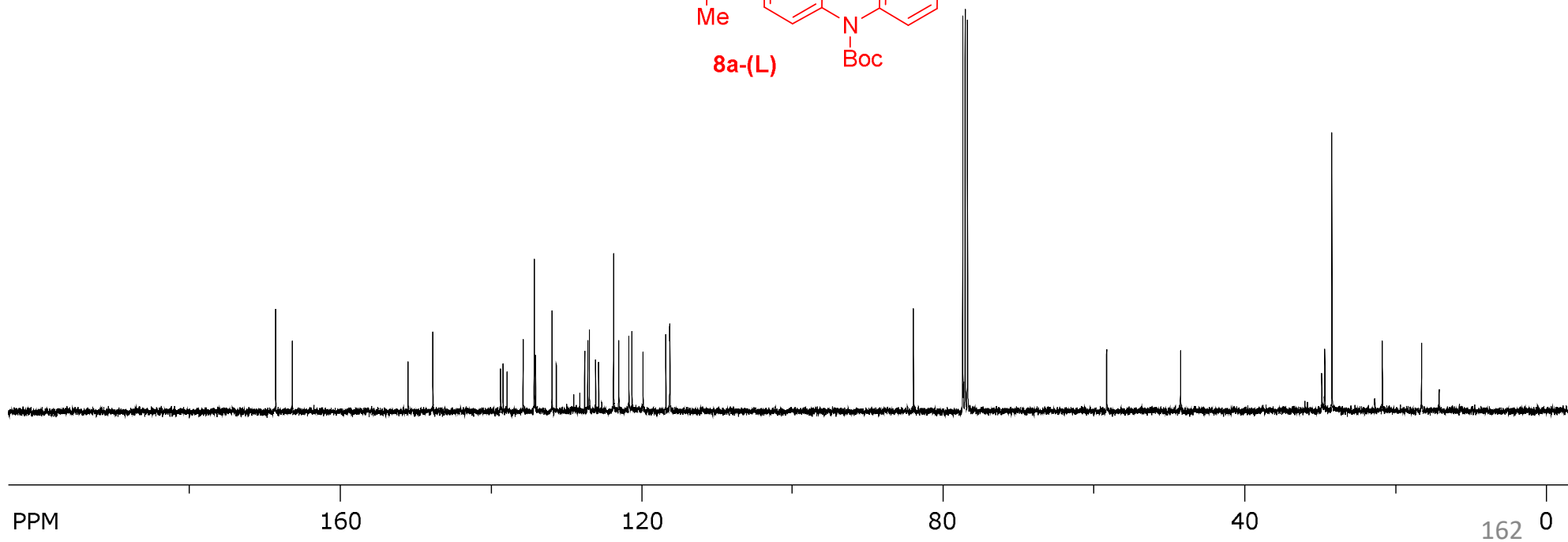
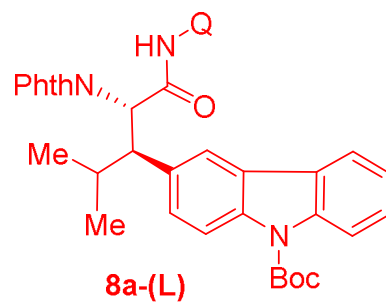


SpinWorks 4: RD 247 REP 5
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 41

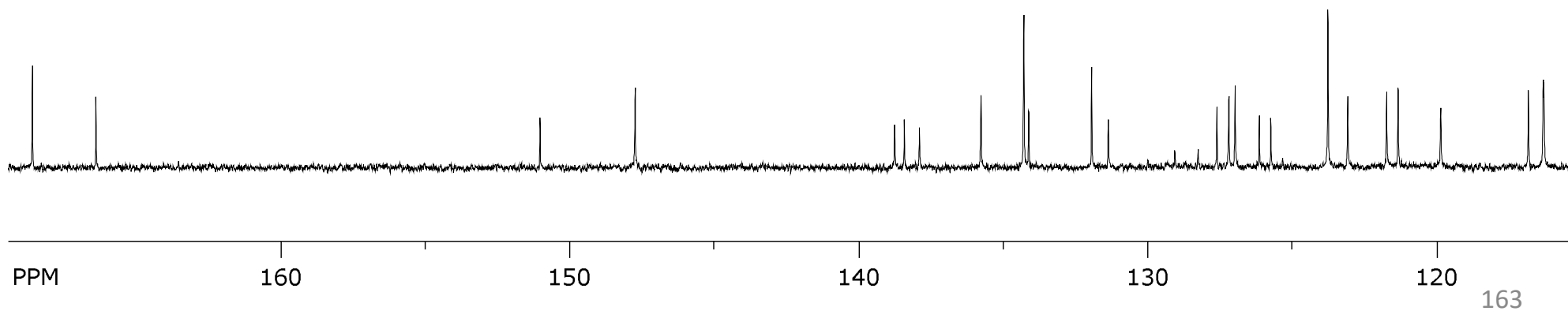
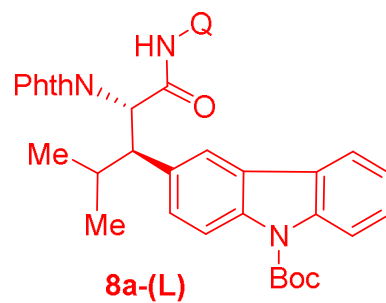


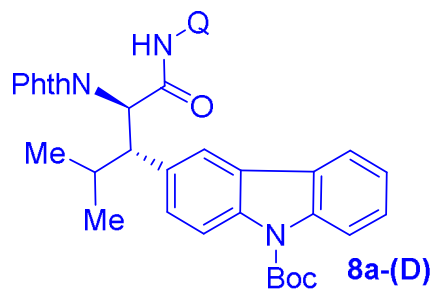
SpinWorks 4: RD 247
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 55

166.412	168.614	151.033	147.740	138.416	137.892	135.762	134.280	134.108	131.950	129.750	129.750	129.750	129.750	129.750	121.319	119.842	116.805	116.292	116.269	83.933	77.391	77.277	77.073	76.756	58.290	48.468	28.379	21.678	16.481
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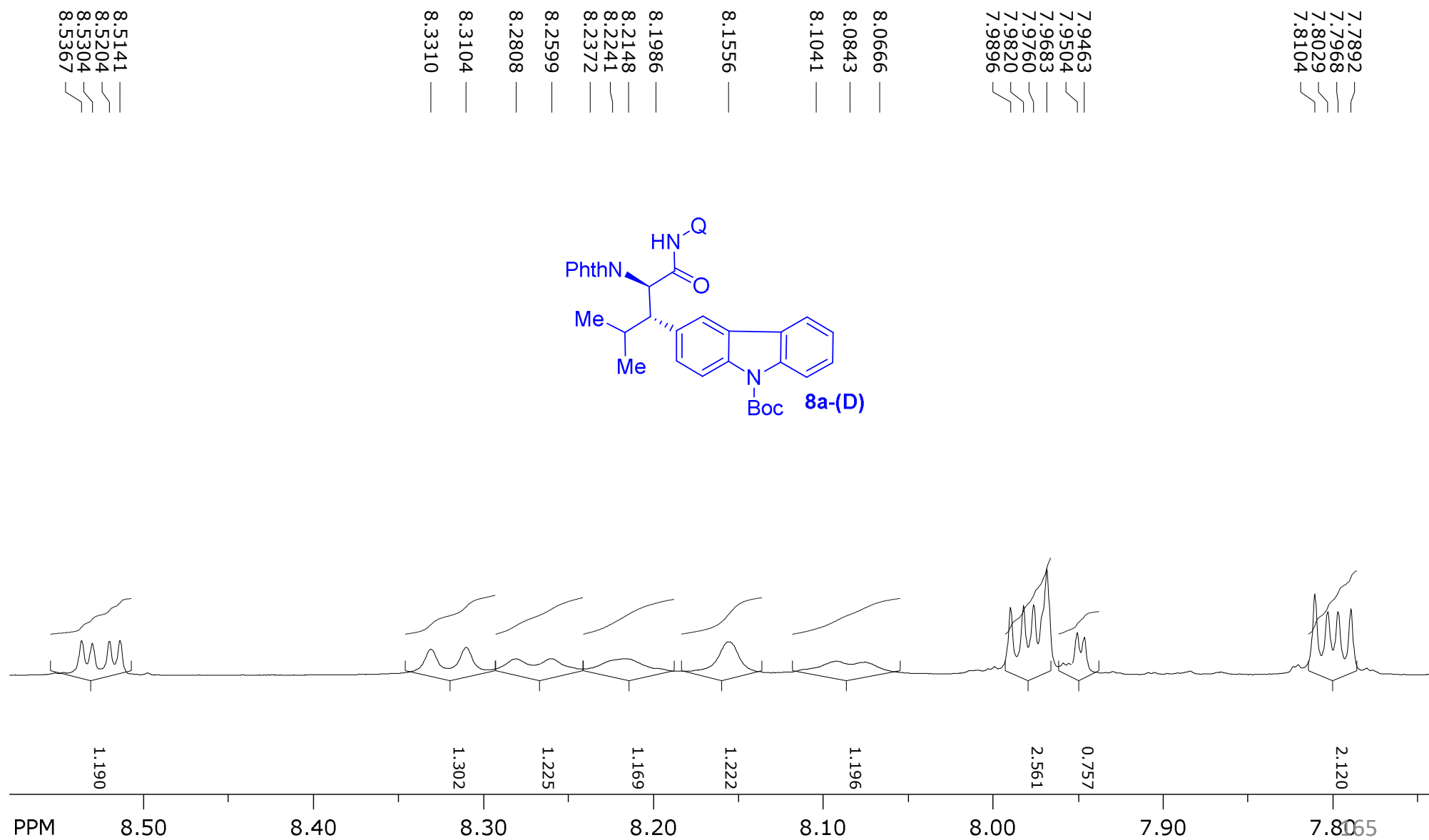


SpinWorks 4: RD 247
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 55

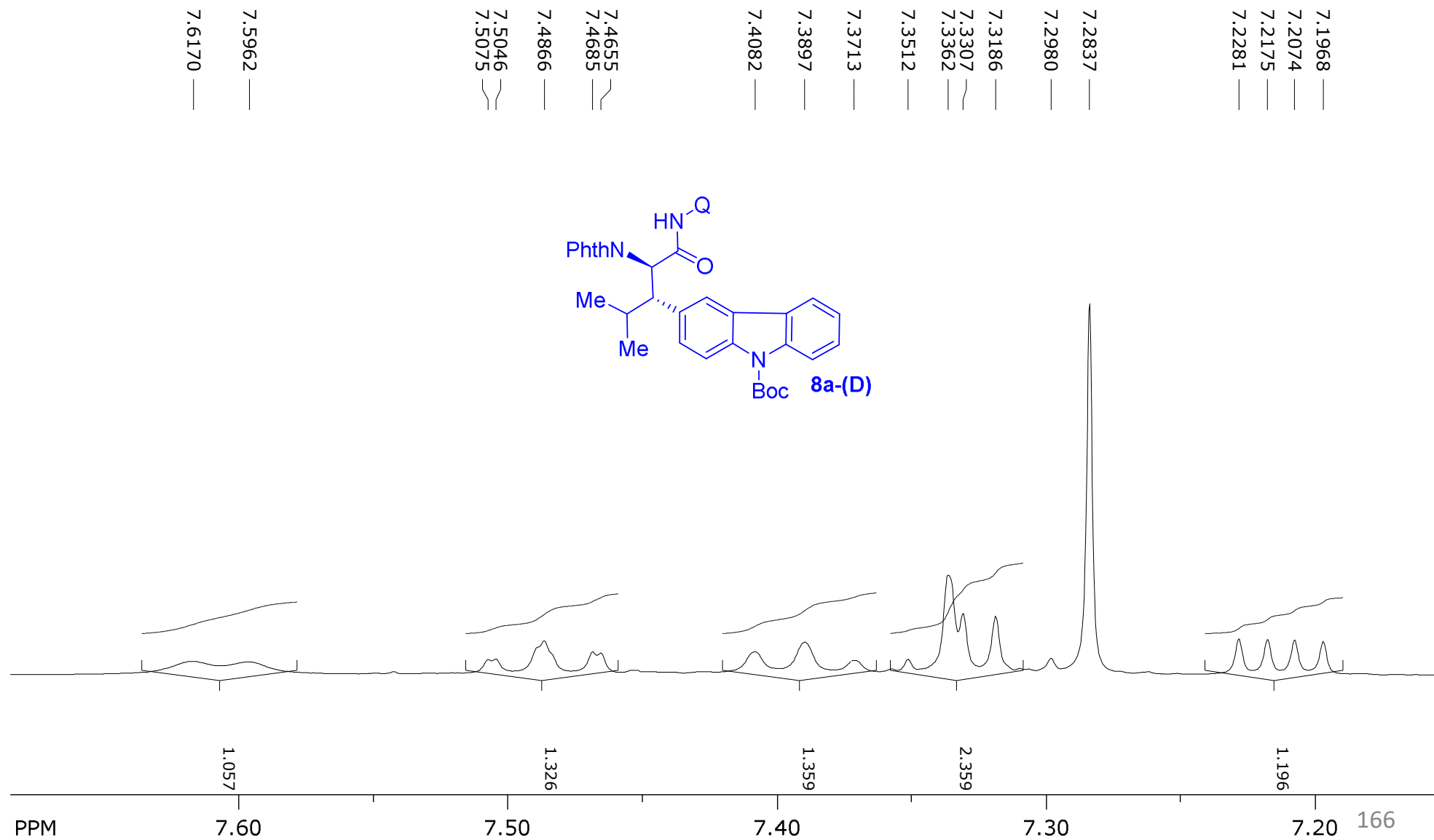


[illegible]

SpinWorks 4: RD-236-REP-4
PROTON_32 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 47



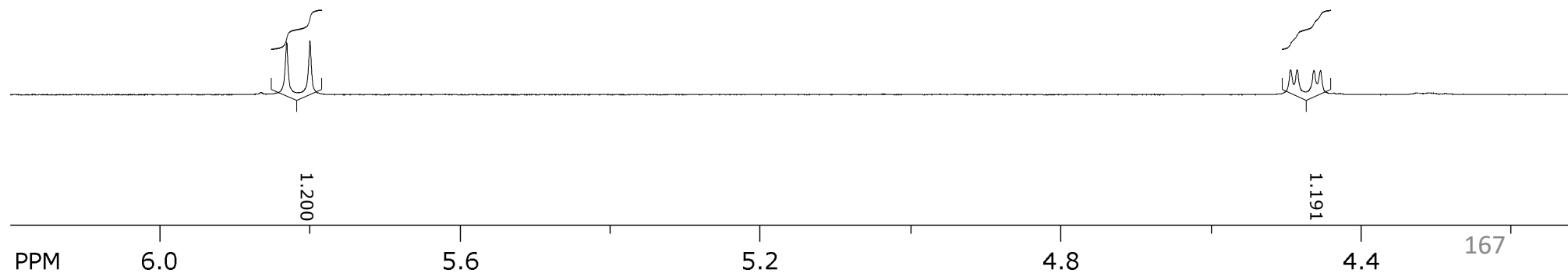
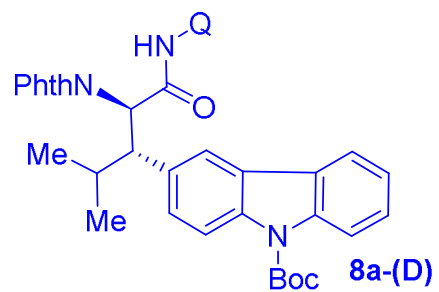
SpinWorks 4: RD-236-REP-4
PROTON_32 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 47



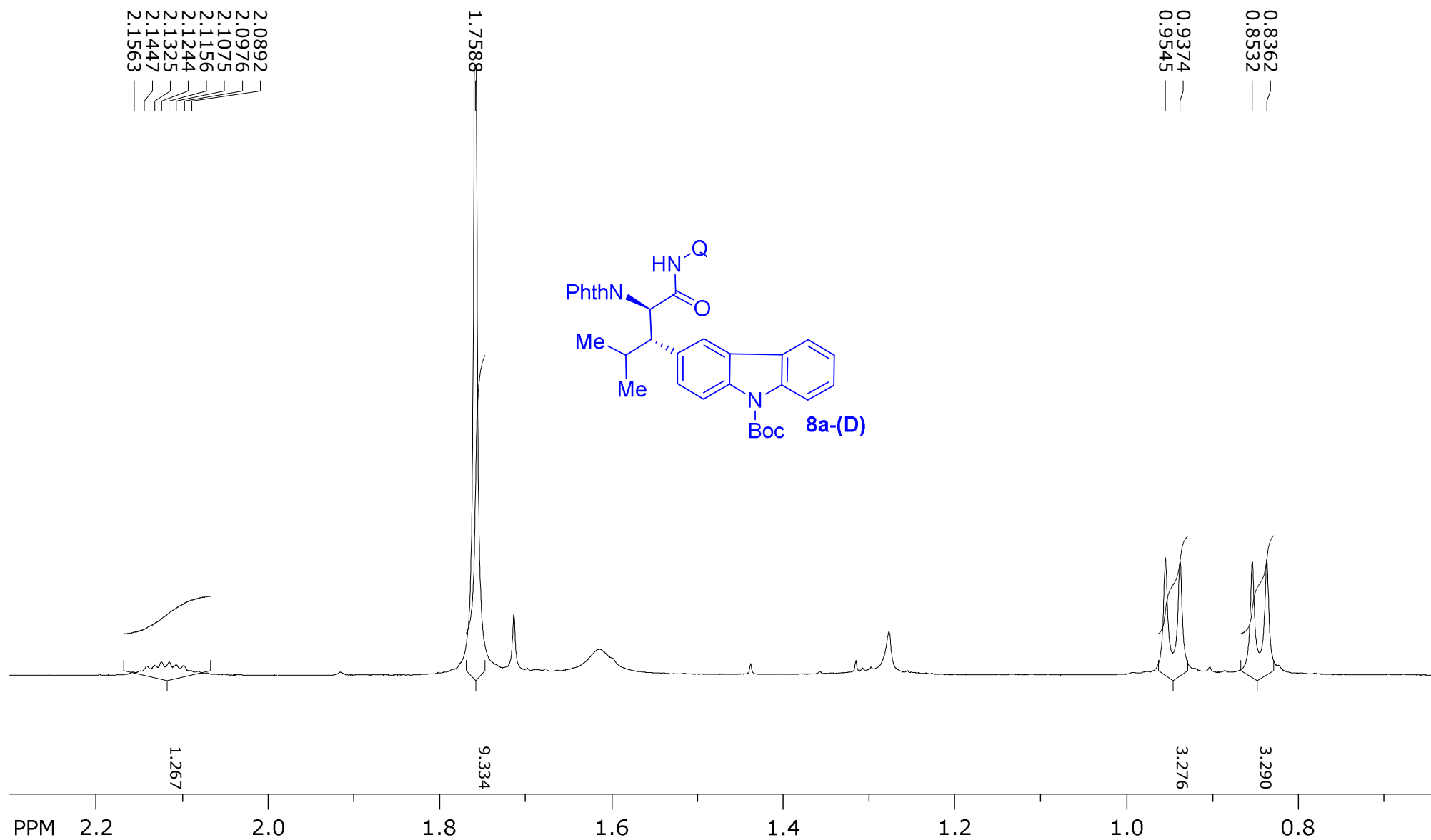
SpinWorks 4: RD-236-REP-4
PROTON_32 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 47

5.8006
5.8316
—
—

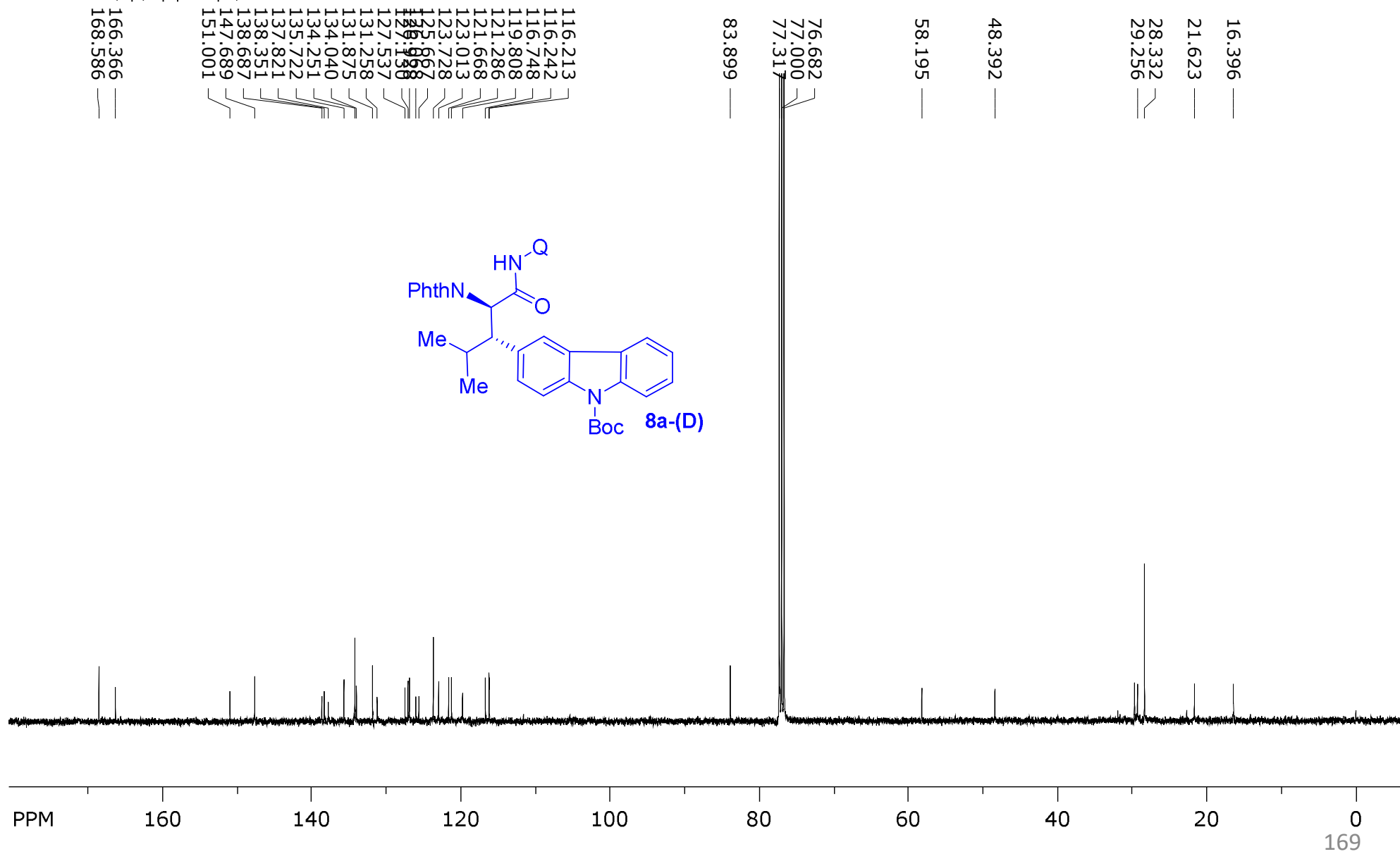
4.4538
4.4625
4.4849
4.4935
—
—
—
—



SpinWorks 4: RD-236-REP-4
PROTON_32 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 47

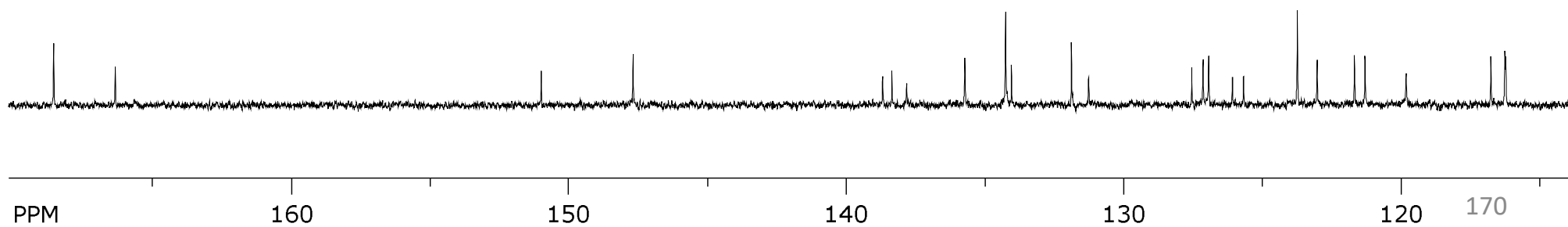
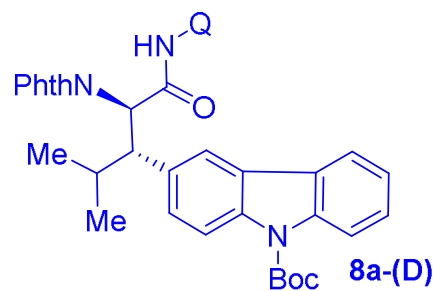


SpinWorks 4: RD 236 REP 2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 17



SpinWorks 4: RD 236 REP 2
 C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 17

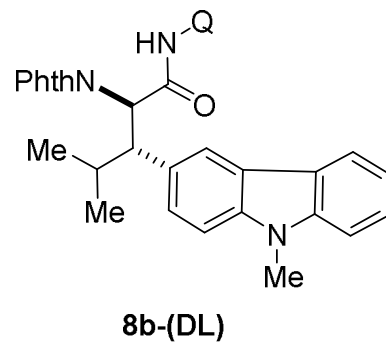
168.586	166.366	151.001	147.689	138.687	137.821	135.722	131.875	127.537	125.667	123.728	121.668	119.808	116.748	116.213
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—



Chemical structure of **8b-(DL)** is shown above the ¹H NMR spectrum. The structure is a 1-methyl-2-(2-methyl-3-oxo-3-phenylbutyl)indole derivative, where the indole ring is substituted with a methyl group at the 1-position and a 2-methyl-3-oxo-3-phenylbutyl group at the 2-position. The structure is labeled **8b-(DL)**.

The ¹H NMR spectrum (400 MHz, CDCl₃) shows the following peaks (ppm) and integrations:

Peak (ppm)	Integration
0.8265, 0.8433, 0.9389, 0.9557	3.159
2.0884, 2.1115, 2.1384, 2.1615	2.966
3.8221	1.098
4.4518, 4.4598, 4.4828, 4.4908	1.035
5.8390, 5.8700	1.047
7.1306, 7.1411, 7.1511, 7.1616, 7.2560, 7.2660, 7.2760, 7.2860, 7.2960, 7.3060, 7.3160, 7.3260, 7.3360, 7.3460, 7.3560, 7.3660, 7.3760, 7.3860, 7.3960, 7.4060, 7.4160, 7.4260, 7.4360, 7.4460, 7.4560, 7.4660, 7.4760, 7.4860, 7.4960, 7.5060, 7.5160, 7.5260, 7.5360, 7.5460, 7.5560, 7.5660, 7.5760, 7.5860, 7.5960, 7.6060, 7.6160, 7.6260, 7.6360, 7.6460, 7.6560, 7.6660, 7.6760, 7.6860, 7.6960, 7.7060, 7.7160, 7.7260, 7.7360, 7.7460, 7.7560, 7.7660, 7.7760, 7.7860, 7.7960, 7.8060, 7.8160, 7.8260, 7.8360, 7.8460, 7.8560, 7.8660, 7.8760, 7.8860, 7.8960, 7.9060, 7.9160, 7.9260, 7.9360, 7.9460, 7.9560, 7.9660, 7.9760, 7.9860, 7.9960, 8.0060, 8.0160, 8.0260, 8.0360, 8.0460, 8.0560, 8.0660, 8.0760, 8.0860, 8.0960, 8.1060, 8.1160, 8.1260, 8.1360, 8.1460, 8.1560, 8.1660, 8.1760, 8.1860, 8.1960, 8.2060, 8.2160, 8.2260, 8.2360, 8.2460, 8.2560, 8.2660, 8.2760, 8.2860, 8.2960, 8.3060, 8.3160, 8.3260, 8.3360, 8.3460, 8.3560, 8.3660, 8.3760, 8.3860, 8.3960, 8.4060, 8.4160, 8.4260, 8.4360, 8.4460, 8.4560, 8.4660, 8.4760, 8.4860, 8.4960, 8.5060, 8.5160, 8.5260, 8.5360, 8.5460, 8.5560, 8.5660, 8.5760, 8.5860, 8.5960, 8.6060, 8.6160, 8.6260, 8.6360, 8.6460, 8.6560, 8.6660, 8.6760, 8.6860, 8.6960, 8.7060, 8.7160, 8.7260, 8.7360, 8.7460, 8.7560, 8.7660, 8.7760, 8.7860, 8.7960, 8.8060, 8.8160, 8.8260, 8.8360, 8.8460, 8.8560, 8.8660, 8.8760, 8.8860, 8.8960, 8.9060, 8.9160, 8.9260, 8.9360, 8.9460, 8.9560, 8.9660, 8.9760, 8.9860, 8.9960, 9.0060, 9.0160, 9.0260, 9.0360, 9.0460, 9.0560, 9.0660, 9.0760, 9.0860, 9.0960, 9.1060, 9.1160, 9.1260, 9.1360, 9.1460, 9.1560, 9.1660, 9.1760, 9.1860, 9.1960, 9.2060, 9.2160, 9.2260, 9.2360, 9.2460, 9.2560, 9.2660, 9.2760, 9.2860, 9.2960, 9.3060, 9.3160, 9.3260, 9.3360, 9.3460, 9.3560, 9.3660, 9.3760, 9.3860, 9.3960, 9.4060, 9.4160, 9.4260, 9.4360, 9.4460, 9.4560, 9.4660, 9.4760, 9.4860, 9.4960, 9.5060, 9.5160, 9.5260, 9.5360, 9.5460, 9.5560, 9.5660, 9.5760, 9.5860, 9.5960, 9.6060, 9.6160, 9.6260, 9.6360, 9.6460, 9.6560, 9.6660, 9.6760, 9.6860, 9.6960, 9.7060, 9.7160, 9.7260, 9.7360, 9.7460, 9.7560, 9.7660, 9.7760, 9.7860, 9.7960, 9.8060, 9.8160, 9.8260, 9.8360, 9.8460, 9.8560, 9.8660, 9.8760, 9.8860, 9.8960, 9.9060, 9.9160, 9.9260, 9.9360, 9.9460, 9.9560, 9.9660, 9.9760, 9.9860, 9.9960, 10.0060, 10.0160, 10.0260, 10.0360, 10.0460, 10.0560, 10.0660, 10.0760, 10.0860, 10.0960, 10.1060, 10.1160, 10.1260, 10.1360, 10.1460, 10.1560, 10.1660, 10.1760, 10.1860, 10.1960, 10.2060, 10.2160, 10.2260, 10.2360, 10.2460, 10.2560, 10.2660, 10.2760, 10.2860, 10.2960, 10.3060, 10.3160, 10.3260, 10.3360, 10.3460, 10.3560, 10.3660, 10.3760, 10.3860, 10.3960, 10.4060, 10.4160, 10.4260, 10.4360, 10.4460, 10.4560, 10.4660, 10.4760, 10.4860, 10.4960, 10.5060, 10.5160, 10.5260, 10.5360, 10.5460, 10.5560, 10.5660, 10.5760, 10.5860, 10.5960, 10.6060, 10.6160, 10.6260, 10.6360, 10.6460, 10.6560, 10.6660, 10.6760, 10.6860, 10.6960, 10.7060, 10.7160, 10.7260, 10.7360, 10.7460, 10.7560, 10.7660, 10.7760, 10.7860, 10.7960, 10.8060, 10.8160, 10.8260, 10.8360, 10.8460, 10.8560, 10.8660, 10.8760, 10.8860, 10.8960, 10.9060, 10.9160, 10.9260, 10.9360, 10.9460, 10.9560, 10.9660, 10.9760, 10.9860, 10.9960, 11.0060, 11.0160, 11.0260, 11.0360, 11.0460, 11.0560, 11.0660, 11.0760, 11.0860, 11.0960, 11.1060, 11.1160, 11.1260, 11.1360, 11.1460, 11.1560, 11.1660, 11.1760, 11.1860, 11.1960, 11.2060, 11.2160, 11.2260, 11.2360, 11.2460, 11.2560, 11.2660, 11.2760, 11.2860, 11.2960, 11.3060, 11.3160, 11.3260, 11.3360, 11.3460, 11.3560, 11.3660, 11.3760, 11.3860, 11.3960, 11.4060, 11.4160, 11.4260, 11.4360, 11.4460, 11.4560, 11.4660, 11.4760, 11.4860, 11.4960, 11.5060, 11.5160, 11.5260, 11.5360, 11.5460, 11.5560, 11.5660, 11.5760, 11.5860, 11.5960, 11.6060, 11.6160, 11.6260	



8.5182
8.5293
8.5405

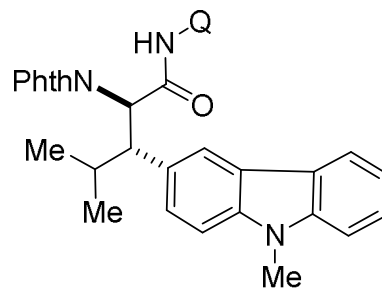
8.2958

8.1903
8.2090

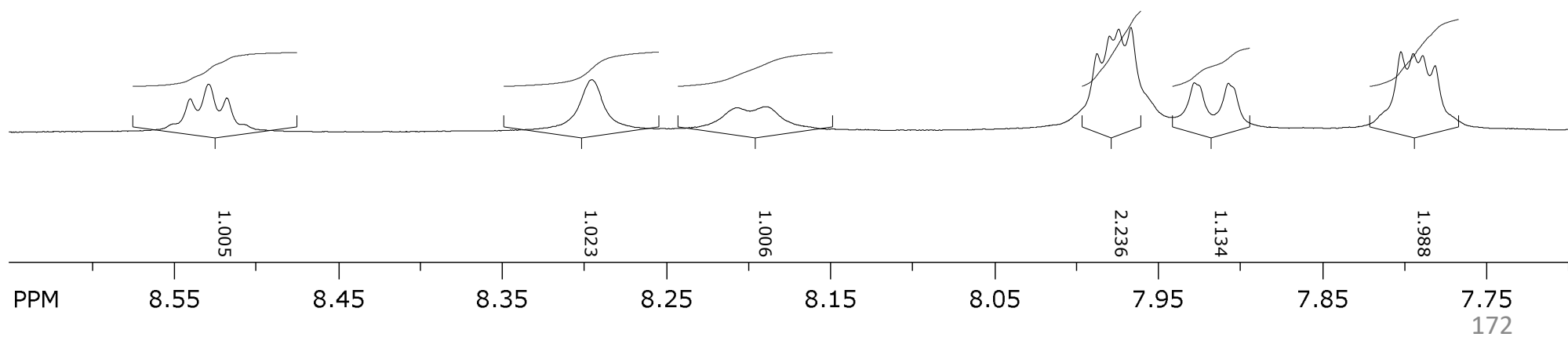
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7.9742
7.9797
7.9873

7.9074
7.9280

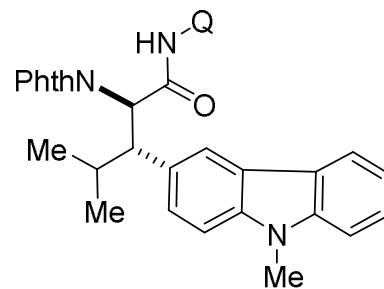
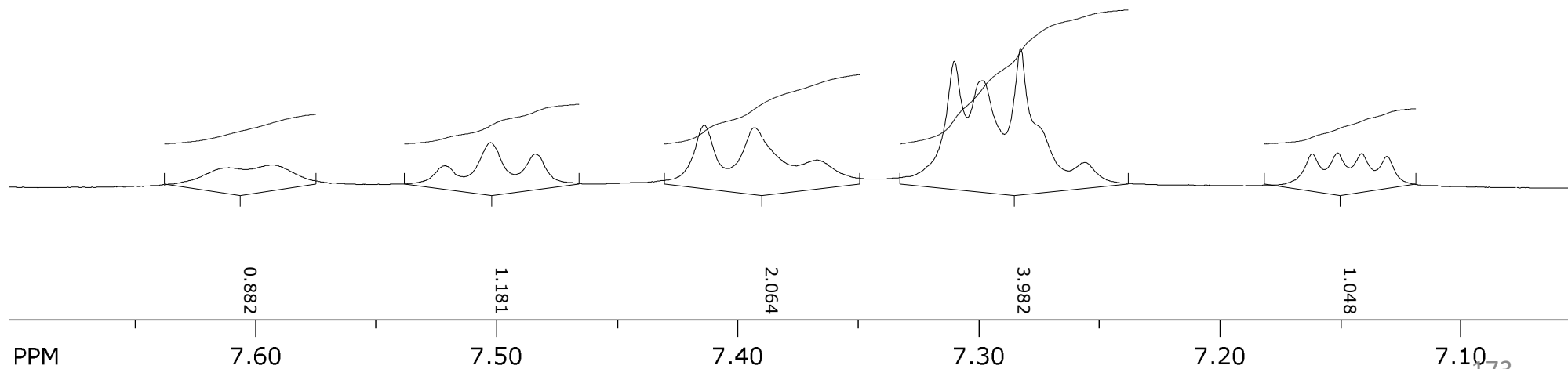
7.7813
7.7888
7.7946
7.8021

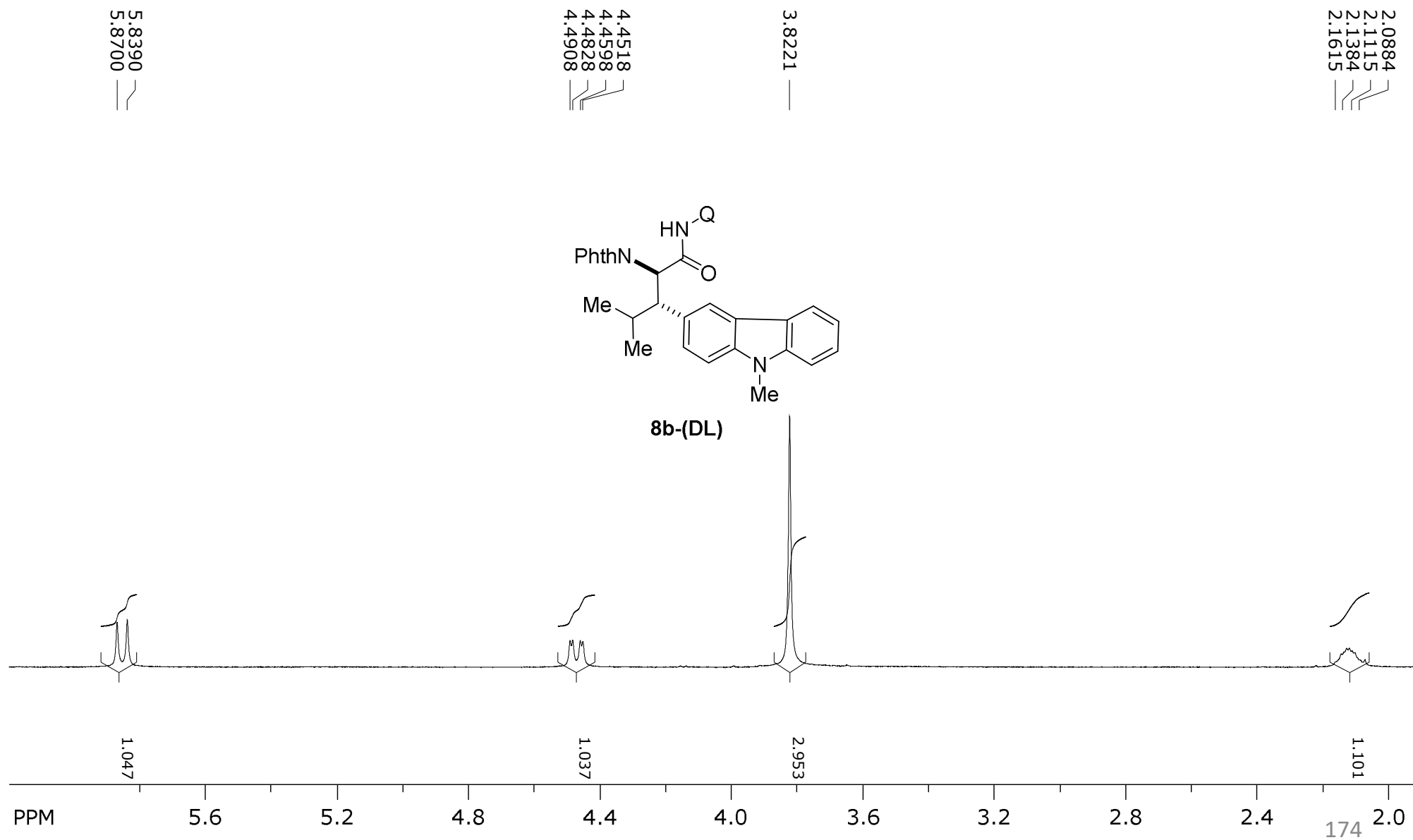


8b-(DL)



7.1306 —
7.1411 —
7.1511 —
7.1616 —
7.2560 —
7.2827 —
7.2983 —
7.3102 —
7.3671 —
7.3932 —
7.4139 —
7.4842 —
7.5026 —
7.5243 —
7.5957 —
7.6139 —

**8b-(DL)**

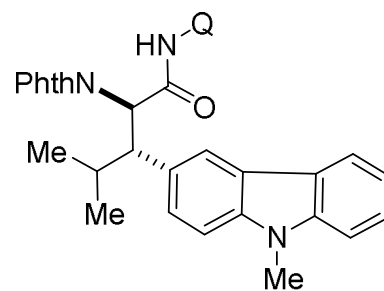


0.9557

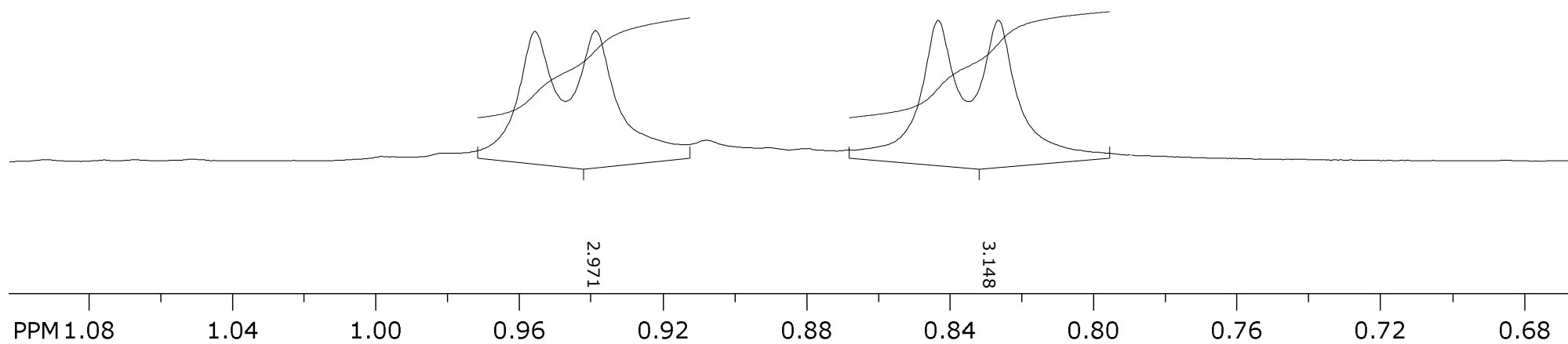
0.9389

0.8433

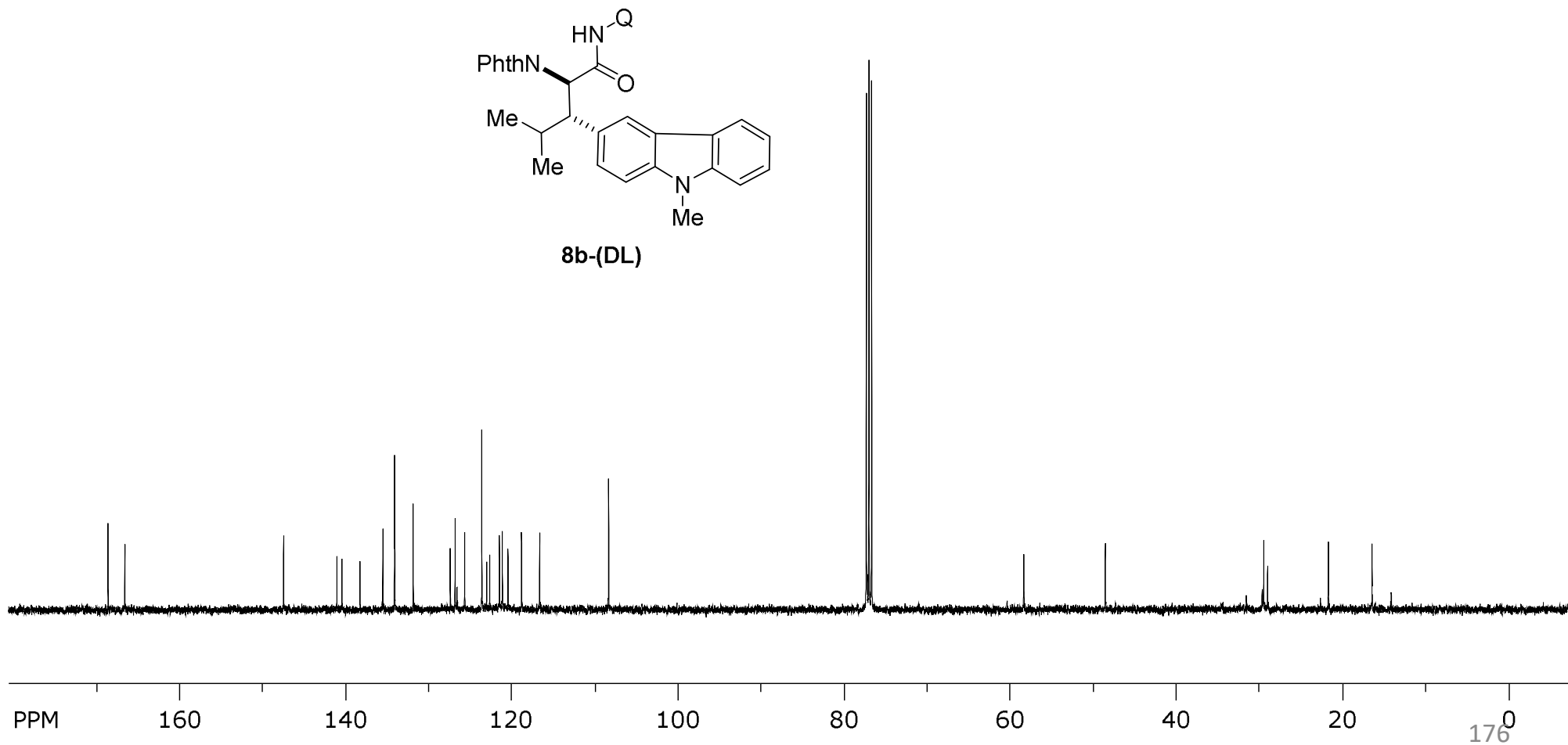
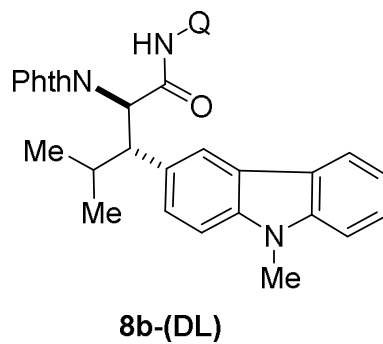
0.8265



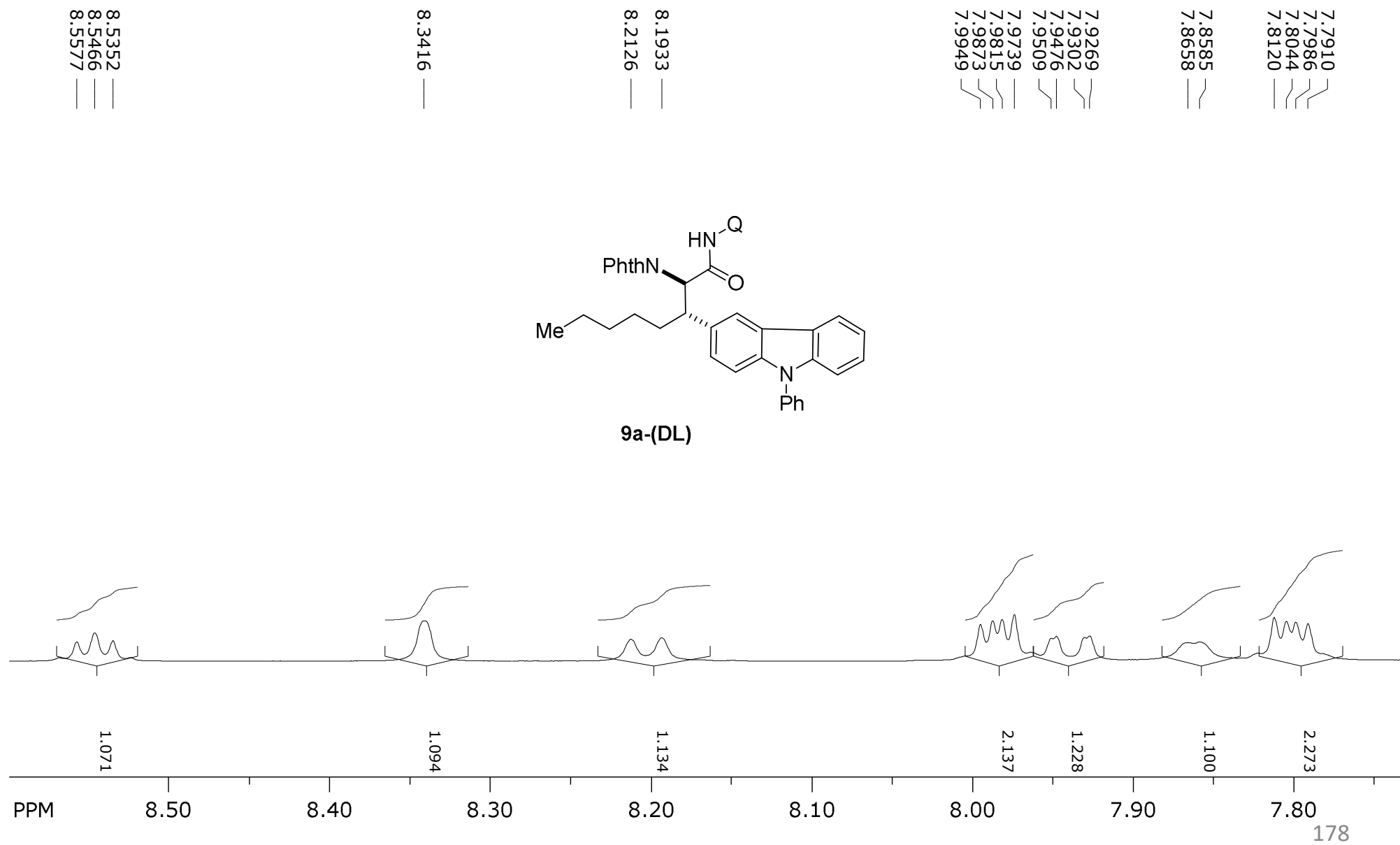
8b-(DL)



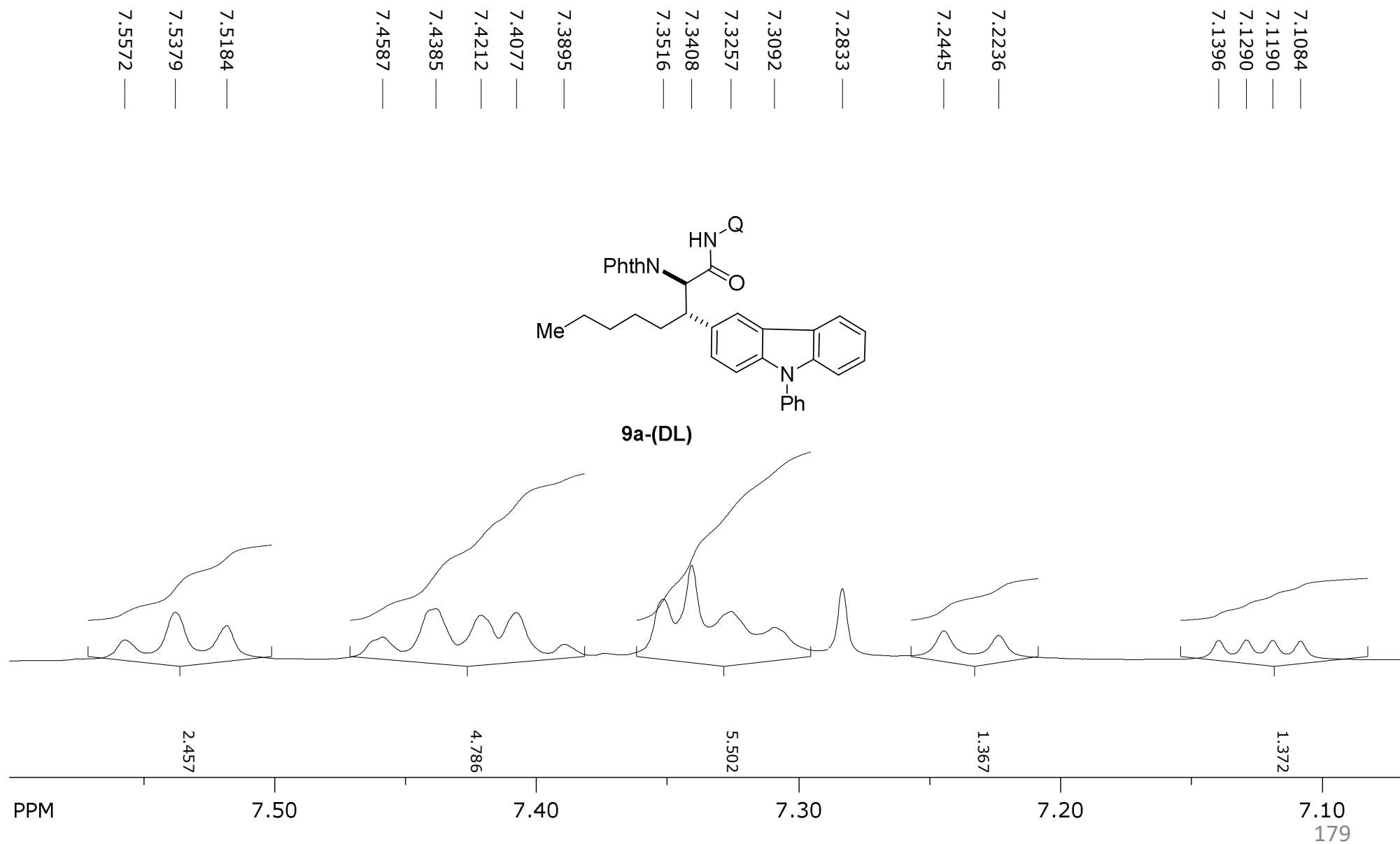
SpinWorks 4: RD 209
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 12





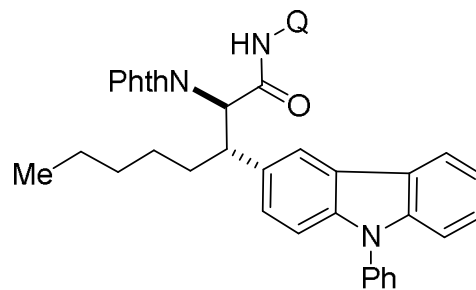


SpinWorks 4: rd-120

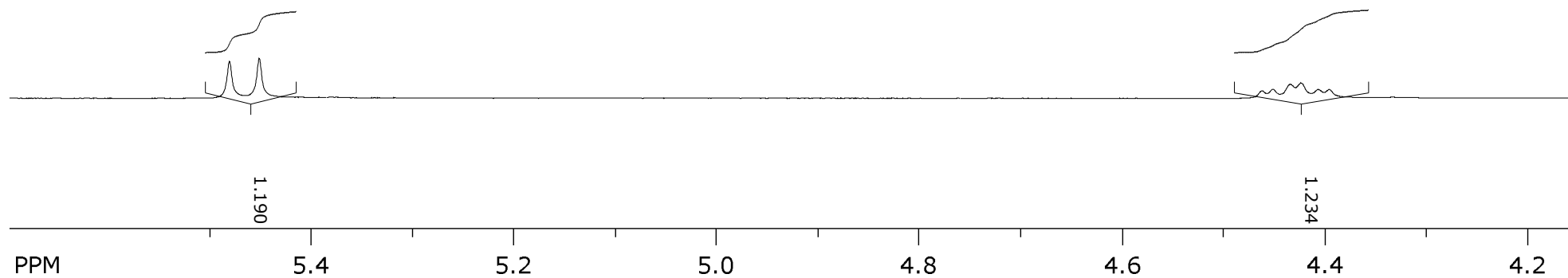


5.4516 —
5.4811 —

4.3972 —
4.4072 —
4.4231 —
4.4338 —
4.4509 —
4.4613 —



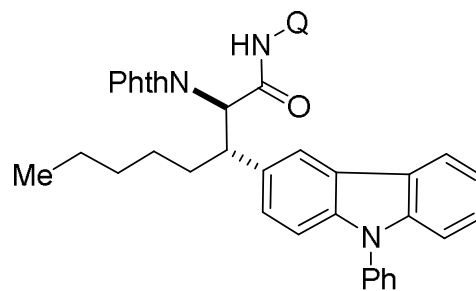
9a-(DL)



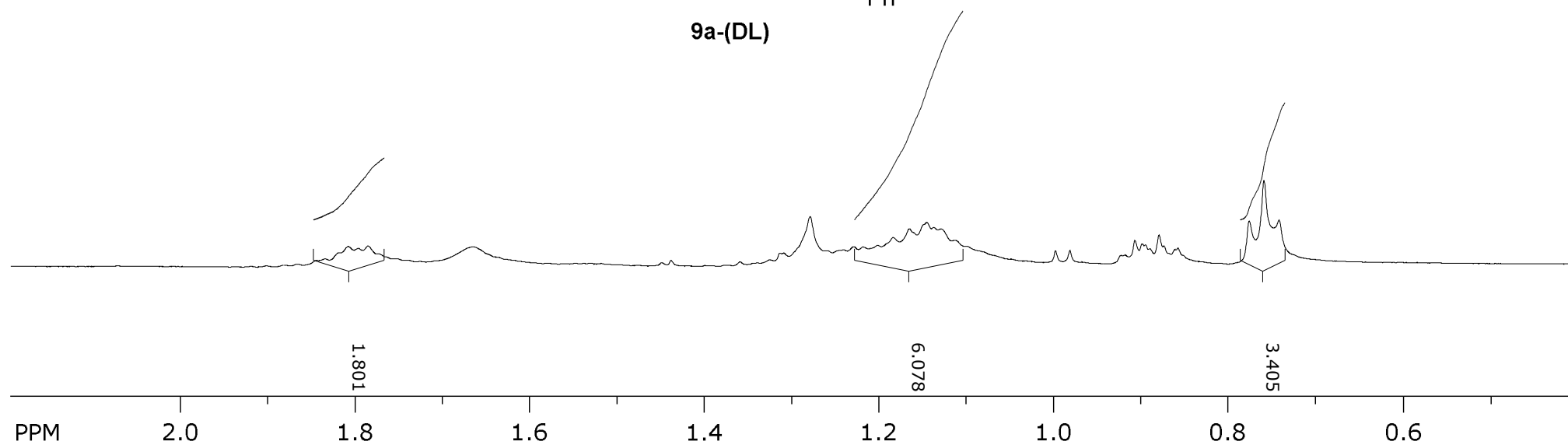
1.7703
1.7850
1.7963
1.8077
1.8199
1.8289
1.8476

1.1011
1.1285
1.1453
1.1650
1.1838
1.2014
1.2181

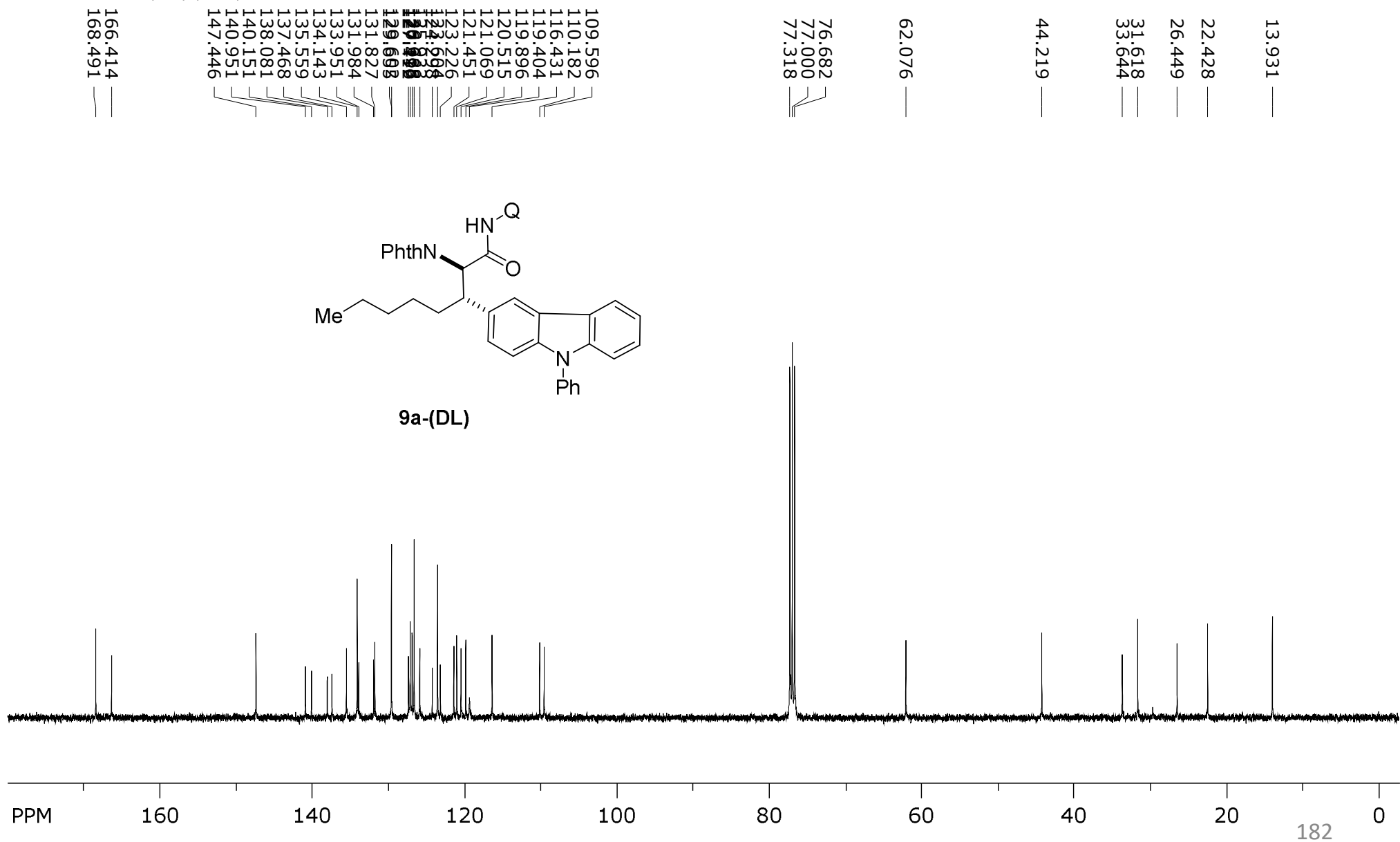
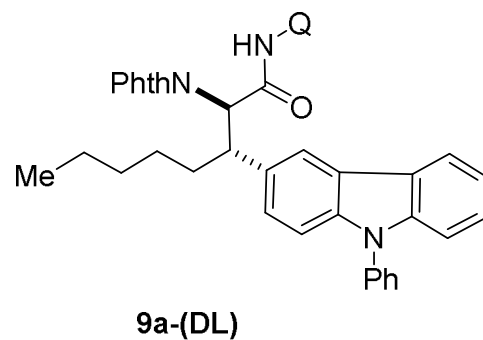
0.7417
0.7589
0.7758



9a-(DL)



SpinWorks 4: RD 120
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 40



SpinWorks 4: RD 120
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 40

168.491

166.414

147.446

140.151
140.951

138.081
137.468

135.559
134.143

133.951
131.984

131.827
129.655

129.602
127.412

127.196
126.928

126.668
125.933

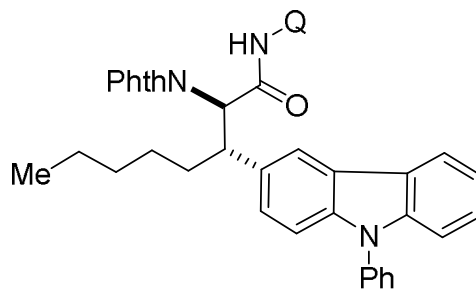
124.298
123.604

123.226
121.451

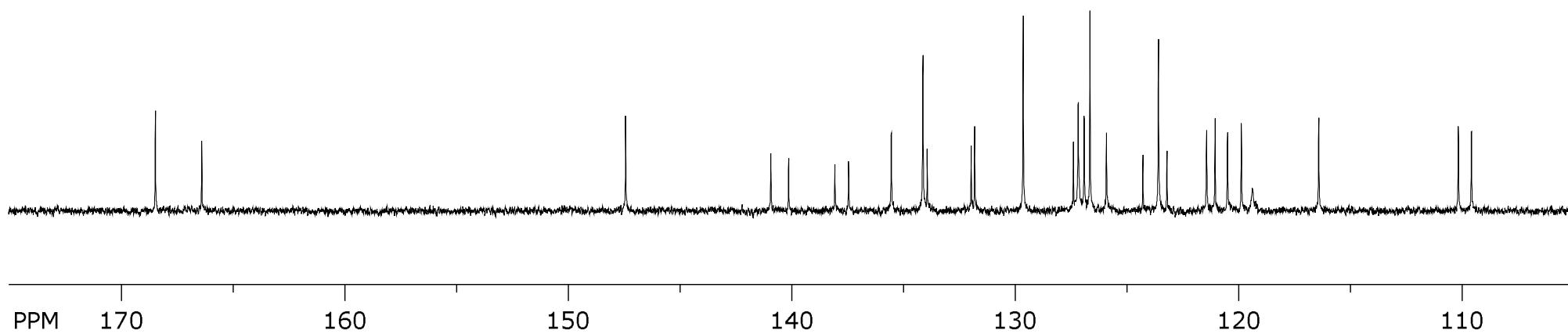
121.069
119.896

119.404
116.431

110.182
109.596

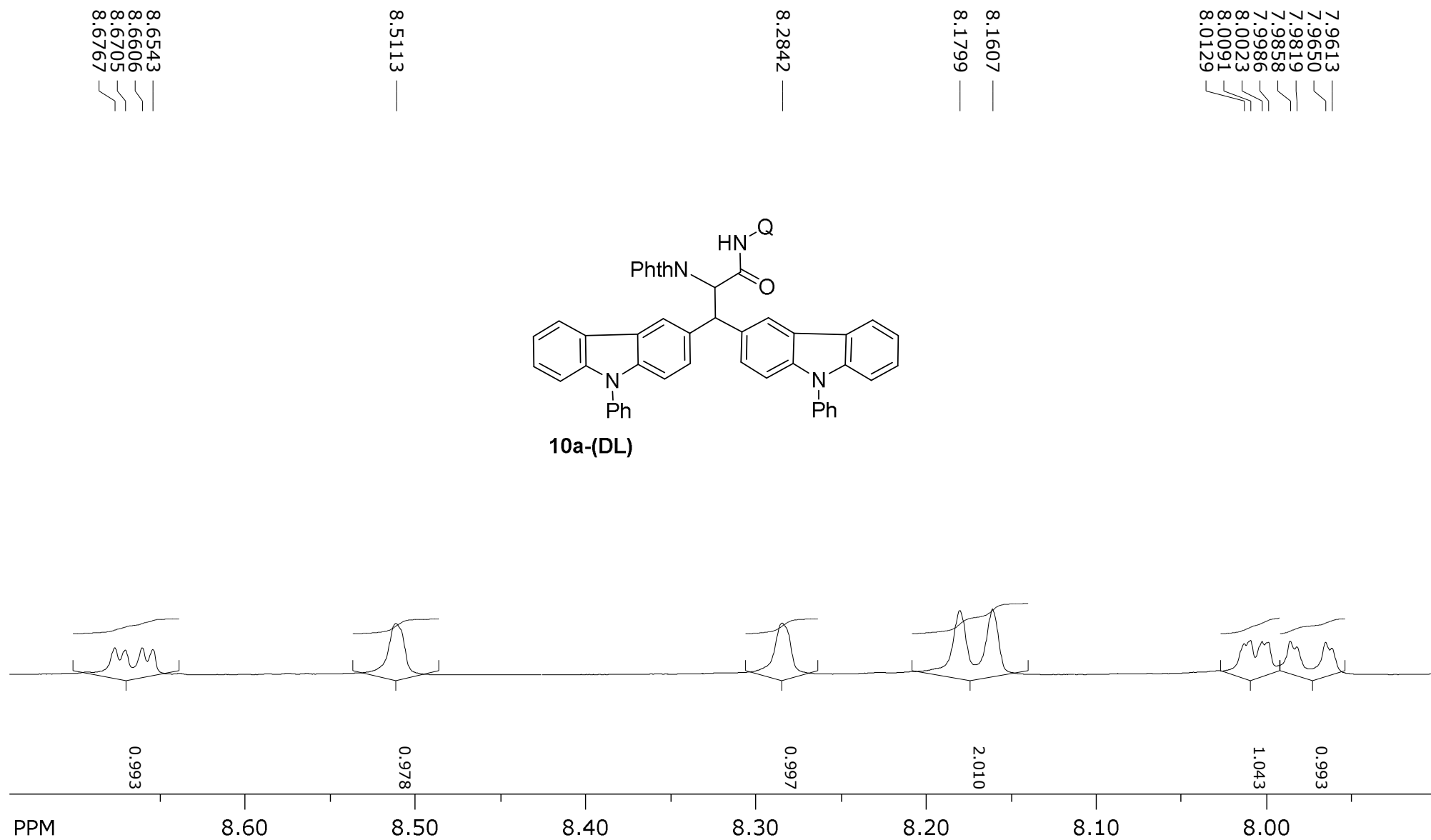


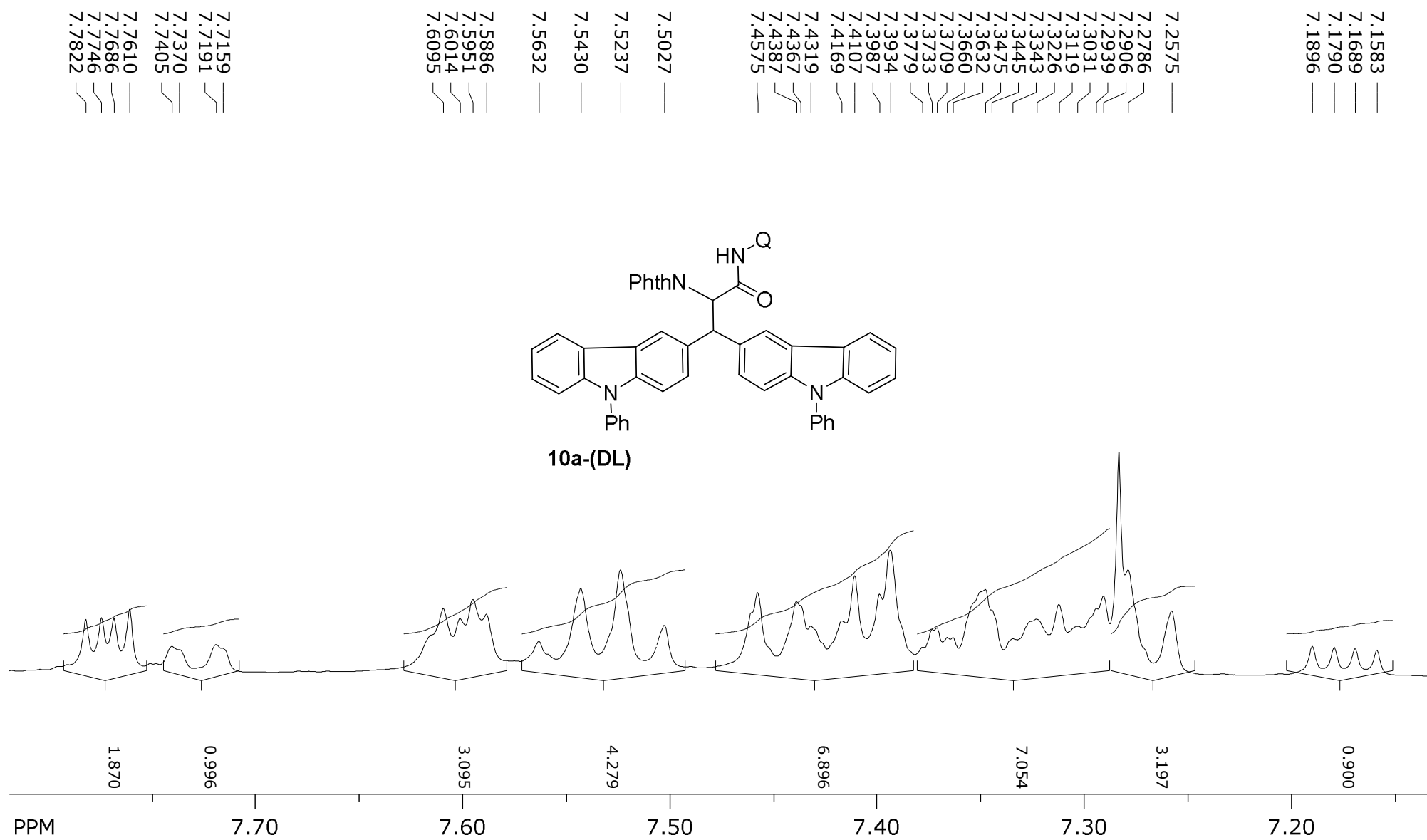
9a-(DL)



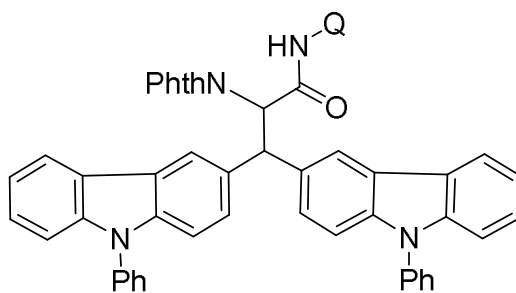


10a-(DL)

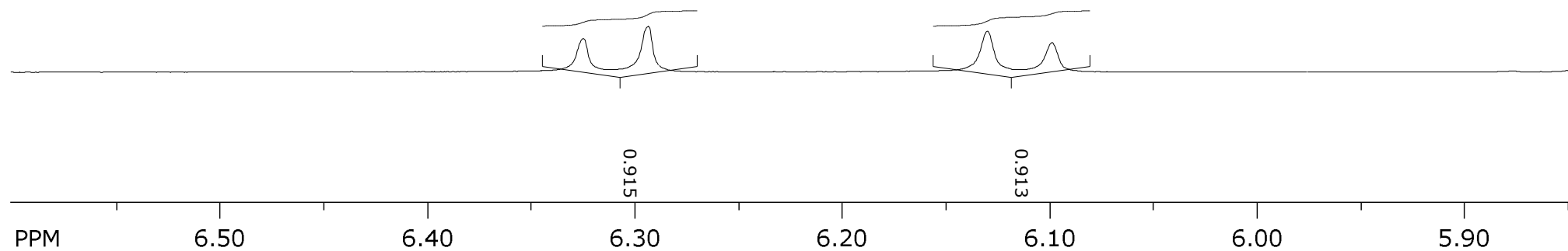




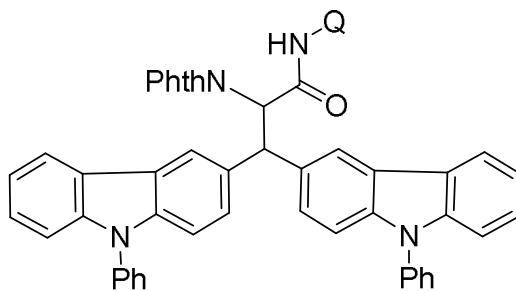
6.3246 —
6.2933 —
6.1297 —
6.0985 —



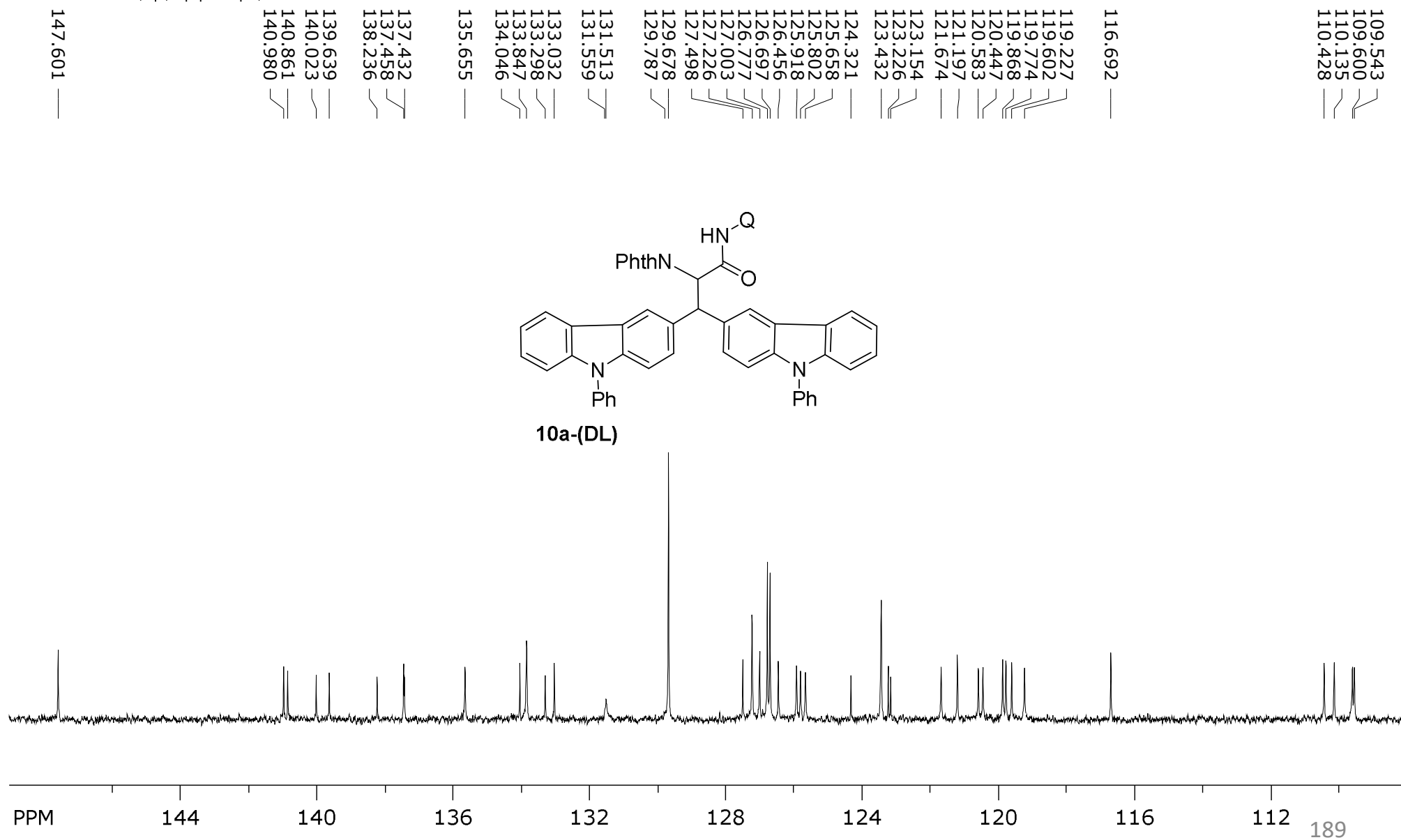
10a-(DL)



SpinWorks 4: RD 52 P
 C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 11



10a-(DL)



SpinWorks 4: rd 250 rep 2

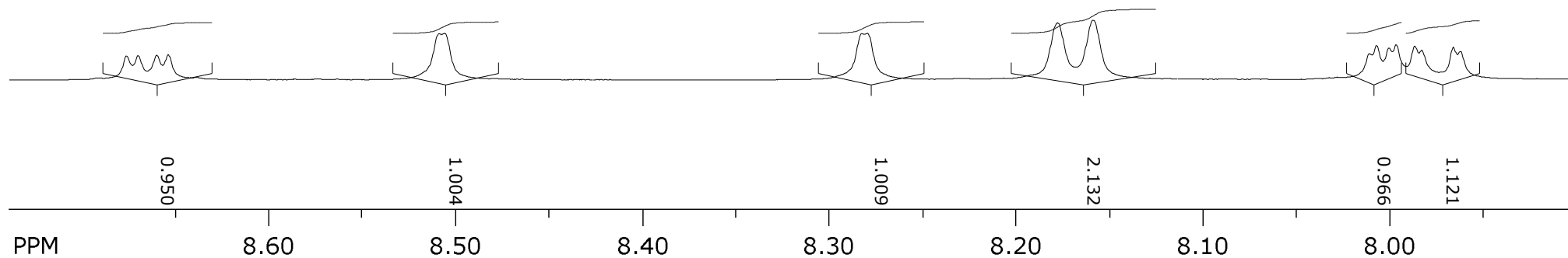
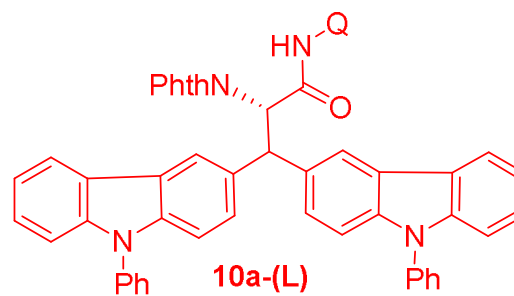
8.6542
8.6605
8.6703
8.6766

8.5090

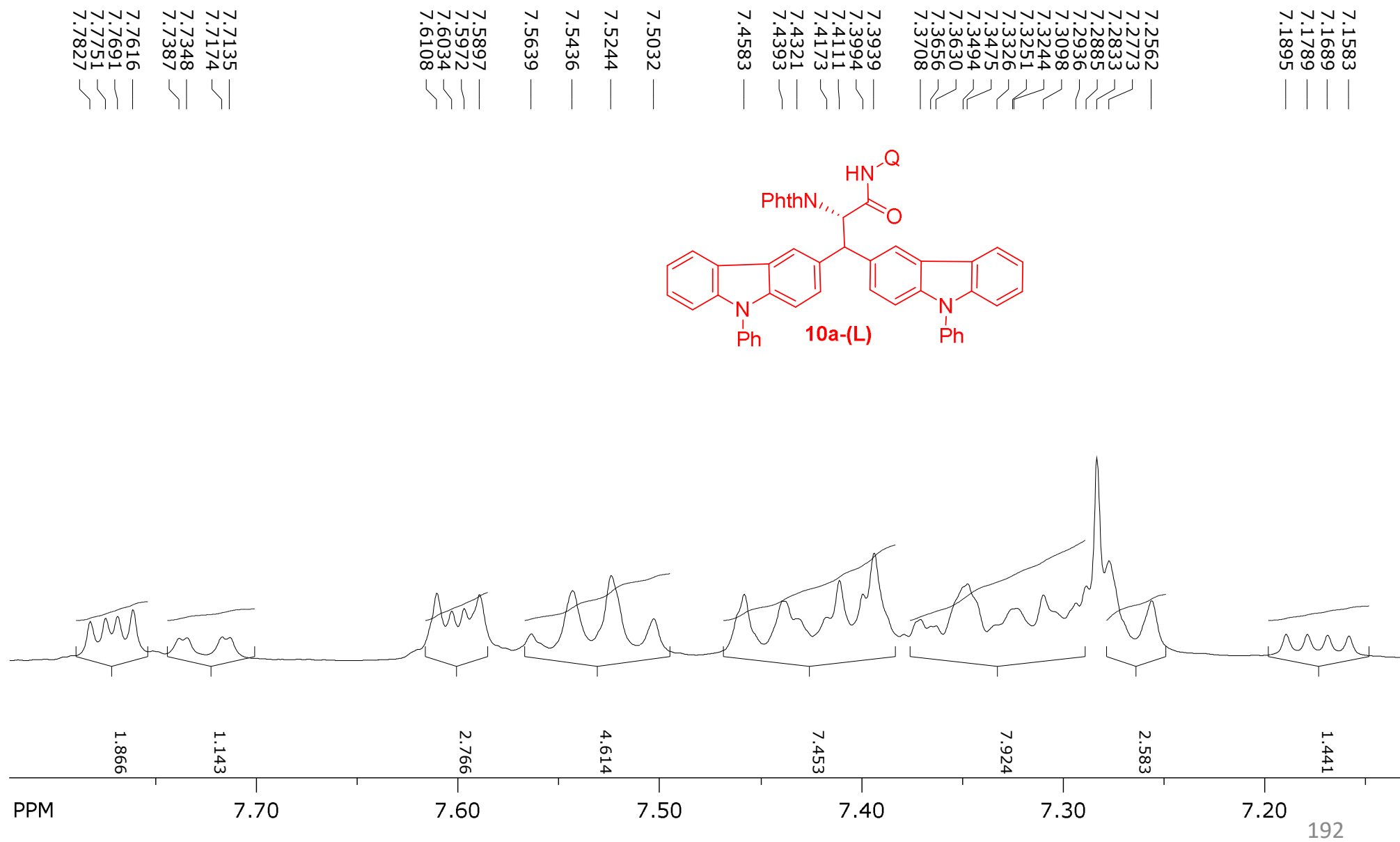
8.2824

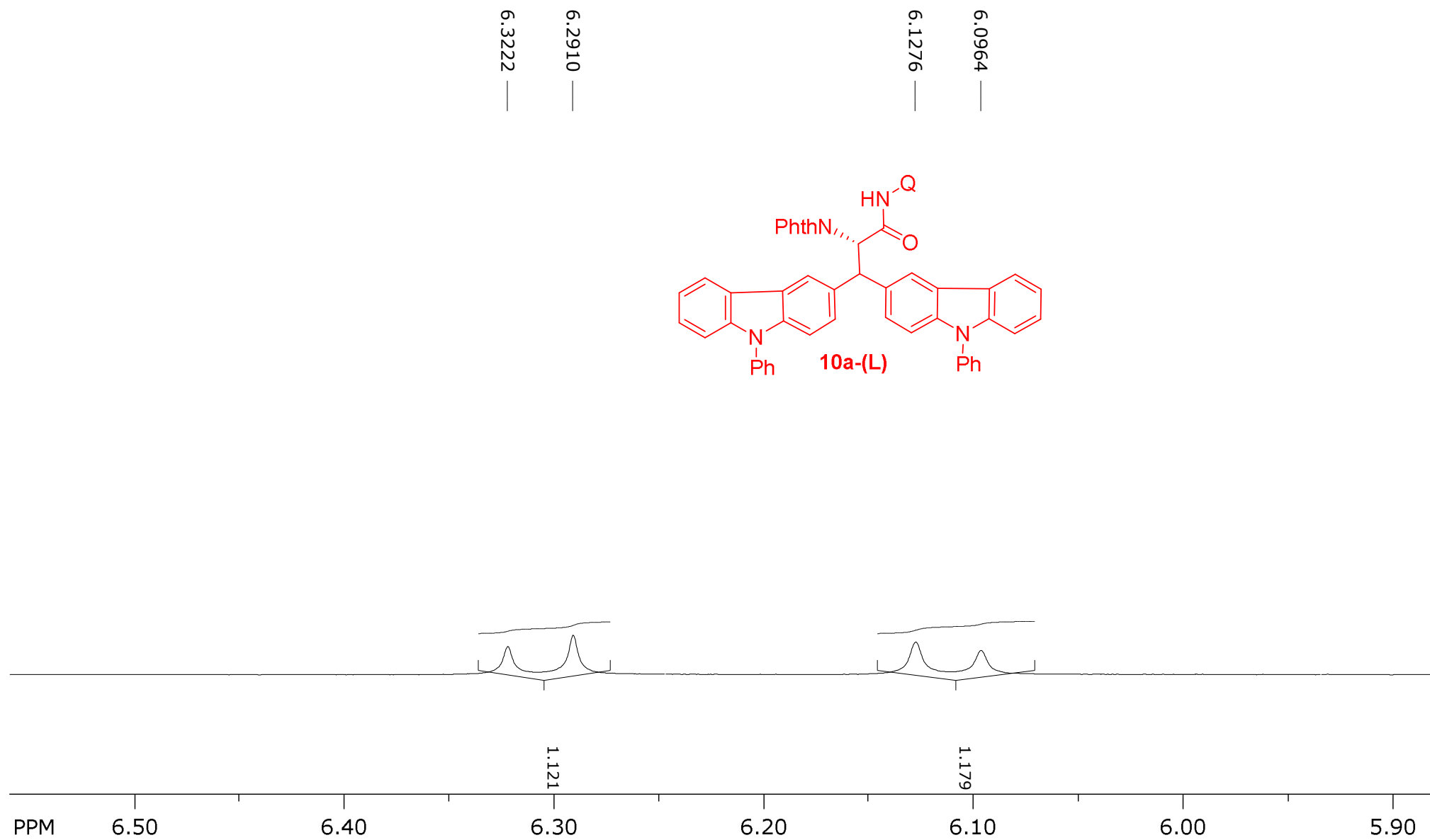
8.1593
8.1783

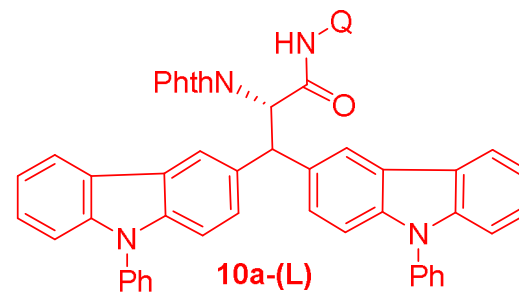
7.9622
7.9660
7.9829
7.9867
7.9965
8.0005
8.0071
8.0109



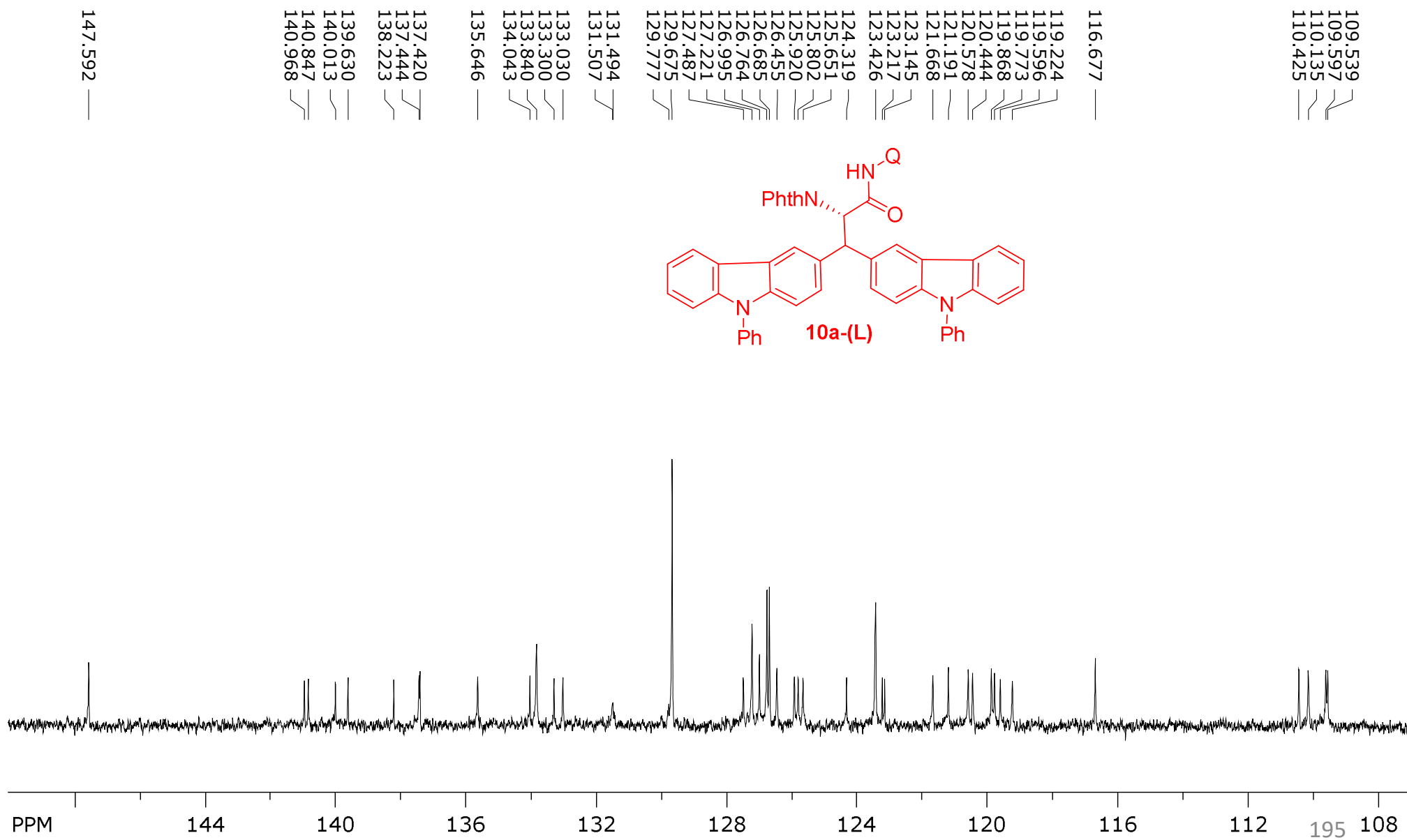
SpinWorks 4: rd 250 rep 2

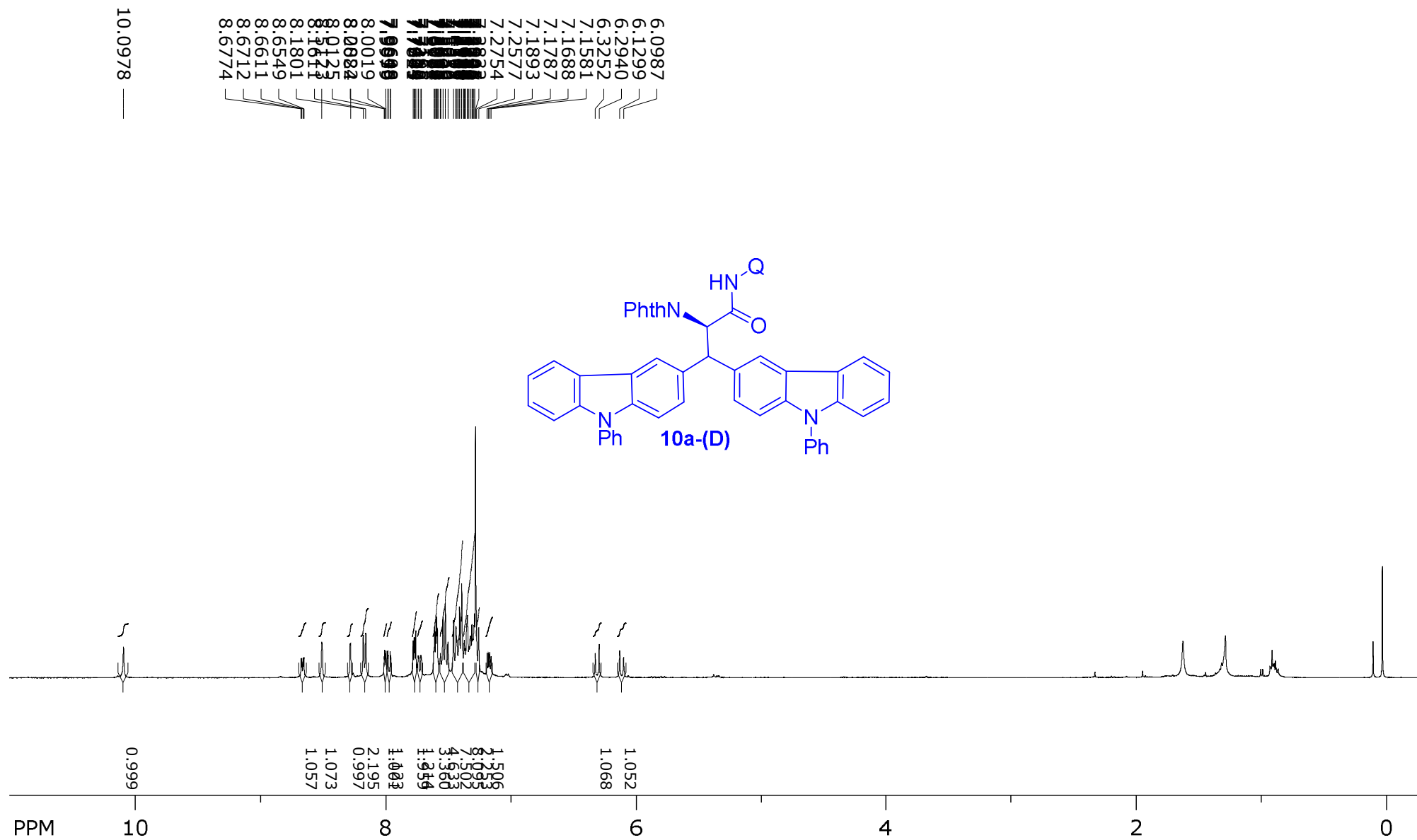


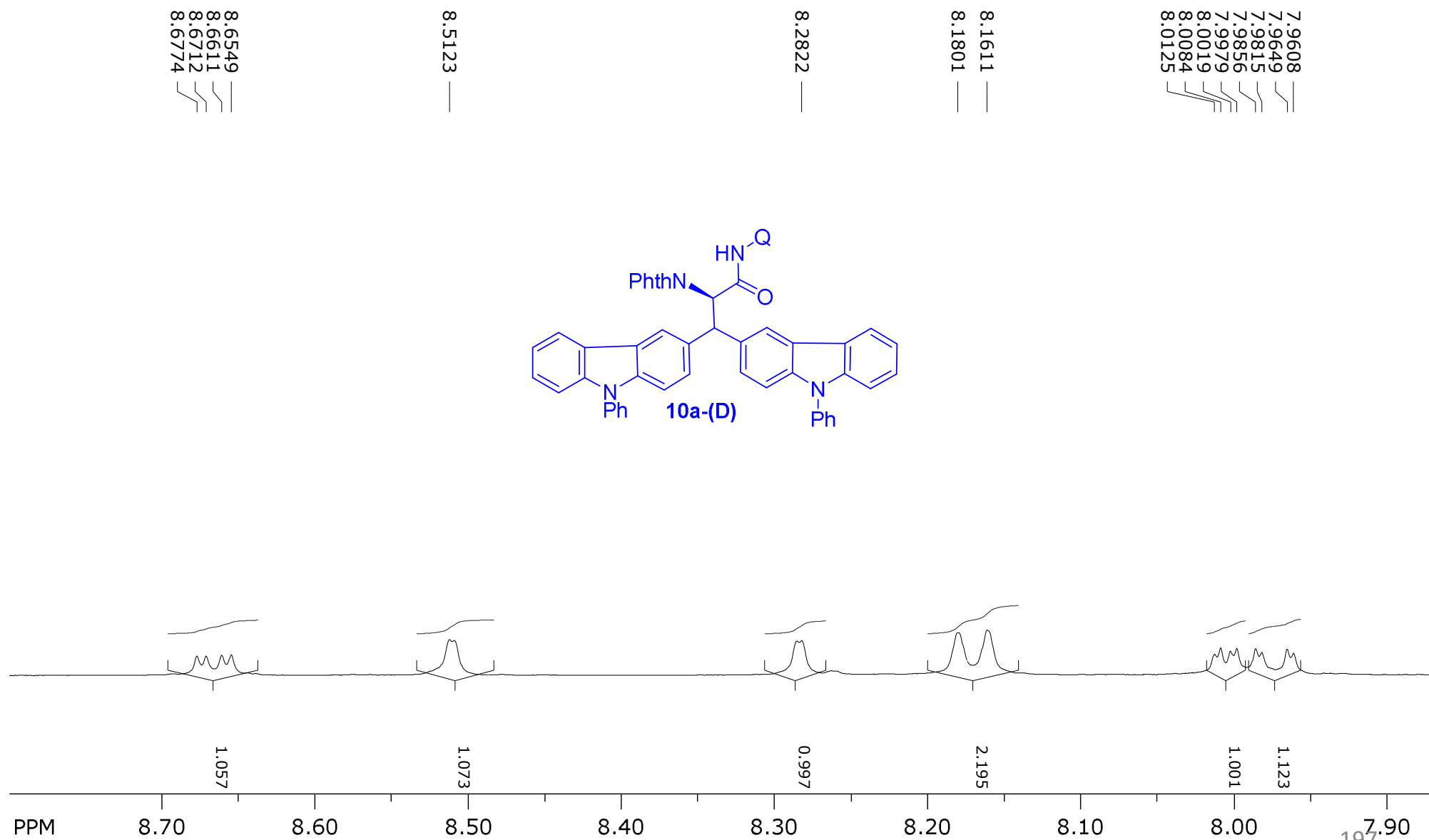


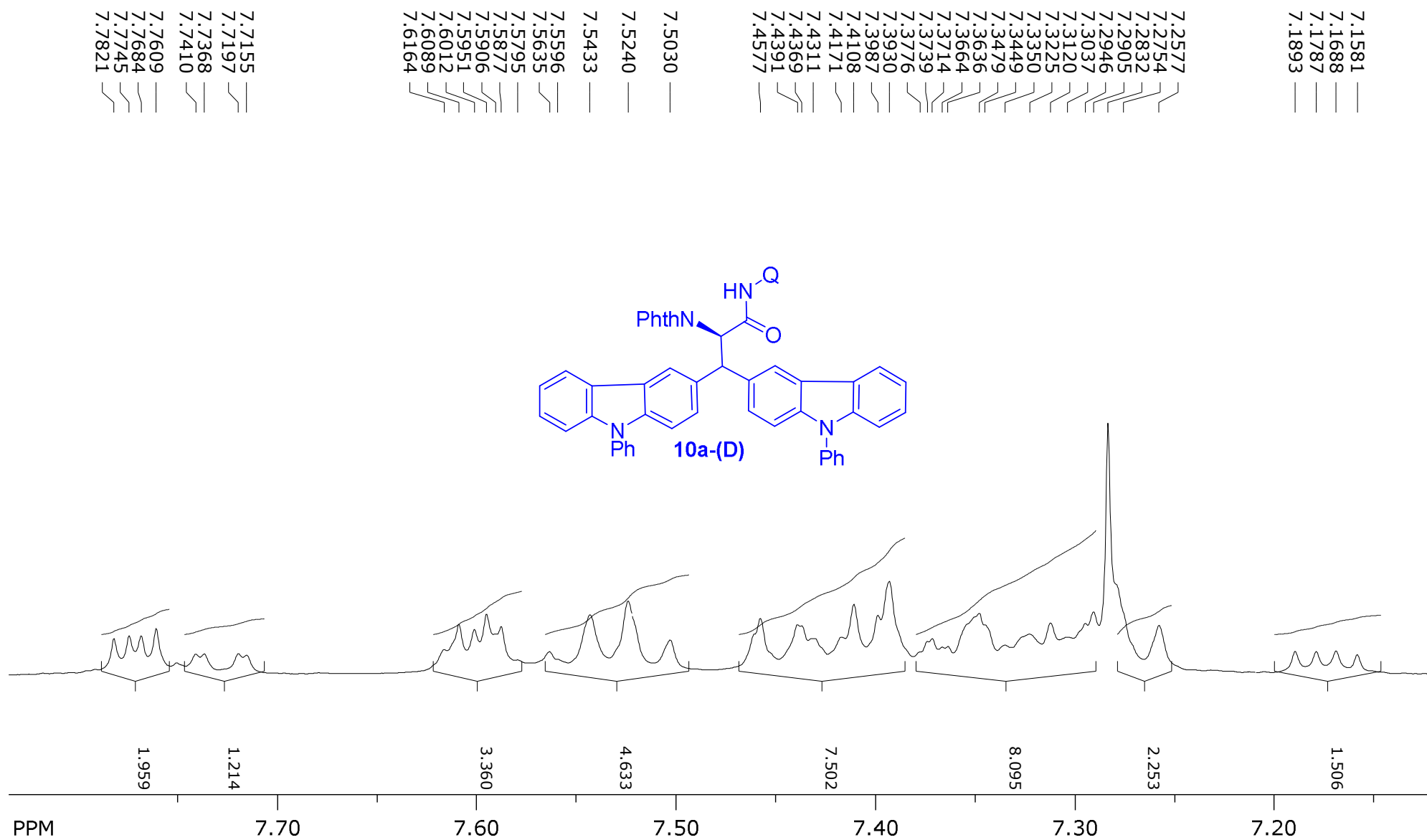
[illegible]

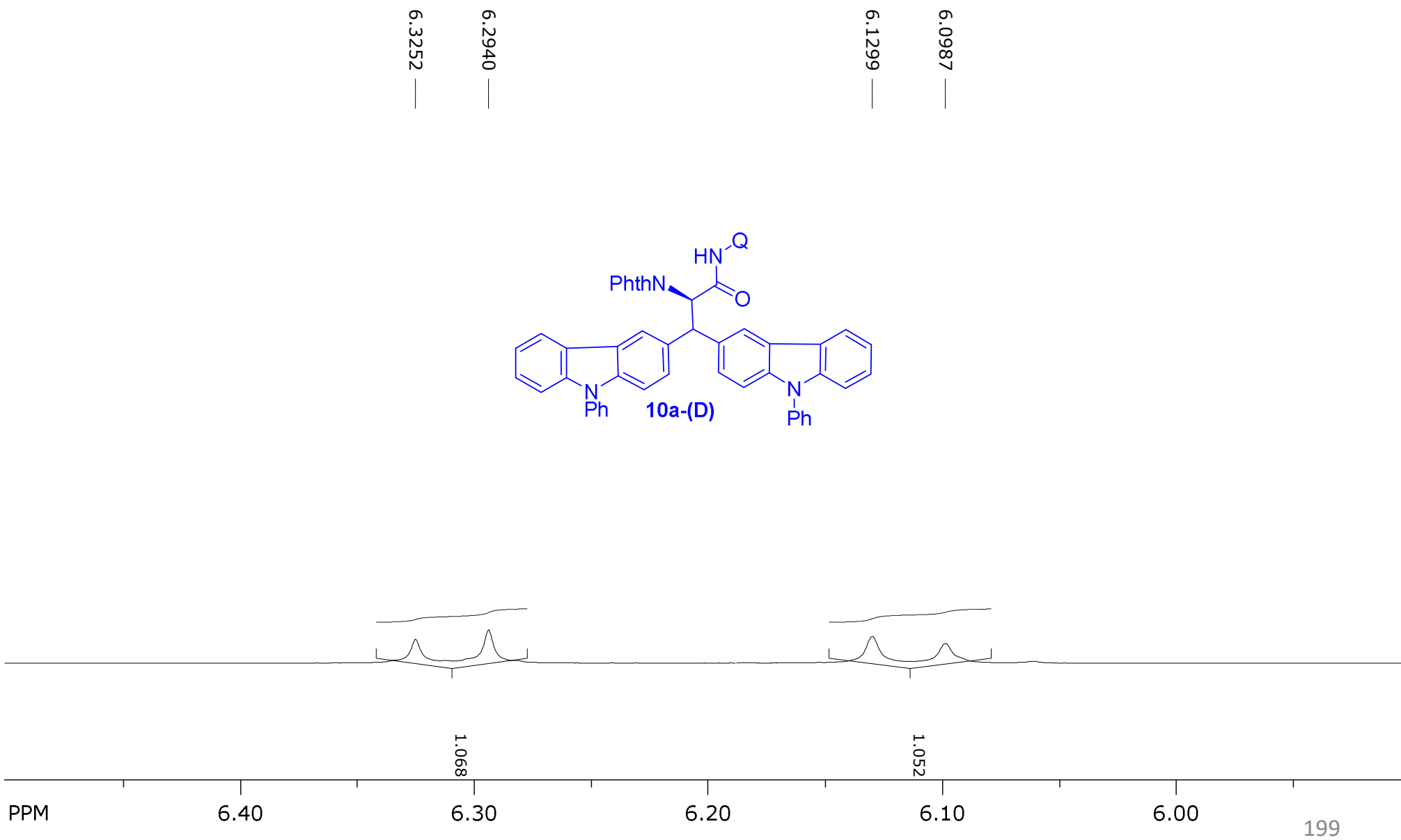
SpinWorks 4: rd 250



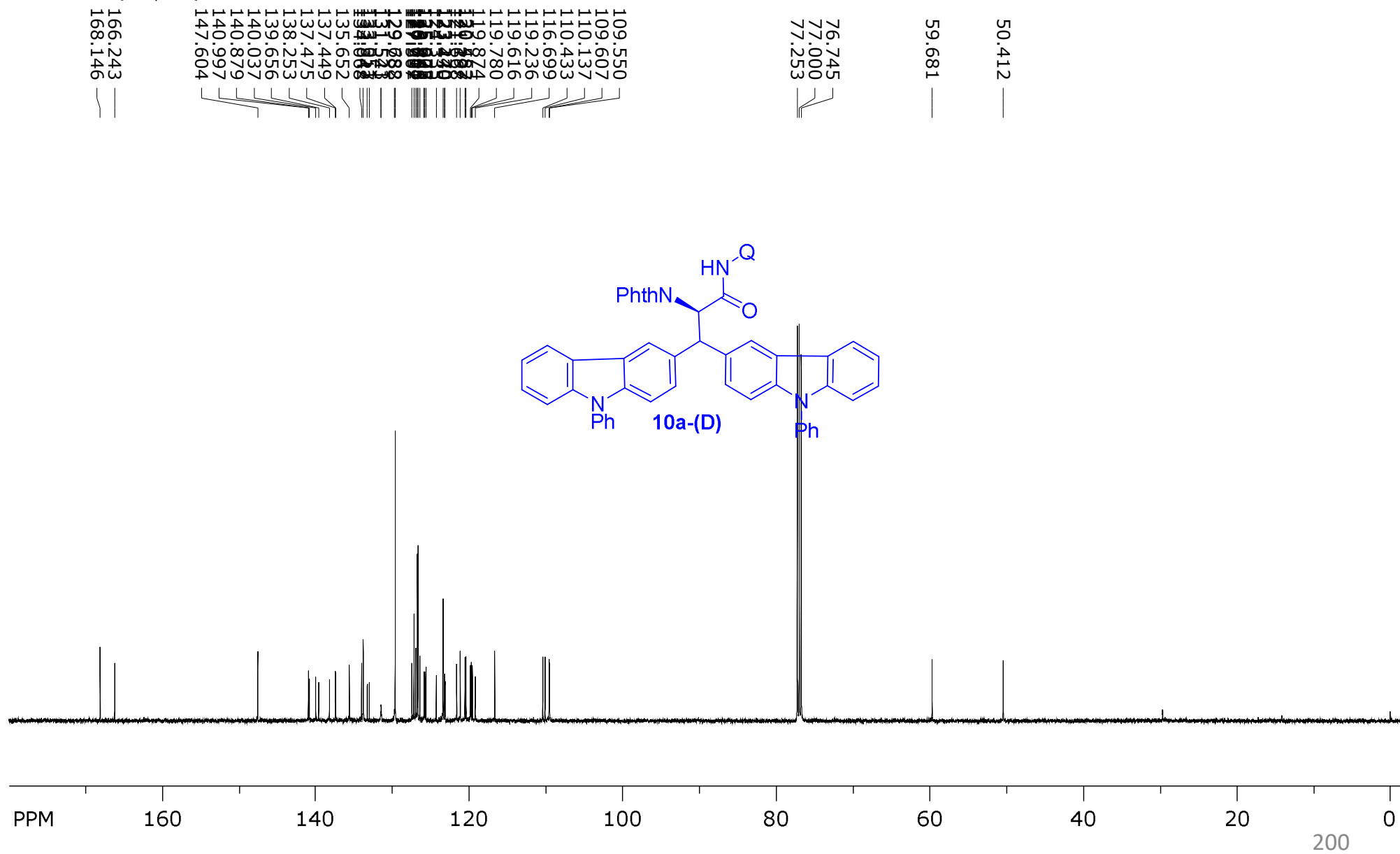




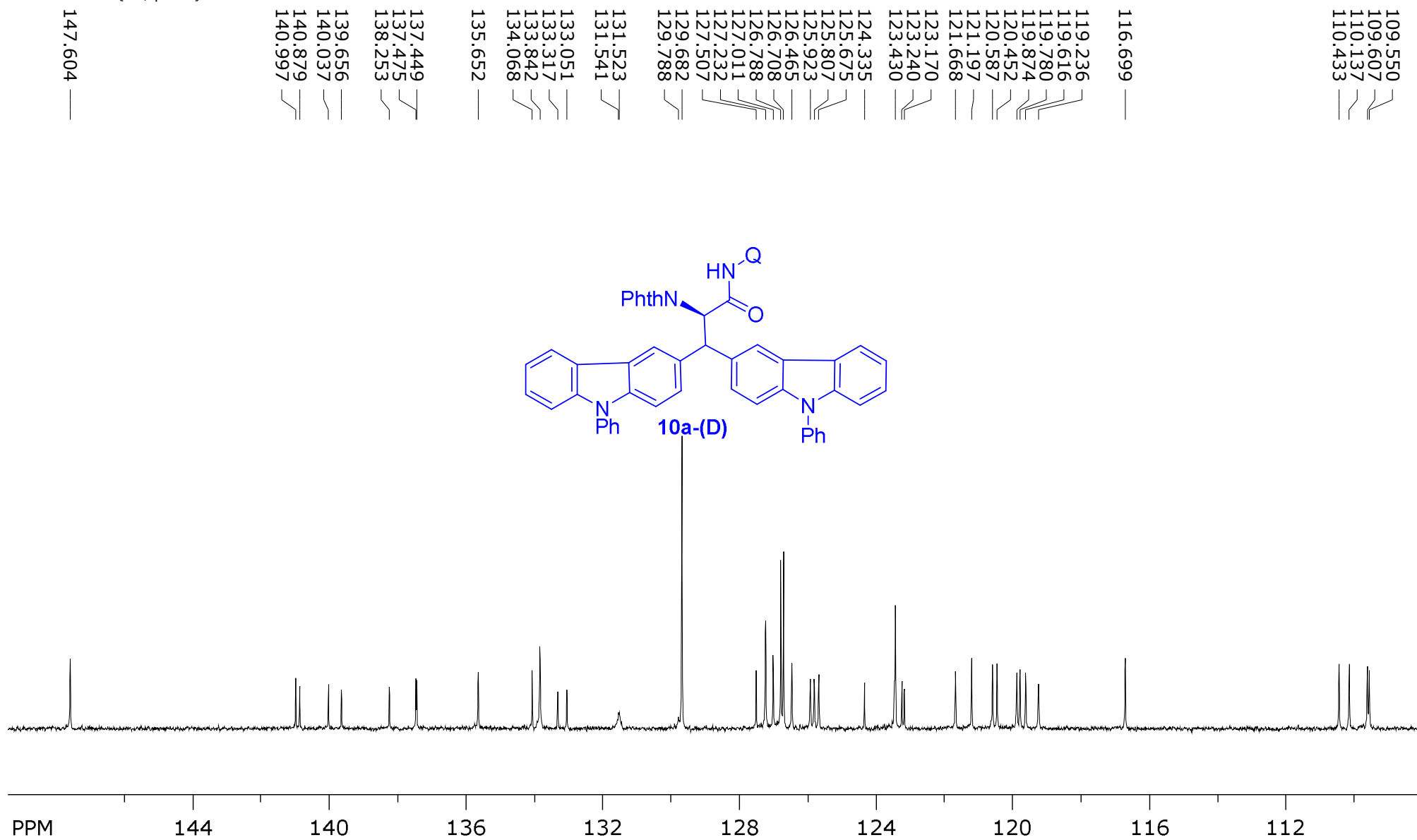


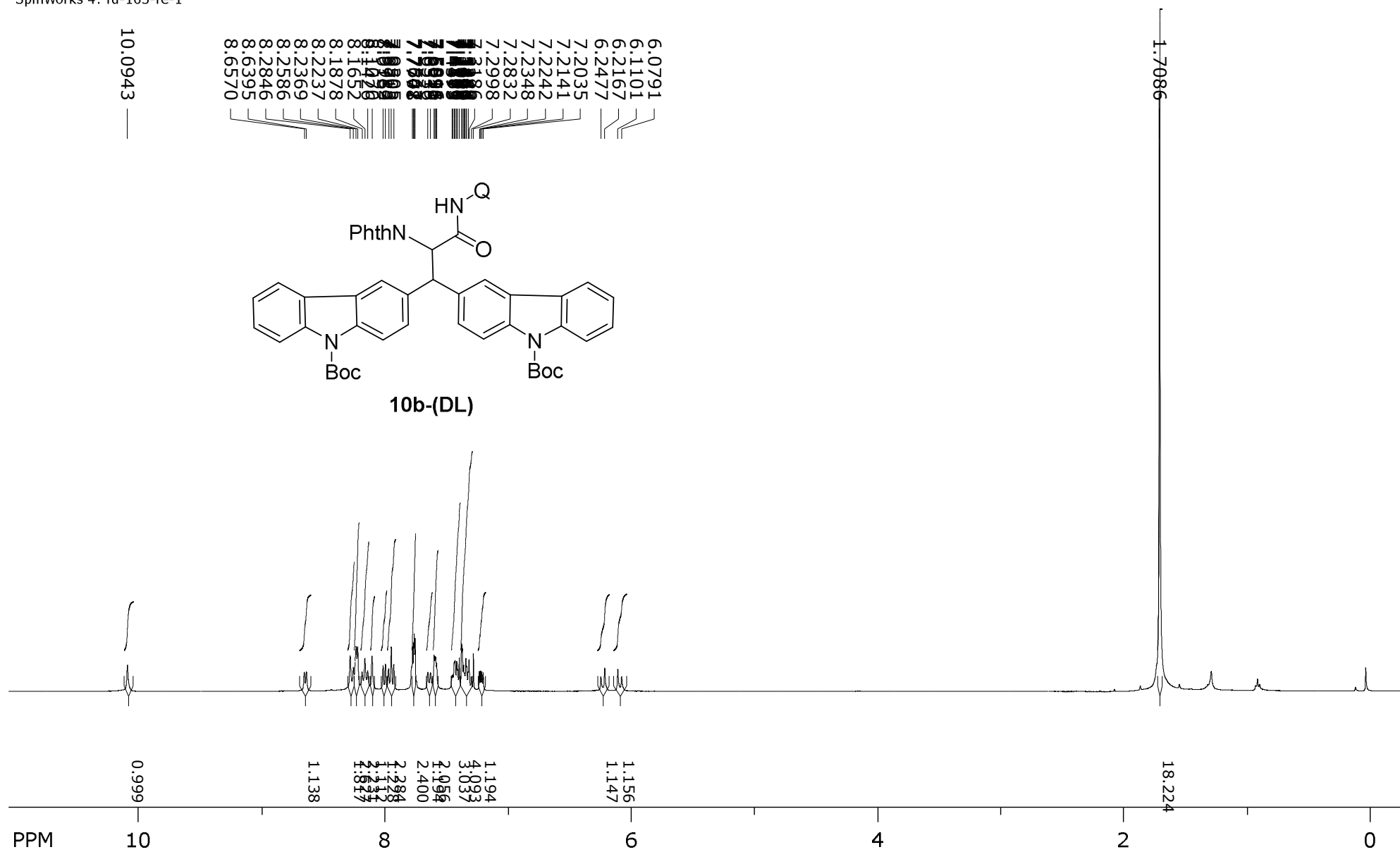


SpinWorks 4: SAB110
C13CPD CDCl3 {D:\Spectra} nmr 10



SpinWorks 4: SAB110
C13CPD CDCl3 {D:\Spectra} nmr 10



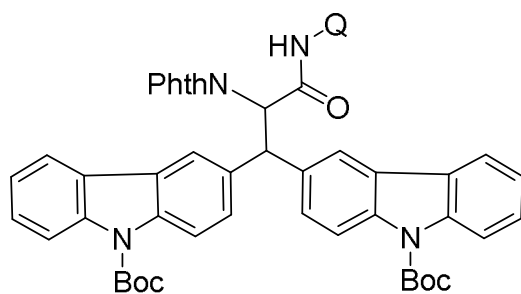


8.6395 —
8.6570 —

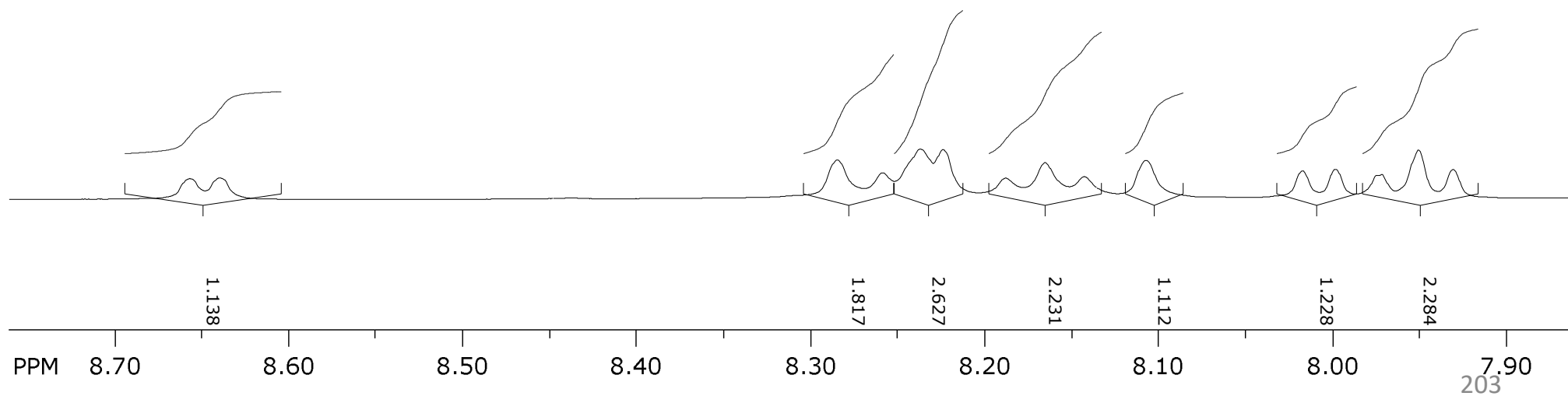
8.2237 —
8.2369 —
8.2586 —
8.2846 —

8.1426 —
8.1652 —
8.1878 —
8.1070 —

7.9305 —
7.9503 —
7.9715 —
7.9982 —
8.0169 —



10b-(DL)



SpinWorks 4: rd-163-re-1

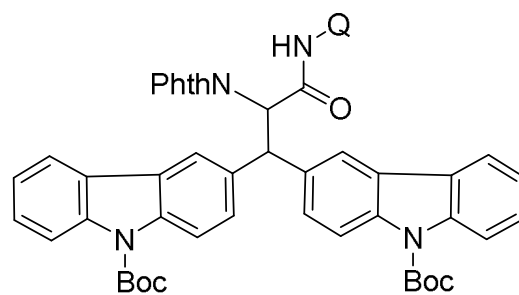
7.7567
7.7642
7.7701
7.7778

7.6536
7.6319
7.6025
7.5951
7.5893
7.5816

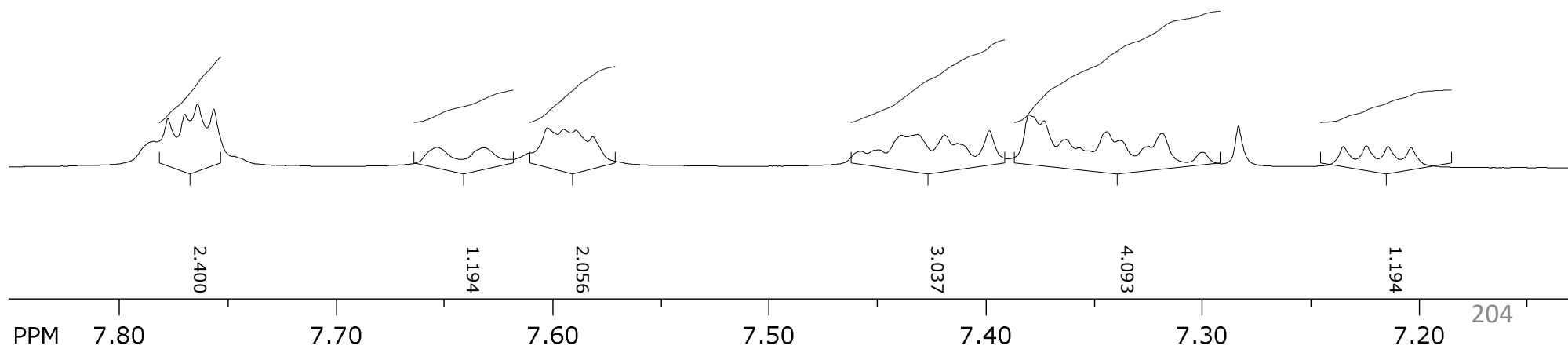
7.4575
7.4493
7.4389
7.4315
7.4190
7.4131
7.3983

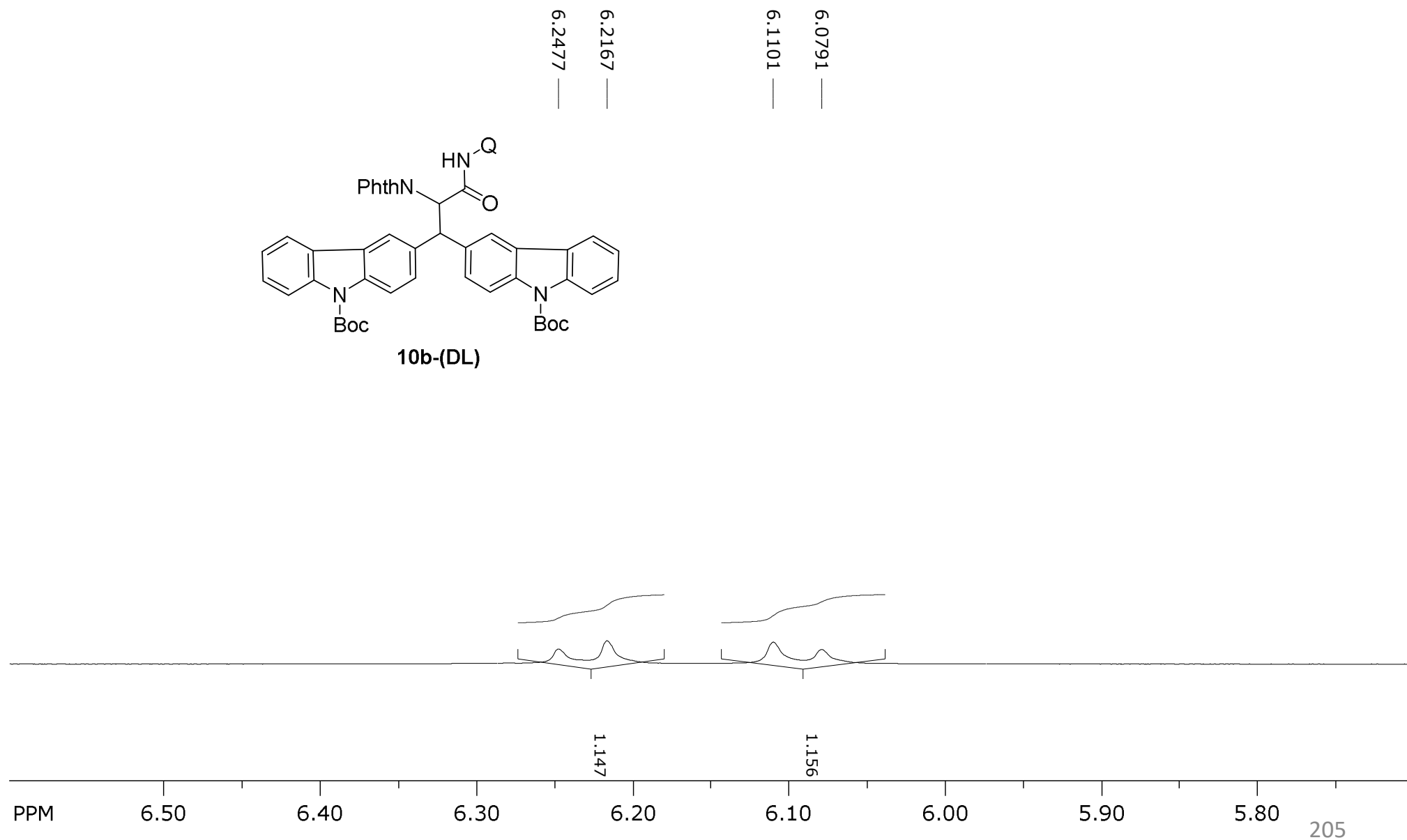
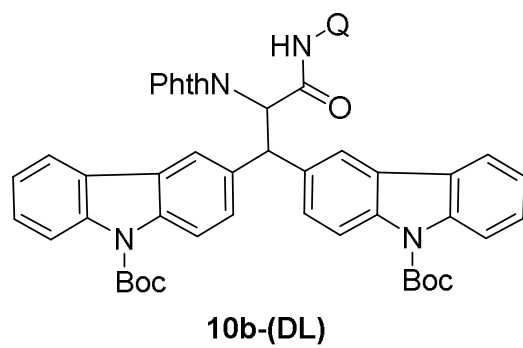
7.3800
7.3731
7.3629
7.3569
7.3526
7.3441
7.3383
7.3249
7.3186
7.2998
7.2832

7.2348
7.2242
7.2141
7.2035



10b-(DL)





Chemical structure of **10b-(DL)** is shown above the spectrum. The structure features two indole-3-carboxamide units, each protected with a Boc group, linked via a central chiral carbon atom. The amide group is labeled "HN-Q".

