Enantioselective Iodolactonization to Prepare ε-Lactone Rings Using Hypervalent Iodine

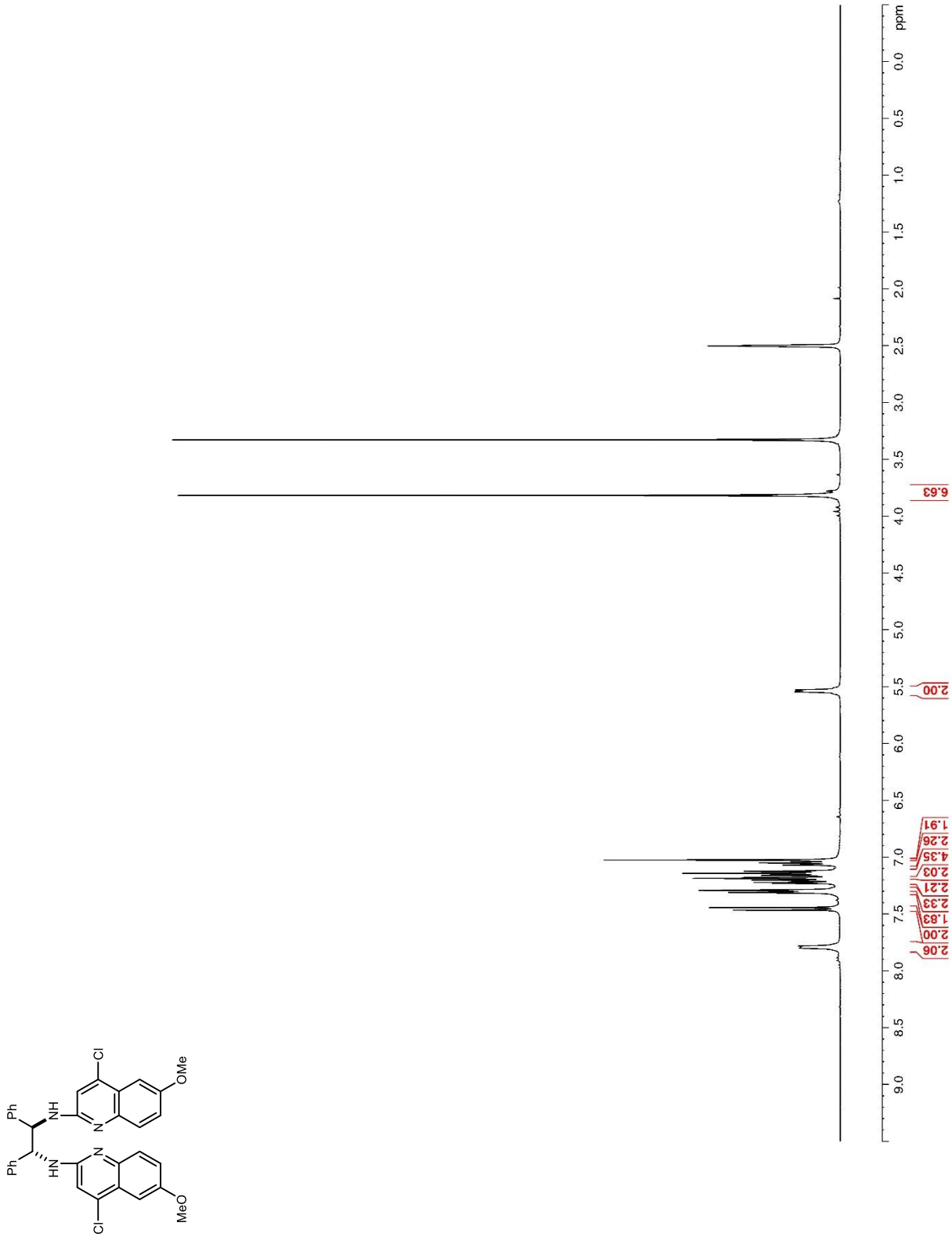
Jenna L. Payne, Zihang Deng, Andrew L. Flach, and Jeffrey N. Johnston*

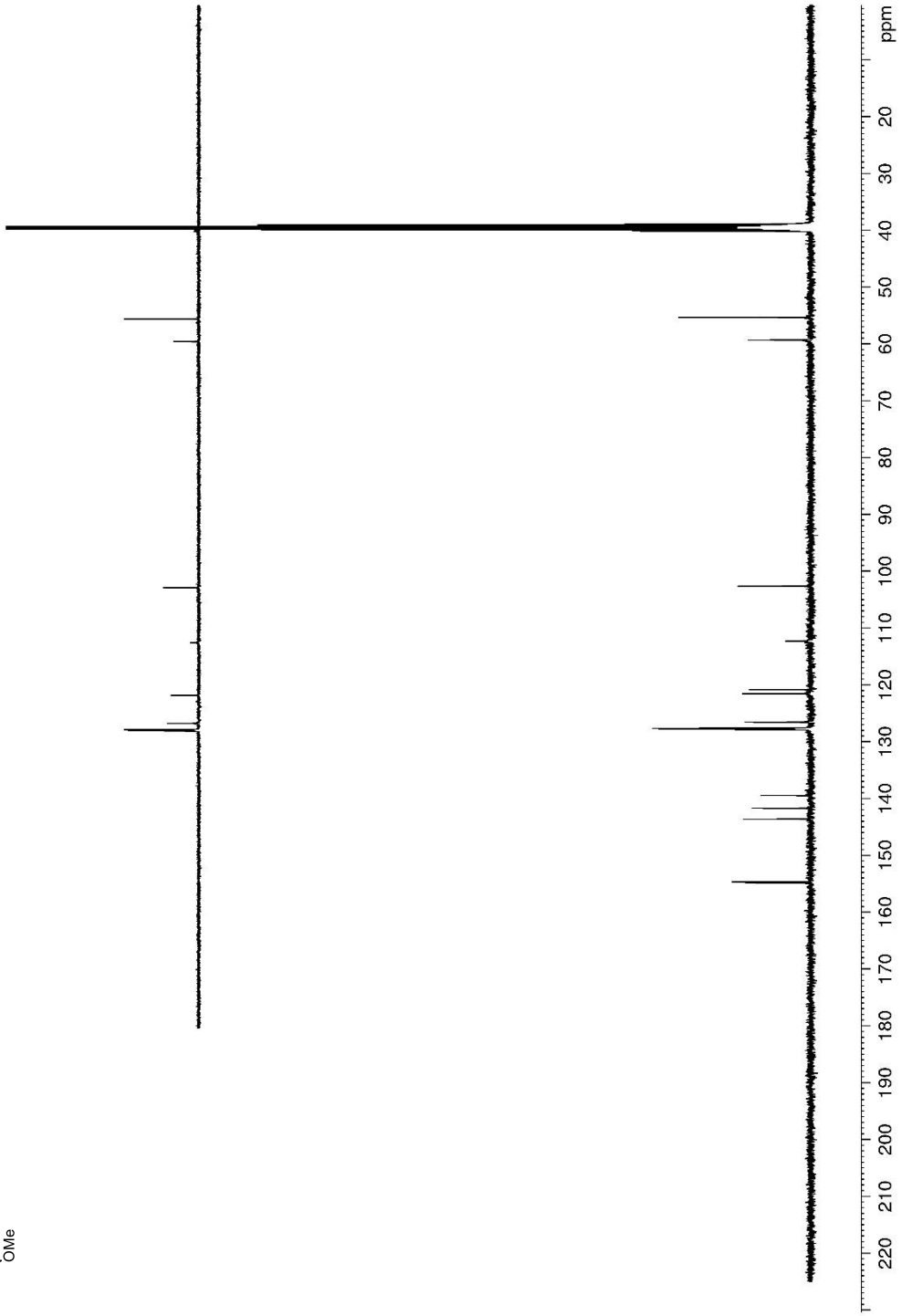
Department of Chemistry and Vanderbilt Institute of Chemical Biology,

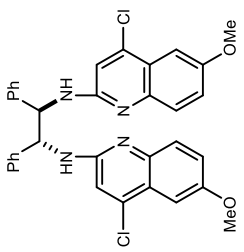
Vanderbilt University, Nashville, Tennessee 37235

Table of Contents SI2-X

Figure 1. ^{1}H NMR (400 MHz, DMSO-d_6) of **S1**




ppm
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220


Cl
OMe
Ph
NH
N
Ph
HN
N
Cl
MeO

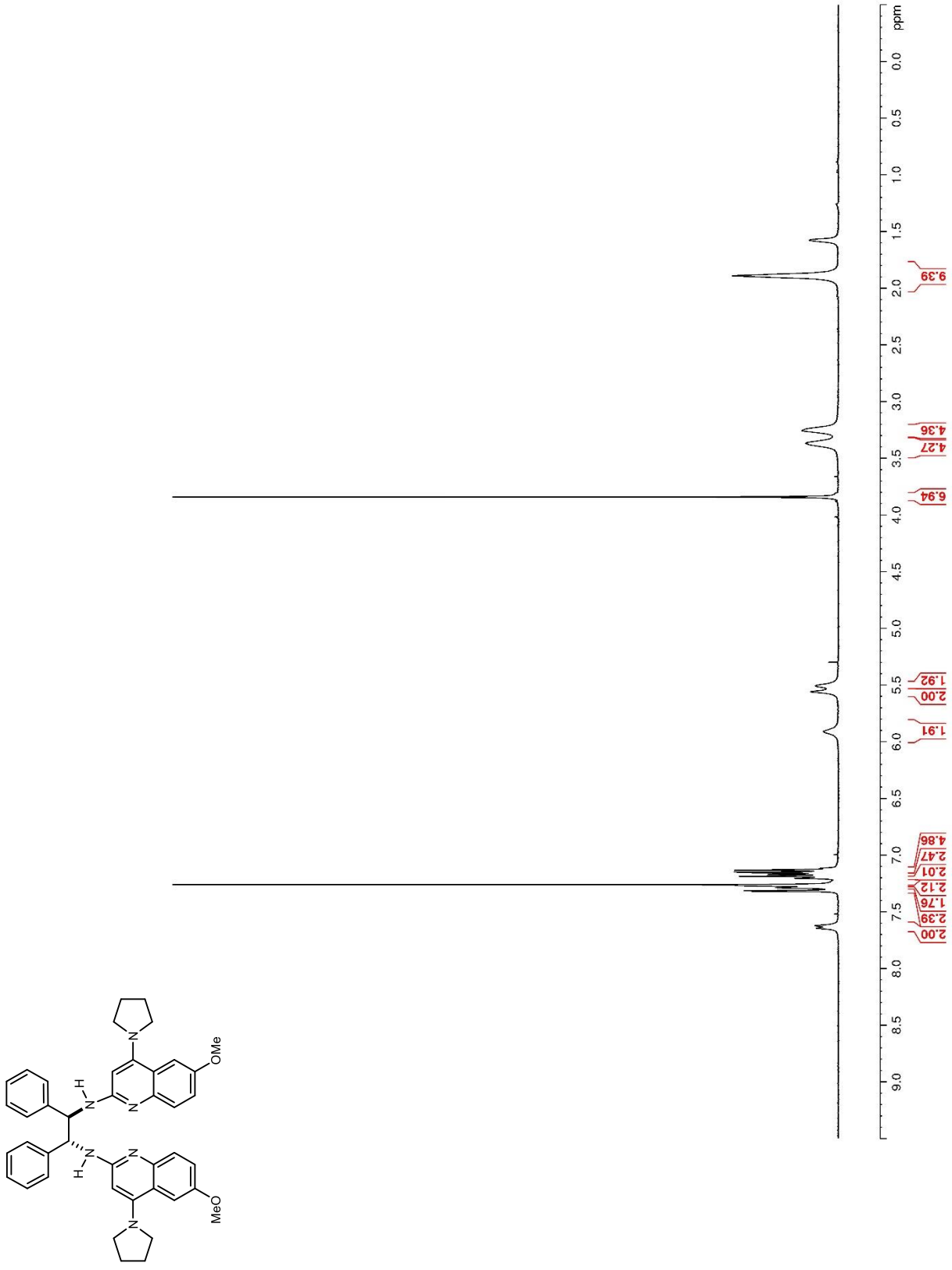

ppm
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
8.0
8.5
9.0
9.39
4.36
4.27
6.94
1.92
2.00
1.91
4.86
2.47
2.01
2.12
1.76
2.39
2.00
OMe
MeO
H
N
N
N
N
H
N
N

Figure 2. ^{13}C NMR (150 MHz, $CDCl_3$) of **4**

Figure 3. ^{1}H NMR (400 MHz**,** $CDCl_3$) of **5b**

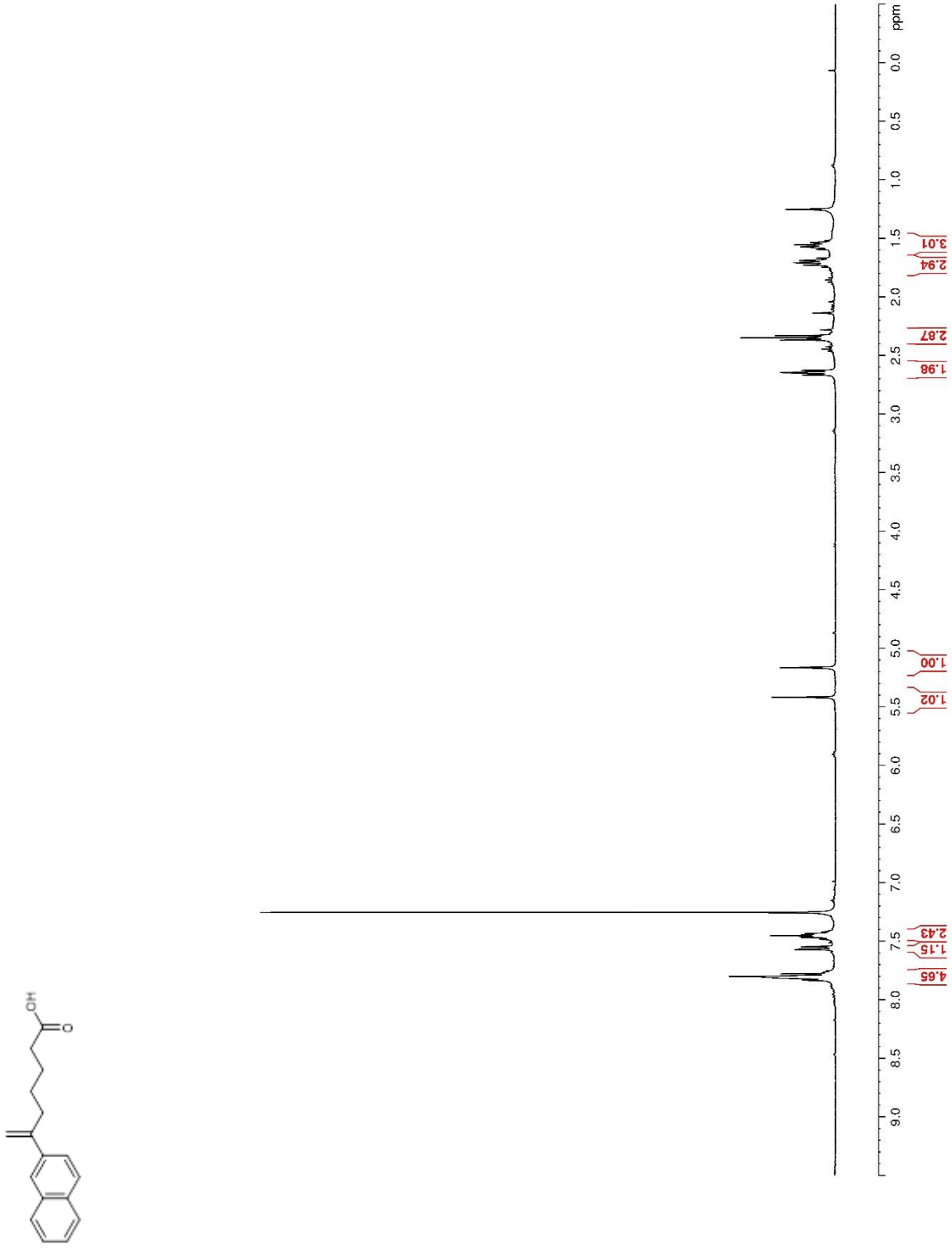


Figure 4. ^{13}C NMR (150 MHz, $CDCl_3$) of **5b**

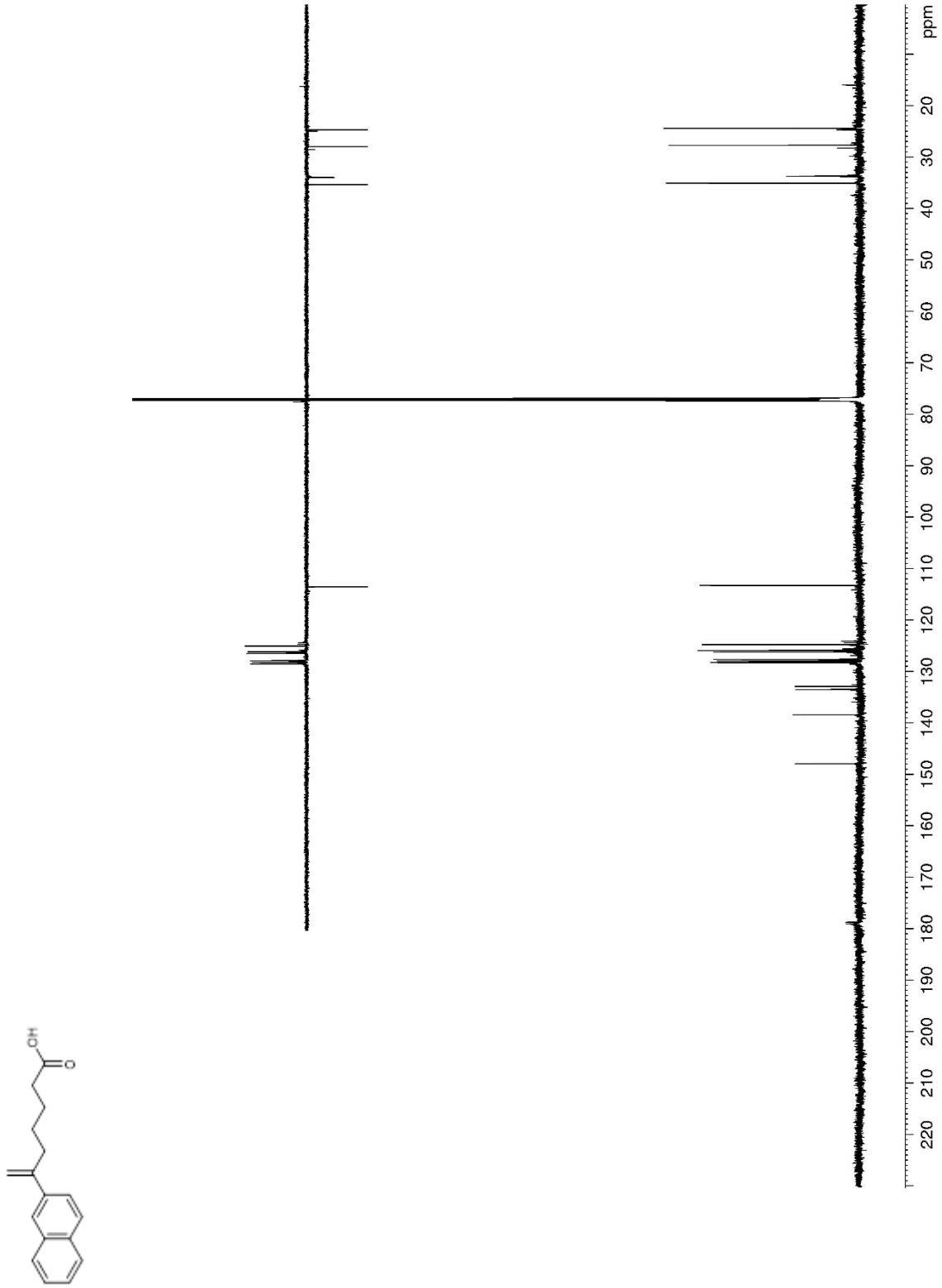


Figure 5. ^{1}H NMR (400 MHz**,** $CDCl_3$) of **5c**

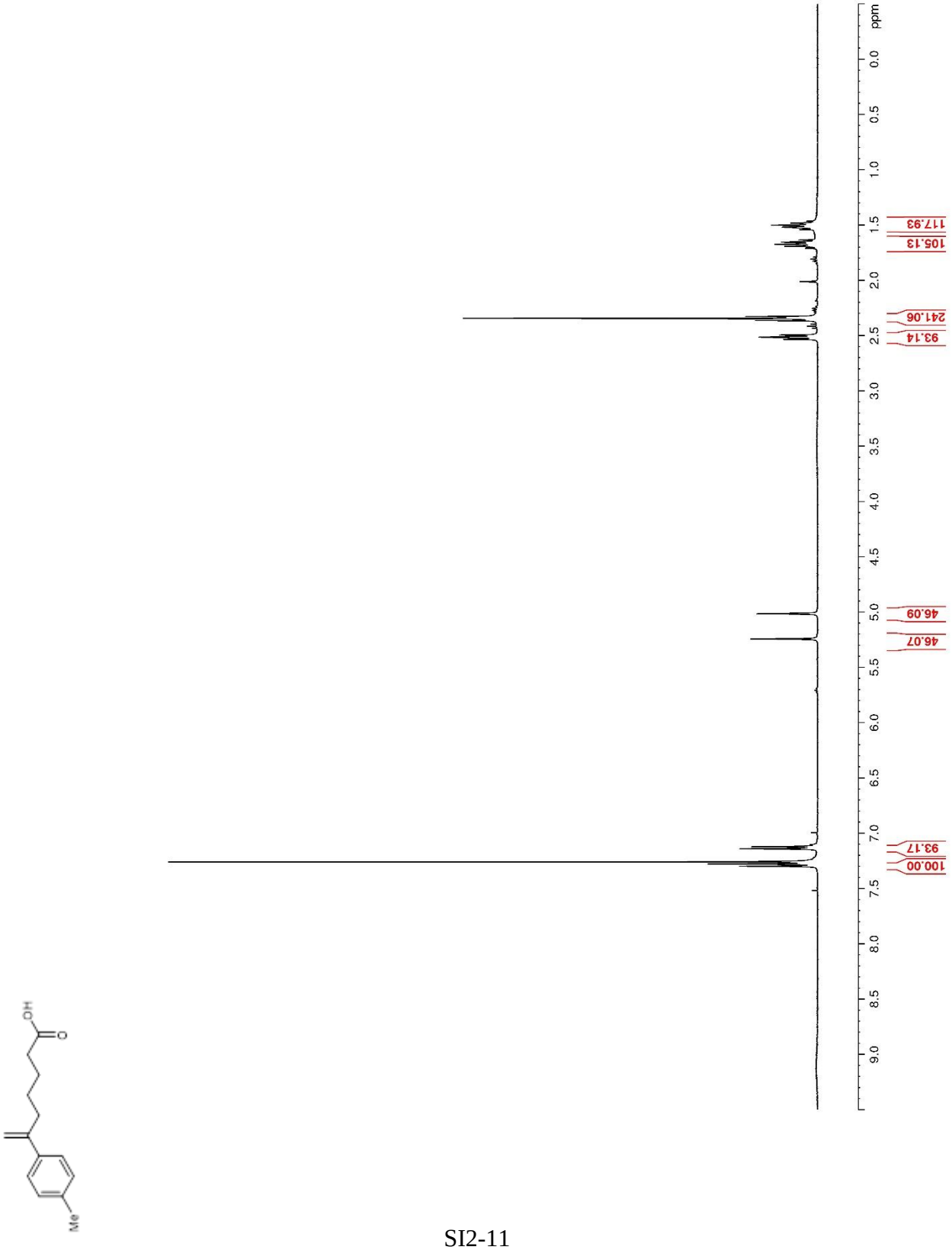


Figure 6. ^{13}C NMR (150 MHz, $CDCl_3$) of **5c**

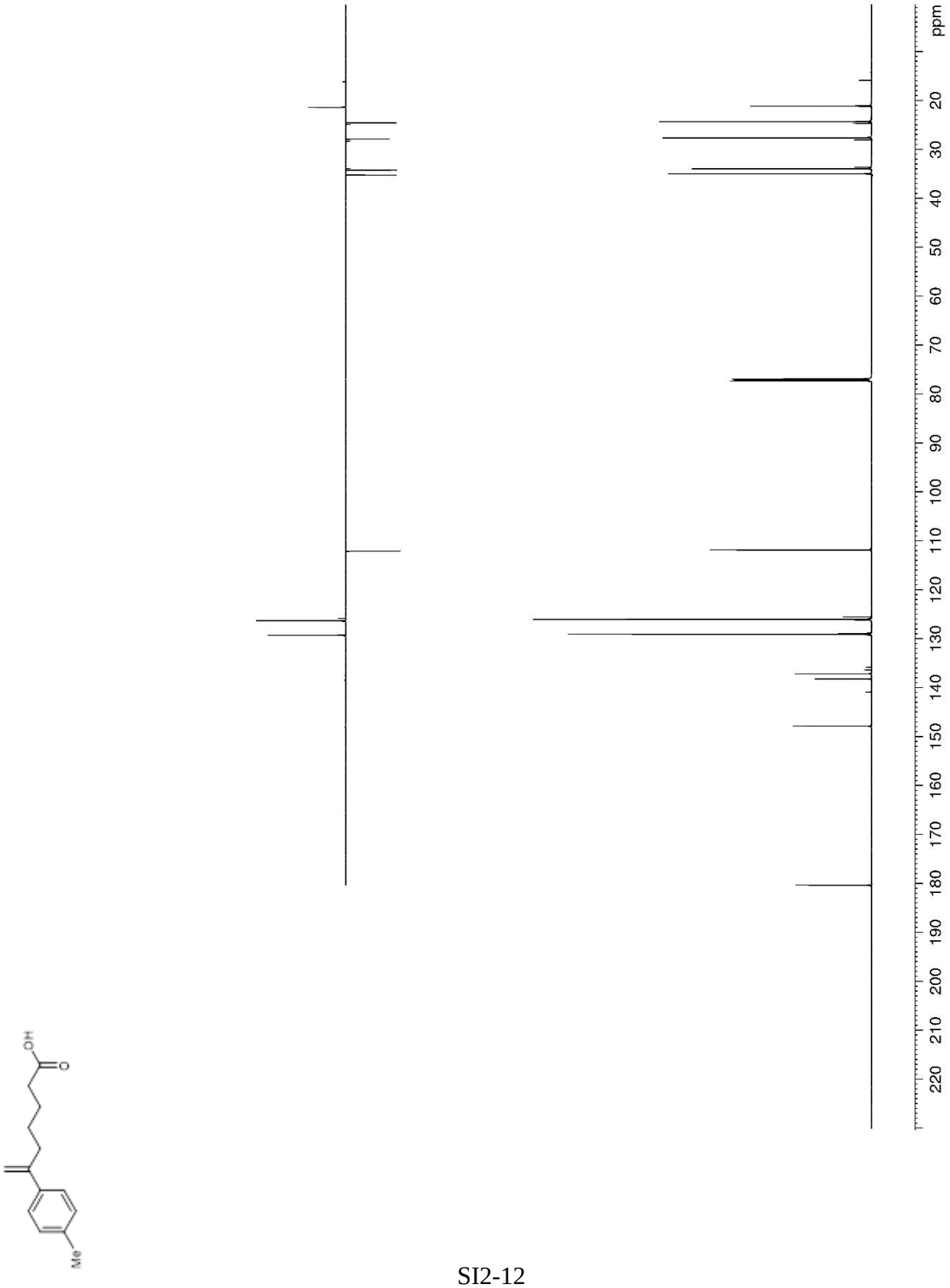


Figure 7. ^{1}H NMR (400 MHz**,** $CDCl_3$) of **5d**

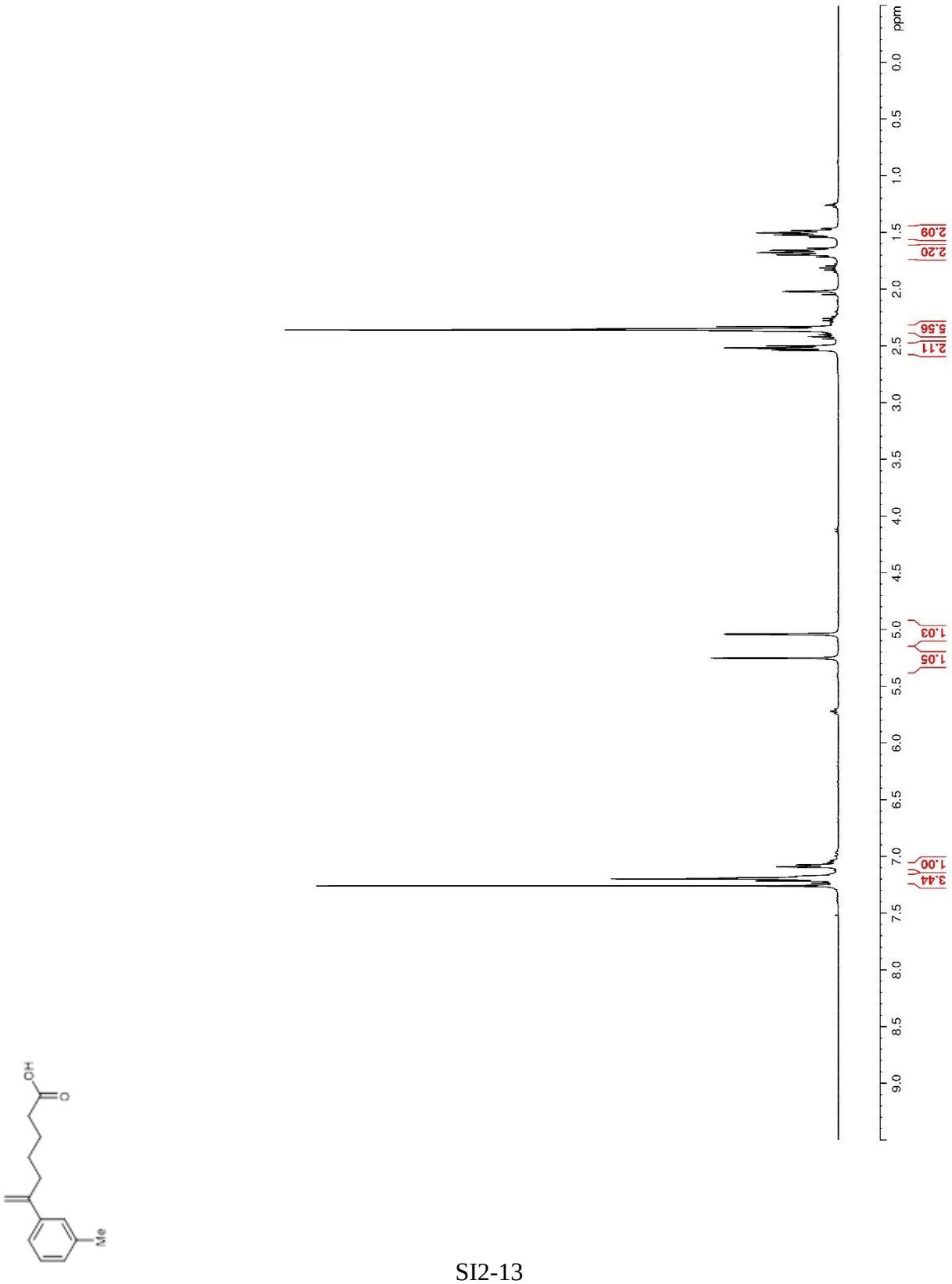


Figure 8. ^{13}C NMR (150 MHz, $CDCl_3$) of **5d**

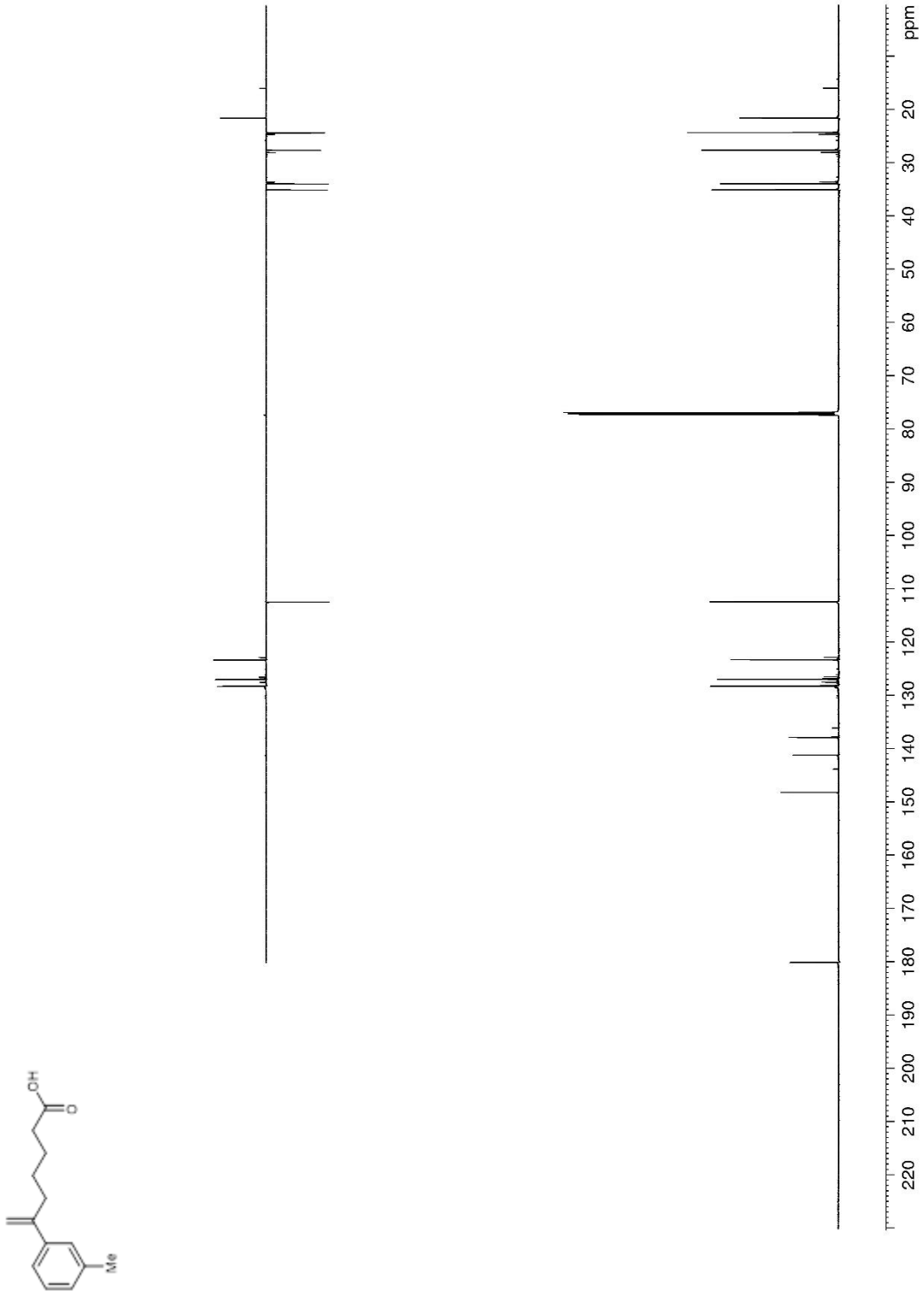


Figure 9. ^{1}H NMR (400 MHz**,** $CDCl_3$) of **5e**

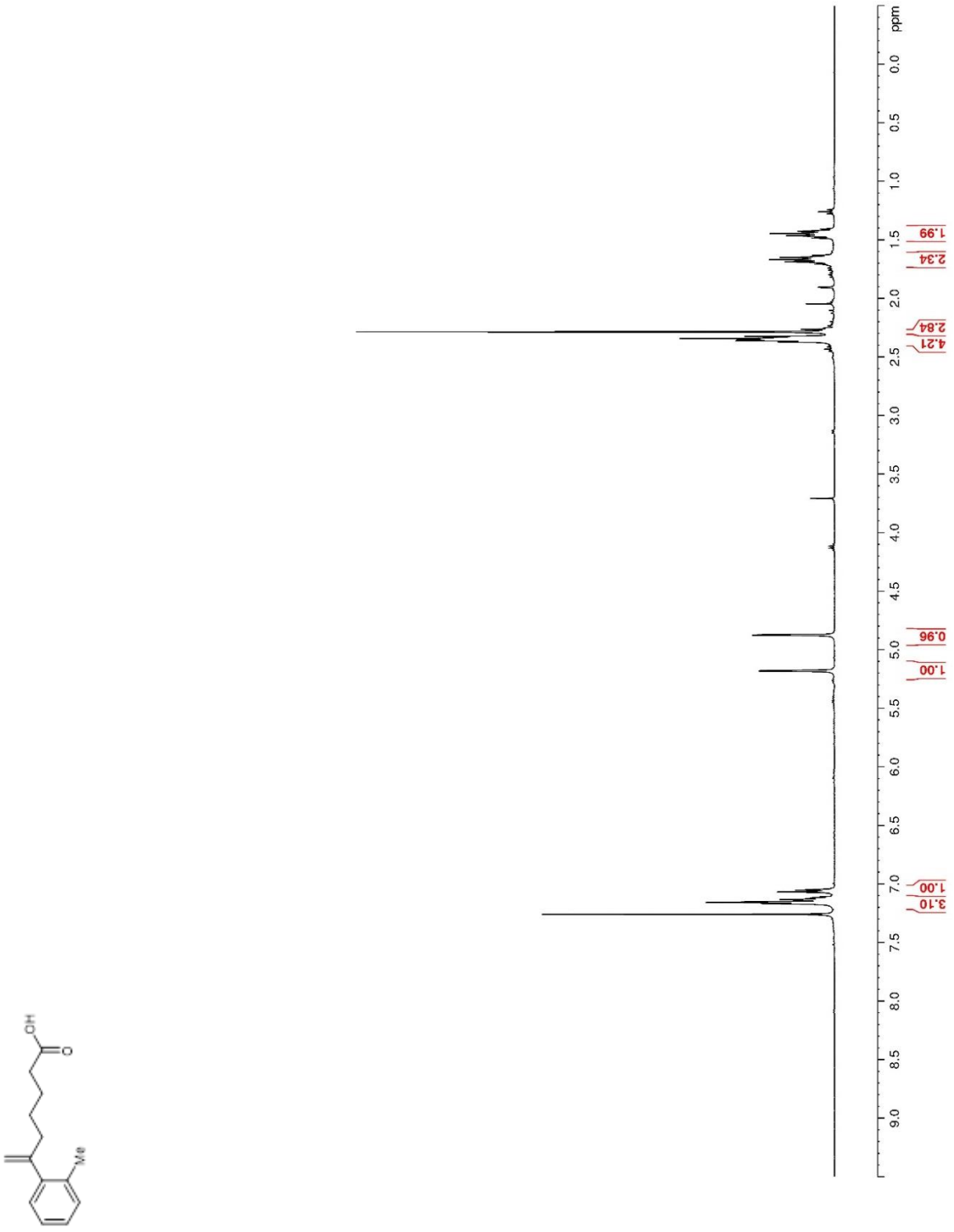


Figure 10. ^{13}C NMR (150 MHz, $CDCl_3$) of **5e**

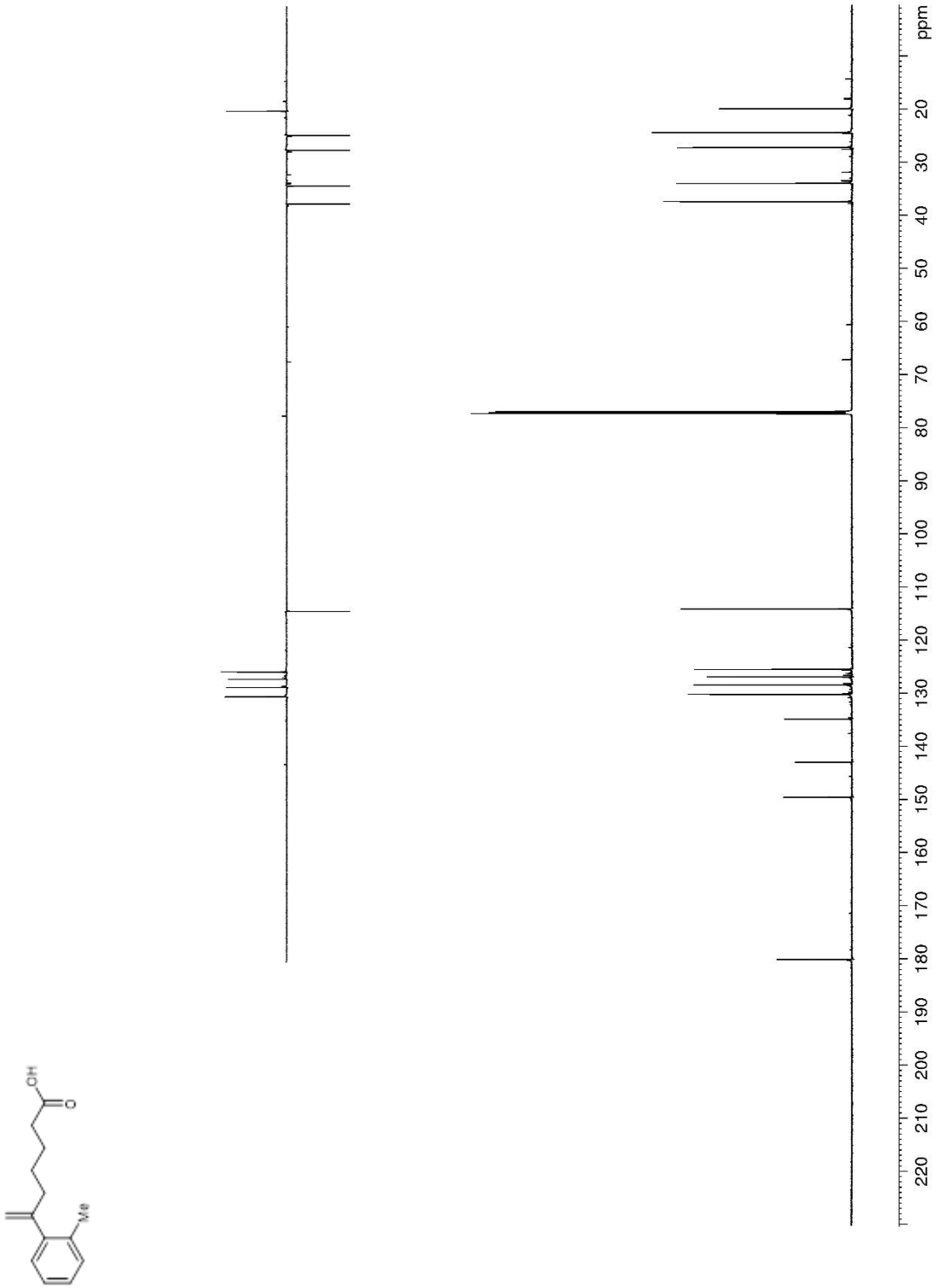


Figure 11. ^{1}H NMR (400 MHz**,** $CDCl_3$) of **5f**

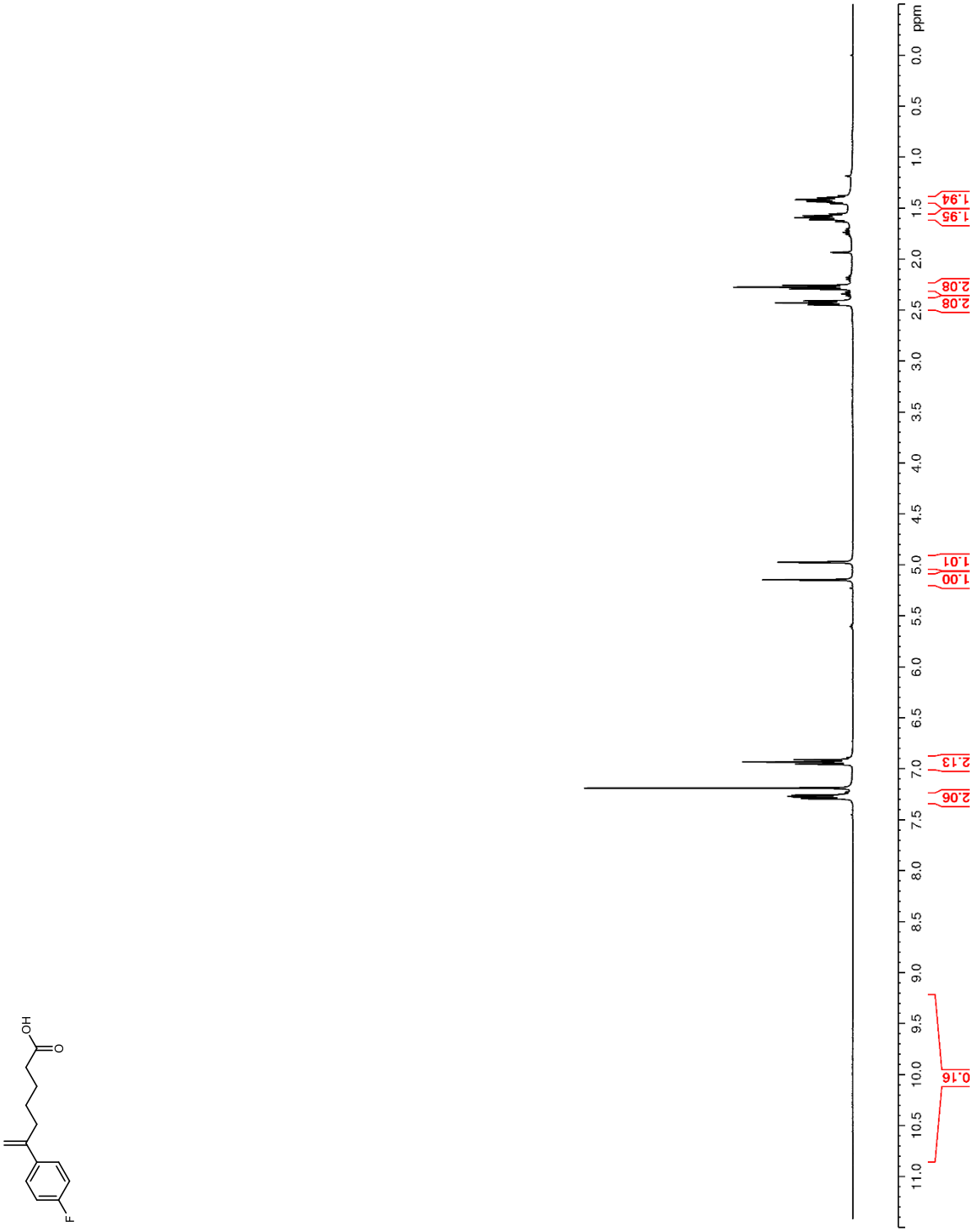
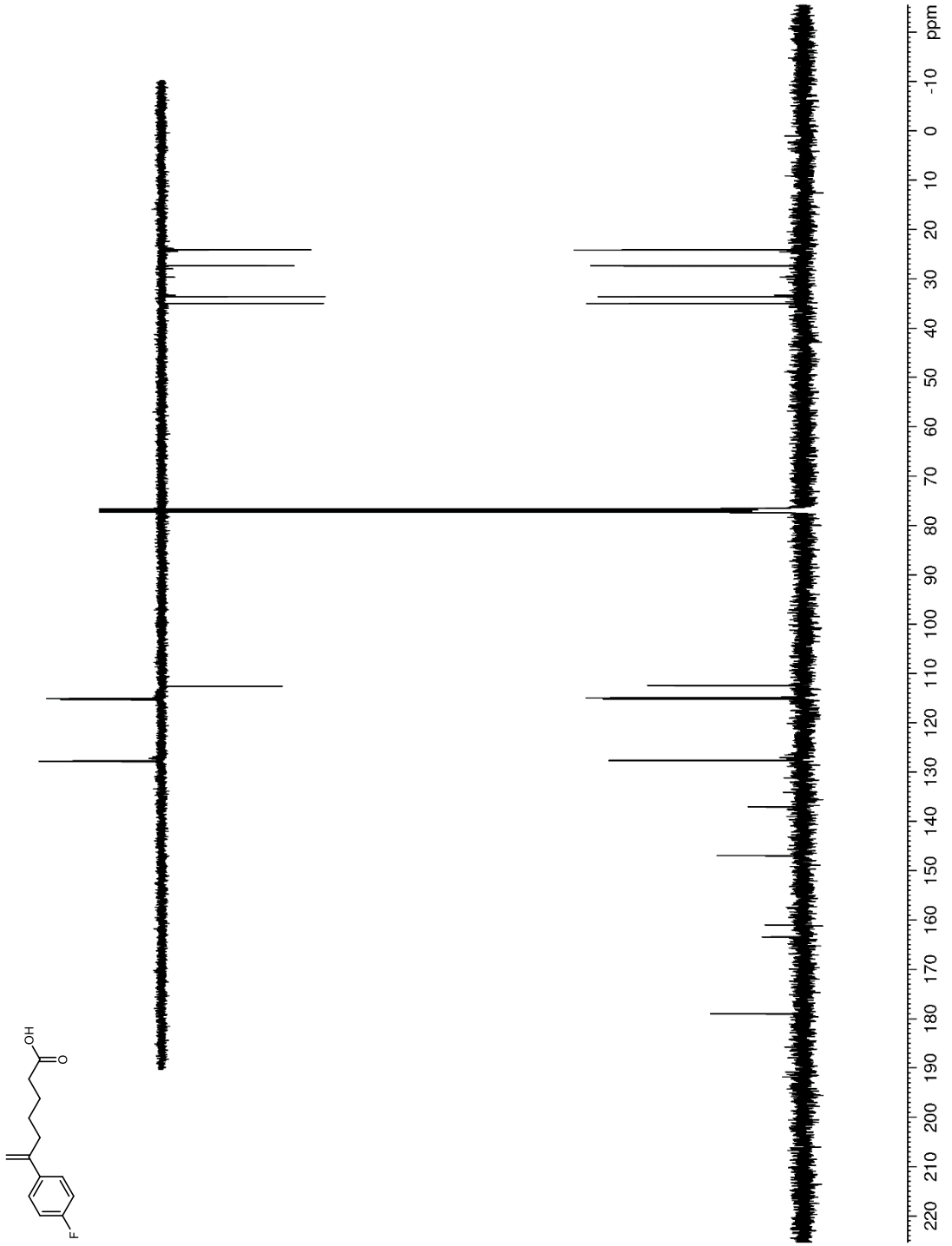
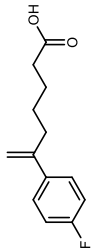


