

# *Supporting Information*

## **Total Synthesis and Antimalarial Activity of 2-(p-Hydroxybenzyl)-prodigiosins, Isoheptylprodigiosin and Geometric Isomers of Tambjamine MYP1, Isolated from Marine Bacteria**

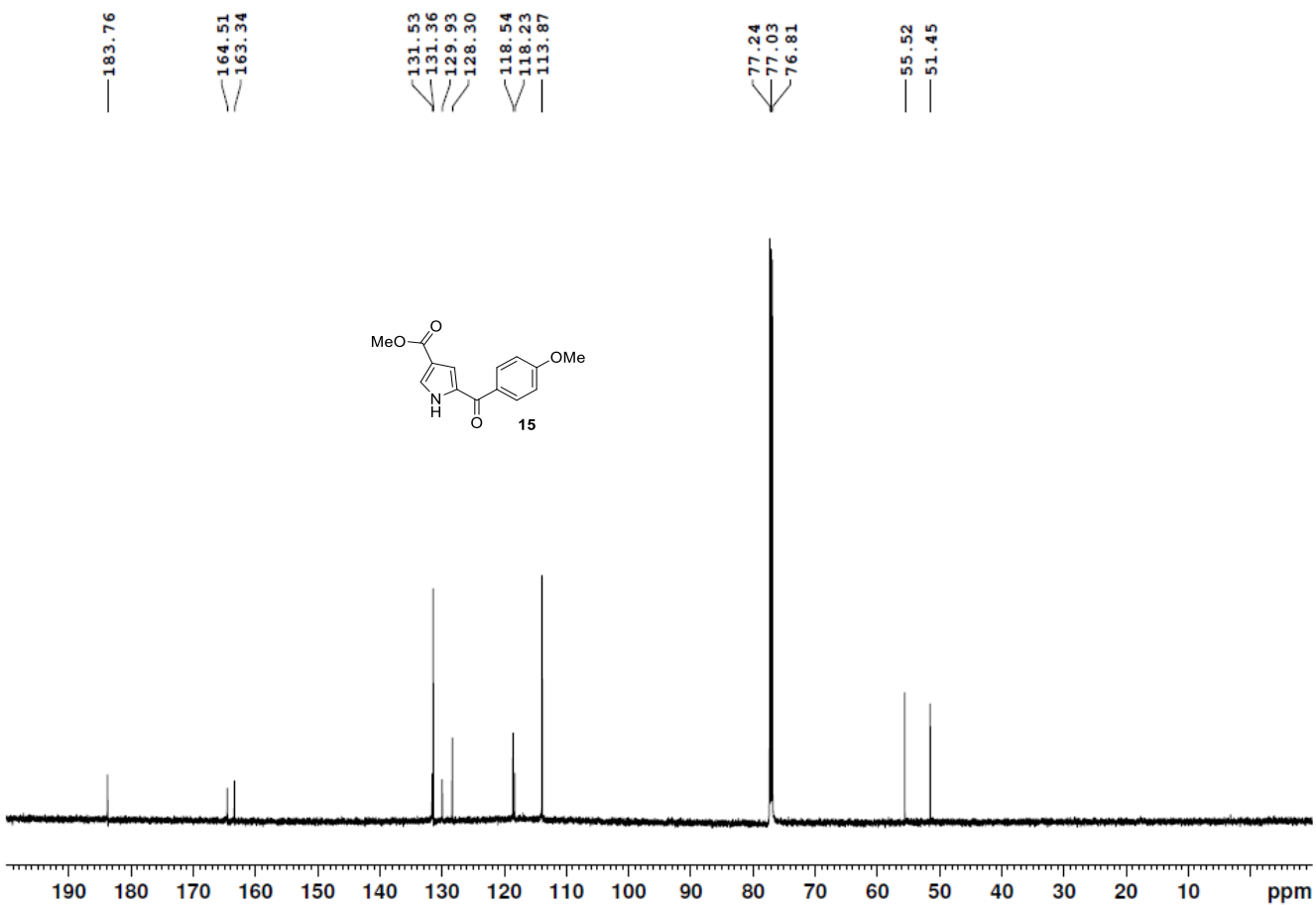
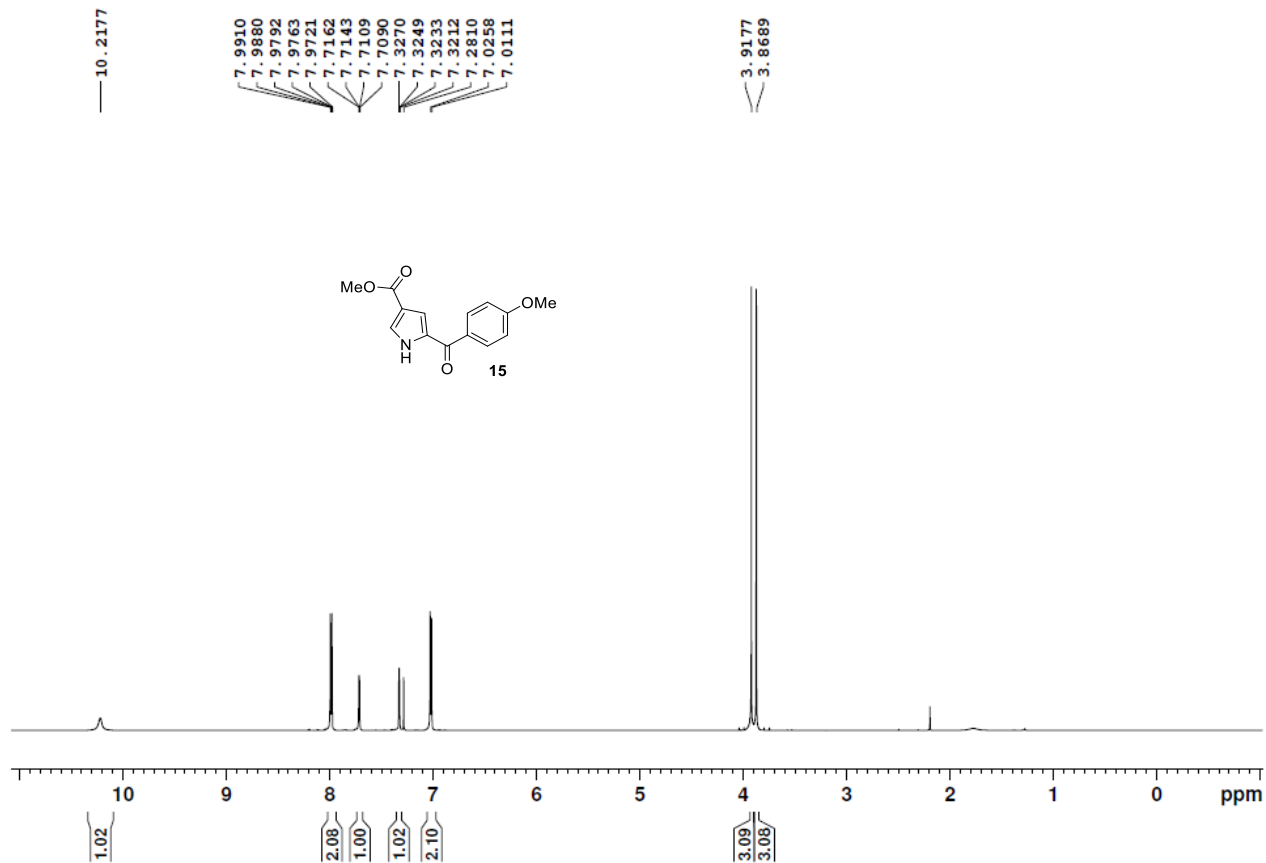
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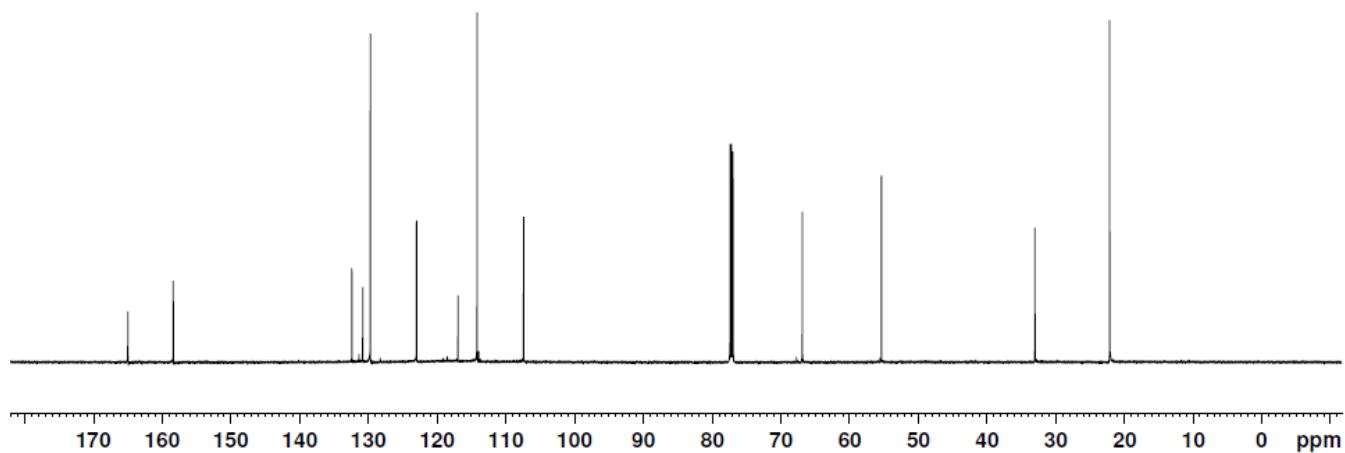
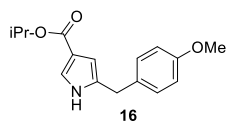
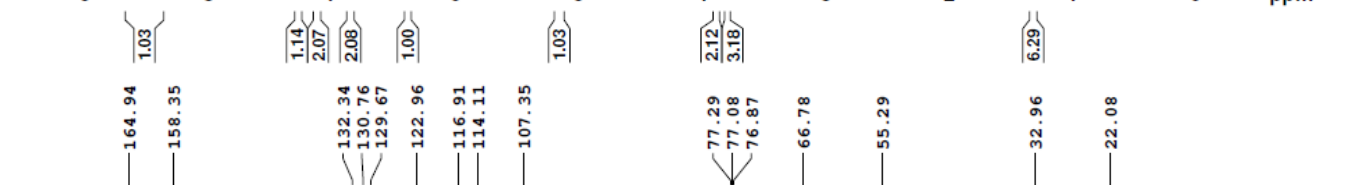
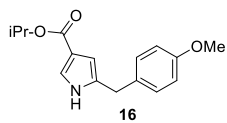
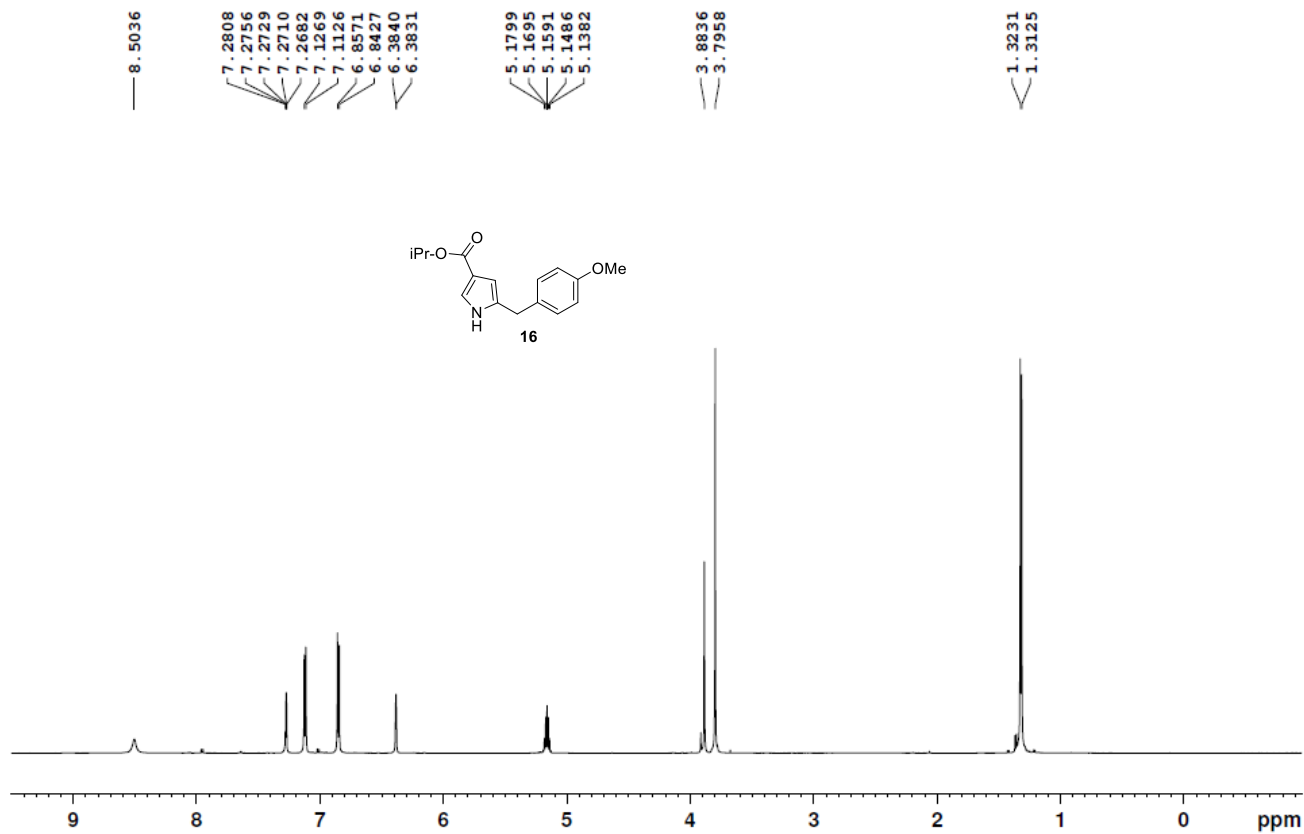
<sup>†</sup>Department of Chemistry, Portland State University, Portland, Oregon 97201, United States

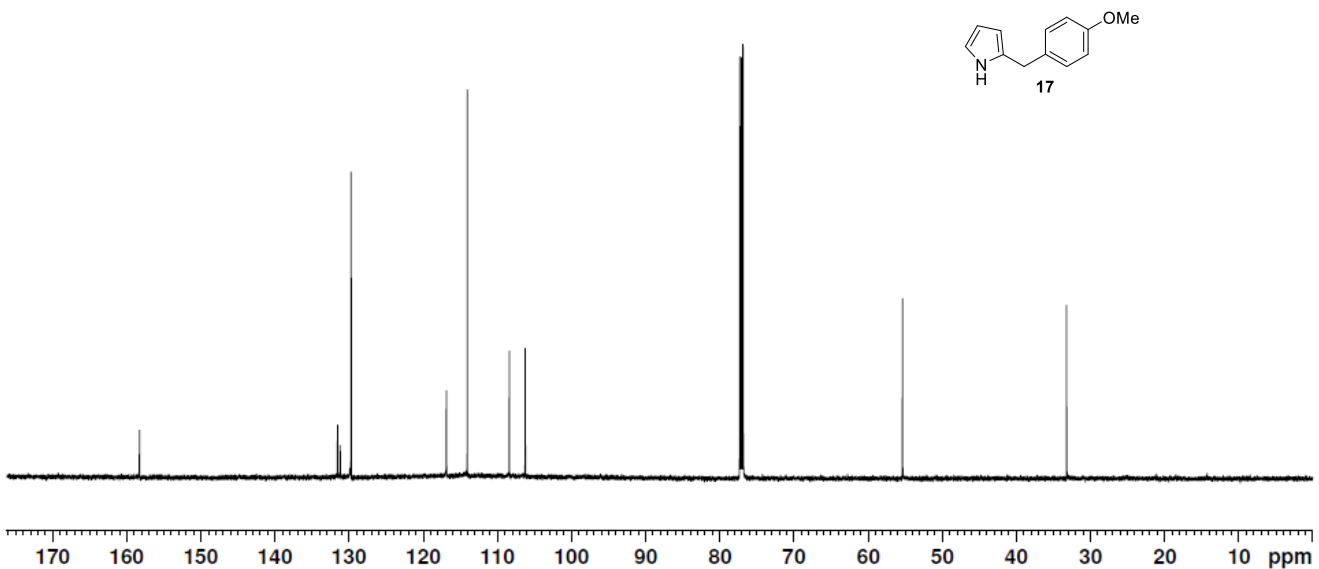
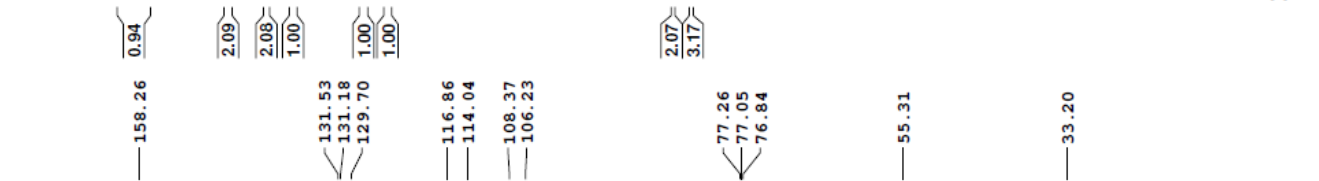
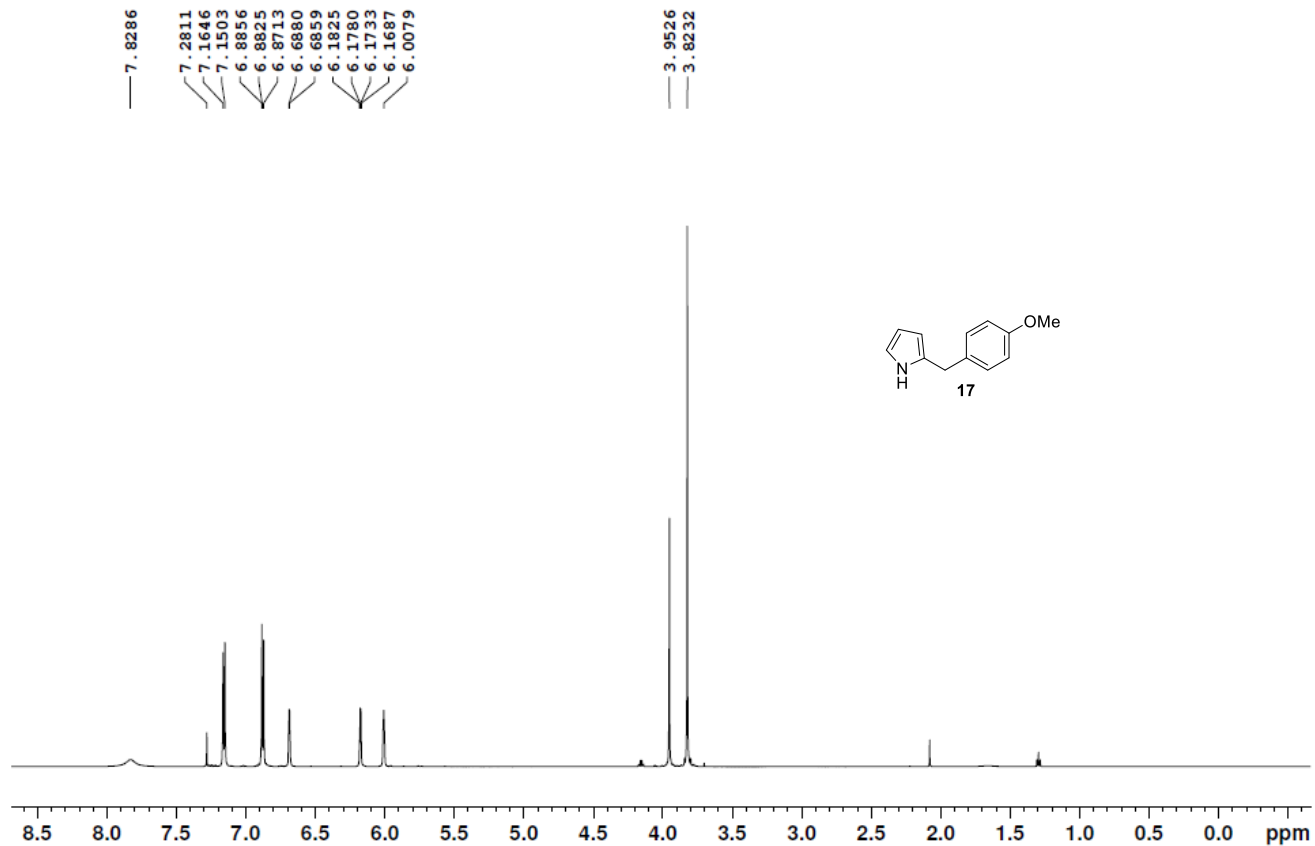
<sup>‡</sup>Department of Veterans Affairs Medical Center, Portland, Oregon 97239, United States

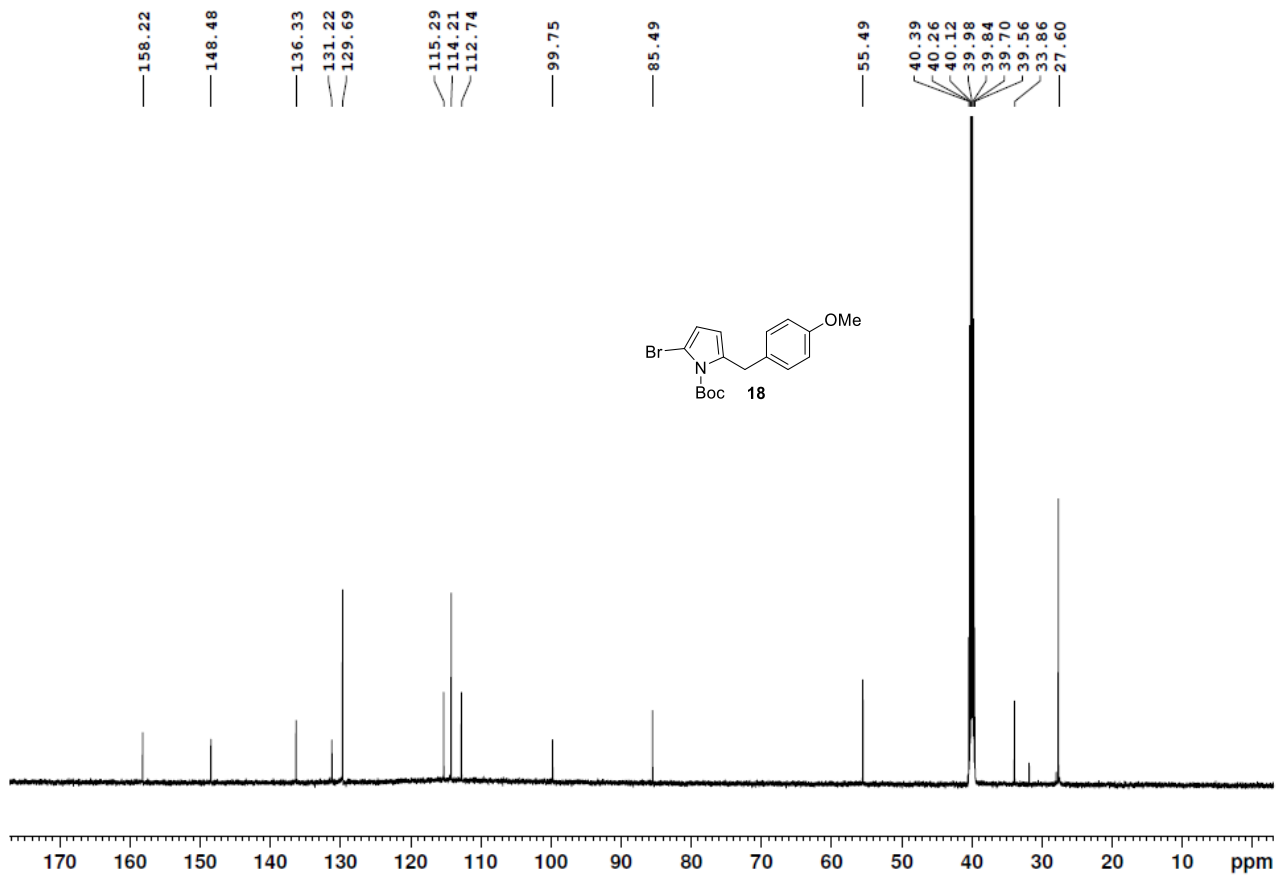
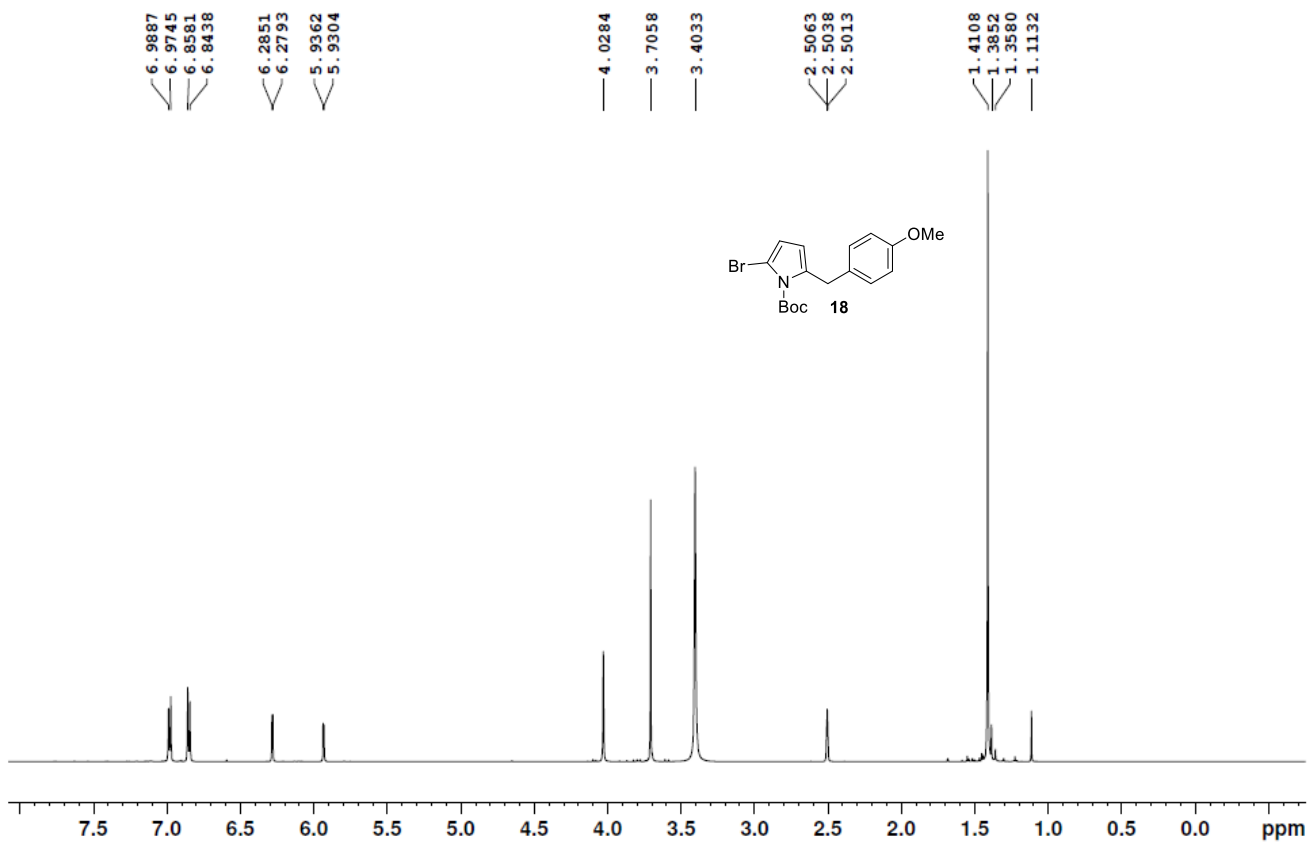
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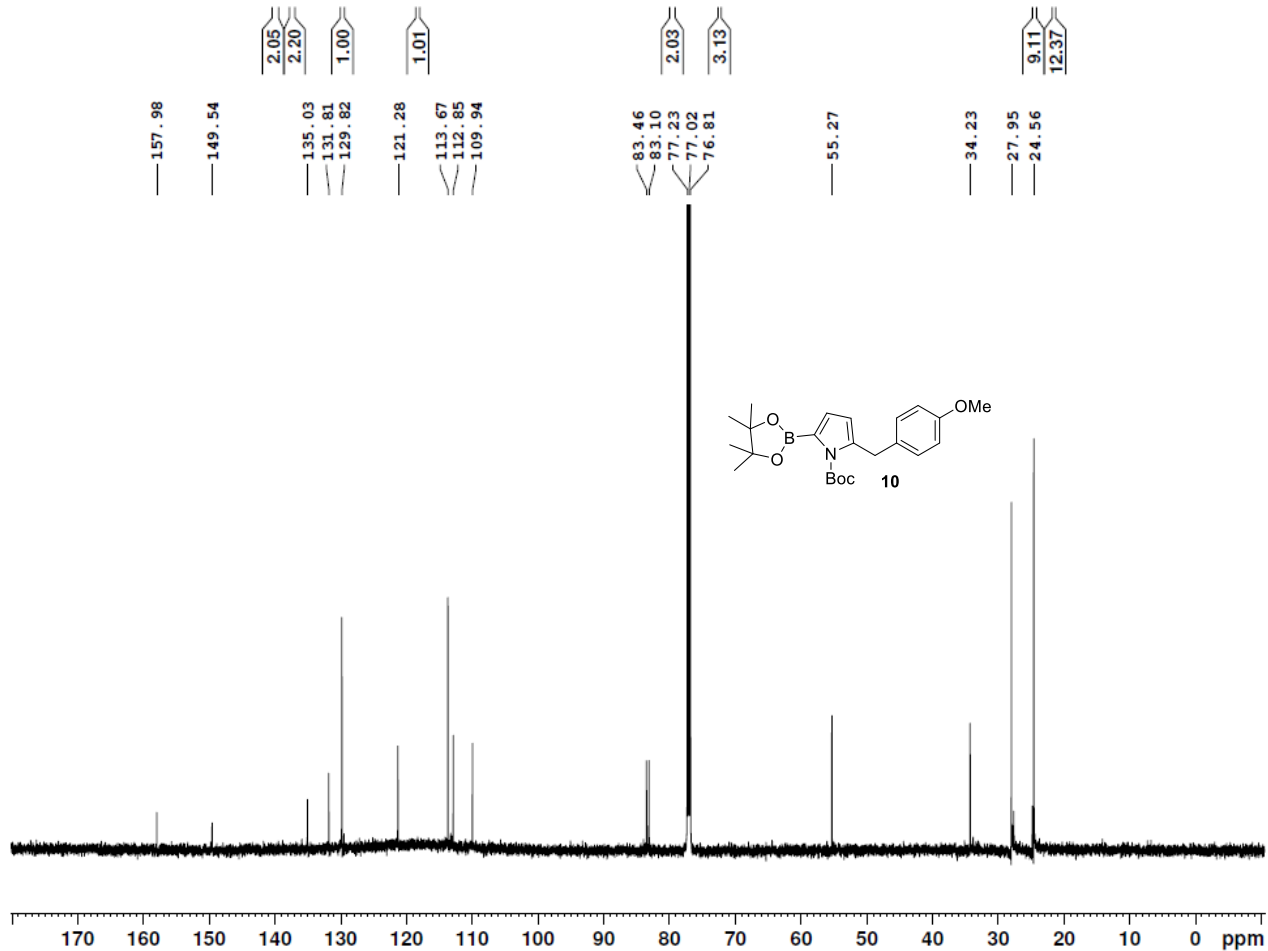
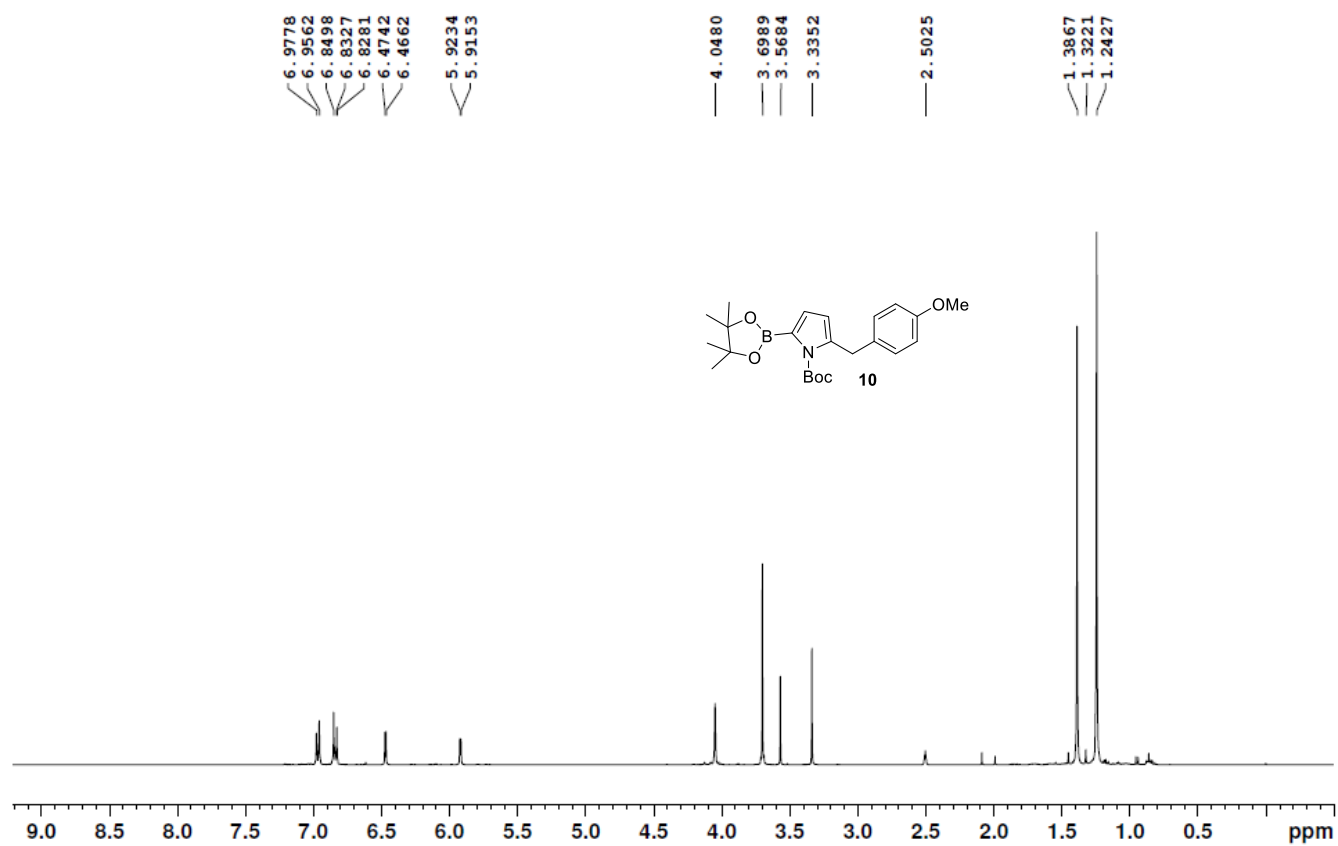
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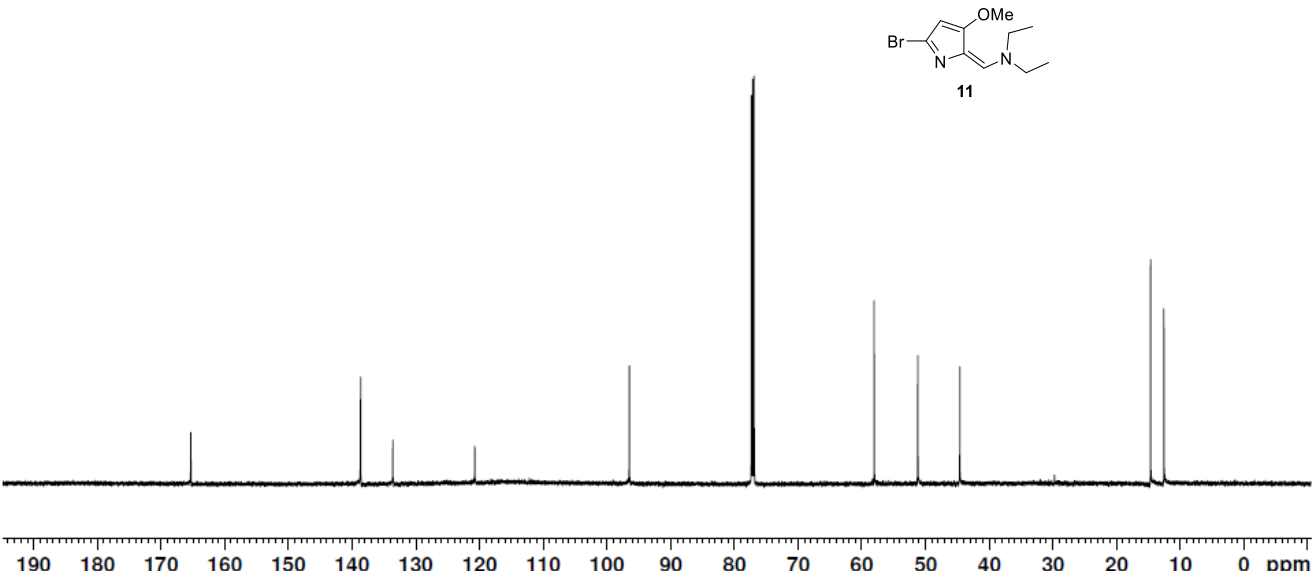
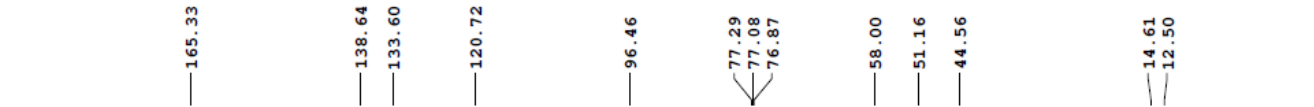
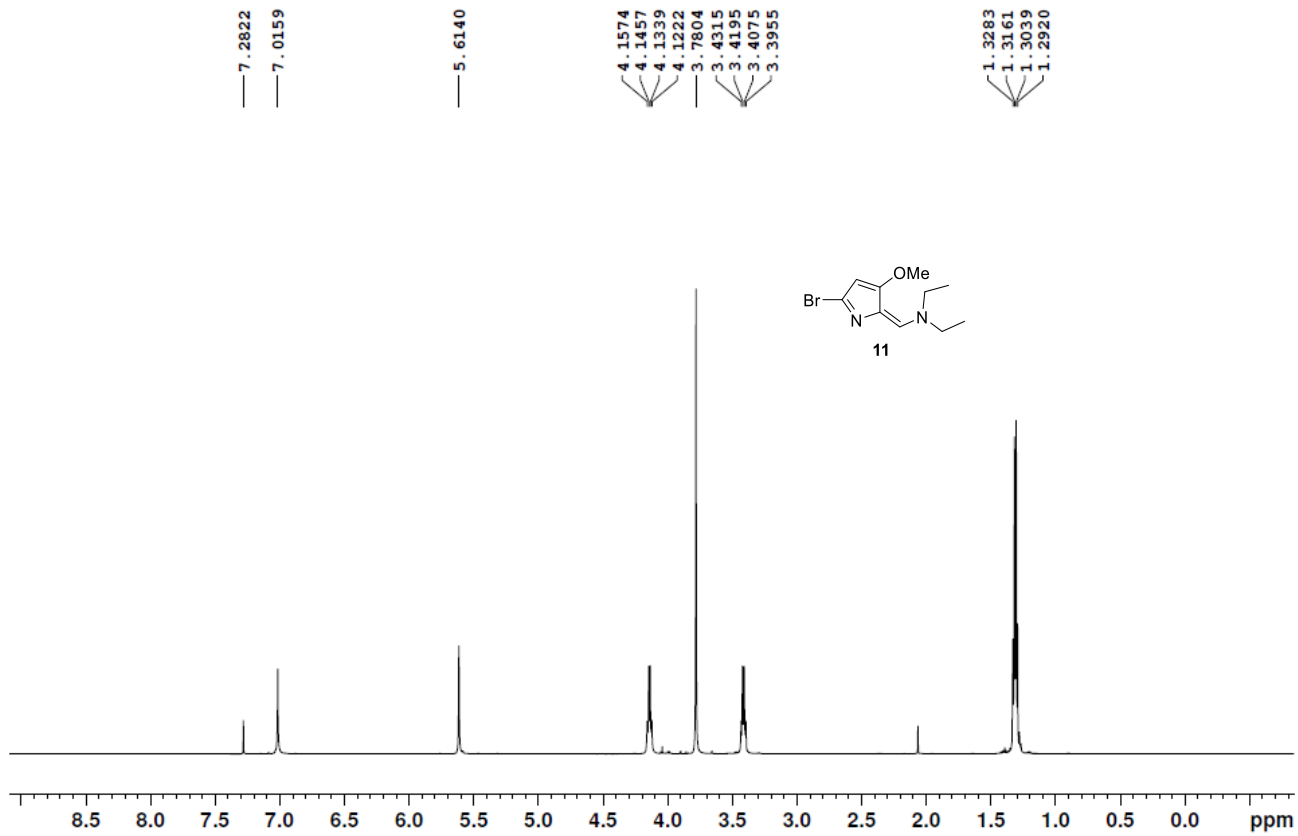


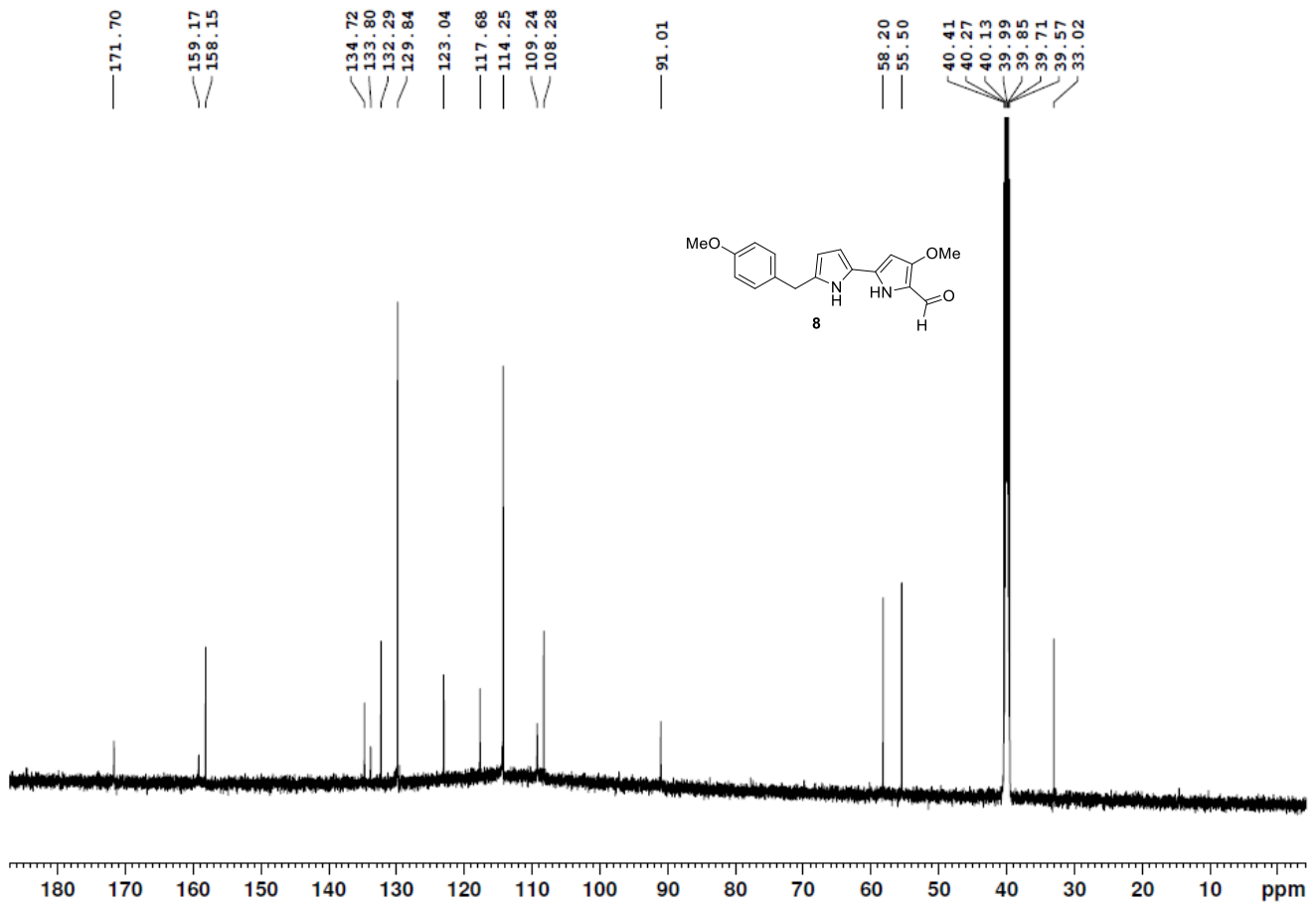
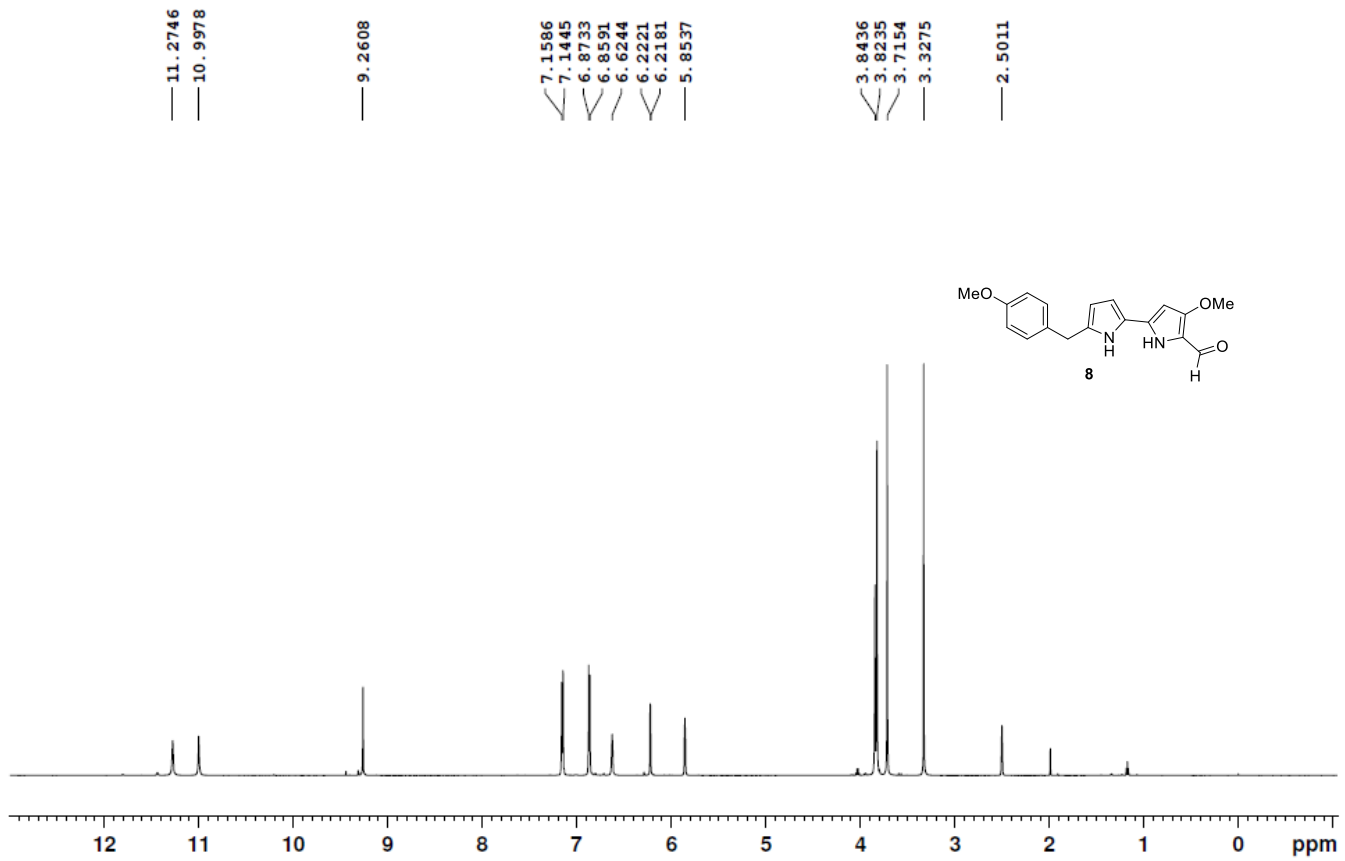




