

# **A Thermo-regulated Highly Regioselective Mono and Dihalogenations of Phenols and Anilines in Water Employing New Lewis Base Adducts (LBAs) [DBUBr]<sup>+</sup>Br<sup>-</sup> and [DBUI]<sup>+</sup>I<sup>-</sup> As Green Reagents; A Simple Approach**

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**General Considerations.** All solvents were treated according to standard methods. Commercial reagents were purchased from AVRA, Merck and TCCI and used without further purification unless otherwise stated. Solvents, unless otherwise specified, were reagent grade and distilled once prior to use.  $^1\text{H}$ -NMR spectra were recorded at 400 MHz (Varian);  $^{13}\text{C}$  NMR spectra were recorded at 100 MHz (Varian).  $^1\text{H}$ -NMR chemical shifts are calibrated using residual undeuterated solvents  $\text{CHCl}_3$  ( $\delta = 7.26$  ppm), DMSO ( $\delta = 2.50$  ppm)  $^{13}\text{C}$ -NMR chemical shifts for  $^{13}\text{C}$ -NMR are reported relative to the central  $\text{CHCl}_3$  ( $\delta = 77.16$  ppm) or DMSO ( $\delta = 39.52$  ppm). Coupling constants are given in Hz. Elemental analyses was done using Elementar Vario EL Cube.

### **General Procedure for the preparation of 2 and 3:**

To an ice cold solution of DBU (1.0 equiv) in ethyl acetate (10 mL) was added a solution of reagent (1.1 equiv) in ethyl acetate (5 mL) slowly drop by drop through addition funnel. After addition the reaction mass was warmed to rt and stirred for 30 min. The resultant solid was filtered through Buchner funnel and washed successively with ethyl acetate (10 mL) and ether (10 mL). The solid thus obtained was thoroughly dried under vacuum to furnish different LBAs.

### **General Experimental procedure for monohalogenation:**

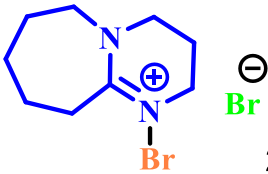
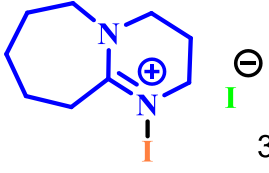
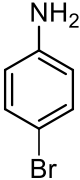
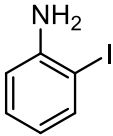
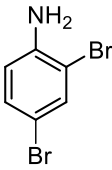
To a stirred solution/suspension of phenol/aniline derivative (5.0 mmol) in water (7 mL) at temperature mentioned in table was added reagent **5** (5.5 mmol) and stirred until completion (TLC). The resultant solid was filtered through syntered disc and washed thoroughly with water (5 mL) and dried under vacuum to produce solid products. The solids were recrystallised from ethanol/ether.

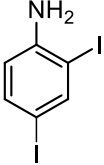
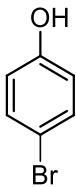
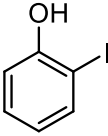
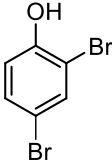
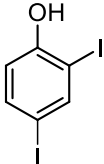
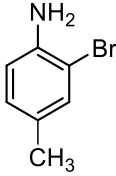
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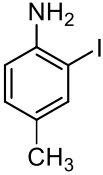
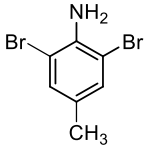
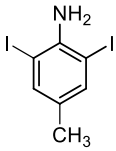
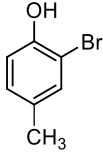
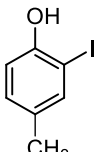
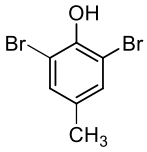
To a stirred solution/suspension of phenol/aniline derivative (5.0 mmol) in water (3 mL) at temperature mentioned in table was added reagent **2/3** (10.5 mmol) and stirred until completion (TLC). The resultant solid was filtered through syntered disc and washed thoroughly with water (5 mL) and dried under vacuum to produce solid products. The solids were recrystallised from ethanol/ether. For liquid products the aqueous layer was extracted into ethylacetate (2 x 10 mL). combined organic layers were dried using  $\text{Na}_2\text{SO}_4$  and evaporated under vacuum to furnish pure products.

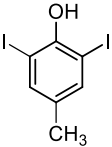
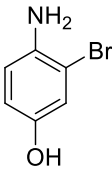
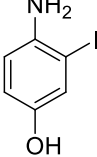
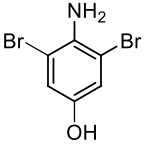
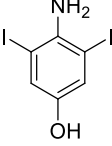
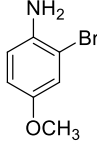
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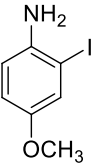
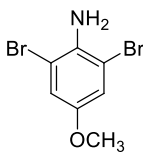
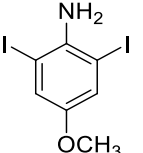
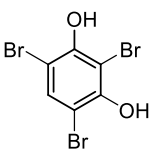
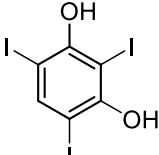
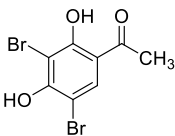
The aqueous layer was basified with aq. NaOH and extracted into ethyl acetate. The organic layers were evaporated under vacuum to obtain DBU which was reused again for preparation of LBAs.

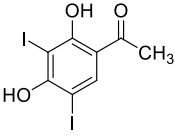
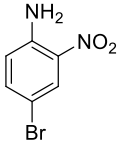
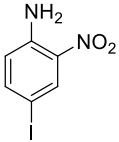
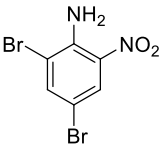
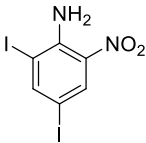
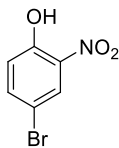
	<p><b>MP</b> = 140-143 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 3.73 – 3.43 (m, 6H), 3.02-2.93 (m, 2H), 2.16 (s, 2H), 1.90–1.66 (m, 6H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> δ 168.0, 167.8, 62.3, 55.6, 55.2, 49.6, 48.9, 29.3, 28.2, 25.7, 22.4, 20.0, 14.0.</p> <p><b>IR (film) ν<sub>max</sub>:</b> 1193, 1253, 1325, 1627, 1724, 2935, 3446 cm<sup>-1</sup>. <b>Mass (ESI-MS):</b> 312.05 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>9</sub>H<sub>16</sub>Br<sub>2</sub>N<sub>2</sub>; C, 34.64; H, 5.17; N, 8.98; Br, 51.21; Found: C, 34.67; H, 5.15; N, 8.96; Br, 51.26.</p>
	<p><b>MP</b> = 161-164 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 3.64 (dd, <i>J</i> = 12.7, 7.2 Hz, 4H), 3.54 (s, 2H), 2.98 (s, 2H), 2.23 – 2.11 (m, 2H), 1.82 (d, <i>J</i> = 23.4 Hz, 6H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> δ 166.2, 55.3, 49.2, 38.4, 33.6, 28.9, 26.7, 24.0, 19.6.</p> <p><b>IR (film) ν<sub>max</sub>:</b> 1319, 1481, 1643, 2935, 3118 cm<sup>-1</sup>.</p> <p><b>Mass (ESI-MS):</b> 405.94 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>9</sub>H<sub>16</sub>I<sub>2</sub>N<sub>2</sub>; C, 26.62; H, 3.97; N, 8.78; I, 62.97; Found: C, 26.58; H, 3.92; N, 8.75; I, 62.96.</p>
	<p><b>MP</b> = 62-64 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> 7.23 (d, <i>J</i> = 8.8 Hz, 2H), 6.56 (d, <i>J</i> = 8.8 Hz, 2H), 3.69 (s, 2H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 145.4, 131.98, 116.68, 110.17.</p> <p><b>Mass (ESI-MS):</b> 172.0 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>6</sub>BrN; C, 41.89; H, 3.52; Br, 46.45; N, 8.14; Found: C, 41.92; H, 3.58; Br, 46.50, N, 8.19.</p>
	<p><b>MP</b> = 56-59 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> 7.87 (d, <i>J</i> = 6.7 Hz, 1H), 7.28 (t, <i>J</i> = 5.9 Hz, 1H), 7.12 (t, <i>J</i> = 7.3 Hz, 1H), 7.07 (d, <i>J</i> = 7.8 Hz, 1H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 134.5, 129.4, 129.2, 125.6, 125.6, 118.7;</p> <p><b>Mass (ESI-MS):</b> 218.95 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>6</sub>IN; C, 32.90; H, 2.76; I, 57.94; N, 6.40; Found: C, 32.47; H, 2.84; I, 57.57, N, 6.77.</p>
	<p><b>MP</b> = 78-79 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> 7.53 (d, <i>J</i> = 2.0 Hz, 1H), 7.19 (dd, <i>J</i> = 8.4 &amp; 2.0 Hz, 1H), 6.64 (d, <i>J</i> = 8.4 Hz, 1H), 4.10 (s, 2H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 149.8, 129.2, 128.0, 124.9, 113.5, 107.0.</p> <p><b>Mass (ES-MS):</b> 250.88 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>5</sub>Br<sub>2</sub>N; C, 41.89; H, 3.52; Br, 46.45; N, 8.14; Found: C, 41.92; H, 3.58; Br, 46.50, N, 8.19.</p>

 <p>4d</p>	<p><b>MP</b> = 93-95 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.53 (d, <i>J</i> = 2.2 Hz, 1H), 7.20 (dd, <i>J</i> = 8.5, 2.2 Hz, 1H), 6.24 (d, <i>J</i> = 8.5 Hz, 1H), 4.09 (s, 2H).</p> <p><b><sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>):</b> δ 146.7, 139.4, 130.2, 119.7, 86.1, 85.3</p> <p><b>Mass (ESI-MS):</b> 344.85 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>5</sub>I<sub>2</sub>N; C, 20.89; H, 1.46; I, 73.58; N, 4.06; Found; C, 20.80; H, 1.49; I, 73.55; N, 4.55.</p>
 <p>5a</p>	<p><b>MP</b> = 65-67 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> 7.32 (d, <i>J</i> = 8.8 Hz, 2H), 6.72 (d, <i>J</i> = 8.8 Hz, 2H), 5.03 (s, 1H);</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 154.7, 132.5, 117.2, 112.8.</p> <p><b>Mass (ESI-MS):</b> 172.0 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>5</sub>BrO; C, 41.65; H, 2.91; Br, 46.18; Found: C, 41.62; H, 2.94; Br, 46.15.</p>
 <p>5b</p>	<p><b>MP</b> = 37-40 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.66 (dd, <i>J</i> = 7.9, 1.4 Hz, 1H), 7.23 (d, <i>J</i> = 1.4 Hz, 1H), 7.00 (dd, <i>J</i> = 8.1, 1.4 Hz, 1H), 6.84 (m, 1H), 5.28 (s, 1H).</p> <p><b><sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>):</b> δ 154.7, 138.2, 130.2, 122.4, 115.1, 85.7.</p> <p><b>Mass [ESI-MS]:</b> 219.94 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>5</sub>IO; C, 32.76; H, 2.29; I, 57.68; Found; C, 32.70; H, 2.30; I, 55.65.</p>
 <p>5c</p>	<p><b>MP</b> = 38-40 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> 7.59 (d, <i>J</i> = 2.0 Hz, 1H), 7.32 (dd, <i>J</i> = 8.8 &amp; 2.0 Hz, 1H), 6.91 (d, <i>J</i> = 8.8 Hz, 1H), 5.49 (s, 1H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 152.7, 133.9, 129.2, 113.5, 110.3.</p> <p><b>Mass (ESI-MS):</b> 249.0 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>4</sub>Br<sub>2</sub>O; C, 28.61; H, 1.60; Br, 63.44; Found: C, 28.62; H, 1.64; Br, 63.38.</p>
 <p>5d</p>	<p><b>MP</b> = 68-70 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.85 (s, 1H), 7.53 (d, <i>J</i> = 6.2 Hz, 1H), 6.29 (d, <i>J</i> = 5.2 Hz, 1H), <b>5.25 (s, 1H).</b></p> <p><b><sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>):</b> δ 153.5, 136.7, 128.8, 115.1, 85.7, 83.2.</p> <p><b>Mass (ESI-MS):</b> 345.84 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>4</sub>I<sub>2</sub>O<sub>2</sub>; C, 20.83; H, 1.17; I, 73.38; Found; C, 20.80; H, 1.19; I, 73.34.</p>
 <p>6a</p>	<p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> 7.23 (s, 1H), 6.90 (d, <i>J</i> = 8.0 Hz, 1H), 6.67 (d, <i>J</i> = 8.0 Hz, 1H), 2.22 (s, 3H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 143.2, 134.5, 131.2, 129.3, 116.7, 109.6, 23.3.</p> <p><b>Mass (ESI-MS):</b> 186.1 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>7</sub>H<sub>8</sub>BrN; C, 45.19; H, 4.33; Br, 42.95; N, 7.53; Found: C, 45.21; H, 4.36; Br, 42.98; N, 7.48.</p>

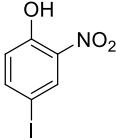
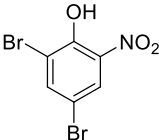
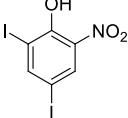
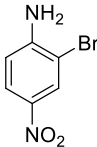
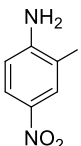
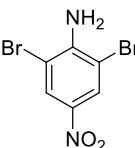
 <p>6b</p>	<p><b>MP</b> = 39-41 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.47 (s, 1H), 6.94 (d, <i>J</i> = 7.1 Hz, 1H), 6.66 (d, <i>J</i> = 8.1 Hz, 1H), 3.13 (s, 2H), 2.20 (s, 3H).</p> <p><b><sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>):</b> δ 144.2, 139.0, 130.0, 129.5, 114.7, 84.3, 19.8.</p> <p><b>Mass (ESI-MS):</b> 232.97 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>7</sub>H<sub>8</sub>IN; C, 36.08; H, 3.46; I, 54.45; N; 6.01; Found; C, 36.11; H, 3.40; I, 54.44; N; 6.06.</p>
 <p>6c</p>	<p><b>MP</b> = 74-75 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> 7.19 (s, 2H), 4.38 (s, 2H), 2.20 (s, 3H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 151.7, 136.8, 133.9, 120.3, 18.7.</p> <p><b>Mass (ESI-MS):</b> 264.9, [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>7</sub>H<sub>7</sub>Br<sub>2</sub>N; C, 31.73; H, 2.66; Br, 60.32; N, 5.29; Found: C, 31.76; H, 2.64; Br, 60.28; N, 5.32.</p>
 <p>6d</p>	<p><b>MP</b> = 85-87 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.25 (s, 2H), 4.38 (s, 2H), 2.25 (s, 3H).</p> <p><b><sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>):</b> δ 139.6, 132.2, 129.4, 85.3, 19.8.</p> <p><b>Mass (ESI-MS):</b> 358.87 [M<sup>+</sup>]</p> <p><b>CHN:</b> Expected for C<sub>7</sub>H<sub>7</sub>I<sub>2</sub>N; C, 23.42; H, 1.97; I, 70.71; N, 3.90; Found; C, 23.40; H, 1.95; I, 70.70; N, 3.94.</p>
 <p>7a</p>	<p><b>MP</b> = 210-214 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> 7.26 (s, 1H), 7.00 (dd, <i>J</i> = 8.2, 1.2 Hz, 1H), 6.90 (d, <i>J</i> = 8.2 Hz, 1H), 5.33 (s, 1H), 2.26 (s, 3H);</p> <p><b>Mass (ESI-MS):</b> 187.03 [M<sup>+</sup>]</p> <p><b>CHN:</b> Expected for C<sub>7</sub>H<sub>7</sub>BrO; C, 44.95; H, 3.77; Br, 42.72; Found: C, 44.98; H, 3.80; Br, 42.70.</p>
 <p>7b</p>	<p><b>MP</b> = 34-36 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.47 (s, 1H), 7.04 (d, <i>J</i> = 8.2 Hz, 1H), 6.87 (d, <i>J</i> = 8.2 Hz, 1H), 5.16 (s, 1H), 2.25 (s, 3H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 154.2, 144.2, 134.3, 130.0, 114.7, 84.3, 19.8.</p> <p><b>Mass (ESI-MS):</b> 233.95 [M<sup>+</sup>]</p> <p><b>CHN:</b> Expected for C<sub>7</sub>H<sub>7</sub>IO; C, 35.92; H, 3.01; I, 54.22; Found: C, 35.90; H, 3.11; I, 54.20.</p>
 <p>7c</p>	<p><b>MP</b> = 46-48 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 7.49 (s, 2H), 5.57 (s, 1H), 2.25 (s, 3H).</p> <p><b>Mass (ESI-MS):</b> 327.77 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>7</sub>H<sub>6</sub>OBr<sub>2</sub>; C, 31.62; H, 2.27; Br, 60.09; Found: 31.63; H, 2.24; Br, 60.10.</p>

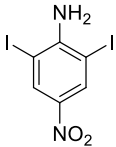
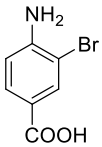
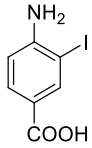
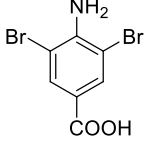
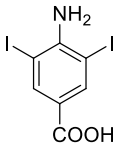
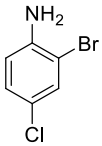
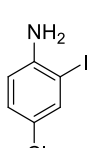
 7d	<p><b>MP</b> = 59-61 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.53 (s, 2H), 5.55 (s, 1H), 2.22 (s, 3H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 139.6, 132.2, 129.4, 82.0, 19.8.</p> <p><b>Mass (ESI-MS):</b> 359.85 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>7</sub>H<sub>6</sub>I<sub>2</sub>O; C, 23.36; H, 1.68; I, 70.52; Found; C, 23.32; H, 1.60; I, 70.55.</p>
 8a	<p><b>MP</b> = 151-153 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> 7.31 (d, <i>J</i> = 2.4 Hz, 1H), 6.97 (d, <i>J</i> = 9.0 Hz, 1H), 6.83 (dd, <i>J</i> = 9.0, 2.4 Hz, 1H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 143.3, 134.5, 122.7, 119.8, 118.9, 116.7.</p> <p><b>Mass (ESI-MS):</b> 188.0 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>6</sub>BrNO; C, 38.33; H, 3.22; Br, 42.50; N, 7.45; Found: C, 38.36; H, 3.24; Br, 42.48, N, 7.41.</p>
 8b	<p><b>MP</b> = 143-146 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.40 (d, <i>J</i> = 2.3 Hz, 1H), 7.07 (dd, <i>J</i> = 8.6, 2.3 Hz, 1H), 6.68 (d, <i>J</i> = 8.6 Hz, 1H), 4.07 (s, 2H).</p> <p><b>Mass (ESI-MS):</b> 234.95 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>6</sub>I NO; C, 30.66; H, 2.57; I, 54.00; N, 5.96; Found; C, 30.62; H, 2.54; I, 54.08; N, 5.98.</p>
 8c	<p><b>MP</b> = 156-158 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> 7.33 (s, 2H);</p> <p><b>Mass (ESI-MS):</b> 266.92 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>5</sub>Br<sub>2</sub>NO; C, 27.00; H, 1.89; Br, 59.87; N, 5.25; Found: C, 27.04; H, 1.93; Br, 59.85, N, 5.28.</p>
 8d	<p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.23 (s, 2H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 153.1, 141.1, 122.6, 120.1.</p> <p><b>Mass (ESI-MS):</b> 360.85 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>5</sub>I<sub>2</sub> NO; C, 19.97; H, 1.40; I, 70.32; N, 3.88; Found: C, 19.99; H, 1.42; I, 70.35; N, 3.89.</p>
 9a	<p><b>MP</b> = 62-64 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 6.99 (d, <i>J</i> = 1.8 Hz, 1H), 6.78 (dd, <i>J</i> = 7.1, 2.3 Hz, 1H), 6.45 (d, <i>J</i> = 8.1 Hz, 1H), 3.78 (s, 3H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 151.7, 141.2, 120.7, 118.2, 117.8, 110.3, 51.0.</p> <p><b>Mass (ESI-MS):</b> 202.05 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>7</sub>H<sub>8</sub>BrNO; C, 41.61; H, 3.99; Br, 39.55; N, 6.93; Found; C, 41.62; H, 3.95; Br, 39.56; N, 6.94.</p>

