

Supplementary information

Pd(II)-catalyzed selective β -C-H functionalization of azobenzene carboxamides

Rayavarapu Padmavathi and Srinivasarao Arulananda Babu*

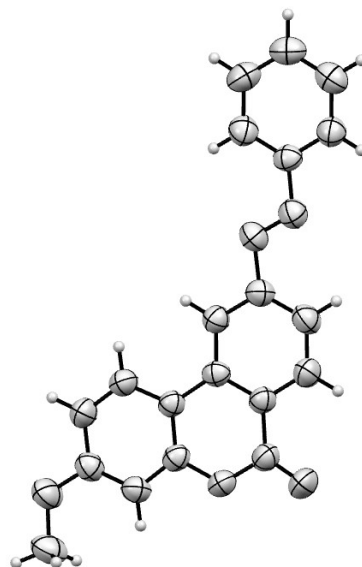
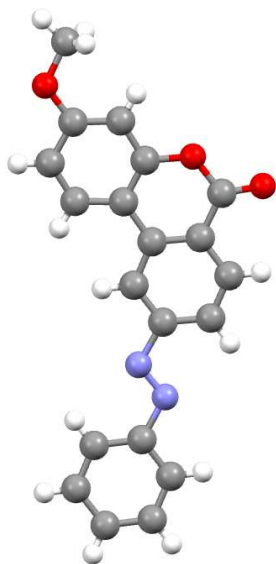
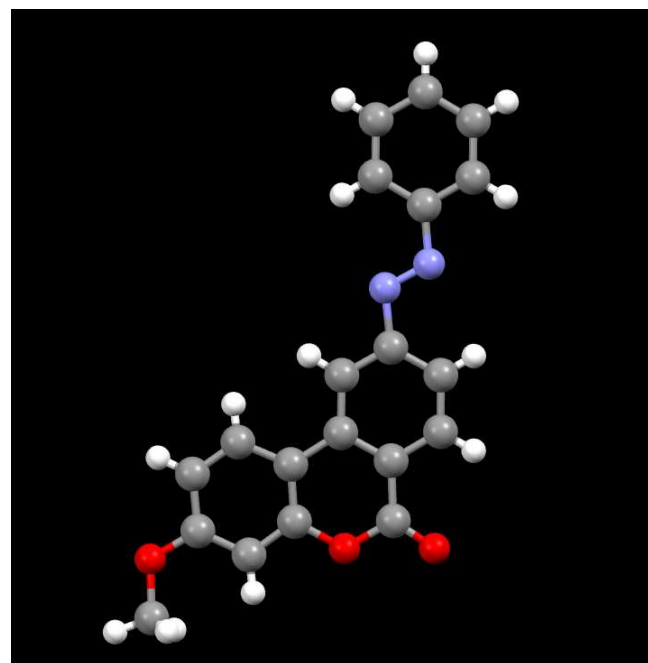
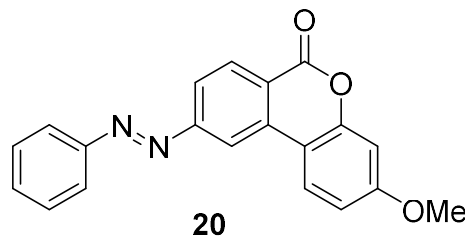
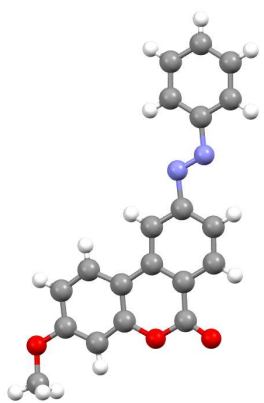
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X-ray structure of compound **20**

CCDC 2226308



ORTEP structure (ellipsoid probability = 50%)

checkCIF/PLATON report

Structure factors have been supplied for datablock(s) rp1338

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No syntax errors found. CIF dictionary Interpreting this report

Datablock: rp1338

Bond precision: C-C = 0.0033 A Wavelength=0.71073

Cell: a=8.6384 (9) b=19.8168 (19) c=9.4404 (11)
alpha=90 beta=99.588 (10) gamma=90

Temperature: 298 K

	Calculated	Reported
Volume	1593.5 (3)	1593.5 (3)
Space group	P 21/n	P 1 21/n 1
Hall group	-P 2yn	-P 2yn
Moiety formula	C20 H14 N2 O3	C20 H14 N2 O3
Sum formula	C20 H14 N2 O3	C20 H14 N2 O3
Mr	330.33	330.33
Dx, g cm ⁻³	1.377	1.377
Z	4	4
Mu (mm ⁻¹)	0.094	0.094
F000	688.0	688.0
F000'	688.32	
h, k, lmax	10, 23, 11	10, 23, 11
Nref	2805	2799
Tmin, Tmax	0.972, 0.972	0.997, 1.000
Tmin'	0.972	

Correction method= # Reported T Limits: Tmin=0.997 Tmax=1.000
AbsCorr = MULTI-SCAN

Data completeness= 0.998 Theta(max)= 24.999

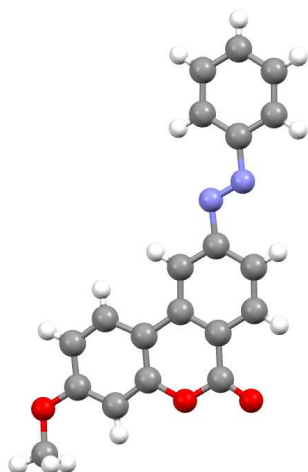
R(reflections)= 0.0507 (1782)

wR2(reflections)=
0.1634 (2799)

S = 1.043

Npar= 227

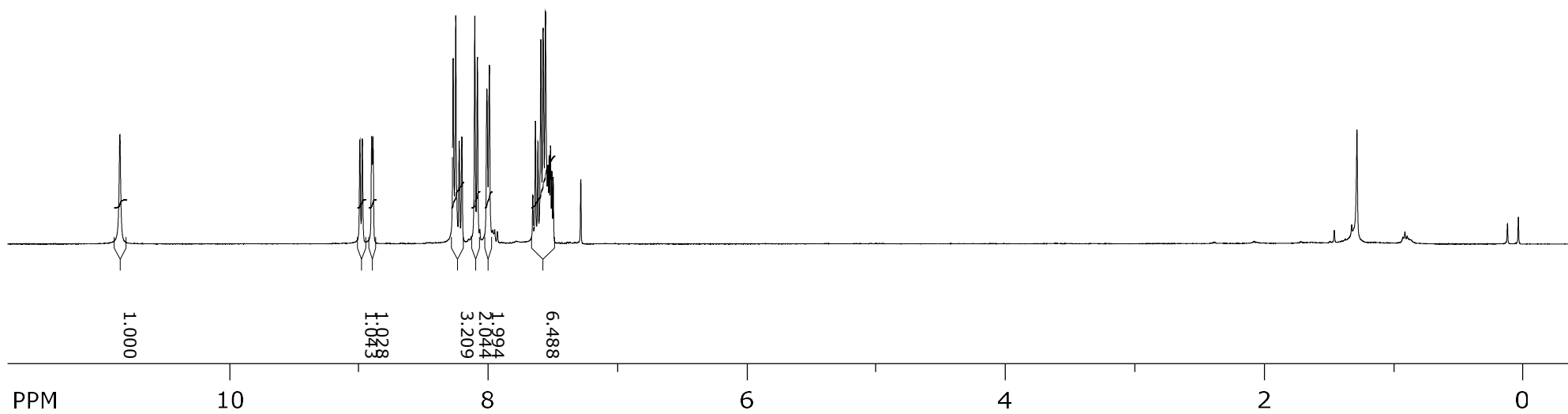
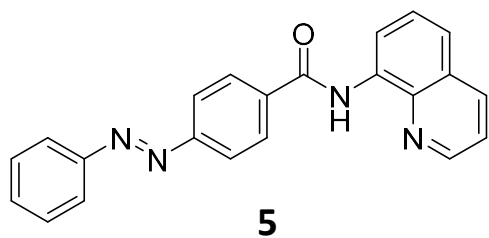
Brief crystal data
X-ray structure of compound **20**
CCDC 2226308



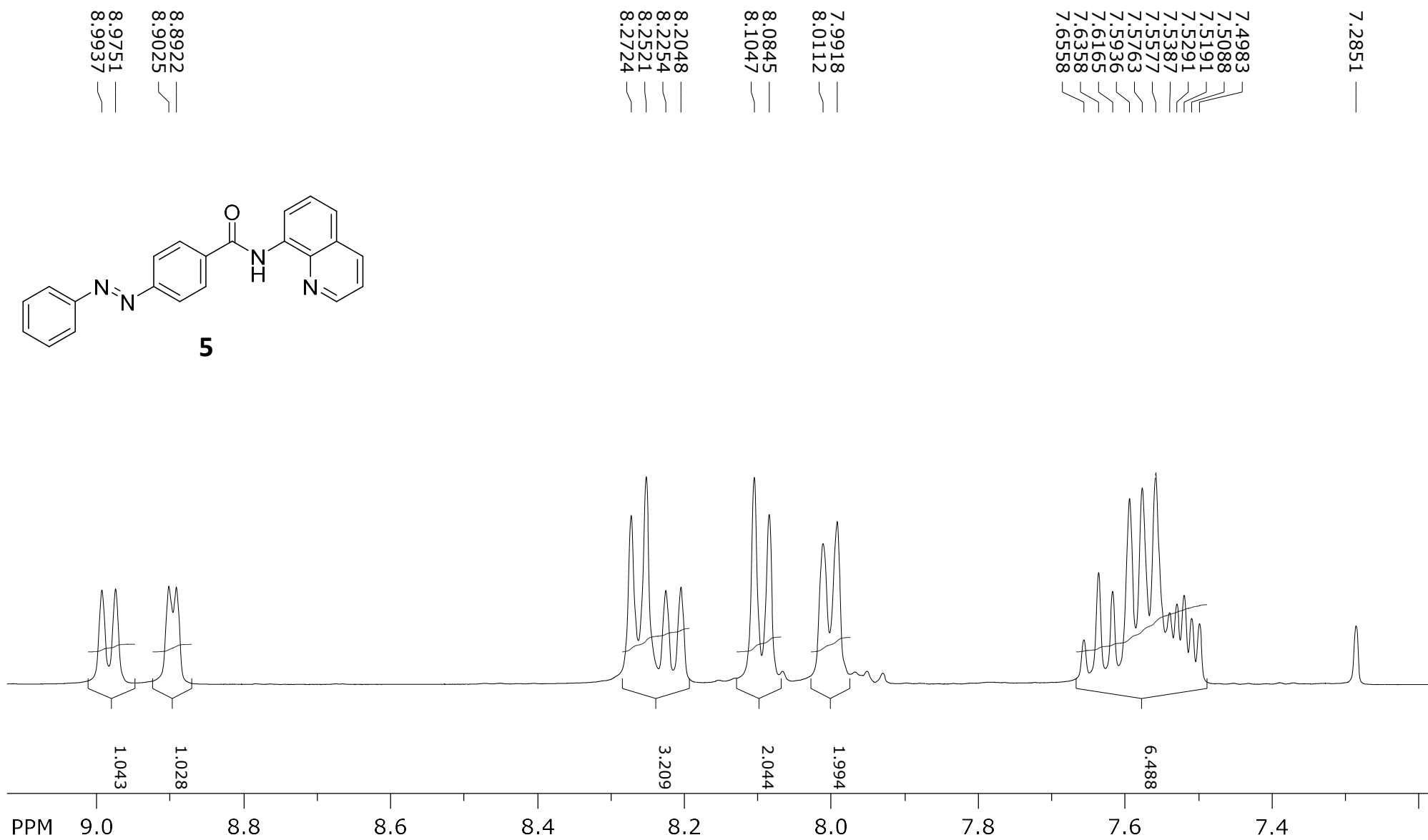
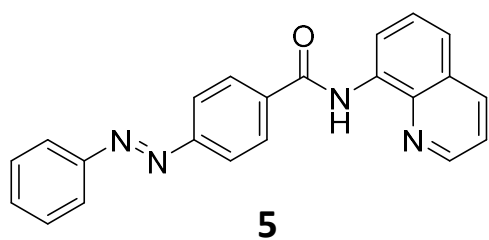
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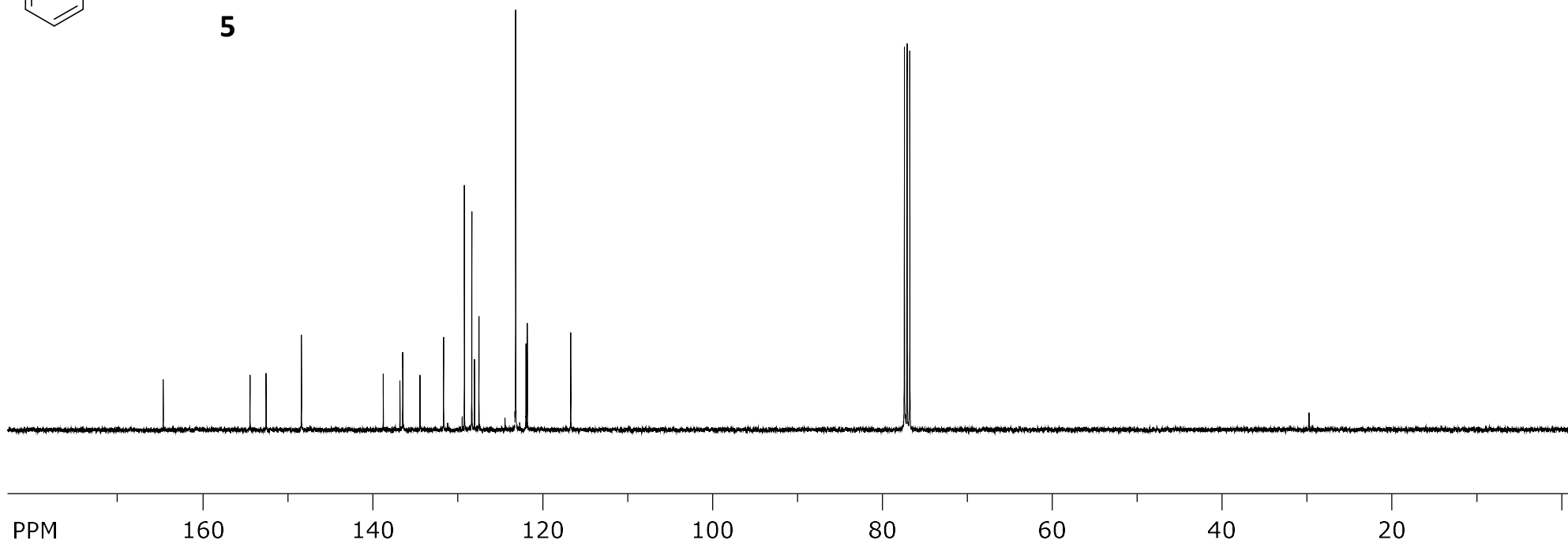
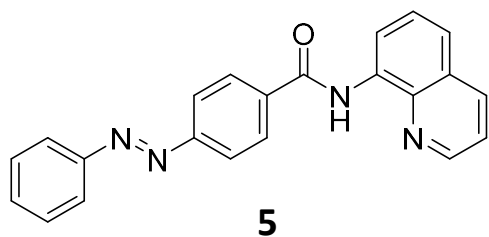
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SpinWorks 4: RP 540 FIN
C13CPD CDCI3 /opt/topspin3.5pl2/nmrdata nmrsu 46

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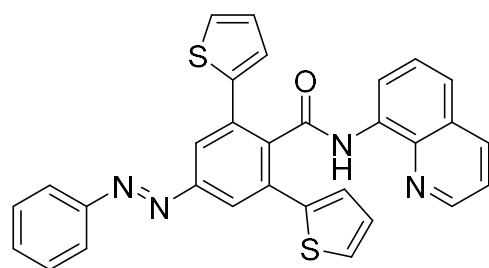
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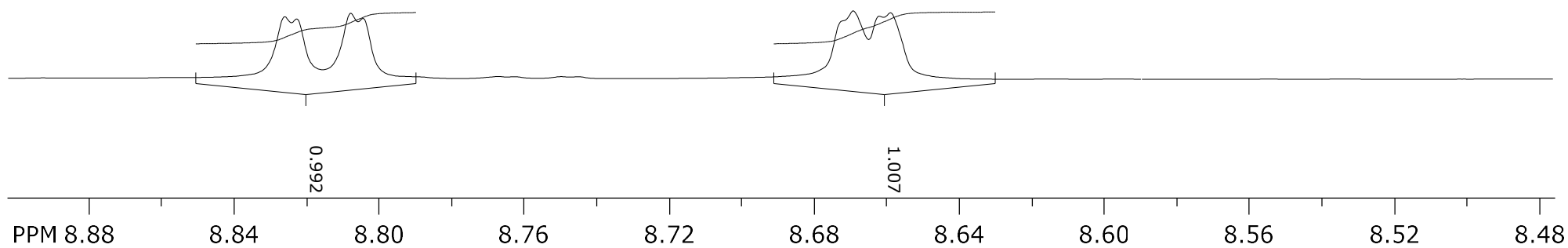
SpinWorks 4: RP 1024 B2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 12

8.8228
8.8261
8.8045
8.8079

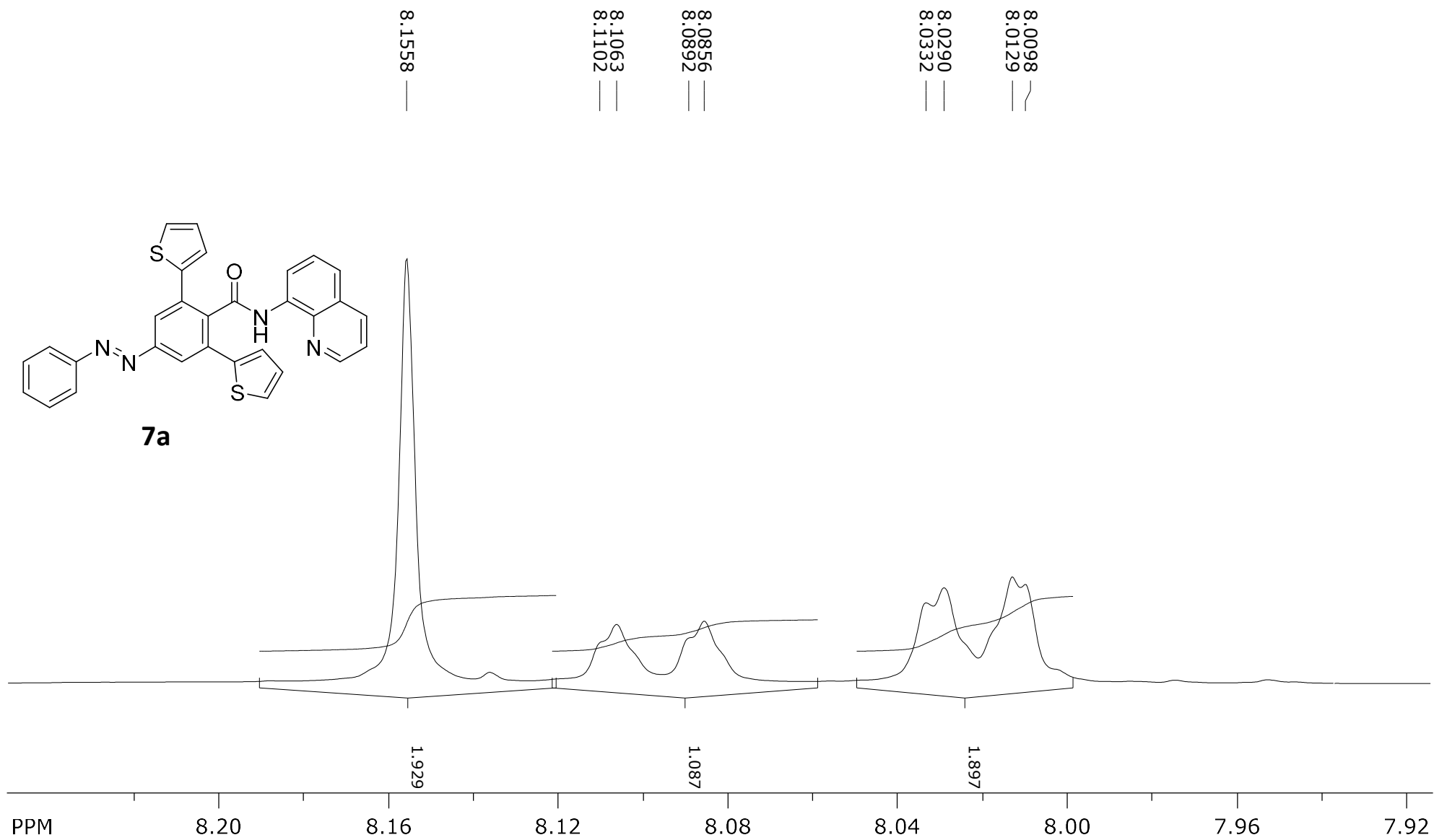
8.6589
8.6620
8.6599
8.6729



7a



SpinWorks 4: RP 1024 B2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 12



SpinWorks 4: RP 1024 B2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 12

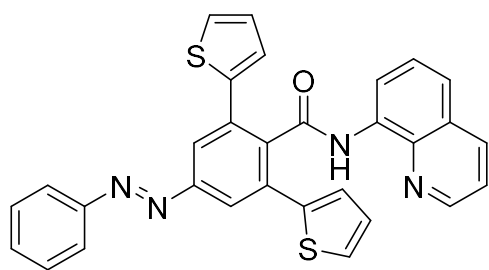
7.4992
7.5185
7.5340
7.5526
7.5669
7.5860
7.6077

7.4461
7.4529

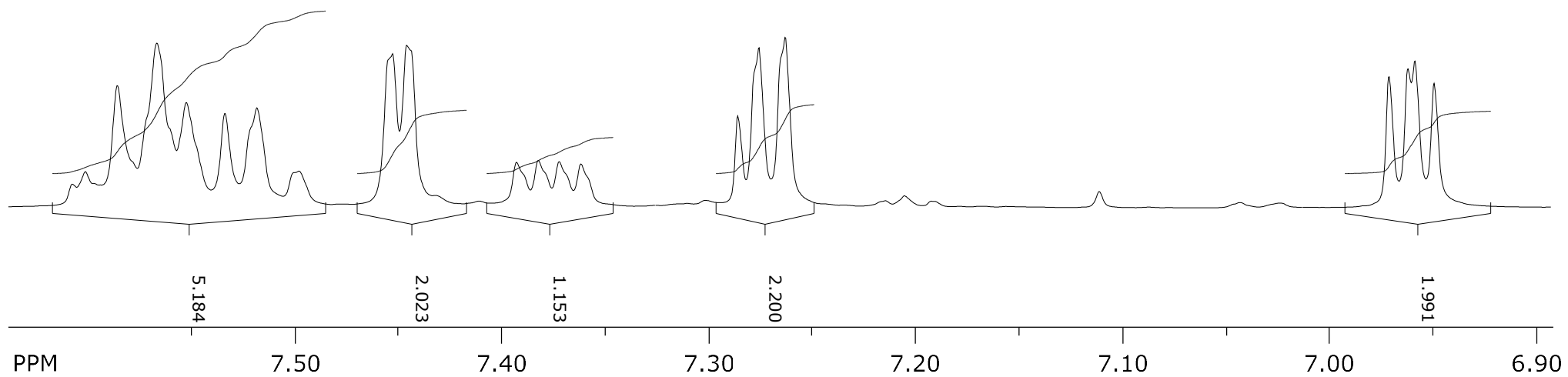
7.3603
7.3724
7.3825
7.3930

7.2631
7.2758
7.2860

6.9493
6.9586
6.9620
6.9712



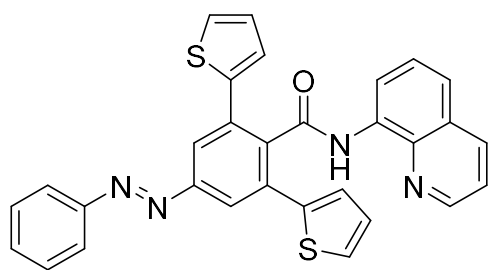
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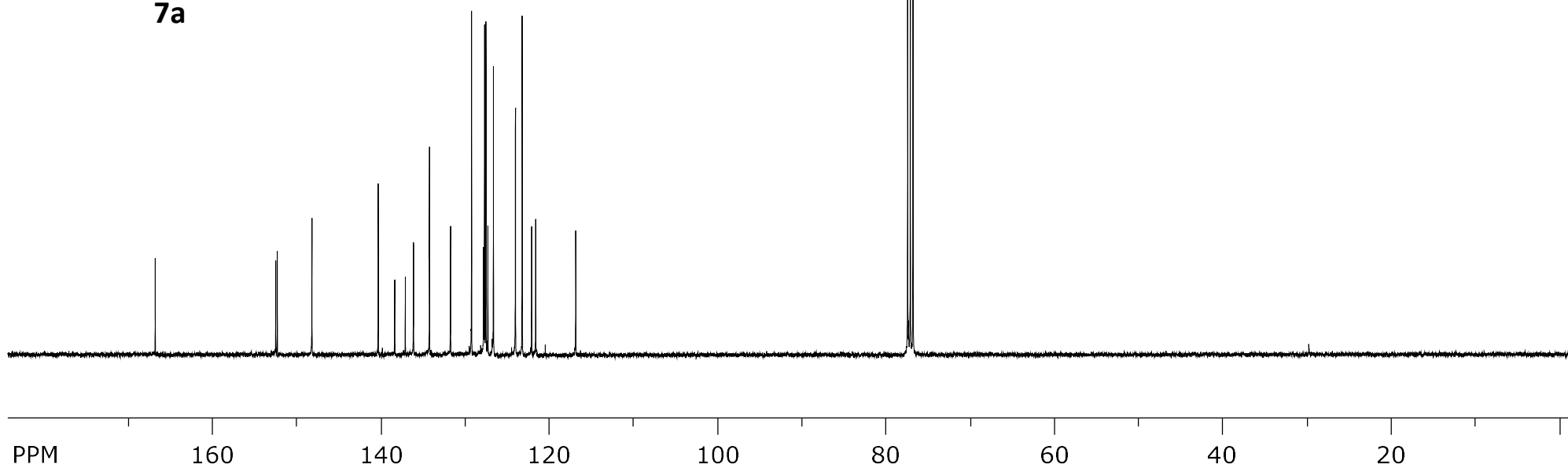
SpinWorks 4: RP 1024 B2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 12

166.840
152.337
152.526
148.219
140.335
138.384
137.121
136.147
134.262
134.242
131.747
129.252
~~127.809~~
126.652
124.035
123.231
122.107
121.628
116.868

76.791
77.108
77.426

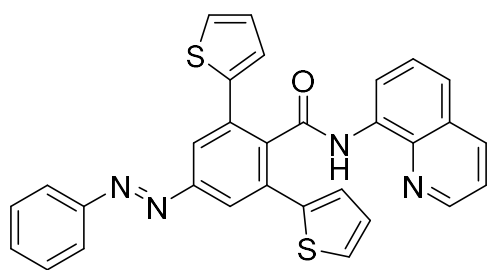


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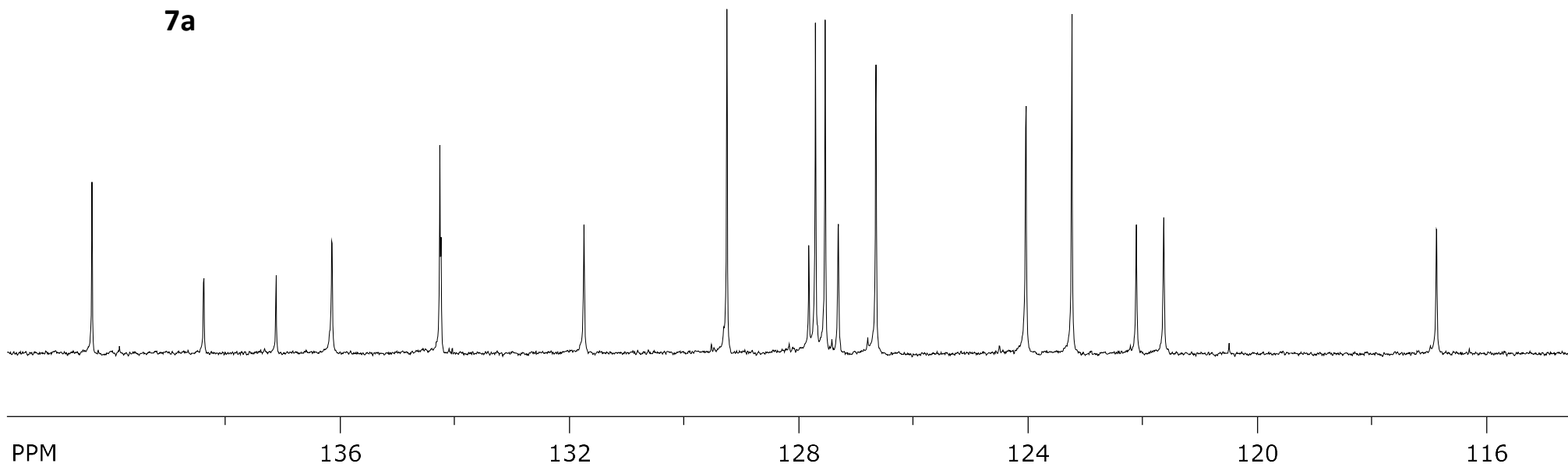


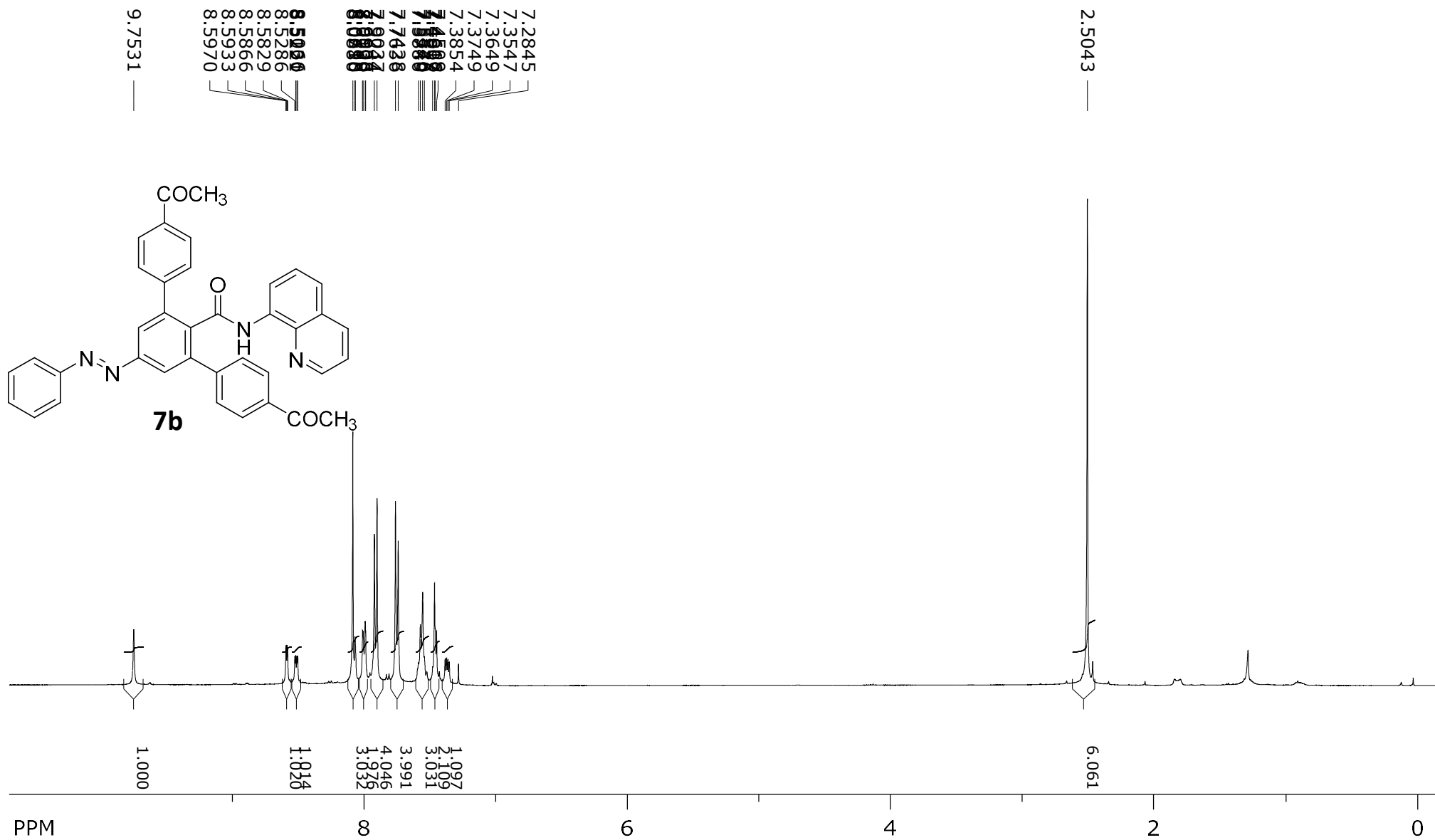
SpinWorks 4: RP 1024 B2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 12

140.335 —
138.384 —
137.121 —
136.147 —
134.242 —
134.262 —
131.747 —
129.252 —
127.822 —
127.707 —
127.537 —
127.309 —
126.652 —
124.035 —
123.231 —
122.107 —
121.628 —
116.868 —



7a



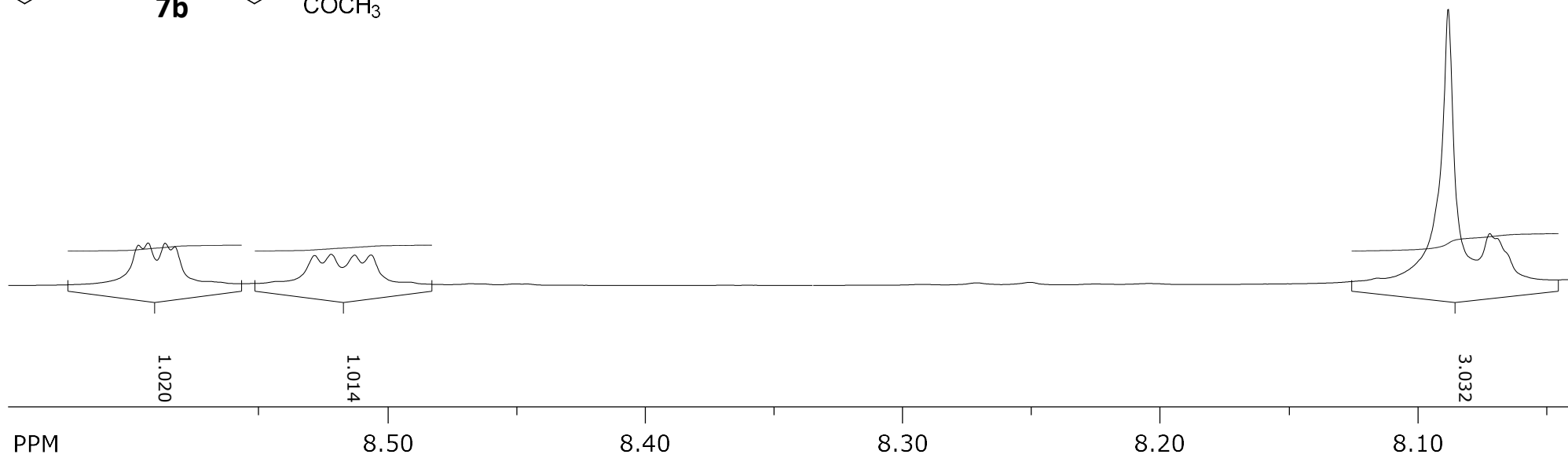
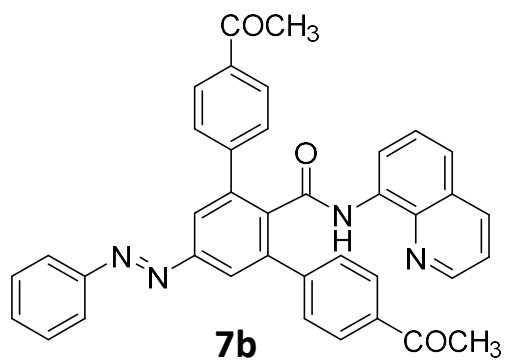


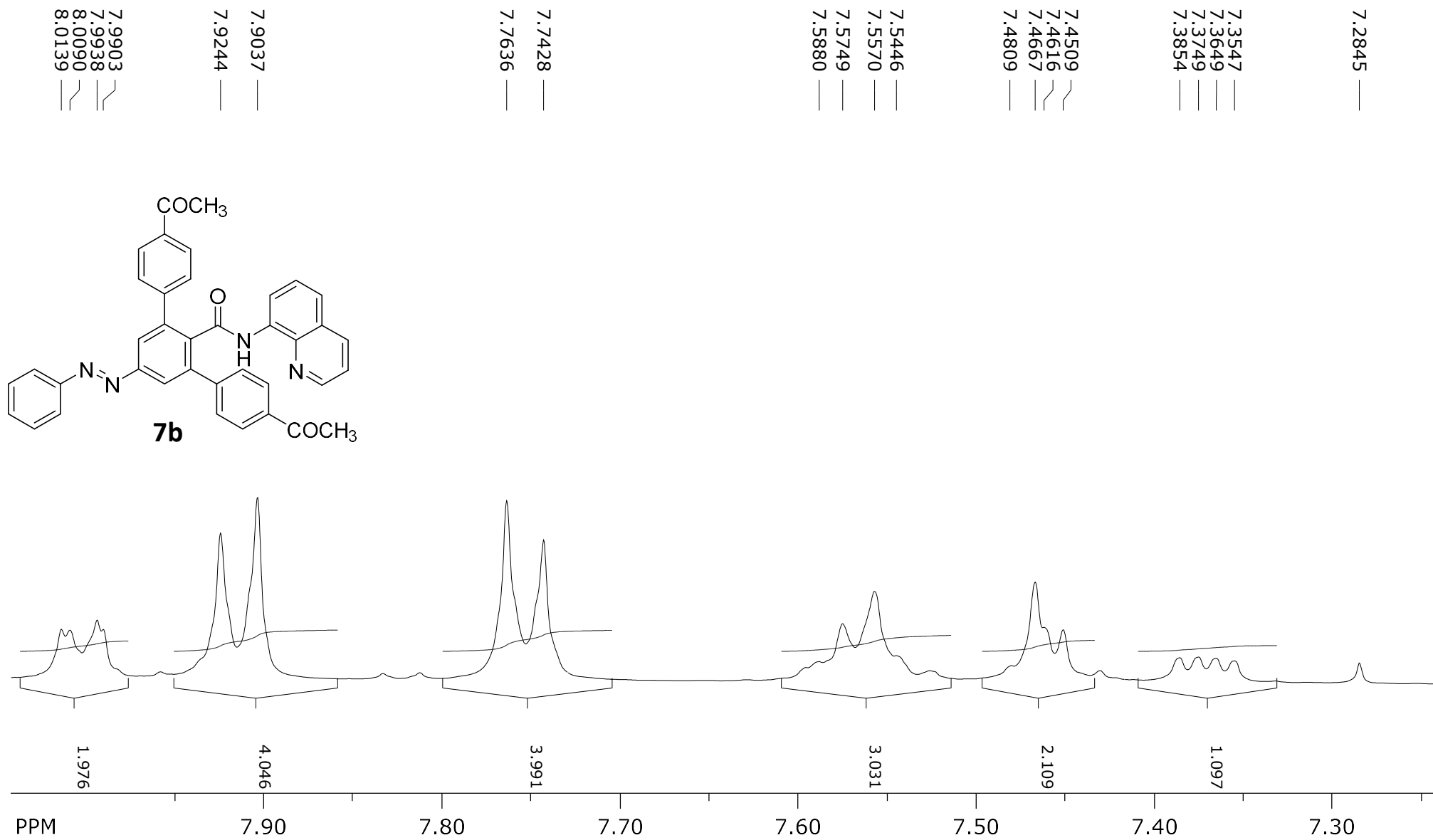
SpinWorks 4: RP 1172 B2

8.5829
8.5866
8.5933
8.5970

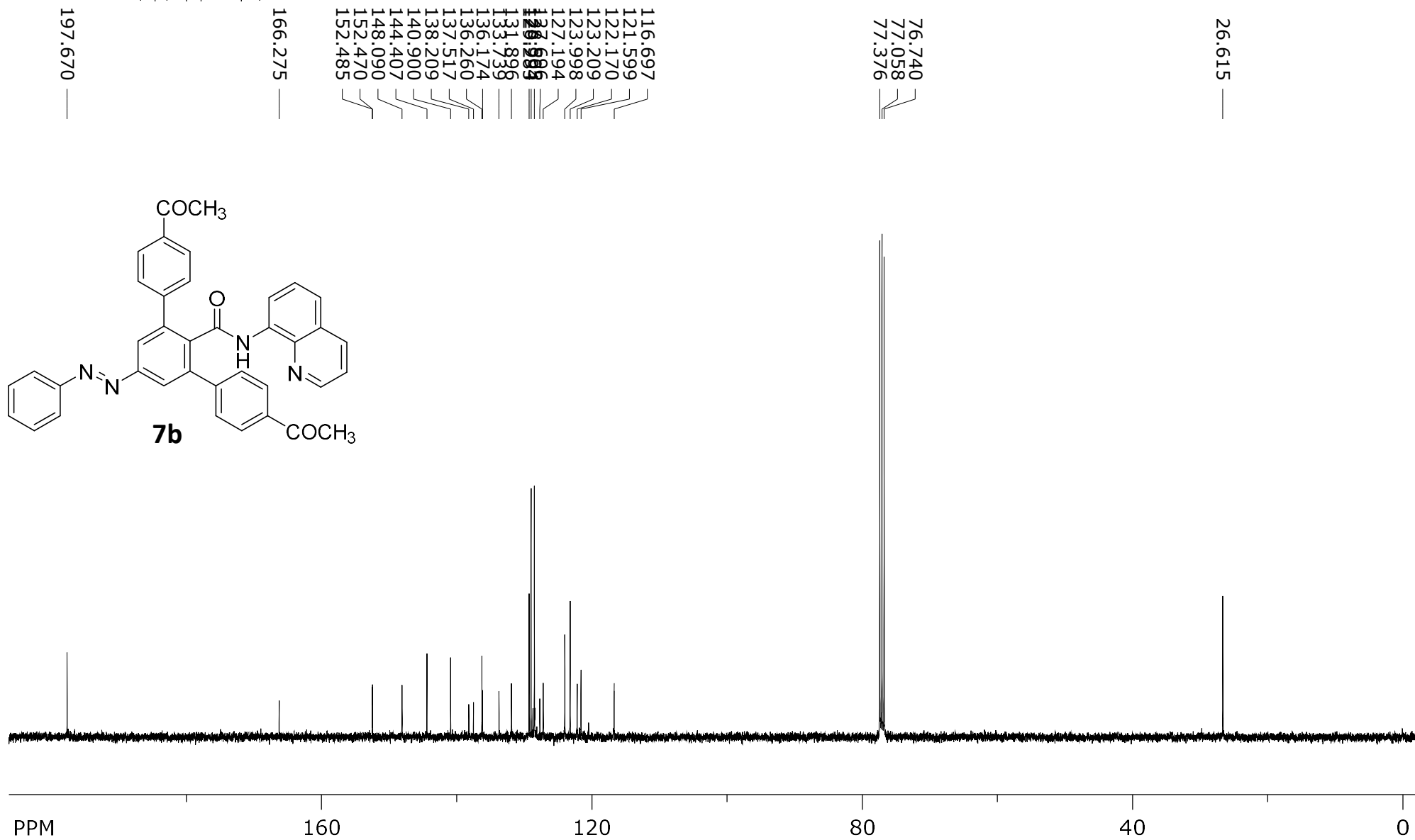
8.5066
8.5130
8.5221
8.5286

8.0690
8.0718
8.0880

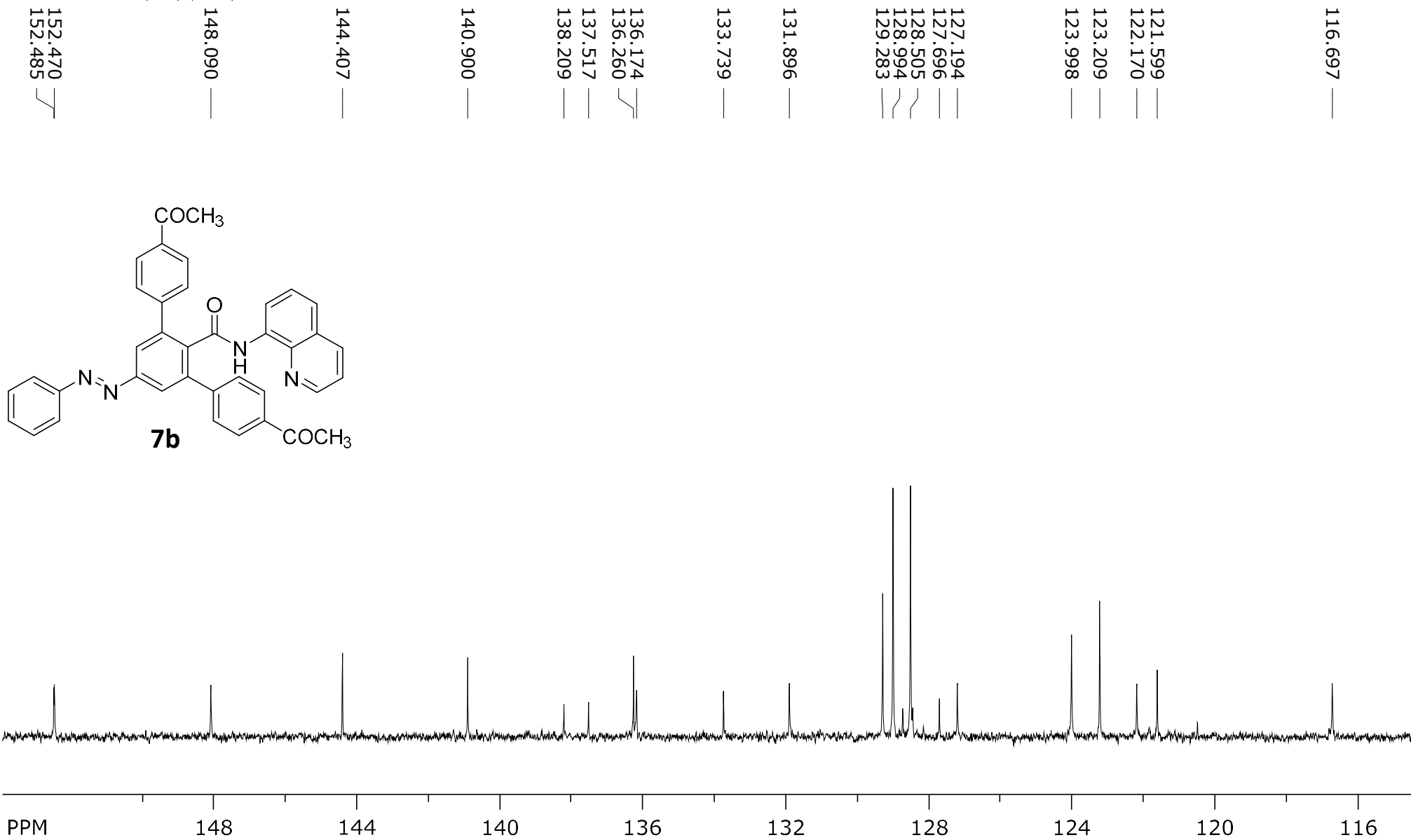




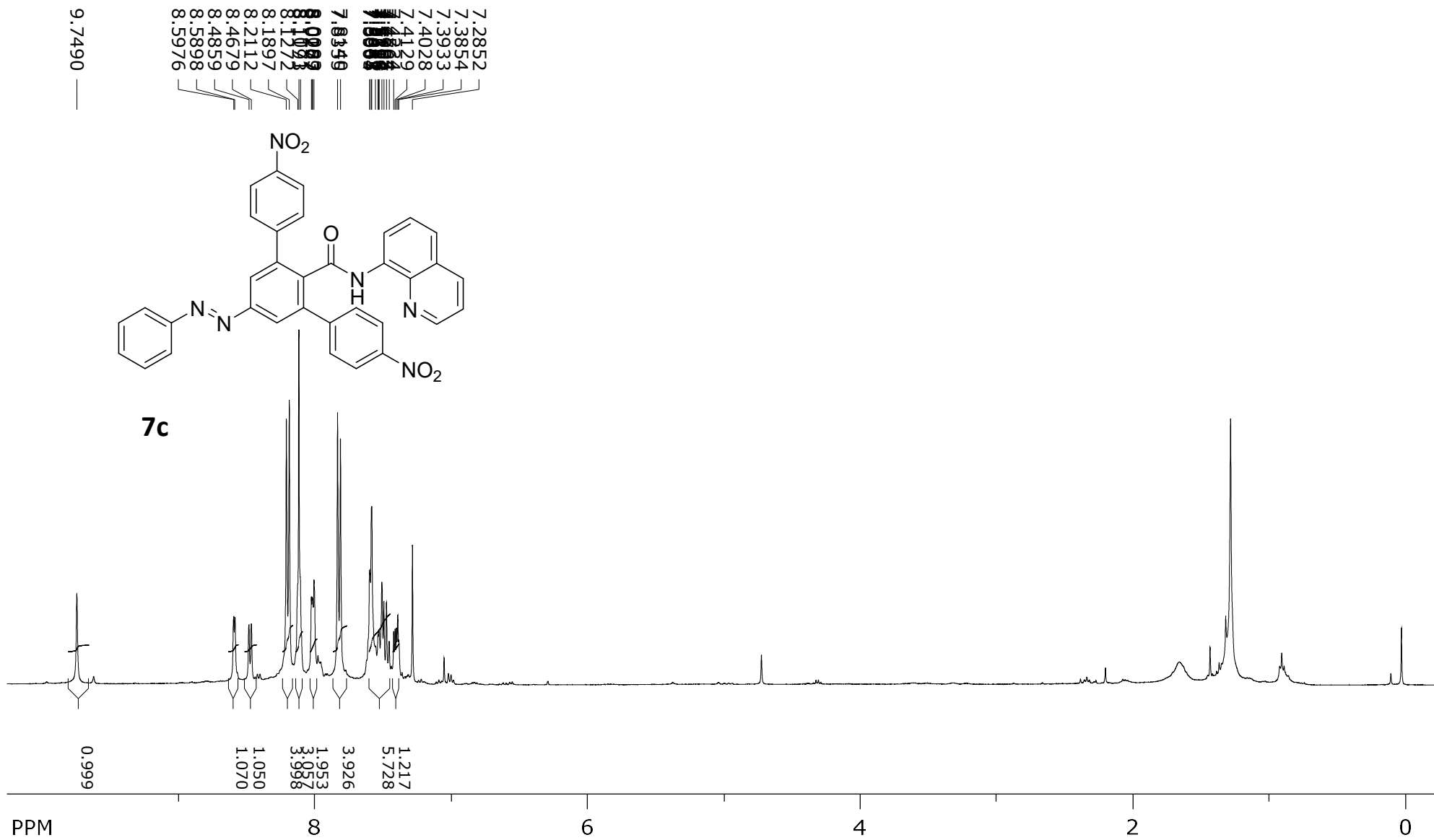
SpinWorks 4: RP 547 B2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 49



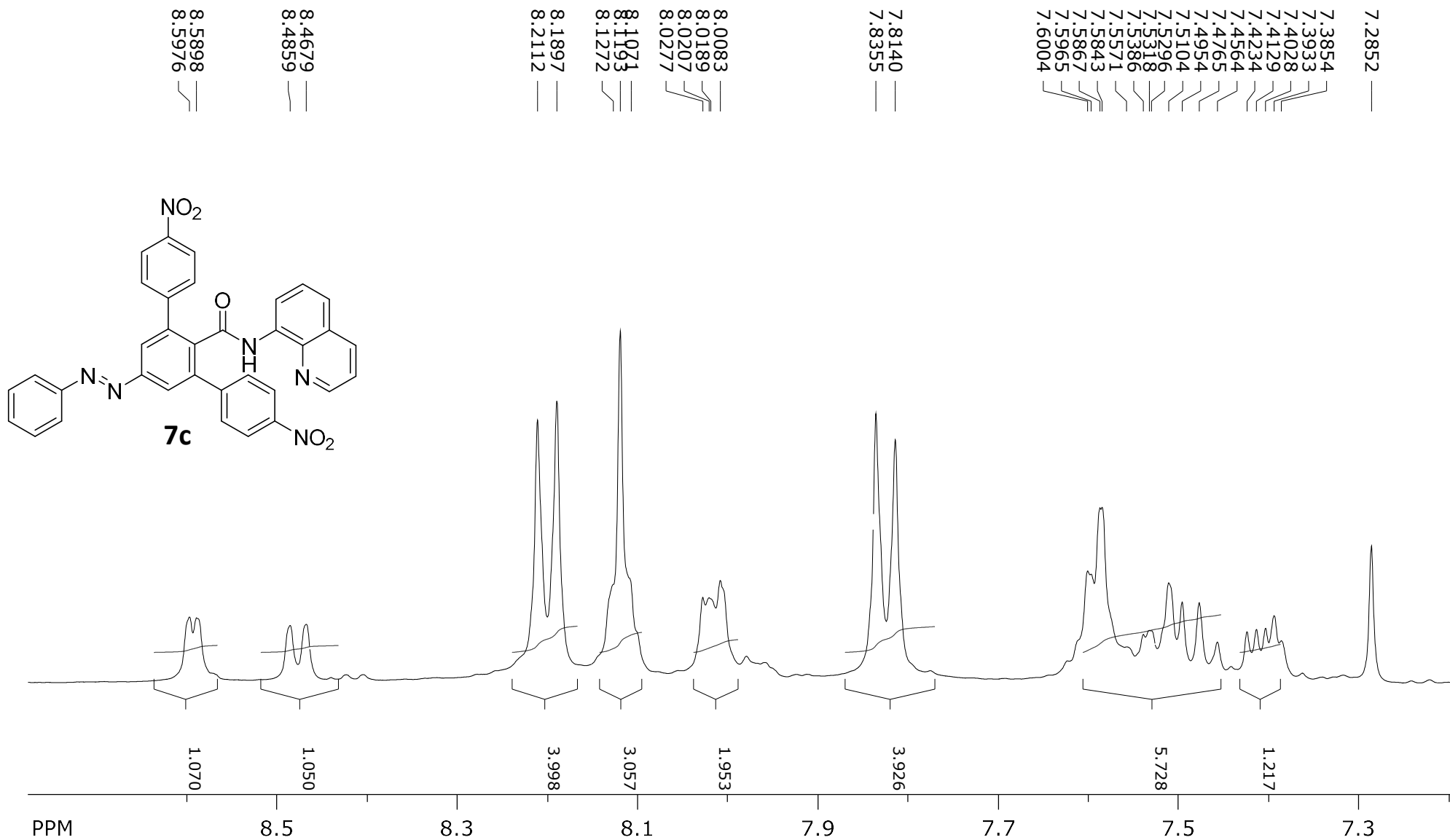
SpinWorks 4: RP 547 B2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 49



SpinWorks 4: RP 1177 REP B2 1
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 6



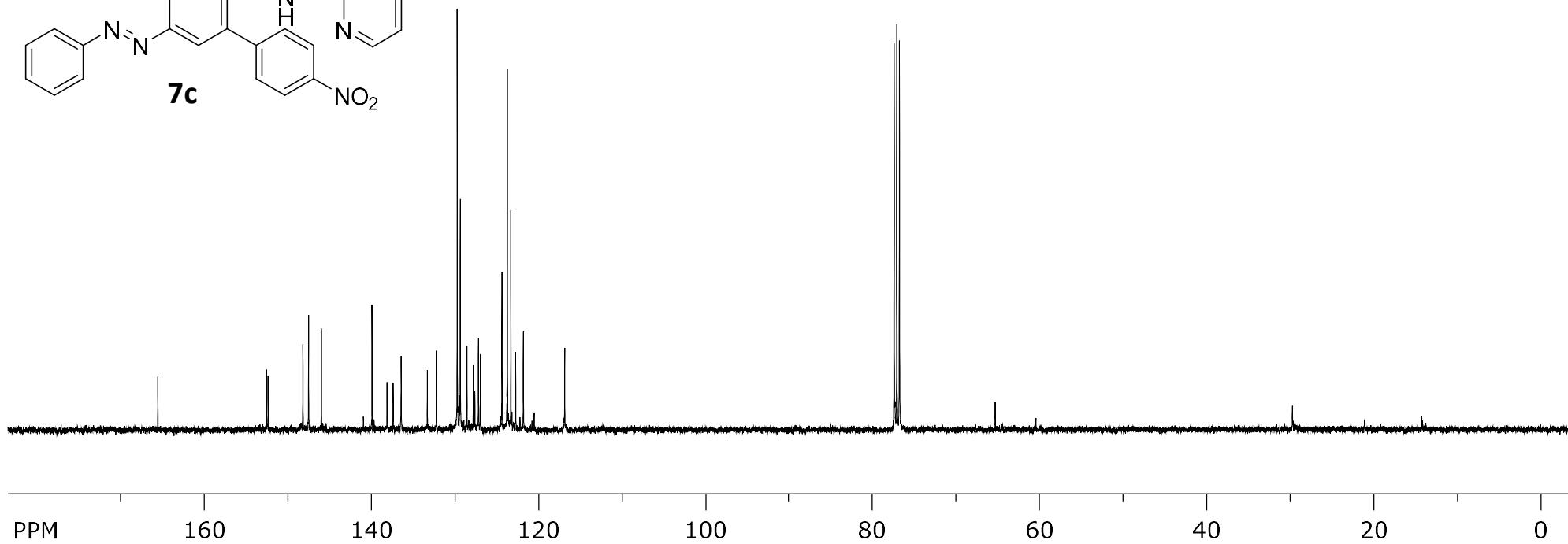
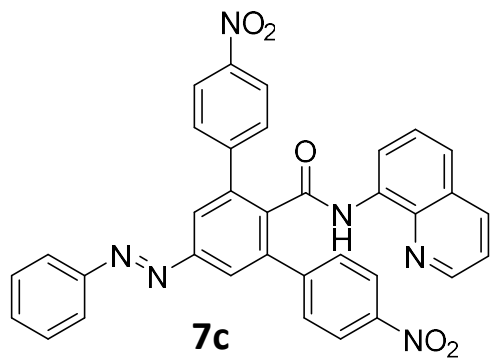
SpinWorks 4: RP 1177 REP B2 1
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 6



SpinWorks 4: RP 1177 B2
C13CPD CDCI3 /opt/topspin3.5pl2/nmrdata nmrsu 9

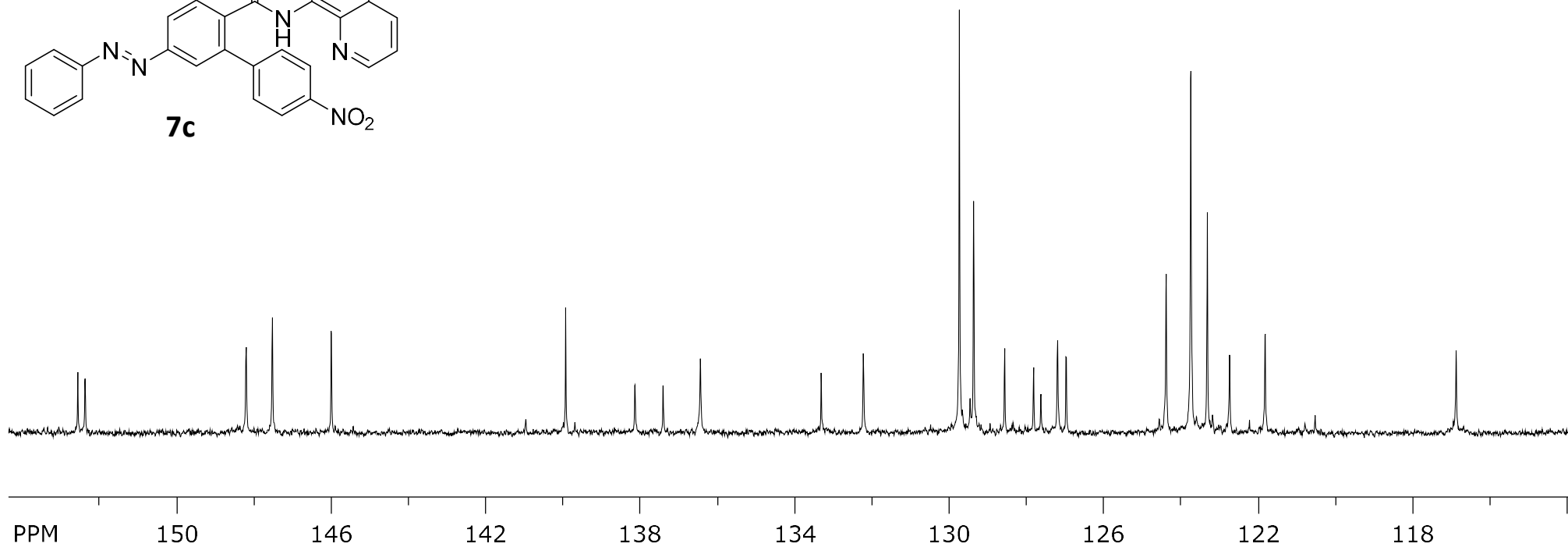
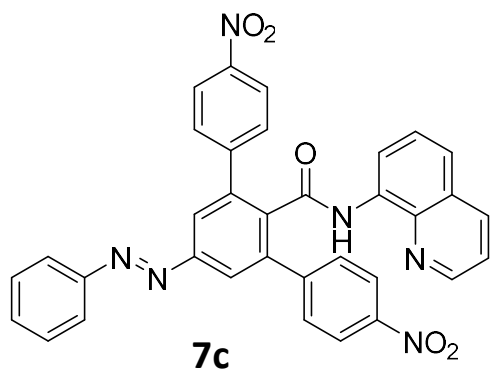
165.578
152.571
152.383
148.211
147.532
146.005
139.933
138.137
137.408
136.441
133.312
132.219
129.994
129.994
129.994
124.376
123.736
123.310
122.732
121.812
116.864

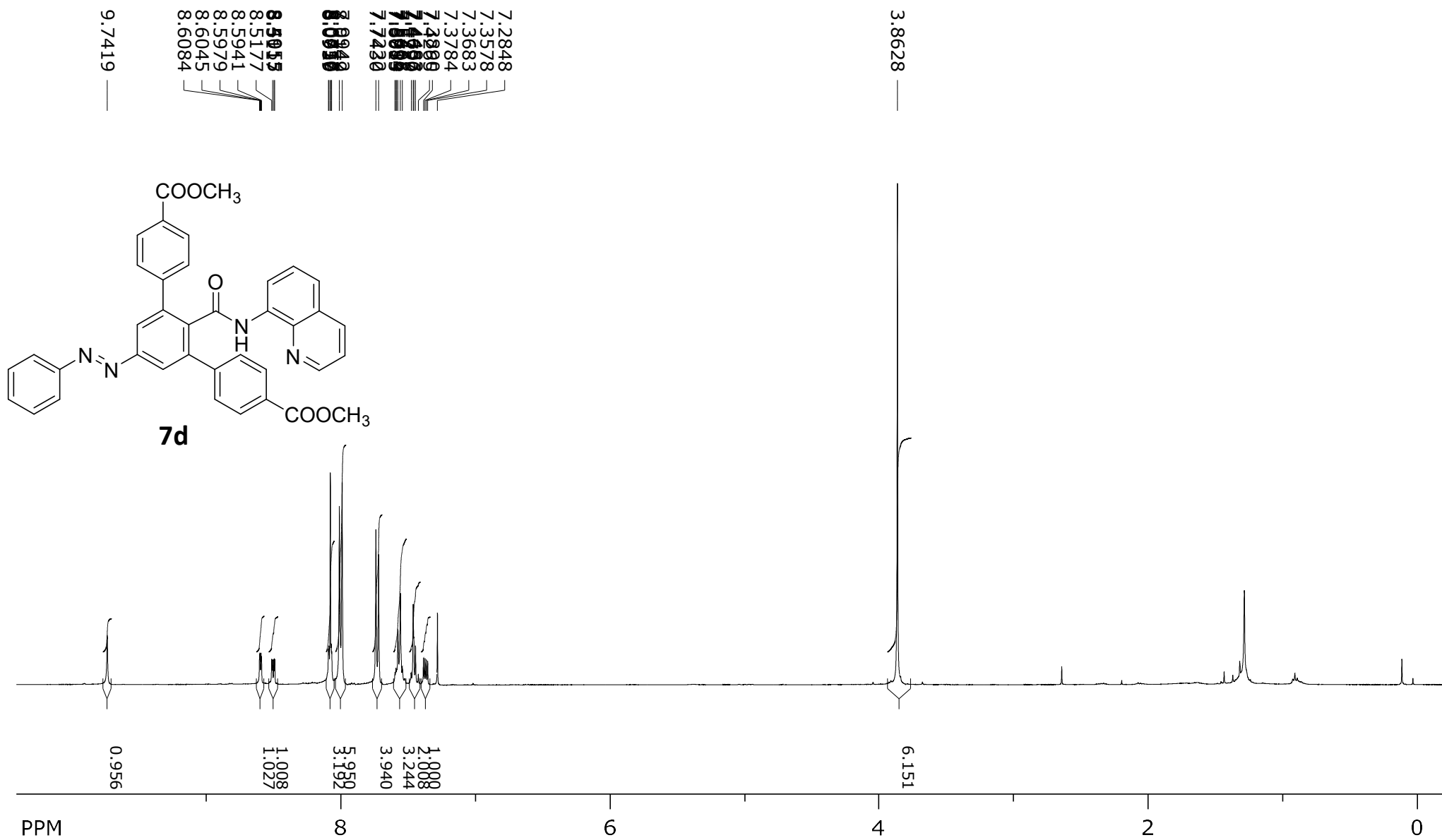
76.780
77.098
77.416

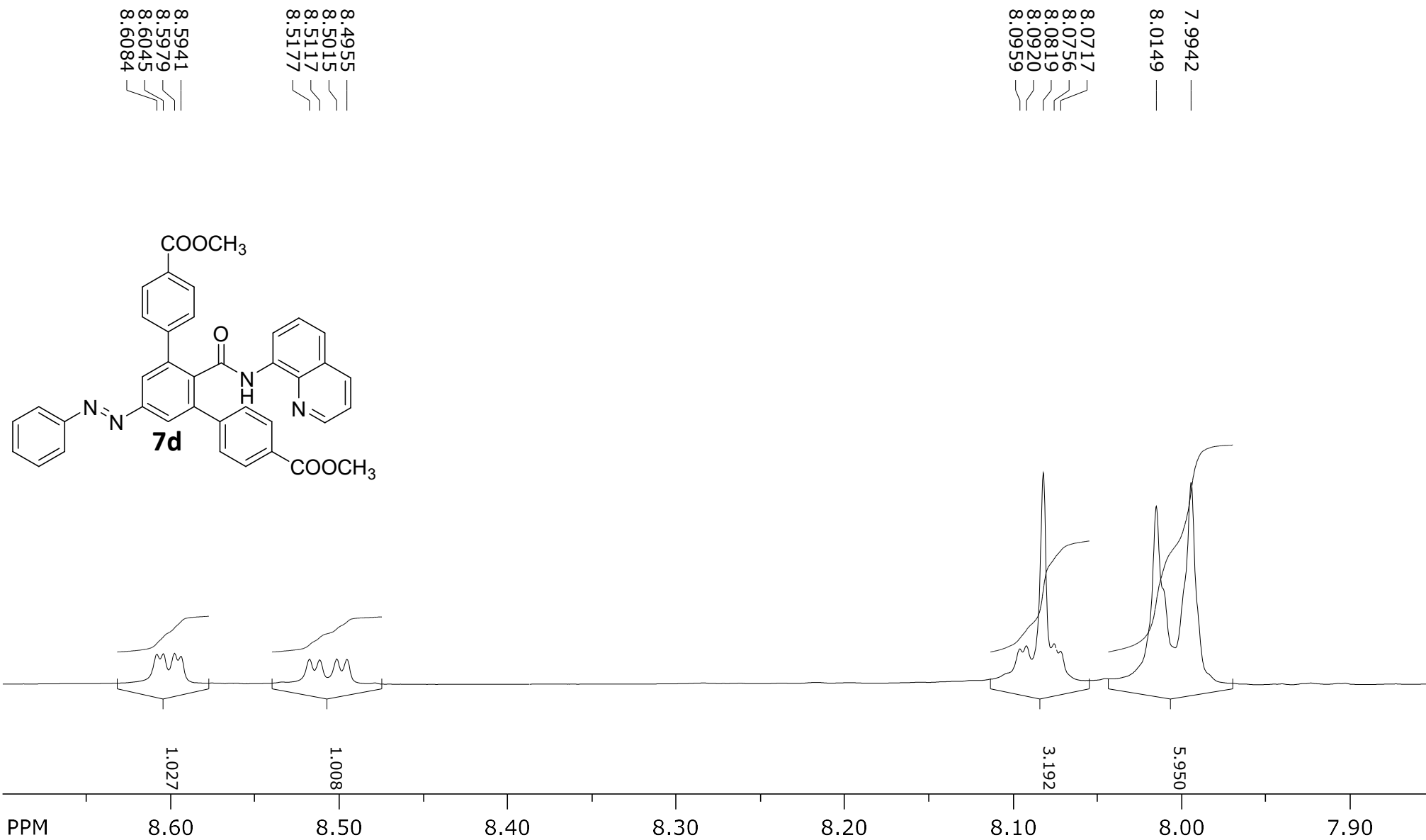


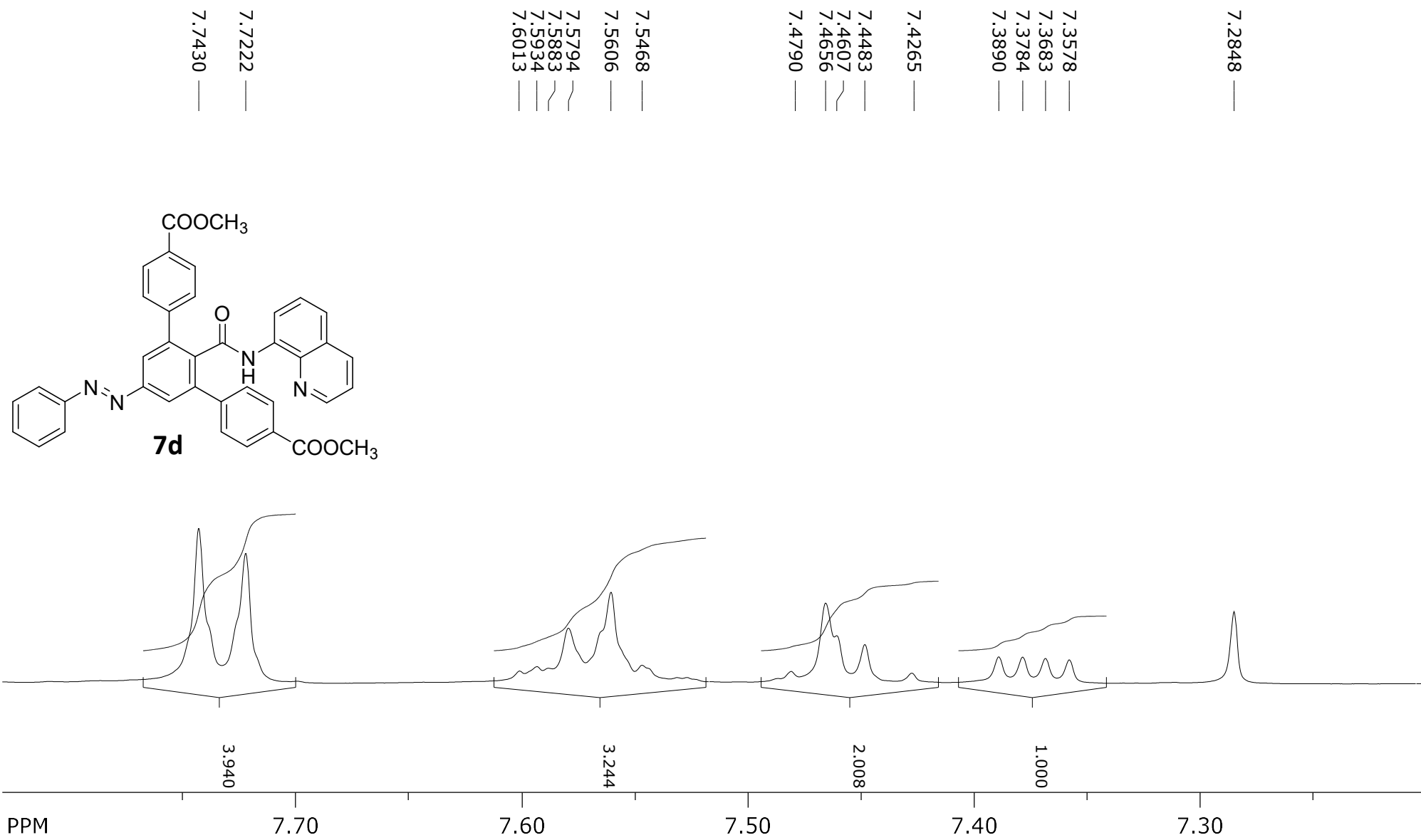
SpinWorks 4: RP 1177 B2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 9

152.383 —
152.571 —
148.211 —
147.532 —
146.005 —
139.933 —
138.137 —
137.408 —
136.441 —
133.312 —
132.219 —
129.734 —
129.363 —
128.561 —
127.811 —
127.190 —
126.967 —
124.376 —
123.736 —
122.732 —
121.812 —
116.864 —







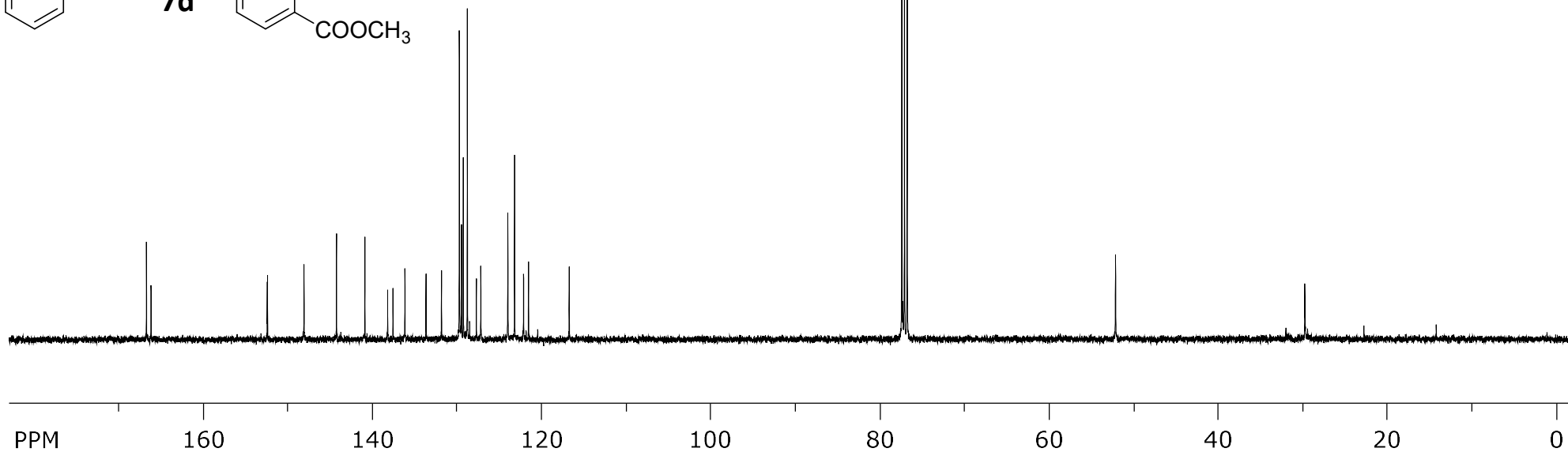
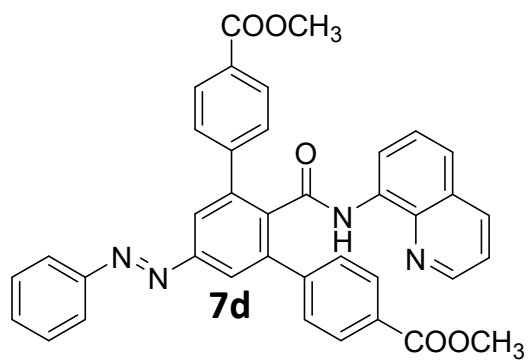


SpinWorks 4: RP 1332 R
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 48

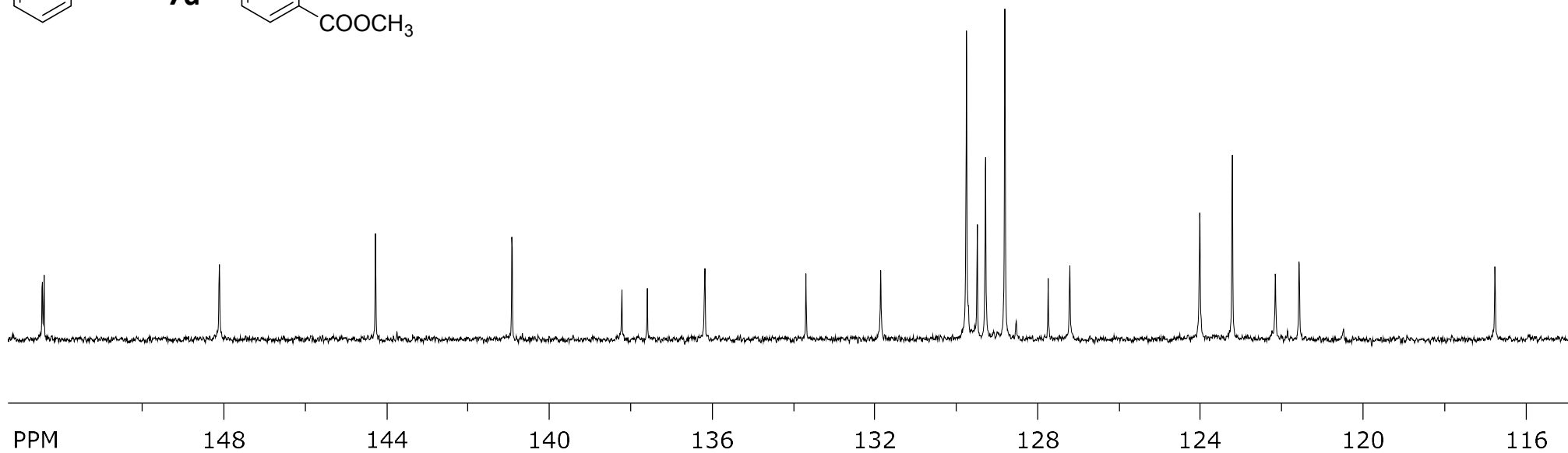
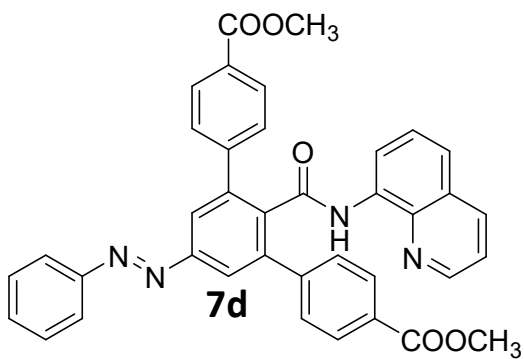
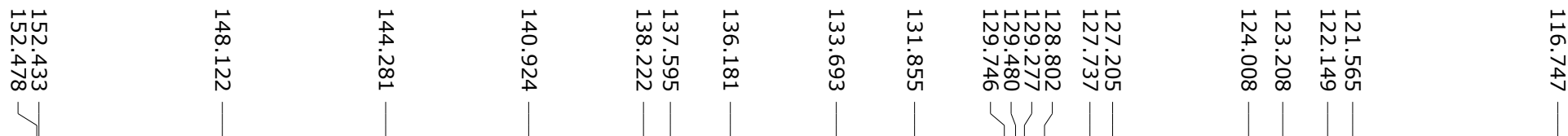
166.217
166.762
152.433
148.122
144.281
140.924
138.222
137.595
136.181
133.693
131.855
129.746
129.433
127.737
127.205
124.008
123.208
122.149
121.565
116.747

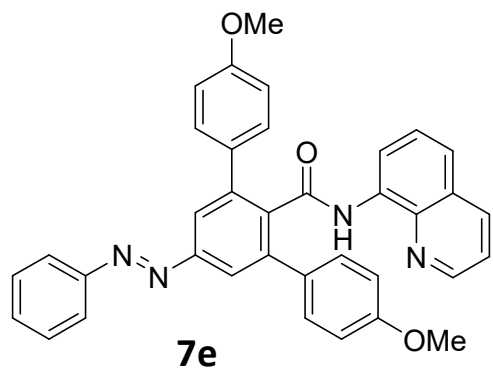
76.765
77.083
77.400

52.122



SpinWorks 4: RP 1332 R
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 48





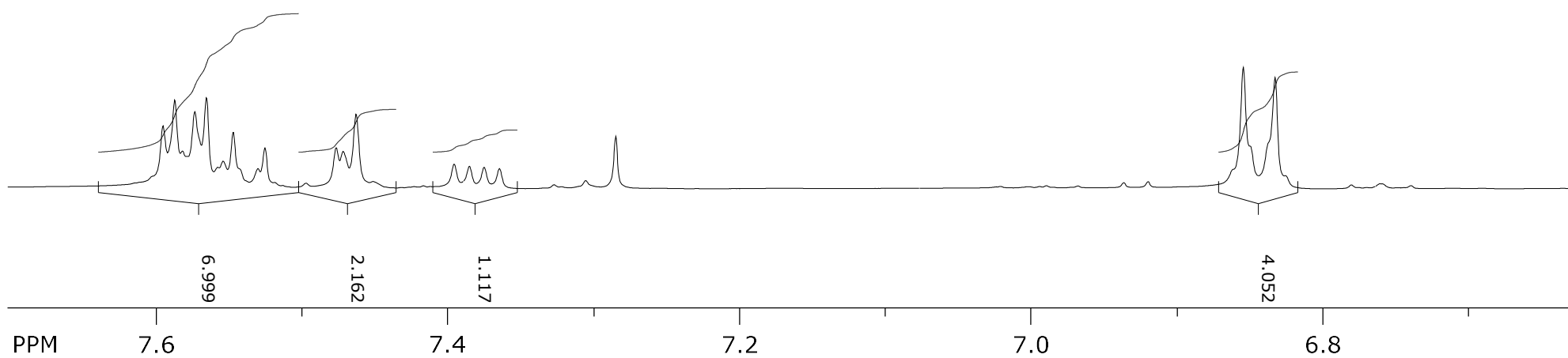
7.5257
7.5474
7.5659
7.5738
7.5876
7.5956

7.4632
7.4720
7.4768

7.3648
7.3753
7.3854
7.3958

7.2849

6.8254
6.8325
6.8543
6.8613

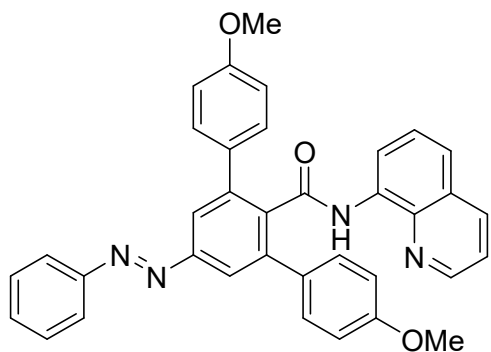


SpinWorks 4: RP 903 R4
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 56

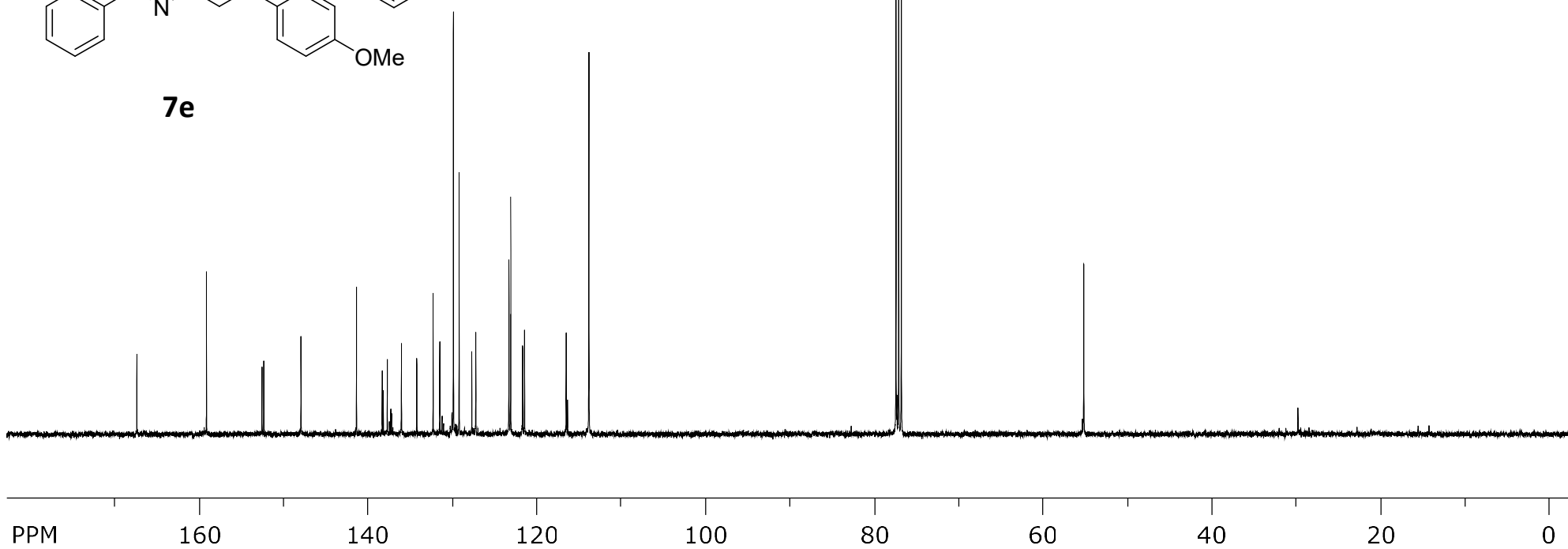
167.438
159.182
152.391
147.983
141.399
138.347
138.212
137.747
136.070
134.252
132.313
131.520
129.881
129.694
127.722
127.254
123.317
123.112
121.696
121.472
116.536
113.841

76.794
77.112
77.429

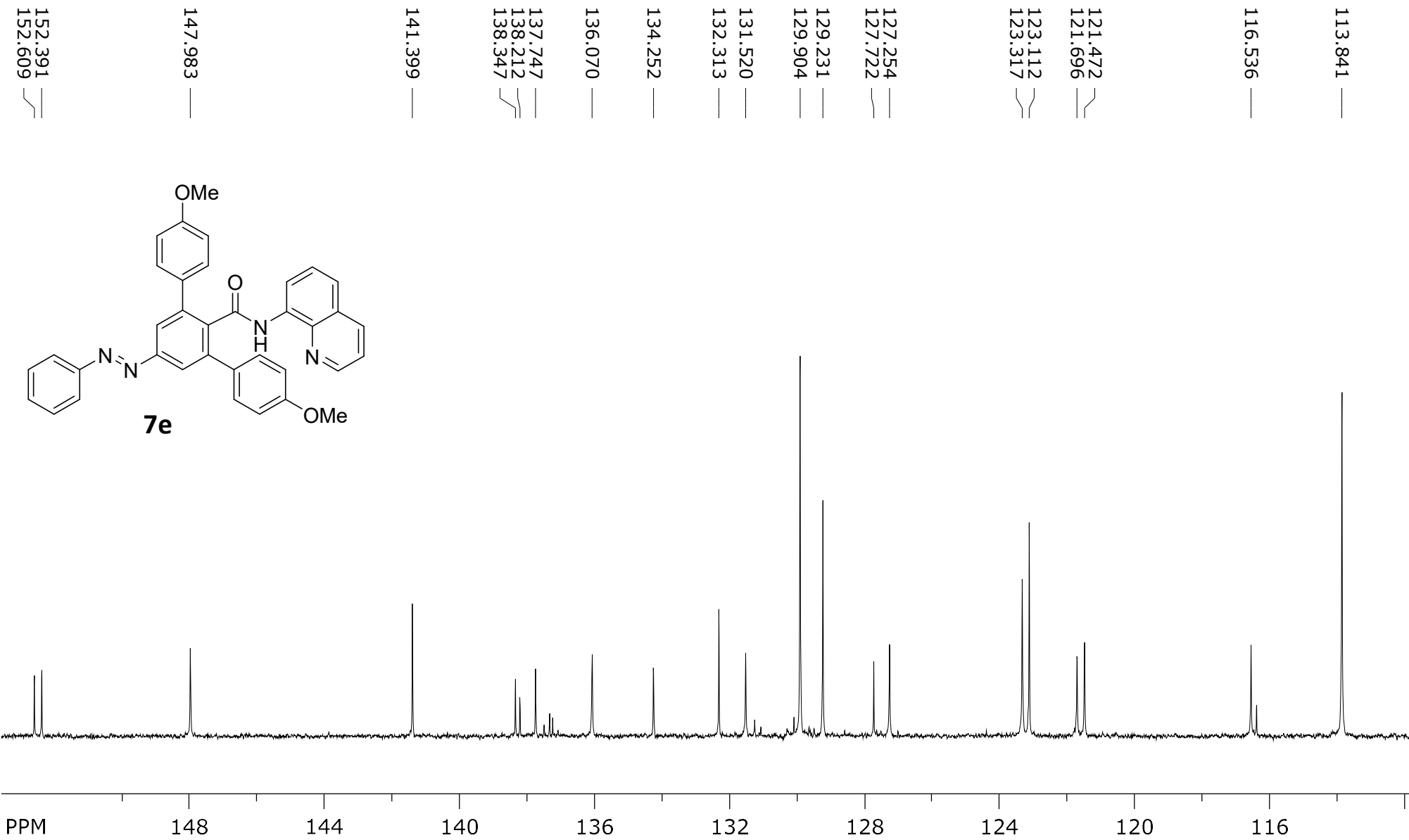
55.162

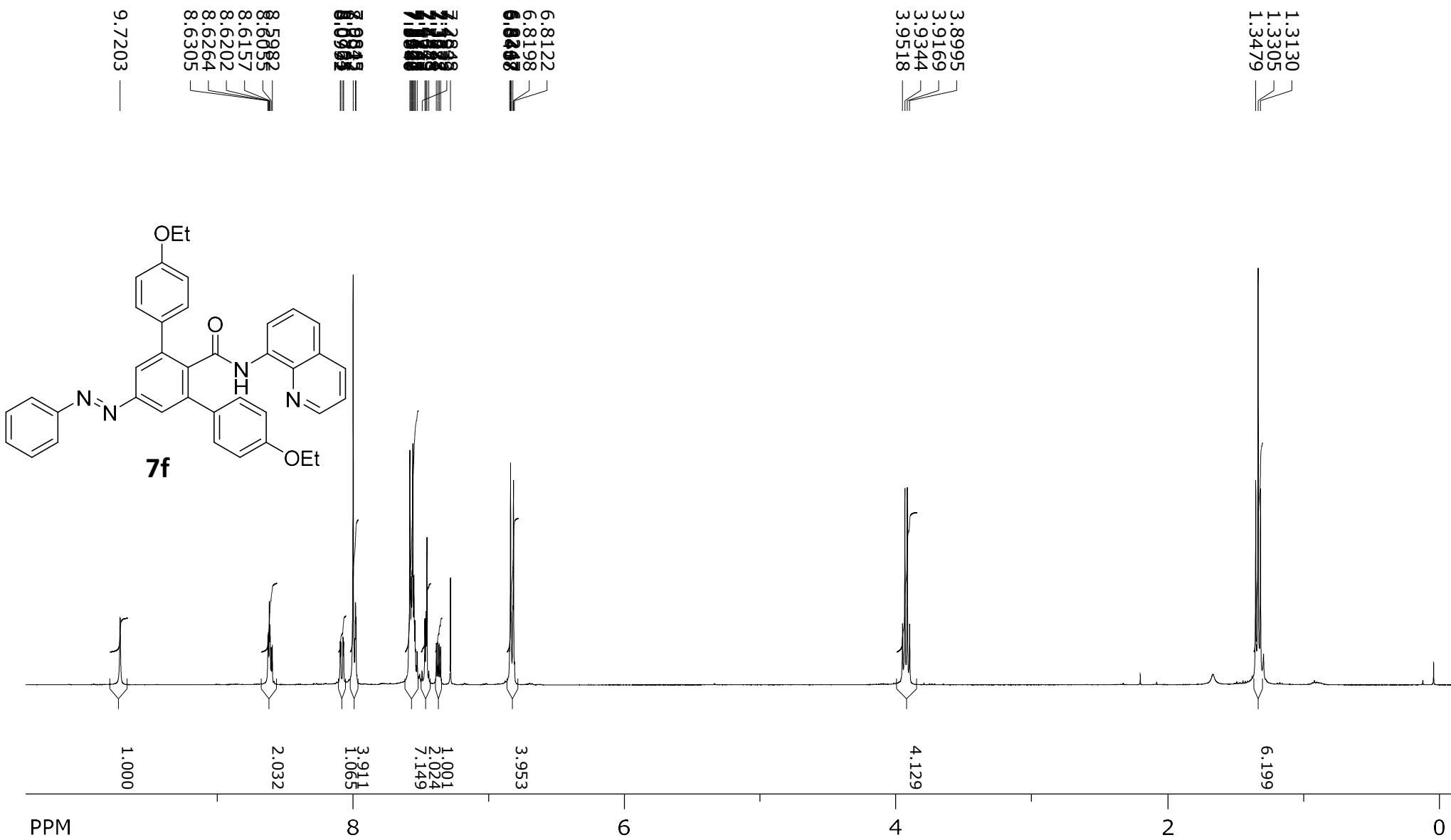


7e



SpinWorks 4: RP_903_R4
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 56

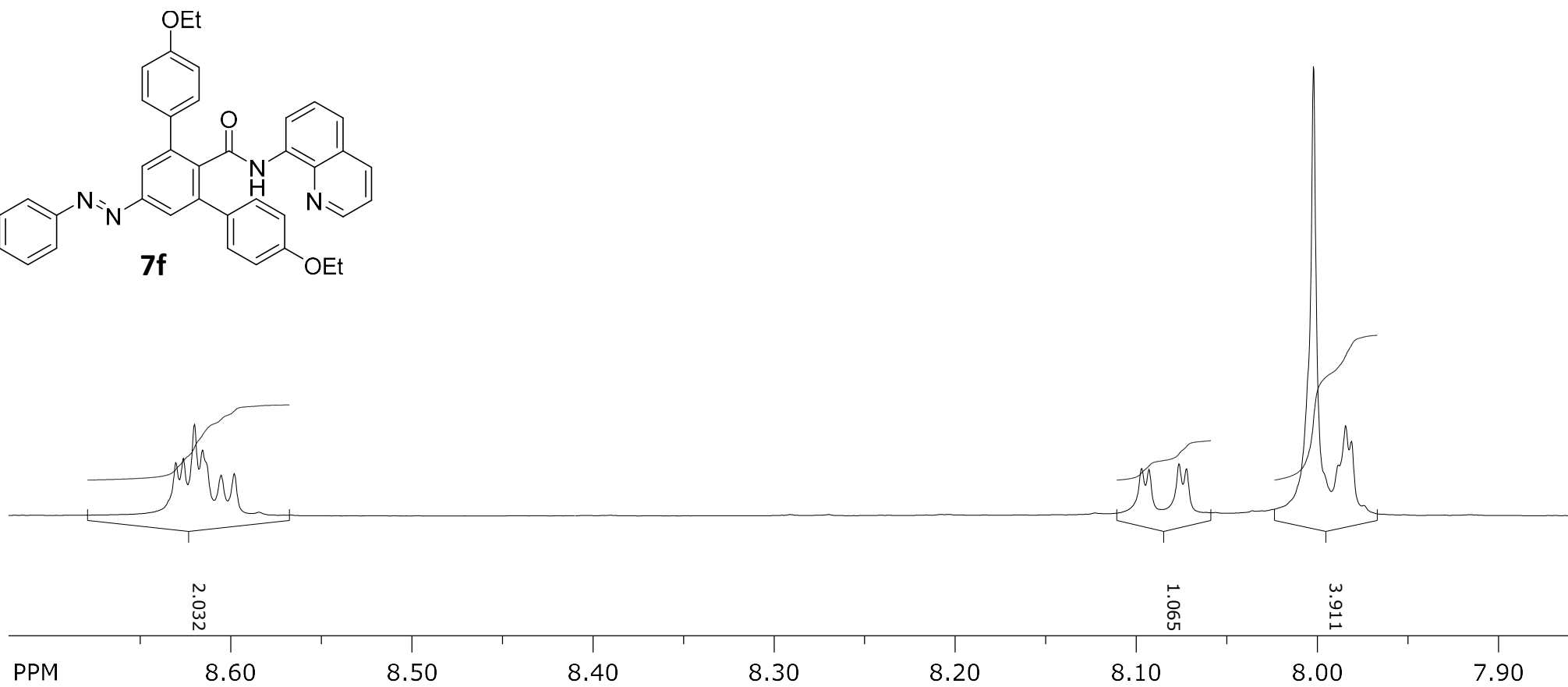
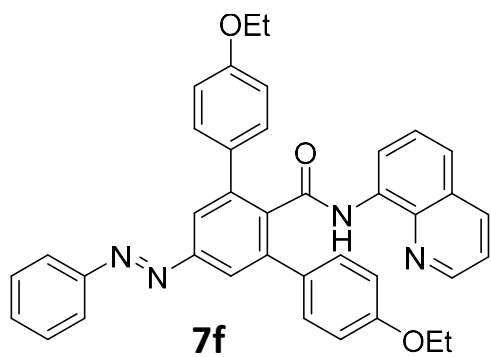


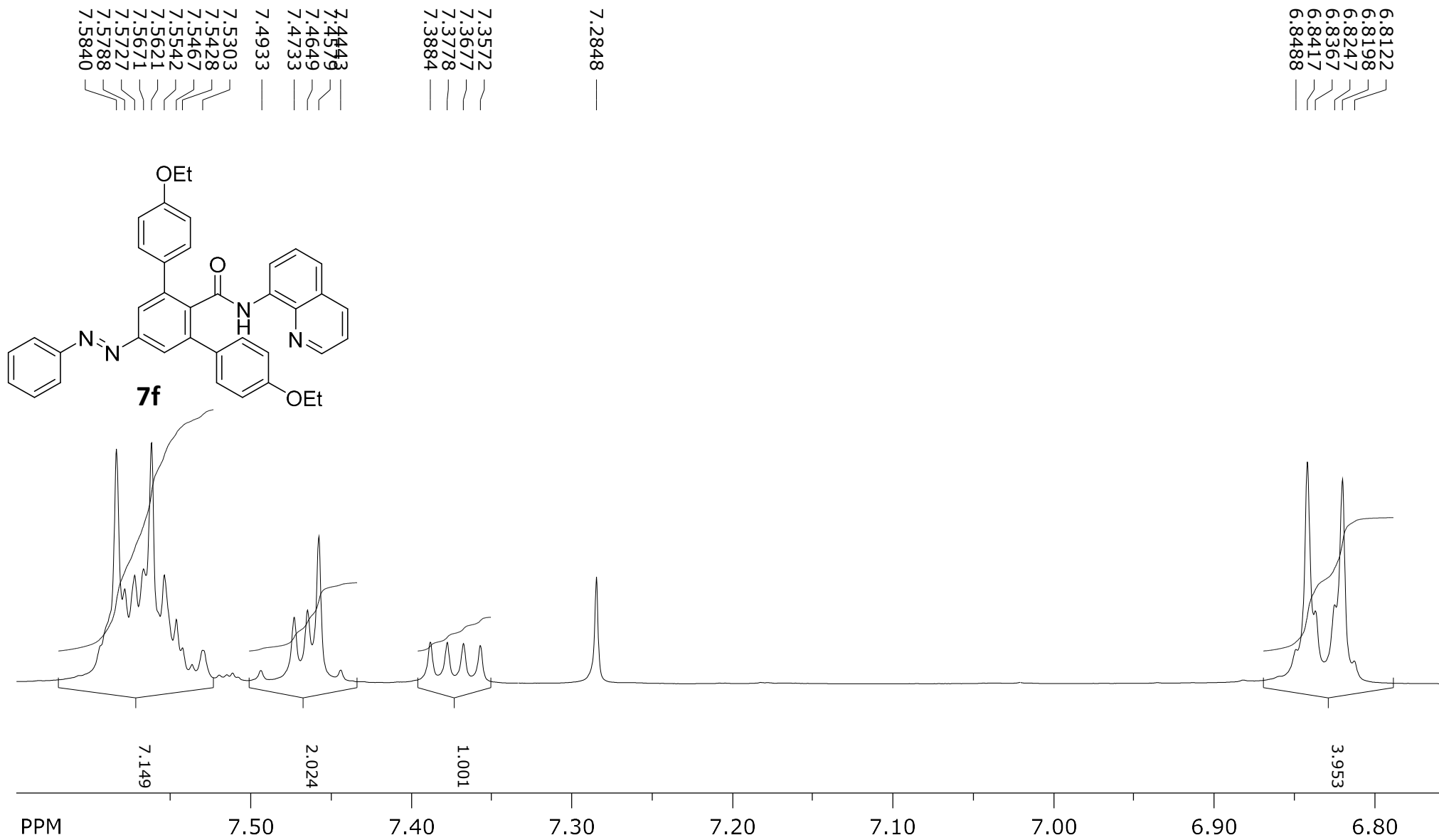


8.5982
8.6055
8.6157
8.6202
8.6264
8.6305

8.0724
8.0765
8.0931
8.0972

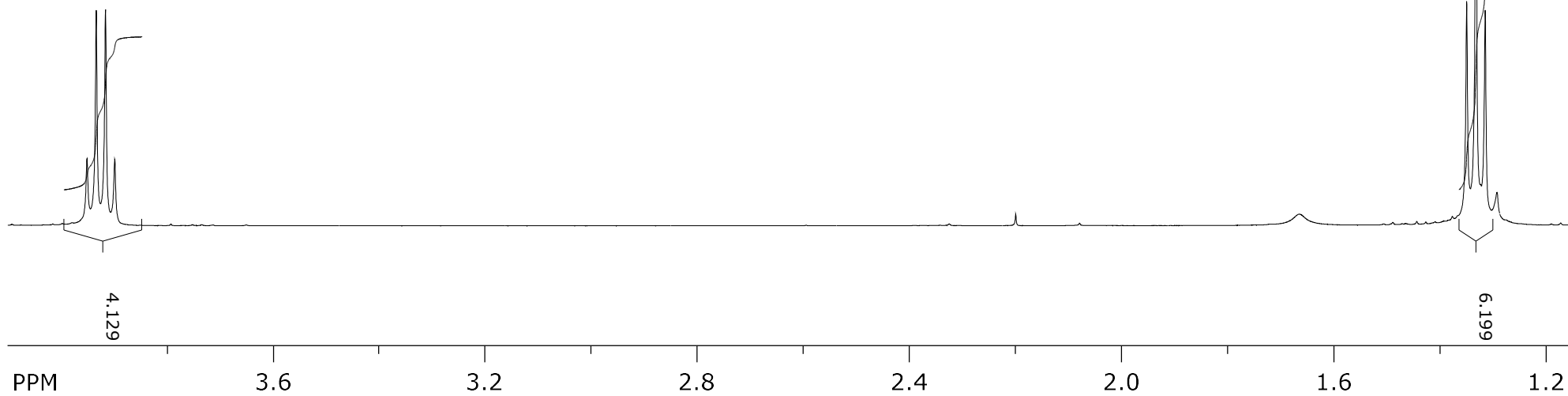
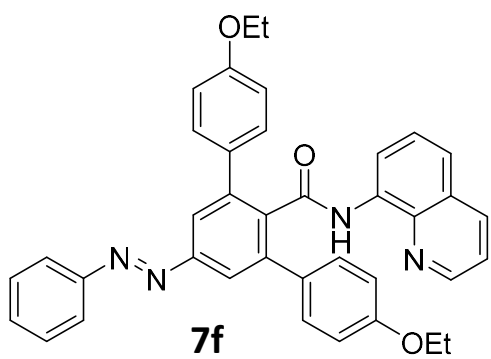
7.9813
7.9845
8.0022



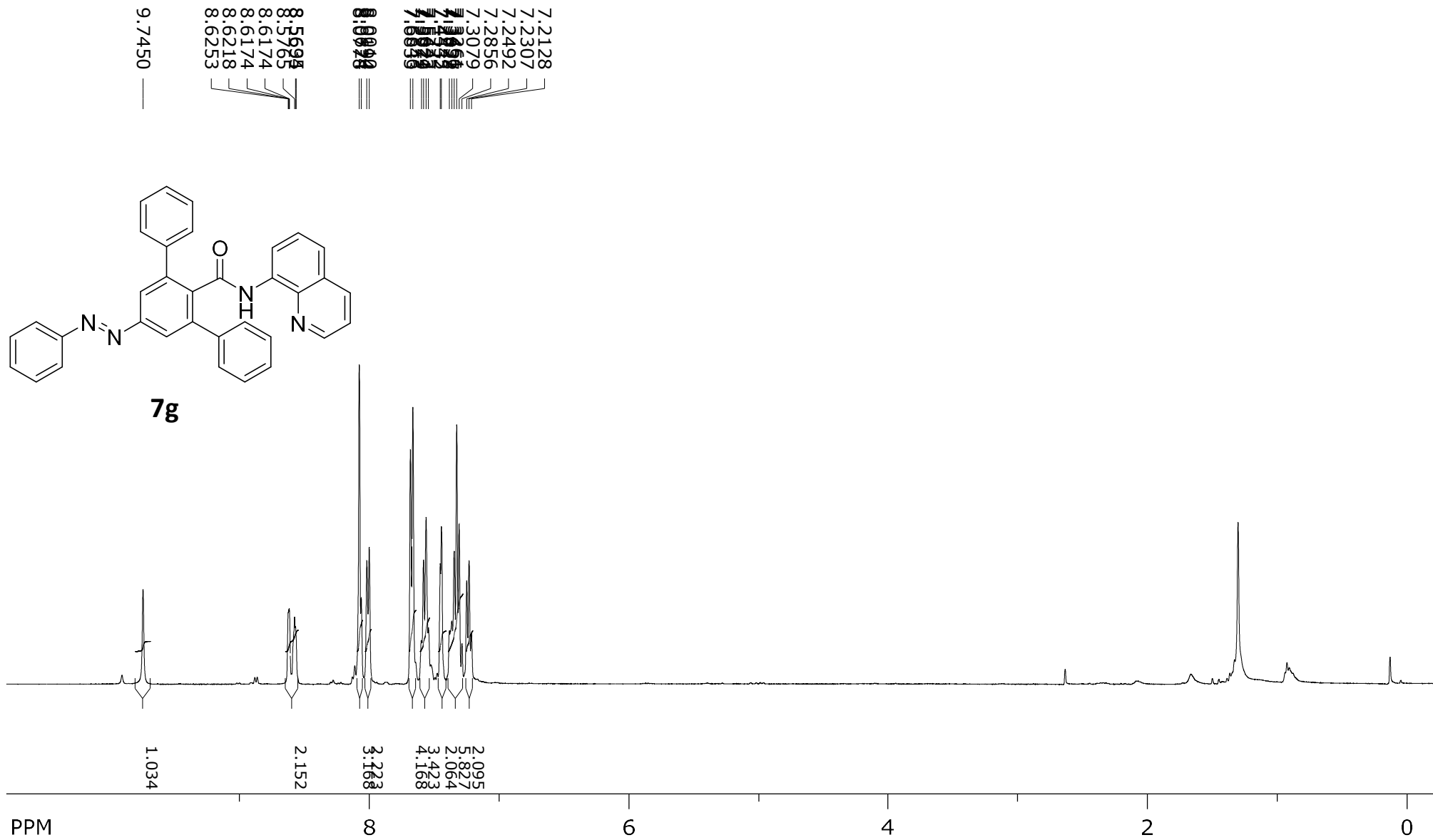


3.8995
3.9169
3.9344
3.9518

1.3130
1.3305
1.3479



SpinWorks 4: RP 1317 R4
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 52



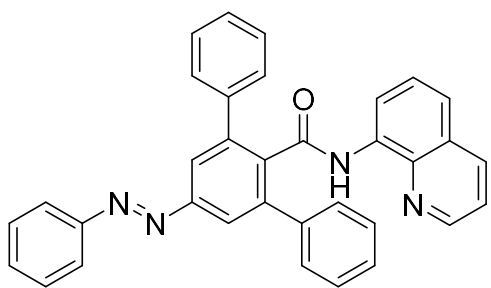
SpinWorks 4: RP 1317 R4
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 52

8.5635
8.5694
8.5765
8.6174
8.6174
8.6218
8.6253

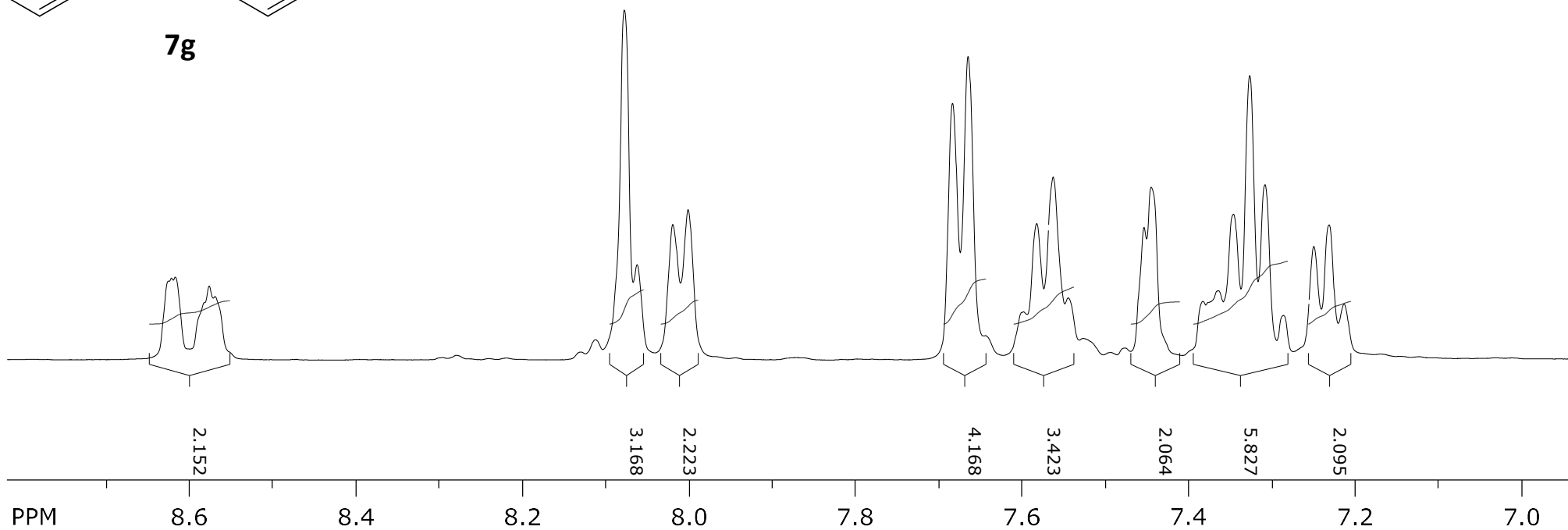
8.0010
8.0194
8.0624
8.0778

7.6646
7.6833
7.5443
7.5622
7.5821
7.5979

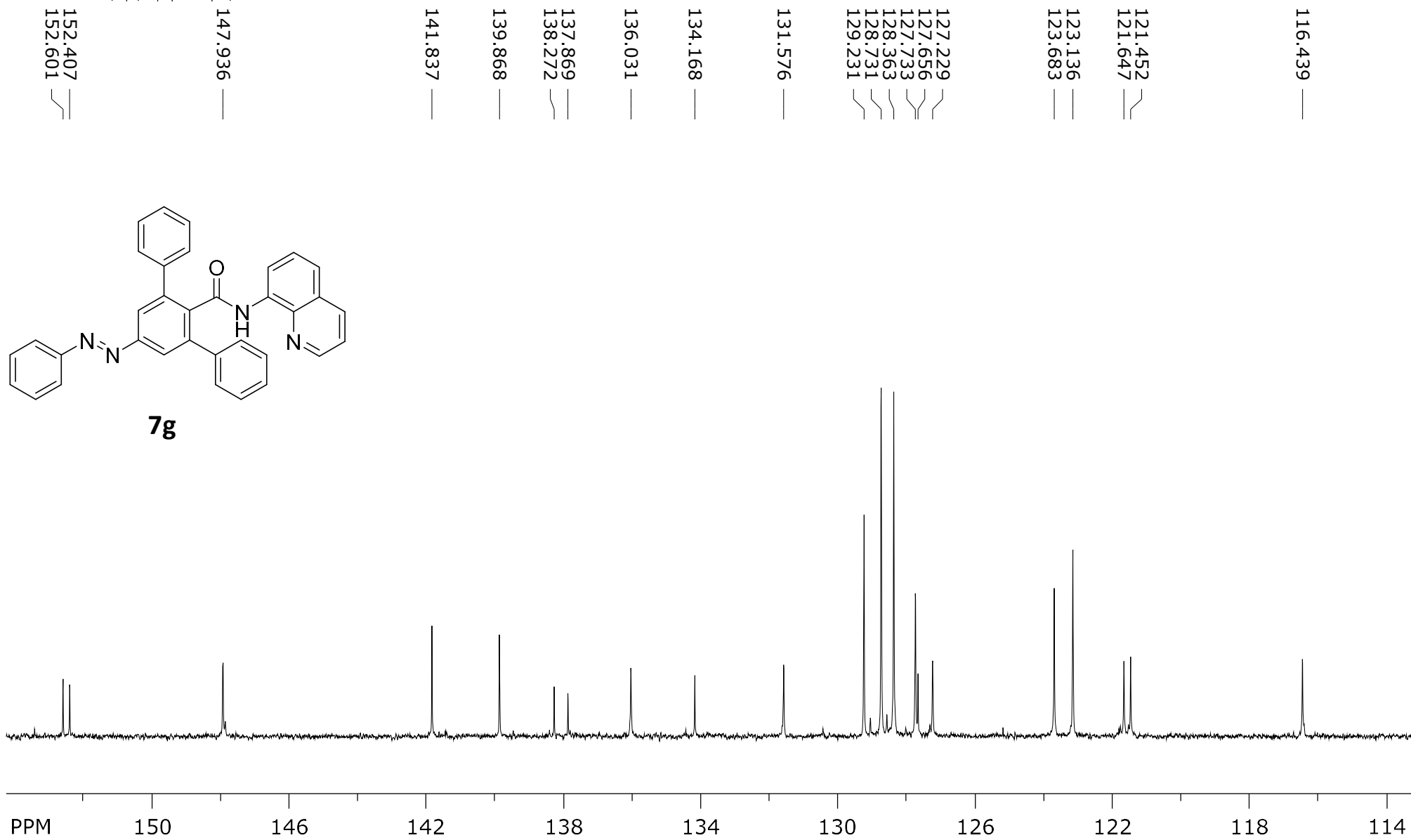
7.4445
7.4532
7.2128
7.2307
7.2492
7.2856
7.3079
7.3261
7.3456
7.3637
7.3823

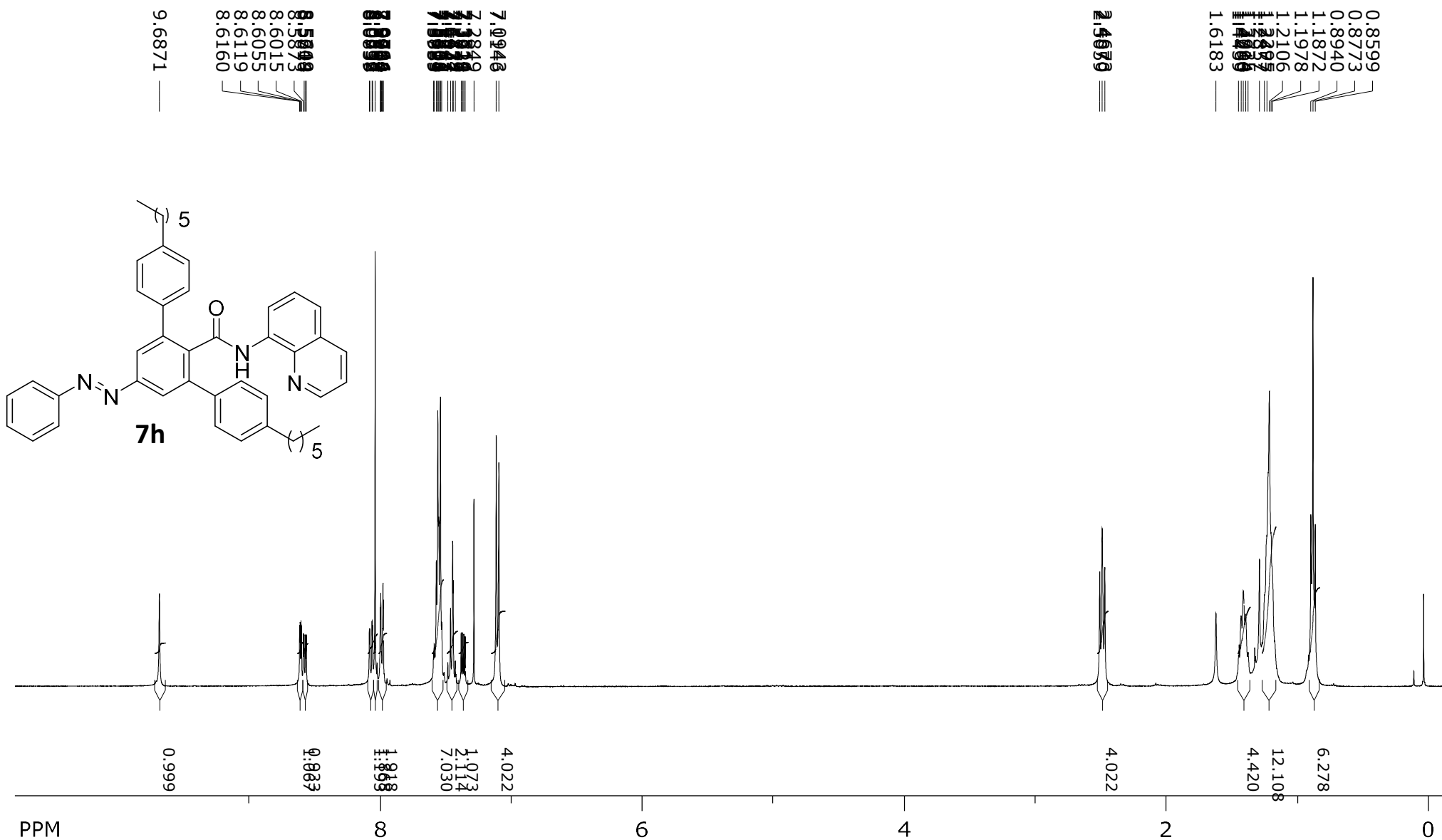


7g



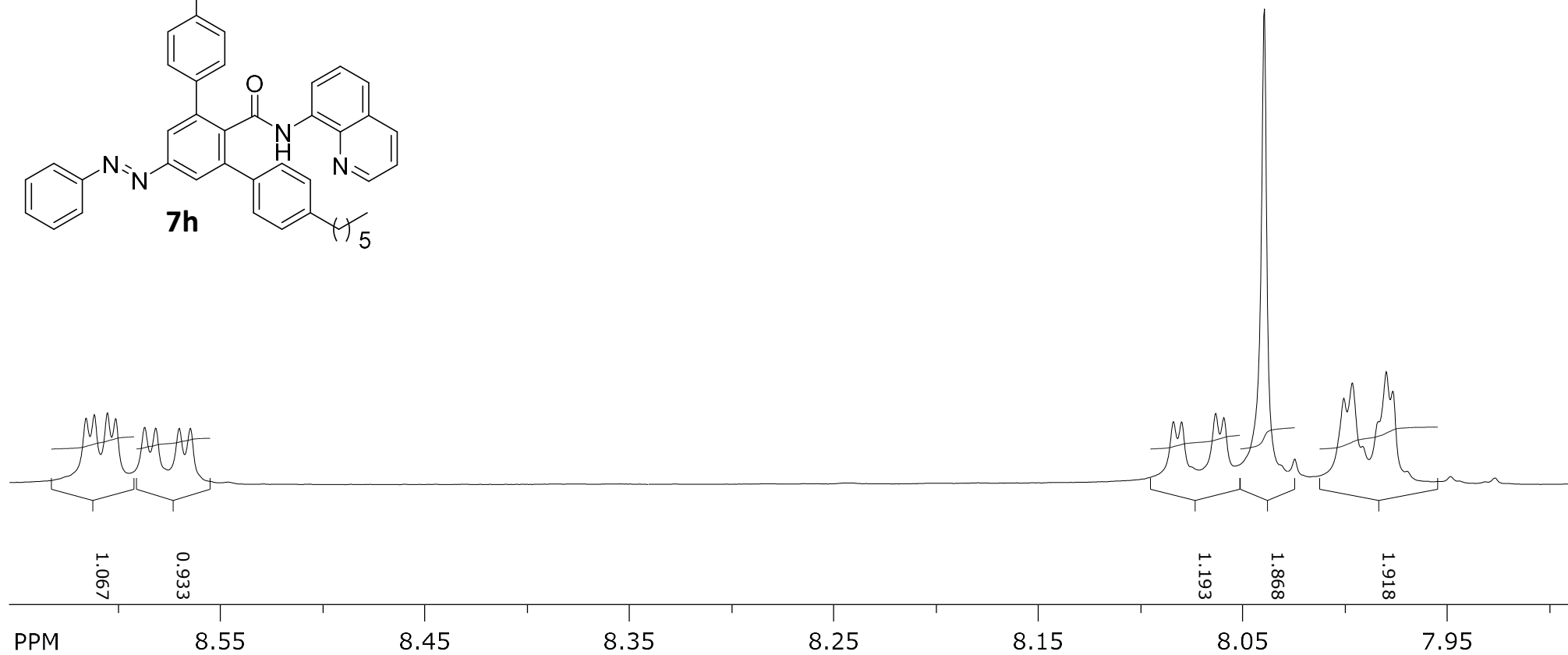
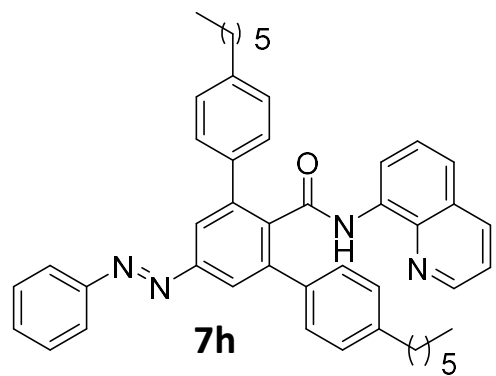
SpinWorks 4: RP 1317 R4
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 52

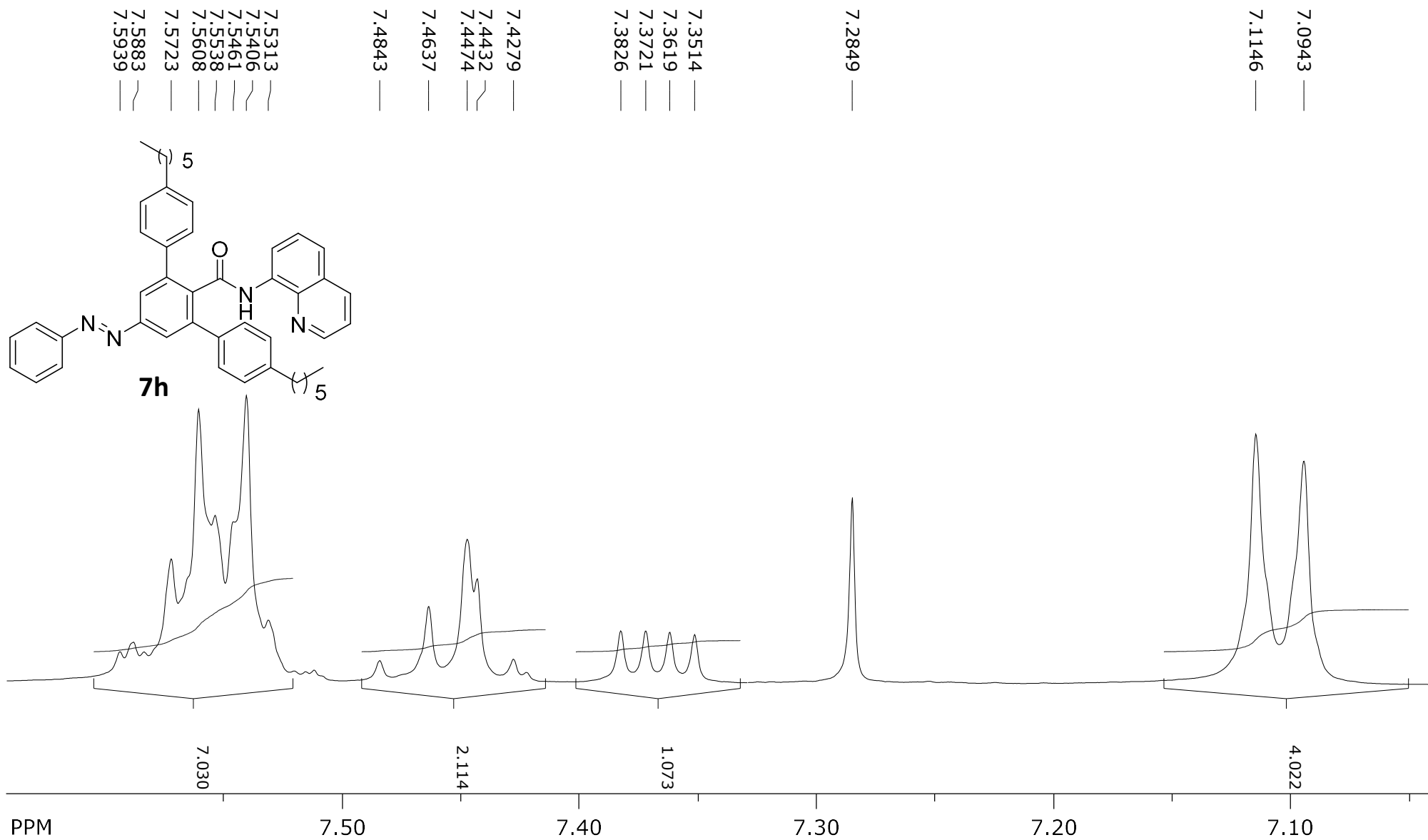


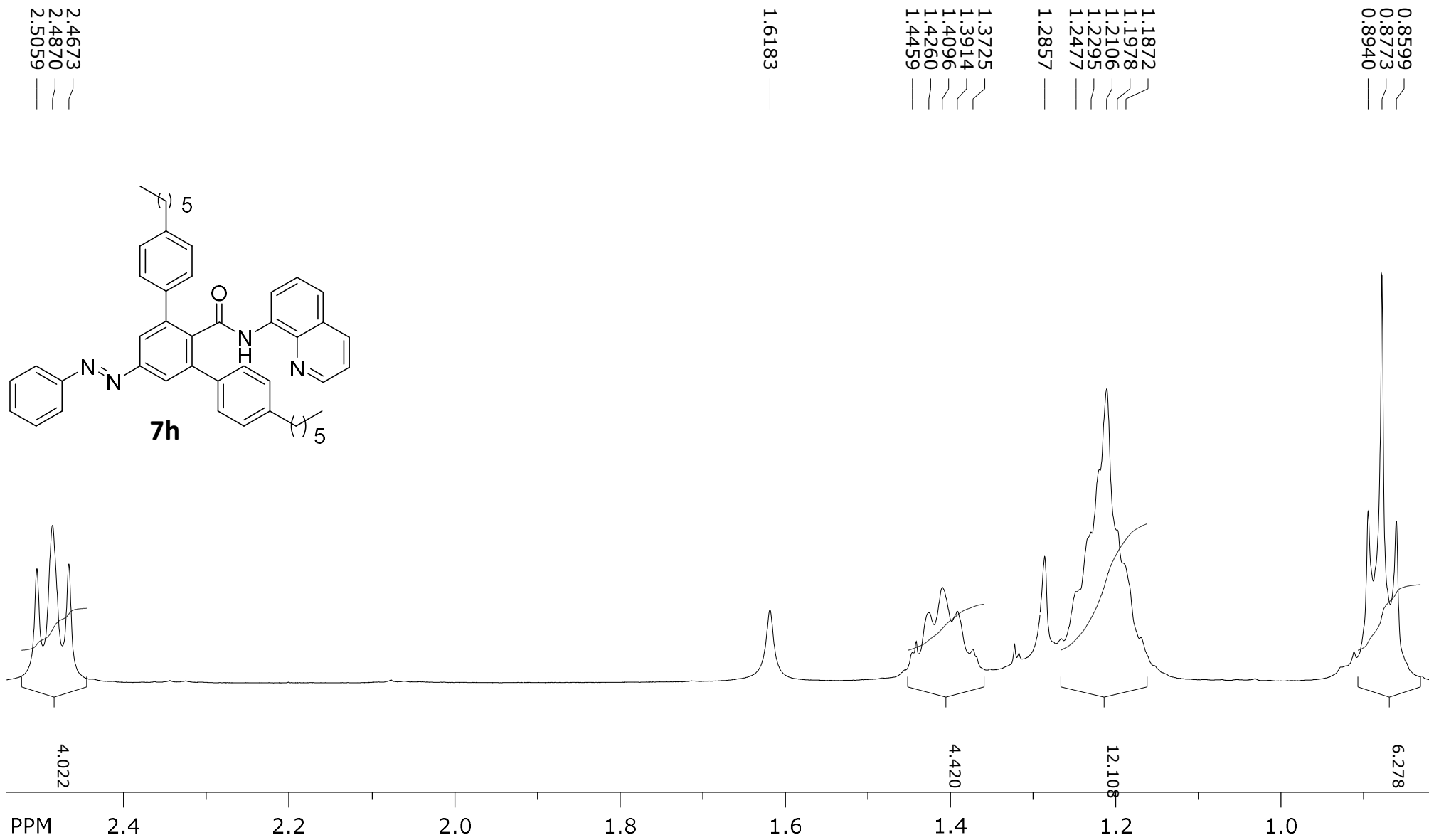


8.5649
8.5704
8.5818
8.5873
8.6015
8.6055
8.6119
8.6160

7.9764
7.9796
7.9836
7.9912
7.9963
7.9963
7.9963
8.0004
8.0394
8.0592
8.0632
8.0798
8.0839

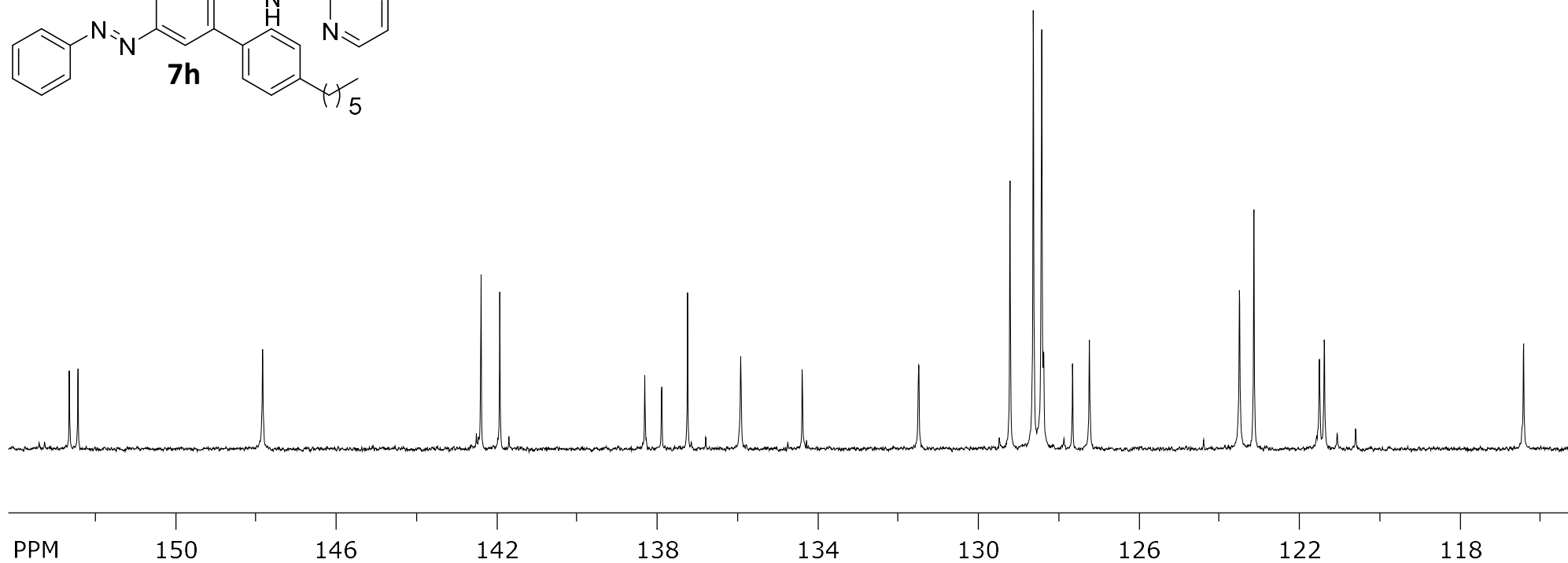
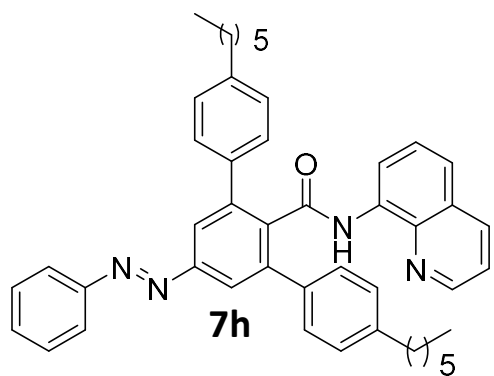






SpinWorks 4: RP 1165 A2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 9

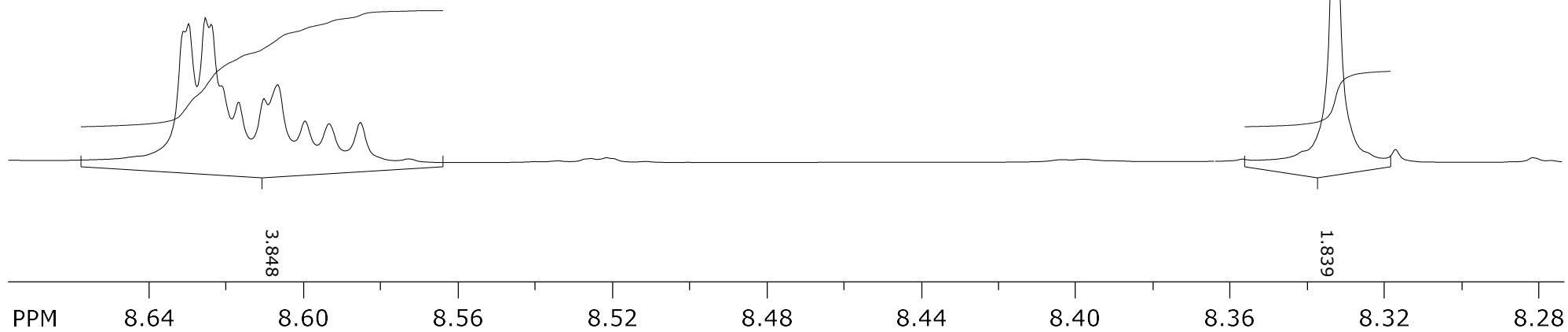
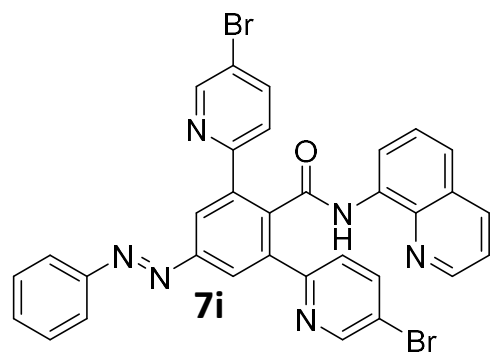
152.448
152.664
147.844
141.931
142.400
138.316
137.250
137.895
135.924
134.391
131.488
129.211
128.631
128.421
128.374
127.654
127.233
123.491
123.131
121.497
121.376
116.408



SpinWorks 4: rp-1030b2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 13

8.5854
8.5935
8.5997
8.6068
8.6104
8.6170
8.6214
8.6241
8.6256
8.6299
8.6312

8.3327



SpinWorks 4: rp-1030b2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 13

8.1233
8.1274

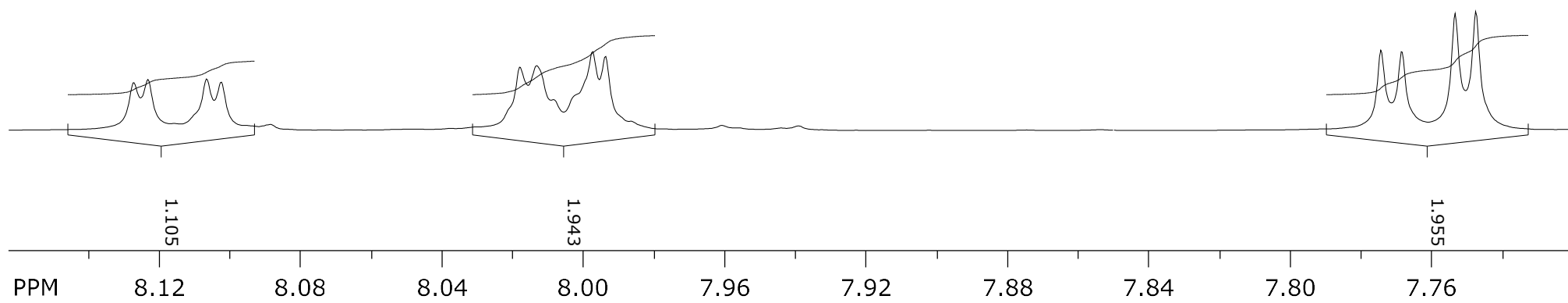
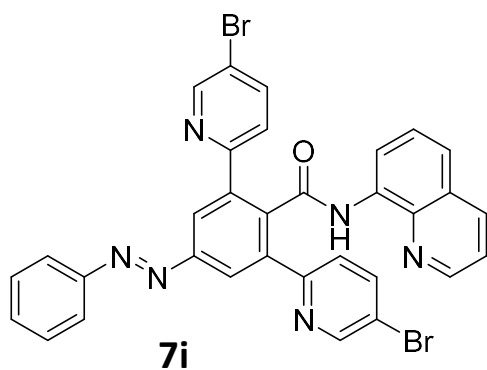
8.1026
8.1067

8.0133
8.0180

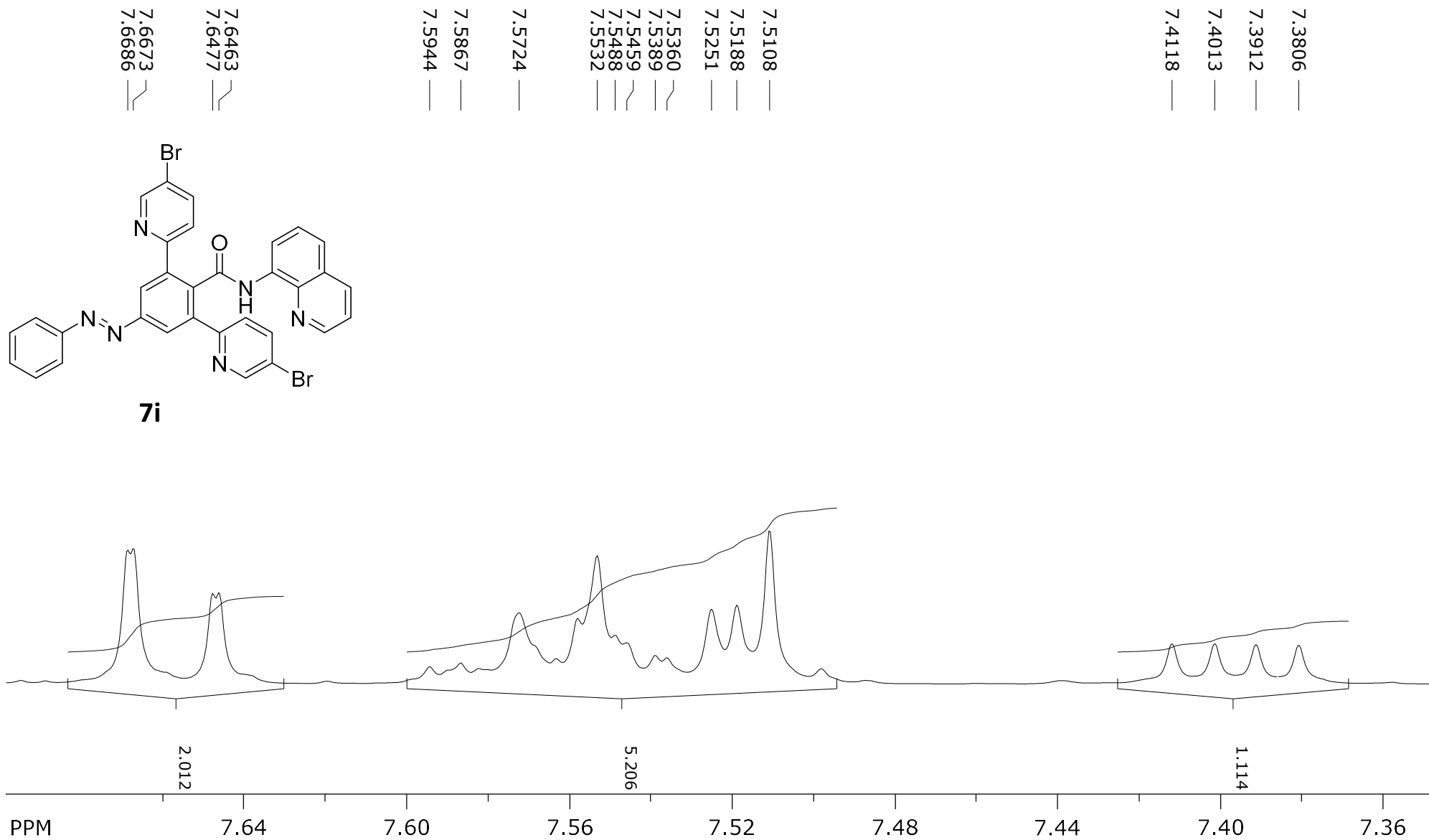
7.9938
7.9975

7.7684
7.7743

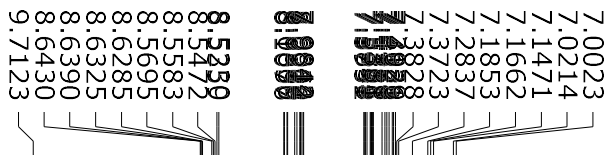
7.7474
7.7533



SpinWorks 4: rp-1030b2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 13



SpinWorks 4: SS-951 Rep
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 5



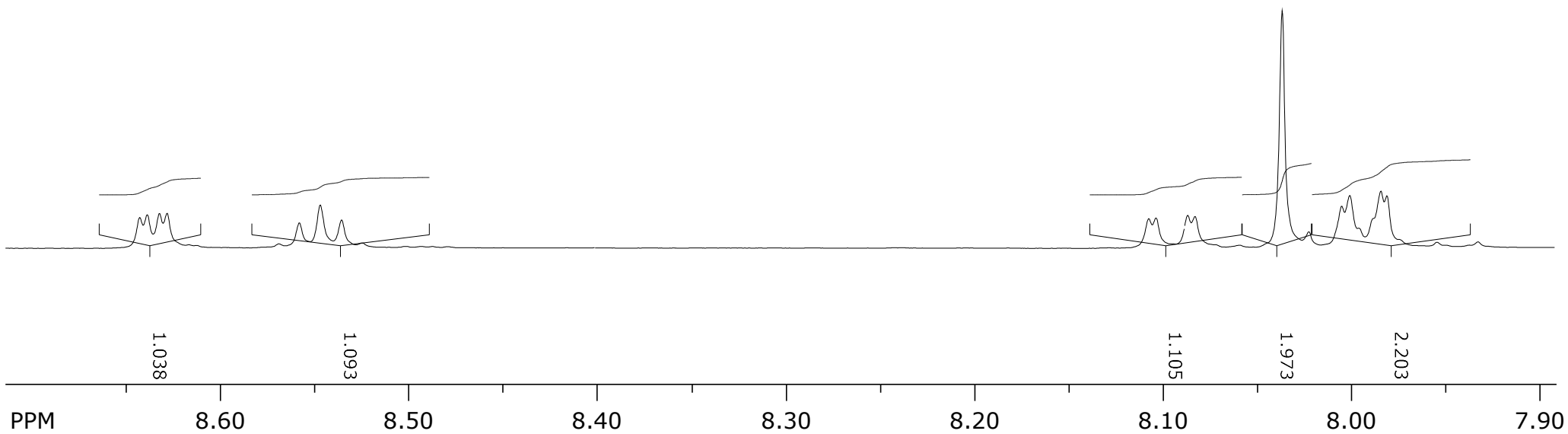
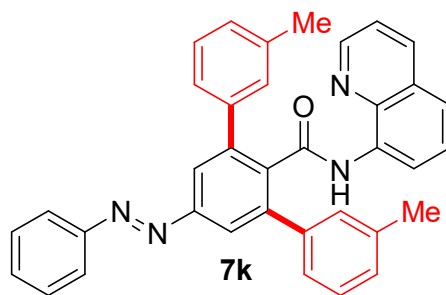
SpinWorks 4: SS-951 Rep
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 5

8.6285
8.6325
8.6390
8.6430

8.5230
8.5359
8.5472
8.5583
8.5695

8.0830
8.0869
8.1037
8.1076

7.9812
7.9844
7.9962
8.0009
8.0052
8.0226
8.0367



SpinWorks 4: SS-951 Rep
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 5

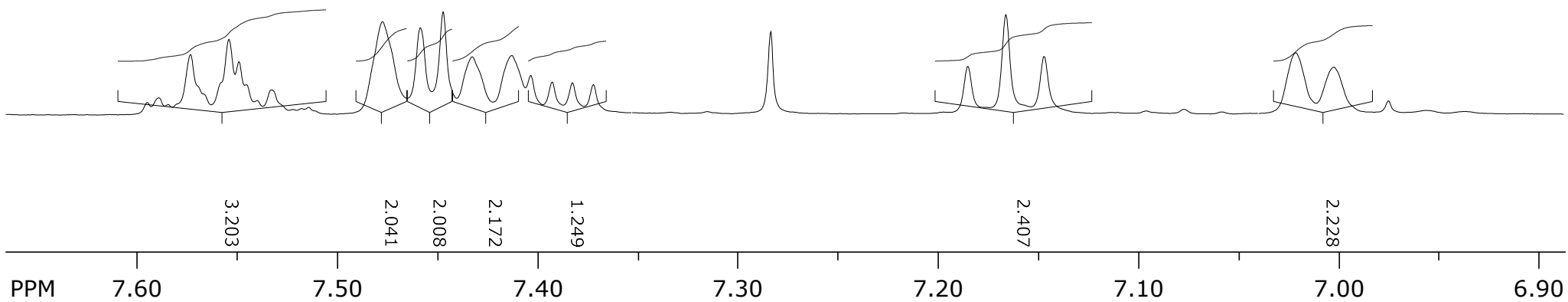
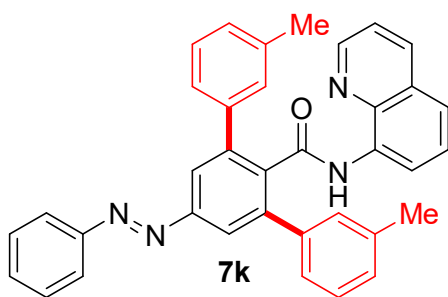
7.53331
7.54403
7.54556
7.54993
7.55444
7.57335
7.58448
7.58994
7.59552

