Supporting Information for:
Quinine catalysed asymmetric Michael additions in a sustainable solvent

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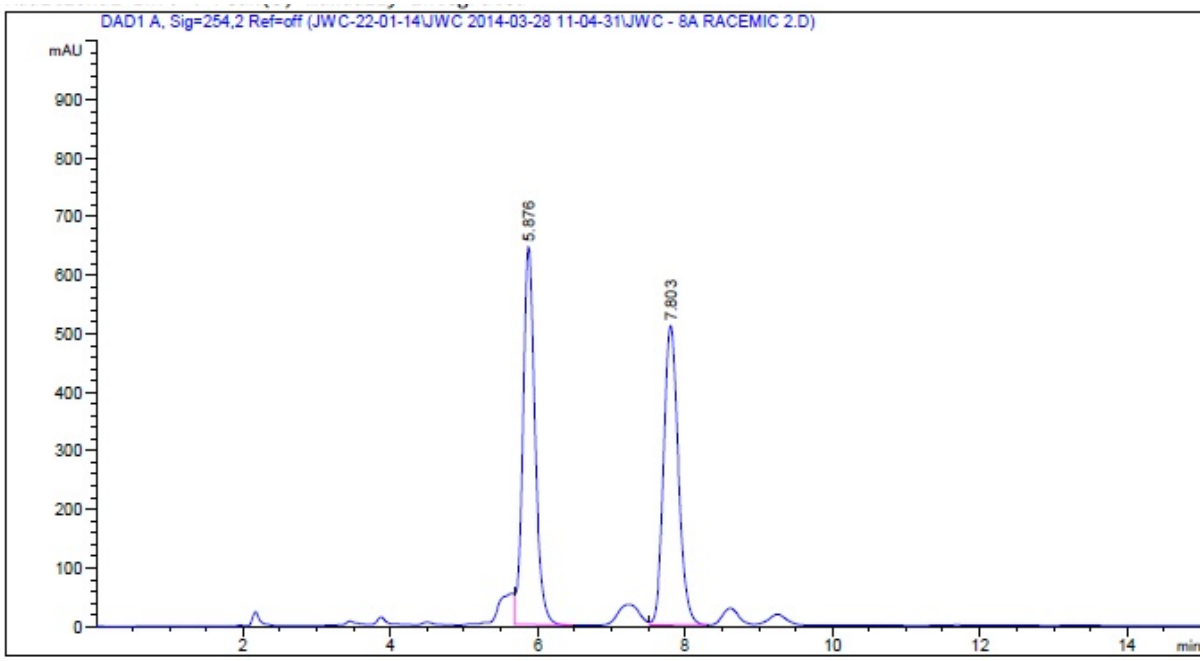
Contents

2-Cyano-3,5-diphenyl-5-oxo-pentanonitrile 8a

Racemic sample

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                    Area Percent Report
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Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=254,2 Ref=off

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   5.876 VB    0.1715 7279.64746  645.93445  50.6556
   2   7.803 VB    0.2137 7091.20752  511.47995  49.3444

Totals :                  1.43709e4  1157.41440
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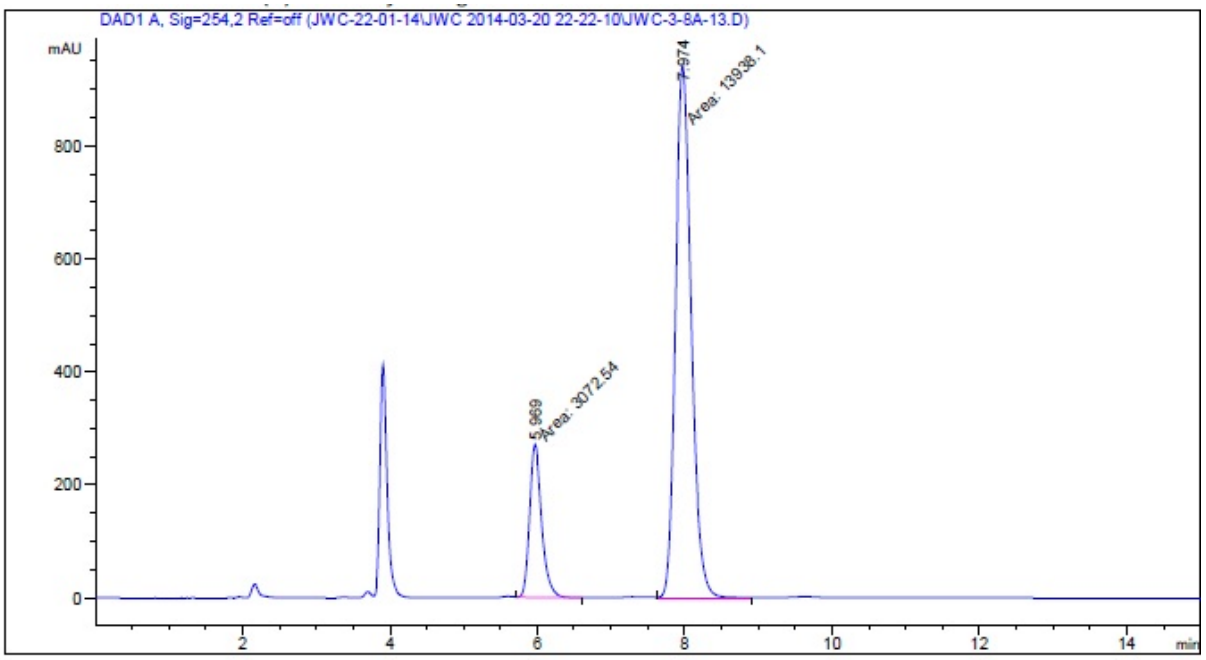
Sample prepared using the conditions of Table 1, entry 15 with 64% ee

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                        Area Percent Report
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Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=254,2 Ref=off

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   5.969 MM    0.1891 3072.54175  270.77618  18.0625
   2   7.974 MM    0.2468 1.39381e4   941.09064  81.9375

Totals :                  1.70106e4  1211.86682
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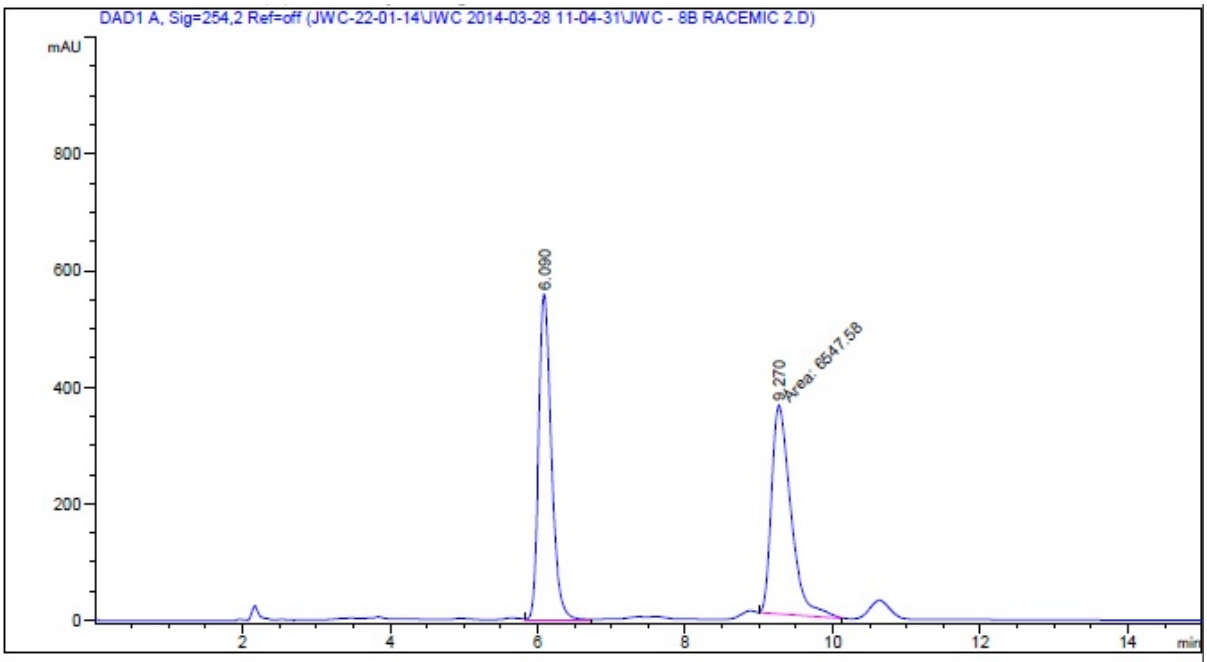
3–(4–Chlorophenyl)–2-cyano-5-phenyl-5-oxo-pentanonitrile 8b

Racemic sample

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                          Area Percent Report
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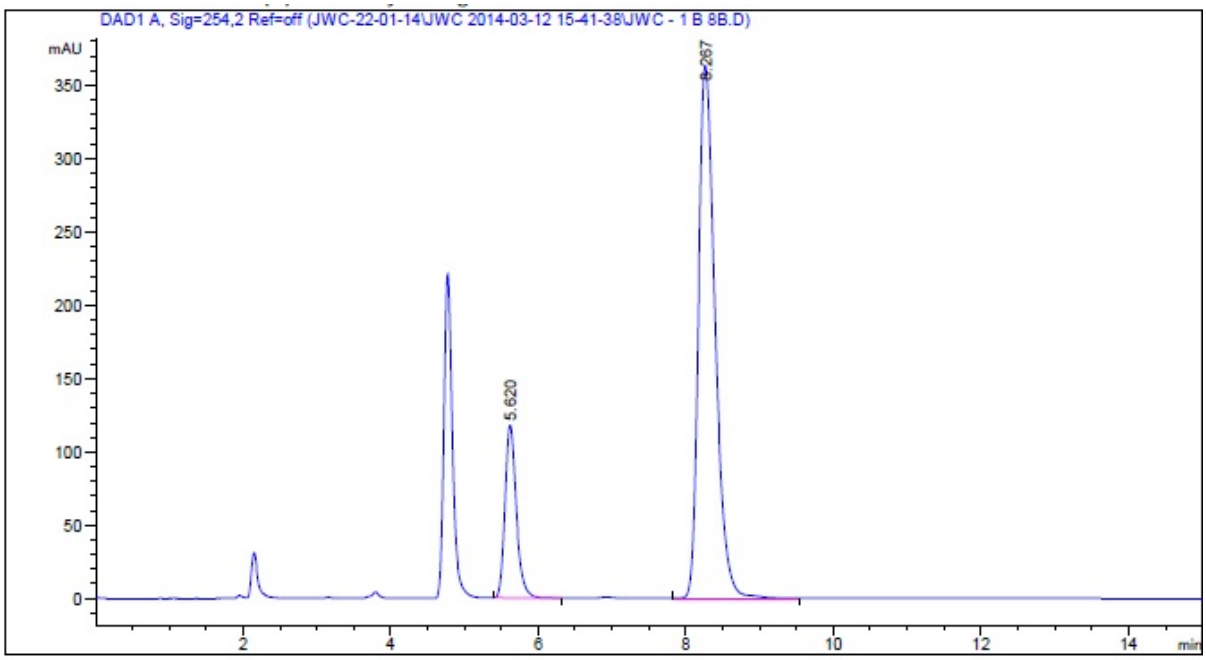
Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=254,2 Ref=off

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   6.090 VB    0.1828 6644.08301  558.29498  50.3658
   2   9.270 MM    0.3048 6547.58301  358.04370  49.6342

Totals :                  1.31917e4   916.33868
```

Sample prepared using the conditions of Table 2, entry 4 with 64% ee

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                          Area Percent Report
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Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=254,2 Ref=off

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   5.620 BB    0.1610 1243.20410  117.87500  17.9580
   2   8.267 BB    0.2403 5679.62500  363.44861  82.0420

Totals :                  6922.82910  481.32361
```
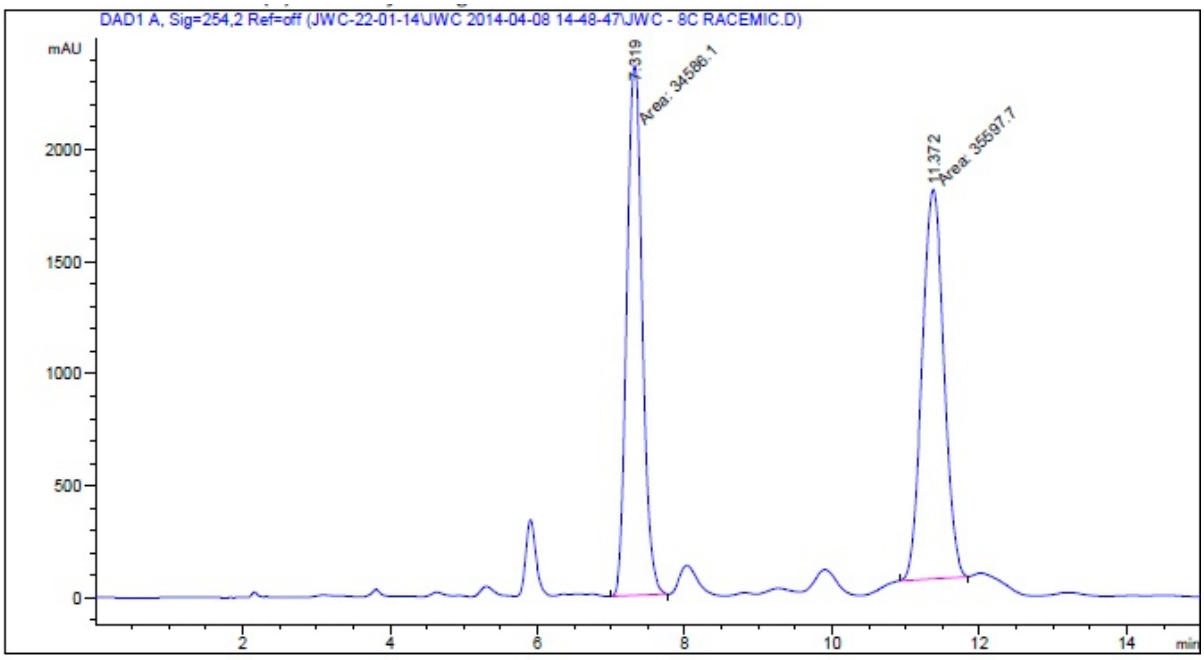

3–(4–Methoxyphenyl)–2-cyano-5-phenyl-5-oxo-pentanonitrile 8c

Racemic sample

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                    Area Percent Report
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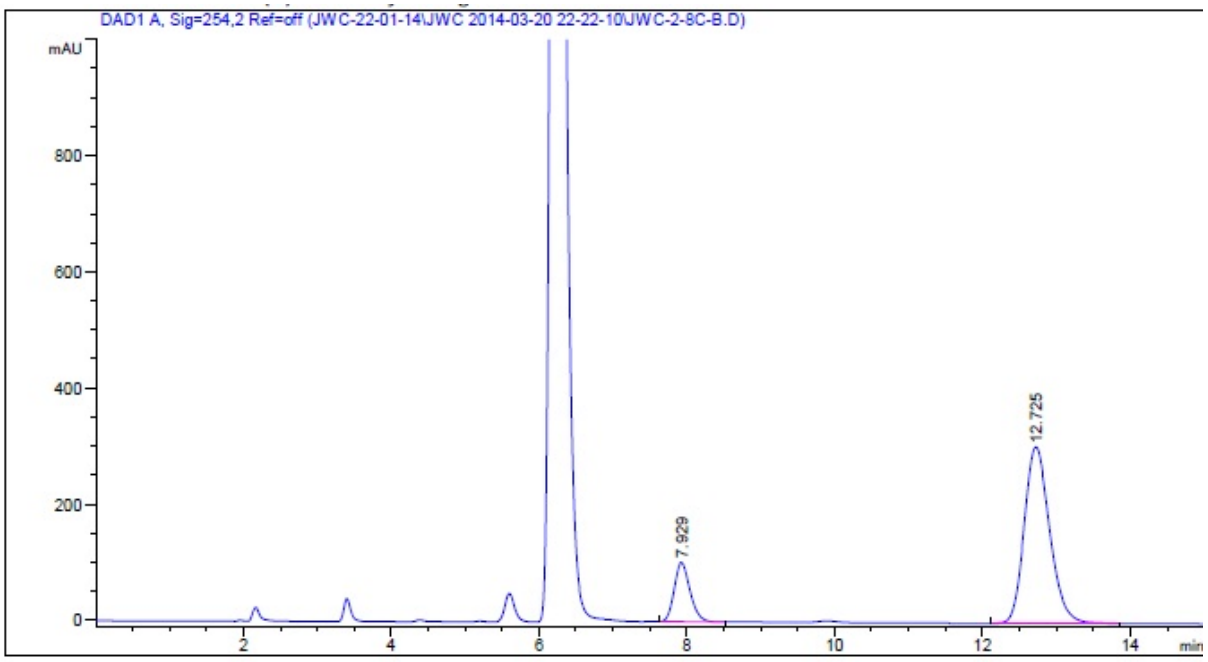
Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Do not use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=254,2 Ref=off

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   7.319 MM    0.2440 3.45861e4  2362.76782  49.2793
   2  11.372 MM    0.3418 3.55977e4  1735.99670  50.7207

Totals :                  7.01838e4  4098.76453
```

Sample prepared using the conditions of Table 2, entry 8 with 65% ee

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=====================================================================
                      Area Percent Report
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Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=254,2 Ref=off

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   7.929 BB    0.2301 1526.21240  102.30077  17.3963
   2  12.725 BB    0.3686 7246.96973  303.49915  82.6037

Totals :                  8773.18213  405.79991
```
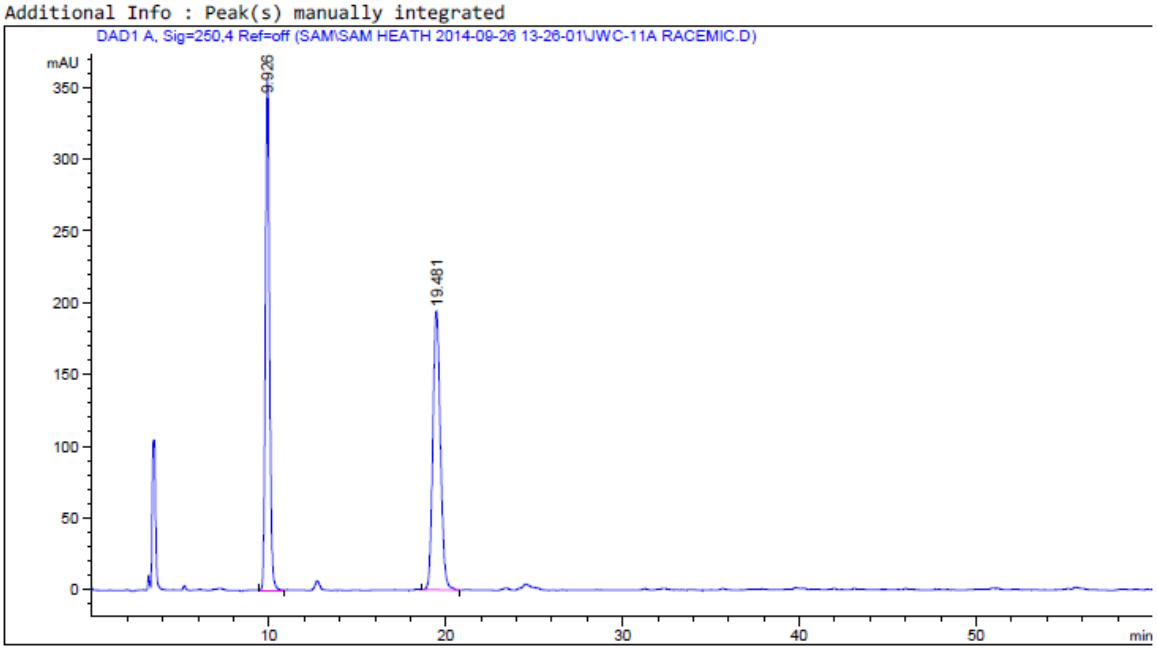

4,4–Dicyano–1,3,5–triphenylpentan–1–one 11a

Racemic sample

Additional Info : Peak(s) manually integrated

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                        Area Percent Report
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Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Do not use Multiplier & Dilution Factor with ISTDs

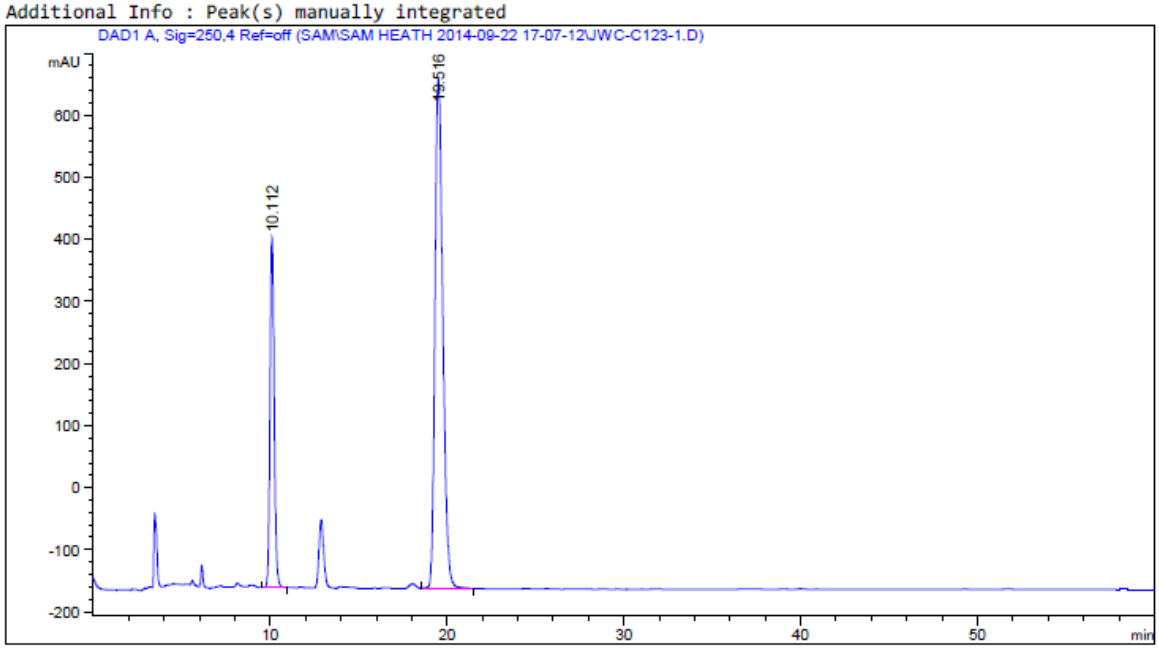

Signal 1: DAD1 A, Sig=250,4 Ref=off

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   9.926 BB    0.2486 5759.11621  356.19238  49.8929
   2  19.481 BB    0.4613 5783.83643  194.31696  50.1071

Totals :                  1.15430e4   550.50934
```

Sample prepared using the conditions of Table 3, entry 1 with 46% ee

Additional Info : Peak(s) manually integrated

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                      Area Percent Report
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Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Do not use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=250,4 Ref=off

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  10.112 BB    0.2538 9292.54102  565.15698  26.8612
   2  19.516 BB    0.4774 2.53021e4   821.30701  73.1388
```
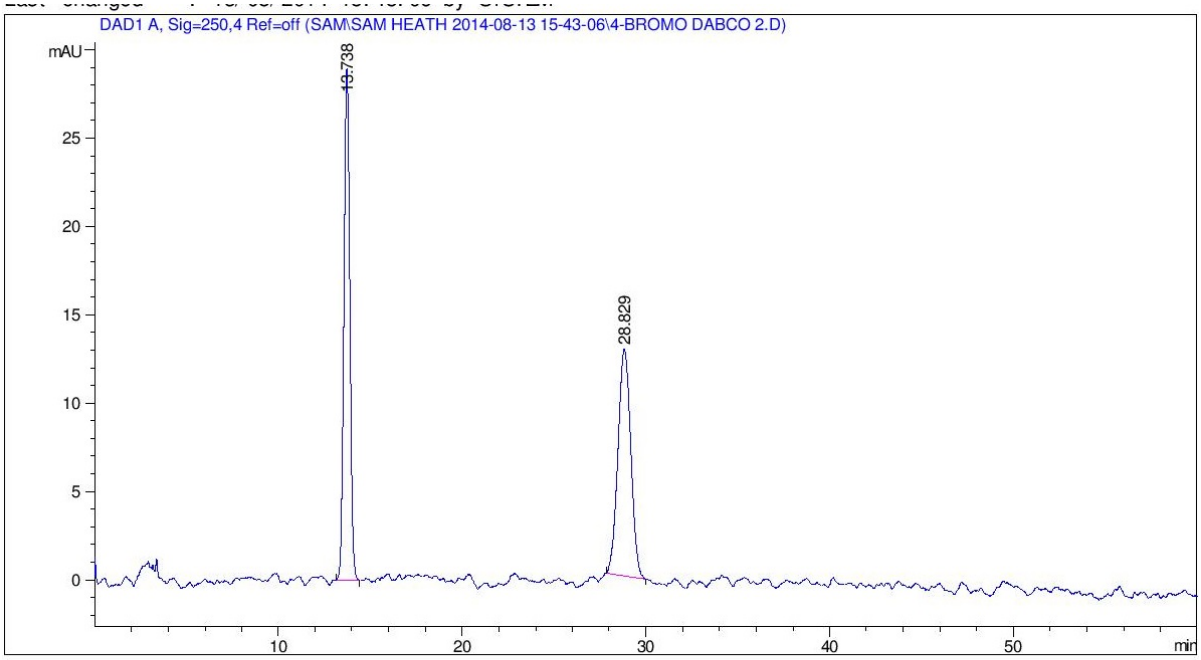