Figure 12. ^{13}C NMR (150 MHz, $CDCl_3$) of **5f**




OH
O
F

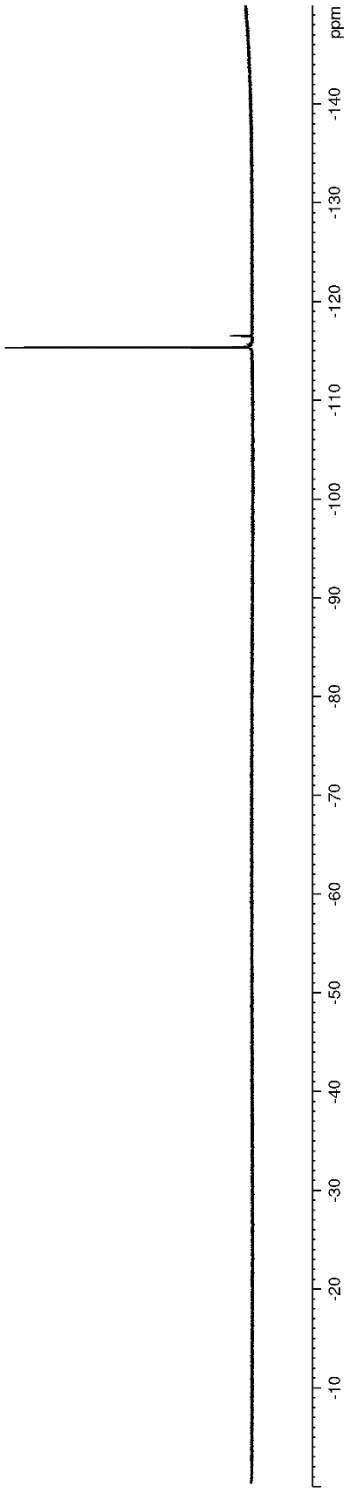

ppm
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
-130
-140

Figure 13. ^{1}H NMR (400 MHz**,** $CDCl_3$) of **5g**

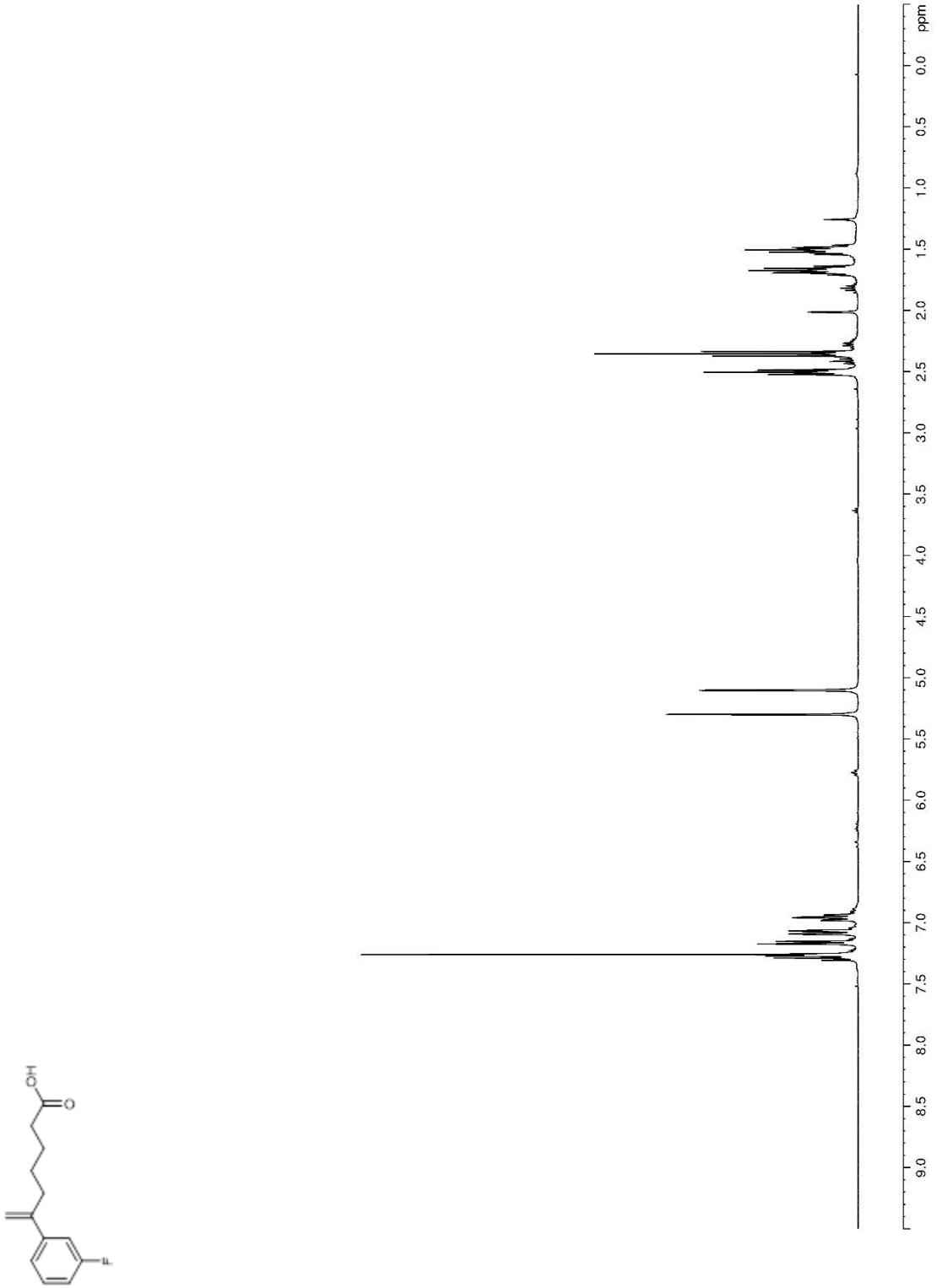


Figure 14. ^{13}C NMR (150 MHz, $CDCl_3$) of **5g**

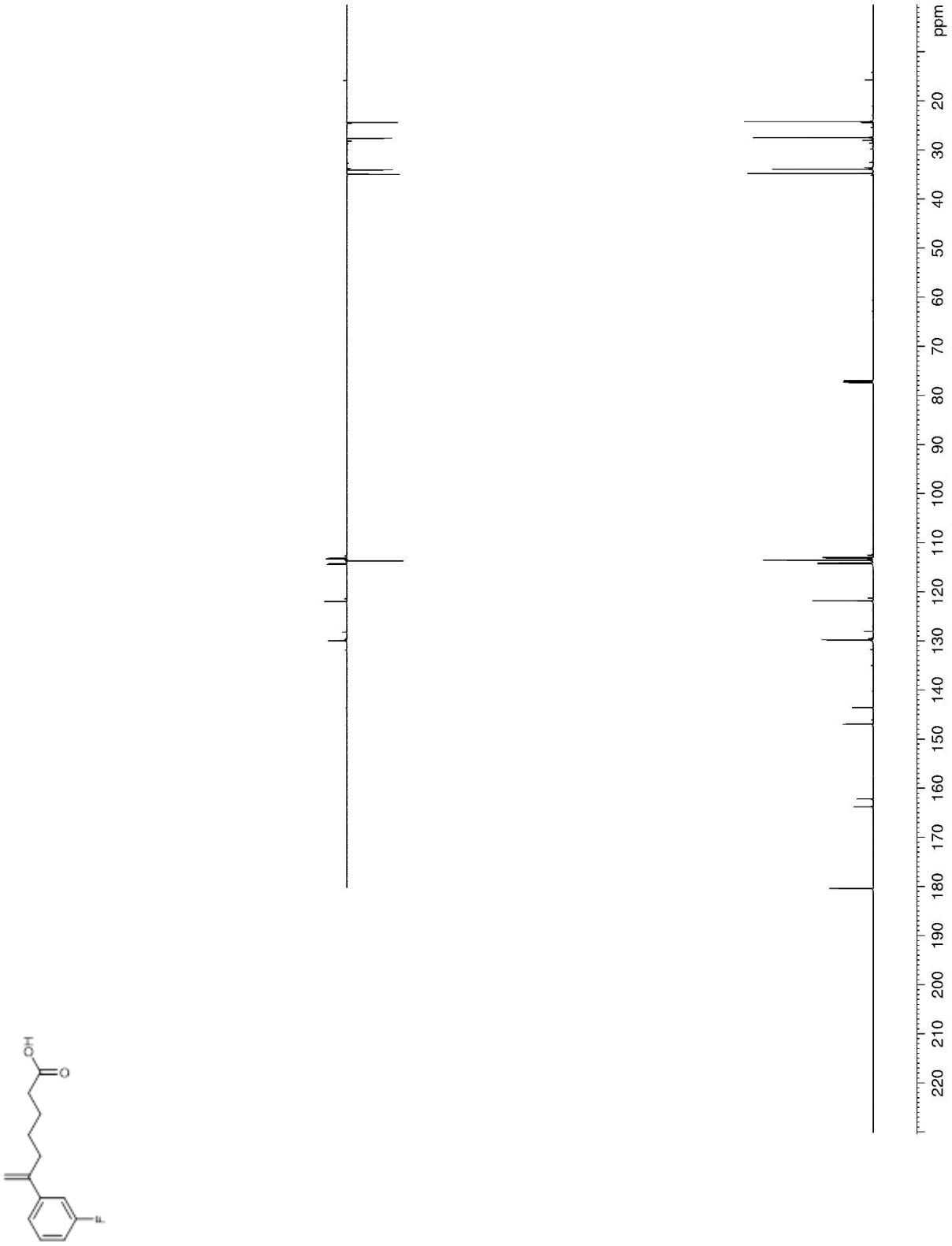


Figure 15. ^{19}F NMR (282 MHz, $CDCl_3$) of **5g**

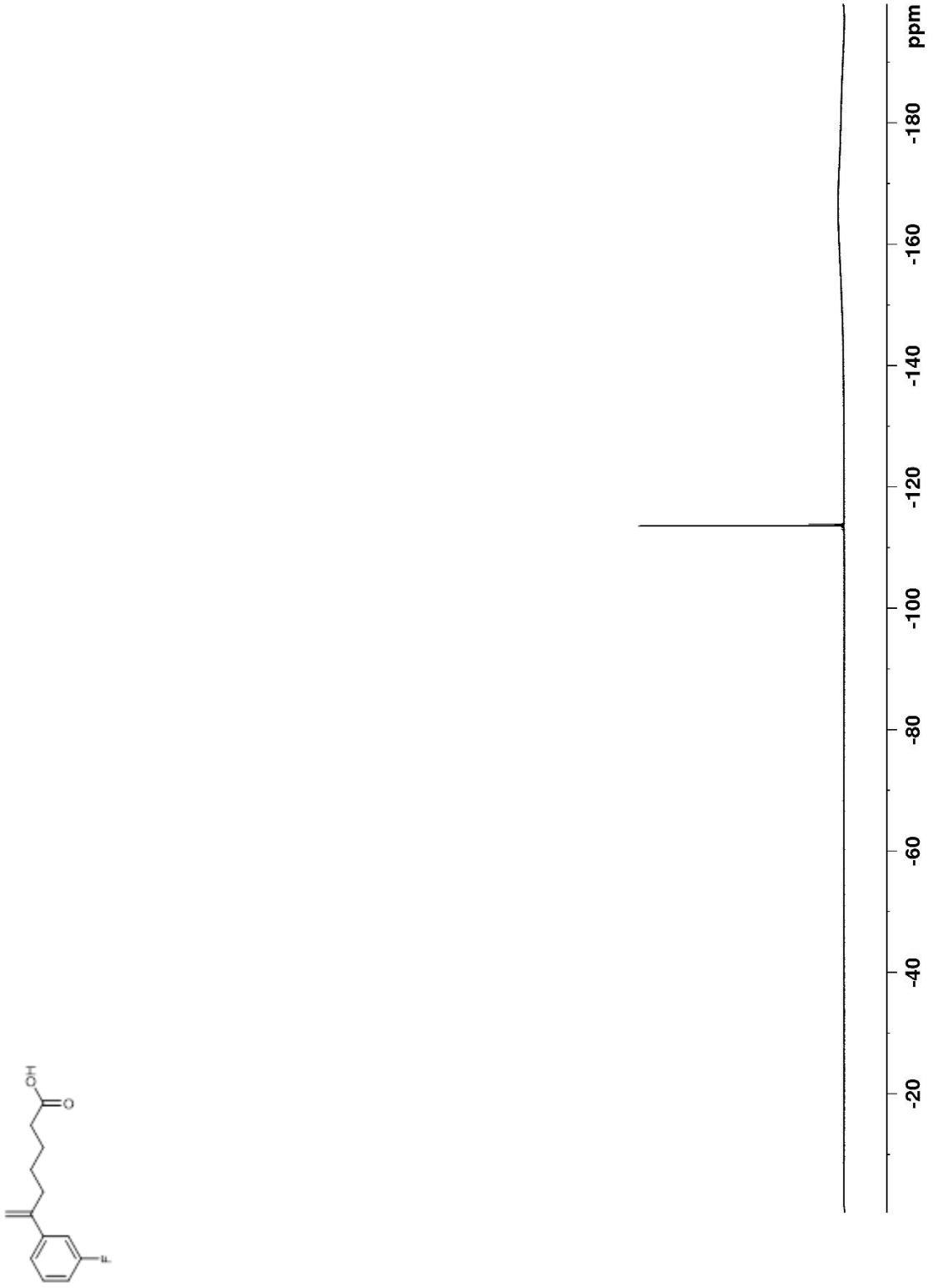


Figure 16. ^{1}H NMR (400 MHz**,** $CDCl_3$) of **5h**

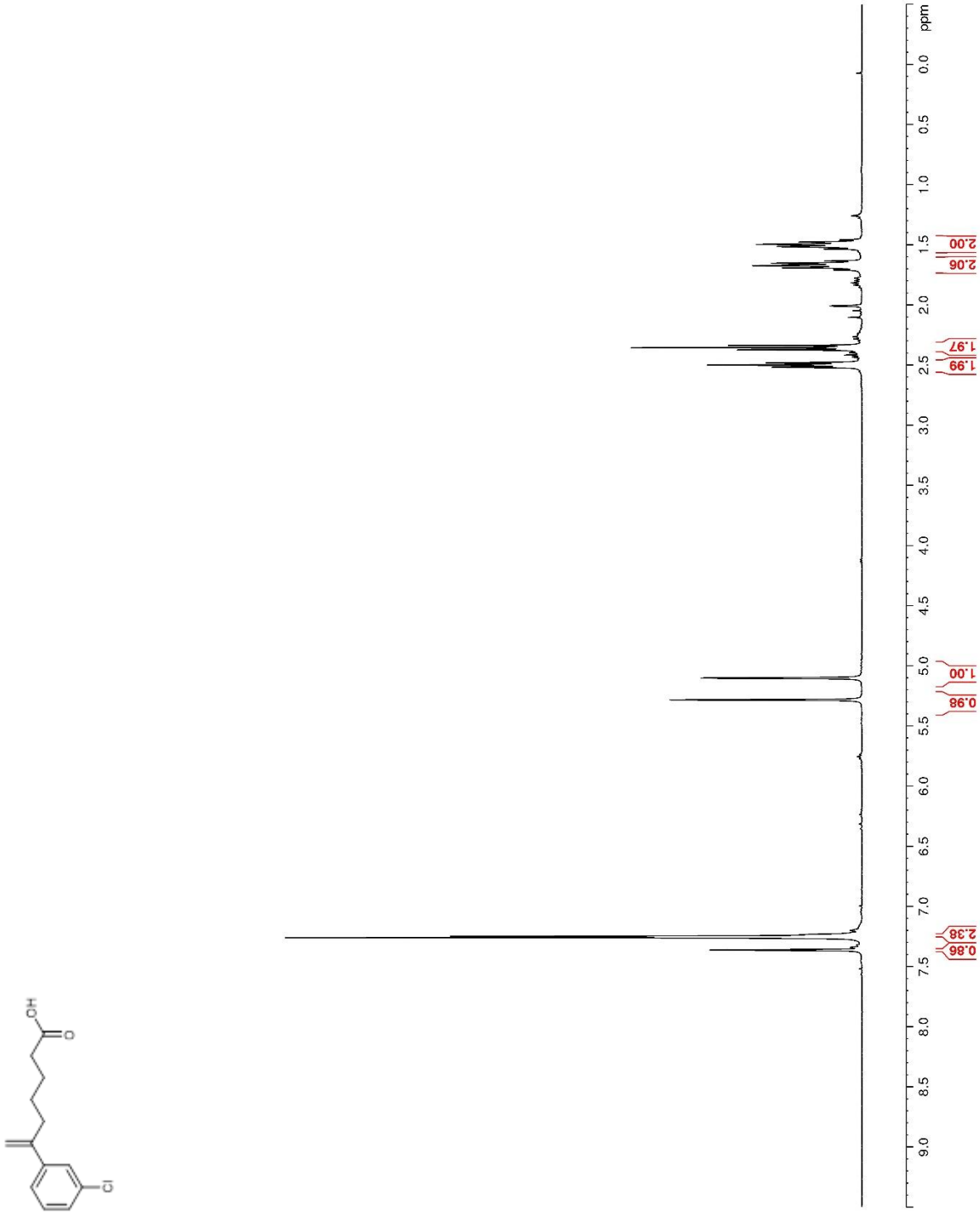


Figure 17. ^{13}C NMR (150 MHz, $CDCl_3$) of **5h**

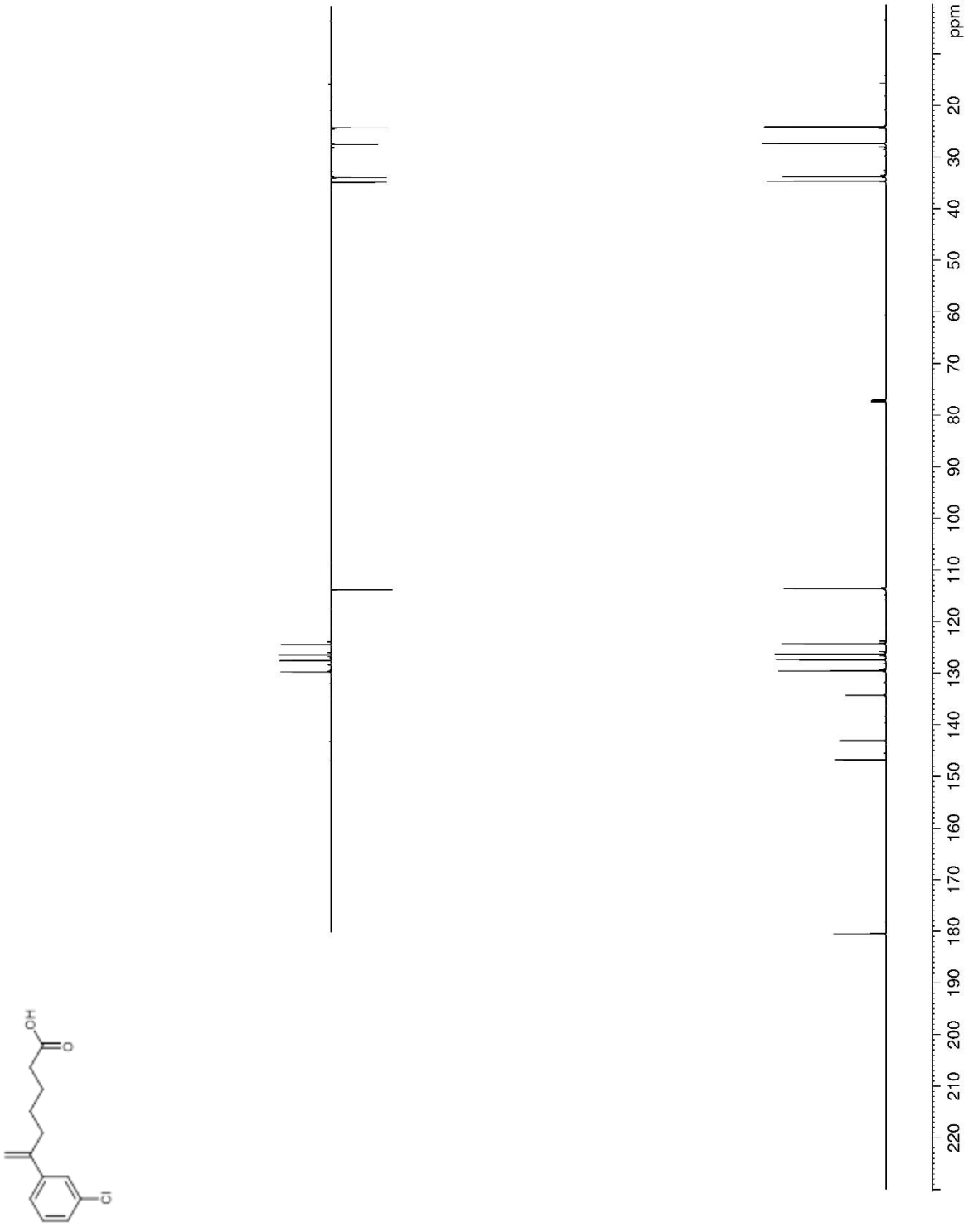


Figure 18. ^{1}H NMR (400 MHz**,** $CDCl_3$) of **5i**

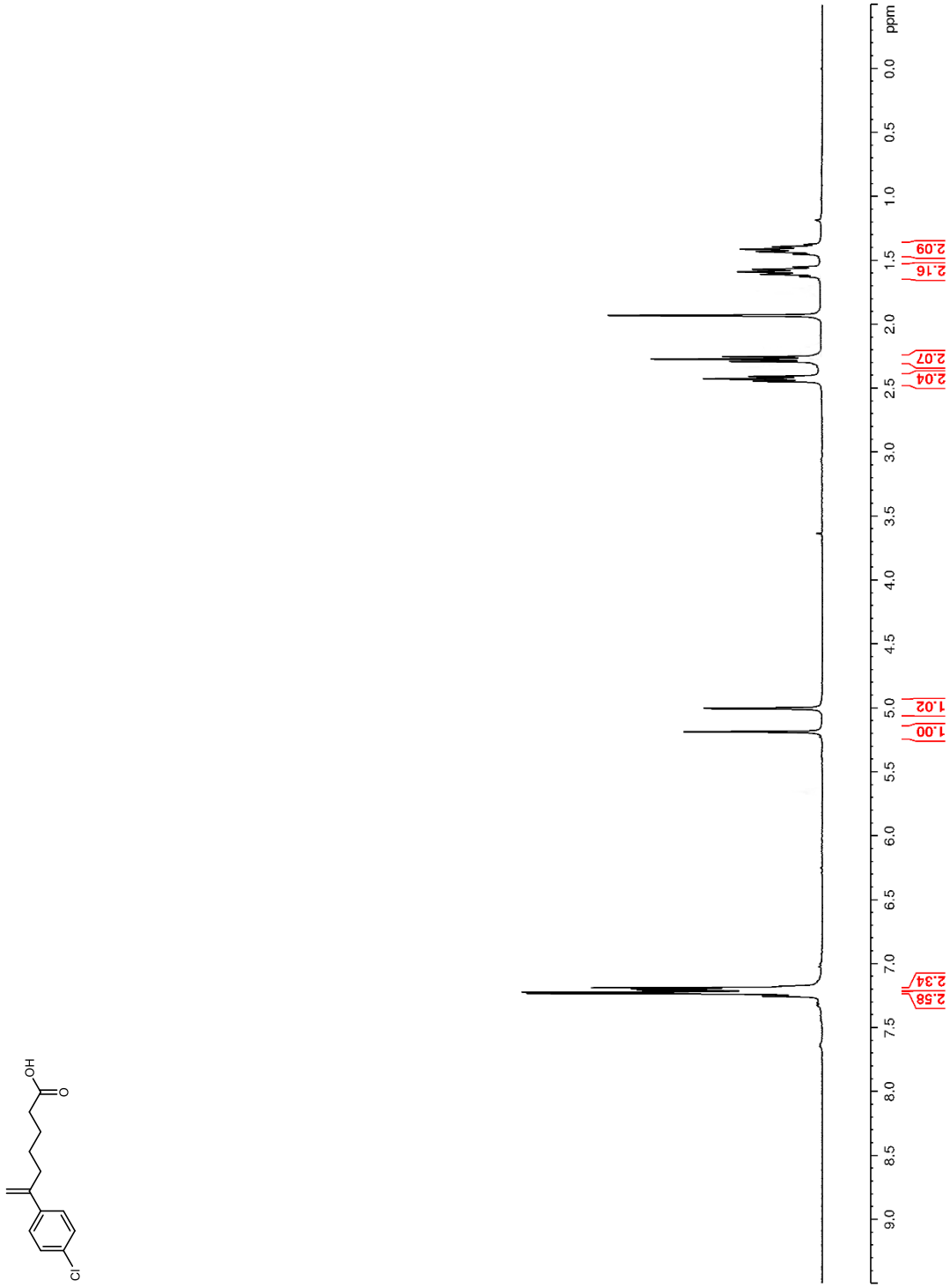


Figure 19. ^{13}C NMR (100 MHz, $CDCl_3$) of **5i**

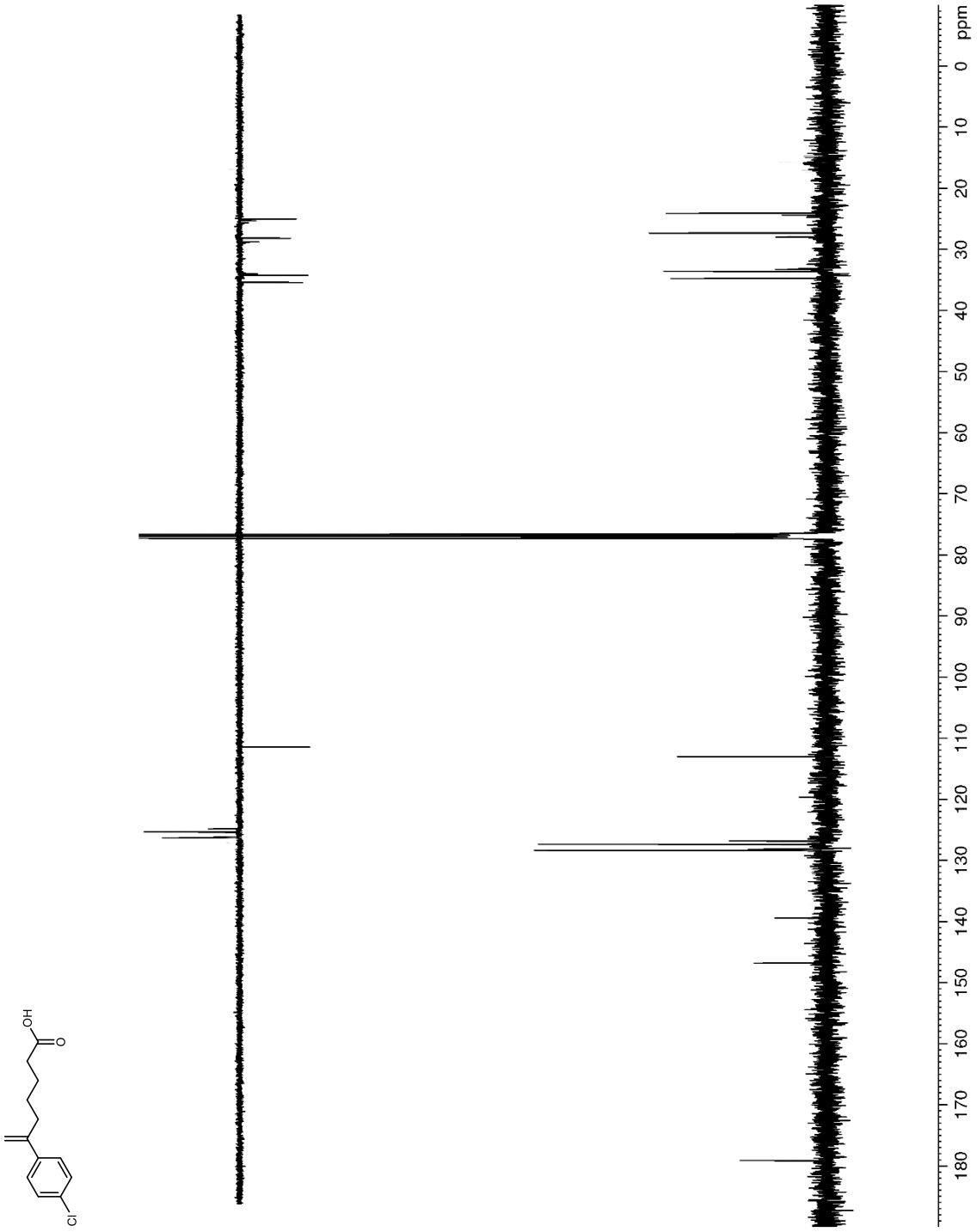


Figure 20. ^{1}H NMR (400 MHz**,** $CDCl_3$) of **5j**

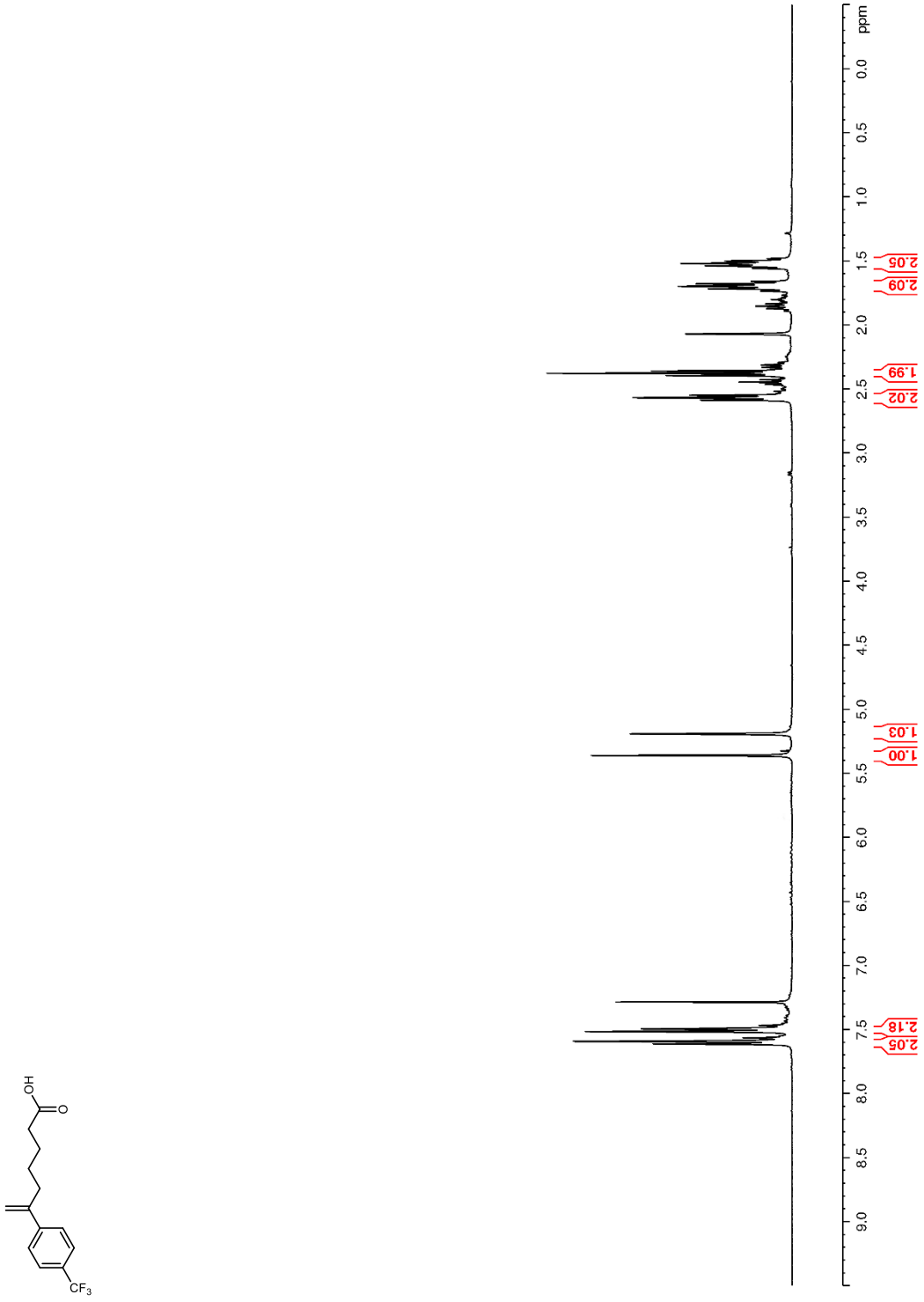


Figure 21. ^{13}C NMR (100 MHz, $CDCl_3$) of **5j**

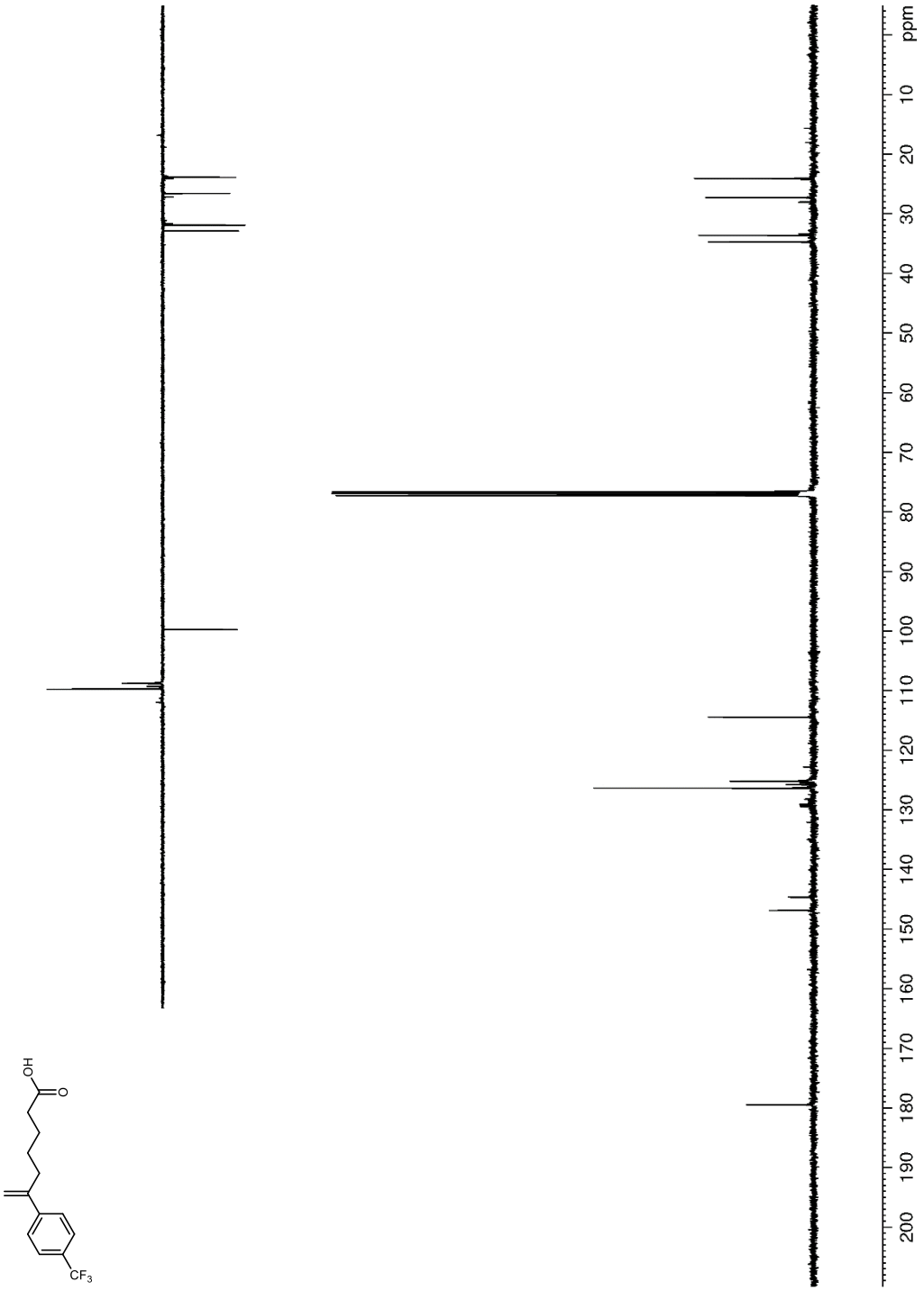


Figure 22. ^{19}F NMR (282 MHz, $CDCl_3$) of **5j**

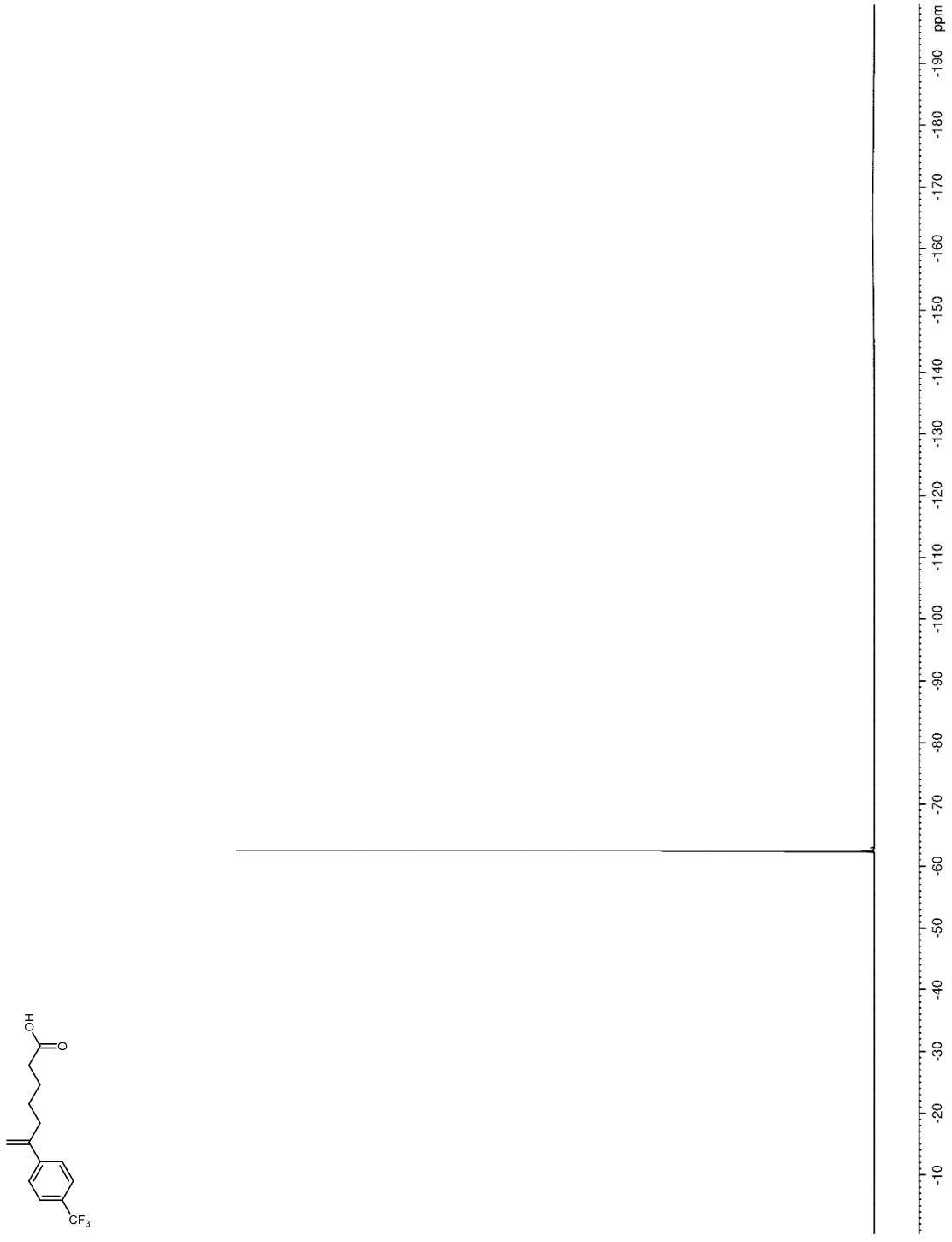


Figure 23. ^{1}H NMR (400 MHz**,** $CDCl_3$) of **5k**

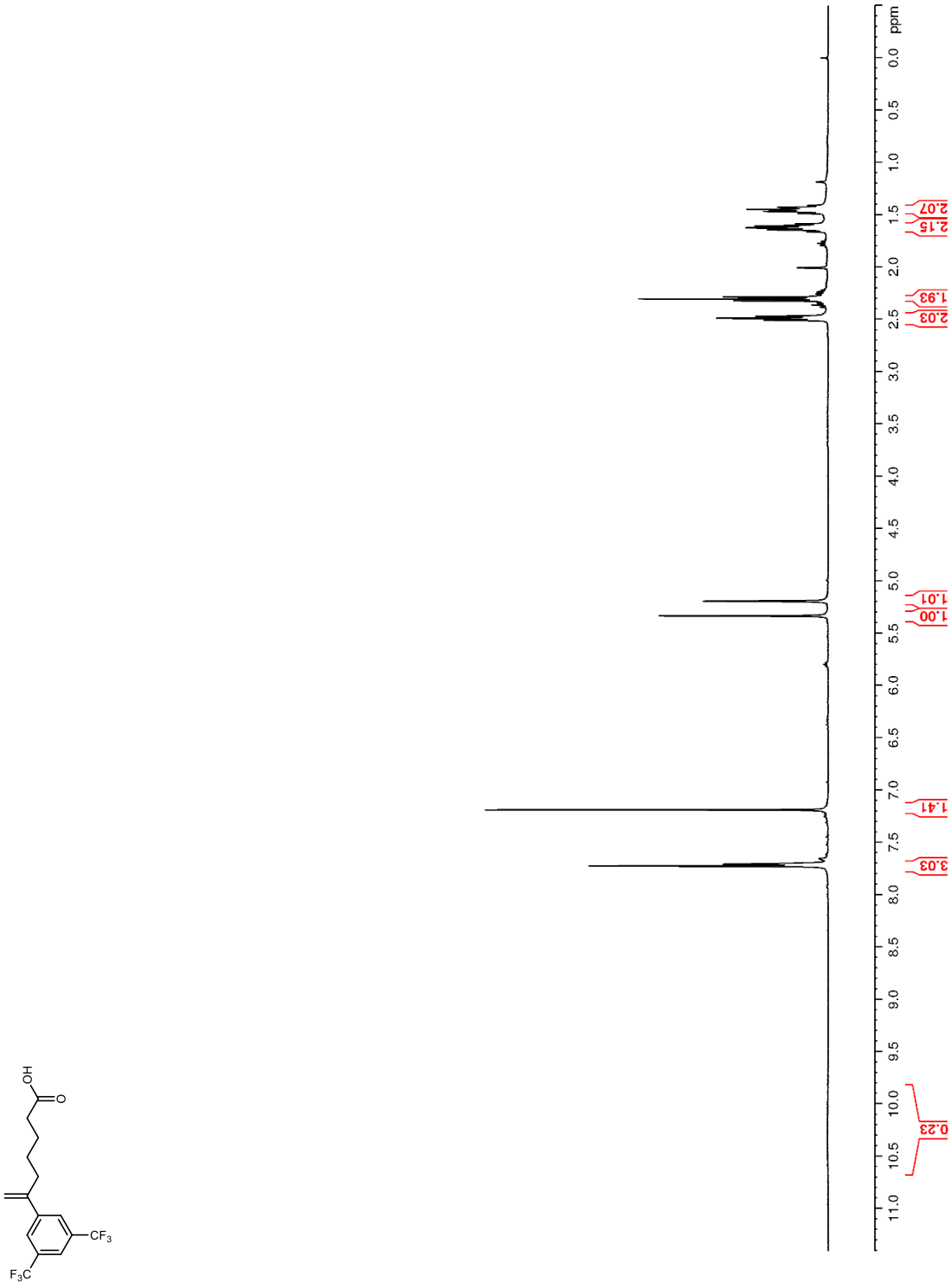


Figure 24. ^{13}C NMR (100 MHz, $CDCl_3$) of **5k**

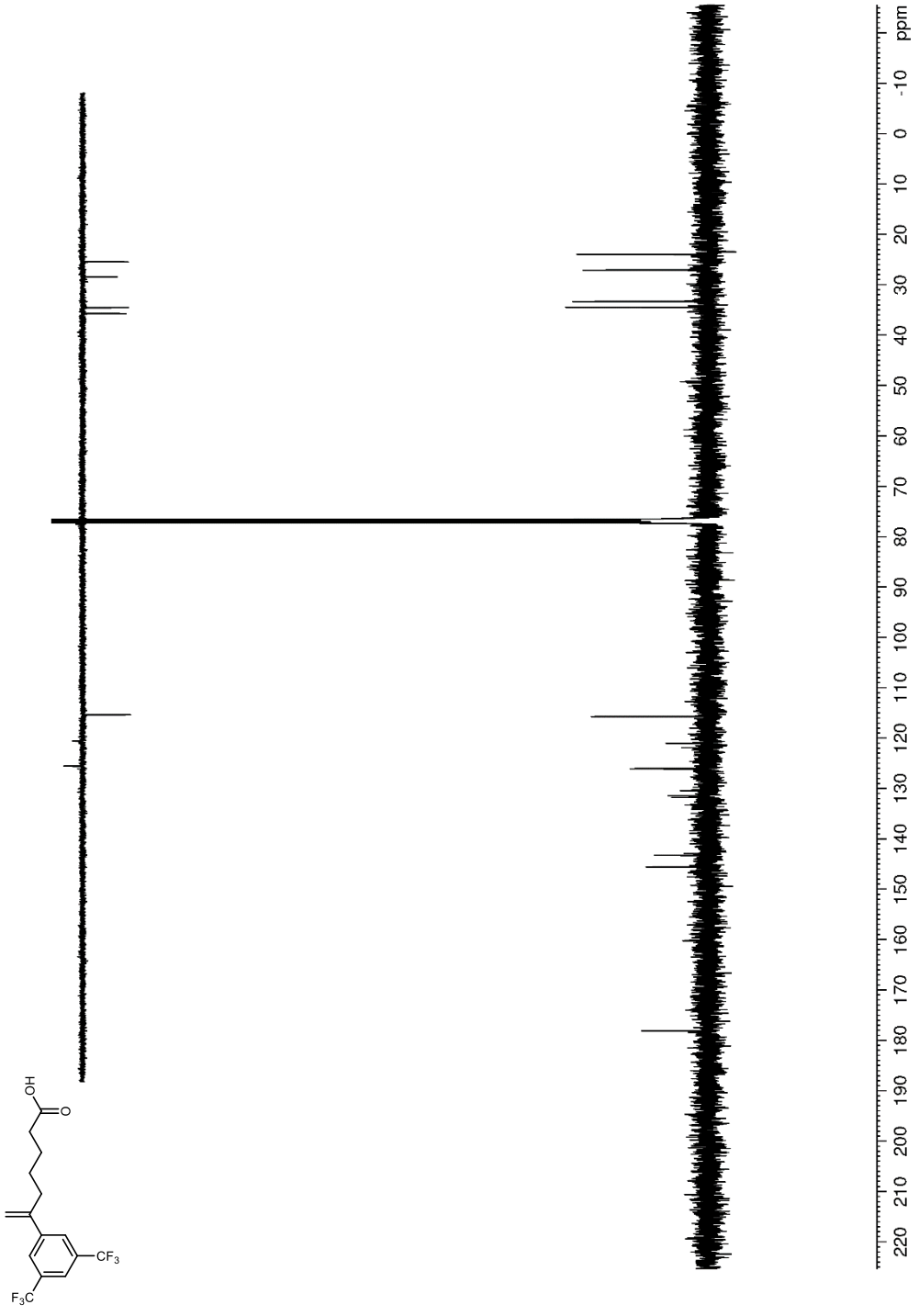


Figure 25. ^{19}F NMR (282 MHz, $CDCl_3$) of **5k**

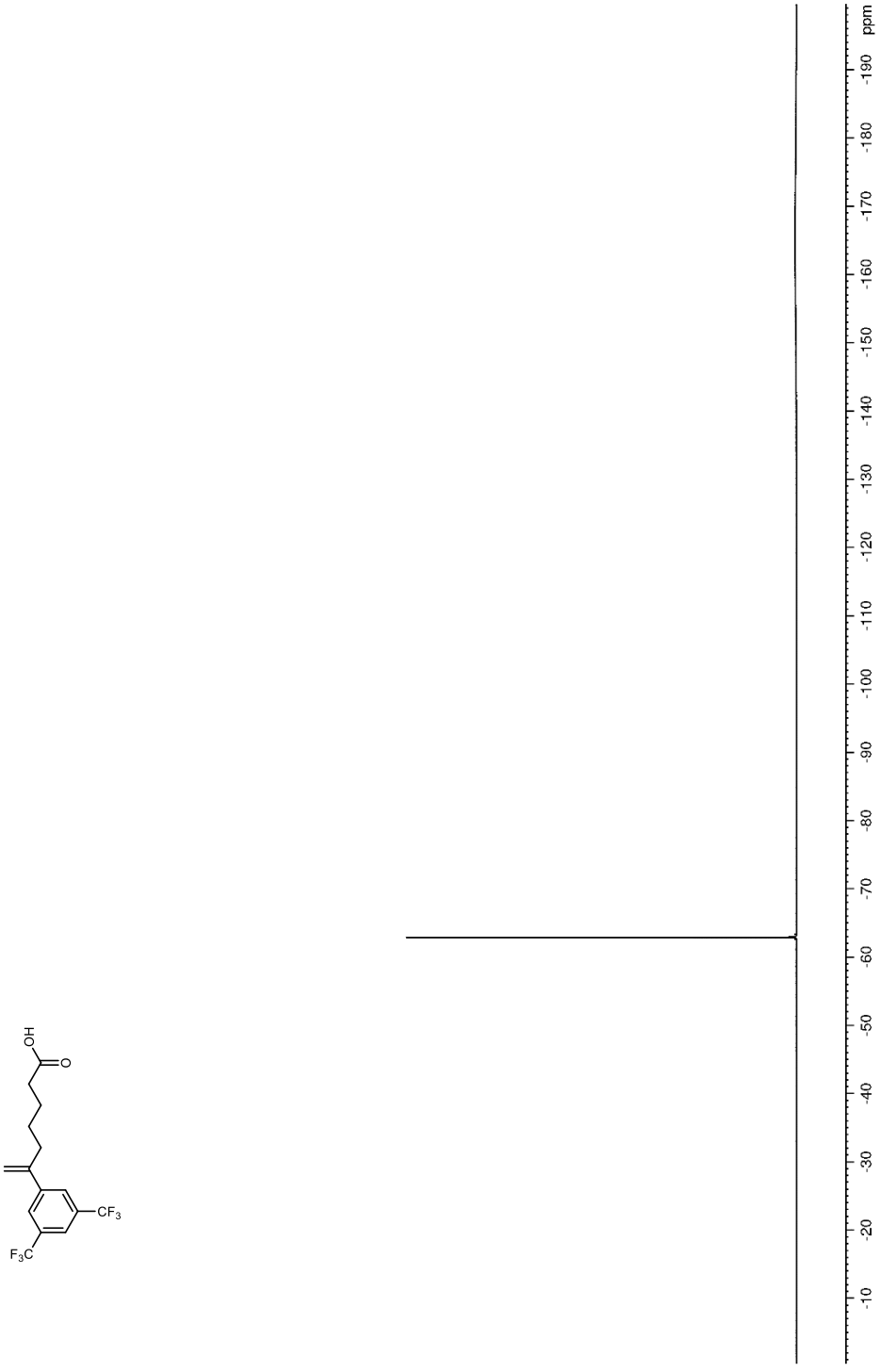


Figure 26. ^{1}H NMR (400 MHz**,** $CDCl_3$) of **5l**

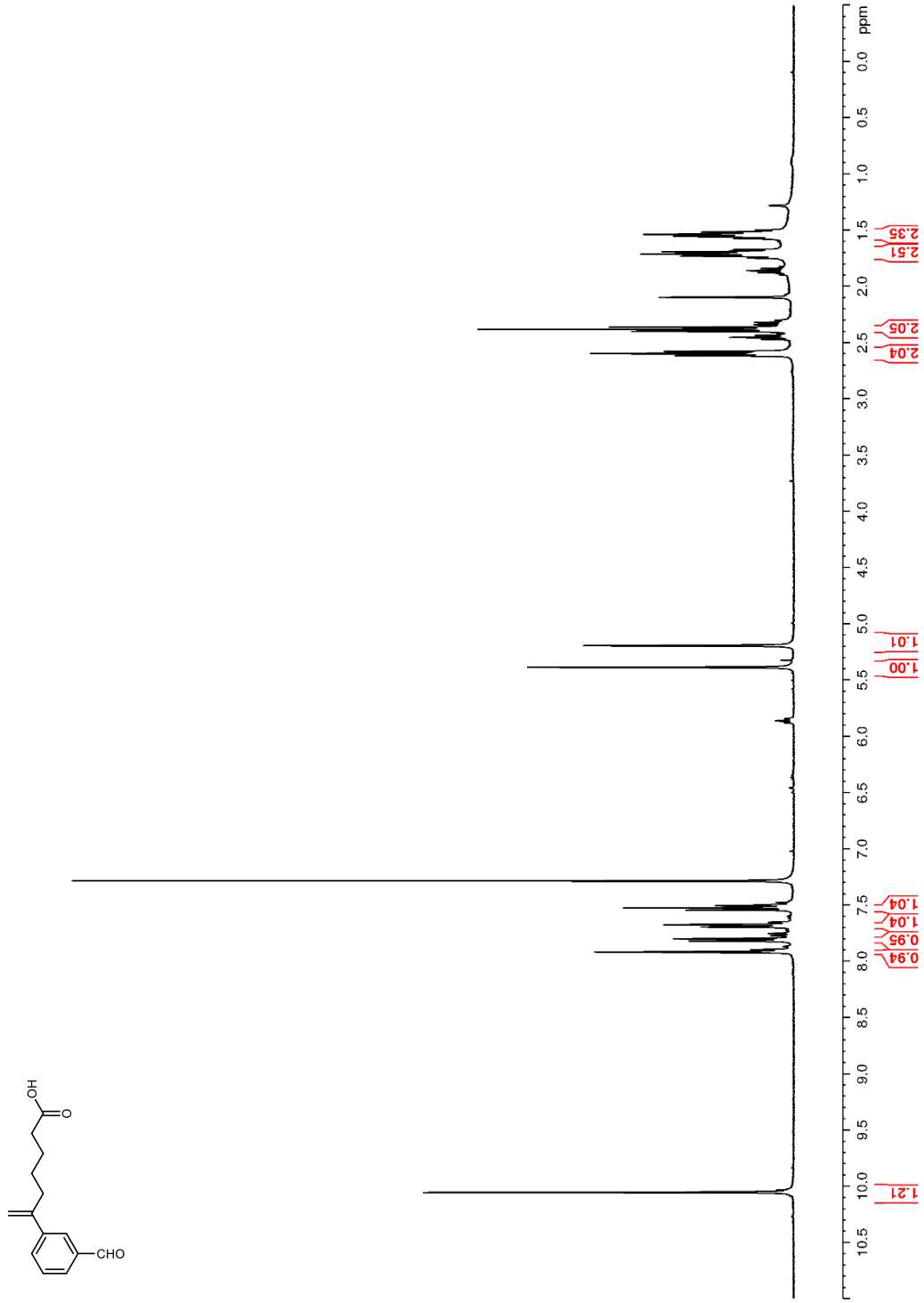


Figure 27. ^{13}C NMR (100 MHz, $CDCl_3$) of **5l**

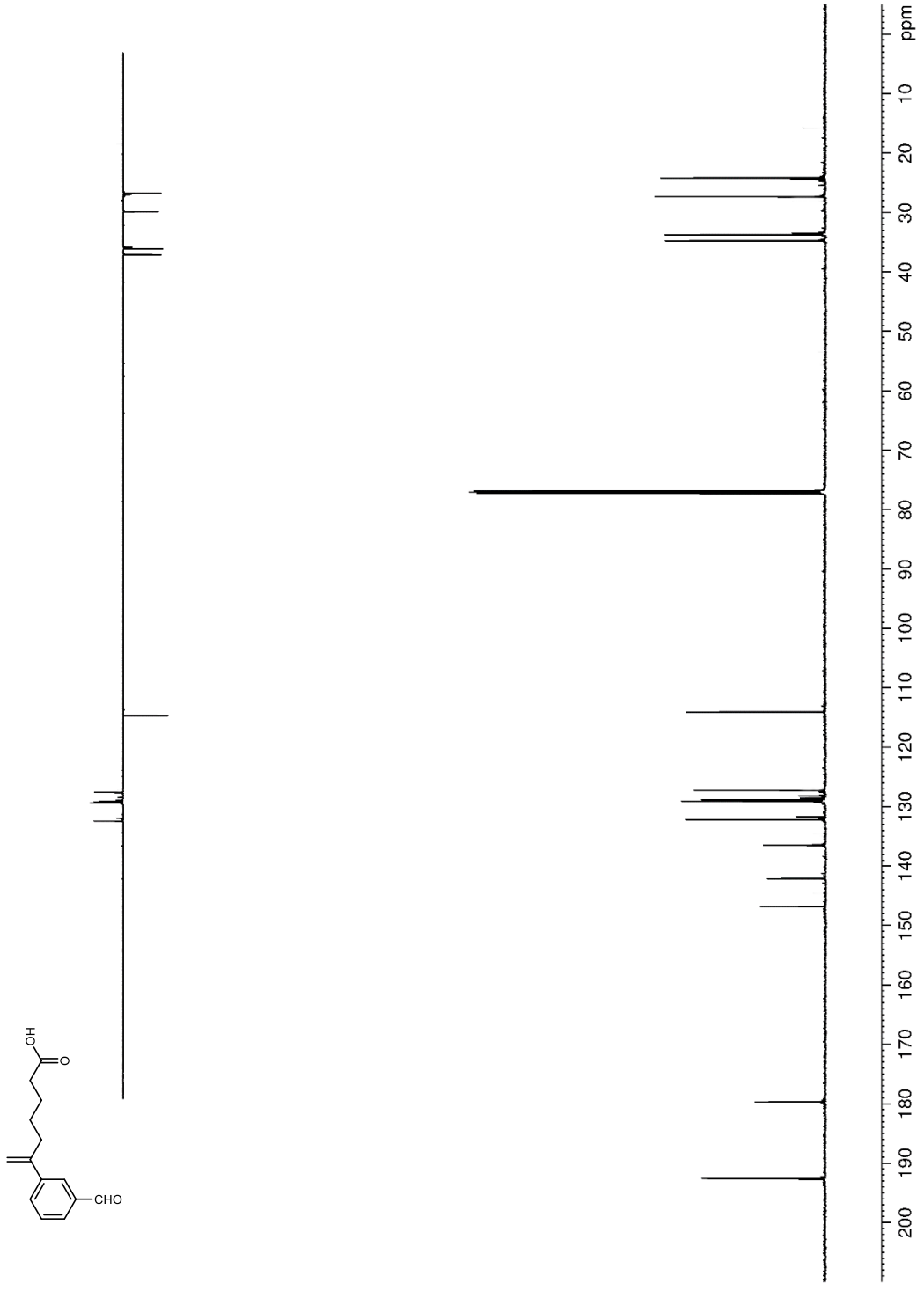


Figure 28. ^{1}H NMR (400 MHz**,** $CDCl_3$) of **5m**

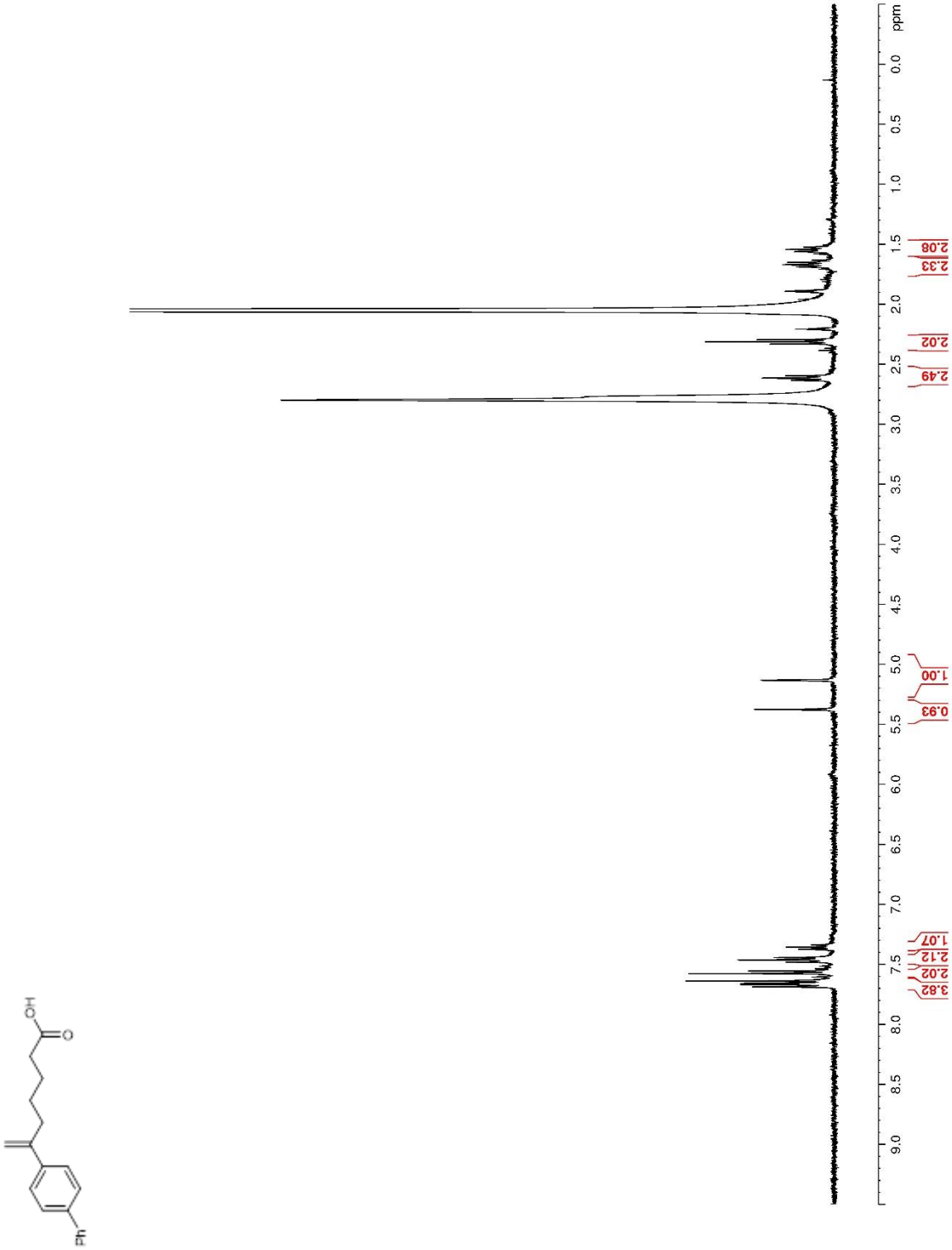
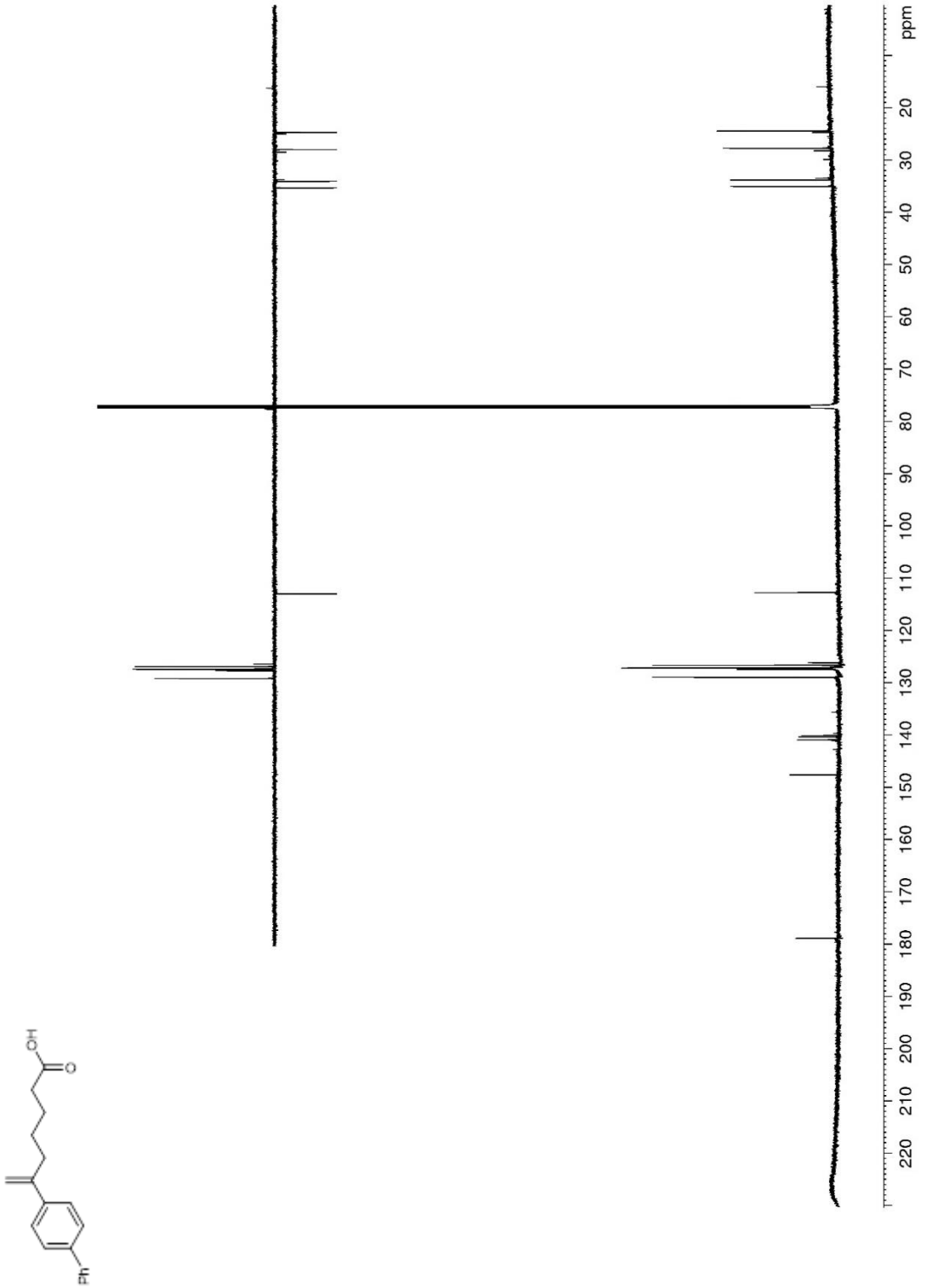