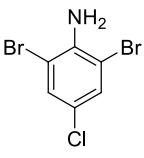
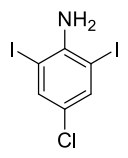
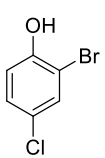
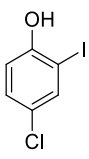
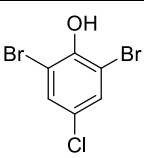
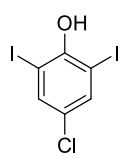
 <p>9b</p>	<p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.42 (s, 1H), 6.75 (d, <i>J</i> = 7.3 Hz, 1H), 6.47 (d, <i>J</i> = 7.3 Hz, 1H), 3.92 (s, 3H).  <b>Mass (ESI-MS):</b> 248.97 [M<sup>+</sup>].  <b>CHN:</b> Expected for C<sub>7</sub>H<sub>8</sub>INO; C, 33.76; H, 3.24; I, 50.96; N, 5.62; Found: C, 33.77; H, 3.23; I, 50.90; N, 5.60.</p>
 <p>9c</p>	<p><b>MP</b> = 80-82 °C.  <b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 6.98 (s, 2H), 3.86 (s, 3H).  <b>Mass (ESI-MS):</b> 280.94 [M<sup>+</sup>].  <b>CHN:</b> Expected for C<sub>7</sub>H<sub>7</sub>Br<sub>2</sub>NO; C, 29.93; H, 2.51; Br, 56.88; N, 4.99; Found: C, 29.91; H, 2.49; Br, 56.85; N, 4.97.</p>
 <p>9d</p>	<p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.26 (s, 2H), 3.82 (s, 3H).  <b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 153.1, 141.0, 122.6, 85.5, 54.4.  <b>Mass (ESI-MS):</b> 374.86 [M<sup>+</sup>].  <b>CHN:</b> Expected for C<sub>7</sub>H<sub>7</sub>I<sub>2</sub>NO; C, 22.426; H, 1.88; I, 67.69; N, 3.74; Found: C, 22.40; H, 1.84; I, 67.71; N, 3.72.</p>
 <p>10a</p>	<p><b>MP</b> = 112-115 °C.  <b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 7.60 (d, <i>J</i> = 4.4 Hz, 1H), 5.94 (s, 2H).  <b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 150.6, 132.3, 115.5, 110.7.  <b>Mass (ESI-MS):</b> 343.77 [M<sup>+</sup>].  <b>CHN:</b> Expected for C<sub>6</sub>H<sub>3</sub>O<sub>2</sub>Br<sub>3</sub>; C, 20.78; H, 0.87; Br, 69.12; Found: C, 20.80; H, 0.89; Br, 69.19.</p>
 <p>10b</p>	<p><b>MP</b> = 140-142 °C.  <b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.94 (s, 1H), 5.86 (s, 2H).  <b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 153.3, 146.6, 86.6, 80.6.  <b>Mass (ESI-MS):</b> 487.73 [M<sup>+</sup>].  <b>CHN:</b> Expected for C<sub>6</sub>H<sub>3</sub>I<sub>3</sub>O<sub>2</sub>; C, 14.77; H, 0.62; I, 78.05; Found: C, 14.78; H, 0.66; I, 78.09.</p>
 <p>11a</p>	<p><b>MP</b> = 96-99 °C.  <b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 7.63 (s, 1H), 6.52 (s, 2H), 2.59 (s, 3H).  <b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> δ 201.92, 160.27, 155.51, 133.32, 115.21, 99.33, 98.87, 26.28.  <b>Mass (ESI-MS):</b> 307.87 [M<sup>+</sup>].  <b>CHN:</b> Expected for C<sub>8</sub>H<sub>6</sub>O<sub>3</sub>Br<sub>2</sub>; C, 31.00; H, 1.95; Br, 51.56; Found: C, 31.08; H, 1.98; Br, 51.50.</p>

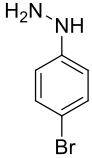
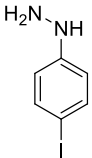
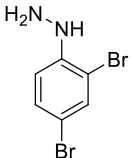
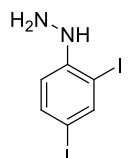
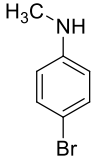
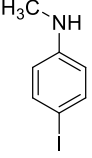
 <p>11b</p>	<p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.89 (s, 1H), 2.59 (s, 3H).  <b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 201.9, 161.2, 160.3, 136.5, 116.9, 81.7, 80.6, 26.3.  <b>Mass (ESI-MS):</b> 403.84 [M<sup>+</sup>].  <b>CHN:</b> Expected for C<sub>8</sub>H<sub>6</sub>I<sub>3</sub>O<sub>3</sub>; C, 23.79; H, 1.50; I, 62.83; Found; C, 23.76; H, 1.50; I, 62.89.</p>
 <p>12a</p>	<p><b>MP = 108-110 °C.</b>  <b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 8.27 (d, <i>J</i> = 2.3 Hz, 1H), 7.43 (dd, <i>J</i> = 8.9, 2.3 Hz, 1H), 6.73 (d, <i>J</i> = 8.9 Hz, 1H), 6.08 (s, 2H).  <b>Mass (ESI-MS):</b> 215.95 [M<sup>+</sup>].  <b>CHN:</b> Expected for C<sub>6</sub>H<sub>5</sub>N<sub>2</sub>O<sub>2</sub>Br; C, 33.21; H, 2.32; N, 12.91; Br, 36.82 Found: C, 33.29; H, 2.34; N, 12.96; Br, 36.93.</p>
 <p>12b</p>	<p><b>MP = 120-123 °C.</b>  <b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 8.17 (s, 1H), 7.78 (dd, <i>J</i> = 8.9, 2.3 Hz, 1H), 6.73 (d, <i>J</i> = 8.9 Hz, 1H), 6.08 (s, 2H).  <b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 141.3, 140.9, 132.9, 128.2, 112.8, 78.7.  <b>Mass (ESI-MS):</b> 263.94 [M<sup>+</sup>].  <b>CHN:</b> Expected for C<sub>6</sub>H<sub>5</sub>IN<sub>2</sub>O<sub>2</sub>; C, 27.29; H, 1.91; I, 48.07; N, 10.61; Found: C, 27.25; H, 1.90; I, 48.17; N, 10.60.</p>
 <p>12c</p>	<p><b>MP = 128-130 °C.</b>  <b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 8.29 (d, <i>J</i> = 2.3 Hz, 1H), 7.81 (d, <i>J</i> = 2.3 Hz, 1H), 6.64 (s, 2H).  <b>Mass (ESI-MS):</b> 293.86 [M<sup>+</sup>].  <b>CHN:</b> Expected for C<sub>6</sub>H<sub>4</sub>N<sub>2</sub>O<sub>2</sub>Br<sub>2</sub>; C, 24.35; H, 1.36; N, 9.47; Br, 54.00 Found: C, 24.40; H, 1.39; N, 9.90; Br, 54.30.</p>
 <p>12d</p>	<p><b>MP = 136-138 °C.</b>  <b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 8.16 (d, <i>J</i> = 2.3 Hz, 2H), 5.25 (s, 2H).  <b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 150.2, 149.4, 140.9, 134.2, 86.8, 86.1.  <b>Mass (ESI-MS):</b> 389.84 [M<sup>+</sup>].  <b>CHN:</b> Expected for C<sub>6</sub>H<sub>4</sub>I<sub>2</sub>N<sub>2</sub>O<sub>2</sub>; C, 18.48; H, 1.03; I, 65.09; N, 7.18; Found; C, 18.50; H, 1.05; I, 65.12; N, 7.17.</p>
 <p>13a</p>	<p><b>MP = 109-112 °C.</b>  <b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 8.52 (d, <i>J</i> = 2.2 Hz, 1H), 7.76 (dd, <i>J</i> = 8.7, 2.3 Hz, 1H), 6.73 (d, <i>J</i> = 8.9 Hz, 1H).  <b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 150.6, 138.7, 136.8, 128.3, 124.2, 117.2.  <b>Mass (ESI-MS):</b> 218.00 [M<sup>+</sup>].  <b>CHN:</b> Expected for C<sub>6</sub>H<sub>4</sub>BrNO<sub>3</sub>; C, 33.06; H, 1.85; N, 9.47; Br, 36.65; Found; C, 33.08; H, 1.83; N, 9.45; Br, 36.62; N, 6.45.</p>

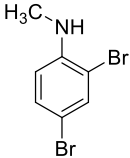
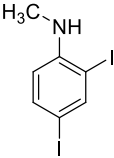
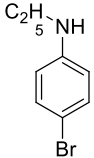
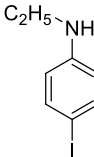
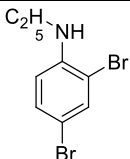
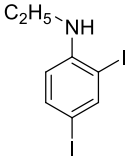


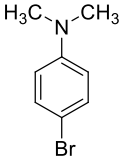
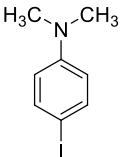
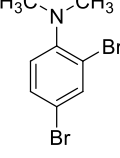
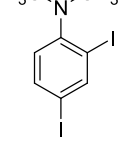
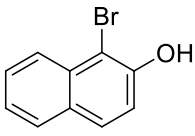
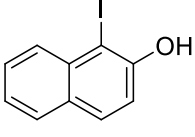
 <p>13b</p>	<p><b>MP</b> = 38-40 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 8.25 (s, 1H), 8.03 (d, <i>J</i> = 2.0 Hz, 1H), 6.93 (d, <i>J</i> = 2.0 Hz, 1H), 6.16 (s, 1H).</p> <p><b>Mass (ESI-MS):</b> 262.94 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>4</sub>INO<sub>3</sub>; C, 27.19; H, 1.52; I, 47.89; N, 5.29; Found C, 27.20; H, 1.50; I, 47.85; N, 5.25.</p>
 <p>13c</p>	<p><b>MP</b> = 139-141 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> 11.05 (s, 1H), 8.25 (d, <i>J</i> = 2.4 Hz, 1H), 7.99 (d, <i>J</i> = 2.4 Hz, 1H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 149.8, 141.3, 140.2, 128.0, 118.4, 116.6.</p> <p><b>Mass (ESI-MS):</b> 296.9 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>3</sub>Br<sub>2</sub>NO<sub>3</sub>; C, 24.27; H, 1.02; Br, 53.83; N, 4.72; Found: C, 24.25; H, 1.05; Br, 53.86; N, 4.69.</p>
 <p>13d</p>	<p><b>MP</b> = 155-157 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 11.05 (s, 1H), 8.25 (t, <i>J</i> = 8.4 Hz, 2H).</p> <p><b>Mass (ESI-MS):</b> 390.82 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>3</sub>I<sub>2</sub>NO<sub>3</sub>; C, 18.44; H, 0.77; I, 64.93; N, 3.58; Found: C, 18.40; H, 0.74; I, 64.98; N, 3.50.</p>
 <p>14a</p>	<p><b>MP</b> = 100-102 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 8.28 (d, <i>J</i> = 2.5 Hz, 1H), 7.93 (dd, <i>J</i> = 8.6, 2.5 Hz, 1H), 6.75 (d, <i>J</i> = 4.4 Hz, 1H), 4.83 (s, 2H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 153.1, 141.0, 131.3, 122.6, 119.6, 117.9.</p> <p><b>Mass (ESI-MS):</b> 215.95 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>5</sub>N<sub>2</sub>O<sub>2</sub>Br; C, 33.21; H, 2.32; N, 12.91; Br, 36.82 Found: C, 33.29; H, 2.34; N, 12.96; Br, 36.93.</p>
 <p>14b</p>	<p><b>MP</b> = 91-93 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 8.37 (d, <i>J</i> = 2.5 Hz, 1H), 8.03 (dd, <i>J</i> = 8.9, 2.5 Hz, 1H), 6.74 (d, <i>J</i> = 4.6 Hz, 1H), 4.83 (s, 2H).</p> <p><b>Mass (ESI-MS):</b> 264.92 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>5</sub>IN<sub>2</sub>O<sub>2</sub>; C, 27.19; H, 1.52; I, 47.89; N, 5.29; Found: C, 27.21; H, 1.54; I, 47.91; N, 5.32.</p>
 <p>14c</p>	<p><b>MP</b> = 203-206 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 8.34 (s, 2H), 5.29 (s, 2H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 155.7, 142.5, 129.0, 118.0</p> <p><b>Mass (ESI-MS):</b> 293.86 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>4</sub>N<sub>2</sub>O<sub>2</sub>Br<sub>2</sub>; C, 24.35; H, 1.362; N, 9.47; Br, 54.00; Found: C, 24.40; H, 1.39; N, 9.90; Br, 54.30.</p>

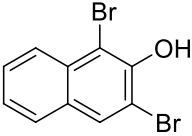
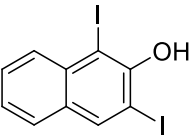
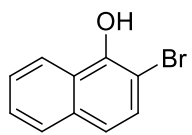
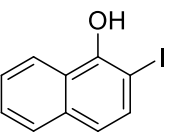
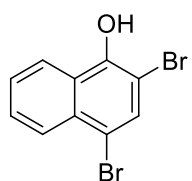
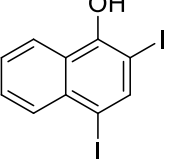
 <p>14d</p>	<p><b>MP</b> = 151-154 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 8.34 (s, 2H), 5.23 (s, 2H).</p> <p><b>Mass (ESI-MS):</b> 390.82 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>3</sub>I<sub>2</sub>N<sub>2</sub>O<sub>2</sub>; C, 18.44; H, 0.77; I, 64.93; N, 3.58; Found: C, 18.42; H, 0.76; I, 64.95; N, 3.61.</p>
 <p>15a</p>	<p><b>MP</b> = 210-212 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 8.18 (d, <i>J</i> = 1.9 Hz, 1H), 7.84 (dd, <i>J</i> = 8.4, 1.9 Hz, 1H), 6.75 (d, <i>J</i> = 8.4 Hz, 1H).</p> <p><b>Mass (ESI-MS):</b> 214.96 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>7</sub>H<sub>6</sub>NO<sub>2</sub>Br; C, 38.92; H, 2.80; N, 6.48; O, 14.81; Br, 36.99; Found: C, 38.98; H, 2.90; N, 6.50; O, 14.98; Br, 37.00</p>
 <p>15b</p>	<p><b>MP</b> = 160-162 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 8.28 (d, <i>J</i> = 1.9 Hz, 1H), 7.84 (dd, <i>J</i> = 8.4, 1.9 Hz, 1H), 6.65 (d, <i>J</i> = 8.4 Hz, 1H).</p> <p><b>Mass (ESI-MS):</b> 262.94 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>7</sub>H<sub>6</sub>INO<sub>2</sub>; C, 31.96; H, 2.30; I, 43.25; N, 5.33; Found: C, 31.91; H, 2.32; I, 43.20; N, 5.39.</p>
 <p>15c</p>	<p><b>MP</b> = 285-286 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 8.34 (s, 2H), 5.29 (s, 2H);</p> <p><b>Mass (ESI-MS):</b> 292.87 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>7</sub>H<sub>5</sub>NO<sub>2</sub>Br<sub>2</sub>; C, 28.51; H, 1.71; N, 4.75; Br, 54.19; Found: C, 28.55; H, 1.75; N, 4.72; Br, 54.21.</p>
 <p>15d</p>	<p><b>MP</b> = 201-203 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 8.34 (s, 2H), 5.29 (s, 2H).</p> <p><b>Mass (ESI-MS):</b> 388.84 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>7</sub>H<sub>5</sub>I<sub>2</sub>NO<sub>2</sub>; C, 21.62; H, 1.30; I, 65.26; N, 3.60; Found: C, 21.66; H, 1.35; I, 65.22; N, 3.68.</p>
 <p>16a</p>	<p><b>MP</b> = 66-68 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> 7.40 (d, <i>J</i> = 2.4 Hz, 1H), 7.07 (dd, <i>J</i> = 8.2 &amp; 2.4 Hz, 1H), 6.68 (d, <i>J</i> = 8.4 Hz, 1H), 4.07 (s, 2H);</p> <p><b>Mass (ESI-MS):</b> 206.4 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>5</sub>BrClN; C, 34.90; H, 2.44; Br, 38.70; Cl, 17.17; N, 6.78; Found: C, 34.86; H, 2.54; Br, 38.68; Cl, 17.19; N, 6.75.</p>
 <p>16b</p>	<p><b>MP</b> = 39-41 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.40 (d, <i>J</i> = 2.3 Hz, 1H), 7.07 (dd, <i>J</i> = 8.6, 2.3 Hz, 1H), 6.68 (d, <i>J</i> = 8.6 Hz, 1H), 4.07 (s, 2H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 142.9, 131.8, 128.4, 123.0, 116.2, 85.1.</p> <p><b>Mass (ESI-MS):</b> 252.92 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>5</sub>INCl; C, 28.43; H, 1.99; I, 50.07; N, 5.53;</p>