5-(4-Bromophenyl)-4,4–dicyano–1,3–diphenylpentan–1–one 11b

Racemic sample



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Area Percent Report

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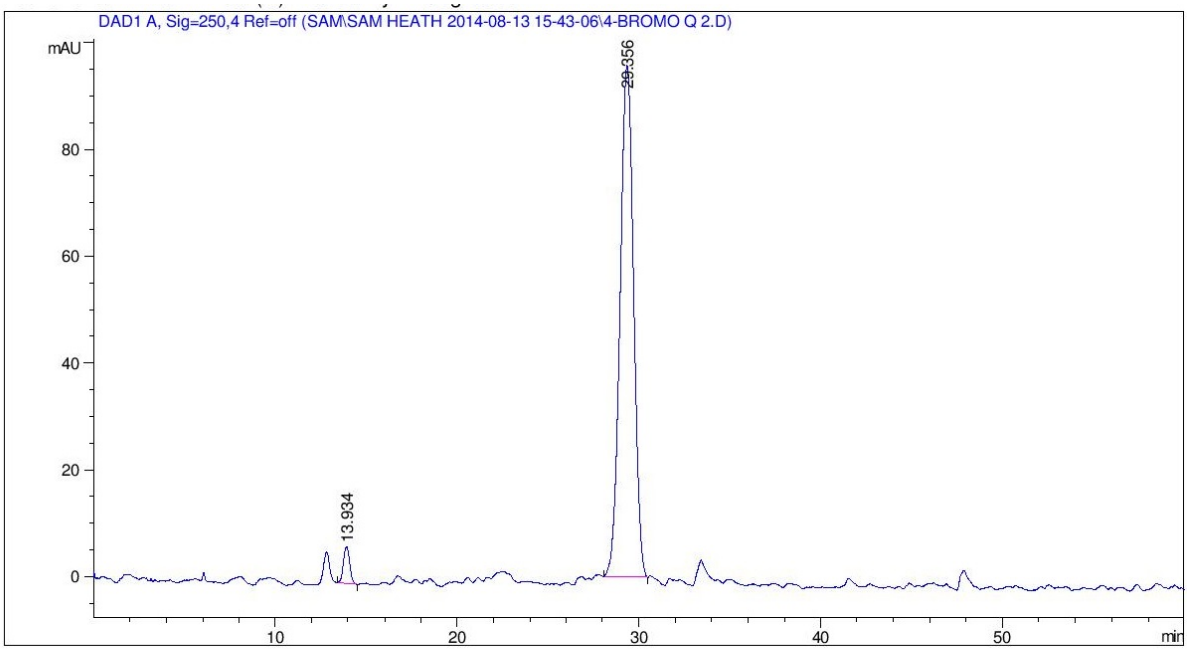
Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 A, Sig=250,4 Ref=off

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	13.738	BB	0.3405	645.77692	28.91961	50.8791
2	28.829	BB	0.5831	623.46155	12.82627	49.1209
Totals :				1269.23846	41.74587	

Sample prepared using the conditions of Table 3, entry 2 with 94% ee

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                    Area Percent Report
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Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

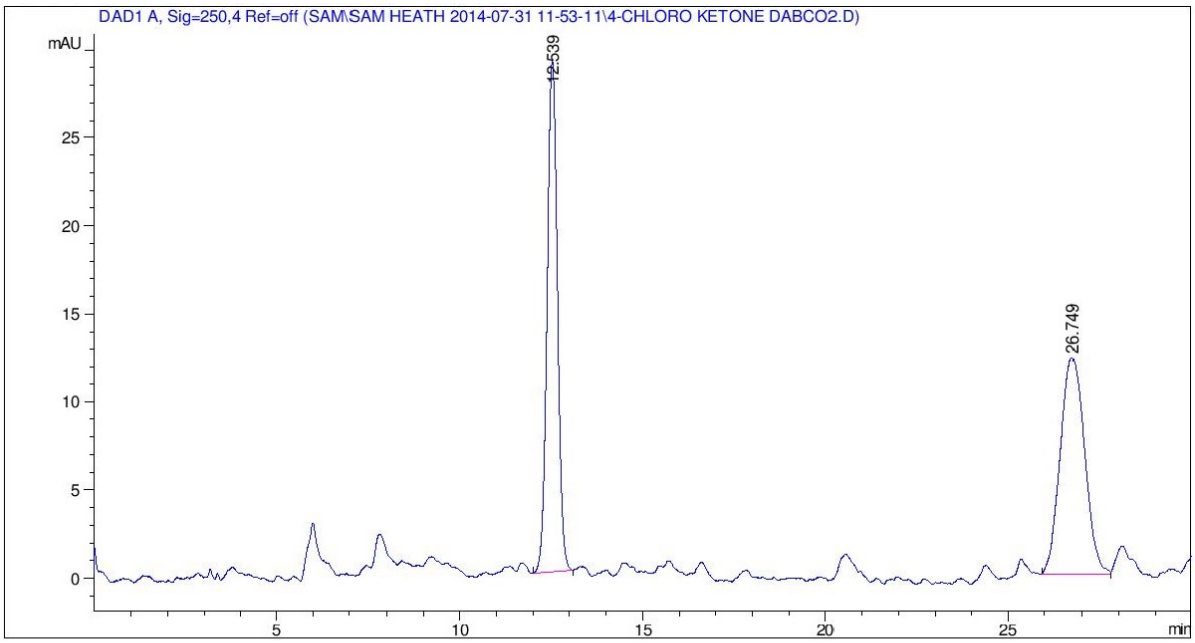

Signal 1: DAD1 A, Sig=250,4 Ref=off

Peak  RetTime Type  Width     Area      Height     Area
  #    [min]       [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  13.934 BB    0.3285  166.83731   6.93844   3.2634
   2  29.356 BB    0.7842 4945.56348  95.81300  96.7366

Totals :                  5112.40079  102.75144
```

5-(4-Chlorophenyl)-4,4–dicyano–1,3–diphenylpentan–1–one 11c

Racemic sample



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Area Percent Report

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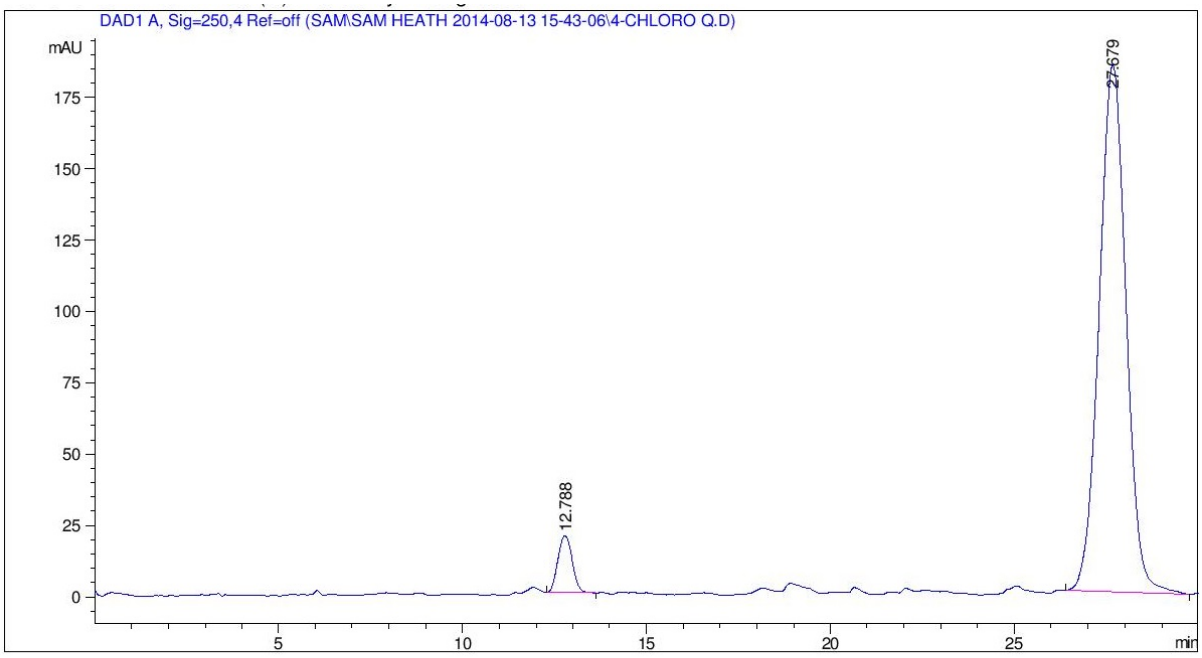
Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 A, Sig=250,4 Ref=off

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	12.539	BB	0.2990	570.37366	29.05391	50.7893
2	26.749	BV	0.5328	552.64575	12.28516	49.2107
Totals :				1123.01941	41.33907	

Sample prepared using the conditions of Table 3, entry 3 with 89% ee



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Area Percent Report

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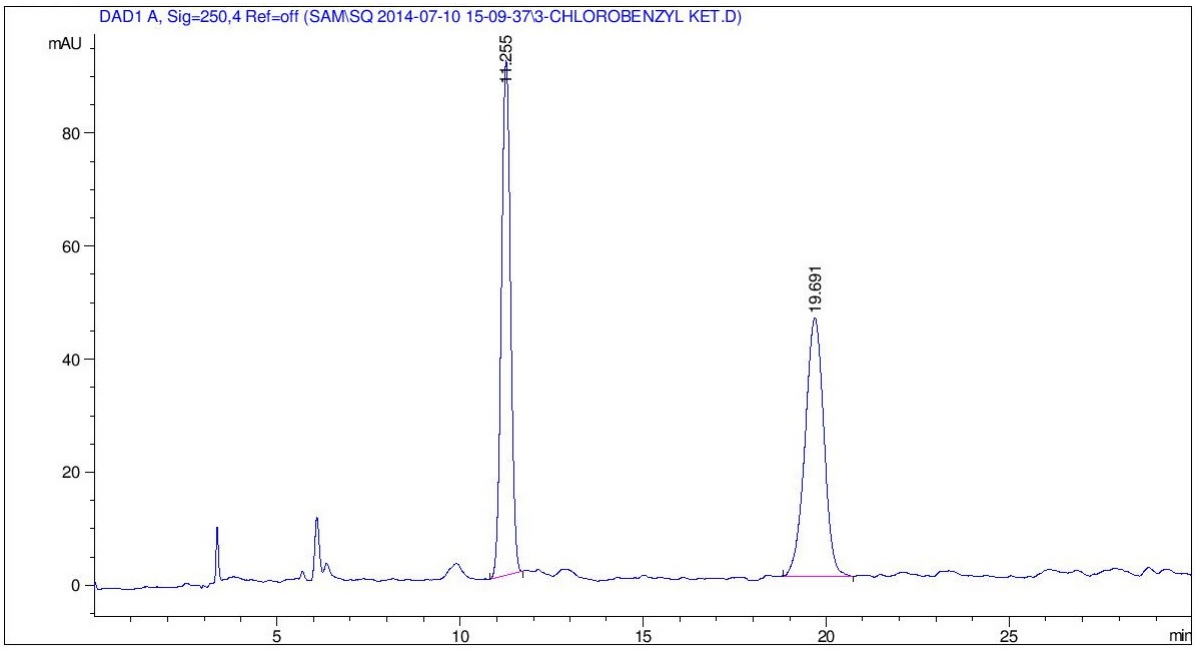
Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 A, Sig=250,4 Ref=off

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	12.788	BB	0.4292	540.39789	19.87690	5.4473
2	27.679	BB	0.7850	9380.08203	184.54669	94.5527
Totals :				9920.47992	204.42359	

5-(3-Chlorophenyl)-4,4–dicyano–1,3–diphenylpentan–1–one 11d

Racemic sample



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Area Percent Report

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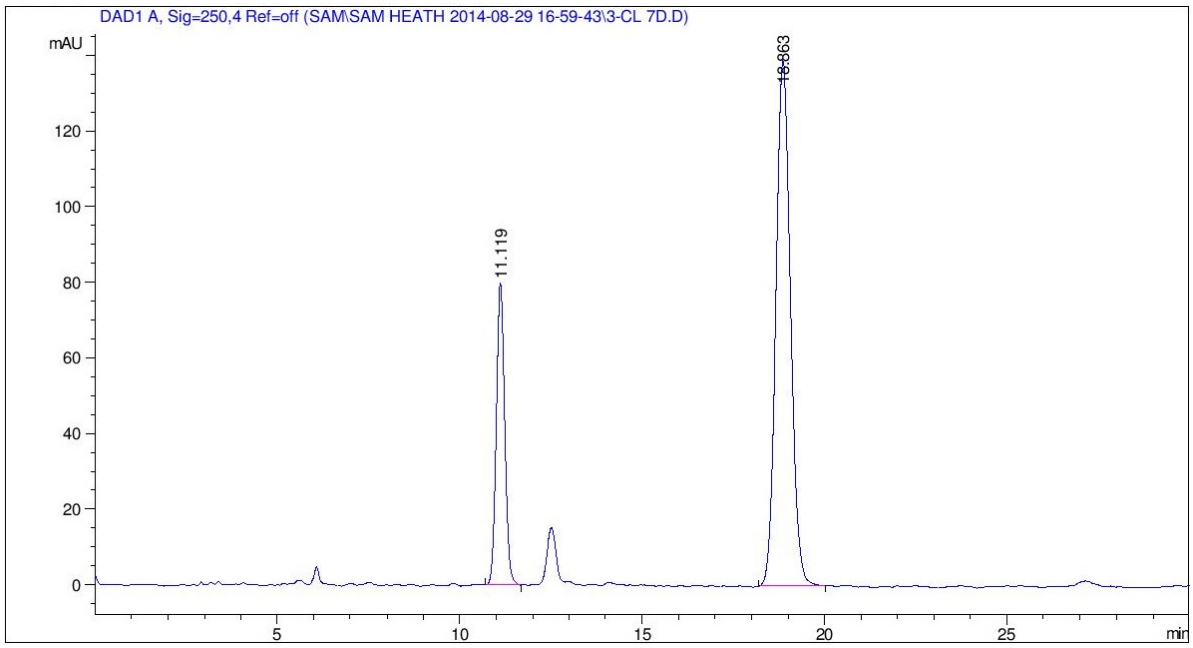
Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 A, Sig=250,4 Ref=off

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	11.255	BB	0.2708	1582.99780	91.04628	49.3087
2	19.691	BB	0.5279	1627.38538	45.64938	50.6913
Totals :				3210.38318	136.69566	

Sample prepared using the conditions of Table 3, entry 13 with 50% ee



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Area Percent Report

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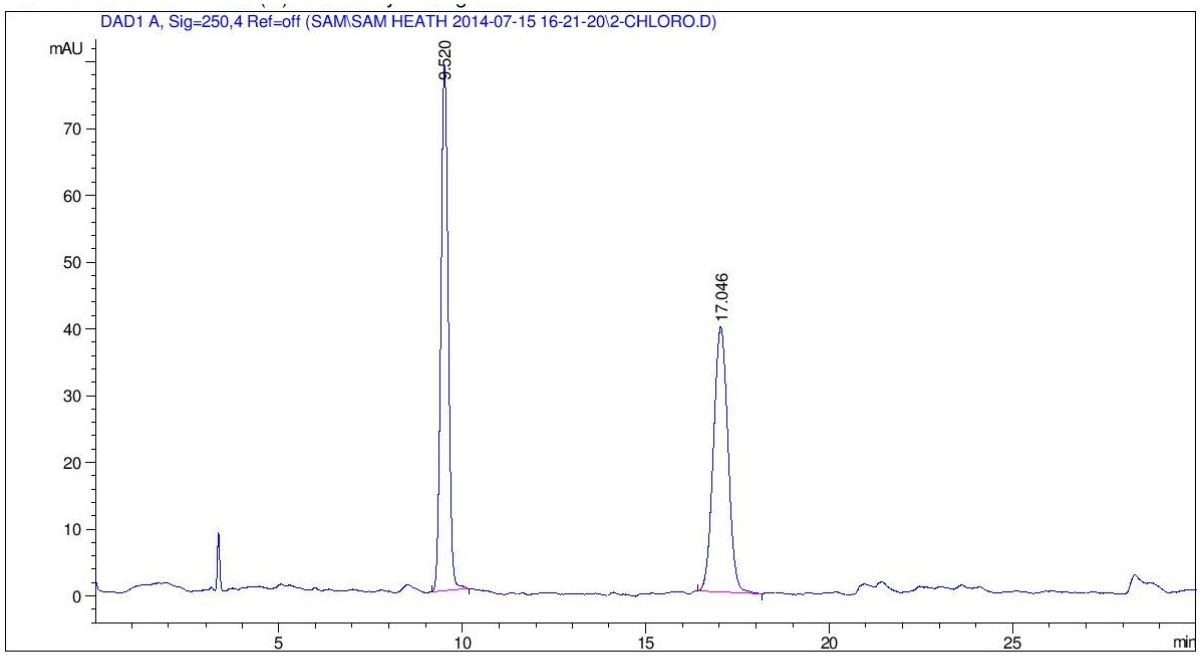
Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 A, Sig=250,4 Ref=off

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	11.119	BB	0.2467	1278.54614	79.88173	24.8731
2	18.863	BB	0.4283	3861.72778	138.92717	75.1269
Totals :				5140.27393	218.80890	

5-(2-Chlorophenyl)-4,4–dicyano–1,3–diphenylpentan–1–one 11e

Racemic sample



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Area Percent Report

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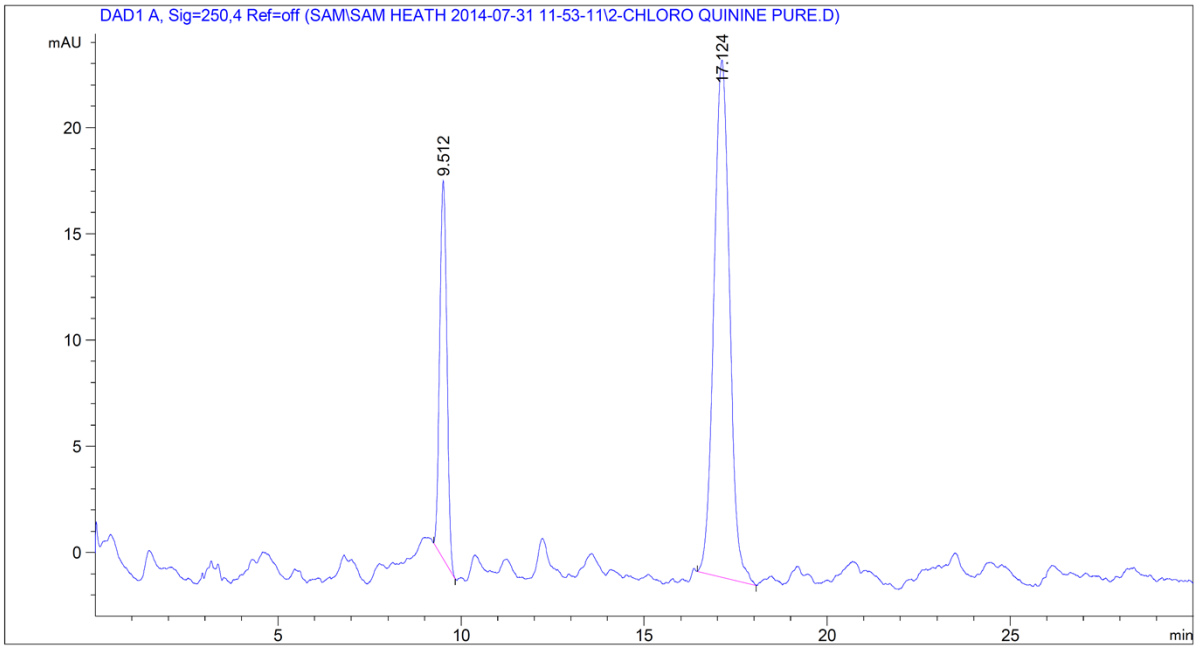
Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 A, Sig=250,4 Ref=off

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.520	BB	0.2170	1098.13867	78.59915	50.1050
2	17.046	BB	0.4231	1093.53528	39.73511	49.8950
Totals :				2191.67395	118.33426	

Sample prepared using the conditions of Table 3, entry 5 with 50% ee

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                        Area Percent Report
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Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=250,4 Ref=off

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   9.512 BB    0.2100  241.11748   17.80276  24.9515
   2  17.124 BB    0.4518  725.22601   24.32615  75.0485

Totals :                   966.34349   42.12890
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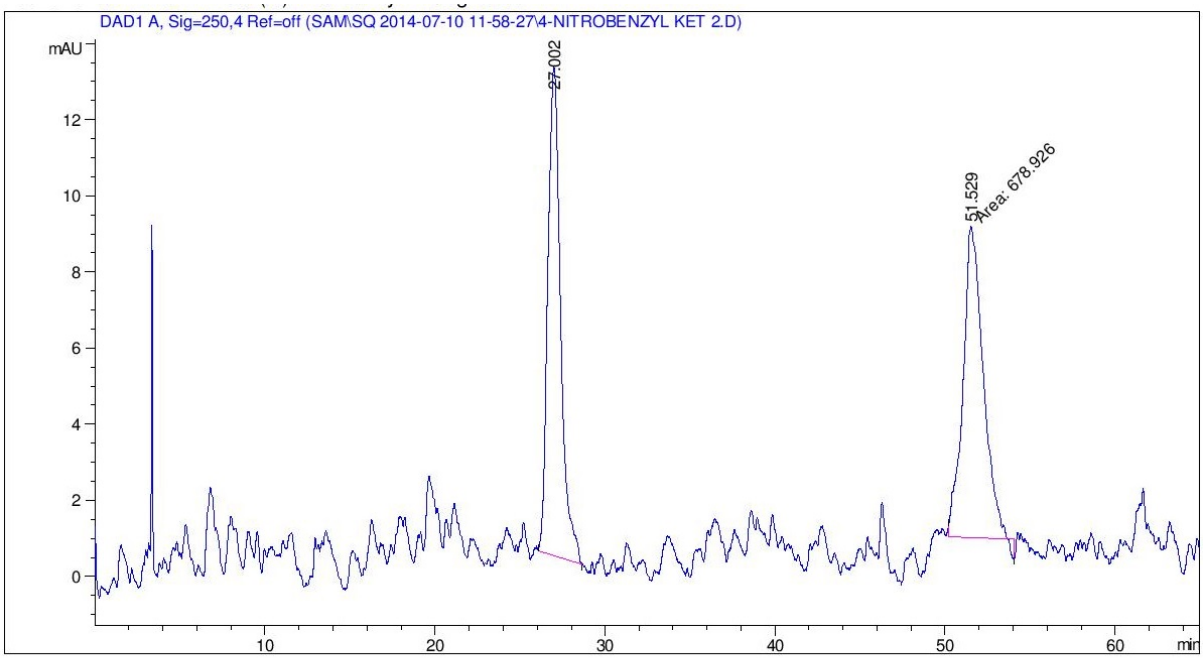
4,4–Dicyano–5-(4-nitrophenyl)-1,3–diphenylpentan–1–one 11f

Racemic sample



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Area Percent Report

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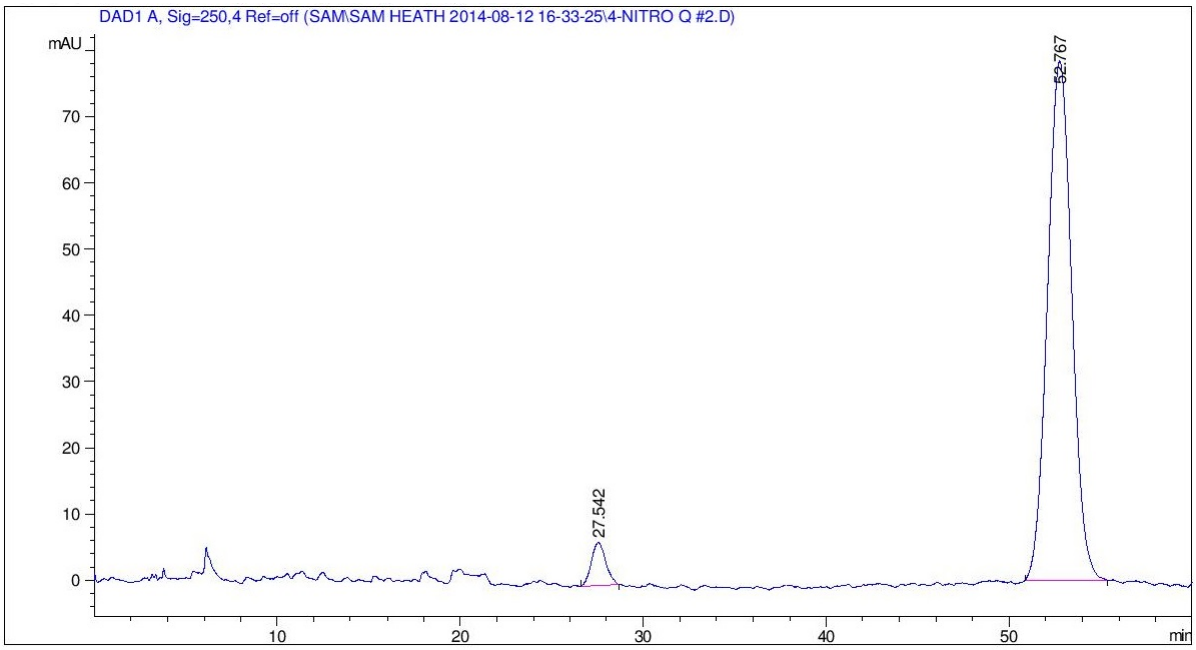
Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 A, Sig=250,4 Ref=off

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	27.002	BB	0.6258	669.88806	12.85789	49.6650
2	51.529	MM	1.3843	678.92572	8.17438	50.3350
Totals :				1348.81378	21.03228	

Sample prepared using the conditions of Table 3, entry 6 with 91% ee



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Area Percent Report

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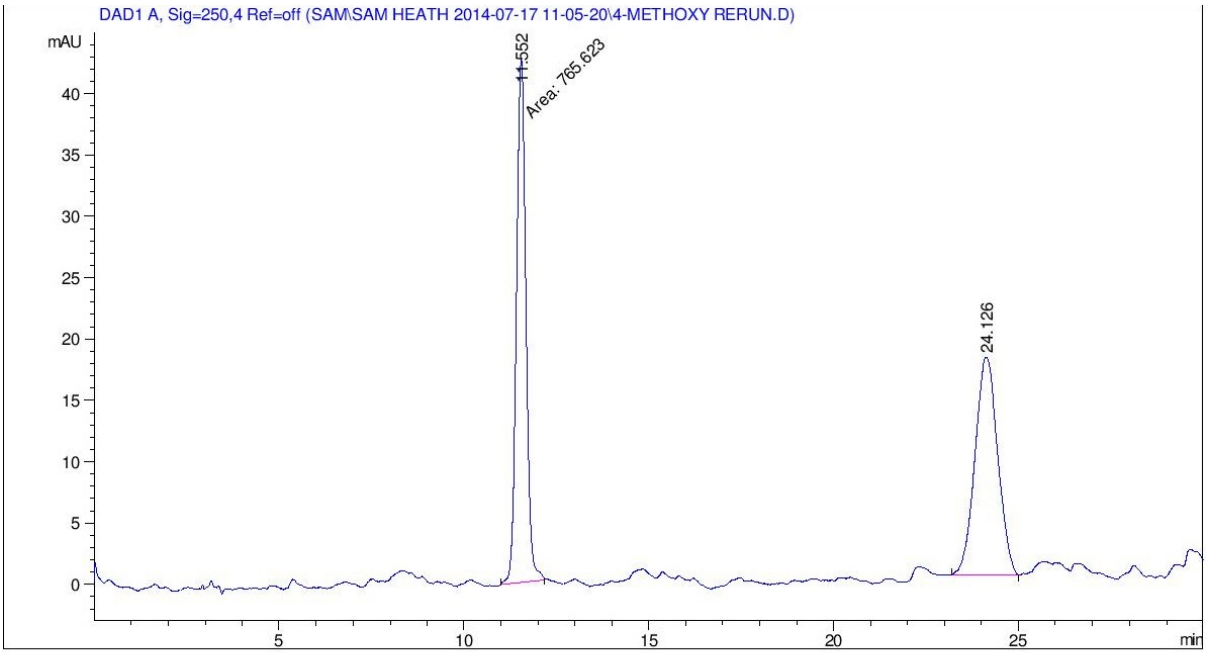
Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 A, Sig=250,4 Ref=off

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	27.542	BB	0.6402	353.27130	6.51935	4.6578
2	52.767	BB	1.1973	7231.16943	78.45258	95.3422
Totals :				7584.44073	84.97194	

4,4–Dicyano–5-(4-methoxyphenyl)-1,3–diphenylpentan–1–one 11g

Racemic sample

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                    Area Percent Report
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Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=250,4 Ref=off

Peak  RetTime Type  Width    Area       Height     Area
  #   [min]       [min]    [mAU*s]    [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  11.552 PM   0.2992   765.62335  42.64820   50.3343
   2  24.126 BB   0.5348   755.45447  17.74101   49.6657

Totals :                   1521.07782  60.38920
```
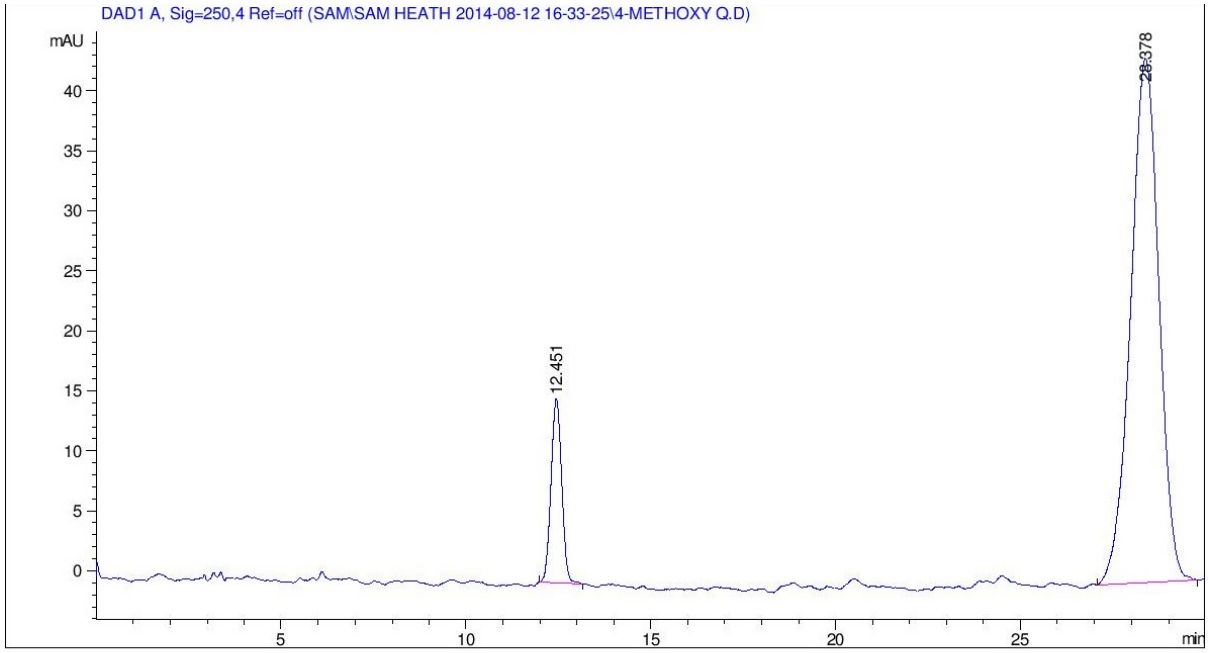