Figure 29. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **5m**



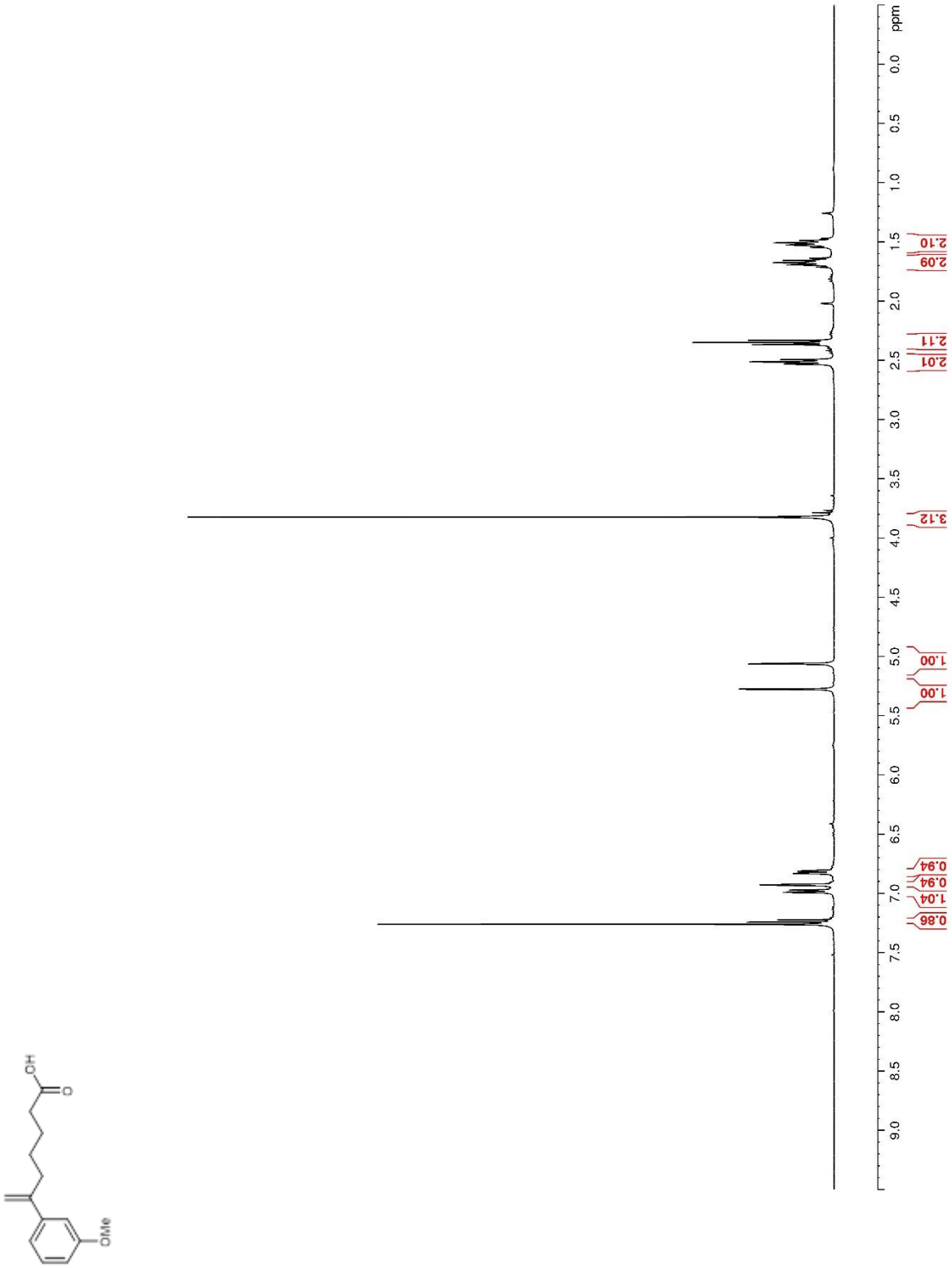

ppm
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
8.0
8.5
9.0
2.10
2.09
2.11
2.01
3.12
1.00
1.00
0.94
0.94
1.04
0.86
OH
O
OMe

Figure 30. ^{13}C NMR (150 MHz, $CDCl_3$) of **5n**

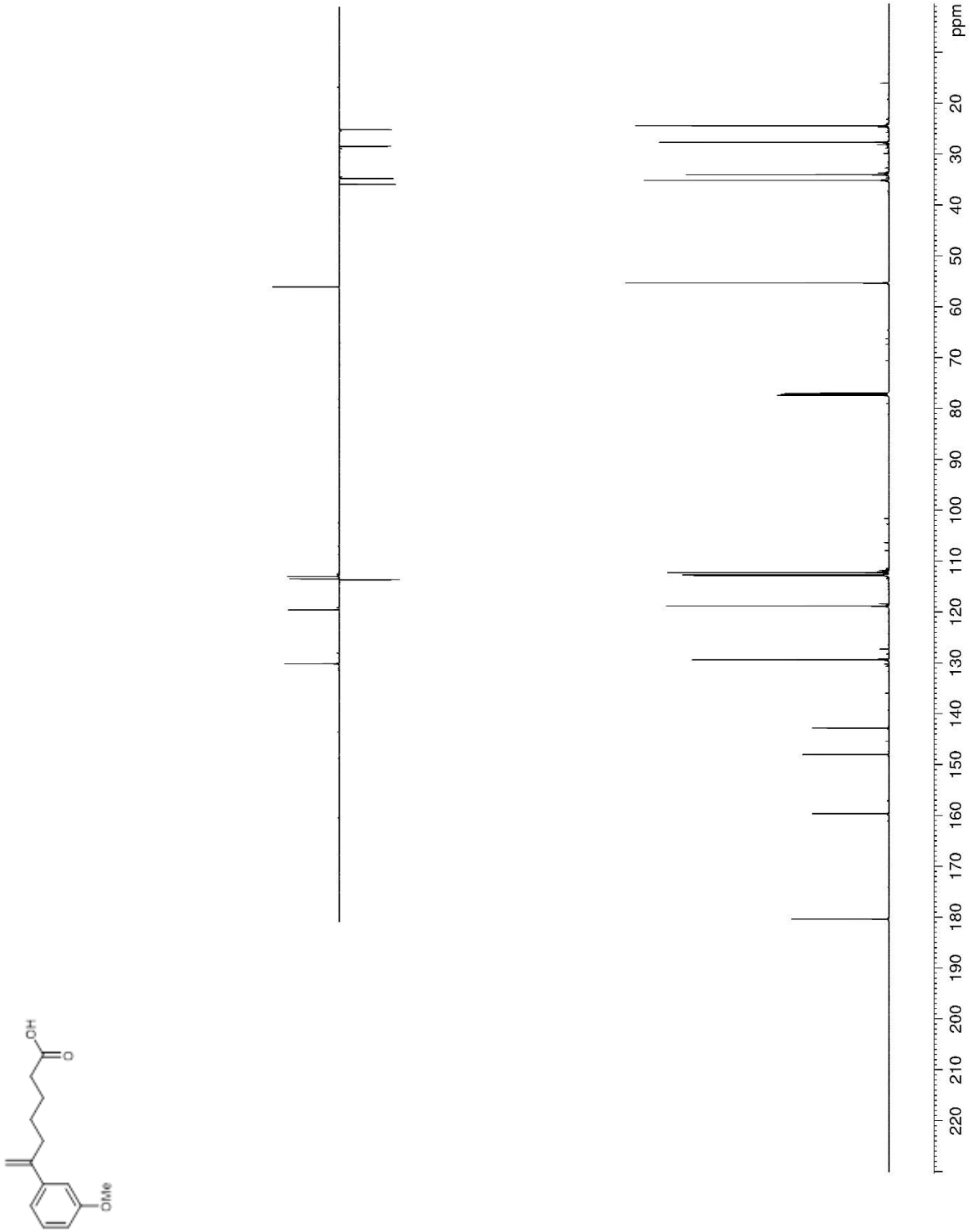


Figure 31. ^{1}H NMR (400 MHz, $CDCl_3$) of **5o**

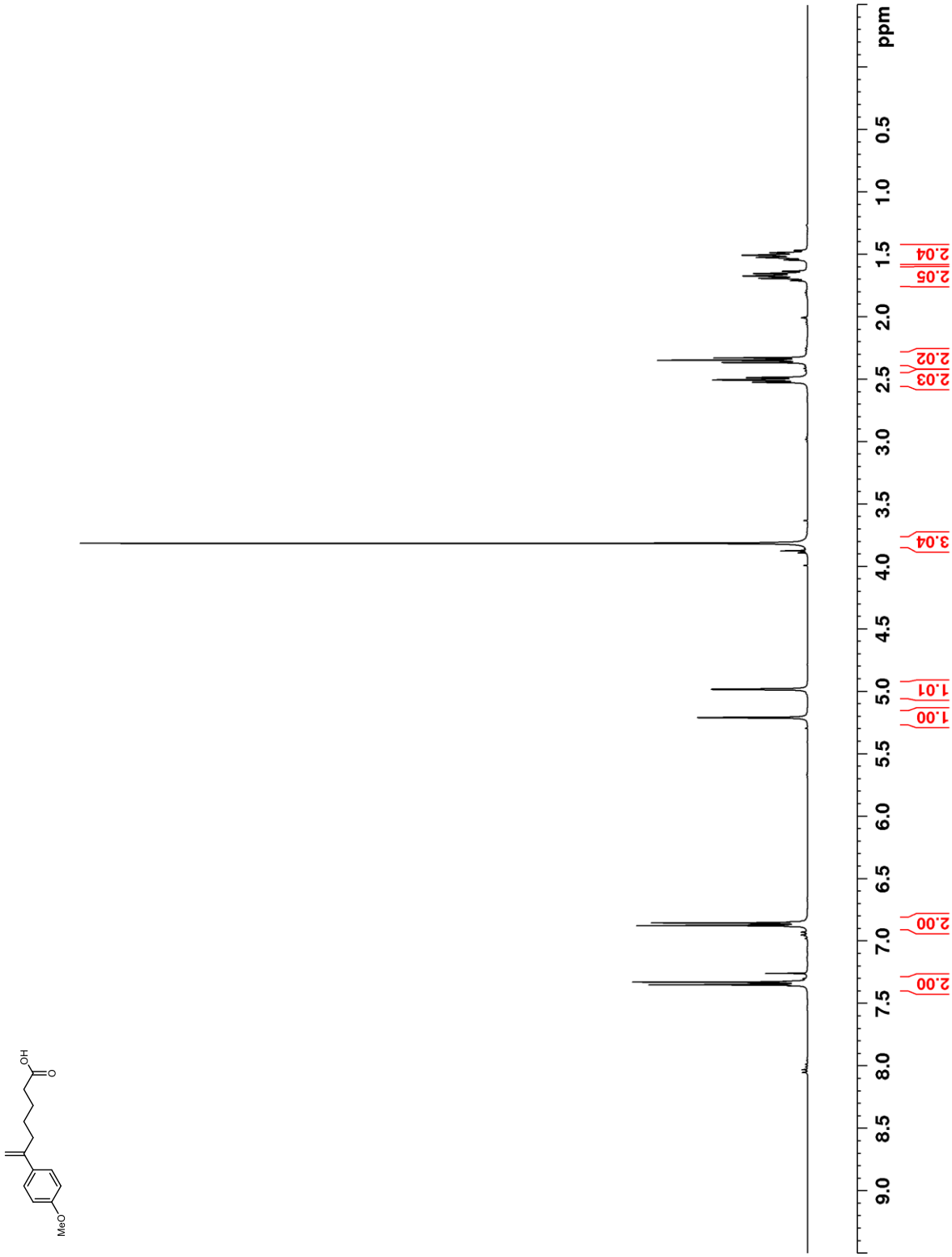
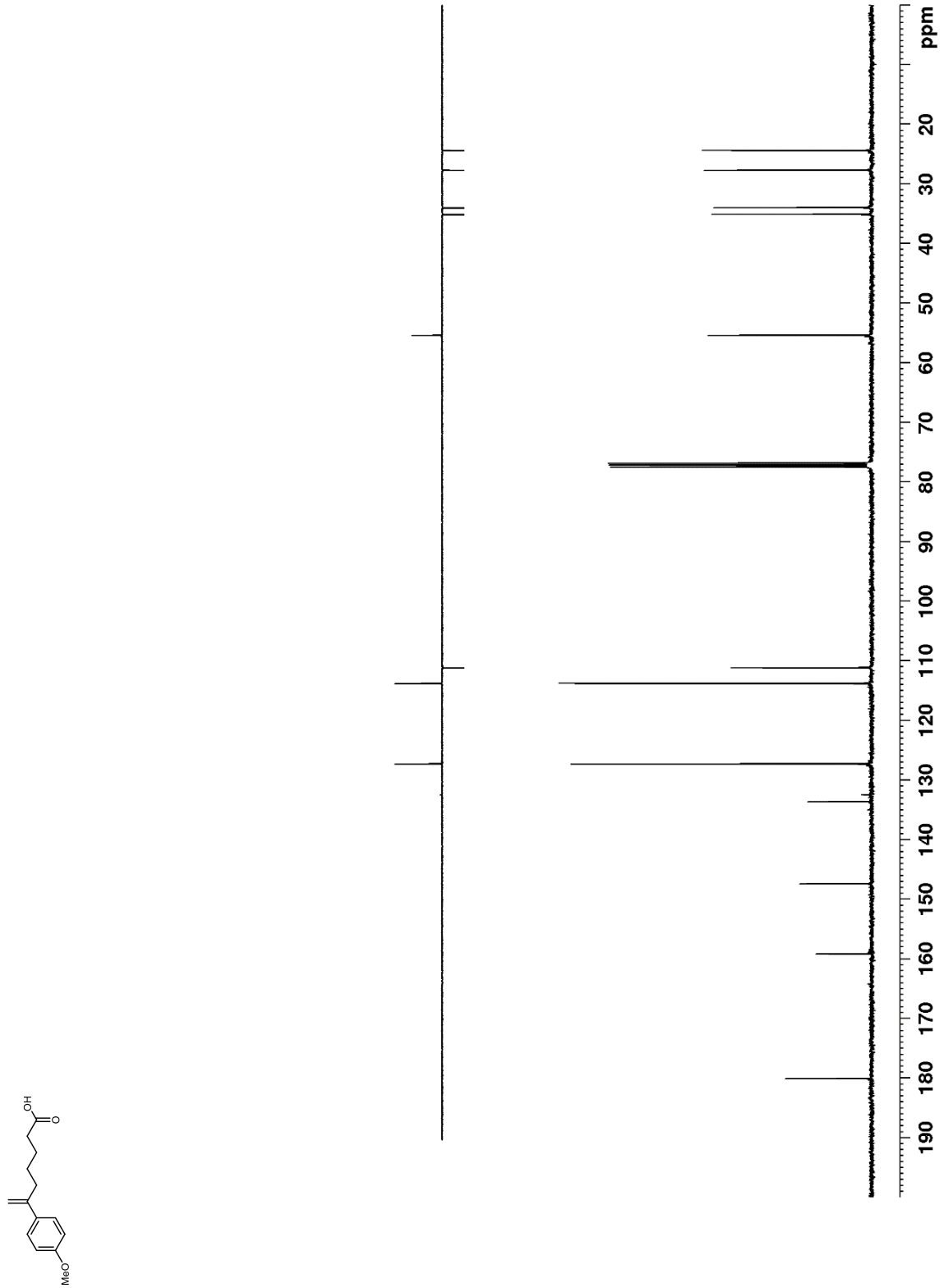
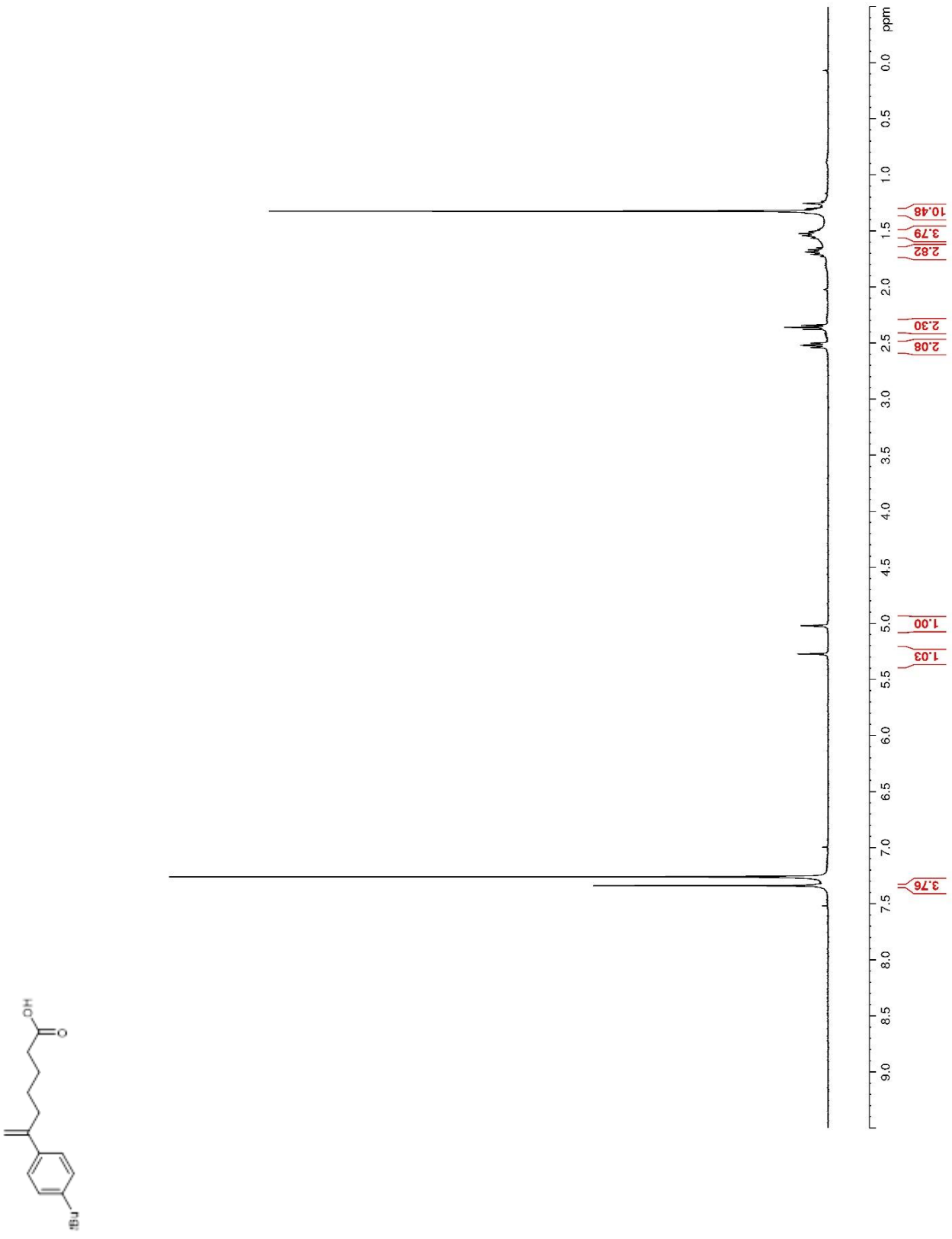


Figure 32. ^{13}C NMR (100 MHz, $CDCl_3$) of **5o**




ppm
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
8.0
8.5
9.0
10.48
3.79
2.82
2.30
2.08
1.00
1.03
3.76
HO
O
F