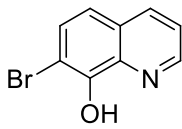
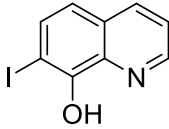
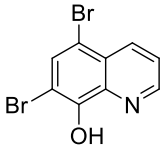
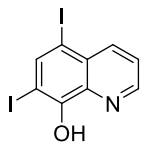
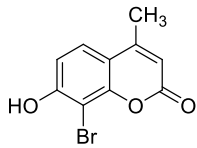
	Found: C, 28.40; H, 1.90; I, 50.55; N; 5.50; Cl.
 <p>16c</p>	<p><b>MP</b> = 94-95 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> 7.39 (s, 2H), 4.54 (s, 2H);</p> <p><b>Mass (ESI-MS):</b> 285.4 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>4</sub>Br<sub>2</sub>ClN; C, 25.25; H, 1.41; Br, 56.00; Cl, 12.42; N, 4.91; Found: C, 25.26; H, 1.44; Br, 55.98; Cl, 12.39; N, 4.88.</p>
 <p>16d</p>	<p><b>MP</b> = 60-62 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.26 (s, 2H), 4.54 (s, 2H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 141.0, 131.3, 122.6, 86.6.</p> <p><b>Mass (ESI-MS):</b> 378.81 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>4</sub>I<sub>2</sub>NCl; C, 19.00; H, 1.06; I, 66.90; N; 3.69; Found; C, 19.04; H, 1.10 I, 66.94; N; 3.60; Cl; 9.39.</p>
 <p>17a</p>	<p><b>MP</b> = 32-36 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.68 (d, <i>J</i> = 2.1 Hz, 1H), 7.21 (dd, <i>J</i> = 8.2, 2.3 Hz, 1H), 6.65 (d, <i>J</i> = 8.5 Hz, 1H).</p> <p><b>Mass (ESI-MS):</b> 207.45 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>4</sub>BrClO; C, 34.74; H, 1.94; Br, 38.52; Cl, 17.09; Found: C, 34.73; H, 1.96; Br, 38.50; Cl, 17.07.</p>
 <p>17b</p>	<p><b>MP</b> = 75-79 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.47 (s, 1H), 7.35(d, <i>J</i> = 8.2 Hz, 1H), 6.82 (d, <i>J</i> = 8.2 Hz, 1H), 5.16 (s, 1H).</p> <p><b>Mass (ESI-MS):</b> 253.90 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>4</sub>ClIO; C, 28.32; H, 1.58; I, 49.87; Found: C, 28.30 H, 1.60; I, 49.90.</p>
 <p>17c</p>	<p><b>MP</b> = 90-92 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.61 (s, 2H).</p> <p><b>Mass (ESI-MS):</b> 286.35 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>3</sub>Br<sub>2</sub>ClO; C, 25.17; H, 1.06; Br, 55.81; Cl, 12.38; Found: C, 25.18; H, 1.04; Br, 55.83; Cl, 12.35;</p>
 <p>17d</p>	<p><b>MP</b> = 102-104 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.66 (s, 2H), 5.71 (s, 1H).</p> <p><b>Mass (ESI-MS):</b> 379.80 [M<sup>+</sup>];</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>3</sub>ClI<sub>2</sub>O; C, 18.95; H, 0.80; I, 66.7; Found: C, 18.90; H, 0.88; I, 66.74.</p>

 <p>18a</p>	<p><b>MP</b> = 105-107 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 7.24 (d, <i>J</i> = 2.0 Hz, 2H), 6.58 (d, <i>J</i> = 3.1 Hz, 2H), 3.66 (s, 2H);</p> <p><b>Mass (ESI-MS):</b> 185.98 [M<sup>+</sup>];</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>7</sub>N<sub>2</sub>Br; C, 38.53; H, 3.77; N, 14.98; Br, 42.72; Found: C, 38.65; H, 3.70; N, 14.97; Br, 42.79.</p>
 <p>18b</p>	<p><b>MP</b> = 102-106 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.24 – 7.21 (m, 2H), 6.58 – 6.55 (m, 2H), 3.68 (s, 2H). <b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 156.2, 137.6, 113.4.</p> <p><b>Mass (ESI-MS):</b> 233.97 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>7</sub>IN<sub>2</sub>; C, 30.79; H, 3.01; I, 54.22; N, 11.97; Found: C, 30.81; H, 3.05; I, 54.21; N, 11.90.</p>
 <p>18c</p>	<p><b>MP</b> = 57-60 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 7.53 (d, <i>J</i> = 2.2 Hz, 1H), 7.20 (dd, <i>J</i> = 8.5, 2.2 Hz, 1H), 6.64 (d, <i>J</i> = 8.5 Hz, 1H), 4.09 (s, 2H);</p> <p><b>Mass (ESI-MS):</b> 263.89 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>6</sub>N<sub>2</sub>Br<sub>2</sub>; C, 27.10; H, 2.27; N, 10.53; Br, 60.09; Found: C, 27.19; H, 2.30; N, 10.56; Br, 60.11.</p>
 <p>18d</p>	<p><b>MP</b> = 110-112 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.52 (dd, <i>J</i> = 10.8, 2.4 Hz, 1H), 7.20 (dt, <i>J</i> = 8.5, 4.3 Hz, 1H), 6.64 (d, <i>J</i> = 8.5 Hz, 1H), 4.09 (s, 2H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 148.6, 140.1, 137.6, 118.5, 85.6, 81.8.</p> <p><b>Mass (ESI-MS):</b> 359.86 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>6</sub>H<sub>6</sub>I<sub>2</sub>N<sub>2</sub>; C, 20.02; H, 1.68; I, 70.52; N, 7.78; Found: C, 20.10; H, 1.66; I, 70.55; N, 7.55.</p>
 <p>19a</p>	<p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 7.43 (d, <i>J</i> = 8.8 Hz, 2H), 6.40 (d, <i>J</i> = 8.7 Hz, 2H), 2.81 (s, 3H);</p> <p><b>Mass (ESI-MS):</b> 184.96 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>7</sub>H<sub>8</sub>NBr; C, 45.19; H, 4.33; N, 7.53; Br, 42.95; Found: C, 45.15; H, 4.30; N, 7.54; Br, 42.90.</p>
 <p>19b</p>	<p><b>MP</b> = 30-33 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.43 (d, <i>J</i> = 8.8 Hz, 2H), 6.40 (d, <i>J</i> = 8.7 Hz, 2H), 2.81 (s, 3H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 148.6, 140.1, 118.5, 77.7, 31.4.</p> <p><b>Mass (ESI-MS):</b> 232.97 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>7</sub>H<sub>8</sub>IN; C, 36.08; H, 3.46; I, 54.45; N, 6.01; Found: C, 36.10; H, 3.43; I, 54.47; N, 6.10.</p>

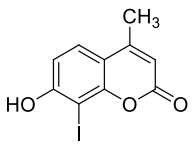
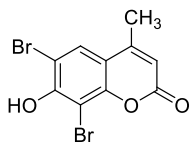
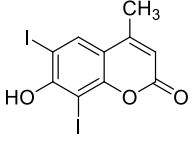
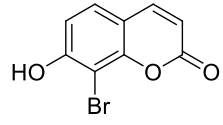
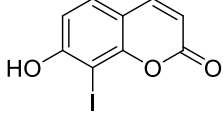
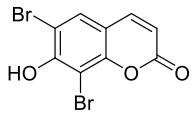
 <p>19c</p>	<p><b>MP</b> = 42-44 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 7.53 (d, <i>J</i> = 2.3 Hz, 1H), 7.26 (s, 1H), 6.48 (d, <i>J</i> = 8.7 Hz, 1H), 4.36 (s, 1H), 2.87 (s, 3H);</p> <p><b>Mass (ESI-MS):</b> 262.89 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>7</sub>H<sub>7</sub>NBr<sub>2</sub>; C, 31.73; H, 2.66; N, 5.29; Br. 60.32; Found: C, 31.70; H, 2.65; N, 5.30; Br. 60.34.</p>
 <p>19d</p>	<p><b>MP</b> = 80-82 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.75 (d, <i>J</i> = 2.3 Hz, 1H), 7.30 (dd, <i>J</i> = 8.7, 2.3 Hz, 1H), 6.47 (d, <i>J</i> = 8.2 Hz, 1H), 4.36 (s, 1H), 2.87 (s, 3H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 149.2, 145.1, 137.2, 116.3, 84.7, 82.8, 29.7.</p> <p><b>Mass (ESI-MS):</b> 358.87 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>7</sub>H<sub>7</sub>I<sub>2</sub>N; C, 23.42; H, 1.97; I, 70.71; N, 3.90; Found: C, 23.40; H, 1.94; I, 70.70; N, 3.94.</p>
 <p>20a</p>	<p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.39 (d, <i>J</i> = 8.7 Hz, 2H), 6.51 (d, <i>J</i> = 8.7 Hz, 2H), 3.12 (q, <i>J</i> = 7.1 Hz, 2H), 1.24 (t, <i>J</i> = 7.1 Hz, 3H).</p> <p><b>Mass (ESI-MS):</b> 200.08 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>8</sub>H<sub>10</sub>BrN; C, 48.02; H, 5.04; N, 7.00; Br. 39.94; Found: C, 48.39; H, 5.06; N, 7.02; Br. 39.96.</p>
 <p>20b</p>	<p><b>MP</b> = 50-52 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.41 (d, <i>J</i> = 8.7 Hz, 2H), 6.40 (d, <i>J</i> = 8.7 Hz, 2H), 3.12 (q, <i>J</i> = 7.1 Hz, 2H), 1.24 (t, <i>J</i> = 7.1 Hz, 3H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 143.3, 134.5, 116.7, 45.9, 29.7.</p> <p><b>Mass (ESI-MS):</b> 246.99 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>8</sub>H<sub>10</sub>IN; C, 38.89; H, 4.08; I, 51.36; N, 5.97; Found: C, 38.92; H, 4.10; I, 51.30; N, 5.95.</p>
 <p>20c</p>	<p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.78 (d, <i>J</i> = 2.1 Hz, 1H), 7.20 (dd, <i>J</i> = 8.2, 2.3 Hz, 1H), 6.38 (d, <i>J</i> = 8.7 Hz, 1H), 3.12 (q, <i>J</i> = 7.1 Hz, 2H), 1.24 (t, <i>J</i> = 7.1 Hz, 3H).</p> <p><b>Mass (ESI-MS):</b> 278.97 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>8</sub>H<sub>9</sub>Br<sub>2</sub>N; C, 34.44; H, 3.25; N, 7.00; Br. 57.28; Found: C, 34.45; H, 3.22; N, 6.96; Br. 57.31.</p>
 <p>20d</p>	<p><b>MP</b> = 65-67 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.53 (d, <i>J</i> = 2.3 Hz, 1H), 7.29 (dd, <i>J</i> = 8.7, 2.3 Hz, 1H), 6.48 (d, <i>J</i> = 8.7 Hz, 1H), 3.12 (q, <i>J</i> = 7.1 Hz, 2H), 1.24 (t, <i>J</i> = 7.1 Hz, 3H).</p> <p><b>Mass (ESI-MS):</b> 372.88 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>8</sub>H<sub>9</sub>I<sub>2</sub>N; C, 25.76; H, 2.43; I, 68.05; N, 3.76; Found: C, 25.79; H, 2.40; I, 68.10; N, 3.79.</p>

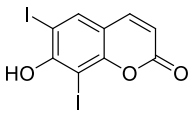
 <p>21a</p>	<p><b>MP</b> = 52-54 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 7.43 (d, <i>J</i> = 2.1 Hz, 2H), 6.65 (d, <i>J</i> = 9.0 Hz, 2H), 2.92 (s, 6H);</p> <p><b>Mass (ESI-MS):</b> 199.00 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for CHN: Expected for C<sub>8</sub>H<sub>10</sub>NBr; C, 48.02; H, 5.04; N, 7.00; Br, 39.94; Found: C, 48.05; H, 5.06; N, 7.10; Br, 39.99.</p>
 <p>21b</p>	<p><b>MP</b> = 63-65 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 7.47 (d, <i>J</i> = 2.1 Hz, 2H), 6.49 (d, <i>J</i> = 9.0 Hz, 2H), 2.92 (s, 6H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 150.0, 137.5, 114.7, 77.4, 40.3.</p> <p><b>Mass (ESI-MS):</b> 246.99 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>8</sub>H<sub>10</sub>IN; C, 38.89; H, 4.08; I, 51.36; N, 5.67; Found: C, 38.80; H, 4.08; I, 51.39; N, 5.60.</p>
 <p>21c</p>	<p><b>MP</b> = 52-54 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 7.31 – 7.28 (m, 1H), 6.93 (d, <i>J</i> = 8.6 Hz, 1H), 6.60 – 6.56 (m, 1H), 2.92 (s, 6H).</p> <p><b>Mass (ESI-MS):</b> 199.00 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>8</sub>H<sub>9</sub>NBr<sub>2</sub>; C, 48.02; H, 5.04; N, 7.00; Br, 39.94; Found: C, 48.05; H, 5.06; N, 7.10; Br, 39.99.</p>
 <p>21d</p>	<p><b>MP</b> = 70-72 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> 7.53 (d, <i>J</i> = 2.2 Hz, 1H), 7.29 (dd, <i>J</i> = 5.2, 2.6 Hz, 1H), 6.48 (d, <i>J</i> = 8.7 Hz, 1H), 2.87 (s, 6H).</p> <p><b>Mass (ESI-MS):</b> 372.88 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>8</sub>H<sub>9</sub>I<sub>2</sub>N; C, 25.76; H, 2.43; I, 68.05; N, 3.76; Found; C, 25.74; H, 2.40; I, 68.15; N, 3.70.</p>
 <p>25a</p>	<p><b>MP</b> = 79-80 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 7.92 (dd, <i>J</i> = 14.7, 5.3 Hz, 2H), 7.69 – 7.57 (m, 3H), 7.28 (d, <i>J</i> = 5.7 Hz, 1H), 5.93 (s, 1H).</p> <p><b>Mass (ESI-MS):</b> 223.1 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>10</sub>H<sub>7</sub>BrO; C, 53.84; H, 3.16; Br, 35.82; Found: C, 53.87; H, 3.14; Br, 35.78.</p>
 <p>25b</p>	<p><b>MP</b> = 108-110 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.93 (d, <i>J</i> = 8.5 Hz, 1H), 7.76 – 7.72 (m, 2H), 7.55 (t, <i>J</i> = 7.7 Hz, 1H), 7.38 (t, <i>J</i> = 7.5 Hz, 1H), 7.26 (d, <i>J</i> = 1.5 Hz, 1H), 5.79 (s, 1H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 153.7, 134.7, 131.6, 130.2, 129.66, 128.2, 124.1 116.4, 86.2.</p> <p><b>Mass (ESI-MS):</b> 269.95 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>10</sub>H<sub>7</sub>IO; C, 44.47; H, 2.61; I, 46.99; Found; C, 44.44; H, 2.69; I, 46.90.</p>

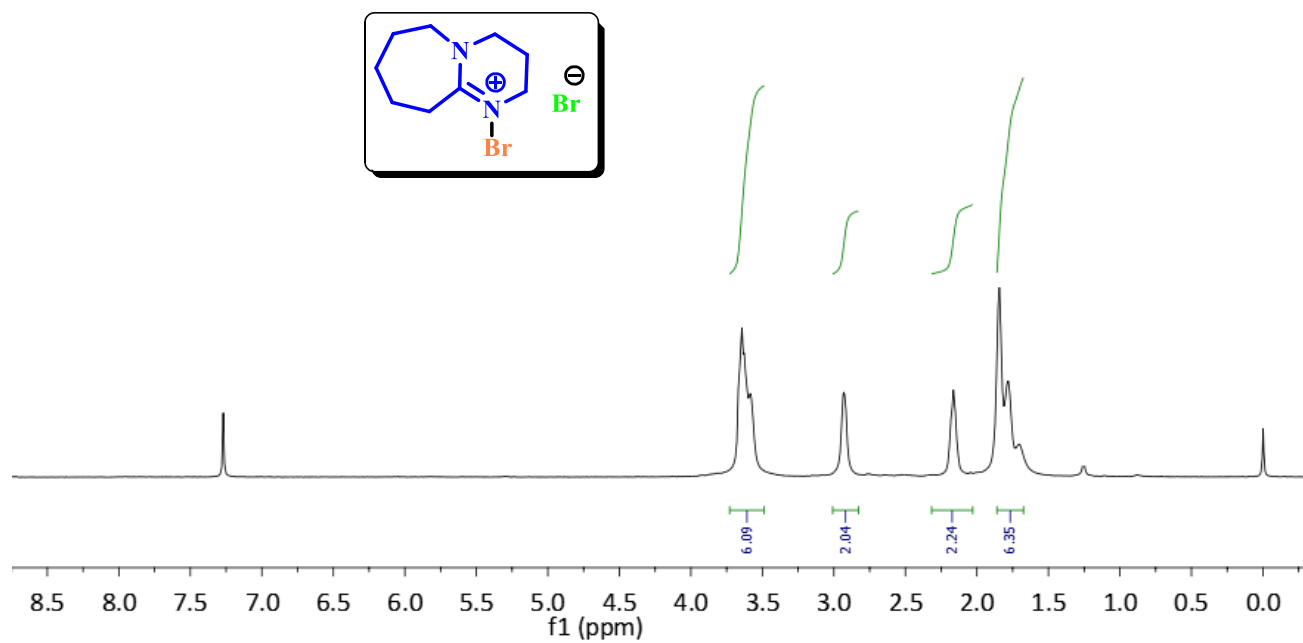
 25c	<p><b>MP</b> = 105-106 °C.  <b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>)</b>: 8.16 (d, <i>J</i> = 1.6 Hz, 1H), 7.81-7.79 (m, 2H), 7.65-7.61 (m, 2H), 5.93 (s, 1H);  <b>Mass (ESI-MS)</b>: 301.9 [M<sup>+</sup>].  <b>CHN</b>: Expected for C<sub>10</sub>H<sub>6</sub>Br<sub>2</sub>O; C, 39.78; H, 2.00; Br, 52.92; Found: C, 39.81; H, 2.04; Br, 52.89.</p>
 25d	<p><b>MP</b> = 120-123 °C.  <b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)</b>: δ 7.92 (dd, <i>J</i> = 14.7, 5.3 Hz, 2H), 7.69-7.62 (m, 2H), 7.29 (s, 1H), 5.93 (s, 1H).  <b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>)</b>: 150.6, 132.3, 129.7, 129.4, 127.9, 125.4, 124.2, 85.2, 82.3.  <b>Mass (ESI-MS)</b>: 395.85 [M<sup>+</sup>].  <b>CHN</b>: Expected for C<sub>10</sub>H<sub>6</sub>I<sub>2</sub>O; C, 30.33; H, 1.53; I, 64.10; Found: C, 30.37; H, 1.55; I, 64.08.</p>
 26a	<p><b>MP</b> = 43-45 °C.  <b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>)</b>: δ 8.03 (d, <i>J</i> = 8.5 Hz, 1H), 7.79 – 7.73 (m, 2H), 7.57 (t, <i>J</i> = 7.7 Hz, 1H), 7.39 (t, <i>J</i> = 7.5 Hz, 1H), 7.27 (d, <i>J</i> = 7.5 Hz, 1H), 5.92 (s, 1H).  <b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>)</b>: 150.6, 134.1, 132.3, 128.3, 127.9, 126.8, 124.2, 122.6, 121.3, 106.2.  <b>Mass (ESI-MS)</b>: 221.97 [M<sup>+</sup>].  <b>CHN</b>: Expected for C<sub>10</sub>H<sub>7</sub>OBr; C, 53.84; H, 3.16; O, 7.17; Br, 35.82; Found: C, 53.88; H, 3.11; O, 7.19; Br, 35.80.</p>
 26b	<p><b>MP</b> = 92-96 °C.  <b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)</b>: δ 8.23 (d, <i>J</i> = 8.5 Hz, 1H), 8.06 (dd, <i>J</i> = 15.8, 8.5 Hz, 2H), 7.57 (t, <i>J</i> = 7.7 Hz, 1H), 7.39 (t, <i>J</i> = 7.5 Hz, 1H), 7.27 (d, <i>J</i> = 4.8 Hz, 1H), 5.91 (s, 1H).  <b>Mass (ESI-MS)</b>: 269.95 [M<sup>+</sup>].  <b>CHN</b>: Expected for C<sub>10</sub>H<sub>7</sub>IO; C, 44.47; H, 2.61; I, 46.99; Found: C, 44.44; H, 2.69; I, 46.90.</p>
 26c	<p><b>MP</b> = 105-107 °C.  <b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>)</b>: δ 8.25 (d, <i>J</i> = 8.4 Hz, 1H), 8.13 (d, <i>J</i> = 8.4 Hz, 1H), 7.80 (s, 1H), 7.61-7.56 (m, 2H), 5.97 (s, 1H).  <b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>)</b>: 150.6, 132.3, 129.7, 129.4, 127.9, 125.4, 124.2, 119.9, 114.2, 106.2.  <b>Mass (ESI-MS)</b>: 299.88 [M<sup>+</sup>]; 301.88 (M+2) 303.88 (M+4);  <b>CHN</b>: Expected for C<sub>10</sub>H<sub>6</sub>OBr<sub>2</sub>; C, 39.78; H, 2.00; O, 5.30; Br, 52.9; Found: C, 39.80; H, 2.10; O, 5.35; Br, 52.99.</p>
 26d	<p><b>MP</b> = 110-112 °C.  <b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)</b>: δ 8.25 (d, <i>J</i> = 8.4 Hz, 1H), 8.13 (d, <i>J</i> = 8.4 Hz, 1H), 7.80 (s, 1H), 7.59 (dd, <i>J</i> = 14.3, 3.6 Hz, 2H), 5.97 (s, 1H).  <b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>)</b>: 163.7, 148.3, 136.9, 132.3, 129.7, 129.4, 128.3, 123.4, 92.8, 76.7.  <b>Mass (ESI-MS)</b>: 395.85 [M<sup>+</sup>].  <b>CHN</b>: Expected for C<sub>10</sub>H<sub>6</sub>I<sub>2</sub>O; C, 30.33; H, 1.53; I, 64.10; Found: C,</p>