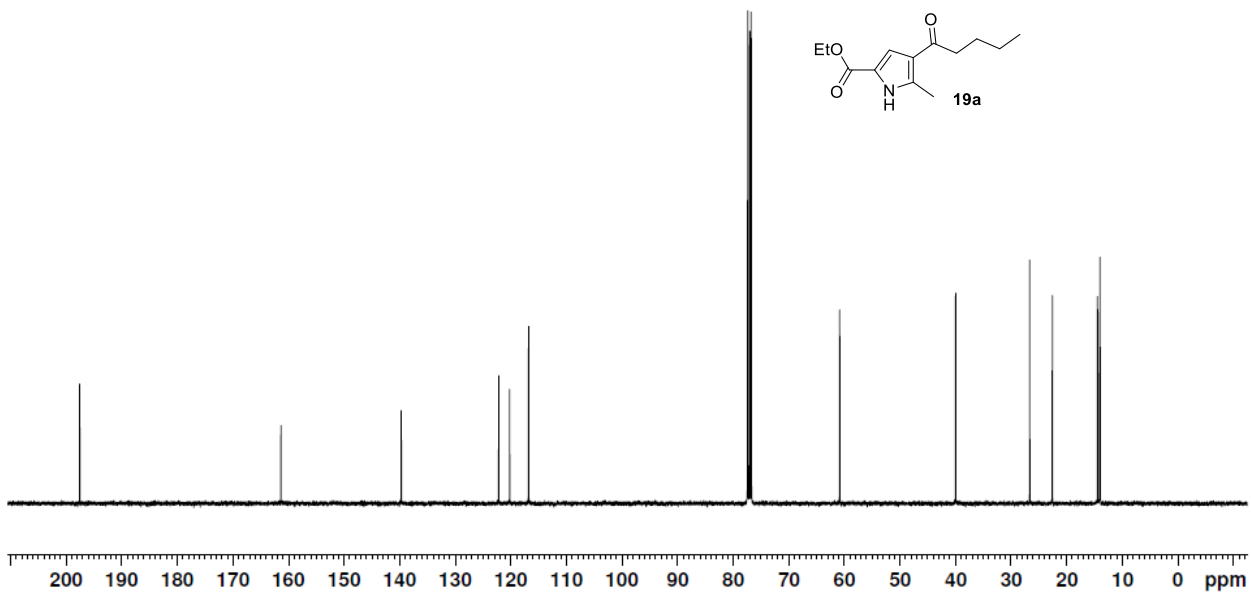
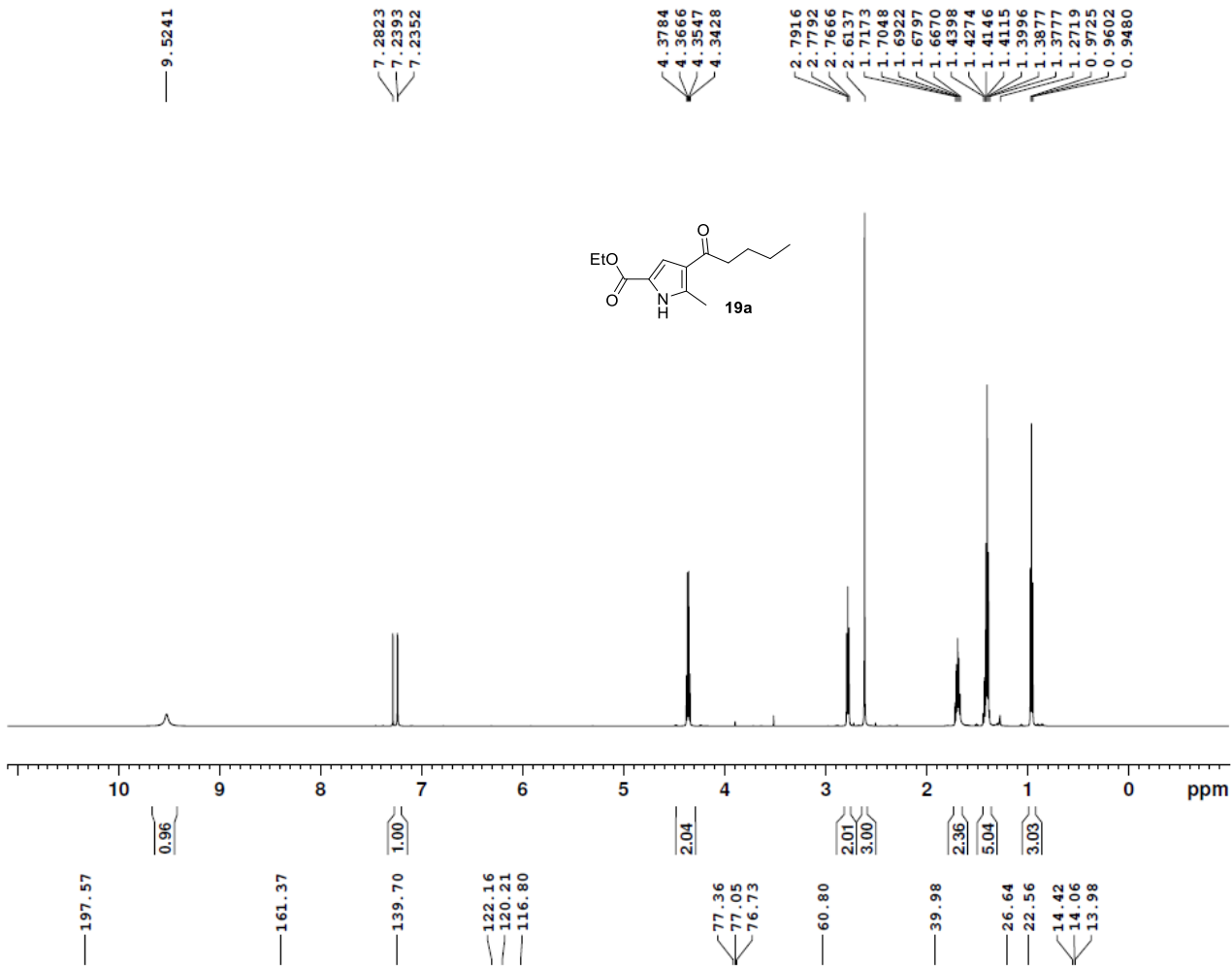


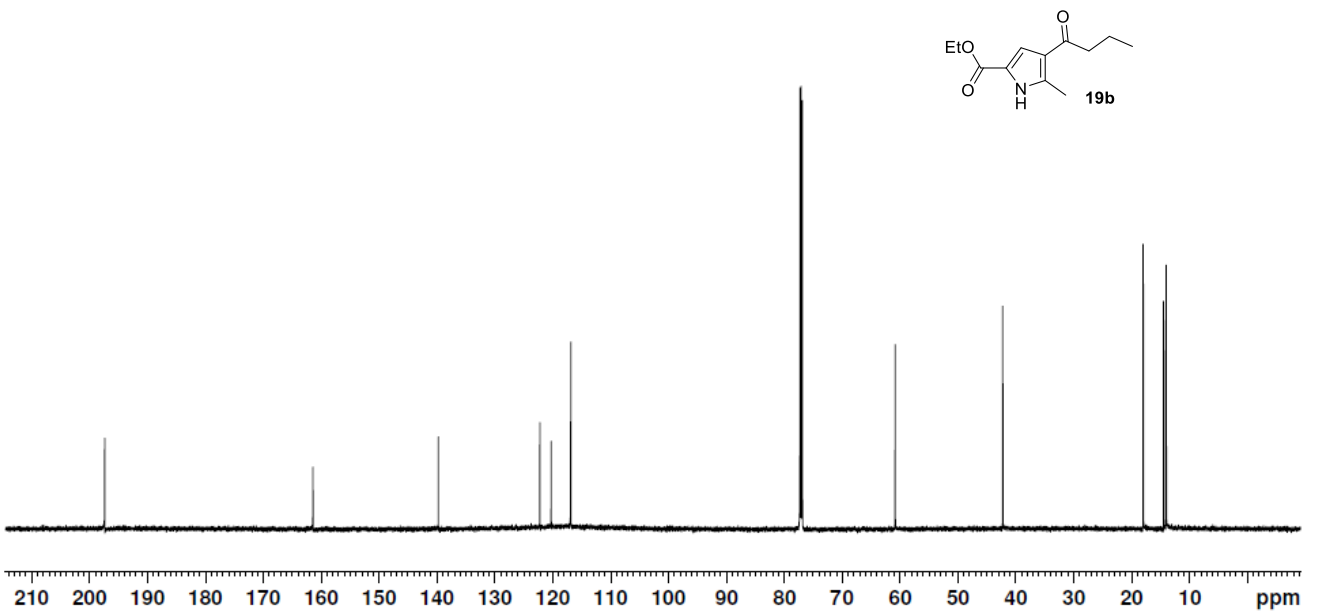
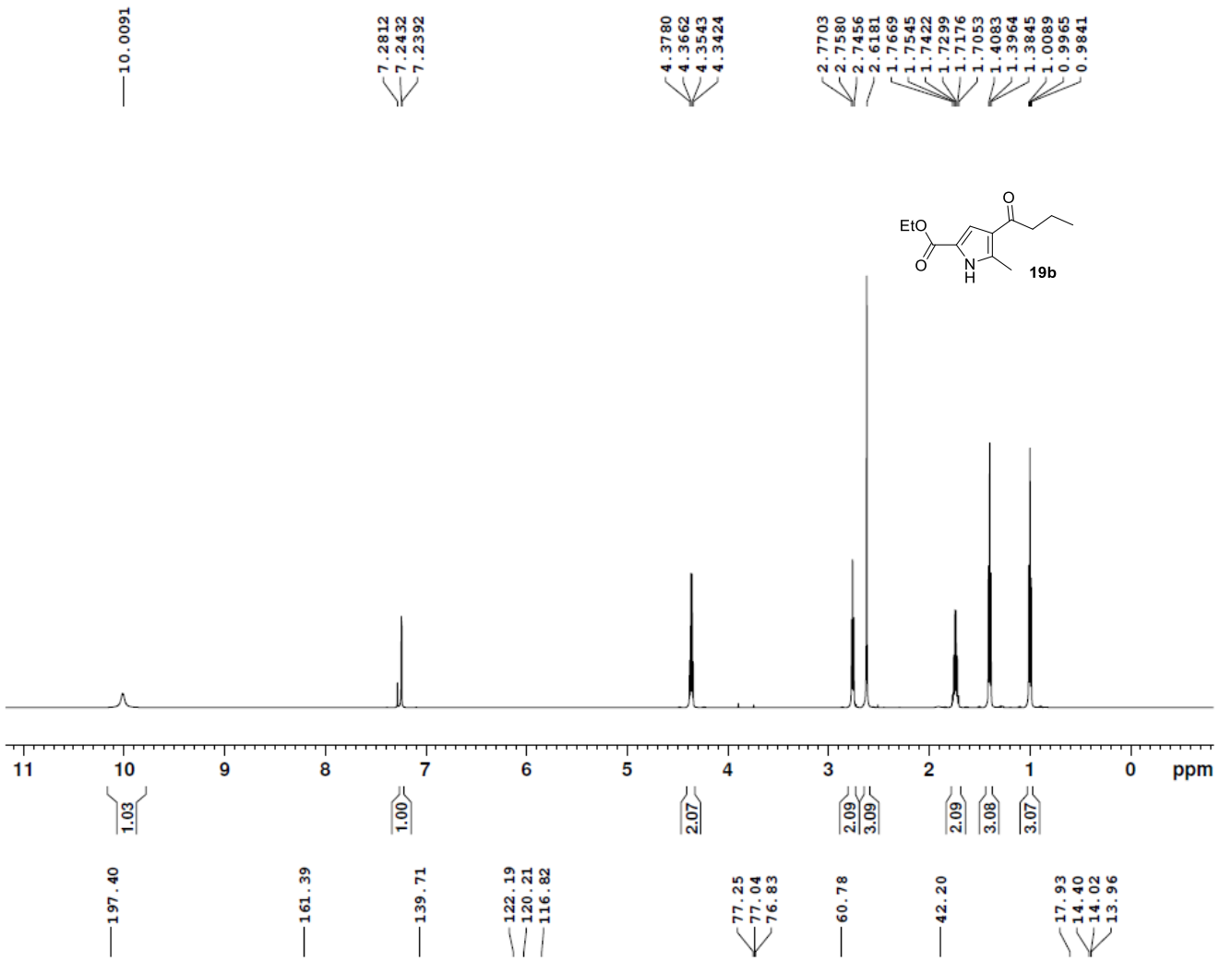


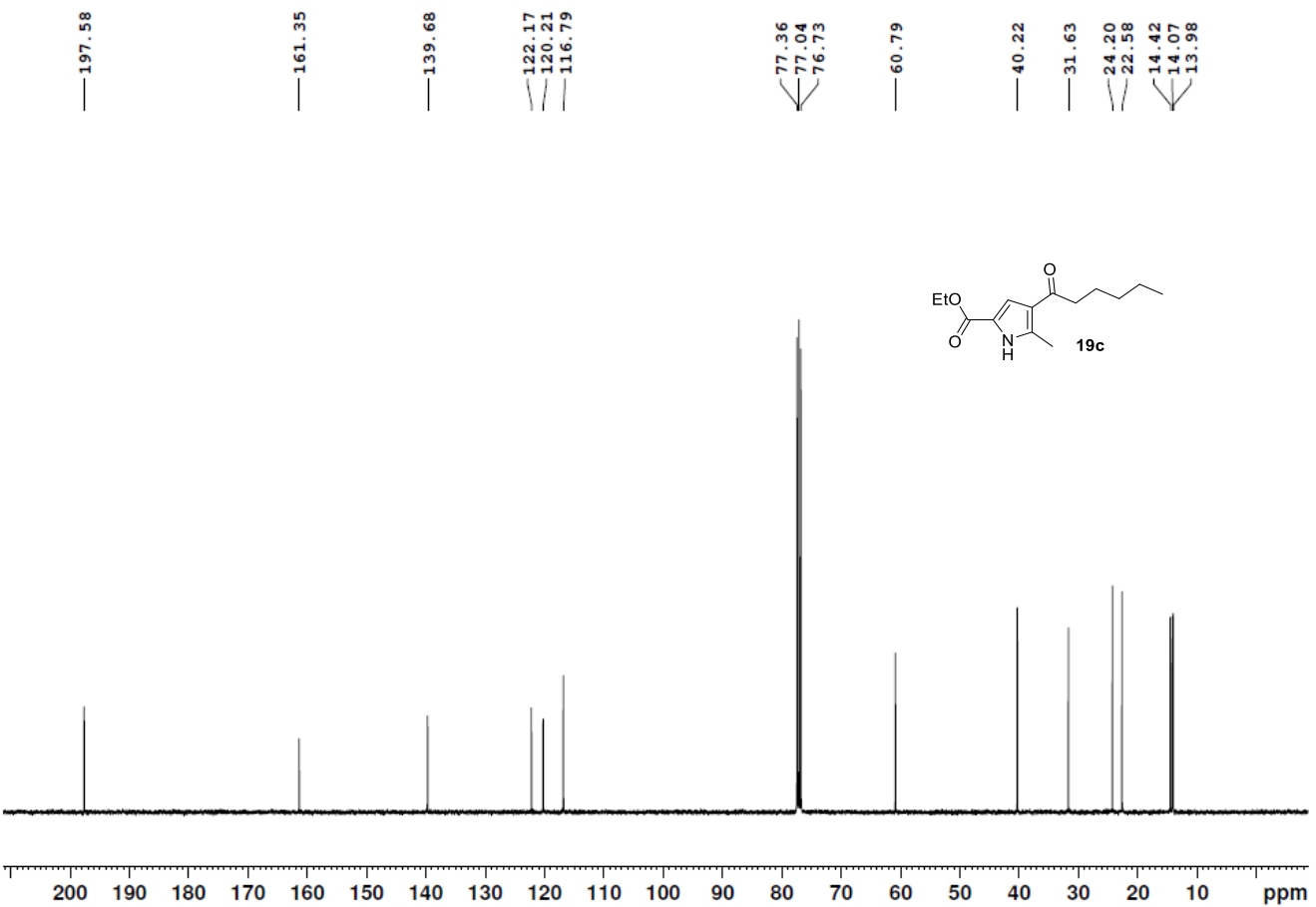
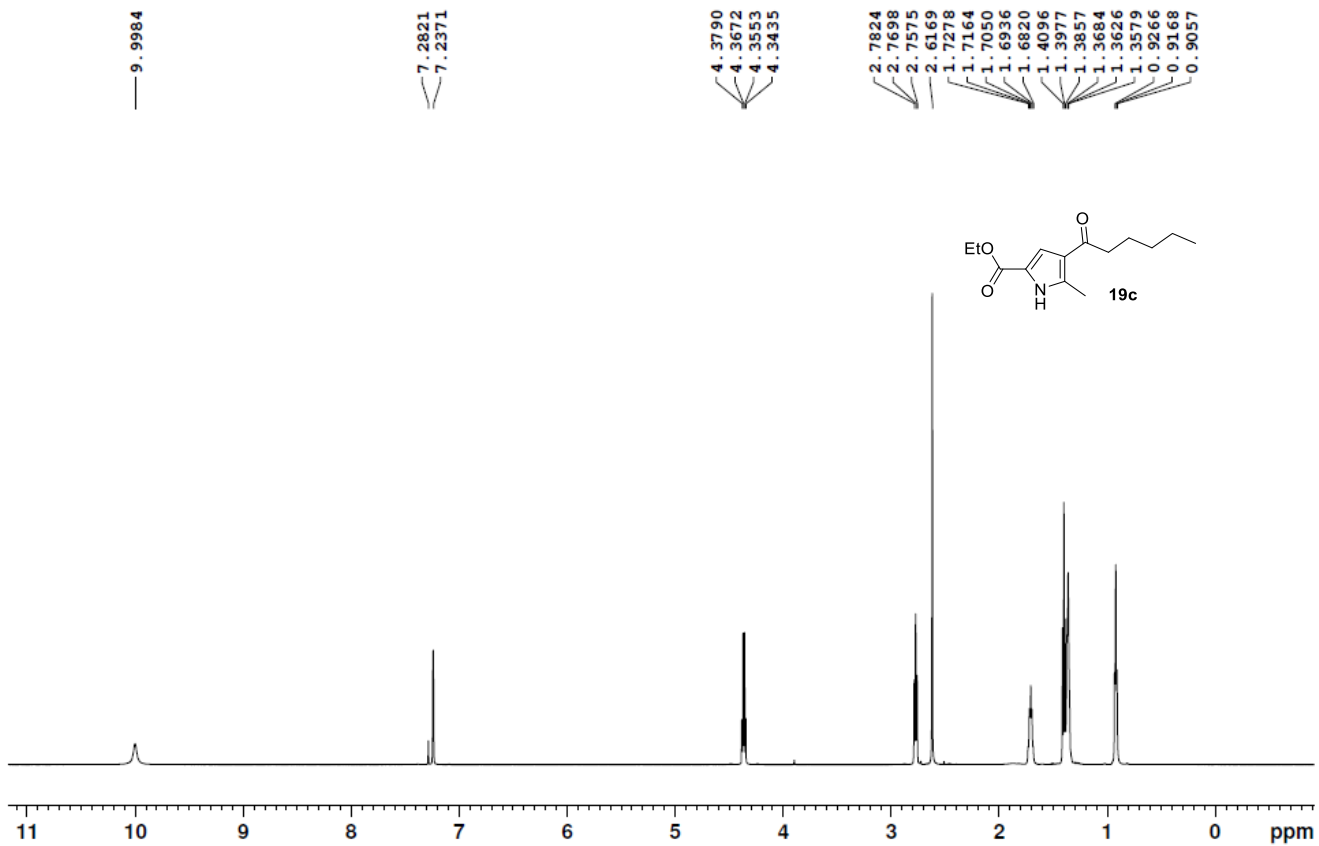


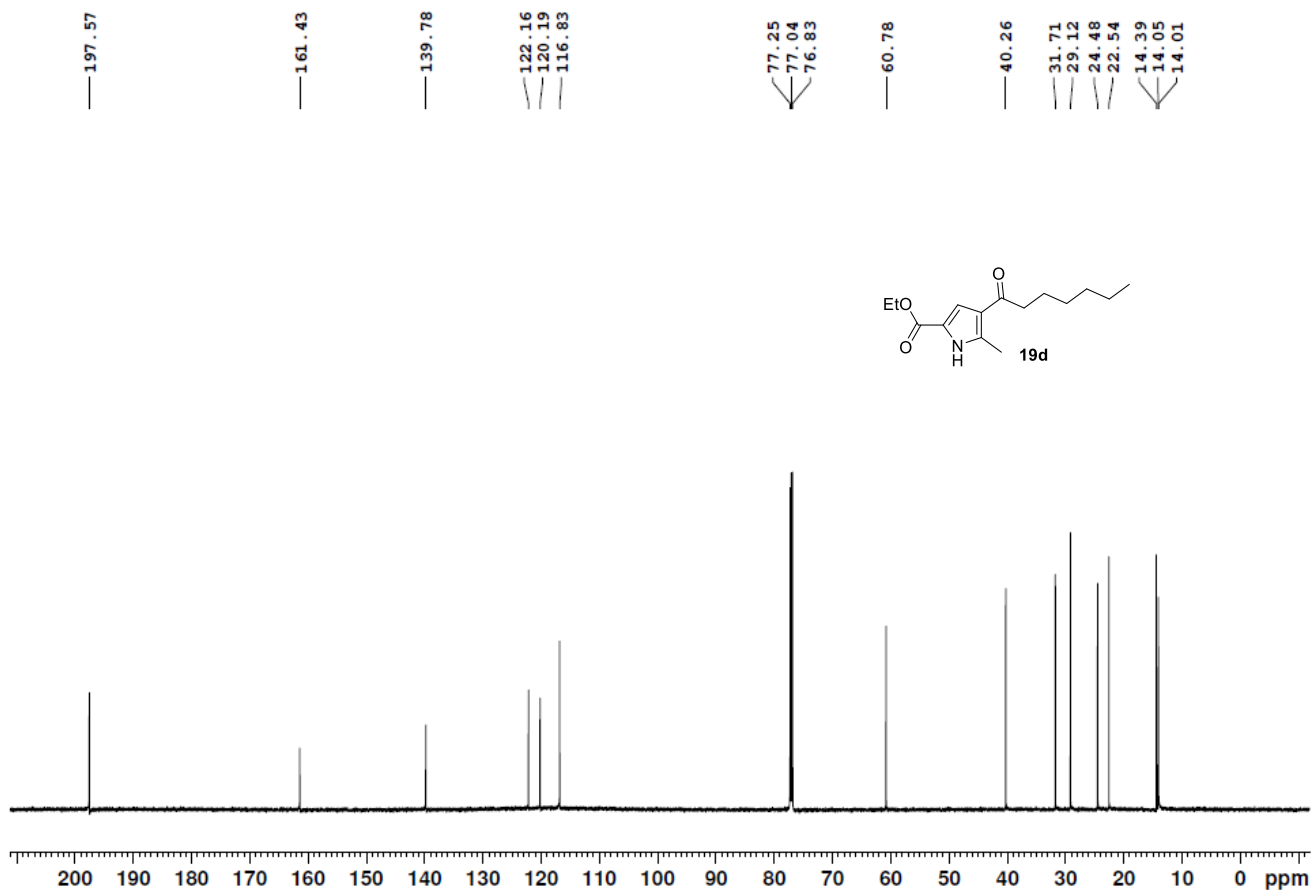
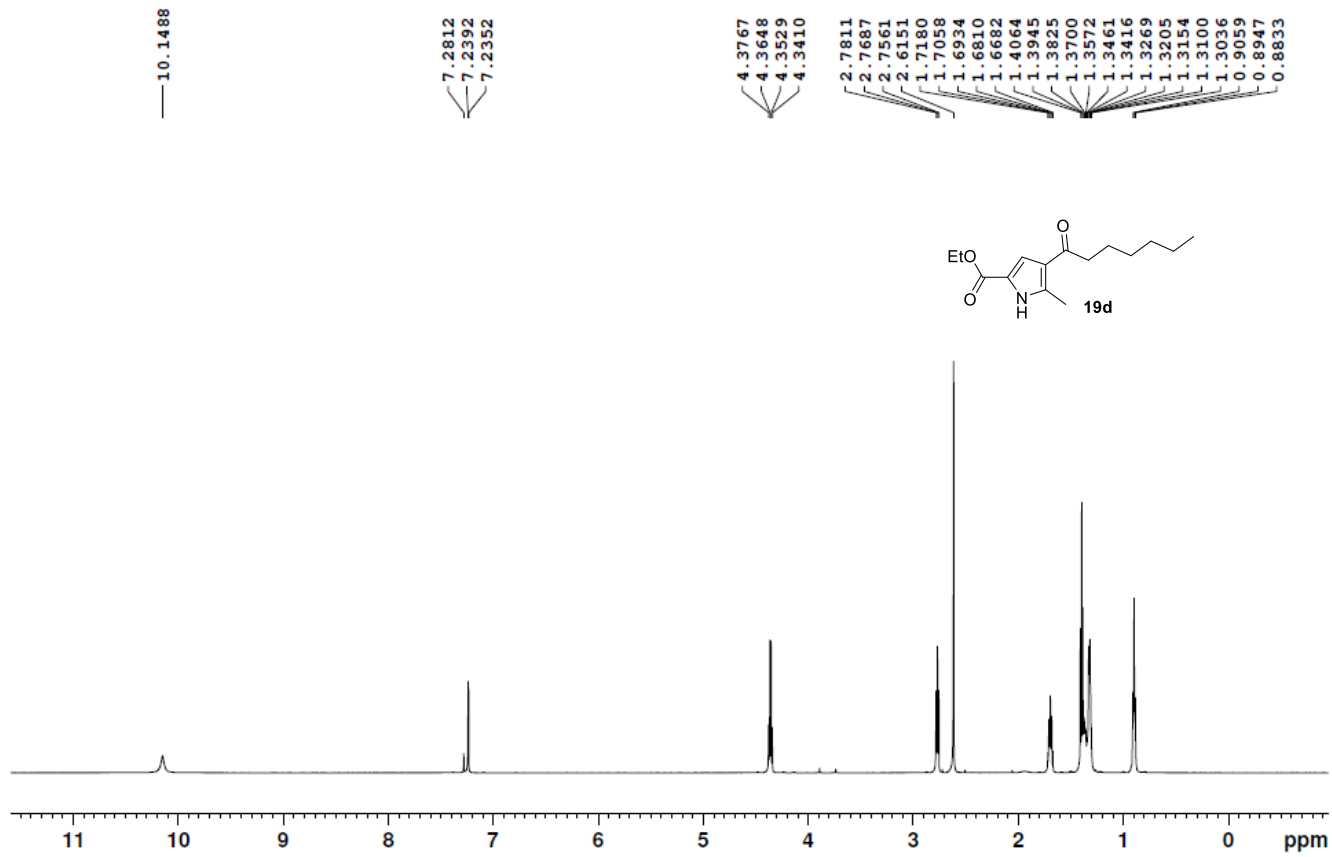


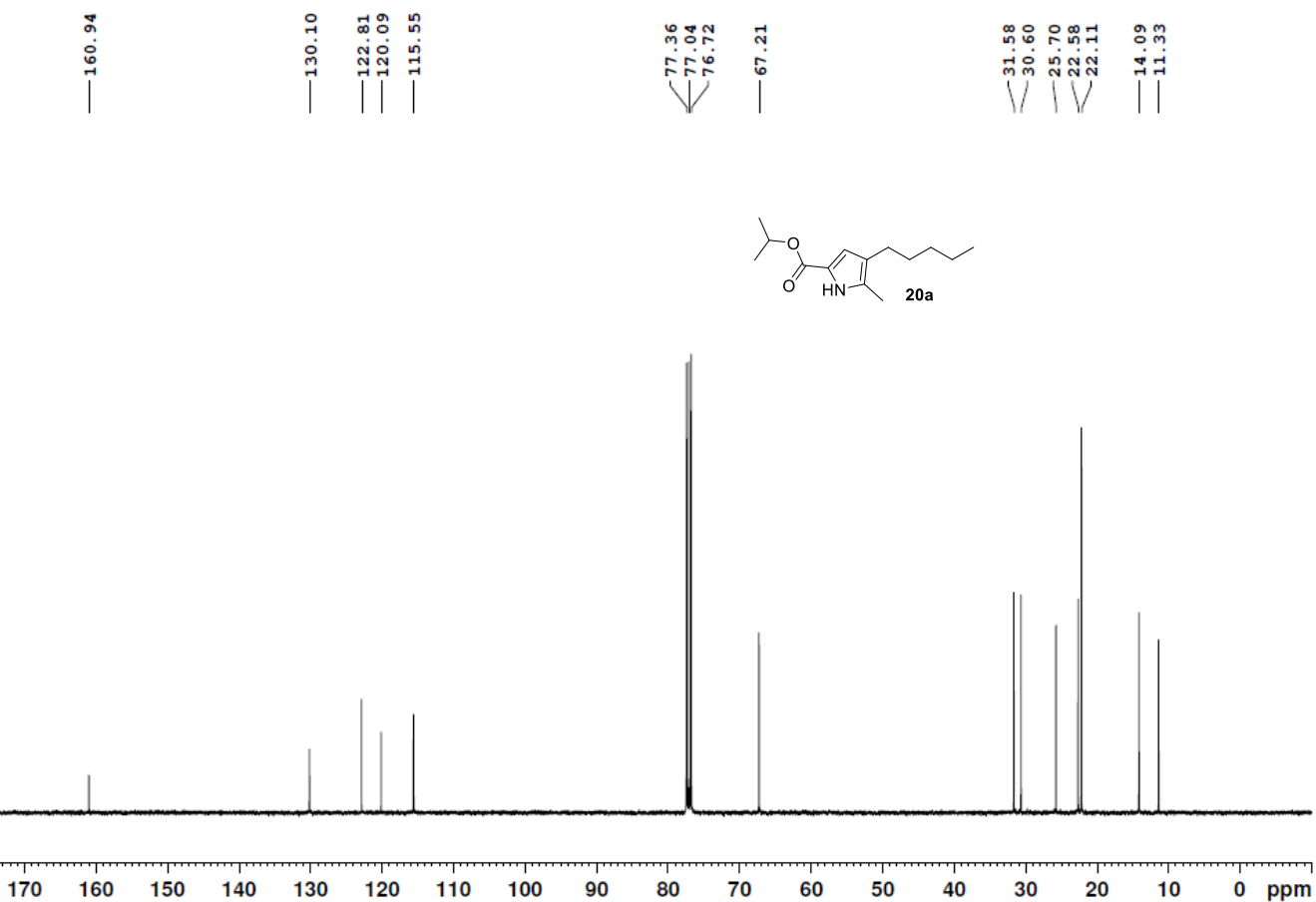
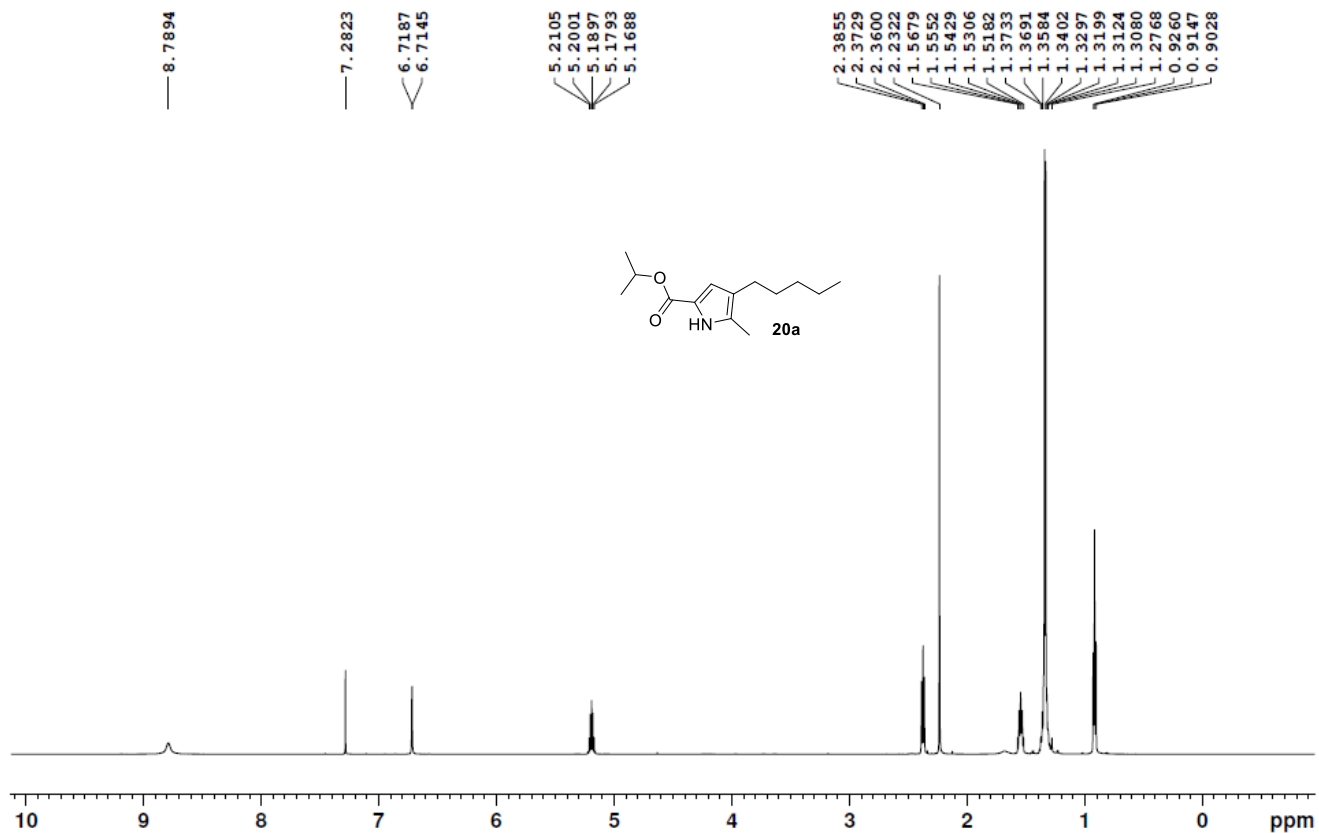


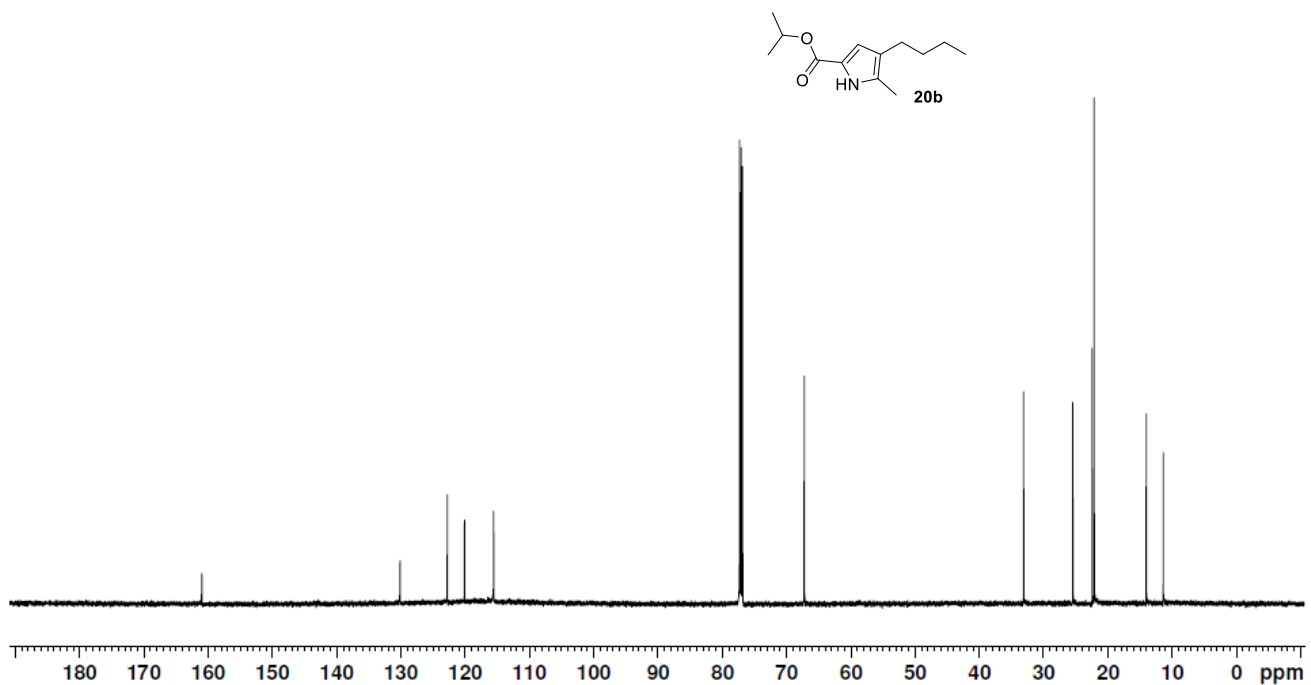
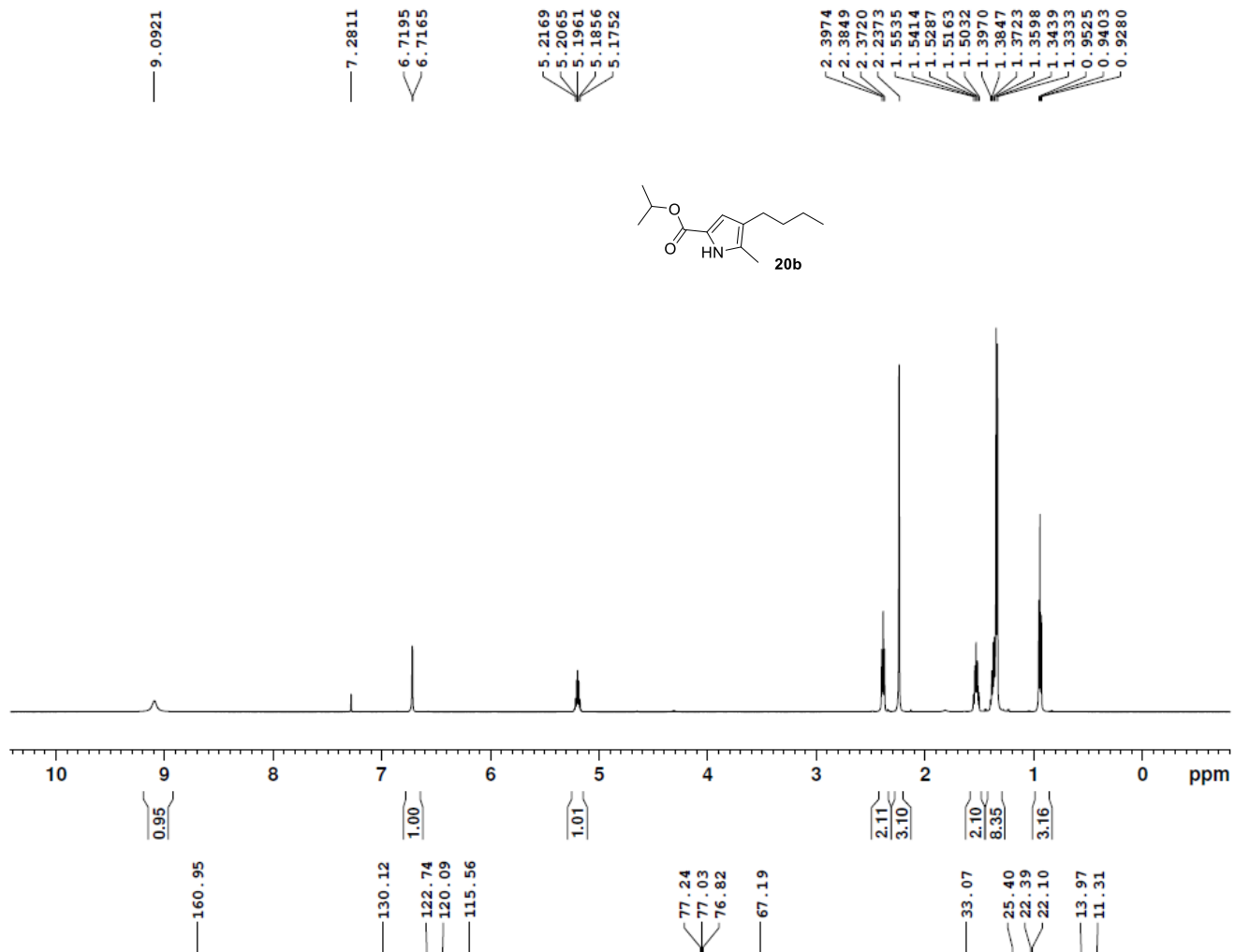


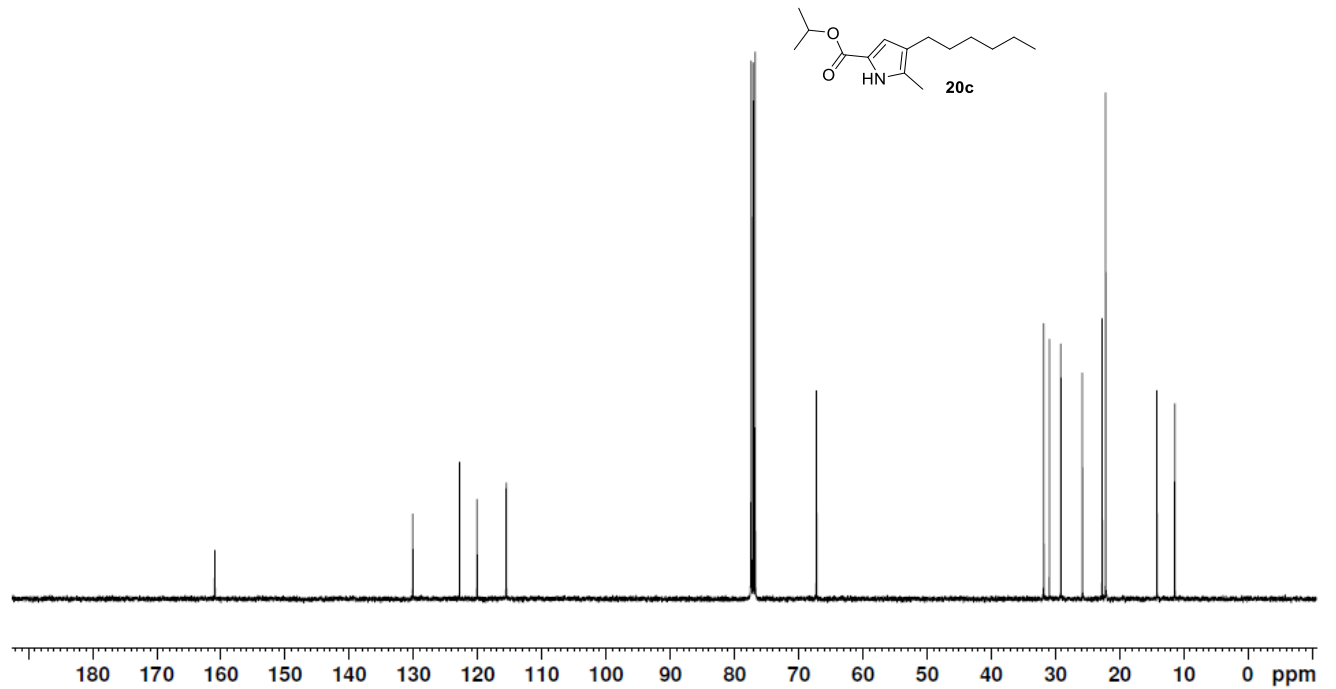
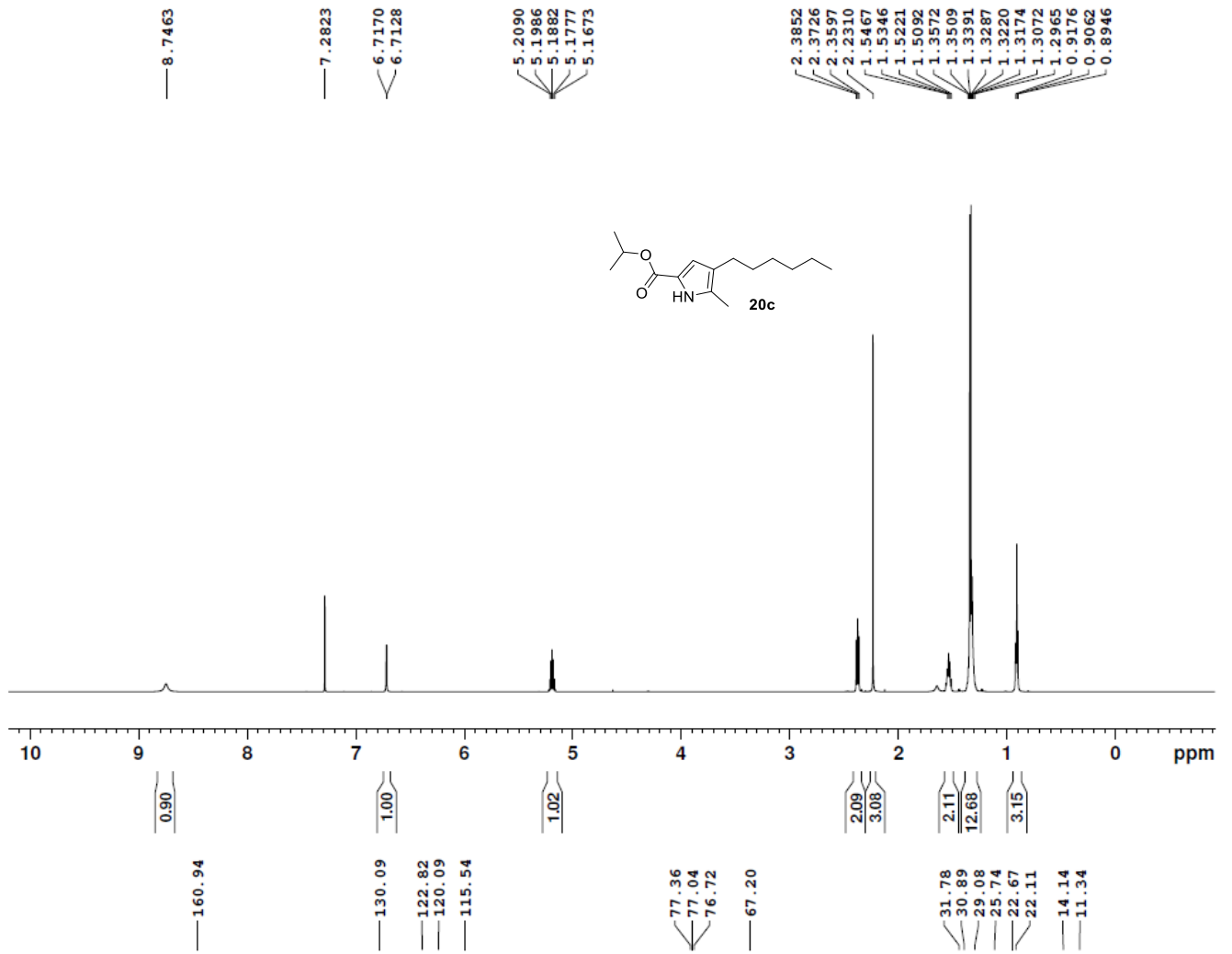