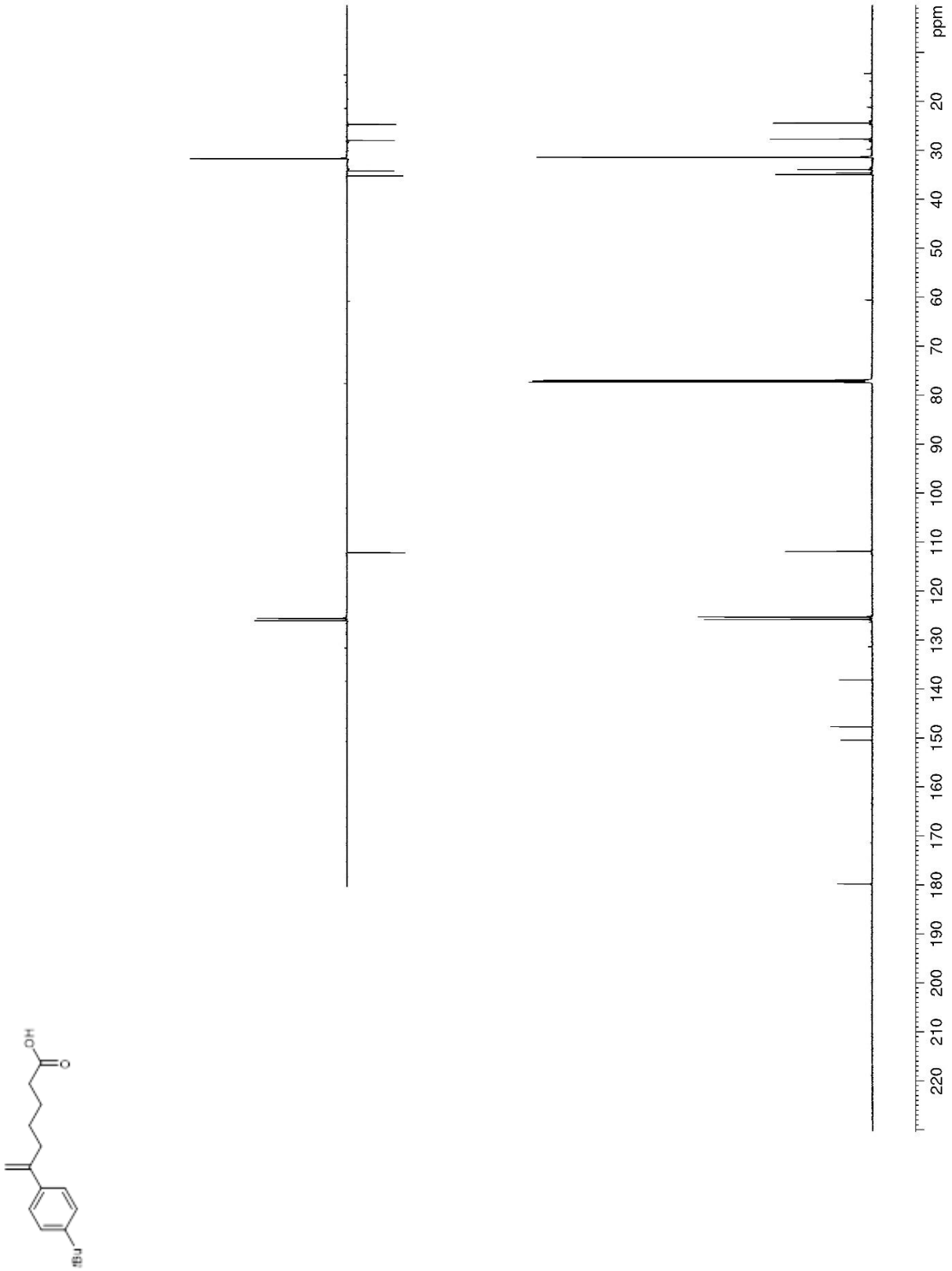

ppm
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
HO
O
Br

Figure 33. ^{1}H NMR (400 MHz**,** $CDCl_3$) of **5q**

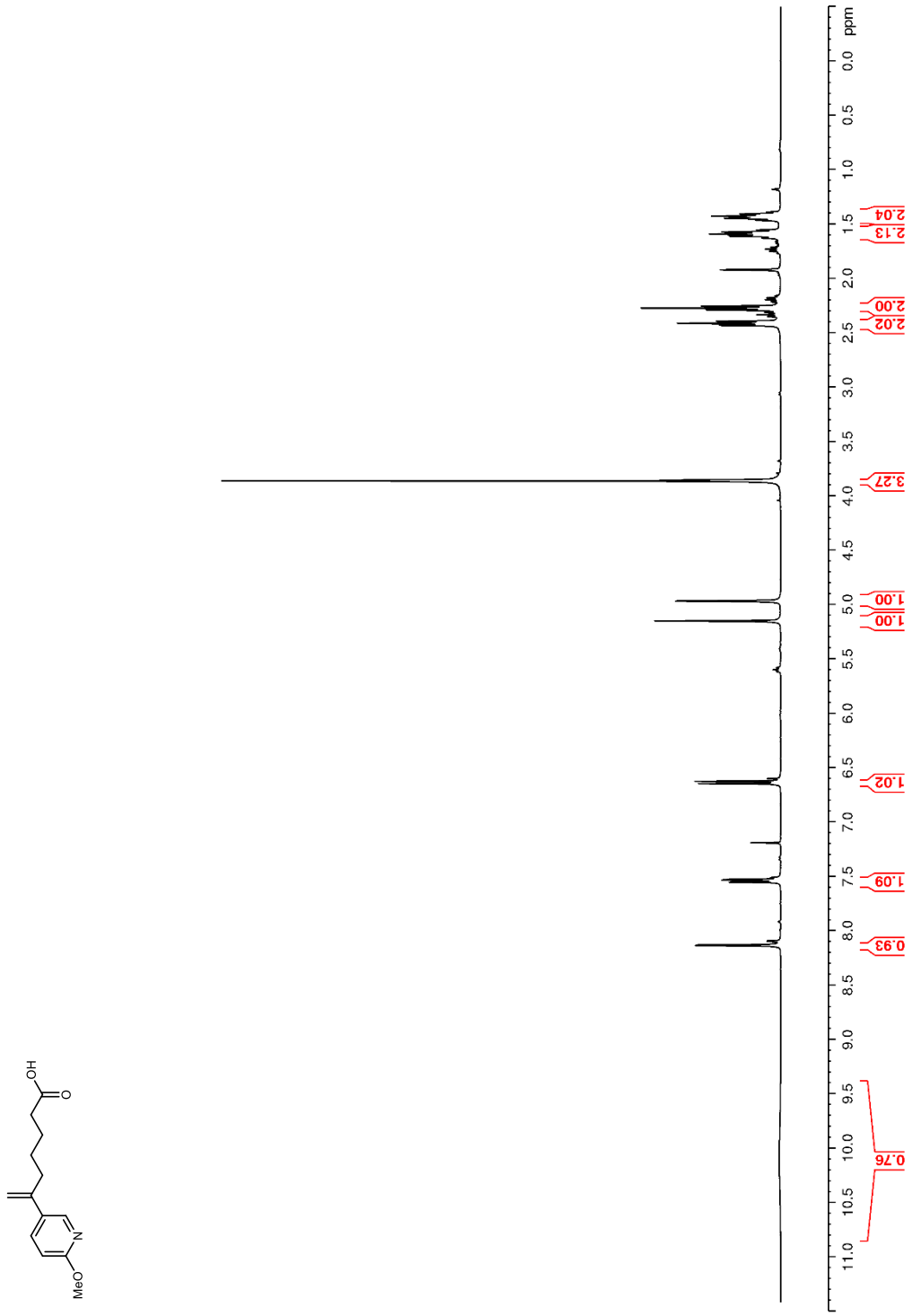


Figure 34. ^{13}C NMR (100 MHz**,** $CDCl_3$) of **5q**

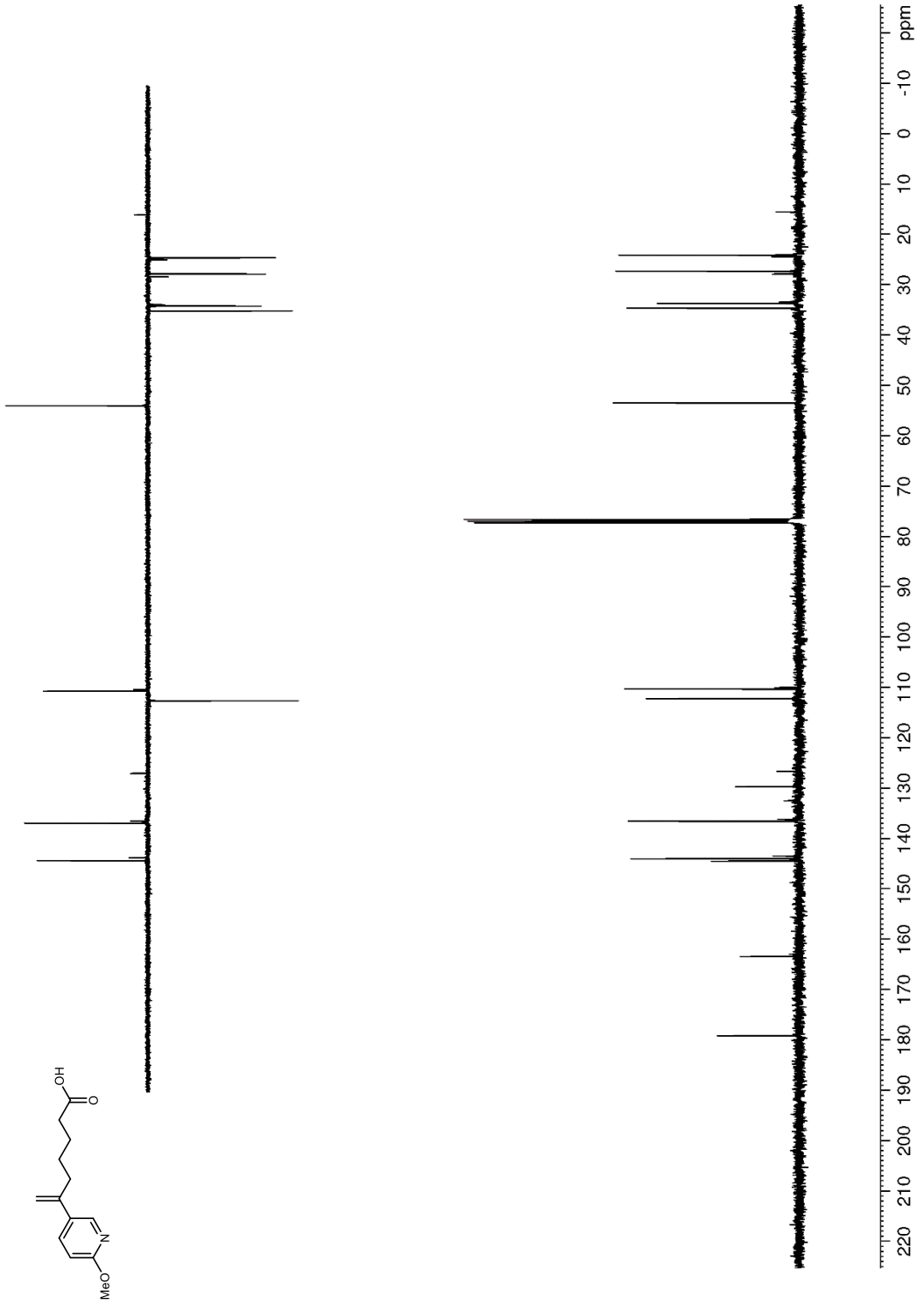


Figure 35. ^{1}H NMR (400 MHz, $CDCl_3$) of **5s**

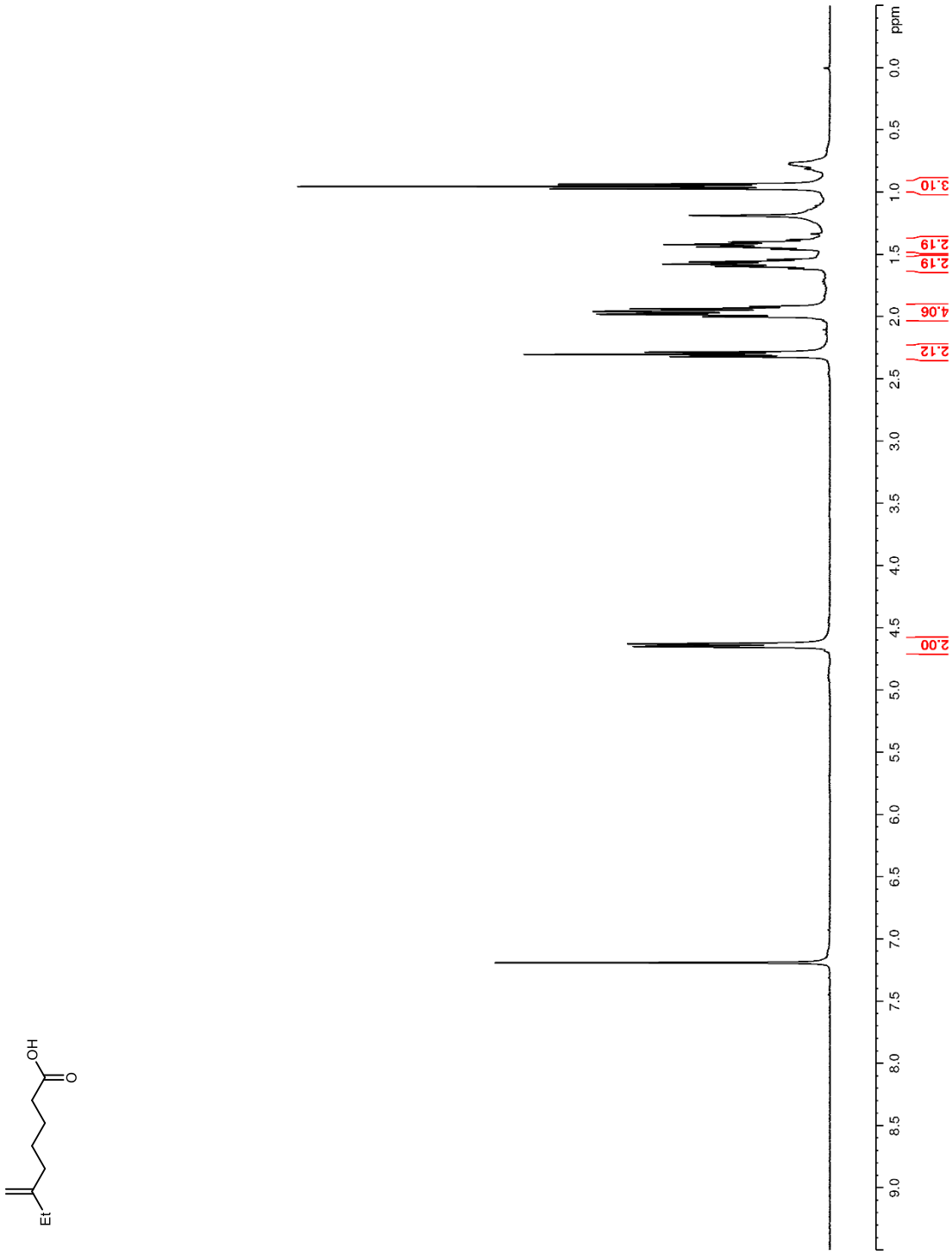


Figure 36. ^{13}C NMR (100 MHz**,** $CDCl_3$) of **5s**

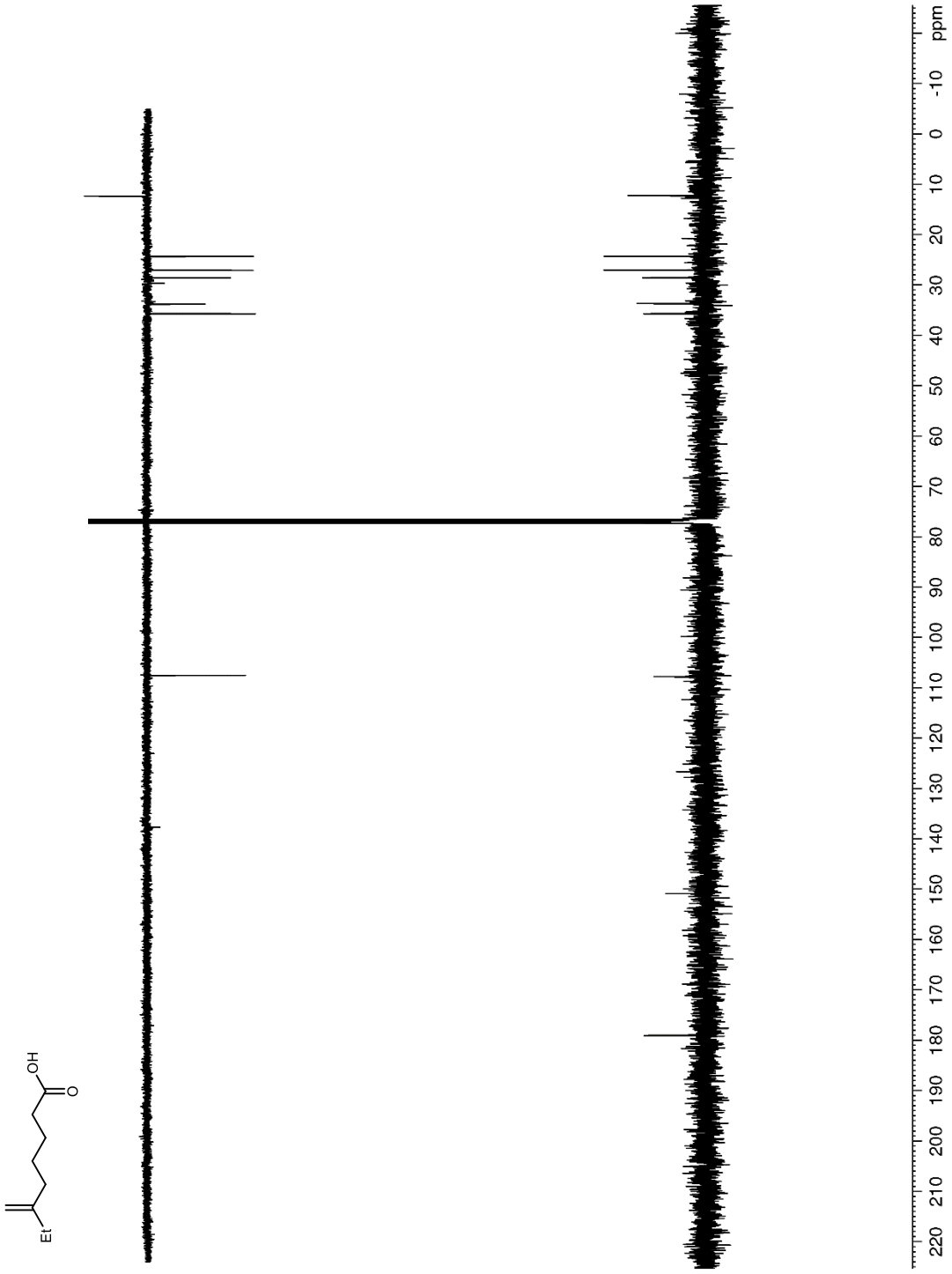


Figure 37. ^{1}H NMR (400 MHz, $(CD_3)_2CO$) of **S2**

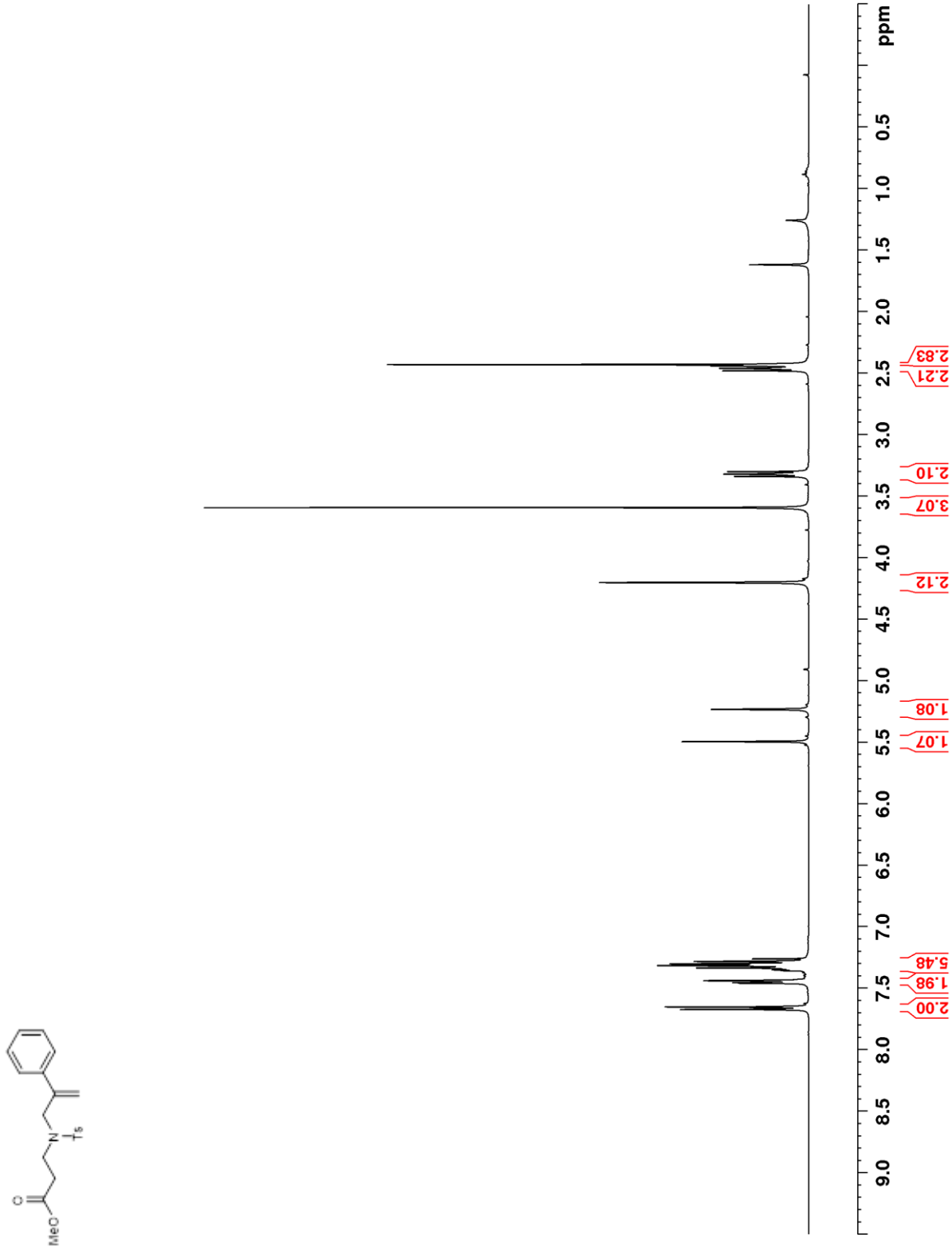


Figure 38. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **S2**

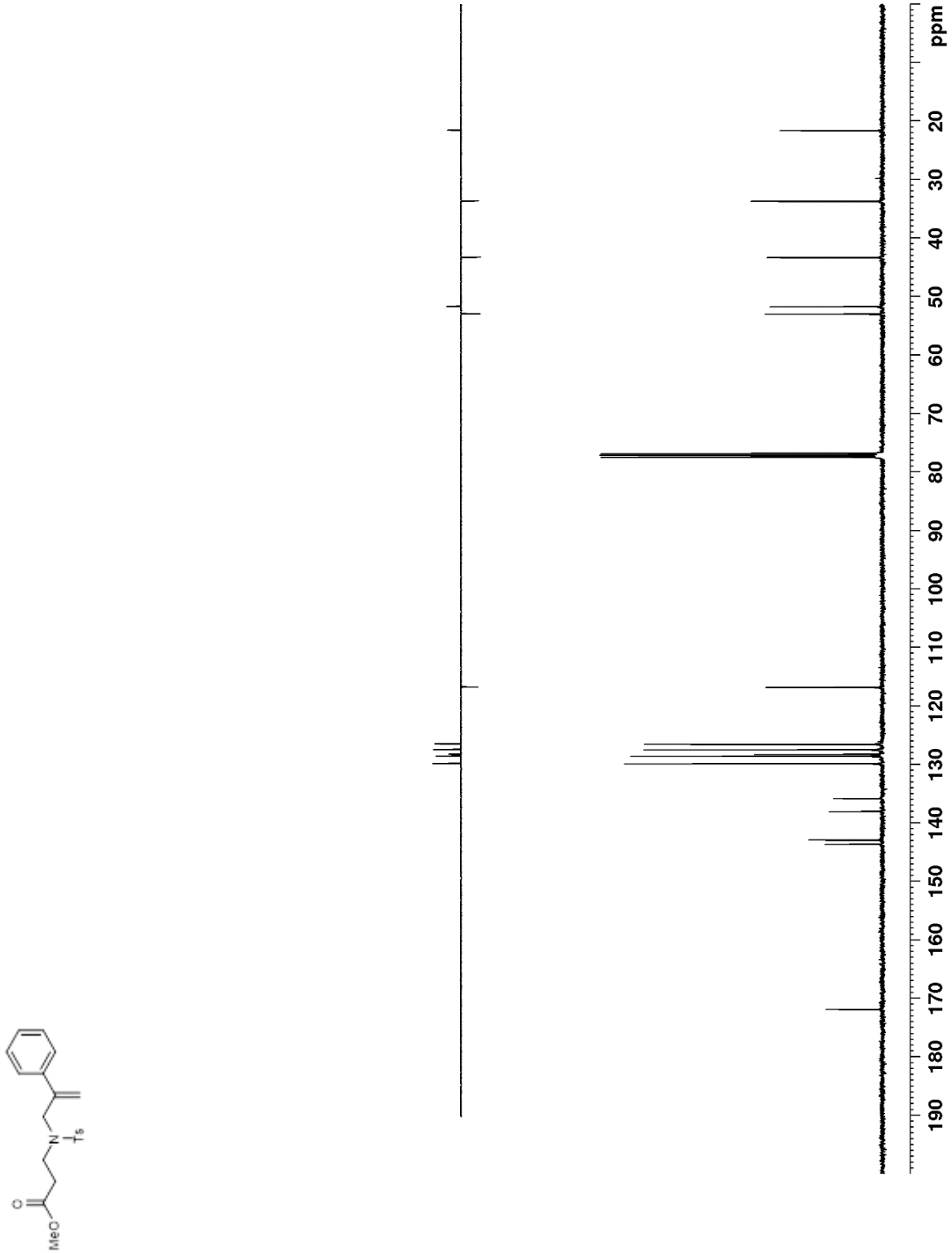


Figure 39. ^{1}H NMR (400 MHz, $(CD_3)_2CO$) of **9**

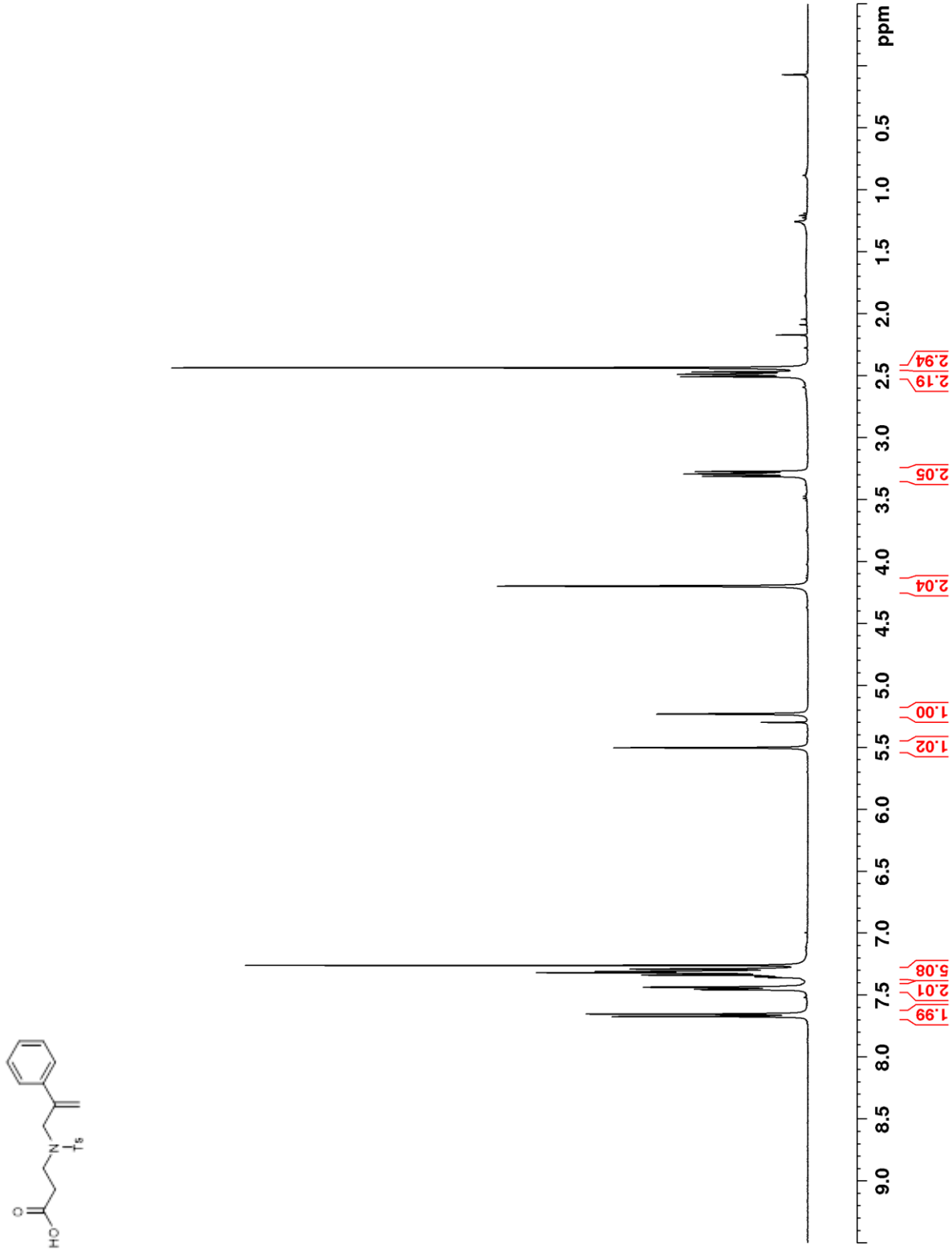


Figure 40. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **9**

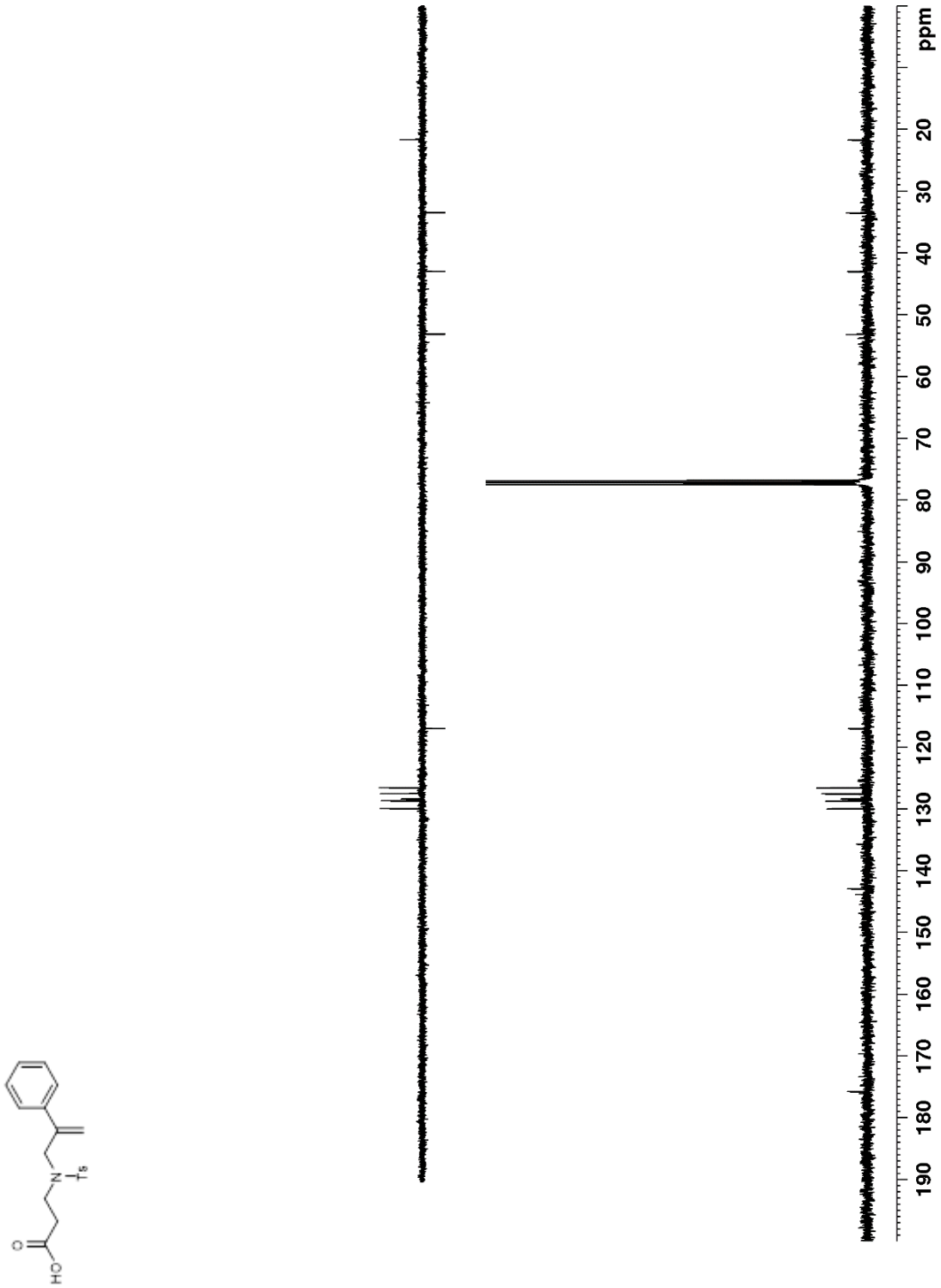


Figure 41. ^{1}H NMR (400 MHz, $(CD_3)_2CO$) of **S3**

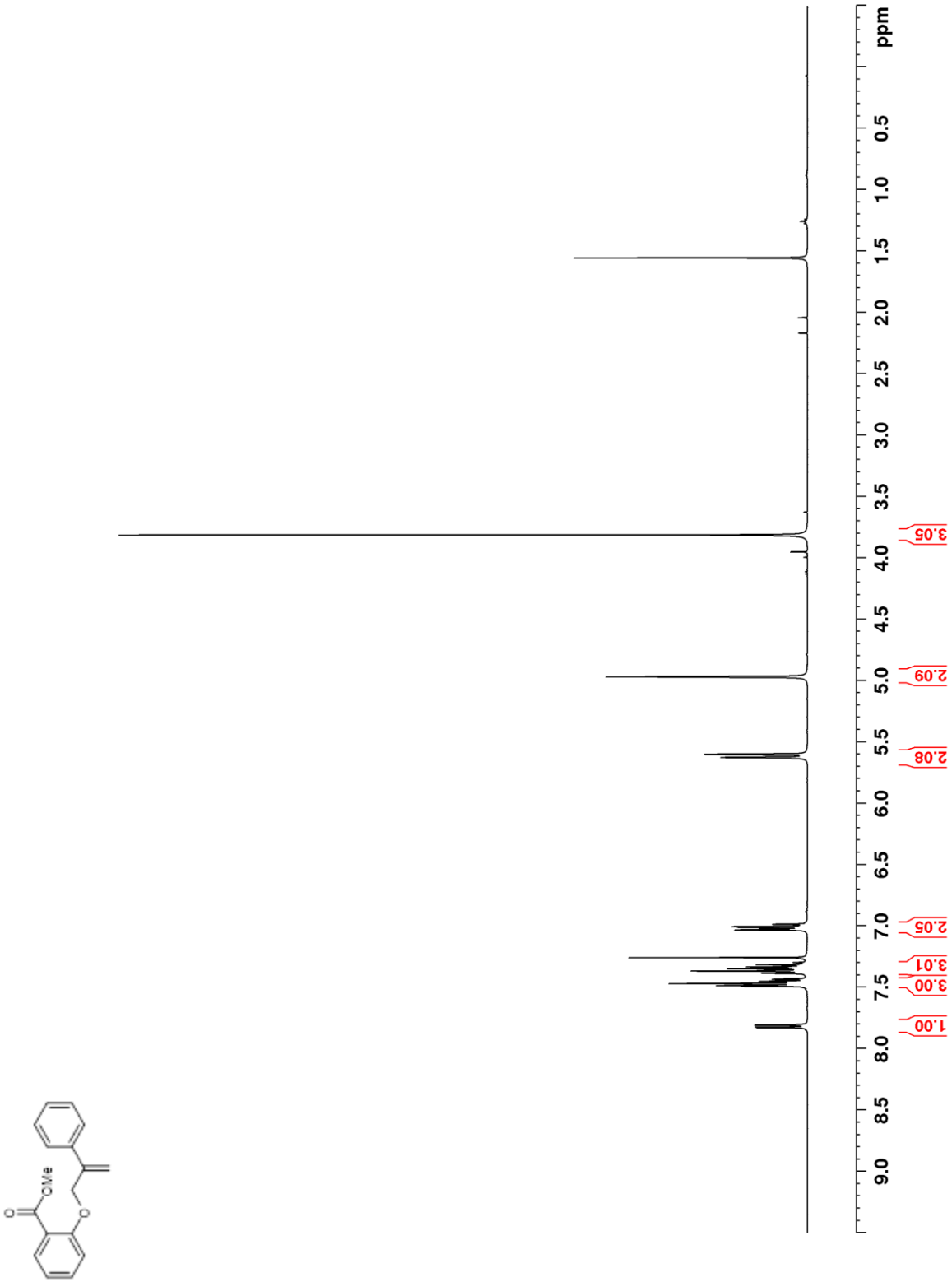


Figure 42. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **S3**

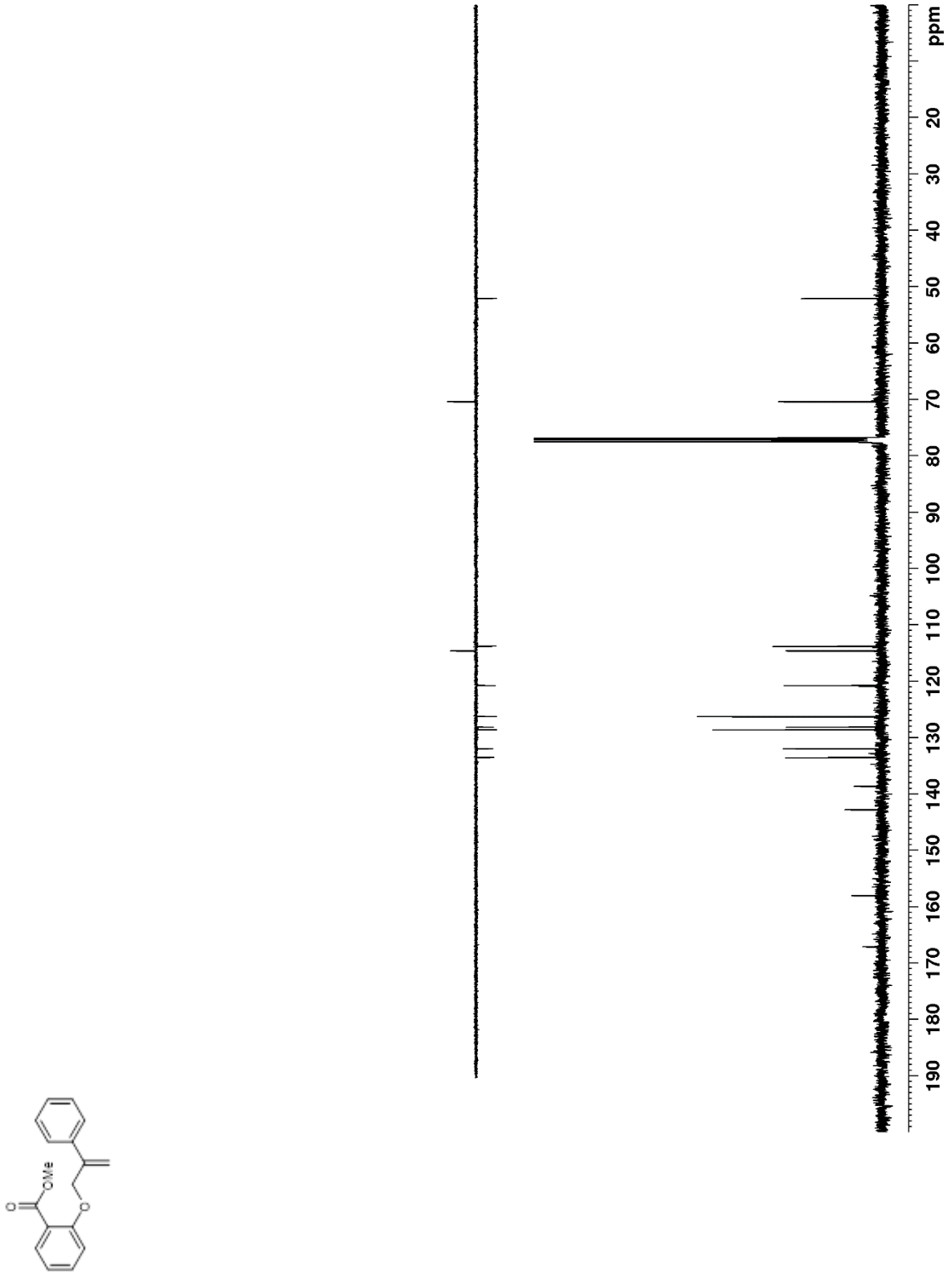


Figure 43. ^{1}H NMR (400 MHz, $(CD_3)_2CO$) of **11**

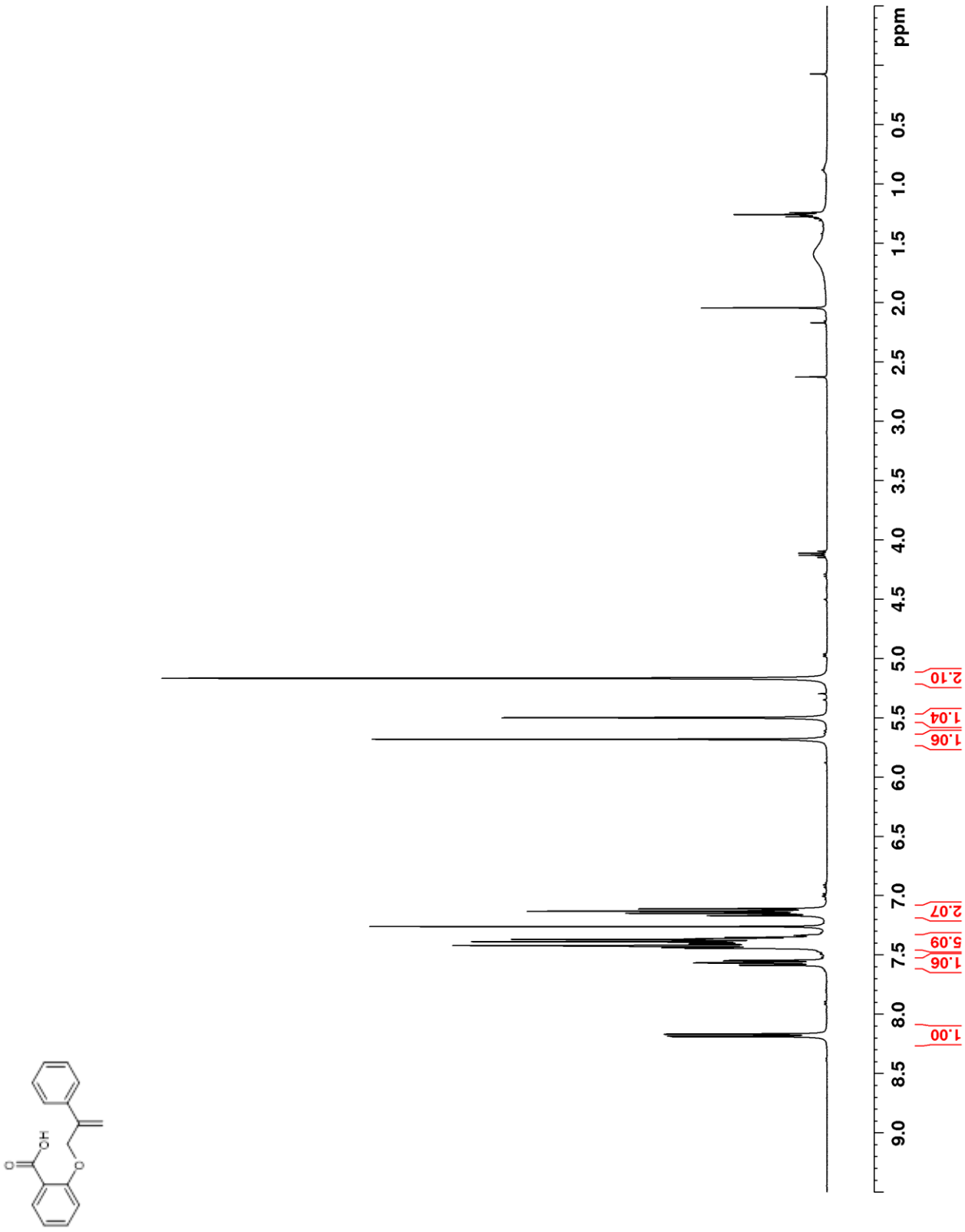


Figure 44. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **11**

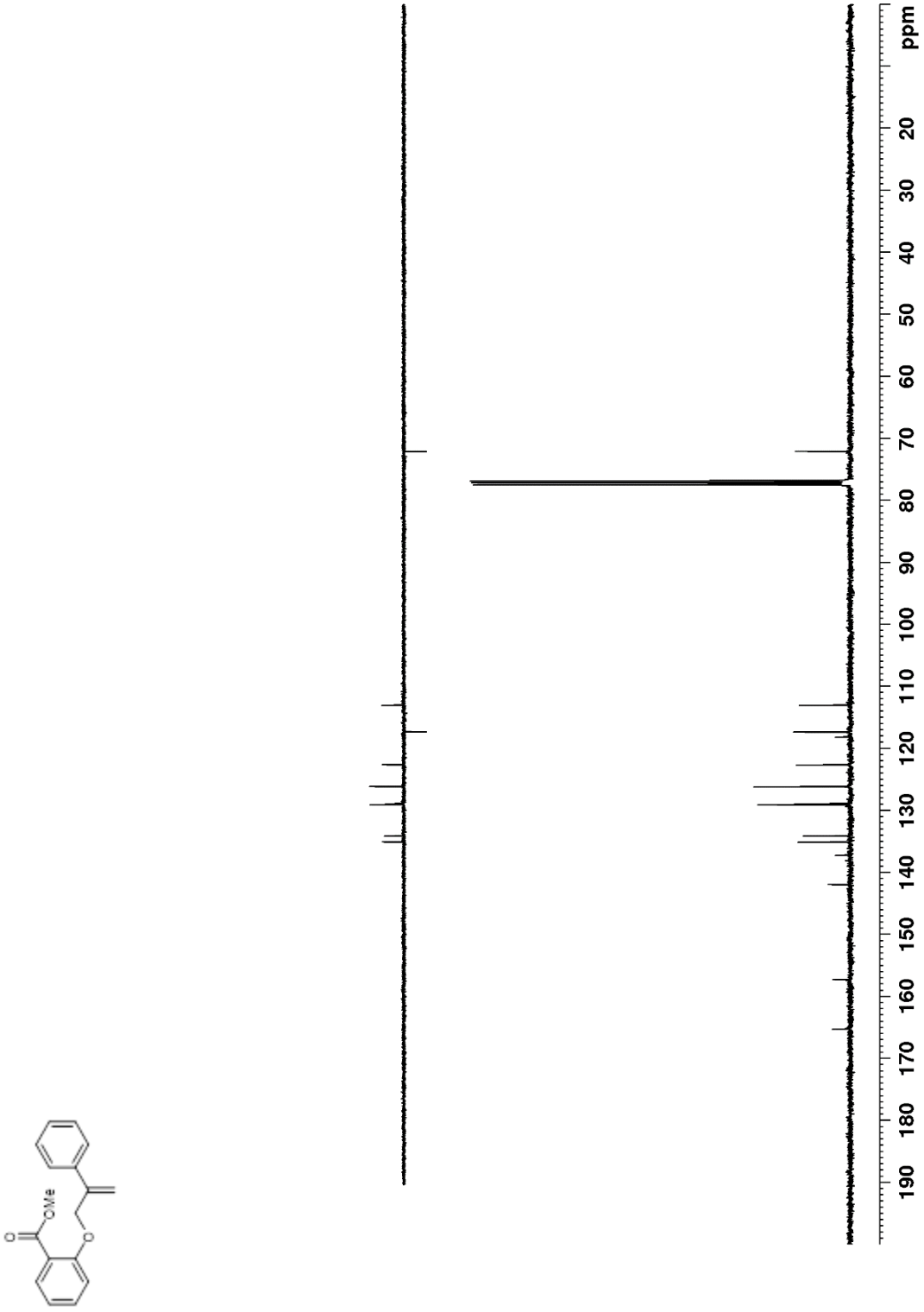


Figure 45. ^{1}H NMR (400 MHz, $(CD_3)_2CO$) of **8a**

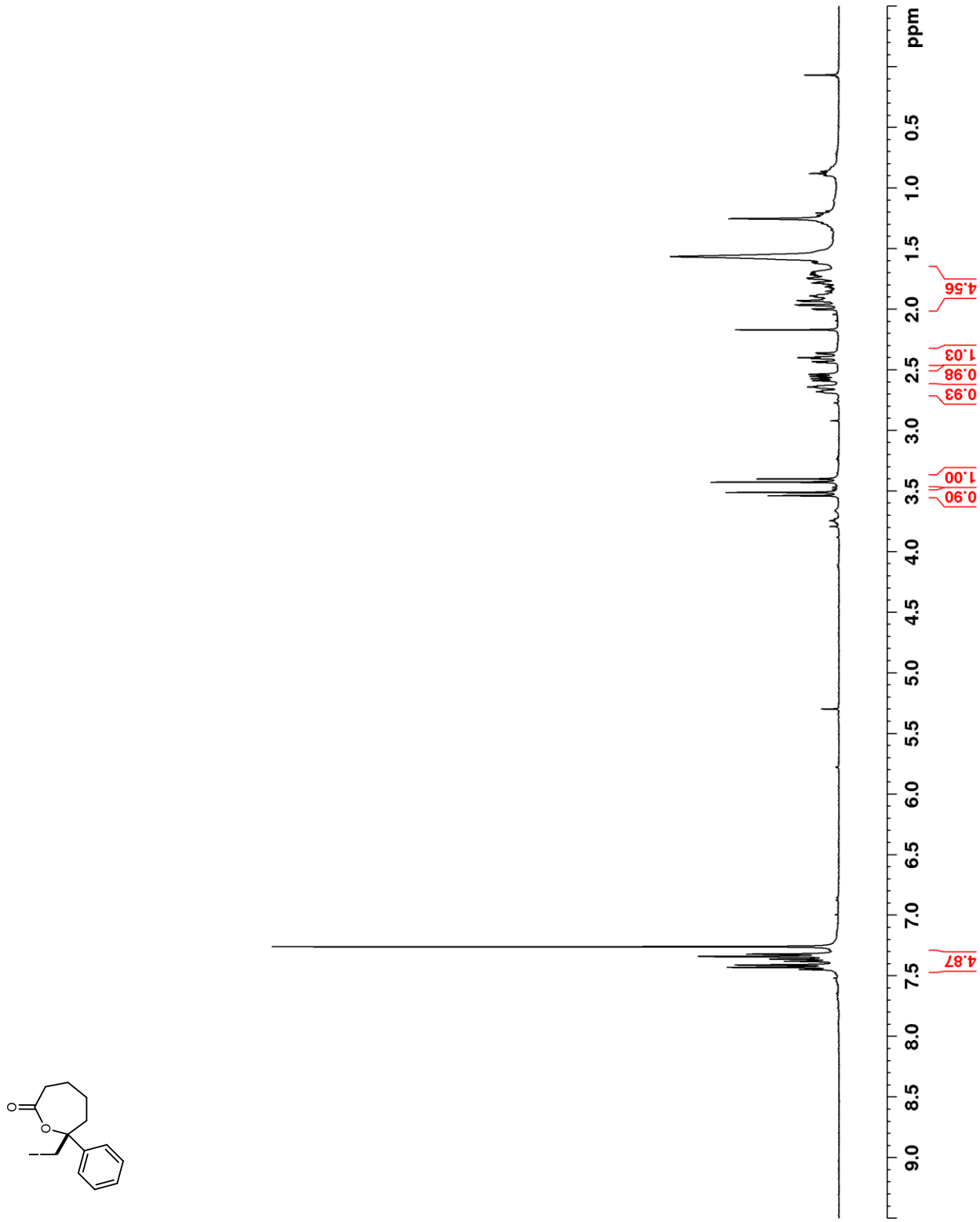


Figure 46. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **8a**

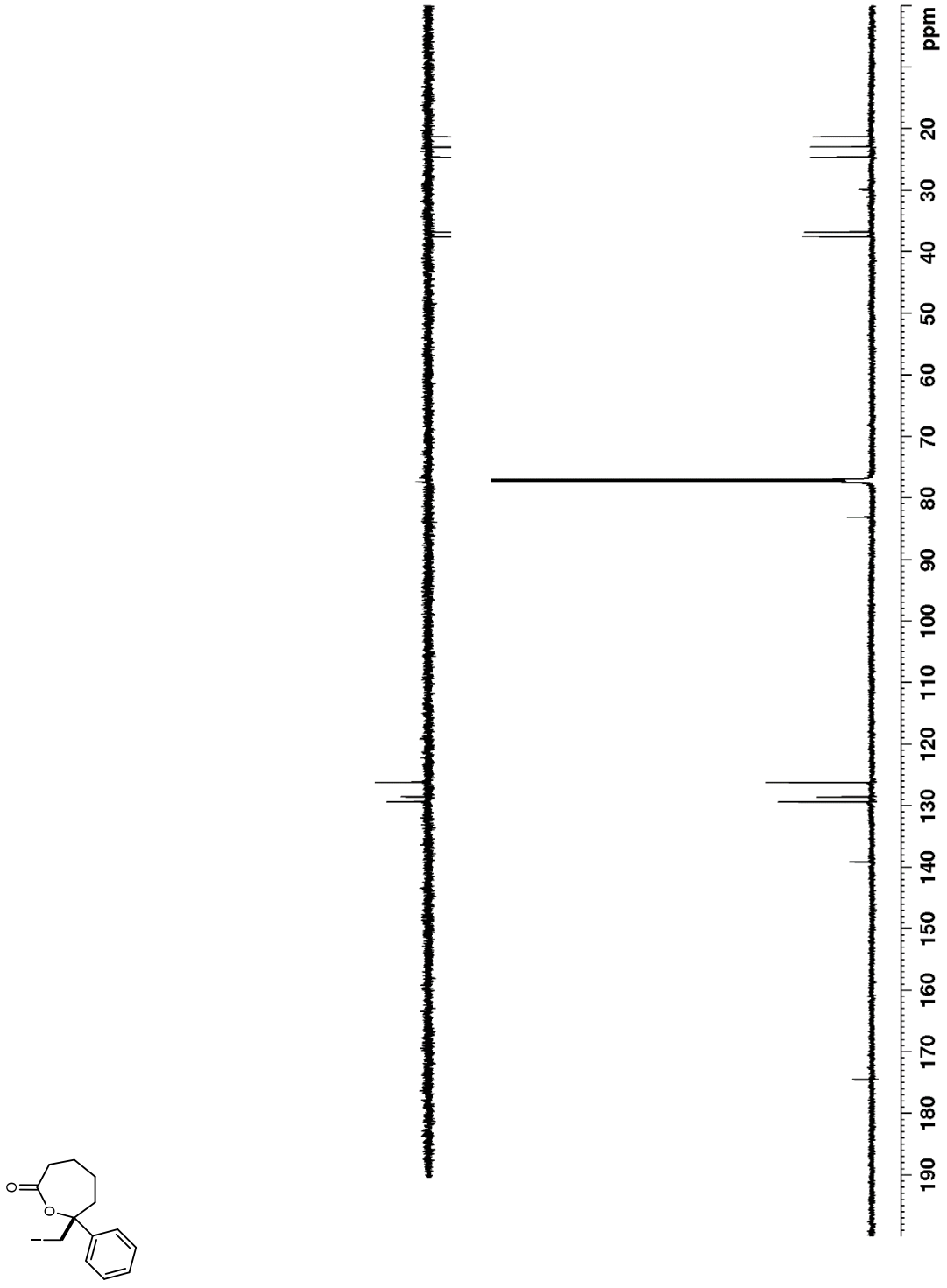


Figure 47. ^{1}H NMR (400 MHz, ($CDCl_3$) of **8b**

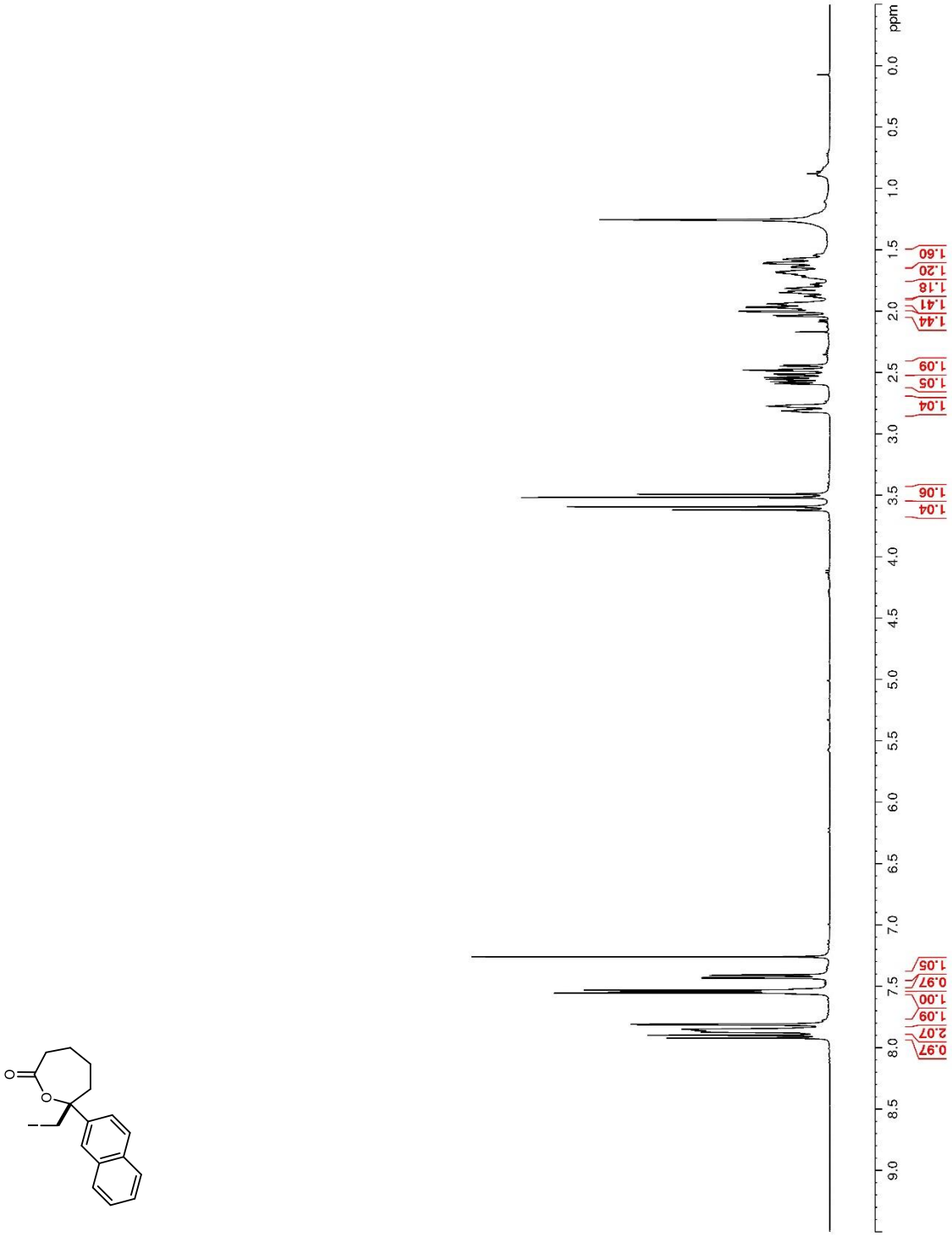


Figure 48. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **8b**

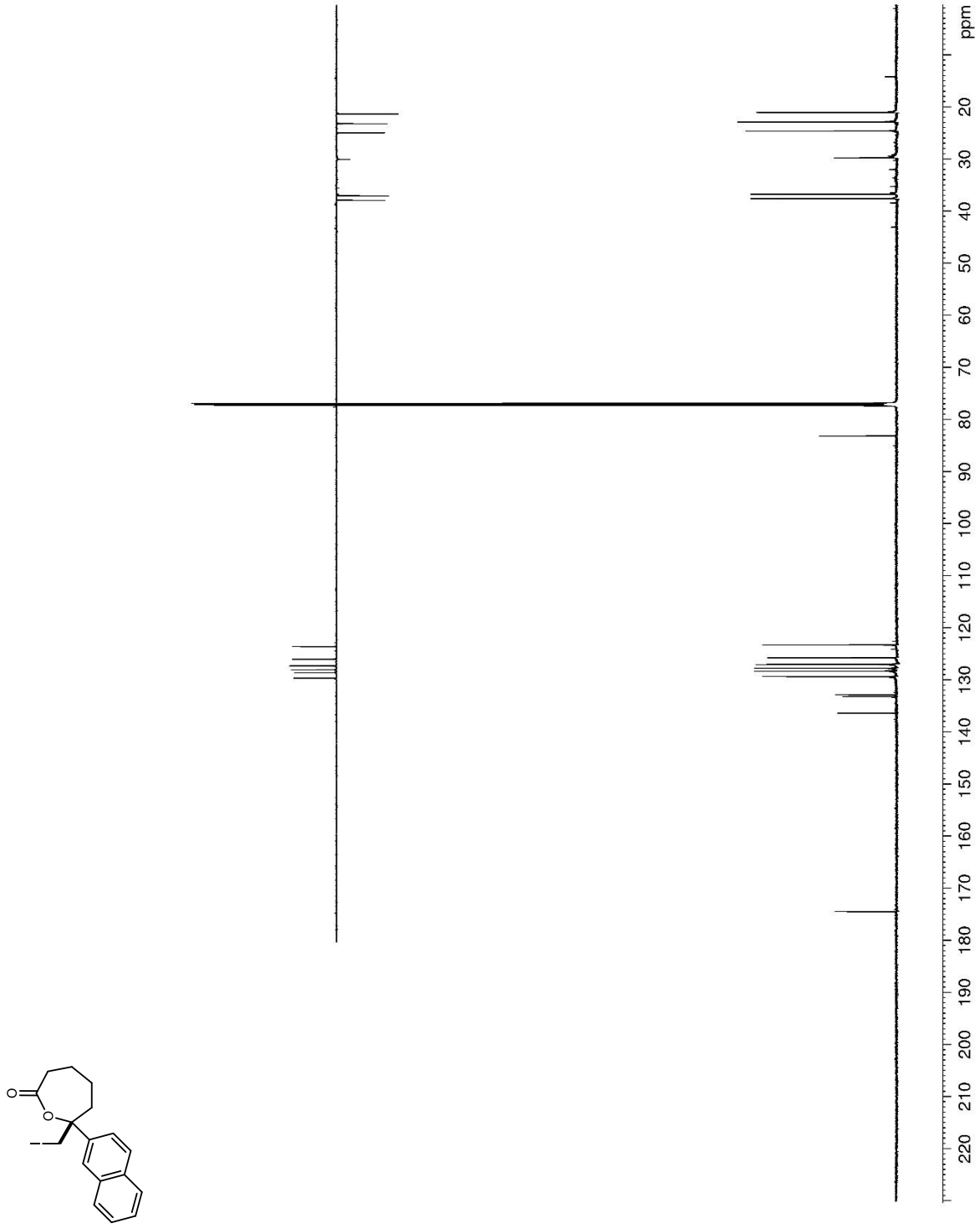


Figure 49. ^{1}H NMR (400 MHz, ($CDCl_3$) of **8c**

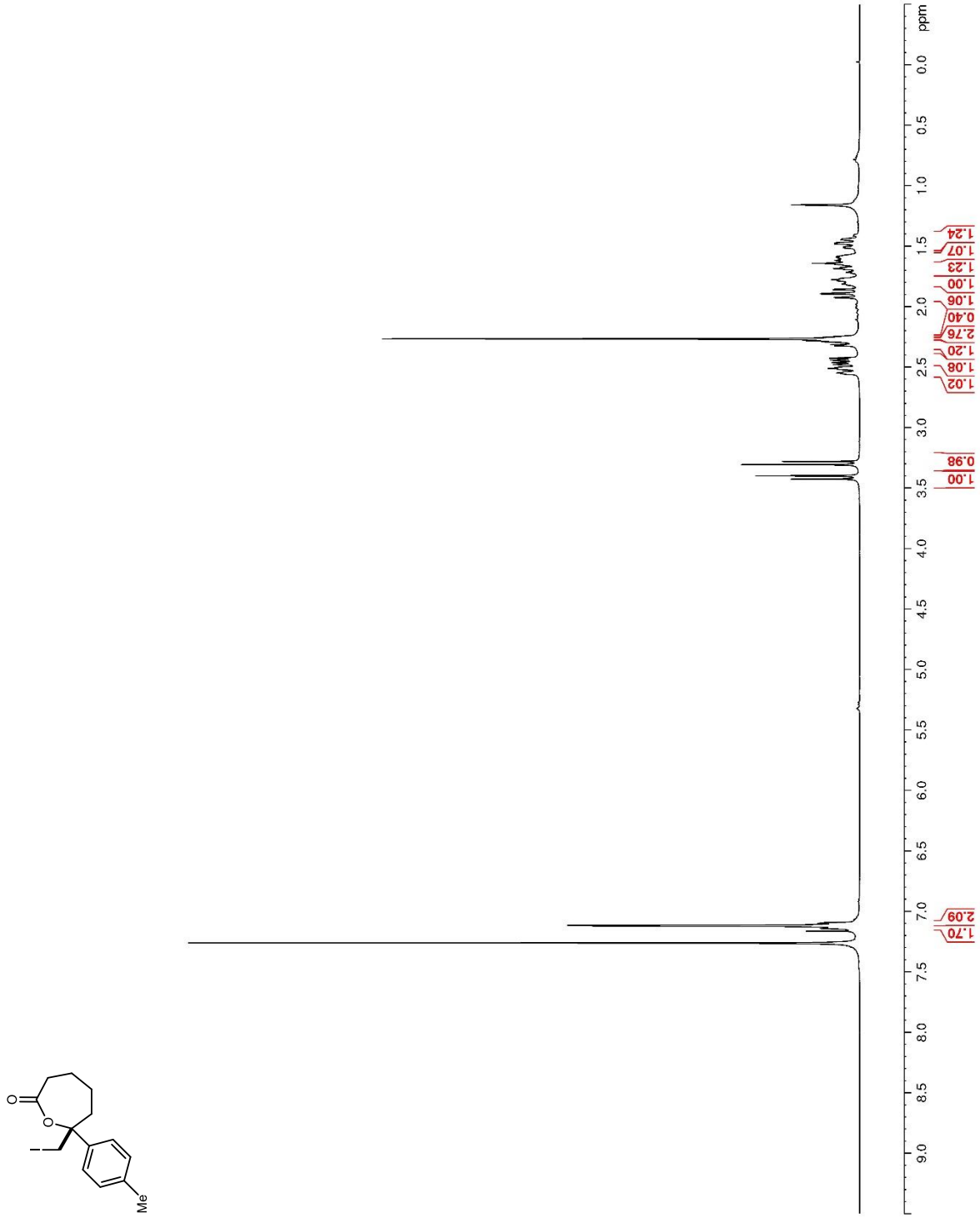


Figure 50. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **8c**

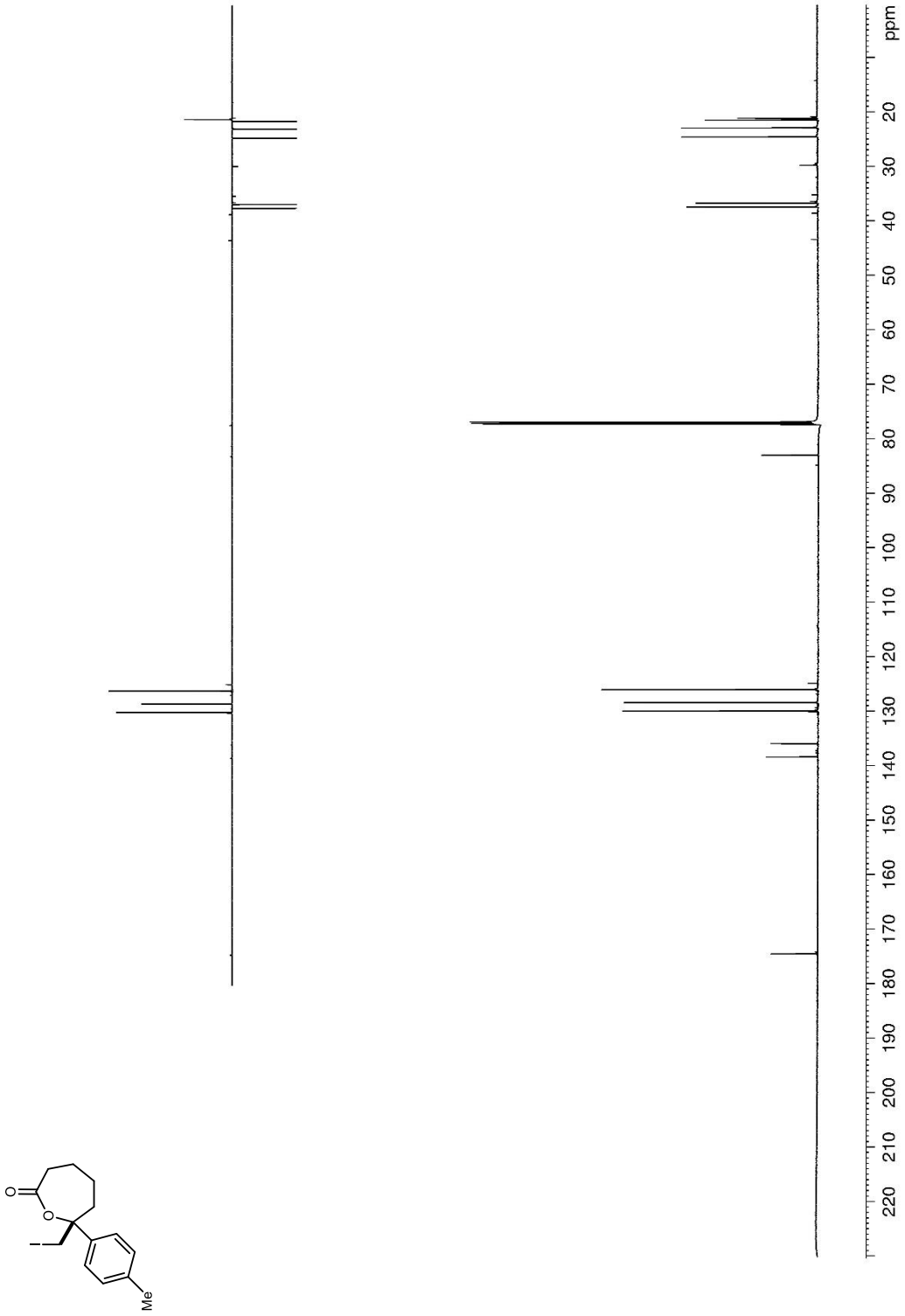


Figure 51. ^{1}H NMR (400 MHz, ($CDCl_3$) of **8d**

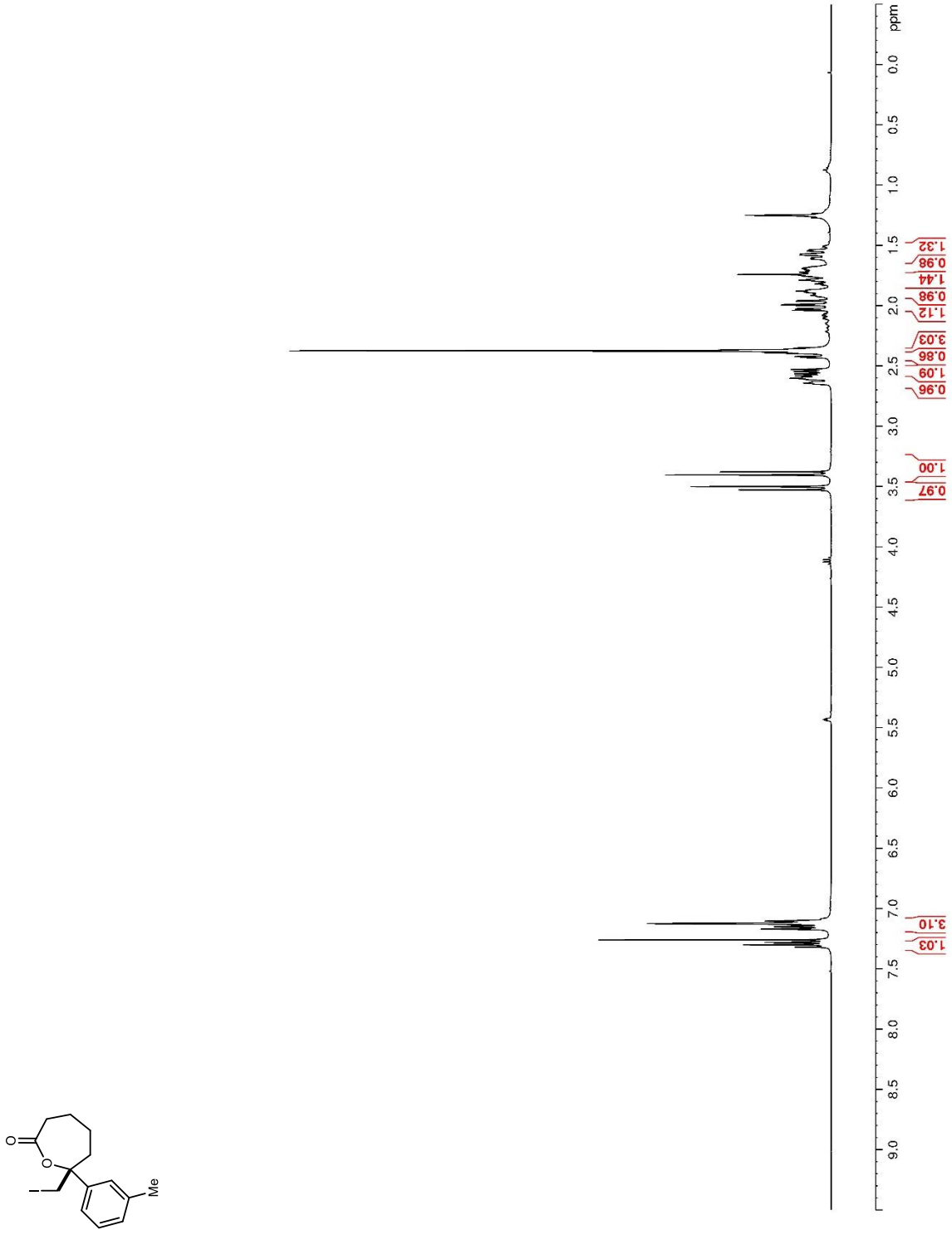


Figure 52. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **8d**

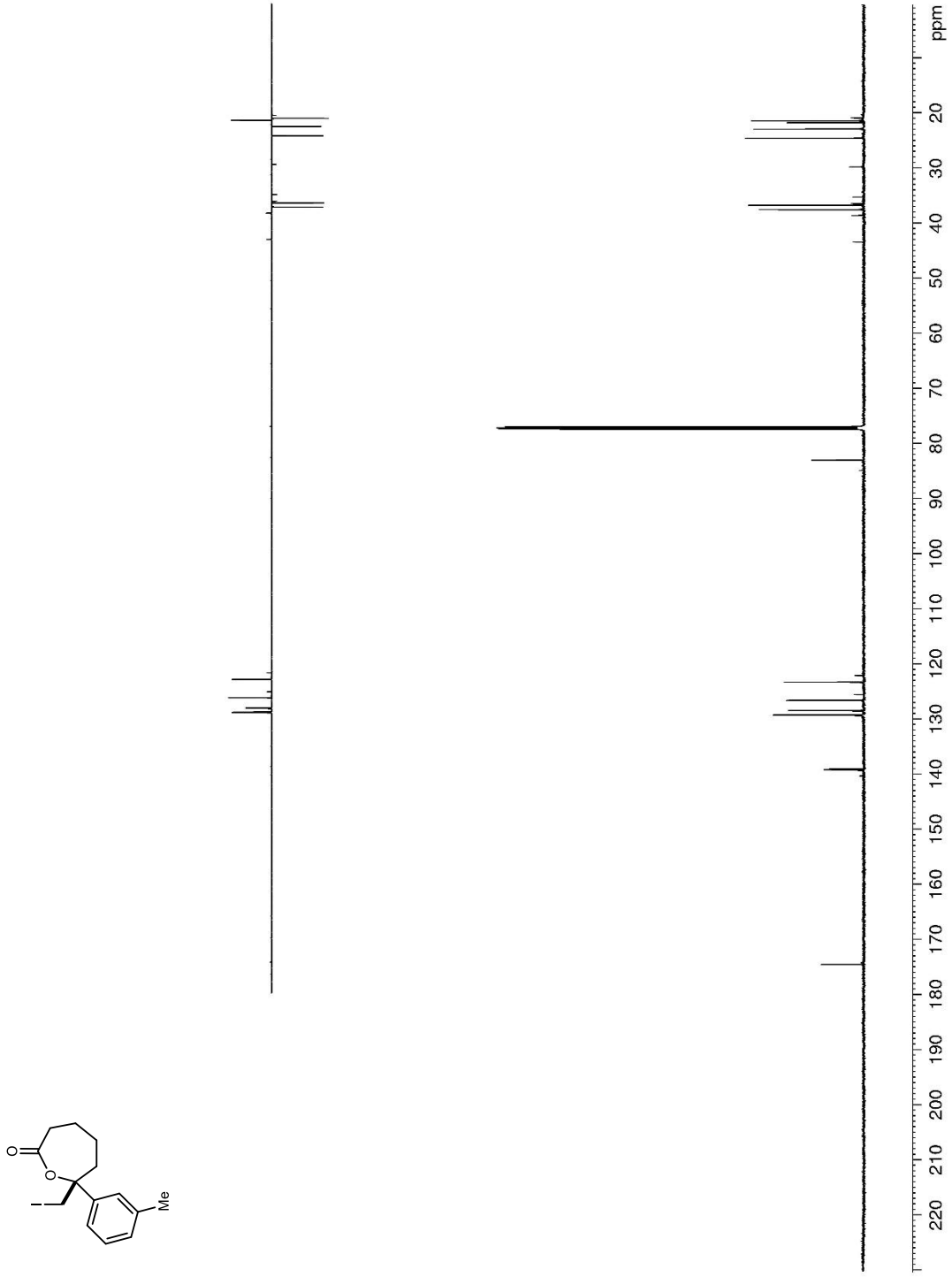


Figure 53. ^{1}H NMR (400 MHz, ($CDCl_3$) of **8f**

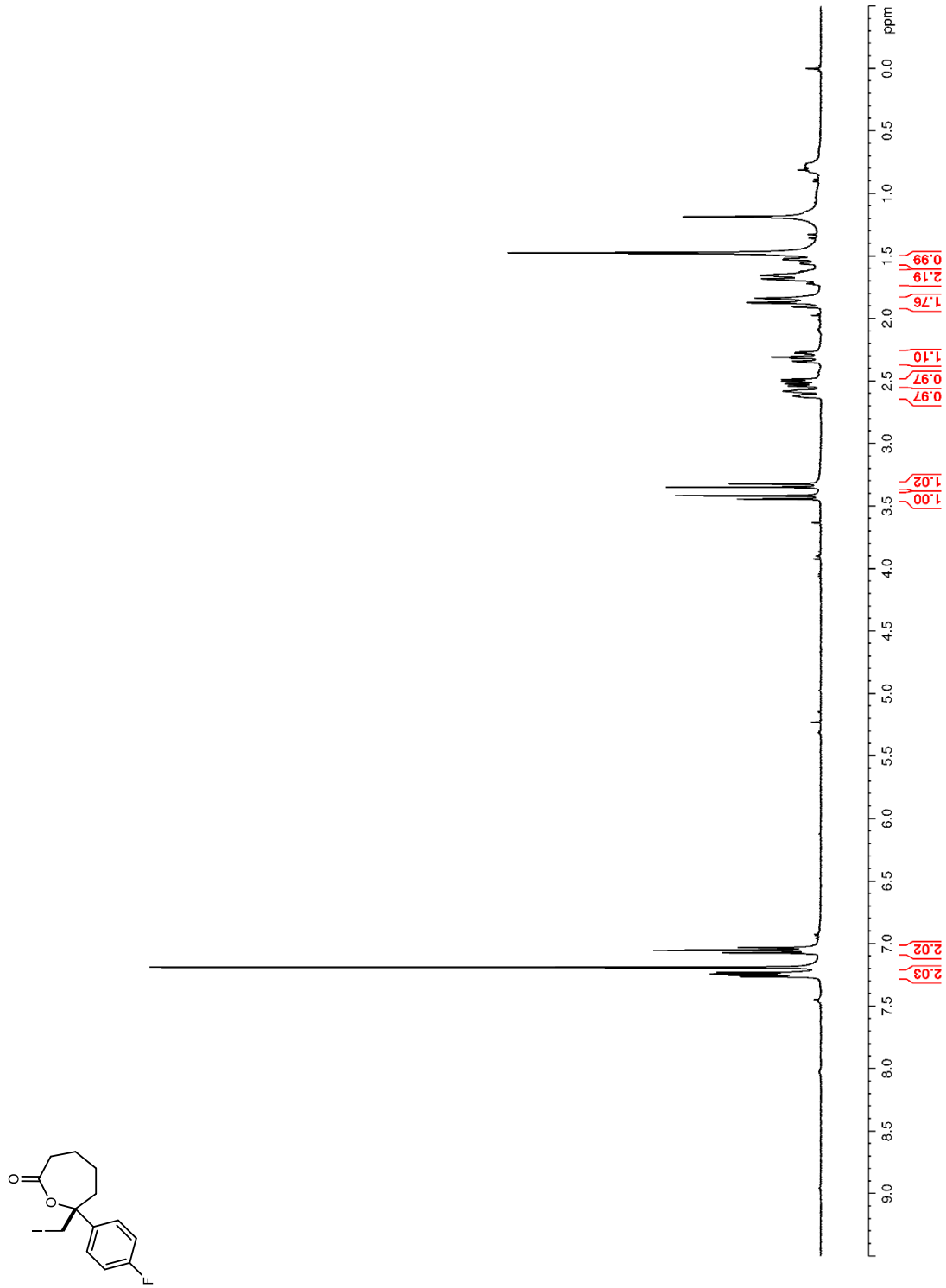


Figure 54. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **8f**

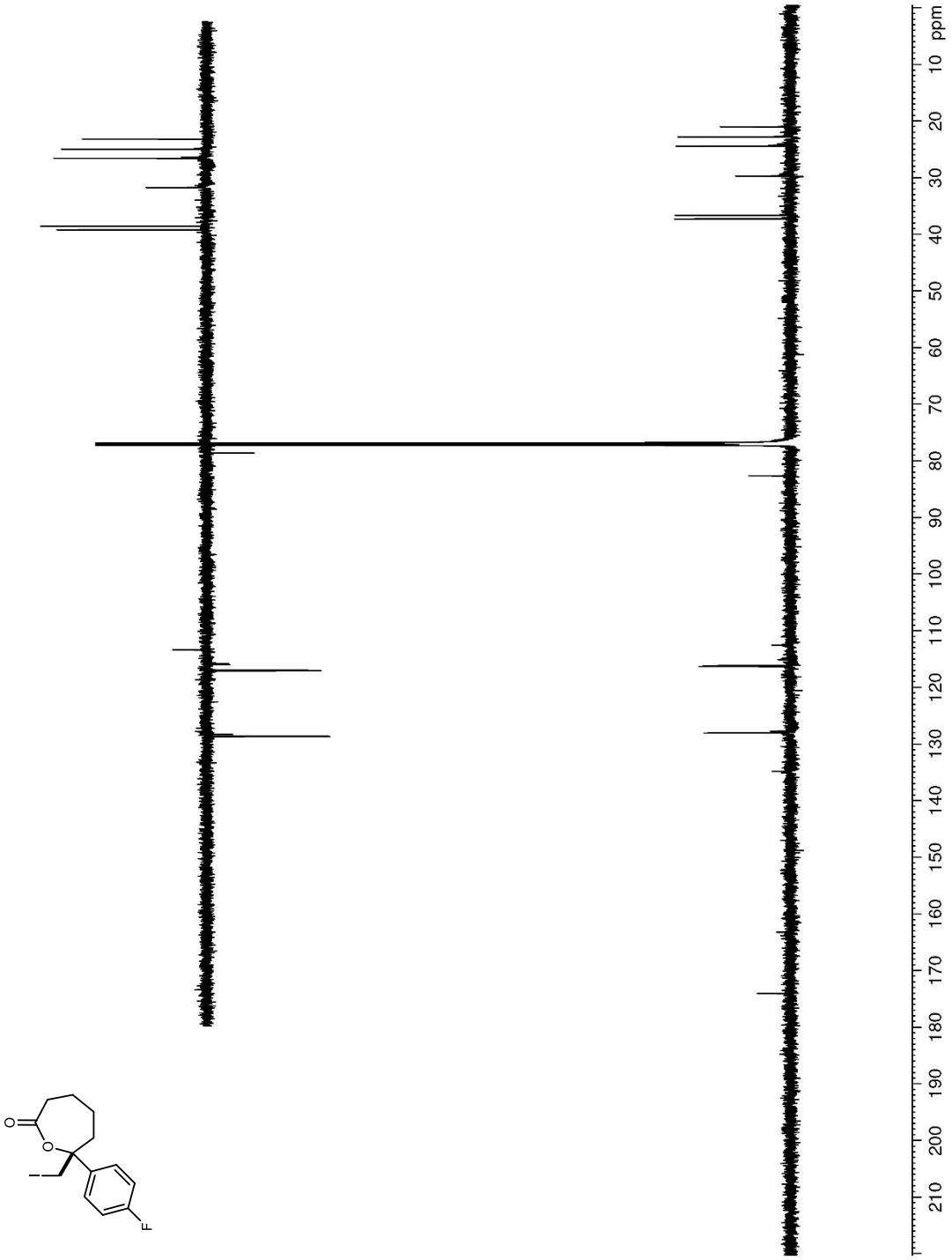


Figure 55. ^{19}F NMR (282 MHz**,** $CDCl_3$) of **8f**

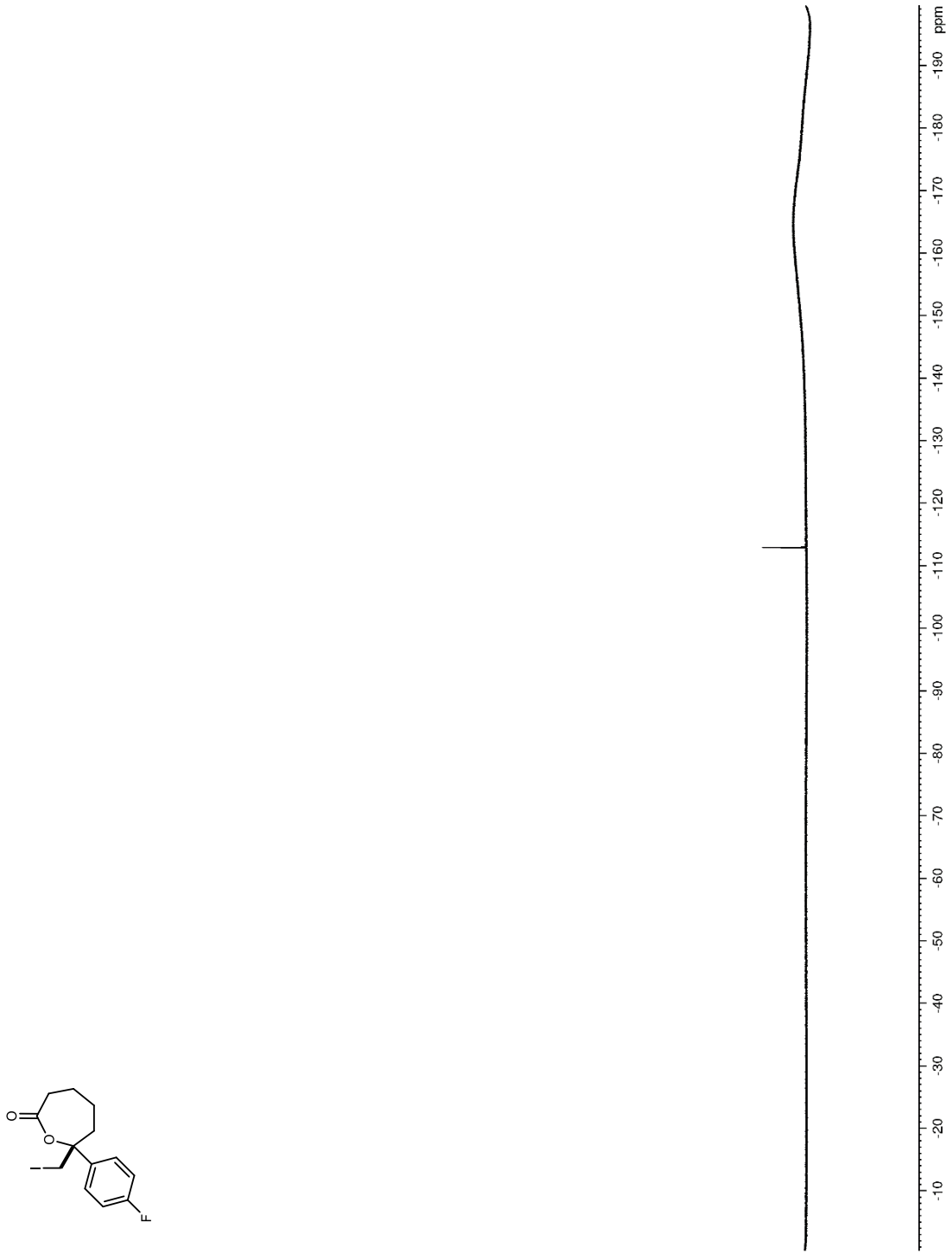