	30.37; H, 1.55; I, 64.08.
 <p>27a</p>	<p><b>MP</b> = 140-142 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 8.77 (dd, <i>J</i> = 4.3, 1.5 Hz, 1H), 8.15 (dd, <i>J</i> = 8.3, 1.5 Hz, 1H), 7.79 (d, <i>J</i> = 4.4 Hz, 1H), 7.48 (dd, <i>J</i> = 8.3, 4.3 Hz, 1H), 7.14 (d, <i>J</i> = 8.8 Hz, 1H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 152.5, 150.6, 140.2, 132.3, 129.4, 125.4, 124.2, 121.7, 106.2.</p> <p><b>Mass (ESI-MS):</b> 222.96 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>9</sub>H<sub>6</sub>NBrO; C, 48.25; H, 2.70; N, 6.25; Br. 35.66; Found: C, 48.30; H, 2.69; N, 6.24; Br. 35.62.</p>
 <p>27b</p>	<p><b>MP</b> = 150-153 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 8.77 (dd, <i>J</i> = 4.3, 1.5 Hz, 1H), 8.15 (dd, <i>J</i> = 8.3, 1.5 Hz, 1H), 7.82 (m, 1H), 7.48 (dd, <i>J</i> = 8.3, 4.3 Hz, 1H), 7.14 (d, <i>J</i> = 8.8 Hz, 1H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 153.0, 148.6, 137.5, 136.2, 135.2, 128.1, 122.3, 119.3, 77.5.</p> <p><b>Mass (ESI-MS):</b> 270.95 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>9</sub>H<sub>6</sub>ION; C, 39.88; H, 2.23; I, 46.82; N, 5.17; Found: C, 39.80; H, 2.25; I, 46.79; N, 5.11.</p>
 <p>27c</p>	<p><b>MP</b> = 197-199 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> 8.82 (dd, <i>J</i> = 4.0, 1.2 Hz, 1H), 8.47 (dd, <i>J</i> = 8.2, 1.2 Hz, 1H), 7.91 (s, 1H), 7.59 (dd, <i>J</i> = 8.2, 4.0 Hz, 1H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 153.1, 150.6, 135.0, 132.3, 129.7, 129.4, 124.2, 121.0, 120.4.</p> <p><b>Mass (ESI-MS):</b> 302.9 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>9</sub>H<sub>5</sub>Br<sub>2</sub>NO; C, 35.68; H, 1.66; Br, 52.75; N, 4.62; O, 5.28; Found: C, 35.71; H, 1.65; Br, 52.78; N, 4.60; O, 5.25.</p>
 <p>27d</p>	<p><b>MP</b> = 202-205 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 8.74 (d, <i>J</i> = 4.2 Hz, 1H), 8.32 (s, 1H), 8.29 (d, <i>J</i> = 1.2 Hz, 1H), 7.56 (dd, <i>J</i> = 8.5, 4.2 Hz, 1H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 153.0, 147.8, 146.1, 137.5, 136.2, 128.2, 85.7, 80.7.</p> <p><b>Mass (ESI-MS):</b> 396.8 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>9</sub>H<sub>5</sub>I<sub>2</sub>ON; C, 27.23; H, 1.27; I, 63.94; N, 3.53; Found: C, 27.24; H, 1.20; I, 63.89; N, 3.59.</p>
 <p>28a</p>	<p><b>MP</b> = 215-217 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> δ 7.51 (d, <i>J</i> = 8.7 Hz, 1H), 7.00 (d, <i>J</i> = 5.1 Hz, 1H), 6.16 (s, 1H), 5.95 (s, 1H), 2.42 (s, 3H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 162.3, 157.0, 152.9, 148.8, 130.8, 114.2, 112.8, 107.8, 21.4.</p> <p><b>Mass (ESI-MS):</b> 254.99 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>10</sub>H<sub>7</sub>O<sub>3</sub>Br; C, 46.90; H, 3.94; N, 5.47; Br, 31.20; Found: C, 46.96; H, 3.90; N, 5.49; Br, 31.25.</p>

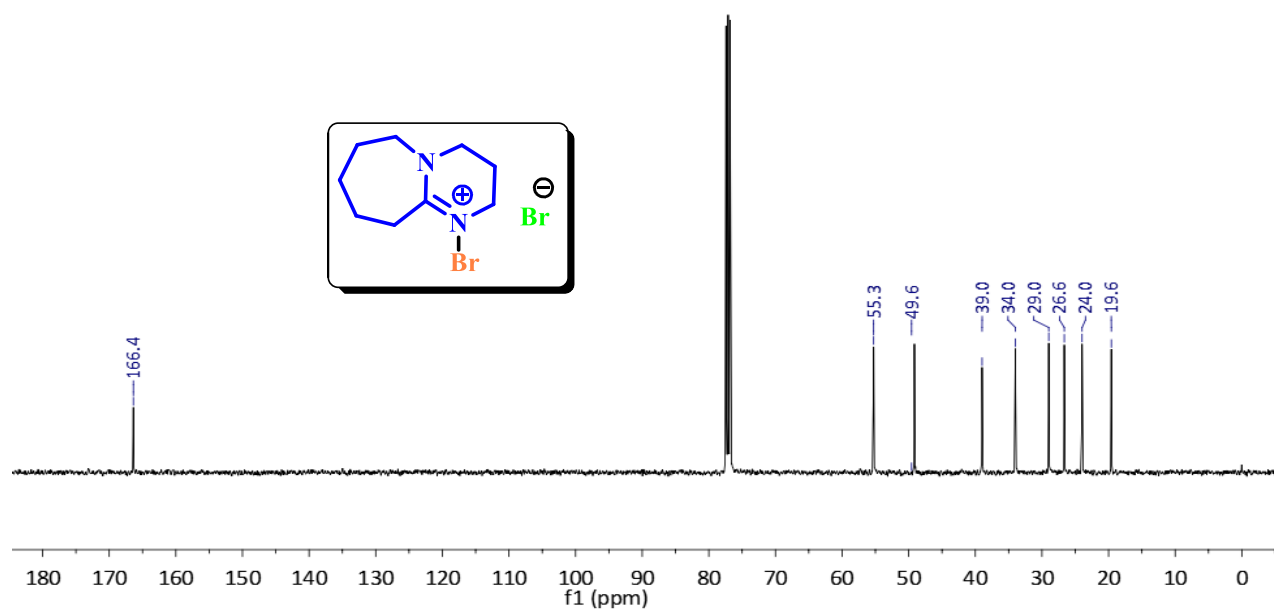


 <p>28b</p>	<p><b>MP</b> = 234-236 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.51 (d, <i>J</i> = 8.7 Hz, 1H), 7.00 (d, <i>J</i> = 8.7 Hz, 1H), 6.15 (d, <i>J</i> = 9.0 Hz, 1H), 5.94 (s, 1H), 2.42 (s, 3H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 162.1, 161.0, 155.2, 151.7, 133.9, 113.5, 110.3, 108.1, 82.1, 18.7.</p> <p><b>Mass (ESI-MS):</b> 301.94 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>10</sub>H<sub>7</sub>IO<sub>3</sub>; C, 39.76; H, 2.34; I, 42.01; Found C, 39.79; H, 2.30; I, 42.41.</p>
 <p>28c</p>	<p><b>MP</b> = 279-280 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, in CDCl<sub>3</sub>):</b> 7.94 (s, 1H), 6.16 (s, 1H), 2.41 (s, 3H).</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 162.6, 152.2, 150.0, 148.5, 130.9, 129.4, 114.2, 122.8, 107.8, 19.2.</p> <p><b>Mass (ESI-MS):</b> 333.9 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>10</sub>H<sub>6</sub>Br<sub>2</sub>O<sub>3</sub>; C, 35.97; H, 1.81; Br, 47.85; Found: C, 35.99; H, 1.84; Br, 47.82.</p>
 <p>28d</p>	<p><b>MP</b> = 252-254 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.94 (s, 1H), 6.16 (s, 1H), 2.41 (s, 3H)</p> <p><b><sup>13</sup>C NMR (100 MHz, in CDCl<sub>3</sub>):</b> 162.2, 161.1, 151.7, 148.2, 133.9, 116.3, 113.5, 85.2, 82.8, 18.7.</p> <p><b>Mass (ESI-MS):</b> 427.84 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>10</sub>H<sub>6</sub>I<sub>2</sub>O<sub>3</sub>; C, 28.06; H, 1.41; I, 59.31; Found: C, 28.23; H, 1.38; I, 59.45.</p>
 <p>29a</p>	<p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> 7.79 (d, <i>J</i> = 8.4 Hz, 1H), 7.51 (d, <i>J</i> = 8.7 Hz, 1H), 6.85 (d, <i>J</i> = 3.7 Hz, 1H), 6.13 (d, <i>J</i> = 1.1 Hz, 1H).</p> <p><b>Mass (ESI-MS):</b> 241.04 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>9</sub>H<sub>5</sub>BrO<sub>3</sub>; C, 44.85; H, 2.09; Br, 33.15; Found: C, 44.82; H, 2.11; Br, 33.17.</p>
 <p>29b</p>	<p><b>MP</b> = 140-142 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> 7.68 (d, <i>J</i> = 8.41 Hz, 1H), 7.51 (d, <i>J</i> = 8.7 Hz, 1H), 6.99 (d, <i>J</i> = 3.7 Hz, 1H), 6.16 (d, <i>J</i> = 1.1 Hz, 1H).</p> <p><b>Mass (ESI-MS):</b> 287.93 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>9</sub>H<sub>5</sub>IO<sub>3</sub>; C, 37.53; H, 1.75; I, 44.06; Found: C, 37.50; H, 1.74; I, 44.10.</p>
 <p>29c</p>	<p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> 7.96 (s, 1H), 7.78 (d, <i>J</i> = 8.7 Hz, 1H), 6.25 (d, <i>J</i> = 1.1 Hz, 1H).</p> <p><b>Mass (ESI-MS):</b> 319.93 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected for C<sub>9</sub>H<sub>4</sub>Br<sub>2</sub>O<sub>3</sub>; C, 33.79; H, 1.26; Br, 49.95; Found: C, 33.81; H, 1.28; Br, 49.93.</p>