Sample prepared using the conditions of Table 3, entry 7 with 77% ee



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Area Percent Report

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Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

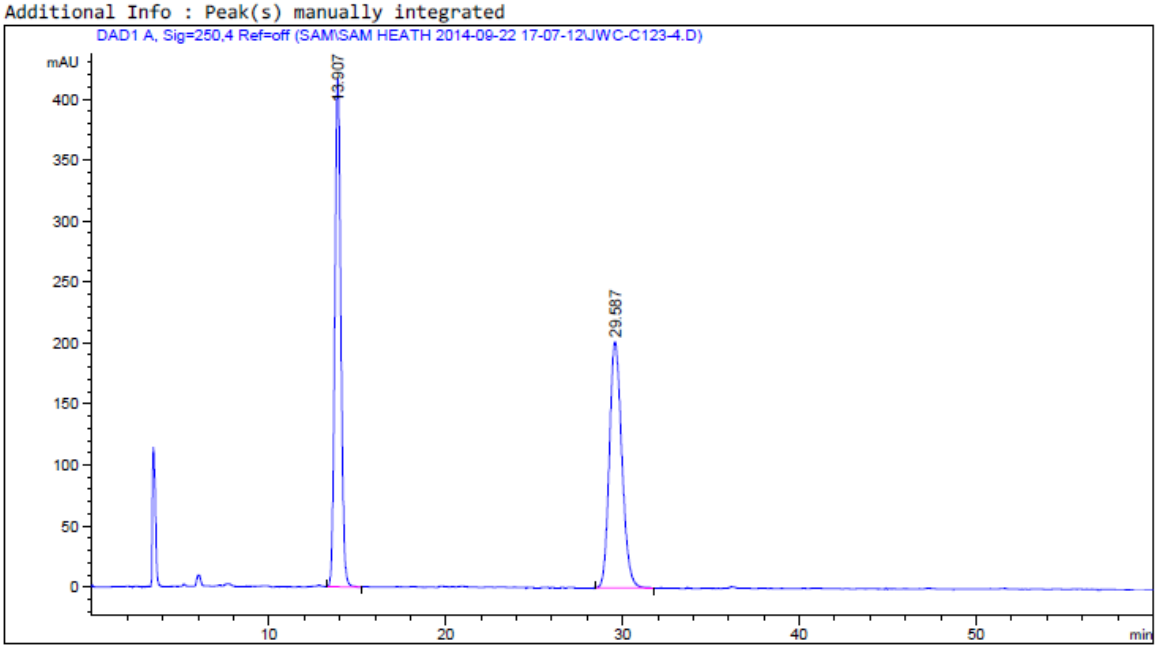
Signal 1: DAD1 A, Sig=250,4 Ref=off

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	12.451	BB	0.3130	309.65198	15.37255	11.7629
2	28.378	BB	0.7825	2322.79224	43.67145	88.2371
Totals :				2632.44421	59.04400	

4,4–Dicyano–1,3–diphenyl-5-(4-trifluoromethylphenyl) pentan–1–one 11h

Racemic sample

Additional Info : Peak(s) manually integrated

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                        Area Percent Report
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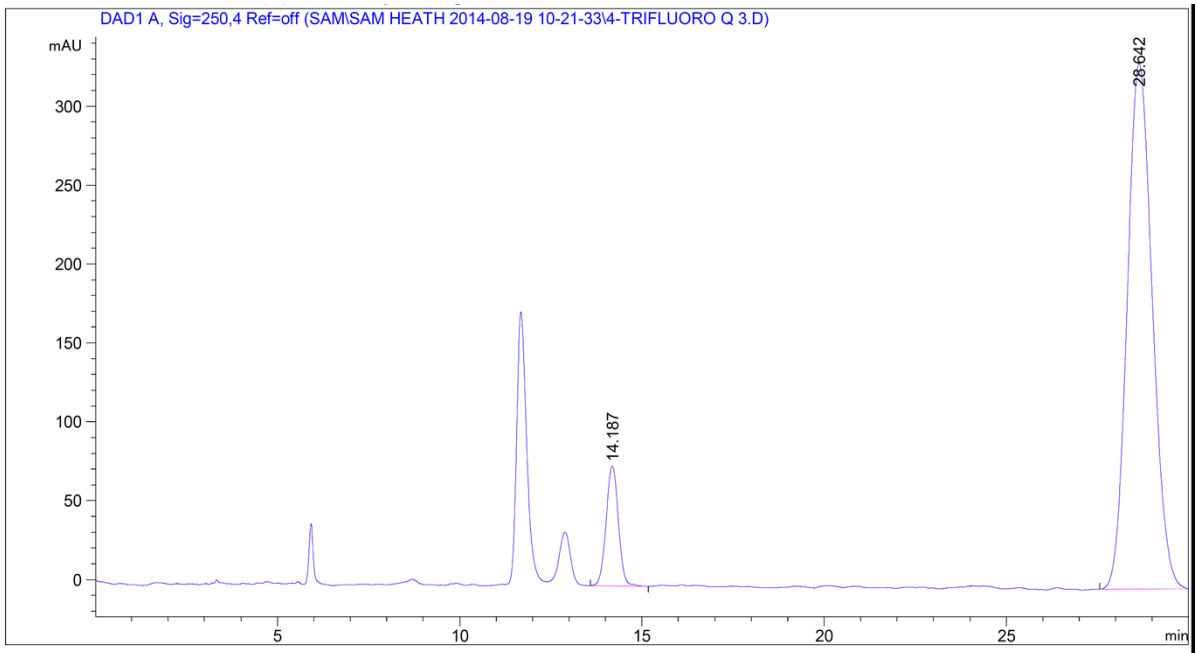
Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Do not use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=250,4 Ref=off

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  13.907 BB    0.3690 9881.61328  416.19177  49.9816
   2  29.587 BB    0.7462 9888.89355  201.64113  50.0184
```

Sample prepared using the conditions of Table 3, entry 8 with 80% ee

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                      Area Percent Report
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Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=250,4 Ref=off

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  14.187 BB    0.3623 1770.70447   75.85291  10.0029
   2  28.642 BBA   0.7395 1.59312e4   333.39822  89.9971

Totals :                  1.77019e4   409.25114
```
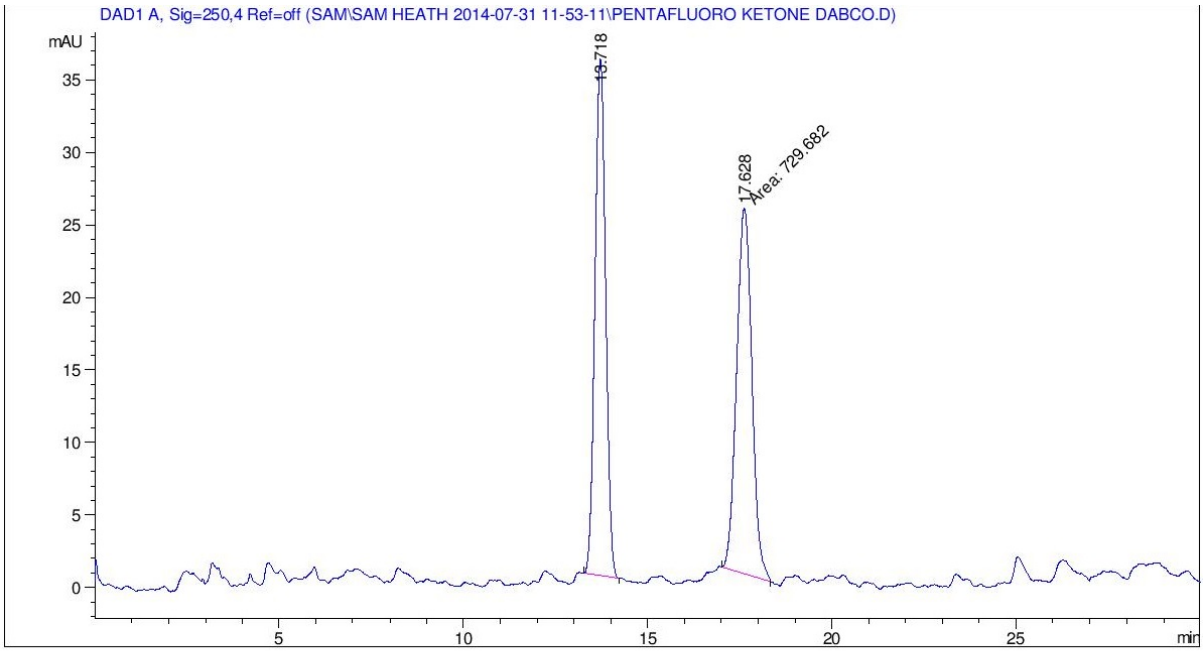
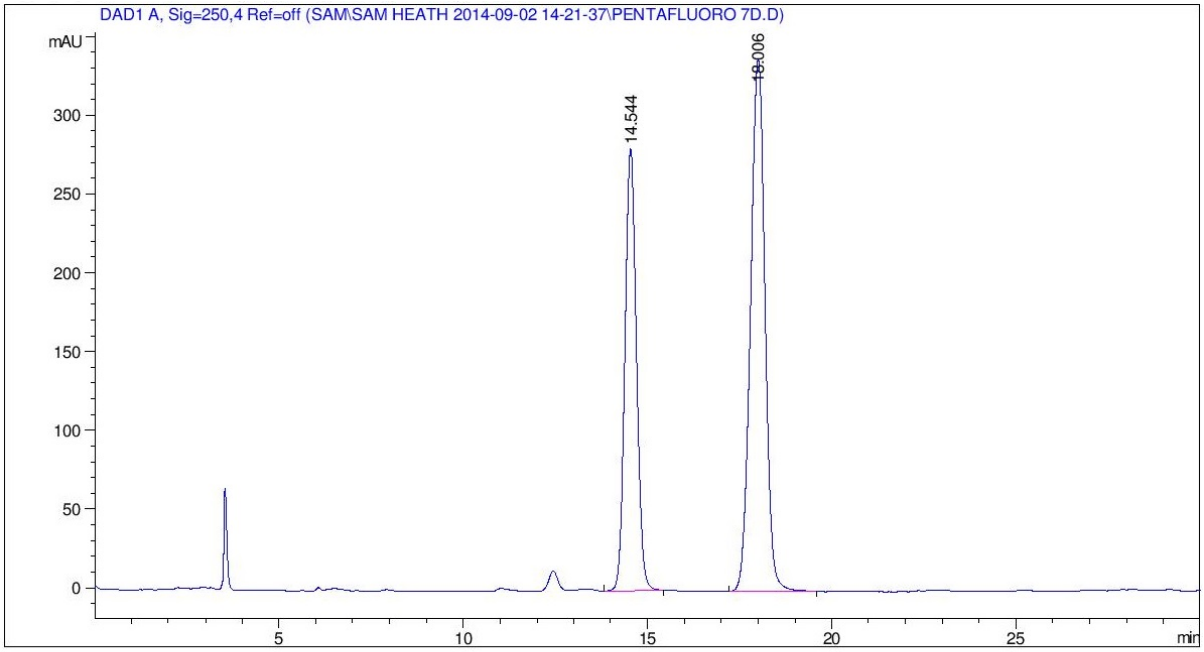

4,4–Dicyano–5-(pentafluorophenyl)-1,3–diphenylpentan–1–one 11i

Racemic sample




```
================================================================================
                                Area Percent Report
================================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=250,4 Ref=off

Peak  RetTime Type  Width     Area      Height     Area
  #   [min]       [min]   [mAU*s]      [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  13.718 BB   0.3128  716.70416  35.61340  49.5514
   2  17.628 MM   0.4822  729.68170  25.21881  50.4486

Totals :                  1446.38586  60.83221
```

Sample prepared using the conditions of Table 3, entry 17 with 21% ee



==========

Area Percent Report

==========

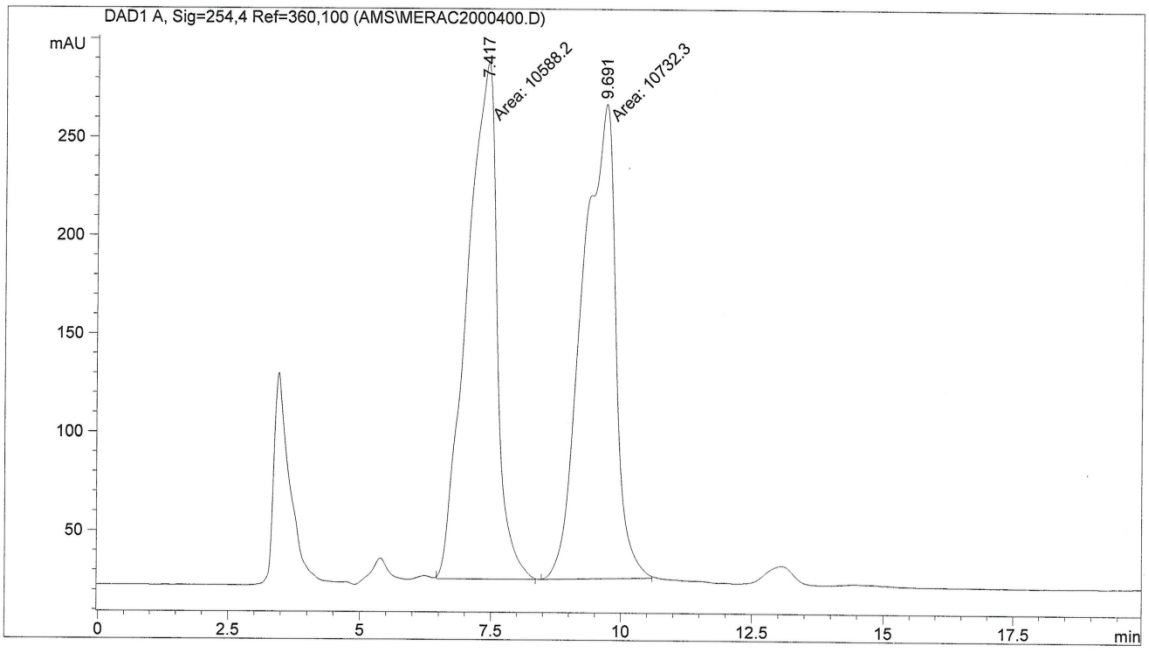
Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 A, Sig=250,4 Ref=off

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	14.544	BB	0.3389	6084.52881	280.69244	39.7215
2	18.006	BB	0.4229	9233.45313	337.74756	60.2785
Totals :				1.53180e4	618.44000	

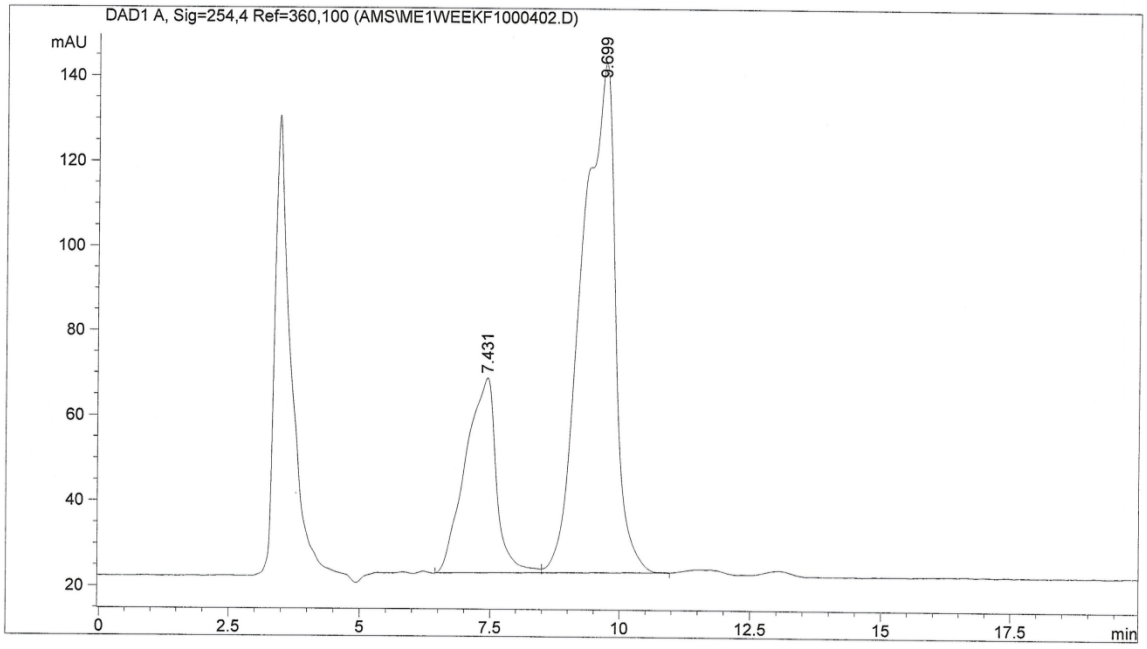
4,4–Dicyano–1,3–diphenylpentan–1–one 11j

Racemic sample




```
=====================================================================
                        Area Percent Report
=====================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   7.417 MM    0.6719 1.05882e4   262.64023  49.6621
   2   9.691 MM    0.7413 1.07323e4   241.30629  50.3379

Totals :                  2.13205e4   503.94652
```

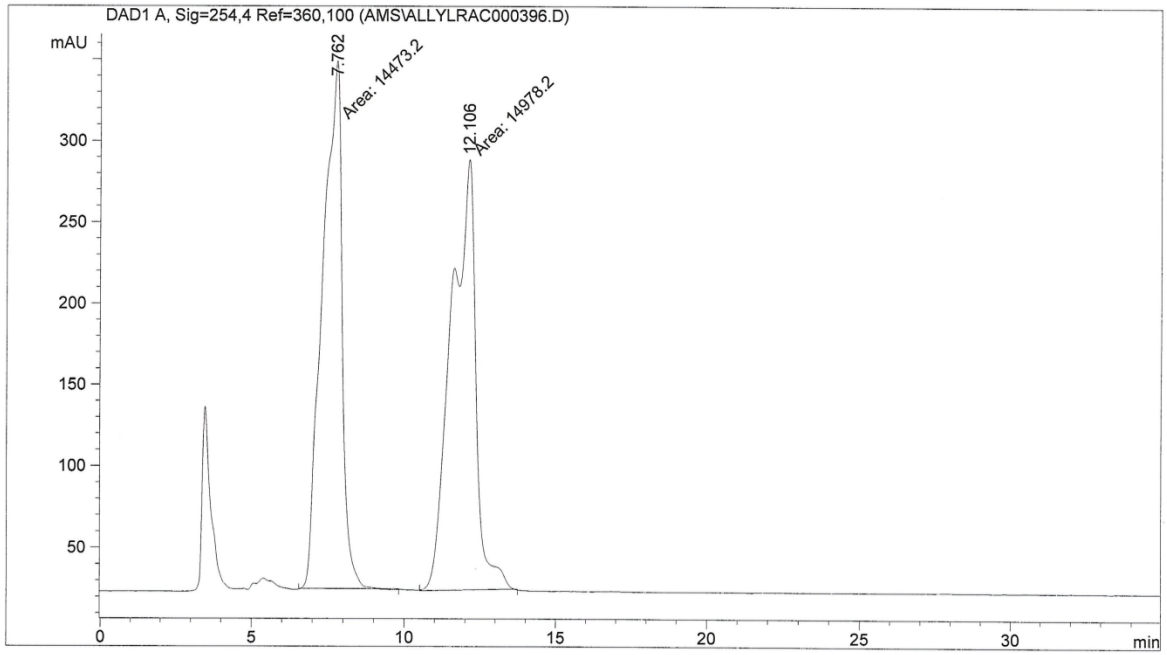
Sample prepared using the conditions of Table 3, entry 19 with 48% ee




```
=====================================================================
                      Area Percent Report
=====================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   7.431 BV    0.5465 1896.73669   45.67661  26.0855
   2   9.699 VB    0.5965 5374.48584  120.00797  73.9145

Totals :                  7271.22253  165.68457
```