Figure 56. ^{1}H NMR (400 MHz, ($CDCl_3$) of **8g**

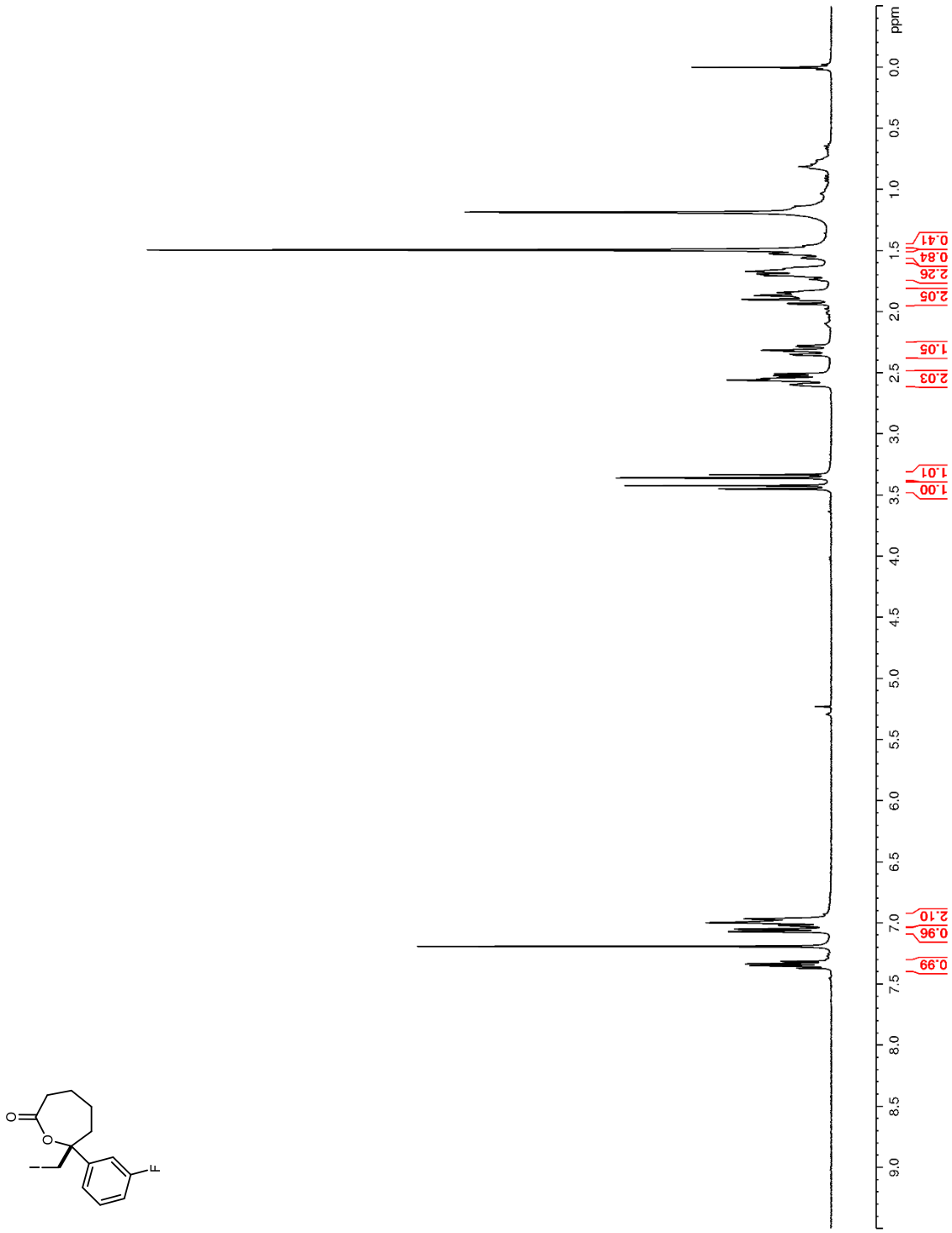


Figure 57. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **8g**

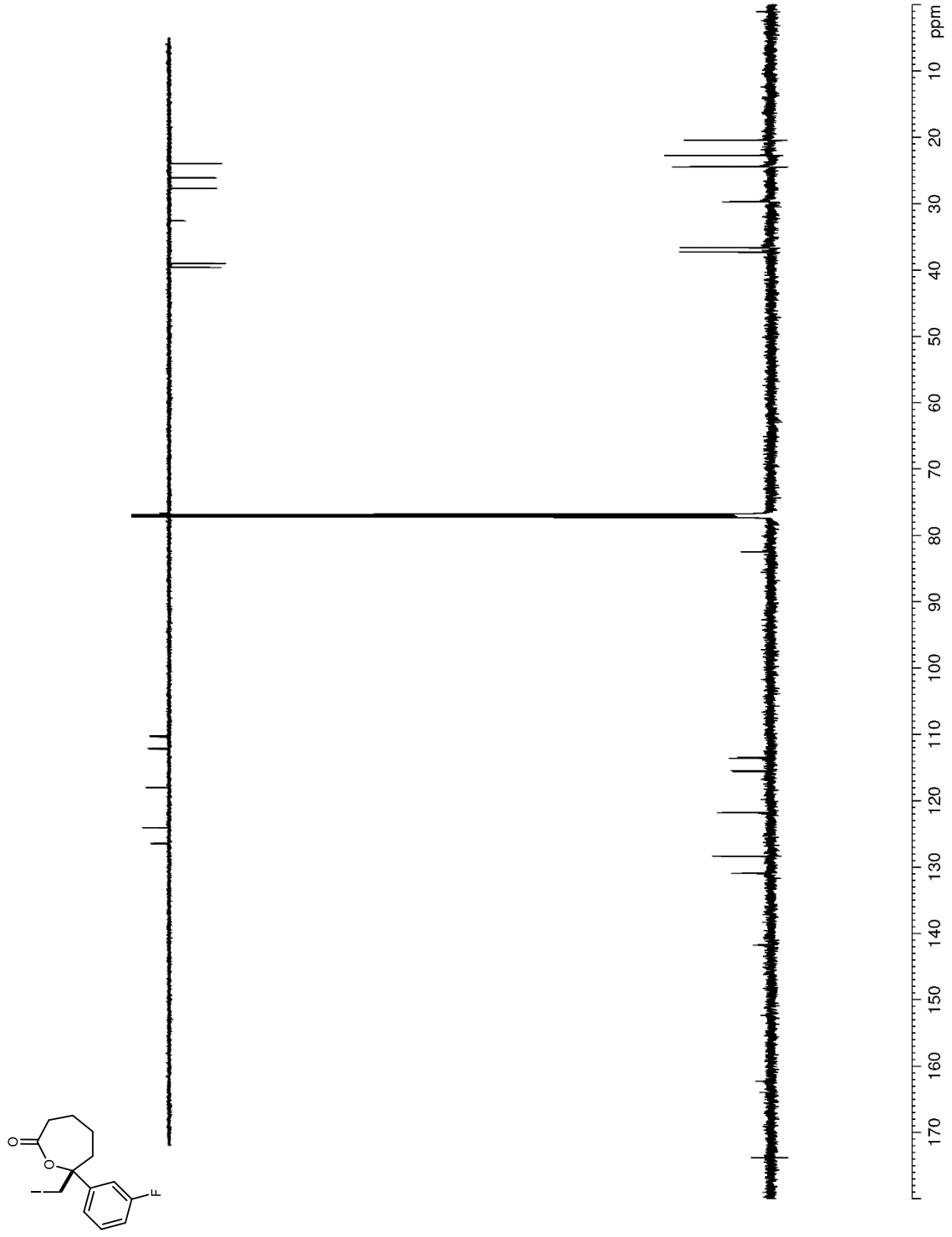


Figure 58. ^{19}F NMR (282 MHz**,** $CDCl_3$) of **8g**

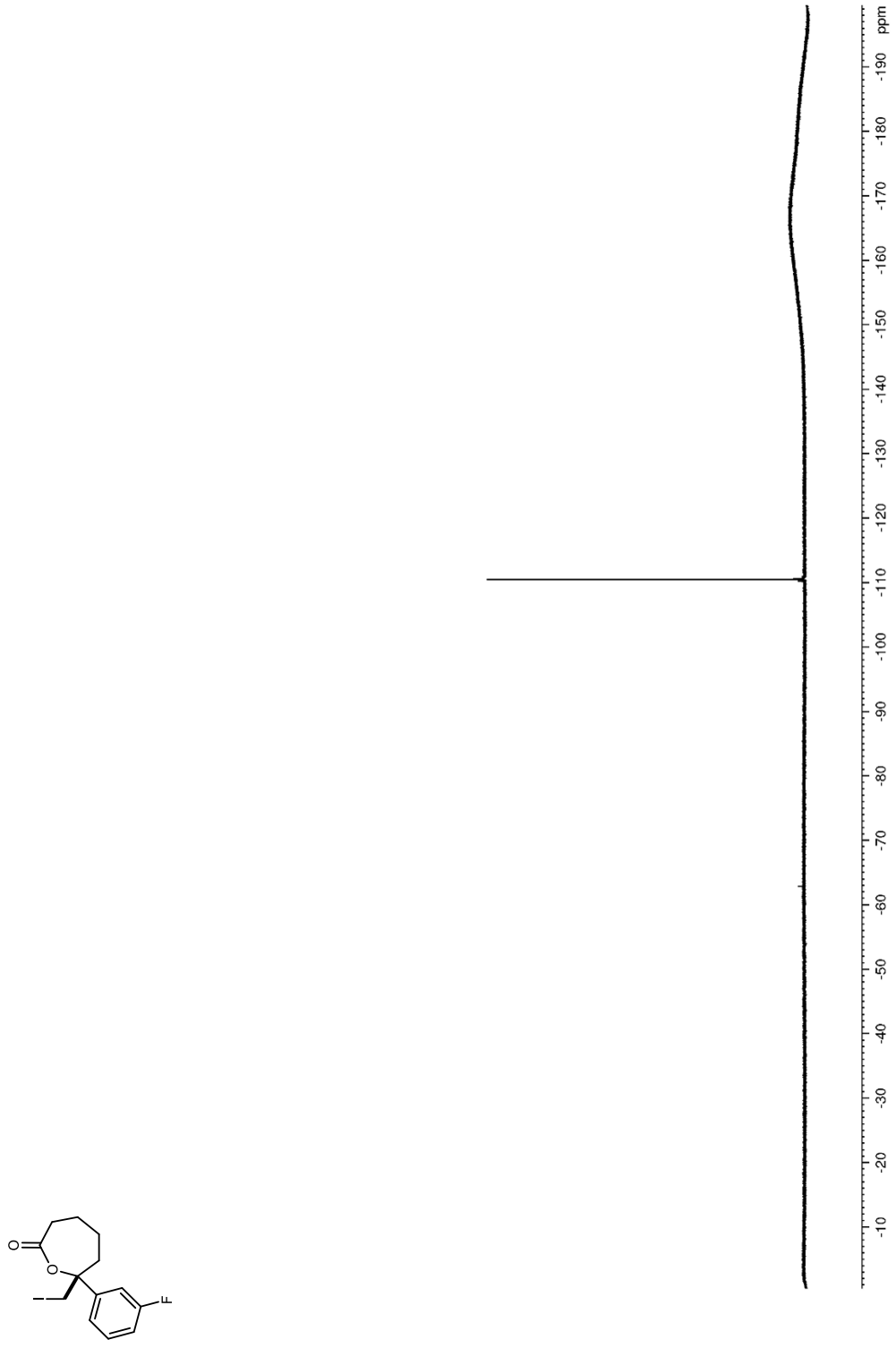


Figure 59. ^{1}H NMR (400 MHz, ($CDCl_3$) of **8h**

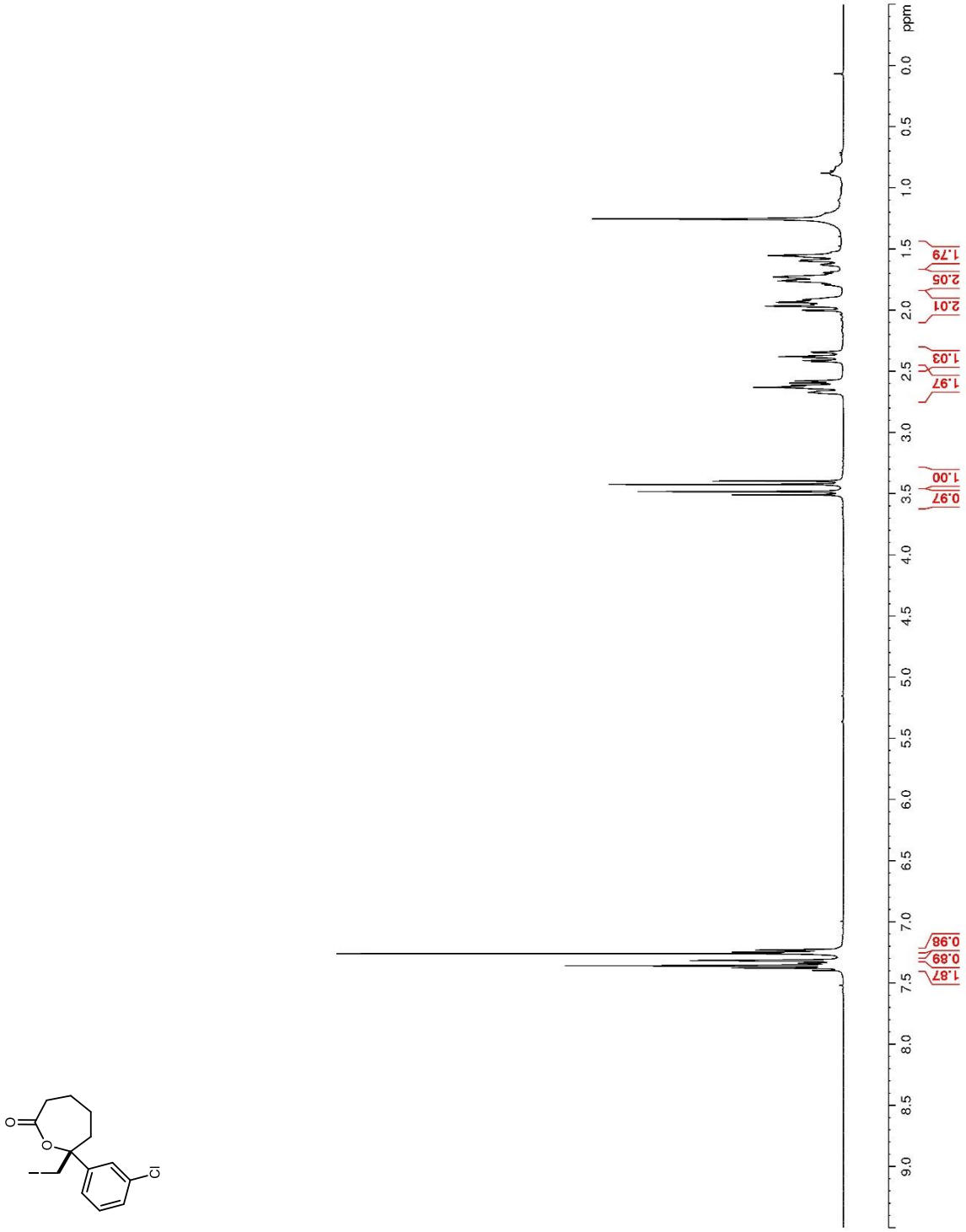


Figure 60. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **8h**

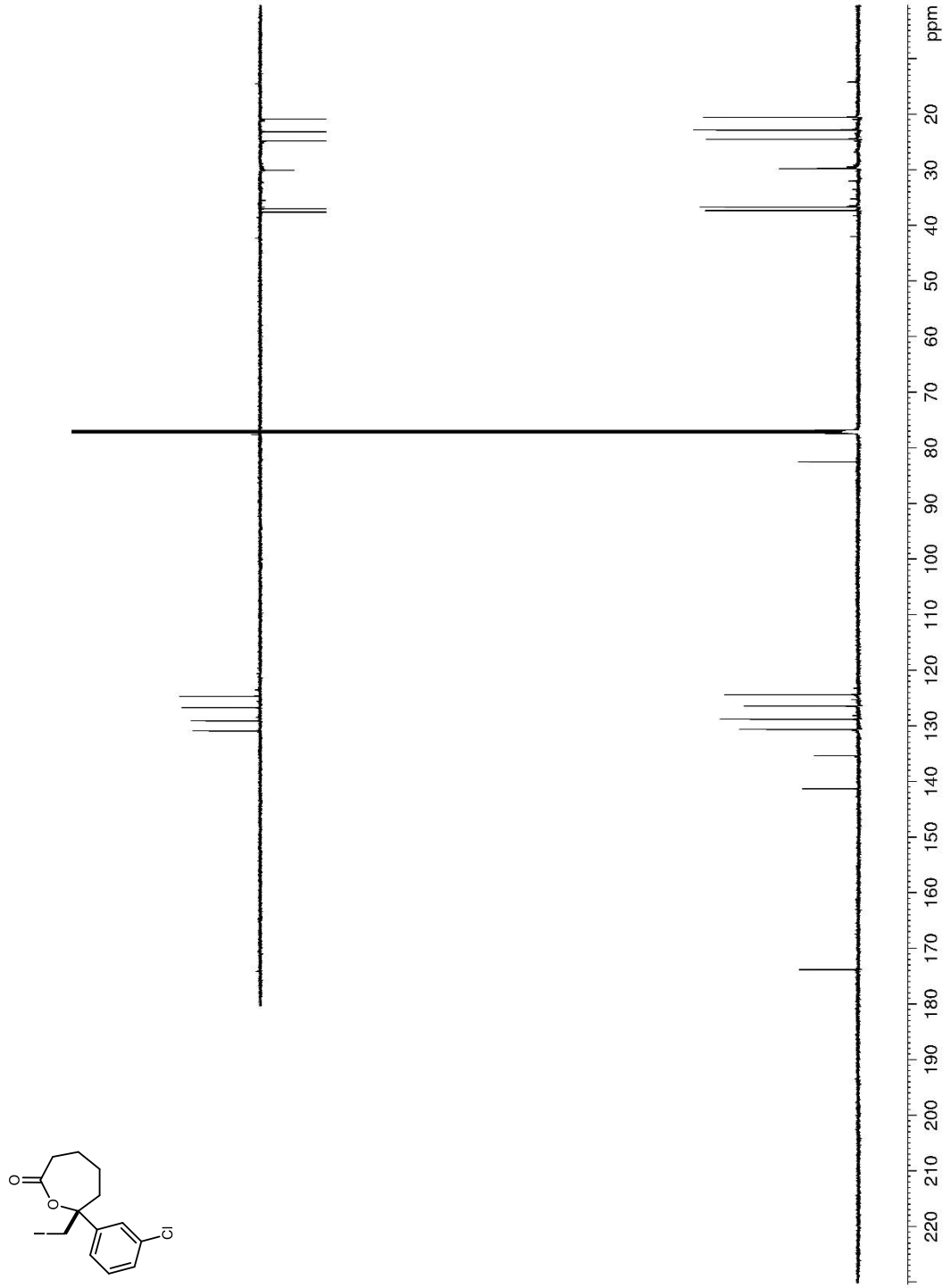


Figure 61. ^{1}H NMR (400 MHz, ($CDCl_3$) of **8i**

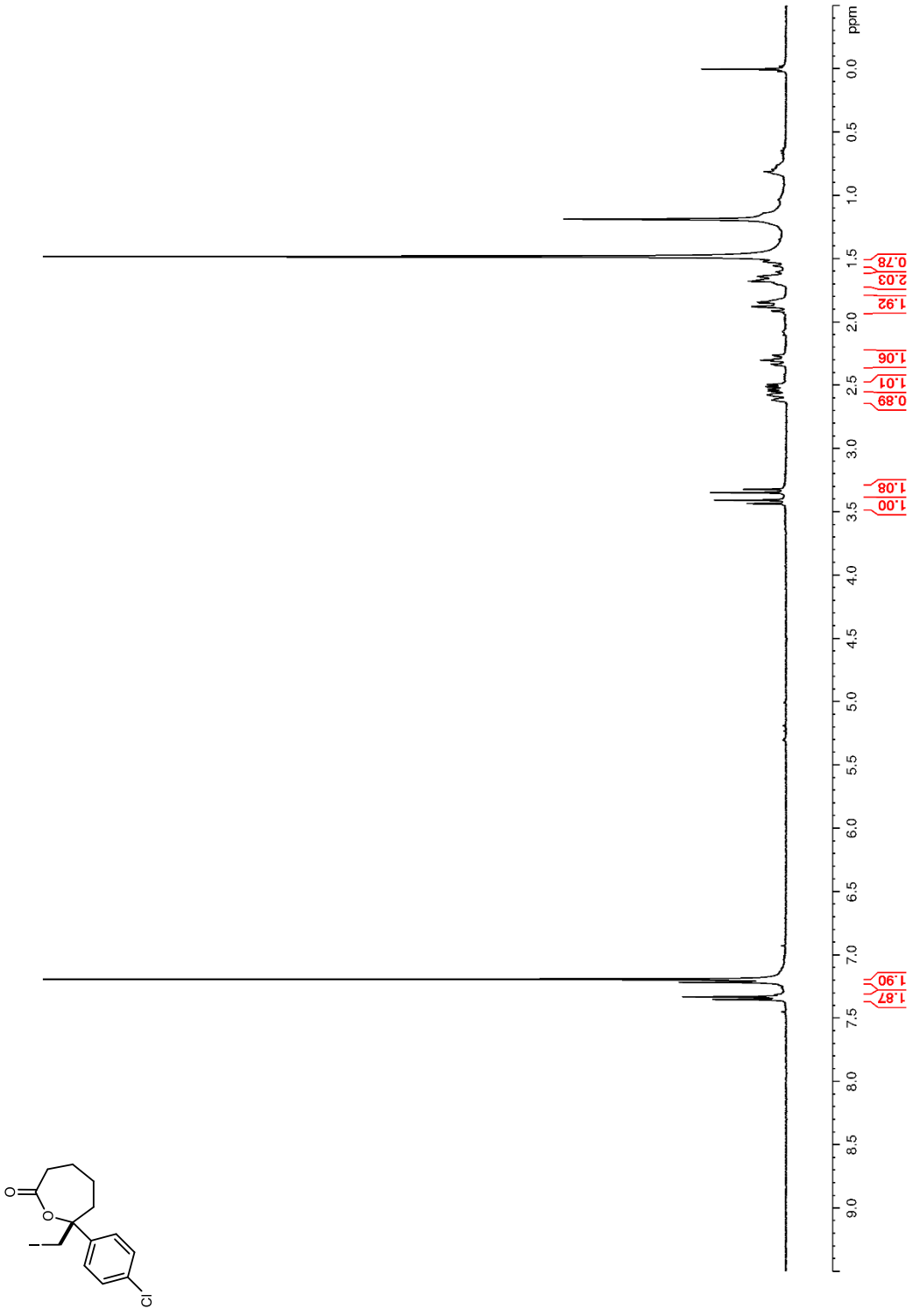


Figure 62. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **8i**

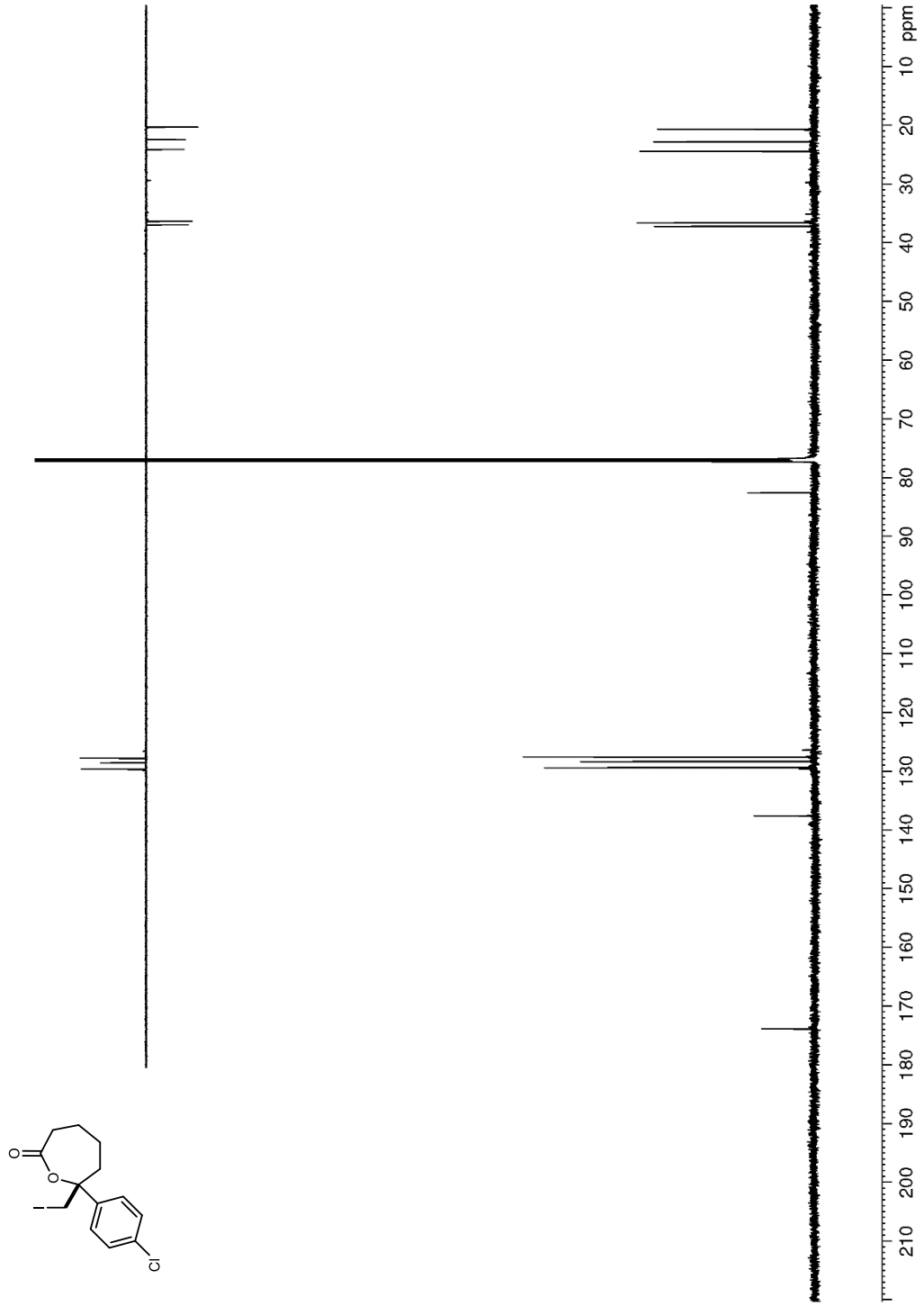


Figure 63. ^{1}H NMR (400 MHz, ($CDCl_3$) of **8j**

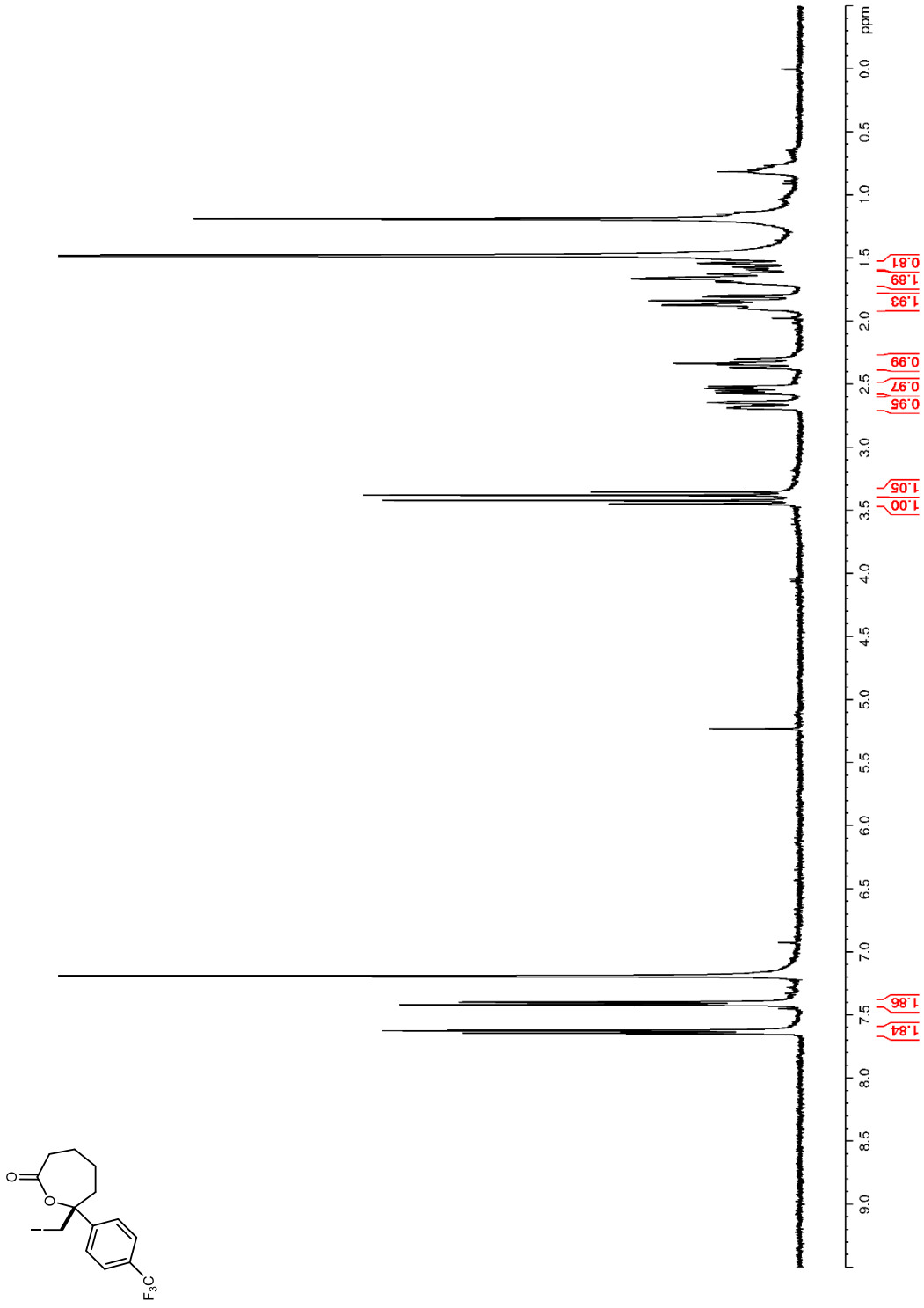


Figure 64. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **8j**

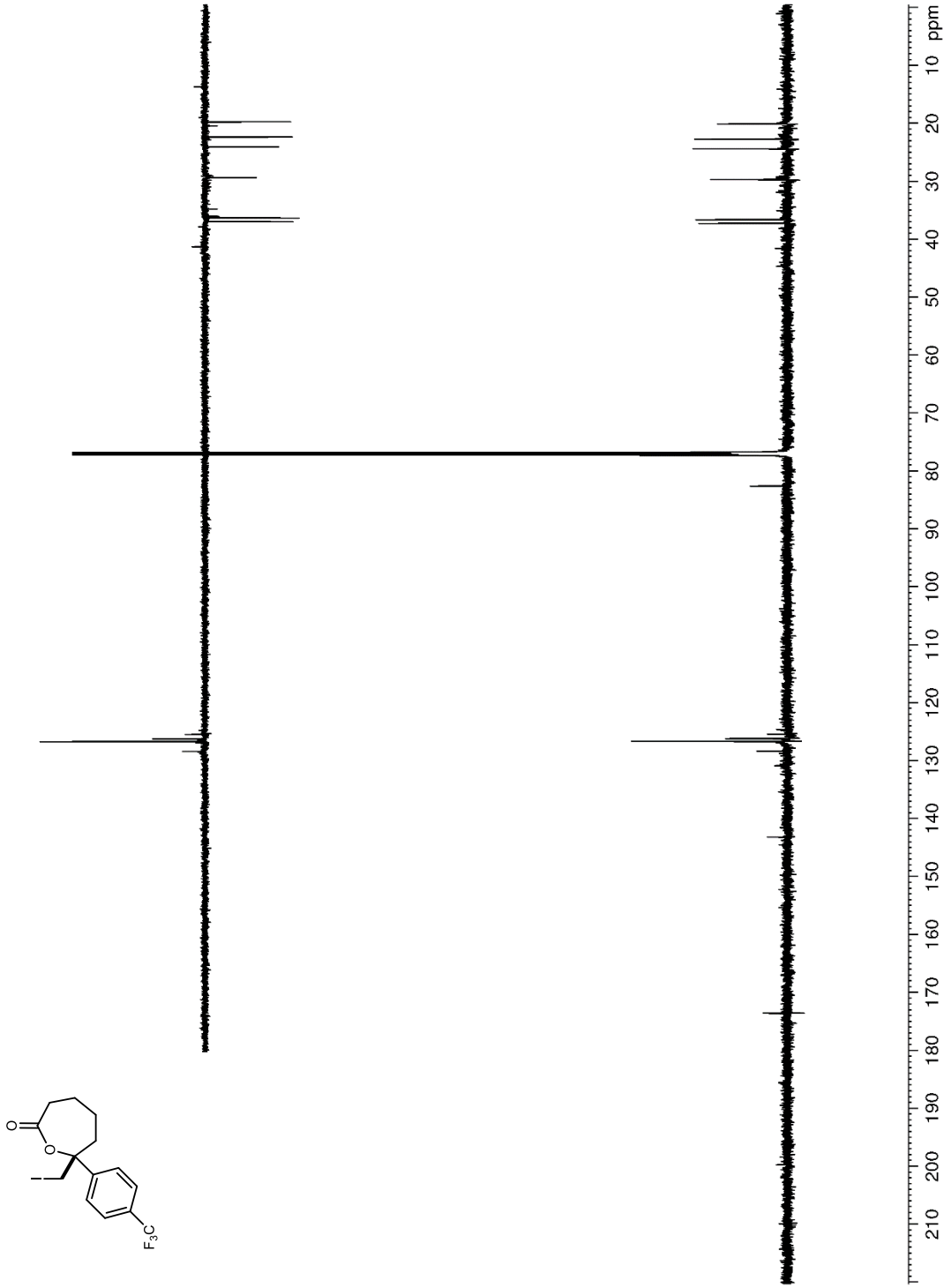


Figure 65. ^{19}F NMR (282 MHz**,** $CDCl_3$) of **8j**

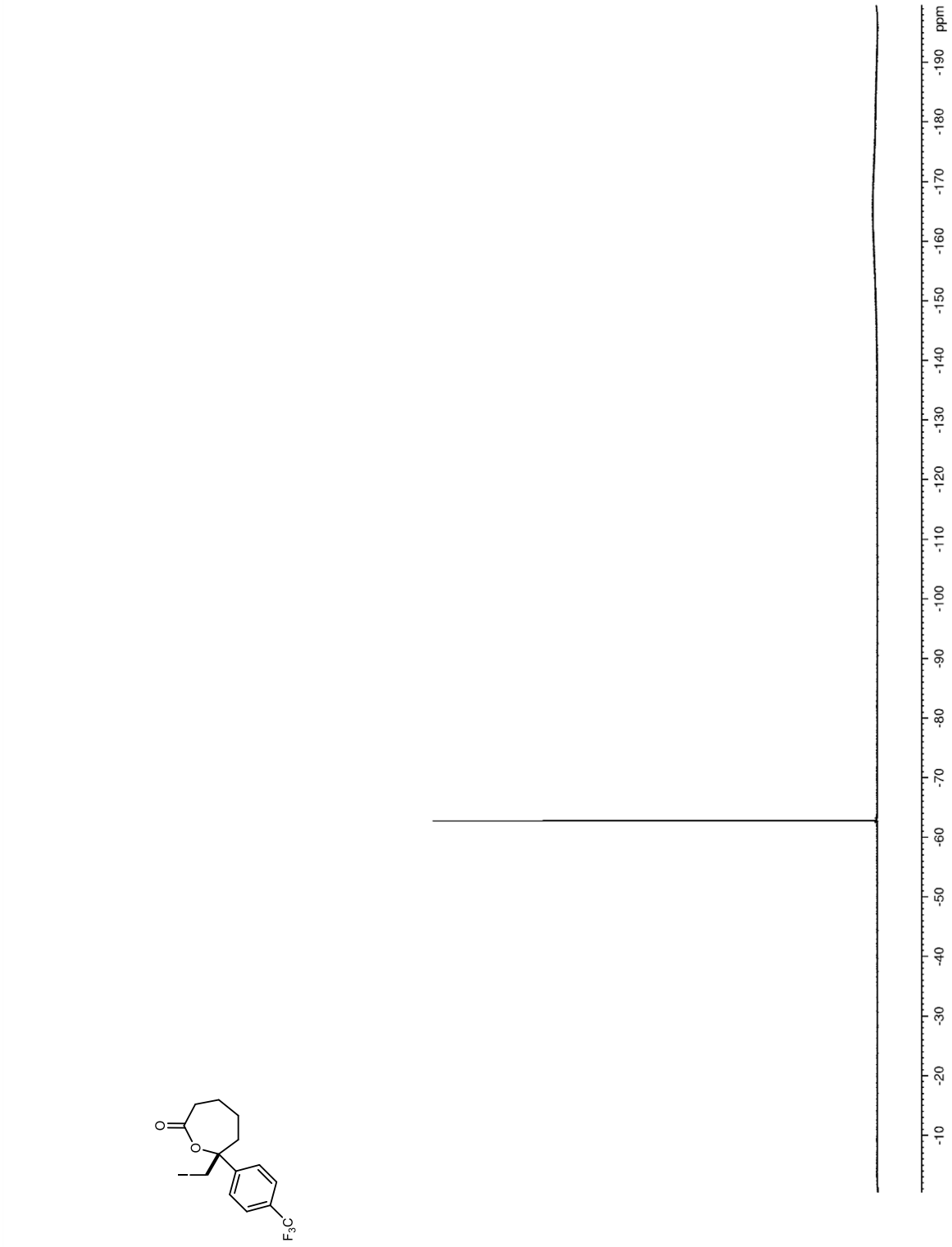


Figure 66. ^{1}H NMR (600 MHz, ($CDCl_3$) of **8k**

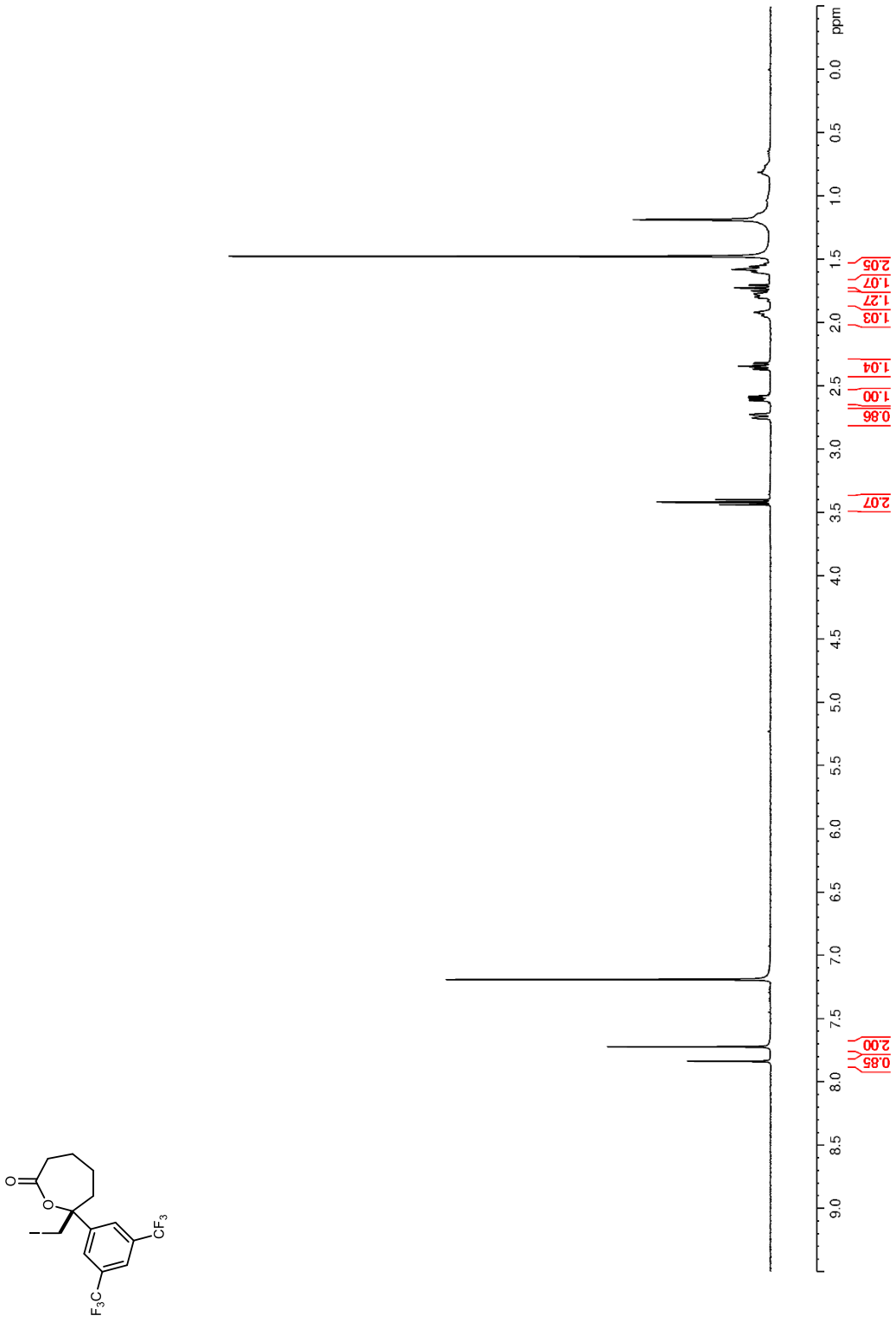


Figure 67. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **8k**

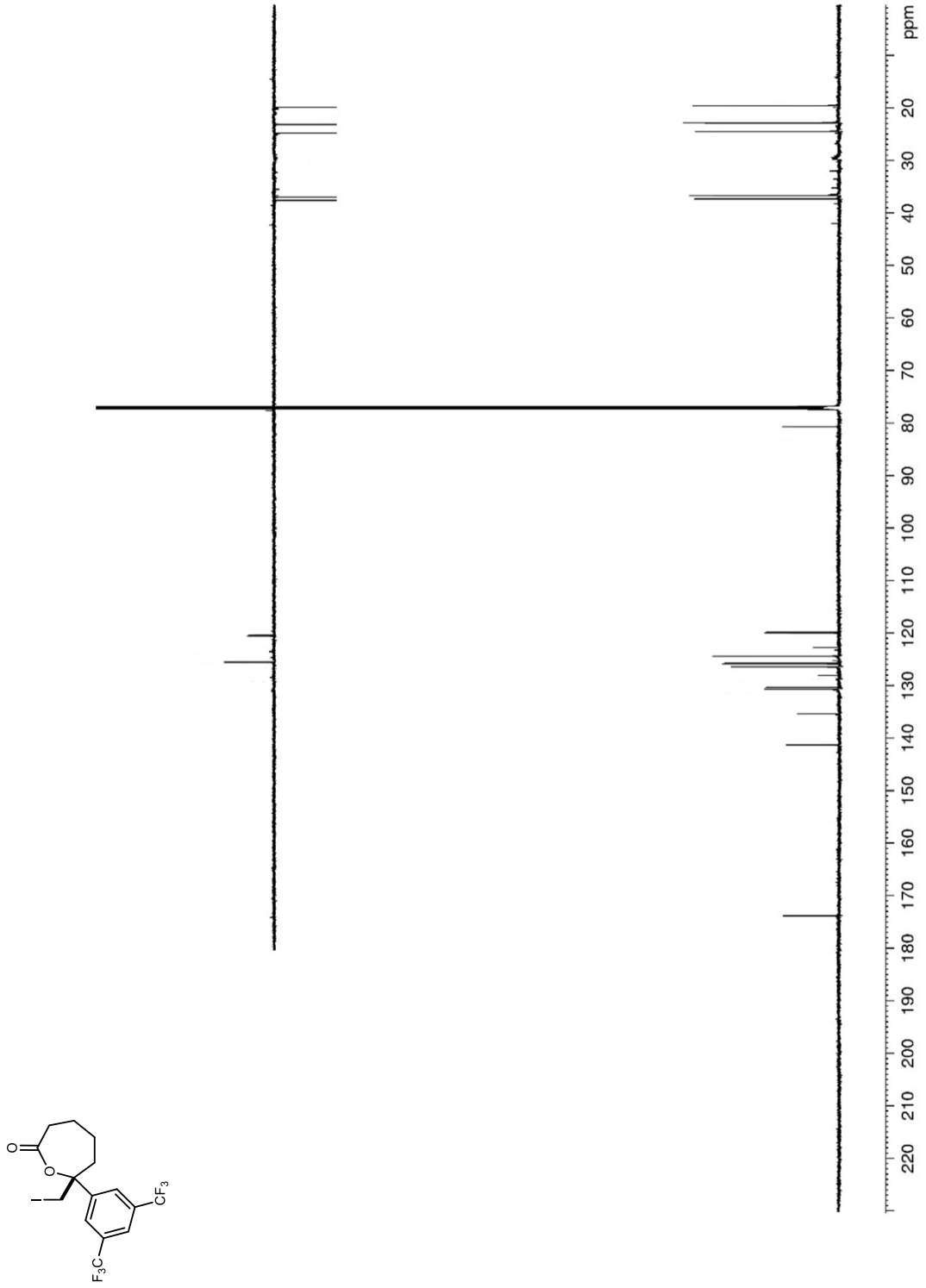


Figure 68. ^{19}F NMR (282 MHz**,** $CDCl_3$) of **8k**

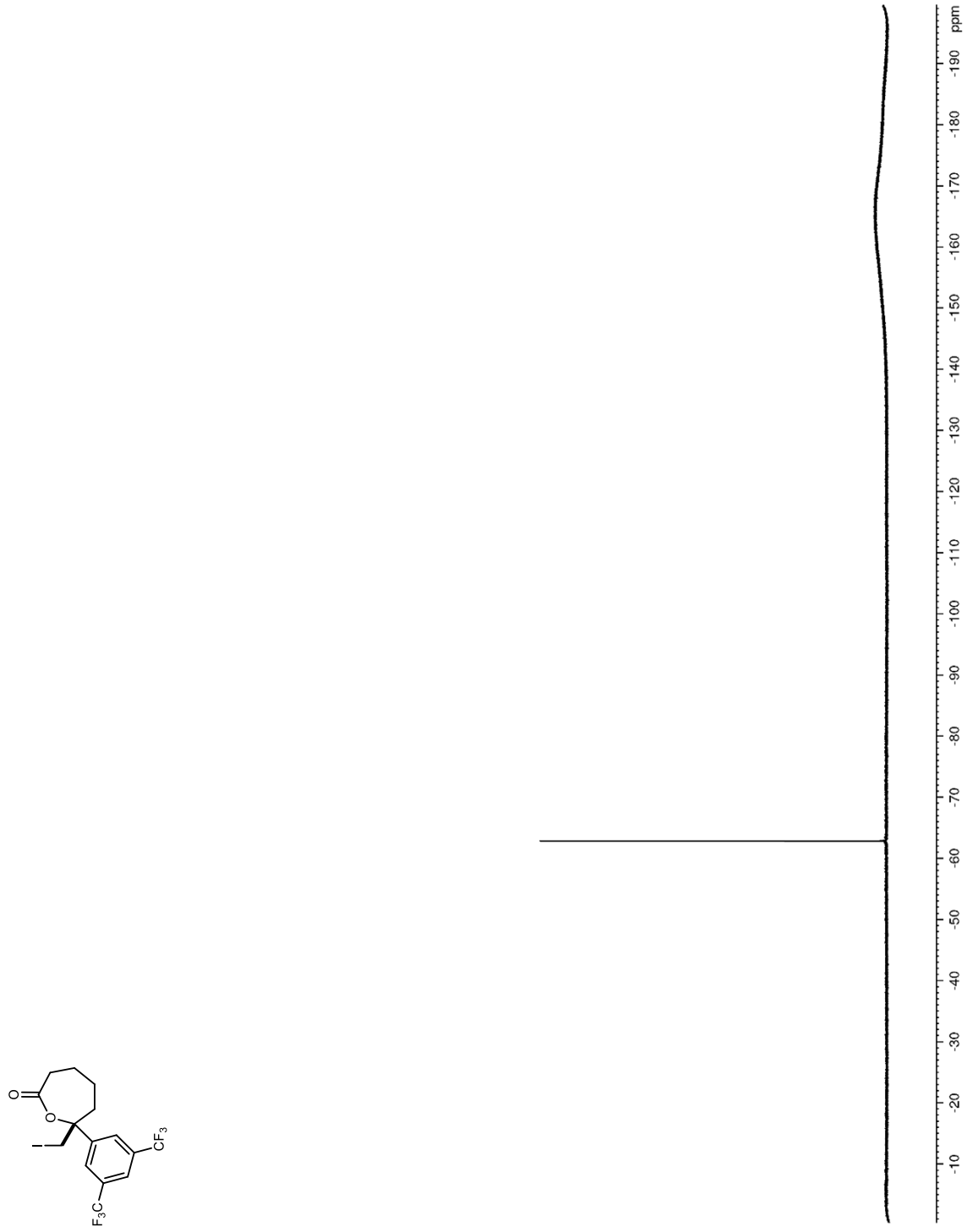


Figure 69. ^{1}H NMR (400 MHz, ($CDCl_3$) of **8l**

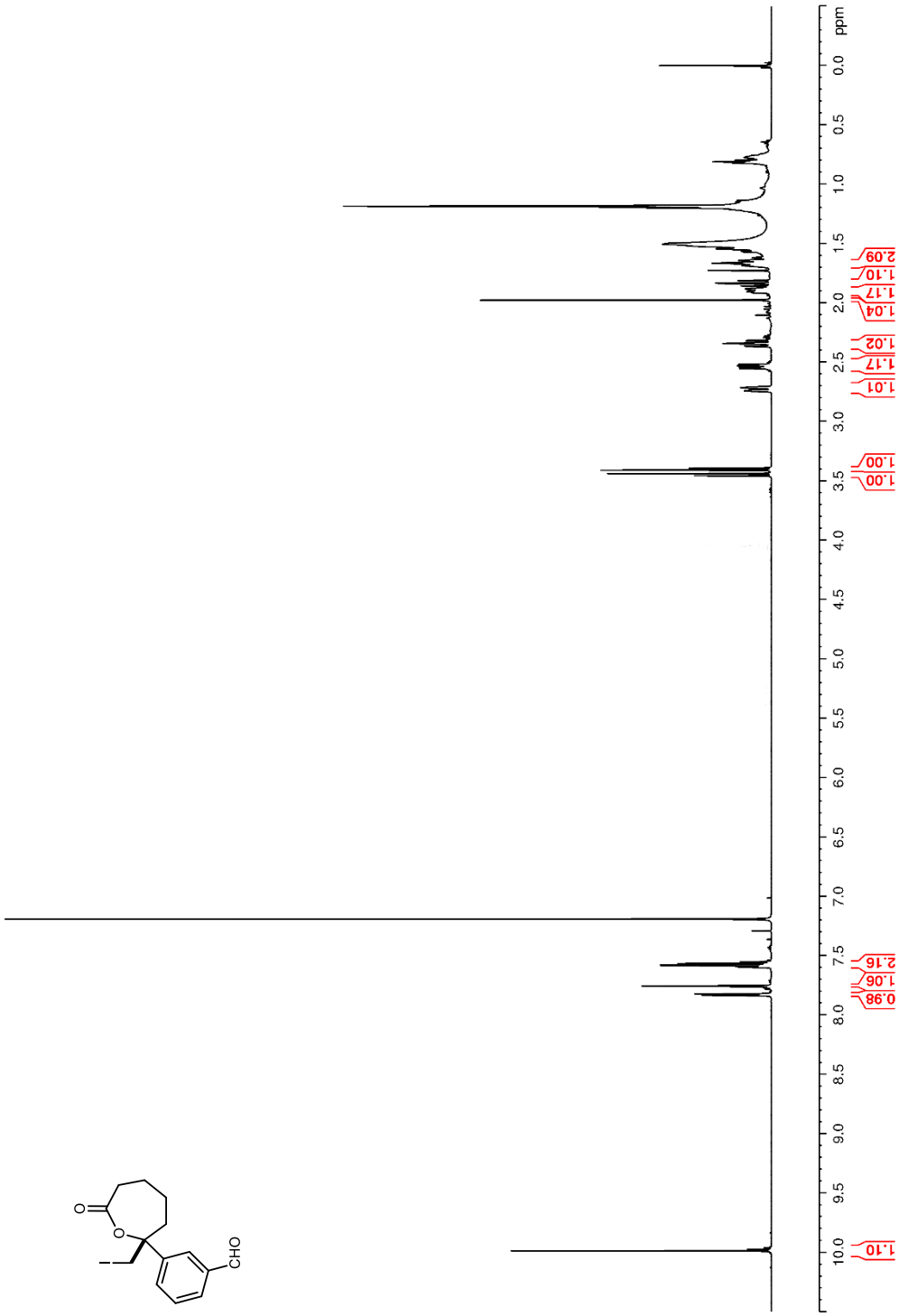


Figure 70. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **8l**

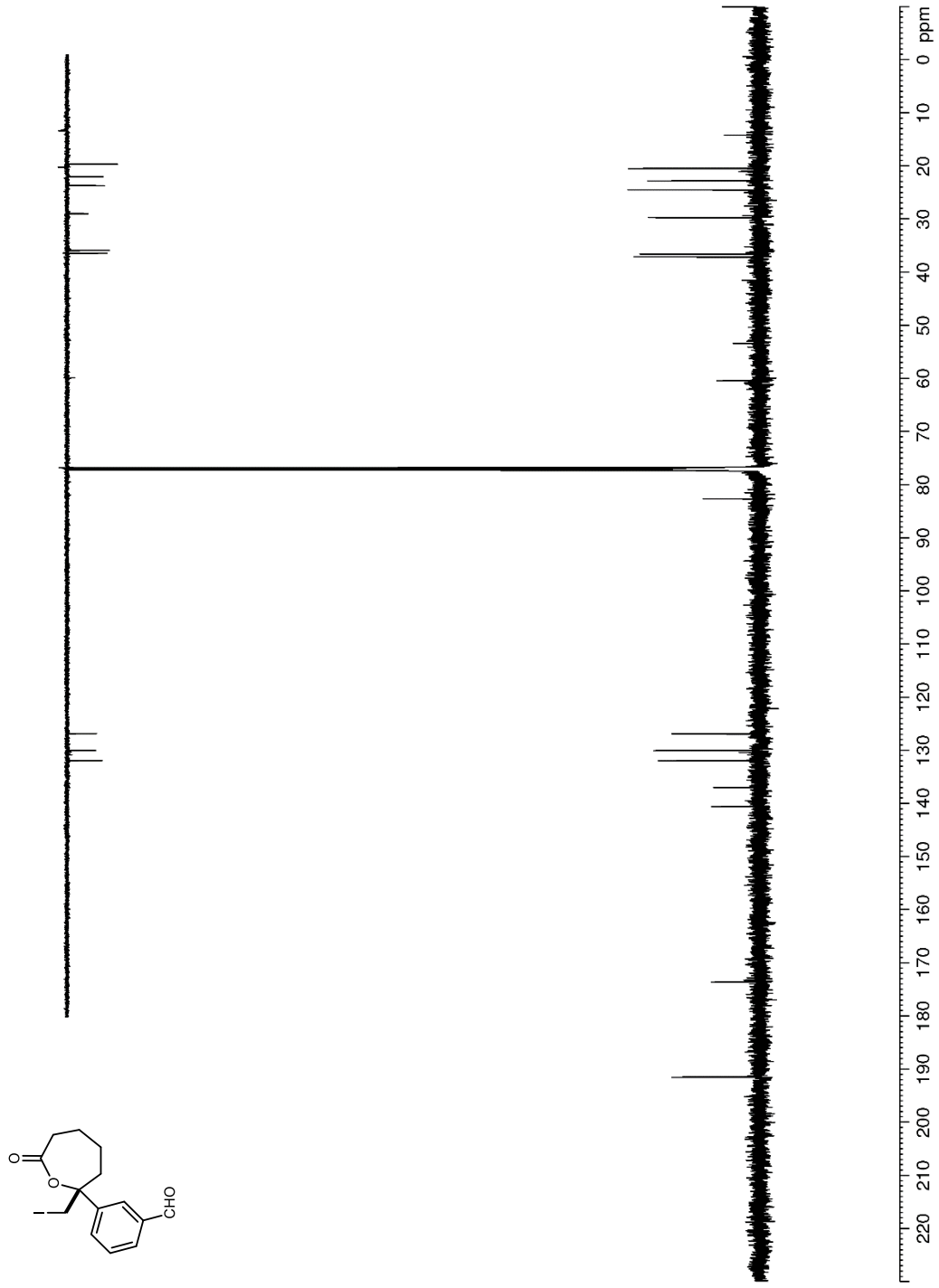


Figure 71. ^{1}H NMR (400 MHz, ($CDCl_3$) of **8m**

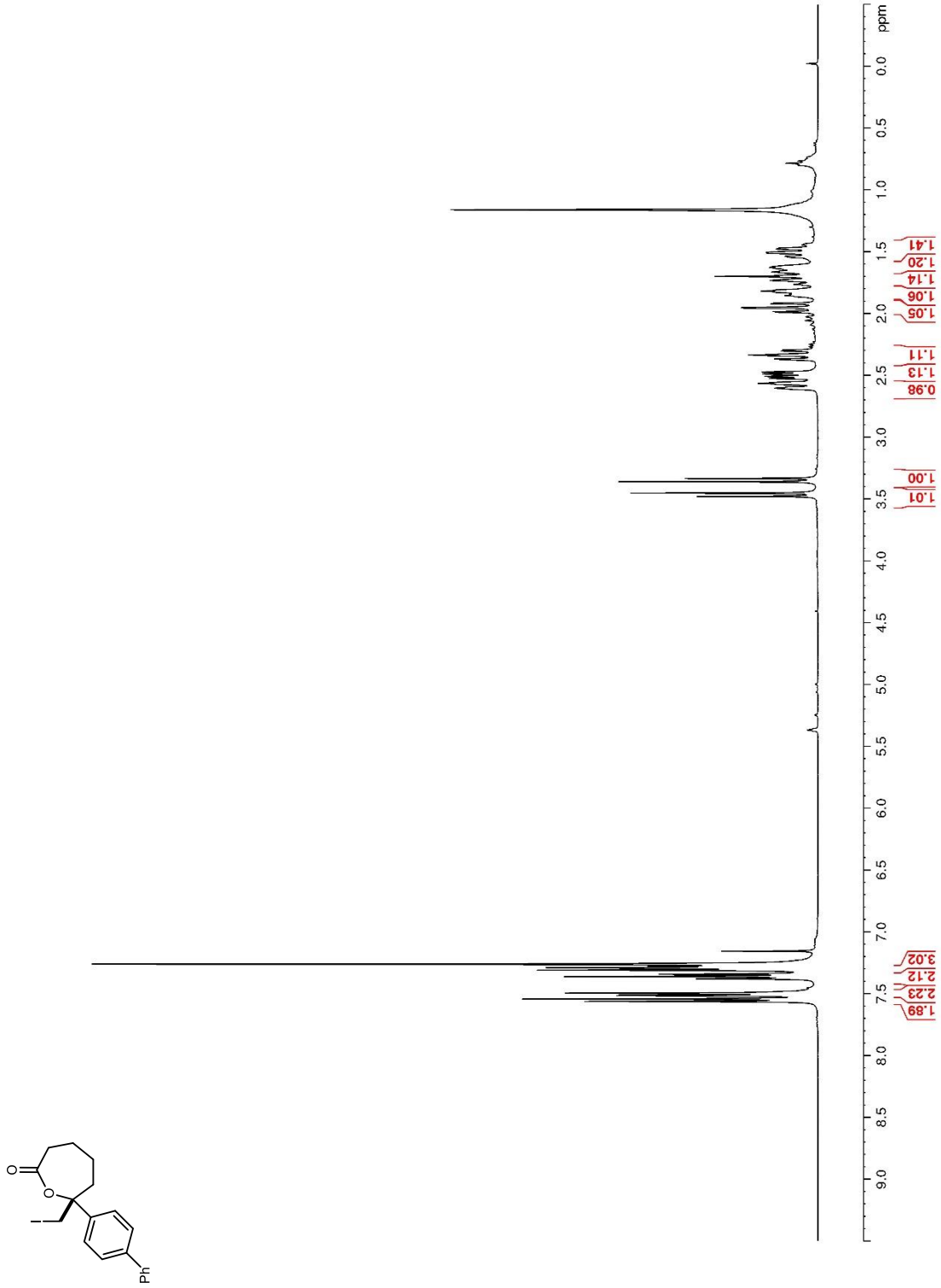


Figure 72. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **8m**

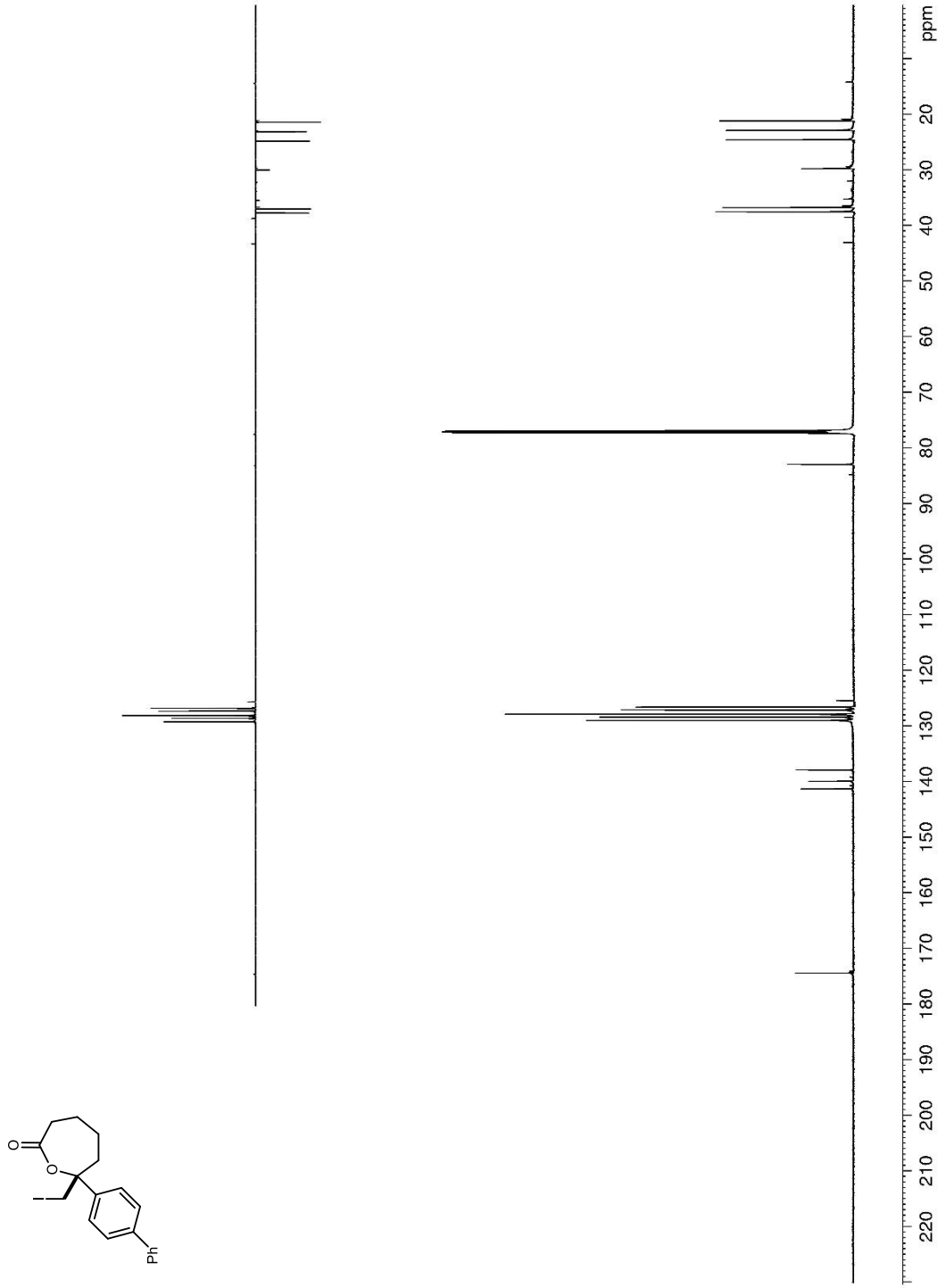


Figure 73. ^{1}H NMR (400 MHz, ($CDCl_3$) of **8n**

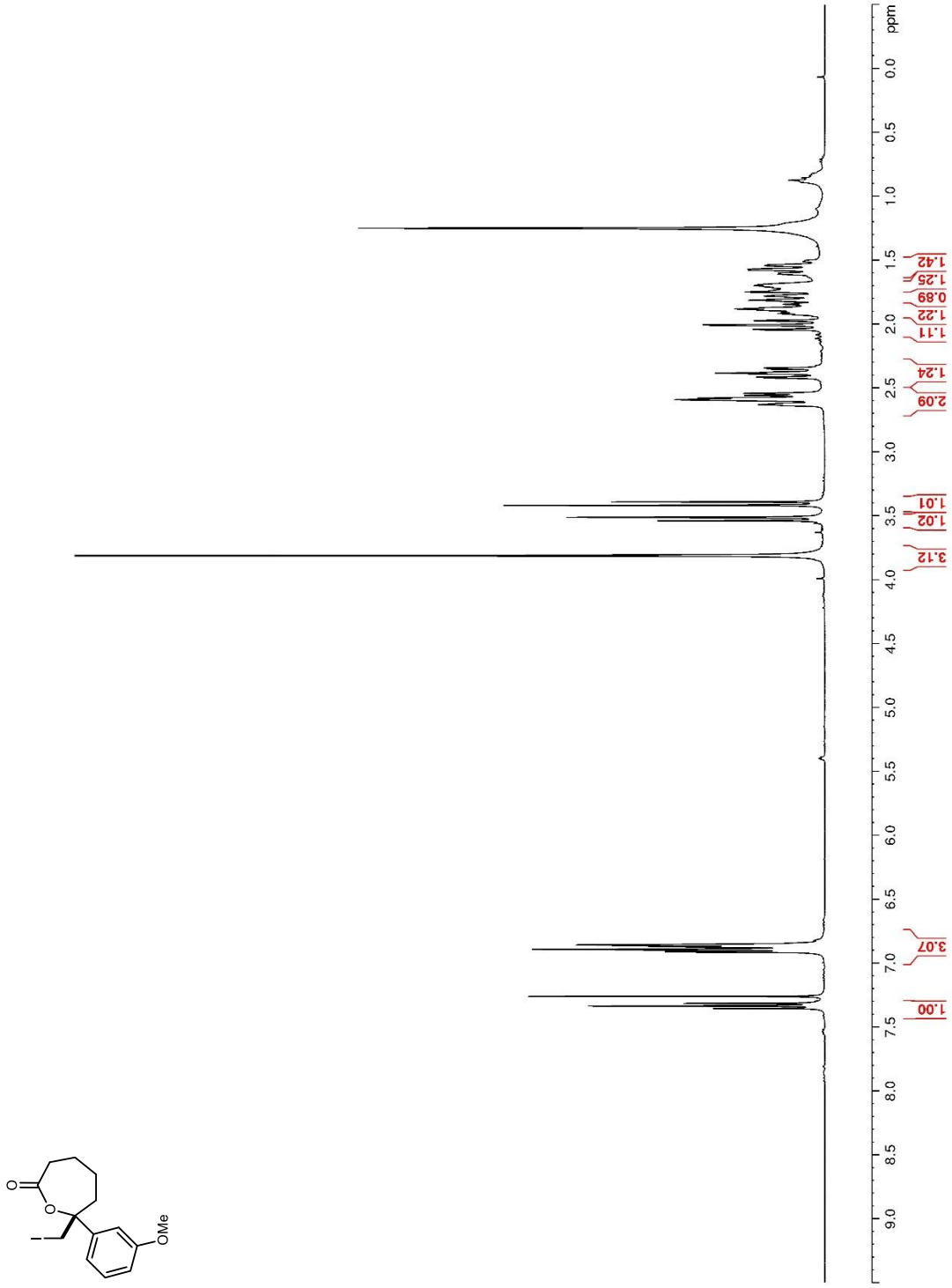


Figure 74. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **8n**

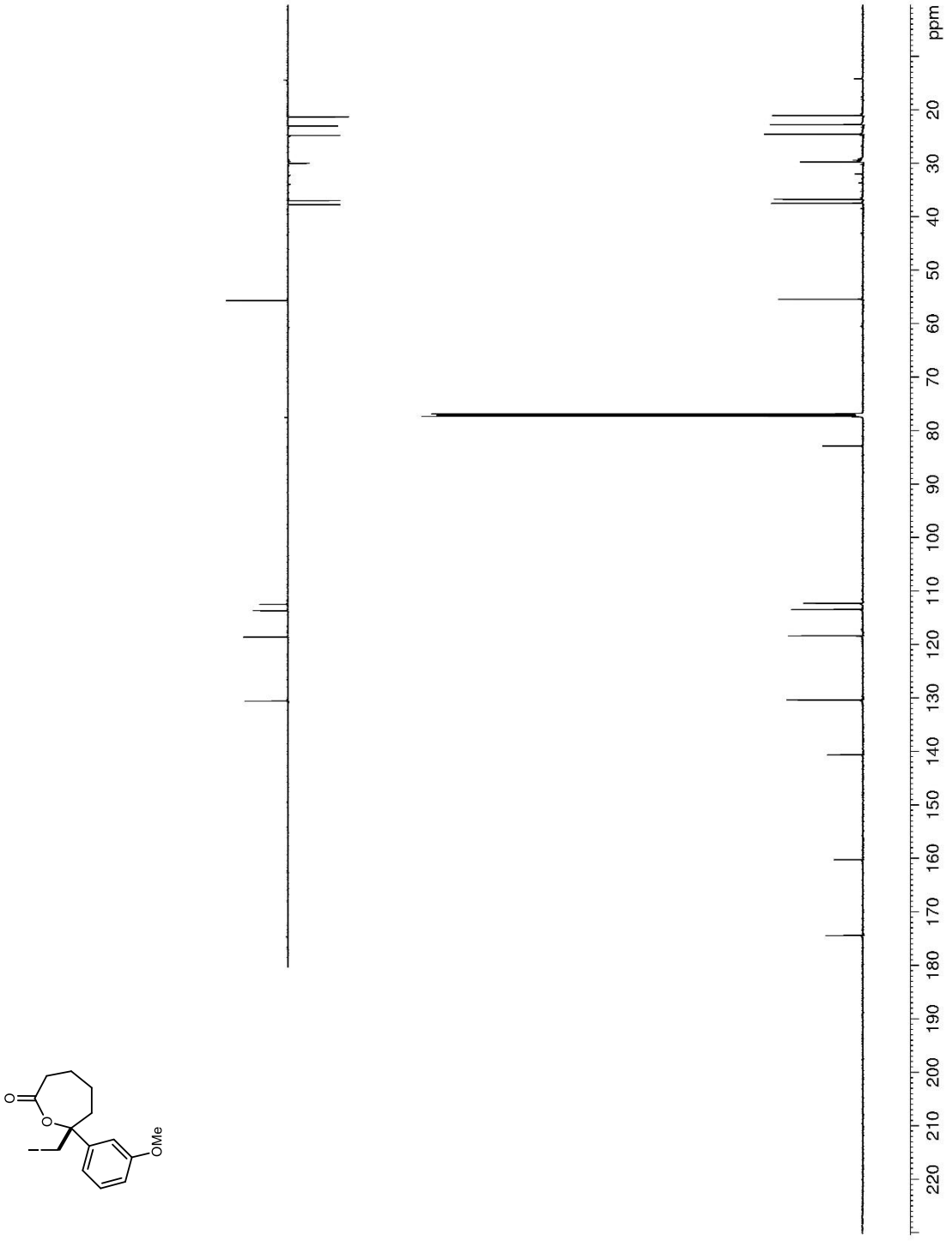


Figure 75. ^{1}H NMR (400 MHz, ($CDCl_3$) of **8o**

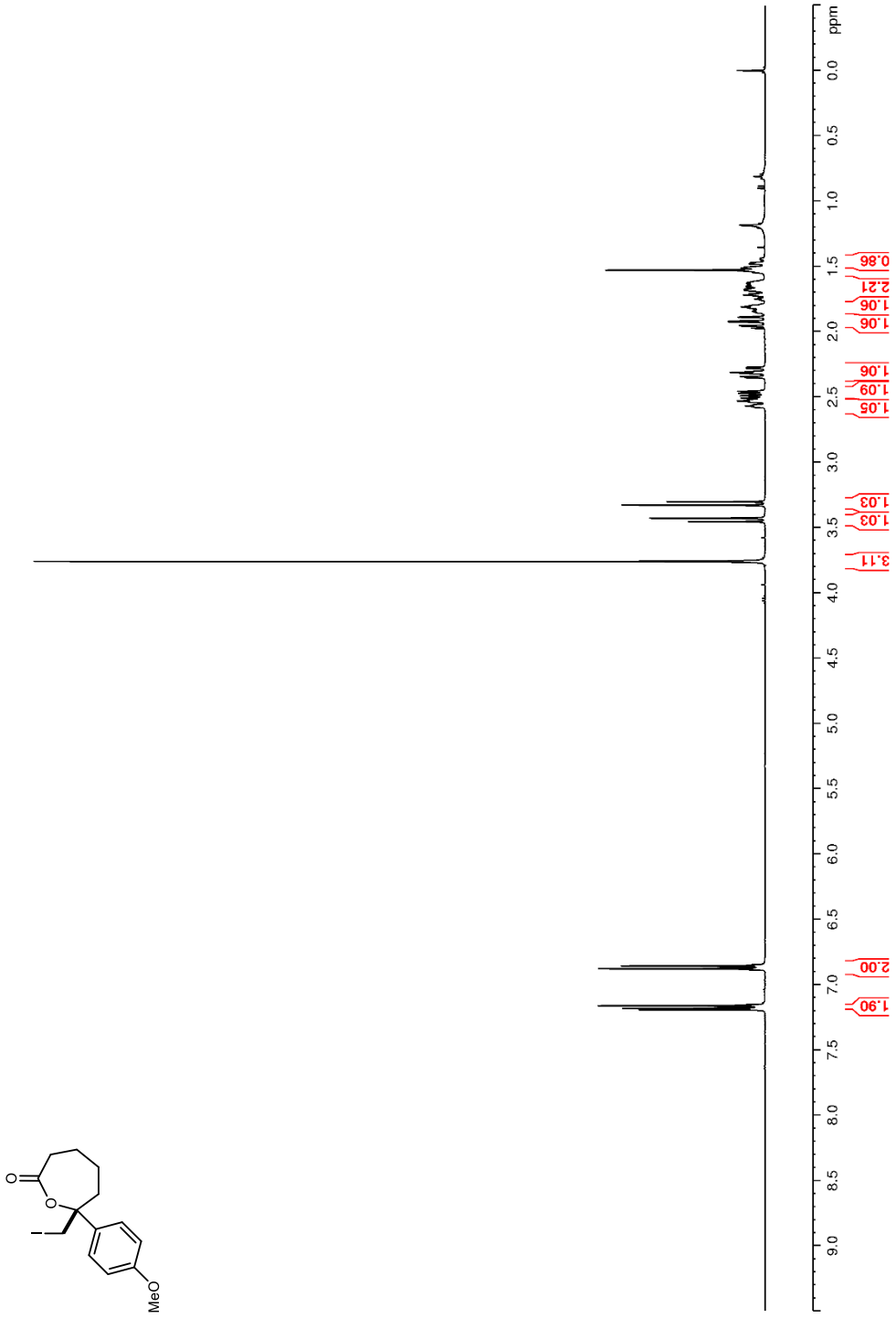


Figure 76. ^{13}C NMR (100 MHz**,** $CDCl_3$) of **8o**

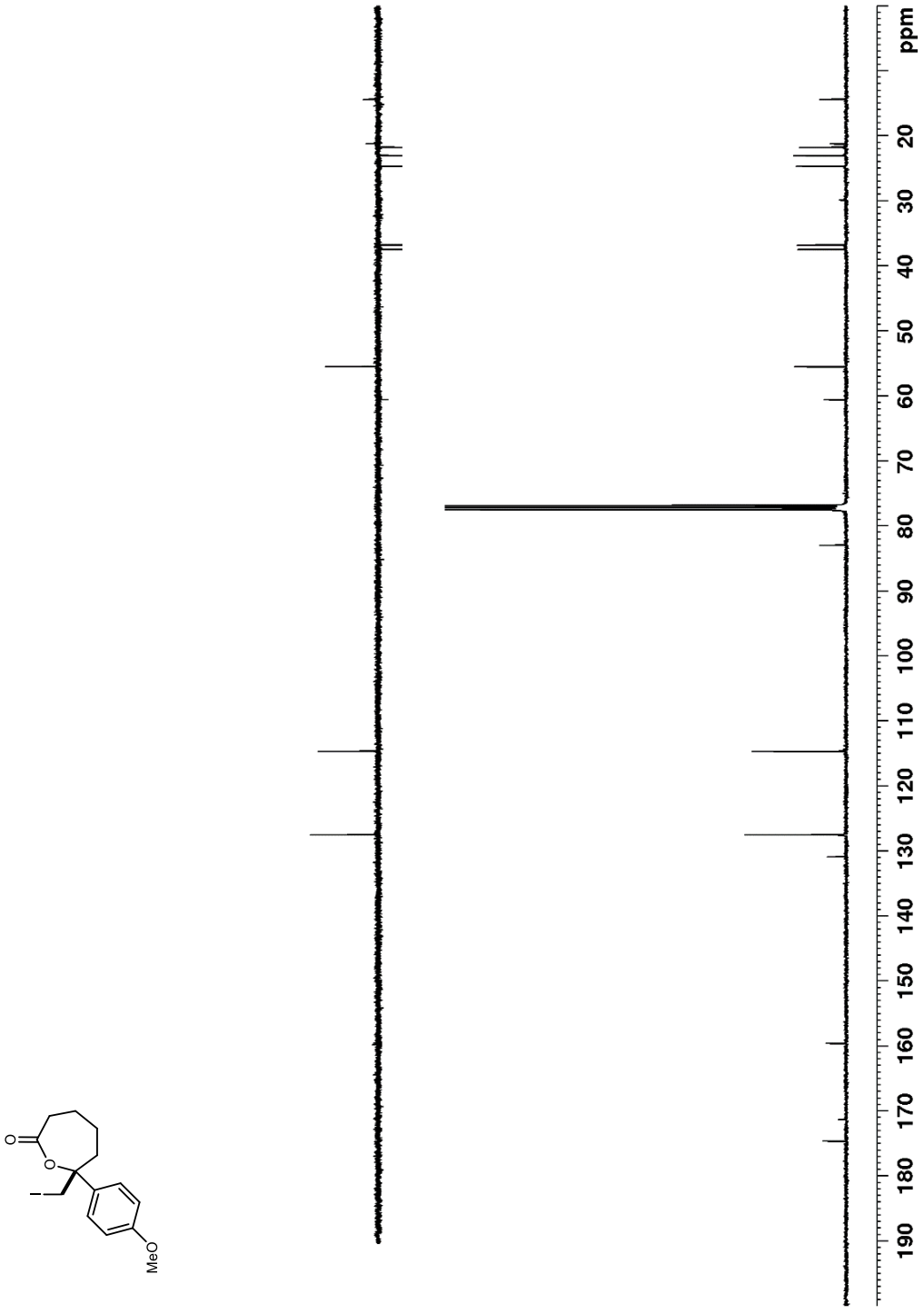


Figure 77. ^{1}H NMR (400 MHz, ($CDCl_3$) of **8p**

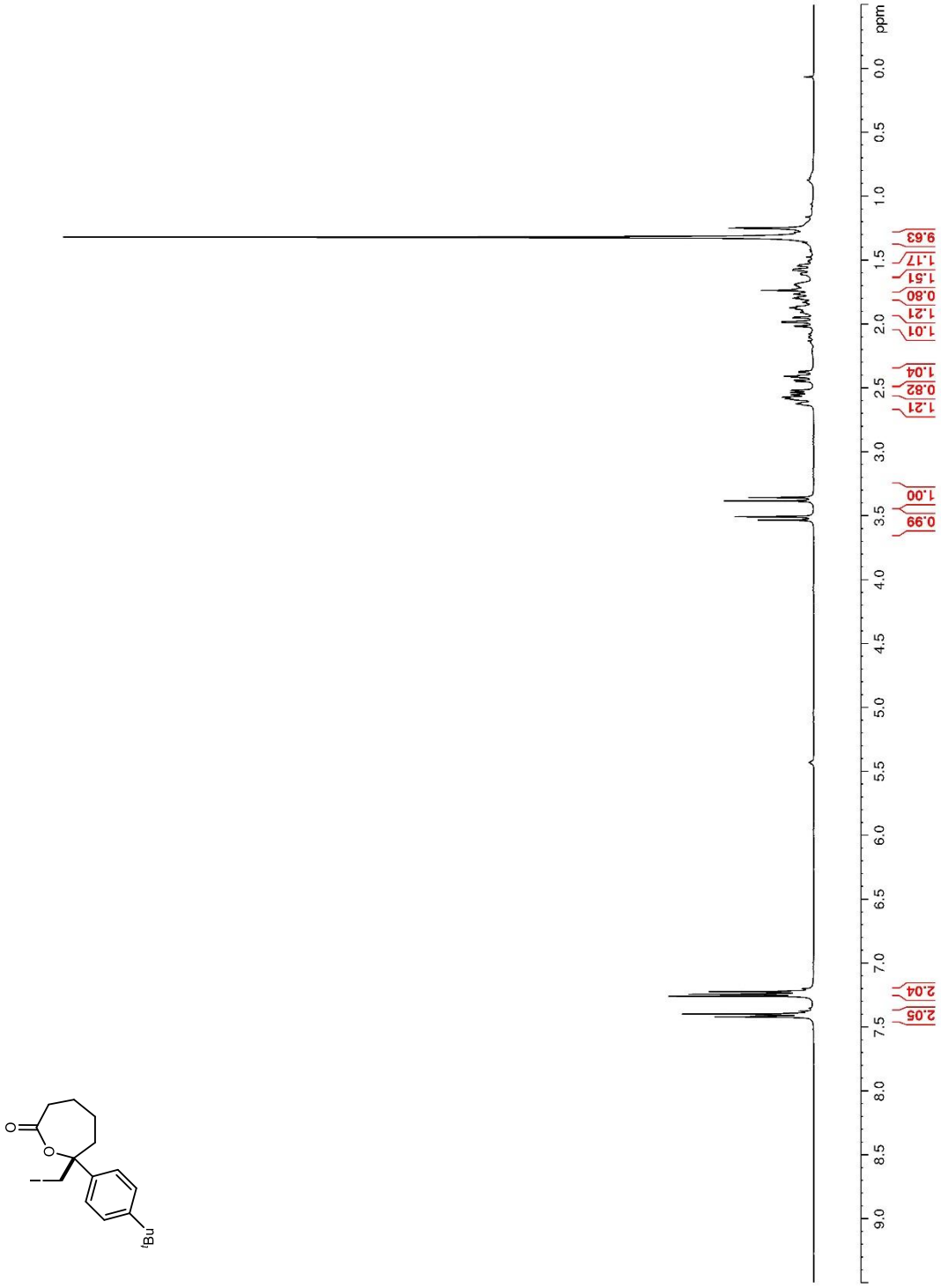


Figure 78. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **8p**

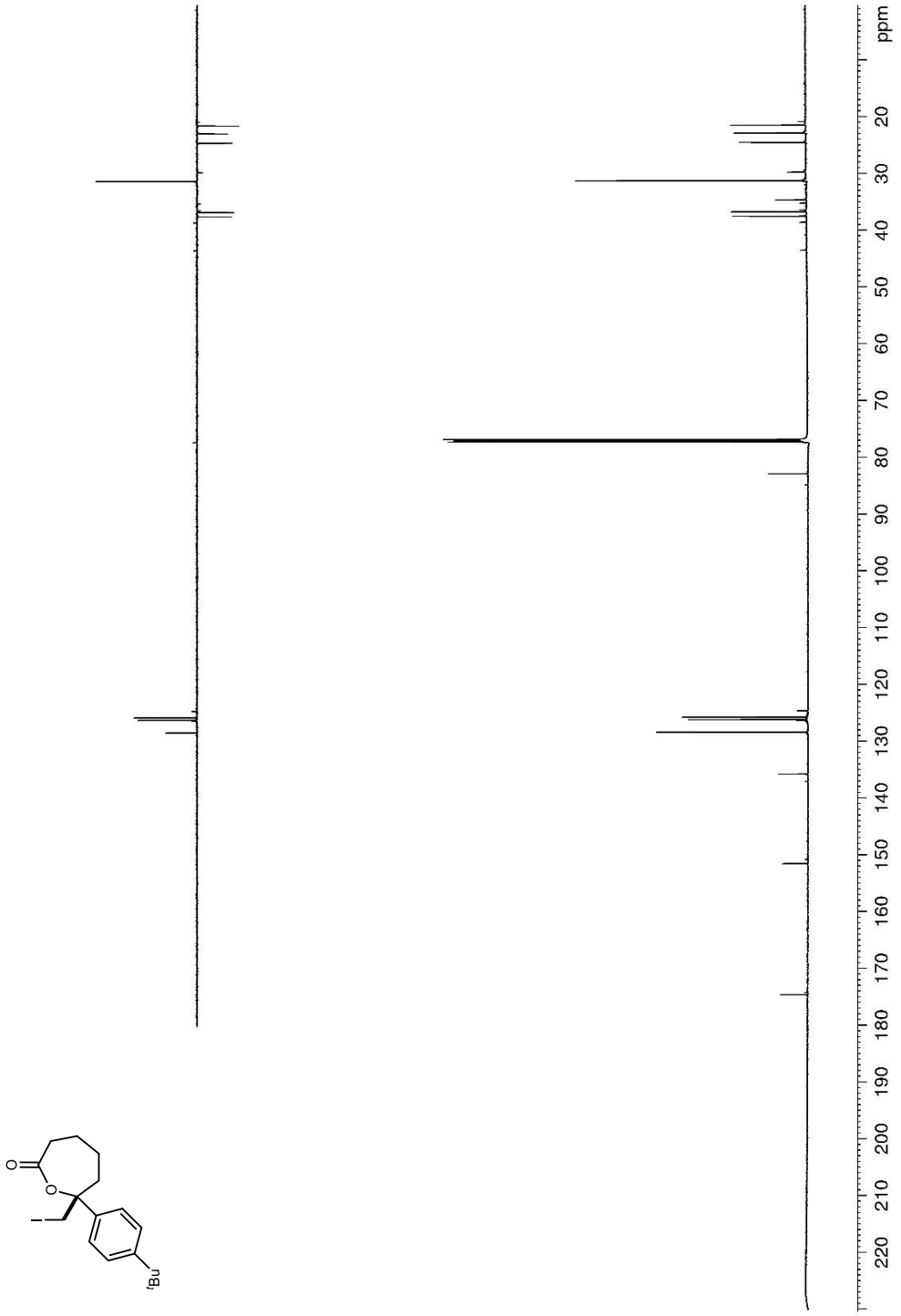


Figure 79. ^{1}H NMR (400 MHz, ($CDCl_3$) of **8q**

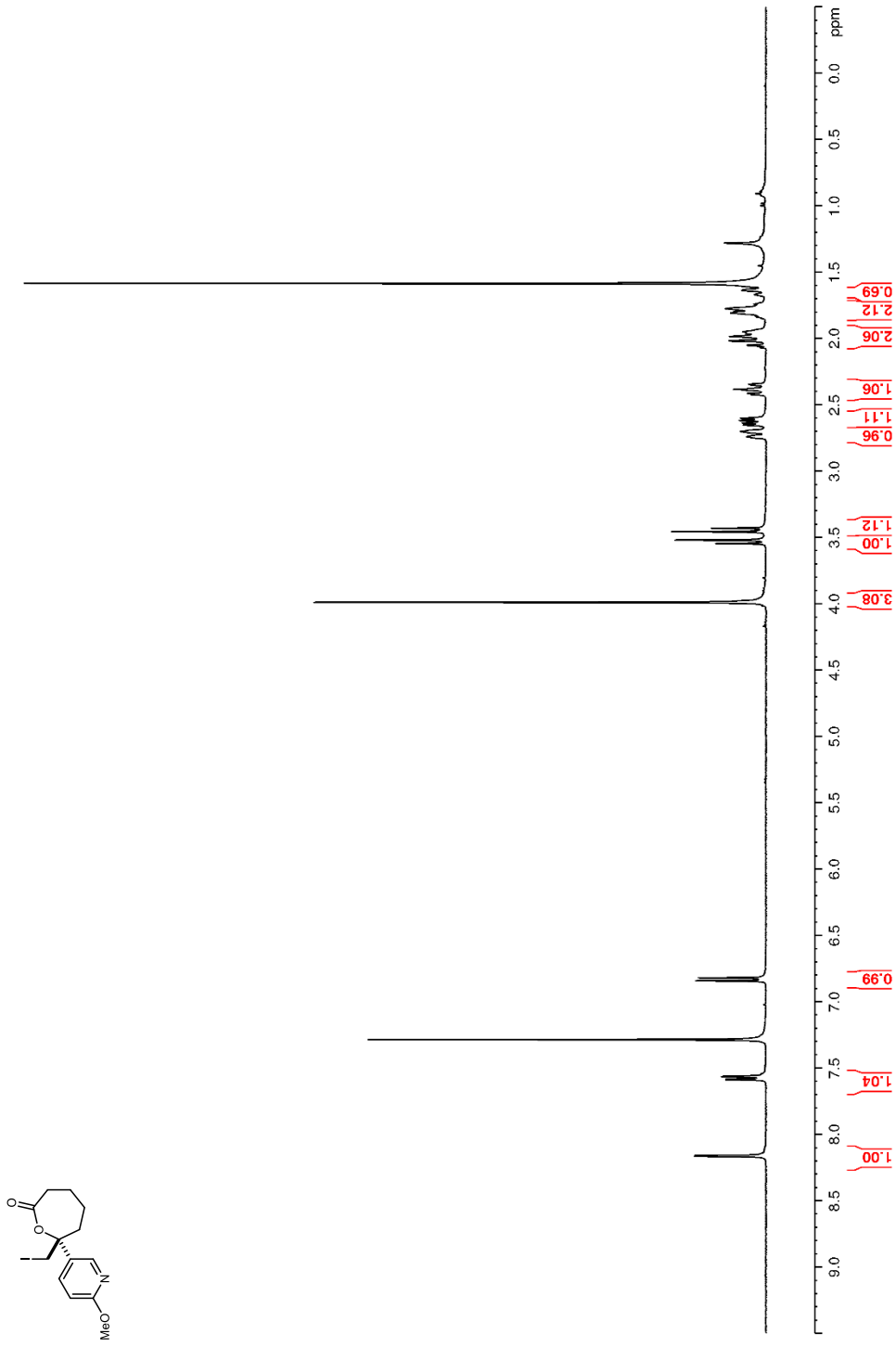


Figure 80. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **8q**