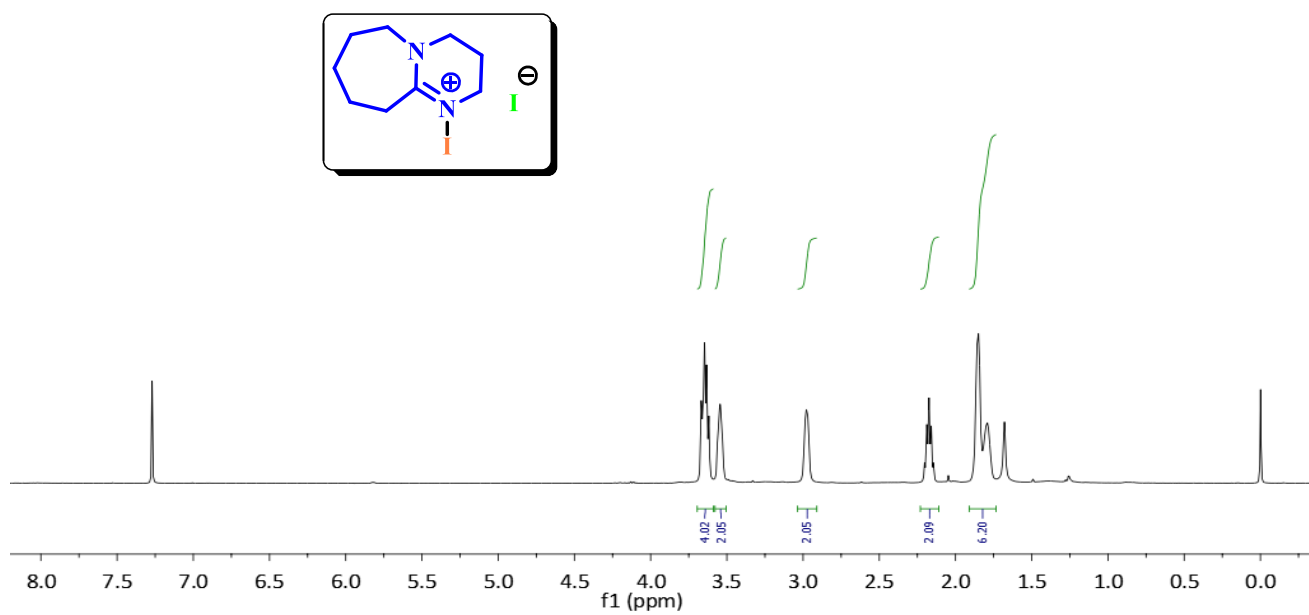
 29d	<p><b>MP</b> = 165-167 °C.</p> <p><b><sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>):</b> δ 7.85 (s, 2H), 7.53 (d, <i>J</i> = 9.5 Hz, 2H), 6.29 (d, <i>J</i> = 5.0 Hz, 1H).</p> <p><b>Mass (ESI-MS):</b> 413.82 [M<sup>+</sup>].</p> <p><b>CHN:</b> Expected) for C<sub>9</sub>H<sub>4</sub>I<sub>2</sub>O<sub>3</sub>; C, 26.11; H, 0.97; I, 61.32; Found: C, 26.15; H, 0.95; I, 61.30.</p>
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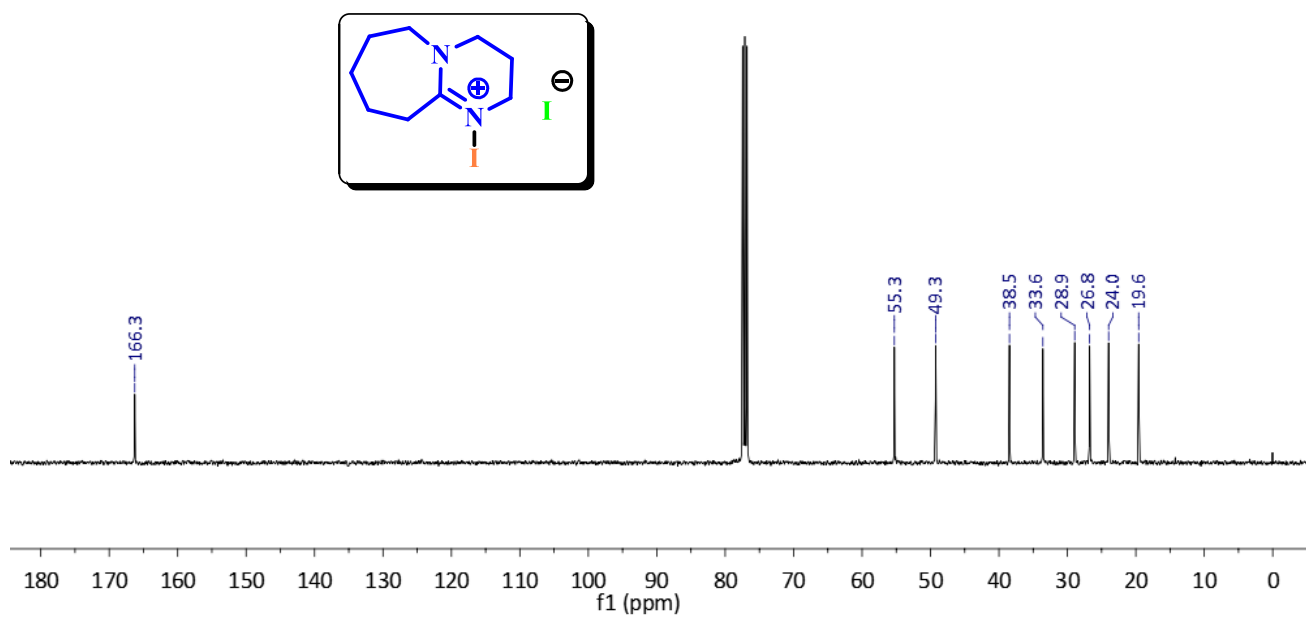
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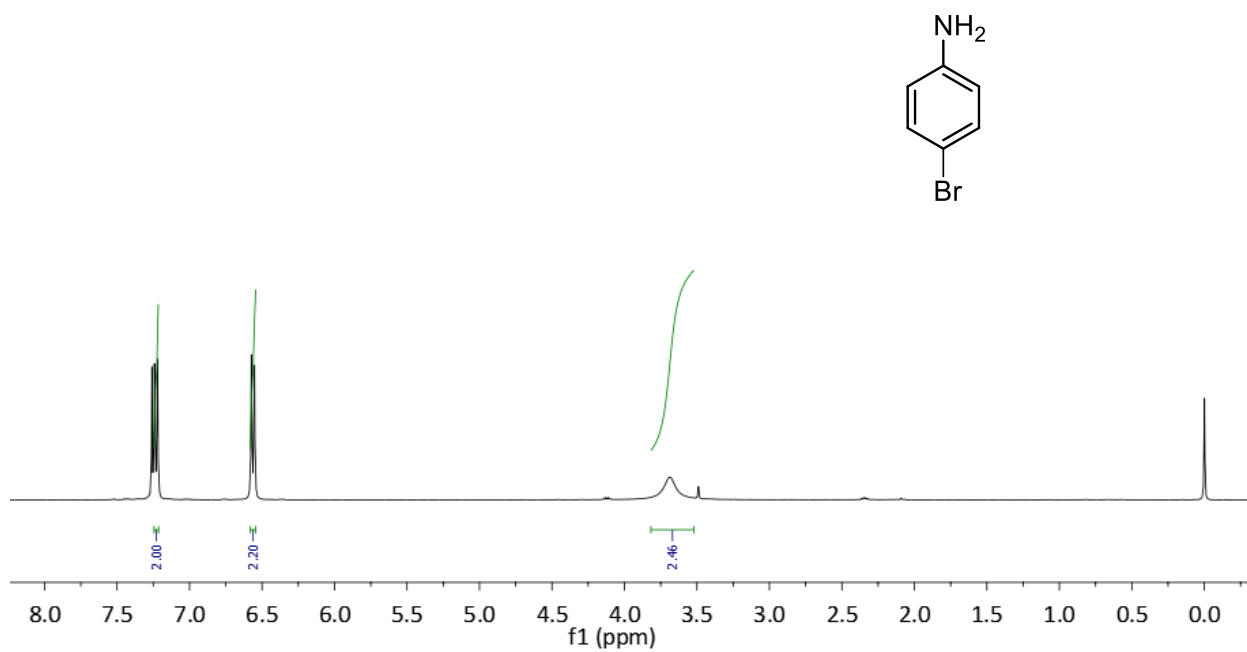
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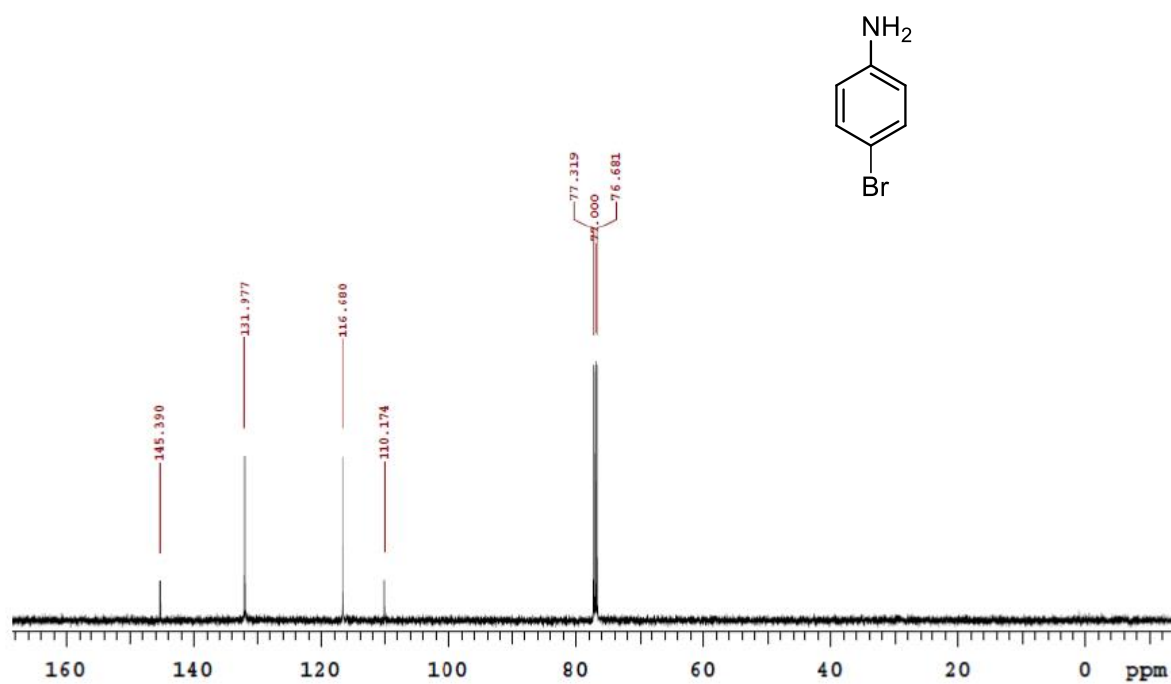
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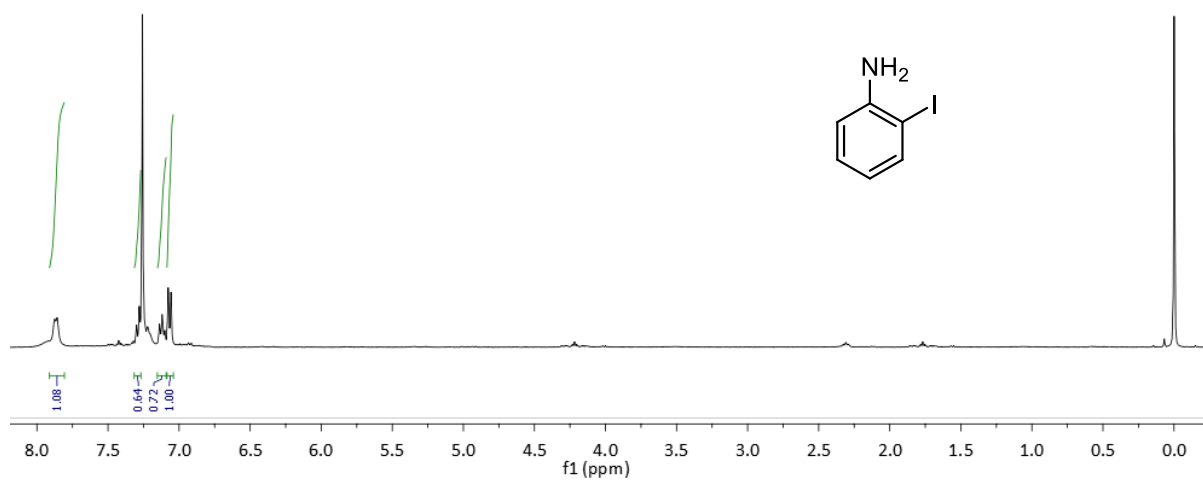
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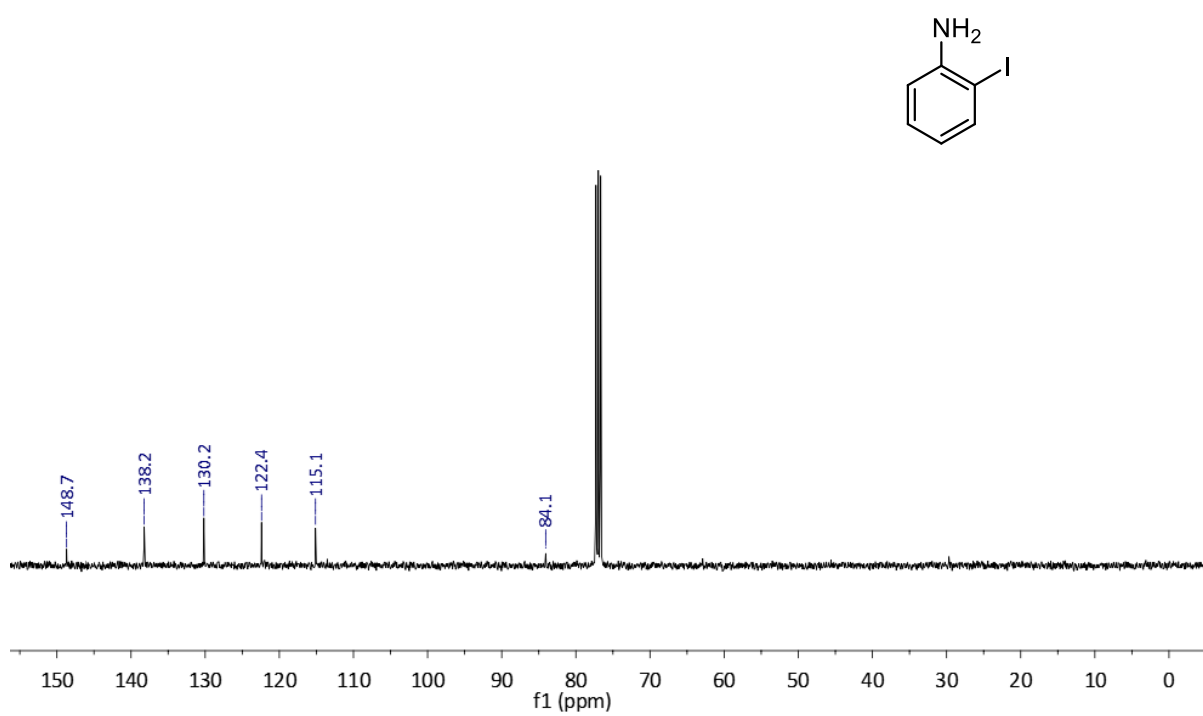
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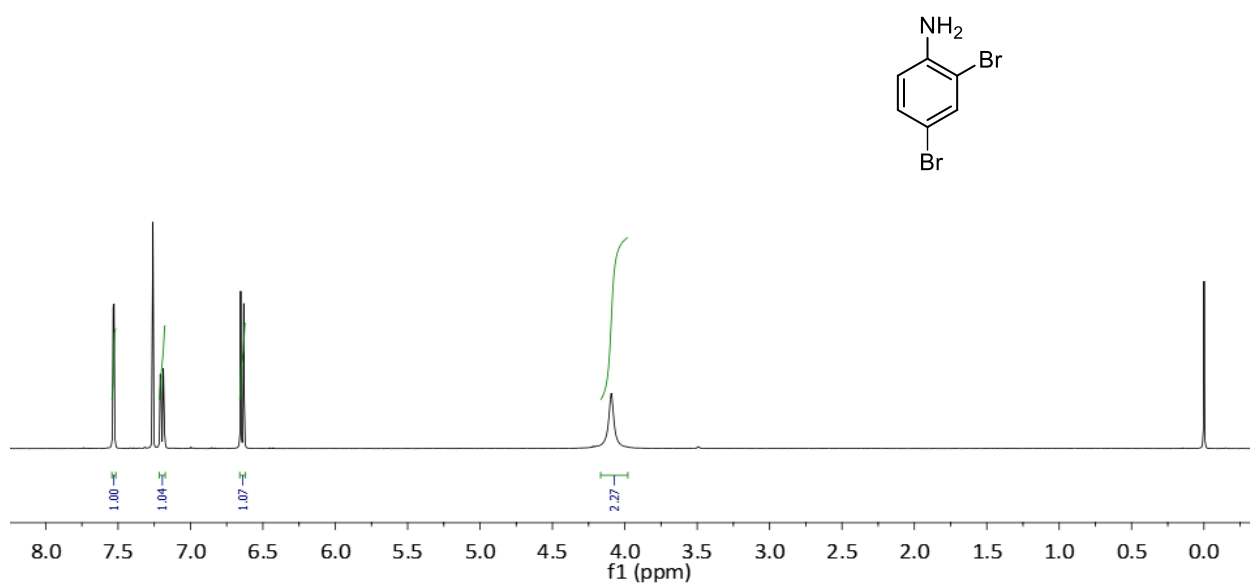
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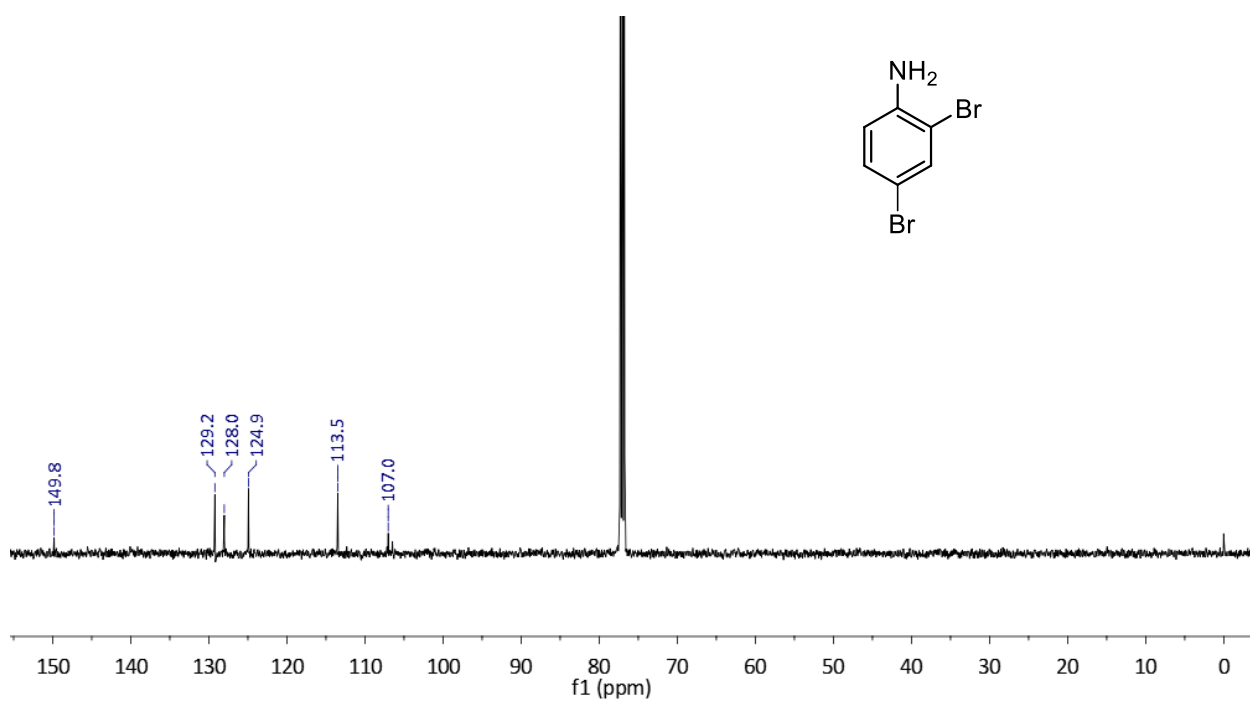
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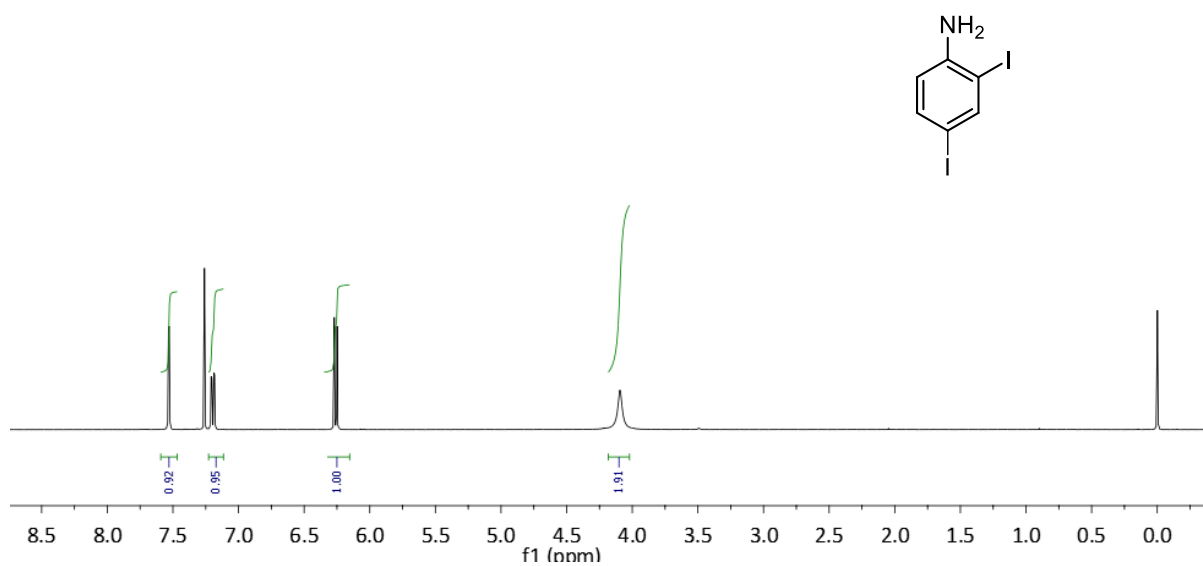
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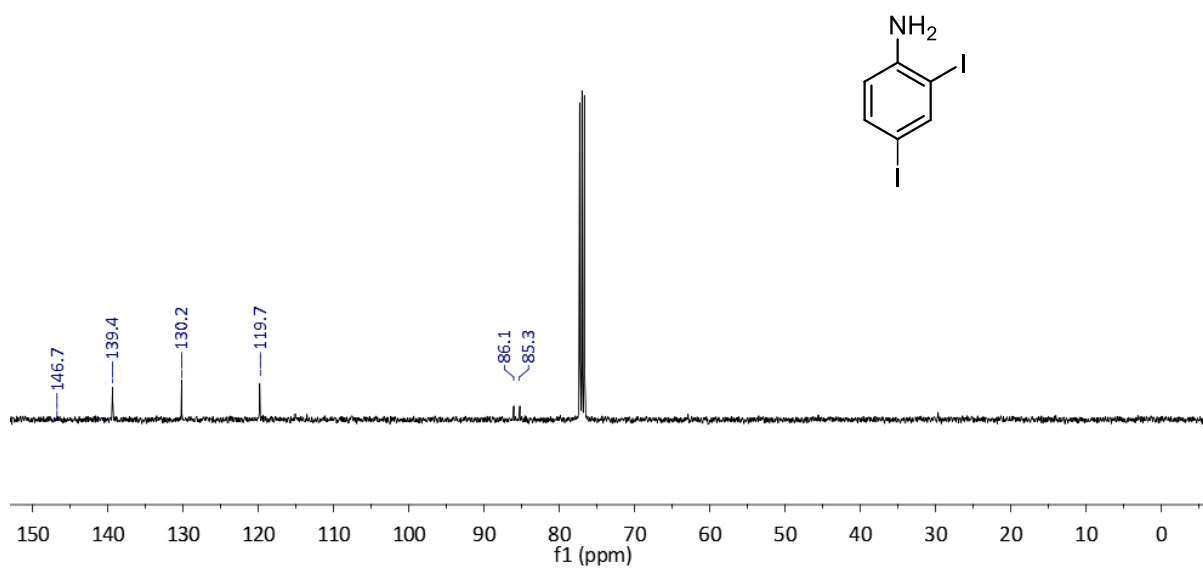
$^1\text{H}$ -NMR of 4c in  $\text{CDCl}_3$