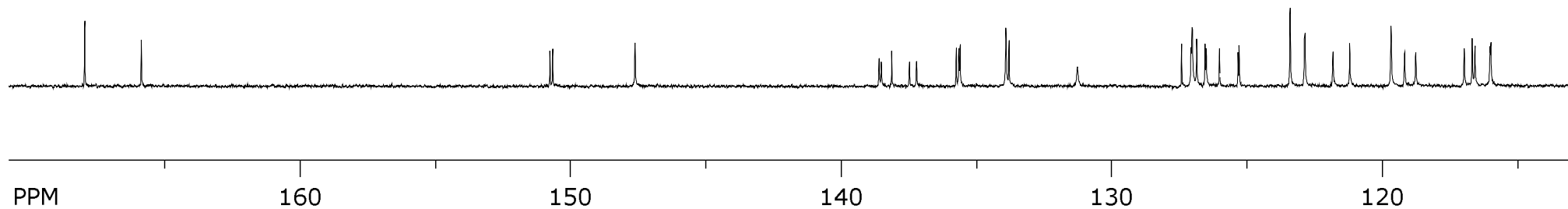
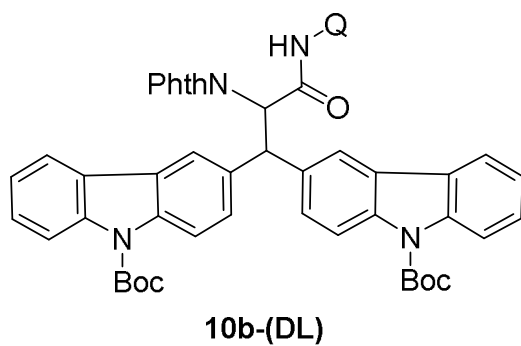
¹³C NMR spectrum (CDCl₃) data (PPM):

Chemical Shift (PPM)
167.971
165.877
150.763
147.615
138.588
138.508
138.123
137.467
137.204
135.734
133.898
133.890
133.888
131.254
129.999
129.998
129.997
129.996
129.995
129.994
129.993
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129.990
129.989
129.988
129.987
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129.984
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129.894
129.893
129.892
129.891
129.890
129.889
129.888
129.887
129.886
129.885
129.884
129.883
129.882
129.881
129.880
129.879
129.878
129.877
129.876
129.875
129.874
129.873
129.872
129.871
129.870
129.869
129.868
129.867
129.866
129.865
129.864
129.863
129.862
129.861
129.860
129.859
129.858
129.857
129.856
129.855
129.854
129.853
129.852
129.851
129.850
129.849
129.848
129.847
129.846
129.845
129.844
129.843
129.842
129.841
129.840
129.839
129.838
129.837
129.836
129.835
129.834
129.833
129.832
129.831
129.830
129.829
129.828
129.827
129.826
129.825
129.824
129.823
129.822
129.821
129.820
129.819
129.818
129.817
129.816
129.815
129.814
129.813
129.812
129.811
129.810
129.809
129.808
129.807
129.806
129.805
129.804
129.803
129.802
129.801
129.800
129.799
129.798
129.797
129.796
129.795
129.794
129.793
129.792
129.791
129.790
129.789
129.788
129.787
129.786
129.785
129.784
129.783
129.782
129.781
129.780
129.779
129.778
129.777
129.776
129.775
129.774
129.773
129.772
129.771
129.770
129.769
129.768
129.767
129.766
129

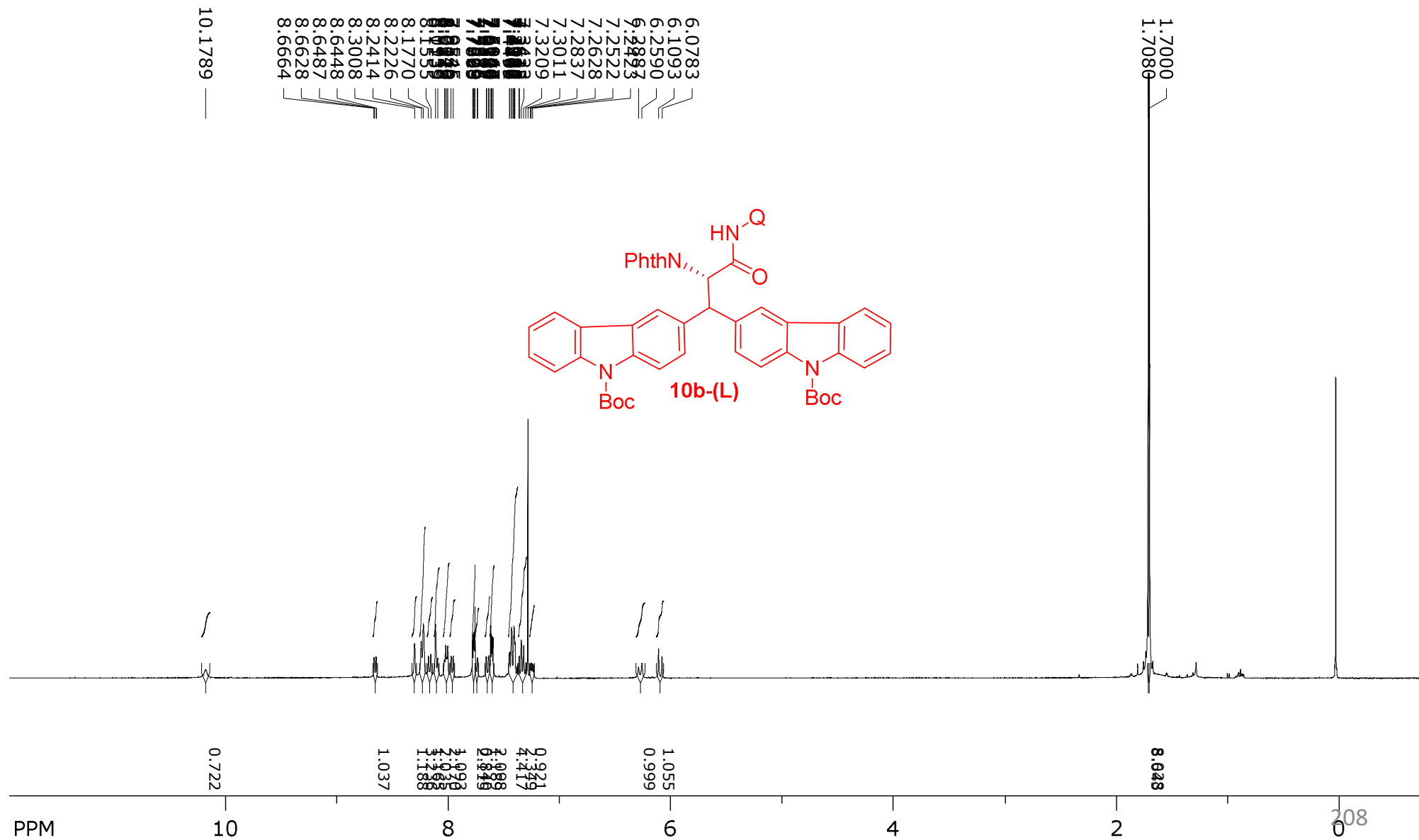
206

SpinWorks 4: RD 163 R
 C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 60

167.971 —
 165.877 —
 150.660 —
 150.763 —
 147.615 —
 138.588 —
 138.508 —
 138.123 —
 137.467 —
 137.204 —
 135.734 —
 135.638 —
 135.590 —
 133.898 —
 133.781 —
 131.254 —
 127.399 —
 127.047 —
 127.008 —
 126.840 —
 126.533 —
 126.489 —
 125.998 —
 125.311 —
 125.270 —
 123.384 —
 122.838 —
 121.798 —
 121.181 —
 119.651 —
 119.148 —
 118.738 —
 116.945 —
 116.651 —
 116.550 —
 115.989 —
 115.961 —



SpinWorks 4: RD-1019-REP-1
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2



SpinWorks 4: RD-1019-REP-1
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2

8.6448
8.6487
8.6628
8.6664

8.3008

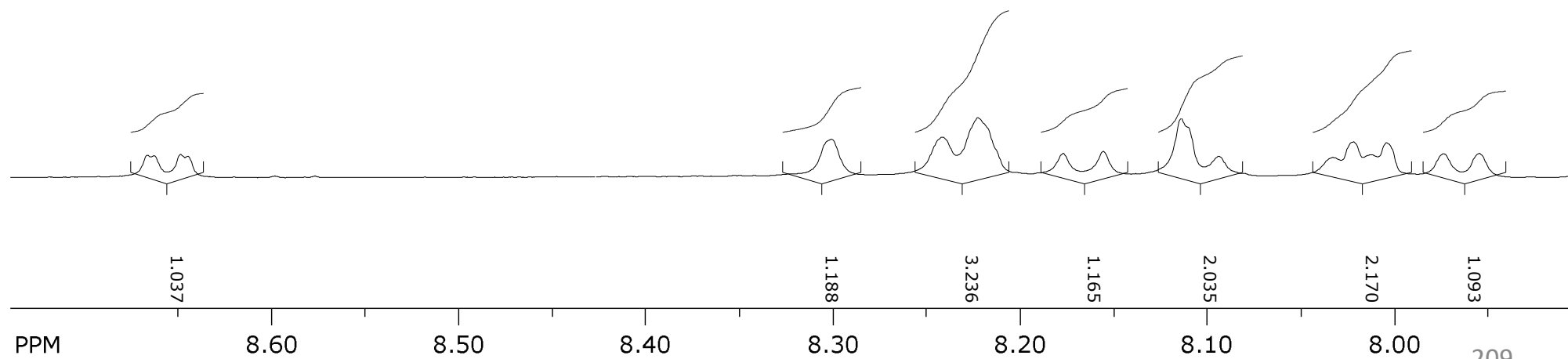
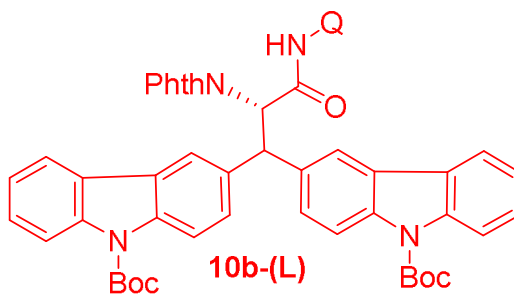
8.2414
8.2226

8.1770
8.1555

8.1139
8.0939

8.0329
8.0217
8.0126

7.9736
7.9545



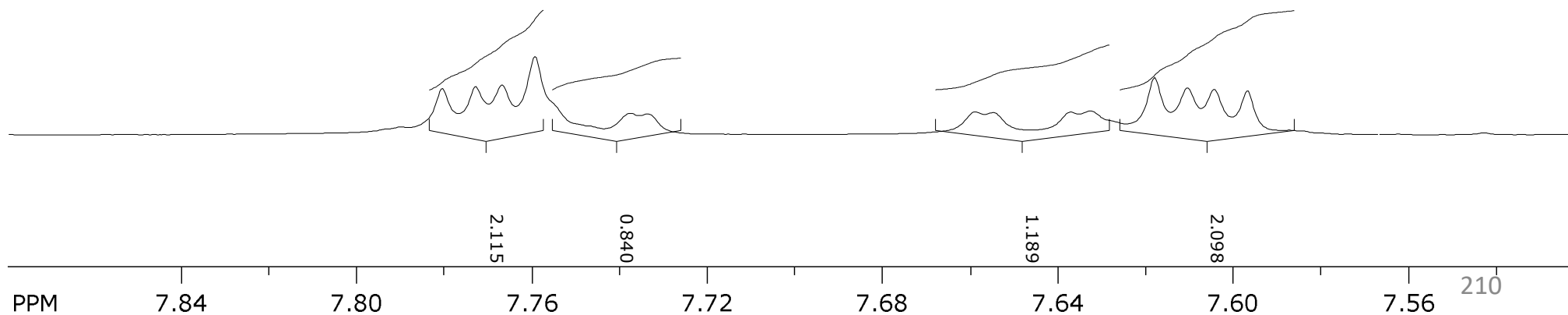
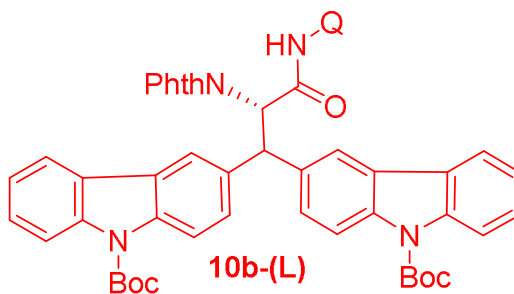
SpinWorks 4: RD-1019-REP-1
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2

7.7336 —
7.7376 —

7.6547 —
7.6589 —

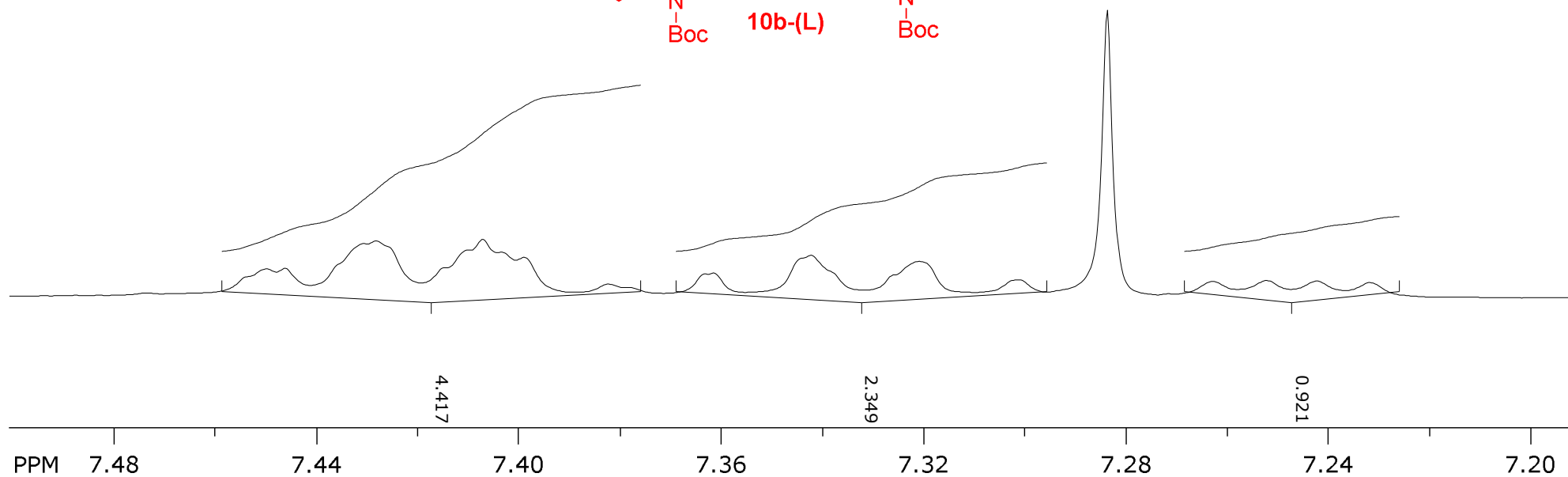
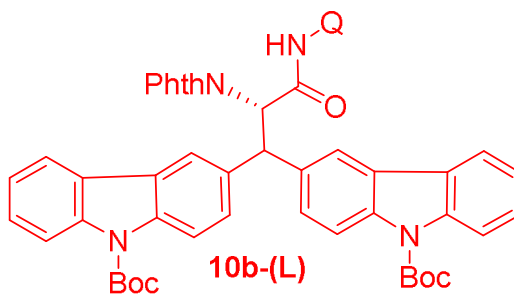
7.6325 —
7.6369 —

7.6179 —
7.6104 —
7.6043 —
7.5967 —



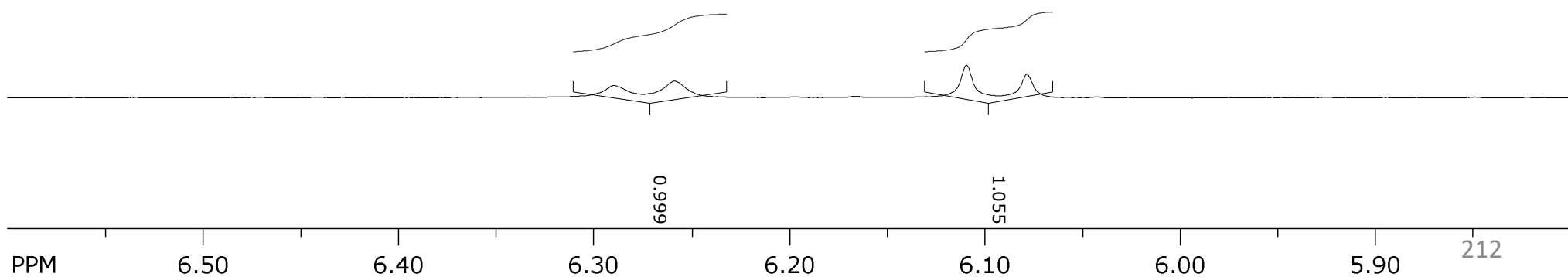
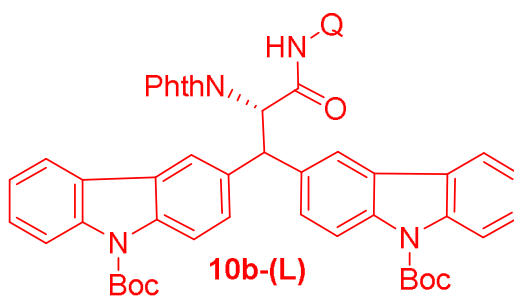
SpinWorks 4: RD-1019-REP-1
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2

7.3990 —
7.4035 —
7.4071 —
7.4102 —
7.4147 —
7.4282 —
7.4308 —
7.4462 —
7.4499 —
7.3615 —
7.3633 —
7.3423 —
7.3209 —
7.3011 —
7.2837 —
7.2628 —
7.2522 —
7.2423 —
7.2326 —

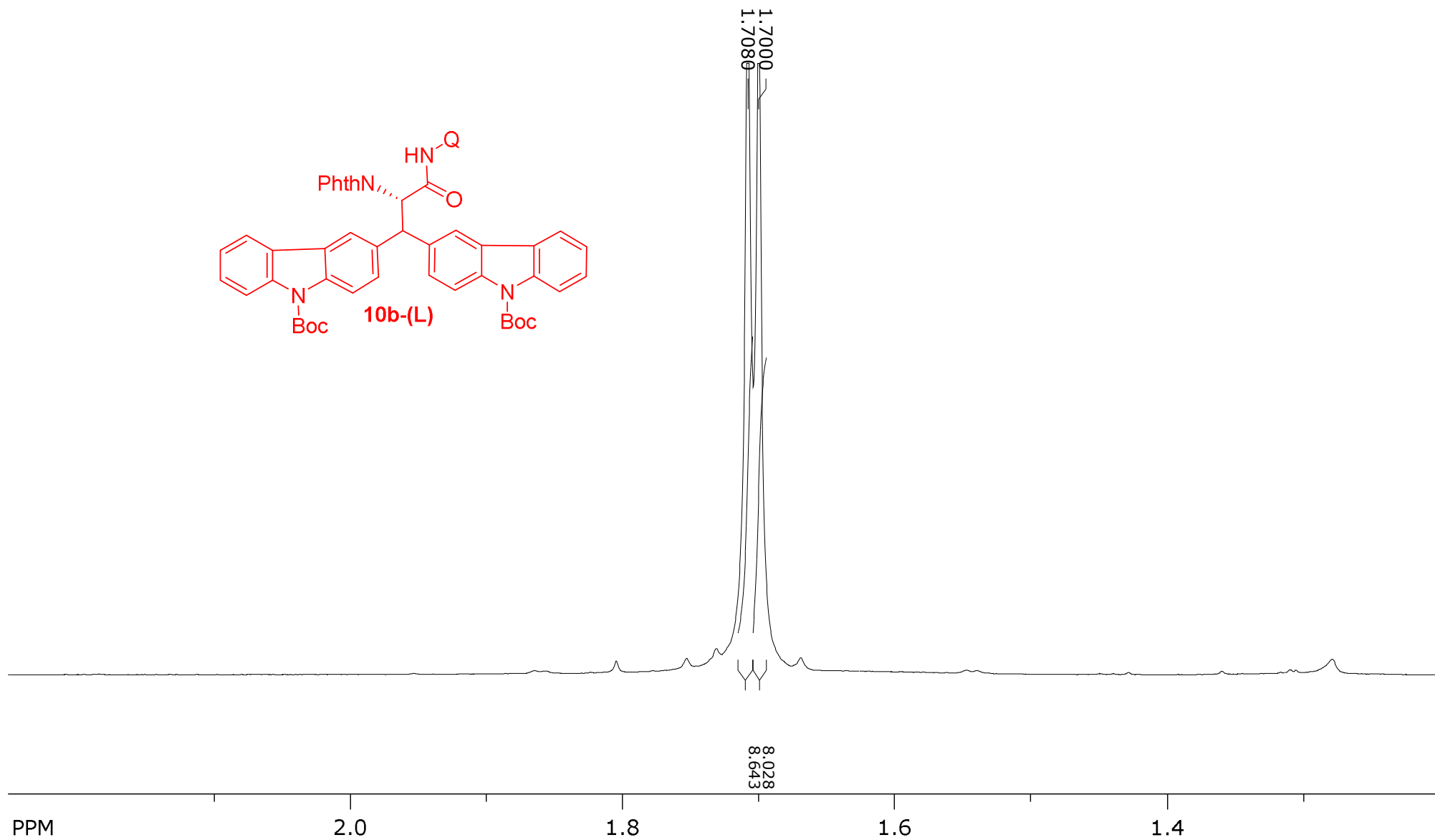
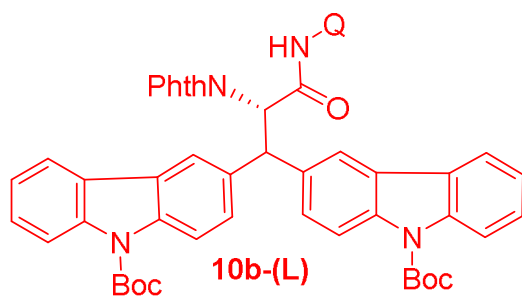


SpinWorks 4: RD-1019-REP-1
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2

6.2887 —
6.2590 —
6.1093 —
6.0783 —



SpinWorks 4: RD-1019-REP-1
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2



SpinWorks 4: RD-1019
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 20

168.025

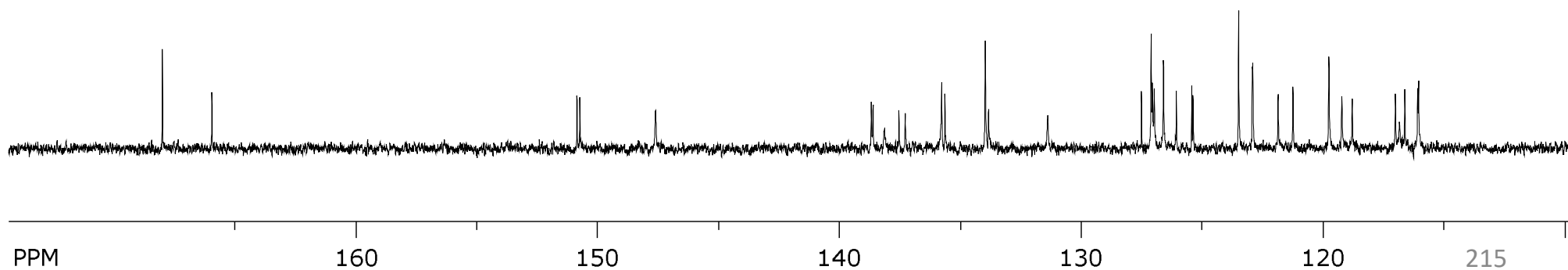
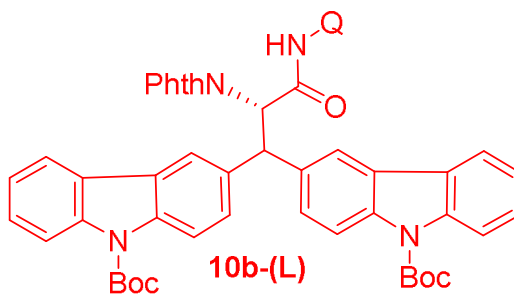
165.973

150.747
150.864

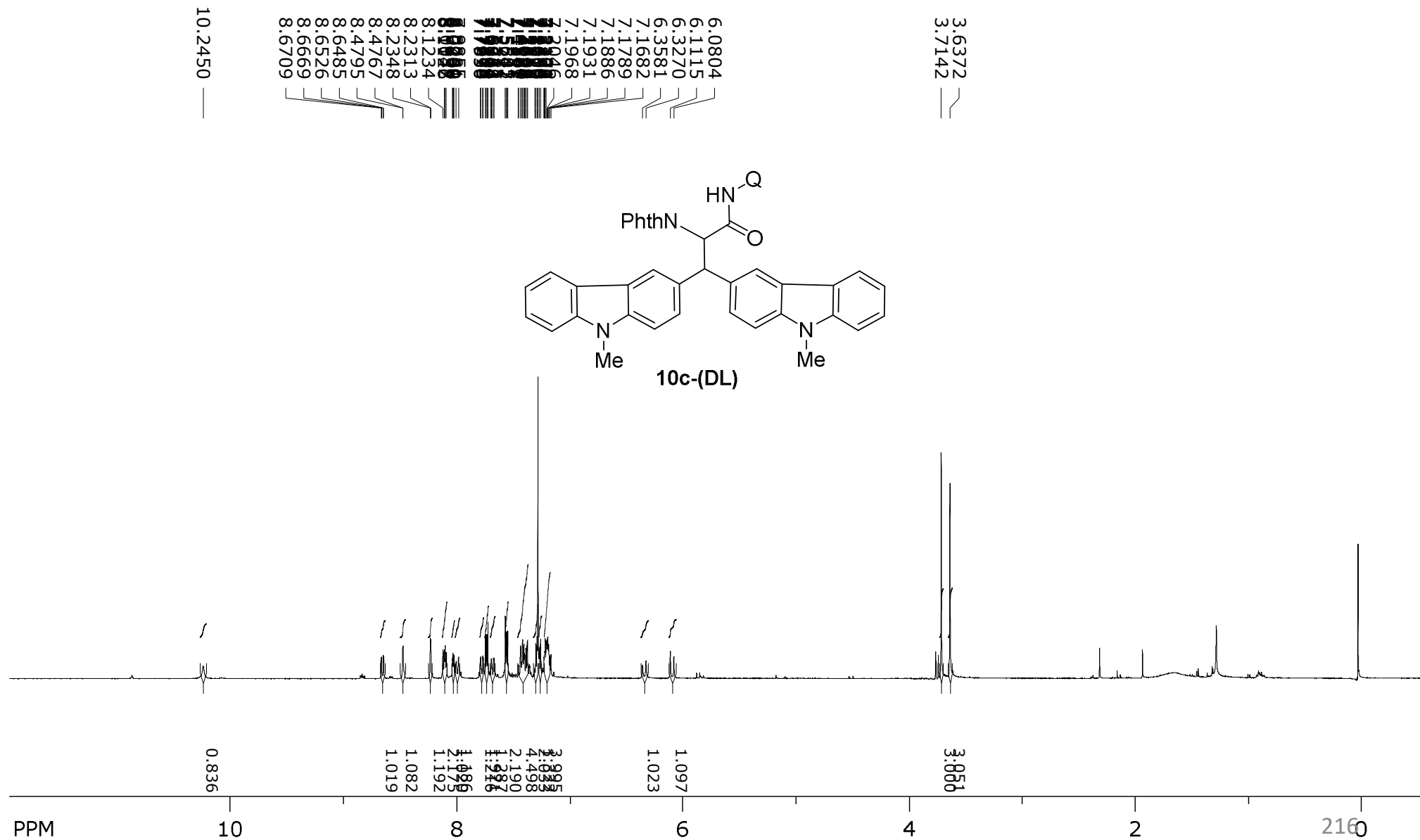
147.616

138.682
138.612
138.155
138.138
137.538
137.278
135.772
135.635
133.965
133.829

131.378
127.504
127.102
127.052
126.973
126.594
126.060
125.421
125.367
123.480
122.910
122.898
121.849
121.234
119.742
119.209
118.780
116.995
116.825
116.604
116.070
115.980



SpinWorks 4: RD-1015
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 13



SpinWorks 4: RD-1015
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 13

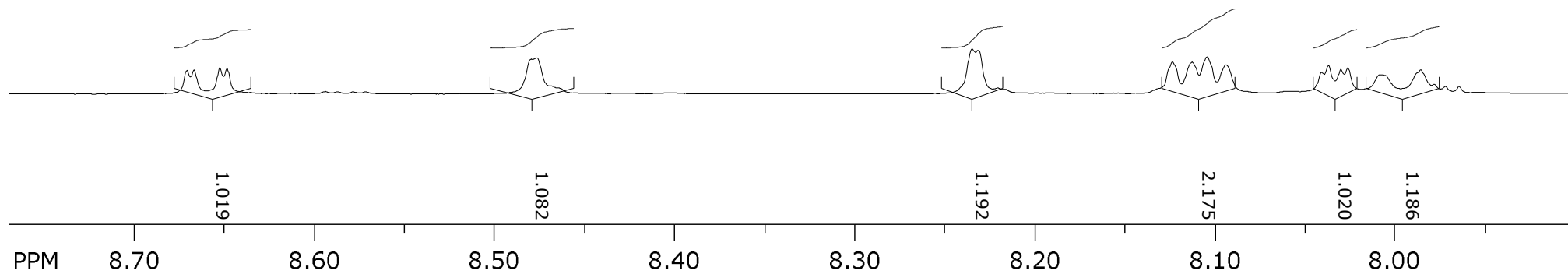
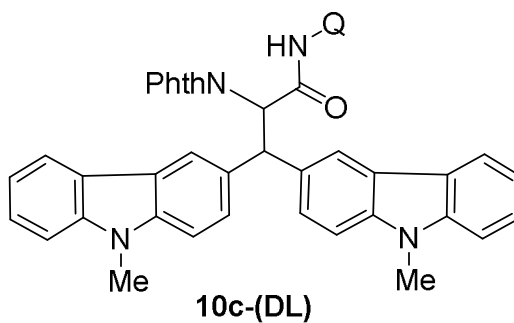
8.6485
8.6526
8.6669
8.6709

8.4767
8.4795

8.2313
8.2348

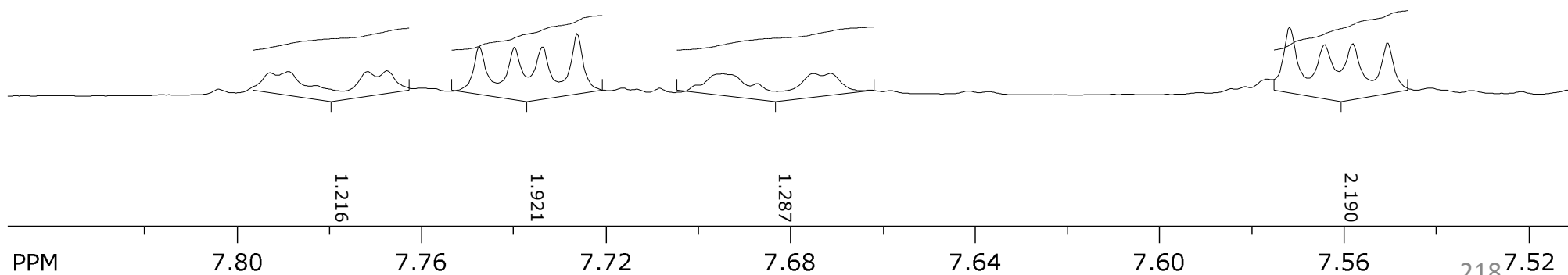
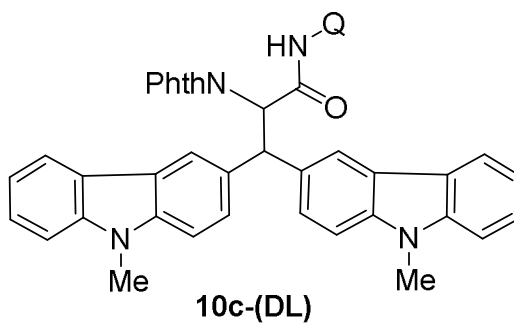
8.0937
8.1042
8.1126
8.1234

7.9855
8.0081
8.0260
8.0299
8.0368
8.0406



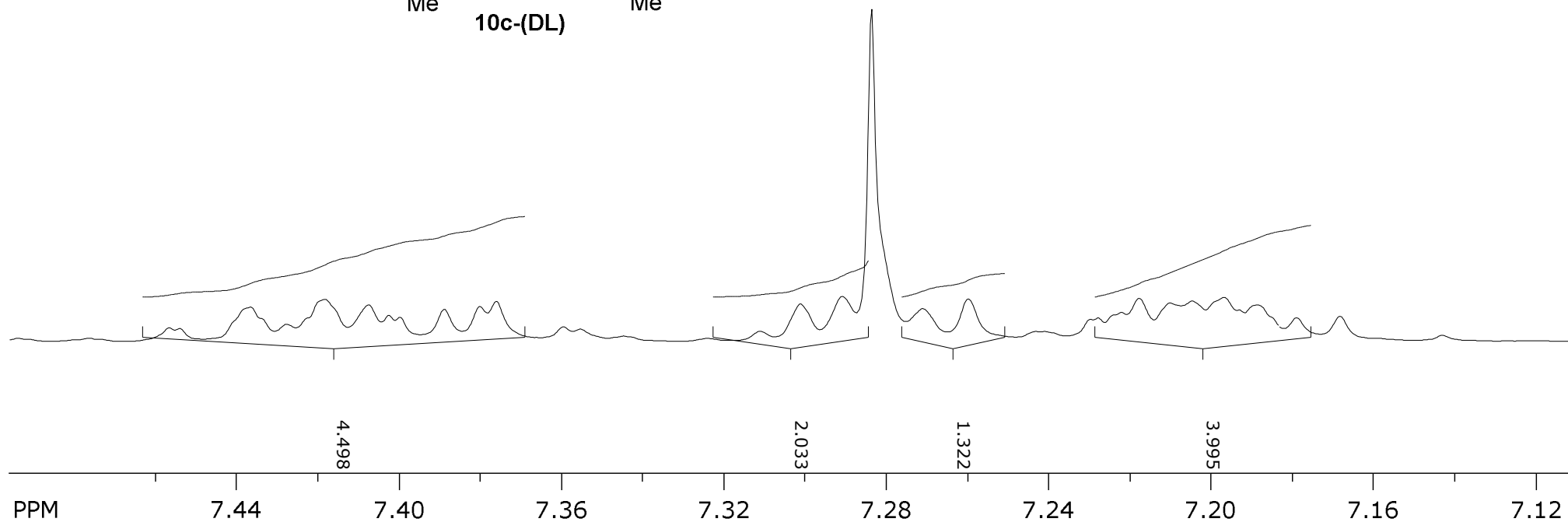
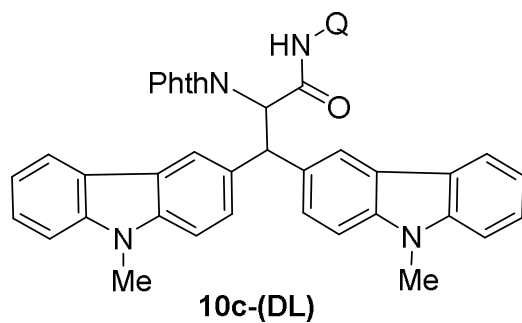
SpinWorks 4: RD-1015
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 13

7.7890	7.7675	7.7475	7.7263	7.7338	7.7004	7.6948	7.6873	7.6751	7.6713	7.5717	7.5642	7.5581	7.5505



SpinWorks 4: RD-1015
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 13

7.4541	7.3761	7.2598	7.1682
7.4567	7.3801	7.2709	7.1789
	7.3889	7.2836	7.1886
		7.2909	7.1931
		7.3012	7.1968
		7.3110	7.2046
			7.2101
			7.2177
			7.2220
			7.2278
			7.2298

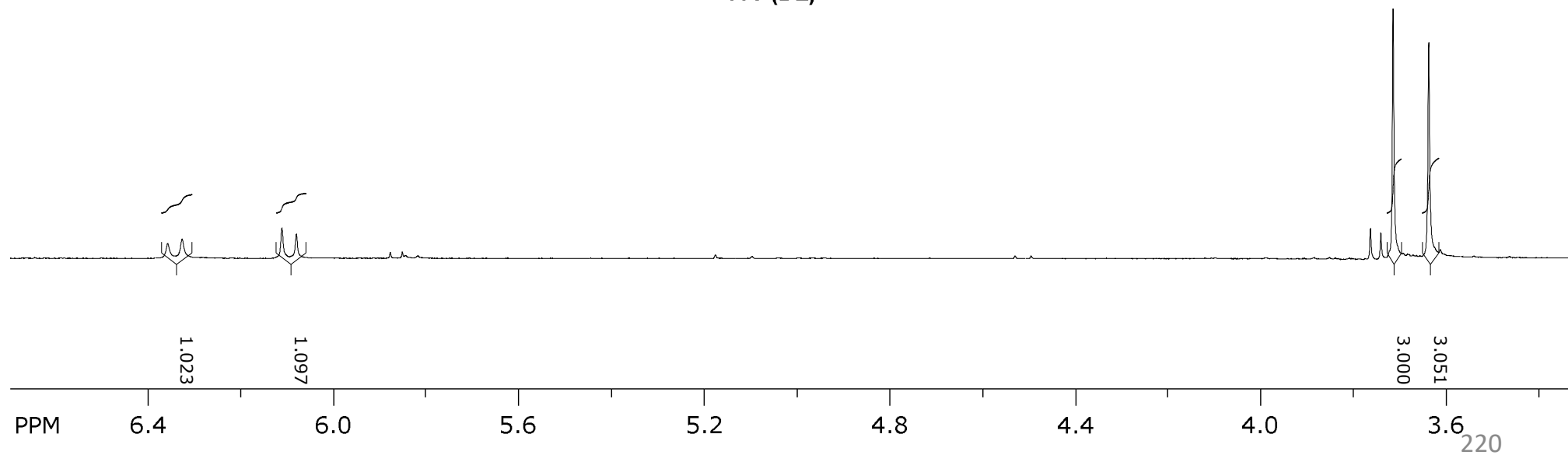
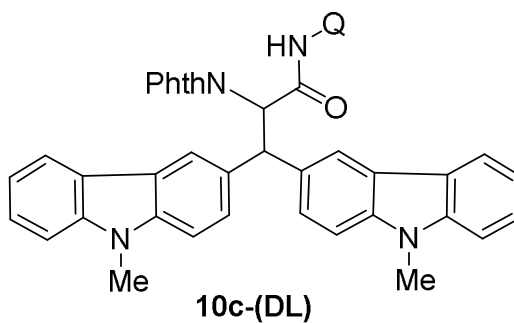


SpinWorks 4: RD-1015
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 13

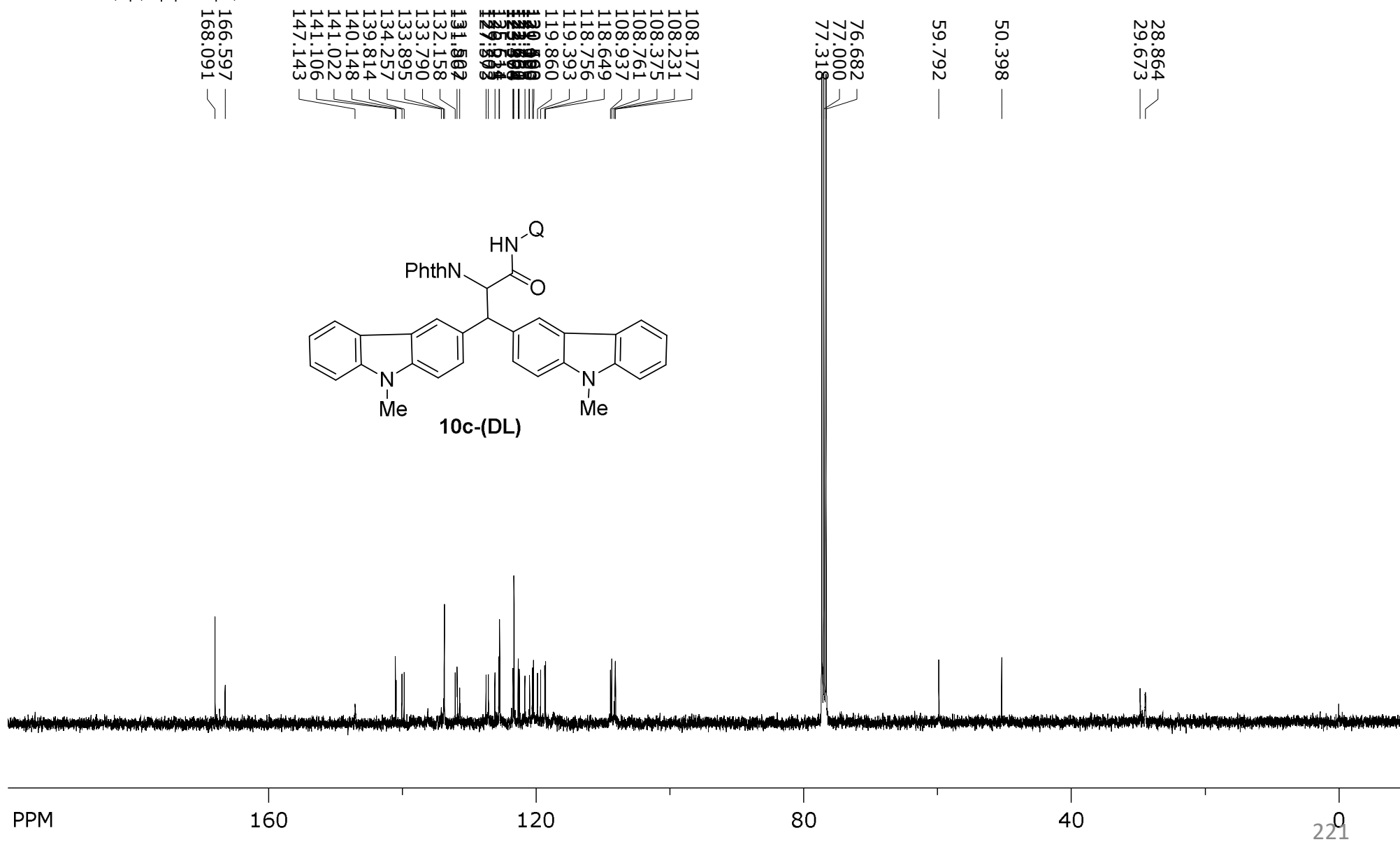
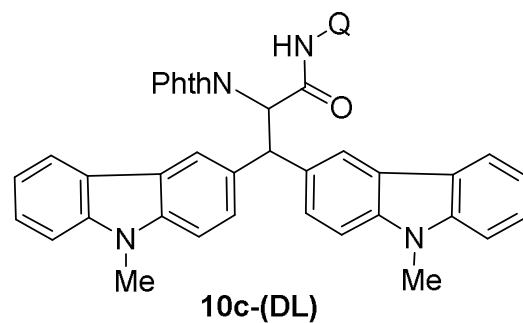
6.3270
6.3581

6.0804
6.1115

3.6372
3.7142



SpinWorks 4: RD 1015
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 20



SpinWorks 4: RD 1015
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 20

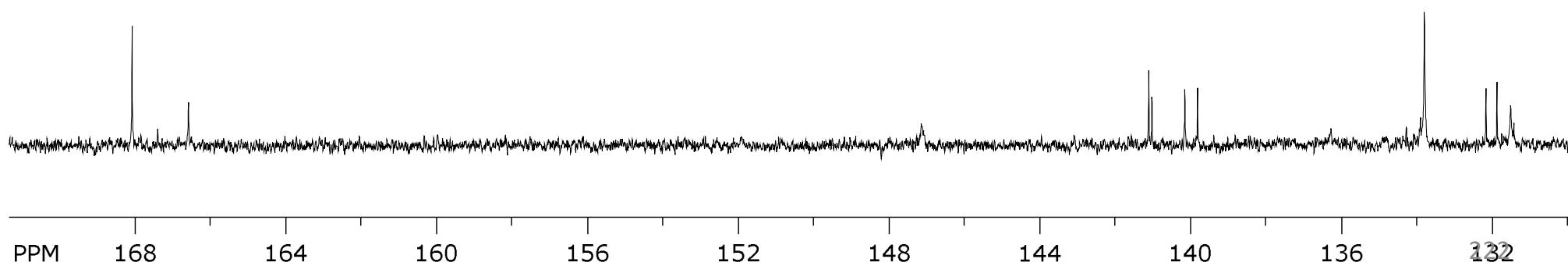
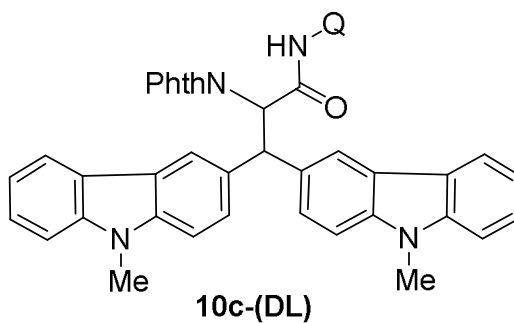
168.091 —
166.597 —

147.143 —

139.814 —
140.148 —
141.022 —
141.106 —

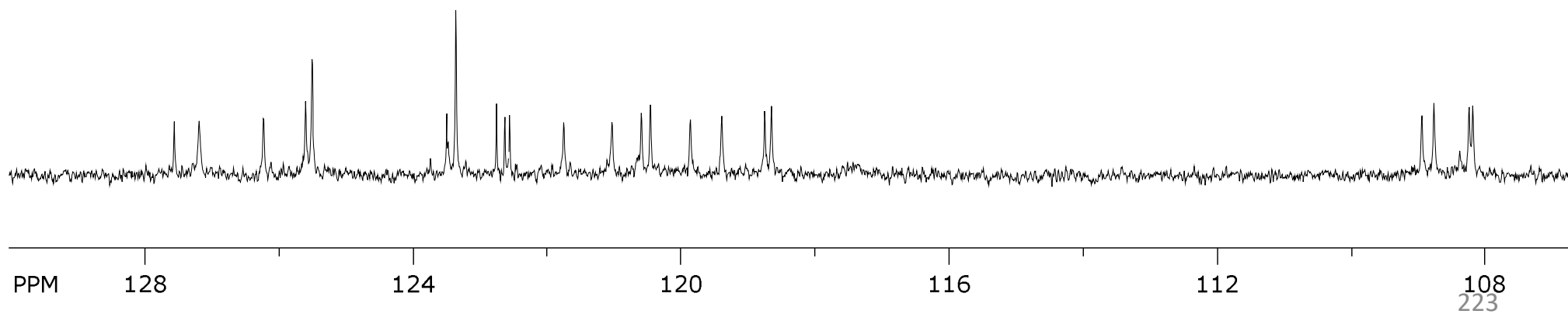
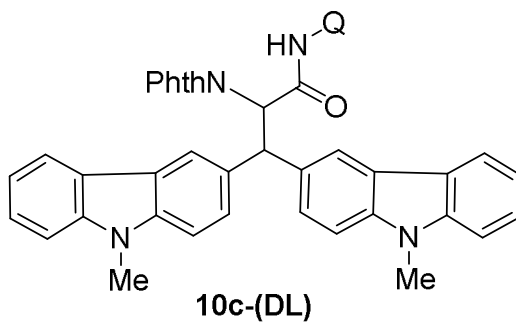
133.790 —
133.895 —
134.257 —

131.502 —
131.867 —
132.158 —

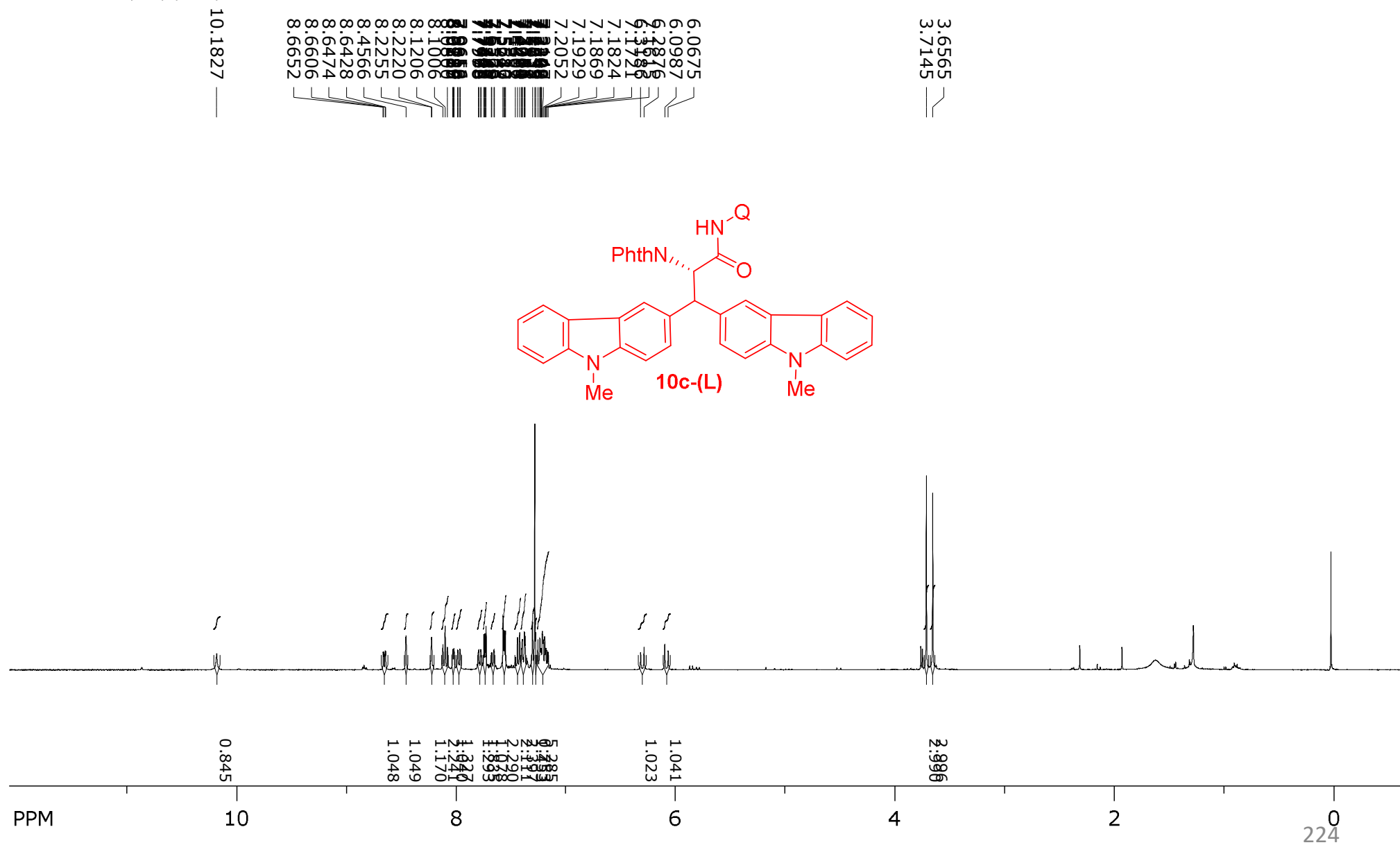


SpinWorks 4: RD 1015
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 20

108.177	108.231	108.375	108.761	108.937	118.649	118.756	119.393	119.860	120.460	120.593	121.030	121.109	121.753	122.562	122.631	122.760	123.364	123.478	123.504	125.514	125.611	126.235	127.202	127.573



SpinWorks 4: RD 1011
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 44



SpinWorks 4: RD 1011
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 44

8.6428
8.6474
8.6606
8.6652

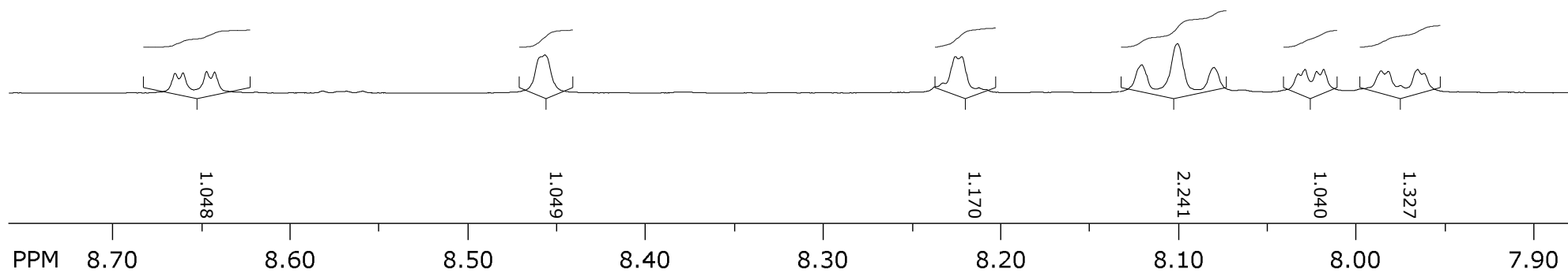
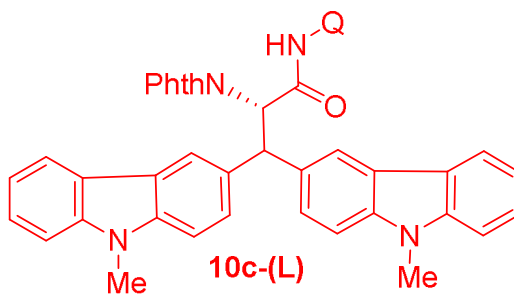
8.4566

8.2220
8.2255

8.1206
8.1006
8.0800

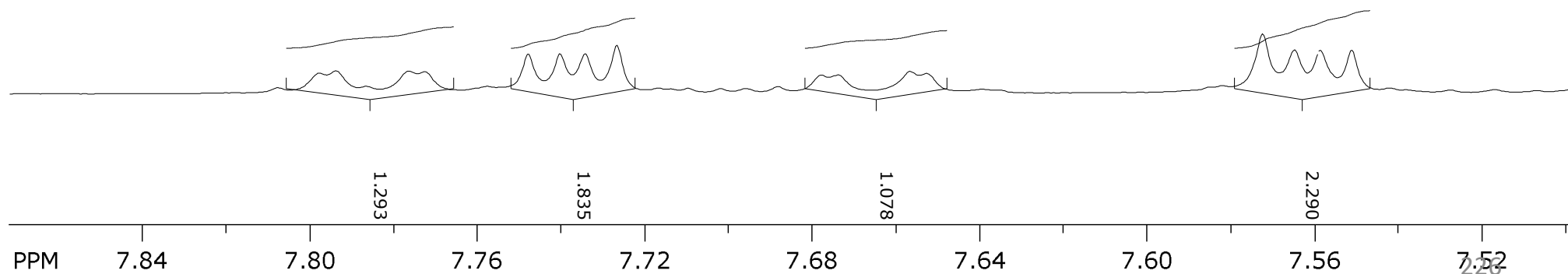
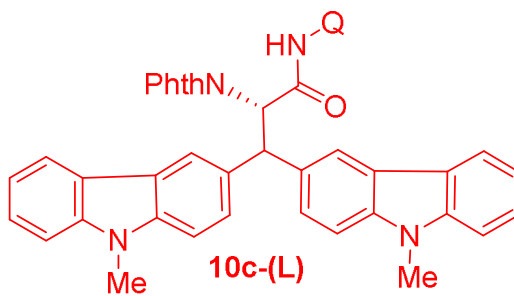
8.0325
8.0287
8.0219
8.0180

7.9858
7.9818
7.9652
7.9616



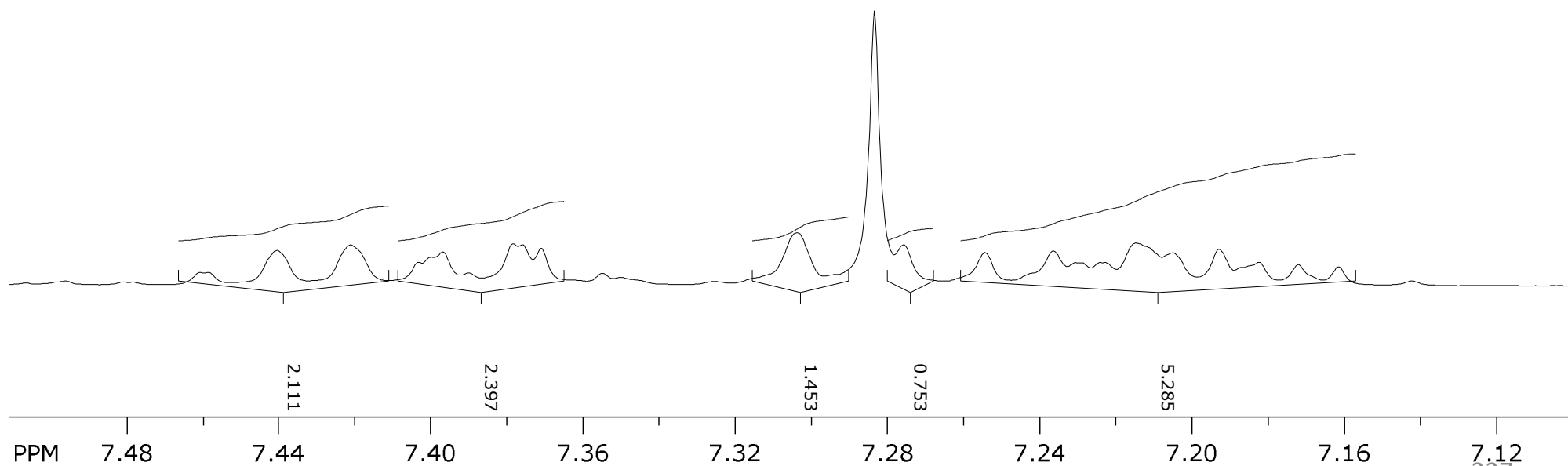
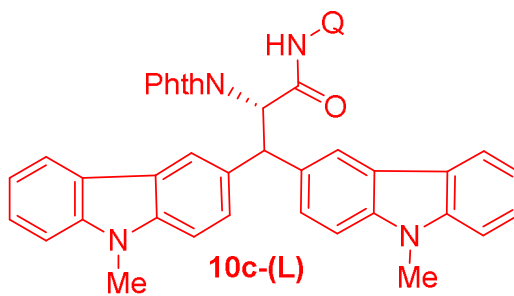
SpinWorks 4: RD 1011
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 44

7.7938	7.7726	7.7267	7.6738	7.6526	7.5510
7.7978	7.7765	7.7343	7.6779	7.6566	7.5586
—	—	—	—	—	—
—	—	7.7403	—	—	7.5647
—	—	7.7479	—	—	7.5723



SpinWorks 4: RD 1011
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 44

7.4607 —
7.4406 —
7.4213 —
7.4034 —
7.3970 —
7.4001 —
7.3786 —
7.3761 —
7.3711 —
7.3038 —
7.2835 —
7.2759 —
7.2545 —
7.2365 —
7.2308 —
7.2290 —
7.2242 —
7.2229 —
7.2147 —
7.2052 —
7.1929 —
7.1869 —
7.1824 —
7.1721 —
7.1615 —

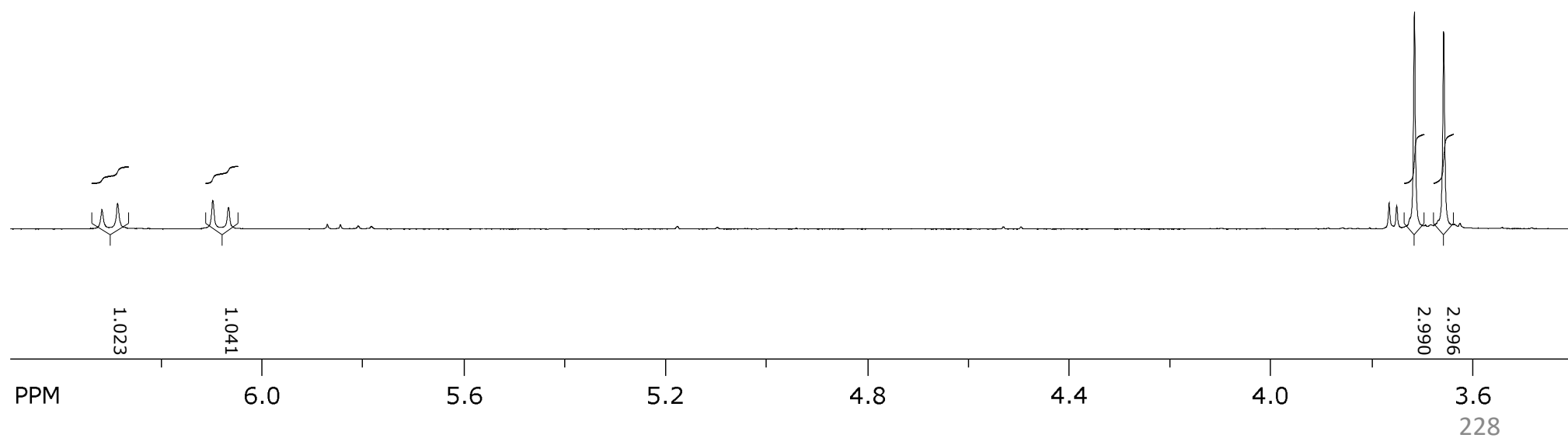
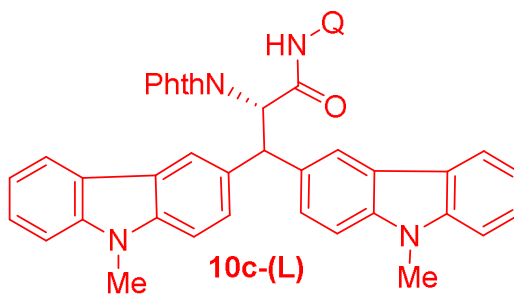


SpinWorks 4: RD 1011
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 44

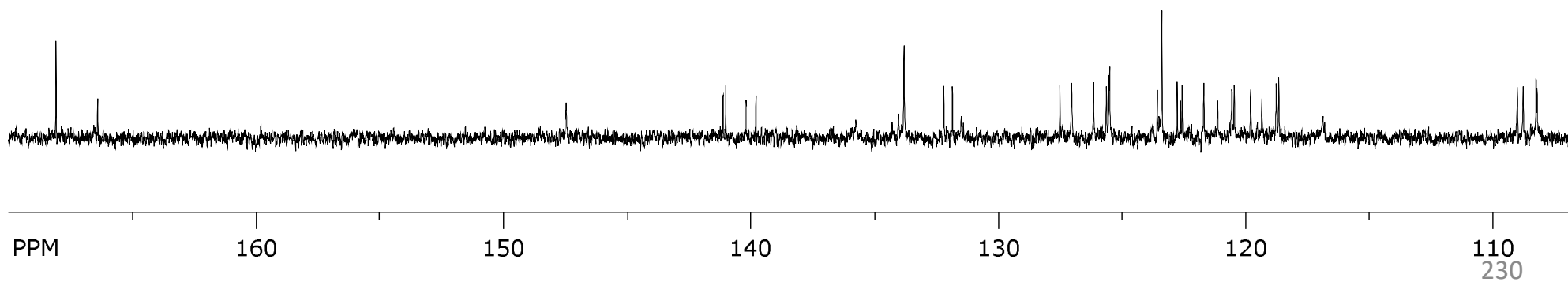
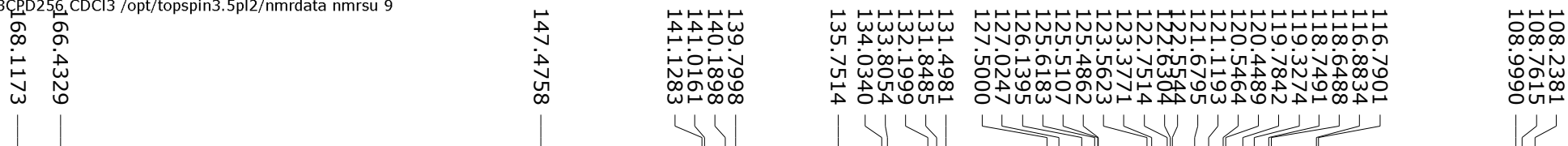
6.2876
6.3186

6.0675
6.0987

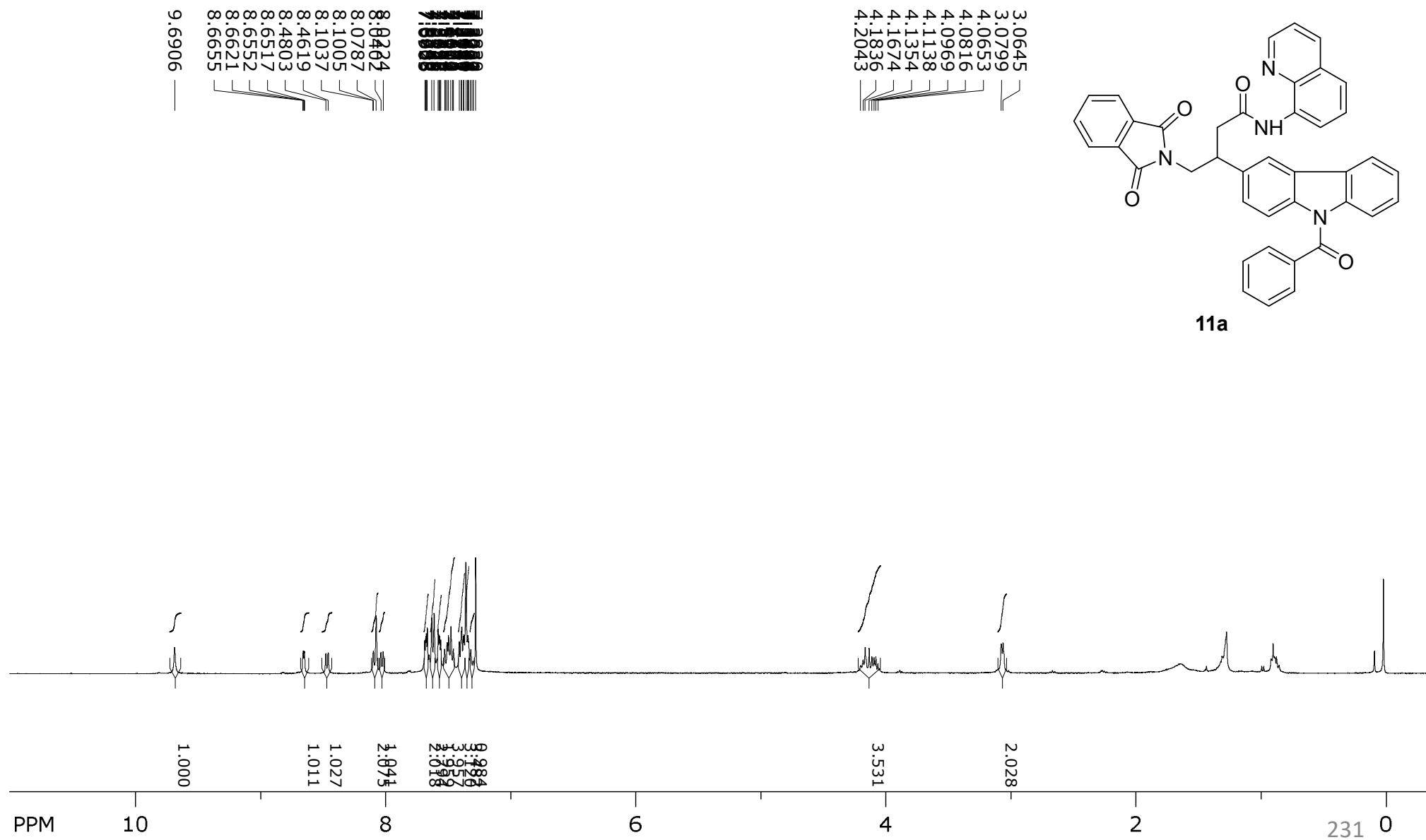
3.6565
3.7145



SpinWorks 4: RD-1011
C13CPD256.CDCI3 /opt/topspin3.5pl2/nmrdata nmrsu 9



SpinWorks 4: RD 117 RE
¹H

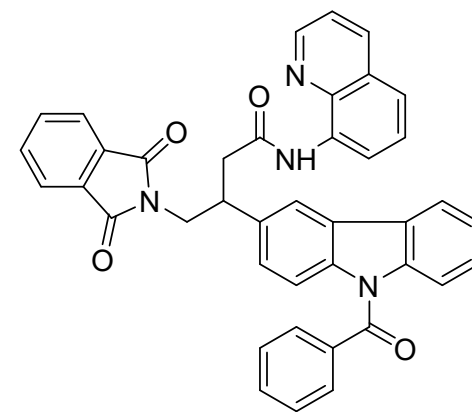


SpinWorks 4: RD 117 RE
1H

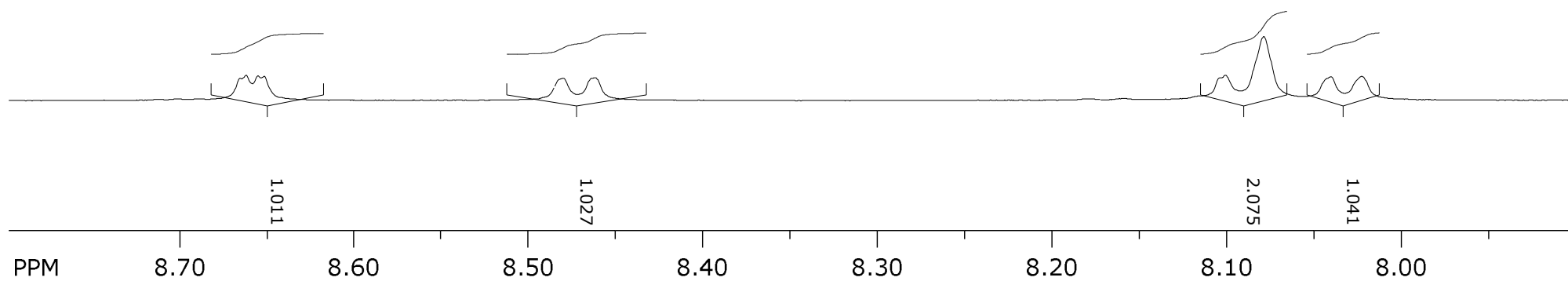
8.6517
8.6552
8.6621
8.6655

8.4619
8.4803

8.0224
8.0402
8.0787
8.1005
8.1037



11a



SpinWorks 4: RD 117 RE
1H

7.6692 —
7.6768 —
7.6826 —
7.6903 —

7.6340 —

7.6155 —

7.5622 —
7.5698 —
7.5757 —
7.5833 —

7.5212 —
7.5104 —
7.4999 —
7.5313 —

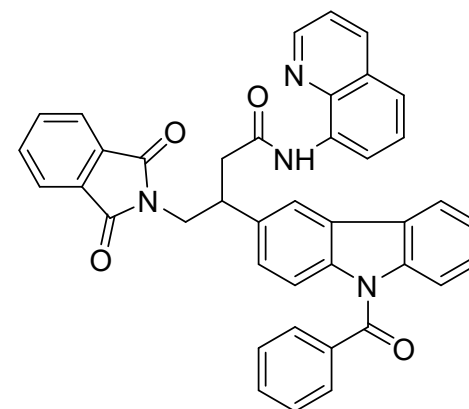
7.4812 —
7.4690 —
7.4611 —

7.4137 —
7.3981 —
7.3941 —
7.3820 —
7.3759 —

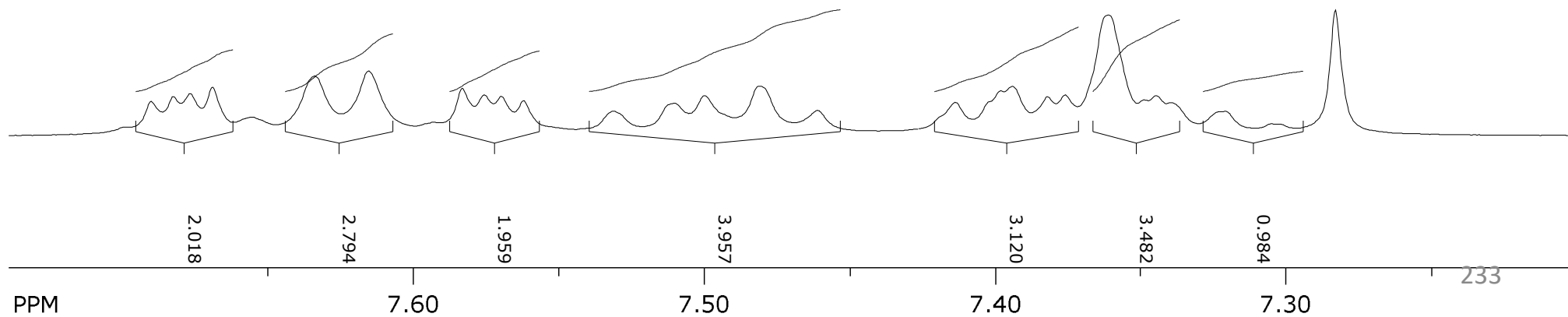
7.3610 —
7.3488 —
7.3446 —
7.3394 —
7.3232 —

7.3209 —
7.3050 —
7.3021 —

7.2830 —



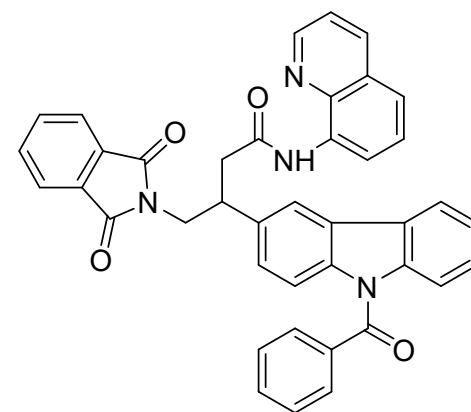
11a



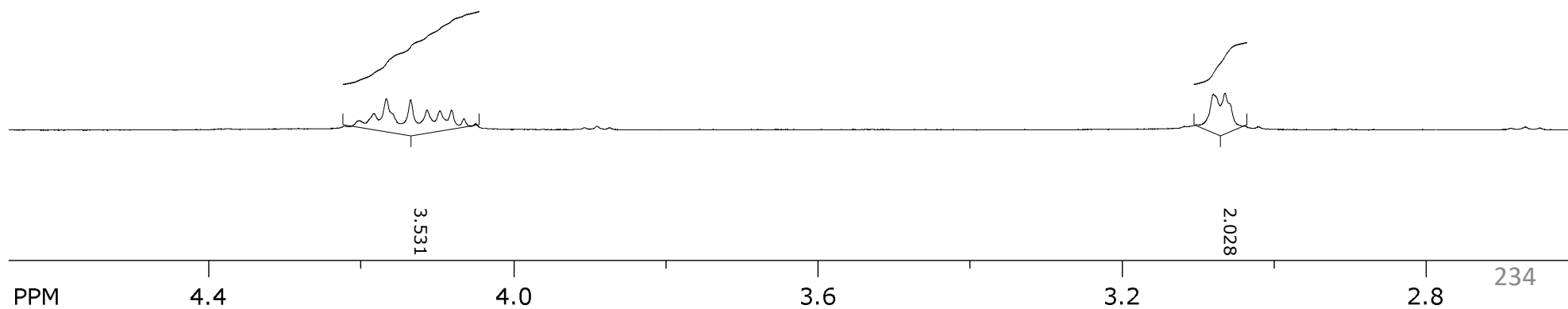
SpinWorks 4: RD 117 RE
1H

4.0653
4.0816
4.0969
4.1138
4.1354
4.1674
4.1836
4.2043

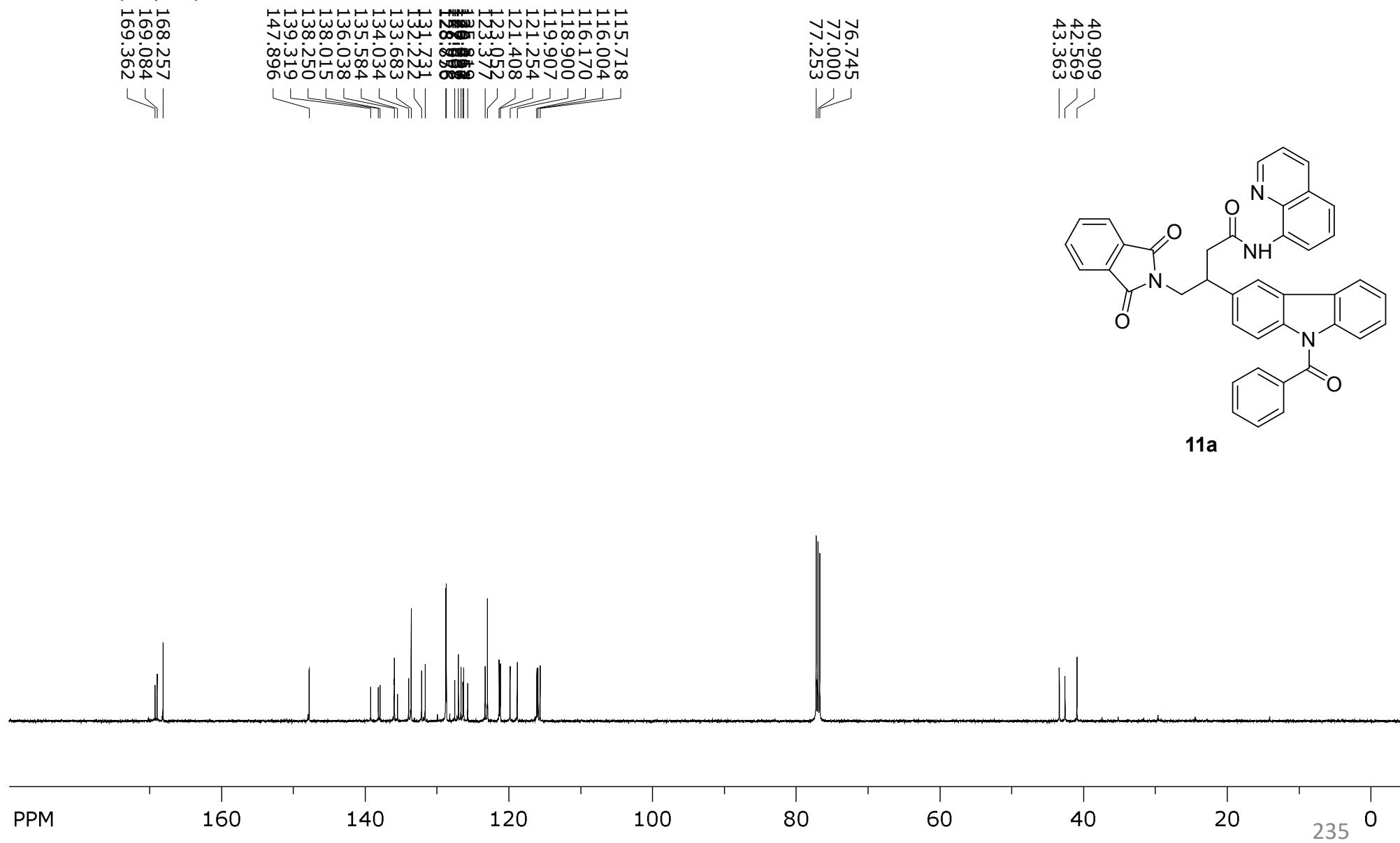
3.0645
3.0799



11a



SpinWorks 4: SAB 157
C13CPD CDCl3 {D:\Spectra} nmr 17

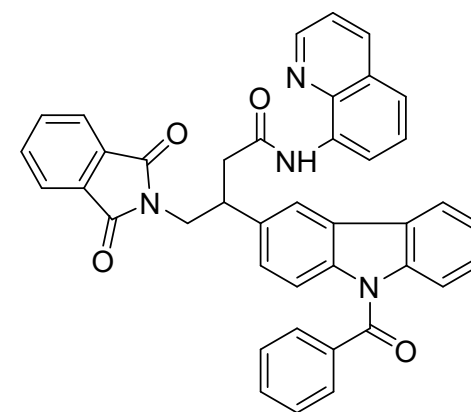


SpinWorks 4: SAB 157
C13CPD CDCl3 {D:\Spectra} nmr 17

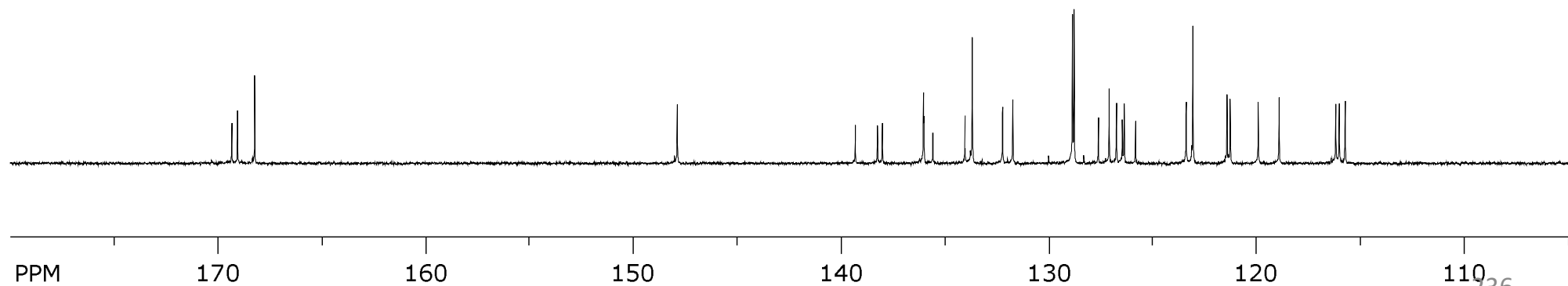
168.257 —
169.084 —
169.362 —

147.896 —

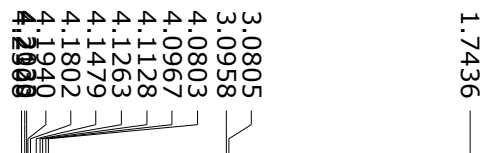
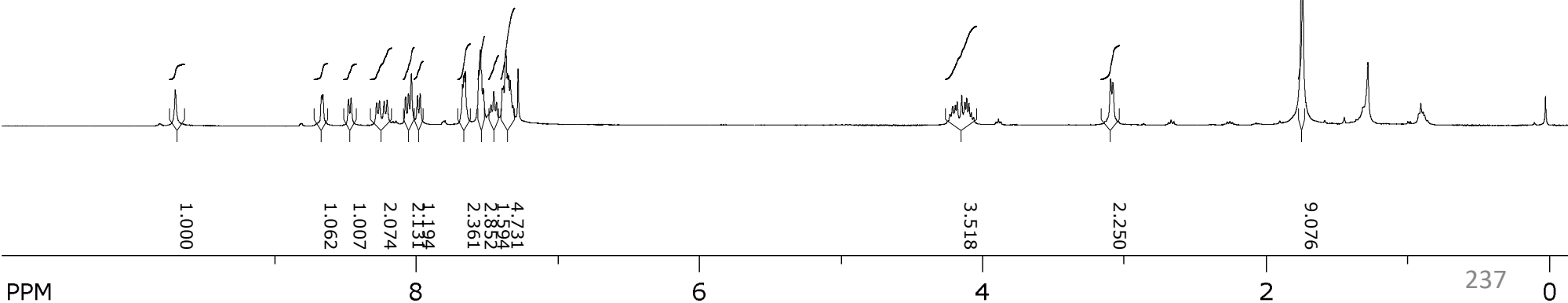
115.718 —
116.004 —
116.170 —
118.900 —
119.907 —
121.254 —
121.408 —
123.052 —
123.377 —
125.819 —
126.361 —
126.457 —
126.736 —
127.087 —
127.608 —
128.776 —
128.856 —
131.731 —
132.222 —
133.683 —
134.034 —
135.584 —
136.038 —
138.015 —
138.250 —
139.319 —



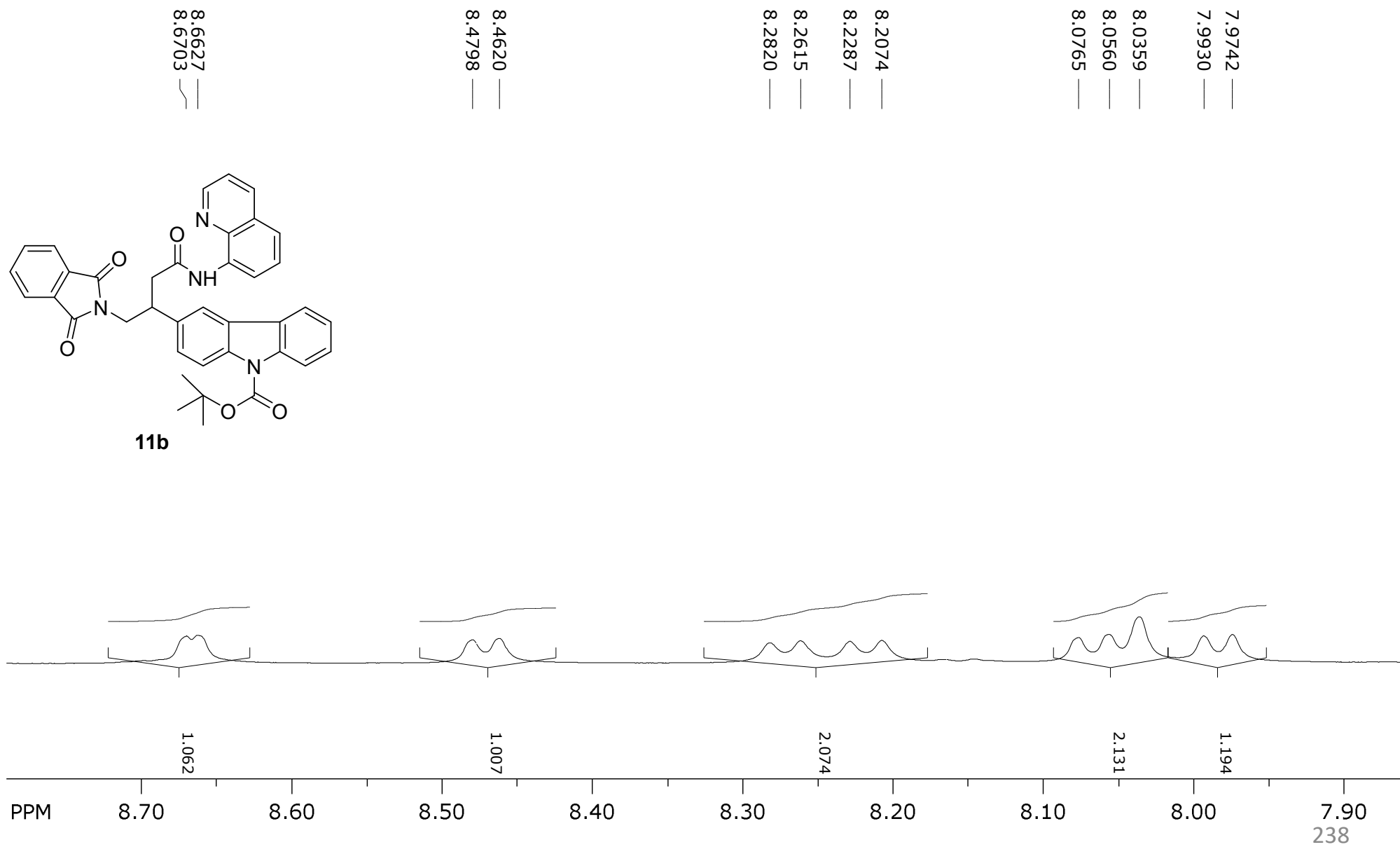
11a

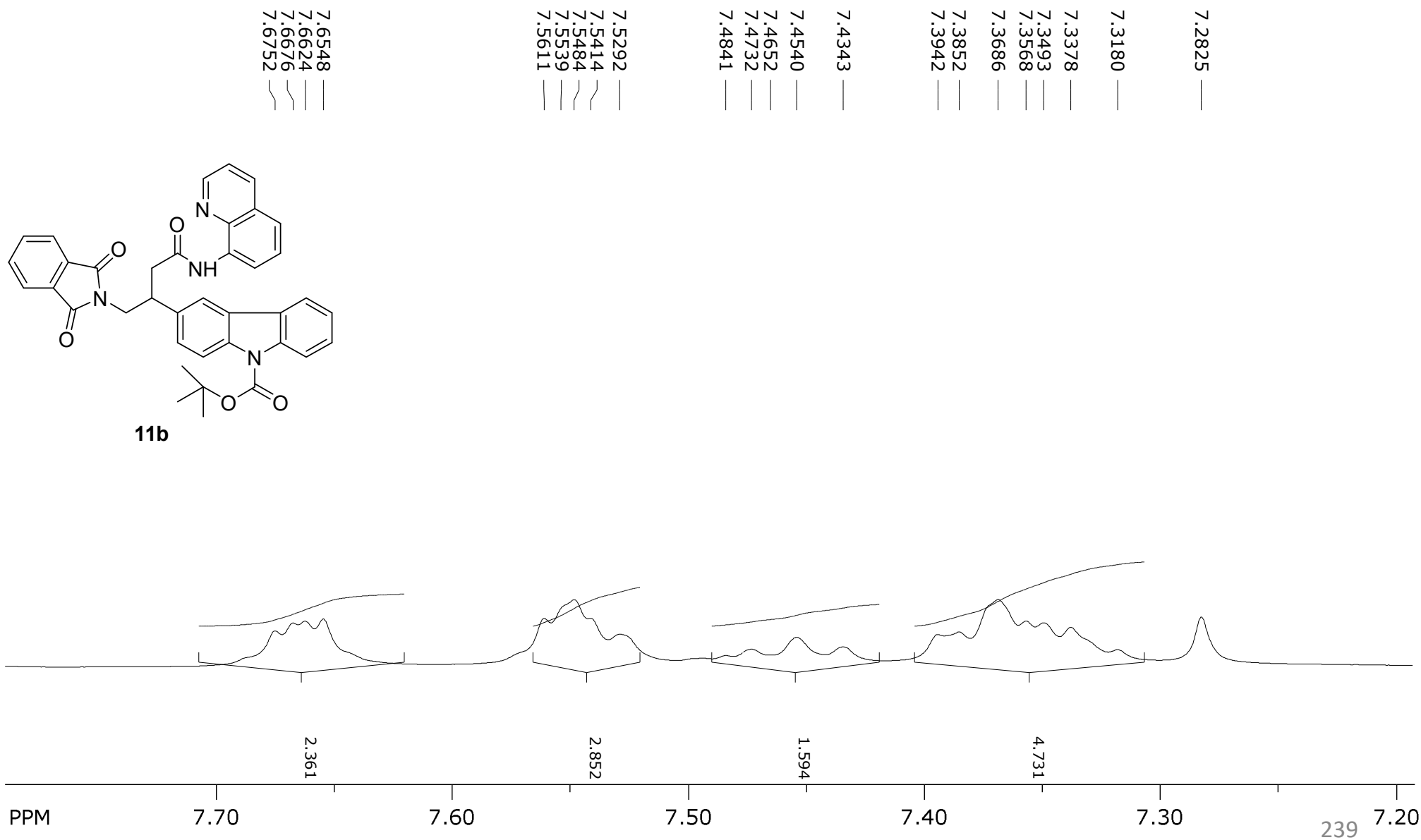


9.7040 —



SpinWorks 4: rd-112-re-1

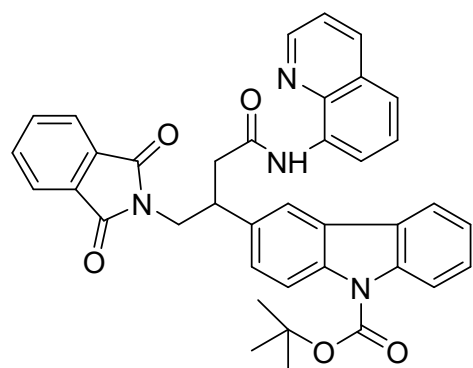




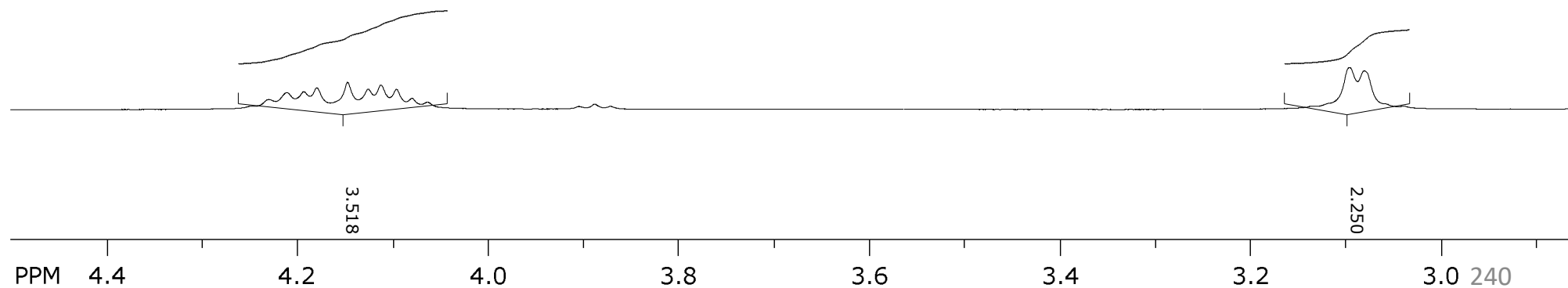
SpinWorks 4: rd-112-re-1

4.0803
4.0967
4.1128
4.1263
4.1479
4.1802
4.1940
4.2033
4.2120
4.2308

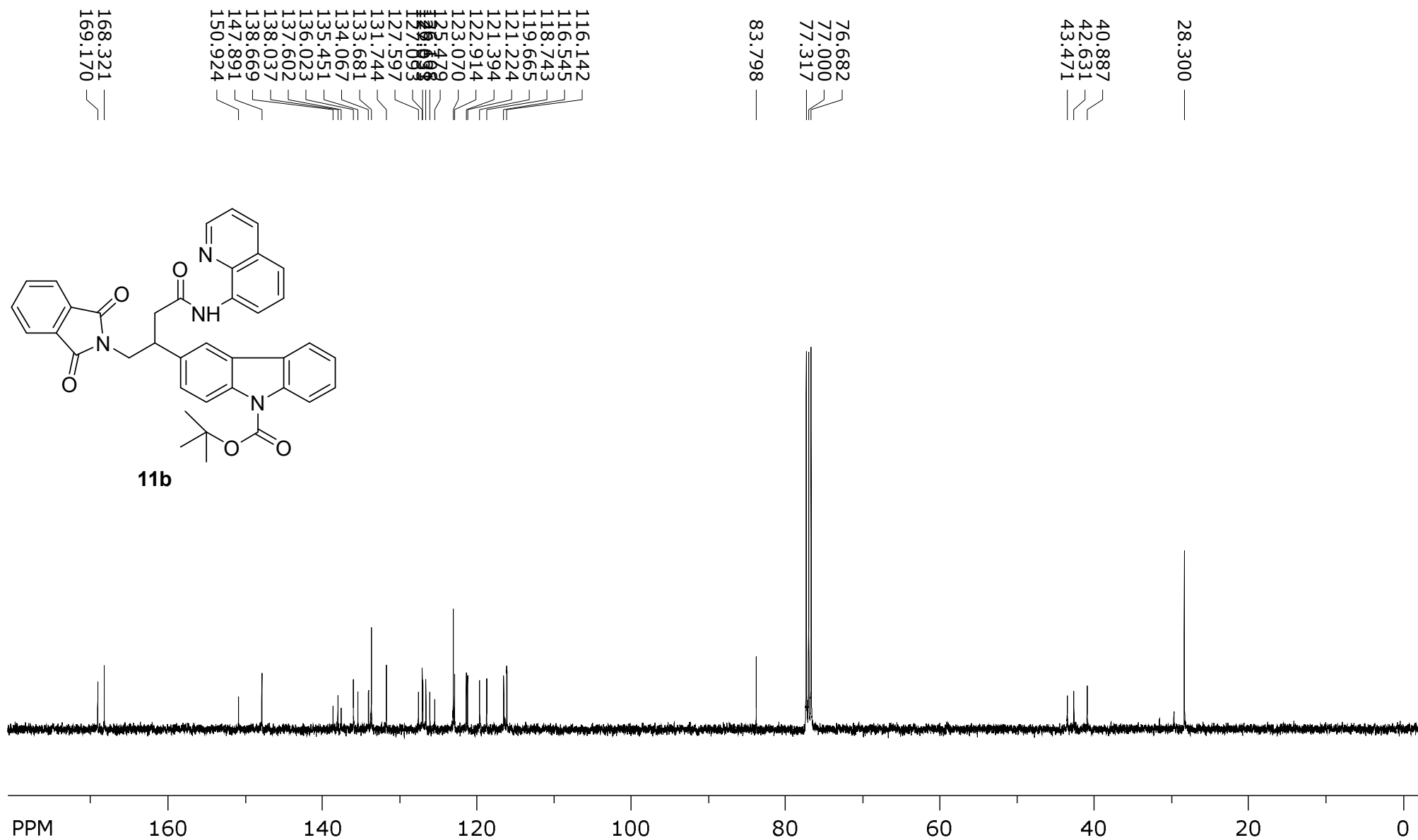
3.0805
3.0958



11b



SpinWorks 4: rd-112-re



SpinWorks 4: rd-112-re

168.321 —
169.170 —

150.924 —

147.891 —

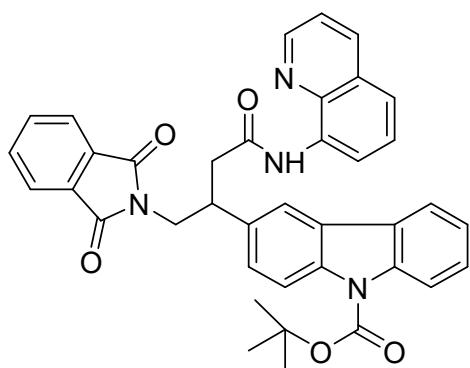
137.602 —
138.037 —
138.669 —
136.023 —
135.451 —
134.067 —
133.681 —

131.744 —

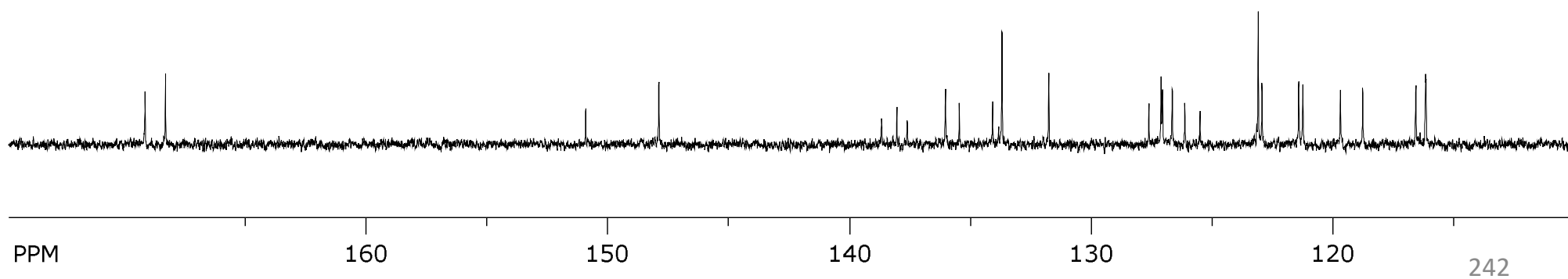
127.597 —
127.093 —
126.631 —
126.108 —
125.479 —

123.070 —
122.914 —
121.394 —
121.224 —
119.665 —
118.743 —

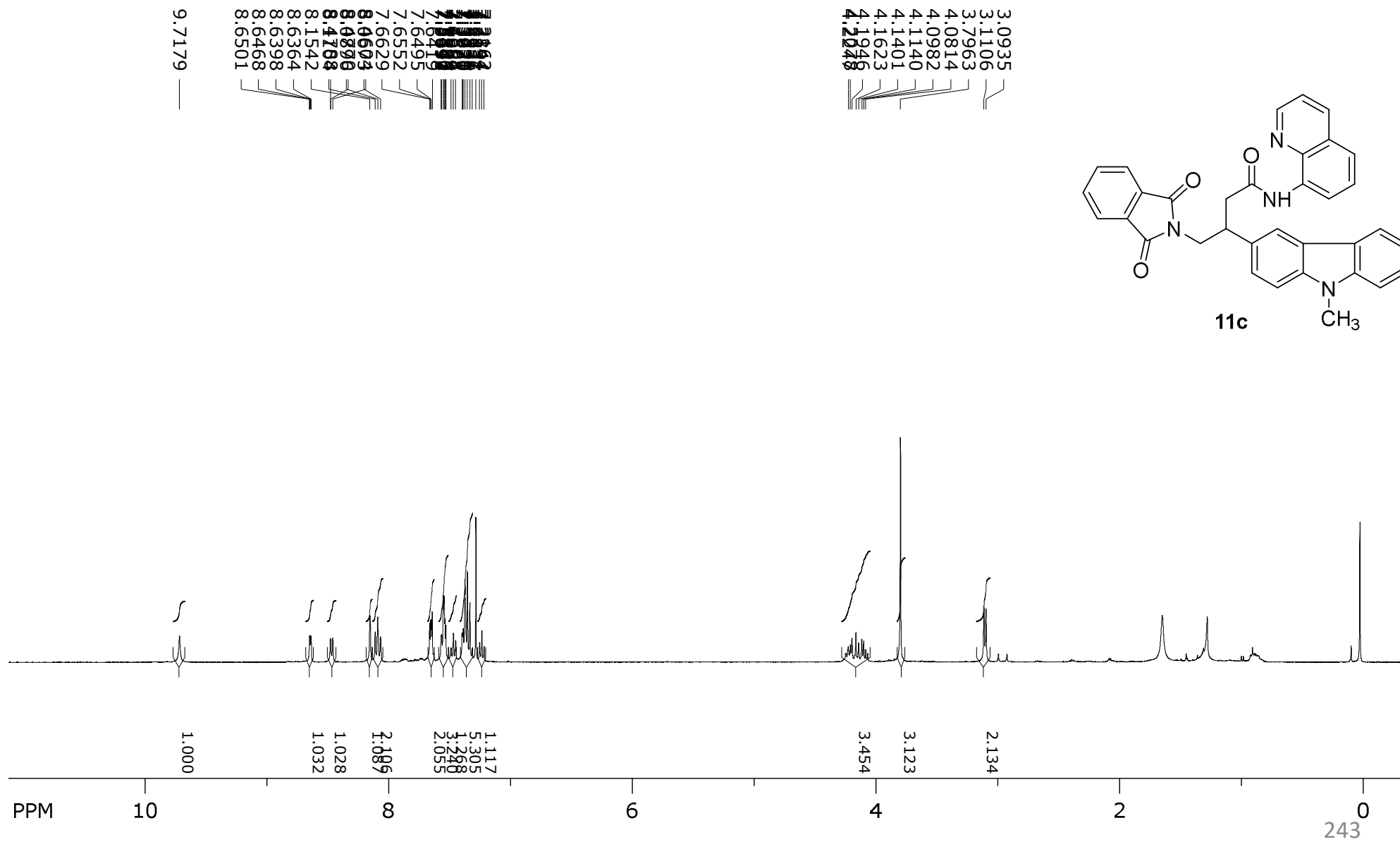
116.545 —
116.142 —



11b



SpinWorks 4: RD 341 RE
1H

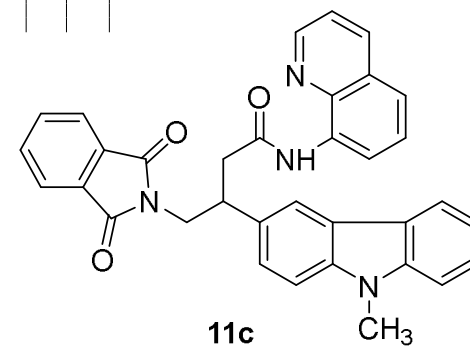


SpinWorks 4: RD 341 RE
1H

8.6364
8.6398
8.6468
8.6501

8.4604
8.4770
8.4788

8.1542
8.0673
8.0896
8.1104



1.032

1.028

1.087

2.106

PPM

8.8

8.6

8.4

8.2

8.0

244

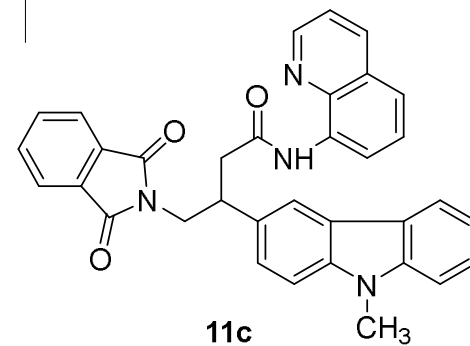
SpinWorks 4: RD 341 RE
1H

7.6419 —
7.6495 —
7.6552 —
7.6629 —

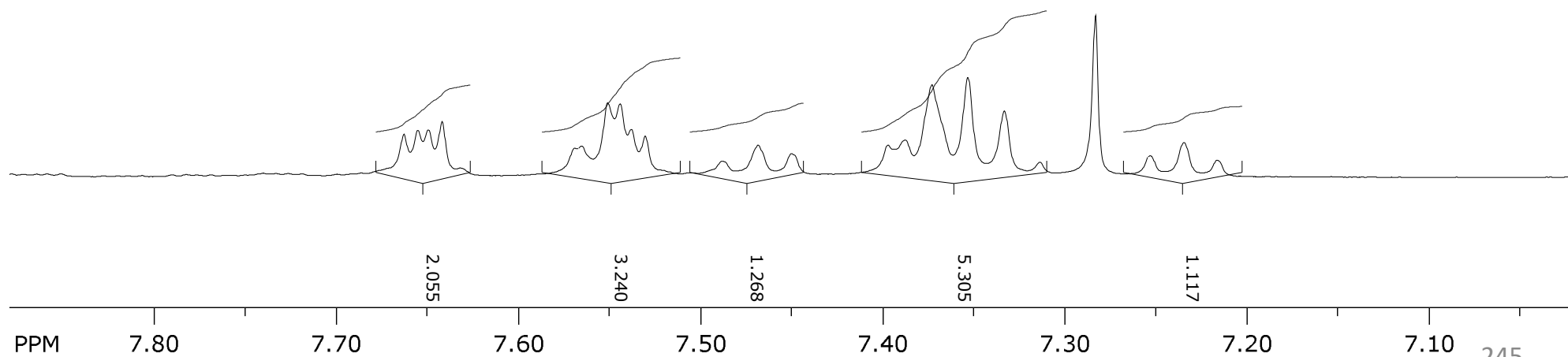
7.5303 —
7.5380 —
7.5442 —
7.5510 —
7.5653 —
7.5691 —

7.4869 —
7.4684 —
7.4501 —

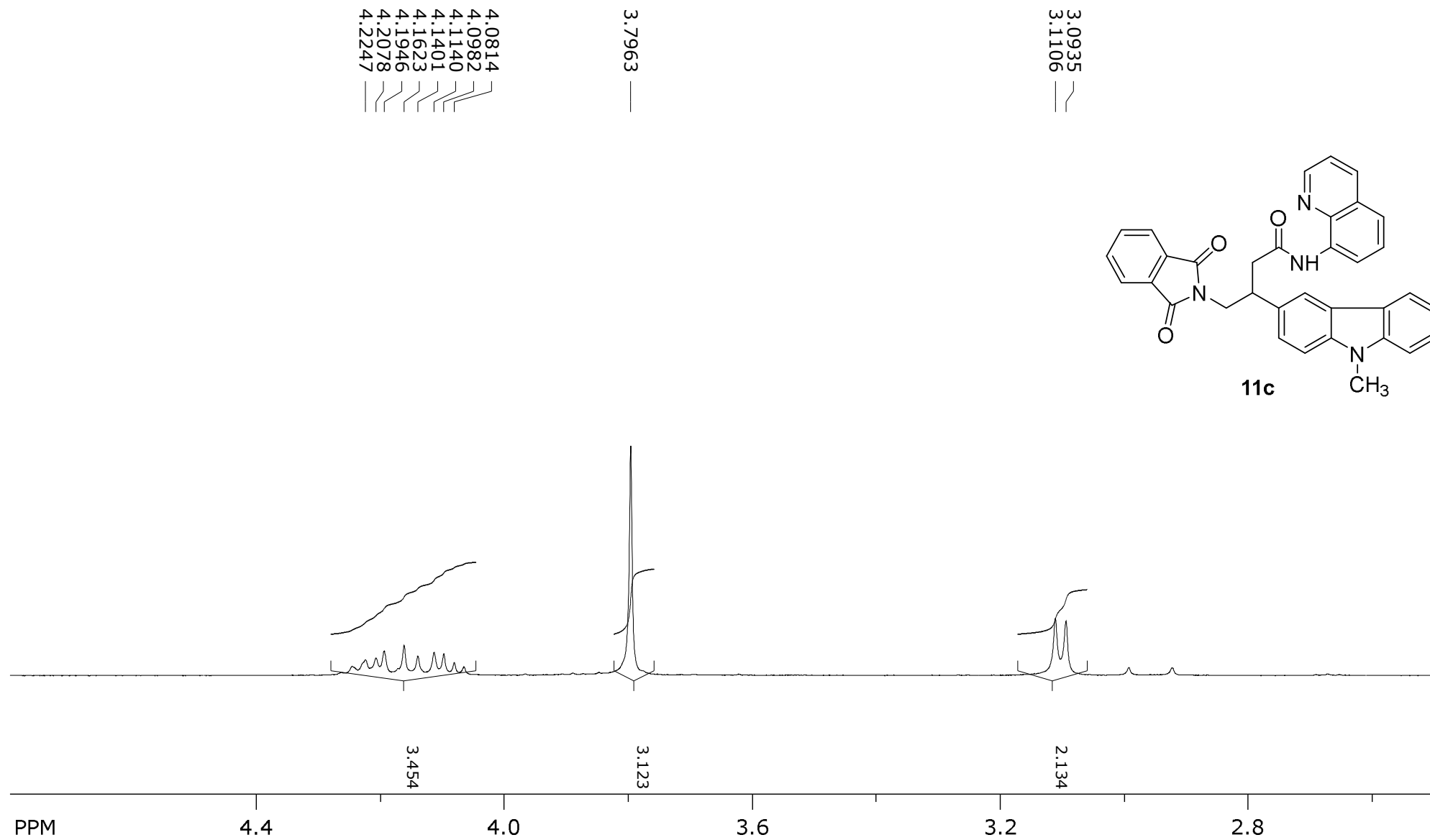
7.3970 —
7.3930 —
7.3875 —
7.3729 —
7.3531 —
7.3331 —
7.3136 —
7.2831 —
7.2531 —
7.2344 —
7.2162 —



11c



SpinWorks 4: RD 341 RE
1H

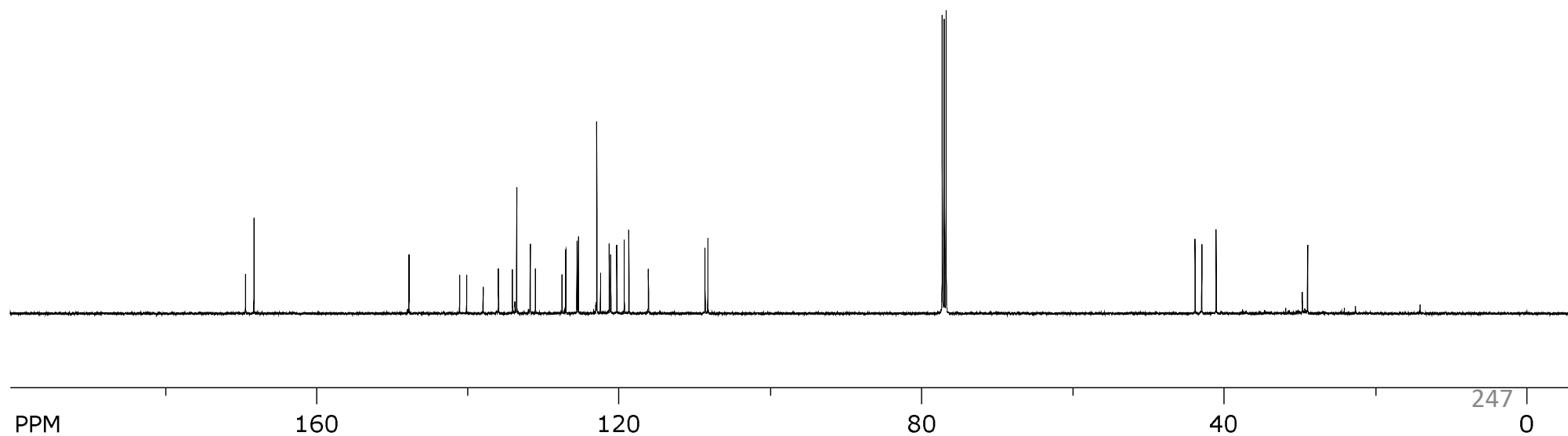
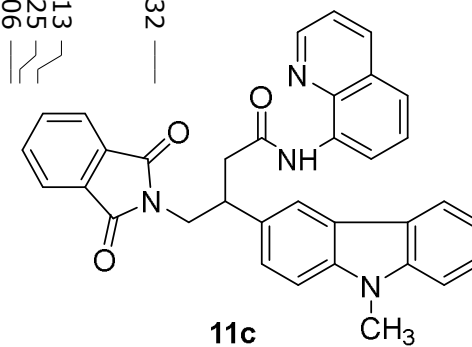


SpinWorks 4: SAB 158
C13CPD CDCl3 {D:\Spectra} nmr 18

108.271
108.636
116.133
118.714
119.327
120.311
121.108
121.309
122.456
125.599
127.067
127.564
131.082
131.768
133.555
134.118
135.975
138.001
140.191
141.112
147.810

76.746
77.000
77.255

41.013
42.925
43.806
28.932



SpinWorks 4: SAB 158
C13CPD CDCl3 {D:\Spectra} nmr 18

168.314 —
169.431 —

147.810 —

140.191 —
141.112 —

138.001 —

135.975 —

134.118 —

133.555 —

131.768 —

131.082 —

127.564 —

127.067 —

125.590 —

125.399 —

122.956 —

122.472 —

121.309 —

121.108 —

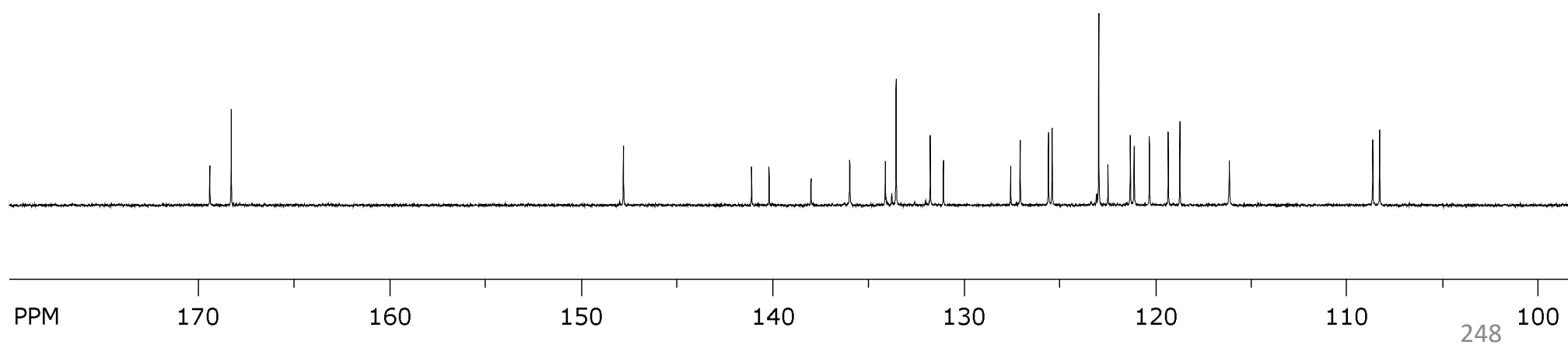
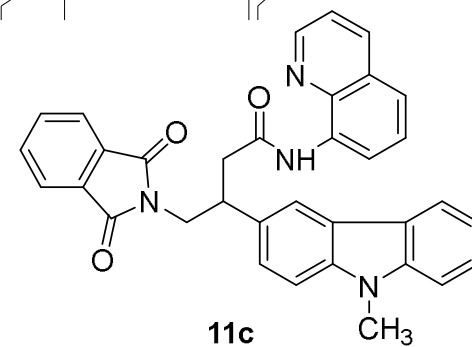
120.311 —

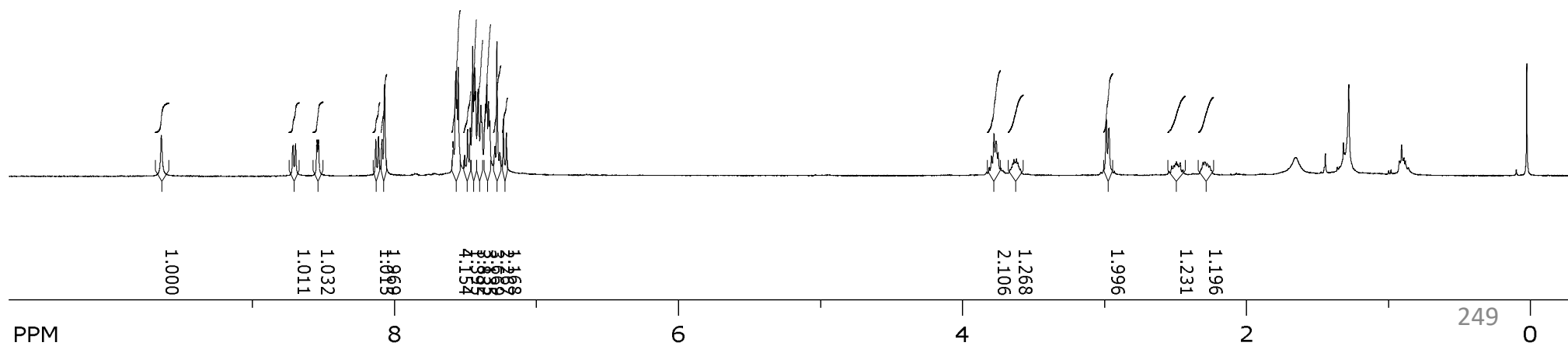
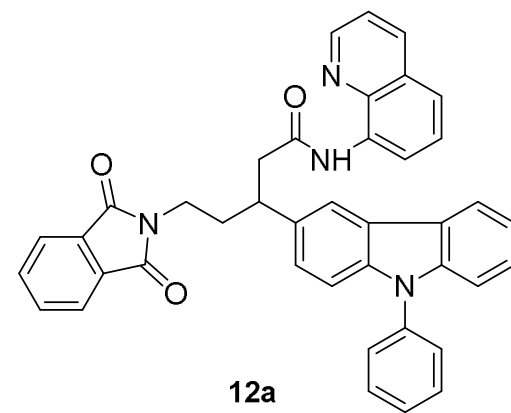
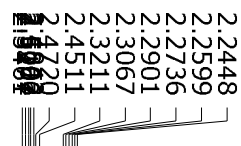
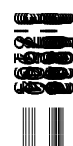
119.327 —

118.714 —

116.133 —

108.271 —
108.636 —



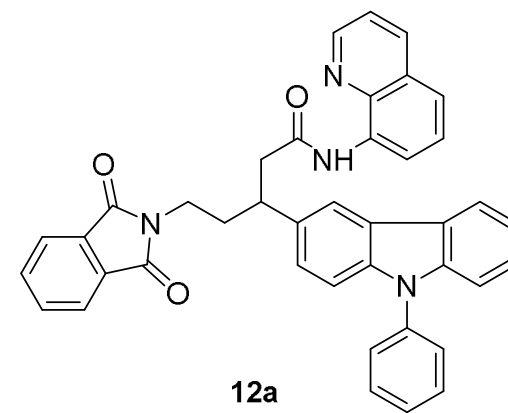


SpinWorks 4: rd-47-re-3

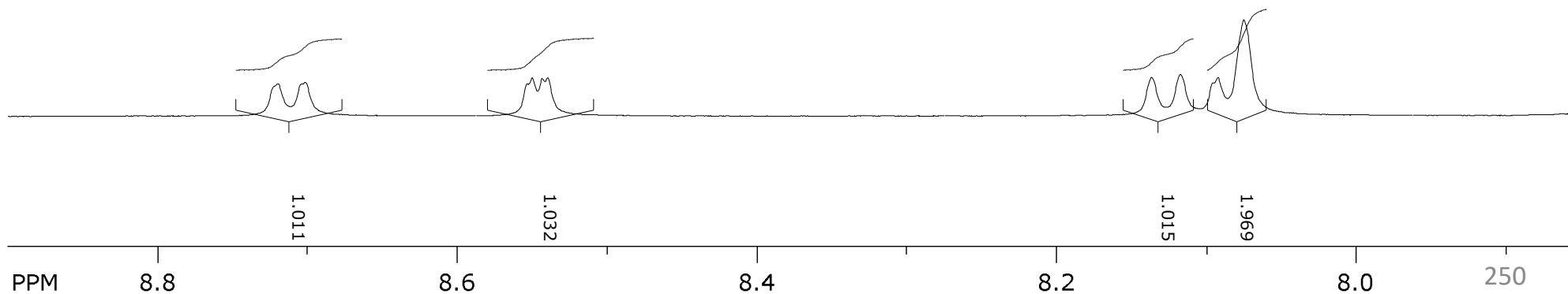
8.7016 —
8.7199 —

8.5397 —
8.5434 —
8.5501 —
8.5535 —

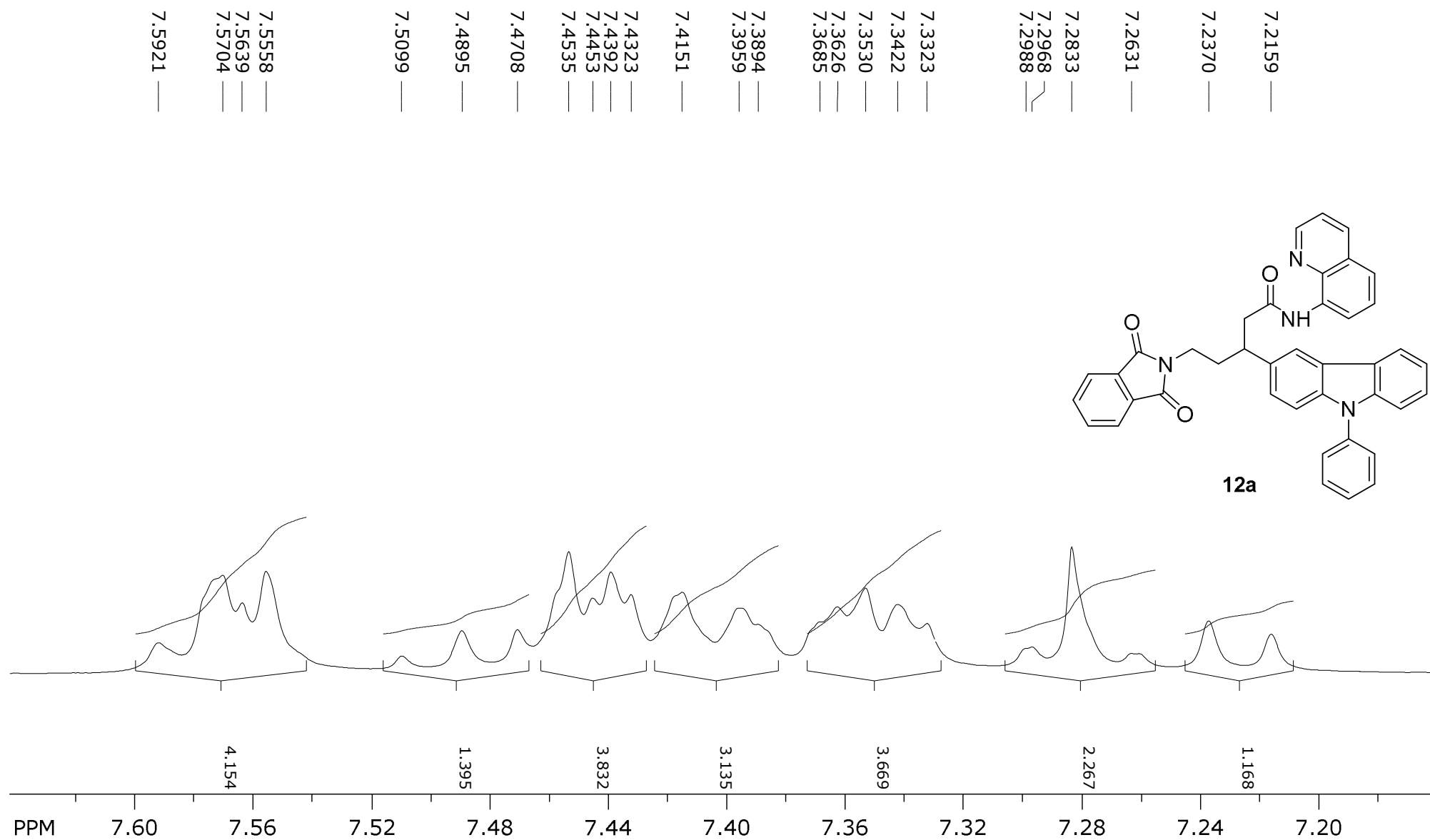
8.0749 —
8.0921 —
8.0954 —
8.1172 —
8.1365 —



12a



SpinWorks 4: rd-47-re-3

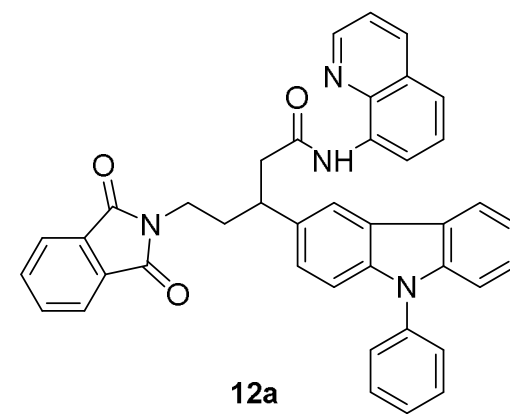


SpinWorks 4: rd-47-re-3

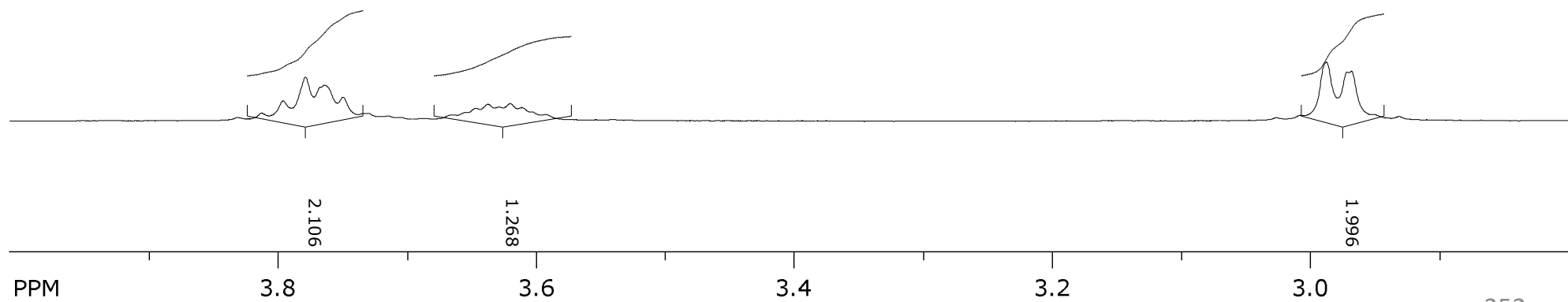
3.7500
3.7644
3.7791
3.7964
3.8133

3.5932
3.6037
3.6112
3.6202
3.6284
3.6376
3.6438
3.6547
3.6697

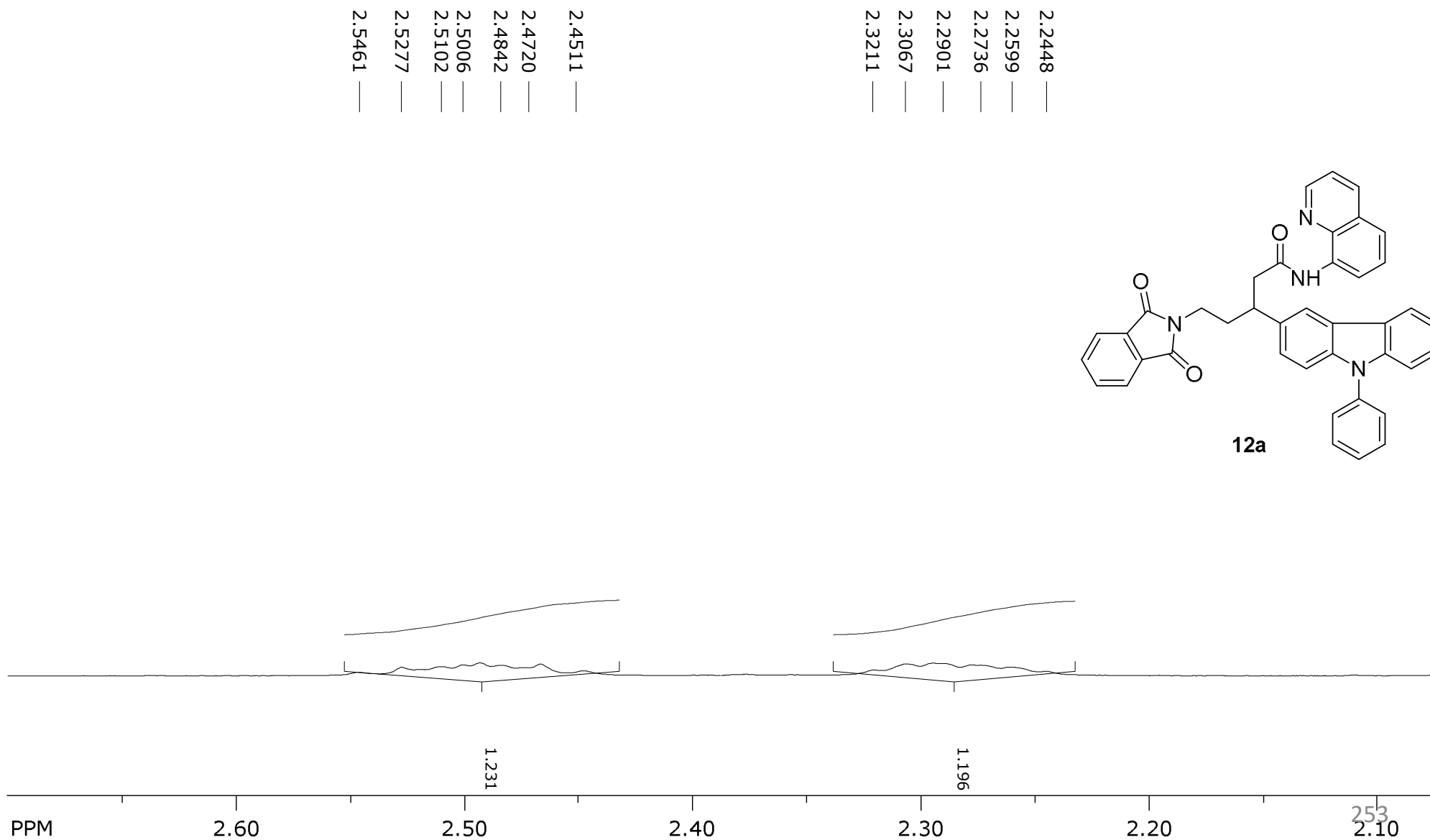
2.9679
2.9874



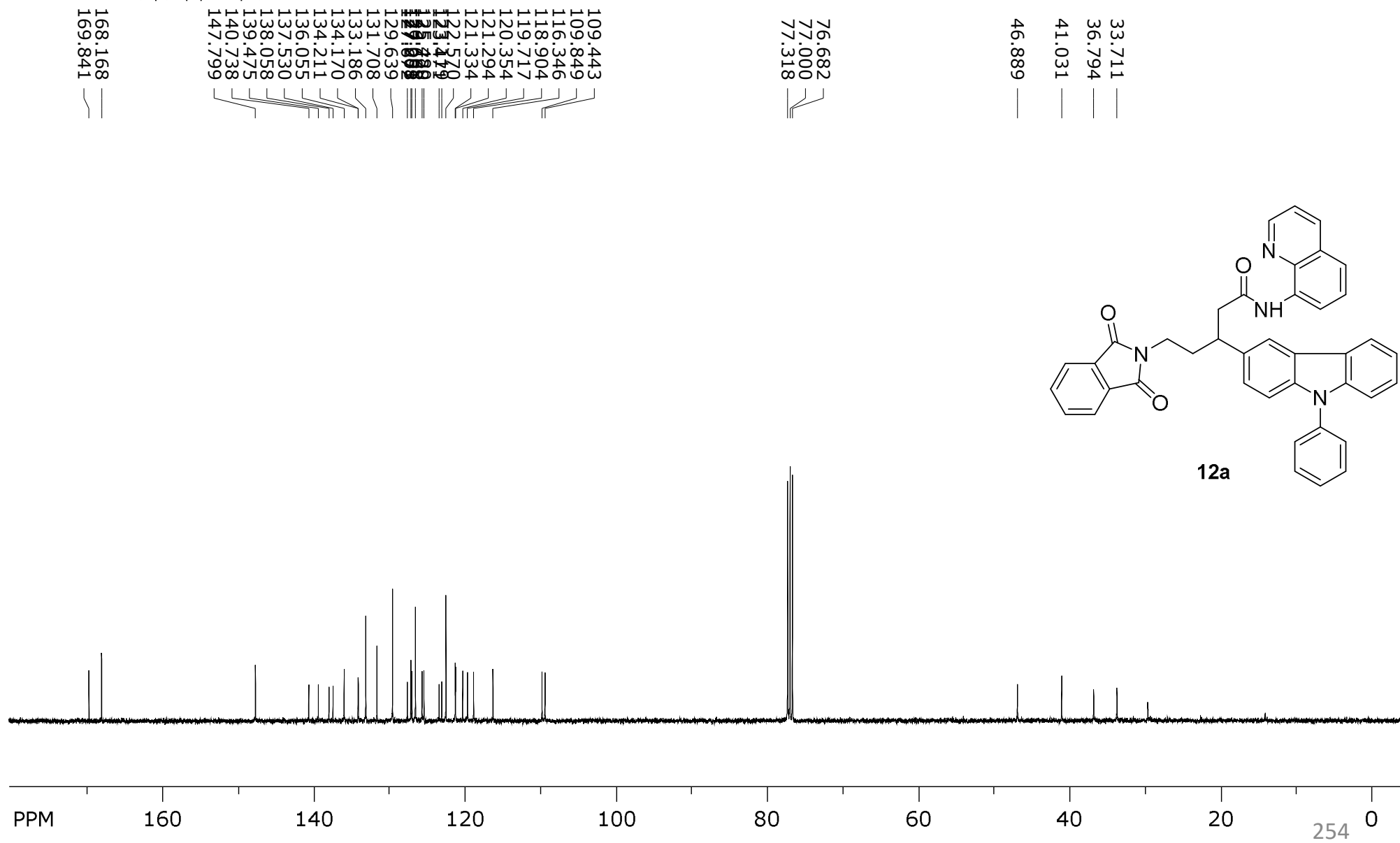
12a



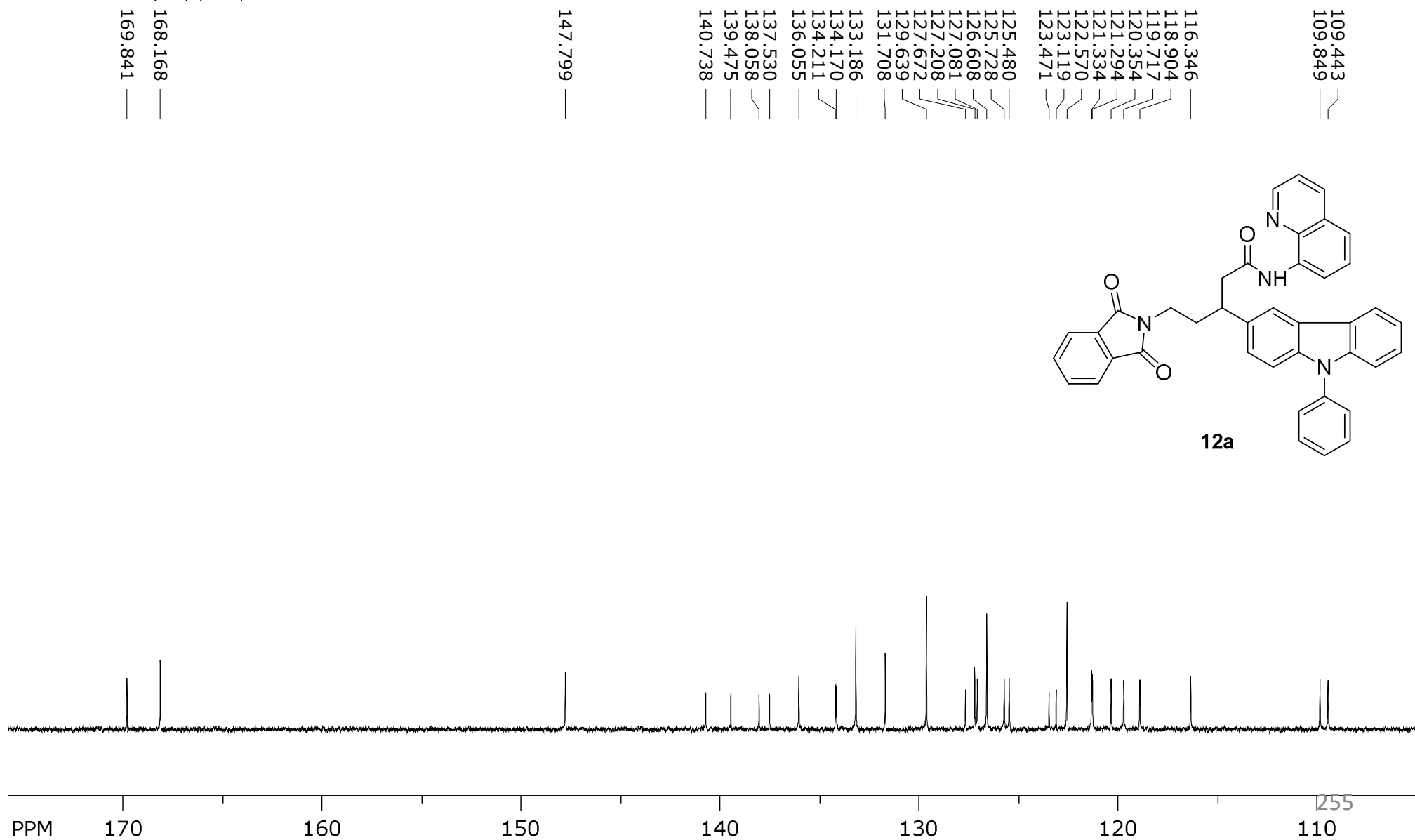
SpinWorks 4: rd-47-re-3



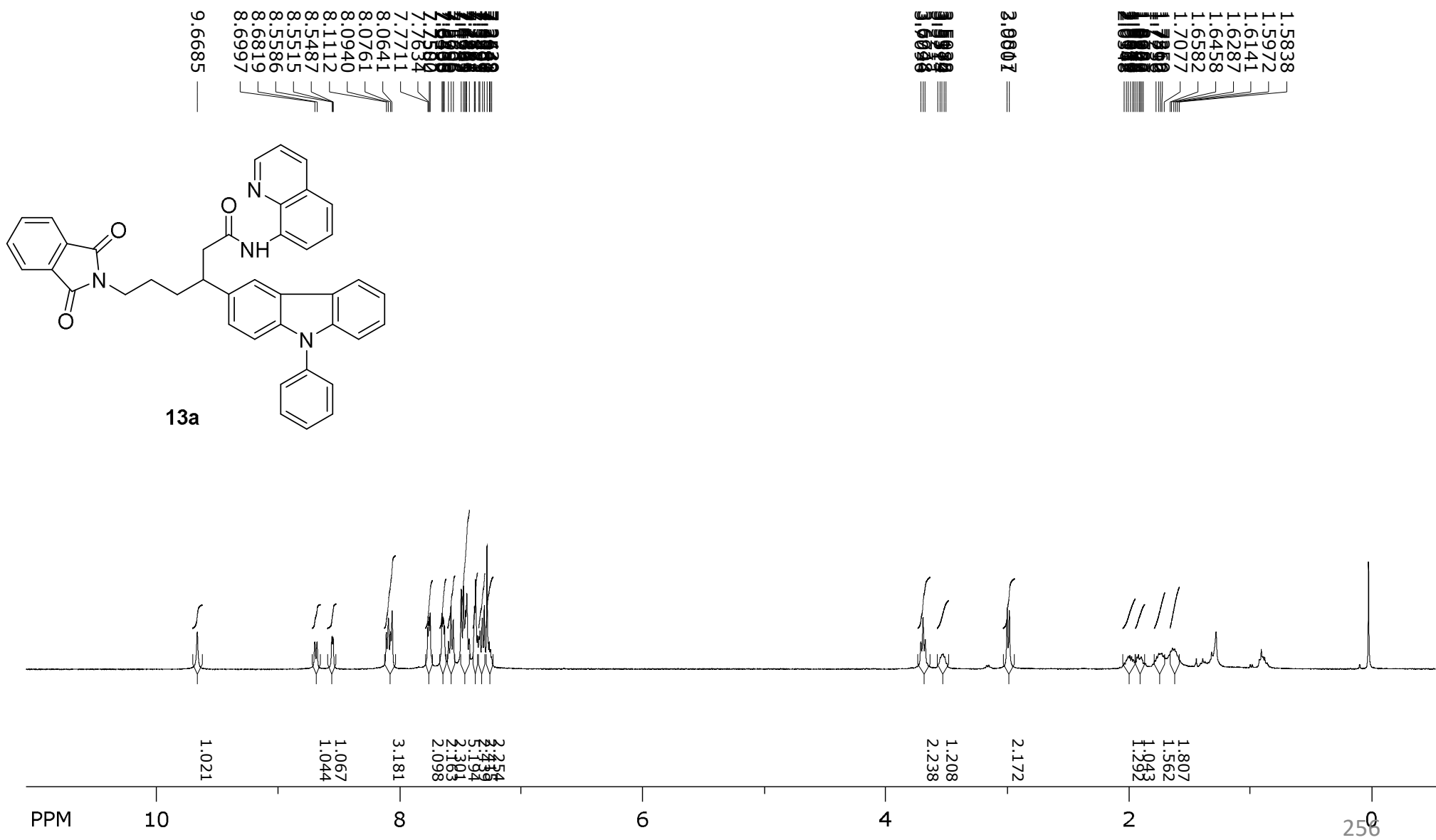
SpinWorks 4: RD 47 REP 1
 C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 54



SpinWorks 4: RD 47 REP 1
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 54



SpinWorks 4: rd-48-re-3

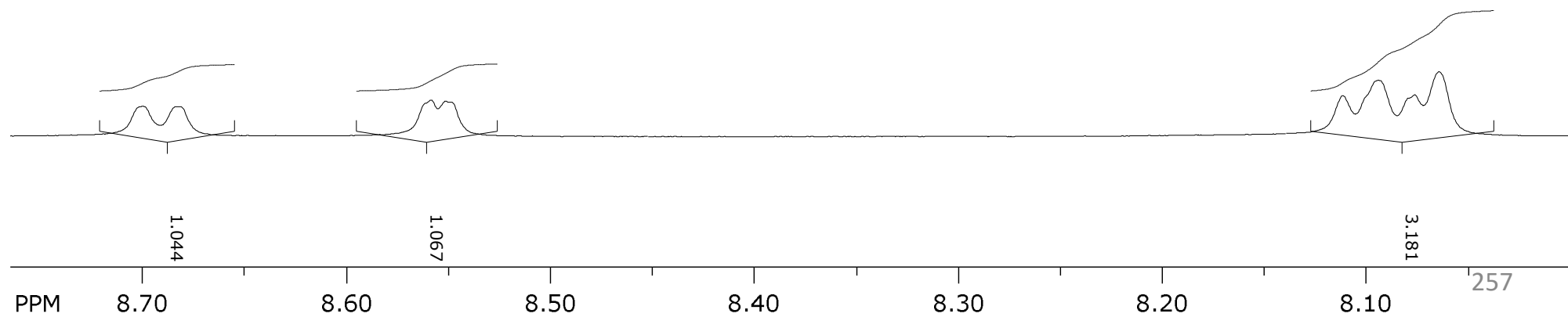
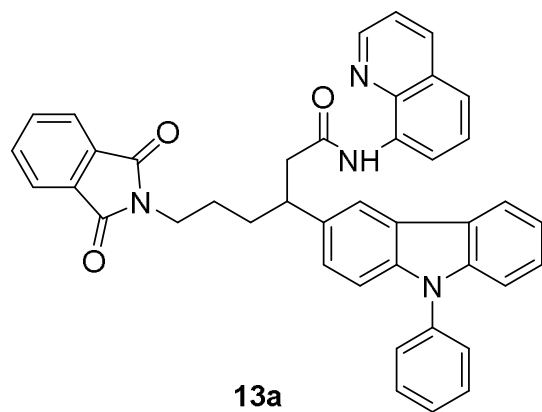


SpinWorks 4: rd-48-re-3

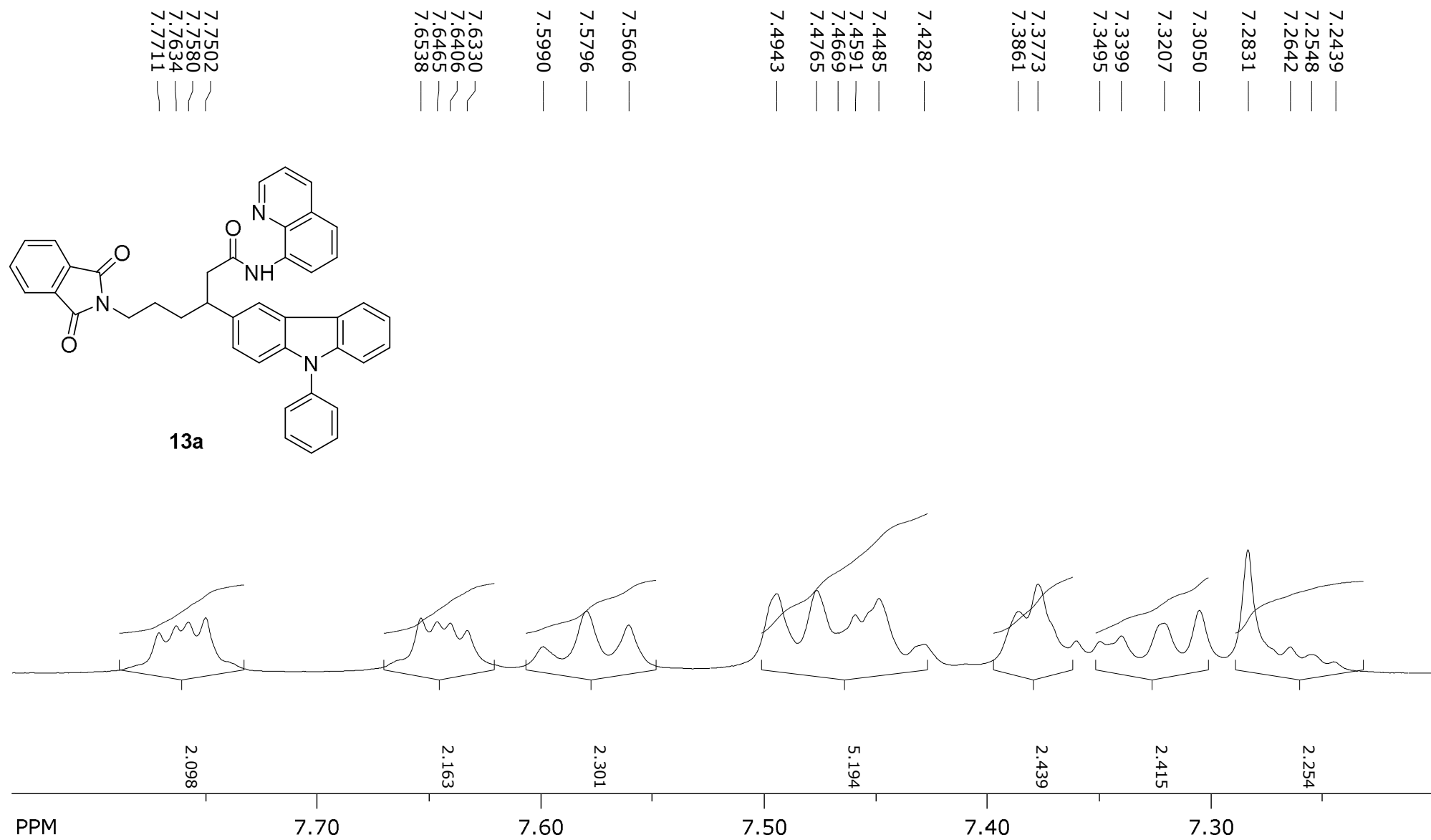
8.6819 —
8.6997 —

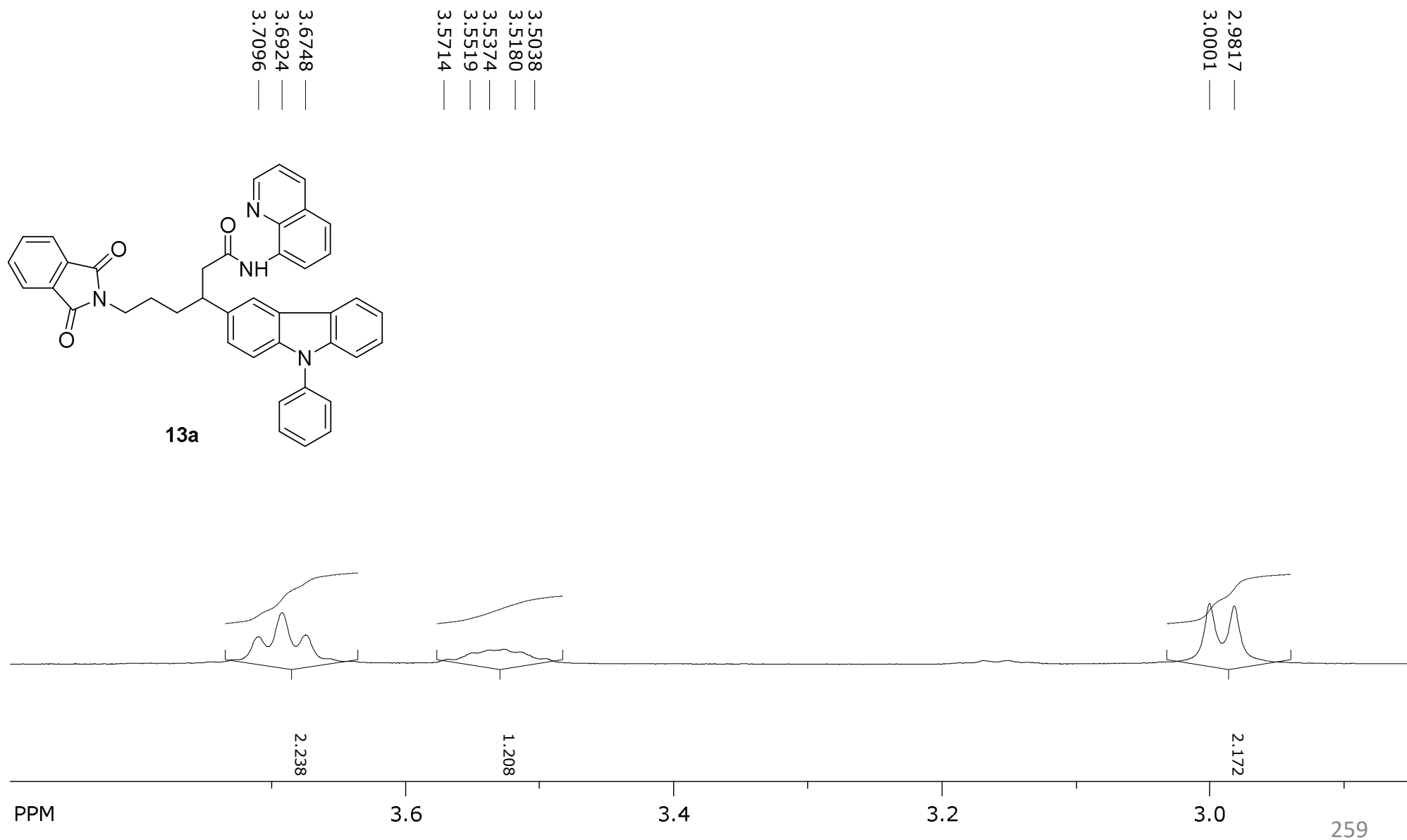
8.5487 —
8.5515 —
8.5586 —

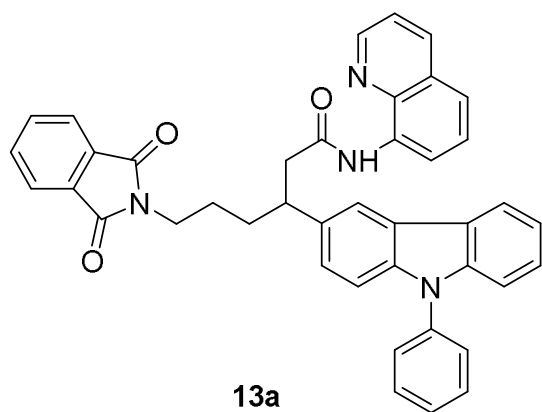
8.0641 —
8.0761 —
8.0940 —
8.1112 —



SpinWorks 4: rd-48-re-3





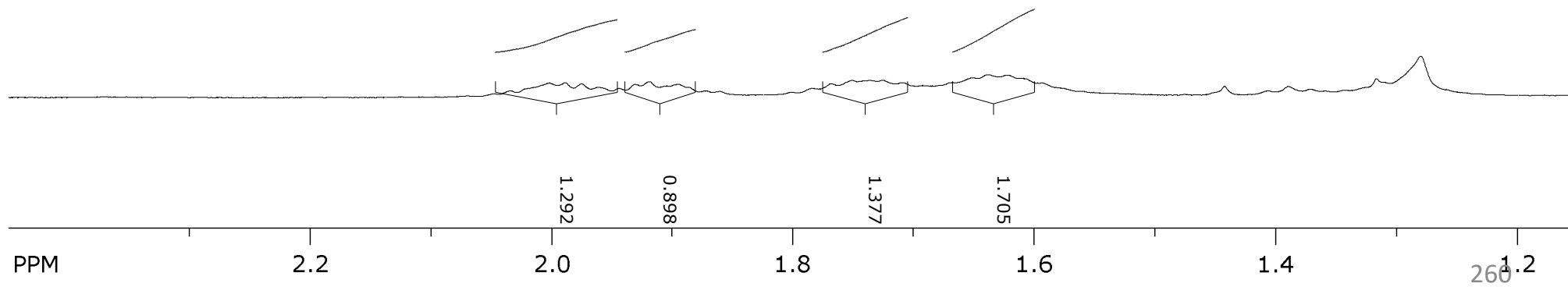


1.8787
1.8902
1.9030
1.9102
1.9245
1.9388
1.9532
1.9646
1.9832
2.0019
2.0162
2.0348

1.7756

1.7077
1.7259
1.7366
1.7512

1.6582
1.6458
1.6287
1.6141
1.5972
1.5838

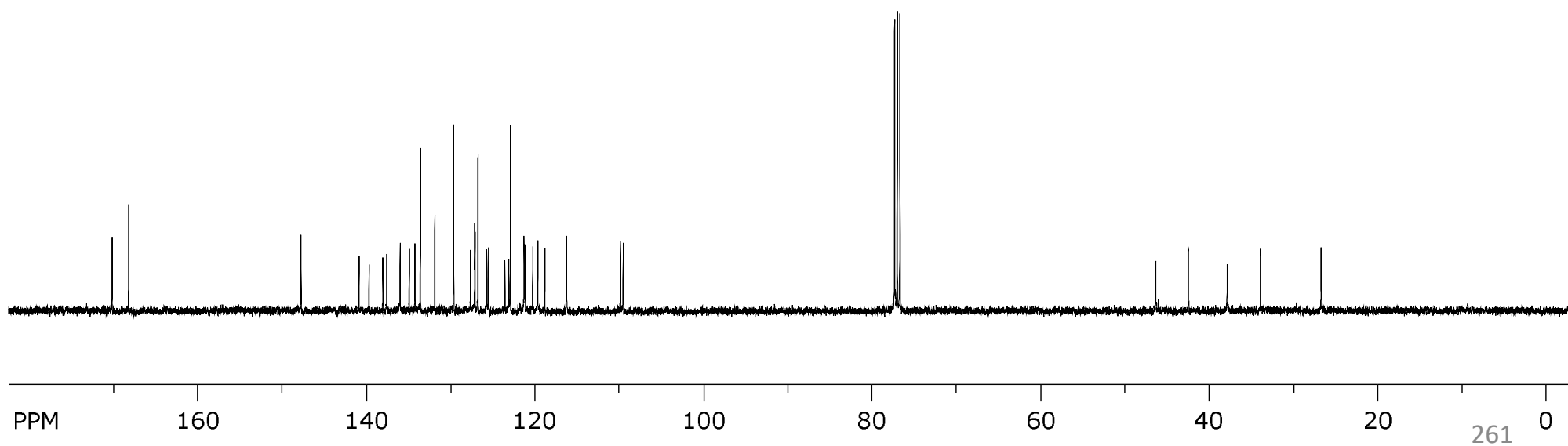
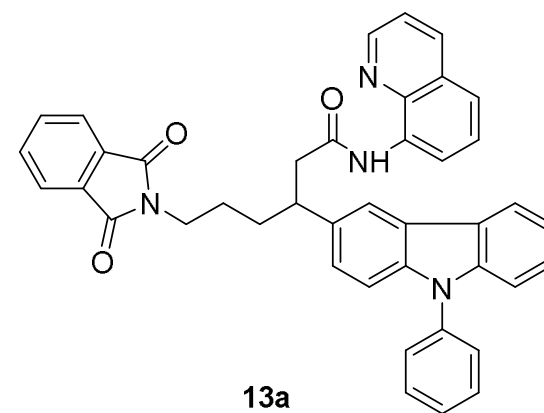


SpinWorks 4: RD 48 REP 2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 32

109.550
109.863
116.265
118.839
119.677
120.278
121.207
121.314
122.951
123.514
125.525
125.525
125.525
129.666
131.914
133.623
134.260
134.945
136.023
137.607
138.066
139.716
140.903
147.779
168.252
170.207

76.682
77.000
77.318

26.677
33.865
37.828
42.444
46.320



SpinWorks 4: RD 48 REP 2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 32

168.252 —
170.207 —

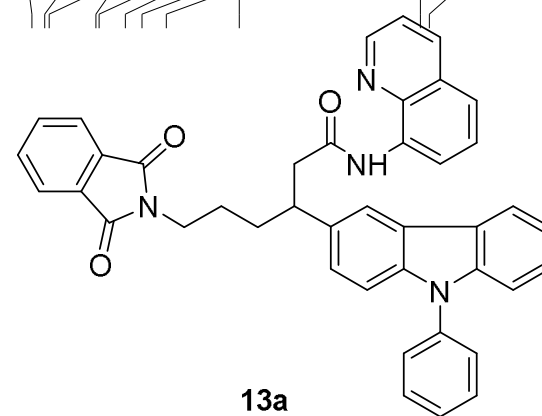
147.779 —

133.623 —
134.260 —
134.945 —
136.023 —
137.607 —
138.066 —
139.716 —
140.903 —

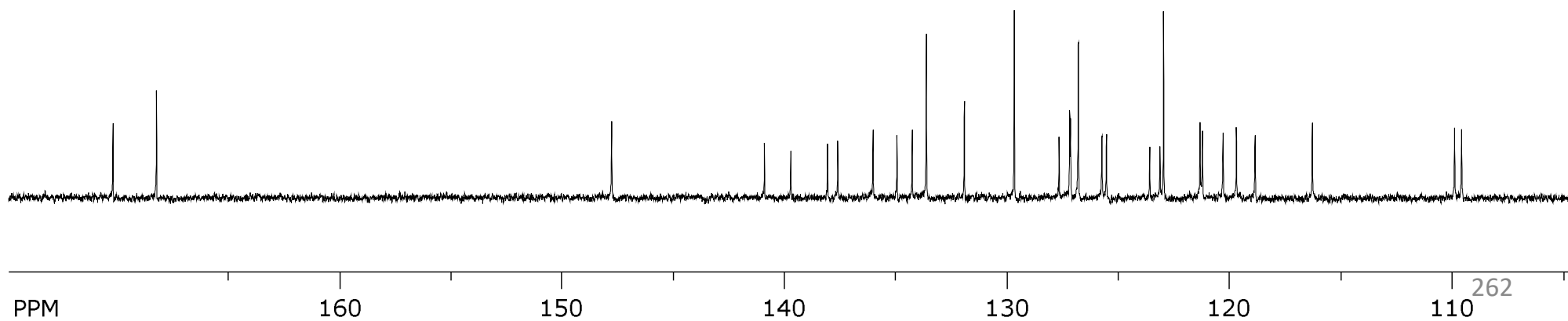
125.525 —
125.725 —
126.790 —
127.137 —
127.178 —
127.656 —
129.666 —
131.914 —

116.265 —
118.839 —
119.677 —
120.278 —
121.207 —
121.314 —
122.951 —
123.116 —
123.574 —