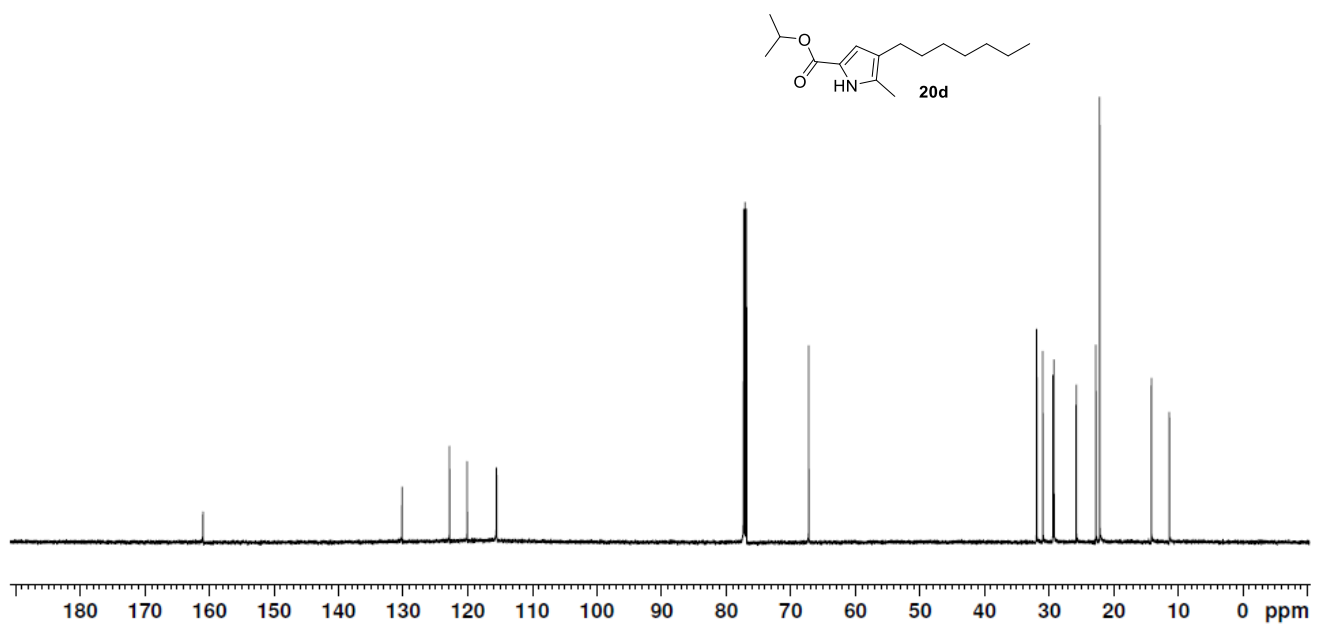
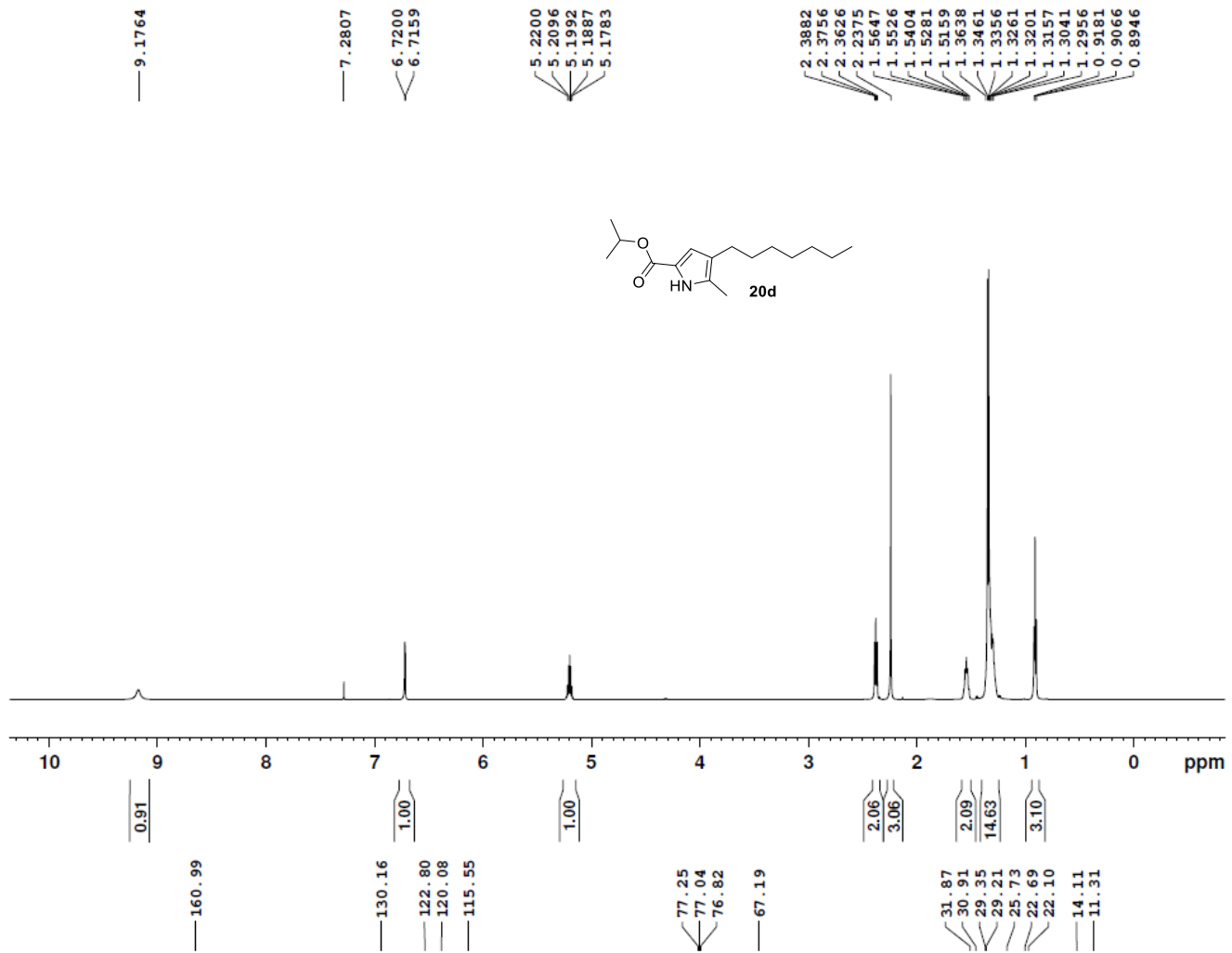




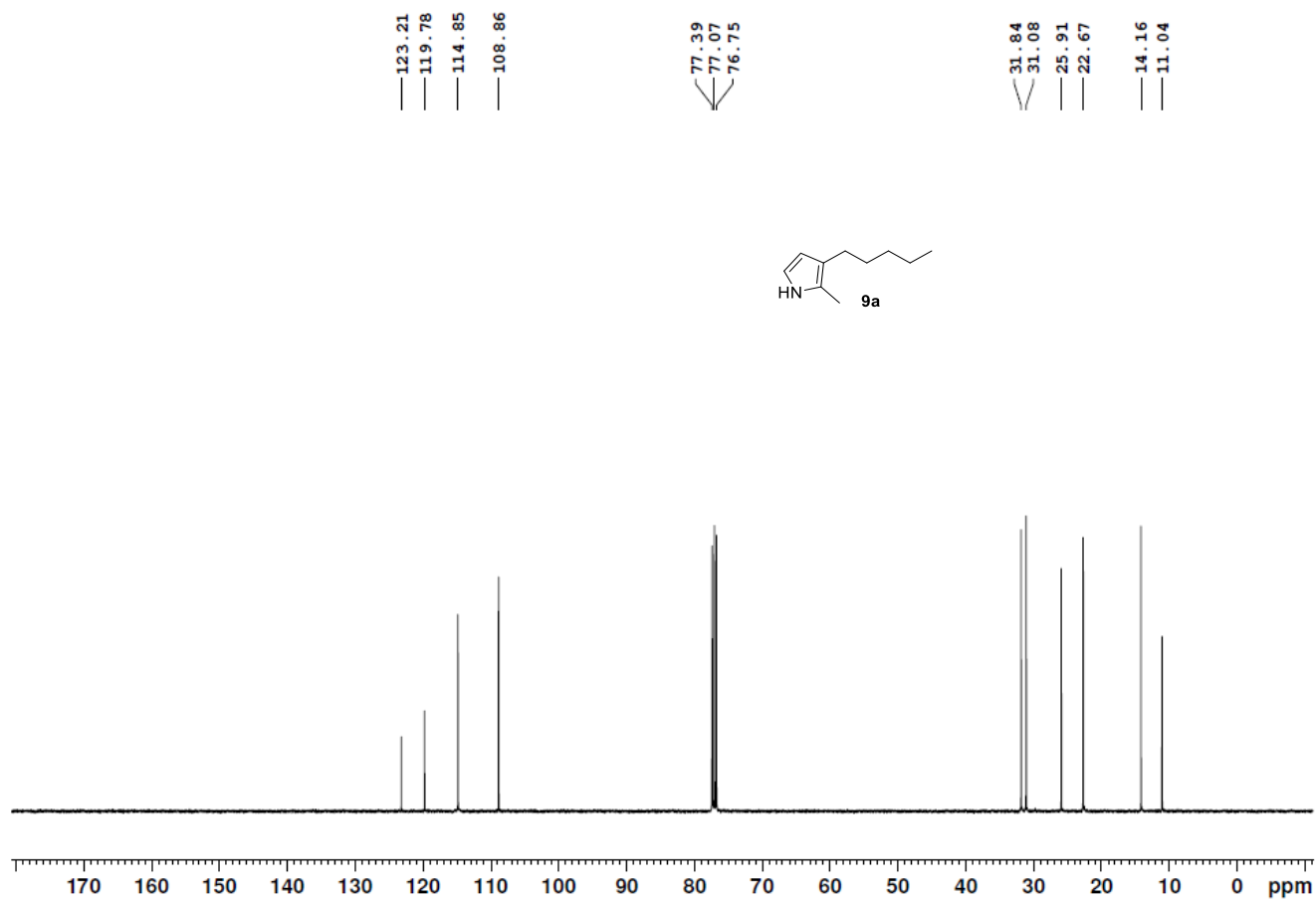
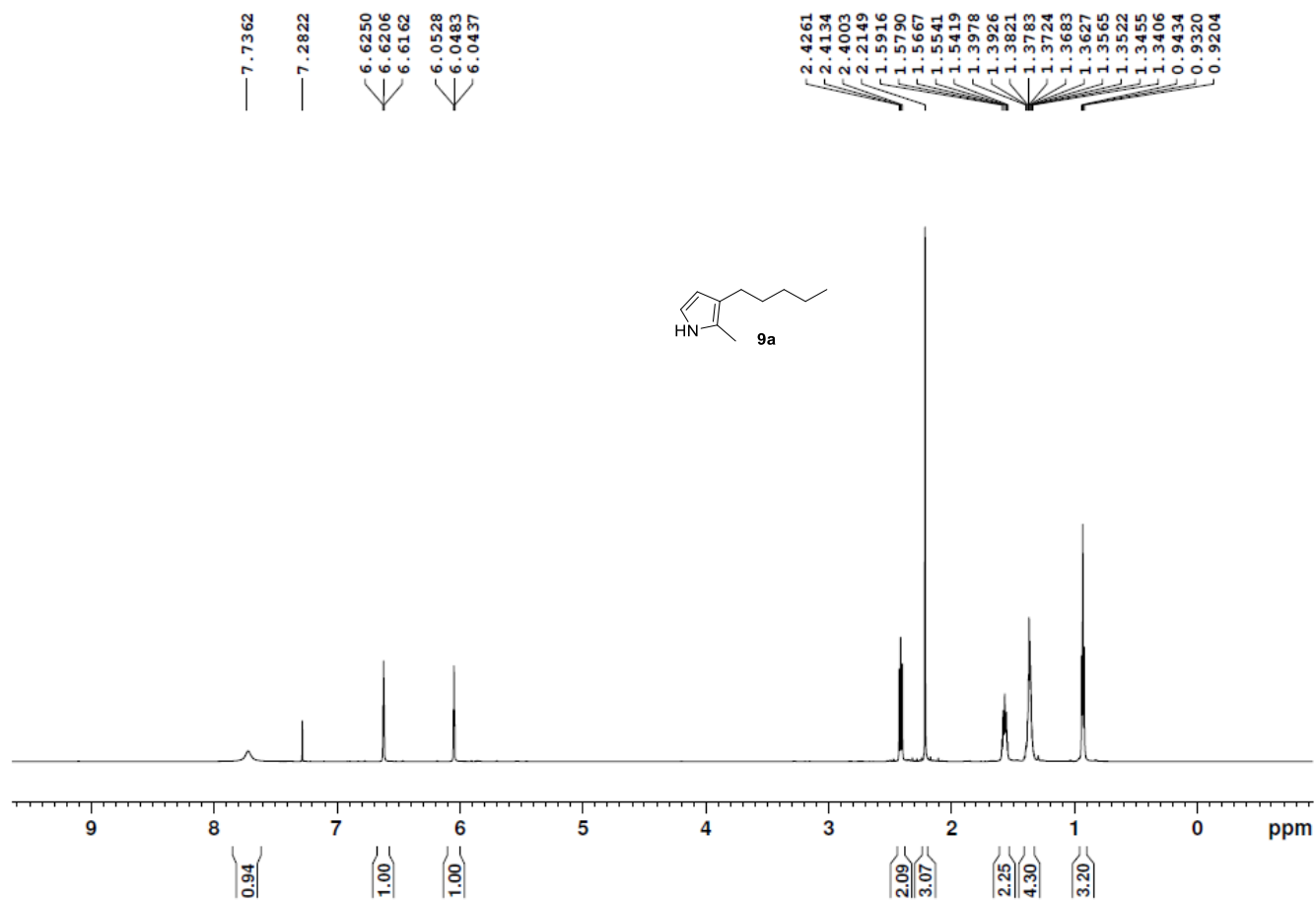


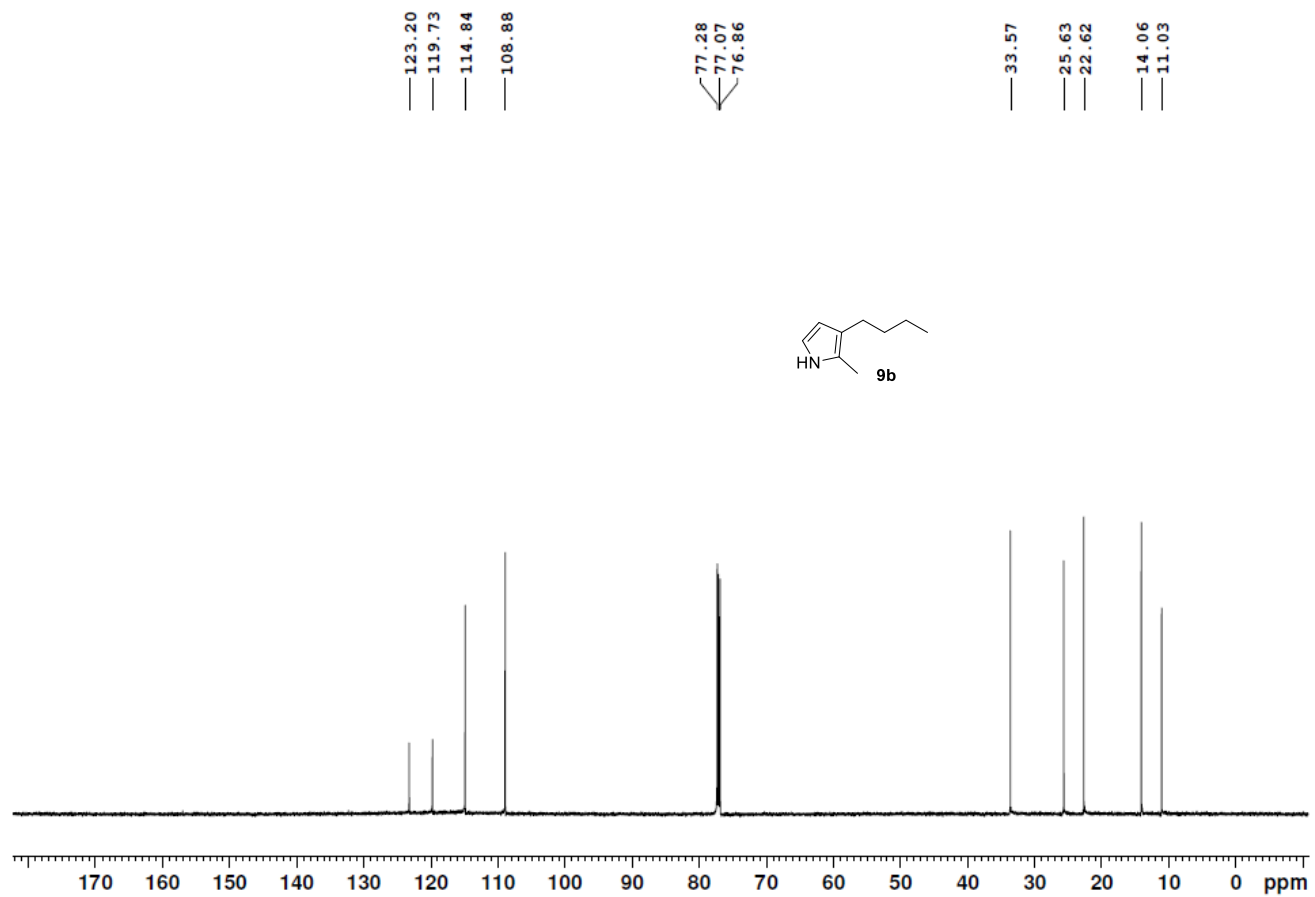
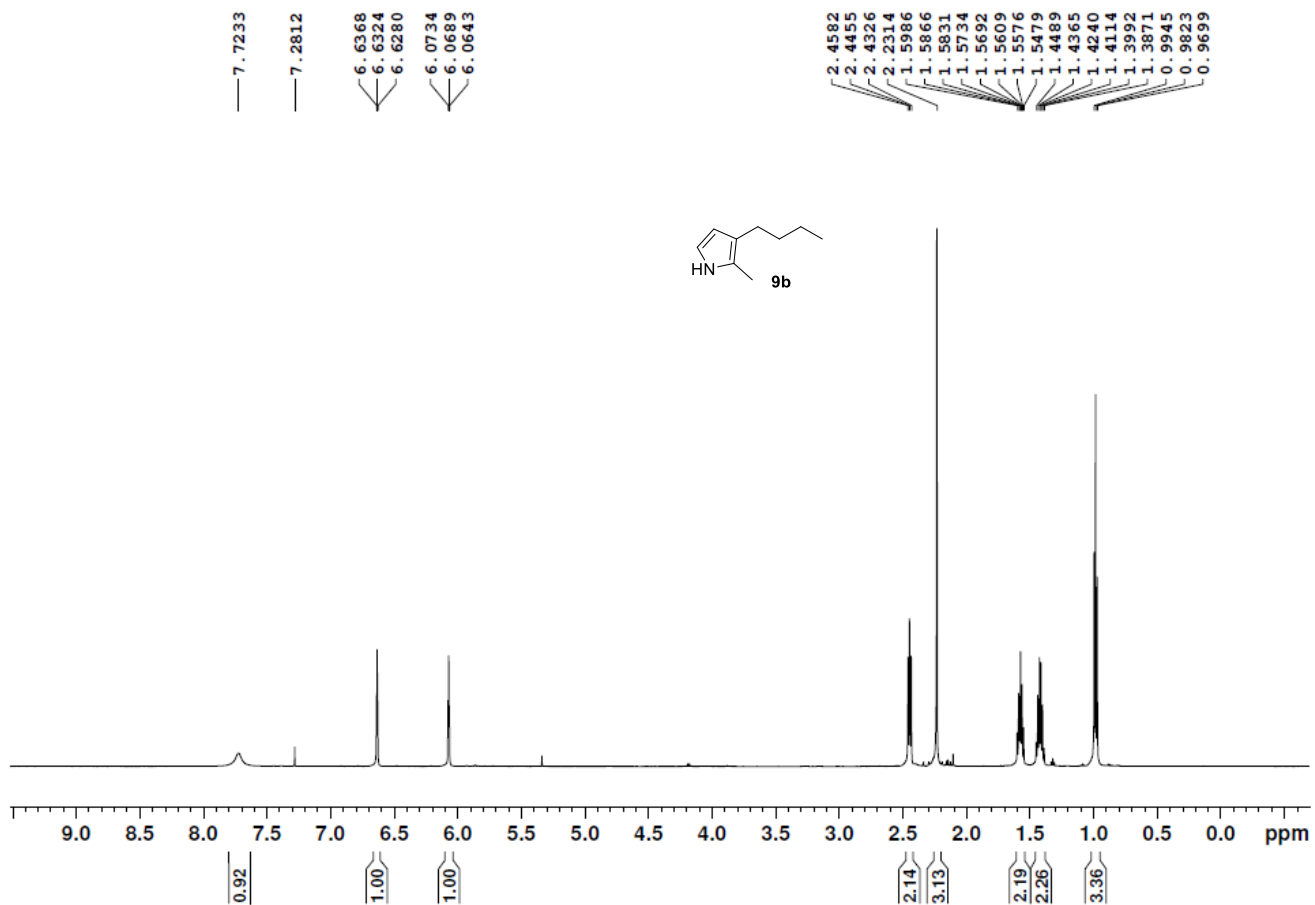


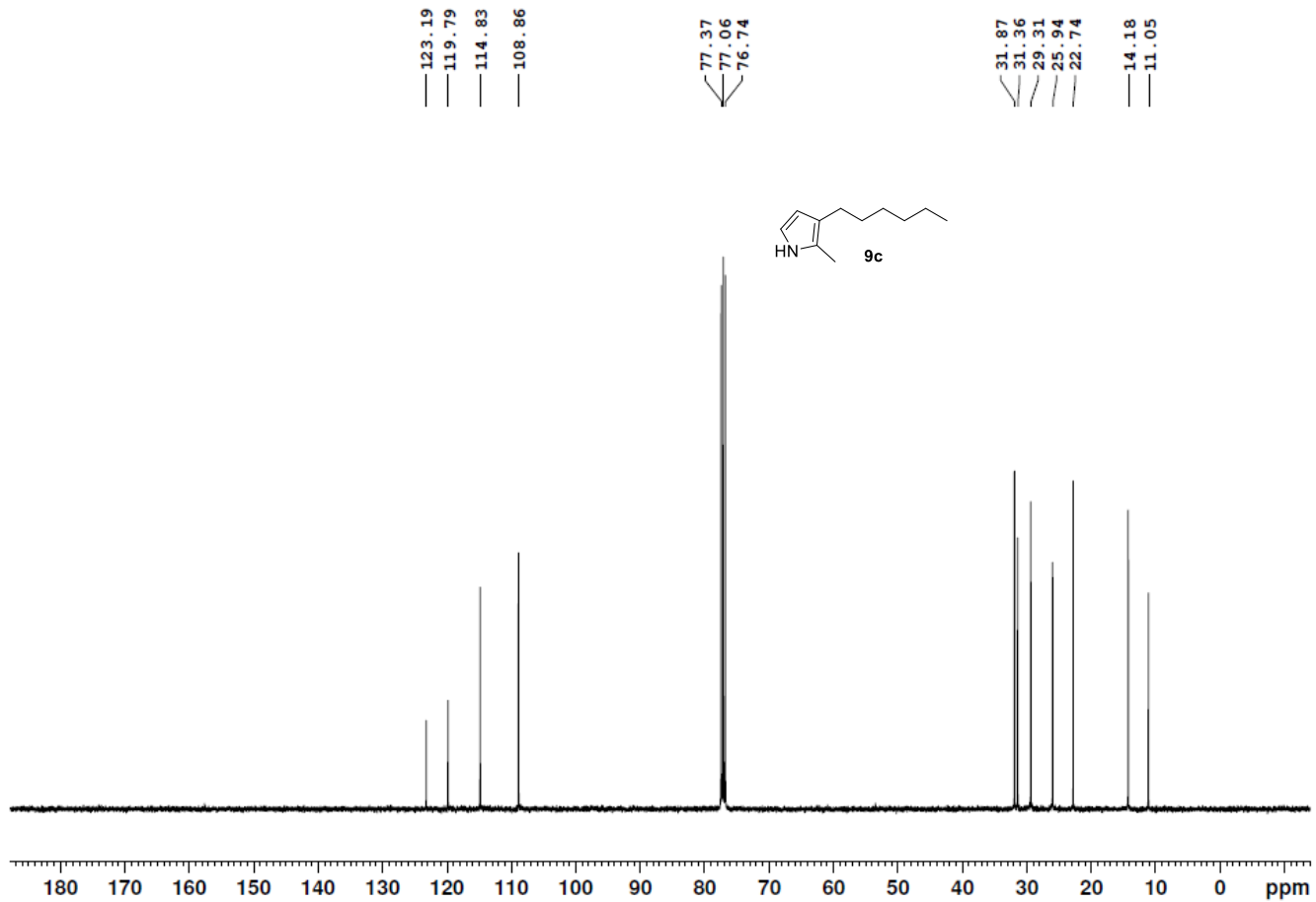
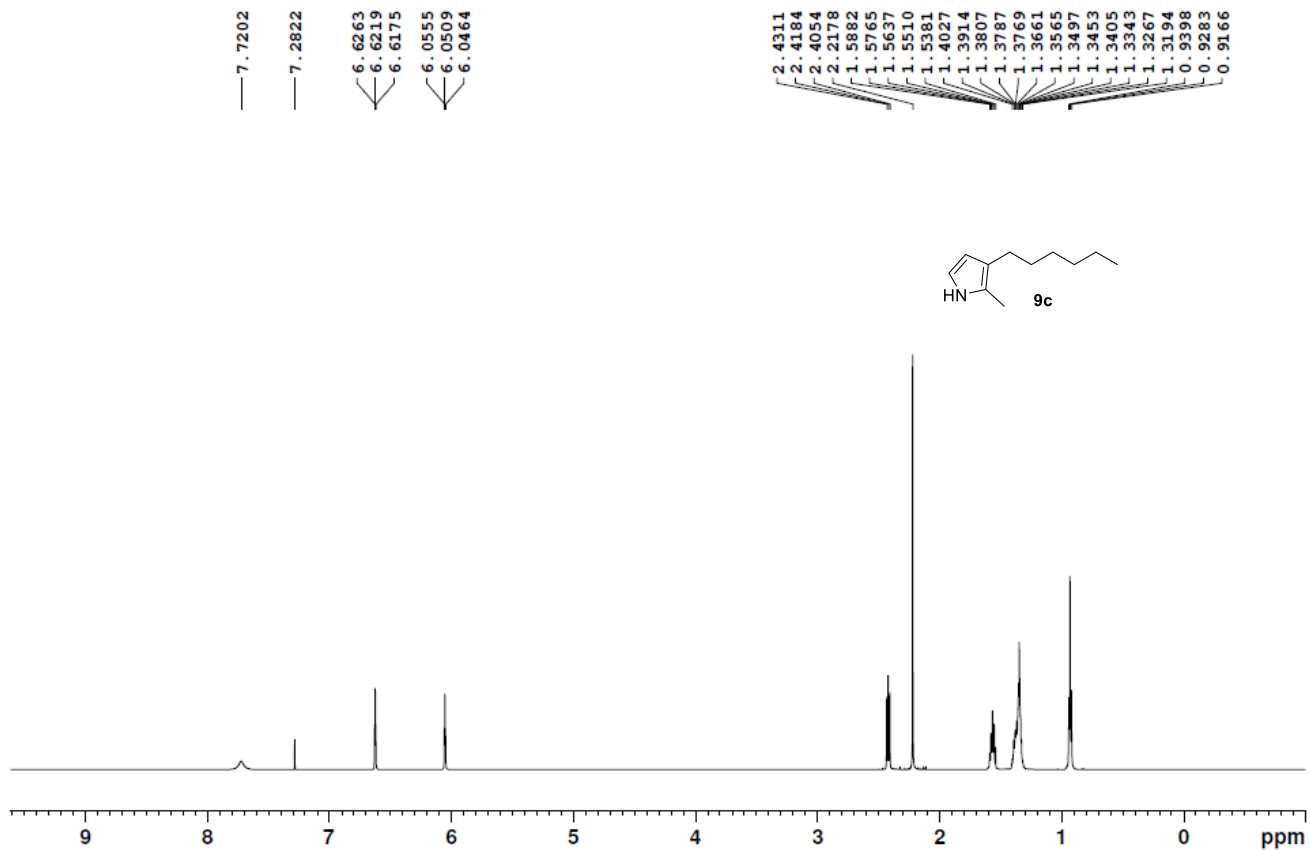


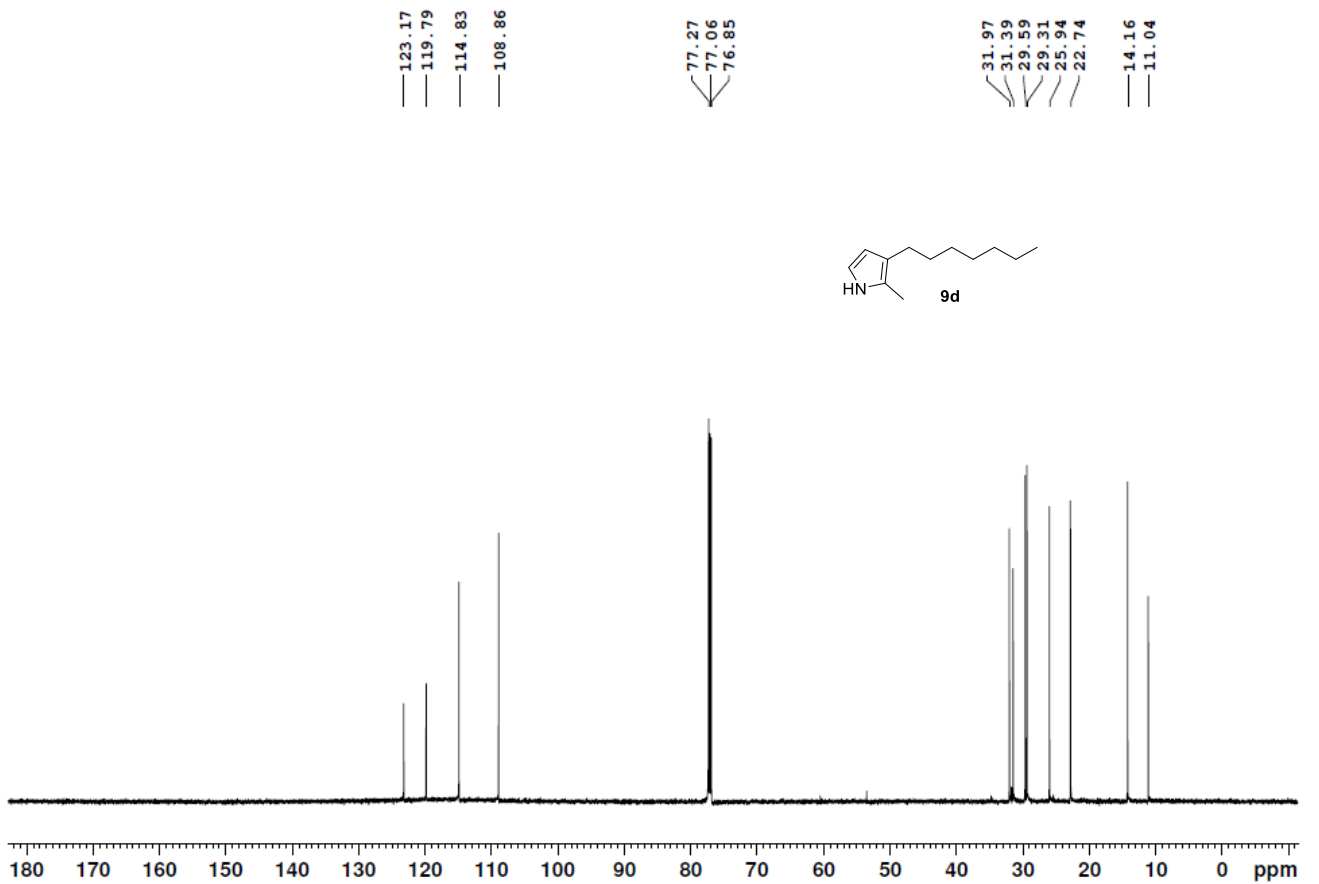
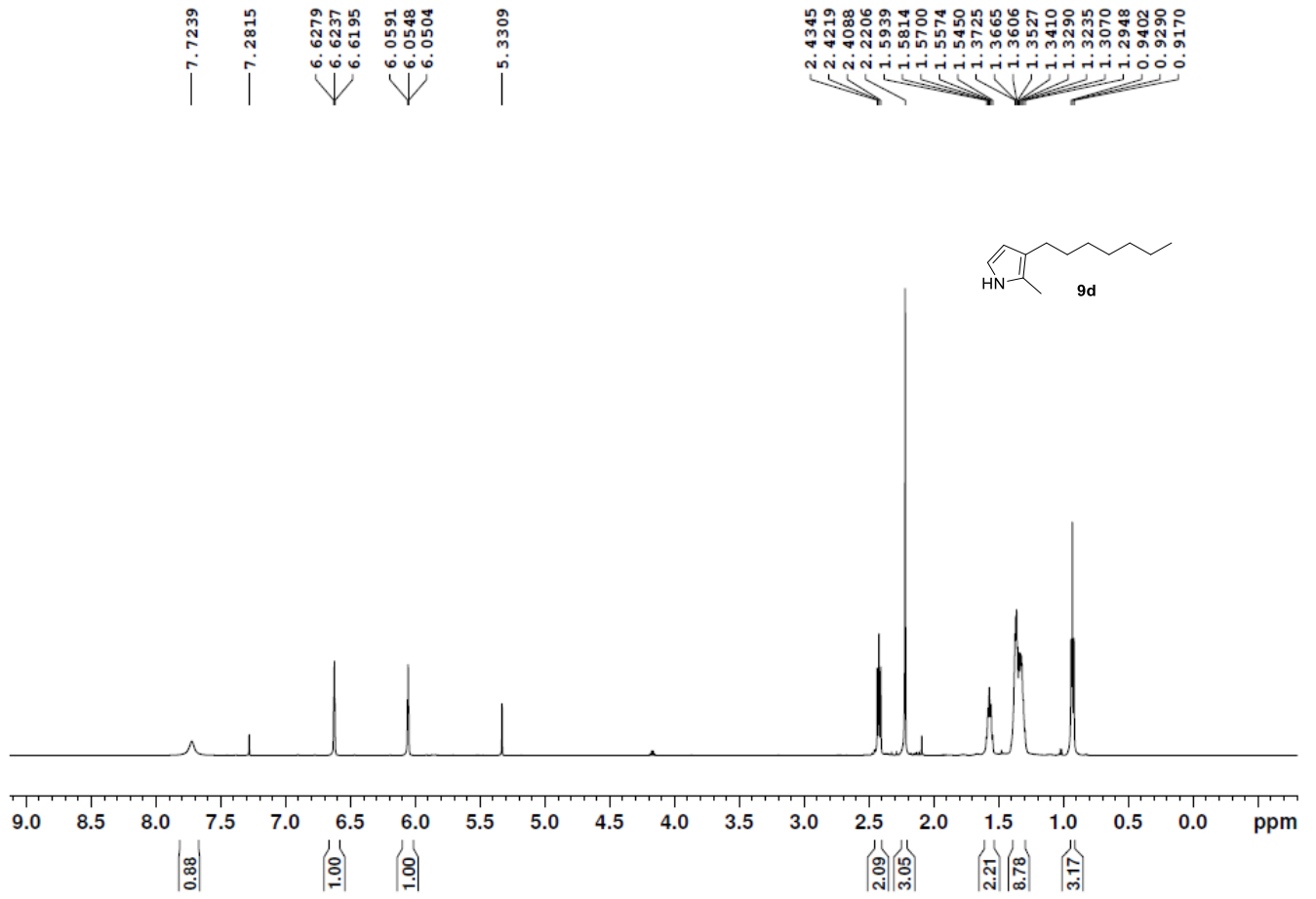


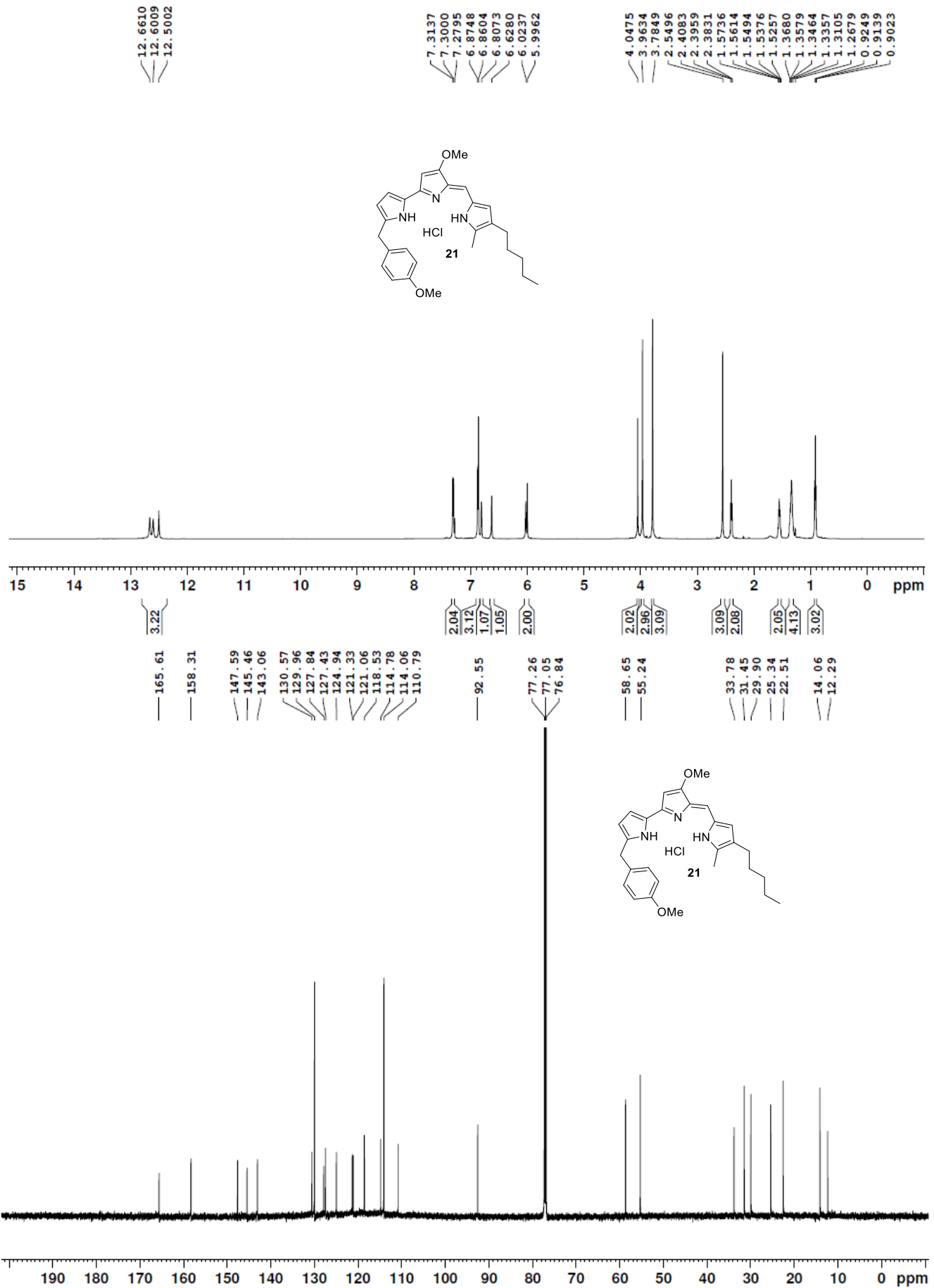


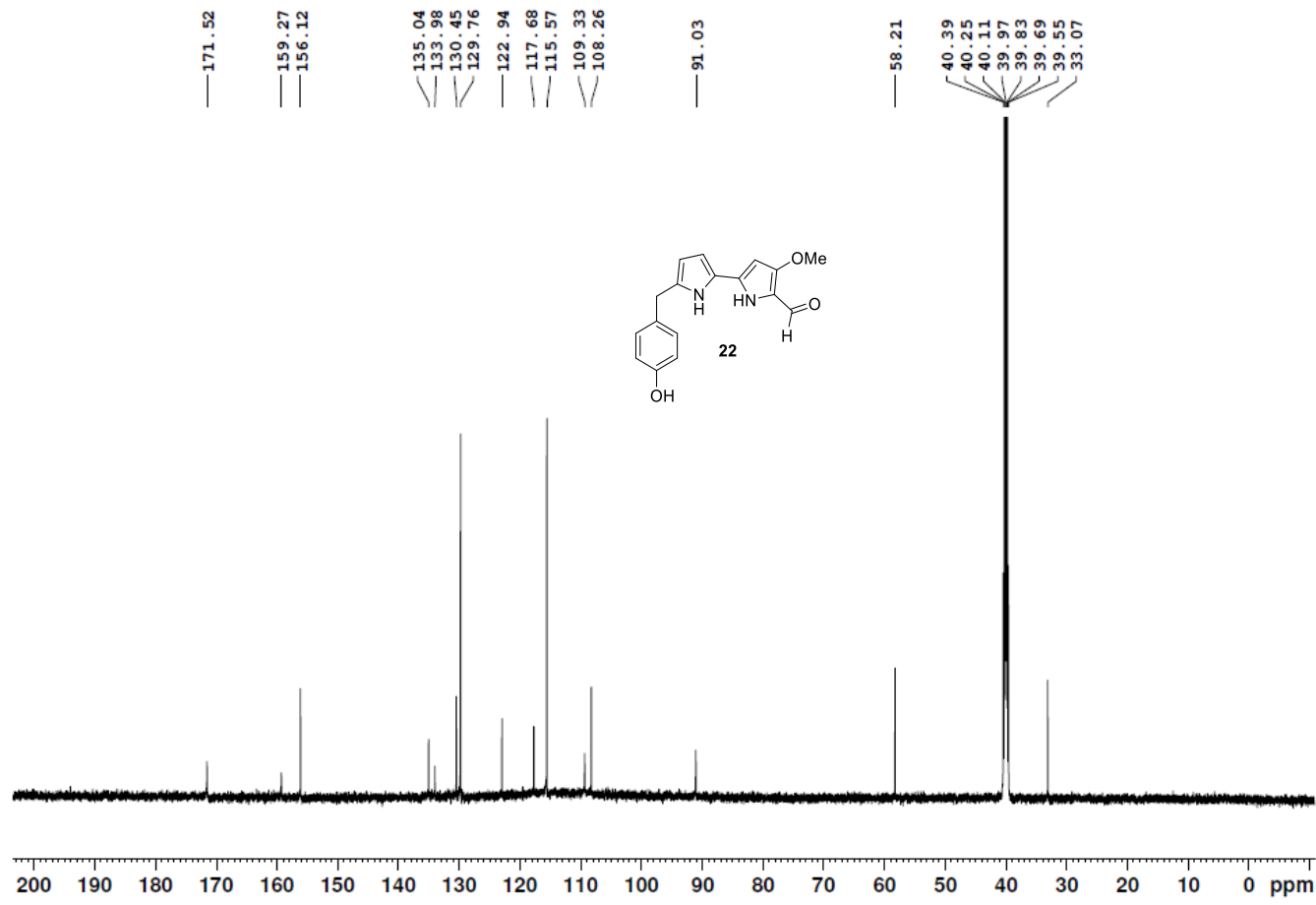
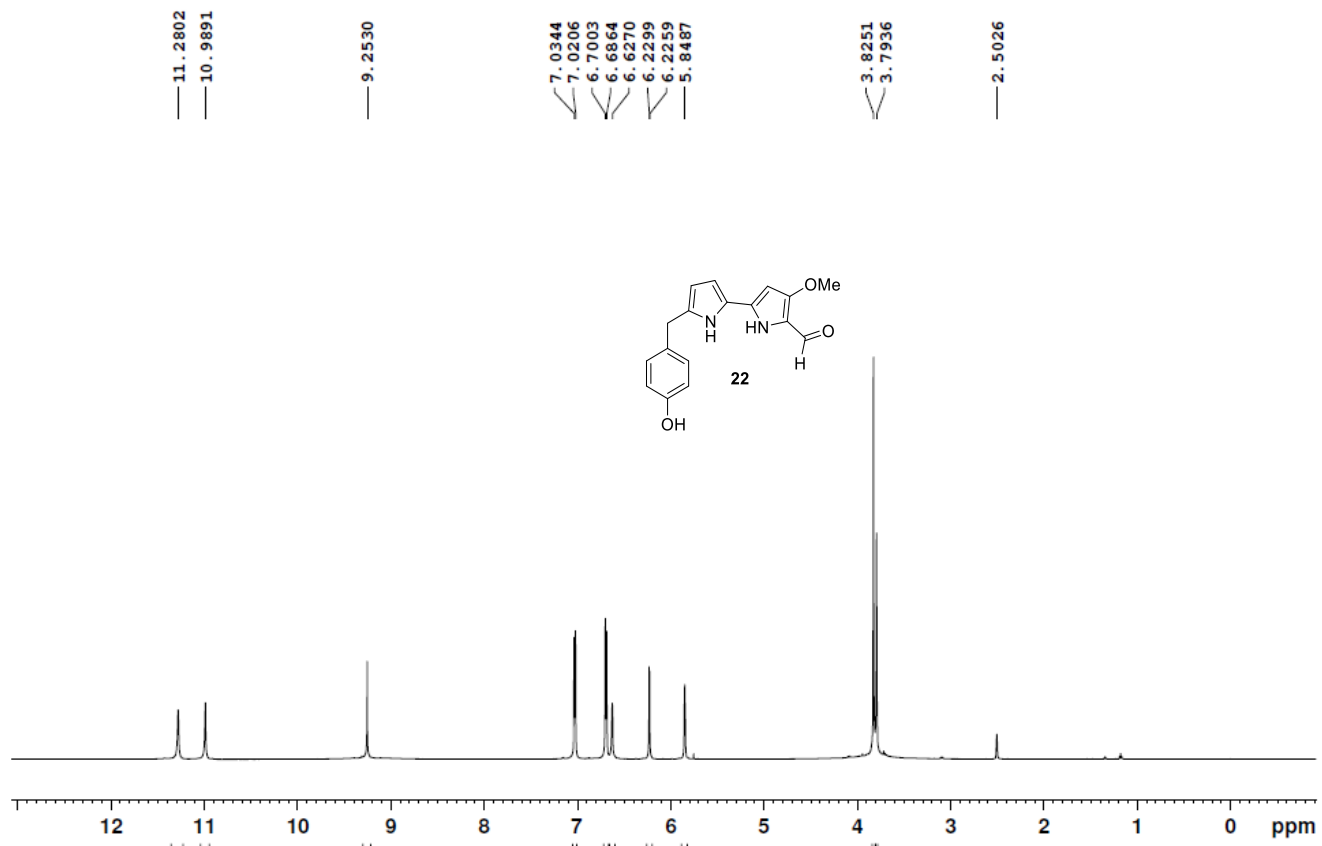