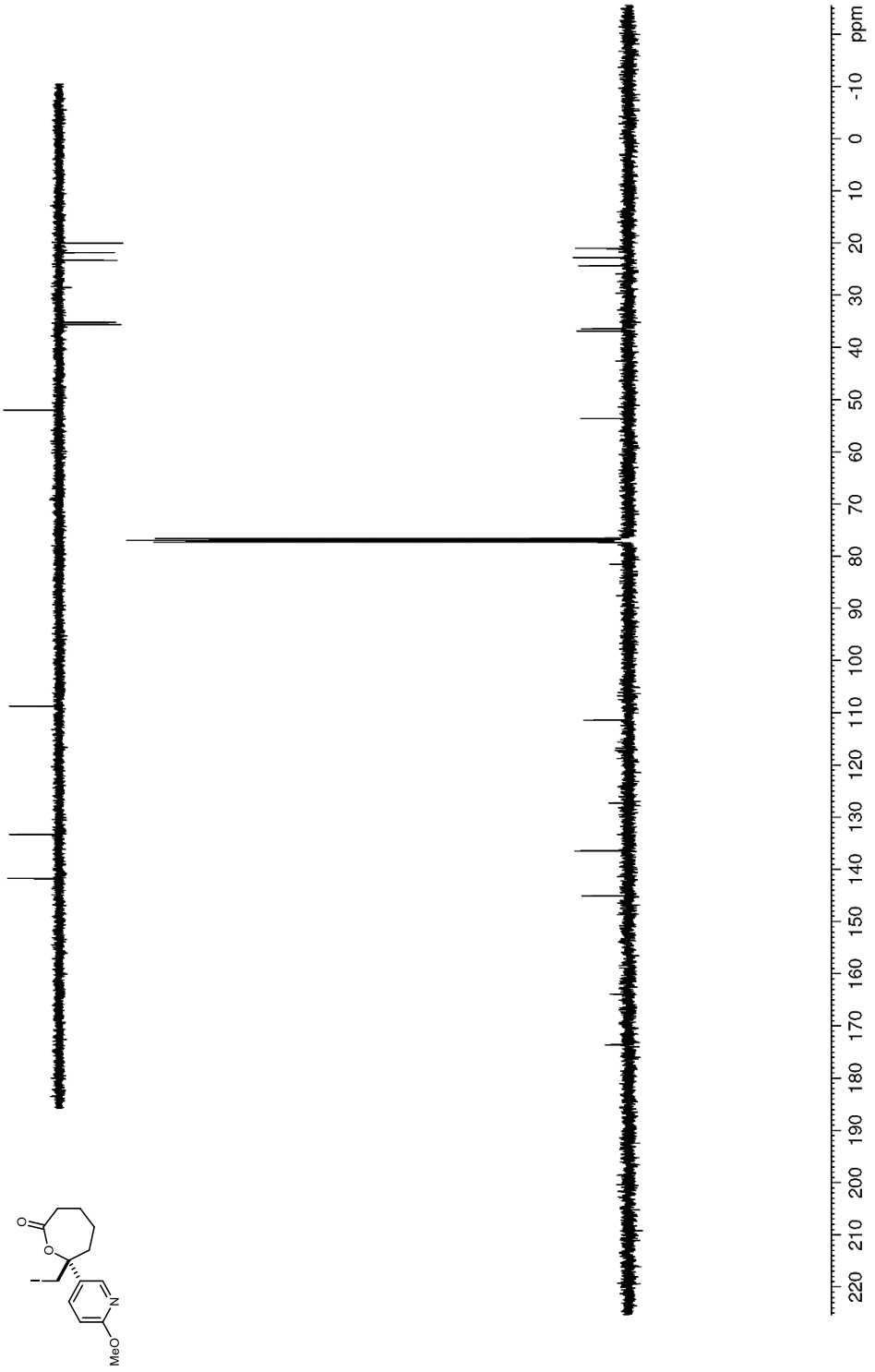


Figure 81. ^{1}H NMR (400 MHz, $CDCl_3$) of **8r**

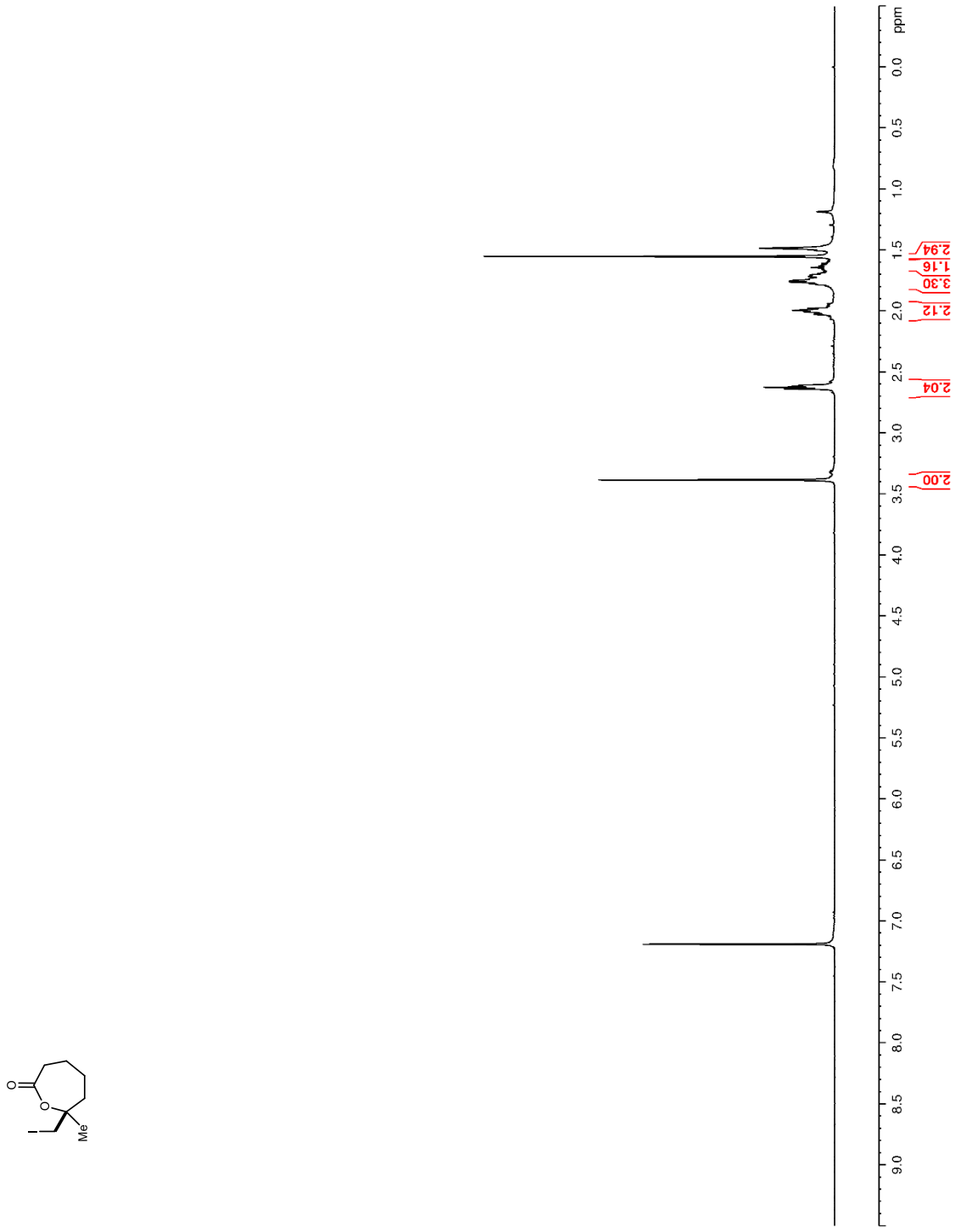


Figure 82. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **8r**

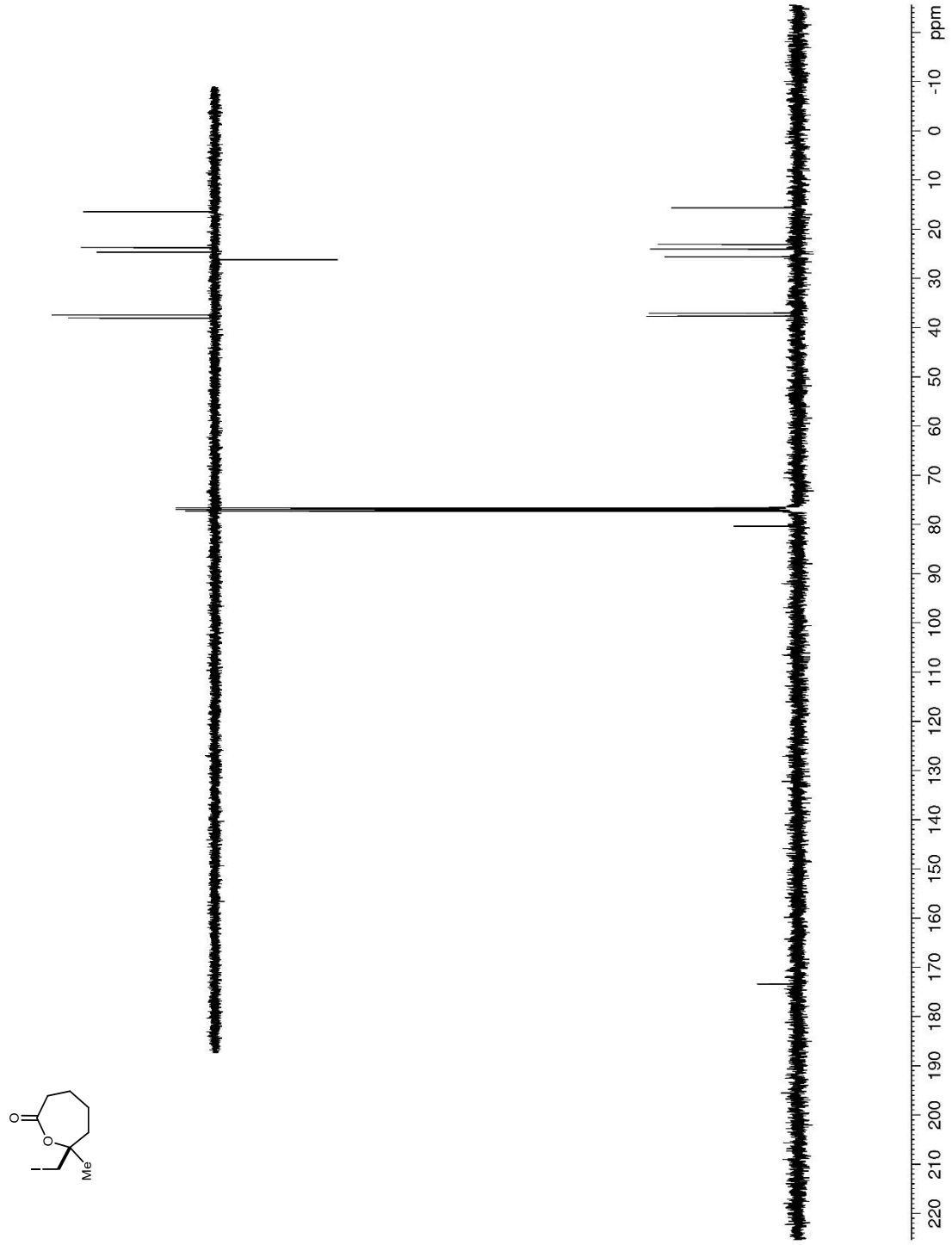


Figure 83. ^{1}H NMR (400 MHz, $CDCl_3$) of **8s**

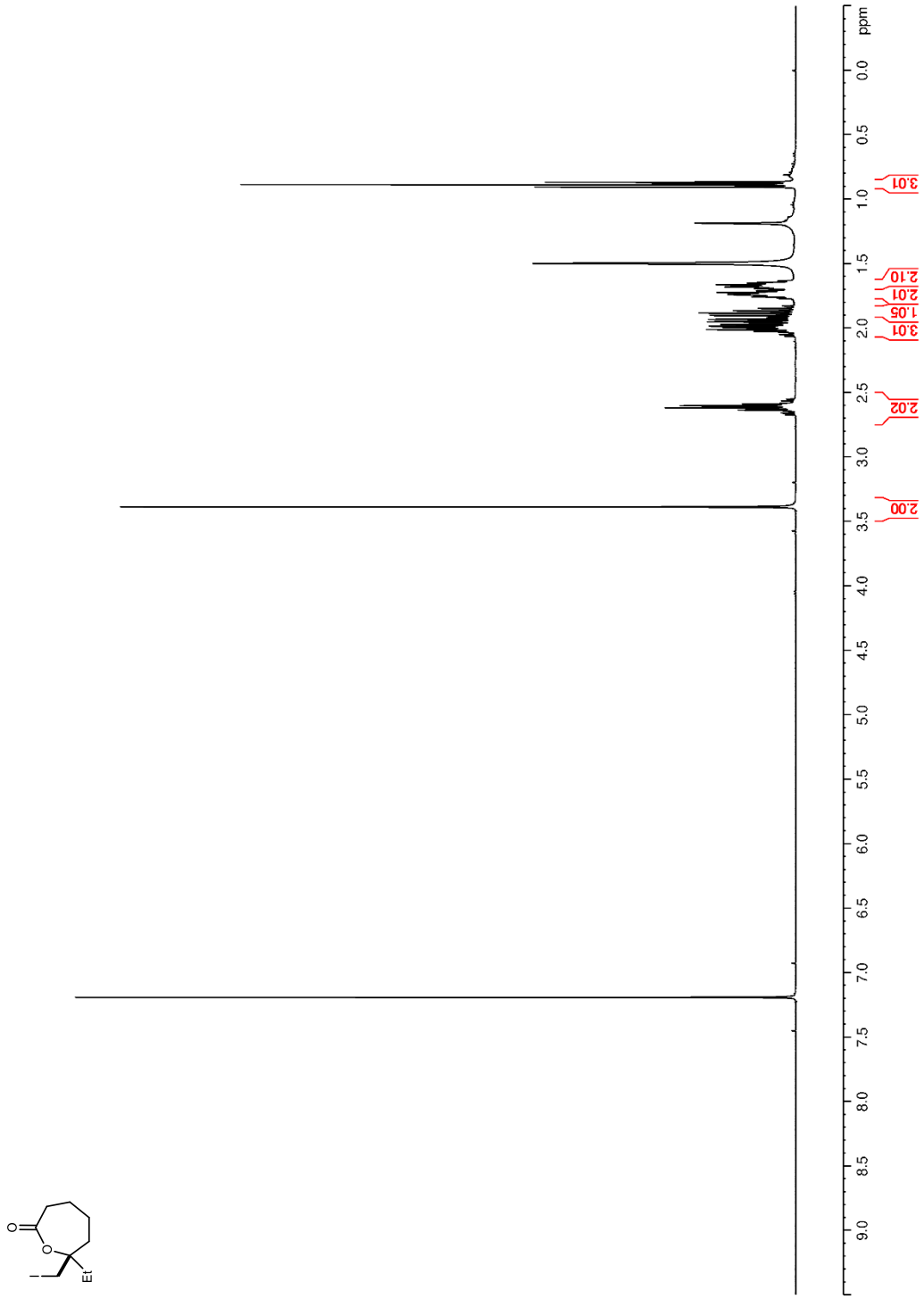


Figure 84. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **8s**

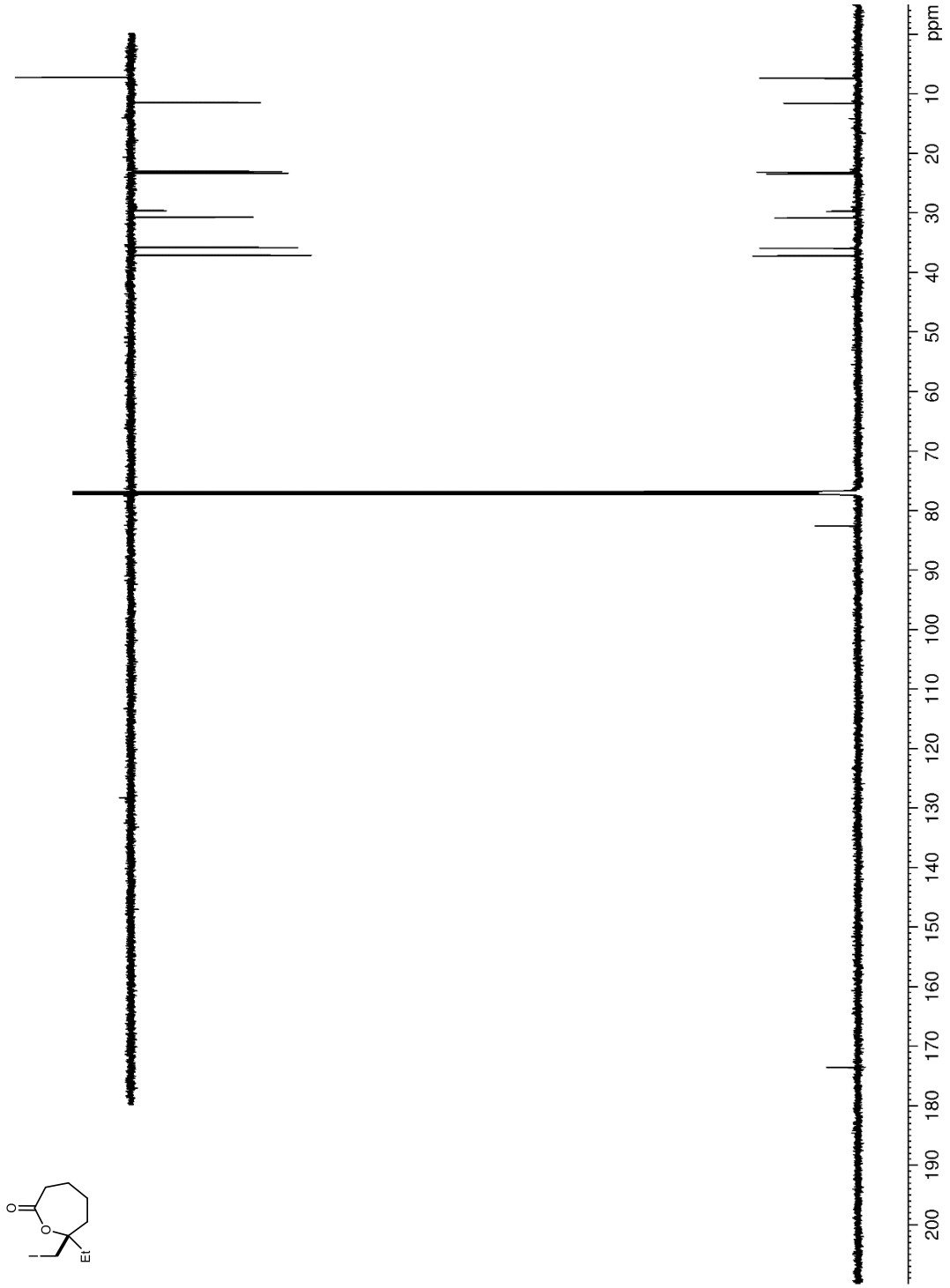


Figure 85. ^{1}H NMR (400 MHz, ($CDCl_3$) of **10**

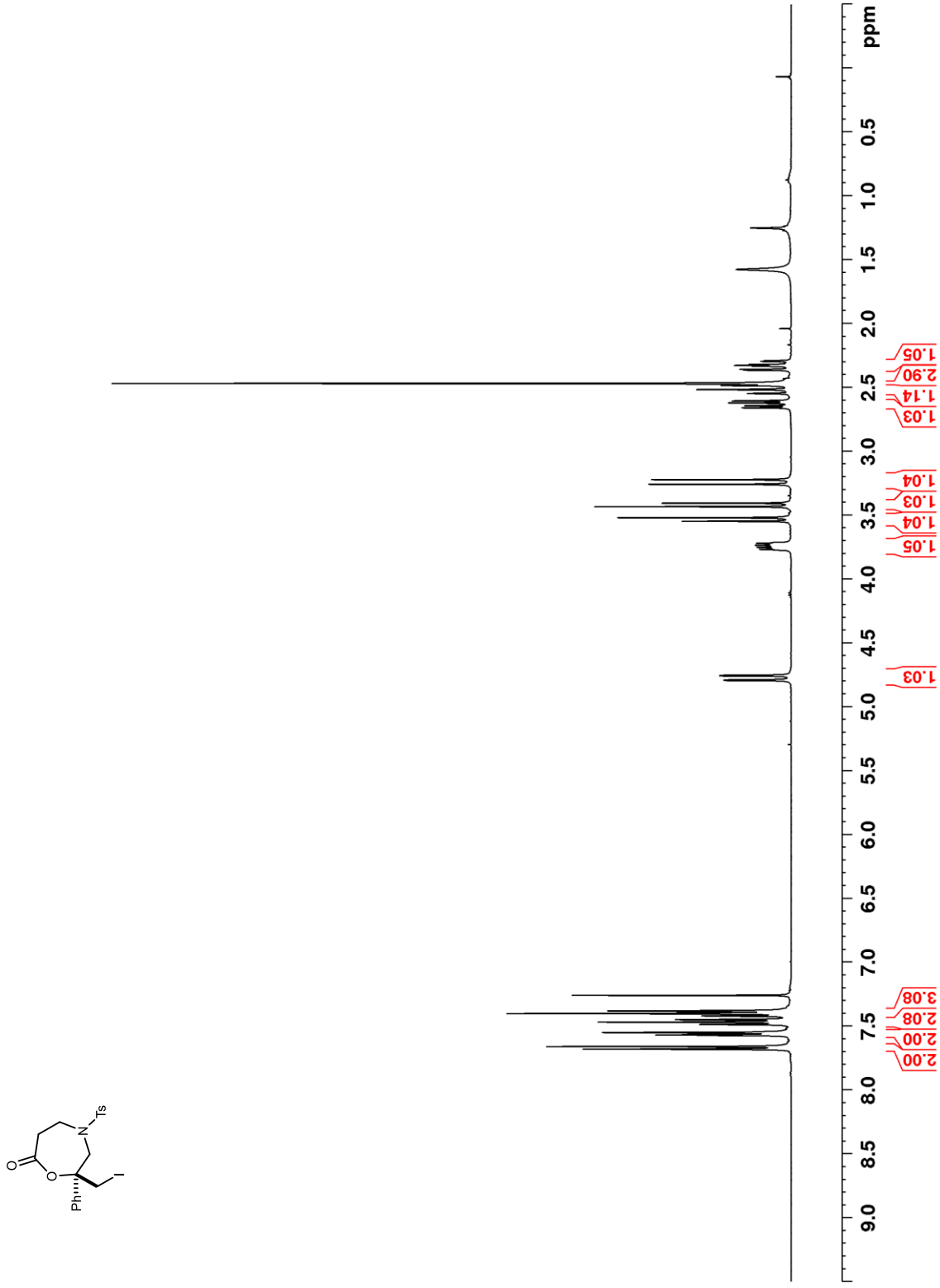


Figure 86. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **10**

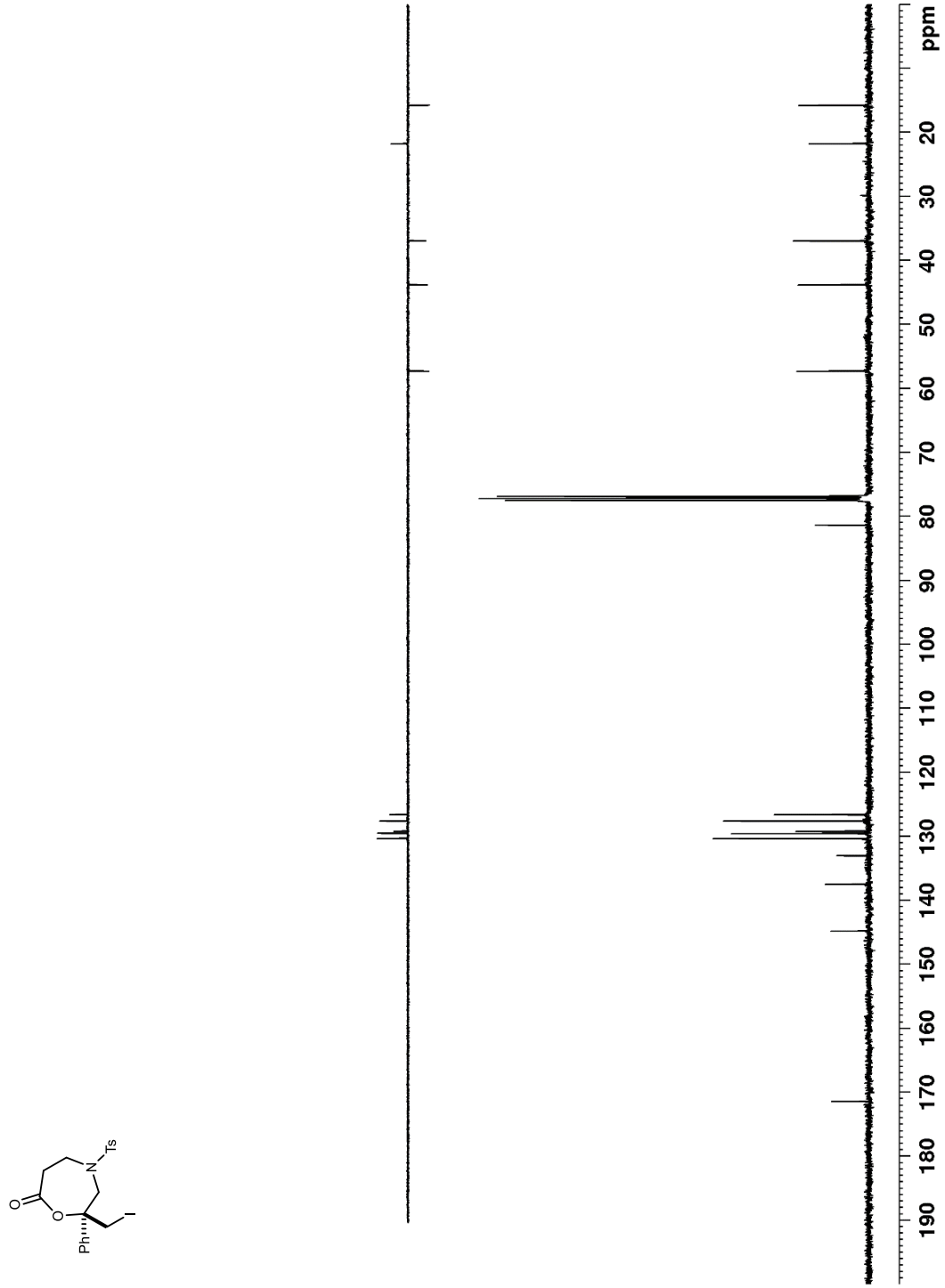


Figure 87. ^{1}H NMR (400 MHz, ($CDCl_3$) of **12**

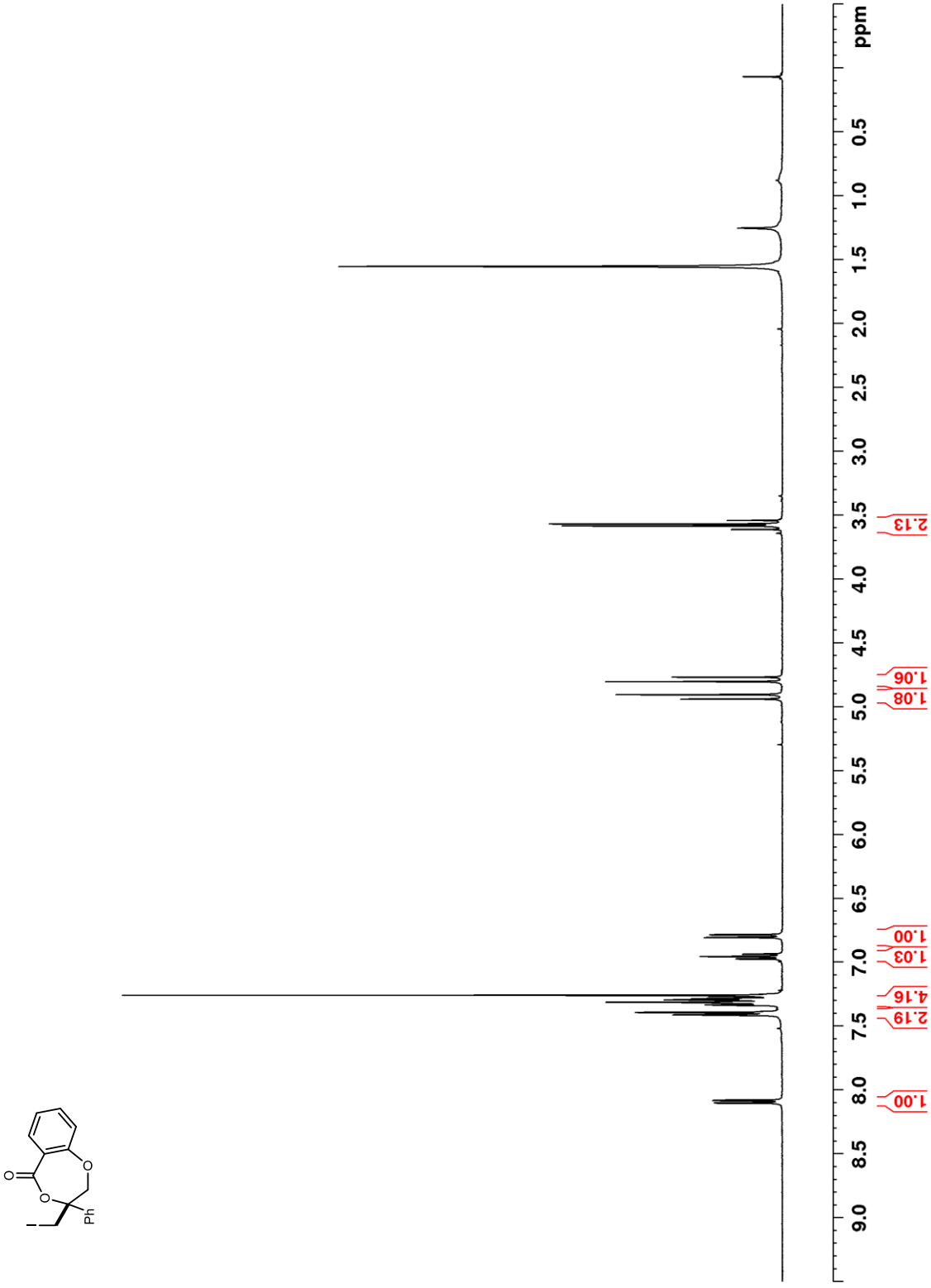


Figure 88. ^{13}C NMR (100 MHz**,** $CDCl_3$) of **12**

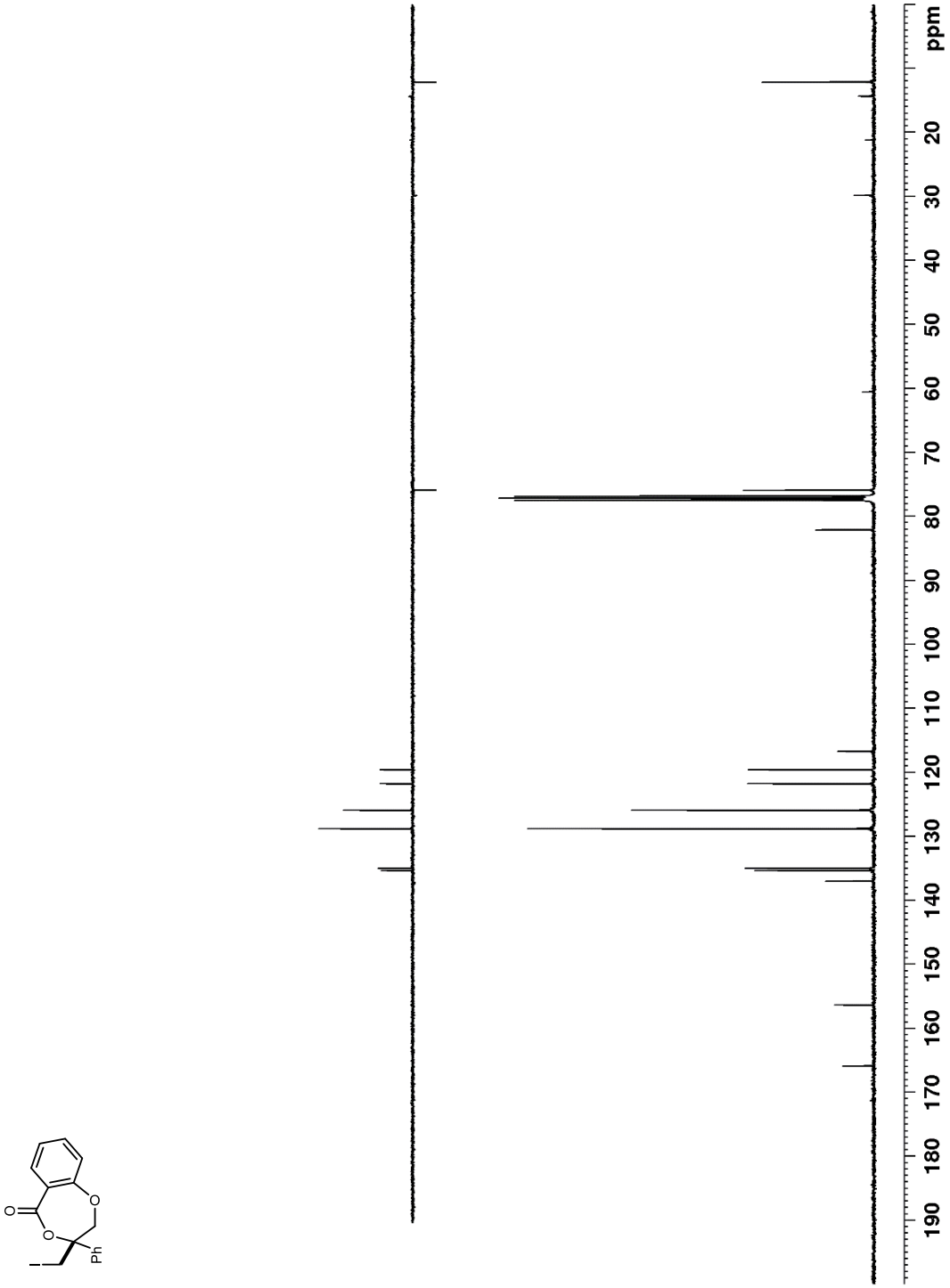


Figure 89. ^{1}H NMR (400 MHz, ($CDCl_3$) of **13**

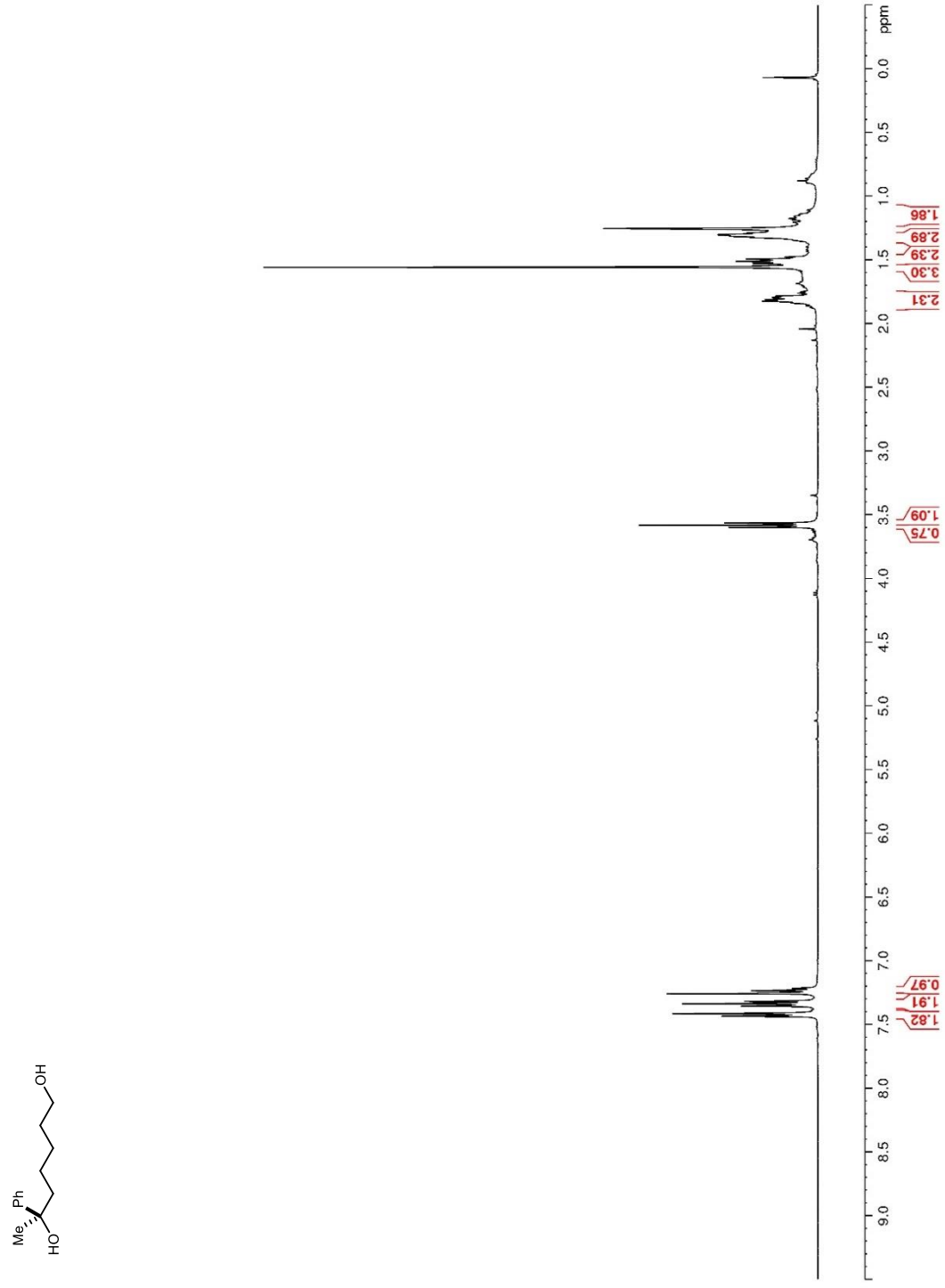


Figure 90. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **13**

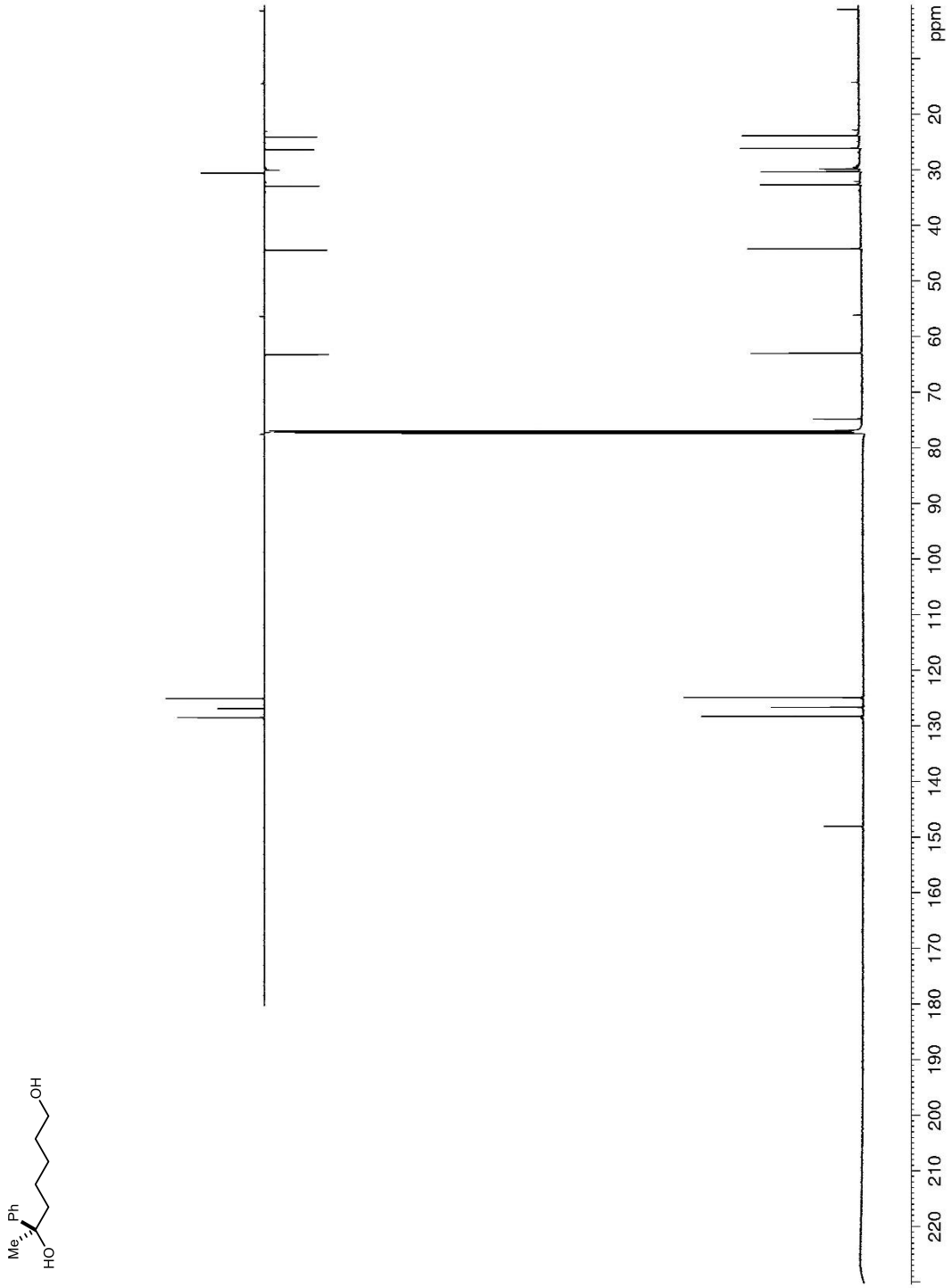


Figure 91. ^{1}H NMR (400 MHz, ($CDCl_3$) of **14**

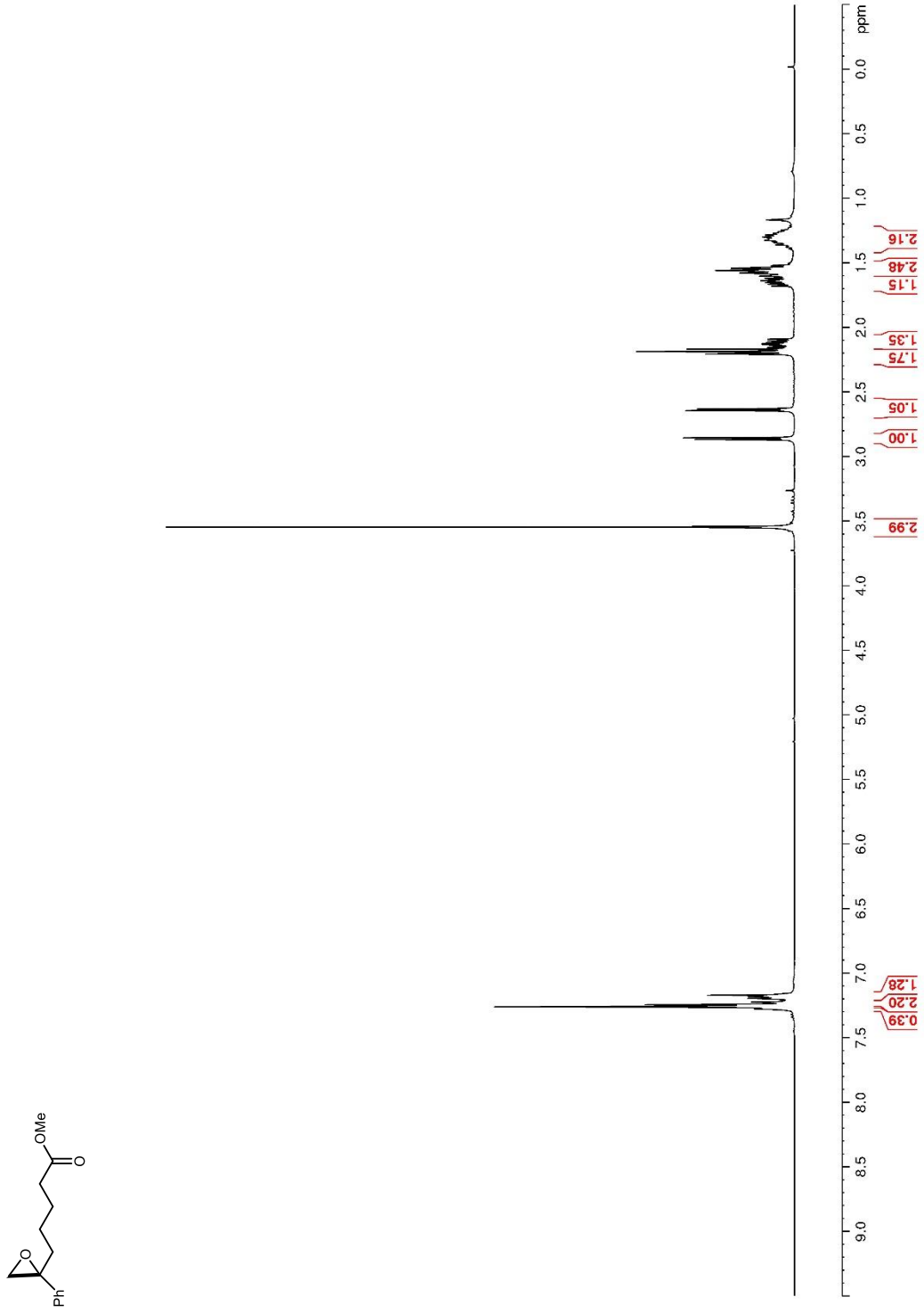


Figure 92. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **14**

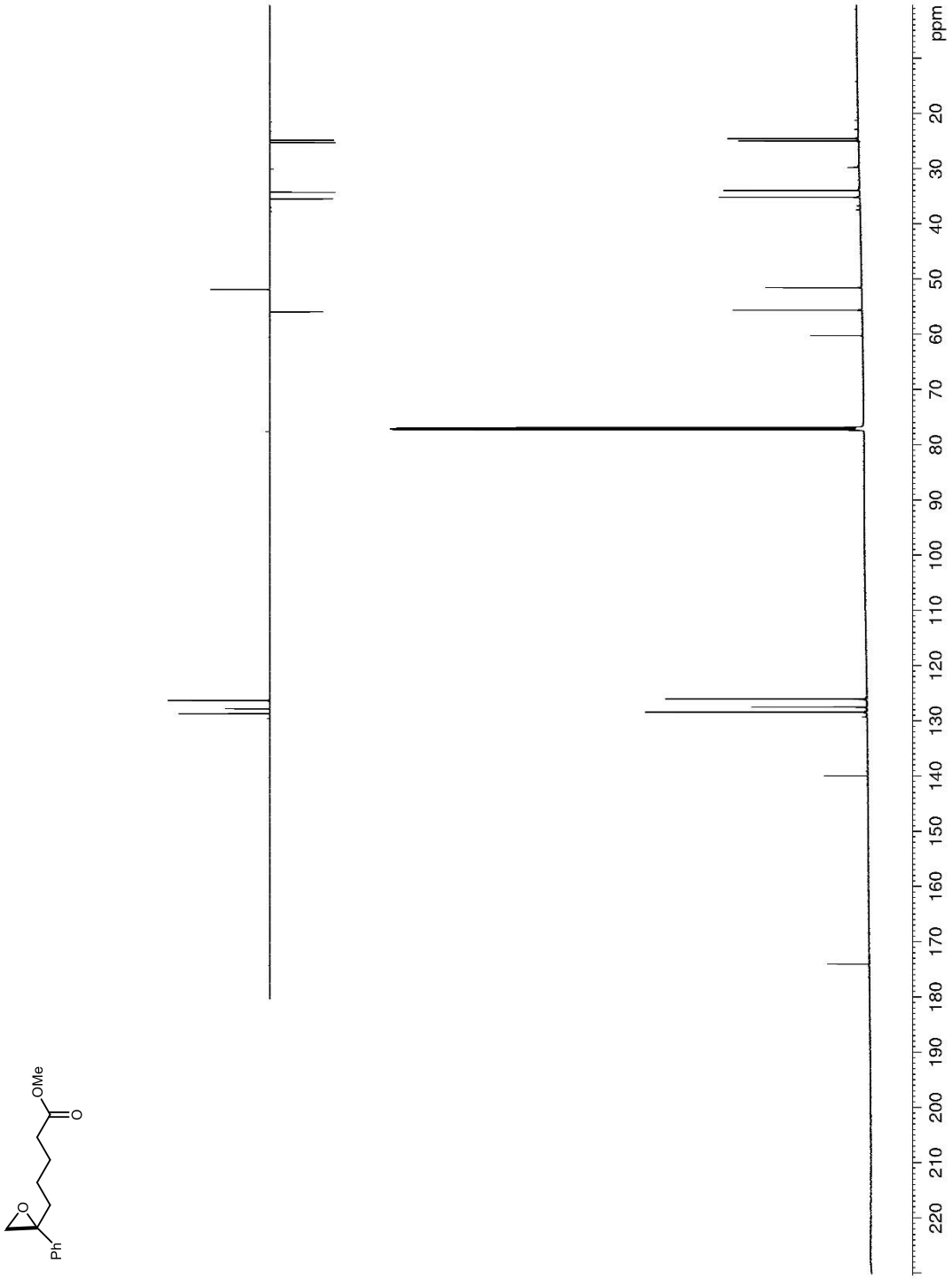


Figure 93. ^{1}H NMR (400 MHz, ($CDCl_3$) of **15**

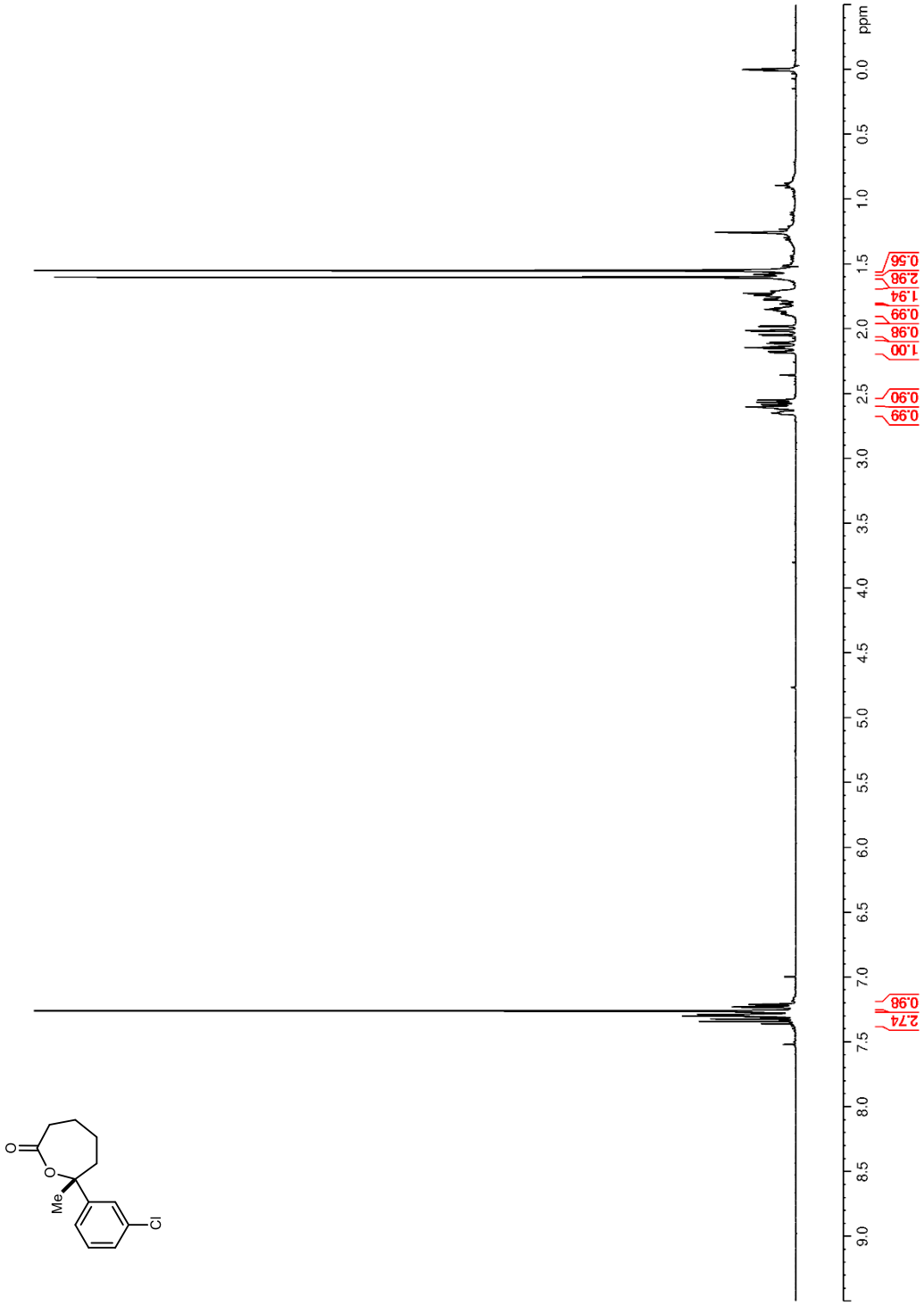


Figure 94. ^{13}C NMR (150 MHz**,** $CDCl_3$) of **15**

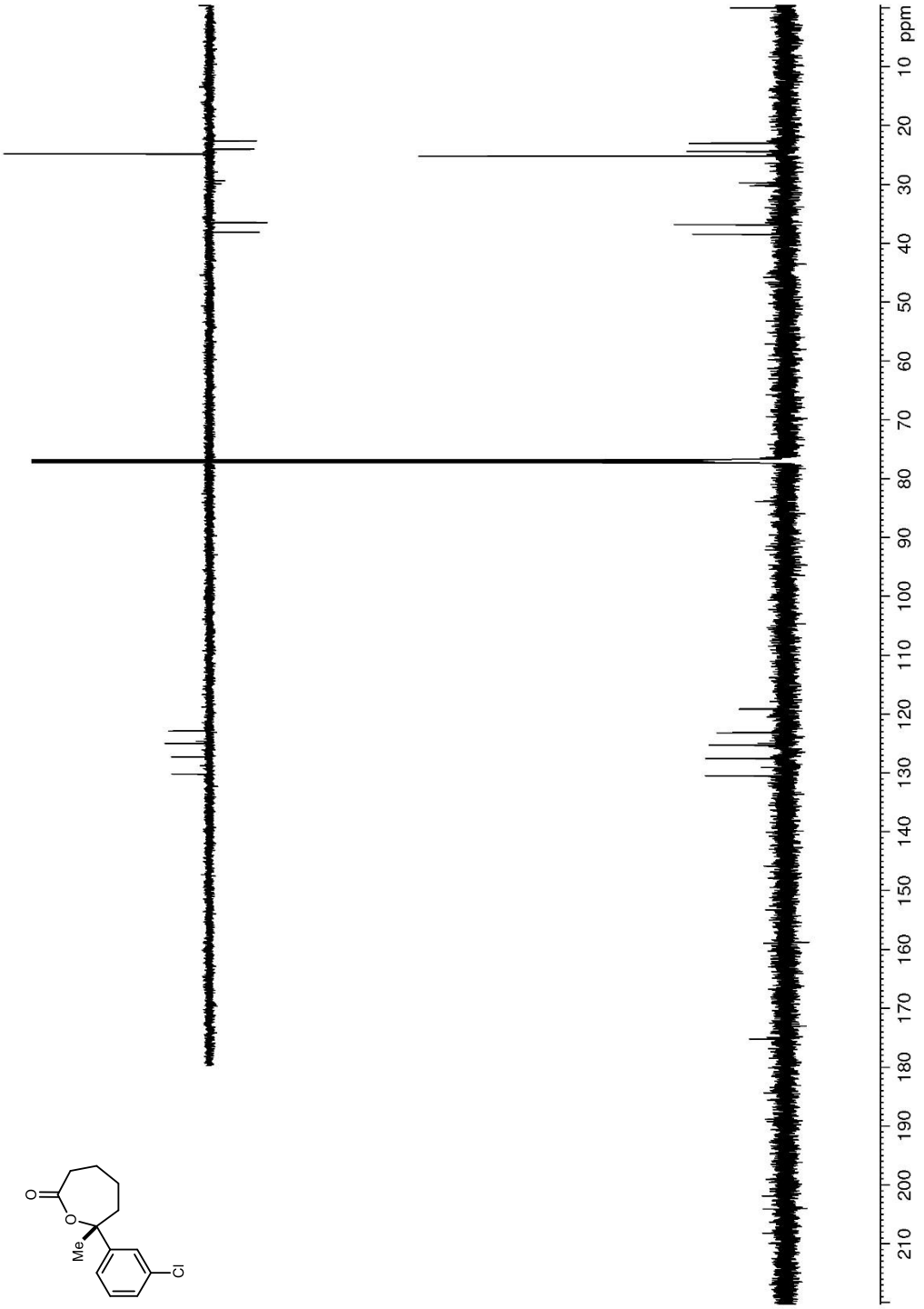
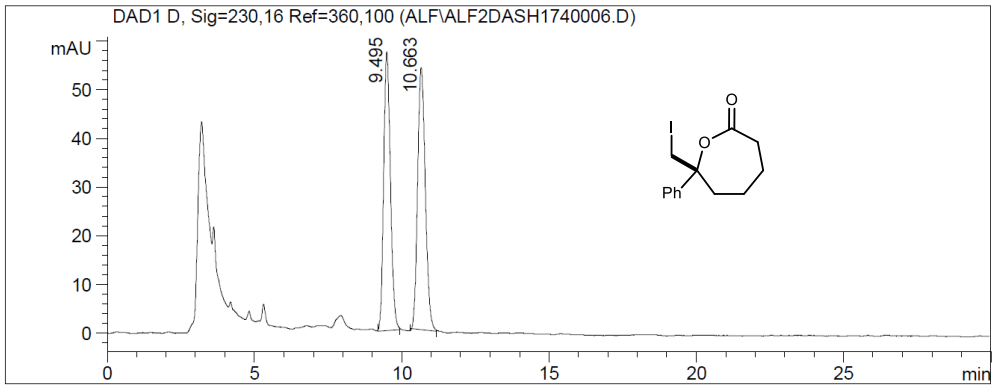
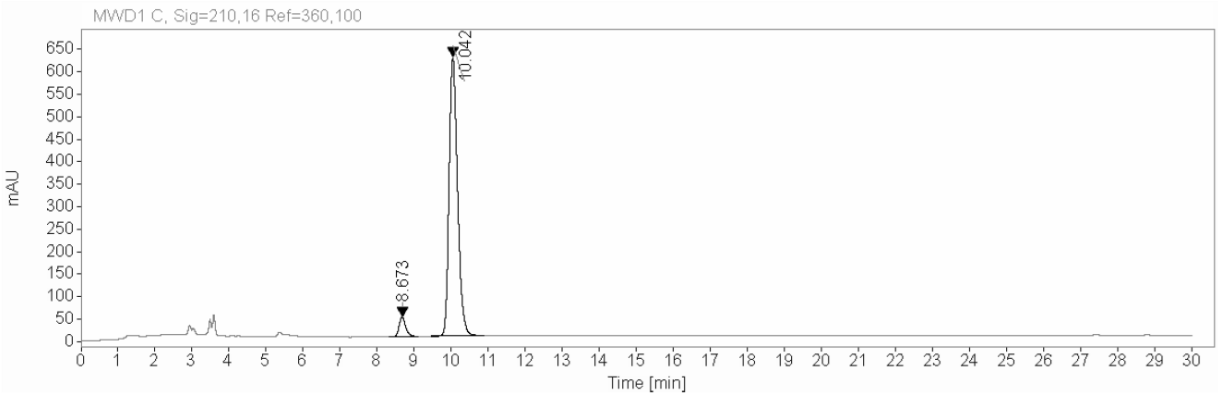


Figure 95. HPLC trace of **8a**



Signal 1: DAD1 D, Sig=230,16 Ref=360,100

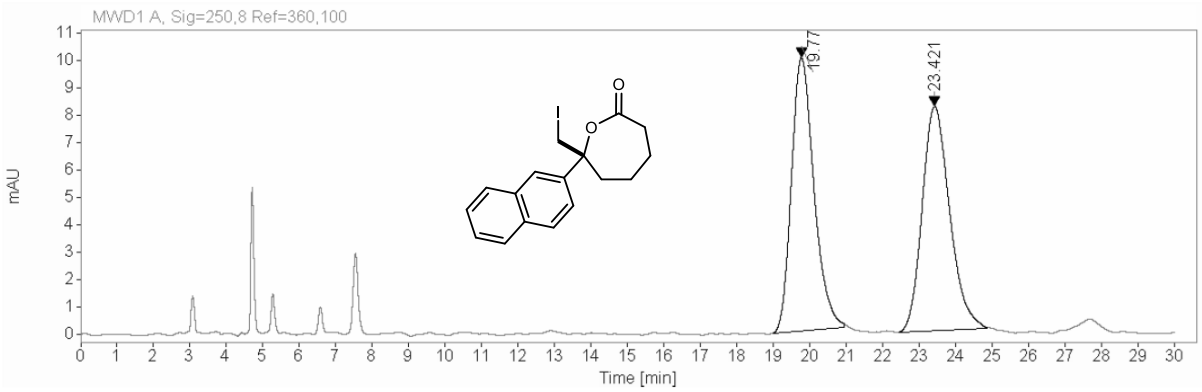
Peak #	RT [min]	Width [min]	Area	Area %
1	9.495	0.267	918.937	48.387
2	10.663	0.303	980.203	51.613



Signal: MWD1 C, Sig=210,16 Ref=360,100

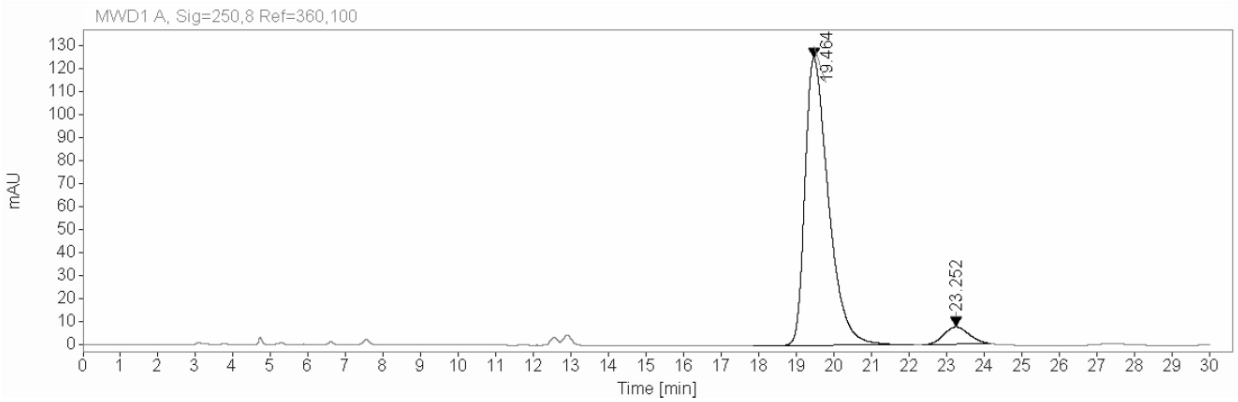
RT [min]	Type	Width [min]	Area	Height	Area%	Name
8.673	MM	0.2188	579.0646	44.0993	5.5808	
10.042	MM	0.2636	9796.8643	619.4515	94.4192	
		Sum	10375.9288			

Figure 96. HPLC trace of **8b**



Signal: MWD1 A, Sig=250,8 Ref=360,100

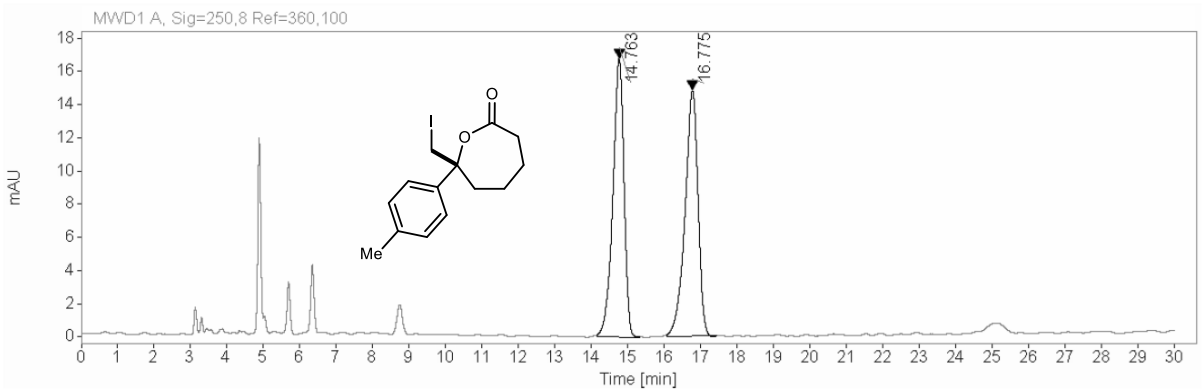
RT [min]	Type	Width [min]	Area	Height	Area%	Name
19.770	BB	0.6610	428.2288	9.9721	49.9410	
23.421	BB	0.8019	429.2405	8.1838	50.0590	
		Sum	857.4693			



Signal: MWD1 A, Sig=250,8 Ref=360,100

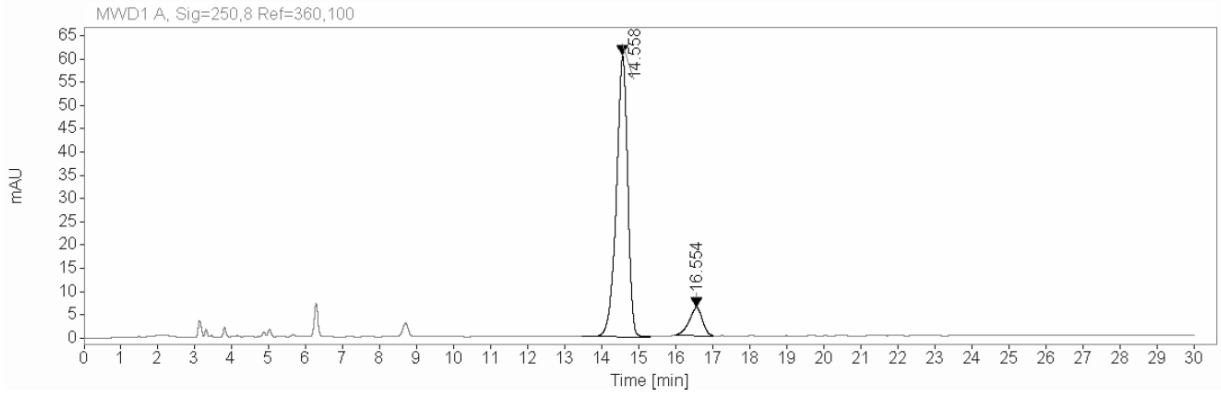
RT [min]	Type	Width [min]	Area	Height	Area%	Name
19.464	MM	0.7275	5460.8457	125.1038	93.9265	
23.252	MM	0.7811	353.1120	7.5342	6.0735	
		Sum	5813.9577			