7.47776
7.44774
7.45888
7.43228
7.41331
7.40336
7.39229
7.38228
7.37223

7.28337

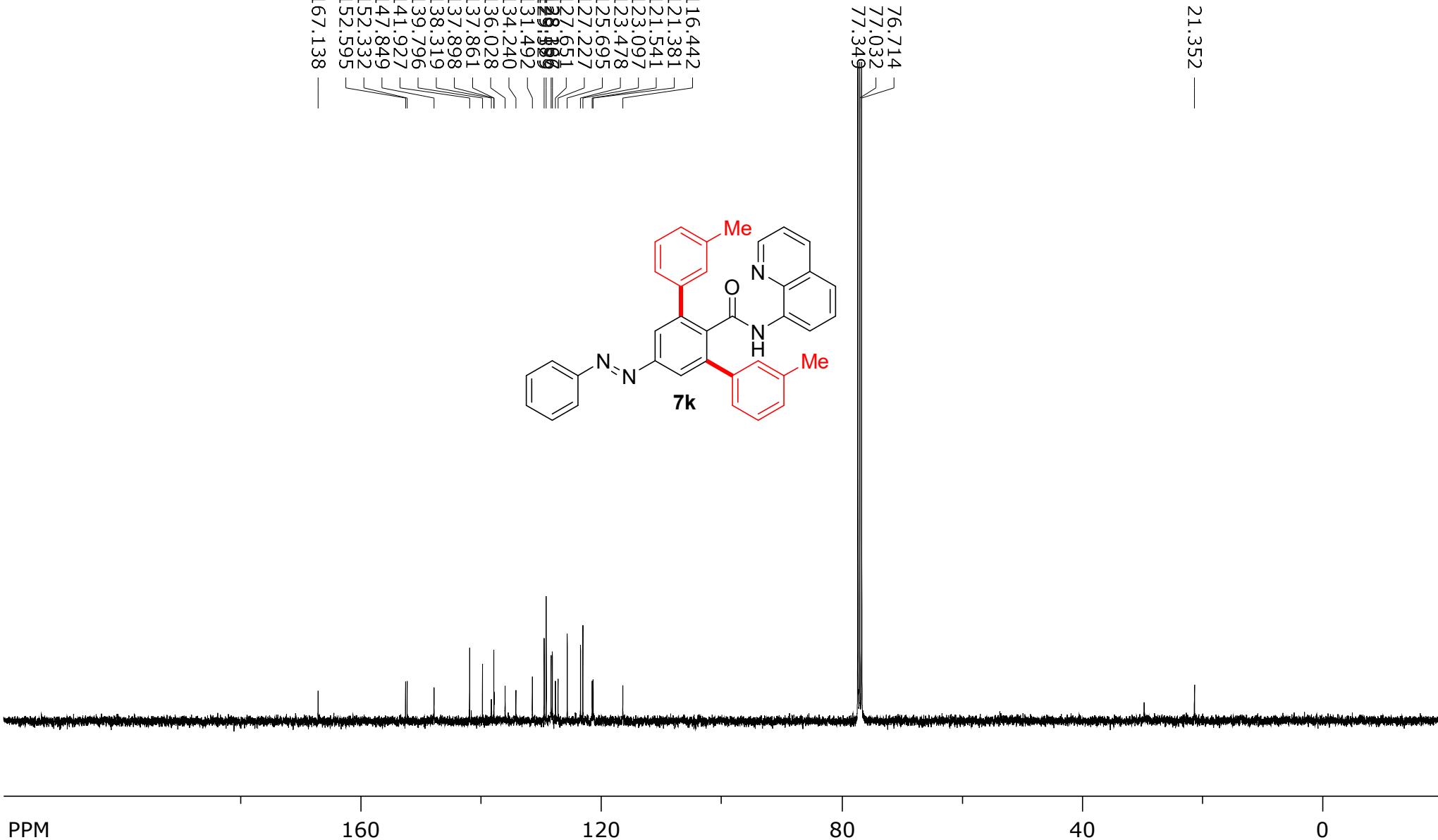
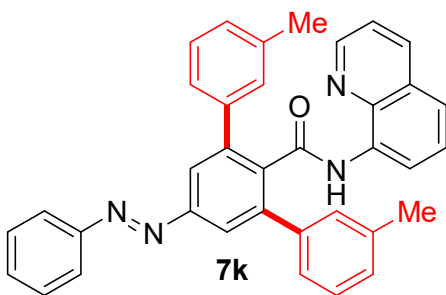
7.18553
7.16662
7.14771

7.02114
7.00223



SpinWorks 4: SS-951 Rep
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 5

116.442
121.381
121.541
123.097
123.478
125.695
127.227
127.651
129.189
129.189
131.492
134.240
136.028
137.861
137.898
138.319
139.796
141.927
147.849
152.332
152.595
167.138



PPM

160

120

80

40

0

SpinWorks 4: SS-951 Rep
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 5

137.861
137.898
138.319

136.028

134.240

131.492

129.189
129.529

128.167
128.386

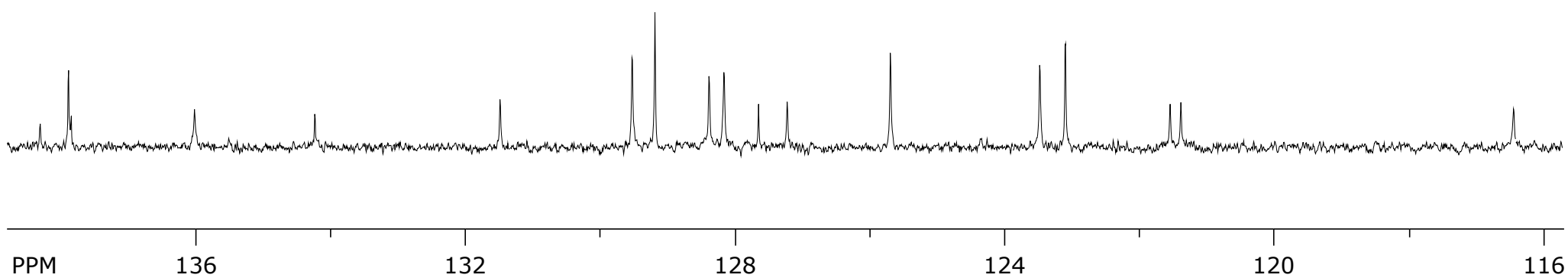
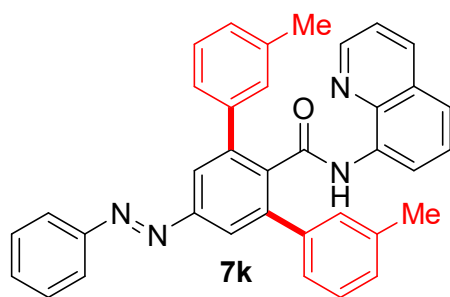
127.227
127.651

125.695

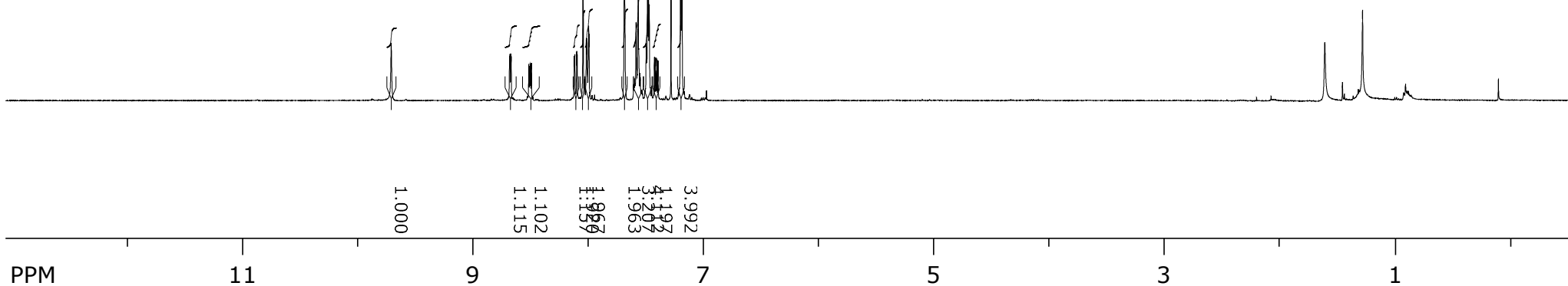
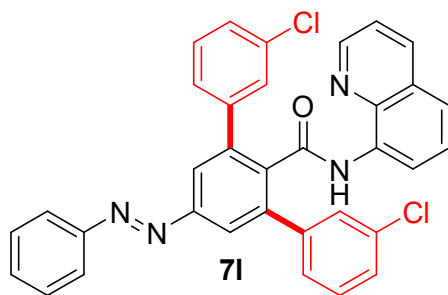
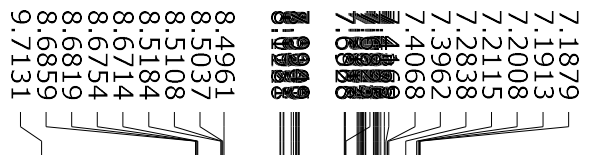
123.097
123.478

121.381
121.541

116.442



SpinWorks 4: SS-954
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 26



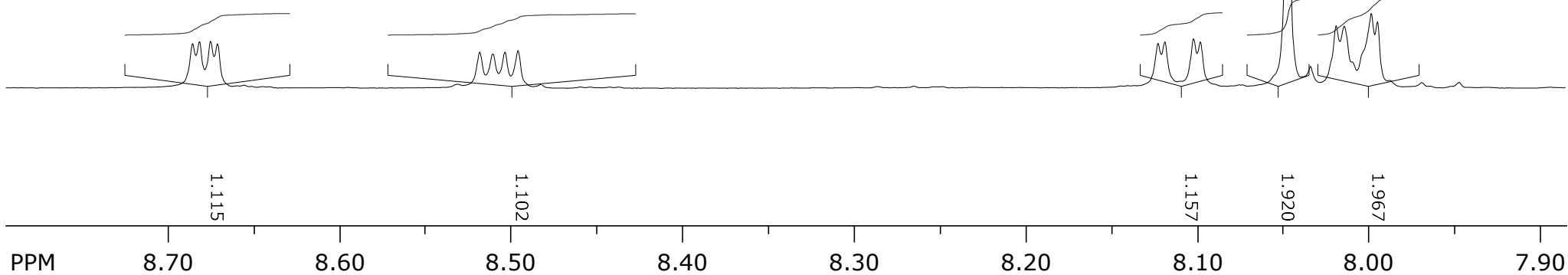
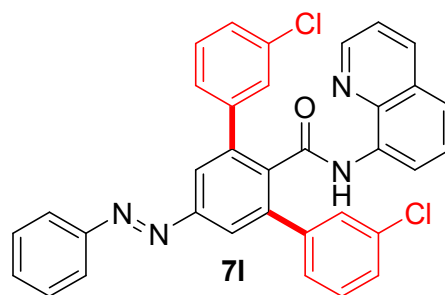
SpinWorks 4: SS-954
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 26

8.6714
8.6754
8.6819
8.6859

8.4961
8.5037
8.5108
8.5184

8.0981
8.1021
8.1188
8.1228

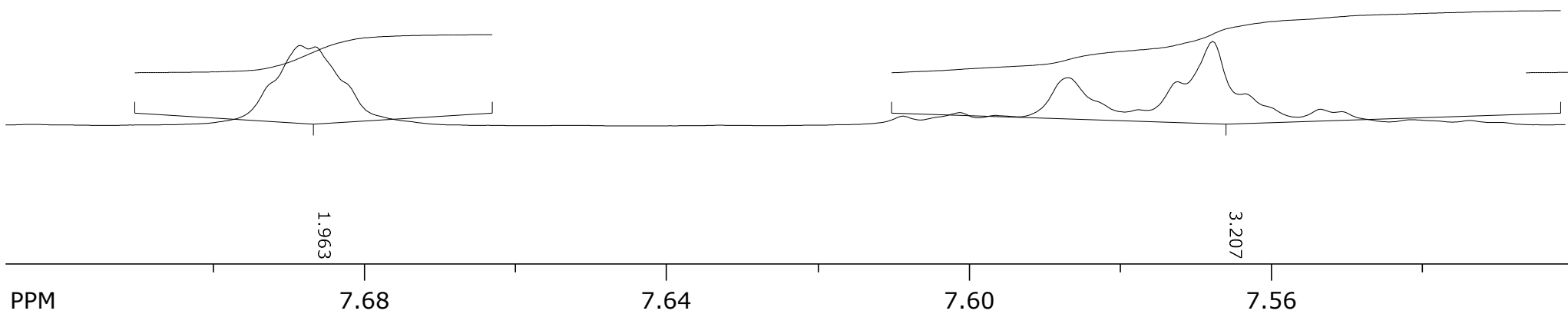
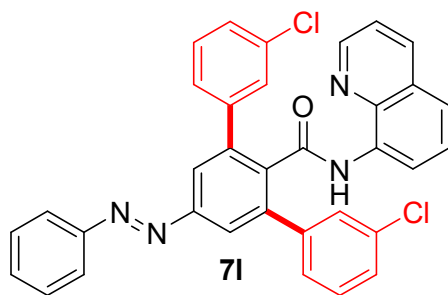
7.9949
7.9985
8.0096
8.0143
8.0190
8.0339
8.0471



SpinWorks 4: SS-954
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 26

7.6825 —
7.6866 —
7.6886 —
7.6928 —

7.5507 —
7.5534 —
7.5635 —
7.5677 —
7.5724 —
7.5775 —
7.5869 —
7.5965 —
7.6012 —
7.6088 —

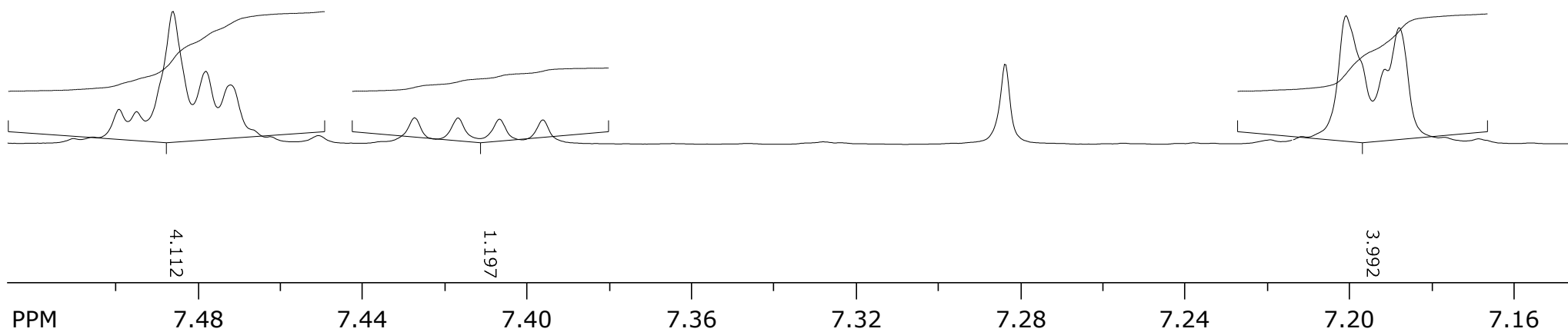
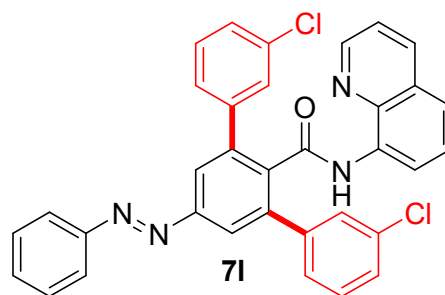


SpinWorks 4: SS-954
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 26

7.4994
7.4951
7.4863
7.4783
7.4723
7.4626
7.4508
7.4275
7.4169
7.4068
7.3962

7.2838

7.2115
7.2008
7.1913
7.1879

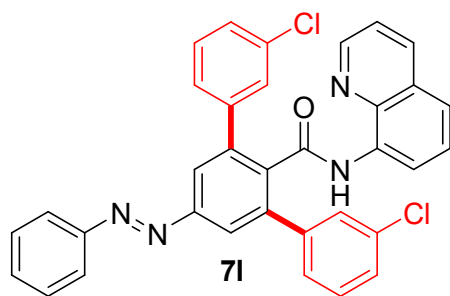


SpinWorks 4: SS-954

C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 38

116.699
121.559
122.018
123.206
123.883
126.849
127.166
127.667
129.819
131.816
133.773
134.331
136.104
137.638
138.275
140.536
141.379
148.185
152.415
152.478
166.193

76.729
77.046
77.364



PPM

160

120

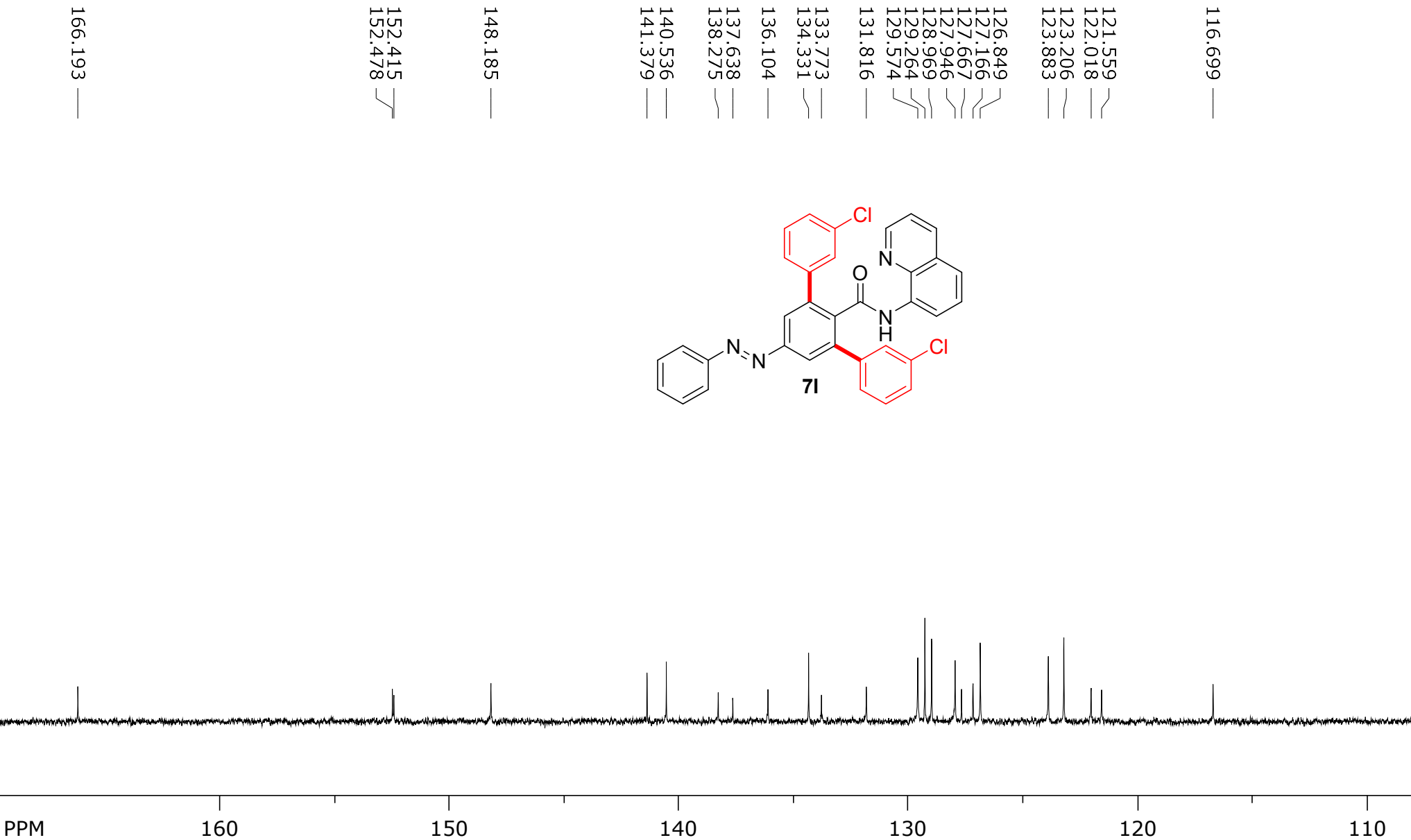
80

40

0

SpinWorks 4: SS-954

C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 38

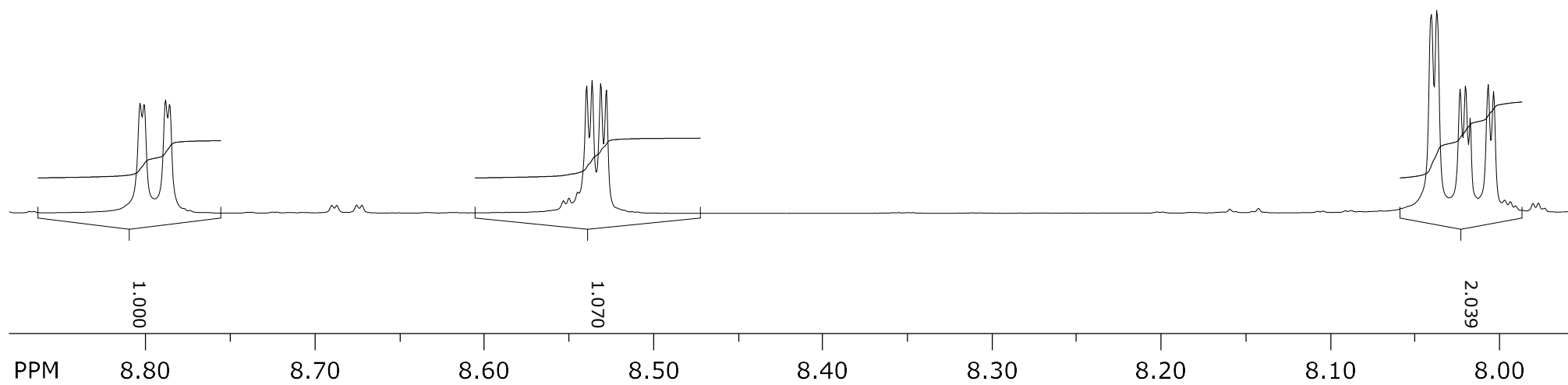
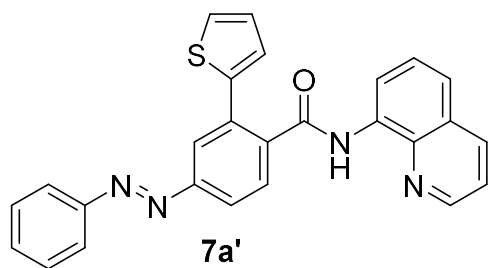


SpinWorks 4: SAB 210702
1H_8scan CDCl3 {D:\Spectra} nmr 2

8.7862
8.7886
8.8013
8.8037

8.5280
8.5313
8.5364
8.5396

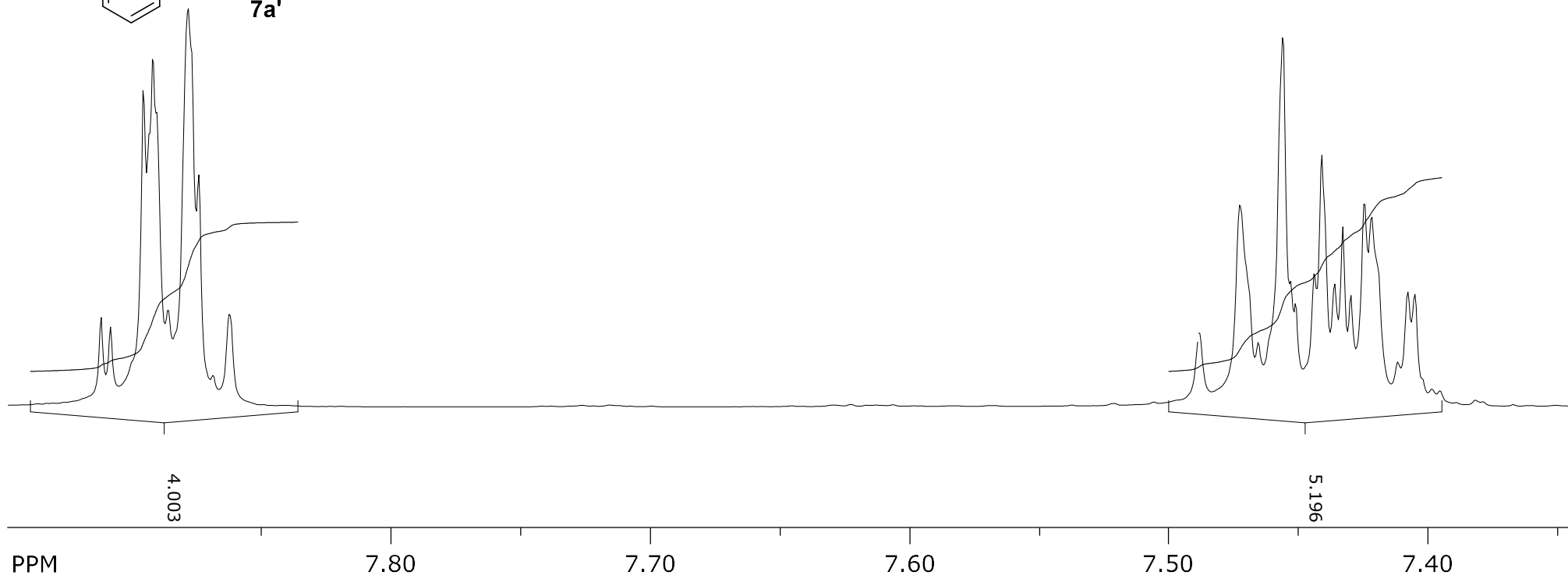
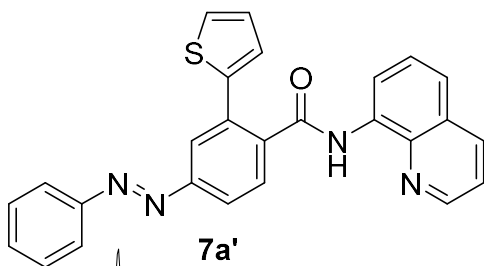
8.0034
8.0066
8.0173
8.0199
8.0232
8.0369
8.0403



SpinWorks 4: SAB 210702
1H_8scan CDCl3 {D:\Spectra} nmr 2

7.8624
7.8743
7.8784
7.8906
7.8919
7.8956
7.9083
7.9120

7.4050
7.4077
7.4217
7.4245
7.4297
7.4328
7.4360
7.4409
7.4559
7.4725
7.4882



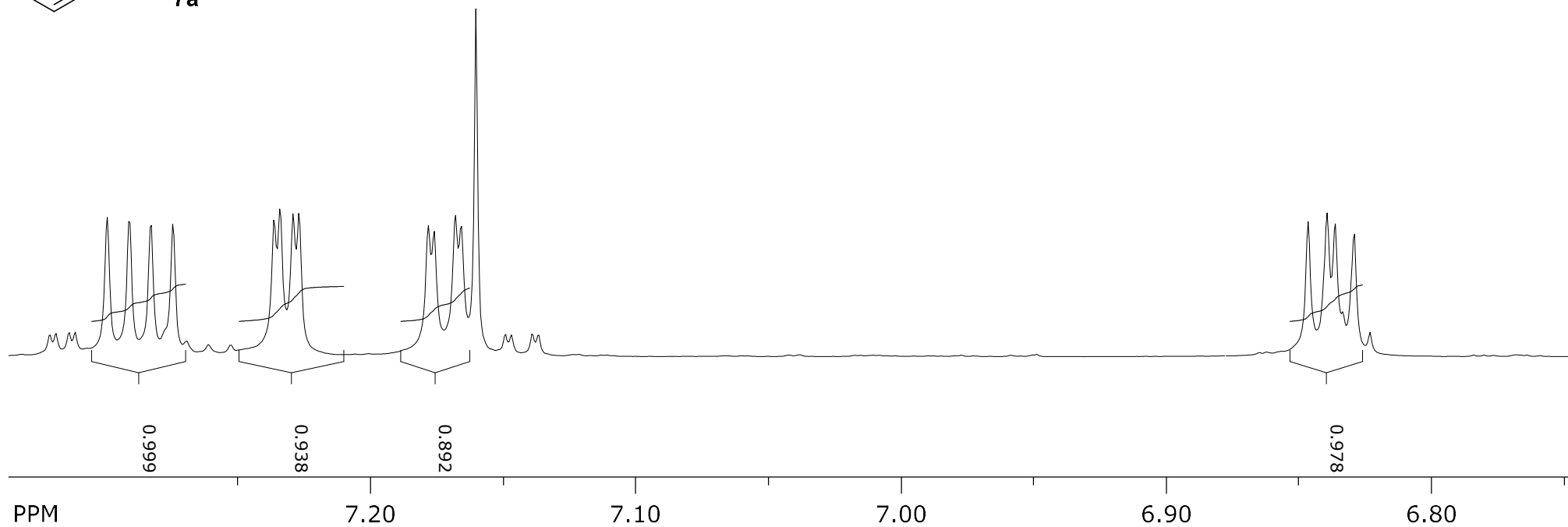
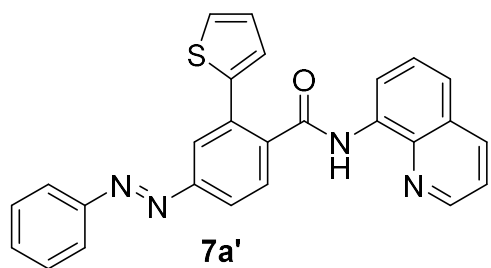
SpinWorks 4: SAB 210702
1H_8scan CDCl3 {D:\Spectra} nmr 2

7.22747
7.2831
7.2912
7.2996

7.22272
7.2294
7.2344
7.2366

7.1604
7.1660
7.1682
7.1762
7.1784

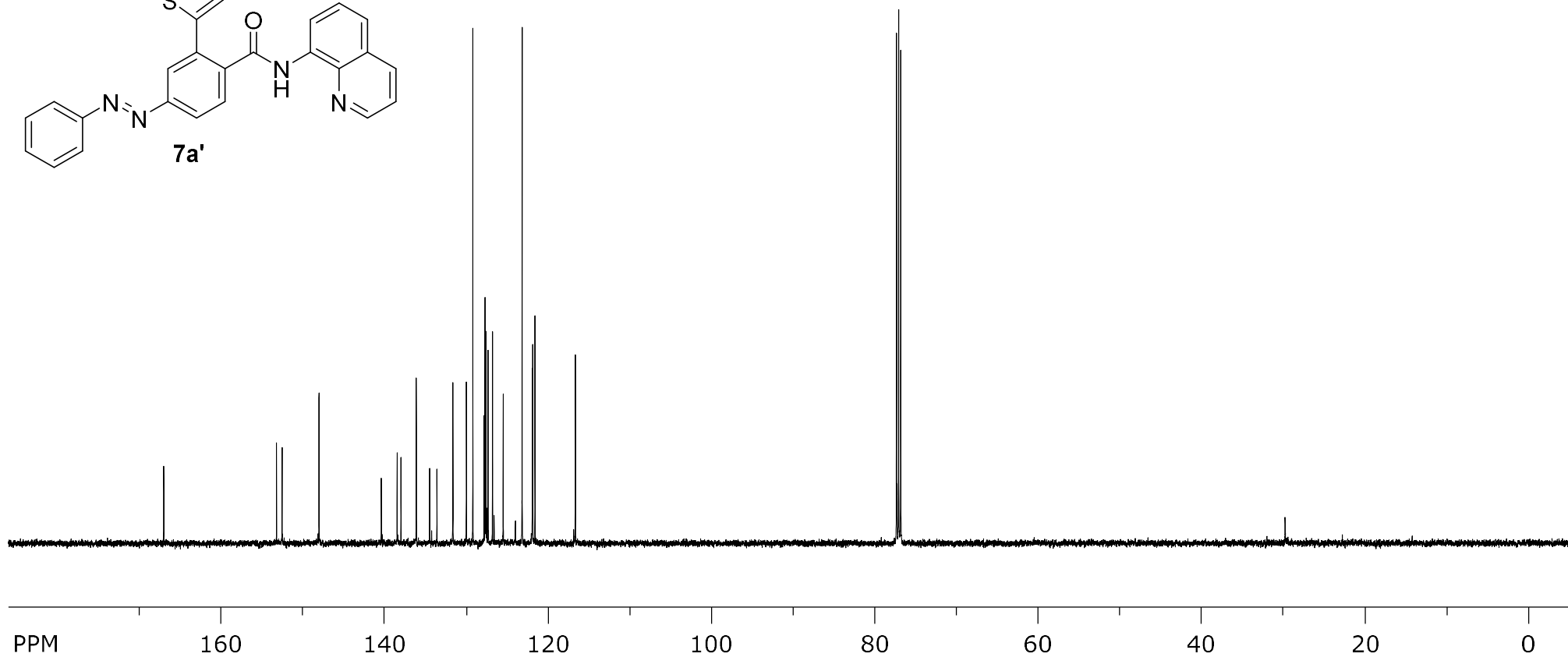
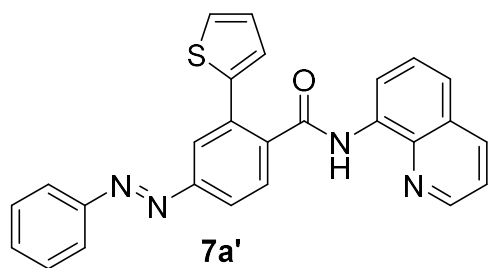
6.8290
6.8362
6.8464



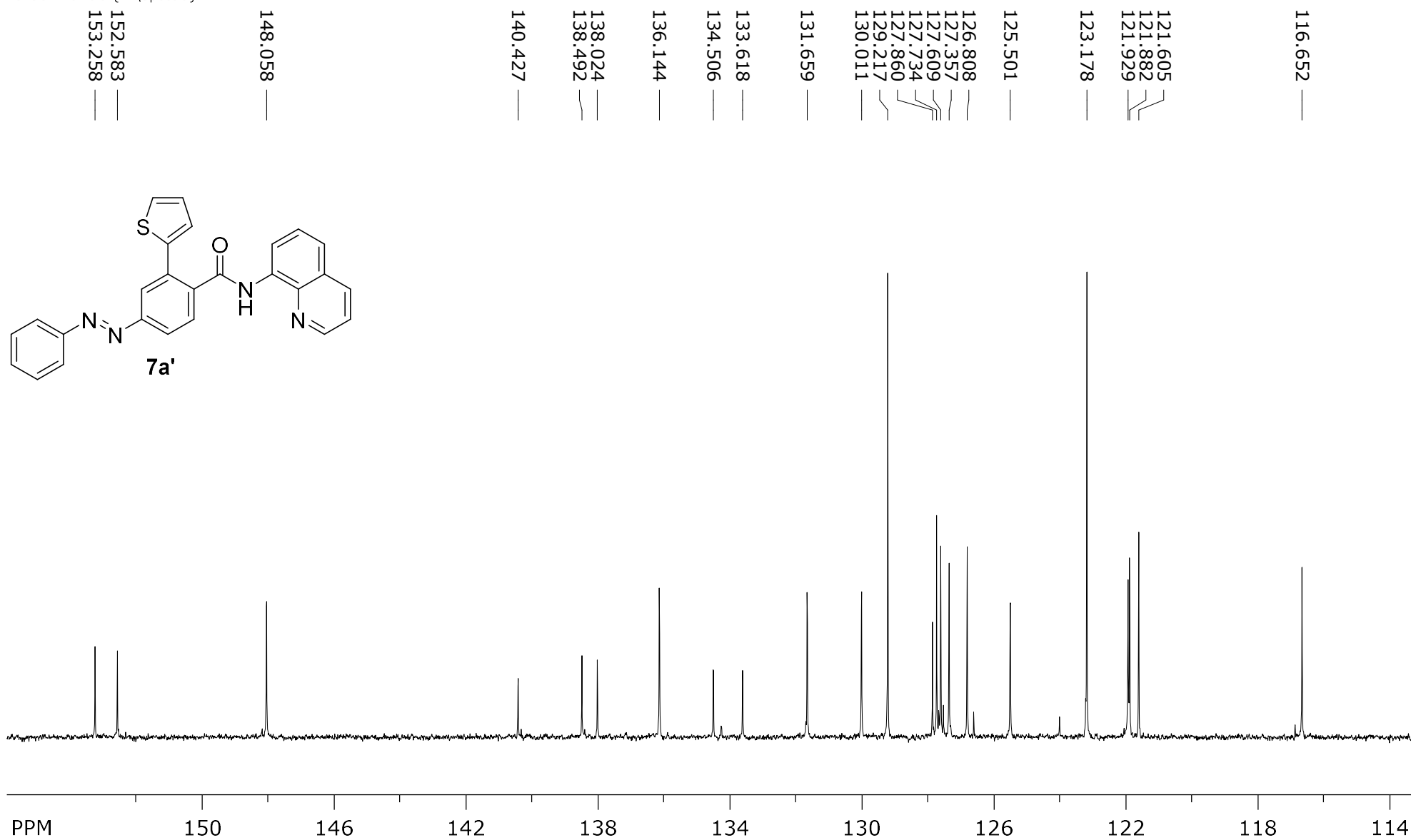
SpinWorks 4: SAB 210702
C13CPD CDCl3 {D:\Spectra} nmr 2

167.078
153.258
152.583
148.058
140.427
138.492
138.024
136.144
134.506
133.618
131.659
130.011
129.217
~~127.889~~
127.357
126.808
125.501
123.178
121.929
121.882
121.605
116.652

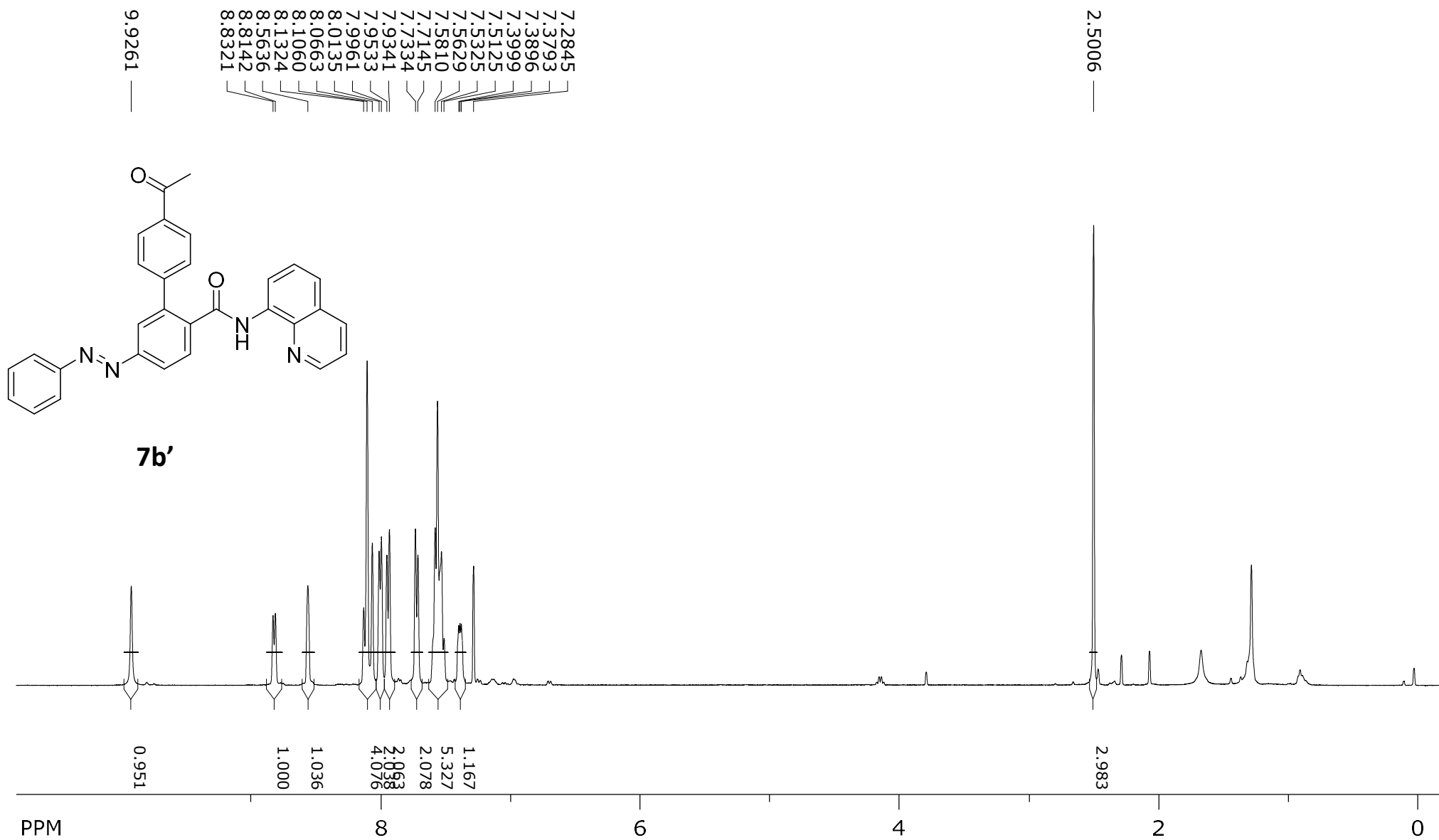
76.811
77.065
77.318



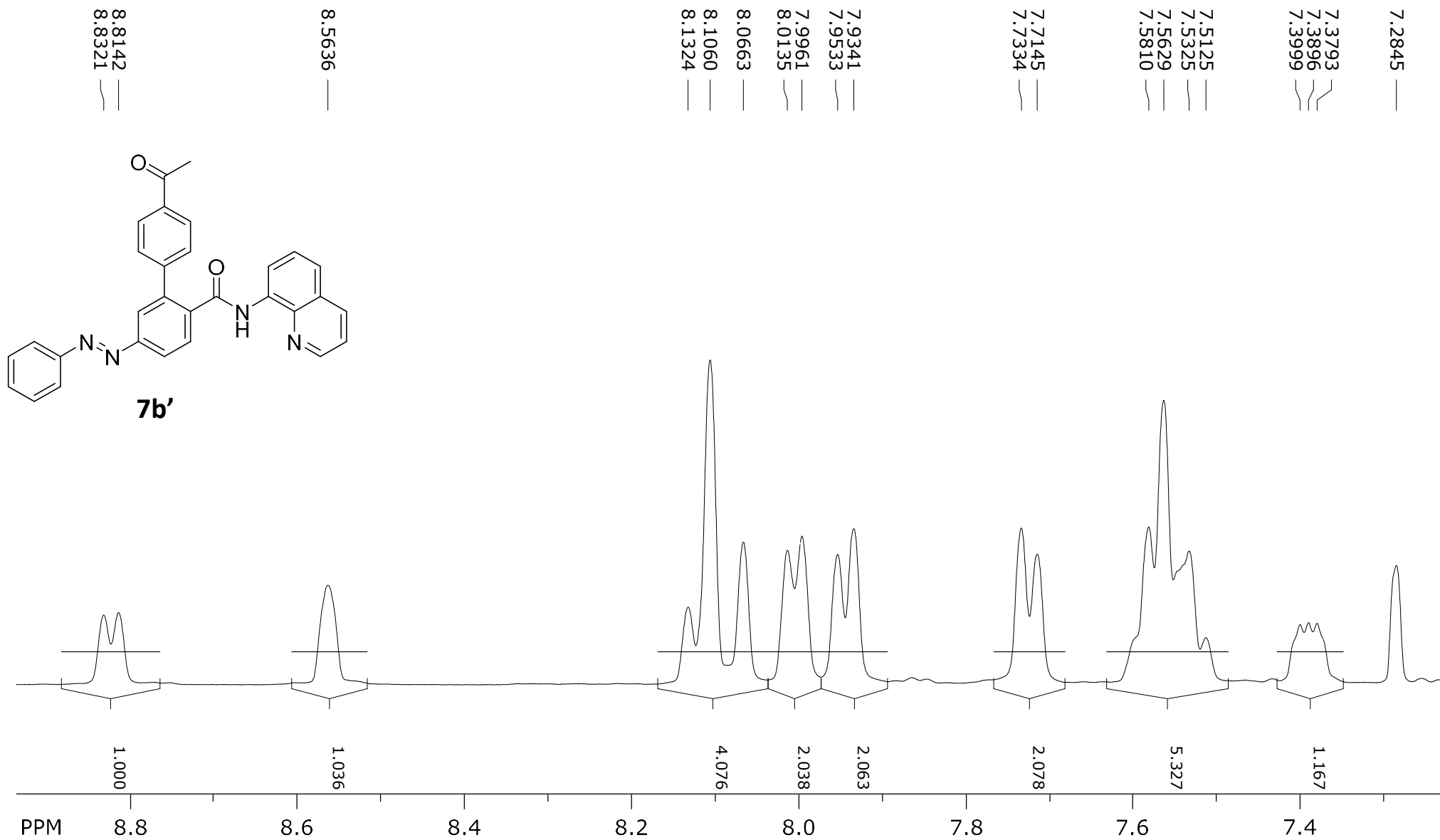
SpinWorks 4: SAB 210702
C13CPD CDCl3 {D:\Spectra} nmr 2



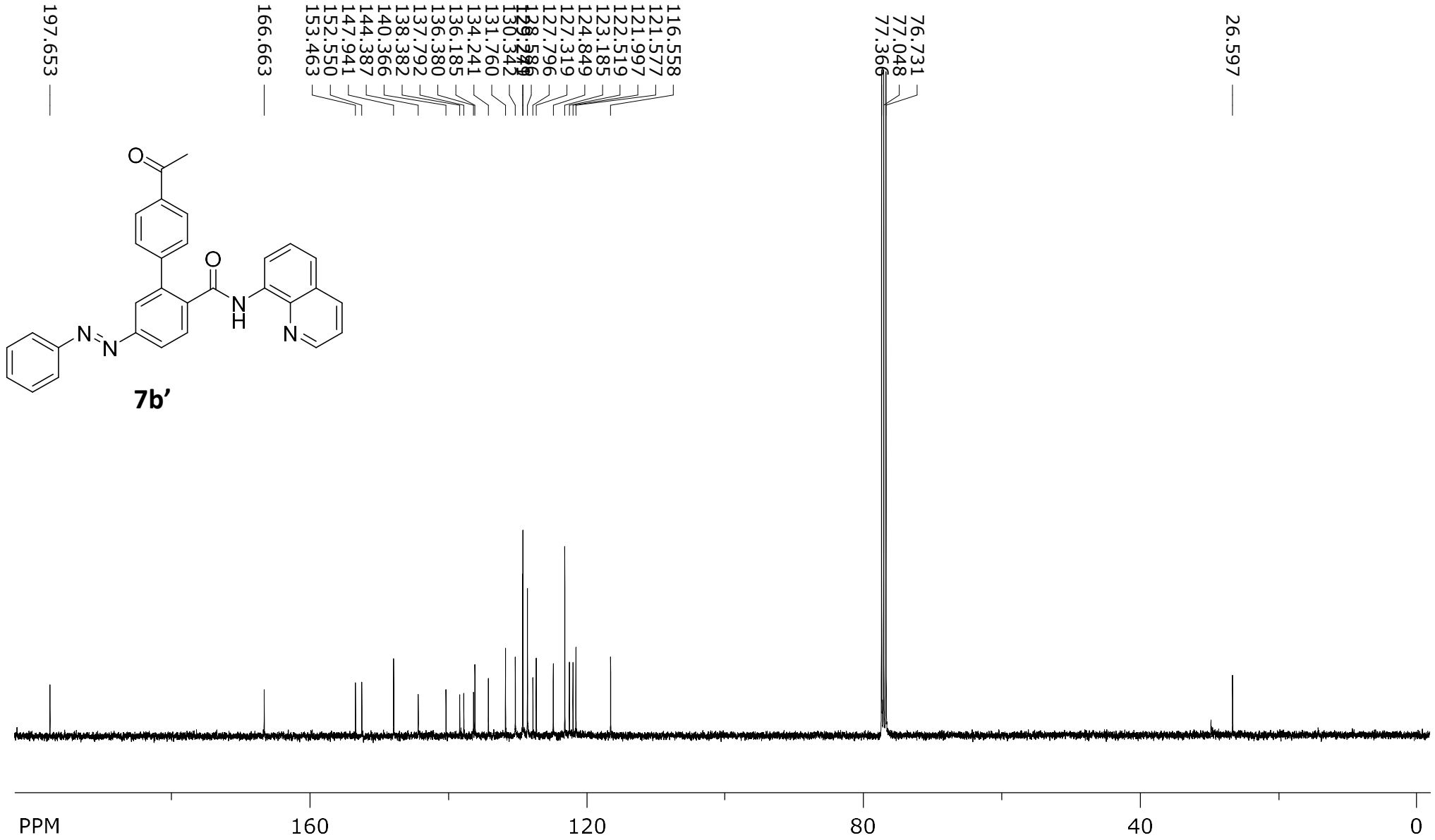
SpinWorks 4: RP 1357 B2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 51



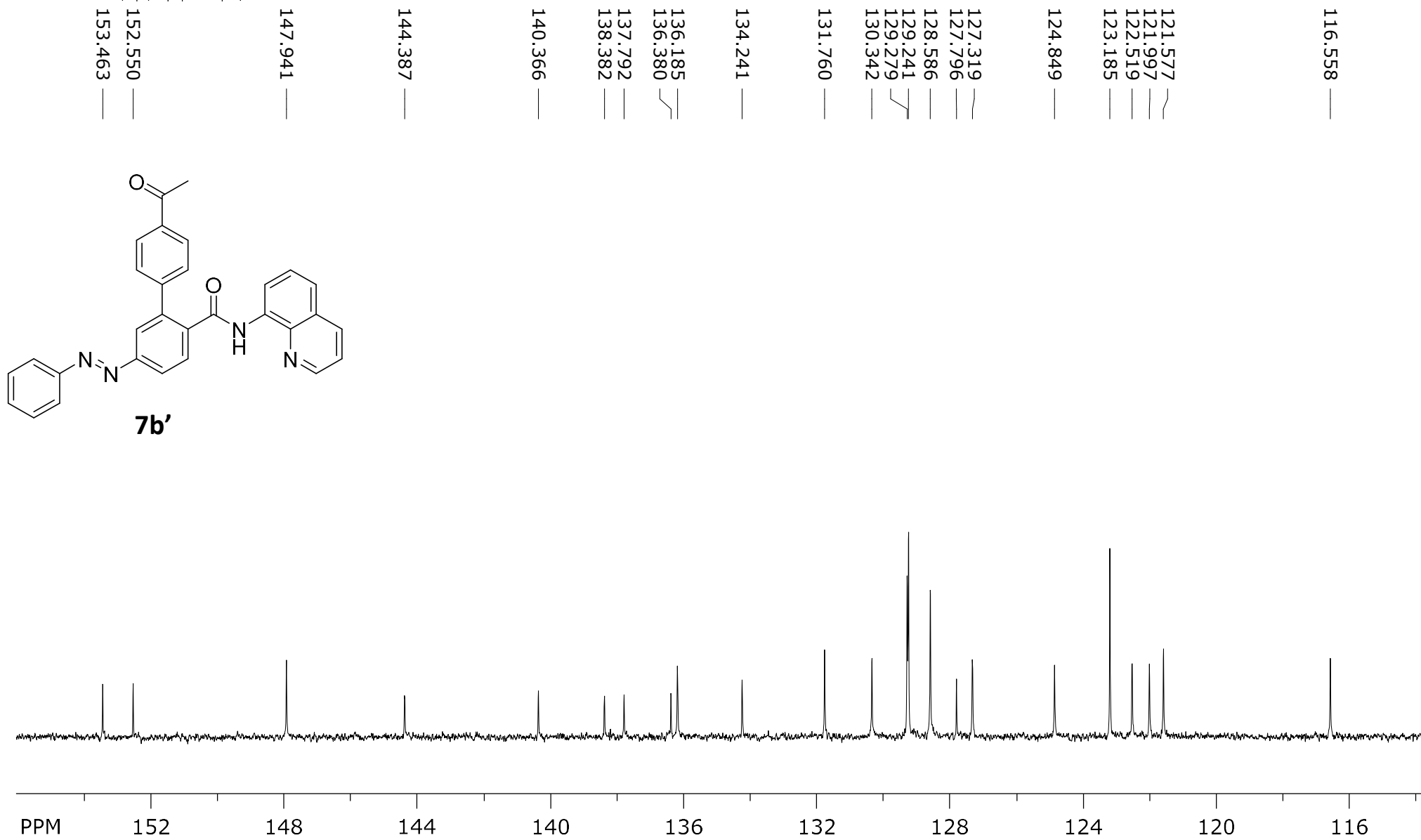
SpinWorks 4: RP 1357 B2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 51



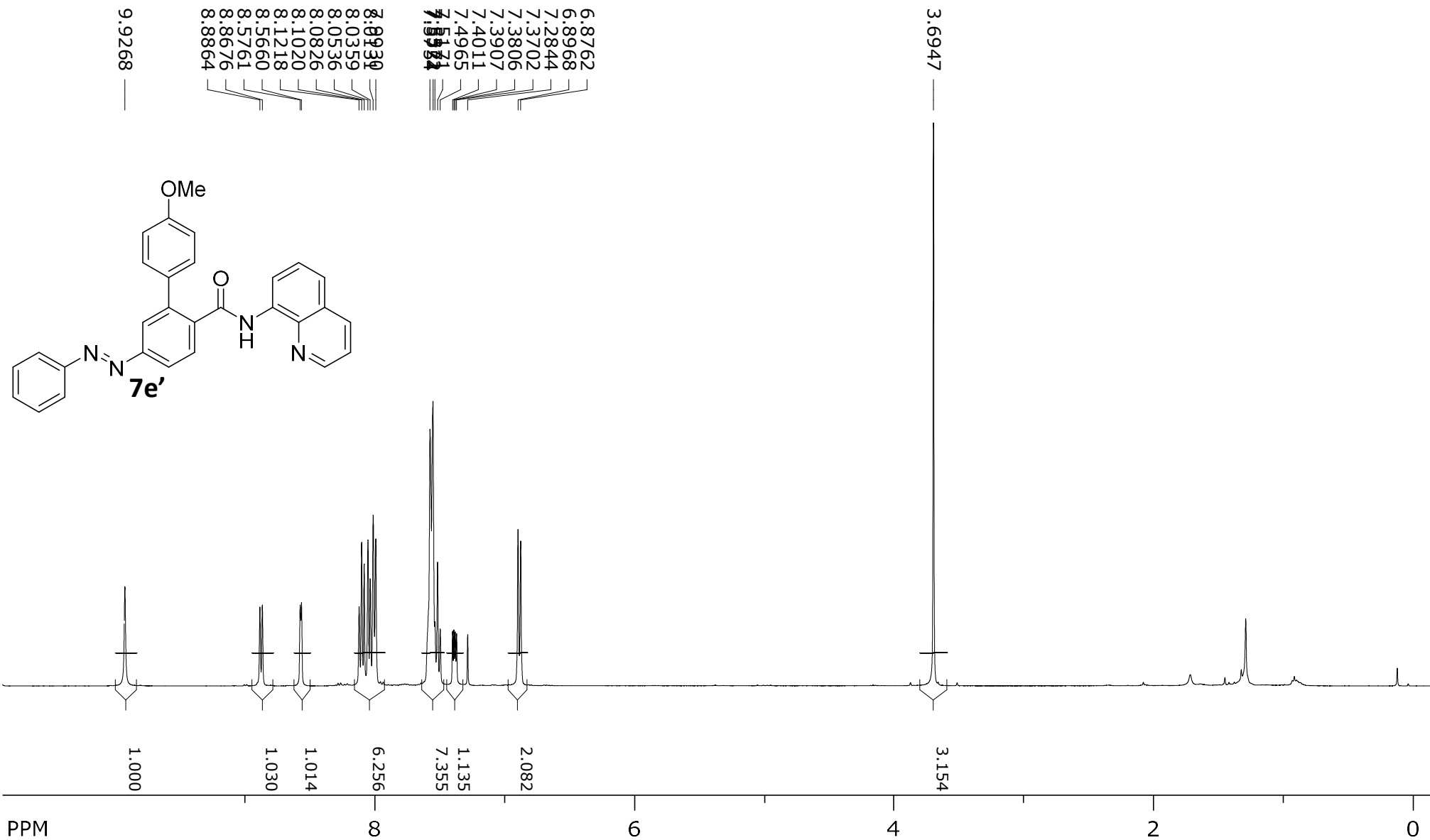
SpinWorks 4: RP 1357 B2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 51



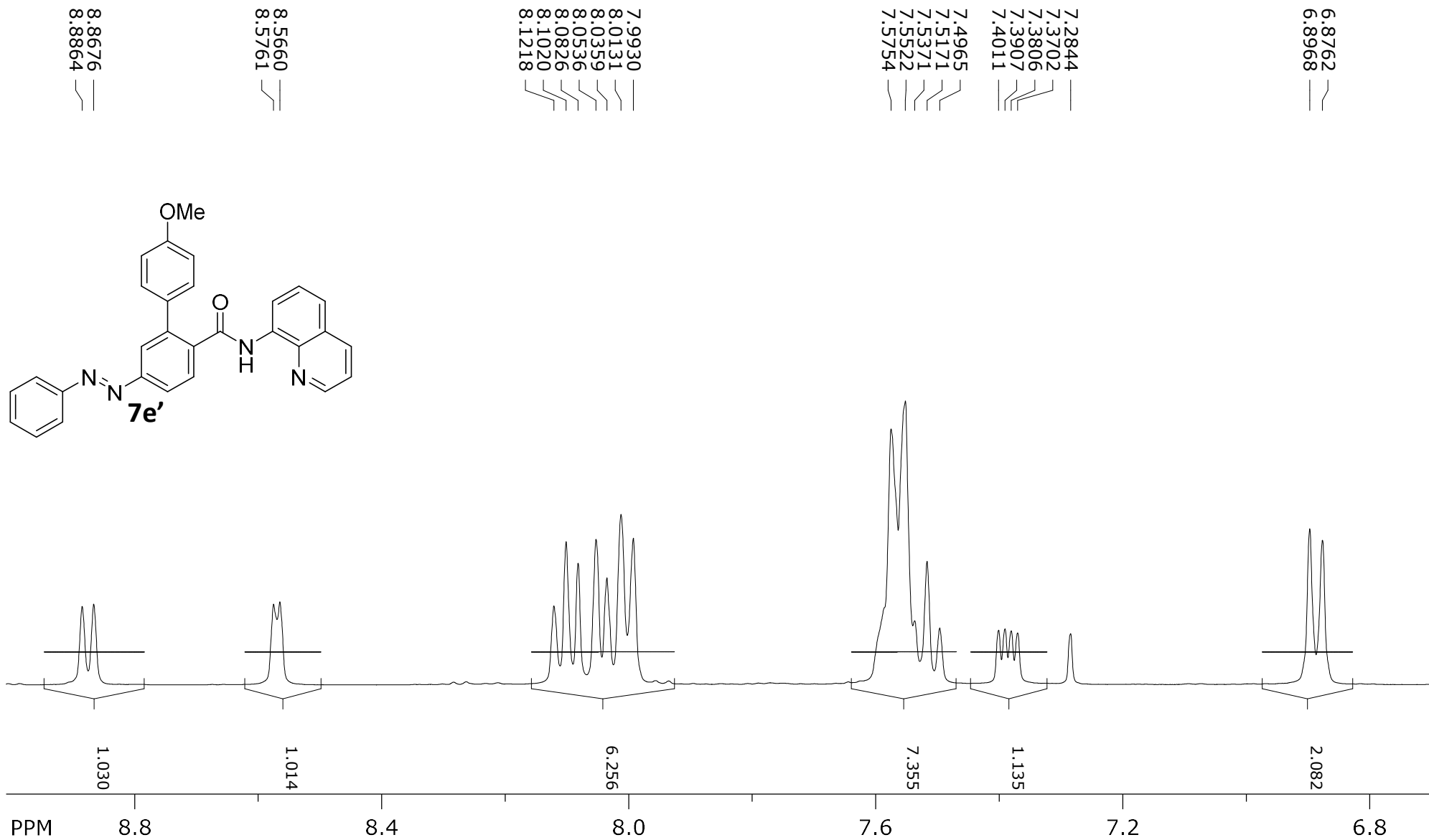
SpinWorks 4: RP 1357 B2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 51



SpinWorks 4: RP 973 R B
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 34



SpinWorks 4: RP 973 R B
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 34

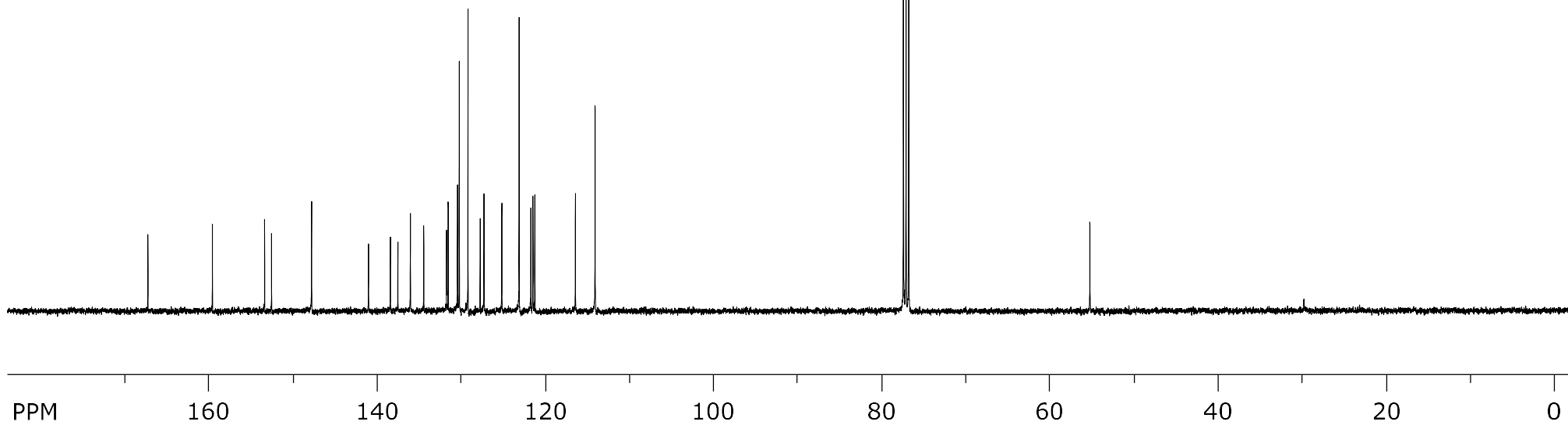
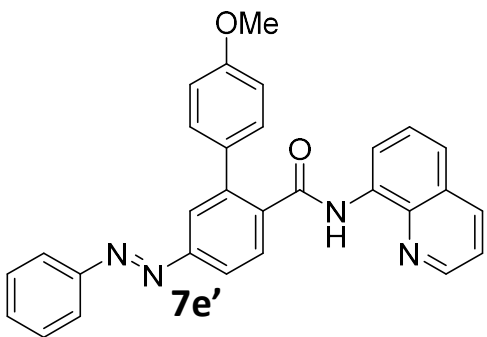


SpinWorks 4: RP 973 R.B
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 34

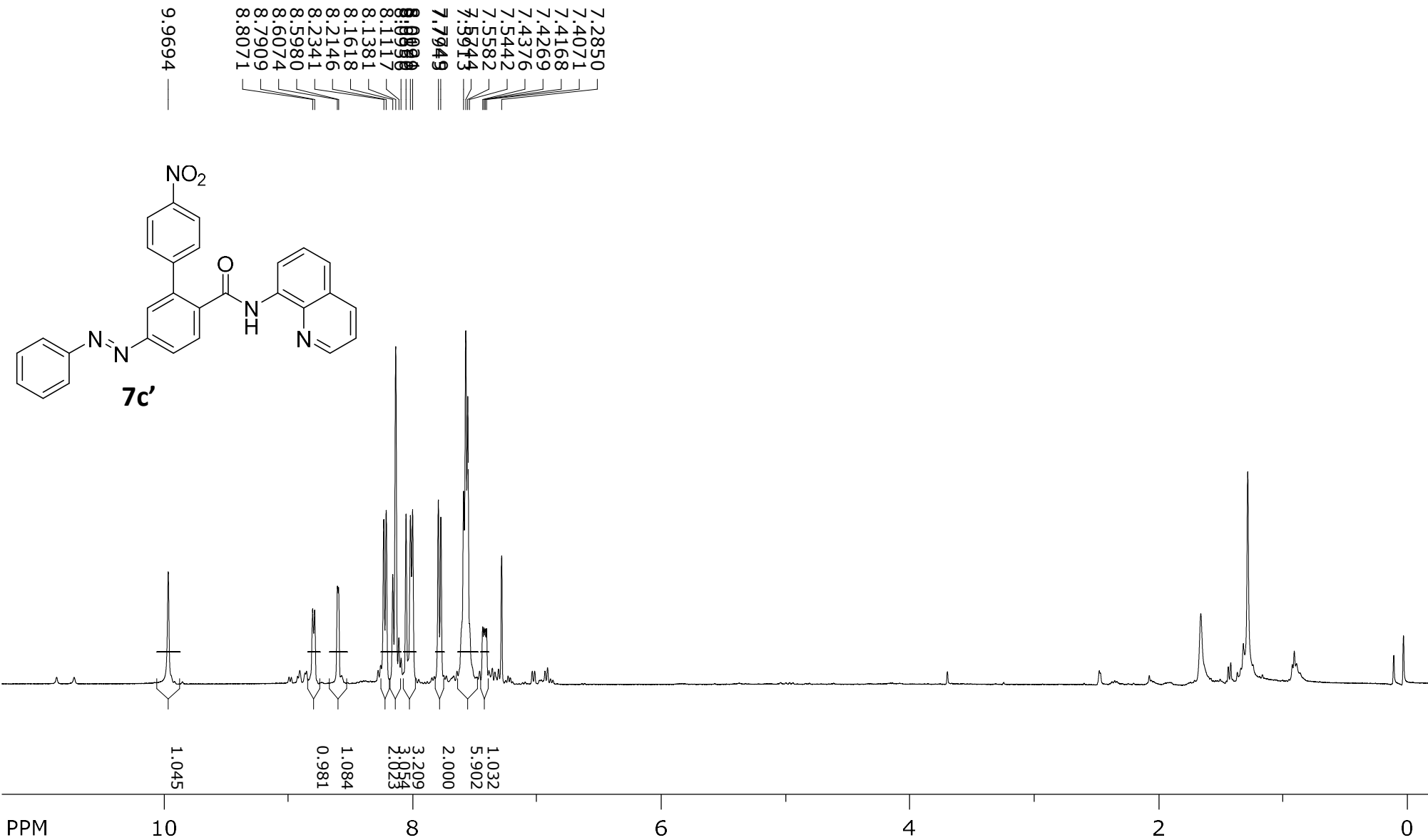
167.313
159.636
153.423
152.601
147.834
141.062
138.462
137.567
136.075
134.486
131.783
130.471
130.258
129.225
127.773
127.316
125.193
123.136
121.738
121.498
121.268
116.443
114.098

76.770
77.089
77.406

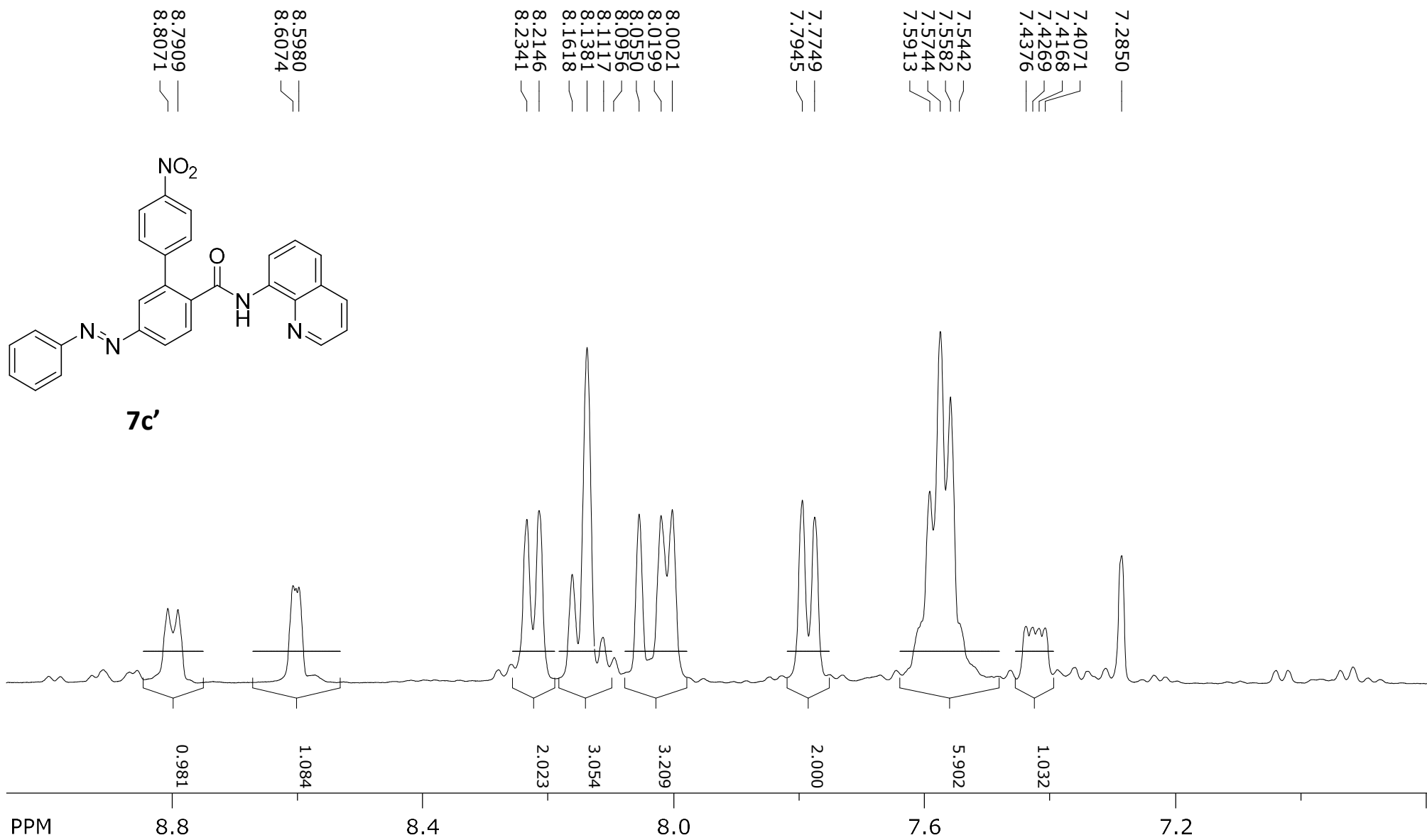
55.214



SpinWorks 4: RP 1370
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 51



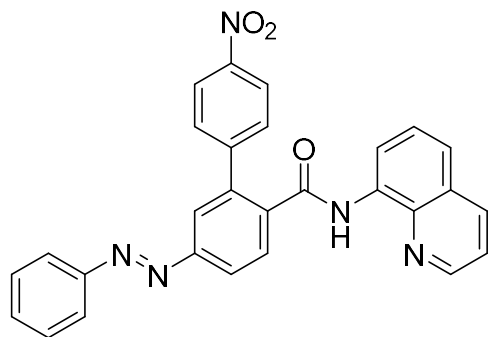
SpinWorks 4: RP 1370
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 51



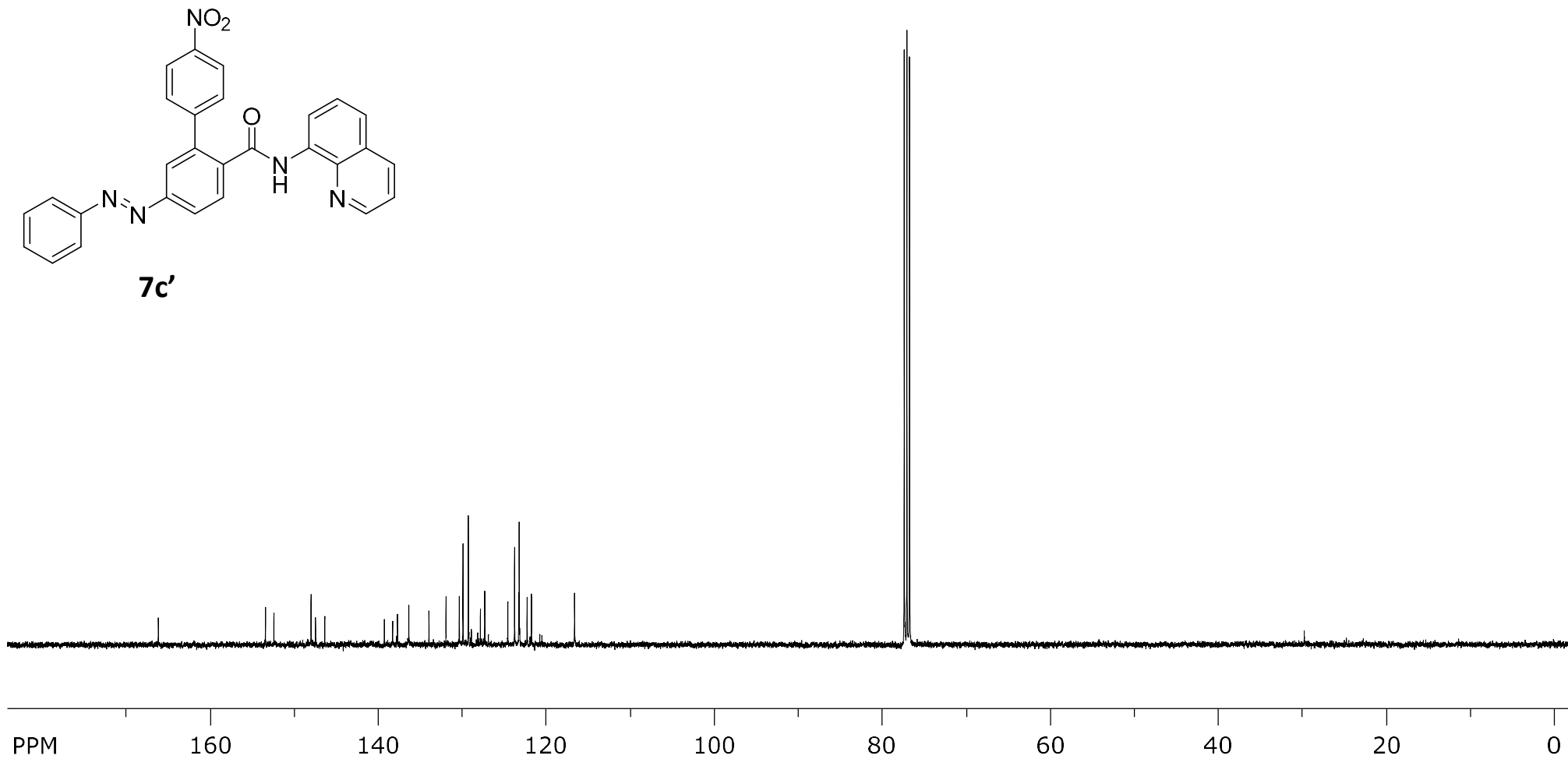
SpinWorks 4: RP 1370
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 51

166.223
153.467
152.462
148.036
147.512
146.404
137.738
136.395
133.994
131.960
130.380
129.940
129.298
127.869
127.343
124.596
123.792
123.302
123.244
122.304
121.776
116.653

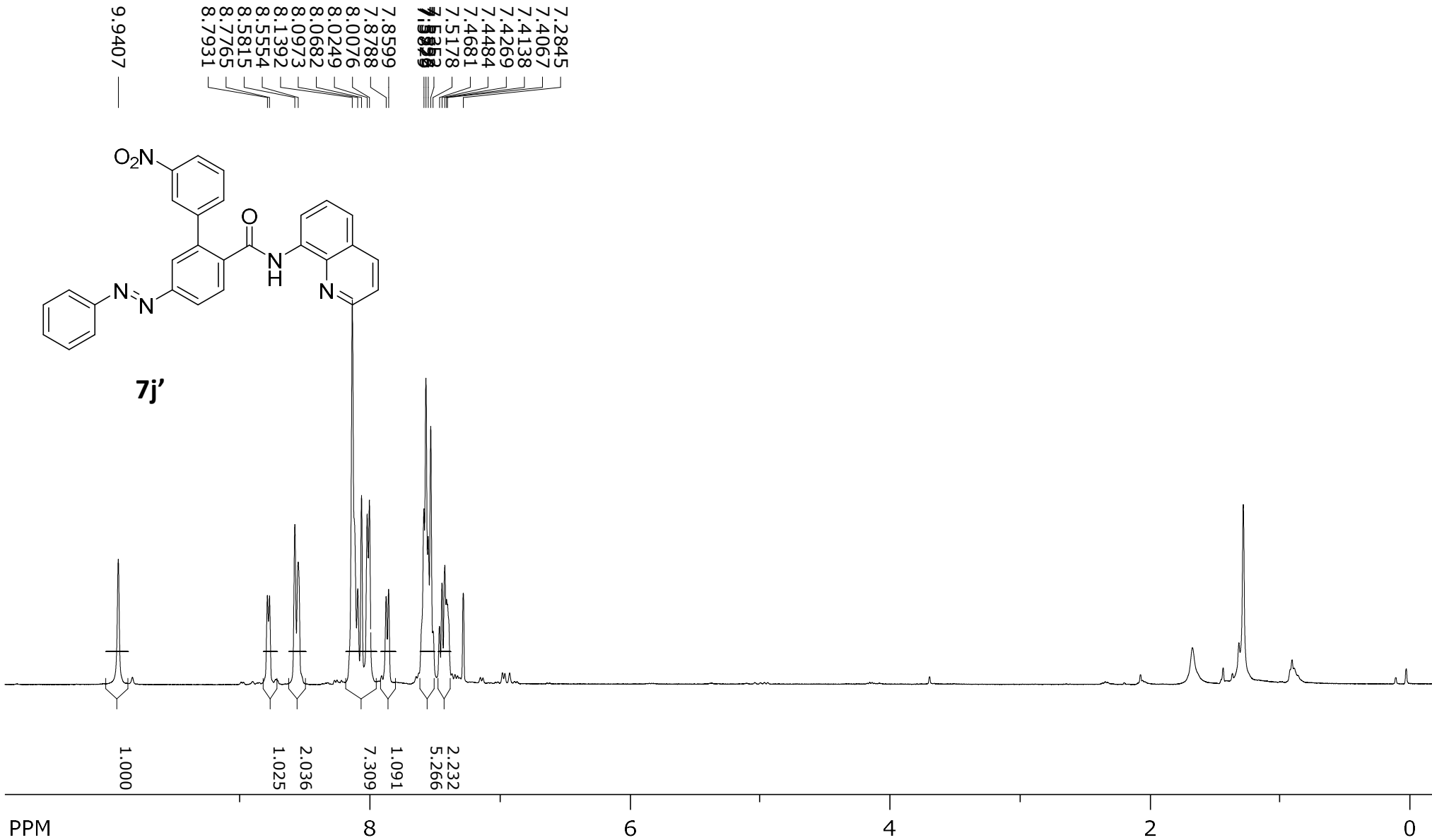
76.746
77.063
77.381



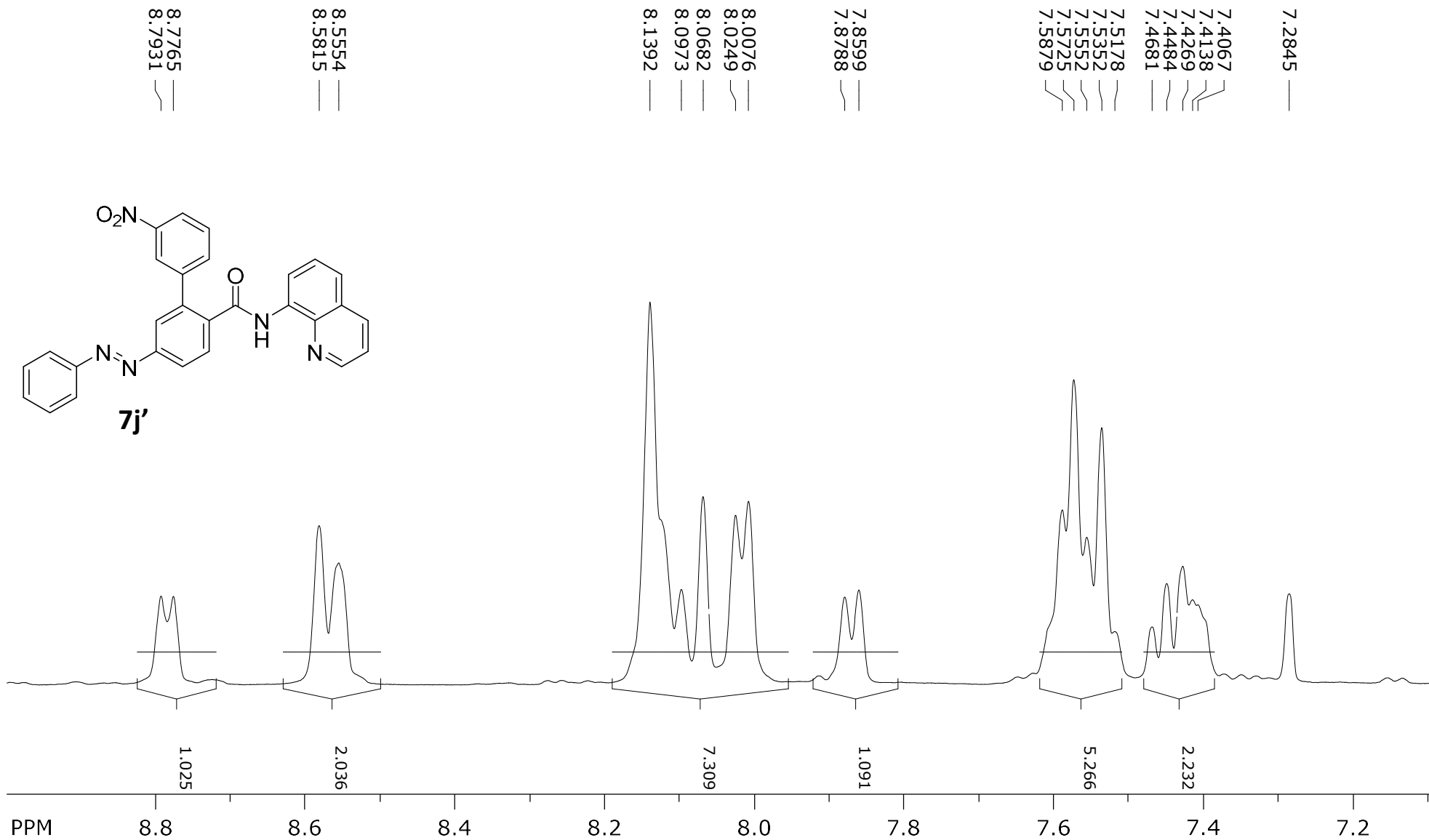
7c'



SpinWorks 4: RP 1359
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 56



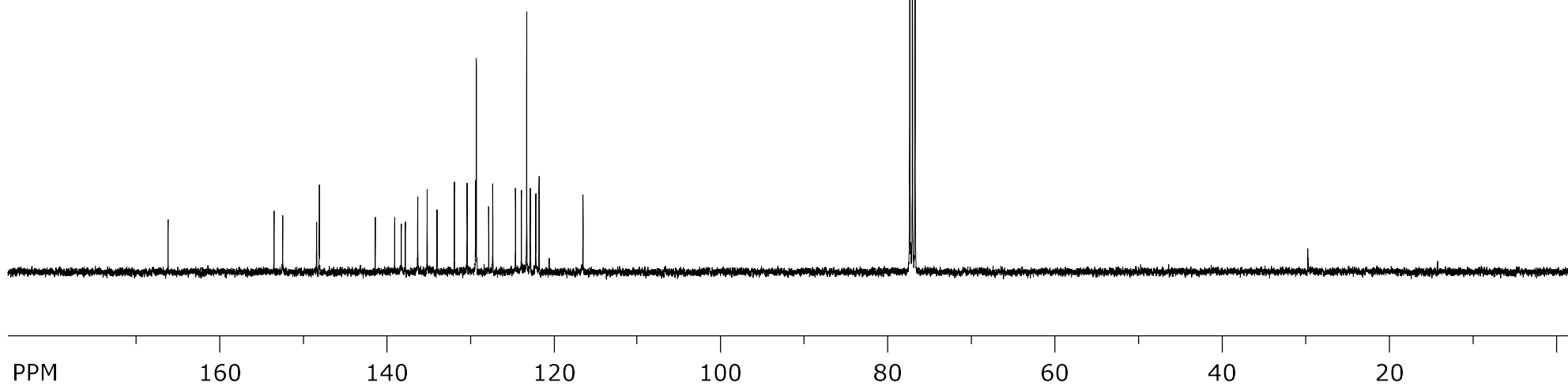
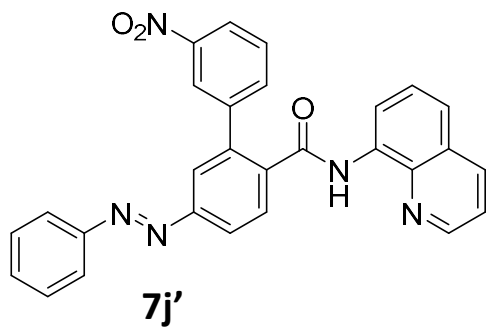
SpinWorks 4: RP 1359
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 56



SpinWorks 4: RP 1359
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 56

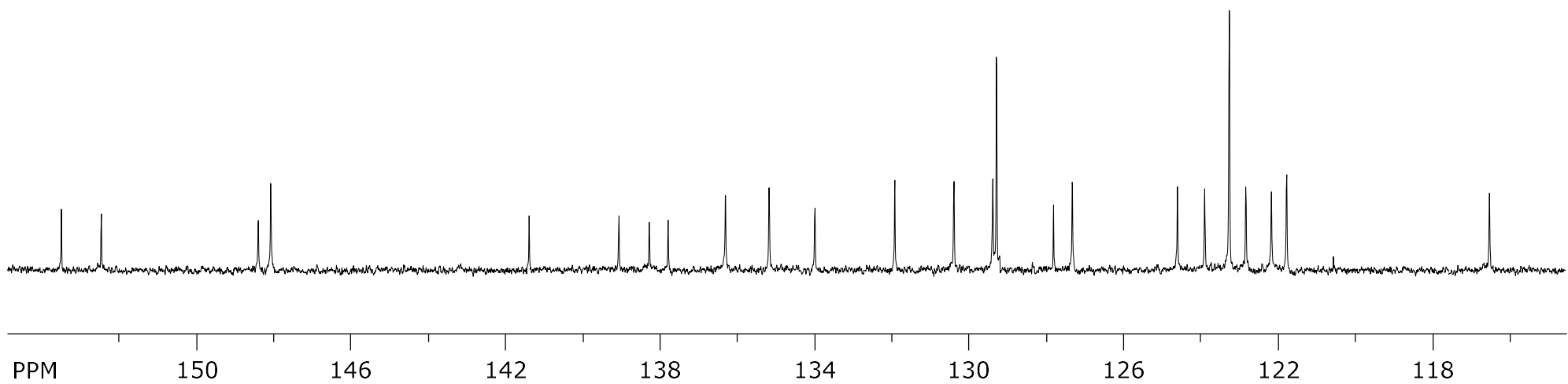
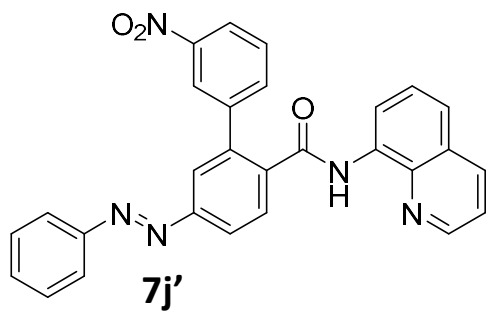
166.198
153.509
152.476
148.409
148.085
141.392
139.069
138.281
137.791
136.307
135.177
133.993
131.923
129.986
129.386
127.810
127.325
124.601
123.895
123.257
122.829
122.167
121.773
116.518

76.751
77.069
77.386



SpinWorks 4: RP 1359
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 56

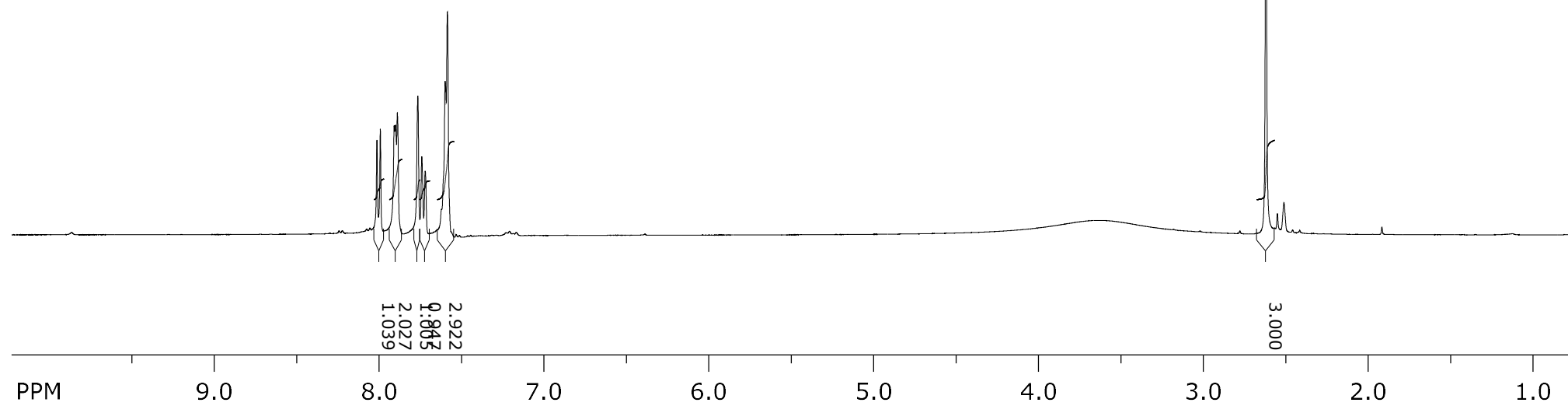
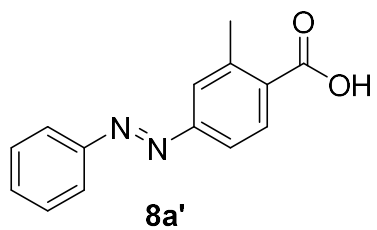
153.509 —
152.476 —
148.085 —
148.409 —
141.392 —
139.069 —
138.281 —
137.791 —
136.307 —
135.177 —
133.993 —
131.923 —
130.390 —
129.286 —
129.385 —
127.810 —
127.325 —
124.601 —
123.895 —
123.257 —
122.829 —
122.167 —
121.773 —
116.518 —



SpinWorks 4: RP AZO ME COOH
PROTON DMSO /opt/topspin3.5pl2/nmrdata nmrsu 15

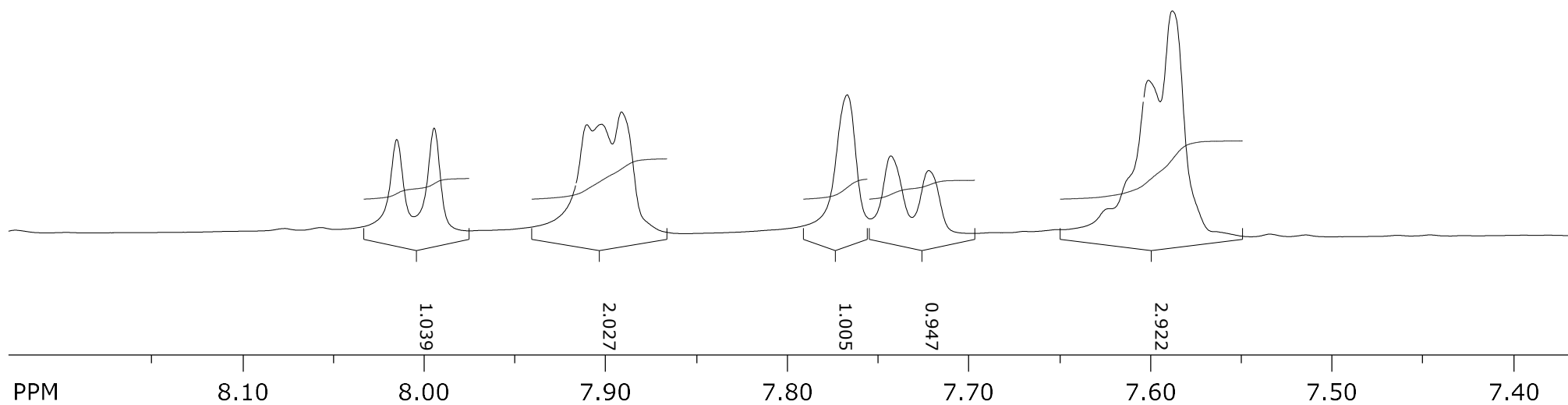
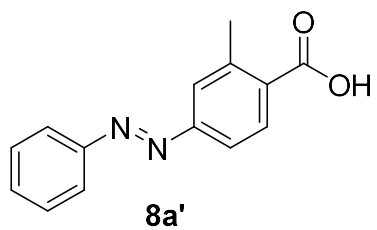
7.5879
7.6010
7.6114
7.6214
7.6430
7.7670
7.8914
7.9024
7.9105
7.9947
8.0153

2.6178

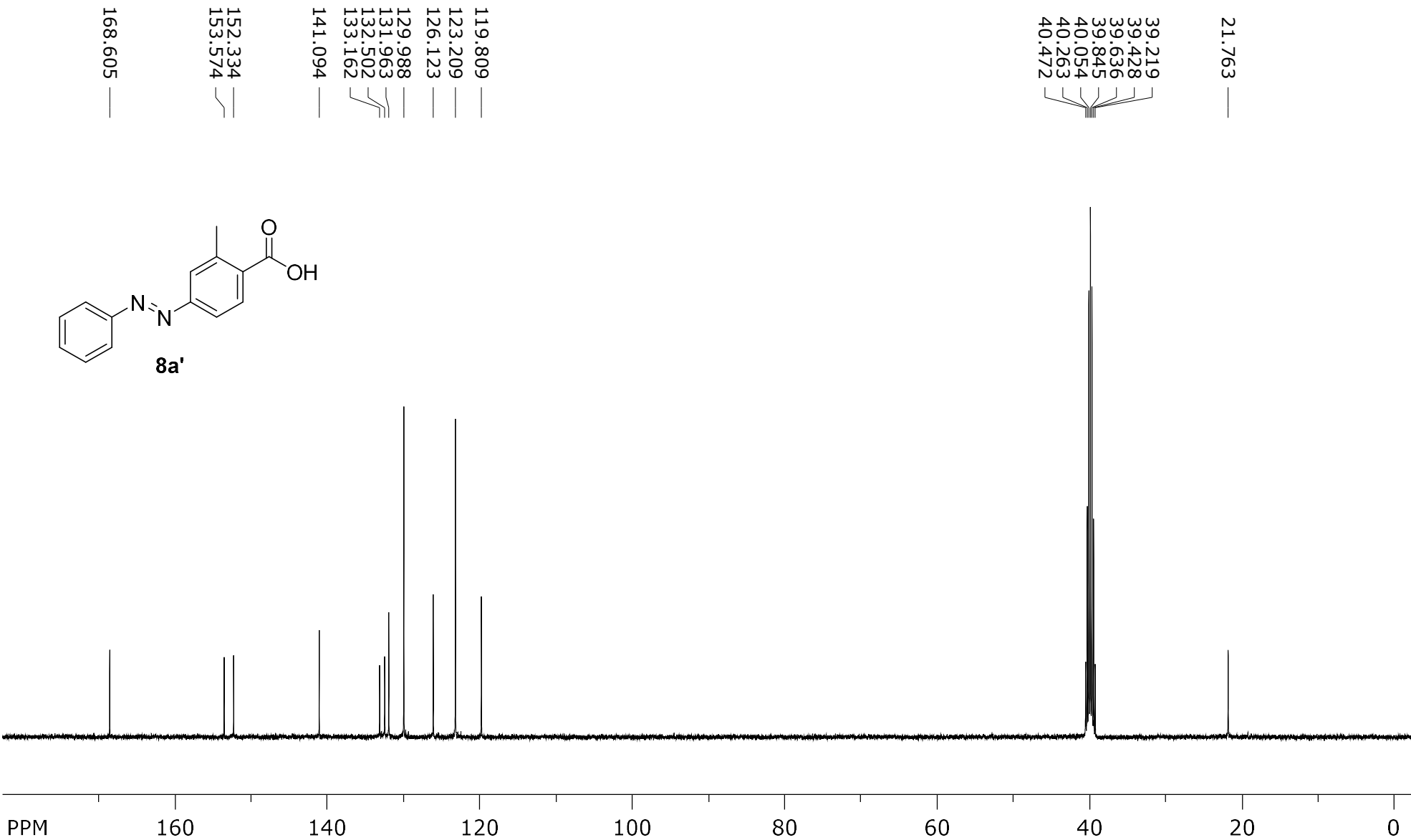


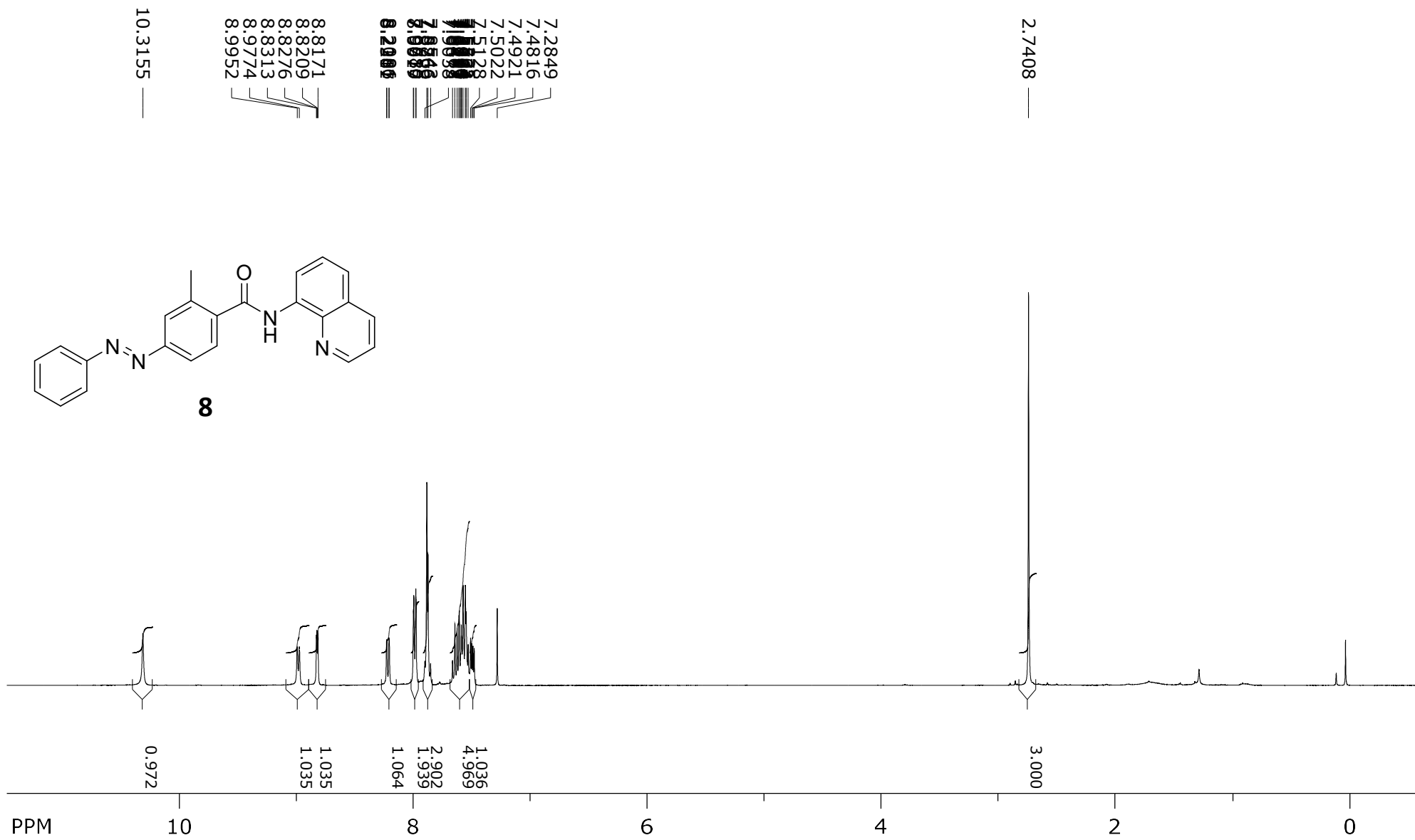
SpinWorks 4: RP AZO ME COOH
PROTON DMSO /opt/topspin3.5pl2/nmrdata nmrsu 15

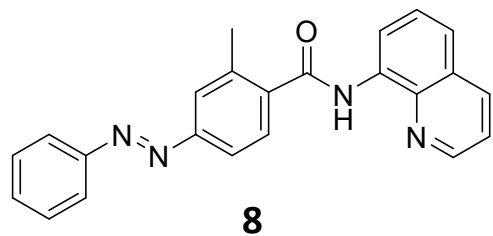
8.0153	7.9947	7.8914	7.9024	7.9105	7.7670	7.7430	7.7221	7.6239	7.6114	7.6010	7.5879
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SpinWorks 4: RP AZO ME COOH
C13CPD DMSO /opt/topspin3.5pl2/nmrdata nmrsu 15



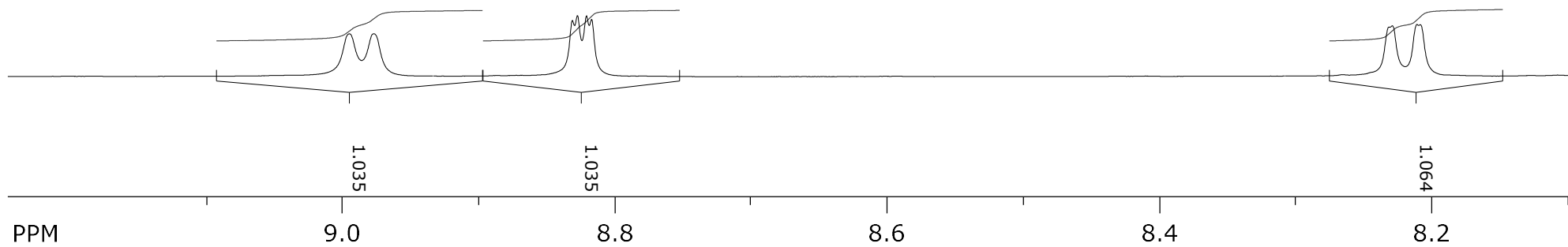


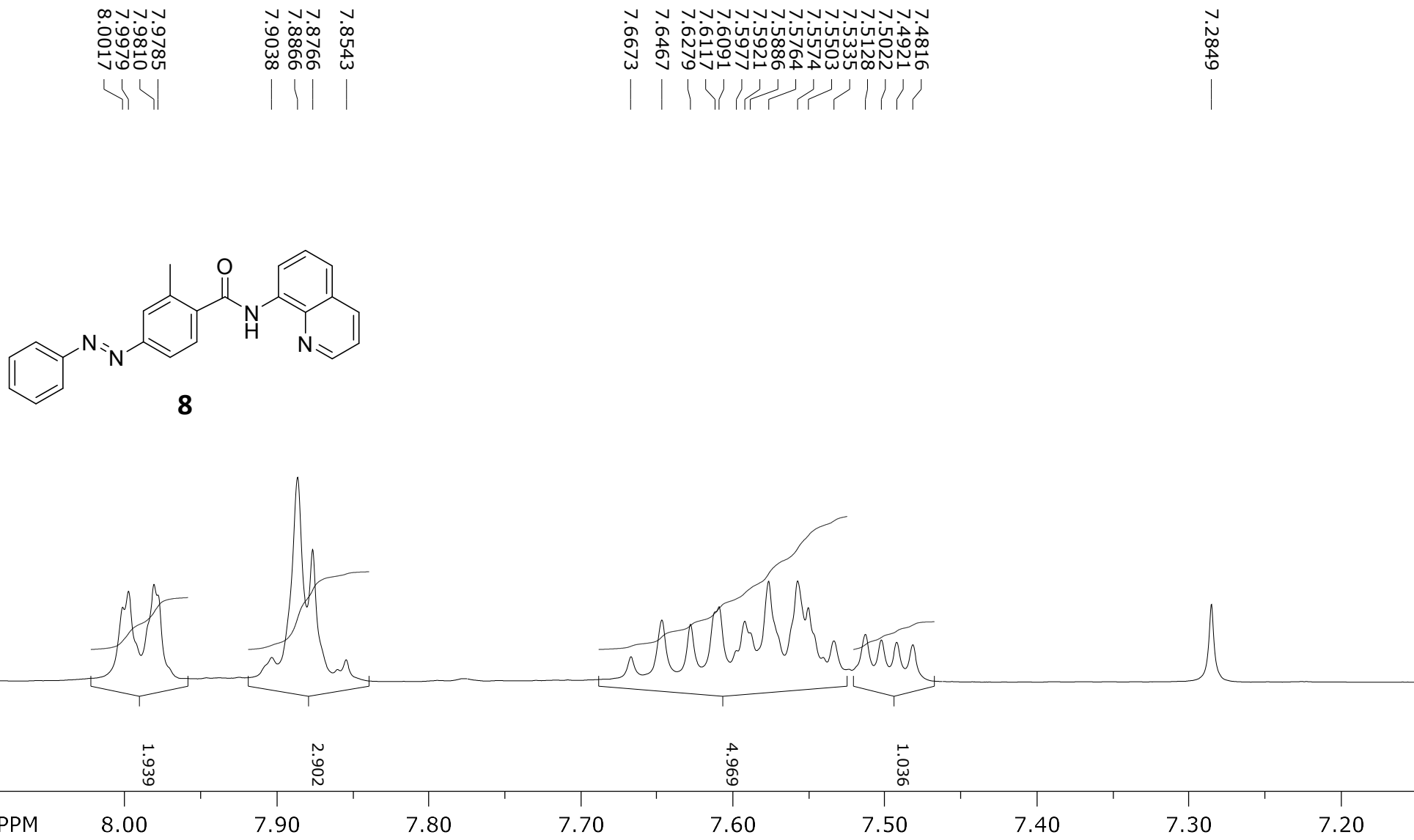


8.9774
8.9952

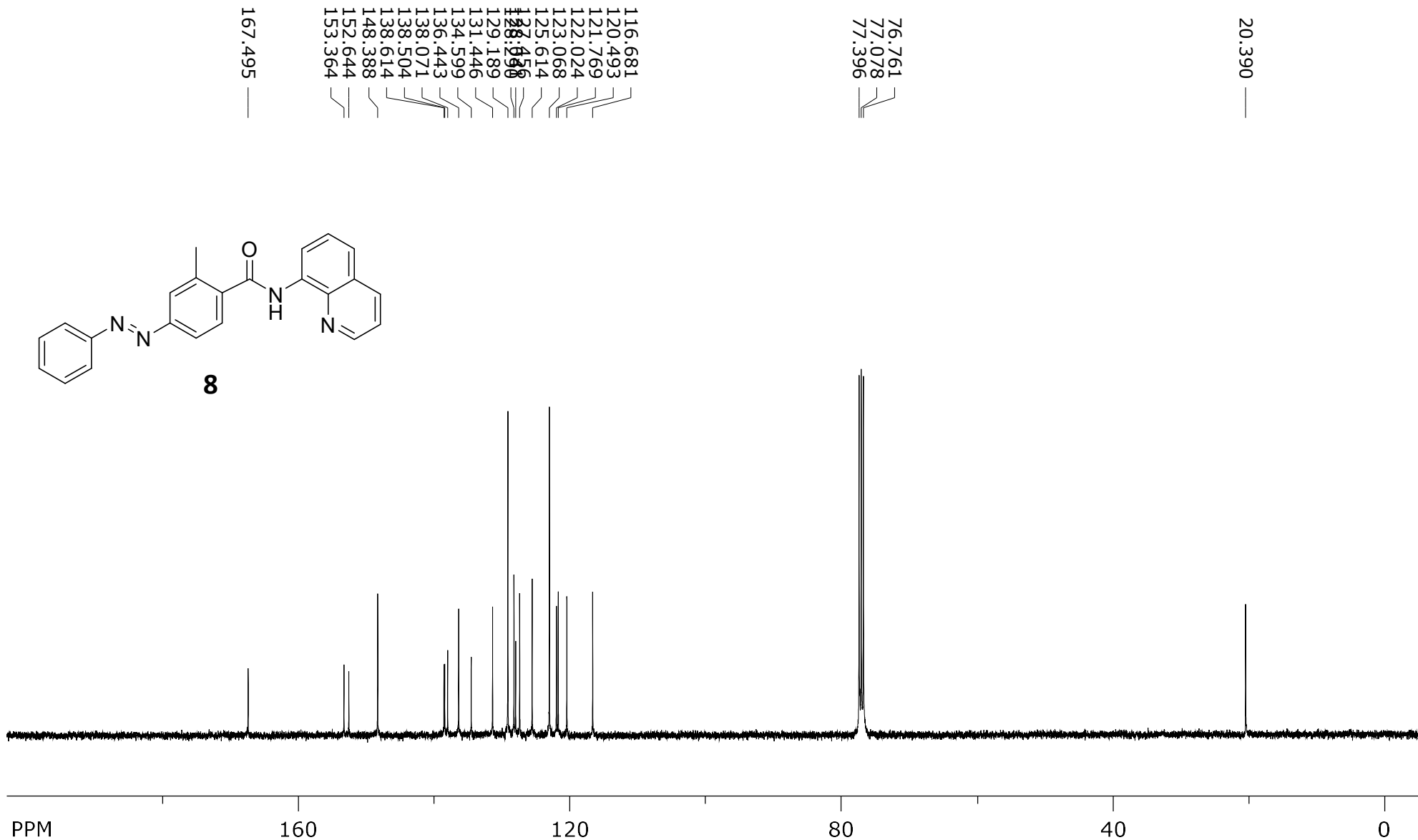
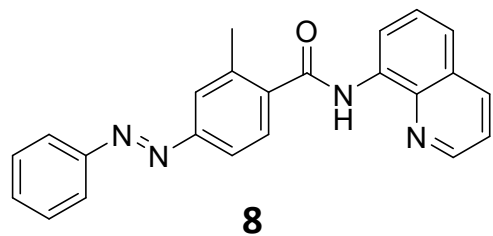
8.8171
8.8209
8.8276
8.8313

8.2081
8.2106
8.2287
8.2311





SpinWorks 4: RP 1181 A2
C13CPD CDCI3 /opt/topspin3.5pl2/nmrdata nmrsu 2



SpinWorks 4: RP 1181 A2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2

152.644
153.364

148.388

138.071
138.504
138.614

136.443

134.599

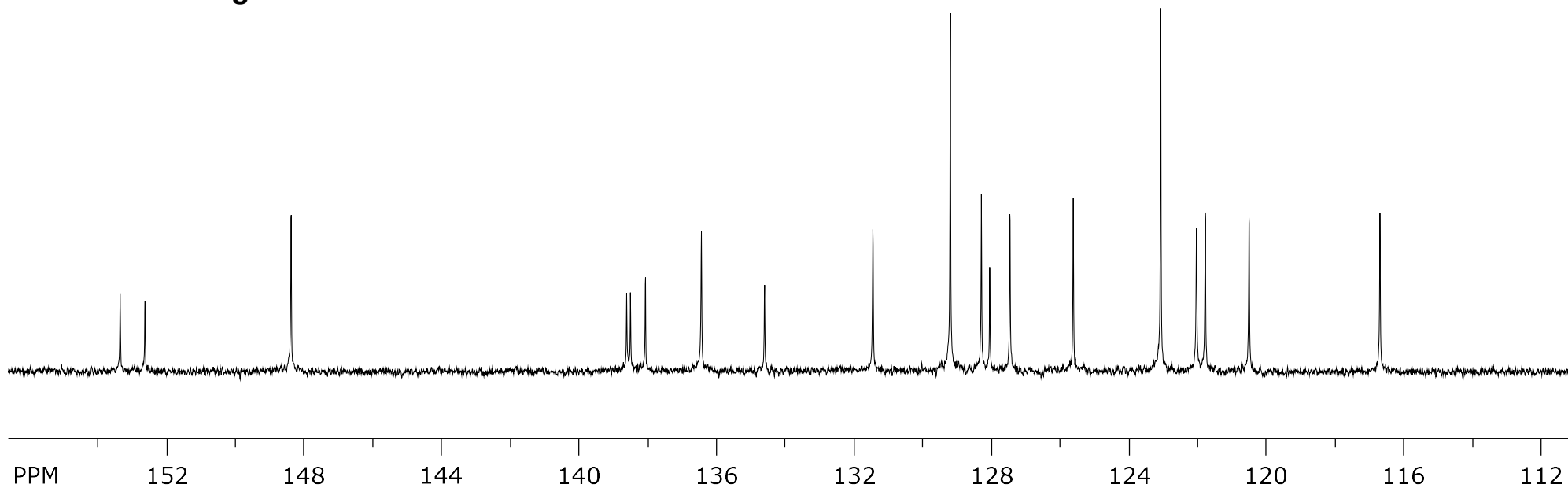
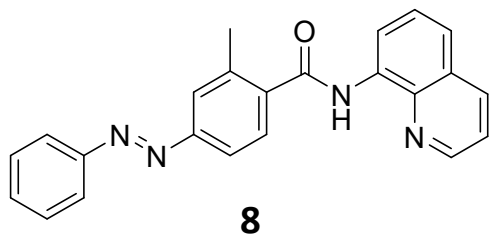
131.446

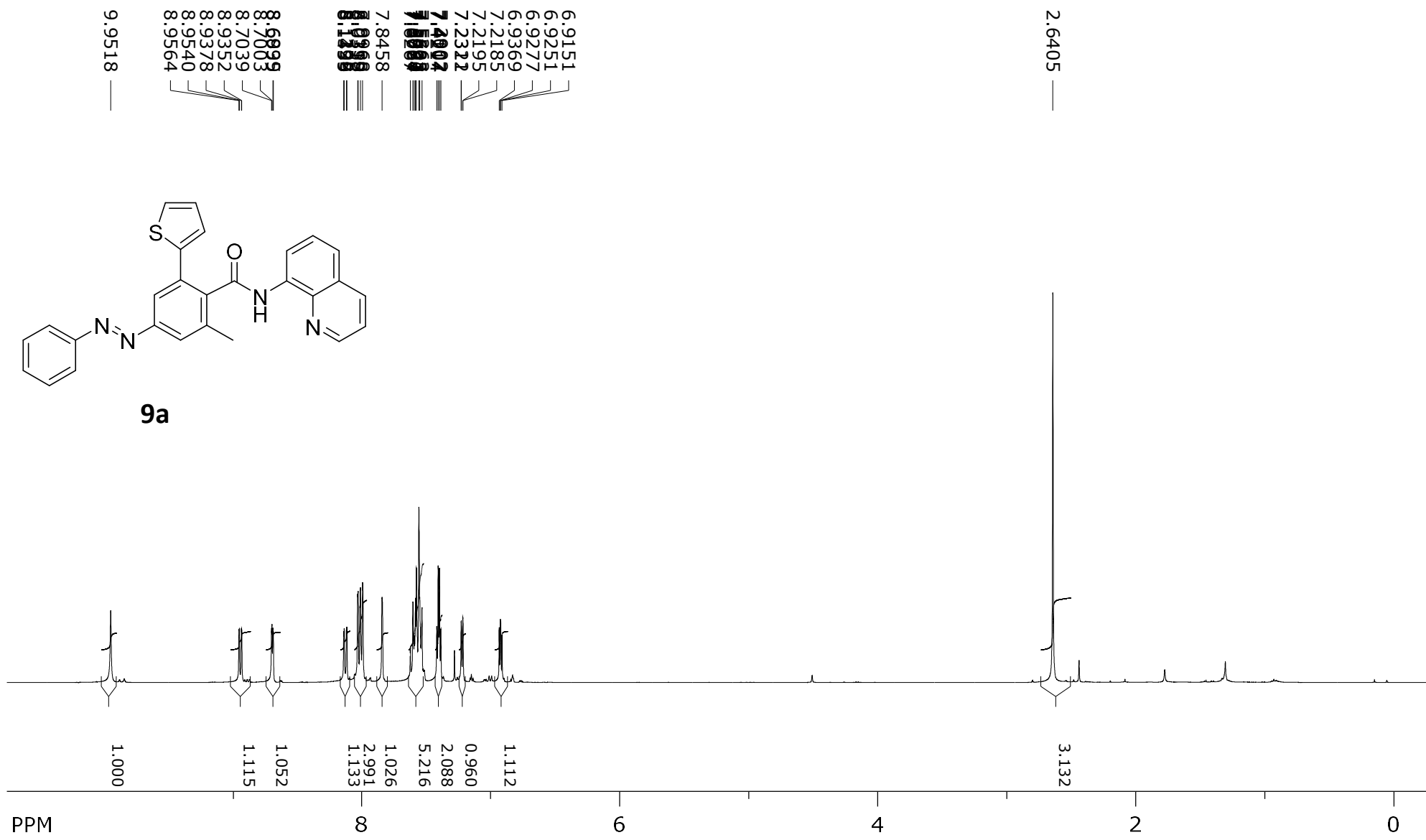
127.456
128.041
128.290
129.189

125.614

123.068
120.493
121.769
122.024

116.681





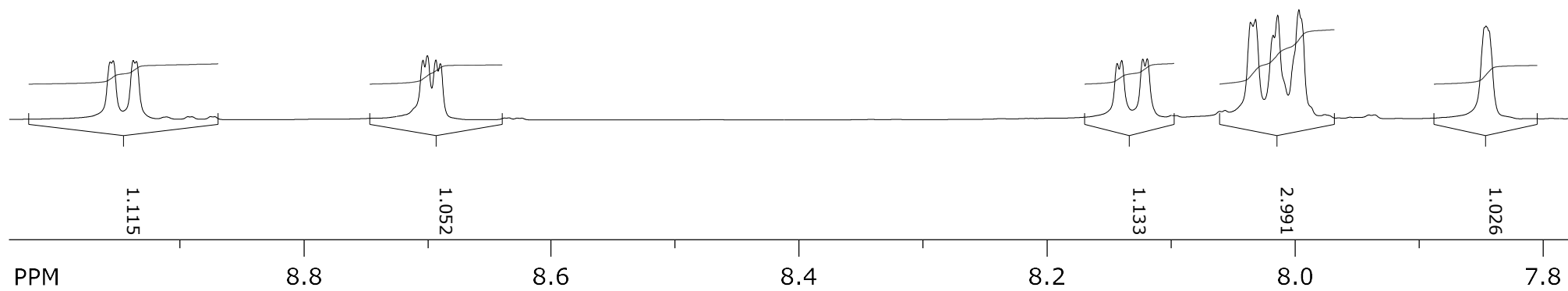
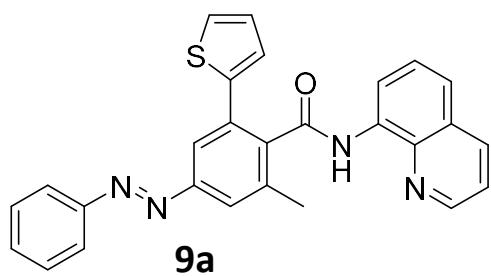
8.9352
8.9378
8.9540
8.9564

8.6899
8.6935
8.7003
8.7039

8.1192
8.1228
8.1399
8.1435

7.9968
8.0139
8.0318
8.0359

7.8458

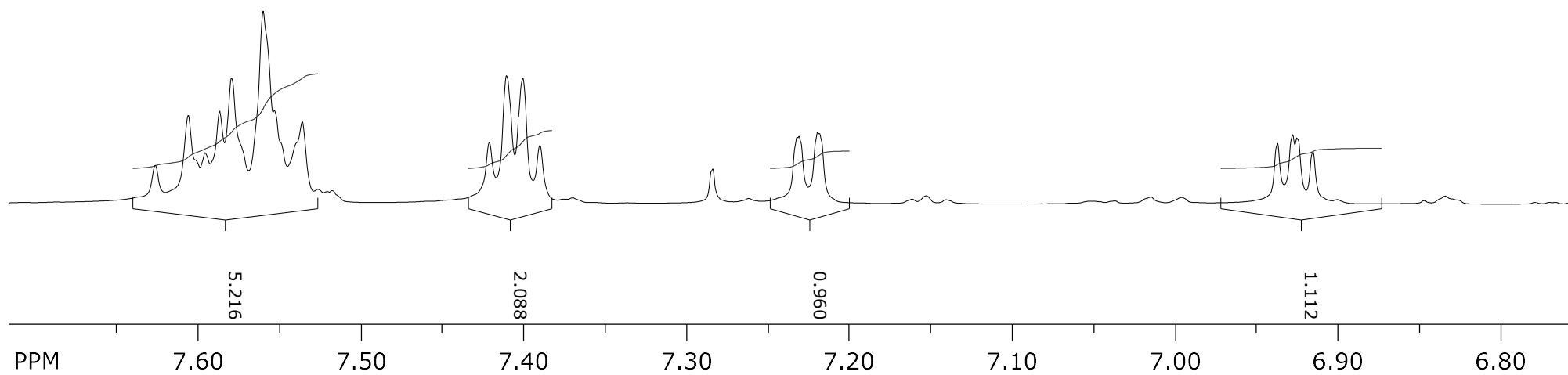
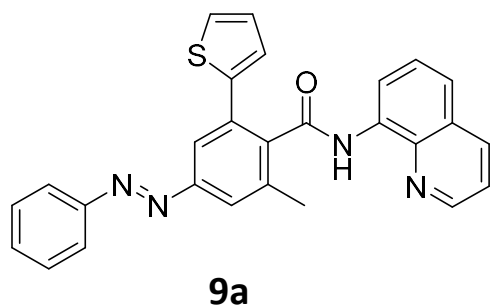


7.5363
7.5335
7.5603
7.5797
7.5871
7.5960
7.6064
7.6267

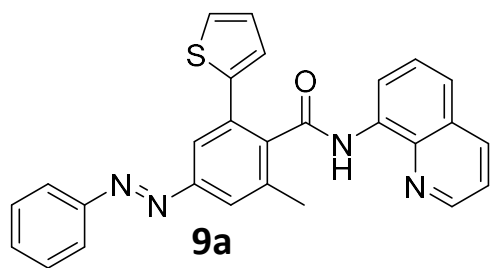
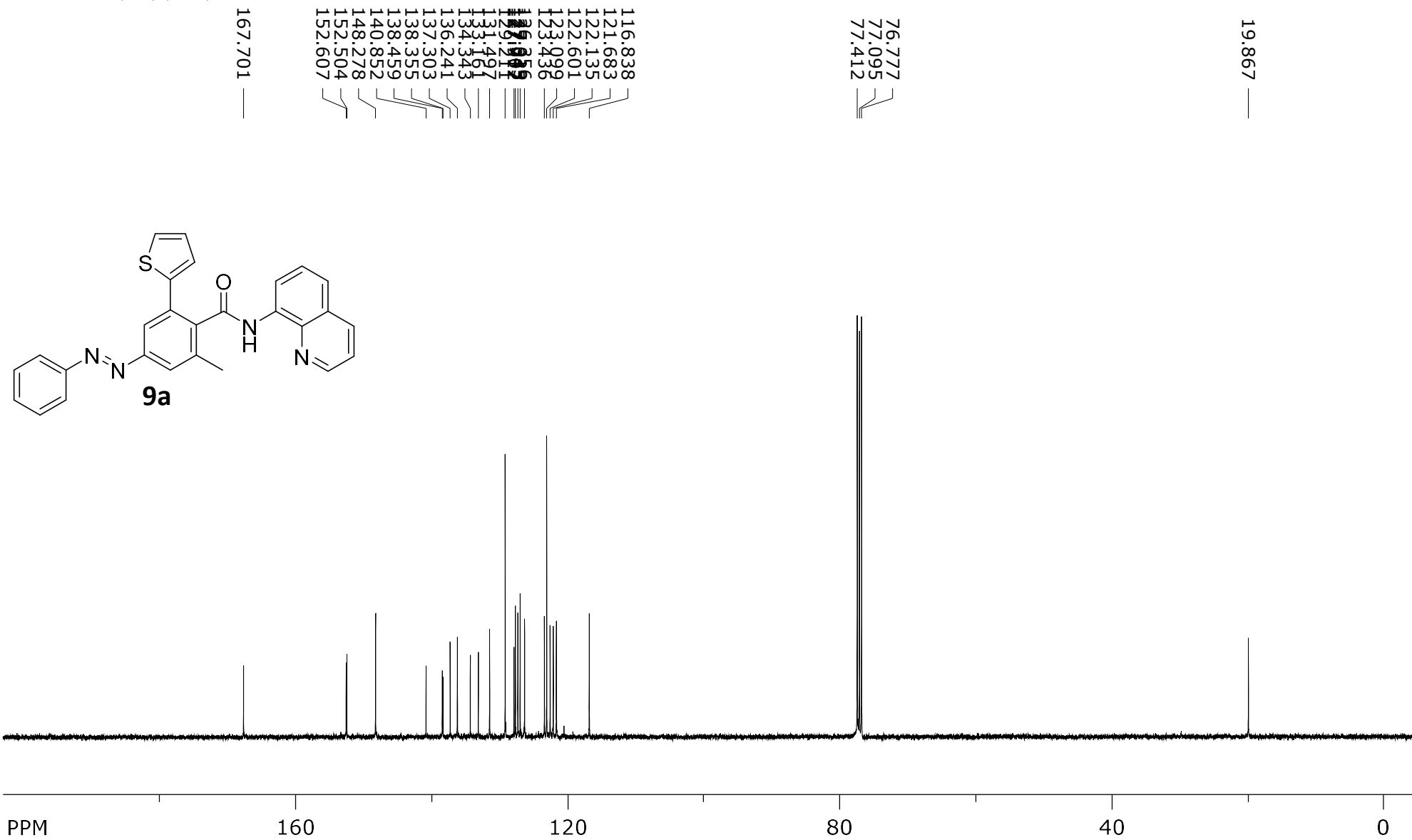
7.3902
7.4007
7.4107
7.4214

7.2185
7.2195
7.2311
7.2322

6.9151
6.9251
6.9277
6.9369

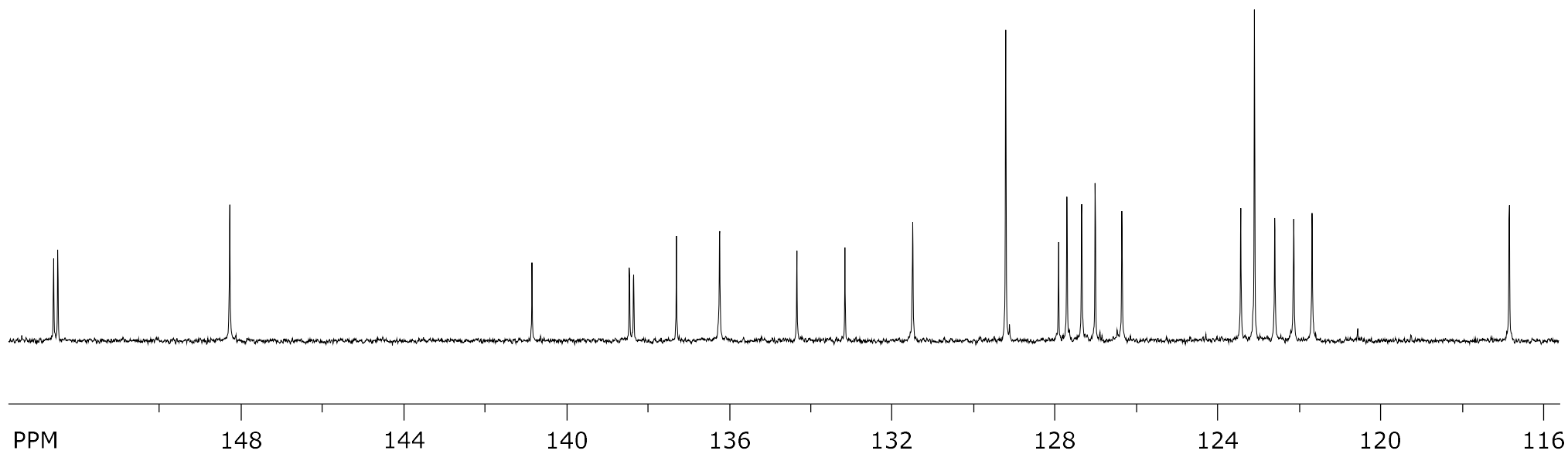
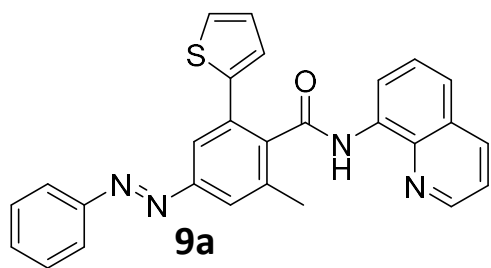


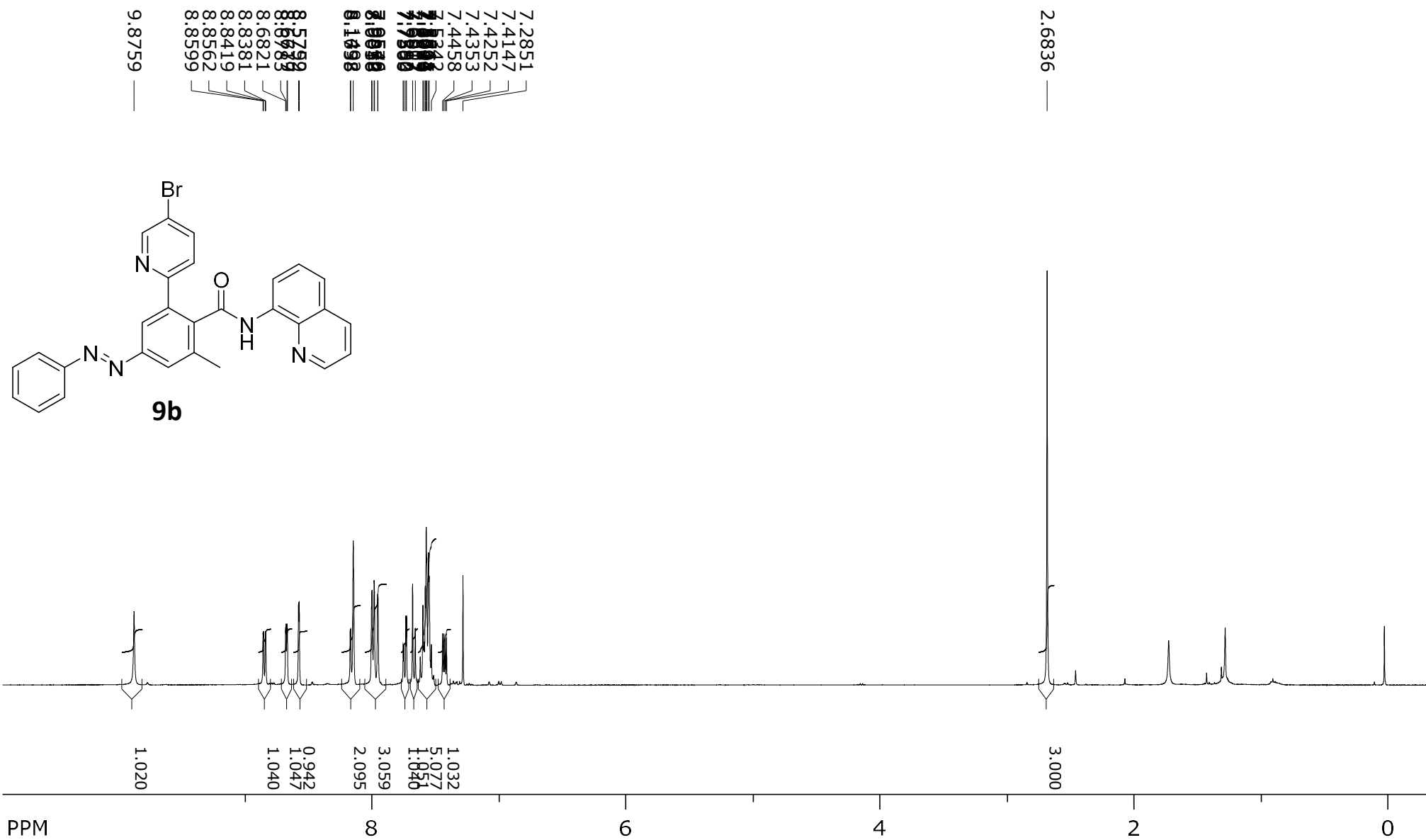
SpinWorks 4: RP_120B REP
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 9



SpinWorks 4: RP 120B REP
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 9

152.504	148.278	140.852	138.355	137.303	136.241	134.343	133.161	131.497	129.211	127.912	127.707	127.345	127.013	126.356	123.436	123.099	122.601	122.135	121.683	116.838
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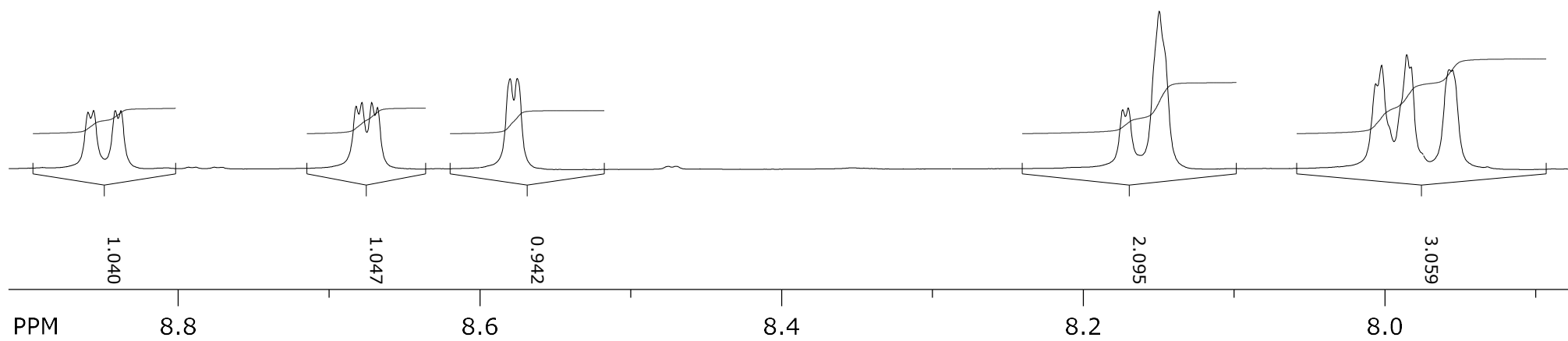
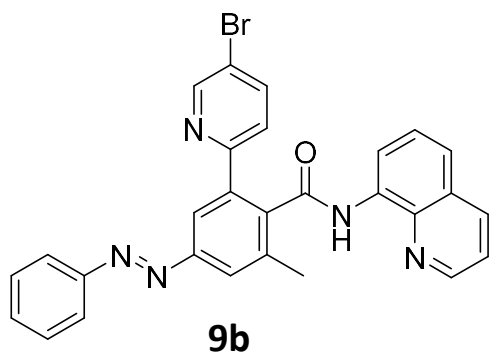
8.8381
8.8419
8.8562
8.8599

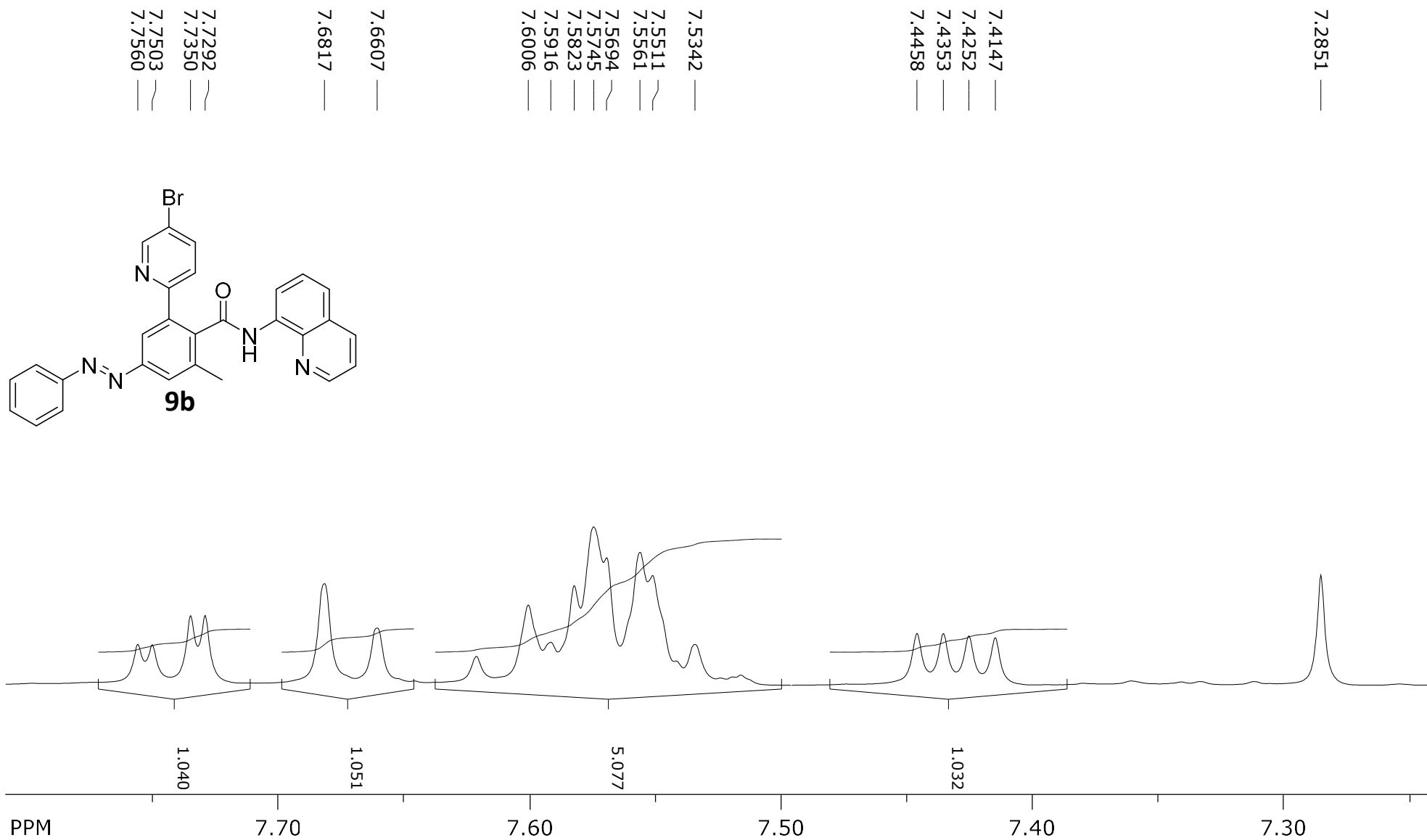
8.6679
8.6717
8.6783
8.6821

8.5752
8.5799

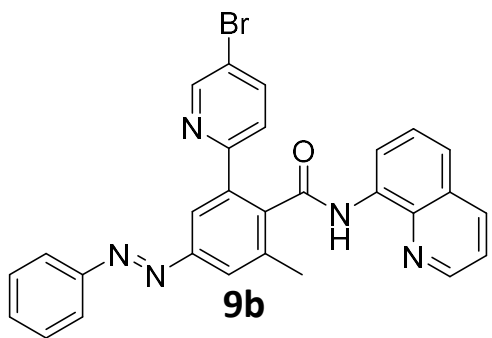
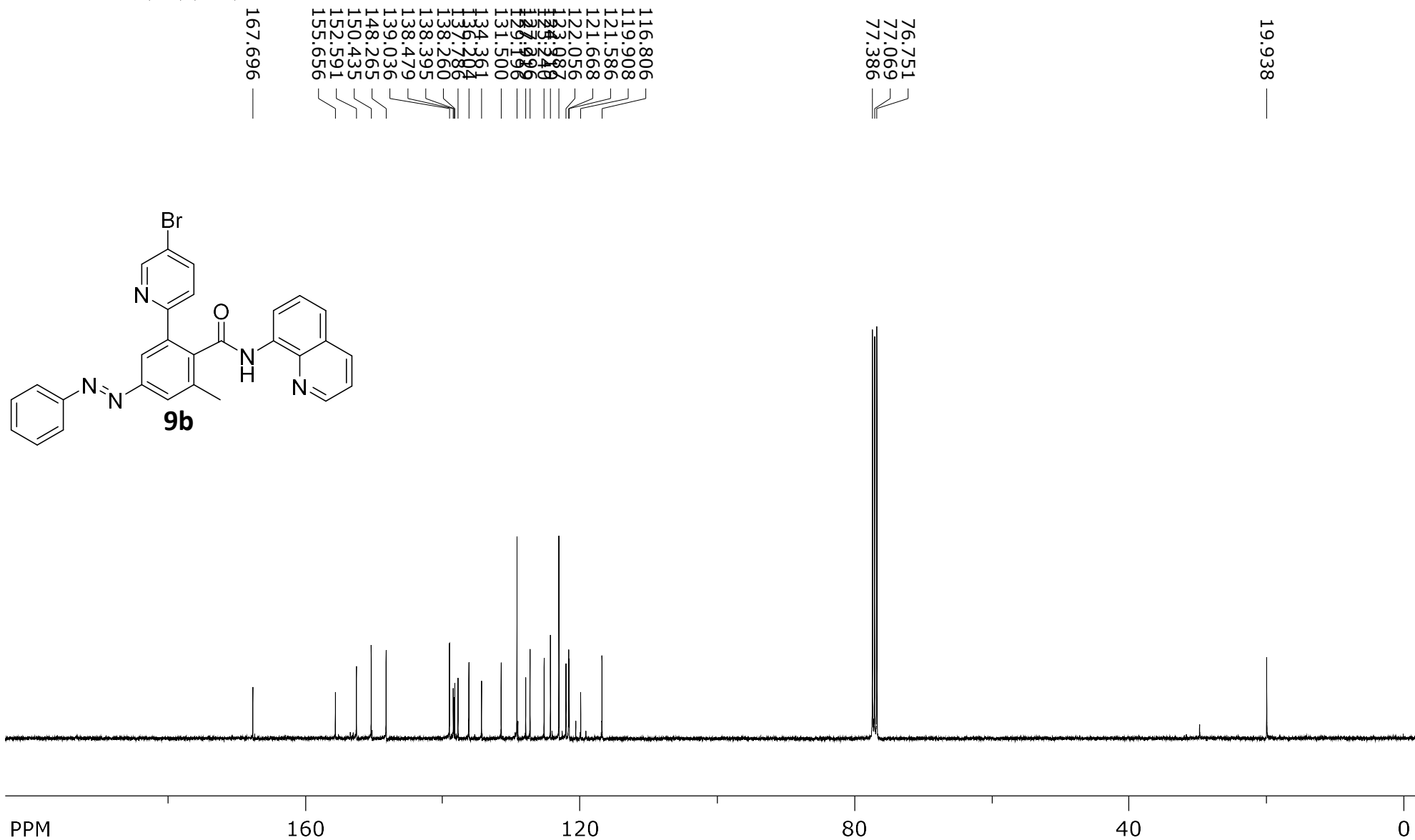
8.1492
8.1698
8.1735

7.9546
7.9570
7.9822
7.9850
8.0018
8.0056

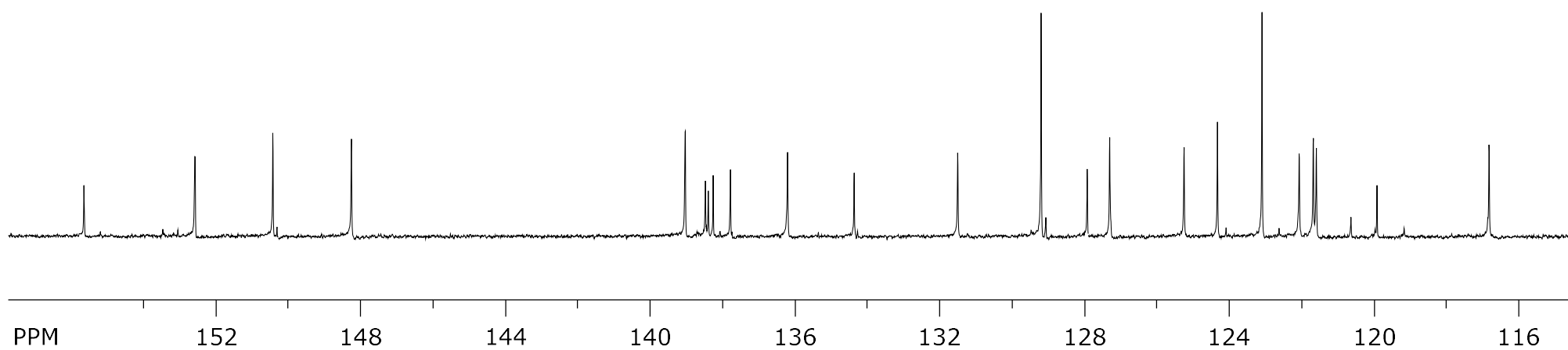
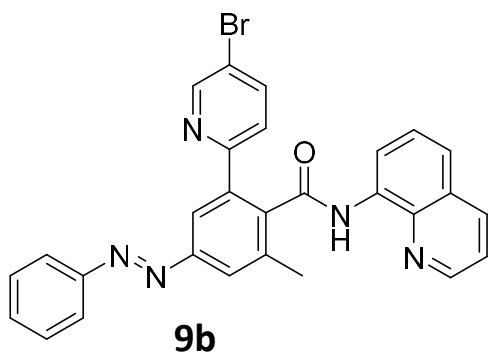


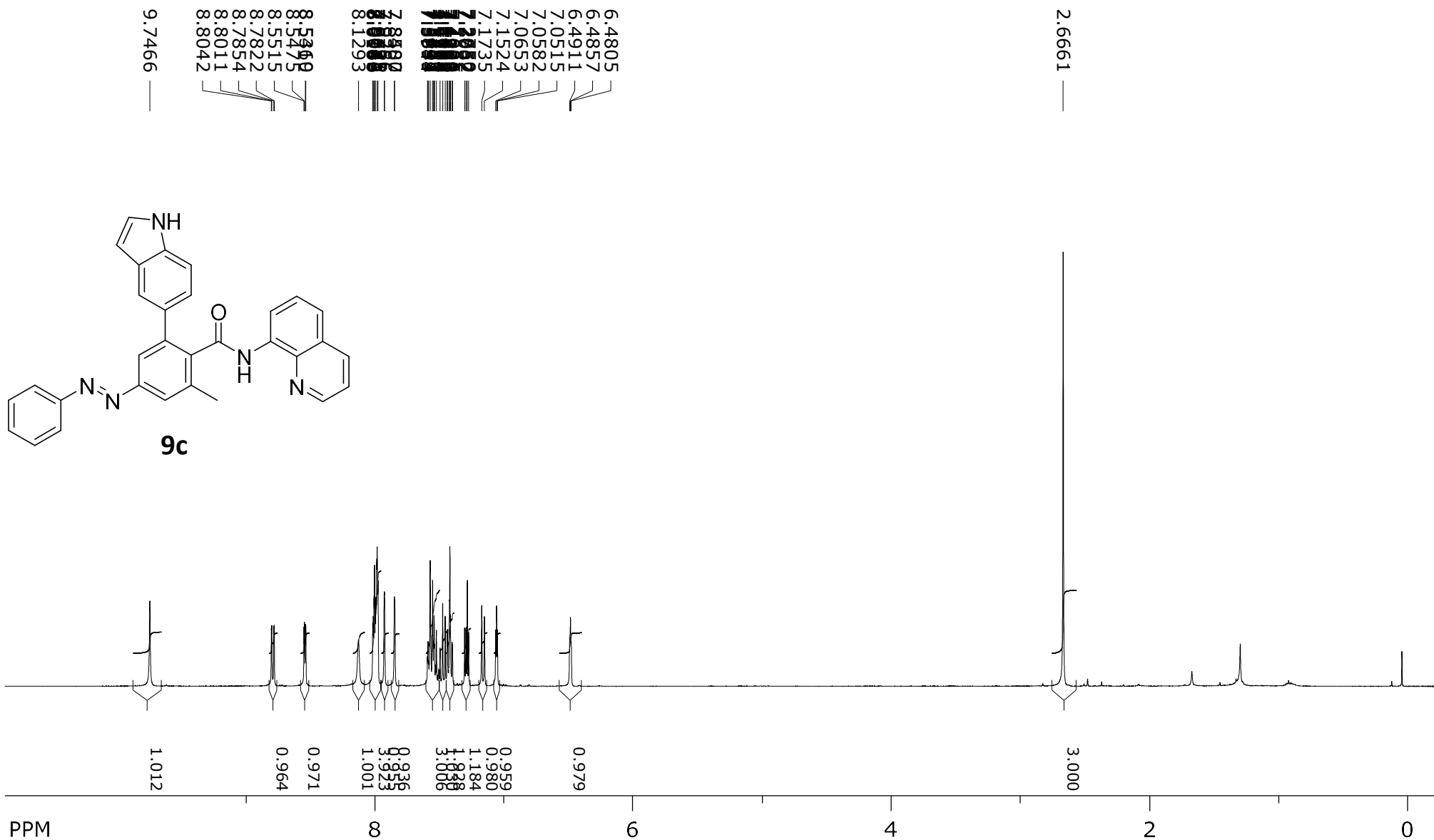


SpinWorks 4: RP-1186 Rep B2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 3



SpinWorks 4: RP-1186 Rep B2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 3