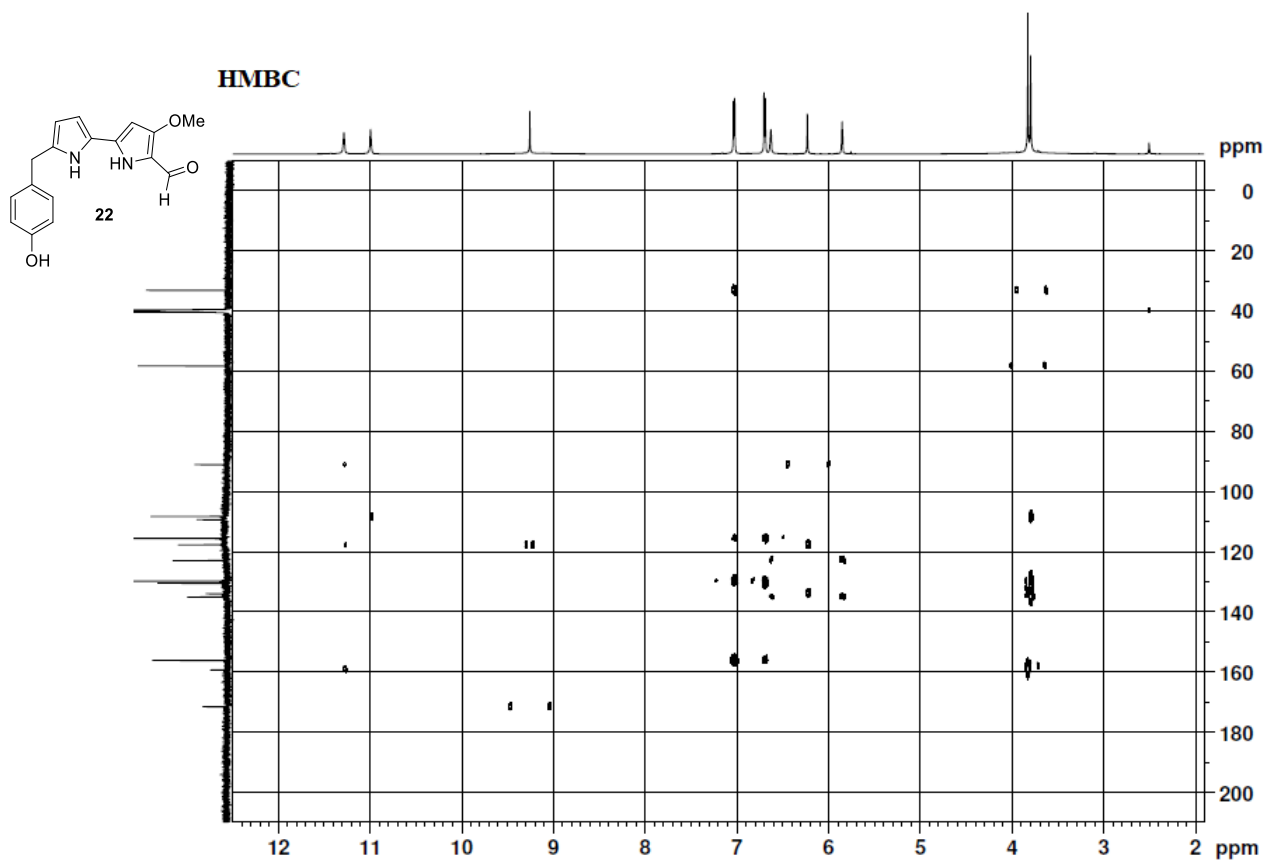
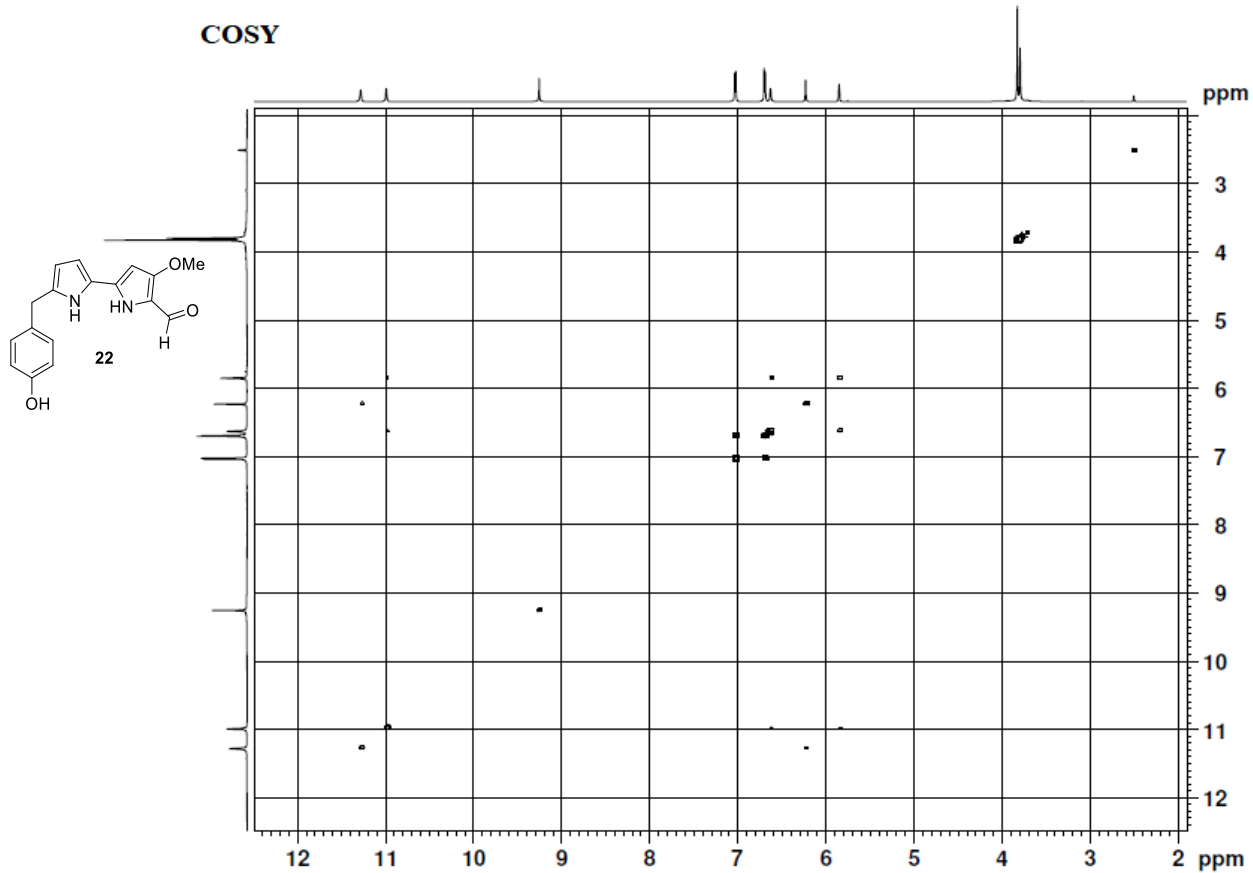


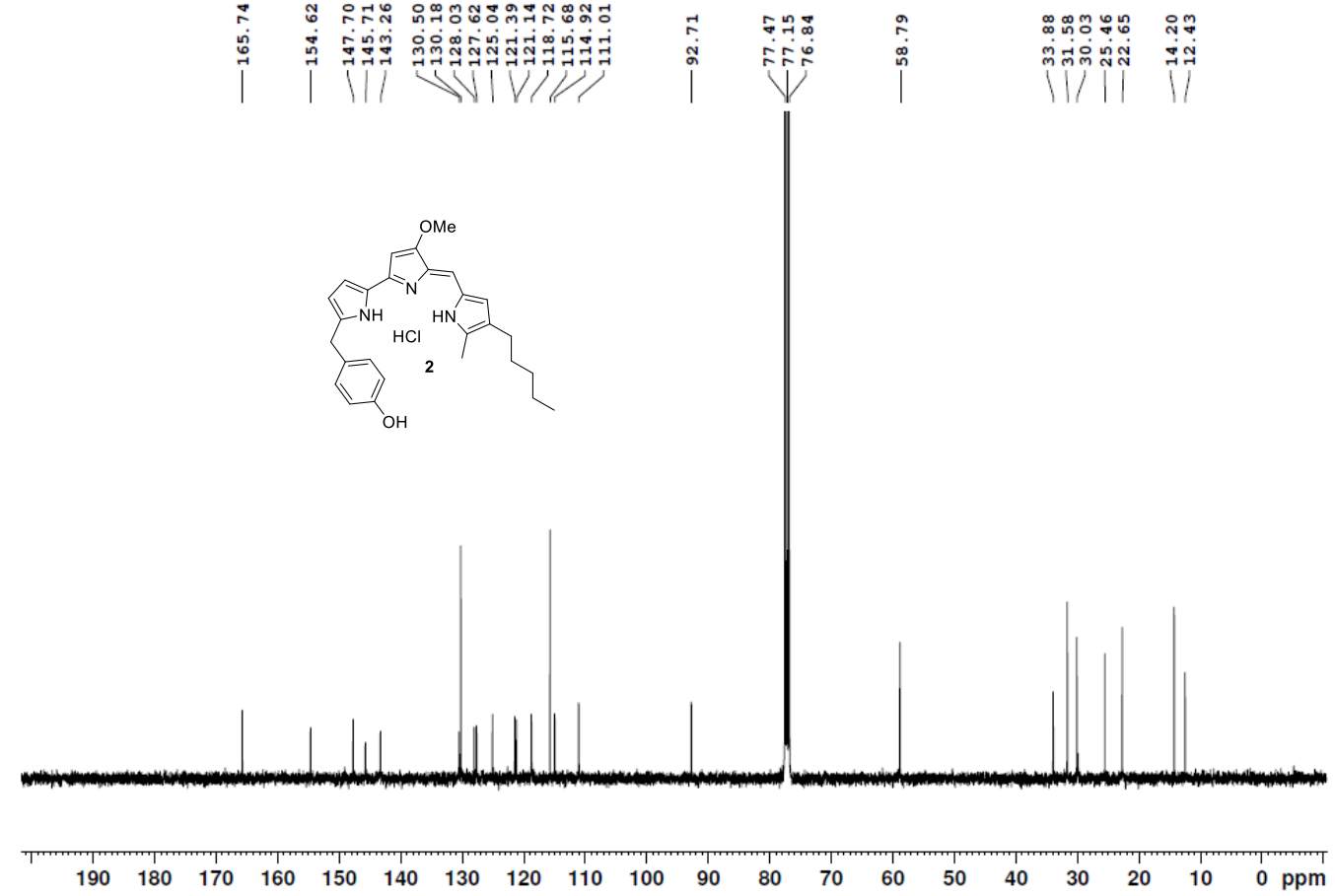
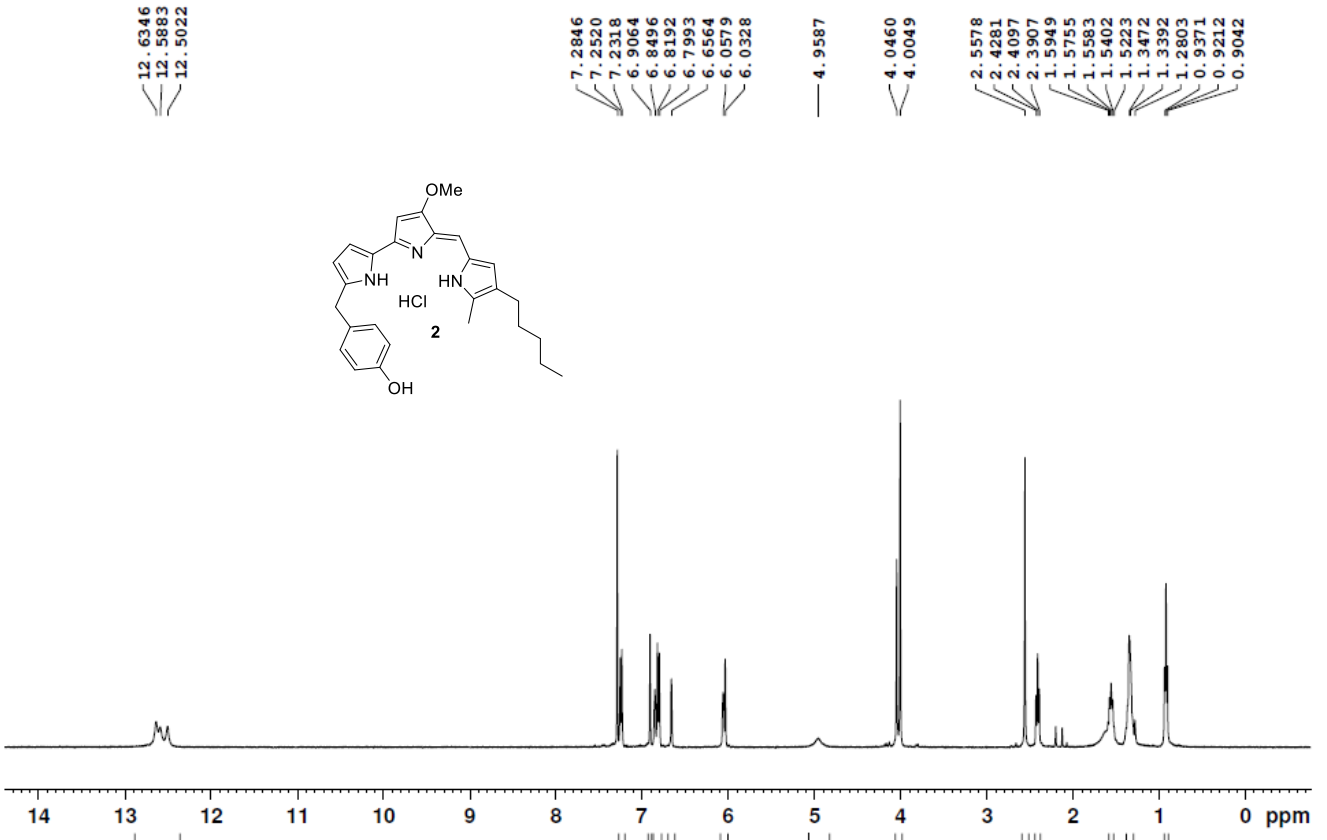




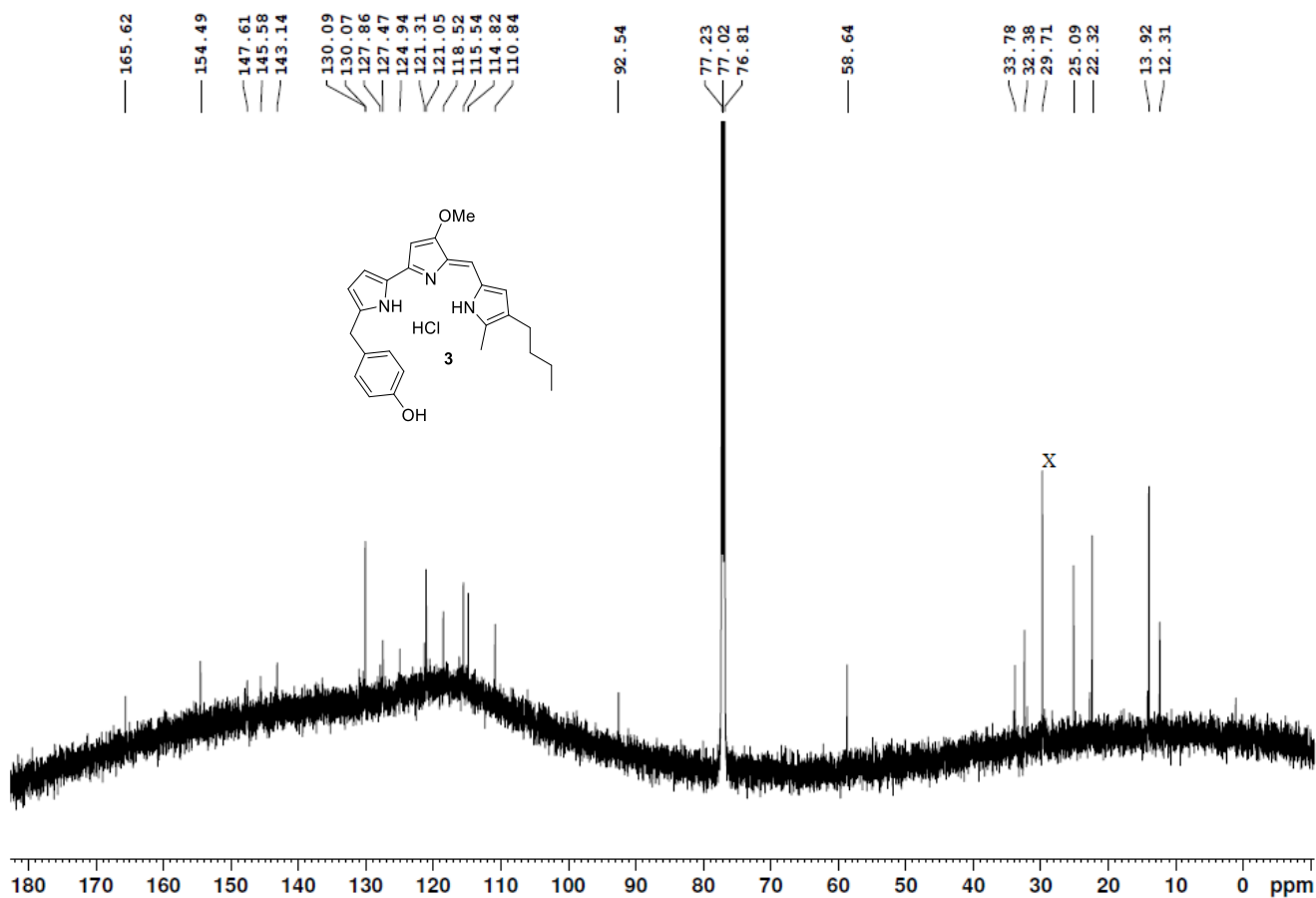
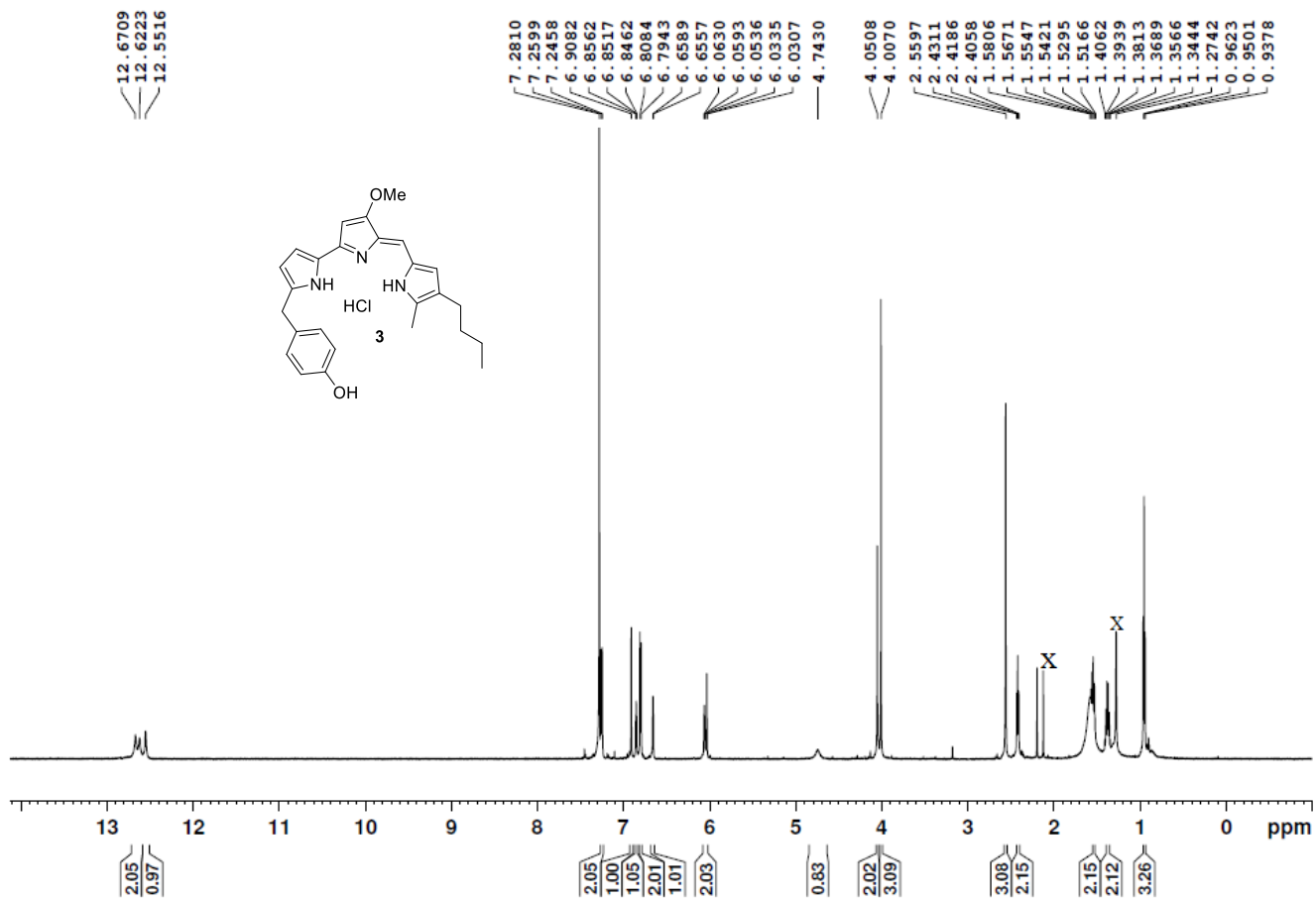


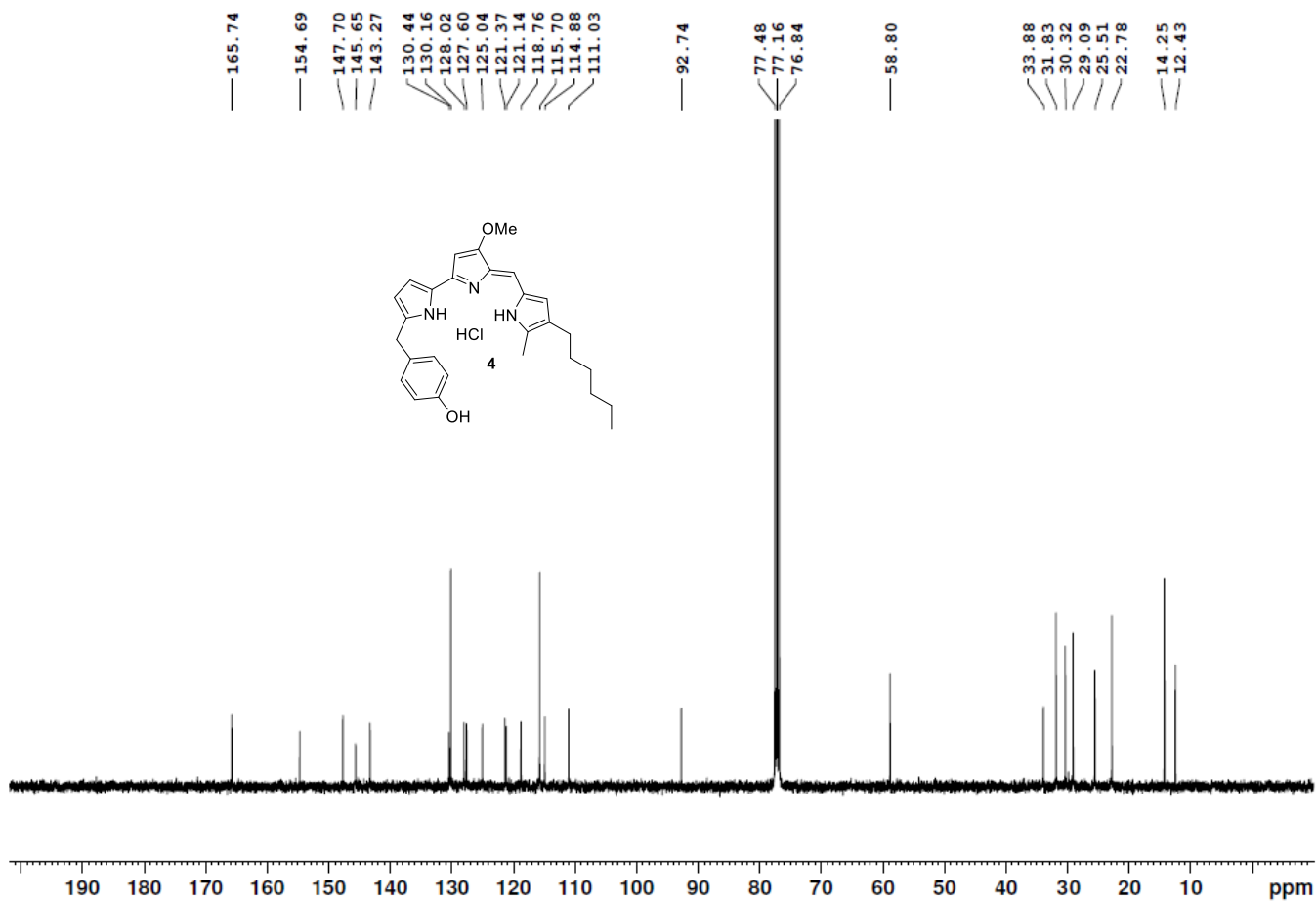
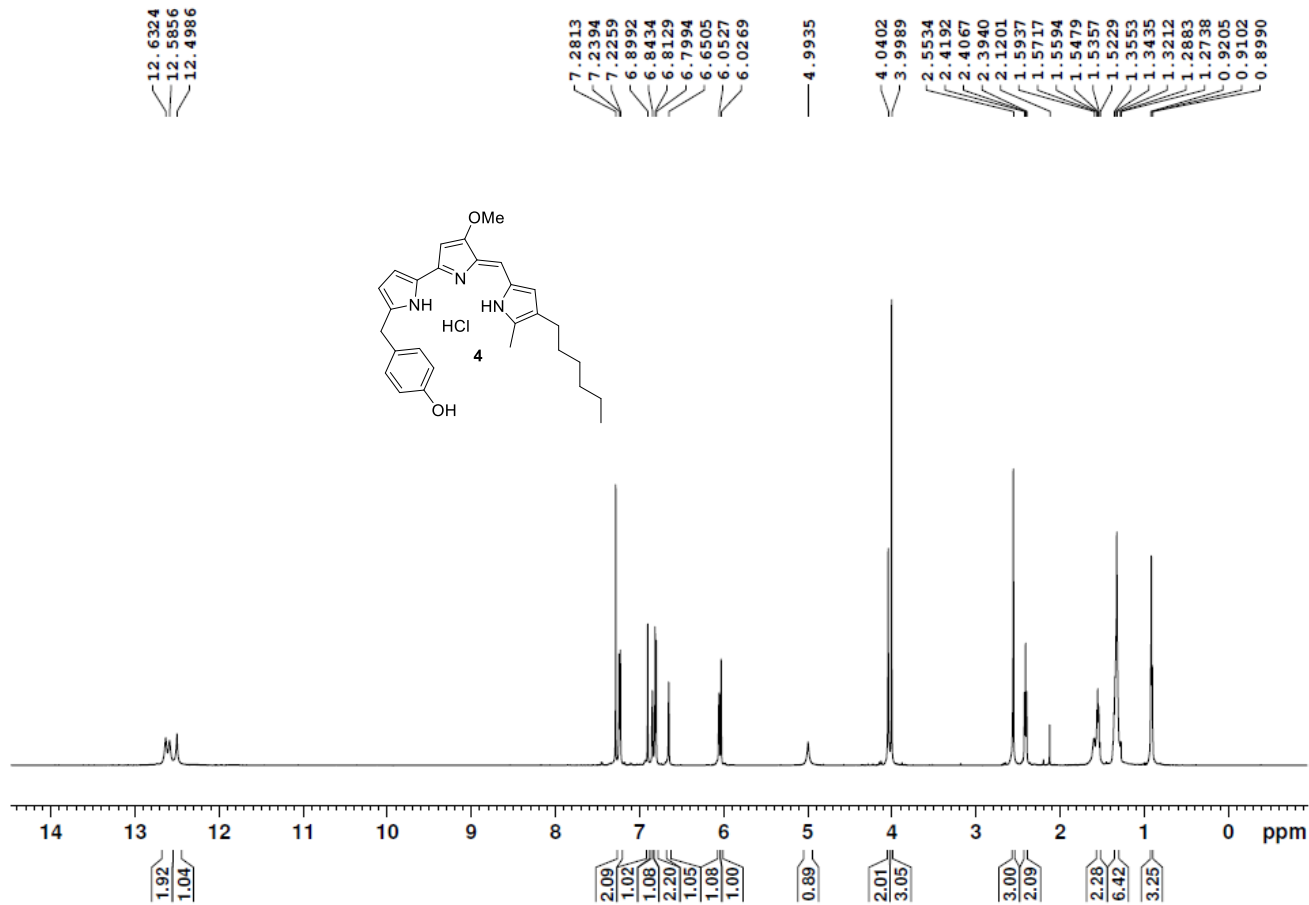


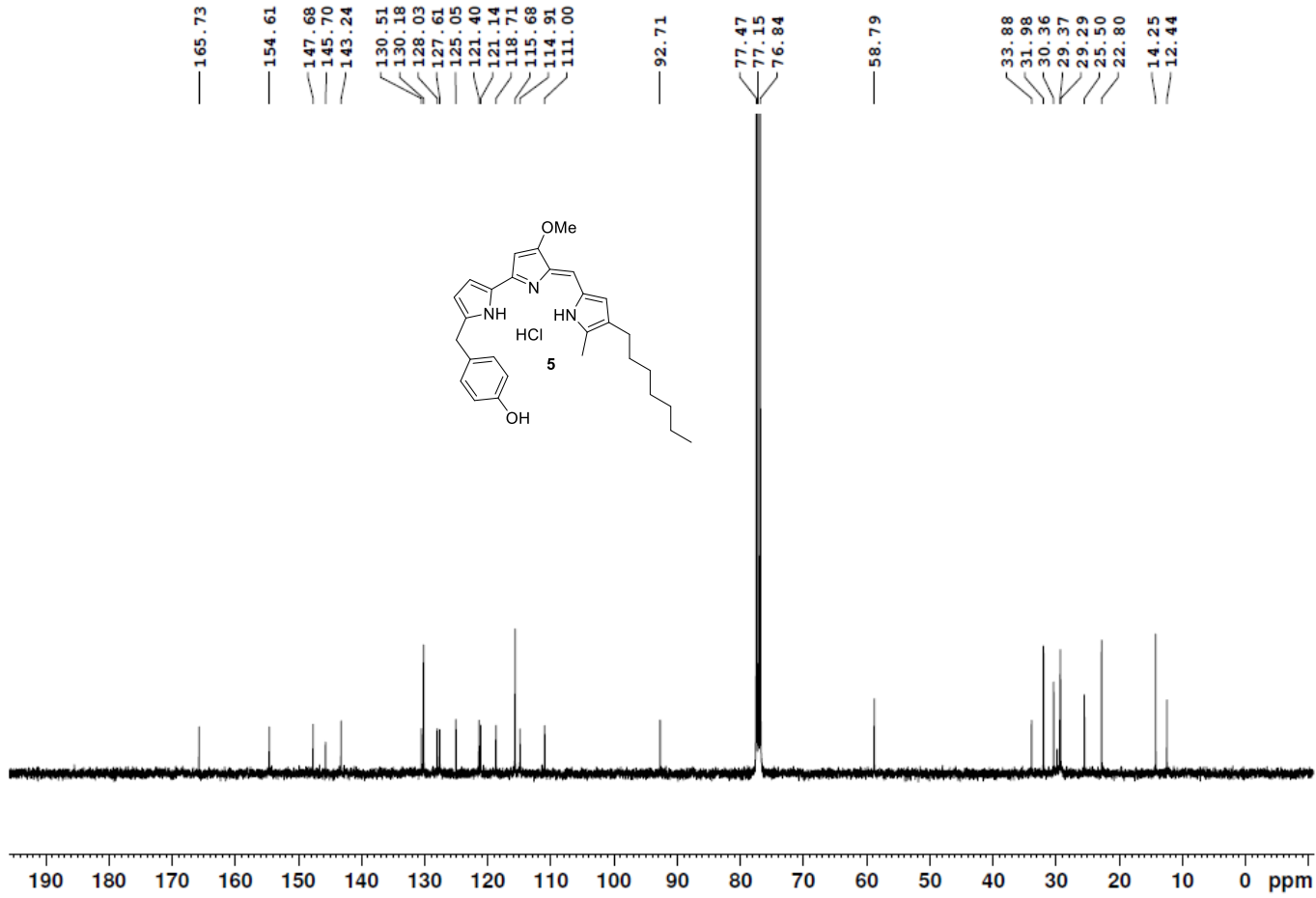
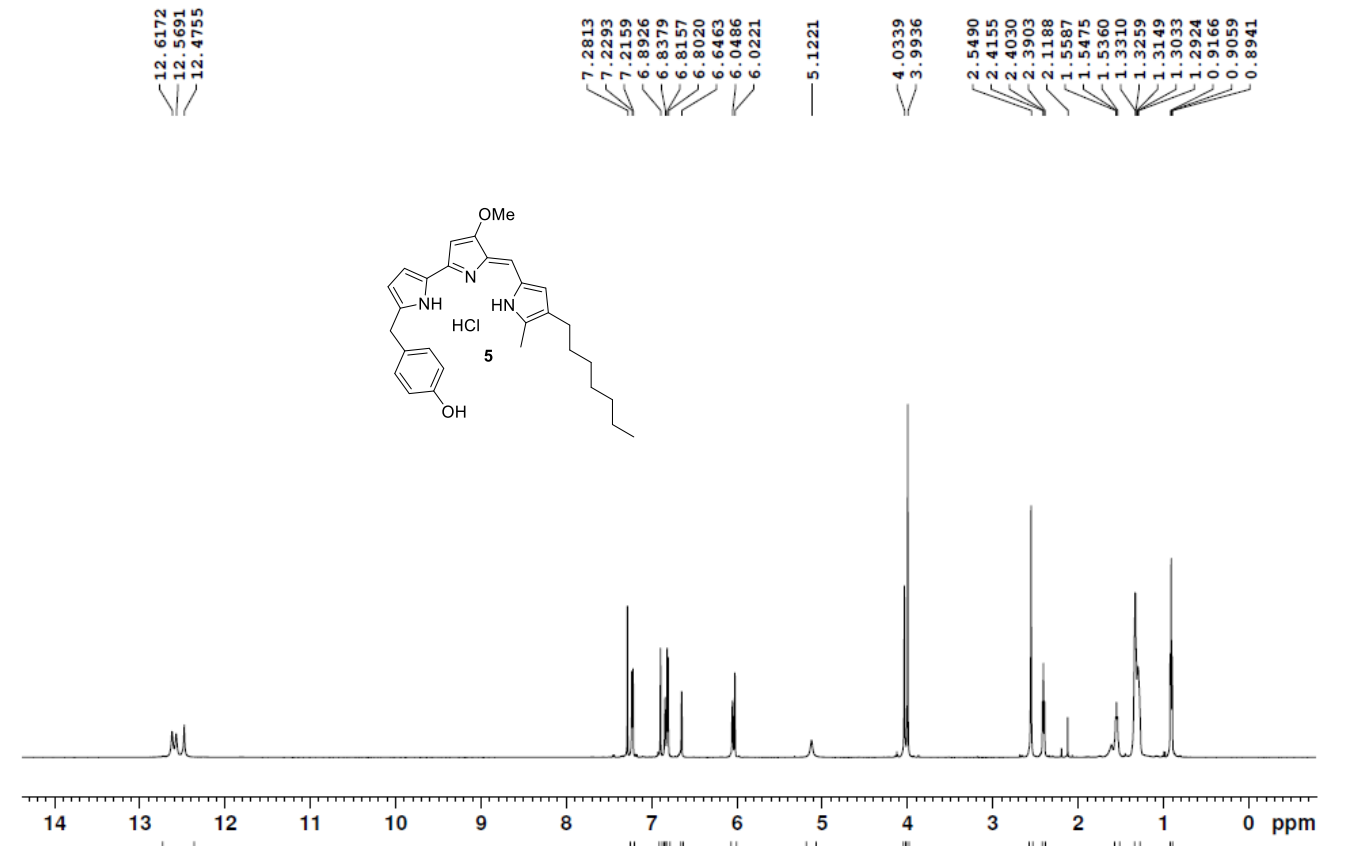


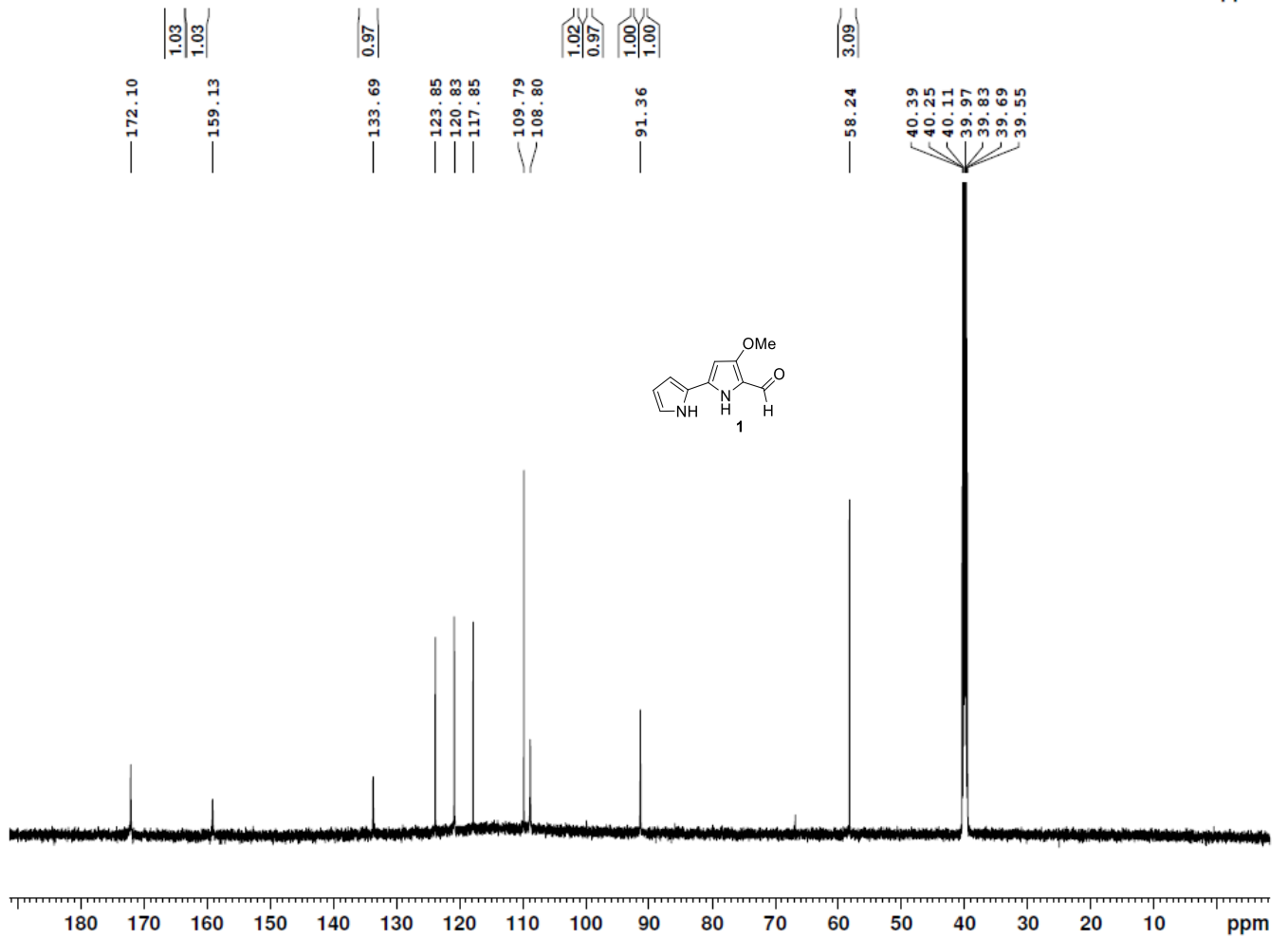
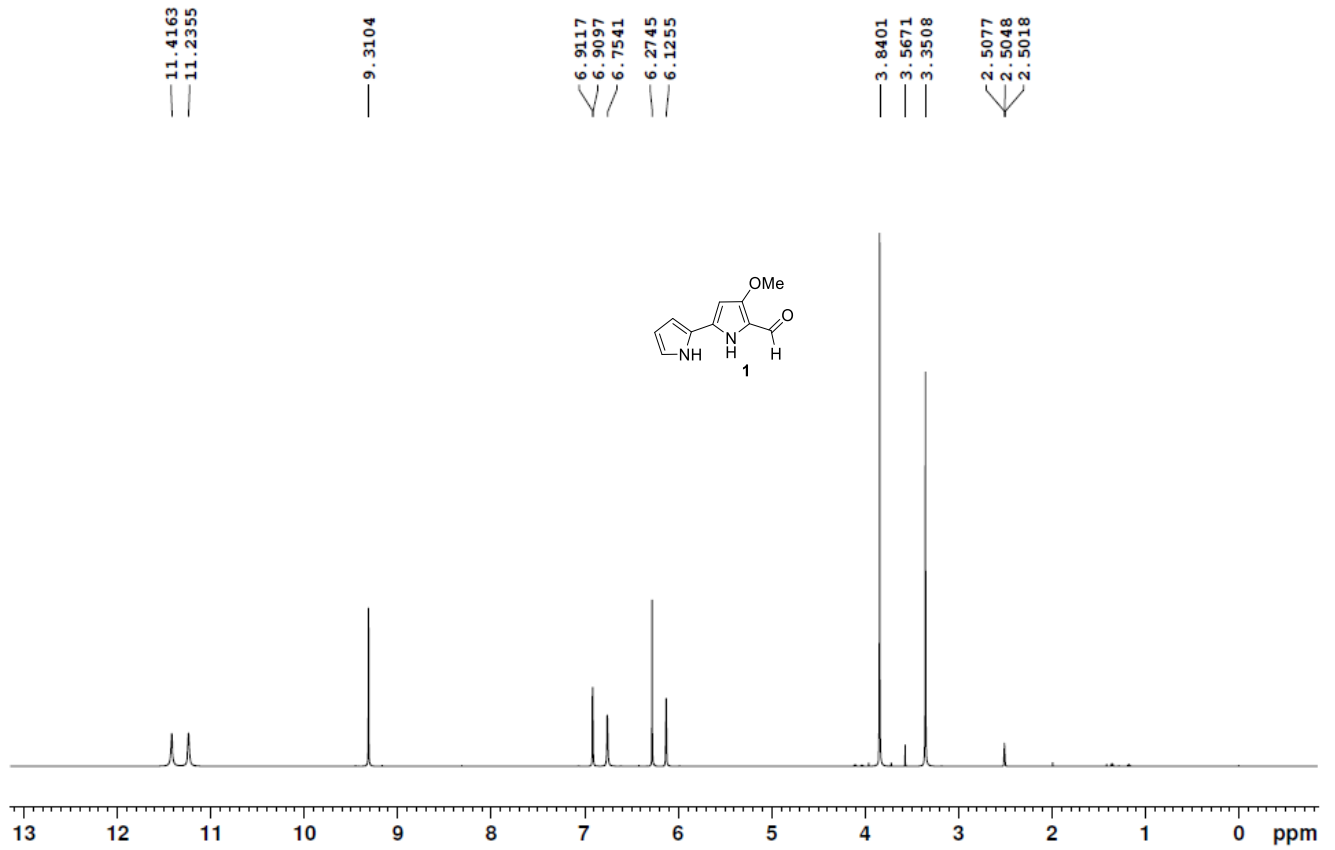


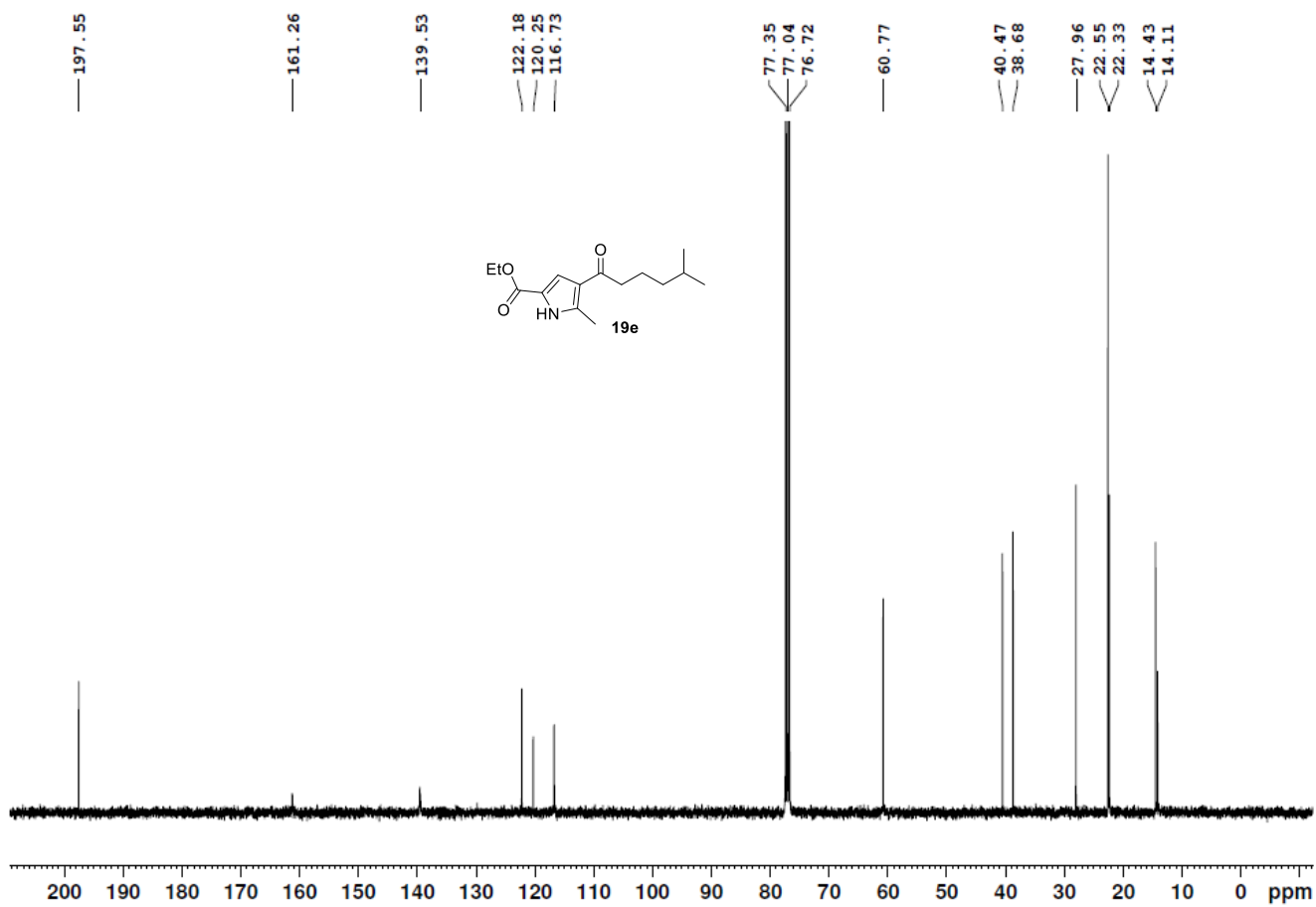
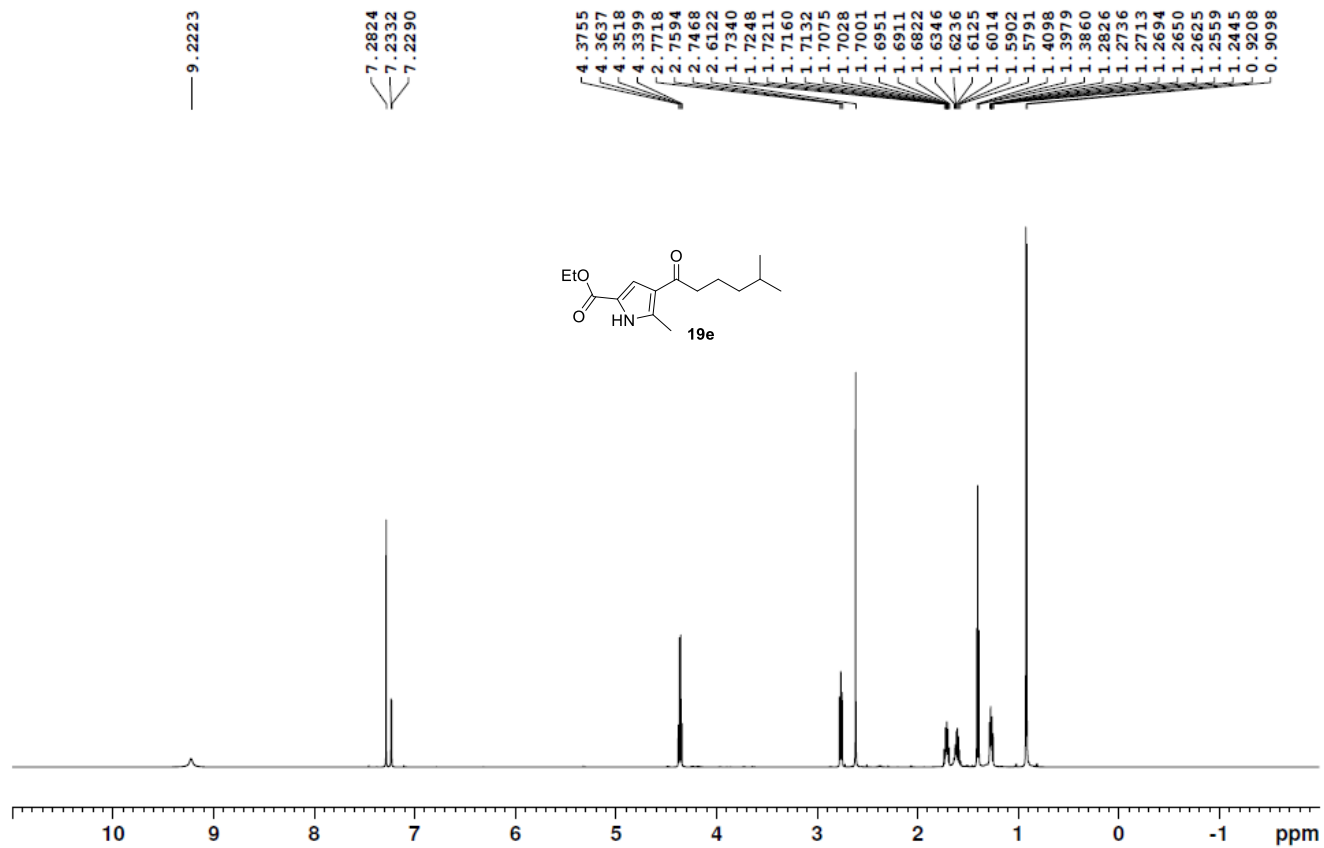