109.550 —
109.863 —



13a

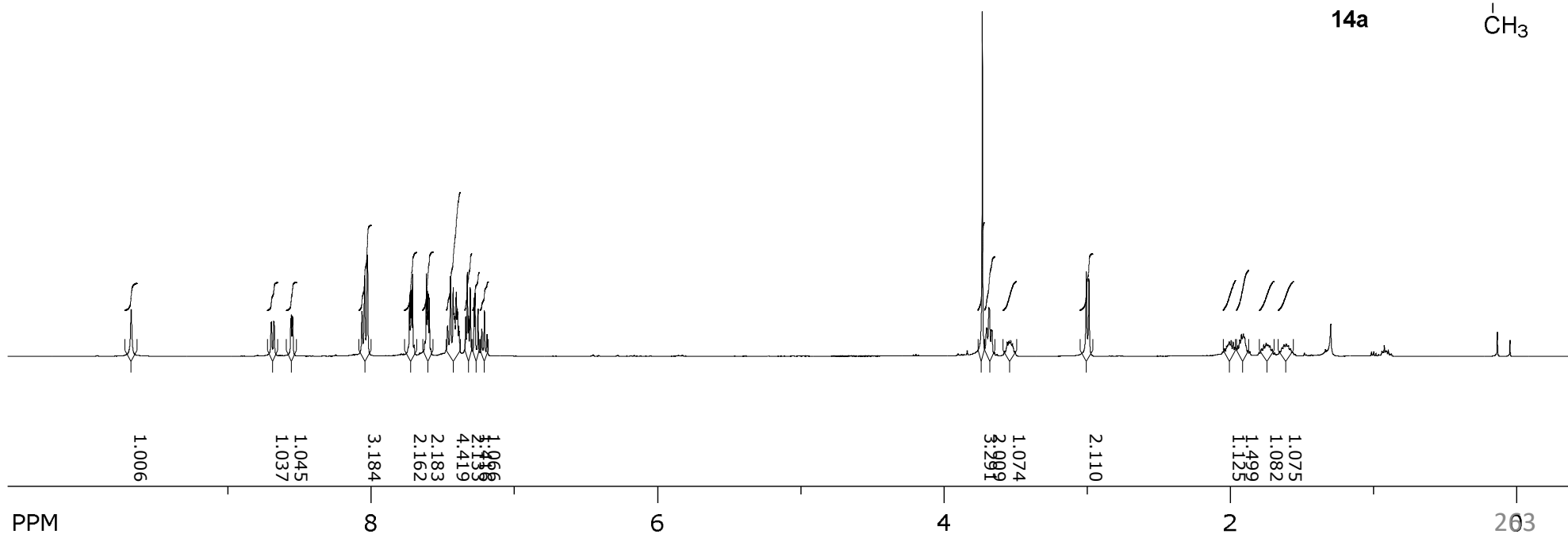


8.5517	
8.5557	
8.5623	
8.5662	
8.6822	
8.6851	
8.7009	
8.7036	
9.6821	

80202



2.0843

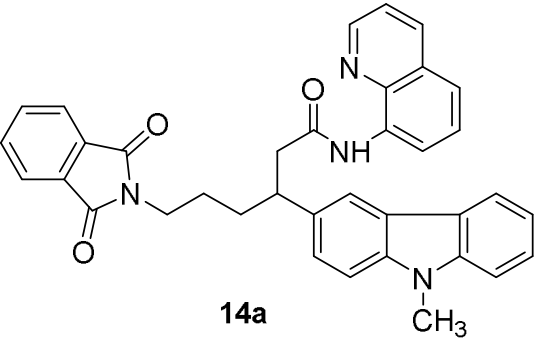


SpinWorks 4: rd-128 rep

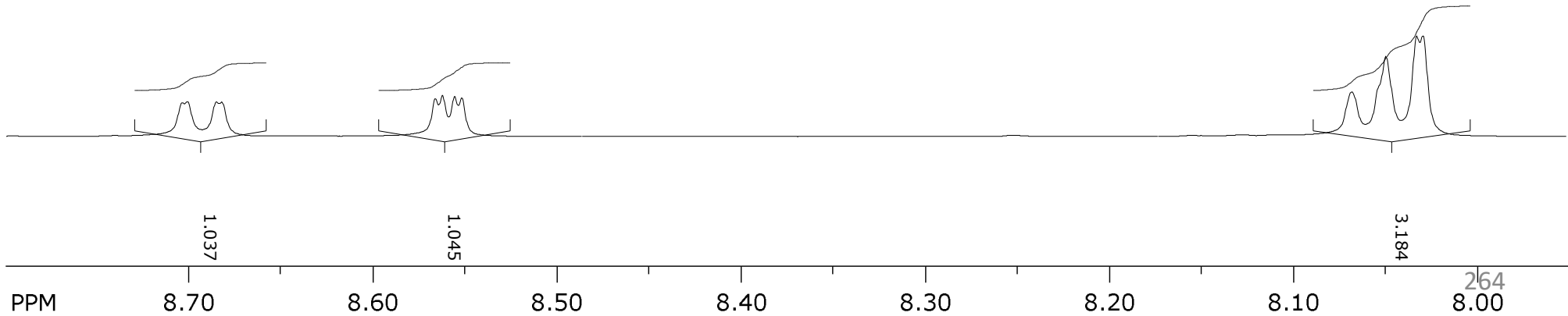
8.6822
8.6851
8.7009
8.7036

8.5517
8.5557
8.5623
8.5662

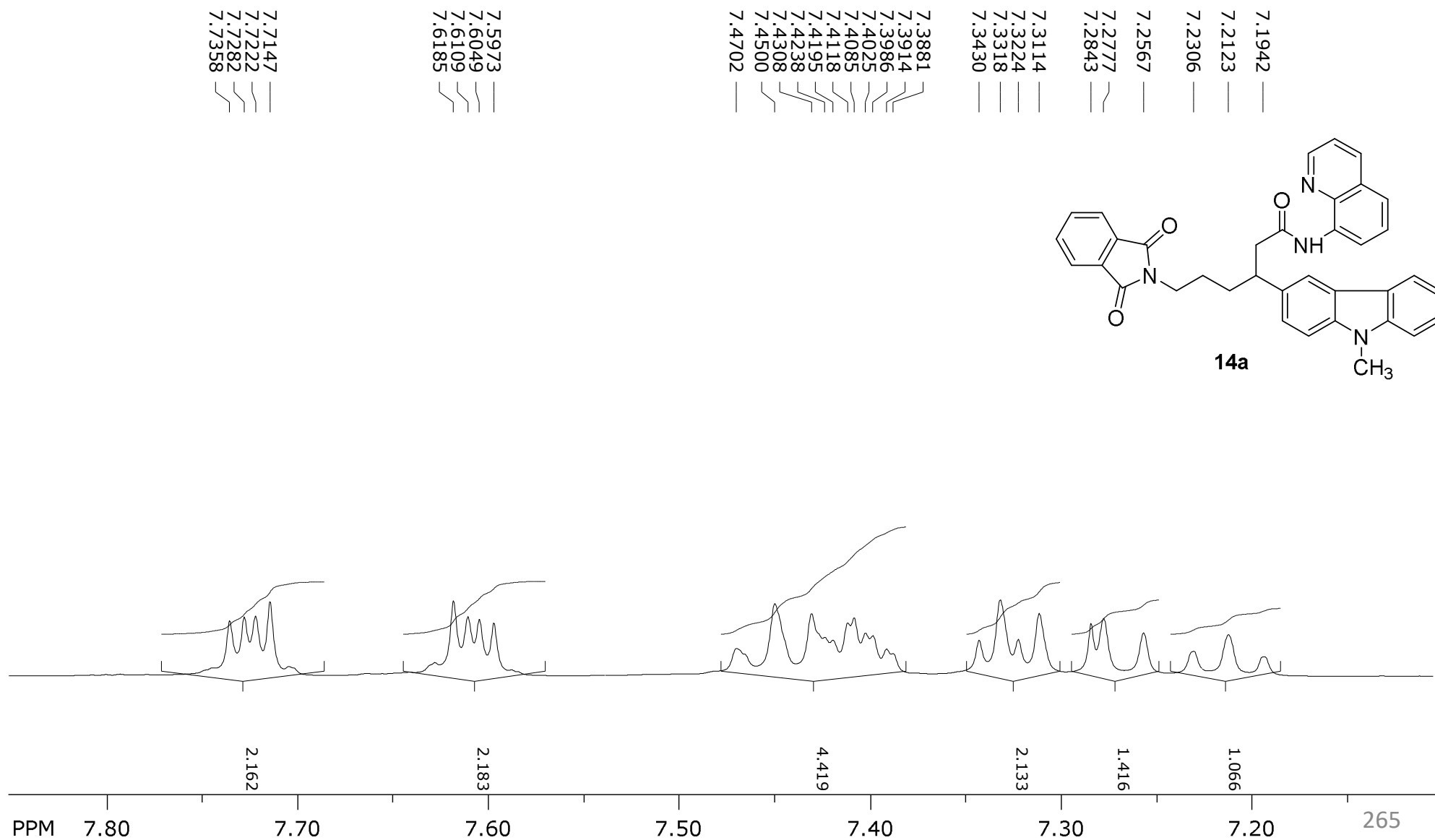
8.0296
8.0329
8.0497
8.0682



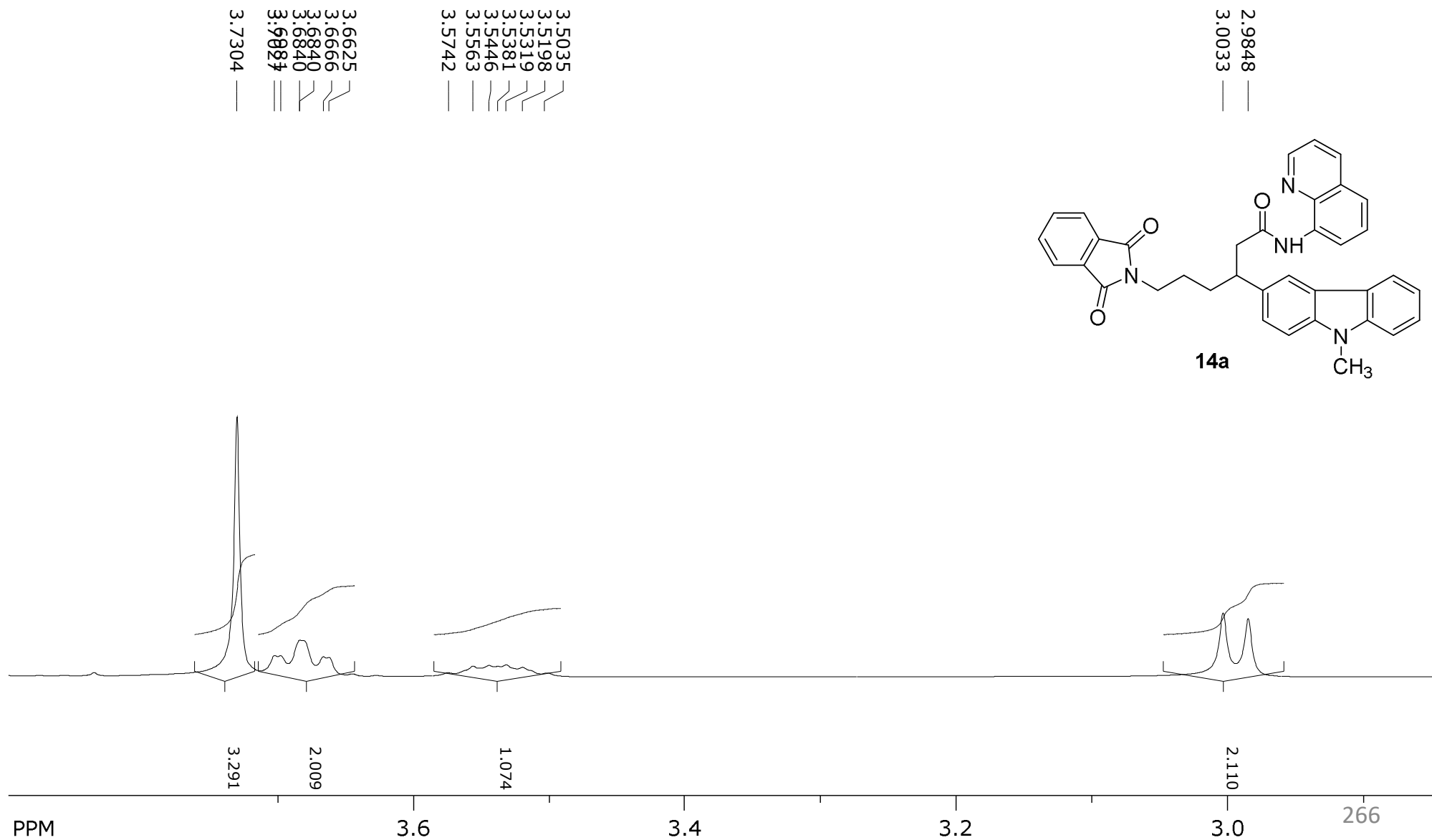
14a



SpinWorks 4: rd-128 rep



SpinWorks 4: rd-128 rep

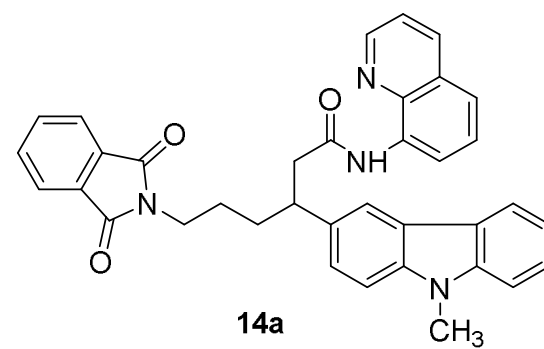


SpinWorks 4: rd-128 rep

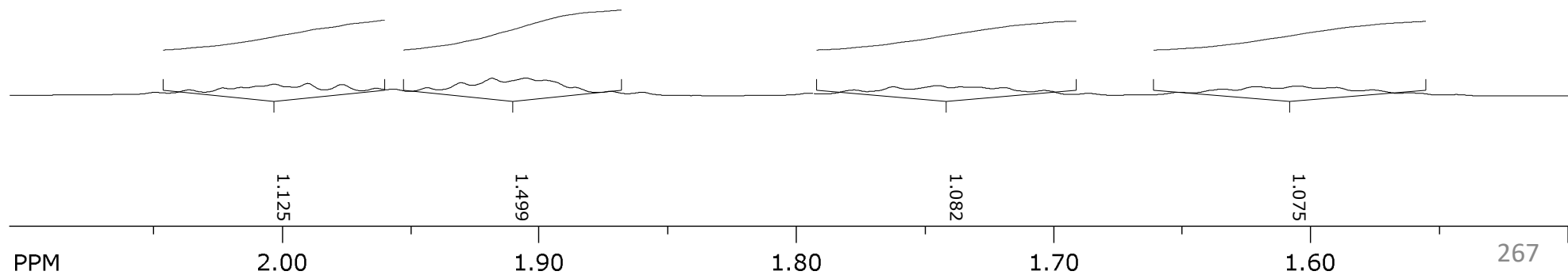
1.8980 —
1.9057 —
1.9188 —
1.9308 —
1.9440 —
1.9639 —
1.9772 —
1.9904 —
1.9972 —
2.0035 —
2.0096 —
2.0163 —
2.0234 —

1.7821 —
1.7626 —
1.7455 —
1.7365 —
1.7298 —
1.7116 —
1.6957 —

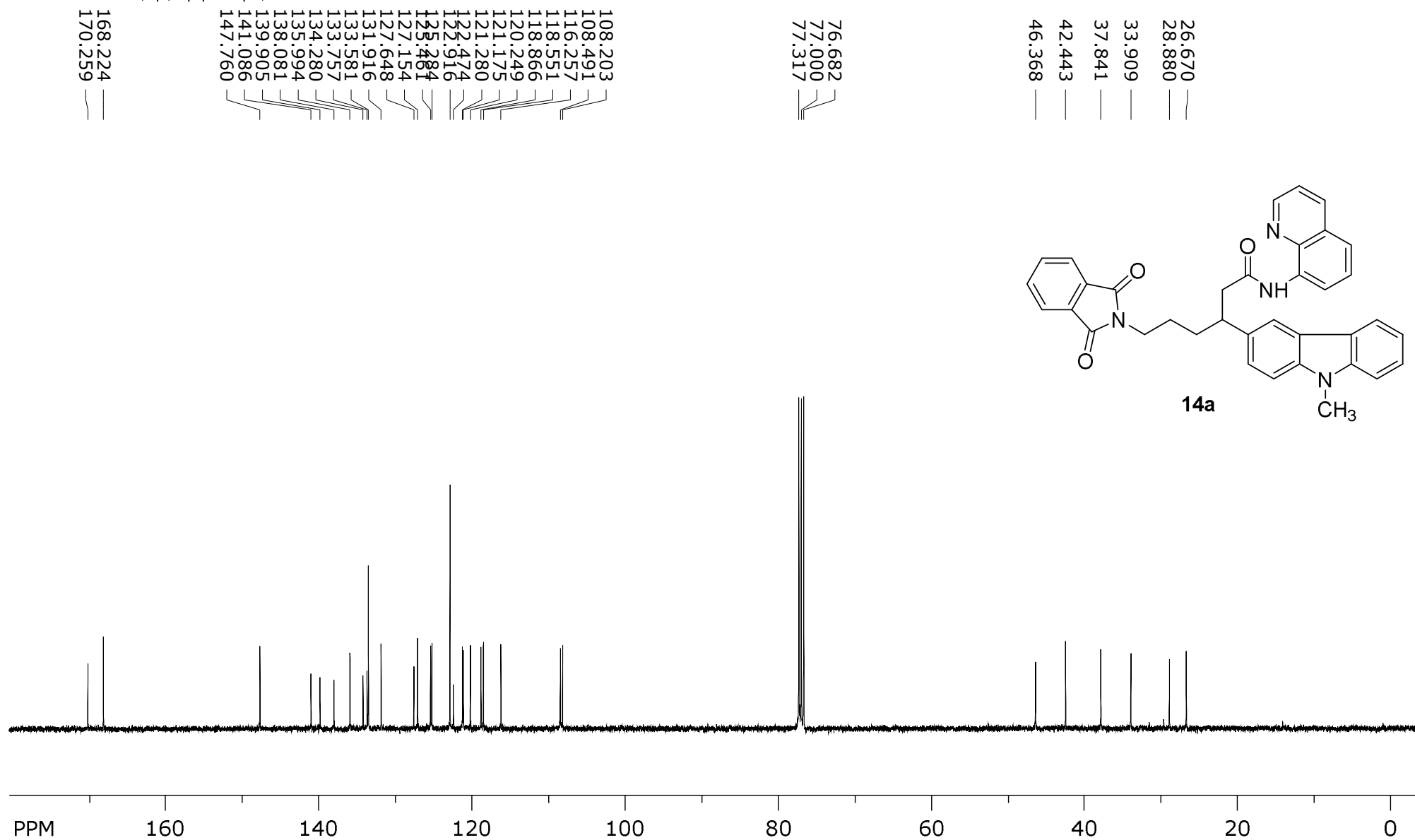
1.5756 —
1.5899 —
1.6057 —
1.6220 —
1.6342 —
1.6481 —



14a

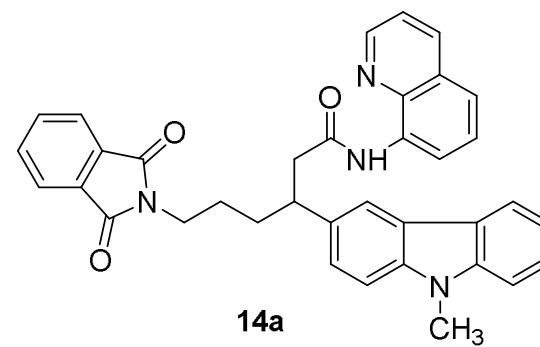


SpinWorks 4: RD 128 REP
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 5

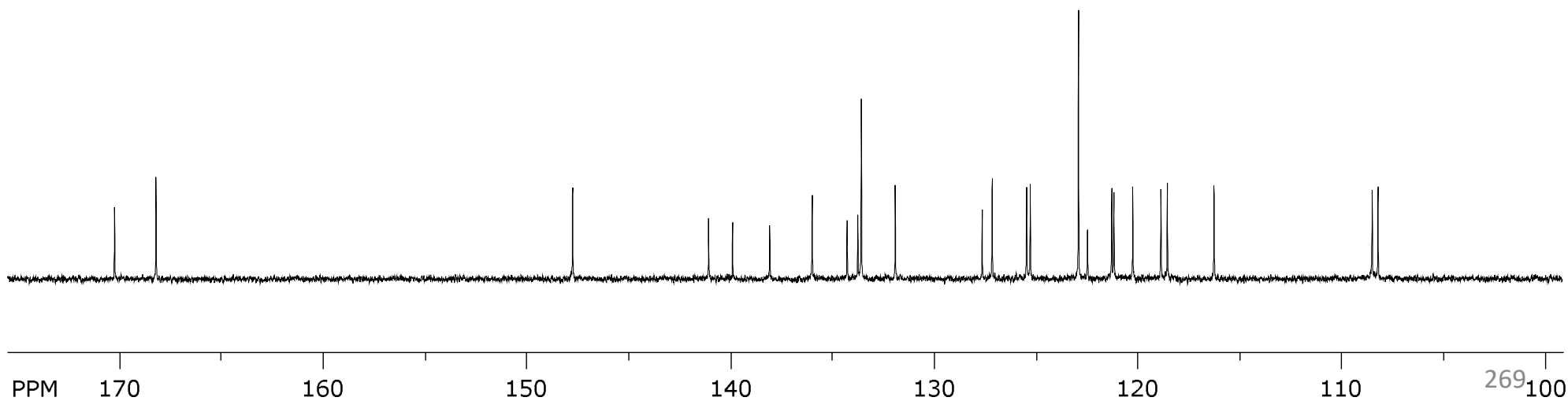


SpinWorks 4: RD 128 REP
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 5

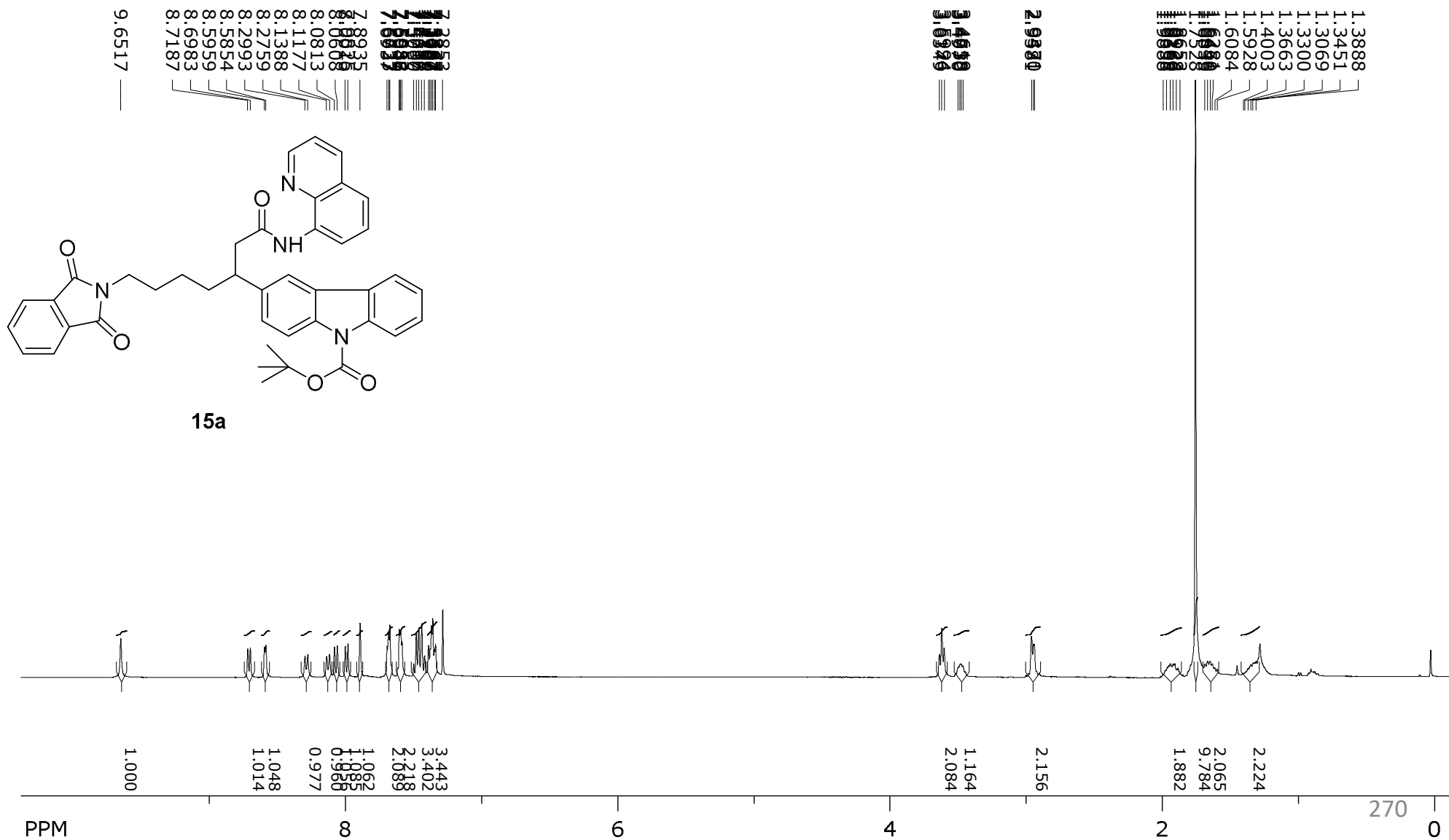
170.259 —
168.224 —
147.760 —
141.086 —
139.905 —
138.081 —
135.994 —
134.280 —
133.757 —
133.581 —
131.916 —
127.648 —
127.154 —
125.461 —
125.284 —
122.916 —
122.474 —
121.280 —
121.175 —
120.249 —
118.866 —
118.551 —
116.257 —
108.491 —
108.203 —



14a



PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2



SpinWorks 4: RD 175
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2

8.6983 —
8.7187 —

8.5854 —
8.5959 —

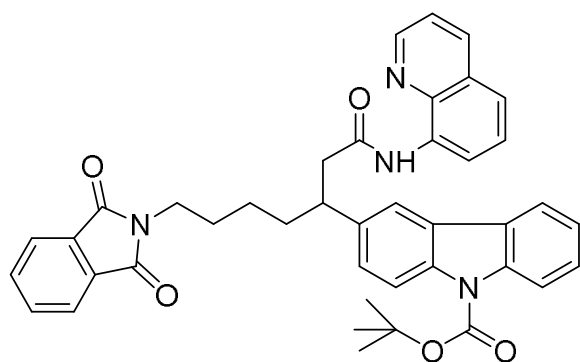
8.2759 —
8.2993 —

8.1177 —
8.1388 —

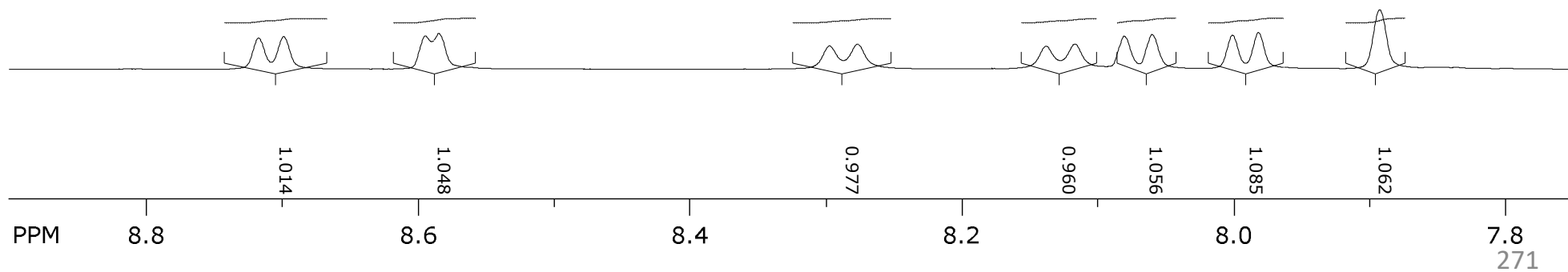
8.0608 —
8.0813 —

7.9825 —
8.0016 —

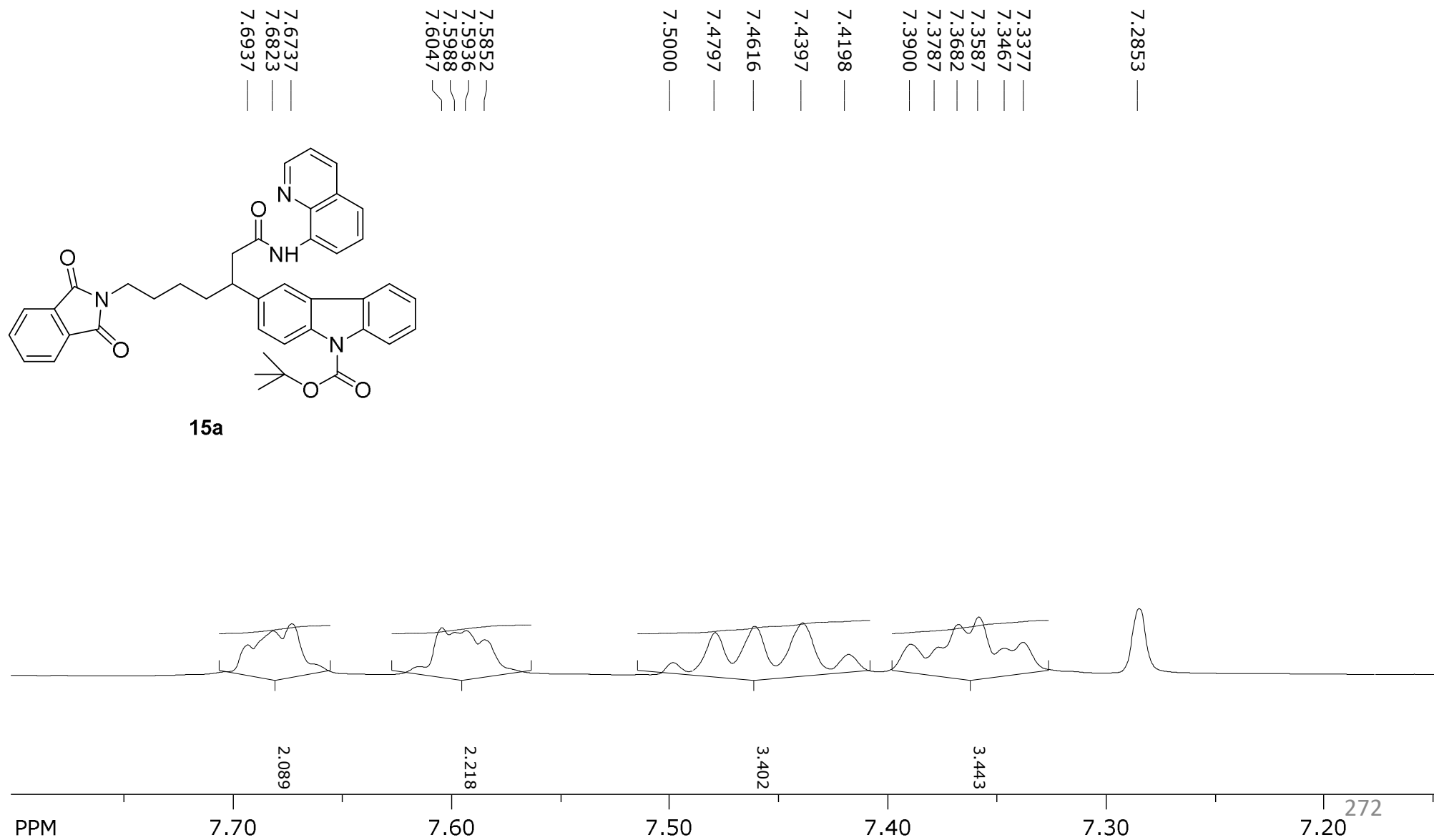
7.8935 —



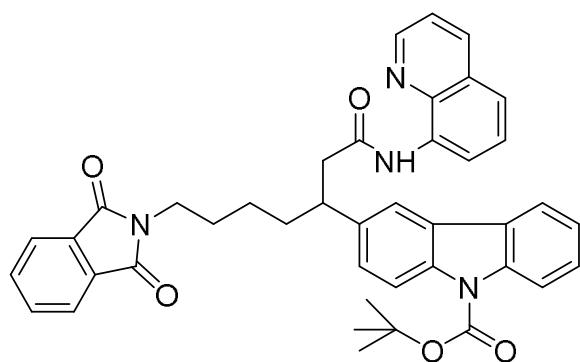
15a



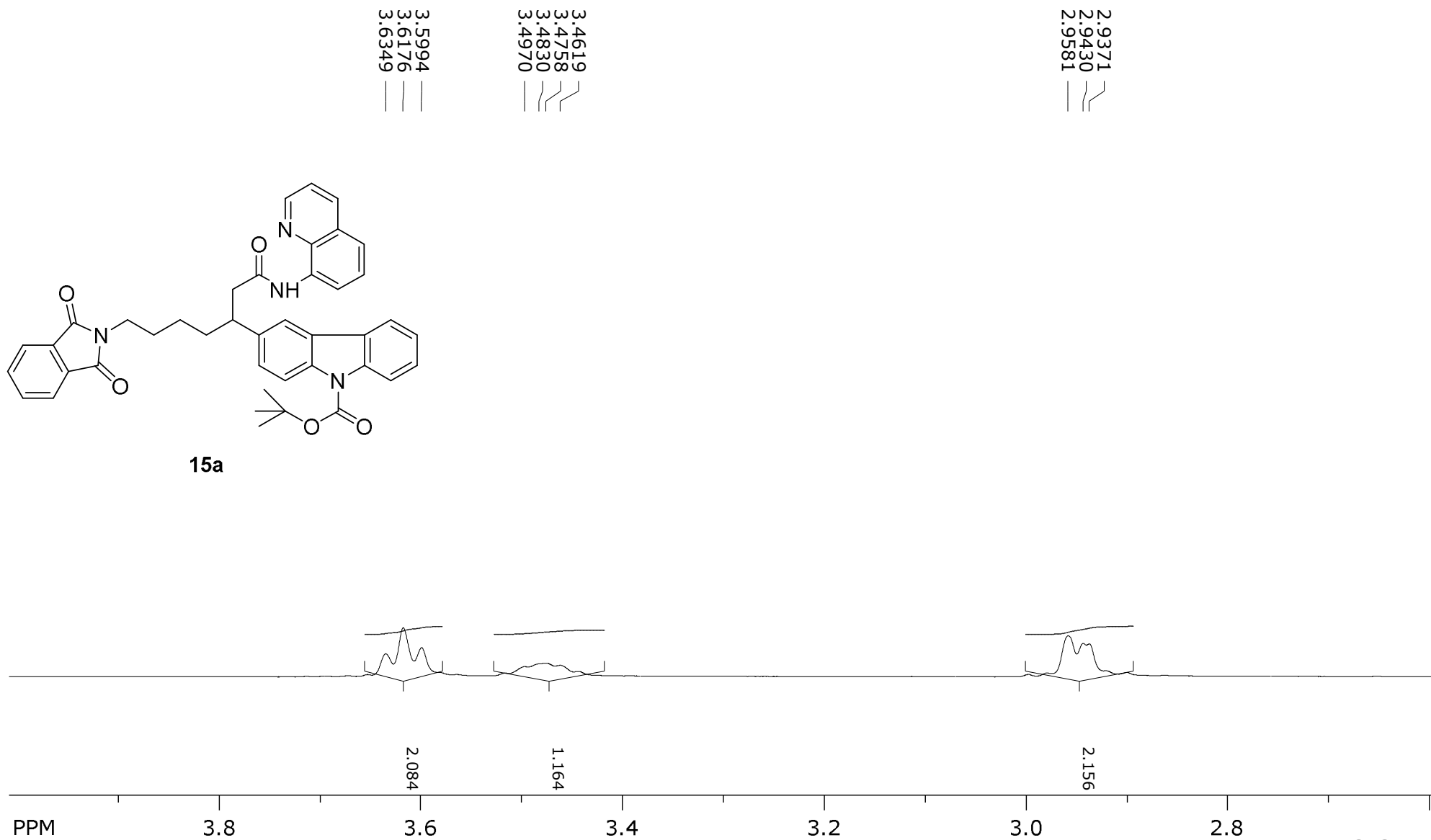
SpinWorks 4: RD 175
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2



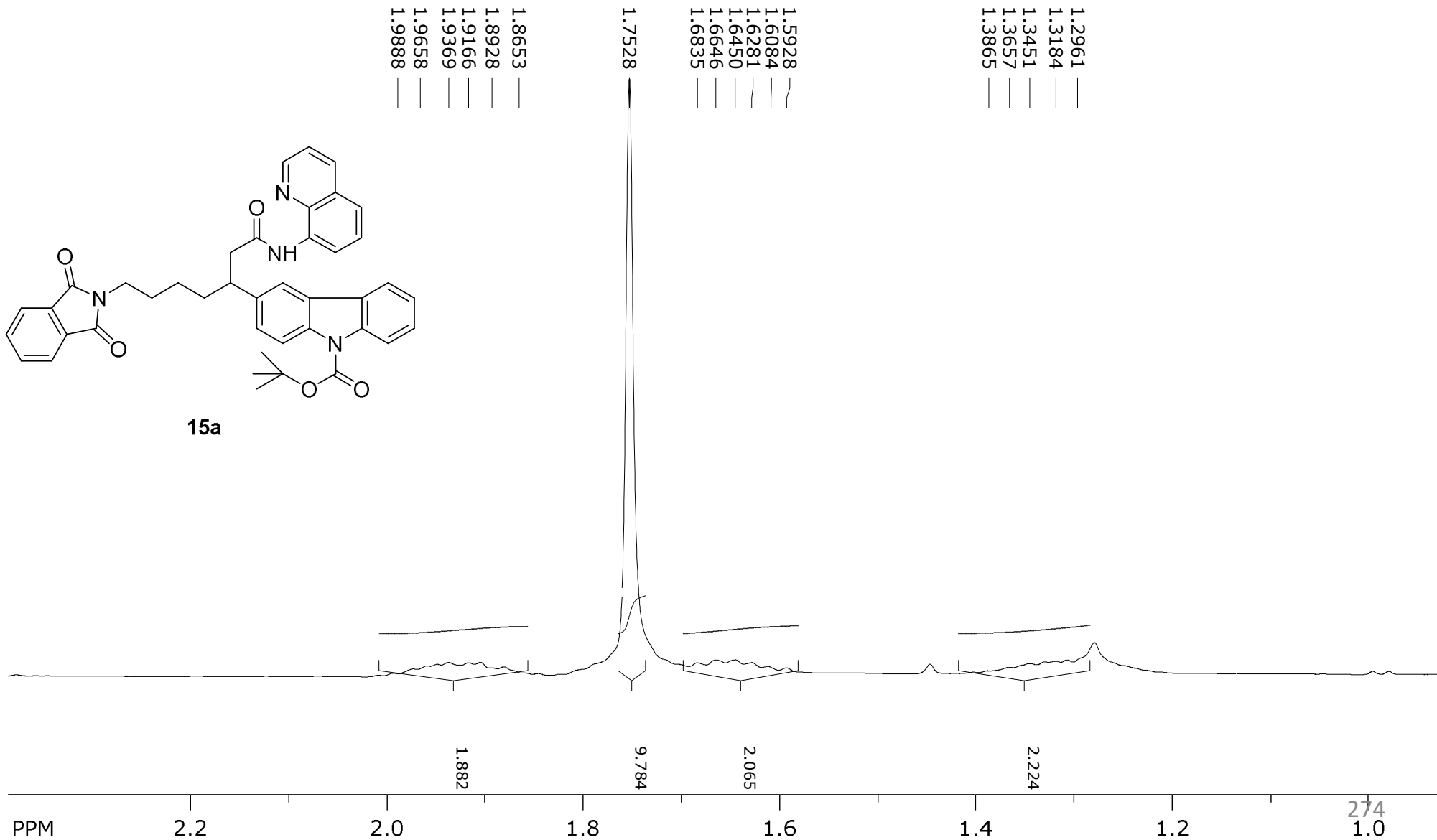
SpinWorks 4: RD 175
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2



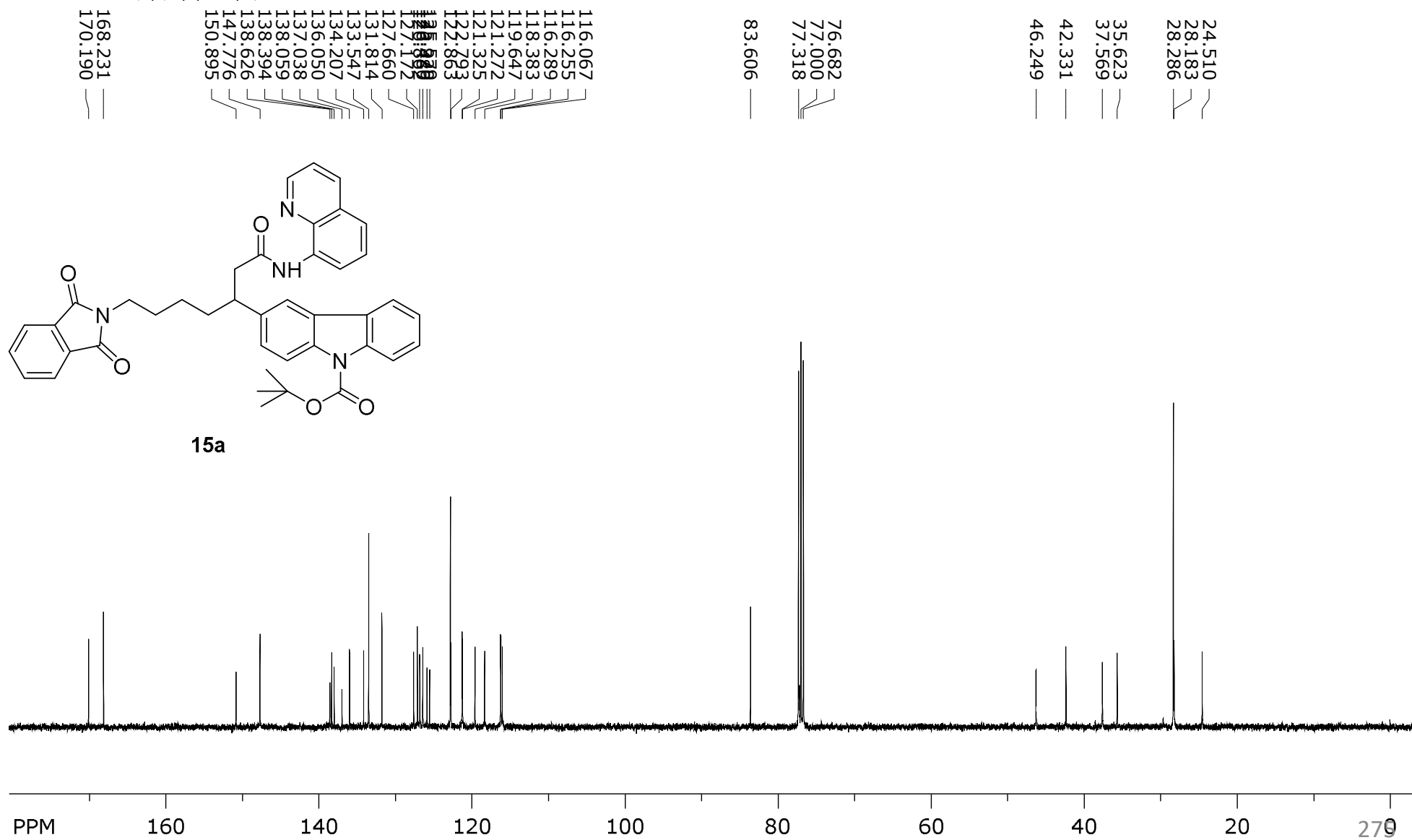
15a



SpinWorks 4: RD 175
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2



SpinWorks 4: RD 175
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 26



SpinWorks 4: RD 175
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 26

170.190 —
168.231 —

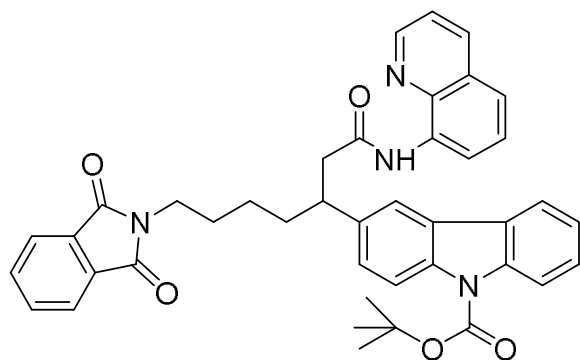
150.895 —
147.776 —

138.626 —
138.394 —
138.059 —
137.038 —
136.050 —
134.207 —
133.547 —
131.814 —

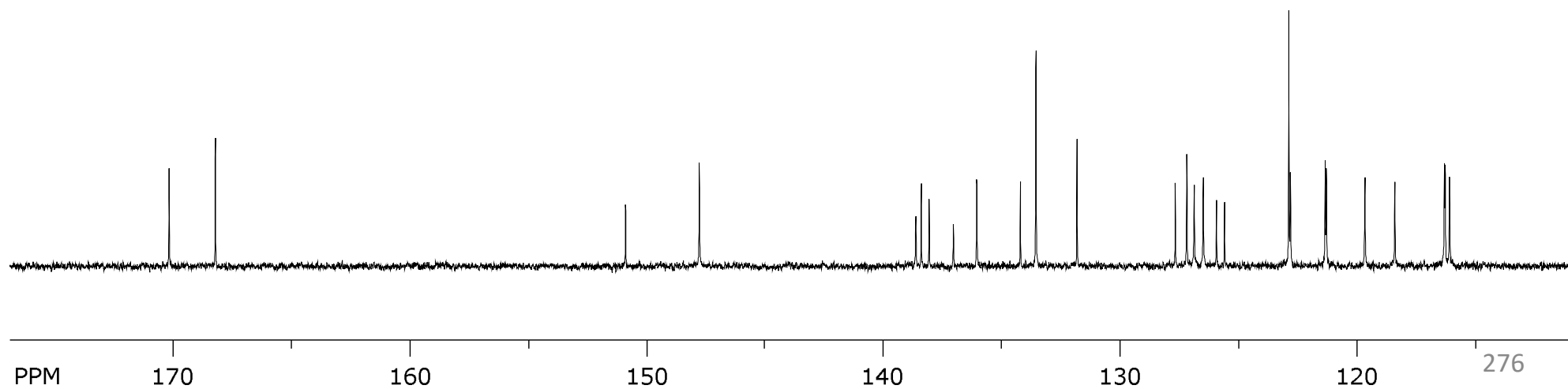
127.660 —
127.172 —
126.862 —
126.480 —
125.920 —
125.579 —

122.863 —
122.793 —
121.325 —
121.272 —
119.647 —
118.383 —

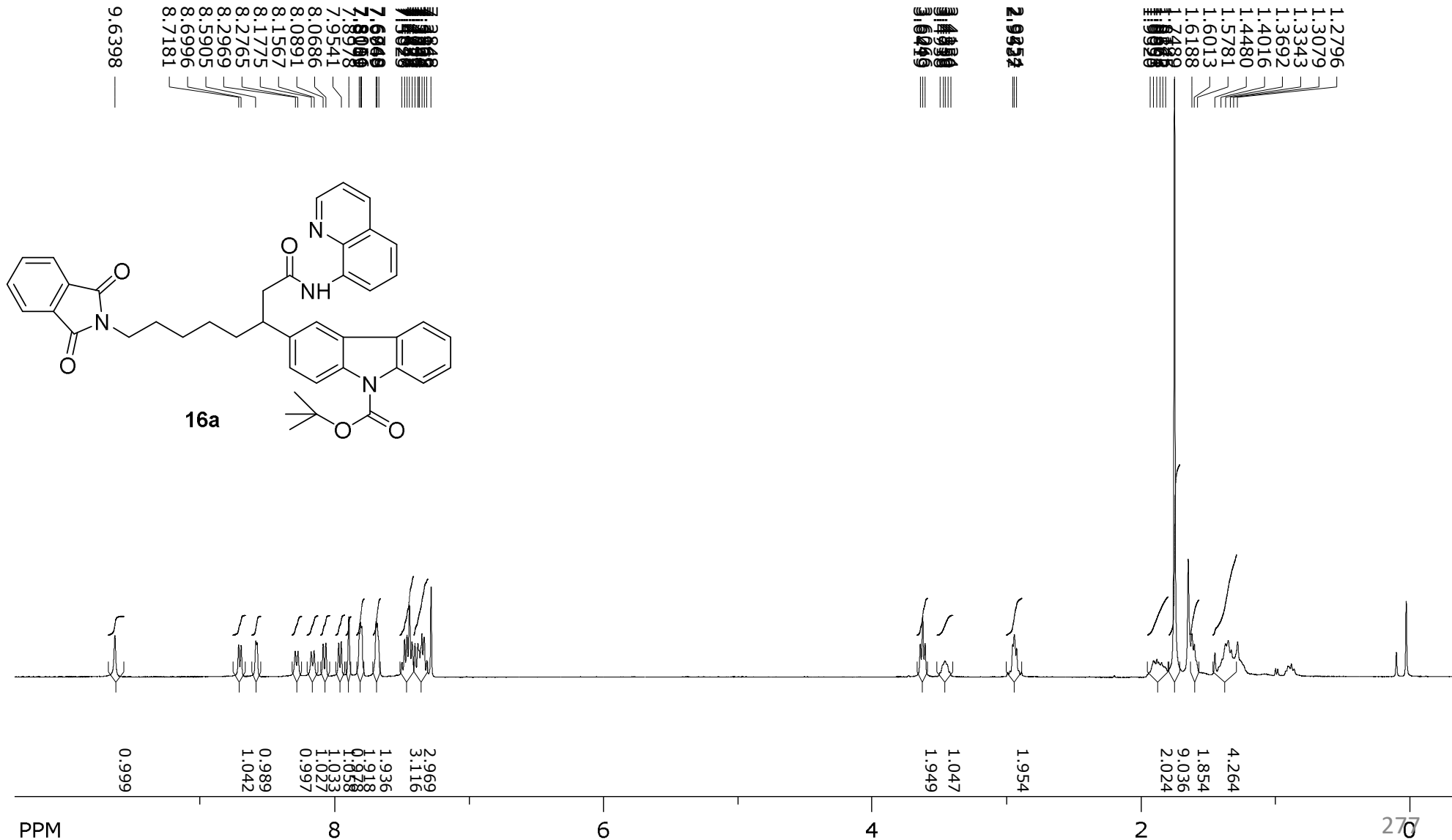
116.289 —
116.255 —
116.067 —



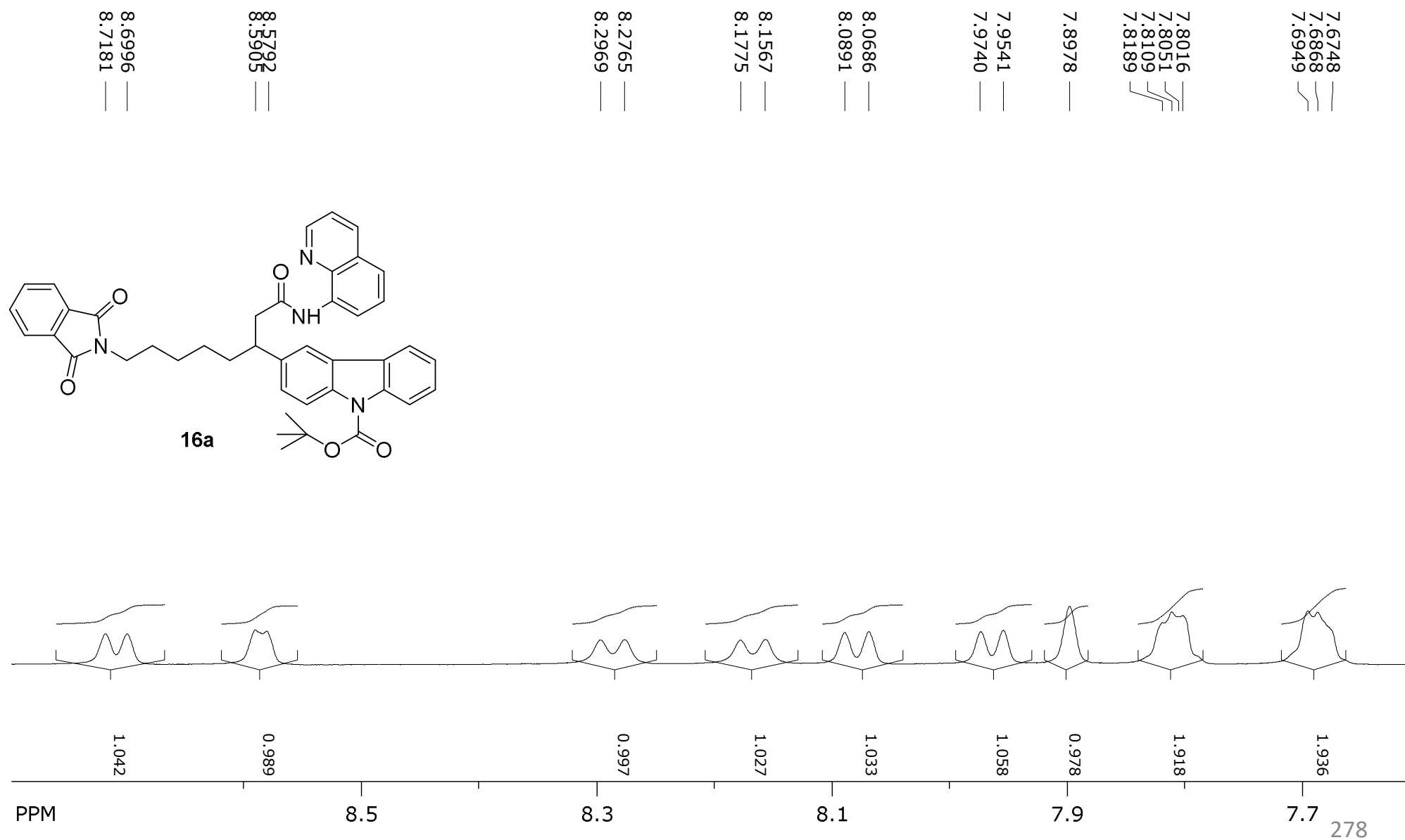
15a



SpinWorks 4: RD 162
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 14

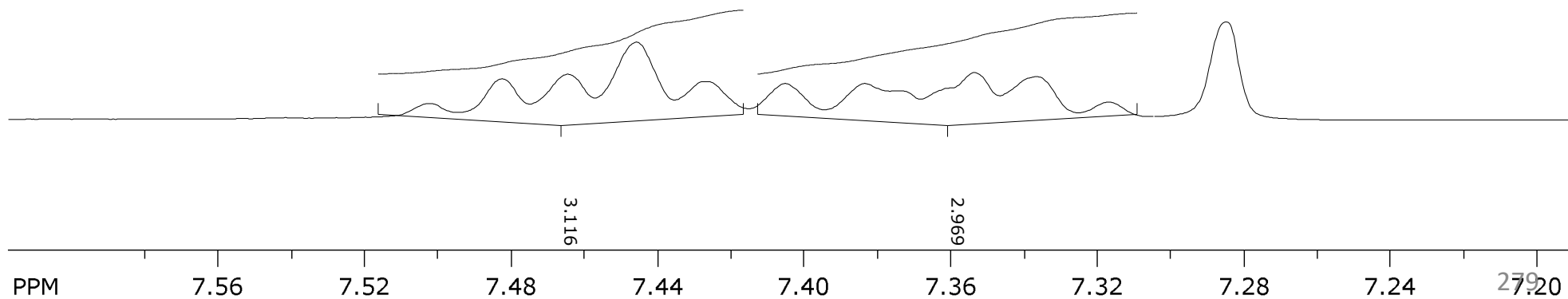
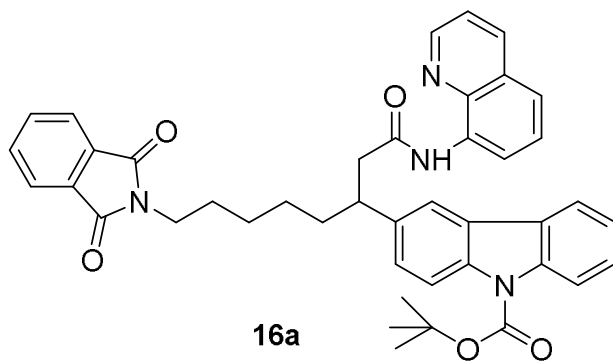


SpinWorks 4: RD 162
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 14

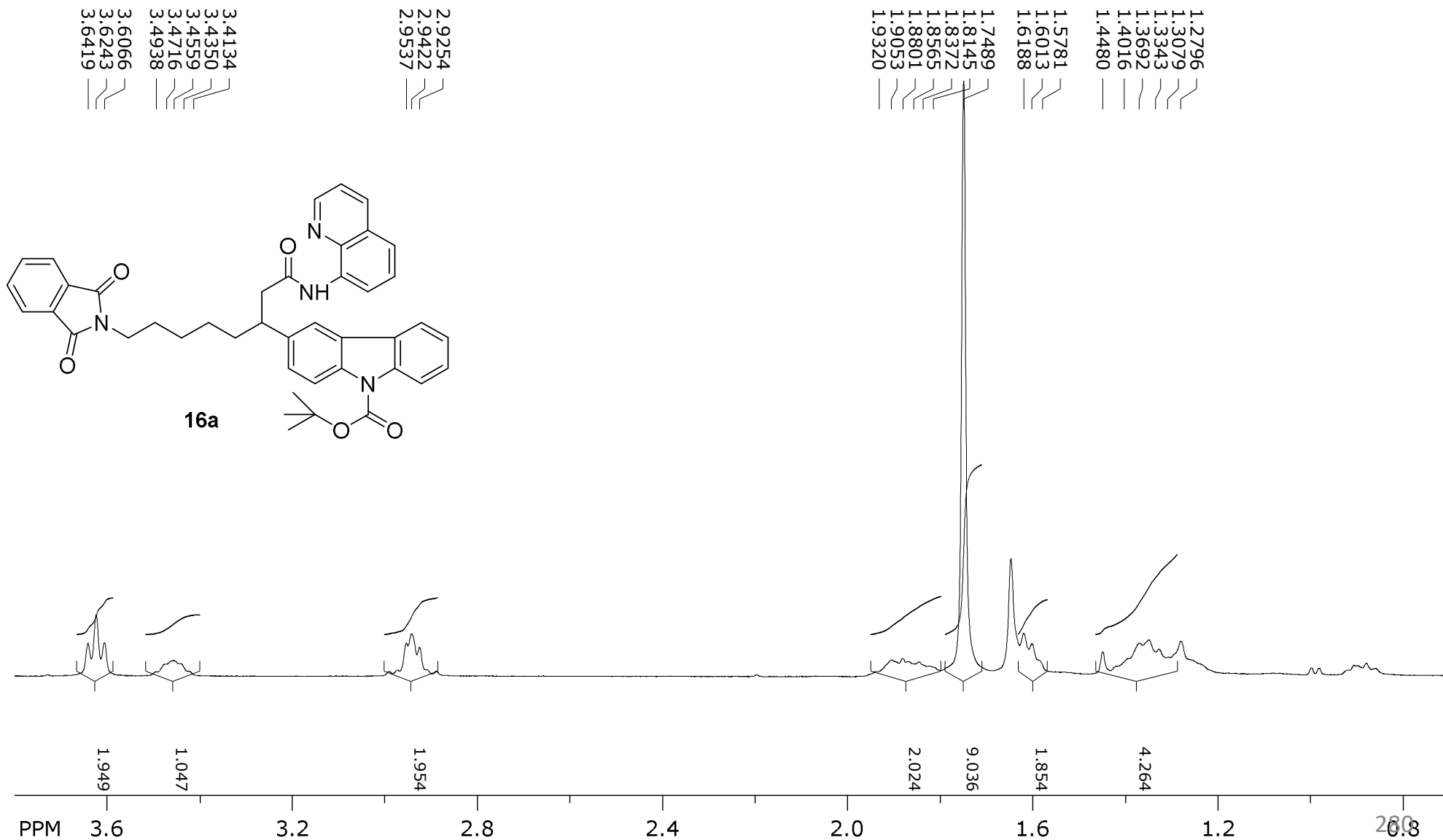


SpinWorks 4: RD 162
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 14

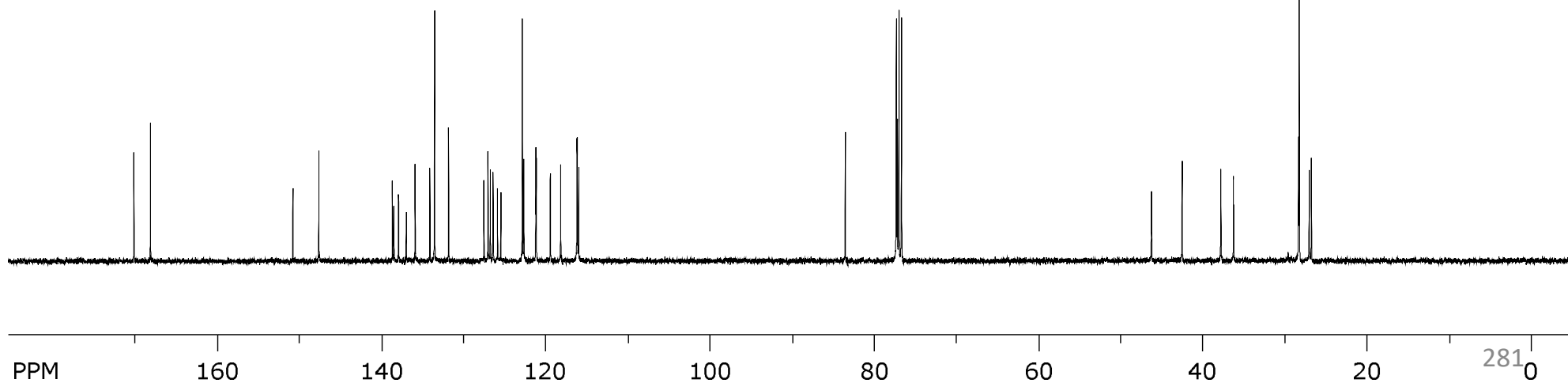
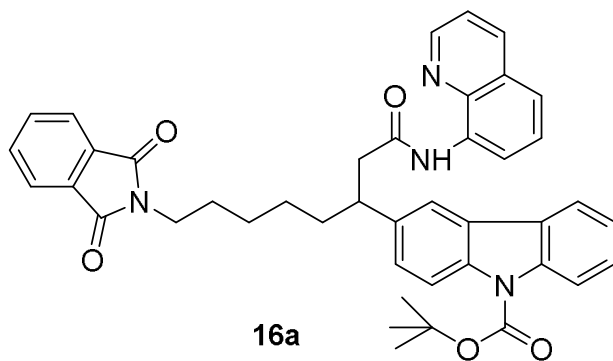
7.5023 —
7.4826 —
7.4647 —
7.4458 —
7.4272 —
7.4052 —
7.3835 —
7.3744 —
7.3748 —
7.3534 —
7.3365 —
7.3169 —
7.2848 —



SpinWorks 4: RD 162
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 14

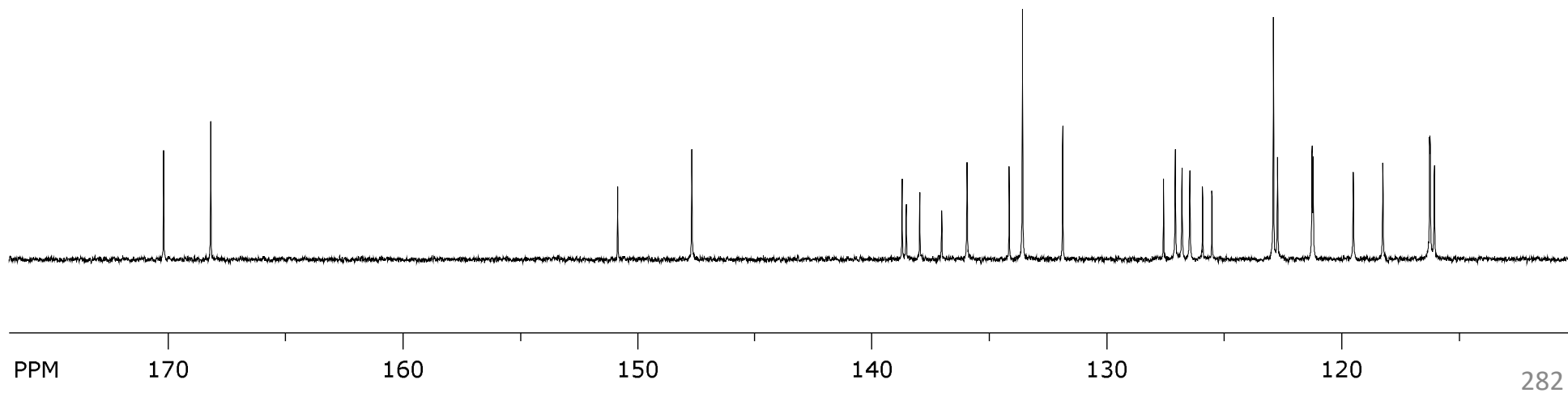
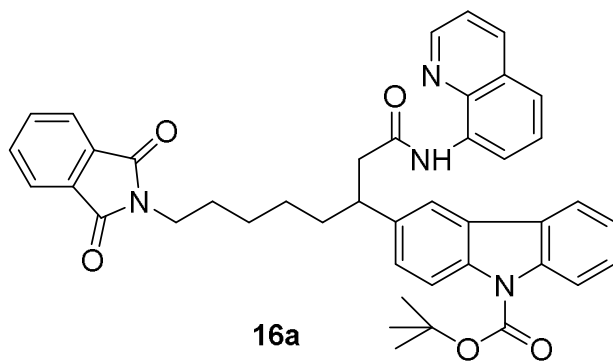


SpinWorks 4: RD 162
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 3

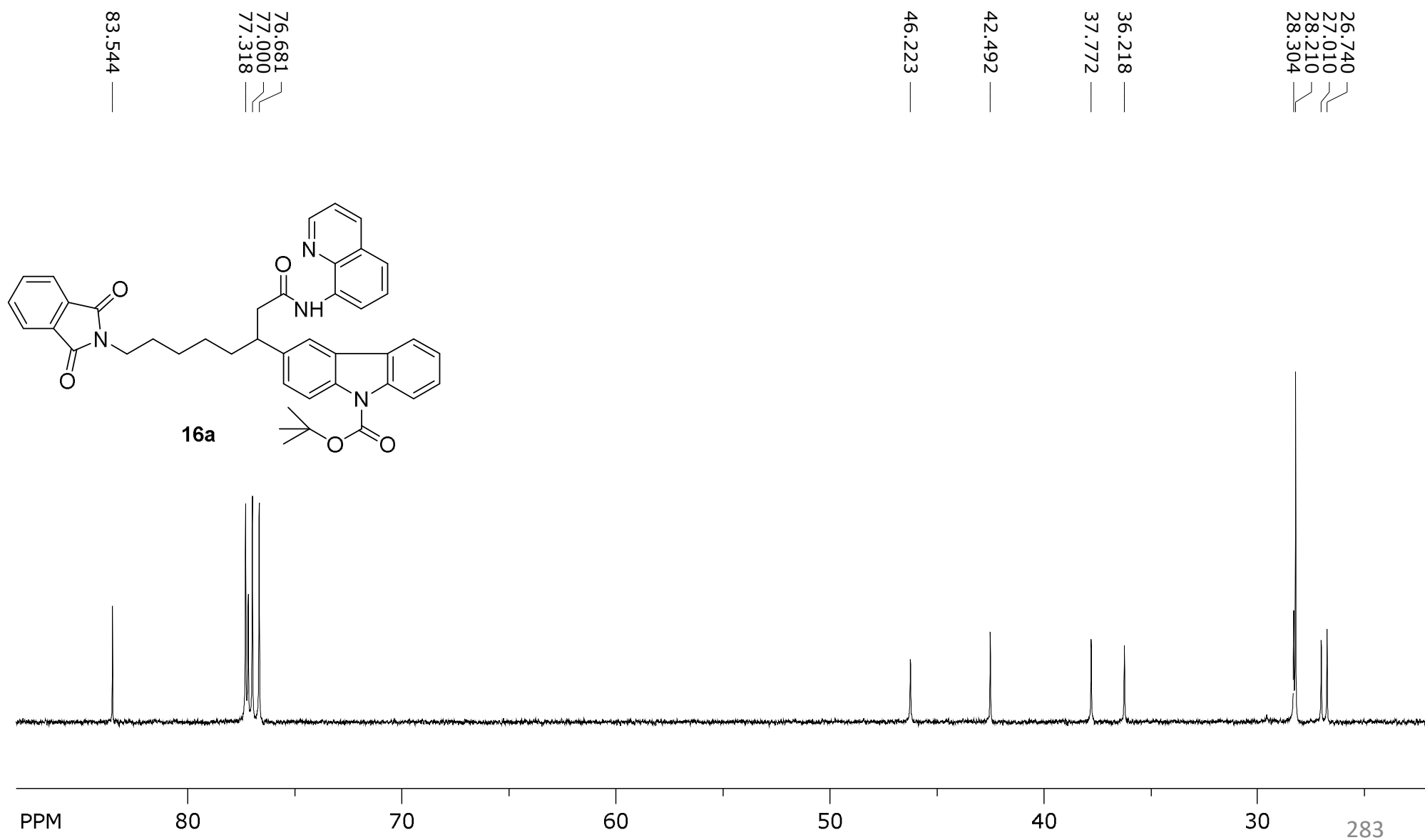


SpinWorks 4: RD 162
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 3

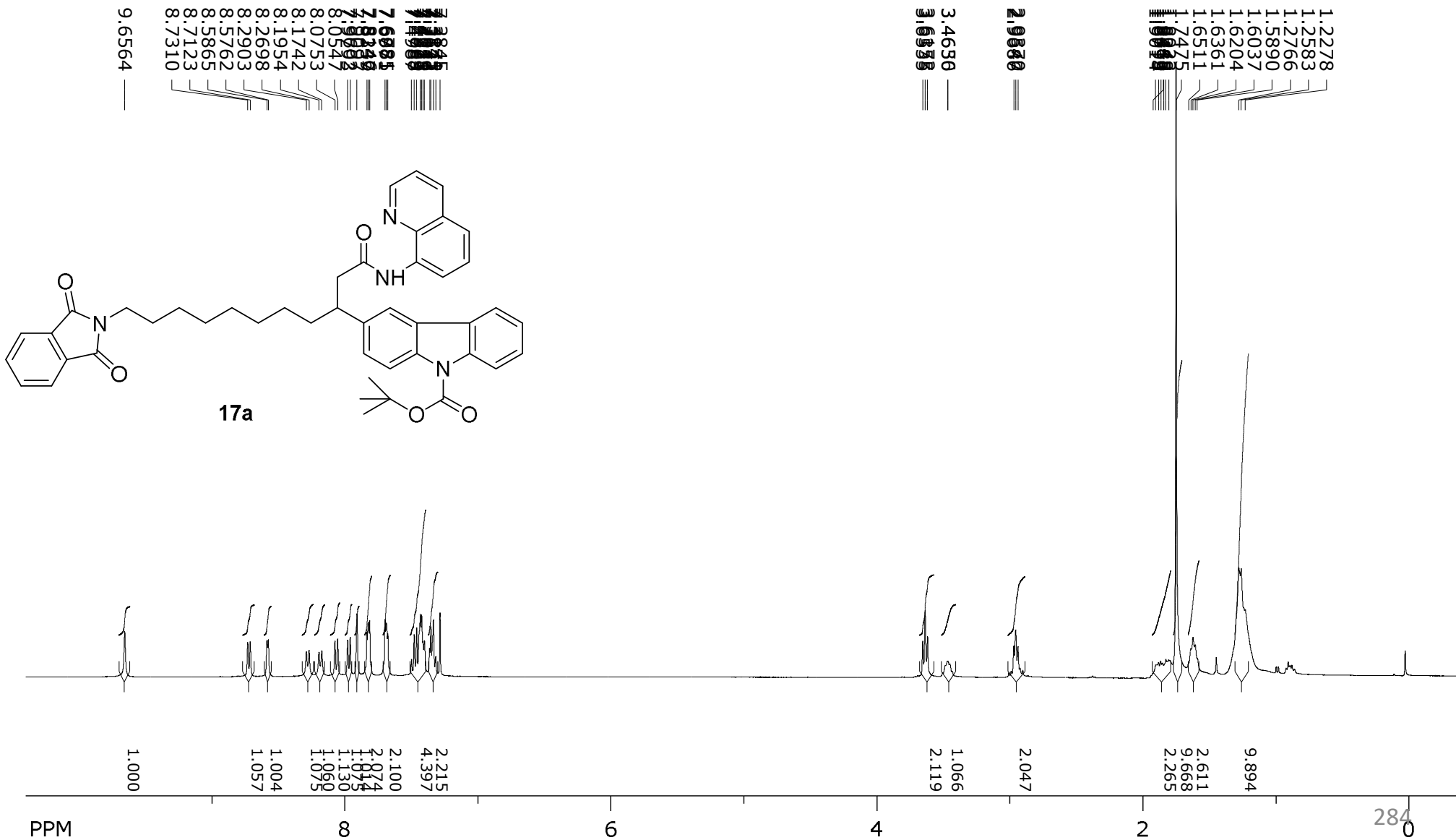
170.219	168.207	150.854	147.696	138.727	138.553	137.975	137.033	135.956	134.157	133.588	131.876	127.578	127.075	126.792	126.453	125.908	125.514	122.890	122.716	121.246	121.198	119.482	118.220	116.226	116.025
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SpinWorks 4: RD 162
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 3



SpinWorks 4: RD 169
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 42



SpinWorks 4: RD 169
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 42

8.7123 —
8.7310 —

8.5762 —
8.5865 —

8.2698 —
8.2903 —

8.1742 —
8.1954 —

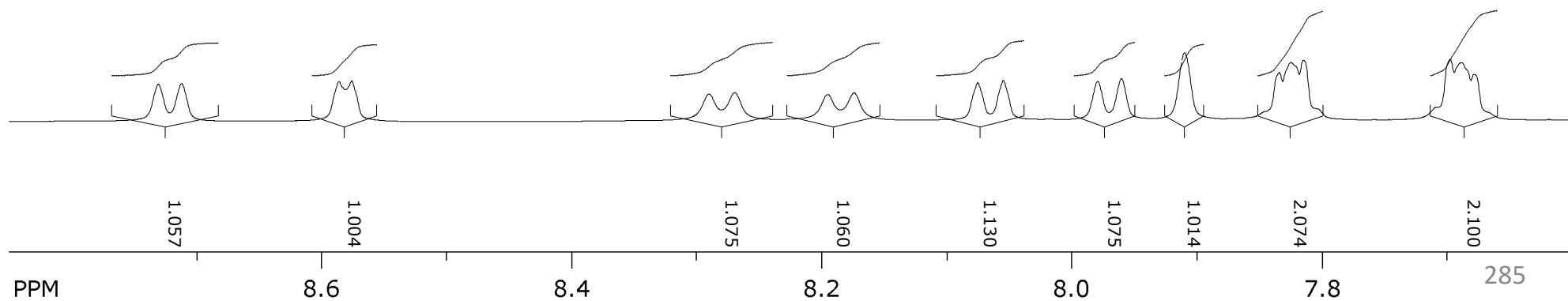
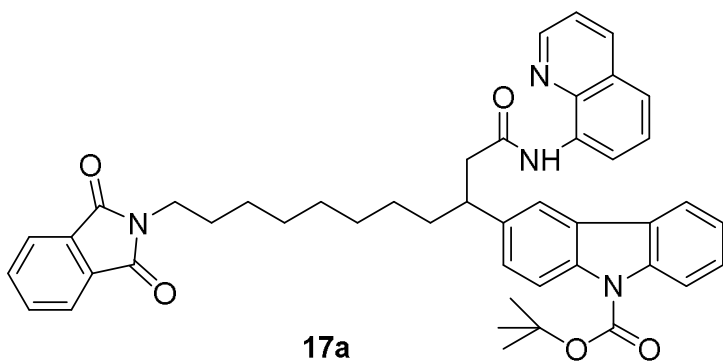
8.0547 —
8.0753 —

7.9602 —
7.9793 —

7.9097 —

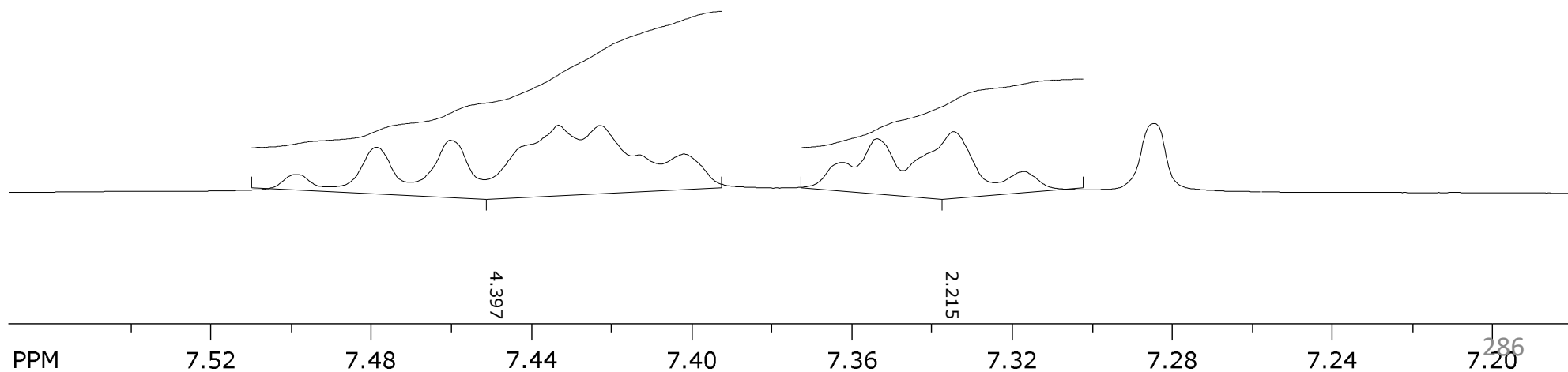
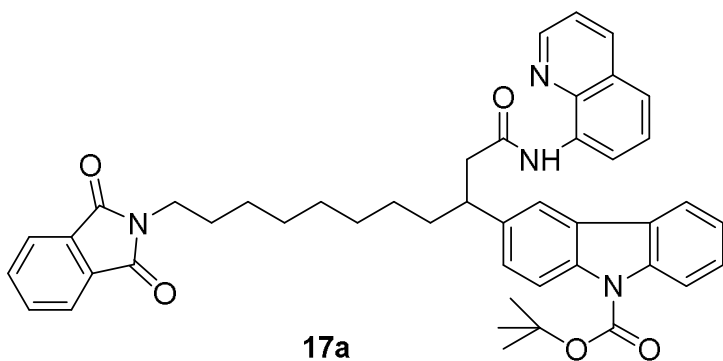
7.8146 —
7.8247 —
7.8339 —

7.6781 —
7.6885 —
7.6971 —

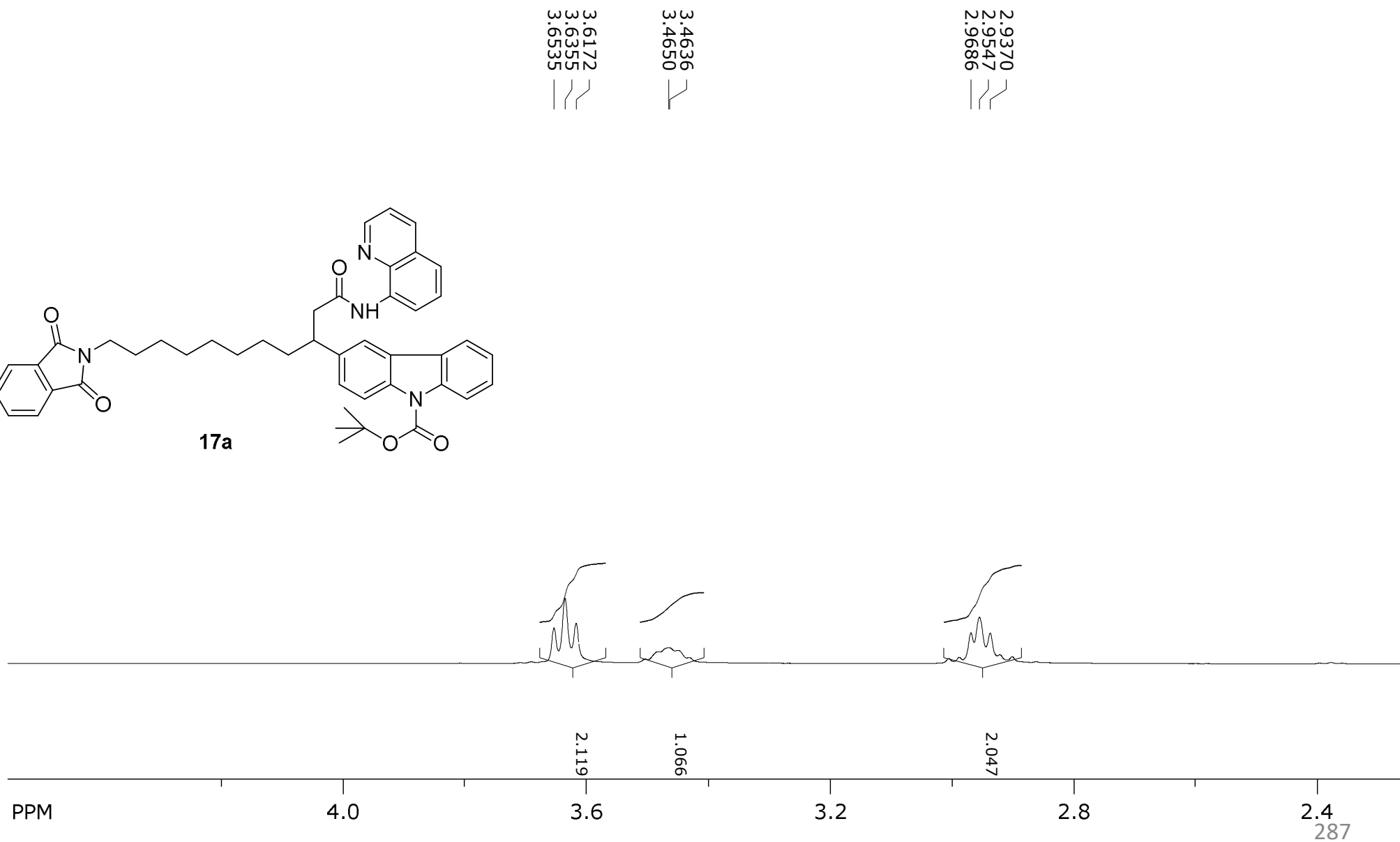
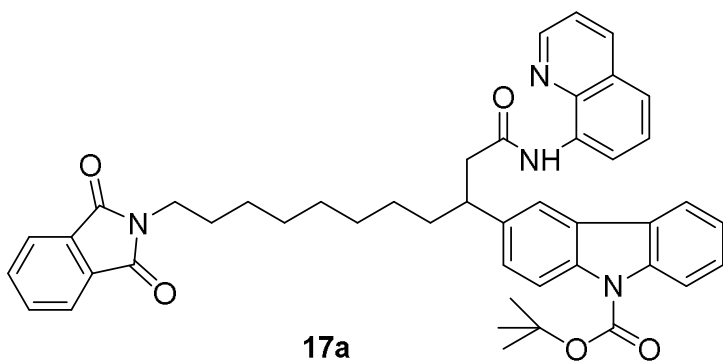


SpinWorks 4: RD 169
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 42

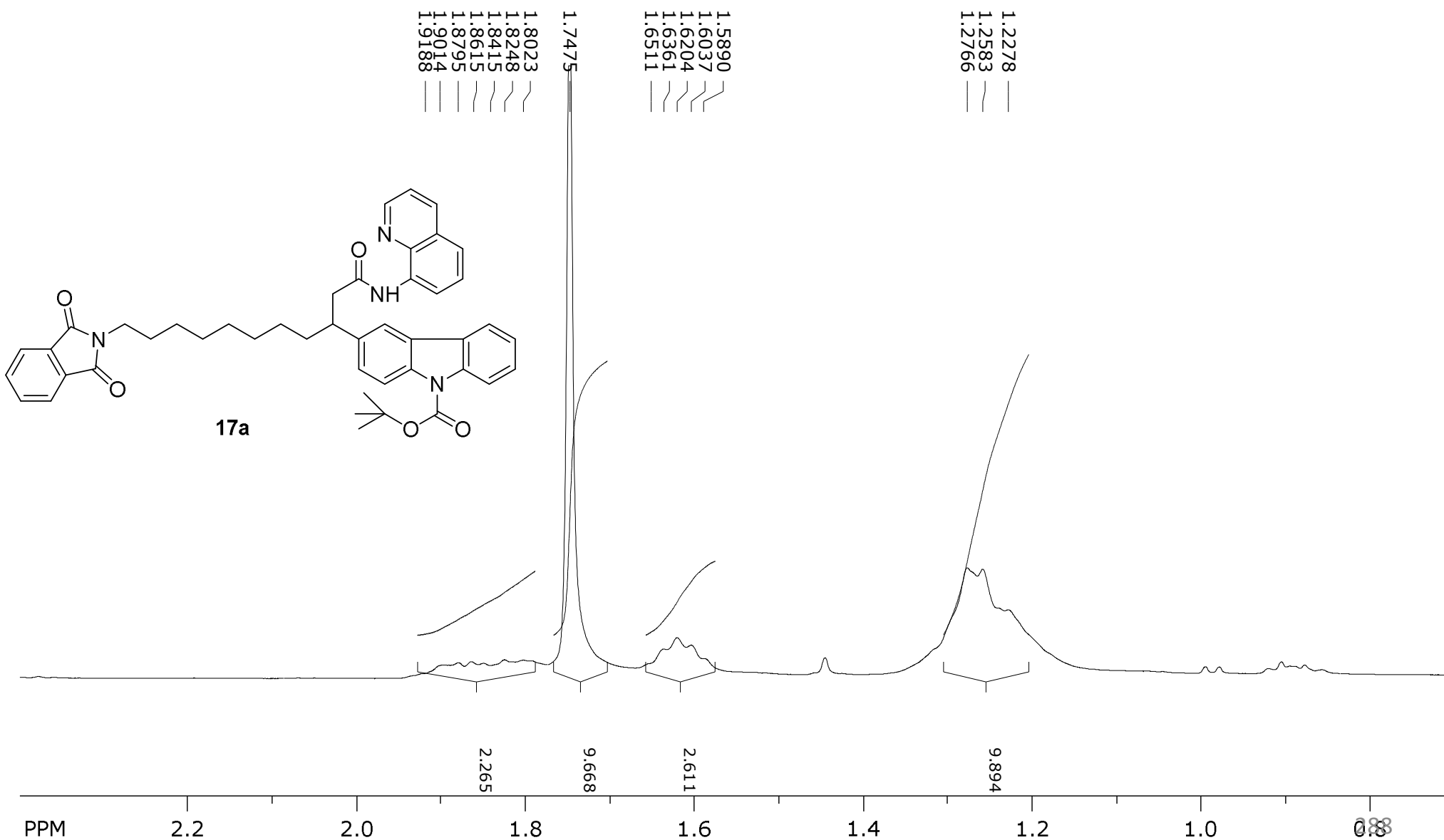
7.4987 —
7.4788 —
7.4603 —
7.4333 —
7.4228 —
7.4131 —
7.4019 —
7.3622 —
7.3537 —
7.3345 —
7.3171 —
7.2845 —



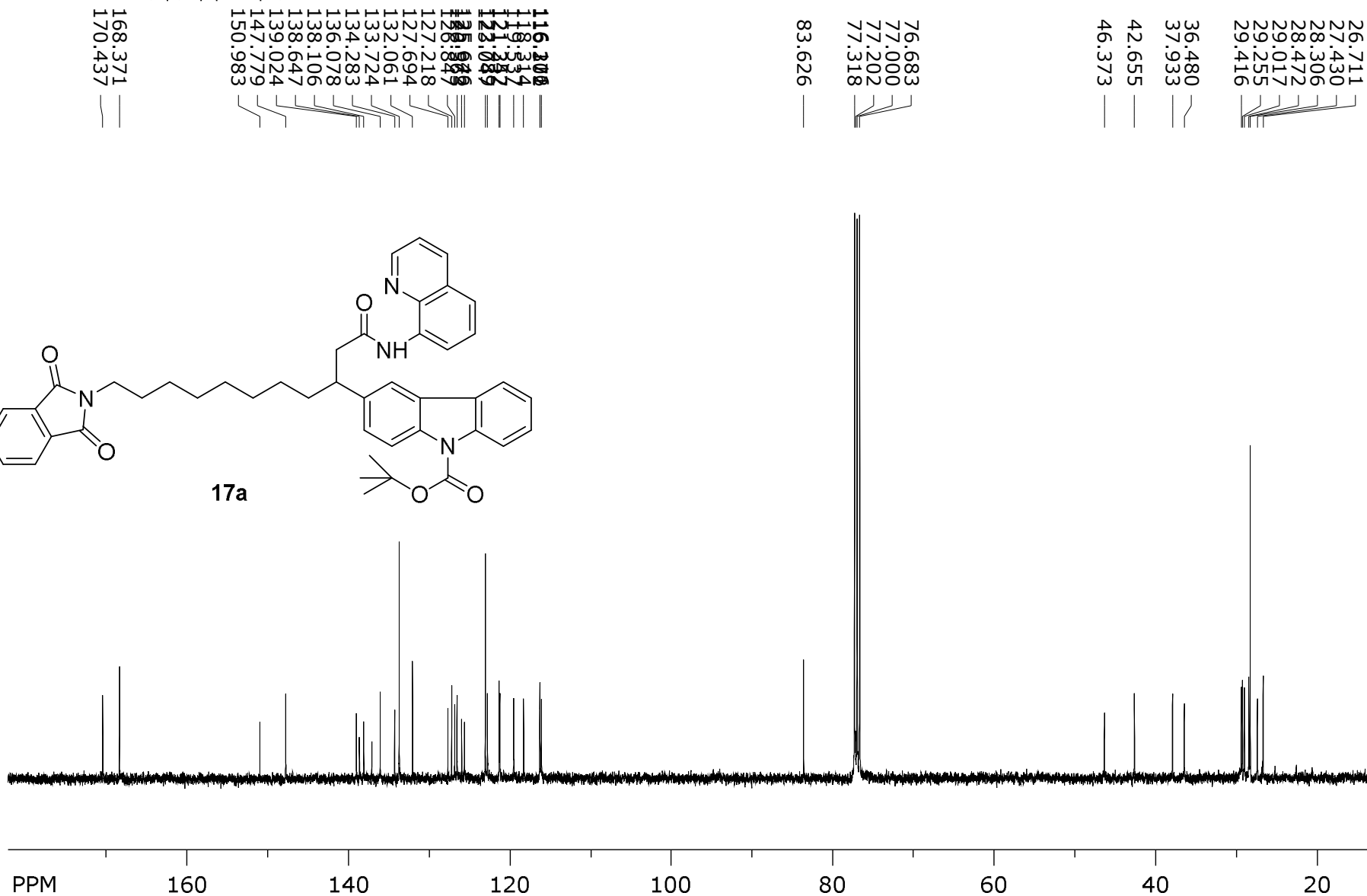
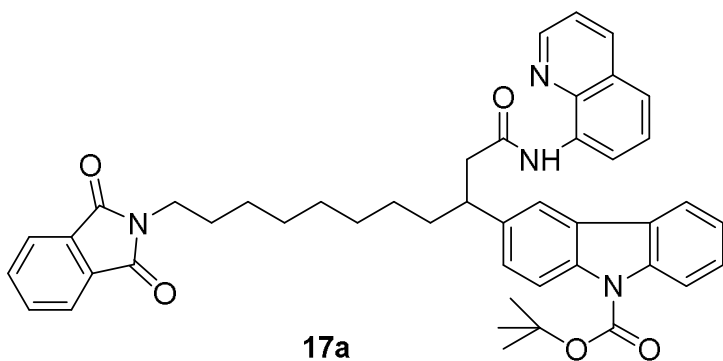
SpinWorks 4: RD 169
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 42



SpinWorks 4: RD 169
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 42

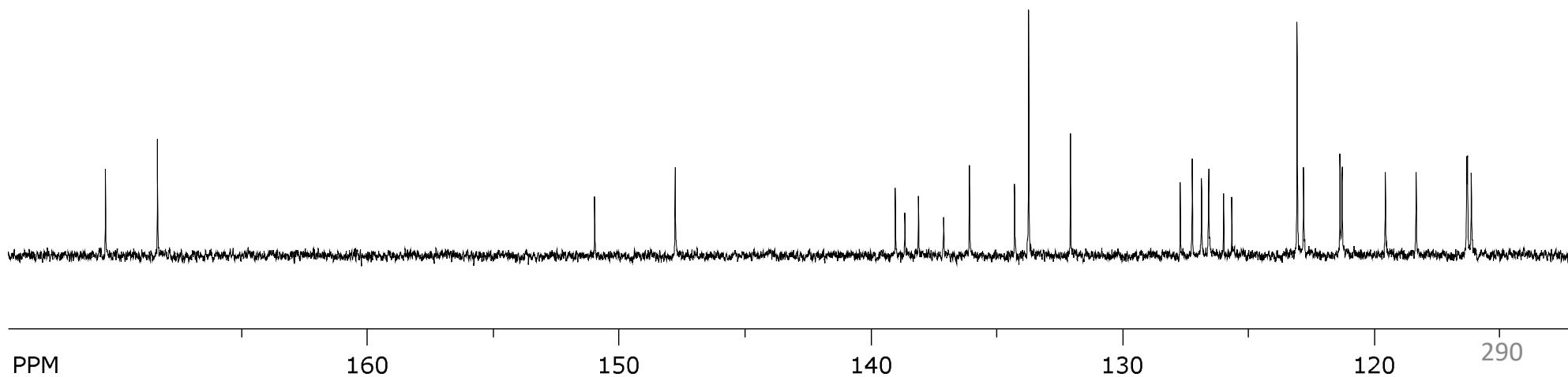
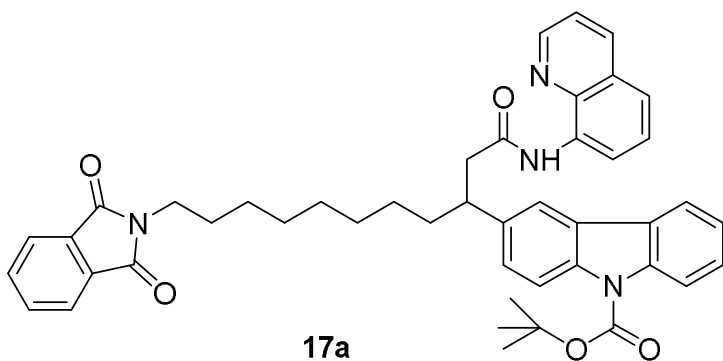


SpinWorks 4: RD 169
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 42

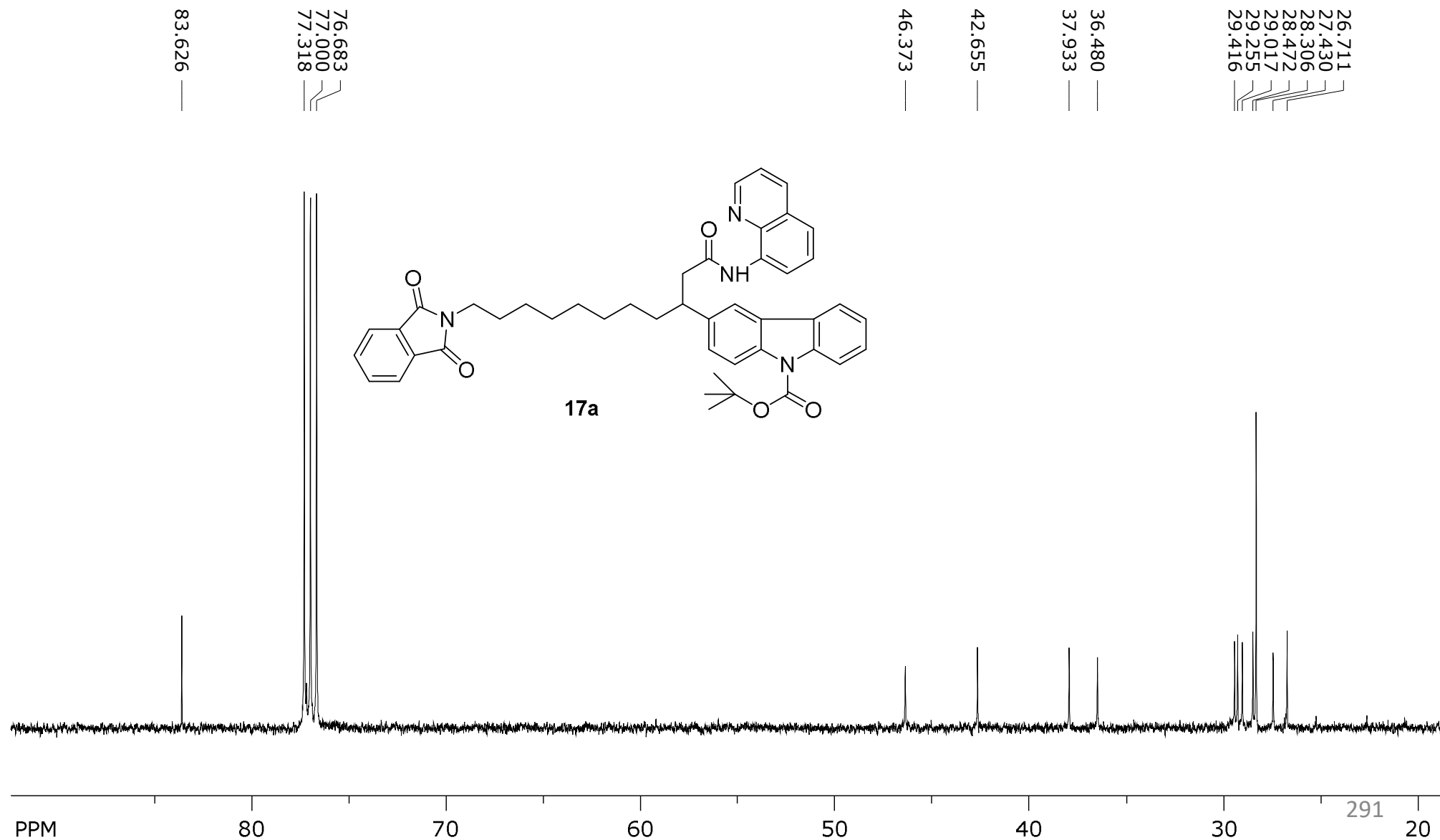


SpinWorks 4: RD 169
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 42

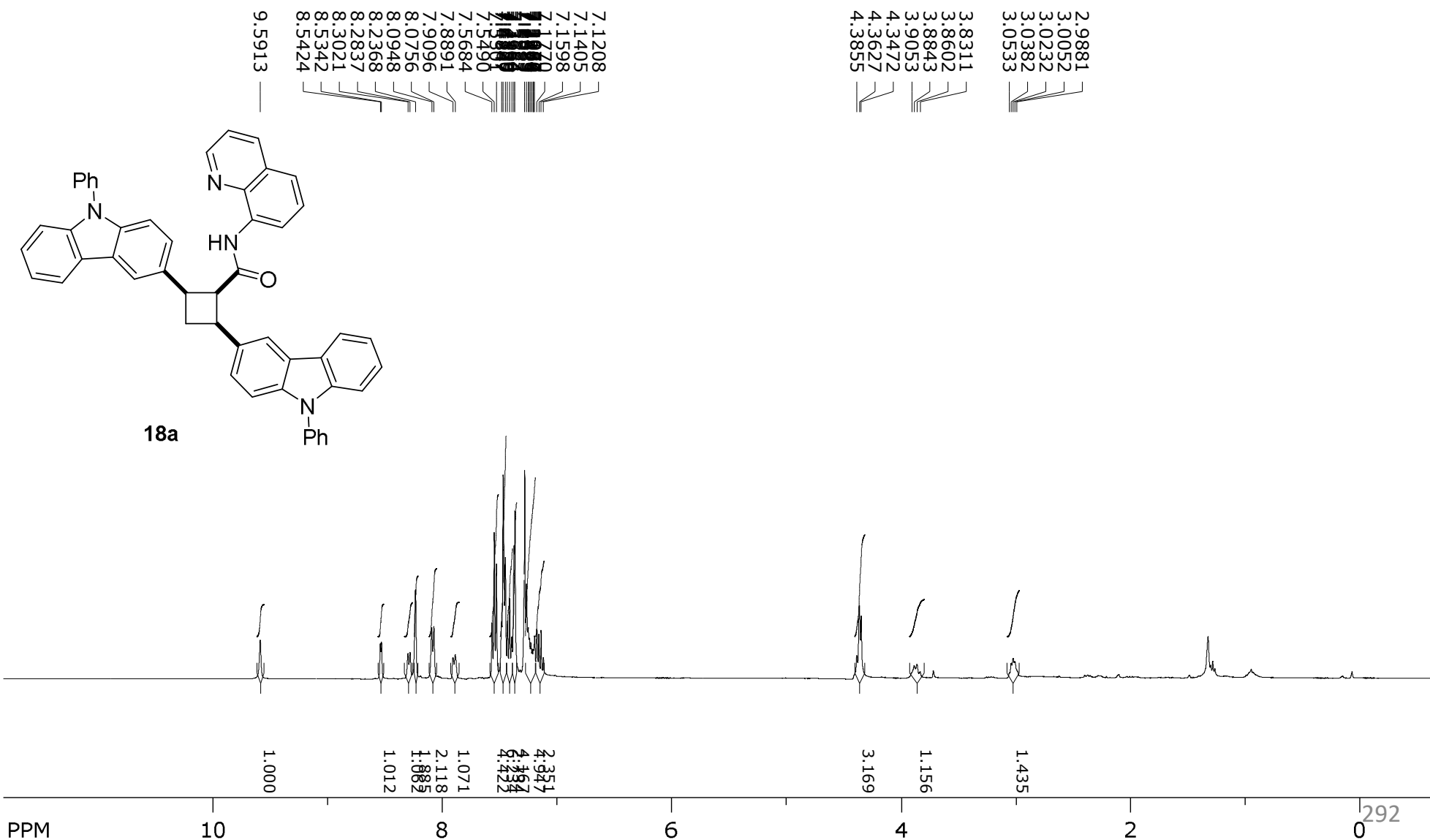
170.437 —
168.371 —
150.983 —
147.779 —
139.024 —
138.647 —
138.106 —
136.078 —
134.283 —
133.724 —
132.061 —
127.694 —
127.218 —
126.847 —
126.563 —
125.972 —
125.646 —
123.047 —
121.342 —
121.257 —
119.537 —
118.314 —
116.301 —
116.272 —
116.116 —



SpinWorks 4: RD 169
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 42



SpinWorks 4: rd-116-rep-2
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 41



SpinWorks 4: rd-116-rep-2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 41

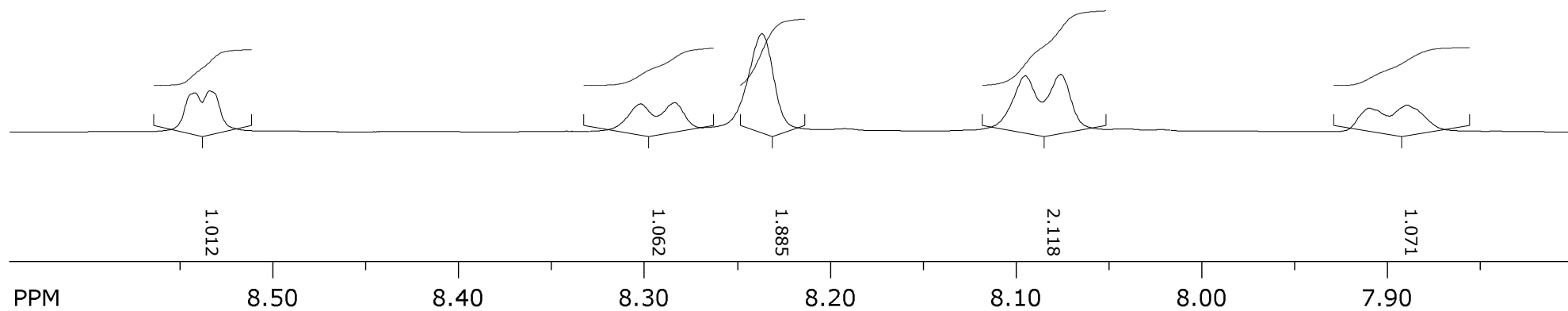
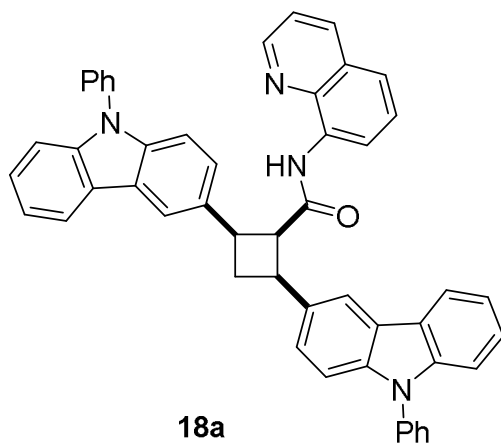
8.5342
8.5424

8.2837
8.3021

8.2368

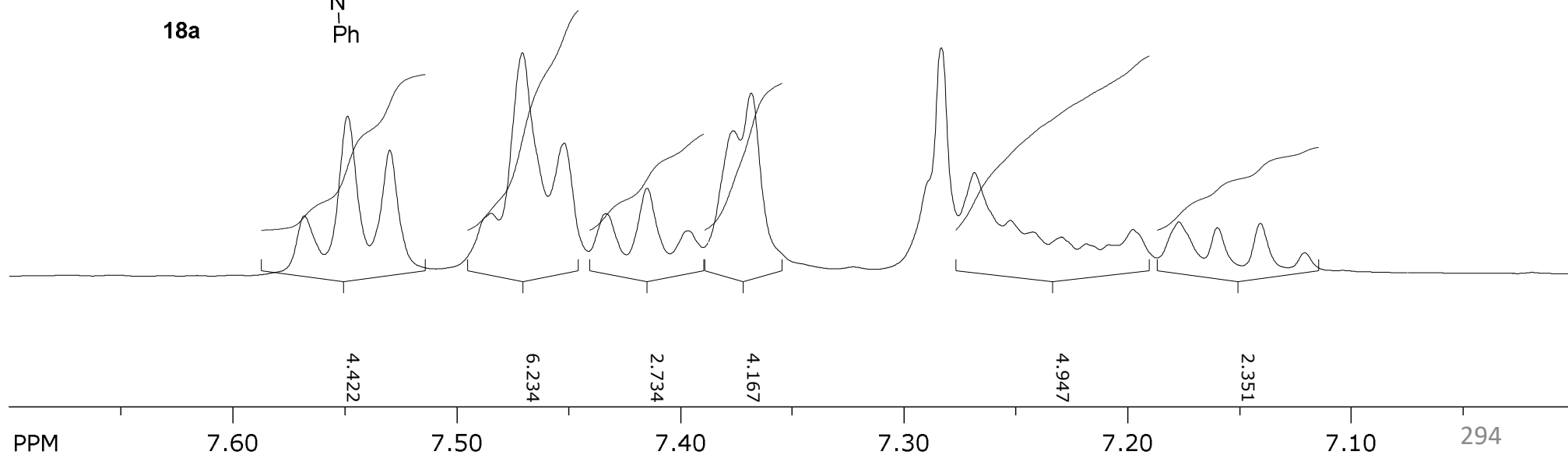
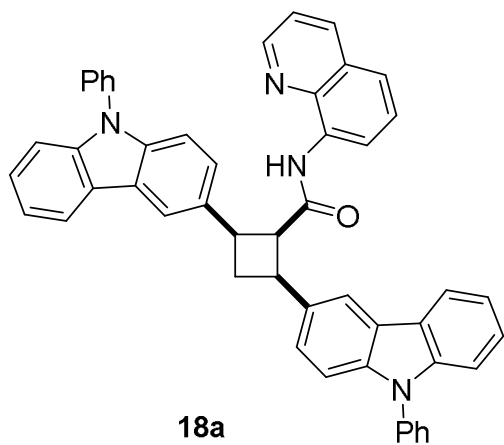
8.0756
8.0948

7.8891
7.9096



SpinWorks 4: rd-116-rep-2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 41

7.5301	7.3684	7.1208
7.5490	7.3764	7.1405
7.5684		7.1598
		7.1770
		7.1977
		7.2050
		7.2084
		7.2185
		7.2296
		7.2425
		7.2525
		7.2685
		7.2833

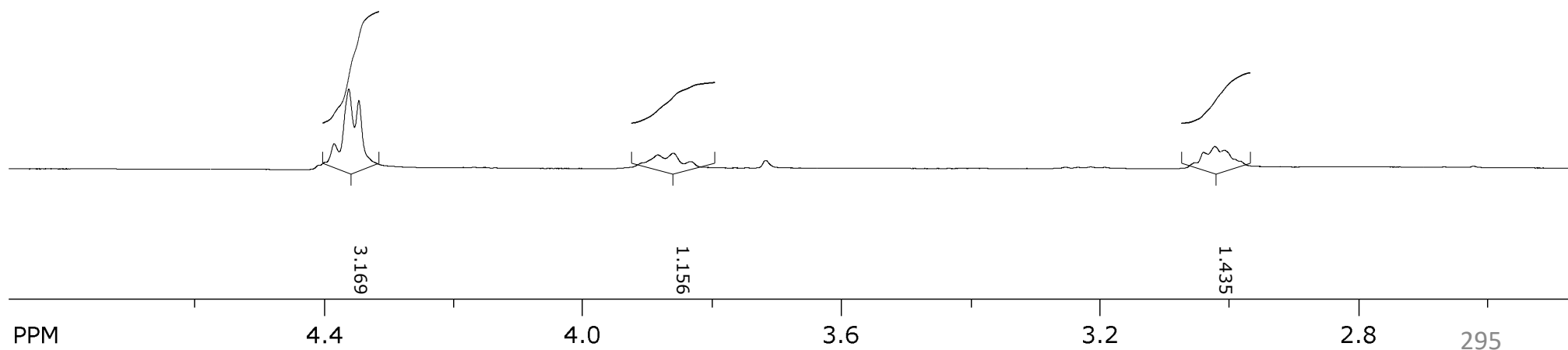
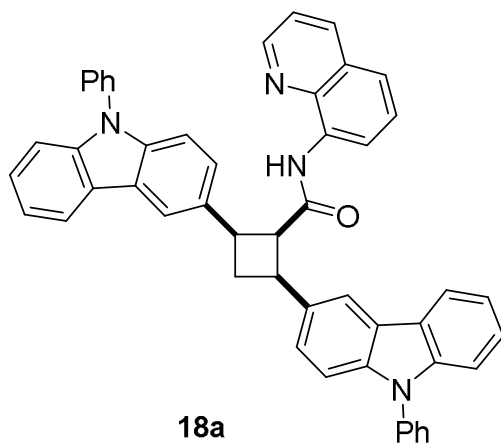


SpinWorks 4: rd-116-rep-2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 41

4.3472
4.3627
4.3855

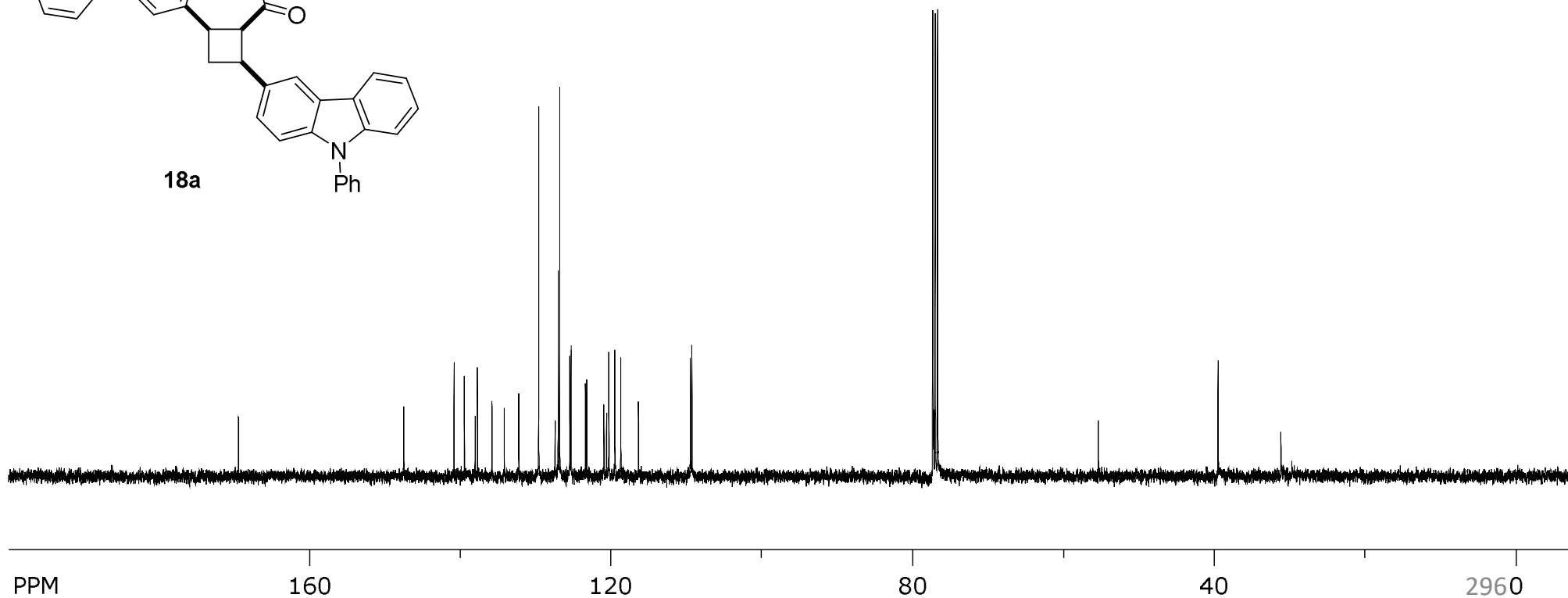
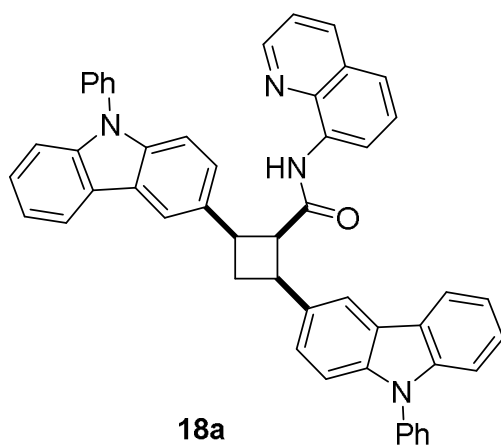
3.8311
3.8602
3.8843
3.9053

2.9881
3.0052
3.0232
3.0382
3.0533



SpinWorks 4: rd-116-rep-2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 41

169.469 —
147.525
140.861
139.484
138.052
137.750
135.820
134.173
132.261
129.616
127.447
127.031
125.889
123.411
120.964
120.616
120.308
119.520
118.729
116.377
109.474
109.280
77.318
77.000
76.683
55.349 —
39.452 —
31.110 —



SpinWorks 4: rd-116-rep-2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 41

169.469

147.525

140.861

139.484

138.052

137.750

135.820

134.173

132.261

129.616

127.447

127.031

126.840

125.486

125.328

123.411

123.249

120.964

120.616

120.308

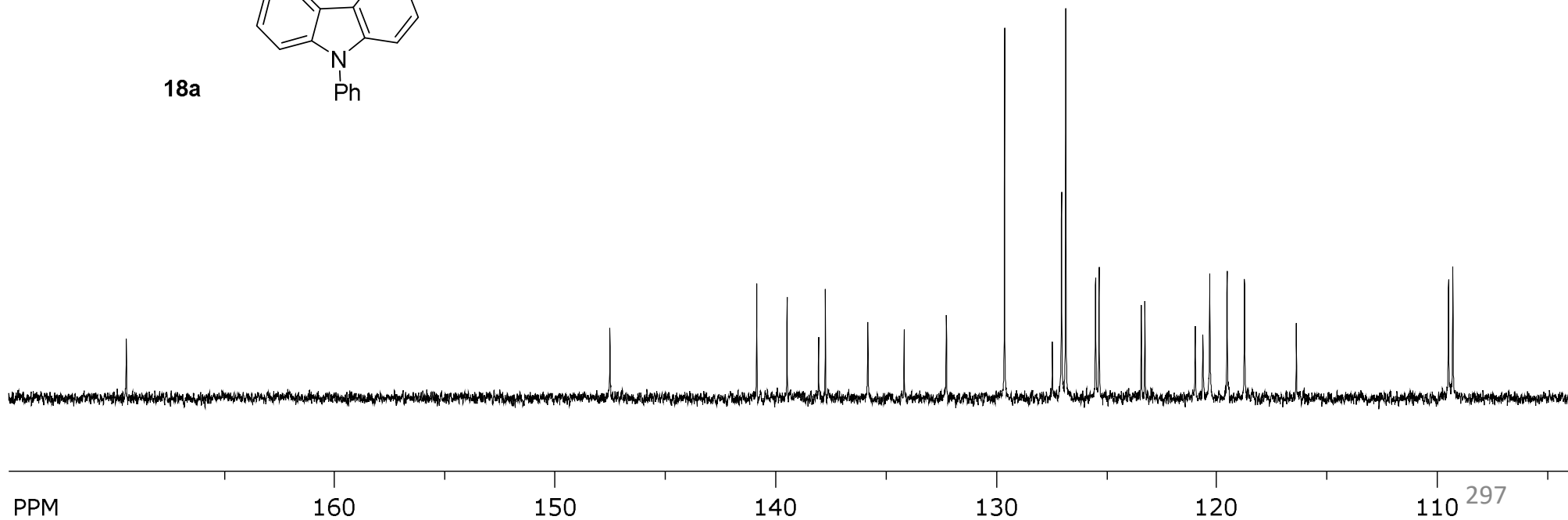
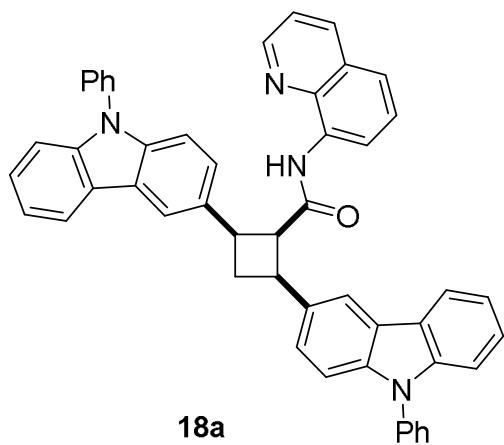
119.520

118.729

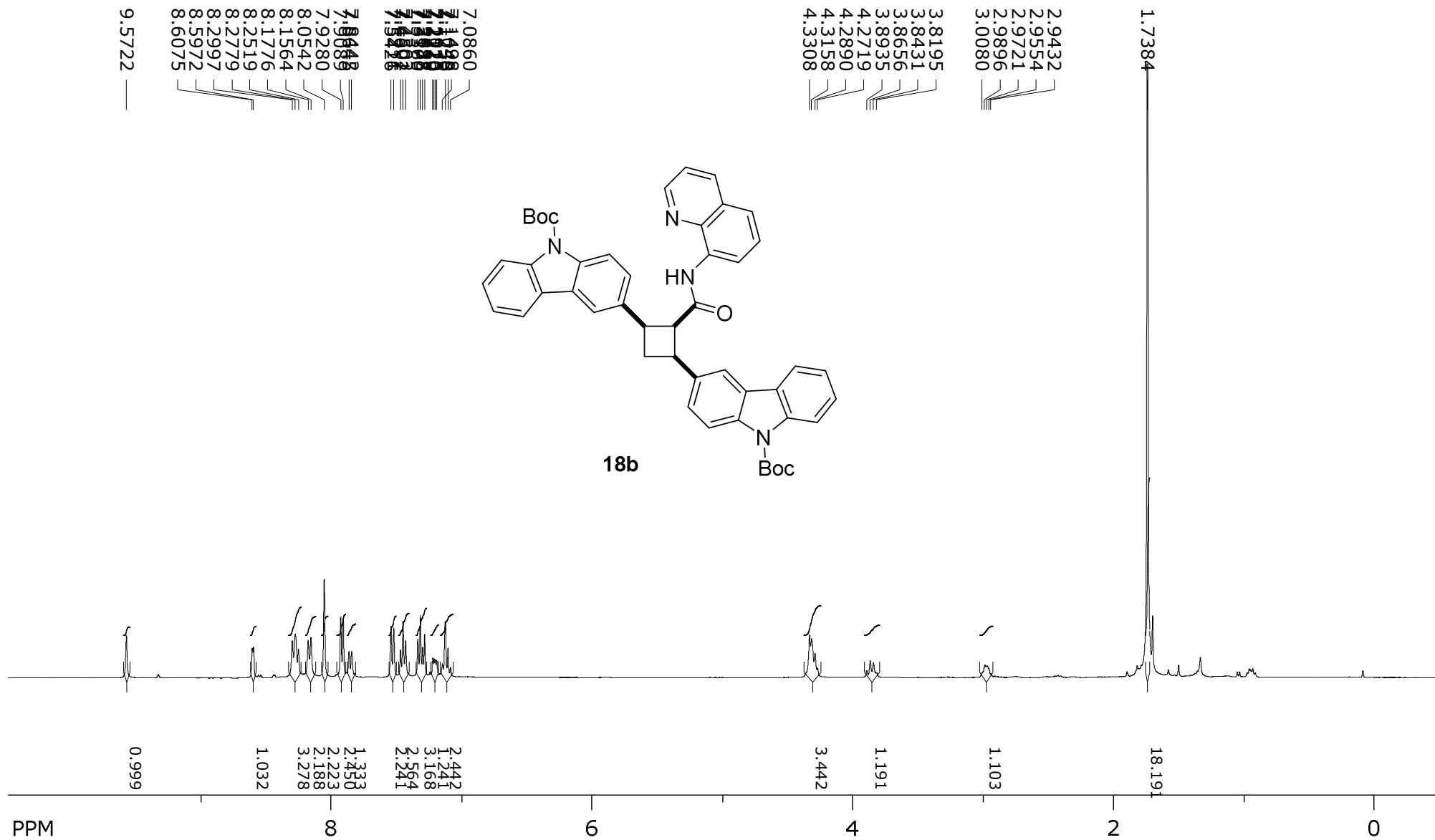
116.377

109.474

109.280



SpinWorks 4: RD 166
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8



SpinWorks 4: RD 166
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8

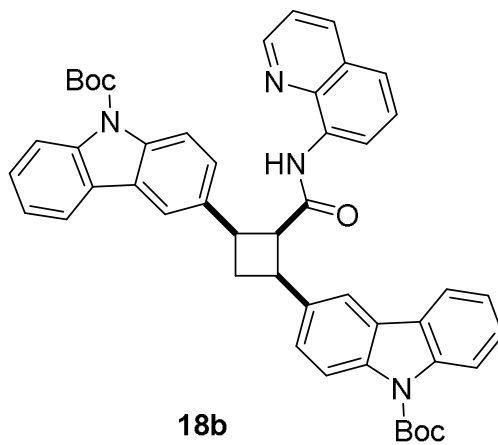
8.5972 —
8.6075 —

8.2519 —
8.2779 —
8.2997 —

8.1564 —
8.1776 —

8.0542 —

7.8442 —
7.8645 —
7.9089 —
7.9280 —



1.032

3.278

2.188

2.223

2.450

1.333

PPM

8.5

8.3

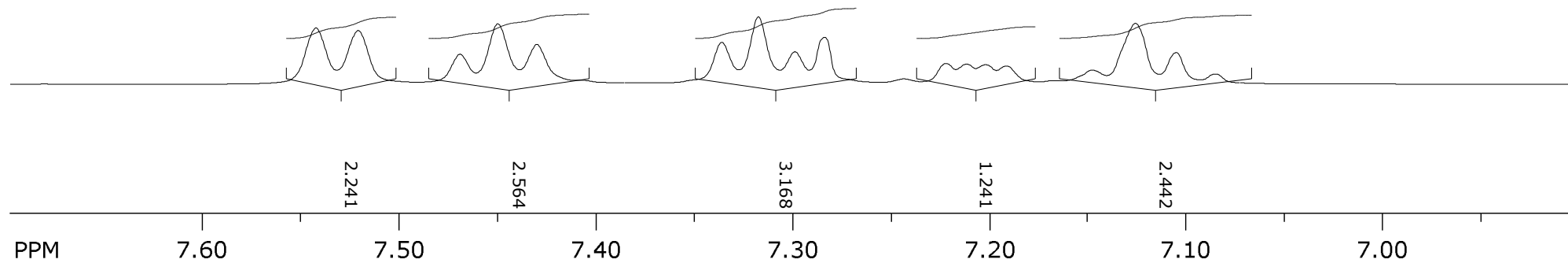
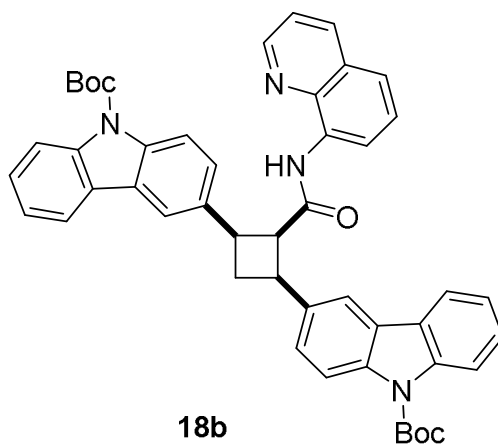
8.1

7.9

299

SpinWorks 4: RD 166
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8

7.5426	7.5211	7.4692	7.4501	7.4302	7.3360	7.3175	7.2988	7.2837	7.2220	7.2116	7.2020	7.1915	7.1498	7.1256	7.1048	7.0860
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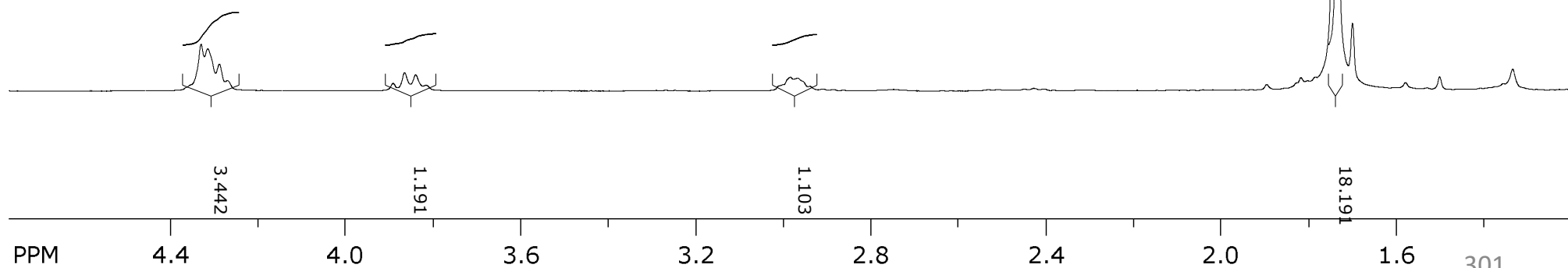
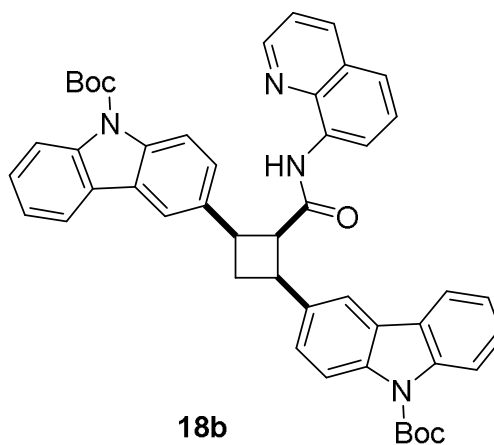
SpinWorks 4: RD 166
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8

4.2719
4.2890
4.3158
4.3308

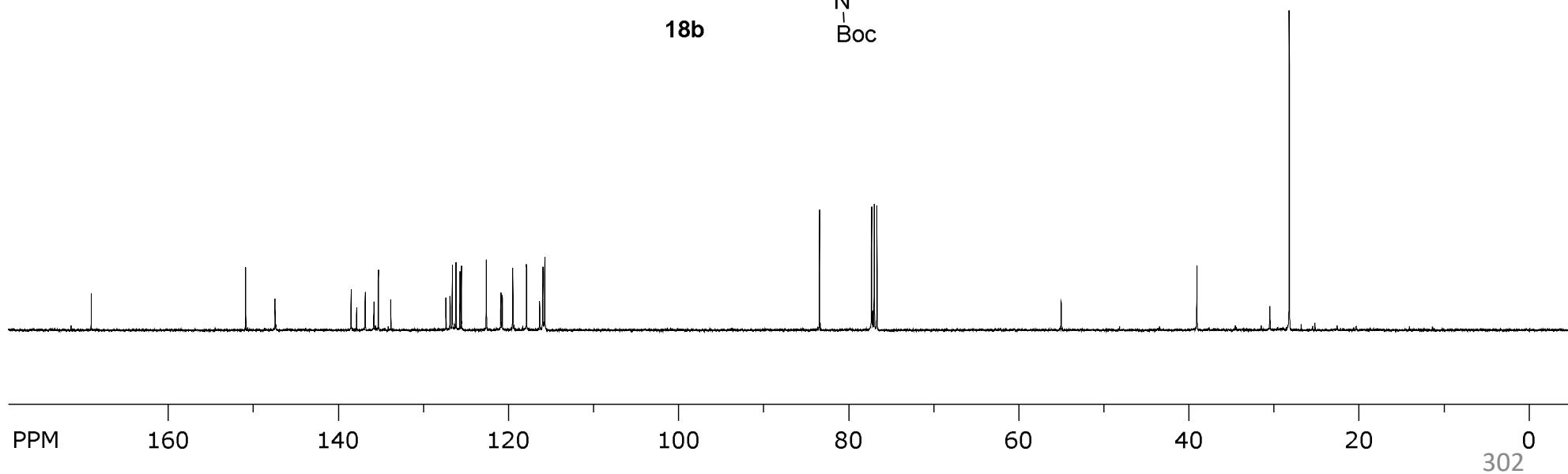
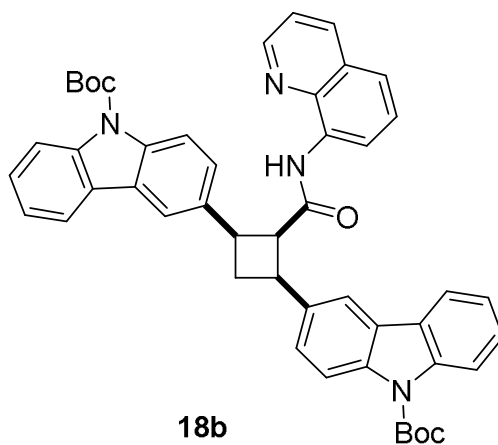
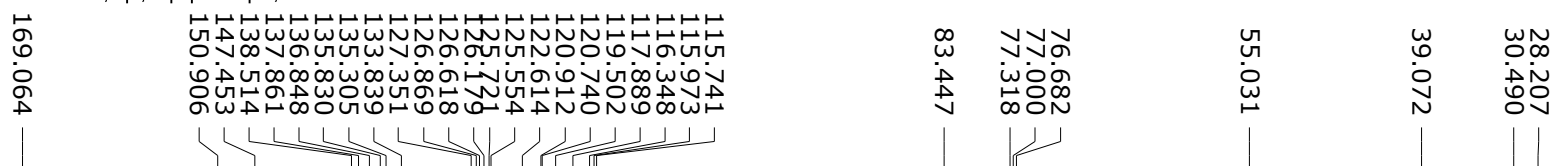
3.8195
3.8431
3.8656
3.8935

2.9432
2.9554
2.9721
2.9896
3.0080

1.7384

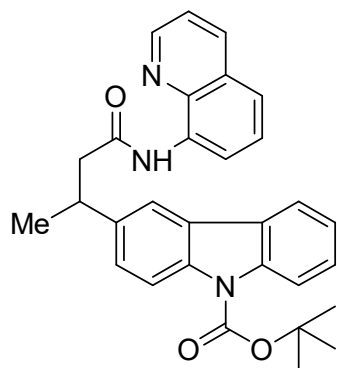


SpinWorks 4: RD 166
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8

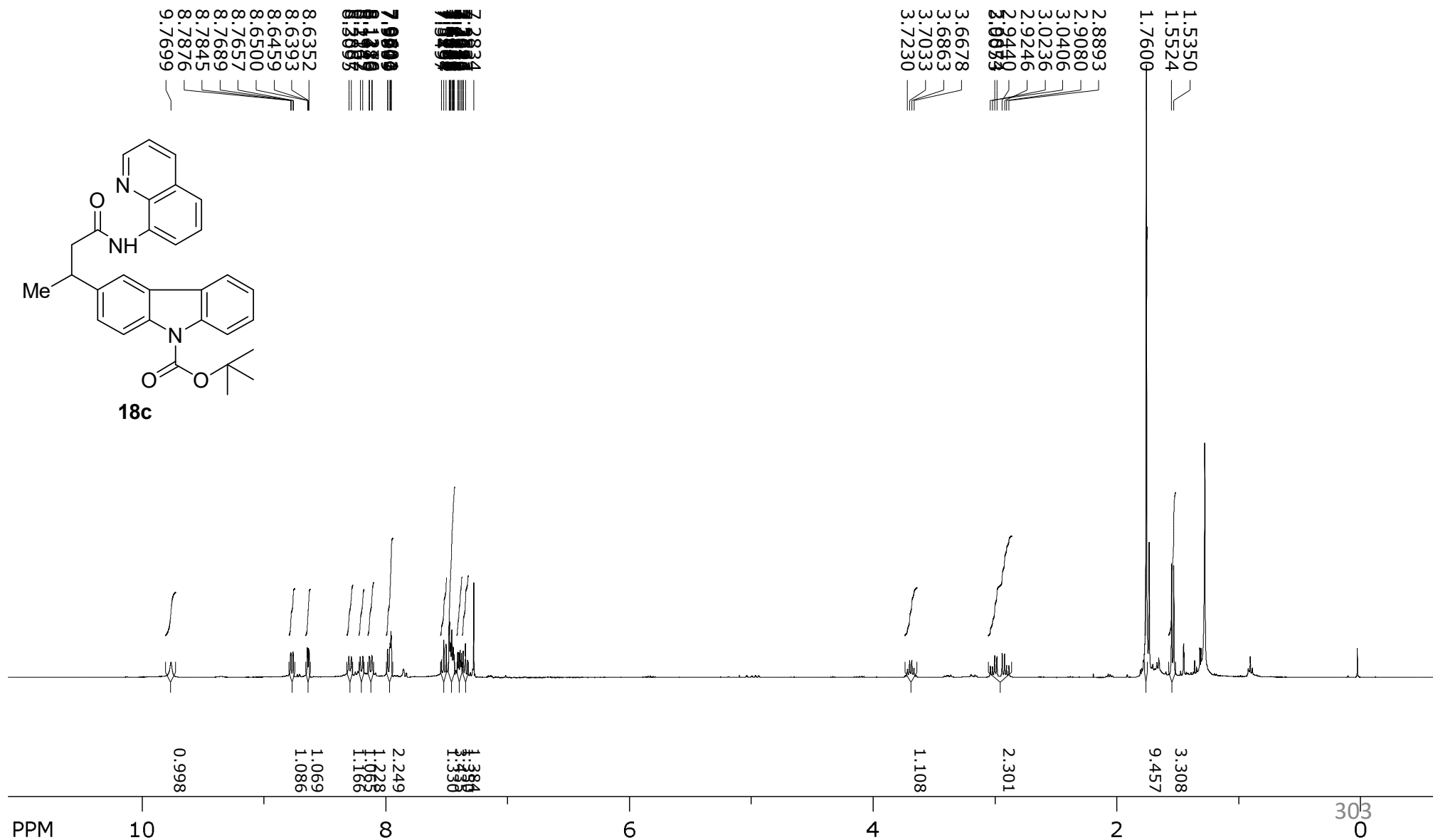


SpinWorks 4: RD-1016

PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8



18c



SpinWorks 4: RD-1016
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8

8.7657
8.7689
8.7845
8.7876

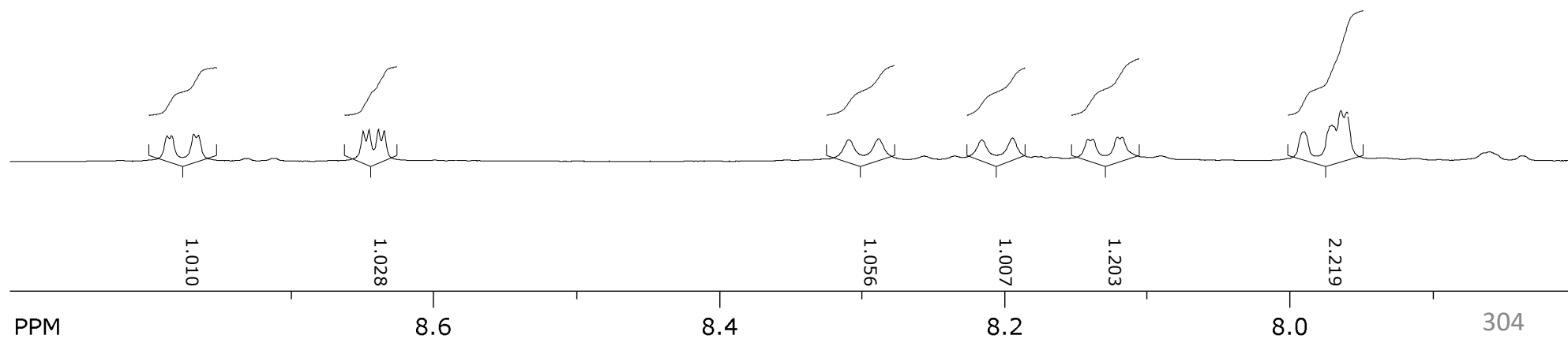
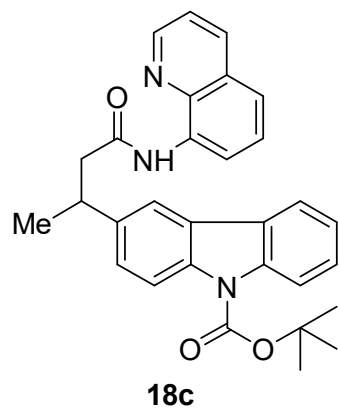
8.6352
8.6393
8.6459
8.6500

8.2887
8.3095

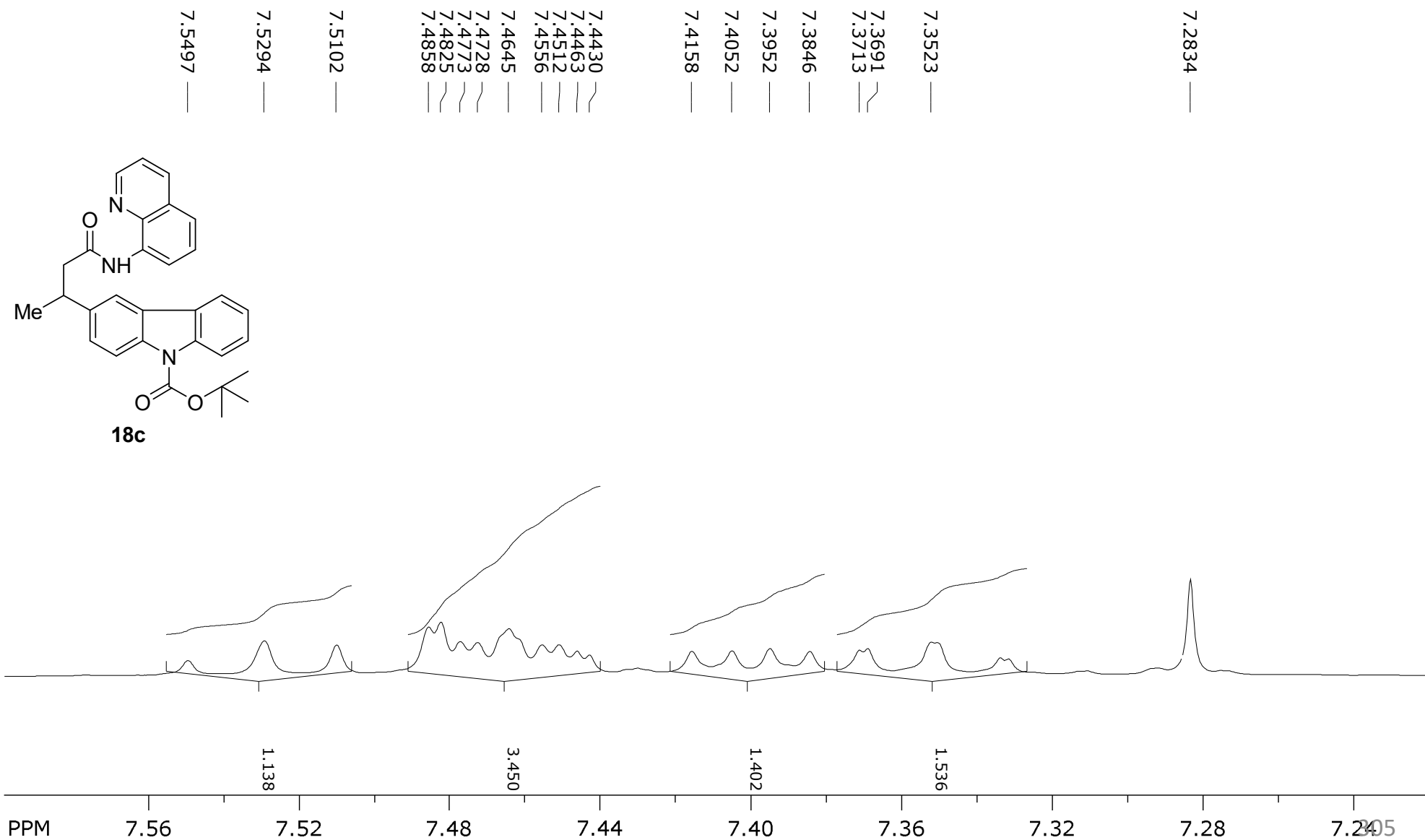
8.1947
8.2162

8.1176
8.1210
8.1383
8.1416

7.9601
7.9642
7.9703
7.9716
7.9899
7.9909



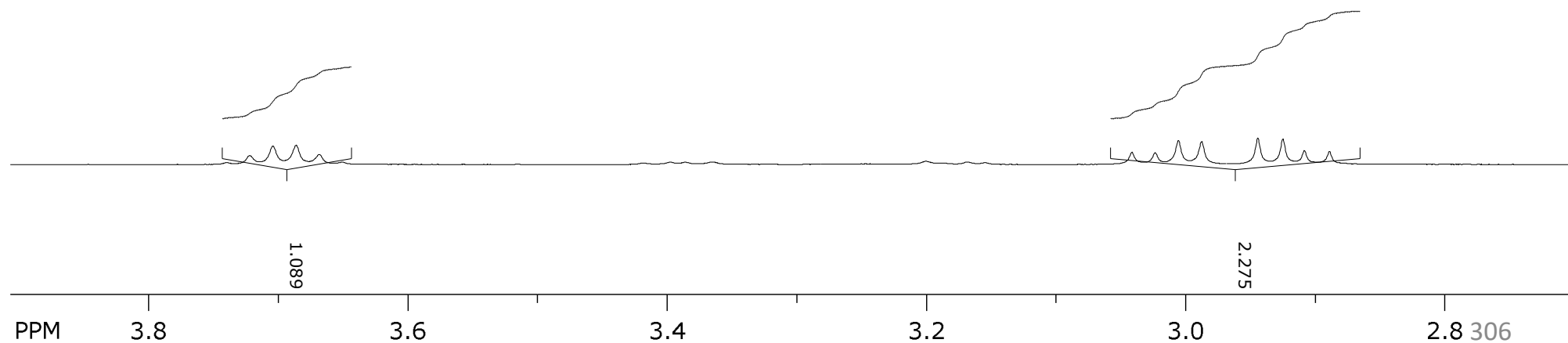
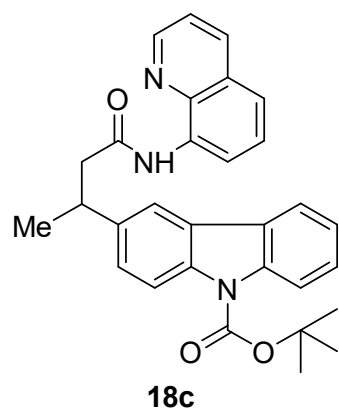
SpinWorks 4: RD-1016
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8



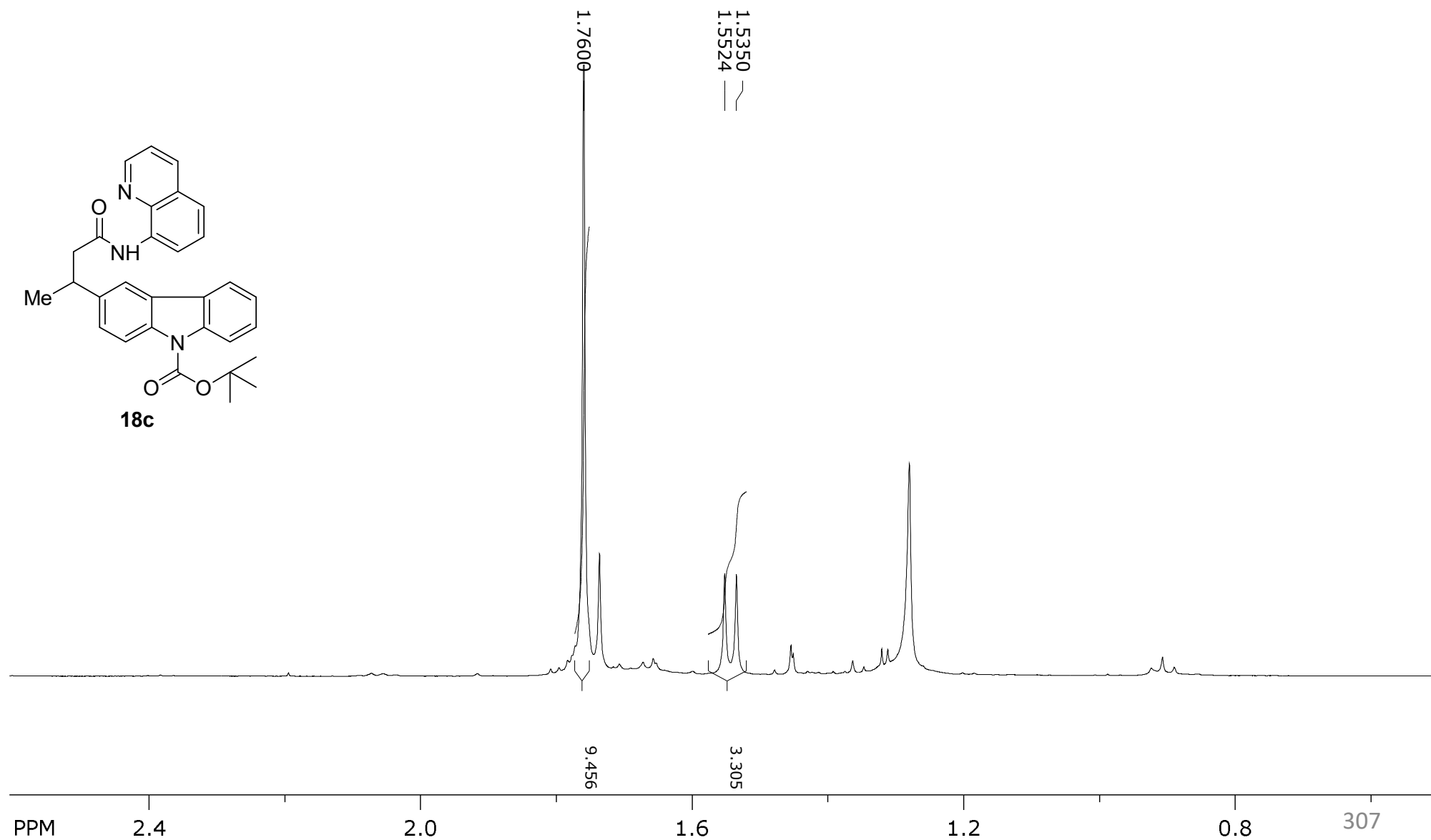
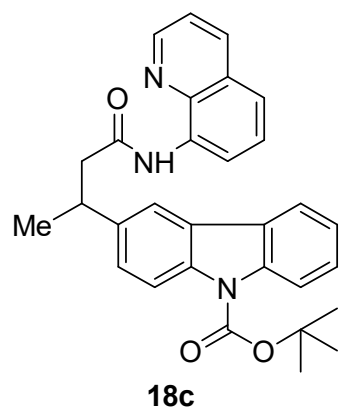
SpinWorks 4: RD-1016
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8