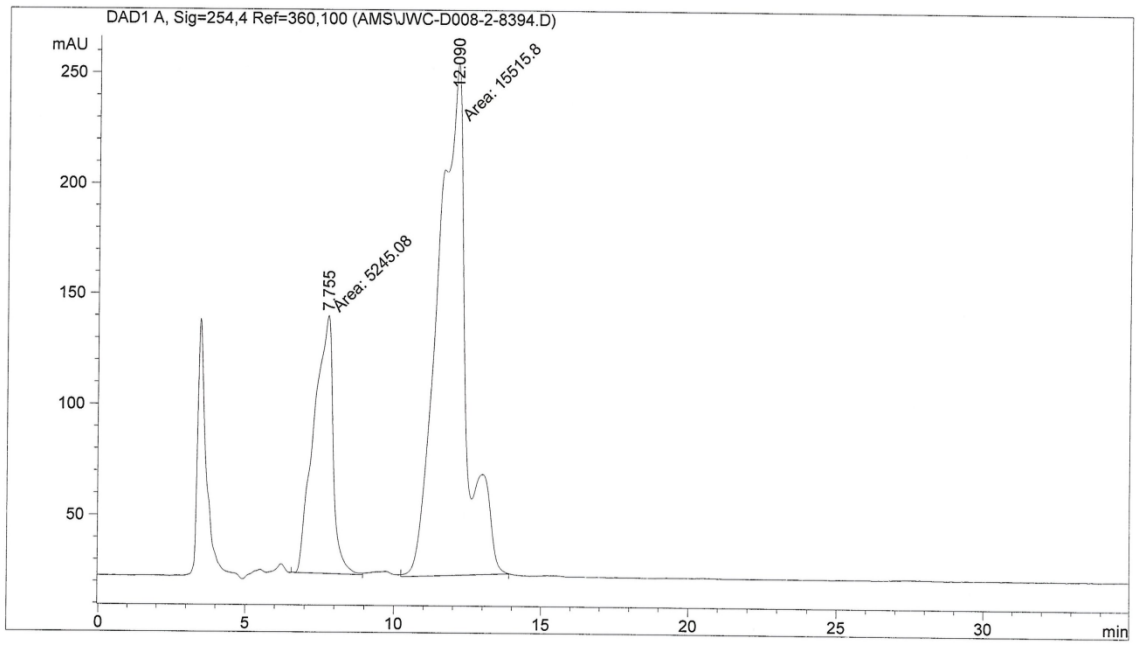
4,4–Dicyano–1,3–diphenylhept-6-en–1–one 11k

Racemic sample




```
=====================================================================
                        Area Percent Report
=====================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   7.762 MM    0.7433 1.44732e4   324.53958  49.1426
   2  12.106 MM    0.9431 1.49782e4   264.70483  50.8574

Totals :                  2.94514e4   589.24442
```

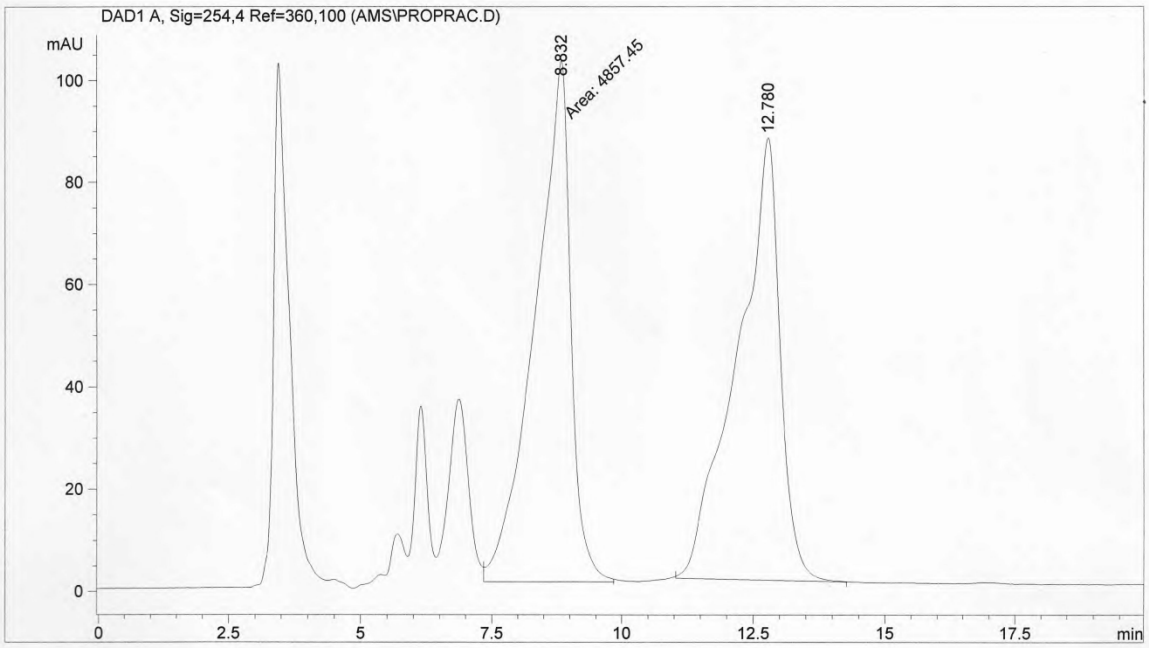
Sample prepared using the conditions of Table 3, entry 21 with 50% ee




```
================================================================================
                            Area Percent Report
================================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   7.755 MM    0.7504 5245.08496  116.49339  25.2643
   2  12.090 MM    1.1168 1.55158e4   231.54184  74.7357

Totals :                  2.07609e4   348.03522
```

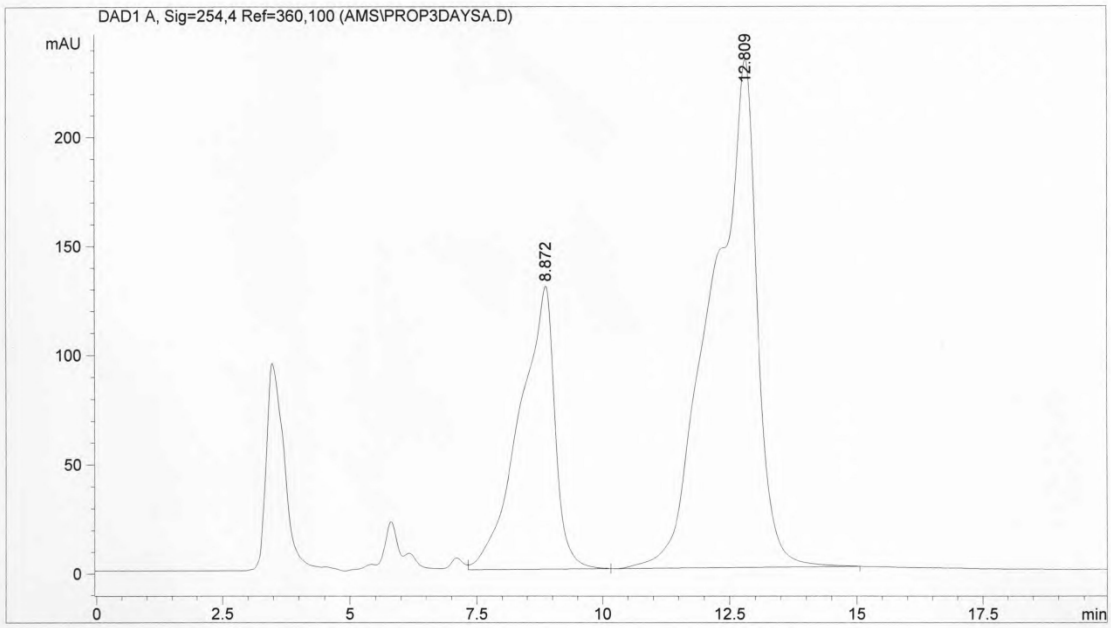
4,4–Dicyano–1,3–diphenylhept-6-en–1–one 11l

Racemic sample



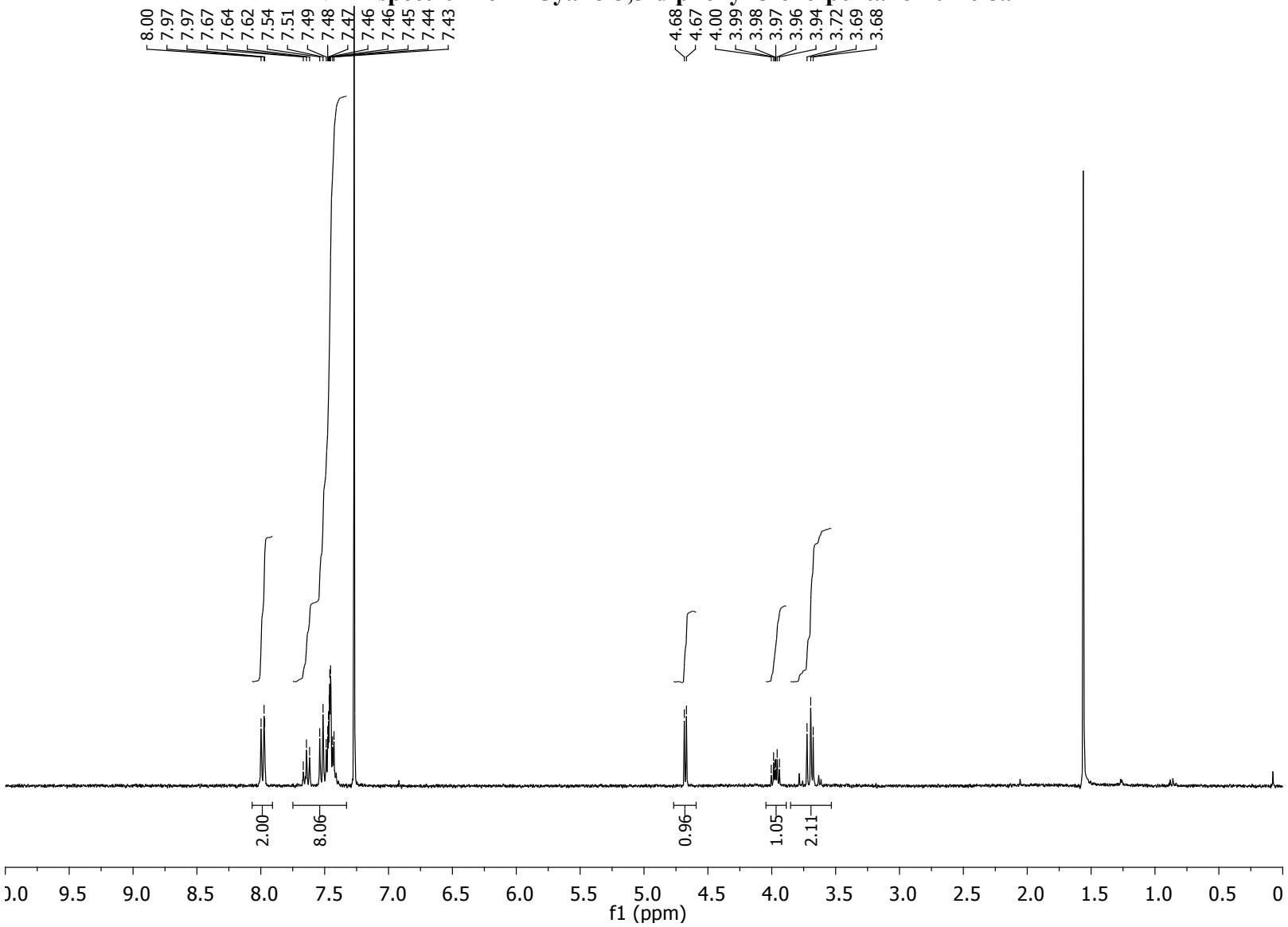

```
================================================================================
                          Area Percent Report
================================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.832 MM    0.7942 4857.45068  101.93389  49.8221
   2  12.780 BB    0.7541 4892.13037   86.46111  50.1779

Totals :                  9749.58105  188.39500
```

Sample prepared using the conditions of Table 3, entry 22 with 38% ee

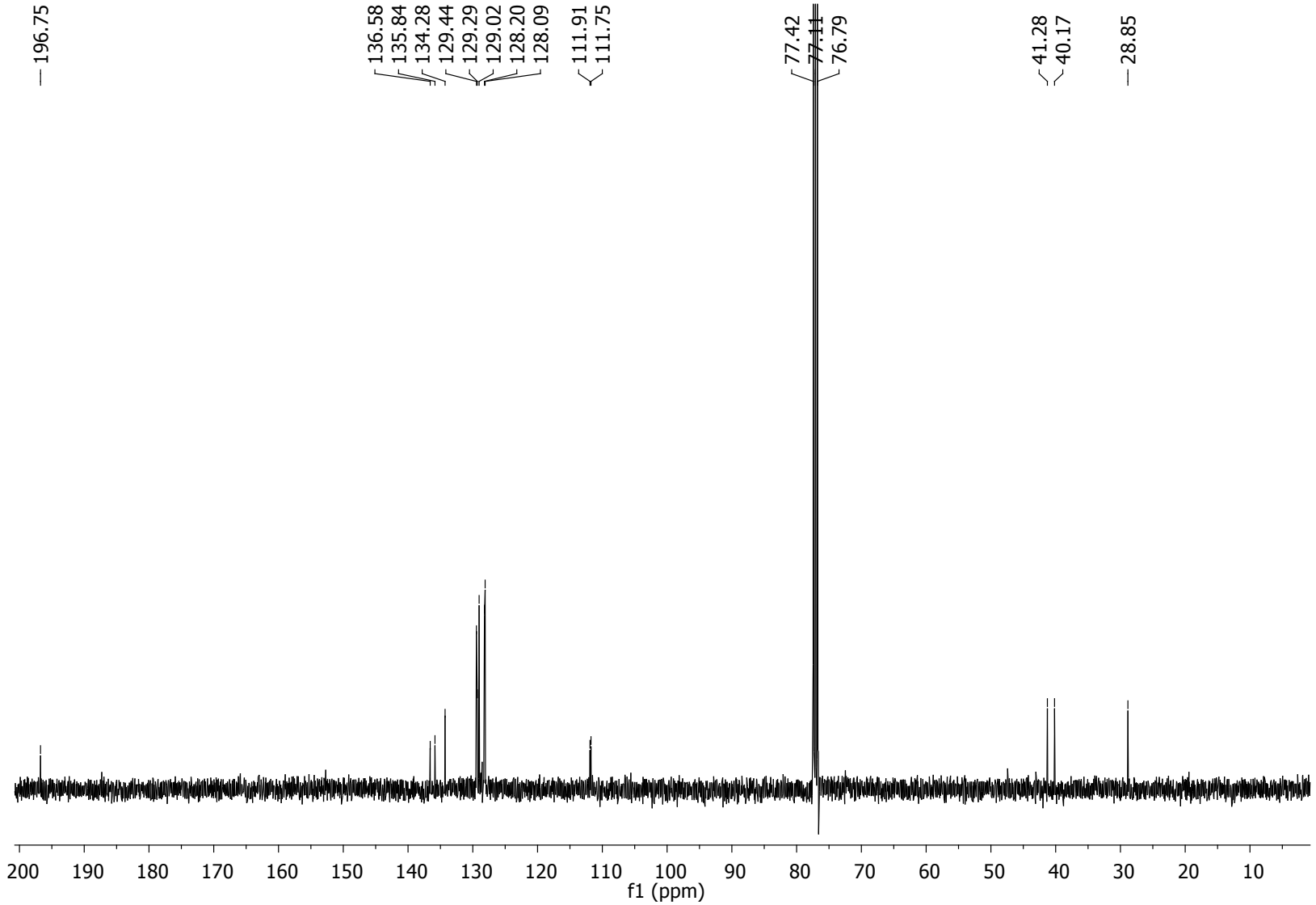



```
=====================================================================
                        Area Percent Report
=====================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=254,4 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1   8.872 VV    0.6468 6380.20752  129.50426  30.9701
   2  12.809 VB    0.8087 1.42210e4   232.79901  69.0299

Totals :                  2.06012e4   362.30327
```

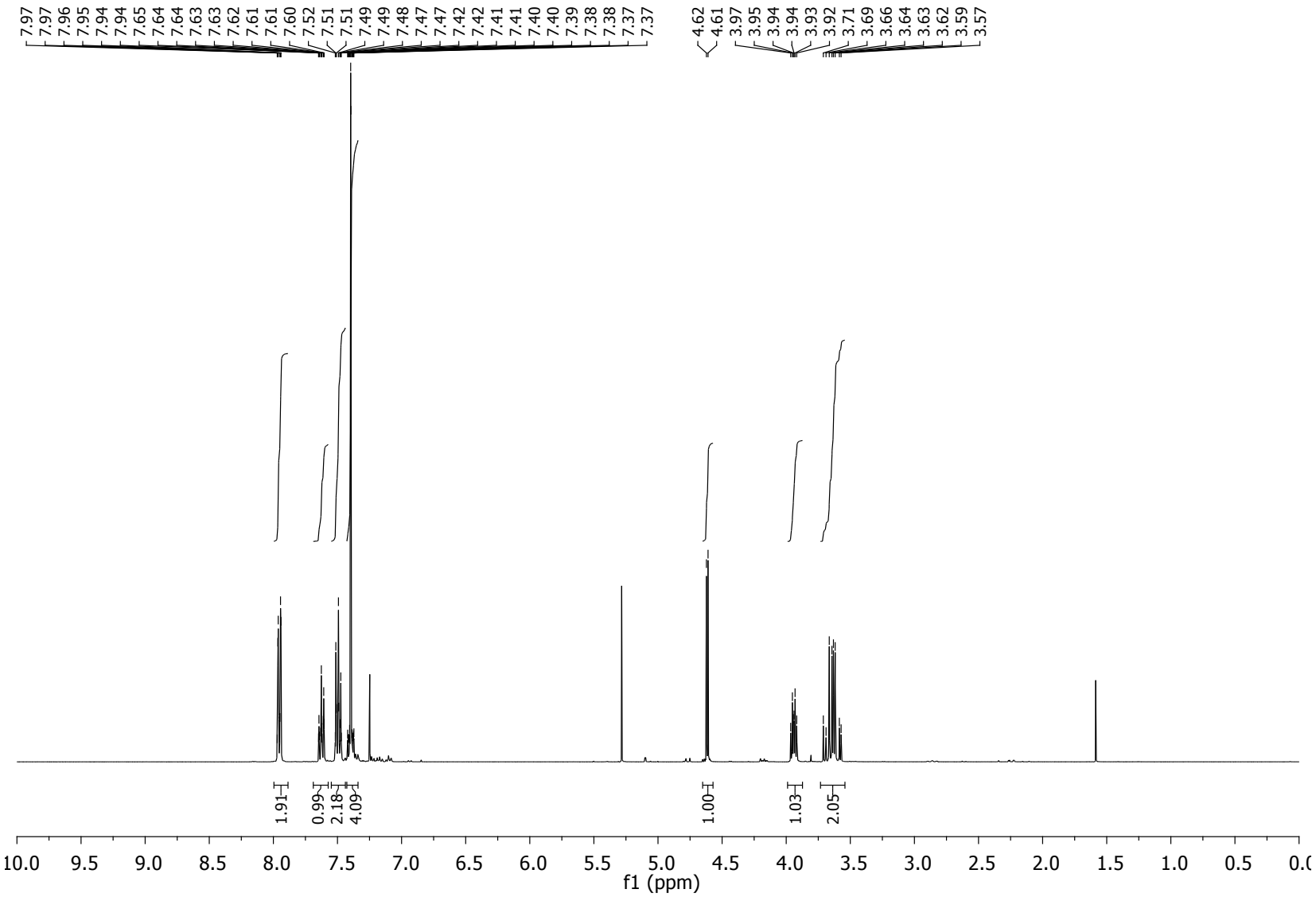
^{1}H NMR spectrum of 2-Cyano-3,5-diphenyl-5-oxo-pentanonitrile 8a



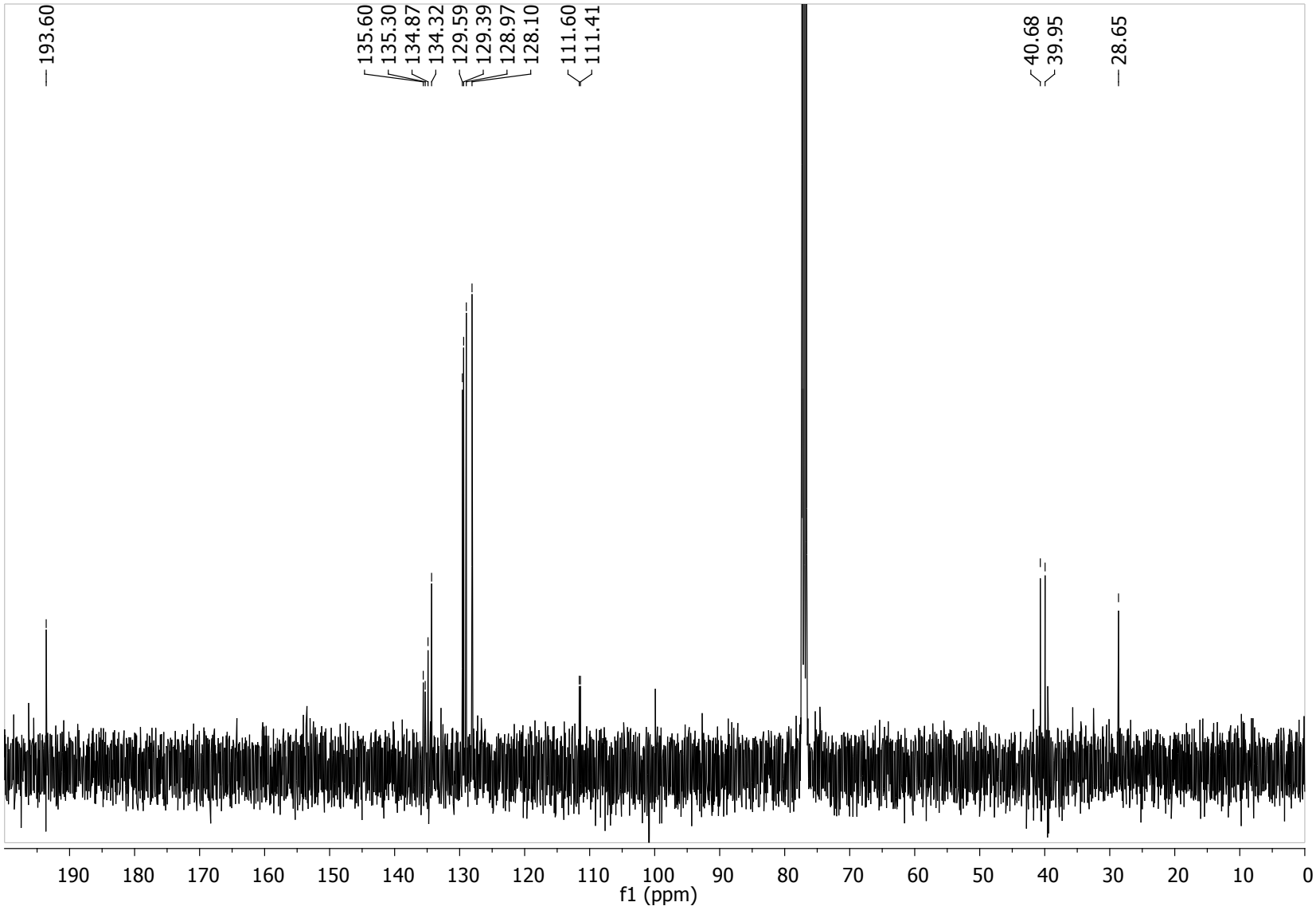
^{13}C NMR spectrum of 2-Cyano-3,5-diphenyl-5-oxo-pentanonitrile 8a



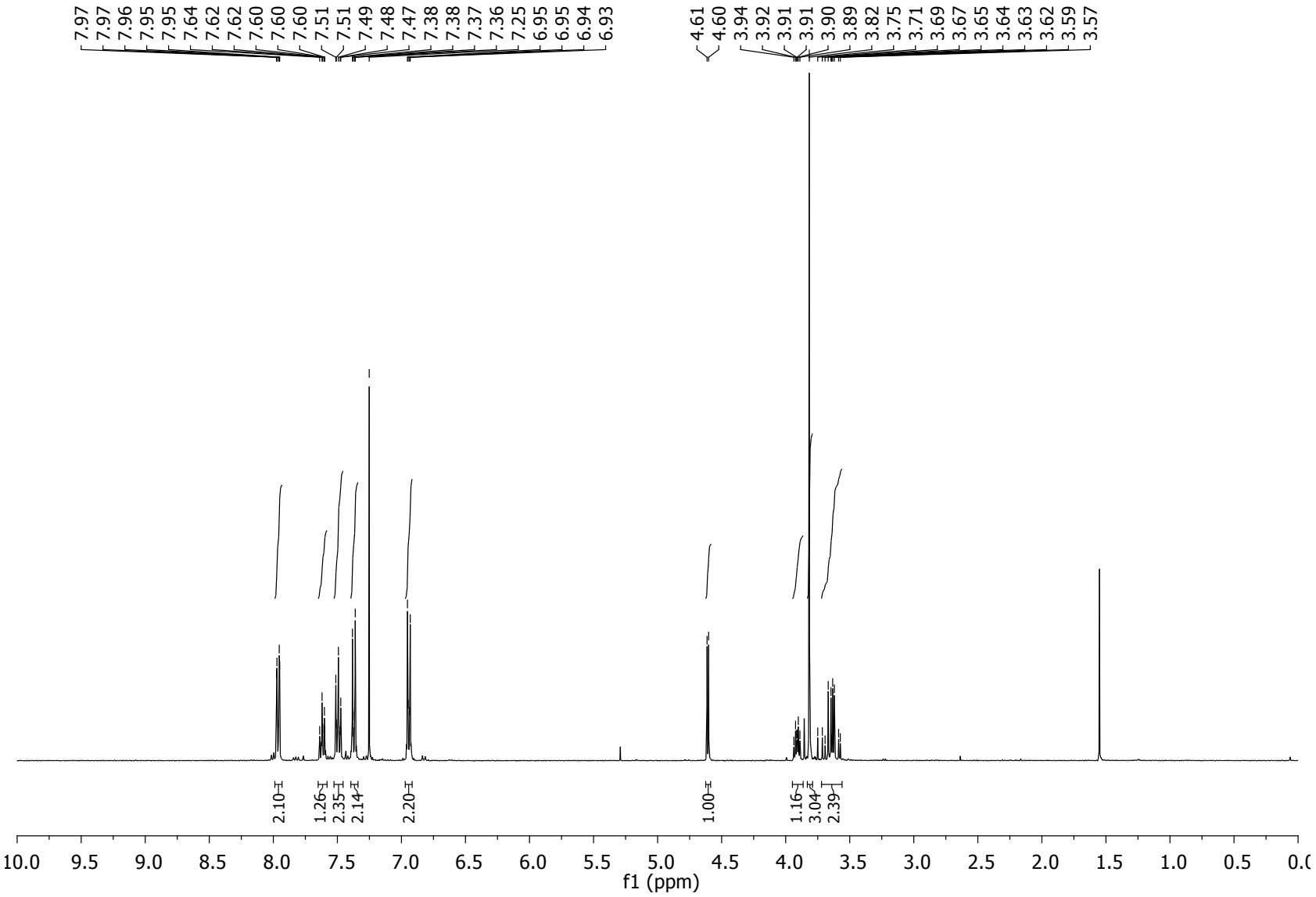
^{1}H NMR spectrum of 3–(4–Chlorophenyl)–2-cyano-5-phenyl-5-oxo-pentanonitrile 8b