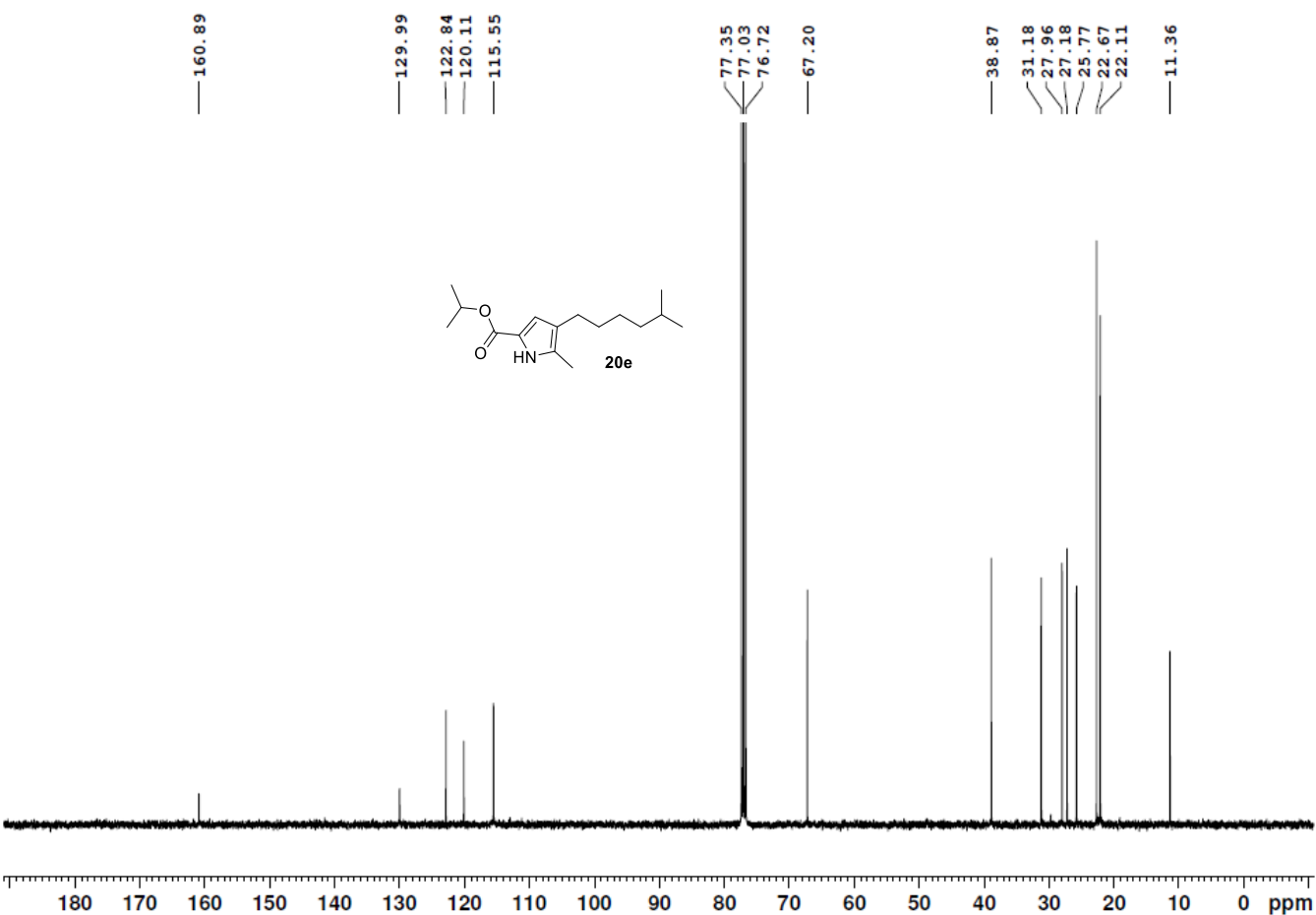
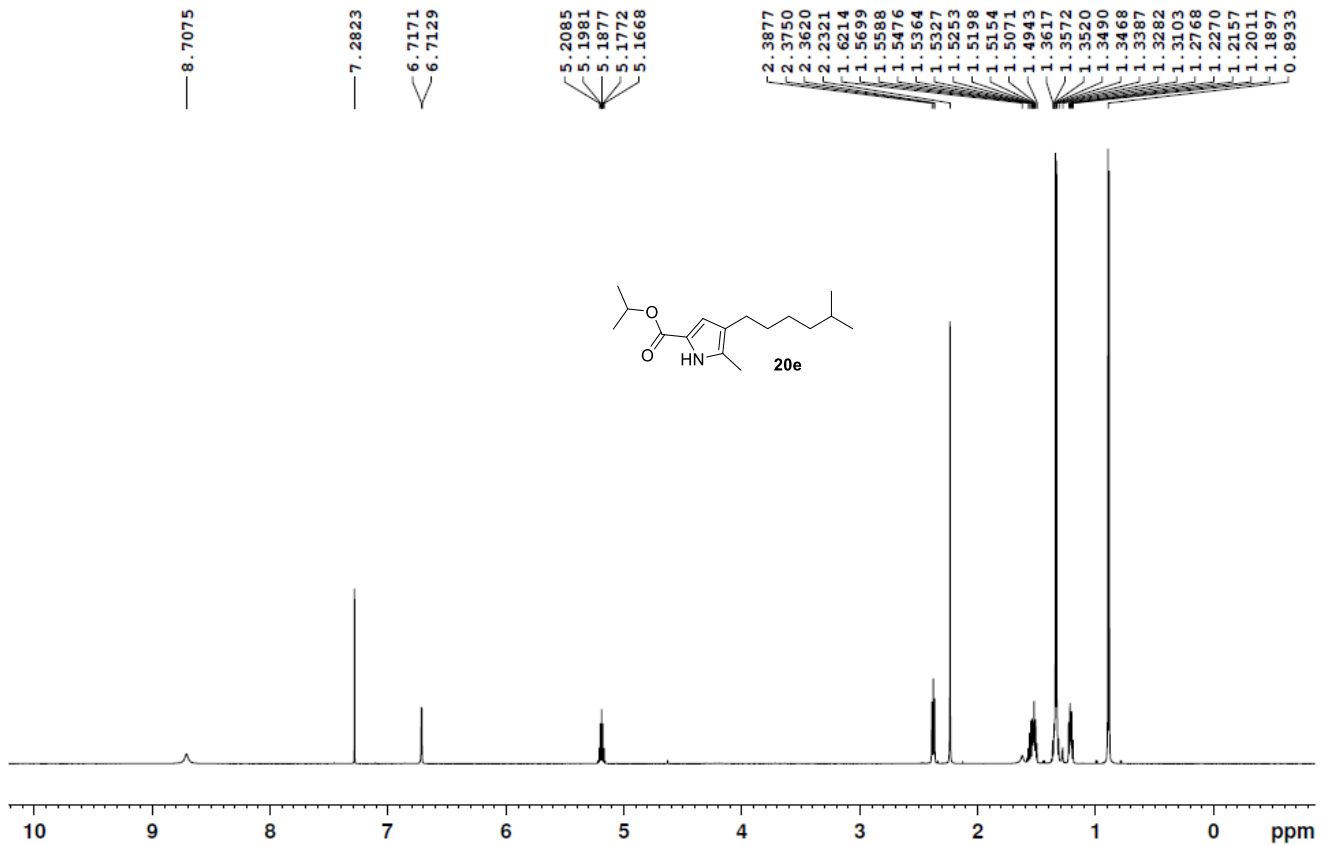


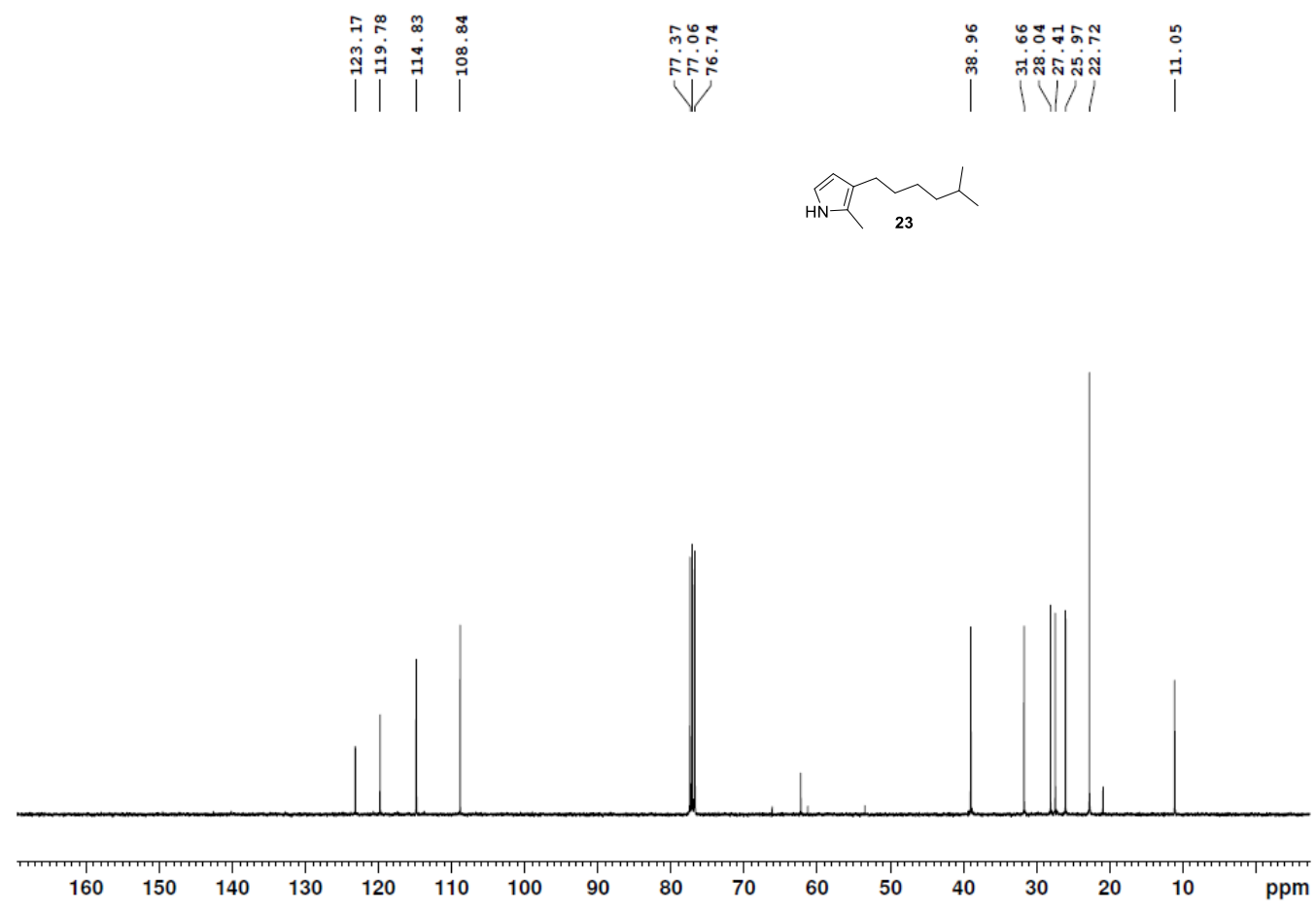
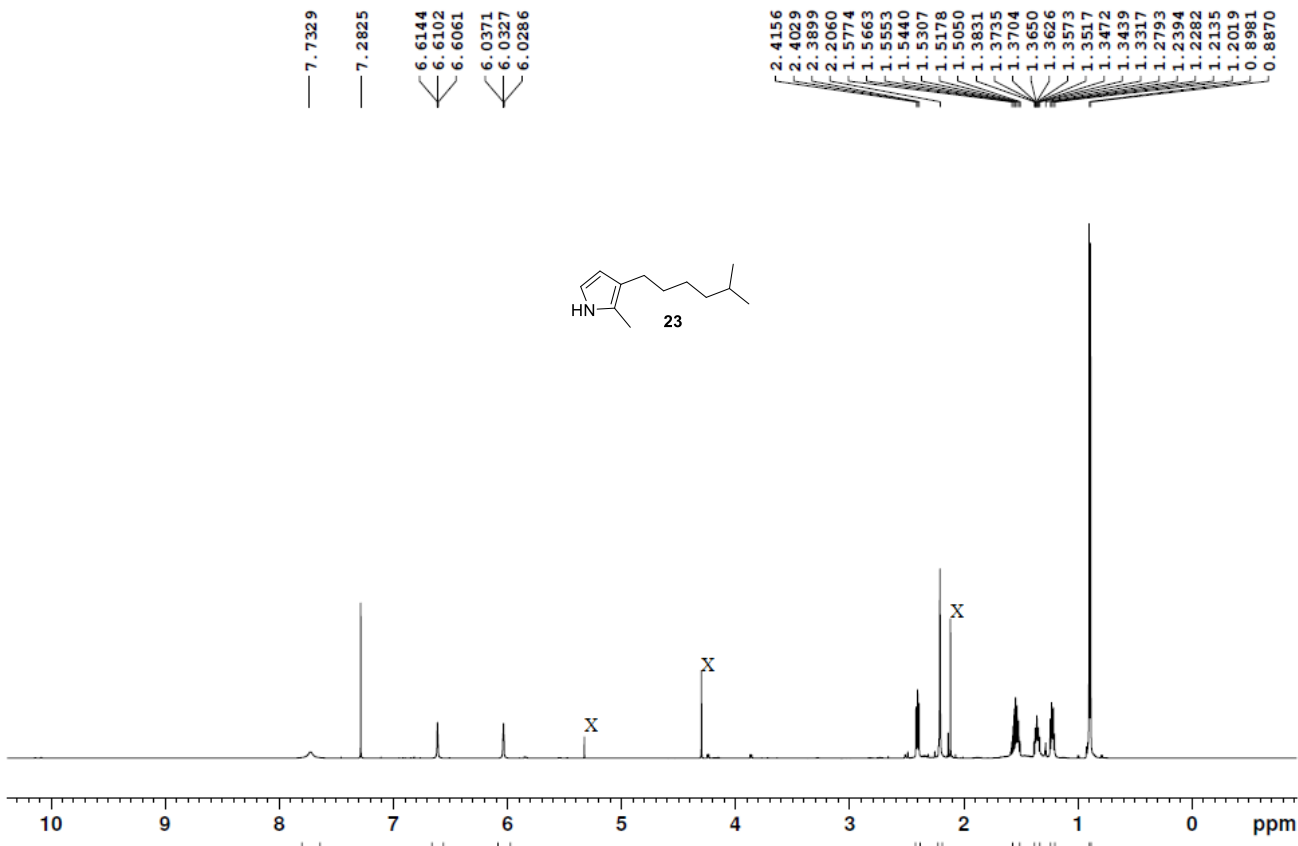


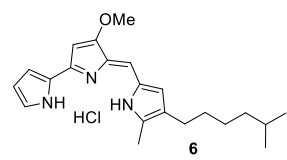
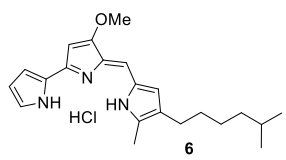
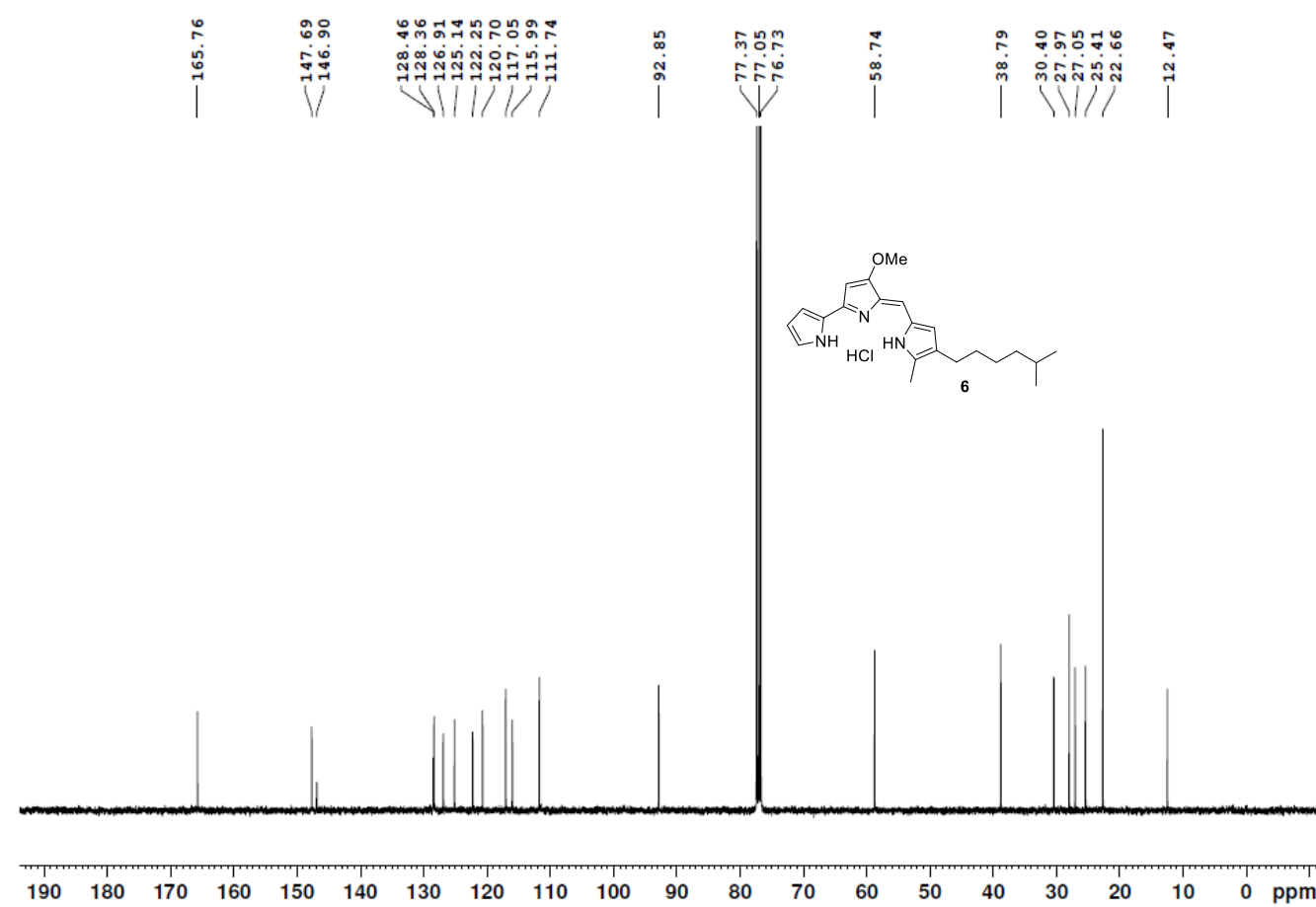
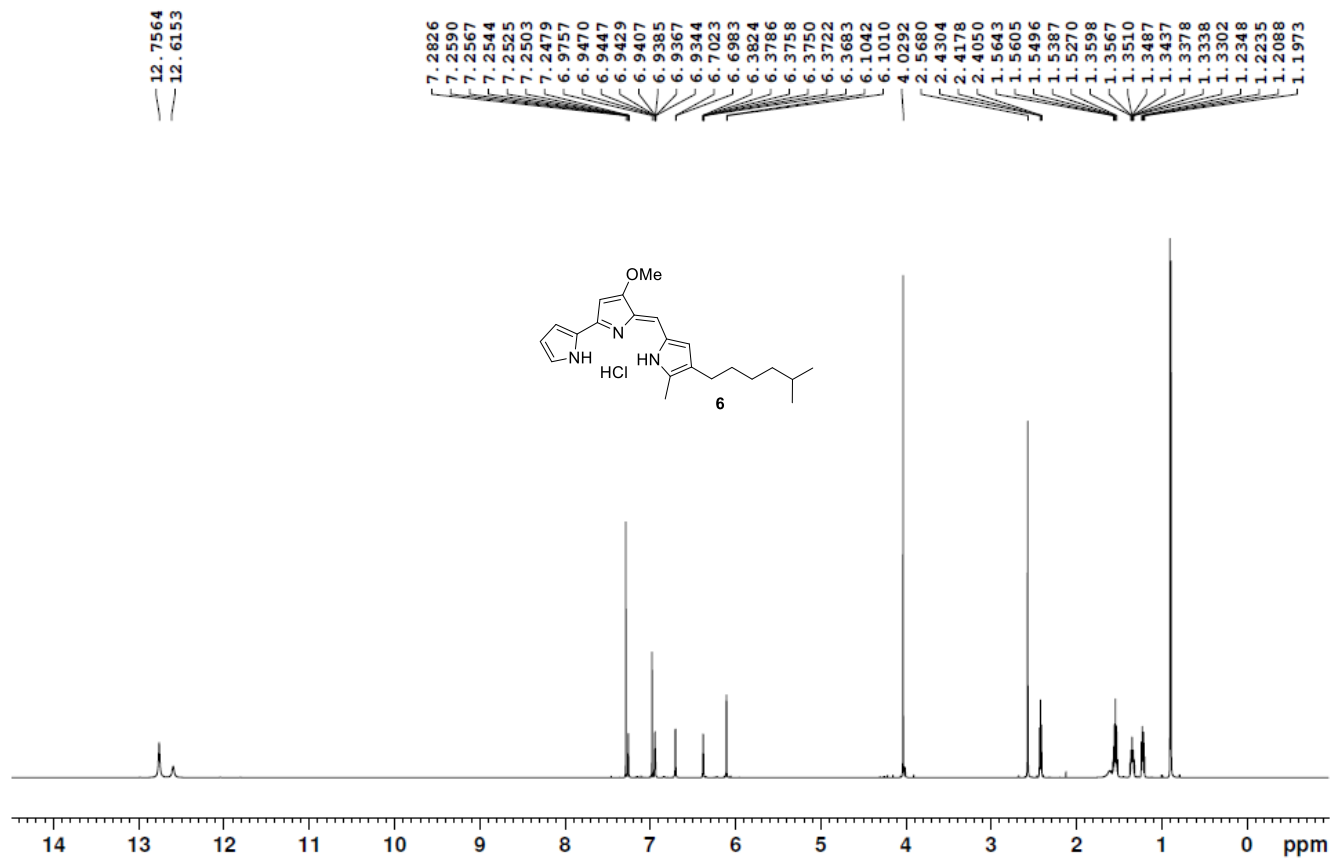




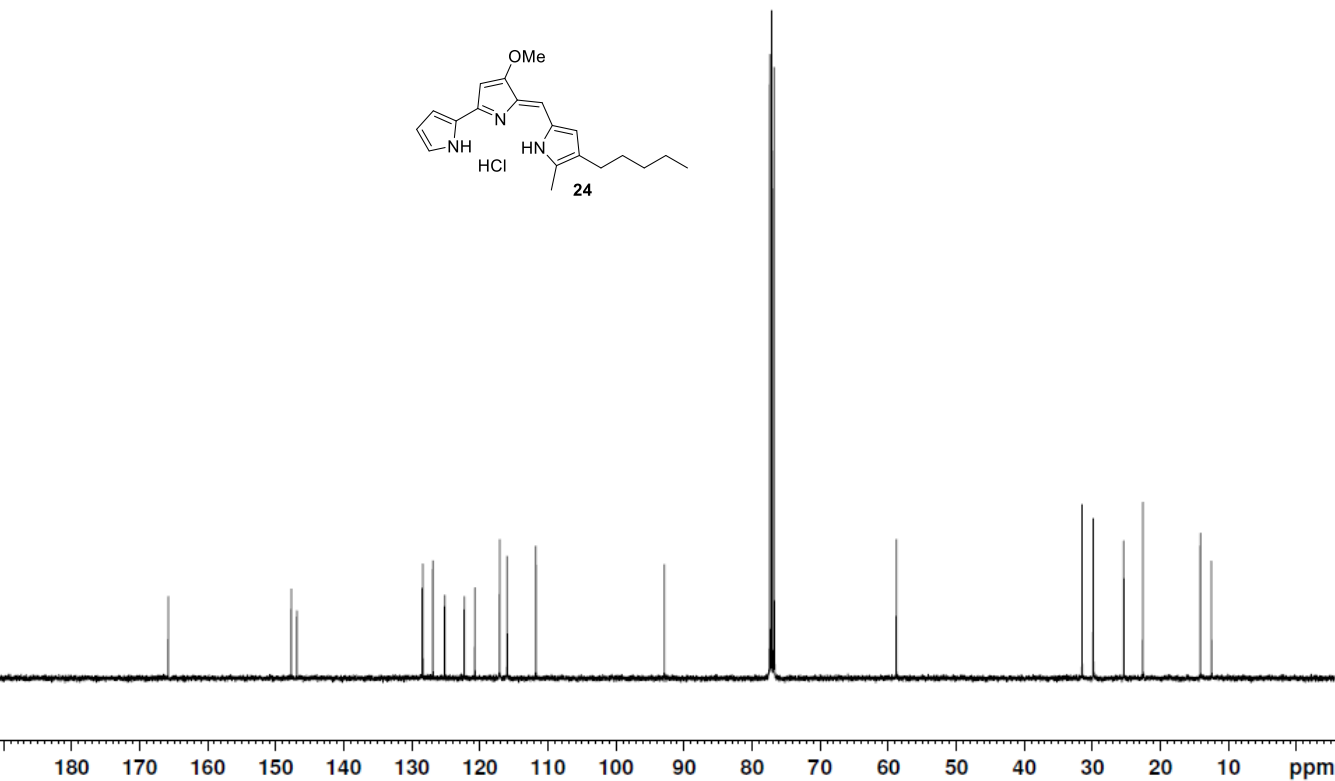
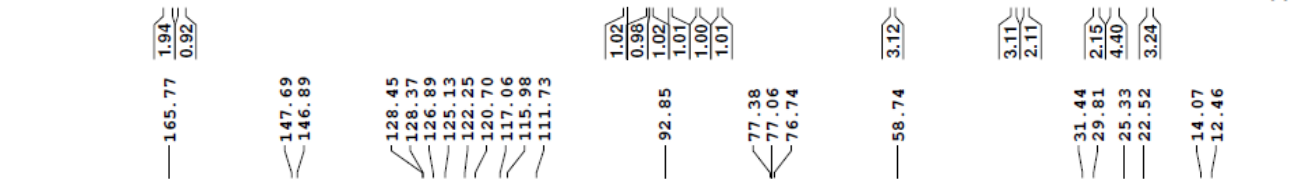
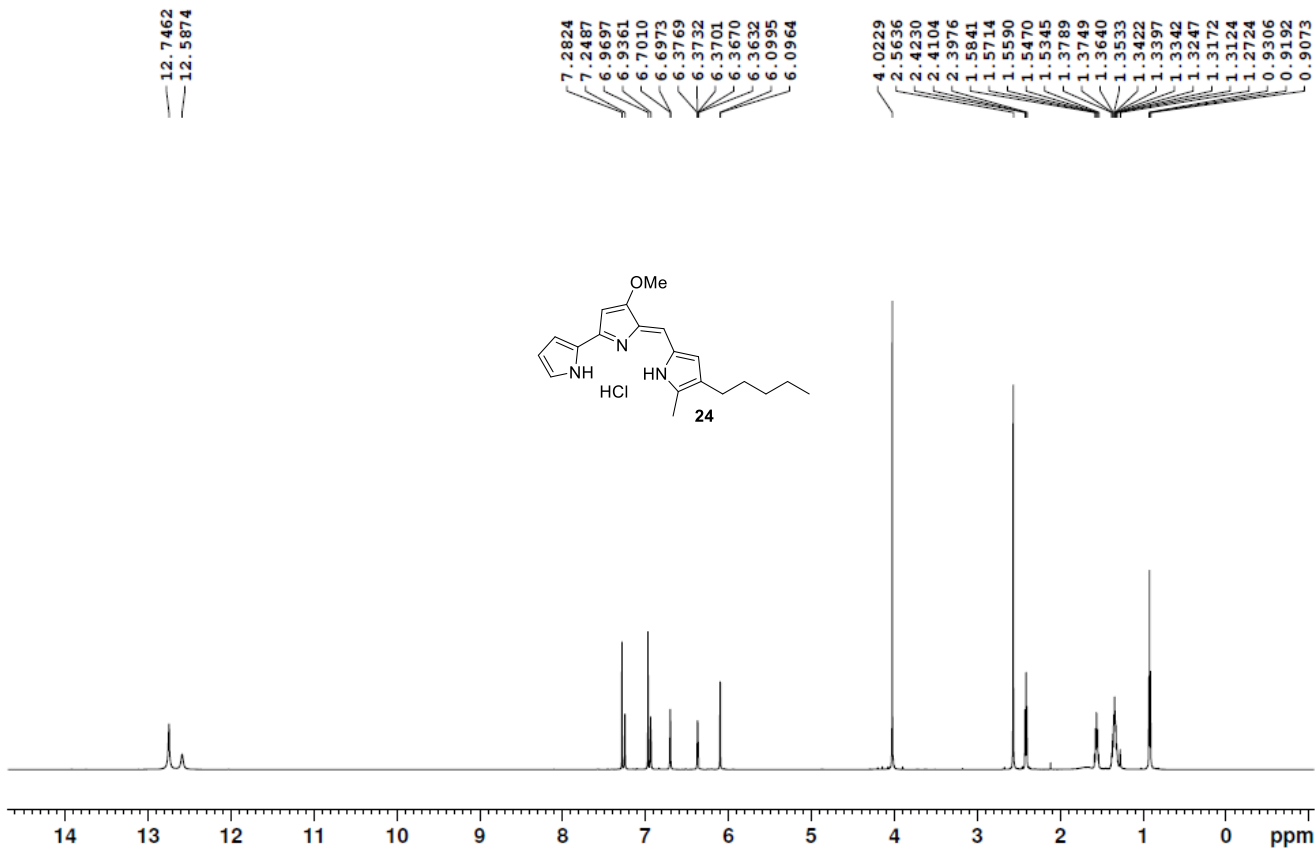


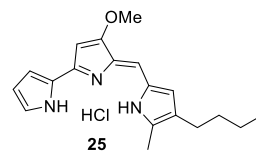
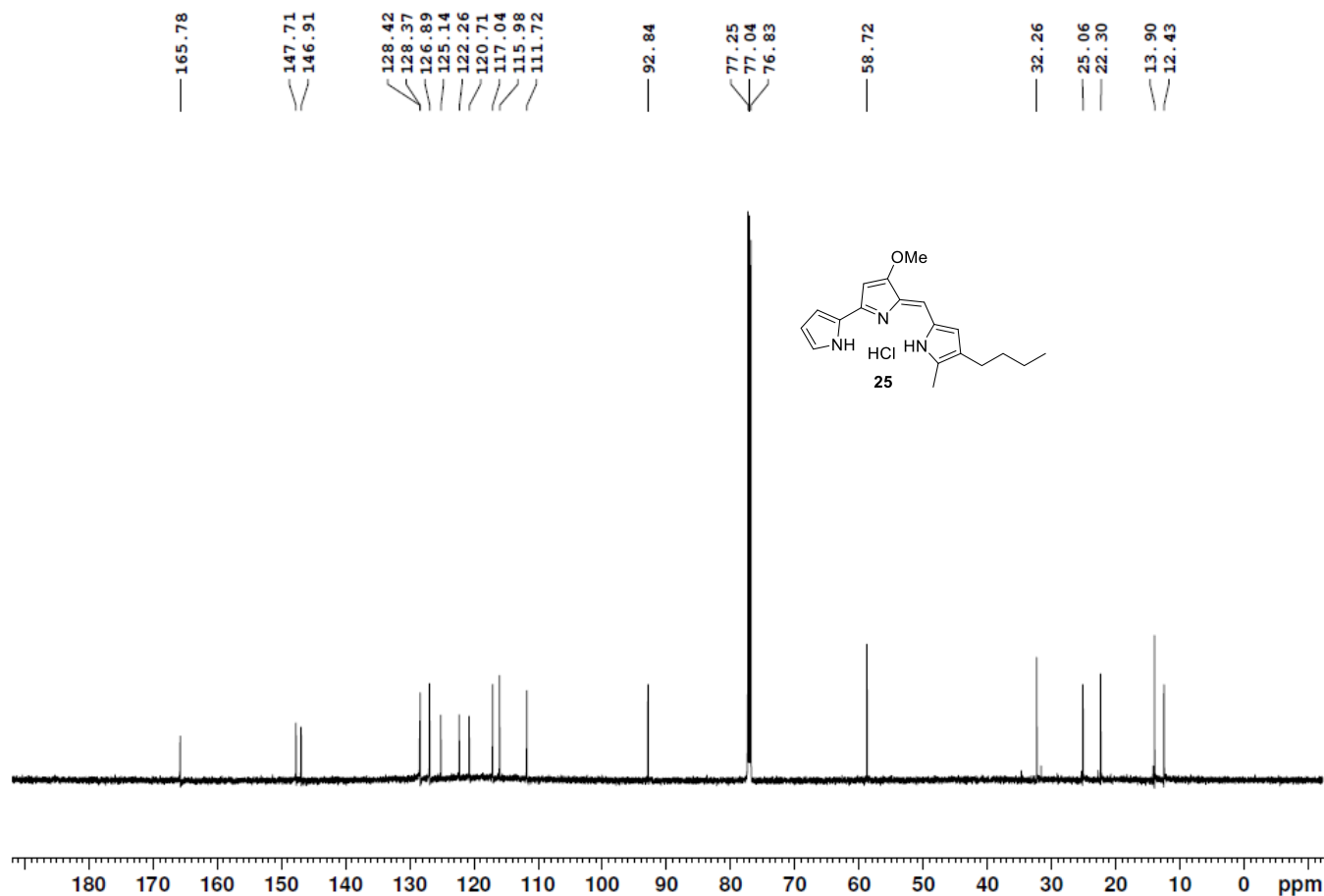
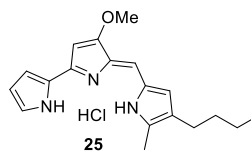
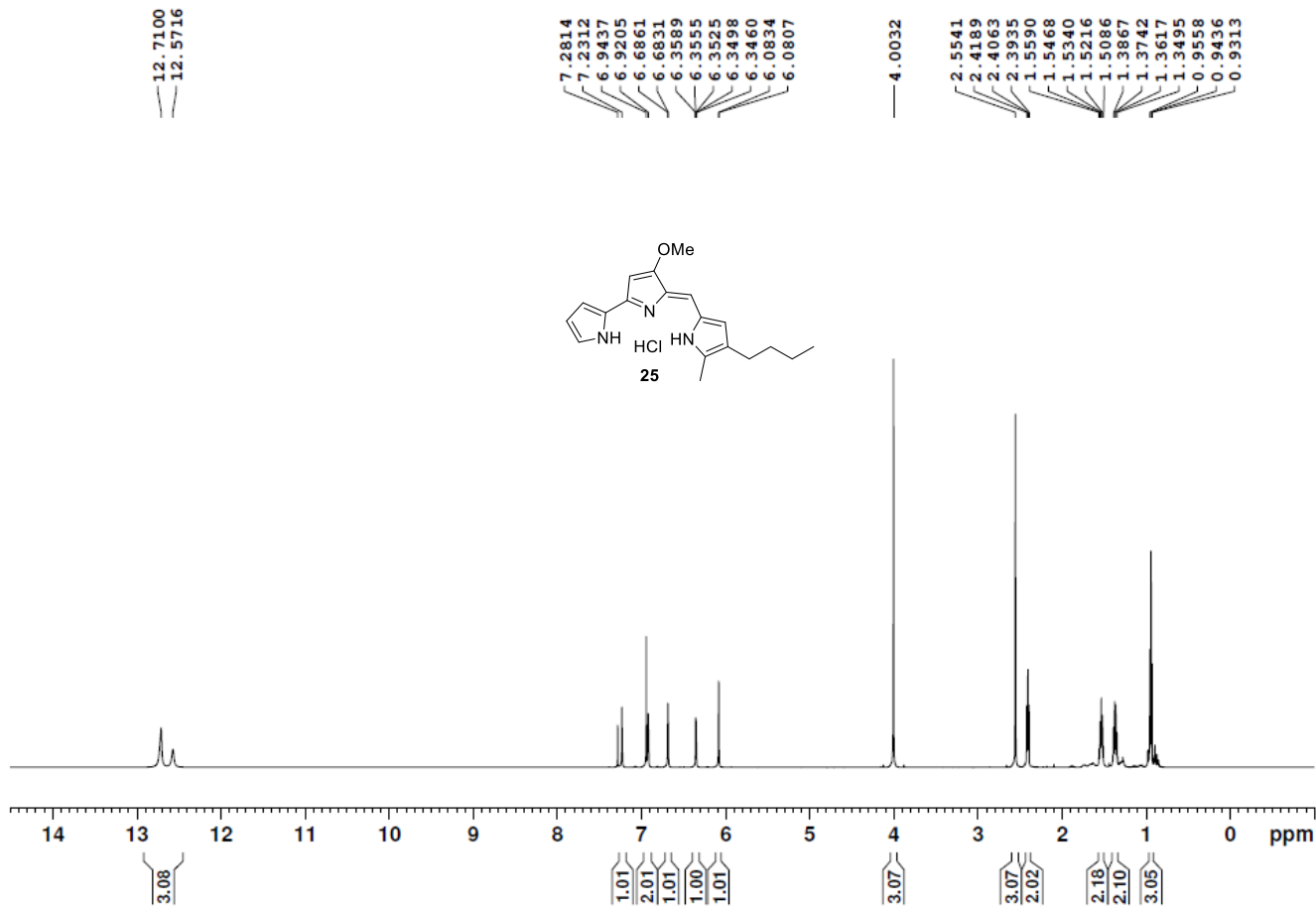


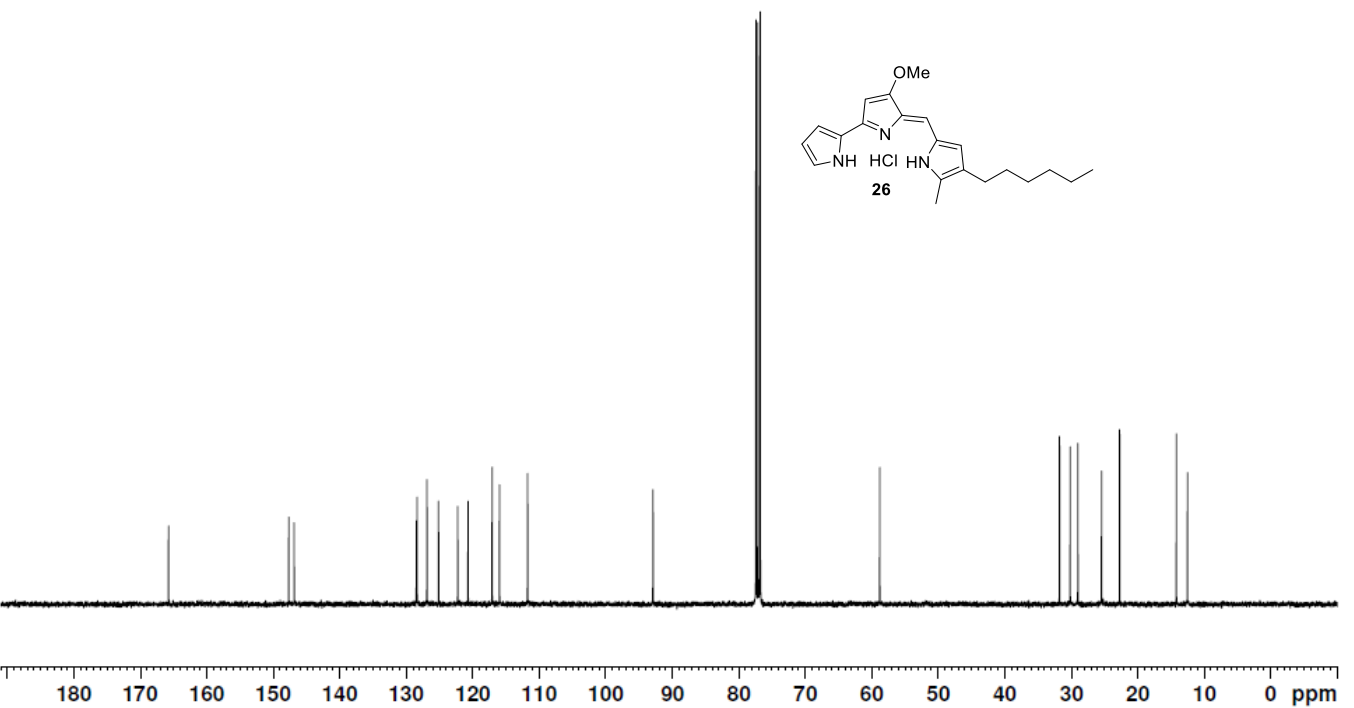
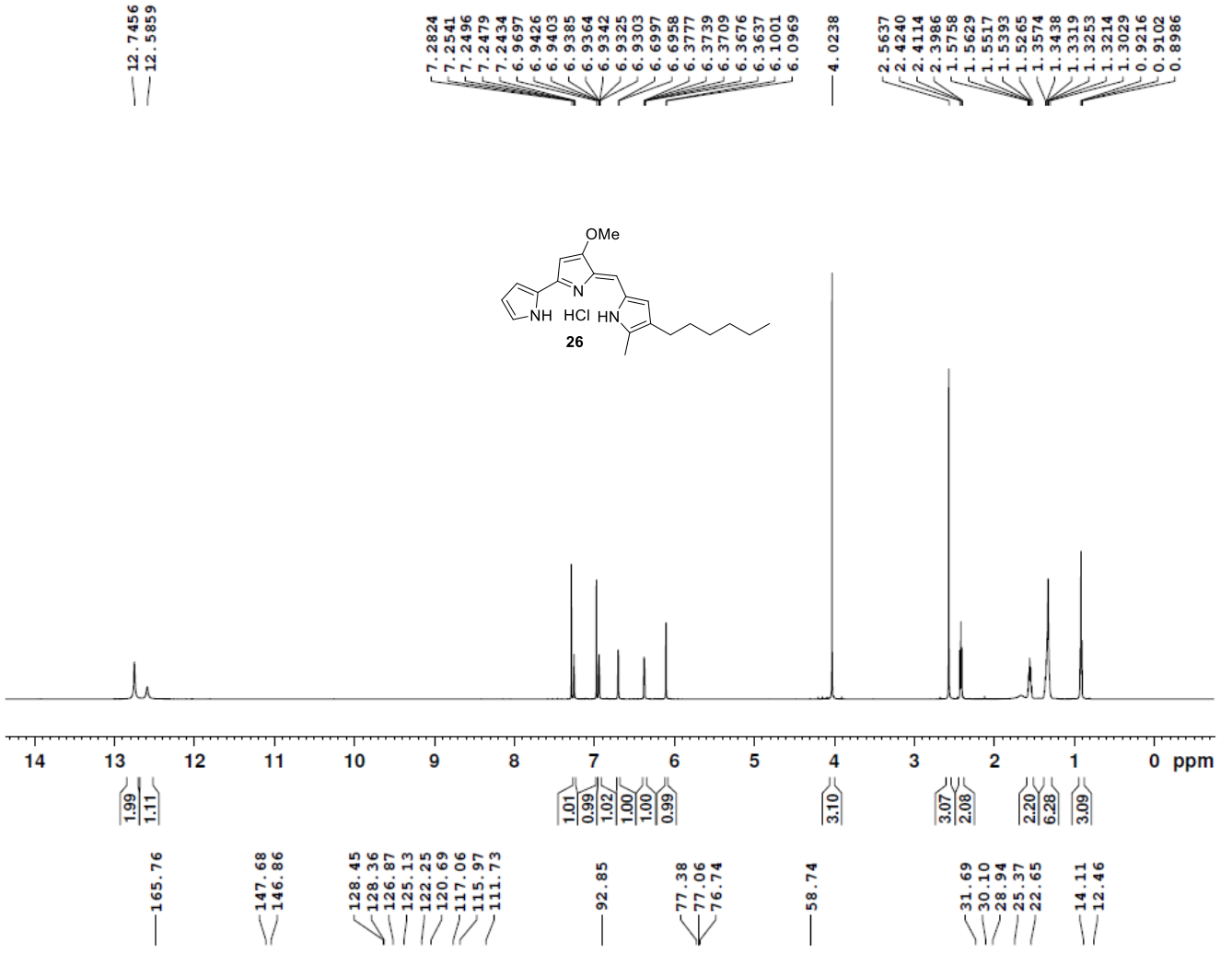