$^{13}\text{C}$  NMR of 4c in  $\text{CDCl}_3$

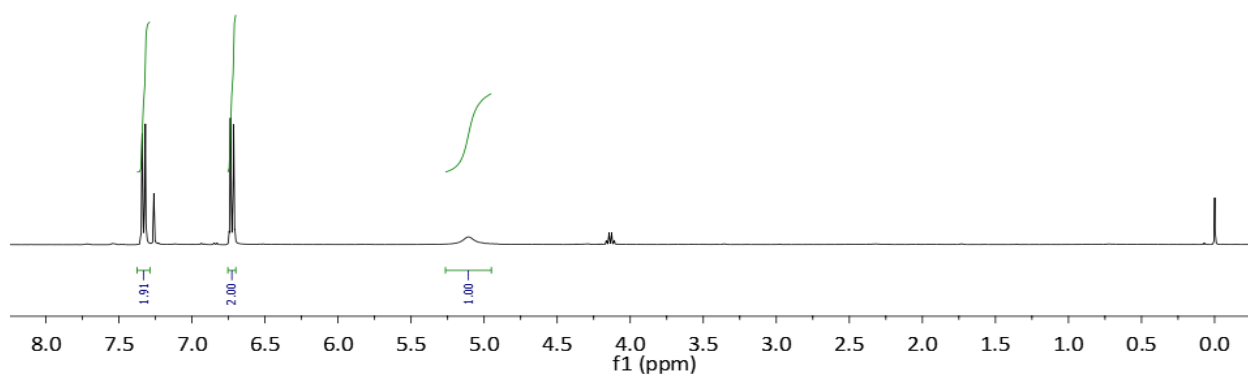
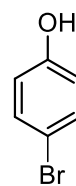


<sup>1</sup>H-NMR of 4d in CDCl<sub>3</sub>

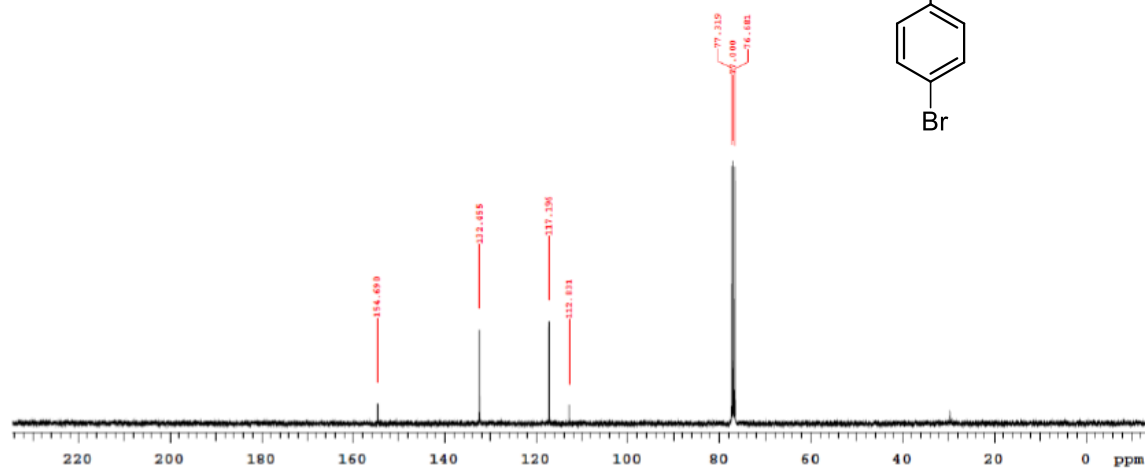
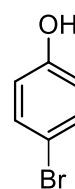


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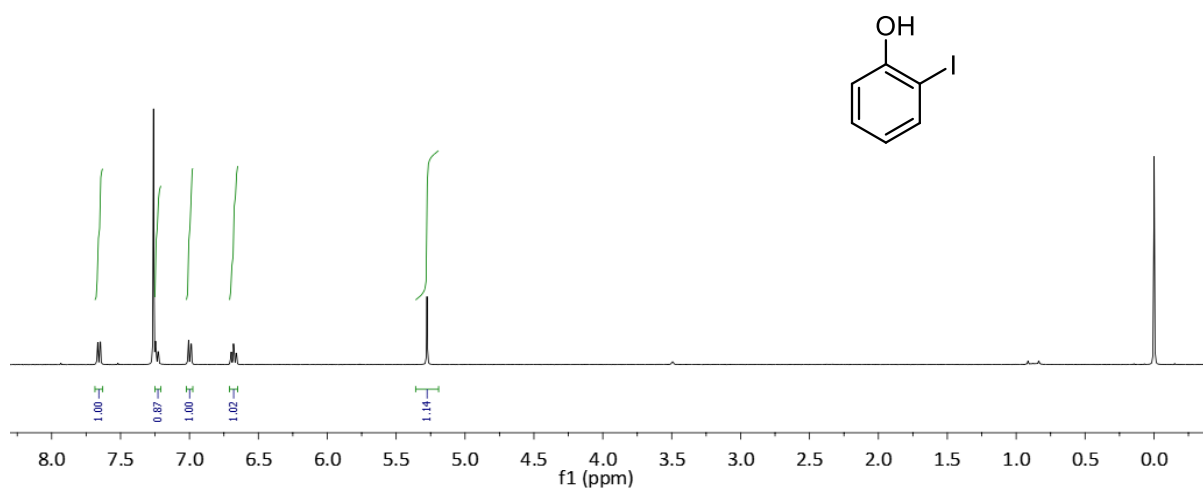




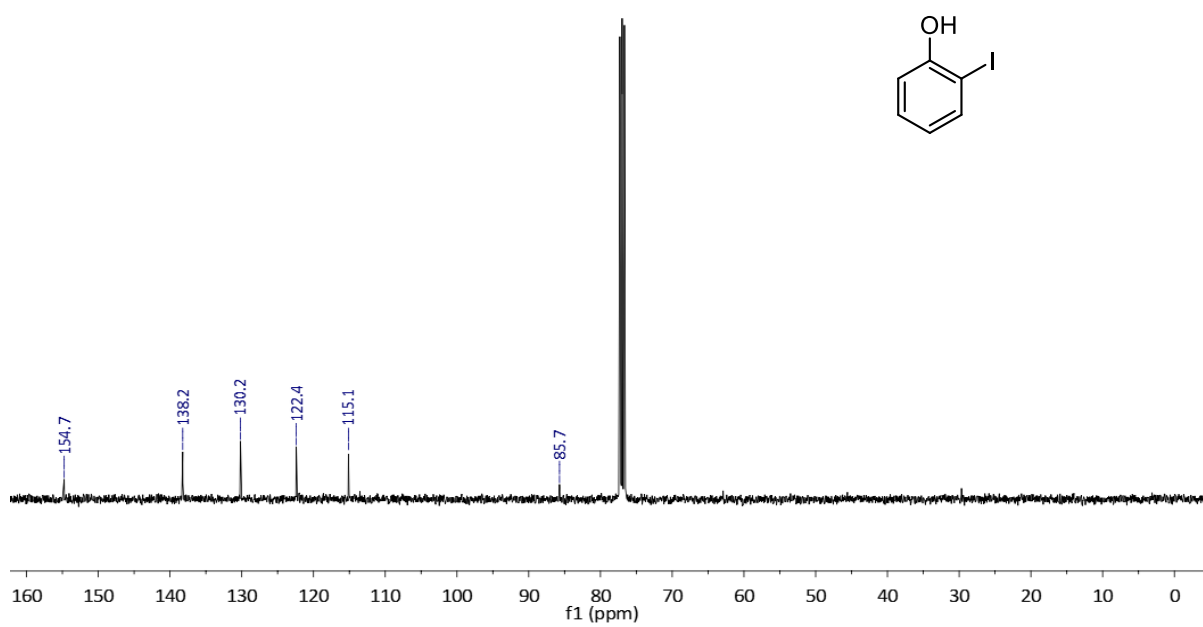
<sup>1</sup>H-NMR of 5a in CDCl<sub>3</sub>



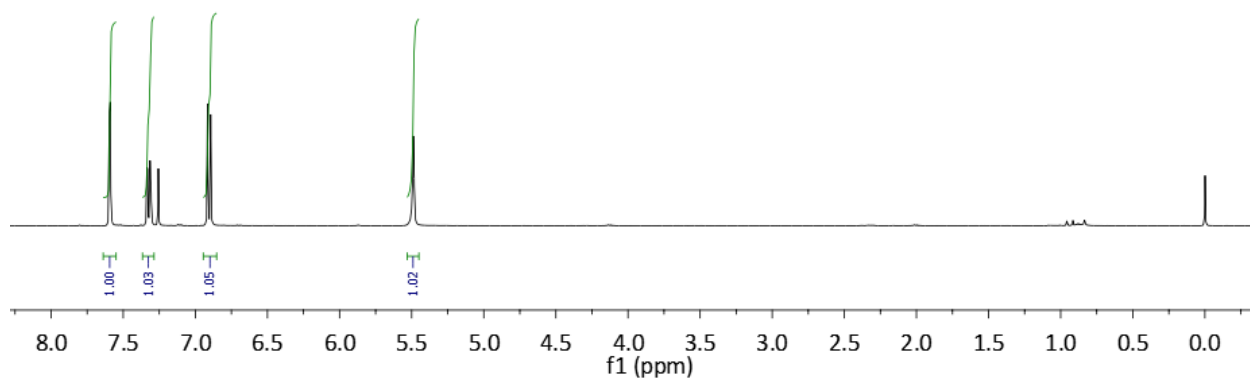
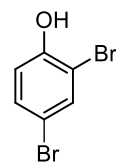
<sup>13</sup>C NMR of 5a in CDCl<sub>3</sub>



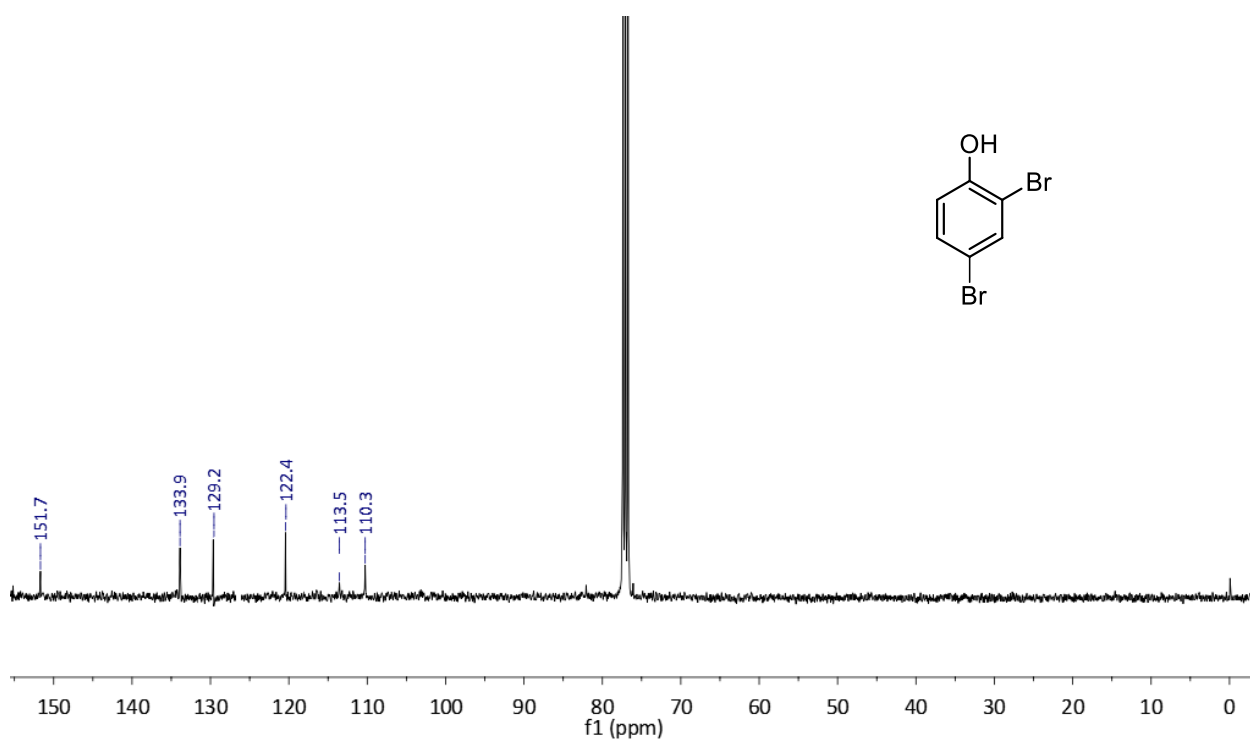
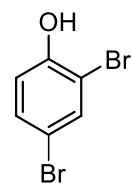
$^1\text{H-NMR}$  of **5b** in  $\text{CDCl}_3$