3.6678
3.6863
3.7033
3.7230

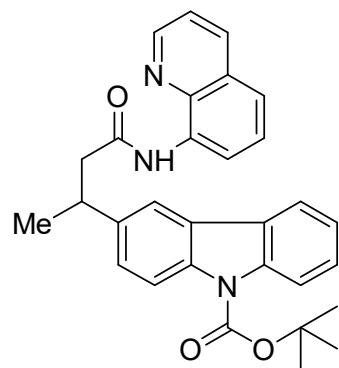
2.8893
2.9080
2.9246
2.9440
2.9874
3.0053
3.0236
3.0406



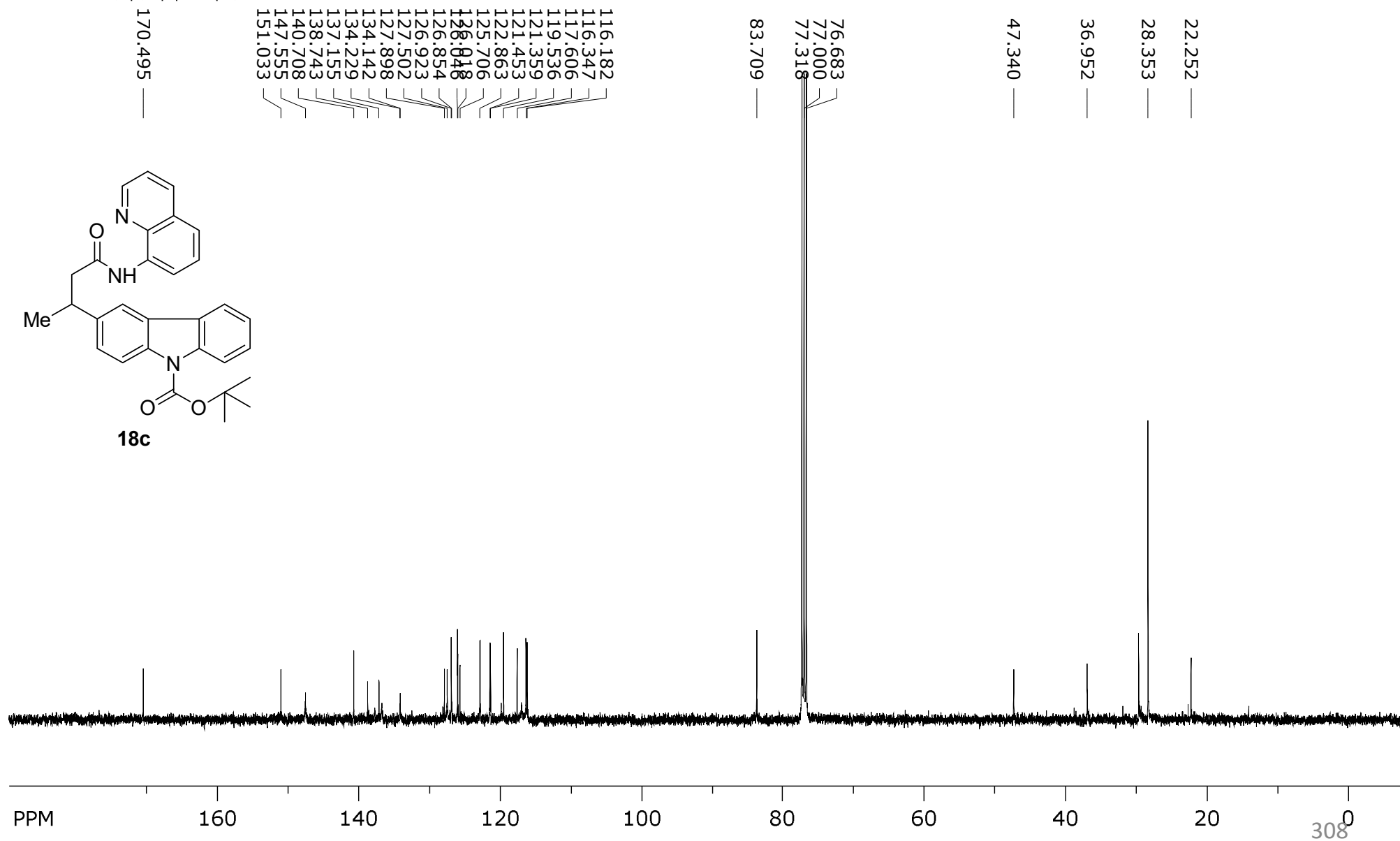
SpinWorks 4: RD-1016
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8



SpinWorks 4: RD 1016
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 41



18c



SpinWorks 4: RD 1016
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 41

170.495

151.033

147.555

140.708

138.743

137.155

134.142
134.229

127.898
127.502
126.923
126.854
126.046
126.018
125.706

122.863

121.453

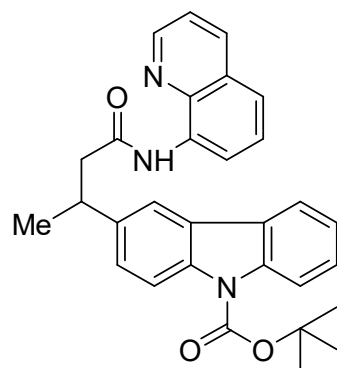
121.359

119.536

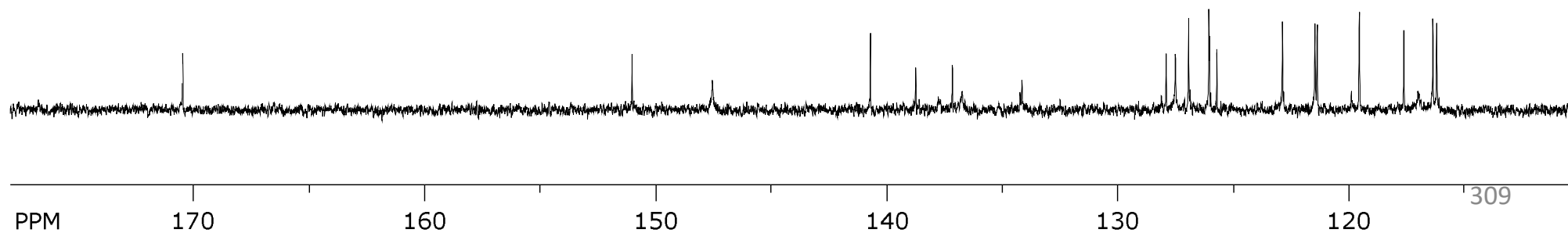
117.606

116.347

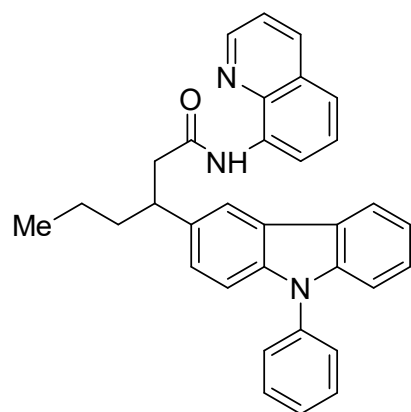
116.182



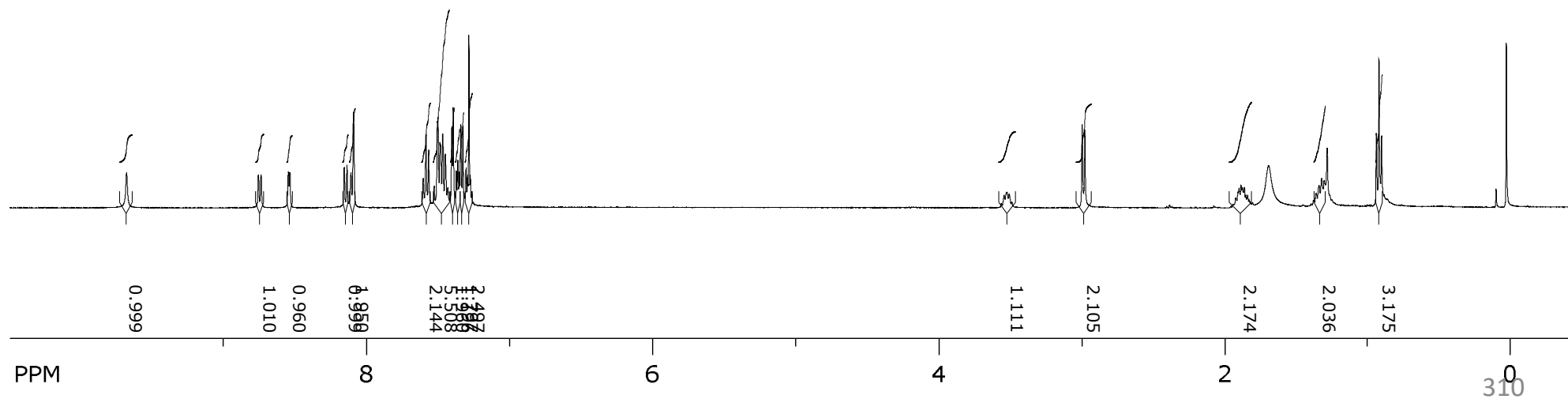
18c



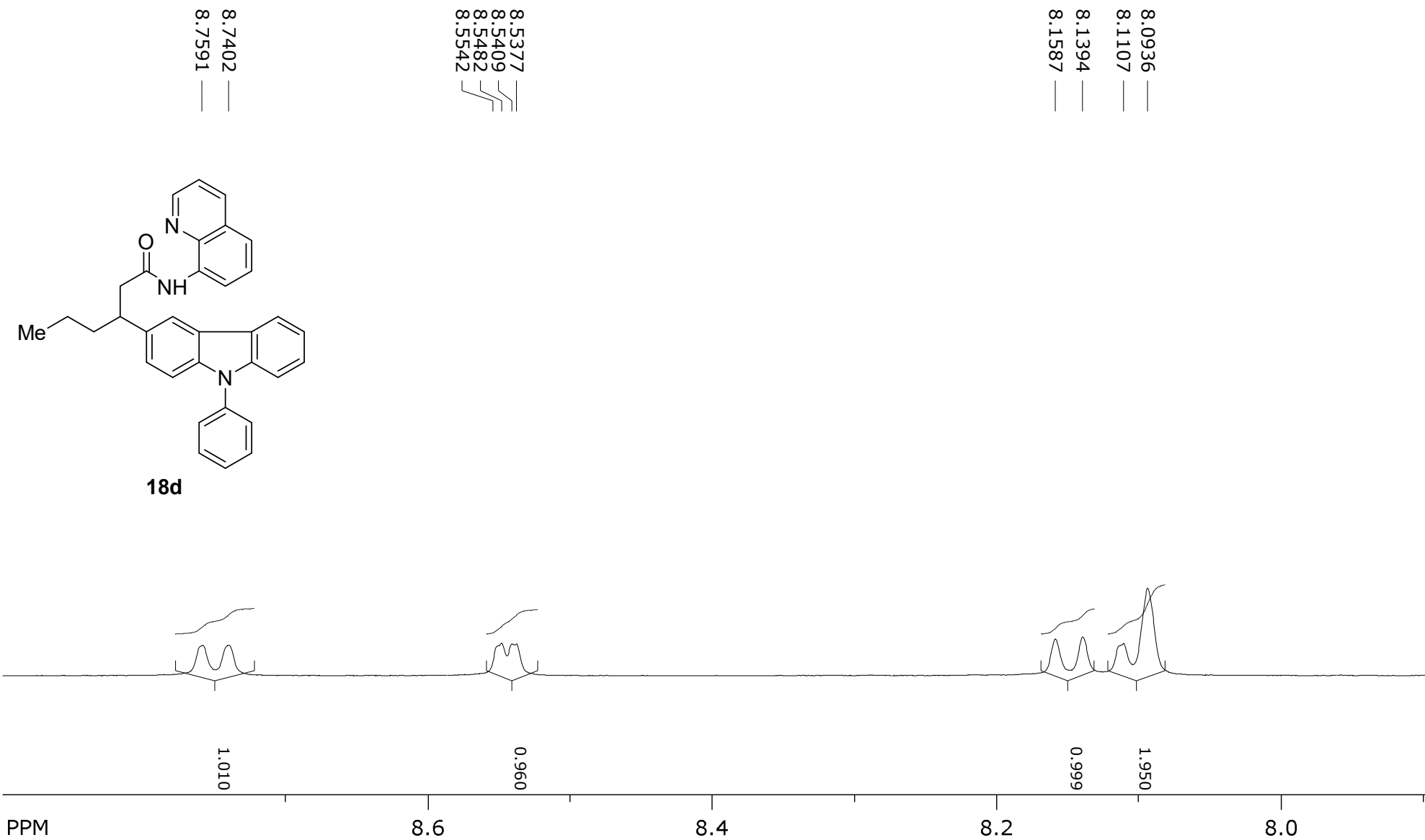
SpinWorks 4: RD 81
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2



18d

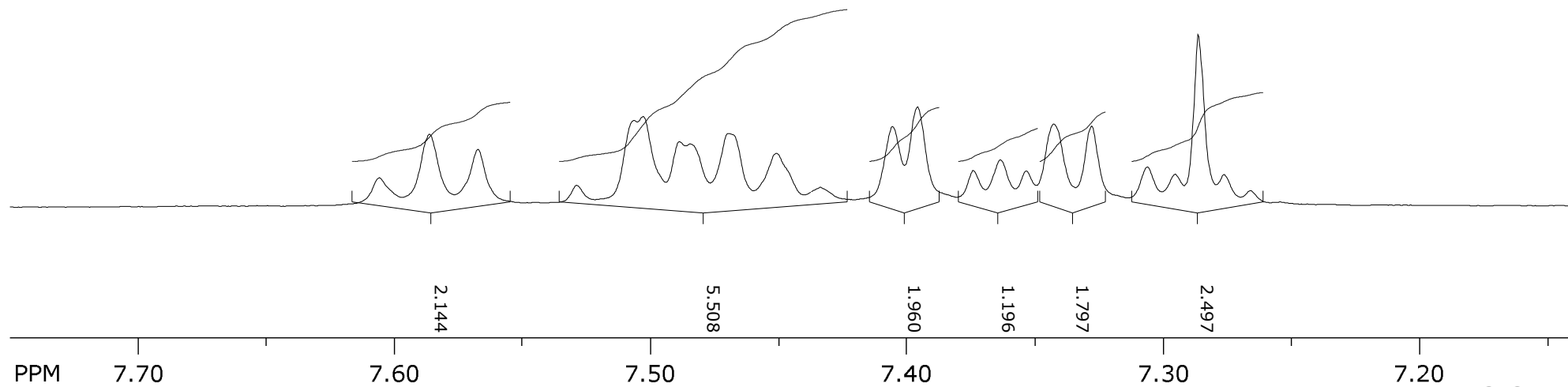
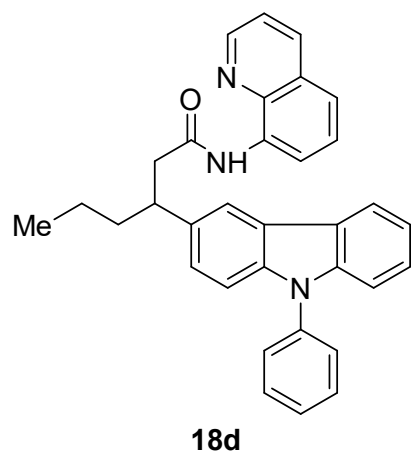


SpinWorks 4: RD 81
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2

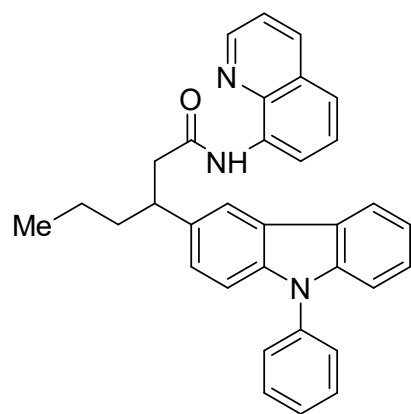


SpinWorks 4: RD 81
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2

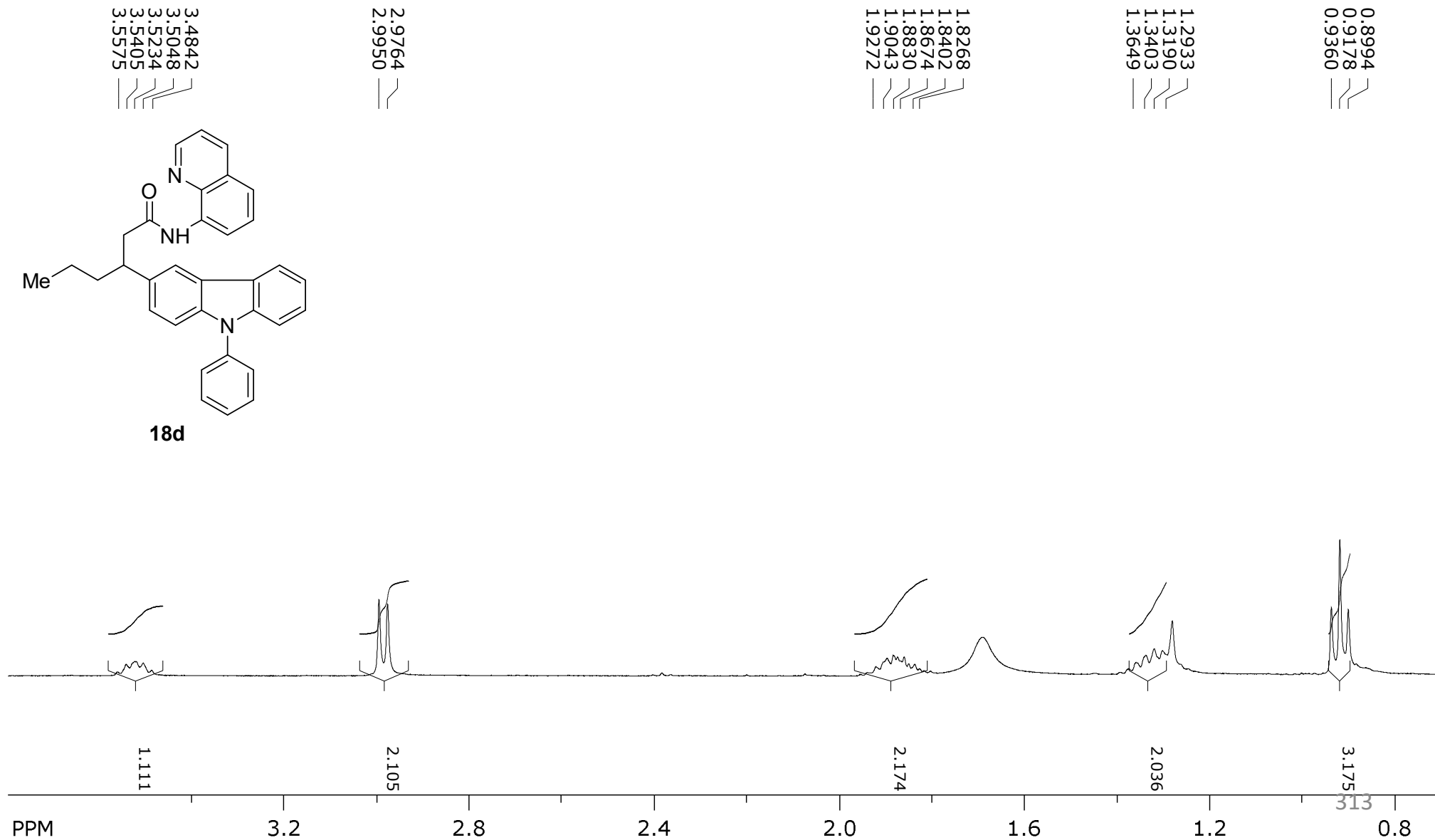
7.2659 —
7.2762 —
7.2862 —
7.2953 —
7.3061 —
7.3279 —
7.3427 —
7.3534 —
7.3635 —
7.3741 —
7.3958 —
7.4056 —
7.4338 —
7.4509 —
7.4696 —
7.4846 —
7.4888 —
7.5030 —
7.5065 —
7.5289 —
7.5675 —
7.5864 —
7.6060 —



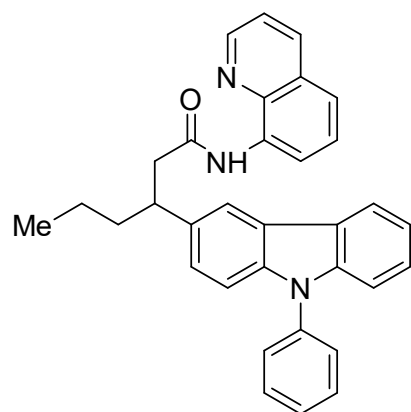
SpinWorks 4: RD 81
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2



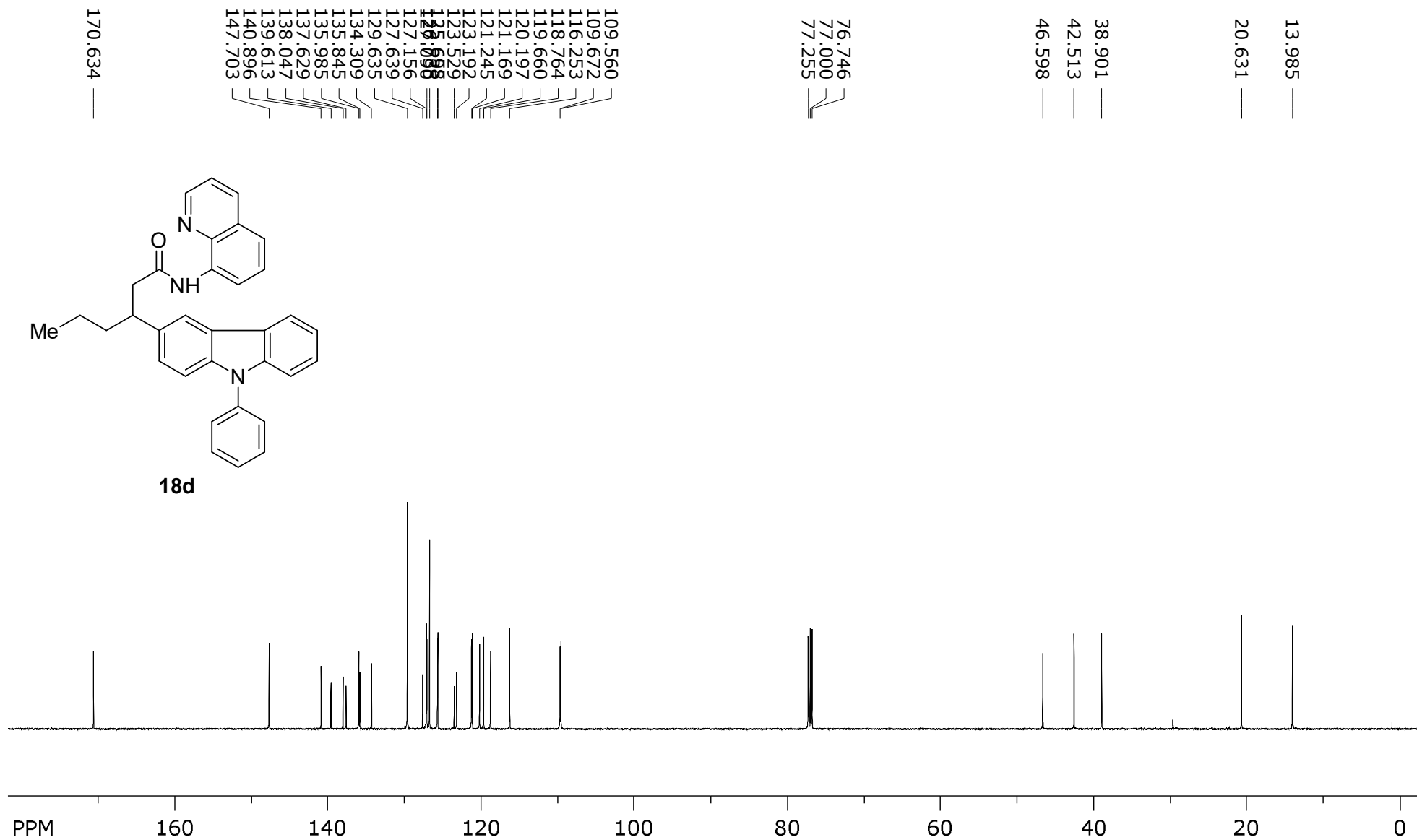
18d



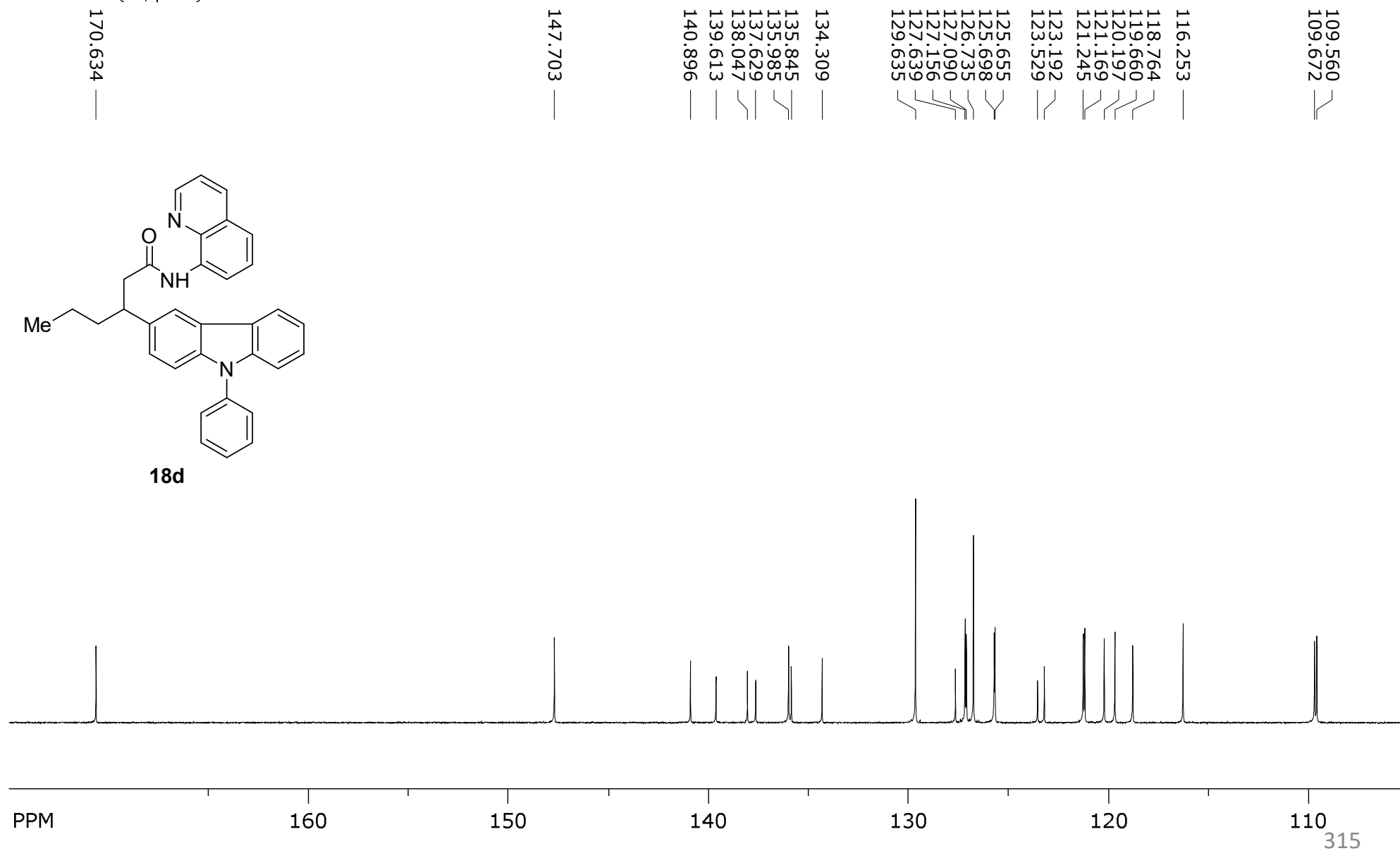
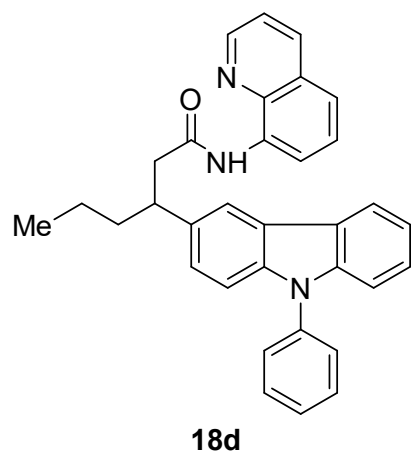
SpinWorks 4: SAB070707
C13CPD CDCl3 {D:\Spectra} nmr 40



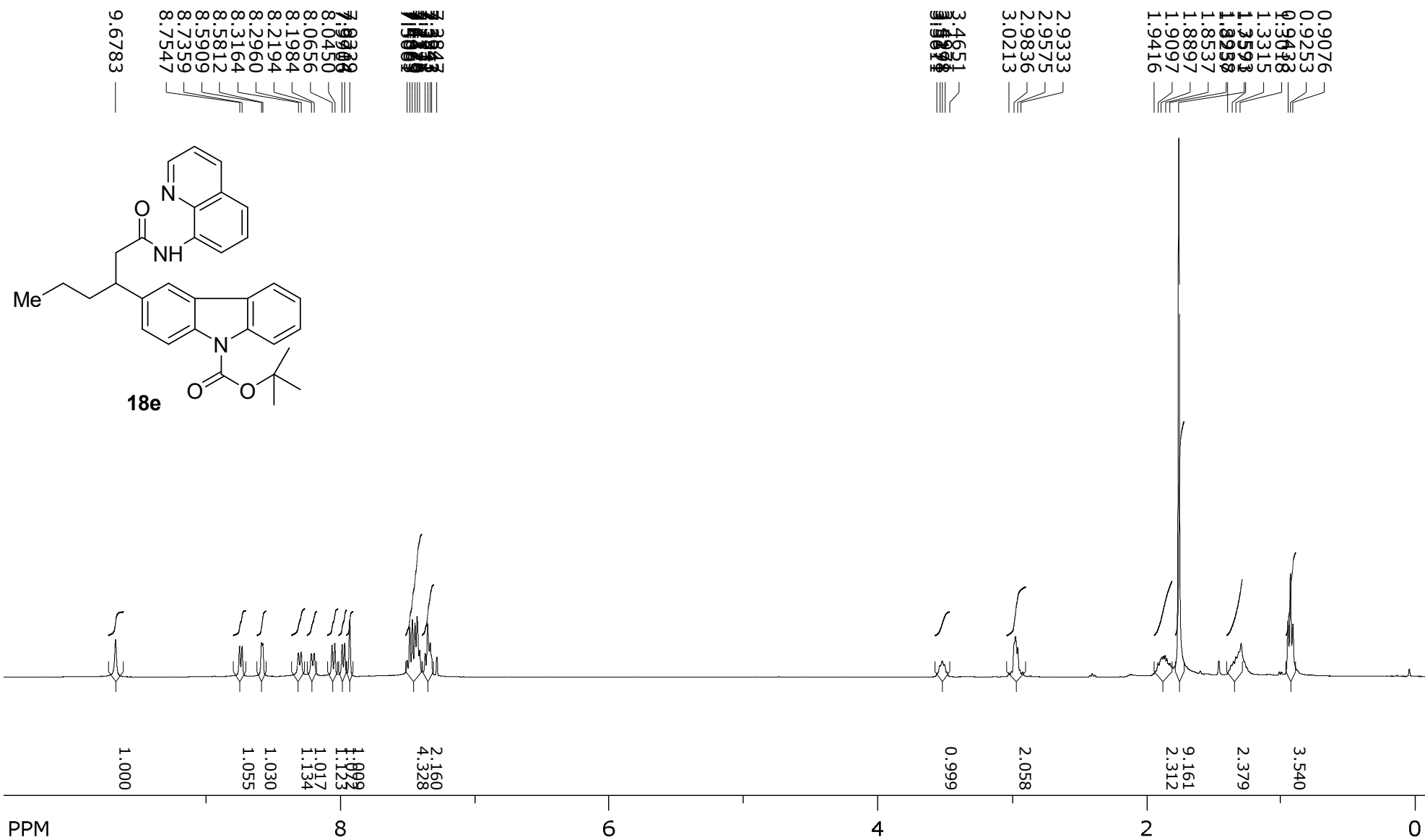
18d



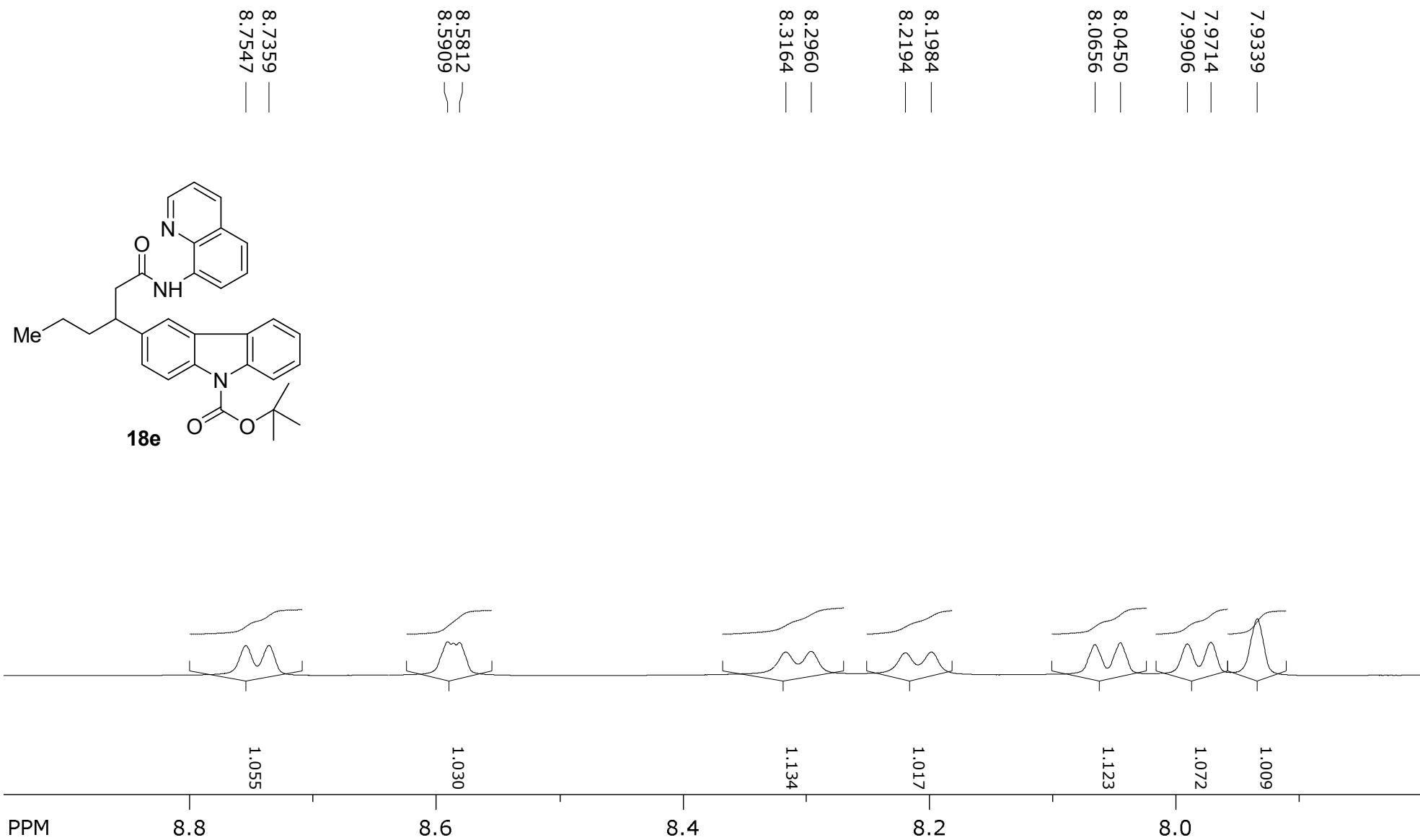
SpinWorks 4: SAB070707
C13CPD CDCl3 {D:\Spectra} nmr 40



SpinWorks 4: RD 182
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 43

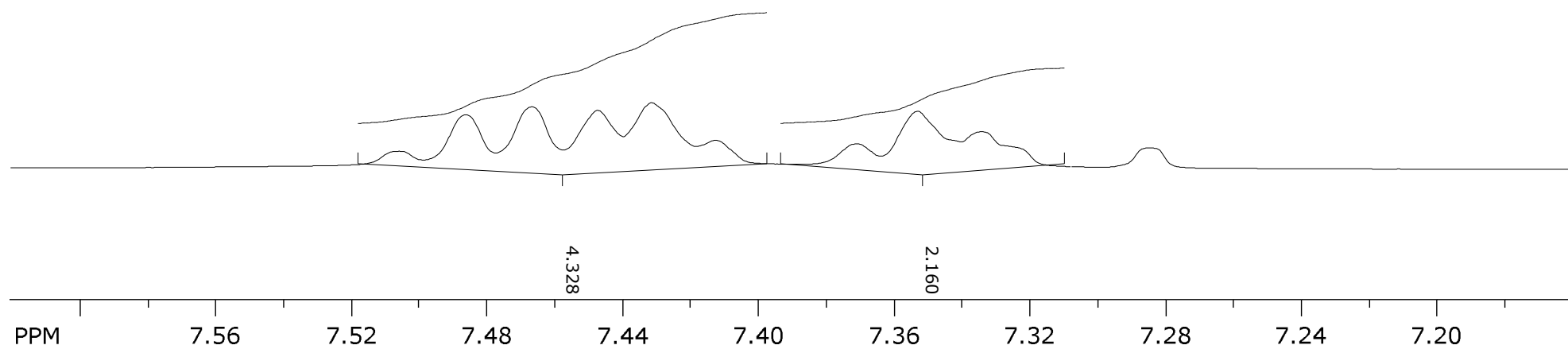
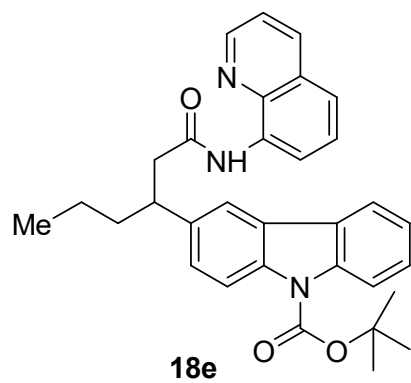


SpinWorks 4: RD 182
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 43

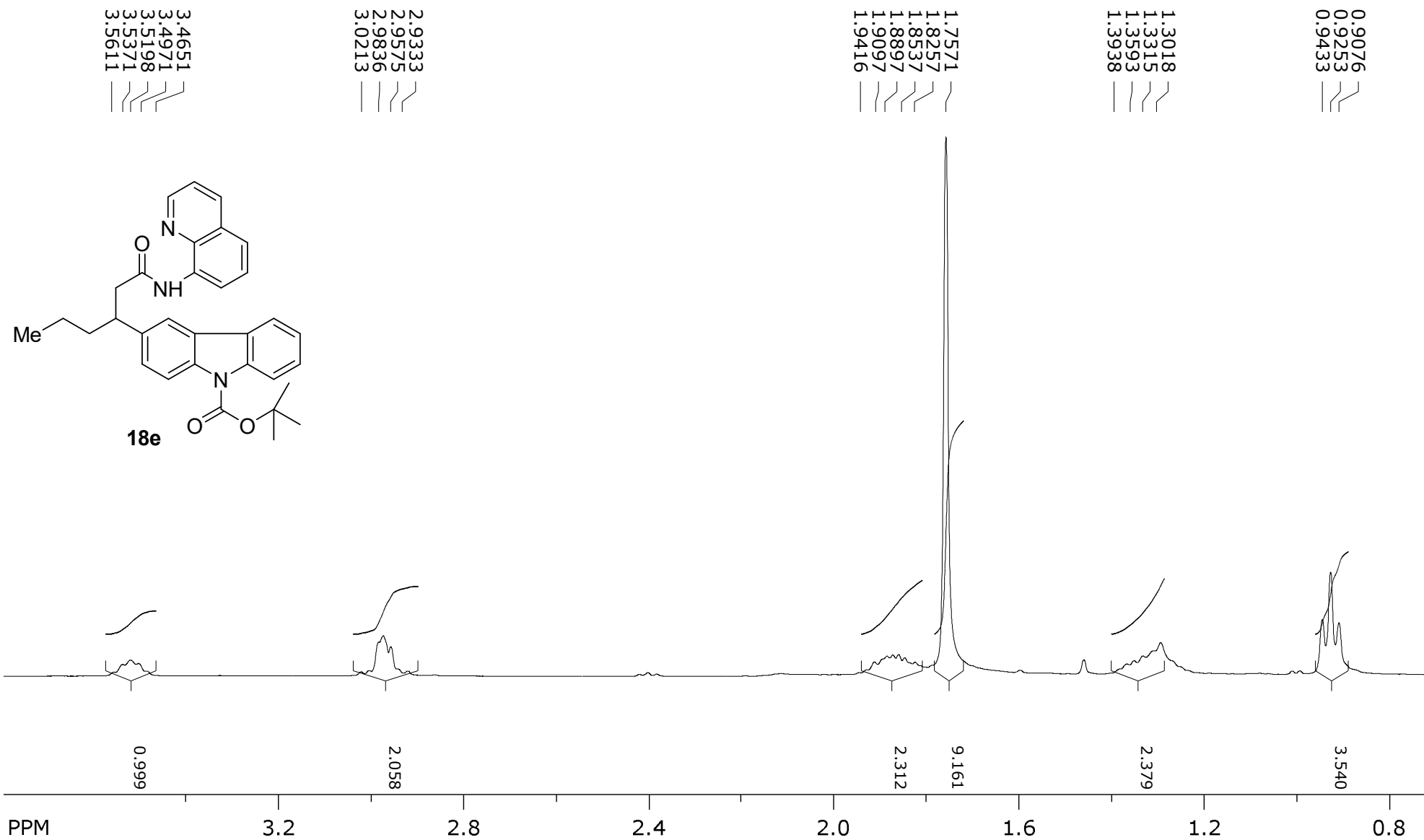


SpinWorks 4: RD 182
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 43

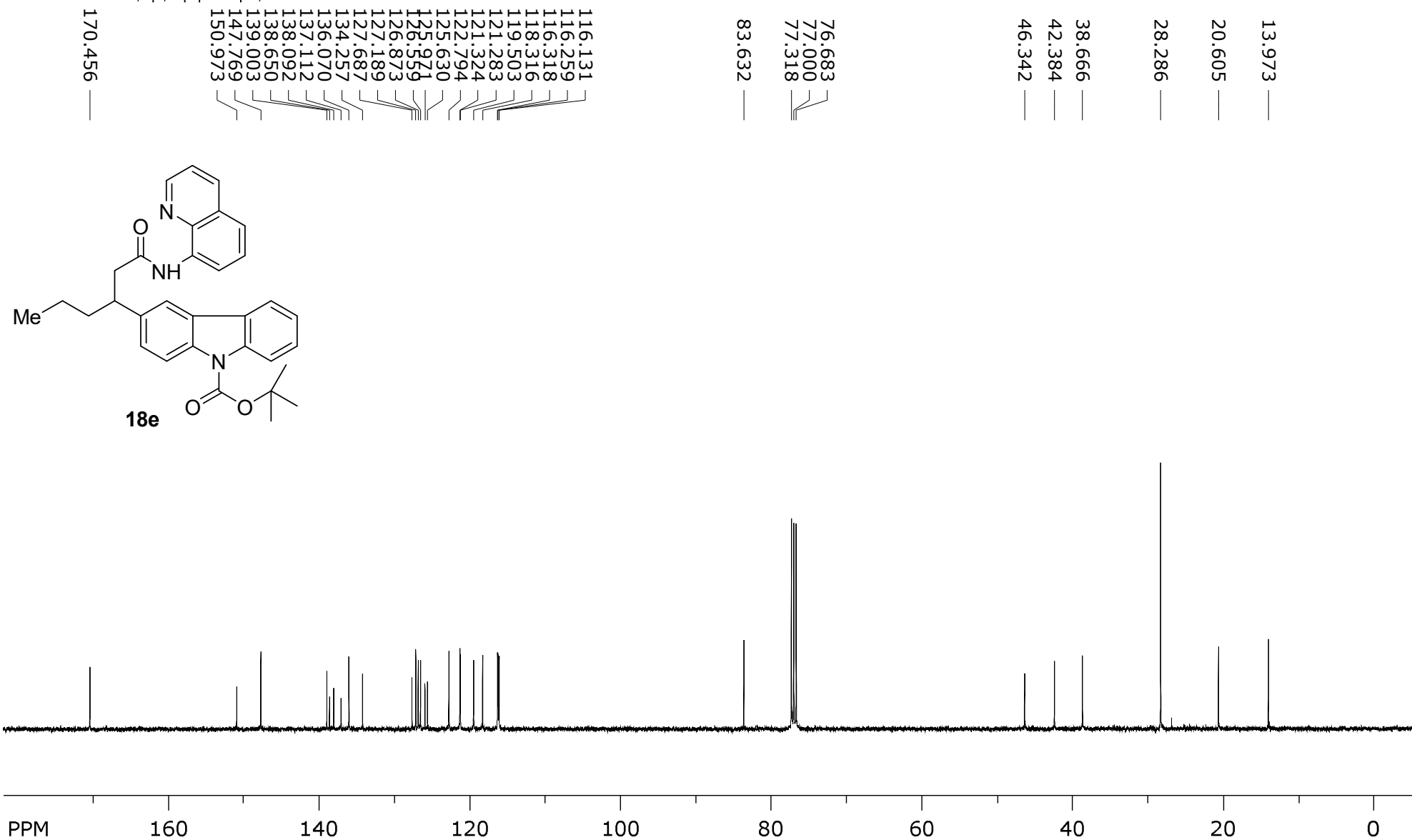
7.5061 —
7.4863 —
7.4669 —
7.4475 —
7.4316 —
7.4126 —
7.3711 —
7.3531 —
7.3343 —
7.3243 —
7.2847 —

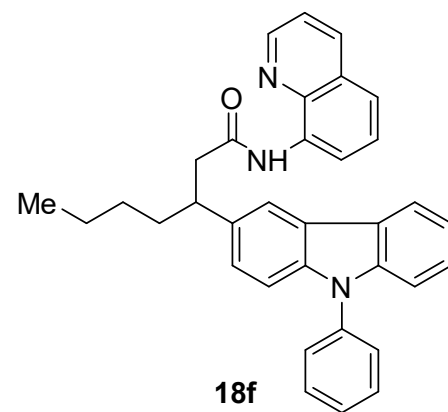


SpinWorks 4: RD 182
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 43



SpinWorks 4: RD 182
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 43



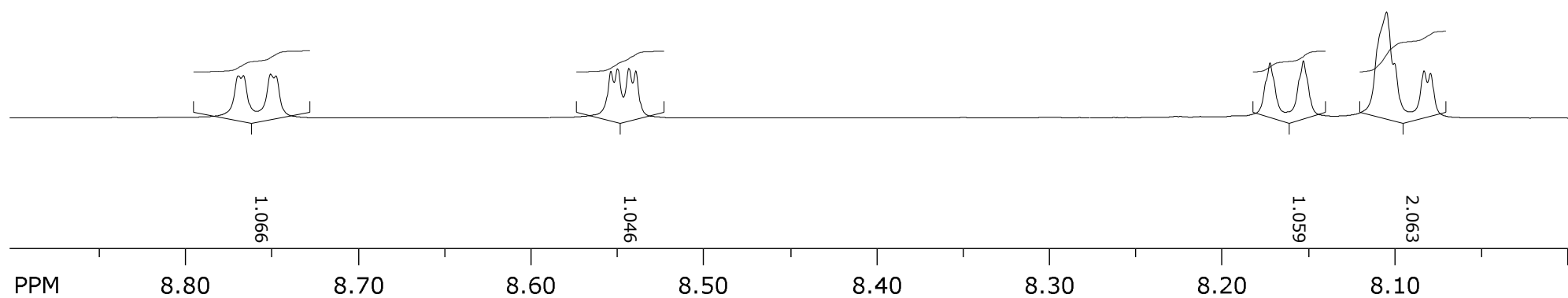
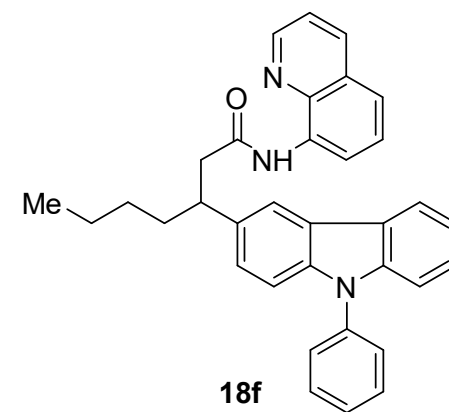
[illegible]

SpinWorks 4: RD 84
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 44

8.7480
8.7509
8.7668
8.7697

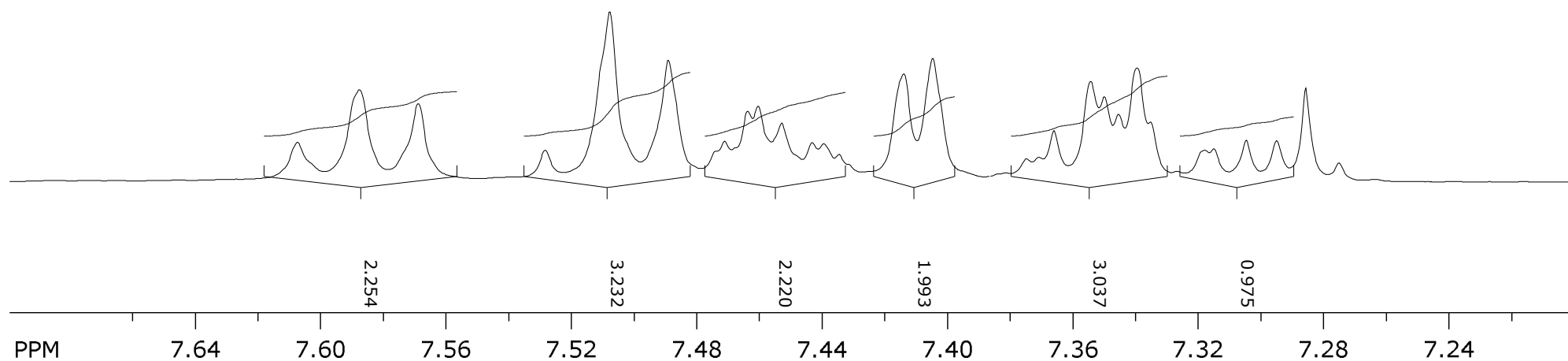
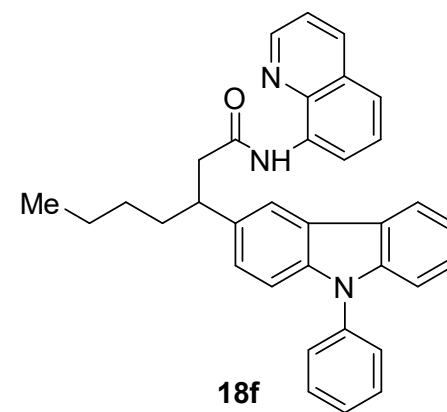
8.5395
8.5435
8.5500
8.5540

8.0791
8.0830
8.1001
8.1046
8.1046
8.1529
8.1722

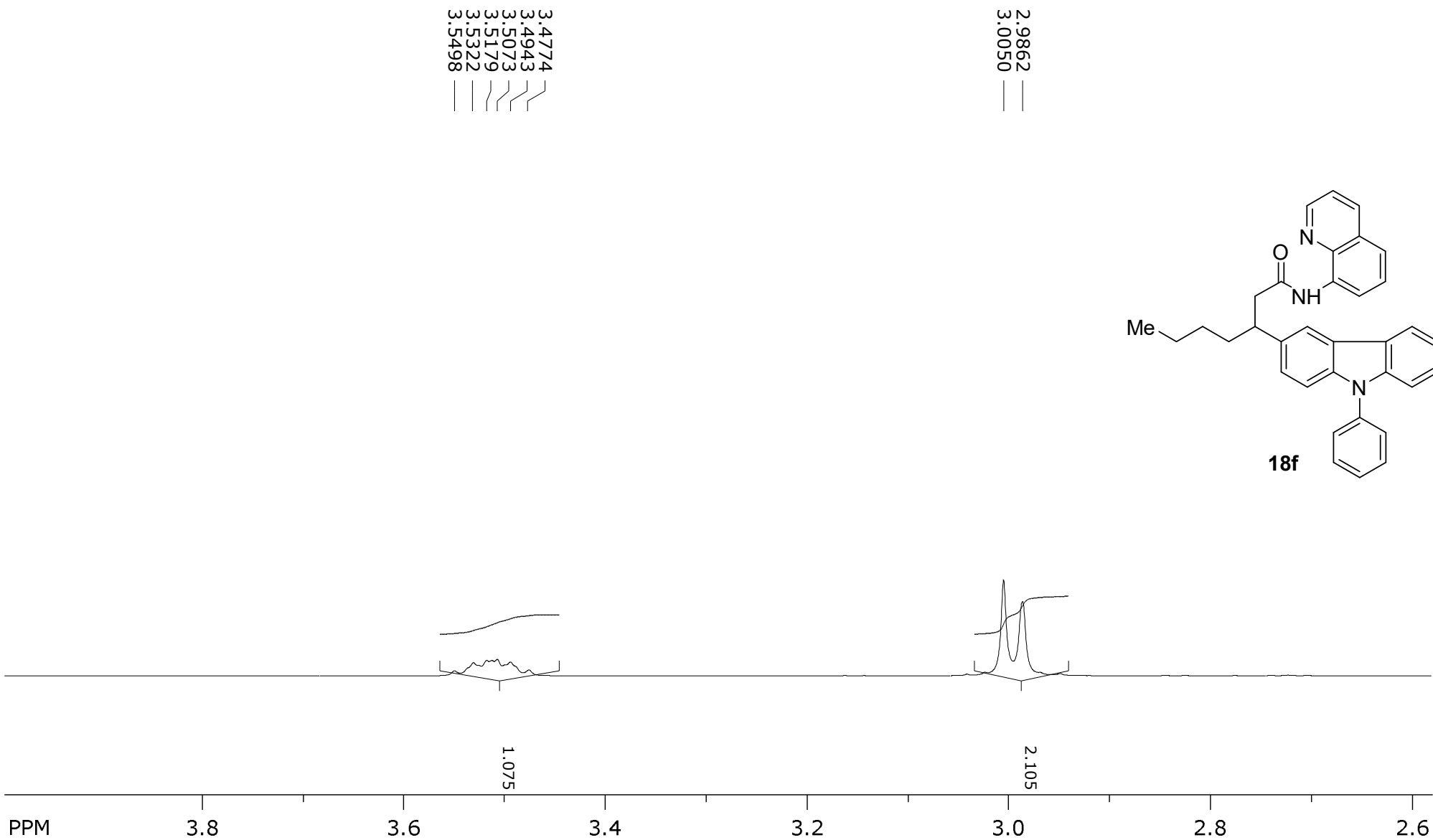


SpinWorks 4: RD 84
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 44

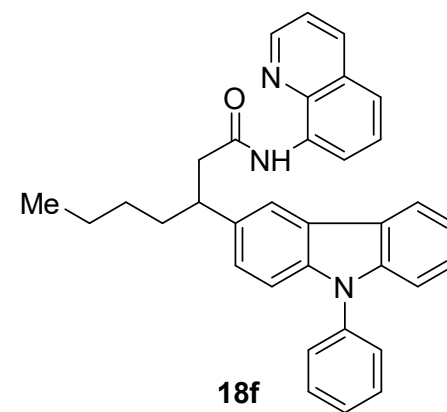
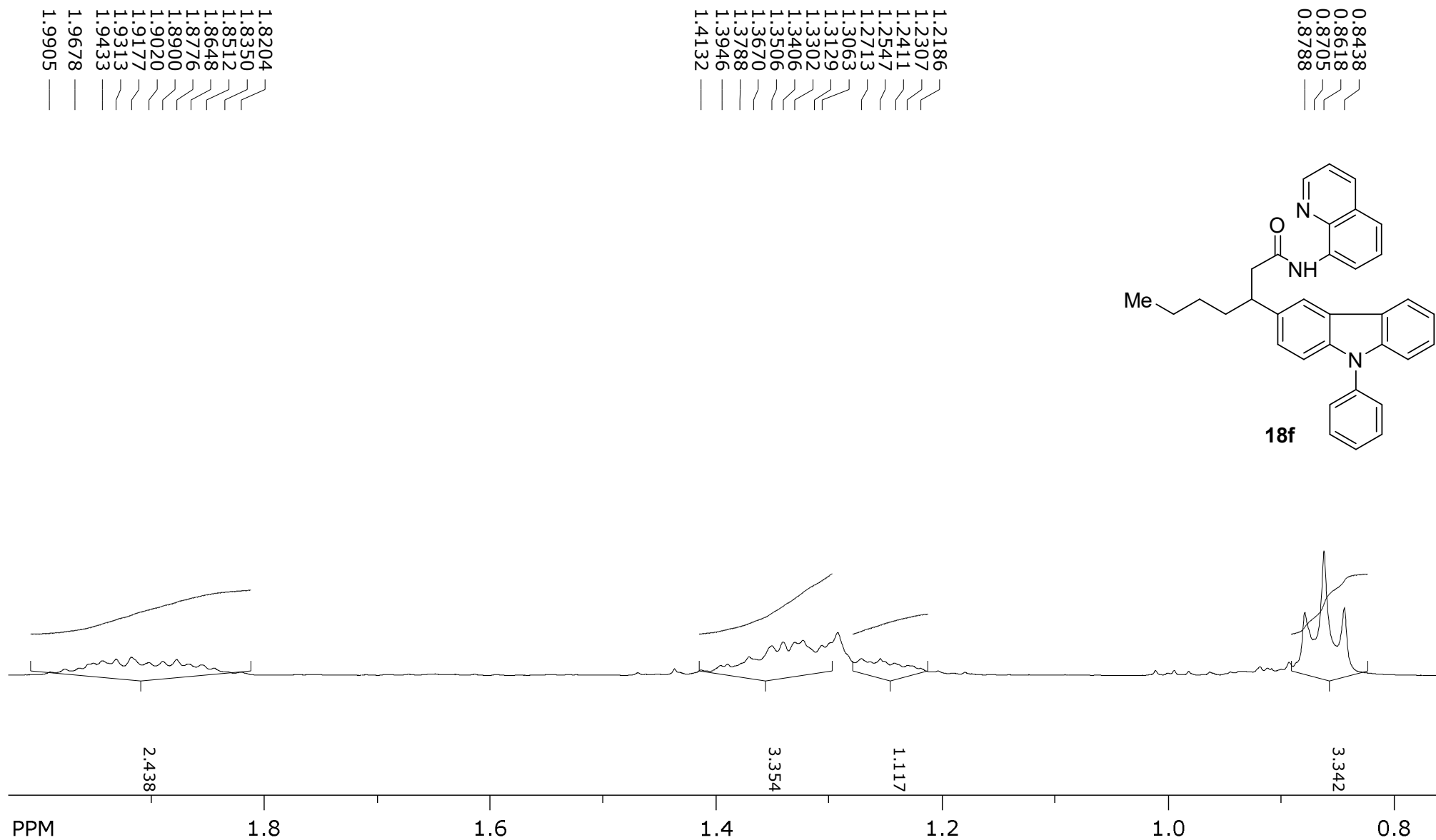
7.2751	7.2857	7.2950	7.3047	7.3150	7.3179	7.3352	7.3395	7.3454	7.3499	7.3543	7.3660	7.3708	7.3748	7.4047	7.4139	7.4346	7.4395	7.4432	7.4529	7.4604	7.4637	7.4711	7.4739	7.4891	7.5078	7.5284	7.5689	7.5876	7.6074
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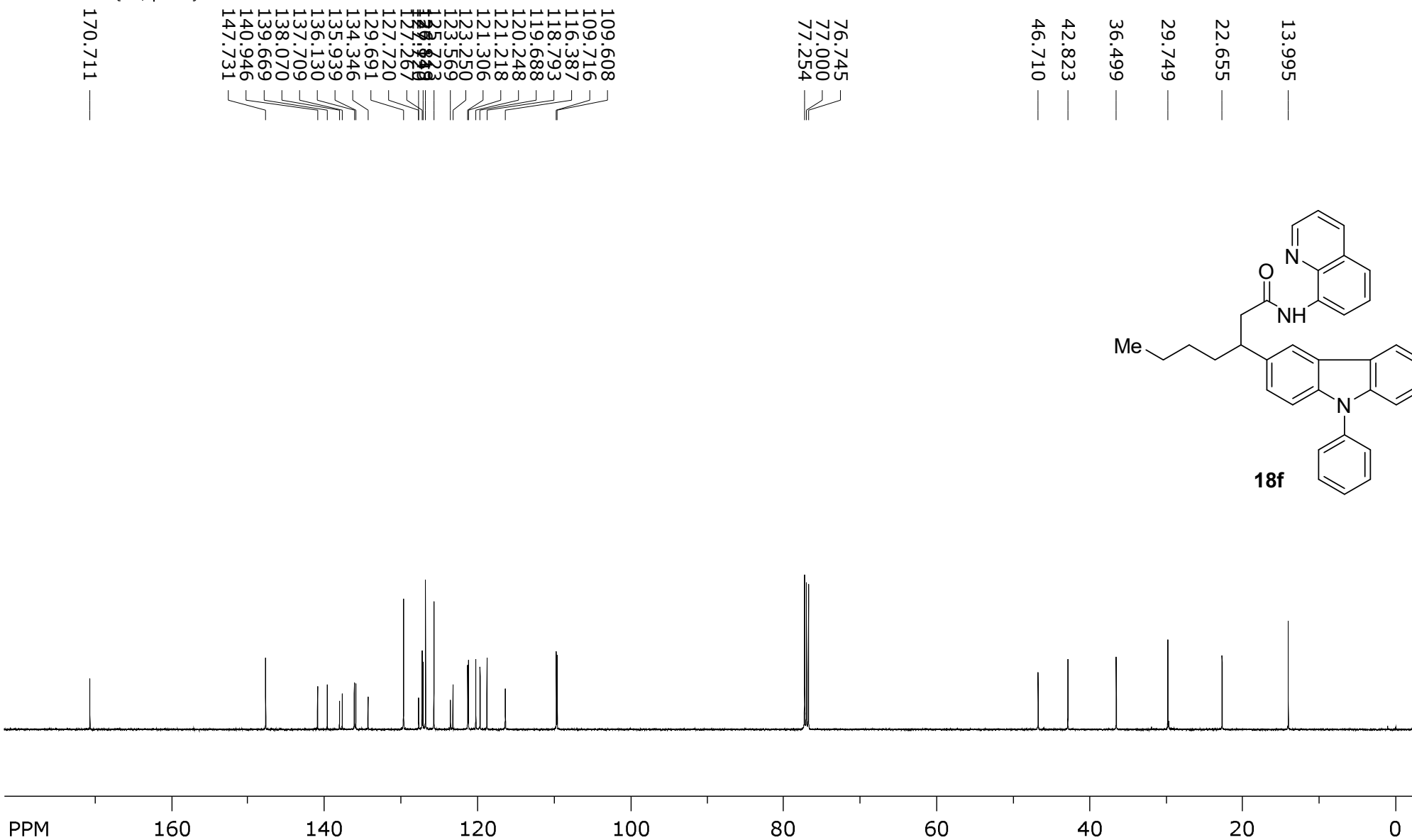
SpinWorks 4: RD 84
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 44



SpinWorks 4: RD 84
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 44



SpinWorks 4: SAB070708
C13CPD CDCl3 {D:\Spectra} nmr 41



SpinWorks 4: SAB070708
C13CPD CDCl3 {D:\Spectra} nmr 41

147.731 —

140.946 —

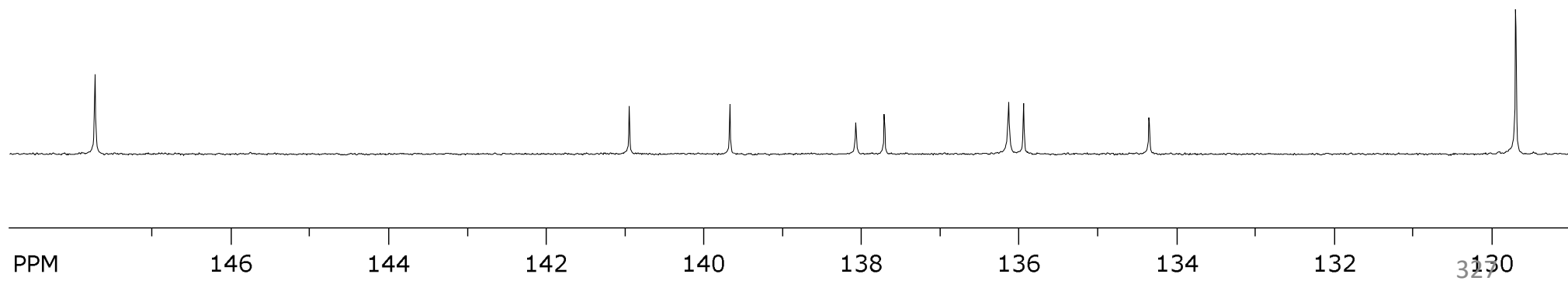
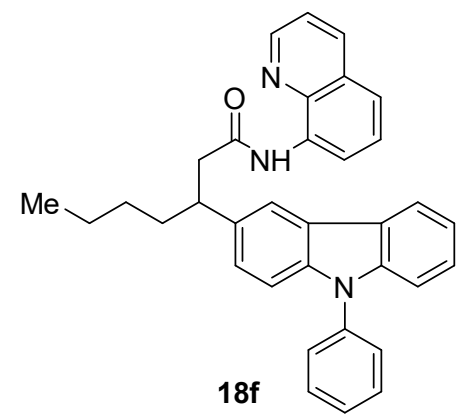
139.669 —

137.709 —
138.070 —

135.939 —
136.130 —

134.346 —

129.691 —



SpinWorks 4: SAB070708
C13CPD CDCl3 {D:\Spectra} nmr 41

126.819 —
127.143 —
127.267 —
127.720 —

125.723 —

123.250 —
123.569 —

121.218 —
121.306 —

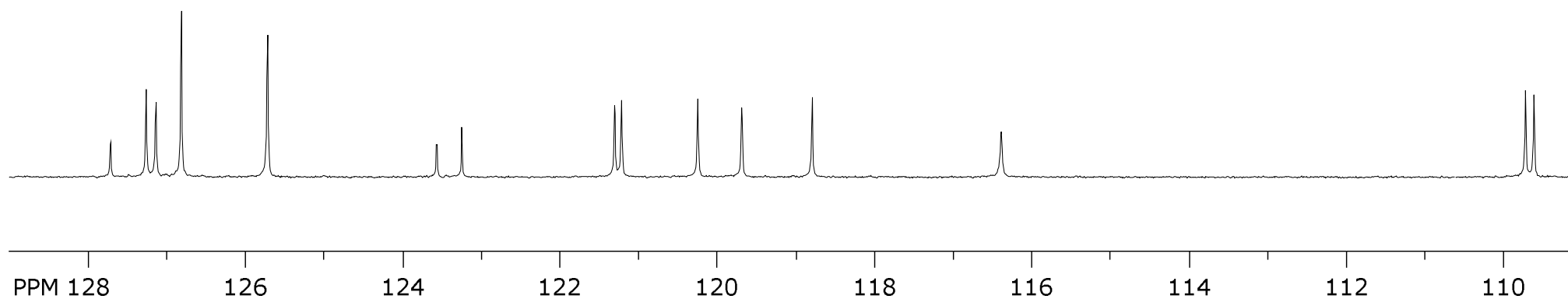
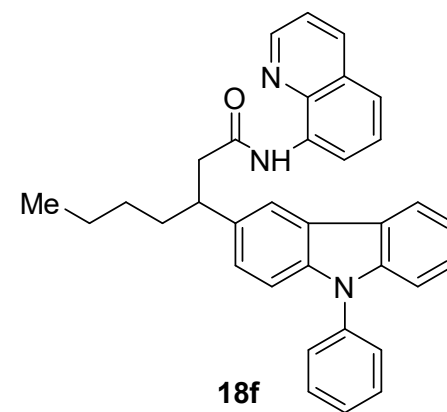
120.248 —

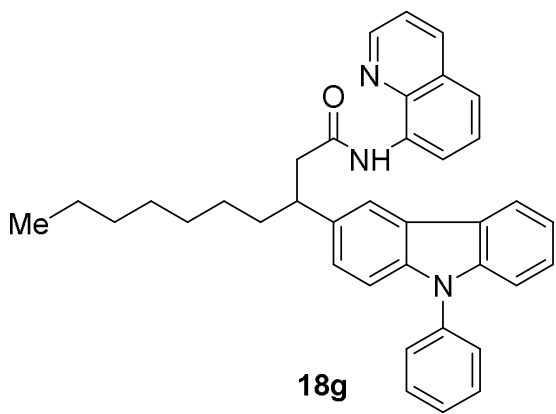
119.688 —

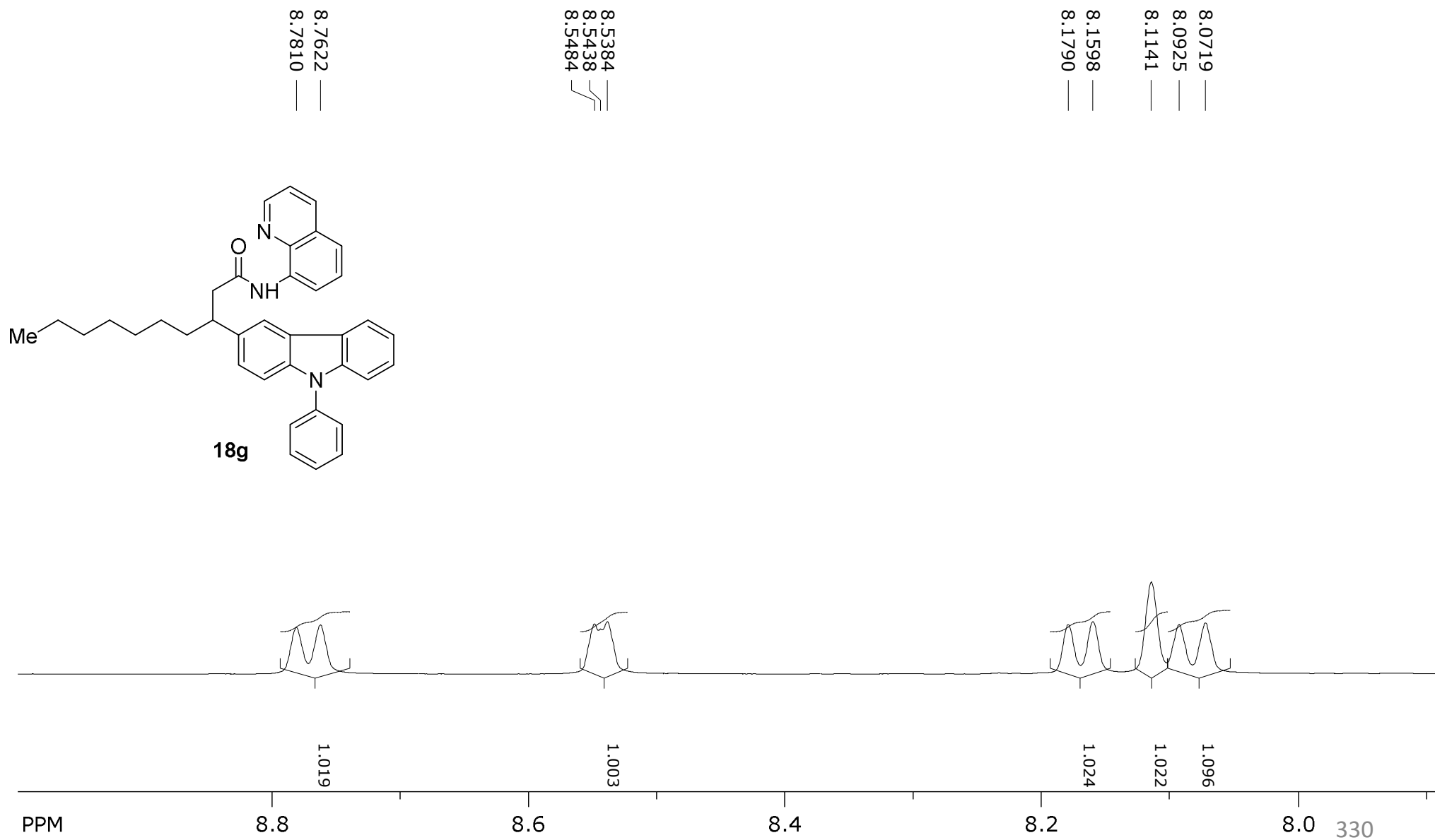
118.793 —

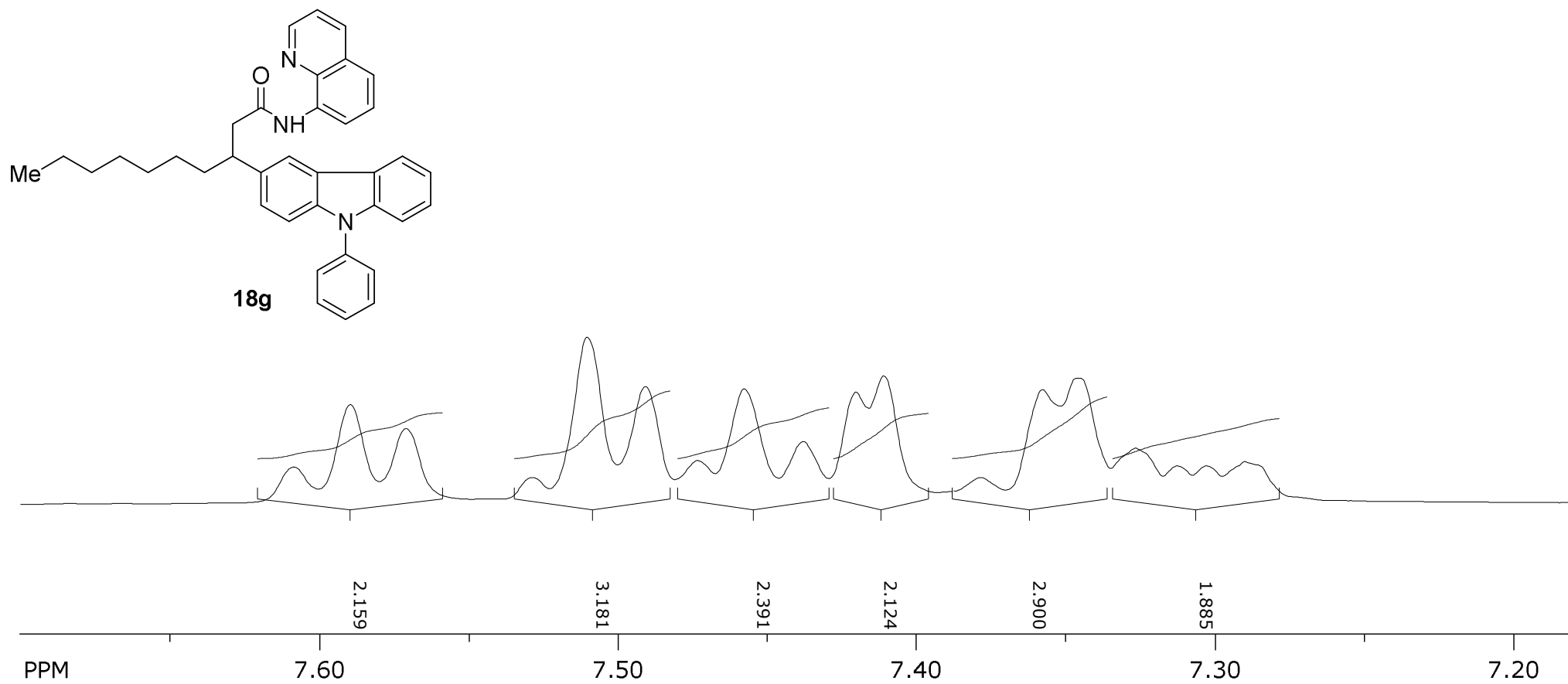
116.387 —

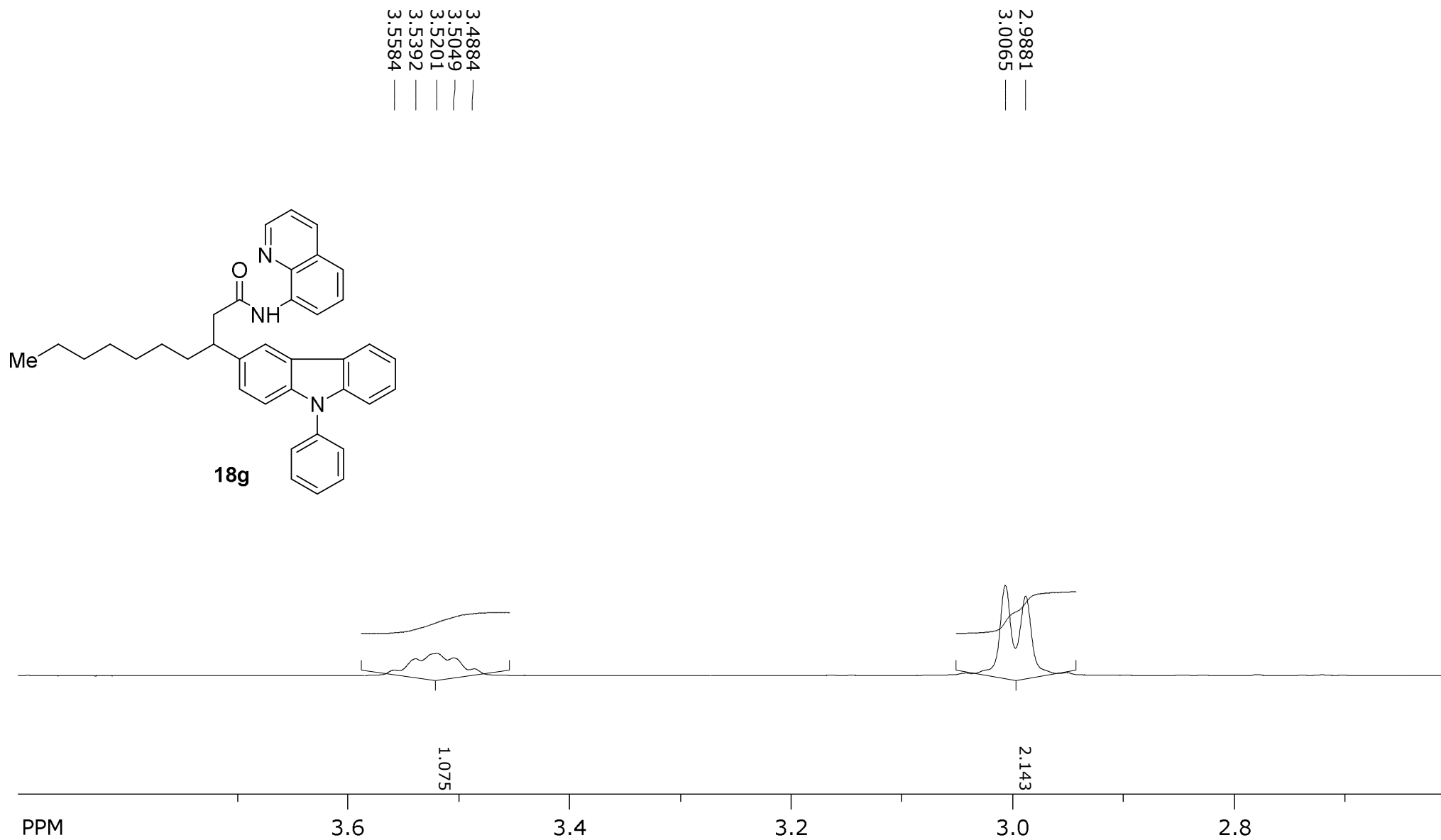
109.608 —
109.716 —

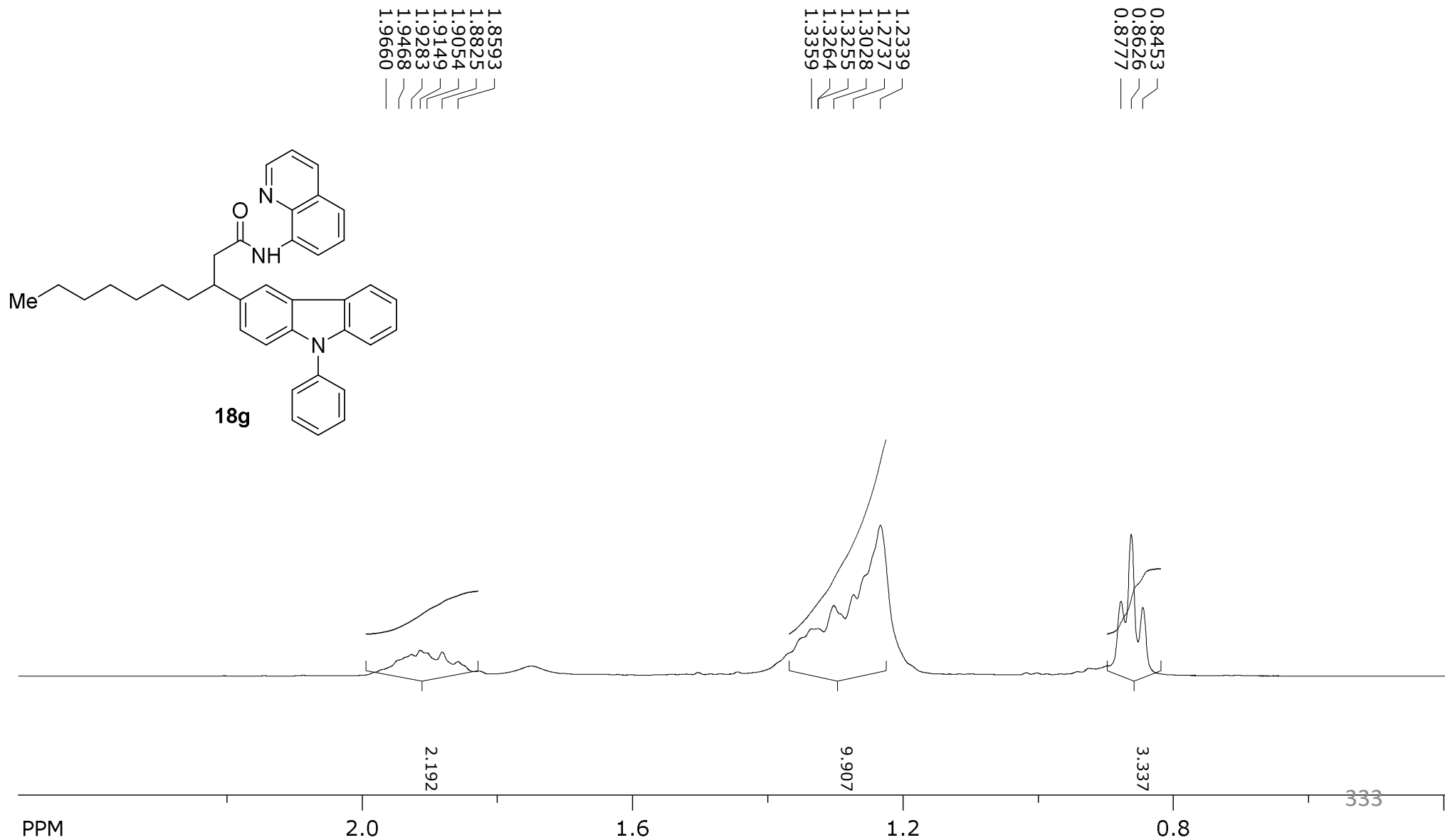




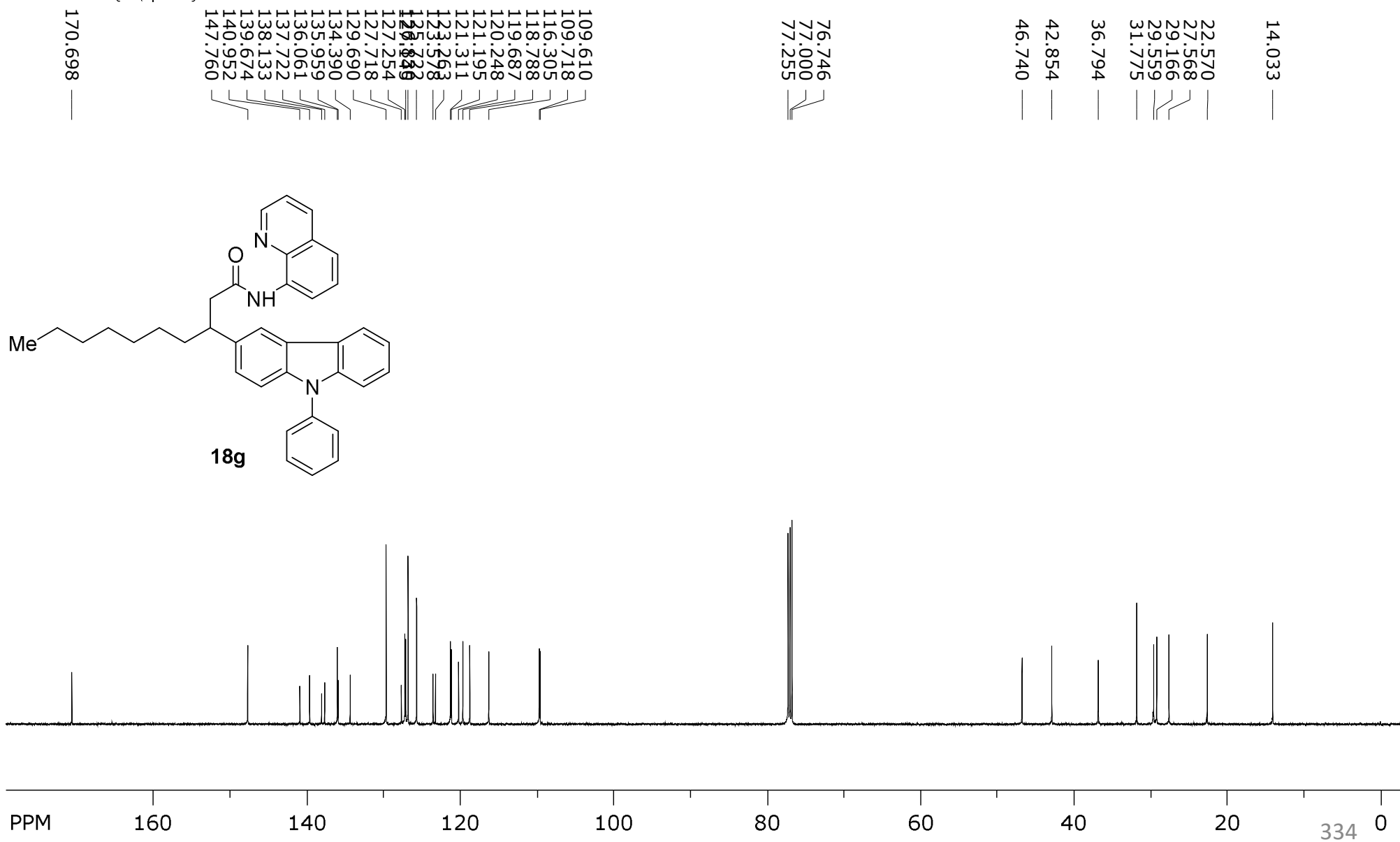




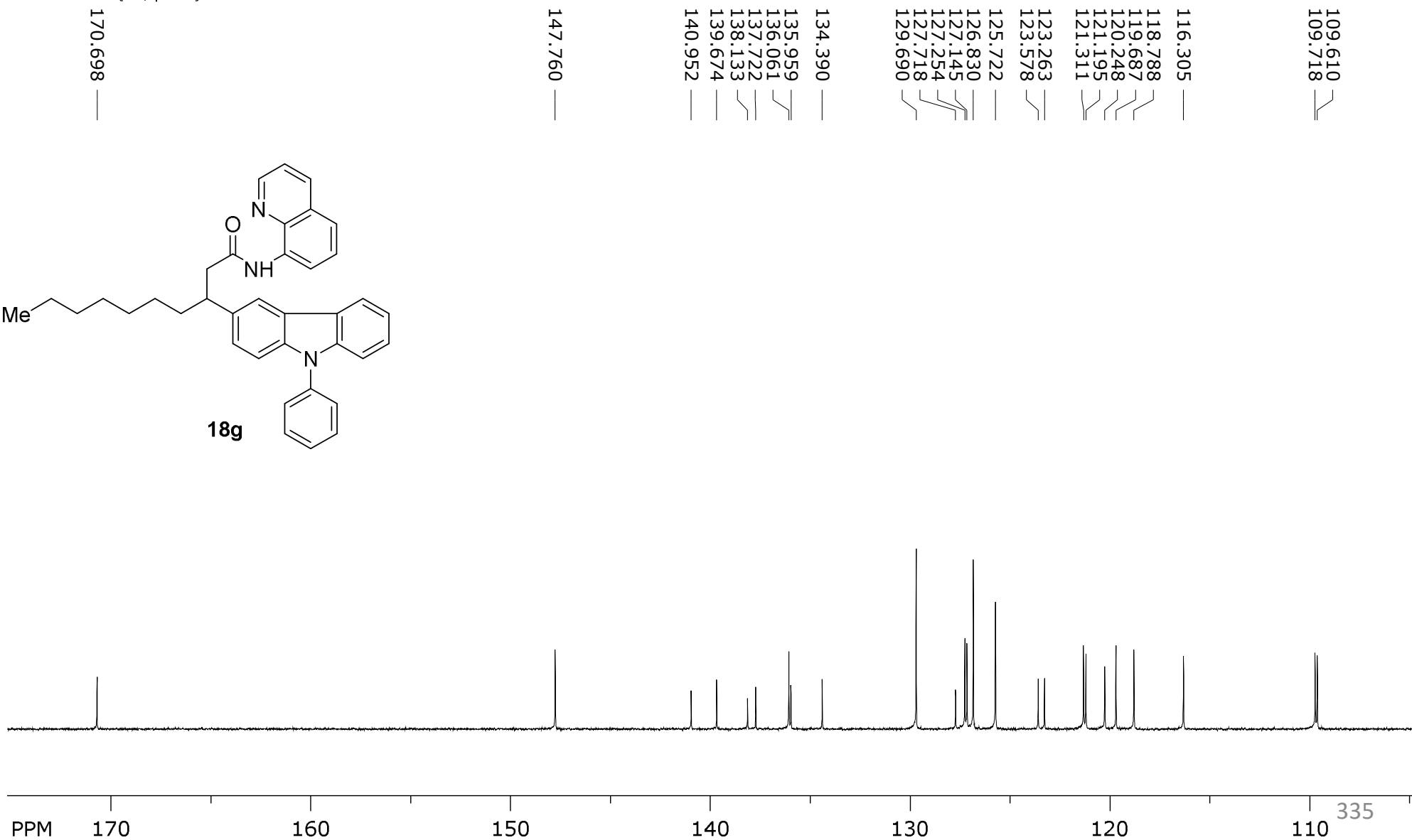
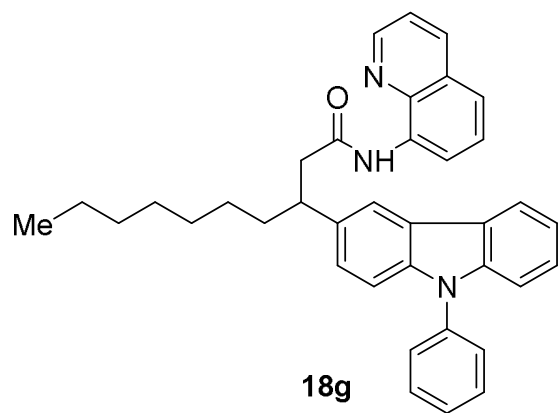




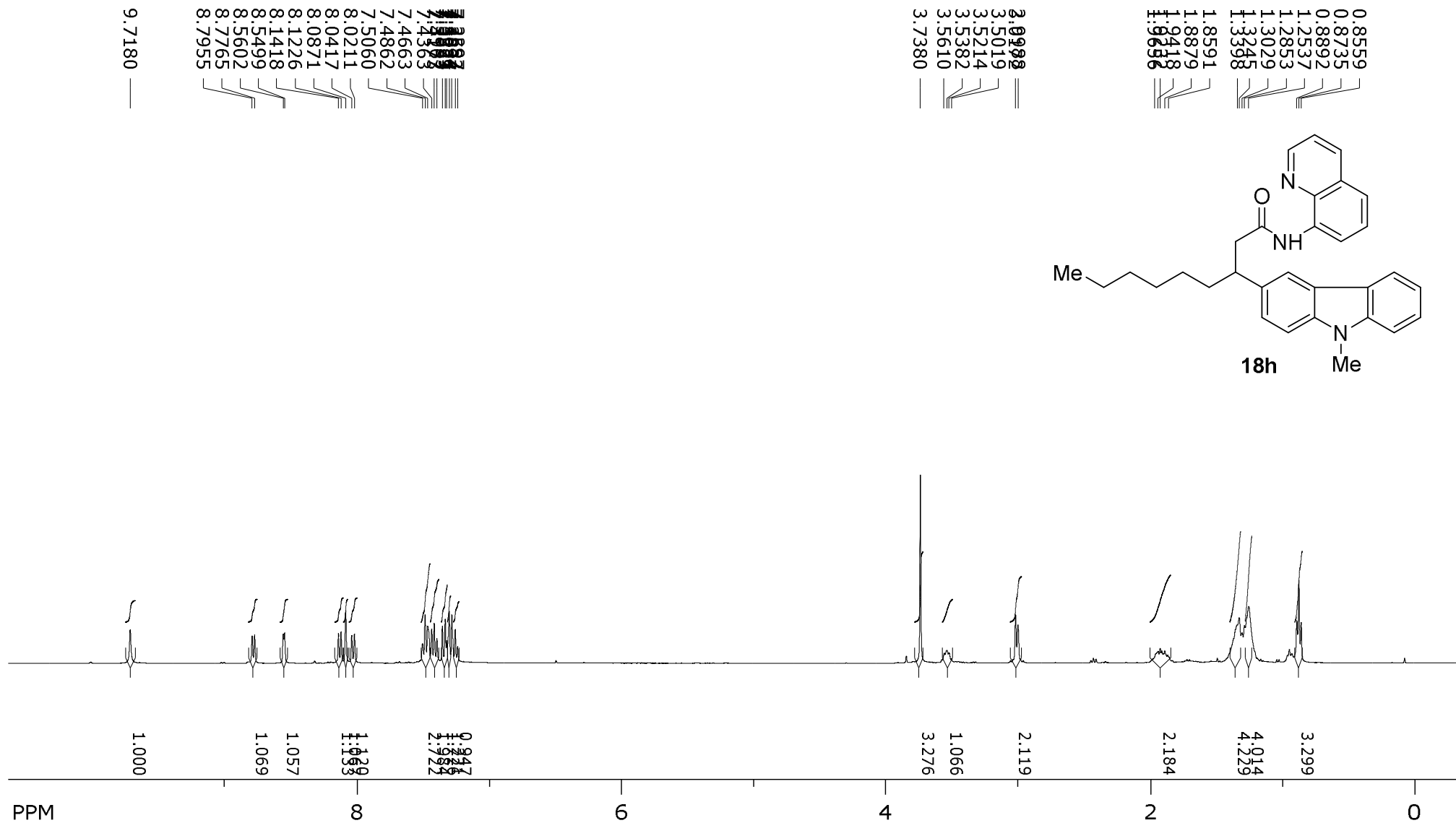
SpinWorks 4: SAB100705
C13CPD CDCl3 {D:\Spectra} nmr 14



SpinWorks 4: SAB100705
C13CPD CDCl3 {D:\Spectra} nmr 14



SpinWorks 4: RD 194
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 35

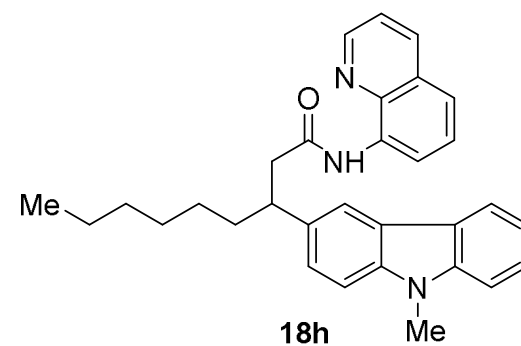


SpinWorks 4: RD 194
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 35

8.7765
8.7955

8.5499
8.5602

8.0211
8.0417
8.0871
8.1226
8.1418



1.069

1.057

1.133

1.067

1.120

PPM

9.0

8.8

8.6

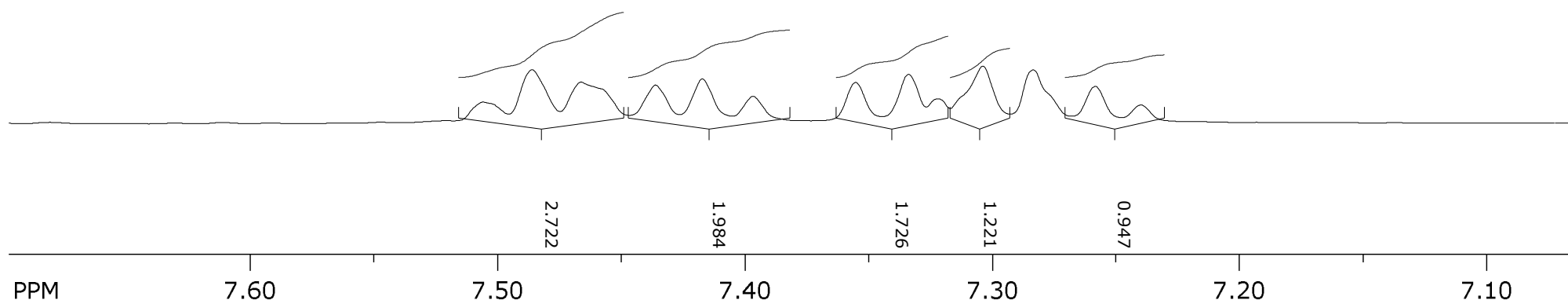
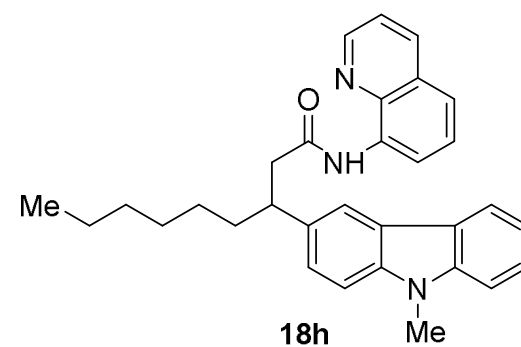
8.4

8.2

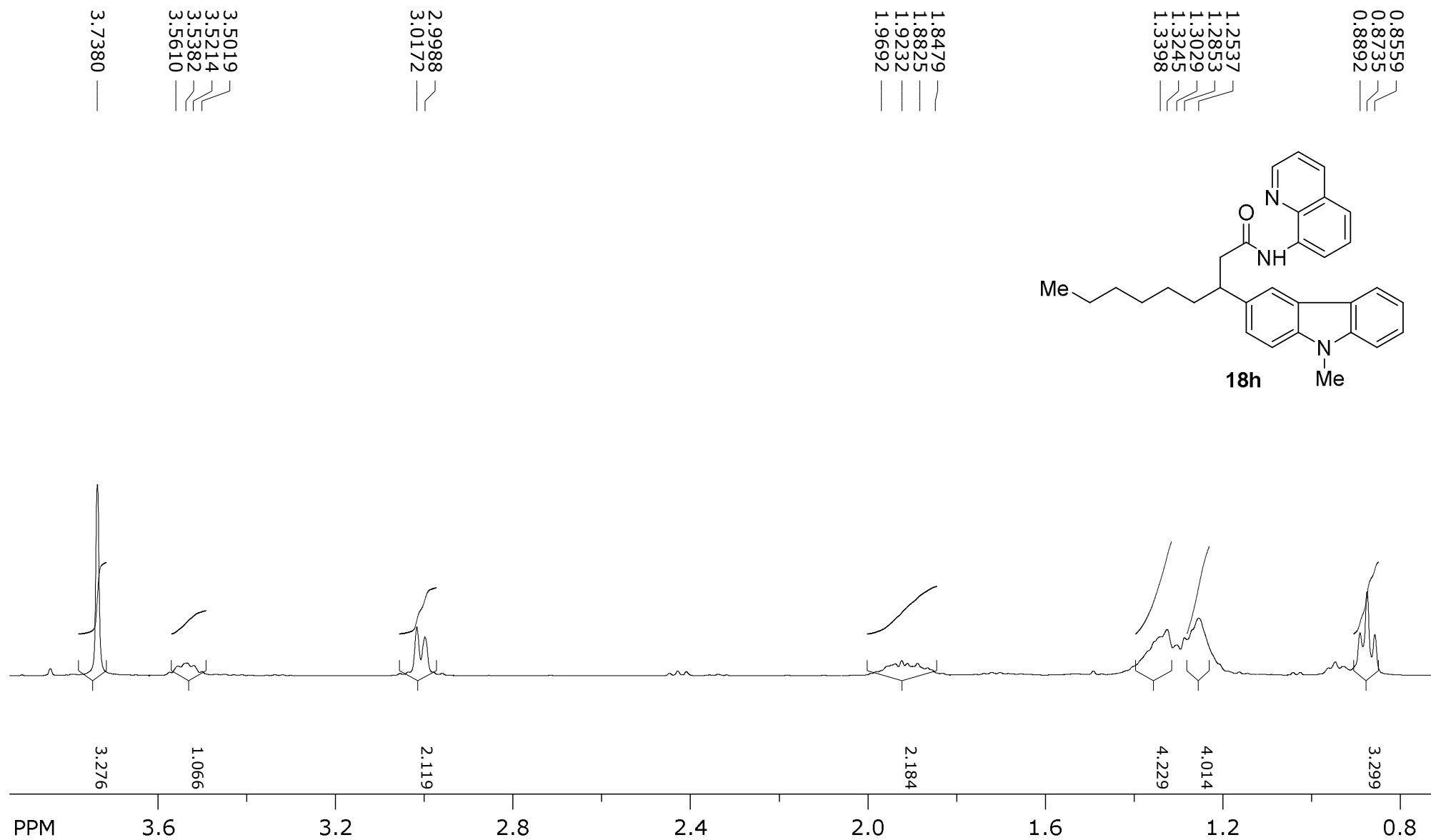
8.0

SpinWorks 4: RD 194
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 35

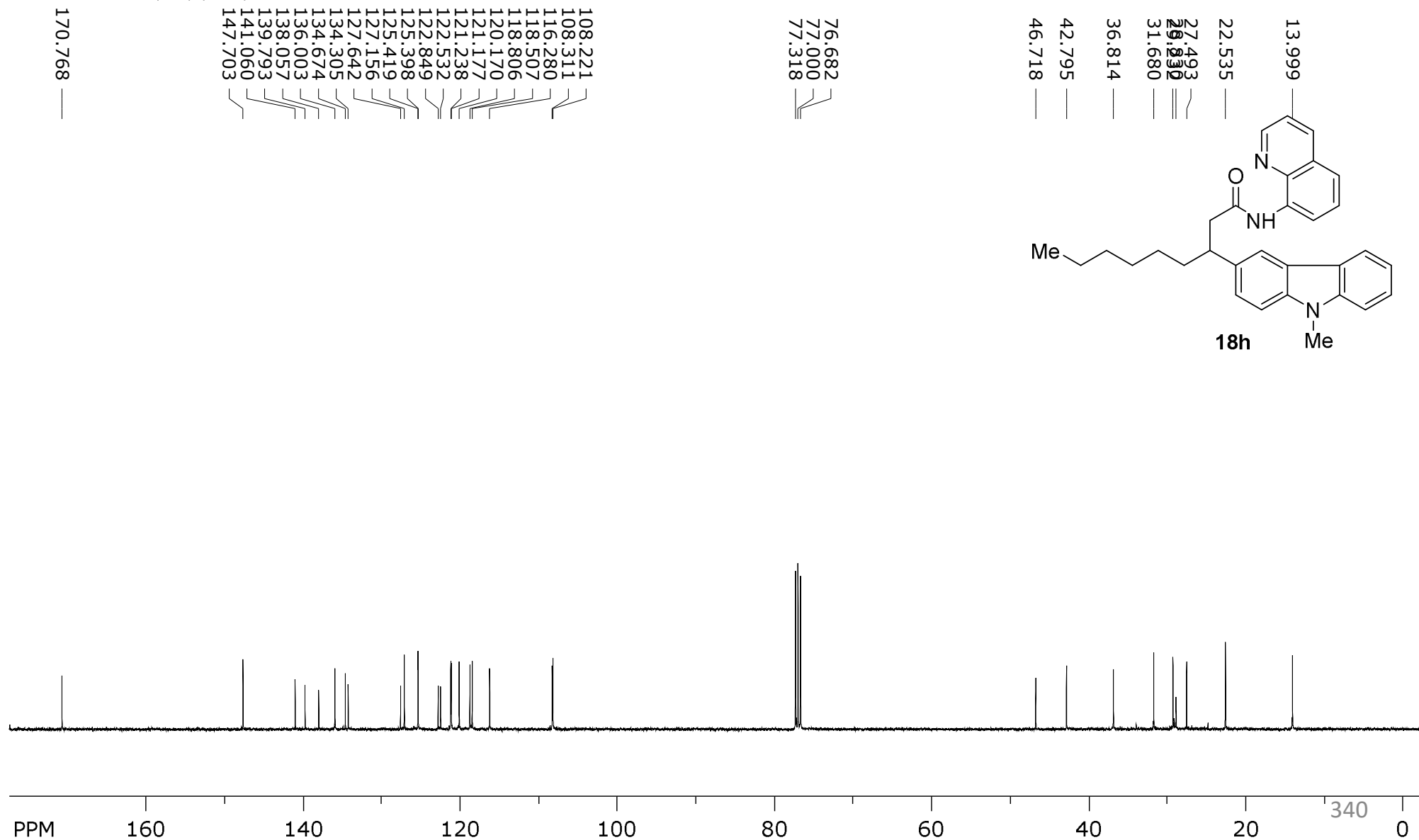
7.2397 —
7.2583 —
7.2834 —
7.3037 —
7.3221 —
7.3339 —
7.3553 —
7.3967 —
7.4173 —
7.4363 —
7.4663 —
7.4862 —
7.5060 —



SpinWorks 4: RD 194
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 35



SpinWorks 4: RD 194
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 35



SpinWorks 4: RD 194
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 35

46.718 —

42.795 —

36.814 —

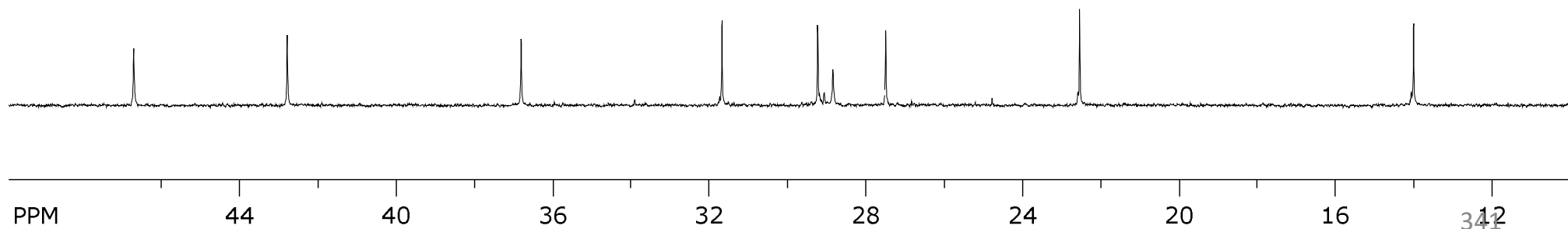
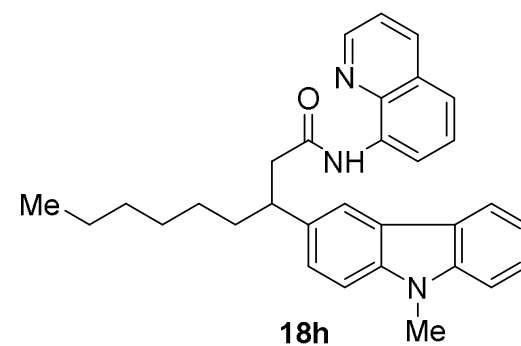
31.680 —

28.830 —
29.232 —

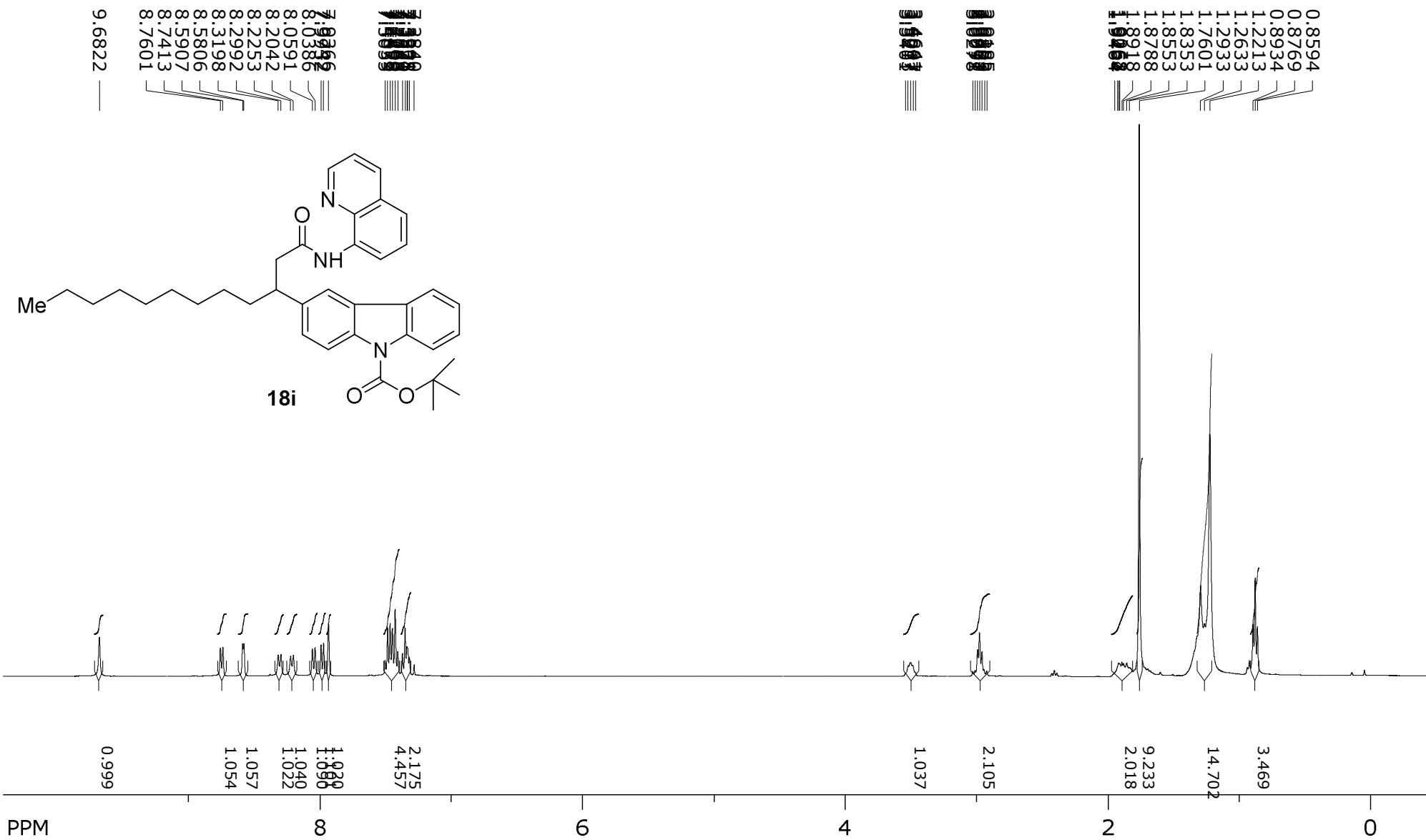
27.493 —

22.535 —

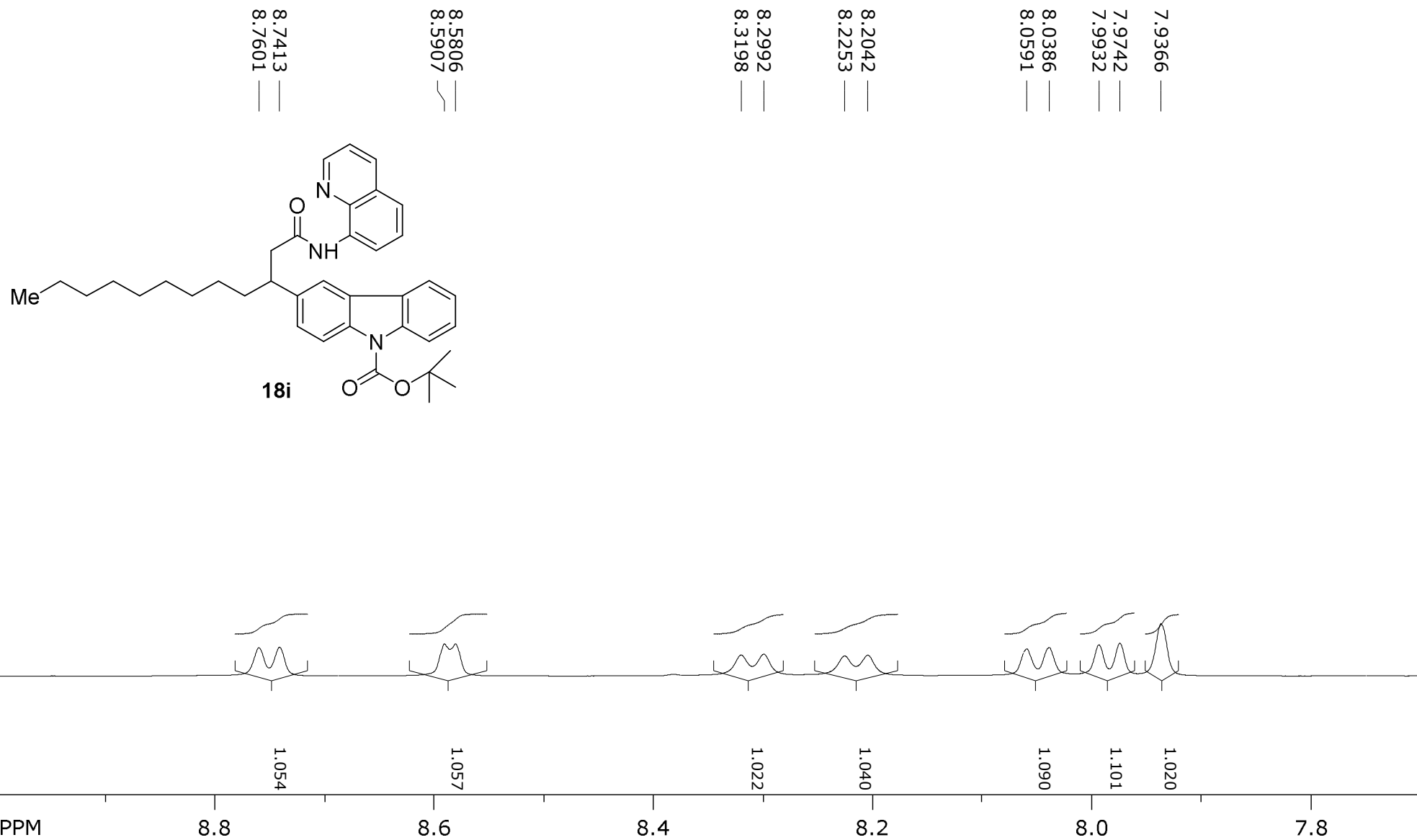
13.999 —



SpinWorks 4: RD 195
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 32

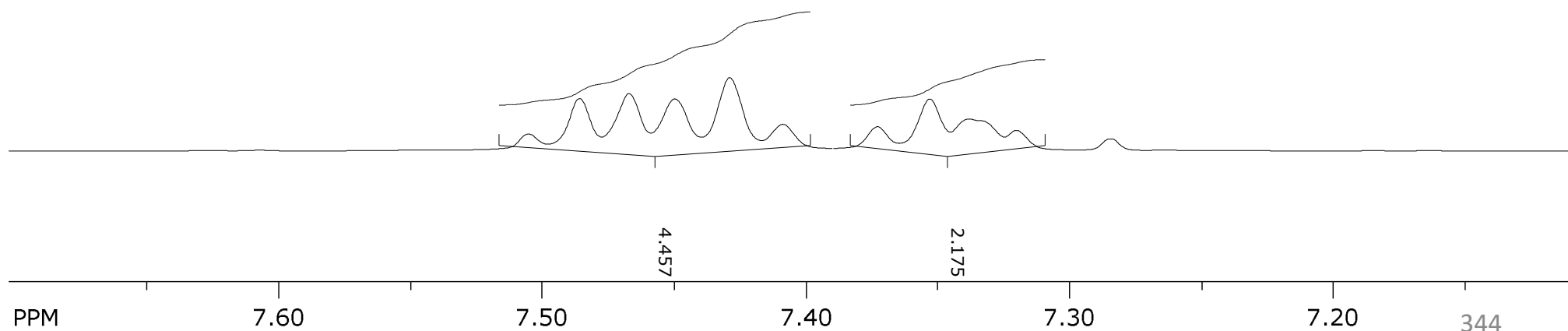
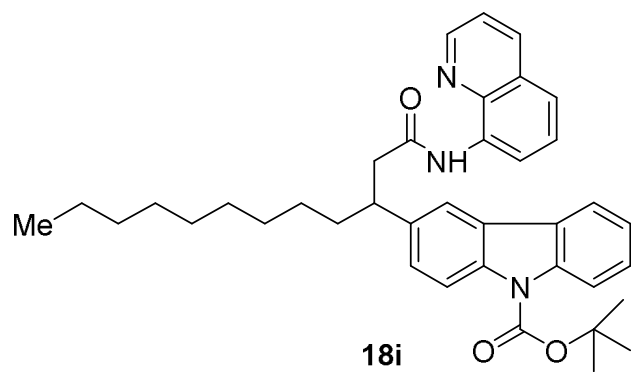


SpinWorks 4: RD 195
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 32



SpinWorks 4: RD 195
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 32

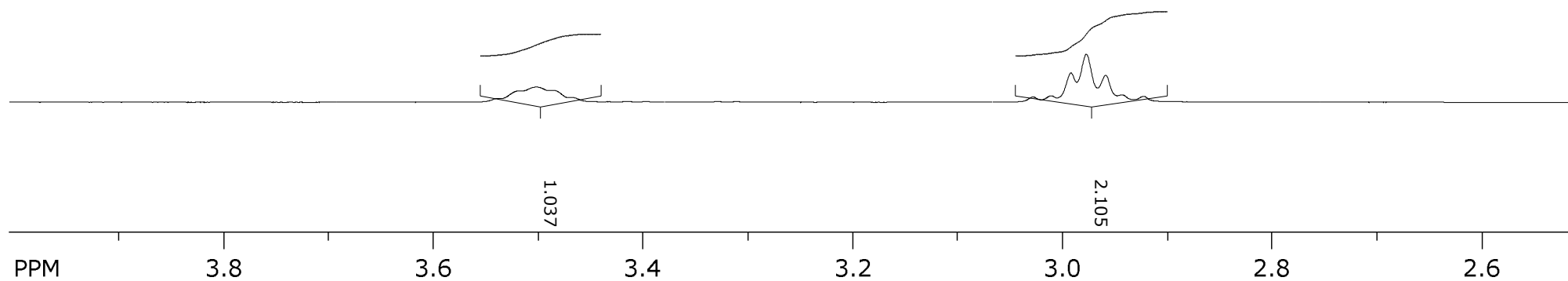
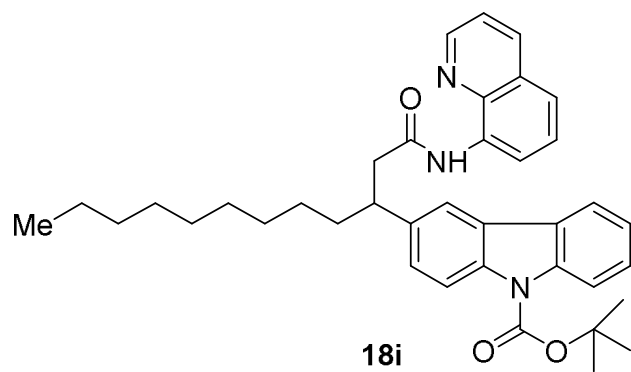
7.2840 —
7.3201 —
7.3335 —
7.3378 —
7.3531 —
7.3729 —
7.4088 —
7.4290 —
7.4498 —
7.4672 —
7.4859 —
7.5053 —



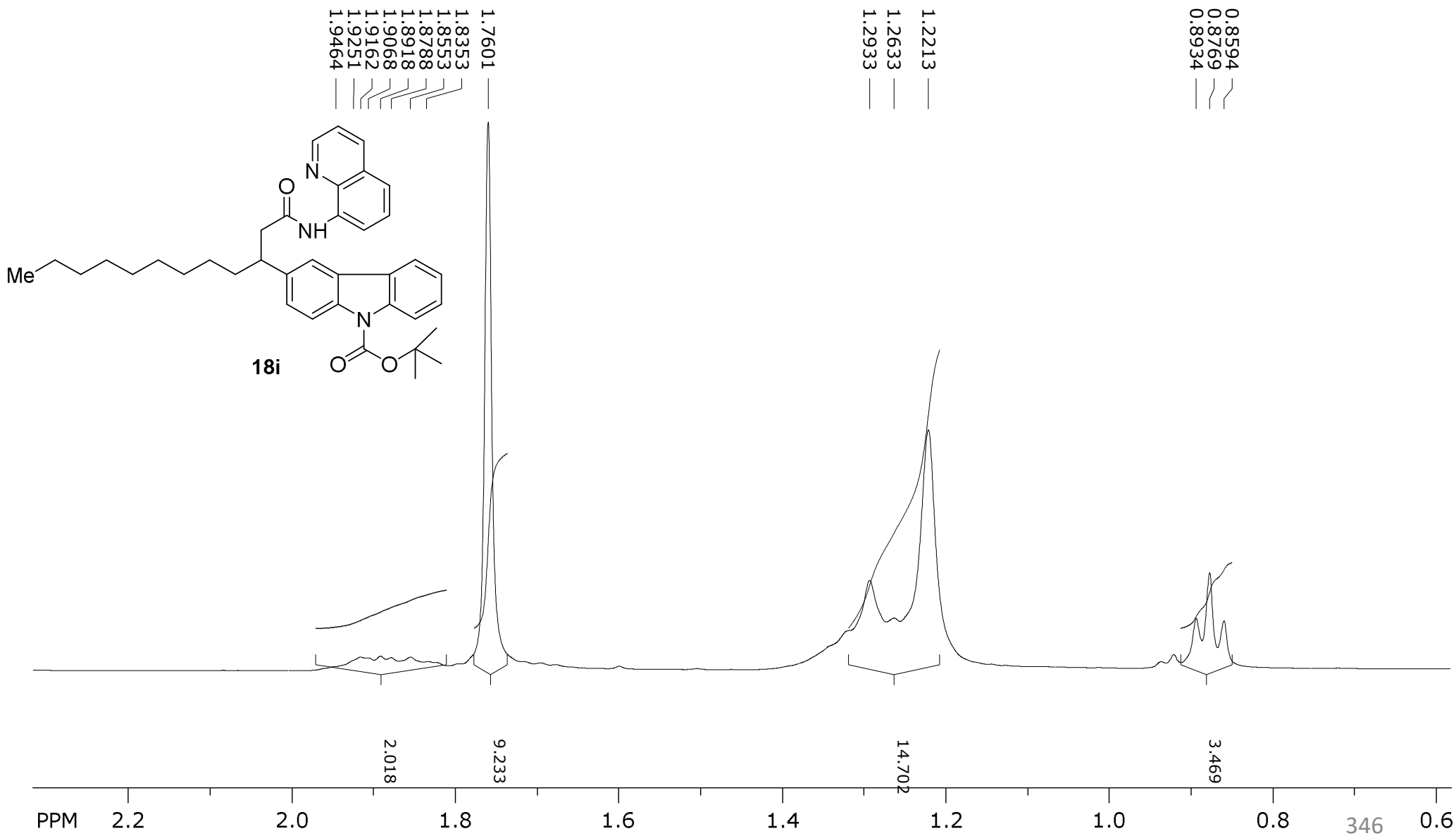
SpinWorks 4: RD 195
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 32

3.4641
3.4807
3.5017
3.5213
3.5401

2.9185
2.9383
2.9585
2.9771
2.9917
3.0091
3.0278



SpinWorks 4: RD 195
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 32

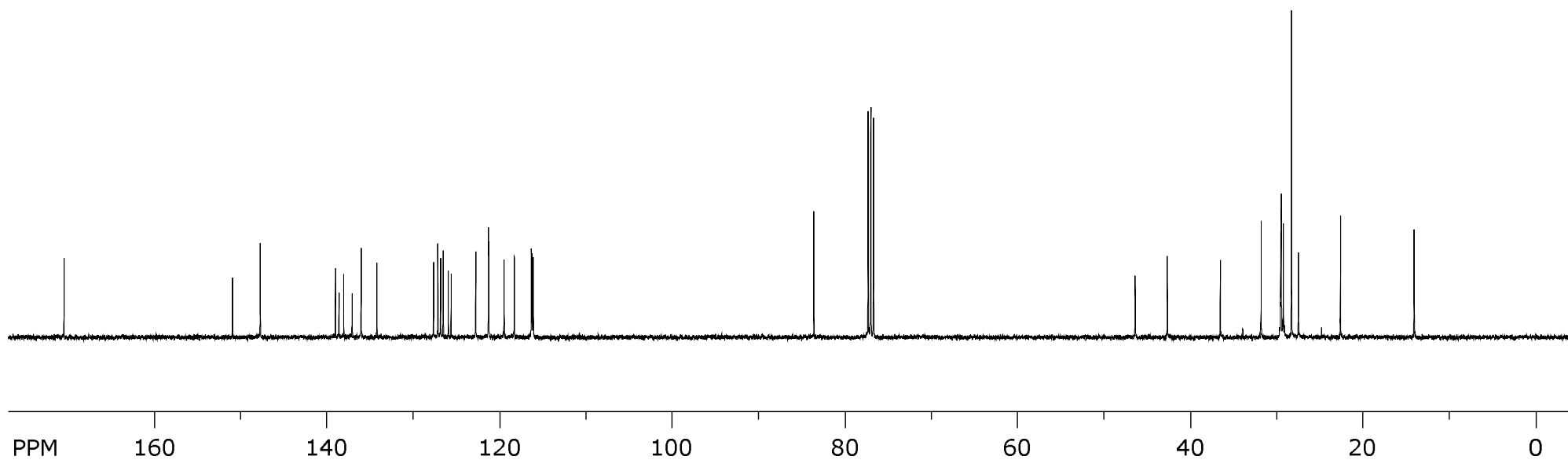
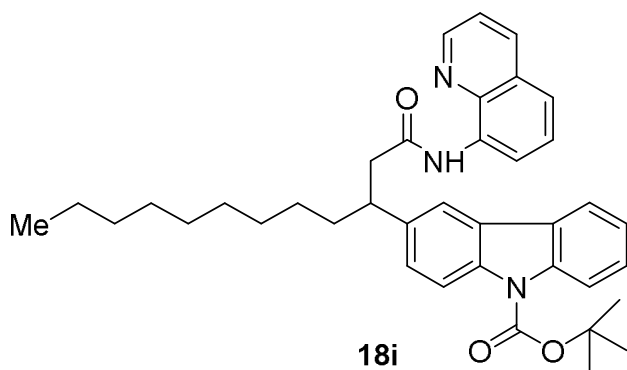


SpinWorks 4: RD 195
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 32

170.485 —
150.963 —
147.748 —
139.043 —
138.631 —
137.100 —
136.058 —
134.237 —
127.674 —
127.175 —
126.852 —
125.551 —
125.500 —
122.779 —
121.308 —
119.495 —
118.308 —
116.334 —
116.250 —
116.122 —

83.605 —
77.318 —
77.000 —
76.682 —

46.375 —
42.644 —
36.503 —
31.777 —
29.510 —
29.459 —
29.441 —
29.203 —
28.273 —
27.462 —
22.583 —
14.046 —



SpinWorks 4: RD 195
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 32

170.485

150.963

147.748

139.043

138.631

138.078

137.100

136.058

134.237

127.674

127.175

126.852

126.551

125.960

125.638

122.779

121.302

121.279

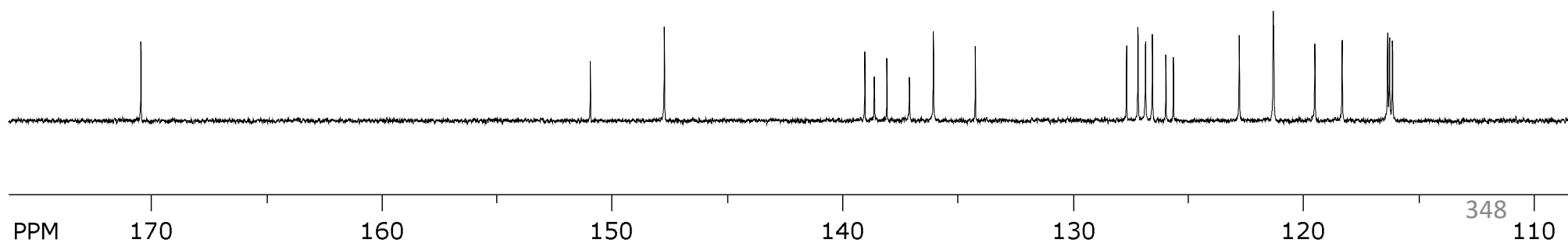
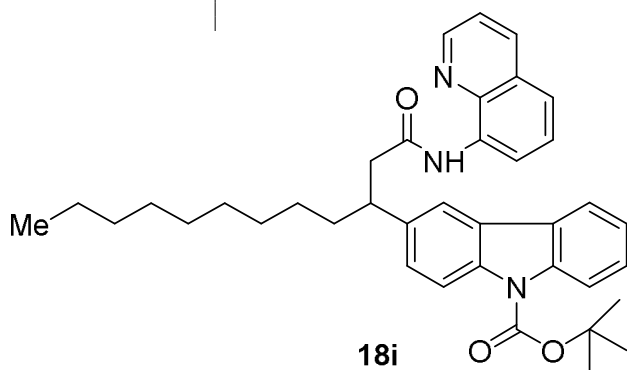
119.495

118.308

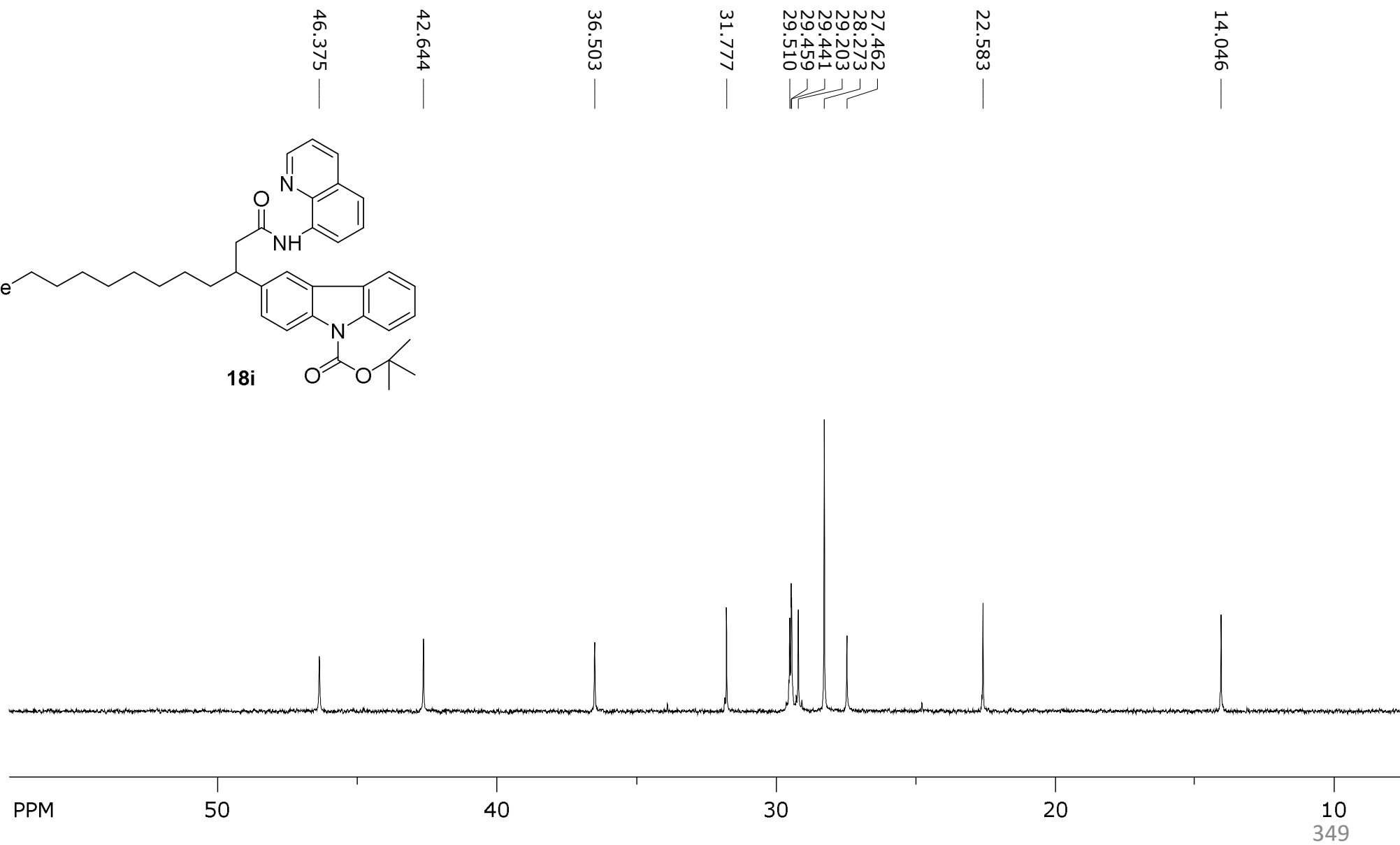
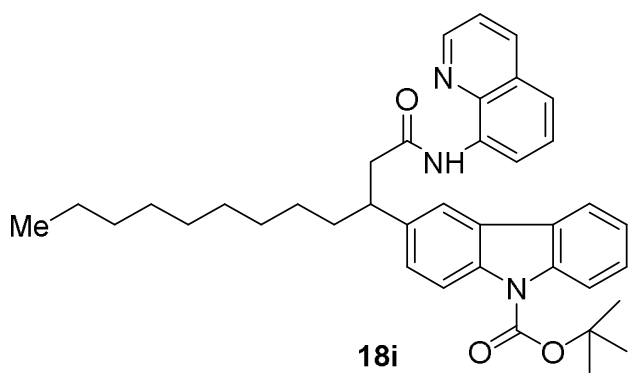
116.334

116.250

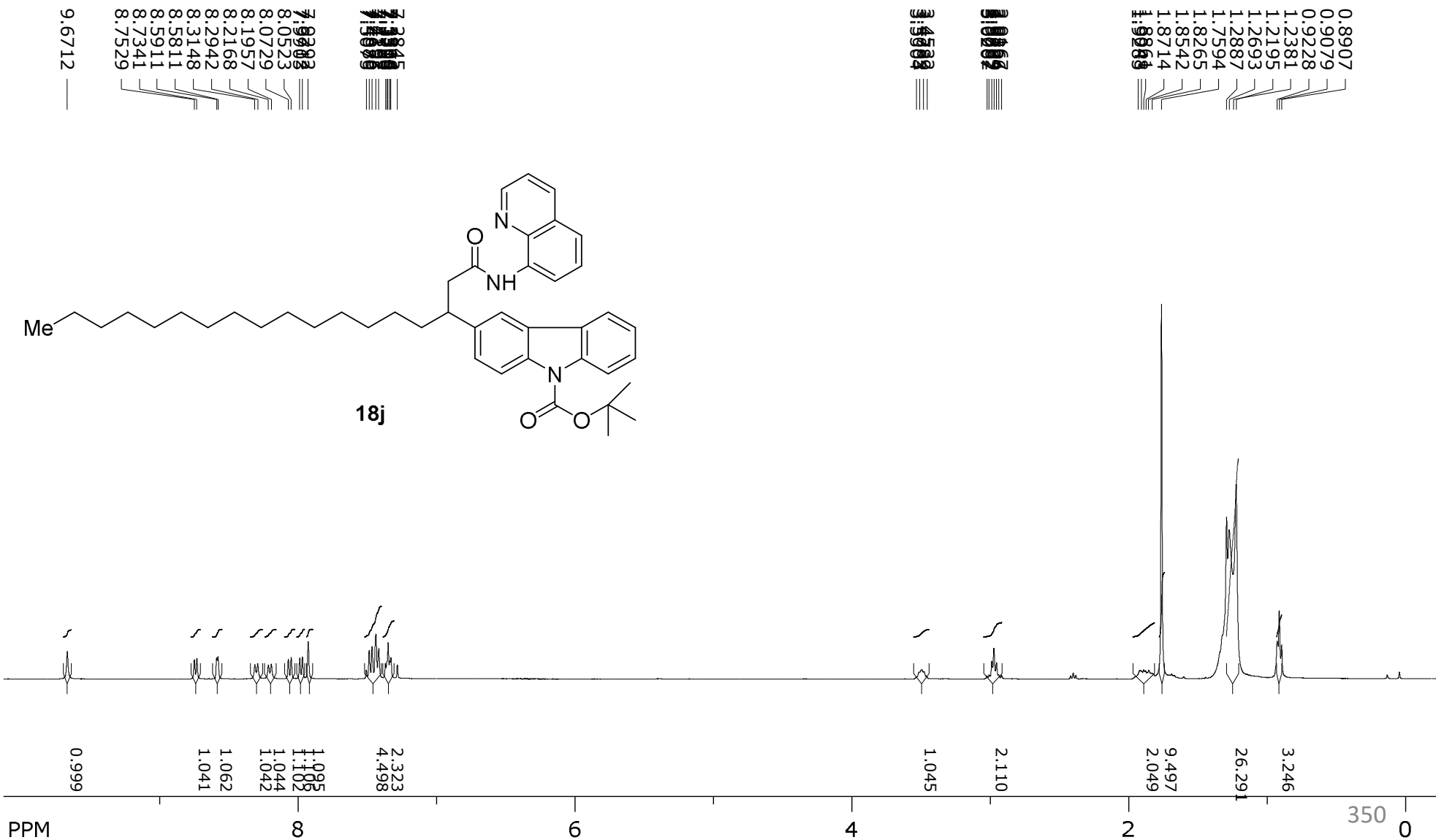
116.122



C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 32



SpinWorks 4: RD 193
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 3



SpinWorks 4: RD 193
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 3

8.7341 —
8.7529 —

8.5811 —
8.5911 —

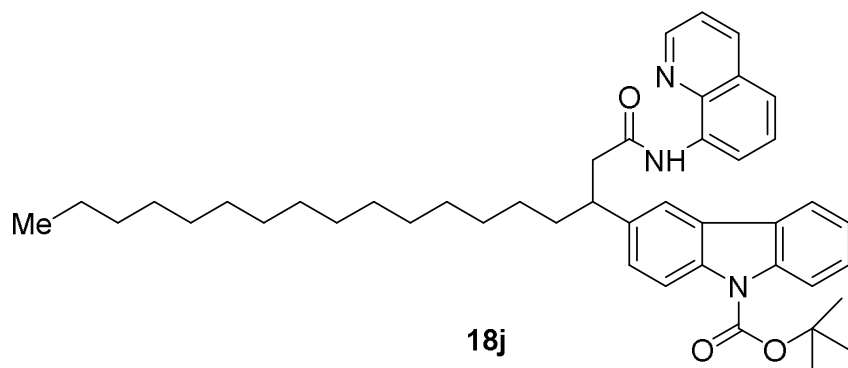
8.2942 —
8.3148 —

8.1957 —
8.2168 —

8.0523 —
8.0729 —

7.9712 —
7.9903 —

7.9292 —



18j

1.041

1.062

1.042

1.044

1.102

1.106

1.095

PPM

8.6

8.4

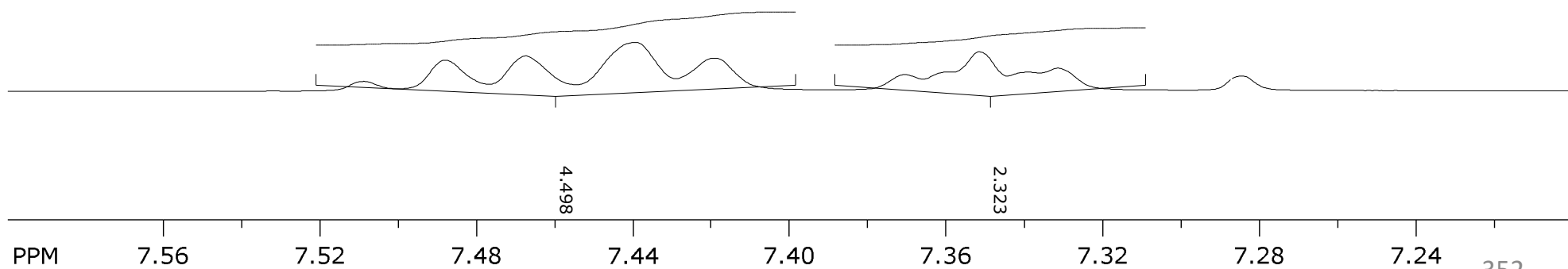
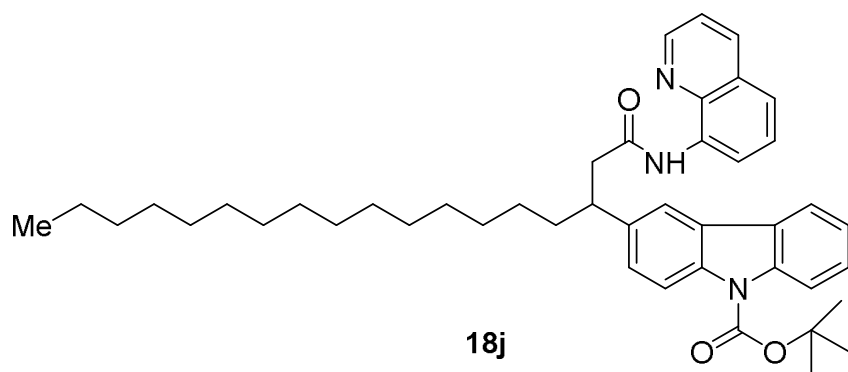
8.2

8.0

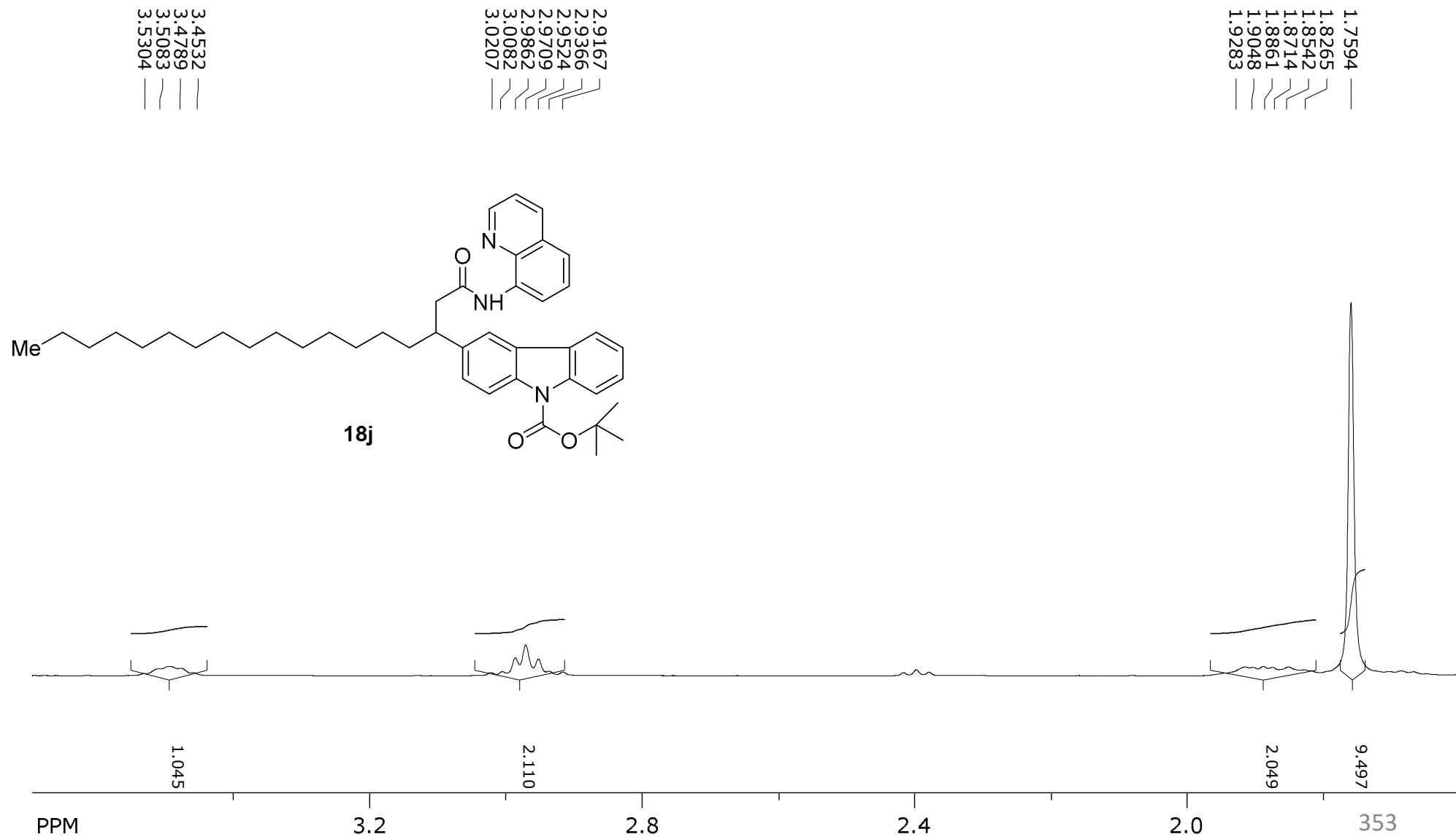
351

SpinWorks 4: RD 193
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 3

7.5075 —
7.4880 —
7.4675 —
7.4393 —
7.4192 —
7.3706 —
7.3596 —
7.3515 —
7.3390 —
7.3314 —
7.2845 —