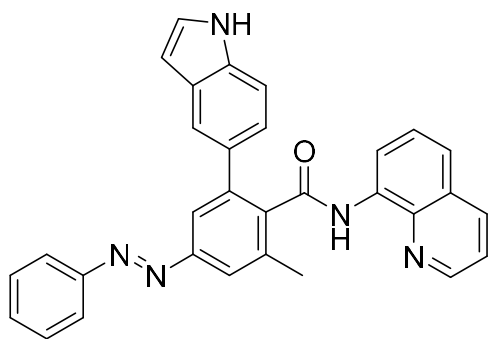


8.7822
8.7854
8.8011
8.8042

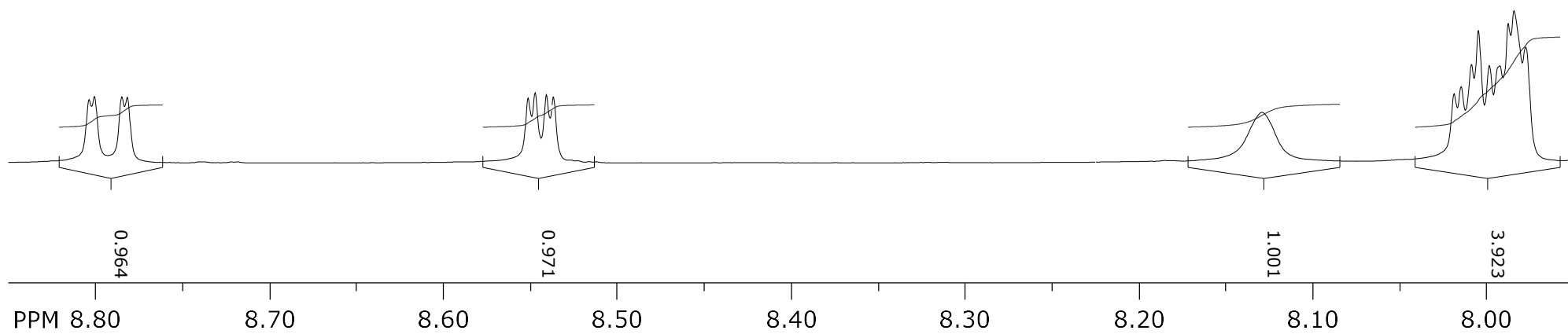
8.5369
8.5410
8.5475
8.5515

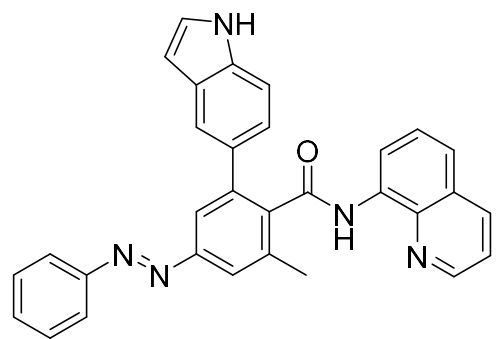
8.1293

7.9775
7.9841
7.9982
8.0046
8.0086
8.0145
8.0186

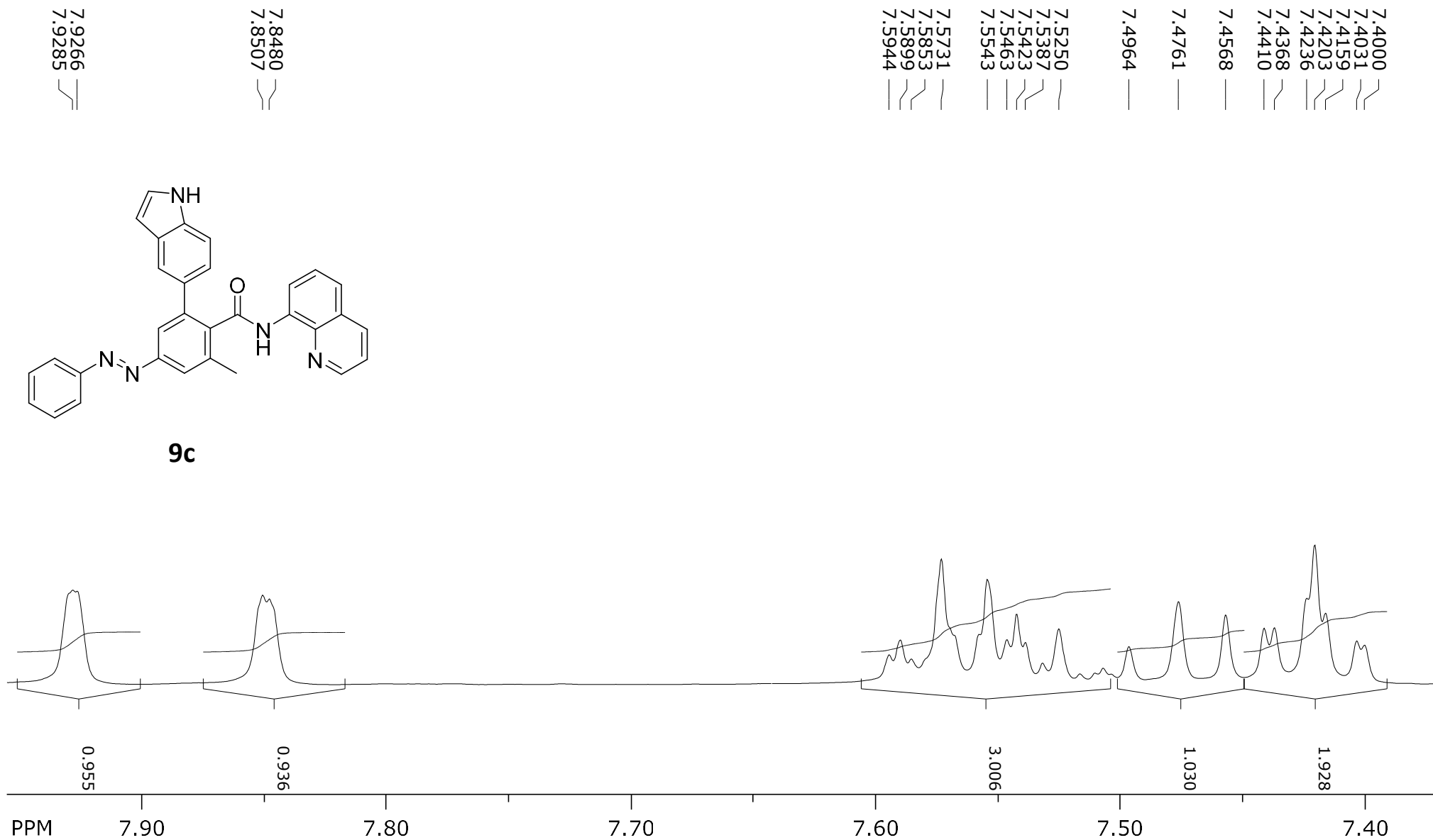


9c





9c



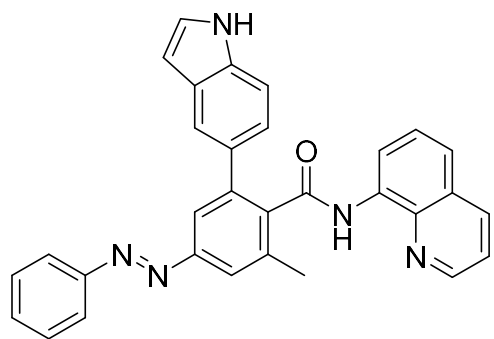
SpinWorks 4: RP-1211B2

7.2750
7.2852
7.2957
7.3062

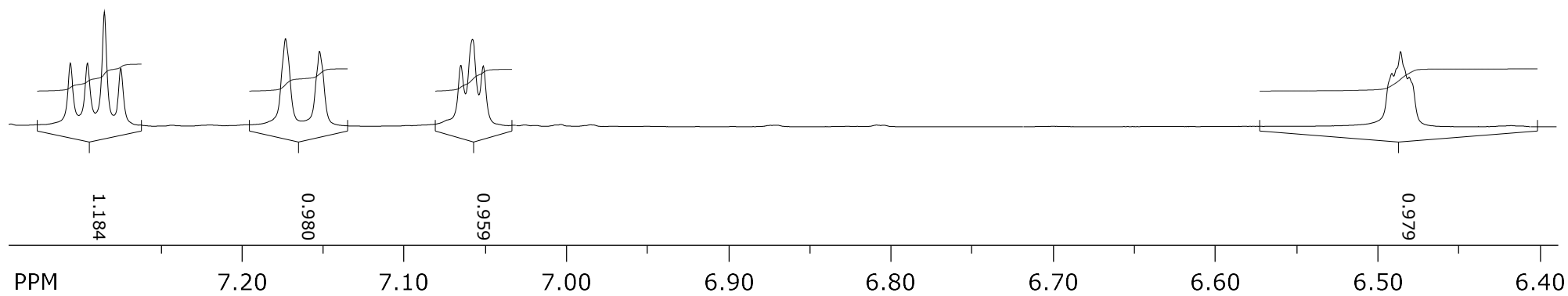
7.1524
7.1735

7.0515
7.0582
7.0653

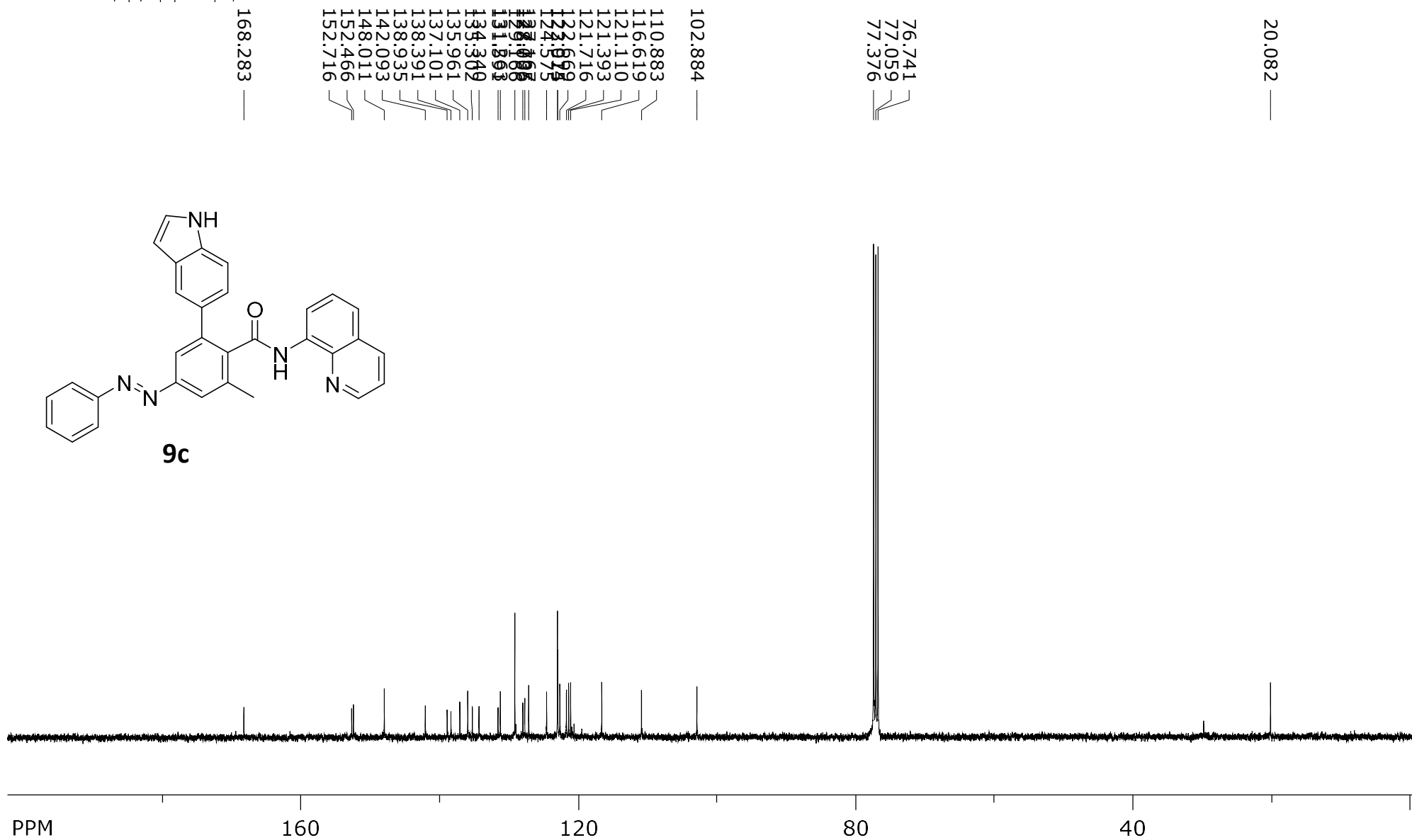
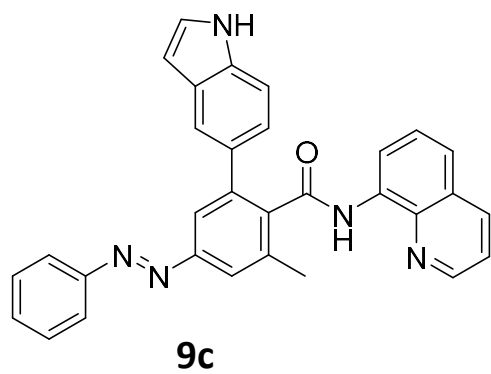
6.4805
6.4857
6.4911



9c



SpinWorks 4: RP 1211 B2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 6



SpinWorks 4: RP 1211 B2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 6

152.466
152.716

148.011

142.093

138.391
138.935

137.101

135.961

134.340

131.263
131.591

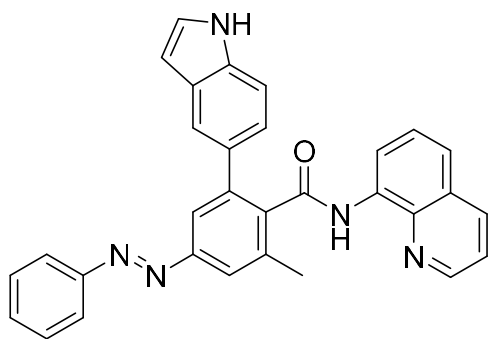
127.167
127.735
128.006
129.166

124.575
122.974
122.669
121.716
121.393
121.110

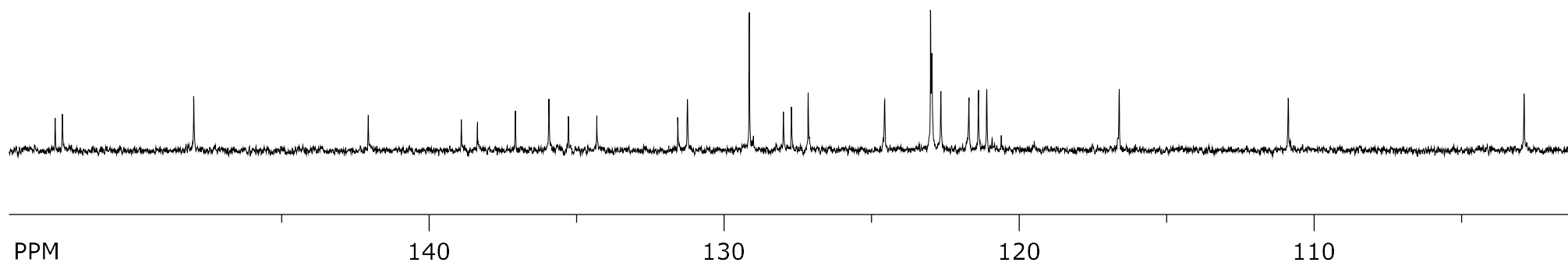
116.619

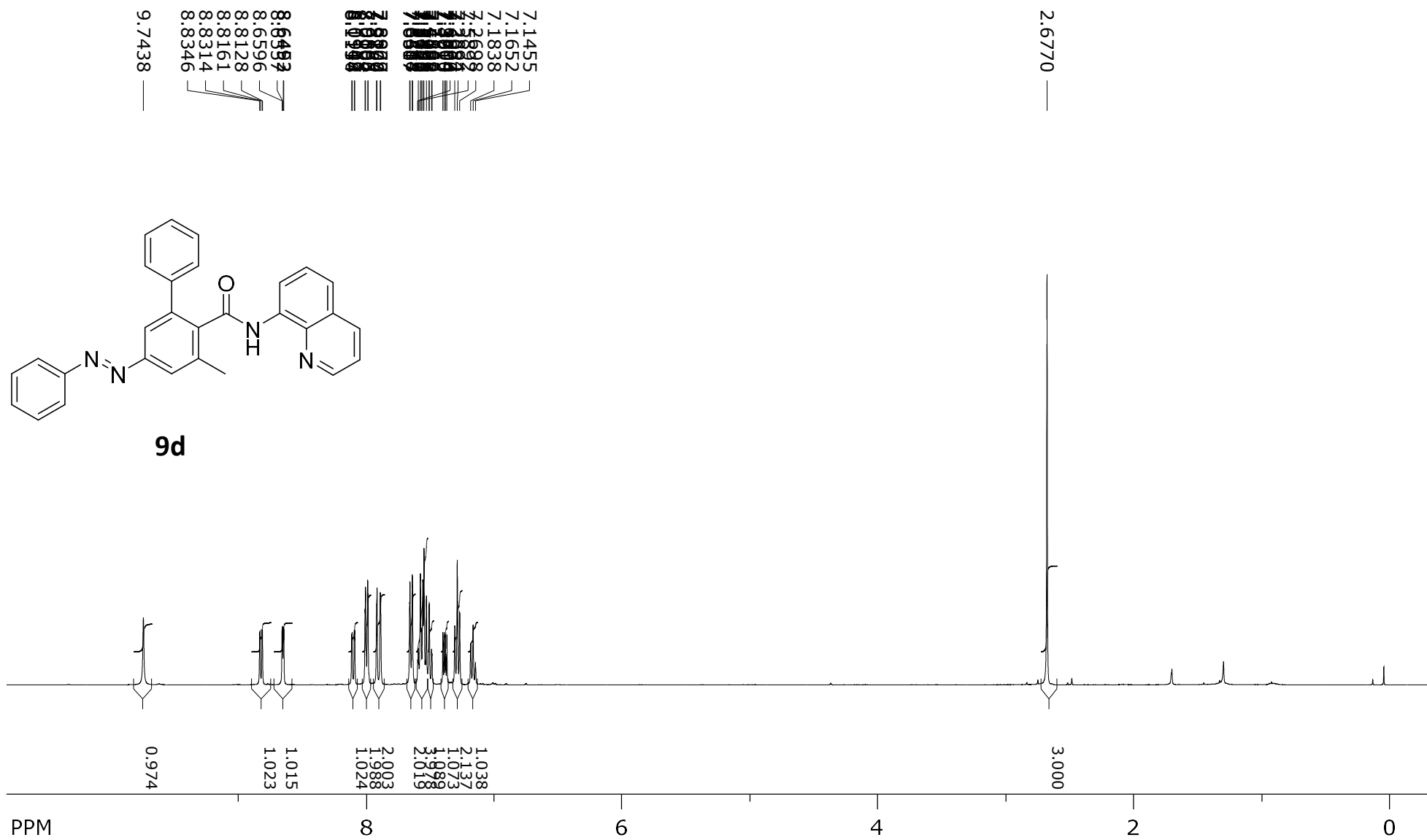
110.883

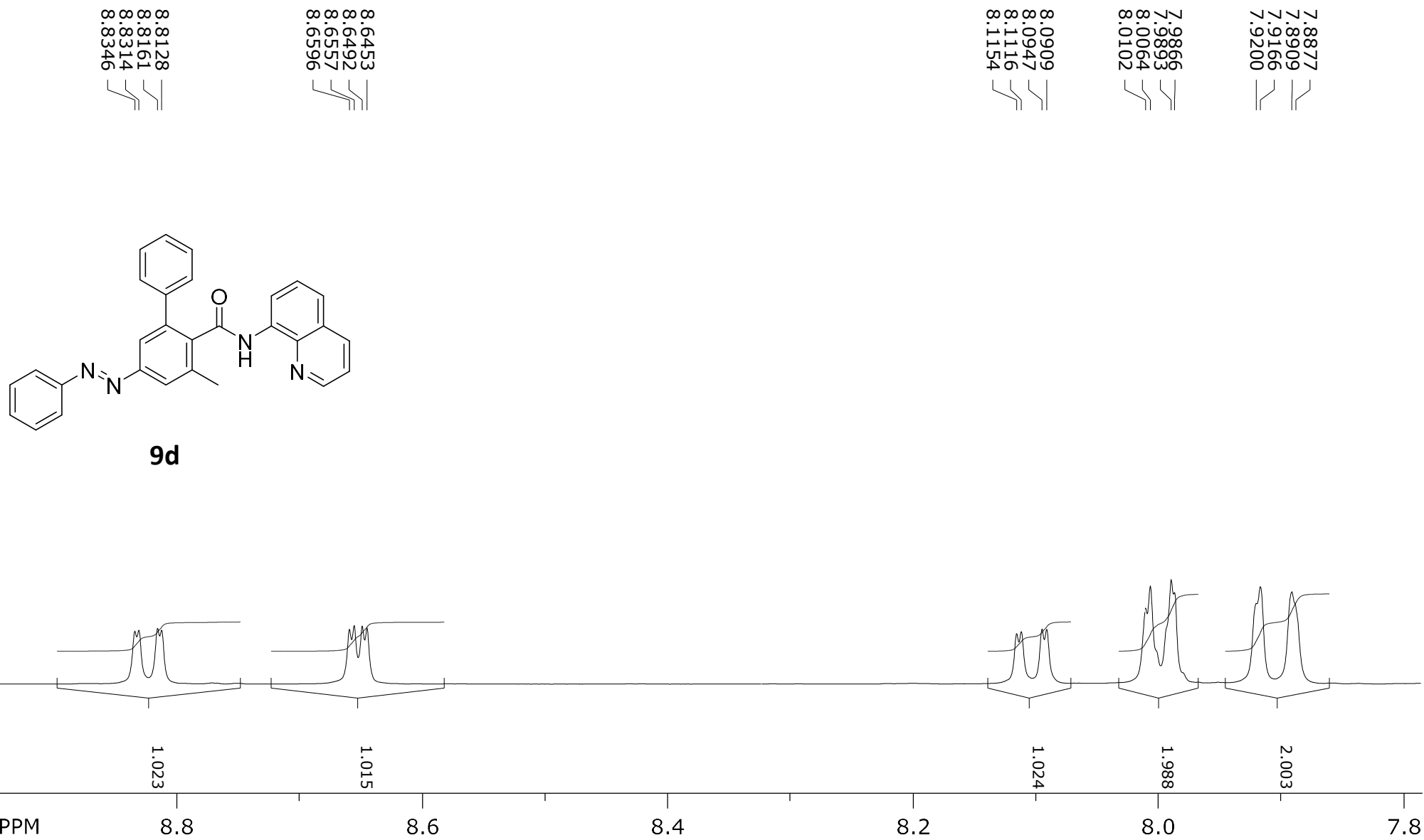
102.884



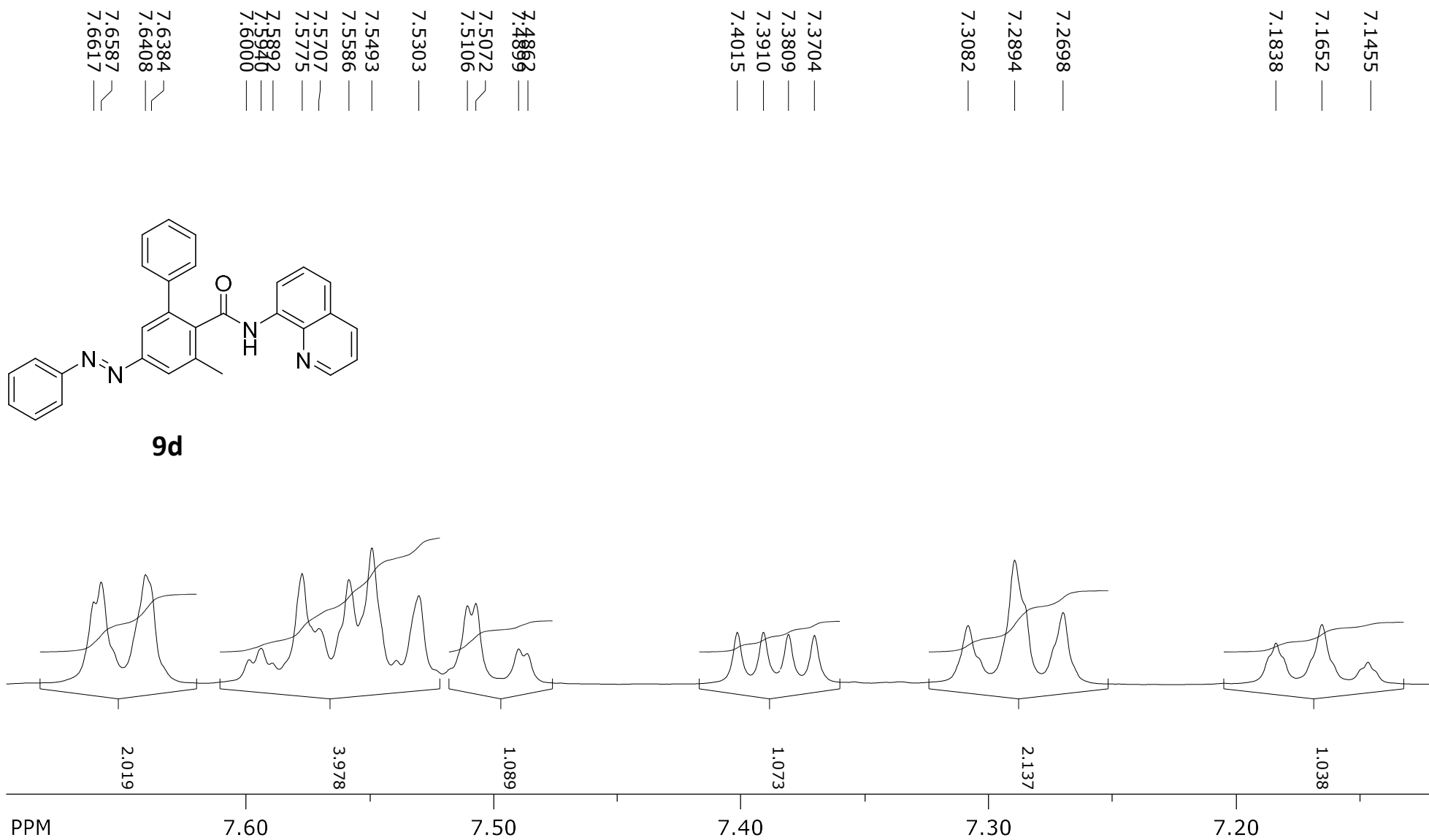
9c



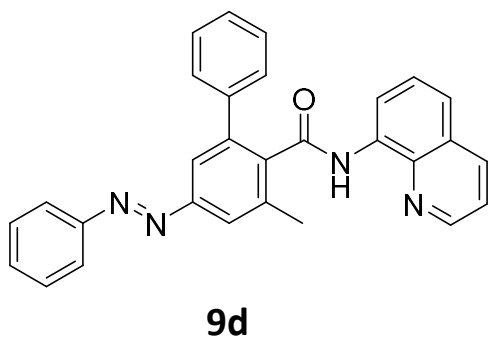
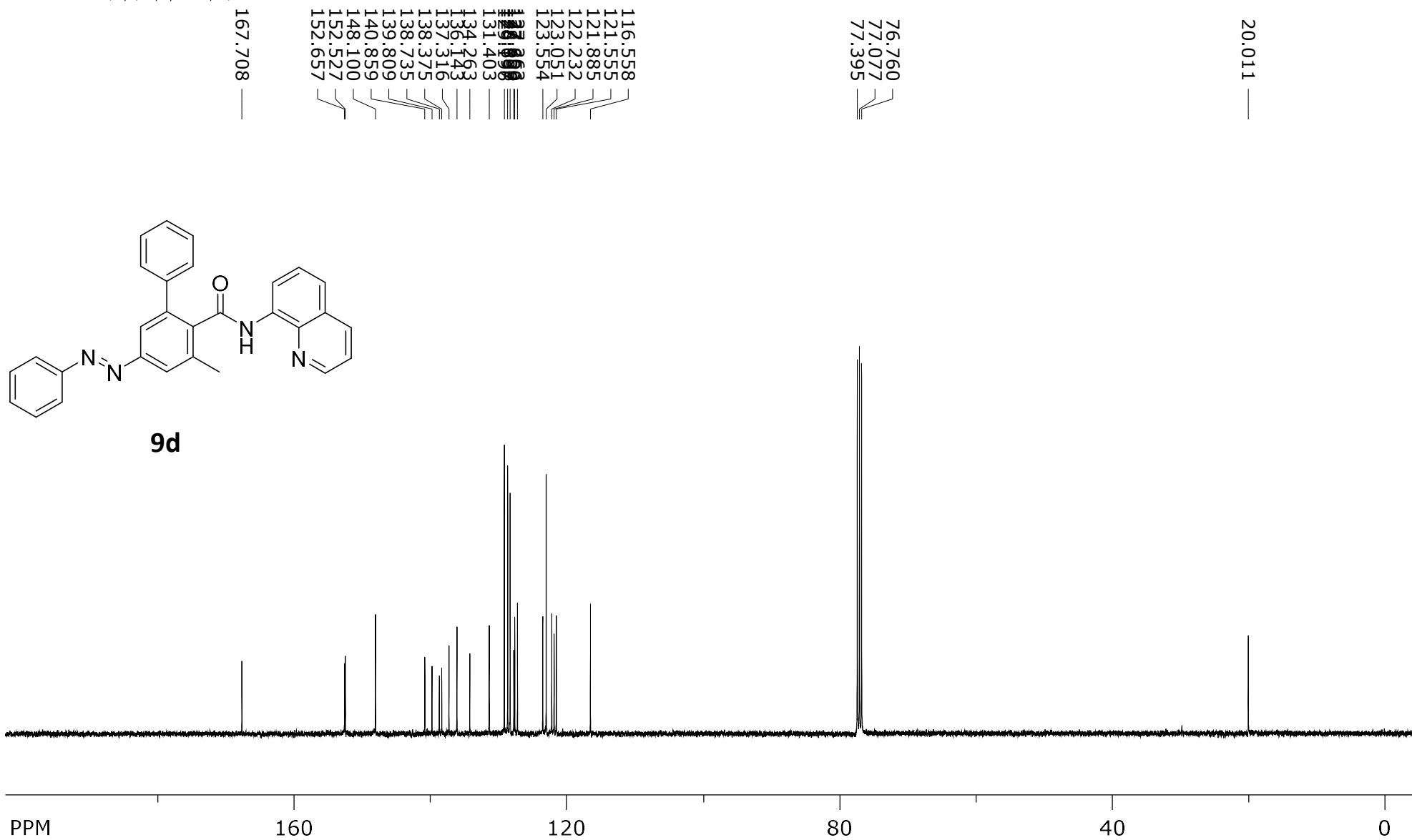




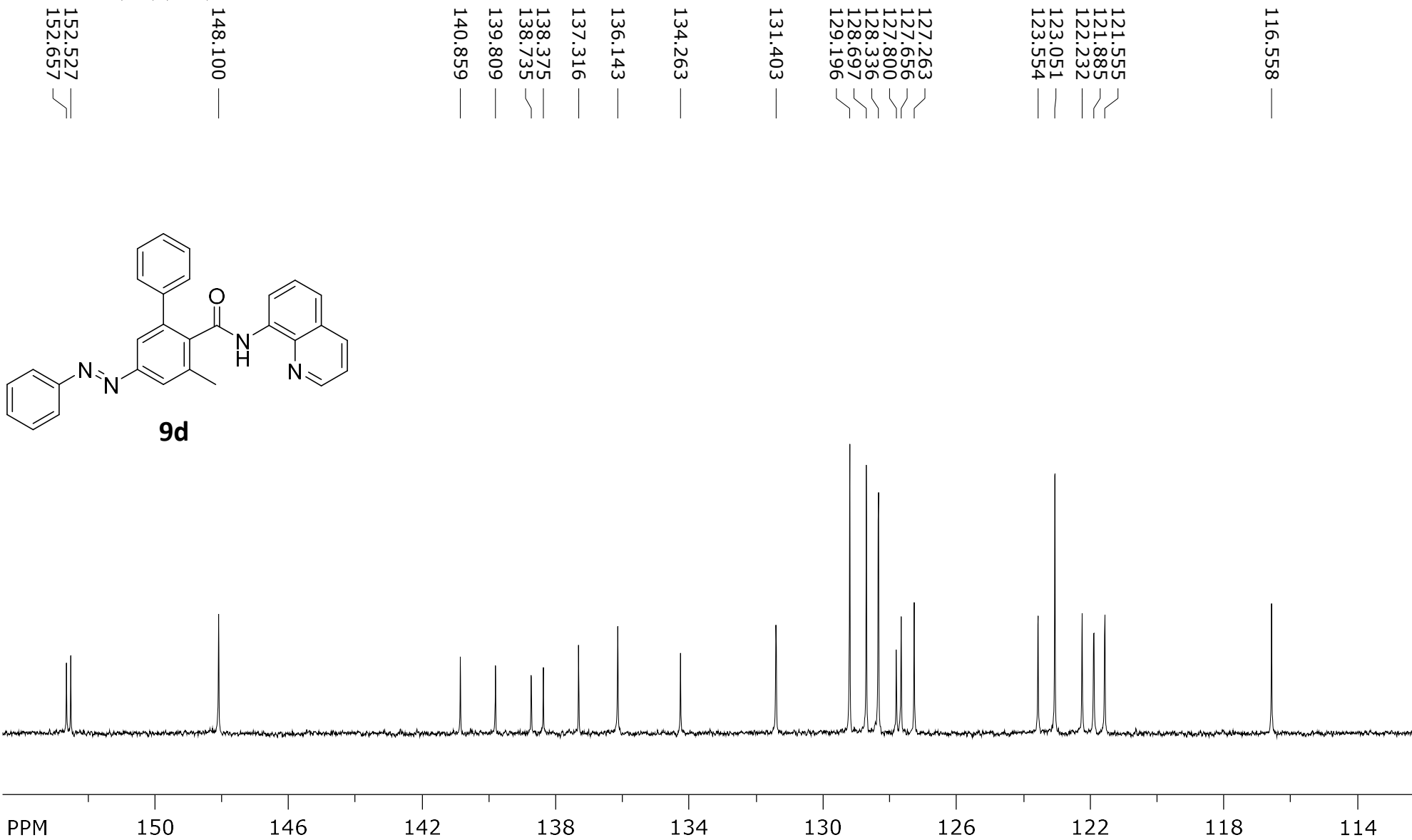
SpinWorks 4: rRP-1206-A2

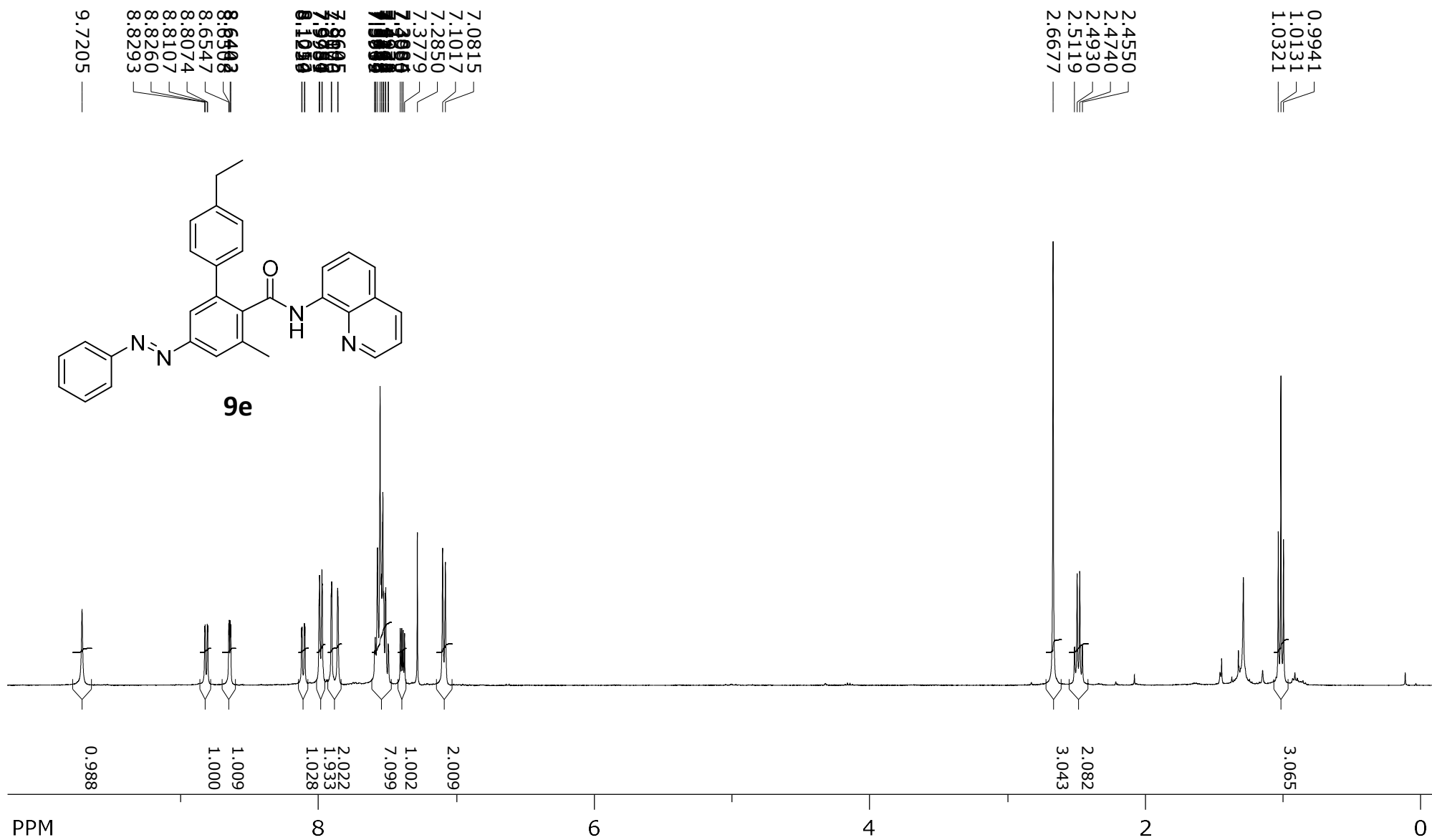


SpinWorks 4: RP 1206 A2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 1



SpinWorks 4: RP 1206 A2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 1

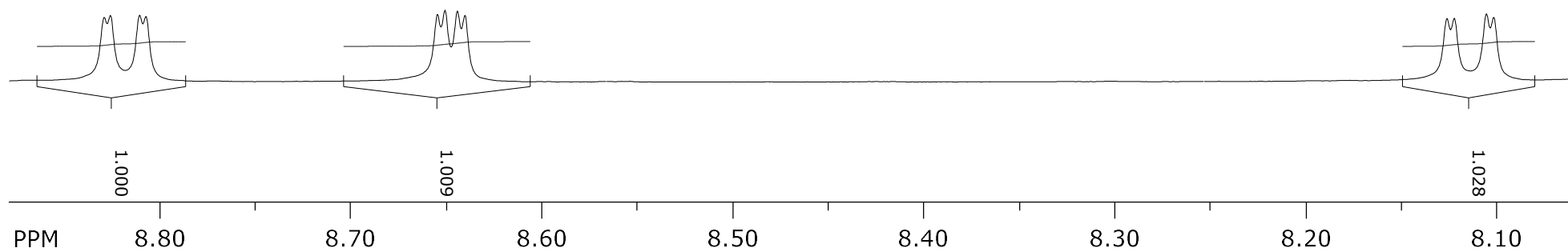
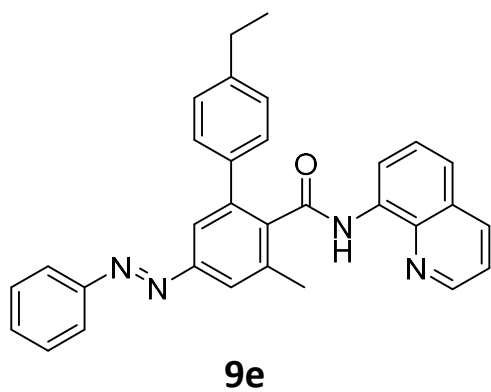




8.8074
8.8107
8.8260
8.8293

8.6403
8.6442
8.6508
8.6547

8.1014
8.1052
8.1220
8.1259



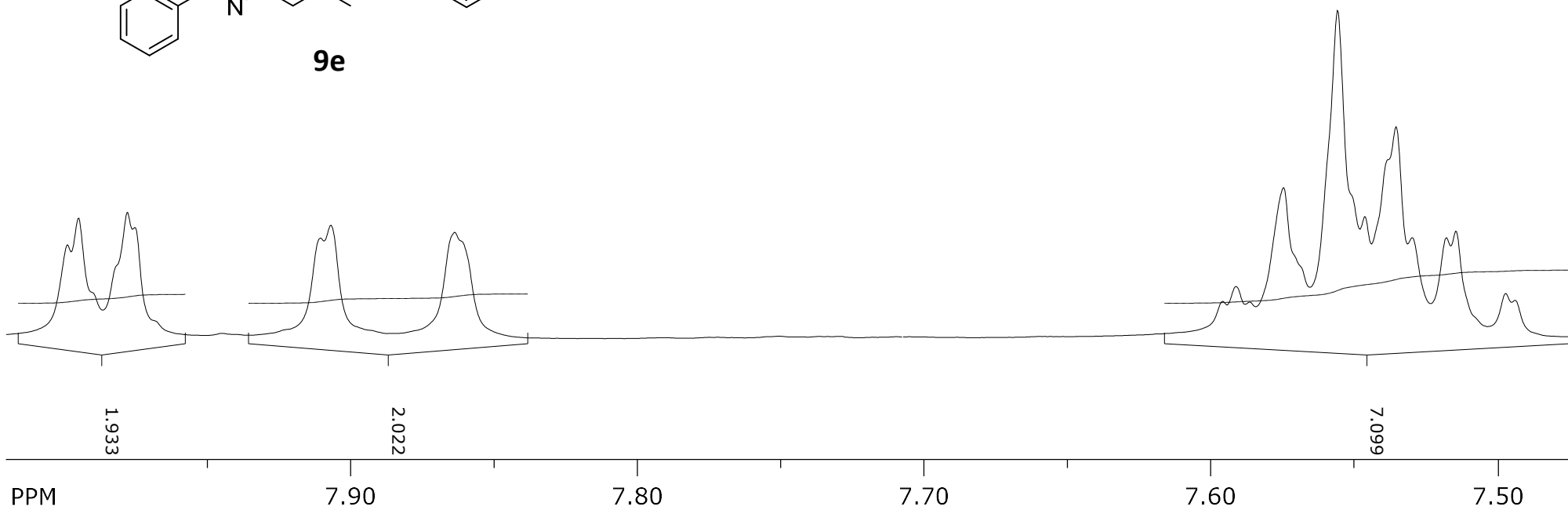
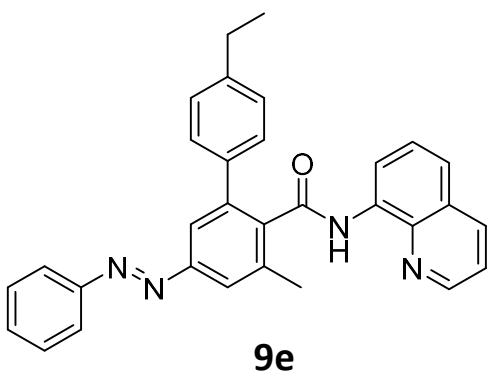
7.9754
7.9780
7.9951
7.9989

7.9070
7.9106

7.8645

7.5746
7.5864
7.5912
7.5959

7.5558
7.5462
7.5354
7.5297
7.5178
7.5145
7.4971
7.4938

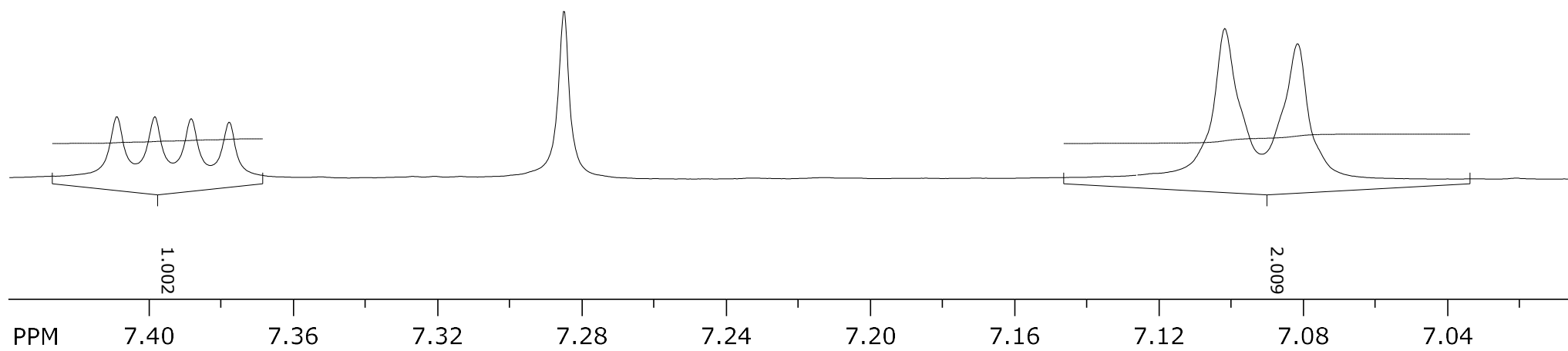
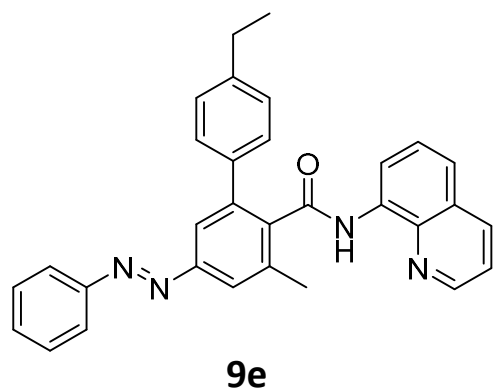


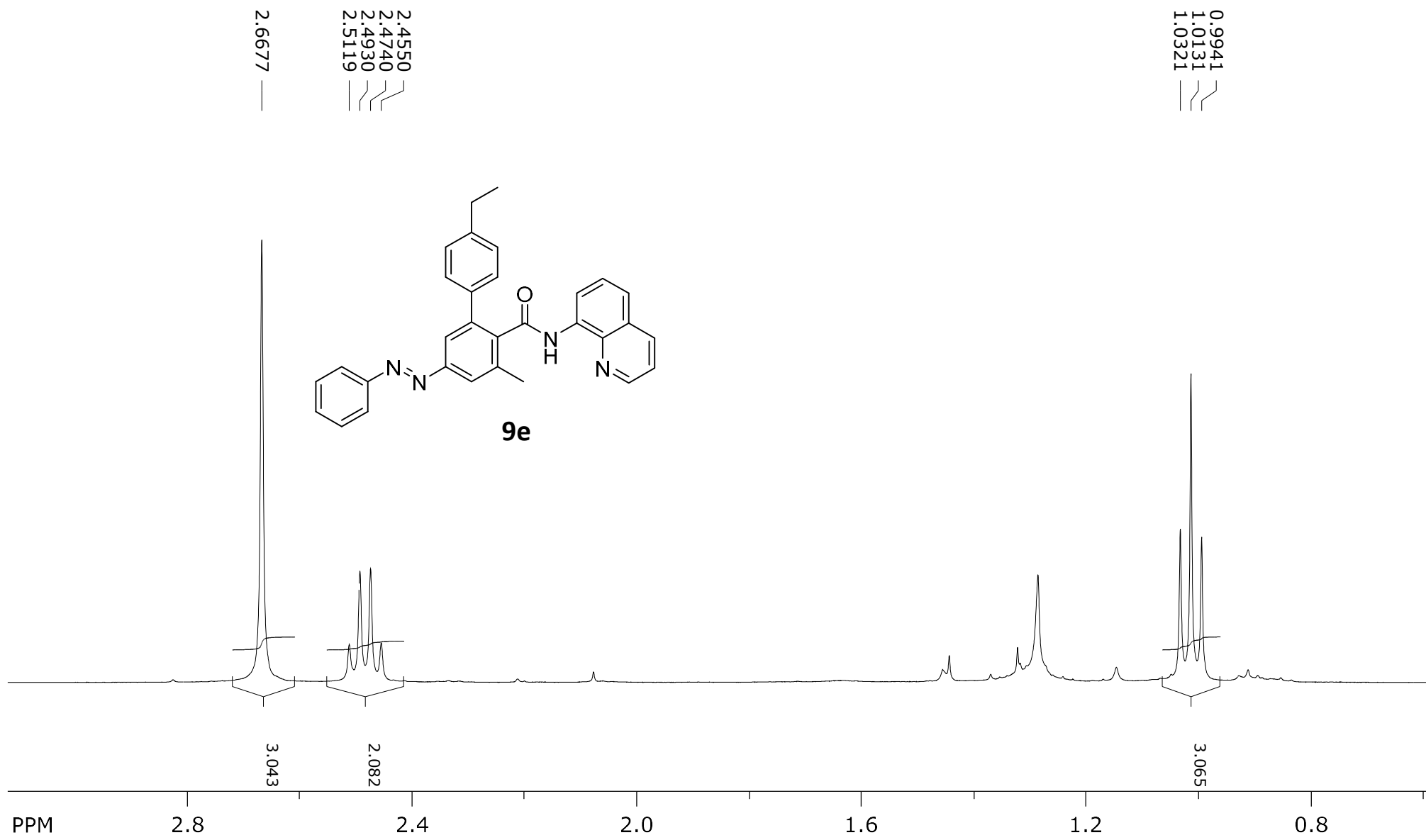
7.3779
7.3884
7.3985
7.4090

7.2850

7.1017

7.0815





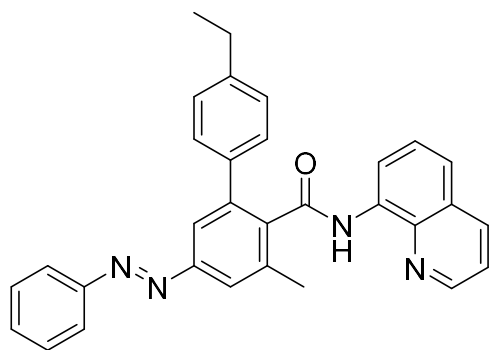
SpinWorks 4: RP 1185 R 6

C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 53

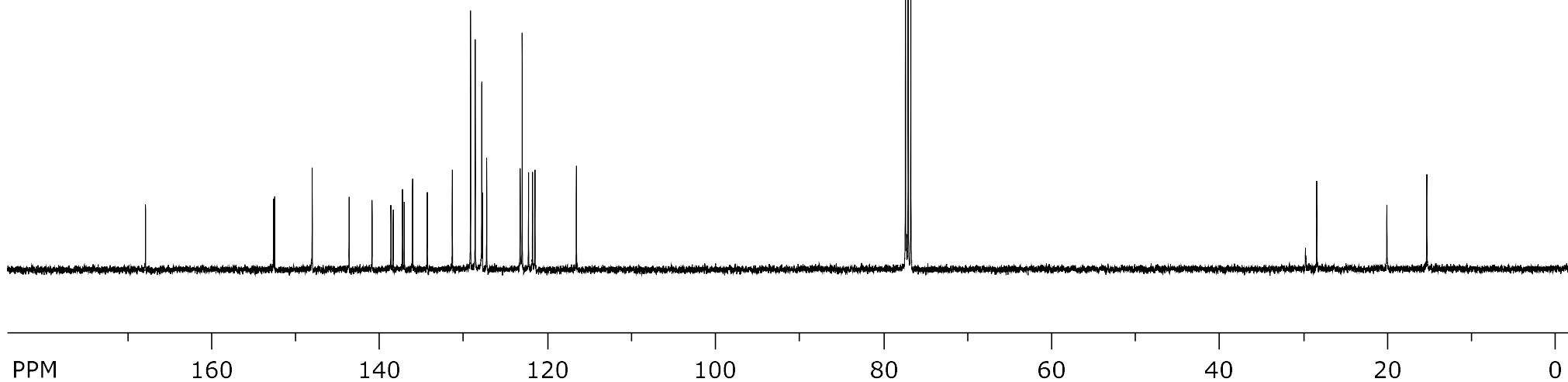
167.909
152.652
152.526
148.056
143.654
140.925
138.673
137.296
138.405
134.343
136.091
131.362
129.189
127.079
123.275
122.039
122.286
121.810
121.515
116.587

76.750
77.068
77.386

28.400
20.045
15.289

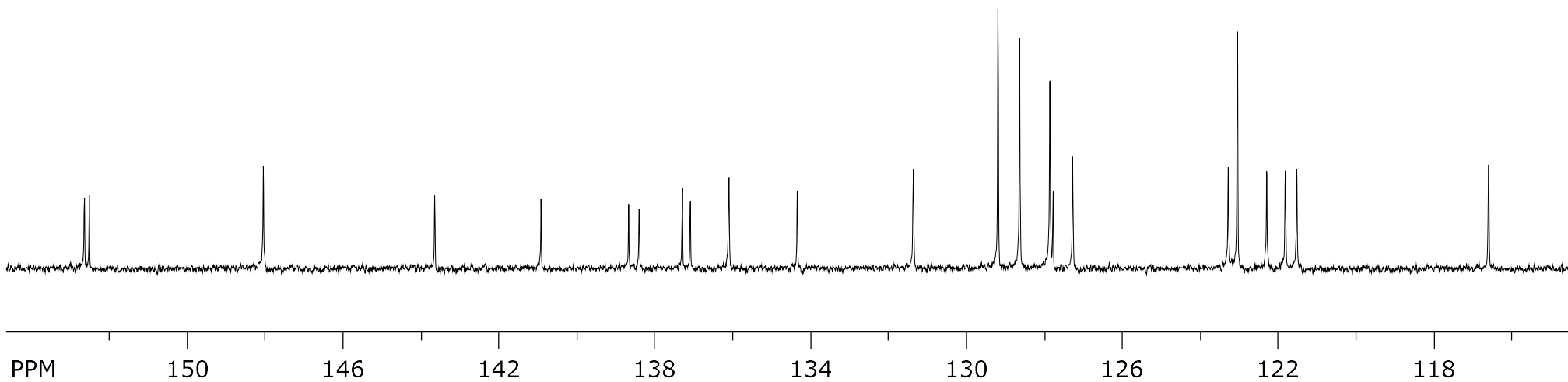
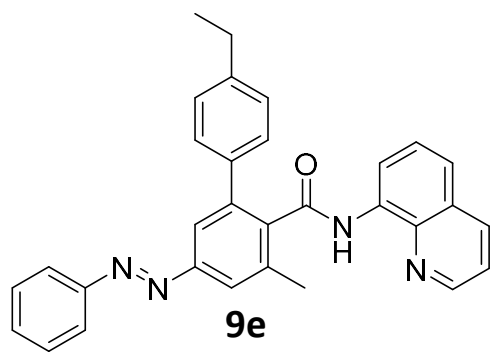


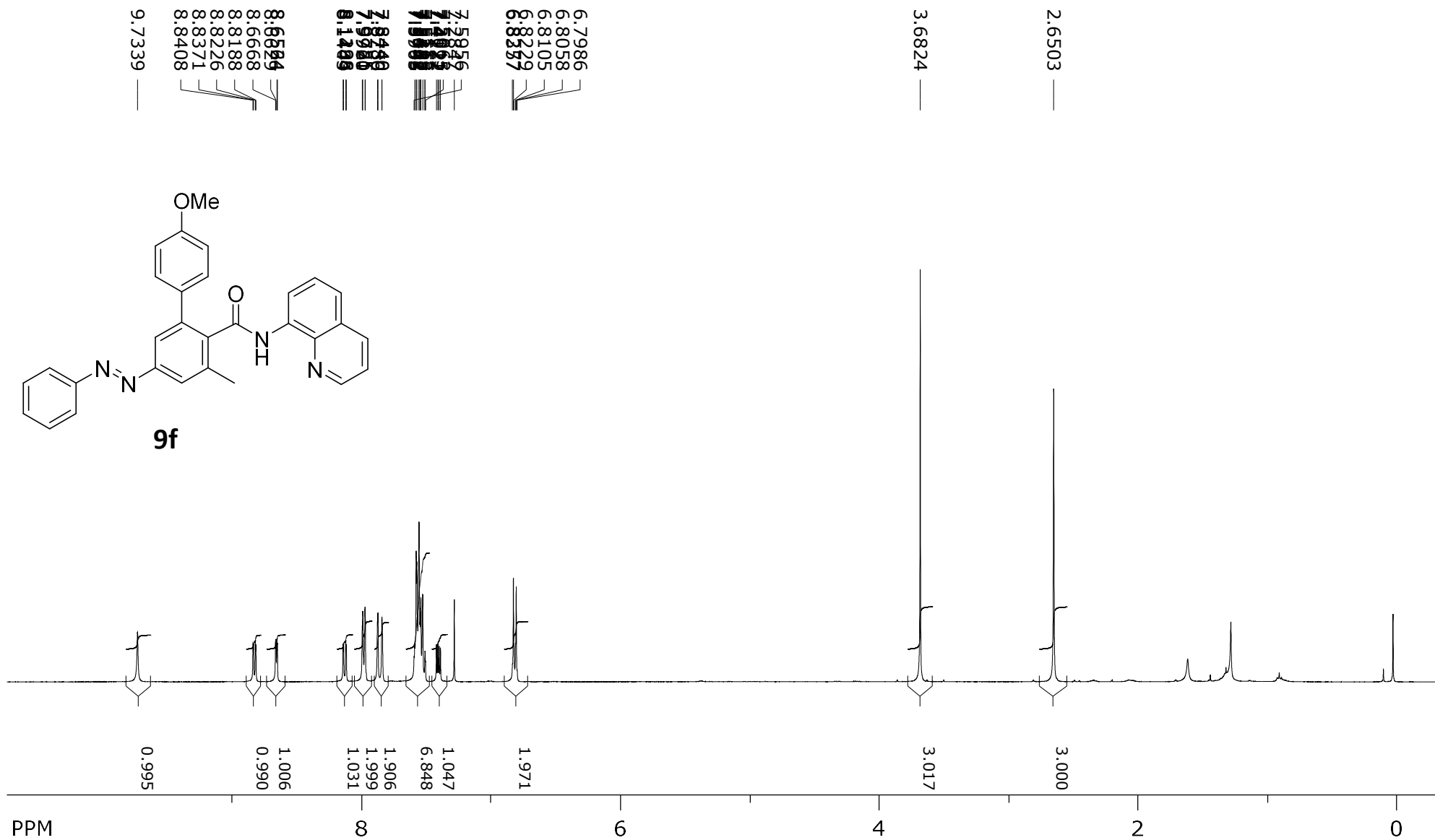
9e



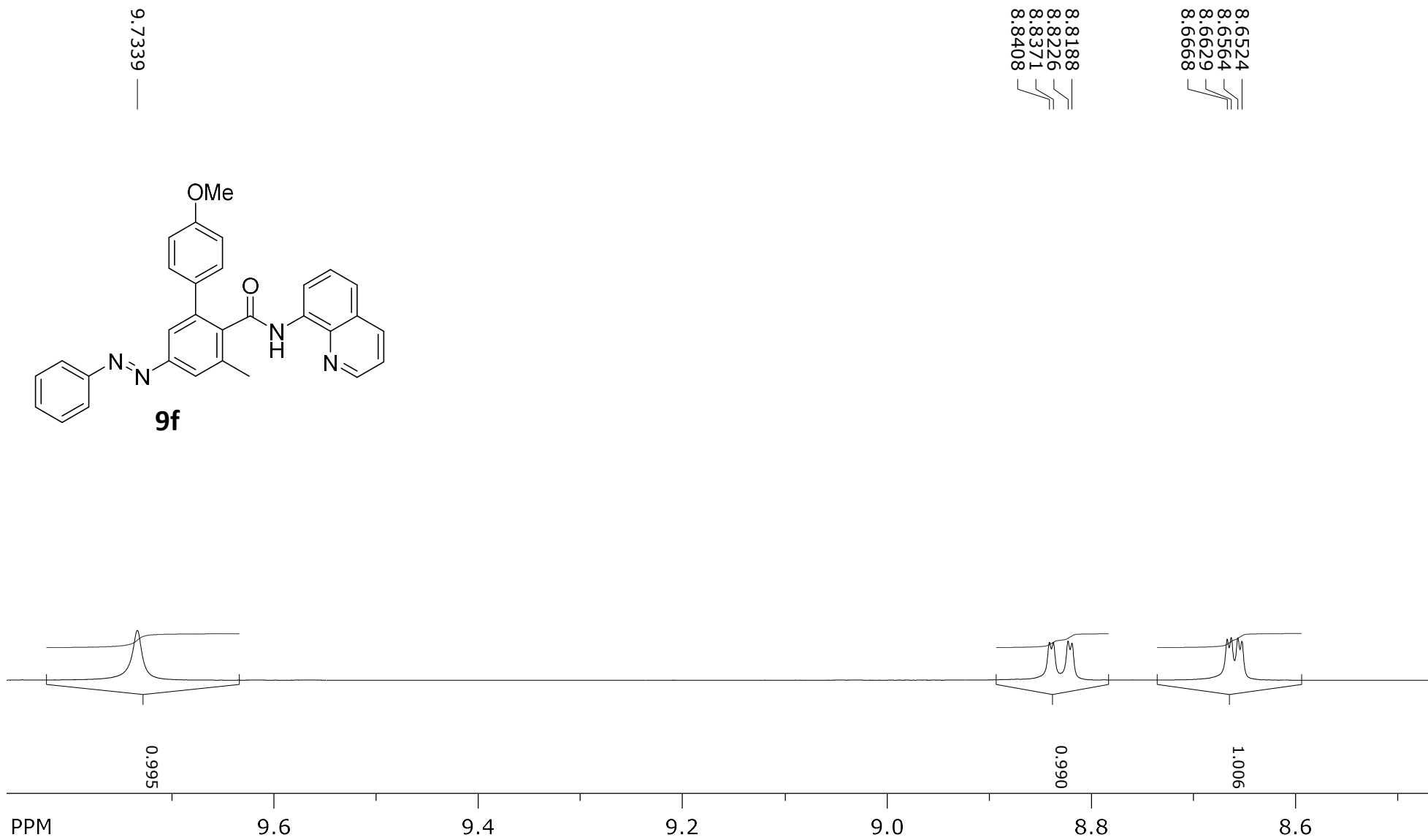
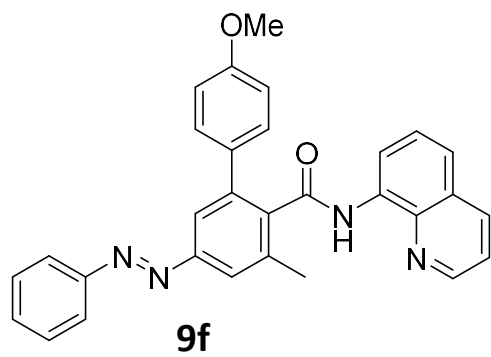
SpinWorks 4: RP 1185 R 6
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 53

152.526 —
152.652 —
148.056 —
143.654 —
140.925 —
138.673 —
138.405 —
137.296 —
137.091 —
136.100 —
134.343 —
131.362 —
129.187 —
128.633 —
127.856 —
127.774 —
127.270 —
123.275 —
123.039 —
122.286 —
121.810 —
121.515 —
116.587 —





SpinWorks 4: RP-1187fin



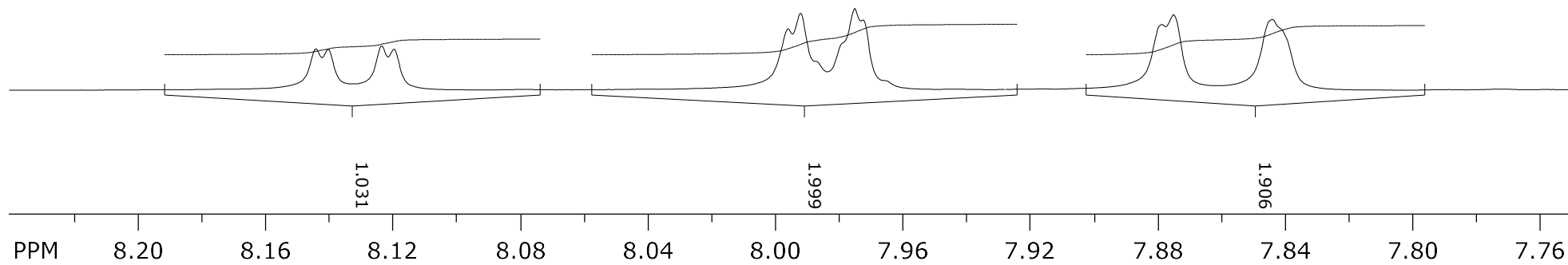
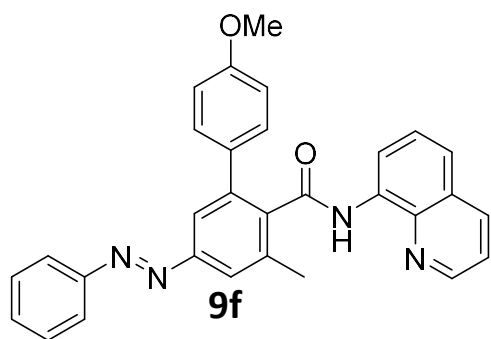
SpinWorks 4: RP-1187fin

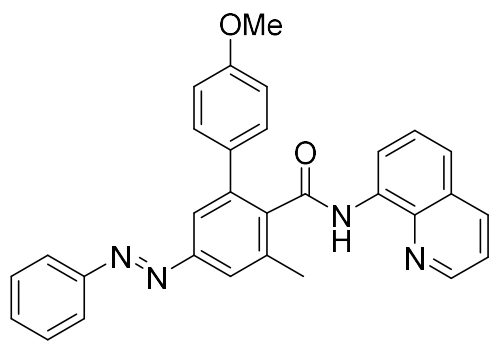
8.1198
8.1236
8.1404
8.1443

7.9921
7.9960
7.9725
7.9751

7.8750
7.8786

7.8440





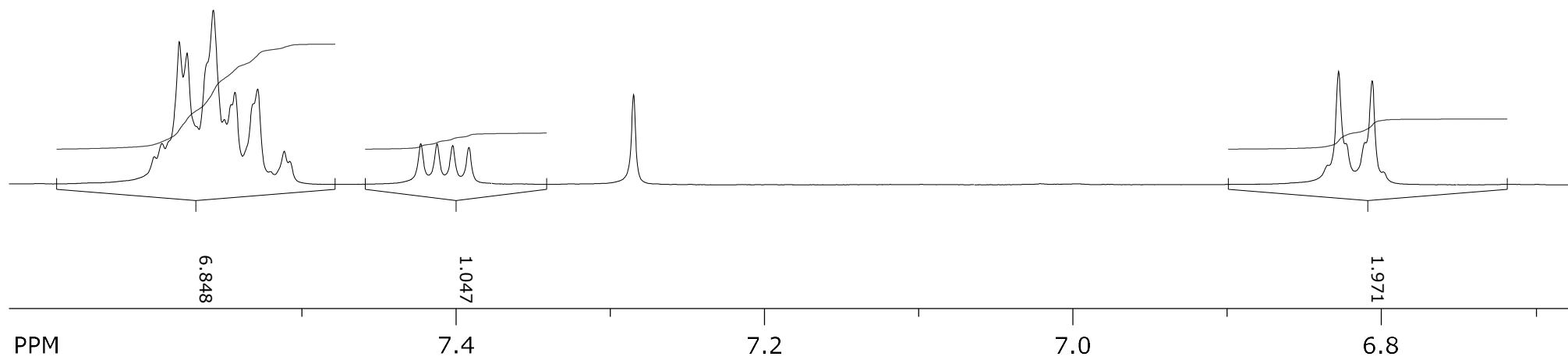
9f

7.5063
7.5113
7.5113
7.5285
7.5432
7.5572
7.5742
7.5793
7.5905

7.3915
7.4021
7.4122
7.4227

7.2847

6.7986
6.8058
6.8105
6.8229
6.8277
6.8357



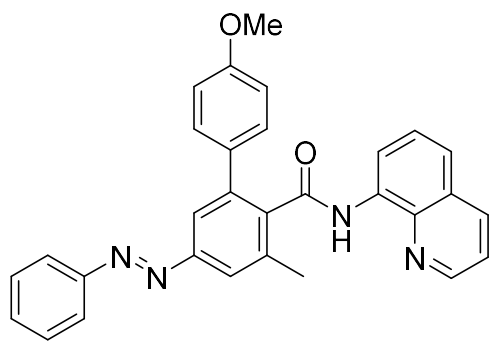
SpinWorks 4: RP 1187 R
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 20

168.009 —
159.160 —
152.514 —
148.128 —
140.439 —
138.662 —
137.222 —
136.187 —
134.296 —
132.333 —
131.378 —
129.997 —
129.107 —
127.845 —
123.033 —
122.302 —
121.925 —
121.573 —
116.634 —
113.840 —

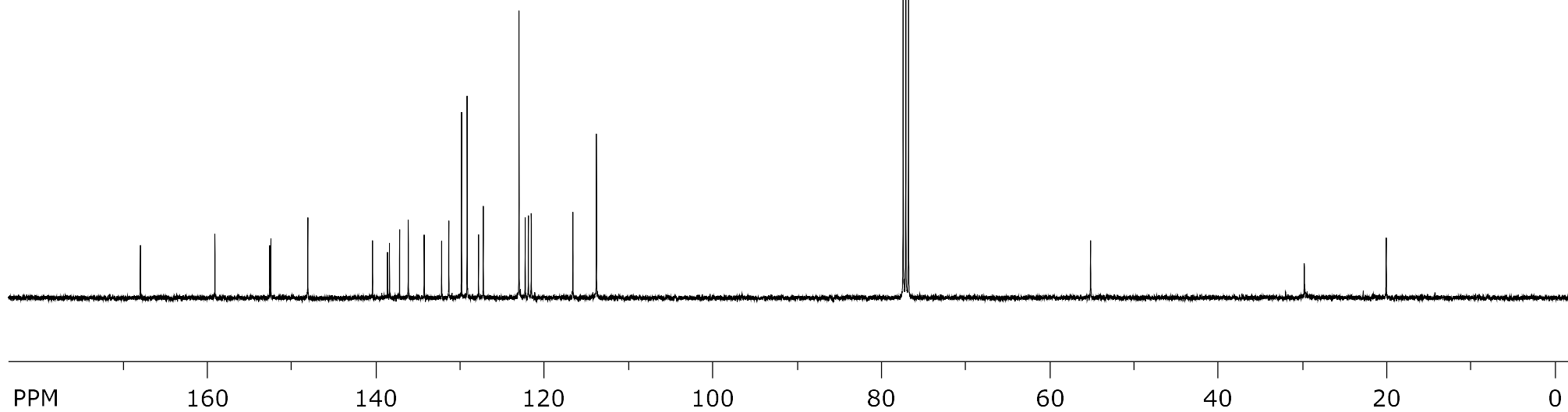
76.765 —
77.083 —
77.401 —

55.136 —

20.015 —

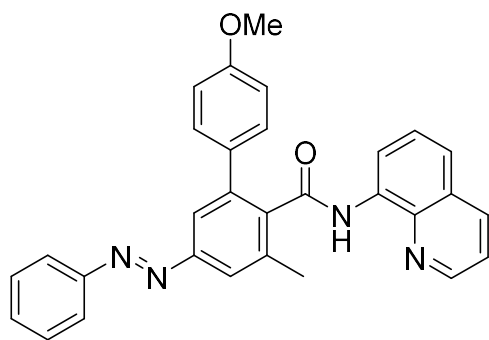


9f

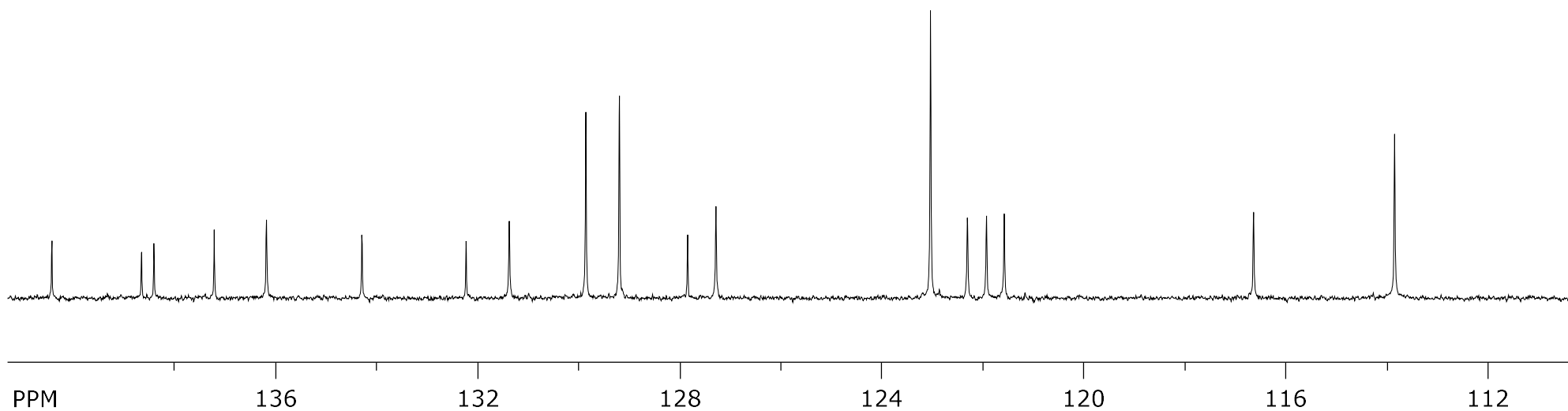


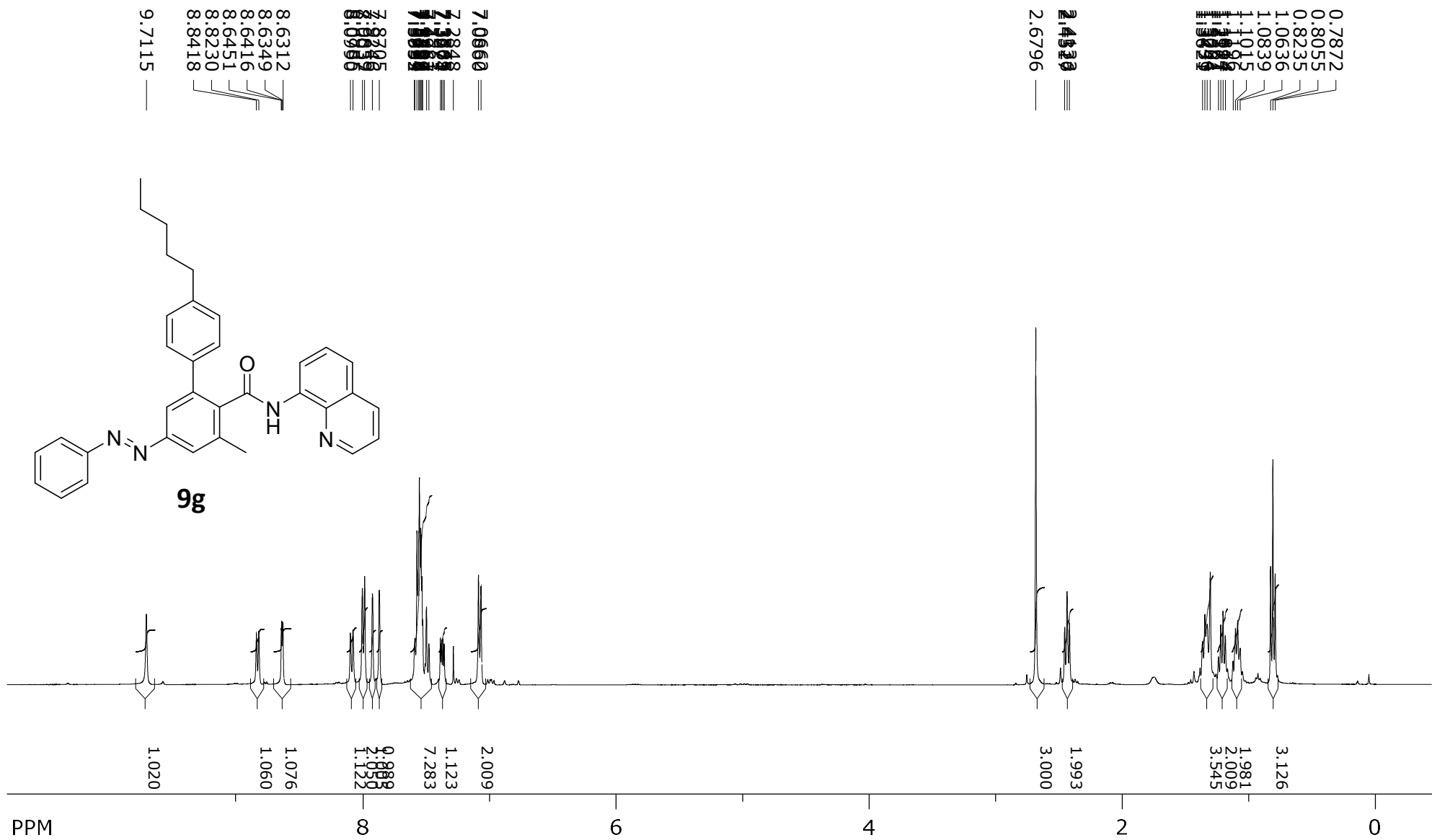
SpinWorks 4: RP 1187 R
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 20

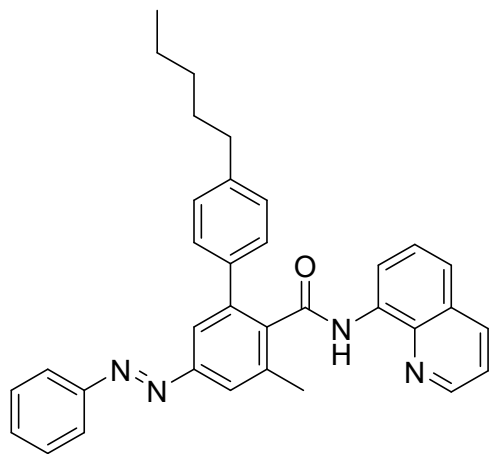
140.439 —
138.417 —
138.662 —
137.222 —
136.187 —
134.296 —
132.233 —
131.378 —
129.860 —
129.197 —
127.845 —
127.283 —
123.033 —
121.573 —
121.925 —
122.302 —
116.634 —
113.840 —



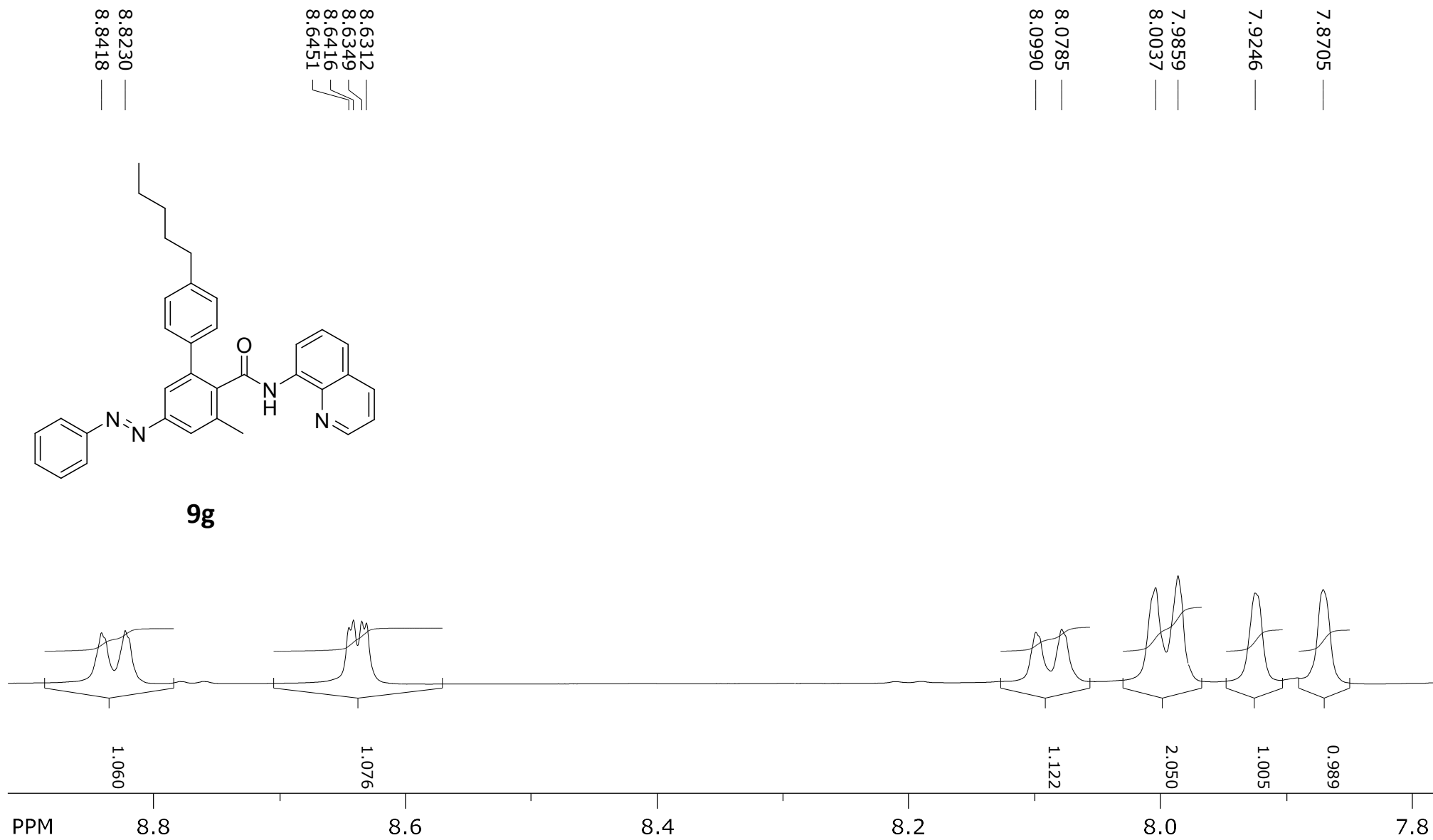
9f



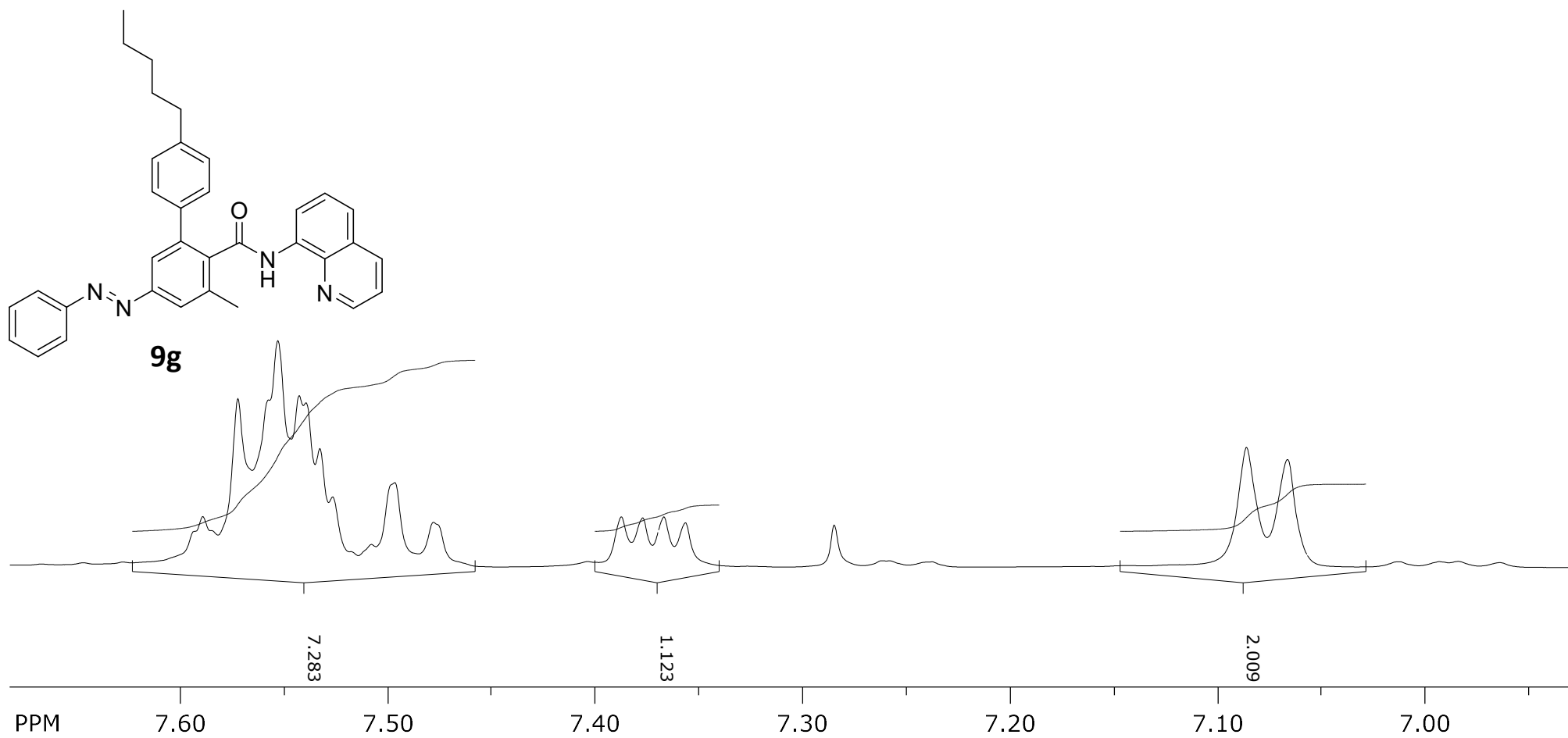


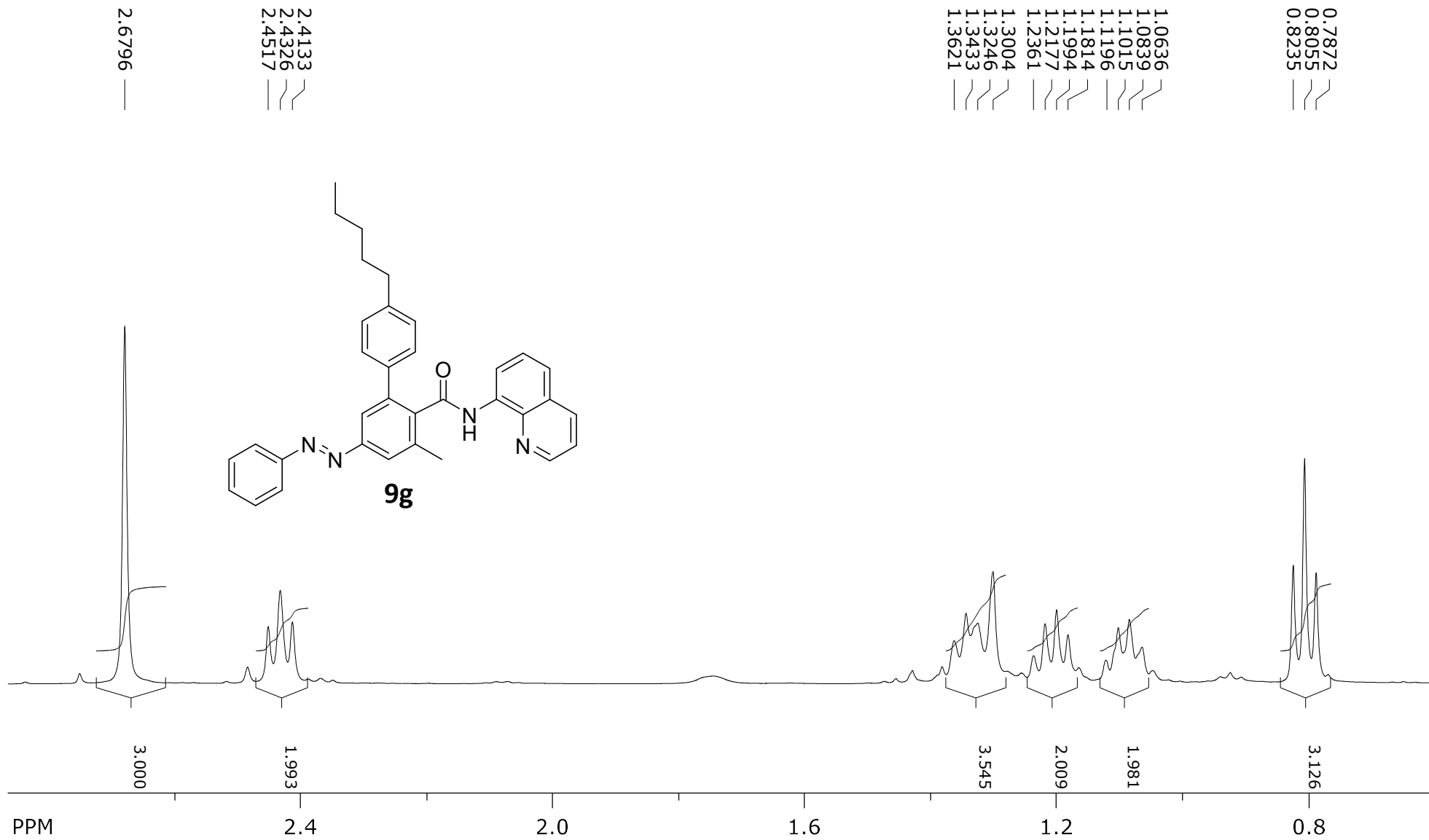


9g

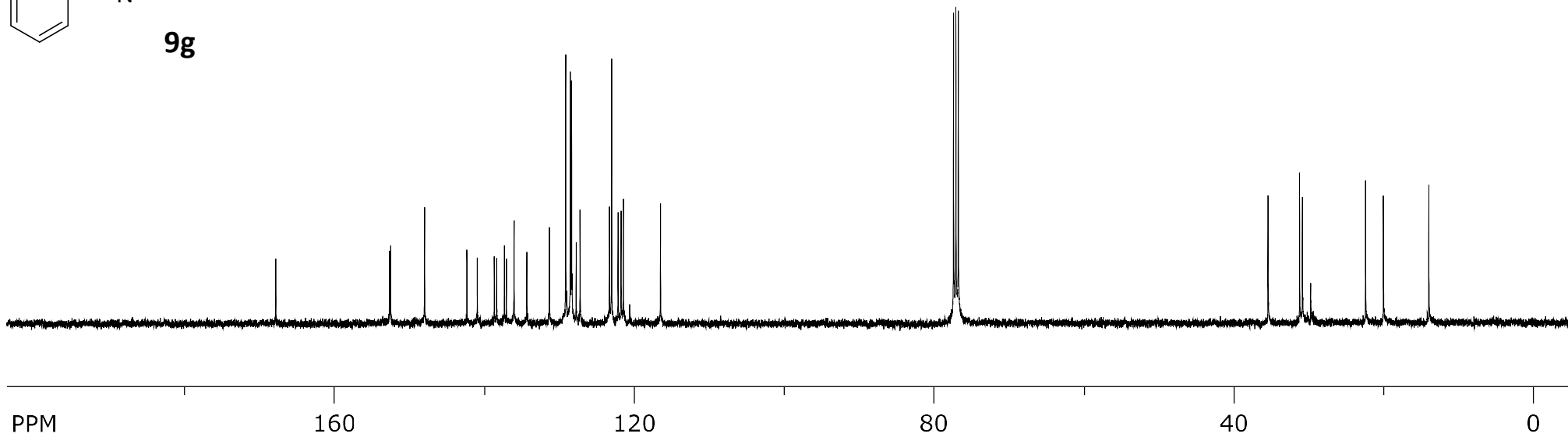
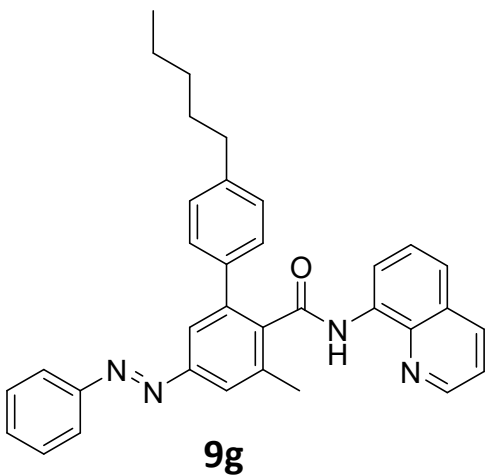


7.5267
7.53329
7.5395
7.5429
7.5531
7.5576
7.5724
7.5893
7.5932
7.4781
7.4967
7.3565
7.3669
7.3771
7.3874
7.2848
7.0662
7.0860





SpinWorks 4: RP 1193 A2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 26



SpinWorks 4: RP 1193 A2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 26

152.542
152.687

148.008

142.361

140.975

138.703

138.390

137.351

137.089

136.062

134.368

131.343

129.174

128.554

128.387

127.773

127.254

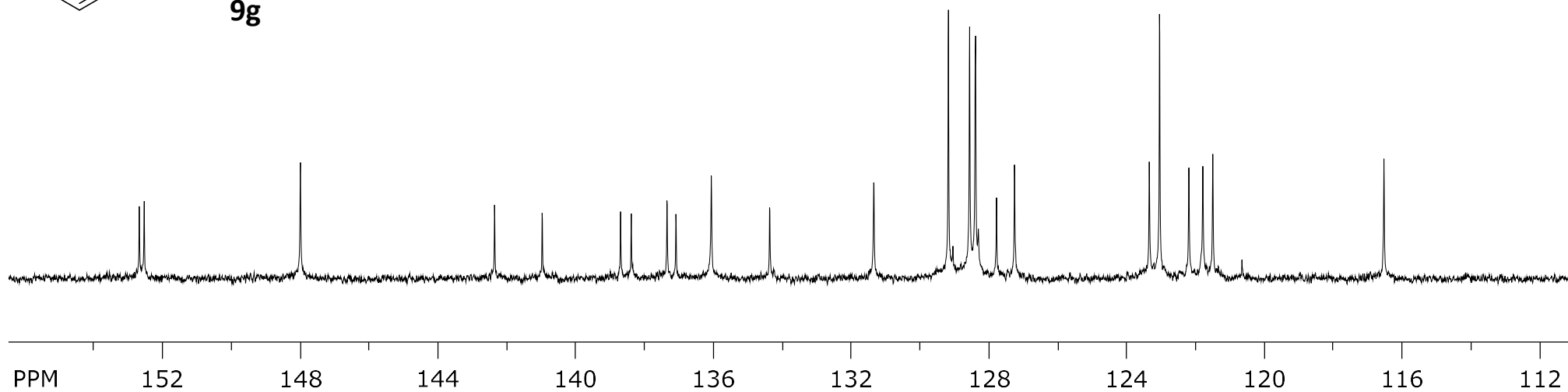
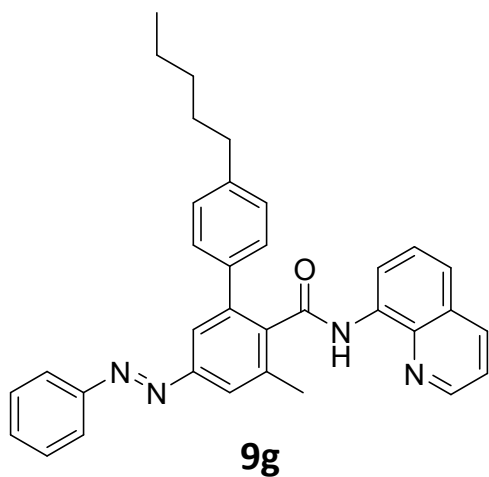
123.332

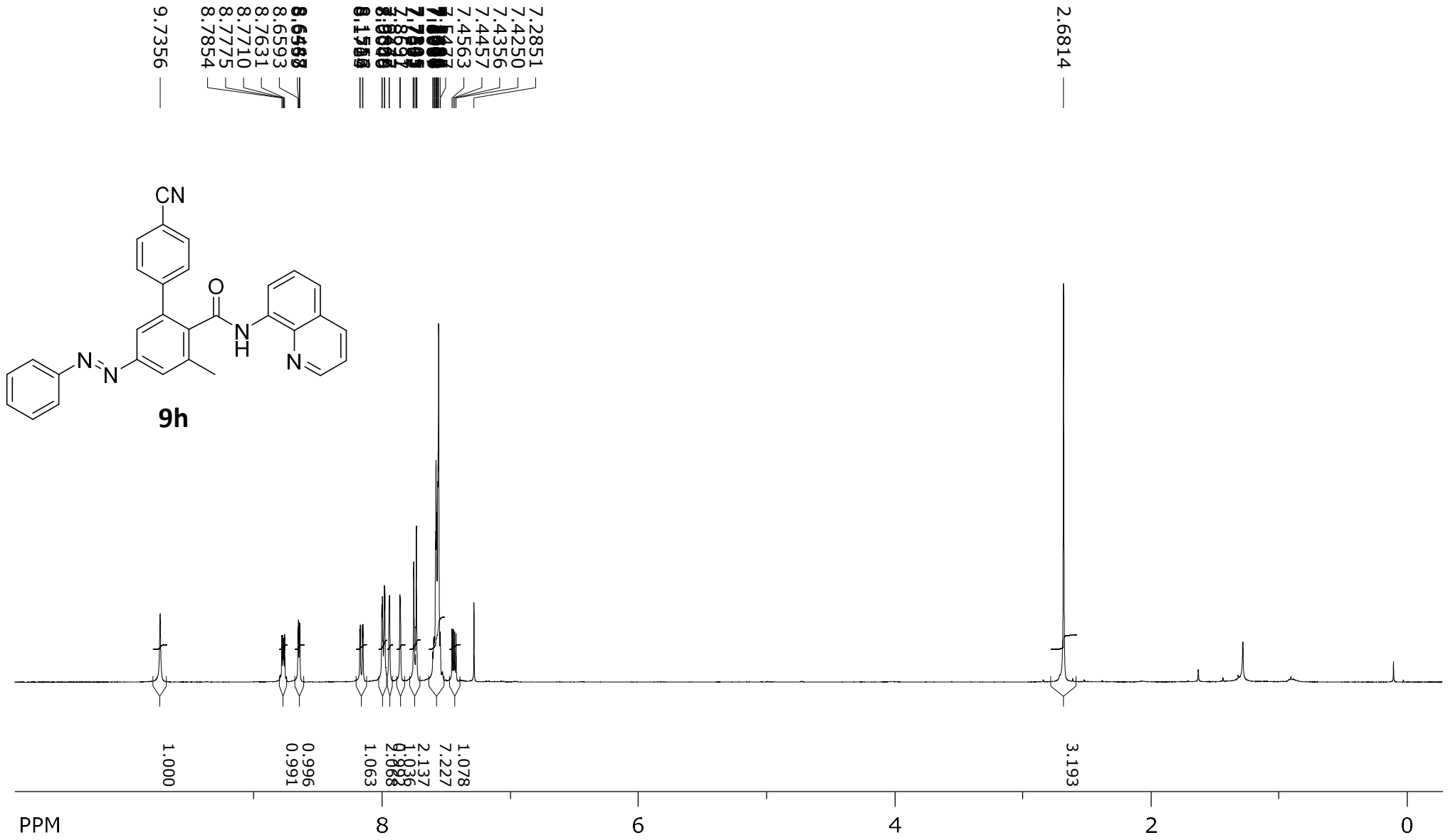
122.180

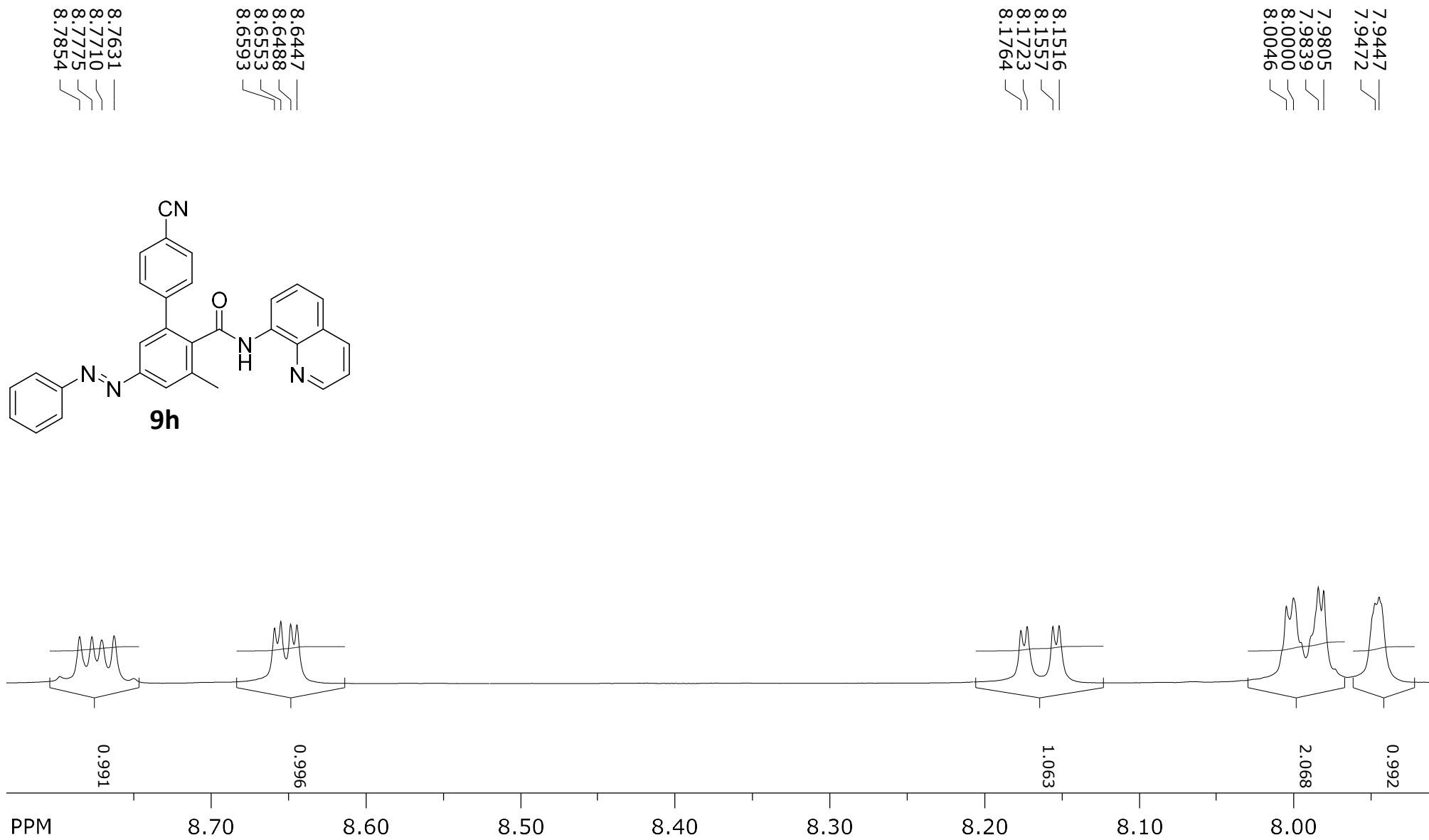
121.779

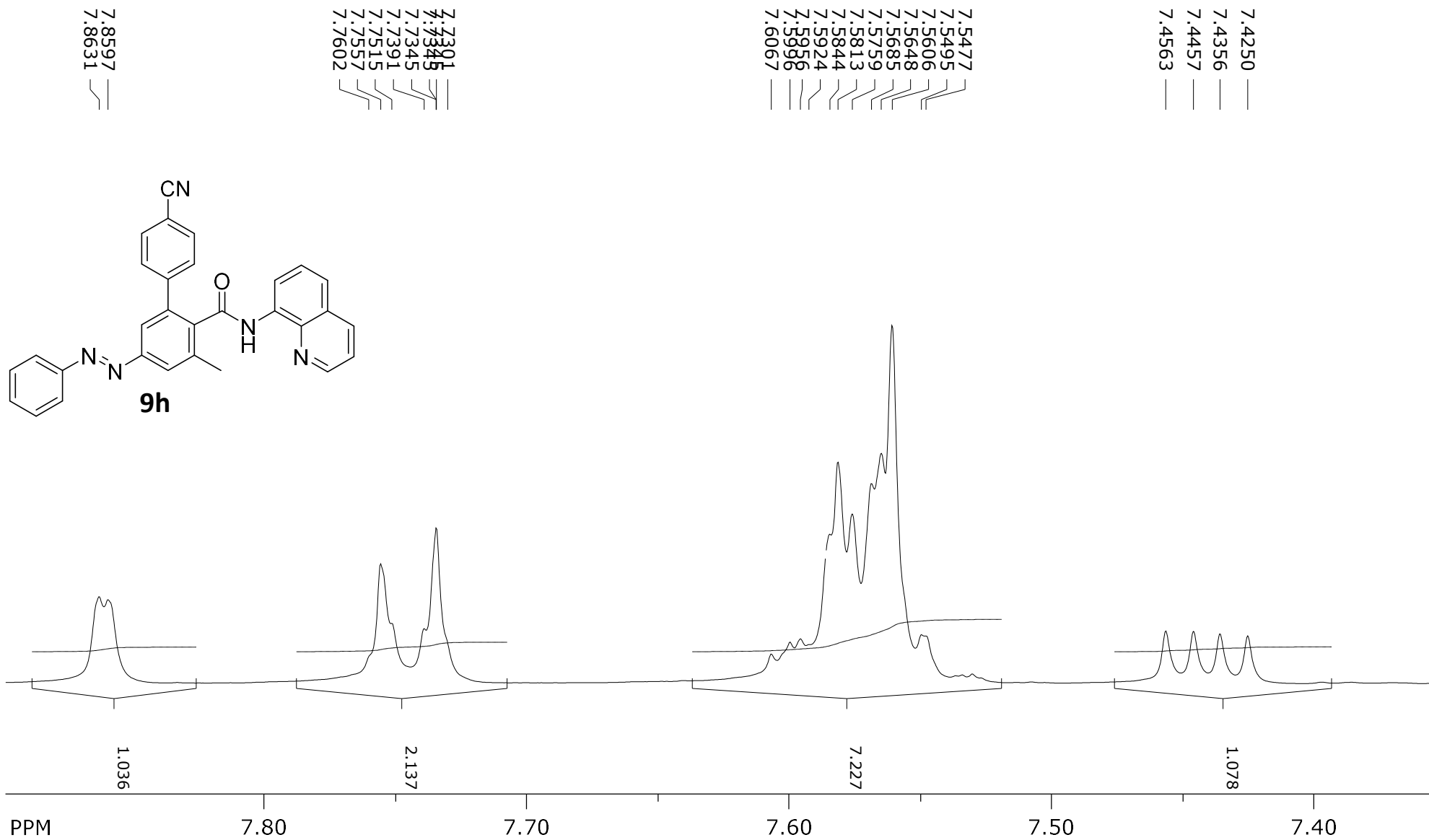
121.487

116.514







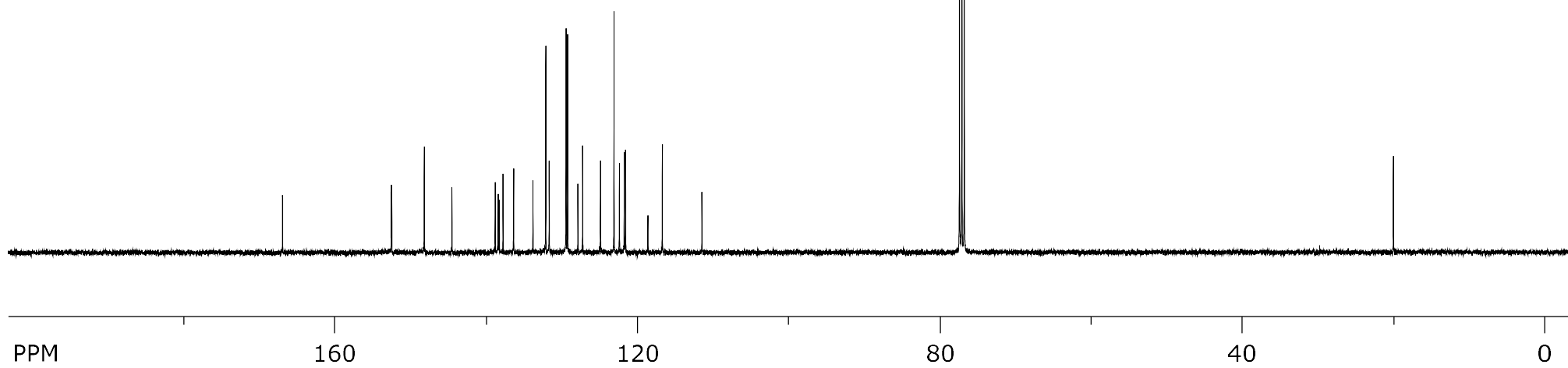
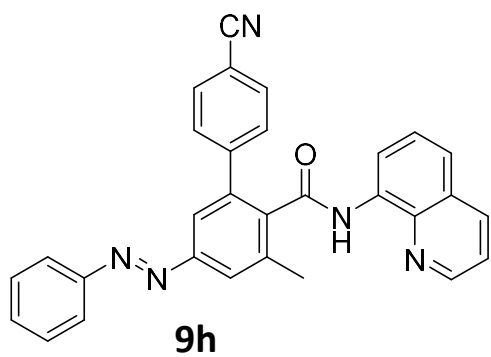


SpinWorks 4: RP 1207 B2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8

166.982 —
152.578 —
148.225 —
144.565 —
138.841 —
138.448 —
138.299 —
137.806 —
136.401 —
133.876 —
131.696 —
129.953 —
129.853 —
127.953 —
124.905 —
123.494 —
122.494 —
121.766 —
121.583 —
118.633 —
116.727 —
111.485 —

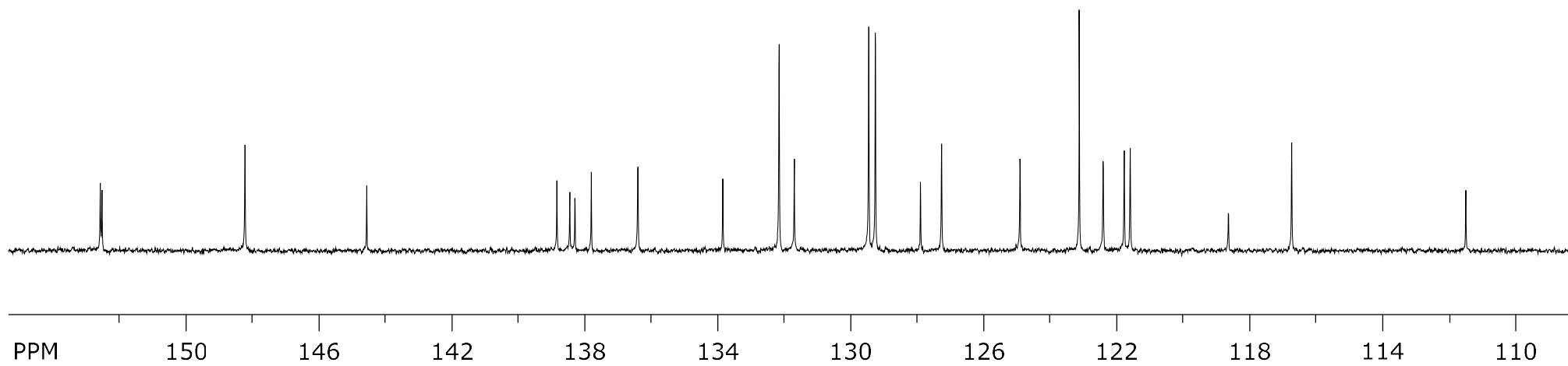
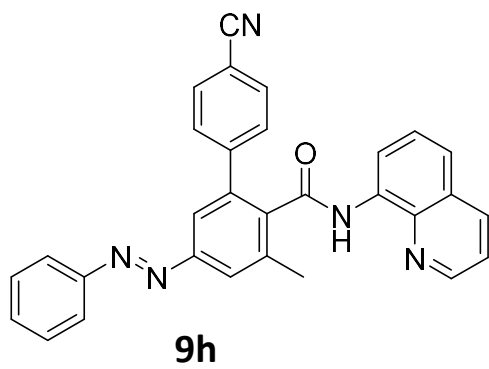
76.766 —
77.084 —
77.402 —

19.980 —

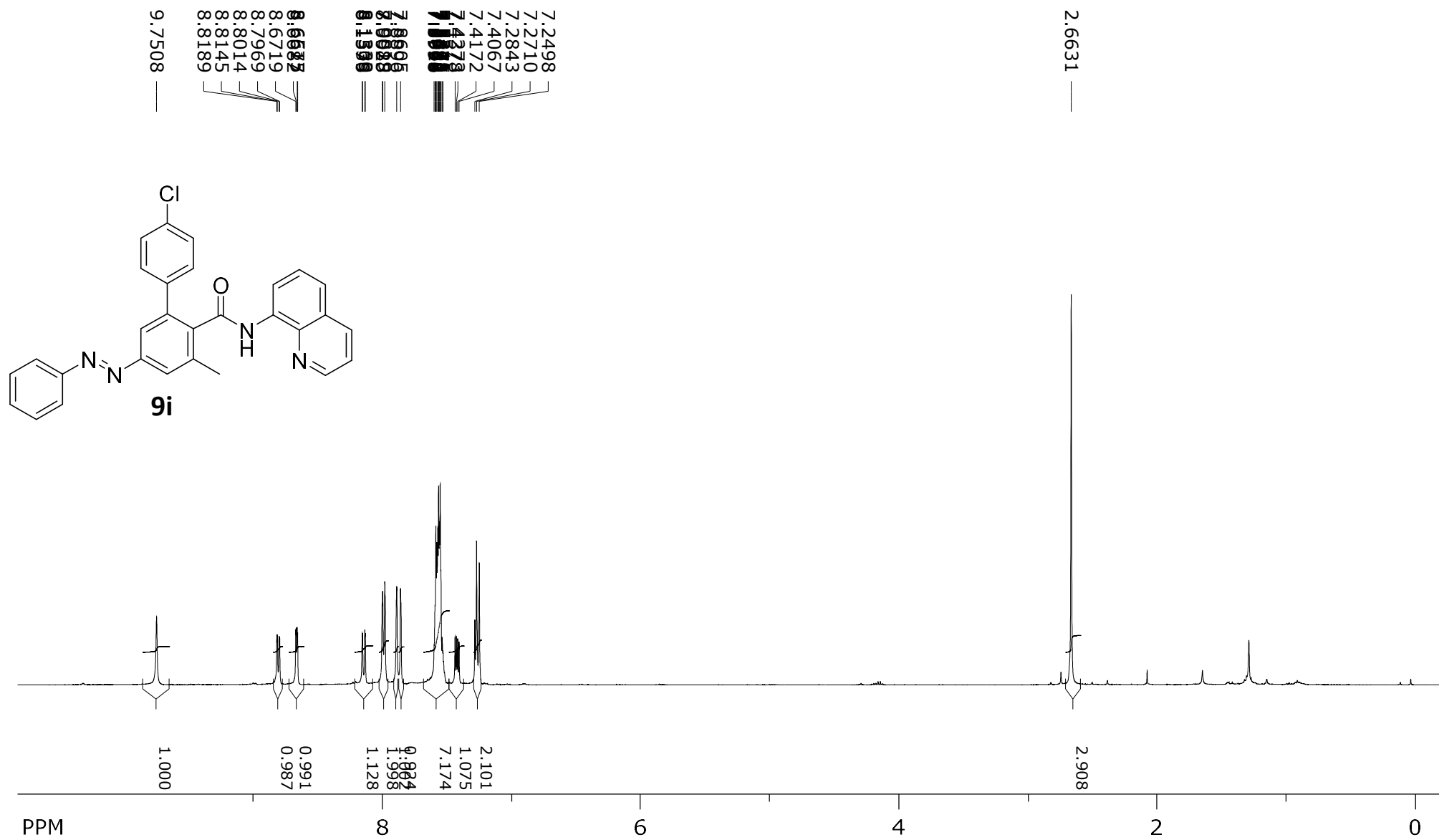


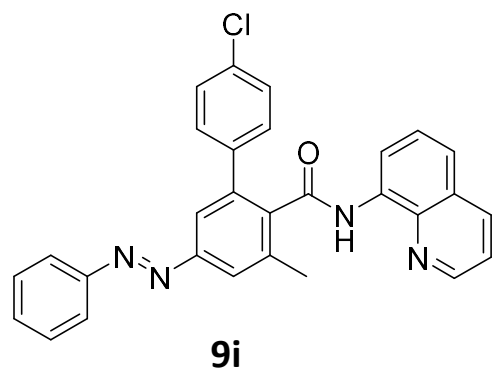
SpinWorks 4: RP 1207 B2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8

152.527
152.578
148.225
144.565
138.841
138.448
138.299
137.806
136.401
133.846
132.150
131.696
129.458
129.257
127.895
127.263
124.905
123.120
122.404
121.766
121.583
118.633
116.727
111.485



SpinWorks 4: RP-1195A1+A3





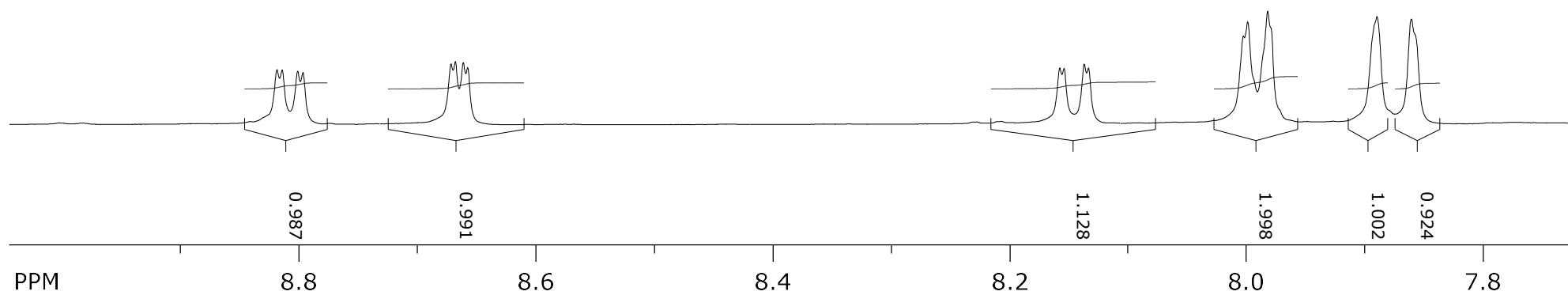
8.7969
8.8014
8.8145
8.8189

8.6577
8.6615
8.6682
8.6719

8.1333
8.1369
8.1539
8.1576

7.9819
7.9988
8.0025

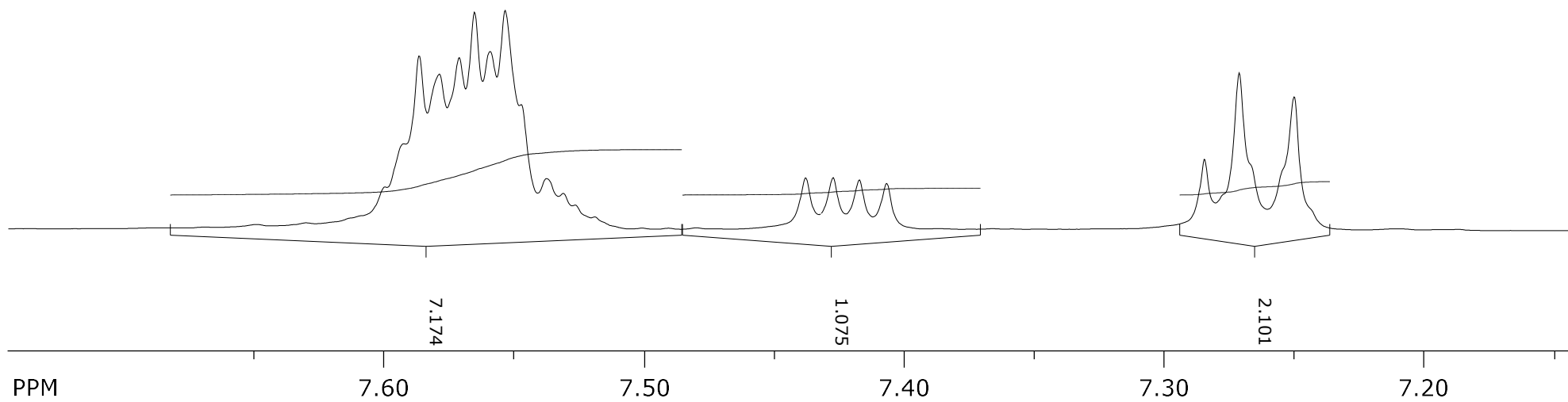
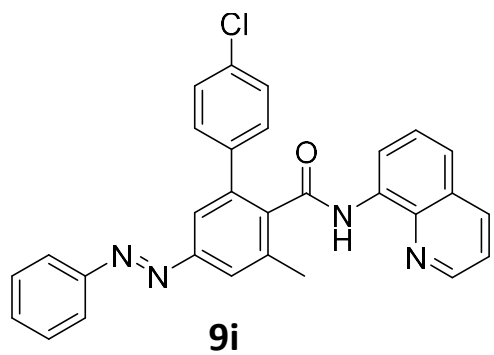
7.8605
7.8896



7.5311
7.5375
7.5473
7.5535
7.5593
7.5652
7.5712
7.5788
7.5866
7.5925
7.5998

7.4067
7.4172
7.4273
7.4378

7.2498
7.2710
7.2843

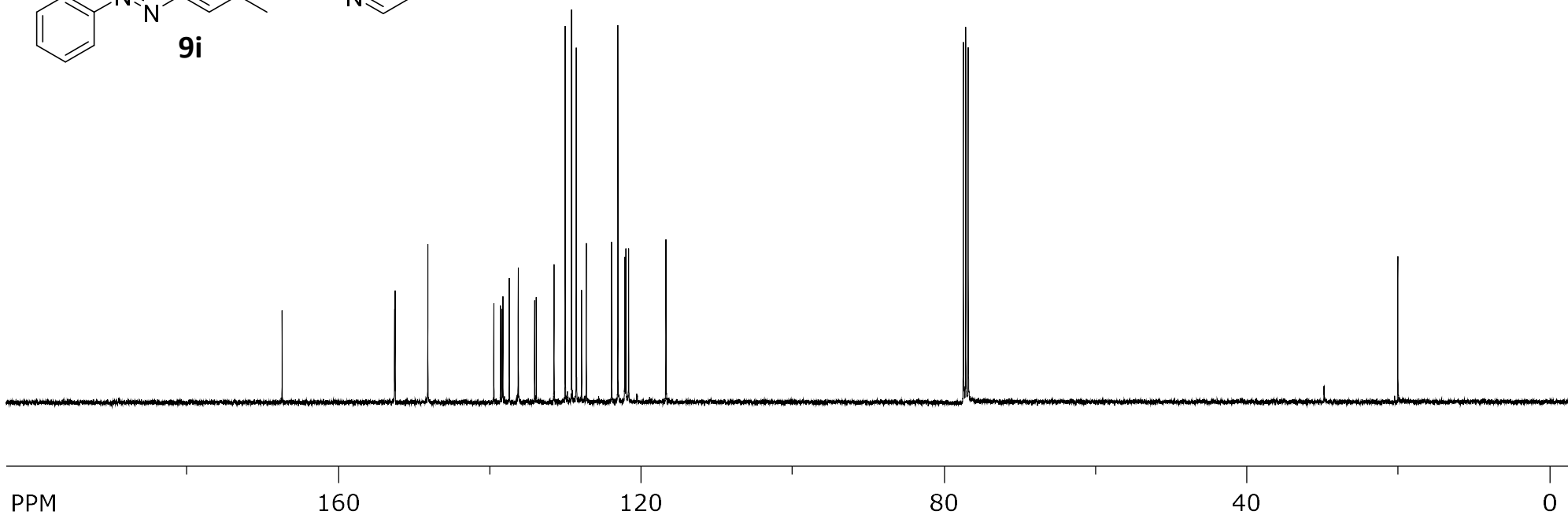
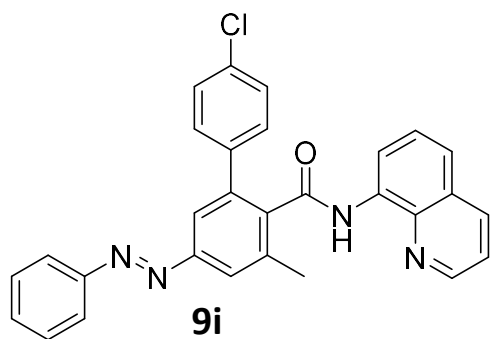


SpinWorks 4: RP 1195 A1 A3
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 17

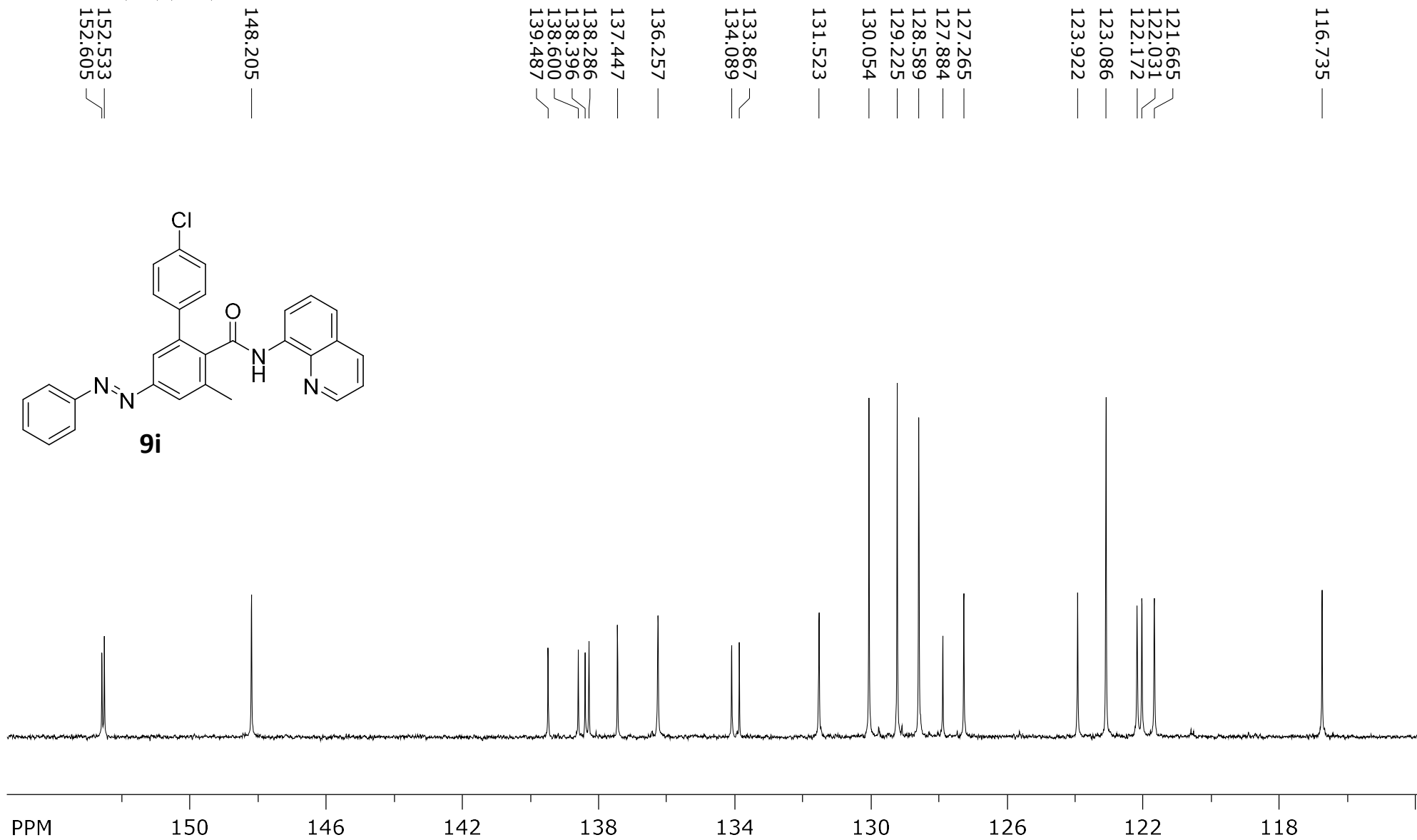
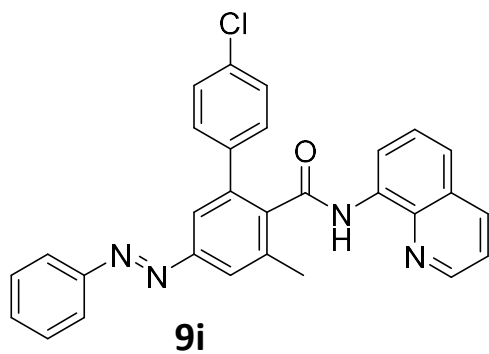
167.470 —
152.605
152.533
148.205
139.487
138.600
138.396
138.286
137.447
137.427
132.999
131.523
130.954
127.955
127.954
123.922
123.086
122.172
122.031
121.665
116.735

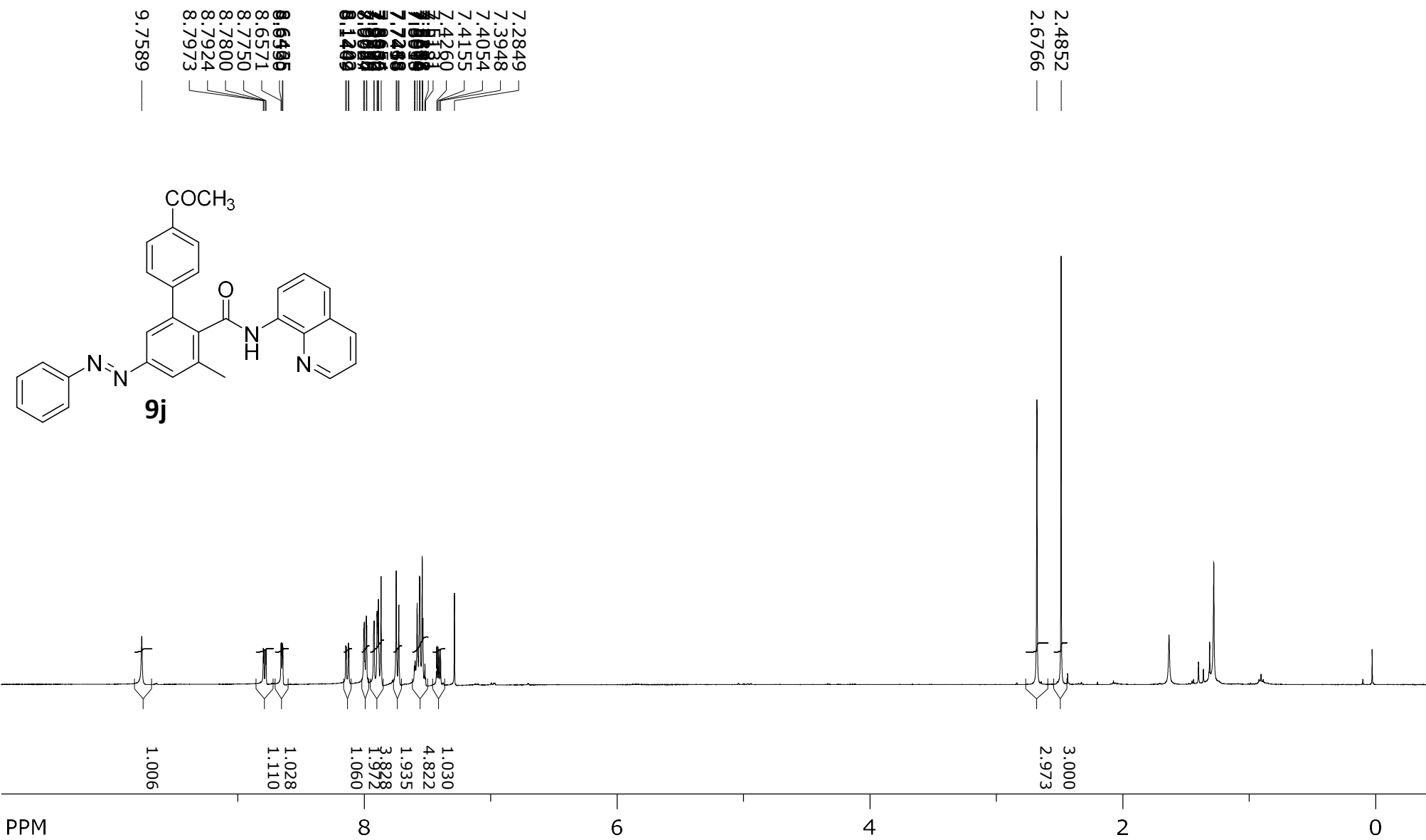
76.789
77.106
77.424

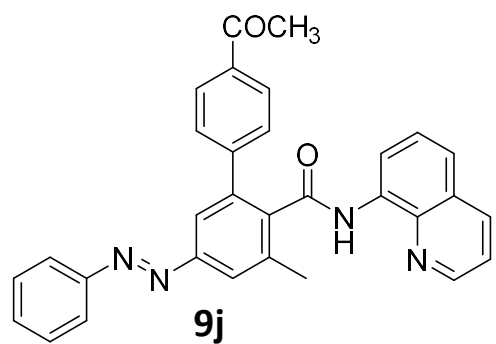
19.995 —



SpinWorks 4: RP 1195 A1 A3
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 17







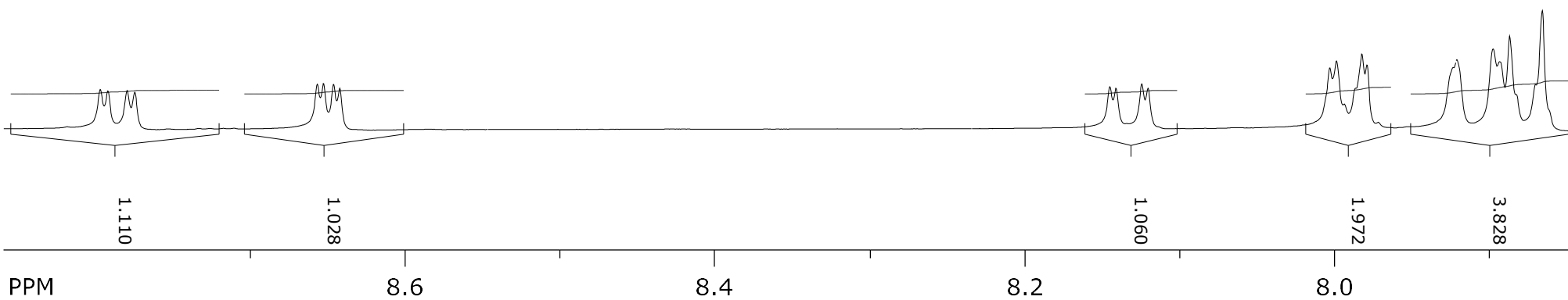
8.7750
8.7800
8.7924
8.7973

8.6425
8.6465
8.6530
8.6571

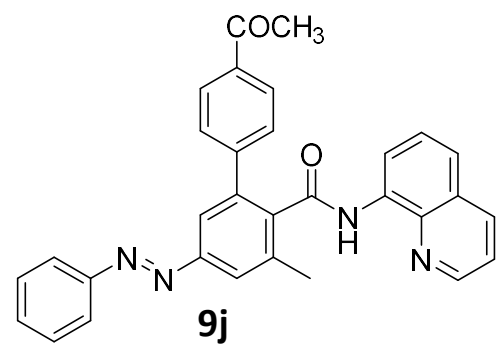
8.1202
8.1242
8.1409
8.1449

7.9786
7.9820
7.9984
8.0027

7.9206
7.9230
7.8865
7.8930
7.8972



SpinWorks 4: RP-1188fin

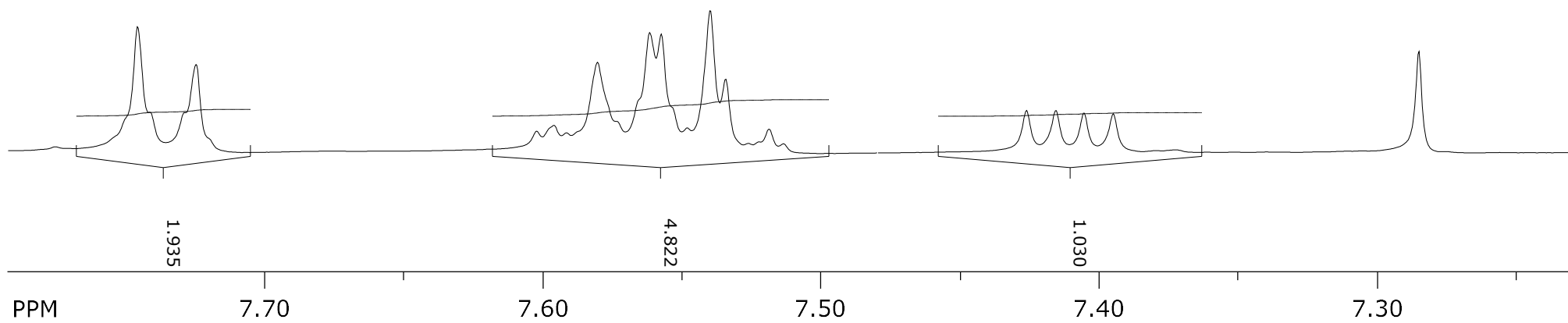


7.7248
7.7288
7.7414
7.7458

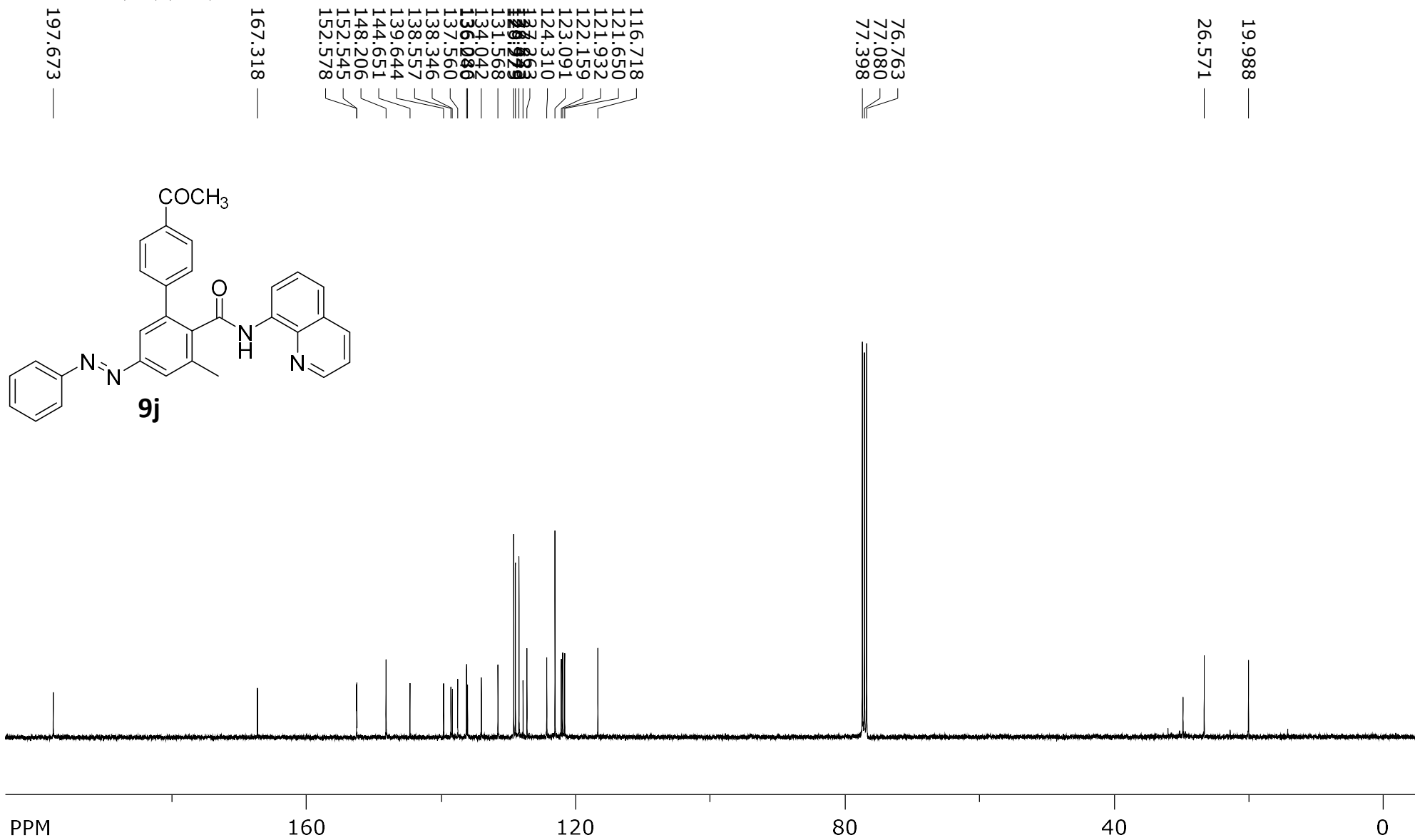
7.5958
7.6019
7.5804
7.5574
7.5616
7.5343
7.5398
7.5181

7.3948
7.4054
7.4155
7.4260

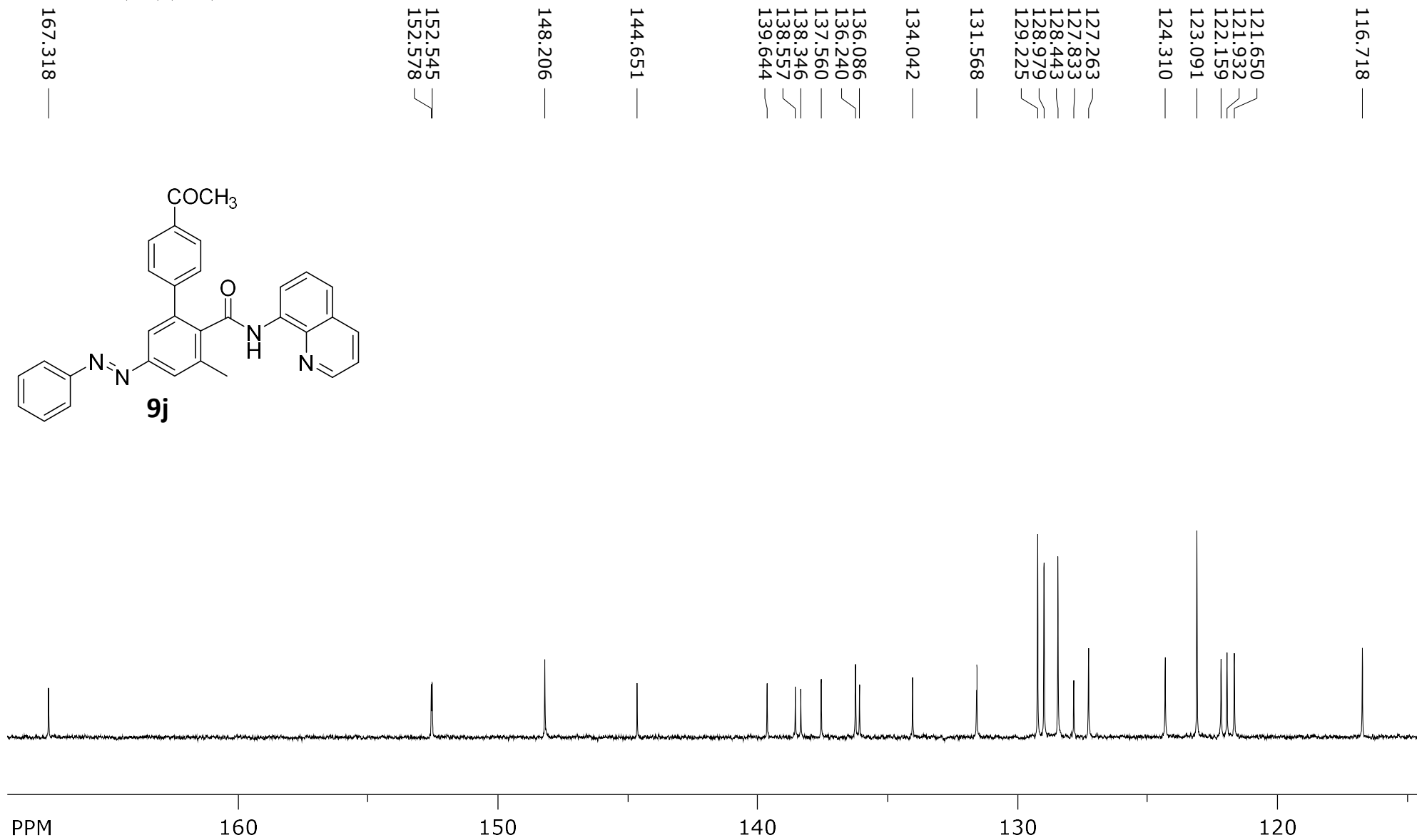
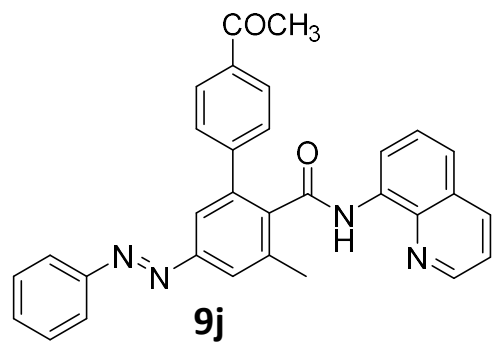
7.2849



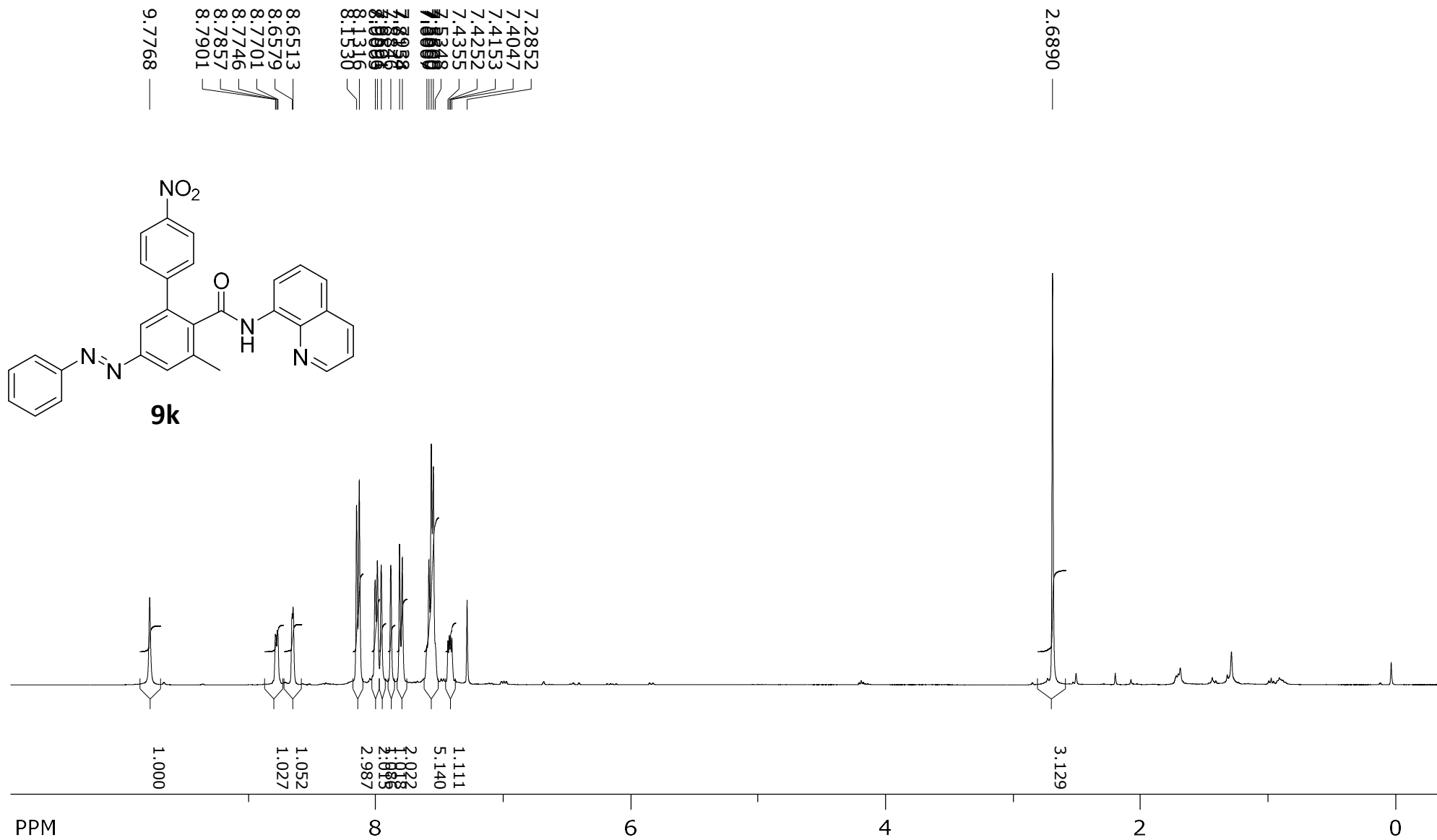
SpinWorks 4: RP 1188 FIN1
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 4