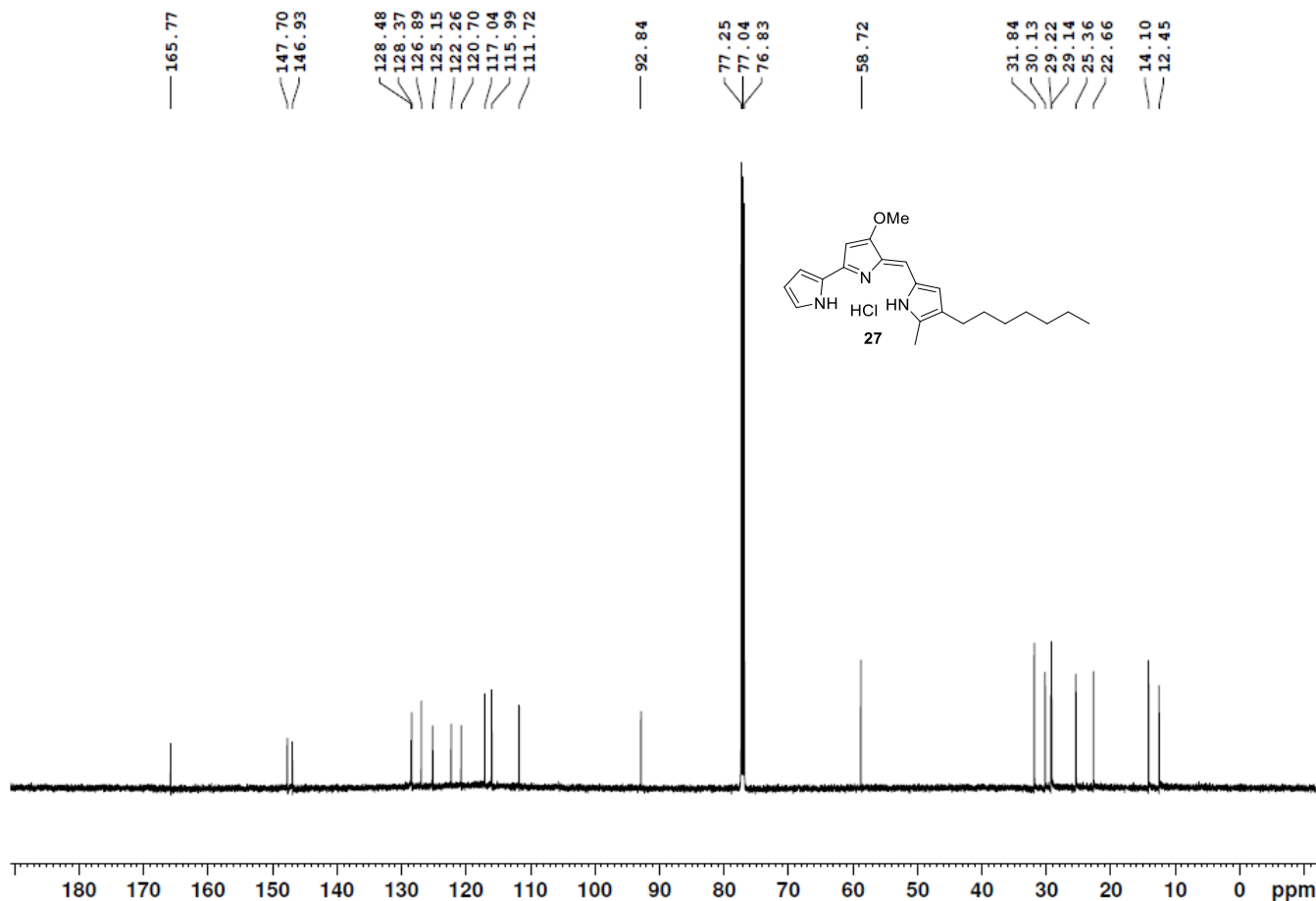
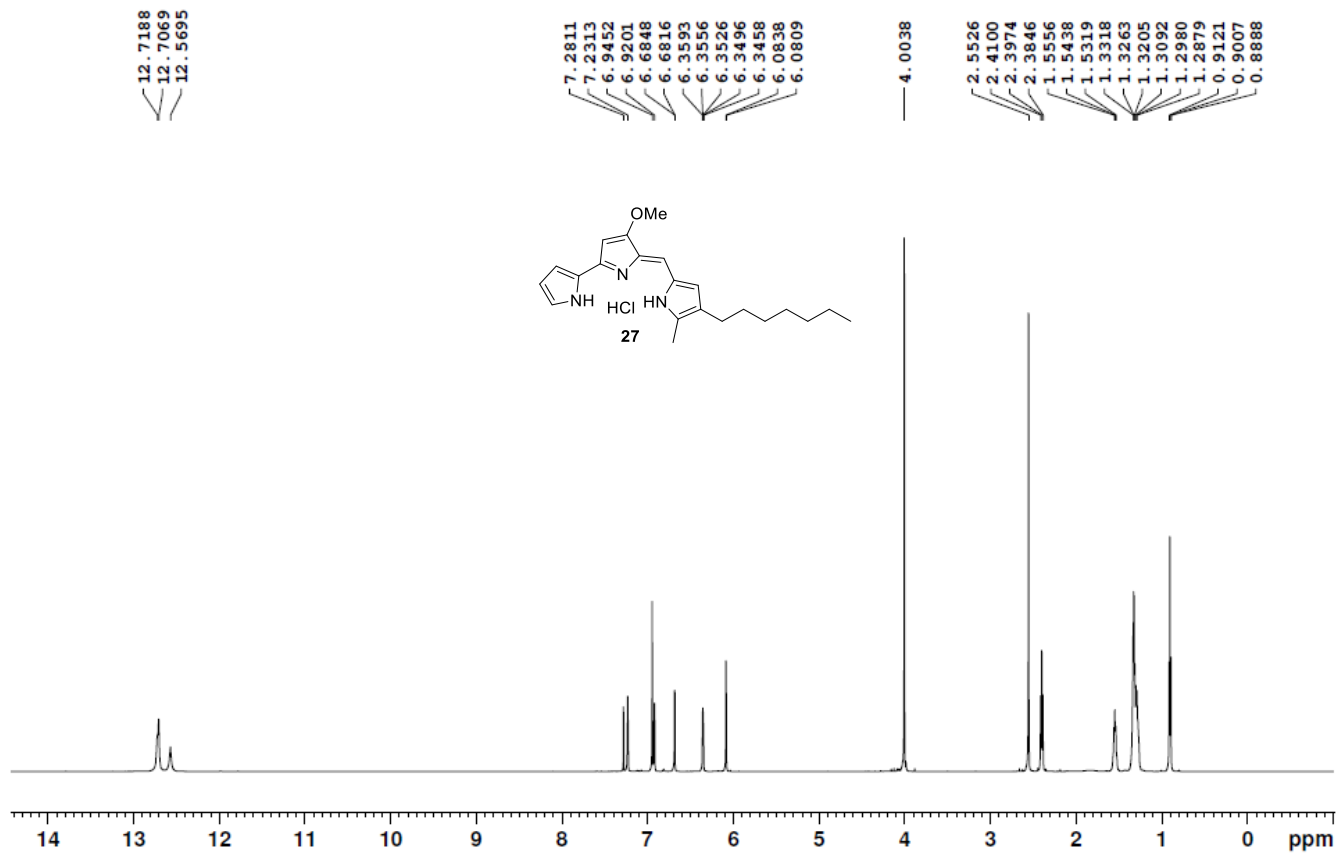


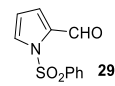
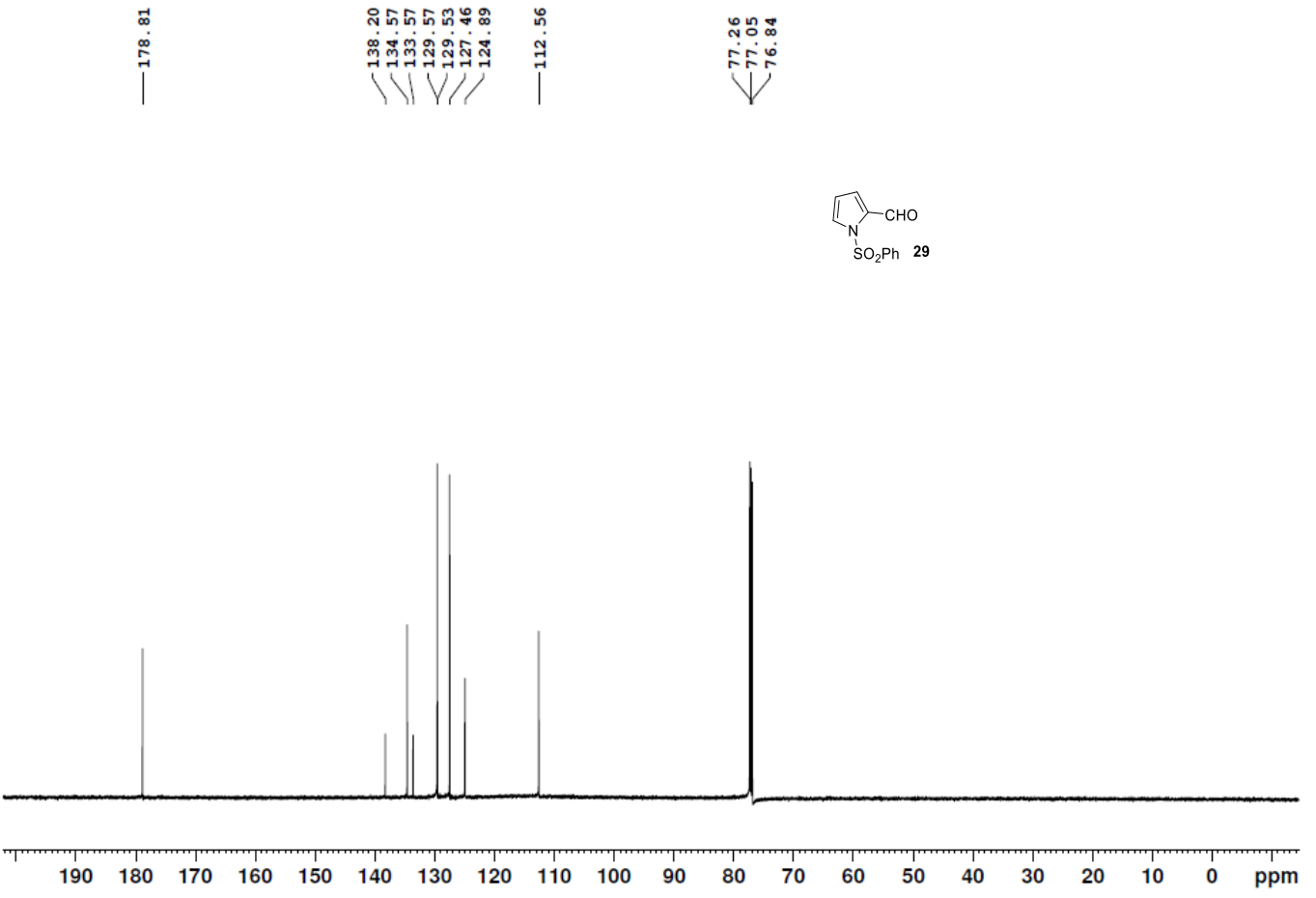
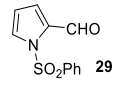
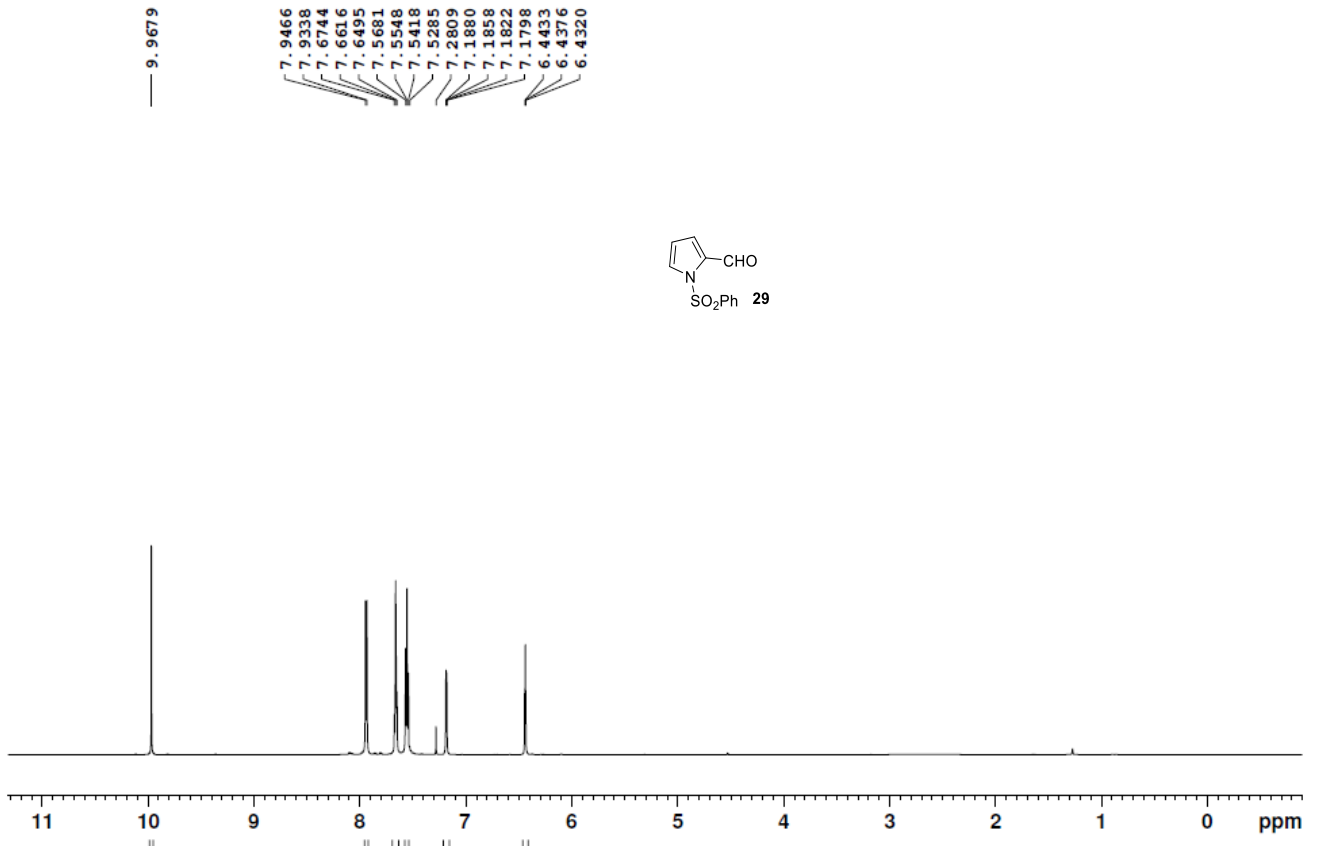




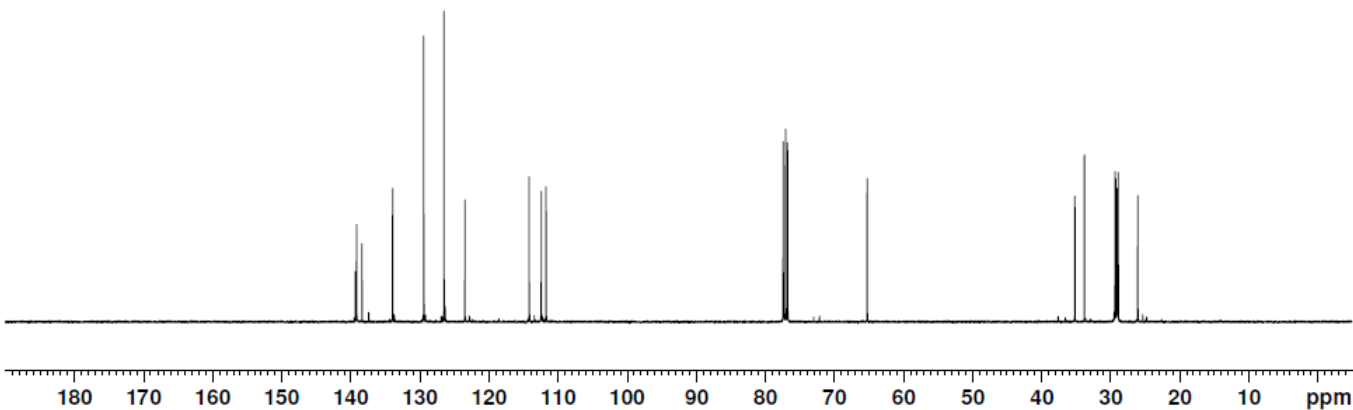
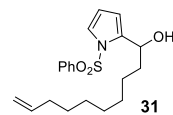
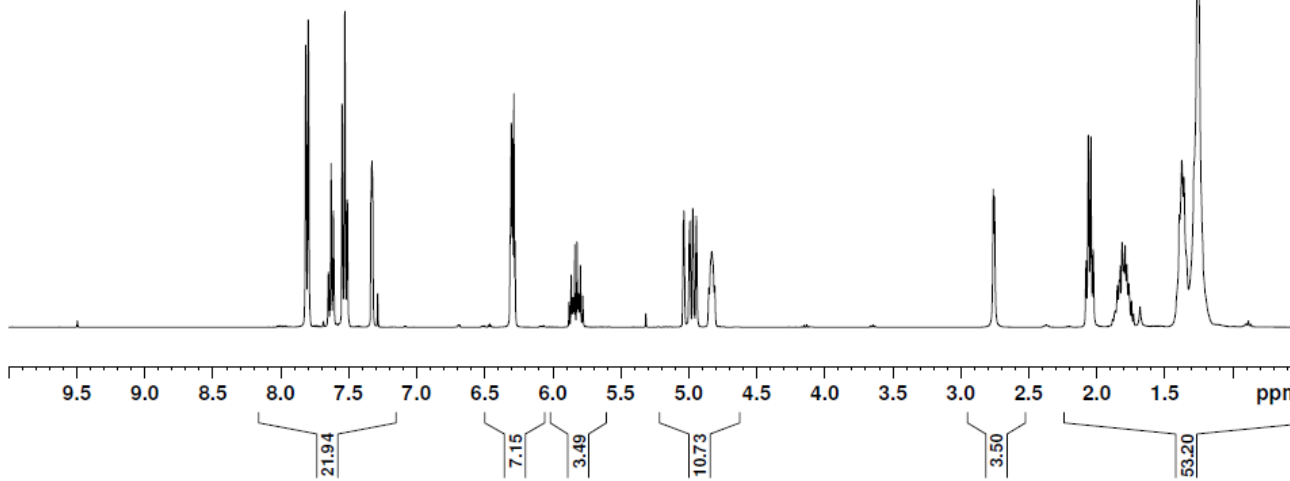
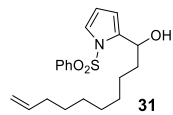


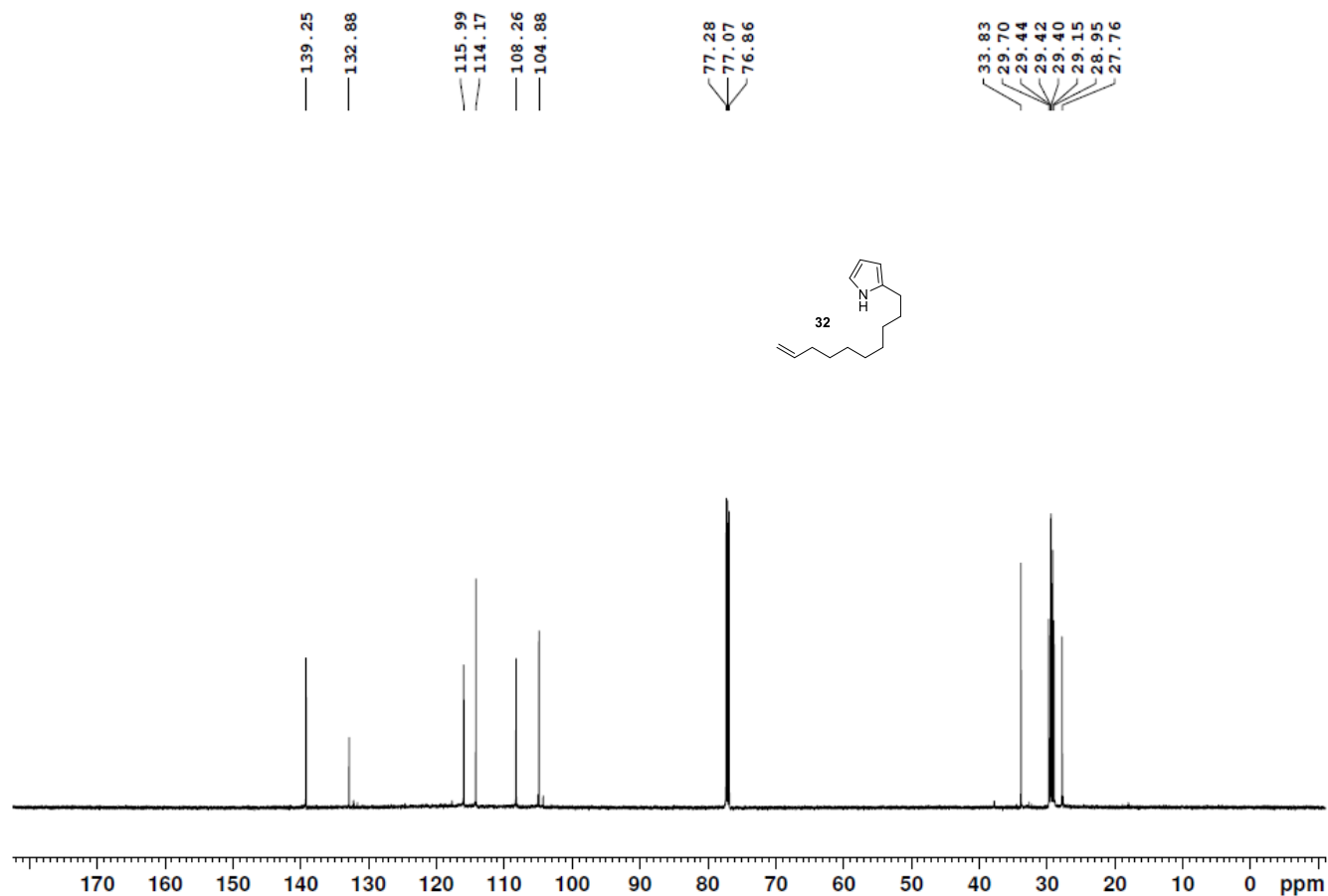
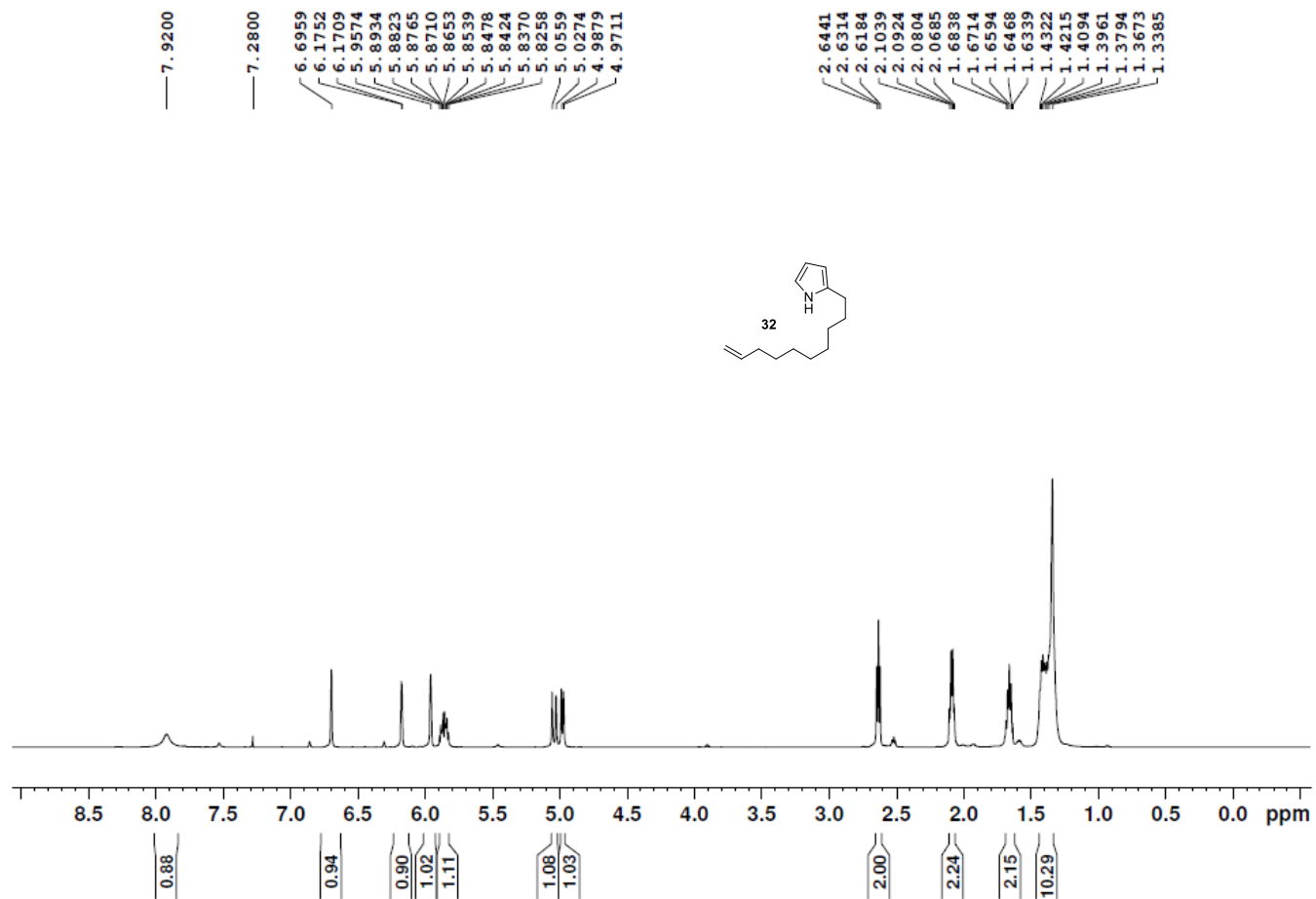


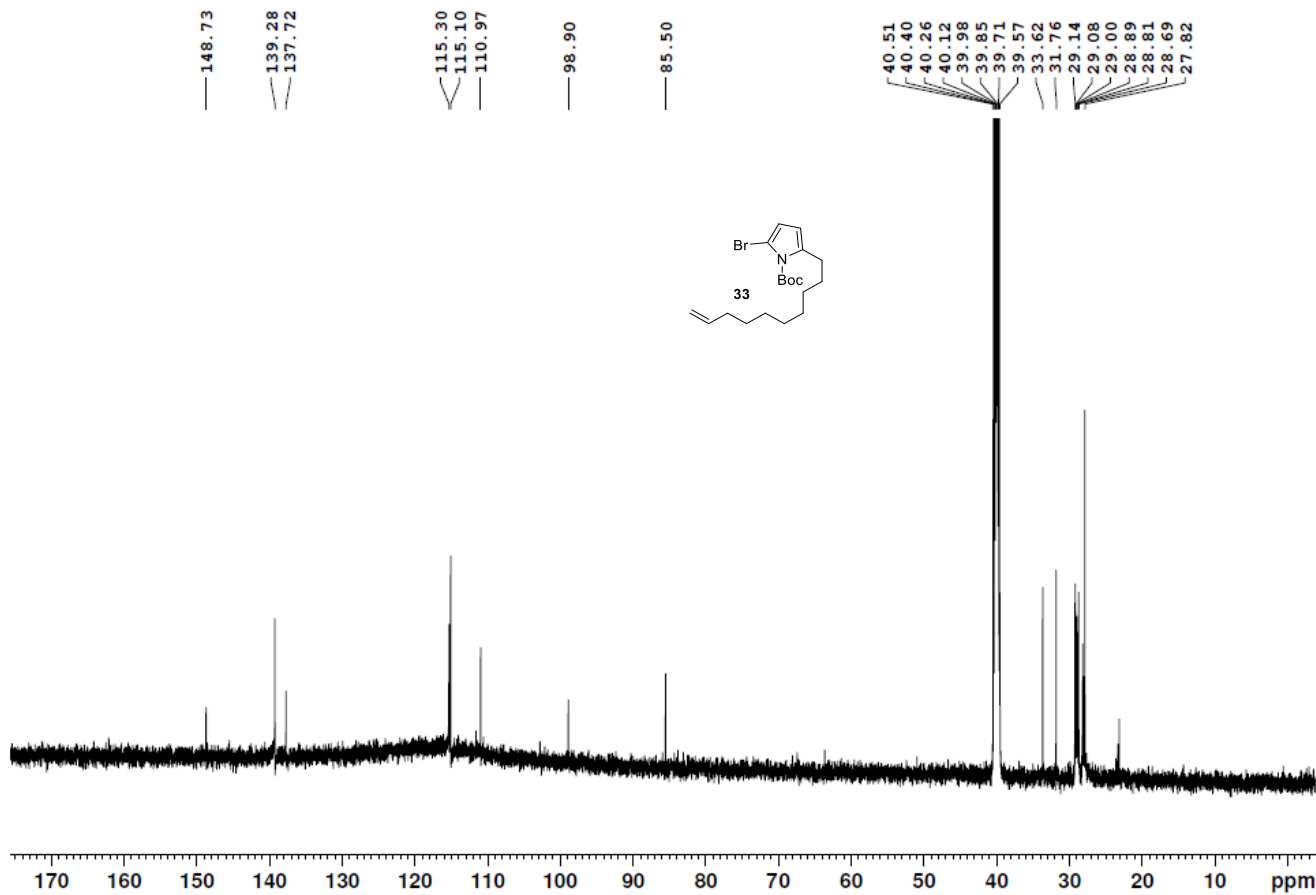
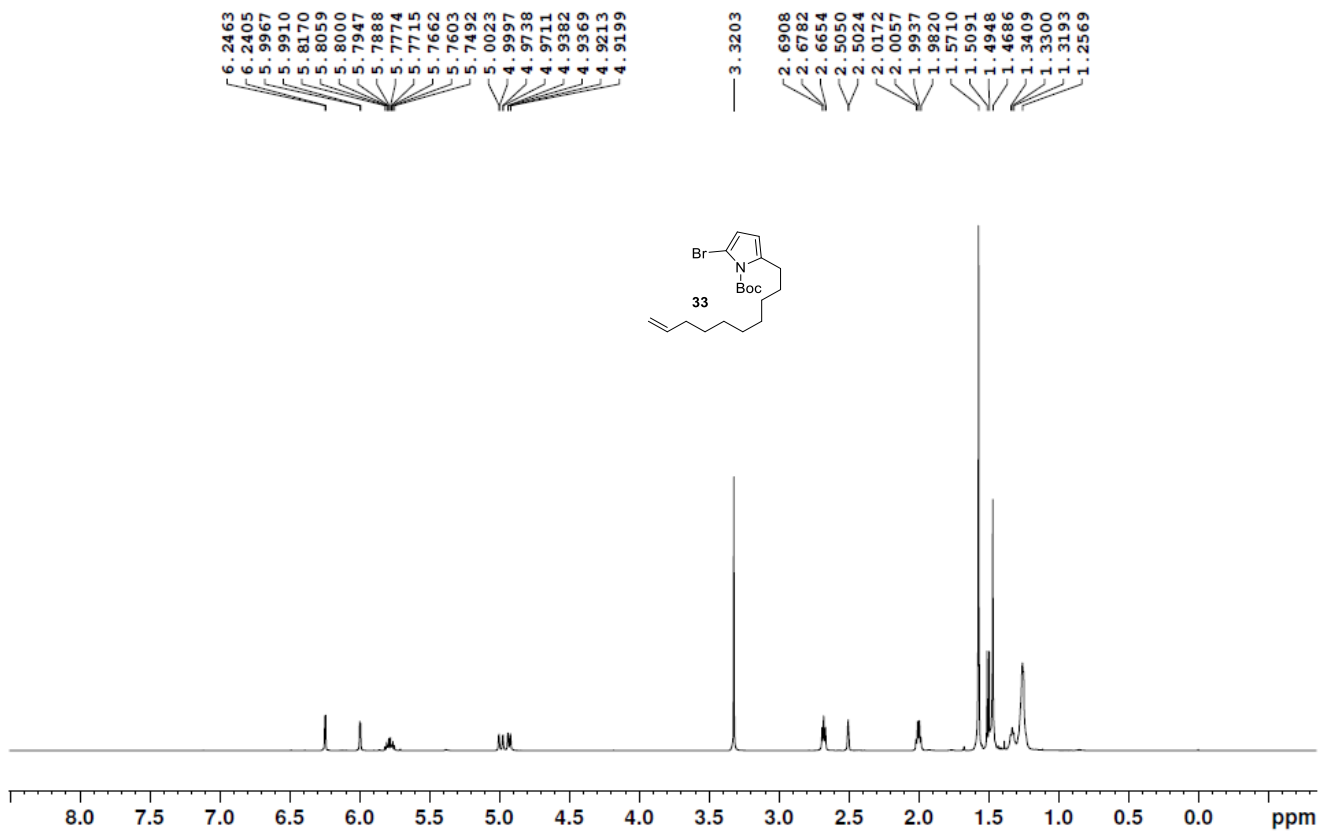




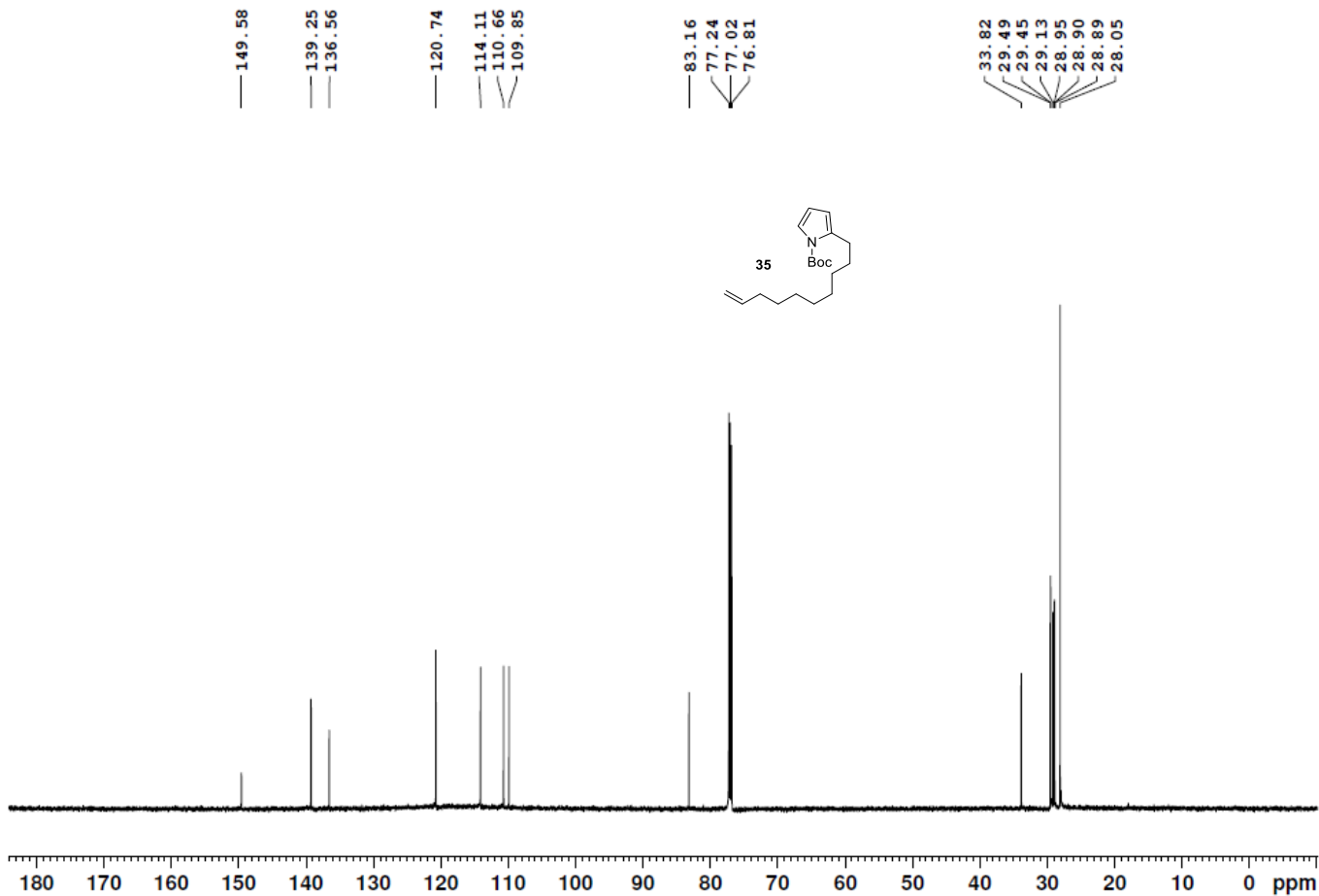
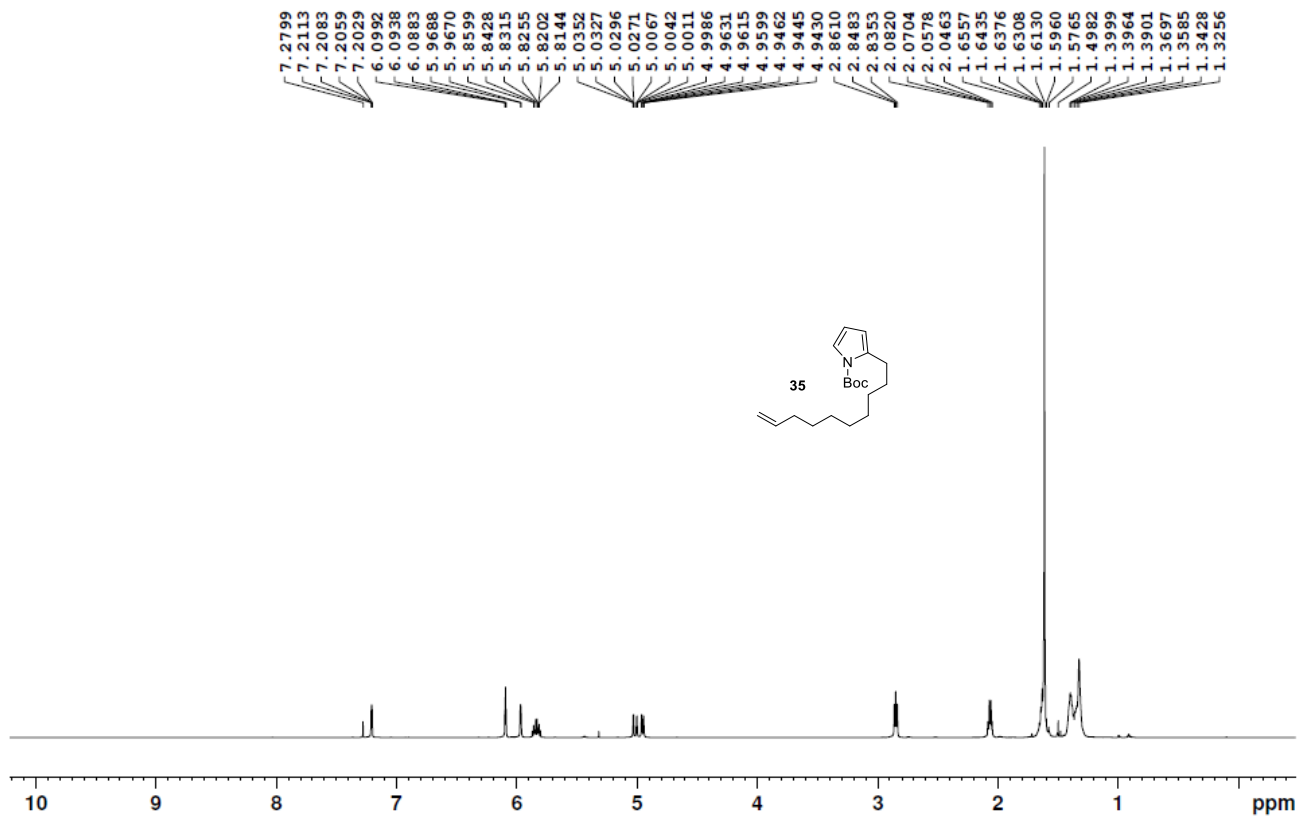
9.4940  
7.8147  
7.7956  
7.6843  
7.6480  
7.6289  
7.6108  
7.5669  
7.5469  
7.5271  
7.5078  
7.3334  
7.3292  
7.3267  
7.3221  
7.2852  
6.3035  
6.2322  
6.2838  
6.2755  
5.8785  
5.8619  
5.8531  
5.8452  
5.8362  
5.8193  
5.8104  
5.8024  
5.7937  
5.7770  
5.3134  
5.0362  
5.0326  
4.9934  
4.9898  
4.9678  
4.9654  
4.9424  
4.9400  
4.8501  
4.8272  
4.8073  
2.7588  
2.7487  
2.0762  
2.0590  
2.0407  
2.0233  
1.8804  
1.8659  
1.8587  
1.8456  
1.8323  
1.8249  
1.8108  
1.7985  
1.7898  
1.7754  
1.7621  
1.7411  
1.7267  
1.6788  
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1.3553  
1.2547  
1.2479  
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0.8816

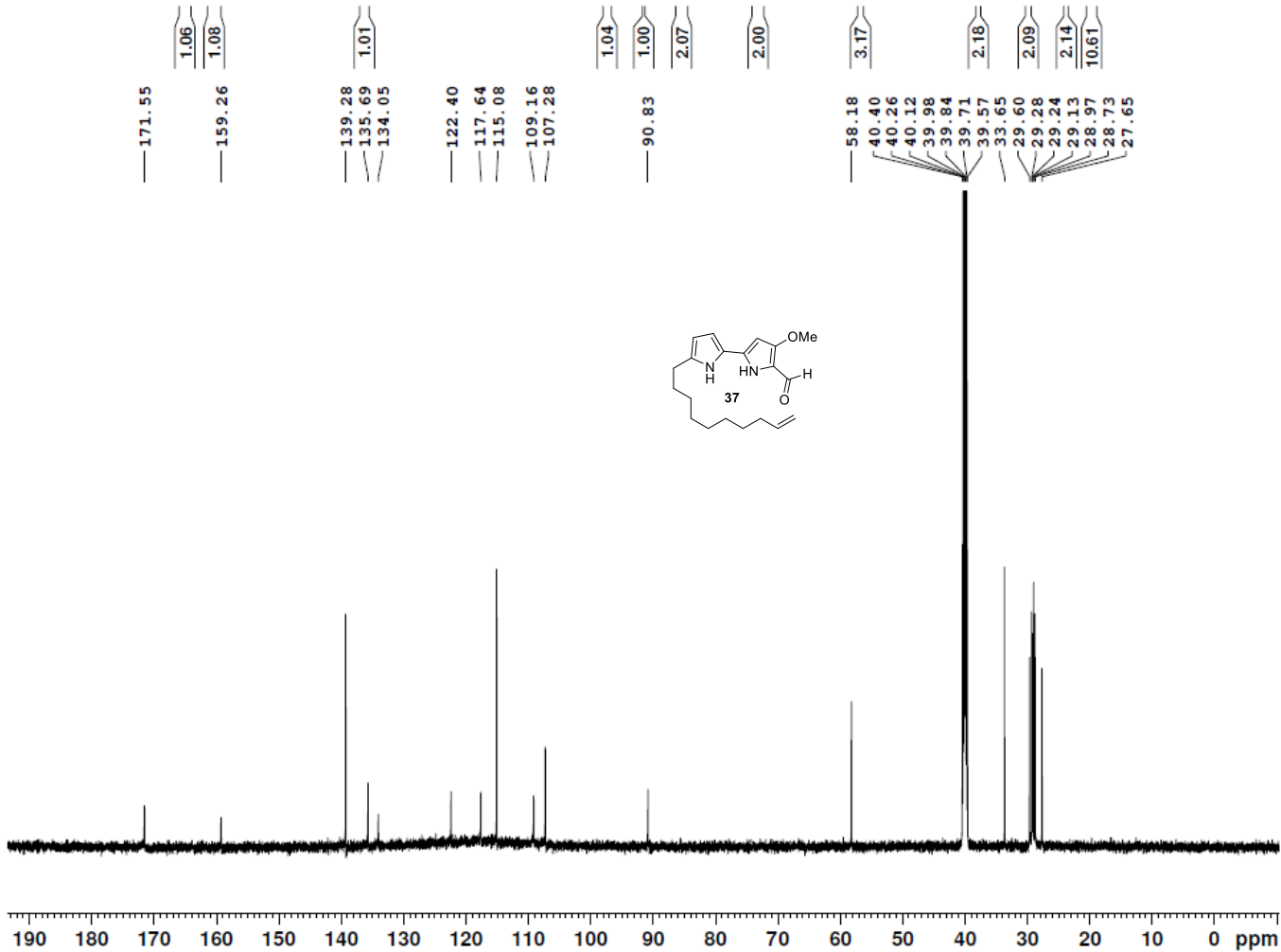
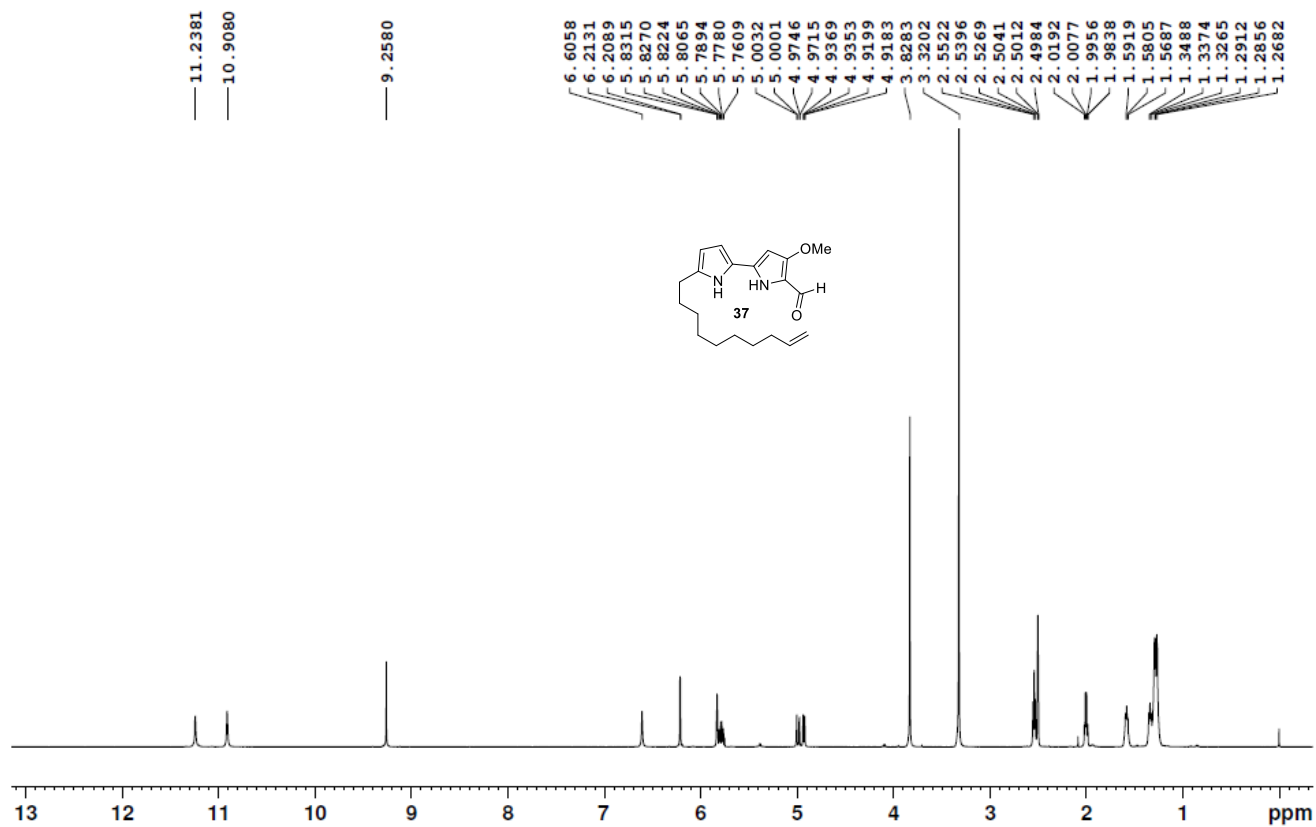