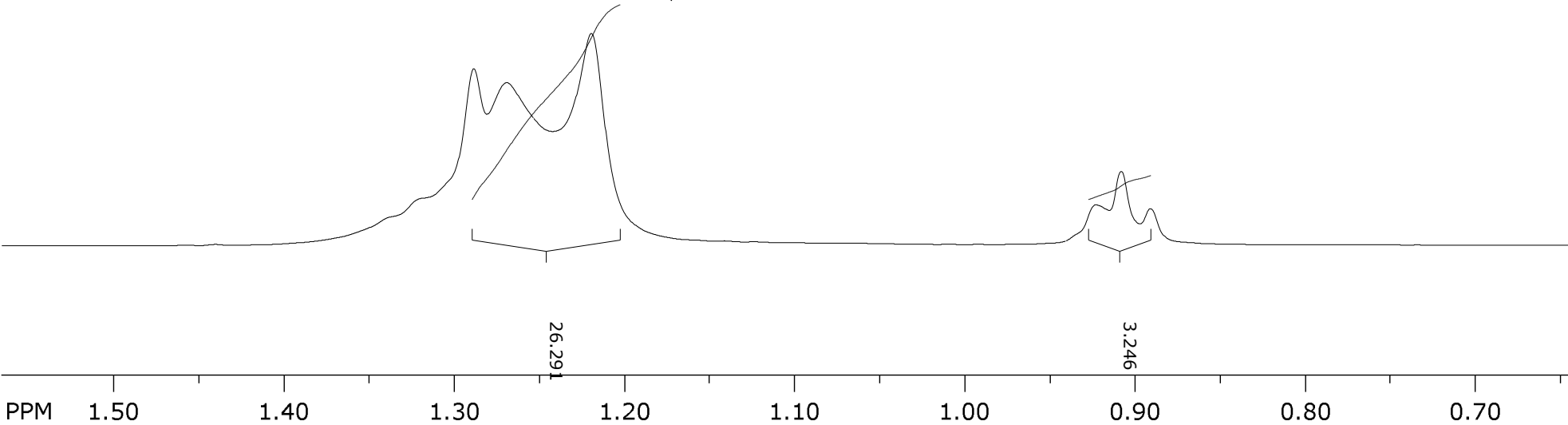
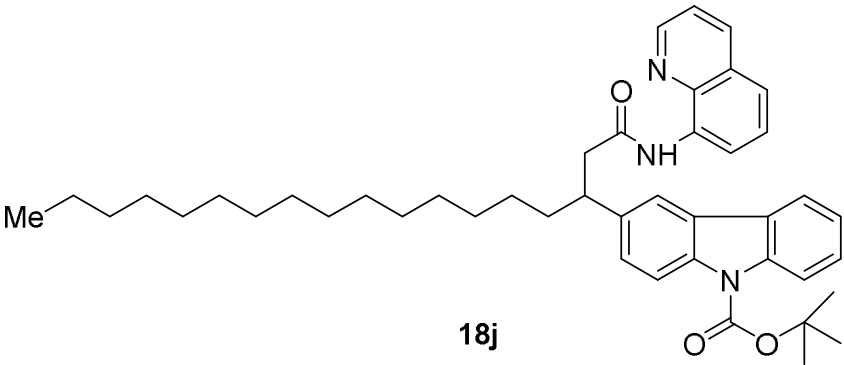
SpinWorks 4: RD 193
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 3



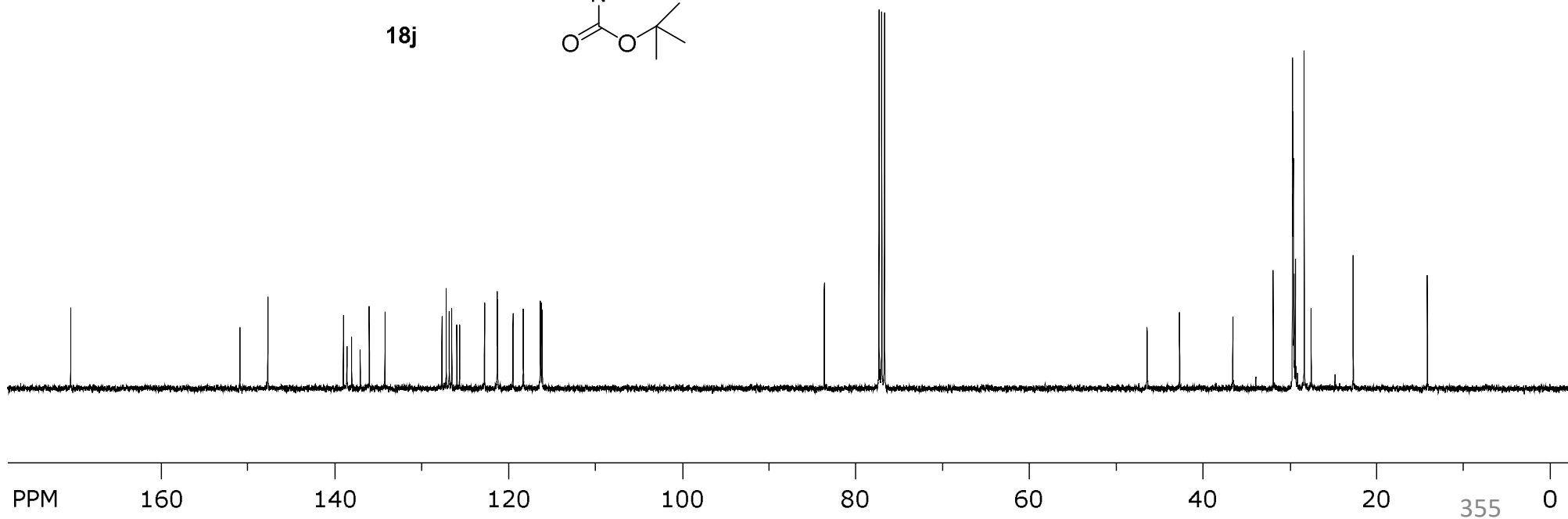
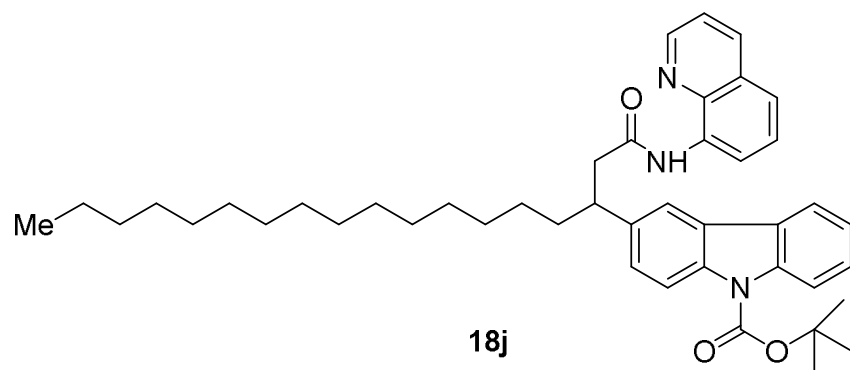
SpinWorks 4: RD 193
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 3

1.2195 —
1.2381 —
1.2693 —
1.2887 —

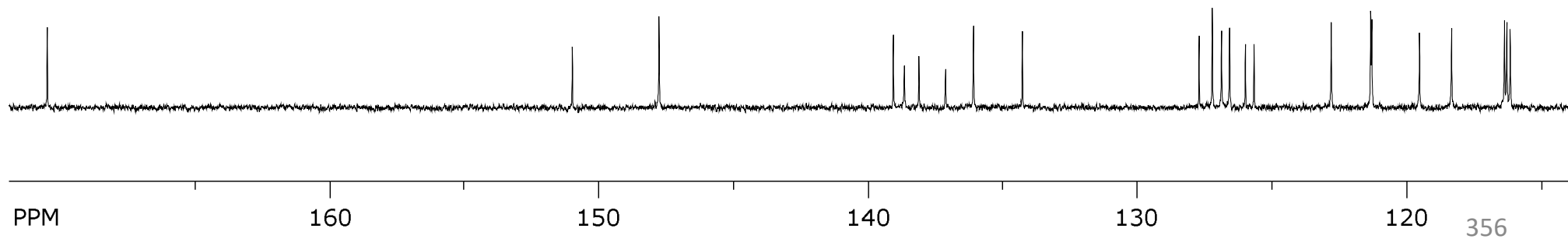
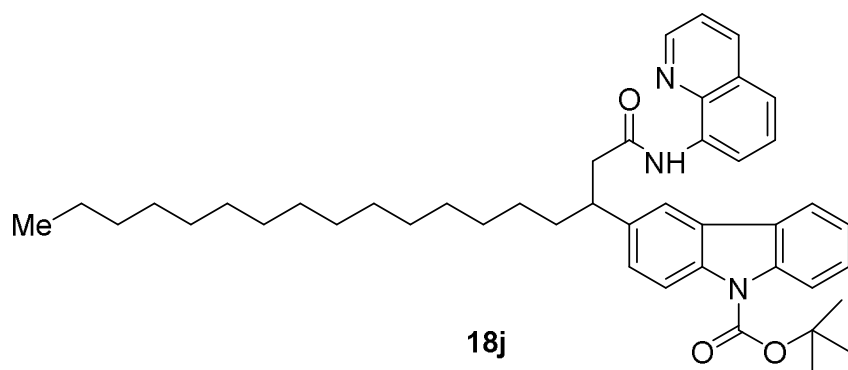
0.8907 —
0.9079 —
0.9228 —



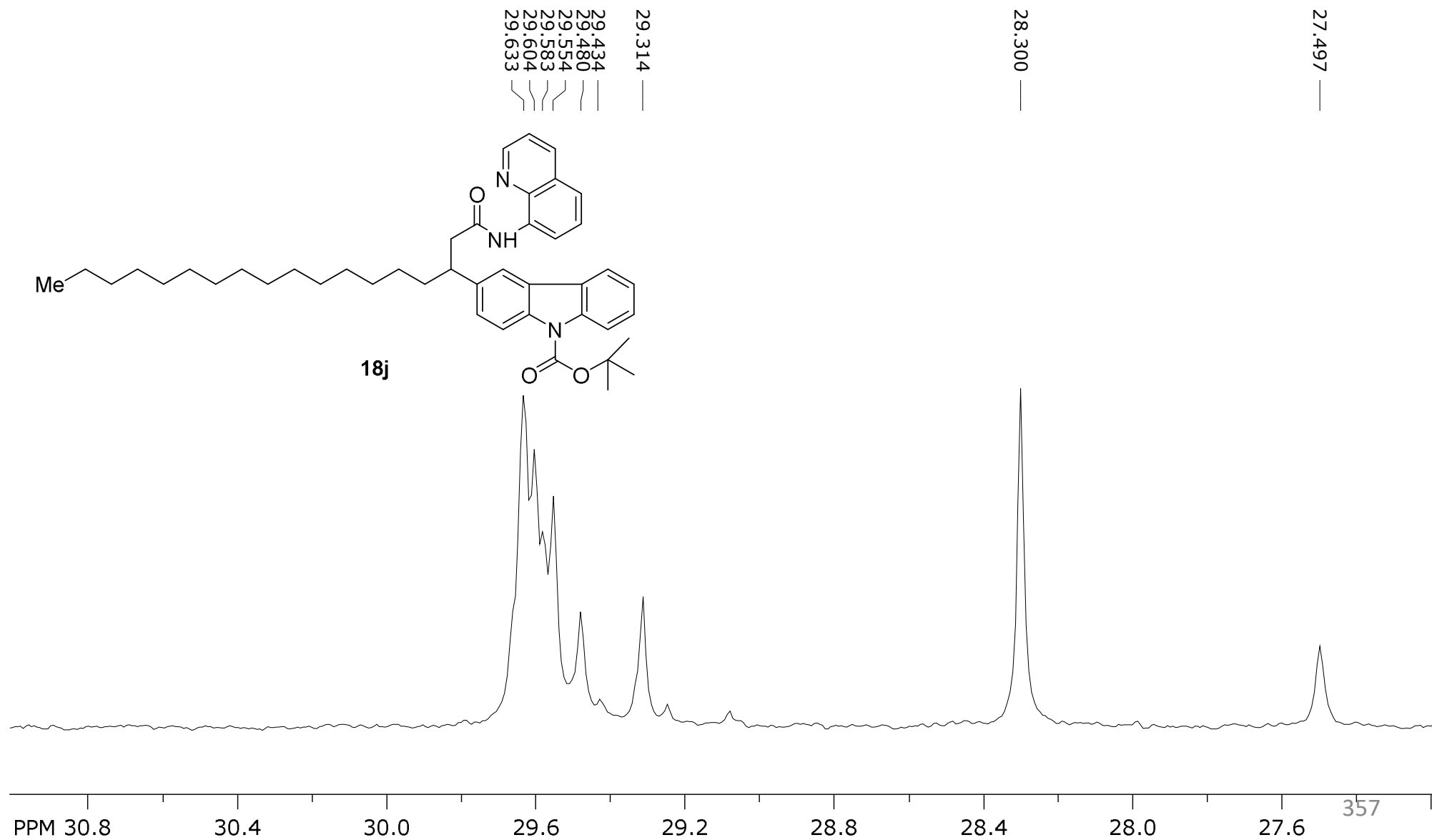
SpinWorks 4: RD 193
 C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 3

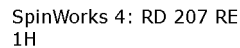
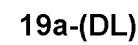


SpinWorks 4: RD 193
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 3

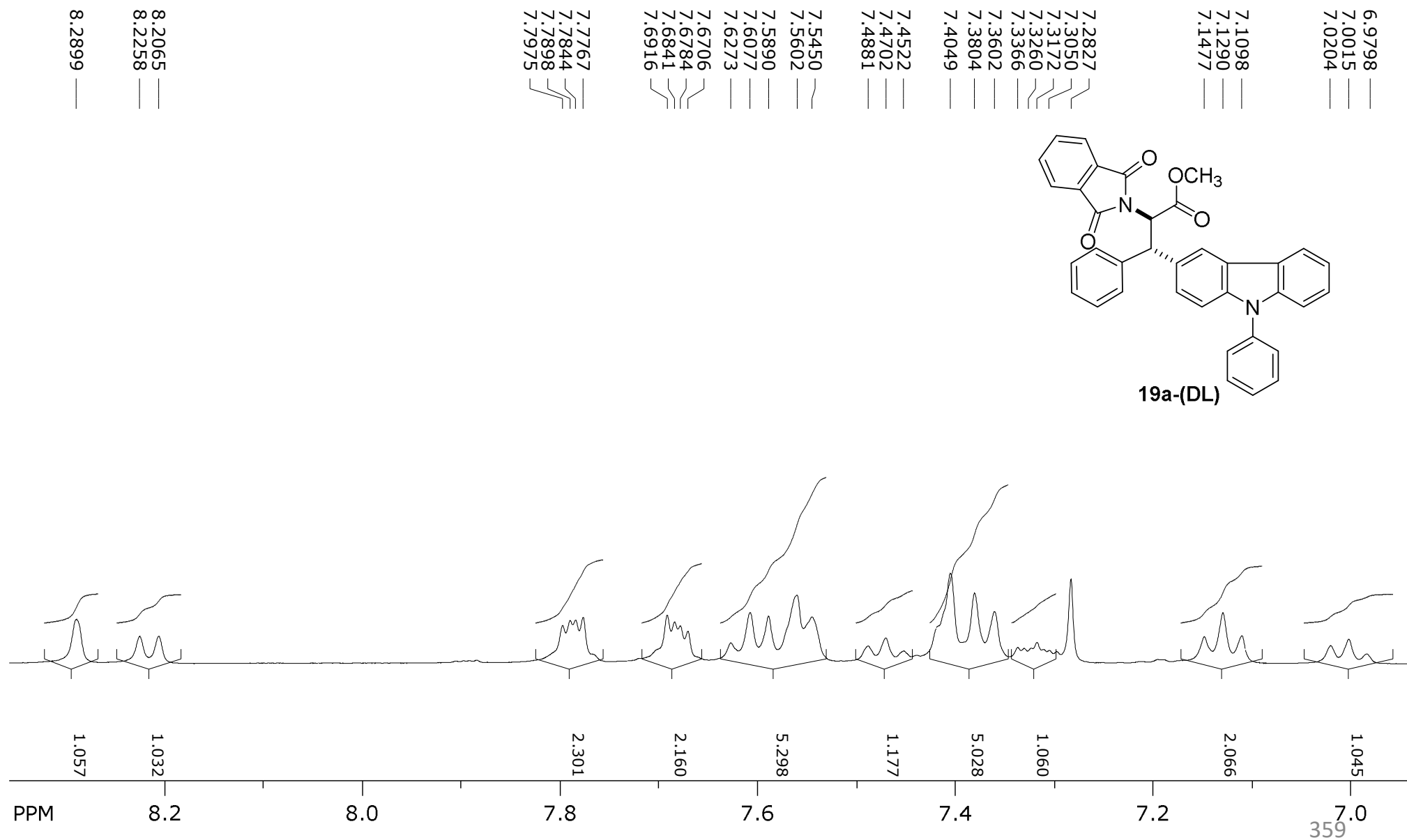


SpinWorks 4: RD 193
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 3





SpinWorks 4: RD 207 RE
1H



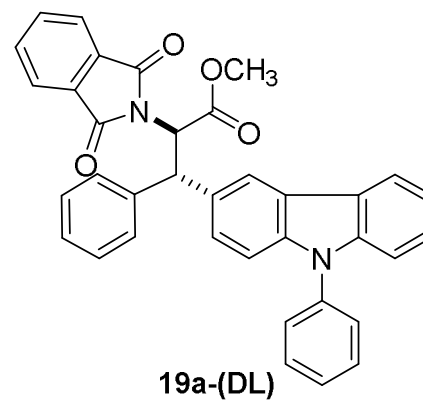
SpinWorks 4: SAB 156
C13CPD CDCl3 {D:\Spectra} nmr 16

109.737
110.069
118.986
119.883
120.410
123.263
123.402
123.624
125.948
127.944
128.483
129.796
131.368
133.121
134.037
137.665
139.884
140.984
141.172

167.361
168.807

76.746
77.000
77.255

50.488
52.597
55.308



PPM 160 120 80 40 360 0

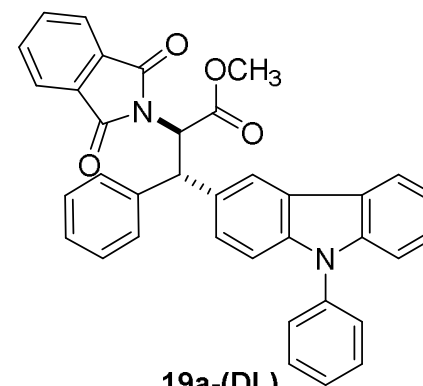
SpinWorks 4: SAB 156
C13CPD CDCl3 {D:\Spectra} nmr 16

167.361 —
168.807 —

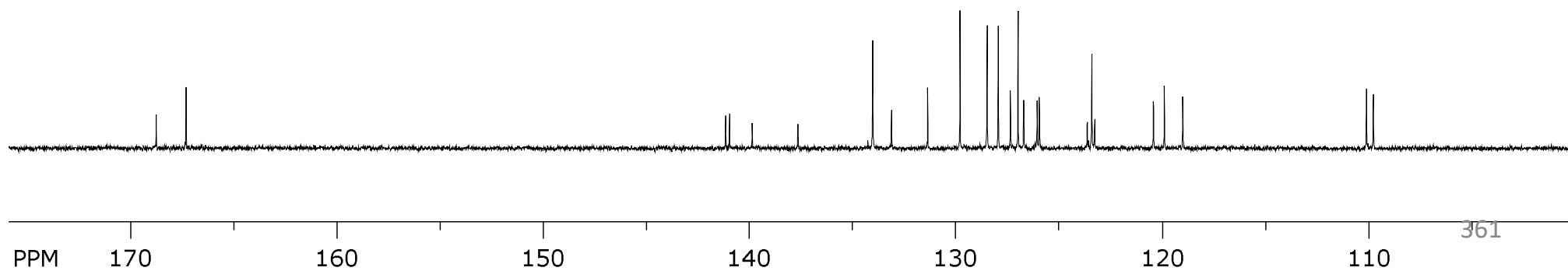
137.665 —
139.884 —
140.984 —
141.172 —

118.986
119.883
120.410
123.263
123.402
123.624
125.948
126.054
126.706
126.982
127.350
127.944
128.483
129.796
131.368
133.121
134.037

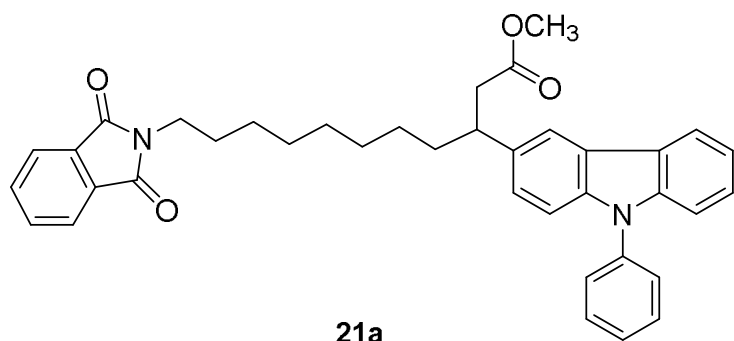
109.737
110.069



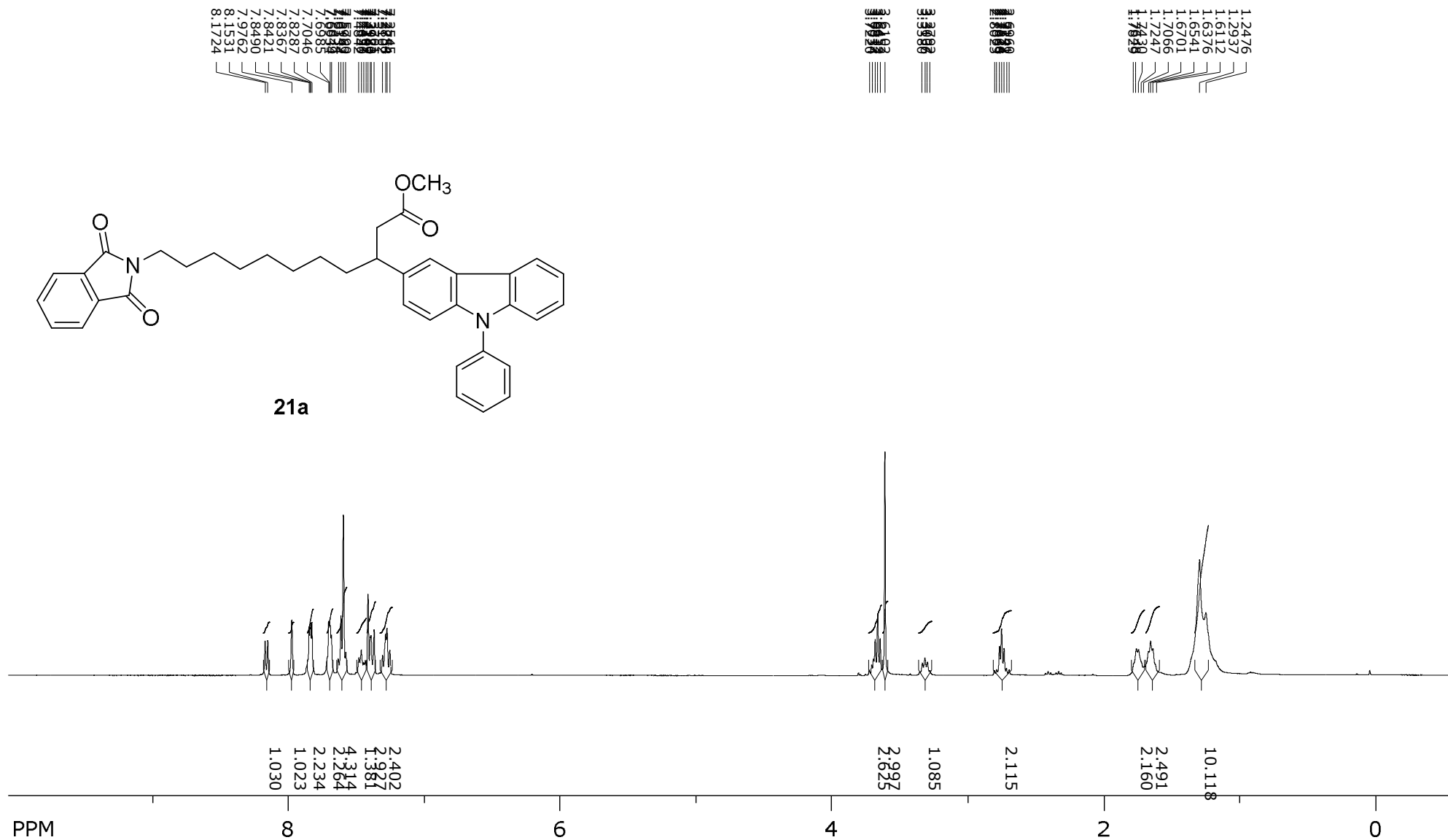
19a-(DL)



SpinWorks 4: RD 219
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 15



21a



SpinWorks 4: RD 219
PROTON CDCl₃ /opt/topspin3.5pl2/nmrdata nmrsu 15

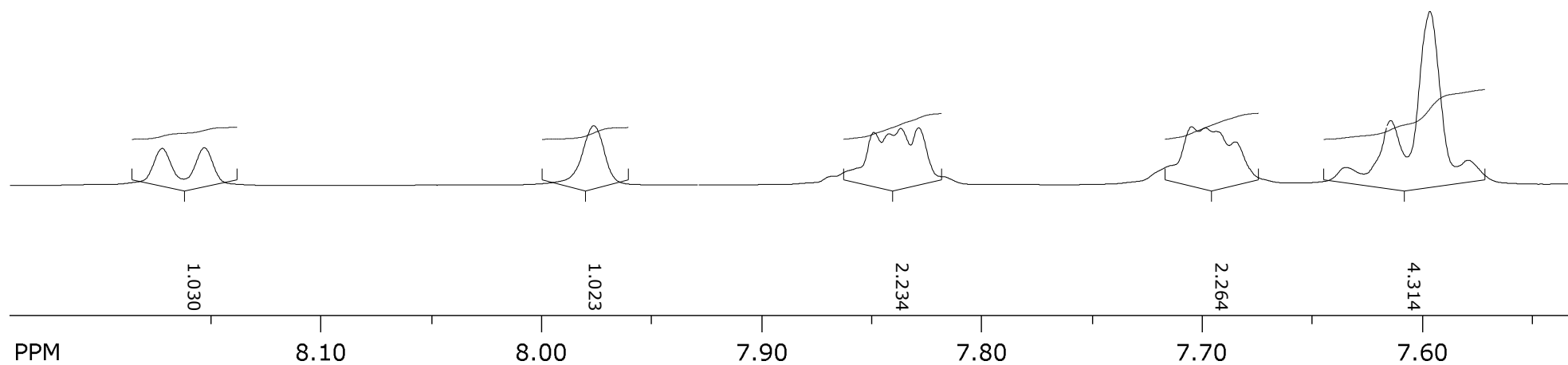
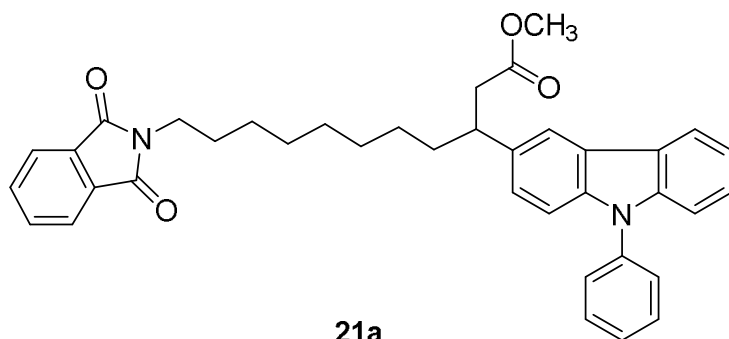
8.1724 —
8.1531 —

7.9762 —

7.8287 —
7.8367 —
7.8421 —
7.8490 —

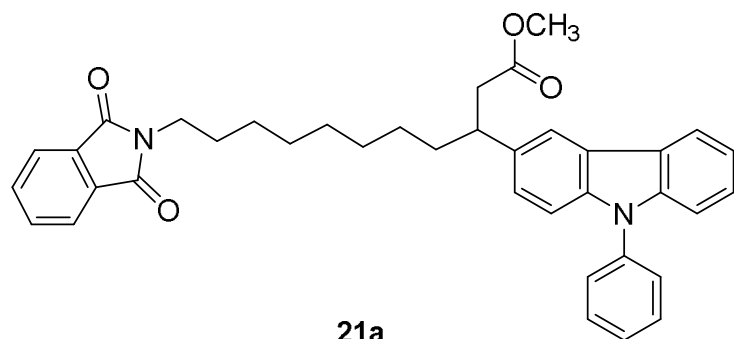
7.6849 —
7.6934 —
7.6985 —
7.7046 —

7.5790 —
7.5963 —
7.6142 —
7.6334 —

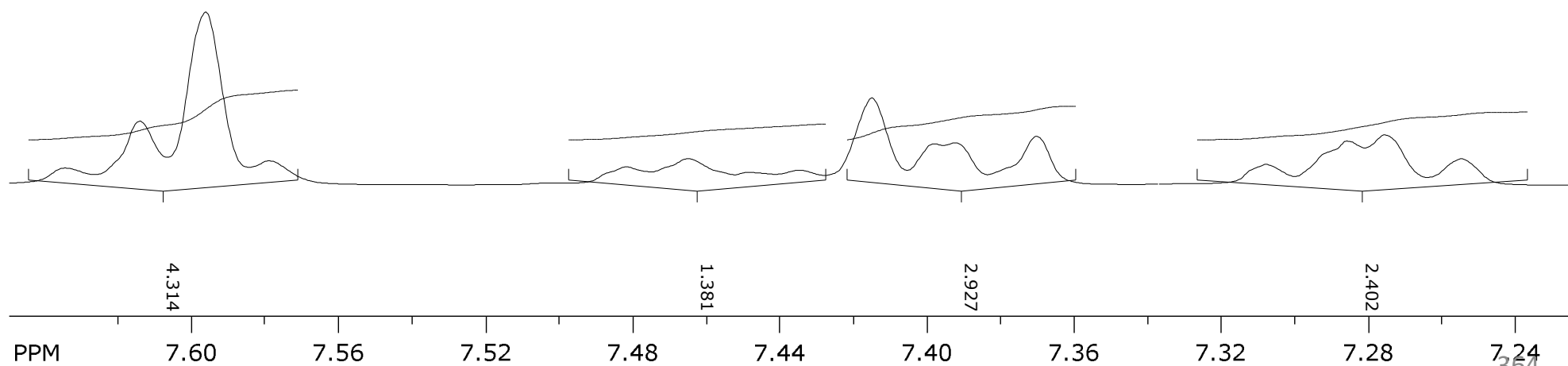


SpinWorks 4: RD 219
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 15

7.6334 —
7.6142 —
7.5963 —
7.5790 —
7.4842 —
7.4650 —
7.4451 —
7.4307 —
7.4149 —
7.3923 —
7.3980 —
7.3701 —
7.3102 —
7.2858 —
7.2754 —
7.2545 —



21a

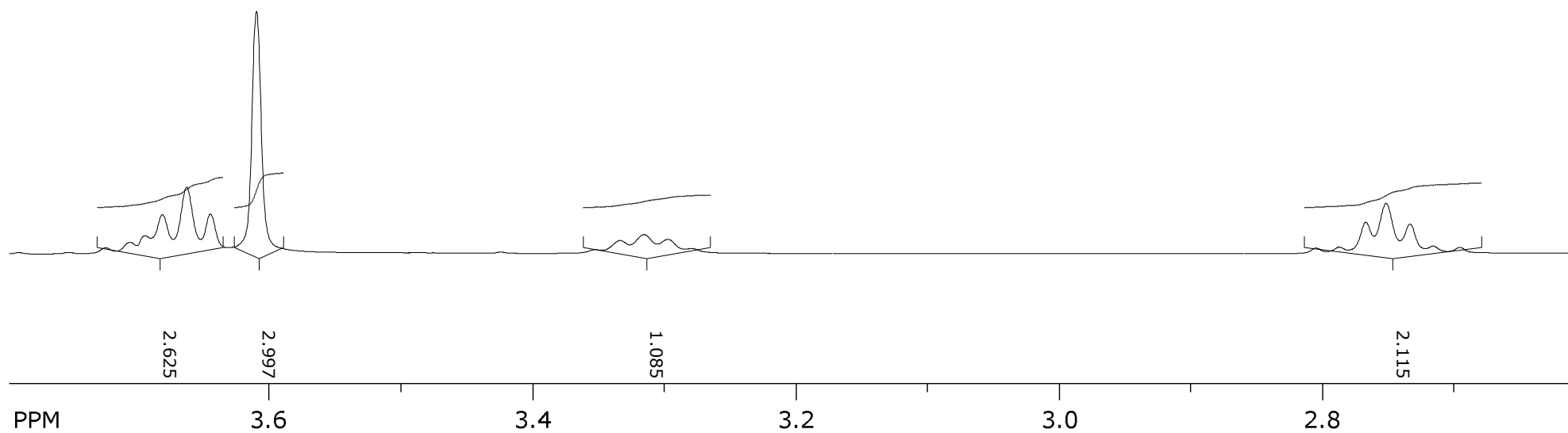
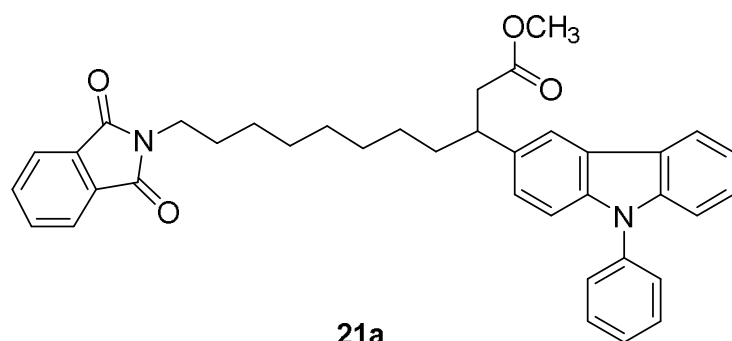


SpinWorks 4: RD 219
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 15

3.6102 —
3.6452 —
3.6633 —
3.6817 —
3.7034 —
3.7220 —

3.3380 —
3.3136 —
3.3007 —
3.2792 —

2.6960 —
2.7141 —
2.7332 —
2.7514 —
2.7668 —
2.7869 —
2.8023 —

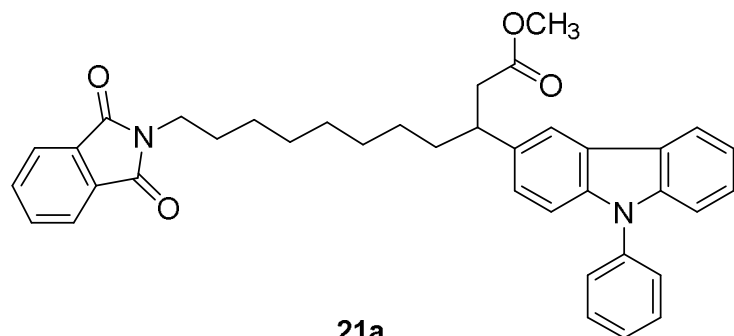


SpinWorks 4: RD 219

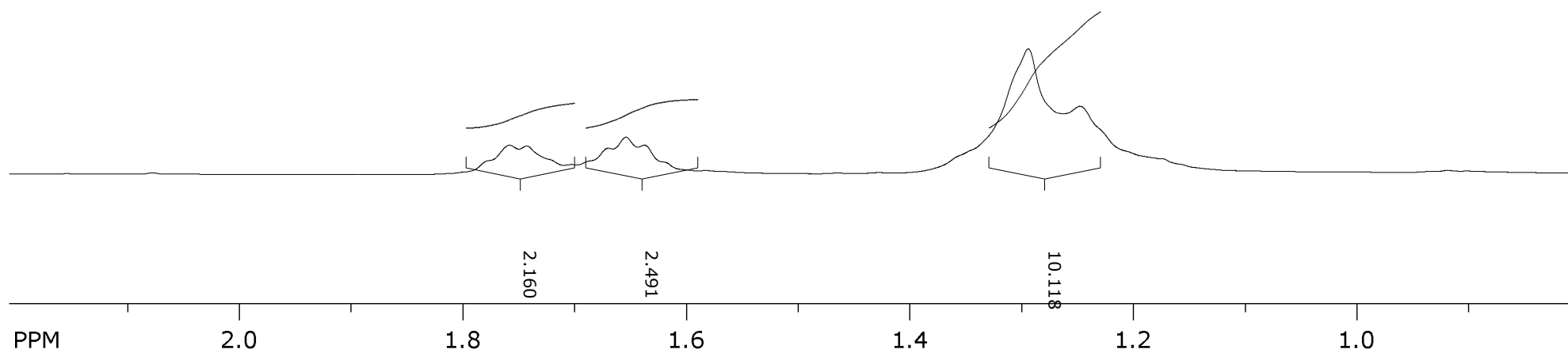
PROTON CDCl₃ /opt/topspin3.5pl2/nmrdata nmrsu 15

1.6112 —
1.6376 —
1.6541 —
1.6701 —
1.7066 —
1.7247 —
1.7430 —
1.7648 —
1.7829 —

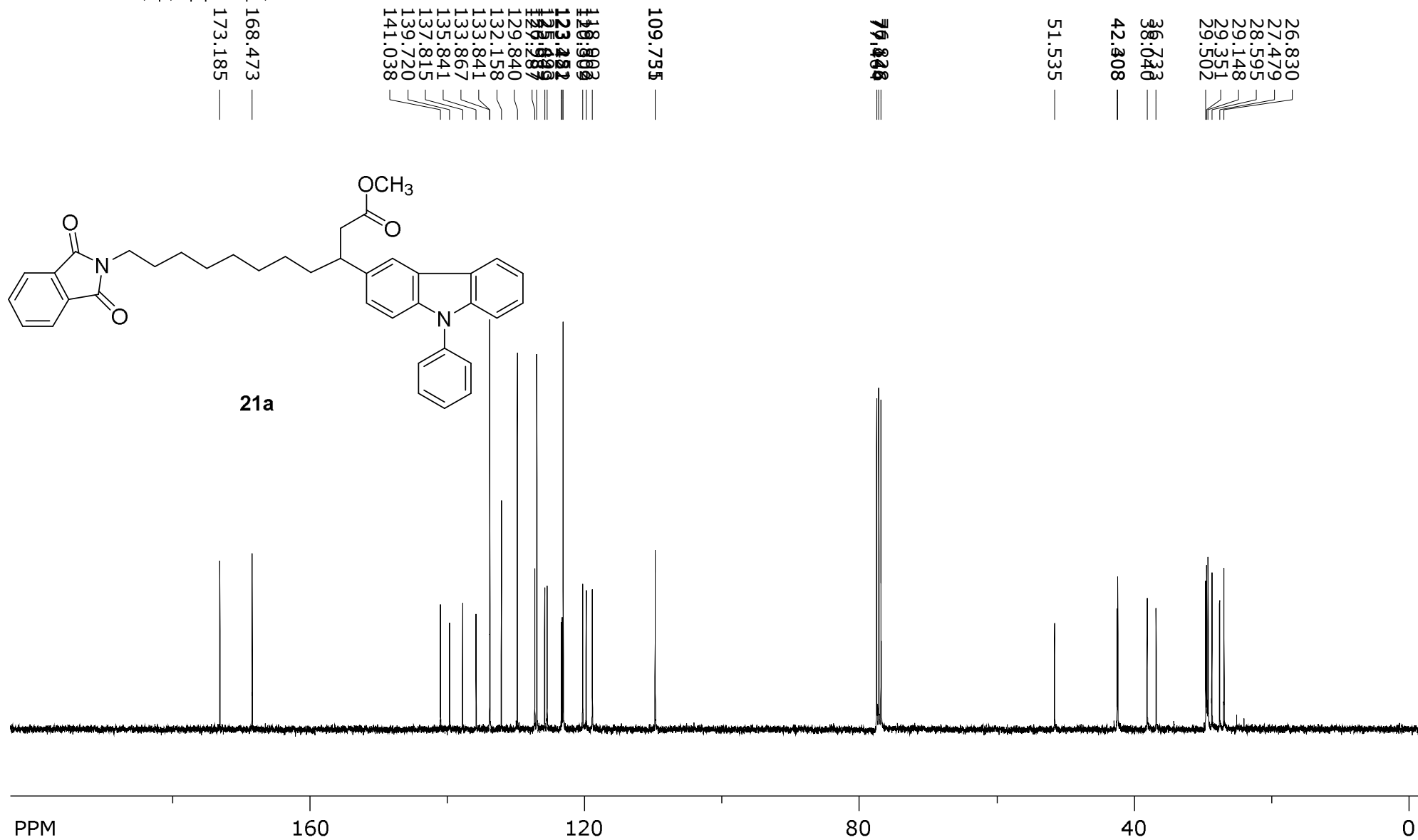
1.2476 —
1.2937 —



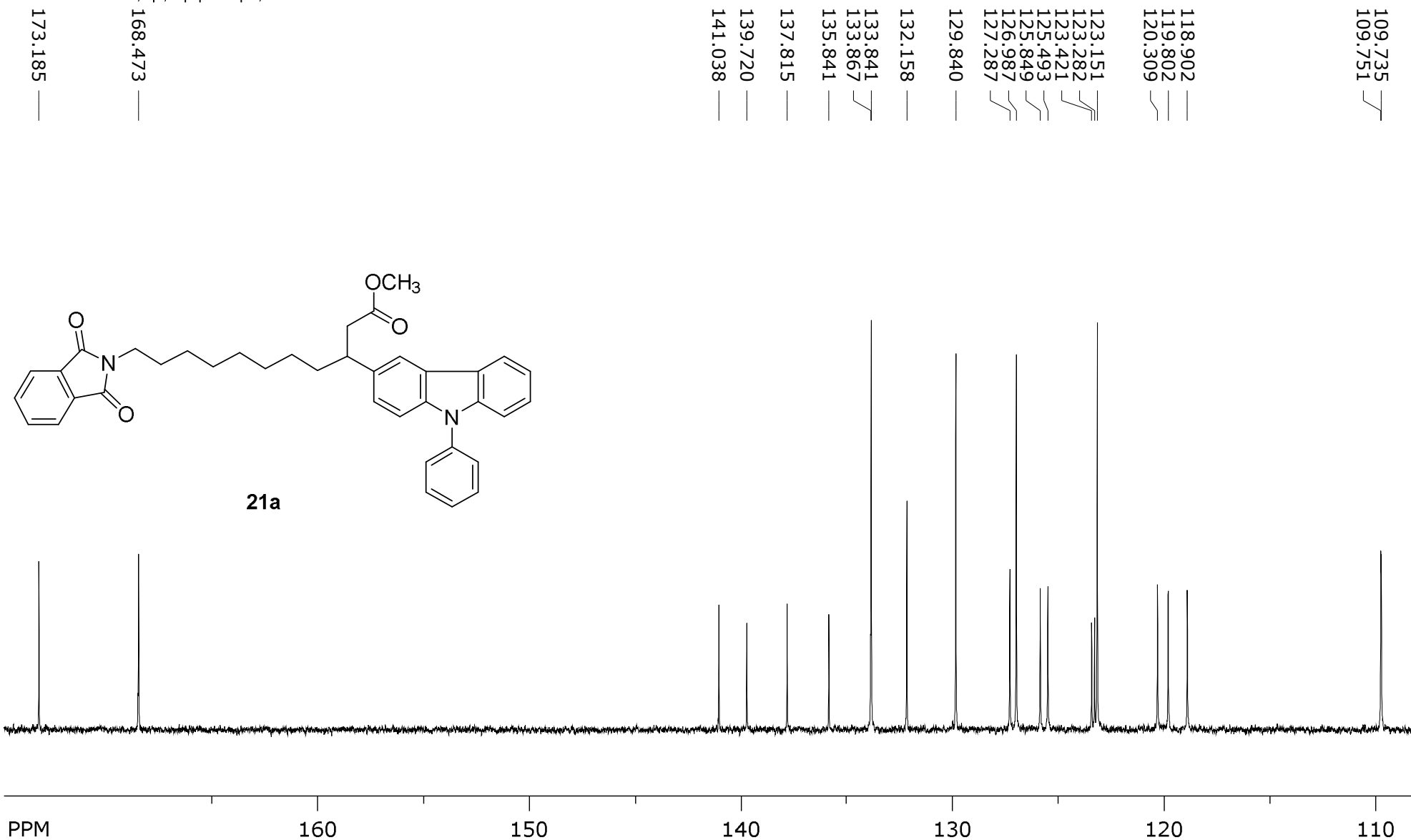
21a



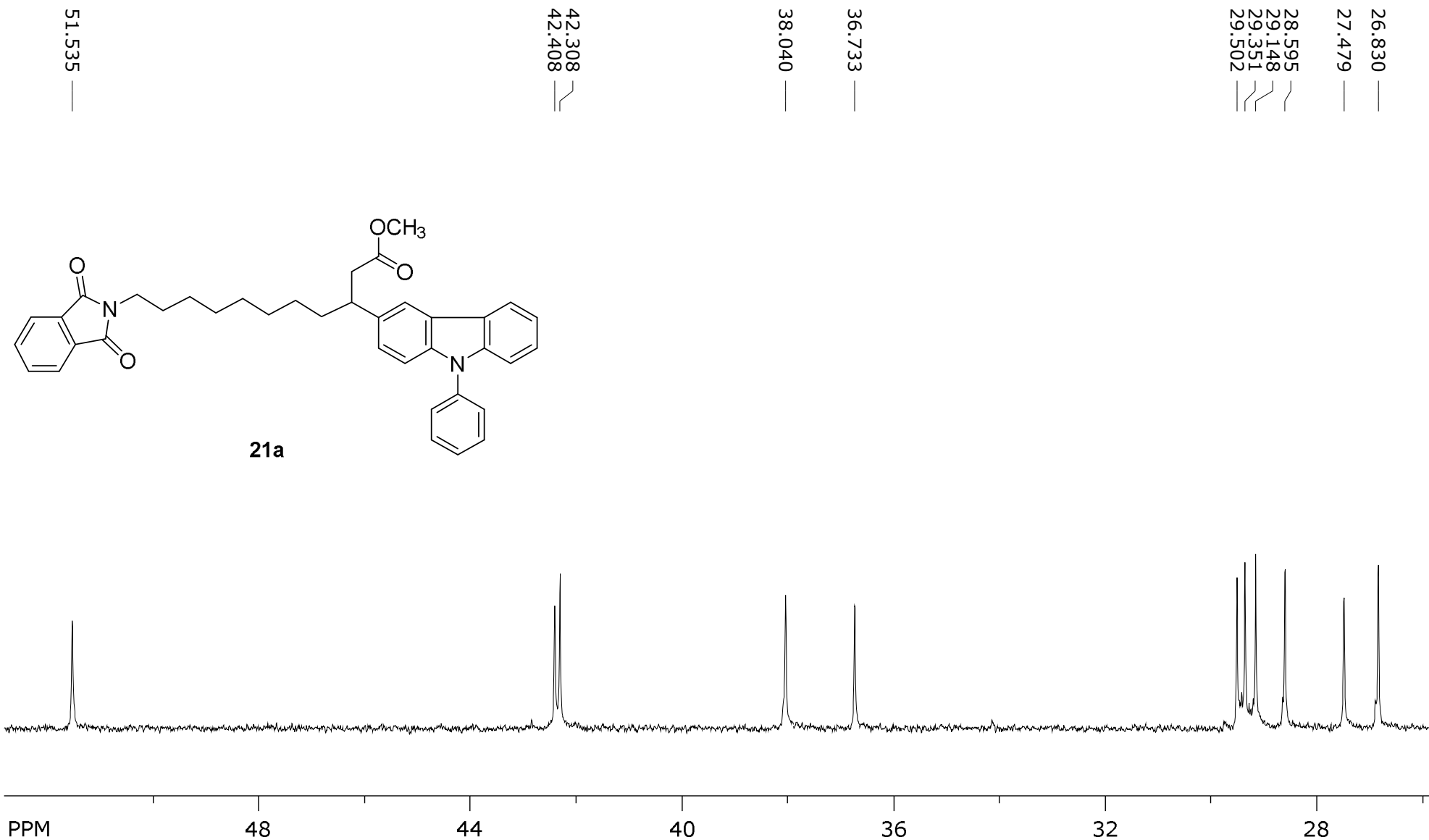
SpinWorks 4: RD 219
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 15

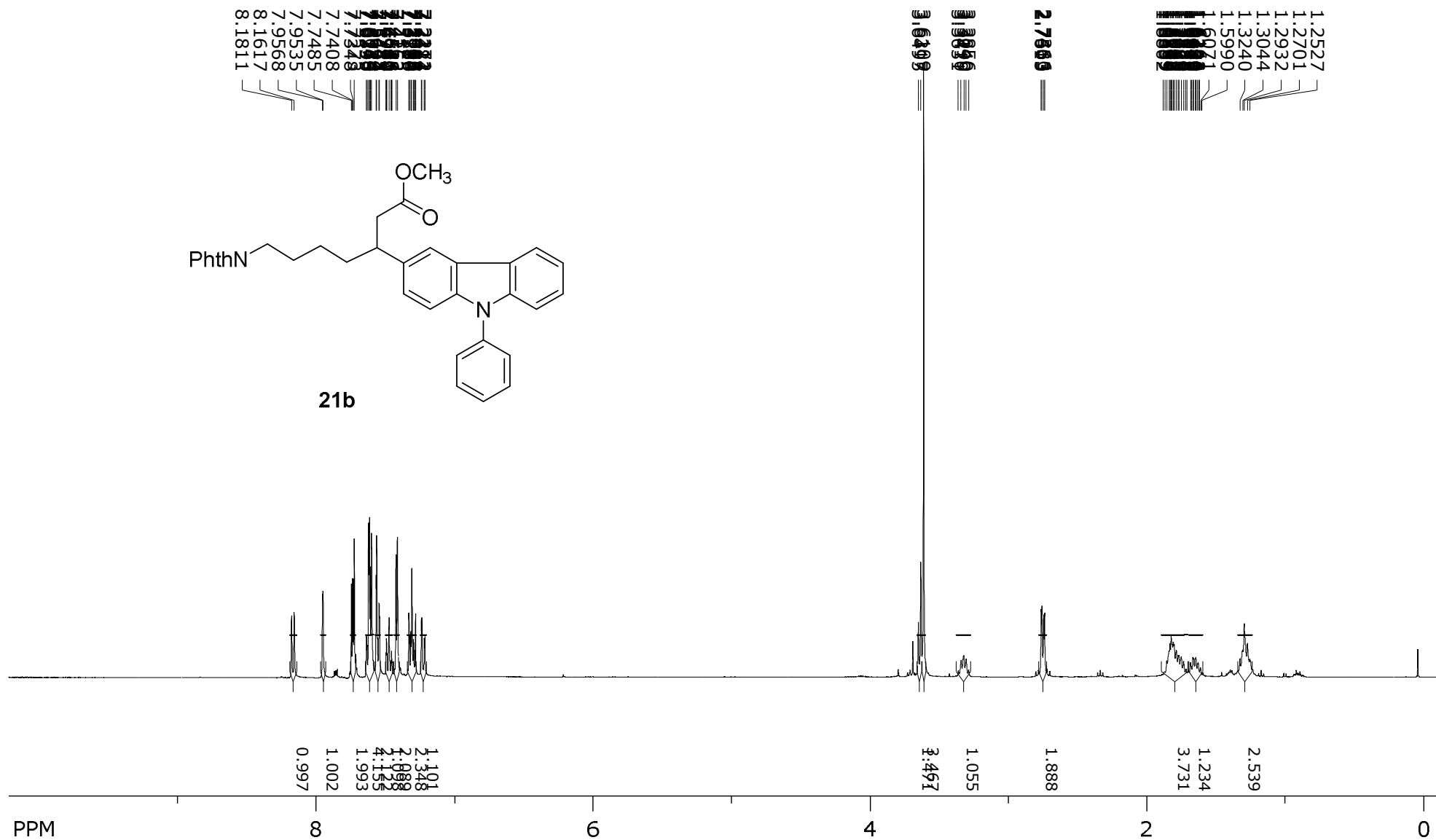


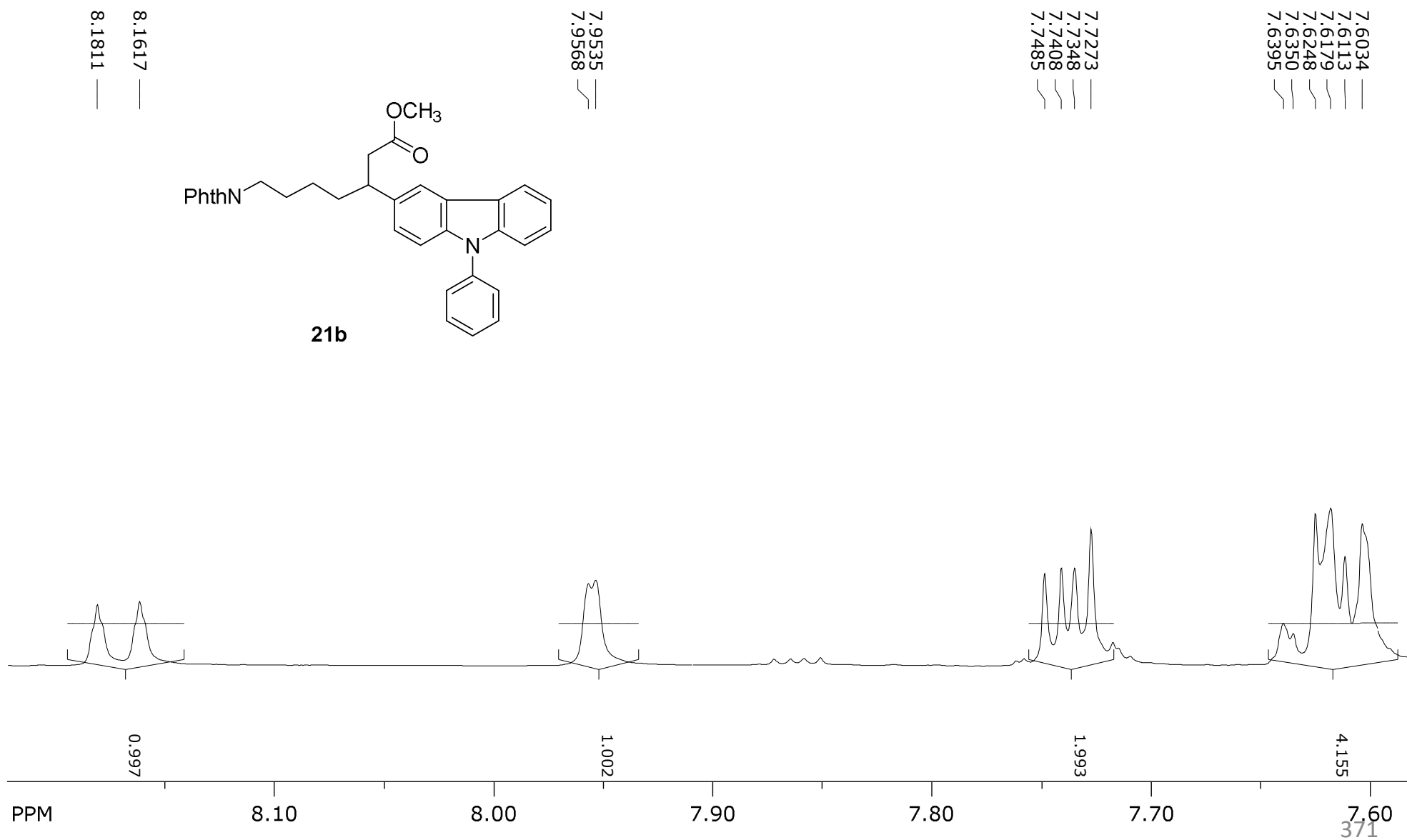
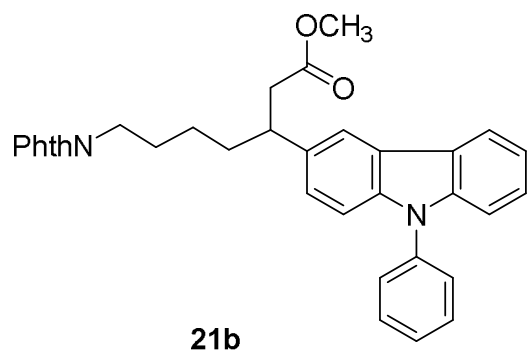
SpinWorks 4: RD 219
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 15



SpinWorks 4: RD 219
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 15







SpinWorks 4: rd-297

7.5447 —
7.5478 —
7.5654 —
7.5692 —

7.4909 —
7.4941 —
7.4974 —

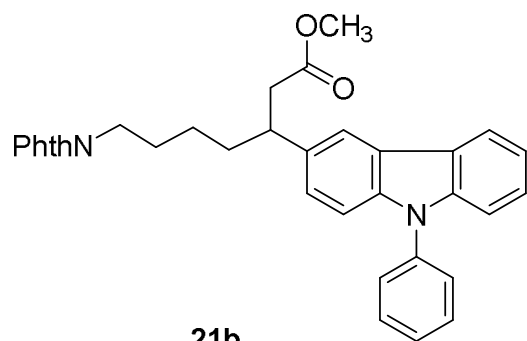
7.4760 —

7.4546 —
7.4578 —
7.4613 —

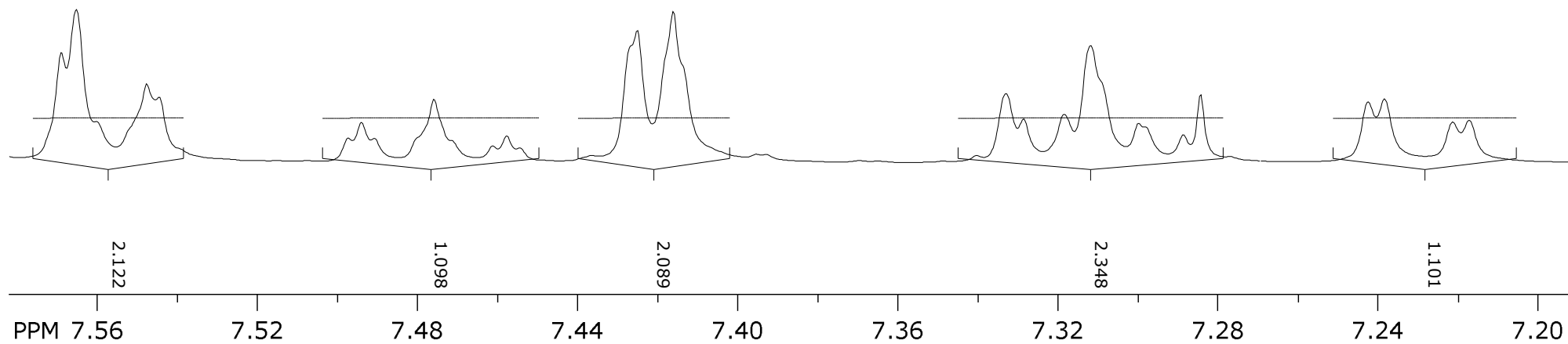
7.4162 —
7.4252 —

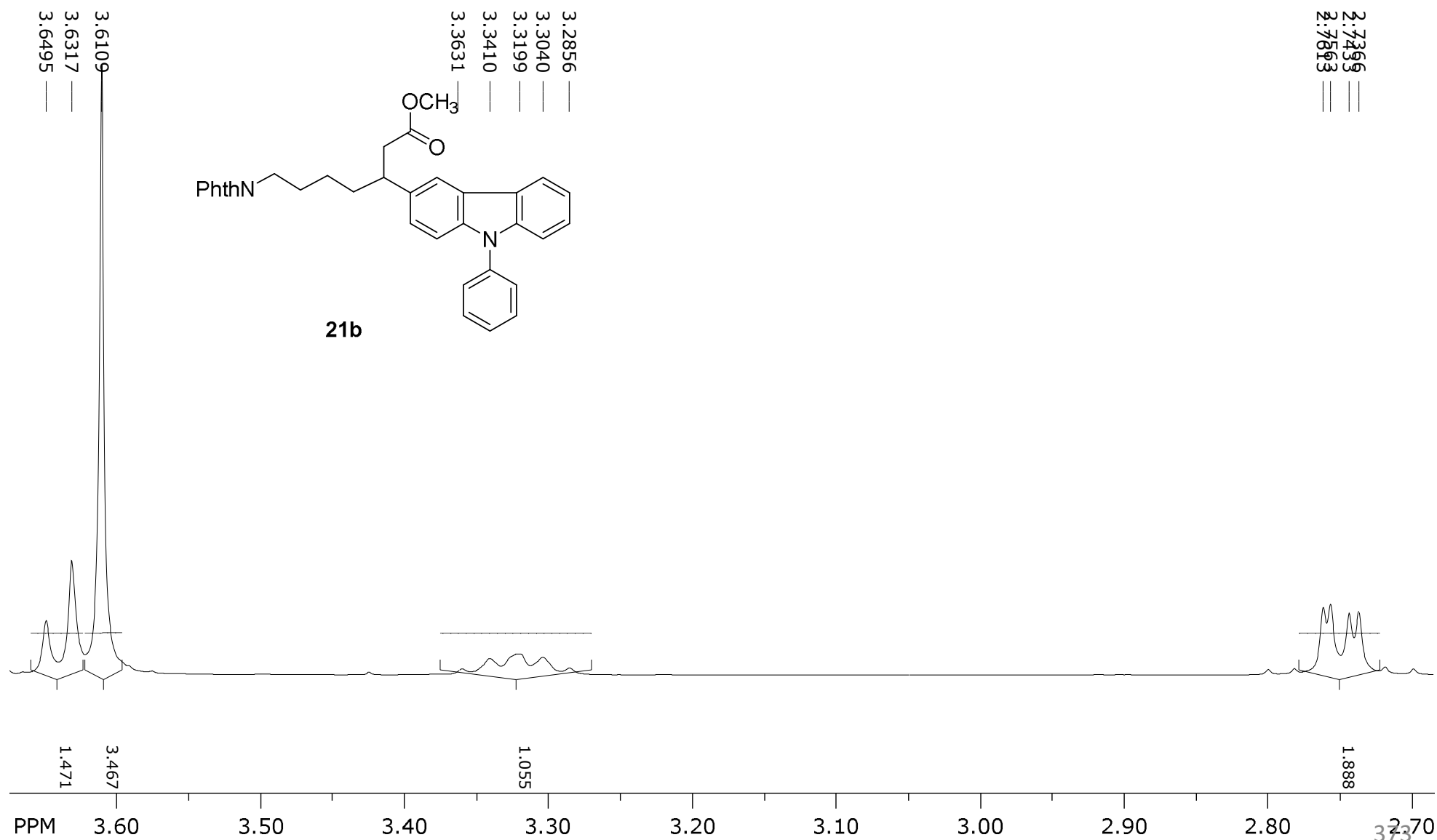
7.2843 —
7.2886 —
7.2981 —
7.2998 —
7.3118 —
7.3184 —
7.3286 —
7.3330 —

7.2383 —
7.2424 —
7.2171 —
7.2212 —



21b

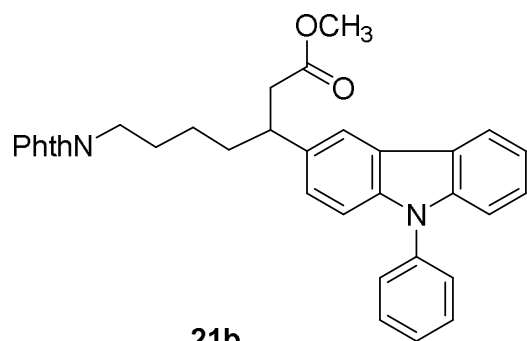




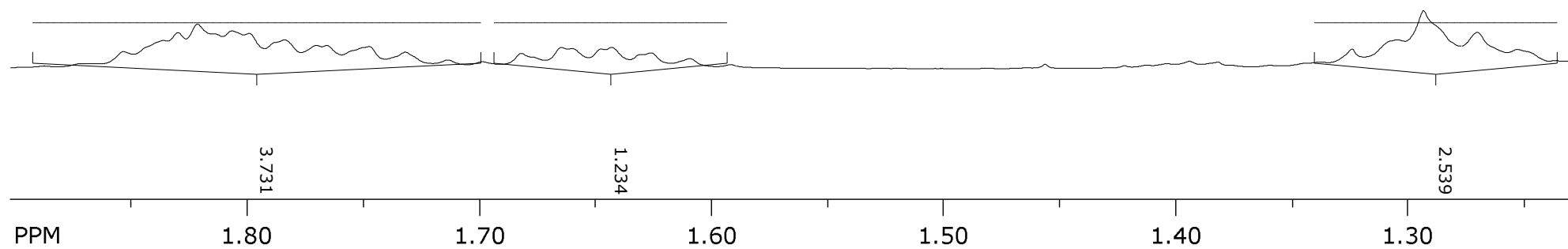
SpinWorks 4: rd-297

1.5990
1.6071
1.6161
1.6244
1.6322
1.6430
1.6476
1.6602
1.6648
1.6739
1.6817
1.7058
1.7184
1.7320
1.7476
1.7658
1.7703
1.7840
1.7993
1.8067
1.8145
1.8216
1.8300
1.8364
1.8535
1.8659
1.8802

1.2527
1.2701
1.2932
1.3044
1.3240



21b



C13CPD CDCl₃ /opt/topspin3.5pl2/nmrdata nmrsu 60

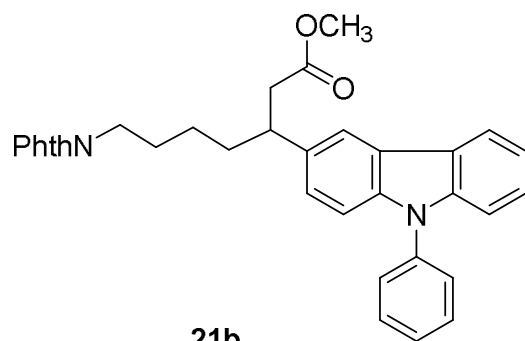
109.737
109.768
118.965
119.831
120.424
123.060
123.468
~~125.000~~
125.000
127.309
129.837
132.022
133.738
135.250
137.783
139.725
141.057

76.800
77.118
77.436

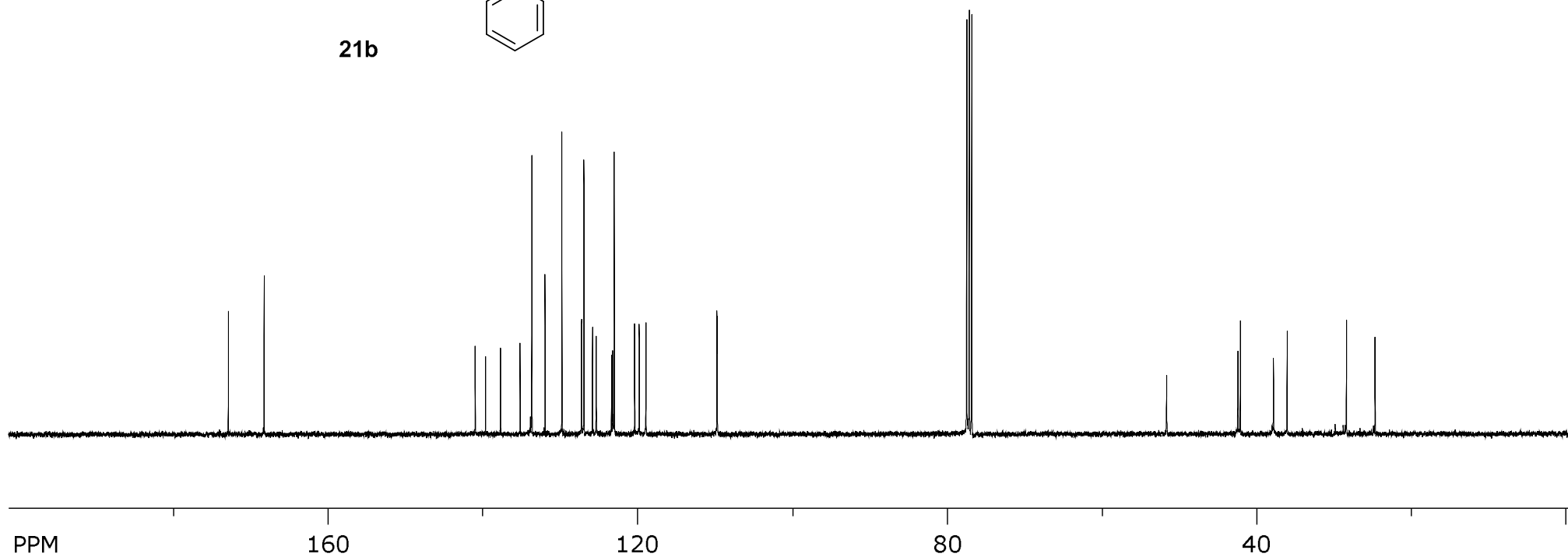
51.572

35.975
37.736
42.025
42.339

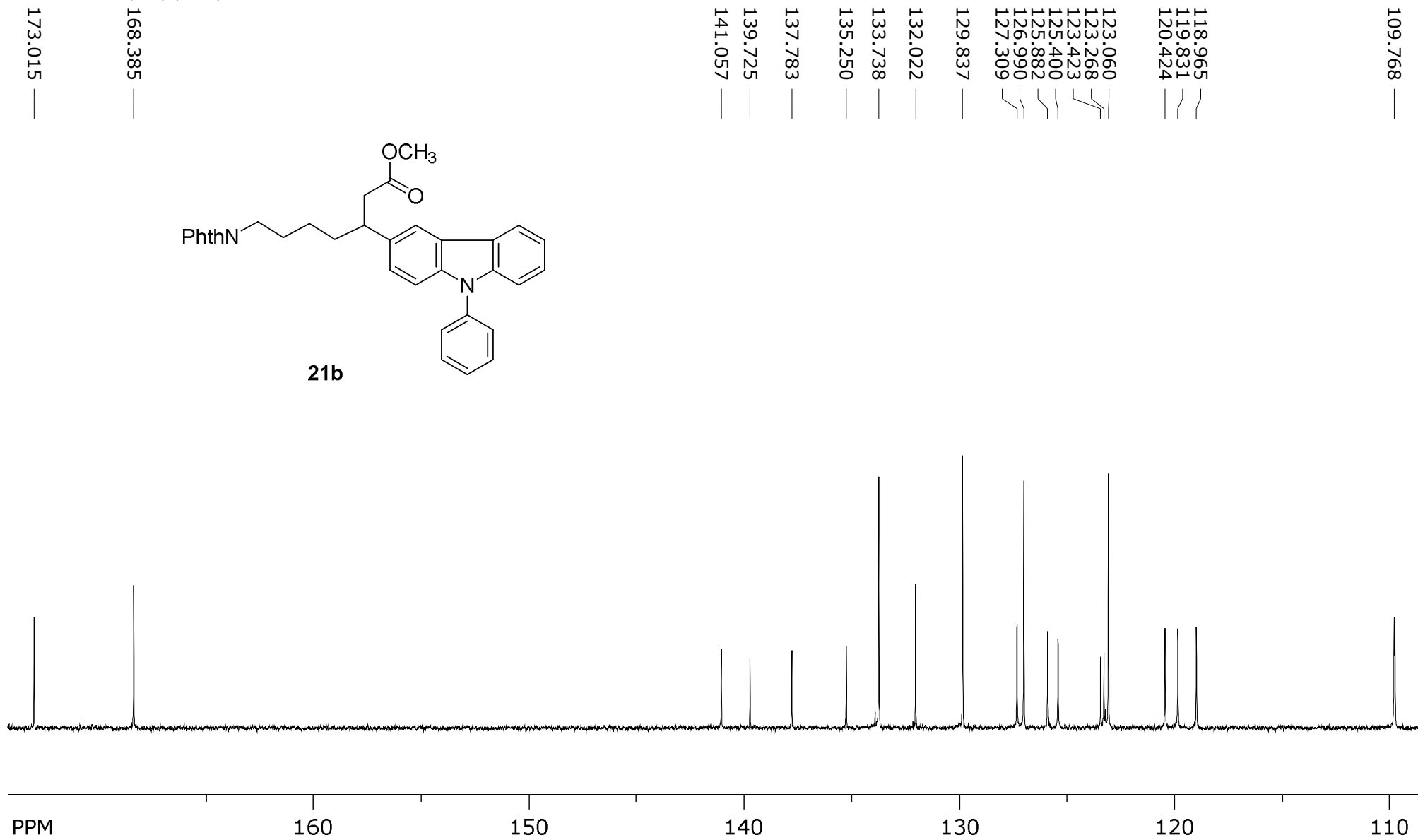
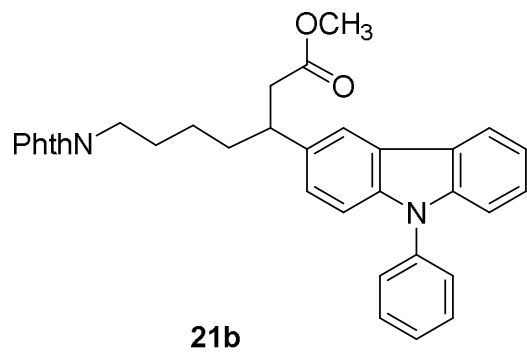
24.588
28.292



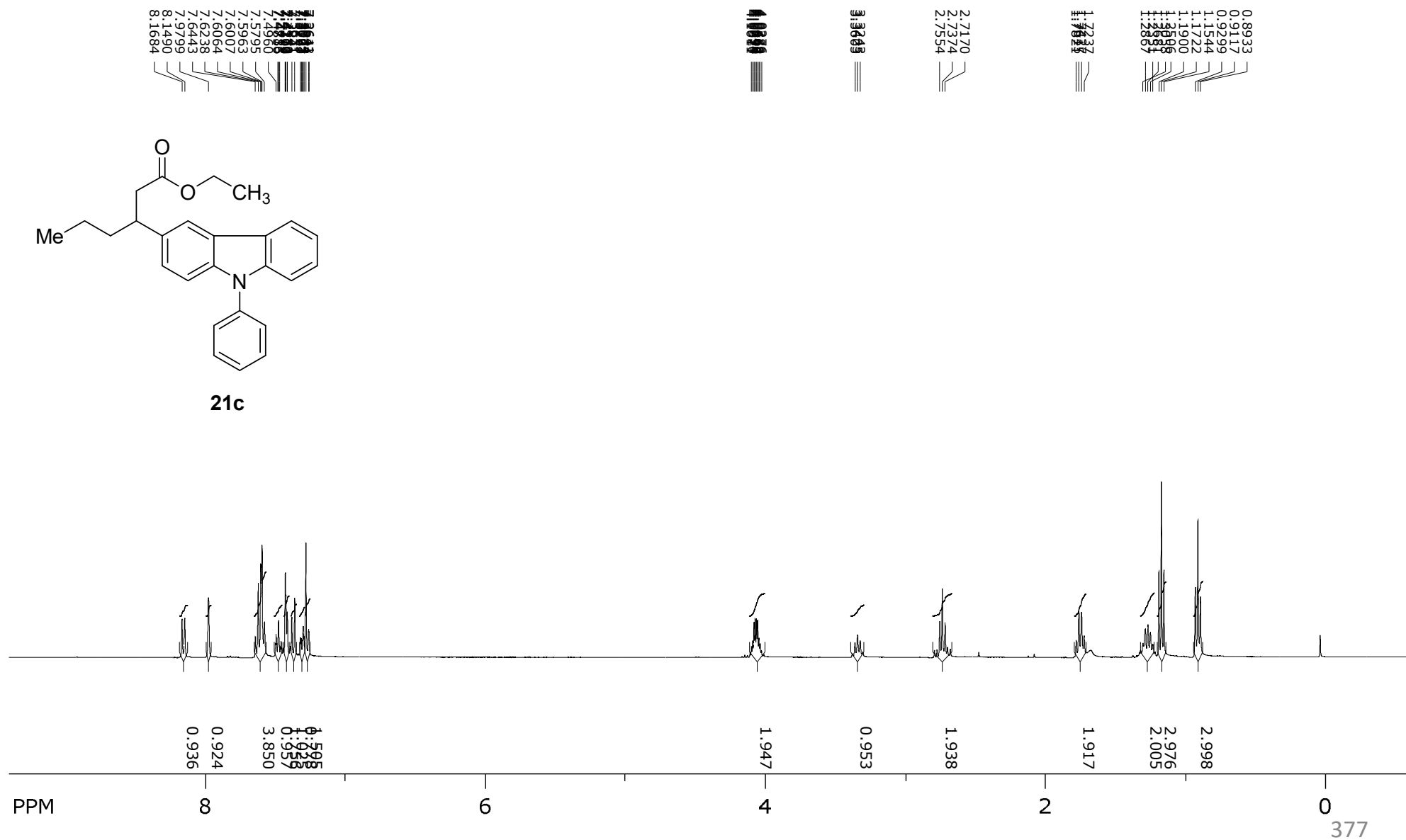
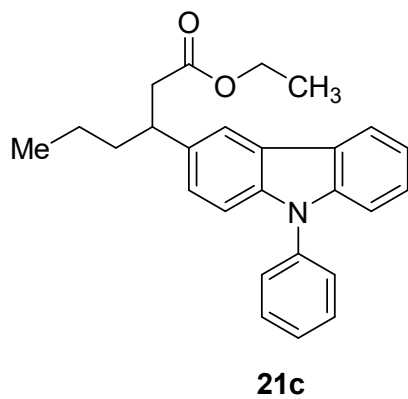
21b



SpinWorks 4: RD 297
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 60



SpinWorks 4: RD-269-REP-1
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 17

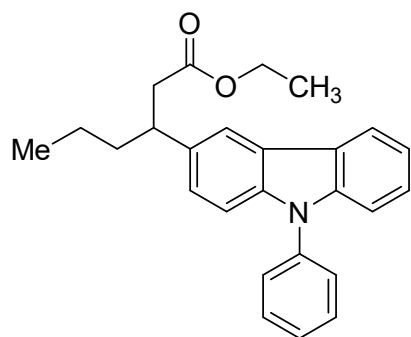


SpinWorks 4: RD-269-REP-1
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 17

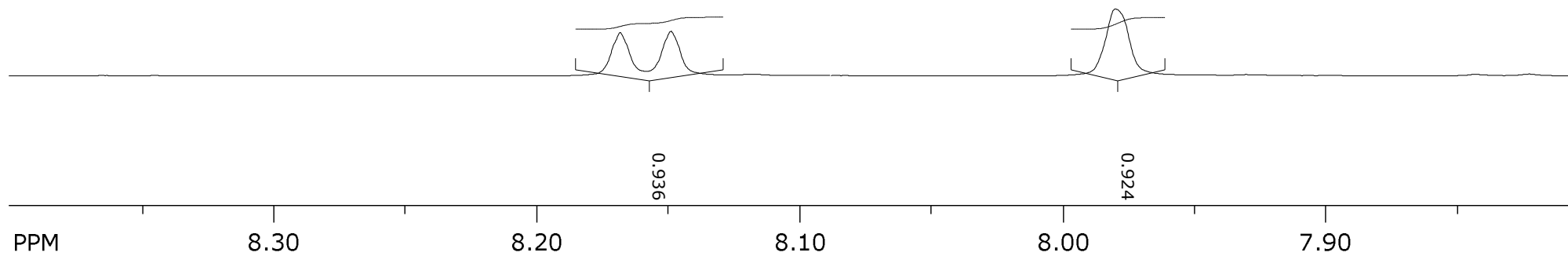
8.1684

8.1490

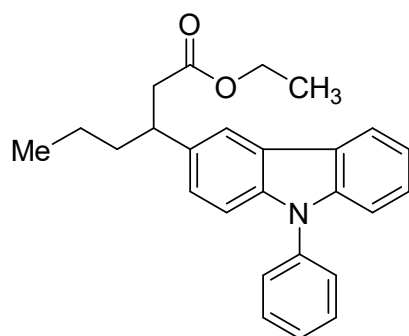
7.9799



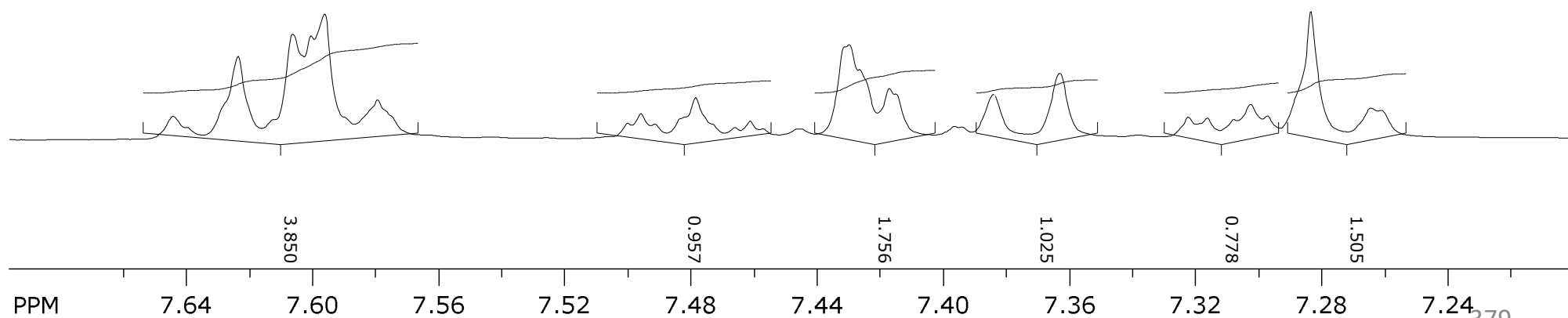
21c



SpinWorks 4: RD-269-REP-1
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 17



21c

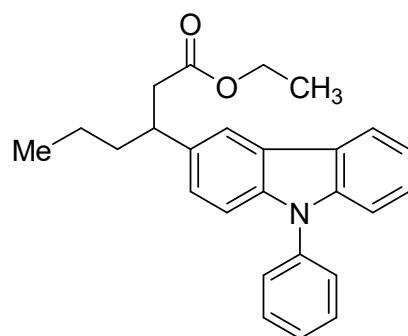


SpinWorks 4: RD-269-REP-1
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 17

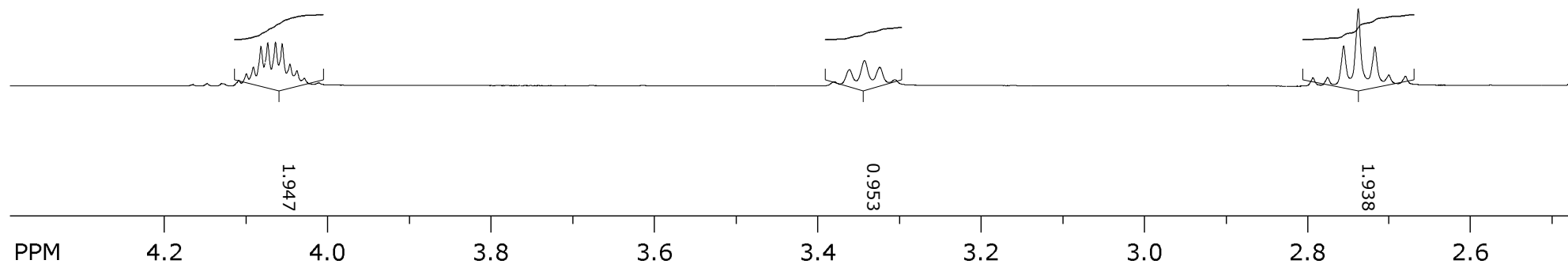
4.0276
4.0383
4.0468
4.0562
4.0646
4.0739
4.0824
4.0920
4.1011

3.3243
3.3243
3.3425
3.3603

2.7170
2.7374
2.7554



21c

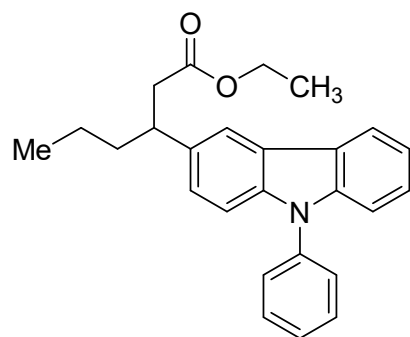


SpinWorks 4: RD-269-REP-1
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 17

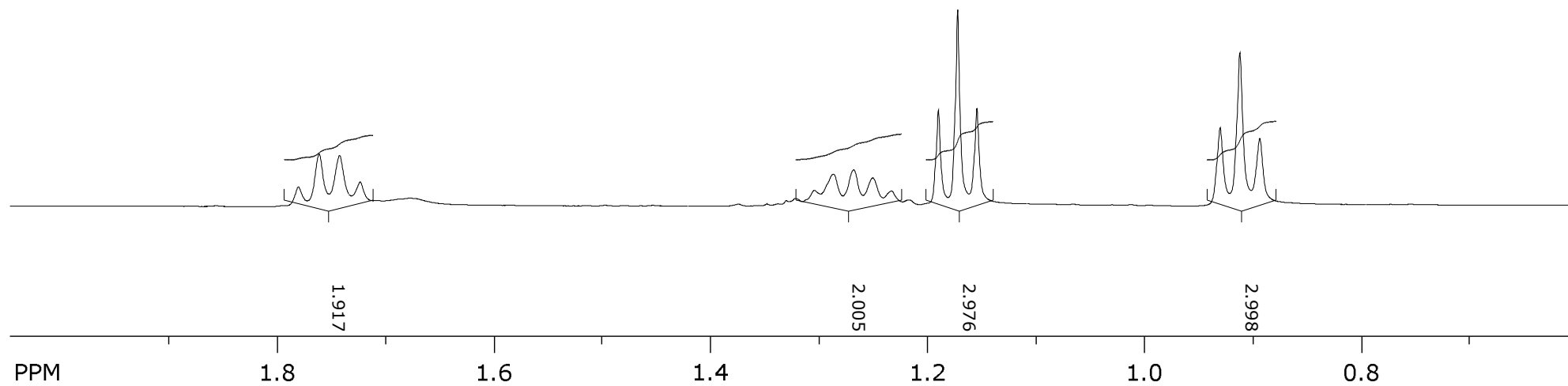
1.7237
1.7427
1.7615
1.7821

1.2351
1.2506
1.2681
1.2867
1.3058
1.1544
1.1722
1.1900

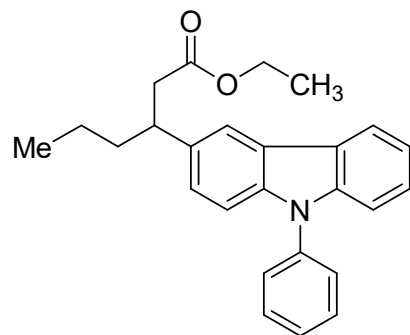
0.8933
0.9117
0.9299



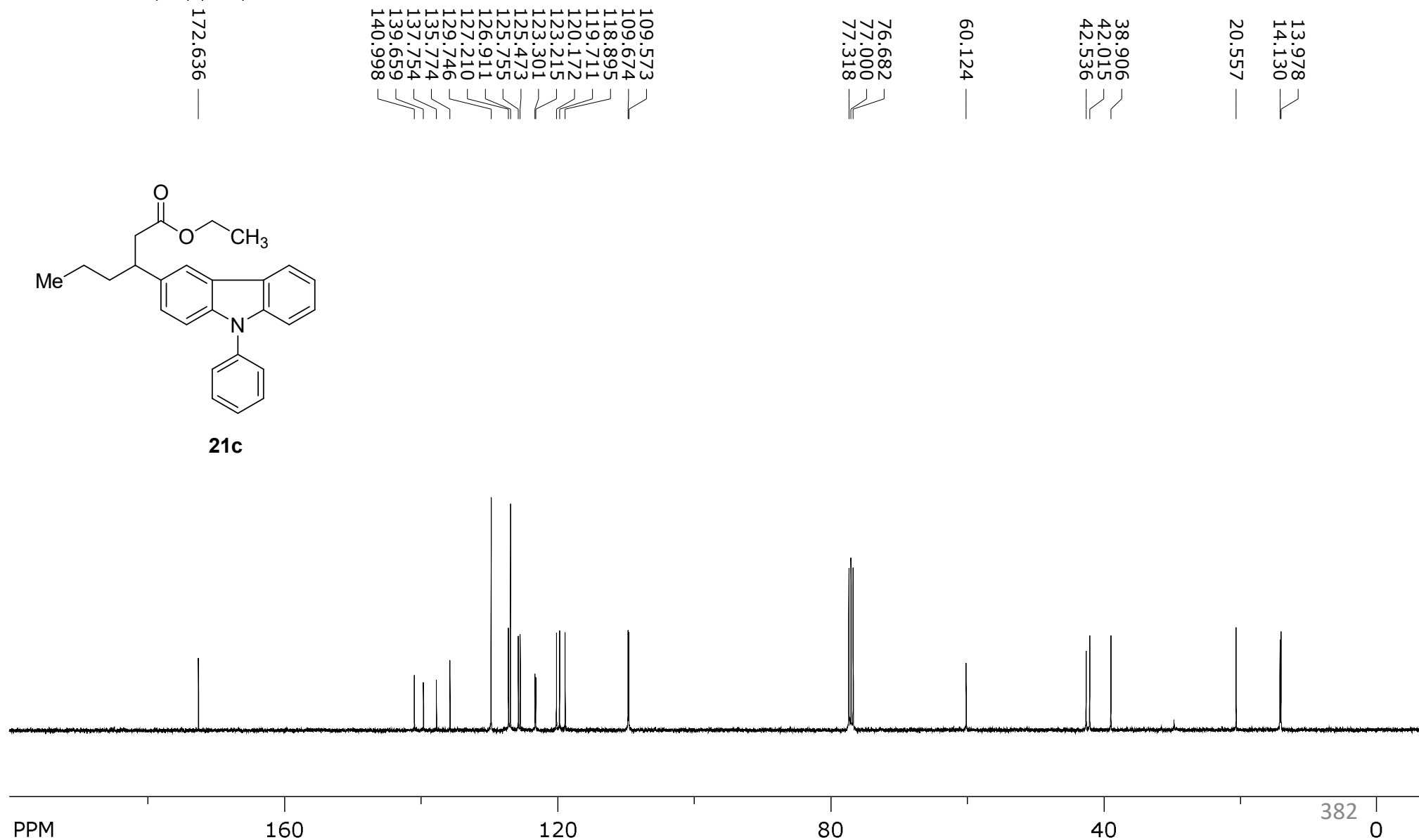
21c

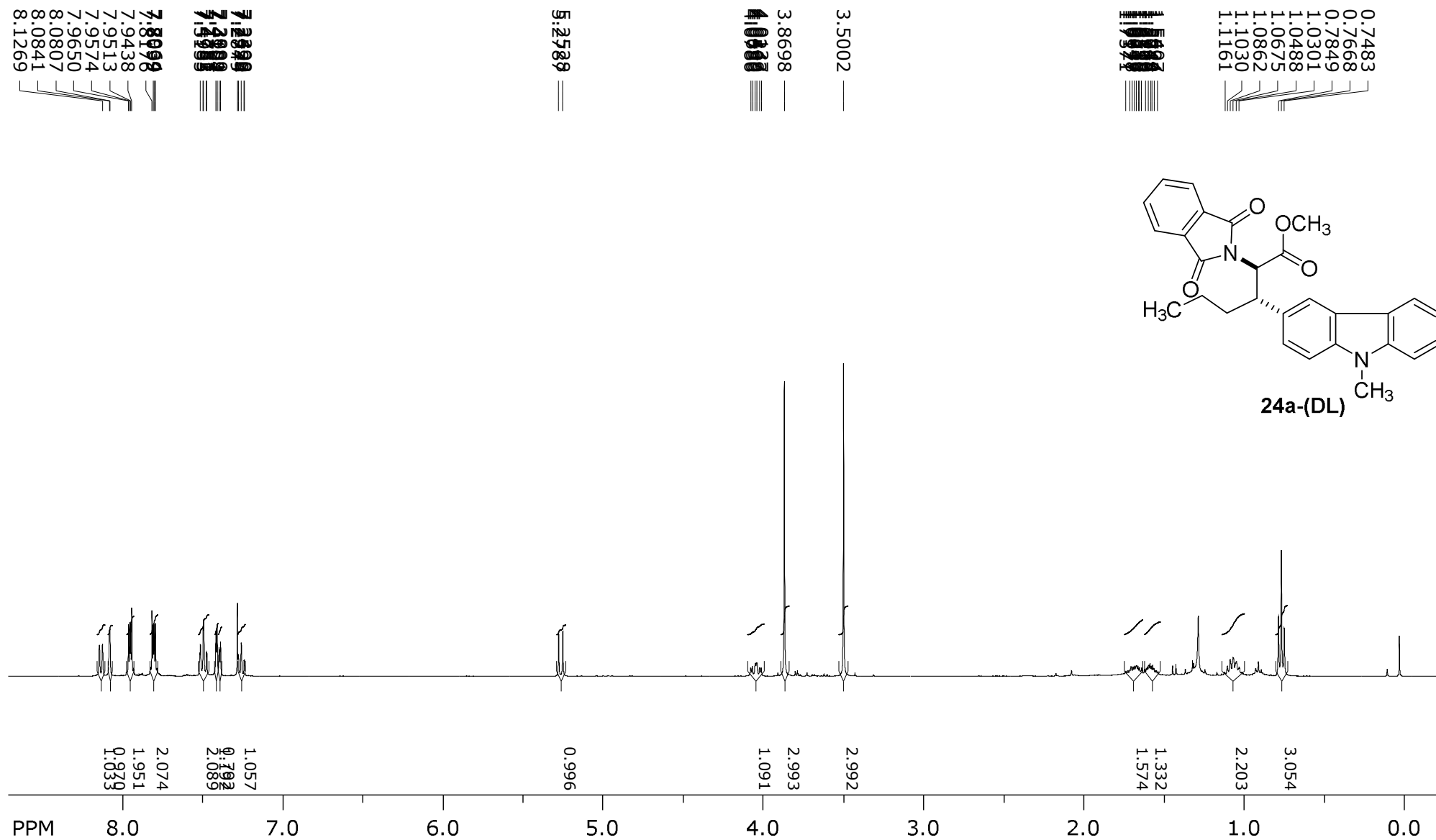


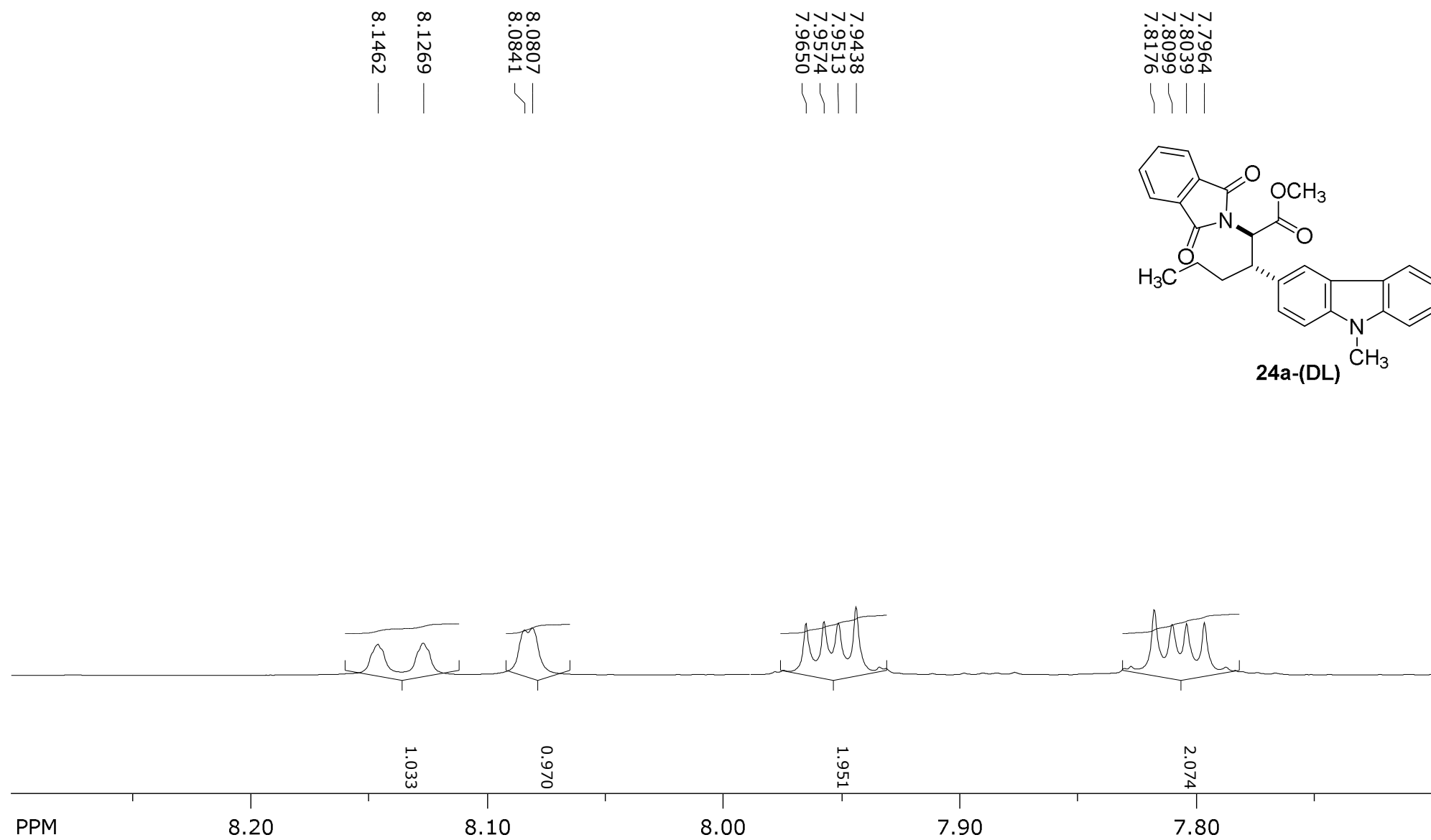
SpinWorks 4: RD 269
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 7



21c





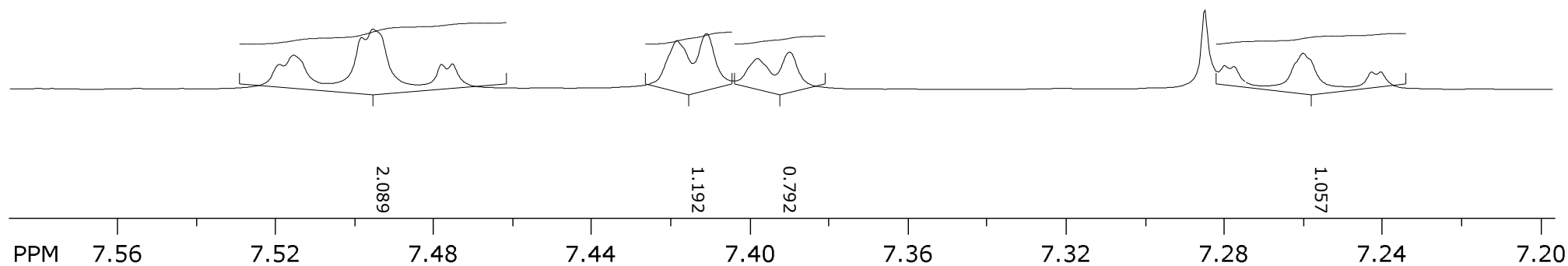
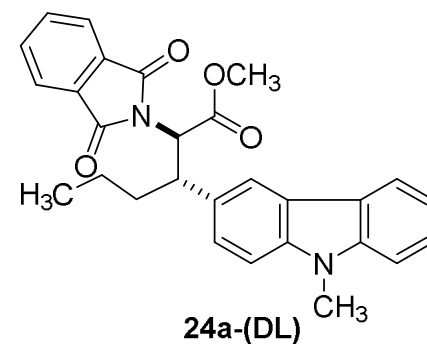


SpinWorks 4: rd-277

7.5155 —
7.4955 —
7.4983 —
7.4751 —
7.4782 —

7.4184 —
7.4109 —
7.3981 —
7.3899 —

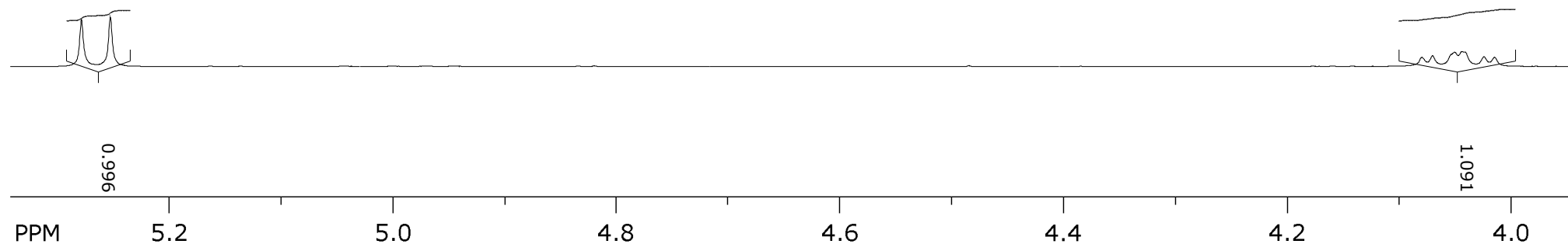
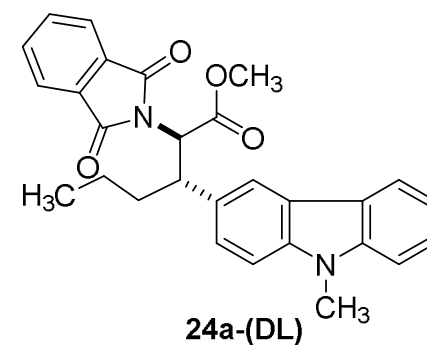
7.2398 —
7.2429 —
7.2599 —
7.2774 —
7.2849 —



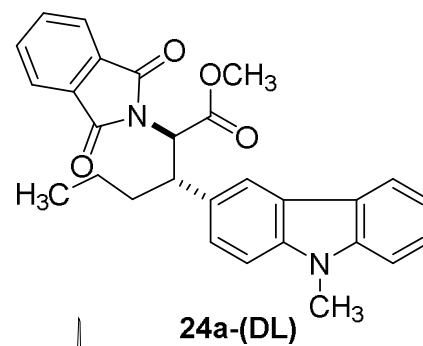
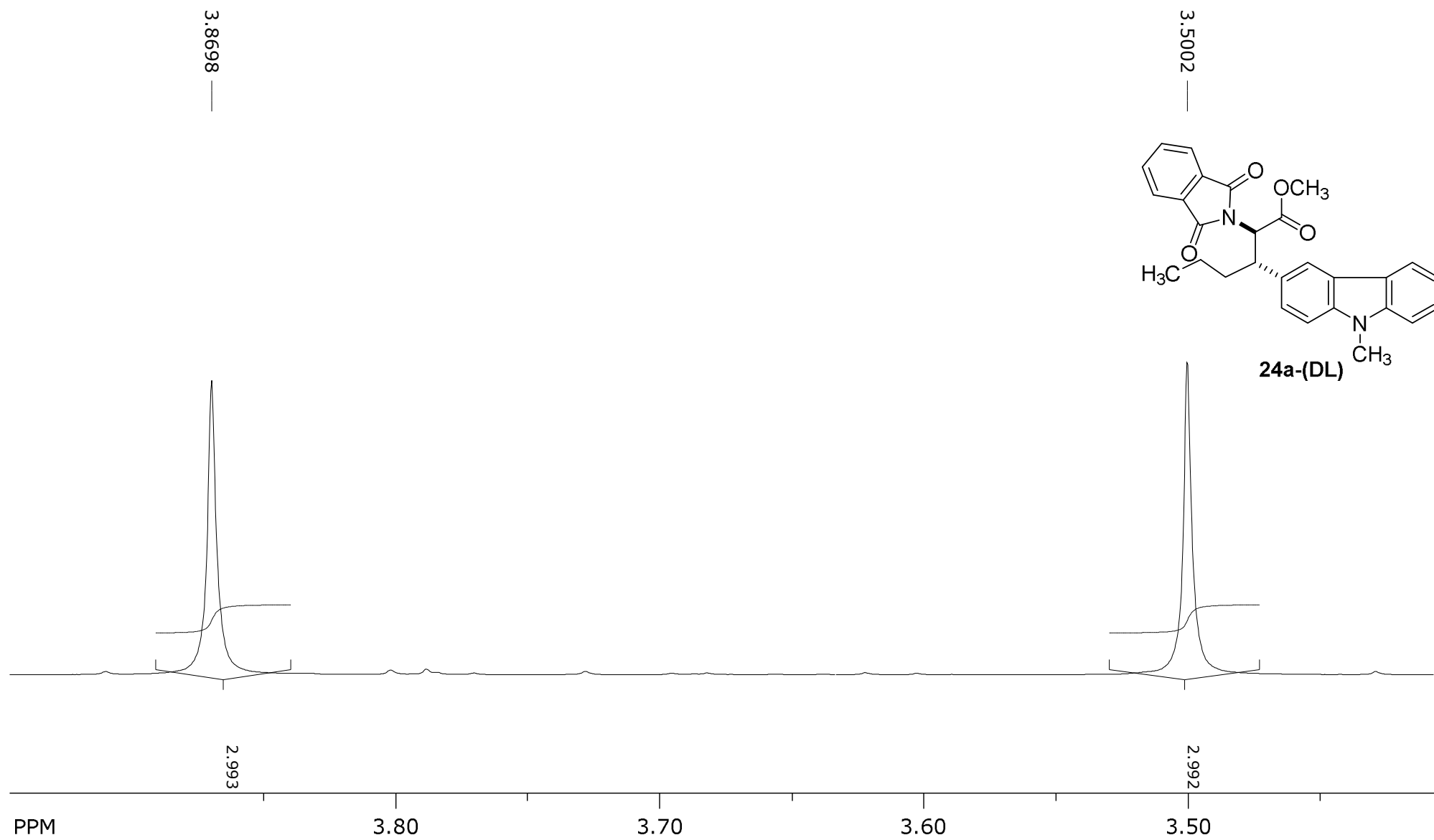
SpinWorks 4: rd-277

5.2528
5.2787

4.0137
4.0243
4.0409
4.0530
4.0680
4.0786



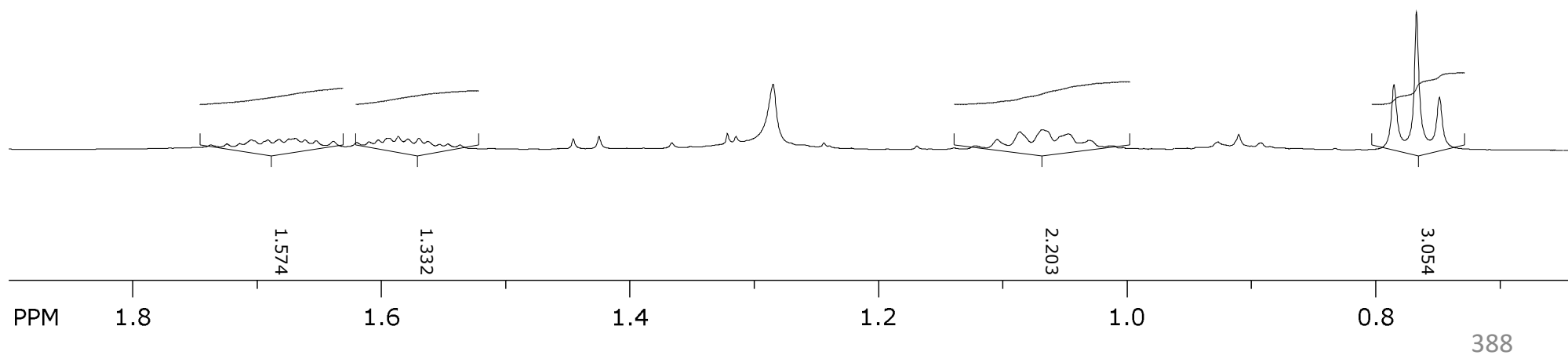
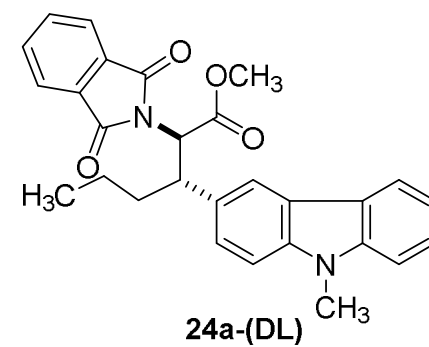
386



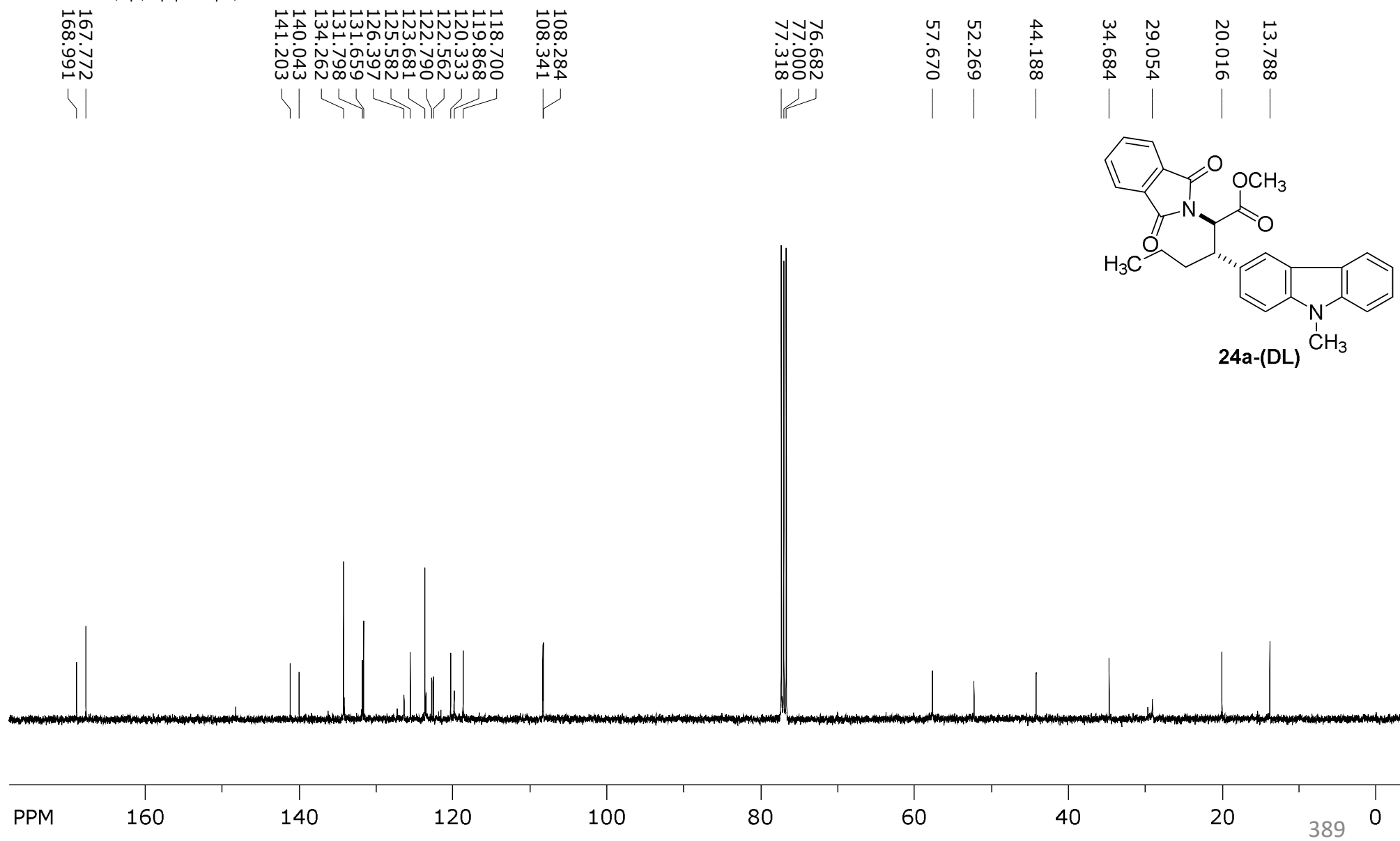
1.5407
1.5594
1.5743
1.5818
1.5968
1.6136
1.6398
1.6510
1.6585
1.6716
1.6847
1.6978
1.7127
1.7371

1.0301
1.0488
1.0675
1.0862
1.1030
1.1161

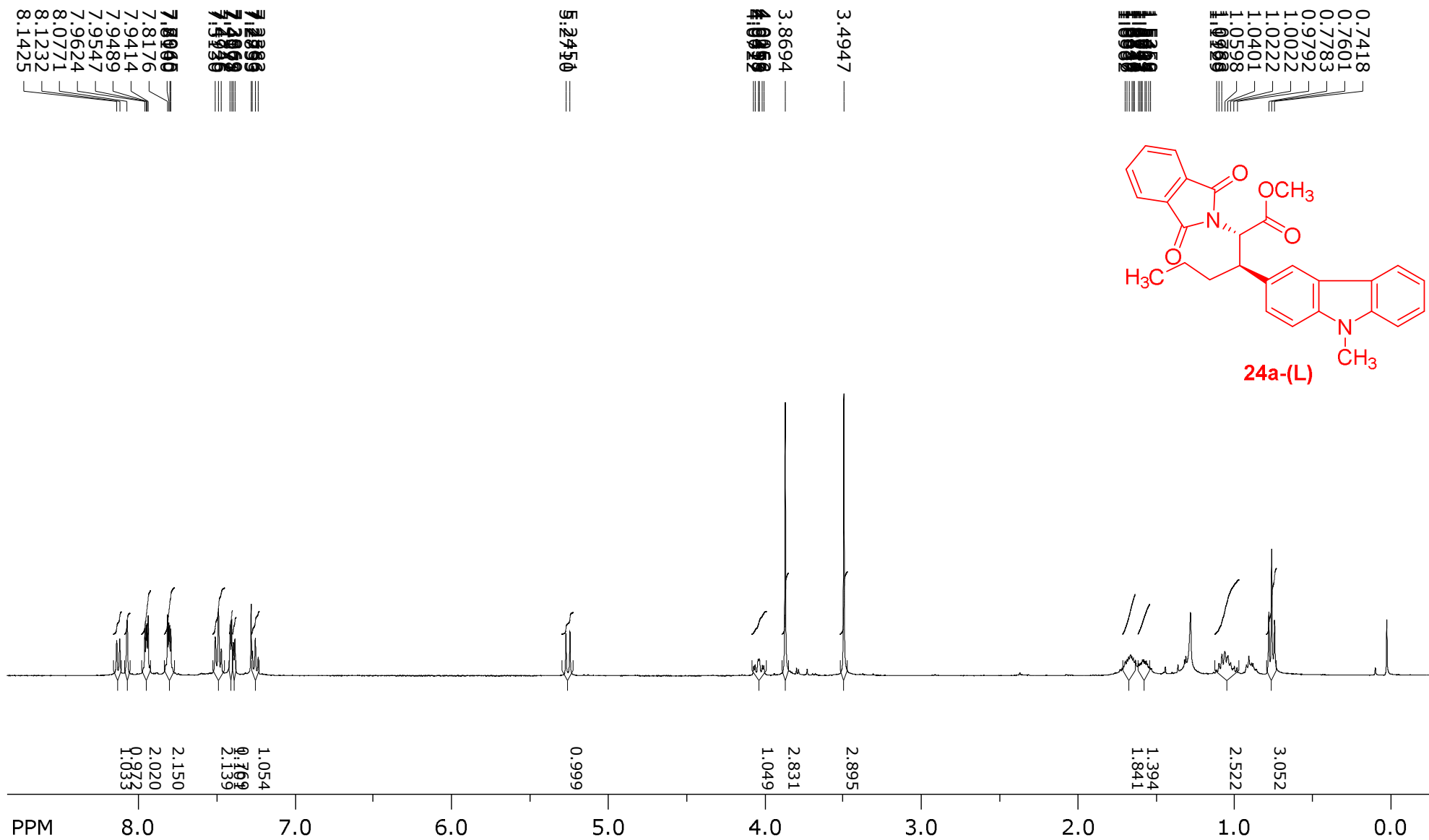
0.7483
0.7668
0.7849

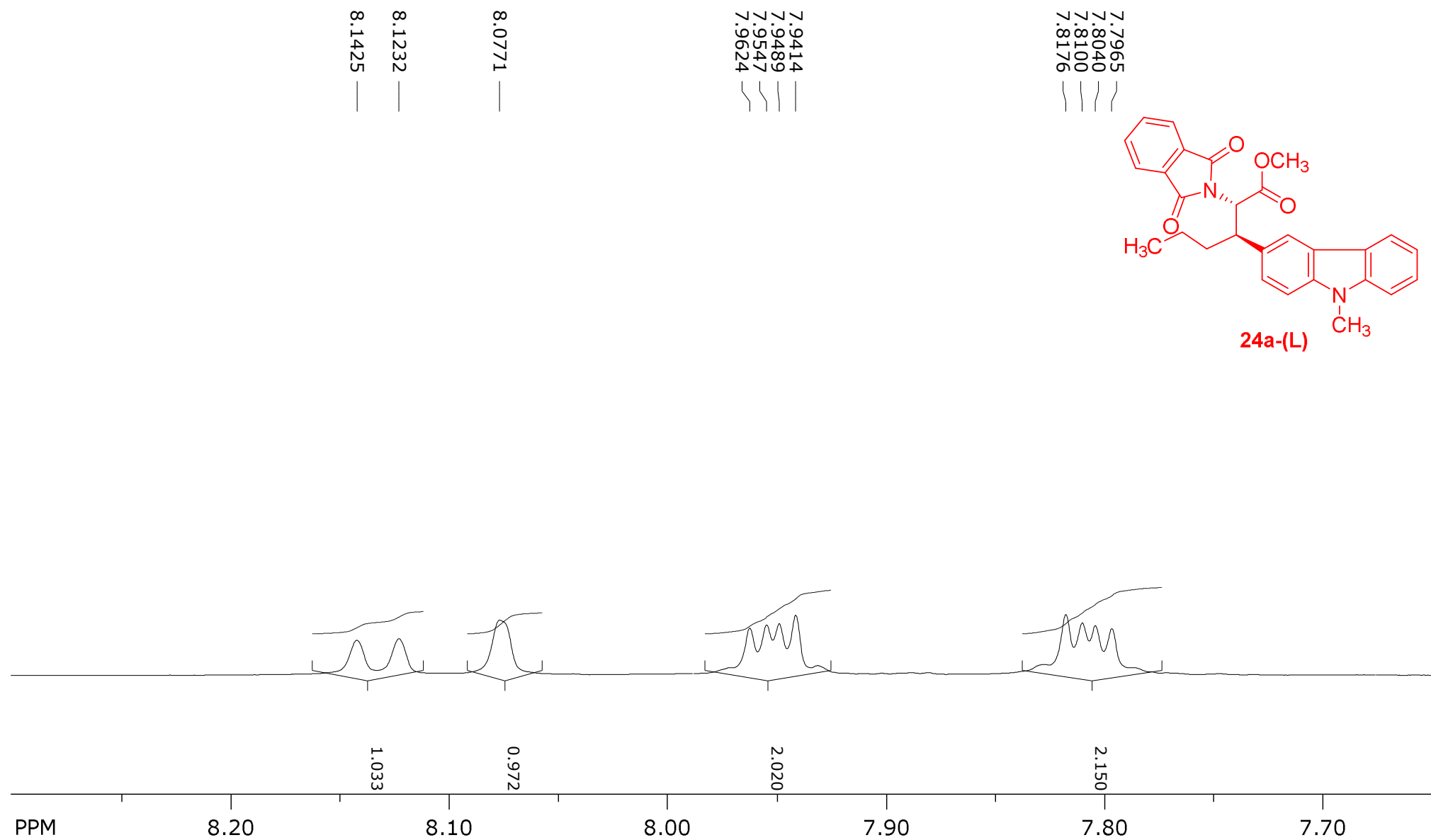


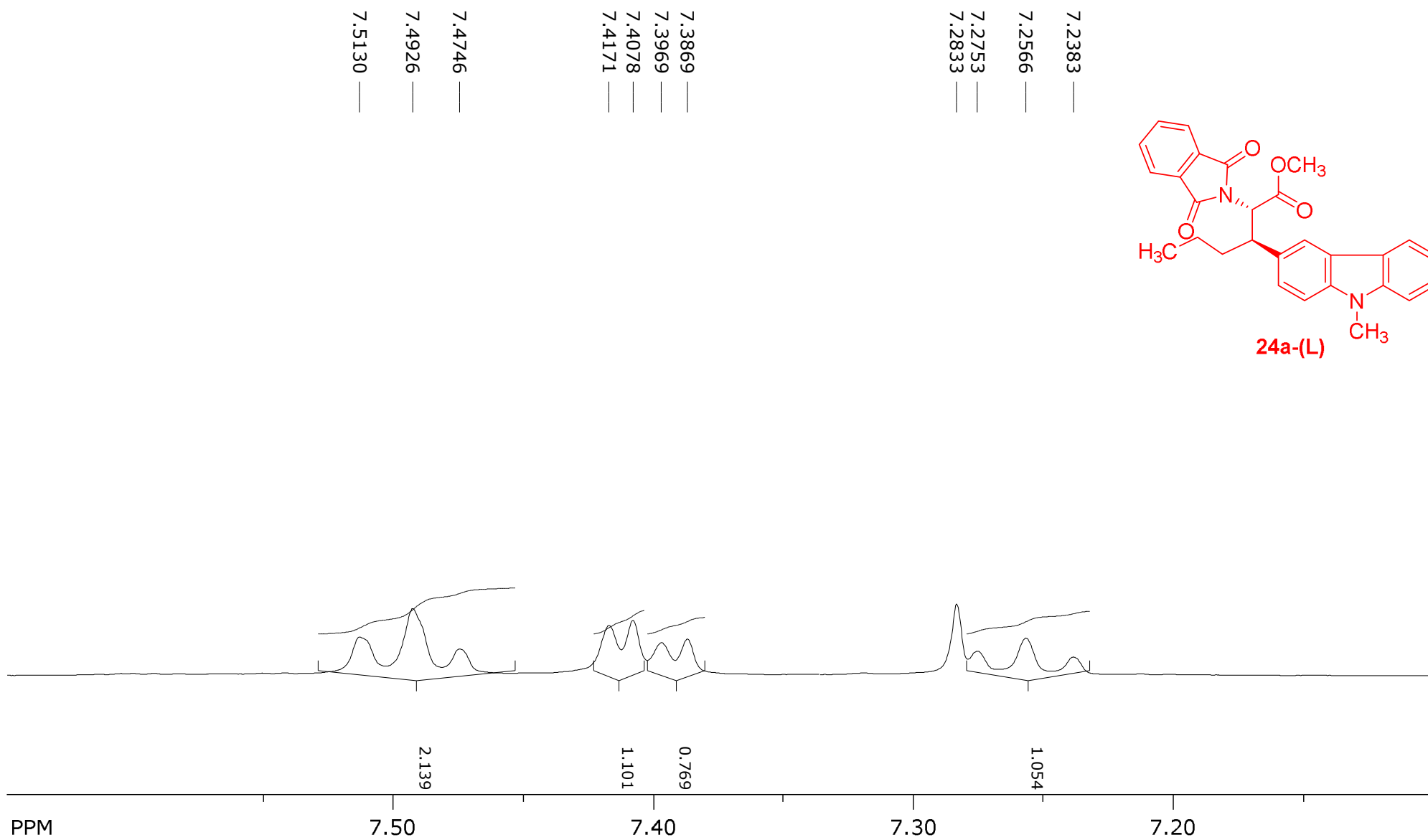
SpinWorks 4: RD 277 REP 1
C13CPD CDCI3 /opt/topspin3.5pl2/nmrdata nmrsu 7



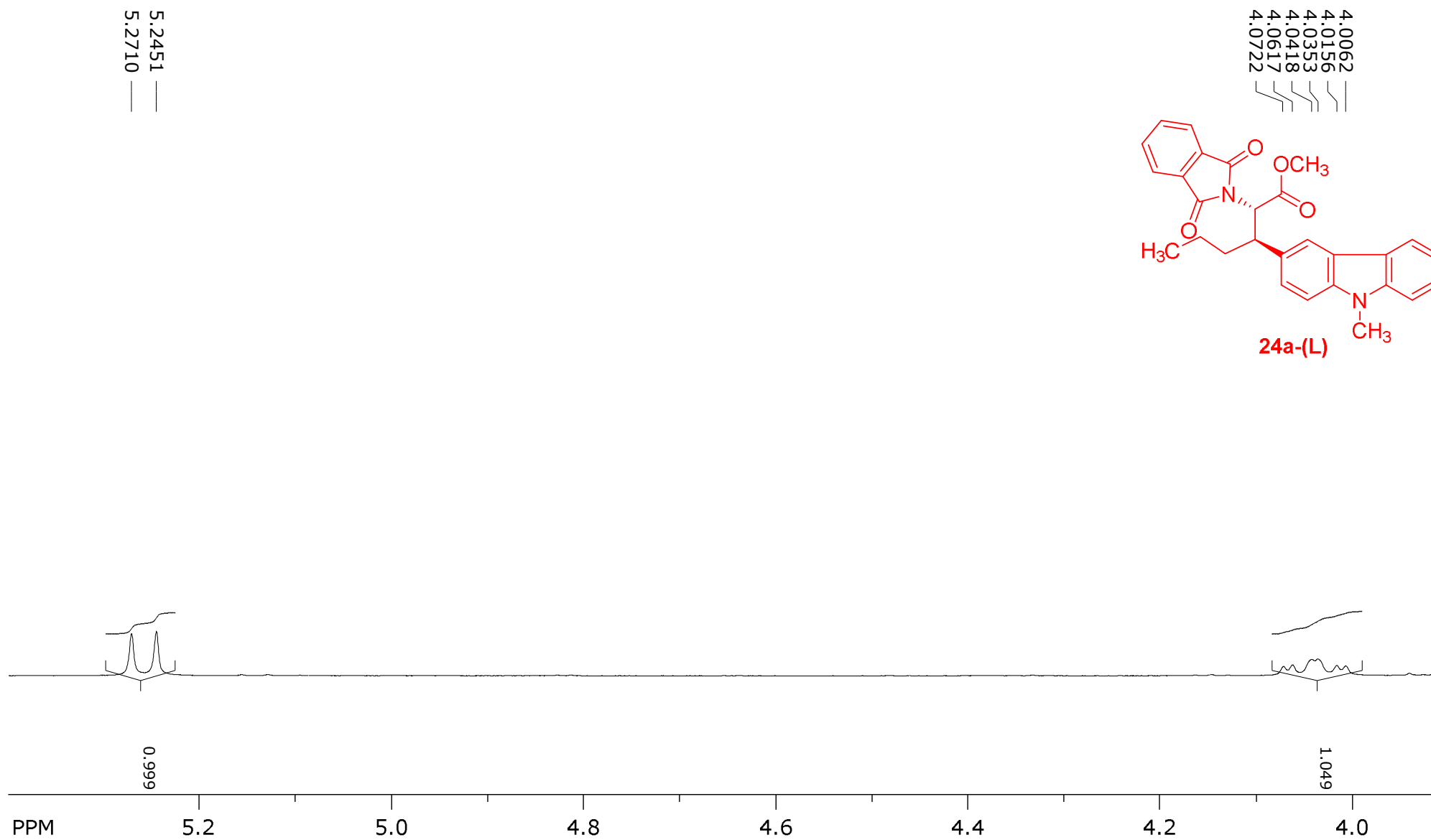
SpinWorks 4: rd-586

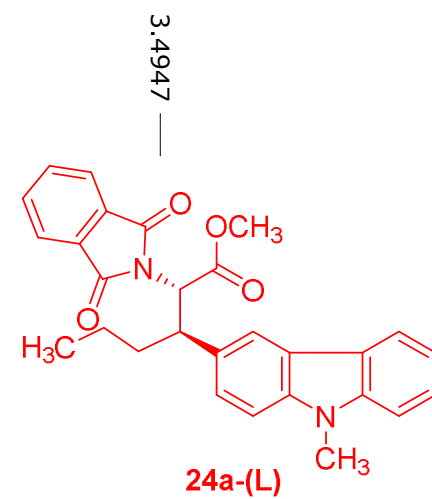
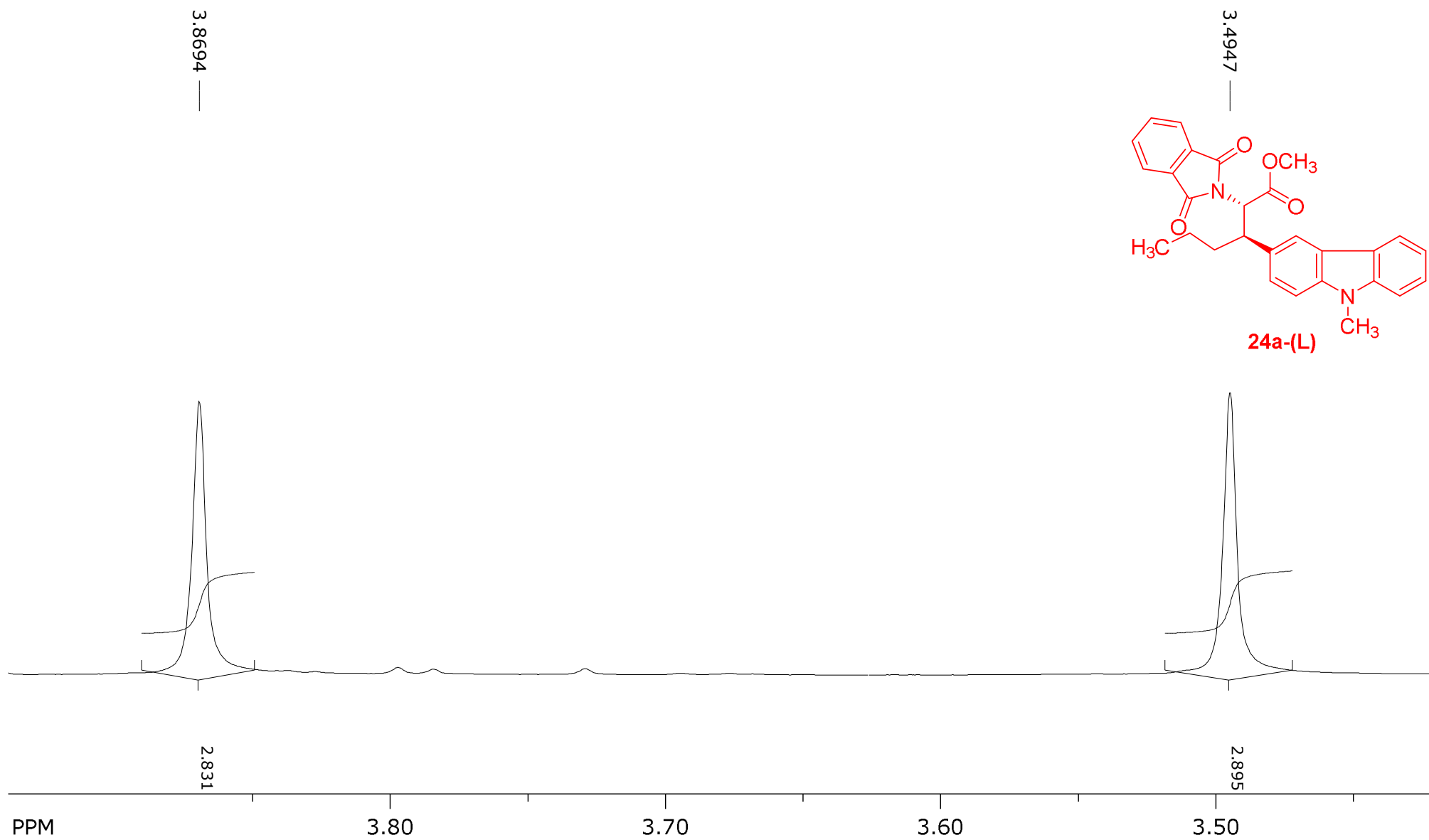






SpinWorks 4: rd-586



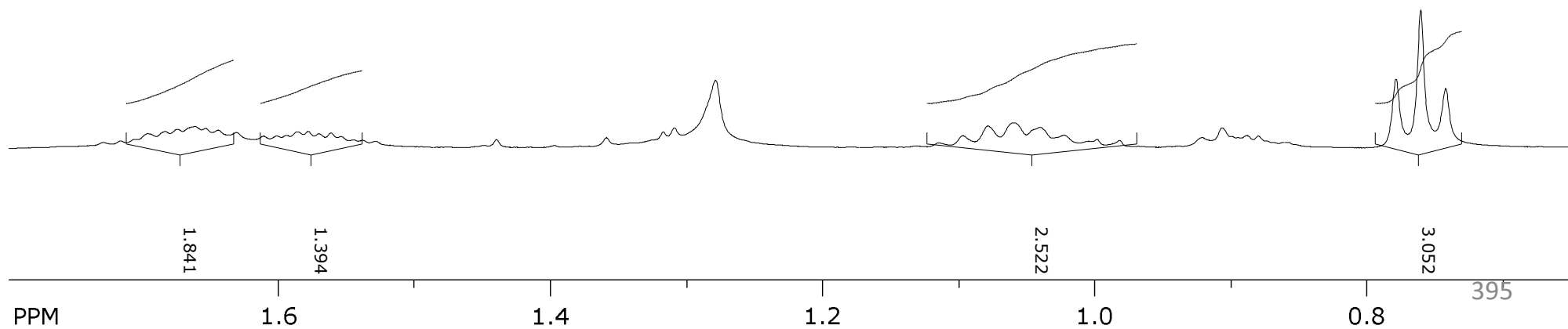
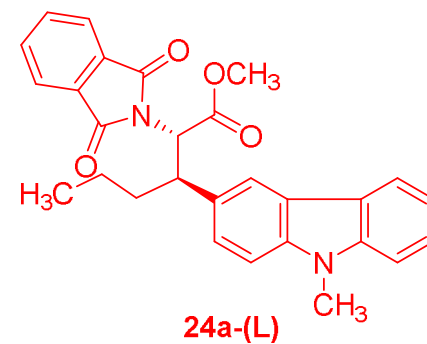


SpinWorks 4: rd-586

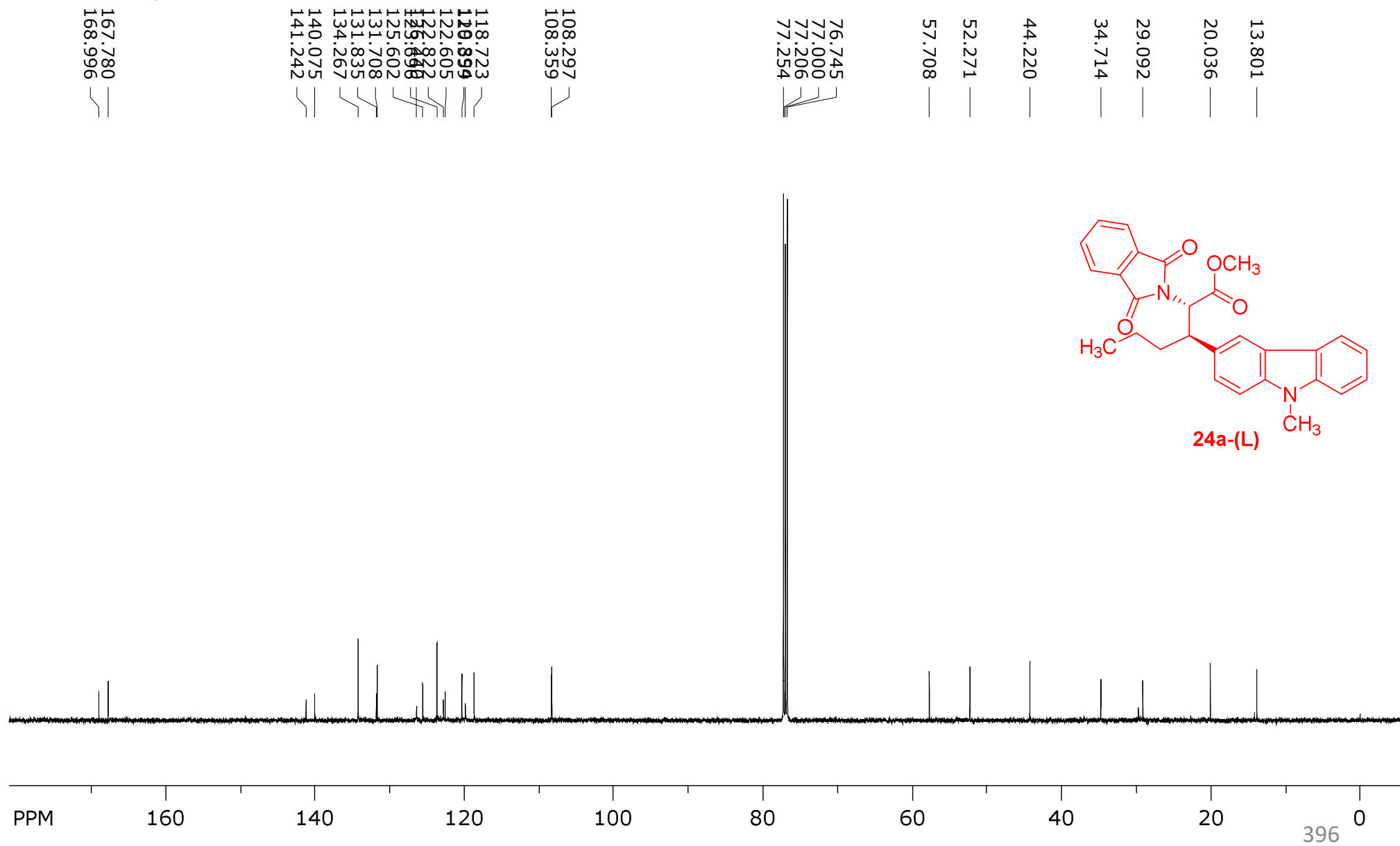
1.5350
1.5465
1.5614
1.5703
1.5862
1.5942
1.6013
1.6111
1.6372
1.6446
1.6539
1.6687
1.6836
1.6962

0.9792
1.0022
1.0222
1.0401
1.0598
1.0783
1.0968
1.1129

0.7418
0.7601
0.7783



SpinWorks 4: SAB109
C13CPD CDCl3 {D:\Spectra} nmr 9



108.297
108.359

76.745
77.000
77.206
77.254

57.708

52.271

44.220

34.714

29.092

20.036

13.801

118.723
120.899
122.605
122.822
125.846
125.898
125.902
131.708
131.835
134.267
140.075
141.242

167.780
168.996

SpinWorks 4: SAB109
C13CPD CDCl3 {D:\Spectra} nmr 9

167.780 —
168.996 —

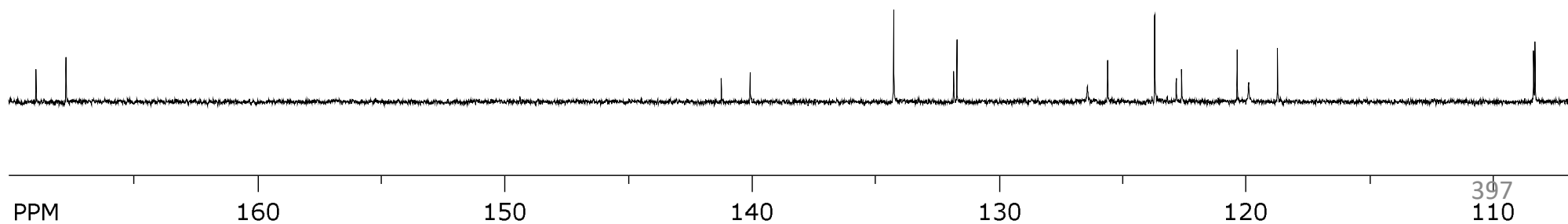
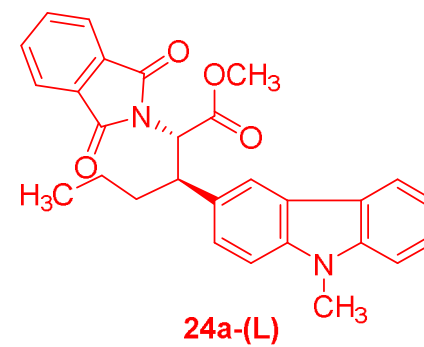
140.075 —
141.242 —

134.267 —
131.708 —
131.835 —

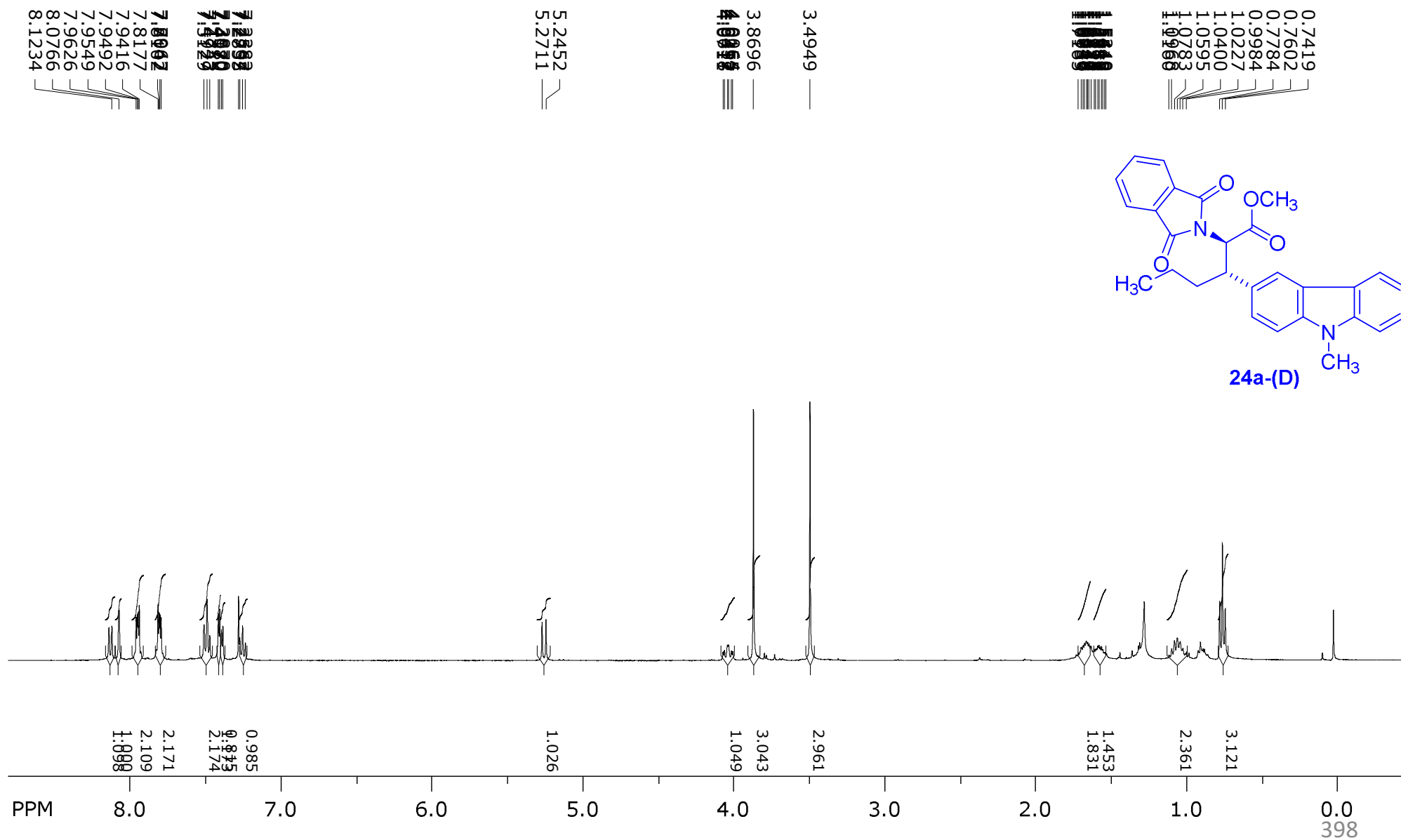
126.440 —
125.602 —
123.696 —
122.822 —
122.605 —

118.723 —
119.894 —
120.334 —

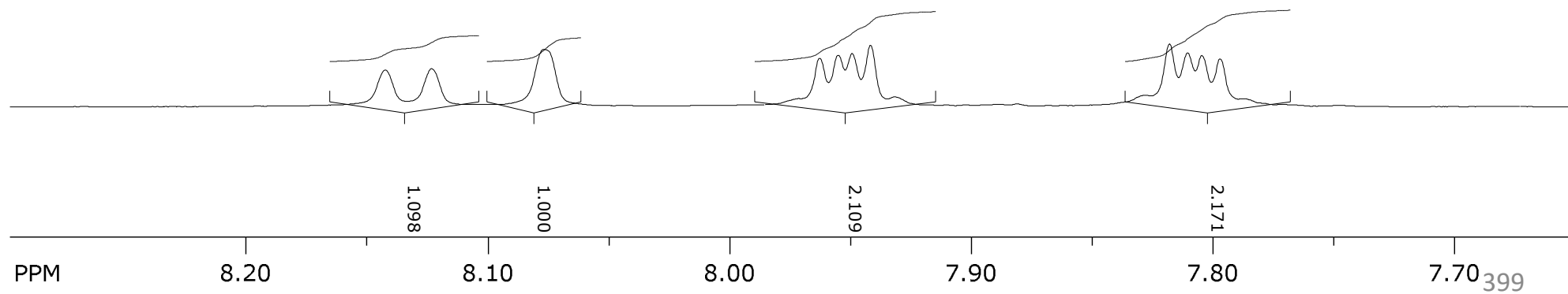
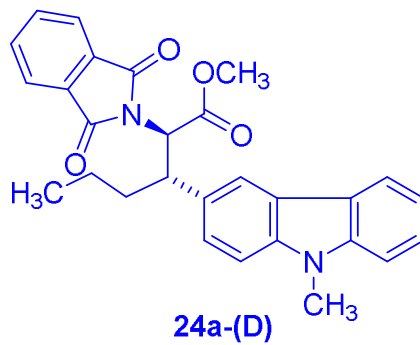
108.297 —
108.359 —



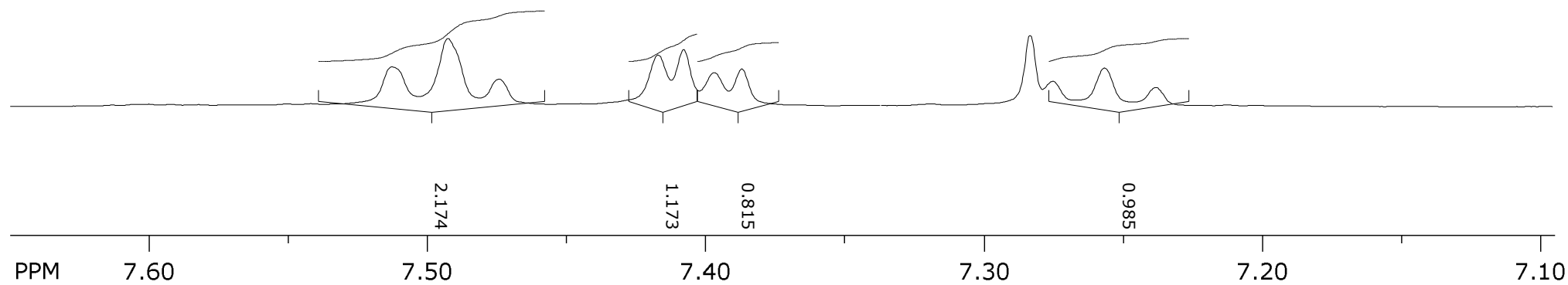
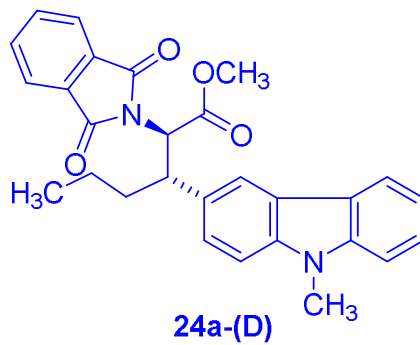
SpinWorks 4: rd-596