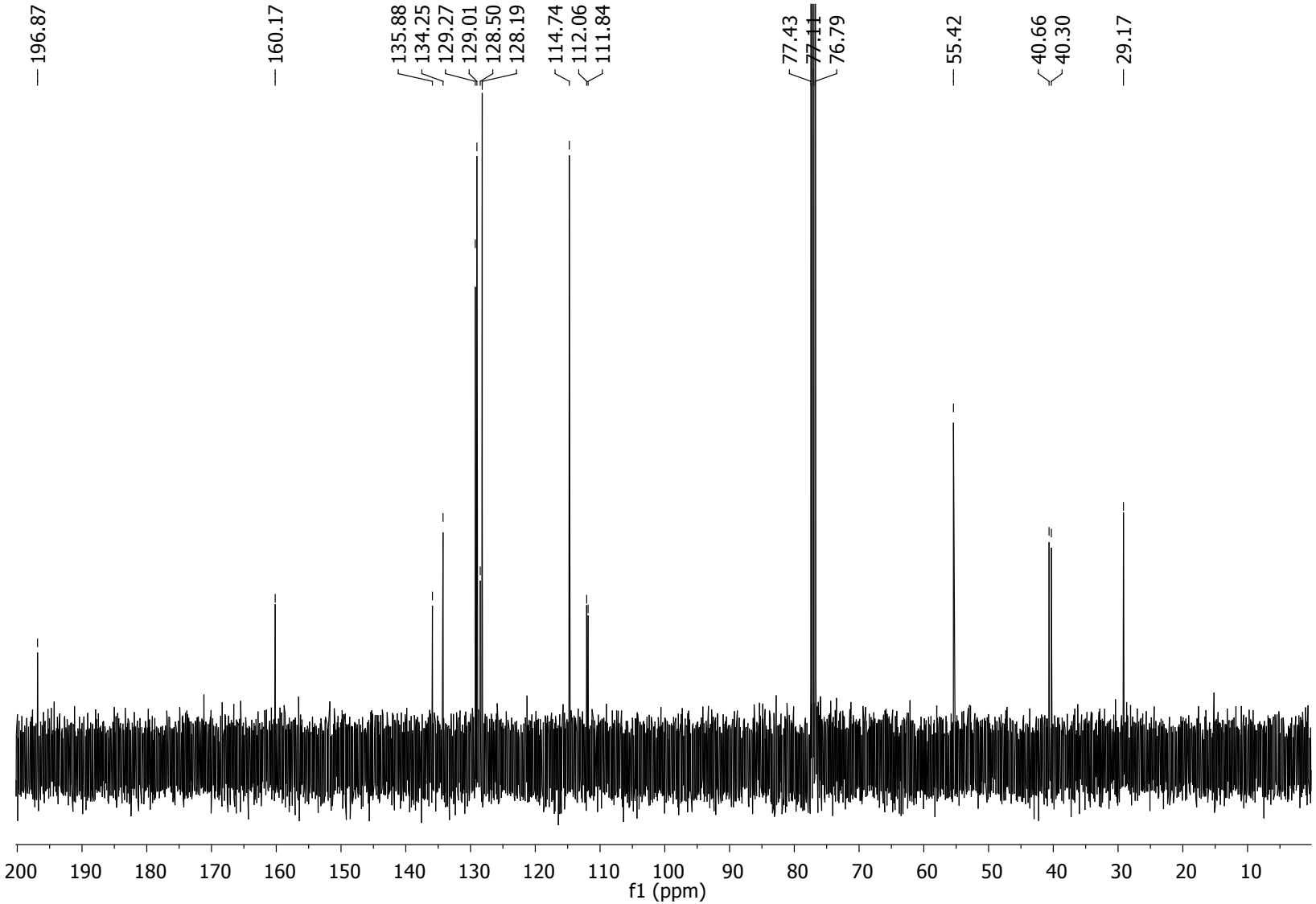
^{13}C NMR spectrum of 3–(4–Chlorophenyl)–2-cyano-5-phenyl-5-oxo-pentanonitrile 8b



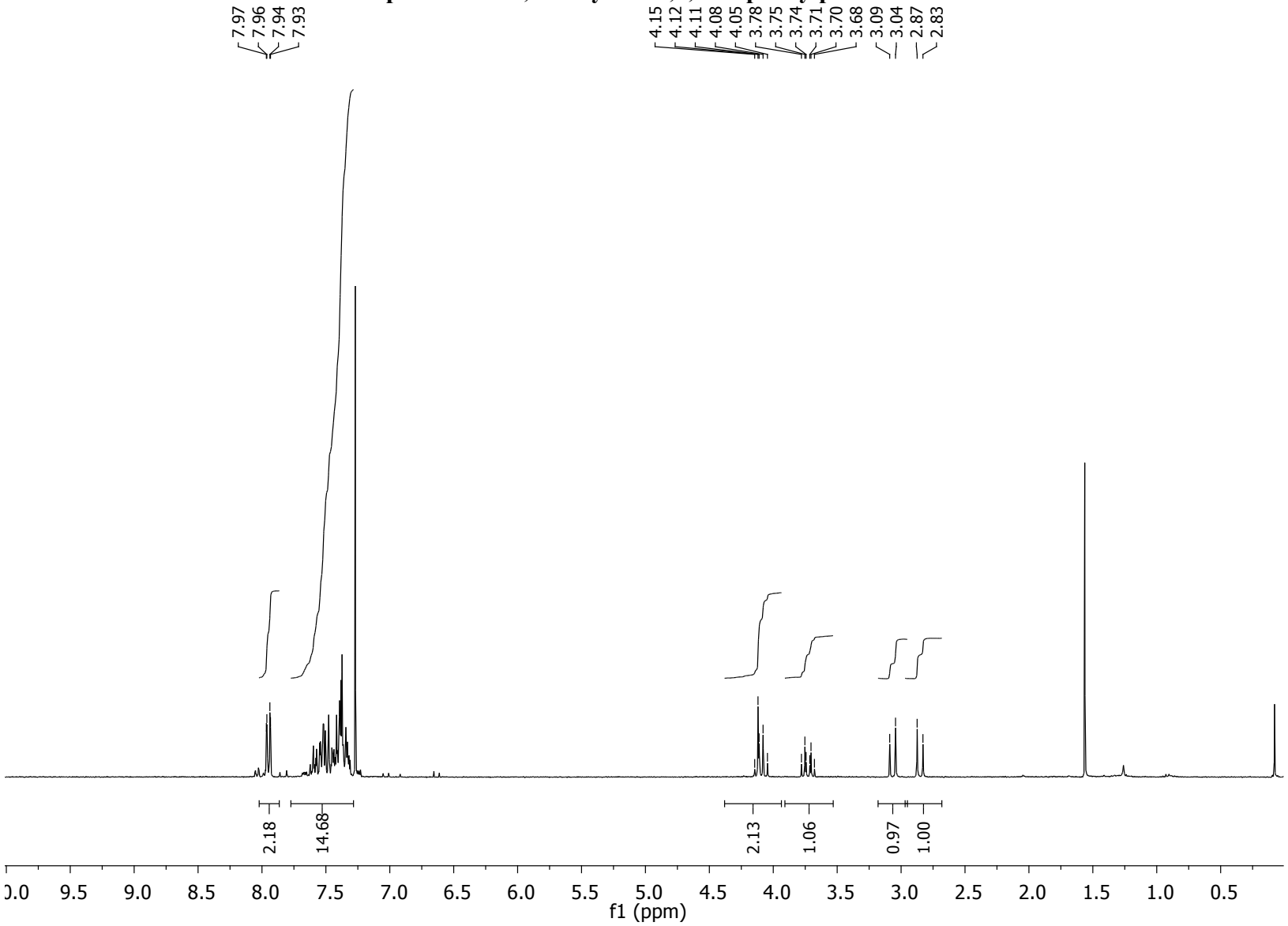
^{1}H NMR spectrum of 3–(4–Methoxyphenyl)–2-cyano-5-phenyl-5-oxo-pentanonitrile 8c



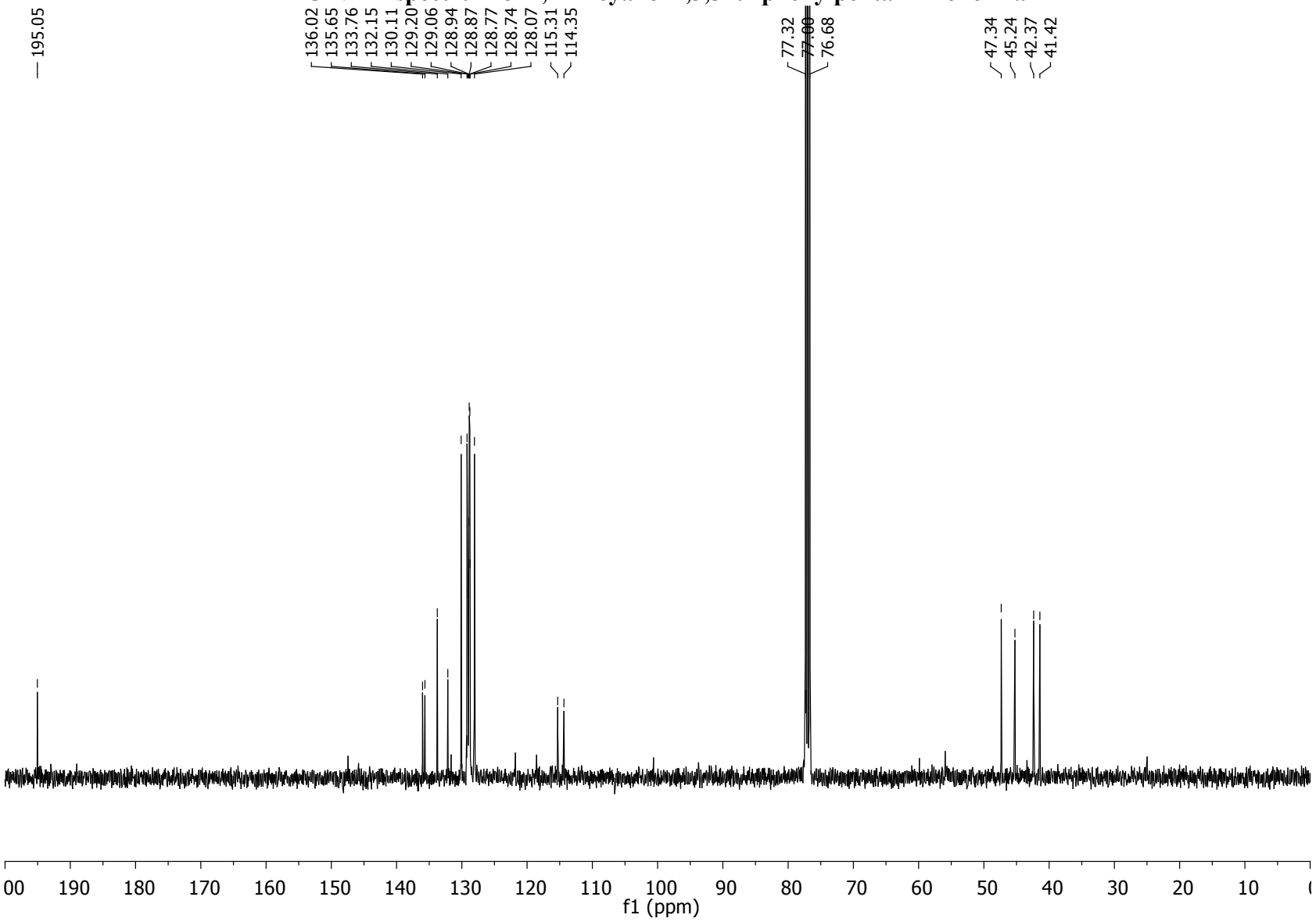
^{13}C NMR spectrum of 3–(4–Methoxyphenyl)–2-cyano-5-phenyl-5-oxo-pentanonitrile 8c



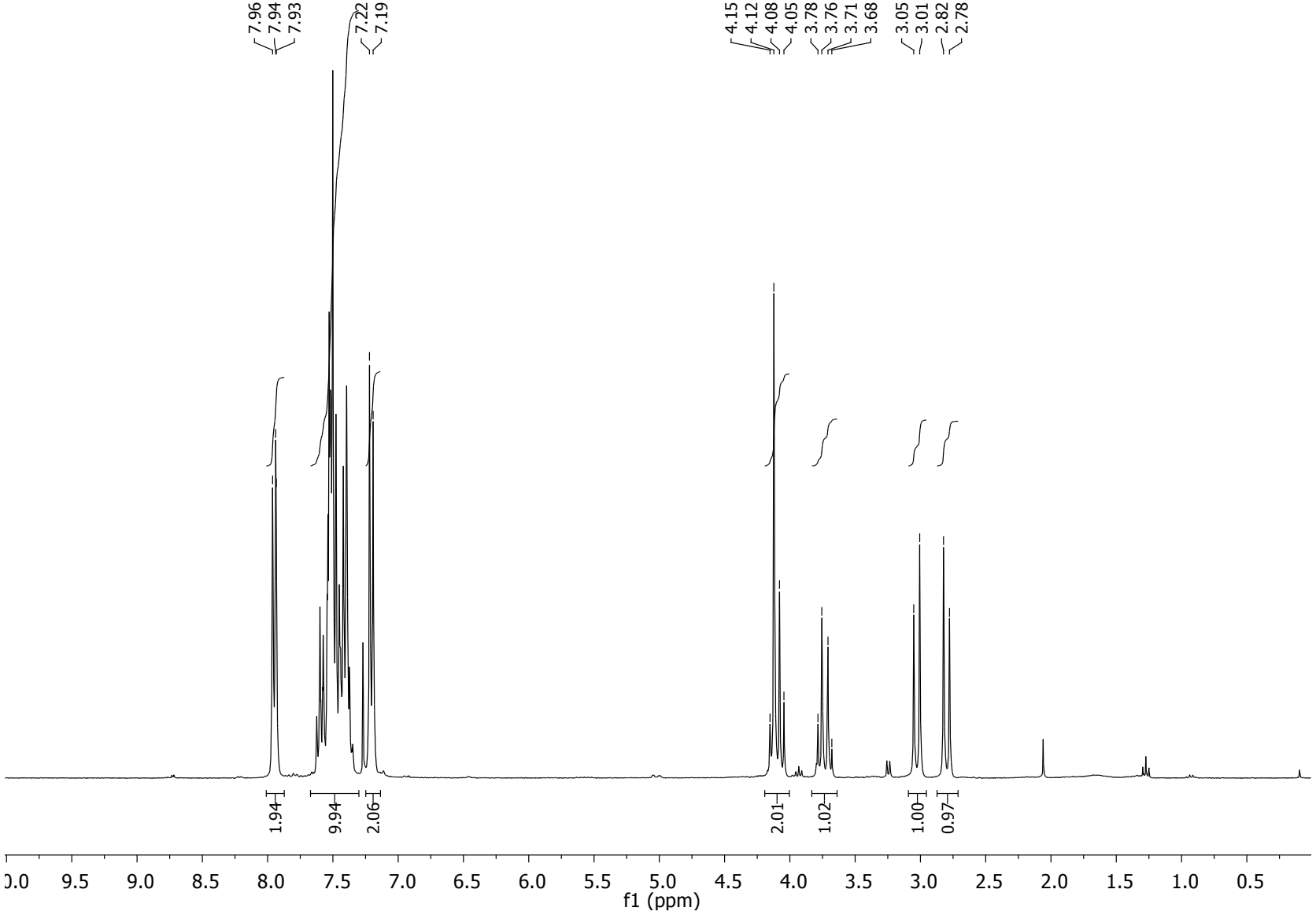
^{1}H NMR spectrum of 4,4–Dicyano–1,3,5–triphenylpentan–1–one 11a



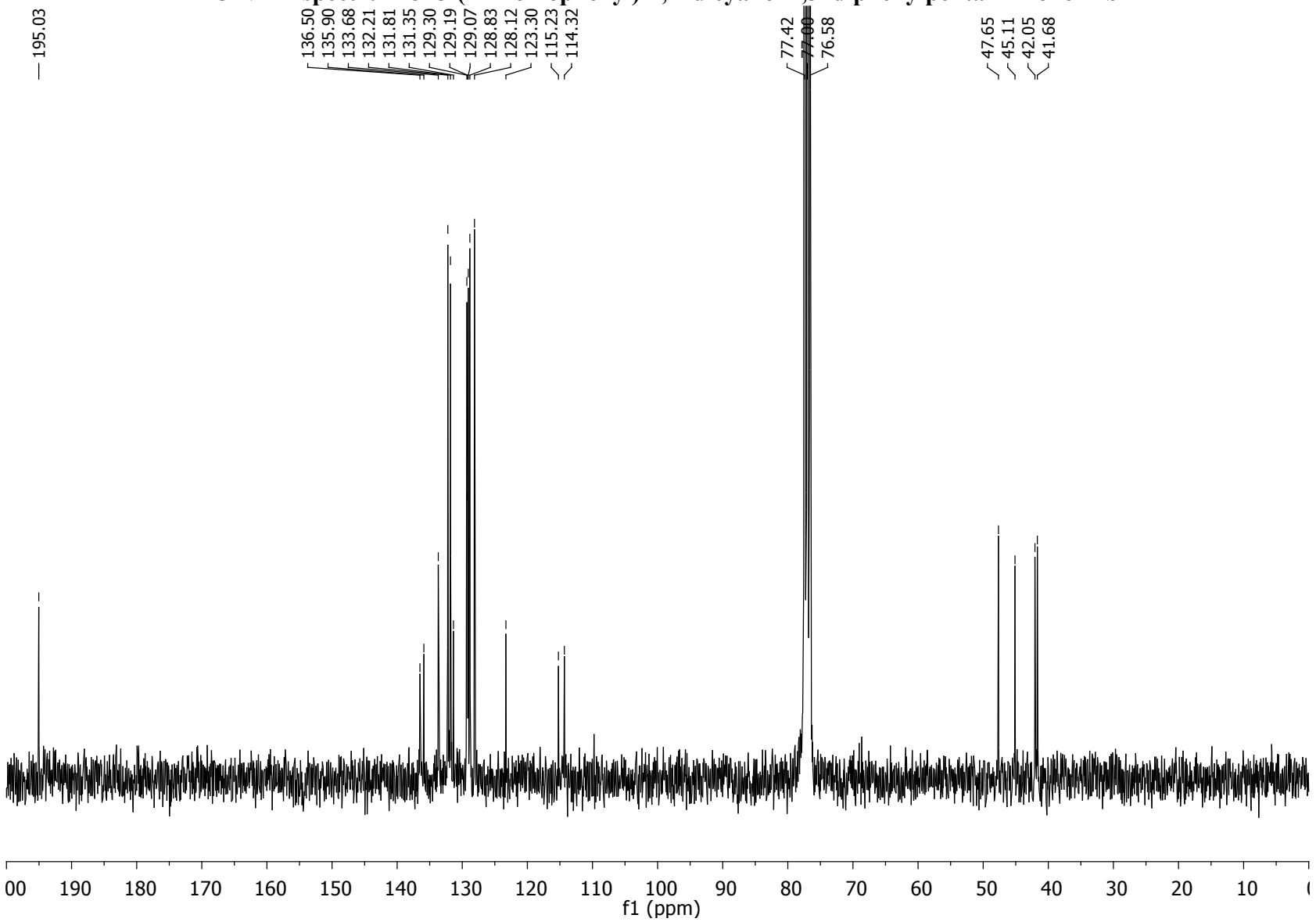
^{13}C NMR spectrum of 4,4–Dicyano–1,3,5–triphenylpentan–1–one 11a



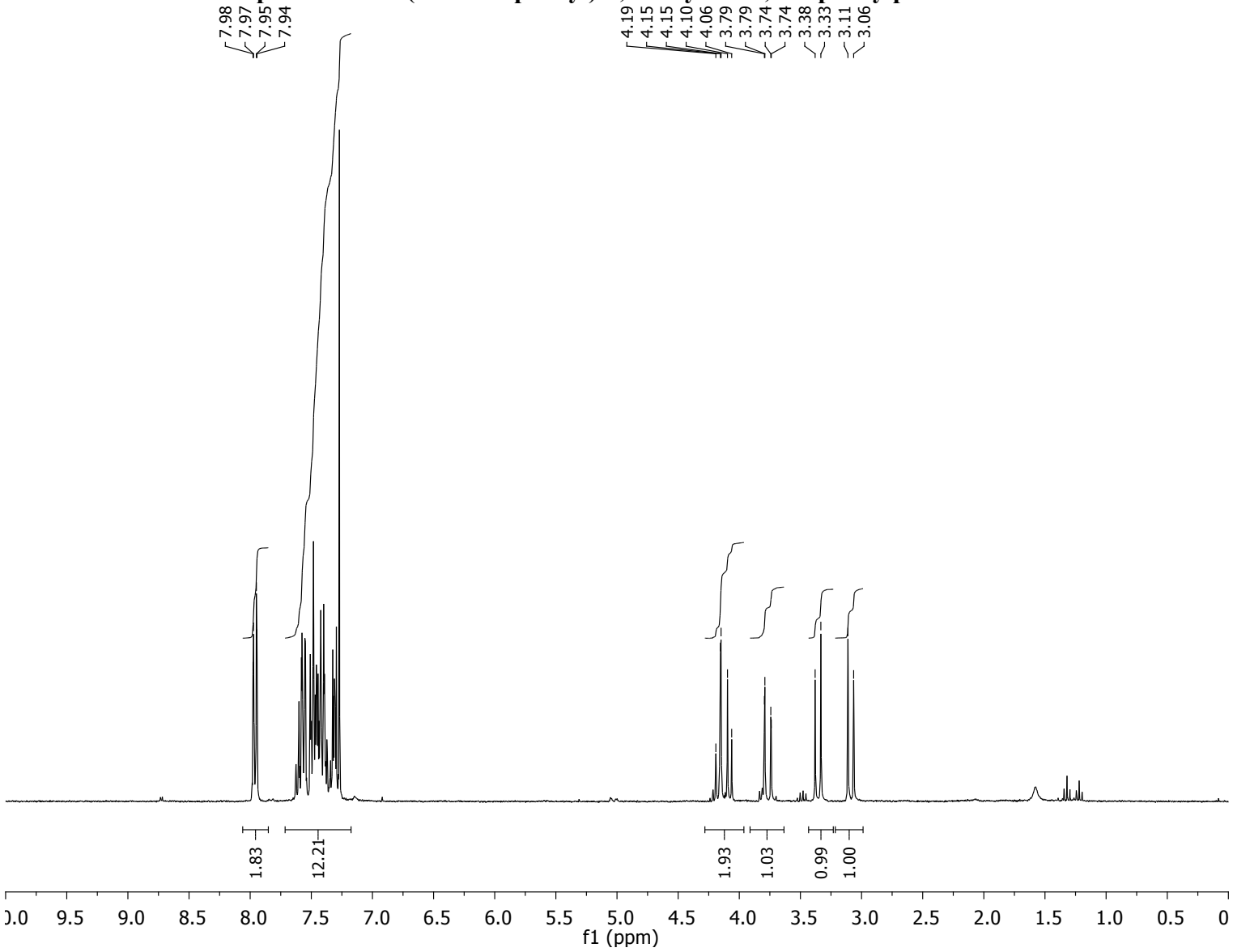
^{1}H NMR spectrum of 5-(4-Bromophenyl)-4,4–dicyano–1,3–diphenylpentan–1–one 11b