SpinWorks 4: RP_1188_FIN1
C13CPD CDCI3 /opt/topspin3.5pl2/nmrdata nmrsu 4



SpinWorks 4: RP 1184 B2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 5



SpinWorks 4: RP 1184 B2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 5

8.7701
8.7746
8.7857
8.7901

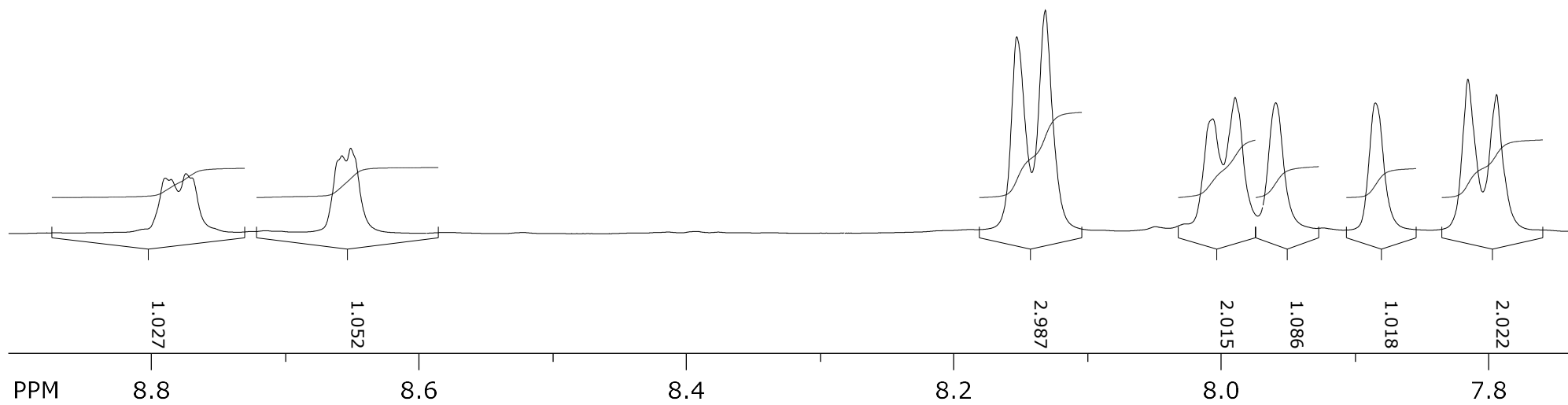
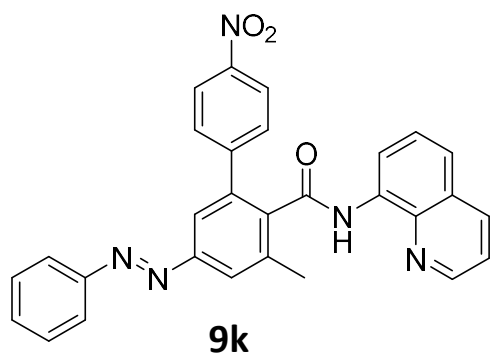
8.6513
8.6579

8.1316
8.1530

7.9591
7.9896
8.0063

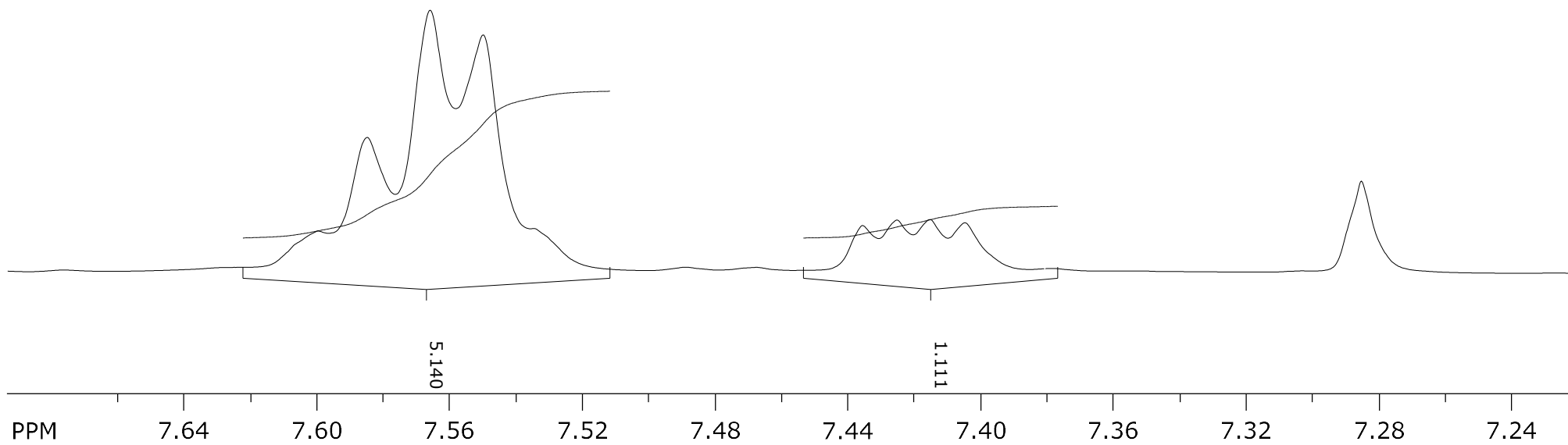
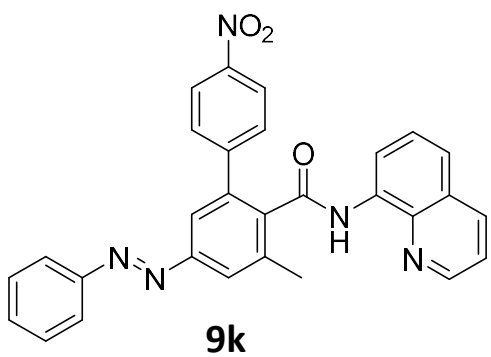
7.8846

7.7938
7.8154

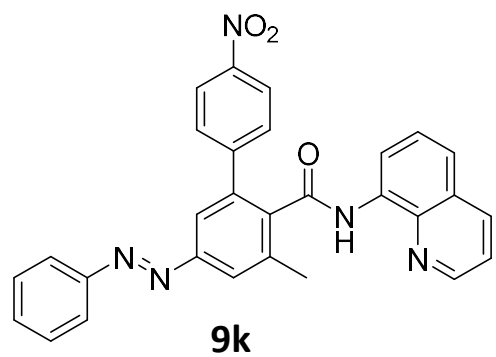


SpinWorks 4: RP 1184 B2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 5

7.6007 —
7.5850 —
7.5660 —
7.5500 —
7.5348 —
7.4355 —
7.4252 —
7.4153 —
7.4047 —
7.2852 —



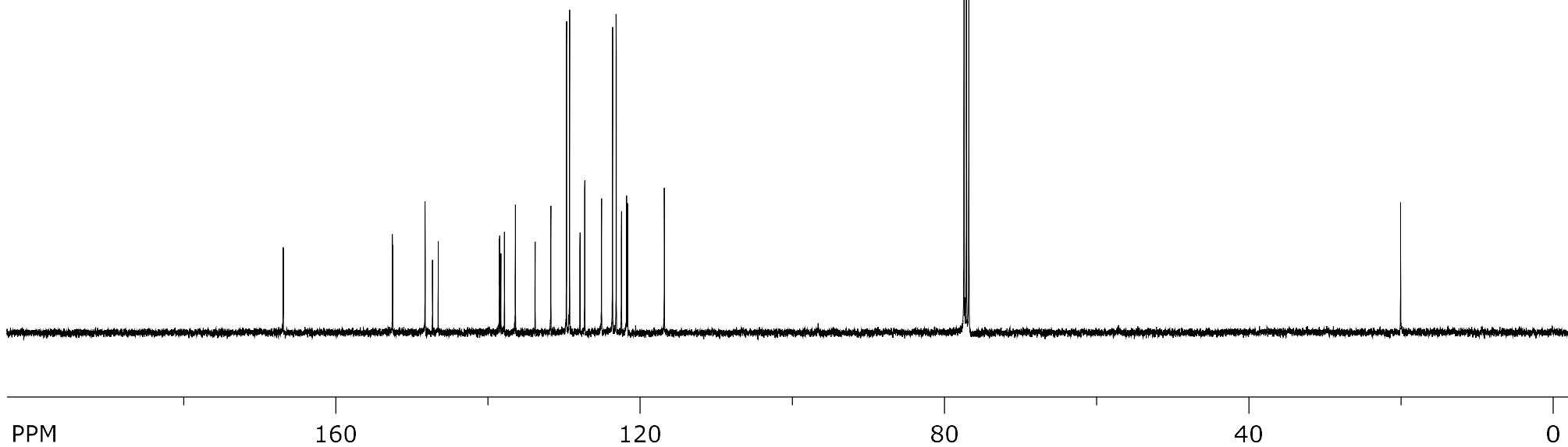
SpinWorks 4: RP 1184 B2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 5



166.916 —
152.562
152.519
148.265
147.286
146.539
138.484
138.455
138.300
139.829
139.829
131.730
131.730
129.851
129.851
123.133
123.133
122.442
121.761
121.624
116.801

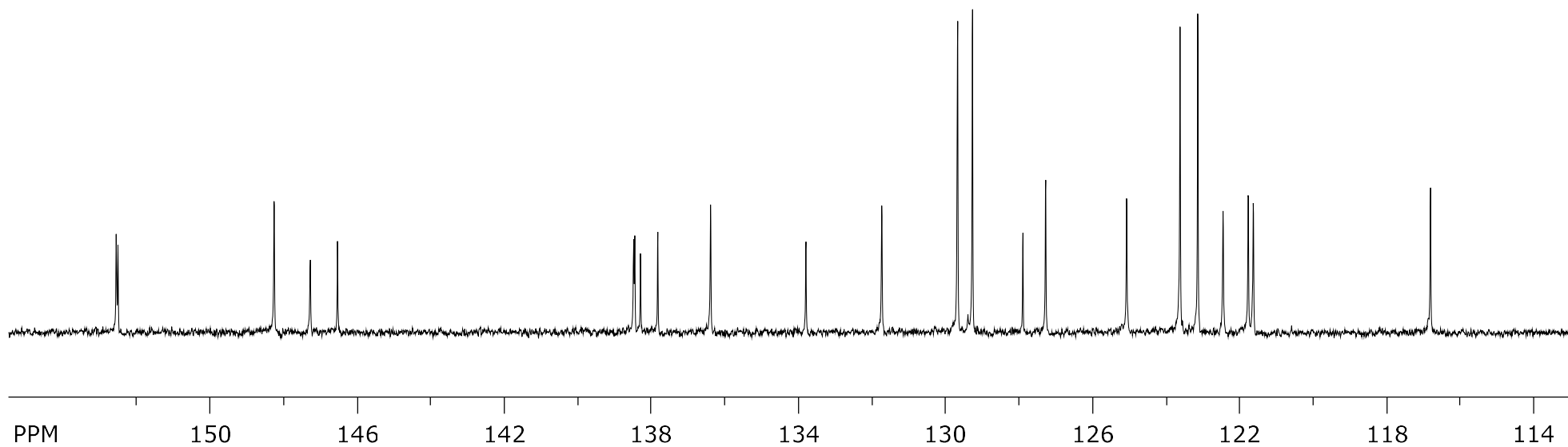
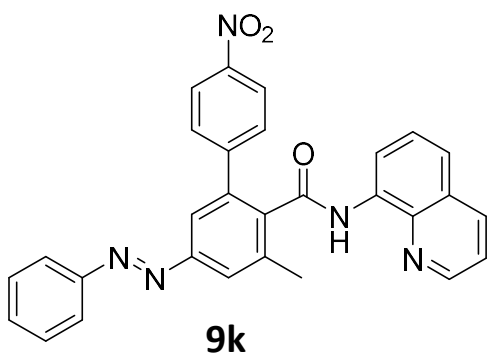
76.759
77.077
77.393

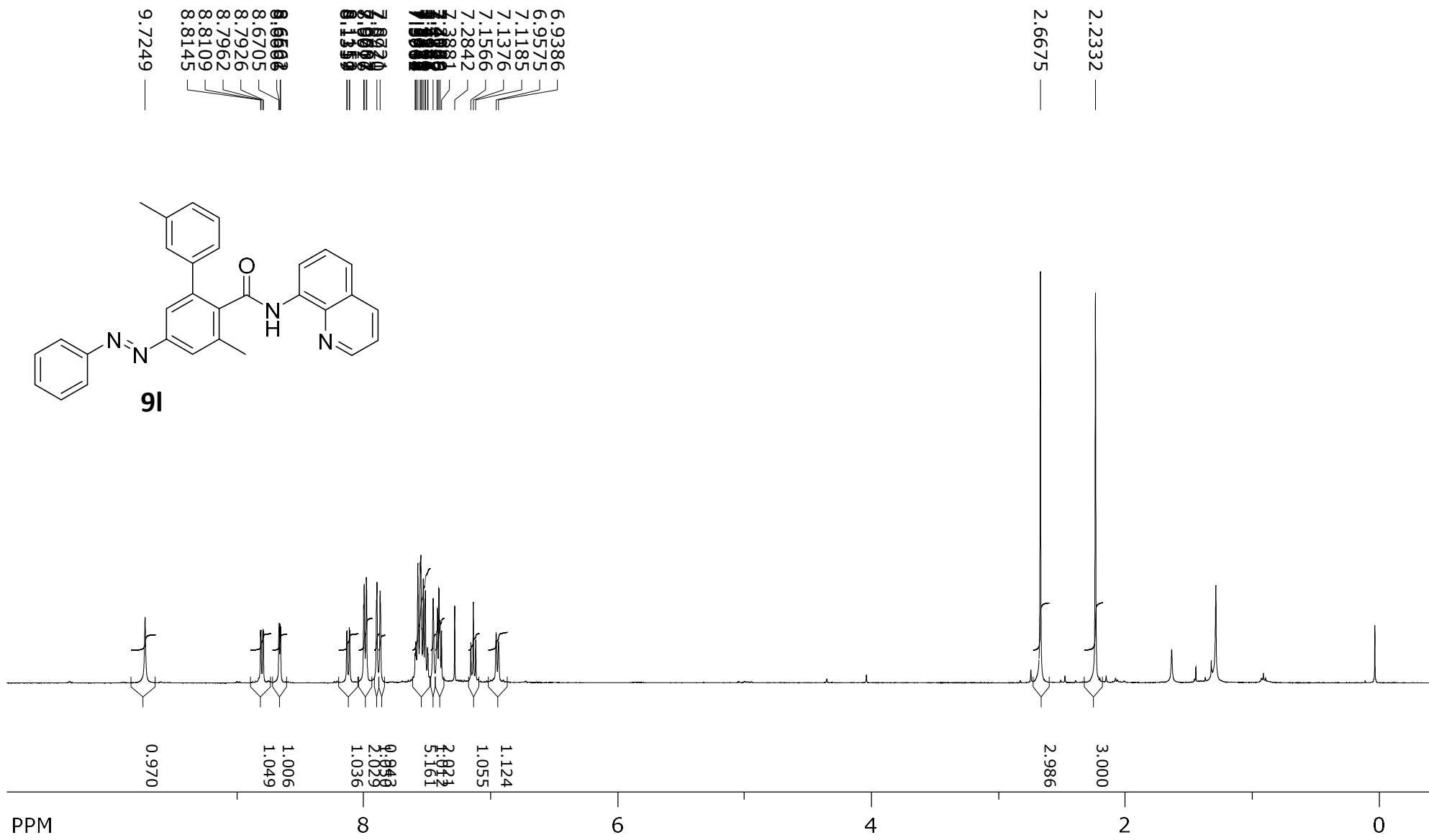
19.980 —



SpinWorks 4: RP 1184 B2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 5

152.519
152.562
146.539
147.286
148.265
137.829
138.300
138.455
138.484
136.389
133.798
131.730
129.263
129.671
127.272
127.891
125.065
123.617
123.133
122.442
121.761
121.624
116.801





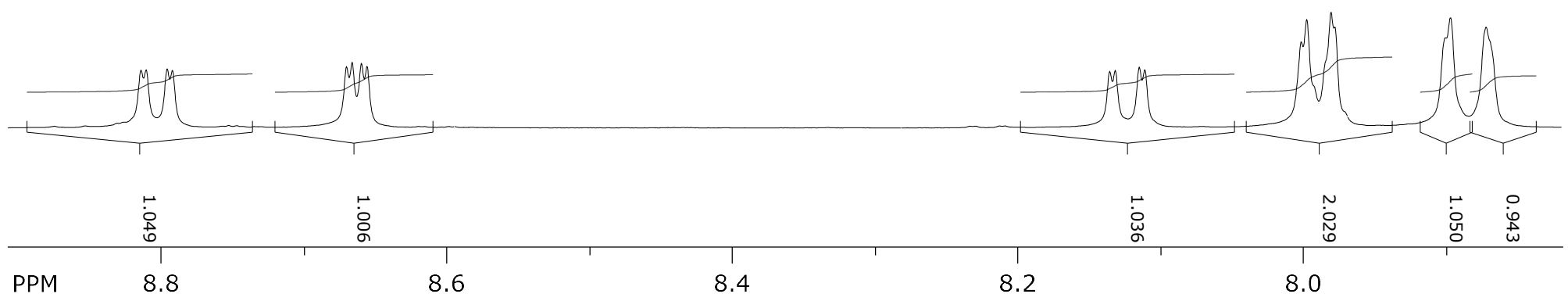
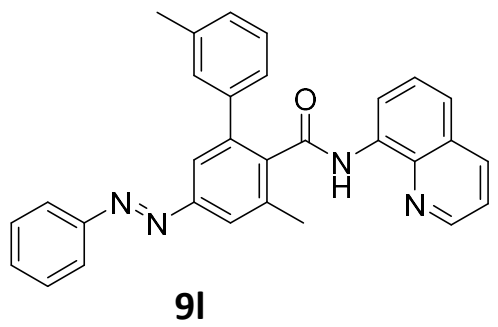
7.8721
7.8970

7.9781
7.9807
7.9977
8.0016

8.1112
8.1151
8.1319
8.1357

8.6562
8.6601
8.6666
8.6705

8.7926
8.7962
8.8109
8.8145



SpinWorks 4: RP-1192A1+A3

7.4946
7.4984
7.5154
7.5191
7.5319
7.5438
7.5511
7.5555
7.5748
7.5868
7.5914
7.5962

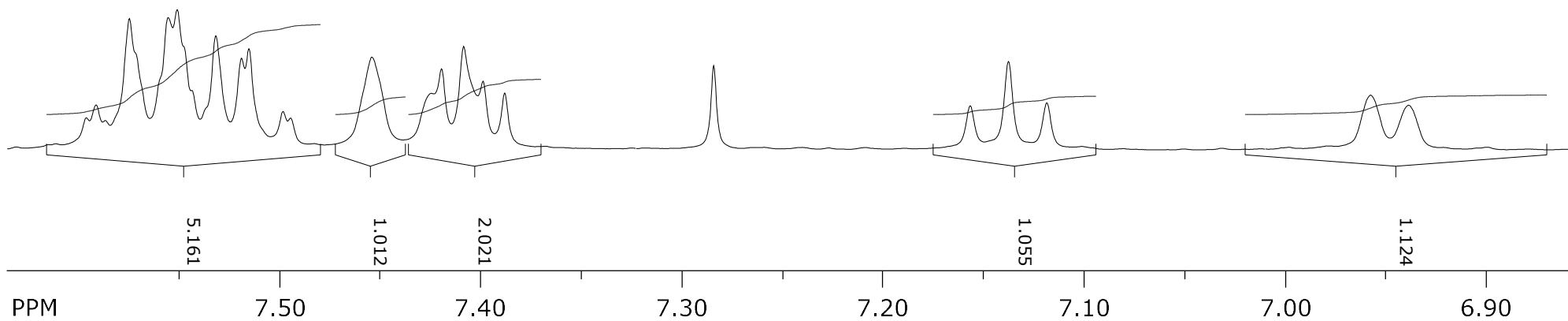
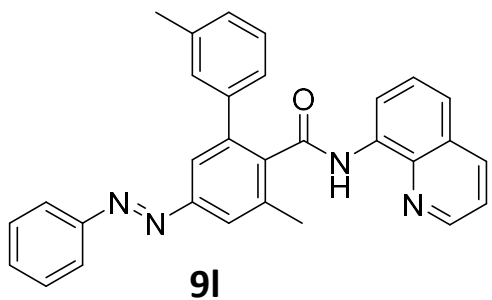
7.4542 —

7.3881
7.3989
7.4086
7.4196
7.4246

7.2842 —

7.1185 —
7.1376 —
7.1566 —

6.9386 —
6.9575 —

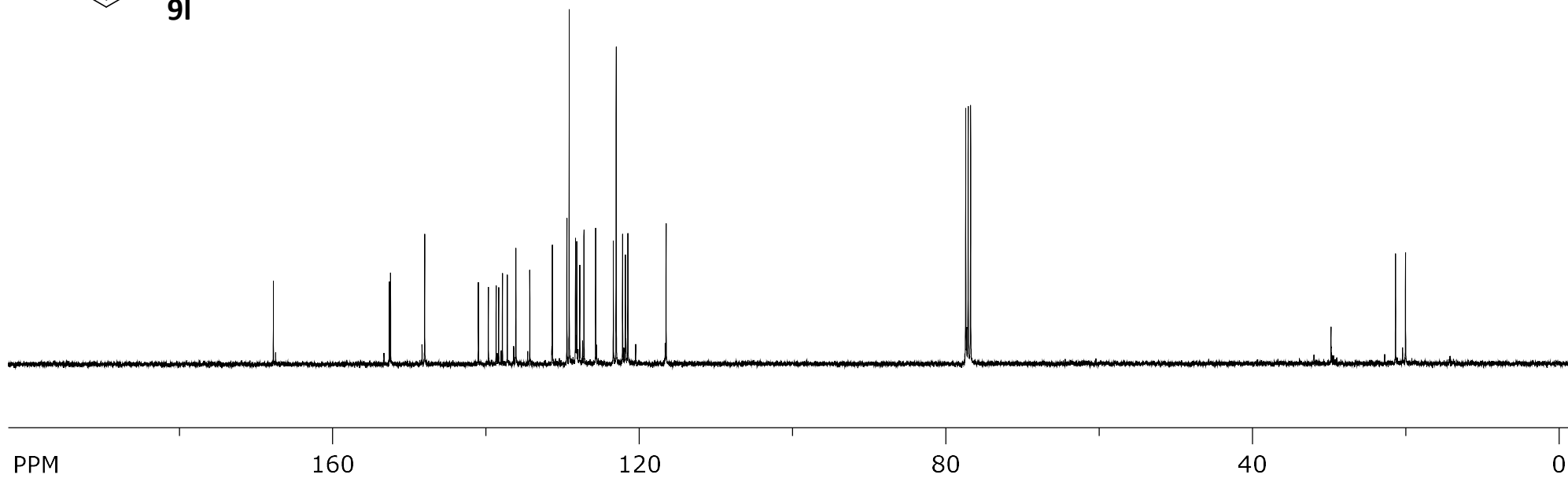
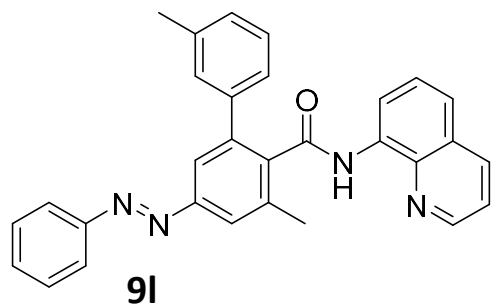


SpinWorks 4: RP 1192 A1 A3
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 6

167.803
152.665
148.058
141.045
139.743
138.732
138.402
137.908
136.334
134.353
131.389
129.919
129.809
127.729
123.459
122.224
121.856
121.532
116.543

76.793
77.110
77.428

20.027
21.328



SpinWorks 4: RP 1192 A1 A3
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 6

152.505
152.665

148.058

141.045

139.743

138.732

138.402

137.906

137.270

136.152

134.334

131.389

129.492

129.195

128.371

128.200

127.809

125.736

123.429

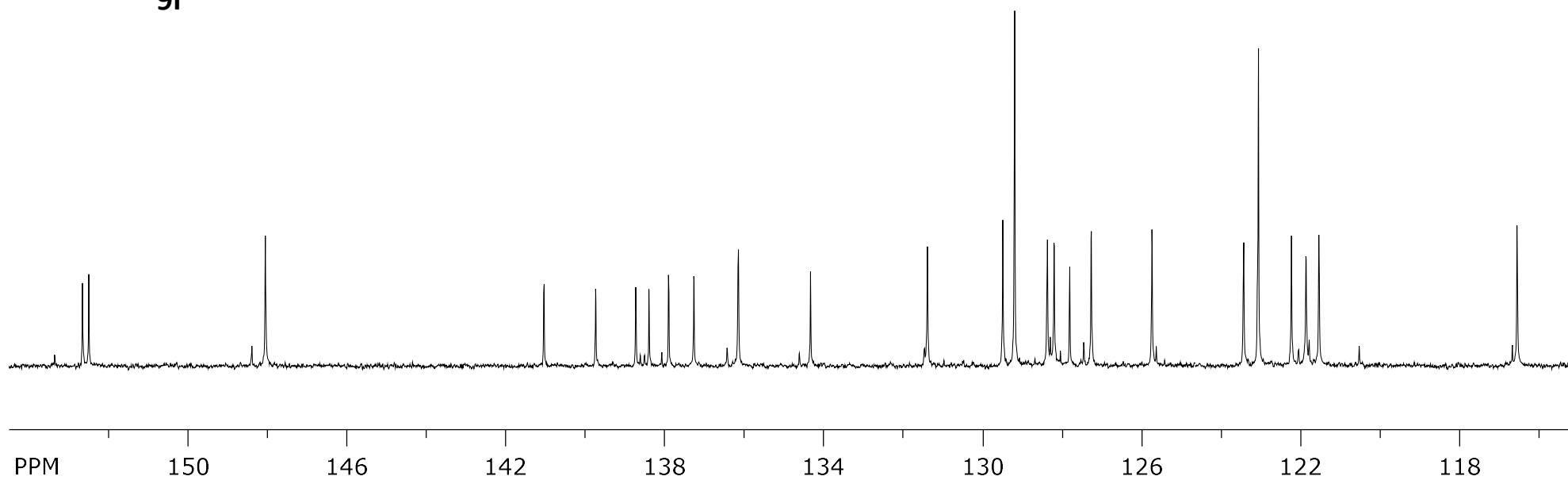
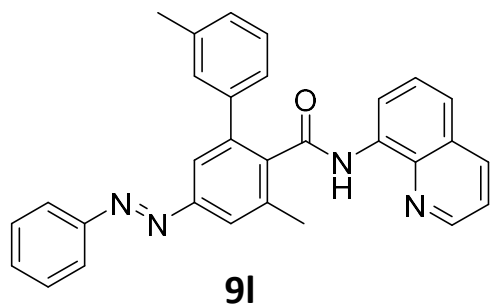
123.056

122.224

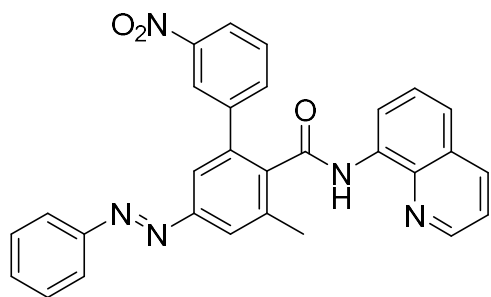
121.856

121.532

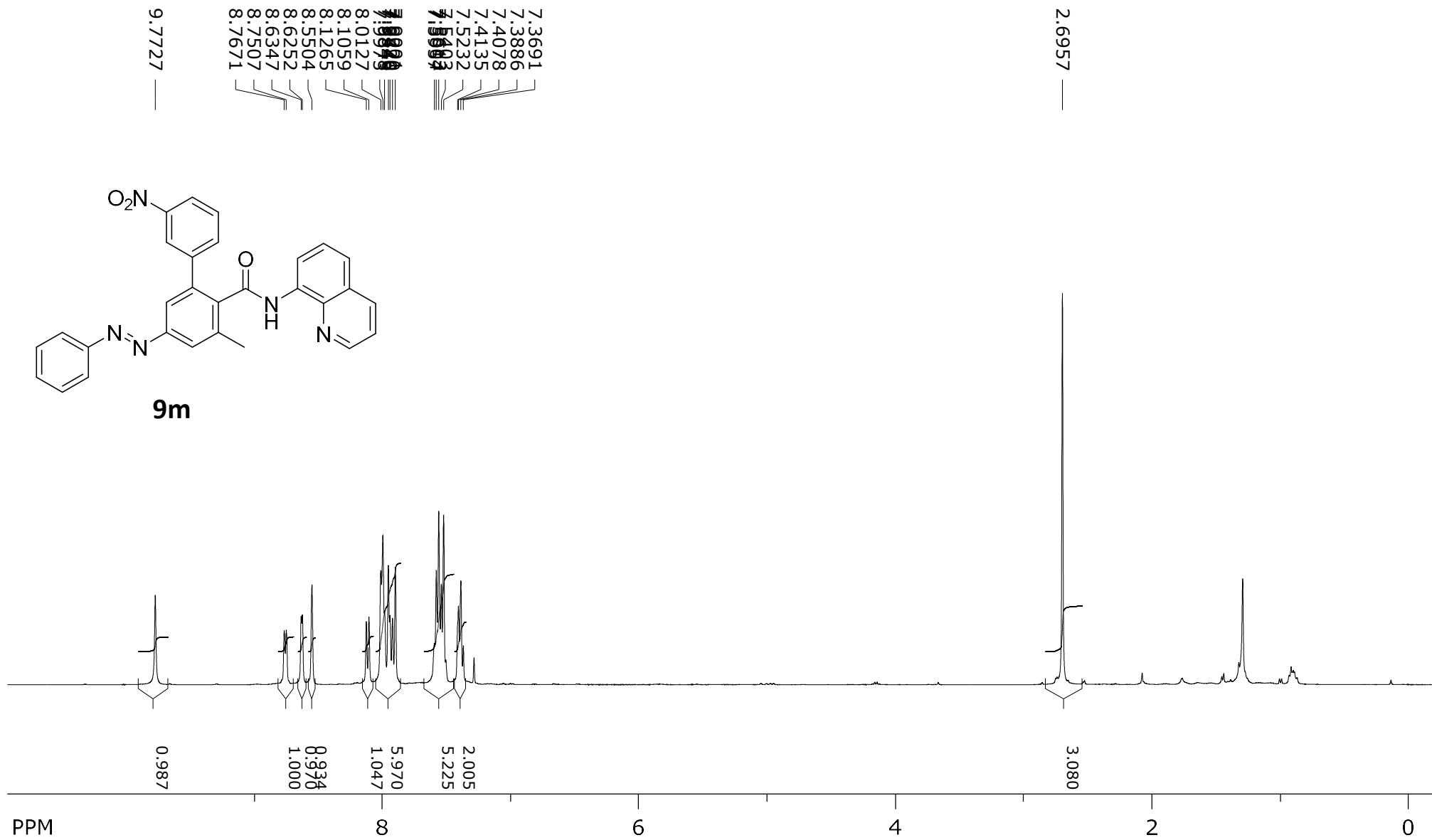
116.543



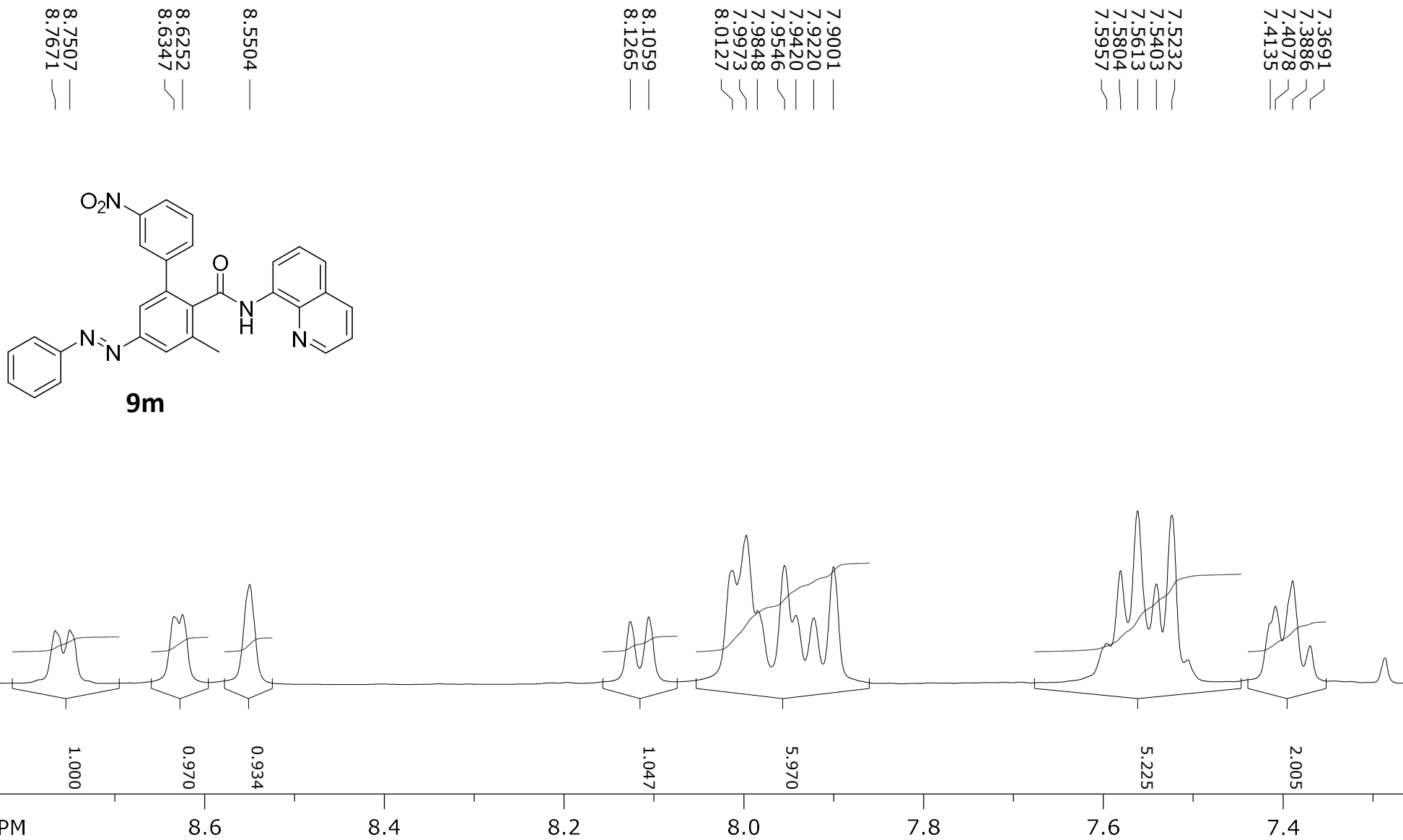
SpinWorks 4: RP 120 9 A2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8



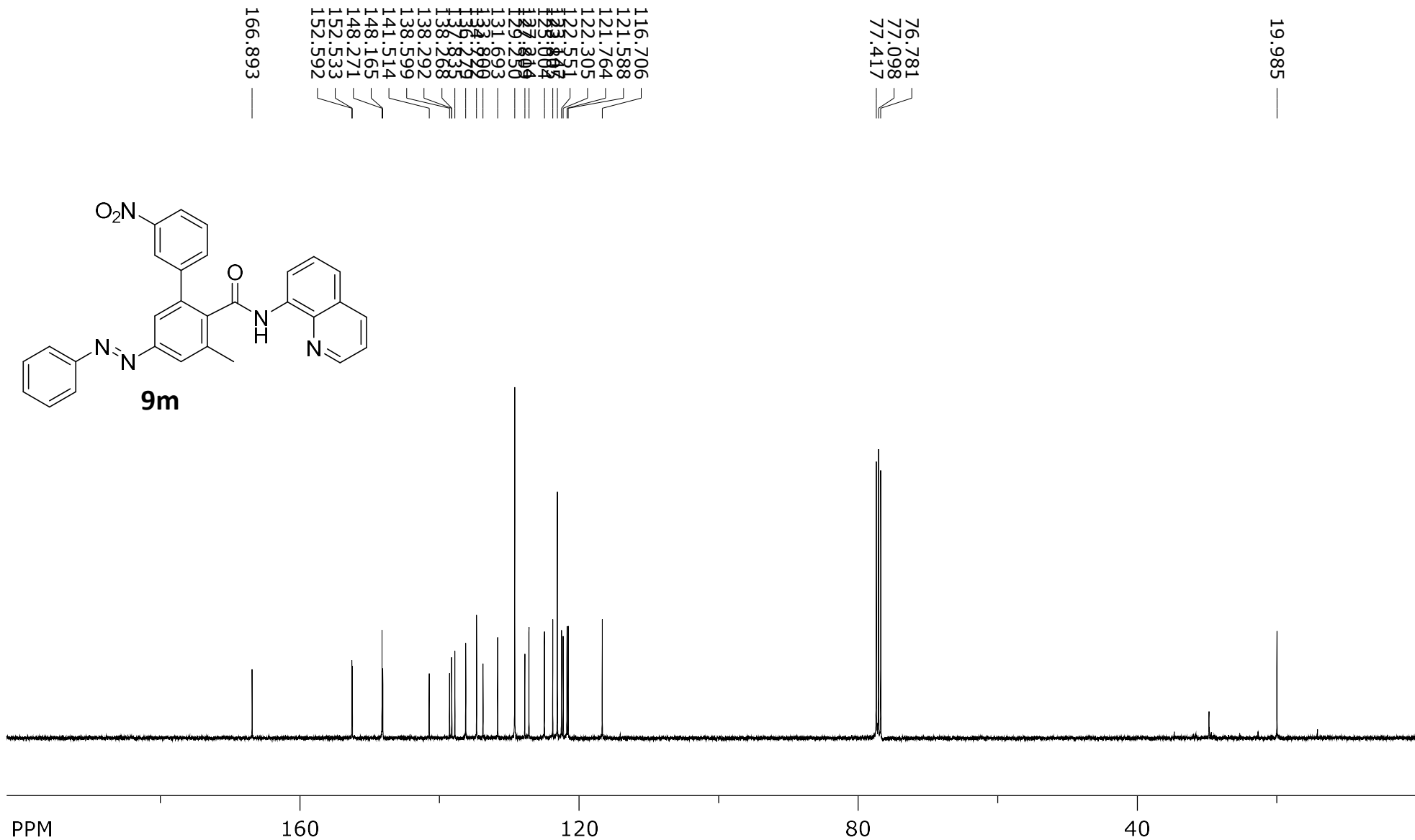
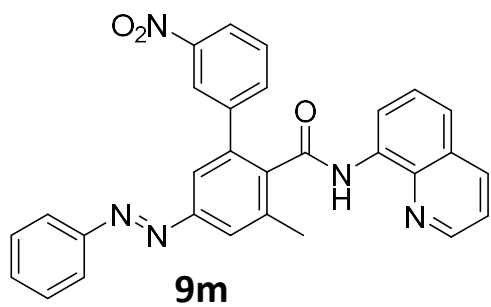
9m



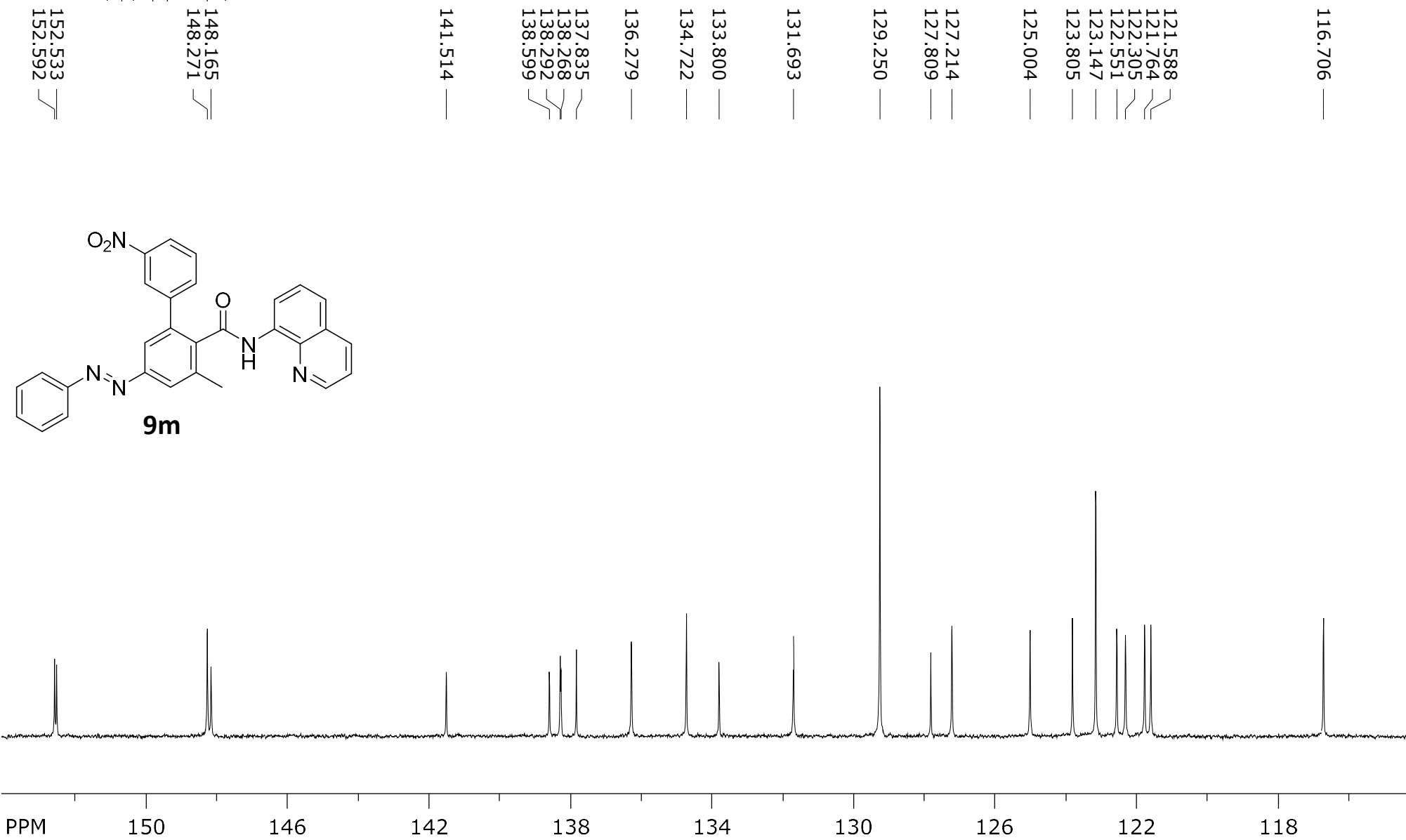
SpinWorks 4: RP 120 9 A2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8

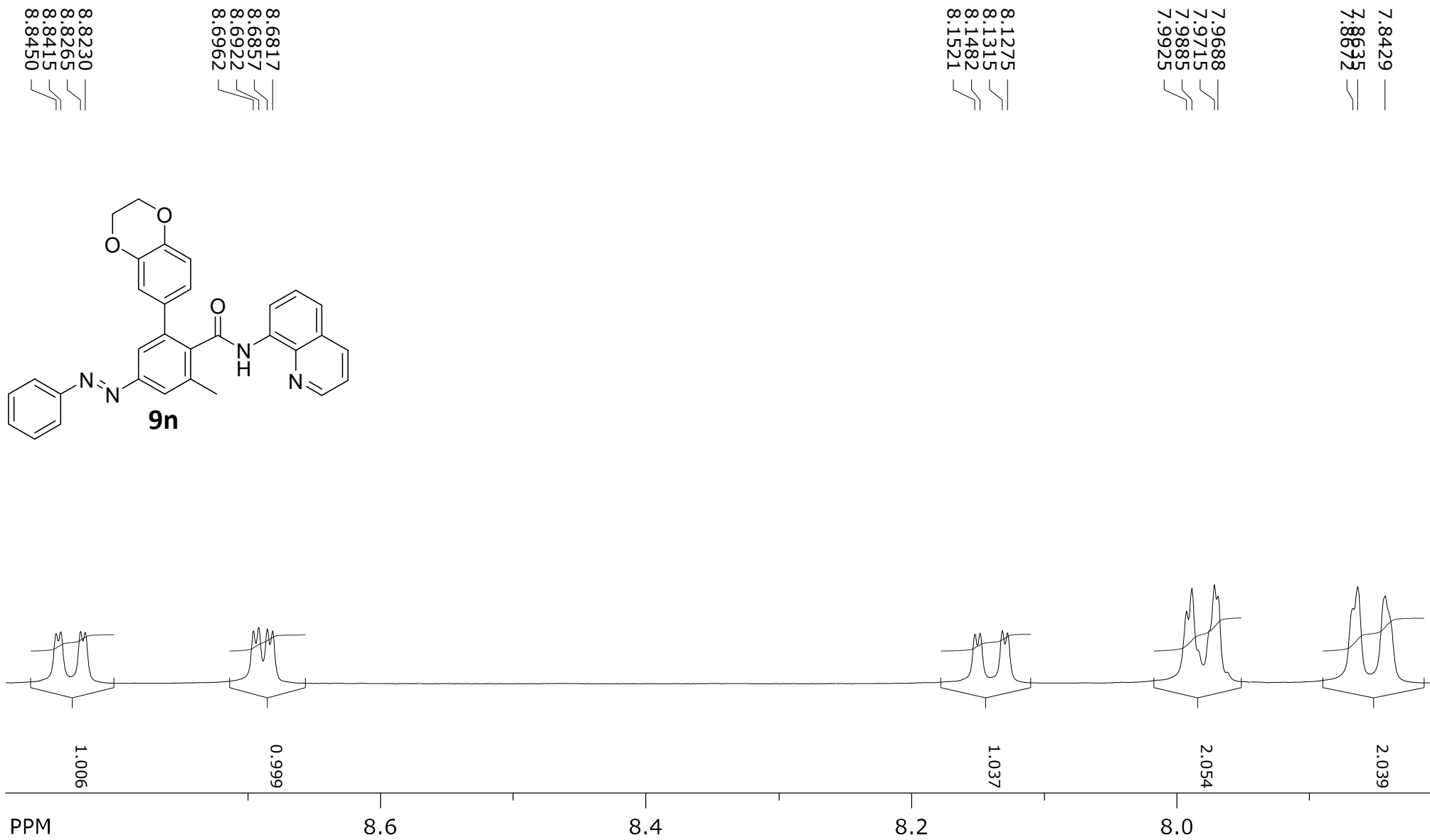


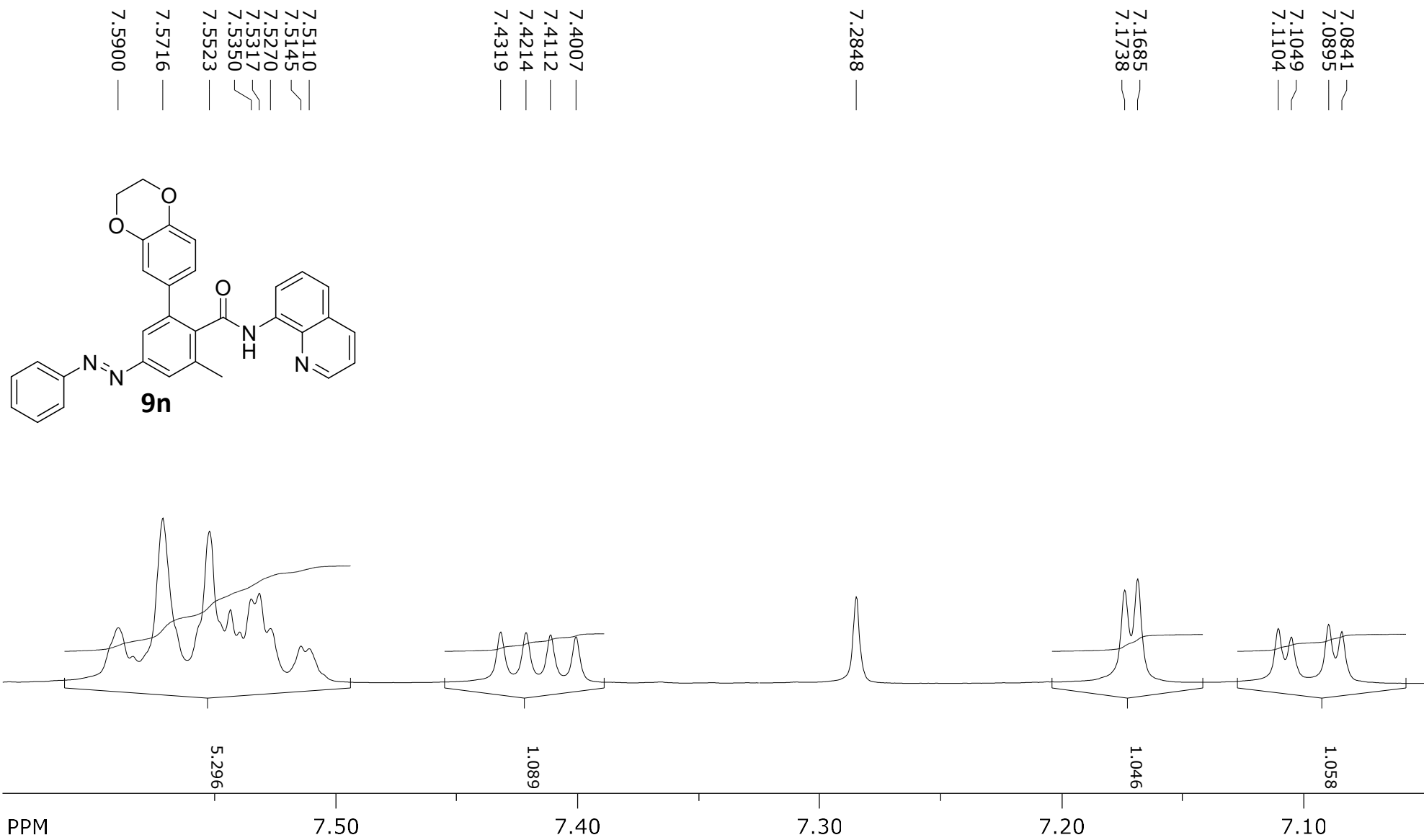
SpinWorks 4: RP 120 9 A2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8

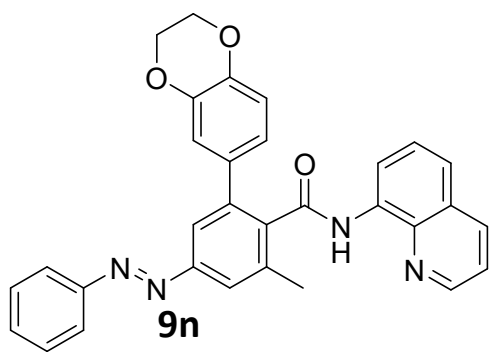


SpinWorks 4: RP 120 9 A2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 8

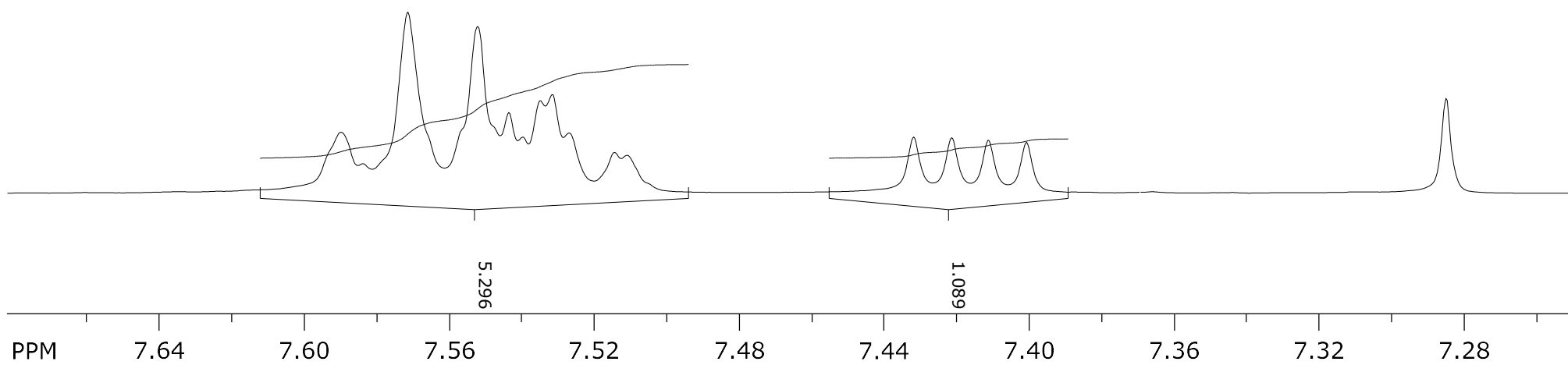








7.5900 —
7.5716 —
7.5523 —
7.5350 —
7.5317 —
7.5270 —
7.5145 —
7.5110 —
7.4319 —
7.4214 —
7.4112 —
7.4007 —
7.2848 —



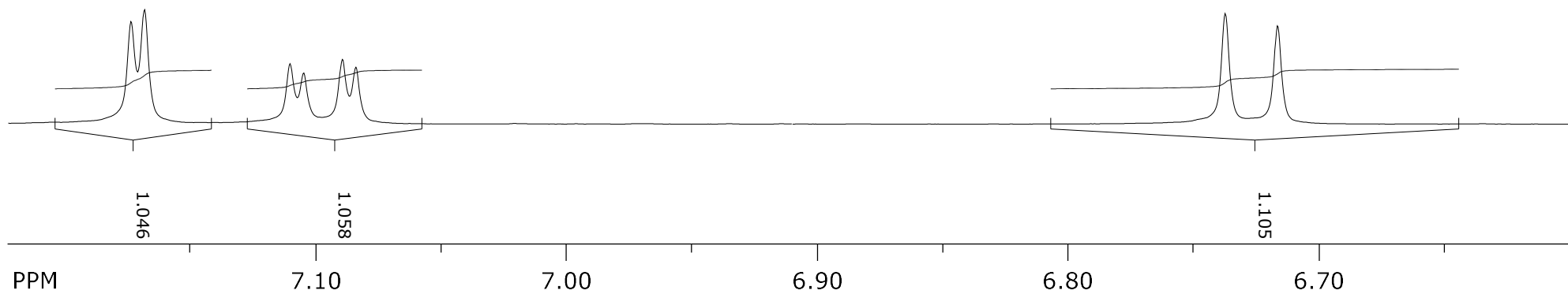
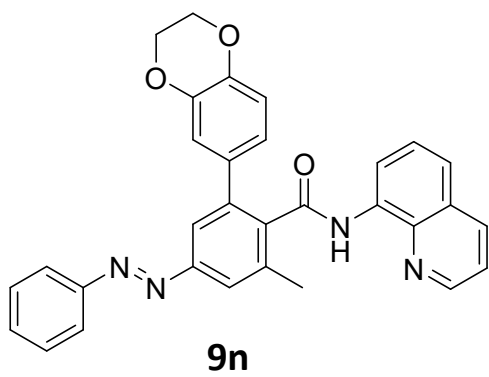
7.1685
7.1738

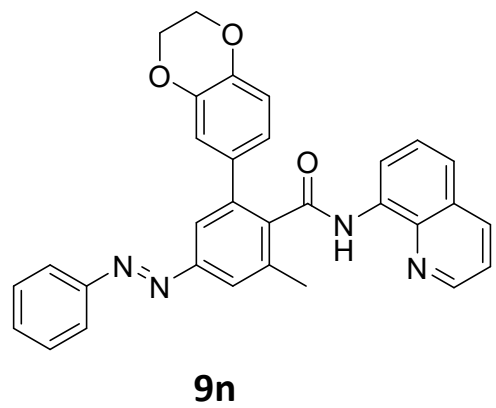


7.0841
7.0895
7.1049
7.1104

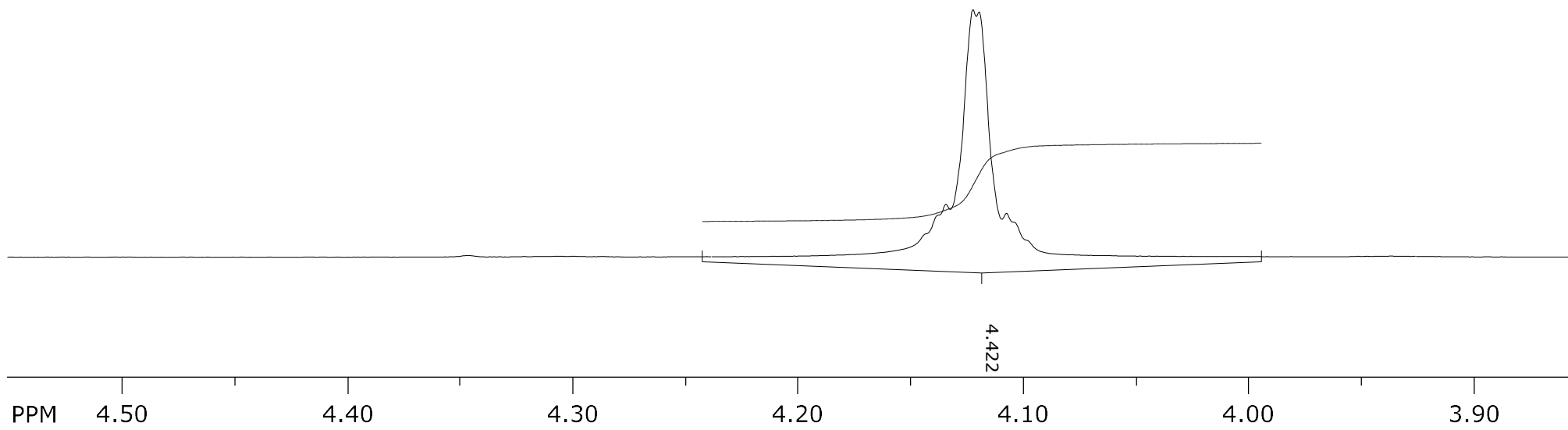


6.7372
6.7164

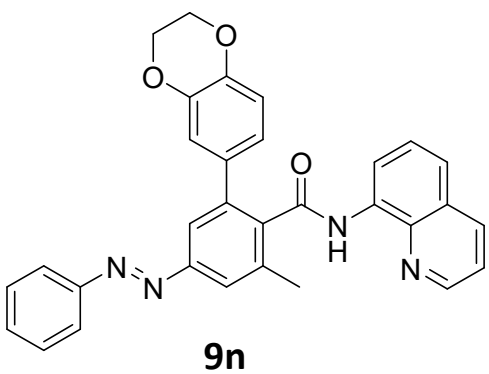
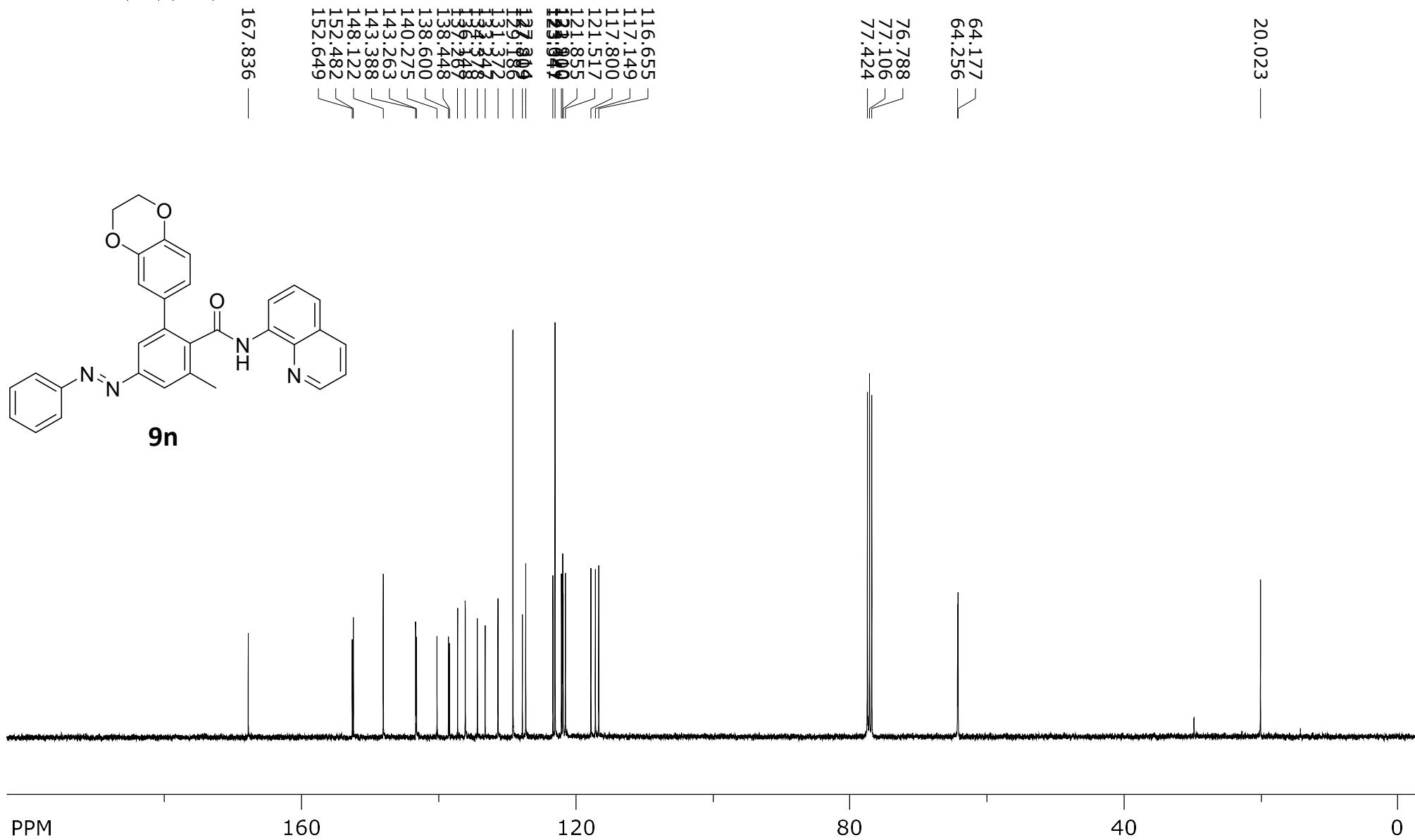




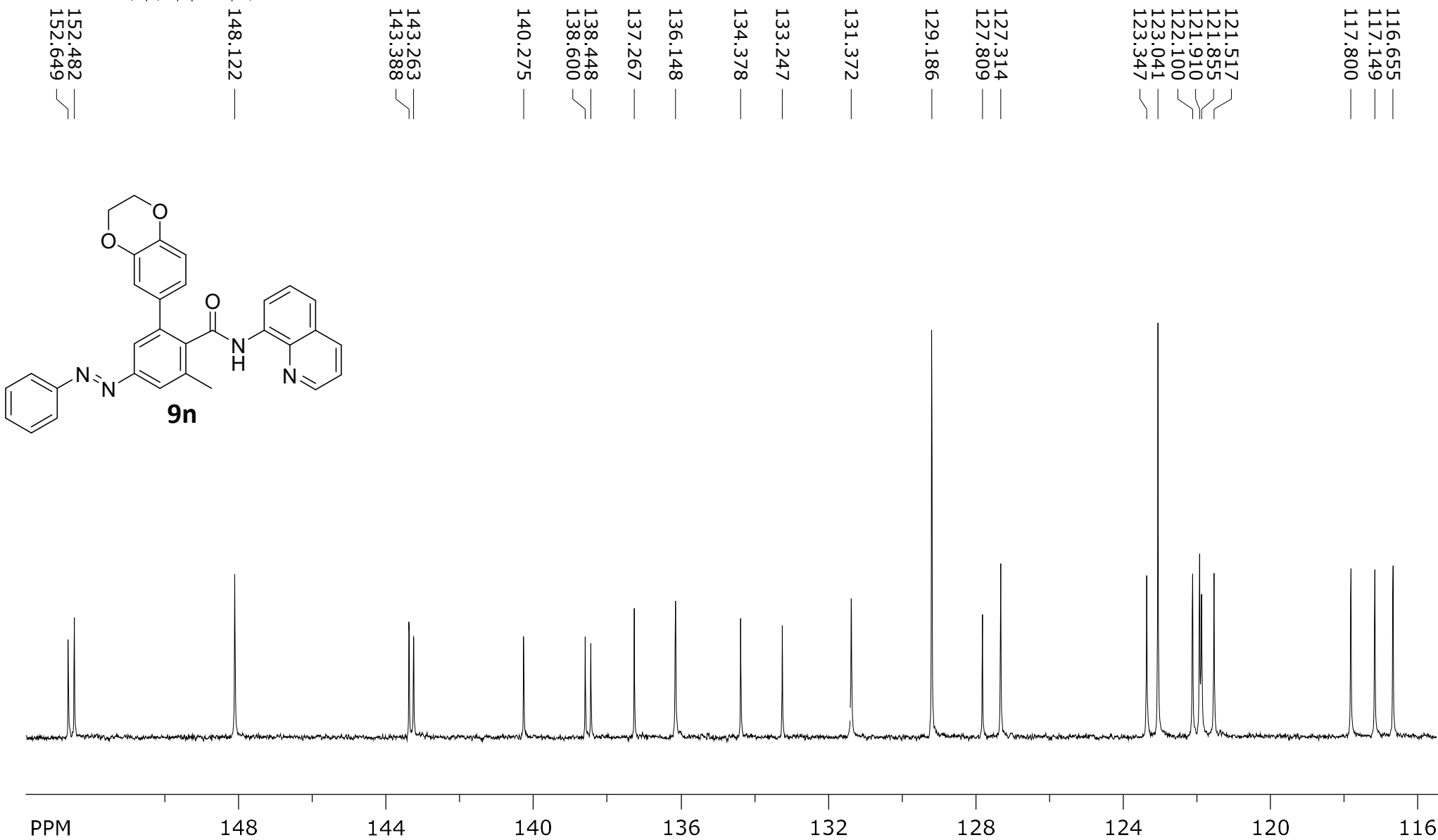
4.0968
4.1074
4.1074
4.1074
4.1195
4.1222
4.1343
4.1441



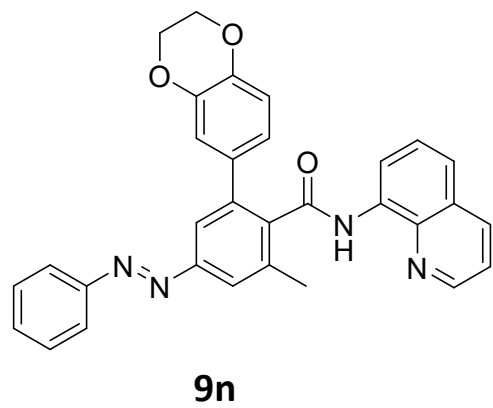
SpinWorks 4: RP 1205 B2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 1



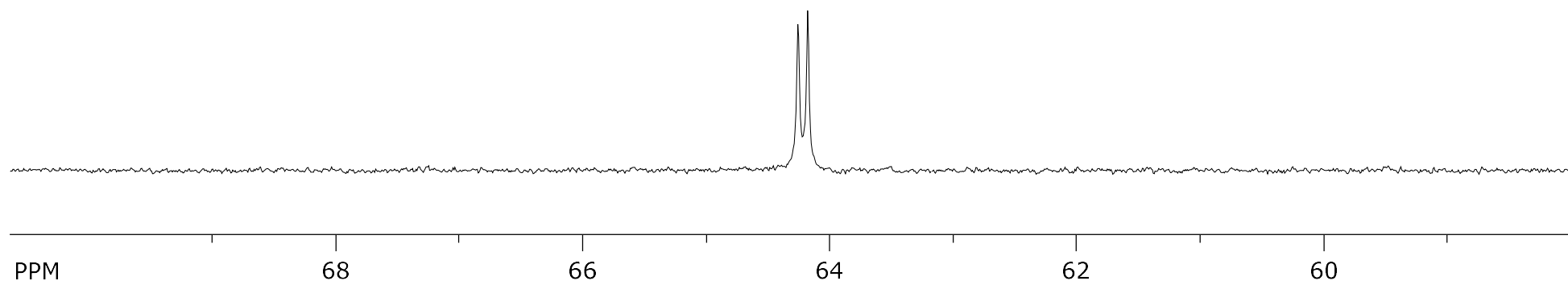
SpinWorks 4: RP 1205 B2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 1



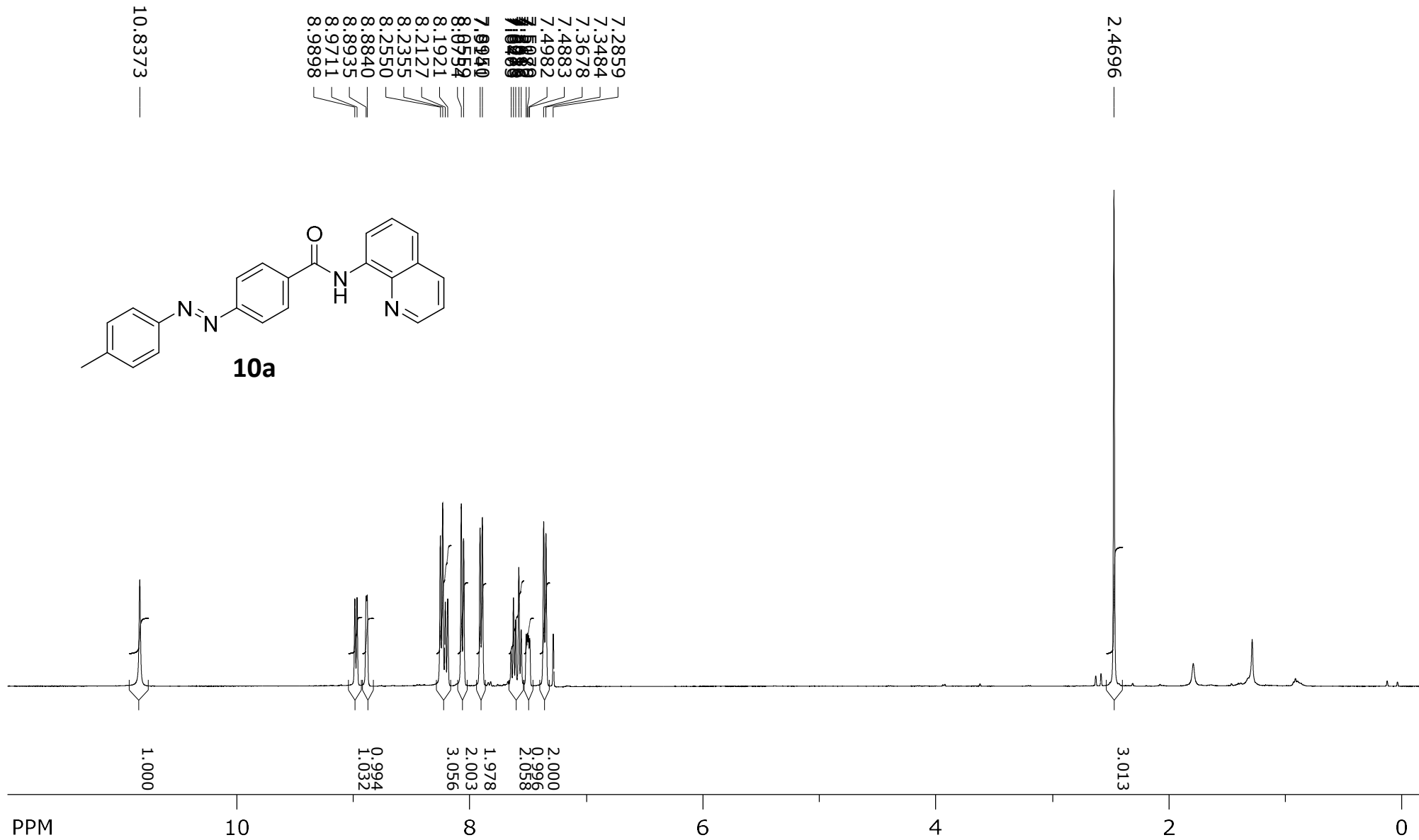
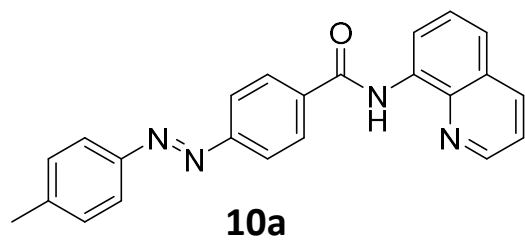
SpinWorks 4: RP 1205 B2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 1



64.177
64.256



SpinWorks 4: RP 1254 R1
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 55



SpinWorks 4: RP 1254 R1
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 55

8.9711
8.9898
8.8840
8.8935

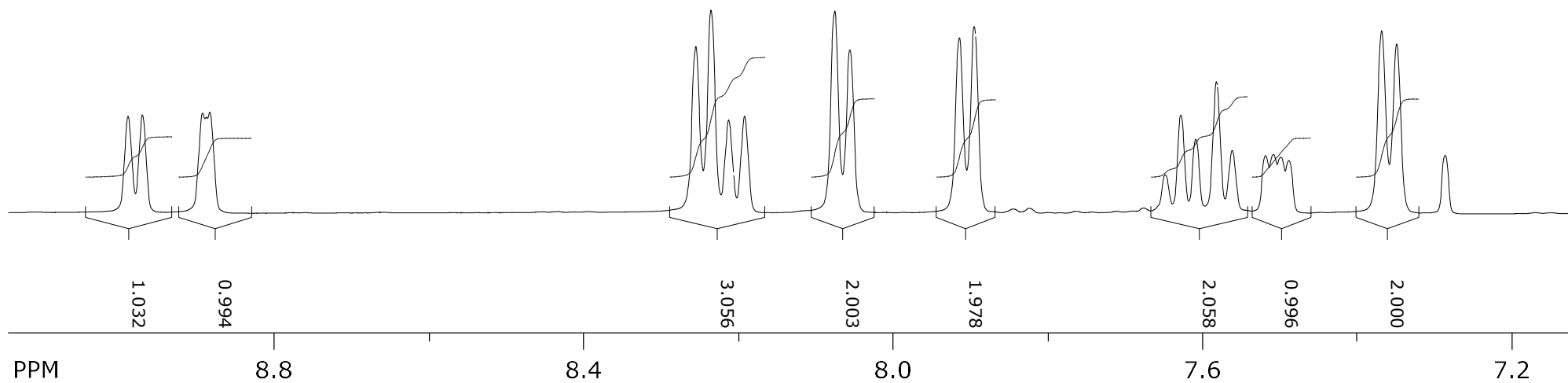
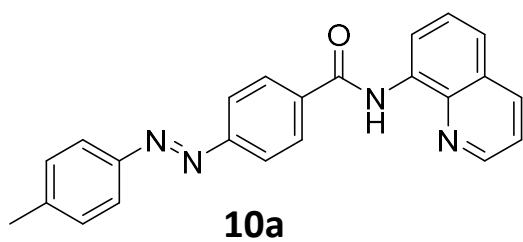
8.1921
8.2127
8.2355
8.2550

8.0559
8.0754

7.8950
7.9141

7.5612
7.5816
7.6083
7.6276
7.6463
7.5180
7.5079
7.4982
7.4883

7.3484
7.3678
7.2859

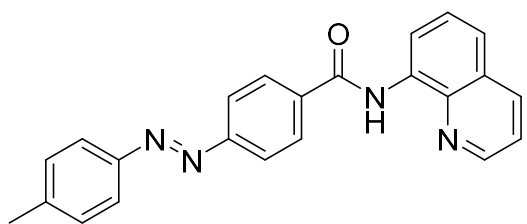


SpinWorks 4: RP 1254 R1
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 55

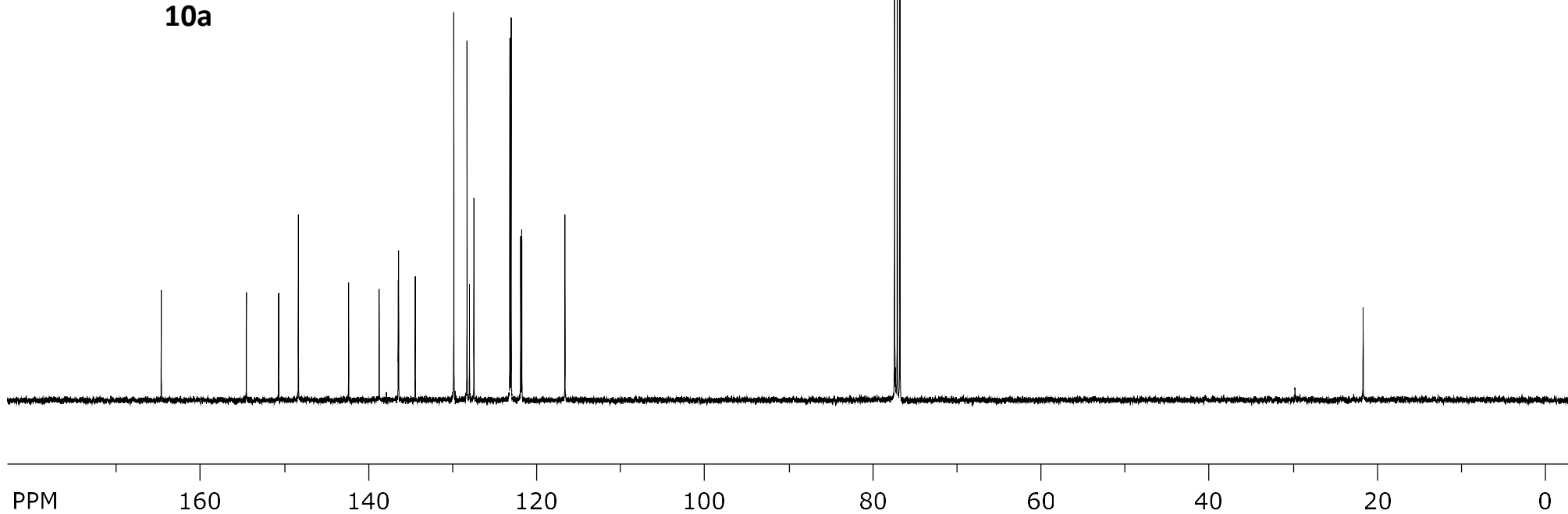
164.711 —
154.583 —
148.392 —
142.405 —
138.768 —
136.501 —
136.456 —
134.474 —
129.881 —
128.310 —
127.488 —
123.212 —
123.056 —
121.917 —
121.791 —
116.653 —

76.772 —
77.090 —
77.408 —

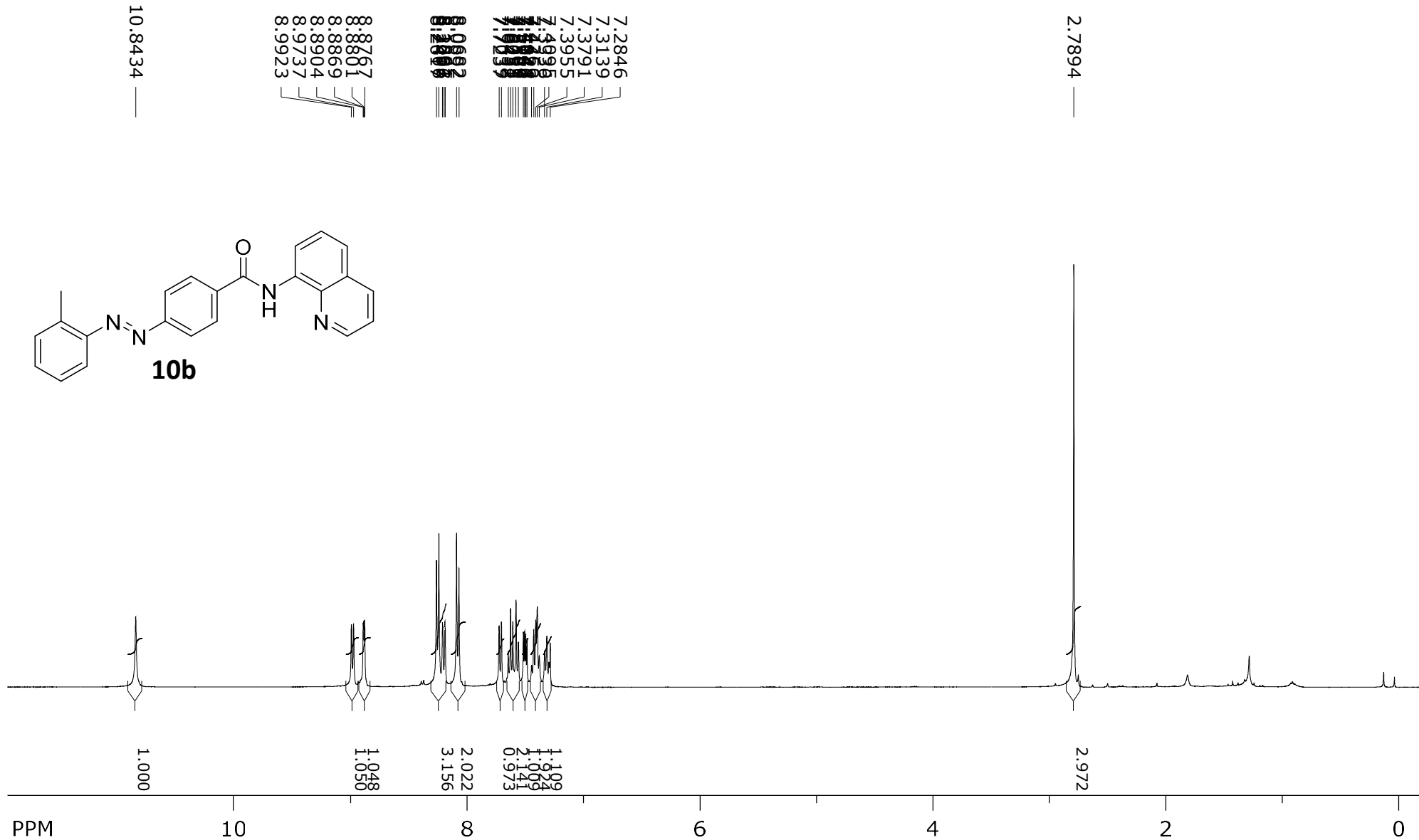
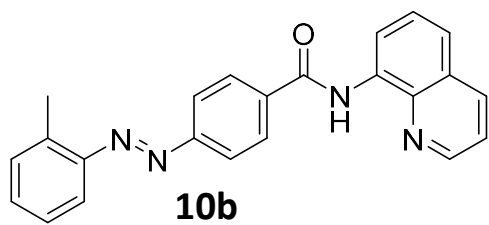
21.636 —



10a



SpinWorks 4: rp 1256 b2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 29



SpinWorks 4: rp 1256 b2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 29

8.8767
8.8801
8.8869
8.8904
8.9737
8.9923

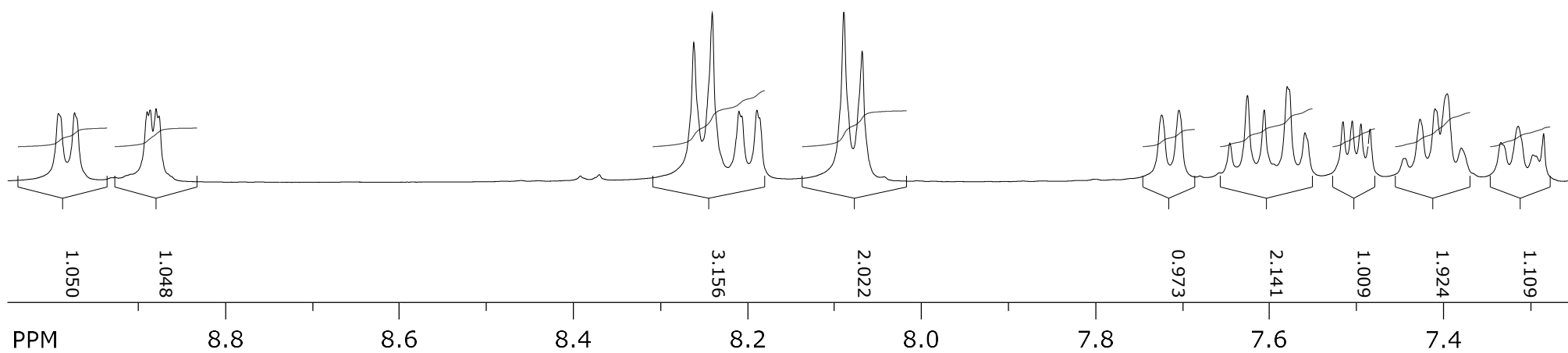
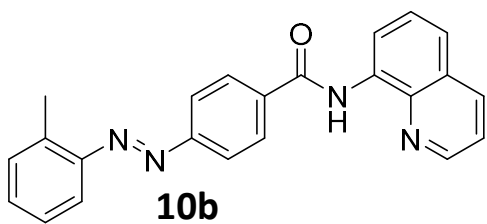
8.1861
8.1891
8.2066
8.2097
8.2406
8.2617

8.0682
8.0892

7.7039
7.7237

7.5589
7.5793
7.6058
7.6251
7.6452

7.5152
7.5047
7.4946
7.4841
7.4453
7.4266
7.4095
7.3955
7.3396
7.3139
7.2846

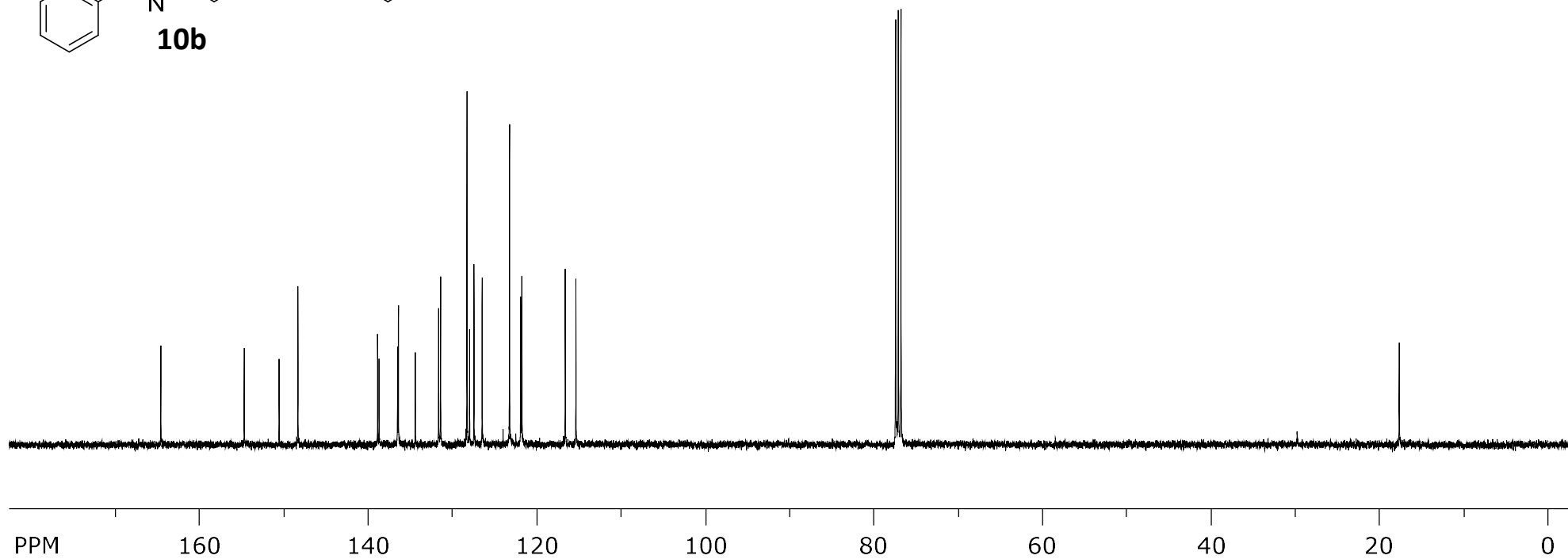
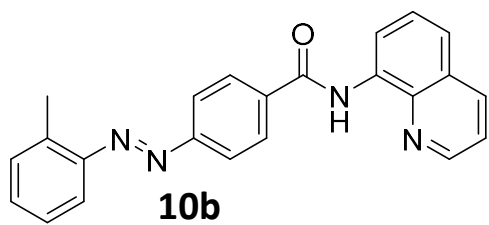


SpinWorks 4: rp 1256 b2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 29

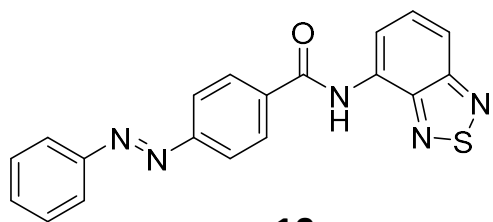
164.662
154.760
150.619
148.383
138.922
138.754
136.454
136.559
134.450
131.680
131.445
128.314
128.008
127.483
126.508
123.257
121.933
121.795
116.641
115.376

76.781
77.099
77.416

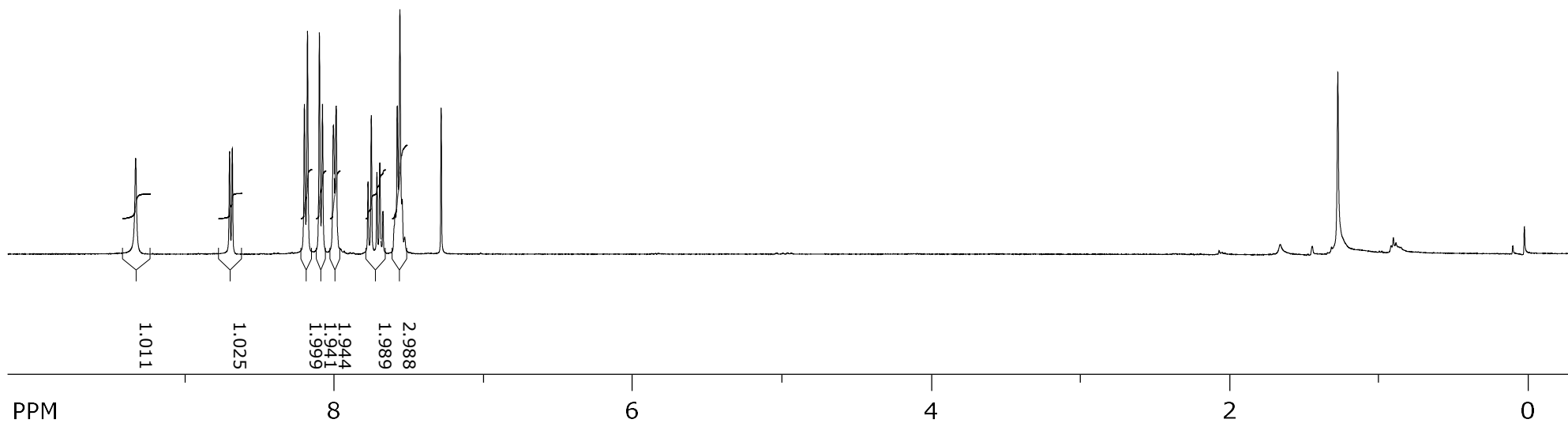
17.625

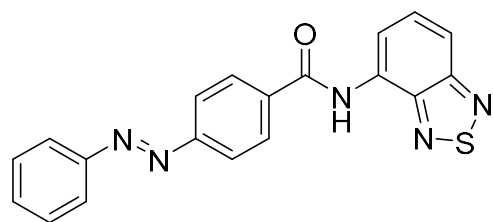


9.3331
8.7033
8.6851
8.2018
8.1811
8.1013
8.0807
8.0074
7.9885
7.9990
7.9990
7.5939
7.5792
7.5613
7.5466
7.2851

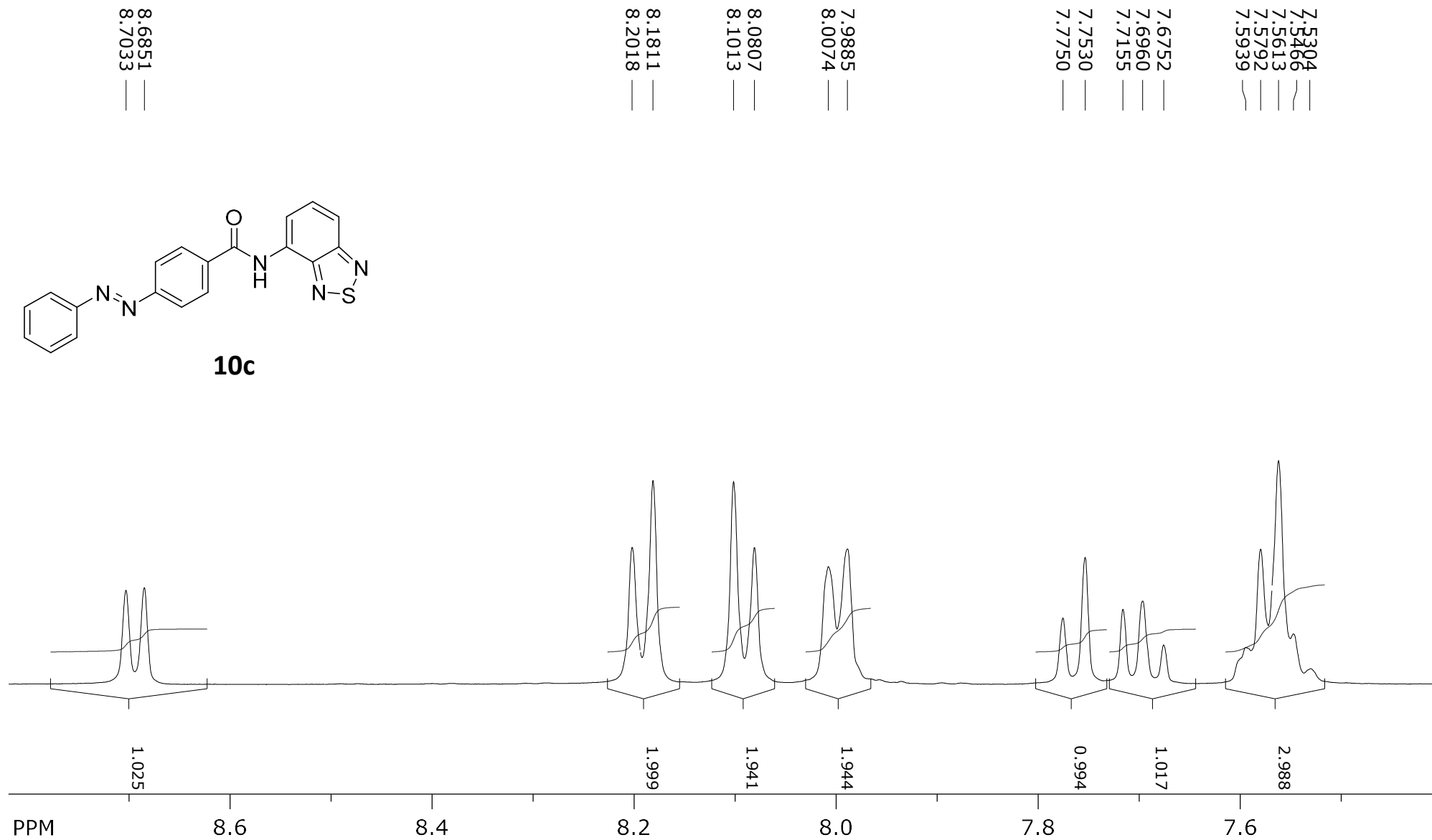


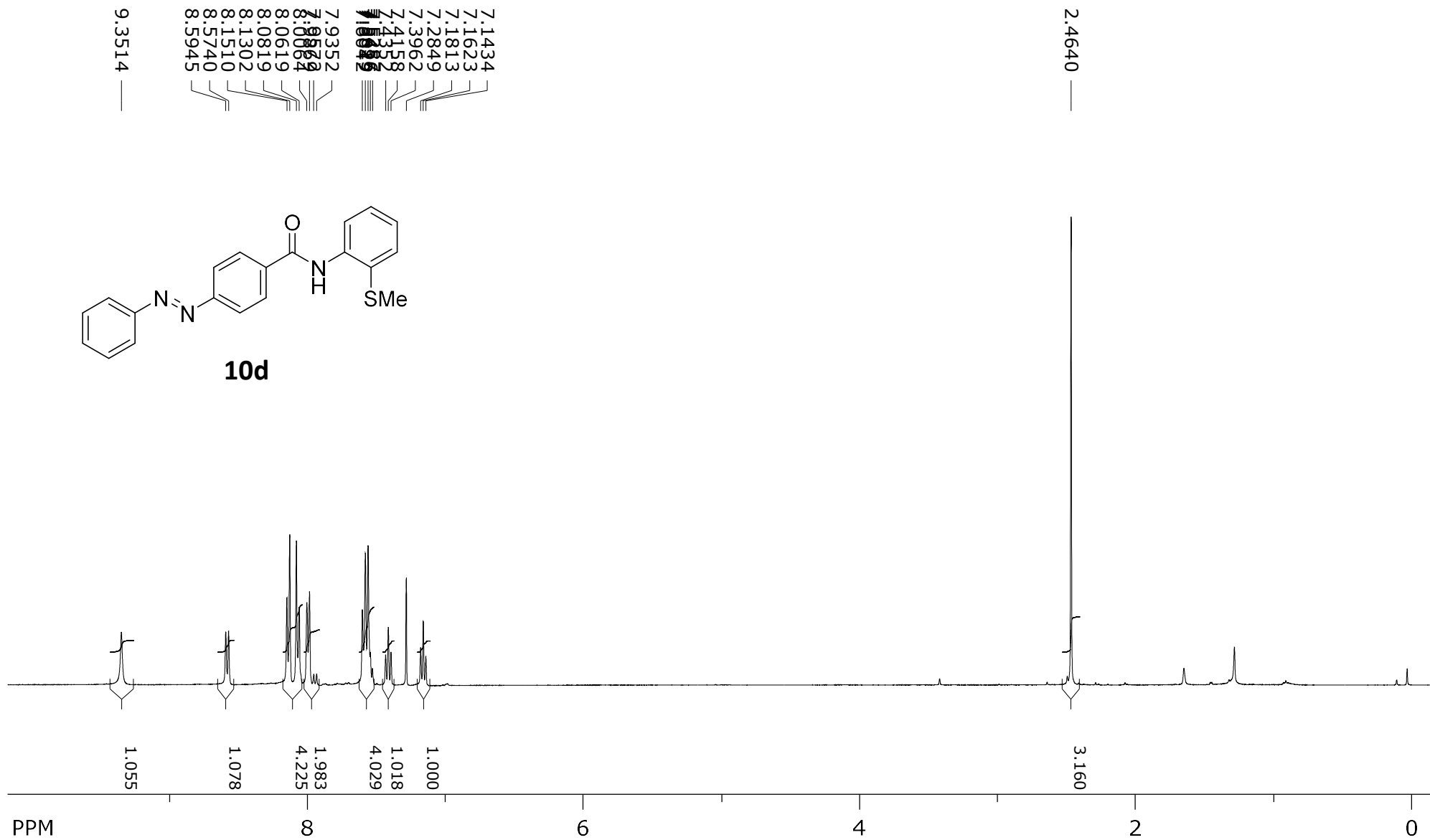
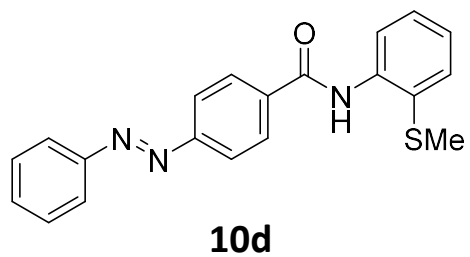
10c

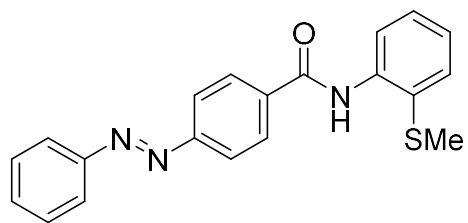




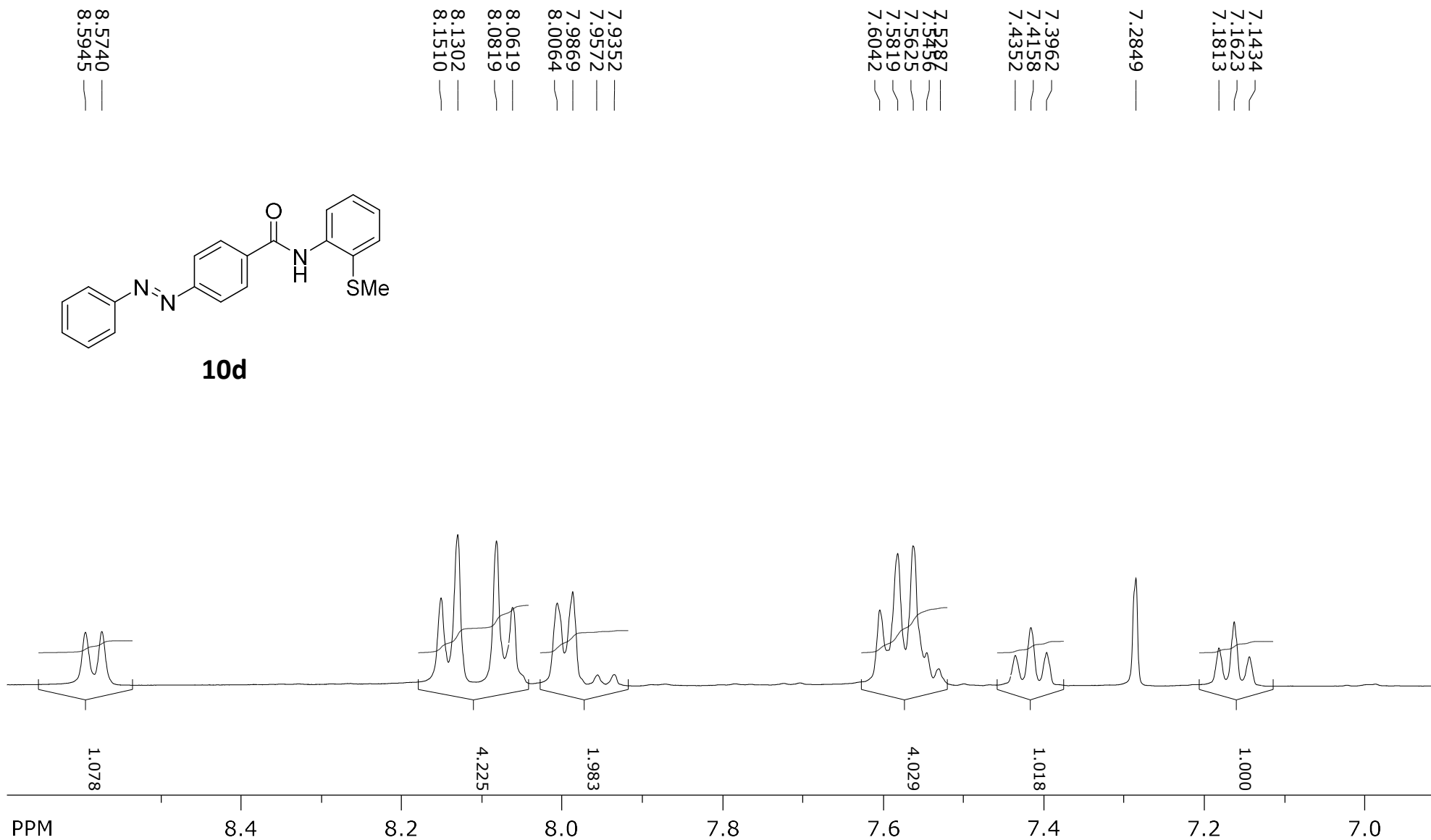
10c



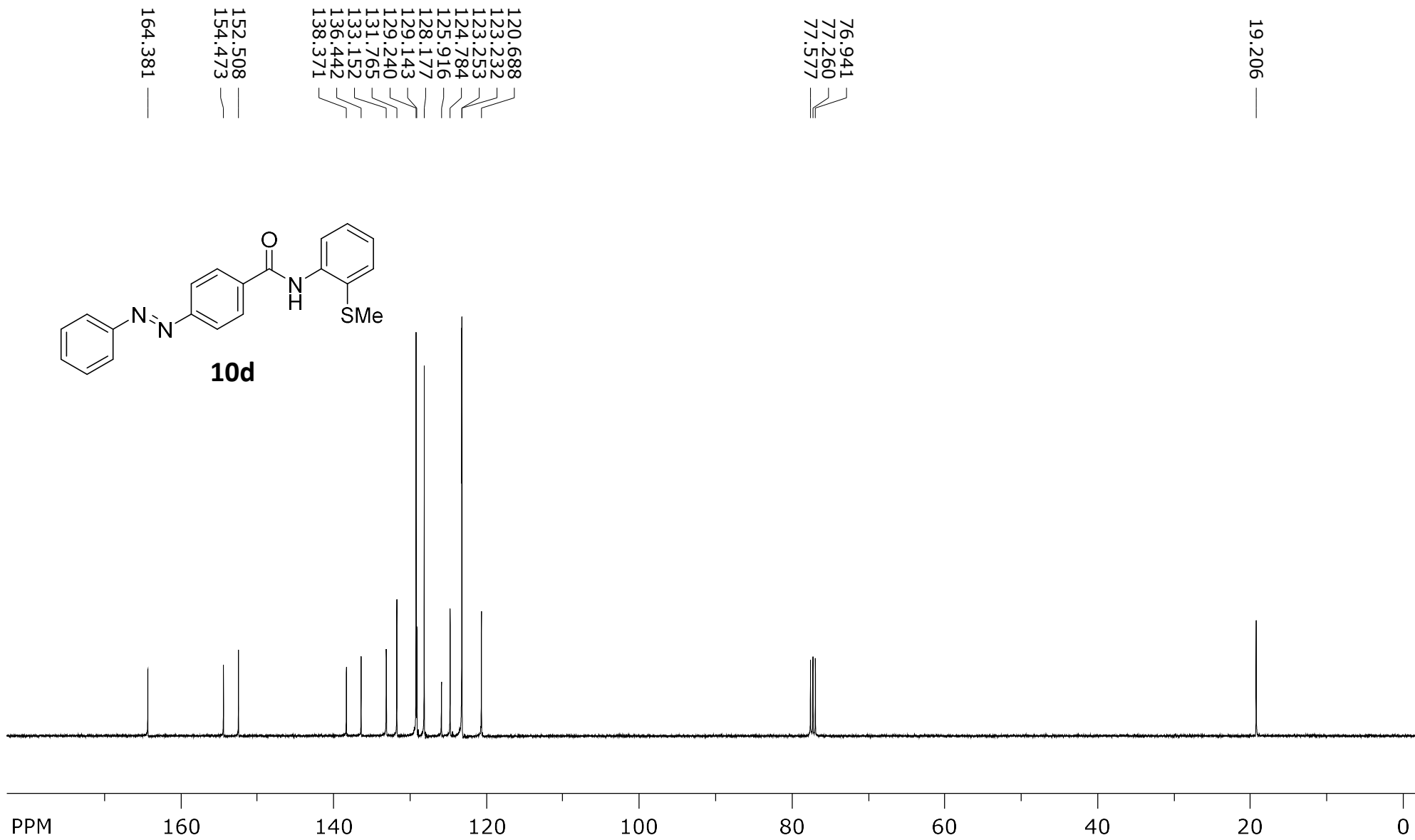




10d



SpinWorks 4: RP 971 A2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 33



7.9716
7.9749
7.9914
7.9957

7.8519
7.8706

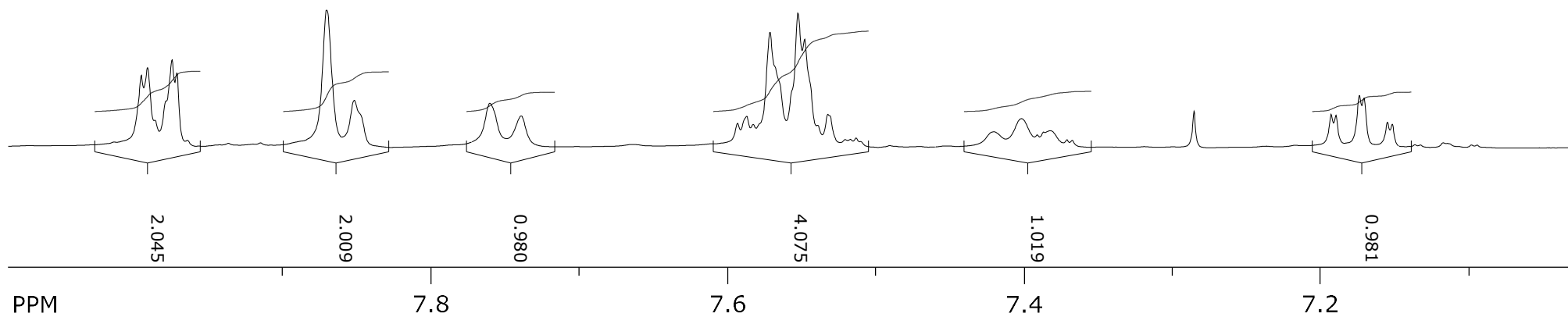
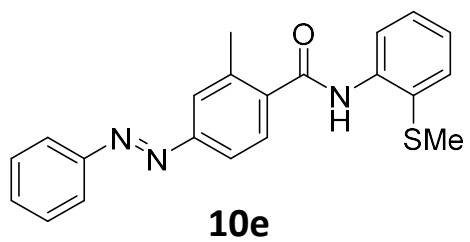
7.7392
7.7603

7.5322
7.5479
7.5524
7.5713
7.5932

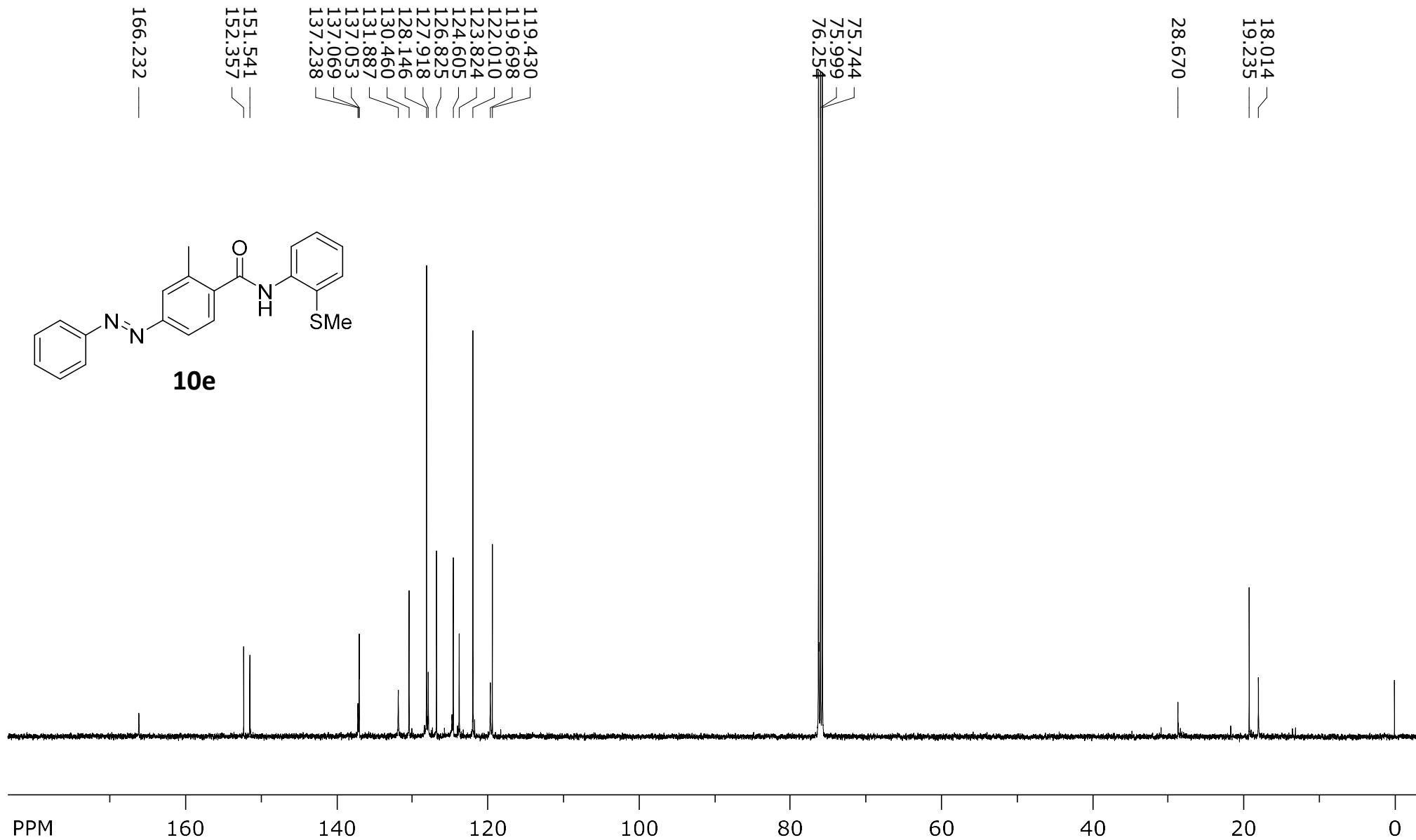
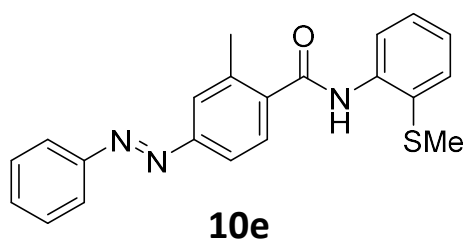
7.3820
7.4016
7.4203

7.2851

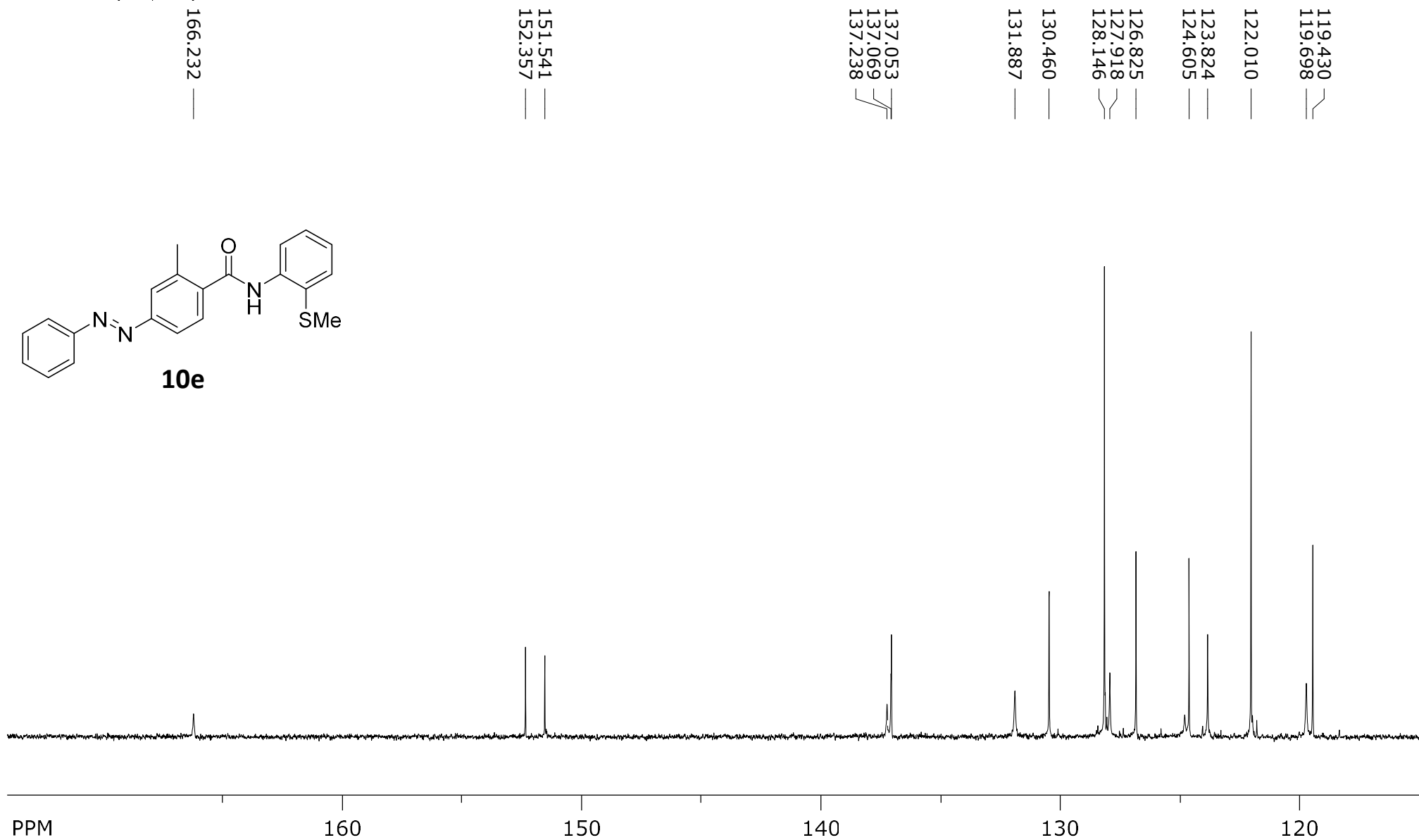
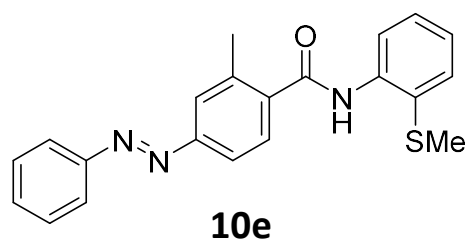
7.1513
7.1545
7.1704
7.1735
7.1893
7.1925



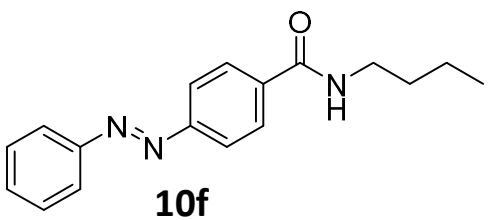
SpinWorks 4: SAB130302
C13CPD CDCl3 {D:\Spectra} nmr 31



SpinWorks 4: SAB130302
C13CPD CDCl3 {D:\Spectra} nmr 31



SpinWorks 4: RP 1313 A2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 15

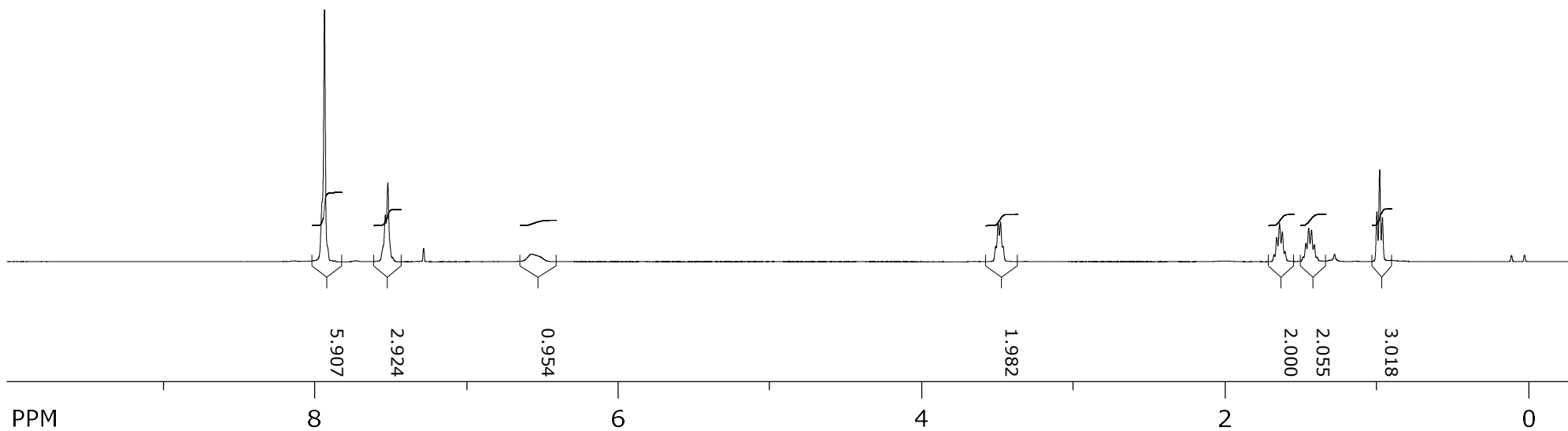


7.5398
7.5376
7.9154
7.9399

6.5480

3.5080
3.4688
3.4948

0.9593
0.9774
0.9957
1.6097
1.6119
1.6157
1.6381

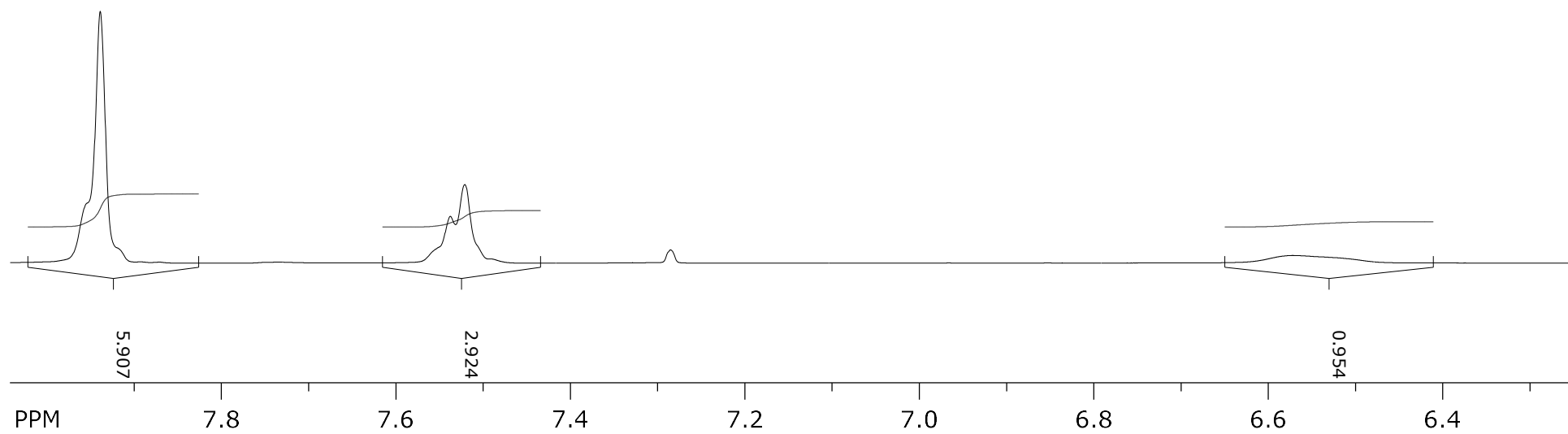
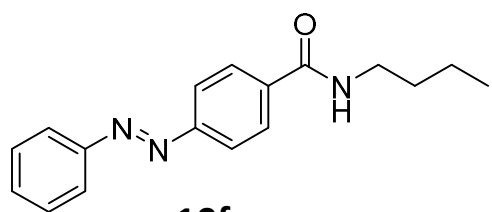


SpinWorks 4: RP 1313 A2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 15

7.9154
7.9389
7.9578
|
|
|

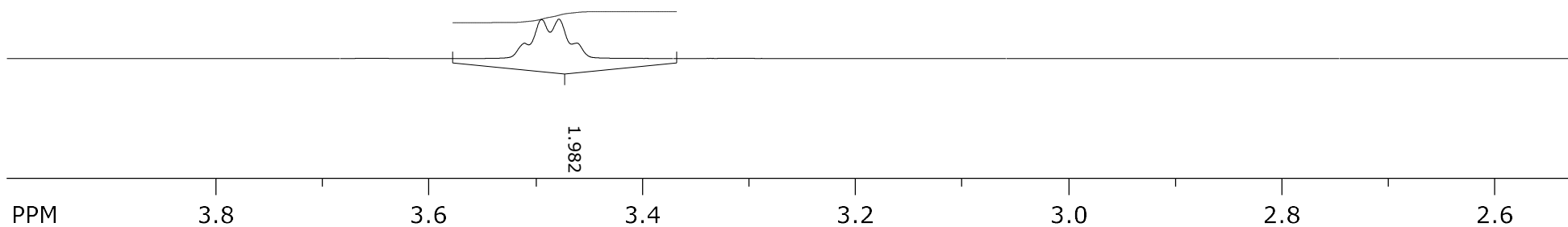
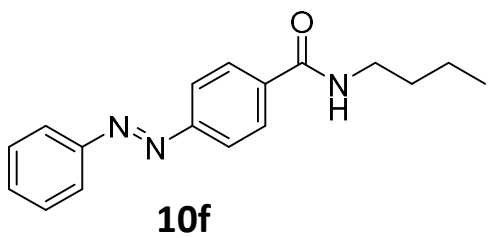
7.5208
7.5379
|
|

6.5480
—



SpinWorks 4: RP 1313 A2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 15

3.4622
3.4785
3.4948
3.5080

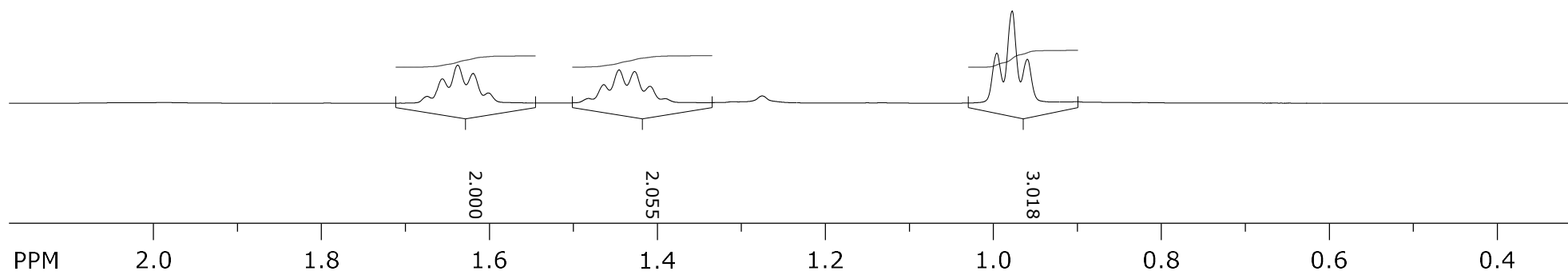
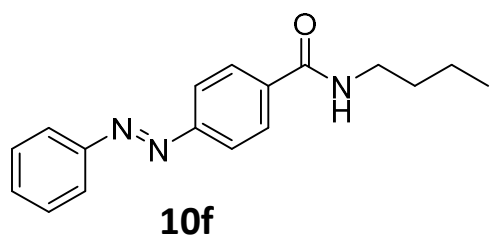


SpinWorks 4: RP 1313 A2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 15

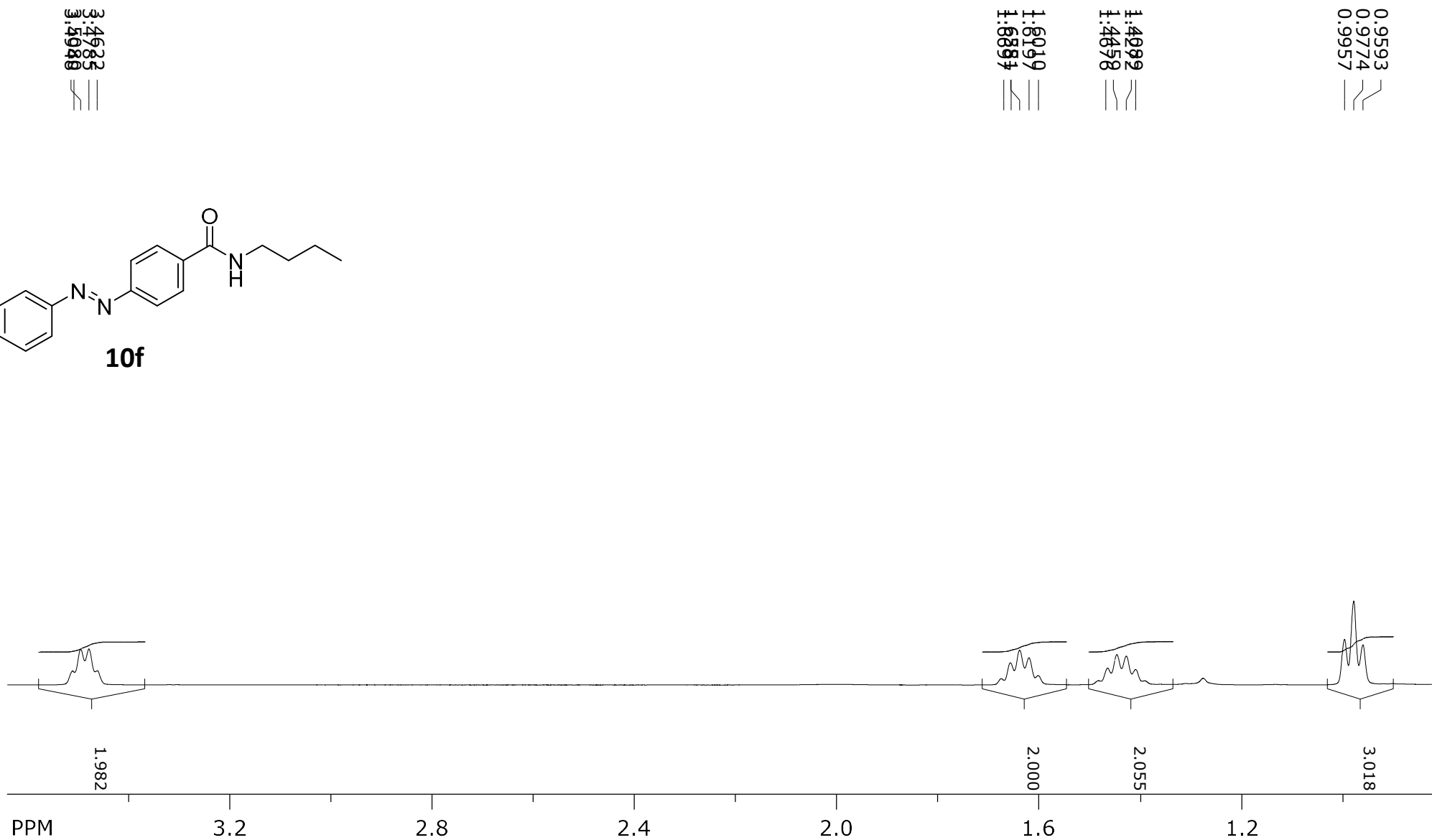
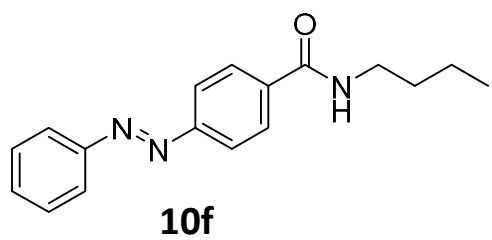
1.6010
1.6197
1.6381
1.6551
1.6750

1.4089
1.4272
1.4459
1.4676

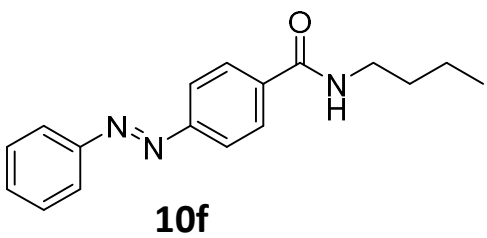
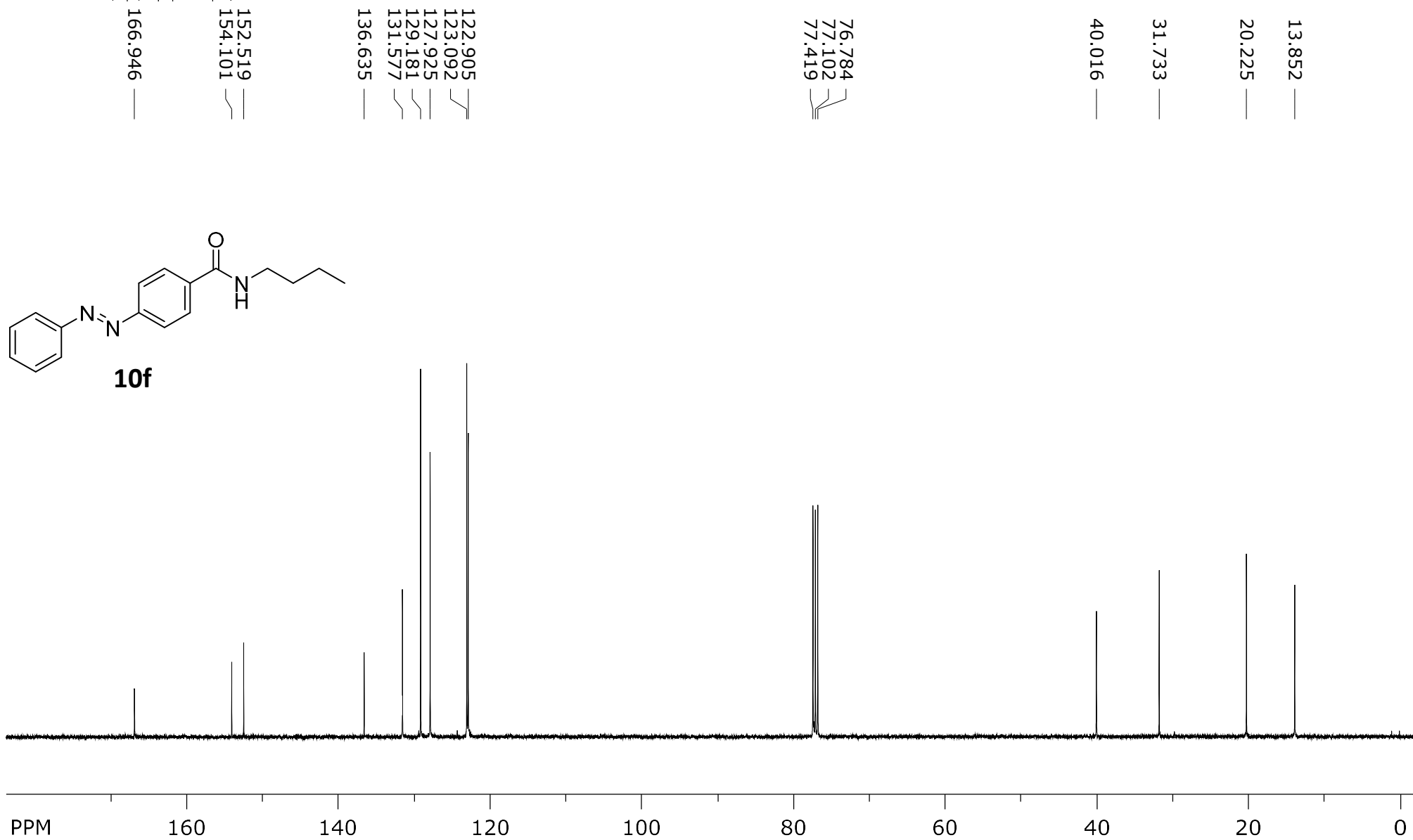
0.9593
0.9774
0.9957



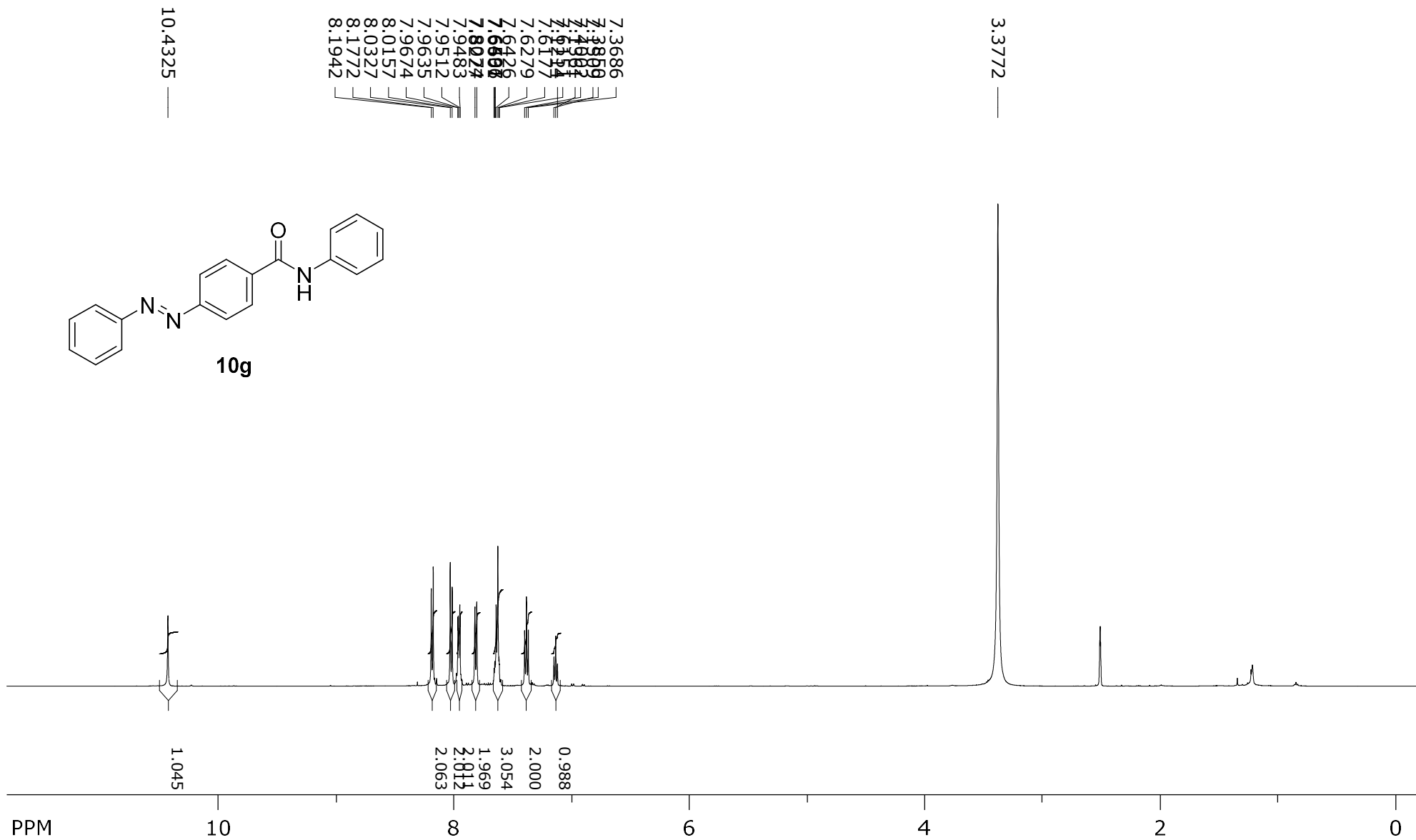
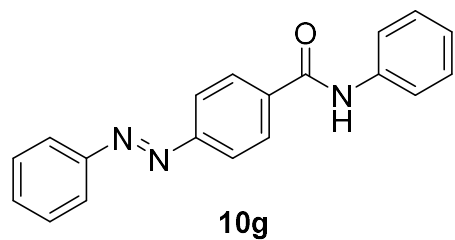
SpinWorks 4: RP 1313 A2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 15



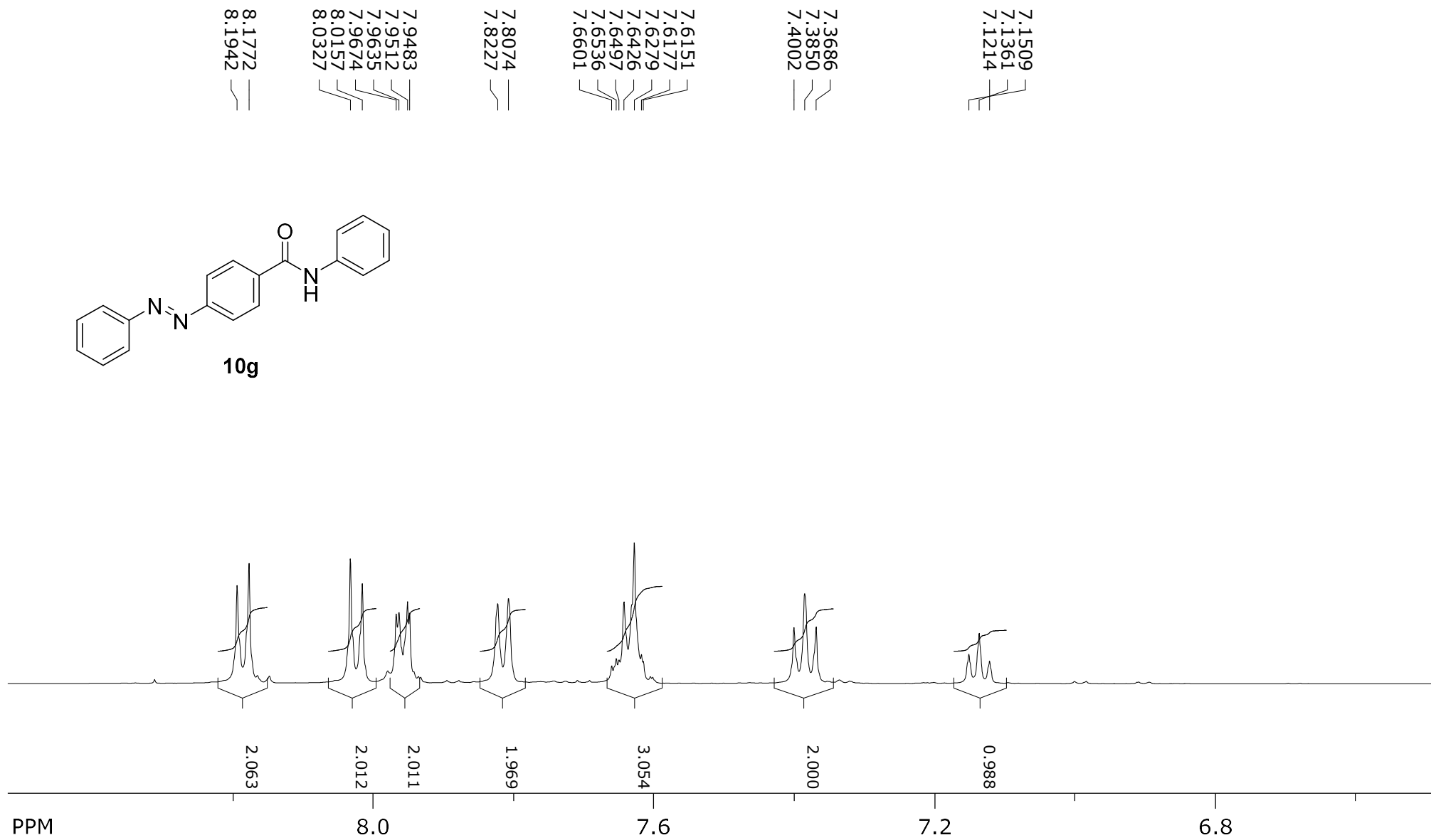
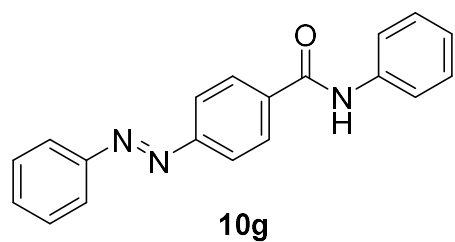
SpinWorks 4: RP 1313 A2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 15



SpinWorks 4: SAB170701
1H_8scan DMSO {D:\Spectra} nmr 50



SpinWorks 4: SAB170701
1H_8scan DMSO {D:\Spectra} nmr 50



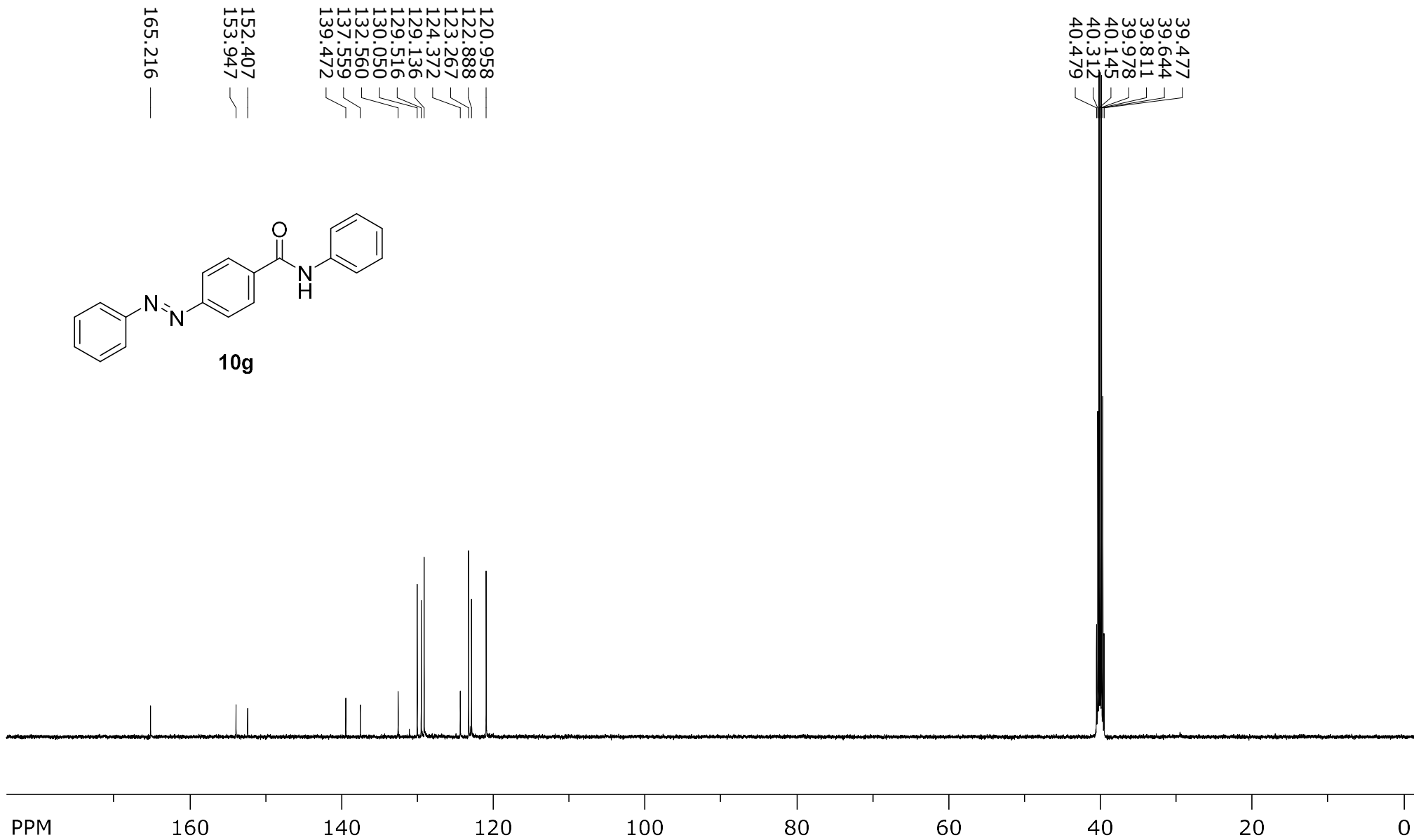
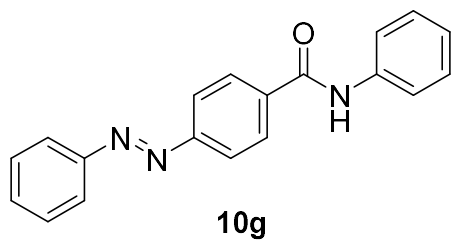
SpinWorks 4: SAB170701
C13CPD DMSO {D:\Spectra} nmr 50

165.216

152.407
153.947

120.958
122.888
123.267
124.372
129.136
129.516
130.050
132.560
137.559
139.472

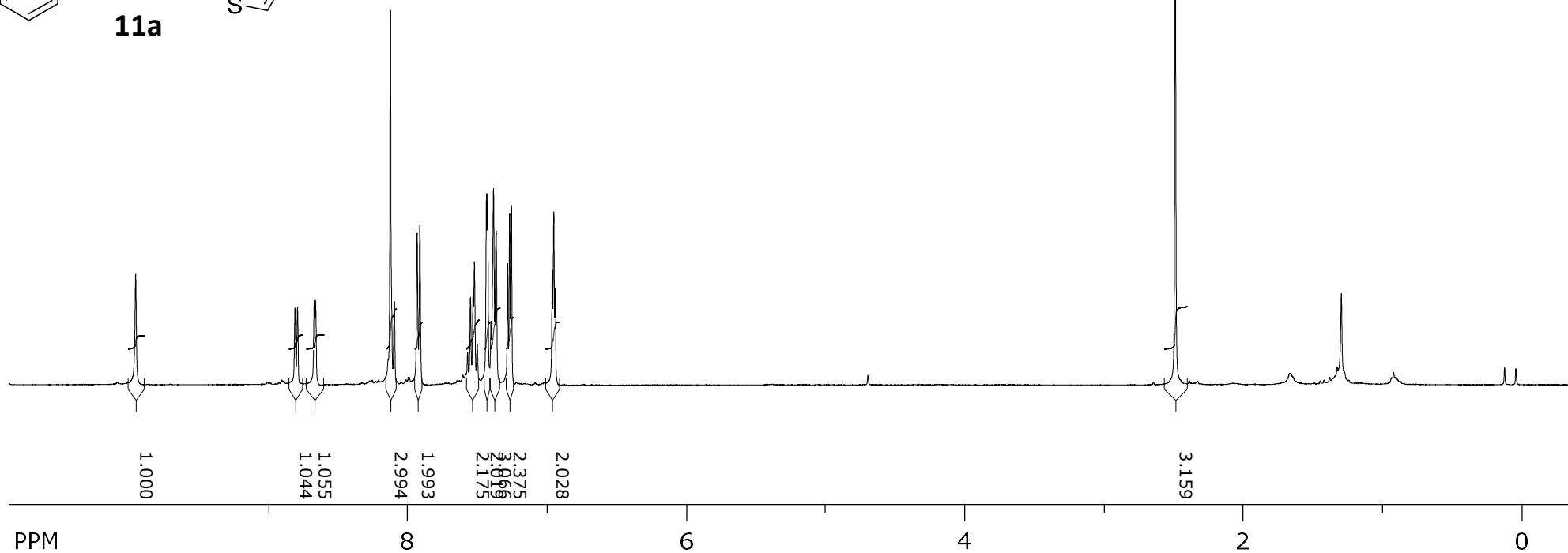
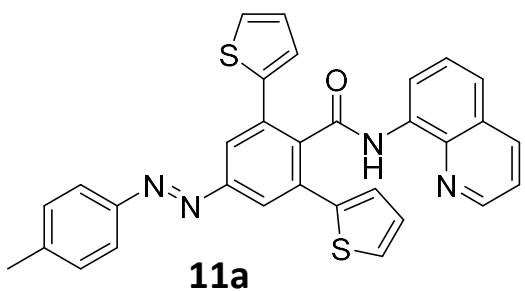
39.477
39.644
39.811
39.978
40.145
40.312
40.479