7.7967
7.8042
7.8102
7.8177
7.9416
7.9492
7.9549
7.9626
8.0766
8.1234
8.1426



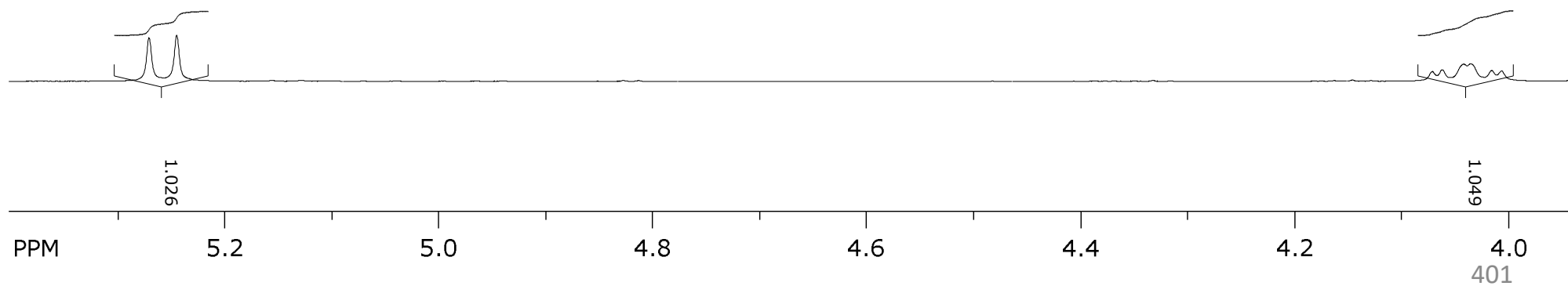
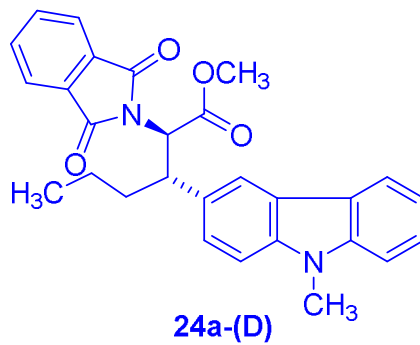
7.2382 —
7.2567 —
7.2752 —
7.2835 —
7.4172 —
7.4080 —
7.3970 —
7.3870 —
7.4743 —
7.4927 —
7.5129 —

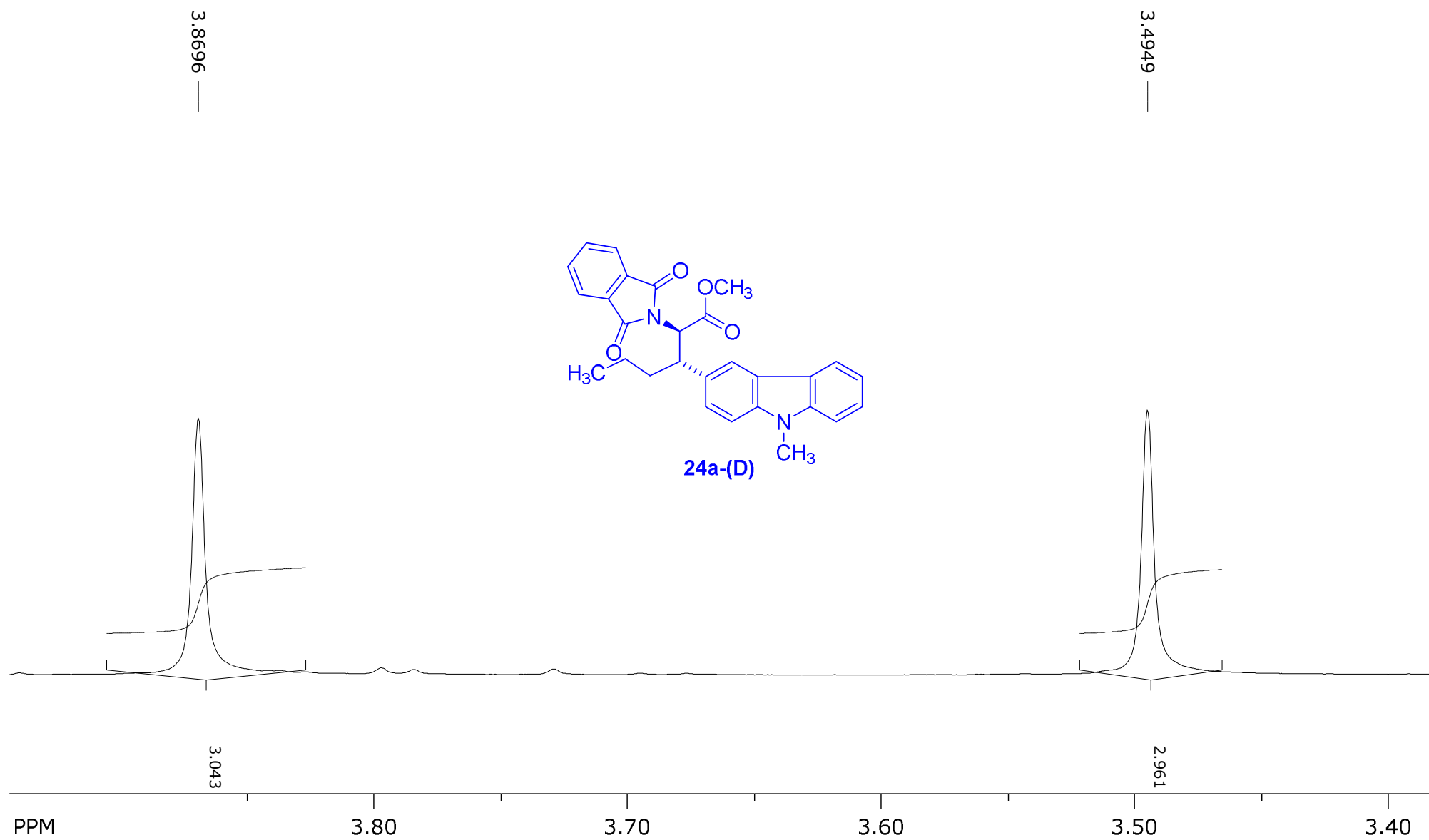


SpinWorks 4: rd-596

5.2452
5.2711

4.0064
4.0155
4.0352
4.0417
4.0618
4.0711



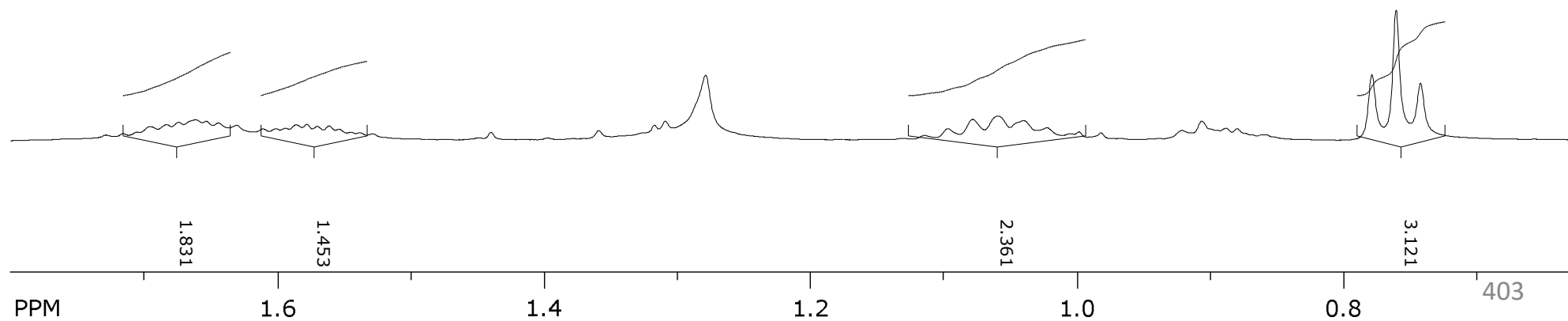
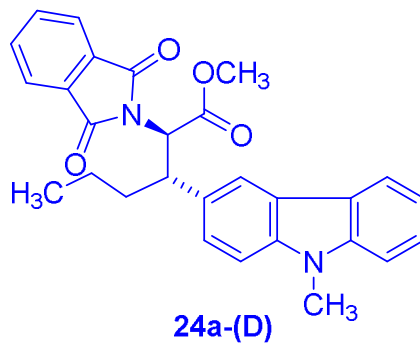


SpinWorks 4: rd-596

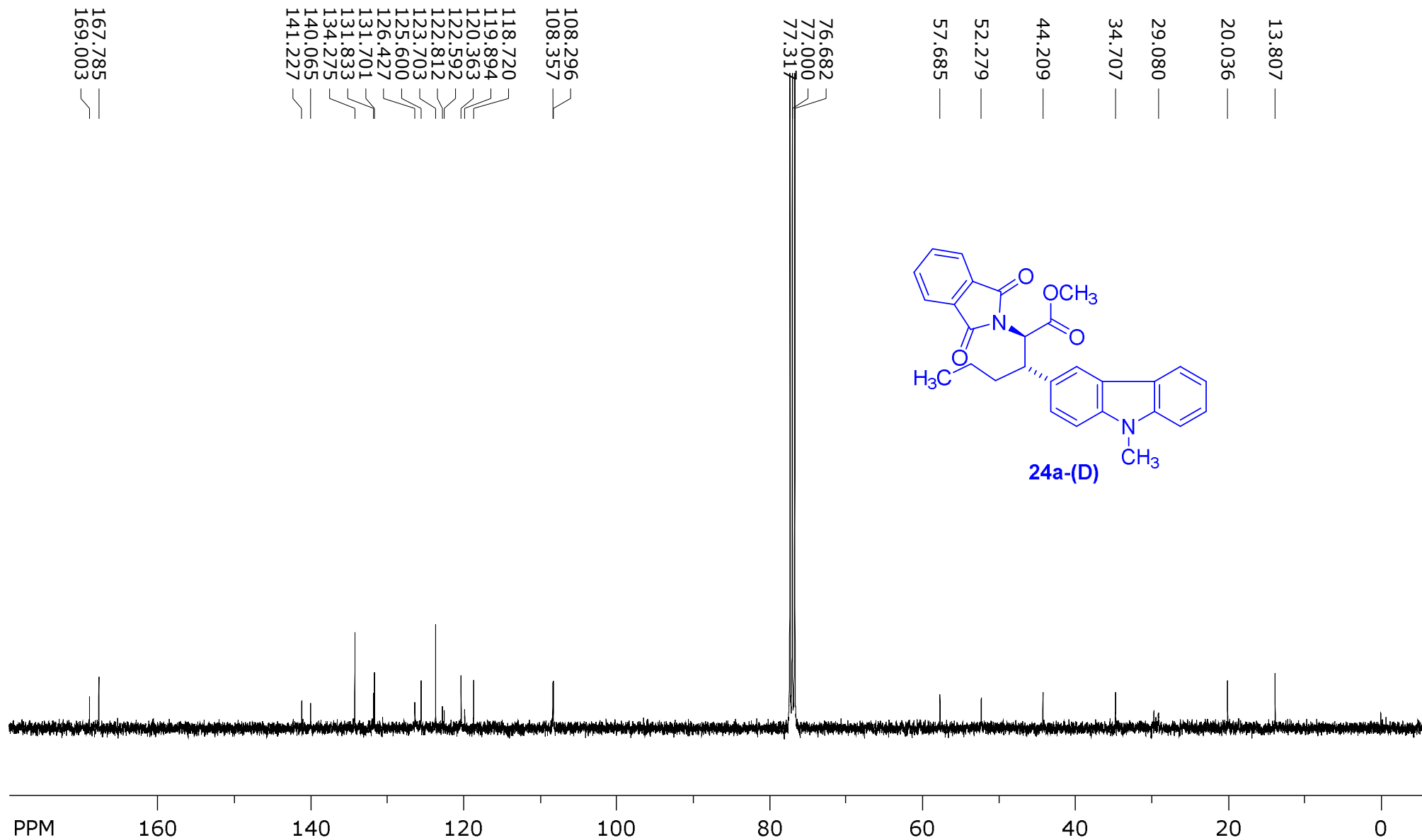
1.5340
1.5418
1.5542
1.5618
1.5783
1.5862
1.6018
1.6111
1.6312
1.6447
1.6539
1.6619
1.6746
1.6836
1.6959
1.7165

0.9984
1.0227
1.0400
1.0595
1.0783
1.0968
1.1160

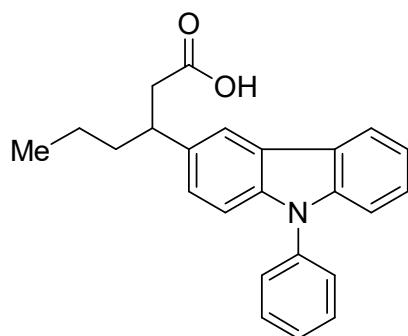
0.7419
0.7602
0.7784



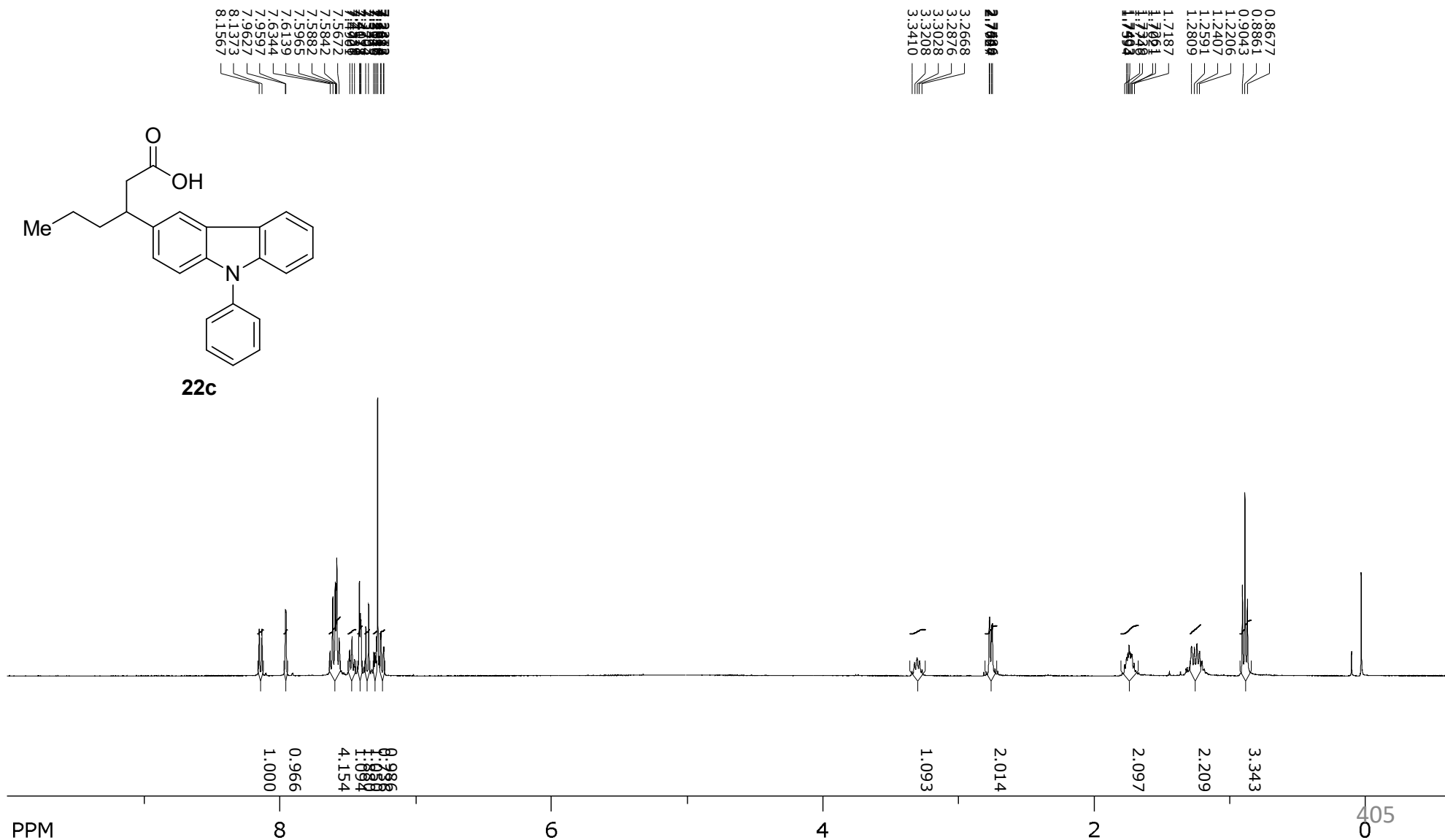
SpinWorks 4: rd 596



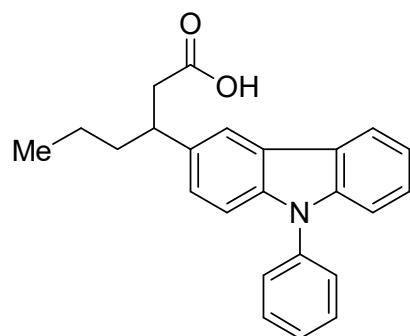
SpinWorks 4: RD-275-REP-2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 18



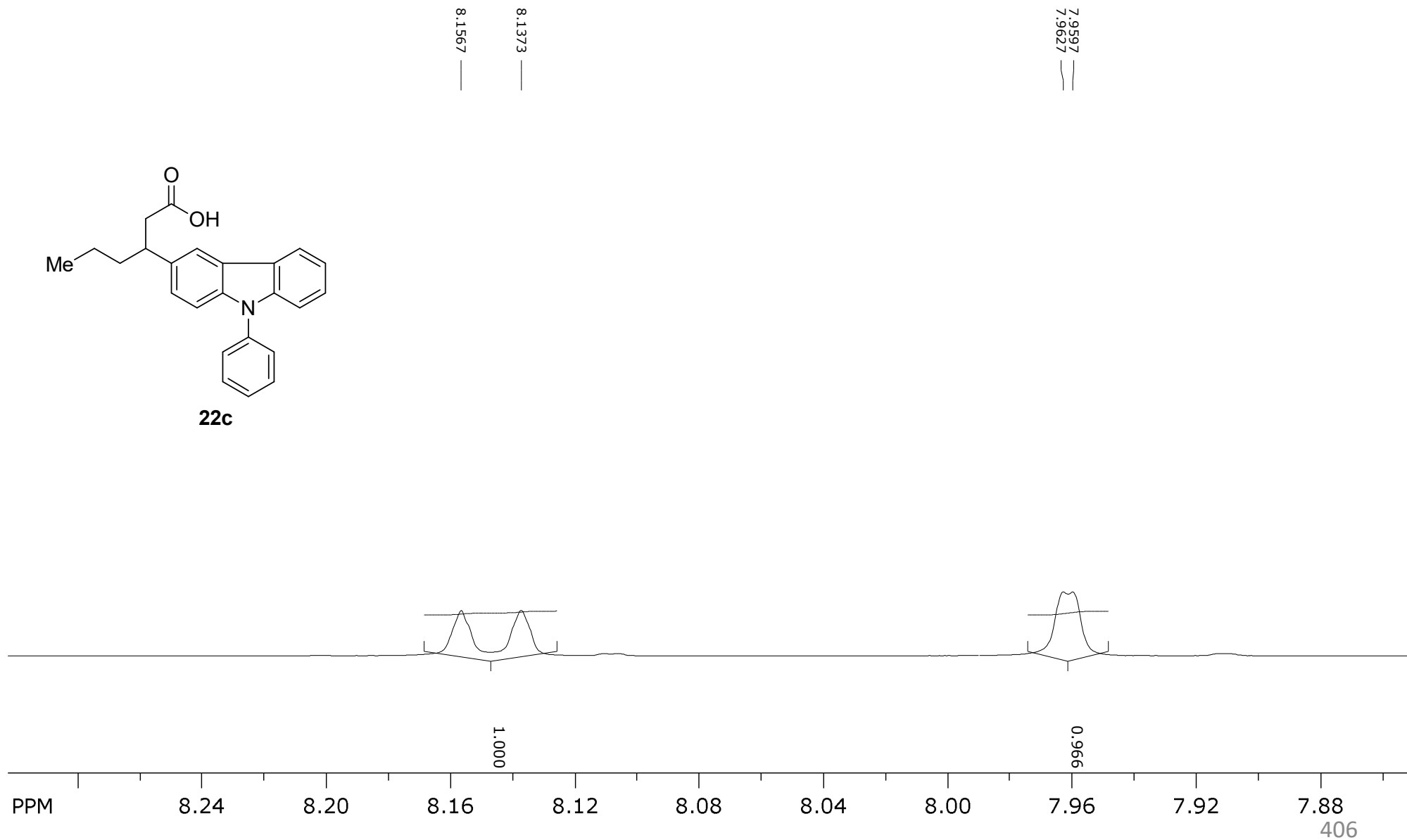
22c



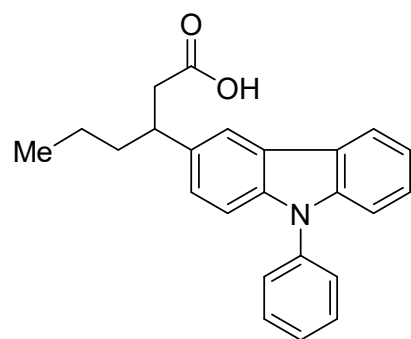
SpinWorks 4: RD-275-REP-2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 18



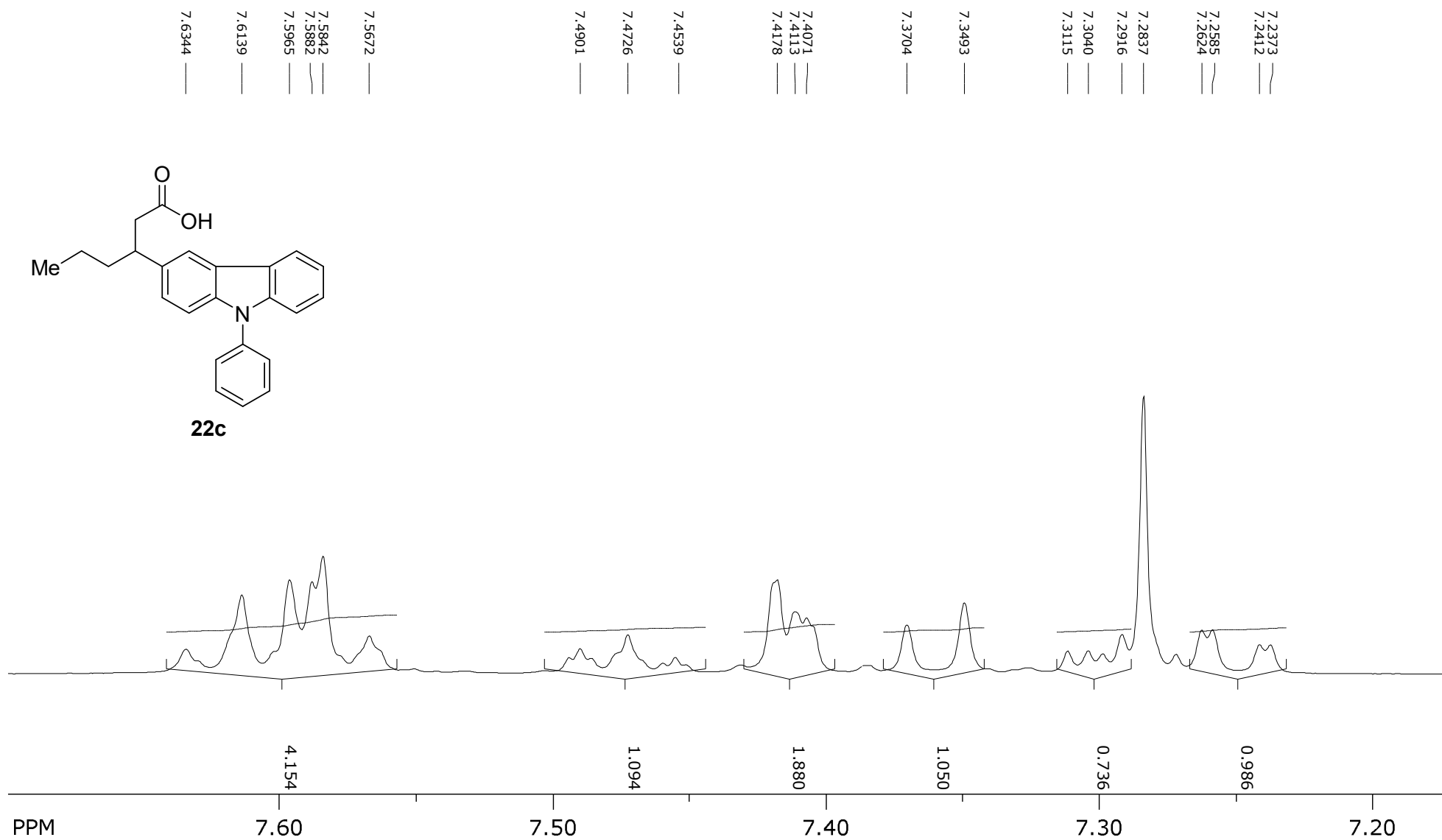
22c



SpinWorks 4: RD-275-REP-2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 18



22c

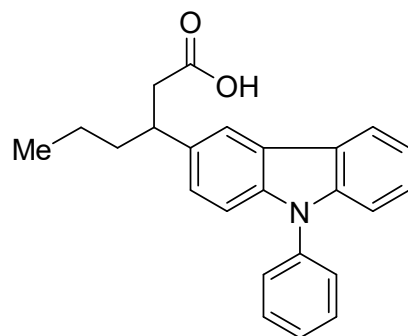


SpinWorks 4: RD-275-REP-2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 18

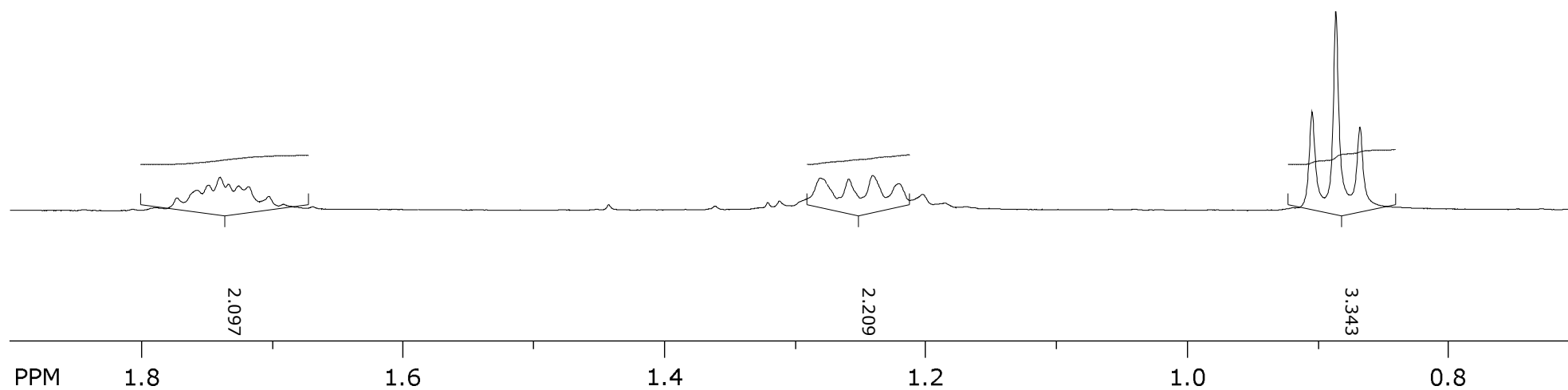
1.7032
1.7187
1.7261
1.7339
1.7403
1.7493
1.7595
1.7736

1.2206
1.2407
1.2591
1.2809

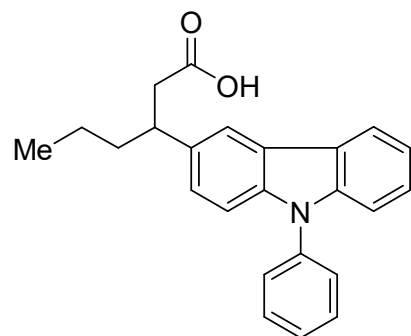
0.8677
0.8861
0.9043



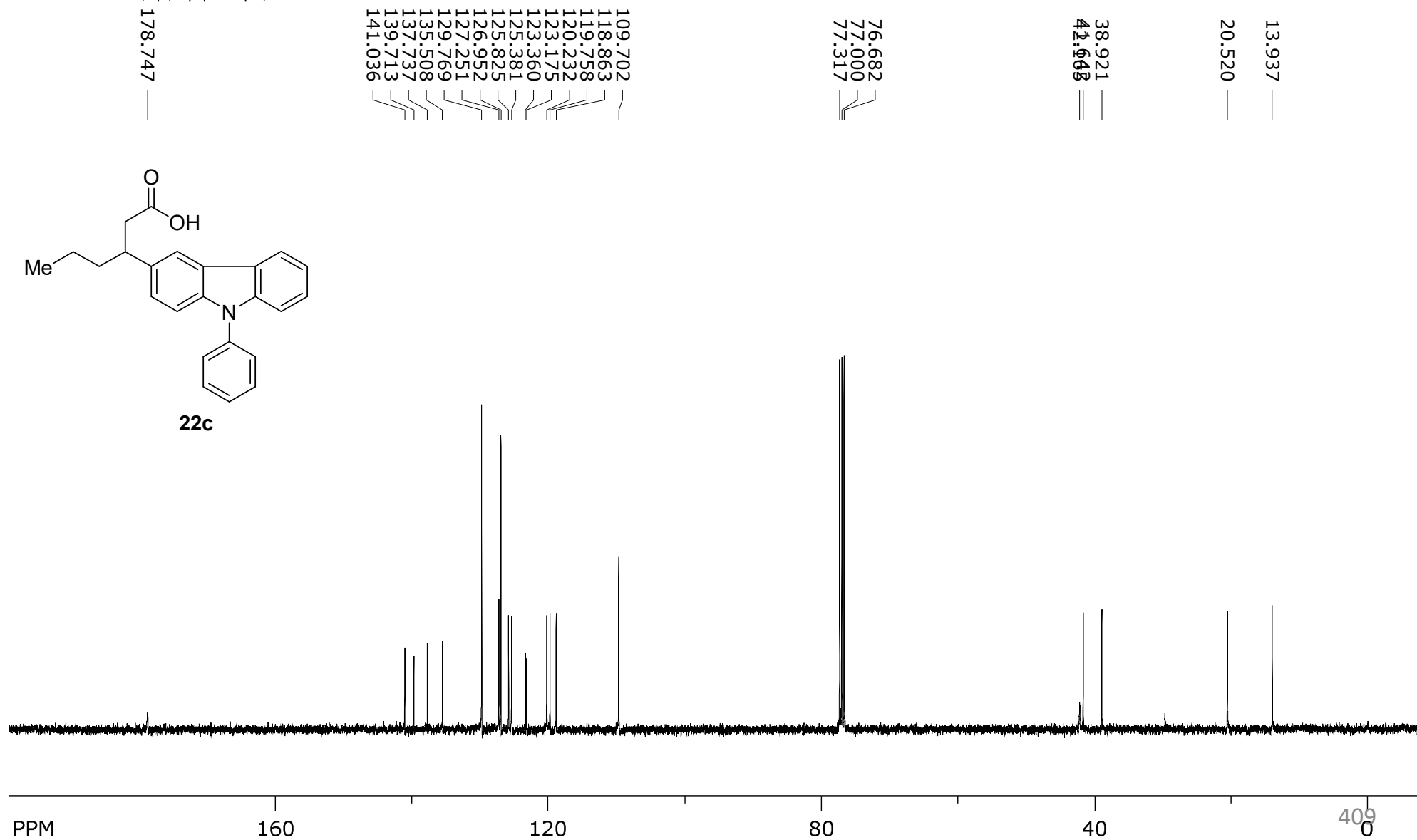
22c



SpinWorks 4: RD 275 REP 1
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8



22c



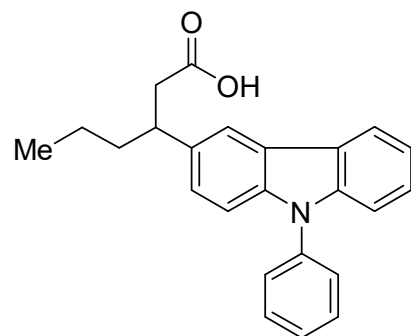
SpinWorks 4: RD 275 REP 1
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8

41.642
42.165

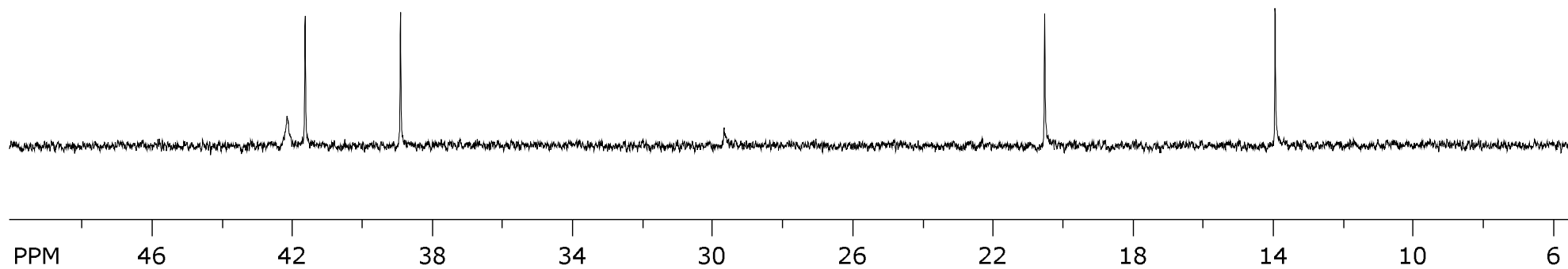
38.921

20.520

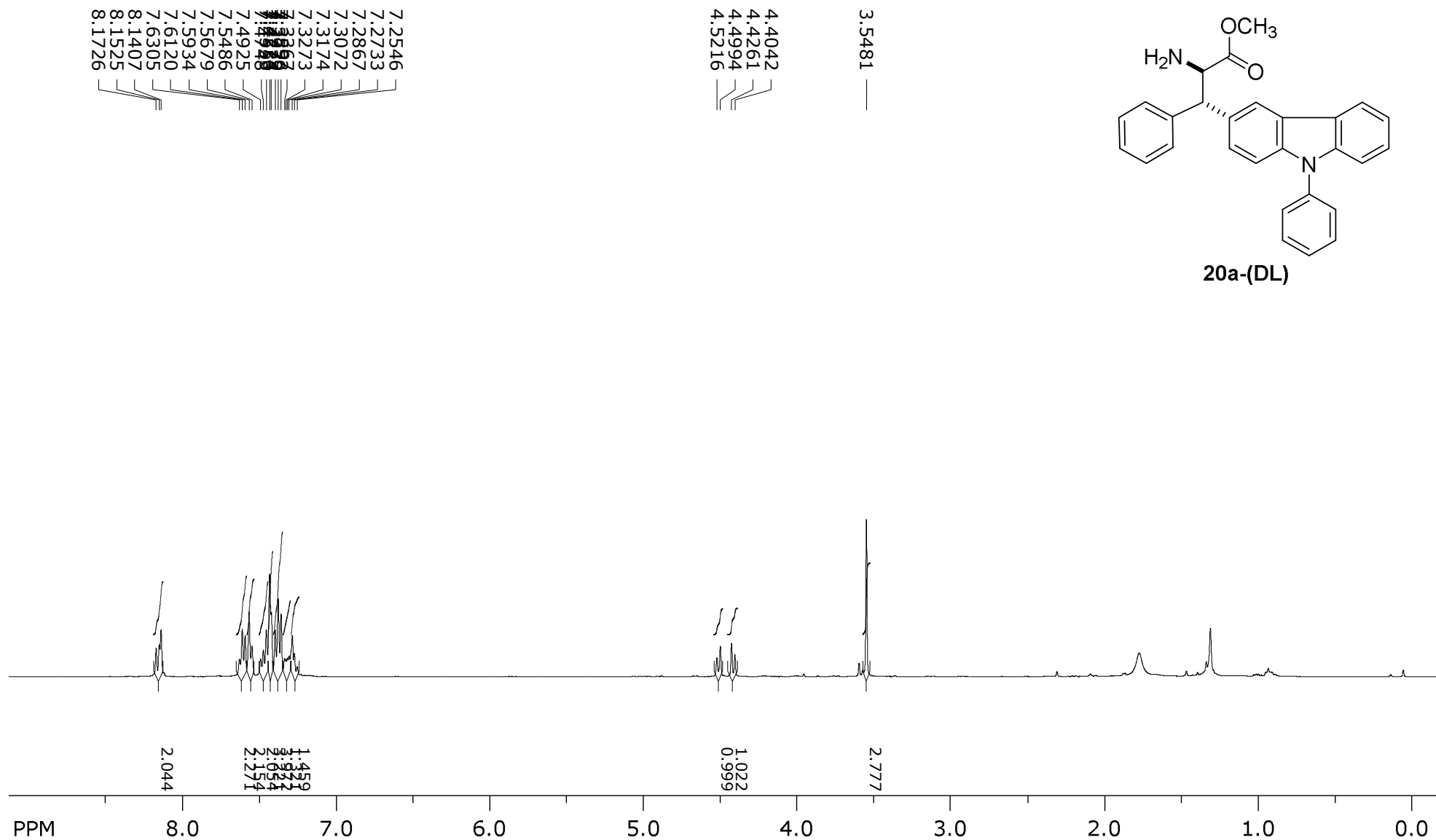
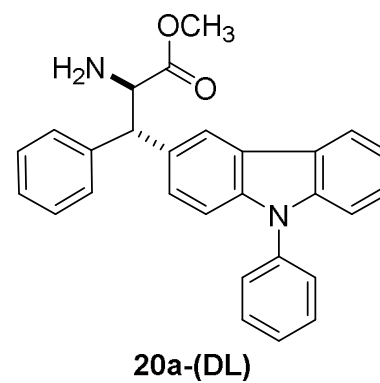
13.937



22c



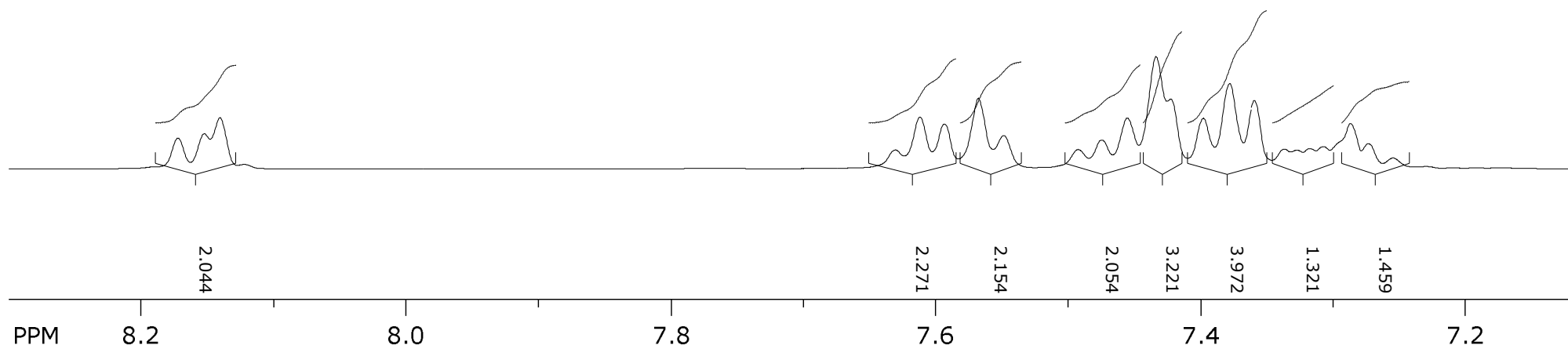
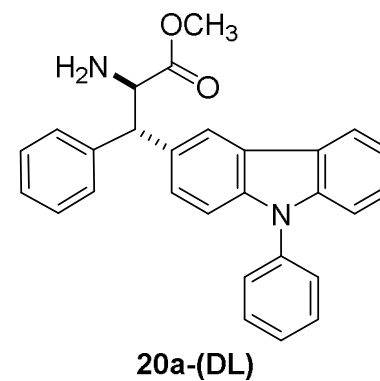
SpinWorks 4: RD 222
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 16



SpinWorks 4: RD 222
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 16

8.1407
8.1525
8.1726

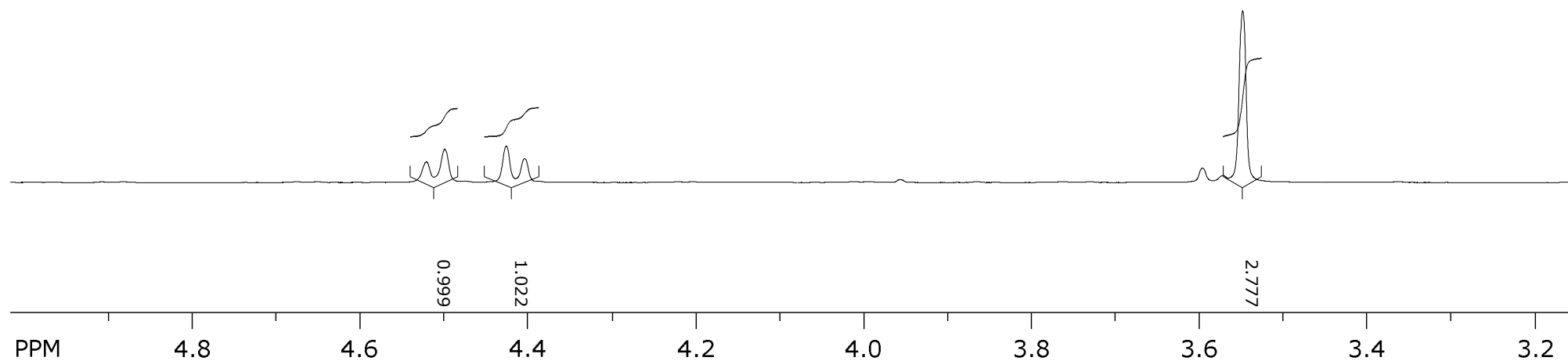
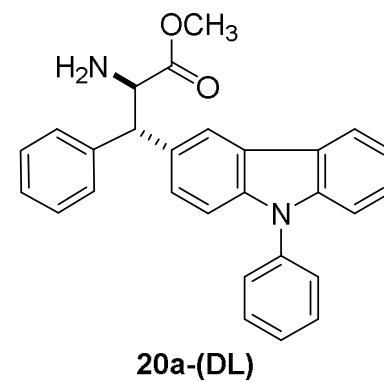
7.2546
7.2733
7.2867
7.3072
7.3174
7.3273
7.3367
7.3593
7.3779
7.3979
7.4224
7.4336
7.4553
7.4748
7.4925
7.5486
7.5679
7.5934
7.6120
7.6305



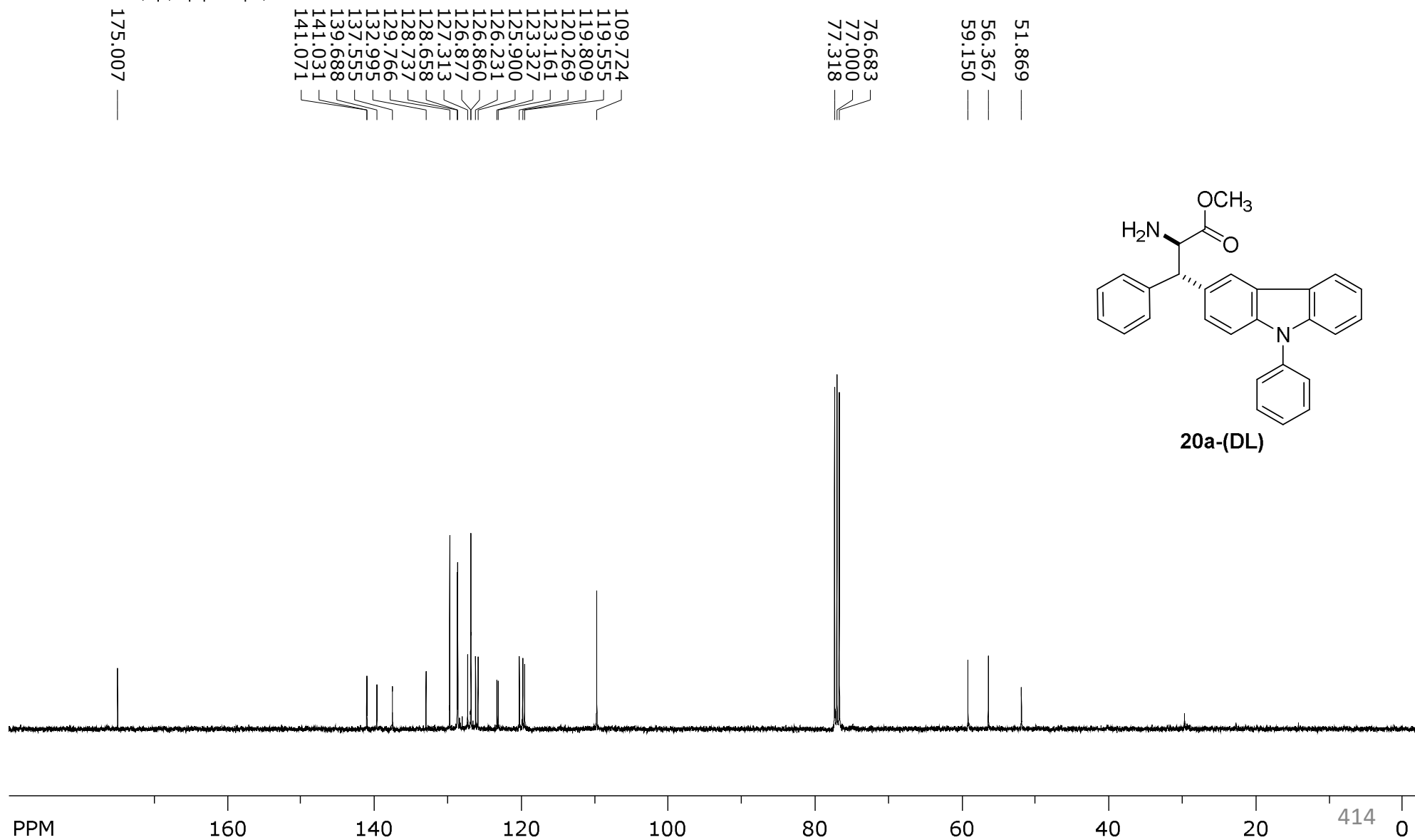
SpinWorks 4: RD 222
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 16

4.4042
4.4261
4.4994
4.5216

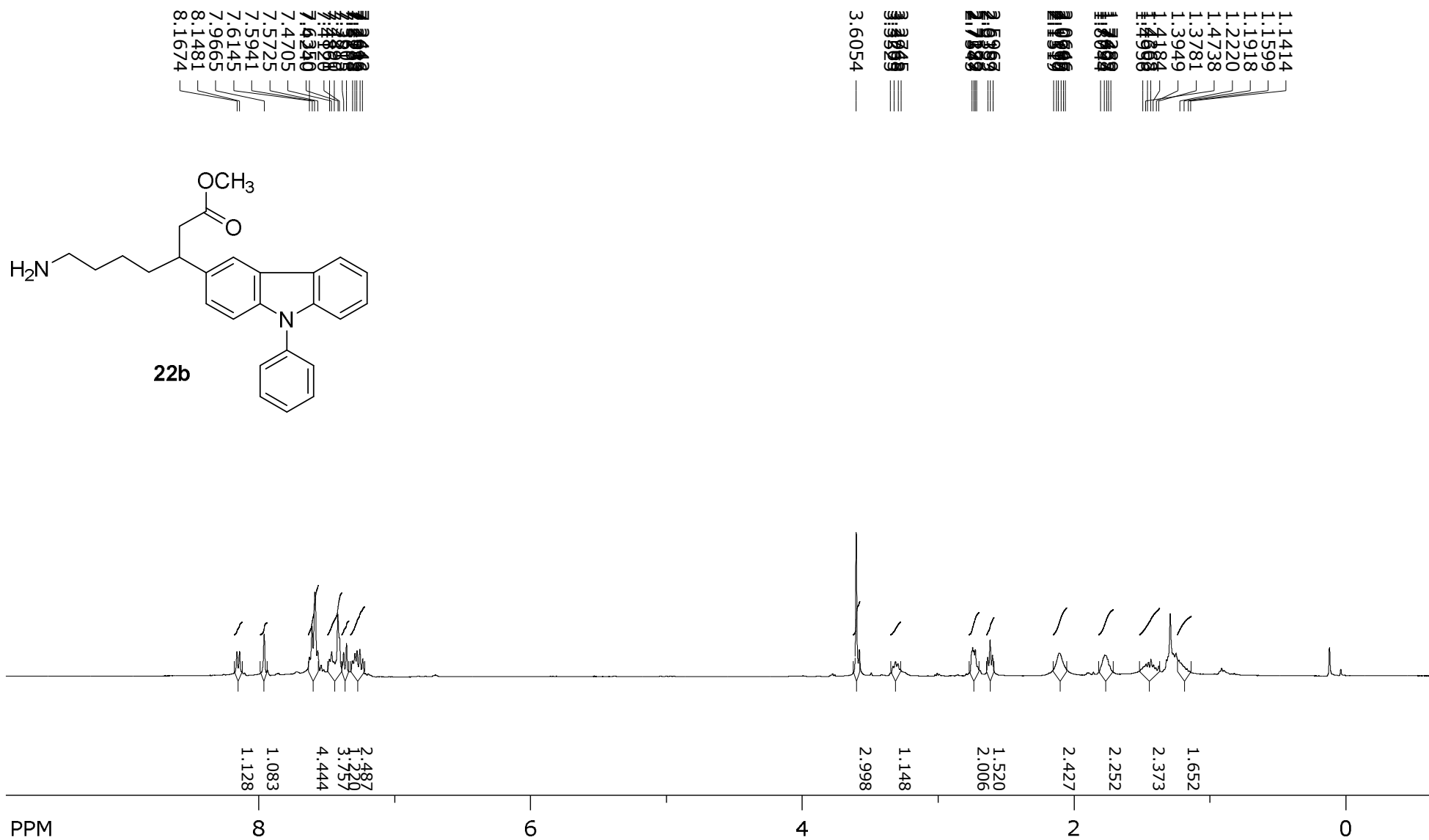
3.5481



SpinWorks 4: RD 222
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 16



SpinWorks 4: RD 464
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8



SpinWorks 4: RD 464
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8

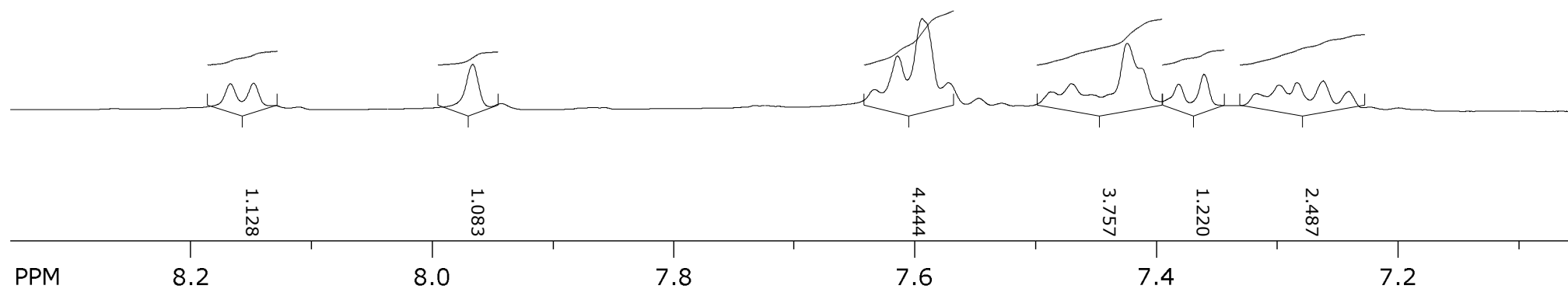
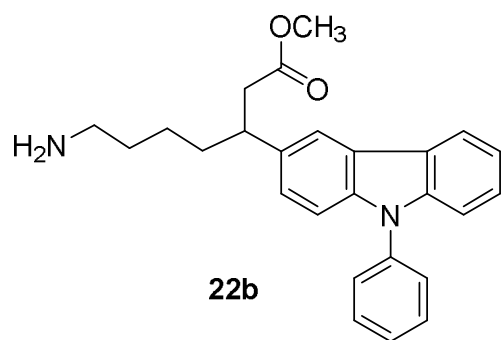
8.1481
 8.1674

7.9665

7.5725
 7.5941
 7.6145
 7.6350

7.4120
 7.4240
 7.4490
 7.4705
 7.4861

7.3603
 7.3815
 7.2442
 7.2616
 7.2833
 7.2983
 7.3158



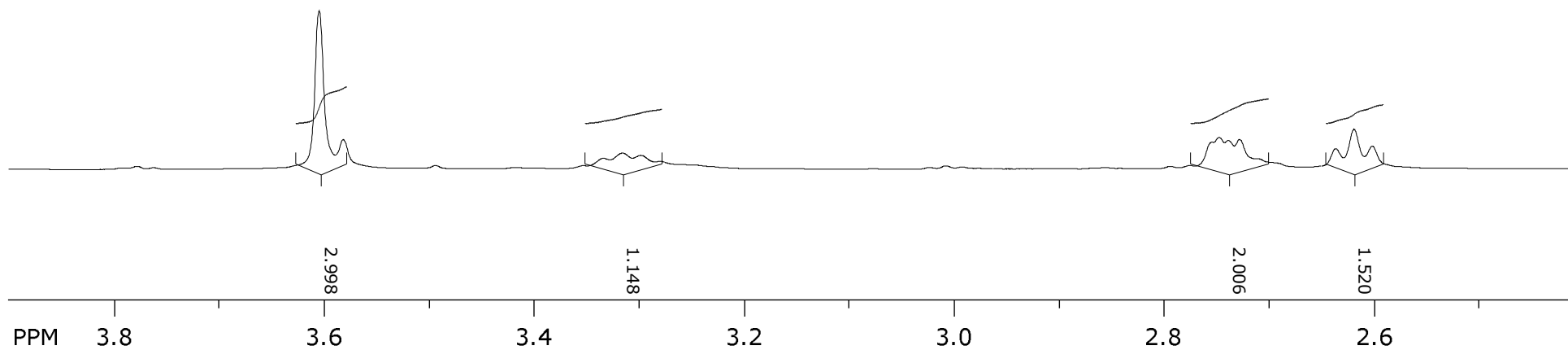
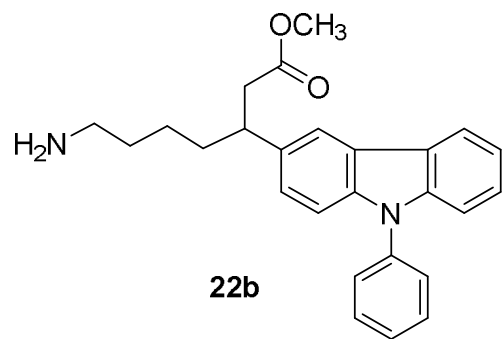
SpinWorks 4: RD 464
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8

3.6054

3.2745
3.2968
3.3265
3.3525

2.7192
2.7279
2.7387
2.7543

2.5967
2.6189
2.6353



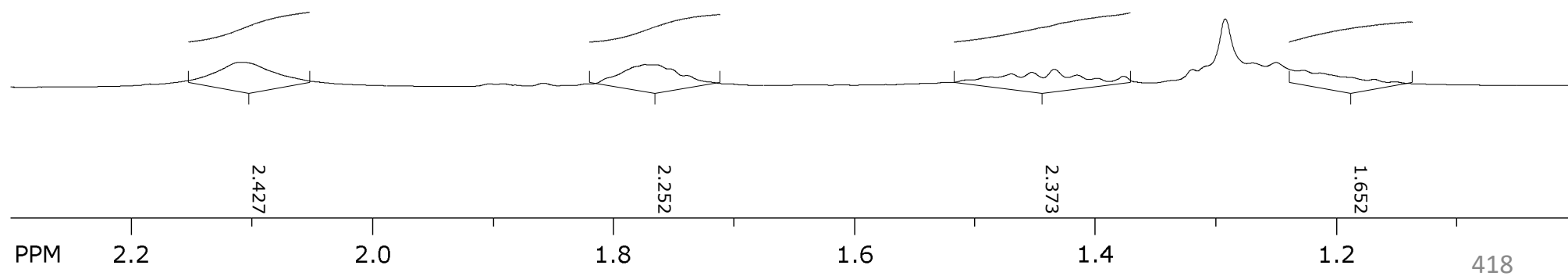
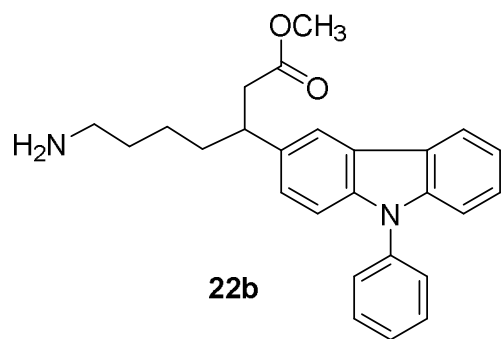
SpinWorks 4: RD 464
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8

2.0646
2.0797
2.0965
2.1150
2.1317
2.1519

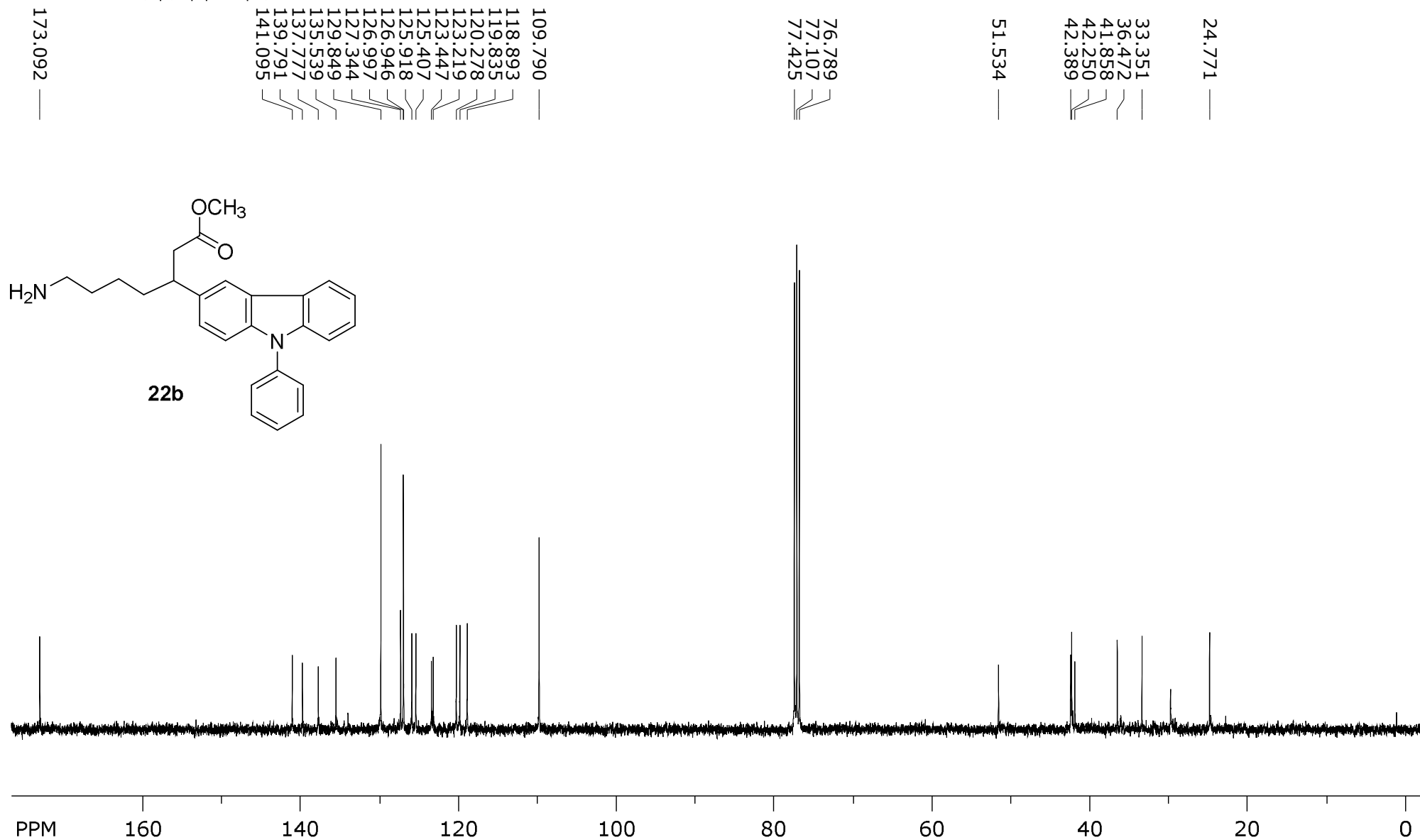
1.7289
1.7457
1.7608
1.7793
1.8044

1.3781
1.3949
1.4184
1.4368
1.4603
1.4738
1.4956

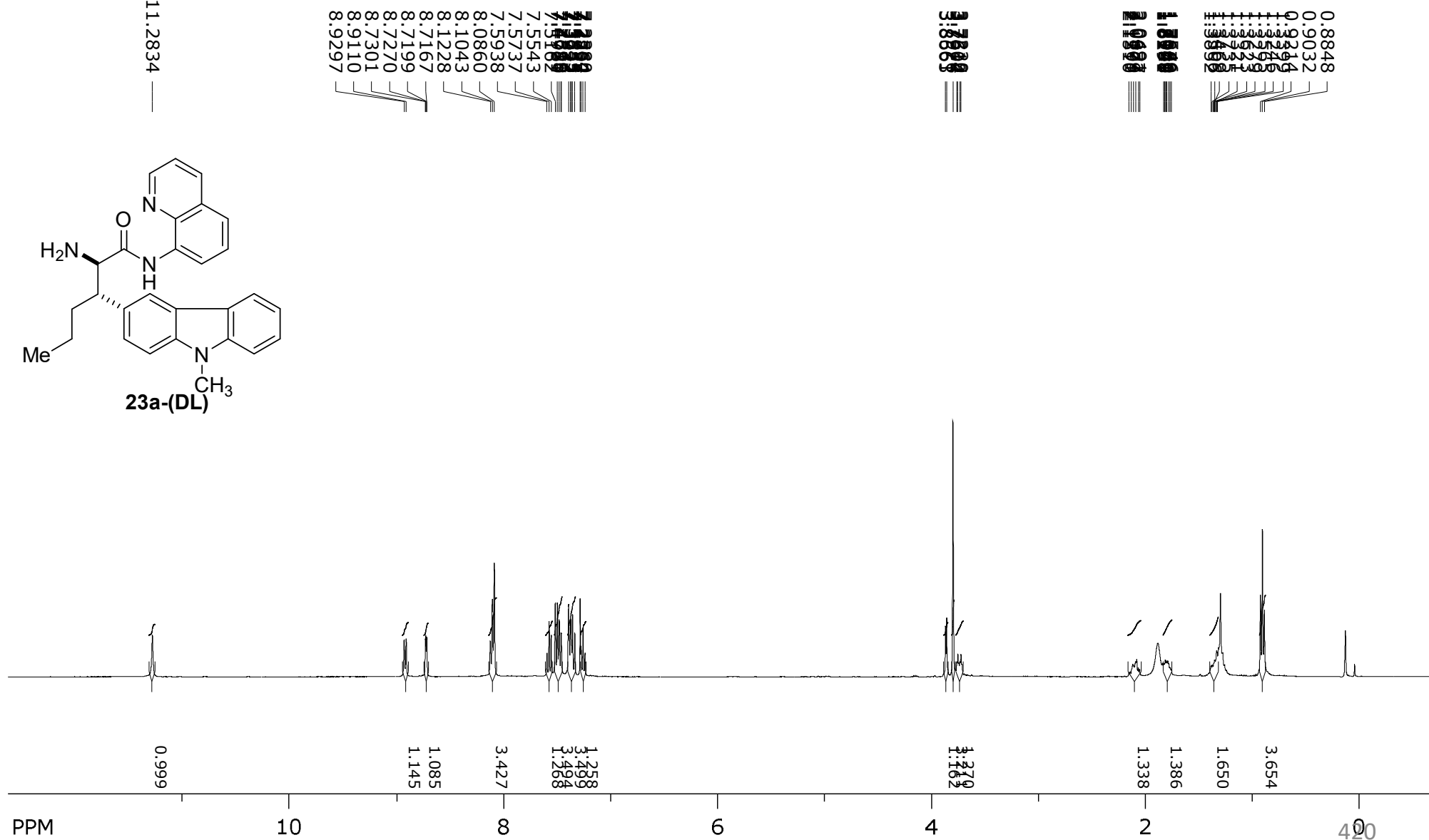
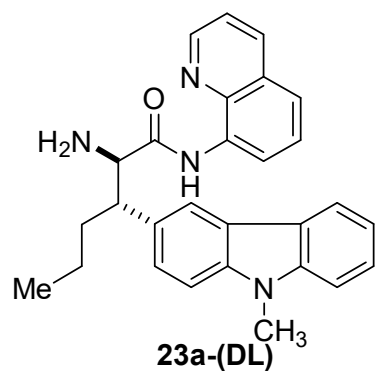
1.1414
1.1599
1.1918
1.2220



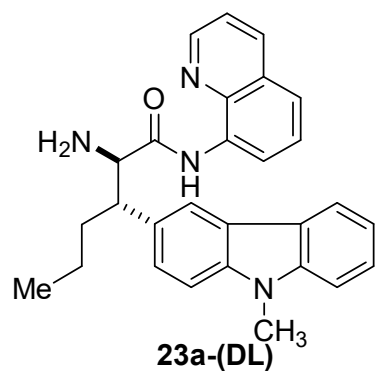
SpinWorks 4: RD 464
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8



SpinWorks 4: RD 456
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 47



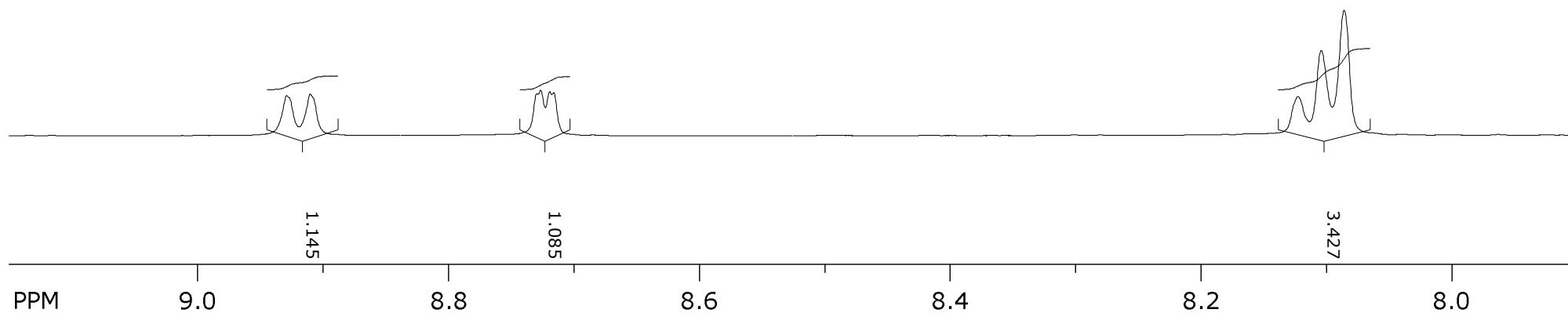
SpinWorks 4: RD 456
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 47



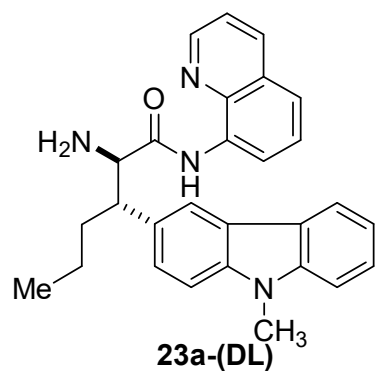
8.9110
8.9297

8.7167
8.7199
8.7270
8.7301

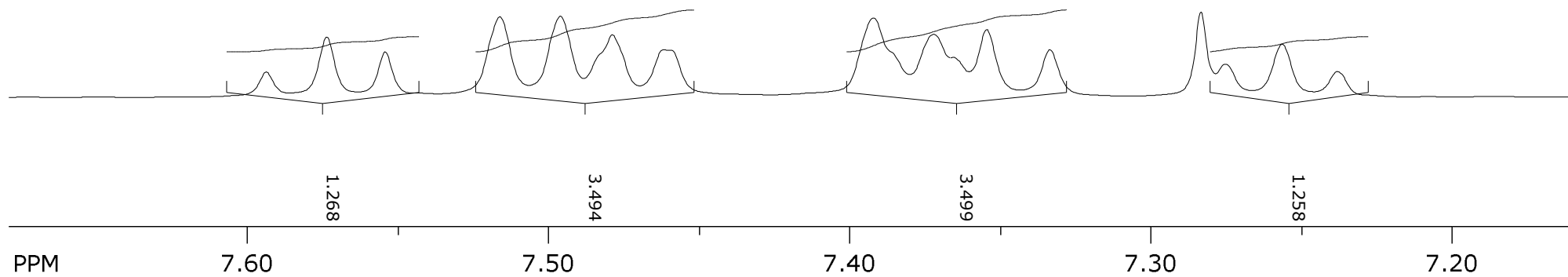
8.0860
8.1043
8.1228



SpinWorks 4: RD 456
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 47

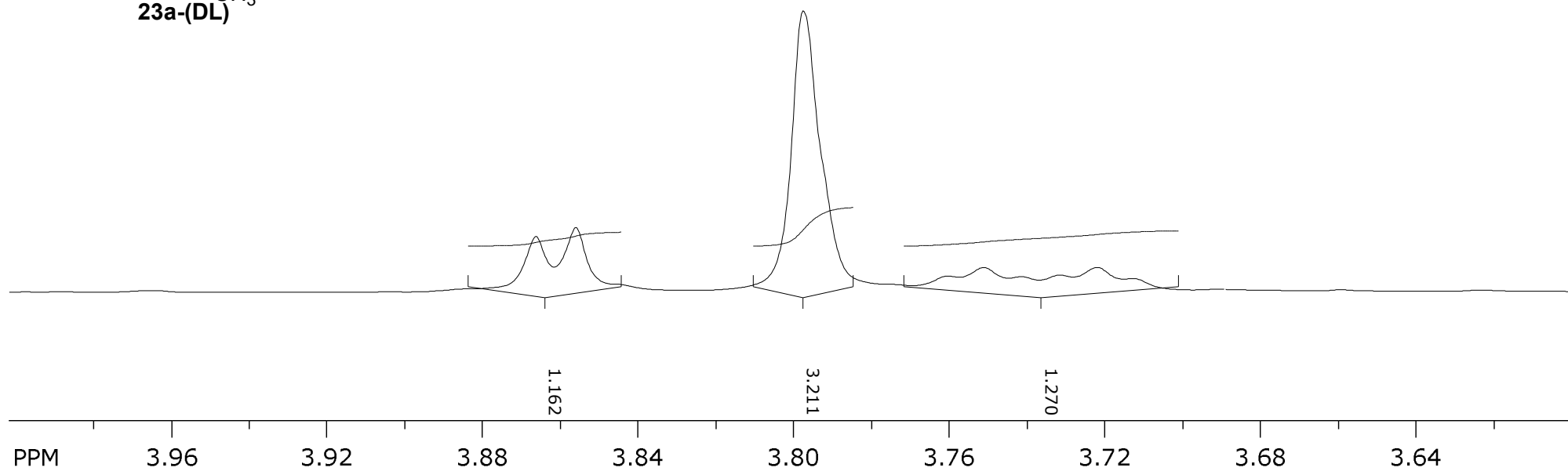
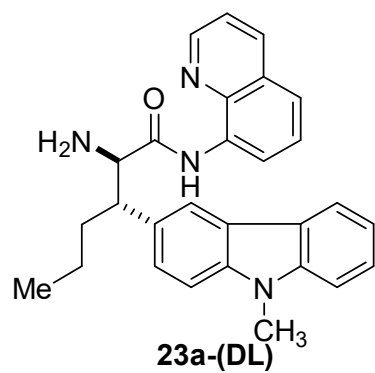


7.5938 —
7.5737 —
7.5543 —
7.5162 —
7.4961 —
7.4788 —
7.4596 —
7.4619 —
7.3922 —
7.3722 —
7.3655 —
7.3545 —
7.3335 —
7.2833 —
7.2752 —
7.2564 —
7.2380 —



SpinWorks 4: RD 456
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 47

3.8663 —
3.8561 —
3.7976 —
3.7604 —
3.7512 —
3.7315 —
3.7220 —



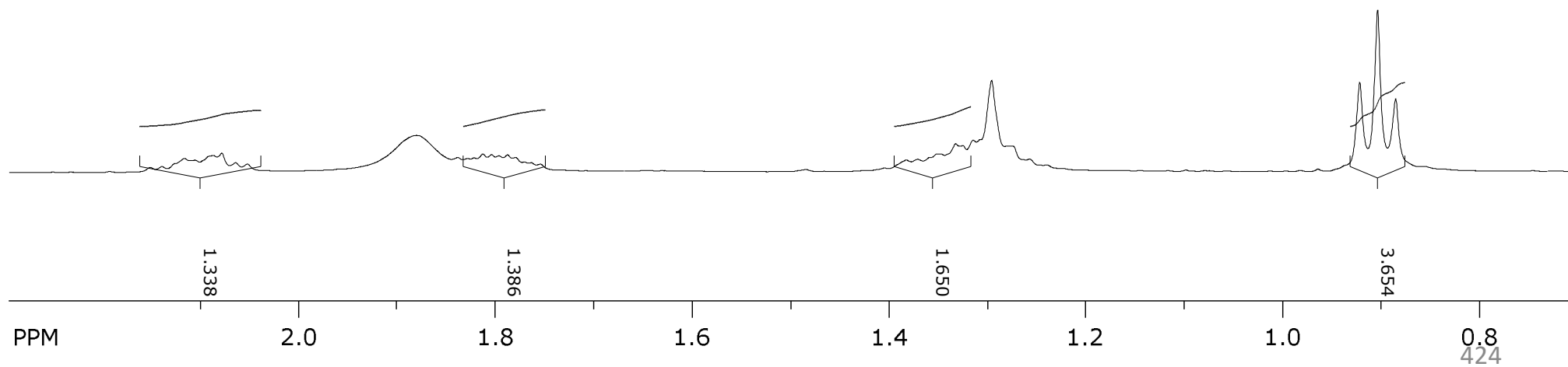
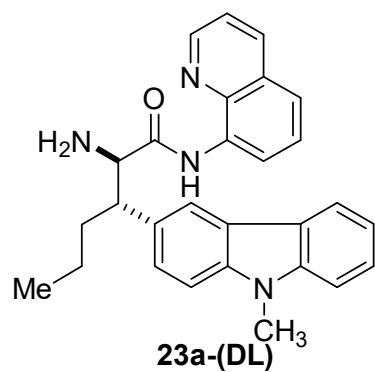
SpinWorks 4: RD 456
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 47

2.0491
2.0637
2.0873
2.1109
2.1291
2.1510

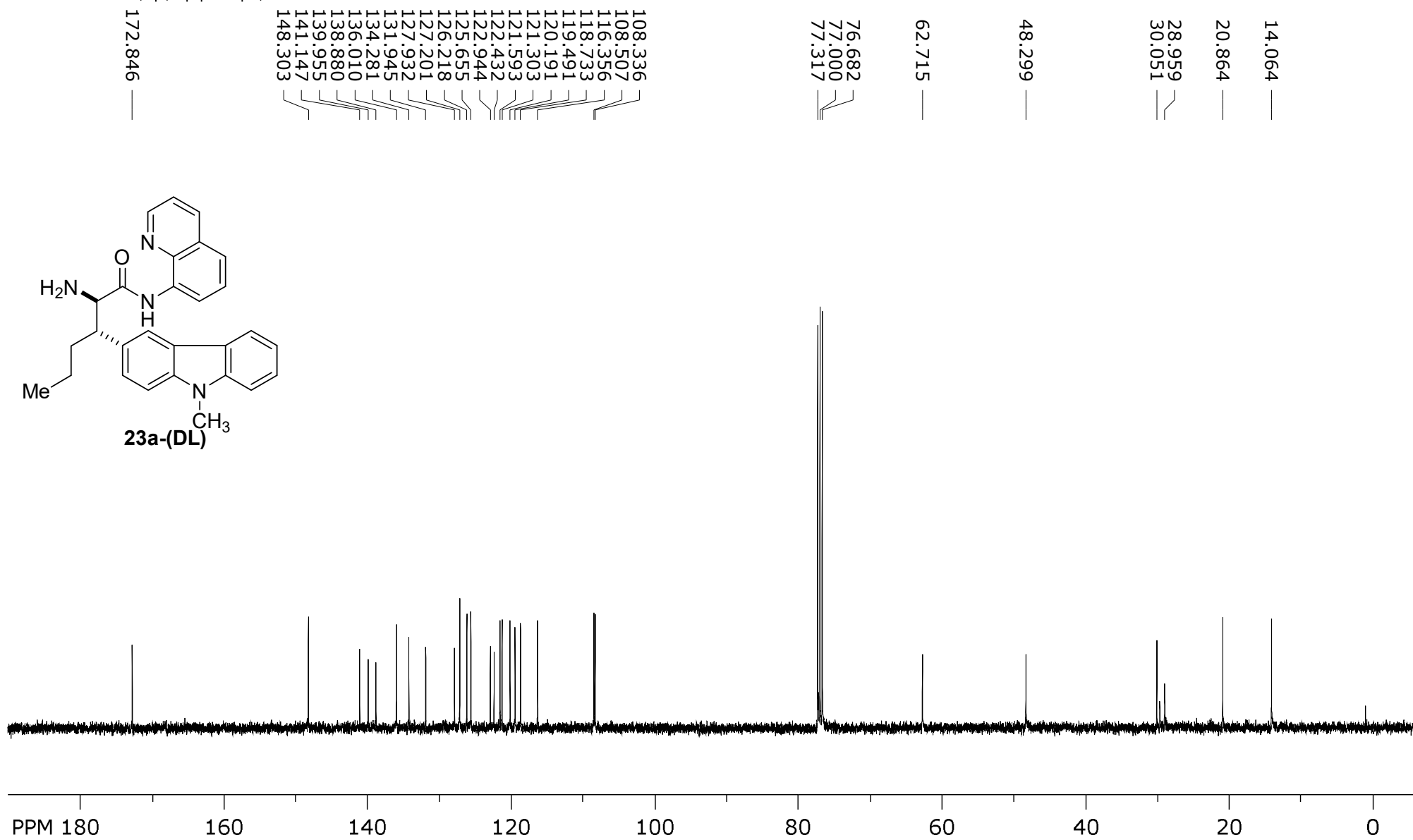
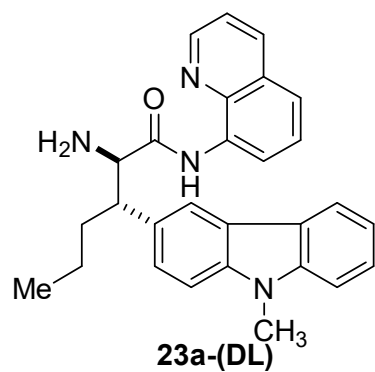
1.7546
1.7679
1.7800
1.7966
1.8041
1.8129
1.8188
1.8291

1.3145
1.3279
1.3375
1.3506
1.3574
1.3697
1.3831

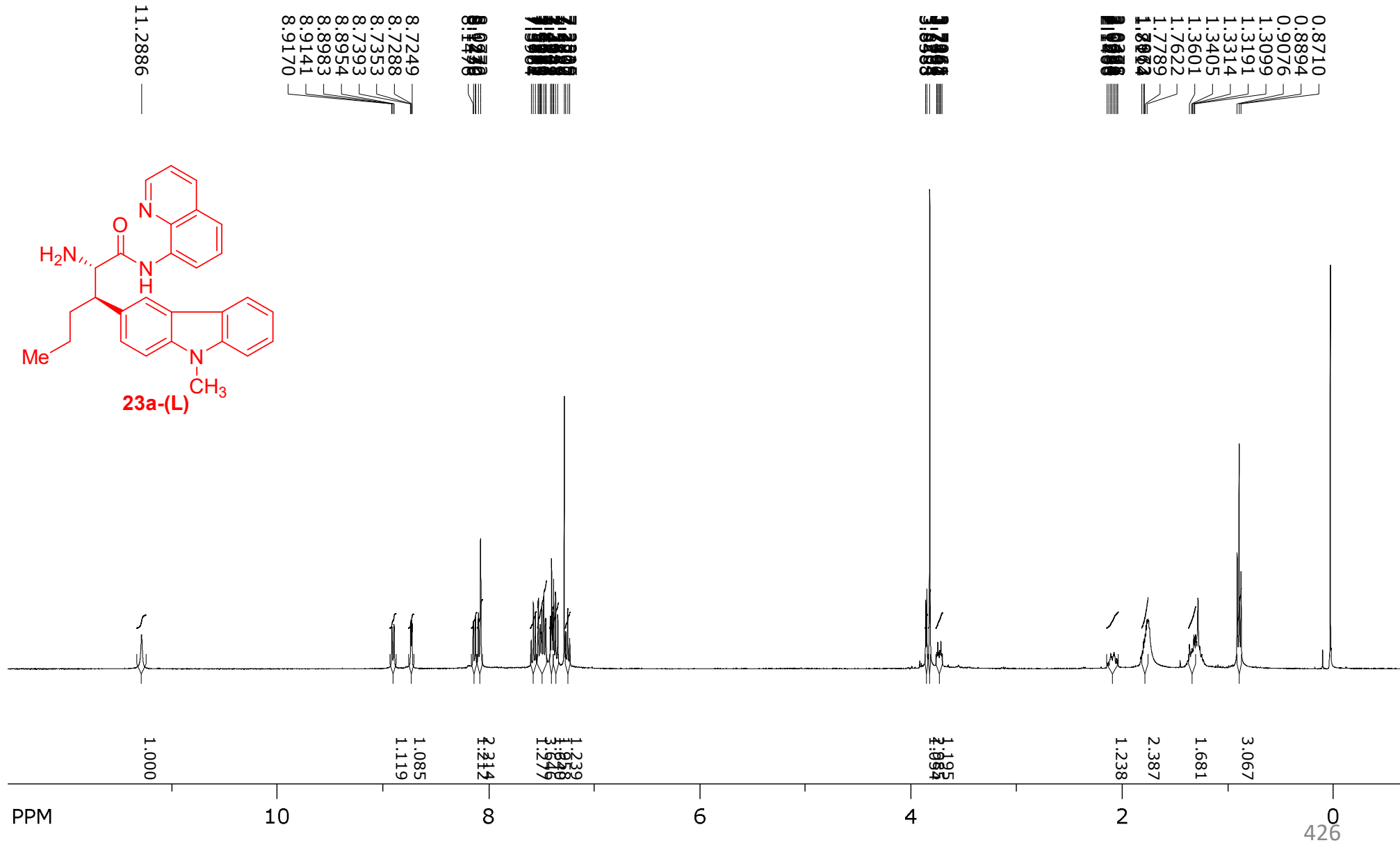
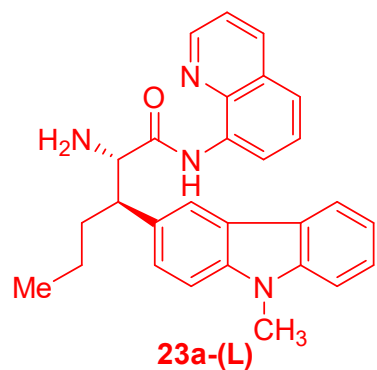
0.8848
0.9032
0.9214



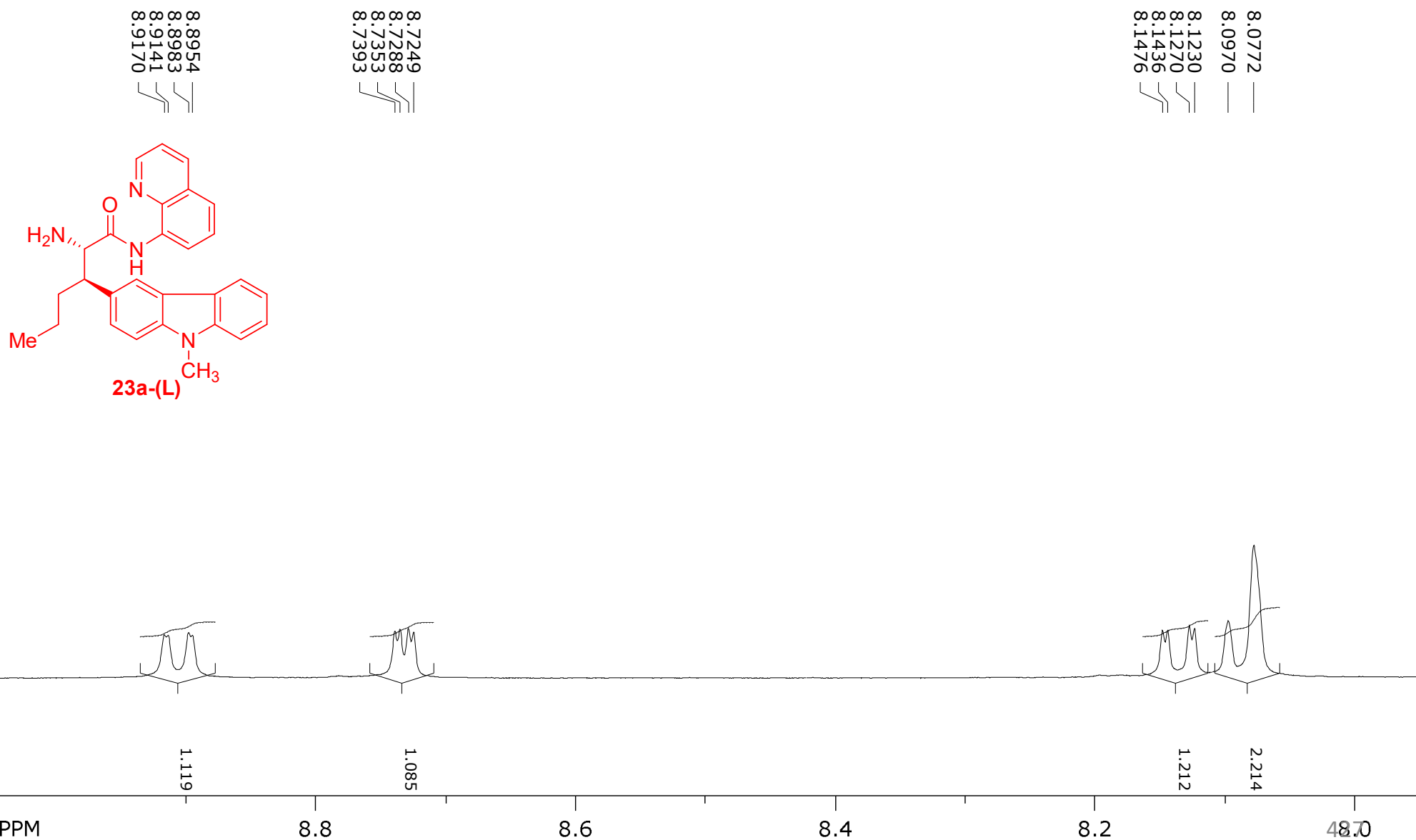
SpinWorks 4: RD 456
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 47



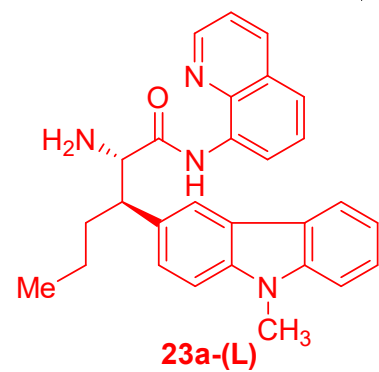
SpinWorks 4: RD-978
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 27



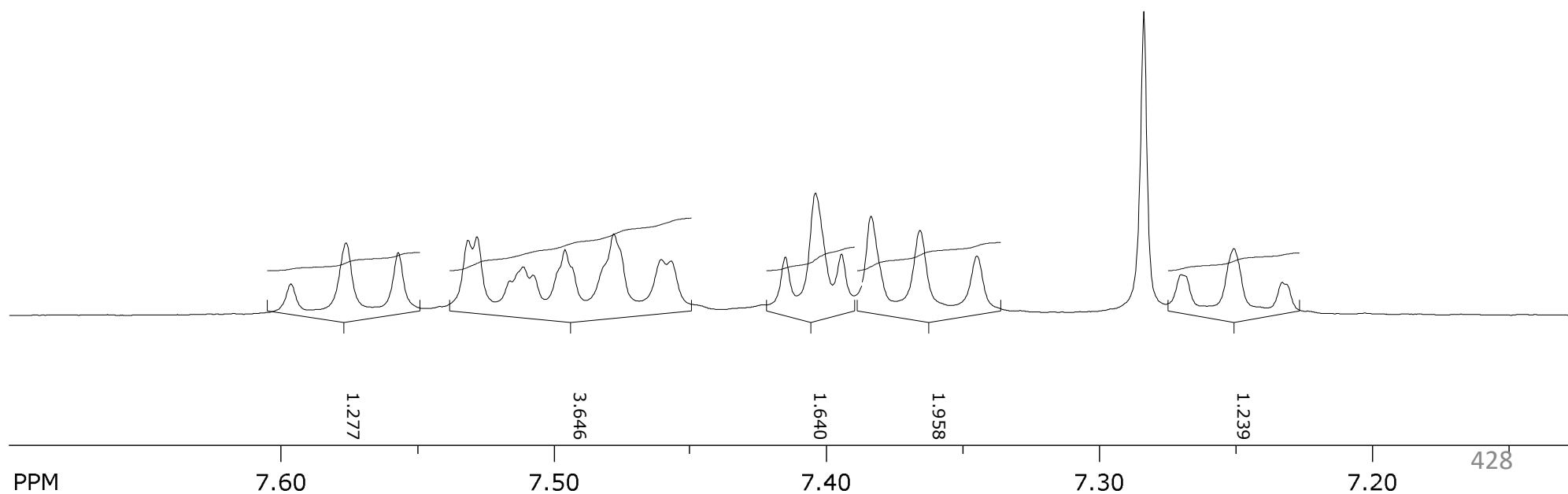
SpinWorks 4: RD-978
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 27



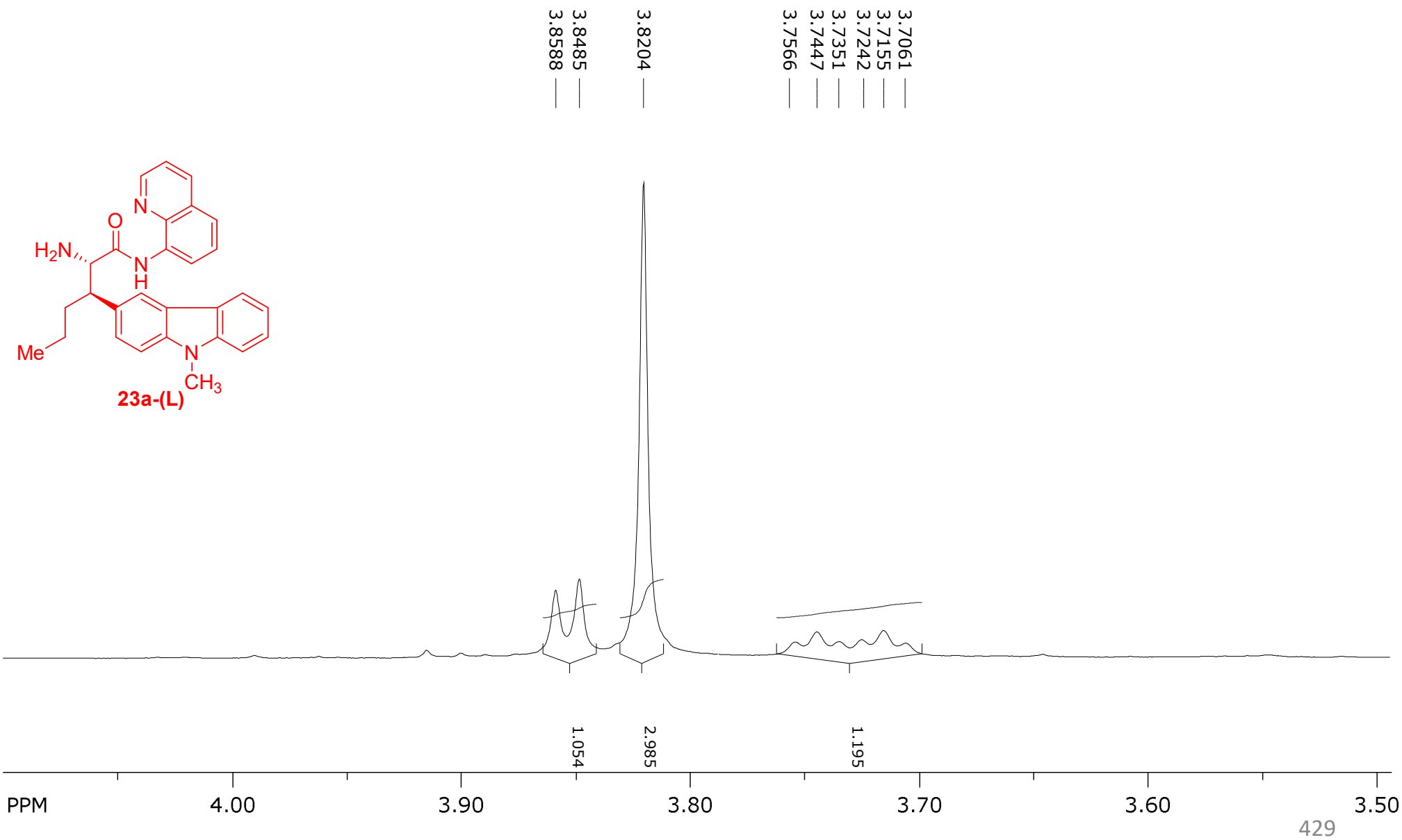
SpinWorks 4: RD-978
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 27



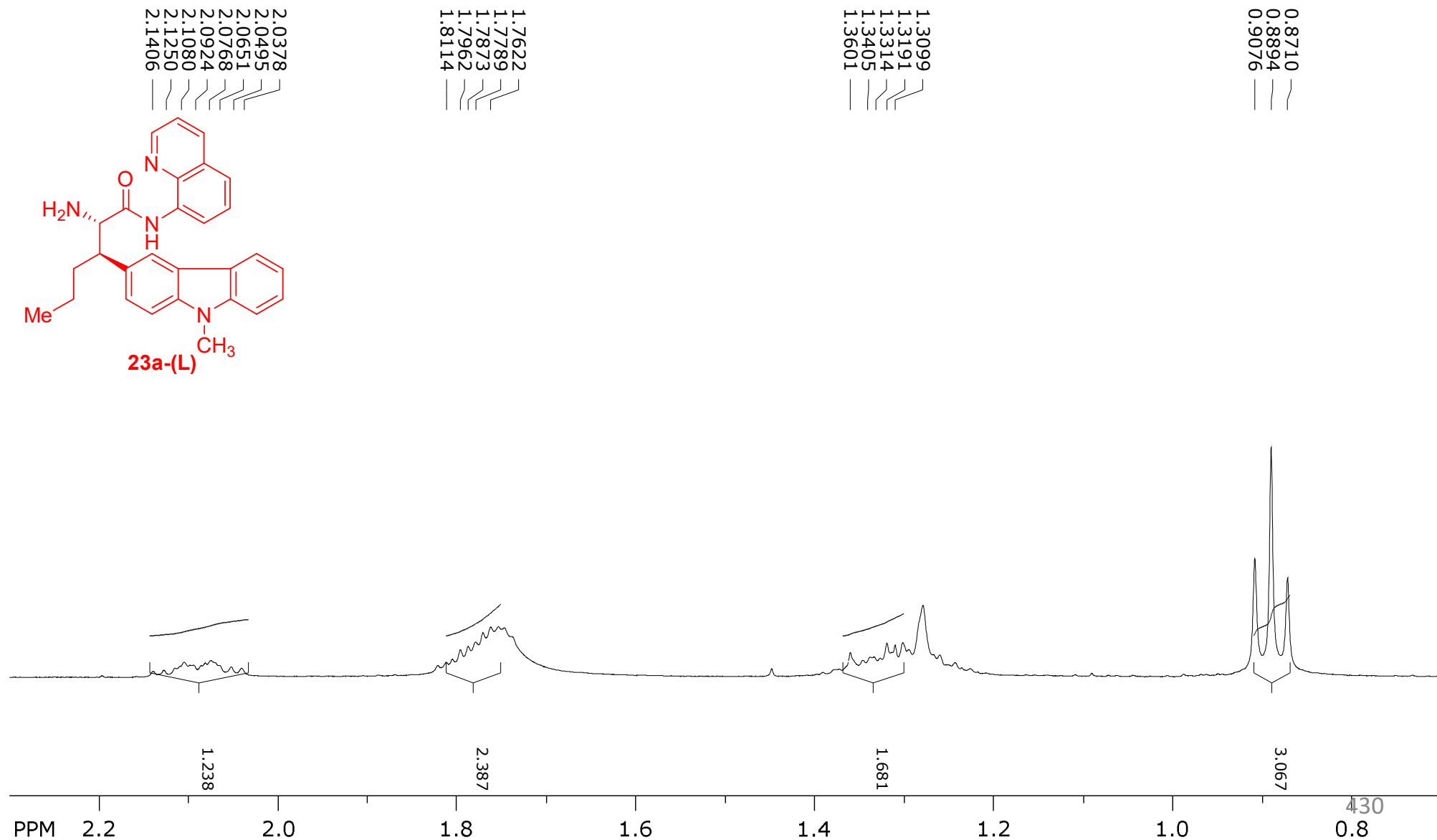
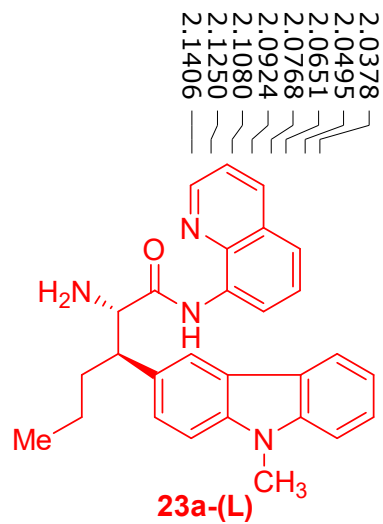
7.5964	7.5762	7.5571	7.5315	7.5282	7.5161	7.5076	7.4959	7.4780	7.4607	7.4571	7.4151	7.4041	7.3945	7.3837	7.3658	7.3449	7.2837	7.2700	7.2507	7.2329	7.2315
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—



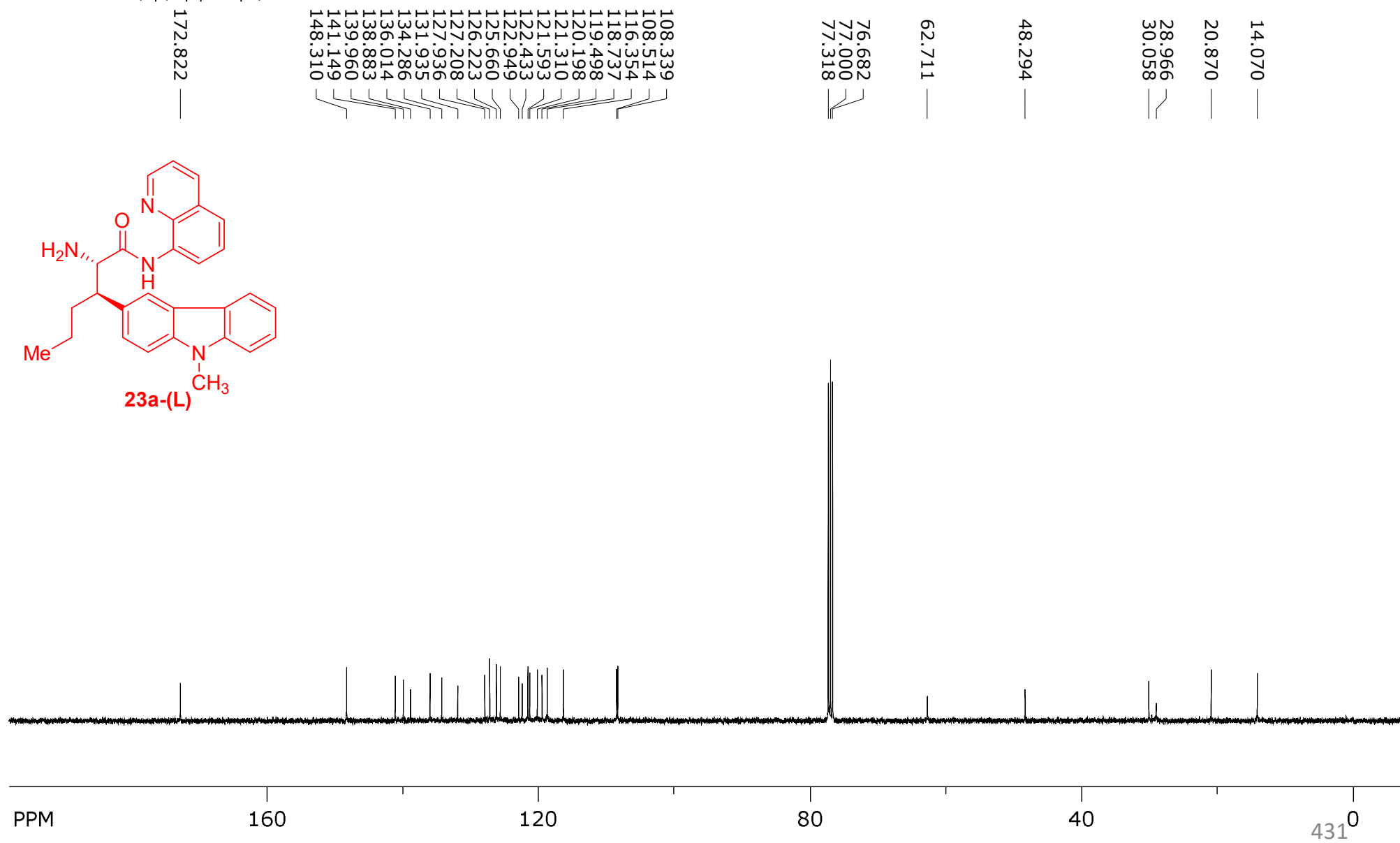
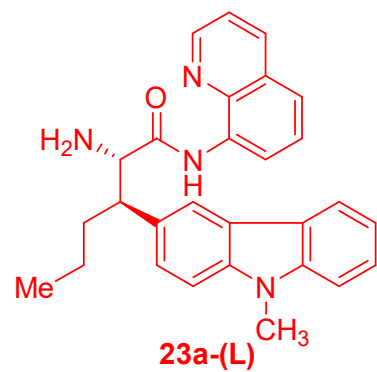
SpinWorks 4: RD-978
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 27

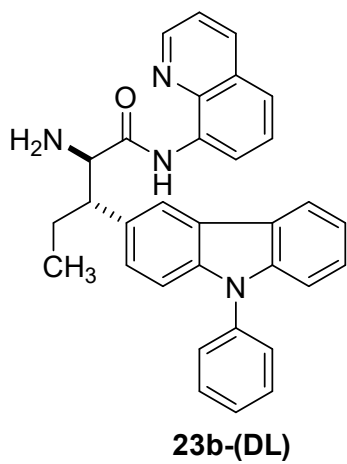


SpinWorks 4: RD-978
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 27

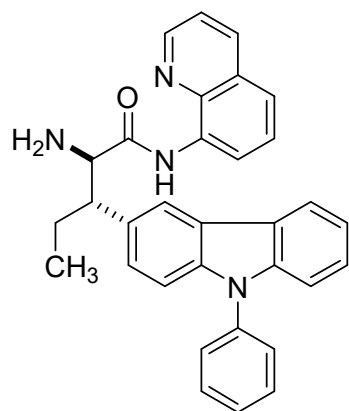


SpinWorks 4: RD-978
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 13



[illegible]

SpinWorks 4: RD 426 REP 1
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 9

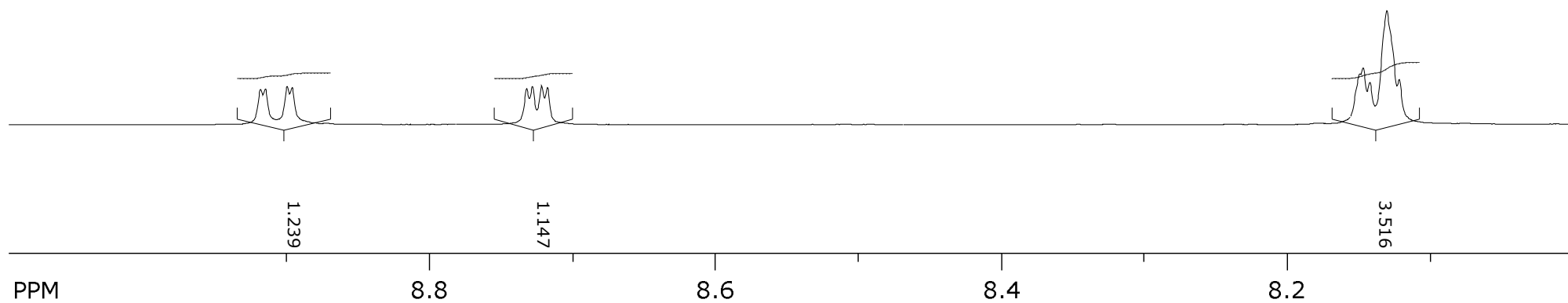


23b-(DL)

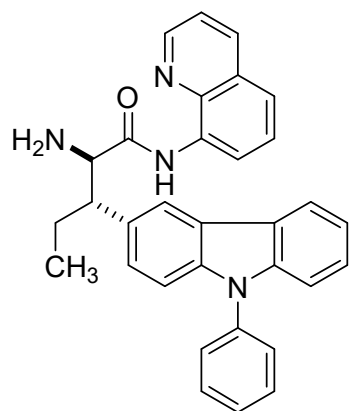
8.8961
8.8996
8.9149
8.9182

8.7175
8.7216
8.7280
8.7320

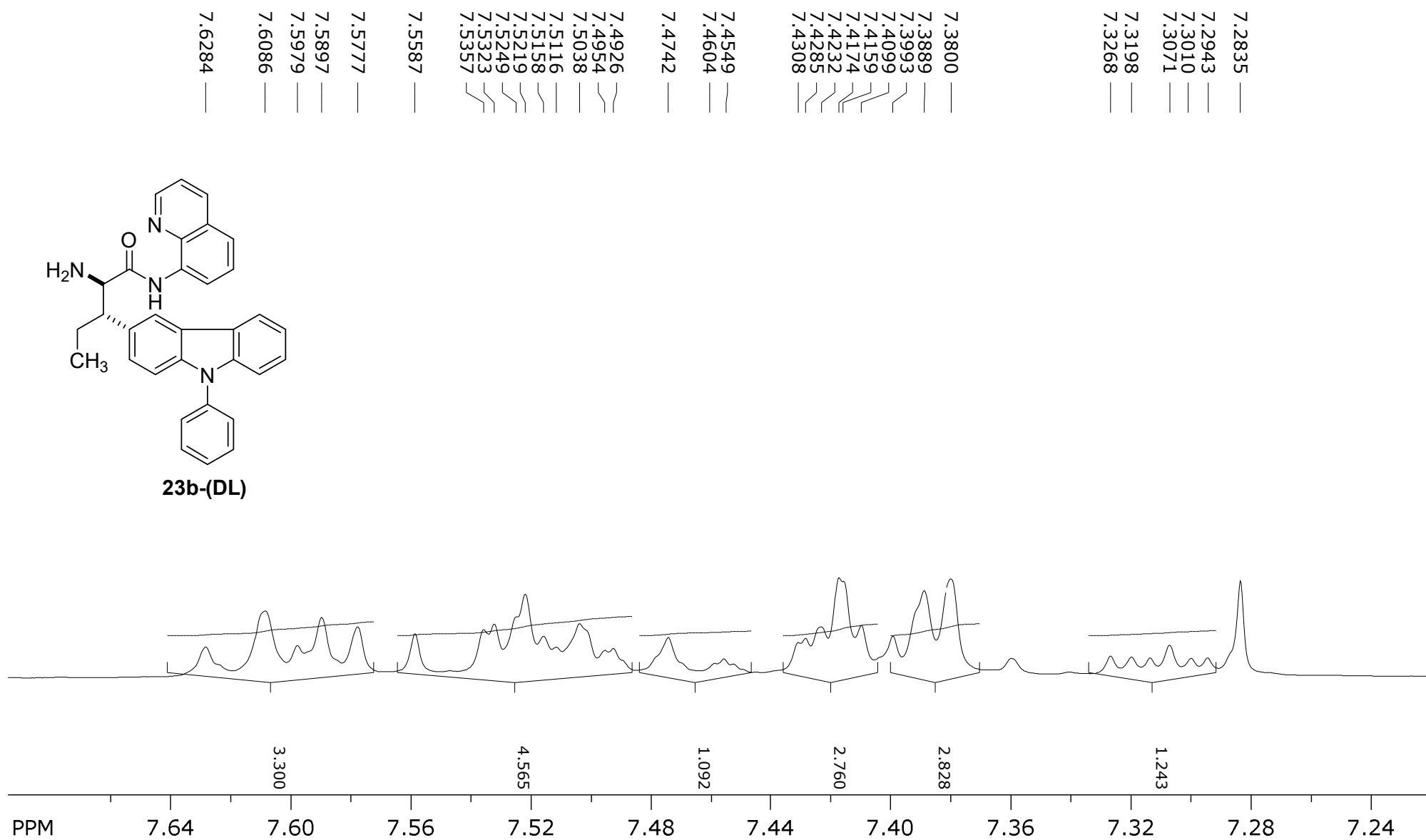
8.1216
8.1302
8.1421
8.1468
8.1492



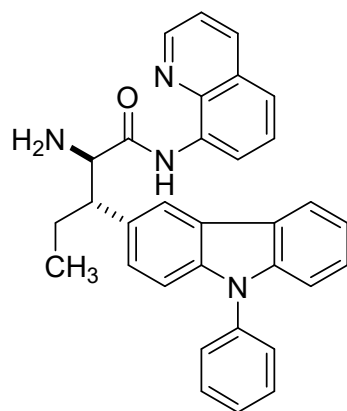
SpinWorks 4: RD 426 REP 1
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 9



23b-(DL)



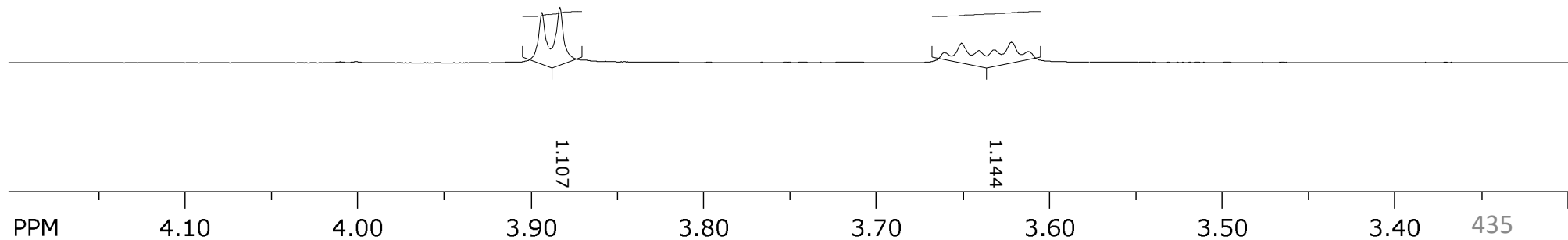
SpinWorks 4: RD 426 REP 1
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 9



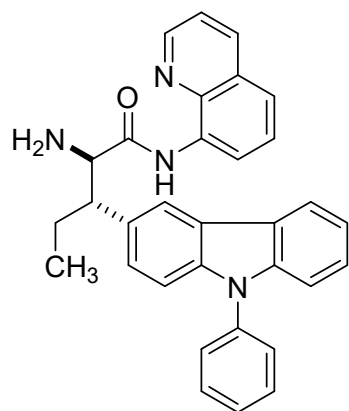
23b-(DL)

3.8833
3.8937

3.6142
3.6224
3.6310
3.6401
3.6511
3.6605



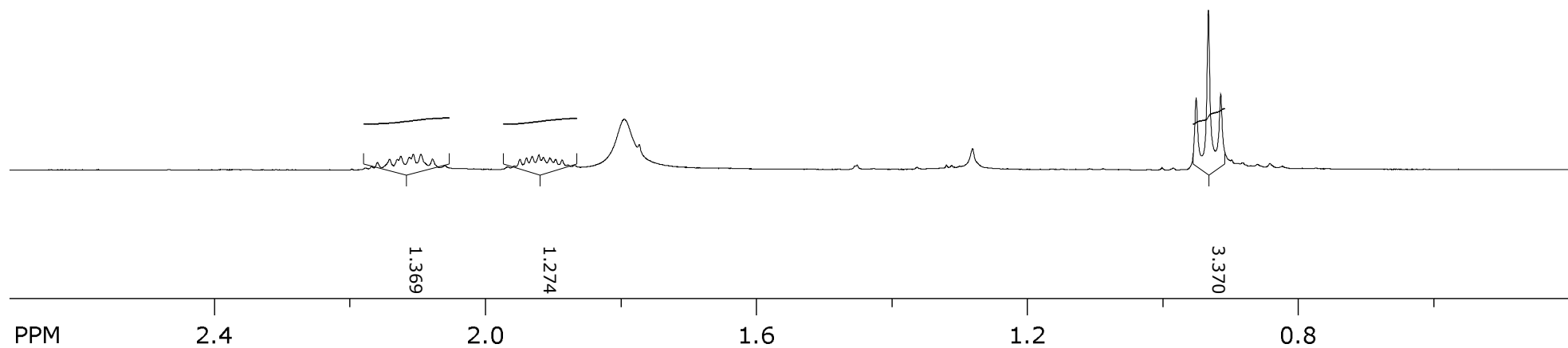
SpinWorks 4: RD 426 REP 1
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 9



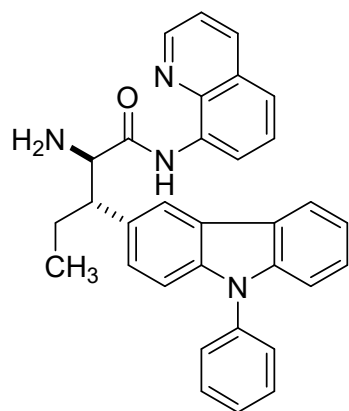
23b-(DL)

2.0769
 2.0927
 2.1186
 2.1404
 2.1603
 1.8683
 1.8921
 1.9100
 1.9378
 1.9517

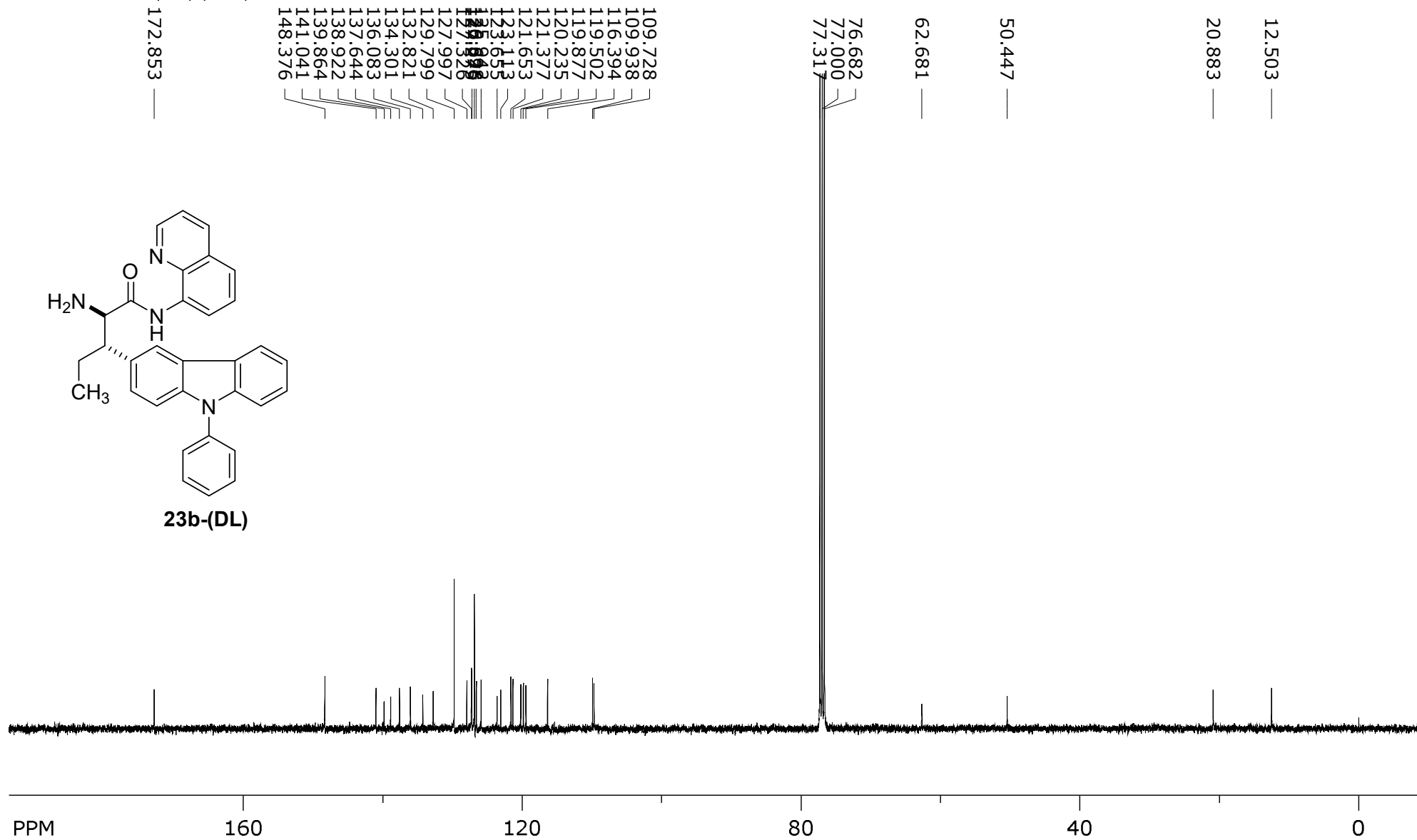
0.9141
 0.9323
 0.9505



SpinWorks 4: RD-426-REP-1
 C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 14

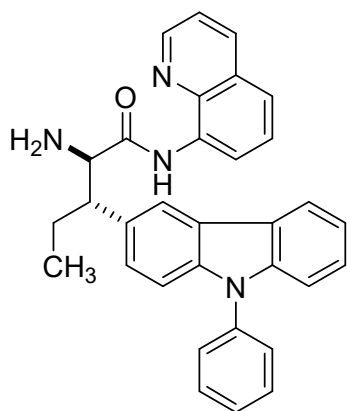


23b-(DL)

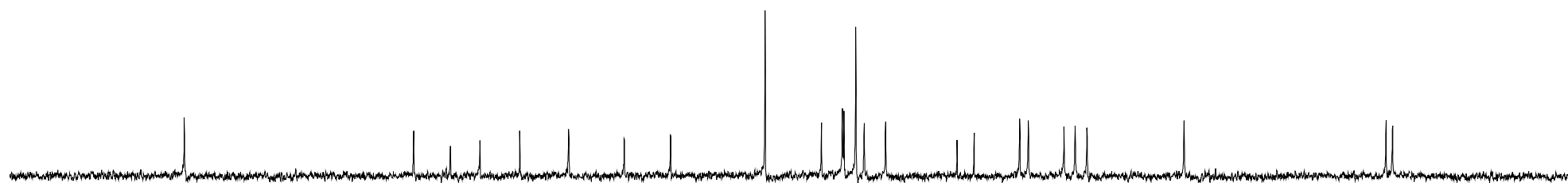


SpinWorks 4: RD-426-REP-1
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 14

148.376 —
141.041 —
139.864 —
138.922 —
137.644 —
136.083 —
134.301 —
132.821 —
129.799 —
127.997 —
127.326 —
127.275 —
126.896 —
126.628 —
125.942 —
123.655 —
123.113 —
121.653 —
121.377 —
120.235 —
119.877 —
119.502 —
116.394 —
109.728 —
109.938 —



23b-(DL)



PPM

140

130

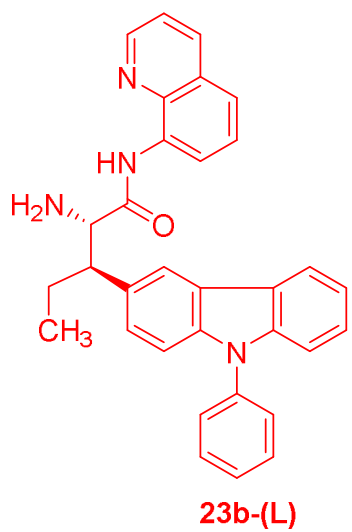
120

110

438

¹H NMR spectrum (400 MHz, CDCl₃) of compound **23b-(L)**. The chemical structure is shown above the spectrum. The spectrum displays peaks corresponding to the protons in the molecule, with integration values provided below the baseline.

Chemical Shift (ppm)	Integration
~1.1	0.999
~1.2	1.107
~1.3	1.135
~1.9	1.208
~2.0	3.101
~2.1	3.101
~2.2	3.101
~3.9	3.359
~7.0-8.0	1.123, 1.084, 1.307, 1.276, 3.253
~11.3	0.999

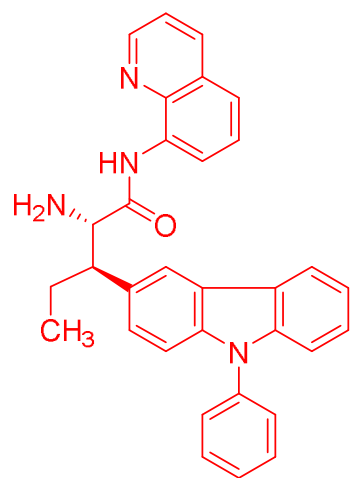


SpinWorks 4: RD-982
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 5

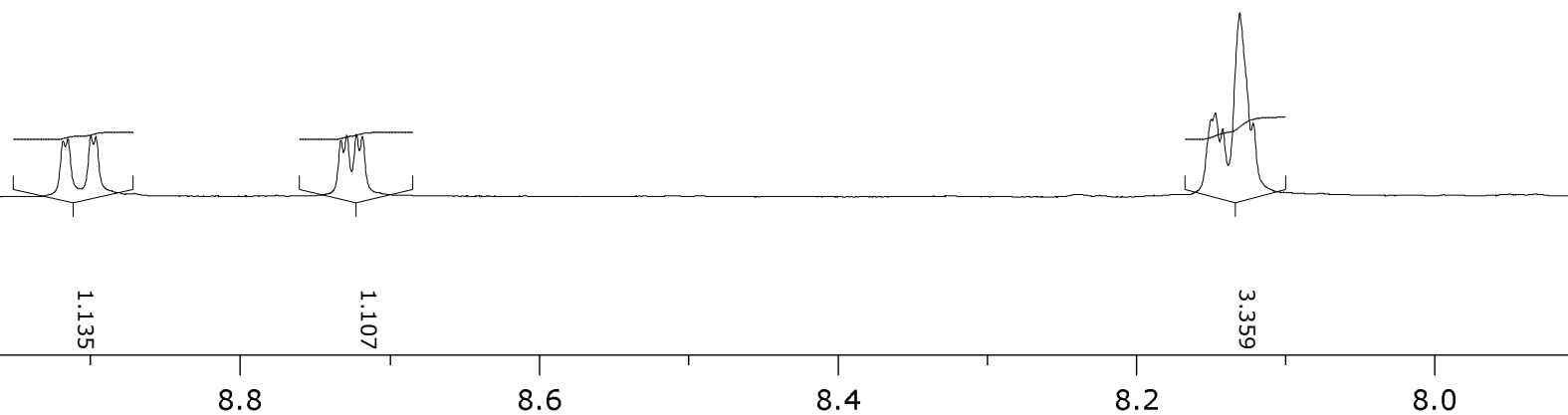
8.8970
8.9003
8.9157
8.9189

8.7184
8.7224
8.7289
8.7329

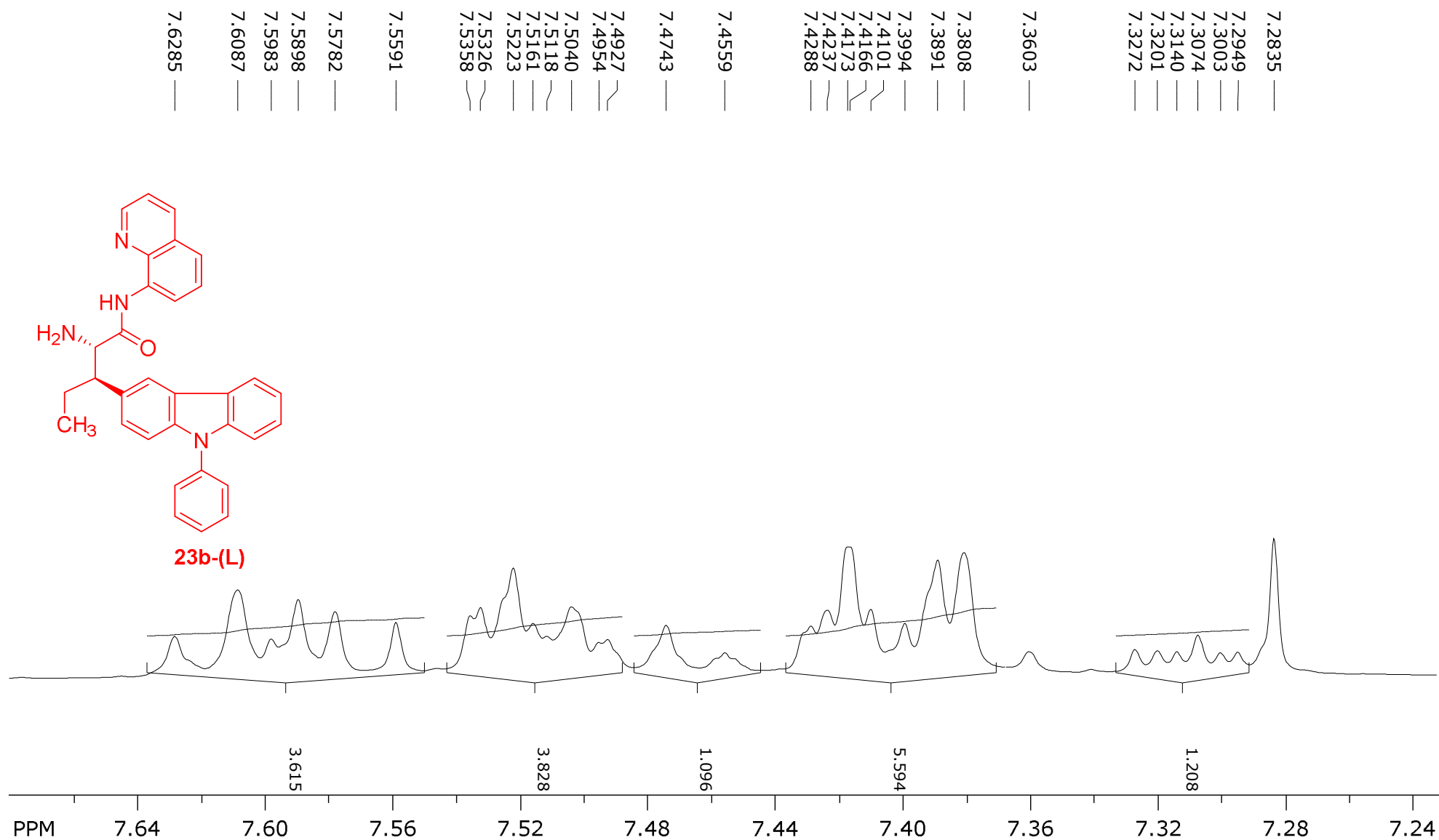
8.1216
8.1307
8.1421
8.1470
8.1498



23b-(L)



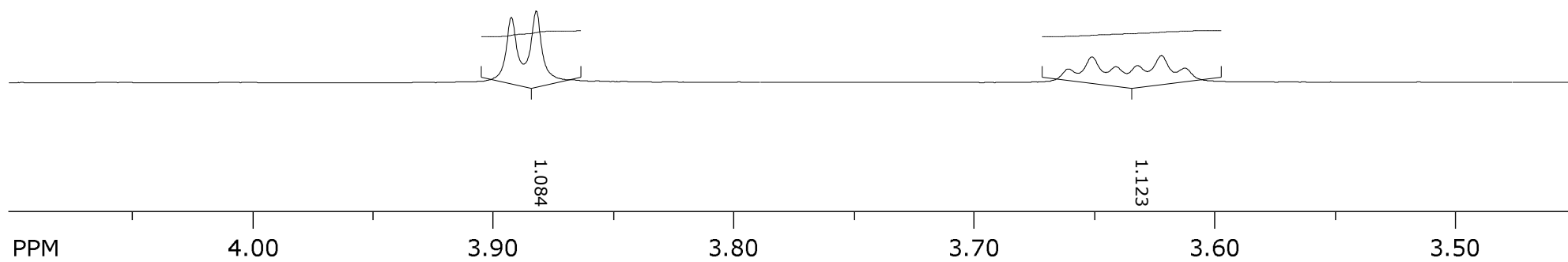
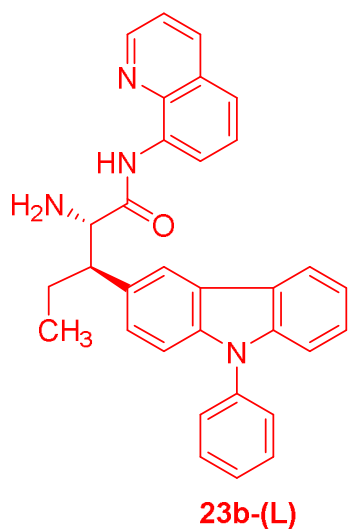
SpinWorks 4: RD-982
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 5



SpinWorks 4: RD-982
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 5

3.8822 —
3.8926 —

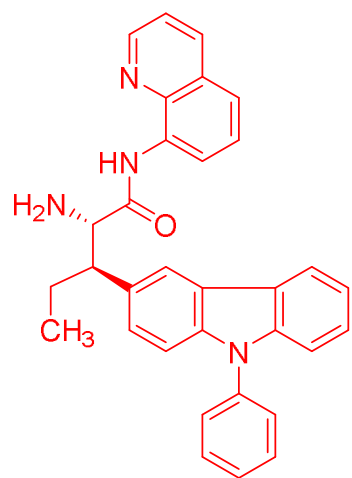
3.6126 —
3.6221 —
3.6339 —
3.6413 —
3.6510 —
3.6618 —



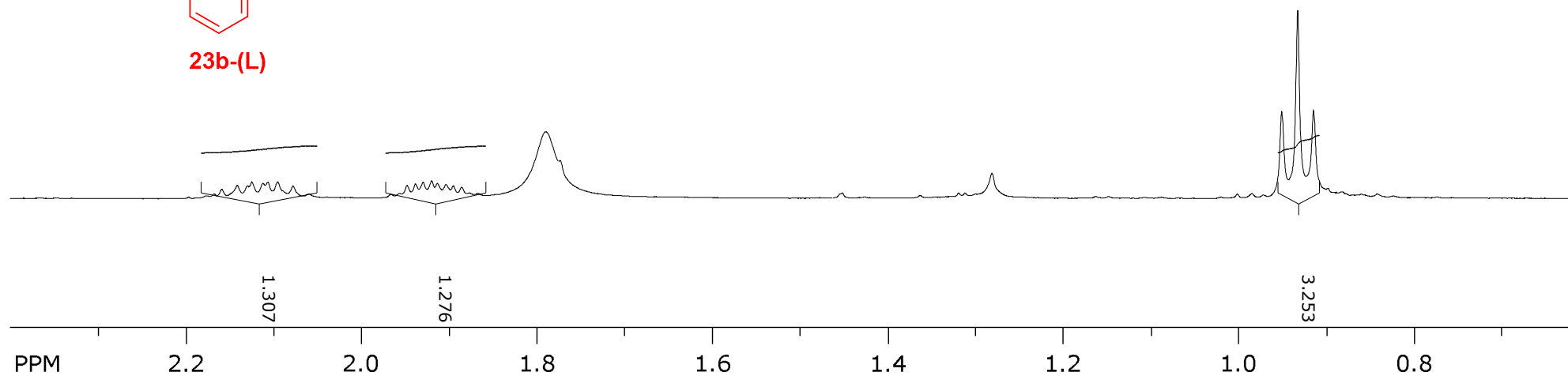
SpinWorks 4: RD-982
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 5

2.0792
2.0933
2.1110
2.1269
2.1428
2.1605
1.8866
1.9007
1.9184
1.9290
1.9360
1.9519

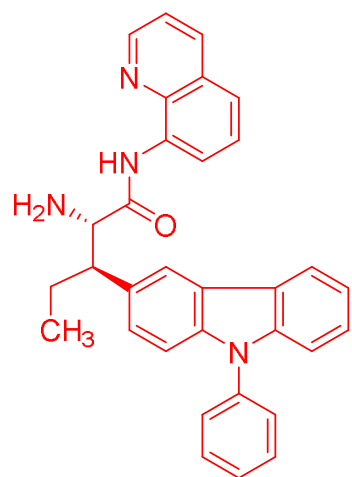
0.9143
0.9325
0.9507



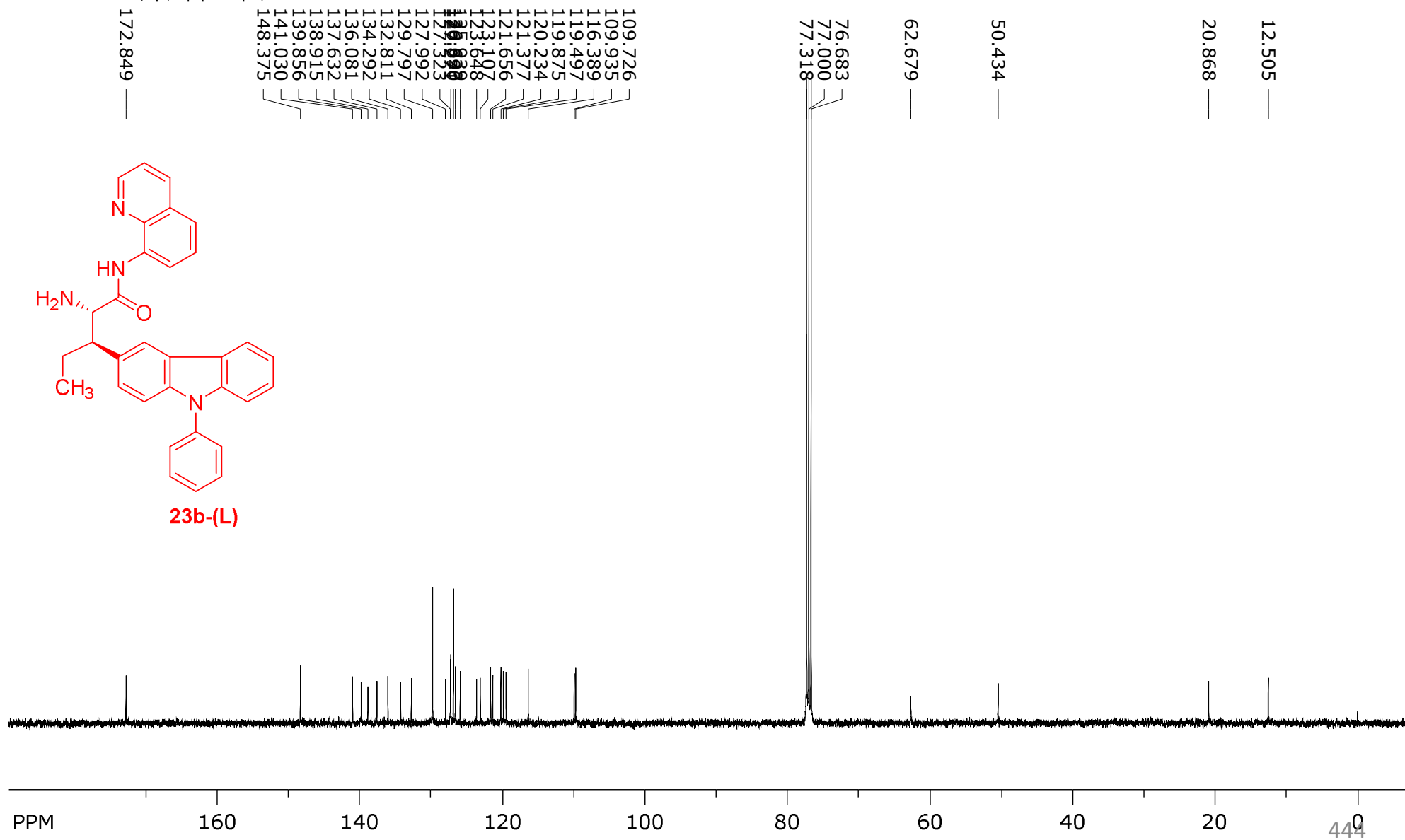
23b-(L)



SpinWorks 4: RD-982
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 22



23b-(L)



SpinWorks 4: RD-982
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 22

148.375 —

141.030 —

139.856 —

138.915 —

137.632 —

136.081 —

134.292 —

132.811 —

129.797 —

127.992 —

127.323 —

127.271 —

126.890 —

126.623 —

125.939 —

123.648 —

123.107 —

121.656 —

121.377 —

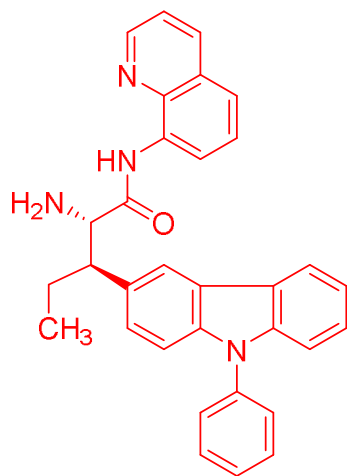
120.234 —

119.875 —

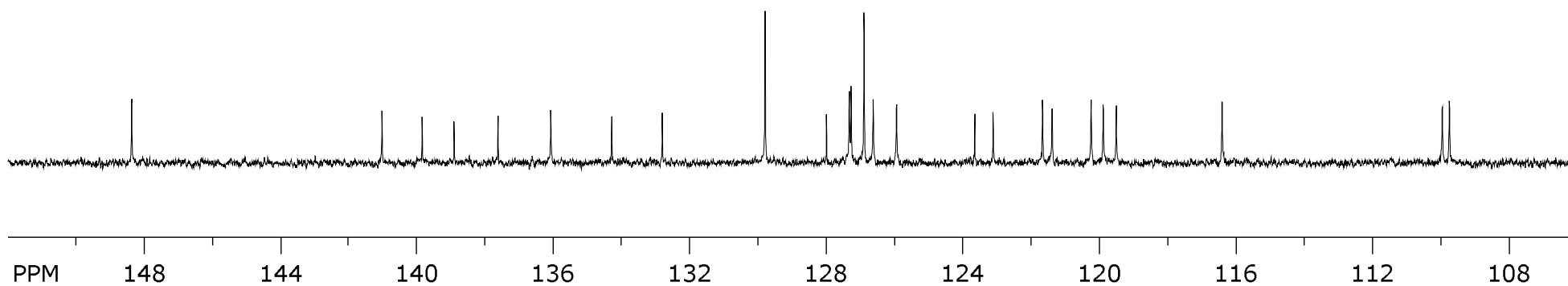
119.497 —

116.389 —

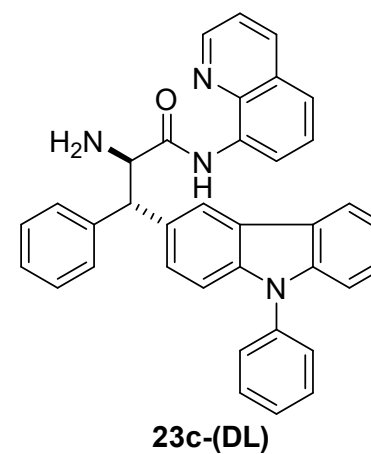
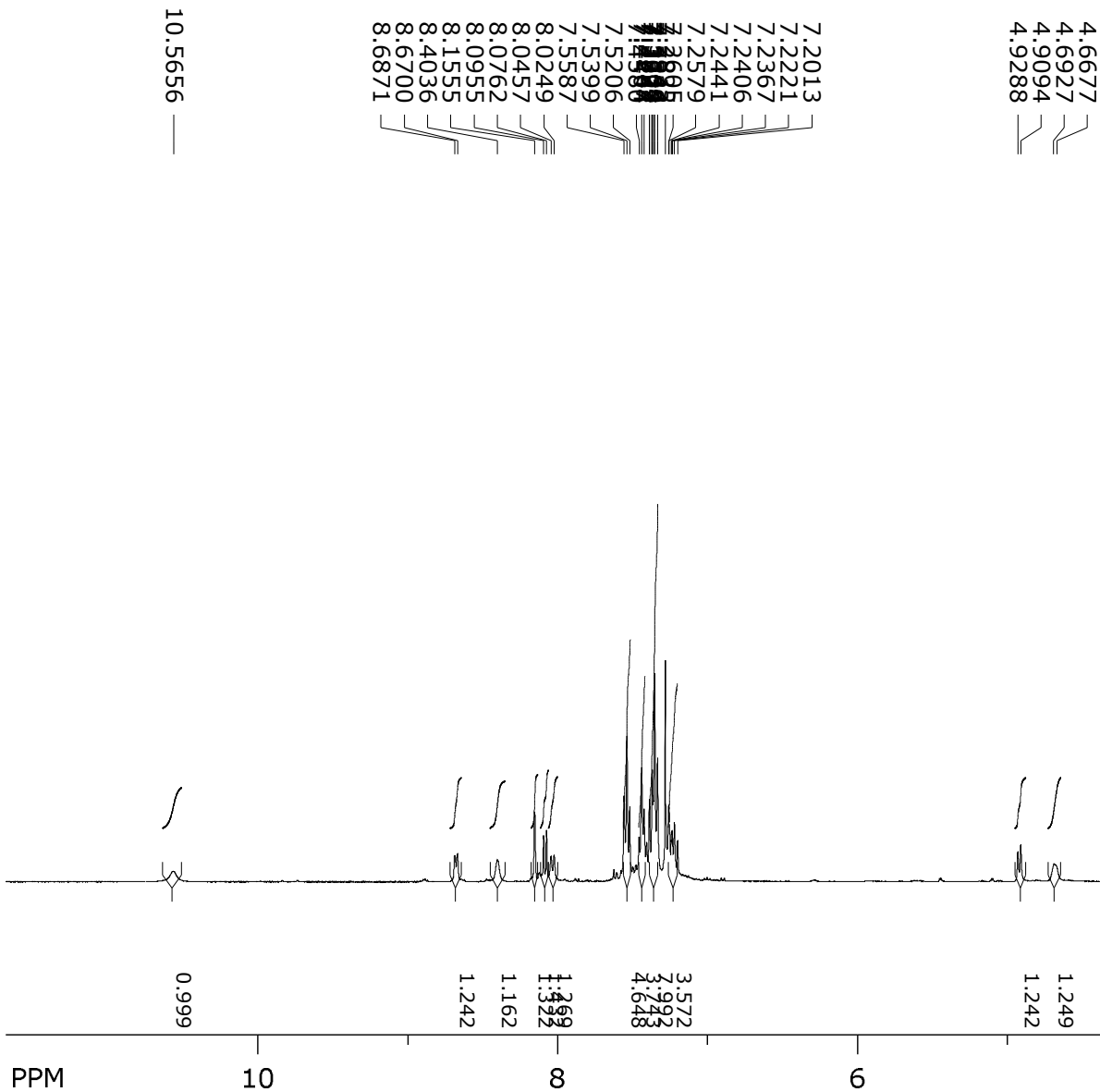
109.726 —
109.935 —



23b-(L)



SpinWorks 4: RD 421 REP 2
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 10



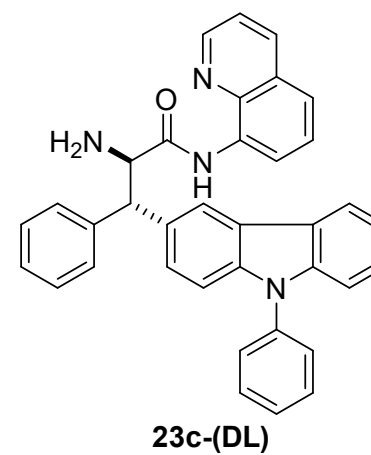
SpinWorks 4: RD 421 REP 2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 10