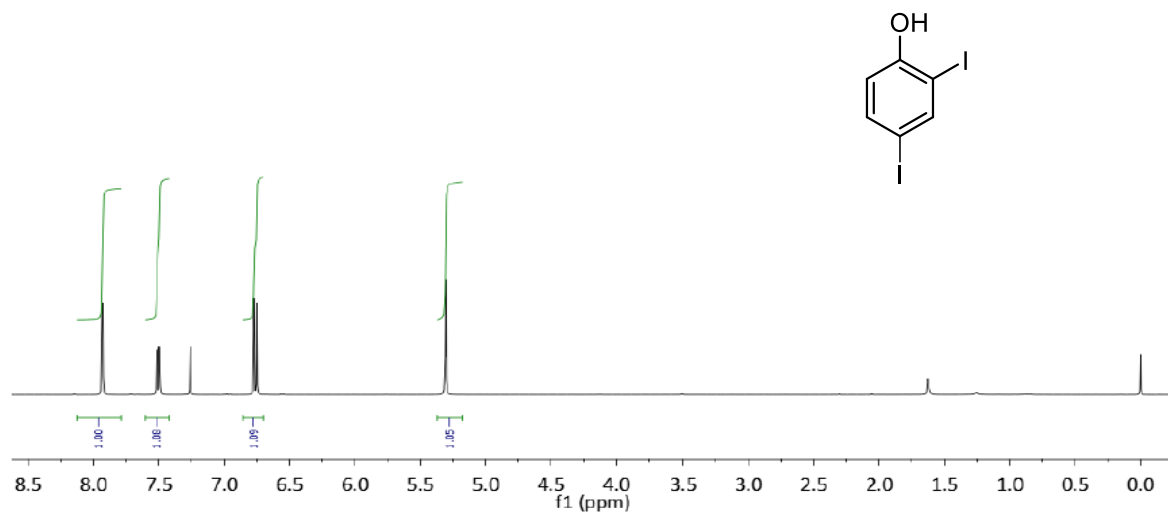
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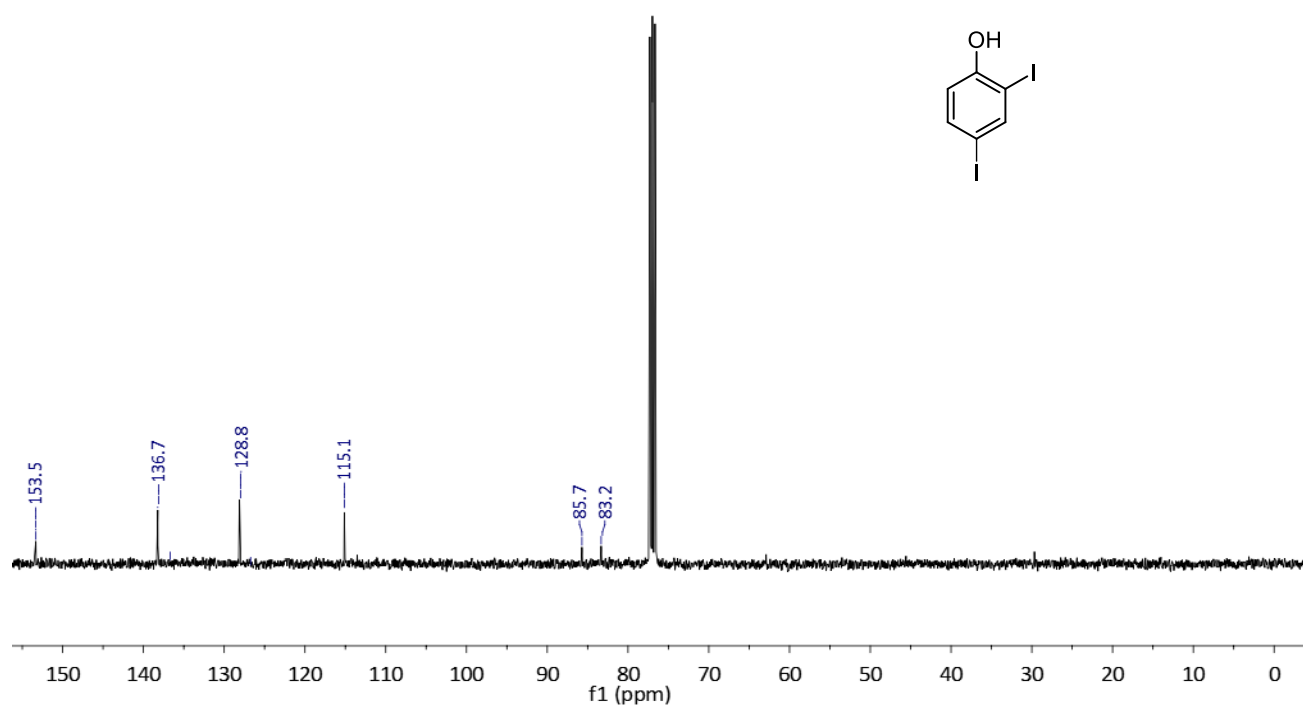
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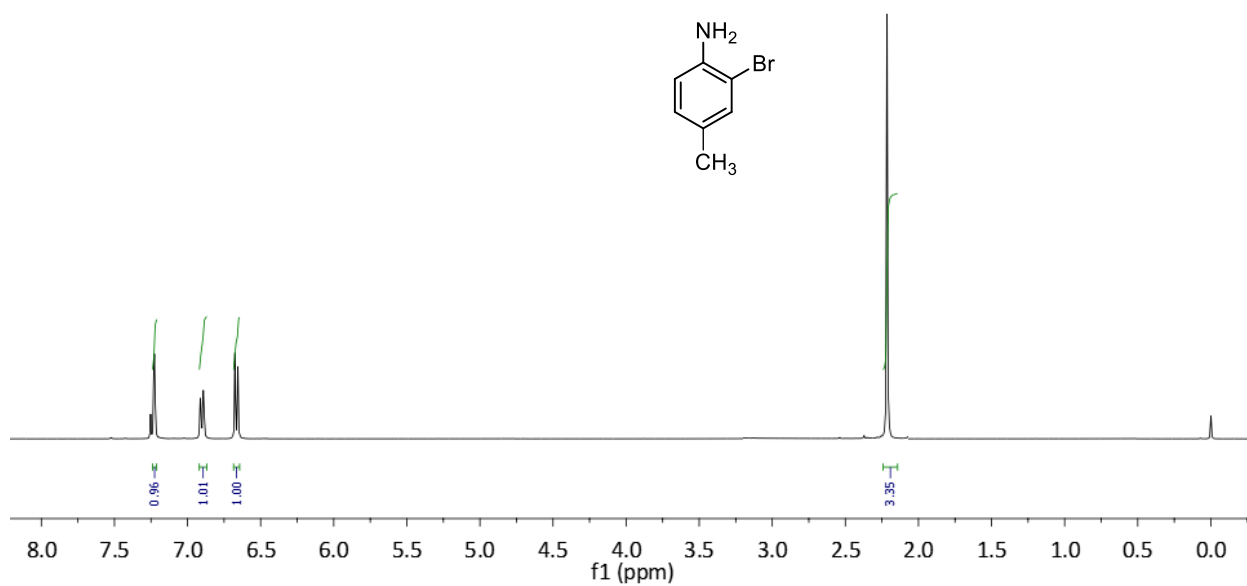
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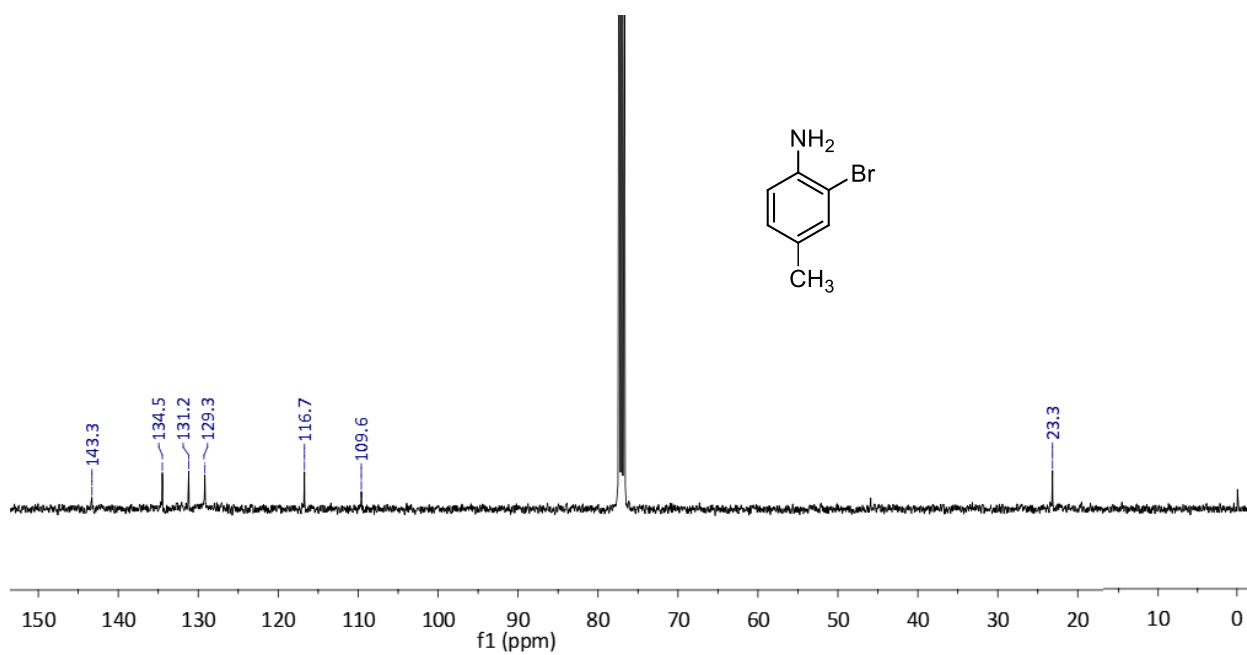
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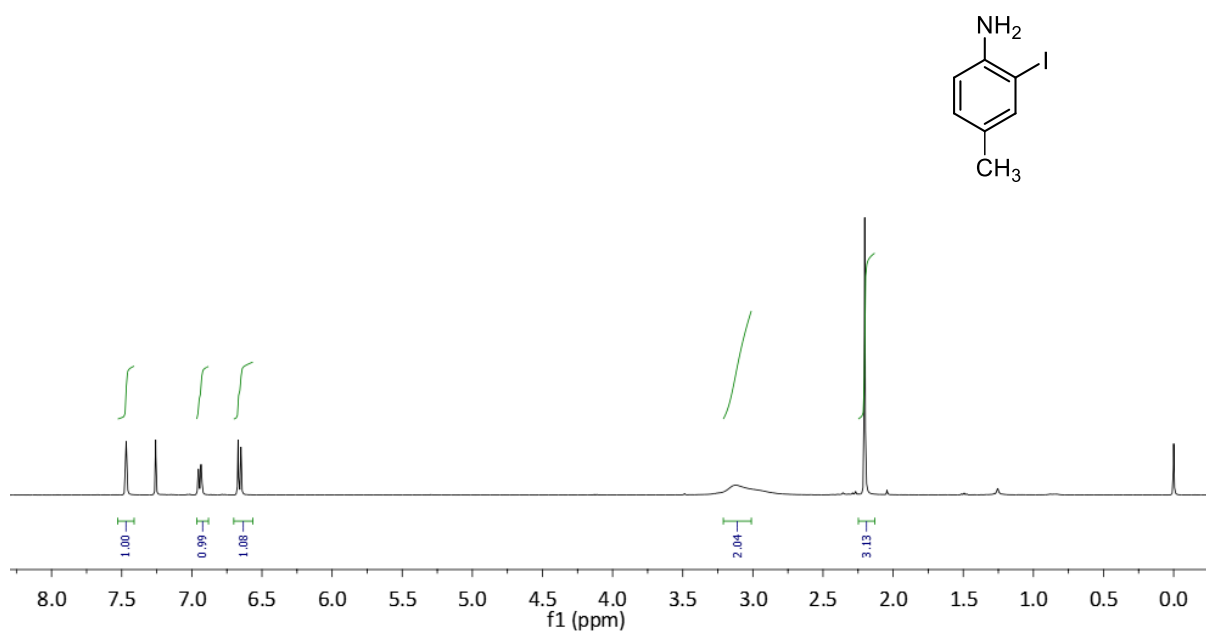
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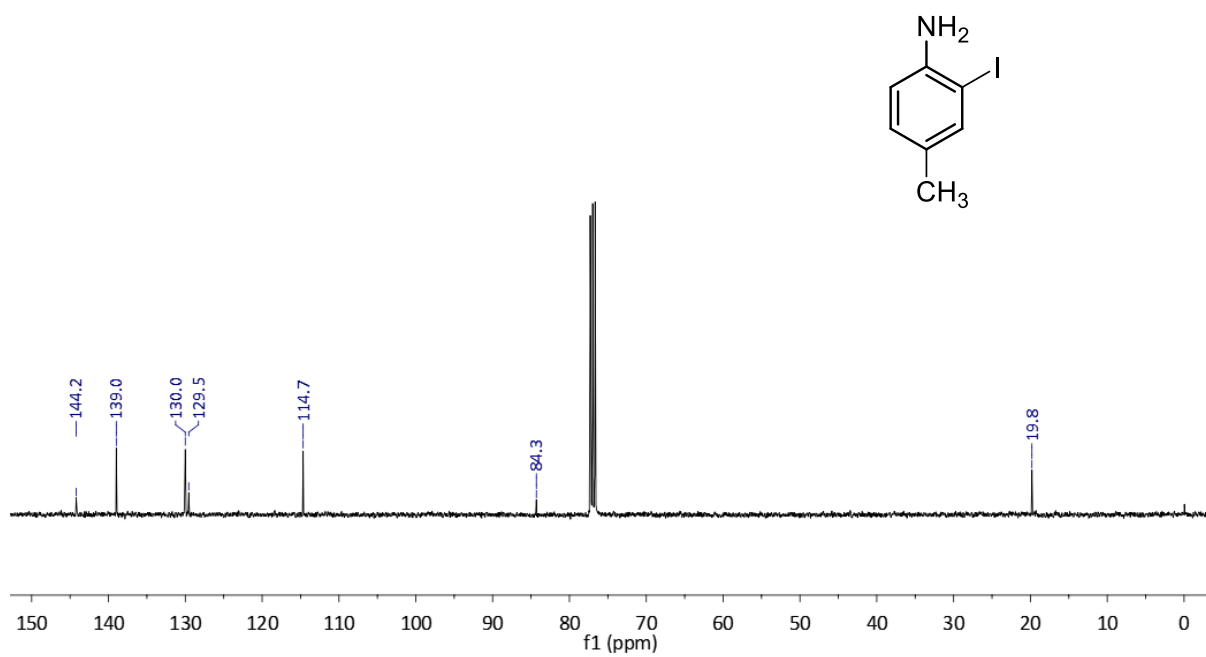
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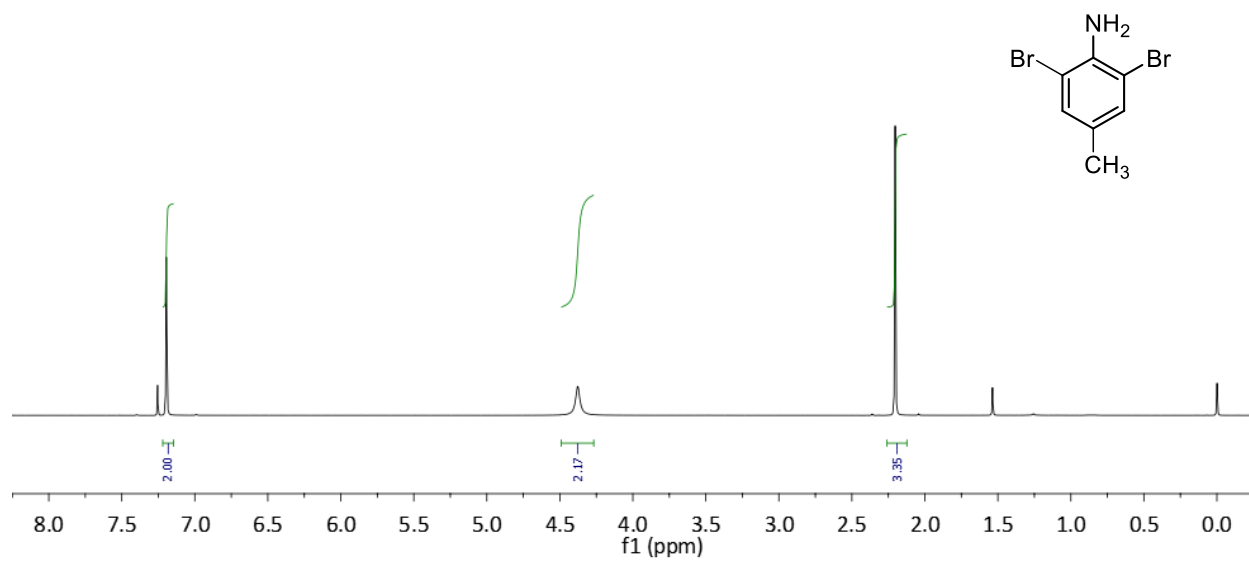
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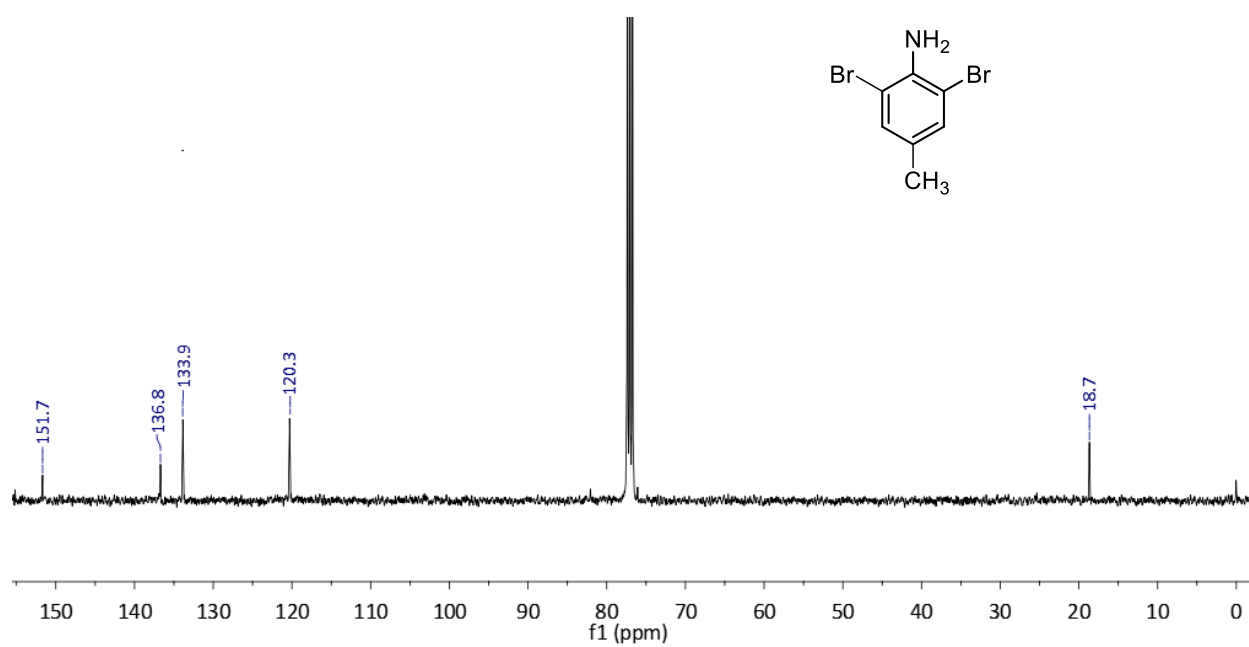
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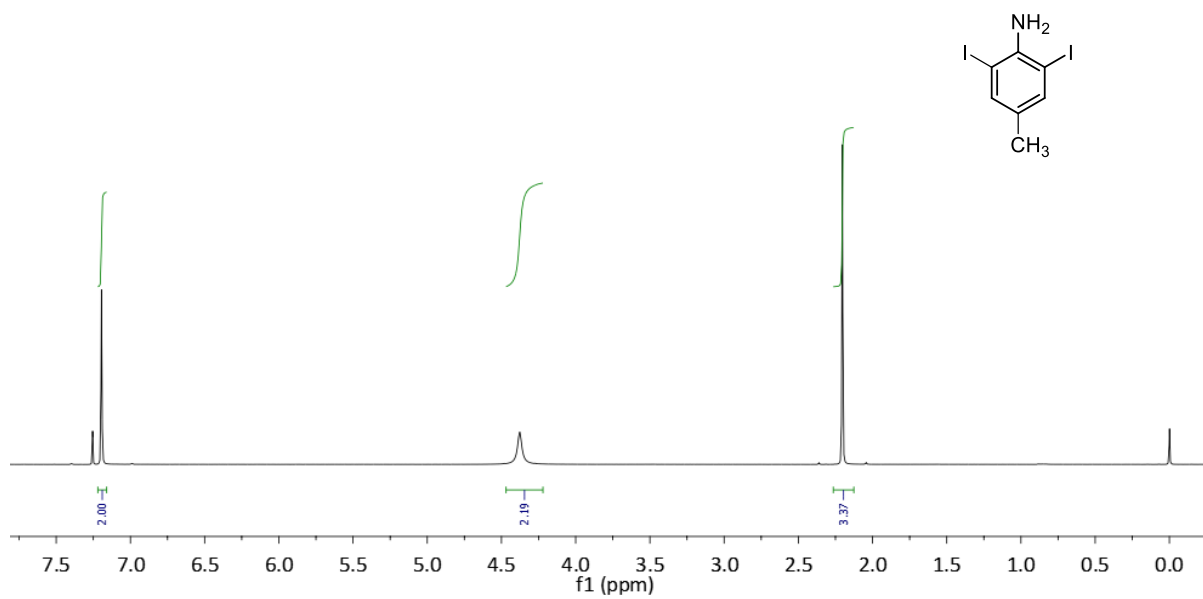
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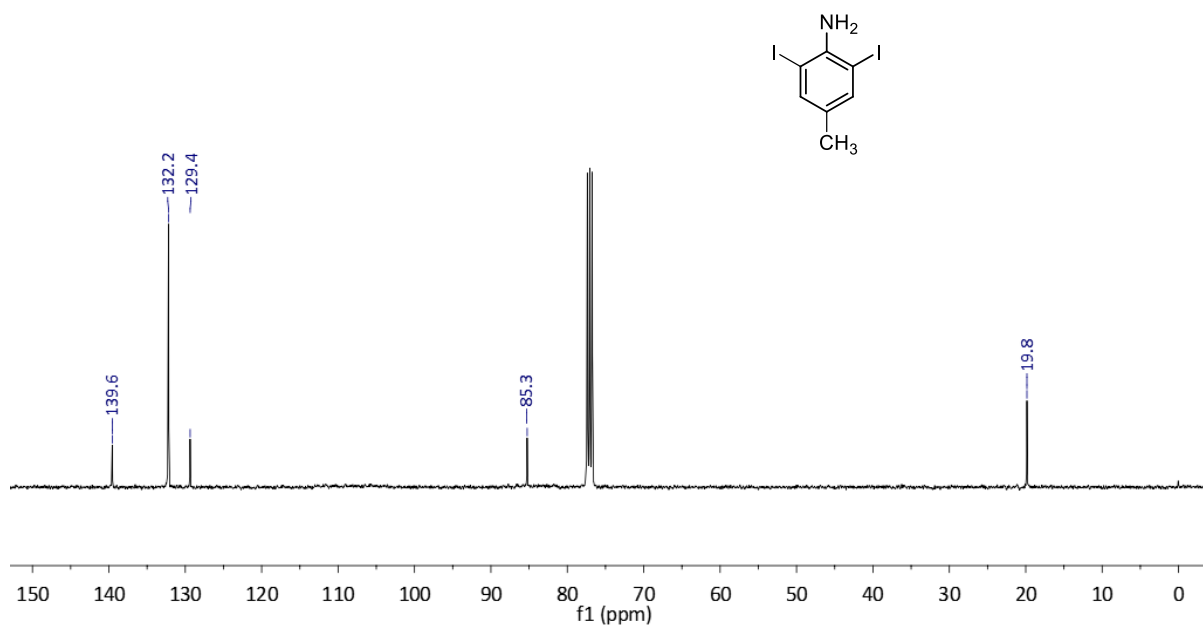
$^1\text{H-NMR}$  of **6c** in  $\text{CDCl}_3$