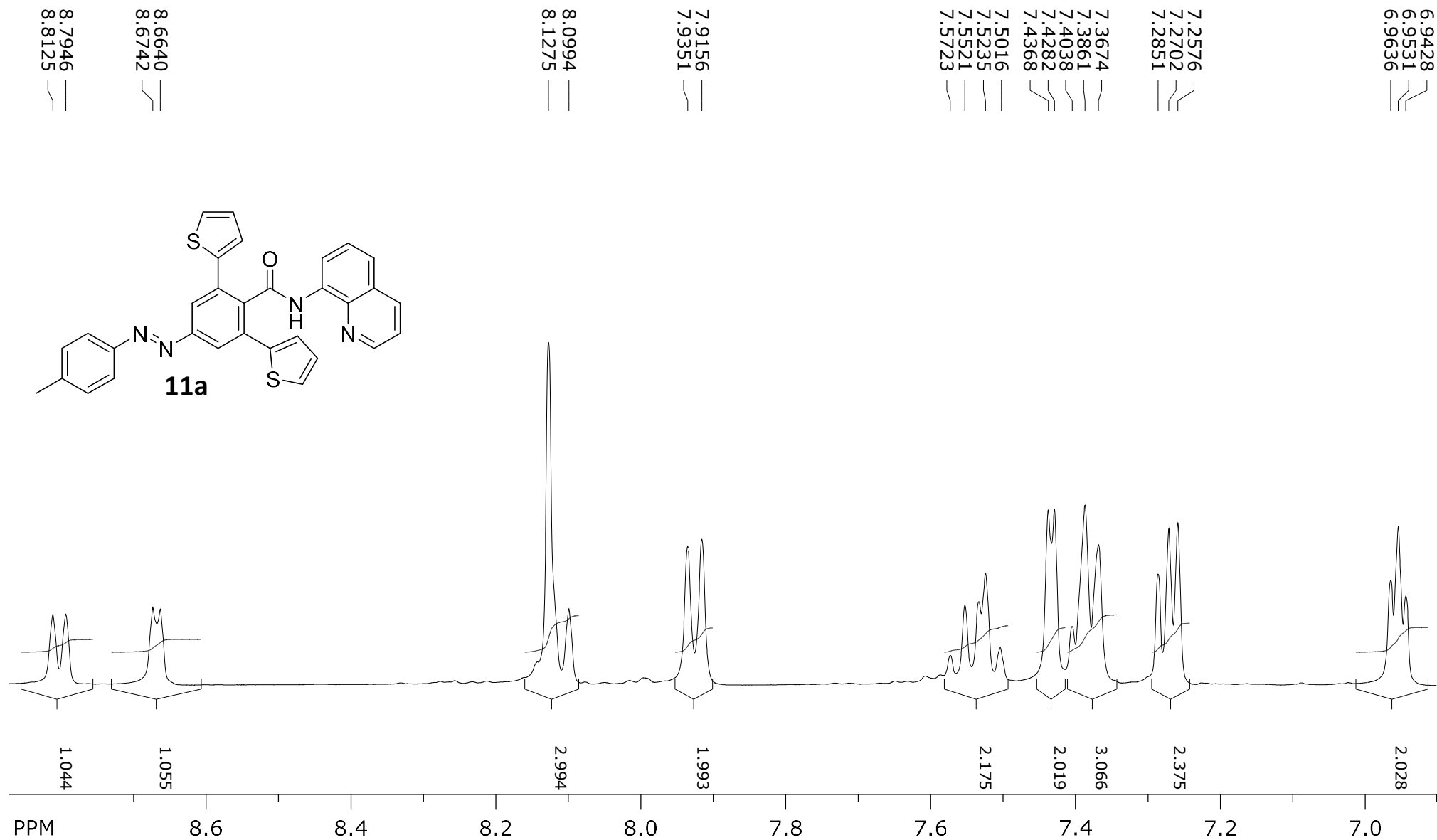
SpinWorks 4: RP 1265
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 56

9.9579
8.6640
8.6742
8.7946
8.8125
8.1275
8.0994
7.9351
7.9156
7.5723
7.5521
7.5235
7.3674
7.3574
7.3474
7.2851
7.2702
7.2576
7.2536
6.9636
6.9428
6.9531

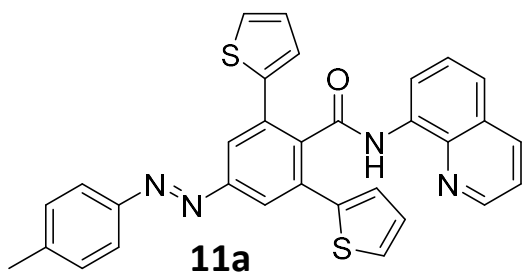
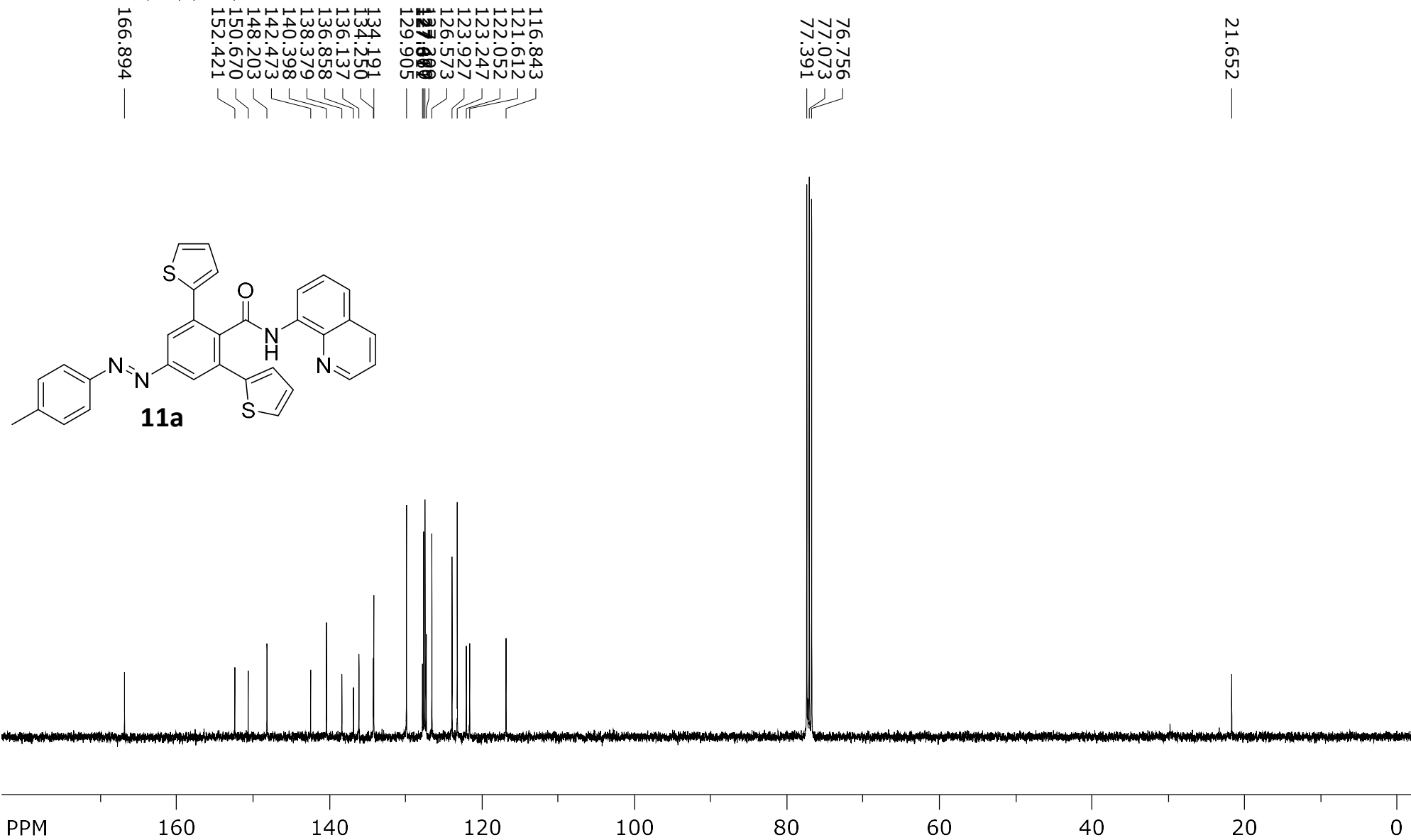
2.4874



SpinWorks 4: RP 1265
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 56

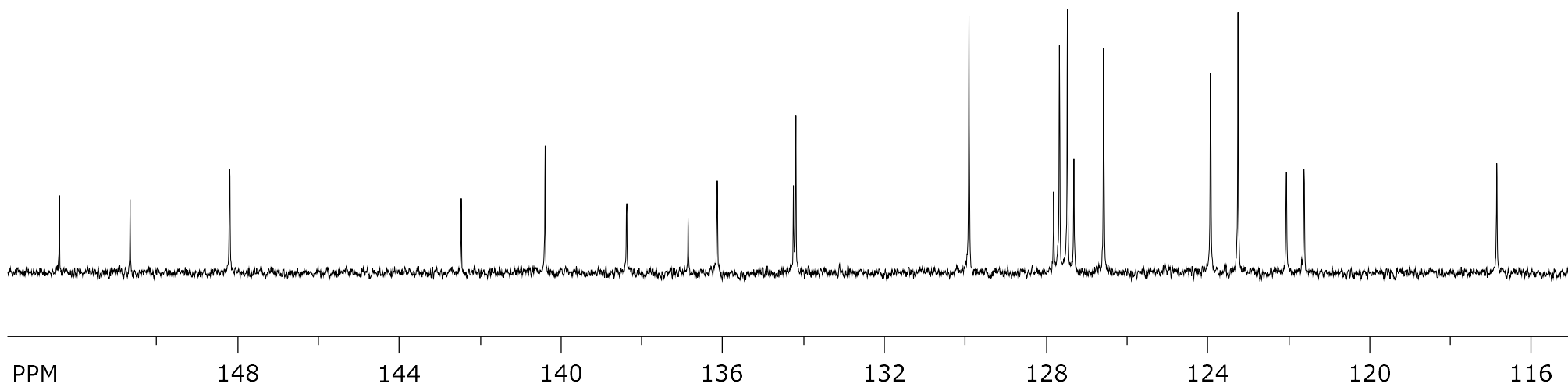
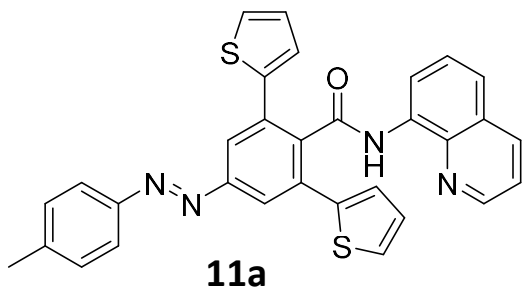


SpinWorks 4: RP 1265
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 56

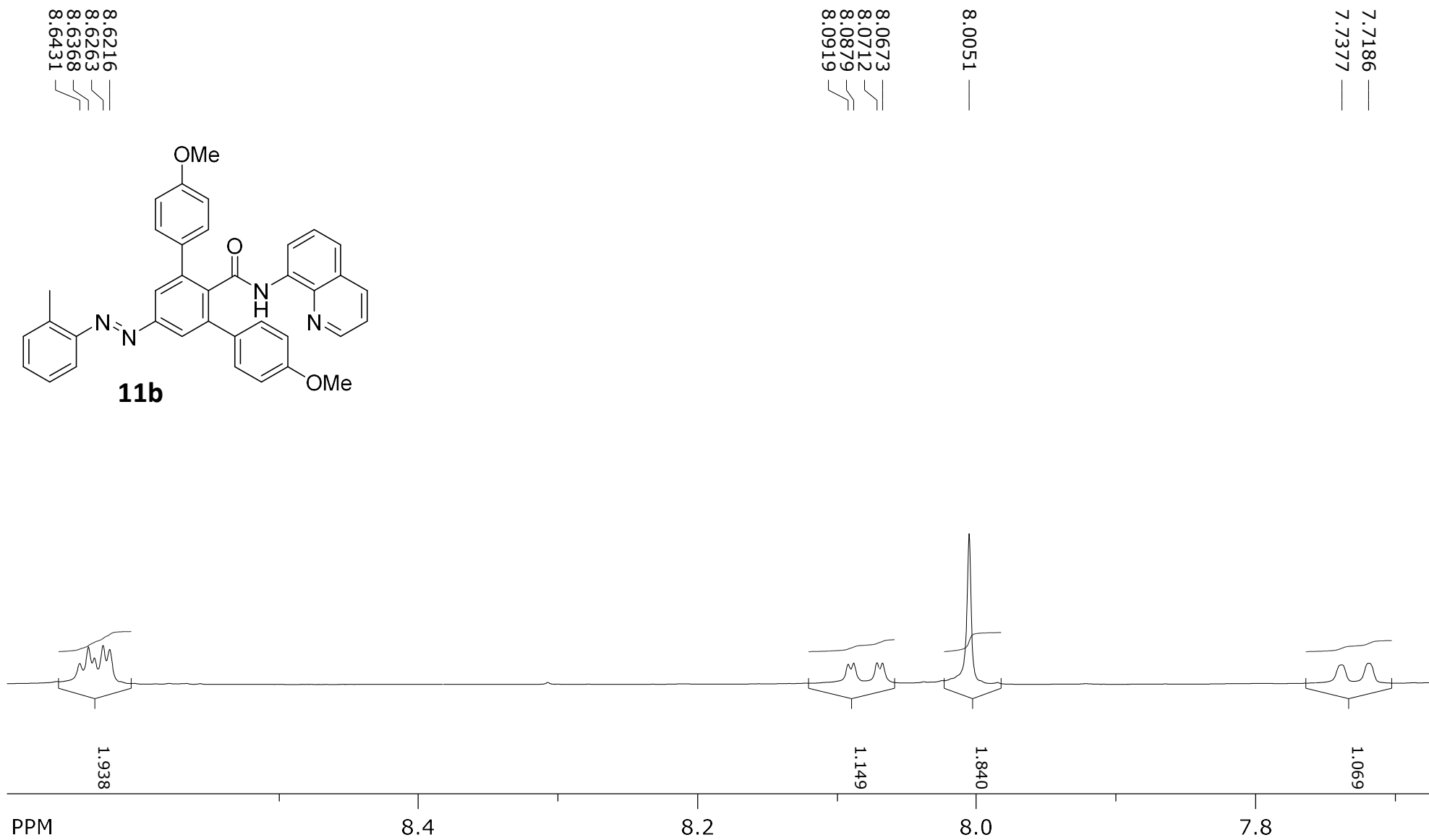
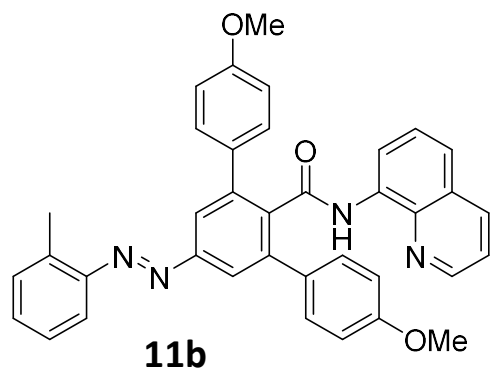


SpinWorks 4: RP 1265
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 56

152.421 —
150.670 —
148.203 —
142.473 —
140.398 —
138.379 —
136.137 —
136.858 —
134.191 —
134.250 —
129.905 —
127.811 —
127.667 —
127.470 —
127.309 —
126.573 —
123.927 —
123.247 —
122.052 —
121.612 —
116.843 —



SpinWorks 4: RP 1275 B2
PROTON_32 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 1

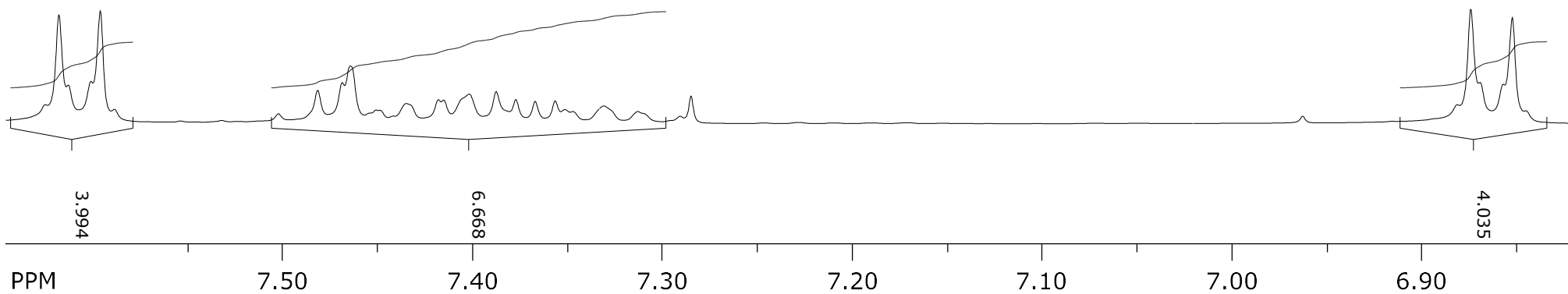
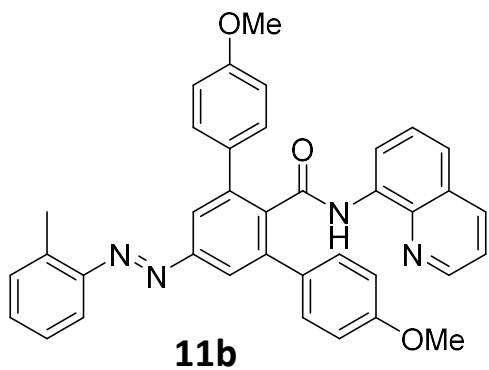


SpinWorks 4: RP 1275 B2
PROTON_32 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 1

7.5887
7.5962
7.6011
7.6131
7.6180
7.6251

7.4816
7.4687
7.4644
7.4487
7.4349
7.4180
7.4152
7.4018
7.3876
7.3772
7.3670
7.3565
7.3514
7.3308
7.3123
7.2849

6.8449
6.8521
6.8569
6.8692
6.8740
6.8812



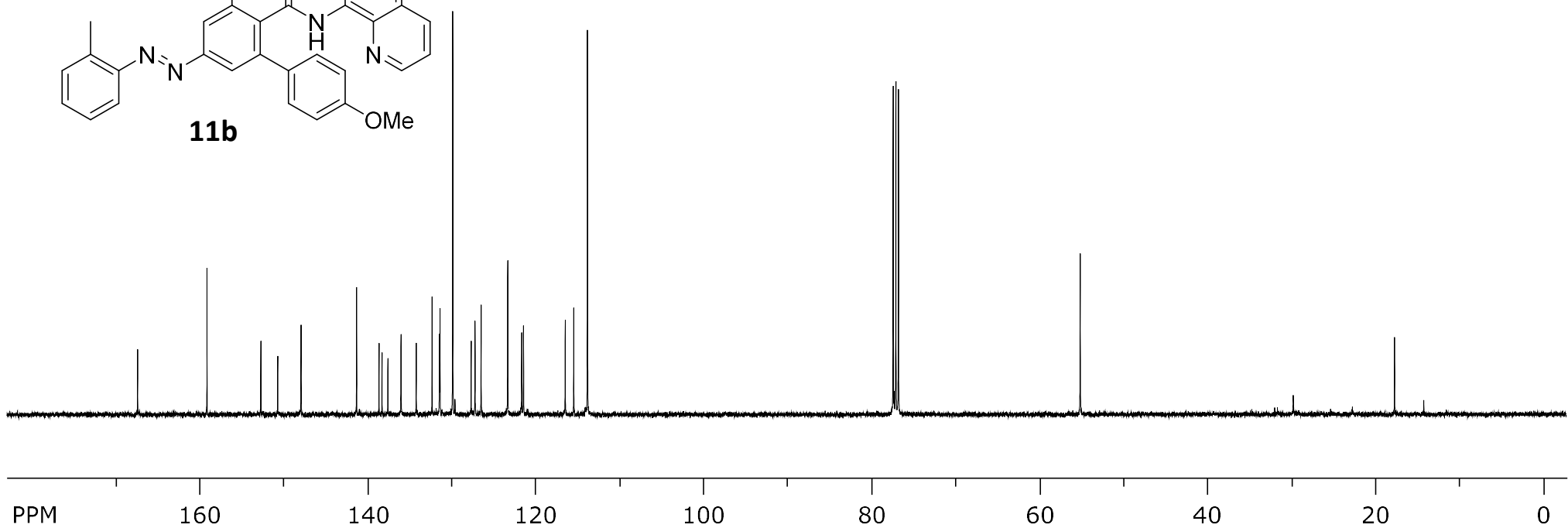
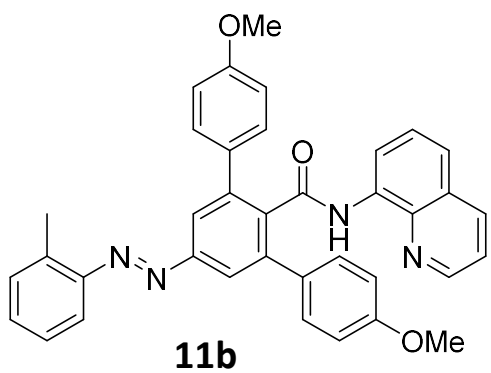
SpinWorks 4: RP 1275 B2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 1

167.458 —
159.184 —
152.767 —
150.763 —
147.983 —
141.363 —
138.694 —
137.632 —
136.071 —
134.261 —
132.369 —
131.487 —
129.907 —
127.722 —
127.222 —
126.533 —
123.356 —
121.692 —
121.478 —
116.509 —
115.495 —
113.862 —

76.805 —
77.122 —
77.440 —

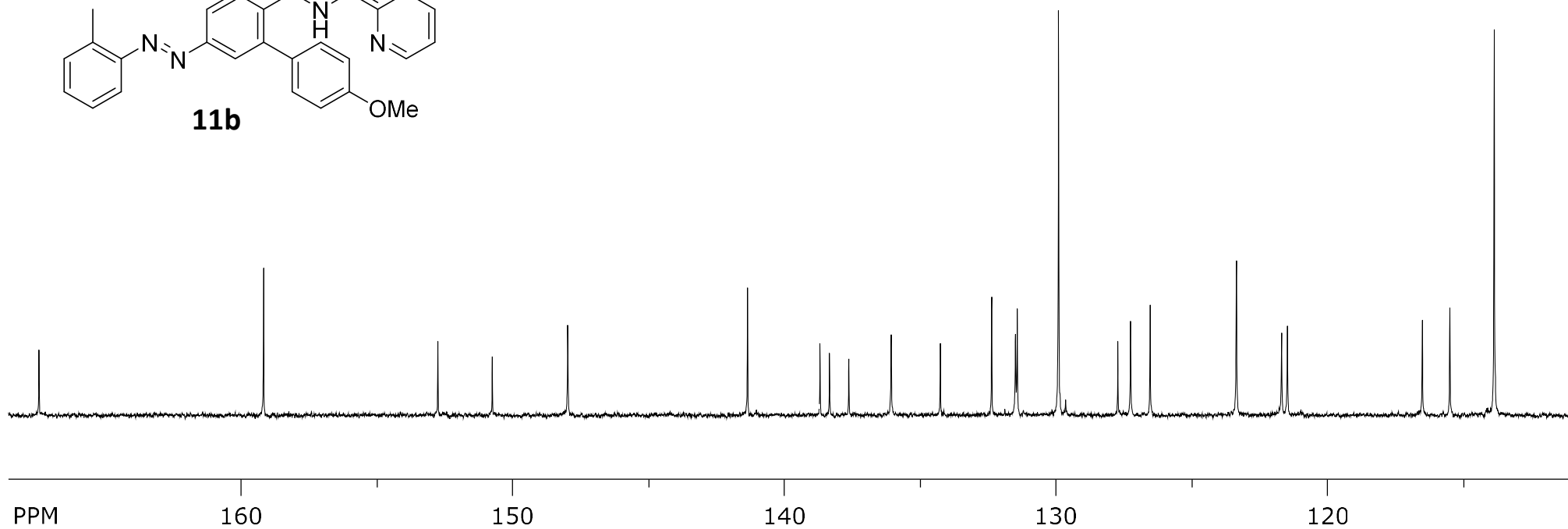
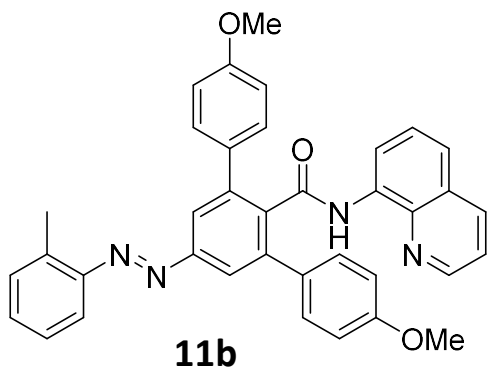
55.158 —

17.713 —

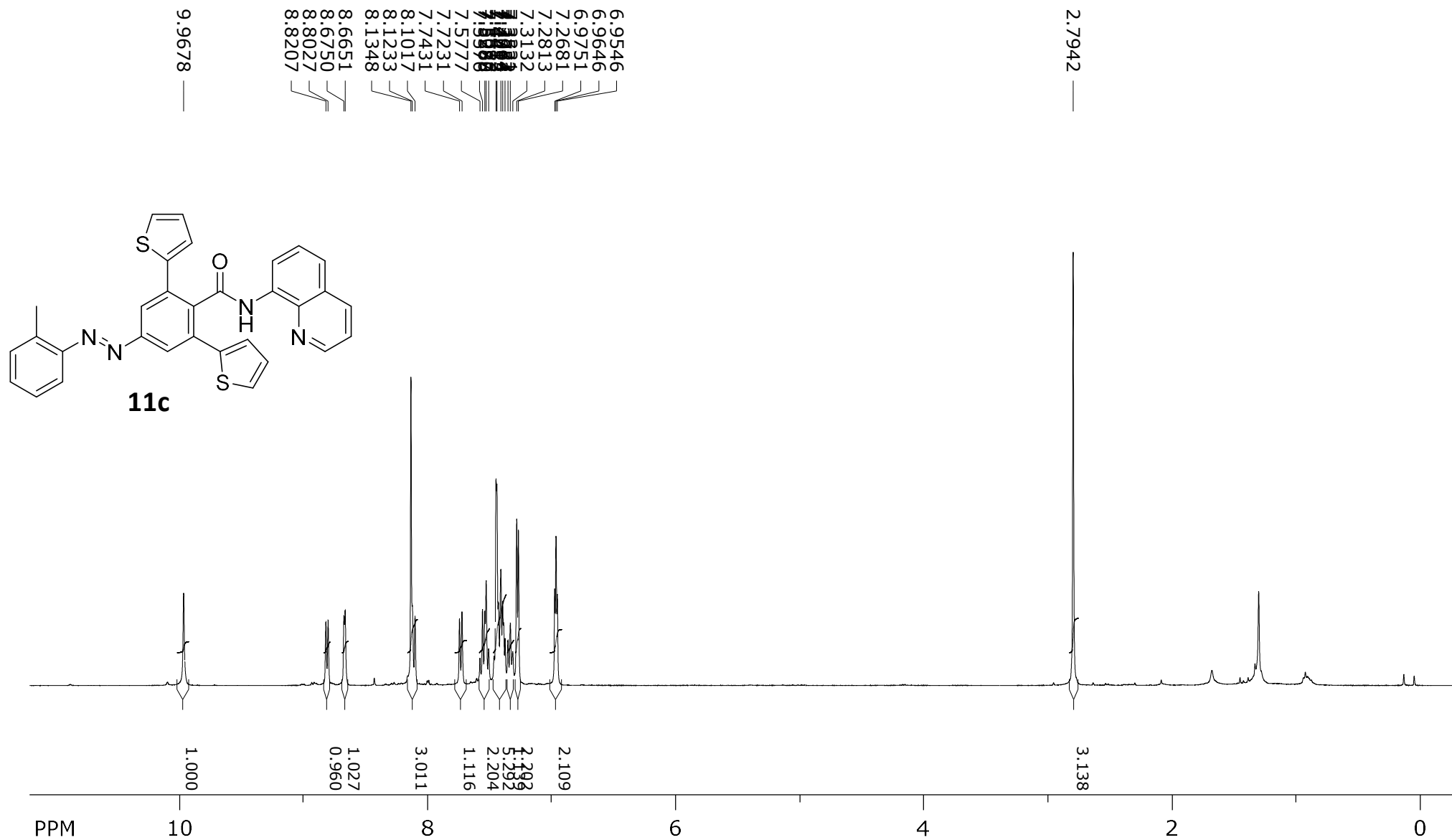


SpinWorks 4: RP 1275 B2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 1

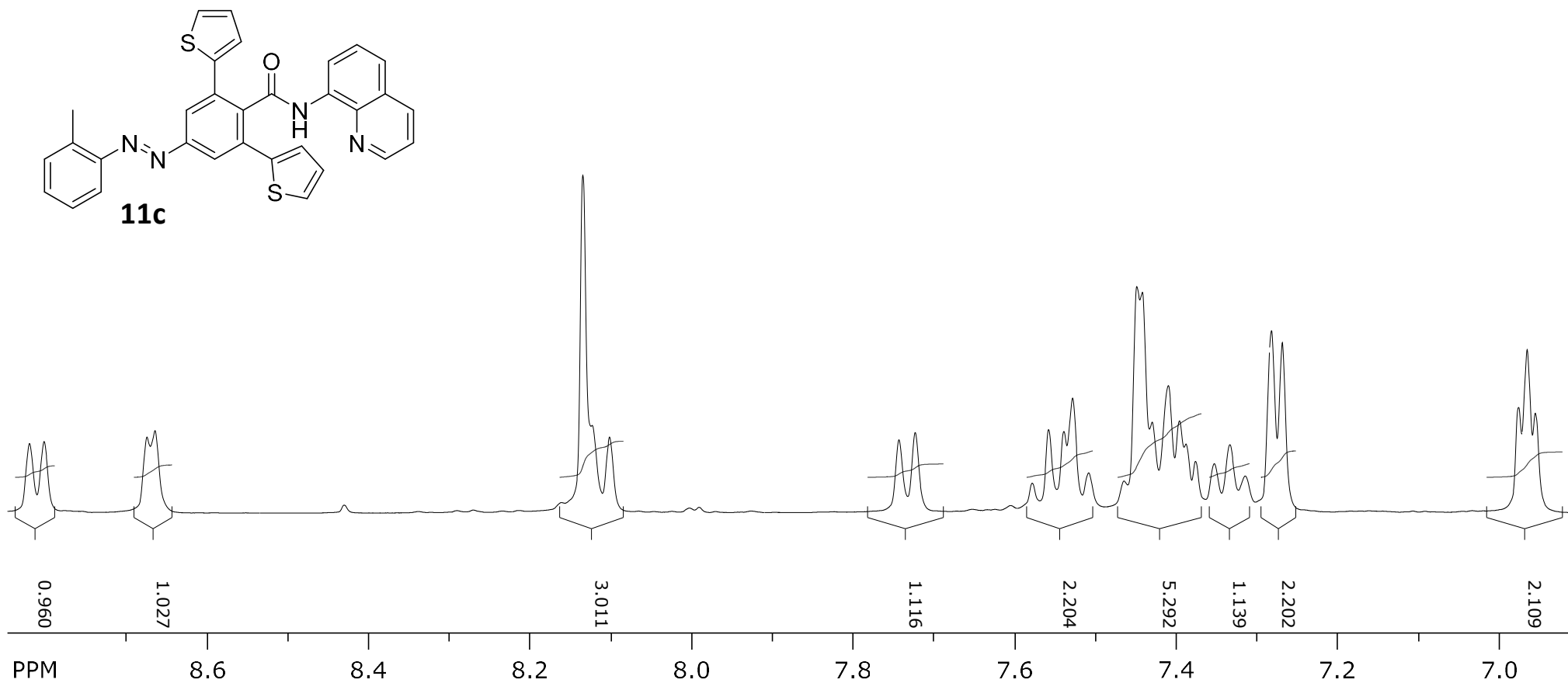
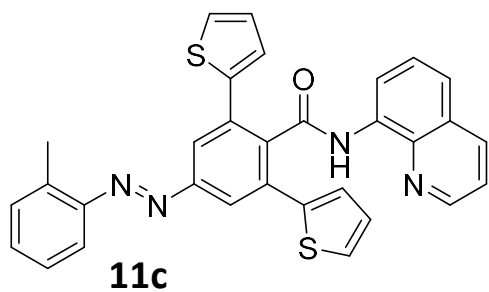
167.458 —
159.184 —
152.767 —
150.763 —
147.983 —
141.363 —
138.344 —
137.632 —
138.694 —
136.071 —
134.261 —
132.369 —
131.493 —
131.427 —
129.907 —
127.722 —
127.255 —
126.533 —
123.356 —
121.692 —
121.478 —
116.509 —
115.495 —
113.862 —



SpinWorks 4: RP 1266 REP
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 60



SpinWorks 4: RP 1266 REP
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 60

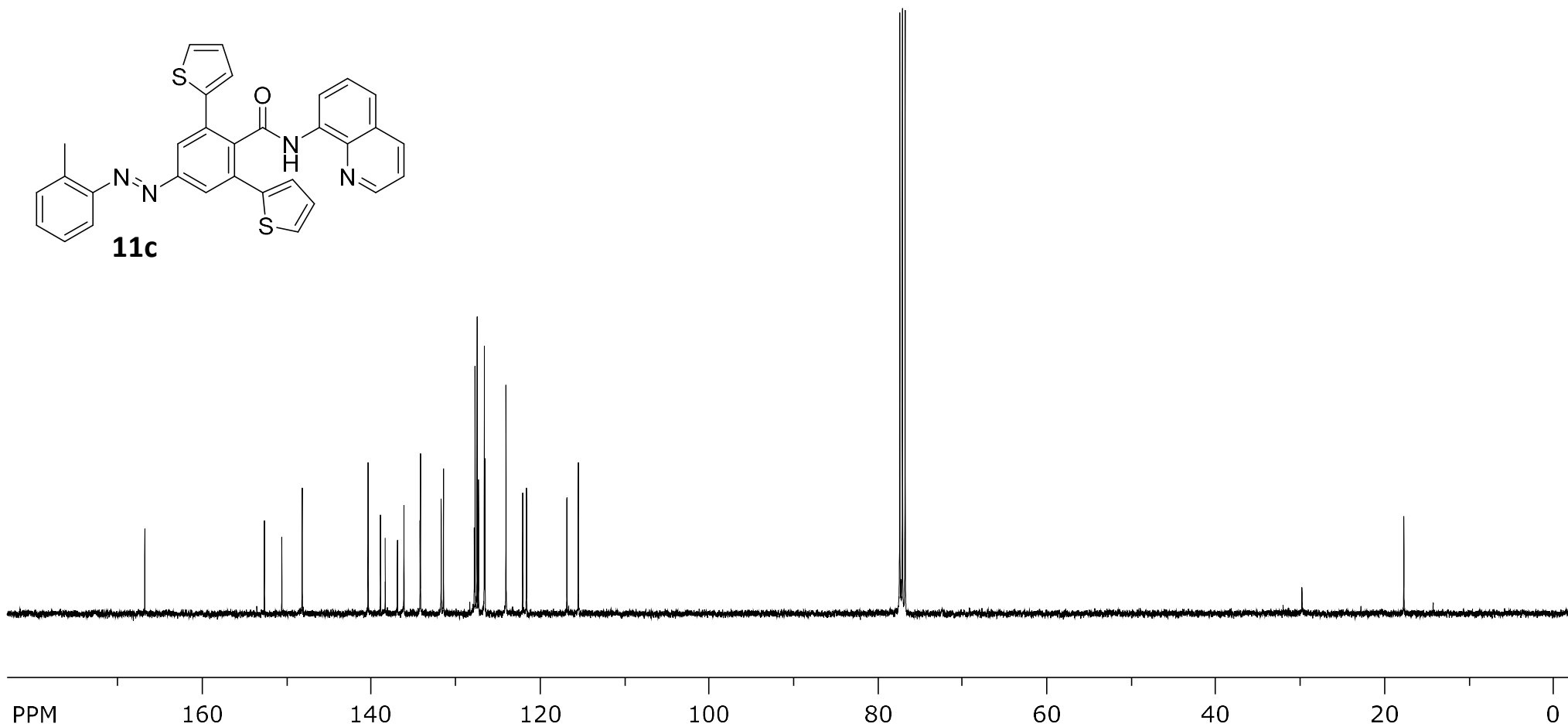
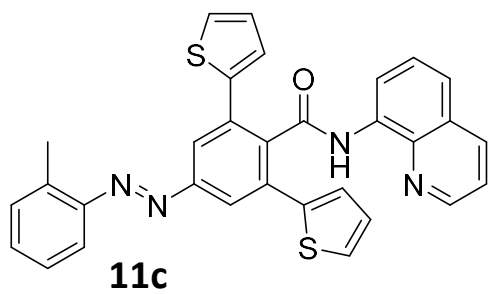


SpinWorks 4: RP 1266 REP
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 60

166.862 —
152.694 —
150.624 —
148.217 —
140.407 —
138.937 —
136.931 —
134.198 —
131.745 —
129.829 —
127.829 —
126.547 —
124.070 —
122.085 —
121.632 —
116.846 —
115.501 —

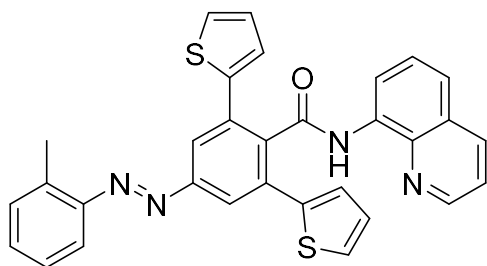
76.771 —
77.089 —
77.406 —

17.678 —

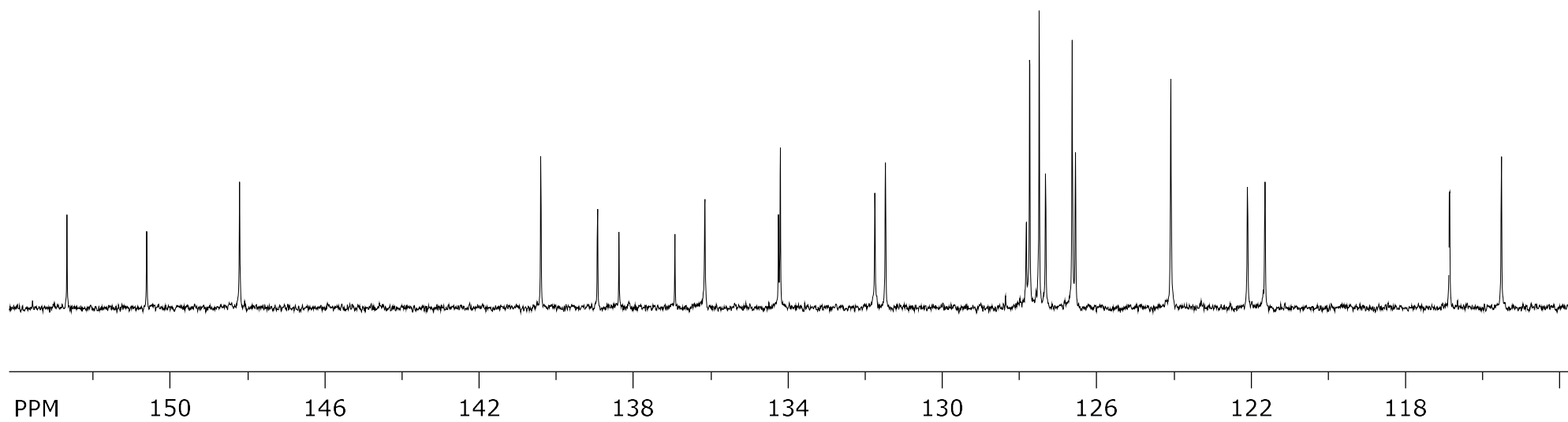


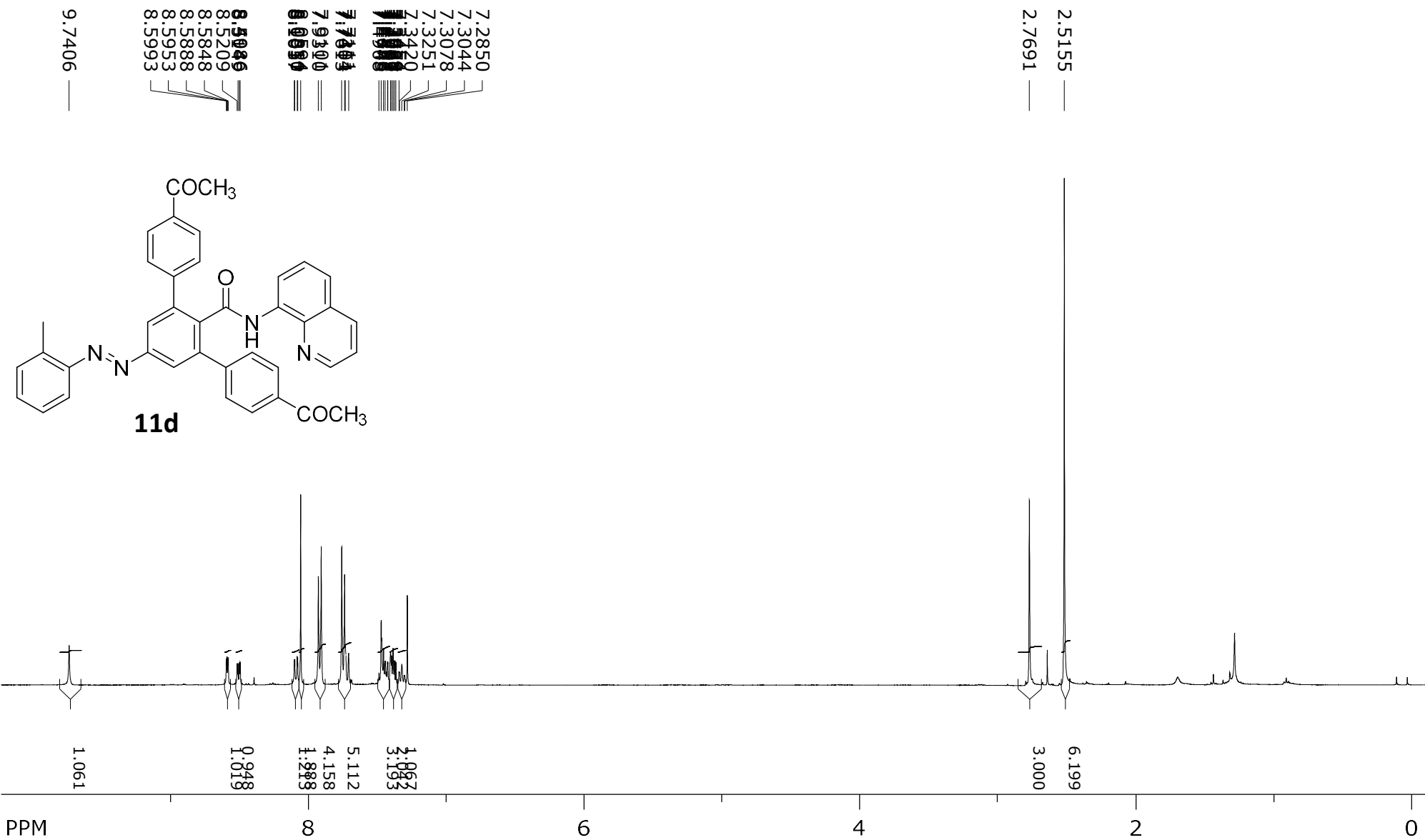
SpinWorks 4: RP 1266 REP
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 60

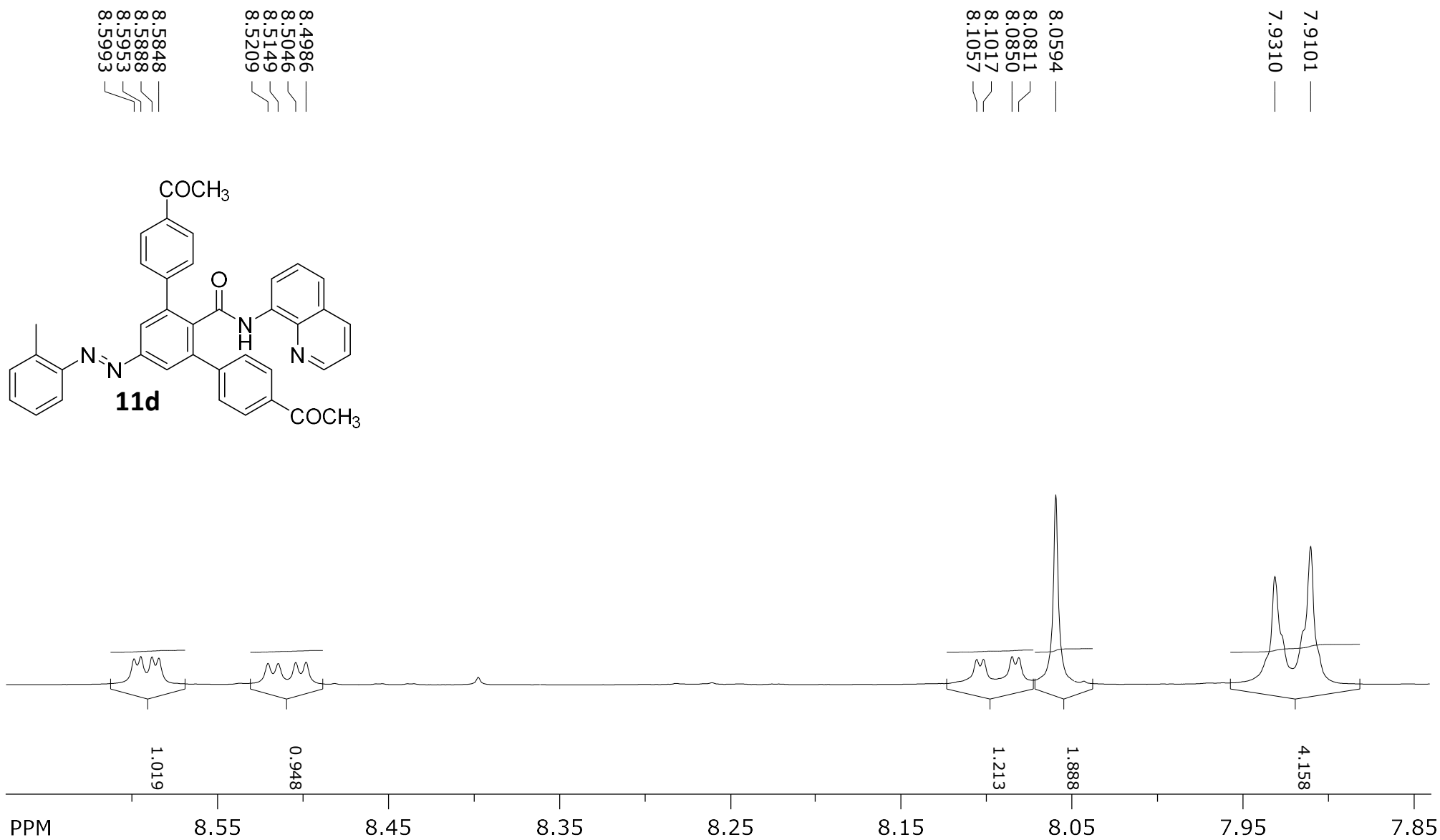
152.694 —
150.624 —
148.217 —
140.407 —
138.380 —
138.937 —
136.153 —
136.931 —
134.198 —
134.245 —
131.471 —
131.745 —
127.820 —
127.733 —
127.486 —
127.320 —
126.629 —
126.547 —
124.070 —
122.085 —
121.632 —
116.846 —
115.501 —



11c

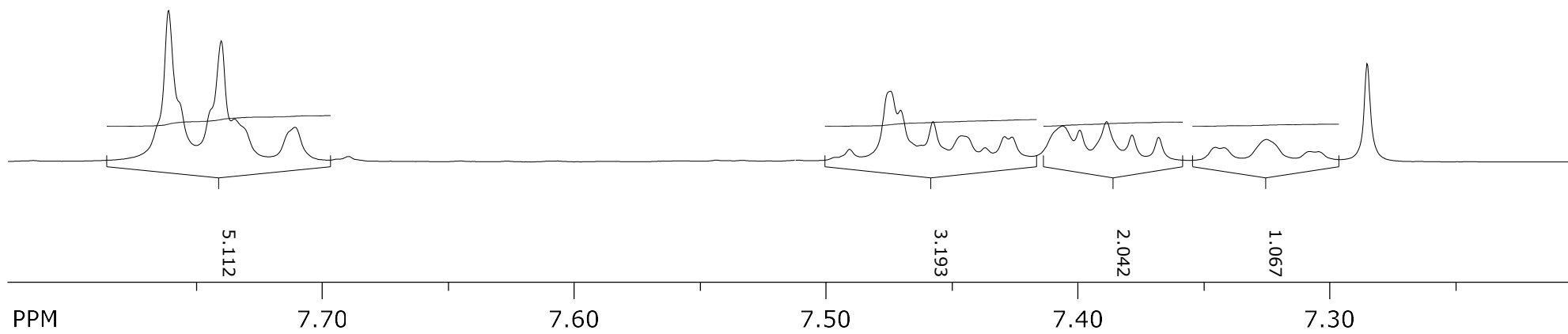
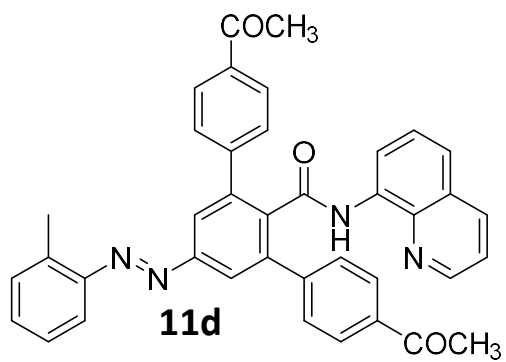




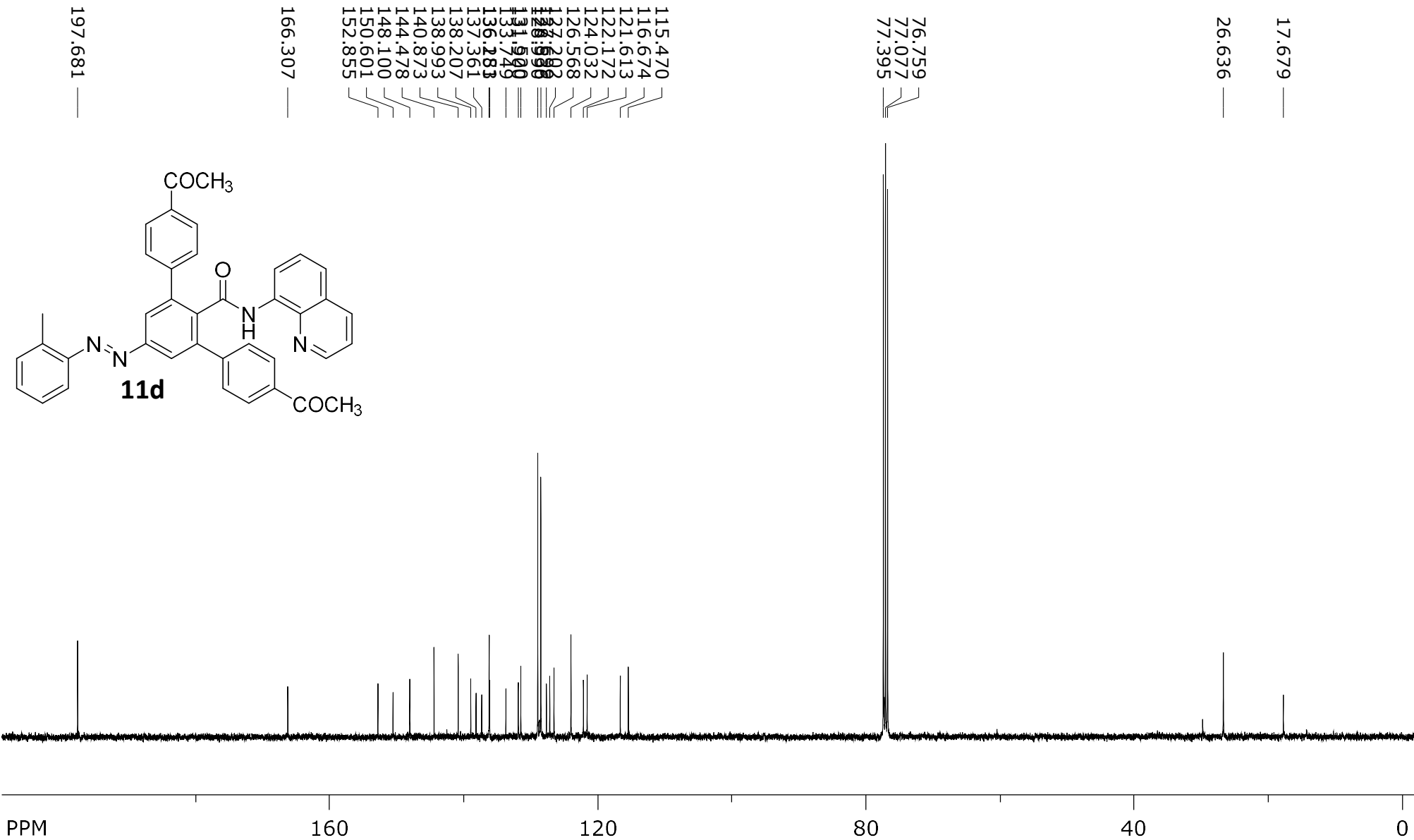


7.7613
7.7351
7.7404
7.7111

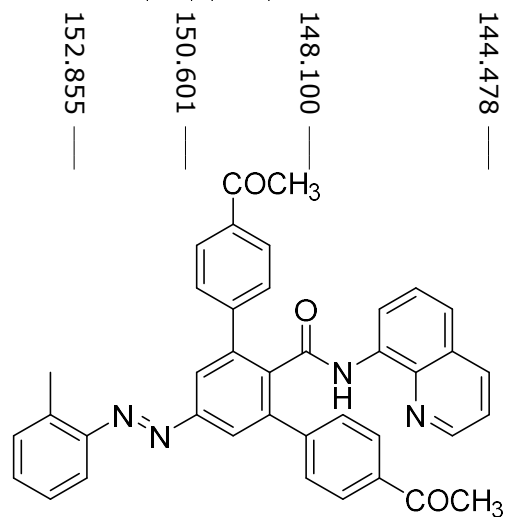
7.2850
7.3044
7.3078
7.3251
7.3420
7.3454
7.3679
7.3785
7.3886
7.3992
7.4061
7.4262
7.4291
7.4462
7.4576
7.4745
7.4908



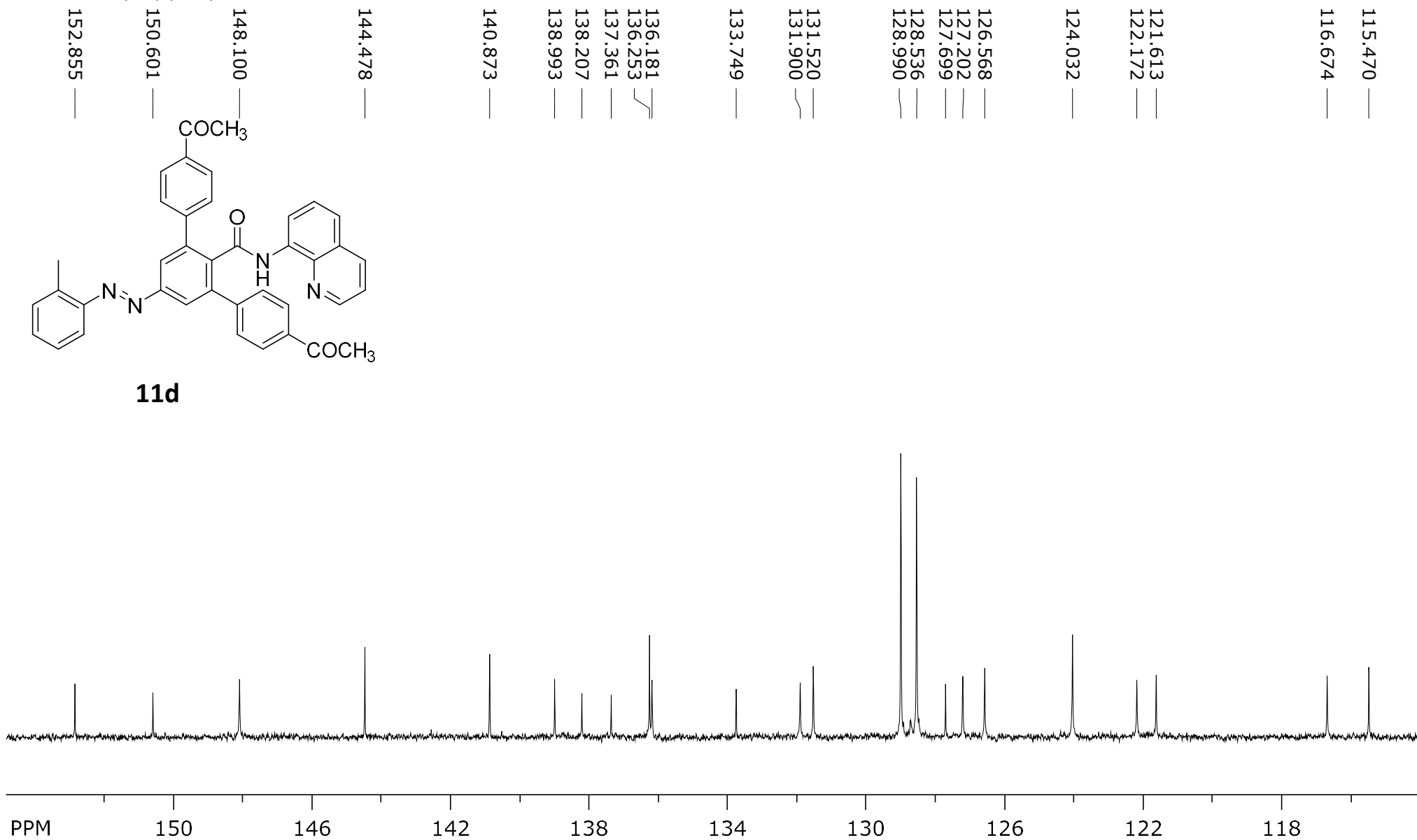
SpinWorks 4: RP 1274 REP
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 57



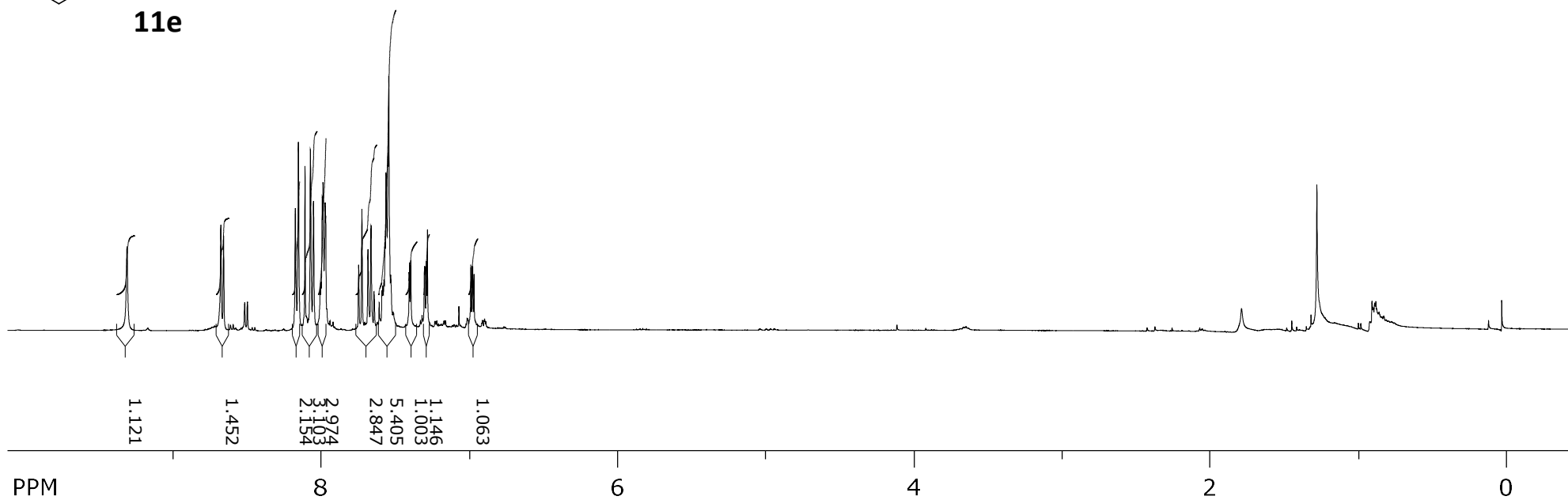
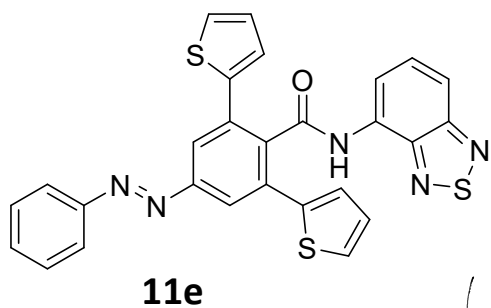
SpinWorks 4: RP 1274 REP
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 57



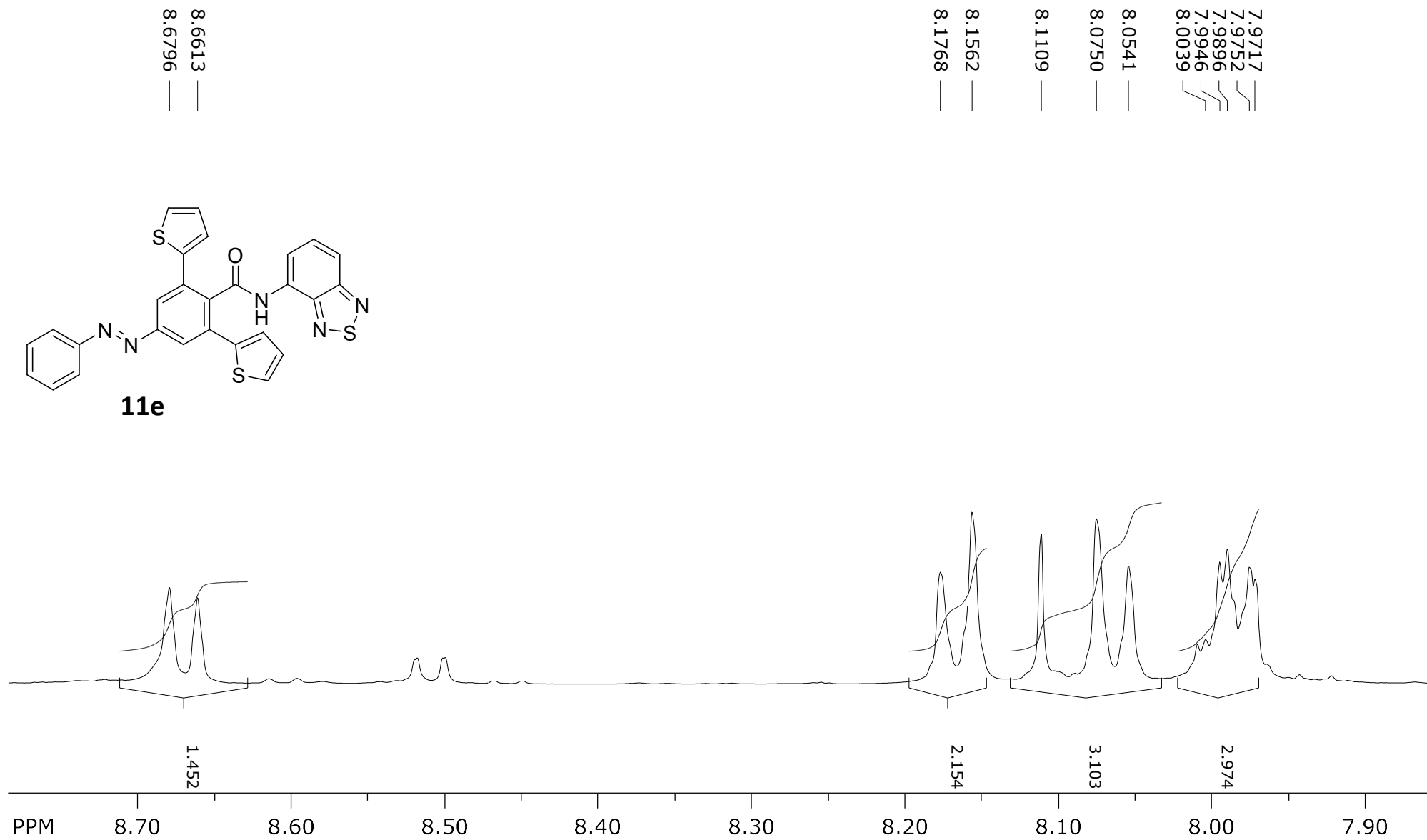
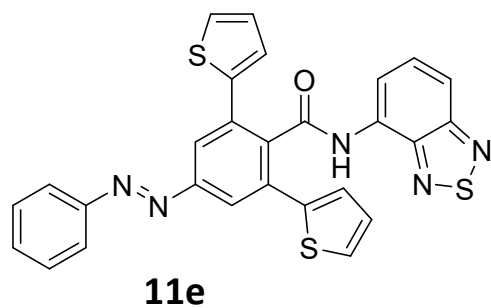
11d



SpinWorks 4: RP 978 A2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2



SpinWorks 4: RP 978 A2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2



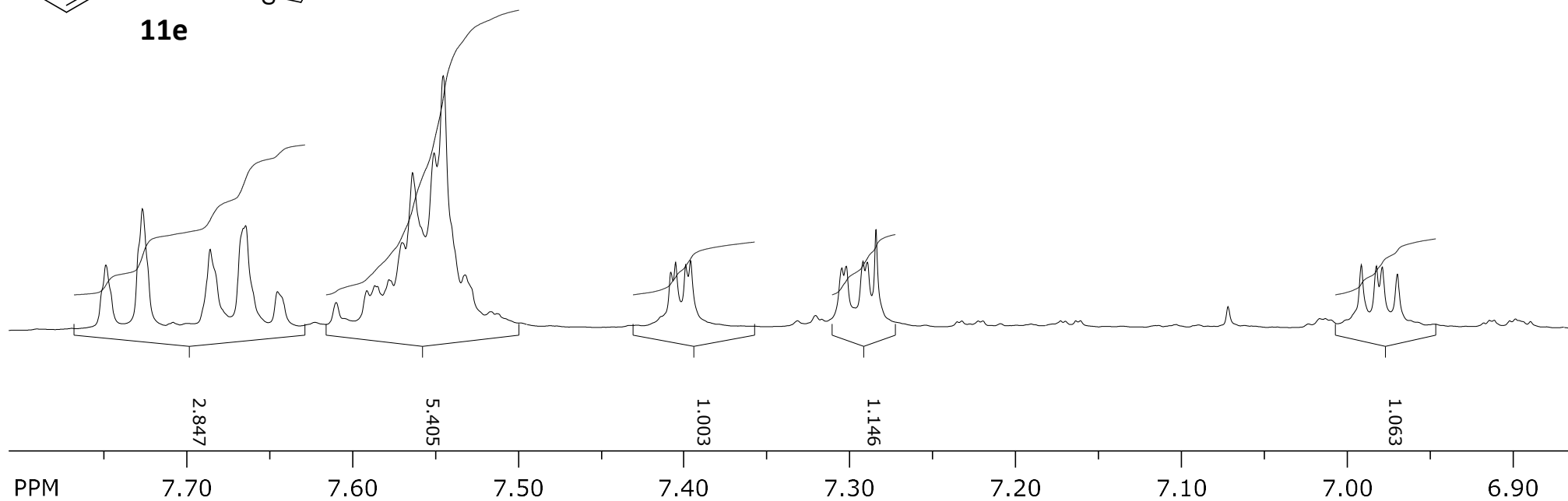
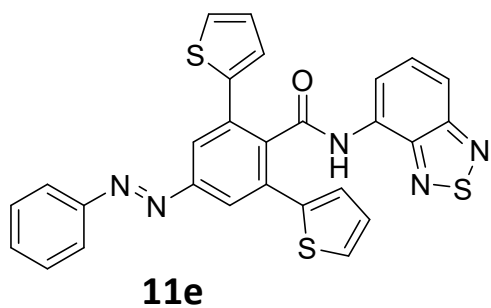
SpinWorks 4: RP 978 A2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2

7.5321
7.5455
7.5509
7.5640
7.5701
7.5866
7.5918
7.6102
7.6457
7.6646
7.6861
7.7269
7.7490

7.3962
7.3990
7.4053
7.4080

7.2844
7.2895
7.2921
7.3023
7.3049

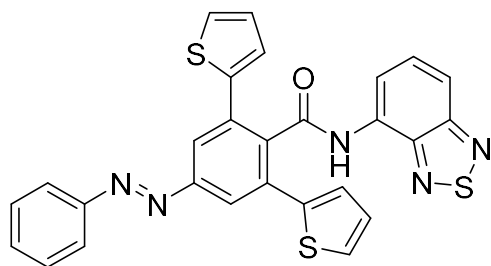
6.9696
6.9788
6.9824
6.9914



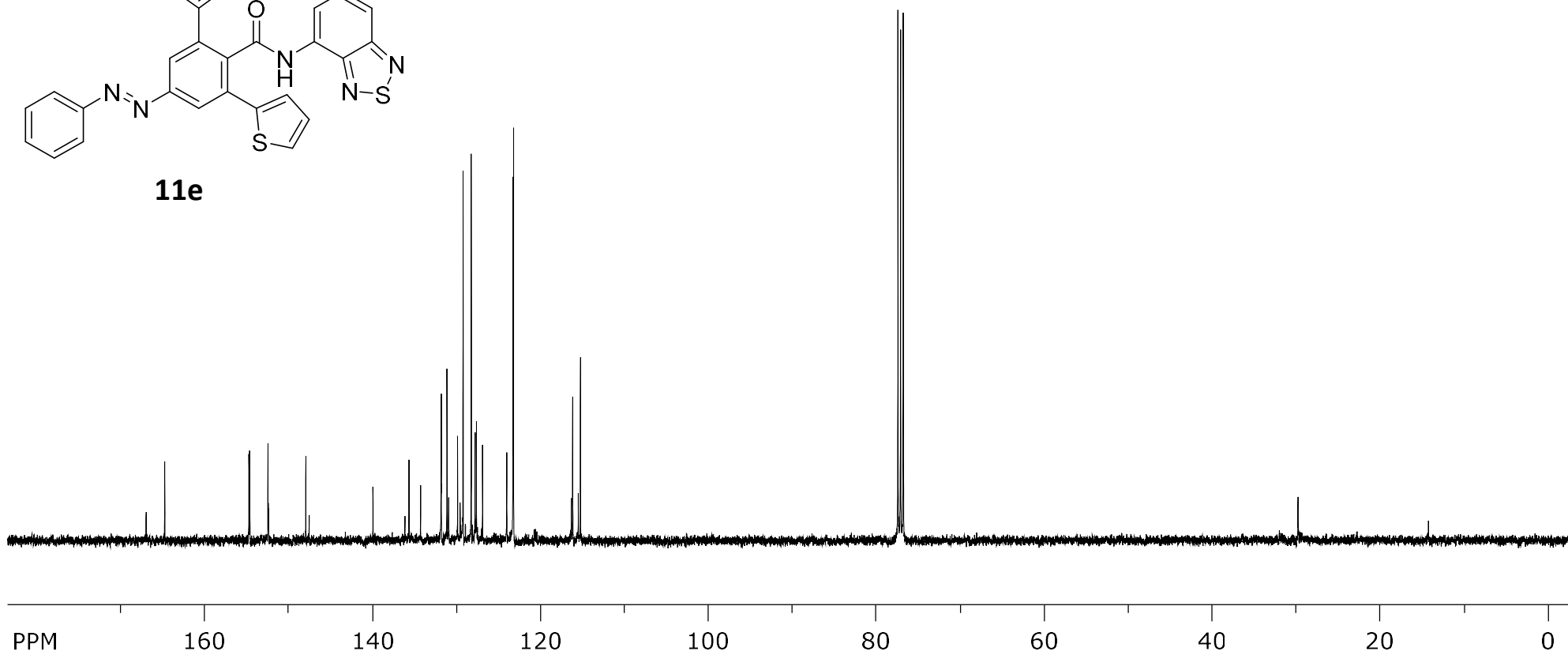
SpinWorks 4: RP 978 A2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2

164.792
154.759
152.493
154.681
147.981
139.980
135.682
134.300
131.832
131.159
129.891
129.229
128.993
127.643
126.924
124.034
123.288
123.225
116.178
115.250

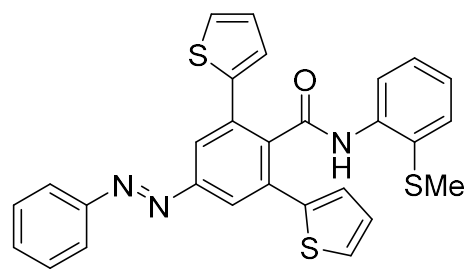
76.778
77.096
77.414



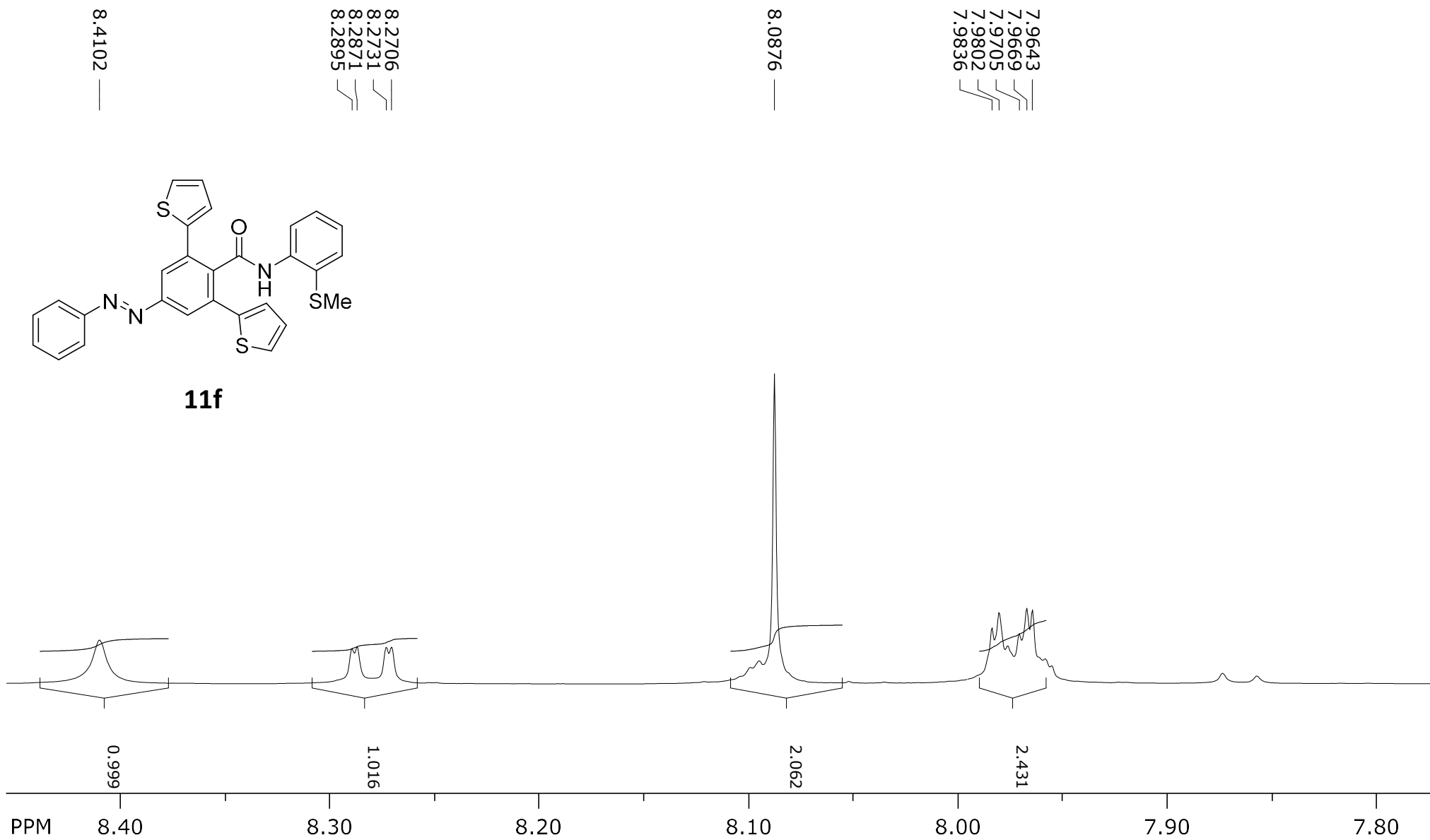
11e



SpinWorks 4: SAB300605
1H_8scan CDCl3 {D:\Spectra} nmr 30



11f



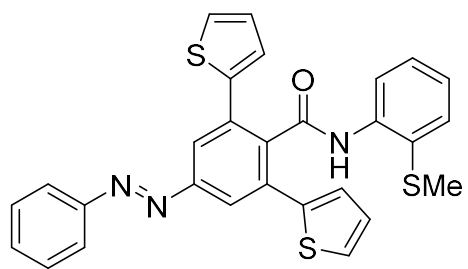
SpinWorks 4: SAB300605
1H_8scan CDCl3 {D:\Spectra} nmr 30

7.5186
7.5239
7.5278
7.5312
7.5354
7.5477
7.5506
7.5563
7.5642
7.5680

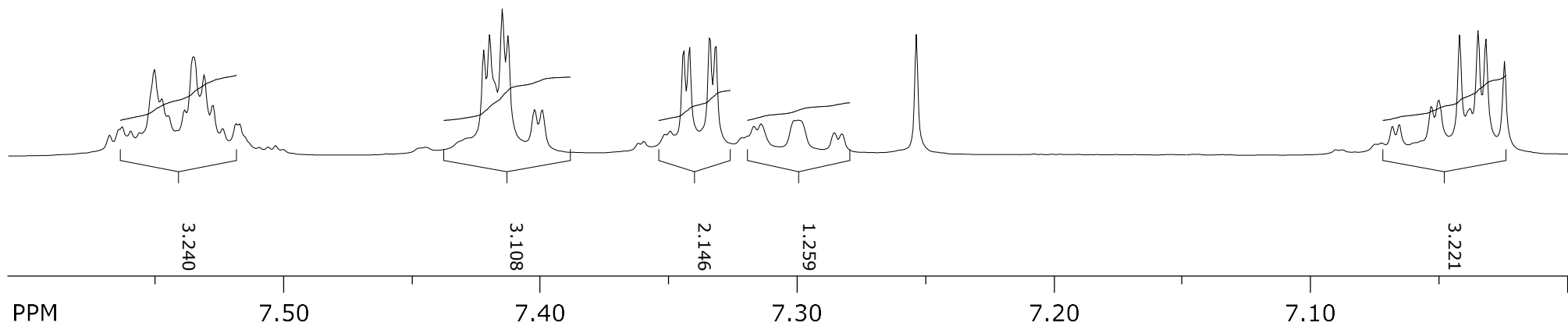
7.3994
7.4024
7.4128
7.4150
7.4199
7.4222

7.2826
7.2855
7.2996
7.3010
7.3141
7.3168
7.3318
7.3341
7.3420
7.3443
7.3495
7.3516

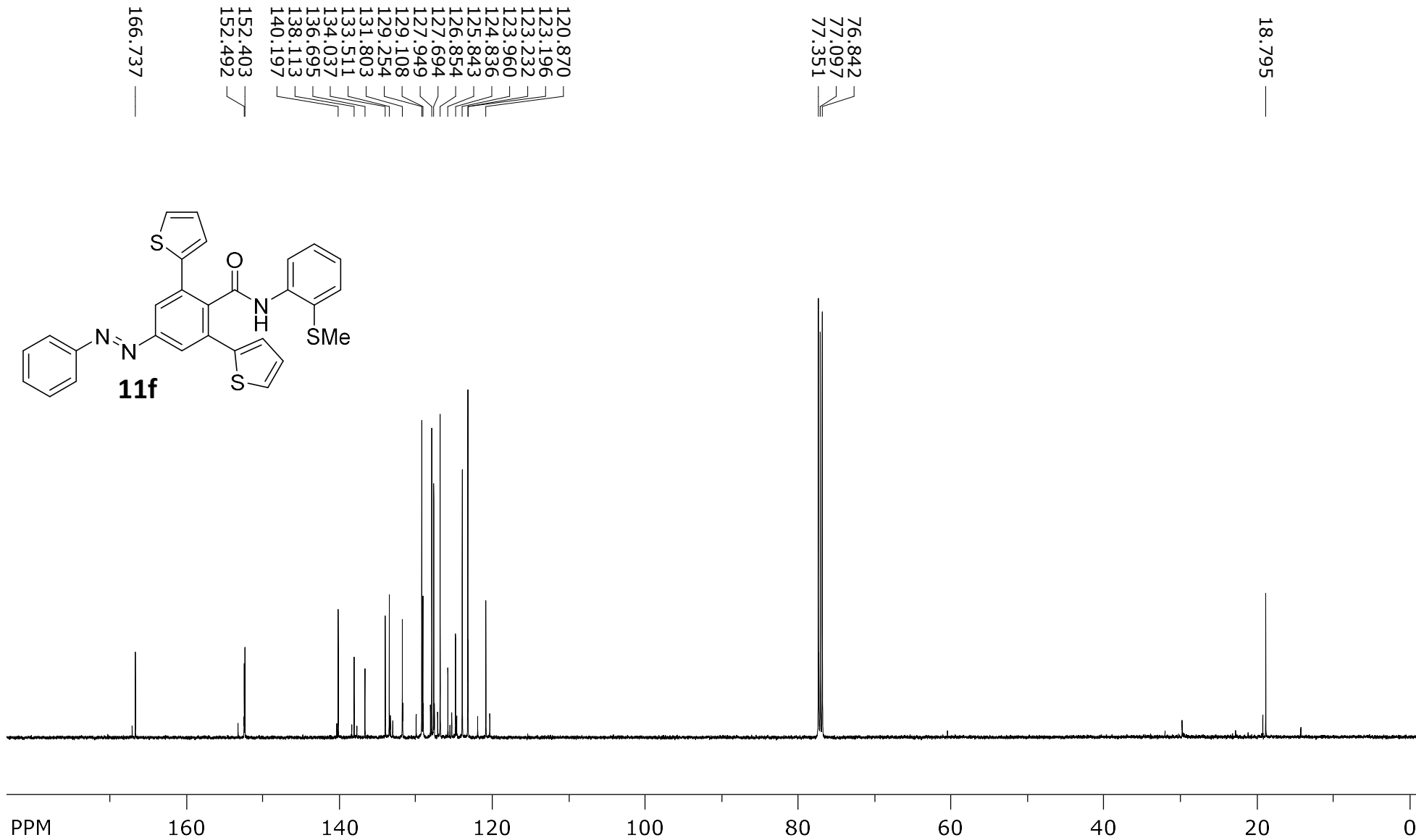
7.0243
7.0315
7.0346
7.0418
7.0499
7.0528
7.0653
7.0680



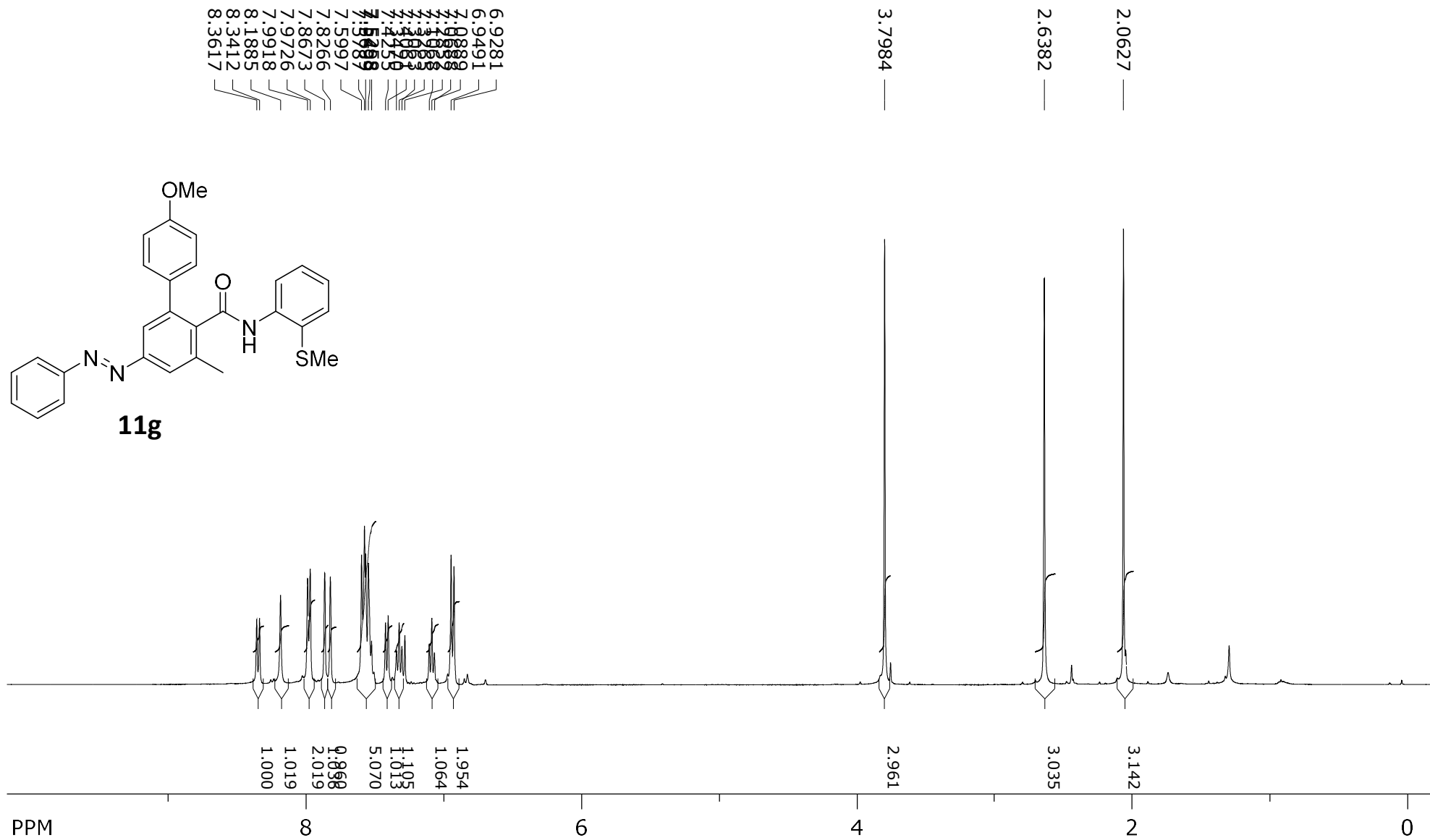
11f



SpinWorks 4: SAB140305
C13CPD CDCl3 {D:\Spectra} nmr 30

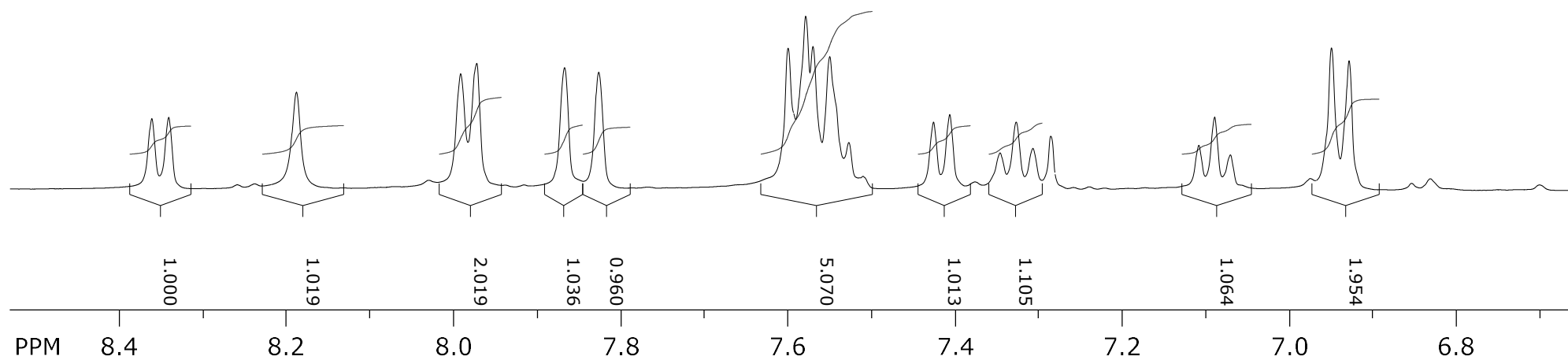
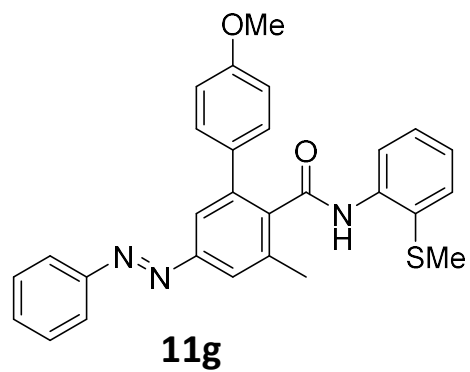


SpinWorks 4: RP 1233 B2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2

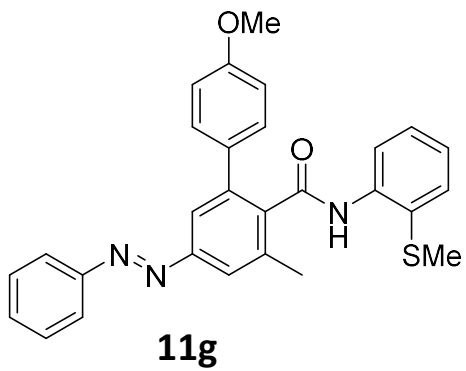
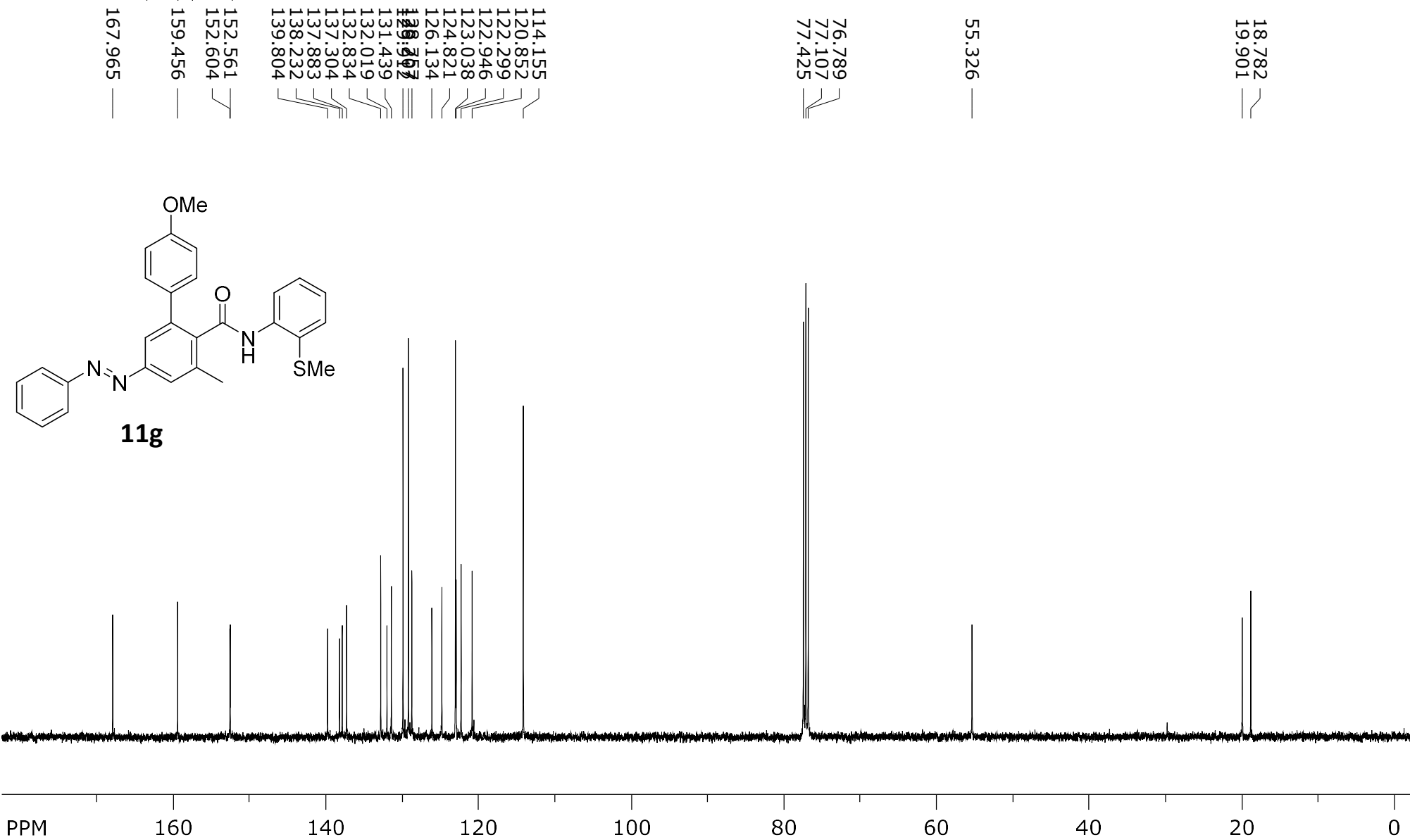


SpinWorks 4: RP 1233 B2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2

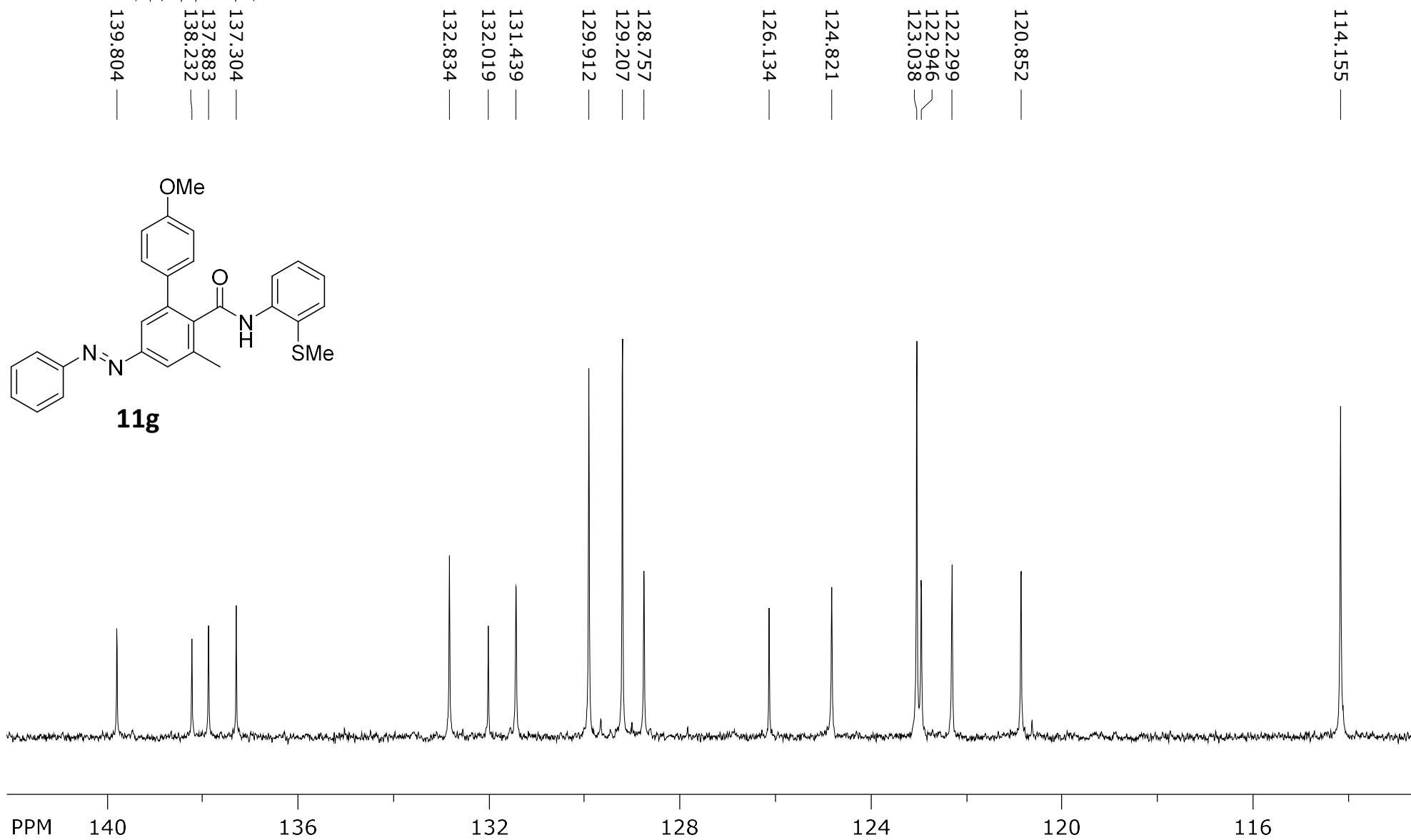
8.3412 —
8.3617 —
8.1885 —
7.9726 —
7.9918 —
7.8266 —
7.8673 —
7.5458 —
7.5699 —
7.5787 —
7.5997 —
7.4061 —
7.4255 —
7.2852 —
7.3063 —
7.3265 —
7.3470 —
7.0688 —
7.0889 —
7.1068 —
6.9281 —
6.9491 —



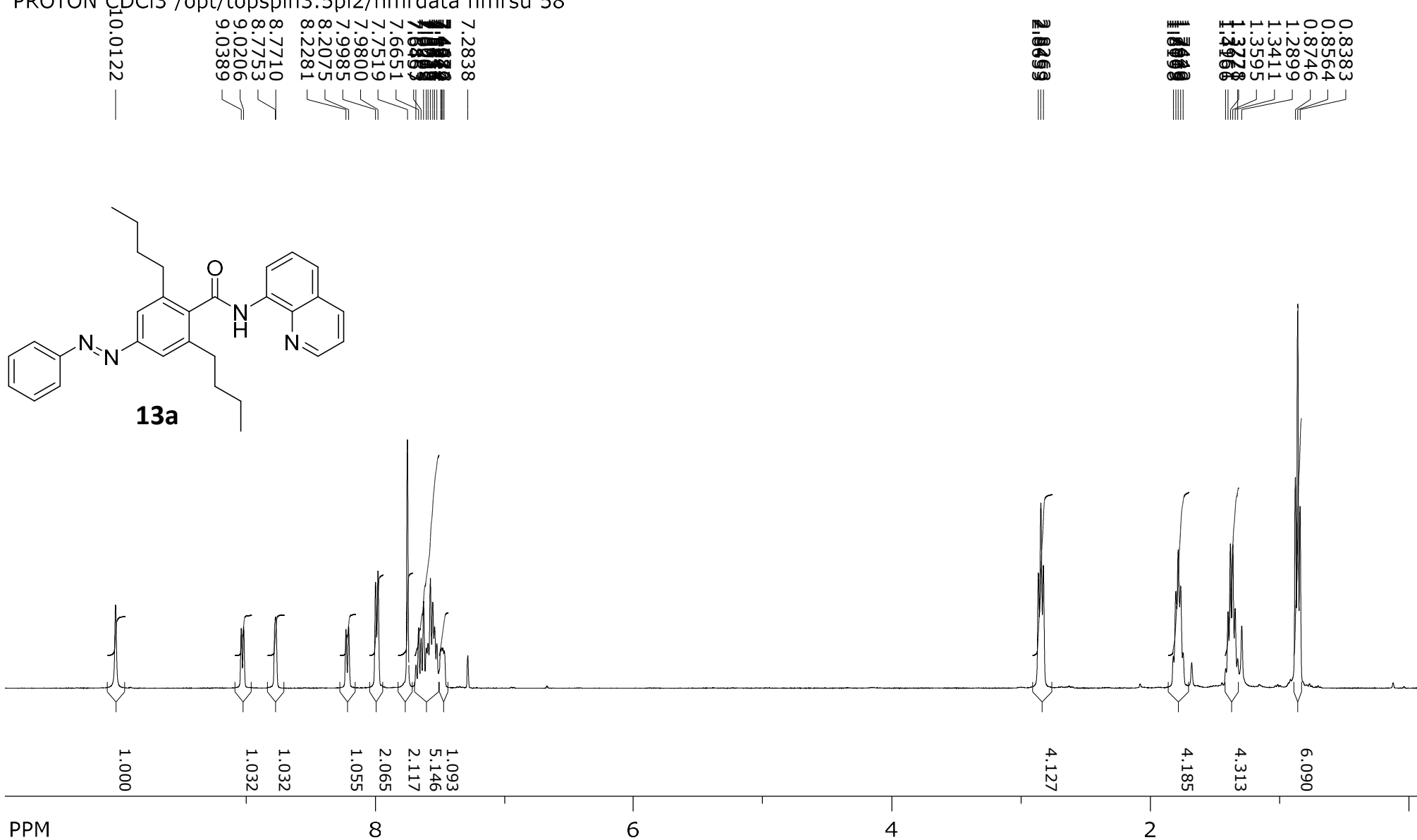
SpinWorks 4: RP 1233 B2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2



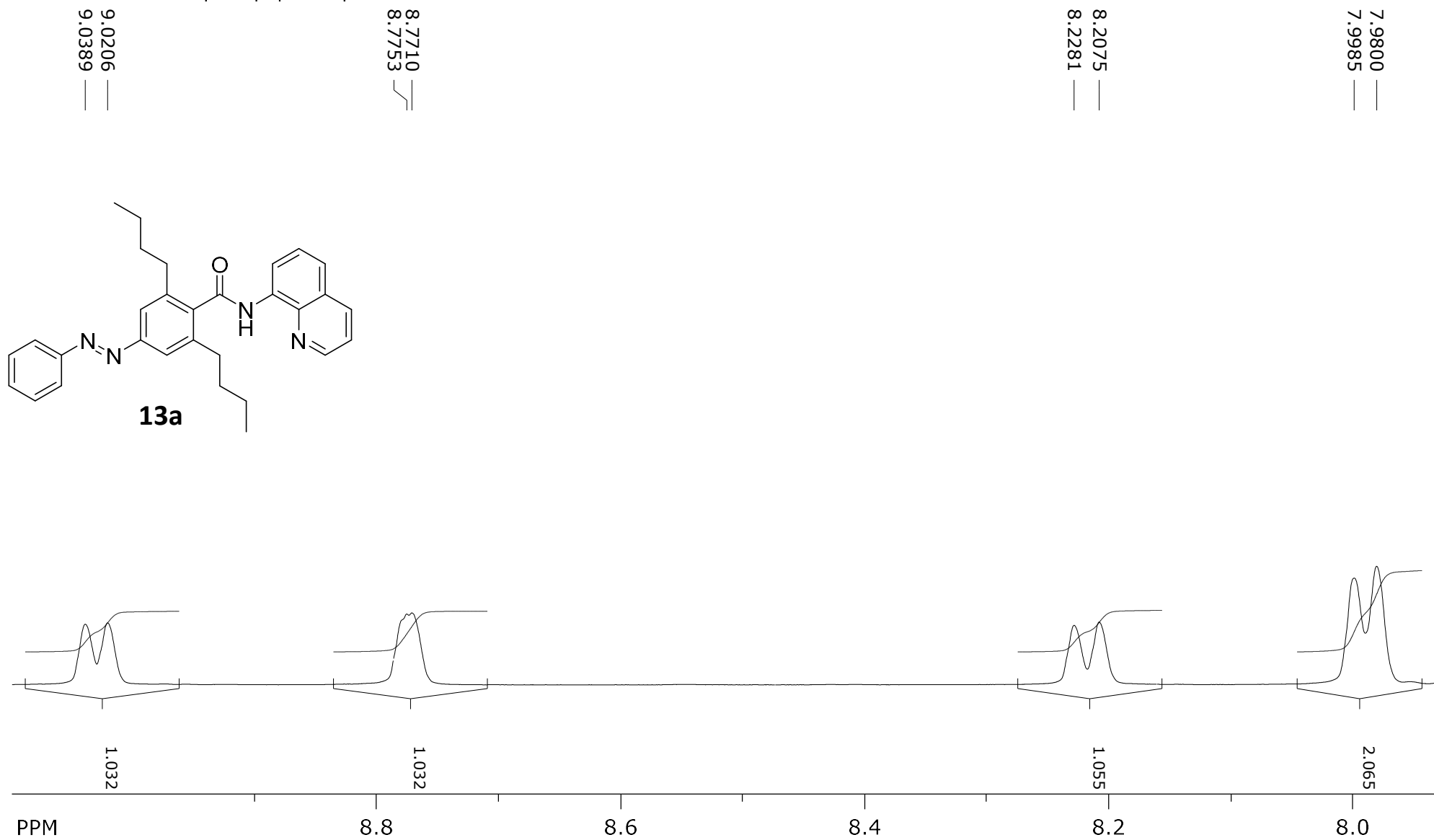
SpinWorks 4: RP 1233 B2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 2



SpinWorks 4: RP 1399 A2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 58



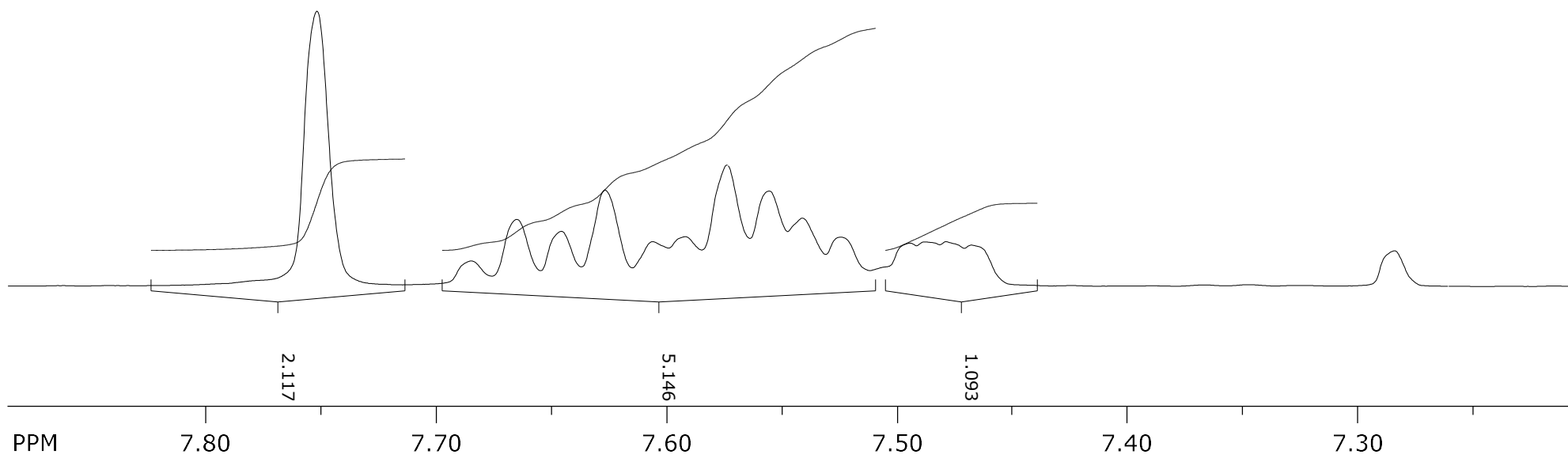
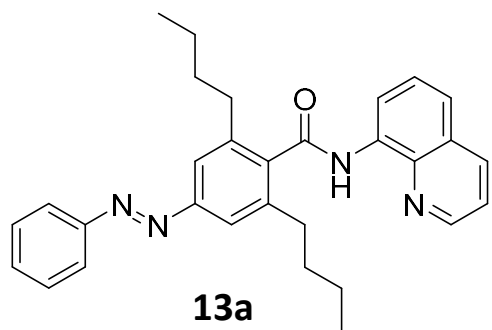
SpinWorks 4: RP 1399 A2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 58



SpinWorks 4: RP 1399 A2

PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 58

7.7519 —
7.6863 —
7.6651 —
7.6457 —
7.6269 —
7.6062 —
7.5919 —
7.5739 —
7.5555 —
7.5411 —
7.5244 —
7.4944 —
7.4879 —
7.4787 —
7.4676 —
7.2838 —



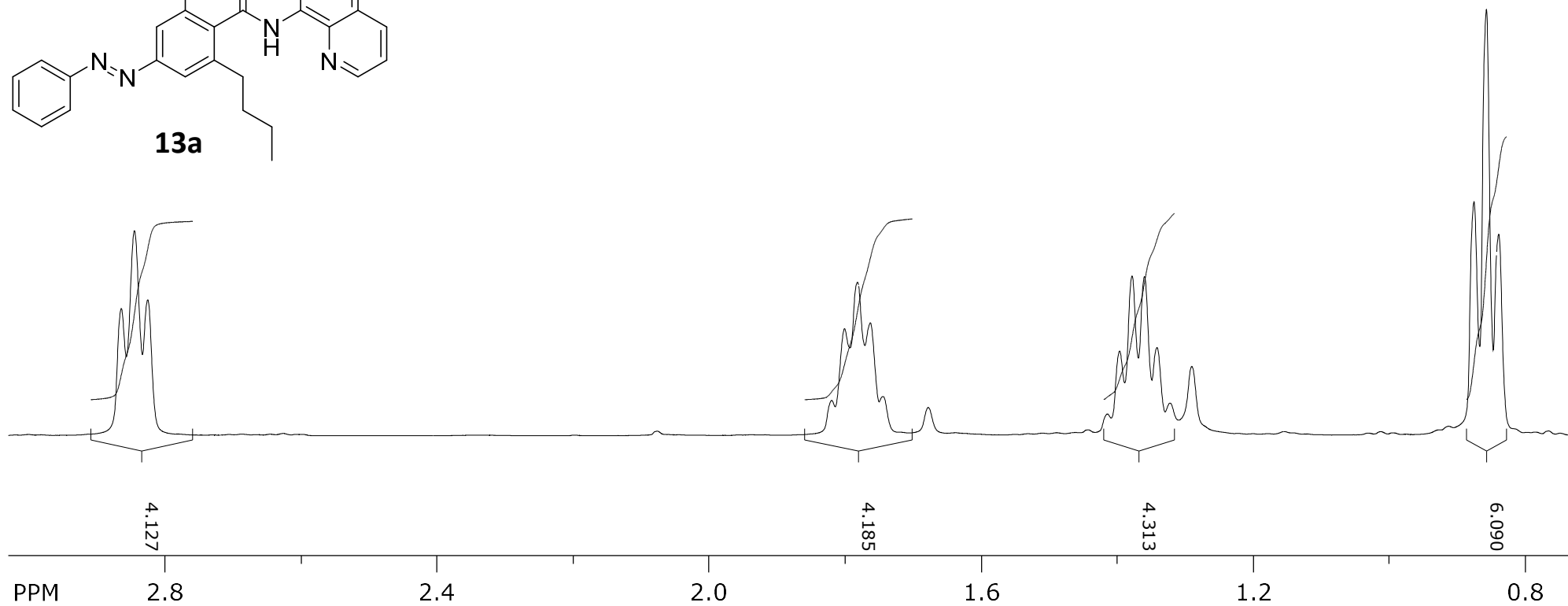
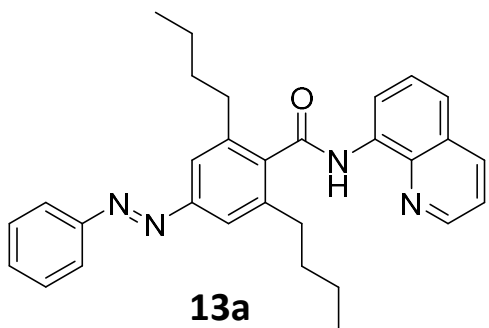
SpinWorks 4: RP 1399 A2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 58

2.8263
2.8459
2.8653

1.7442
1.7629
1.7819
1.8009
1.8198

1.2899
1.3441
1.3595
1.3778
1.3961
1.4166

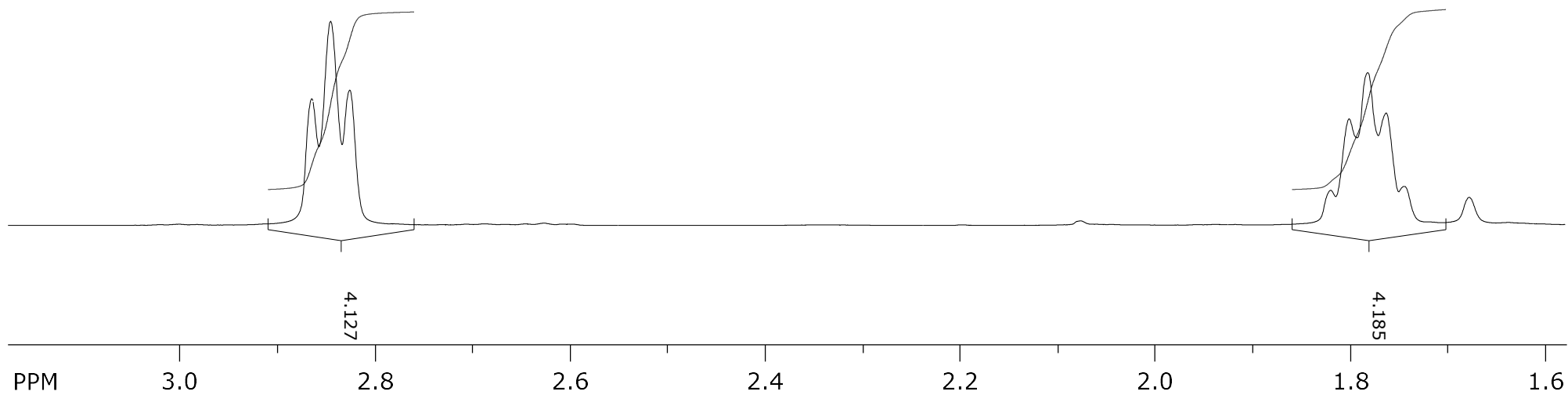
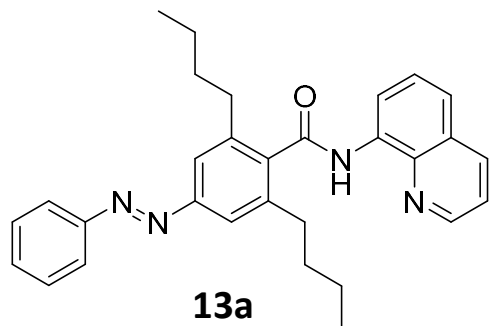
0.8383
0.8564
0.8746



SpinWorks 4: RP 1399 A2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 58

2.8263
2.8459
2.8653

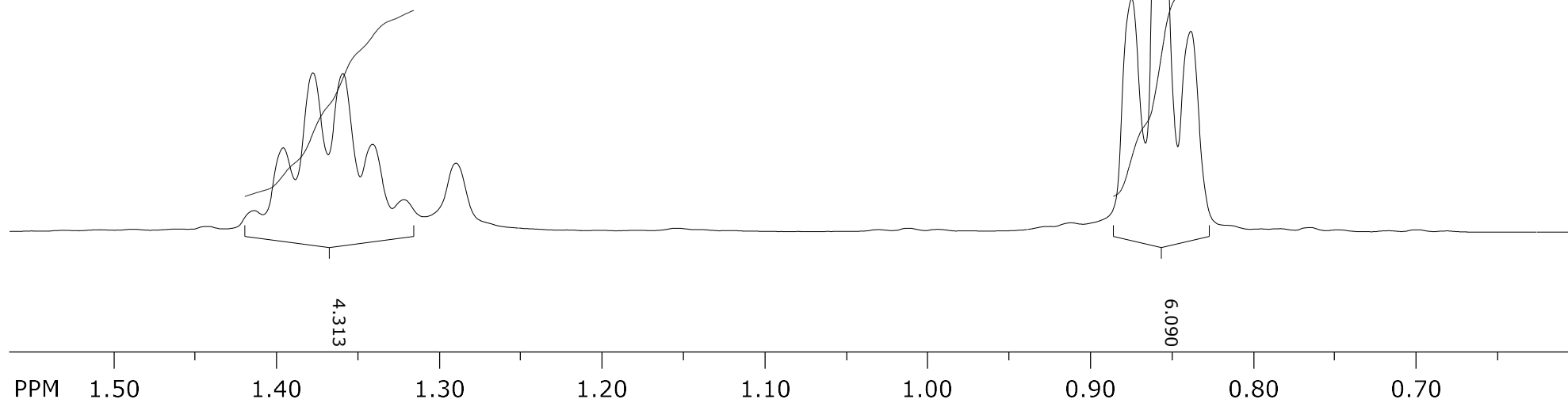
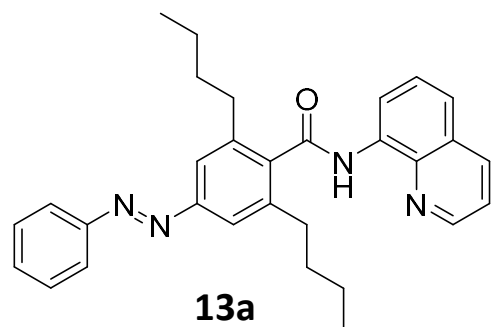
1.7442
1.7629
1.7819
1.8009
1.8198



SpinWorks 4: RP 1399 A2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 58

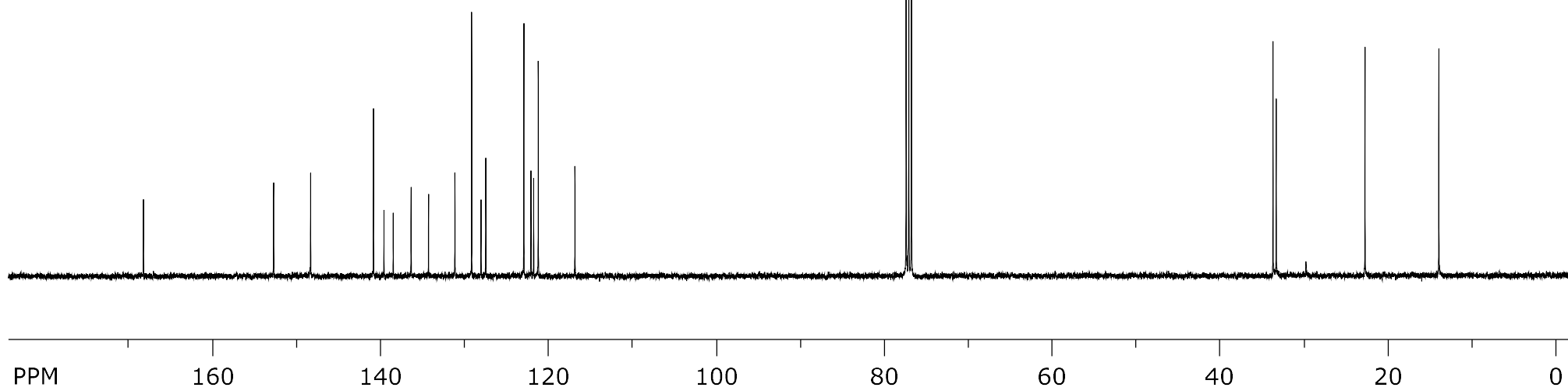
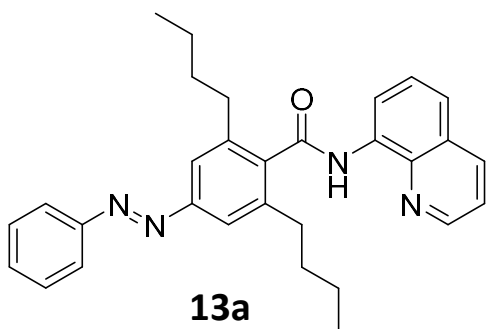
1.4166
1.3961
1.3778
1.3595
1.3411
1.3221
1.2899

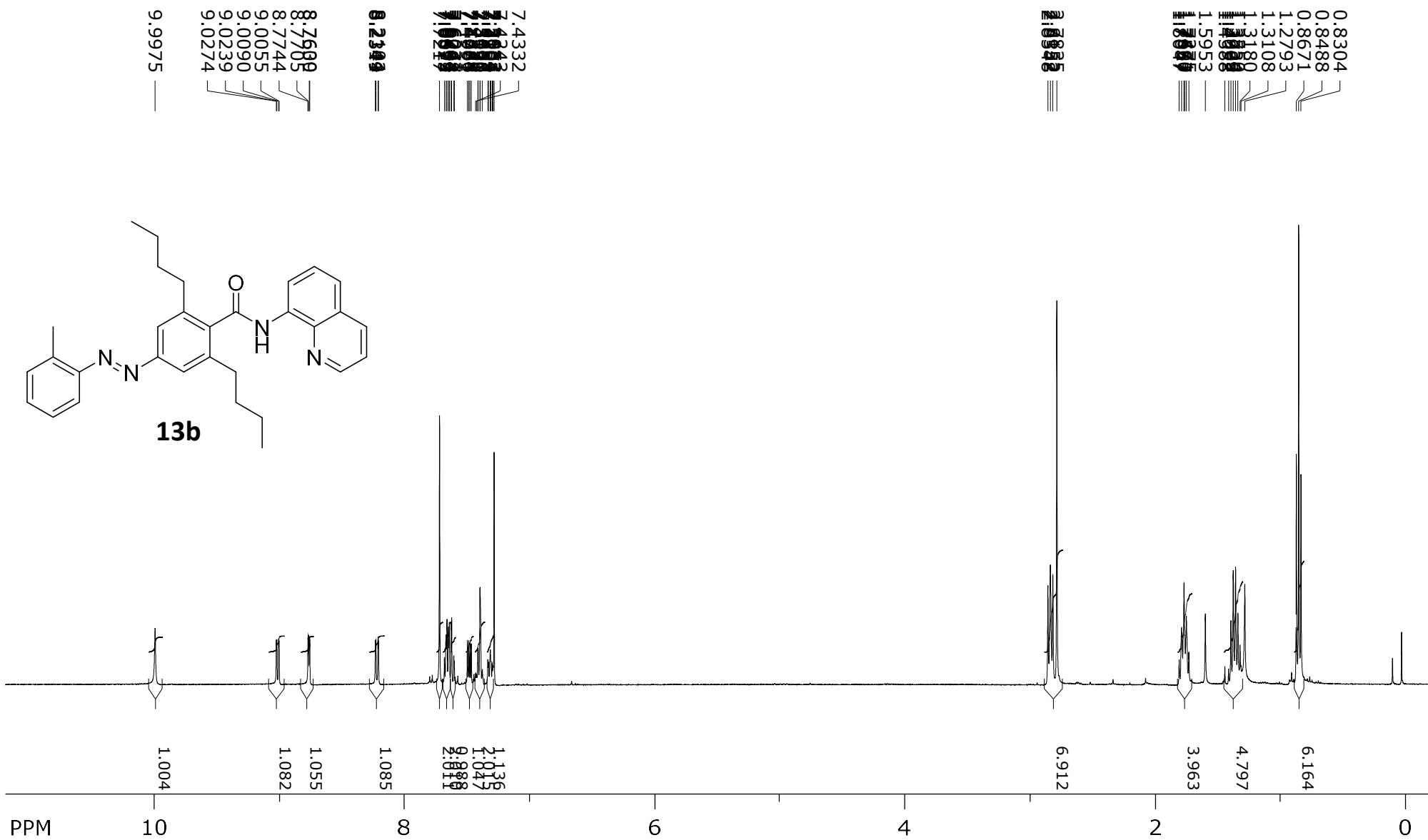
0.8383
0.8564
0.8746



SpinWorks 4: RP 1399 A2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 58

168.274 —
152.758 —
148.354 —
140.860 —
139.612 —
138.507 —
136.373 —
134.298 —
131.157 —
129.157 —
128.048 —
127.475 —
122.938 —
122.094 —
121.769 —
121.223 —
116.849 —
76.751 —
77.069 —
77.386 —
33.284 —
33.666 —
22.708 —
13.911 —

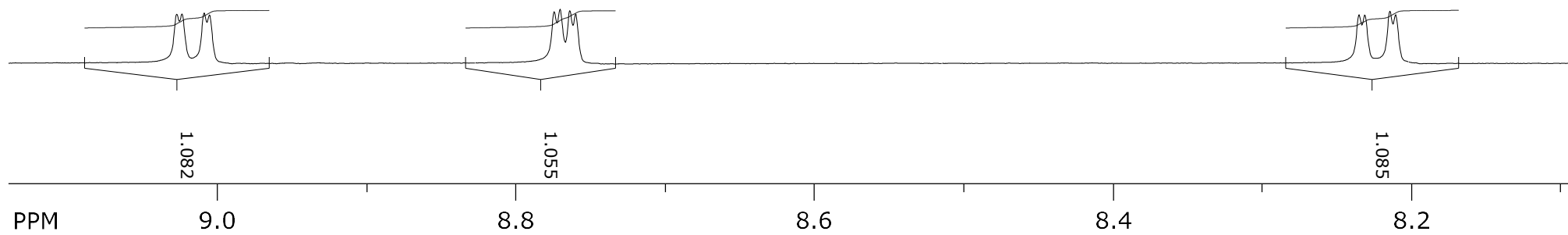
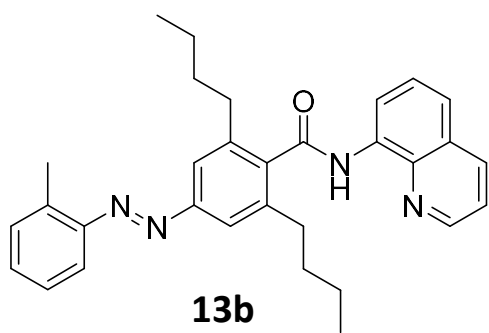


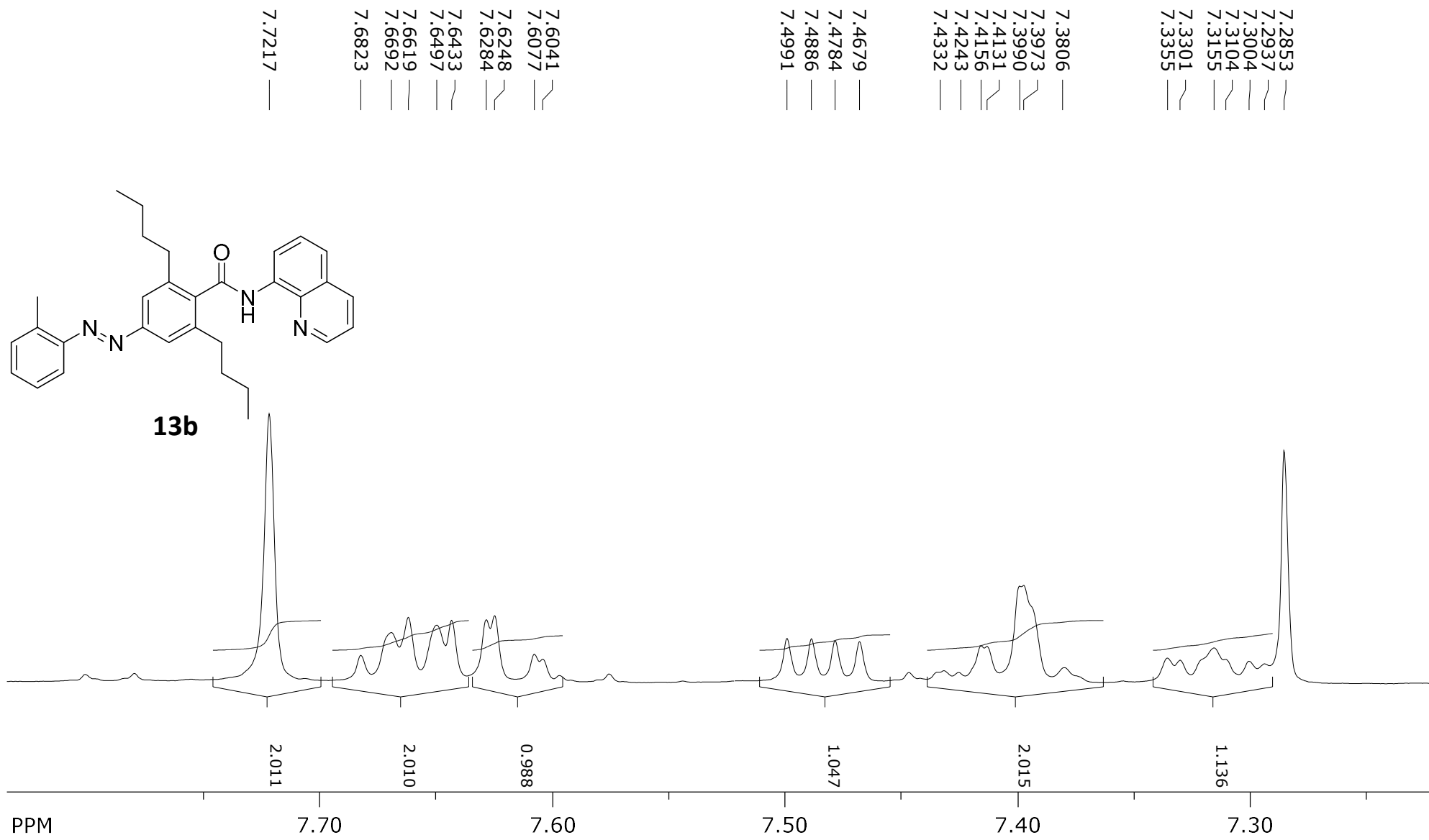


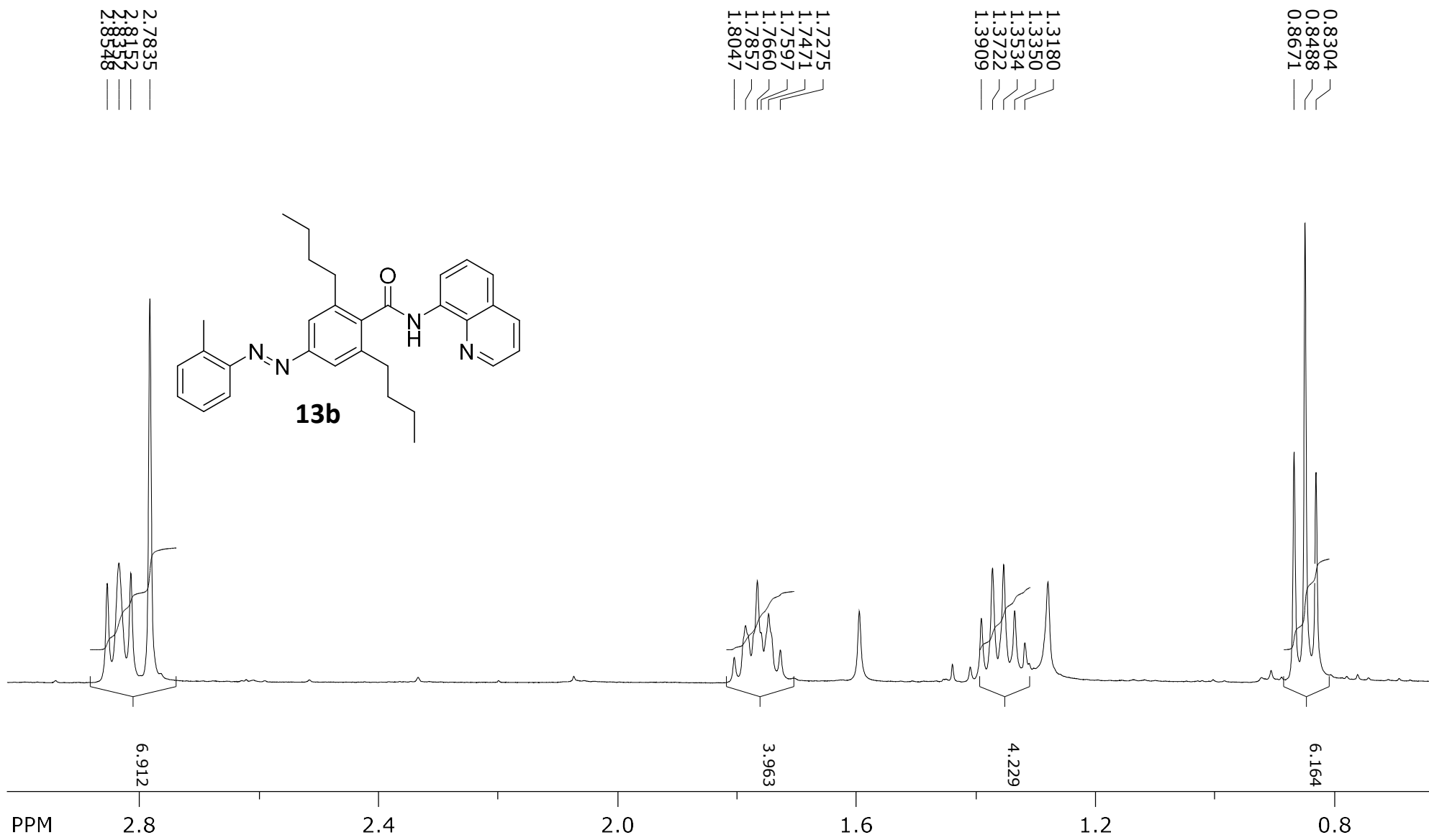
9.0055
9.0090
9.0239
9.0274

8.7600
8.7639
8.7705
8.7744

8.2104
8.2142
8.2311
8.2349

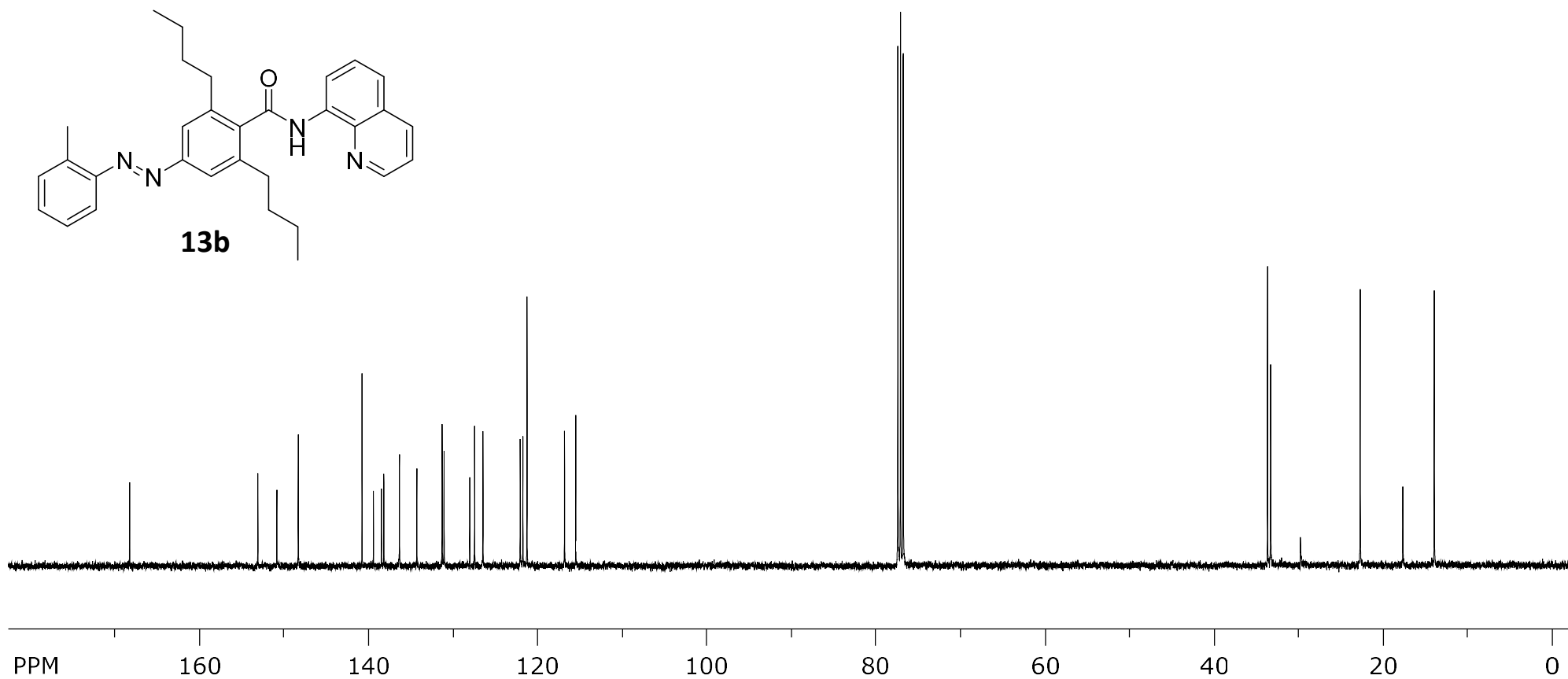
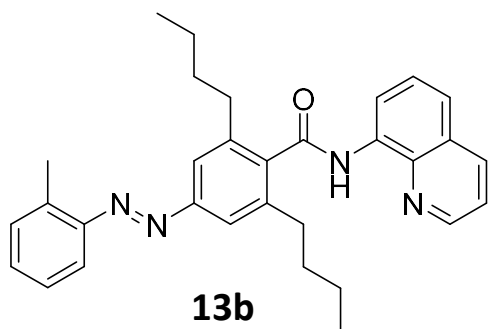


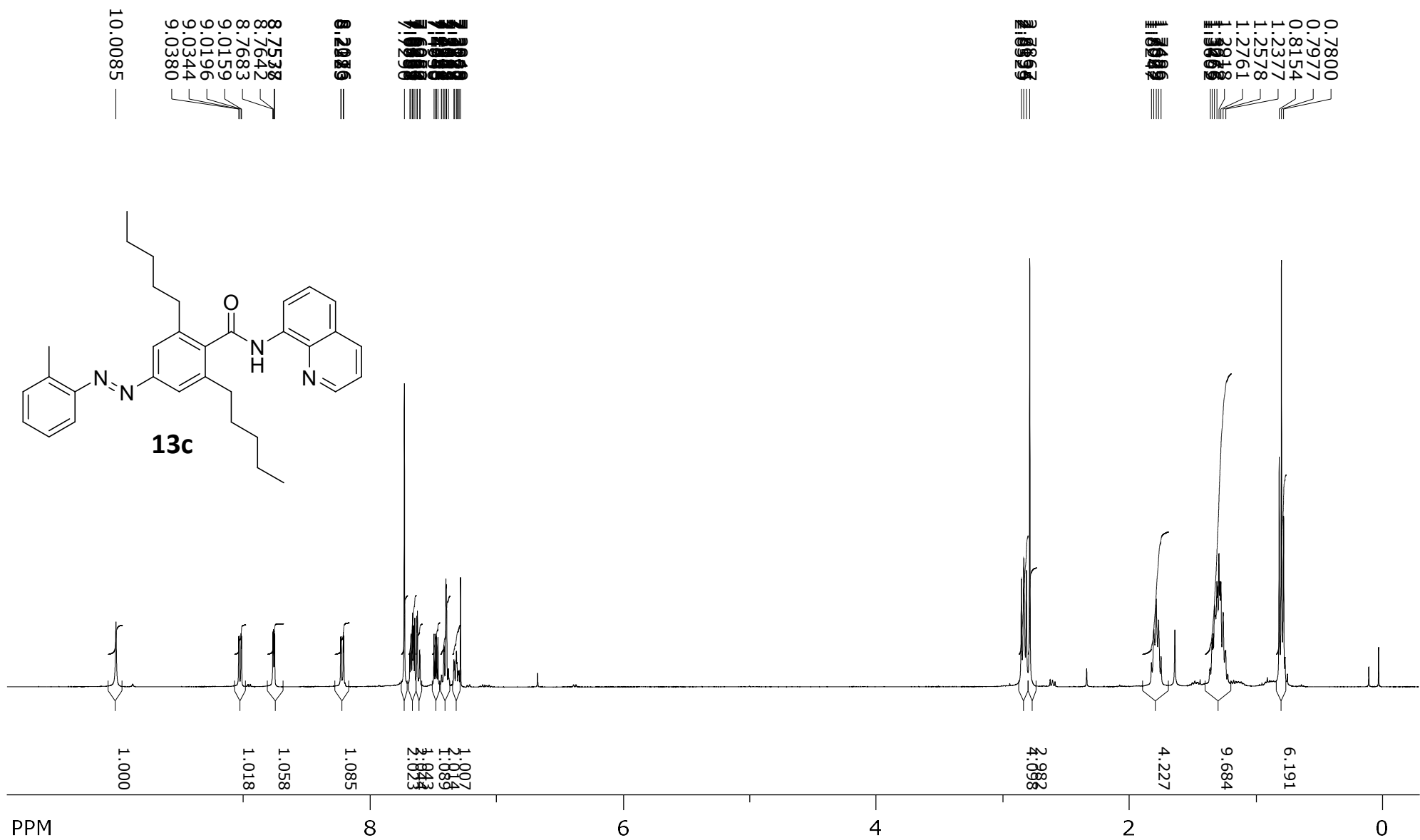




SpinWorks 4: rp-1415a2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 43

168.296	153.125	150.882	148.338	140.792	139.444	138.502	138.221	136.366	134.309	131.313	131.087	128.043	127.474	126.487	122.074	121.760	121.272	116.831	115.502	77.382	77.064	76.747	33.630	33.261	22.659	17.617	13.900
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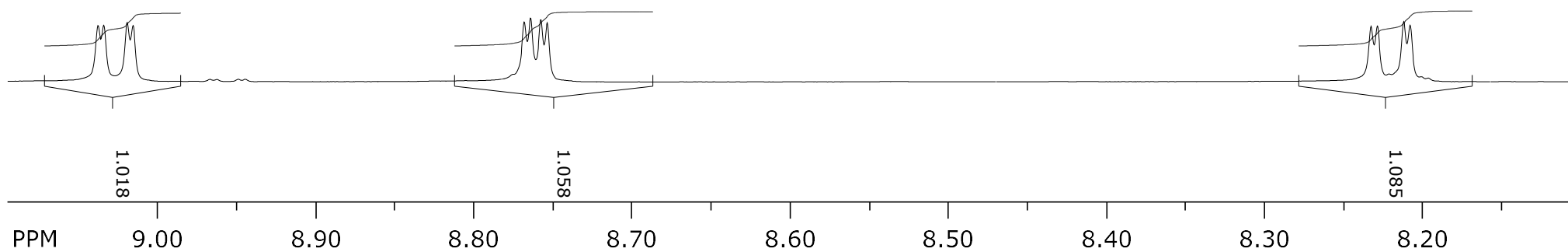
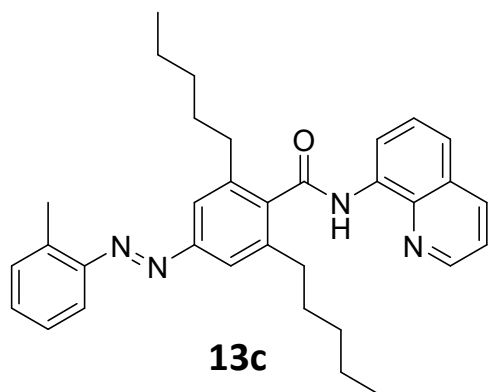