Figure 97. HPLC trace of **8c**



Signal: MWD1 A, Sig=250,8 Ref=360,100

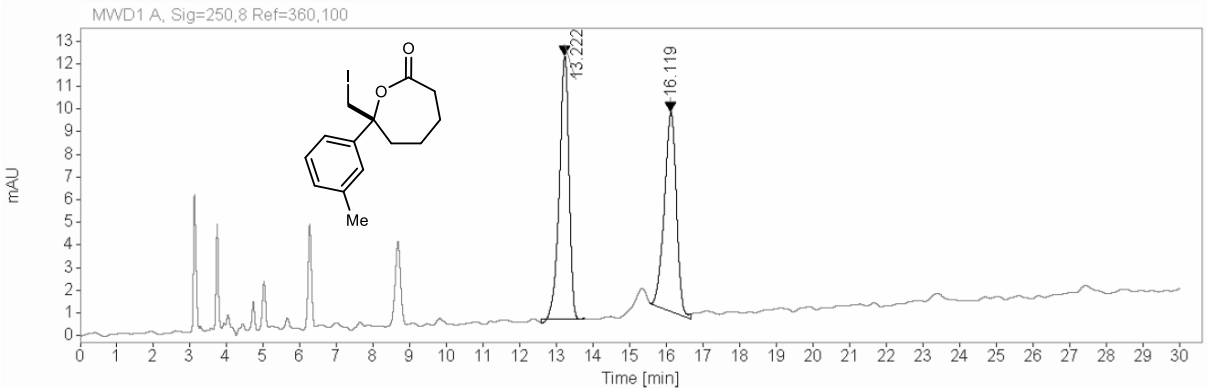
RT [min]	Type	Width [min]	Area	Height	Area%	Name
14.763	BB	0.3217	355.8550	16.7639	49.2745	
16.775	BB	0.3728	366.3337	14.8012	50.7255	
		Sum	722.1888			



Signal: MWD1 A, Sig=250,8 Ref=360,100

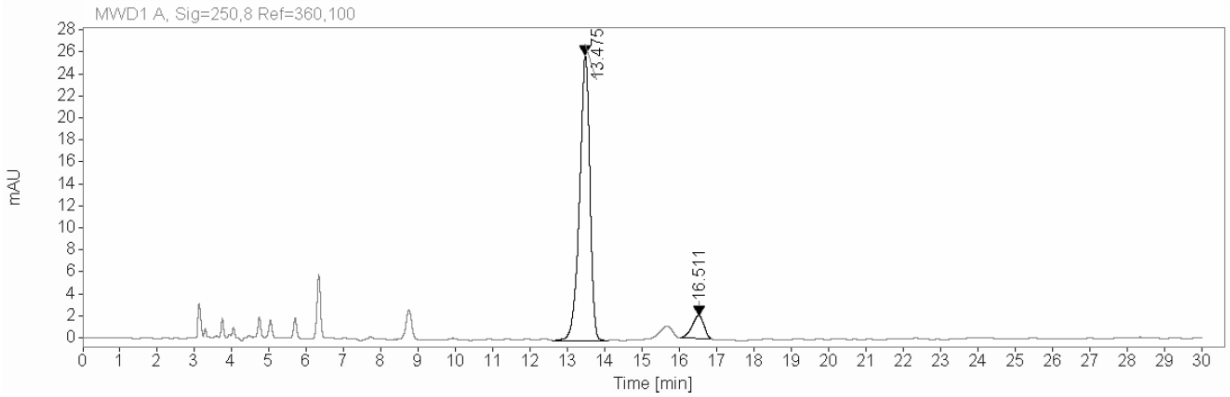
RT [min]	Type	Width [min]	Area	Height	Area%	Name
14.558	MM	0.3538	1285.1370	60.5367	89.5194	
16.554	MM	0.4171	150.4595	6.0122	10.4806	
		Sum	1435.5964			

Figure 98. HPLC trace of **8d**



Signal: MWD1 A, Sig=250,8 Ref=360,100

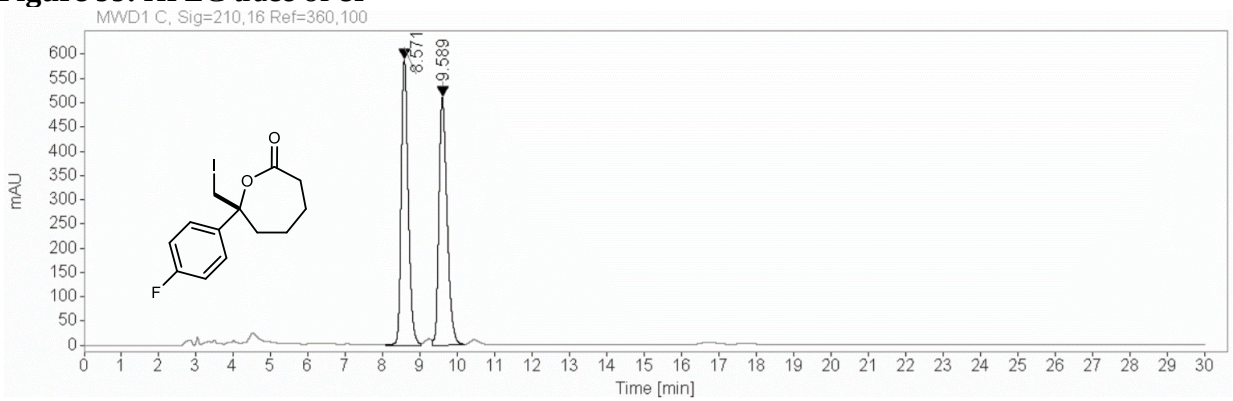
RT [min]	Type	Width [min]	Area	Height	Area%	Name
13.222	MM	0.3051	212.8114	11.6252	51.3923	
16.119	MM	0.3805	201.2806	8.8163	48.6077	
		Sum	414.0920			



Signal: MWD1 A, Sig=250,8 Ref=360,100

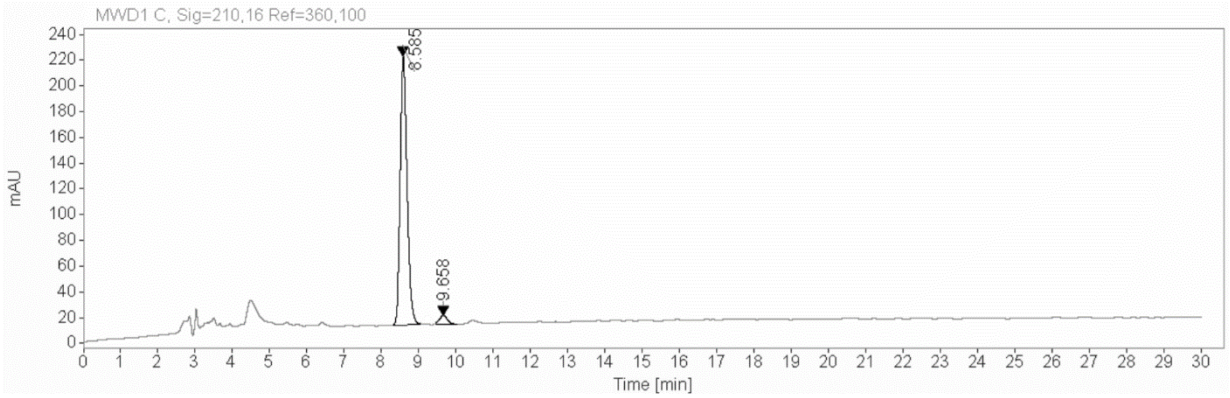
RT [min]	Type	Width [min]	Area	Height	Area%	Name
13.475	MM	0.3231	503.4538	25.9683	91.8418	
16.511	MM	0.3652	44.7212	2.0409	8.1582	
		Sum	548.1750			

Figure 99. HPLC trace of **8f**



Signal: MWD1 C, Sig=210,16 Ref=360,100

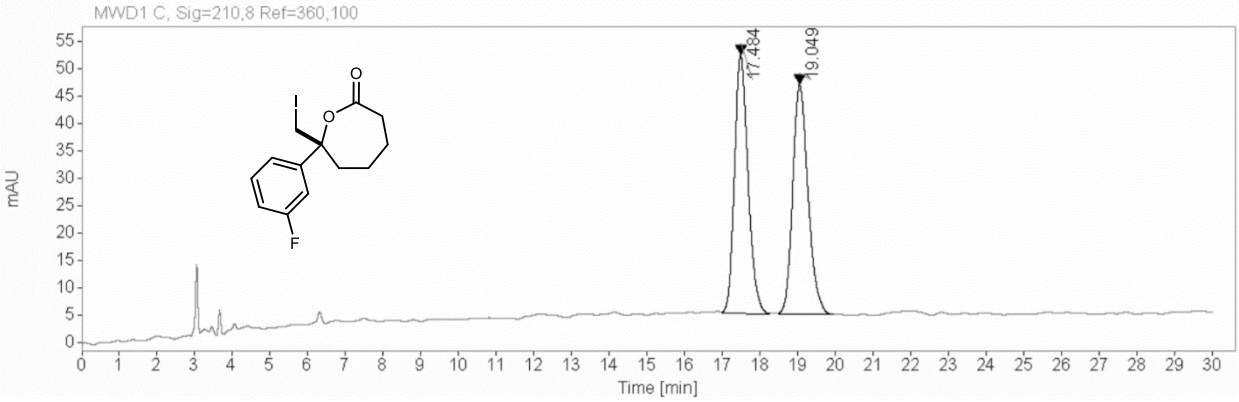
RT [min]	Type	Width [min]	Area	Height	Area%	Name
8.571	VV	0.2007	7727.1094	590.3378	49.9383	
9.589	VV	0.2324	7746.1963	512.1748	50.0617	
		Sum	15473.3057			



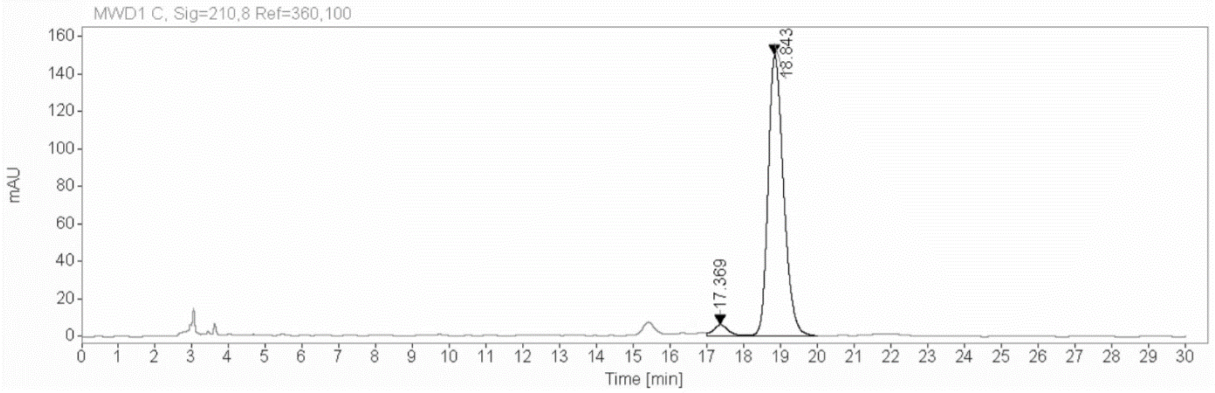
Signal: MWD1 C, Sig=210,16 Ref=360,100

RT [min]	Type	Width [min]	Area	Height	Area%	Name
8.585	MM	0.2141	2681.8232	208.7814	96.2572	
9.658	MM	0.2539	104.2777	6.8440	3.7428	
		Sum	2786.1009			

Figure 100. HPLC trace of **8g**

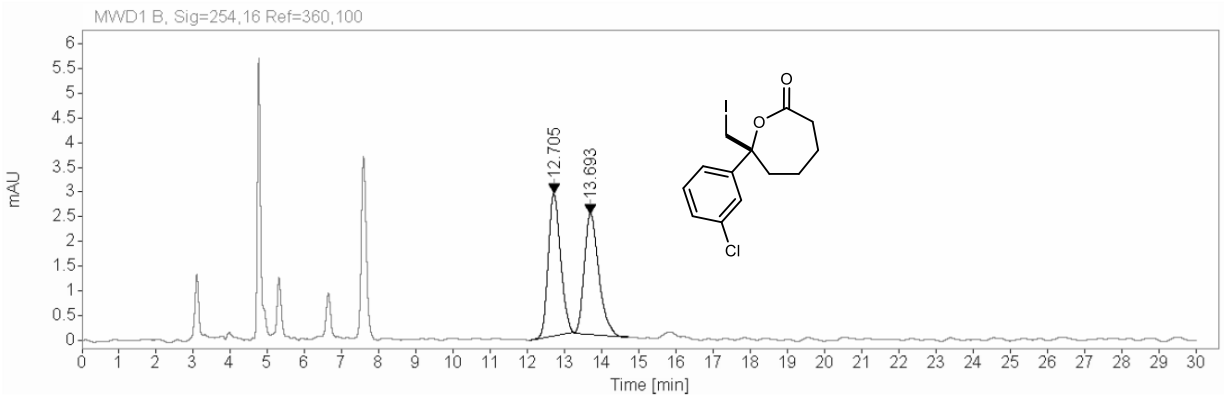


Signal:	MWD1 C, Sig=210,8 Ref=360,100				
RT [min]	Type	Width [min]	Area	Height	Area% Name
17.484	VB	0.3847	1183.4186	47.1683	50.0235
19.049	BB	0.4314	1182.3063	41.8802	49.9765
		Sum	2365.7249		



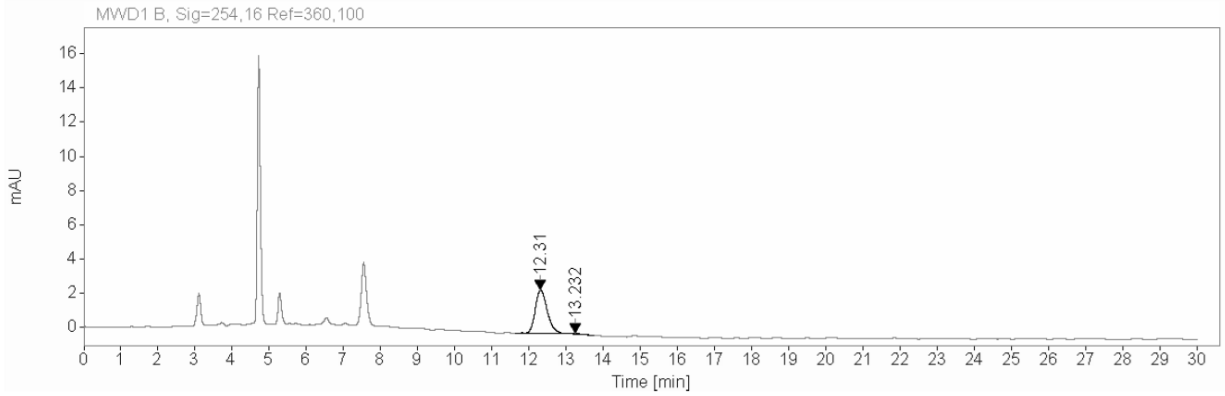
Signal:	MWD1 C, Sig=210,8 Ref=360,100				
RT [min]	Type	Width [min]	Area	Height	Area% Name
17.369	VV	0.4080	157.7821	5.6817	3.4956
18.843	VB	0.4467	4356.0156	150.0426	96.5044
		Sum	4513.7977		

Figure 101. HPLC trace of **8h**



Signal: MWD1 B, Sig=254,16 Ref=360,100

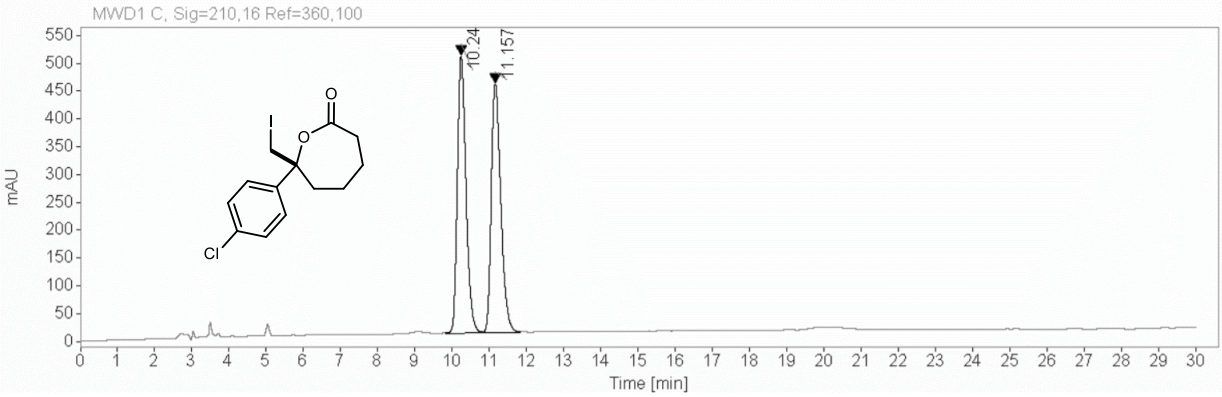
RT [min]	Type	Width [min]	Area	Height	Area%	Name
12.705	MM	0.3874	66.9533	2.8803	50.2623	
13.693	MM	0.4534	66.2546	2.4356	49.7377	
		Sum	133.2080			



Signal: MWD1 B, Sig=254,16 Ref=360,100

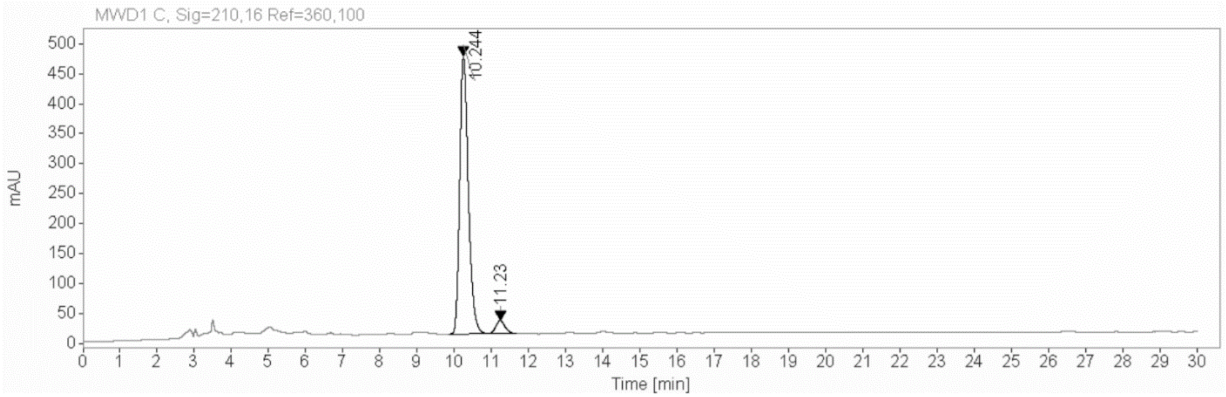
RT [min]	Type	Width [min]	Area	Height	Area%	Name
12.310	MM	0.3780	58.2762	2.5695	97.6512	
13.232	MM	0.4458	1.4017	0.0524	2.3488	
		Sum	59.6779			