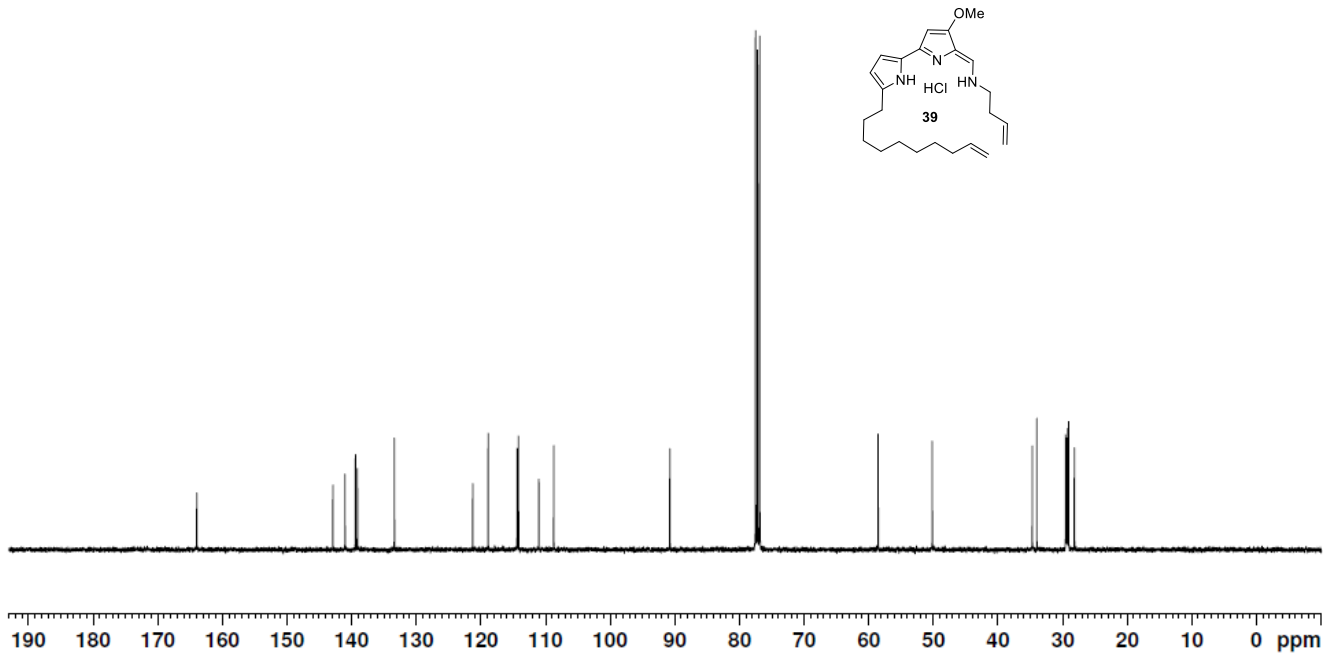
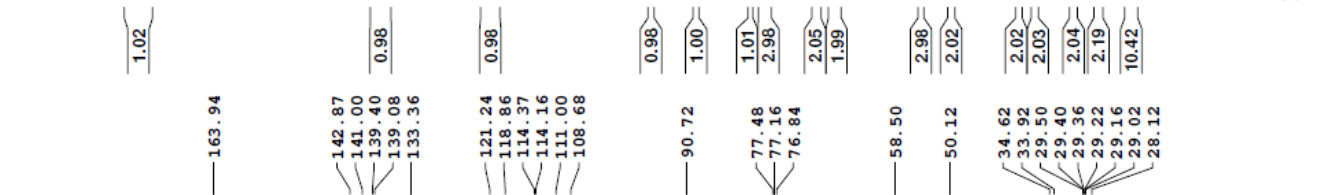
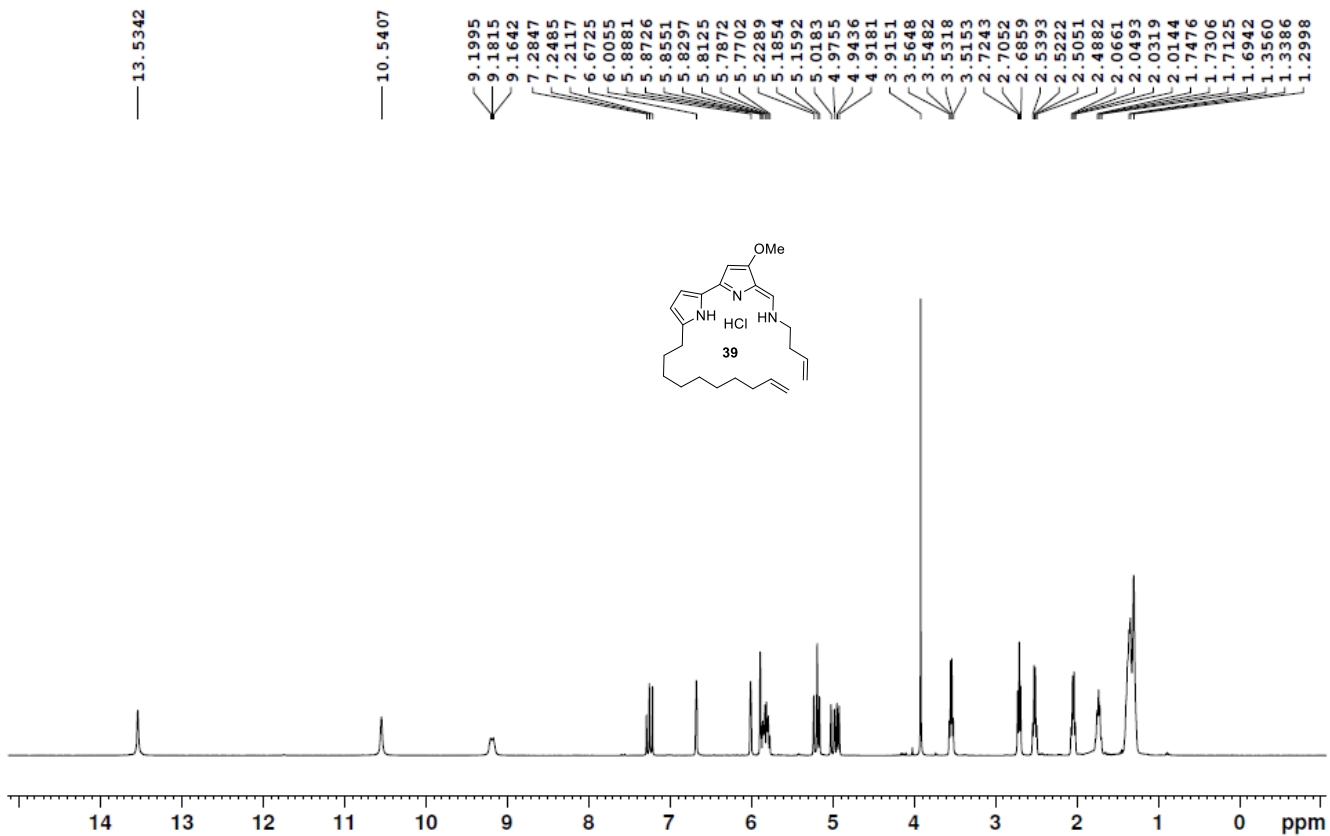


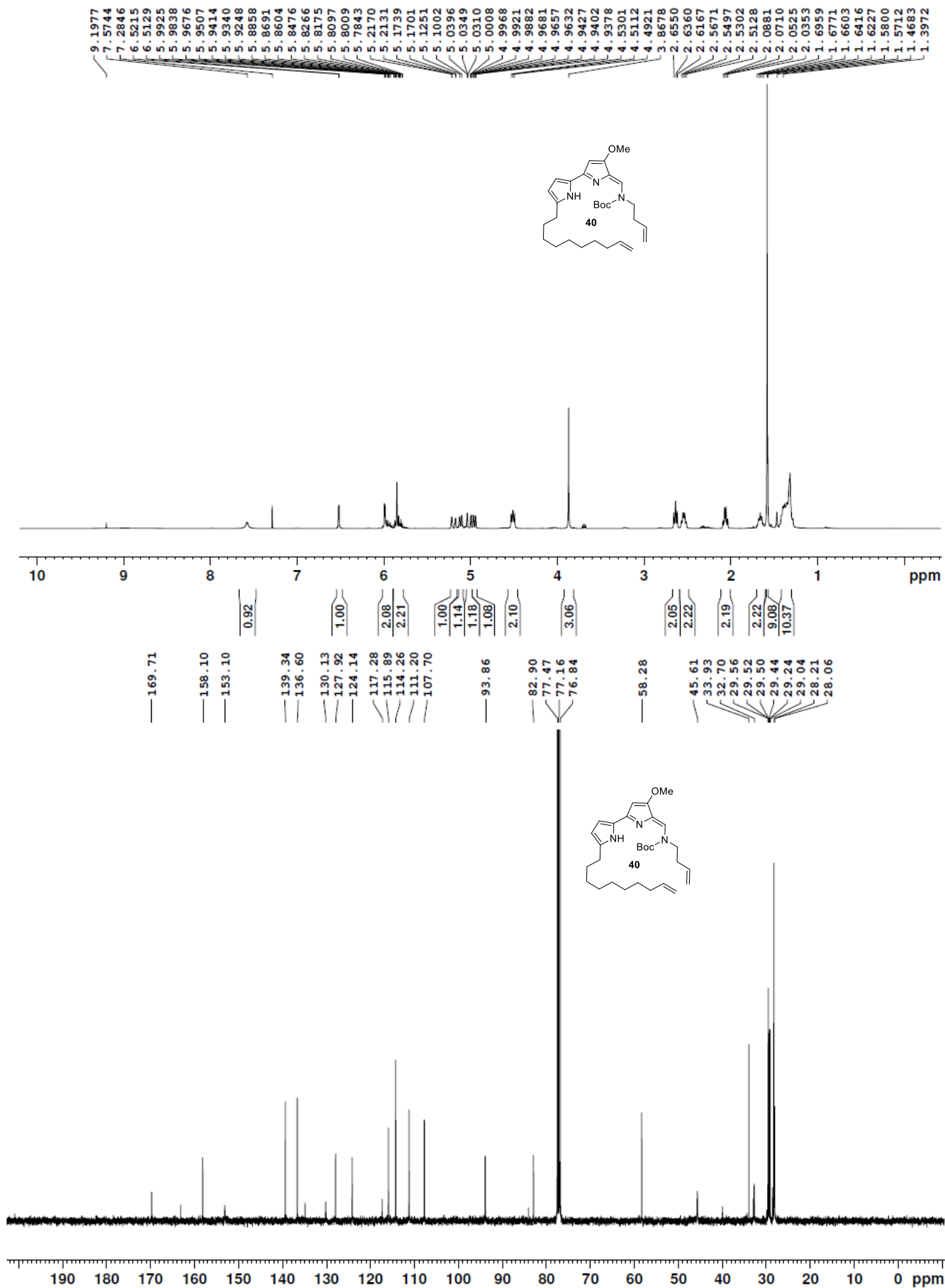


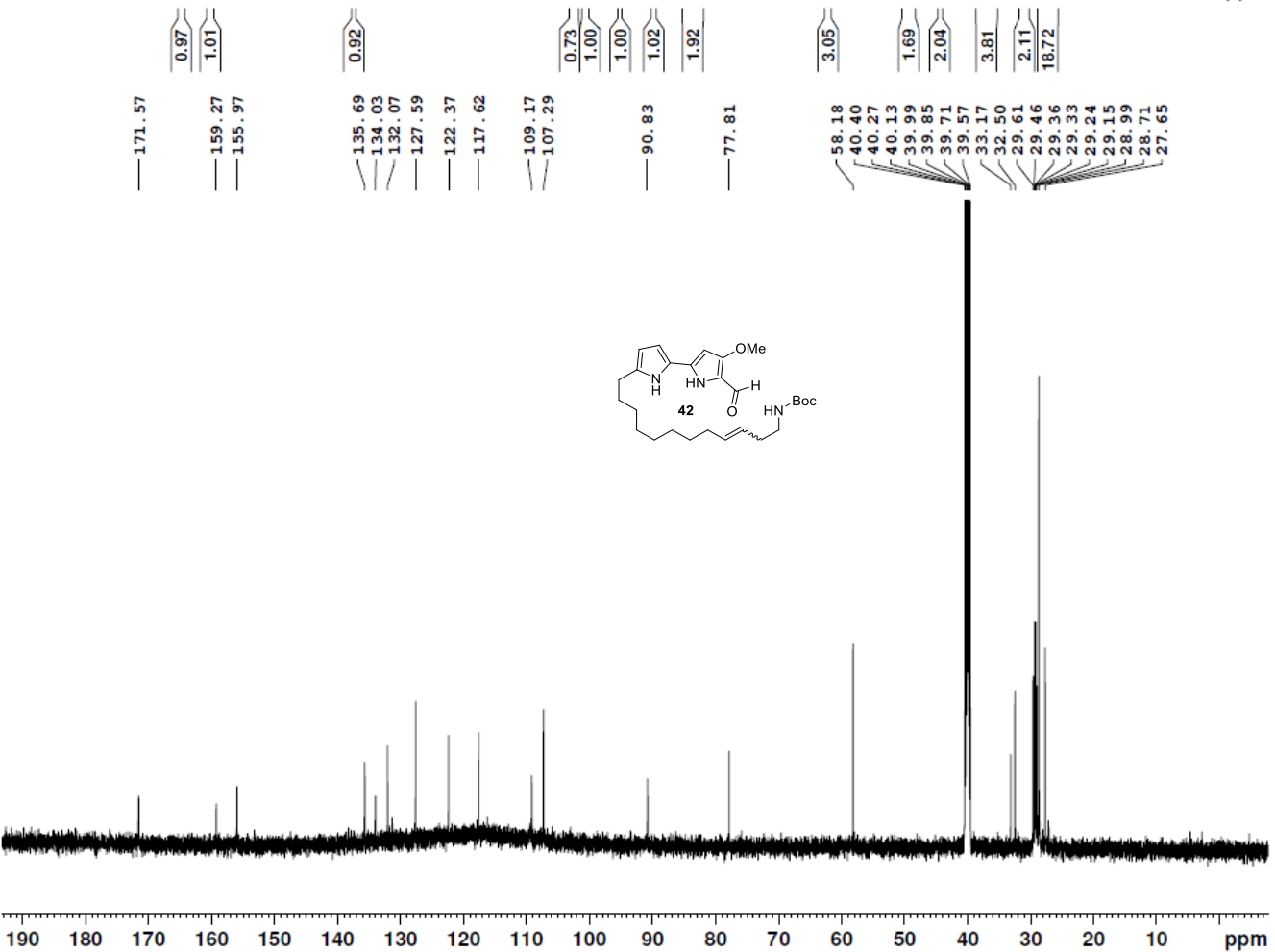
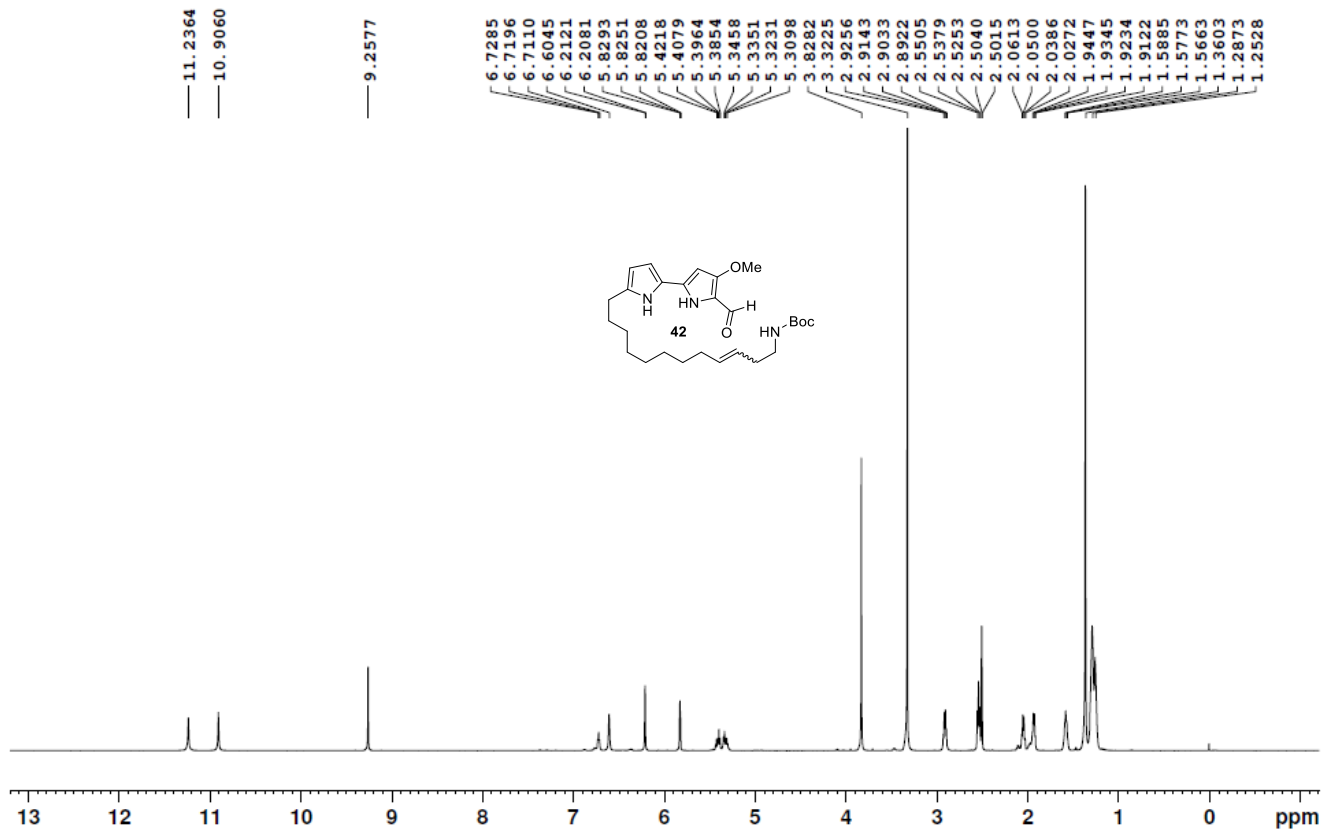


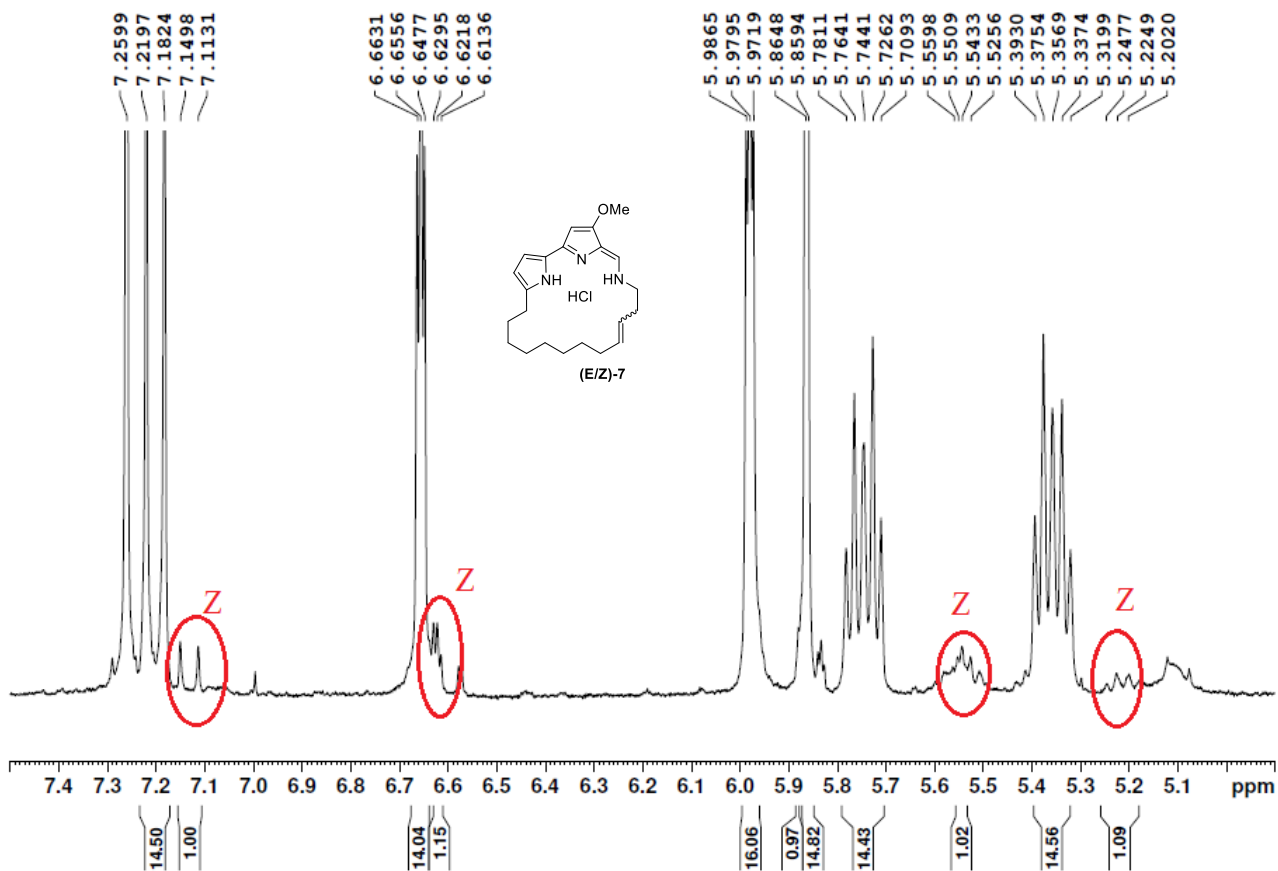
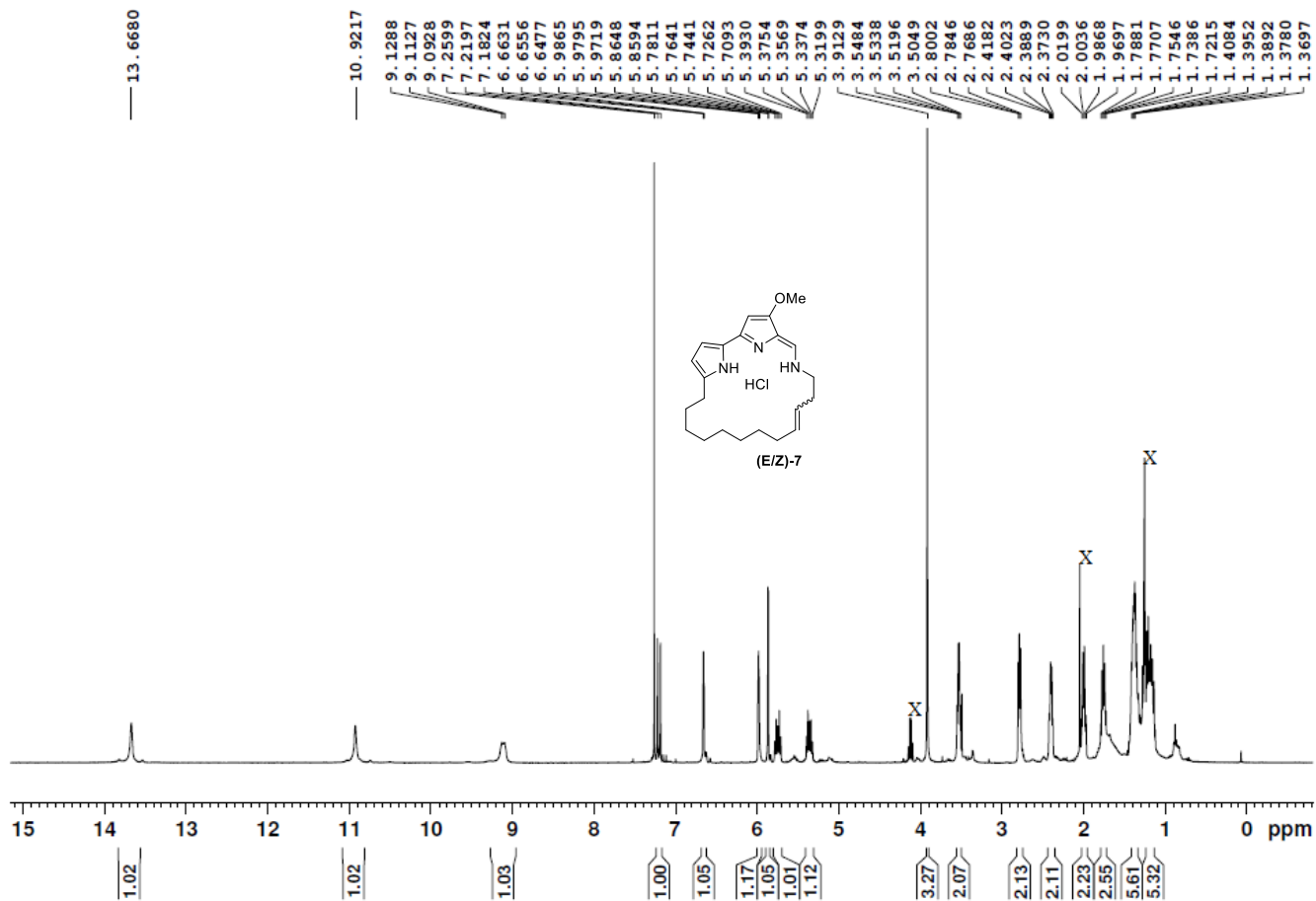


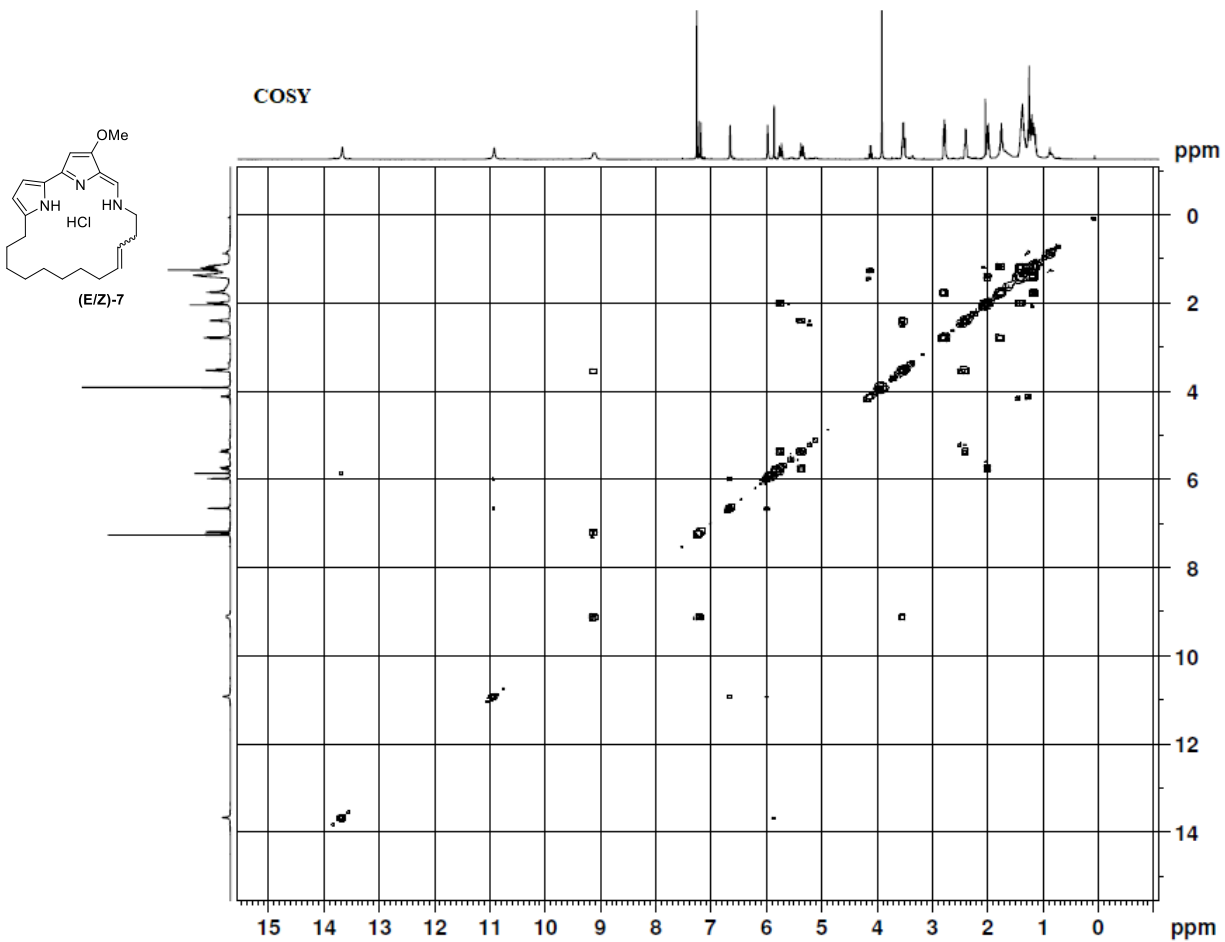
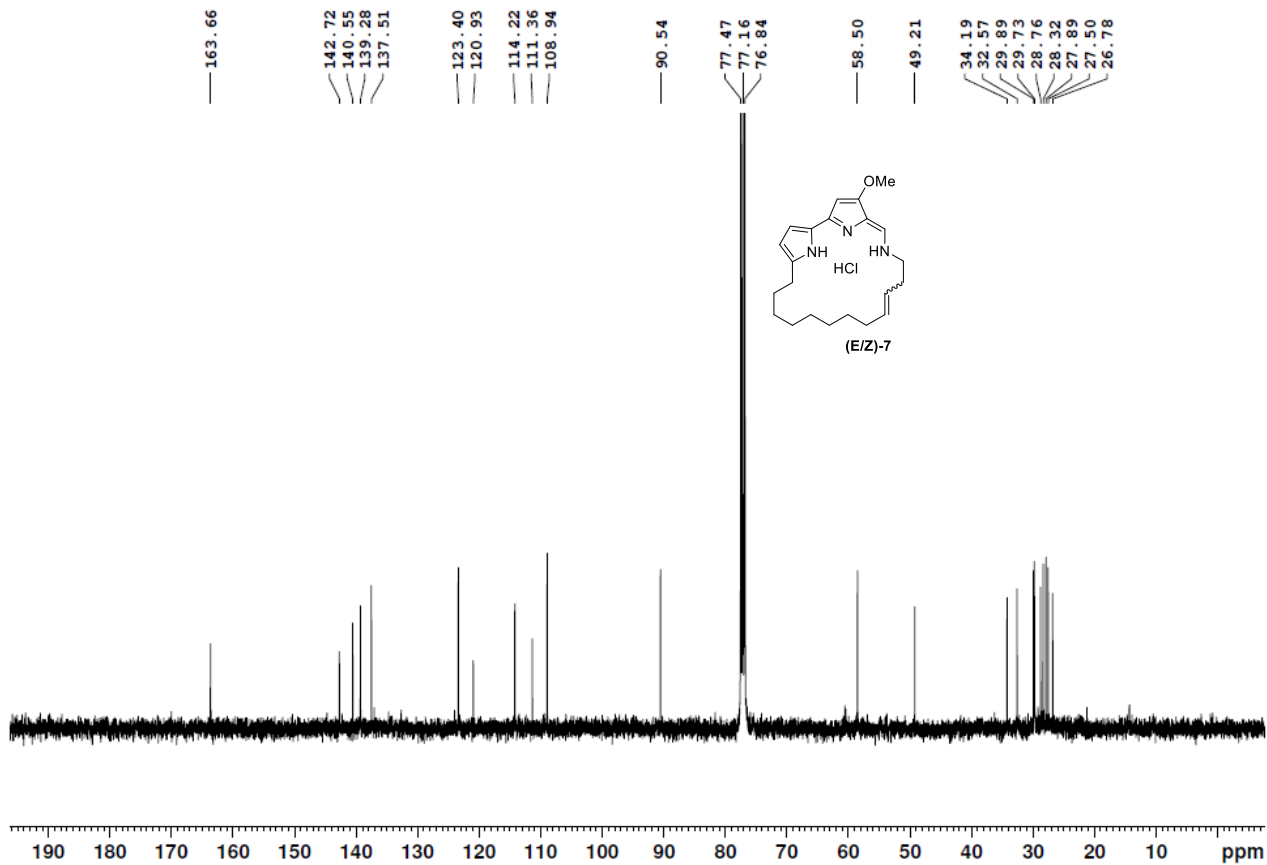


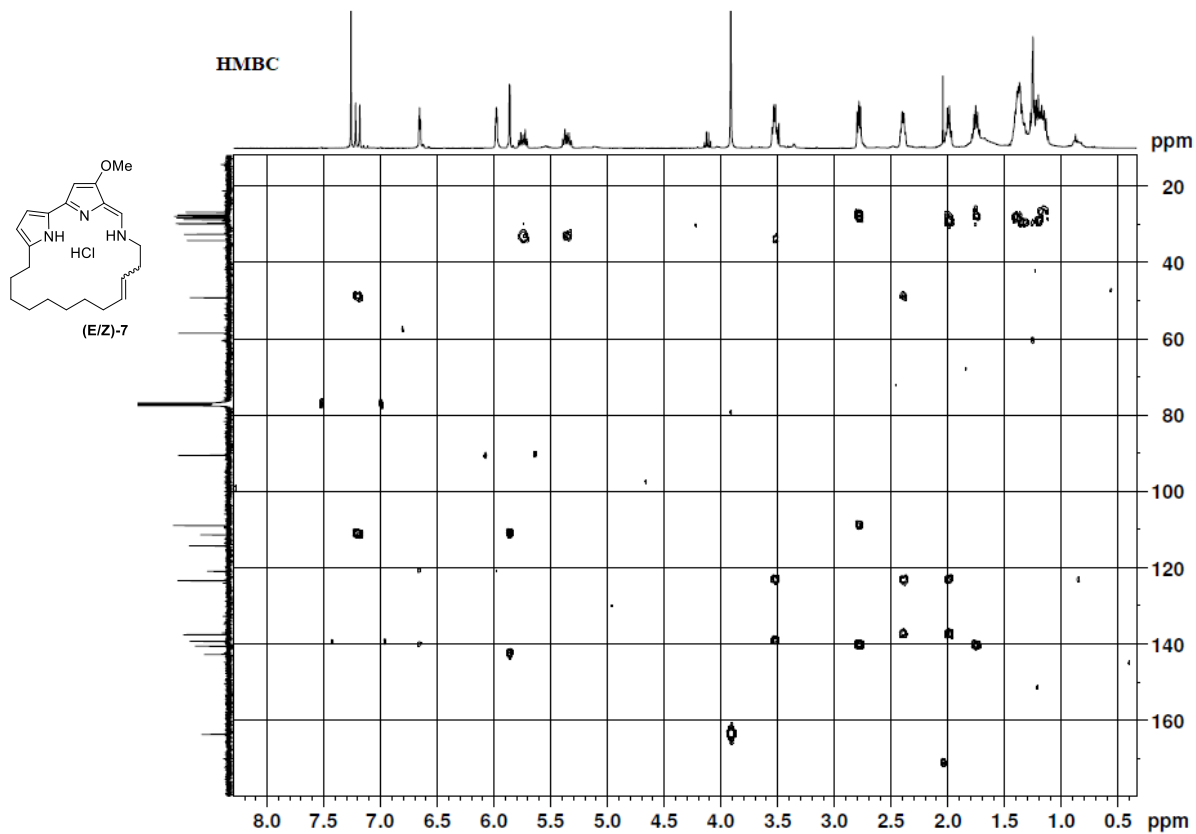
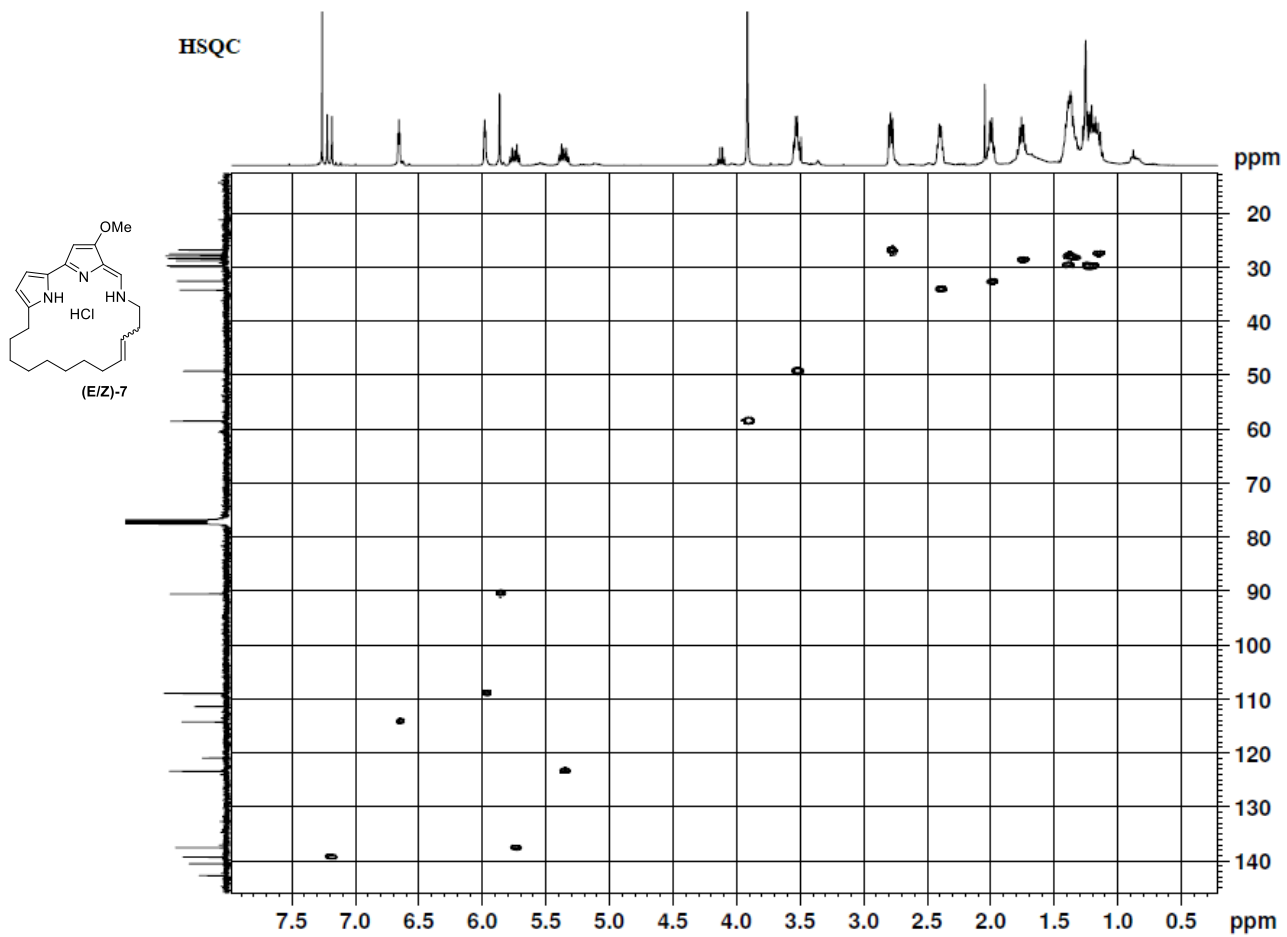






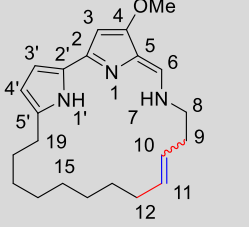
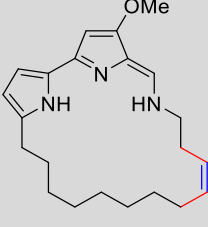








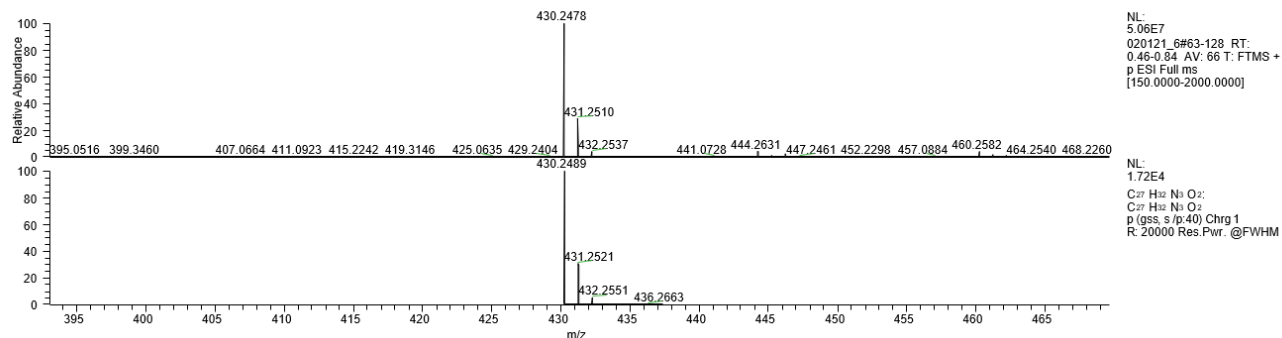
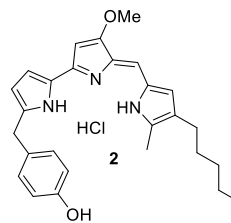
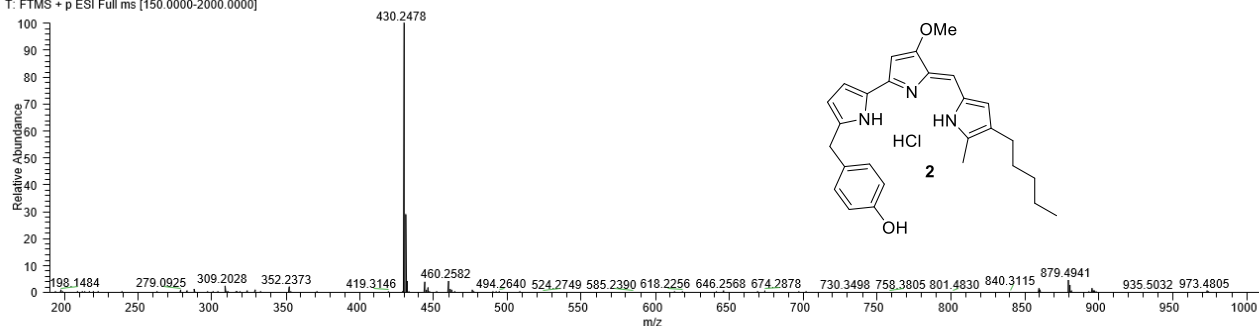
**Table S1.** Comparison of  $^1\text{H}$  and  $^{13}\text{C}$  NMR between major isomer of synthetic compound (*E/Z*)-**7** and natural product **7**\*

Position	 Tambjamine-MYP1 (( <i>E/Z</i> )- <b>7</b> ) (Synthetic compound)		 Tambjamine-MYP1 (Natural compound)	
	Major isomer ( <i>E</i> or <i>trans</i> )		<i>Z</i> or <i>cis</i> -isomer	
	$\delta_{\text{H}}$ ( <i>J</i> in Hz)	$\delta_{\text{C}}$	$\delta_{\text{H}}$ ( <i>J</i> in Hz)	$\delta_{\text{C}}$
1' (NH)	10.92, s	-	10.74	-
2'	-	120.9	-	
3'	6.65, t (3.0)	114.2	6.63, s	113.5
4'	5.97, t (3.0)	108.9	5.99, s	109.7
5'	-	140.5	-	
1 (NH)	13.66, s	-		-
2	-	142.7	-	142.1
3	5.85, d (2.2)	90.5	5.87	90.4
4	-	163.7	-	163.0
5	-	111.4	-	110.1
6	7.20, d (14.9)	139.3	7.14, d (14.8)	140.1
7 (NH)	9.11, m	-	9.29, br d	-
8	3.53, q (5.8)	49.2	3.54, br	51.4
9	2.39, q, (6.3)	34.2	2.50, m	27.8
10	5.35, dt (15.2, 6.8)	123.4	5.22, dt (10.9, 7.7)	123.2
11	5.74, dt (15.2, 7.0)	137.5	5.55, dt (10.9, 7.2)	137.1
12	1.99, q (6.8)	32.6	2.06, m	27.4
13-17	1.40-1.11, m	29.9-27.6	1.29-0.85	28.6-31.8
18	1.75, m	28.8	1.82, m	27.7
19	2.78, t, (6.2)	26.8	2.75, br t (6.1)	27.2
OMe	3.91, s	58.5	3.92, s	58.5

\* Picott, K. J.; Deichert, J. A.; deKemp, E. M.; Schatte, G.; Sauriol, F.; Ross, A. C. Isolation and characterization of tambjamine MYP1, a macrocyclic tambjamine analogue from marine bacterium *Pseudoalteromonas citrea*. *Medchemcomm.* **2019**, *10*, 478–483.