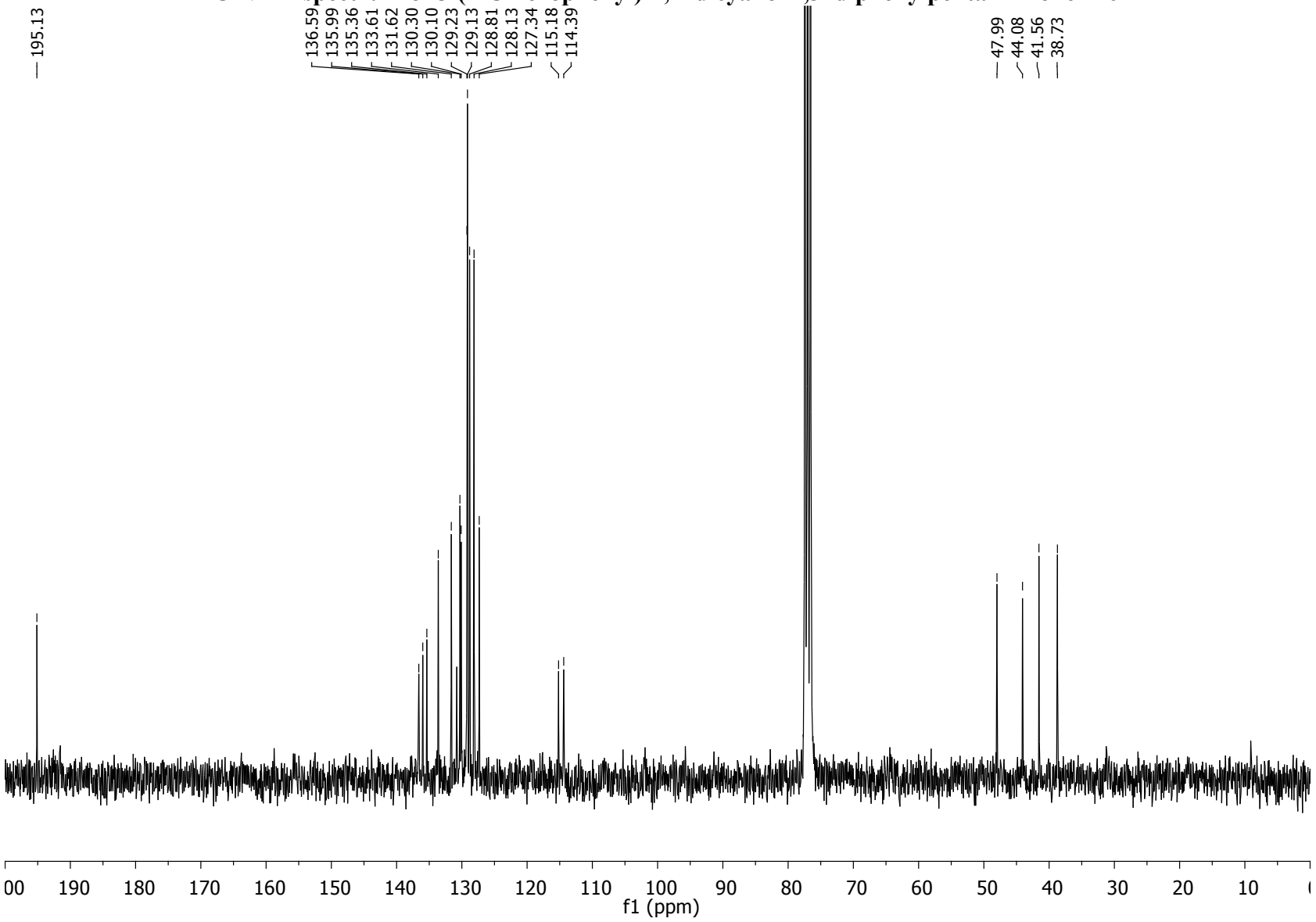
^{13}C NMR spectrum of 5-(4-Bromophenyl)-4,4–dicyano–1,3–diphenylpentan–1–one 11b



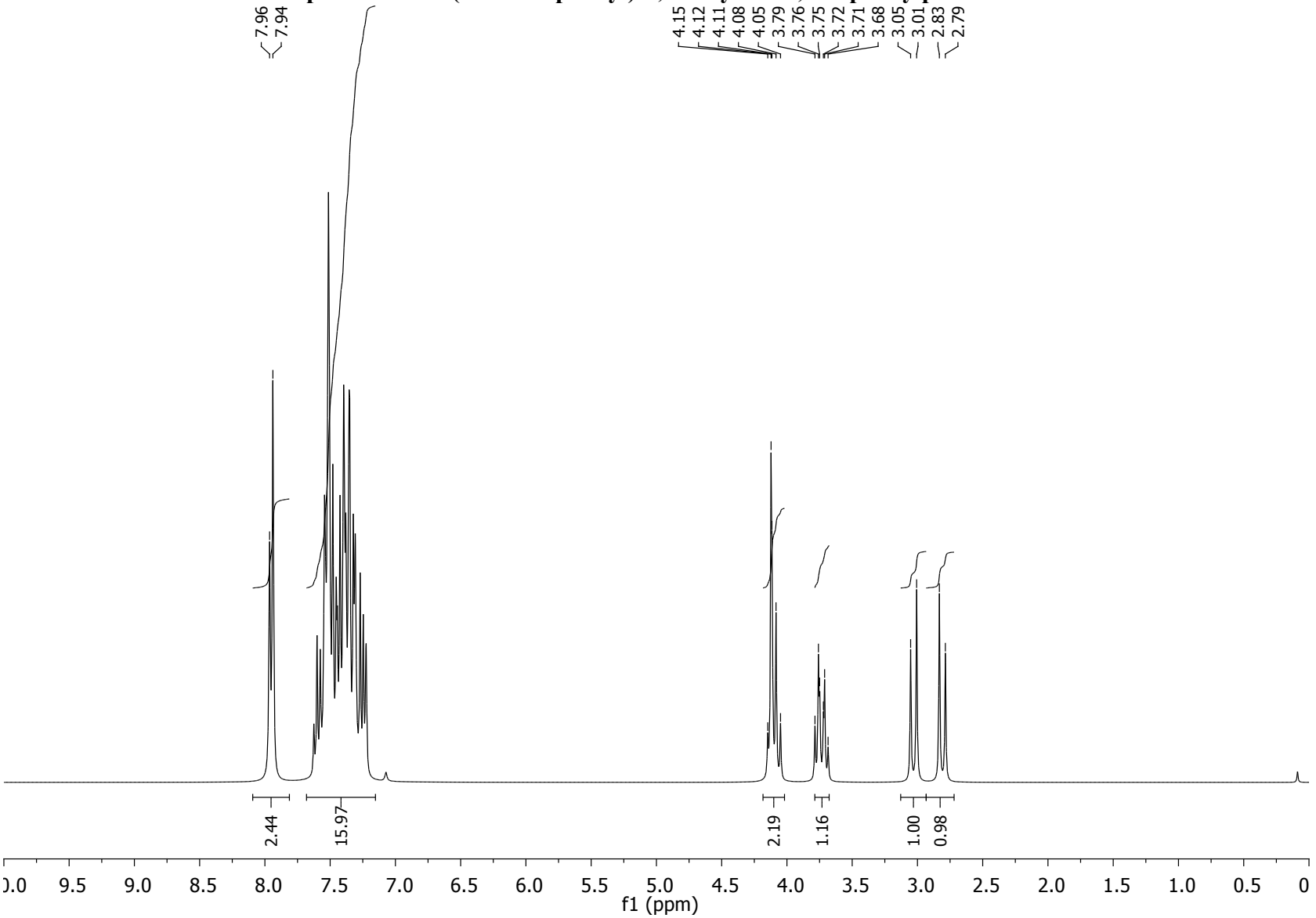
^{1}H NMR spectrum of 5-(4-Chlorophenyl)-4,4–dicyano–1,3–diphenylpentan–1–one 11c



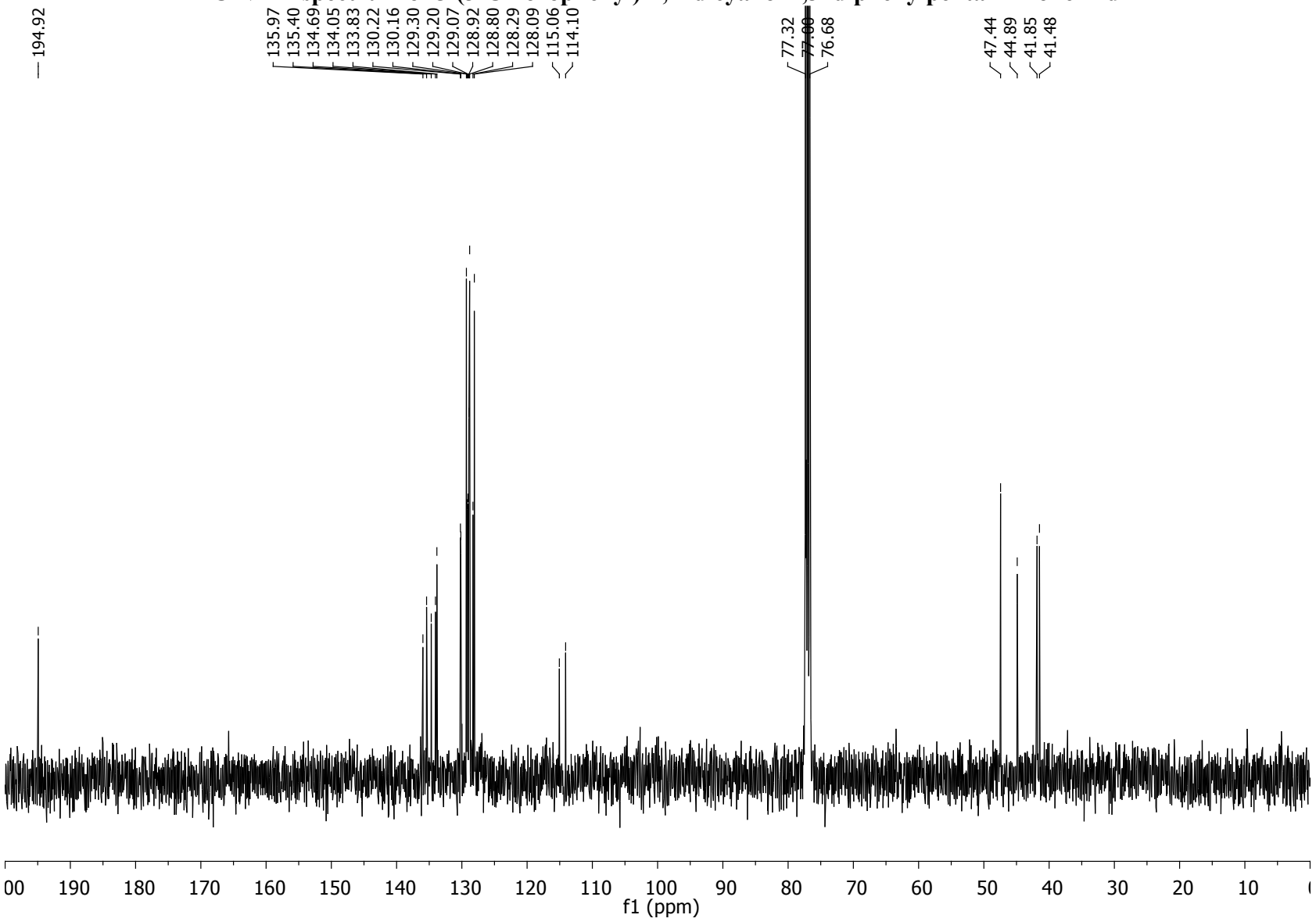
^{13}C NMR spectrum of 5-(4-Chlorophenyl)-4,4–dicyano–1,3–diphenylpentan–1–one 11c



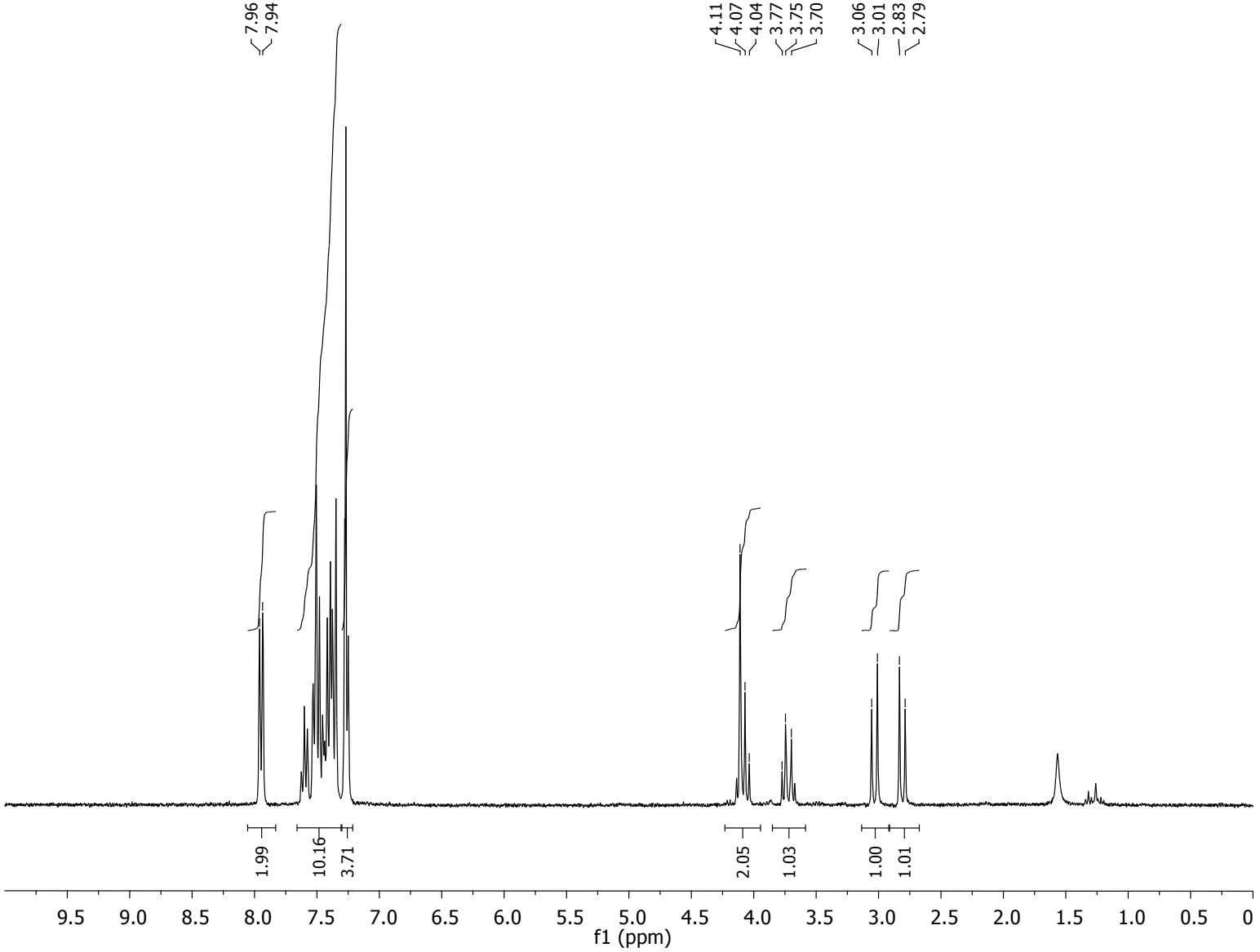
^{1}H NMR spectrum of 5-(3-Chlorophenyl)-4,4–dicyano–1,3–diphenylpentan–1–one 11d



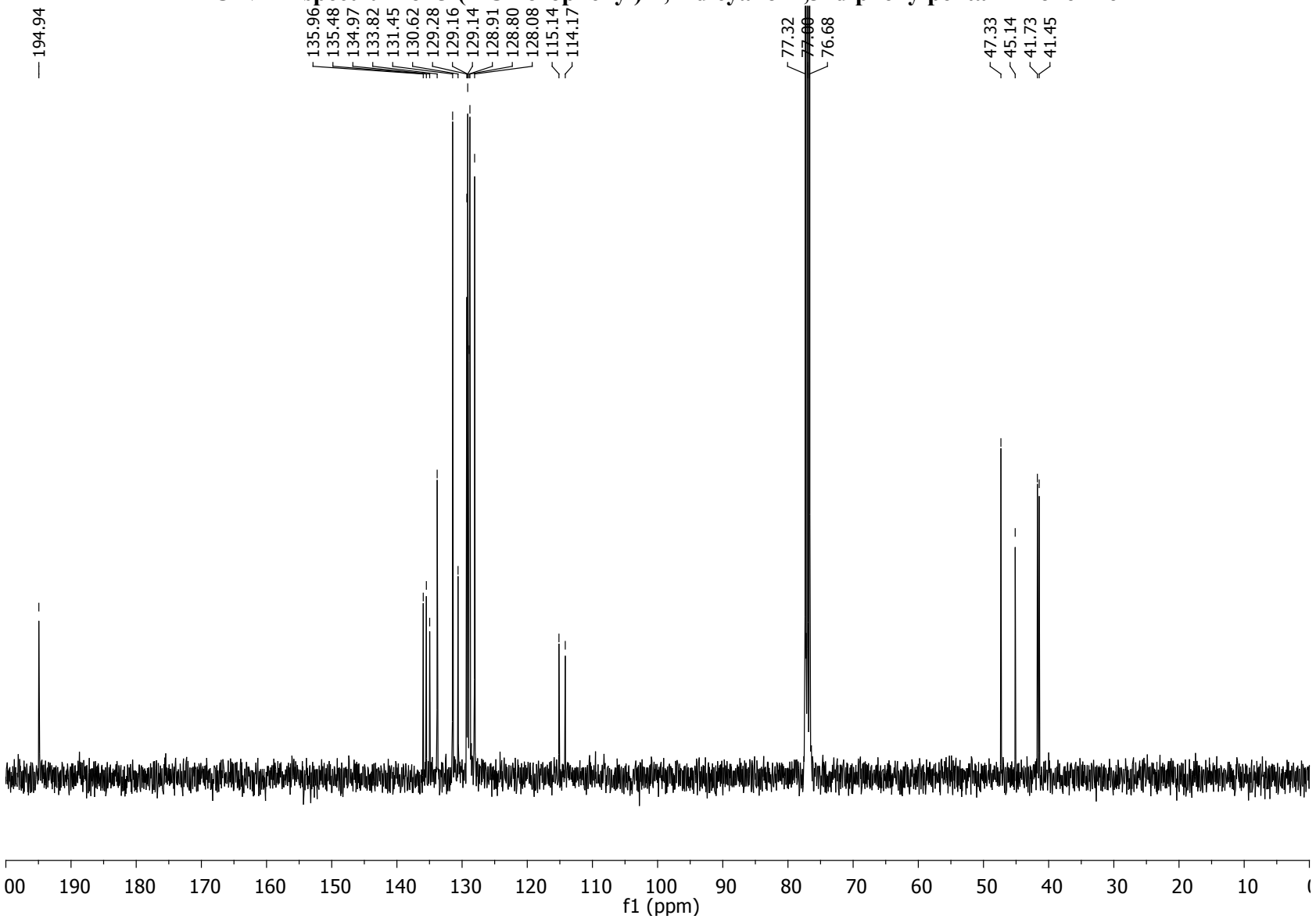
^{13}C NMR spectrum of 5-(3-Chlorophenyl)-4,4–dicyano–1,3–diphenylpentan–1–one 11d



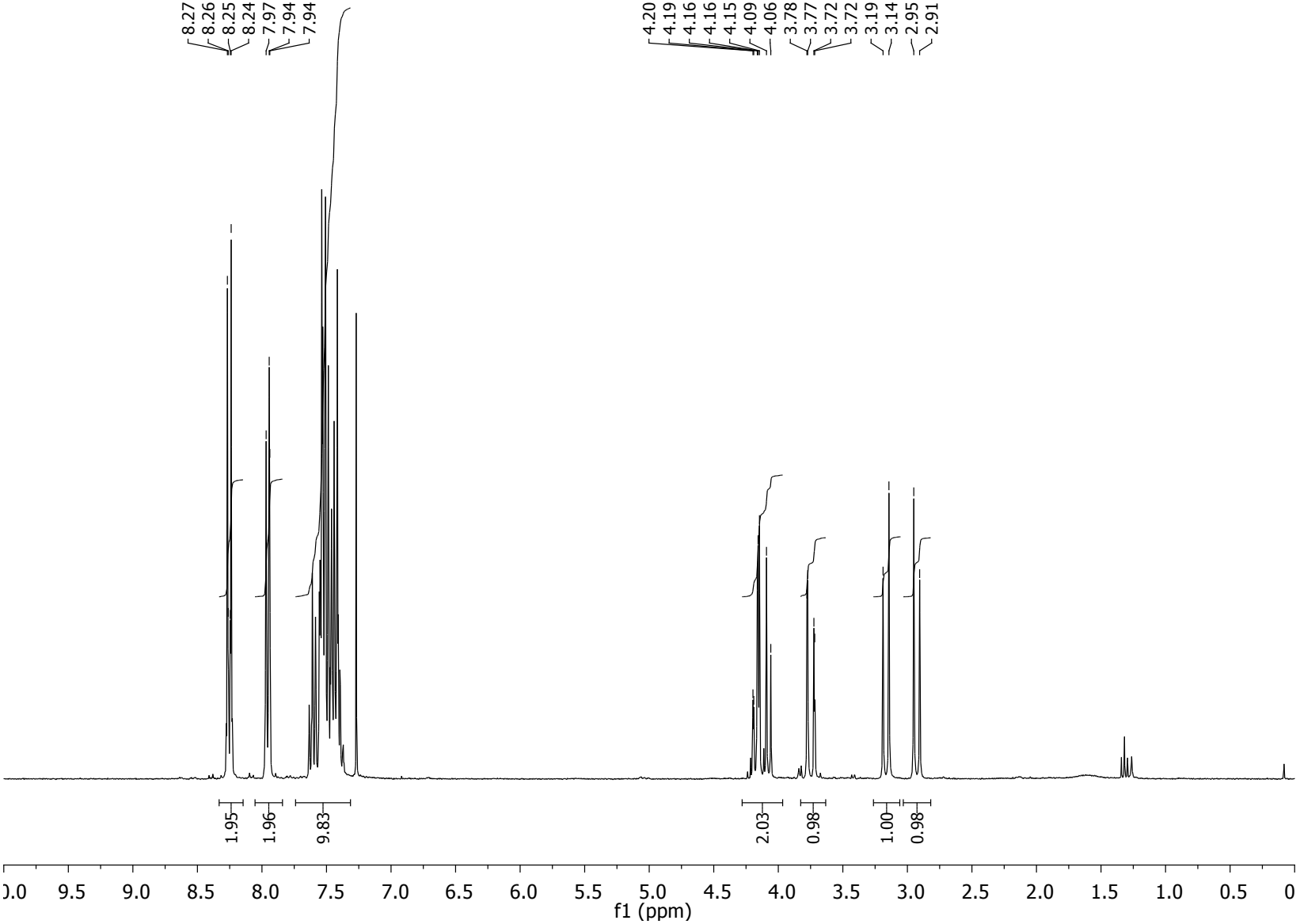
^{1}H NMR spectrum of 5-(2-Chlorophenyl)-4,4–dicyano–1,3–diphenylpentan–1–one 11e



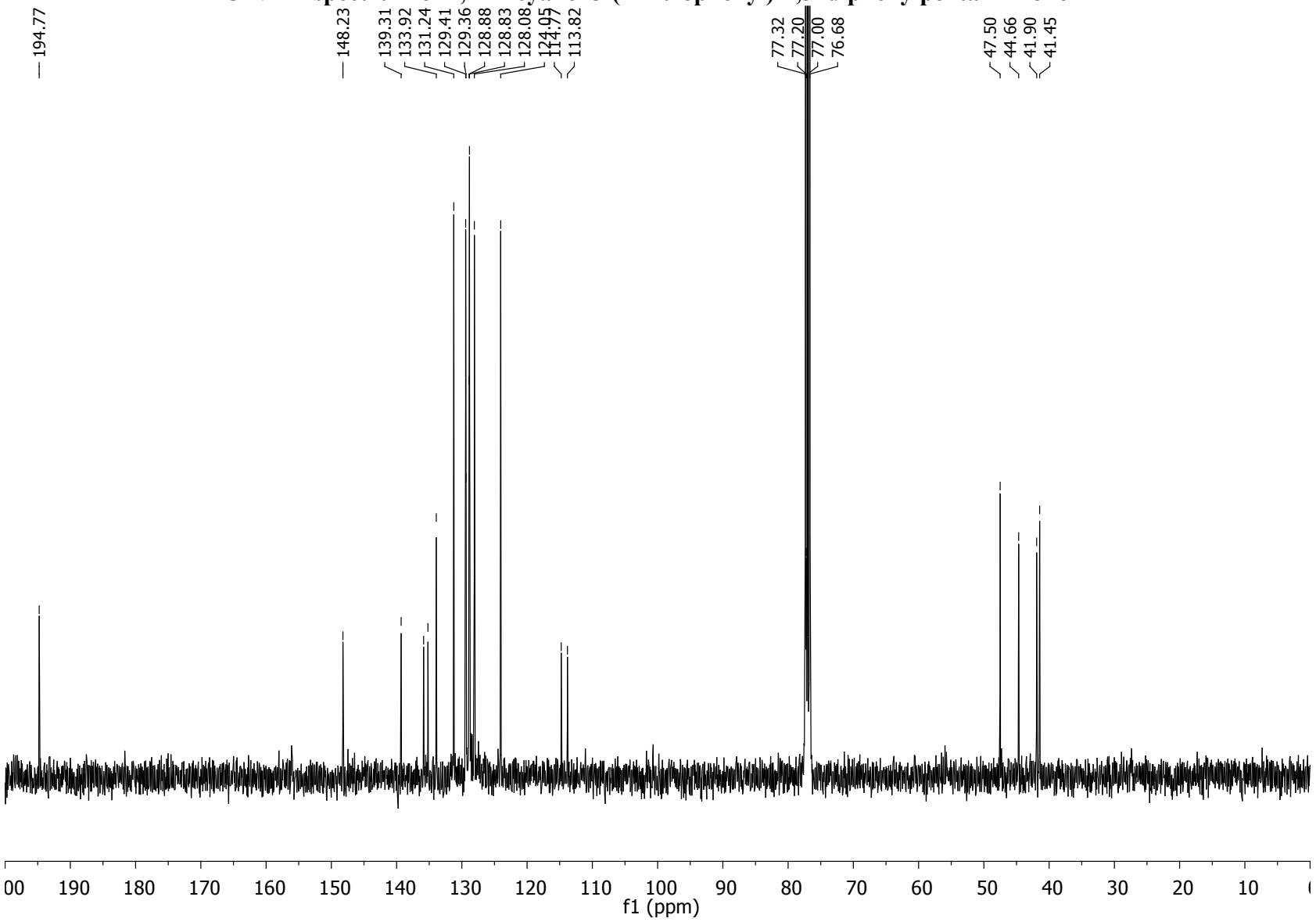
^{13}C NMR spectrum of 5-(2-Chlorophenyl)-4,4–dicyano–1,3–diphenylpentan–1–one 11e