Figure 102. HPLC trace of **8i**



Signal: MWD1 C, Sig=210,16 Ref=360,100

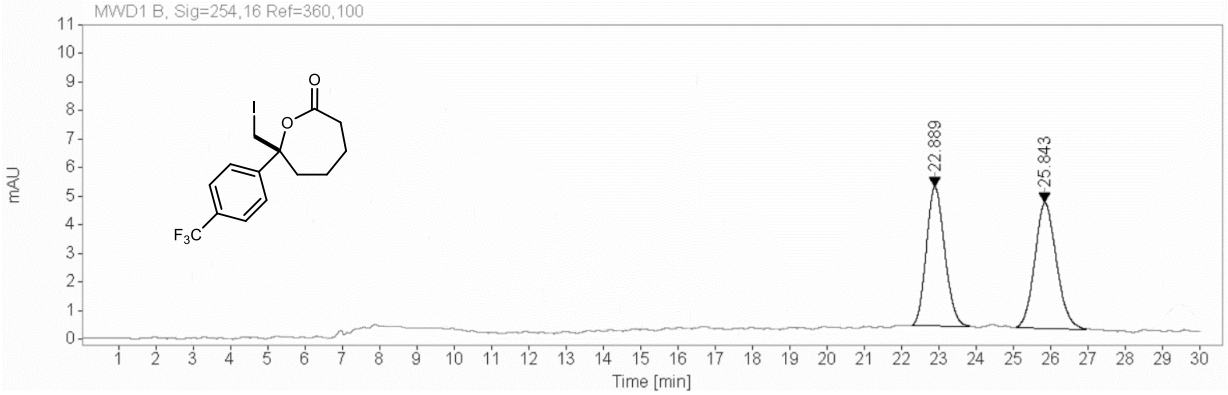
RT [min]	Type	Width [min]	Area	Height	Area%	Name
10.240	MM	0.2676	8005.4858	498.5697	50.1122	
11.157	MM	0.2963	7969.6221	448.2697	49.8878	
		Sum	15975.1079			



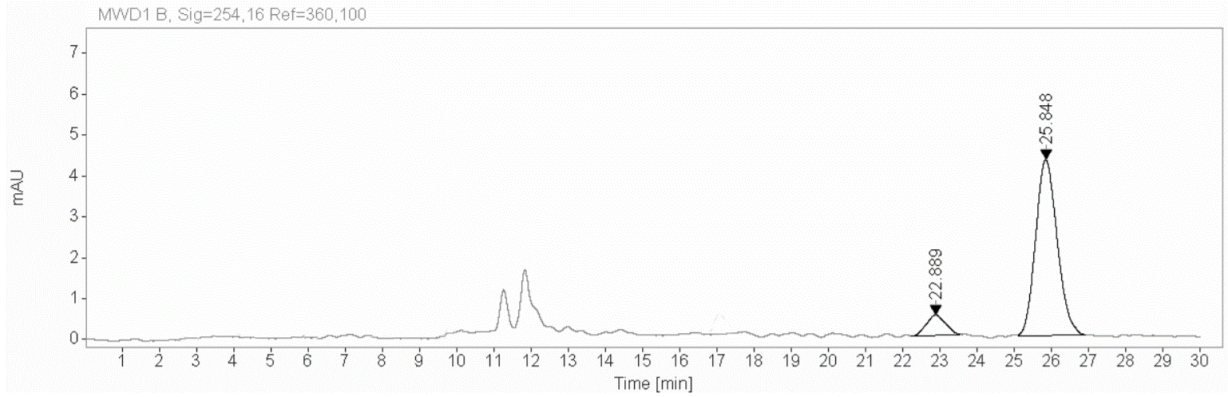
Signal: MWD1 C, Sig=210,16 Ref=360,100

RT [min]	Type	Width [min]	Area	Height	Area%	Name
10.244	MM	0.2691	7479.8799	463.2130	95.4067	
11.230	MM	0.2799	360.1170	21.4457	4.5933	
		Sum	7839.9969			

Figure 103. HPLC trace of **8j**

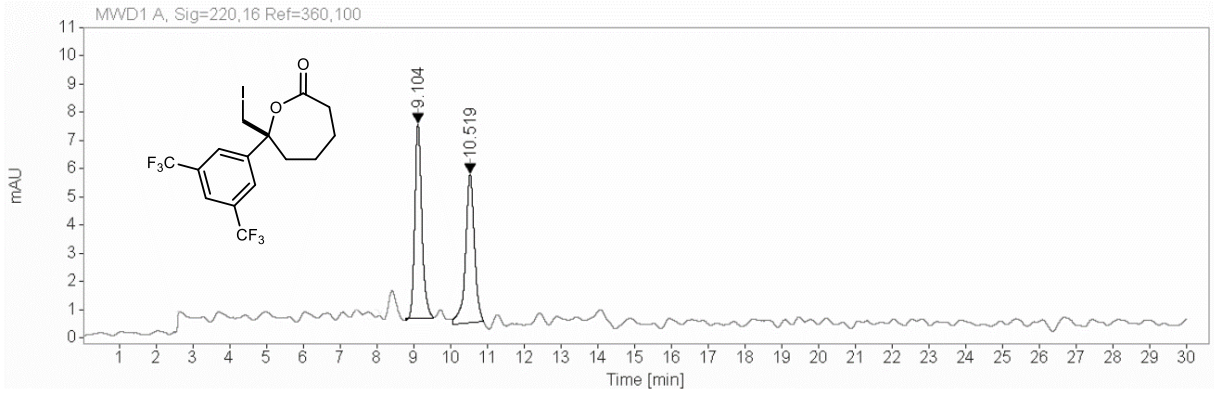


Signal:	MWD1 B, Sig=254,16 Ref=360,100				
RT [min]	Type	Width [min]	Area	Height	Area% Name
22.889	BB	0.5297	167.2467	4.8578	48.5888
25.843	BB	0.6152	176.9615	4.3813	51.4112
		Sum	344.2082		



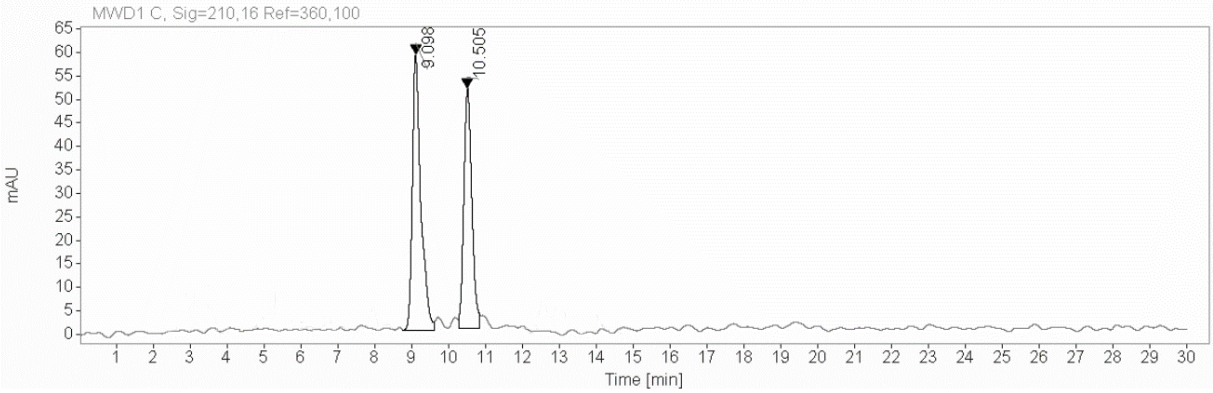
Signal:	MWD1 B, Sig=254,16 Ref=360,100				
RT [min]	Type	Width [min]	Area	Height	Area% Name
22.889	MM	0.6014	18.3094	0.5075	9.5293
25.848	BB	0.5982	173.8282	4.2945	90.4707
		Sum	192.1376		

Figure 104. HPLC trace of **8k**



Signal: MWD1 A, Sig=220,16 Ref=360,100

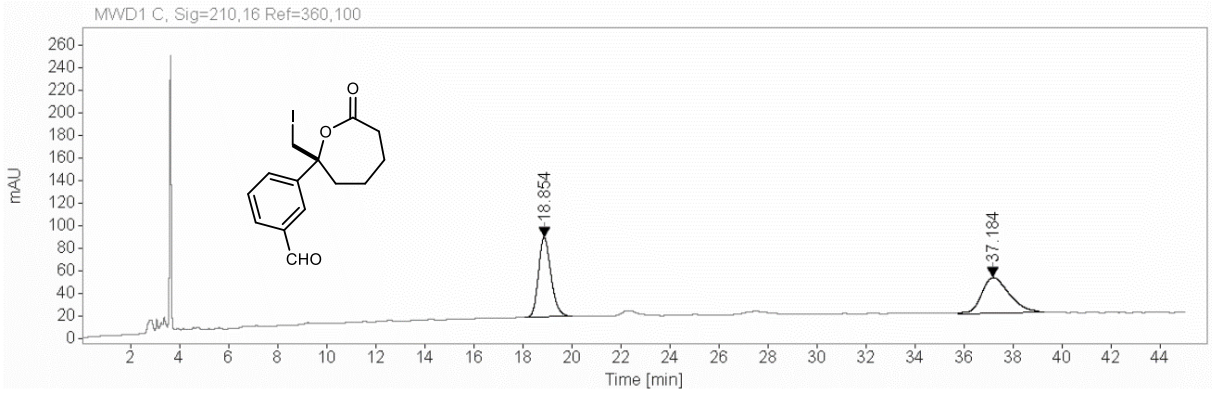
RT [min]	Type	Width [min]	Area	Height	Area%	Name
9.104	MM	0.2219	92.1040	6.9184	50.8443	
10.519	MM	0.2793	89.0451	5.3138	49.1557	
		Sum	181.1491			



Signal: MWD1 C, Sig=210,16 Ref=360,100

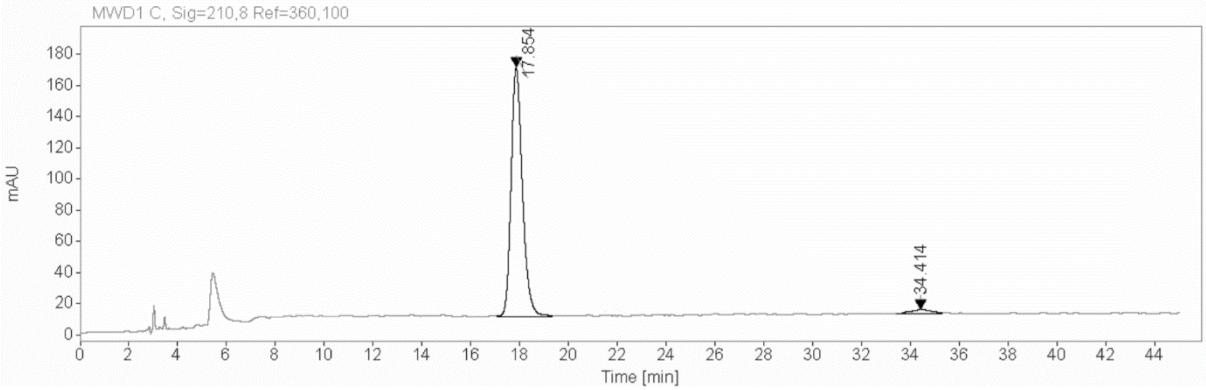
RT [min]	Type	Width [min]	Area	Height	Area%	Name
9.098	MM	0.2660	937.4565	58.7380	54.7906	
10.505	MM	0.2517	773.5226	51.2206	45.2094	
		Sum	1710.9791			

Figure 105. HPLC trace of **8l**



Signal: MWD1 C, Sig=210,16 Ref=360,100

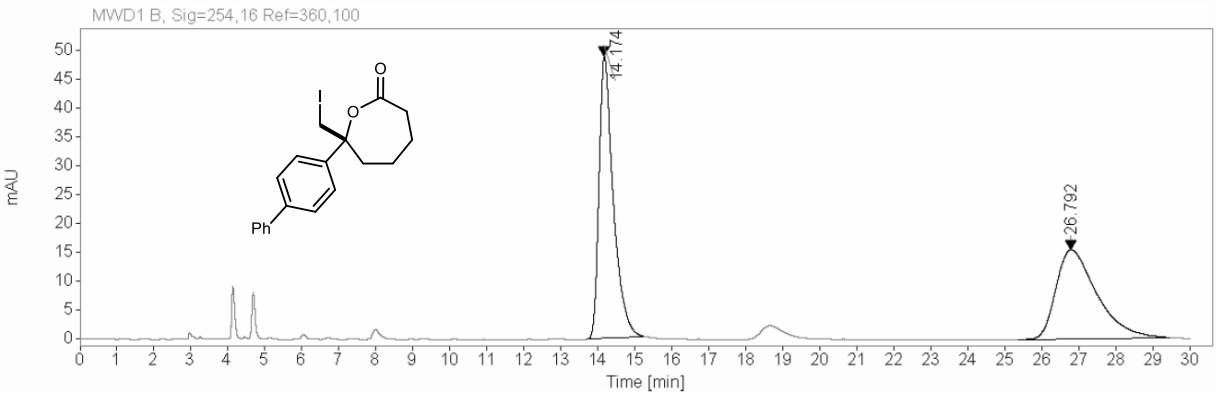
RT [min]	Type	Width [min]	Area	Height	Area%	Name
18.854	MM	0.5899	2492.1973	70.4142	50.3165	
37.184	MM	1.3036	2460.8406	31.4612	49.6835	
		Sum	4953.0378			



Signal: MWD1 C, Sig=210,8 Ref=360,100

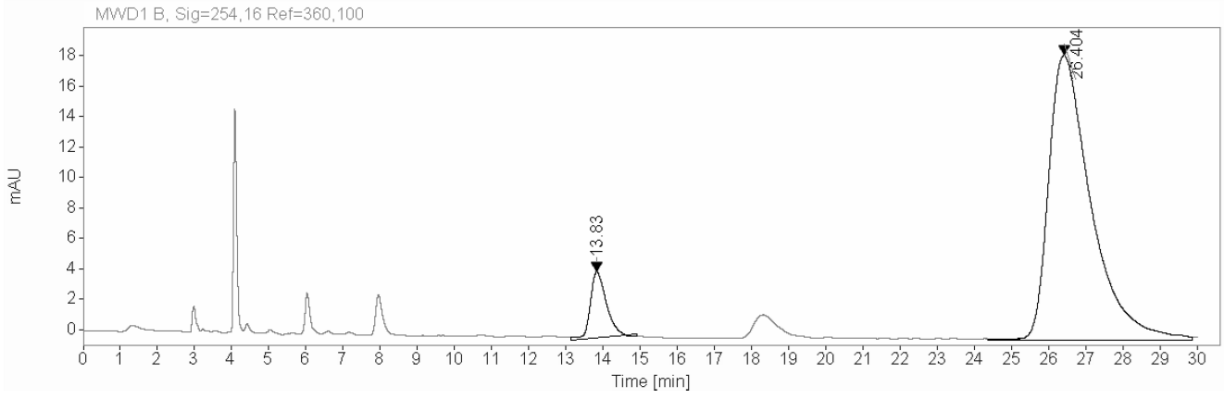
RT [min]	Type	Width [min]	Area	Height	Area%	Name
17.854	MM	0.5360	5131.4307	159.5554	96.9520	
34.414	MM	1.0113	161.3231	2.6587	3.0480	
		Sum	5292.7537			

Figure 106. HPLC trace of **8m**



Signal: MWD1 B, Sig=254,16 Ref=360,100

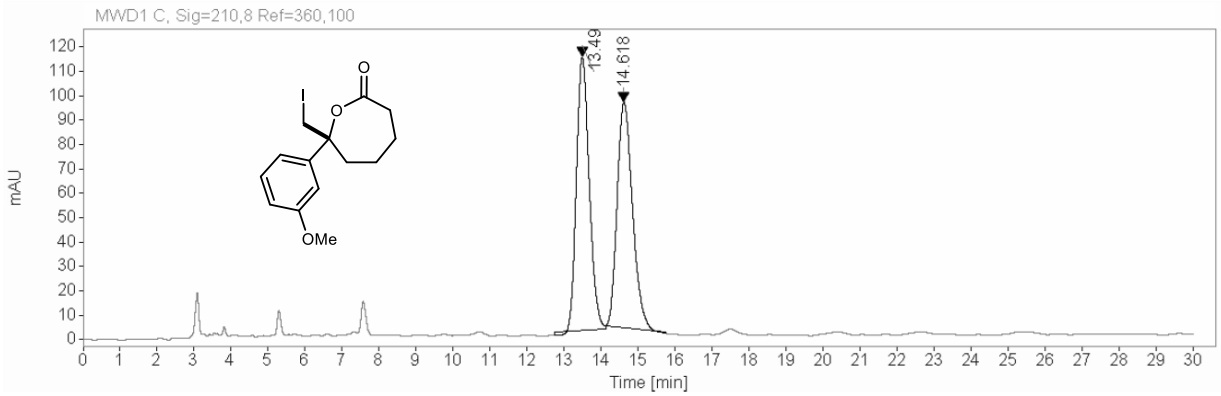
RT [min]	Type	Width [min]	Area	Height	Area%	Name
14.174	MM	0.4481	1312.5444	48.8154	52.6692	
26.792	MM	1.2743	1179.5067	15.4268	47.3308	
		Sum	2492.0511			



Signal: MWD1 B, Sig=254,16 Ref=360,100

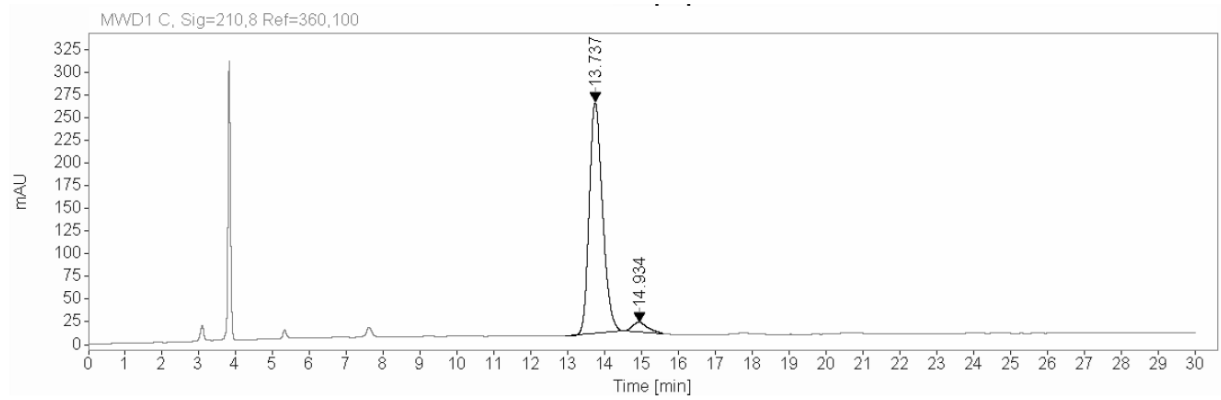
RT [min]	Type	Width [min]	Area	Height	Area%	Name
13.830	MM	0.5012	129.7893	4.3156	8.0833	
26.404	MM	1.3182	1475.8490	18.6594	91.9167	
		Sum	1605.6383			

Figure 107. HPLC trace of **8n**



Signal: MWD1 C, Sig=210,8 Ref=360,100

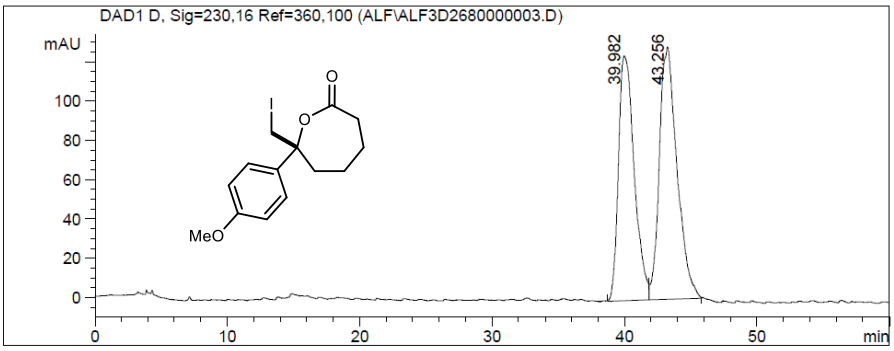
RT [min]	Type	Width [min]	Area	Height	Area%	Name
13.490	MM	0.4009	2698.2815	112.1717	50.2674	
14.618	MM	0.4809	2669.5701	92.5128	49.7326	
		Sum	5367.8516			



Signal: MWD1 C, Sig=210,8 Ref=360,100

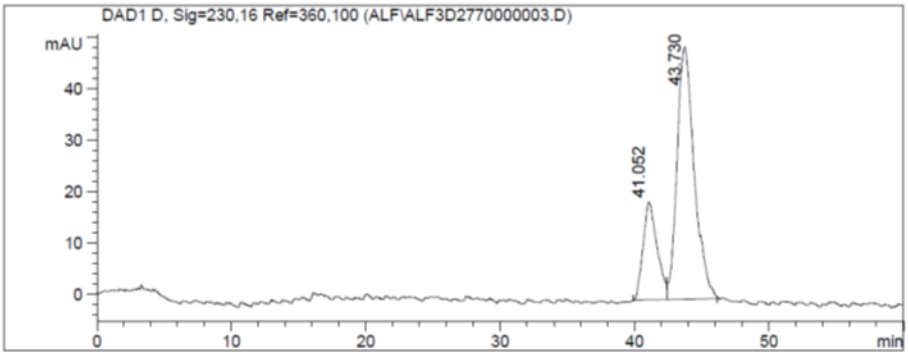
RT [min]	Type	Width [min]	Area	Height	Area%	Name
13.737	MM	0.4173	6383.8237	254.9382	95.2940	
14.934	MM	0.4913	315.2596	10.6951	4.7060	
		Sum	6699.0833			

Figure 108. HPLC trace of **8o**



Signal 1: DAD1 D, Sig=230,16 Ref=360,100

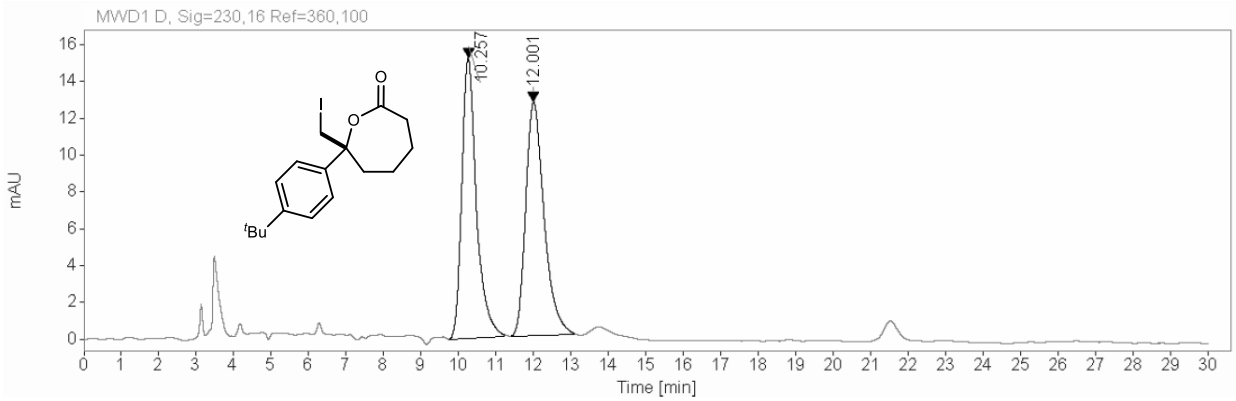
Peak #	RT [min]	Width [min]	Area	Area %
1	39.982	1.380	10315.561	46.349
2	43.256	1.548	11940.668	53.651



Signal 1: DAD1 D, Sig=230,16 Ref=360,100

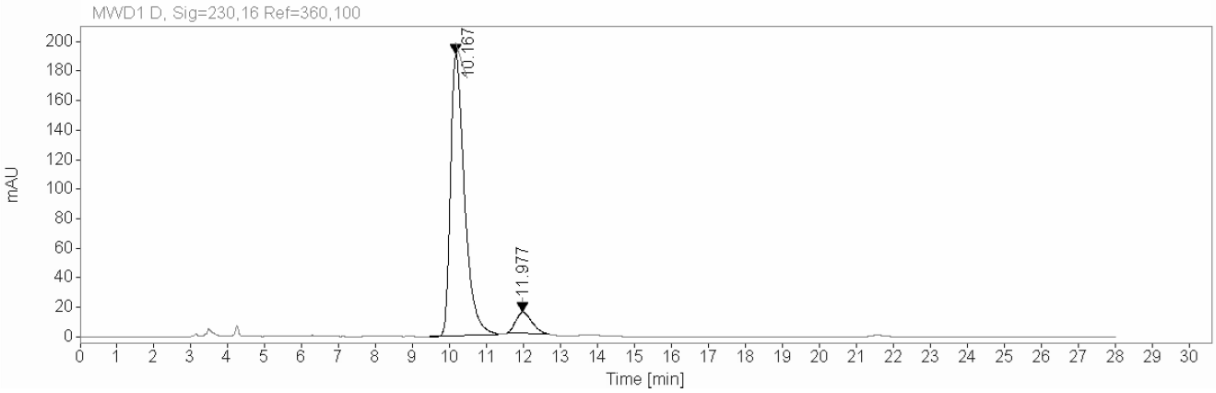
Peak #	RT [min]	Width [min]	Area	Area %
1	41.052	1.207	1381.017	24.098
2	43.730	1.479	4349.737	75.902

Figure 109. HPLC trace of **8p**



Signal: MWD1 D, Sig=230,16 Ref=360,100

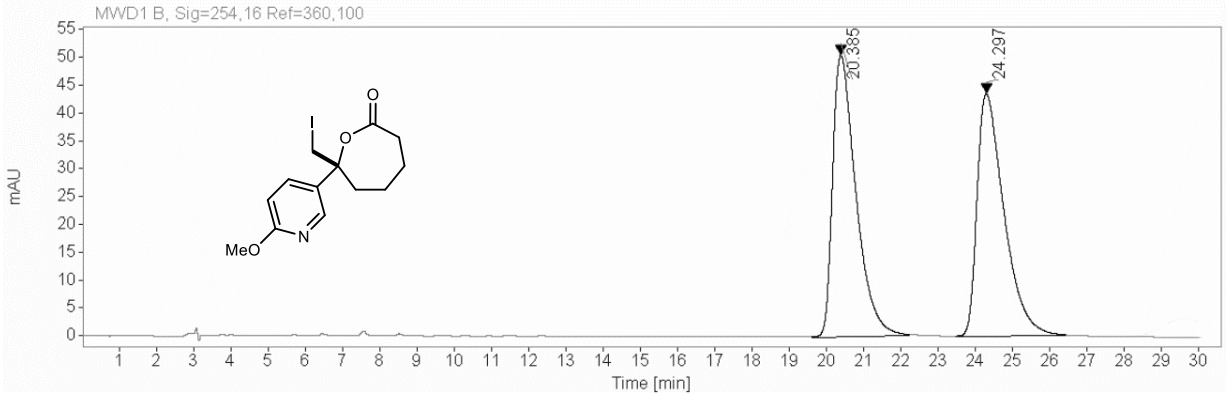
RT [min]	Type	Width [min]	Area	Height	Area%	Name
10.257	VB	0.4102	412.4470	15.2185	48.7576	
12.001	BB	0.5192	433.4659	12.6669	51.2424	
		Sum	845.9129			



Signal: MWD1 D, Sig=230,16 Ref=360,100

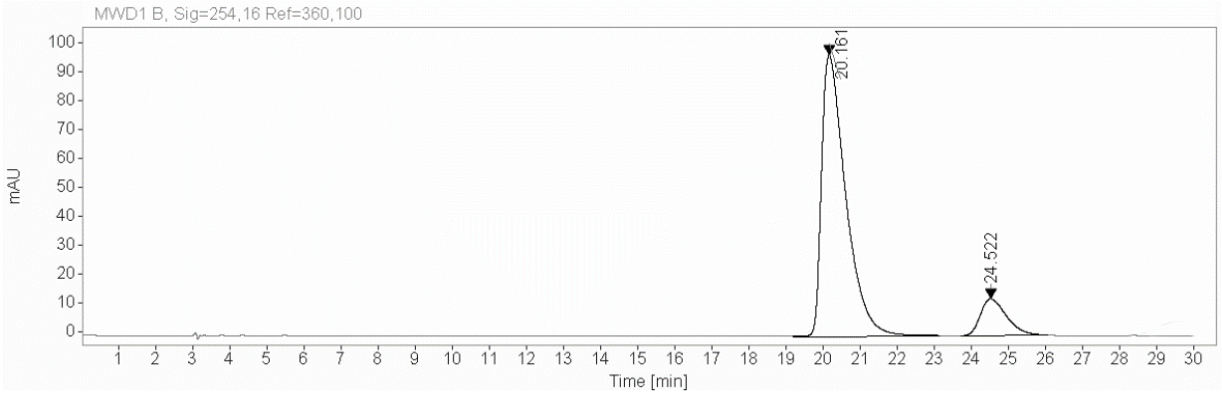
RT [min]	Type	Width [min]	Area	Height	Area%	Name
10.167	MM	0.4390	5020.6367	190.6292	91.9760	
11.977	MM	0.5140	438.0030	14.2025	8.0240	
		Sum	5458.6397			

Figure 110. HPLC trace of **8q**



Signal: MWD1 B, Sig=254,16 Ref=360,100

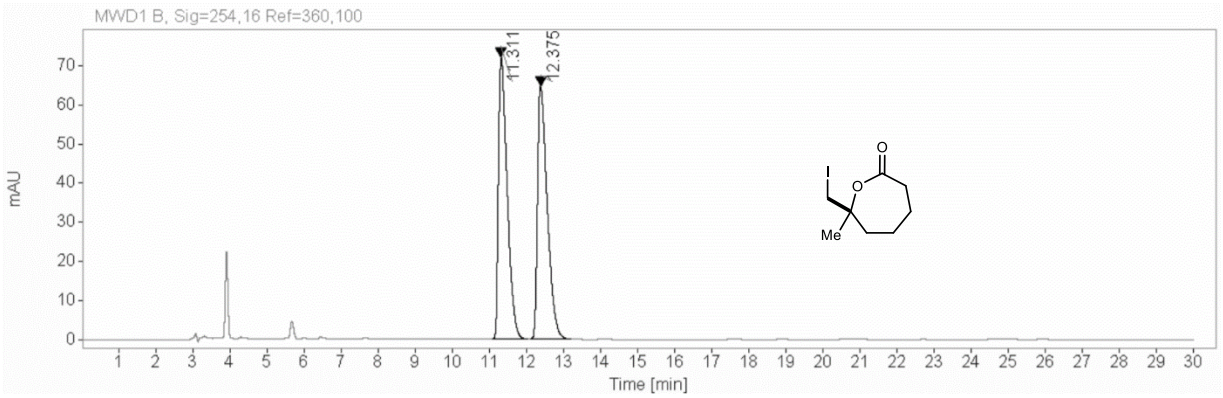
RT [min]	Type	Width [min]	Area	Height	Area%	Name
20.385	MM	0.7270	2208.9399	50.6414	50.0763	
24.297	MM	0.8418	2202.2090	43.6017	49.9237	
		Sum	4411.1489			



Signal: MWD1 B, Sig=254,16 Ref=360,100

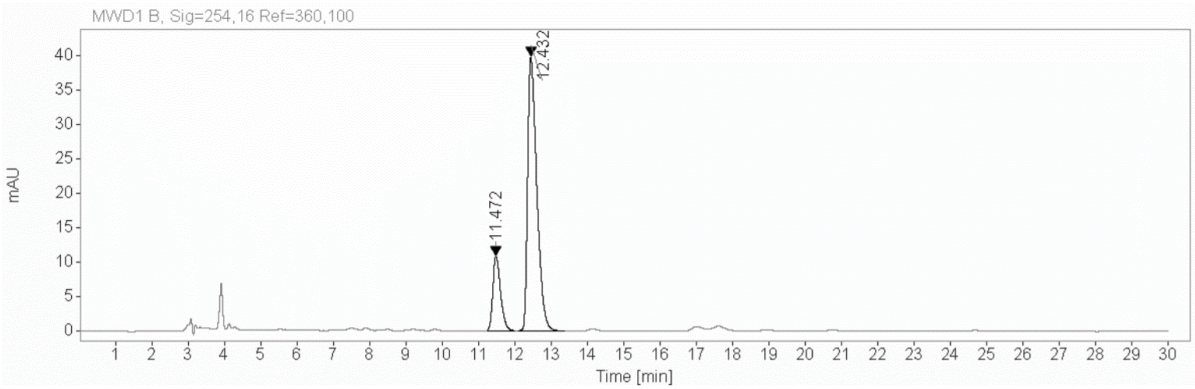
RT [min]	Type	Width [min]	Area	Height	Area%	Name
20.161	MM	0.7561	4411.0757	97.2352	87.5287	
24.522	BB	0.7470	628.5002	12.6651	12.4713	
		Sum	5039.5759			

Figure 111. HPLC trace of **8r**



Signal: MWD1 B, Sig=254,16 Ref=360,100

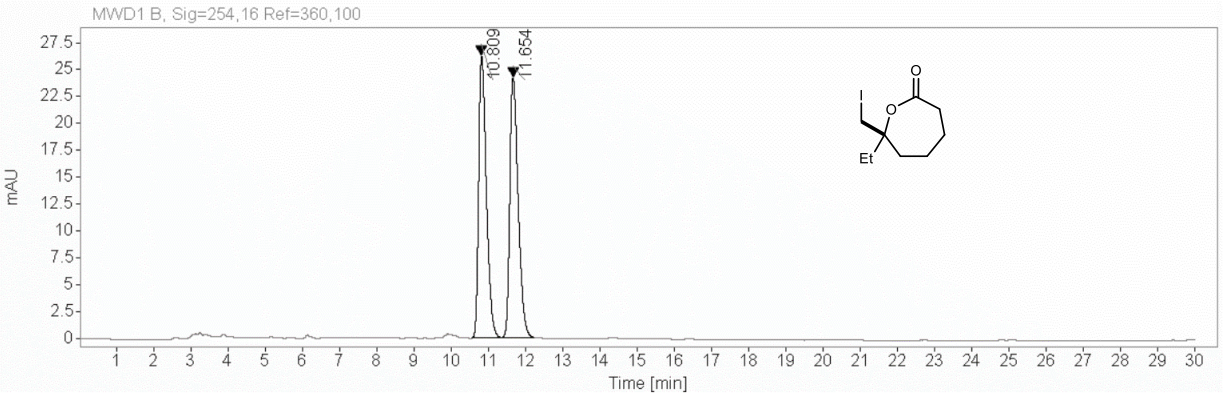
RT [min]	Type	Width [min]	Area	Height	Area%	Name
11.311	BB	0.2498	1180.7141	71.8132	49.9572	
12.375	BB	0.2778	1182.7375	64.5394	50.0428	
		Sum	2363.4517			



Signal: MWD1 B, Sig=254,16 Ref=360,100

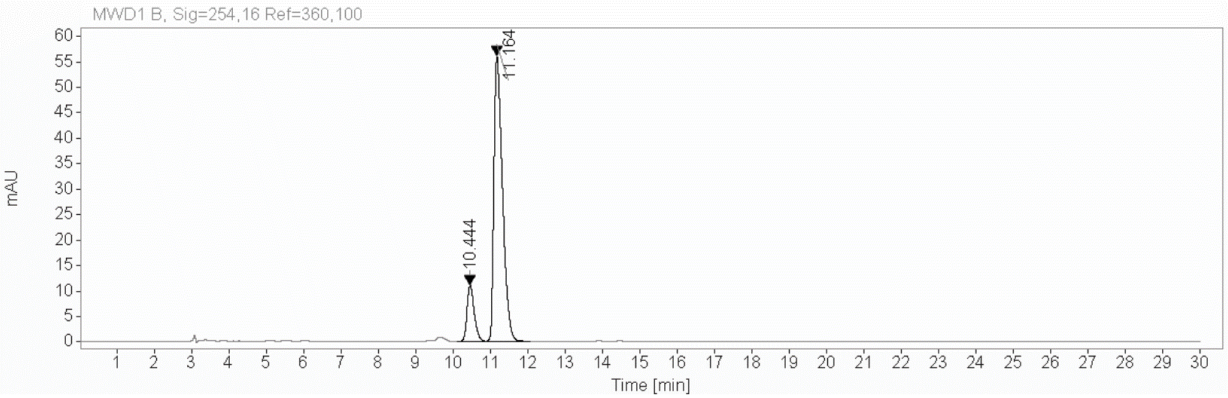
RT [min]	Type	Width [min]	Area	Height	Area%	Name
11.472	MM	0.2459	159.9596	10.8416	18.6386	
12.432	MM	0.2927	698.2588	39.7548	81.3614	
		Sum	858.2184			

Figure 112. HPLC trace of **8s**



Signal: MWD1 B, Sig=254,16 Ref=360,100

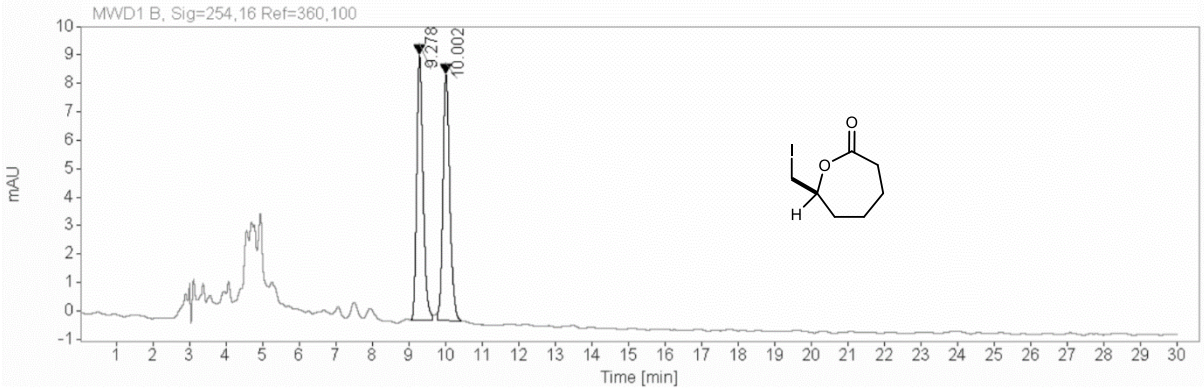
RT [min]	Type	Width [min]	Area	Height	Area%	Name
10.809	BB	0.2229	379.8889	26.2453	49.9707	
11.654	BB	0.2410	380.3345	24.2438	50.0293	
		Sum	760.2234			



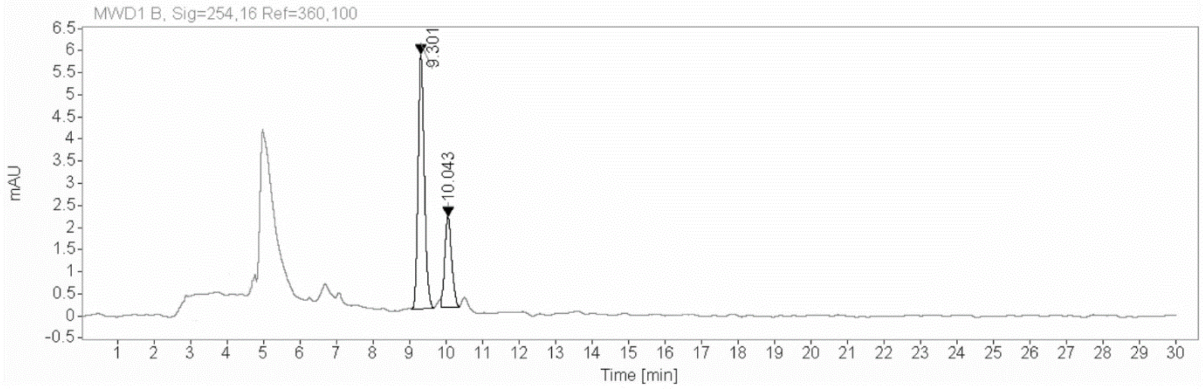
Signal: MWD1 B, Sig=254,16 Ref=360,100

RT [min]	Type	Width [min]	Area	Height	Area%	Name
10.444	MM	0.2240	147.9543	11.0104	14.2071	
11.164	MM	0.2656	893.4598	56.0738	85.7929	
		Sum	1041.4141			

Figure 113. HPLC trace of **8t**

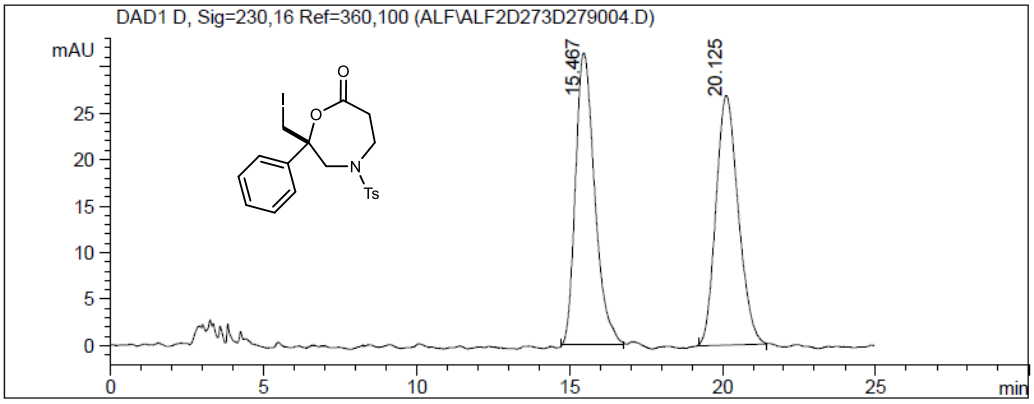


Signal:	MWD1 B, Sig=254,16 Ref=360,100				
RT [min]	Type	Width [min]	Area	Height	Area% Name
9.278	BB	0.1826	112.5021	9.3383	49.6461
10.002	BB	0.2013	114.1062	8.6812	50.3539
		Sum	226.6083		



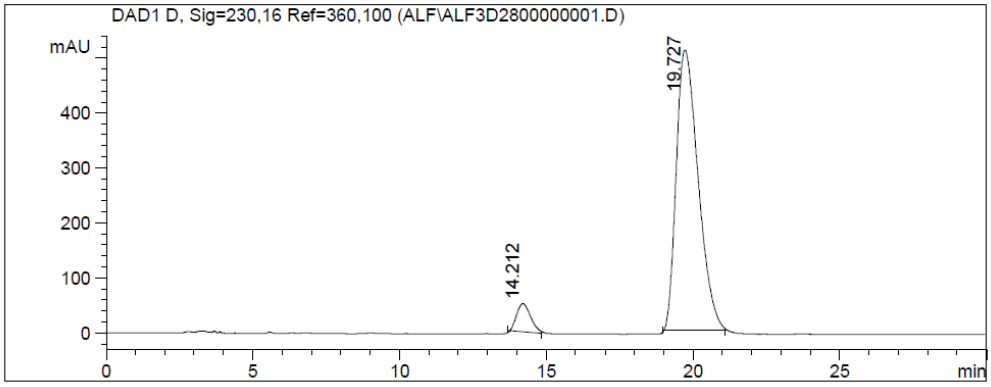
Signal:	MWD1 B, Sig=254,16 Ref=360,100				
RT [min]	Type	Width [min]	Area	Height	Area% Name
9.301	MM	0.1980	68.4136	5.7586	72.0016
10.043	MM	0.2167	26.6031	2.0460	27.9984
		Sum	95.0167		

Figure 114. HPLC trace of **10**



Signal 1: DAD1 D, Sig=230,16 Ref=360,100

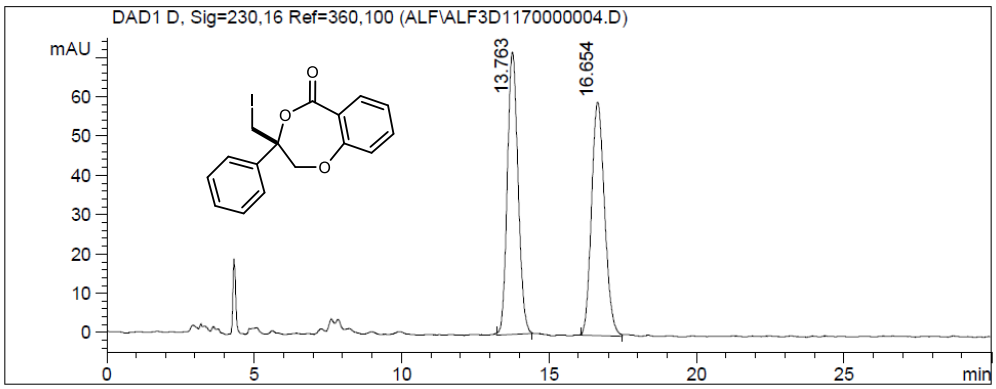
Peak #	RT [min]	Width [min]	Area	Area %
1	15.467	0.725	1359.783	49.948
2	20.125	0.848	1362.634	50.052



Signal 1: DAD1 D, Sig=230,16 Ref=360,100

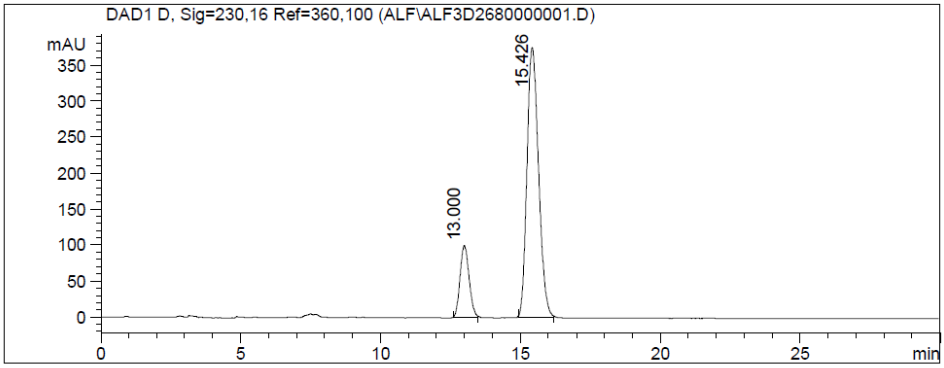
Peak #	RT [min]	Width [min]	Area	Area %
1	14.212	0.552	1690.831	6.010
2	19.727	0.864	26442.414	93.990

Figure 115. HPLC trace of **12**



Signal 1: DAD1 D, Sig=230,16 Ref=360,100

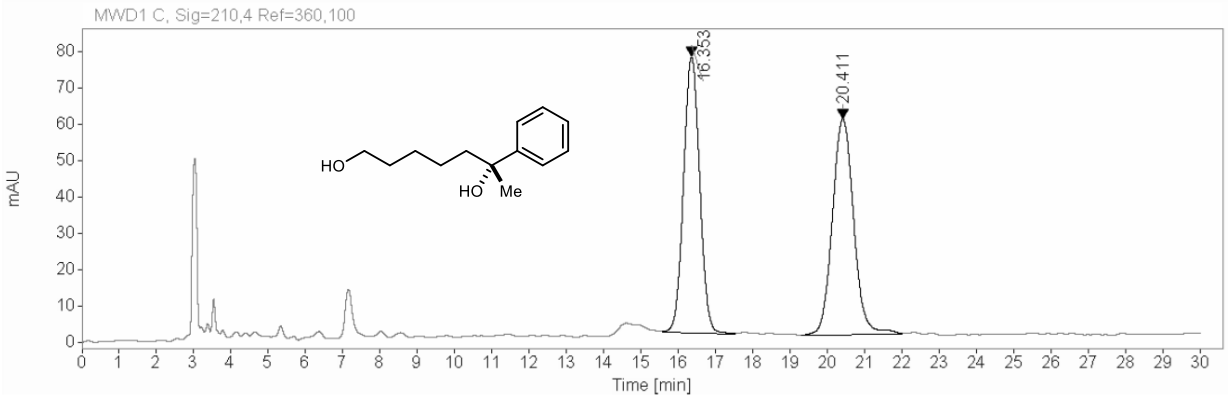
Peak #	RT [min]	Width [min]	Area	Area %
1	13.763	0.421	1815.320	49.826
2	16.654	0.513	1827.979	50.174



Signal 1: DAD1 D, Sig=230,16 Ref=360,100

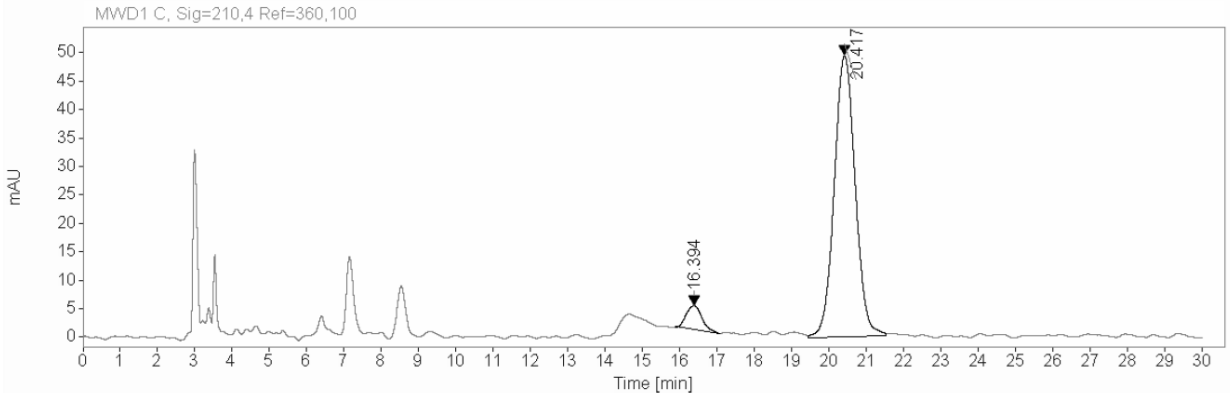
Peak #	RT [min]	Width [min]	Area	Area %
1	13.000	0.371	2213.740	17.053
2	15.426	0.479	10767.708	82.947

Figure 116. HPLC trace of **13**



Signal: MWD1 C, Sig=210,4 Ref=360,100

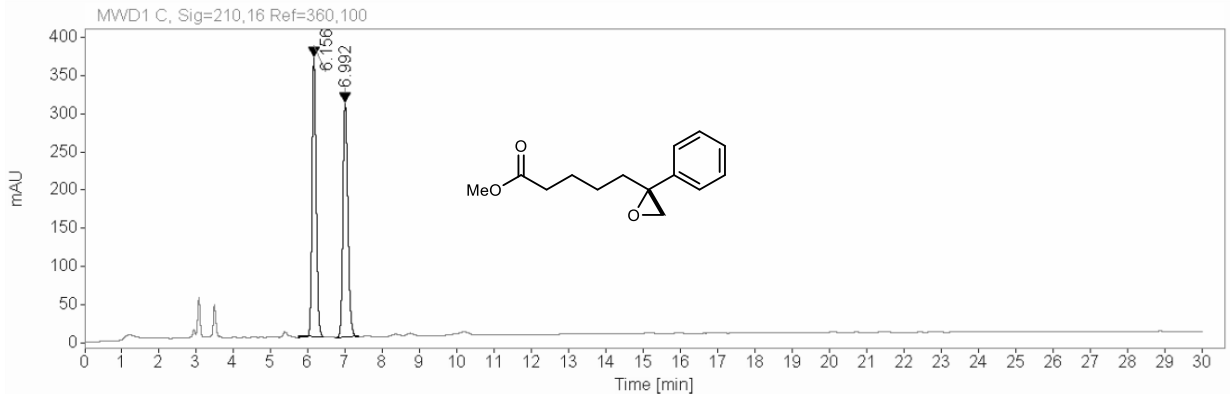
RT [min]	Type	Width [min]	Area	Height	Area%	Name
16.353	MM	0.5007	2278.2786	75.8319	49.0997	
20.411	MM	0.6629	2361.8303	59.3835	50.9003	
		Sum	4640.1089			



Signal: MWD1 C, Sig=210,4 Ref=360,100

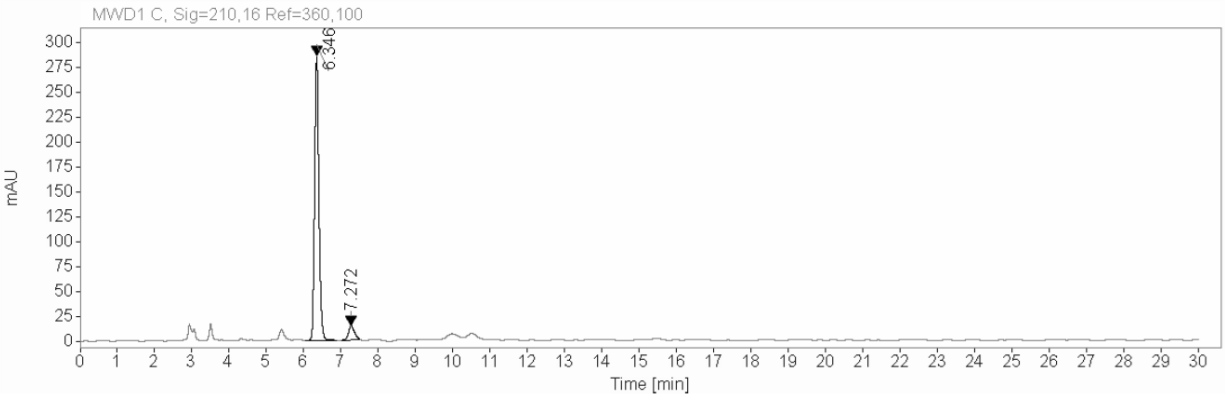
RT [min]	Type	Width [min]	Area	Height	Area%	Name
16.394	MM	0.4909	123.6457	4.1978	6.0108	
20.417	MM	0.6514	1933.4253	49.4674	93.9892	
		Sum	2057.0710			

Figure 117. HPLC trace of **14**



Signal: MWD1 C, Sig=210,16 Ref=360,100

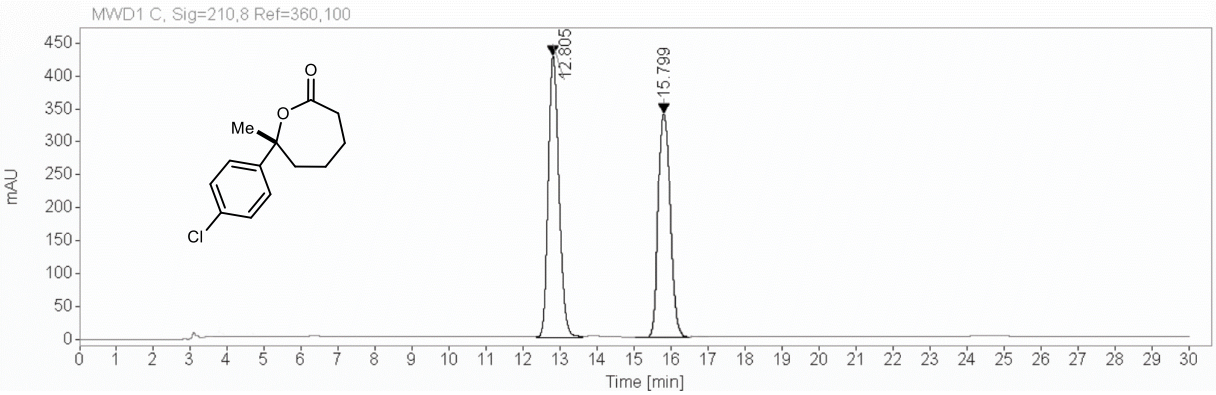
RT [min]	Type	Width [min]	Area	Height	Area%	Name
6.156	MM	0.1273	2796.0784	366.1357	49.8879	
6.992	MM	0.1524	2808.6438	307.2160	50.1121	
		Sum	5604.7222			



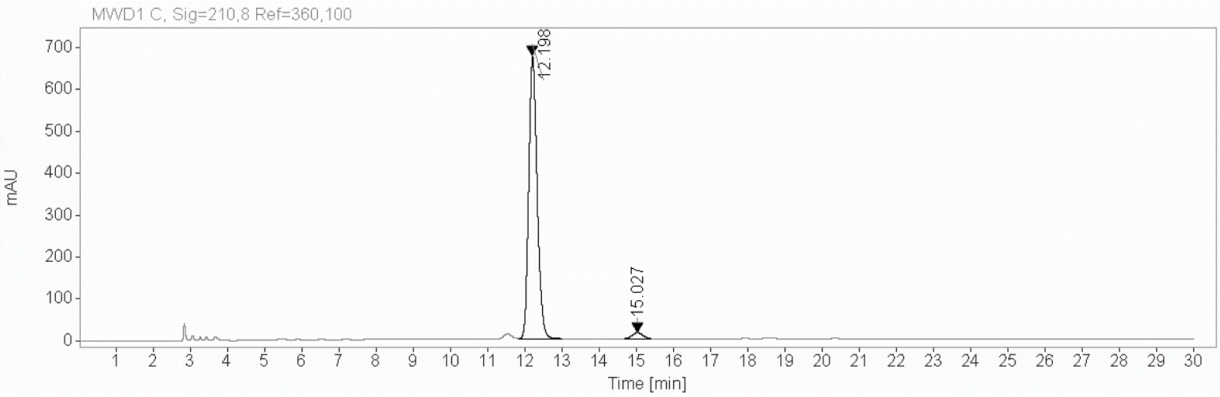
Signal: MWD1 C, Sig=210,16 Ref=360,100

RT [min]	Type	Width [min]	Area	Height	Area%	Name
6.346	MM	0.1346	2305.3855	285.4781	93.6295	
7.272	MM	0.1879	156.8566	13.9145	6.3705	
		Sum	2462.2421			

Figure 118. HPLC trace of **15**



Signal:	MWD1 C, Sig=210,8 Ref=360,100					
RT [min]	Type	Width [min]	Area	Height	Area%	Name
12.805	BB	0.3111	8625.0342	427.9793	49.4293	
15.799	VB	0.4016	8824.1953	339.1051	50.5707	
		Sum	17449.2295			



Signal:	MWD1 C, Sig=210,8 Ref=360,100					
RT [min]	Type	Width [min]	Area	Height	Area%	Name
12.198	MM	0.2640	10701.2266	675.6075	97.3683	
15.027	MM	0.3364	289.2410	14.3301	2.6317	
		Sum	10990.4675			