# HRMS of final compounds

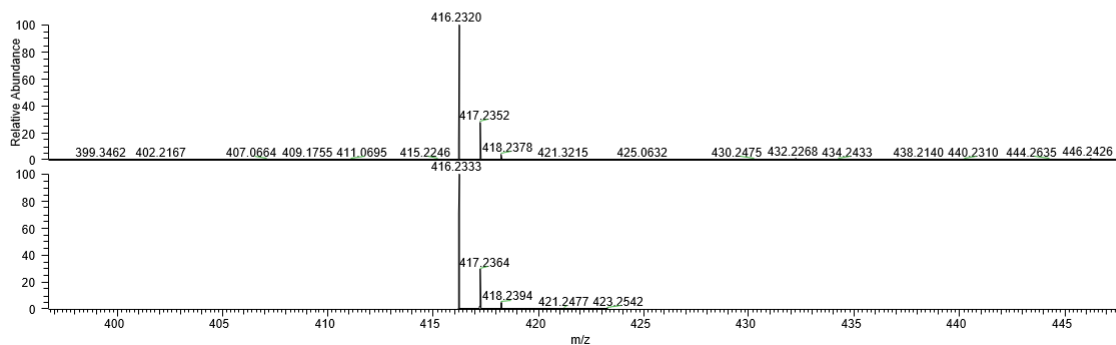
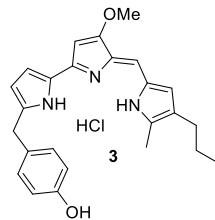
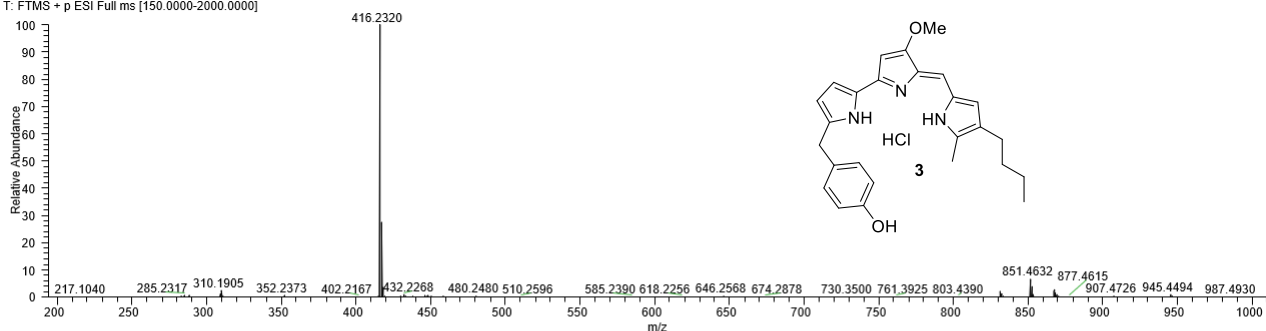
020121\_6#63-128 RT: 0.46-0.84 AV: 66 NL: 5.06E7  
T: FTMS + p ESI Full ms [150.0000-2000.0000]



NL:  
5.06E7  
020121\_6#63-128 RT:  
0.46-0.84 AV: 66 T: FTMS +  
p ESI Full ms  
[150.0000-2000.0000]

NL:  
1.72E4  
C27 H32 N2 O2:  
C27 H32 N2 O2  
p (gss, s [p:40]) Chrg 1  
R: 20000 Res.Pwr. @FWHM

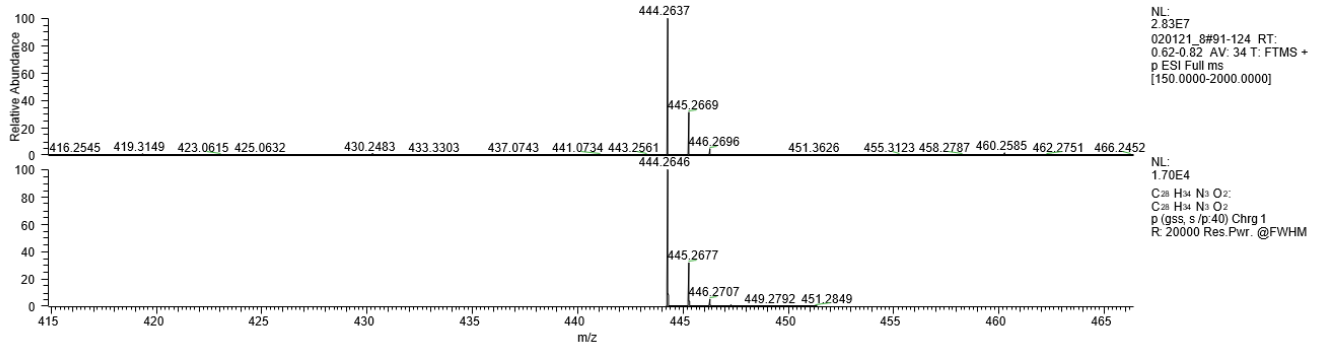
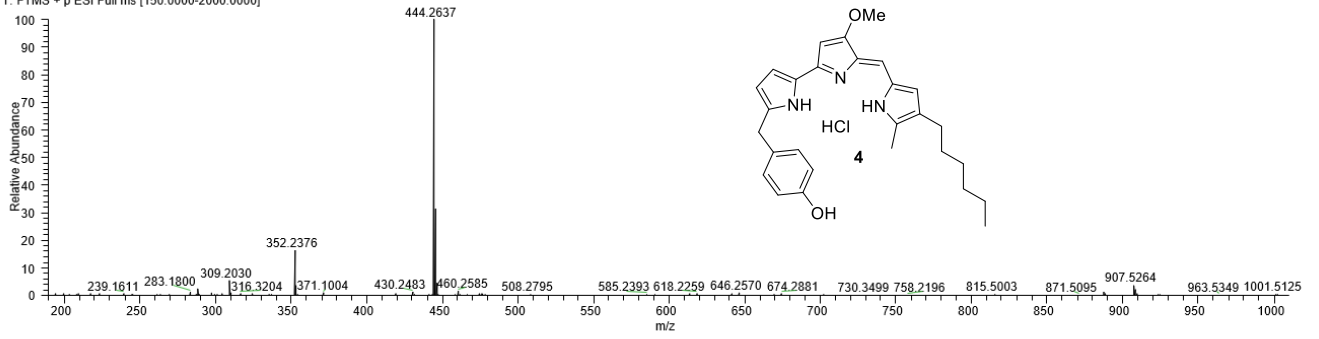
020121\_11#55-121 RT: 0.42-0.79 AV: 67 NL: 9.40E7  
T: FTMS + p ESI Full ms [150.0000-2000.0000]



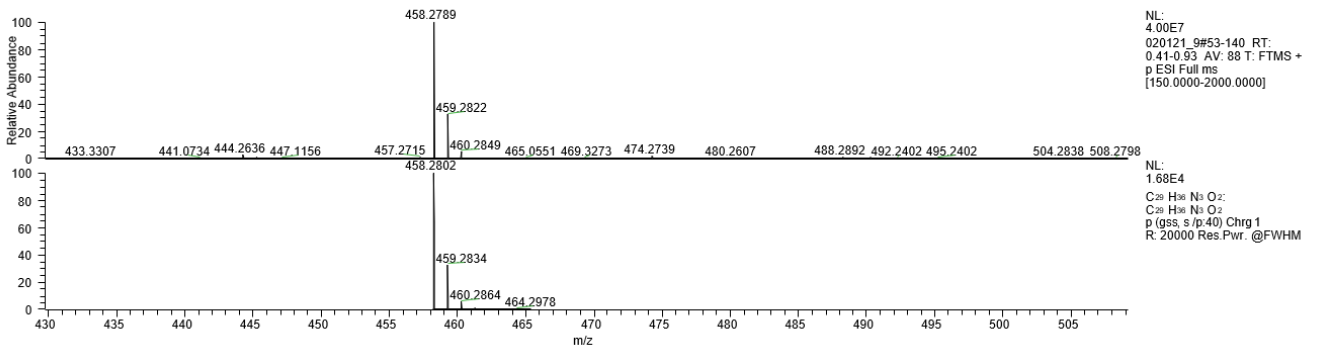
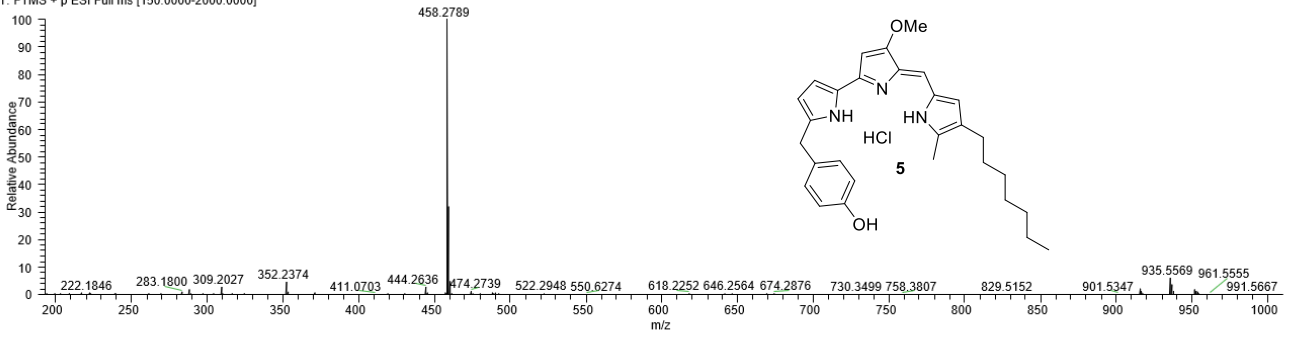
NL:  
9.40E7  
020121\_11#55-121 RT:  
0.42-0.79 AV: 67 T: FTMS +  
p ESI Full ms  
[150.0000-2000.0000]

NL:  
1.74E4  
C28 H30 N2 O2:  
C28 H30 N2 O2  
p (gss, s [p:40]) Chrg 1  
R: 20000 Res.Pwr. @FWHM

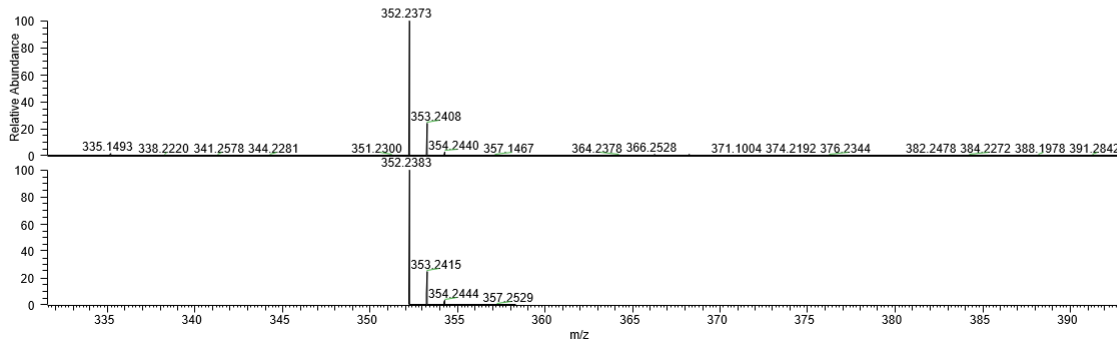
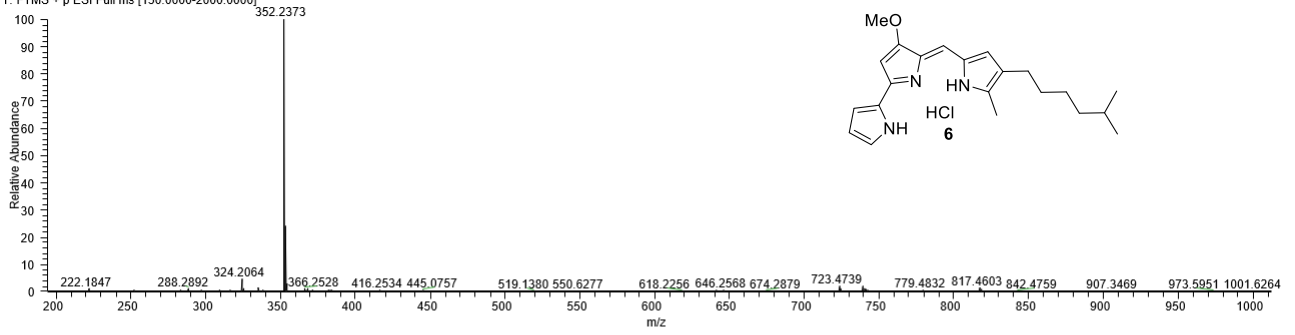
020121\_8#91-124 RT: 0.62-0.82 AV: 34 NL: 2.83E7  
T: FTMS + p ESI Full ms [150.0000-2000.0000]



020121\_9#53-140 RT: 0.41-0.93 AV: 88 NL: 4.00E7  
T: FTMS + p ESI Full ms [150.0000-2000.0000]



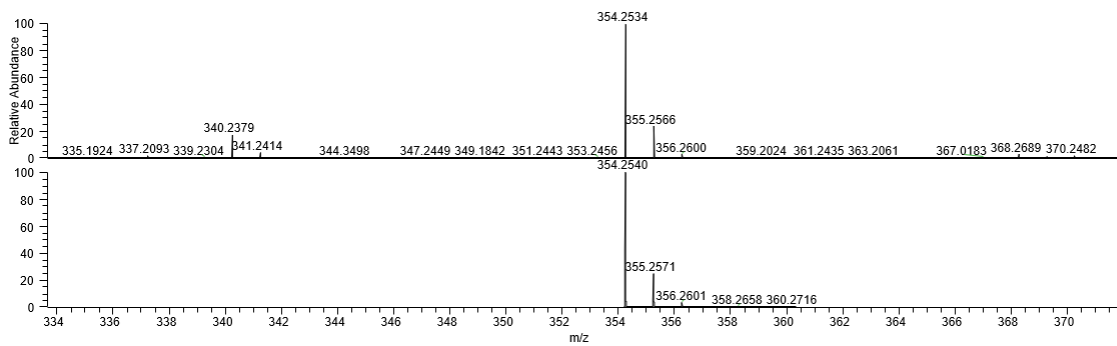
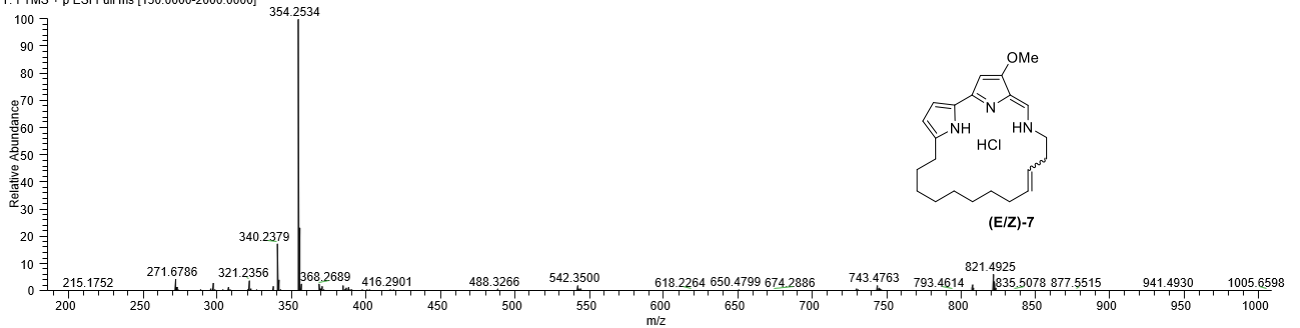
020121\_4#1-243 RT: 0.01-1.50 AV: 243 NL: 7.48E7  
T: FTMS + p ESI Full ms [150.0000-2000.0000]



NL:  
7.48E7  
020121\_4#1-243 RT:  
0.01-1.50 AV: 243 T: FTMS +  
p ESI Full ms  
[150.0000-2000.0000]

NL:  
1.82E4  
C22 H30 N2 O  
C22 H32 N2 O1  
p (gss, s/p:40) Chrg 1  
R: 20000 Res.Pwr. @FWHM

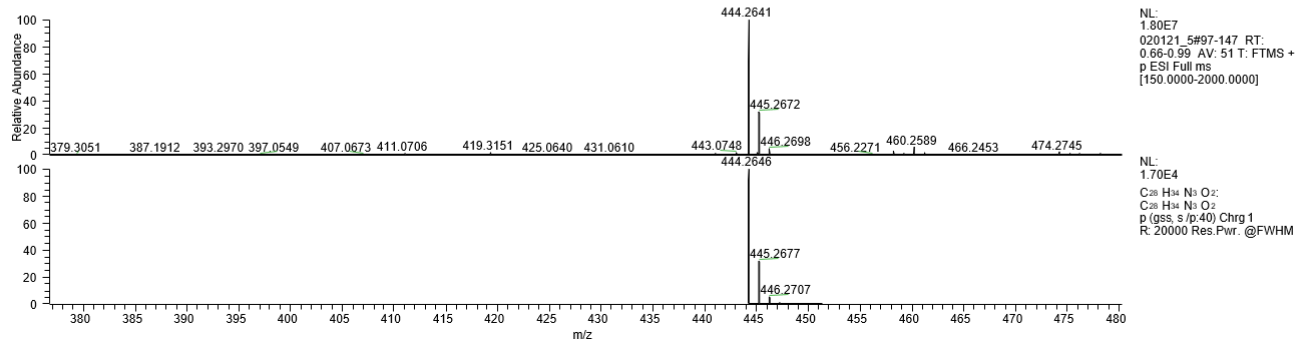
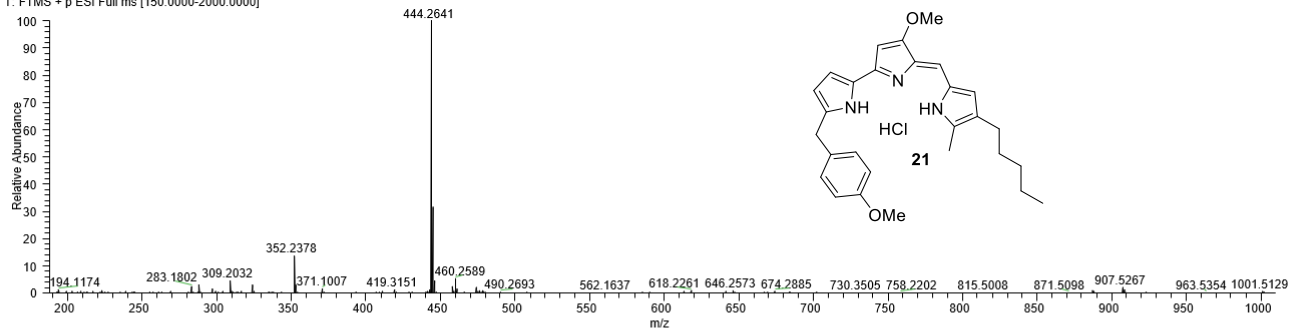
123020-4#68-142 RT: 0.41-0.79 AV: 75 NL: 1.07E9  
T: FTMS + p ESI Full ms [150.0000-2000.0000]



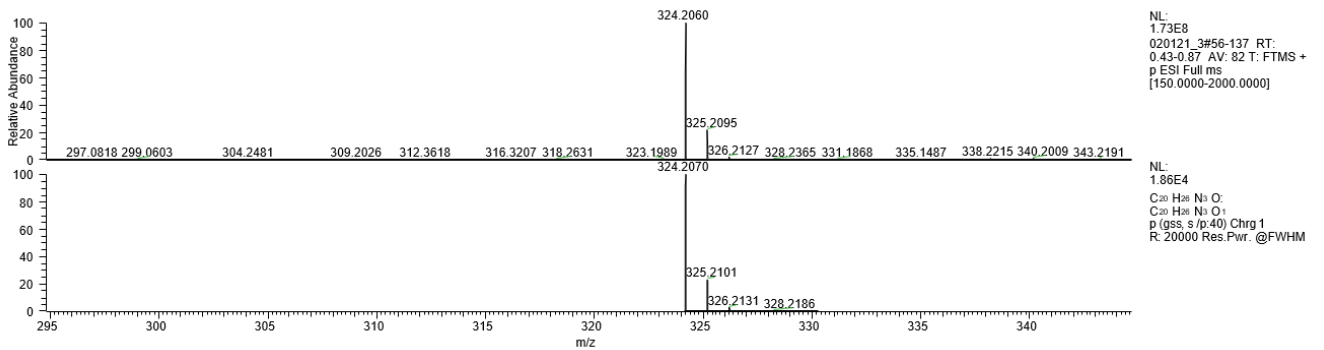
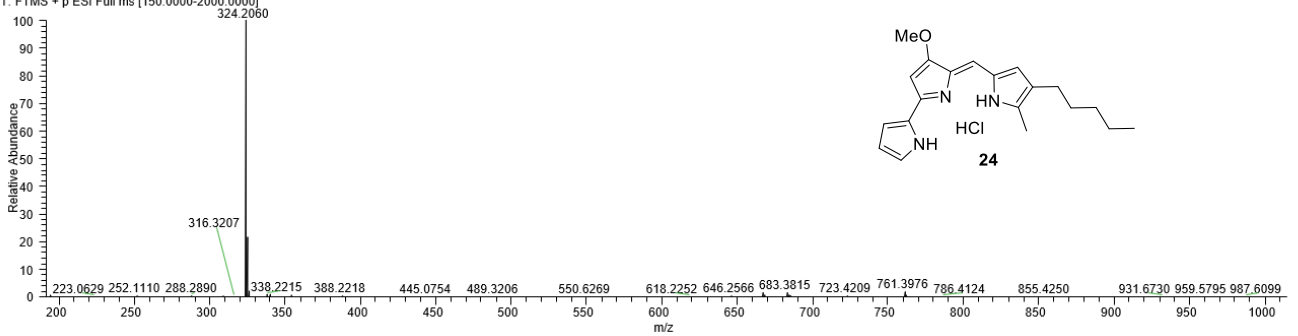
NL:  
1.07E9  
123020-4#68-142 RT:  
0.41-0.79 AV: 75 T: FTMS +  
p ESI Full ms  
[150.0000-2000.0000]

NL:  
1.82E4  
C22 H32 N2 O  
C22 H32 N2 O1  
p (gss, s/p:40) Chrg 1  
R: 20000 Res.Pwr. @FWHM

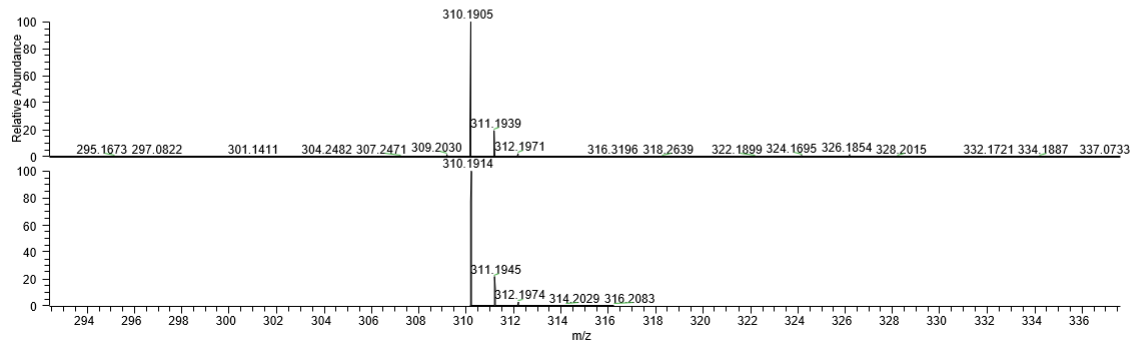
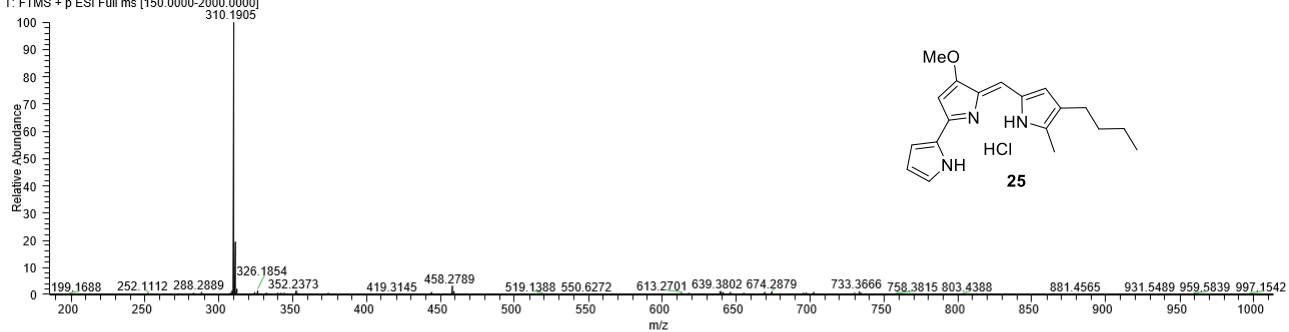
020121\_5#97-147 RT: 0.66-0.99 AV: 51 NL: 1.80E7  
T: FTMS + p ESI Full ms [150.0000-2000.0000]



020121\_3#56-137 RT: 0.43-0.87 AV: 82 NL: 1.73E8  
T: FTMS + p ESI Full ms [150.0000-2000.0000]



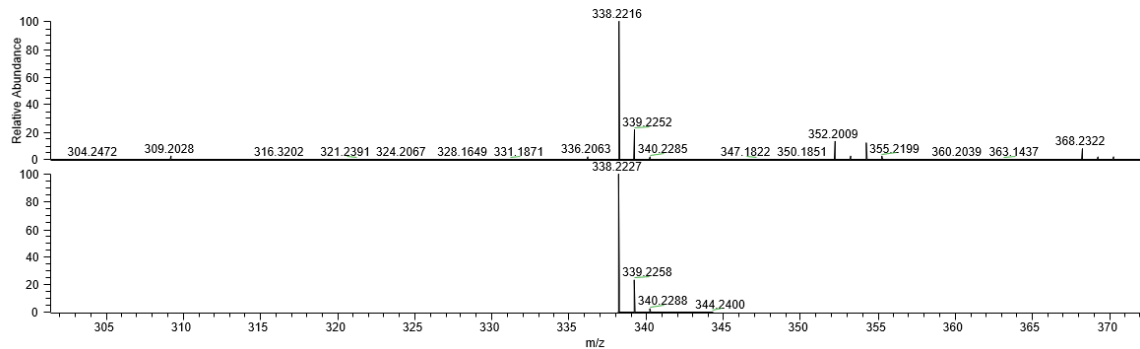
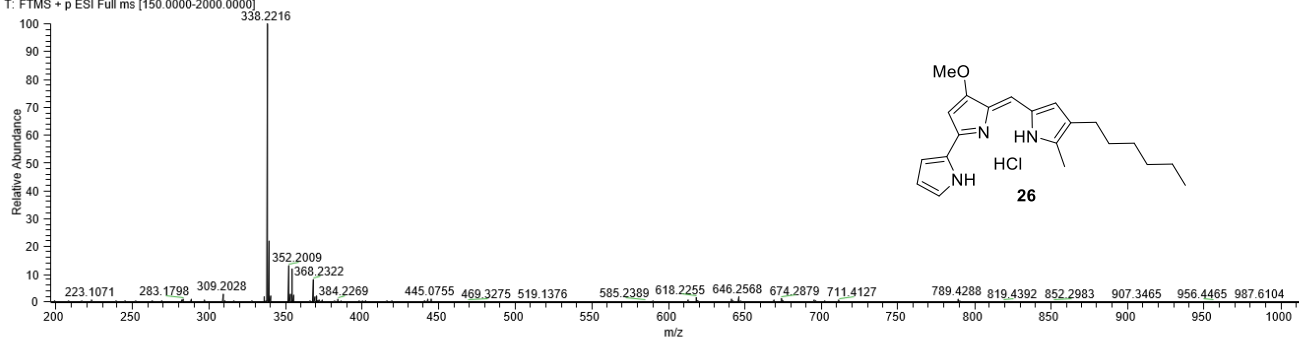
020121\_10#56-124 RT: 0.43-0.81 AV: 69 NL: 8.52E7  
T: FTMS + p ESI Full ms [150.0000-2000.0000]



NL:  
8.52E7  
020121\_10#56-124 RT:  
0.43-0.81 AV: 69 T: FTMS +  
p ESI Full ms  
[150.0000-2000.0000]

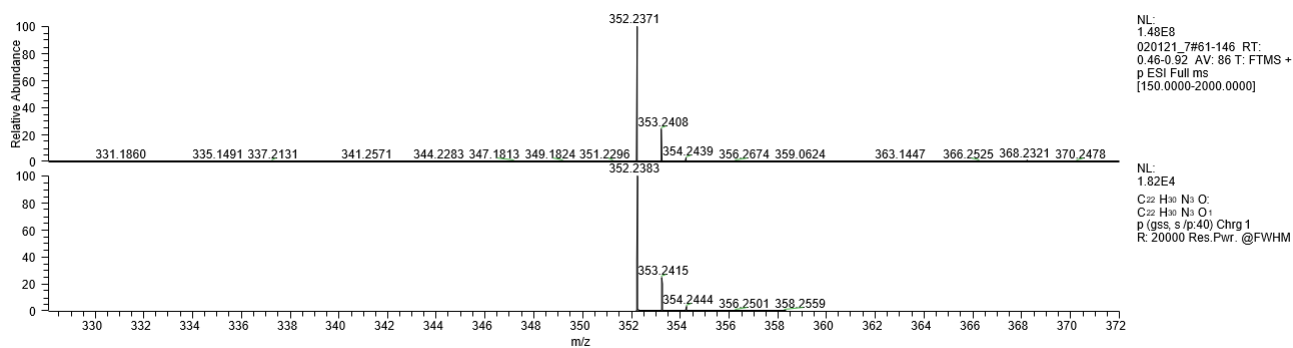
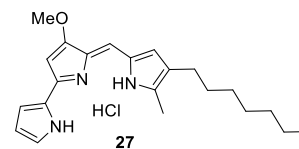
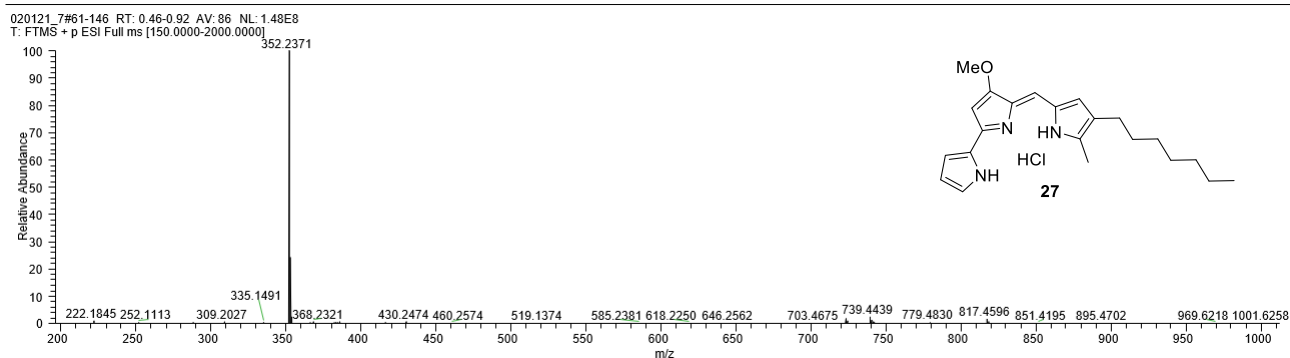
NL:  
1.88E4  
C<sub>19</sub>H<sub>24</sub>N<sub>2</sub>O  
C<sub>19</sub>H<sub>24</sub>N<sub>2</sub>O  
p (gss, s/p:40) Chrg 1  
R: 20000 Res.Pwr. @FWHM

020121\_2#51-120 RT: 0.43-0.86 AV: 70 NL: 2.75E7  
T: FTMS + p ESI Full ms [150.0000-2000.0000]



NL:  
2.75E7  
020121\_2#51-120 RT:  
0.43-0.86 AV: 70 T: FTMS +  
p ESI Full ms  
[150.0000-2000.0000]

NL:  
1.84E4  
C<sub>21</sub>H<sub>28</sub>N<sub>2</sub>O  
C<sub>21</sub>H<sub>28</sub>N<sub>2</sub>O  
p (gss, s/p:40) Chrg 1  
R: 20000 Res.Pwr. @FWHM

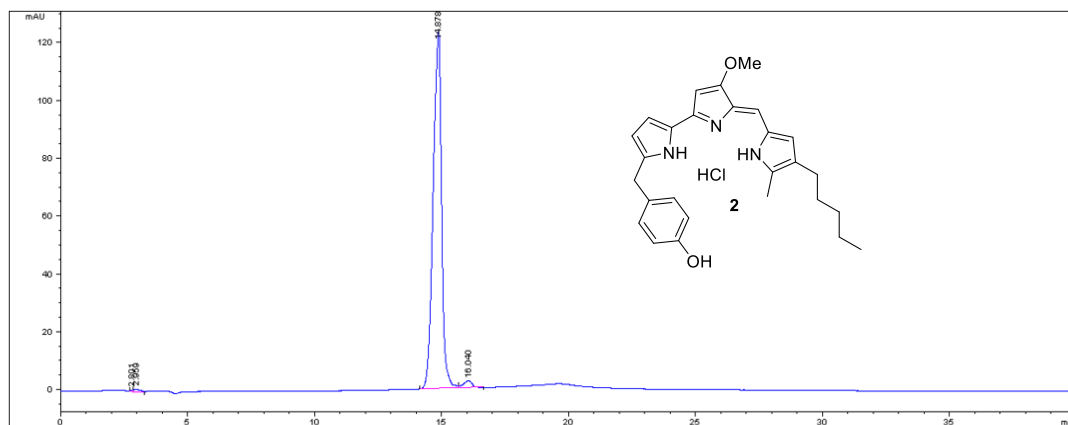


**Table S2.** HPLC gradient used for final compounds

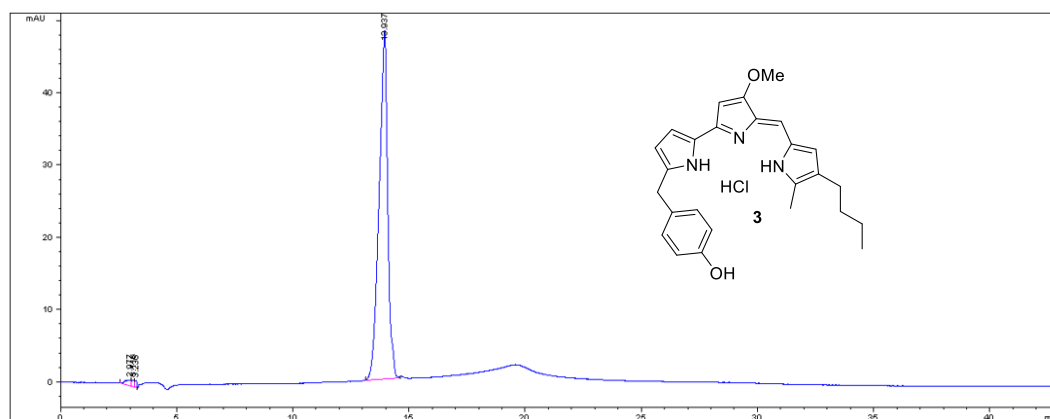
Time (min)	Flow rate (mL/min)	% A <sup>a</sup>	% B <sup>b</sup>
0	0.9	100	0
10	0.9	25	75
15	0.9	0	100
20	0.9	15	85
25	0.9	25	75
40	0.9	100	0

<sup>a</sup>Buffer A: water/acetonitrile/methanol/TFA (50:10:40:0.15)

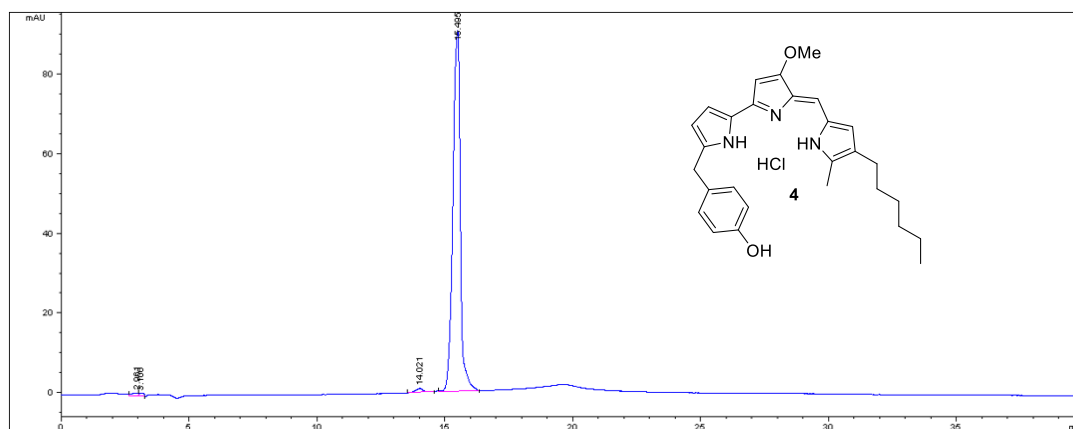
<sup>b</sup>Buffer B: 100% methanol/0.15% TFA



#	Time	Area	Height	Width	Area%	Symmetry
1	2.801	4.8	7.1E-1	0.097	0.165	1.644
2	2.959	17.9	9.8E-1	0.2269	0.611	0.431
3	14.878	2839.8	124.2	0.36	97.168	1.667
4	16.04	60.1	2.4	0.383	2.056	1.194

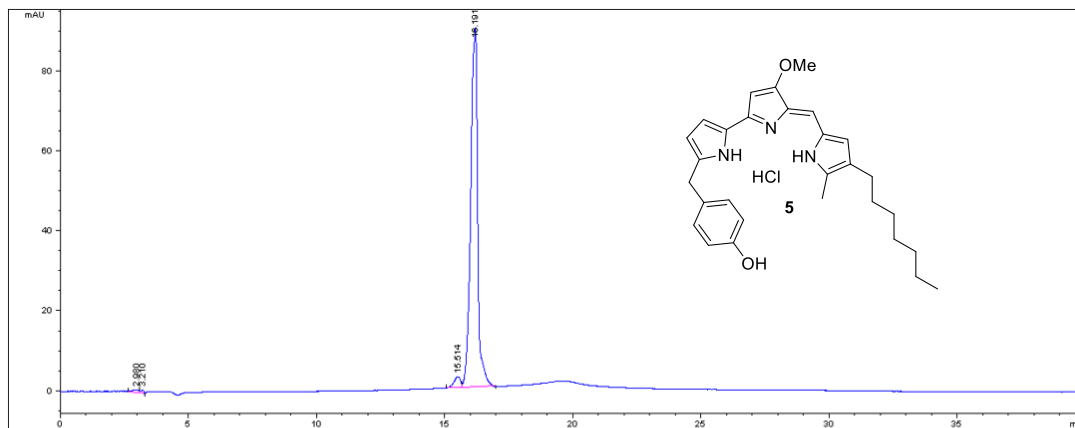


#	Time	Area	Height	Width	Area%	Symmetry
1	2.977	14.8	8.2E-1	0.2351	1.167	3.708
2	3.116	7.9	9.3E-1	0.1273	0.618	0.747
3	3.236	4	9.7E-1	0.0661	0.317	0.772
4	13.937	1244.6	48.2	0.3478	97.898	1.663

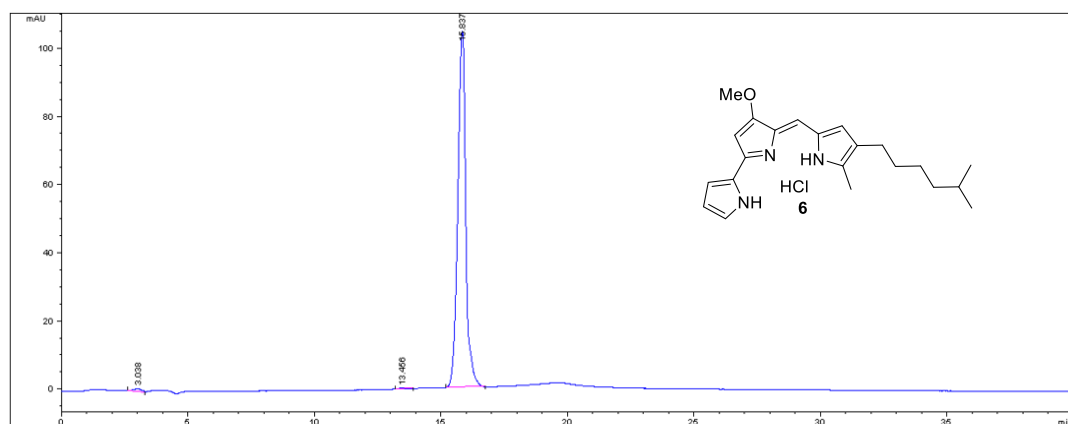


#	Time	Area	Height	Width	Area%	Symmetry
1	2.961	16.4	8.9E-1	0.2327	0.860	4.054
2	3.106	10	8E-1	0.1579	0.526	0.461
3	14.021	24	1	0.3411	1.259	1.046
4	15.495	1855.2	90.6	0.3176	97.355	1.604

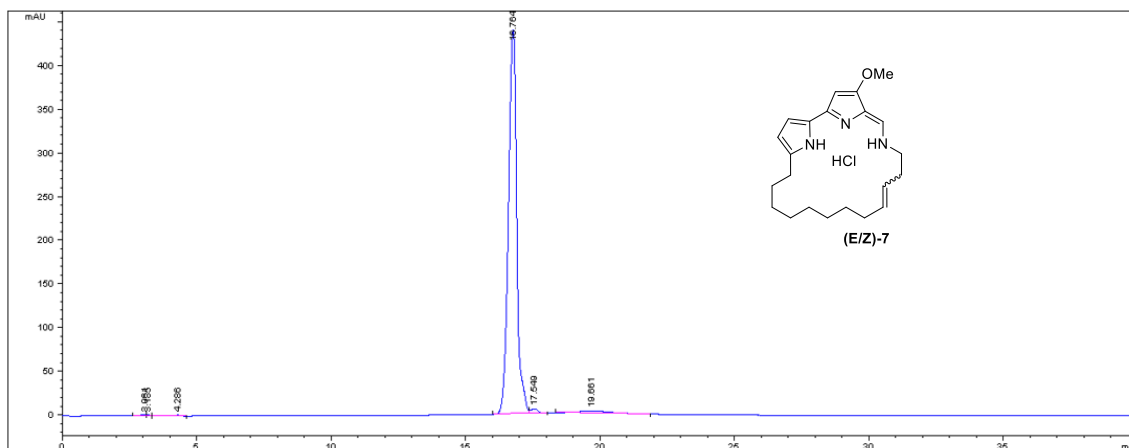




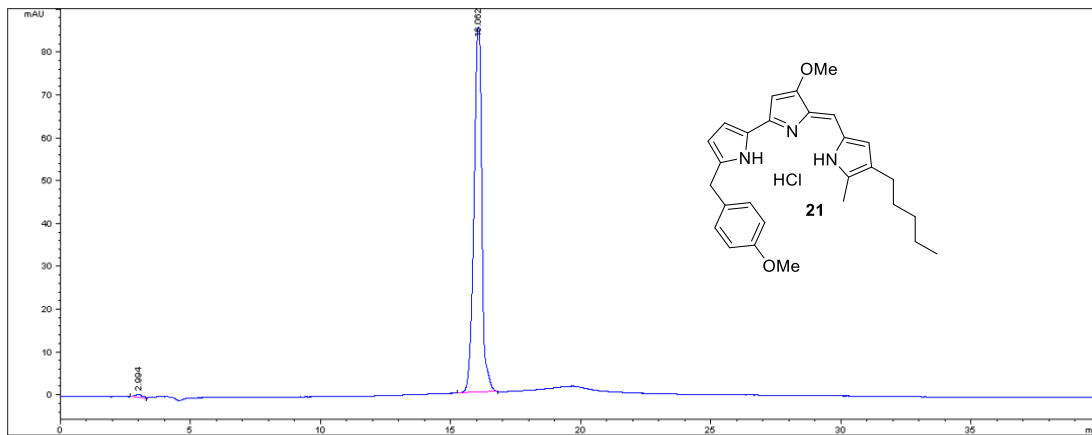
#	Time	Area	Height	Width	Area%	Symmetry
1	2.98	11.8	6.9E-1	0.2194	0.659	1.722
2	3.21	6.6	8.4E-1	0.1097	0.370	2.17
3	15.514	48.8	2.8	0.2687	2.734	1.799
4	16.191	1719	89.9	0.2551	96.236	1.767



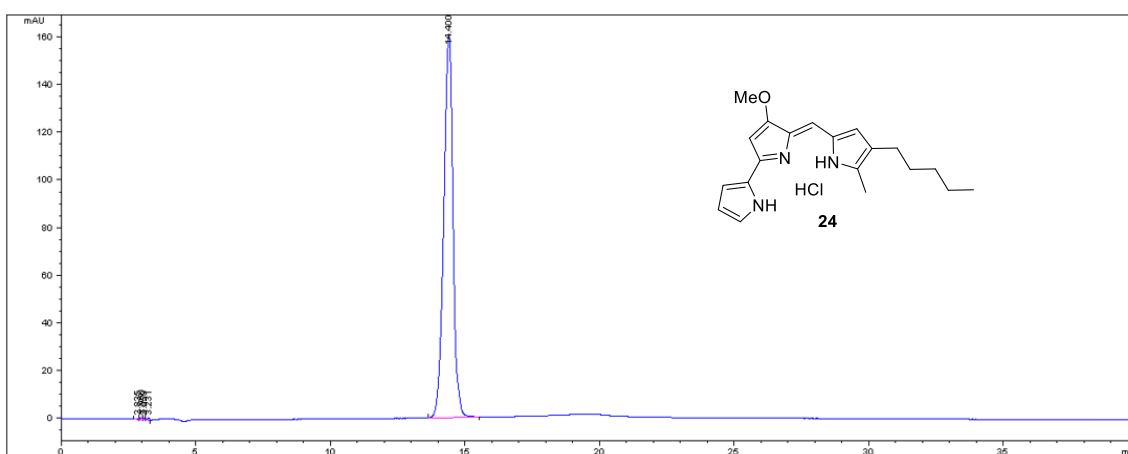
#	Time	Area	Height	Width	Area%	Symmetry
1	3.038	20.6	9.5E-1	0.2777	0.888	1.38
2	13.456	5	2.7E-1	0.2395	0.216	1.452
3	15.837	2296.1	104.4	0.3322	98.897	1.212



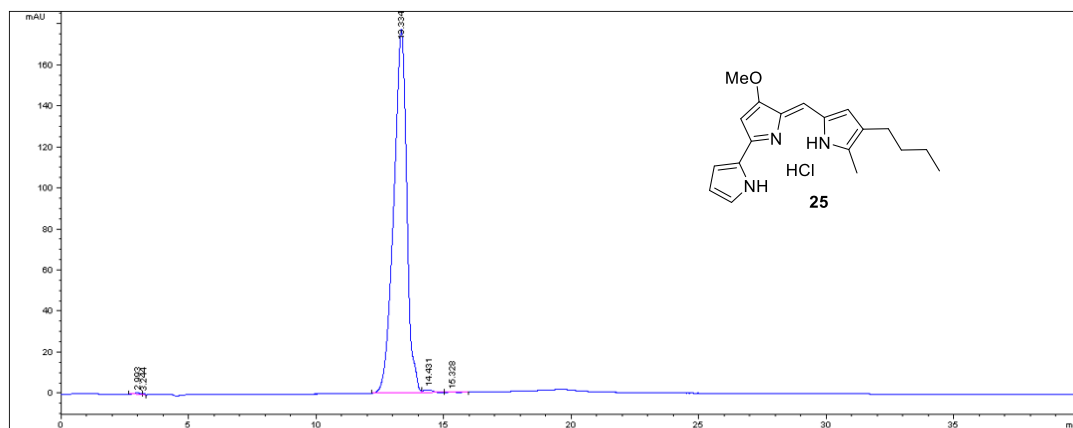
#	Time	Area	Height	Width	Area%	Symmetry
1	3.061	18.5	1.1	0.2244	0.186	3.521
2	3.185	8.2	1	0.1103	0.083	0.468
3	4.286	57.7	1.3	0.591	0.581	3.871
4	16.764	9494.4	439	0.3367	95.604	1.232
5	17.549	97.3	5	0.3023	0.979	0.864
6	19.661	254.9	2.7	1.1119	2.566	0.7



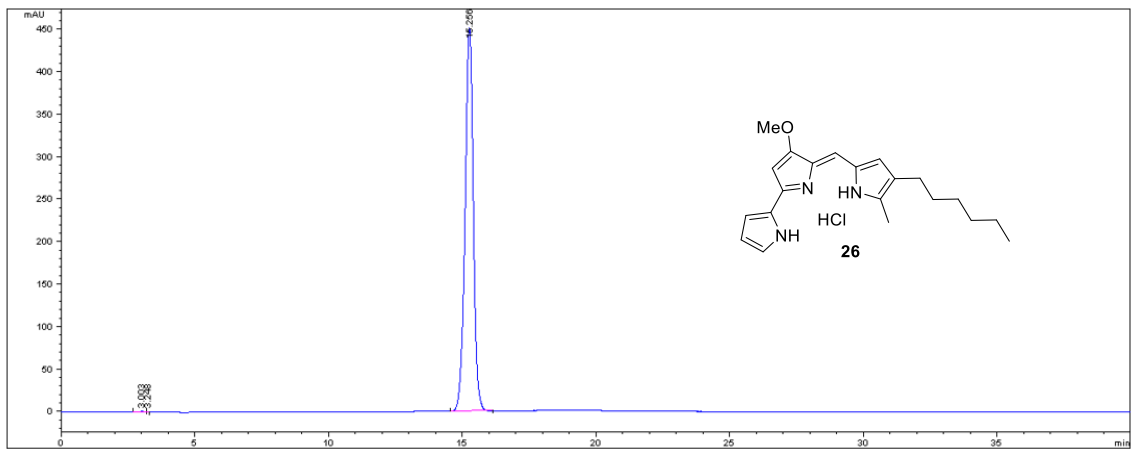
#	Time	Area	Height	Width	Area%	Symmetry
1	2.994	17.9	8.6E-1	0.2732	0.975	0.821
2	16.062	1817.3	85.2	0.3245	99.025	1.245



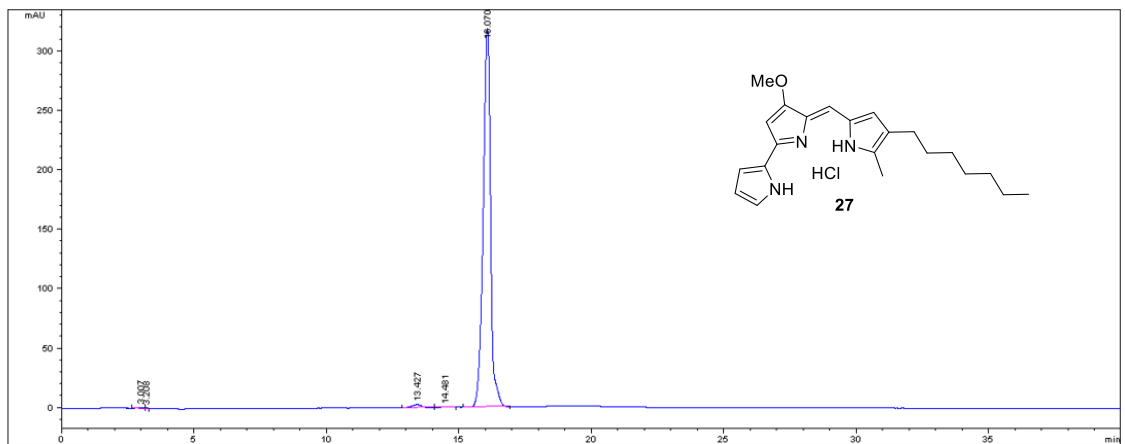
#	Time	Area	Height	Width	Area%	Symmetry
1	2.835	4.4	5.3E-1	0.1254	0.112	2.1
2	2.96	6.3	1E0	0.0907	0.161	1.165
3	3.059	5.6	8.8E-1	0.0923	0.145	0.561
4	3.231	6.8	9.2E-1	0.1062	0.174	1.823
5	14.4	3869.1	161	0.3678	99.408	1.255



#	Time	Area	Height	Width	Area%	Symmetry
1	2.993	20.7	1	0.2591	0.326	1.136
2	3.244	4	7.6E-1	0.0795	0.063	0.963
3	13.334	6294.4	177	0.5371	99.030	1.357
4	14.431	33.9	1.3	0.3508	0.533	1.506
5	15.328	3	2.2E-1	0.1699	0.047	1.697



#	Time	Area	Height	Width	Area%	Symmetry
1	3.003	16.9	9.5E-1	0.2261	0.174	1.176
2	3.248	2.9	6.2E-1	0.0722	0.030	0.972
3	15.256	9706.5	450.7	0.3299	99.796	1.08



#	Time	Area	Height	Width	Area%	Symmetry
1	3.007	16.1	9.3E-1	0.2397	0.255	1.339
2	3.208	3.3	6.8E-1	0.0805	0.053	0.606
3	13.427	69.7	2.7	0.3698	1.101	1.297
4	14.481	9.5	3.7E-1	0.332	0.150	0.849
5	16.07	6233	318.2	0.2984	98.442	1.272