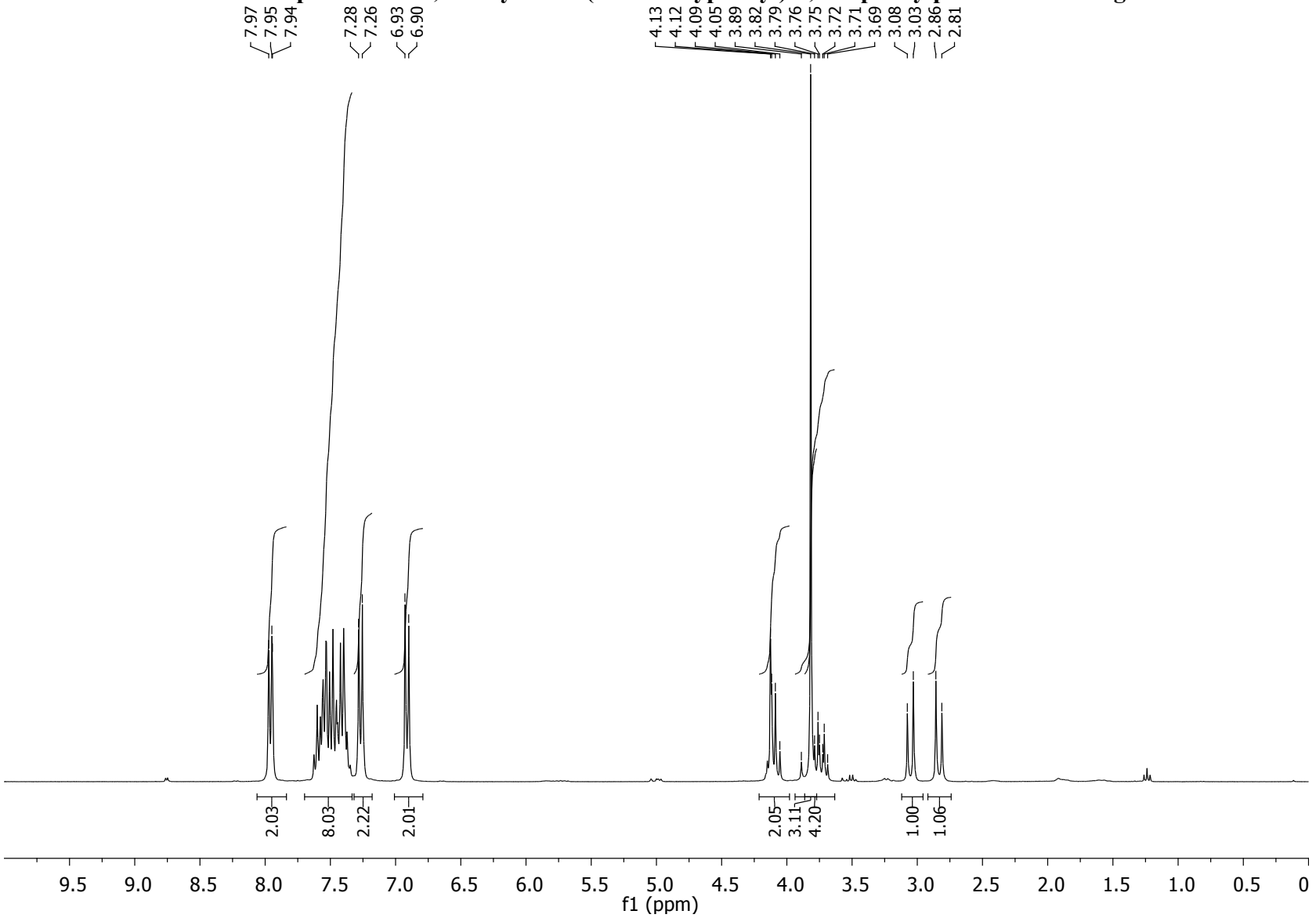
^{1}H NMR spectrum of 4,4–Dicyano–5-(4-nitrophenyl)-1,3–diphenylpentan–1–one 11f



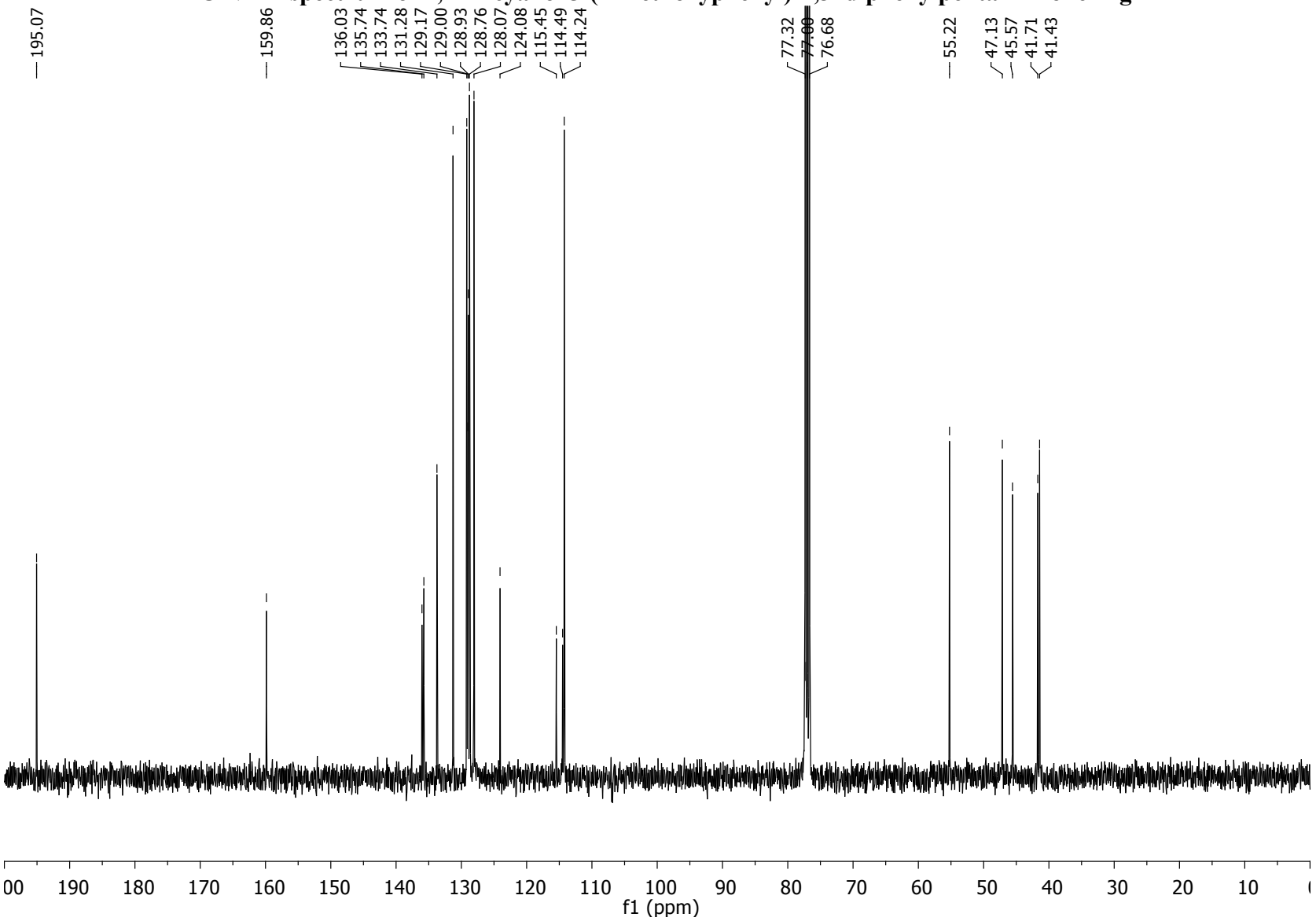
^{13}C NMR spectrum of 4,4–Dicyano–5-(4-nitrophenyl)-1,3–diphenylpentan–1–one 11f



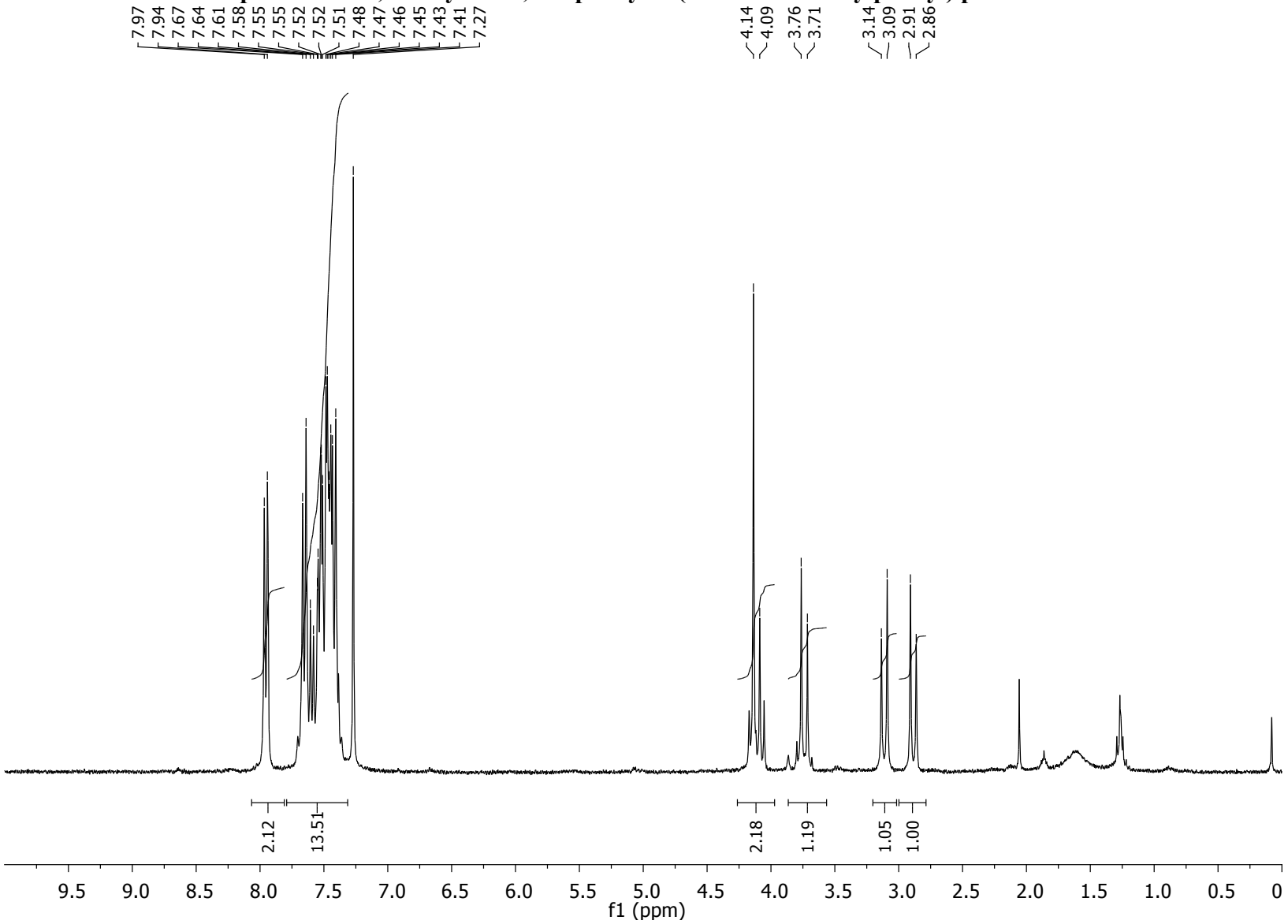
^{1}H NMR spectrum of 4,4–Dicyano–5-(4-methoxyphenyl)-1,3–diphenylpentan–1–one 11g



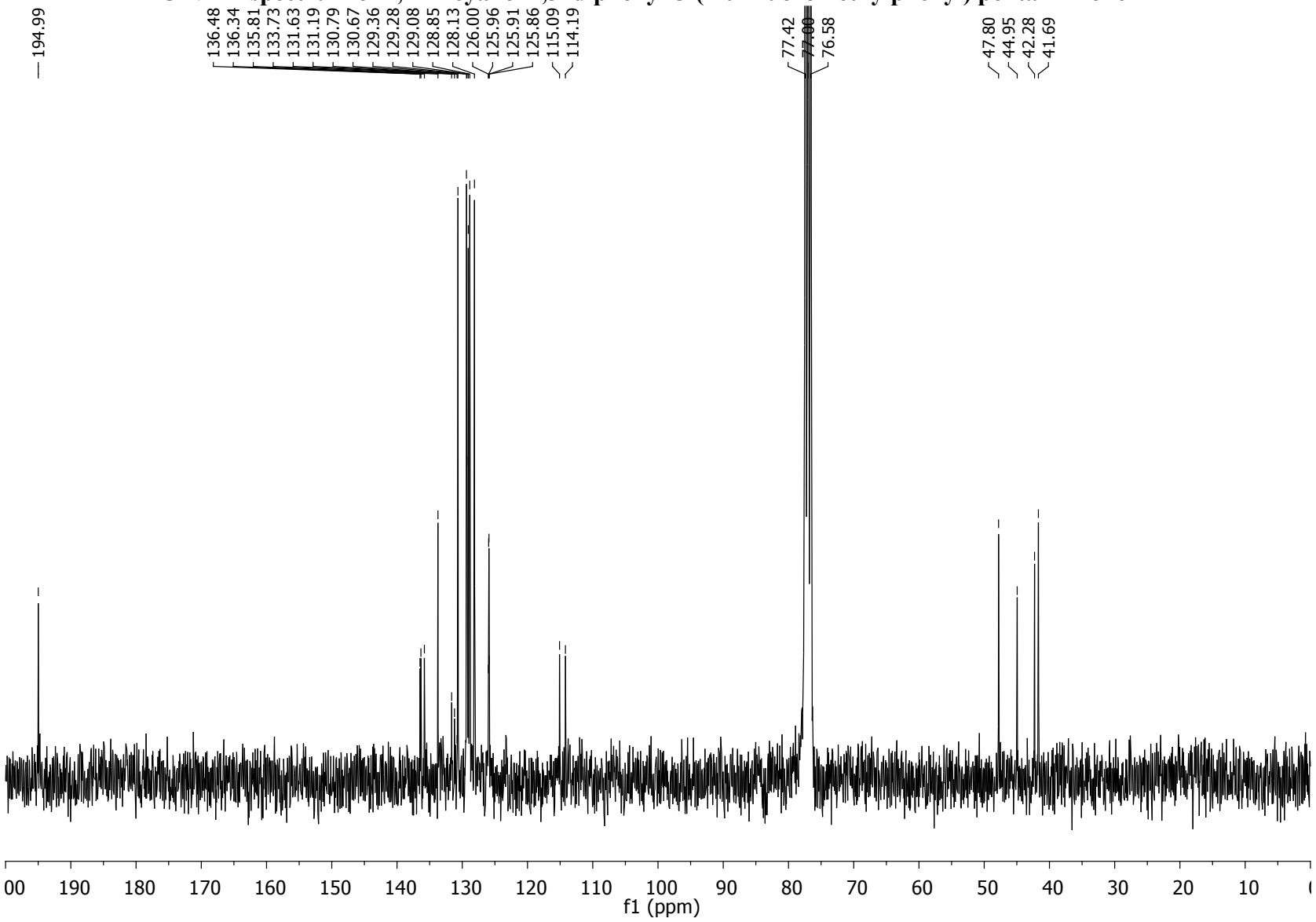
^{13}C NMR spectrum of 4,4–Dicyano–5-(4-methoxyphenyl)-1,3–diphenylpentan–1–one 11g



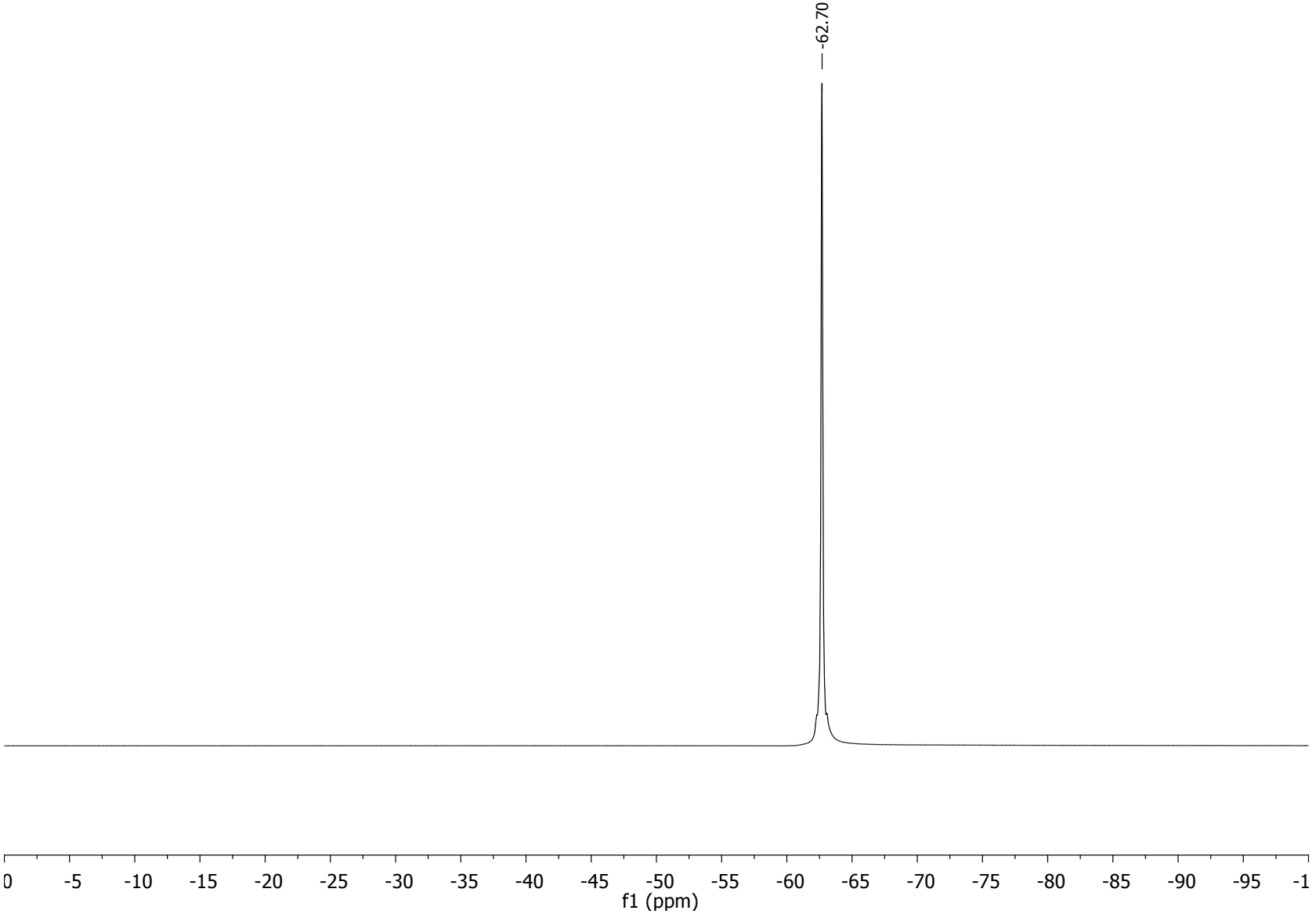
^{1}H NMR spectrum of 4,4–Dicyano–1,3–diphenyl-5-(4-trifluoromethylphenyl) pentan–1–one 11h



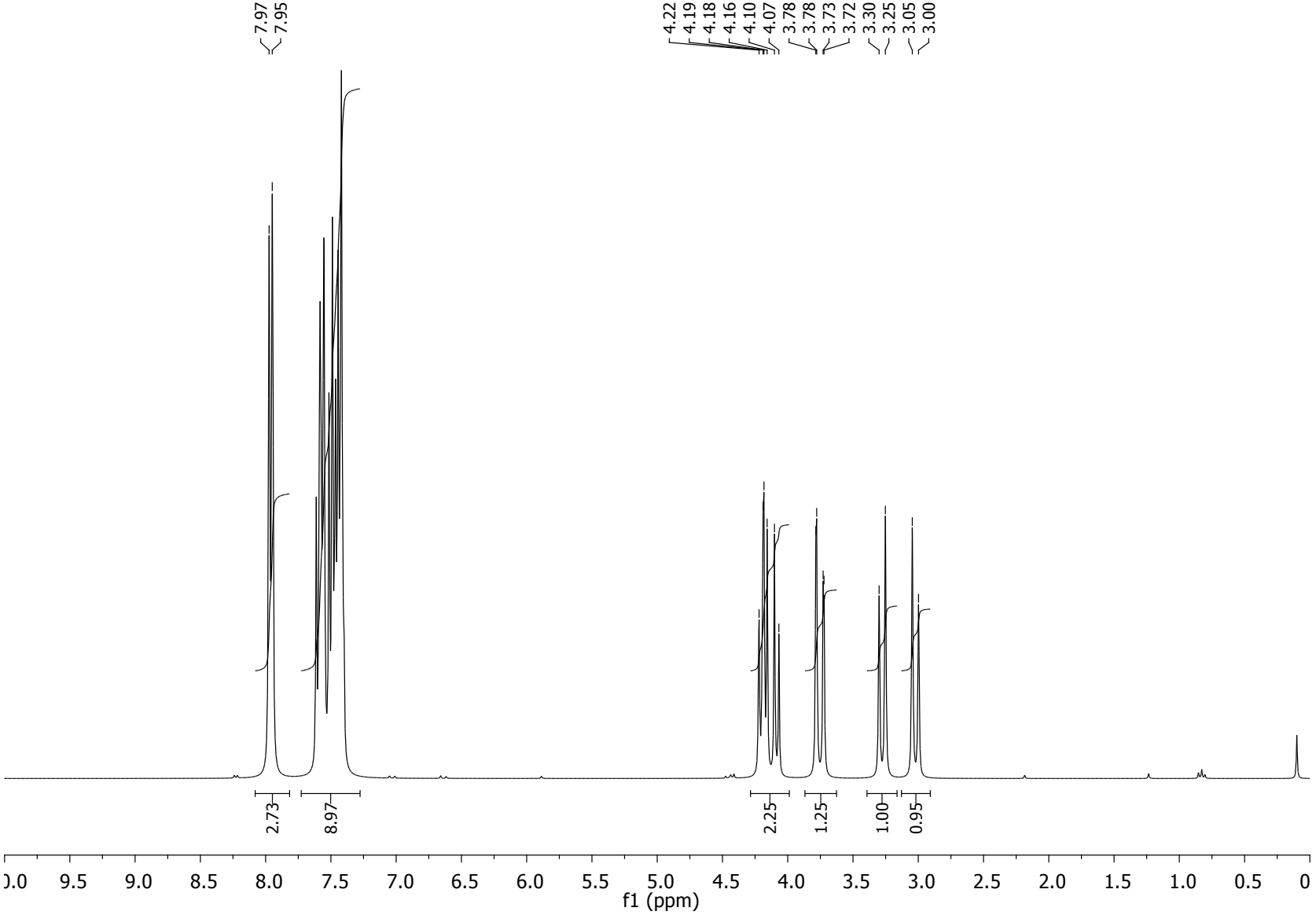
^{13}C NMR spectrum of 4,4–Dicyano–1,3–diphenyl-5-(4-trifluoromethylphenyl) pentan–1–one 11h