8.6700
8.6871

8.4036

8.1555

8.0249
8.0457
8.0762
8.0955



1.242

1.162

1.322

1.432

1.269

PPM

8.8

8.6

8.4

8.2

8.0

7.8

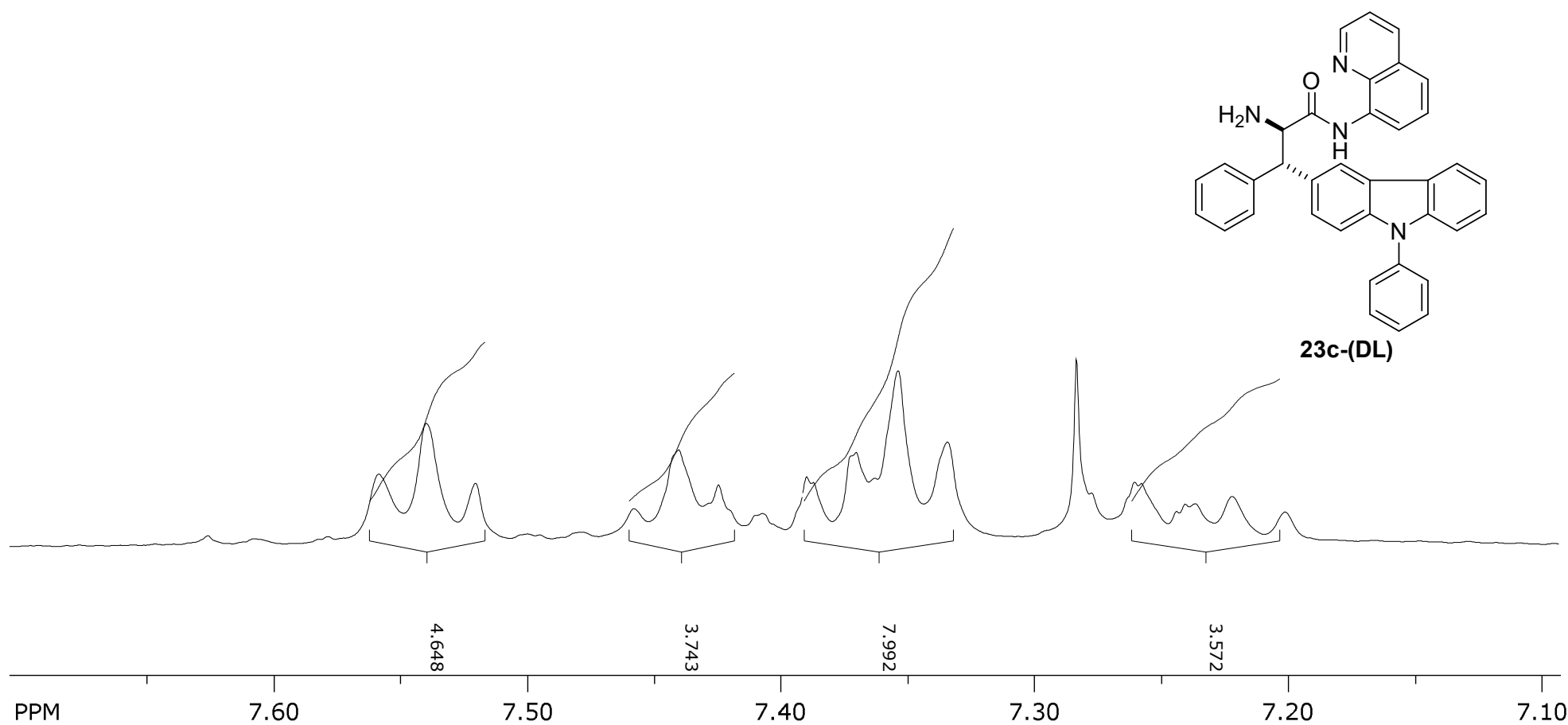
SpinWorks 4: RD 421 REP 2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 10

7.5587 —
7.5399 —
7.5206 —

7.4580 —
7.4404 —
7.4247 —

7.3899 —
7.3873 —
7.3723 —
7.3704 —
7.3632 —
7.3539 —
7.3344 —

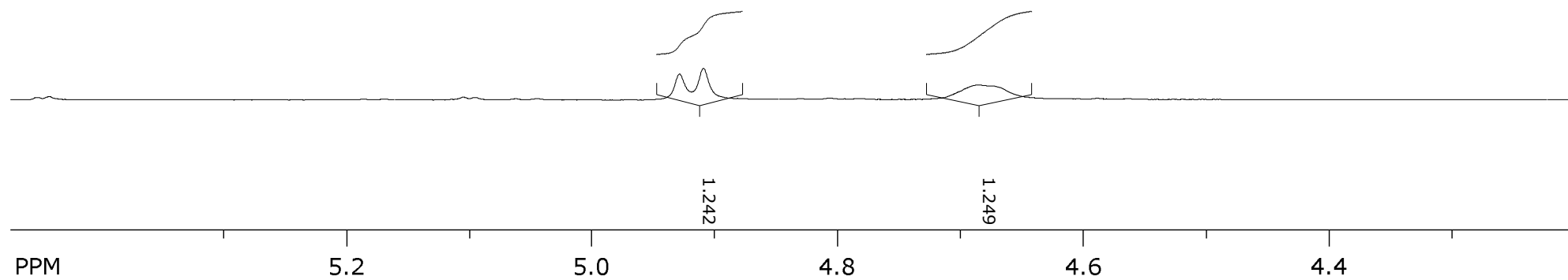
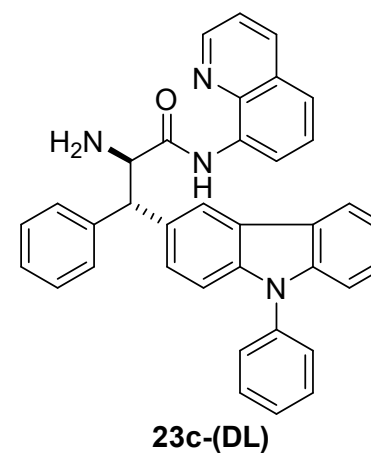
7.2835 —
7.2605 —
7.2579 —
7.2441 —
7.2406 —
7.2367 —
7.2221 —
7.2013 —



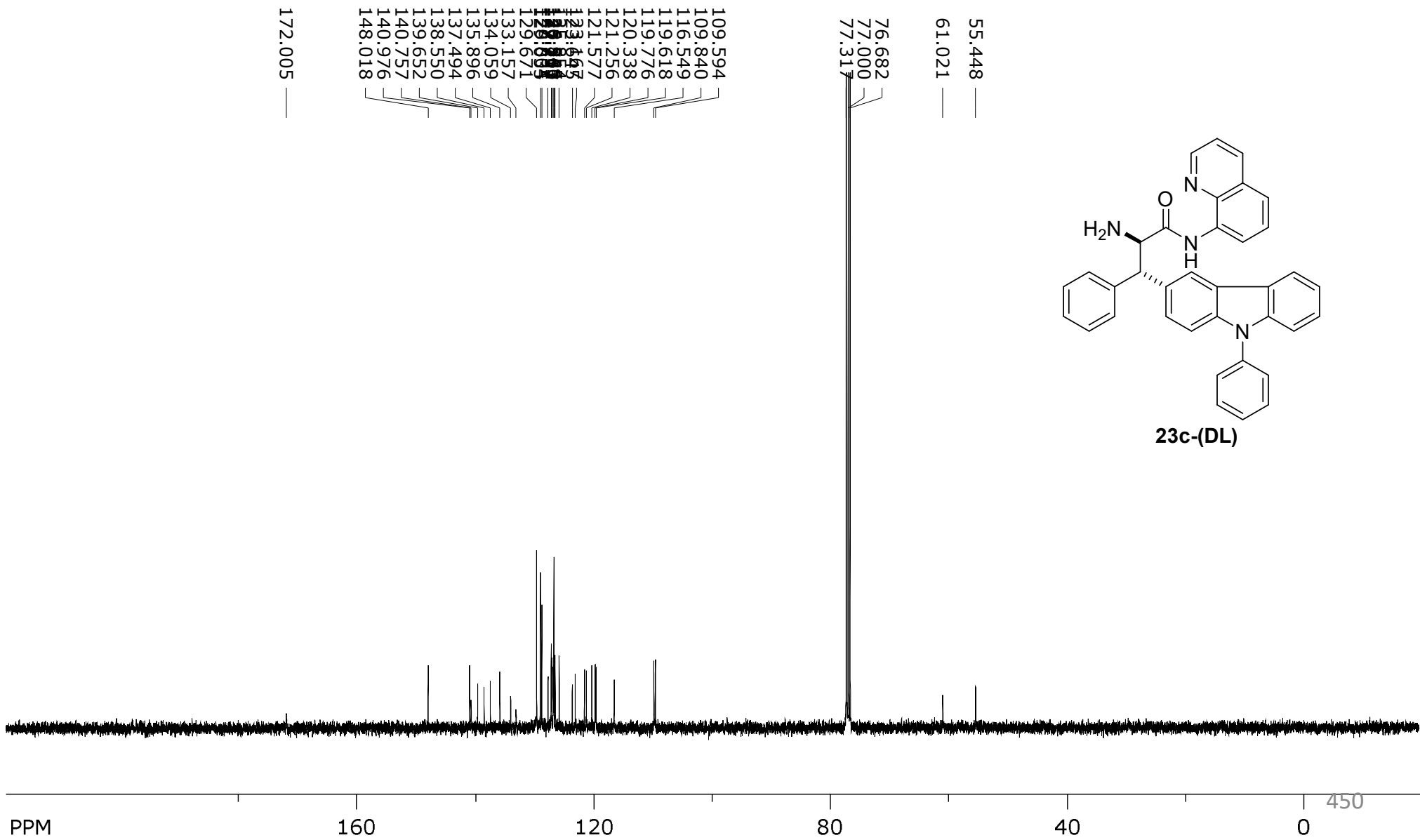
SpinWorks 4: RD 421 REP 2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 10

4.9094 —
4.9288 —

4.6677 —
4.6927 —



SpinWorks 4: RD 421 REP 2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 14



SpinWorks 4: RD 421 REP 2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 14

172.005

148.018

140.976

140.757

139.652

138.550

137.494

135.896

134.059

133.157

129.671

129.035

128.804

127.751

127.217

127.133

126.863

126.756

126.545

125.854

123.645

123.167

121.577

121.256

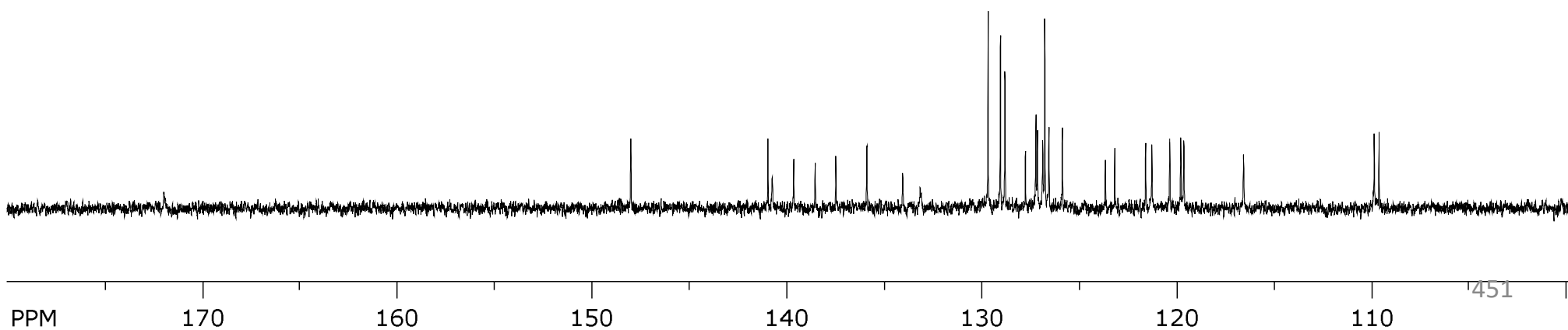
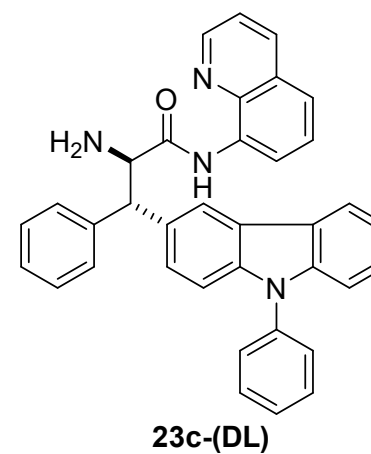
120.338

119.776

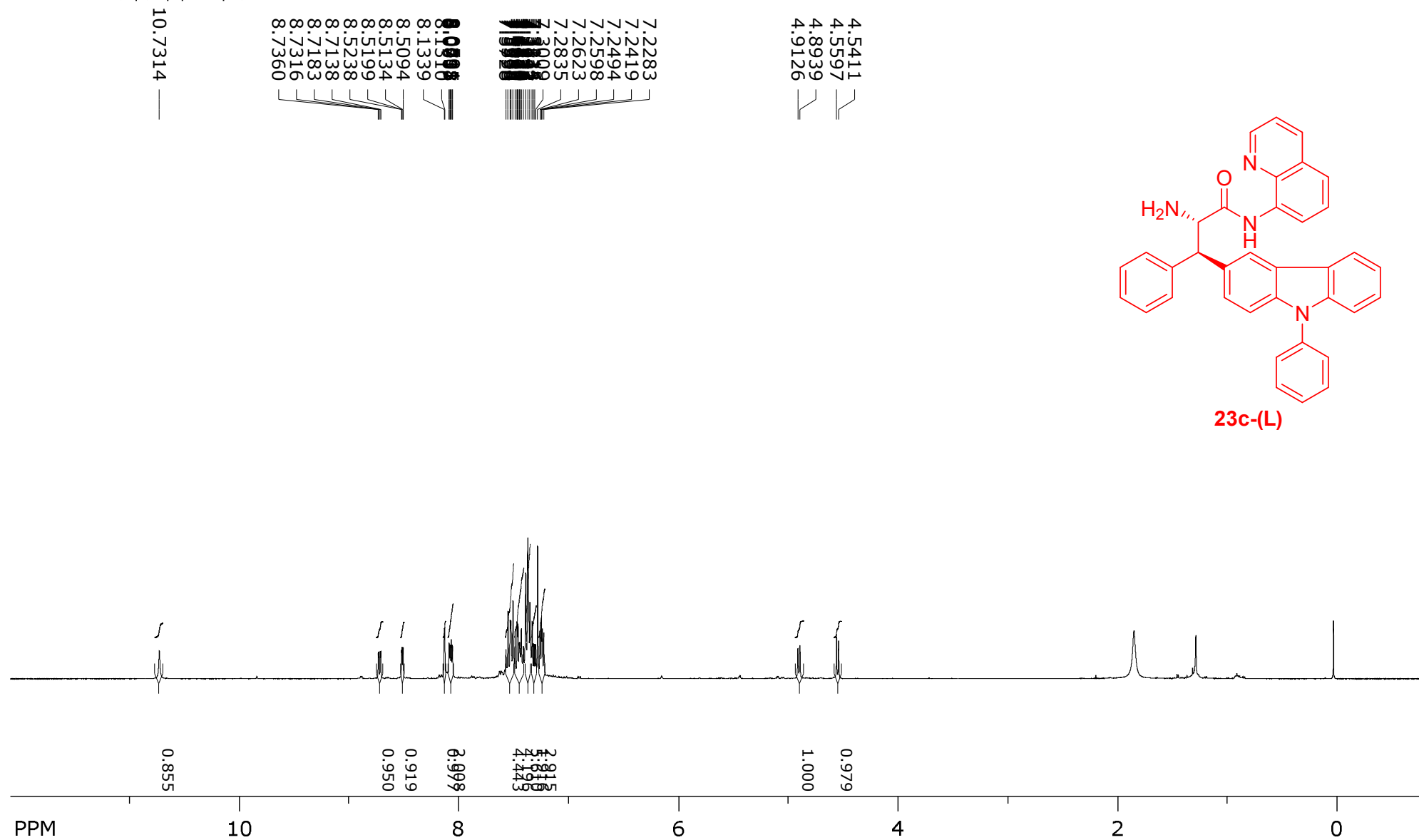
119.618

116.549

109.594
109.840



SpinWorks 4: RD 1012
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 7

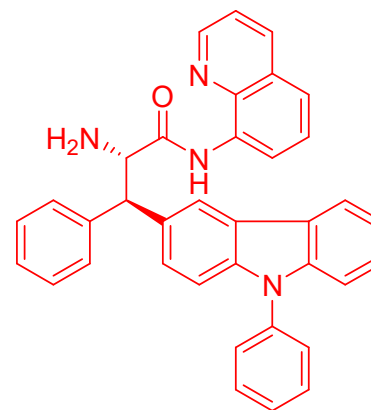


SpinWorks 4: RD 1012
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 7

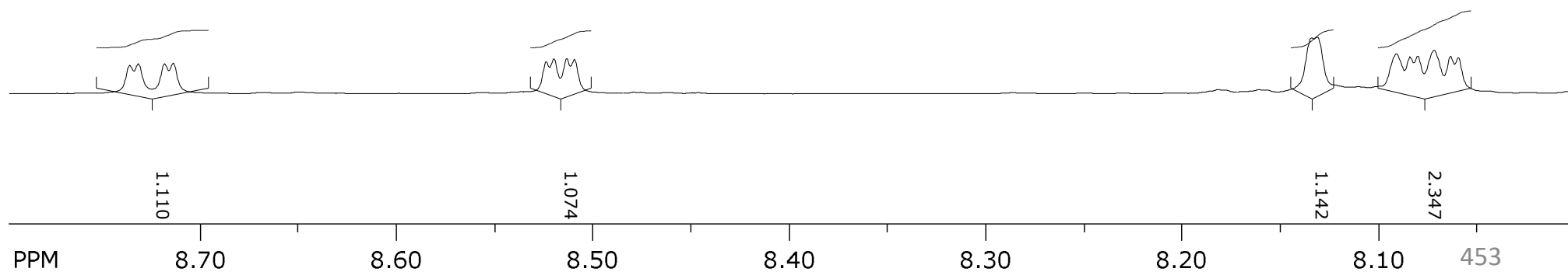
8.7138
8.7183
8.7316
8.7360

8.5094
8.5134
8.5199
8.5238

8.0591
8.0631
8.0715
8.0798
8.0838
8.0907
8.1310
8.1339

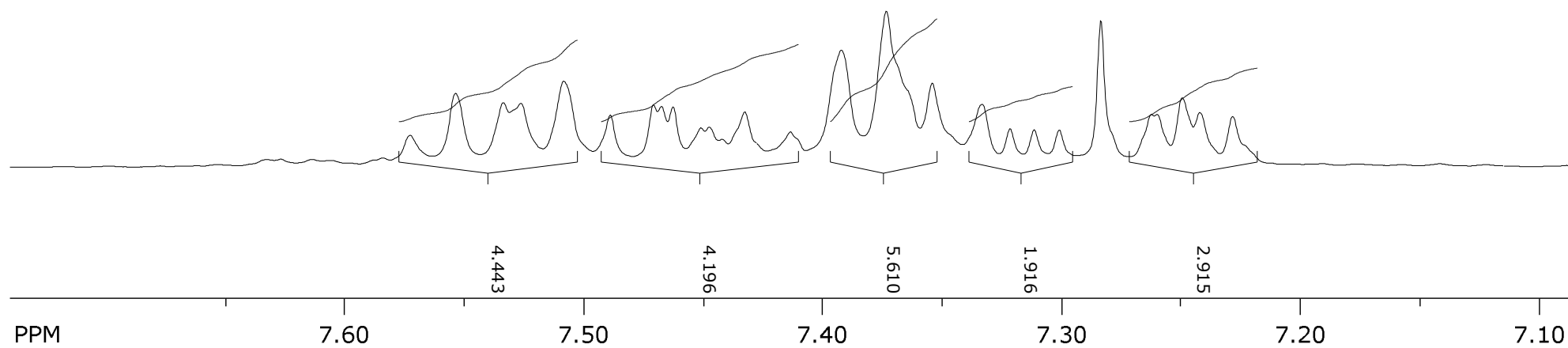
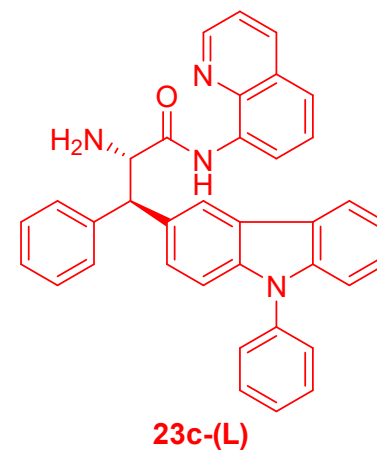


23c-(L)



SpinWorks 4: RD 1012
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 7

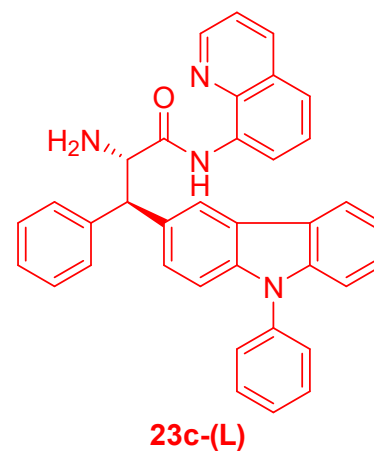
7.2283 —
7.2419 —
7.2494 —
7.2598 —
7.2623 —
7.2835 —
7.3009 —
7.3114 —
7.3215 —
7.3333 —
7.3541 —
7.3733 —
7.3922 —
7.4136 —
7.4326 —
7.4421 —
7.4475 —
7.4510 —
7.4627 —
7.4675 —
7.4709 —
7.4890 —
7.5085 —
7.5264 —
7.5338 —
7.5538 —
7.5728 —



SpinWorks 4: RD 1012
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 7

4.8939
4.9126

4.5411
4.5597



1.168

1.144

PPM

5.6

5.2

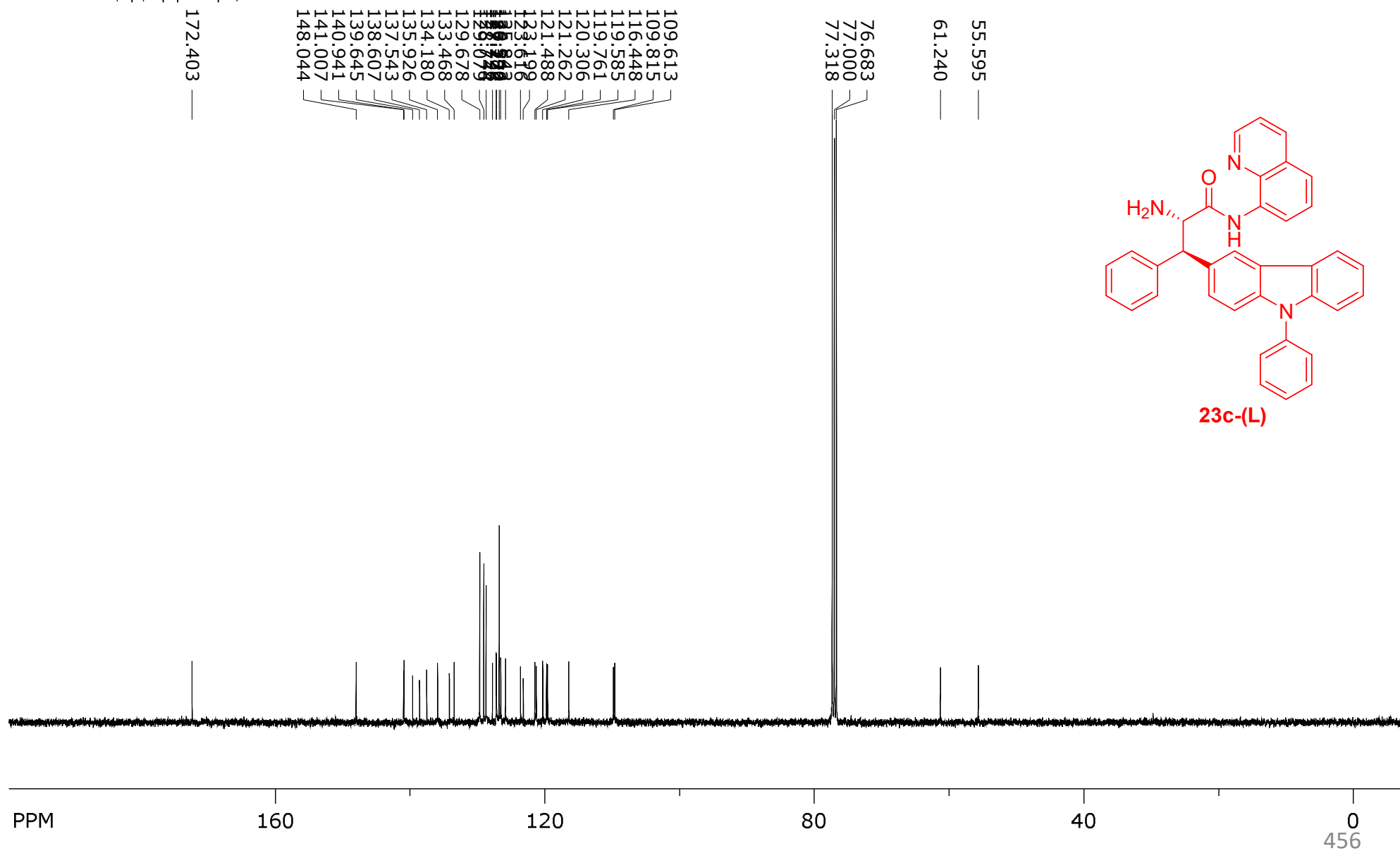
4.8

4.4

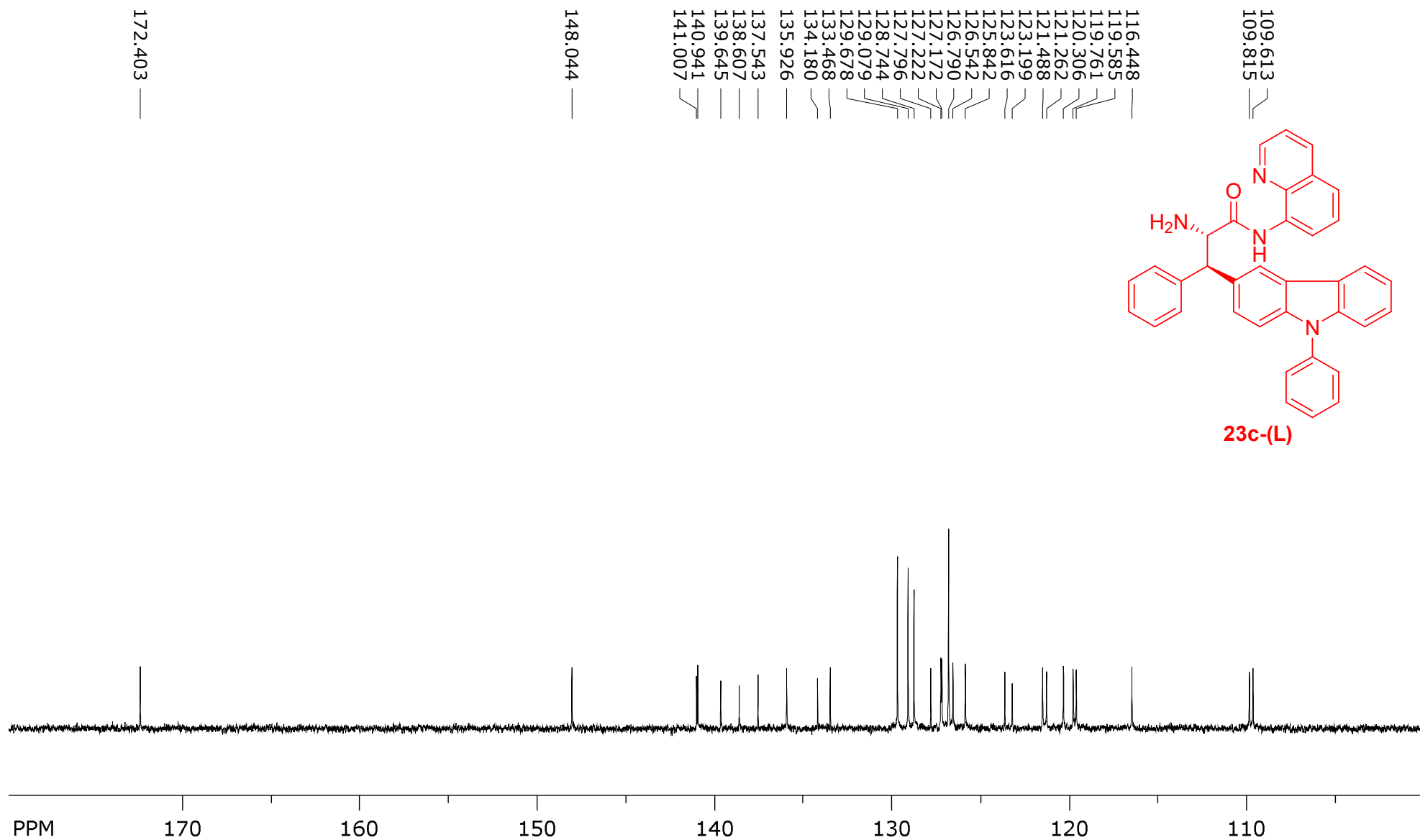
4.0

3.6
455

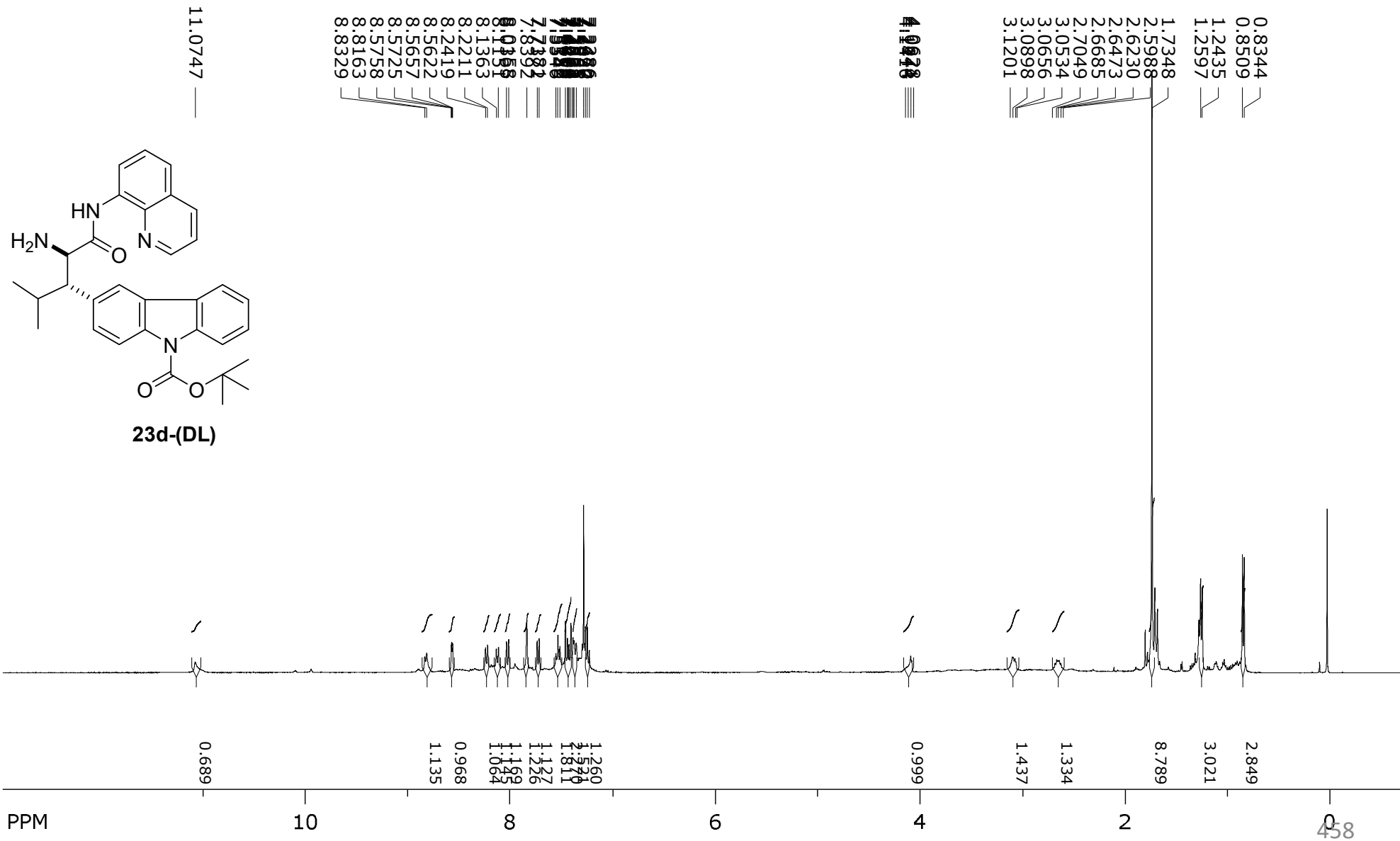
SpinWorks 4: RD 1012
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 33



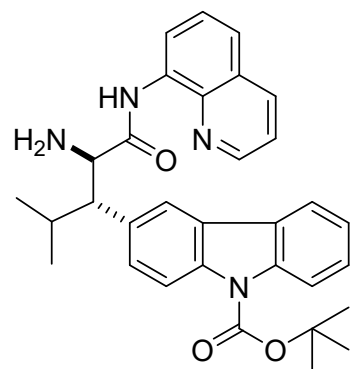
SpinWorks 4: RD 1012
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 33



SpinWorks 4: RD 1018
 PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 11



SpinWorks 4: RD 1018
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 11



23d-(DL)

8.8163 —
8.8329 —

8.5622 —
8.5657 —
8.5725 —
8.5758 —

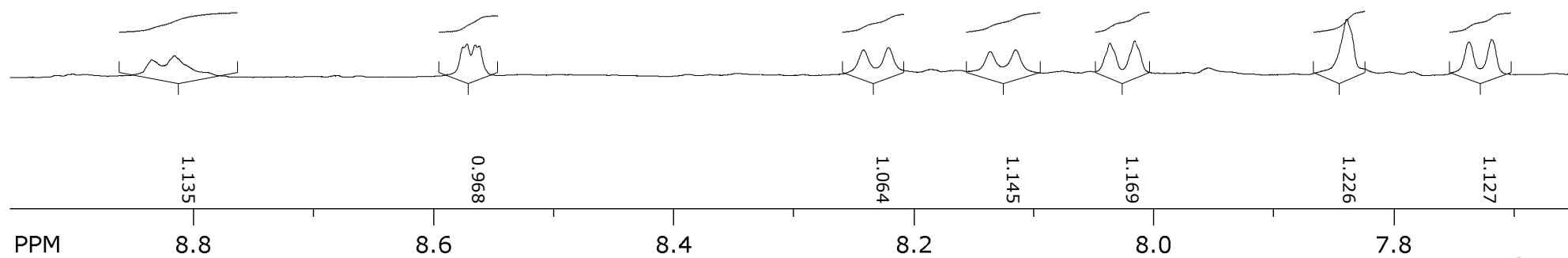
8.2211 —
8.2419 —

8.1151 —
8.1363 —

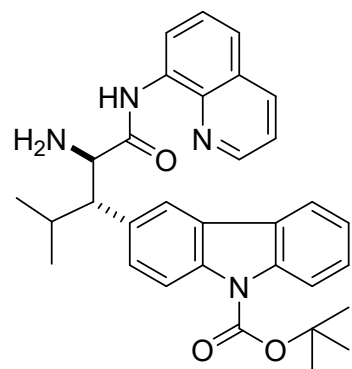
8.0158 —
8.0365 —

7.8392 —

7.7181 —
7.7372 —

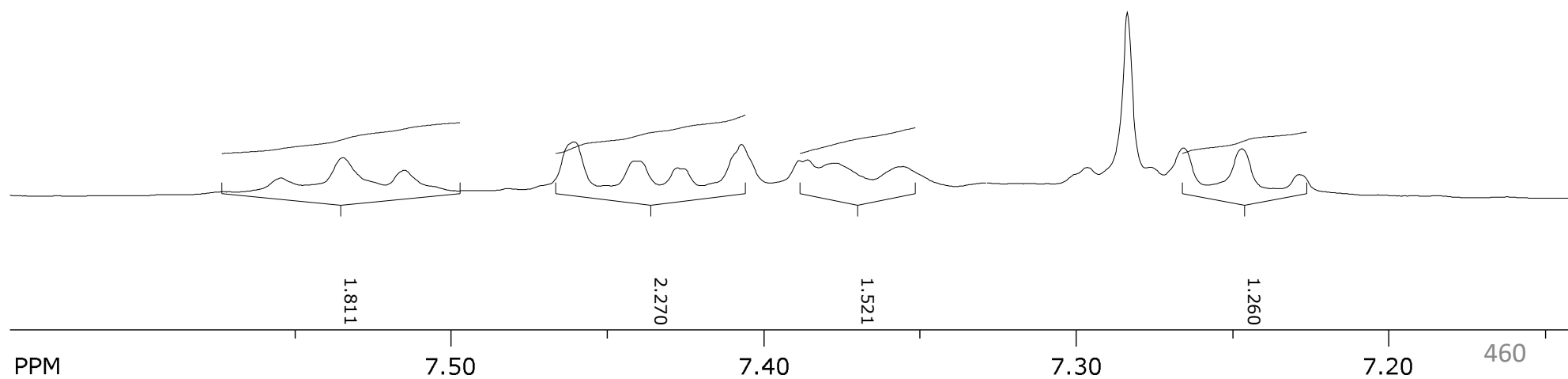


SpinWorks 4: RD 1018
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 11

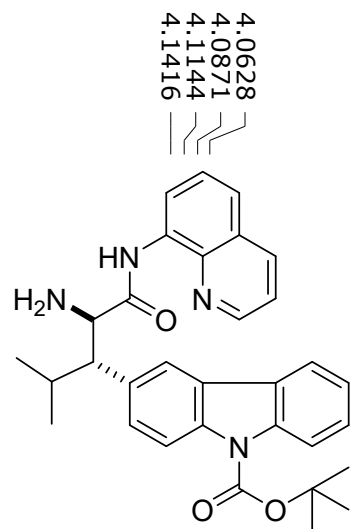


23d-(DL)

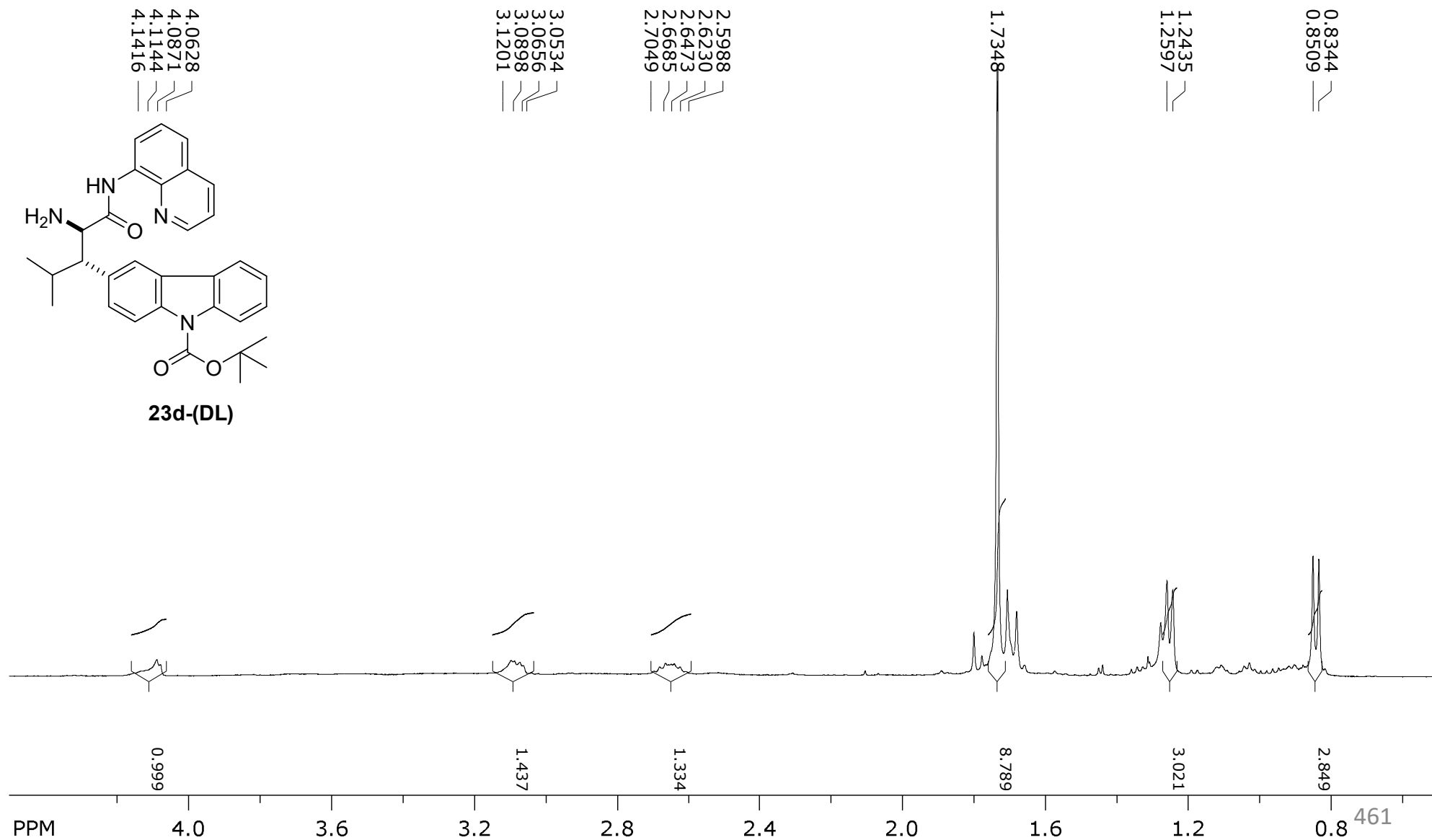
7.5546 —
7.5349 —
7.5152 —
7.4608 —
7.4415 —
7.4403 —
7.4278 —
7.4260 —
7.4072 —
7.3888 —
7.3861 —
7.3772 —
7.3555 —
7.2836 —
7.2657 —
7.2470 —
7.2286 —



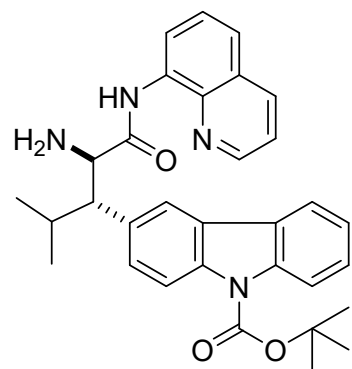
SpinWorks 4: RD 1018
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 11



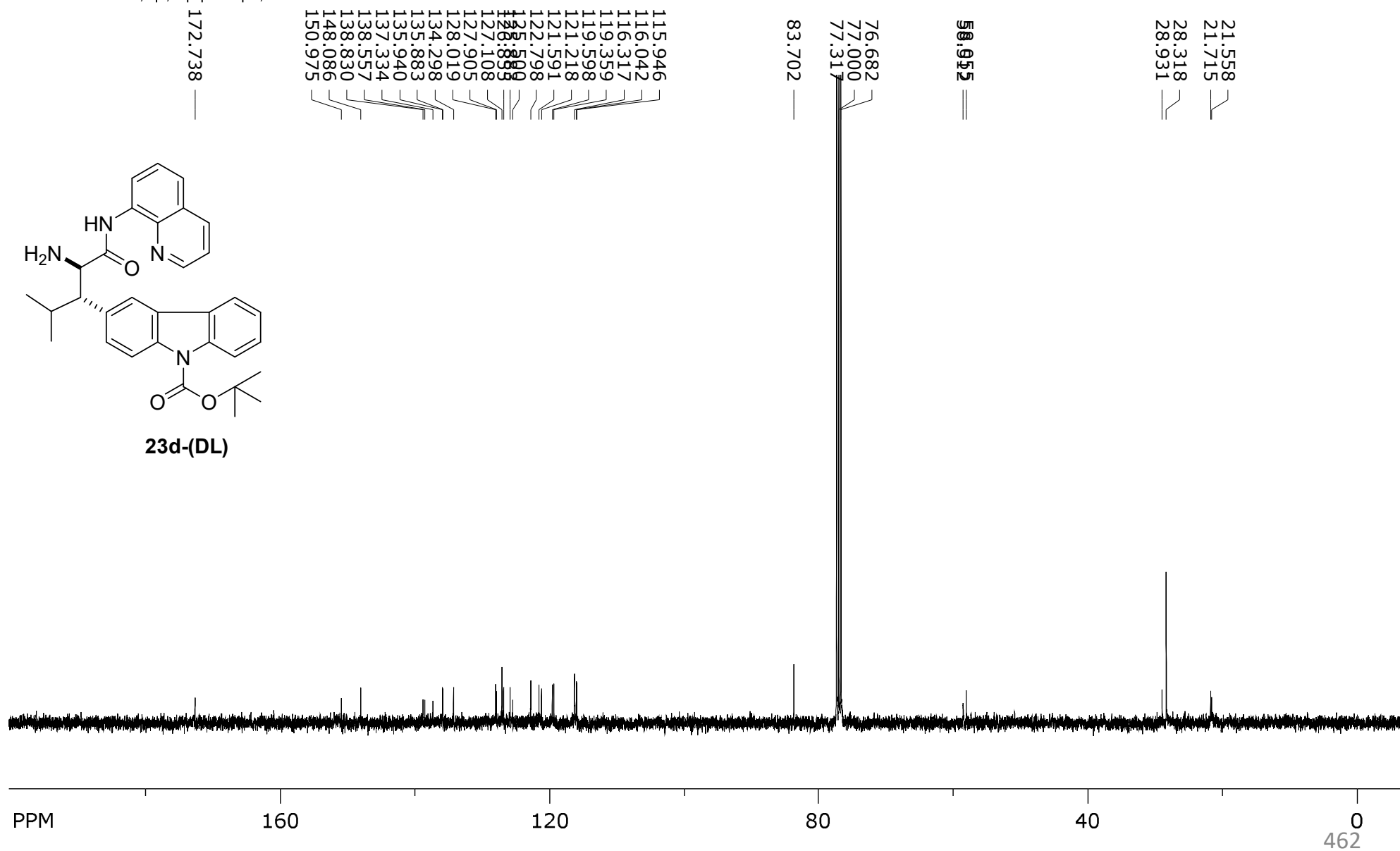
23d-(DL)



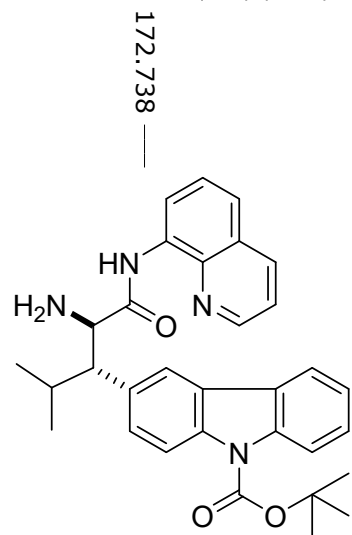
SpinWorks 4: RD-1018
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 21



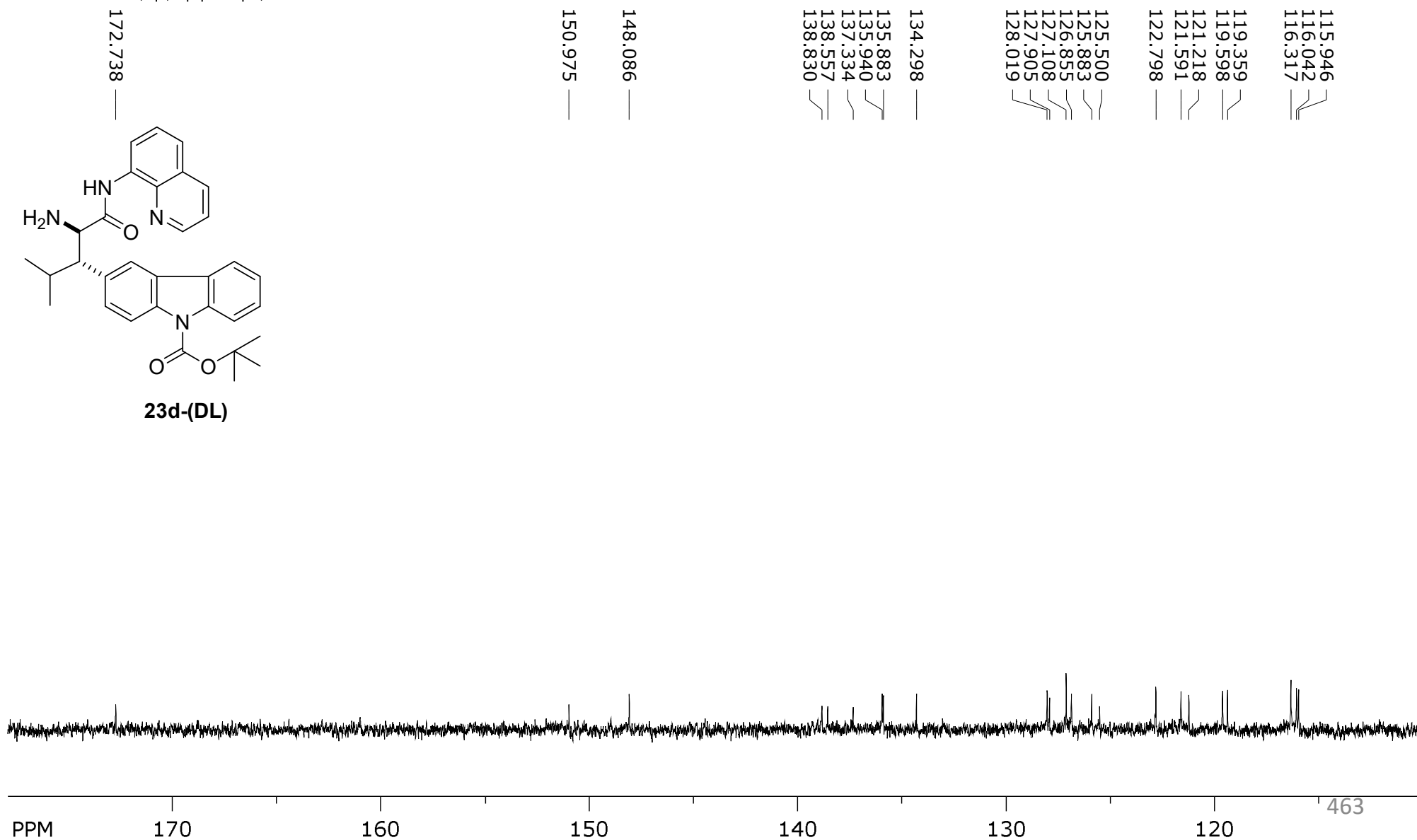
23d-(DL)



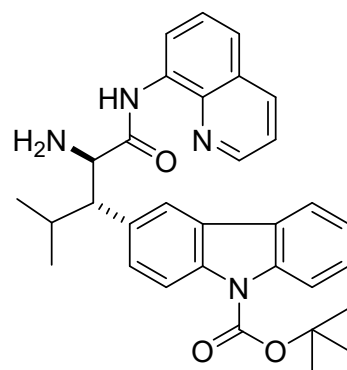
SpinWorks 4: RD-1018
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 21



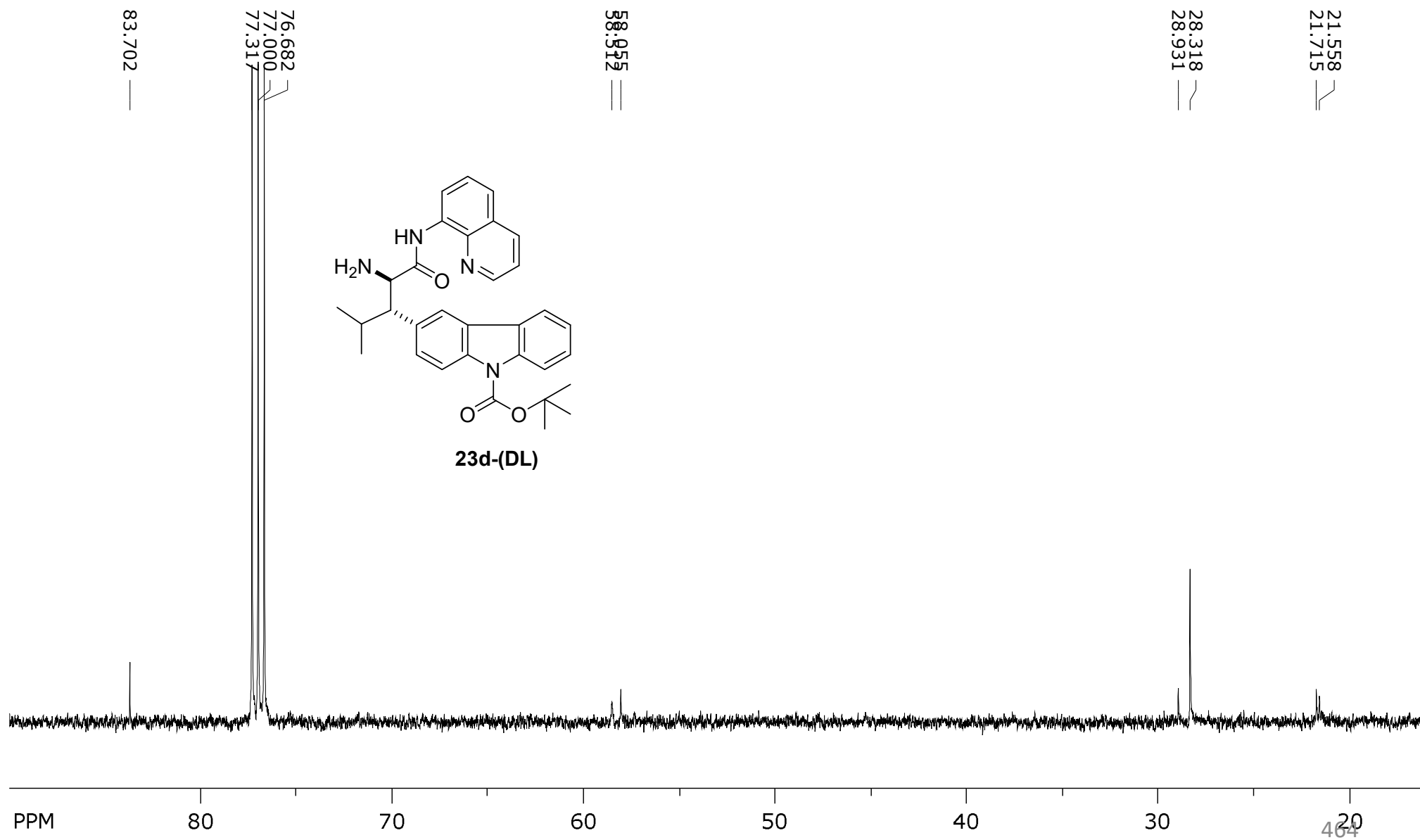
23d-(DL)

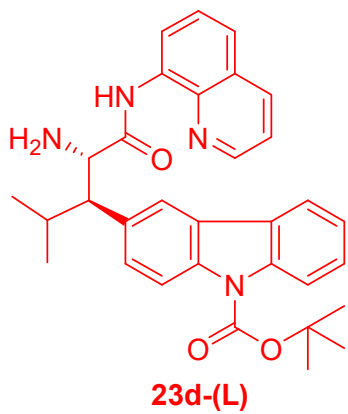


SpinWorks 4: RD-1018
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 21

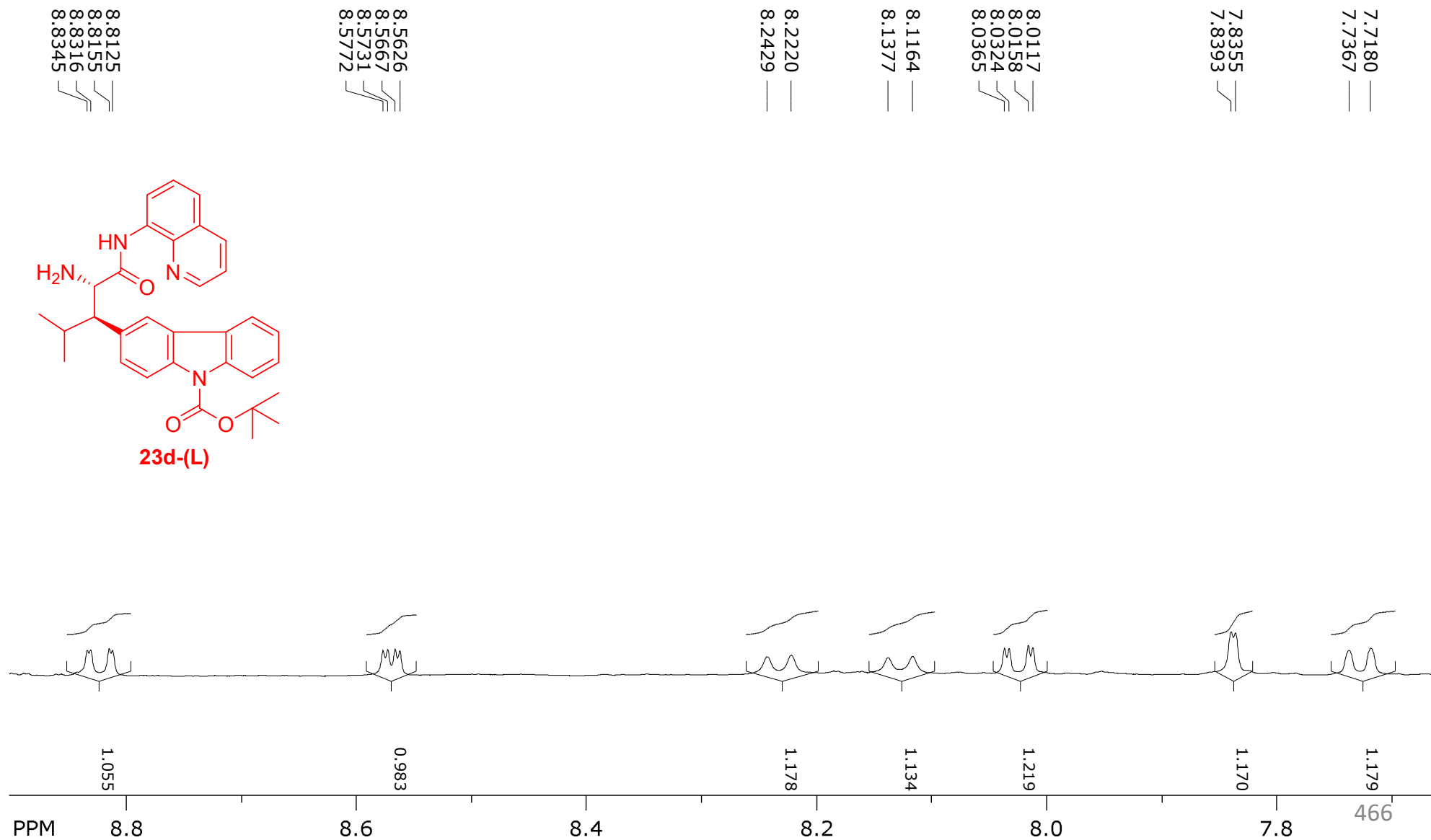


23d-(DL)



[illegible]

SpinWorks 4: RD 1017 R1
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 46



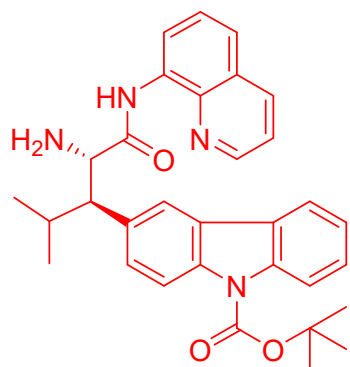
SpinWorks 4: RD 1017 R1
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 46

7.5553 —
7.5351 —
7.5157 —

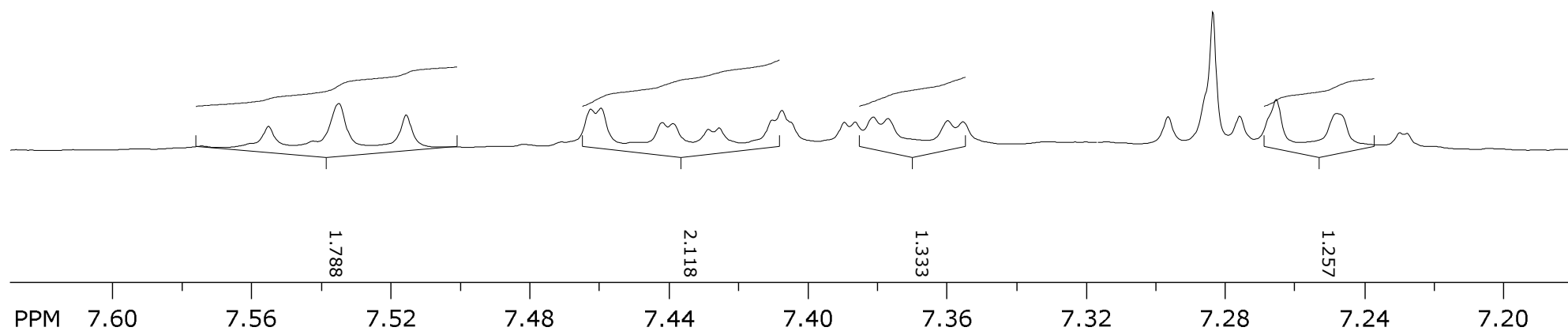
7.4597 —
7.4626 —
7.4420 —
7.4389 —
7.4287 —
7.4256 —
7.4103 —
7.4076 —

7.3814 —
7.3770 —
7.3599 —
7.3555 —

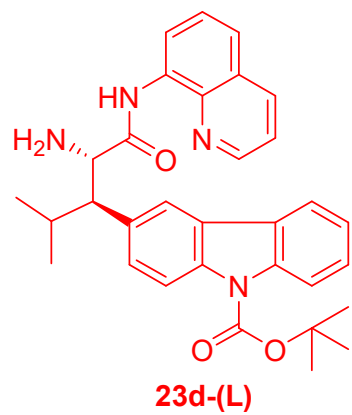
7.2835 —
7.2653 —
7.2480 —



23d-(L)



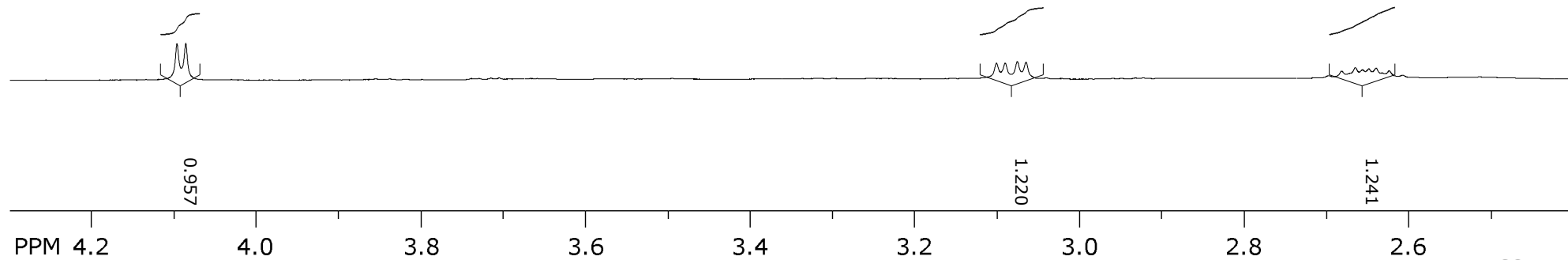
SpinWorks 4: RD 1017 R1
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 46



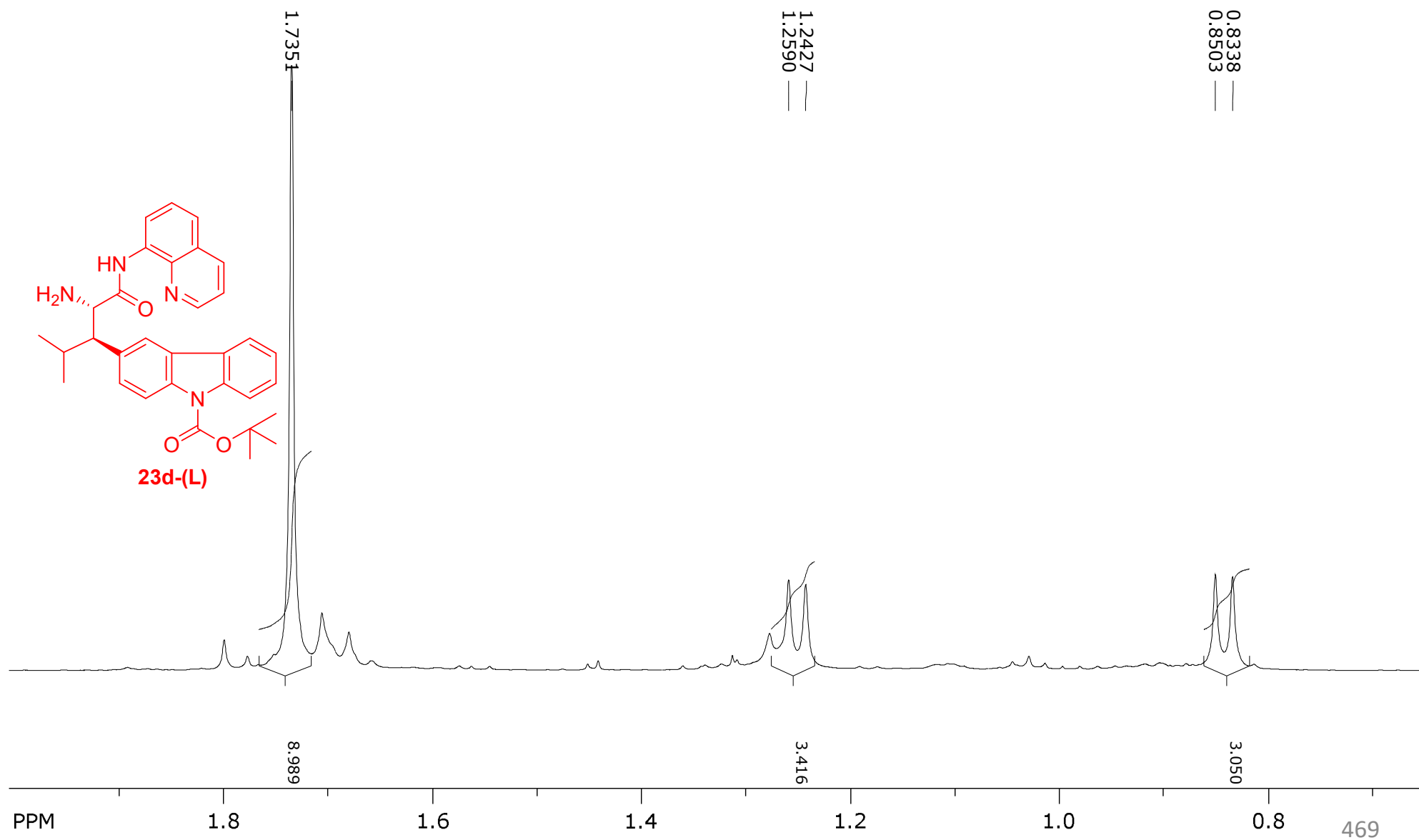
4.0863
4.0969

3.0649
3.0754
3.0901
3.1006

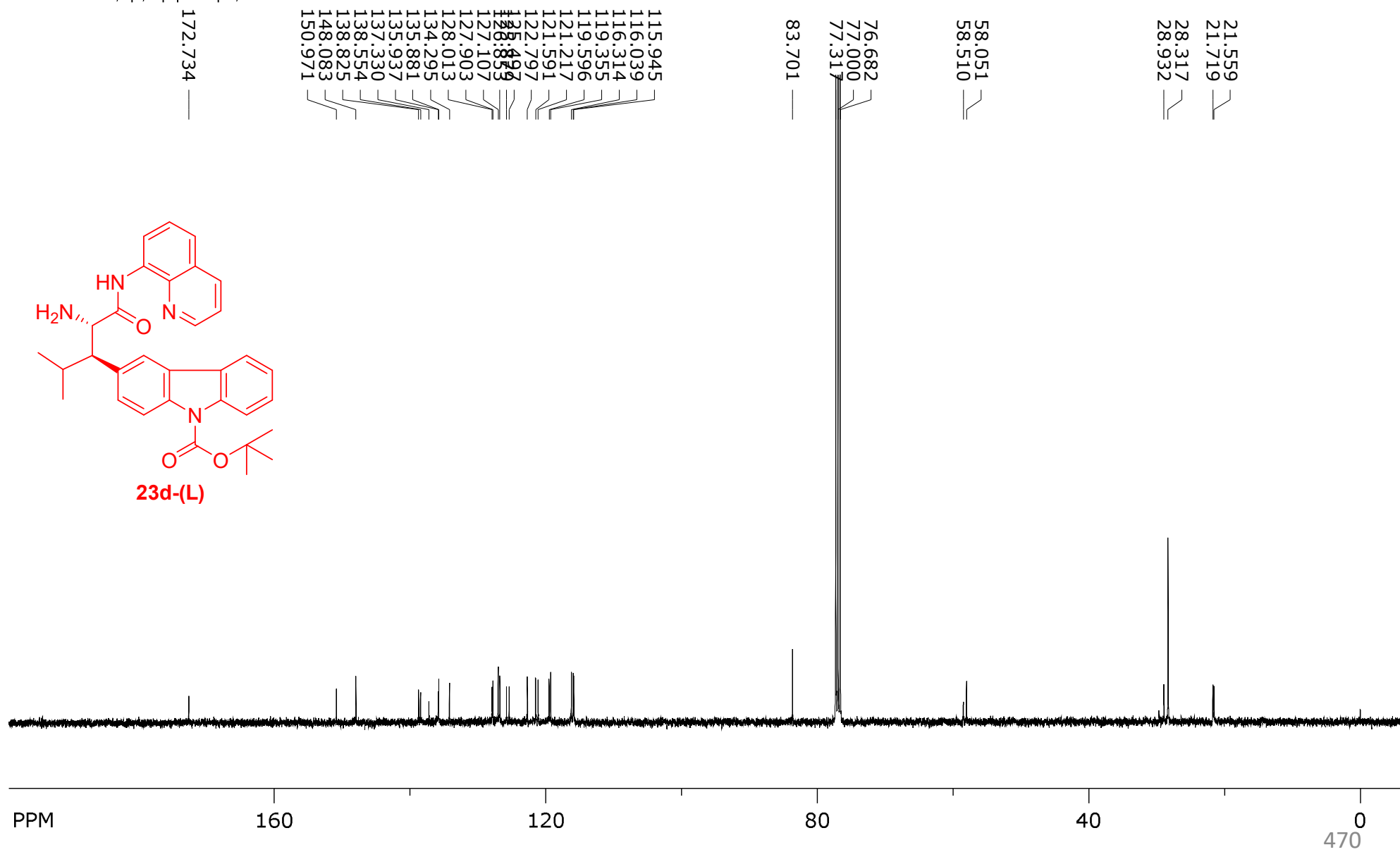
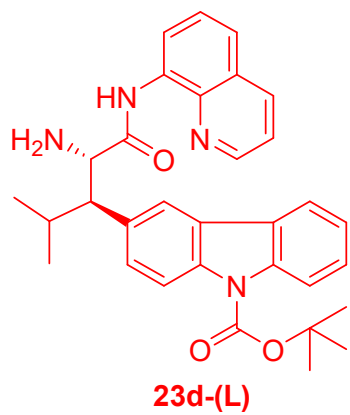
2.6248
2.6323
2.6418
2.6514
2.6635
2.6722
2.6825
2.6953



SpinWorks 4: RD 1017 R1
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 46



SpinWorks 4: RD 1017 R1
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 46



SpinWorks 4: RD 1017 R1
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 46

172.734

150.971

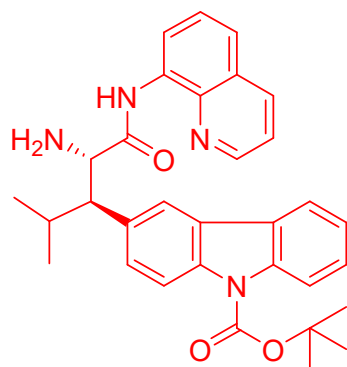
148.083

138.825
138.554
137.330
135.937
135.881
134.295

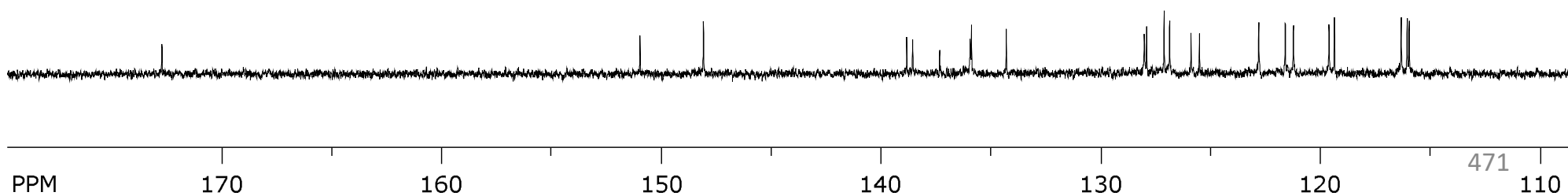
128.013
127.903
127.107
126.853
125.879
125.497

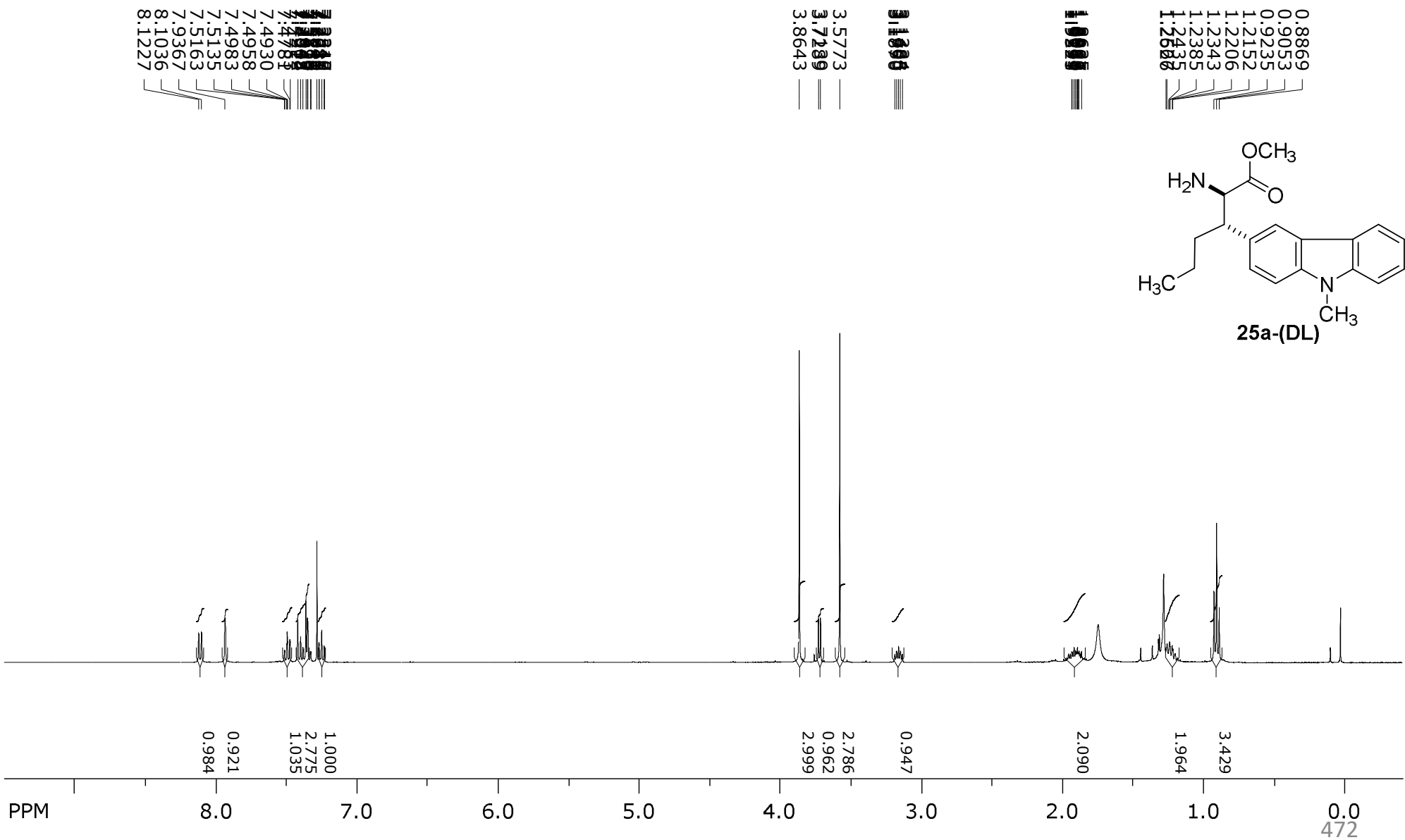
122.797
121.591
121.217
119.596
119.355

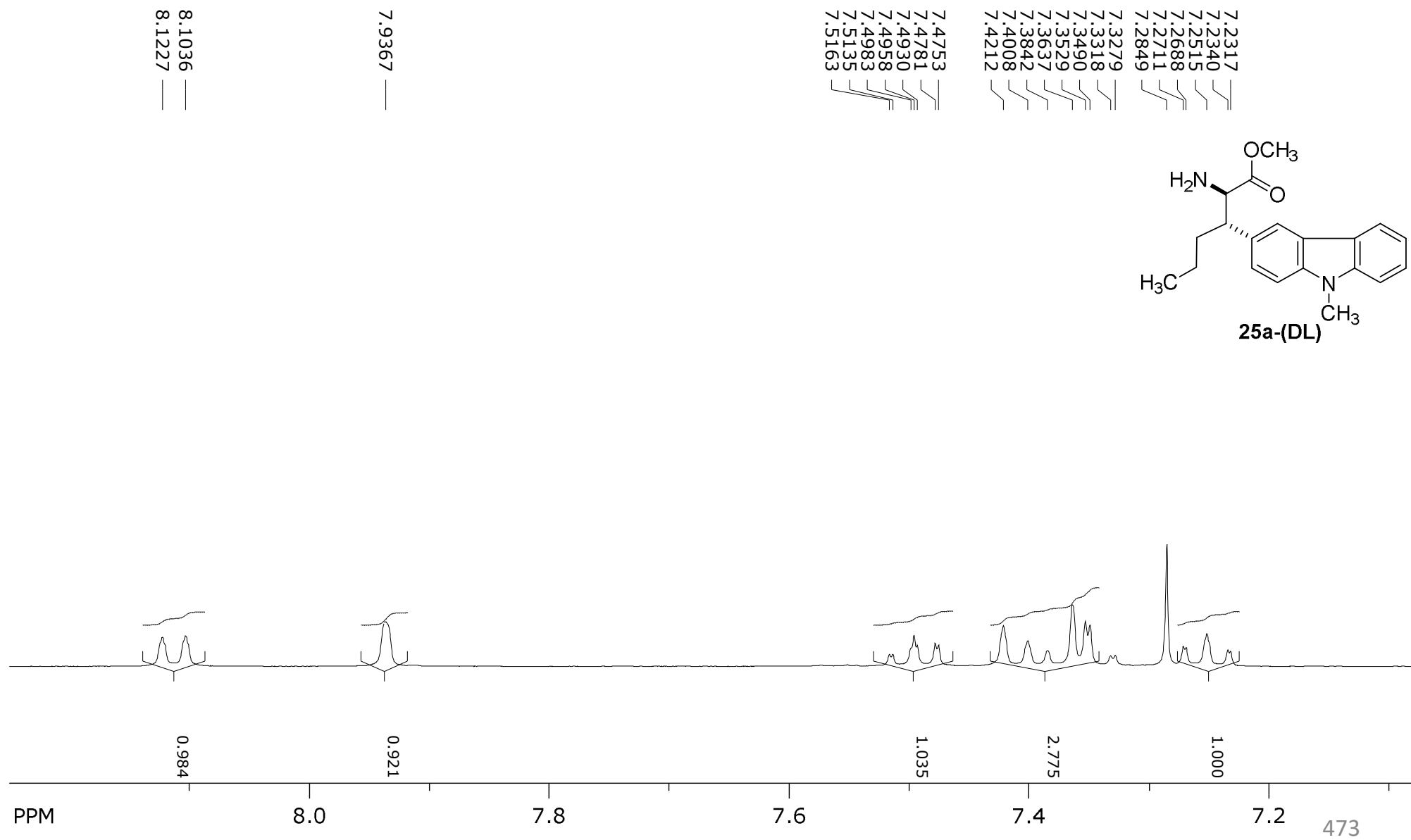
116.314
116.039
115.945

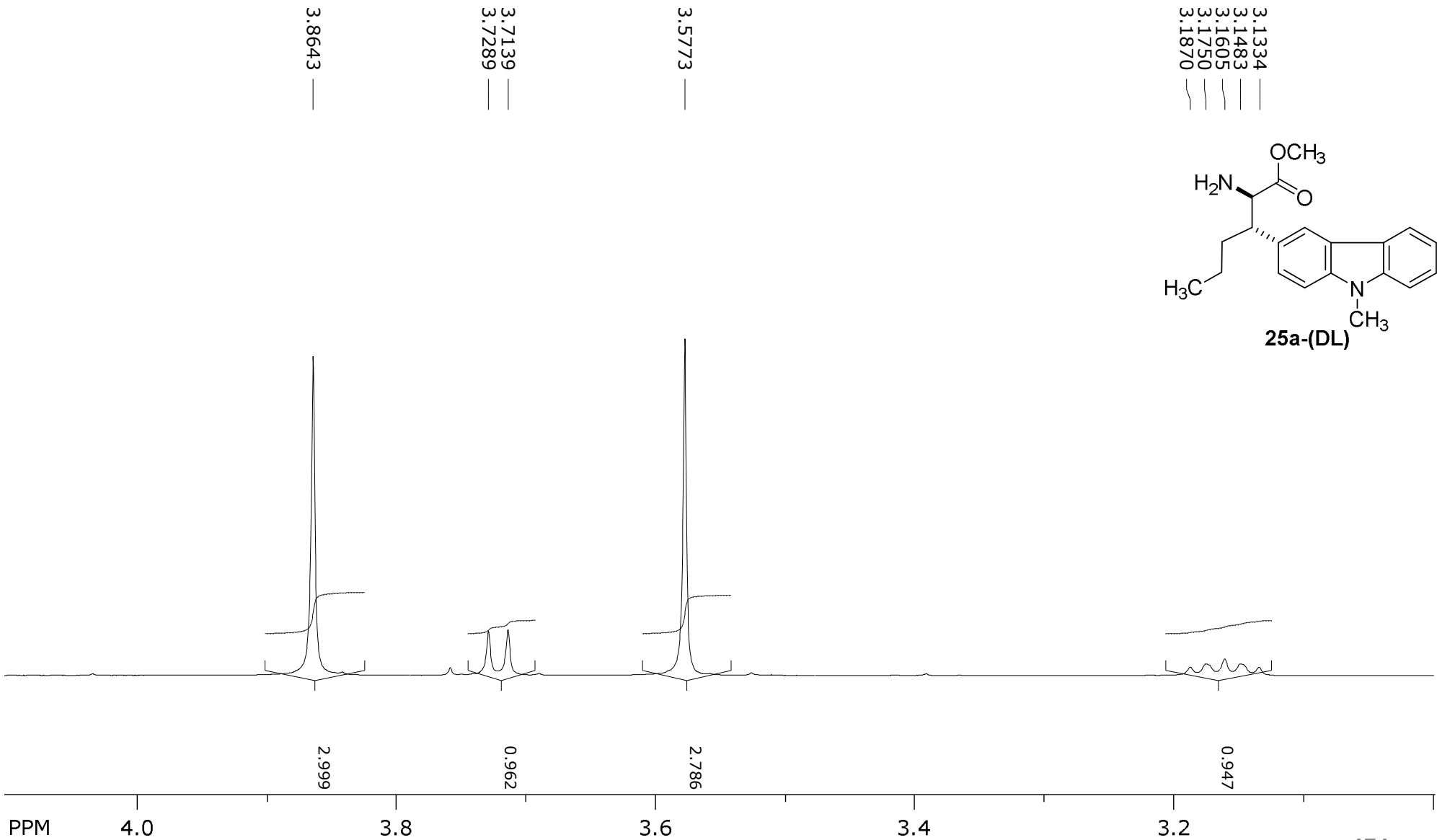


23d-(L)





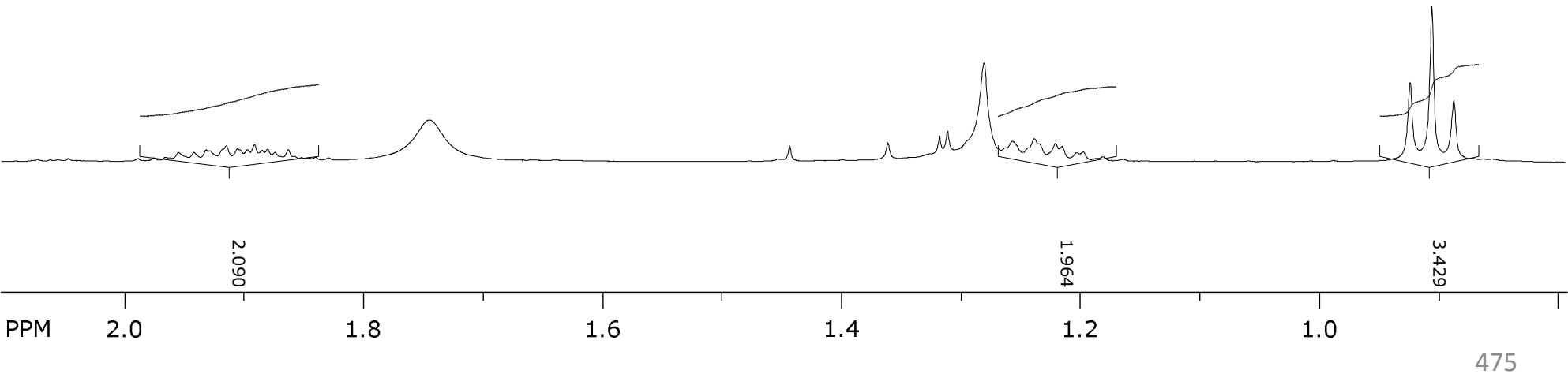
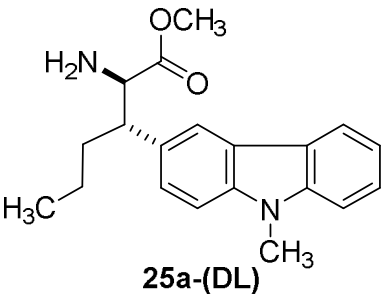




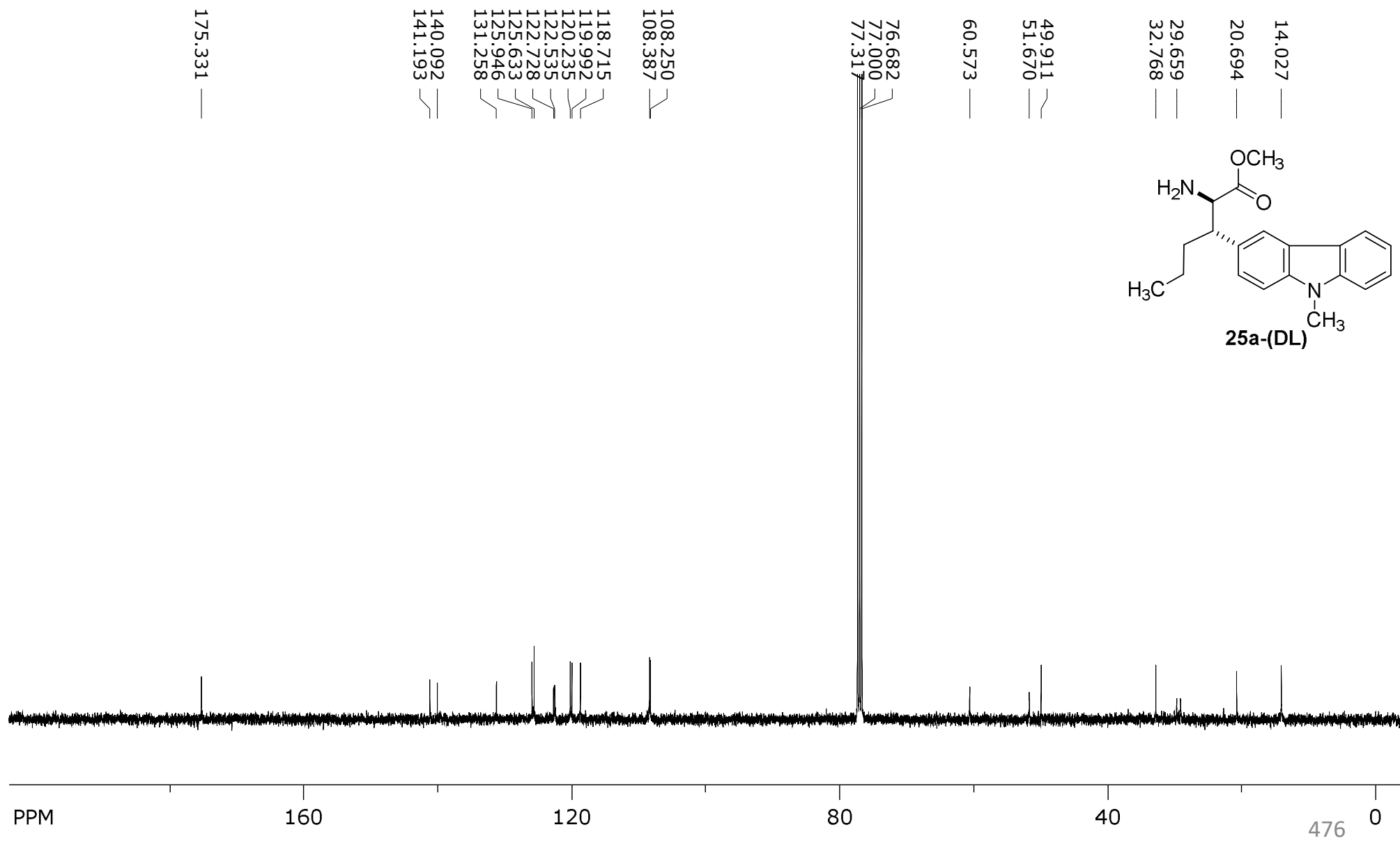
1.8688
1.8807
1.8856
1.8918
1.8978
1.9061
1.9153
1.9291
1.9423
1.9546
1.9656

1.1970
1.2043
1.2152
1.2206
1.2343
1.2435
1.2567

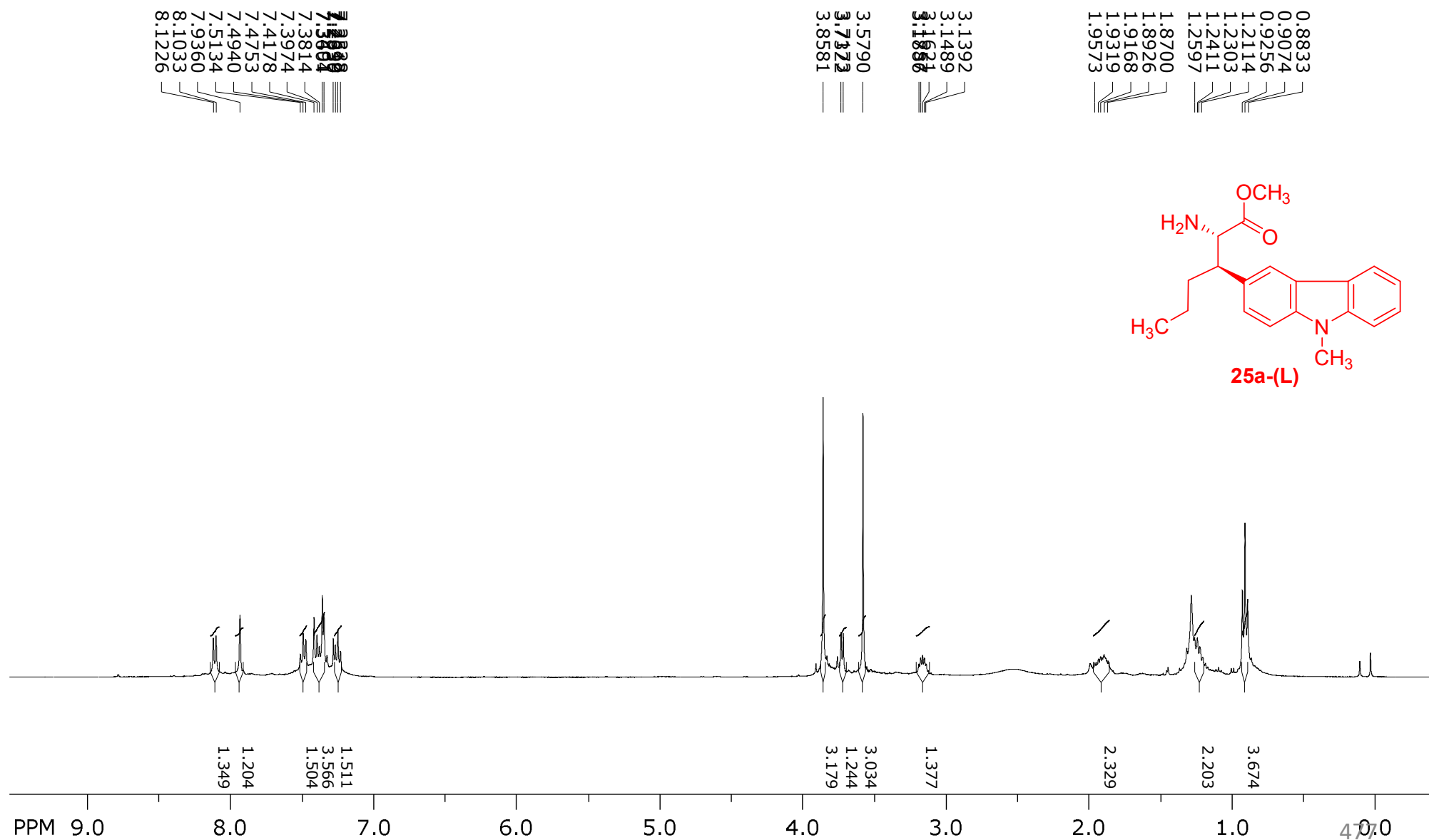
0.8869
0.9053
0.9235



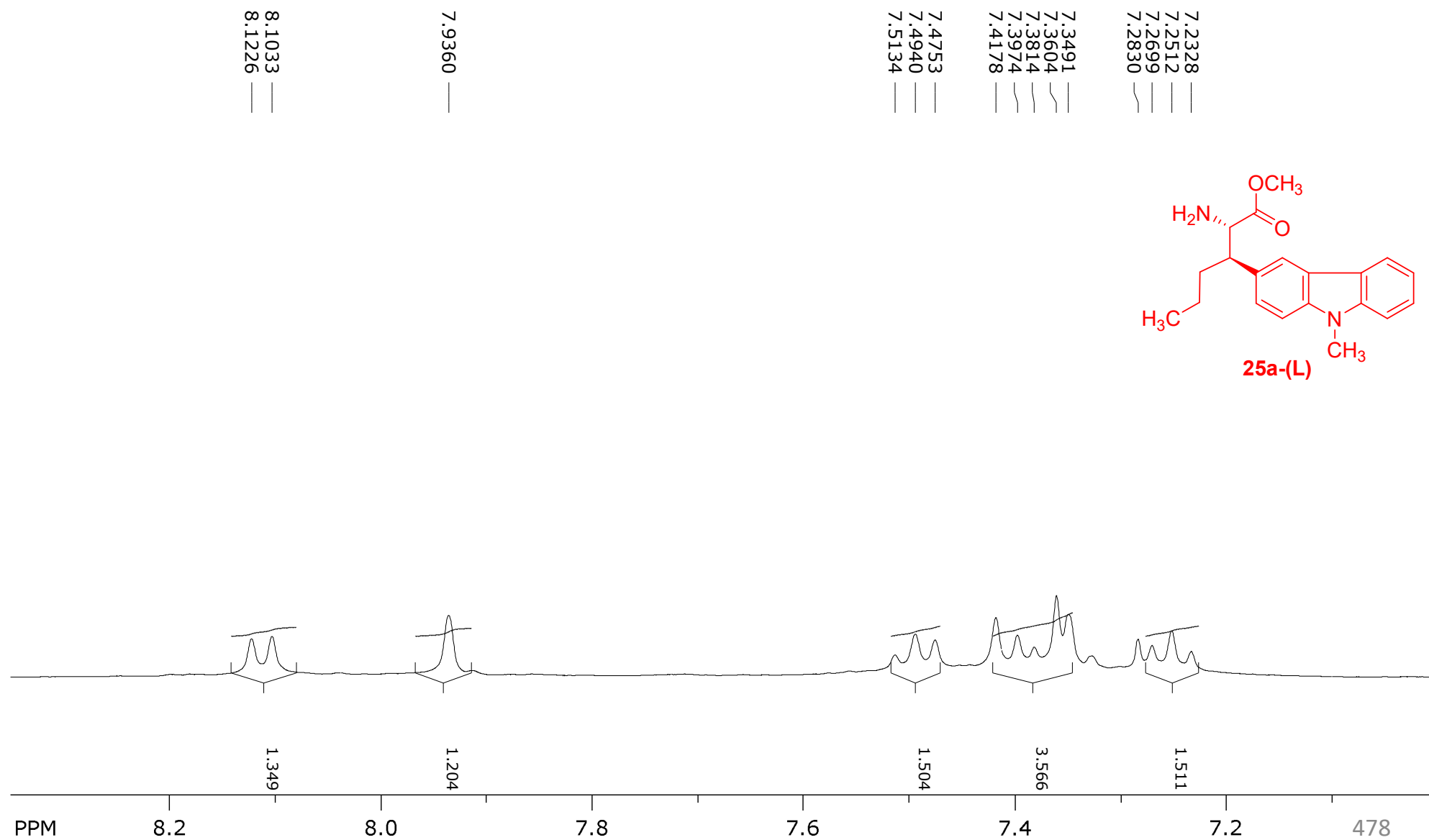
SpinWorks 4: RD 286 RE

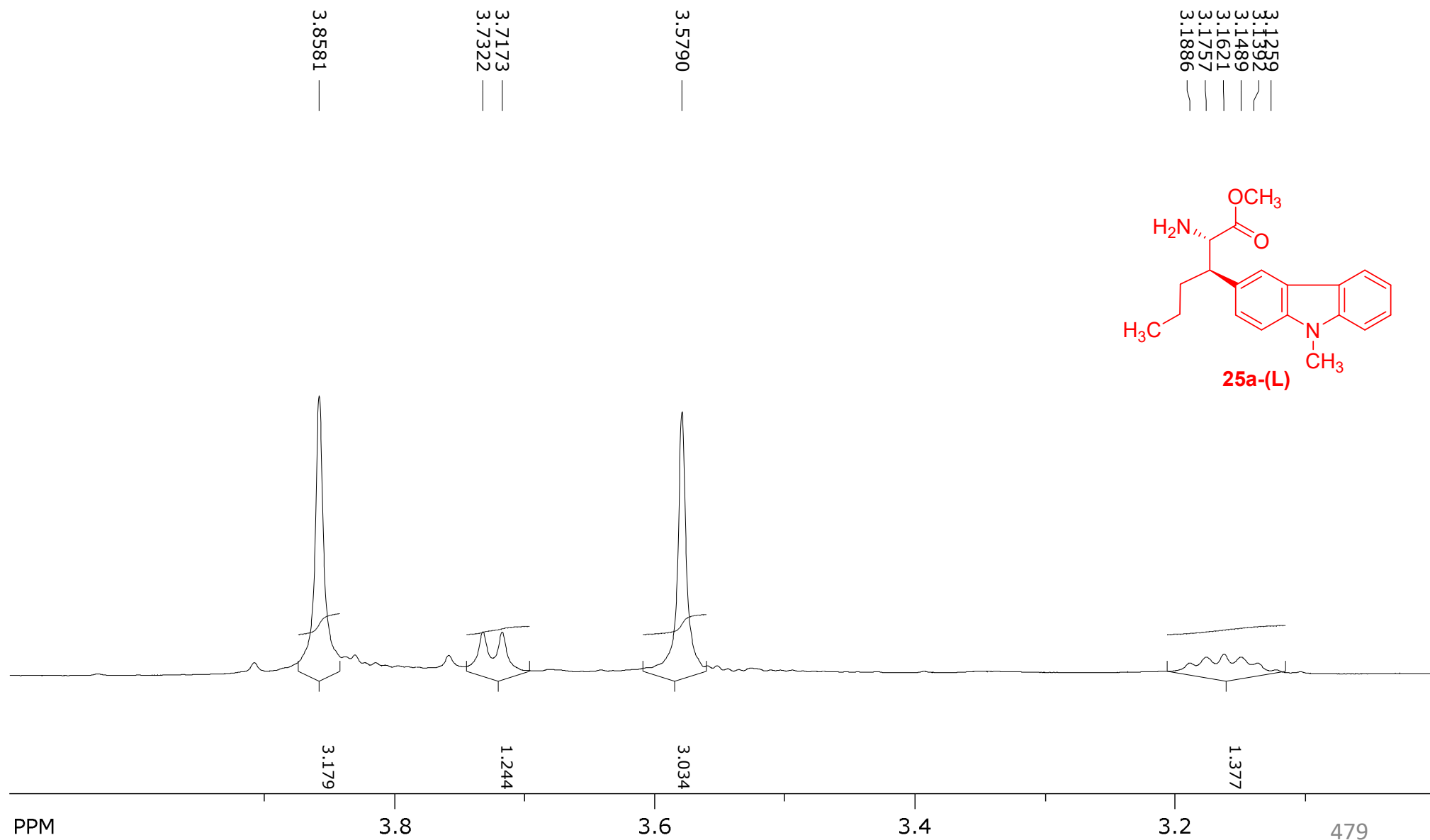


SpinWorks 4: rd663



SpinWorks 4: rd663



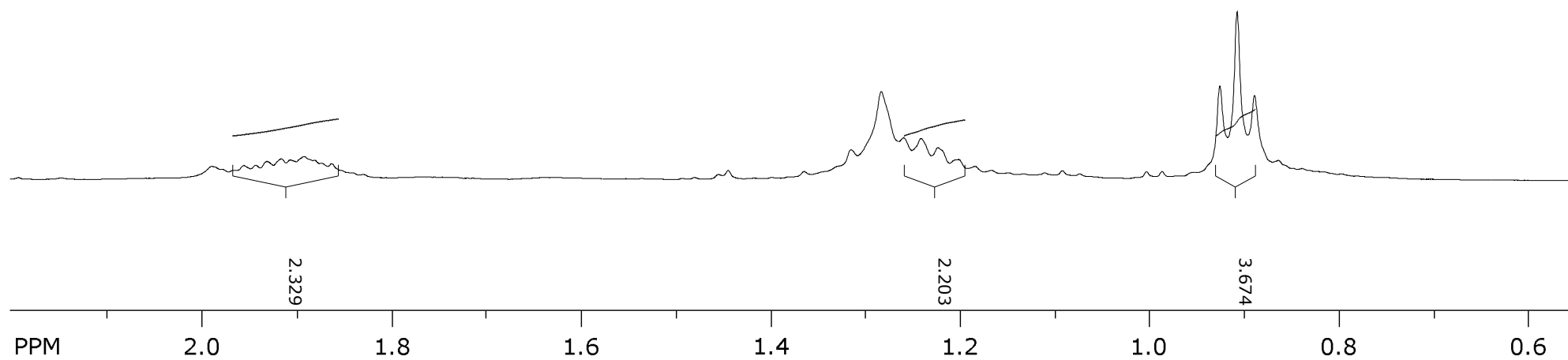
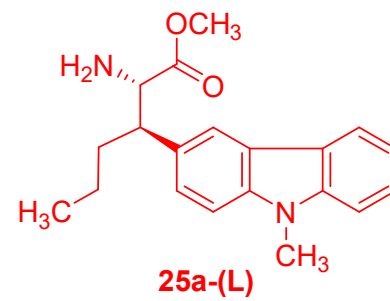


SpinWorks 4: rd663

1.8700
1.8926
1.9168
1.9319
1.9573

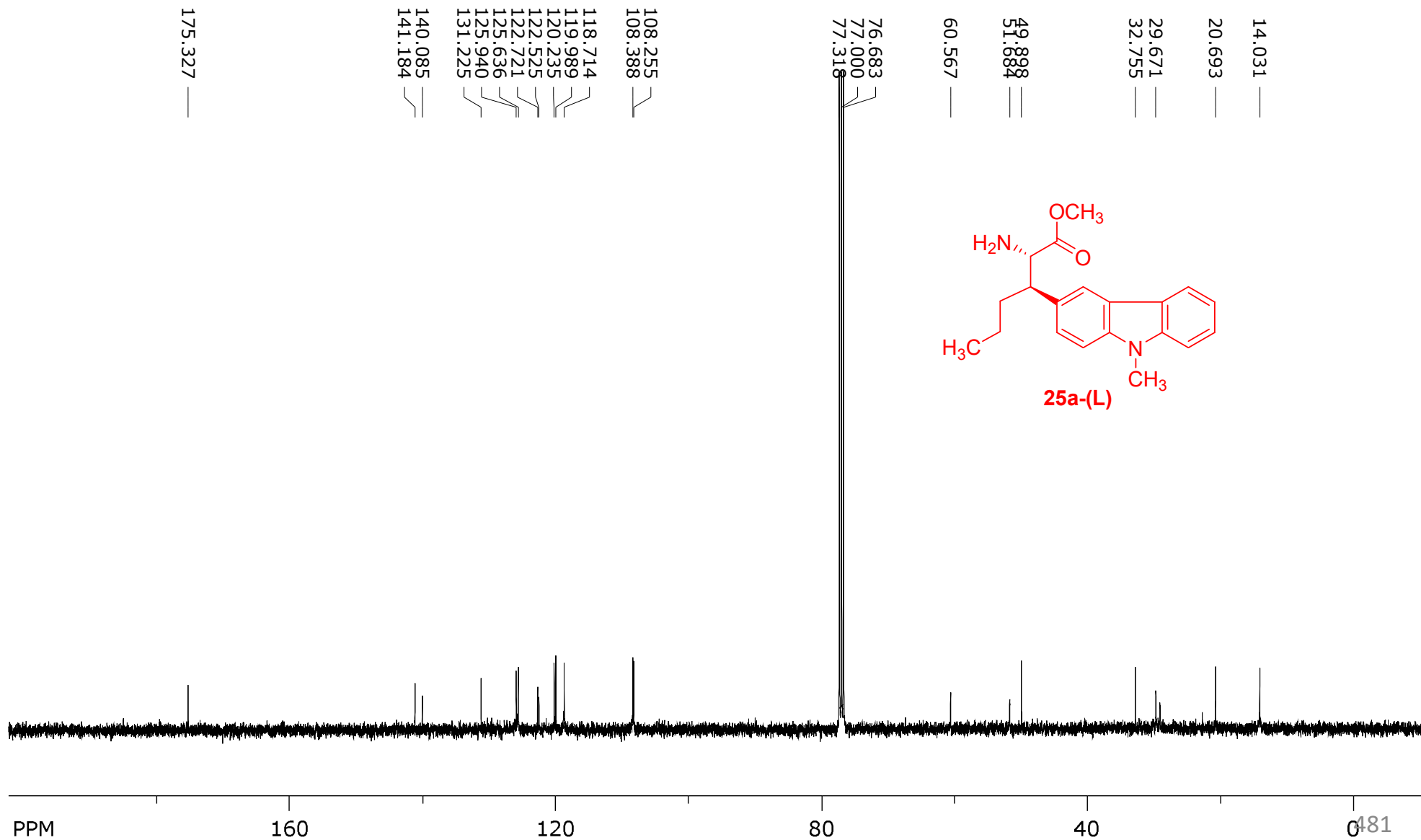
1.2114
1.2303
1.2411
1.2597

0.9256
0.9074
0.8889

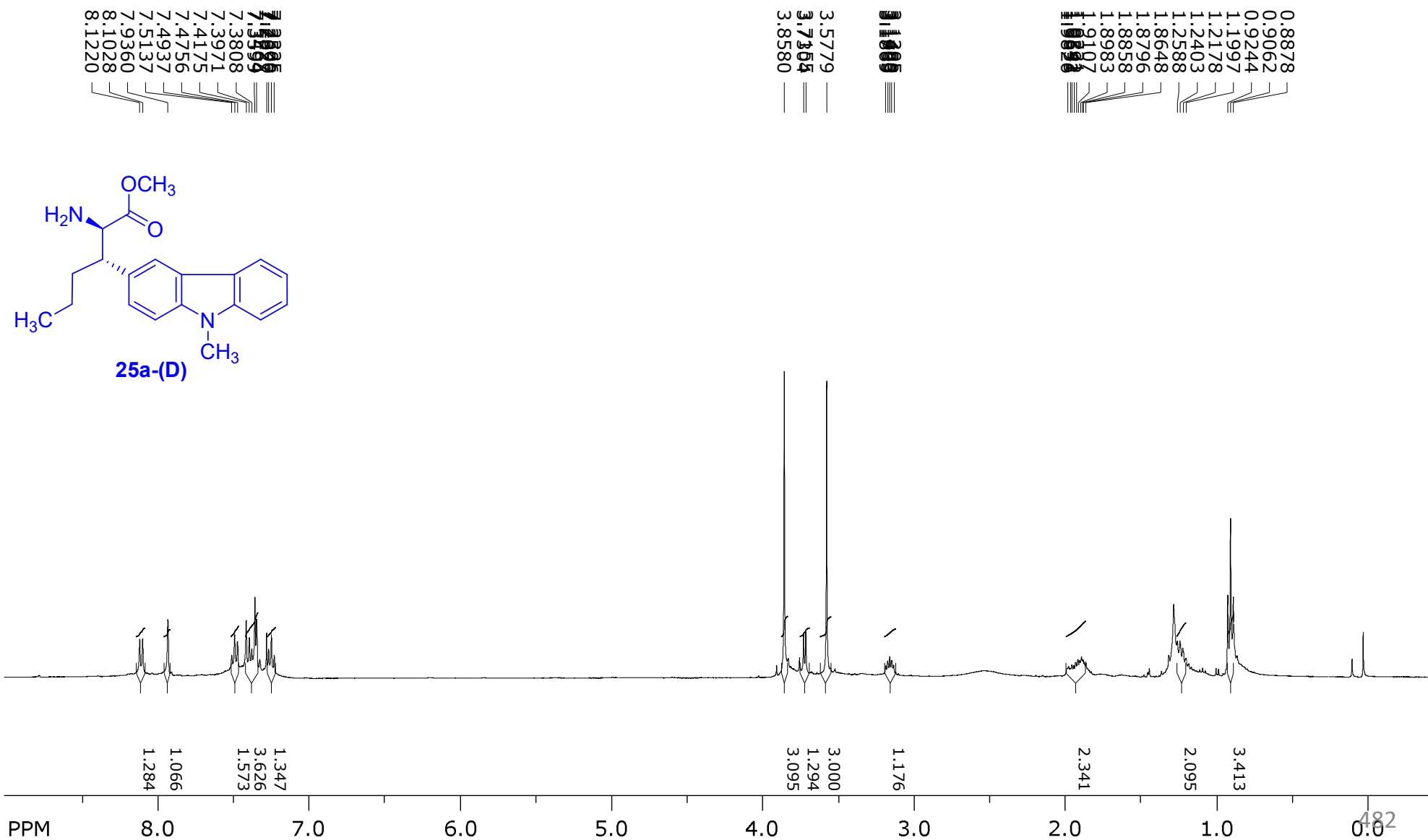


480

SpinWorks 4: RD-663
13C



SpinWorks 4: rd 636 re



SpinWorks 4: rd 636 re

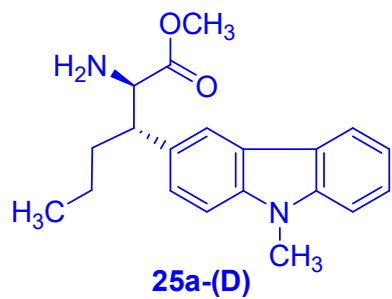
8.1028
8.1220

7.9360

7.4756
7.4937
7.5137

7.3494
7.3599
7.3808
7.3971
7.4175

7.2325
7.2506
7.2696
7.2827



1.284

1.066

1.573

3.626

1.347

PPM

8.0

7.8

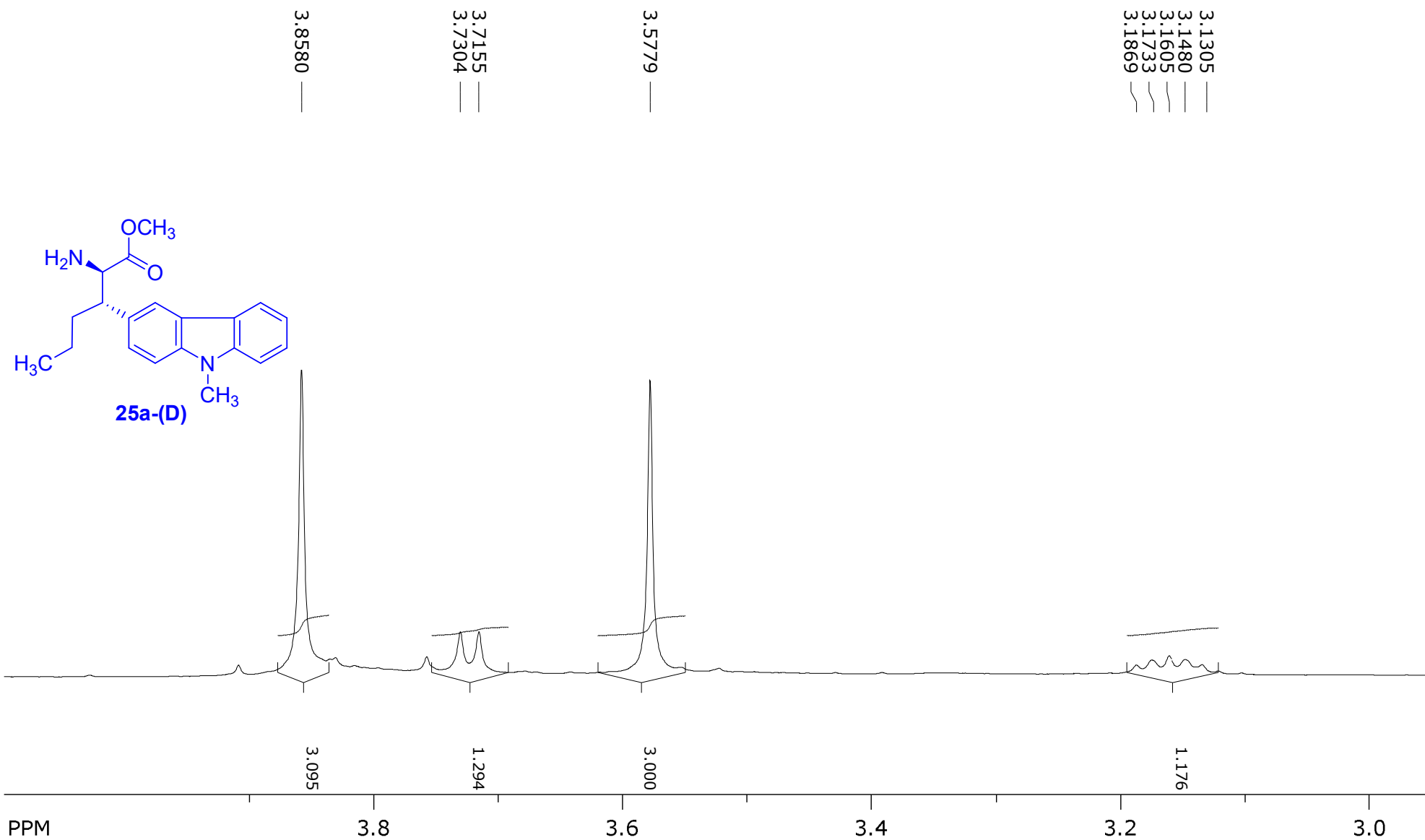
7.6

7.4

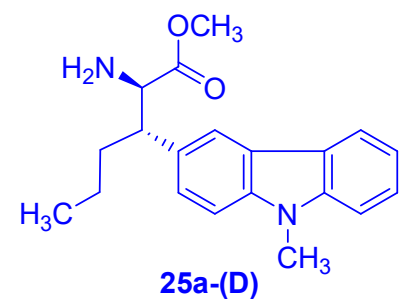
7.2

483

SpinWorks 4: rd 636 re



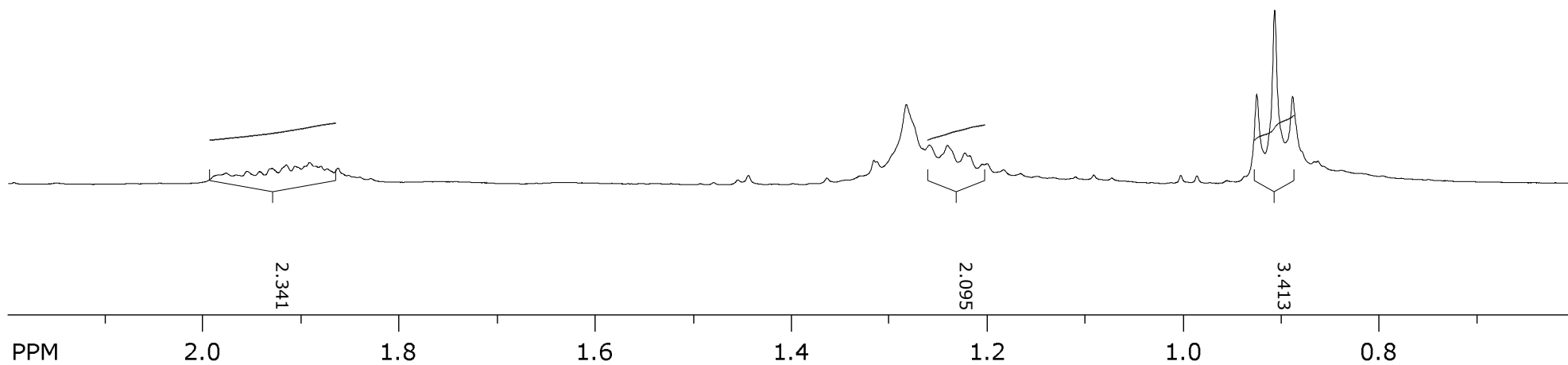
SpinWorks 4: rd 636 re



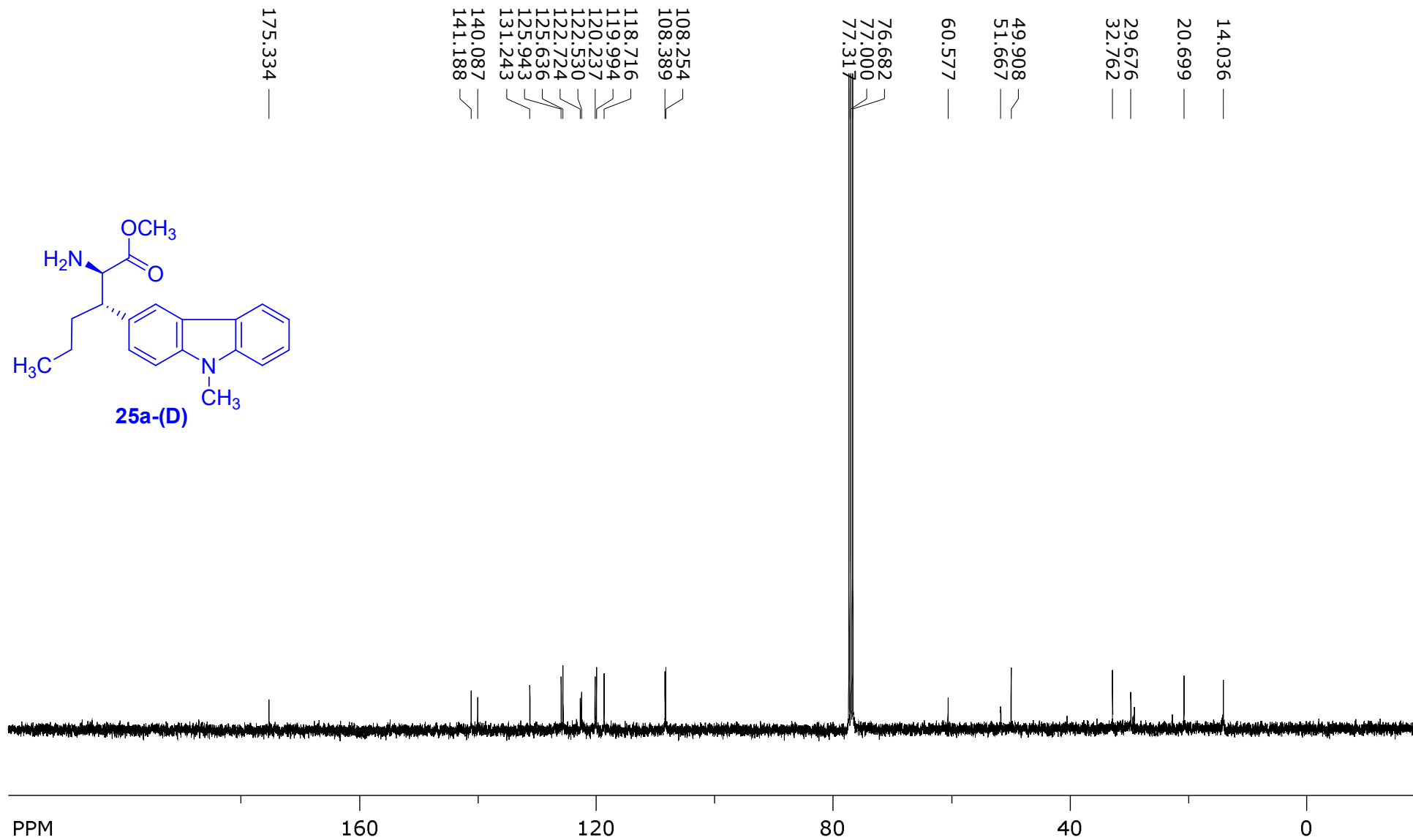
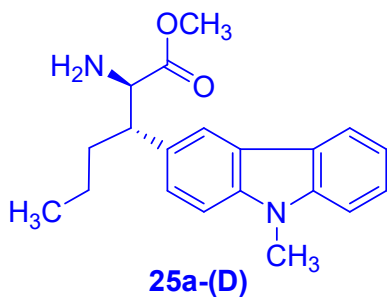
1.8648
1.8796
1.8858
1.8983
1.9107
1.9231
1.9392
1.9541
1.9653
1.9826

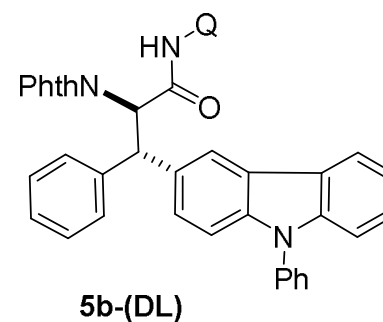
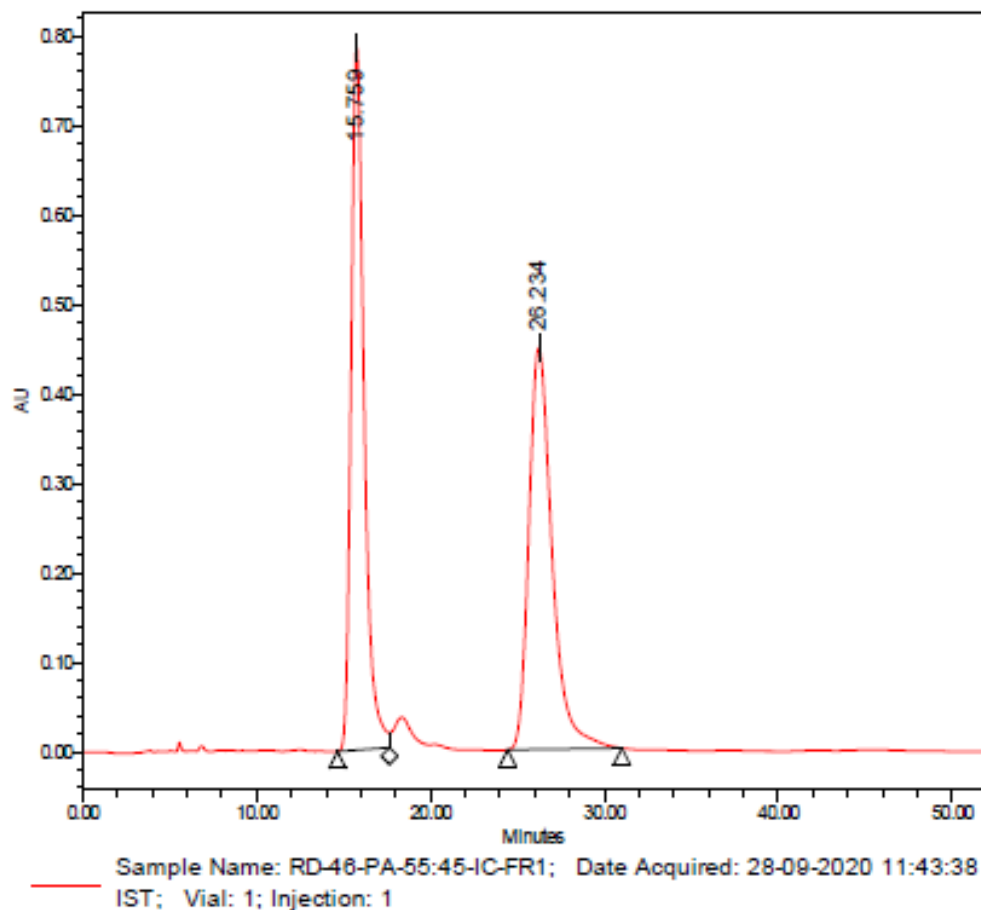
1.1997
1.2178
1.2403
1.2588

0.8878
0.9062
0.9244



SpinWorks 4: rd 636
13c

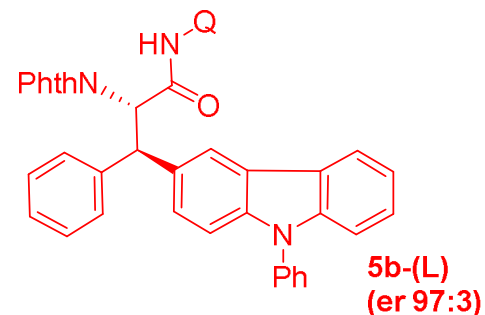
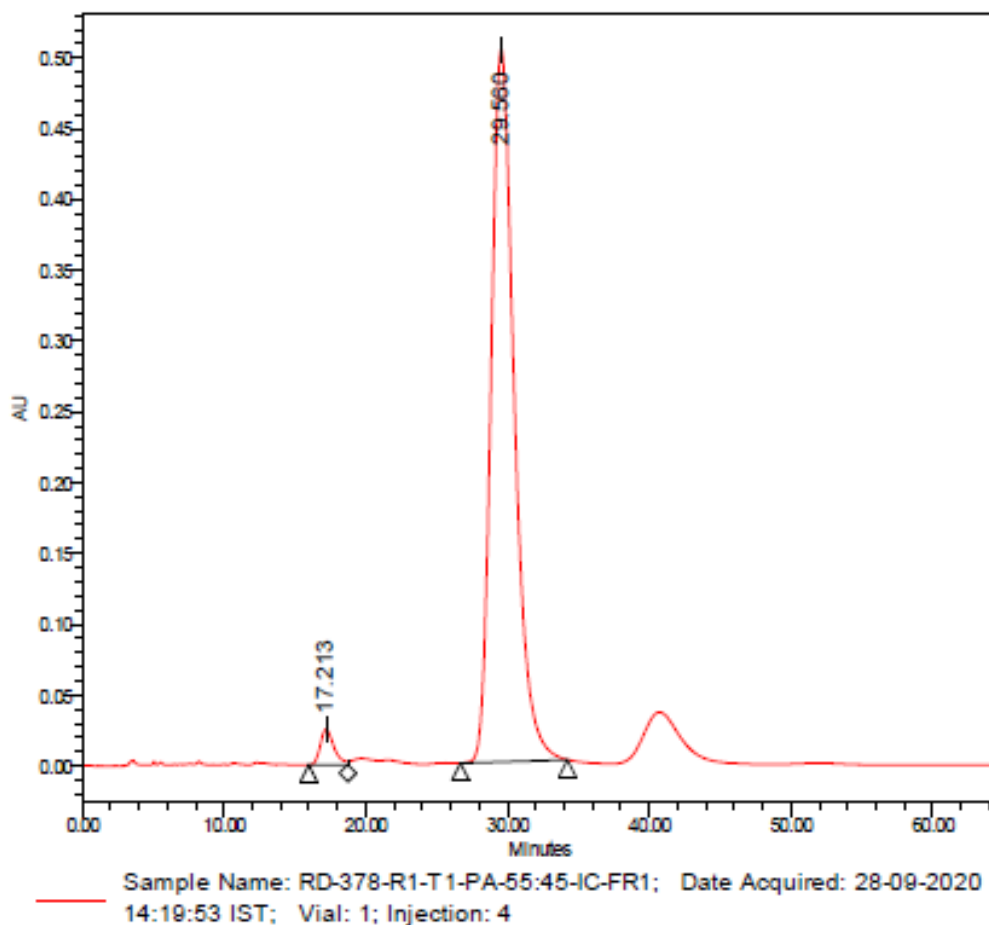




Peak Summary with Statistics
Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-46-PA-55:45-IC-FR1	1	1	26.234	41739768	50.45	448622
2	RD-46-PA-55:45-IC-FR1	1	1	15.759	40995954	49.55	784609
Mean				20.997			
Std. Dev.				7.407			

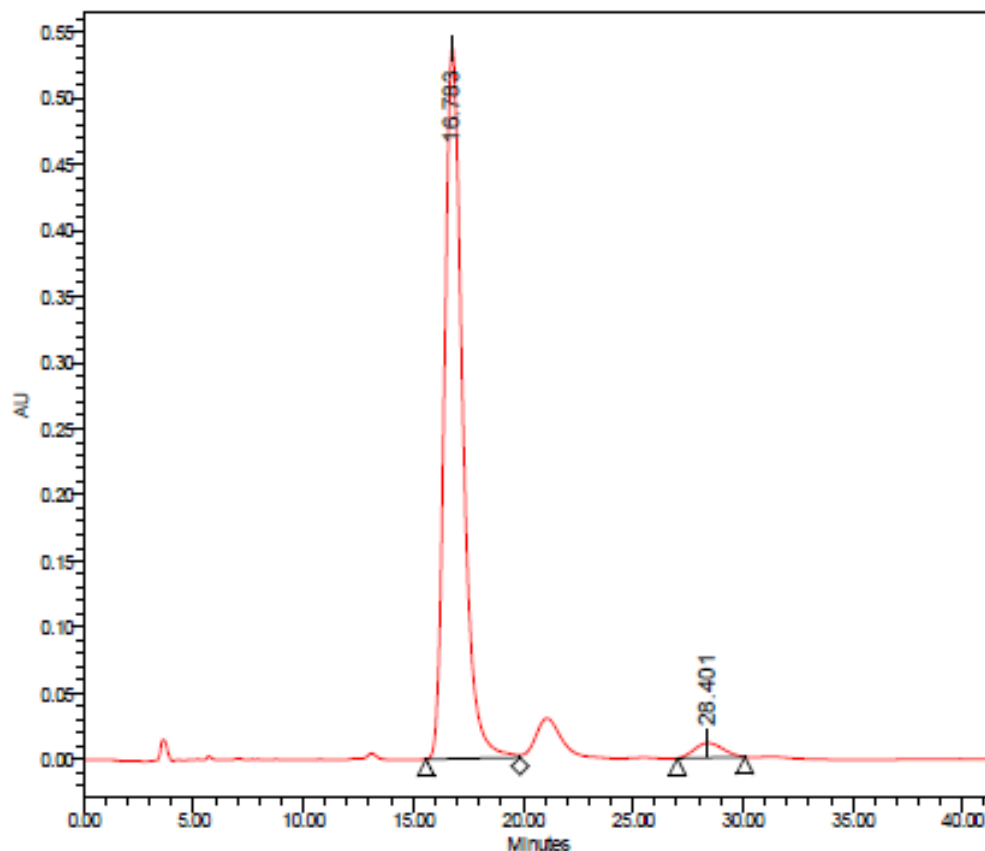
The HPLC of compound **5b-(DL)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (55:45), flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 15.75$ min, $t_L = 26.23$ min.



Peak Summary with Statistics
Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-378-R1-T1-PA-55:45-IC-FR1	1	4	29.560	56866802	97.15	502991
2	RD-378-R1-T1-PA-55:45-IC-FR1	1	4	17.213	1665459	2.85	24912
Mean				23.386			
Std. Dev.				8.731			

The HPLC of compound **5b-(L)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (55:45), flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 17.21$ min, $t_L = 29.56$ min.

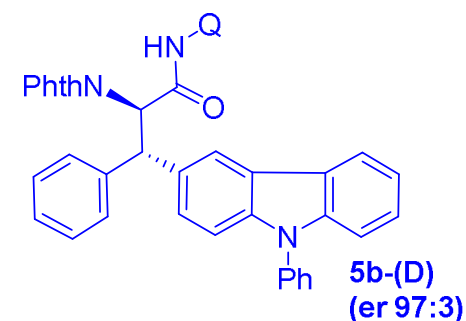


Sample Name: RD-377-R1-PA-55:45-IC-FR1; Date Acquired: 28-09-2020
12:37:58 IST; Vial: 1; Injection: 2

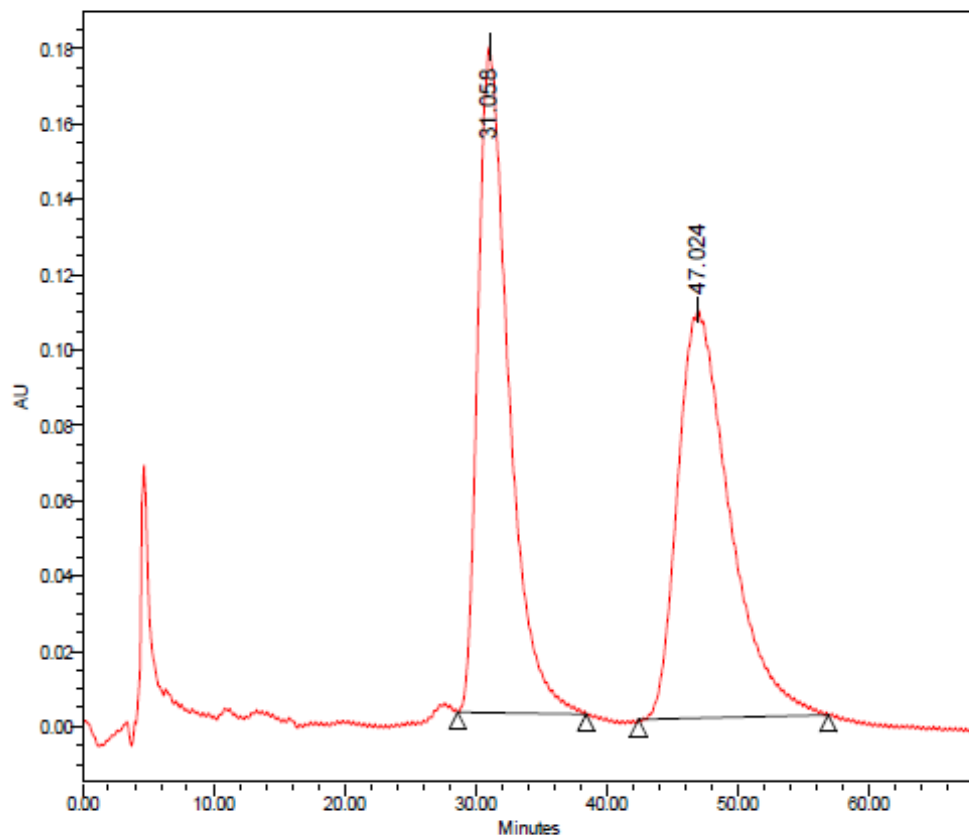
Peak Summary with Statistics

Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-377-R1-PA-55:45-IC-FR1	1	2	28.401	999633	3.15	11097
2	RD-377-R1-PA-55:45-IC-FR1	1	2	16.783	30733889	96.85	537015
Mean				22.592			
Std. Dev.				8.215			



The HPLC of compound **5b-(D)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (55:45), flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 16.78$ min, $t_L = 28.40$ min.

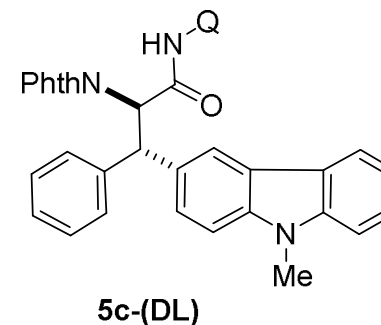


Sample Name: rd 174--R2- hexipa 5050 icfr1; Date Acquired: 21-03-2022
16:16:58 IST; Vial: 1; Injection: 2

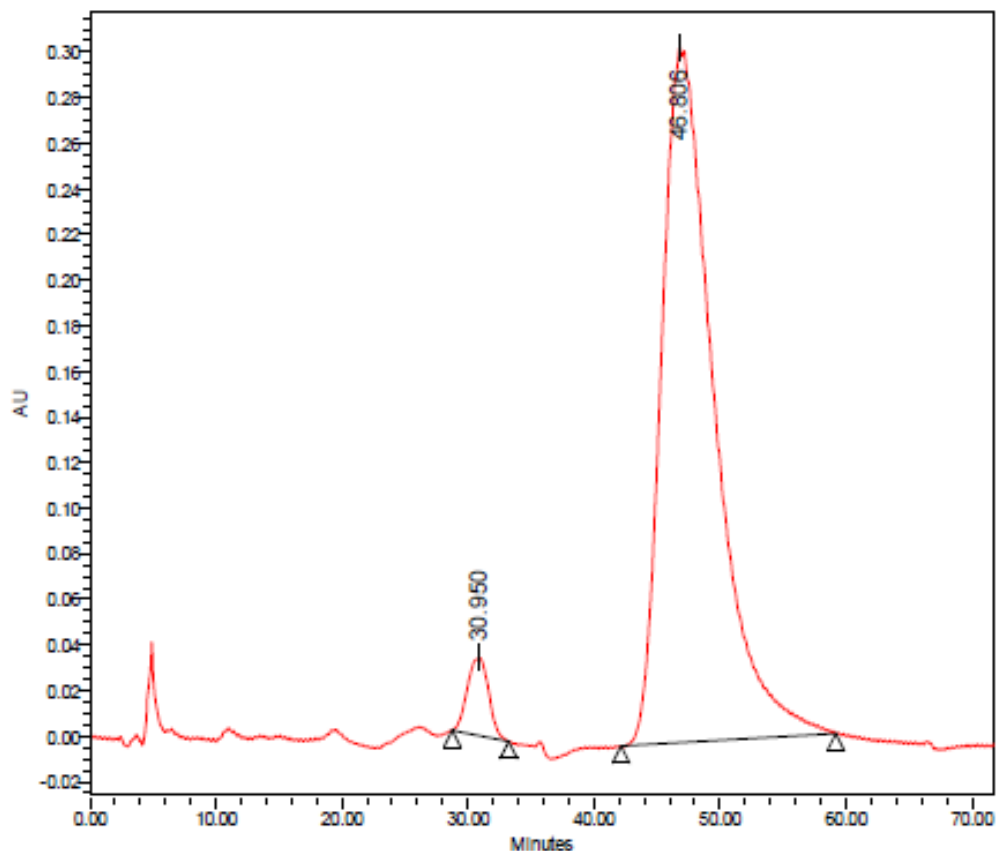
Peak Summary with Statistics

Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	rd 174--R2- hexipa 5050 icfr1	1	2	47.024	29851141	50.78	108334
2	rd 174--R2- hexipa 5050 icfr1	1	2	31.058	28939083	49.22	176850
Mean				39.041			
Std. Dev.				11.290			



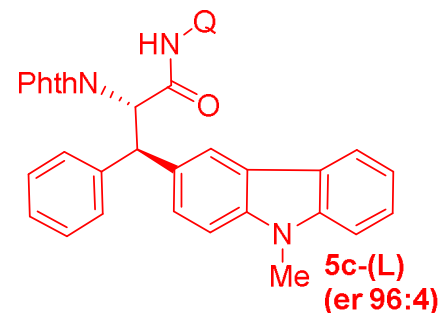
The HPLC of compound **5c-(DL)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (50:50), flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 31.05$ min, $t_L = 47.02$ min.



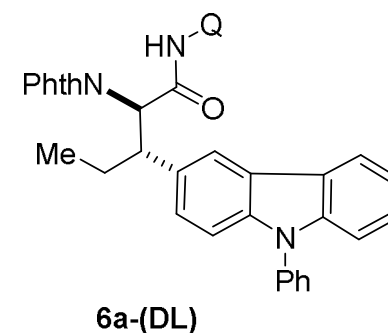
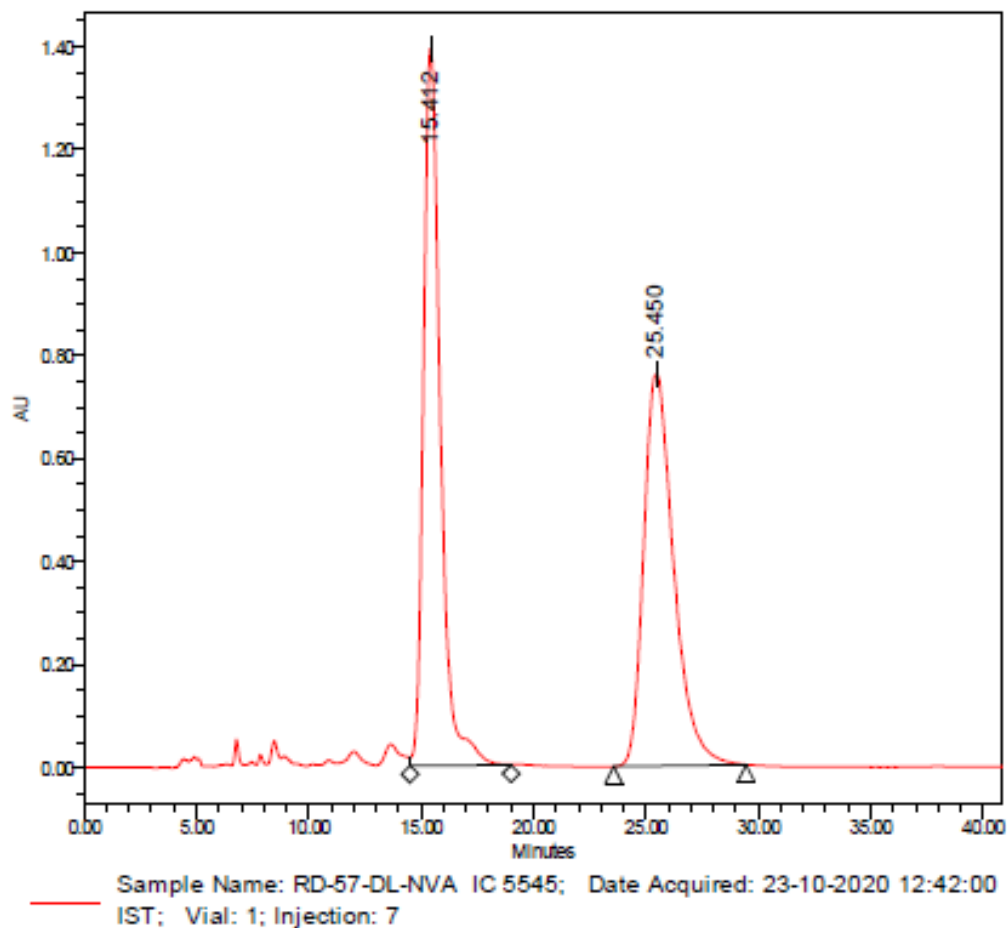
Sample Name: rd 1007--R1- hexipa 5050 icfr1; Date Acquired: 21-03-2022
15:03:59 IST; Vial: 1; Injection: 1

Peak Summary with Statistics
Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	rd 1007--R1- hexipa 5050 icfr1	1	1	46.806	88091125	95.66	305207
2	rd 1007--R1- hexipa 5050 icfr1	1	1	30.950	3991889	4.34	34105
Mean				38.878			
Std. Dev.				11.212			



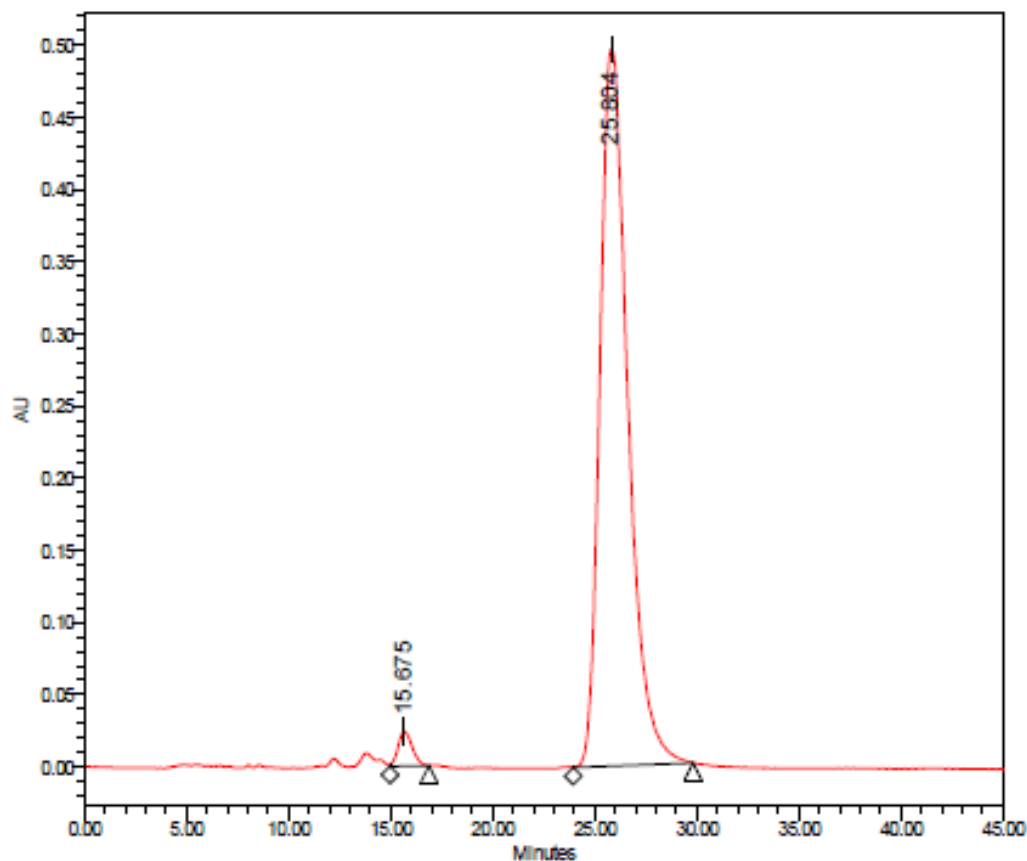
The HPLC of compound **5c-(L)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (50:50), flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 30.95$ min, $t_L = 46.80$ min.



Peak Summary with Statistics
Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-57-DL-NVA IC 5545	1	7	25.450	70707032	49.21	759375
2	RD-57-DL-NVA IC 5545	1	7	15.412	72969474	50.79	1391417
Mean				20.431			
Std. Dev.				7.098			

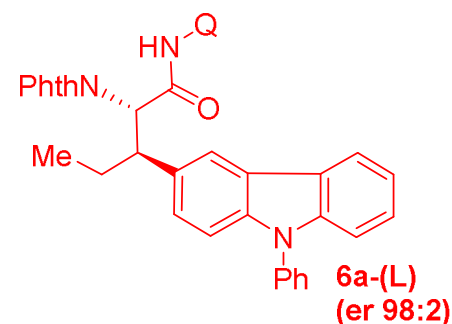
The HPLC of compound **6a-(DL)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (55:45), flow rate 1.0 mL/min, UV detection at 254 nm, $t_D = 15.41$ min, $t_L = 25.45$ min.