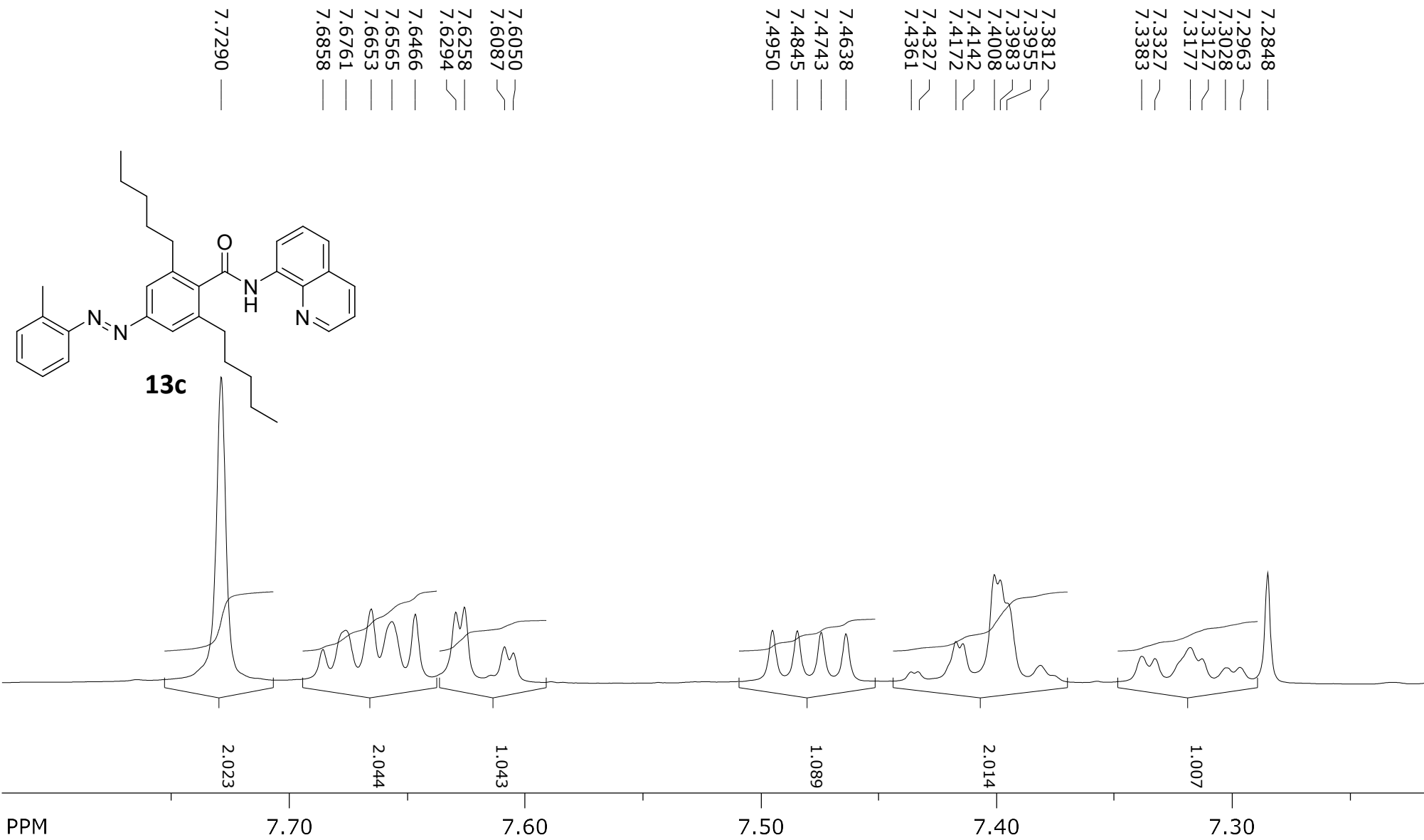
SpinWorks 4: rp-1438a2

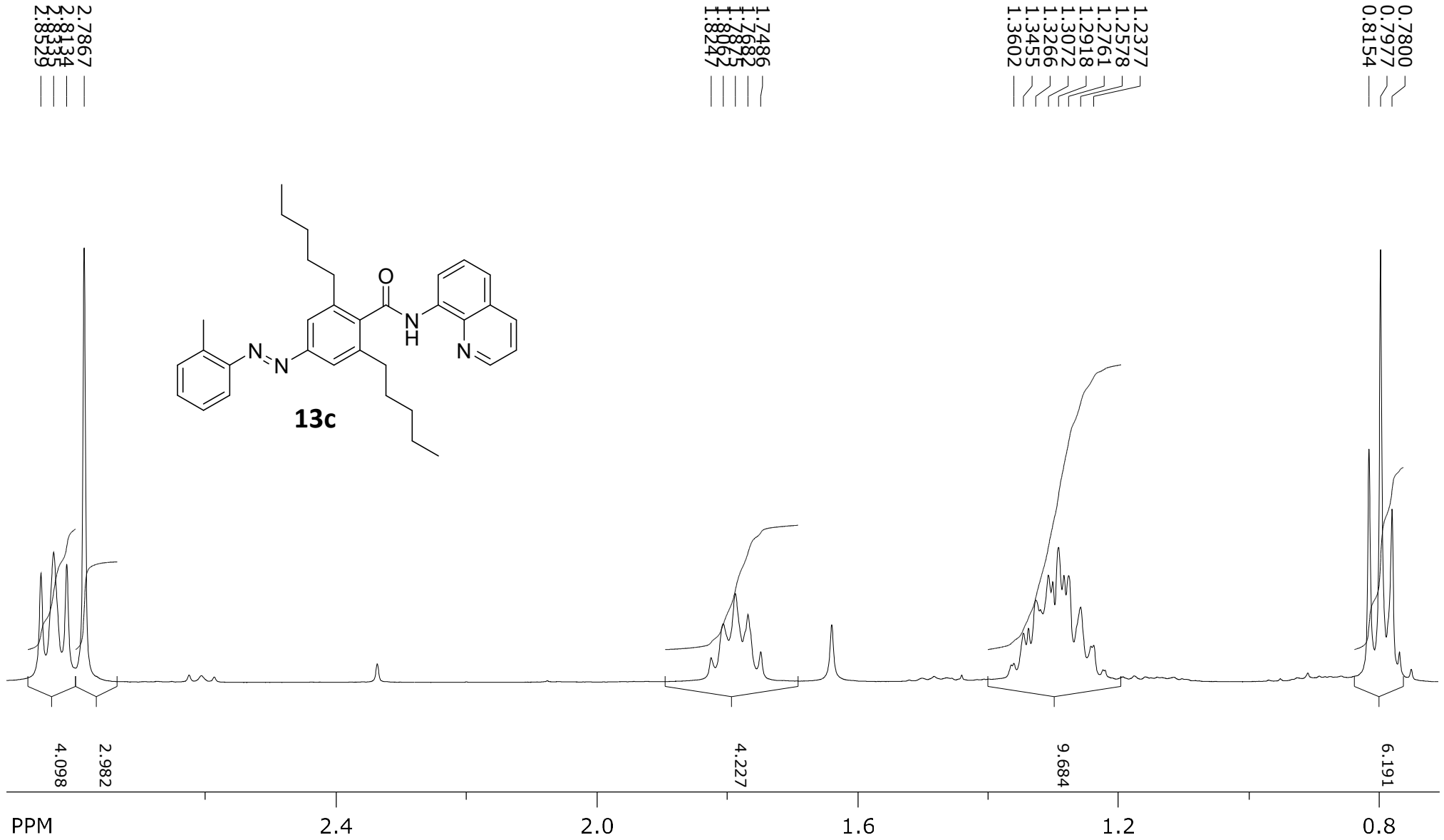
9.0159
9.0196
9.0344
9.0380

8.7537
8.7578
8.7642
8.7683

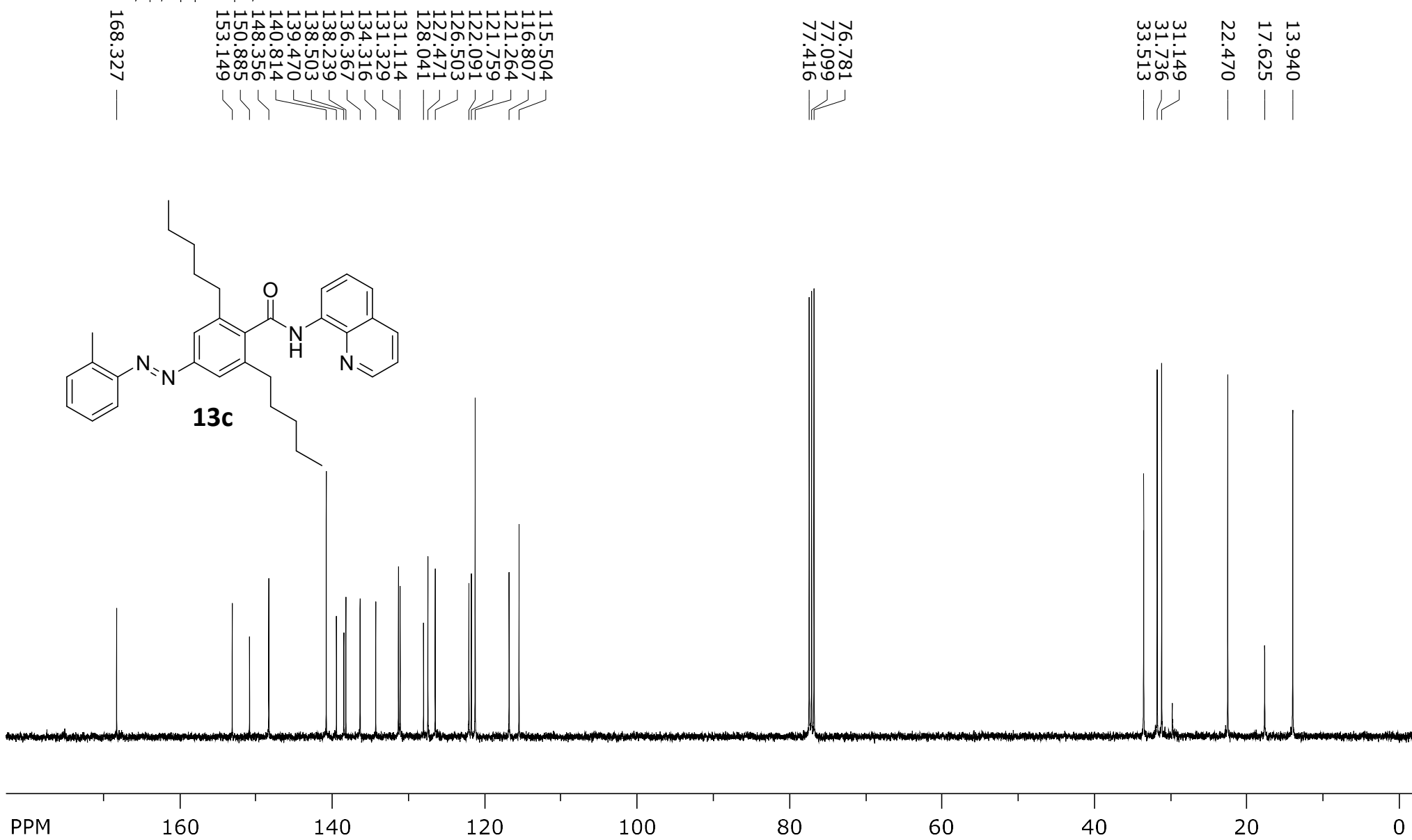
8.2076
8.2116
8.2283
8.2323

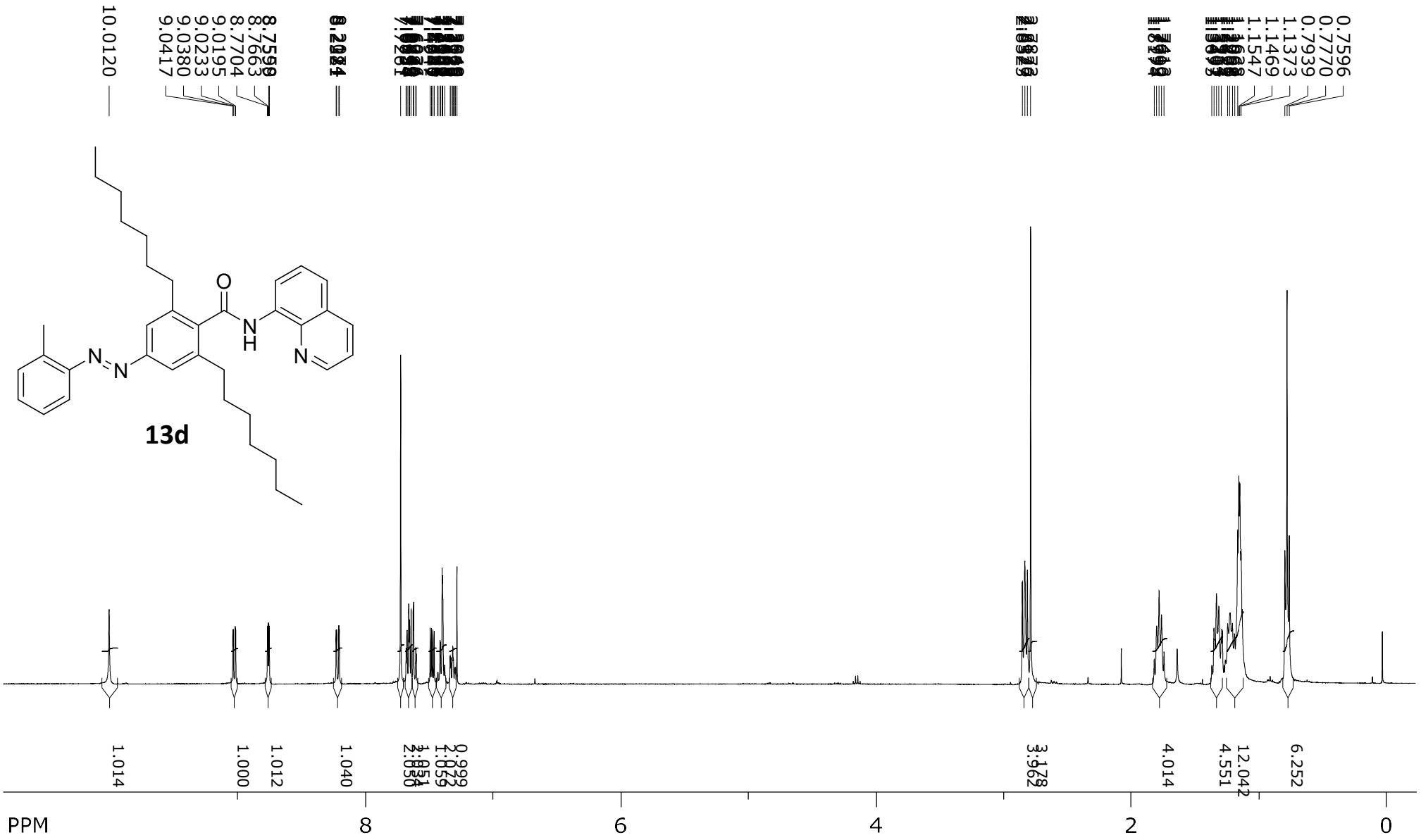






SpinWorks 4: RP 1438 R1
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 51

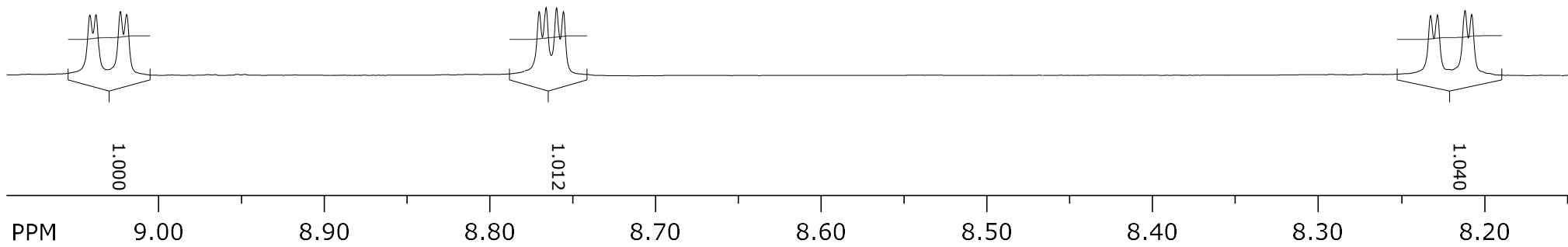
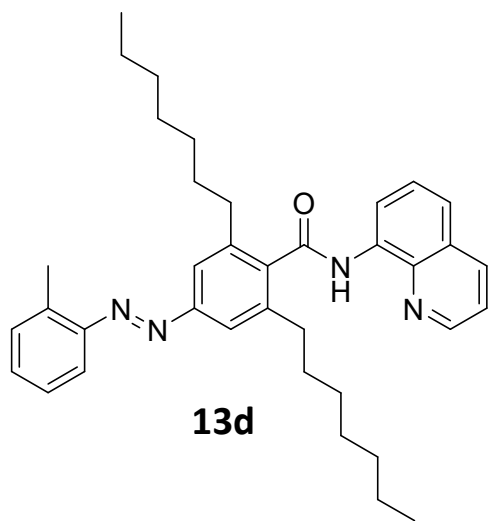


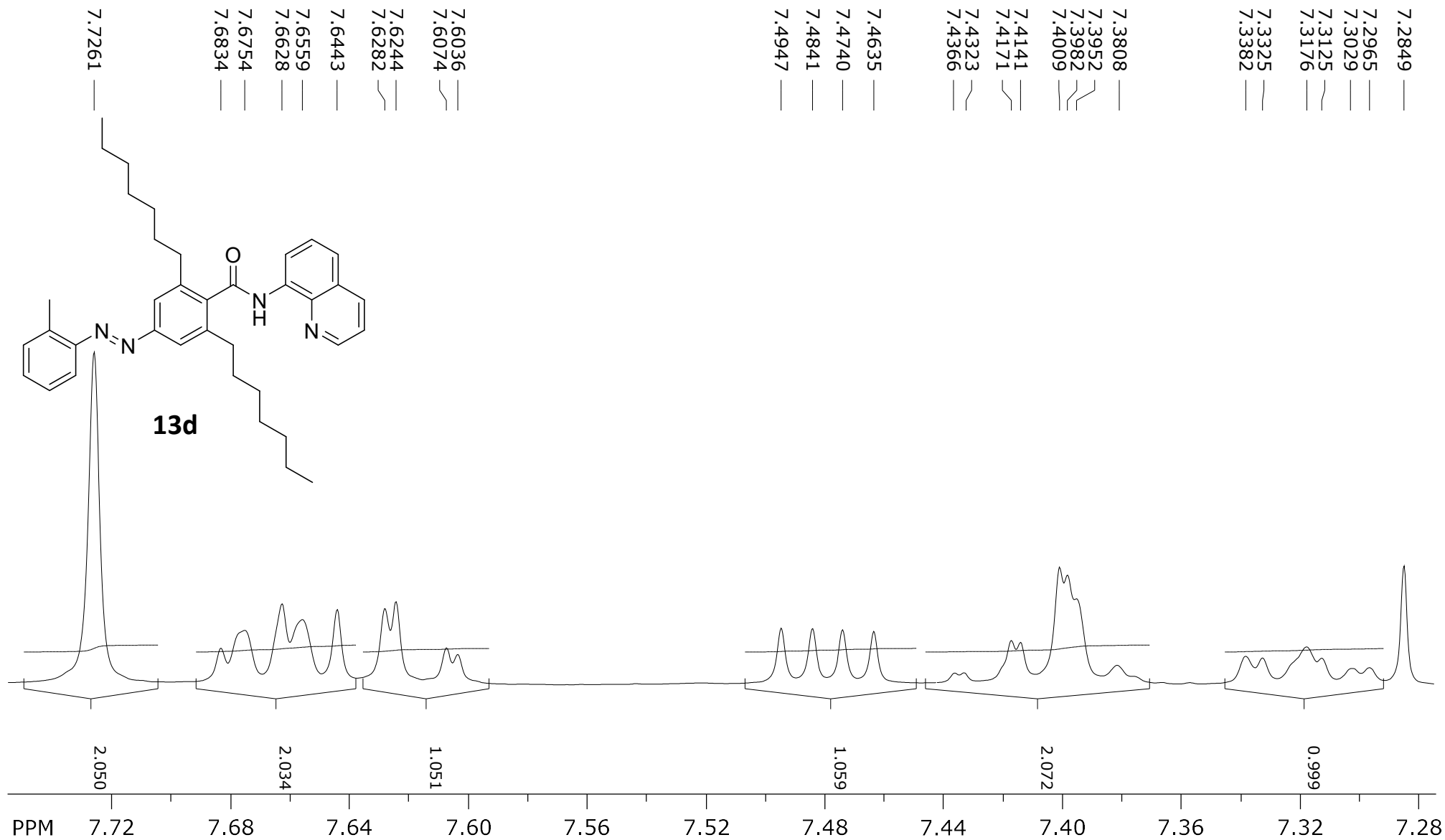


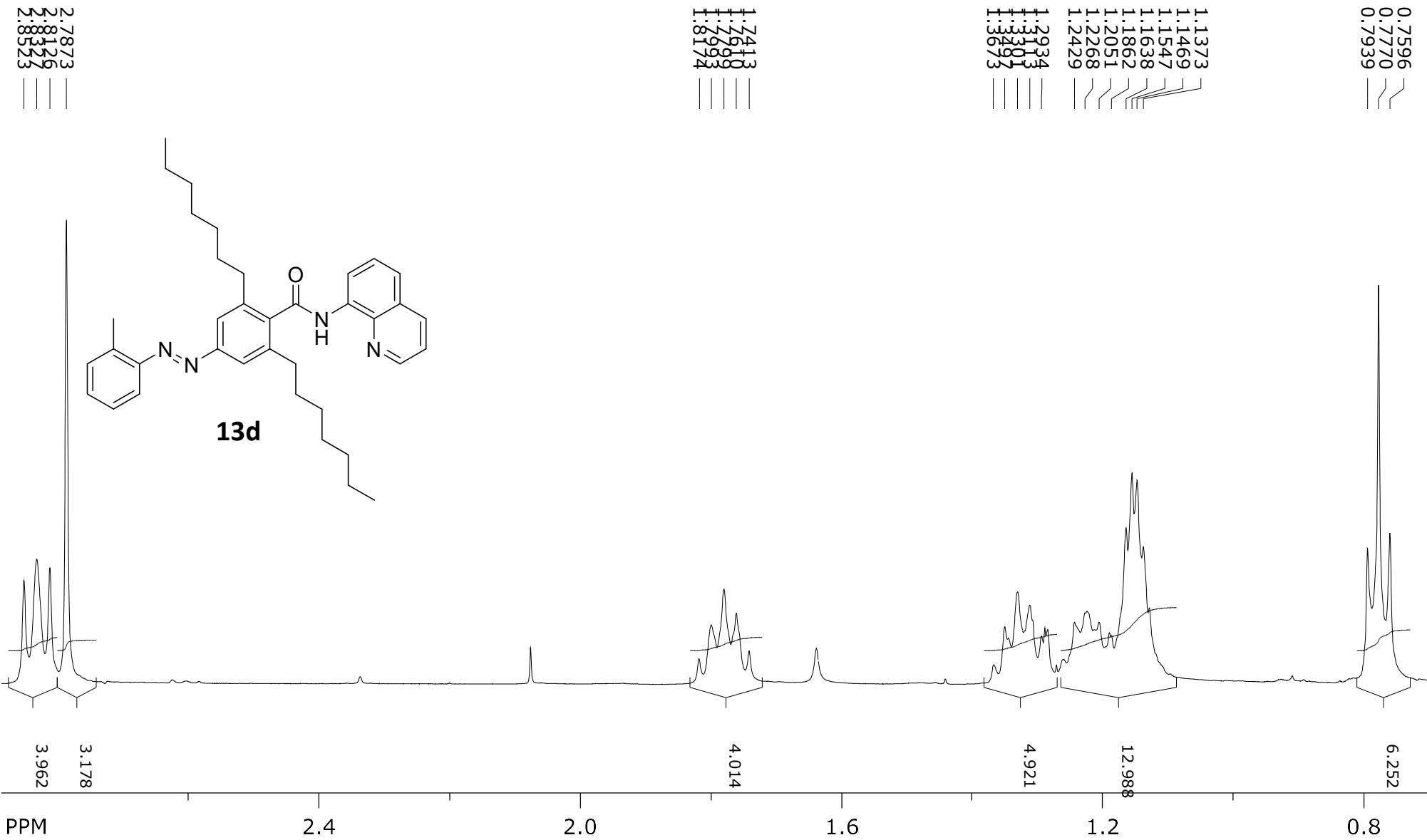
9.0195
9.0233
9.0380
9.0417

8.7558
8.7599
8.7663
8.7704

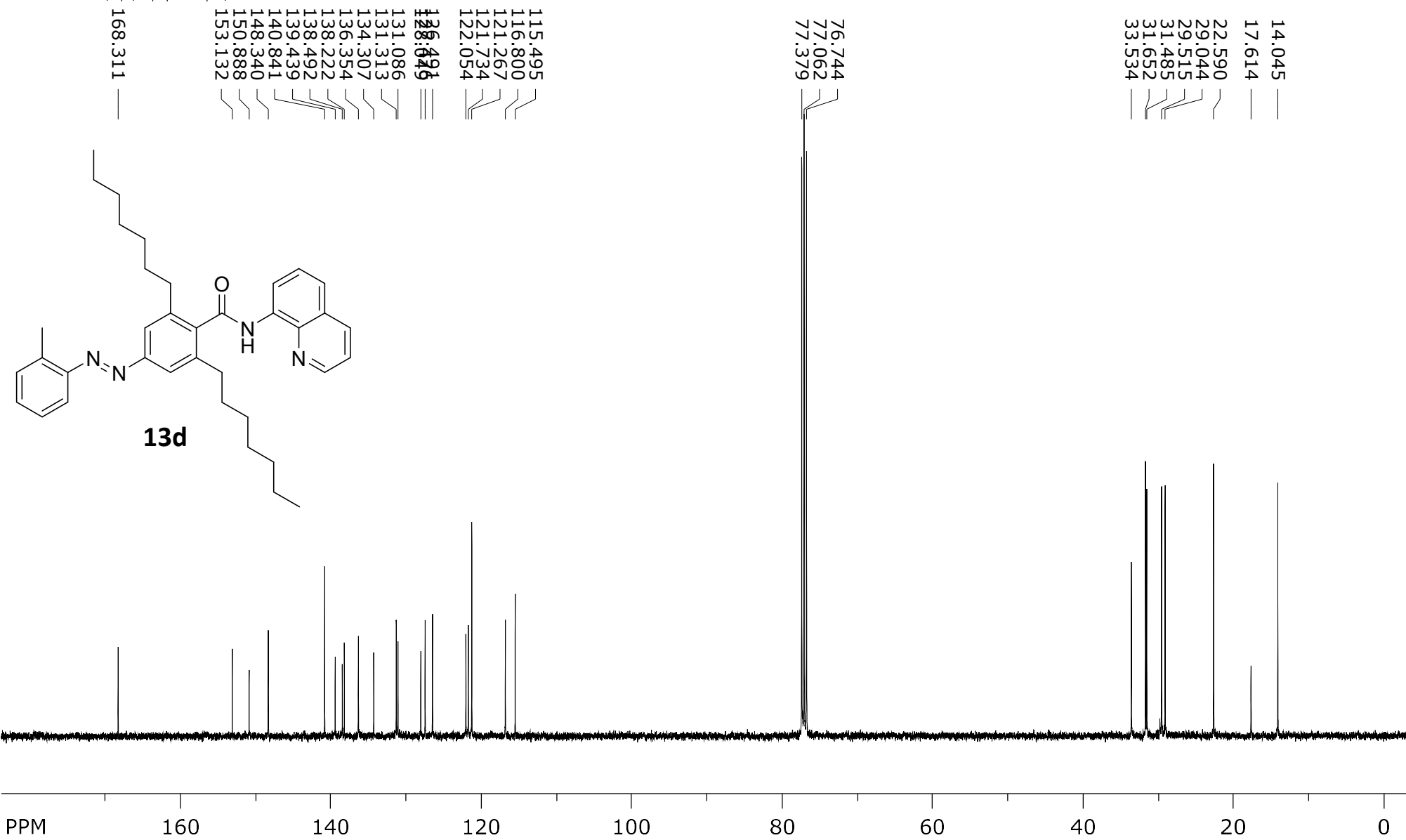
8.2074
8.2114
8.2281
8.2321



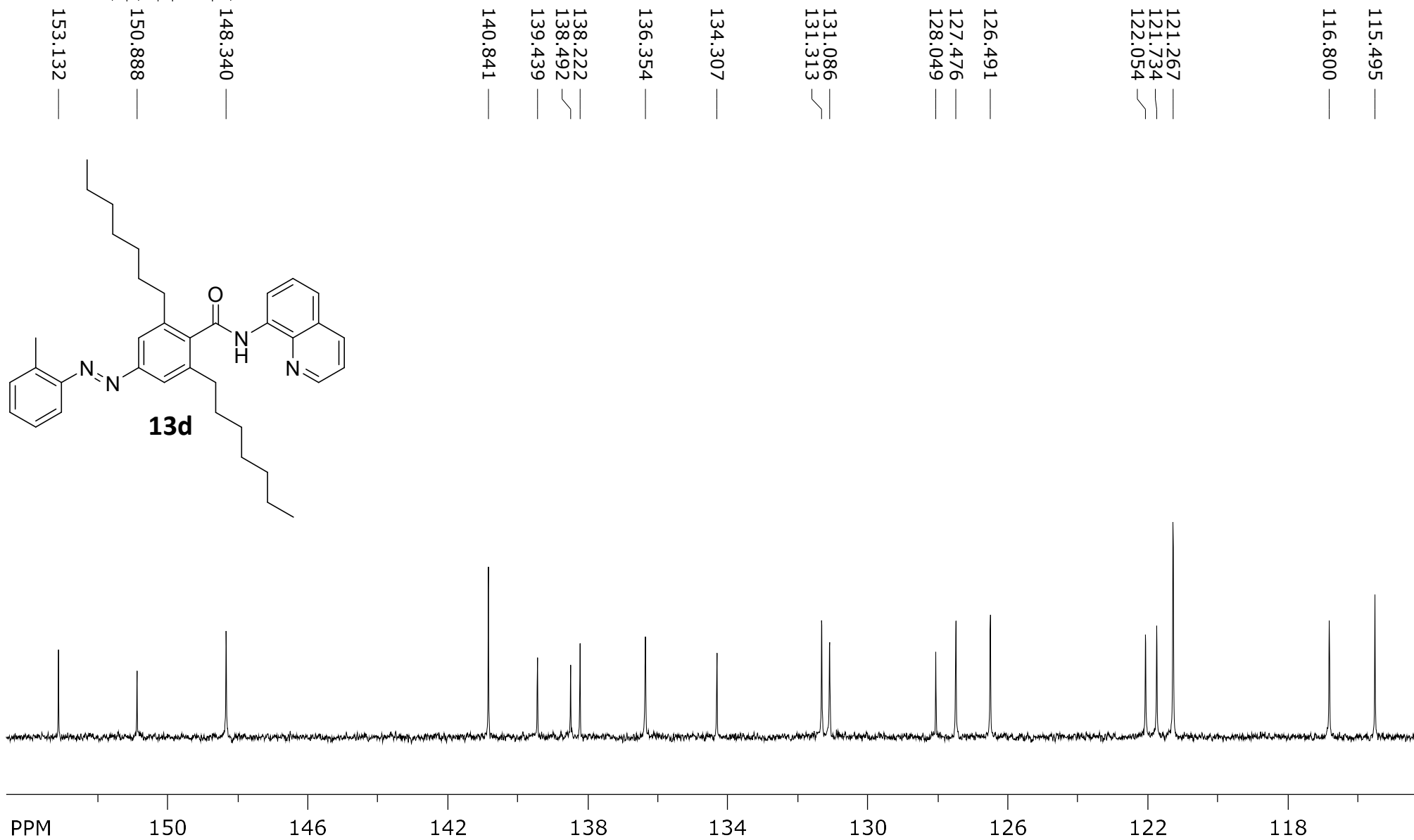


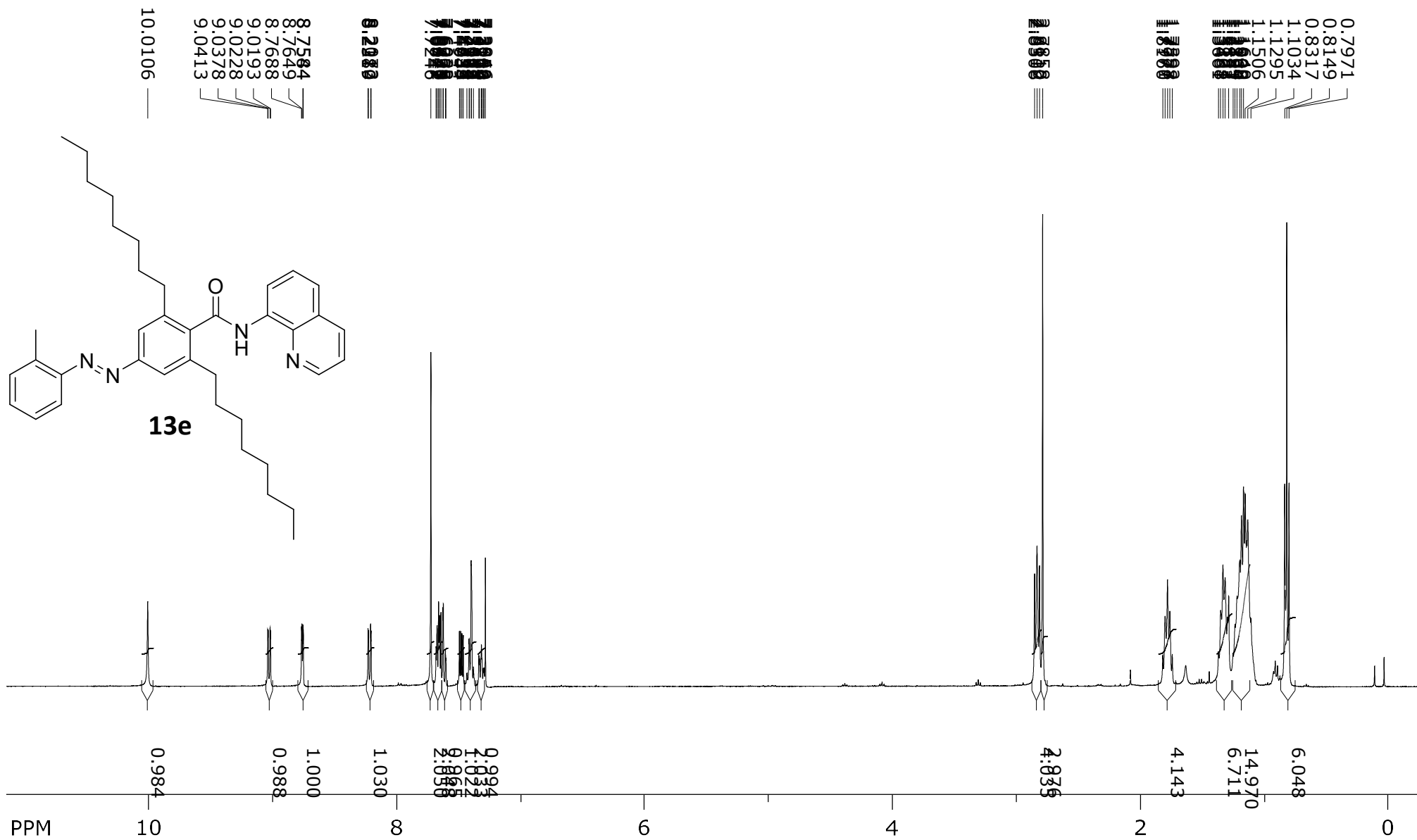


SpinWorks 4: RP 1440 CR
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 51

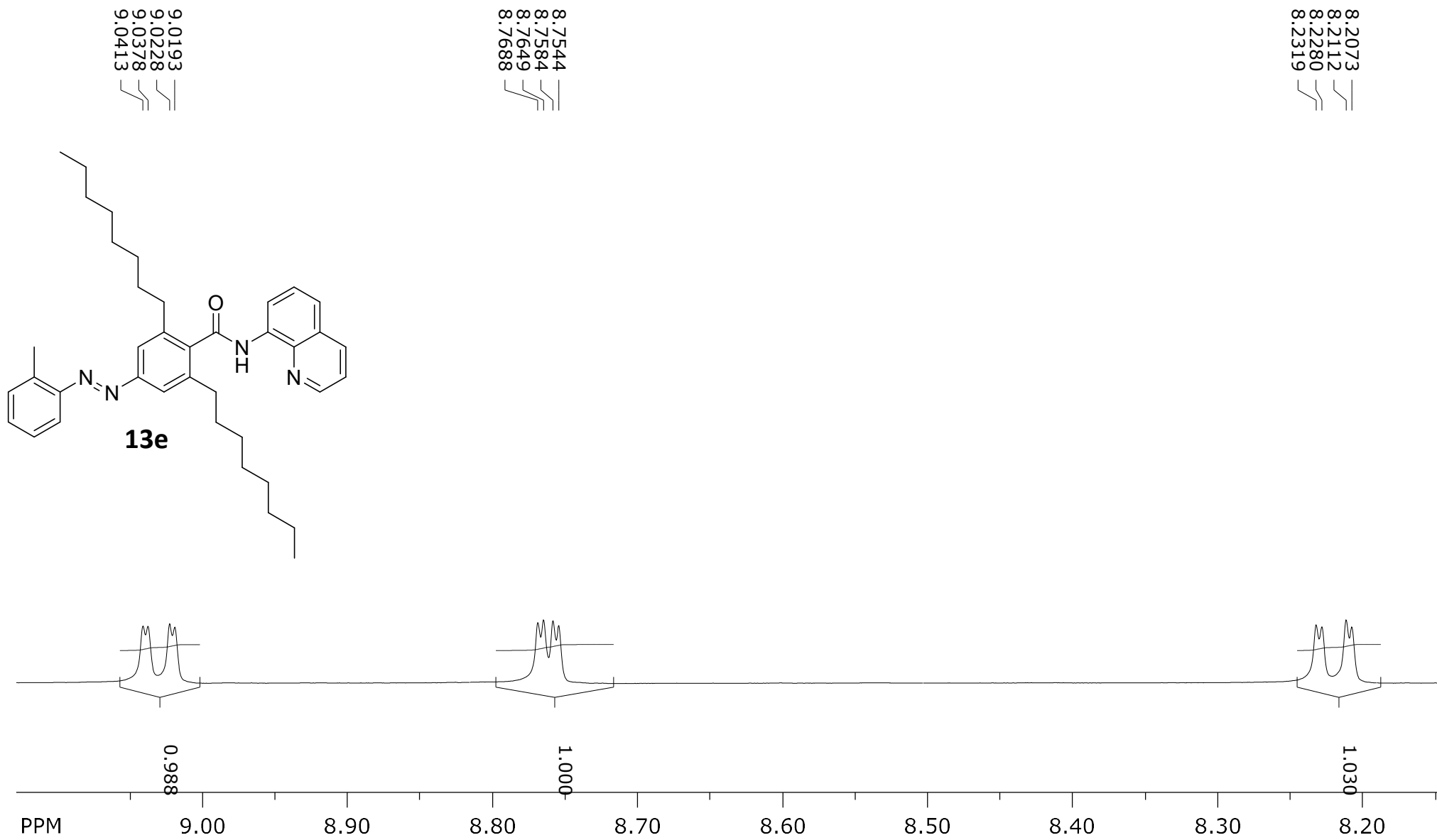


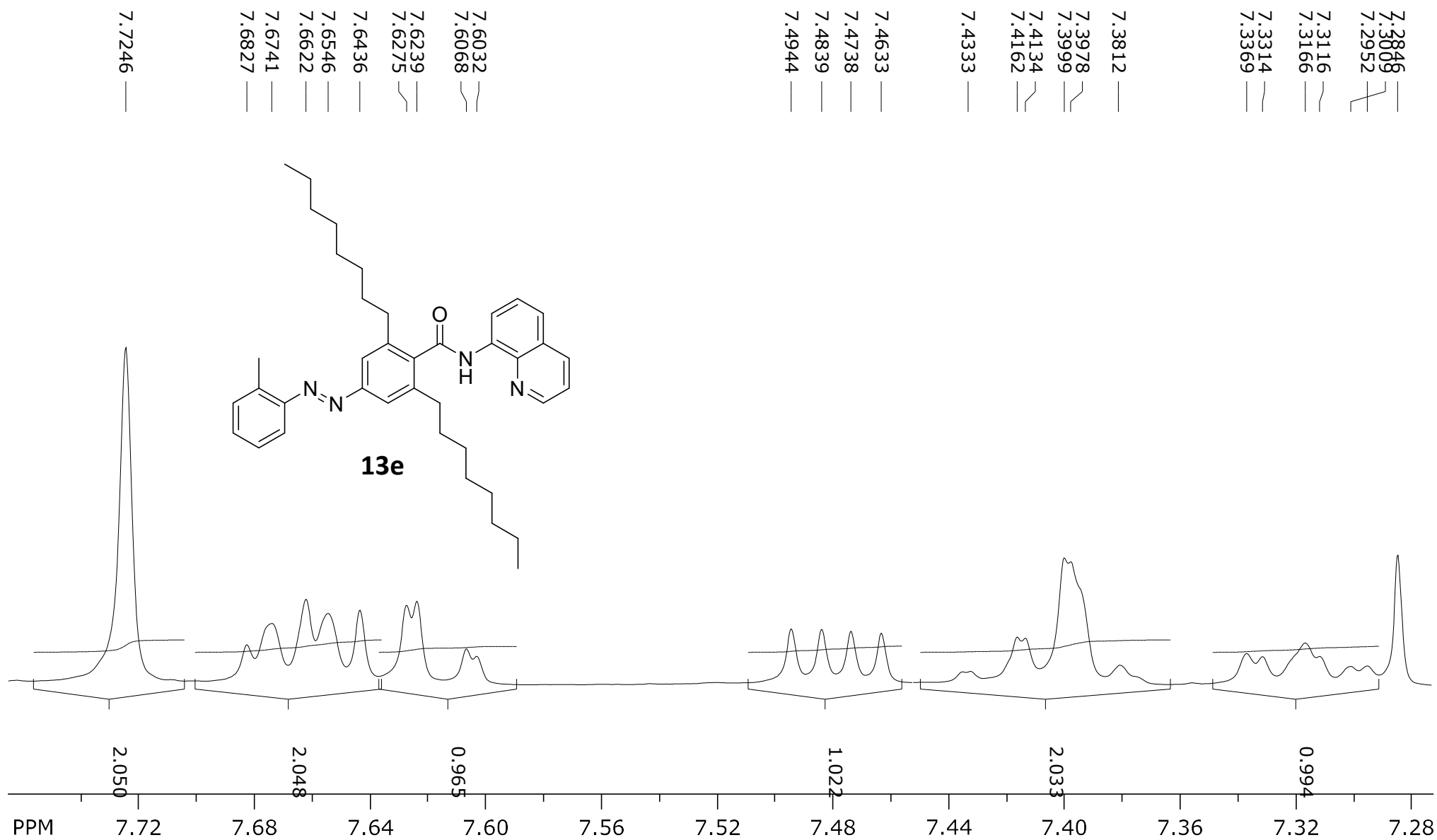
SpinWorks 4: RP 1440 CR
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 51

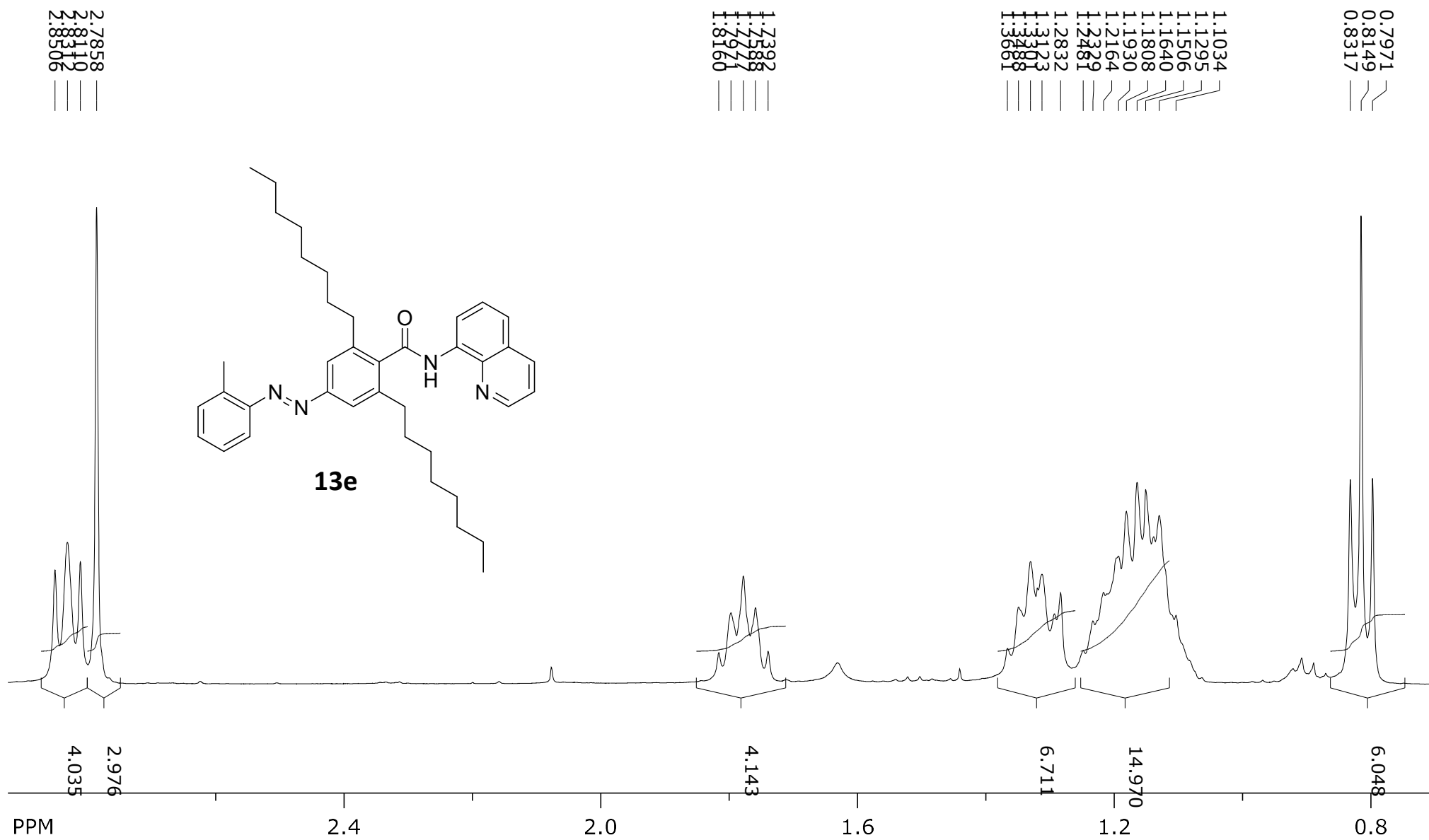




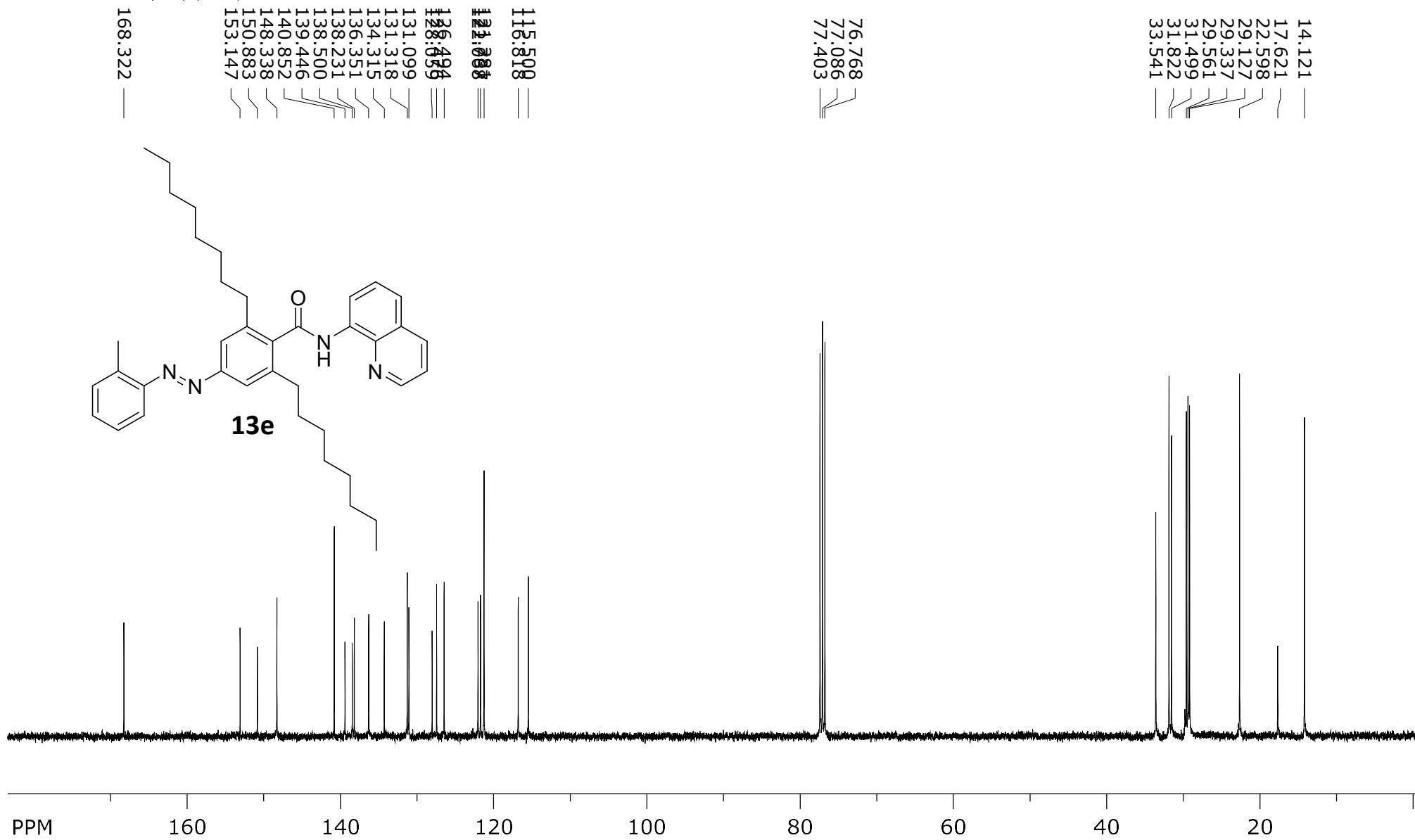
SpinWorks 4: rp-1416a2



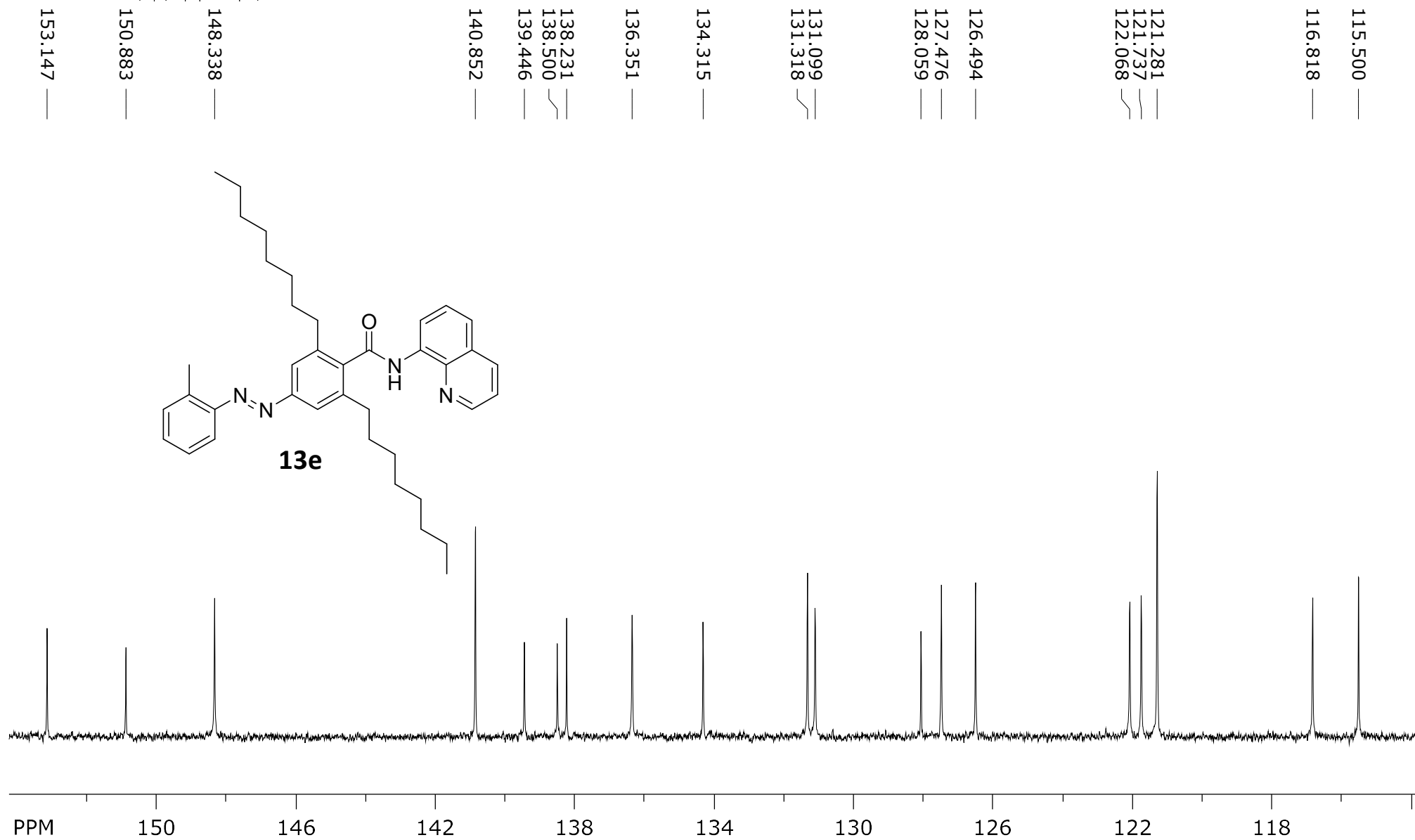


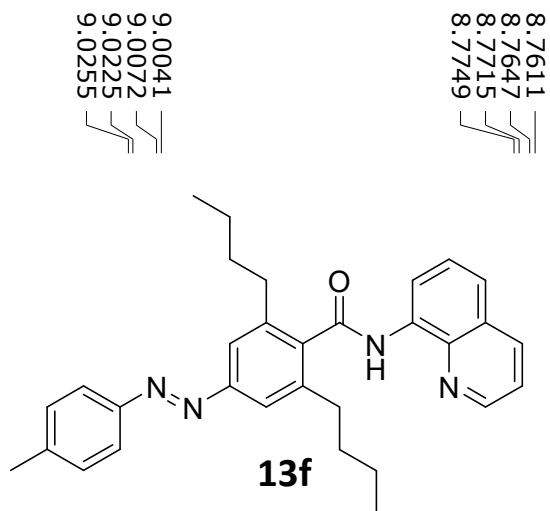


SpinWorks 4: RP 1416 A2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 1



SpinWorks 4: RP 1416 A2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 1



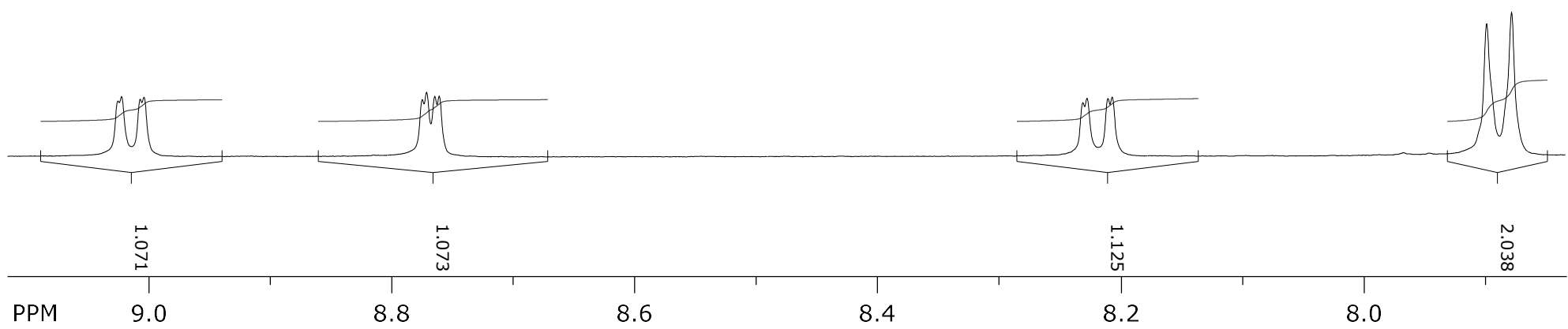


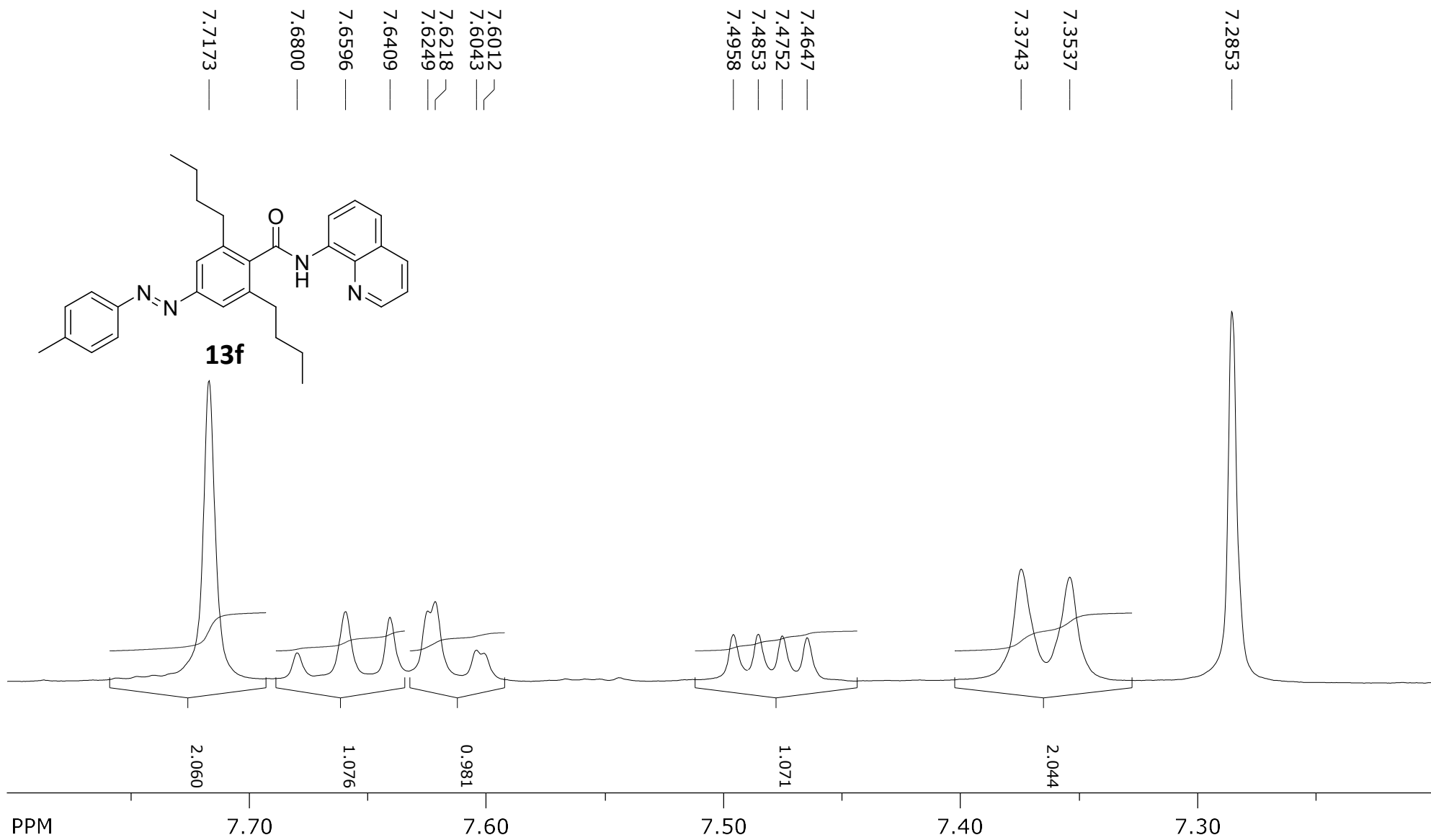
9.0041
9.0072
9.0225
9.0255

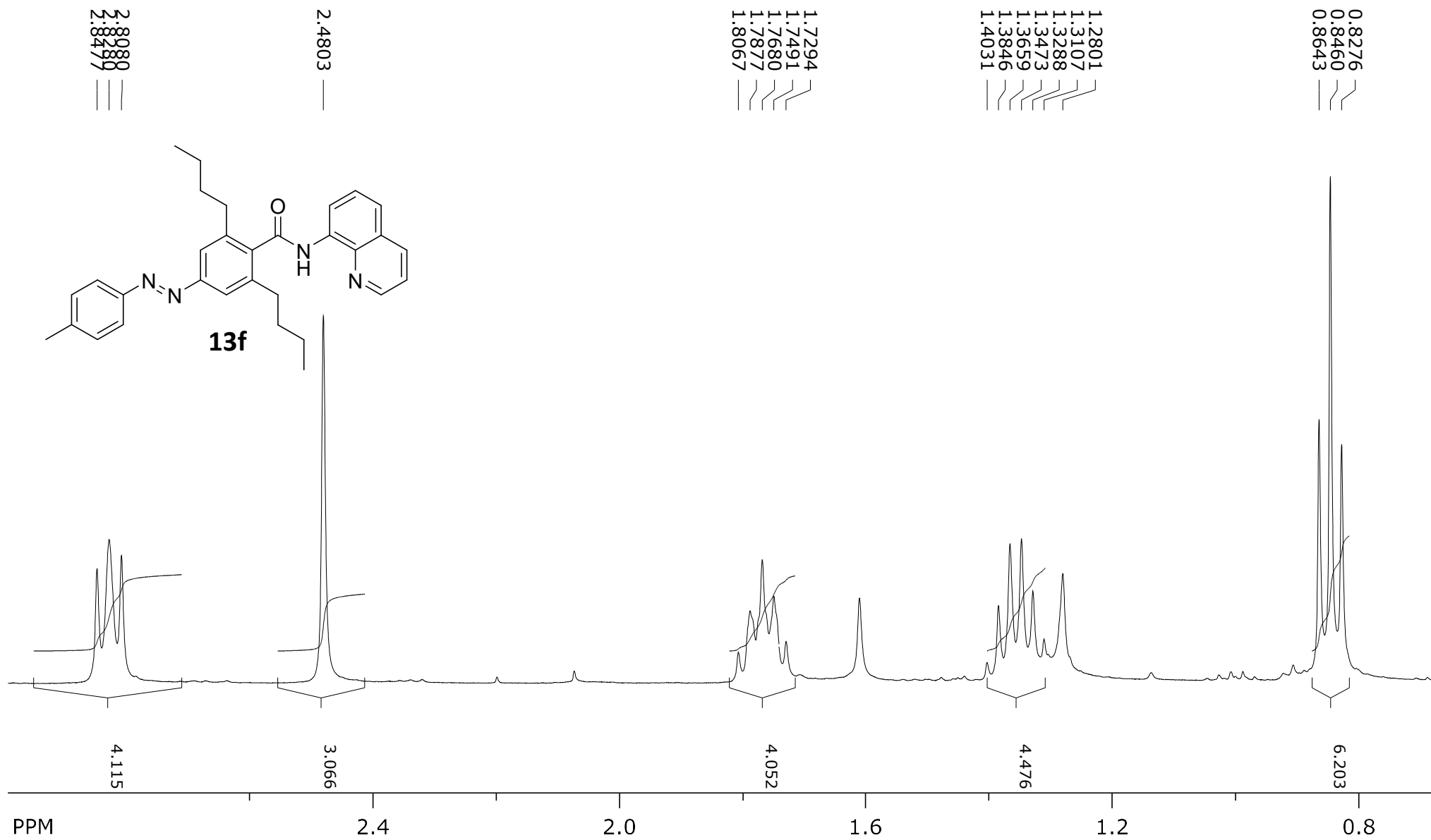
8.7611
8.7647
8.7715
8.7749

8.2070
8.2105
8.2277
8.2312

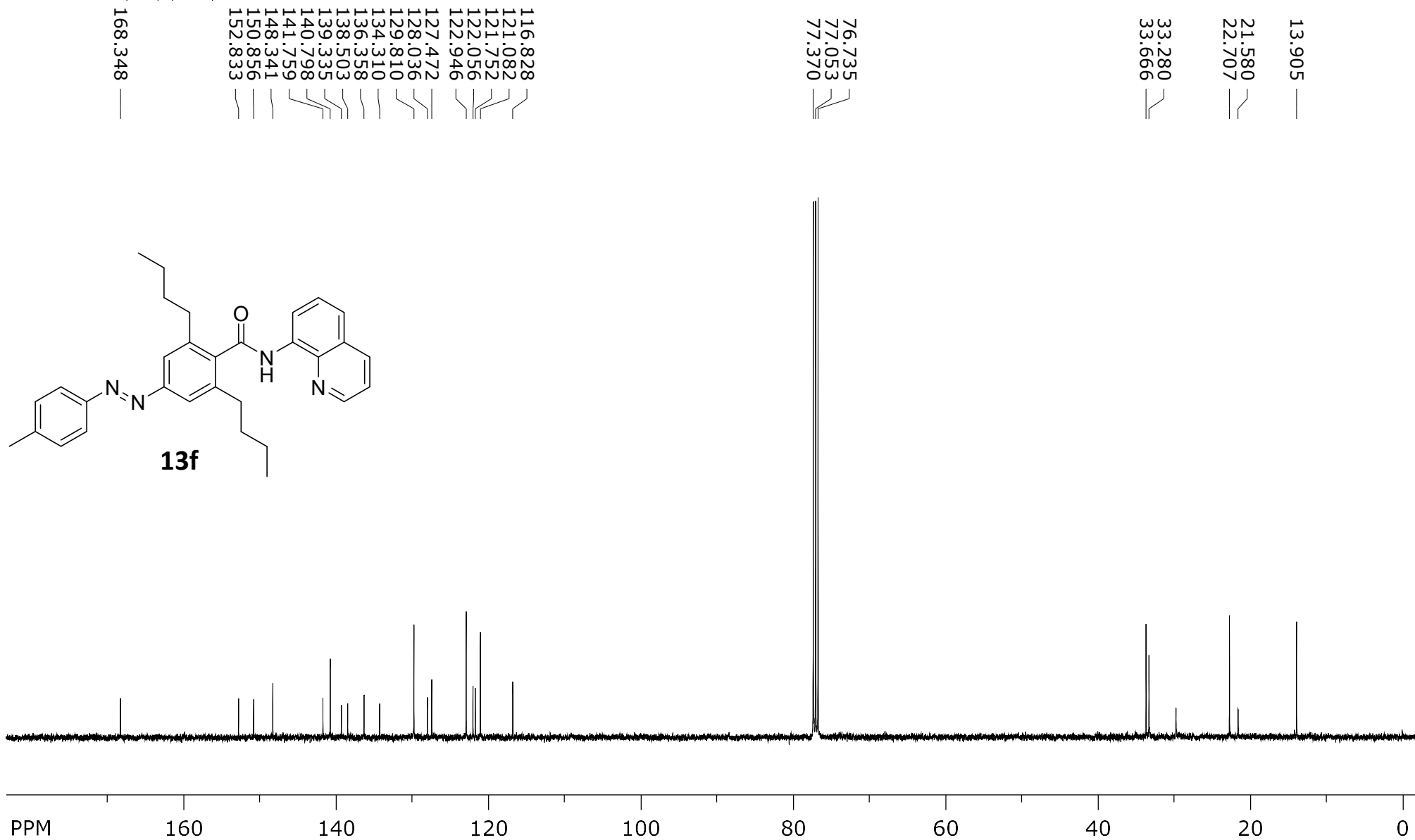
7.8782
7.8988



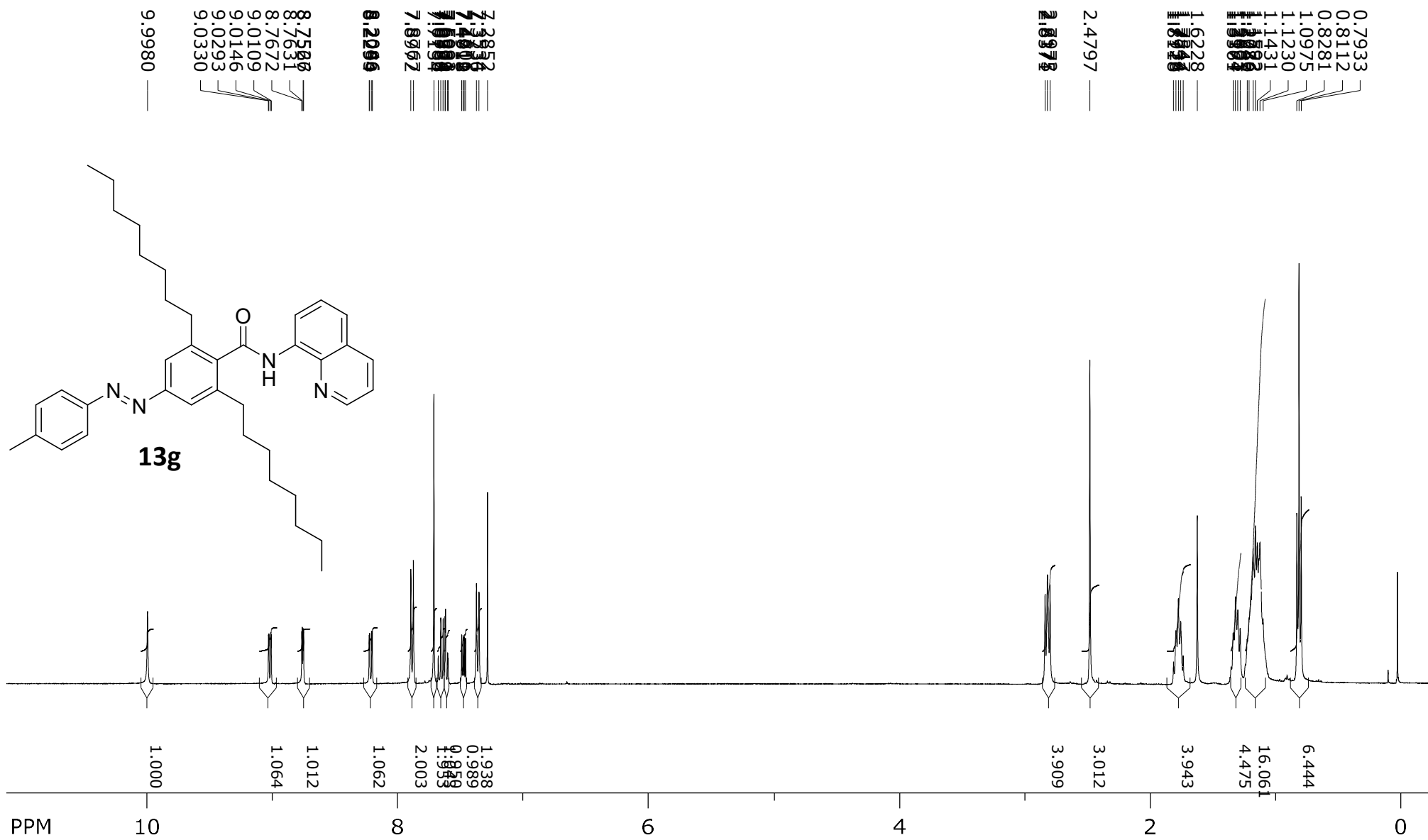




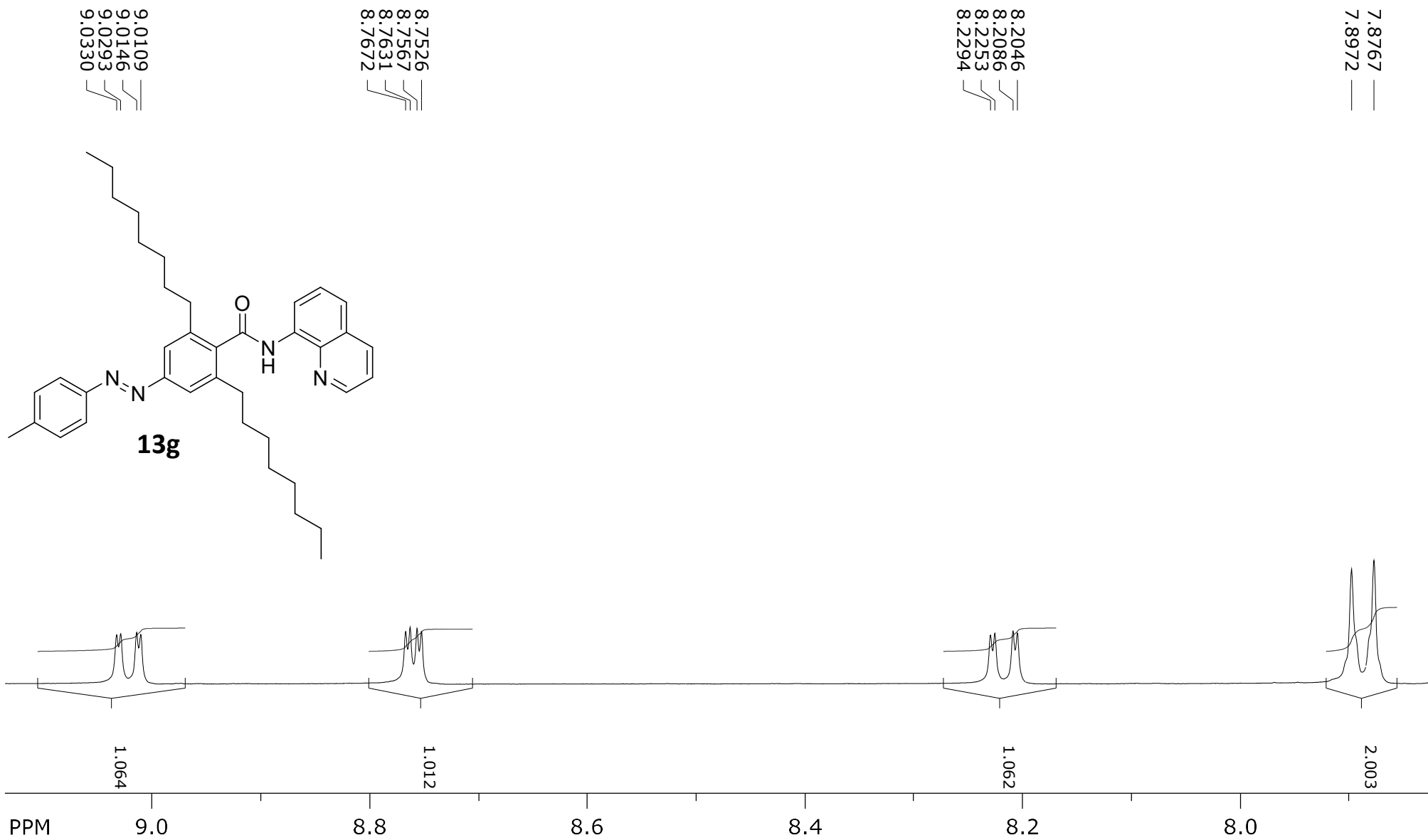
SpinWorks 4: RP 1402 A2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 1



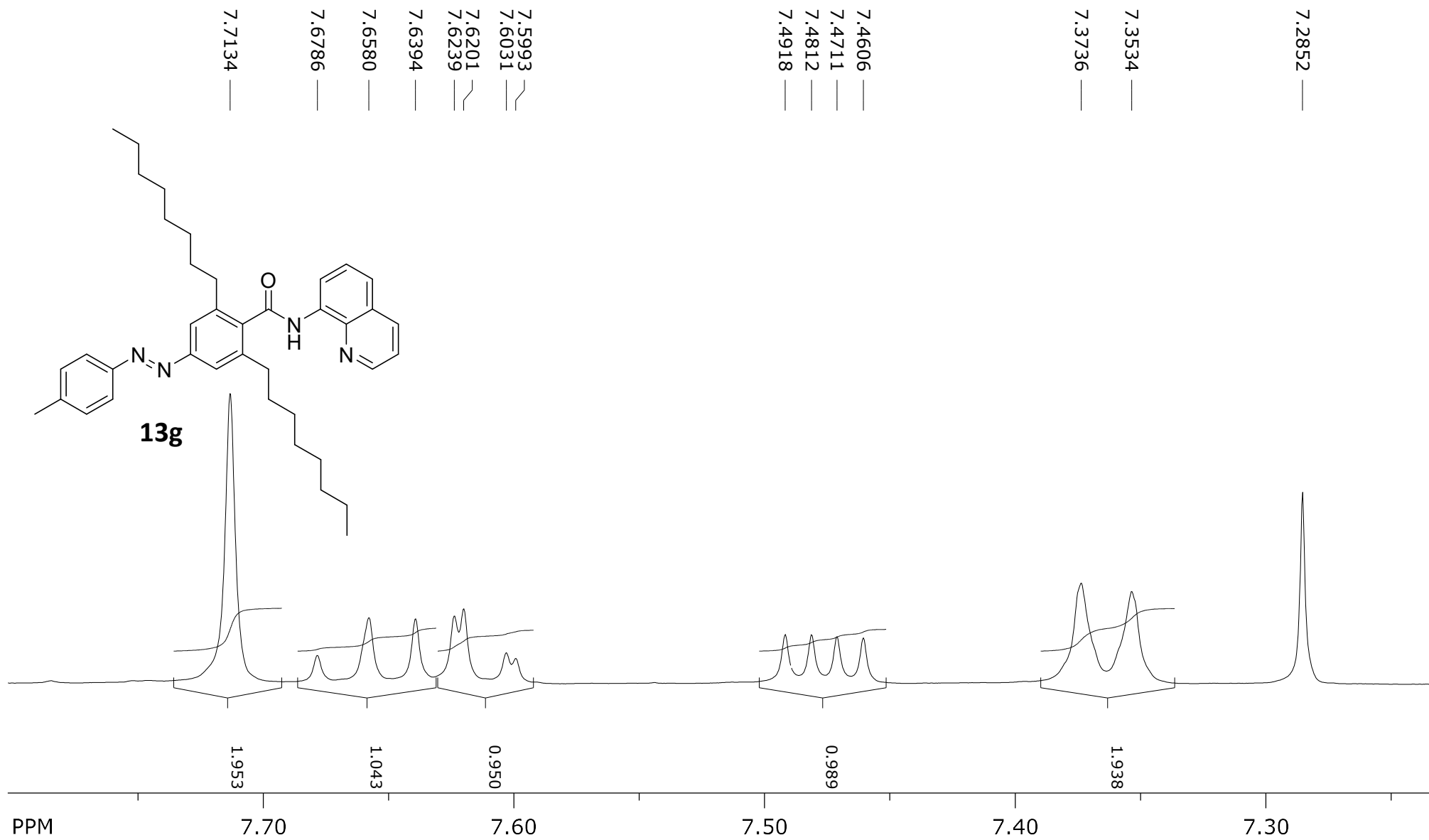
SpinWorks 4: RP-1420A2



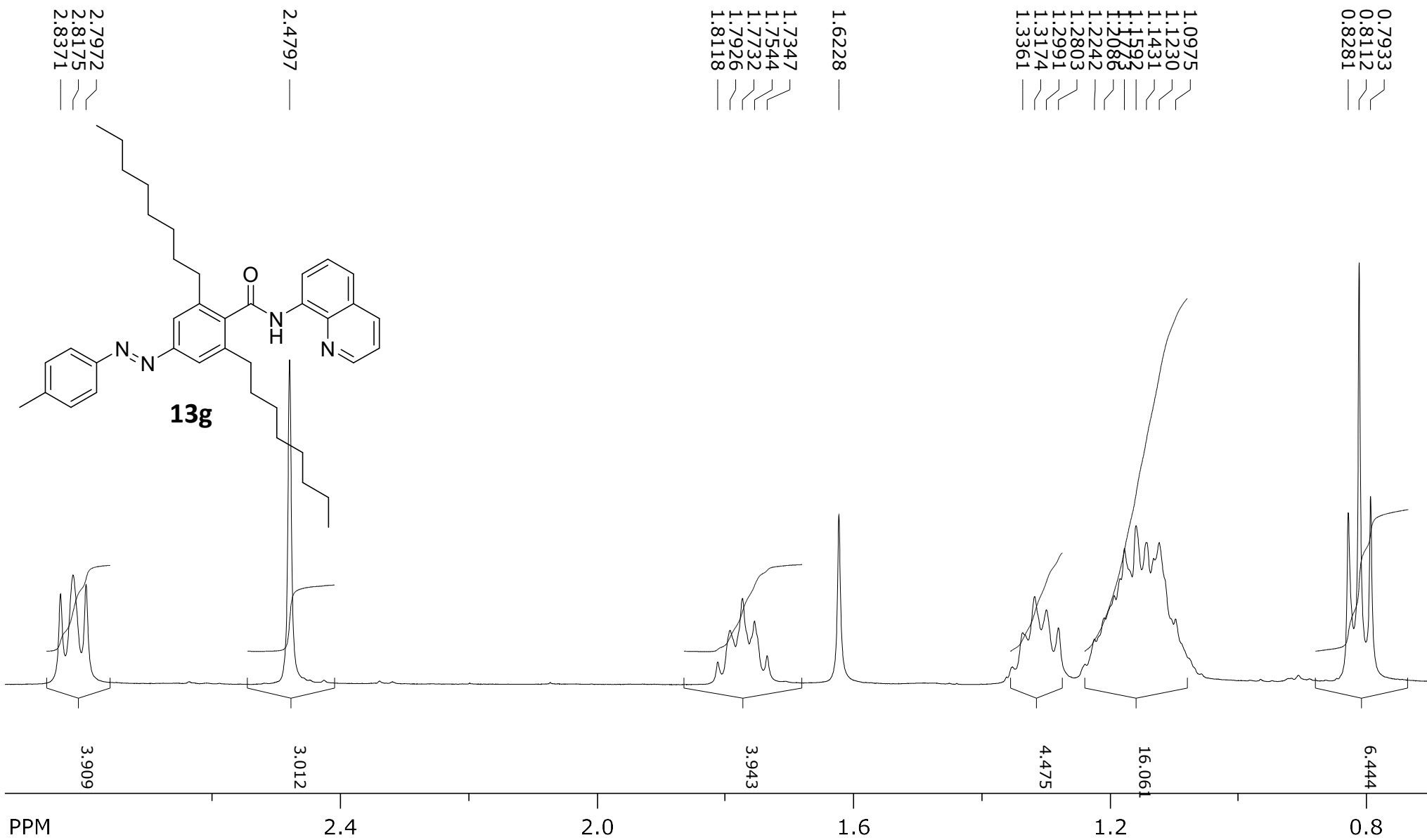
SpinWorks 4: RP-1420A2



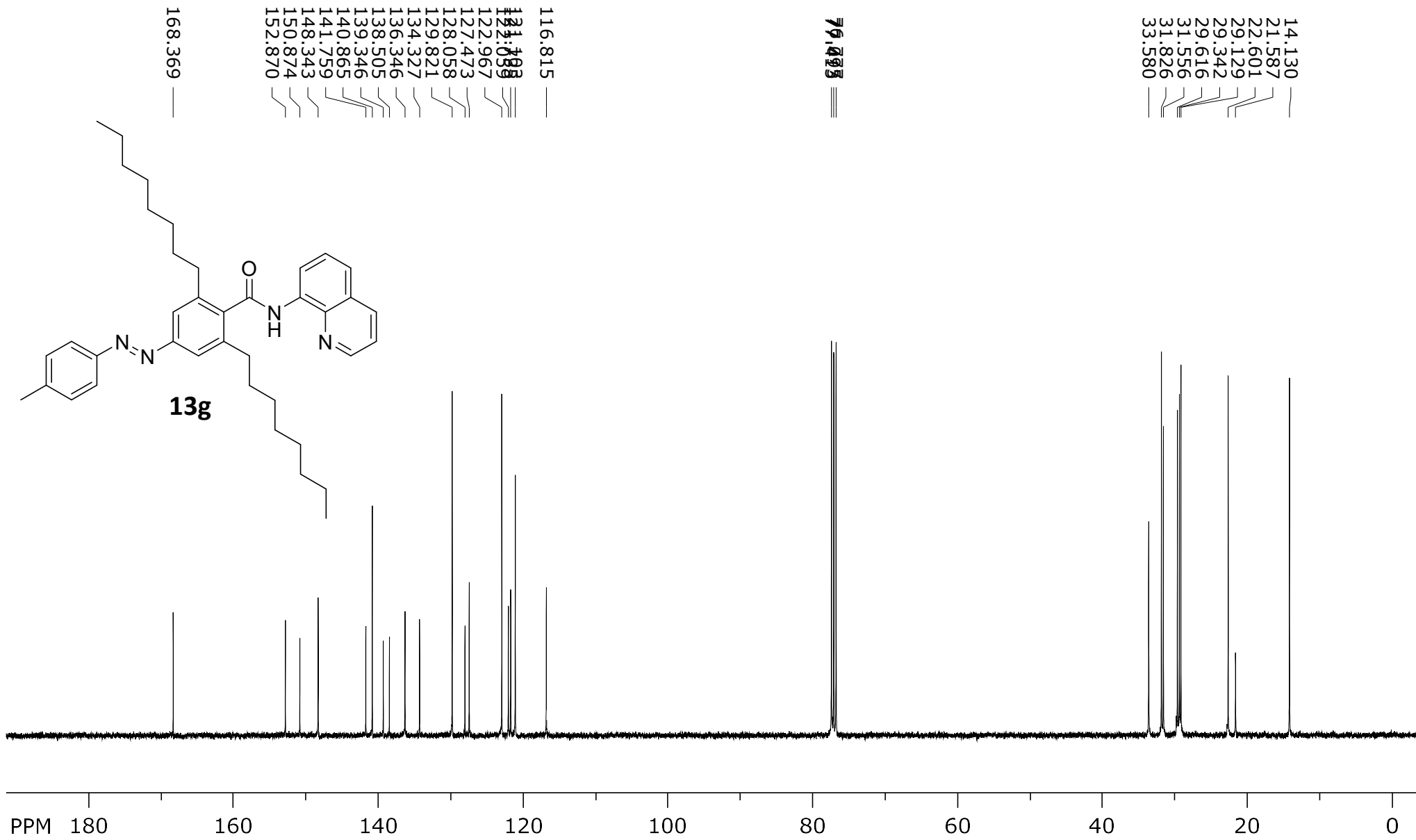
SpinWorks 4: RP-1420A2



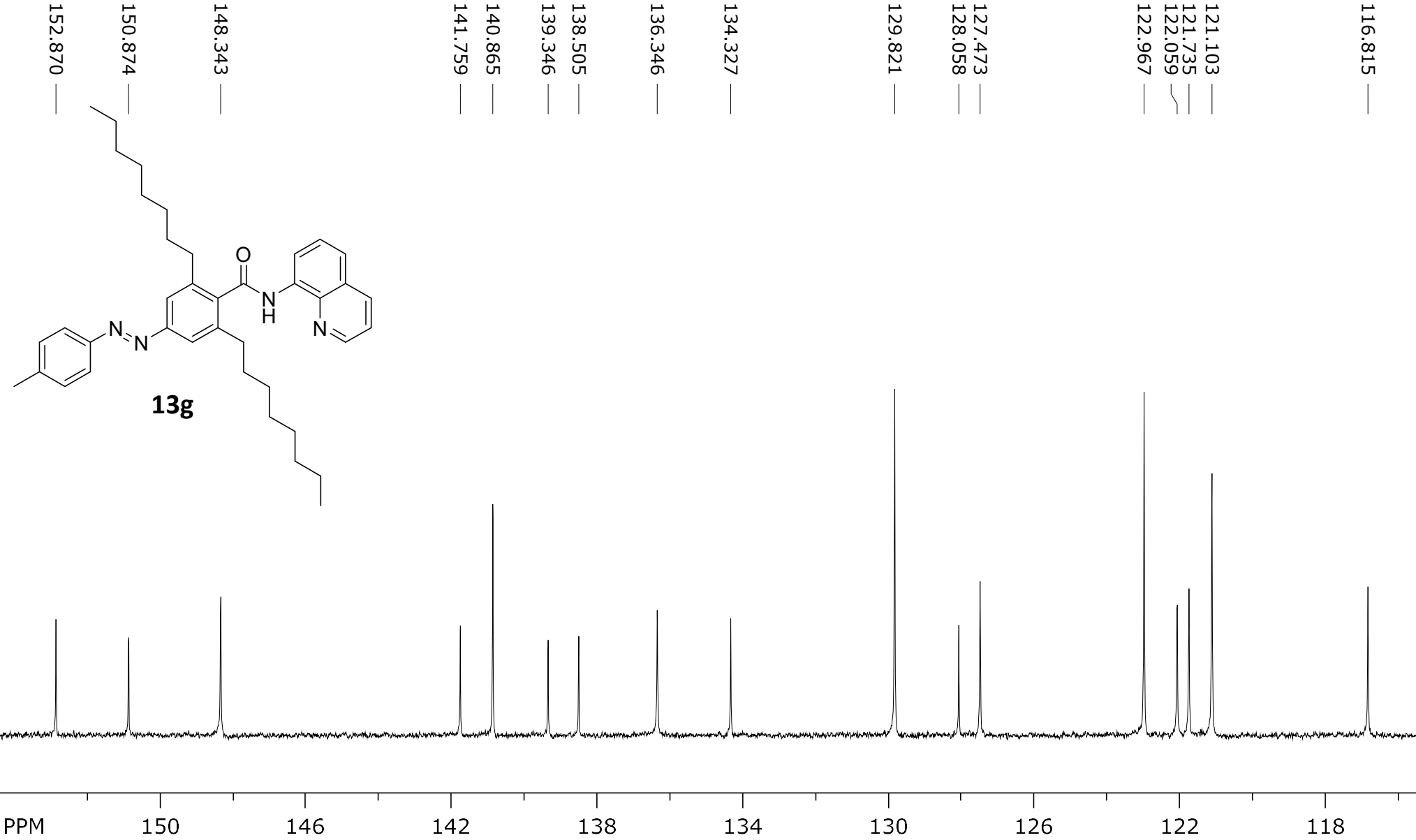
SpinWorks 4: RP-1420A2



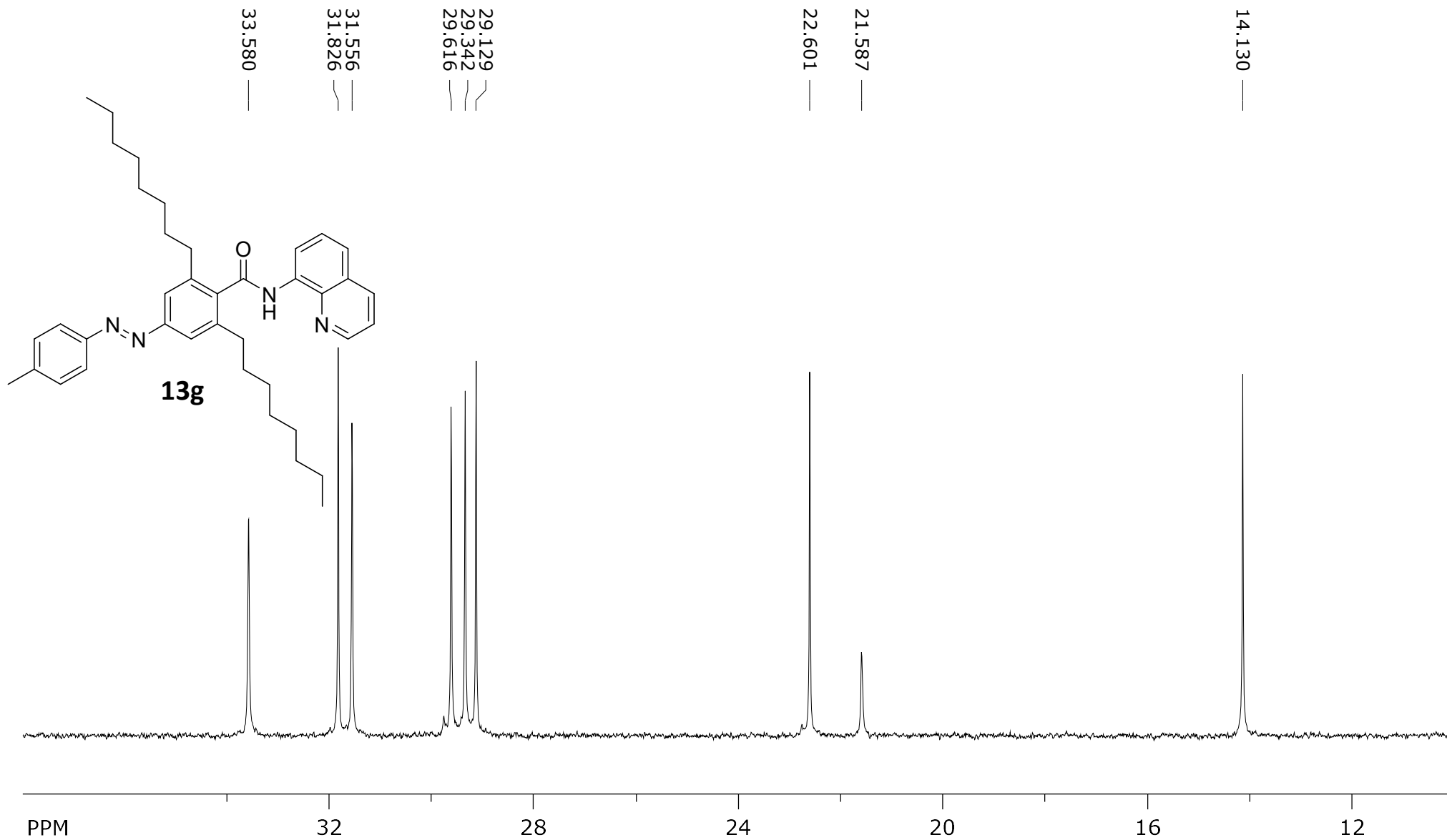
SpinWorks 4: RP 1420 A2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 48



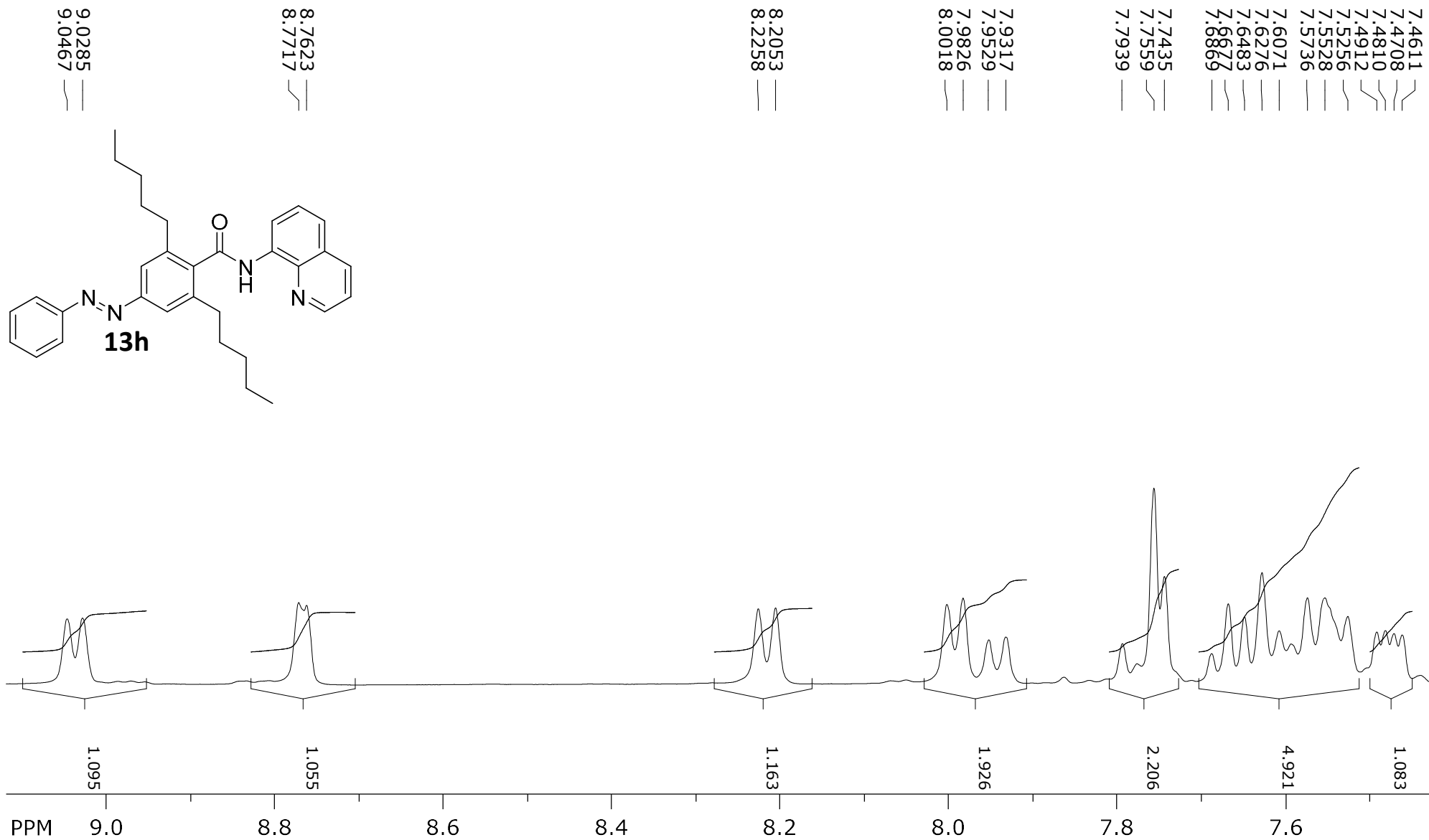
SpinWorks 4: RP 1420 A2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 48



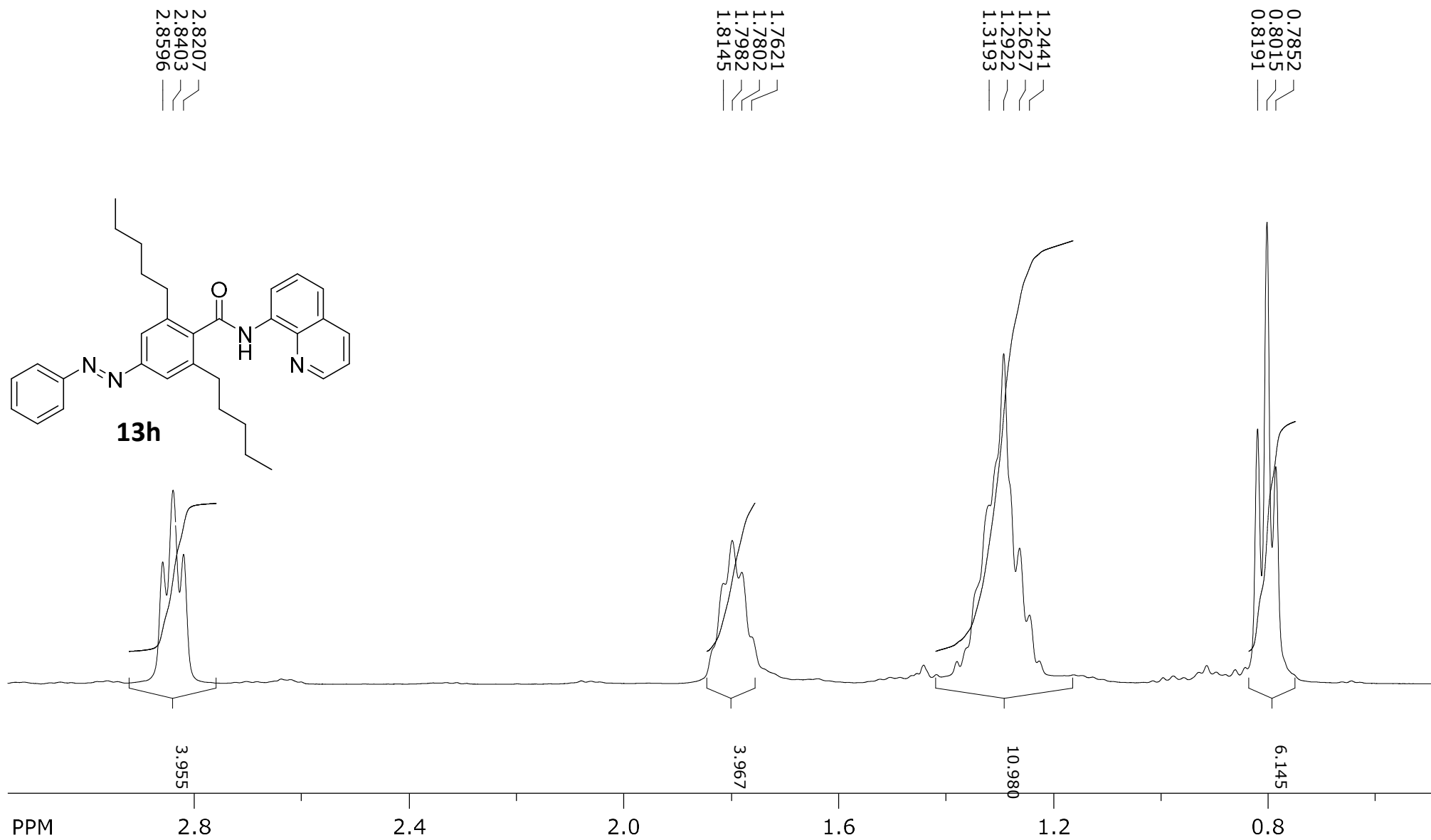
SpinWorks 4: RP 1420 A2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 48



SpinWorks 4: RP 1407 A2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 1



SpinWorks 4: RP 1407 A2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 1



SpinWorks 4: SAB170303
C13CPD CDCl3 {D:\Spectra} nmr 8

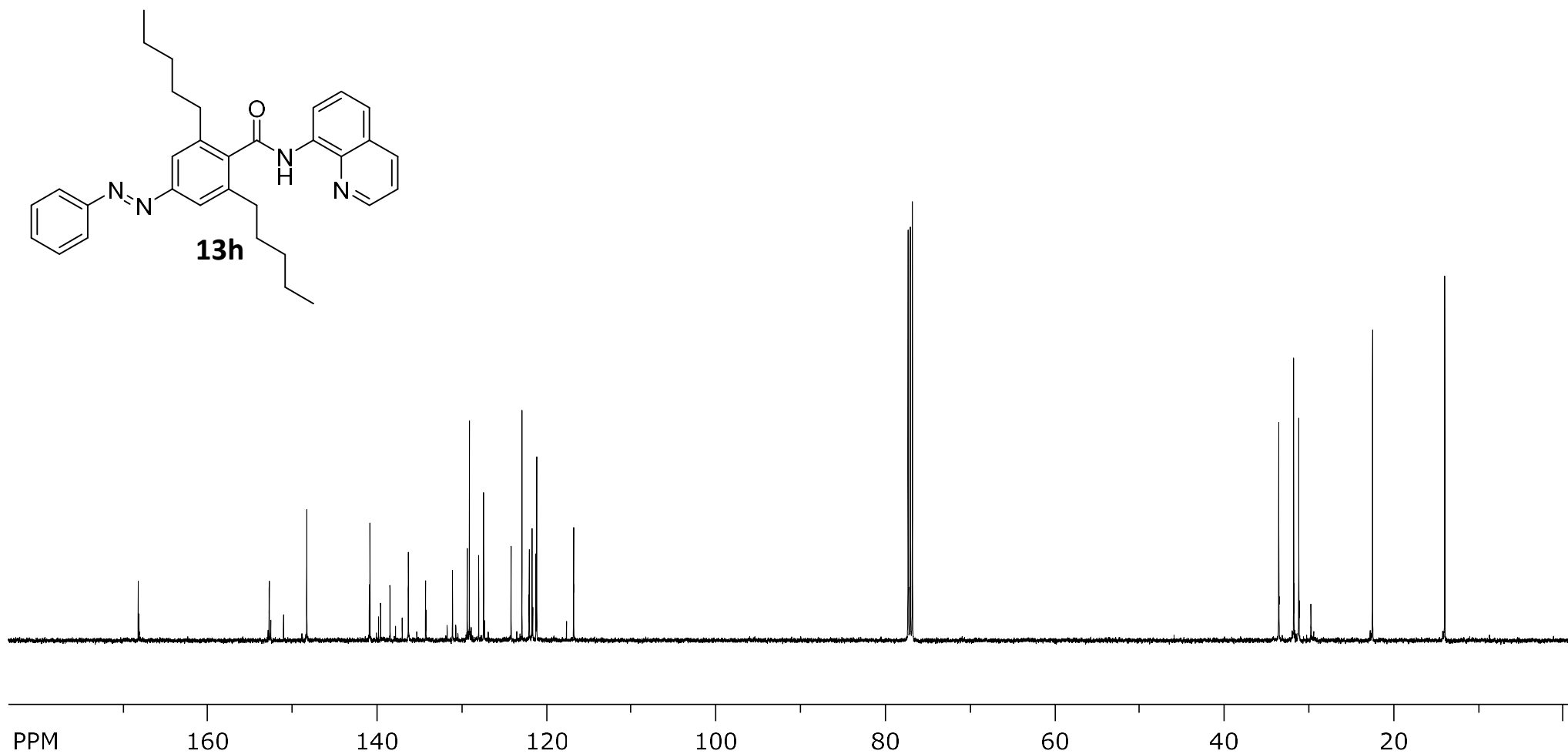
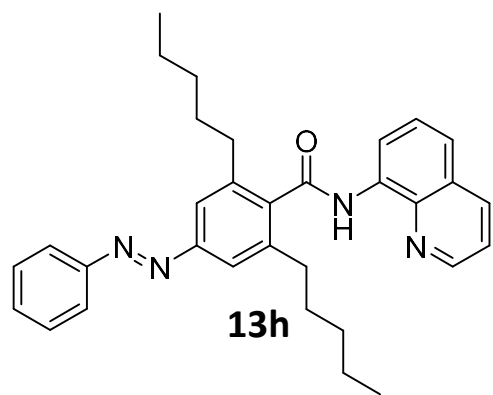
168.265
152.772
152.790
148.342
140.874
139.621
138.515
136.341
134.313
131.128
129.136
128.039
127.463
122.926
122.054
121.732
121.182
116.815

76.796
77.050
77.305

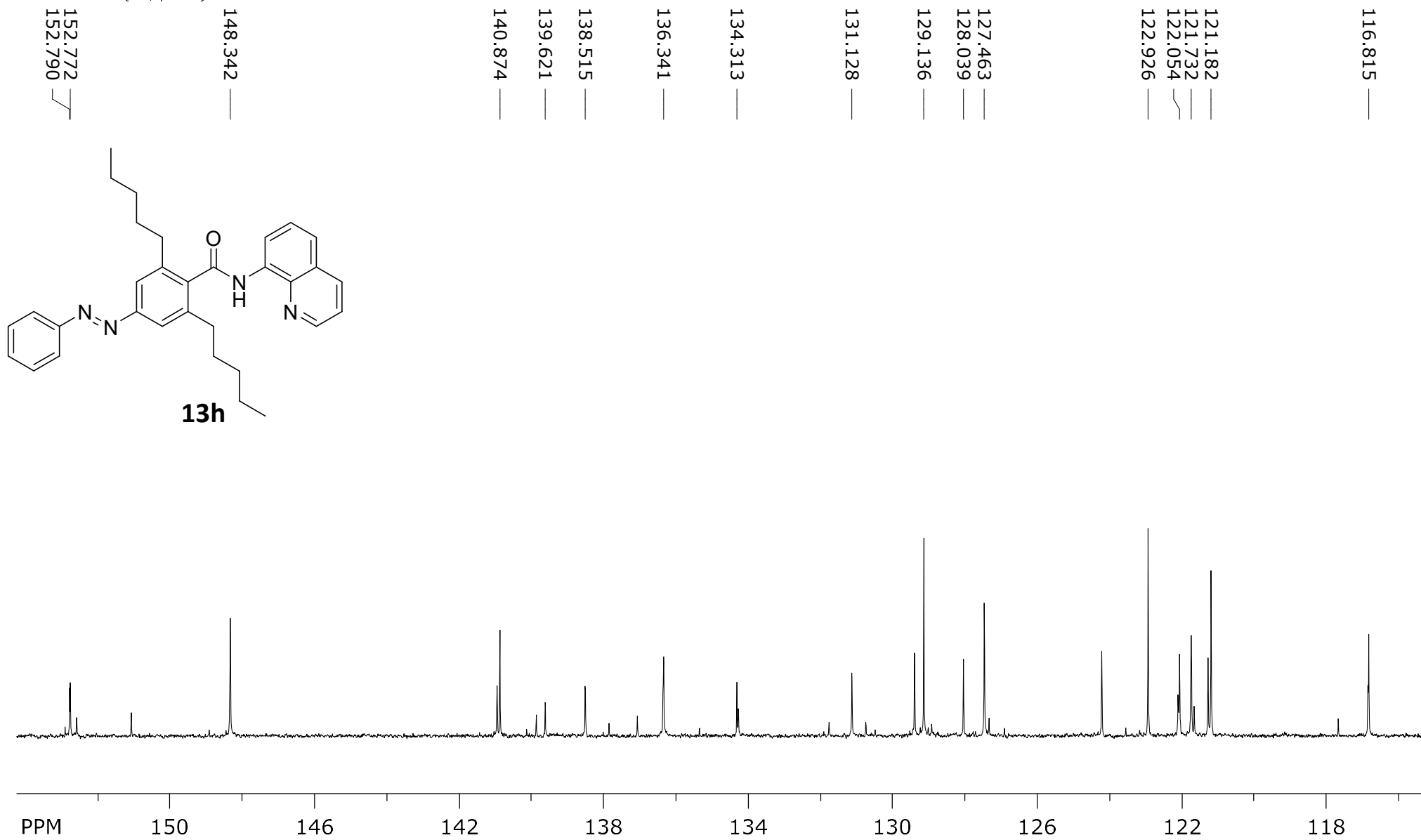
31.154
31.760
33.521

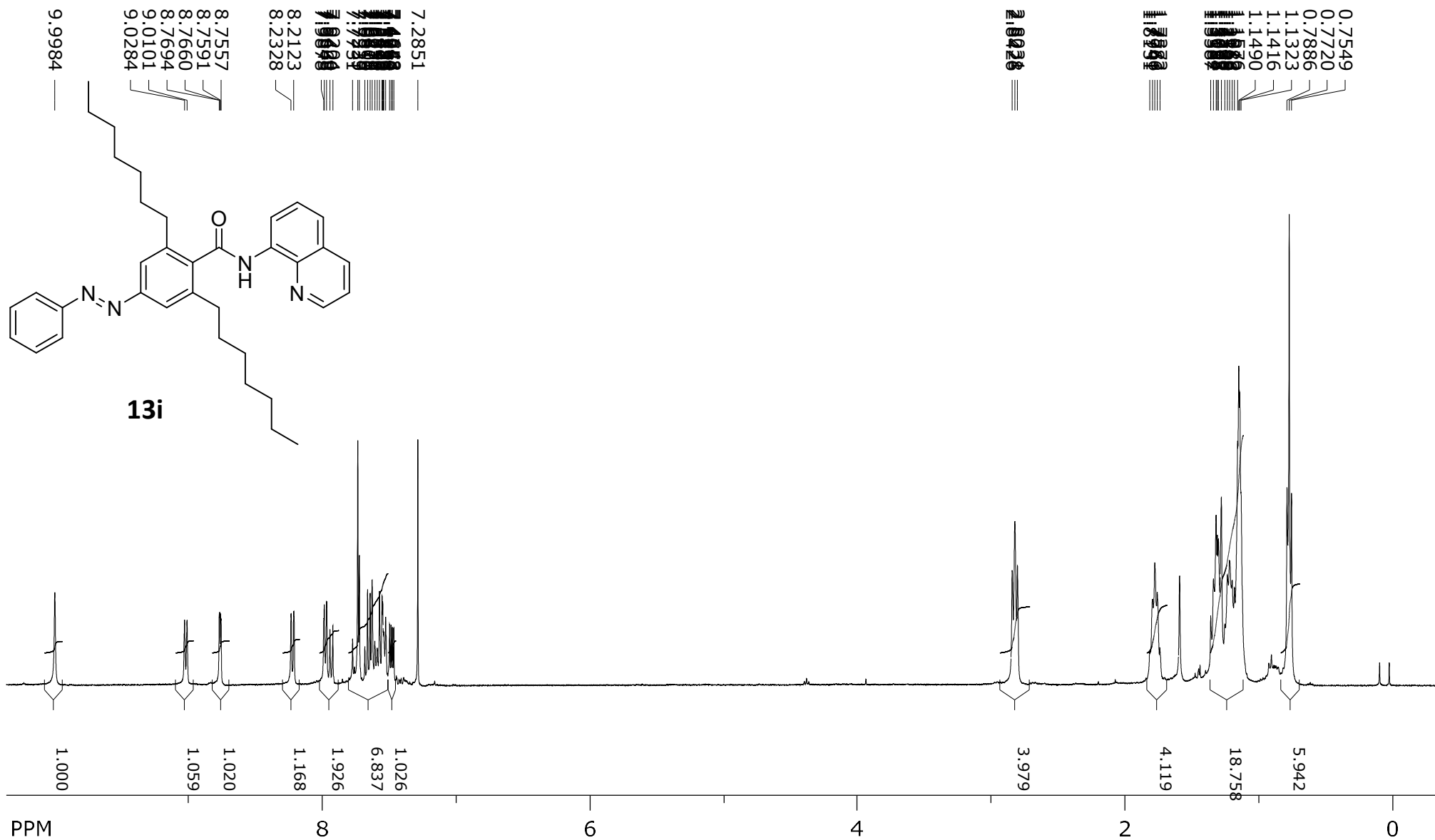
22.436

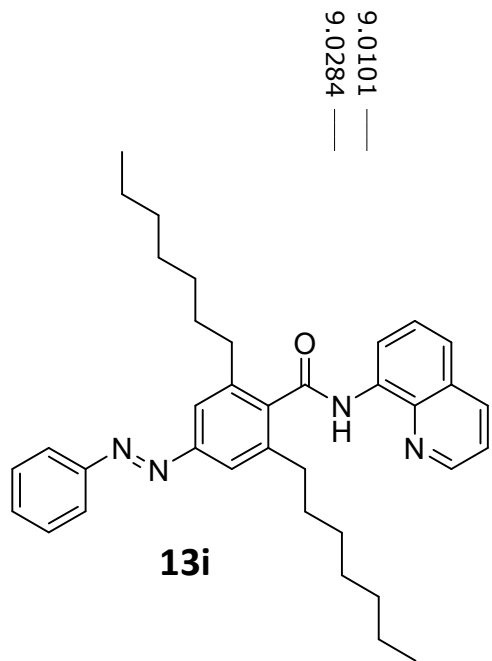
13.903



SpinWorks 4: SAB170303
C13CPD CDCl3 {D:\Spectra} nmr 8



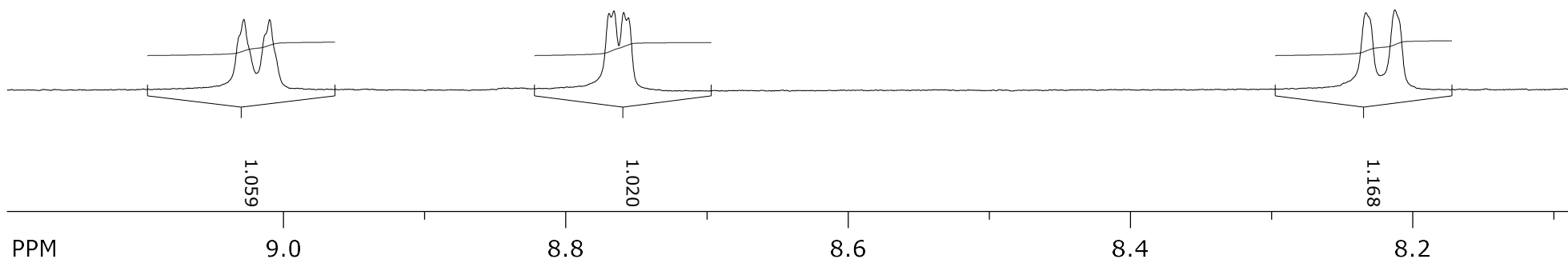


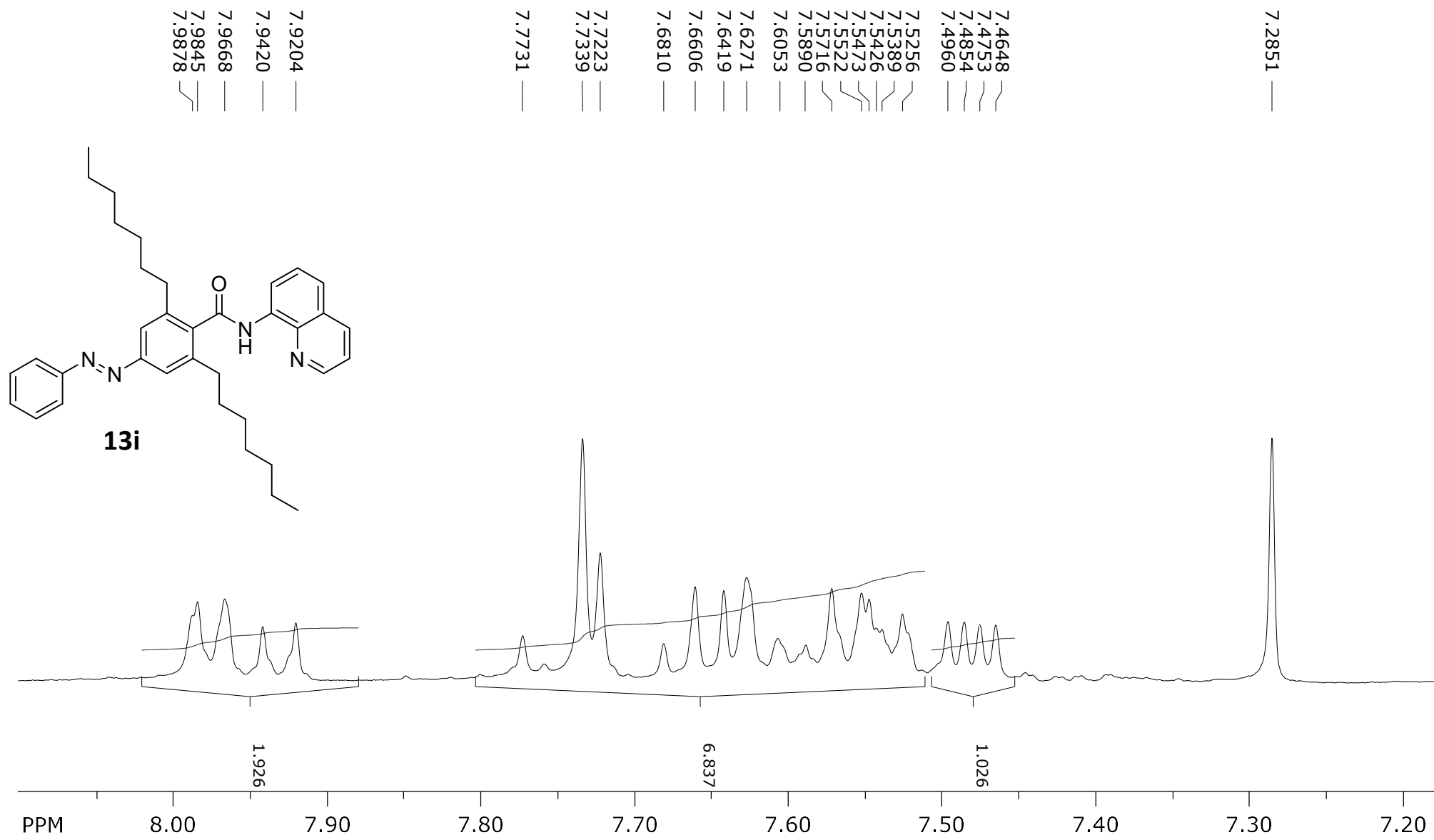


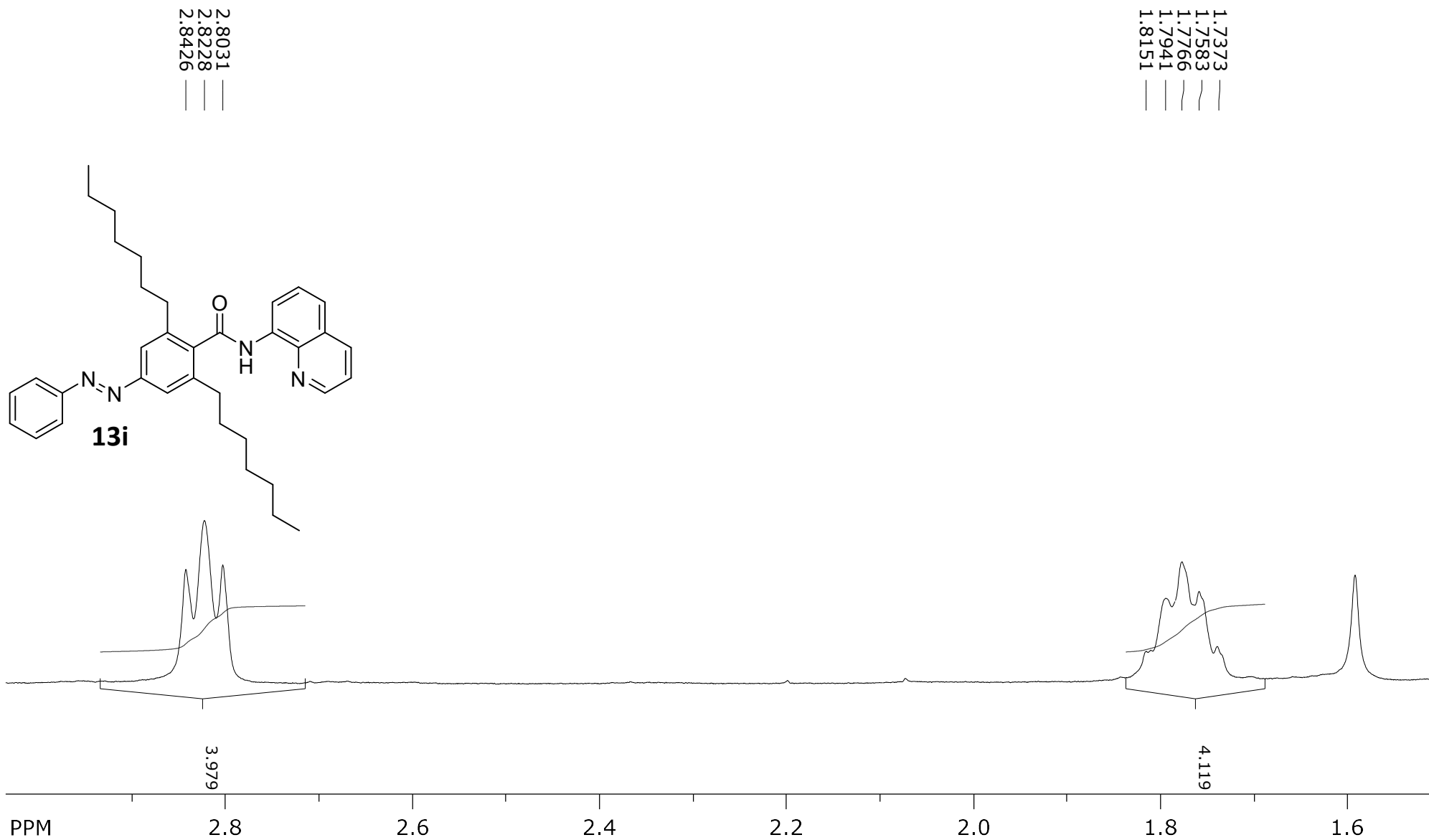
9.0101
9.0284

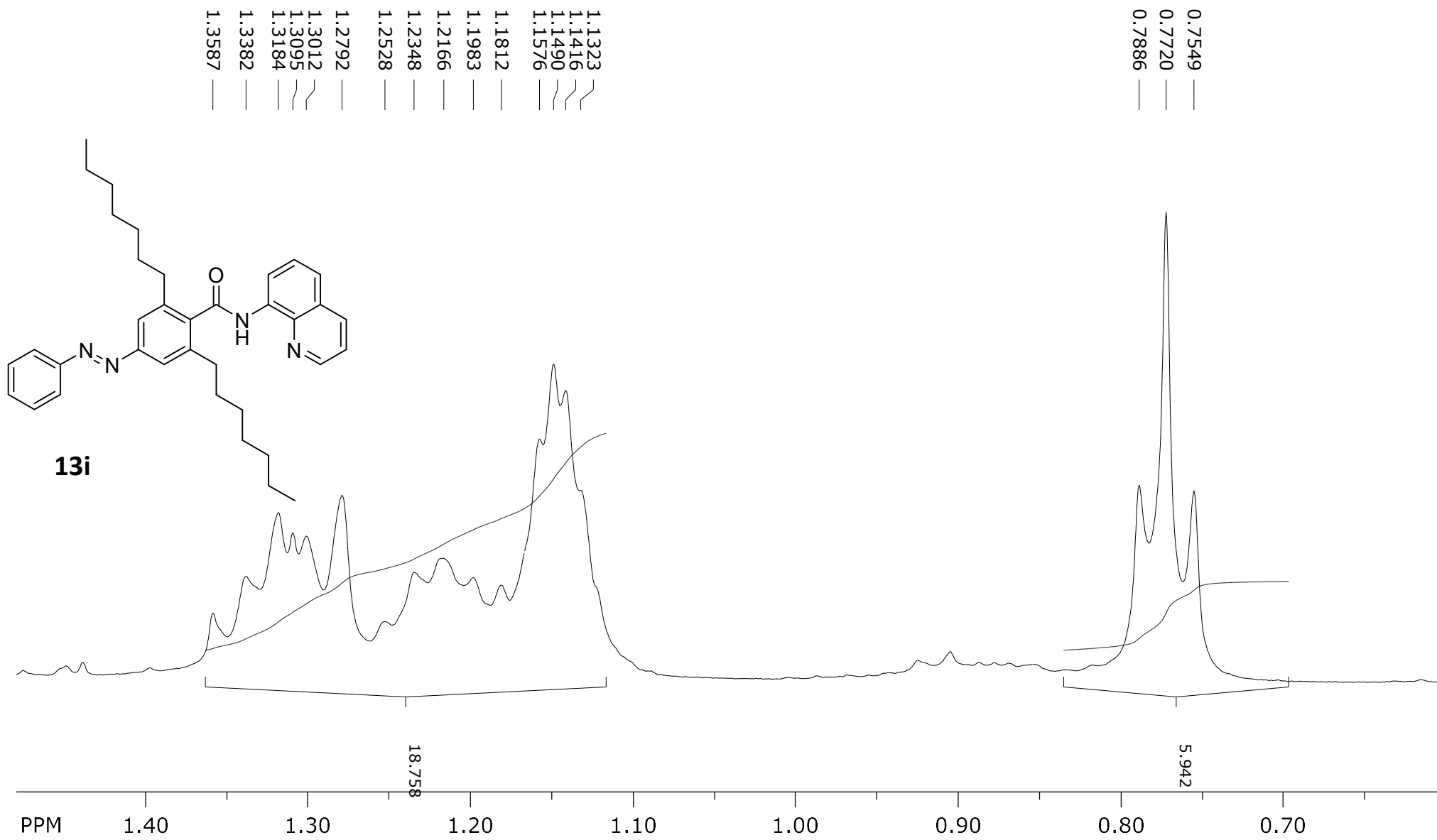
8.7557
8.7591
8.7660
8.7694

8.2123
8.2328







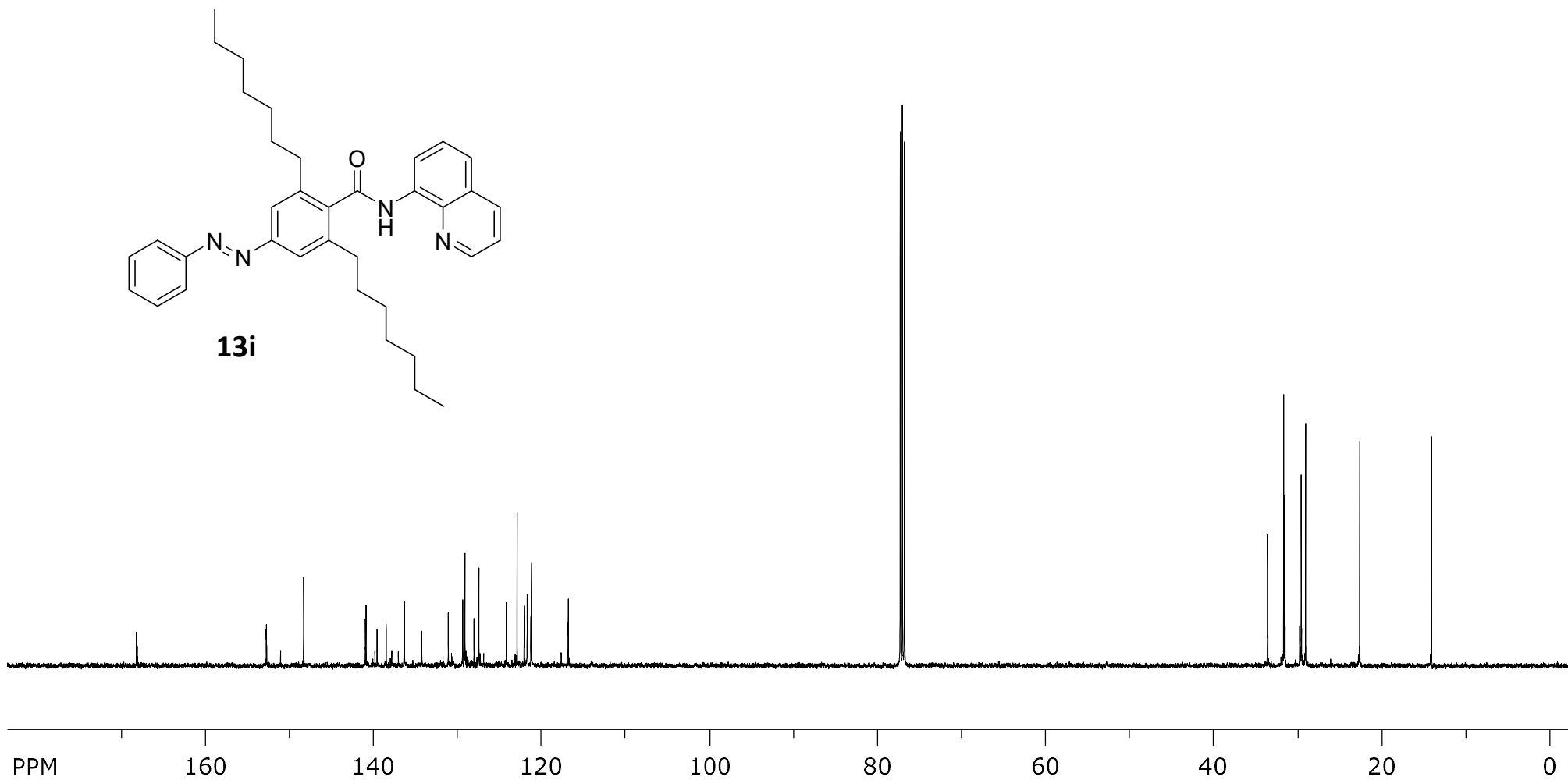
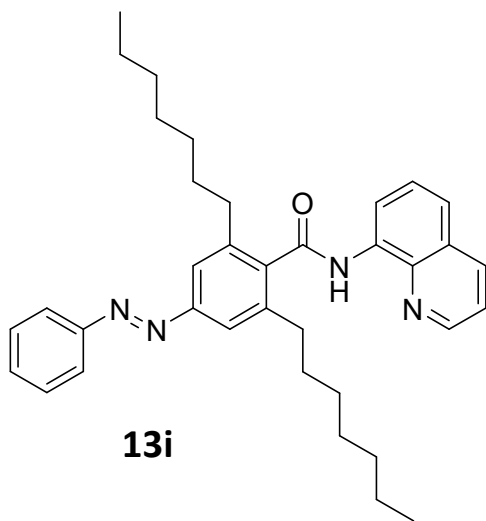


SpinWorks 4: SAB160305
C13CPD CDCl3 {D:\Spectra} nmr 5

168.258
152.773
152.788
148.333
140.902
139.596
138.507
136.334
134.304
131.114
129.133
128.051
127.465
122.917
122.036
121.714
121.193
116.817

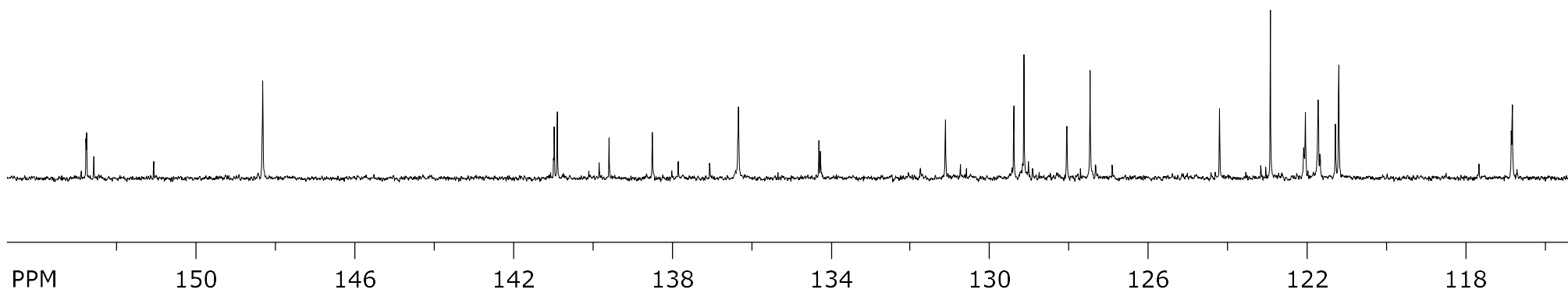
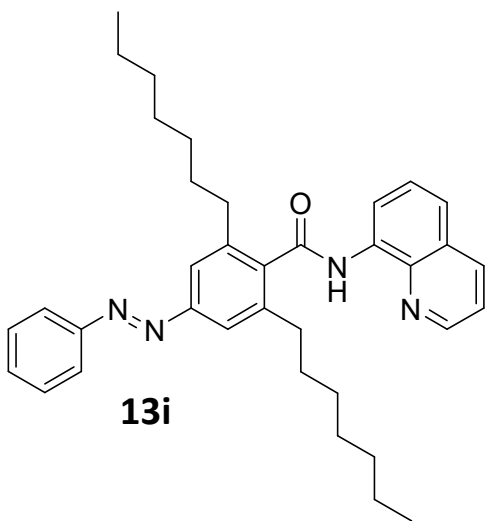
76.784
77.038
77.291

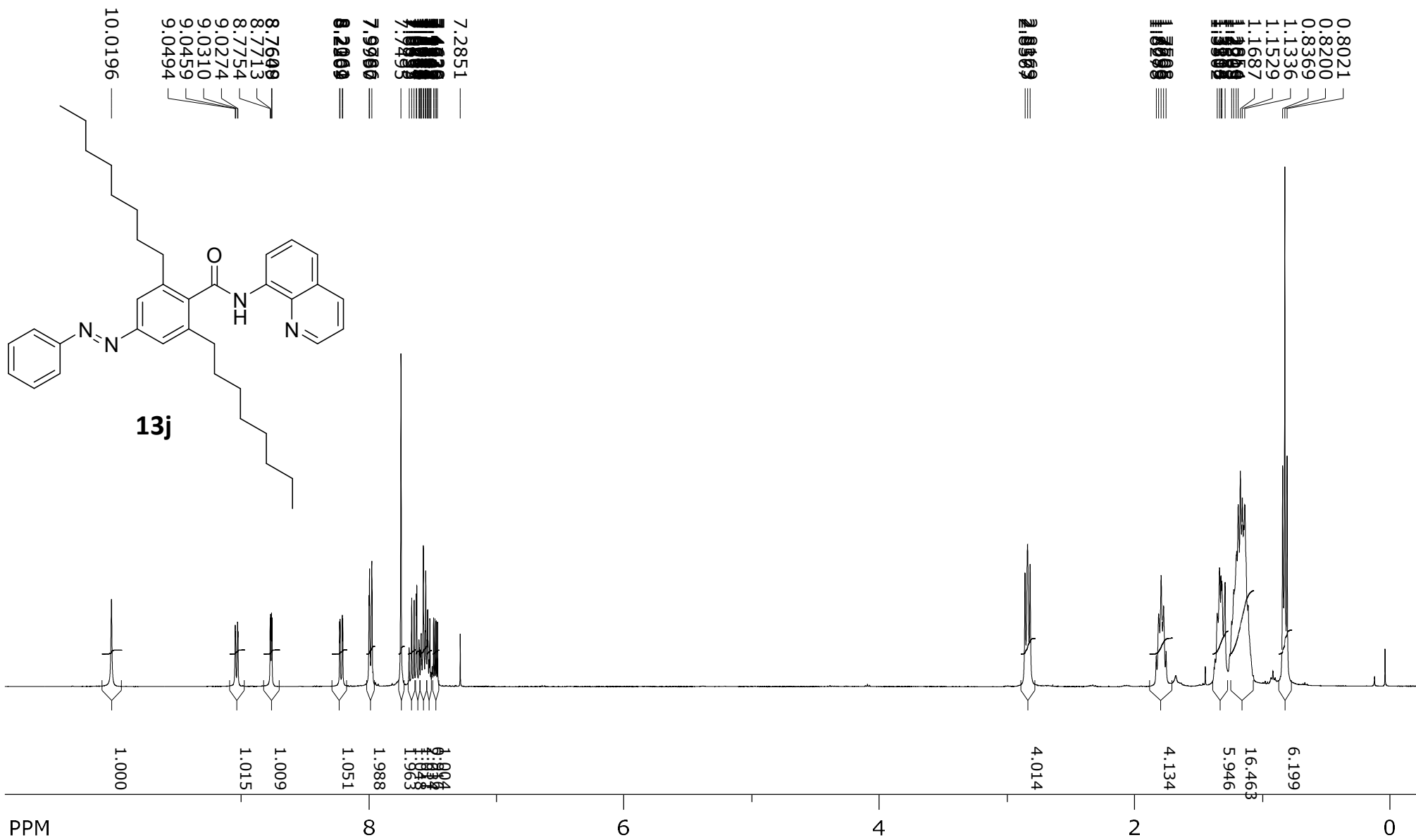
33.549
31.627
31.501
29.540
29.020
22.565
14.010

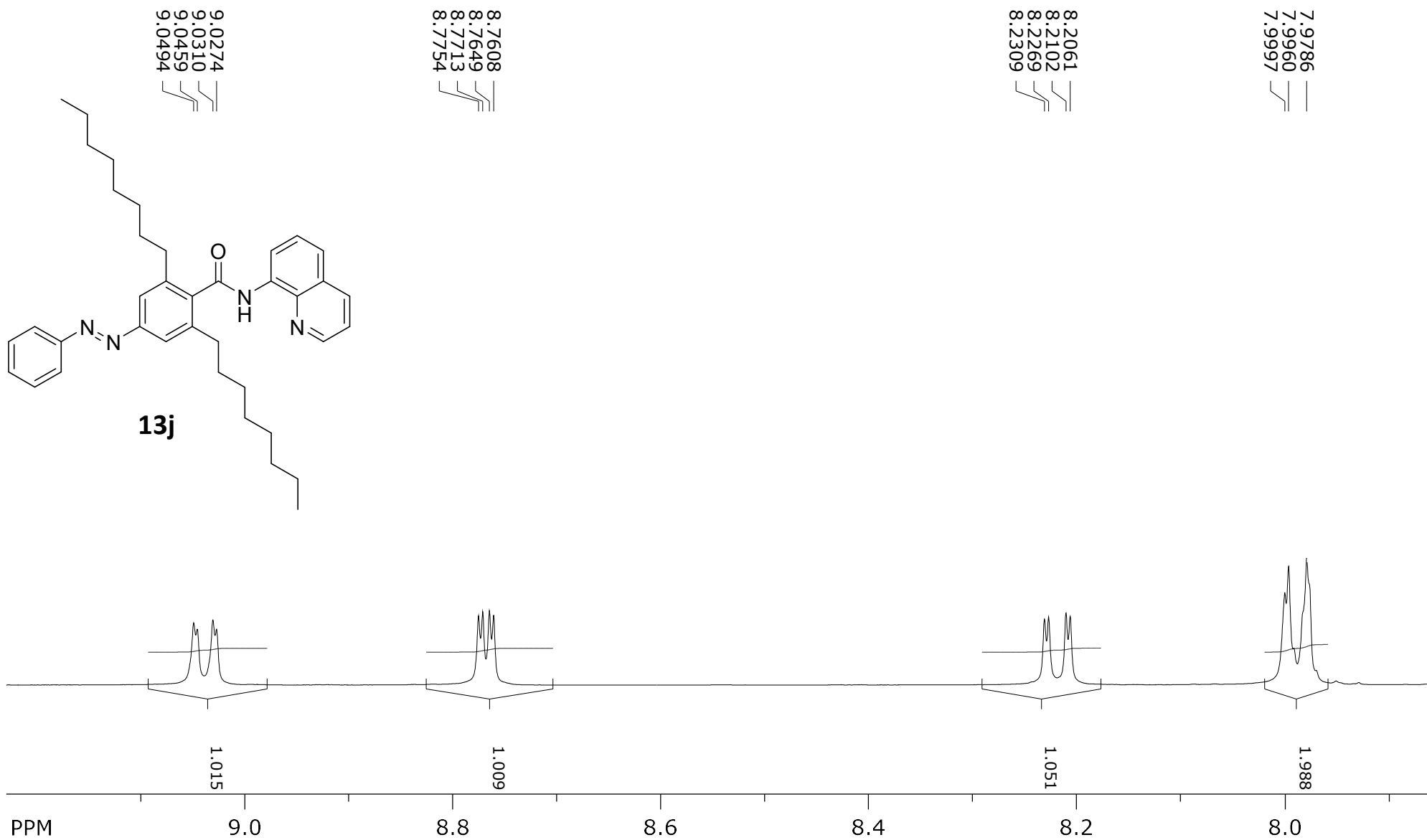


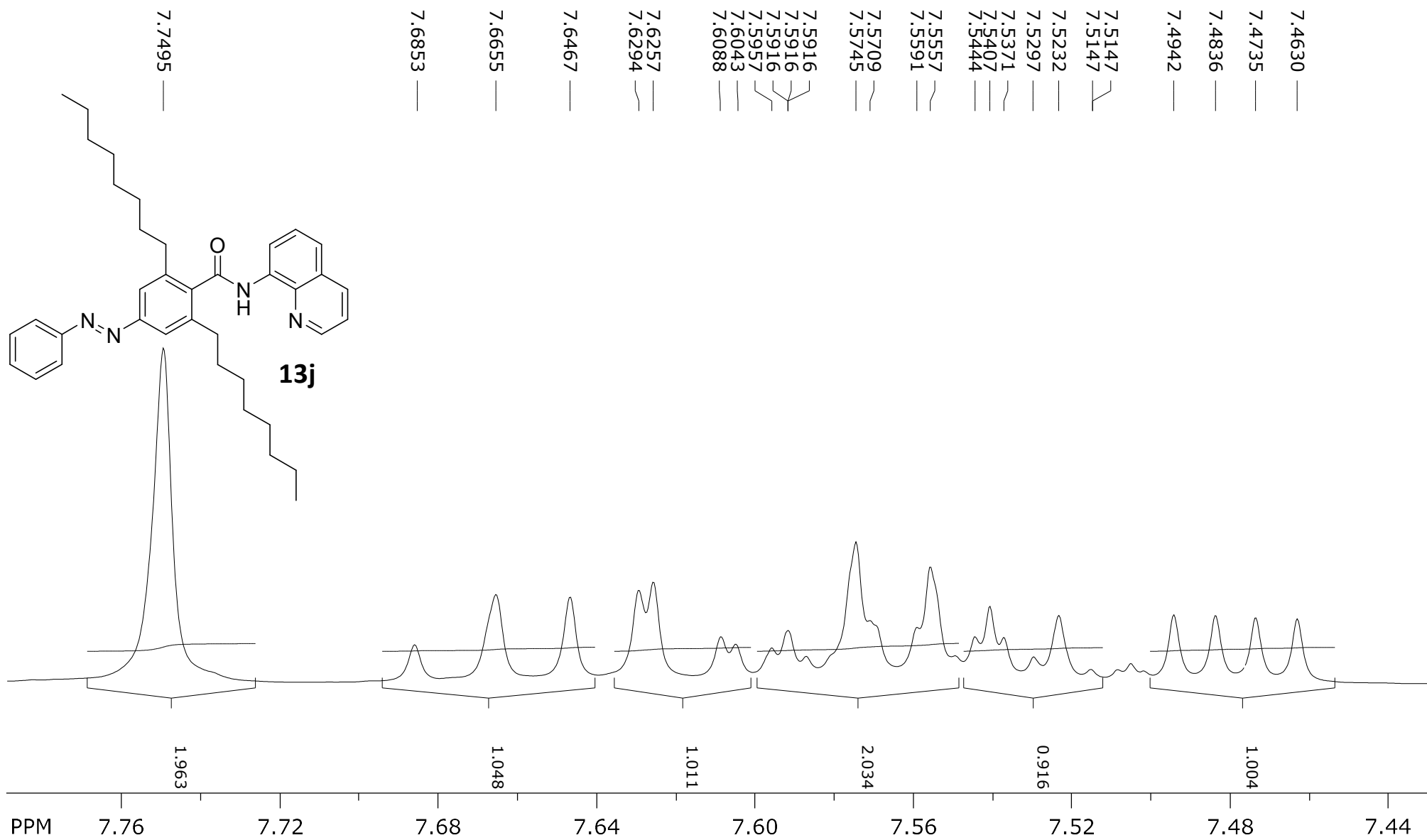
SpinWorks 4: SAB160305
C13CPD CDCl3 {D:\Spectra} nmr 5

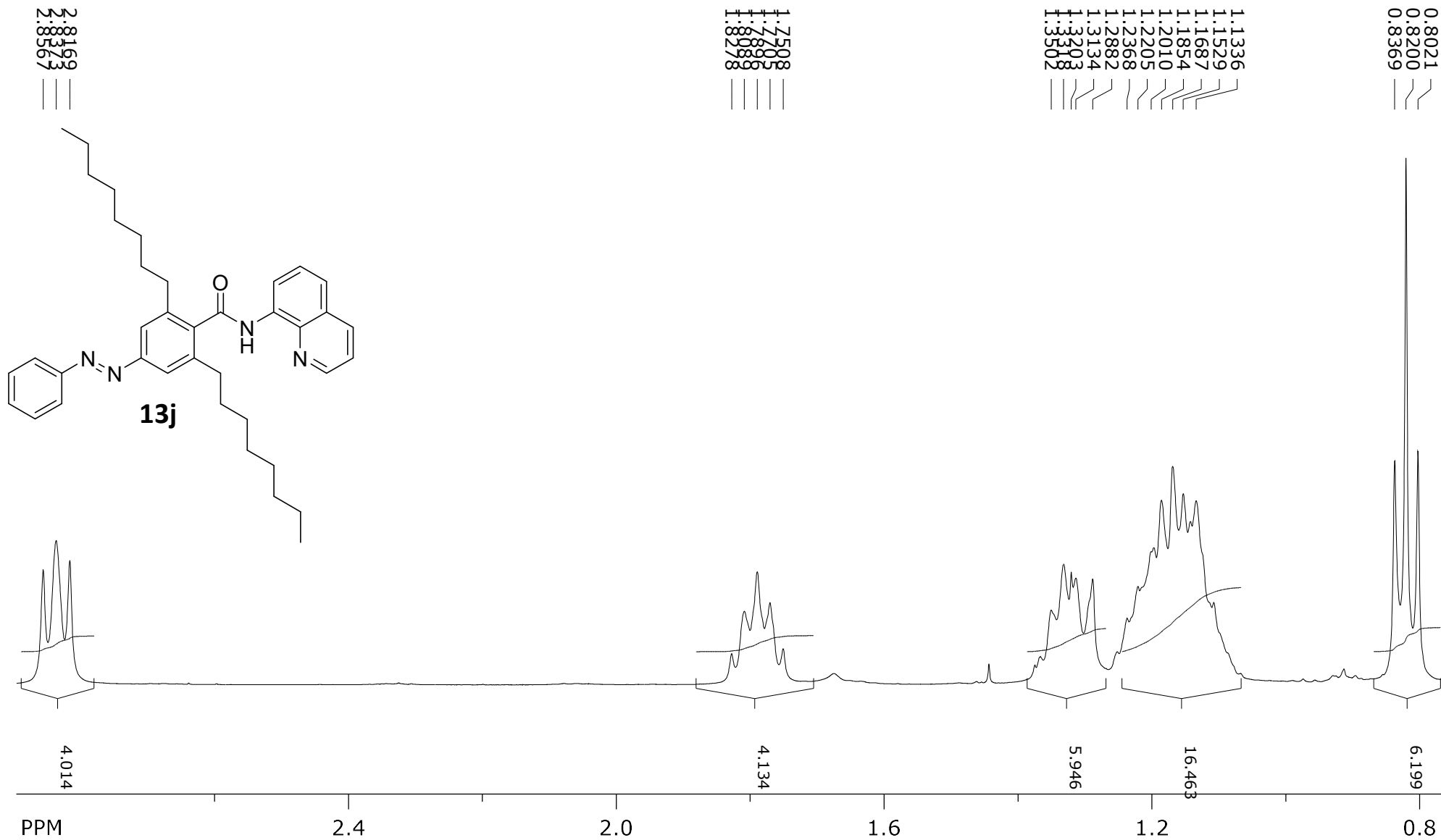
152.773
152.788
148.333
140.902
139.596
138.507
136.334
134.304
131.114
129.133
128.051
127.465
122.917
122.036
121.714
121.193
116.817