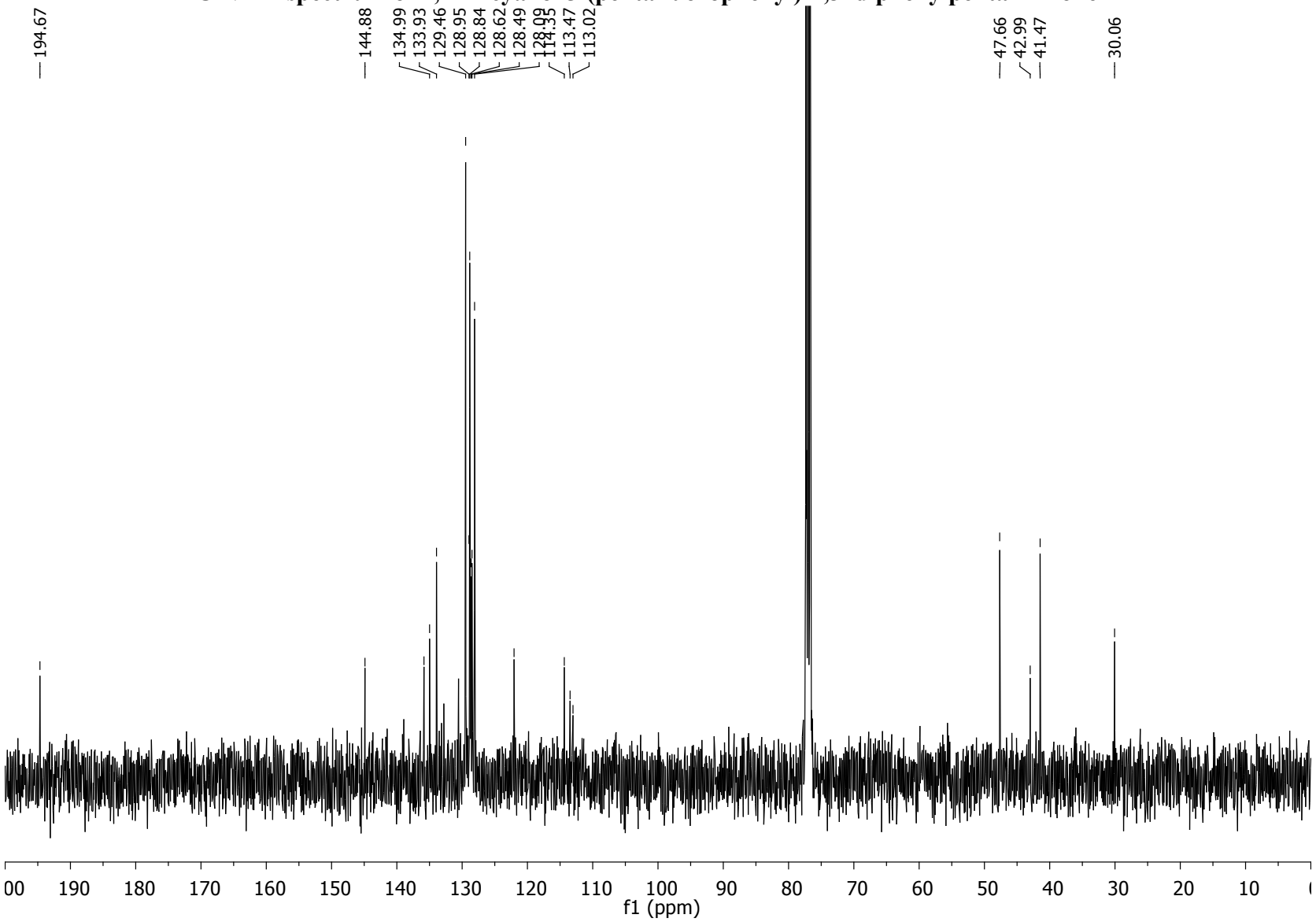
^{19}F NMR spectrum of 4,4–Dicyano–1,3–diphenyl-5-(4-trifluoromethylphenyl) pentan–1–one 11h



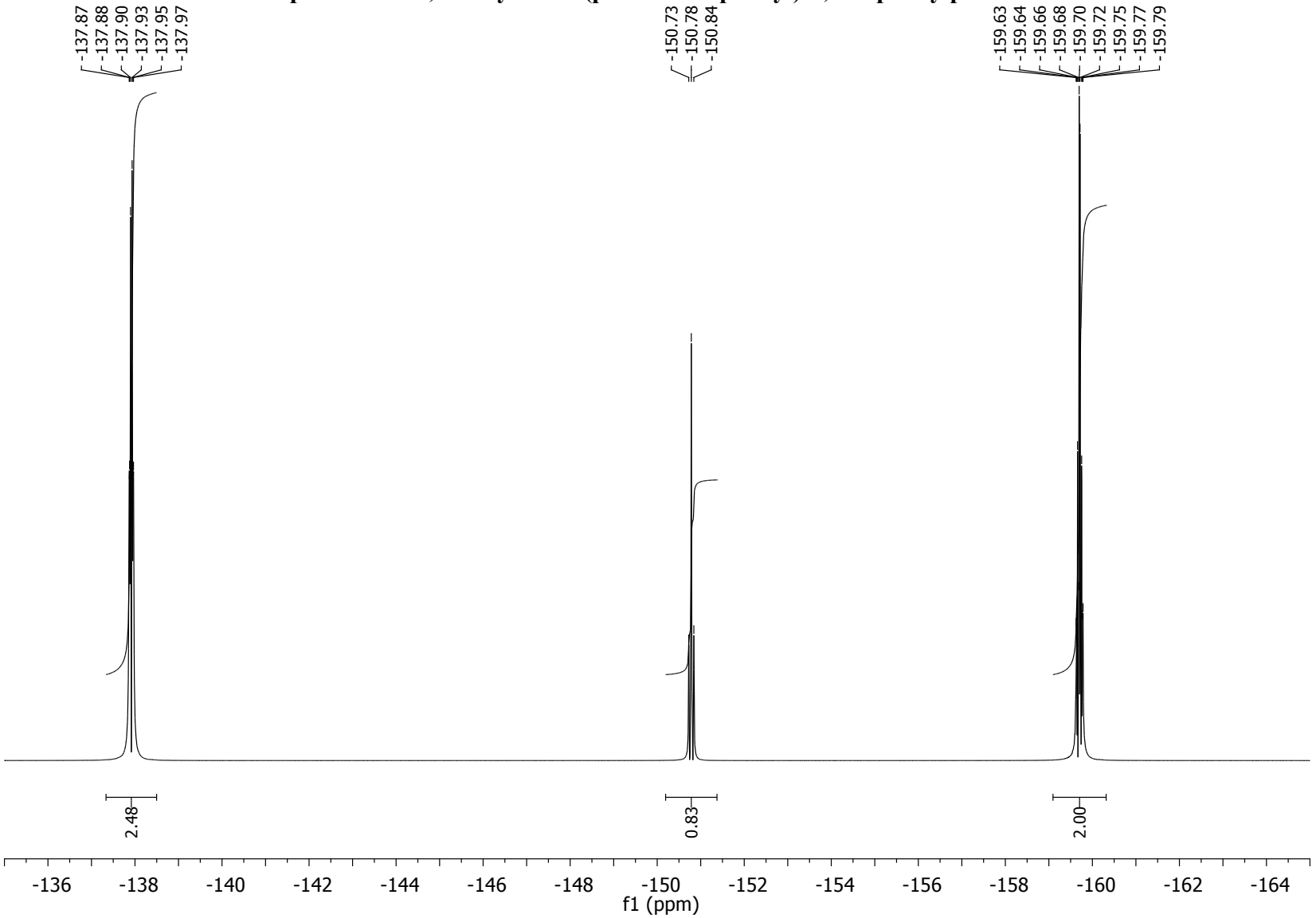
^{1}H NMR spectrum of 4,4–Dicyano–5-(pentafluorophenyl)-1,3–diphenylpentan–1–one 11i



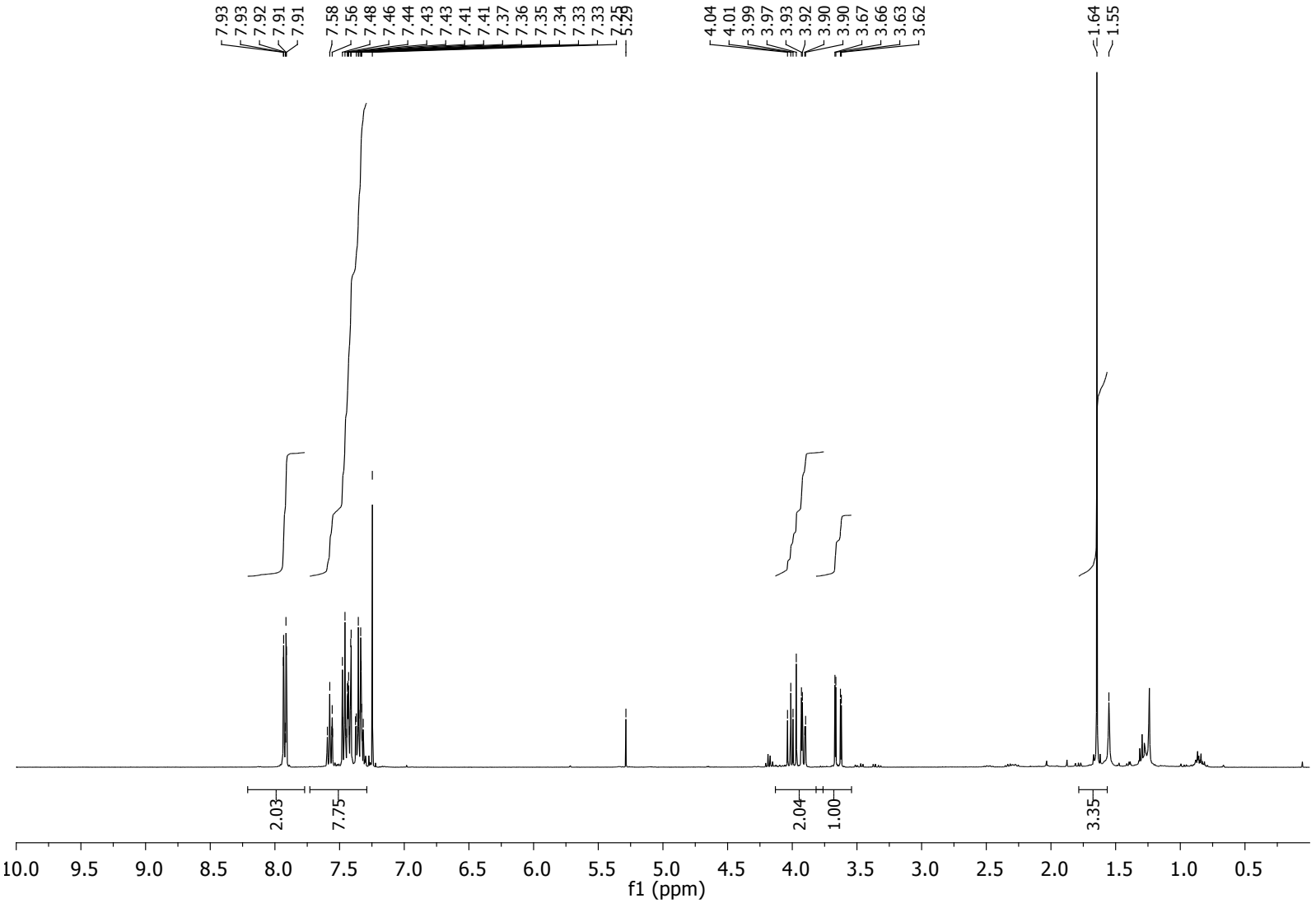
^{13}C NMR spectrum of 4,4–Dicyano–5-(pentafluorophenyl)-1,3–diphenylpentan–1–one 11i



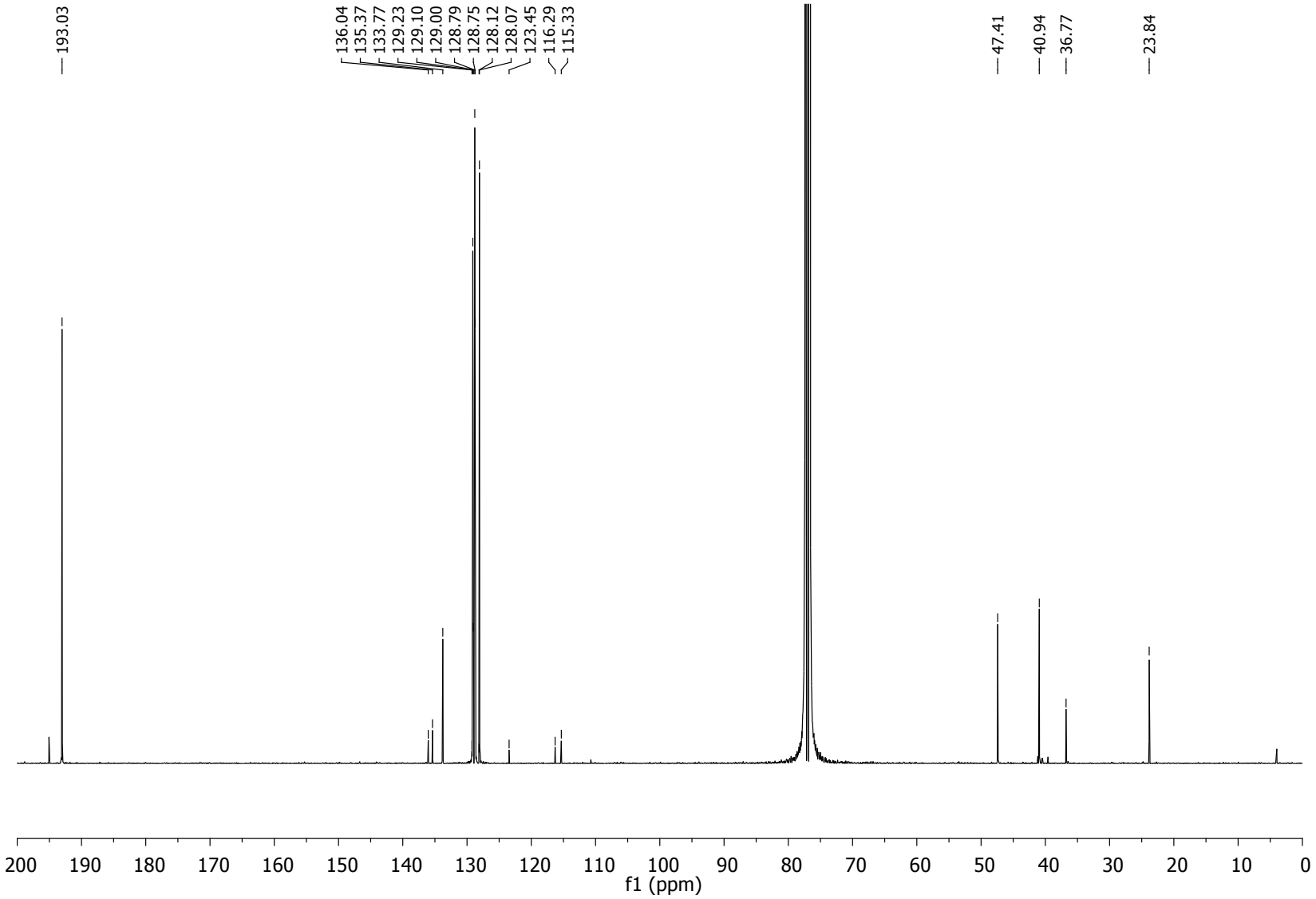
^{19}F NMR spectrum of 4,4–Dicyano–5-(pentafluorophenyl)-1,3–diphenylpentan–1–one 11i



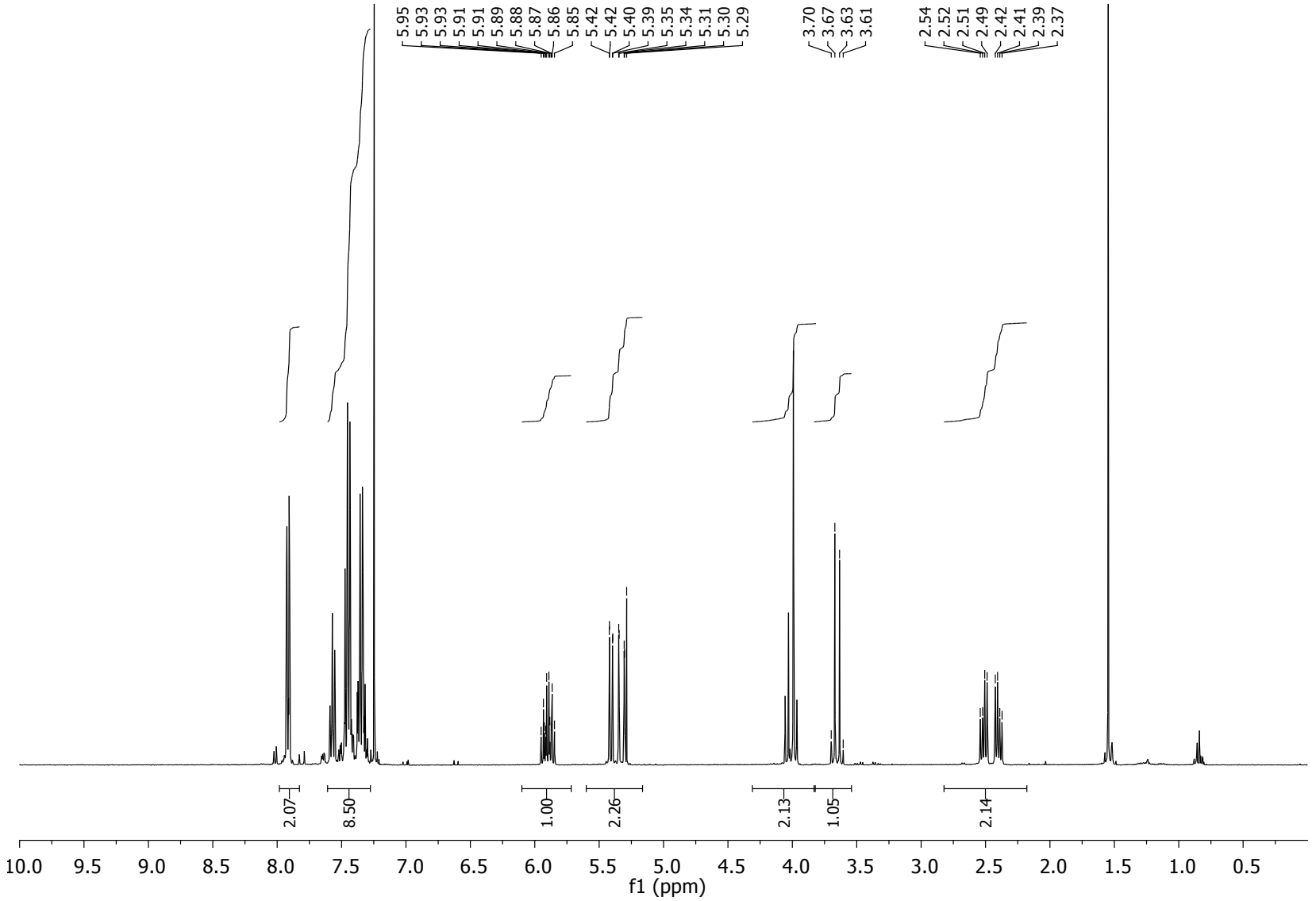
^{1}H NMR spectrum of 4,4–Dicyano–1,3–diphenylpentan–1–one 11j



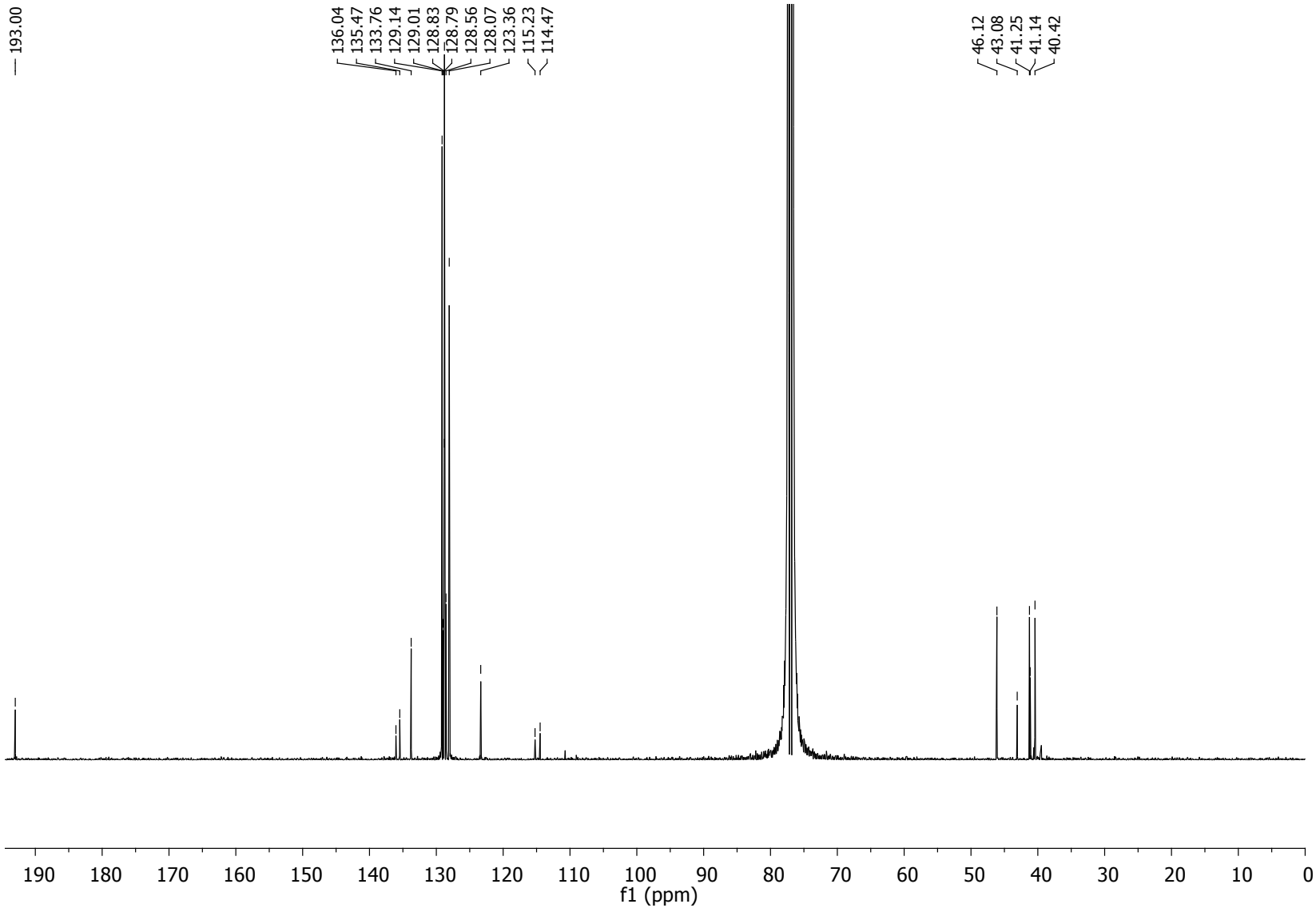
^{13}C NMR spectrum of 4,4–Dicyano–1,3–diphenylpentan–1–one 11j



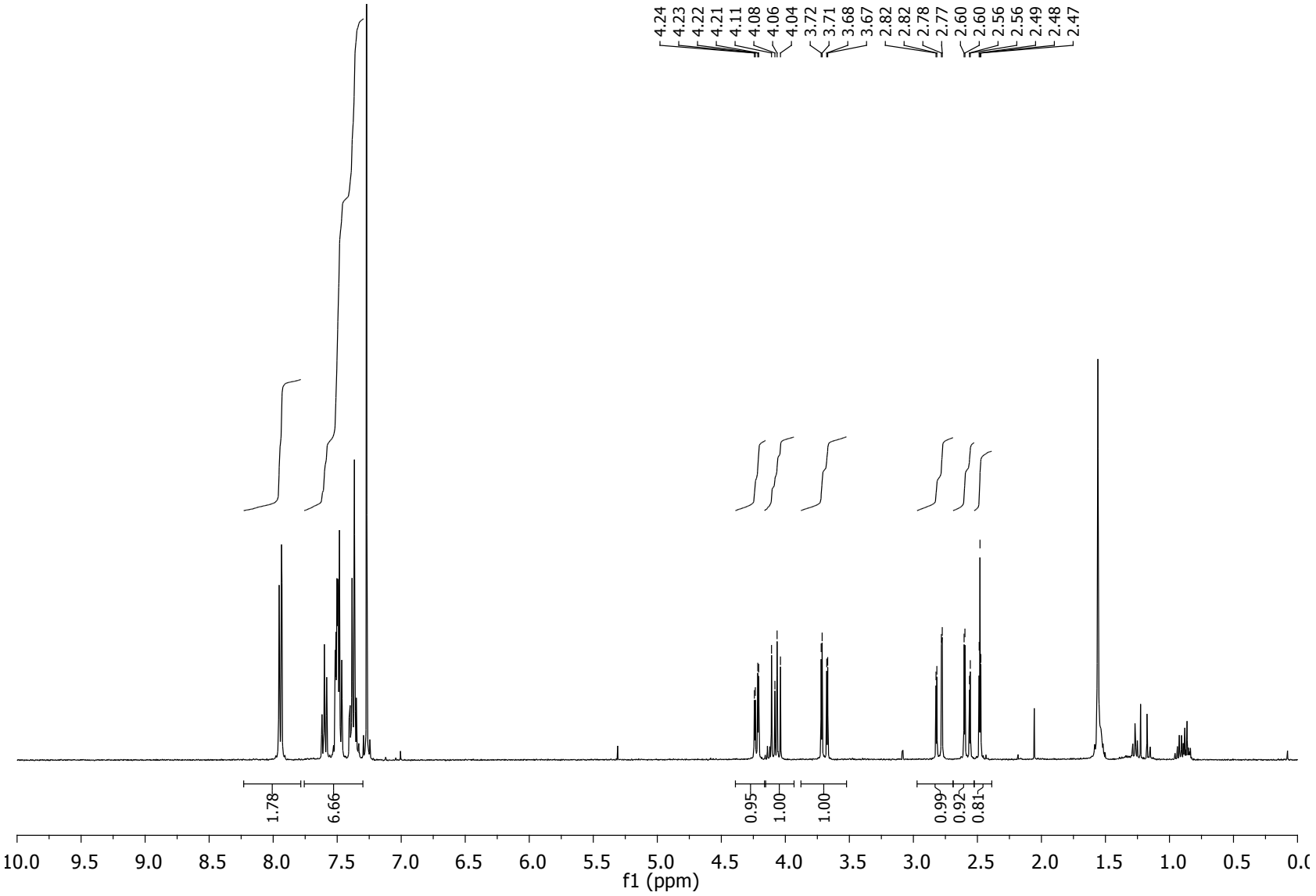
^{1}H NMR spectrum of 4,4–Dicyano–1,3–diphenylhept-6-en–1–one 11k



^{13}C NMR spectrum of 4,4–Dicyano–1,3–diphenylhept-6-en–1–one 11k



^{1}H NMR spectrum of 4,4–Dicyano–1,3–diphenylhept-6-yn–1–one 11l



^{13}C NMR spectrum of 4,4–Dicyano–1,3–diphenylhept-6-yn–1–one 11l