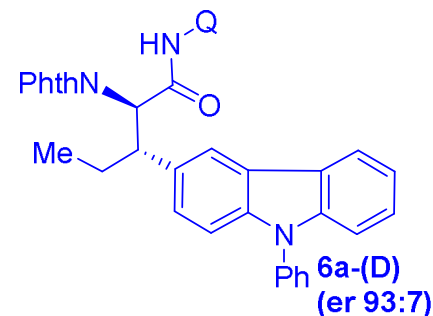
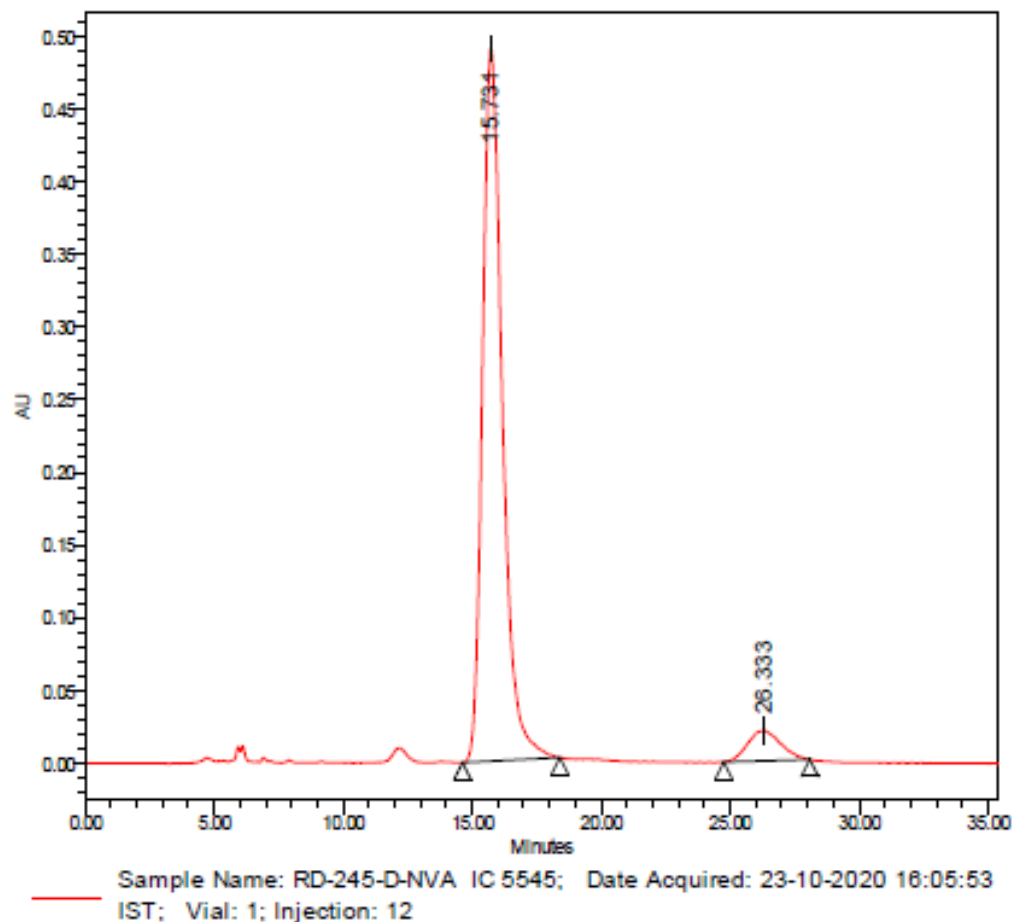
Sample Name: RD-478-L-NVA IC 5545; Date Acquired: 23-10-2020 13:23:38
 IST; Vial: 1; Injection: 8

Peak Summary with Statistics
 Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-478-L-NVA IC 5545	1	8	25.804	47216361	97.62	496778
2	RD-478-L-NVA IC 5545	1	8	15.675	1151414	2.38	23954
Mean				20.740			
Std. Dev.				7.162			



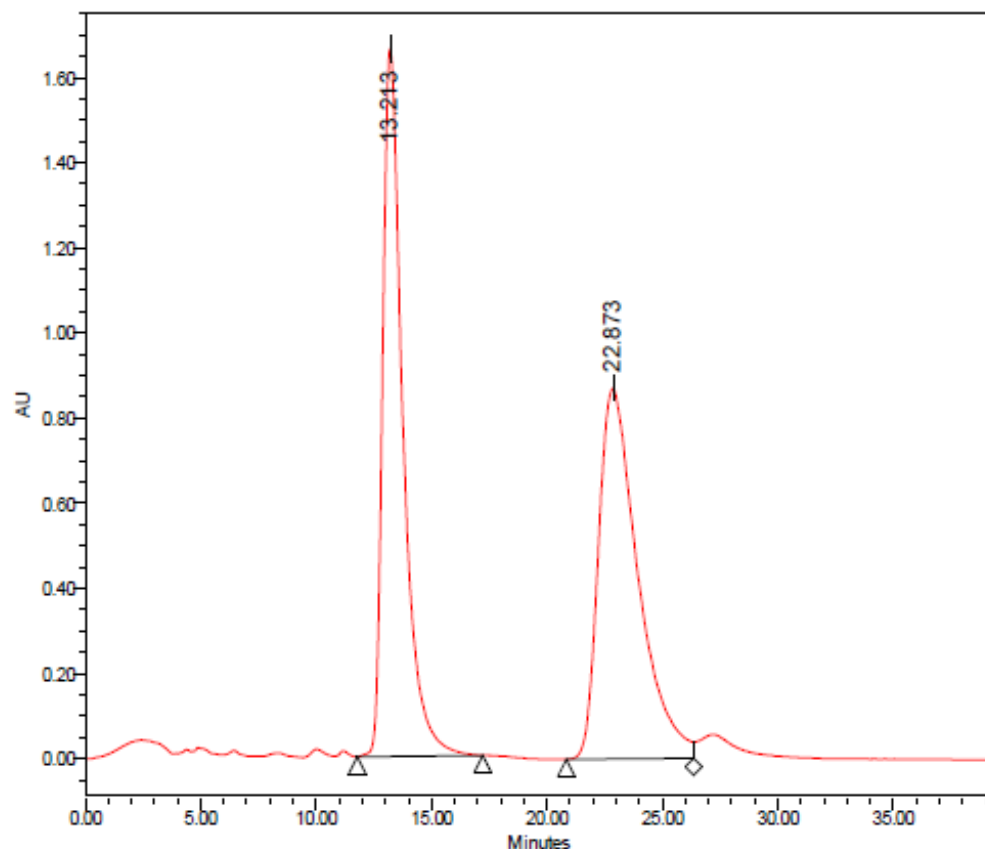
The HPLC of compound **6a-(L)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (55:45), flow rate 1.0 mL/min, UV detection at 254 nm, $t_D = 15.67$ min, $t_L = 25.80$ min.



Peak Summary with Statistics
Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-245-D-NVA IC 5545	1	12	26.333	1855989	6.62	20675
2	RD-245-D-NVA IC 5545	1	12	15.731	26183411	93.38	490260
Mean				21.032			
Std. Dev.				7.497			

The HPLC of compound **6a-(D)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (55:45), flow rate 1.0 mL/min, UV detection at 254 nm, $t_D = 15.73$ min, $t_L = 26.33$ min.

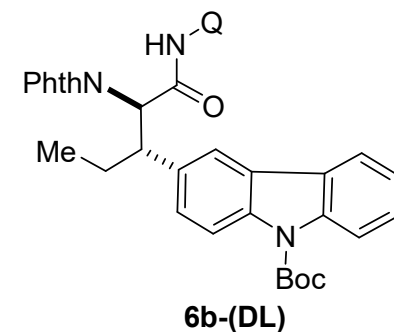


Sample Name: RD-103 HEXIPA5050 IC FR=1; Date Acquired: 17-03-2022
 11:24:32 IST; Vial: 1; Injection: 2

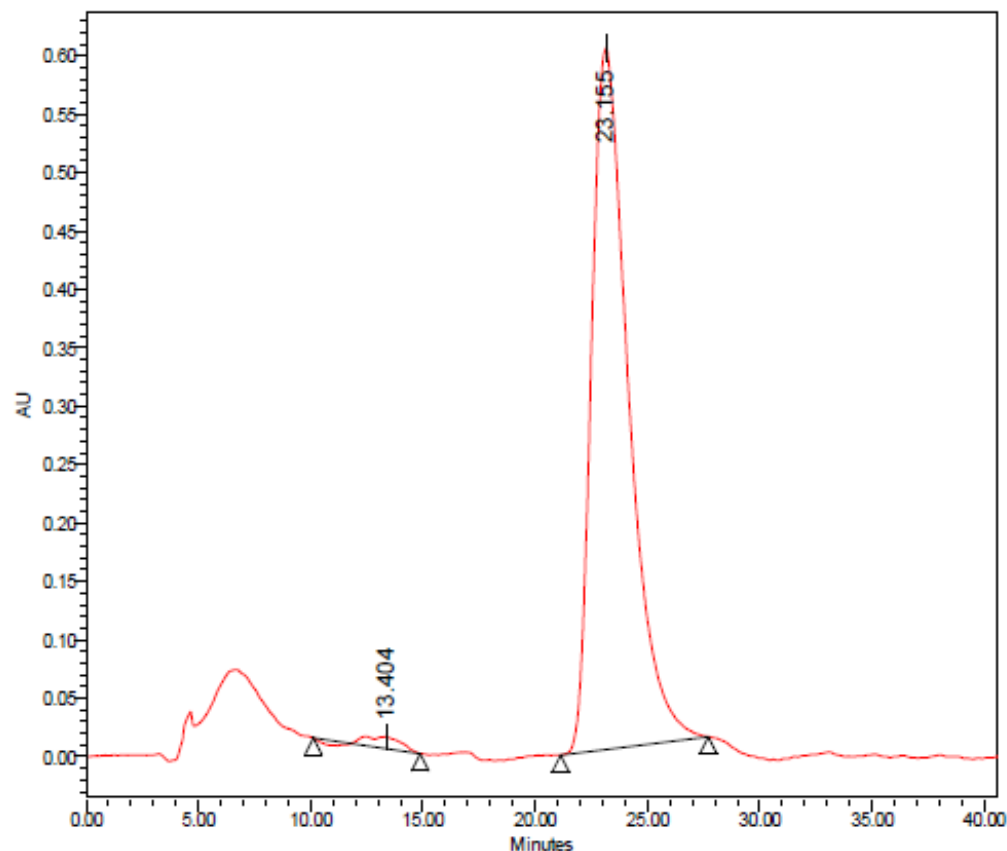
Peak Summary with Statistics

Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-103 HEXIPA5050 IC FR=1	1	2	13.213	101173412	49.49	1661500
2	RD-103 HEXIPA5050 IC FR=1	1	2	22.873	103242648	50.51	870547
Mean				18.043			
Std. Dev.				6.831			



The HPLC of compound **6b-(DL)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (50:50), flow rate 1.0 mL/min, UV detection at 254 nm, $t_D = 13.21$ min, $t_L = 22.87$ min.

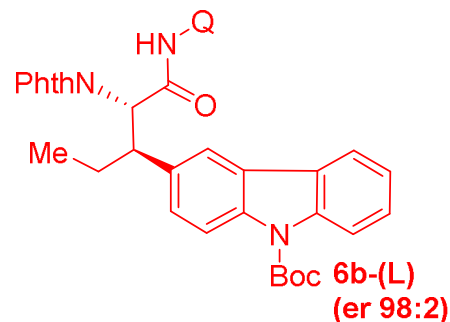


Sample Name: RD-1008 HEXIPA5050 IC FR=1; Date Acquired: 17-03-2022
12:55:26 IST; Vial: 1; Injection: 4

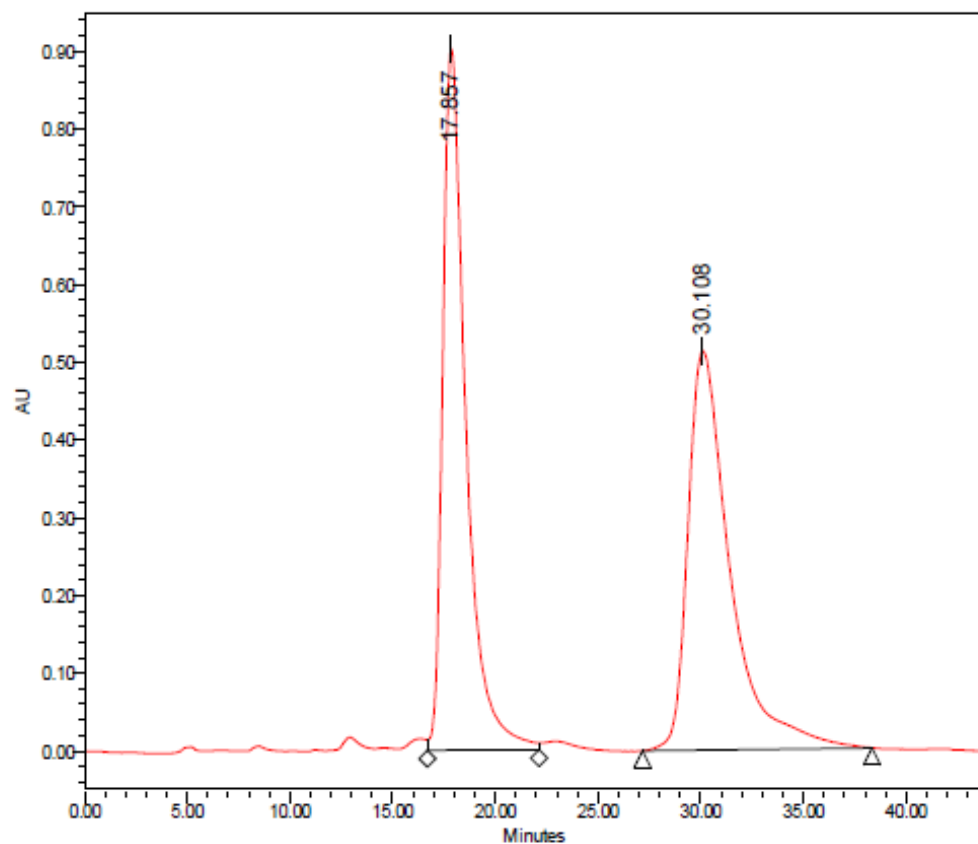
Peak Summary with Statistics

Name:

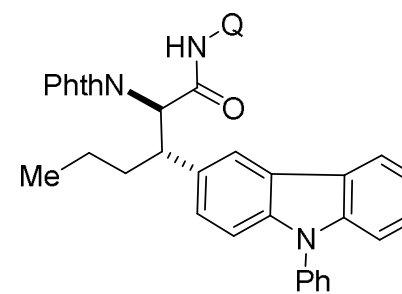
	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-1008 HEXIPA5050 IC FR=1	1	4	23.155	68957294	98.03	600520
2	RD-1008 HEXIPA5050 IC FR=1	1	4	13.404	1388478	1.97	10183
Mean				18.279			
Std. Dev.				6.895			



The HPLC of compound **6b-(L)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (50:50), flow rate 1.0 mL/min, UV detection at 254 nm, $t_D = 13.40$ min, $t_L = 23.15$ min.



Sample Name: RD-41-R-HEXIPA7030 IC FR=1; Date Acquired: 17-03-2022
14:33:01 IST; Vial: 1; Injection: 1

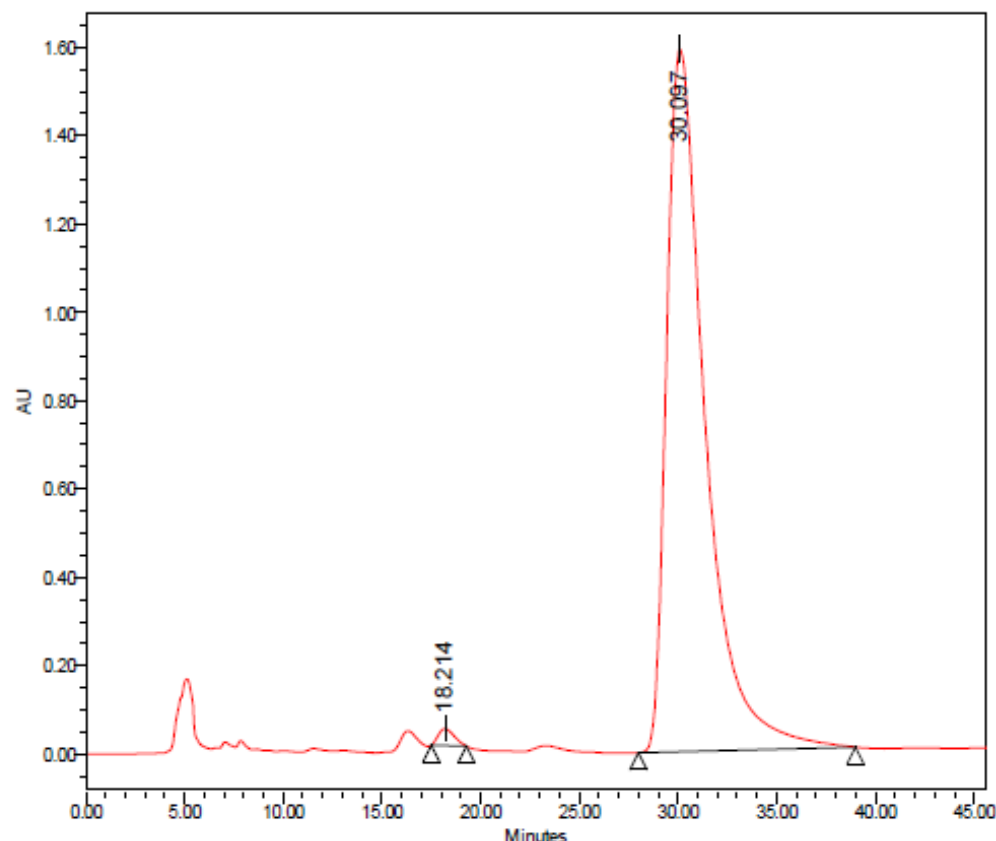


7a-(DL): 93%

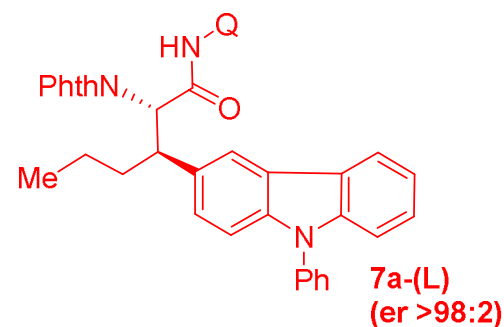
Peak Summary with Statistics
Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-41-R-HEXIPA7030 IC FR=1	1	1	30.108	73273530	50.83	513508
2	RD-41-R-HEXIPA7030 IC FR=1	1	1	17.857	70893212	49.17	901907
Mean				23.982			
Std. Dev.				8.663			

The HPLC of compound **7a-(DL)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (70:30), flow rate 1.0 mL/min, UV detection at 254 nm, $t_D = 17.85$ min, $t_L = 30.10$ min.



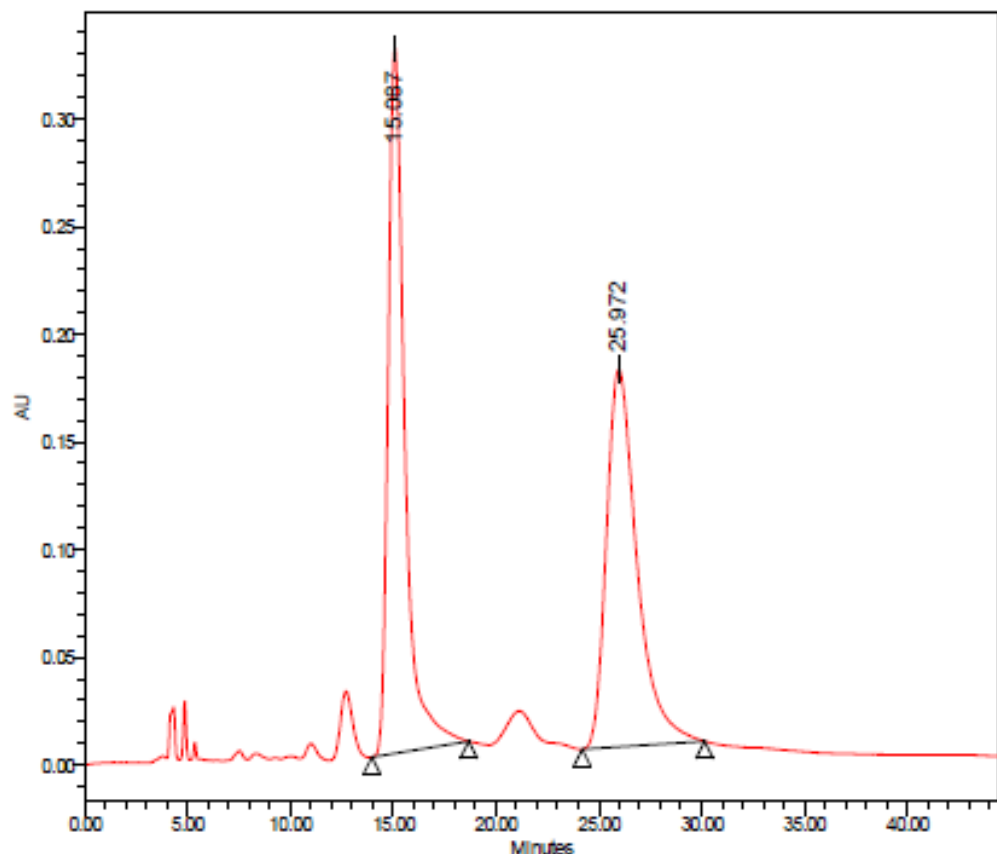
Sample Name: RD-1009-R-HEXIPA7030 IC FR=1; Date Acquired: 17-03-2022
16:30:03 IST; Vial: 1; Injection: 3



Peak Summary with Statistics
Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-1009-R-HEXIPA7030 IC FR=1	1	3	30.097	217051363	99.02	1591619
2	RD-1009-R-HEXIPA7030 IC FR=1	1	3	18.214	2137351	0.98	37989
Mean				24.155			
Std. Dev.				8.403			

The HPLC of compound **7a-(L)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (70:30), flow rate 1.0 mL/min, UV detection at 254 nm, $t_D = 18.21$ min, $t_L = 30.09$ min.

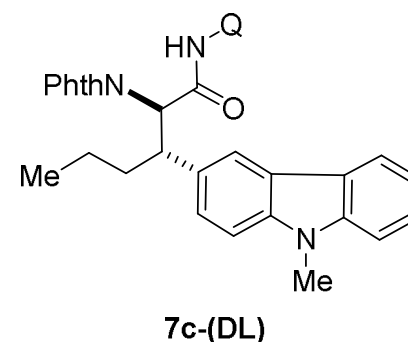


Sample Name: RD-134R-DL-NLE-Ar-50:50; Date Acquired: 09-10-2020 14:28:26
IST; Vial: 1; Injection: 7

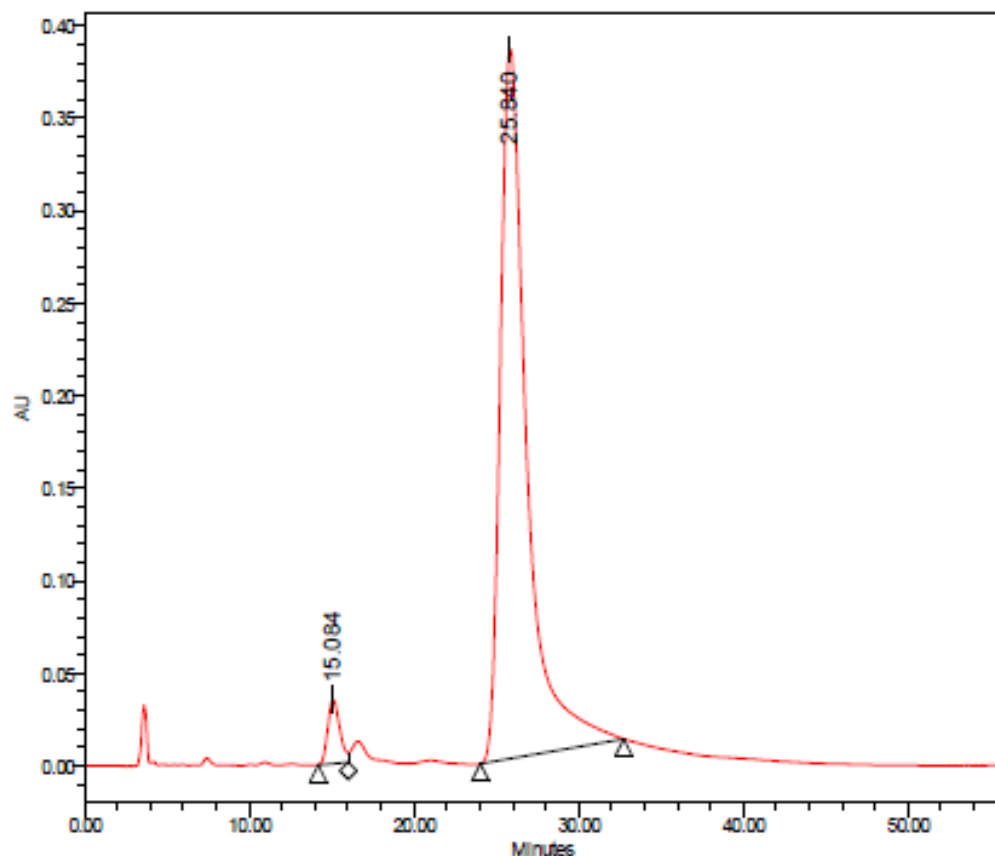
Peak Summary with Statistics

Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-134R-DL-NLE-Ar-50:50	1	7	25.972	18103323	49.50	175124
2	RD-134R-DL-NLE-Ar-50:50	1	7	15.067	18468920	50.50	327369
Mean				20.529			
Std. Dev.				7.697			



The HPLC of compound **7c-(DL)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (50:50), flow rate 1.0 mL/min, UV detection at 254 nm, $t_D = 15.08$ min, $t_L = 25.97$ min.

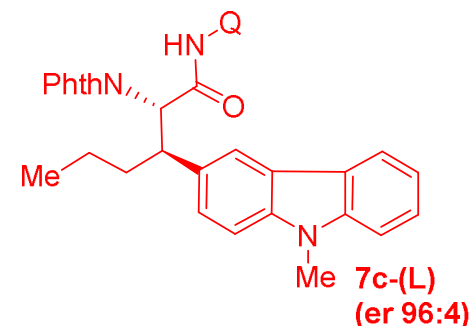


Sample Name: RD-476-T2-NLE-Ar-50:50; Date Acquired: 09-10-2020 17:38:48
 IST; Vial: 1; Injection: 11

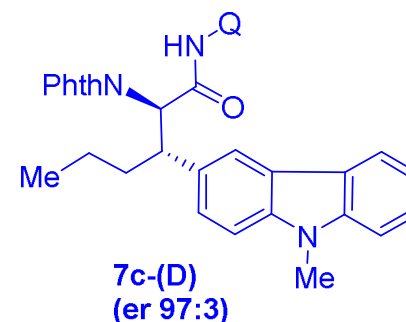
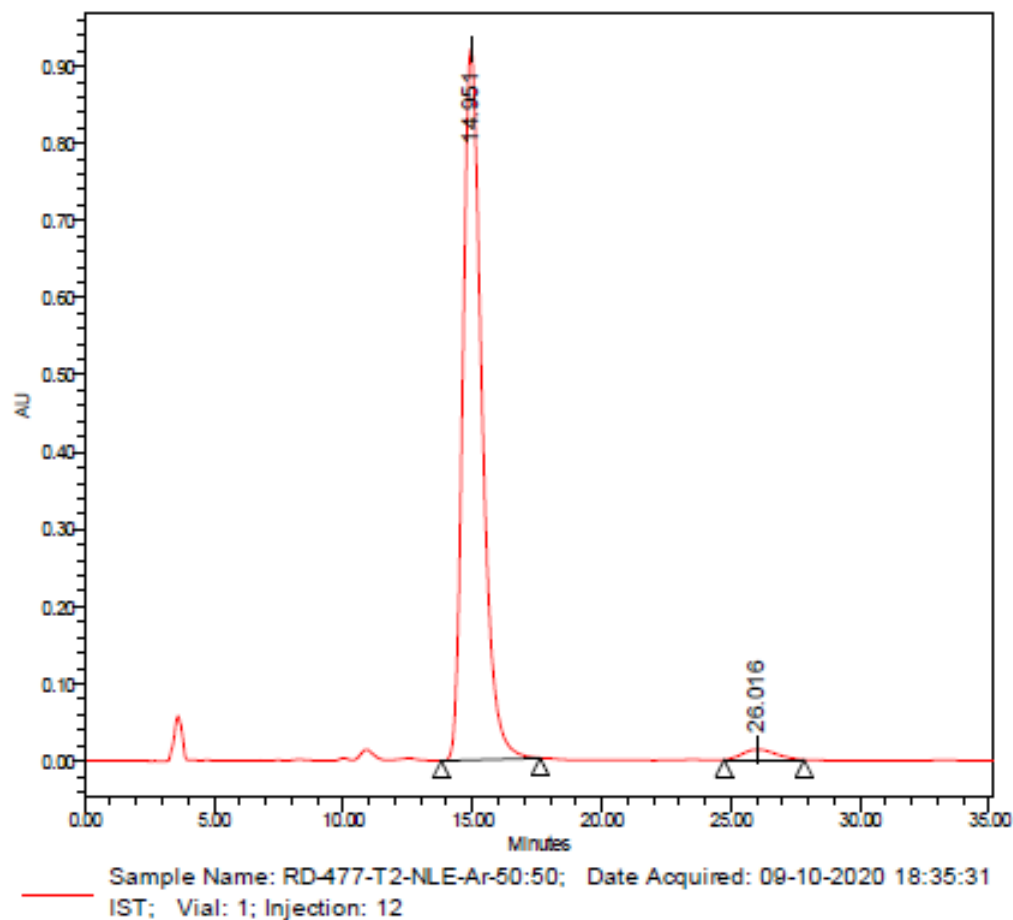
Peak Summary with Statistics

Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-476-T2-NLE-Ar-50:50	1	11	25.840	42905493	96.08	383608
2	RD-476-T2-NLE-Ar-50:50	1	11	15.084	1749562	3.92	34436
Mean				20.462			
Std. Dev.				7.606			



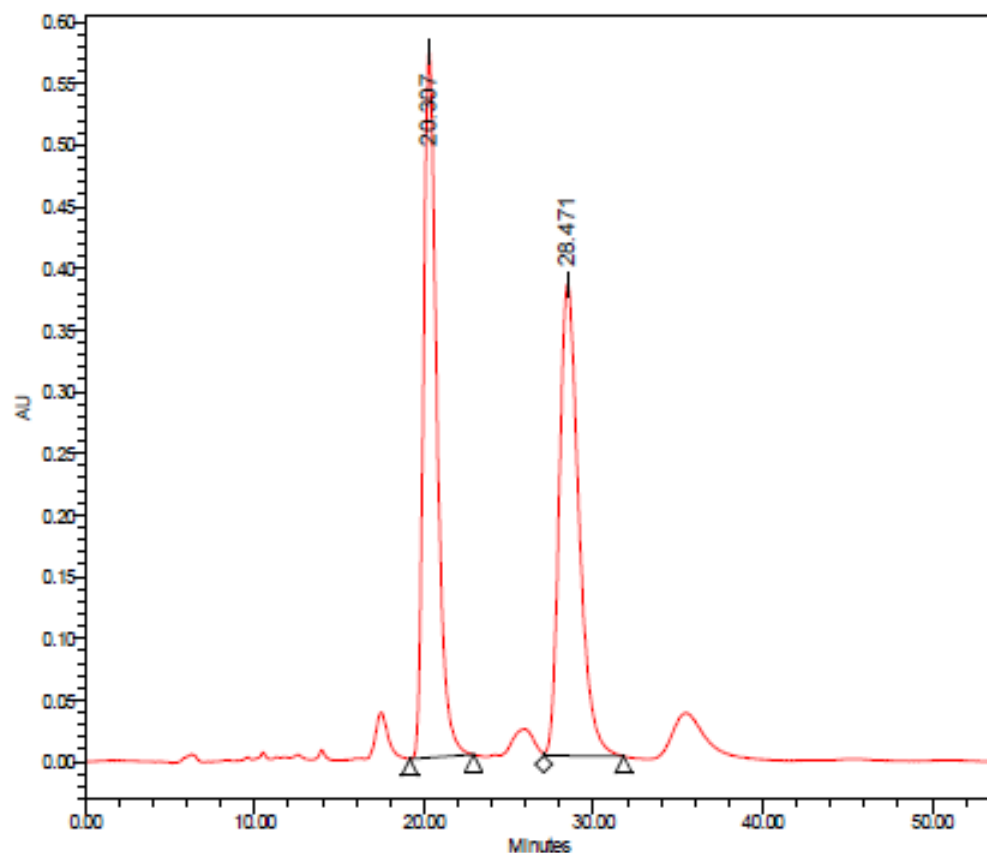
The HPLC of compound **7c-(L)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (50:50), flow rate 1.0 mL/min, UV detection at 254 nm, $t_D = 15.08$ min, $t_L = 25.84$ min.



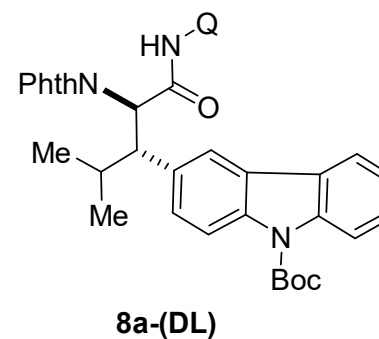
Peak Summary with Statistics
Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-477-T2-NLE-Ar-50:50	1	12	26.016	118333	2.45	13339
2	RD-477-T2-NLE-Ar-50:50	1	12	14.951	47132251	97.55	921238
Mean				20.483			
Std. Dev.				7.824			

The HPLC of compound **7c-(D)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (50:50), flow rate 1.0 mL/min, UV detection at 254 nm, $t_D = 14.95$ min, $t_L = 26.01$ min.



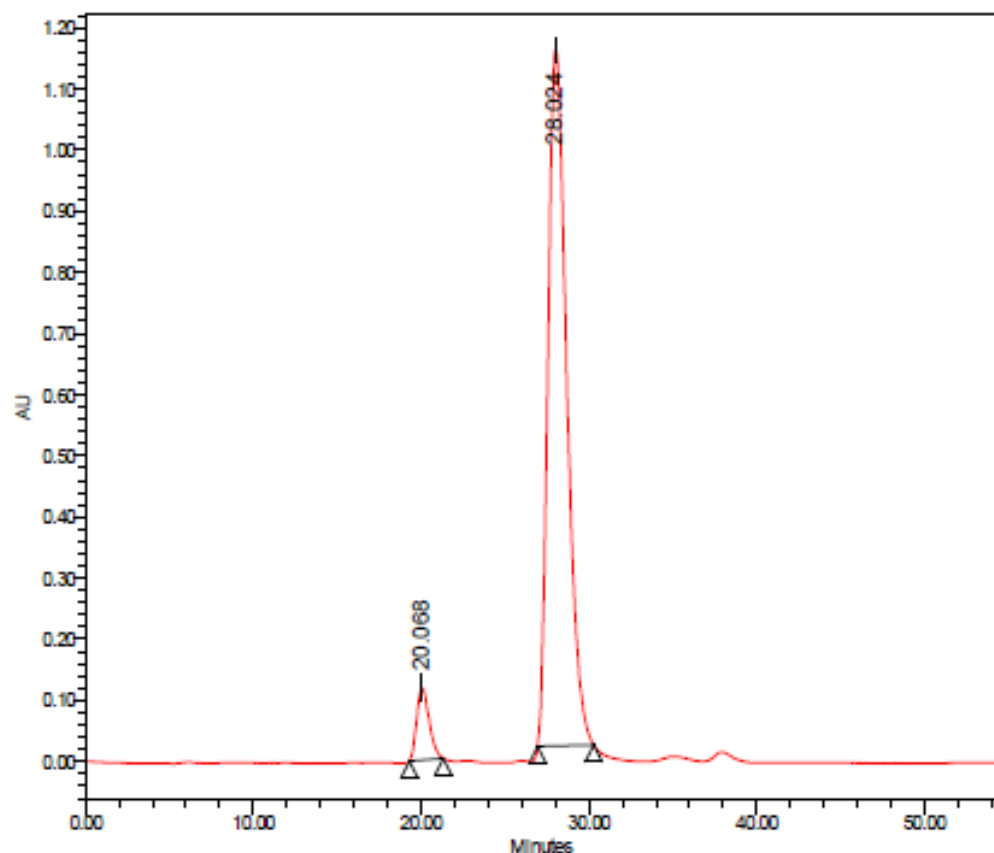
Sample Name: RD-165-IC 80:30 FR-1; Date Acquired: 06-01-2021 15:06:37 IST;
Vial: 1; Injection: 5



Peak Summary with Statistics
Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-165-IC 80:30 FR-1	1	5	28.471	30823531	49.44	382085
2	RD-165-IC 80:30 FR-1	1	5	20.307	31517262	50.56	572757
Mean				24.389			
Std. Dev.				5.773			

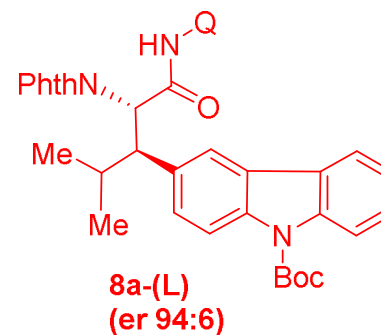
The HPLC of compound **8a-(DL)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (70:30), flow rate 1.0 mL/min, UV detection at 254 nm, $t_D = 20.30$ min, $t_L = 28.47$ min.



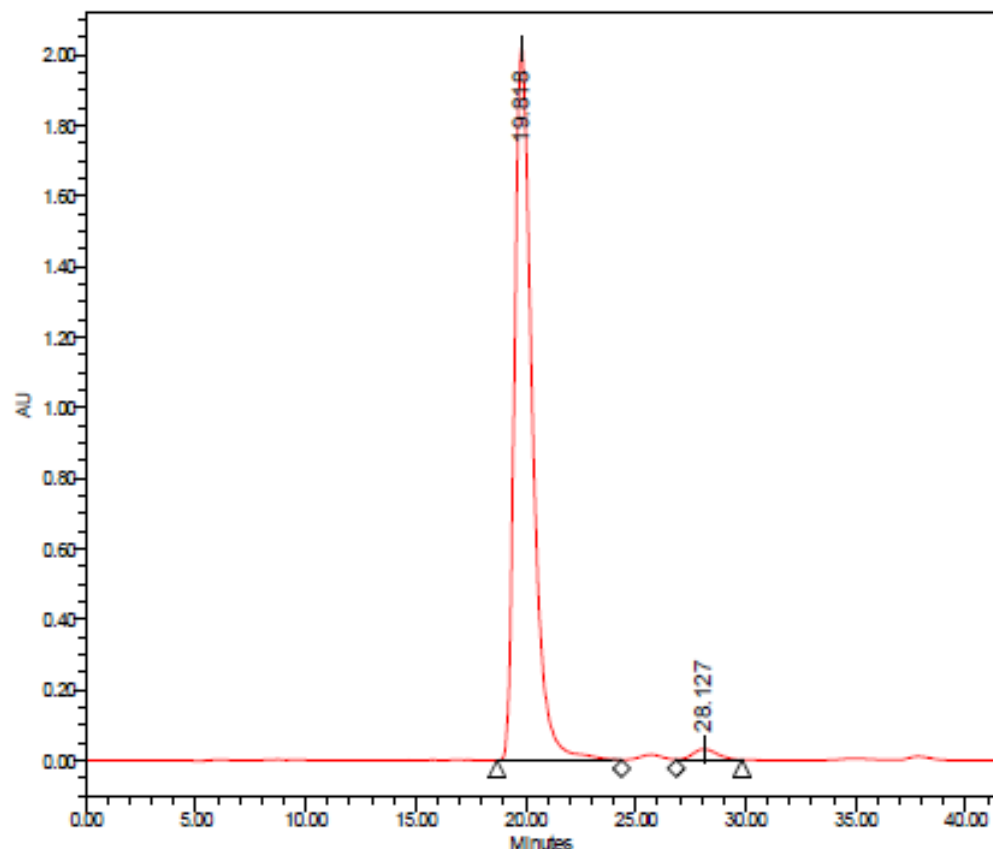
Sample Name: RD-L-LEUC-IC 80:30 FR-1; Date Acquired: 06-01-2021 16:43:59
 IST; Vial: 1; Injection: 7

Peak Summary with Statistics
 Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-L-LEUC-IC 80:30 FR-1	1	7	28.024	87966981	93.55	1138264
2	RD-L-LEUC-IC 80:30 FR-1	1	7	20.068	6062684	6.45	117253
Mean				24.046			
Std. Dev.				5.626			



The HPLC of compound **8a-(L)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (70:30), flow rate 1.0 mL/min, UV detection at 254 nm, $t_D = 20.06$ min, $t_L = 28.02$ min.

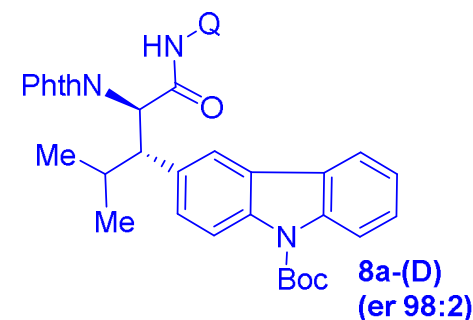


Sample Name: RD-D-LEUC-IC 80:30 FR-1; Date Acquired: 06-01-2021 16:01:23
IST; Vial: 1; Injection: 6

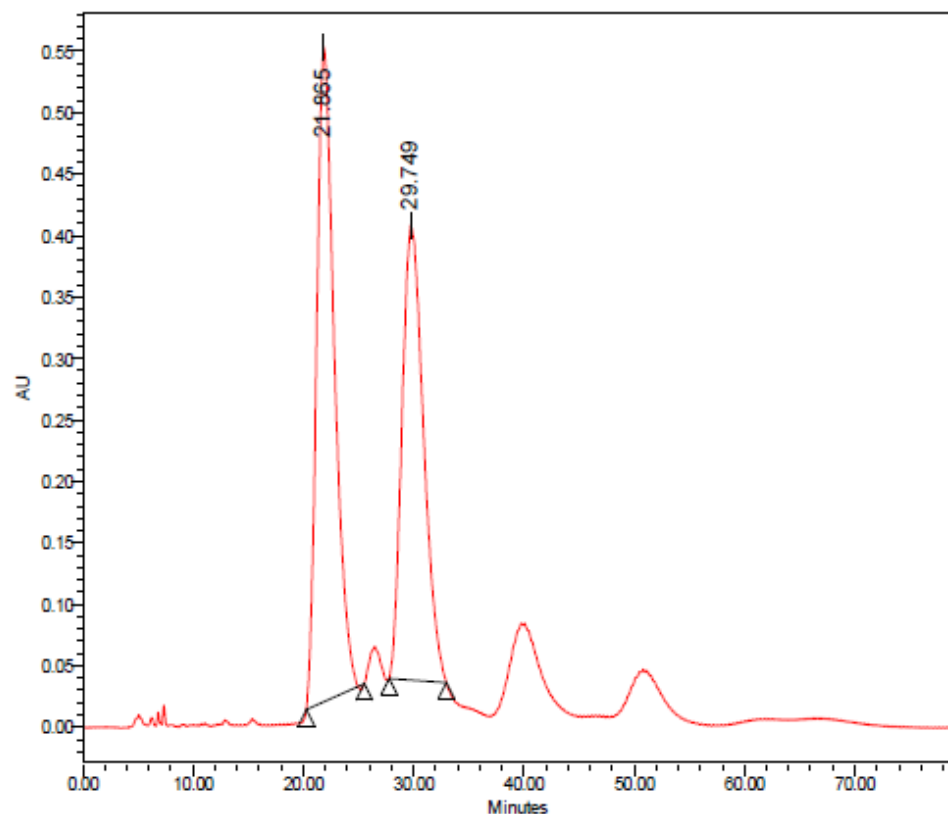
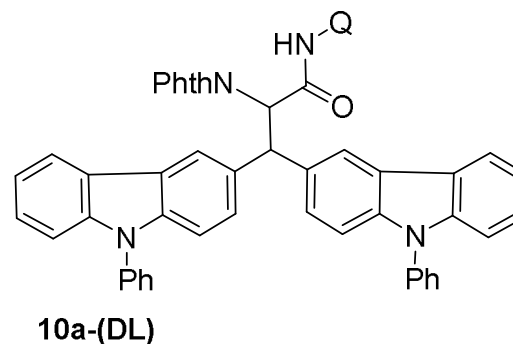
Peak Summary with Statistics

Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-D-LEUC-IC 80:30 FR-1	1	6	28.127	2367506	2.03	30740
2	RD-D-LEUC-IC 80:30 FR-1	1	6	19.818	114191466	97.97	2018743
Mean				23.973			
Std. Dev.				5.875			



The HPLC of compound **8a-(D)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (70:30), flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 19.81$ min, $t_L = 28.12$ min.

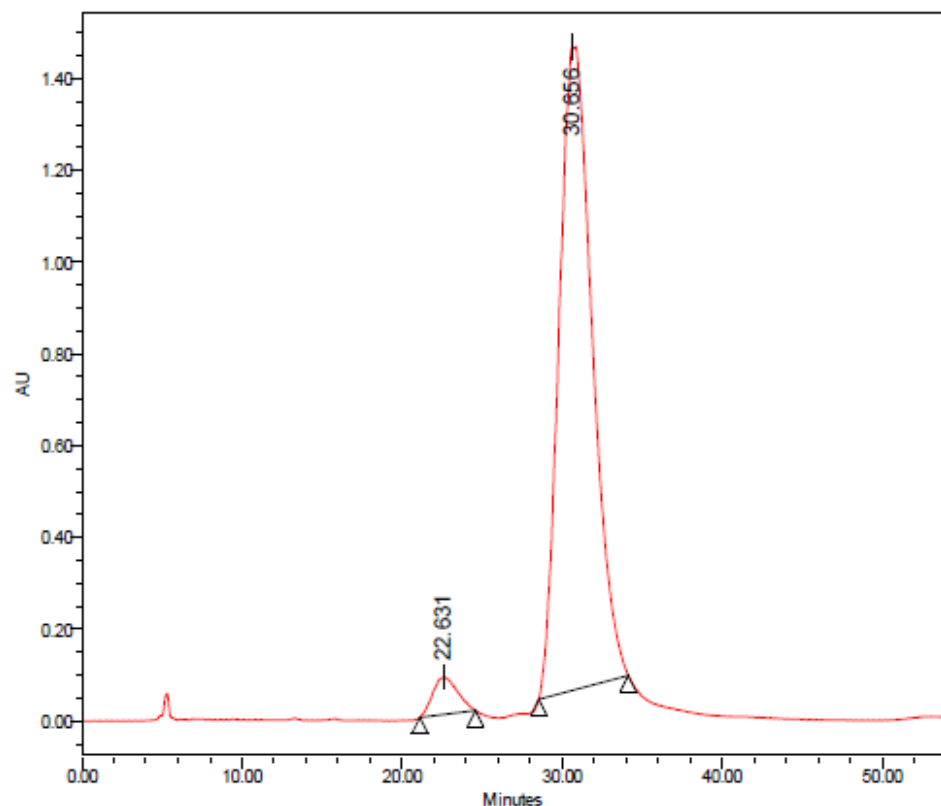


Sample Name: RD-52-DL-ALA IC 55:45; Date Acquired: 04-11-2020 12:39:10
IST; Vial: 1; Injection: 2

Peak Summary with Statistics
Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-52-DL-ALA IC 55:45	1	2	29.749	50043828	45.62	369968
2	RD-52-DL-ALA IC 55:45	1	2	21.865	59647636	54.38	532476
Mean				25.807			
Std. Dev.				5.575			

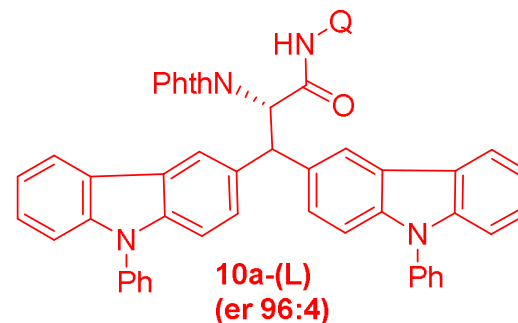
The HPLC of compound **10a-(DL)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (55:45), flow rate 1.0 mL/min, UV detection at 254 nm, $t_D = 21.86$ min, $t_L = 29.74$ min.



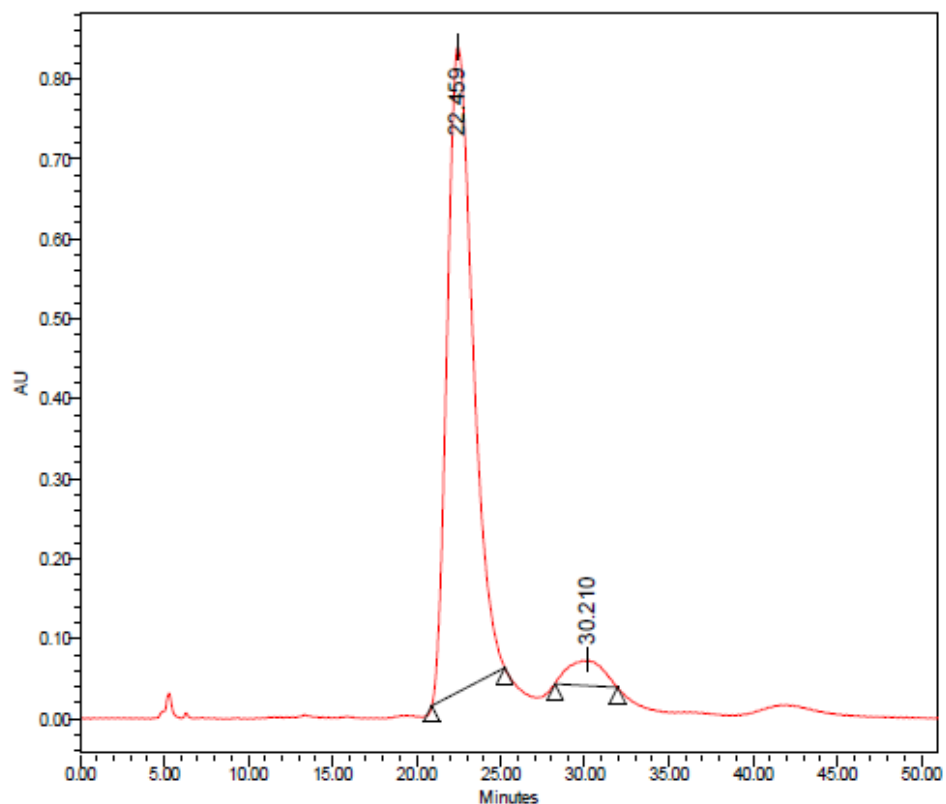
Sample Name: RD-250-L-ALA IC 55:45; Date Acquired: 04-11-2020 13:59:27 IST;
Vial: 1; Injection: 3

Peak Summary with Statistics
Name:

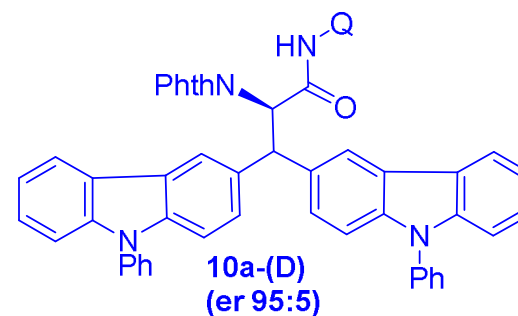
	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-250-L-ALA IC 55:45	1	3	30.656	201976369	95.85	1401951
2	RD-250-L-ALA IC 55:45	1	3	22.631	8741200	4.15	81749
Mean				26.643			
Std. Dev.				5.675			



The HPLC of compound **10a-(L)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (55:45), flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 22.63$ min, $t_L = 30.65$ min.



Sample Name: RD-249-T1-D-ALA IC 55:45; Date Acquired: 04-11-2020 15:45:28
IST; Vial: 1; Injection: 5

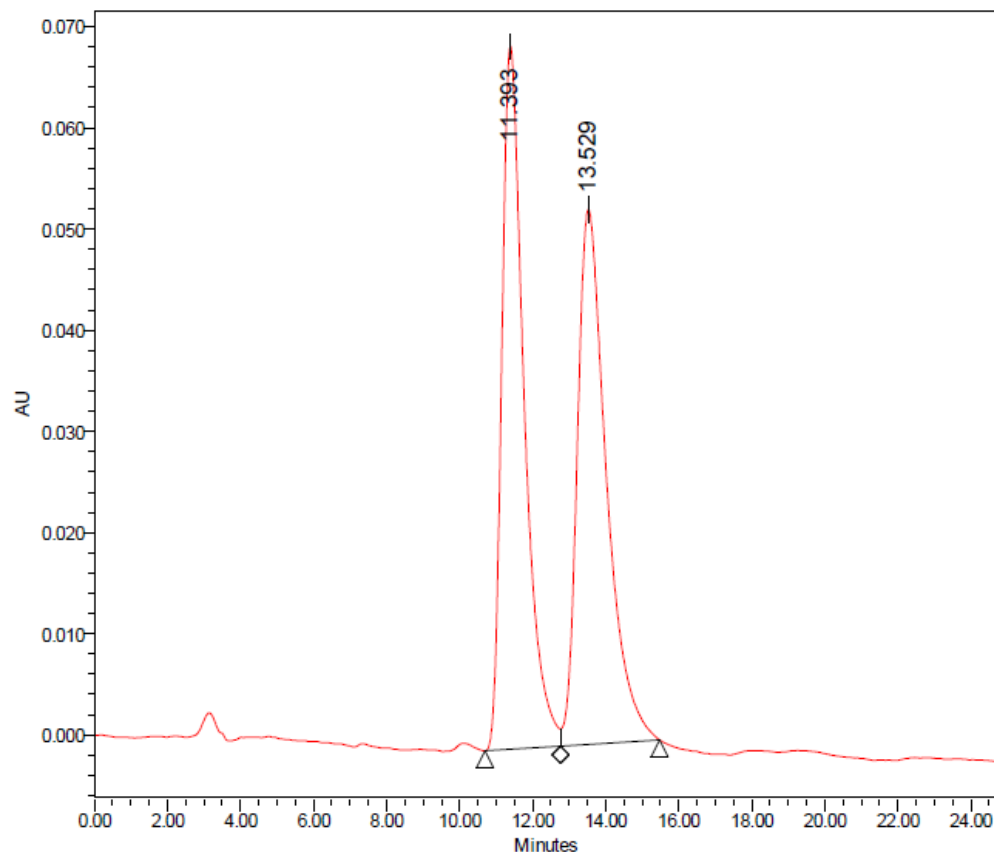


Peak Summary with Statistics

Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-249-T1-D-ALA IC 55:45	1	5	30.210	4586715	5.09	32089
2	RD-249-T1-D-ALA IC 55:45	1	5	22.459	85438184	94.91	806865
Mean				26.335			
Std. Dev.				5.481			

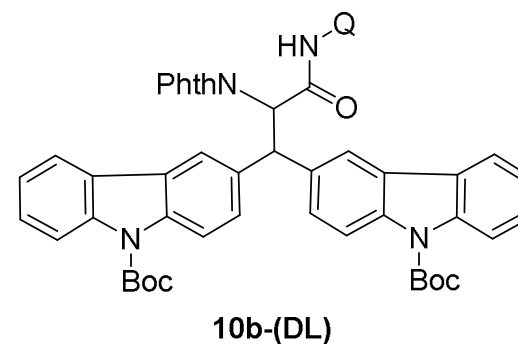
The HPLC of compound **10a-(D)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (55:45), flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 22.45$ min, $t_L = 30.21$ min.



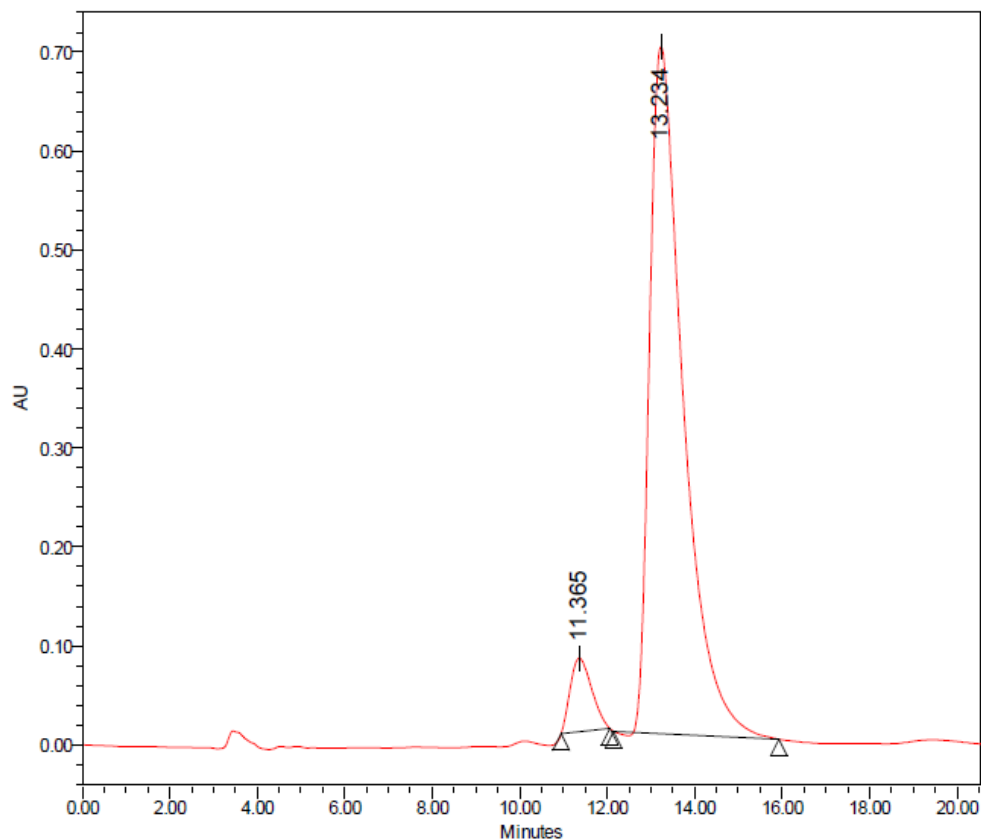
Sample Name: RD-163-R-7030 HEXIPA IB FR=1; Date Acquired: 28-03-2022
 17:11:17 IST; Vial: 1; Injection: 1

Peak Summary with Statistics
 Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-163-R-7030 HEXIPA IB FR=1	1	1	13.529	2932102	49.77	52890
2	RD-163-R-7030 HEXIPA IB FR=1	1	1	11.393	2959416	50.23	69491
Mean				12.461			
Std. Dev.				1.511			



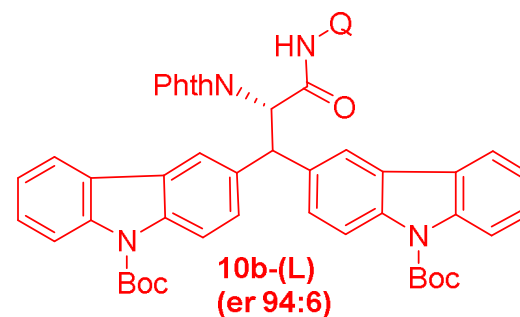
The HPLC of compound **10b-(DL)** was determined using the Daicel Chiralpak IB column, hexane/*i*-PrOH (70:30), flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 11.39$ min, $t_L = 13.52$ min.



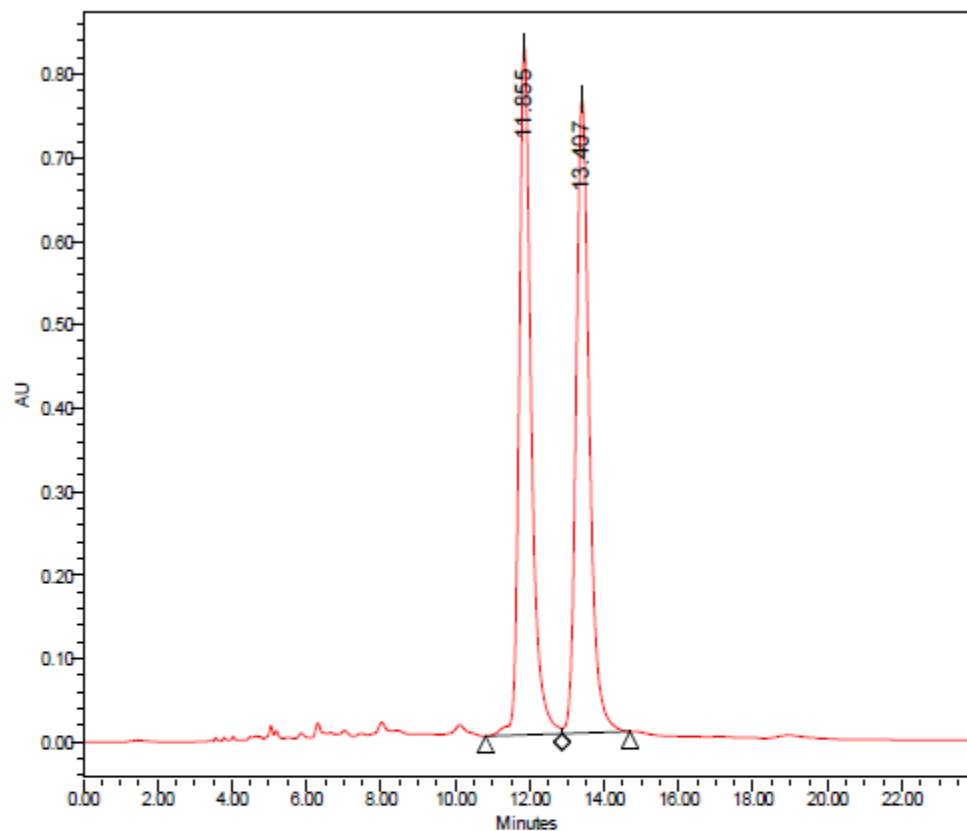
Sample Name: RD-1019-R2-7030 HEXIPA IB FR=1; Date Acquired: 28-03-2022
18:52:24 IST; Vial: 1; Injection: 5

Peak Summary with Statistics
Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-1019-R2-7030 HEXIPA IB FR=1	1	5	13.234	37164663	93.63	694339
2	RD-1019-R2-7030 HEXIPA IB FR=1	1	5	11.365	2528920	6.37	74382
Mean				12.299			
Std. Dev.				1.321			



The HPLC of compound **10b-(L)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (70:30), flow rate 1.0 mL/min, UV detection at 254 nm, $t_D = 11.36$ min, $t_L = 13.23$ min.

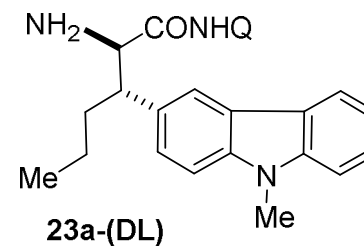


Sample Name: RD-456-R1-HEXIPA 7030 IA FR=1; Date Acquired: 07-03-2022
 13:44:03 IST; Vial: 1; Injection: 8

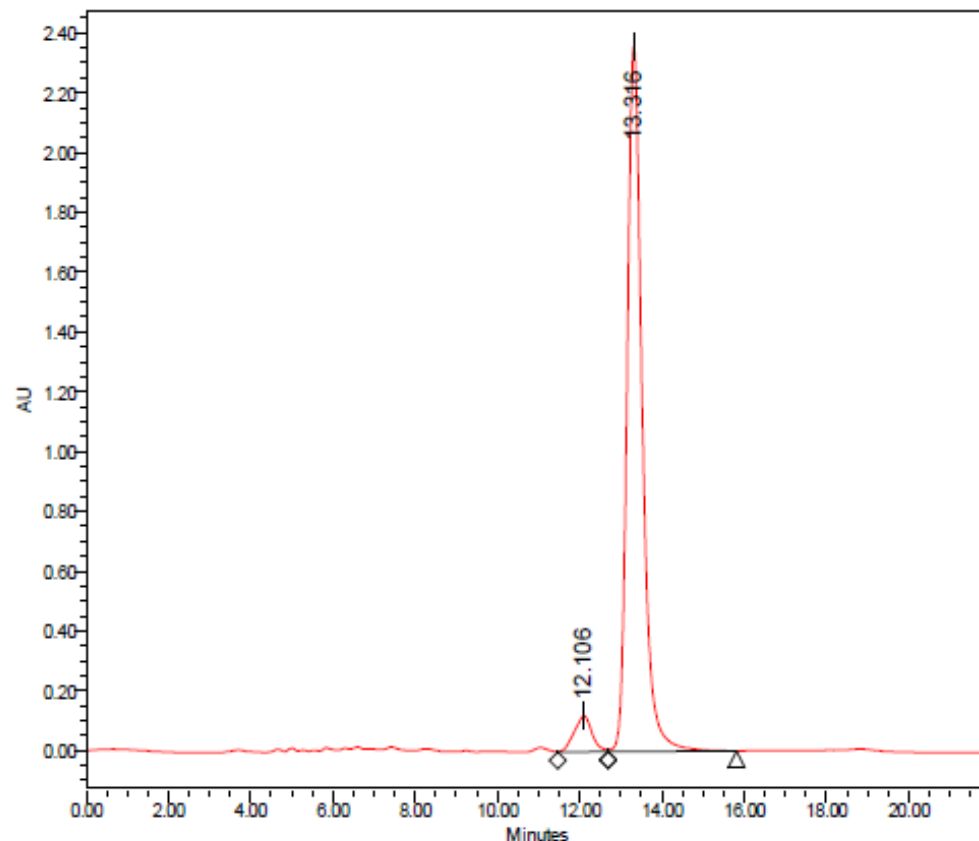
Peak Summary with Statistics

Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-456-R1-HEXIPA 7030 IA FR=1	1	8	13.407	18734923	50.15	759268
2	RD-456-R1-HEXIPA 7030 IA FR=1	1	8	11.855	18619784	49.85	823890
Mean				12.631			
Std. Dev.				1.097			



The HPLC of compound **23a-(DL)** was determined using the Daicel Chiralpak IA column, hexane/*i*-PrOH (70:30), flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 11.85$ min, $t_L = 13.40$ min.

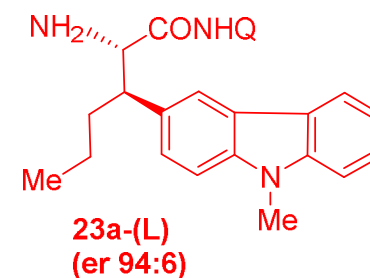


Sample Name: RD-978-R-HEXIPA 7030 IA FR=1; Date Acquired: 07-03-2022
 12:40:42 IST; Vial: 1; Injection: 6

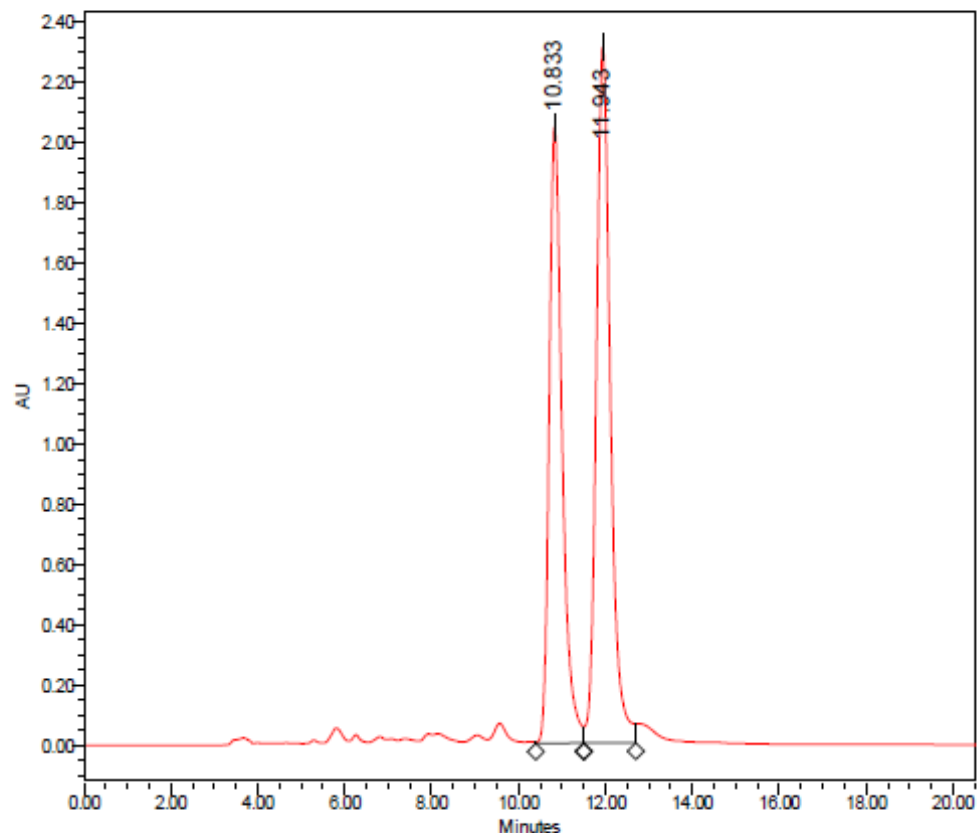
Peak Summary with Statistics

Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-978-R-HEXIPA 7030 IA FR=1	1	6	13.316	60030753	94.29	2358215
2	RD-978-R-HEXIPA 7030 IA FR=1	1	6	12.106	3638479	5.71	120381
Mean				12.711			
Std. Dev.				0.856			



The HPLC of compound **23a-(L)** was determined using the Daicel Chiralpak IA column, hexane/*i*-PrOH (70:30), flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 12.10$ min, $t_L = 13.31$ min.

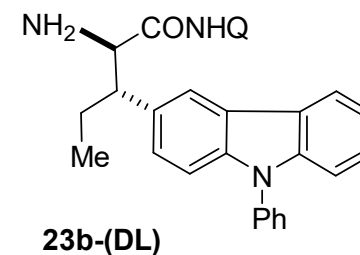


Sample Name: RD-426HEXIPA 7030 IA FR=1; Date Acquired: 07-03-2022
 11:09:48 IST; Vial: 1; Injection: 3

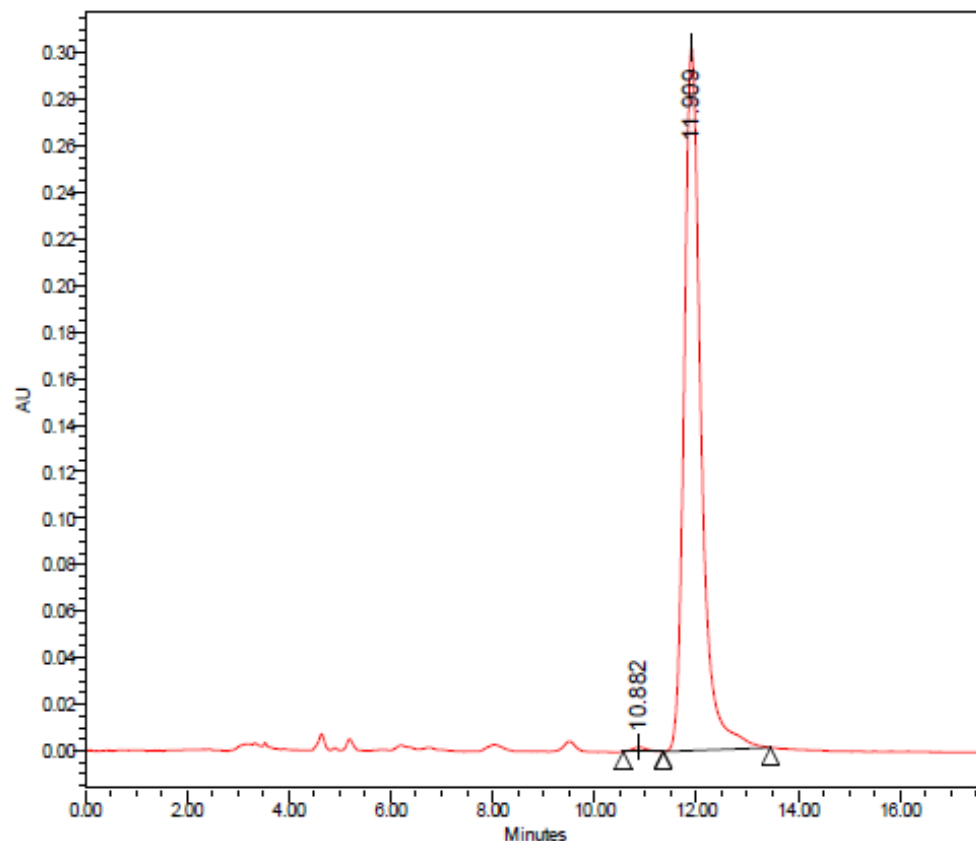
Peak Summary with Statistics

Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-426HEXIPA 7030 IA FR=1	1	3	11.943	52149212	55.22	2309639
2	RD-426HEXIPA 7030 IA FR=1	1	3	10.833	42282926	44.78	2044383
Mean				11.388			
Std. Dev.				0.785			



The HPLC of compound **23b-(DL)** was determined using the Daicel Chiralpak IA column, hexane/*i*-PrOH (70:30), flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 10.83$ min, $t_L = 11.94$ min.

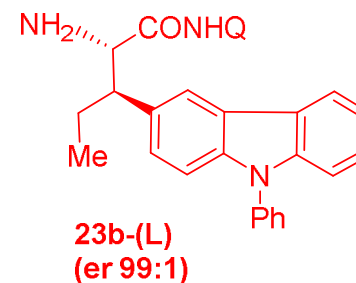


Sample Name: RD-982 HEXIPA 7030 IA FR=1; Date Acquired: 07-03-2022
10:50:38 IST; Vial: 1; Injection: 2

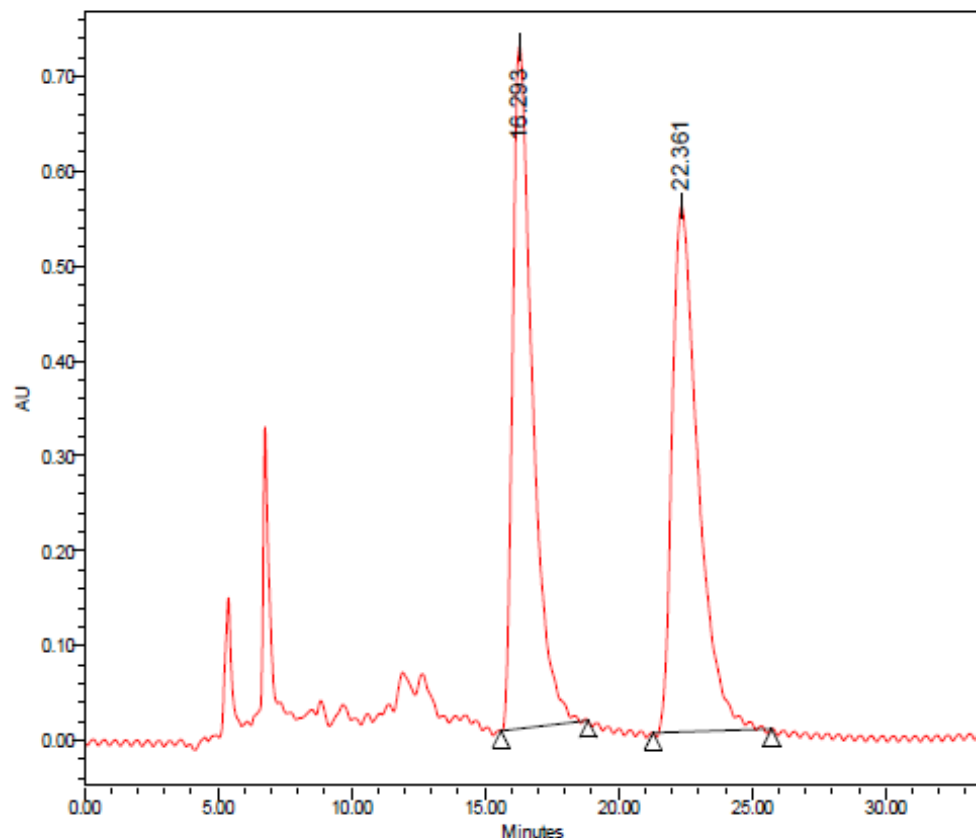
Peak Summary with Statistics

Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-982 HEXIPA 7030 IA FR=1	1	2	11.909	6945096	99.45	302216
2	RD-982 HEXIPA 7030 IA FR=1	1	2	10.882	38580	0.55	1872
Mean				11.396			
Std. Dev.				0.726			



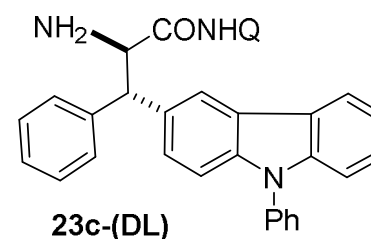
The HPLC of compound **23b-(L)** was determined using the Daicel Chiralpak IA column, hexane/*i*-PrOH (70:30), flow rate 1.0 mL/min, UV detection at 254 nm, $t_D = 10.88$ min, $t_L = 11.90$ min.



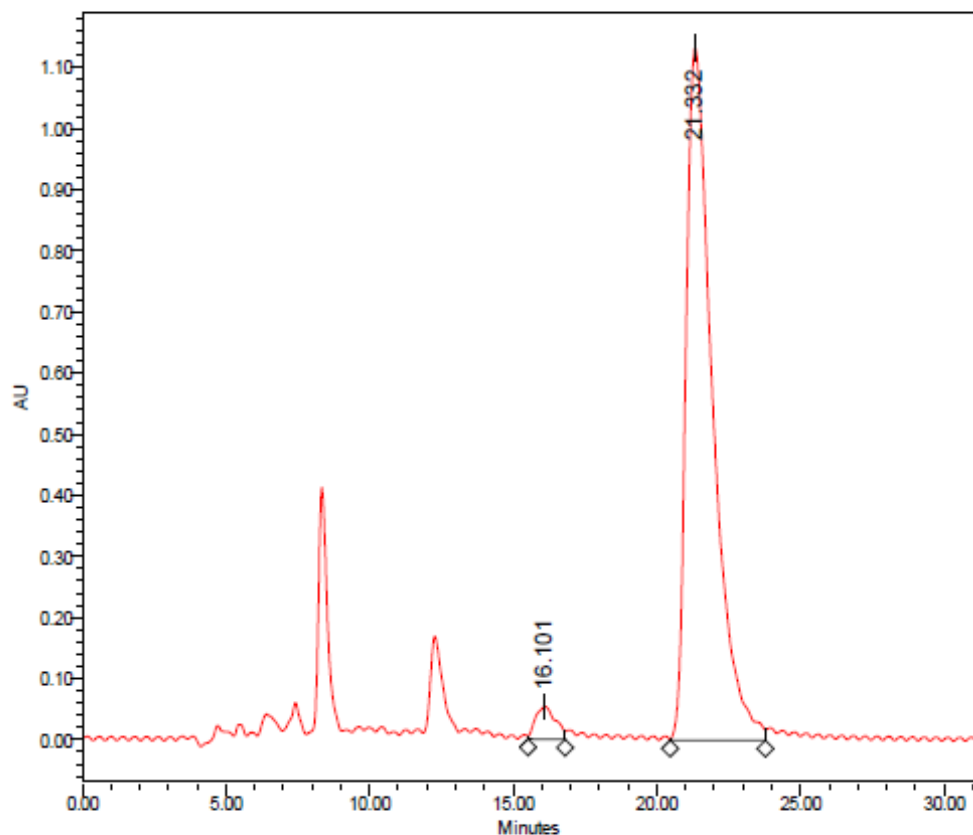
Sample Name: RD-421 HEXIPA 5050 IB FR=1; Date Acquired: 22-03-2022
 11:05:29 IST; Vial: 1; Injection: 1

Peak Summary with Statistics
 Name:

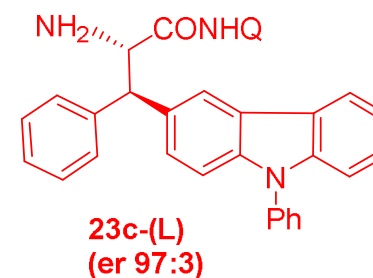
	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-421 HEXIPA 5050 IB FR=1	1	1	22.361	37555884	50.24	553680
2	RD-421 HEXIPA 5050 IB FR=1	1	1	16.293	37193743	49.76	718170
Mean				19.327			
Std. Dev.				4.290			



The HPLC of compound **23c-(DL)** was determined using the Daicel Chiralpak IB column, hexane/*i*-PrOH (50:50), flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 16.29$ min, $t_L = 22.36$ min.



Sample Name: RD-1012-R- HEXIPA 5050 IB FR=1; Date Acquired: 22-03-2022
12:27:25 IST; Vial: 1; Injection: 3

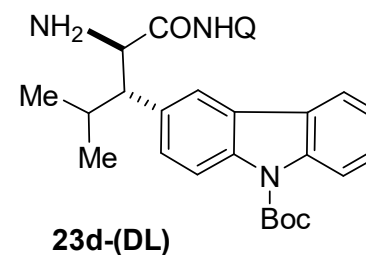
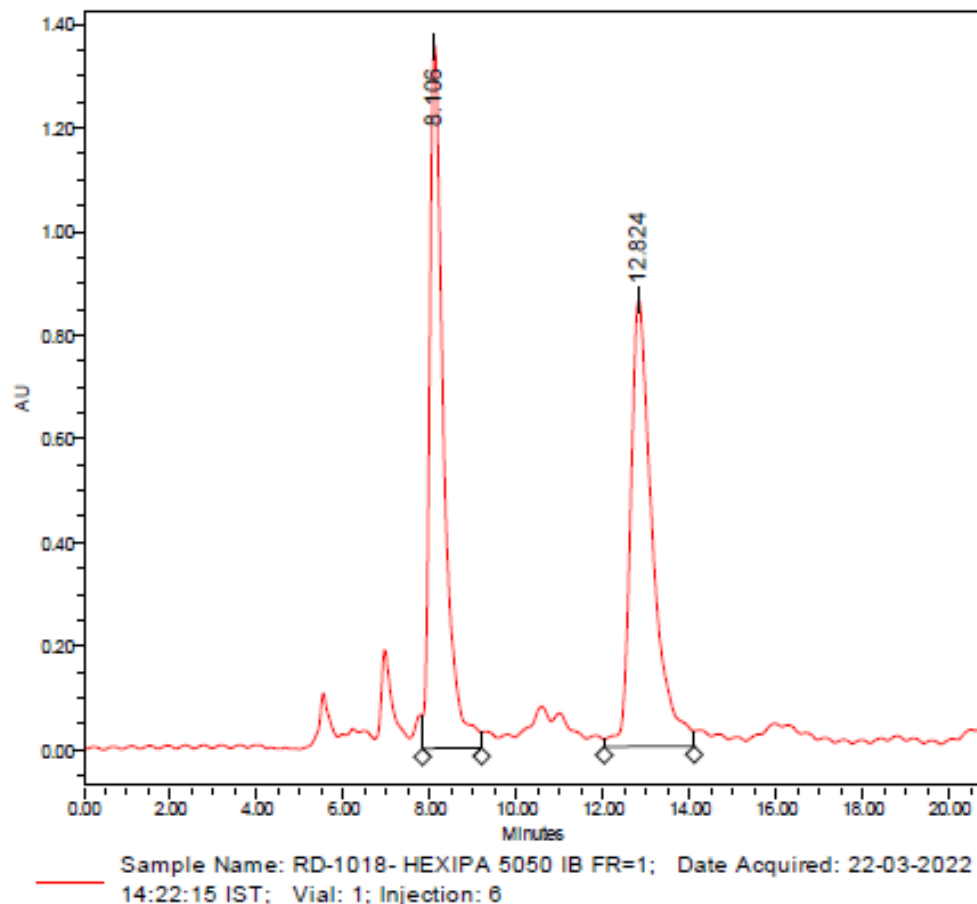


Peak Summary with Statistics

Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-1012-R- HEXIPA 5050 IB FR=1	1	3	21.332	72704363	96.54	1133456
2	RD-1012-R- HEXIPA 5050 IB FR=1	1	3	16.101	2608298	3.46	53485
Mean				18.717			
Std. Dev.				3.699			

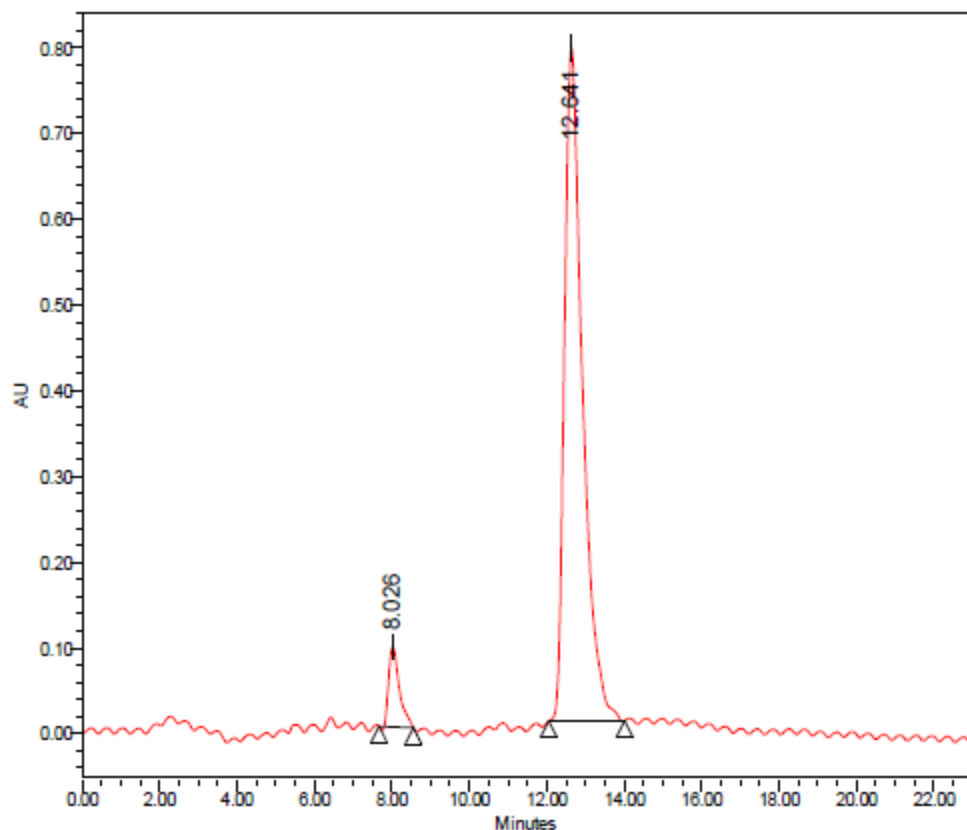
The HPLC of compound **23c-(L)** was determined using the Daicel Chiralpak IB column, hexane/*i*-PrOH (50:50), flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 16.10$ min, $t_L = 21.33$ min.



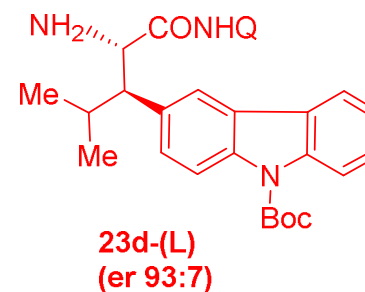
Peak Summary with Statistics
Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-1018- HEXIPA 5050 IB FR=1	1	6	12.824	30372919	49.91	861647
2	RD-1018- HEXIPA 5050 IB FR=1	1	6	8.106	30488387	50.09	1355186
Mean				10.465			
Std. Dev.				3.336			

The HPLC of compound **23d-(DL)** was determined using the Daicel Chiralpak IB column, hexane/*i*-PrOH (50:50), flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 8.10$ min, $t_L = 12.82$ min.



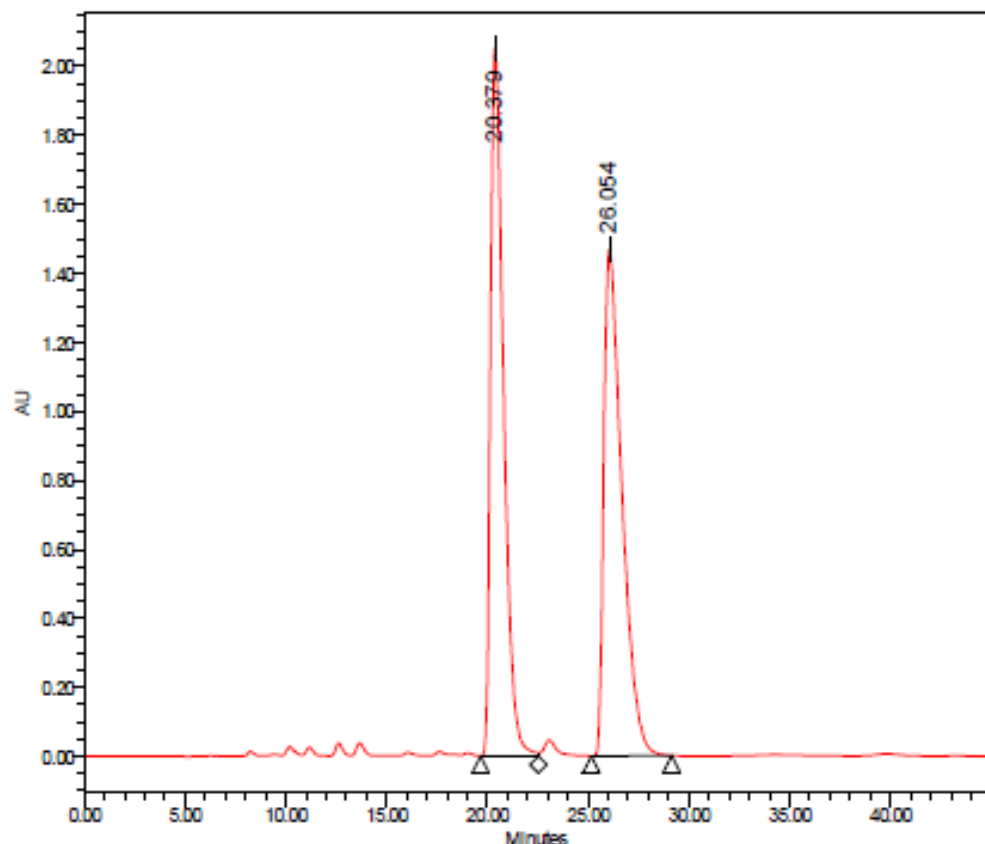
Sample Name: RD-1017-R- HEXIPA 5050 IB FR=1; Date Acquired: 22-03-2022
15:09:35 IST; Vial: 1; Injection: 8



Peak Summary with Statistics
Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-1017-R- HEXIPA 5050 IB FR=1	1	8	12.641	25602490	93.33	784950
2	RD-1017-R- HEXIPA 5050 IB FR=1	1	8	8.026	1821248	6.67	93000
Mean				10.334			
Std. Dev.				3.263			

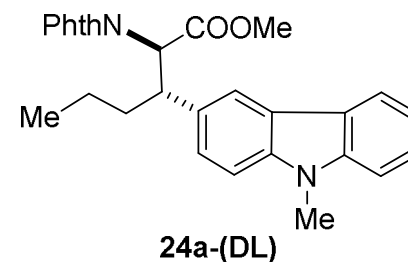
The HPLC of compound **23d-(L)** was determined using the Daicel Chiralpak IB column, hexane/*i*-PrOH (50:50), flow rate 1.0 mL/min, UV detection at 254 nm, $t_D = 8.02$ min, $t_L = 12.64$ min.



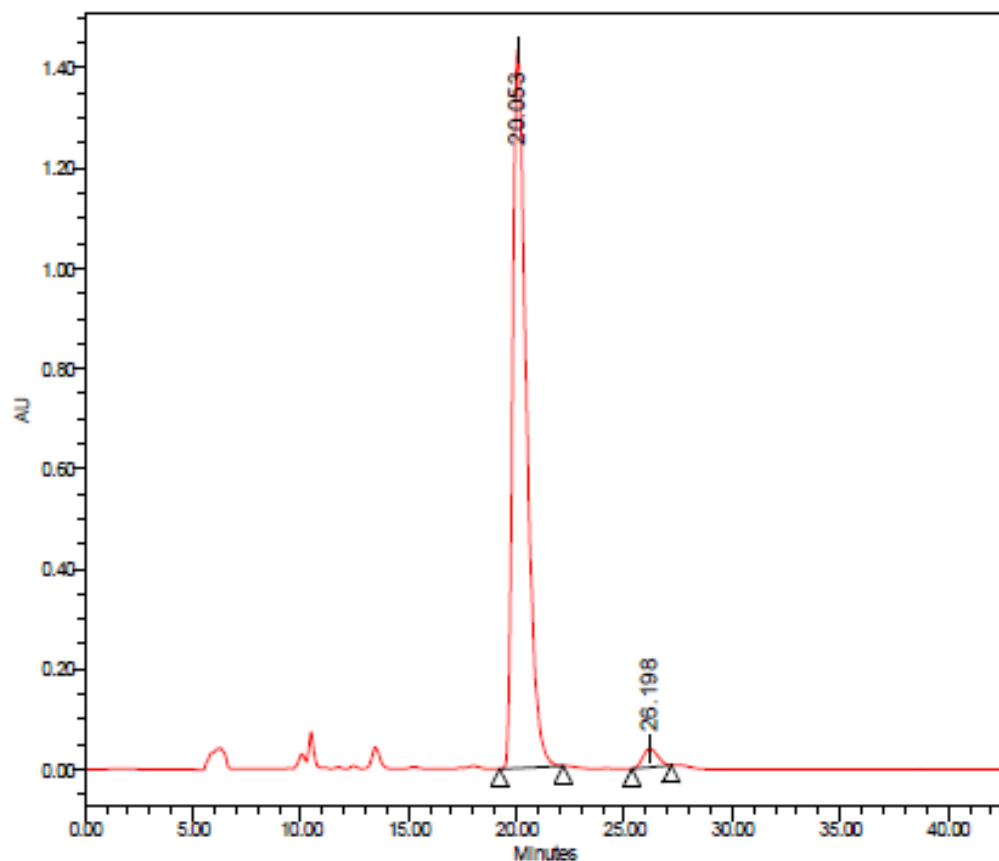
Sample Name: RD-277-IC 80:30 FR-1; Date Acquired: 06-01-2021 11:48:17 IST;
Vial: 1; Injection: 1

Peak Summary with Statistics
Name:

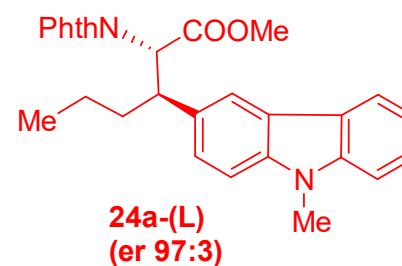
	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-277-IC 80:30 FR-1	1	1	26.054	92079339	49.95	1467263
2	RD-277-IC 80:30 FR-1	1	1	20.379	92280942	50.05	2052224
Mean				23.216			
Std. Dev.				4.012			



The HPLC of compound **24a-(DL)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (70:30), flow rate 1.0 mL/min, UV detection at 254 nm, $t_L = 20.37$ min, $t_D = 26.05$ min.



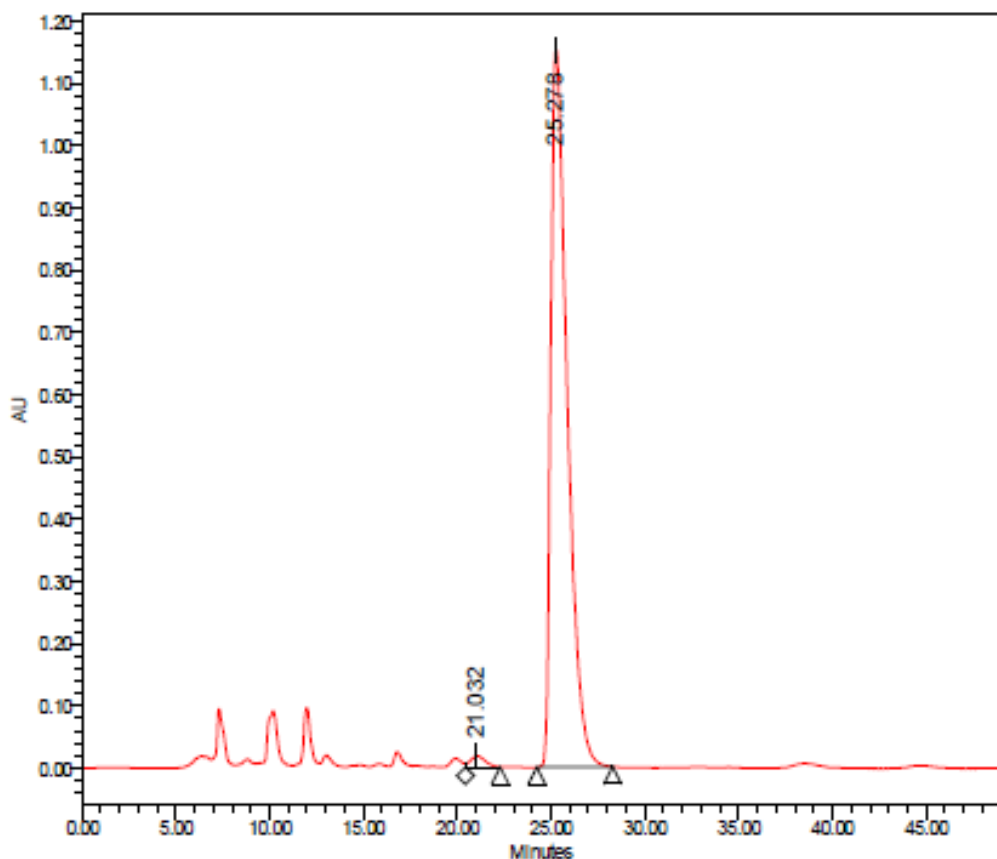
Sample Name: RD-586-IC 80:30 FR-1; Date Acquired: 06-01-2021 14:16:21 IST;
Vial: 1; Injection: 4



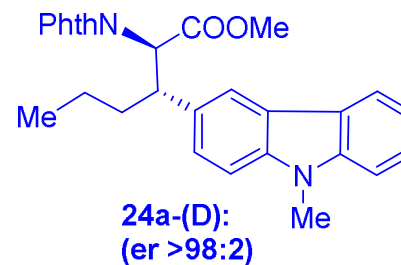
Peak Summary with Statistics
Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-586-IC 80:30 FR-1	1	4	26.198	1759905	2.71	37011
2	RD-586-IC 80:30 FR-1	1	4	20.053	63189300	97.29	1434970
Mean				23.126			
Std. Dev.				4.345			

The HPLC of compound **24a-(L)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (70:30), flow rate 1.0 mL/min, UV detection at 254 nm, $t_L = 20.05$ min, $t_D = 26.19$ min.



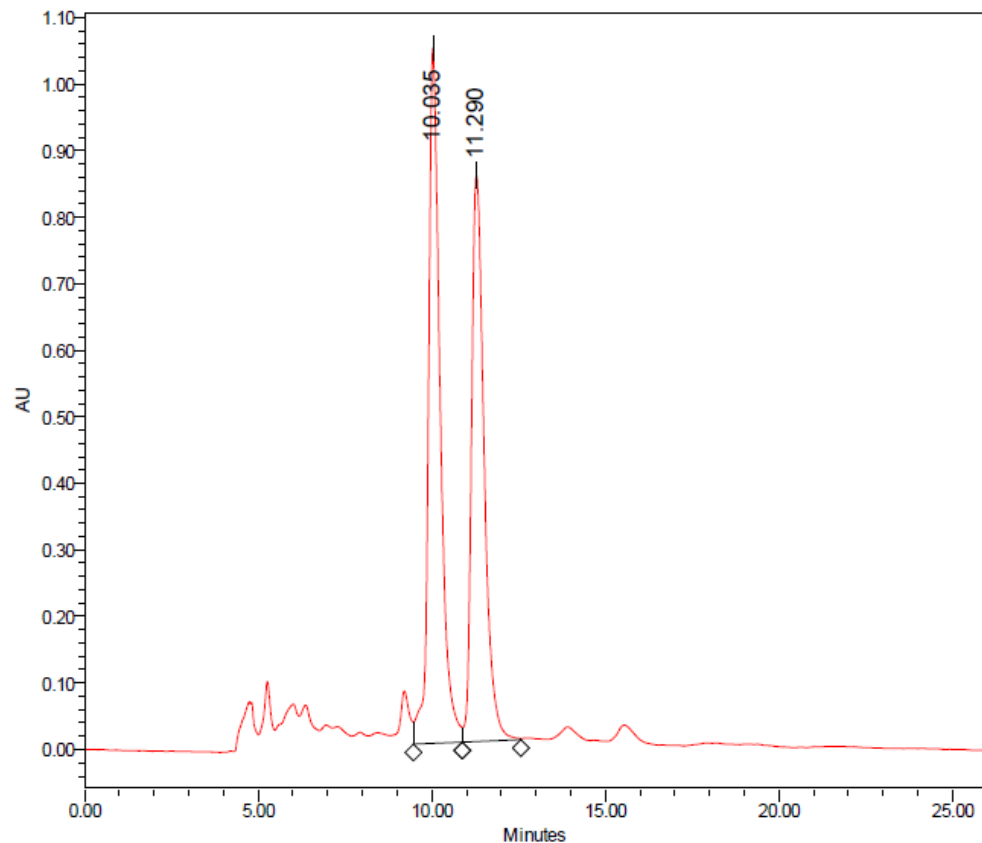
Sample Name: RD-596-IC 80:30 FR-1; Date Acquired: 06-01-2021 13:21:56 IST;
Vial: 1; Injection: 3



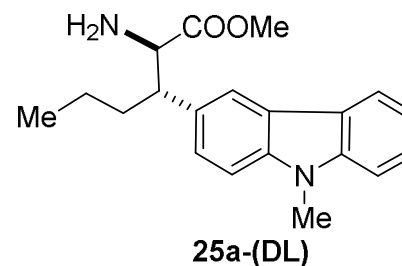
Peak Summary with Statistics
Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-596-IC 80:30 FR-1	1	3	25.278	70533969	98.66	1152415
2	RD-596-IC 80:30 FR-1	1	3	21.032	968505	1.34	17733
Mean				23.155			
Std. Dev.				3.003			

The HPLC of compound **24a-(D)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (70:30), flow rate 1.0 mL/min, UV detection at 254 nm, $t_L = 21.03$ min, $t_D = 25.27$ min.



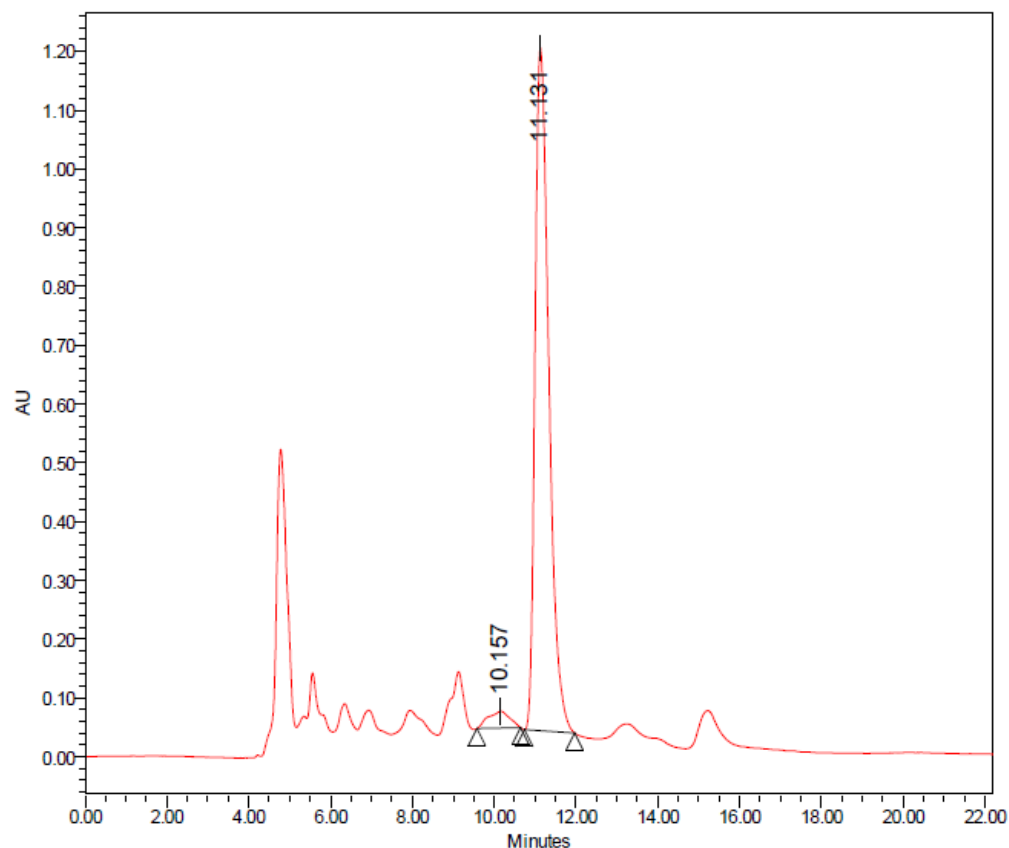
Sample Name: RD-286-R2-IC-5050-FR-1; Date Acquired: 06-07-2021 13:03:45
IST; Vial: 1; Injection: 7



Peak Summary with Statistics
Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-286-R2-IC-5050-FR-1	1	7	11.290	21437273	46.64	850528
2	RD-286-R2-IC-5050-FR-1	1	7	10.035	24529939	53.36	1045163
Mean				10.663			
Std. Dev.				0.887			

The HPLC of compound **25a-(DL)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (50:50), flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 10.03$ min, $t_L = 11.29$ min.

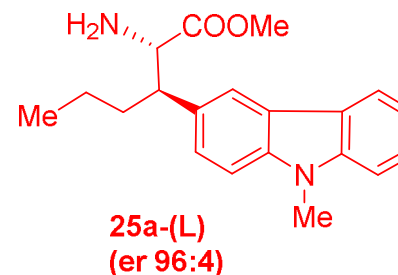


Sample Name: RD-663-R1-IC-5050-FR-1; Date Acquired: 06-07-2021 12:08:10
IST; Vial: 1; Injection: 5

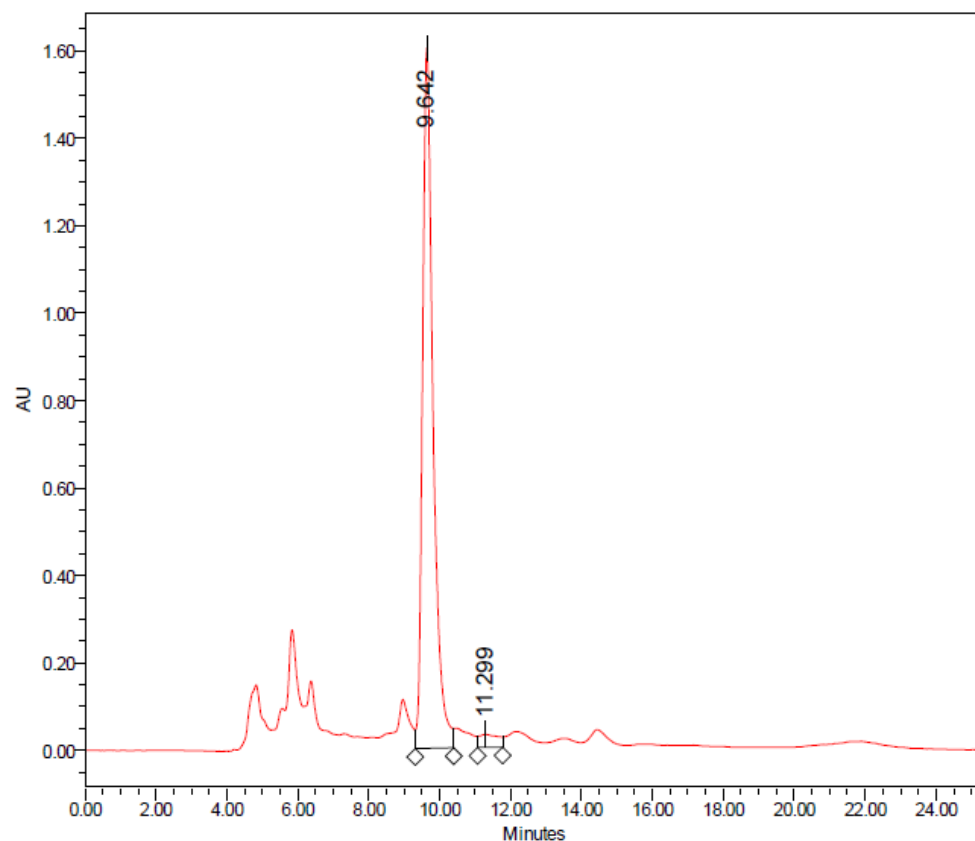
Peak Summary with Statistics

Name:

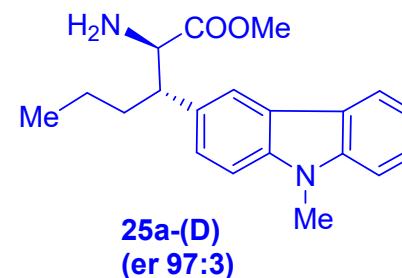
	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-663-R1-IC-5050-FR-1	1	5	11.131	27218849	96.31	1161329
2	RD-663-R1-IC-5050-FR-1	1	5	10.157	1042285	3.69	28423
Mean				10.644			
Std. Dev.				0.688			



The HPLC of compound **25a-(L)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (50:50), flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 10.05$ min, $t_L = 11.13$ min.



Sample Name: RD-636-IC-5050-FR-1; Date Acquired: 06-07-2021 10:44:01 IST;
Vial: 1; Injection: 3

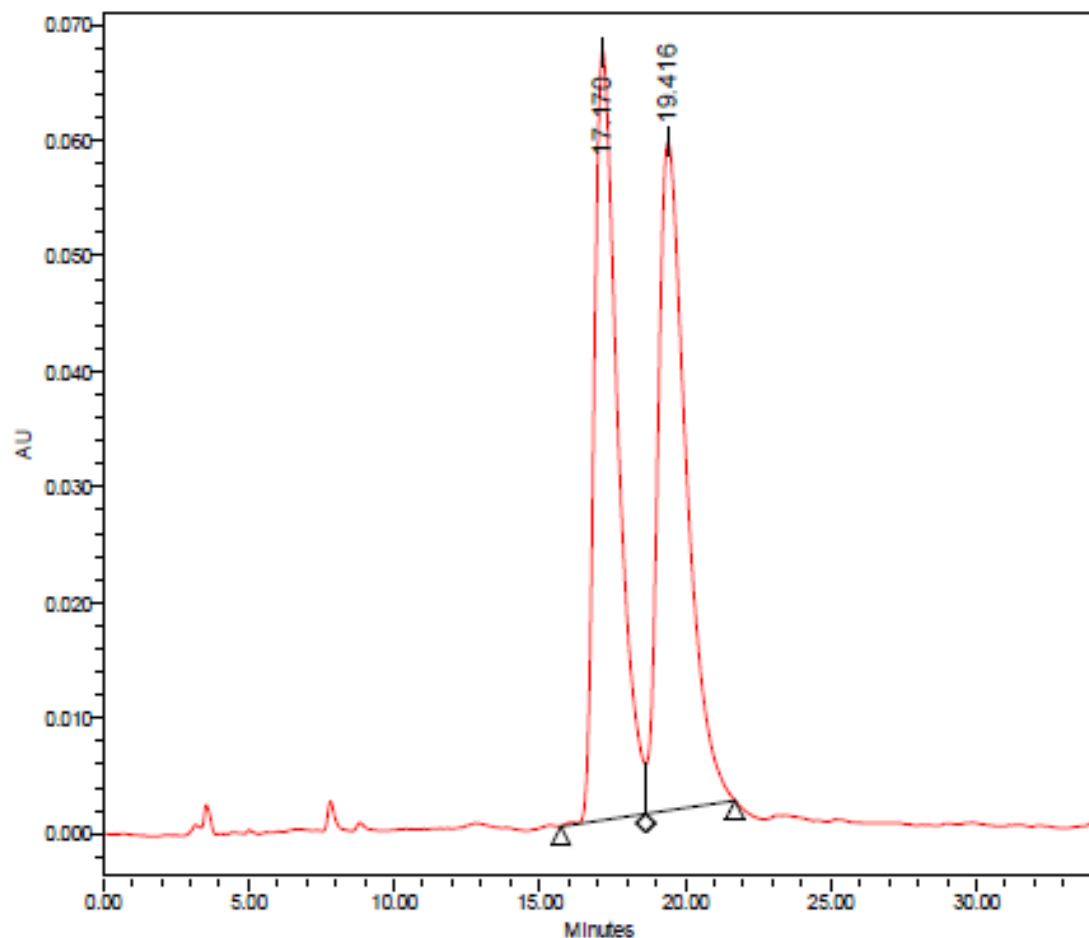


Peak Summary with Statistics

Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-636-IC-5050-FR-1	1	3	11.299	1132131	3.29	29759
2	RD-636-IC-5050-FR-1	1	3	9.642	33267116	96.71	1602382
Mean				10.470			
Std. Dev.				1.171			

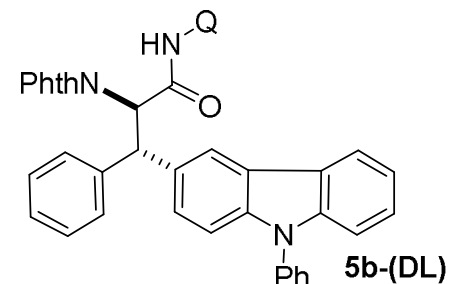
The HPLC of compound **25a-(D)** was determined using the Daicel Chiralpak IC column, hexane/*i*-PrOH (50:50), flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 9.64$ min, $t_L = 11.29$ min.



Sample Name: RD-46 DL-PA HEXIPA 8020 IB; Date Acquired: 28-04-2022
11:47:20 IST; Vial: 1; Injection: 1

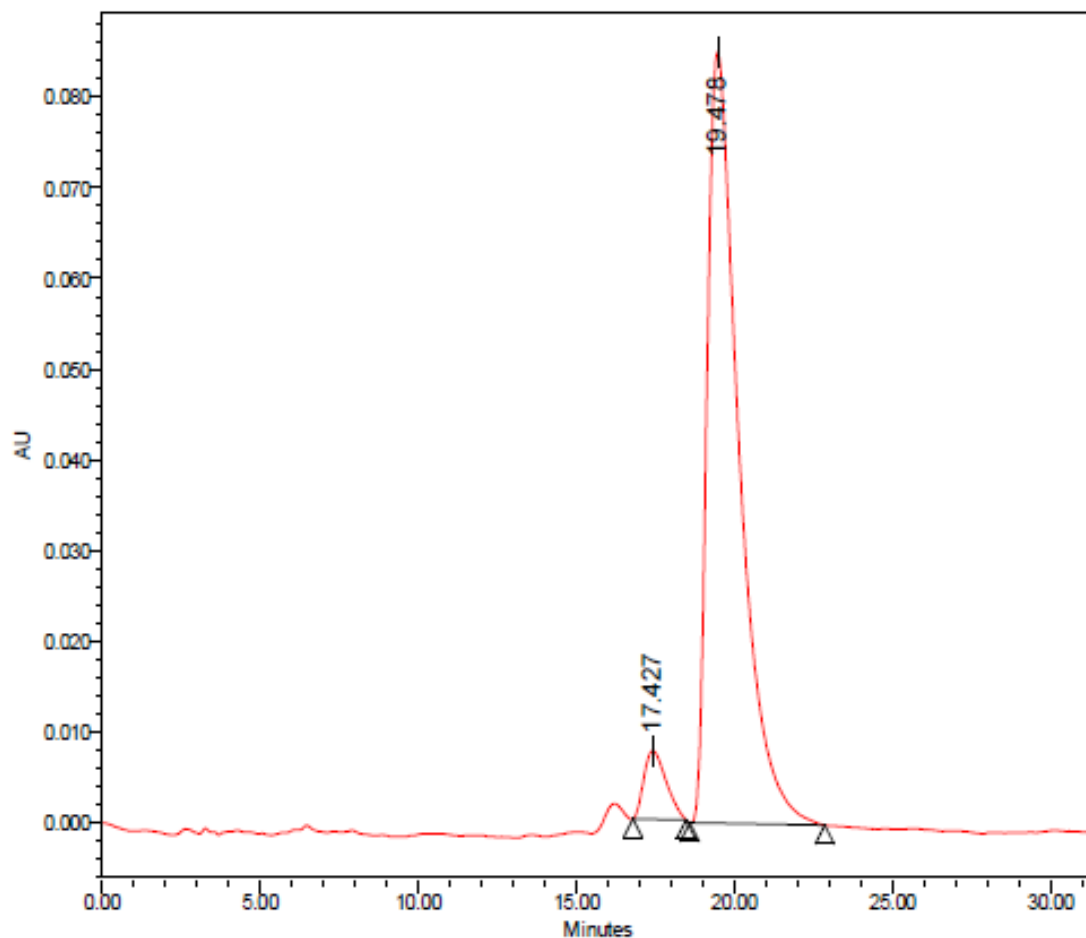
Peak Summary with Statistics
Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-46 DL-PA HEXIPA 8020 IB	1	1	19.416	3921677	51.08	57796
2	RD-46 DL-PA HEXIPA 8020 IB	1	1	17.170	3755580	48.92	66498
Mean				18.293			
Std. Dev.				1.588			



Repeated HPLC analysis for confirming the product **5b-(L)**

The HPLC of compound **5b-(DL)** was determined using the Daicel Chiralpak IB column, hexane/*i*-PrOH 80:20, flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 17.17$ min, $t_L = 19.41$ min.



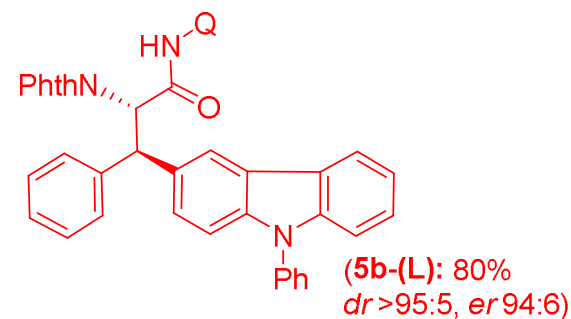
Sample Name: RD-378 L-PA HEXIPA 8020 IB; Date Acquired: 26-04-2022
 13:48:40 IST; Vial: 1; Injection: 1

Peak Summary with Statistics

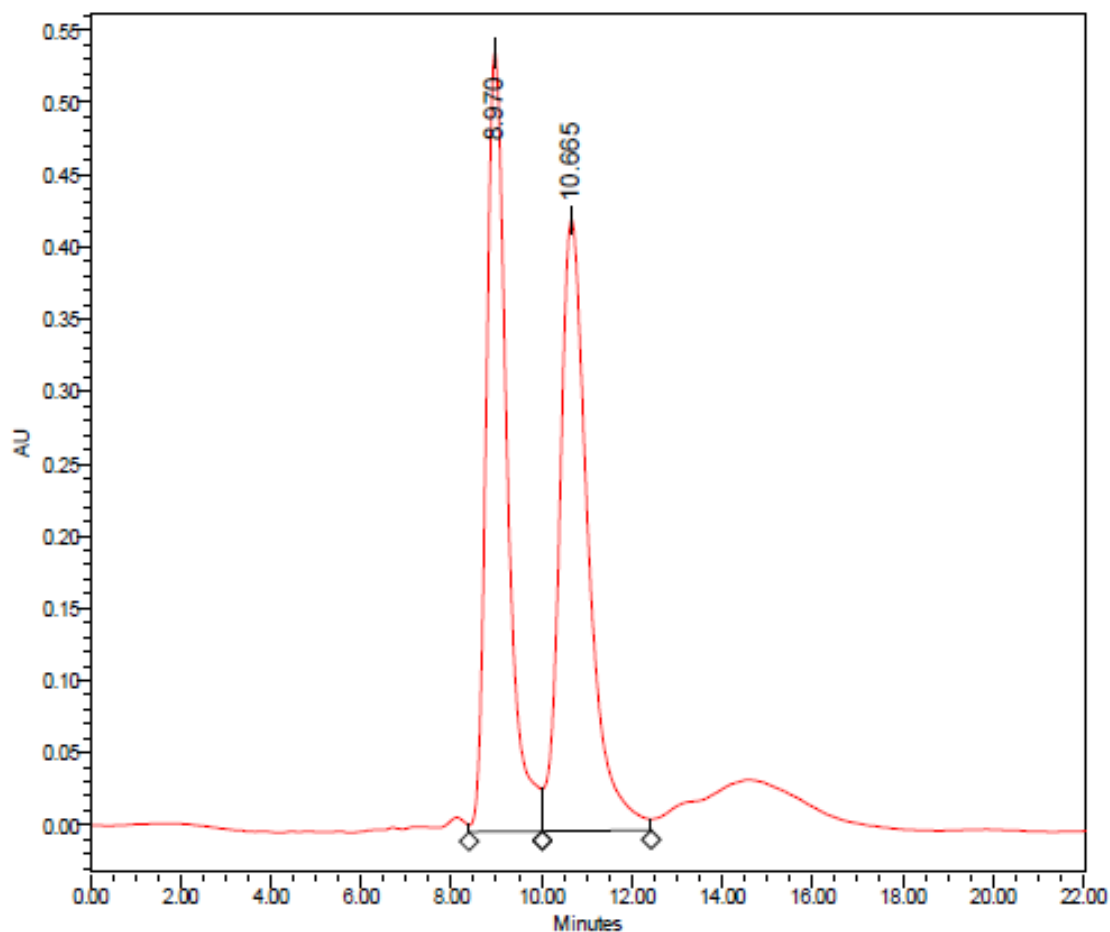
Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-378 L-PA HEXIPA 8020 IB	1	1	19.478	5929235	94.12	84970
2	RD-378 L-PA HEXIPA 8020 IB	1	1	17.427	370663	5.88	7557
Mean				18.452			
Std. Dev.				1.450			

Product **5b-(L)** was obtained in a repeated reaction in a 1 mmol scale



The HPLC of compound **5b-(L)** was determined using the Daicel Chiralpak IB column, hexane/*i*-PrOH 80:20, flow rate 1.0 mL/min, UV detection at 254 nm, t_d = 17.42 min, t_L = 19.47 min.

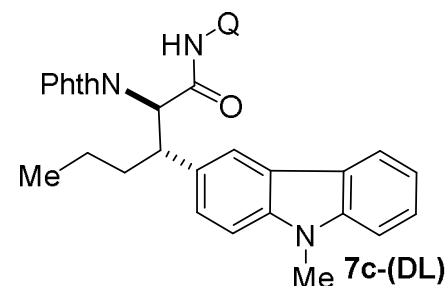


Sample Name: RD-134-DL NLE HEXIPA5050 ODH; Date Acquired: 27-04-2022
11:46:01 IST; Vial: 1; Injection: 1

Peak Summary with Statistics

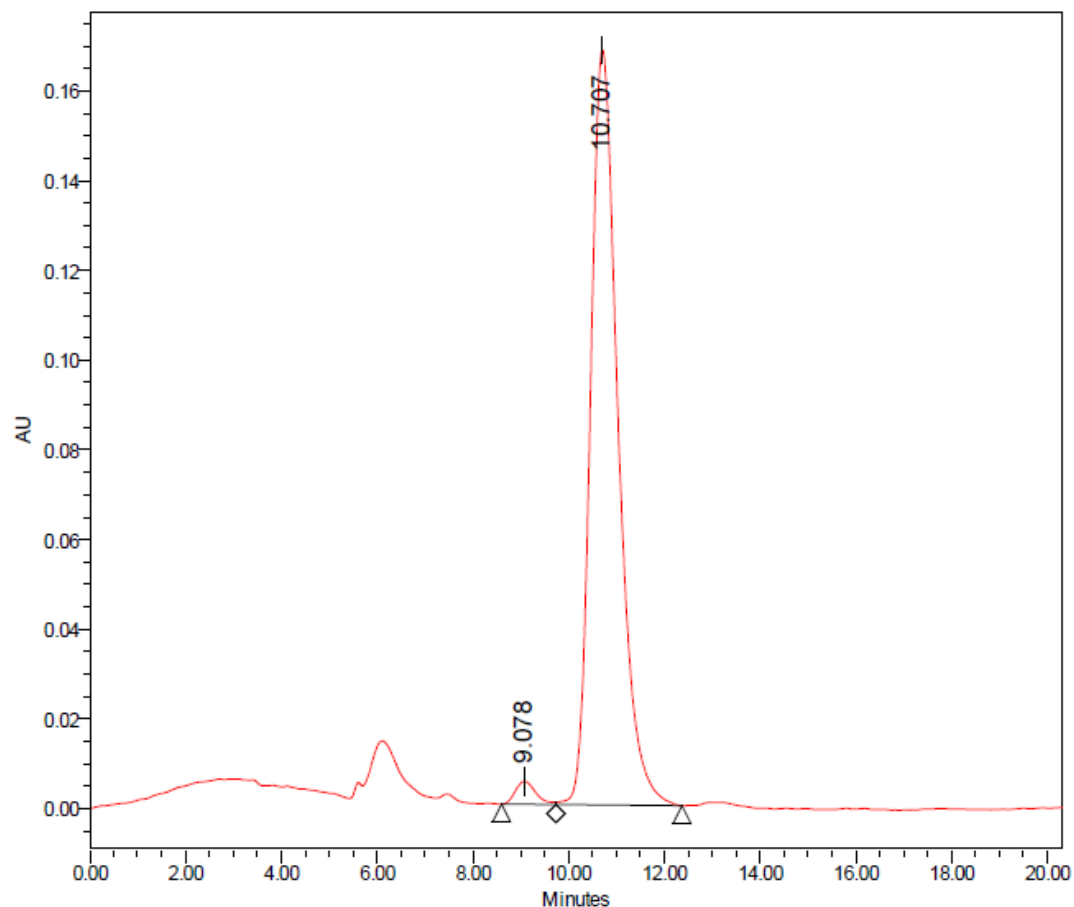
Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-134-DL NLE HEXIPA5050 ODH	1	1	10.665	18582407	51.63	422930
2	RD-134-DL NLE HEXIPA5050 ODH	1	1	8.970	17408053	48.37	538658
Mean				9.817			
Std. Dev.				1.199			



Repeated HPLC analysis for confirming the product **7c-(L)**

The HPLC of compound **7c-(DL)** was determined using the Daicel Chiralpak ODH column, hexane/*i*-PrOH 50:50, flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 8.97$ min, $t_L = 10.66$ min.



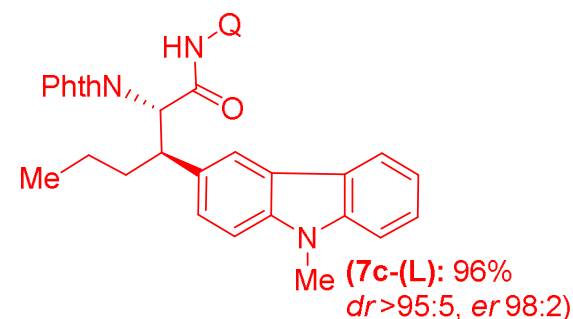
Sample Name: RD-476-L NLE HEXIPA5050 ODH; Date Acquired: 27-04-2022
12:28:19 IST; Vial: 1; Injection: 3

Peak Summary with Statistics

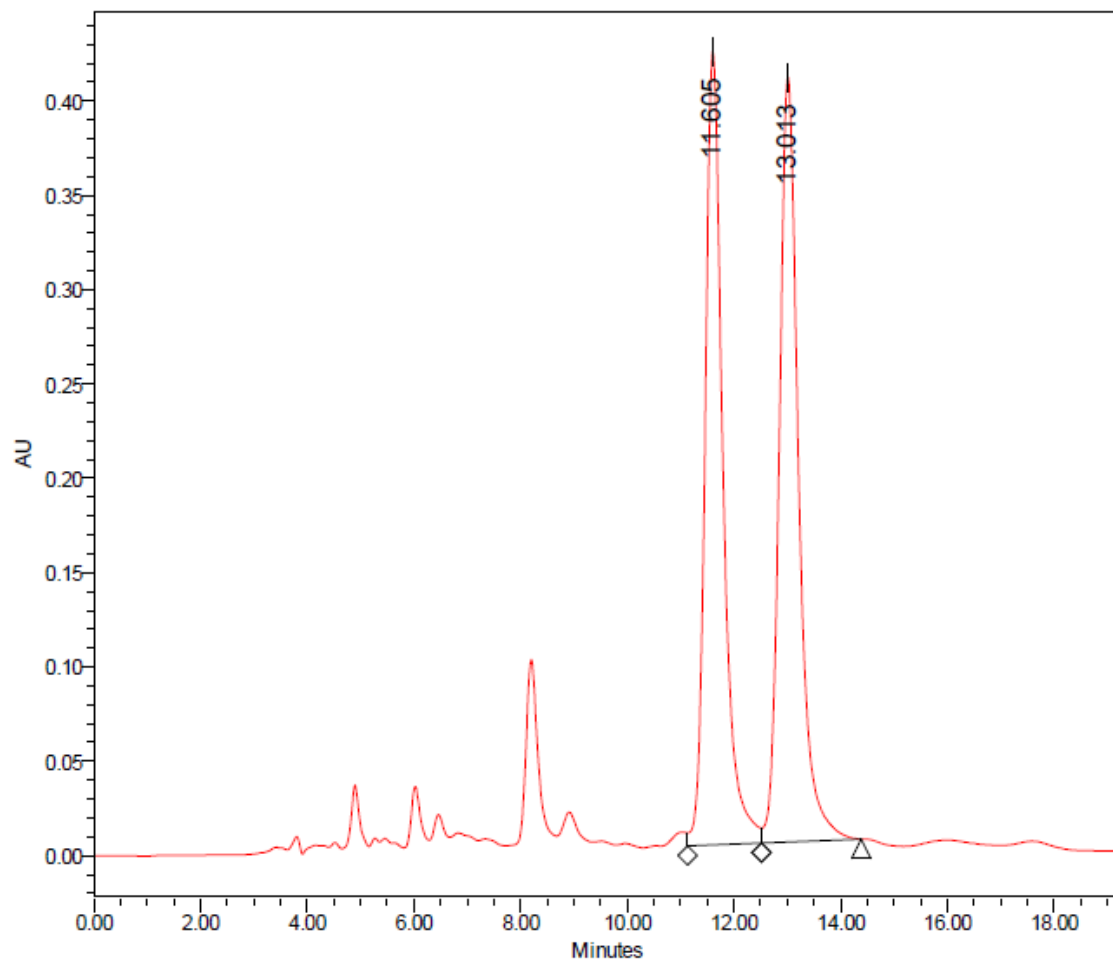
Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-476-L NLE HEXIPA5050 ODH	1	3	10.707	6719911	97.79	168443
2	RD-476-L NLE HEXIPA5050 ODH	1	3	9.078	151856	2.21	5095
Mean				9.892			
Std. Dev.				1.152			

Product **7c-(L)** was obtained in a repeated reaction in a 1 mmol scale



The HPLC of compound **7c-(L)** was determined using the Daicel Chiralpak ODH column, hexane/*i*-PrOH 50:50, flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 9.07$ min, $t_L = 10.70$ min.

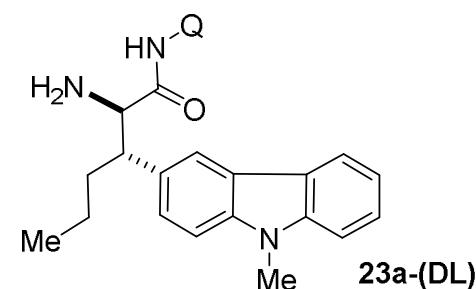


Sample Name: RD-456-DL NLE HEXIPA7030 IA; Date Acquired: 27-04-2022
09:40:36 IST; Vial: 1; Injection: 1

Peak Summary with Statistics

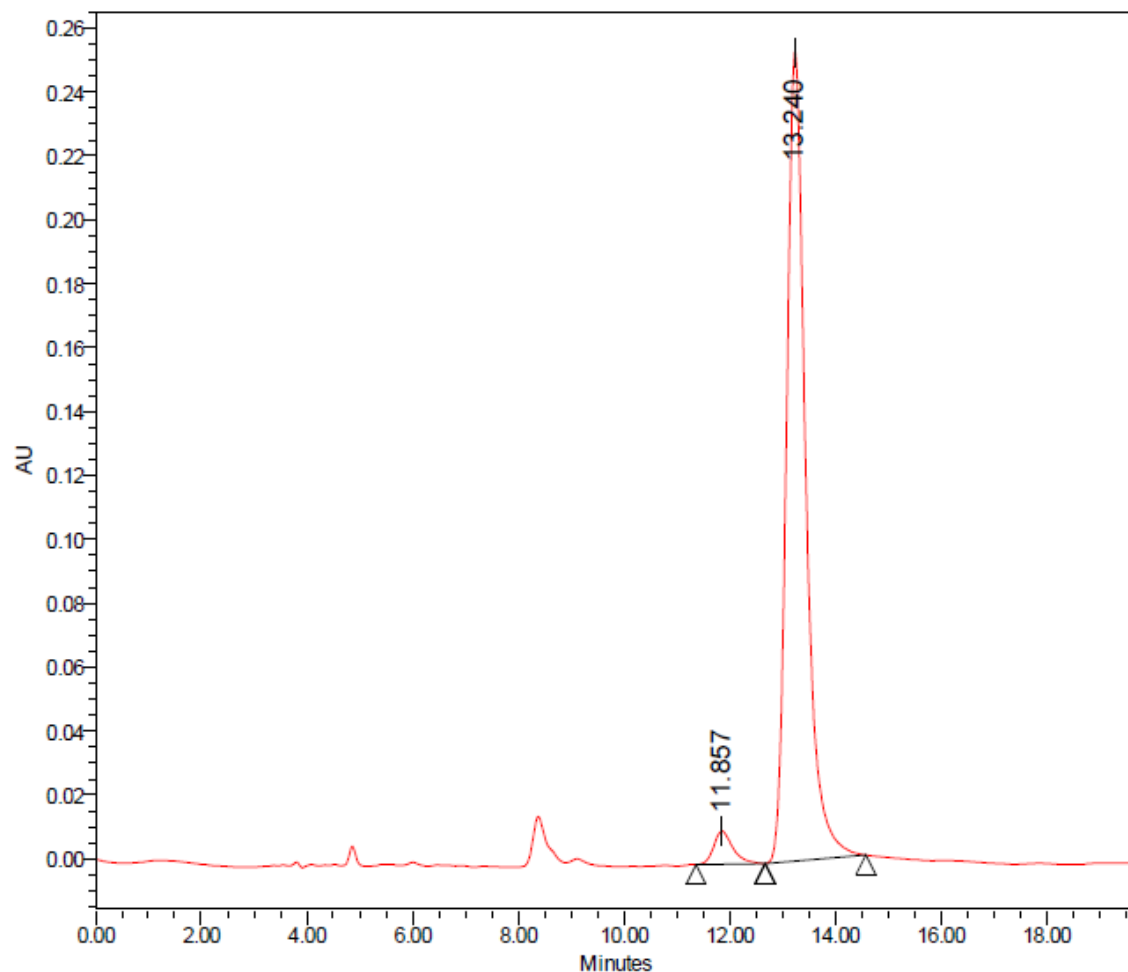
Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-456-DL NLE HEXIPA7030 IA	1	1	13.013	10193573	50.98	405454
2	RD-456-DL NLE HEXIPA7030 IA	1	1	11.605	9803566	49.02	420798
Mean				12.309			
Std. Dev.				0.996			



Repeated HPLC analysis for confirming the product **23a-(L)**

The HPLC of compound **23a-(DL)** was determined using the Daicel Chiralpak IA column, hexane/*i*-PrOH 70:30, flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 11.60$ min, $t_L = 13.01$ min.

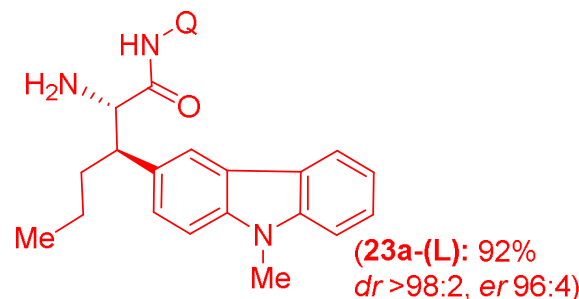


Sample Name: RD-978-L NLE HEXIPA7030 IA; Date Acquired: 27-04-2022
 10:26:52 IST; Vial: 1; Injection: 3

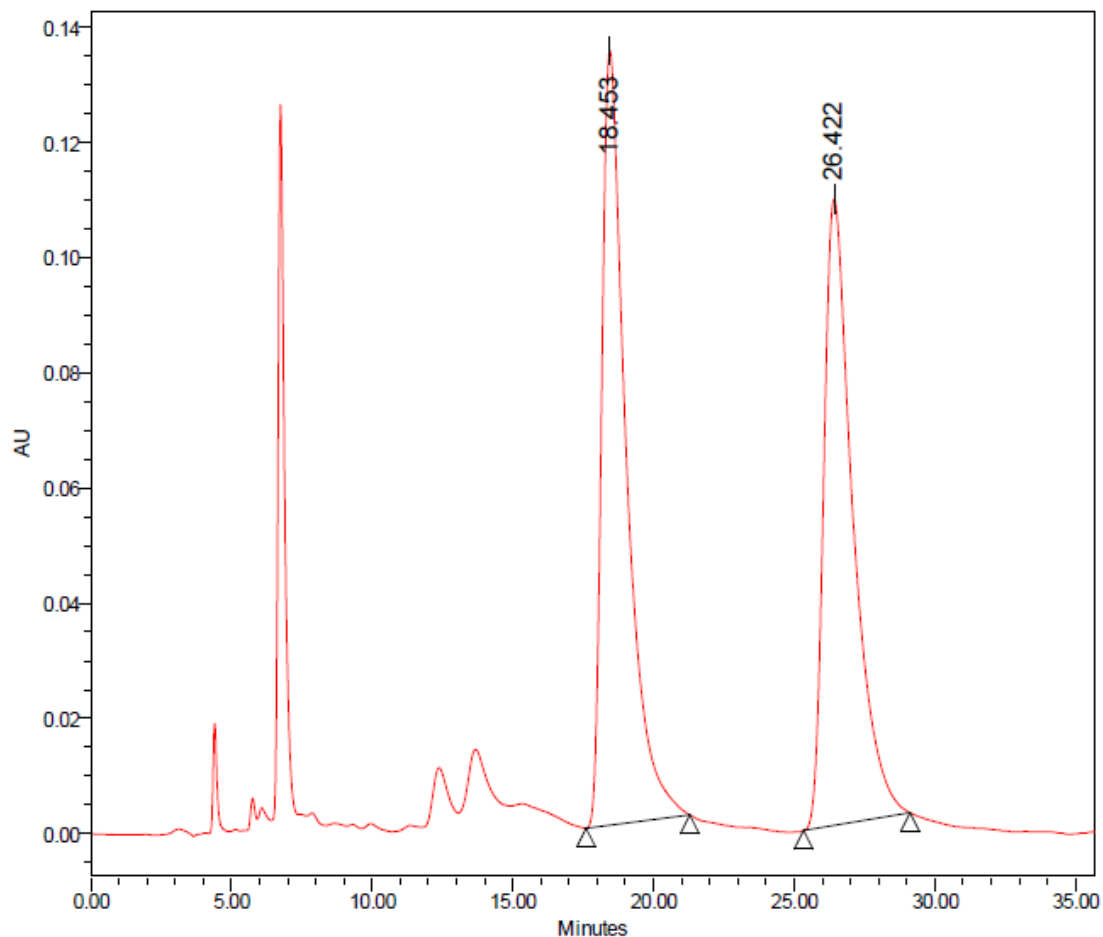
Peak Summary with Statistics
 Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-978-L NLE HEXIPA7030 IA	1	3	11.857	260642	3.93	10322
2	RD-978-L NLE HEXIPA7030 IA	1	3	13.240	6372847	96.07	253253
Mean				12.549			
Std. Dev.				0.978			

Product **23a-(L)** was obtained in a repeated reaction in a 1 mmol scale



The HPLC of compound **23a-(L)** was determined using the Daicel Chiralpak IA column, hexane/*i*-PrOH 70:30, flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 11.85$ min, $t_L = 13.24$ min.

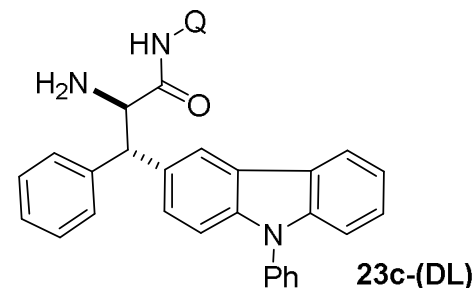


Sample Name: RD-421-R DL-PA HEXIPA 7030 IB; Date Acquired: 26-04-2022
18:30:07 IST; Vial: 1; Injection: 2

Peak Summary with Statistics

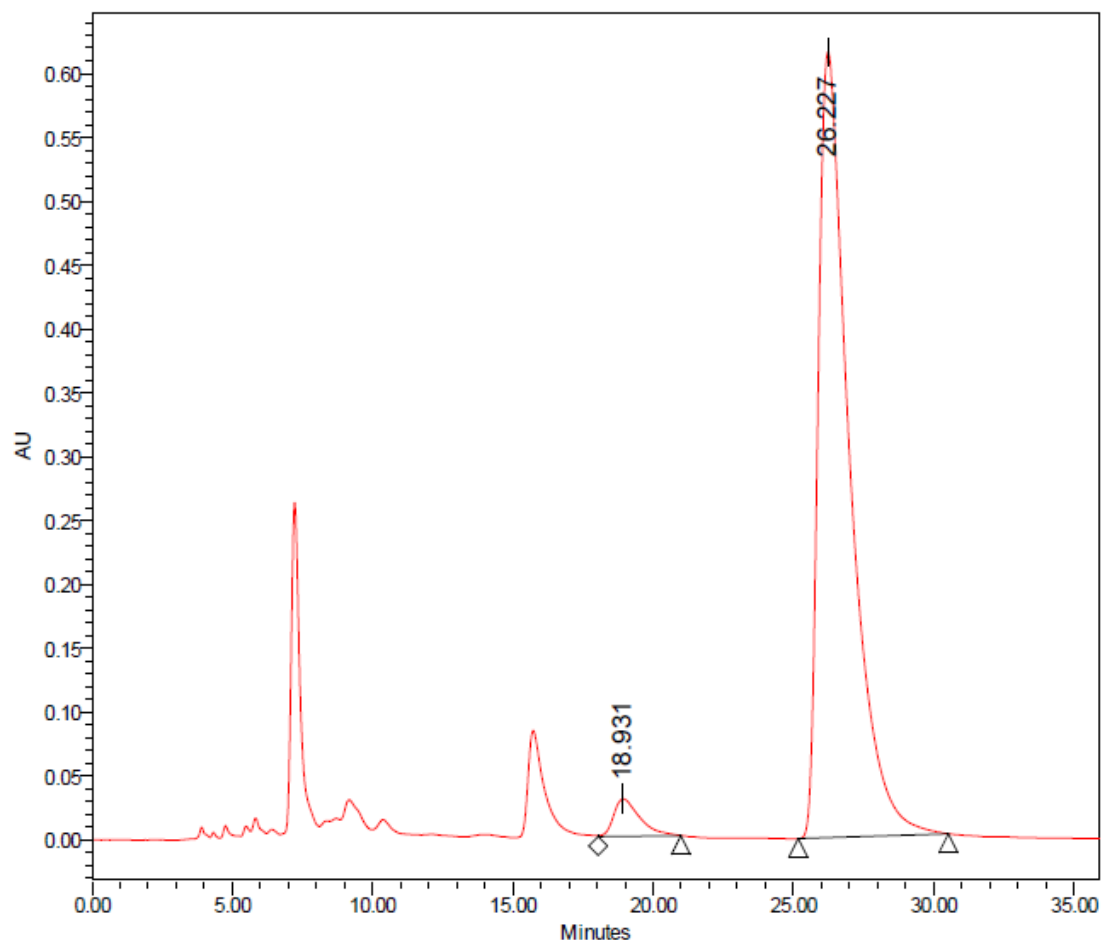
Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-421-R DL-PA HEXIPA 7030 IB	1	2	26.422	7793346	48.86	108718
2	RD-421-R DL-PA HEXIPA 7030 IB	1	2	18.453	8156118	51.14	134486
Mean				22.438			
Std. Dev.				5.635			



Repeated HPLC analysis for confirming the product **23c-(L)**

The HPLC of compound **23c-(DL)** was determined using the Daicel Chiralpak IB column, hexane/*i*-PrOH 70:30, flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 18.45$ min, $t_L = 26.42$ min.



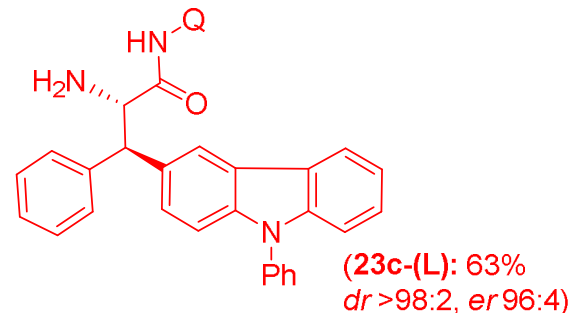
Sample Name: RD-1012-L-REP-PA HEXIPA 7030 IB; Date Acquired: 26-04-2022
19:39:04 IST; Vial: 1; Injection: 4

Peak Summary with Statistics

Name:

	Sample Name	Vial	Inj	Retention Time (min)	Area	% Area	Height
1	RD-1012-L-REP-PA HEXIPA 7030 IB	1	4	26.227	47842675	96.20	615369
2	RD-1012-L-REP-PA HEXIPA 7030 IB	1	4	18.931	1890134	3.80	29209
Mean				22.579			
Std. Dev.				5.159			

Product **23c-(L)** was obtained in a repeated reaction in a 1 mmol scale



The HPLC of compound **23c-(L)** was determined using the Daicel Chiralpak IB column, hexane/*i*-PrOH 70:30, flow rate 1.0 mL/min, UV detection at 254 nm, $t_d = 18.93$ min, $t_L = 26.22$ min.