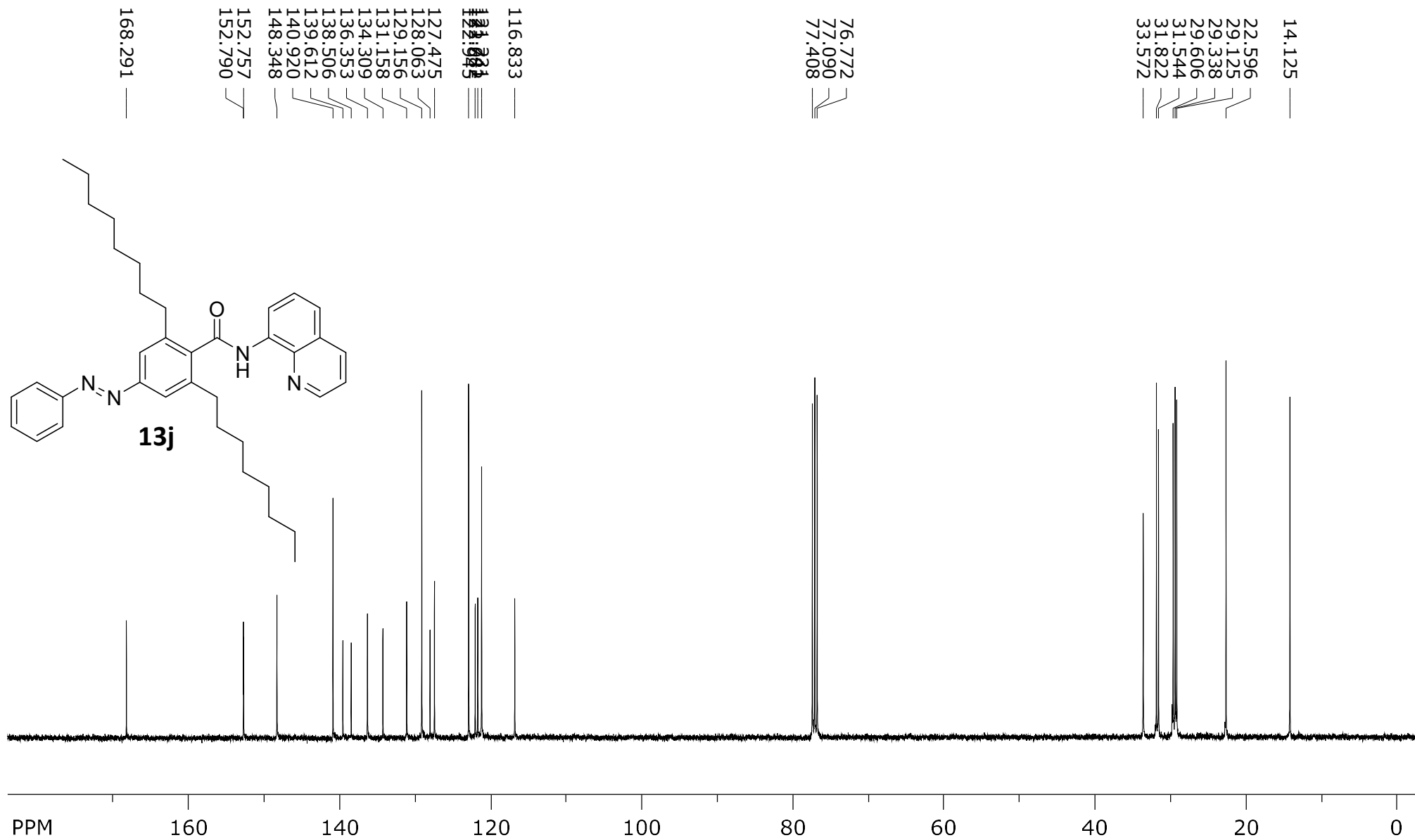




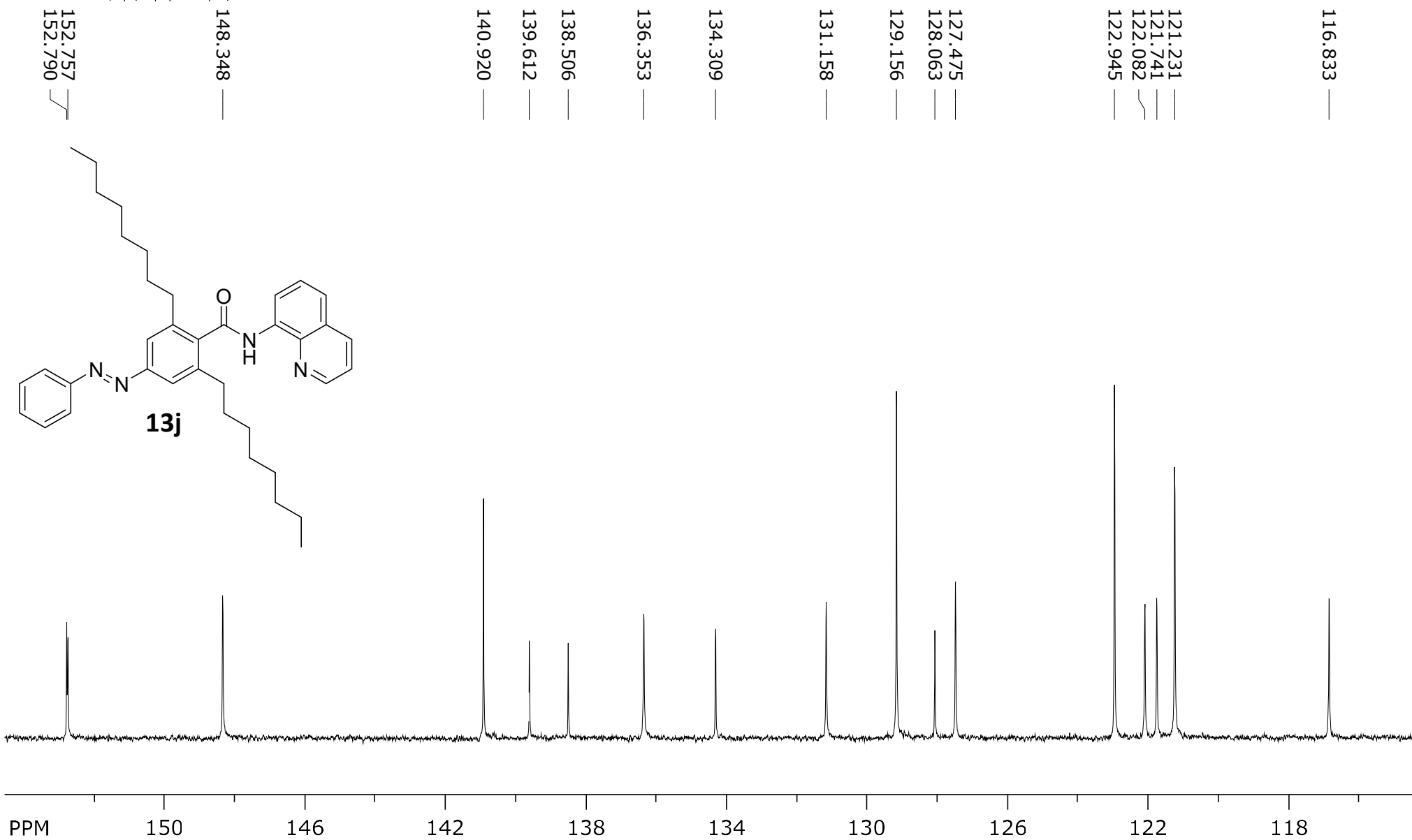




SpinWorks 4: rp 1401 a2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 55



SpinWorks 4: rp 1401 a2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 55



SpinWorks 4: rp 1401 a2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 55

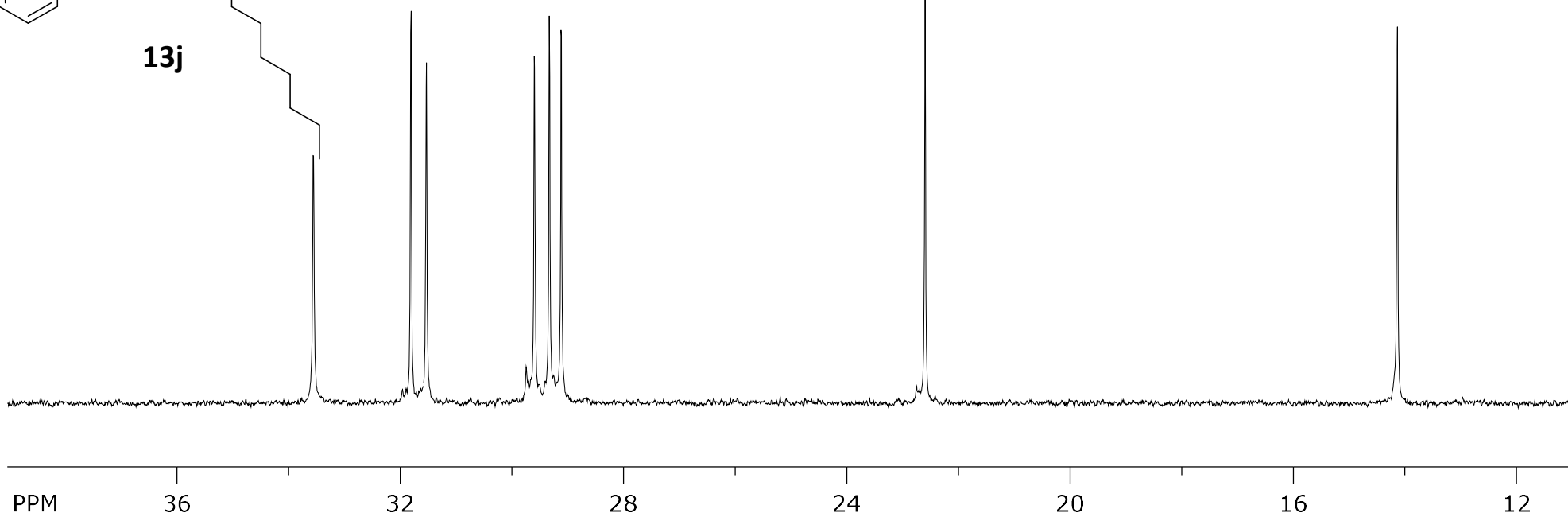
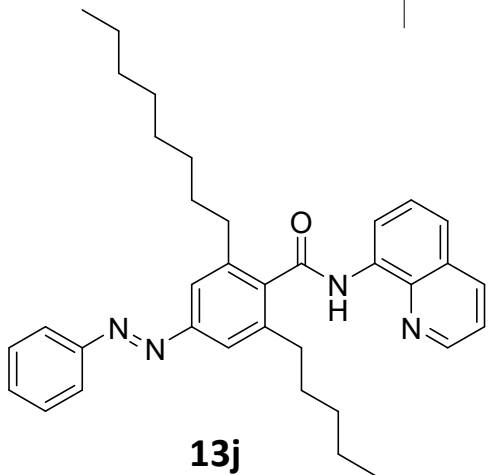
33.572

31.544
31.822

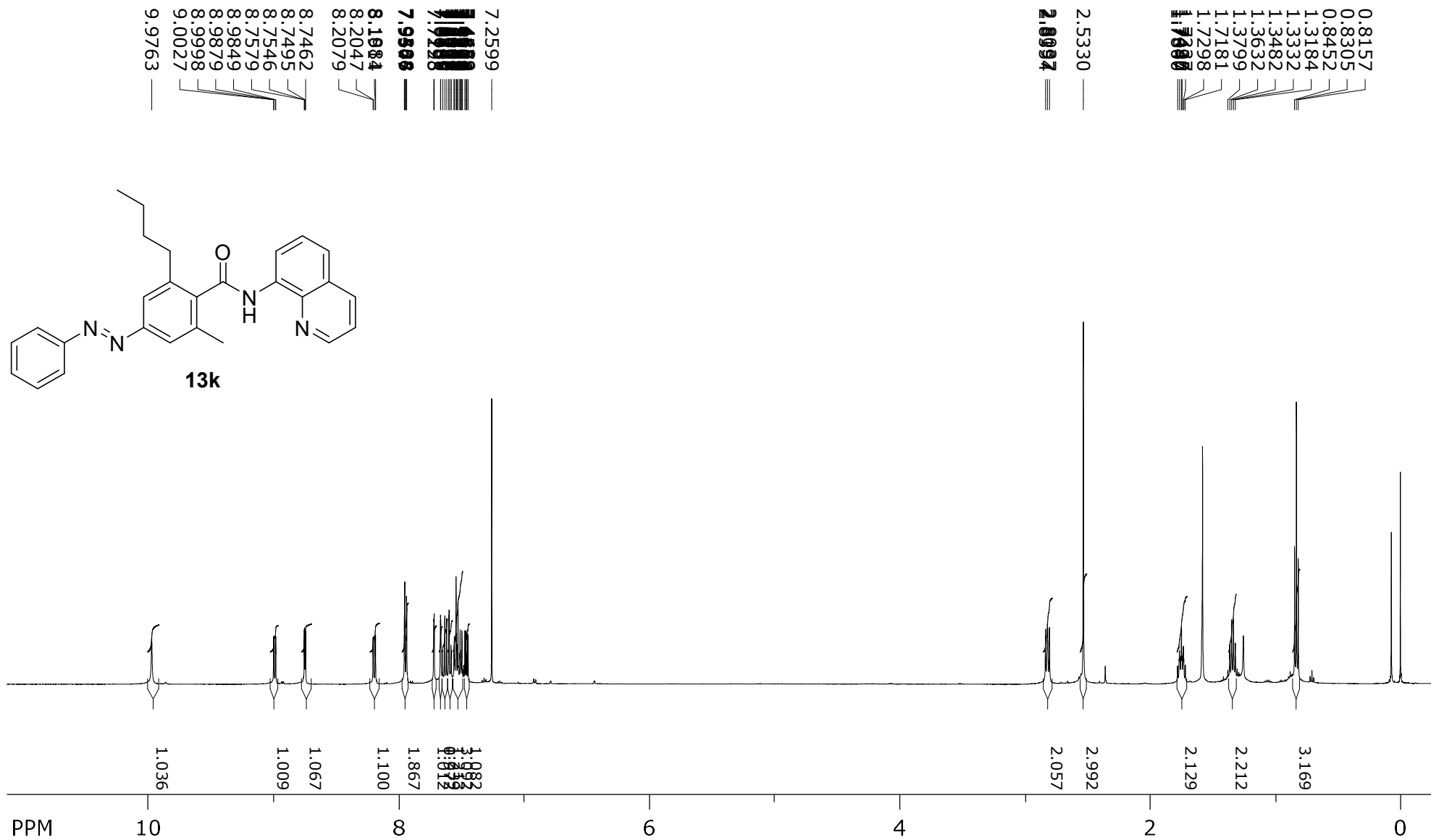
29.125
29.338
29.606

22.596

14.125



SpinWorks 4: SAB030703
1H_8scan CDCl3 {D:\Spectra} nmr 33



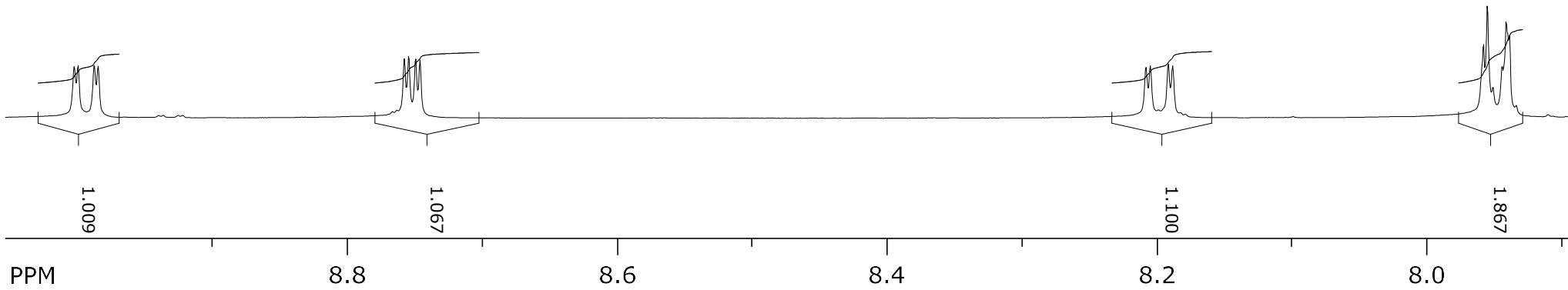
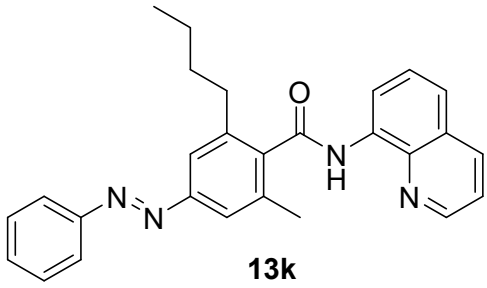
SpinWorks 4: SAB030703
1H_8scan CDCl3 {D:\Spectra} nmr 33

8.9849
8.9879
8.9998
9.0027

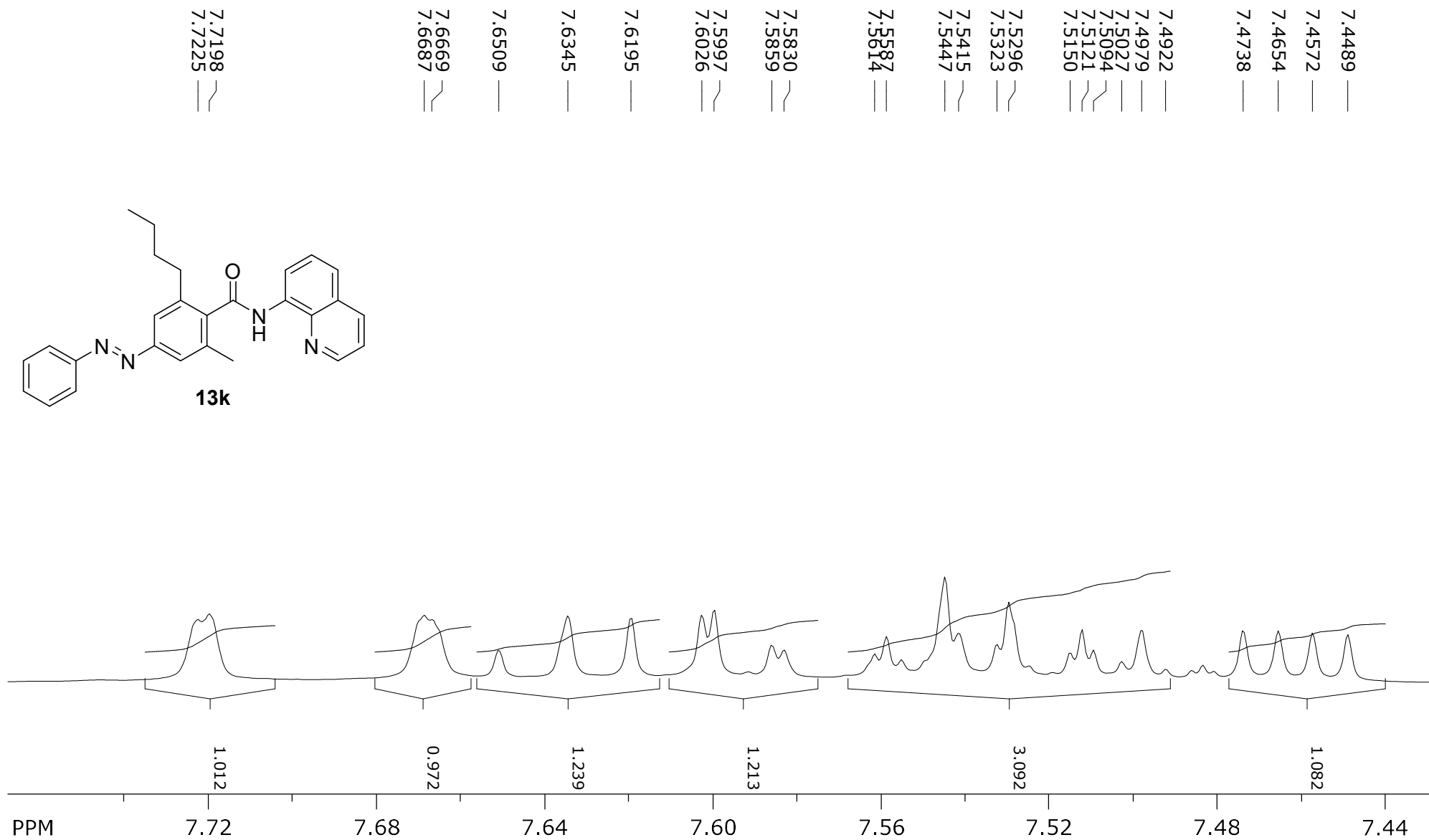
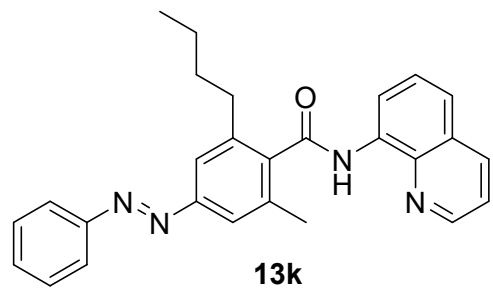
8.7462
8.7495
8.7546
8.7579

8.1881
8.1914
8.2047
8.2079

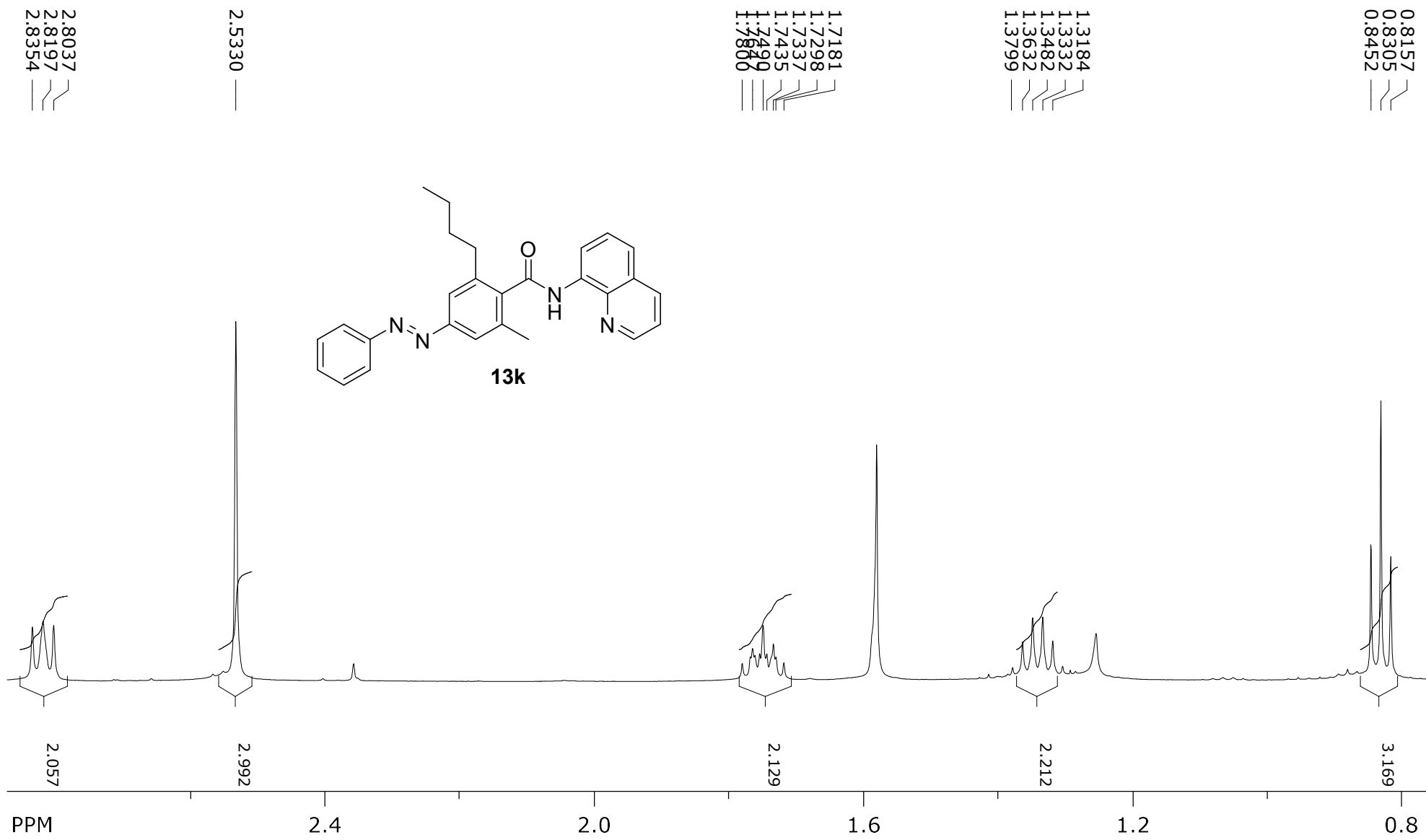
7.9384
7.9408
7.9438
7.9506
7.9547
7.9577



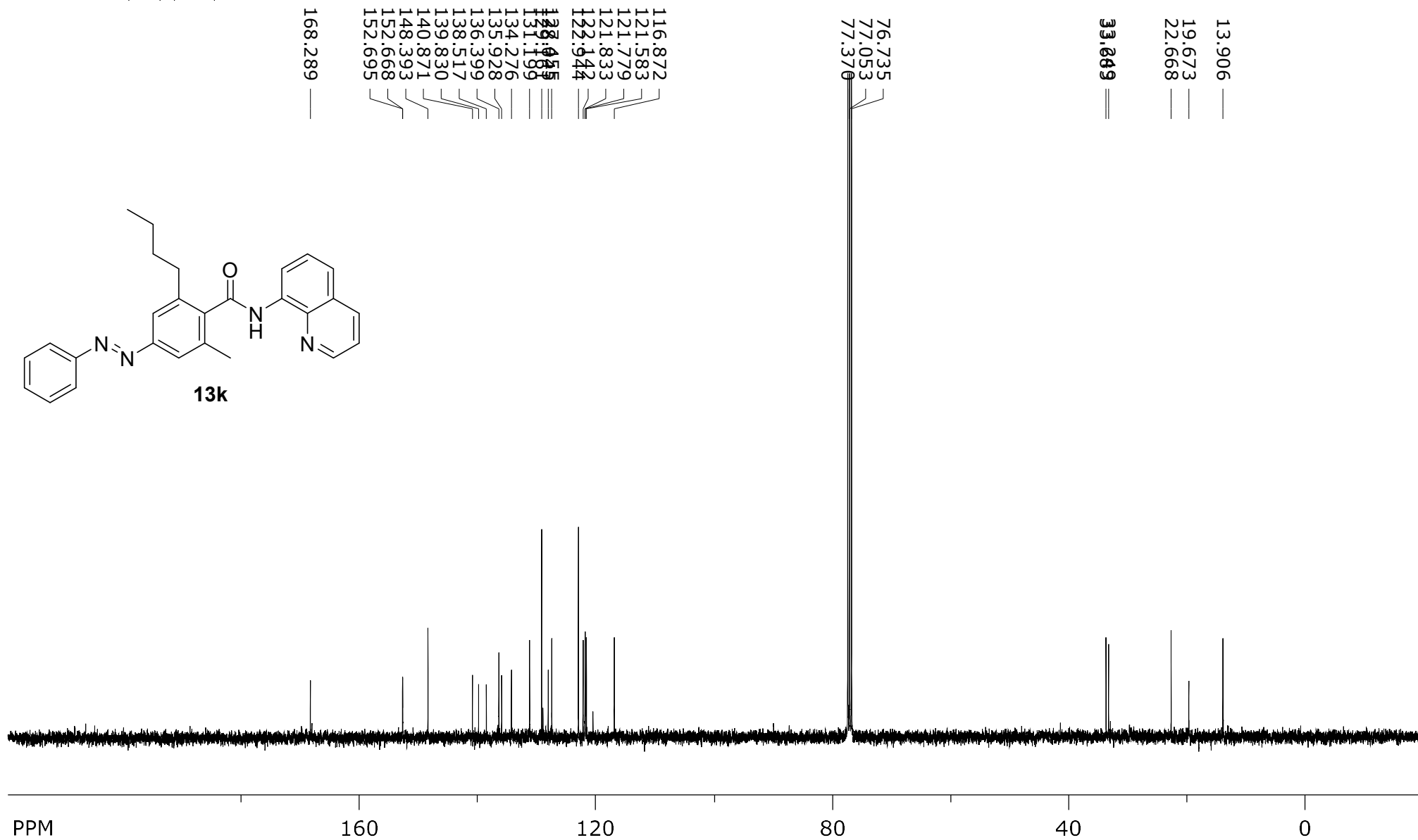
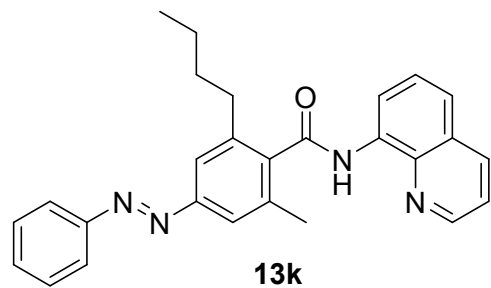
SpinWorks 4: SAB030703
1H_8scan CDCl3 {D:\Spectra} nmr 33



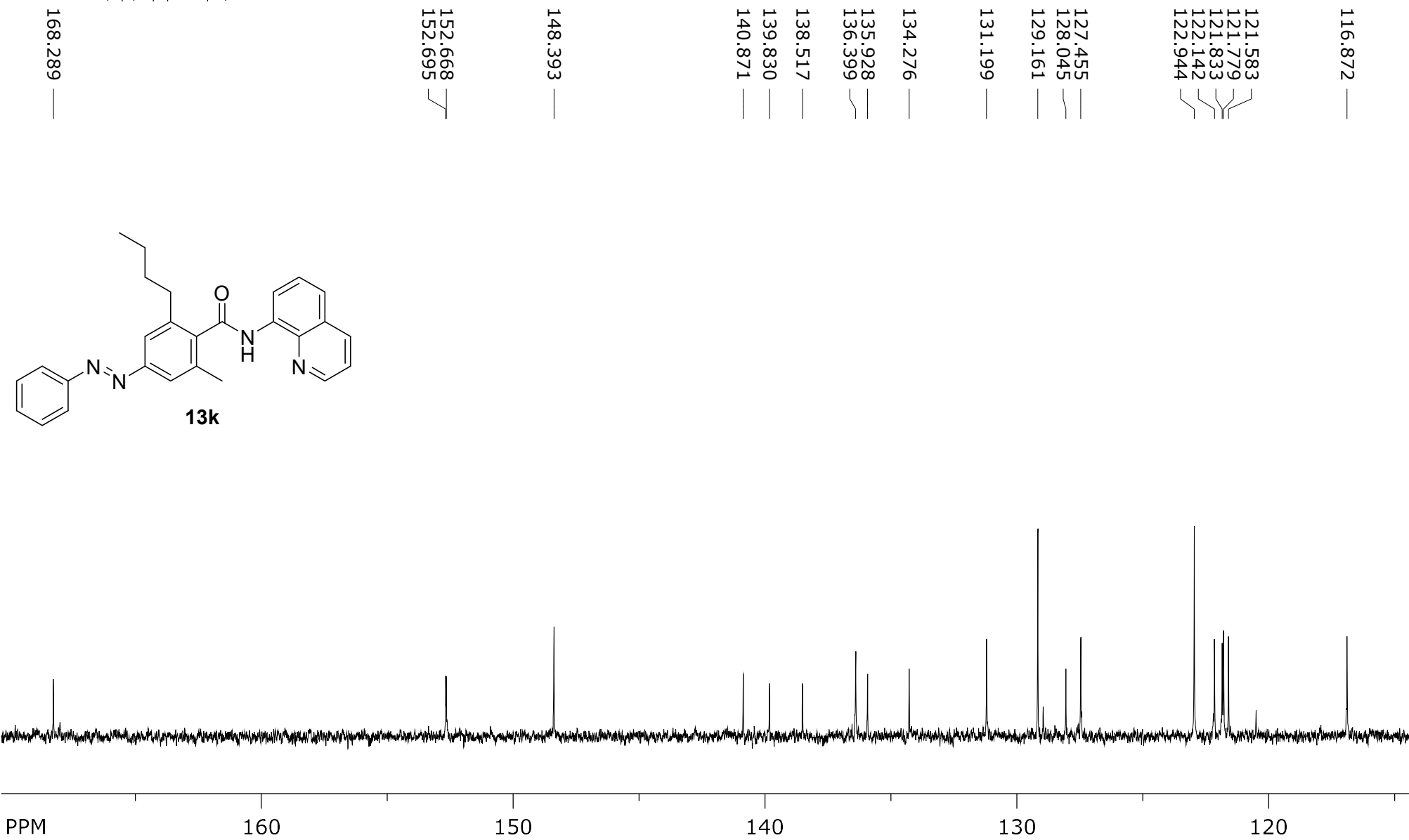
SpinWorks 4: SAB030703
1H_8scan CDCl3 {D:\Spectra} nmr 33



SpinWorks 4: rp 1525
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 47



SpinWorks 4: rp 1525
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 47



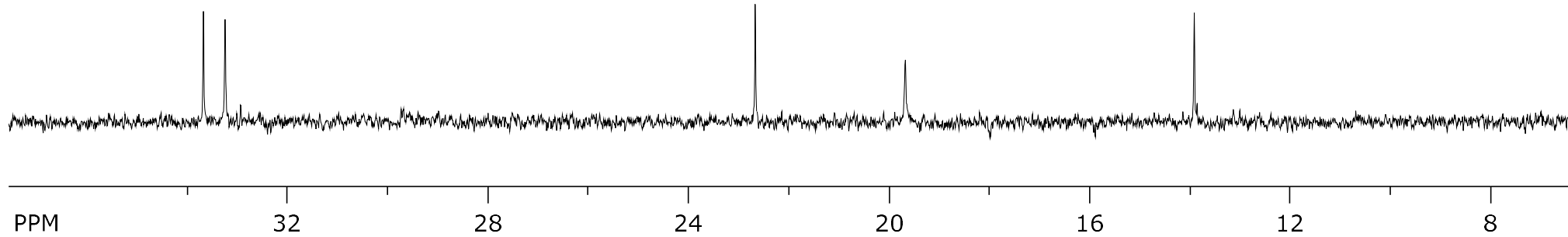
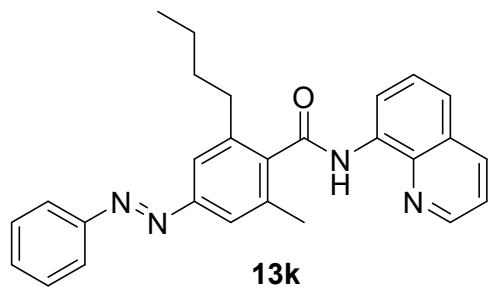
SpinWorks 4: rp 1525
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 47

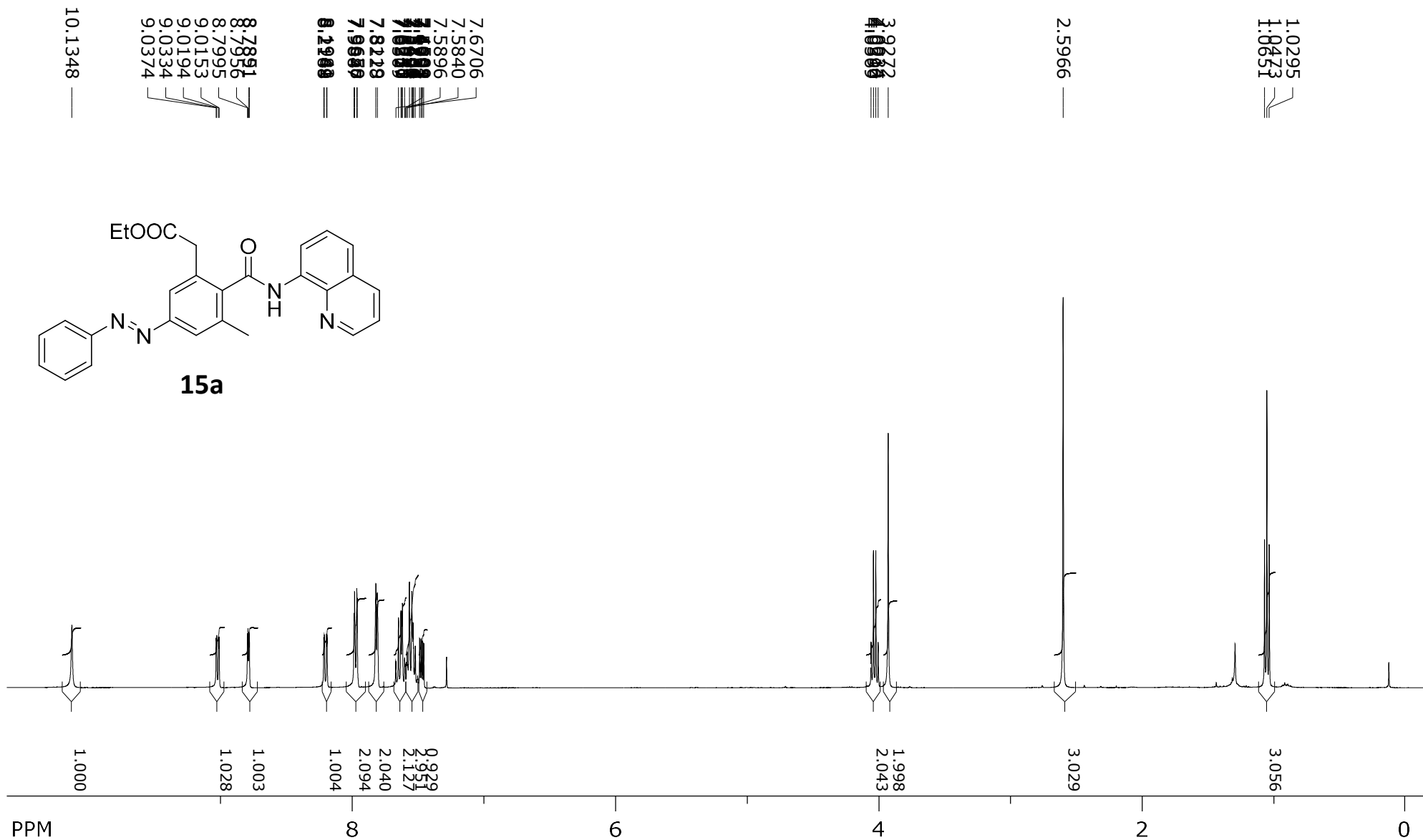
33.249
33.683

22.668

19.673

13.906

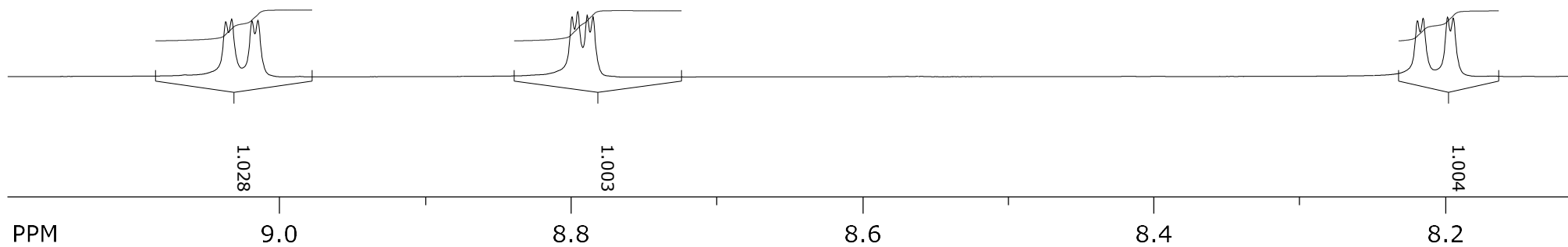
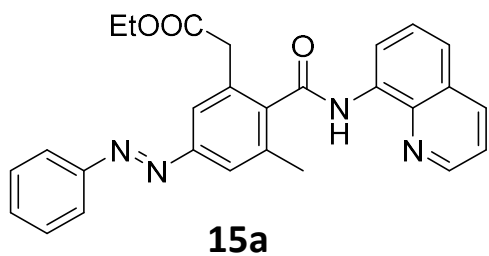


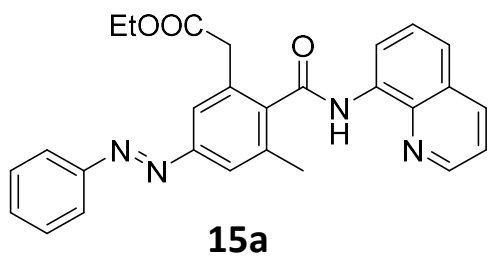


9.0153
9.0194
9.0334
9.0374

8.7851
8.7891
8.7956
8.7995

8.1942
8.1981
8.2149
8.2188

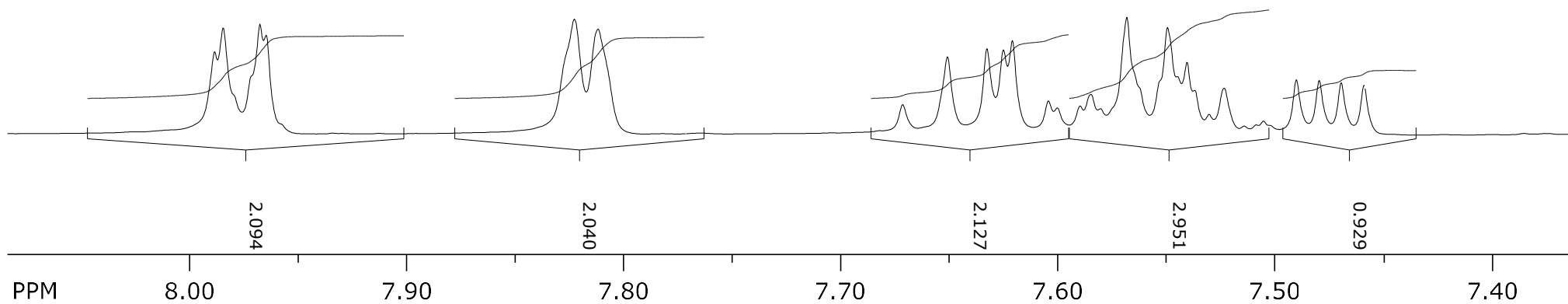




7.9650
7.9678
7.9847
7.9887

7.8119
7.8228

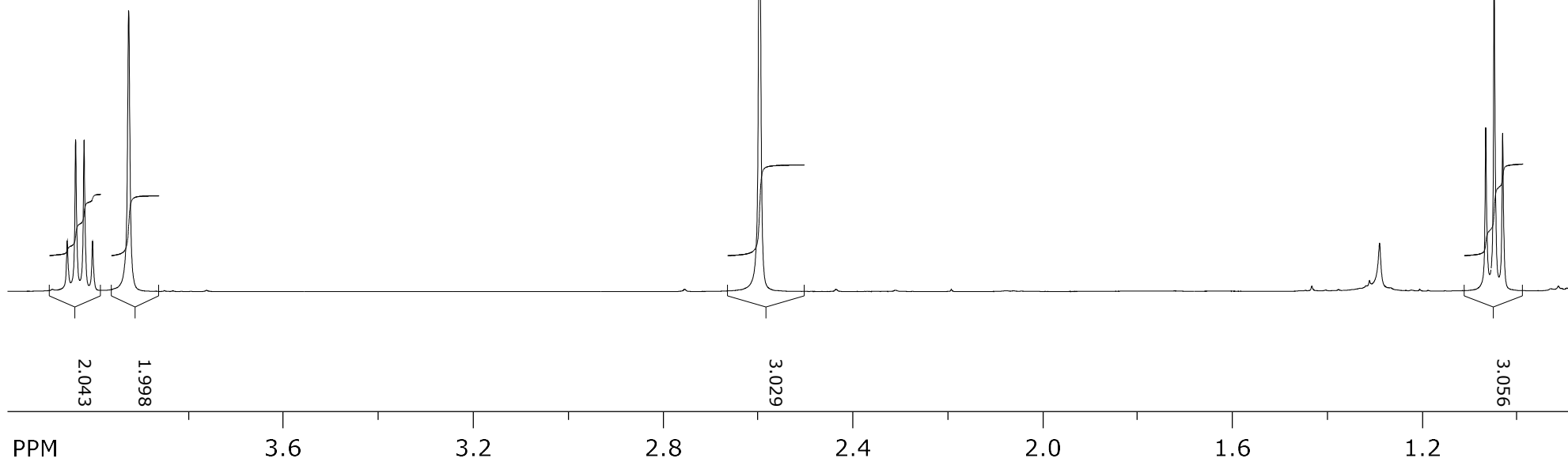
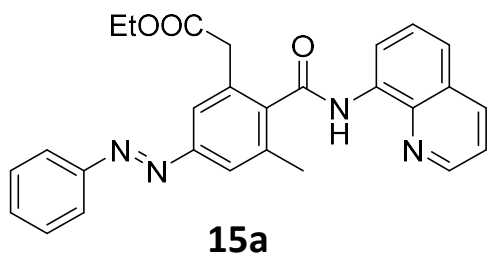
7.4589
7.4694
7.4795
7.4901
7.5234
7.5369
7.5404
7.5449
7.5494
7.5682
7.5840
7.5896
7.5993
7.6049
7.6210
7.6251
7.6327
7.6509
7.6706



3.9272
4.0034
4.0212
4.0390
4.0569

2.5966

1.0295
1.0473
1.0651



SpinWorks 4: rp-1219b2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 33

171.028
167.530
152.588
152.623
148.403
140.072
138.582
136.390
136.321
134.195
132.550
131.338
129.160
128.084
128.084
123.577
123.007
122.753
121.768
117.014

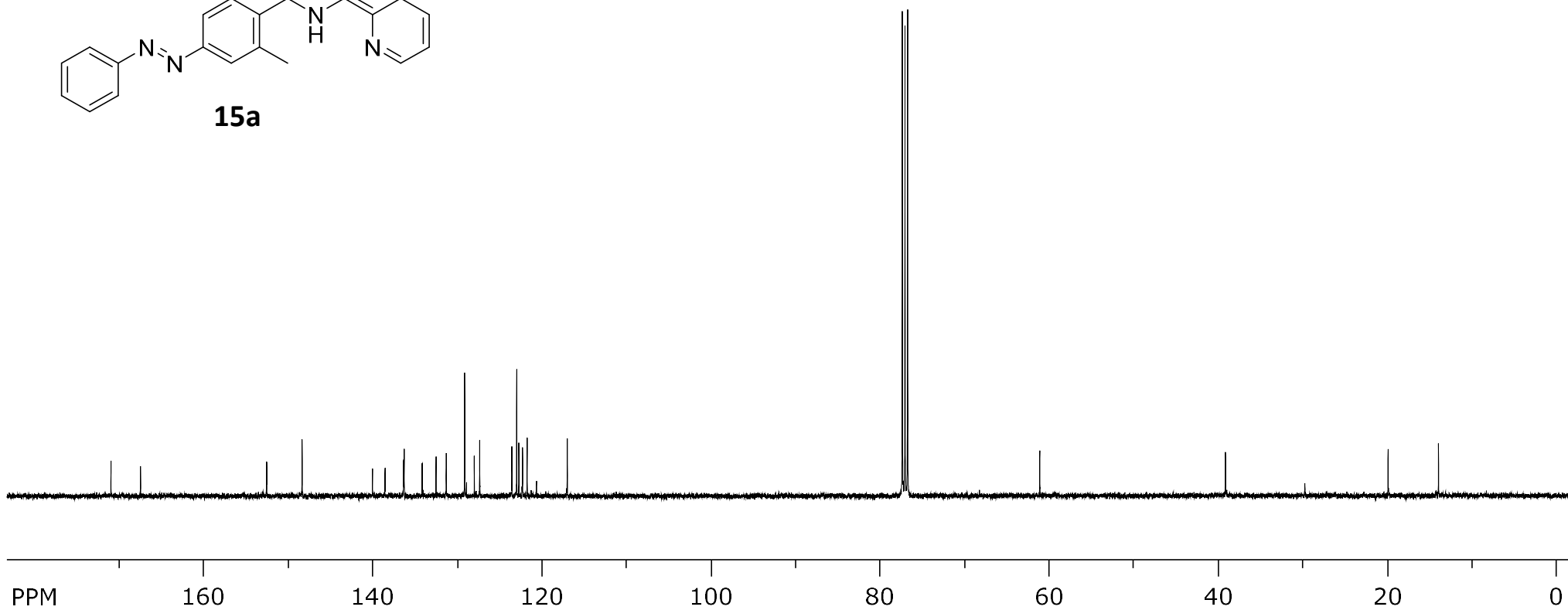
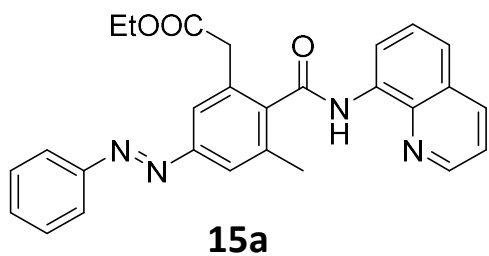
76.729
77.046
77.364

61.097

39.104

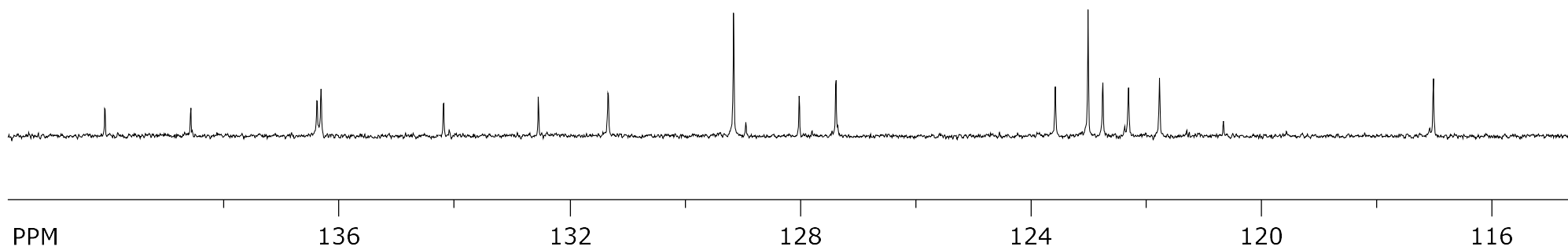
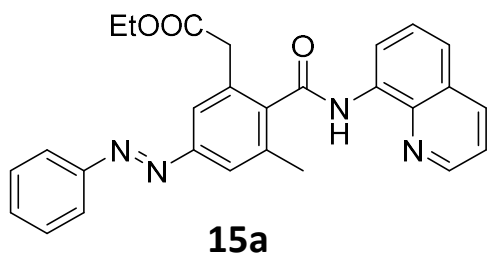
19.858

13.896

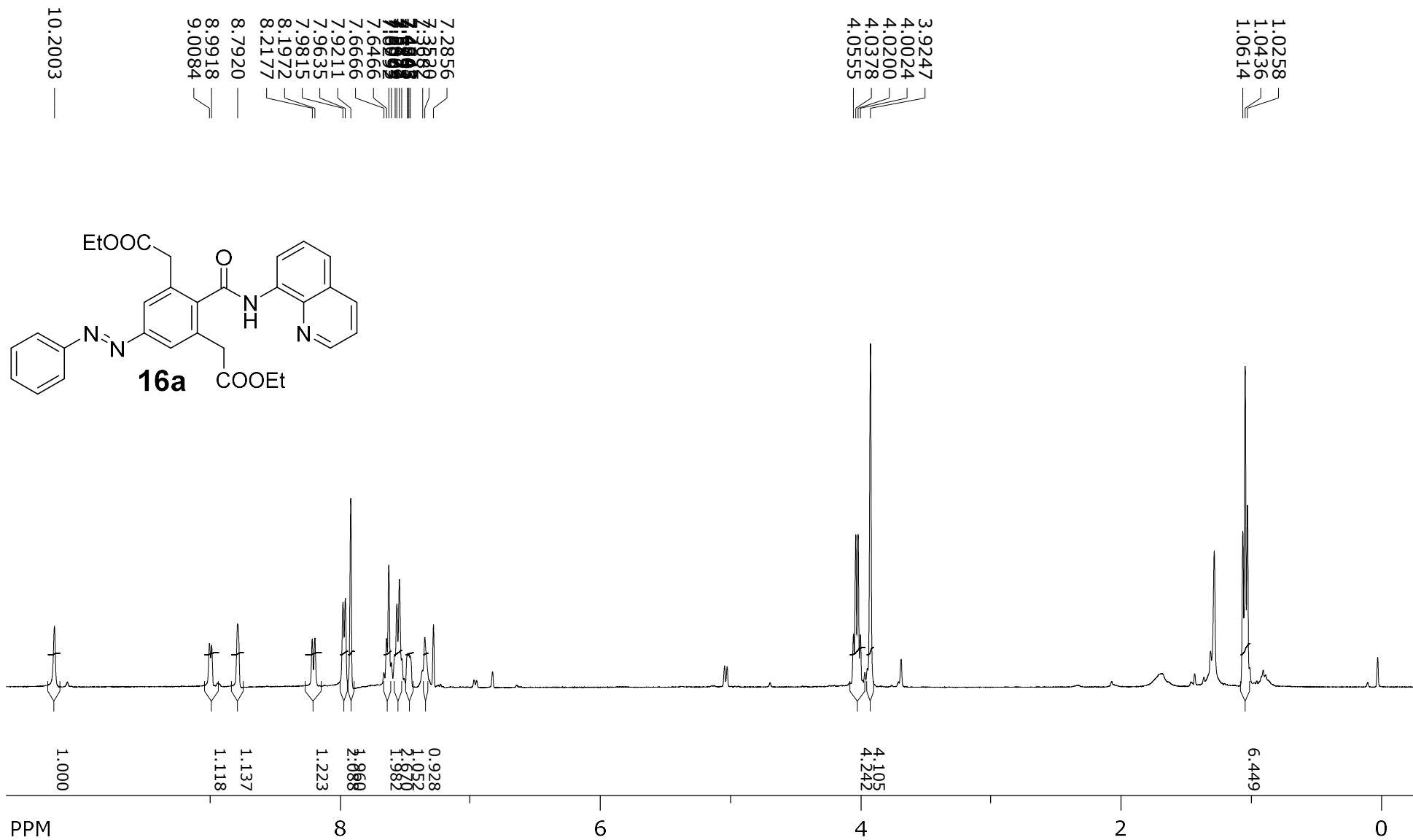


SpinWorks 4: rp-1219b2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 33

140.072 —
138.582 —
136.321 —
136.390 —
134.195 —
132.550 —
131.338 —
129.160 —
128.022 —
127.384 —
123.577 —
122.768 —
122.307 —
122.753 —
123.007 —
117.014 —

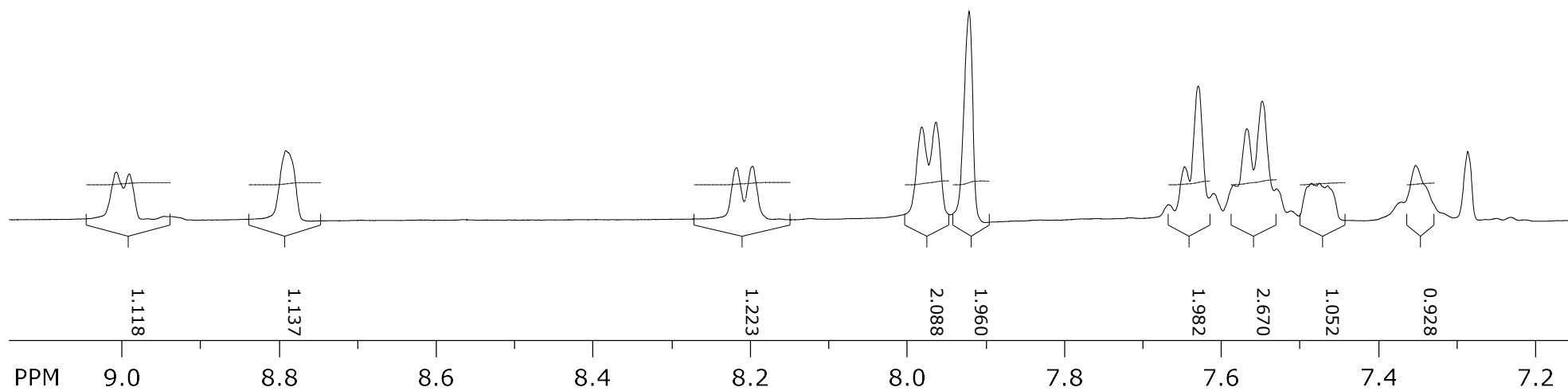
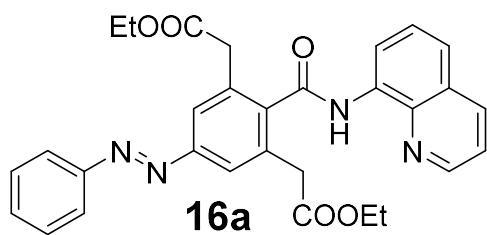


SpinWorks 4: RP 1398 B2 REP
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 1



SpinWorks 4: RP 1398 B2 REP
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 1

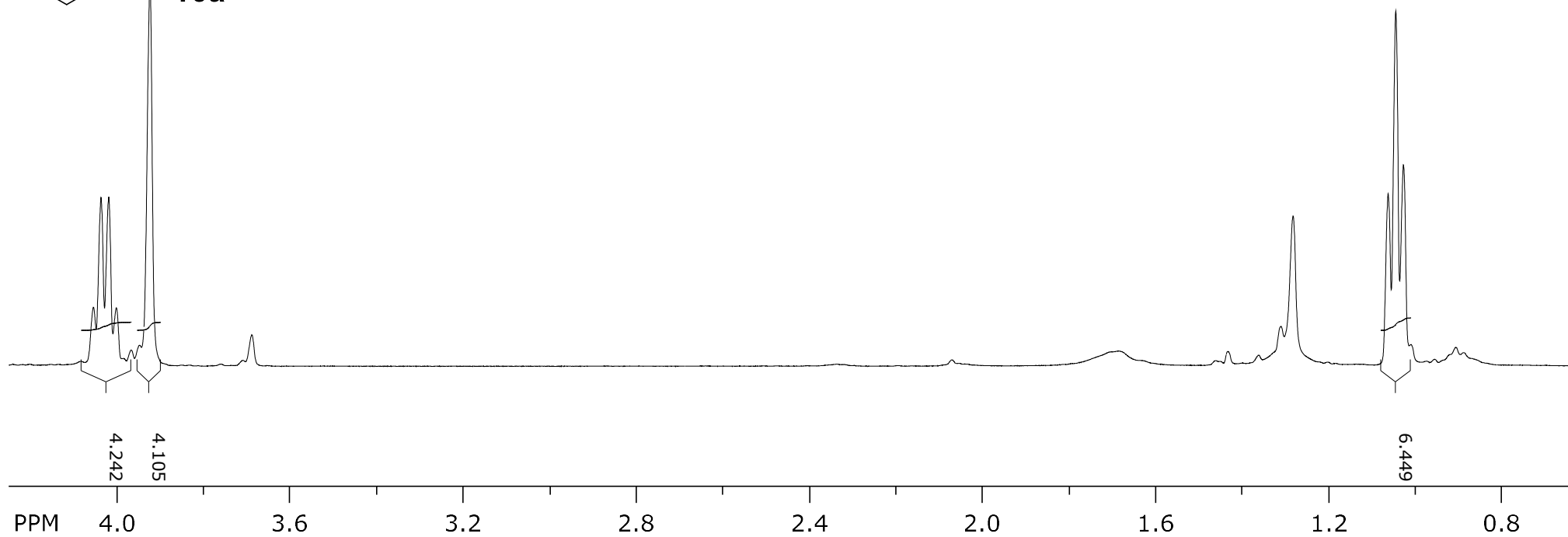
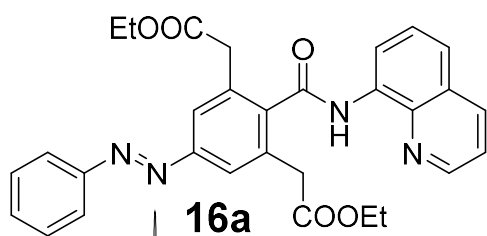
8.9918
9.0084
8.7920
8.1972
8.2177
7.9211
7.9635
7.9815
7.5292
7.5477
7.5672
7.5809
7.6095
7.6292
7.6466
7.6666
7.4847
7.4745
7.4805
7.4643
7.3682
7.3520
7.2856



SpinWorks 4: RP 1398 B2 REP
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 1

3.9247
4.0024
4.0200
4.0378
4.0555

1.0258
1.0436
1.0614



SpinWorks 4: RP 1398 B2
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 1

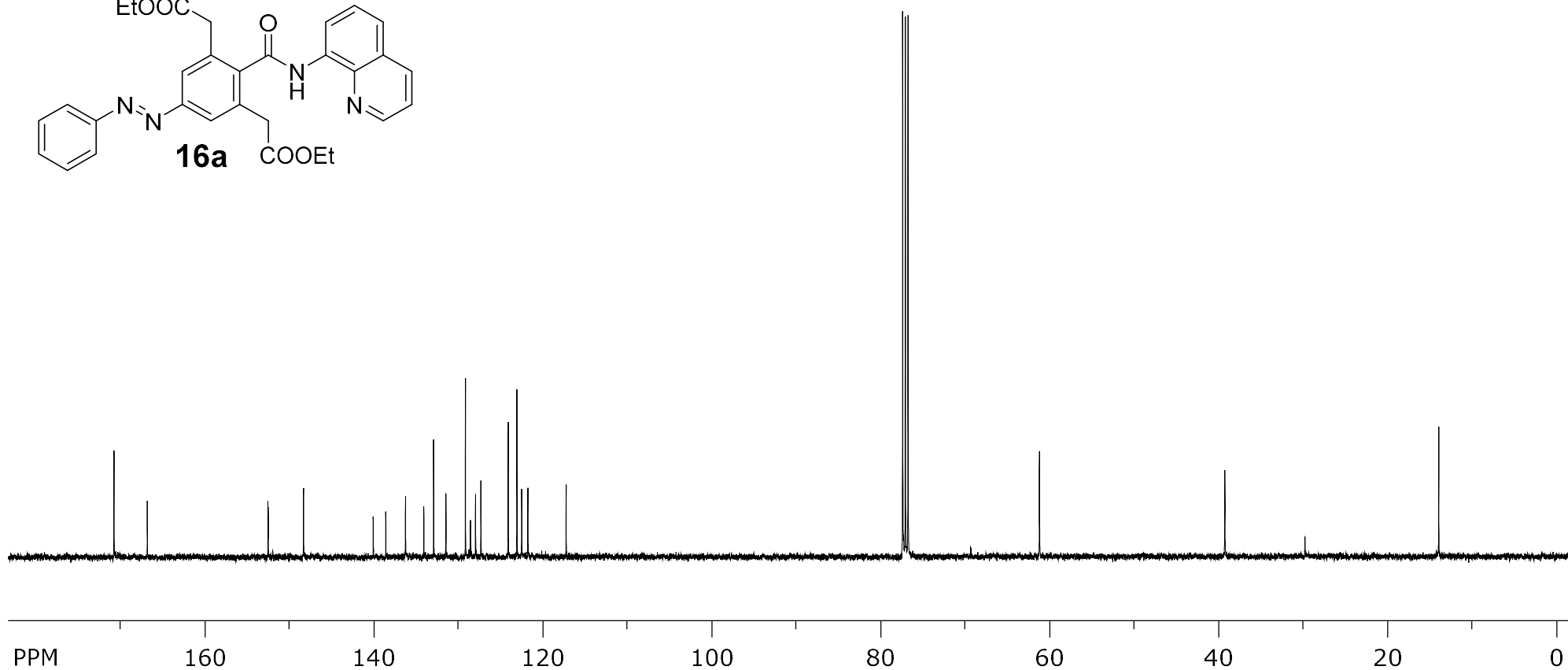
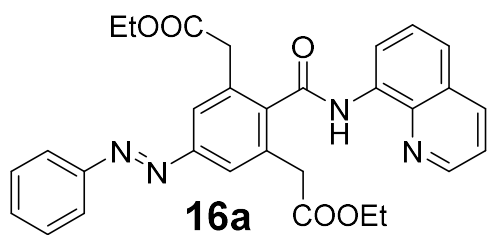
170.816
166.869
152.543
152.577
148.365
140.107
138.613
136.280
134.114
132.950
131.495
129.186
127.990
127.351
124.118
123.085
122.518
121.791
117.256

76.754
77.071
77.389

61.189

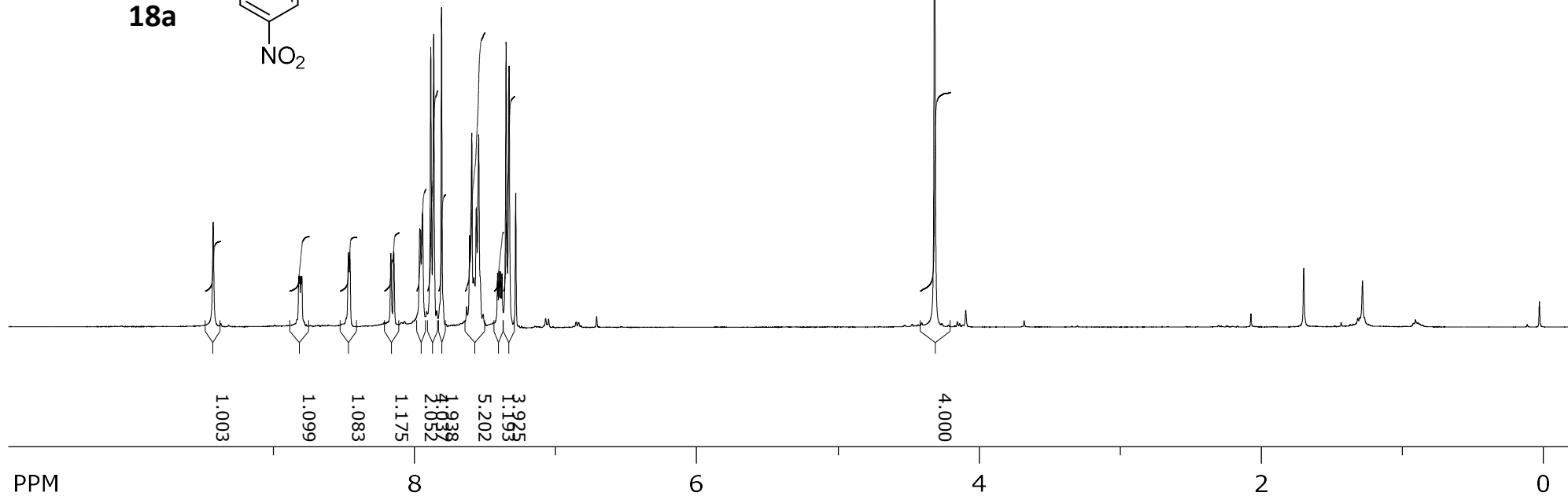
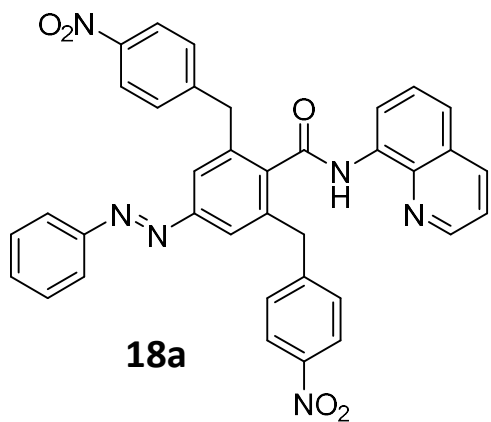
39.226

13.888

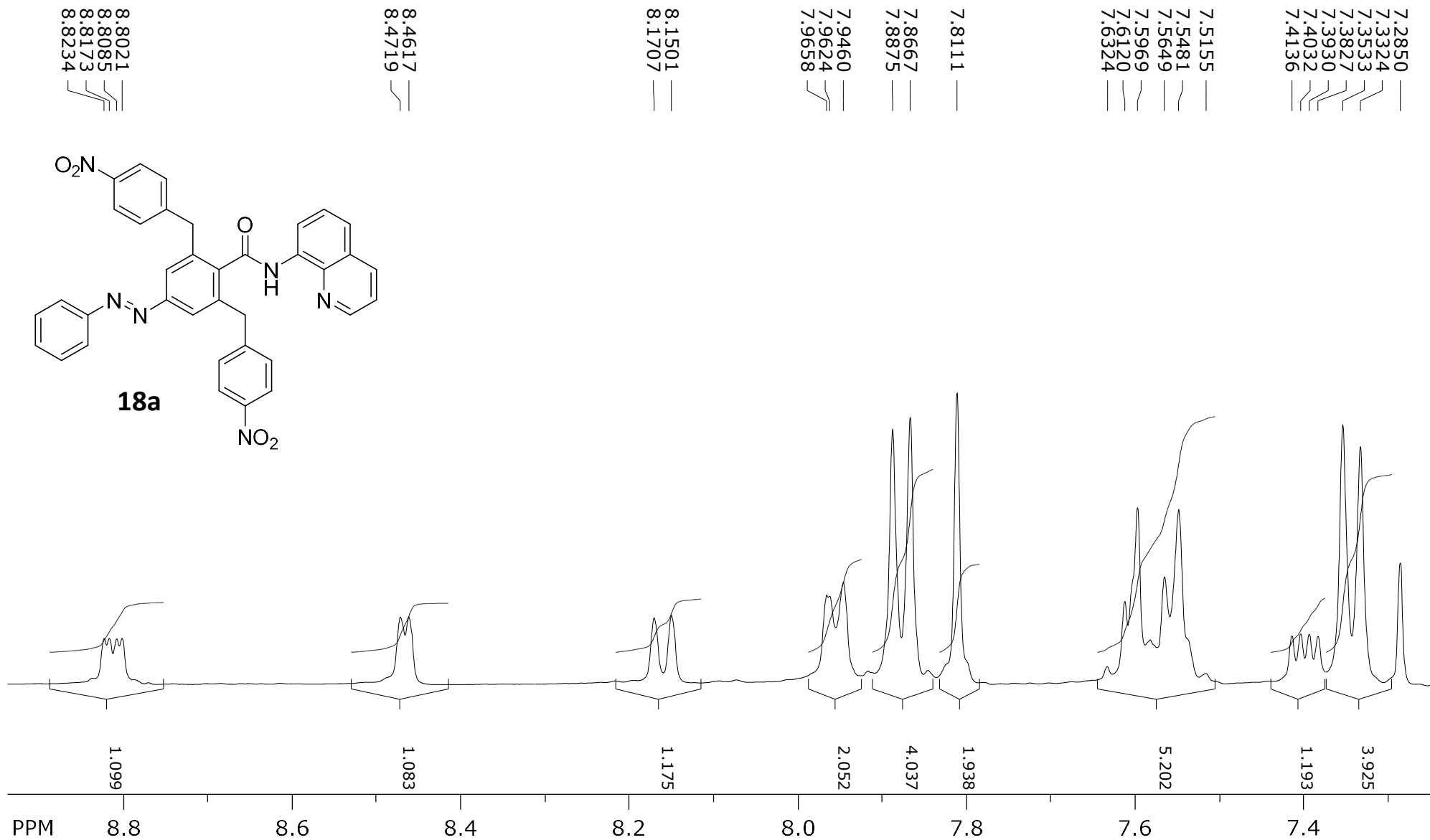


SpinWorks 4: RP 1282
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 1

7.2850
7.3324
7.3533
7.3827
7.4029
7.4219
7.4411
7.8114
7.8214
7.8314
7.8414
7.8514
7.8614
7.8714
7.8814
7.8914
7.9014
7.9114
7.9214
7.9314
7.9414
7.9558
8.1501
8.1707
8.4617
8.4719
8.8021
8.8085
8.8173
8.8234
9.4308



SpinWorks 4: RP 1282
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 1

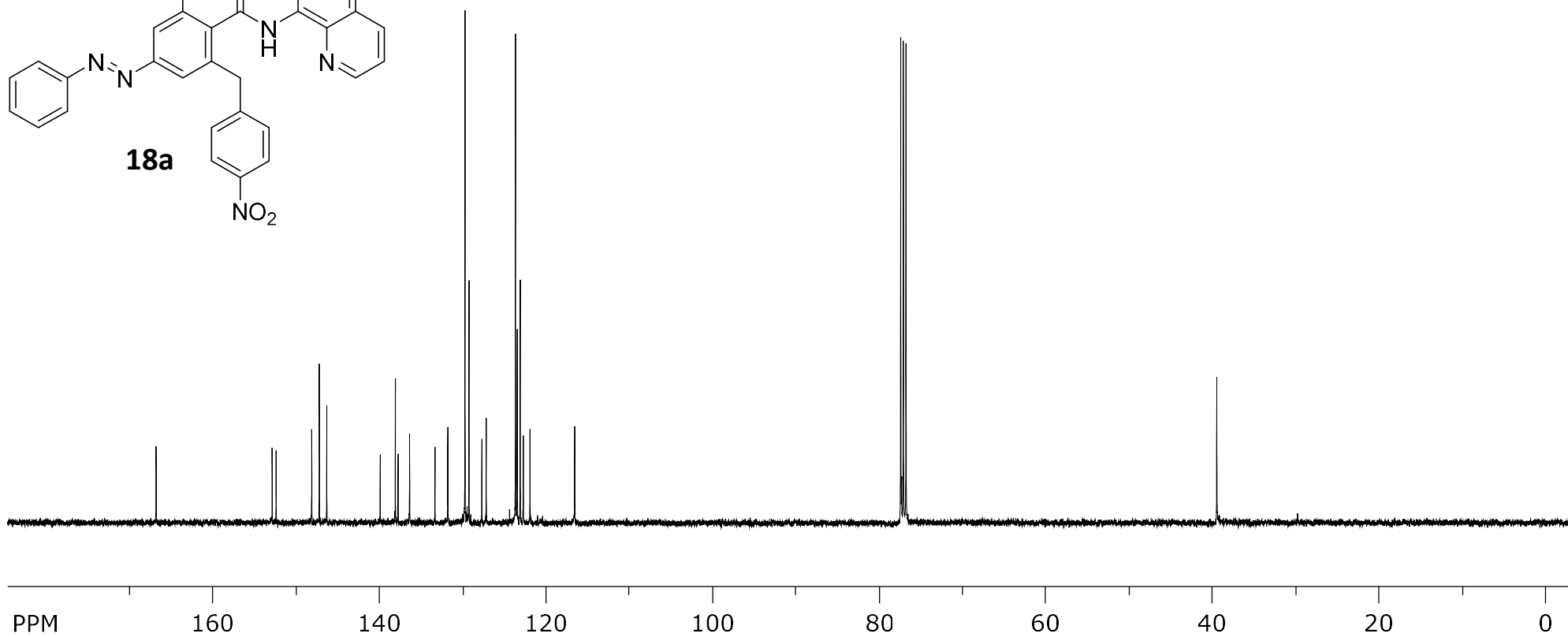
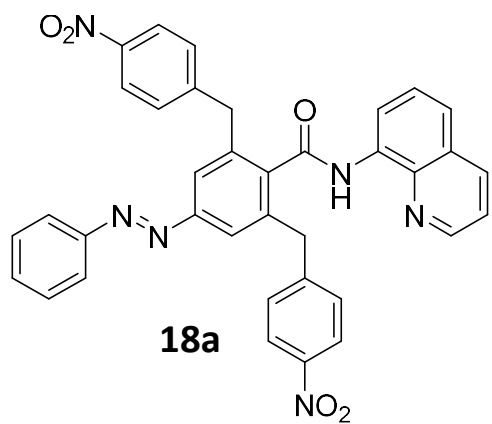


SpinWorks 4: RP 1282
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 1

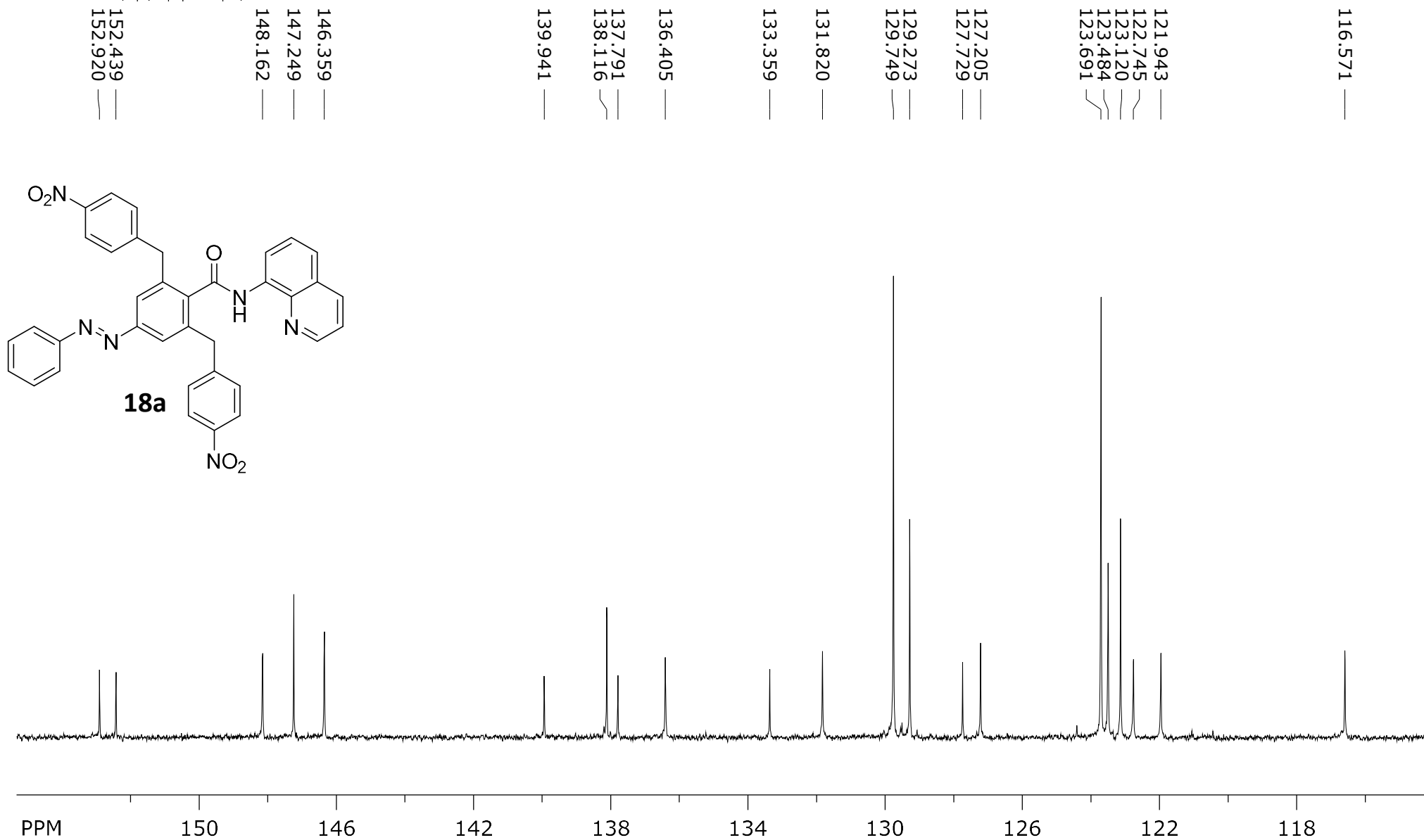
166.860
152.920
148.162
147.249
146.359
139.941
138.116
137.791
136.405
133.359
131.820
129.749
127.209
123.691
123.120
122.745
121.943
116.571

77.411
77.093
76.776

39.440

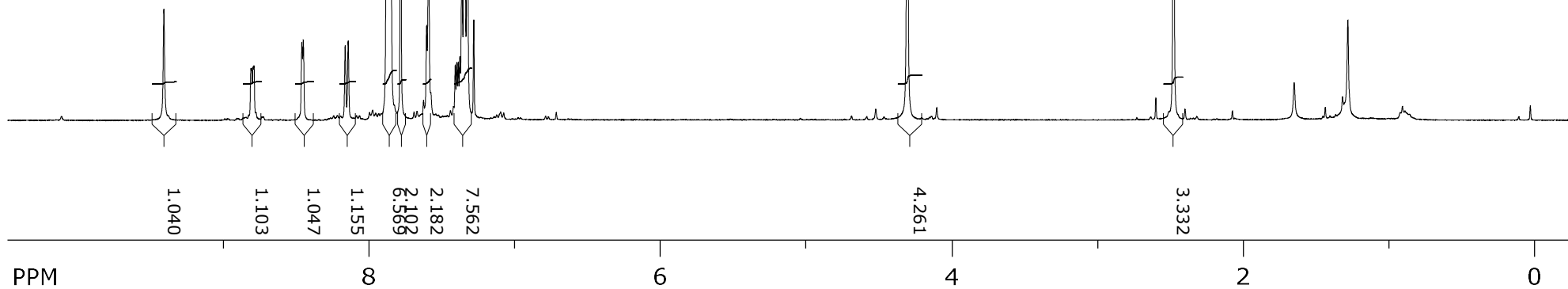
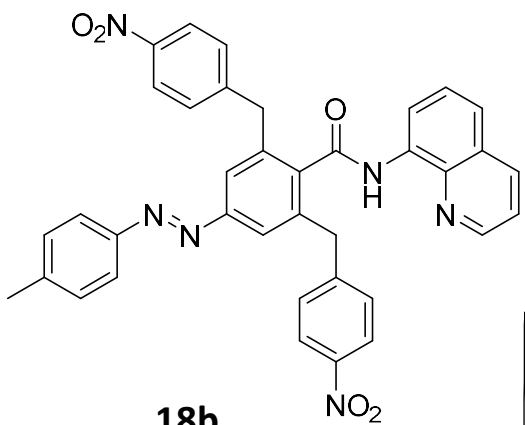


SpinWorks 4: RP 1282
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 1

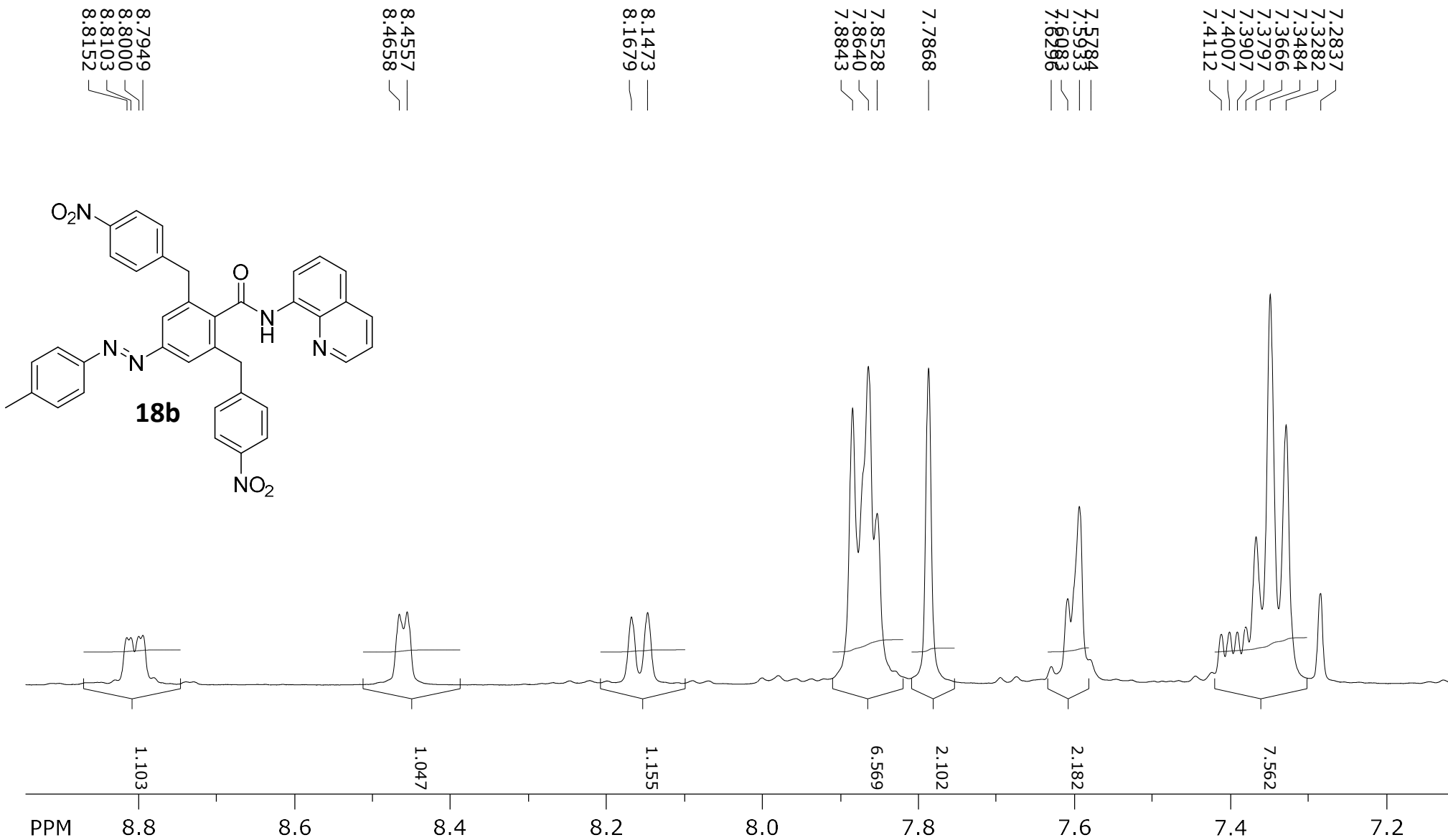


SpinWorks 4: RP-1281 B2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 51

9.4136
8.8152
8.8103
8.8000
8.7949
8.4658
8.4557
8.1679
8.1473
8.1473
7.8843
7.8640
7.8298
7.7998
7.7998
7.7998
7.7998
7.7998
7.7998
7.3797
7.3797
7.3797
7.3666
7.3484
7.3282
7.2837
4.3057
2.4756



SpinWorks 4: RP-1281 B2
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 51



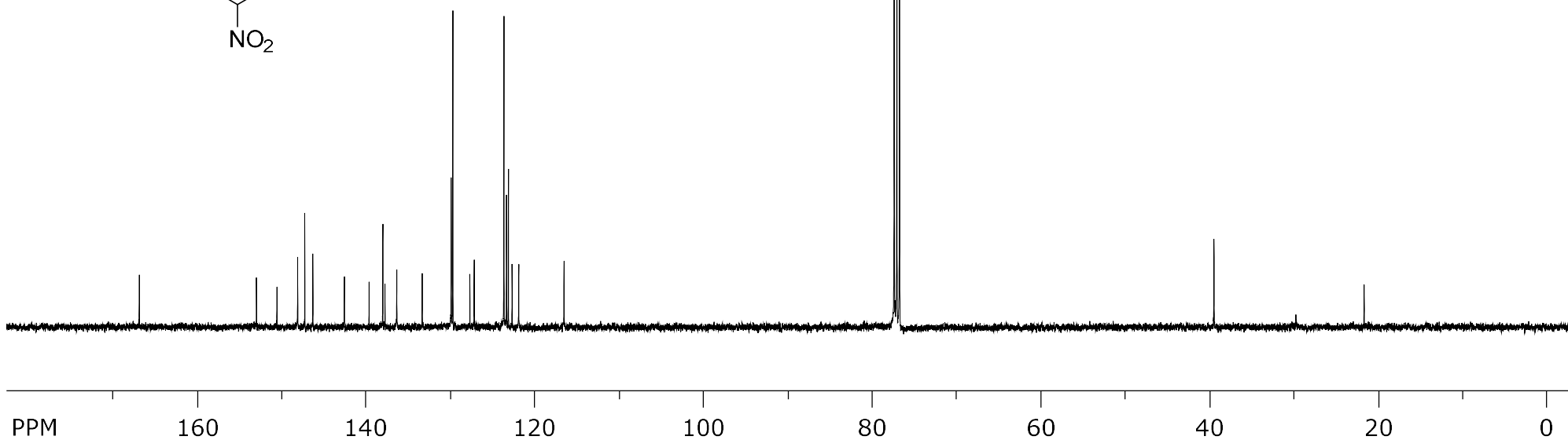
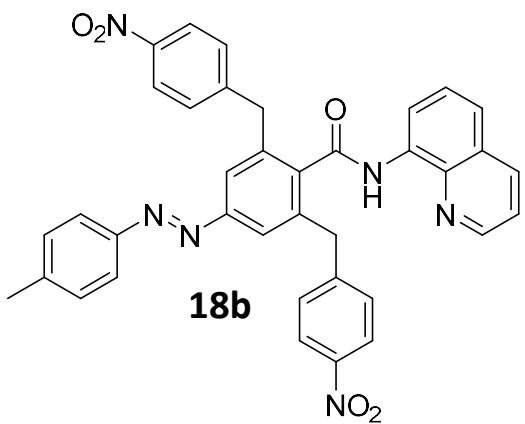
SpinWorks 4: RP-1281 B2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 51

166.920
153.026
150.593
148.140
147.294
146.342
142.604
139.666
138.035
137.785
136.384
133.368
129.925
127.496
123.872
123.364
123.143
122.701
121.921
116.545

76.748
77.065
77.384

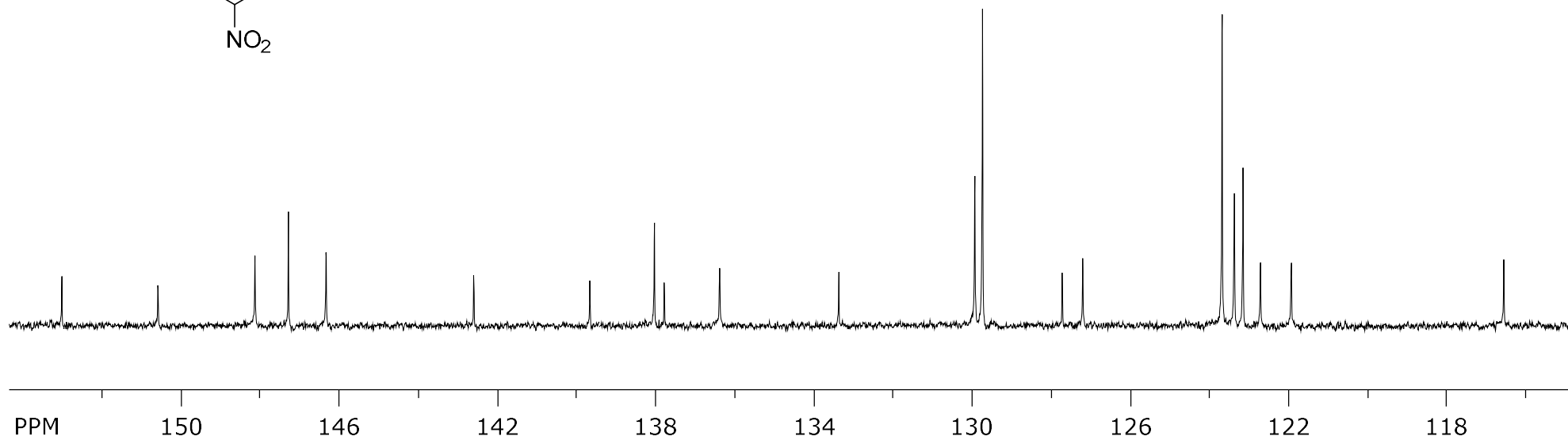
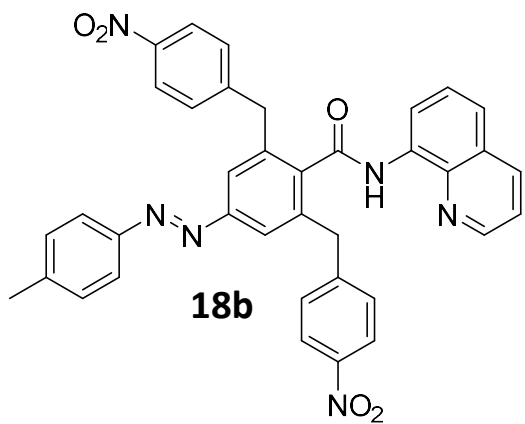
39.448

21.639

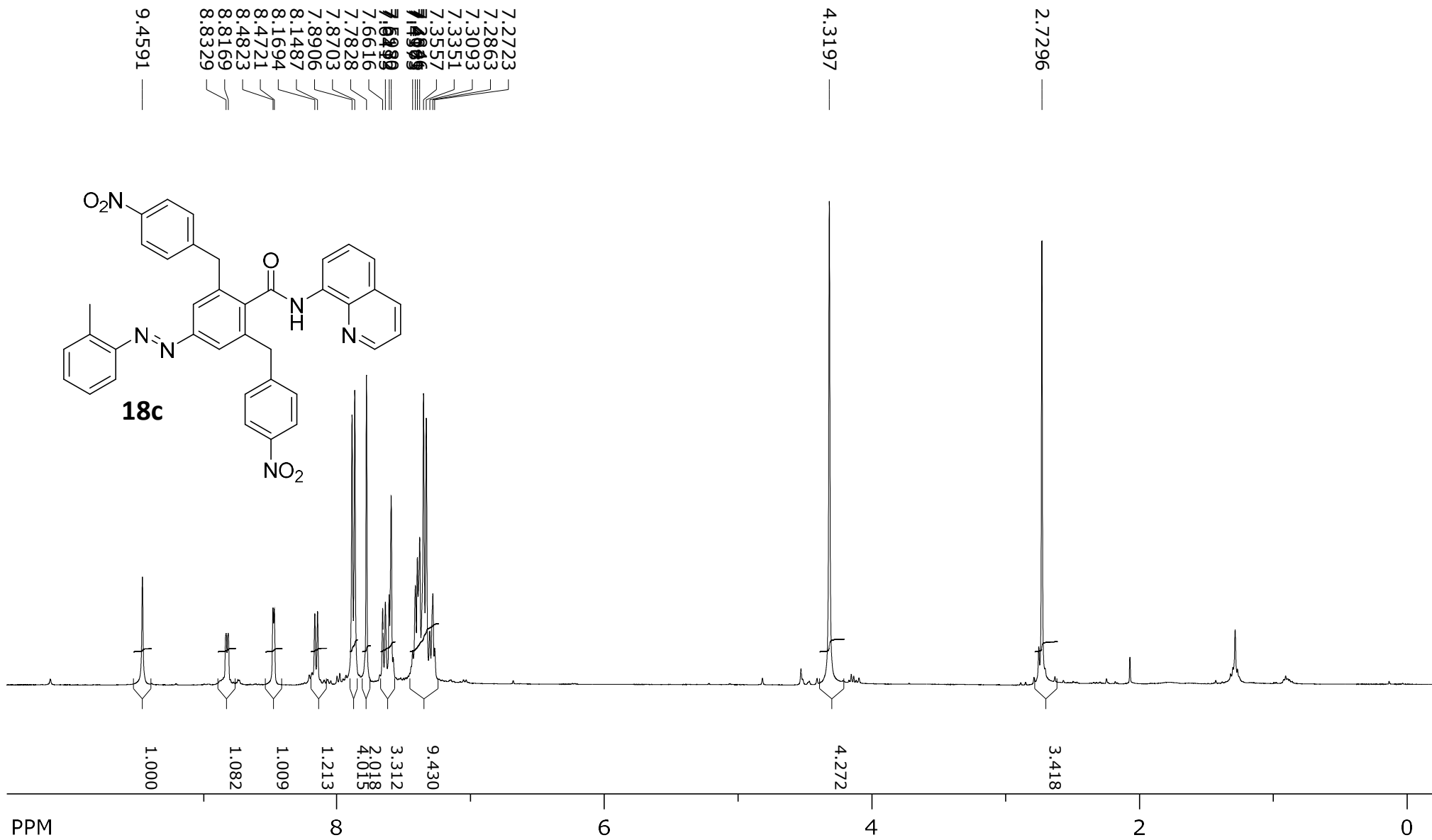


SpinWorks 4: RP-1281 B2
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 51

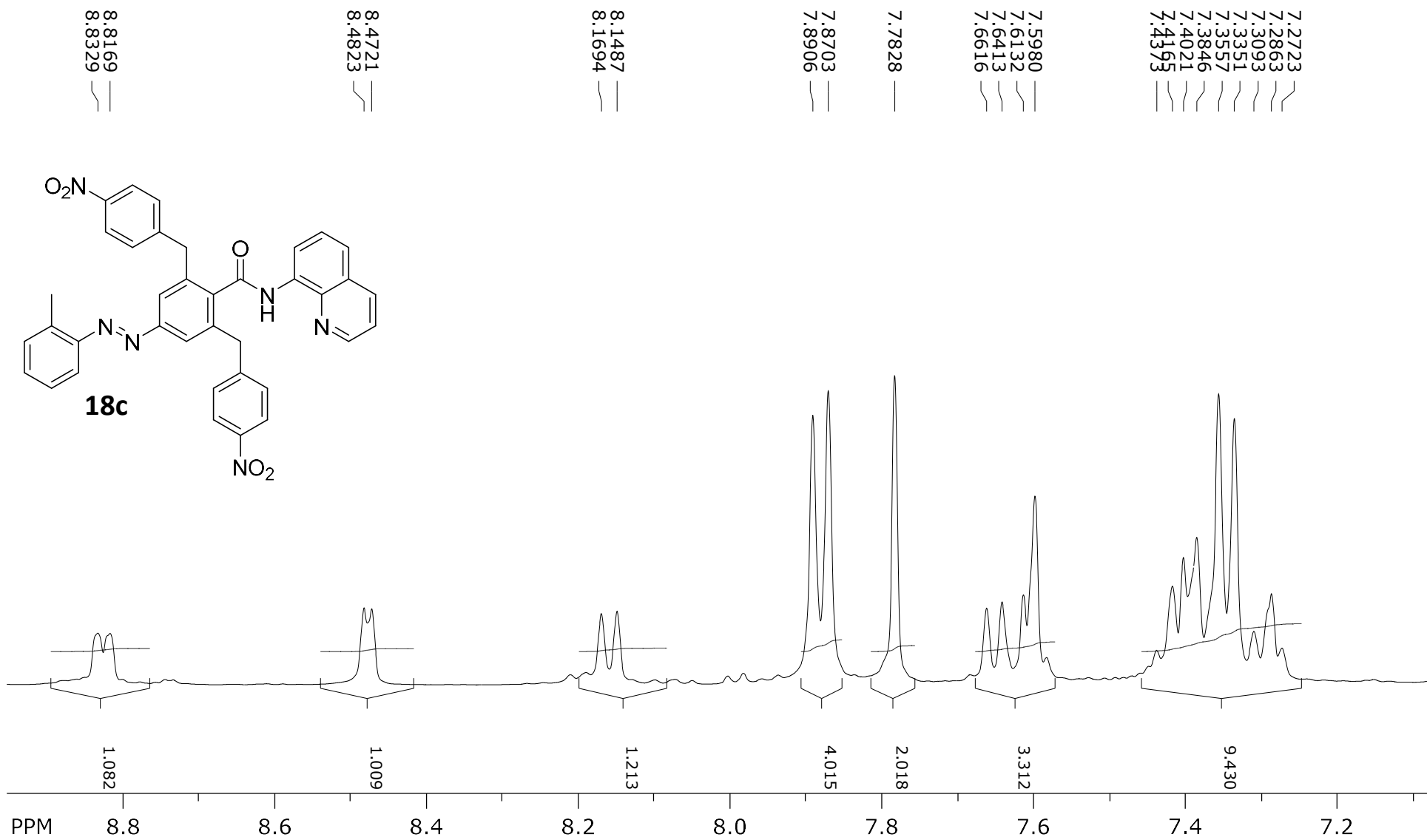
153.026 —
150.593 —
148.140 —
147.294 —
146.342 —
142.604 —
139.666 —
138.035 —
137.785 —
136.384 —
133.368 —
129.735 —
129.927 —
127.197 —
127.716 —
121.921 —
122.701 —
123.143 —
123.364 —
123.672 —
116.545 —



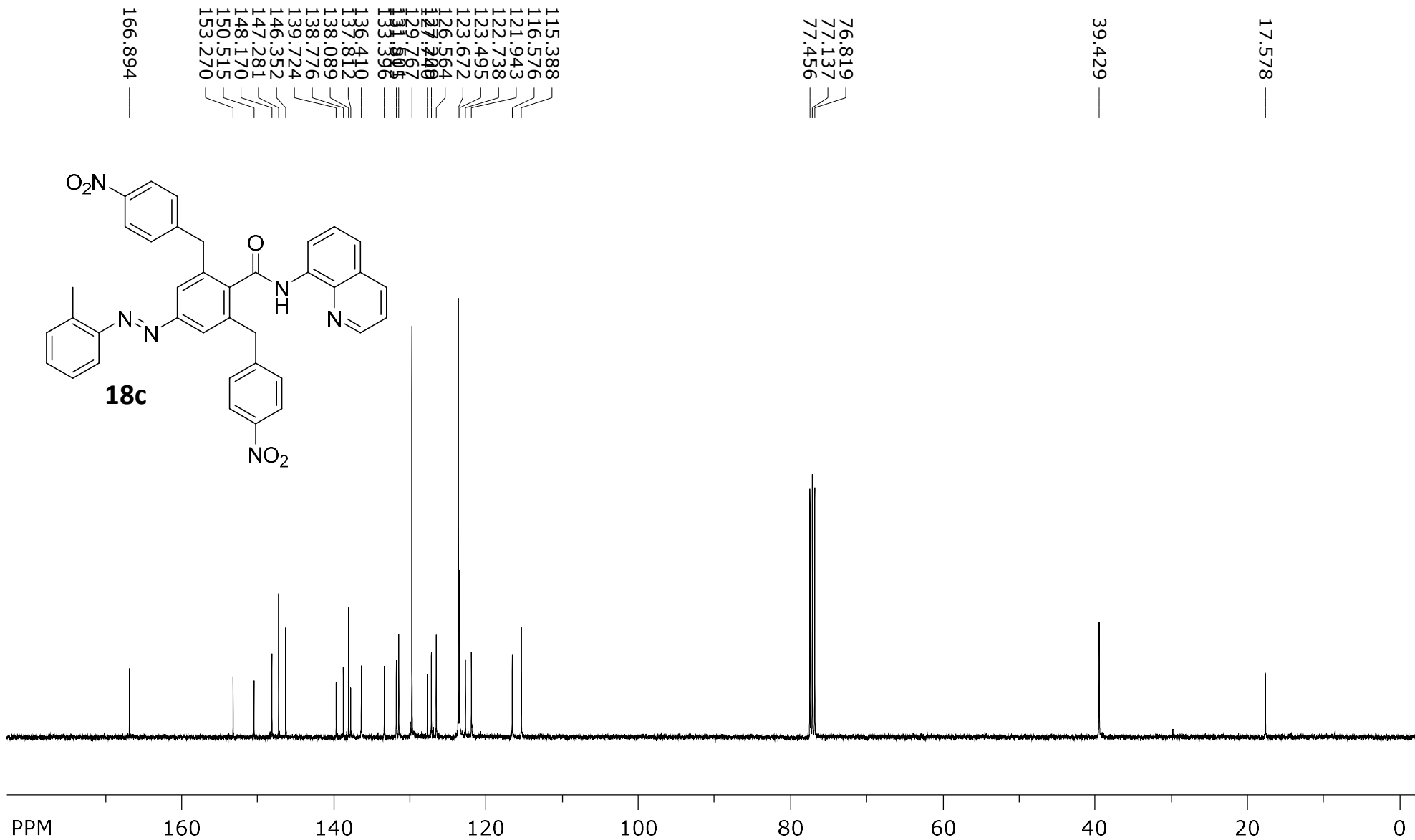
SpinWorks 4: DB 668 A
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 58



SpinWorks 4: DB 668 A
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 58

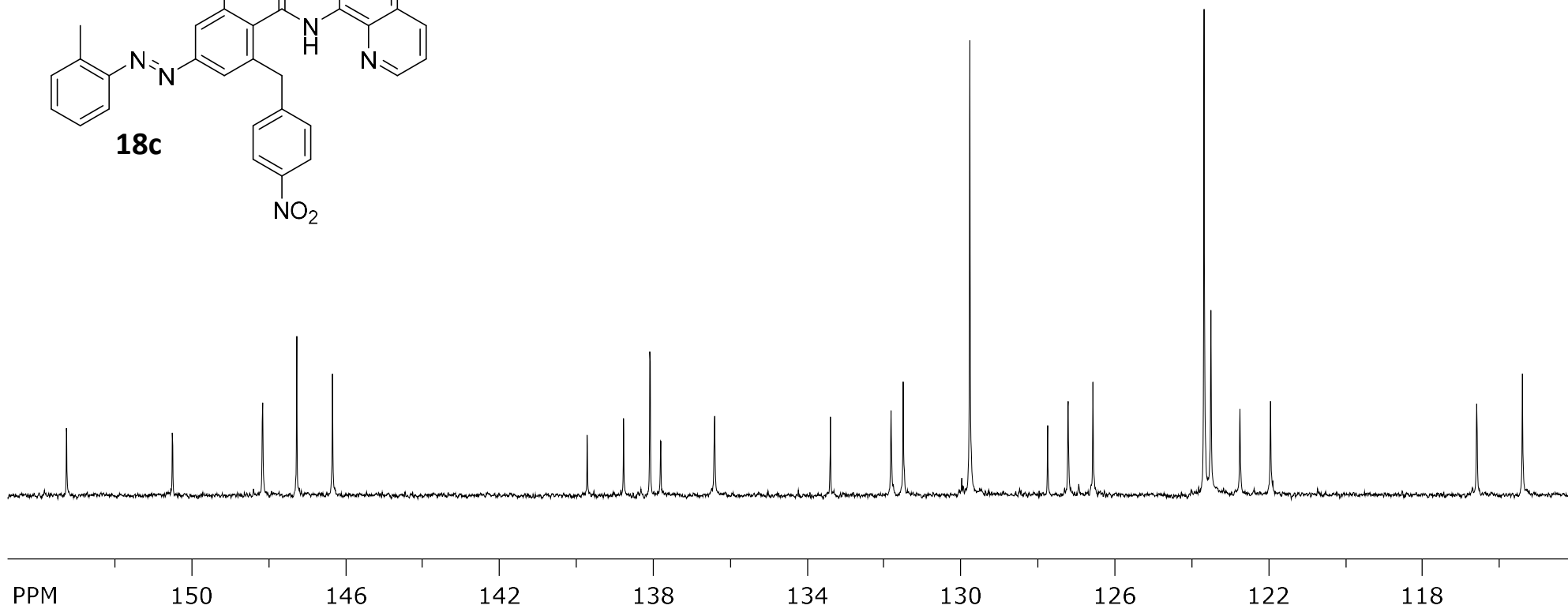
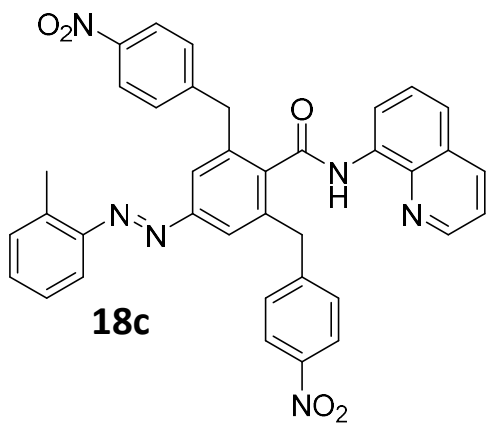


SpinWorks 4: DB 668 A
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 58

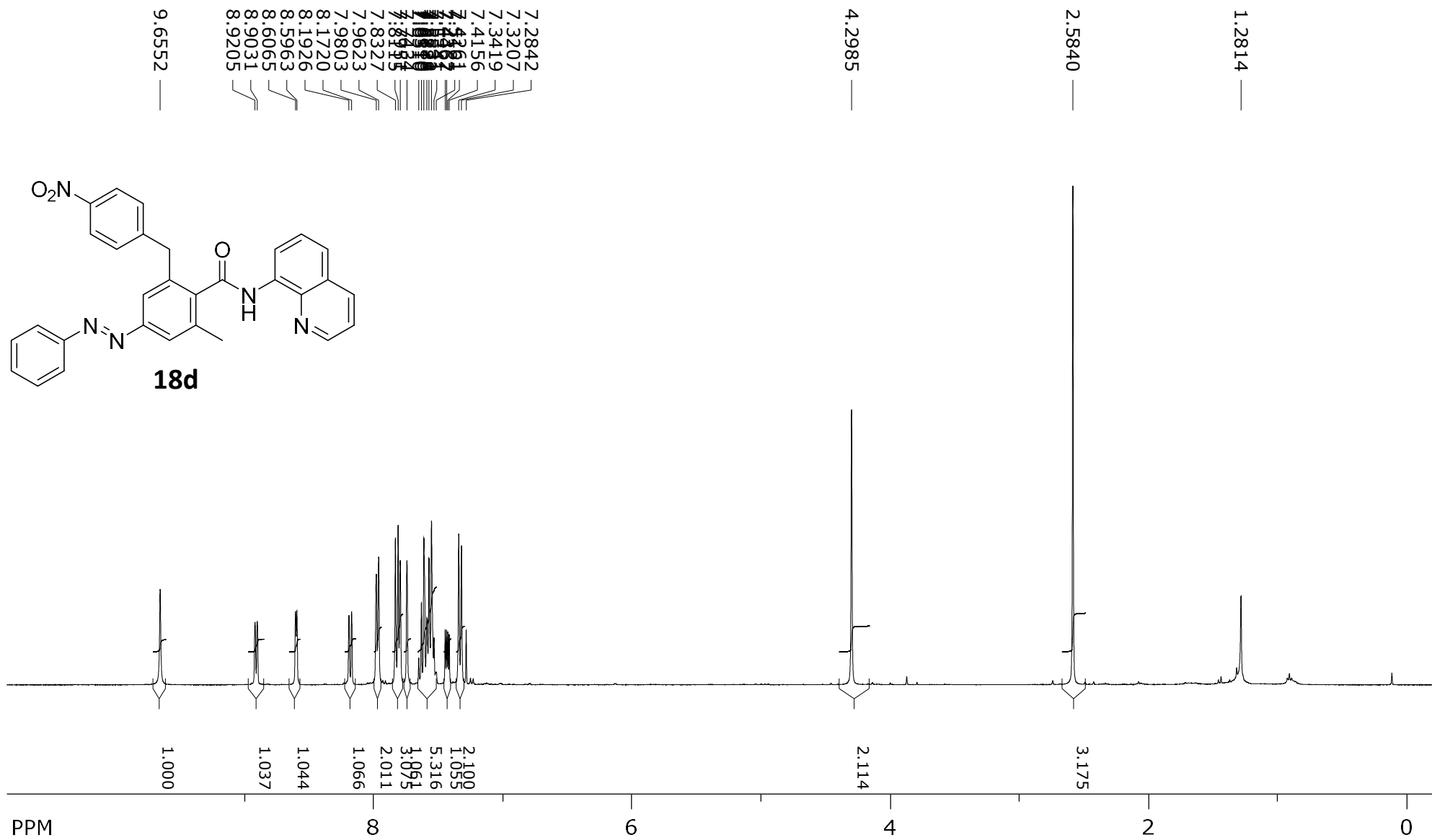


SpinWorks 4: DB 668 A
C13CPD256 CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 58

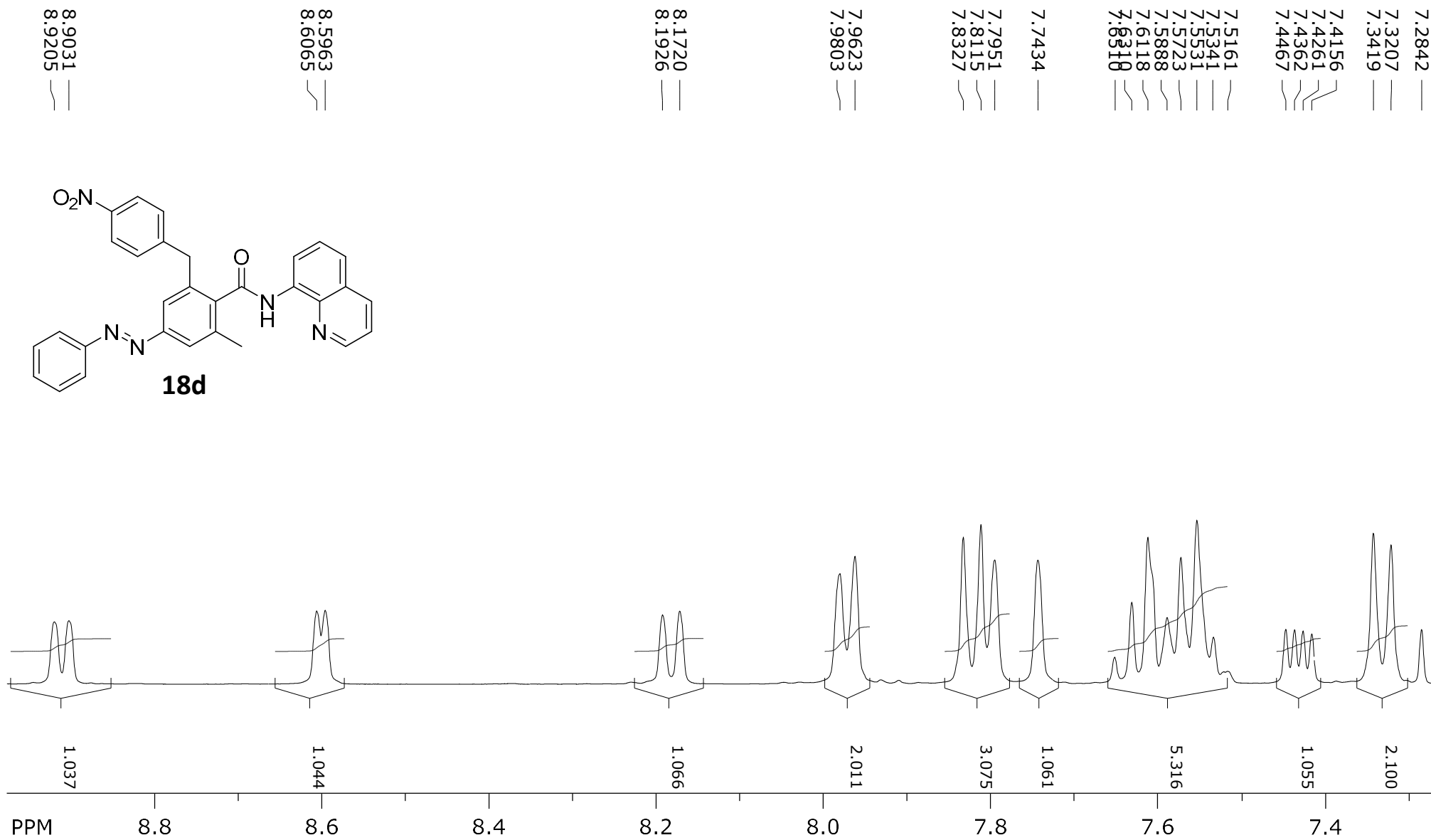
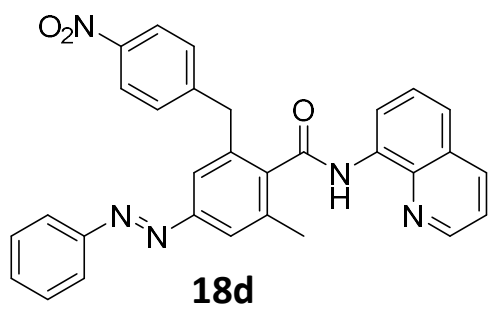
153.270 —
150.515 —
148.170 —
147.281 —
146.352 —
139.724 —
138.776 —
138.089 —
137.812 —
136.410 —
133.396 —
131.815 —
131.501 —
129.767 —
127.740 —
127.209 —
126.564 —
123.672 —
123.495 —
122.738 —
121.943 —
116.576 —
115.388 —



SpinWorks 4: RP 1526
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 51



SpinWorks 4: RP 1526
PROTON CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 51



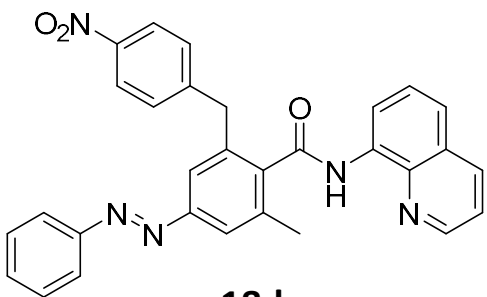
SpinWorks 4: RP 1526
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 51

167.590
152.723
152.549
148.260
147.704
146.198
140.017
138.118
137.488
136.611
136.404
133.792
131.541
129.710
129.594
123.045
122.703
122.465
121.853
116.729

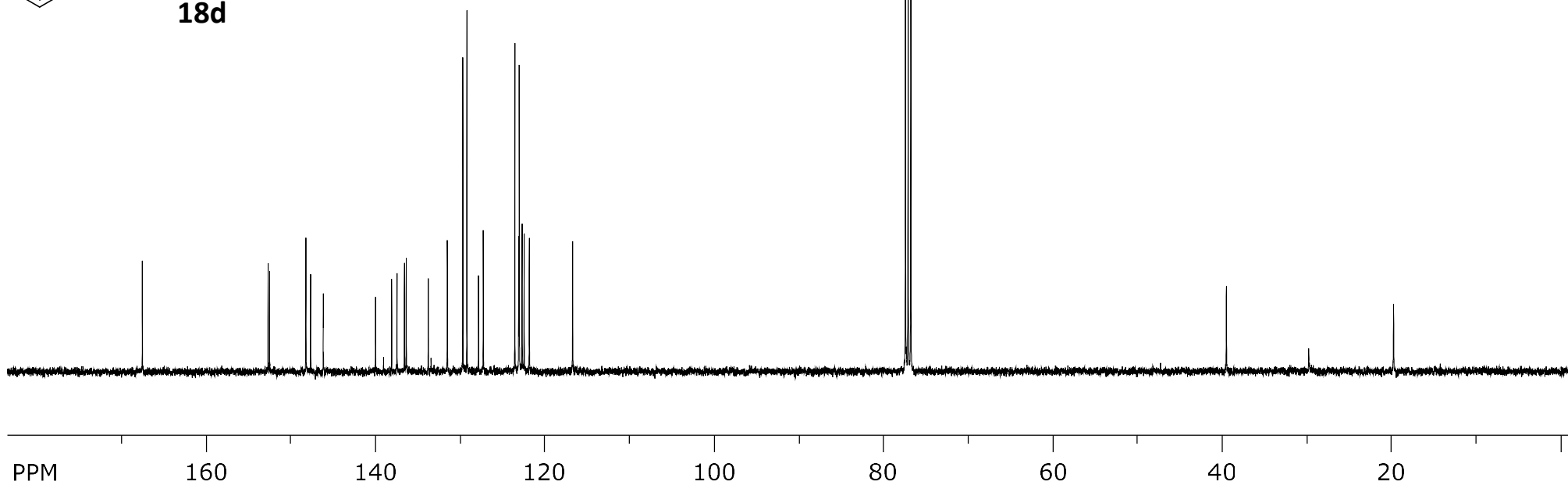
76.763
77.081
77.398

39.469

19.707

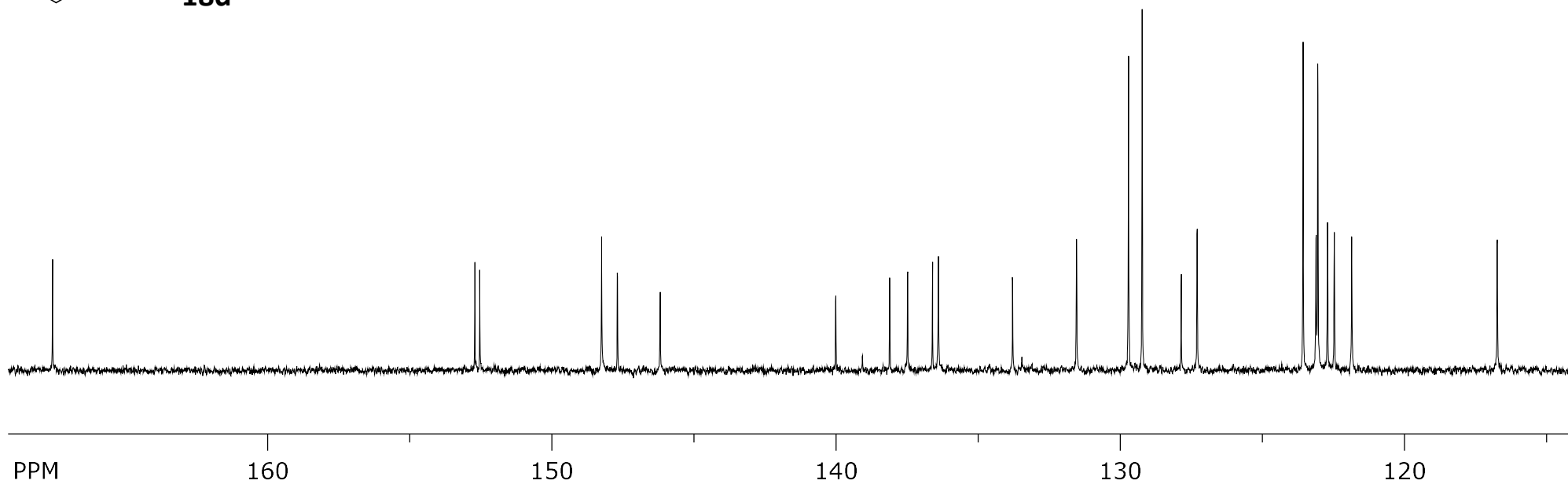
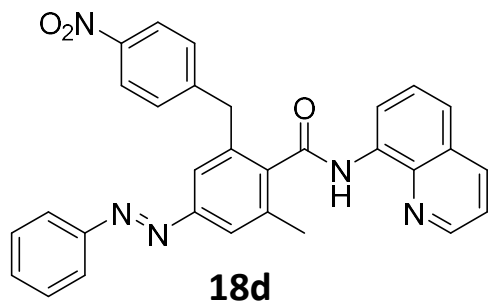


18d

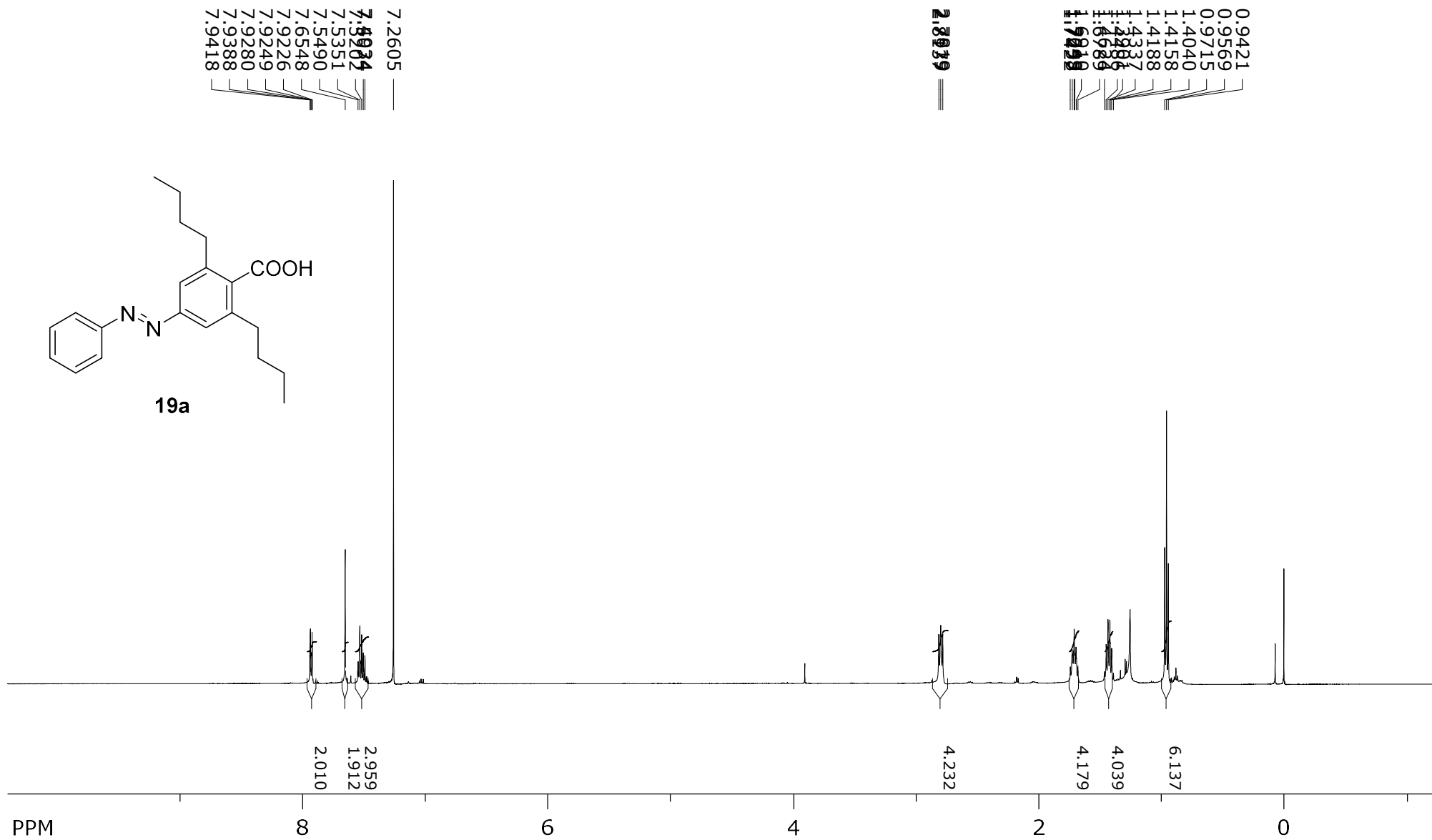
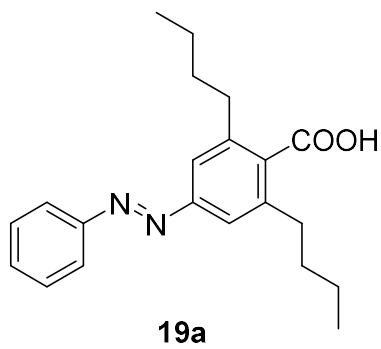


SpinWorks 4: RP 1526
C13CPD CDC13 /opt/topspin3.5pl2/nmrdata nmrsu 51

167.590 —
152.549 —
152.723 —
148.260 —
147.704 —
146.198 —
140.017 —
138.118 —
137.488 —
136.404 —
133.792 —
131.541 —
129.712 —
129.230 —
127.855 —
127.294 —
123.564 —
123.109 —
123.045 —
122.703 —
122.465 —
121.853 —
116.729 —



SpinWorks 4: SAB120301
1H_8scan CDCl3 {D:\Spectra} nmr 1



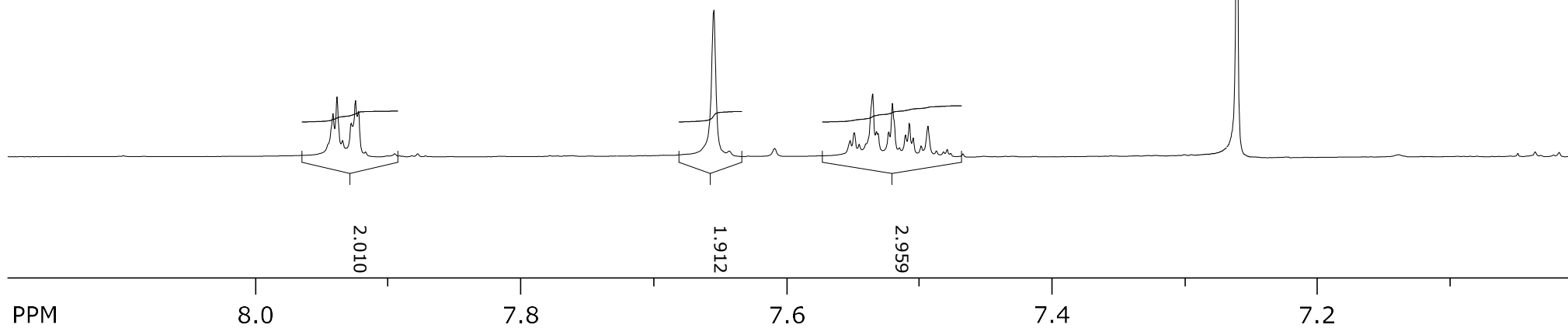
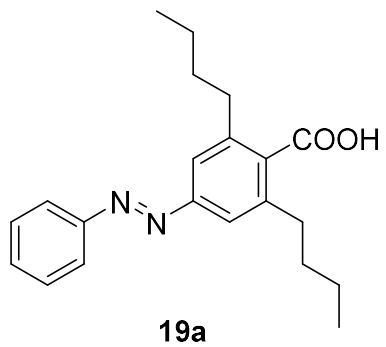
SpinWorks 4: SAB120301
1H_8scan CDCl3 {D:\Spectra} nmr 1

7.9226
7.9249
7.9280
7.9388
7.9418

7.6548

7.4934
7.5074
7.5202
7.5351
7.5490

7.2605



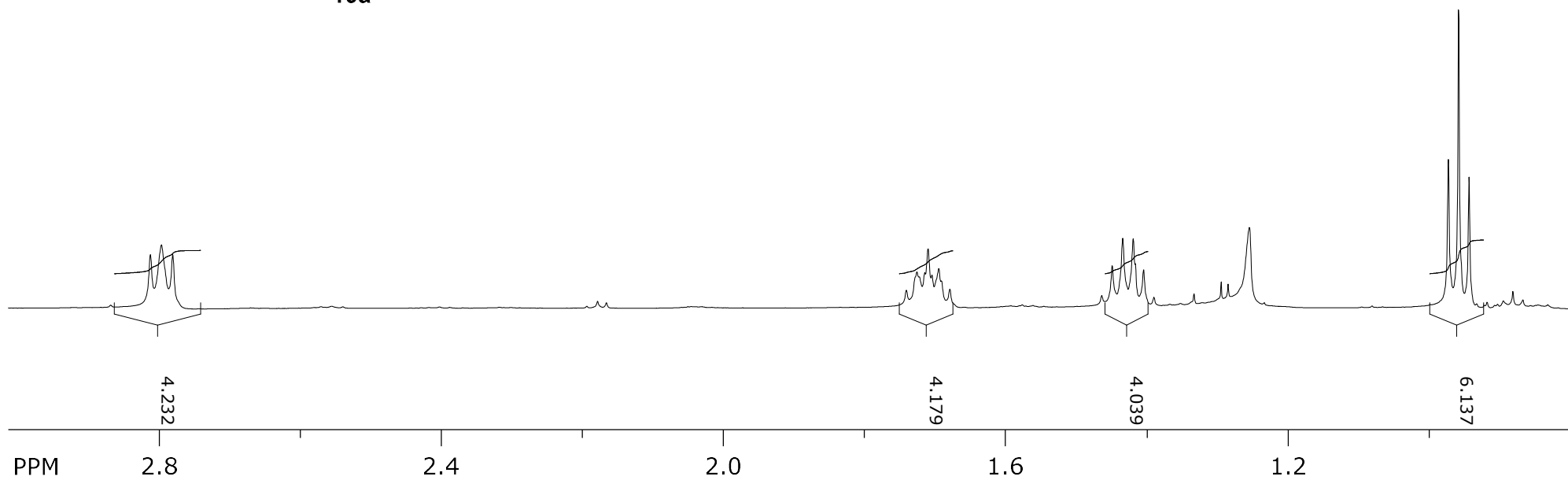
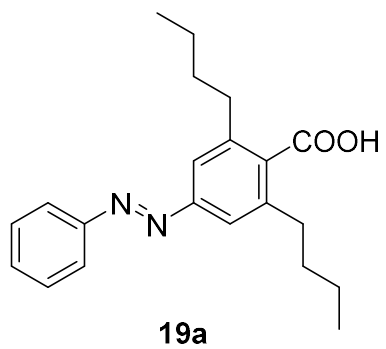
SpinWorks 4: SAB120301
1H_8scan CDCl3 {D:\Spectra} nmr 1

2.7819
2.7979
2.8137

1.6789
1.6910
1.7043
1.7099
1.7258
1.7422

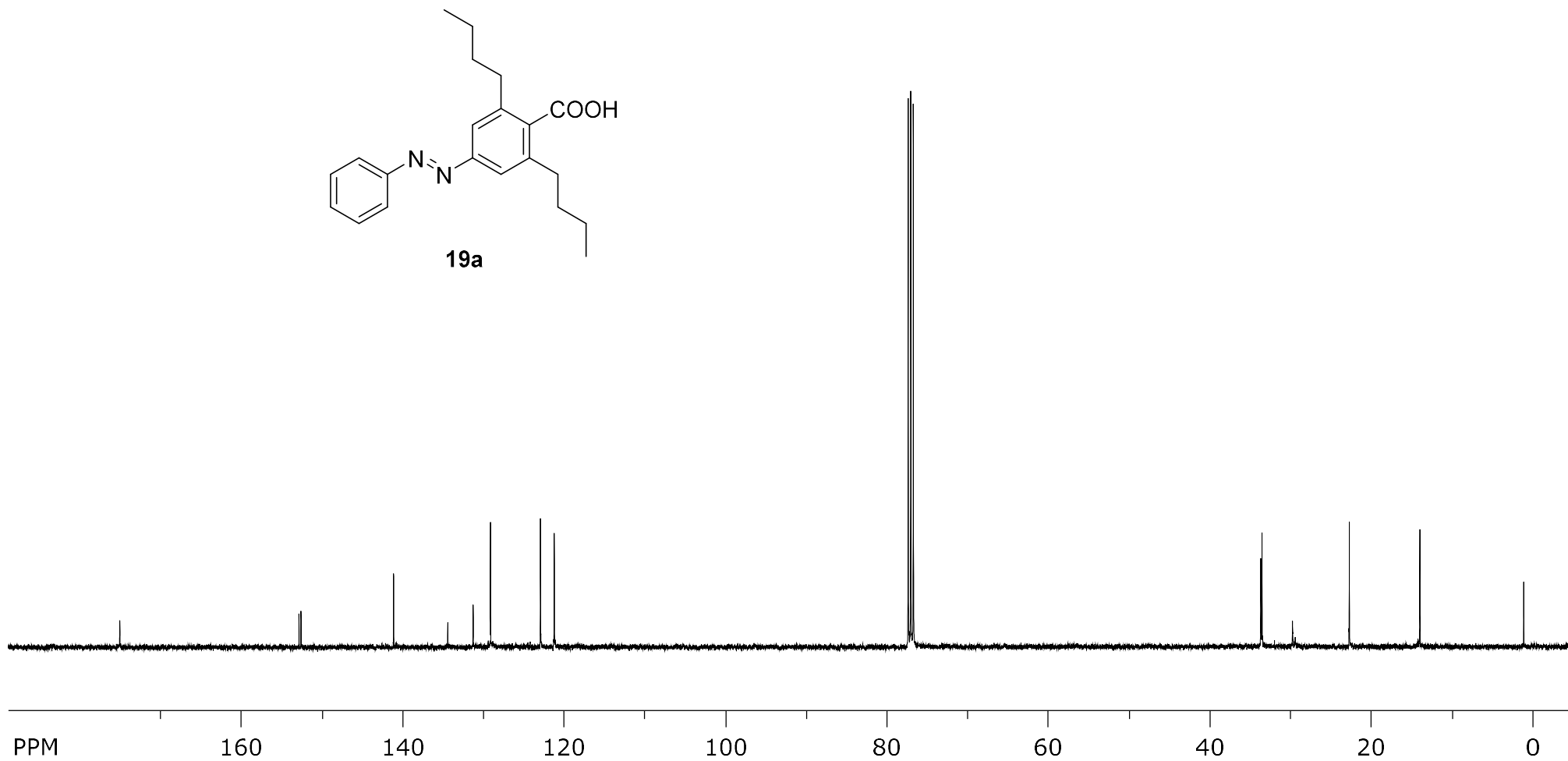
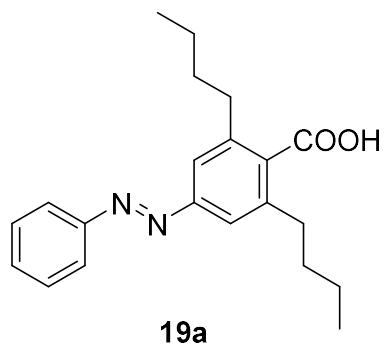
1.3901
1.4040
1.4188
1.4337
1.4486
1.4624

0.9421
0.9569
0.9715

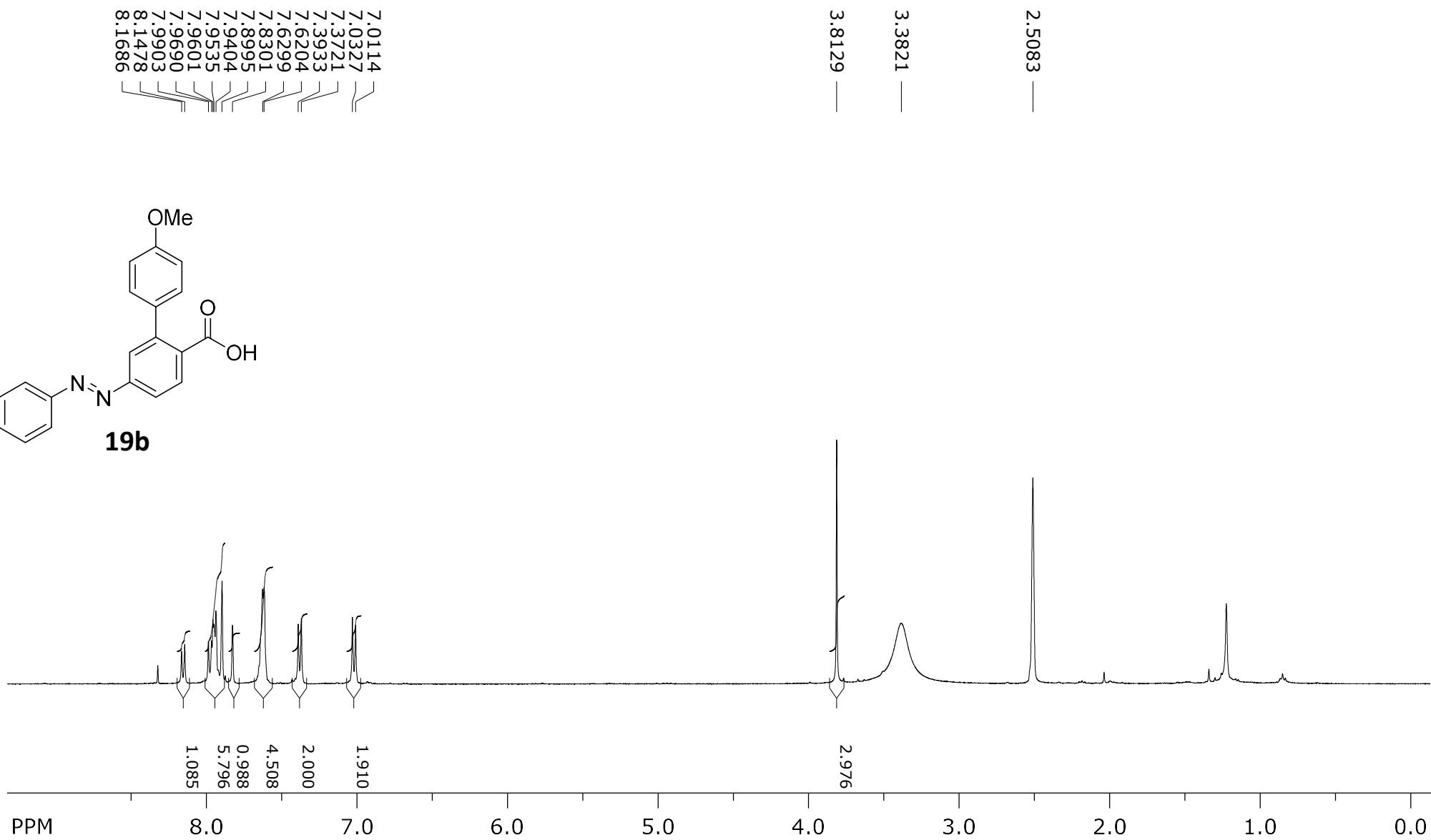
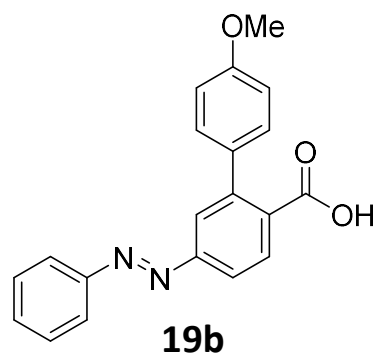


SpinWorks 4: RP 1497 FIN
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 52

175.111 —
152.649 —
152.901 —
141.171 —
129.162 —
131.310 —
134.448 —
121.254 —
122.961 —
76.739 —
77.056 —
77.374 —
33.506 —
33.663 —
22.680 —
13.938 —
1.059 —

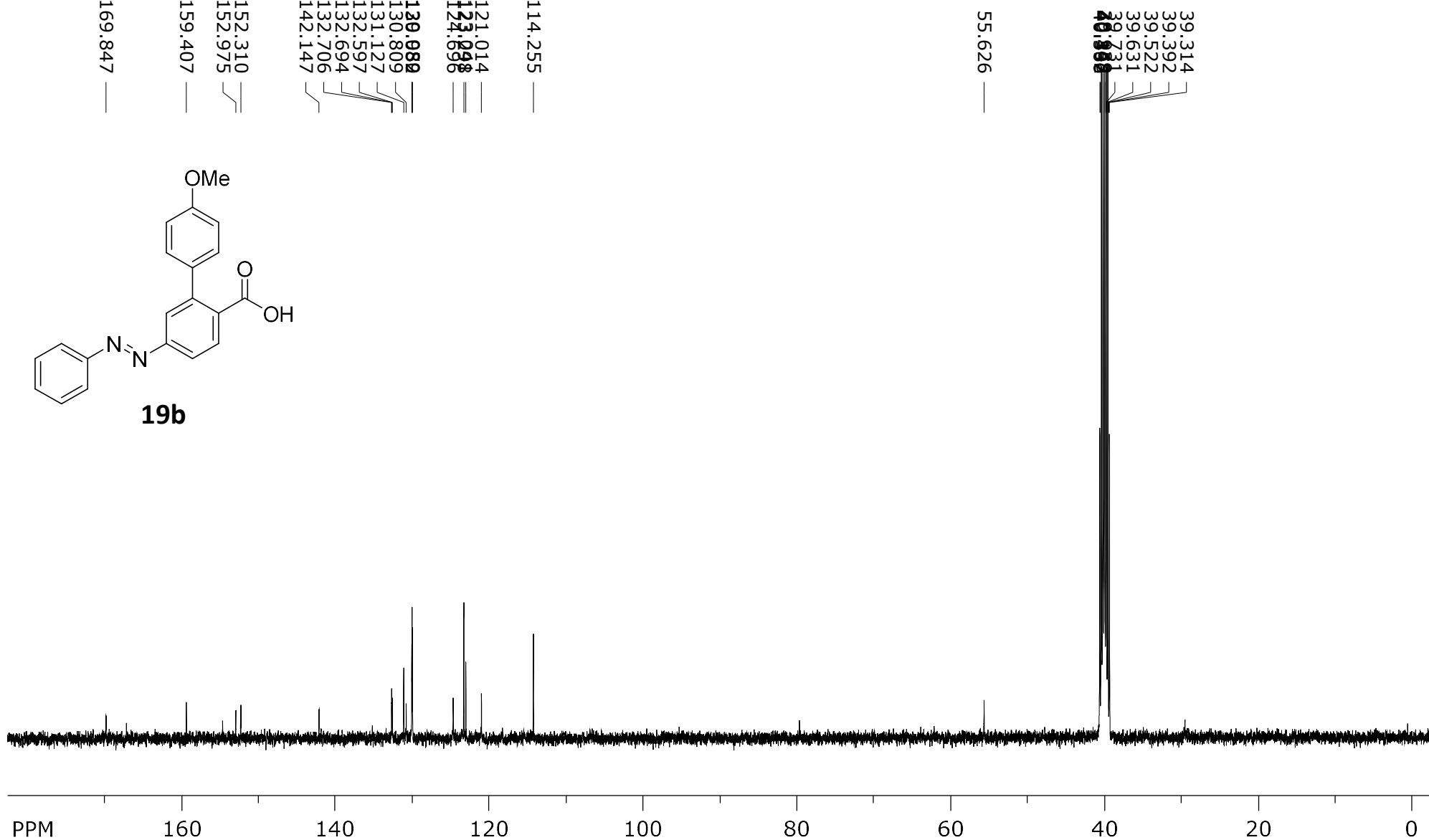
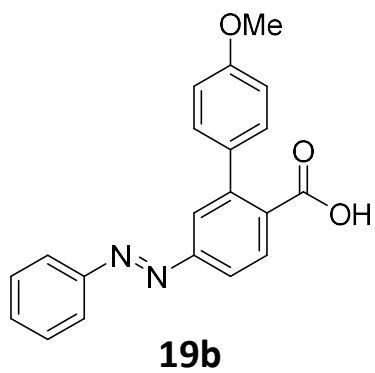


SpinWorks 4: RP 1309
PROTON DMSO /opt/topspin3.5pl2/nmrdata nmrsu 35

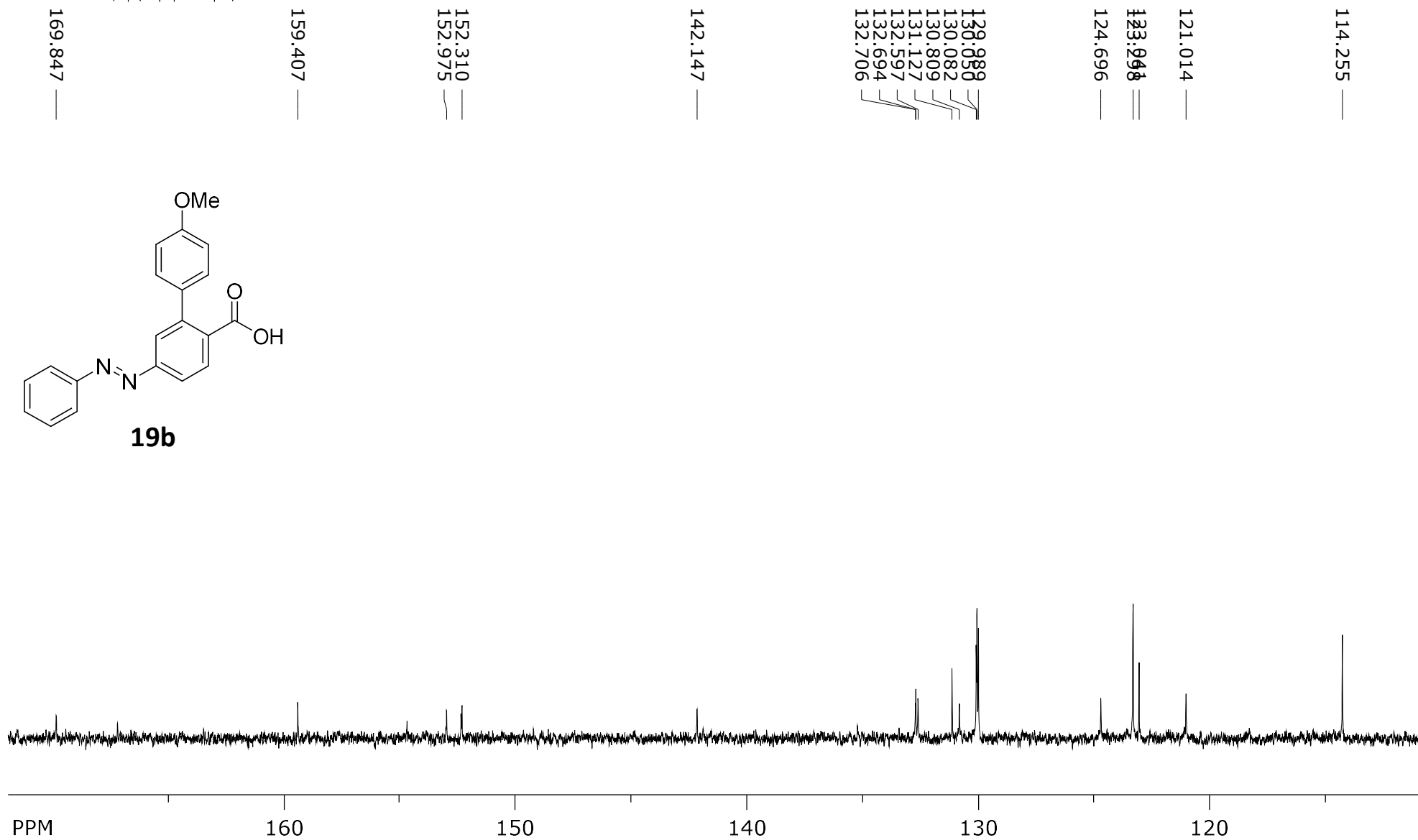
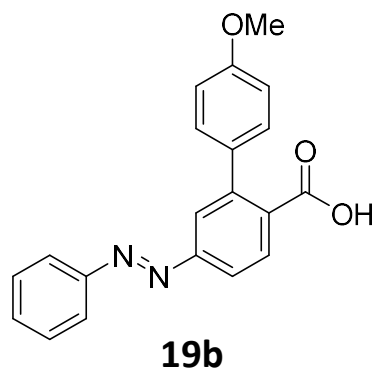


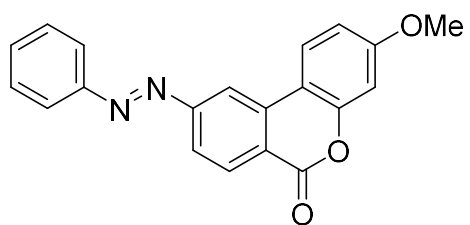
SpinWorks 4: RP 1309
C13CPD DMSO /opt/topspin3.5pl2/nmrdata nmrsu 35

169.847 —
159.407 —
152.310 —
152.975 —
142.147 —
132.706 —
132.694 —
132.597 —
131.127 —
130.809 —
130.989 —
121.014 —
121.938 —
114.255 —

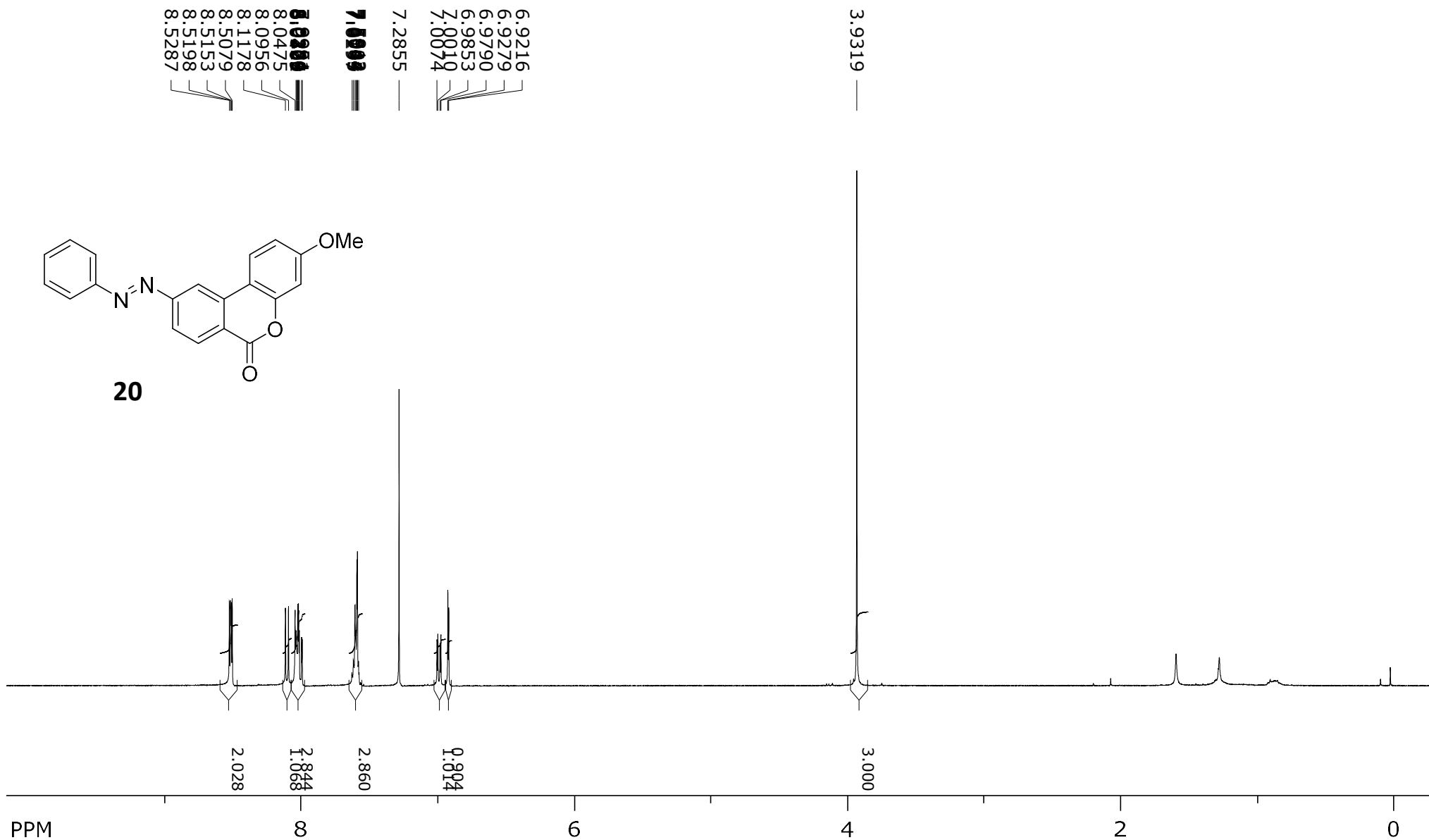


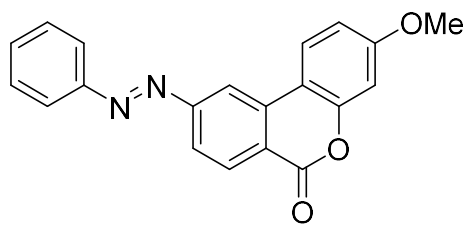
SpinWorks 4: RP 1309
C13CPD DMSO /opt/topspin3.5pl2/nmrdata nmrsu 35





20

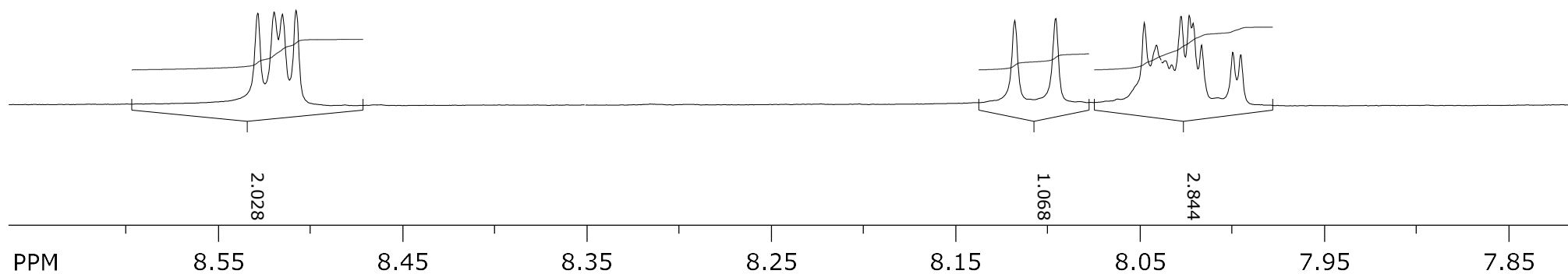




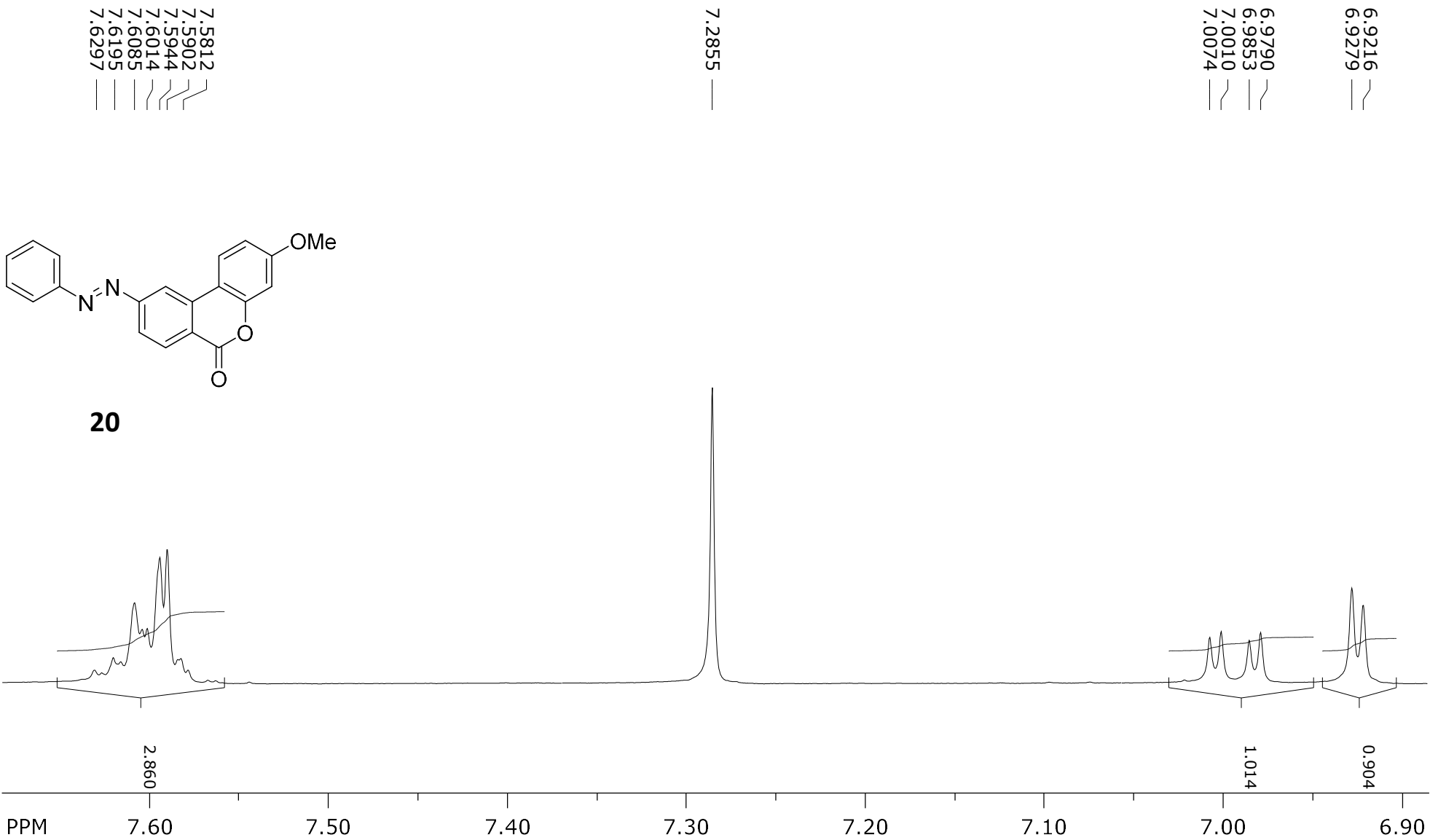
20

8.5079
8.5153
8.5198
8.5287

7.9951
7.9994
8.0164
8.0209
8.0230
8.0275
8.0326
8.0362
8.0409
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8.1178

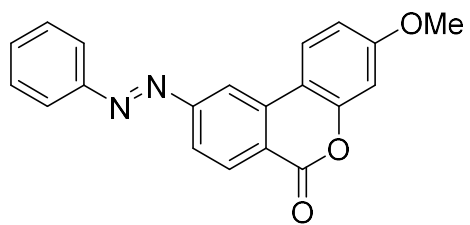


SpinWorks 4: rp-1338r

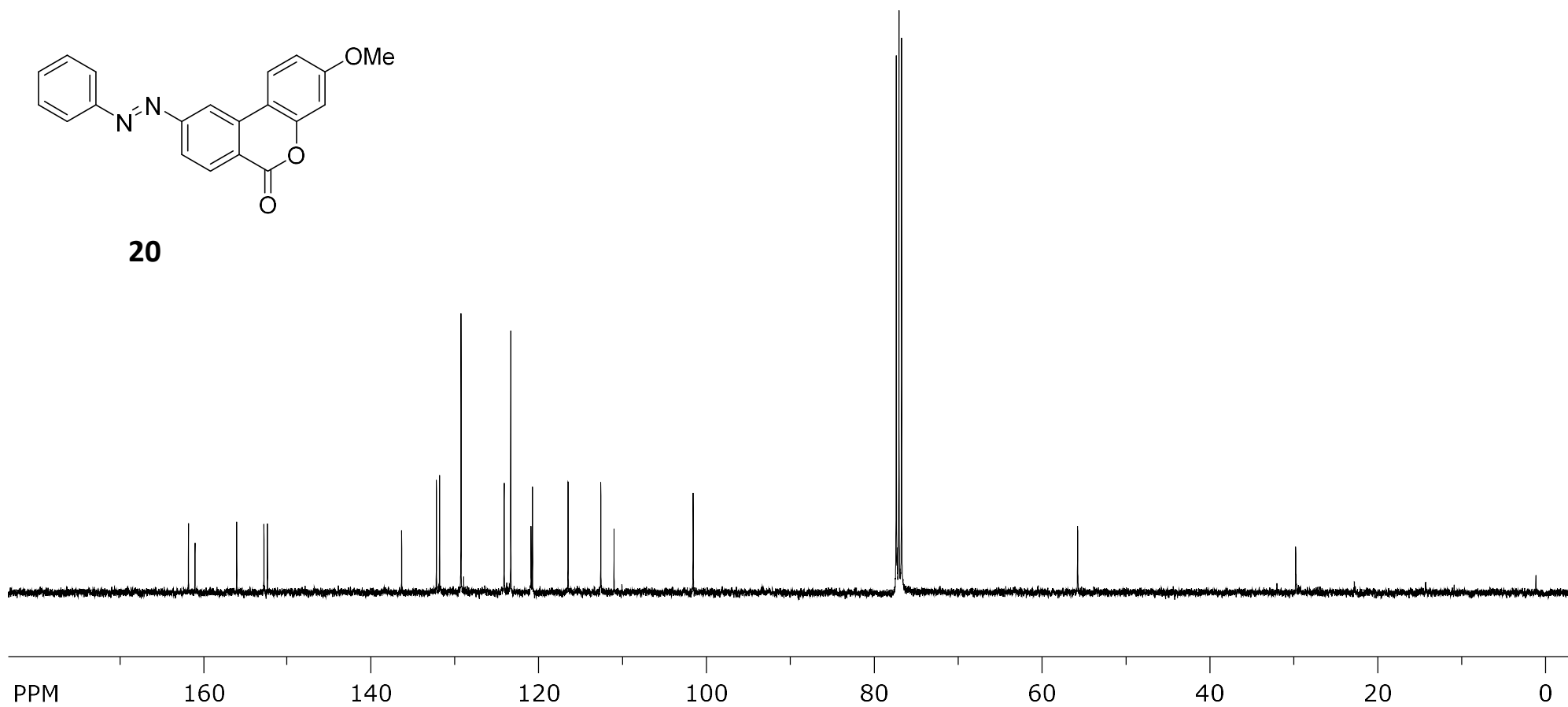


SpinWorks 4: RP 133 8
C13CPD CDCl3 /opt/topspin3.5pl2/nmrdata nmrsu 30

152.423	111.068	101.623	76.751	55.754
152.839	112.641		77.069	
156.092			77.386	
161.059	116.548			
161.841	120.791			
	120.963			
	123.385			
	124.172			
	129.318			
	131.880			
	132.254			
	136.404			



20



Experimental Section

General. ^1H and $^{13}\text{C}\{\text{H}\}$ NMR spectra of compounds were recorded (using TMS as an internal standard) in 400 and ~ 101 MHz (or 500 and ~ 126 MHz) NMR spectrometers, respectively. The HRMS analysis data of samples reported here were obtained from QTOF mass analyzer using the electrospray ionization (ESI) method. IR spectra of samples reported here were recorded as neat or thin films. Column chromatography purification was carried out on silica gel (100–200 mesh). Reactions were conducted in anhydrous solvents under a nitrogen atm wherever required. Organic layers obtained after the workup were dried using anhydrous Na_2SO_4 . Thin layer chromatography (TLC) analyses were performed on silica gel or alumina plates and components were visualized by observation under iodine vapor or using UV lamp. Isolated yields of all the products are reported and yields were not optimized. In all of the cases, after the Pd(II)-catalyzed reactions, the respective crude reaction mixtures were subjected to the column chromatographic purification, and we were focused to isolate the corresponding main products shown in the respective Schemes/Tables and we did not obtain any other by-products in characterizable amounts. While in most of the cases the azobenzenes with *trans* geometry were isolated in pure form, in some cases, the NMR spectra revealed the presence of partial amounts of azobenzenes with *cis* geometry. In some cases, to obtain pure NMR spectra we gently heated the isolated azobenzenes to convert the azobenzenes with *cis* geometry into azobenzenes with *trans* geometry. The corresponding azobenzene carboxylic acids (required to assemble the carboxamides **8** and **10a,b**) were assembled using the standard literature procedures (H. Nishioka, X. Liang, H. Kashidaa, H. Asanuma, *Chem. Commun.* **2007**, 4354–4356) and the carboxamide **5** was assembled from the commercially available azobenzene carboxylic acid. The compound **10g** is a known compound in the literature (E. O. Woolfolk, E. H. Roberts, *J. Org. Chem.* **1956**, *21*, 436–438).

General procedure for the synthesis of the azobenzene carboxylic acid (8a'): To a solution of 4-amino-2-methylbenzoic acid (1.2 equiv, 2.4 mmol) suspended in glacial acetic acid (1.5 mL) was added a solution of nitrosobenzene (1 equiv, 2 mmol) in glacial acetic acid (2 mL) and the mixture was stirred at rt for 24 h. After the reaction period, an orange-colored precipitate is observed, which is then filtered using a suction apparatus, washed with ice-cold water and finally dried to obtain the desired azobenzene carboxylic acid as an orange-colored solid.

General procedure for the synthesis of the carboxamides 5/8/10a/10b-f: A dry RB flask containing amine (0.9 mmol, 0.9 equiv), Et_3N (1.1 mmol, 1.1 equiv) was stirred for 5–10 min under a nitrogen atm. Then, to the reaction flask was added anhydrous DCM (4 mL) followed

by dropwise addition of the corresponding acid chloride, which was prepared from the corresponding carboxylic acid (1 mmol) and SOCl_2 (6 equiv) under refluxing condition for 12 h. Then, the reaction mixture was stirred overnight. After this period, the reaction mixture was diluted with dichloromethane (3-5 mL) and washed with water (5-7 mL) and twice with saturated aqueous NaHCO_3 solution (3-5 mL). The combined organic layers were washed with a minimum dilute HBr to remove excess amine and then dried over anhydrous Na_2SO_4 , concentrated in a vacuum furnished with the corresponding carboxamides.

General procedure for the Pd(II)-catalyzed arylation/benylation of the carboxamides 5/8/10a,b and preparation of the compounds 7a-i,k,l/9a-n/11a-d/18a-d: An appropriate carboxamide (1 equiv), an appropriate aryl/benzyl iodide (3-4 equiv), $\text{Pd}(\text{OAc})_2$ (10 mol%) and AgOAc (2.0-2.2 equiv) in anhydrous toluene (2-3 mL) was heated at 110 °C for 4-48 h under a nitrogen atm in a RB flask. After the reaction period, the reaction mixture was concentrated in a vacuum, and purification of the resulting reaction mixture by column chromatography on neutral alumina or silica gel (eluent = EtOAc :hexanes) furnished the corresponding arylated/benzylated carboxamides **7a-i,k,l/9a-n/11a-d/18a-d** (see the corresponding Tables/Schemes for specific examples). The reactions involving ortho-substituted aryl iodides did not afford the compounds **7m,n**.

General procedure for the Ni(II)-catalyzed mono arylation of the carboxamide 5 and preparation of the compounds 7a', 7b', 7c', 7e', 7j': An appropriate carboxamide (1 equiv), an appropriate aryl iodide (3 equiv), $\text{Ni}(\text{OTf})_2$ (10 mol%) and Na_2CO_3 (4-6 equiv) was suspended in anhydrous toluene (1 mL) in a 10 mL tube. The tube was flushed with N_2 for 2 minutes and sealed with a PTFE-lined cap, and then heated at 160 °C for 36-48 h. After the reaction period, the reaction mixture was concentrated in a vacuum and purification of the resulting reaction mixture by column chromatography on neutral alumina or silica gel (eluent = EtOAc :hexanes) furnished the corresponding mono arylated carboxamides **7a', 7b', 7c', 7e', 7j'** (see the corresponding Tables/Schemes for specific examples).

General procedure for the Pd(II)-catalyzed alkylation of the carboxamides 5/8/10a,b and preparation of the compounds 13a-k: A mixture of an appropriate carboxamide (1 equiv), alkyl iodide (4 equiv), anhydrous K_2CO_3 (2 equiv), NaOTf (3 equiv), $\text{Pd}(\text{OAc})_2$ (10 mol%), was suspended in *t*-AmylOH (1 mL) in a 10 mL tube. The tube was flushed with N_2 for 2 min and sealed with a PTFE-lined cap, and then heated at 125 °C for 22-56 h. After the reaction period, the reaction mixture was concentrated in a vacuum and purification of the resulting reaction mixture by column chromatography on neutral alumina or silica gel (eluent = EtOAc :hexanes) furnished the corresponding alkylated carboxamides **13a-k** (see the

corresponding Tables/Schemes for specific examples). The reaction conditions were adapted from; Y. Zhao . G. Chen, *Org. Lett.* **2011**, *13*, 4850-4853.

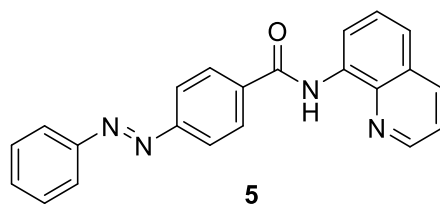
General procedure for the Pd(II)-catalyzed alkylation of the carboxamides 5/8/ preparation of the compounds 15a/16a: A mixture of an appropriate carboxamide (1 equiv), alkyl iodide (4-6 equiv), (BnO)₂POOH (0.2-2 equiv), Ag₂CO₃ (2 equiv), Pd(OAc)₂ (5-10 mol%), was suspended in *t*-AmylOH (1.0-2.0 mL) in a 10 mL tube. The tube was flushed with N₂ for 2 minutes and sealed with a PTFE-lined cap and then heated at 105 °C for 12 h. After the reaction period, the reaction mixture was concentrated in a vacuum and purification of the resulting reaction mixture by column chromatography on silica gel (eluent = EtOAc:hexanes) furnished the corresponding alkylated carboxamides **15a** and **16a** (see the corresponding Tables/Schemes for specific examples).

Procedure for the hydrolysis of the alkylated azobenzene carboxamides 13a. An appropriate amount of bis alkylated azobenzene carboxamide **13a** (0.075 mmol) was taken in a tube, to which trifluoromethanesulfonic acid (0.15 mL), and toluene:H₂O (1.5 mL: 0.15 mL) were added under air. The tube was sealed, and the reaction mixture was stirred at 110 °C for 15 h and the reaction mixture was cooled down to room temperature and excess TfOH was quenched by slow addition of a saturated solution of Na₂CO₃ (5 mL) followed by the extraction using ethyl acetate. The collected organic layers are combined and washed with dilute HBr to remove amine. Purification of the resulting reaction mixture by column chromatography on silica gel eluent=EtOAc:Hexanes) gave the corresponding alkylated azobenzene carboxylic acid **19a** in 95% yield.

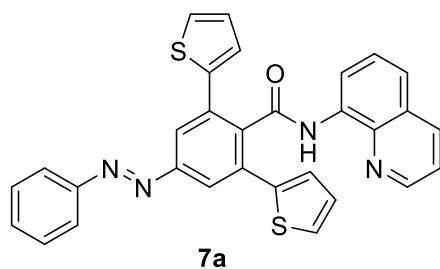
Procedure for the hydrolysis of the arylated azobenzenecarboxamide 7e'. Arylated azobenzenecarboxamide **7e'** (0.11 mmol) and KOH (6.6 mmol) in methanol (1.5 mL) were heated at 100 °C for 48 h in a sealed tube (flushed with nitrogen atm). After this period, the reaction mixture was diluted with water and extracted with ether (2 × 10 mL), and then acidified with 1 N HCl to get a pH ≈ 2. Extraction with ether (2 × 10 mL) and drying of the combined organic layers over Na₂SO₄ followed by evaporation of the solvent in a vacuum afforded the corresponding carboxylic acid **19b** in 66% yield.

Procedure for the lactonization of the arylated azobenzene carboxamides 19b. To a 10 mL RB flask were added mono-arylated azobenzene carboxamide **19b** (0.12 mmol), K₂S₂O₈ (0.36 mmol, 3 equiv) in MeCN:H₂O (1:1, 2 mL) and heated at 60 °C for 24 h in air. After this period, the reaction mixture was washed with a saturated solution of NaHCO₃ (3 × 5 mL). The combined organic layers were dried over Na₂SO₄, followed by evaporation of the solvent in a

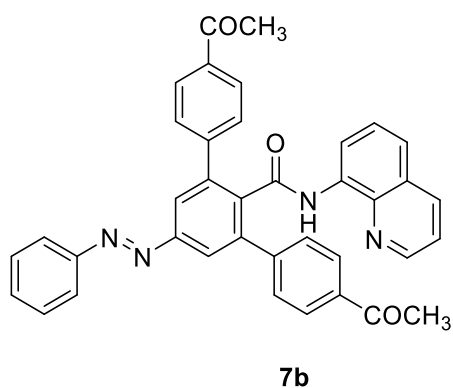
vacuum afforded the corresponding cyclized product **20** (procedure adapted from: Wang, Y.; Gulevich, A. V.; Gevorgyan, V. *Chem. Eur. J.* **2013**, *19*, 1583).



(E)-4-(Phenyldiazenyl)-N-(quinolin-8-yl)benzamide (5): The compound **5** was obtained after workup as an orange coloured solid; Yield: 89% (940 mg, 3 mmol scale); mp 150-152 °C; IR (DCM): 3350, 1672, 1530, 1483 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 10.85 (s, 1H), 8.98 (d, 1H, $J = 7.4$ Hz), 8.90 (d, 1H, $J = 7.4$ Hz), 8.27-8.20 (m, 3H), 8.09 (d, 1H, $J = 8.1$ Hz), 8.00 (d, 1H, $J = 7.8$ Hz), 7.65-7.50 (m, 6H); ^{13}C NMR (100 MHz, CDCl_3): δ 164.7, 154.5, 152.6, 148.4, 138.8, 136.8, 136.5, 134.4, 131.7, 129.2, 128.3, 128.0, 127.5, 123.2, 122.0, 121.8, 116.7; HRMS (ESI): m/z ($M + H$) $^+$ calcd for $\text{C}_{22}\text{H}_{17}\text{N}_4\text{O}$: 353.1402; found 353.1395.

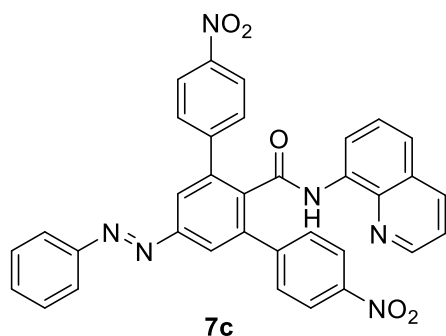


(E)-4-(Phenyldiazenyl)-N-(quinolin-8-yl)-2,6-di(thiophen-2-yl)benzamide (7a): The compound **7a** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 15:85) as an orange coloured solid; Yield: 67% (52 mg, 0.15 mmol scale); mp 153-155 °C; $R_f = 0.40$ (EtOAc:Hexanes = 20:80); IR (DCM): 3334, 1676, 1522, 1483 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.97 (s, 1H), 8.81 (dd, 1H, $J_1 = 7.3$ Hz, $J_2 = 1.4$ Hz), 8.67-8.66 (m, 1H), 8.15 (s, 2H), 8.11-8.08 (m, 1H), 8.03-8.01 (m, 2H), 7.61-7.50 (m, 5H), 7.45-7.44 (m, 2H), 7.39-7.36 (m, 1H), 7.27-7.26 (m, 2H), 6.96 (d, 1H, $J = 5.1$ Hz), 6.95 (d, 1H, $J = 5.1$ Hz); ^{13}C NMR (100 MHz, CDCl_3): δ 166.8, 152.5, 152.3, 148.2, 140.3, 138.4, 137.1, 136.1, 134.3, 134.2, 131.7, 129.2, 127.8, 127.7, 127.5, 127.3, 126.6, 124.0, 123.2, 122.2, 122.1, 121.6, 116.9; HRMS (ESI): m/z ($M + H$) $^+$ calcd for $\text{C}_{30}\text{H}_{21}\text{N}_4\text{OS}_2$: 517.1157; found 517.1133.



(E)-4,4''-Diacetyl-5'-(phenyldiazenyl)-N-(quinolin-8-yl)-(1,1':3',1''-terphenyl)-2'-

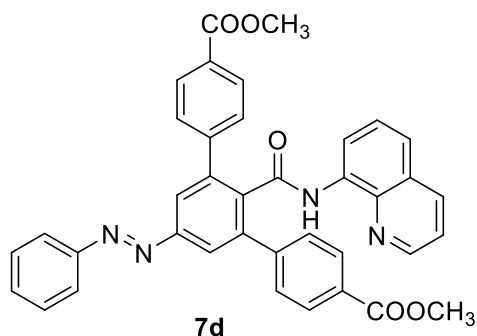
carboxamide (7b): The compound **7b** was obtained after purification by column chromatography on neutral alumina (EtOAc:Hexanes = 50:50) as an orange coloured solid; Yield: 40% (29 mg, 0.125 mmol scale); mp 200-202 °C; R_f = 0.37 (EtOAc:Hexanes = 40:60); IR (DCM): 3333, 1681, 1522, 1483 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.75 (s, 1H), 8.59 (dd, 1H, J_1 = 4.2 Hz, J_2 = 1.5 Hz), 8.52 (dd, 1H, J_1 = 6.2 Hz, J_2 = 2.6 Hz), 8.09 (s, 2H), 8.01-8.06 (m, 1H), 8.01-7.99 (m, 2H), 7.91 (d, 4H, J = 8.3 Hz), 7.75 (d, 4H, J = 8.3 Hz), 7.59-7.54 (m, 3H), 7.47-7.45 (m, 2H), 7.37 (dd, 1H, J_1 = 8.2 Hz, J_2 = 4.2 Hz), 2.50 (s, 6H); ^{13}C NMR (100 MHz, CDCl_3): δ 197.7, 166.3, 152.5, 152.5, 148.1, 144.4, 140.9, 138.2, 137.5, 136.3, 136.2, 133.7, 131.9, 129.3, 129.0, 128.5, 127.7, 127.2, 124.0, 123.2, 122.2, 121.6, 116.7, 26.6; HRMS (ESI): m/z ($M + H$)⁺ calcd for $\text{C}_{38}\text{H}_{29}\text{N}_4\text{O}_3$: 589.2240; found 589.2219.



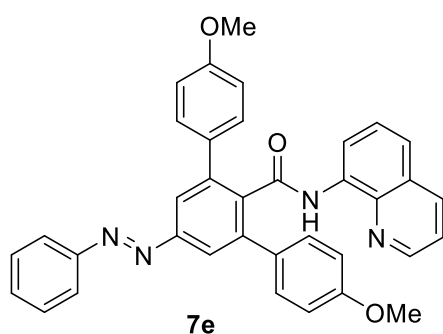
(E)-4,4''-Dinitro-5'-(phenyldiazenyl)-N-(quinolin-8-yl)-(1,1':3',1''-terphenyl)-2'-

carboxamide (7c): The compound **7c** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 20:80) as an orange coloured solid; Yield: 45% (80 mg, 0.3 mmol scale); mp 249-251 °C; R_f = 0.30 (EtOAc:Hexanes = 20:80); IR (DCM): 3328, 1674, 1521, 1343 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.75 (s, 1H), 8.59 (d, 1H, J = 3.1 Hz), 8.48 (d, 1H, J = 7.2 Hz), 8.20 (d, 4H, J = 8.6 Hz), 8.12 (s, 2H), 8.13-8.11 (m, 1H), 8.02-8.00 (m, 2H), 7.82 (d, 4H, J = 8.6 Hz), 7.60-7.46 (m, 5H), 7.41-7.38 (m, 1H); ^{13}C NMR (100 MHz, CDCl_3): δ 165.6, 152.6, 152.4, 148.2, 147.5, 146.0, 139.9, 138.1, 137.4, 136.4, 133.3,

132.2, 129.7, 129.4, 128.6, 127.8, 127.2, 127.0, 124.4, 123.4, 123.3, 122.7, 121.8, 116.9; HRMS (ESI): m/z ($M + H$)⁺ calcd for C₃₄H₂₃N₆O₅: 595.1730; found 595.1708.

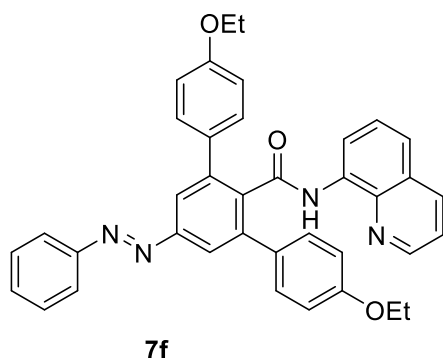


Dimethyl (E)-5'-(phenyldiazenyl)-2'-(quinolin-8-ylcarbamoyl)-(1,1':3',1''-terphenyl)-4,4''-dicarboxylate (7d): The compound **7d** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 40:80) as an orange coloured solid; Yield: 27% (34 mg, 0.2 mmol scale); mp 191-193 °C; R_f = 0.30 (EtOAc:Hexanes = 40:80); IR (DCM): 3333, 1723, 1523, 1483 cm⁻¹; ¹H NMR (400 MHz, CDCl₃): δ 9.74 (s, 1H), 8.60 (dd, 1H, J_1 = 4.2 Hz, J_2 = 1.6 Hz), 8.51 (dd, 1H, J_1 = 6.5 Hz, J_2 = 2.4 Hz), 8.09-8.07 (m, 1H), 8.08 (s, 2H), 8.01-7.99 (m, 6H), 7.73 (d, 4H, J = 8.3 Hz), 7.60-7.55 (m, 3H), 7.48-7.43 (m, 3H), 7.37 (dd, 1H, J_1 = 8.3 Hz, J_2 = 4.2 Hz), 3.86 (s, 6H); ¹³C NMR (100 MHz, CDCl₃): δ 166.8, 166.2, 152.5, 152.4, 148.1, 144.3, 140.9, 138.2, 137.6, 136.2, 133.7, 131.8, 129.7, 129.5, 129.3, 128.8, 127.7, 127.2, 124.0, 123.2, 122.1, 121.6, 116.7, 52.1; HRMS (ESI): m/z ($M + H$)⁺ calcd for C₃₈H₂₉N₄O₅: 621.2138; found 621.2126.



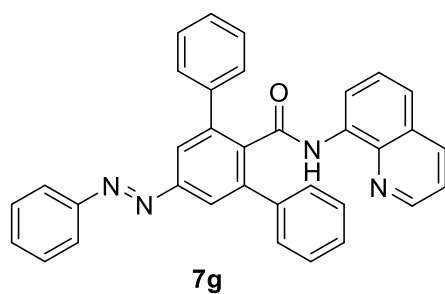
(E)-4,4''-Dimethoxy-5'-(phenyldiazenyl)-N-(quinolin-8-yl)-(1,1':3',1''-terphenyl)-2'-carboxamide (7e): The compound **7e** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 20:80) as an orange coloured solid; Yield: 63% (44 mg, 0.125 mmol scale); mp 181-183 °C; R_f = 0.50 (EtOAc:Hexanes = 20:80); IR (DCM): 3337, 1675, 1524, 1484 cm⁻¹; ¹H NMR (400 MHz, CDCl₃): δ 9.72 (s, 1H), 8.63-8.59

(m, 2H), 8.09 (dd, 1H, $J_1 = 8.2$ Hz, $J_2 = 1.4$ Hz), 8.00-7.99 (m, 3H), 7.96-7.92 (m, 1H), 7.59-7.52 (m, 7H), 7.48-7.46 (m, 2H), 7.38 (dd, 1H, $J_1 = 8.2$ Hz, $J_2 = 4.2$ Hz), 6.86-6.82 (m, 4H), 3.71 (s, 6H); ^{13}C NMR (100 MHz, CDCl_3): δ 167.4, 159.2, 152.6, 152.4, 148.0, 141.4, 138.3, 138.2, 137.7, 136.1, 134.2, 132.2, 131.5, 129.9, 129.2, 127.7, 127.2, 123.3, 123.1, 121.7, 121.5, 116.5, 113.8, 55.2; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{36}\text{H}_{29}\text{N}_4\text{O}_3$: 565.2240; found 565.2216.



(E)-4,4''-Diethoxy-5'-(phenyldiazenyl)-N-(quinolin-8-yl)-(1,1':3',1''-terphenyl)-2'-carboxamide (7f):

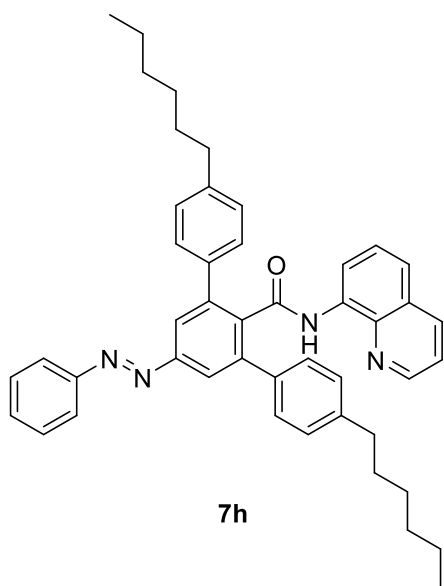
The compound **7f** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 20:80) as an orange coloured solid; Yield: 44% (52 mg, 0.2 mmol scale); mp 152-154 °C; $R_f = 0.50$ (EtOAc:Hexanes = 20:80); IR (DCM): 3341, 1678, 1518, 1482 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.72 (s, 1H), 8.63-8.60 (m, 2H), 8.08 (dd, 1H, $J_1 = 8.2$ Hz, $J_2 = 1.6$ Hz), 8.00 (s, 2H), 8.00-7.98 (m, 2H), 7.58-7.53 (m, 7H), 7.49-7.44 (m, 2H), 7.37 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 4.2$ Hz), 6.85-6.81 (m, 4H), 3.92 (q, 4H, $J = 7.0$ Hz), 1.33 (t, 6H, $J = 7.0$ Hz); ^{13}C NMR (100 MHz, CDCl_3): δ 167.4, 158.6, 152.6, 152.4, 148.0, 141.4, 138.4, 137.8, 136.0, 134.3, 132.2, 131.5, 129.9, 129.2, 127.7, 127.2, 123.3, 123.1, 121.6, 121.4, 116.5, 114.4, 63.3, 14.8; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{38}\text{H}_{33}\text{N}_4\text{O}_3$: 593.2553; found 593.2529.



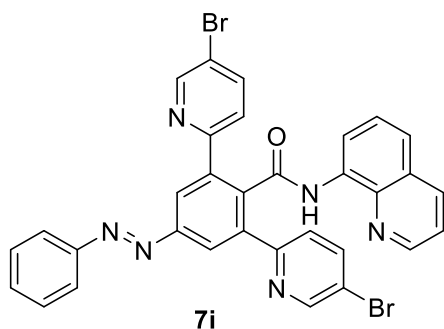
(E)-5'-(Phenyldiazenyl)-N-(quinolin-8-yl)-(1,1':3',1''-terphenyl)-2'-carboxamide (7g):

The compound **7g** was obtained after purification by column chromatography on silica gel

(EtOAc:Hexanes = 20:80) as an orange coloured solid; Yield: 42% (42 mg, 0.2 mmol scale); mp 151-153 °C; R_f = 0.50 (EtOAc:Hexanes = 20:80); IR (DCM): 3337, 1677, 1522, 1483 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.74 (s, 1H), 8.62-8.56 (m, 2H), 8.07 (s, 2H), 8.08-8.06 (m, 1H), 8.01 (d, 2H, $J_1 = 7.4$ Hz), 7.67 (d, 4H, $J = 7.5$ Hz), 7.60-7.54 (m, 3H), 7.45-7.44 (m, 2H), 7.38-7.30 (m, 5H), 7.25-7.21 (m, 2H); ^{13}C NMR (100 MHz, CDCl_3): δ 166.9, 152.6, 152.4, 147.9, 141.8, 139.9, 138.3, 137.9, 136.0, 134.2, 131.6, 129.2, 128.7, 128.4, 127.7, 127.6, 127.2, 123.7, 123.1, 121.6, 121.4, 116.4; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{34}\text{H}_{25}\text{N}_4\text{O}$: 505.2028; found 505.2042.

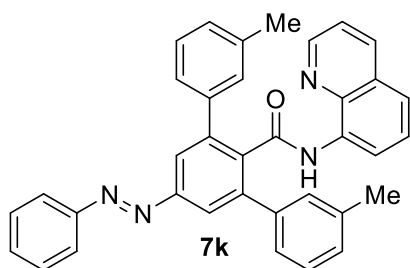


(E)-4,4''-Dihexyl-5'-(phenyldiazenyl)-N-(quinolin-8-yl)-(1,1':3',1''-terphenyl)-2'-carboxamide (7h): The compound **7h** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 5:95) as an orange coloured solid; Yield: 57% (120 mg, 0.3 mmol scale); mp 73-75 °C; R_f = 0.80 (EtOAc:Hexanes = 20:80); IR (DCM): 3339, 2927, 1680 1521 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.69 (s, 1H), 8.61 (dd, 1H, $J_1 = 4.2$ Hz, $J_2 = 1.6$ Hz), 8.58 (dd, 2H, $J_1 = 6.8$ Hz, $J_2 = 2.2$ Hz), 8.07 (dd, 1H, $J_1 = 6.8$ Hz, $J_2 = 2.2$ Hz), 8.04 (s, 2H), 8.00-7.98 (m, 2H), 7.59-7.53 (m, 7H), 7.48-7.43 (m, 2H), 7.34 (dd, 1H, $J_1 = 8.2$ Hz, $J_2 = 4.2$ Hz), 7.10 (d, 4H, $J = 8.1$ Hz), 2.49 (t, 4H, $J = 7.9$ Hz), 1.44-1.37 (m, 4H), 1.25-1.19 (m, 12H), 0.87 (t, 6H, $J = 7.0$ Hz); ^{13}C NMR (100 MHz, CDCl_3): δ 167.3, 152.7, 152.4, 147.8, 142.4, 141.9, 138.3, 137.9, 137.2, 135.9, 134.4, 131.5, 129.2, 128.6, 128.4, 128.4, 127.6, 127.2, 123.5, 123.1, 121.5, 121.4, 116.4, 35.6, 31.7, 31.2, 28.9, 22.6, 14.2; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{46}\text{H}_{49}\text{N}_4\text{O}$: 673.3906; found 673.3929.



(E)-2,6-Bis(5-bromopyridin-2-yl)-4-(phenyldiazenyl)-N-(quinolin-8-yl)benzamide (7i):

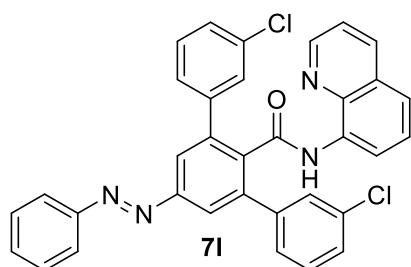
The compound **7i** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 20:80) as an orange coloured solid; Yield: 25% (49 mg, 0.3 mmol scale); mp 181-183 °C; R_f = 0.30 (EtOAc:Hexanes = 20:80); IR (DCM): 3337, 1675, 1524, 1483 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.89 (s, 1H), 8.63-8.58 (m, 4H), 8.33 (s, 2H), 8.11 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 1.6$ Hz), 8.02-7.99 (m, 2H), 7.76 (dd, 2H, $J_1 = 8.4$ Hz, $J_2 = 2.4$ Hz), 7.66 (dd, 2H, $J_1 = 8.4$ Hz, $J_2 = 0.6$ Hz), 7.59-7.51 (m, 5H), 7.40 (dd, 1H, $J_1 = 8.2$ Hz, $J_2 = 4.2$ Hz); ^{13}C NMR (100 MHz, CDCl_3): δ 166.8, 155.6, 152.6, 152.5, 150.5, 148.2, 139.8, 139.0, 138.4, 137.4, 136.0, 134.3, 131.8, 129.2, 127.8, 127.2, 124.6, 123.2, 122.0, 121.6, 120.1, 116.8; HRMS (ESI): m/z ($\text{M} + \text{Na}$) $^+$ calcd for $\text{C}_{32}\text{H}_{20}\text{Br}_2\text{N}_6\text{NaO}$: 684.9963; found 684.9987.



(E)-3,3'-Dimethyl-5'-(phenyldiazenyl)-N-(quinolin-8-yl)-[1,1':3',1''-terphenyl]-2'-

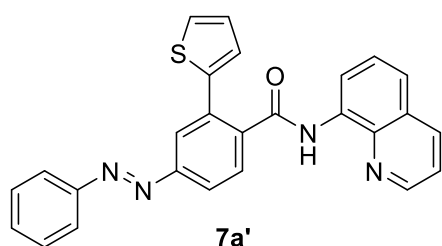
carboxamide (7k): The compound **7k** was obtained after purification by column chromatography on silica gel (EtOAc:hexane = 10:90) as an orange solid (29 mg, 36%, 0.15 mmol scale); R_f (10% EtOAc/hexane) 0.5; mp 162-164 °C; IR (DCM): 3339, 1677, 1513, 770 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.71 (1H, s), 8.63 (1H, dd, $J_1 = 4.2$ Hz, $J_2 = 1.6$ Hz), 8.57-8.52 (1H, m), 8.09 (1H, dd, $J_1 = 8.3$, $J_2 = 1.6$ Hz), 8.04 (2H, s), 8.00-7.98 (2H, m), 7.59-7.53 (3H, m), 7.48 (2H, s), 7.45-7.41 (4H, m), 7.39 (1H, dd, $J_1 = 8.3$ Hz, $J_2 = 4.3$ Hz), 7.17 (2H, t, $J = 7.6$ Hz), 7.02 (2H, d, $J = 7.6$ Hz), 2.25 (6H, s); ^{13}C NMR (~101 MHz, CDCl_3): δ 167.1, 152.6, 152.3, 147.8, 141.9, 139.8, 138.3, 137.9, 137.9, 136.0, 134.2, 131.5, 129.5, 129.2,

128.4, 128.2, 127.6, 127.2, 125.7, 123.5, 123.1, 121.5, 121.4, 116.4, 21.3; HRMS (ESI): m/z $[M+H]^+$ calcd for $C_{36}H_{29}N_4O$: 533.2341 found 533.2338.



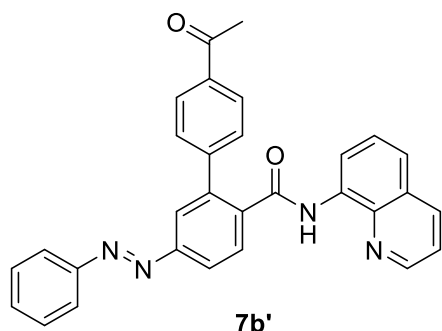
(E)-3,3''-Dichloro-5'-(phenyldiazenyl)-N-(quinolin-8-yl)-[1,1':3',1''-terphenyl]-2'-

carboxamide (71): The compound **71** was obtained after purification by column chromatography on silica gel (EtOAc:hexane = 10:90) as an orange solid (29 mg, 34%, 0.15 mmol scale); R_f (10% EtOAc/hexane) 0.4; mp 197-198 °C; IR (DCM): 3331, 1677, 1580, 770 cm^{-1} ; 1H NMR (400 MHz, $CDCl_3$): δ 9.71 (1H, s), 8.68 (1H, dd, $J_1 = 4.2$, $J_2 = 1.6$ Hz), 8.51 (1H, dd, $J_1 = 5.9$, $J_2 = 3.0$ Hz), 8.11 (1H, dd, $J_1 = 8.3$, $J_2 = 1.6$ Hz), 8.05 (2H, s), 8.02-7.99 (2H, m), 7.69-7.68 (2H, m), 7.61-7.55 (3H, m), 7.50-7.45 (4H, m), 7.41 (1H, dd, $J_1 = 8.3$, $J_2 = 4.2$ Hz), 7.21-7.19 (4H, m); $^{13}C\{^1H\}$ NMR (~101 MHz, $CDCl_3$): δ 166.2, 152.5, 152.4, 148.2, 141.4, 140.5, 138.3, 137.6, 136.1, 134.3, 133.8, 131.8, 129.6, 129.3, 129.0, 127.9, 127.7, 127.2, 126.8, 123.9, 123.2, 122.0, 121.5, 116.7; HRMS (ESI): m/z $[M+H]^+$ calcd for $C_{34}H_{23}Cl_2N_4O$: 573.1249 found 573.1243.



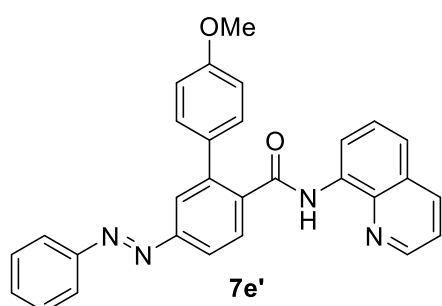
(E)-4-(Phenyldiazenyl)-N-(quinolin-8-yl)-2-(thiophen-2-yl)benzamide (7a'): The compound **7a'** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 20:80) as an orange colored solid; Yield: 47% (41 mg, 0.2 mmol scale); mp 191-193 °C; $R_f = 0.40$ (EtOAc:Hexanes = 20:80); IR (DCM): 1673, 1523, 1482, 1326 cm^{-1} ; 1H NMR (500 MHz, $CDCl_3$): δ 9.96 (s, 1H), 8.79 (dd, 1H, $J_1 = 7.5$ Hz, $J_2 = 1.2$ Hz), 8.53 (dd, 1H, $J_1 = 4.2$ Hz, $J_2 = 1.6$ Hz), 8.04-8.00 (m, 2H), 7.91-7.86 (m, 4H), 7.49-7.40 (m, 5H), 7.29

(dd, 1H, $J_1 = 8.2$ Hz, $J_2 = 4.2$ Hz), 7.23 (dd, 1H, $J_1 = 3.6$ Hz, $J_2 = 1.1$ Hz), 7.17 (dd, 1H, $J_1 = 5.1$ Hz, $J_2 = 1.1$ Hz), 6.85-6.83 (m, 1H); ^{13}C NMR (~ 126 MHz, CDCl_3): δ 167.1, 153.2, 152.6, 148.0, 140.4, 138.5, 138.0, 136.1, 134.5, 133.6, 131.6, 130.0, 129.2, 127.9, 127.7, 127.6, 127.3, 126.8, 125.5, 123.2, 121.9, 121.9, 121.6, 116.5; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{26}\text{H}_{19}\text{N}_4\text{OS}$: 435.1280; found 435.1266.



(E)-4'-Acetyl-5-(phenyldiazenyl)-N-(quinolin-8-yl)-(1,1'-biphenyl)-2-carboxamide (7b'):

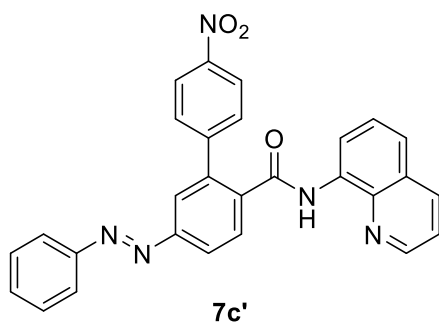
The compound **7b'** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 40:60) as an orange coloured solid; Yield: 50% (35 mg, 0.15 mmol scale); mp 189-191 °C; $R_f = 0.30$ (EtOAc:Hexanes = 40:60); IR (DCM): 3332, 1679, 1524, 1484 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.93 (s, 1H), 8.82 (d, 1H, $J = 7.2$ Hz), 8.56 (br s, 1H), 8.13-8.07 (m, 4H), 8.01 (s, 1H), 8.00 (s, 1H), 7.94 (d, 2H, $J = 7.7$ Hz), 7.72 (d, 2H, $J = 7.6$ Hz), 7.58-7.51 (m, 5H), 7.40-7.38 (m, 1H), 2.50 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3): δ 197.6, 166.7, 153.5, 152.5, 147.9, 144.4, 140.4, 138.4, 137.8, 136.4, 136.2, 134.2, 131.8, 130.3, 129.3, 129.2, 128.6, 127.8, 127.3, 124.8, 123.2, 122.5, 122.0, 121.6, 116.5; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{30}\text{H}_{23}\text{N}_4\text{O}_2$: 471.1821; found 471.1841.



(E)-4'-Methoxy-5-(phenyldiazenyl)-N-(quinolin-8-yl)-(1,1'-biphenyl)-2-carboxamide

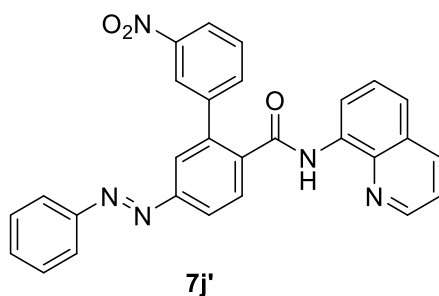
(7e'): The compound **7e'** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 15:85) as an orange coloured solid; Yield: 44% (40 mg, 0.2 mmol scale); mp 181-183 °C; $R_f = 0.40$ (EtOAc:Hexanes = 20:80); IR (DCM): 3328, 1670, 1523,

1483 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.93 (s, 1H), 8.88 (d, 1H, $J = 7.5$ Hz), 8.57 (d, 1H, $J = 4.0$ Hz), 8.12-7.99 (m, 6H), 7.57-7.750 (m, 7H), 7.38 (dd, 1H, $J_1 = 8.2$ Hz, $J_2 = 4.2$ Hz), 6.89 (d, 2H, $J = 8.2$ Hz), 3.69 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3): δ 167.3, 159.6, 153.4, 152.6, 147.8, 141.1, 138.5, 137.6, 136.1, 134.5, 131.8, 131.6, 130.5, 130.3, 129.2, 127.8, 127.3, 125.2, 123.1, 121.7, 121.5, 121.3, 116.4, 114.1, 55.2; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{29}\text{H}_{23}\text{N}_4\text{O}_2$: 459.1821; found 459.1833.



(E)-4'-Nitro-5-(phenyldiazenyl)-N-(quinolin-8-yl)-(1,1'-biphenyl)-2-carboxamide (7c')

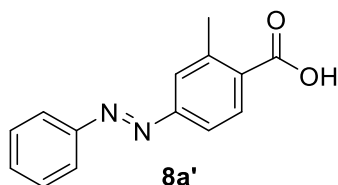
The compound **7c'** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 15:95) as an orange coloured solid; Yield: 20% (18 mg, 0.2 mmol scale); mp 142-144 $^{\circ}\text{C}$; $R_f = 0.40$ (EtOAc:Hexanes = 20:80); IR (DCM): 3332, 1673, 1522, 1483 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.97 (s, 1H), 8.81 (d, 1H, $J = 6.5$ Hz), 8.60 (d, 1H, $J = 3.8$ Hz), 8.22 (d, 2H, $J = 7.8$ Hz), 8.16-8.09 (m, 1H), 8.14 (s, 2H), 8.05-8.00 (m, 3H), 7.78 (d, 2H, $J = 7.8$ Hz), 7.59-7.54 (m, 6H), 7.44-7.41 (m, 1H); ^{13}C NMR (100 MHz, CDCl_3): δ 166.2, 153.5, 152.5, 148.0, 147.5, 146.4, 137.7, 136.4, 134.0, 132.0, 130.4, 129.9, 129.3, 127.9, 127.3, 124.6, 123.8, 123.3, 123.2, 122.3, 121.8, 116.6, 26.6; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{28}\text{H}_{20}\text{N}_5\text{O}_3$: 474.1566; found 474.1553.



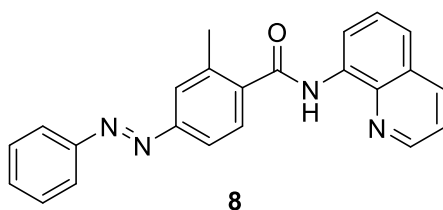
(E)-3'-Nitro-5-(phenyldiazenyl)-N-(quinolin-8-yl)-(1,1'-biphenyl)-2-carboxamide (7j')

The compound **7j'** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 15:85) as an orange coloured solid; Yield: 28% (20 mg, 0.15 mmol scale); mp 169-171 $^{\circ}\text{C}$; $R_f = 0.40$ (EtOAc:Hexanes = 20:80); IR (DCM): 3333, 1673, 1527, 1484 cm^{-1}

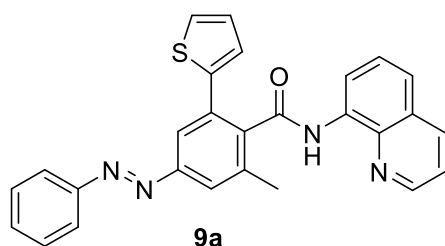
¹H NMR (400 MHz, CDCl₃): δ 9.94 (s, 1H), 8.78 (d, 1H, *J* = 6.6 Hz), 8.58-8.55 (m, 2H), 8.14-8.01 (m, 7H), 7.87 (d, 1H, *J* = 7.6 Hz), 7.59-7.52 (m, 5H), 7.47-7.41 (m, 2H); ¹³C NMR (100 MHz, CDCl₃): δ 166.2, 153.5, 152.5, 148.4, 148.1, 141.4, 139.1, 138.3, 137.8, 136.3, 135.2, 134.0, 131.9, 130.4, 129.4, 129.3, 127.8, 127.3, 124.6, 123.9, 123.2, 122.8, 122.2, 121.8, 116.5; HRMS (ESI): *m/z* (M + H)⁺ calcd for C₂₈H₂₀N₅O₃: 474.1566; found 474.1551.



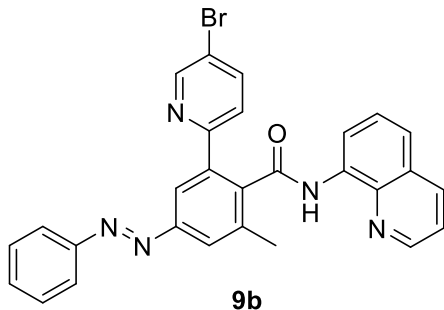
(E)-2-Methyl-4-(phenyldiazenyl)benzoic acid (8a'): The compound **8a'** was obtained after workup as an orange coloured solid; Yield: 83% (400 mg, 2 mmol scale); mp 198-200 °C; IR (DCM): 1691, 1571, 1413, 1269 cm⁻¹; ¹H NMR (400 MHz, DMSO-*d*₆): δ 8.00 (d, 1H, *J* = 8.2 Hz), 7.91-7.89 (m, 2H), 7.77 (s, 1H), 7.73 (d, 1H, *J* = 8.4 Hz), 7.62-7.59 (m, 3H), 2.62 (s, 3H); ¹³C NMR (100 MHz, DMSO-*d*₆): δ 168.6, 153.6, 152.3, 141.1, 133.2, 132.5, 130.0, 126.1, 123.2, 119.8, 21.8; HRMS (ESI): *m/z* (M + H)⁺ calcd for C₁₄H₁₃N₂O₂: 241.0977; found 241.0965 (in the proton NMR the OH peak could not be identified).



(E)-2-Methyl-4-(phenyldiazenyl)-N-(quinolin-8-yl)benzamide (8): The compound **8** was obtained (from **8a'**) as an orange coloured solid; Yield: 87% (320 mg, 1 mmol scale); mp 163-165 °C; IR (DCM): 3357, 1678, 1524, 1482 cm⁻¹; ¹H NMR (400 MHz, CDCl₃): δ 10.31 (s, 1H), 8.99 (d, 1H, *J* = 7.1 Hz), 8.82 (dd, 1H, *J*₁ = 4.2 Hz, *J*₂ = 1.5 Hz), 8.23 (dd, 1H, *J*₁ = 8.2 Hz, *J*₂ = 1.0 Hz), 8.00-7.98 (m, 2H), 7.90-7.85 (m, 3H), 7.66-7.53 (m, 5H), 7.48 (dd, 1H, *J*₁ = 8.3 Hz, *J*₂ = 4.2 Hz), 2.74 (s, 3H); ¹³C NMR (100 MHz, CDCl₃): δ 167.5, 153.4, 152.6, 148.4, 138.6, 138.5, 138.1, 136.4, 134.6, 131.4, 129.2, 128.3, 128.0, 127.4, 125.6, 123.1, 122.0, 121.8, 120.5, 116.7, 20.4; HRMS (ESI): *m/z* (M + H)⁺ calcd for C₂₃H₁₉N₄O: 367.1559; found 367.1547.

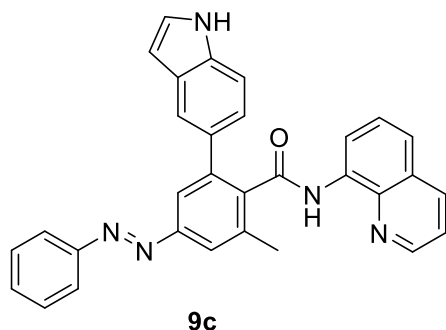


(E)-2-Methyl-4-(phenyldiazenyl)-N-(quinolin-8-yl)-6-(thiophen-2-yl)benzamide (9a): The compound **9a** was obtained after purification by column chromatography on silica (EtOAc:Hexanes = 10:90) as an orange coloured solid; Yield: 66% (59 mg, 0.2 mmol scale); mp 125-127 °C; R_f = 0.50 (EtOAc:Hexanes = 20:80); IR (DCM): 3337, 1674, 1521, 1483 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.95 (s, 1H), 8.94 (dd, 1H, $J_1 = 7.5$ Hz, $J_2 = 1.0$ Hz), 8.70 (dd, 1H, $J_1 = 4.2$ Hz, $J_2 = 1.4$ Hz), 8.13 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 1.4$ Hz), 8.03-8.00 (m, 3H), 7.84 (s, 1H), 7.63-7.54 (m, 5H), 7.42-7.39 (m, 2H), 7.22 (dd, 1H, $J_1 = 5.1$ Hz, $J_2 = 0.4$ Hz), 6.94-6.91 (m, 1H), 2.64 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3): δ 167.7, 152.6, 152.5, 148.3, 140.8, 138.4, 138.3, 137.3, 136.2, 134.3, 133.2, 131.5, 129.2, 127.9, 127.7, 127.3, 127.0, 126.3, 123.4, 123.1, 122.6, 122.1, 121.7, 116.8, 19.9; HRMS (ESI): m/z ($M + H$) $^+$ calcd for $\text{C}_{27}\text{H}_{21}\text{N}_4\text{OS}$: 449.1436; found 449.1451.

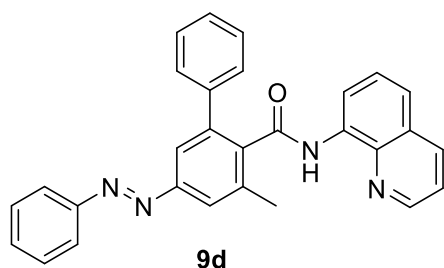


(E)-2-(5-Bromopyridin-2-yl)-6-methyl-4-(phenyldiazenyl)-N-(quinolin-8-yl)benzamide (9b): The compound **9b** was obtained after purification by column chromatography on silica (EtOAc:Hexanes = 10:90) as an orange coloured solid; Yield: 78% (81 mg, 0.2 mmol scale); mp 121-123 °C; R_f = 0.50 (EtOAc:Hexanes = 20:80); IR (DCM): 3341, 1675, 1521, 1483 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.87 (s, 1H), 8.85 (dd, 1H, $J_1 = 7.2$ Hz, $J_2 = 1.5$ Hz), 8.67 (dd, 1H, $J_1 = 4.2$ Hz, $J_2 = 1.5$ Hz), 8.58 (d, 1H, $J = 1.9$ Hz), 8.17-8.15 (m, 2H), 8.00-7.95 (m, 3H), 7.74 (dd, 1H, $J_1 = 8.4$ Hz, $J_2 = 2.3$ Hz), 7.67 (d, 1H, $J = 8.4$ Hz), 7.60-7.53 (m, 5H), 7.43 (dd, 1H, $J_1 = 8.2$ Hz, $J_2 = 4.2$ Hz), 2.68 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3): δ 167.7, 155.6, 152.6, 150.4, 148.3, 139.0, 138.5, 138.4, 138.3, 137.8, 136.2, 134.4, 131.5, 129.2, 127.9, 127.3, 125.2,

124.3, 123.1, 122.0, 121.7, 121.6, 119.9, 116.8, 19.9; HRMS (ESI): m/z ($M + H$)⁺ calcd for C₂₈H₂₁BrN₅O: 522.0929; found 522.0945.

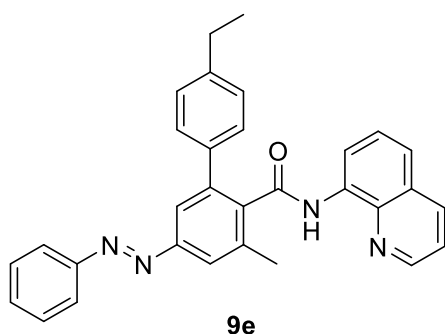


(E)-2-(1H-Indol-5-yl)-6-methyl-4-(phenyldiazenyl)-N-(quinolin-8-yl)benzamide (9c): The compound **9c** was obtained after purification by column chromatography on silica (EtOAc:Hexanes = 50:60) as an orange coloured solid; Yield: 50% (48 mg, 0.2 mmol scale); mp 176-178 °C; R_f = 0.20 (EtOAc:Hexanes = 50:60); IR (DCM): 3320, 1650, 1520, 1484, cm⁻¹; ¹H NMR (400 MHz, CDCl₃): δ 9.75 (s, 1H), 8.79 (dd, 1H, J_1 = 7.5 Hz, J_2 = 1.3 Hz), 8.54 (dd, 1H, J_1 = 4.2 Hz, J_2 = 1.6 Hz), 8.13 (br s, 1H), 8.01-7.97 (m, 4H), 7.93 (d, 1H, J = 0.8 Hz), 7.85 (d, 1H, J = 1.1 Hz), 7.59-7.52 (m, 3H), 7.50-7.46 (m, 1H), 7.44-7.40 (m, 2H), 7.30-7.27 (m, 1H), 7.16 (d, 1H, J = 8.4 Hz), 7.06 (t, 1H, J = 2.8 Hz), 6.48 (t, 1H, J = 2.2 Hz), 2.67 (s, 3H); ¹³C NMR (100 MHz, CDCl₃): δ 168.3, 152.7, 152.5, 148.0, 142.1, 138.9, 138.4, 137.1, 136.0, 135.3, 134.3, 131.6, 131.3, 129.2, 128.0, 127.7, 127.2, 124.6, 123.0, 123.0, 122.7, 121.7, 121.4, 121.1, 116.6, 110.9, 102.9, 20.0; HRMS (ESI): m/z ($M + H$)⁺ calcd for C₃₁H₂₄N₅O: 482.1981; found 482.1964.



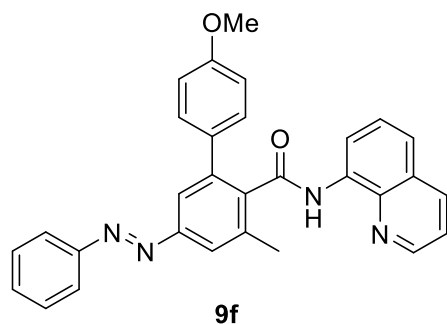
(E)-3-Methyl-5-(phenyldiazenyl)-N-(quinolin-8-yl)-(1,1'-biphenyl)-2-carboxamide (9d): The compound **9d** was obtained after purification by column chromatography on silica (EtOAc:Hexanes = 10:90) as an orange coloured solid; Yield: 70% (62 mg, 0.2 mmol scale); mp 120-122 °C; R_f = 0.50 (EtOAc:Hexanes = 20:80); IR (DCM): 3342, 1673, 1522, 1483 cm⁻¹

¹H NMR (400 MHz, CDCl₃): δ 9.74 (s, 1H), 8.82 (dd, 1H, *J*₁ = 7.4 Hz, *J*₂ = 1.3 Hz), 8.65 (dd, 1H, *J*₁ = 4.2 Hz, *J*₂ = 1.6 Hz), 8.10 (dd, 1H, *J*₁ = 8.3 Hz, *J*₂ = 1.5 Hz), 8.01-7.99 (m, 2H), 7.92-7.89 (m, 2H), 7.66-7.64 (m, 2H), 7.60-7.53 (m, 4H), 7.50 (dd, 1H, *J*₁ = 8.4 Hz, *J*₂ = 1.5 Hz), 7.38 (dd, 1H, *J*₁ = 8.2 Hz, *J*₂ = 4.2 Hz), 7.28 (t, 2H, *J* = 7.5 Hz), 7.16 (t, 1H, *J* = 7.4 Hz), 2.74 (s, 3H); ¹³C NMR (100 MHz, CDCl₃): δ 167.7, 152.6, 152.5, 148.1, 140.8, 139.8, 138.7, 138.4, 137.3, 136.1, 134.3, 131.4, 129.2, 128.7, 128.3, 127.8, 127.6, 127.3, 123.5, 123.0, 122.2, 121.9, 121.5, 116.5, 20.0; HRMS (ESI): *m/z* (M + H)⁺ calcd for C₂₉H₂₃N₄O: 443.1872; found 443.1859.



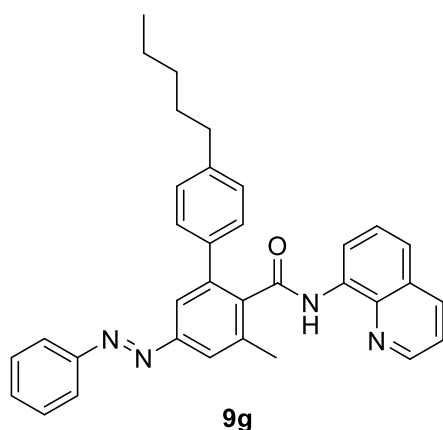
(*E*)-4'-Ethyl-3-methyl-5-(phenyldiazenyl)-*N*-(quinolin-8-yl)-(1,1'-biphenyl)-2-

carboxamide (9e): The compound **9e** was obtained after purification by column chromatography on silica (EtOAc:Hexanes = 10:90) as an orange coloured solid; Yield: 70% (66 mg, 0.2 mmol scale); mp 73-75 °C; *R*_f = 0.60 (EtOAc:Hexanes = 20:80); IR (DCM): 3339, 1674, 1522, 1483 cm⁻¹; ¹H NMR (400 MHz, CDCl₃): δ 9.72 (s, 1H), 8.82 (dd, 1H, *J*₁ = 7.4 Hz, *J*₂ = 1.3 Hz), 8.65 (dd, 1H, *J*₁ = 4.2 Hz, *J*₂ = 1.6 Hz), 8.11 (dd, 1H, *J*₁ = 8.3 Hz, *J*₂ = 1.6 Hz), 8.00-7.97 (m, 2H), 7.91-7.86 (m, 2H), 7.59-7.49 (m, 7H), 7.39 (dd, 1H, *J*₁ = 8.2, *J*₂ = 4.2 Hz), 7.09 (d, 2H, *J* = 8.1 Hz), 2.67 (s, 3H), 2.48 (q, 2H, *J* = 7.6 Hz), 1.01 (t, 3H, *J* = 7.6 Hz); ¹³C NMR (100 MHz, CDCl₃): δ 167.9, 152.6, 152.5, 148.0, 143.0, 140.9, 138.7, 138.4, 137.3, 137.1, 136.1, 134.3, 131.4, 129.2, 128.6, 127.8, 127.8, 127.3, 123.3, 123.0, 122.3, 121.8, 121.5, 116.6, 28.4, 20.0, 15.3; HRMS (ESI): *m/z* (M + H)⁺ calcd for C₃₁H₂₇N₄O: 471.2185; found 471.2198.



(E)-4'-Methoxy-3-methyl-5-(phenyldiazenyl)-N-(quinolin-8-yl)-(1,1'-biphenyl)-2-

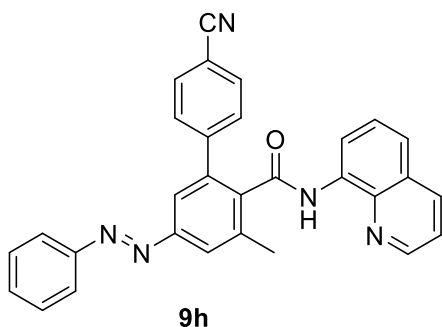
carboxamide (9f): The compound **9f** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 20:80) as an orange coloured solid; Yield: 78% (73 mg, 0.2 mmol scale); mp 87-89 °C; R_f = 0.30 (EtOAc:Hexanes = 20:80); IR (DCM): 3342, 1674, 1521, 1249 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.73 (s, 1H), 8.83 (dd, 1H, J_1 = 7.3 Hz, J_2 = 1.5 Hz), 8.66 (dd, 1H, J_1 = 4.2 Hz, J_2 = 1.6 Hz), 8.13 (dd, 1H, J_1 = 8.3 Hz, J_2 = 1.6 Hz), 7.90-7.97 (m, 2H), 7.88-7.84 (m, 2H), 7.59-7.51 (m, 7H), 7.41 (dd, 1H, J_1 = 8.3 Hz, J_2 = 4.2 Hz), 6.83-6.80 (m, 2H), 3.68 (s, 3H), 2.65 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3): δ 168.0, 159.2, 152.6, 152.5, 148.1, 140.1, 138.7, 138.4, 137.2, 136.2, 134.3, 132.2, 131.4, 129.9, 129.2, 127.8, 127.3, 123.0, 122.3, 121.9, 121.6, 116.6, 113.8, 55.1, 20.0; HRMS (ESI): m/z ($M + H$)⁺ calcd for $\text{C}_{30}\text{H}_{25}\text{N}_4\text{O}_2$: 473.1978; found 473.1997.



(E)-3-Methyl-4'-pentyl-5-(phenyldiazenyl)-N-(quinolin-8-yl)-(1,1'-biphenyl)-2-

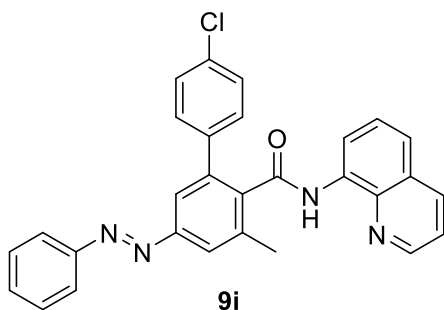
carboxamide (9g): The compound **9g** was obtained after purification by column chromatography on neutral alumina (EtOAc:Hexanes = 5:95) as an orange coloured solid; Yield: 77% (79 mg, 0.2 mmol scale); mp 61-63 °C; R_f = 0.80 (EtOAc:Hexanes = 20:80); IR (DCM): 3340, 2930, 1676, 1522 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.71 (s, 1H), 8.83 (d, 1H, J = 7.5 Hz), 8.64 (dd, 1H, J_1 = 4.2 Hz, J_2 = 1.5 Hz), 8.09 (d, 1H, J = 8.2 Hz), 7.99 (d, 1H, J = 7.1 Hz), 7.92 (s, 1H), 7.87 (s, 1H), 7.59-7.48 (m, 7H), 7.37 (dd, 1H, J_1 = 8.2 Hz, J_2 = 4.1

Hz), 7.08 (d, 2H, $J = 7.9$ Hz), 2.68 (s, 3H), 2.43 (t, 2H, $J = 7.7$ Hz), 1.36-1.30 (m, 2H), 1.24-1.18 (m, 2H), 1.12-1.06 (m, 2H), 0.80 (t, 3H, $J = 7.3$ Hz); ^{13}C NMR (100 MHz, CDCl_3): δ 167.9, 152.7, 152.5, 148.0, 142.4, 141.0, 138.7, 138.4, 137.3, 137.1, 136.1, 134.4, 131.3, 129.2, 128.5, 128.4, 127.8, 127.2, 123.3, 123.0, 122.2, 121.8, 121.5, 116.5, 35.4, 31.2, 30.8, 22.4, 20.0, 14.0; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{34}\text{H}_{33}\text{N}_4\text{O}$: 513.2654; found 513.2672.



(E)-4'-Cyano-3-methyl-5-(phenyldiazenyl)-N-(quinolin-8-yl)-(1,1'-biphenyl)-2-

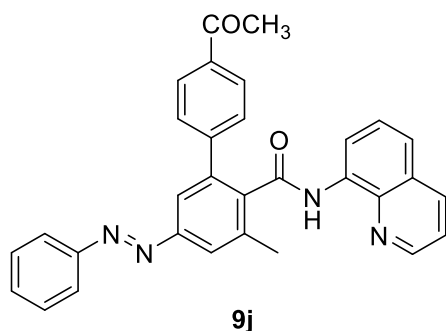
carboxamide (9h): The compound **9h** was obtained after purification by column chromatography on silica (EtOAc:Hexanes = 20:80) as an orange coloured solid; Yield: 59% (55 mg, 0.2 mmol scale); mp 91-93 °C; $R_f = 0.30$ (EtOAc:Hexanes = 20:80); IR (DCM): 3337, 1674, 1522, 1483 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.73 (s, 1H), 8.77 (dd, 1H, $J_1 = 5.8$ Hz, $J_2 = 3.2$ Hz), 8.65 (dd, 1H, $J_1 = 4.2$ Hz, $J_2 = 1.6$ Hz), 8.16 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 1.6$ Hz), 8.00-7.98 (m, 2H), 7.94 (d, 1H, $J = 1.0$ Hz), 7.86 (d, 1H, $J = 1.0$ Hz), 7.76-7.73 (m, 2H), 7.61-7.55 (m, 7H), 7.44 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 4.2$ Hz), 2.68 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3): δ 170.0, 152.6, 152.5, 148.2, 144.6, 138.8, 138.4, 138.3, 137.8, 136.4, 133.8, 132.1, 131.7, 129.4, 129.2, 127.9, 127.3, 124.9, 123.1, 122.4, 121.8, 121.6, 118.6, 116.7, 111.5, 20.0; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{30}\text{H}_{22}\text{N}_5\text{O}$: 468.1824; found 468.1808.



(E)-4'-Chloro-3-methyl-5-(phenyldiazenyl)-N-(quinolin-8-yl)-(1,1'-biphenyl)-2-

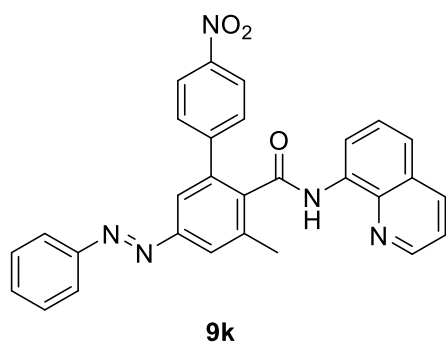
carboxamide (9i): The compound **9i** was obtained after purification by column chromatography on silica (EtOAc:Hexanes = 10:90) as an orange coloured solid; Yield: 65%

(62 mg, 0.2 mmol scale); mp 82-84 °C; R_f = 0.50 (EtOAc:Hexanes = 20:80); IR (DCM): 3338, 1674, 1522, 1484 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.75 (s, 1H), 8.81 (dd, 1H, J_1 = 7.0 Hz, J_2 = 1.8 Hz), 8.66 (dd, 1H, J_1 = 4.2 Hz, J_2 = 1.5 Hz), 8.14 (dd, 1H, J_1 = 8.3 Hz, J_2 = 1.5 Hz), 8.00-7.98 (m, 2H), 7.89 (s, 1H), 7.86 (s, 1H), 7.60-7.53 (m, 7H), 7.42 (dd, 1H, J_1 = 8.2 Hz, J_2 = 4.2 Hz), 7.26 (d, 2H, J = 8.5 Hz), 2.66 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3): δ 167.5, 152.6, 152.5, 148.2, 139.5, 138.6, 138.4, 138.3, 137.4, 136.2, 134.1, 133.9, 131.5, 130.0, 129.2, 128.6, 127.9, 127.3, 123.9, 123.1, 122.2, 122.0, 121.7, 116.7, 20.0; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{29}\text{H}_{22}\text{ClN}_4\text{O}$: 477.1482; found 477.1469.



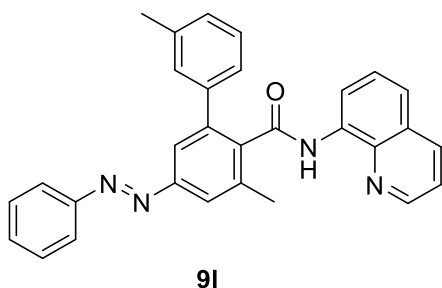
(E)-4'-Acetyl-3-methyl-5-(phenyldiazenyl)-N-(quinolin-8-yl)-(1,1'-biphenyl)-2-

carboxamide (9j): The compound **9j** was obtained after purification by column chromatography on silica (EtOAc:Hexanes = 30:70) as an orange coloured solid; Yield: 56% (54 mg, 0.2 mmol scale); mp 92-94 °C; R_f = 0.20 (EtOAc:Hexanes = 30:70); IR (DCM): 3342, 1676, 1521, 1483 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.76 (s, 1H), 8.79 (dd, 1H, J_1 = 7.0 Hz, J_2 = 2.0 Hz), 8.65 (dd, 1H, J_1 = 4.2 Hz, J_2 = 1.6 Hz), 8.13 (dd, 1H, J_1 = 8.3 Hz, J_2 = 1.6 Hz), 8.00-7.98 (m, 2H), 7.92-7.89 (m, 4H), 7.74-7.72 (m, 2H), 7.60-7.51 (m, 5H), 7.41 (dd, 1H, J_1 = 8.2 Hz, J_2 = 4.2 Hz), 2.68 (s, 3H), 2.48 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3): δ 197.7, 167.3, 152.6, 152.5, 148.2, 144.6, 139.6, 138.5, 138.3, 137.6, 136.2, 136.1, 134.0, 131.6, 129.2, 129.0, 128.4, 127.9, 127.3, 124.3, 123.1, 122.1, 121.9, 121.6, 116.7, 26.6, 20.0; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{31}\text{H}_{25}\text{N}_4\text{O}_2$: 485.1978; found 485.1958.



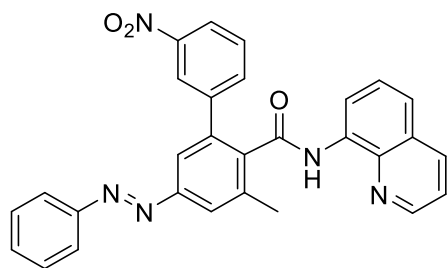
(E)-3-Methyl-4'-nitro-5-(phenyldiazenyl)-N-(quinolin-8-yl)-(1,1'-biphenyl)-2-

carboxamide (9k): The compound **9k** was obtained after purification by column chromatography on silica (EtOAc:Hexanes = 15:95) as an orange coloured solid; Yield: 69% (67 mg, 0.2 mmol scale); mp 93-95 °C; R_f = 0.50 (EtOAc:Hexanes = 30:70); IR (DCM): 3335, 1674, 1519, 1484 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.78 (s, 1H), 8.78 (dd, 1H, J_1 = 6.2 Hz, J_2 = 1.8 Hz), 8.65 (d, 1H, J = 2.6 Hz), 8.15-8.13 (m, 3H), 7.99 (d, 2H, J = 6.7 Hz), 7.96 (s, 1H), 7.88 (s, 1H), 7.80 (d, 2H, J = 8.6 Hz), 7.60-7.53 (m, 5H), 7.42 (dd, 1H, J_1 = 8.2 Hz, J_2 = 4.2 Hz), 2.69 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3): δ 166.9, 152.6, 152.5, 148.3, 147.3, 146.5, 138.5, 138.4, 138.3, 137.8, 136.4, 133.8, 131.7, 129.7, 129.3, 127.9, 127.3, 125.1, 123.6, 123.1, 122.4, 121.8, 121.6, 116.8, 20.0; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{29}\text{H}_{22}\text{N}_5\text{O}_3$: 488.1723; found 488.1711.



(E)-3,3'-Dimethyl-5-(phenyldiazenyl)-N-(quinolin-8-yl)-(1,1'-biphenyl)-2-carboxamide

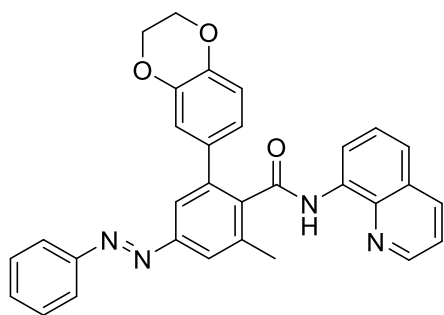
(9l): The compound **9l** was obtained after purification by column chromatography on silica (EtOAc:Hexanes = 10:90) as an orange coloured solid; Yield: 77% (70 mg, 0.2 mmol scale); mp 98-100 °C; R_f = 0.50 (EtOAc:Hexanes = 20:80); IR (DCM): 3053, 1674, 1522, 1263 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.72 (s, 1H), 8.80 (dd, 1H, J_1 = 7.3 Hz, J_2 = 1.4 Hz), 8.66 (dd, 1H, J_1 = 4.2 Hz, J_2 = 1.6 Hz), 8.12 (dd, 1H, J_1 = 8.2 Hz, J_2 = 1.5 Hz), 8.00-7.98 (m, 2H), 7.90 (s, 1H), 7.87 (s, 1H), 7.60-7.49 (m, 5H), 7.45 (s, 1H), 7.42-7.39 (m, 2H), 7.14 (t, 1H, J = 7.6 Hz), 6.95 (d, 1H, J = 7.6 Hz), 2.67 (s, 3H), 2.23 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3): δ 167.8, 152.7, 152.5, 148.0, 141.0, 139.7, 138.7, 138.4, 137.9, 137.3, 136.1, 134.3, 131.4, 129.5, 129.2, 128.4, 128.2, 127.8, 127.3, 125.7, 123.4, 123.0, 122.2, 121.8, 121.5, 116.5, 21.3, 20.0; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{30}\text{H}_{25}\text{N}_4\text{O}$: 457.2028; found 457.2043.



9m

(E)-3-Methyl-3'-nitro-5-(phenyldiazenyl)-N-(quinolin-8-yl)-(1,1'-biphenyl)-2-

carboxamide (9m): The compound **9m** was obtained after purification by column chromatography on silica (EtOAc:Hexanes = 20:80) as an orange coloured solid; Yield: 51% (50 mg, 0.2 mmol scale); mp 196-198 °C; R_f = 0.40 (EtOAc:Hexanes = 30:70); IR (DCM): 3335, 1674, 1526, 1483 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.77 (s, 1H), 8.76 (d, 1H, J = 6.6 Hz), 8.63 (d, 1H, J = 3.8 Hz), 8.55 (s, 1H), 8.12 (d, 1H, J = 8.2 Hz), 8.01-7.90 (m, 6H), 7.59-7.52 (m, 5H), 7.41-7.37 (m, 2H), 2.69 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3): δ 166.9, 152.6, 152.5, 148.3, 148.2, 141.5, 138.6, 138.3, 138.3, 137.8, 136.3, 134.7, 133.8, 131.7, 129.2, 127.8, 127.2, 125.0, 123.8, 123.1, 122.5, 122.3, 121.8, 121.6, 116.7, 20.0; HRMS (ESI): m/z ($\text{M} + \text{H}$)⁺ calcd for $\text{C}_{29}\text{H}_{22}\text{N}_5\text{O}_3$: 488.1723; found 488.1703.

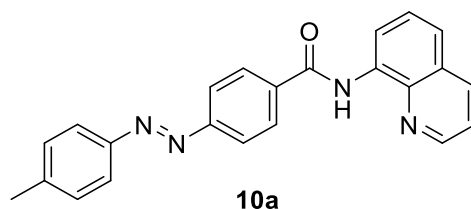


9n

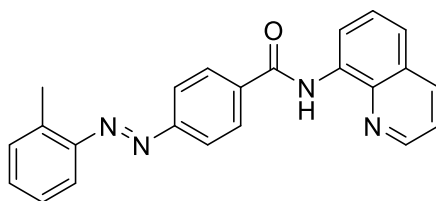
(E)-2-(2,3-Dihydrobenzo(b)(1,4)dioxin-6-yl)-6-methyl-4-(phenyldiazenyl)-N-(quinolin-8-

yl)benzamide (9n): The compound **9n** was obtained after purification by column chromatography on silica (EtOAc:Hexanes = 20:80) as an orange coloured solid; Yield: 69% (69 mg, 0.2 mmol scale); mp 91-93 °C; R_f = 0.30 (EtOAc:Hexanes = 20:80); IR (DCM): 3338, 1674, 1522, 1483 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.74 (s, 1H), 8.83 (dd, 1H, J_1 = 7.4 Hz, J_2 = 1.4 Hz), 8.69 (dd, 1H, J_1 = 4.2 Hz, J_2 = 1.6 Hz), 8.14 (dd, 1H, J_1 = 4.2 Hz, J_2 = 1.6 Hz), 7.99-7.97 (m, 2H), 7.87-7.84 (m, 2H), 7.59-7.51 (m, 5H), 7.42 (dd, 1H, J_1 = 8.3 Hz, J_2 = 2.3 Hz), 7.17 (d, 1H, J = 2.1 Hz), 7.10 (dd, 1H, J_1 = 8.2 Hz, J_2 = 2.2 Hz), 6.73 (d, 1H, J = 8.4 Hz), 4.14-4.09 (m, 4H), 2.65 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3): δ 167.8, 152.6, 152.5, 148.1,

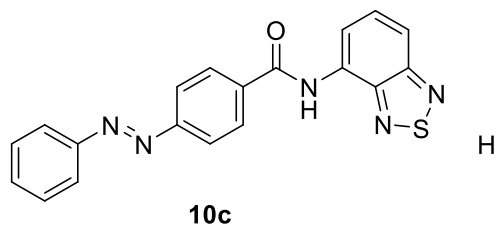
143.4, 143.3, 140.3, 138.6, 138.4, 137.3, 136.1, 134.4, 133.2, 131.4, 129.2, 127.8, 127.3, 123.3, 123.0, 122.1, 121.9, 121.8, 121.5, 117.8, 117.1, 116.6, 64.2, 64.2, 20.0; HRMS (ESI): m/z ($M + H$)⁺ calcd for C₃₁H₂₅N₄O₃: 501.1927; found 501.1903.



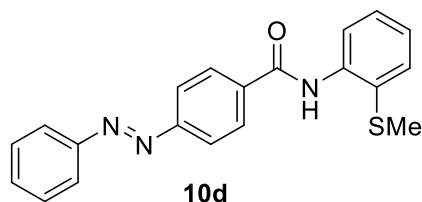
(E)-N-(Quinolin-8-yl)-4-(p-tolyldiazenyl)benzamide (10a): The compound **10a** after purification by column chromatography on silica gel (EtOAc:Hexanes = 20:80) as an orange coloured solid; Yield: 38% (280 mg, 2 mmol scale); mp 97-99 °C; IR (DCM): 3354, 1673, 1530, 1484 cm⁻¹; ¹H NMR (400 MHz, CDCl₃): δ 10.84 (s, 1H), 8.98 (d, 1H, $J = 7.5$ Hz), 8.89 (d, 1H, $J = 3.8$ Hz), 8.25-8.19 (m, 3H), 8.06 (d, 2H, $J_1 = 7.8$ Hz), 7.90 (d, 2H, $J = 7.6$ Hz), 7.65-7.56 (m, 2H), 7.50 (dd, 1H, $J_1 = 4.1$ Hz, $J_2 = 8.0$ Hz), 7.36 (d, 2H, $J_1 = 7.8$ Hz), 2.47 (s, 3H); ¹³C NMR (100 MHz, CDCl₃): δ 164.7, 154.6, 150.7, 148.4, 142.4, 138.8, 136.5, 136.4, 134.4, 129.9, 128.3, 128.0, 127.5, 123.2, 123.0, 121.9, 121.8, 116.6, 21.6; HRMS (ESI): m/z ($M + H$)⁺ calcd for C₂₃H₁₉N₄O: 367.1559; found 367.1543.



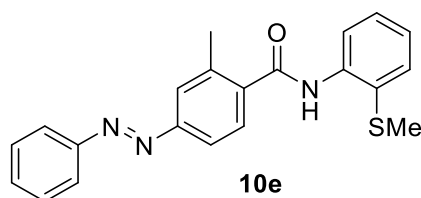
(E)-N-(quinolin-8-yl)-4-(o-tolyldiazenyl)benzamide (10b): The compound **10b** was obtained after workup as an orange coloured solid; Yield: 74% (543 mg, 2 mmol scale); mp 175-177 °C; IR (DCM): 3350, 1672, 1530, 1483 cm⁻¹; ¹H NMR (400 MHz, CDCl₃): δ 10.84 (s, 1H), 8.98 (d, 1H, $J = 7.4$ Hz), 8.88 (dd, 1H, $J_1 = 4.1$ Hz, $J_2 = 1.4$ Hz), 8.26-8.19 (m, 3H), 8.08 (d, 2H, $J = 8.4$ Hz), 7.71 (d, 1H, $J_1 = 7.9$ Hz), 7.64-7.56 (m, 2H), 7.50 (dd, 1H, $J_1 = 4.2$ Hz, $J_2 = 8.2$ Hz), 7.44-7.38 (m, 2H), 7.33-7.28 (m, 1H), 2.79 (s, 3H); ¹³C NMR (100 MHz, CDCl₃): δ 164.7, 154.8, 150.6, 148.4, 138.9, 138.7, 136.5, 136.4, 134.4, 131.7, 131.4, 128.3, 128.0, 127.5, 126.5, 123.2, 121.9, 121.8, 116.6, 115.4, 17.6; HRMS (ESI): m/z ($M + H$)⁺ calcd for C₂₃H₁₉N₄O: 367.1559; found 367.1551.



(E)-N-(Benzo(c)(1,2,5)thiadiazol-4-yl)-4-(phenyldiazenyl)benzamide (10c): The compound **10c** was obtained after workup as an orange coloured solid; Yield: 70% (250 mg, 1 mmol scale); mp 189-191 °C; IR (DCM): 3316, 1648, 1548, 1410 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.33 (s, 1H), 8.69 (d, 1H, $J = 7.3$ Hz), 8.20 (d, 1H, $J = 8.3$ Hz), 8.10 (d, 1H, $J = 8.2$ Hz), 8.00 (d, 1H, $J = 8.8$ Hz), 7.76 (d, 1H, $J = 8.8$ Hz), 7.71-7.67 (m, 1H), 7.59-7.53 (m, 3H); ^{13}C NMR (100 MHz, CDCl_3): δ 164.8, 154.8, 154.7, 152.5, 148.0, 135.7, 131.8, 131.2, 129.9, 129.2, 128.3, 123.3, 123.2, 116.2, 115.2; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{19}\text{H}_{14}\text{N}_5\text{OS}$: 360.0919; found 360.0902.

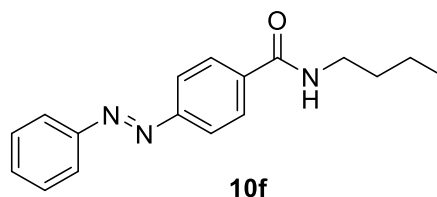


(E)-N-(2-(Methylthio)phenyl)-4-(phenyldiazenyl)benzamide (10d): The compound **10d** was obtained after workup as an orange coloured solid; Yield: 69% (238 mg, 1 mmol scale); mp 120-122 °C; IR (DCM): 3339, 1677, 1518, 1434 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.35 (s, 1H), 8.58 (d, 1H, $J = 8.3$ Hz), 8.14 (d, 1H, $J = 8.3$ Hz), 8.07 (d, 1H, $J = 8.3$ Hz), 8.01-7.93 (m, 2H), 7.60-7.53 (m, 4H), 7.41 (t, 1H, $J = 7.8$ Hz), 7.16 (d, 1H, $J = 7.6$ Hz), 2.46 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3): δ 164.4, 154.5, 152.5, 138.4, 136.4, 133.1, 131.8, 129.2, 129.1, 128.2, 125.9, 124.8, 123.2, 123.2, 120.7, 19.2; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{20}\text{H}_{18}\text{N}_3\text{OS}$: 348.1171; found 348.1186.

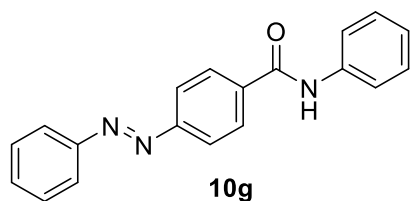


(E)-2-Methyl-N-(2-(methylthio)phenyl)-4-(phenyldiazenyl)benzamide (10e): The compound **10e** was obtained after workup as an orange coloured solid; Yield: 96% (448 mg, 1.3 mmol scale); mp 92-94 °C; IR (DCM): 3333, 1678, 1510, 1432 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 8.75 (s, 1H), 8.54 (d, 1H, $J = 7.6$ Hz), 7.99-7.97 (m, 2H), 7.87-7.85 (m, 2H), 7.75 (d, 1H, $J = 8.4$ Hz), 7.59-7.53 (m, 4H), 7.42-7.7.38 (m, 1H), 7.17 (td, 1H, $J_1 = 7.6$ Hz, $J_2 = 1.7$ Hz);

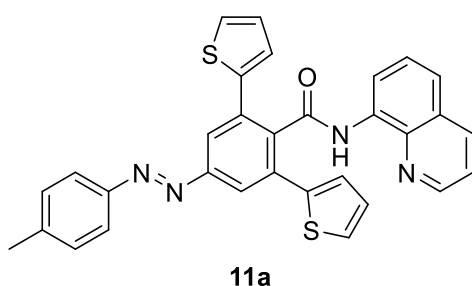
Hz), 2.70 (s, 3H), 2.43 (s, 3H); ^{13}C NMR (~126 MHz, CDCl_3): δ 166.2, 152.3, 151.5, 137.2, 137.1, 137.0, 131.9, 130.5, 128.1, 127.9, 126.8, 124.6, 123.8, 122.0, 119.7, 119.4, 28.7, 19.2, 18.0; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{21}\text{H}_{20}\text{N}_3\text{OS}$: 362.1327; found 362.1316.



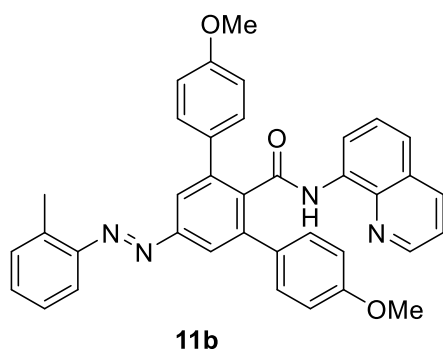
(E)-N-Butyl-4-(phenyldiazenyl)benzamide (10f): The compound **10f** was obtained after workup as an orange coloured solid; Yield: 92% (258 mg, 1 mmol scale); mp 92-94 °C; IR (DCM): 3317, 2659, 1633, 1542 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 7.98-7.91 (m, 6H), 7.56-7.52 (m, 3H), 6.55 (br s, 1H), 3.51-3.46 (m, 2H), 1.67-1.60 (m, 2H), 1.40-1.41 (m, 2H), 0.98 (t, 3H, $J = 7.3$ Hz); ^{13}C NMR (100 MHz, CDCl_3): δ 166.9, 154.1, 152.5, 136.6, 131.6, 129.2, 127.9, 123.1, 122.9, 40.0, 31.7, 20.2, 13.8; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{17}\text{H}_{20}\text{N}_3\text{O}$: 282.1606; found 282.1595.



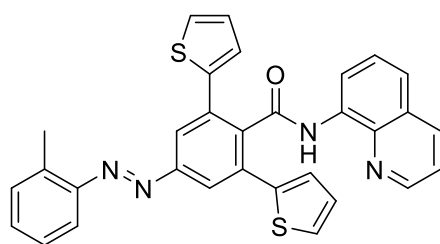
(E)-N-Phenyl-4-(phenyldiazenyl)benzamide (10g): The compound **10g** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 20:80) as a pale orange colored solid; Yield: 33% (150 mg, 1.5 mmol scale); mp 205-207 °C; $R_f = 0.40$ (EtOAc:Hexanes = 20:80); IR (DCM): 3351, 1649, 1527, 1438 cm^{-1} ; ^1H NMR (500 MHz, $\text{DMSO}-d_6$): δ 10.43 (s, 1H), 8.18 (d, 2H, $J = 8.5$ Hz), 8.02 (d, 2H, $J = 8.5$ Hz), 7.97-7.95 (m, 2H), 7.81 (d, 2H, $J = 7.6$ Hz), 7.66-7.61 (m, 3H), 7.40-7.37 (m, 2H), 7.14 (t, 1H, $J = 7.4$ Hz); ^{13}C NMR (~126 MHz, $\text{DMSO}-d_6$): δ 165.2, 153.9, 152.4, 139.5, 137.5, 132.6, 130.0, 129.5, 129.1, 124.4, 123.3, 122.9, 120.9; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{19}\text{H}_{16}\text{N}_3\text{O}$: 302.1293; found 302.1280.



(E)-N-(Quinolin-8-yl)-2,6-di(thiophen-2-yl)-4-(p-tolyldiazenyl)benzamide (11a): The compound **11a** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 20:80) as an orange coloured solid; Yield: 50% (40 mg, 0.15 mmol scale); mp 178-180 °C; R_f = 0.40 (EtOAc:Hexanes = 20:80); IR (DCM): 3335, 1675, 1522, 1483 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.96 (s, 1H), 8.80 (d, 1H, J = 7.2 Hz), 8.67 (d, 1H, J = 4.1 Hz), 8.13-8.10 (m, 3H), 7.92 (d, 2H, J = 7.8 Hz), 7.57-7.50 (m, 2H), 7.43 (d, 2H, J = 3.4 Hz), 7.40-7.36 (m, 3H), 7.26 (d, 2H, J = 5.0 Hz), 6.96-6.94 (m, 2H), 2.49 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3): δ 166.9, 152.4, 150.7, 148.2, 142.5, 140.4, 138.4, 136.8, 136.1, 134.2, 134.2, 129.9, 127.8, 127.7, 127.5, 127.3, 126.6, 123.9, 123.2, 122.0, 121.6, 116.8, 21.6; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{31}\text{H}_{23}\text{N}_4\text{OS}_2$: 531.1313; found 531.1307.

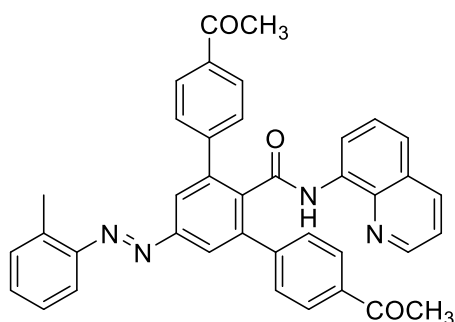


(E)-4,4''-Dimethoxy-N-(quinolin-8-yl)-5'-(o-tolyldiazenyl)-(1,1':3',1''-terphenyl)-2'-carboxamide (11b): The compound **11b** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 20:80) as an orange coloured solid; Yield: 47% (54 mg, 0.2 mmol scale); mp 191-193 °C; R_f = 0.40 (EtOAc:Hexanes = 20:80); IR (DCM): 3340, 1677, 1518, 1518 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.75 (s, 1H), 8.64-8.62 (m, 2H), 8.08 (dd, 1H, J_1 = 8.3 Hz, J_2 = 1.6 Hz), 8.00 (s, 2H), 7.73 (d, 1H, J_1 = 7.6 Hz), 7.66 (dt, 2H, J_1 = 8.7 Hz, J_2 = 0.6 Hz), 7.48-7.31 (m, 6H), 7.40 (dt, 1H, J_1 = 8.8 Hz, J_2 = 2.9 Hz), 3.71 (s, 6H), 2.78 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3): δ 167.4, 159.2, 152.8, 150.8, 148.0, 141.4, 138.7, 138.3, 137.6, 136.1, 134.3, 132.4, 131.5, 131.4, 129.9, 127.7, 127.2, 126.5, 123.3, 121.7, 121.5, 116.5, 115.5, 113.9, 55.1, 17.7; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{37}\text{H}_{31}\text{N}_4\text{O}_3$: 579.2396; found 579.2419.



11c

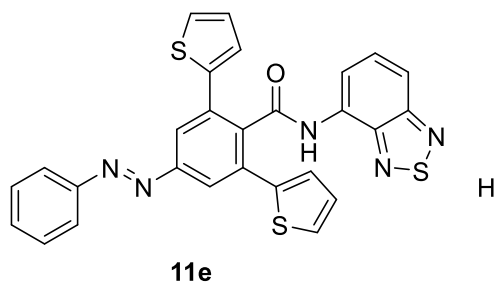
(E)-N-(Quinolin-8-yl)-2,6-di(thiophen-2-yl)-4-(o-tolyldiazenyl)benzamide (11c): The compound **11c** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 20:80) as an orange coloured solid; Yield: 61% (65 mg, 0.2 mmol scale); mp 146-148 °C; R_f = 0.40 (EtOAc:Hexanes = 20:80); IR (DCM): 3335, 1676, 1522, 1483 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.97 (s, 1H), 8.81 (d, 1H, J = 7.2 Hz), 8.67 (d, 1H, J = 4.0 Hz), 8.13-8.10 (m, 3H), 7.73 (d, 1H, J = 8.0 Hz), 7.58-7.51 (m, 2H), 7.45-7.37 (m, 5H), 7.33 (t, 1H, J = 8.0 Hz), 7.27 (d, 2H, J = 5.3 Hz), 6.96 (t, 1H, J = 4.0 Hz), 2.79 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3): δ 166.9, 152.7, 150.6, 148.2, 140.4, 138.9, 138.4, 136.9, 136.1, 134.2, 134.2, 131.7, 131.5, 127.8, 127.7, 127.5, 127.3, 126.6, 126.5, 124.1, 122.1, 121.6, 116.8, 115.5, 17.7; HRMS (ESI): m/z ($M + H$) $^+$ calcd for $\text{C}_{31}\text{H}_{23}\text{N}_4\text{OS}_2$: 531.1313; found 531.1338.



11d

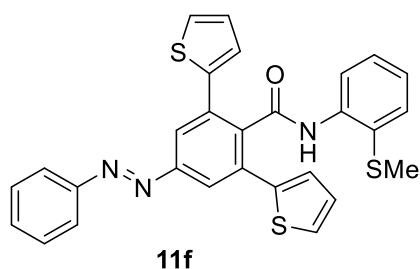
(E)-4,4''-Diacetyl-N-(quinolin-8-yl)-5'-(o-tolyldiazenyl)-(1,1':3',1''-terphenyl)-2'-carboxamide (11d): The compound **11d** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 40:60) as an orange coloured solid; Yield: 42% (50 mg, 0.2 mmol scale); mp 238-240 °C; R_f = 0.30 (EtOAc:Hexanes = 40:65); IR (DCM): 3331, 1681, 1522, 1483 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.74 (s, 1H), 8.59 (dd, 1H, J_1 = 4.2 Hz, J_2 = 1.6 Hz), 8.51 (dd, 1H, J_1 = 6.5 Hz, J_2 = 2.4 Hz), 8.09 (dd, 1H, J_1 = 8.3 Hz, J_2 = 1.6 Hz), 8.06 (s, 2H), 7.92 (d, 4H, J = 8.4 Hz), 7.76-7.71 (m, 5H), 7.49-7.43 (m, 3H), 7.41-7.37 (m, 2H), 7.34-7.30 (m, 1H), 2.77 (s, 3H), 2.51 (s, 6H); ^{13}C NMR (100 MHz, CDCl_3): δ 197.7, 166.3, 152.8, 150.6, 148.1, 144.5, 140.9, 140.0, 138.2, 137.4, 136.2, 136.2, 133.7, 131.9, 131.5,

129.0, 128.5, 127.7, 127.2, 126.6, 124.0, 121.2, 121.6, 116.8, 115.5, 26.6, 17.7; HRMS (ESI): m/z ($M + H$)⁺ calcd for C₃₉H₃₁N₄O₃: 603.2396; found 603.2383.



(E)-N-(Benzo(c)(1,2,5)thiadiazol-4-yl)-4-(phenyldiazenyl)-2,6-di(thiophen-2-

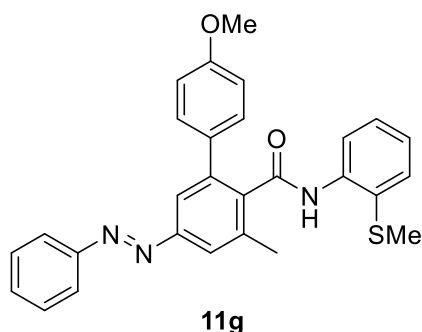
yl)benzamide (11e): The compound **11e** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 10:90) as an orange coloured solid; Yield: 32% (42 mg, 0.25 mmol scale); mp 172-173 °C; R_f = 0.50 (EtOAc:Hexanes = 20:85); IR (DCM): 1680, 1546, 1521, 1409 cm⁻¹; ¹H NMR (400 MHz, CDCl₃): δ 9.31 (s, 1H), 8.67 (d, 1H, J = 7.3 Hz), 8.16 (d, 2H, J = 8.2 Hz), 8.11 (s, 1H), 8.06 (d, 2H, J = 8.4 Hz), 8.00-7.97 (m, 3H), 7.75-7.64 (m, 3H), 7.61-7.53 (m, 5H), 7.40 (dd, 1H, J_1 = 3.6 Hz, J_2 = 1.1 Hz), 7.30 (dd, 1H, J_1 = 5.1 Hz, J_2 = 1.0 Hz), 6.98 (dd, 1H, J_1 = 5.1 Hz, J_2 = 3.7 Hz); ¹³C NMR (100 MHz, CDCl₃): δ 164.8, 154.7, 154.7, 152.5, 148.0, 140.0, 135.7, 134.3, 131.8, 131.1, 130.0, 129.2, 128.3, 127.8, 127.6, 126.9, 124.0, 123.3, 123.2, 116.2, 115.2; HRMS (ESI): m/z ($M + H$)⁺ calcd for C₂₇H₁₈N₅OS₃: 524.0673; found 524.0656.



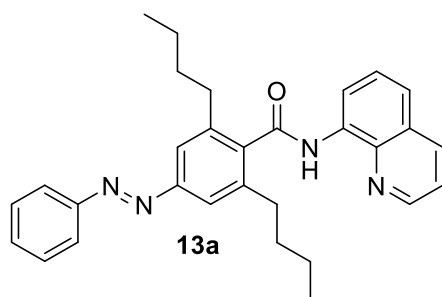
(E)-N-(2-(Methylthio)phenyl)-4-(phenyldiazenyl)-2,6-di(thiophen-2-yl)benzamide (11f):

The compound **11f** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 10:90) as an orange coloured solid; Yield: 51% (66 mg, 0.25 mmol scale); mp 112-114 °C; R_f = 0.50 (EtOAc:Hexanes = 10:90); IR (DCM): 3322, 1679, 1507, 1433 cm⁻¹; ¹H NMR (500 MHz, CDCl₃): δ 8.41 (s, 1H), 8.30 (dd, 1H, J_1 = 8.2, J_2 = 1.2 Hz), 8.09 (s, 2H), 7.98-7.96 (m, 2H), 7.57-7.52 (m, 3H), 7.42-7.40 (m, 3H), 7.35-7.33 (m, 2H), 7.32-7.28 (m, 1H), 7.07-7.02 (m, 3H), 1.95 (s, 3H); ¹³C NMR (~126 MHz, CDCl₃): δ 166.7, 152.5, 152.4, 140.2, 138.1, 136.7, 134.0, 133.5, 131.8, 129.2, 129.1, 127.9, 126.8, 125.8, 124.8, 124.0, 123.2,

123.2, 120.9, 18.8; HRMS (ESI): m/z ($M - H$)⁺ calcd for C₂₈H₂₂N₃OS₃:510.0769; found 510.0749.

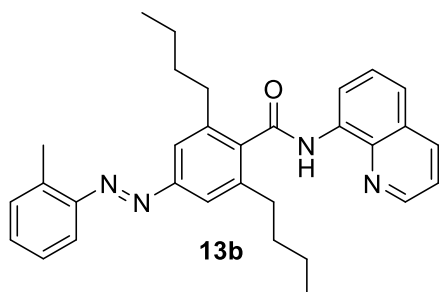


(E)-4'-Methoxy-3-methyl-N-(2-(methylthio)phenyl)-5-(phenyldiazenyl)-(1,1'-biphenyl)-2-carboxamide (11g): The compound **11g** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 20:80) as an orange coloured solid; Yield: 41% (38 mg, 0.2 mmol scale); mp 99-101 °C; R_f = 0.30 (EtOAc:Hexanes = 20:80); IR (DCM): 3327, 1673, 1506, 1431 cm⁻¹; ¹H NMR (400 MHz, CDCl₃): δ 8.35 (d, 1H, J = 8.2 Hz), 8.19 (s, 1H), 7.98 (d, 2H, J = 7.7 Hz), 7.87 (s, 1H), 7.82 (s, 1H), 7.60-7.52 (m, 5H), 7.41 (d, 1H, J = 7.8 Hz), 7.32 (t, 1H, J = 8.2 Hz), 7.08 (t, 1H, J = 7.2 Hz), 6.94 (d, 2H, J = 8.4 Hz), 3.80 (s, 3H), 2.64 (s, 3H), 2.06 (s, 3H); ¹³C NMR (100 MHz, CDCl₃): δ 168.0, 159.4, 152.6, 152.6, 139.8, 138.2, 137.9, 137.3, 132.8, 132.0, 131.4, 129.9, 129.2, 128.7, 126.1, 124.8, 123.0, 122.9, 122.3, 120.8, 114.1, 55.3, 19.9, 18.8; HRMS (ESI): m/z ($M + H$)⁺ calcd for C₂₈H₂₆N₃O₂S: 468.1746; found 468.1738.

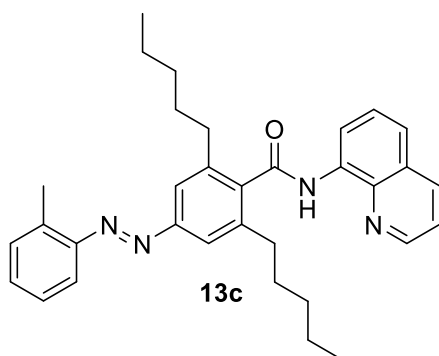


(E)-2,6-Dibutyl-4-(phenyldiazenyl)-N-(quinolin-8-yl)benzamide (13a): The compound **13a** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 5:95) as an orange coloured solid; Yield: 88% (41 mg, 0.1 mmol scale); R_f = 0.70 (EtOAc:Hexanes = 10:90); IR (DCM): 3334, 2956, 1678, 1521 cm⁻¹; ¹H NMR (400 MHz, CDCl₃): δ 10.01 (s, 1H), 9.03 (d, 1H, J = 7.3 Hz), 8.77 (d, 1H, J = 1.7 Hz), 8.22 (d, 1H, J = 8.2 Hz), 7.99-7.98 (m, 2H), 7.75 (s, 2H), 7.69-7.52 (m, 5H), 7.49-7.47 (m, 1H), 2.84 (t, 4H, J

= 7.8 Hz), 1.84-1.74 (m, 4H), 1.40-1.32 (m, 4H), 0.86 (t, 6H, $J = 7.3$ Hz); ^{13}C NMR (100 MHz, CDCl_3): δ 168.3, 152.7, 148.3, 140.9, 139.6, 138.5, 136.4, 134.3, 131.1, 129.1, 128.0, 127.5, 122.9, 122.1, 121.8, 121.2, 116.8, 33.7, 33.3, 22.7, 13.9; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{30}\text{H}_{33}\text{N}_4\text{O}$: 465.2654; found 465.2633.

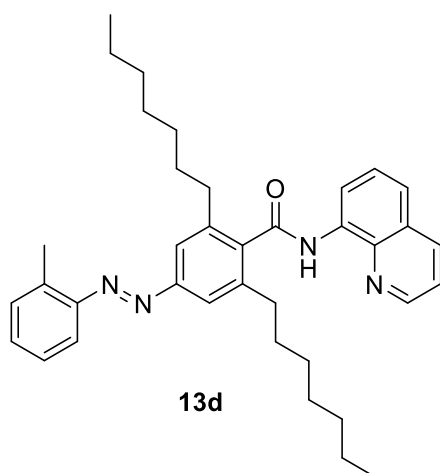


(E)-2,6-Dibutyl-N-(quinolin-8-yl)-4-(o-tolyldiazenyl)benzamide (13b): The compound **13b** was obtained after purification by column chromatography on silica (EtOAc:Hexanes = 10:90) as an orange coloured liquid; Yield: 64% (46 mg, 0.15 mmol scale); $R_f = 0.70$ (EtOAc:Hexanes = 20:80); IR (DCM): 3345, 2956, 1678, 1521 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 10.00 (s, 1H), 9.02 (dd, 1H, $J_1 = 7.3$ Hz, $J_2 = 1.4$ Hz), 8.78 (dd, 1H, $J_1 = 4.2$ Hz, $J_2 = 1.6$ Hz), 8.22 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 1.6$ Hz), 7.72 (s, 2H), 7.68-7.64 (m, 2H), 7.61 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 1.4$ Hz), 7.48 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 4.2$ Hz), 7.43-7.38 (m, 2H), 7.34-7.29 (m, 1H), 2.83 (t, 4H, $J = 8.0$ Hz), 2.78 (s, 3H), 1.80-1.72 (m, 4H), 1.39-1.32 (m, 4H), 0.84 (t, 6H, $J = 7.4$ Hz); ^{13}C NMR (100 MHz, CDCl_3): δ 168.3, 153.1, 150.9, 148.3, 140.8, 139.4, 138.5, 138.2, 136.4, 134.3, 131.3, 131.1, 128.0, 127.5, 126.5, 122.1, 121.8, 121.3, 116.8, 115.5, 33.6, 33.3, 22.6, 17.6, 13.9; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{31}\text{H}_{35}\text{N}_4\text{O}$: 479.2811; found 479.2792.

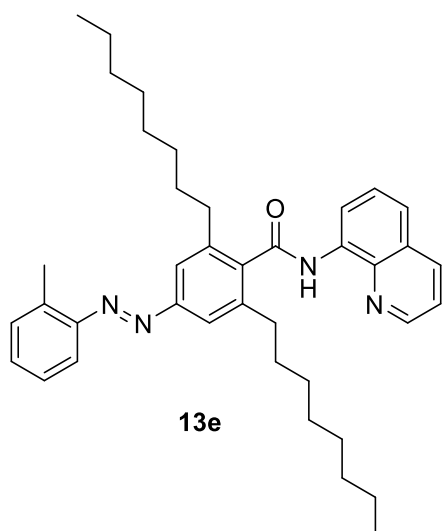


(E)-2,6-Dipentyl-N-(quinolin-8-yl)-4-(o-tolyldiazenyl)benzamide (13c): The compound **13c** was obtained after purification by column chromatography on silica (EtOAc:Hexanes = 10:90) as an orange coloured liquid; Yield: 83% (63 mg, 0.15 mmol scale); $R_f = 0.70$ (EtOAc:Hexanes = 20:80); IR (DCM): 3344, 2928, 1678, 1520 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 10.01 (s,

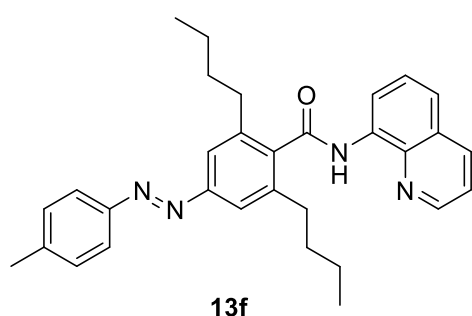
1H), 9.03 (dd, 1H, $J_1 = 7.4$ Hz, $J_2 = 1.5$ Hz), 8.76 (dd, 1H, $J_1 = 4.2$ Hz, $J_2 = 1.6$ Hz), 8.22 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 1.6$ Hz), 7.73 (s, 2H), 7.68-7.65 (m, 2H), 7.62 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 1.5$ Hz), 7.45 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 4.2$ Hz), 7.44-7.38 (m, 2H), 7.34-7.30 (m, 1H), 2.83 (t, 4H, $J = 8.0$ Hz), 2.79 (s, 3H), 1.82-1.75 (m, 4H), 1.36-1.24 (m, 8H), 0.80 (t, 6H, $J = 7.1$ Hz); ^{13}C NMR (100 MHz, CDCl_3): δ 168.3, 153.1, 150.9, 148.3, 140.8, 139.5, 138.5, 136.4, 134.3, 131.3, 131.1, 128.0, 127.5, 126.5, 122.1, 121.7, 121.3, 116.8, 115.5, 33.5, 31.7, 31.1, 22.5, 17.6, 13.9; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{33}\text{H}_{39}\text{N}_4\text{O}$: 507.3124; found 507.3145.



(E)-2,6-Diheptyl-N-(quinolin-8-yl)-4-(o-tolyldiazenyl)benzamide (13d): The compound **13d** was obtained after purification by column chromatography on silica (EtOAc:Hexanes = 10:90) as an orange coloured liquid; Yield: 51% (44 mg, 0.15 mmol scale); $R_f = 0.80$ (EtOAc:Hexanes = 20:80); IR (DCM): 3345, 2926, 1678, 1520 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 10.01 (s, 1H), 9.03 (dd, 1H, $J_1 = 7.4$ Hz, $J_2 = 1.5$ Hz), 8.76 (dd, 1H, $J_1 = 4.2$ Hz, $J_2 = 1.6$ Hz), 8.22 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 1.6$ Hz), 7.73 (s, 2H), 7.68-7.64 (m, 2H), 7.61 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 1.5$ Hz), 7.48 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 4.2$ Hz), 7.44-7.38 (m, 2H), 7.34-7.30 (m, 1H), 2.83 (t, 4H, $J = 8.0$ Hz), 2.79 (s, 3H), 1.82-1.74 (m, 4H), 1.37-1.29 (m, 4H), 1.24-1.14 (m, 12H), 0.78 (t, 6H, $J = 7.0$ Hz); ^{13}C NMR (100 MHz, CDCl_3): δ 168.3, 153.1, 150.9, 148.3, 140.8, 139.4, 138.5, 138.2, 136.3, 134.3, 131.3, 131.1, 128.0, 127.5, 126.5, 122.0, 121.7, 121.3, 116.8, 115.5, 33.5, 31.6, 31.5, 29.5, 29.0, 22.6 17.6, 14.0; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{37}\text{H}_{47}\text{N}_4\text{O}$: 563.3750; found 563.3733.

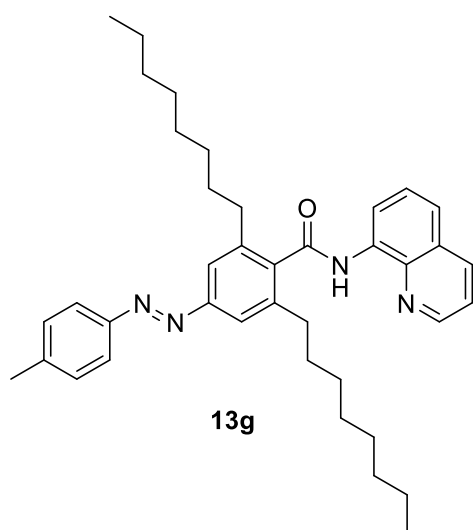


(E)-2,6-Dioctyl-N-(quinolin-8-yl)-4-(o-tolyldiazenyl)benzamide (13e): The compound **13e** was obtained after purification by column chromatography on silica (EtOAc:Hexanes = 10:90) as an orange coloured liquid; Yield: 76% (67 mg, 0.15 mmol scale); R_f = 0.80 (EtOAc:Hexanes = 20:80); IR (DCM): 3345, 2926, 1679, 1521 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 10.01 (s, 1H), 9.03 (dd, 1H, $J_1 = 7.4$ Hz, $J_2 = 1.4$ Hz), 8.76 (dd, 1H, $J_1 = 4.2$ Hz, $J_2 = 1.6$ Hz), 8.22 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 1.6$ Hz), 7.72 (s, 2H), 7.68-7.64 (m, 2H), 7.61 (dd, 1H, $J_1 = 8.2$ Hz, $J_2 = 1.4$ Hz), 7.48 (dd, 1H, $J_1 = 8.2$ Hz, $J_2 = 4.2$ Hz), 7.43-7.38 (m, 2H), 7.34-7.30 (m, 1H), 2.83 (t, 4H, $J = 8.1$ Hz), 2.78 (s, 3H), 1.82-1.74 (m, 4H), 1.37-1.29 (m, 6H), 1.25-1.10 (m, 14H), 0.81 (t, 6H, $J = 7.1$ Hz); ^{13}C NMR (100 MHz, CDCl_3): δ 168.3, 153.1, 150.9, 148.3, 140.8, 139.4, 138.5, 138.2, 136.5, 134.3, 131.3, 131.1, 128.0, 127.5, 126.5, 120.1, 121.7, 121.3, 116.8, 115.5, 33.5, 31.8, 31.5, 29.6, 29.3, 29.1, 22.6, 17.6, 14.1; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{39}\text{H}_{51}\text{N}_4\text{O}$: 591.4063; found 591.4038.

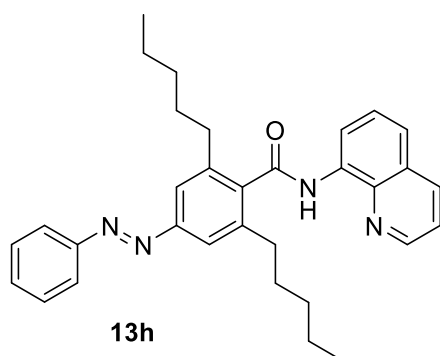


(E)-2,6-Dibutyl-N-(quinolin-8-yl)-4-(p-tolyldiazenyl)benzamide (13f): The compound **13f** was obtained after purification by column chromatography on silica (EtOAc:Hexanes = 10:90) as an orange coloured liquid; Yield: 35% (21 mg, 0.125 mmol scale); R_f = 0.70 (EtOAc:Hexanes = 20:80); IR (DCM): 3345, 2956, 1678, 1520 cm^{-1} ; ^1H NMR (400 MHz,

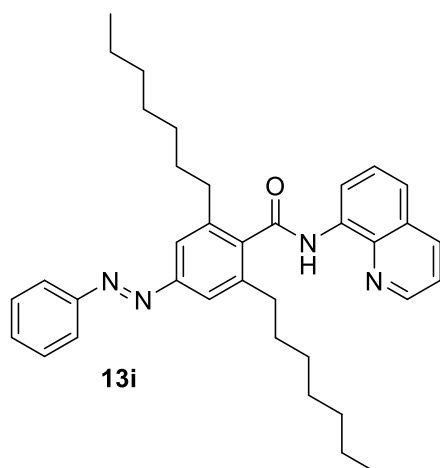
CDCl₃): δ 9.99 (s, 1H), 9.01 (dd, 1H, $J_1 = 7.3$ Hz, $J_2 = 1.2$ Hz), 8.77 (dd, 1H, $J_1 = 4.2$ Hz, $J_2 = 1.4$ Hz), 8.22 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 1.4$ Hz), 7.89 (d, 2H, $J = 8.2$ Hz), 7.72 (s, 2H), 7.68-7.64 (m, 1H), 7.61 (dd, 1H, $J_1 = 8.2$ Hz, $J_2 = 1.2$ Hz), 7.48 (dd, 1H, $J_1 = 8.2$ Hz, $J_2 = 4.2$ Hz), 7.36 (d, 2H, $J = 8.2$ Hz), 2.82 (t, 4H, $J = 8.0$ Hz), 2.48 (s, 3H), 1.81-1.73 (m, 4H), 1.40-1.31 (m, 4H), 0.84 (t, 6H, $J = 7.4$ Hz); ¹³C NMR (100 MHz, CDCl₃): δ 168.3, 152.8, 150.8, 148.3, 141.7, 140.8, 139.3, 138.5, 136.3, 134.3, 129.8, 128.0, 127.5, 122.9, 122.0, 121.7, 121.1, 116.8, 33.7, 33.3, 22.7 21.6, 13.9; HRMS (ESI): m/z (M + H)⁺ calcd for C₃₁H₃₅N₄O: 479.2811; found 479.2826.



(E)-2,6-Dioctyl-N-(quinolin-8-yl)-4-(p-tolyldiazenyl)benzamide (13g): The compound **13g** was obtained after purification by column chromatography on silica (EtOAc:Hexanes = 10:90) as an orange coloured liquid; Yield: 64% (57 mg, 0.15 mmol scale); $R_f = 0.80$ (EtOAc:Hexanes = 20:80); IR (DCM): 3345, 2926, 1678, 1520 cm⁻¹; ¹H NMR (400 MHz, CDCl₃): δ 10.00 (s, 1H), 9.02 (dd, 1H, $J_1 = 7.4$ Hz, $J_2 = 1.5$ Hz), 8.76 (dd, 1H, $J_1 = 4.2$ Hz, $J_2 = 1.6$ Hz), 8.22 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 1.6$ Hz), 7.89 (d, 2H, $J = 8.2$ Hz), 7.71 (s, 2H), 7.68-7.64 (m, 1H), 7.61 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 1.5$ Hz), 7.48 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 4.2$ Hz), 7.36 (d, 2H, $J = 8.1$ Hz), 2.82 (t, 4H, $J = 8.1$ Hz), 2.48 (s, 3H), 1.84-1.73 (m, 4H), 1.34-1.28 (m, 4H), 1.22-1.10 (m, 16H), 0.81 (t, 6H, $J = 7.8$ Hz); ¹³C NMR (100 MHz, CDCl₃): δ 168.4, 152.9, 150.9, 148.3, 141.7, 140.9, 139.3, 138.5, 136.3, 134.3, 129.8, 128.0, 127.5, 123.0, 122.0, 121.7, 121.1, 116.8, 33.6, 31.8, 31.5, 29.6, 29.3, 29.1, 22.6 21.6, 14.1; HRMS (ESI): m/z (M + H)⁺ calcd for C₃₉H₅₁N₄O: 591.4063; found 591.4045.

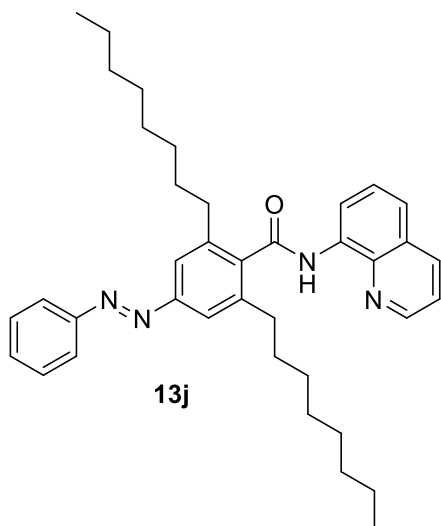


(E)-2,6-Dipentyl-4-(phenyldiazenyl)-N-(quinolin-8-yl)benzamide (13h): The compound **13h** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 5:95) as an orange coloured liquid; Yield: 64% (47 mg, 0.15 mmol scale); R_f = 0.70 (EtOAc:Hexanes = 10:90); IR (DCM): 3344, 2955, 1678, 1521 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 10.02 (s, 1H), 9.04 (d, 1H, J = 7.3 Hz), 8.78 (d, 1H, J = 3.8 Hz), 8.21 (d, 1H, J = 8.2 Hz), 8.00-7.93 (m, 2H), 7.79-7.74 (m, 2H), 7.69-7.52 (m, 5H), 7.48 (dd, 1H, J_1 = 8.2 Hz, J_2 = 4.1 Hz), 2.84 (t, 4H, J = 7.8 Hz), 1.81-1.76 (m, 4H), 1.32-1.24 (m, 8H), 0.80 (t, 6H, J = 7.0 Hz); ^{13}C NMR (~126 MHz, CDCl_3): δ 168.3, 152.8, 152.8, 148.3, 140.9, 139.6, 138.5, 136.3, 134.3, 131.1, 129.1, 128.0, 127.5, 122.9, 122.0, 121.7, 121.2, 116.8, 33.5, 31.8, 31.1, 22.4, 13.9; HRMS (ESI): m/z ($M + H$) $^+$ calcd for $\text{C}_{32}\text{H}_{37}\text{N}_4\text{O}$: 493.2967; found 493.2964.

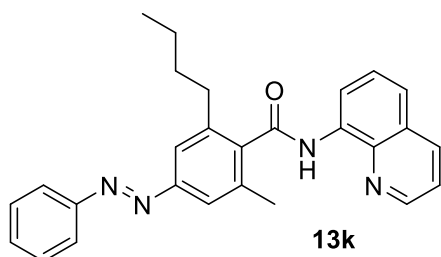


(E)-2,6-Diheptyl-4-(phenyldiazenyl)-N-(quinolin-8-yl)benzamide (13i): The compound **13i** was obtained after purification by column chromatography on silica (EtOAc:Hexanes = 10:90) as an orange coloured liquid; Yield: 68% (56 mg, 0.15 mmol scale); R_f = 0.70 (EtOAc:Hexanes = 20:80); IR (DCM): 3343, 2926, 1678, 1521 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 10.00 (s, 1H), 9.05 (d, 1H, J = 7.3 Hz), 8.76 (dd, 1H, J_1 = 4.1 Hz, J_2 = 1.4 Hz), 8.22 (d, 1H, J = 8.2 Hz), 7.99-7.92 (m, 2H), 7.77-7.52 (m, 7H), 7.48 (dd, 1H, J_1 = 8.3 Hz, J_2 = 4.2 Hz), 2.82 (t, 4H, J =

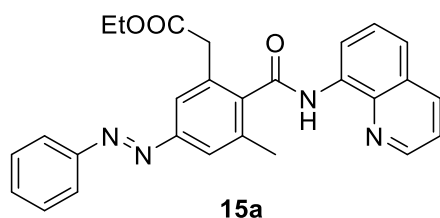
7.9 Hz), 1.81-1.84 (m, 4H), 1.36-1.13 (m, 16H), 0.77 (t, 6H, $J = 6.8$ Hz); ^{13}C NMR (~126 MHz, CDCl_3): δ 168.2, 152.8, 152.8, 148.3, 140.9, 139.6, 138.5, 136.3, 134.3, 131.1, 129.1, 128.0, 127.5, 122.9, 122.0, 121.7, 121.2, 116.8, 33.5, 31.6, 31.5, 29.5, 29.0, 22.0, 14.0; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{36}\text{H}_{45}\text{N}_4\text{O}$: 549.3593; found 549.3572.



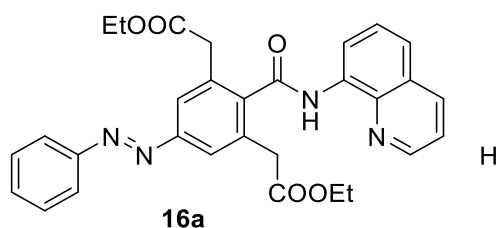
(E)-2,6-Dioctyl-4-(phenyldiazenyl)-N-(quinolin-8-yl)benzamide (13j): The compound **13j** was obtained after purification by column chromatography on silica (EtOAc:Hexanes = 10:90) as an orange coloured liquid; Yield: 79% (68 mg, 0.15 mmol scale); $R_f = 0.80$ (EtOAc:Hexanes = 20:80); IR (DCM): 3344, 2923, 1678, 1520 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 10.02 (s, 1H), 9.04 (dd, 1H, $J_1 = 7.4$ Hz, $J_2 = 1.4$ Hz), 8.77 (dd, 1H, $J_1 = 4.2$ Hz, $J_2 = 1.6$ Hz), 8.22 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 1.6$ Hz), 8.00-7.98 (m, 2H), 7.75 (s, 2H), 7.68-7.65 (m, 1H), 7.63-7.60 (m, 1H), 7.59-7.55 (m, 2H), 7.54-7.51 (m, 1H), 7.48 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 4.2$ Hz), 2.84 (t, 4H, $J = 8.2$ Hz), 1.83-1.75 (m, 4H), 1.35-1.28 (m, 6H), 1.24-1.13 (m, 14H), 0.82 (t, 6H, $J = 7.2$ Hz); ^{13}C NMR (100 MHz, CDCl_3): δ 168.3, 152.8, 152.7, 148.3, 140.9, 139.6, 138.5, 136.3, 134.3, 131.1, 129.1, 128.1, 127.5, 122.9, 122.1, 121.7, 121.2, 116.8, 35.6, 31.8, 31.5, 29.6, 29.3, 29.1, 22.6, 14.1; HRMS (ESI): m/z ($\text{M} + \text{H}$) $^+$ calcd for $\text{C}_{38}\text{H}_{49}\text{N}_4\text{O}$: 577.3906; found 577.3928.



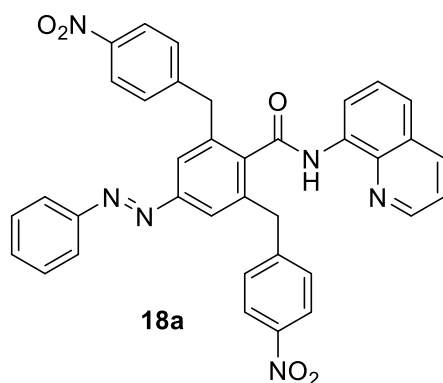
(E)-2-Butyl-6-methyl-4-(phenyldiazenyl)-N-(quinolin-8-yl)benzamide (13k): The compound **13k**, was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 10:90) as an orange coloured liquid; Yield: 24% (15 mg, 0.15 mmol scale); $R_f = 0.40$ (EtOAc:Hexanes = 15:85); IR (DCM): 3338, 1674, 1521, 1482 cm^{-1} ; $^1\text{H NMR}$ (500 MHz, CDCl_3): δ 9.98 (s, 1H), 8.99 (dd, 1H, $J_1 = 7.4$, $J_2 = 1.5$ Hz), 8.75 (dd, 1H, $J_1 = 4.2$, $J_2 = 1.6$ Hz), 8.20 (dd, 1H, $J_1 = 8.2$, $J_2 = 1.6$ Hz), 7.96-7.94 (m, 2H), 7.72 (d, 1H, $J = 1.3$ Hz), 7.67-7.66 (m, 1H), 7.63 (t, 1H, $J = 8.2$ Hz), 7.59 (dd, 1H, $J_1 = 8.3$, $J_2 = 1.4$ Hz), 7.56-7.49 (m, 3H), 7.46 (dd, 1H, $J_1 = 8.3$, $J_2 = 4.2$ Hz), 2.82 (t, 2H, $J = 8.0$ Hz), 2.53 (s, 3H), 1.78-1.72 (m, 2H), 1.38-1.32 (m, 2H), 0.83 (t, 3H, $J = 7.4$ Hz); $^{13}\text{C NMR}$ (100 MHz, CDCl_3): δ 168.3, 152.7, 152.7, 148.4, 140.9, 139.8, 138.5, 136.4, 135.9, 134.3, 131.2, 129.2, 128.0, 127.4, 122.9, 122.1, 121.8, 121.8, 121.6, 116.9, 33.7, 33.2, 22.7, 19.7, 13.9; HRMS (ESI): m/z ($M + H$) $^+$ calcd for $\text{C}_{27}\text{H}_{27}\text{N}_4\text{O}_3$: 423.2185; found 423.2168.



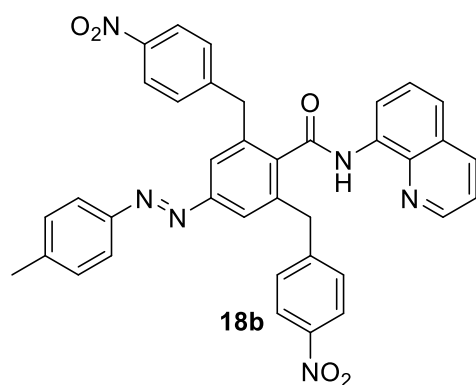
Ethyl (E)-2-(3-methyl-5-(phenyldiazenyl)-2-(quinolin-8-ylcarbamoyl)phenyl)acetate (15a): The compound **15a** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 20:80) as an orange coloured solid; Yield: 60% (34 mg, 0.125 mmol scale); mp 95-97 $^{\circ}\text{C}$; $R_f = 0.30$ (EtOAc:Hexanes = 20:80); IR (DCM): 3337, 1734, 1674, 1523 cm^{-1} ; $^1\text{H NMR}$ (400 MHz, CDCl_3): δ 10.13 (s, 1H), 9.03 (dd, 1H, $J_1 = 7.2$ Hz, $J_2 = 1.6$ Hz), 8.79 (dd, 1H, $J_1 = 4.2$ Hz, $J_2 = 1.6$ Hz), 8.21 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 1.6$ Hz), 7.99-7.96 (m, 2H), 7.82 (s, 1H), 7.81 (s, 1H), 7.67-7.62 (m, 2H), 7.60-7.52 (m, 3H), 7.47 (dd, 1H, $J_1 = 8.3$ Hz, $J_2 = 4.2$ Hz), 4.03 (q, 2H, $J = 7.1$ Hz), 3.93 (s, 2H), 2.60 (s, 3H), 1.04 (t, 3H, $J = 7.1$ Hz); $^{13}\text{C NMR}$ (100 MHz, CDCl_3): δ 171.0, 167.5, 152.6, 152.6, 148.4, 140.1, 138.6, 136.4, 136.3, 134.2, 132.5, 131.3, 129.2, 128.0, 127.4, 123.6, 123.0, 122.7, 122.3, 121.8, 117.0, 61.1, 39.1, 18.8, 19.8, 13.9; HRMS (ESI): m/z ($M + H$) $^+$ calcd for $\text{C}_{27}\text{H}_{25}\text{N}_4\text{O}_3$: 453.1927; found 453.1944.



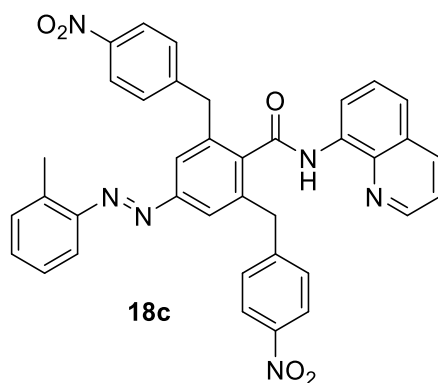
Diethyl 2,2'-(5-(phenyldiazenyl)-2-(quinolin-8-ylcarbamoyl)-1,3-phenylene)(*E*)-diacetate (16a): The compound **16a** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 20:80) as an orange coloured semisolid; Yield: 46% (24 mg, 0.1 mmol scale); $R_f = 0.30$ (EtOAc:Hexanes = 20:80); IR (DCM): 3330, 1734, 1672, 1524 cm^{-1} ; $^1\text{H NMR}$ (400 MHz, CDCl_3): δ 10.20 (s, 1H), 9.00 (d, 1H, $J = 6.6$ Hz), 8.79 (br s, 1H), 8.21 (d, 1H, $J = 8.2$ Hz), 7.97 (d, 2H, $J = 7.2$ Hz), 7.92 (s, 2H), 7.67-7.61 (m, 2H), 7.58-7.52 (m, 3H), 7.48-7.46 (m, 1H), 7.36-7.35 (m, 1H), 4.03 (q, 4H, $J = 7.1$ Hz), 3.92 (s, 4H), 1.04 (t, 6H, $J = 7.1$ Hz); $^{13}\text{C NMR}$ (100 MHz, CDCl_3): δ 170.8, 166.9, 152.6, 152.5, 148.4, 140.1, 138.6, 136.3, 134.1, 132.9, 131.5, 129.2, 128.0, 127.3, 124.1, 123.1, 122.5, 121.8, 117.2, 61.2, 39.2, 13.9; HRMS (ESI): m/z ($M + H$) $^+$ calcd for $\text{C}_{30}\text{H}_{29}\text{N}_4\text{O}_5$: 525.2138; found 525.2114.



(*E*)-2,6-Bis(4-nitrobenzyl)-4-(phenyldiazenyl)-*N*-(quinolin-8-yl)benzamide (18a): The compound **18a** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 30:70) as an orange coloured solid; Yield: 45% (45 mg, 0.16 mmol); mp 168-170 $^{\circ}\text{C}$; $R_f = 0.30$ (EtOAc:Hexanes = 30:70); IR (DCM): 1672, 1519, 1484, 1345 cm^{-1} ; $^1\text{H NMR}$ (400 MHz, CDCl_3): δ 9.43 (s, 1H), 8.81 (dd, 1H, $J_1 = 6.1$ Hz, $J_2 = 2.6$ Hz), 8.47 (d, 1H, $J = 8.2$ Hz), 8.16 (d, 1H, $J = 8.2$ Hz), 7.96-7.95 (m, 2H), 7.88 (d, 4H, $J = 8.3$ Hz), 7.81 (s, 2H), 7.63-7.51 (m, 5H), 7.40 (dd, 1H, $J_1 = 8.2$ Hz, $J_2 = 4.2$ Hz), 7.34 (d, 4H, $J = 8.4$ Hz), 4.31 (s, 4H); $^{13}\text{C NMR}$ (100 MHz, CDCl_3): δ 166.9, 152.9, 152.4, 148.2, 147.2, 146.3, 139.9, 138.1, 137.8, 136.4, 133.3, 131.8, 129.7, 129.3, 127.7, 127.2, 123.7, 123.5, 123.1, 122.7, 121.9, 116.6, 39.4; HRMS (ESI): m/z ($M + H$) $^+$ calcd for $\text{C}_{36}\text{H}_{27}\text{N}_6\text{O}_5$: 623.2043; found 623.2062.

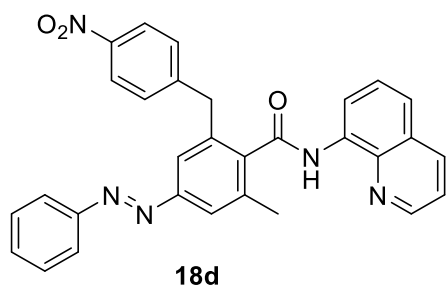


(E)-2,6-Bis(4-nitrobenzyl)-N-(quinolin-8-yl)-4-(p-tolyldiazenyl)benzamide (18b): The compound **18b** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 30:70) as an orange coloured solid; Yield: 30% (38 mg, 0.2 mmol scale); mp 92-94 °C; R_f = 0.30 (EtOAc:Hexanes = 30:70); IR (DCM): 3326, 1672, 1519, 1345 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.41 (s, 1H), 8.80 (dd, 1H, $J_1 = 6.1$ Hz, $J_2 = 2.0$ Hz), 8.46 (d, 1H, $J = 4.0$ Hz), 8.15 (d, 1H, $J = 8.2$ Hz), 7.88-7.85 (m, 6H), 7.79 (s, 2H), 7.62-7.58 (m, 2H), 7.41-7.33 (m, 7H), 4.30 (s, 4H), 2.47 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3): δ 166.9, 153.0, 150.6, 148.1, 147.3, 146.3, 142.6, 140.0, 138.0, 137.8, 136.4, 133.4, 129.9, 129.7, 127.7, 127.2, 123.7, 123.4, 123.1, 122.7, 121.9, 116.5, 39.4, 21.6; HRMS (ESI): m/z ($M + H$) $^+$ calcd for $\text{C}_{37}\text{H}_{29}\text{N}_6\text{O}_5$: 637.2199; found 637.2231.



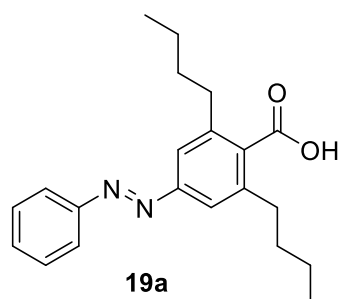
(E)-2,6-Bis(4-nitrobenzyl)-N-(quinolin-8-yl)-4-(o-tolyldiazenyl)benzamide (18c): The compound **18c** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 40:60) as an orange coloured solid; Yield: 52% (66 mg, 0.2 mmol scale); mp 187-189 °C; R_f = 0.30 (EtOAc:Hexanes = 40:60); IR (DCM): 1672, 1519, 1483, 1344 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 9.46 (s, 1H), 8.82 (d, 1H, $J = 6.4$ Hz), 8.48 (d, 1H, $J = 4.1$ Hz), 8.16 (d, 1H, $J = 8.3$ Hz), 7.88 (d, 4H, $J = 8.1$ Hz), 7.78 (s, 2H), 7.66-7.60 (m, 3H), 7.44-7.27 (m, 8H), 4.32 (s, 4H), 2.73 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3): δ 166.9, 153.3, 150.5,

148.2, 147.3, 146.3, 139.7, 138.8, 138.1, 137.8, 136.4, 133.4, 131.8, 131.5, 129.8, 127.7, 127.2, 126.6, 123.7, 123.5, 122.7, 121.9, 116.6, 115.4, 39.4, 17.6; HRMS (ESI): m/z ($M + H$)⁺ calcd for C₃₇H₂₉N₆O₅: 637.2199; found 637.2226.



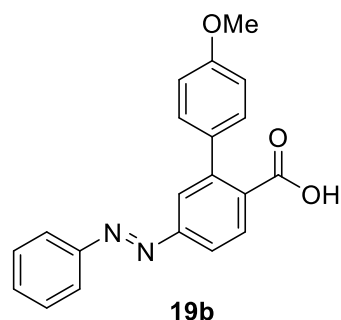
(E)-2-Methyl-6-(4-nitrobenzyl)-4-(phenyldiazenyl)-N-(quinolin-8-yl)benzamide (18d):

The compound **18d** was obtained after purification by column chromatography on silica gel (EtOAc:Hexanes = 20:80) as an orange coloured solid; Yield: 61% (46 mg, 0.15 mmol scale); mp 174-176 °C; R_f = 0.30 (EtOAc:Hexanes = 20:80); IR (DCM): 3335, 1673, 1521, 1482 cm⁻¹; ¹H NMR (400 MHz, CDCl₃): δ 9.65 (s, 1H), 8.91 (d, 1H, J = 7.0 Hz), 8.60 (d, 1H, J = 4.1 Hz), 8.18 (d, 1H, J = 4.1 Hz), 7.97 (d, 2H, J = 7.2 Hz), 7.83-7.79 (m, 3H), 7.74 (s, 1H), 7.65-7.52 (m, 5H), 7.43 (dd, 1H, J_1 = 8.2, J_2 = 4.2 Hz), 7.33 (d, 2H, J = 8.5 Hz), 4.30 (s, 2H), 2.58 (s, 3H); ¹³C NMR (100 MHz, CDCl₃): δ 167.6, 152.7, 152.5, 148.3, 147.7, 146.2, 140.0, 138.1, 137.5, 136.6, 136.4, 133.8, 131.5, 129.7, 129.2, 127.8, 127.3, 123.6, 123.1, 123.0, 122.7, 122.5, 121.8, 116.7, 39.5, 19.7; HRMS (ESI): m/z ($M + H$)⁺ calcd for C₃₀H₂₄N₅O₃: 502.1879; found 502.1860.

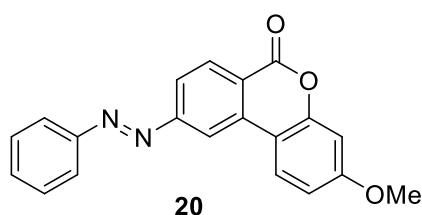


(E)-2,6-Dibutyl-4-(phenyldiazenyl)benzoic acid (19a): The compound (**19a**) was obtained after workup as an orange coloured solid; Yield: 95% (24 mg, 0.075 mmol scale); mp 101-103 °C; IR (DCM): 2928, 2958, 1695, 1462 cm⁻¹; ¹H NMR (500 MHz, CDCl₃): δ 7.94-7.92 (m 2 H), 7.65 (s, 2H), 7.55-7.49 (m, 3H), 2.80 (t, 4H, J = 8.0 Hz), 1.74-1.68 (m, 4H), 1.46-1.39 (m, 4H), 0.96 (t, 6H, J = 7.4 Hz); ¹³C NMR (100 MHz, CDCl₃): δ 175.1, 152.9, 152.6, 141.2, 134.4,

131.3, 129.2, 123.0, 121.2, 33.7, 33.5, 22.7, 13.9; HRMS (ESI): m/z ($M + H$)⁺ calcd for C₂₁H₂₇N₂O₂:339.2073; found 339.2059.



(E)-4'-Methoxy-5-(phenyldiazenyl)-(1,1'-biphenyl)-2-carboxylic acid (19b): The compound **19b** was obtained after workup as an orange coloured solid; Yield: 66% (21 mg, 0.098 mmol scale); mp 210-212 °C; IR (DCM): 2924, 2357, 1695, 1253 cm⁻¹; ¹H NMR (400 MHz, DMSO-*d*₆): δ 7.96-7.90 (m, 4H), 7.83 (s, 1H), 7.63-7.62 (m, 3H), 7.38 (d, 2H, *J* = 7.8 Hz), 7.02 (d, 2H, *J* = 7.9 Hz), 3.82 (s, 3H); ¹³C NMR (100 MHz, DMSO-*d*₆): δ 169.8, 159.4, 153.0, 152.3, 142.1, 132.7, 132.7, 132.6, 131.1, 130.8, 130.1, 130.0, 130.0, 124.7, 123.3, 123.0, 121.0, 114.2; HRMS (ESI): m/z ($M - H$)⁺ calcd for C₂₀H₁₅N₂O₃: 333.1083; found 331.1070.



(E)-3-Methoxy-9-(phenyldiazenyl)-6H-benzo(c)chromen-6-one (20): The compound **20** was obtained after workup as an orange coloured solid; Yield: 61% (24 mg, 0.12 mmol scale); mp 215-217 °C; IR (DCM): 1735, 1611, 1430, 1289 cm⁻¹; ¹H NMR (400 MHz, CDCl₃): δ 8.53-8.51 (m, 2H), 8.11 (d, 1H, *J* = 8.9 Hz), 8.05-7.99 (m, 3H), 7.63-7.58 (m, 3H), 6.99 (dd, 1H, *J*₁ = 8.8 Hz, *J*₂ = 2.6 Hz), 6.92 (d, 1H, *J* = 2.5 Hz), 3.93 (s, 3H); ¹³C NMR (100 MHz, CDCl₃): δ 161.8, 161.0, 156.1, 152.8, 152.4, 136.4, 132.2, 131.9, 129.3, 124.2, 123.4, 121.0, 120.8, 116.5, 112.2, 111.1, 101.6, 55.7; HRMS (ESI): m/z ($M + H$)⁺ calcd for C₂₀H₁₅N₂O₃: 331.1083; found 331.1068.