$^{13}\text{C-NMR}$  of **6c** in  $\text{CDCl}_3$

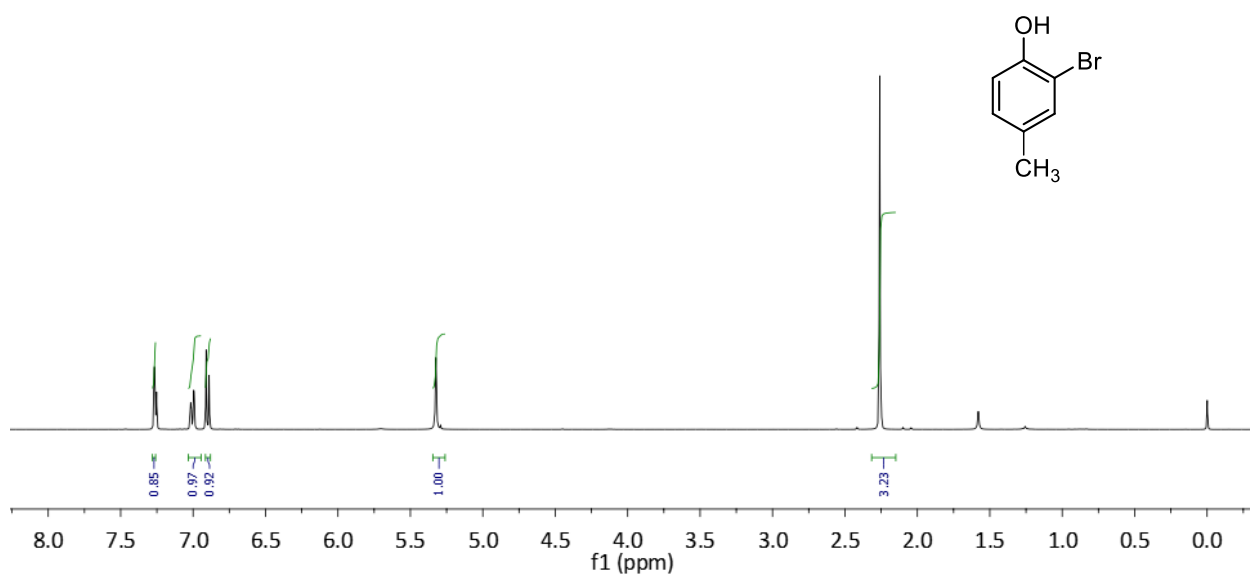


<sup>1</sup>H-NMR of 6d in CDCl<sub>3</sub>

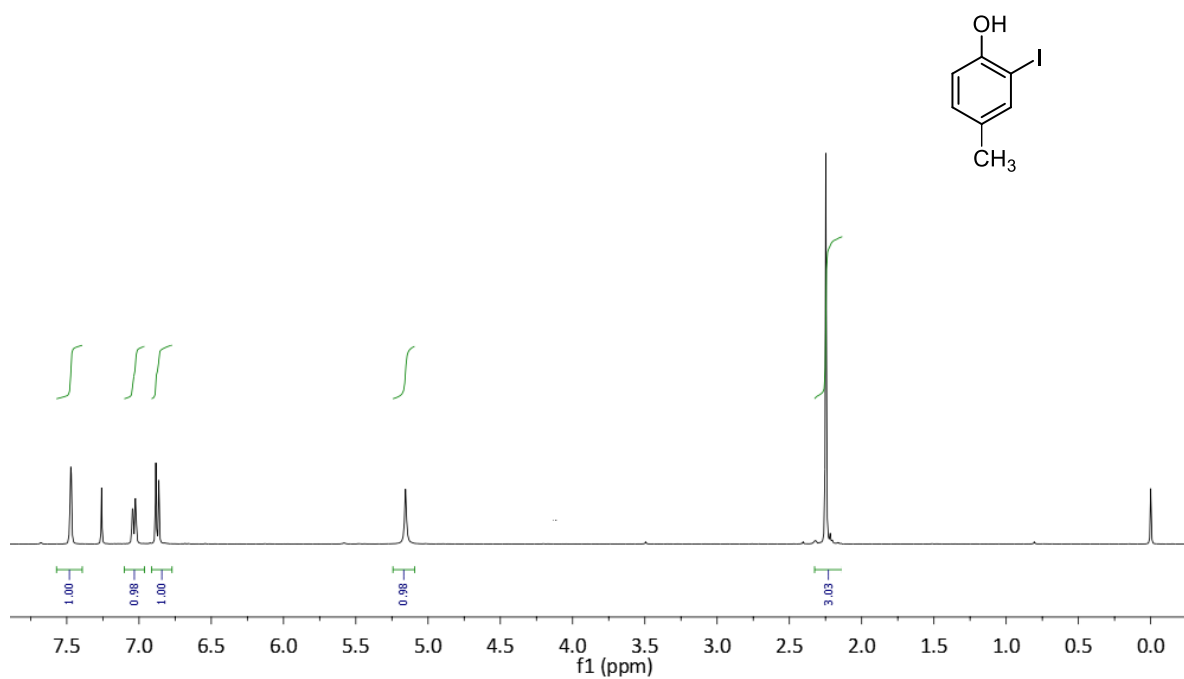


<sup>13</sup>C NMR of 6d in CDCl<sub>3</sub>

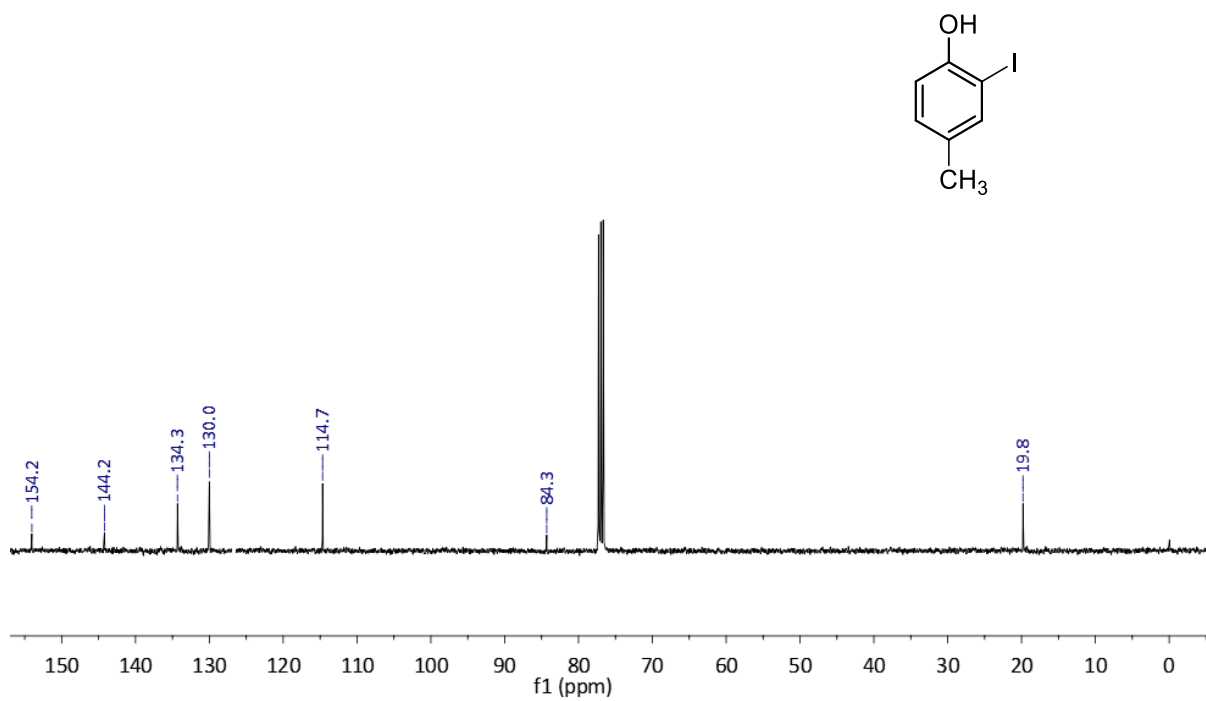




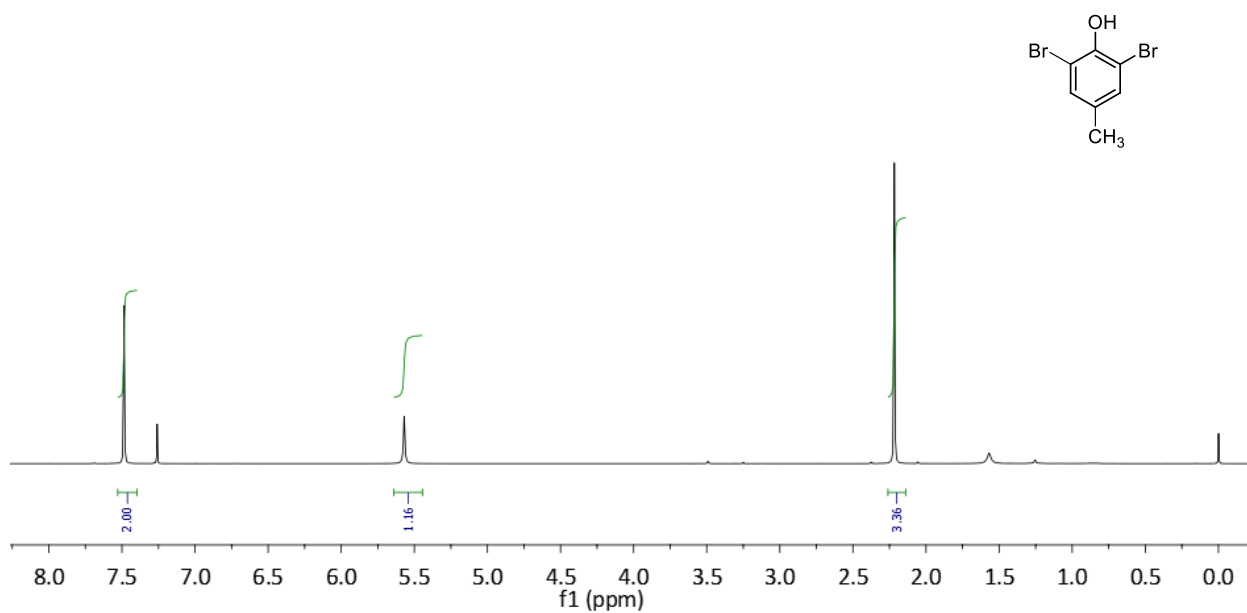
<sup>1</sup>H-NMR of 7a in CDCl<sub>3</sub>



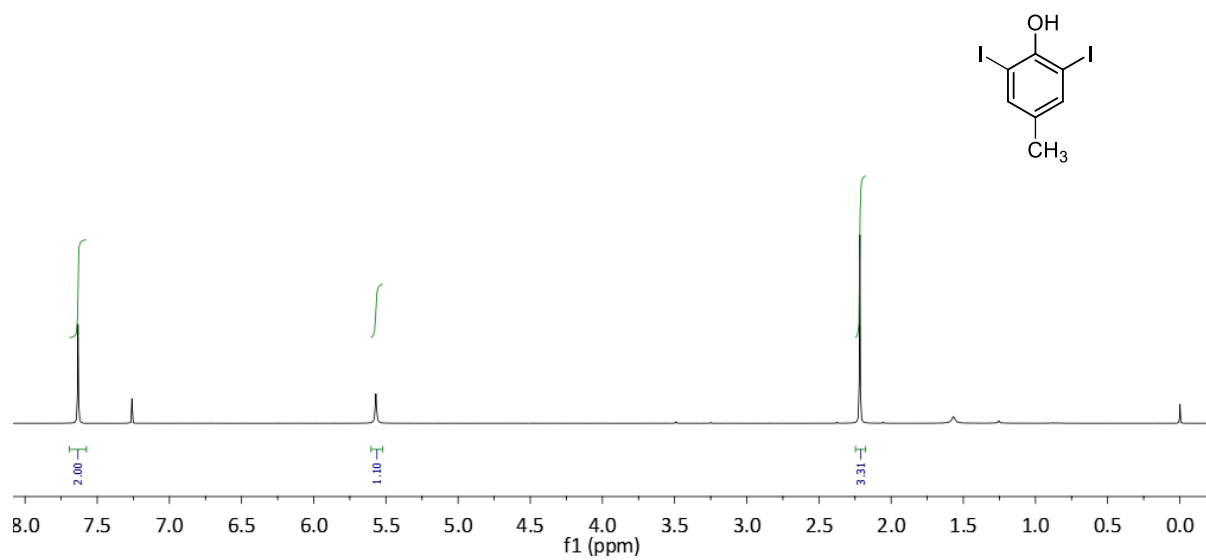
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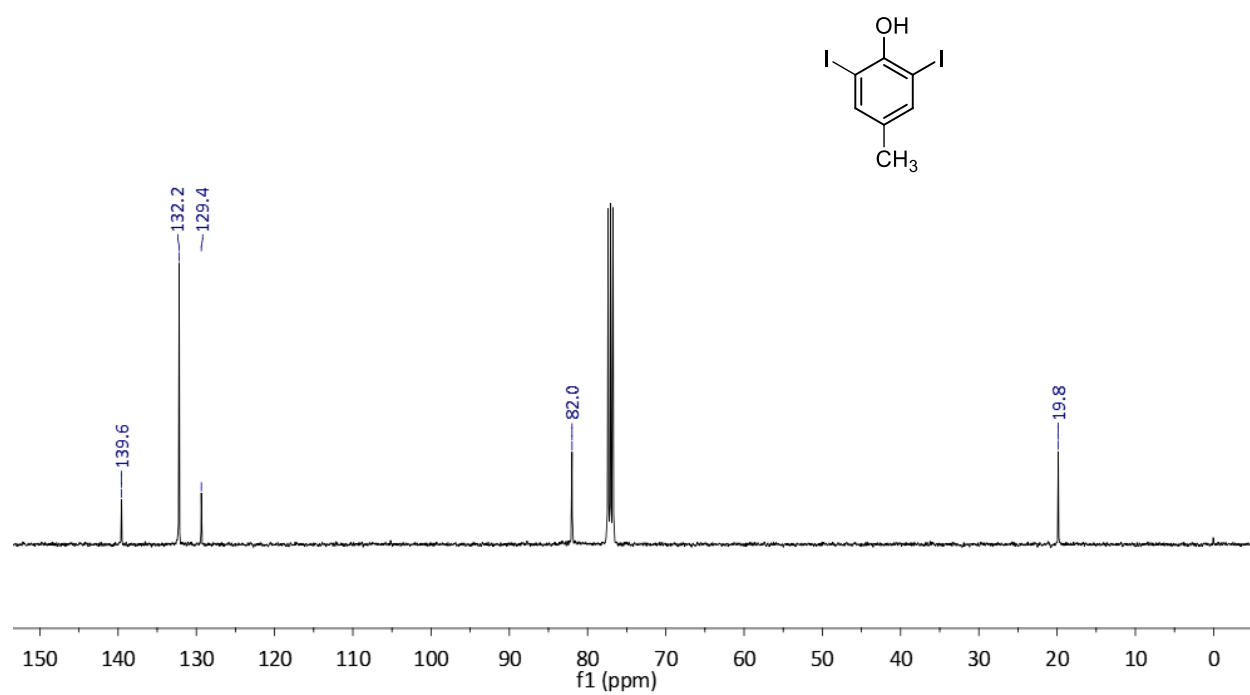
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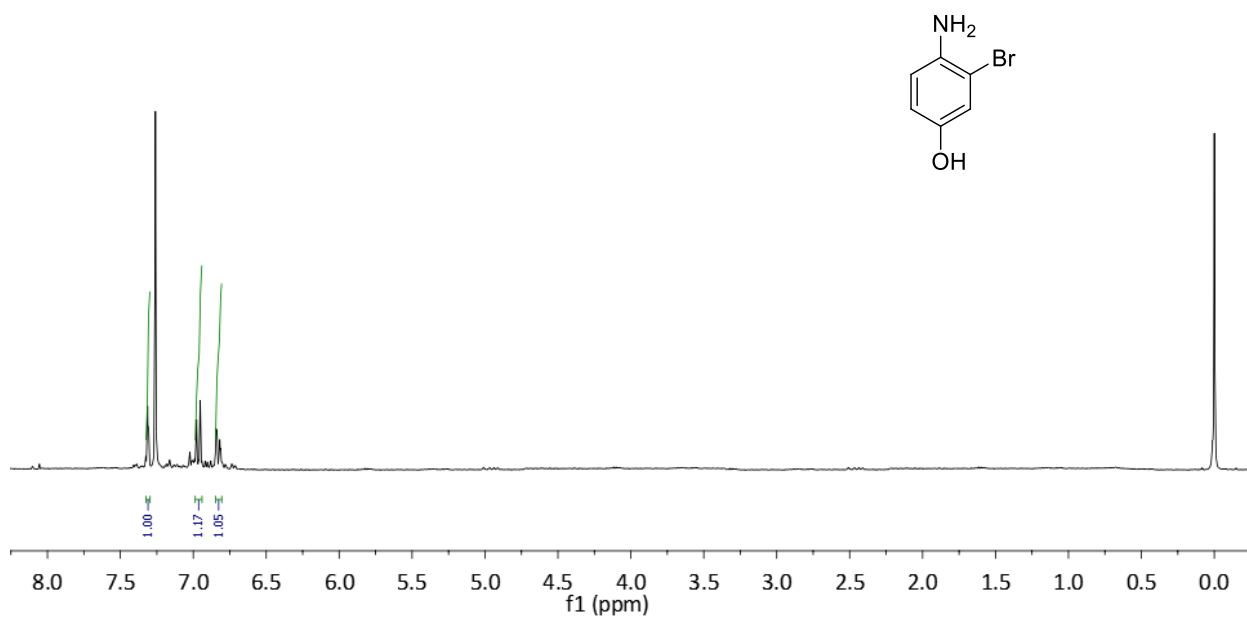
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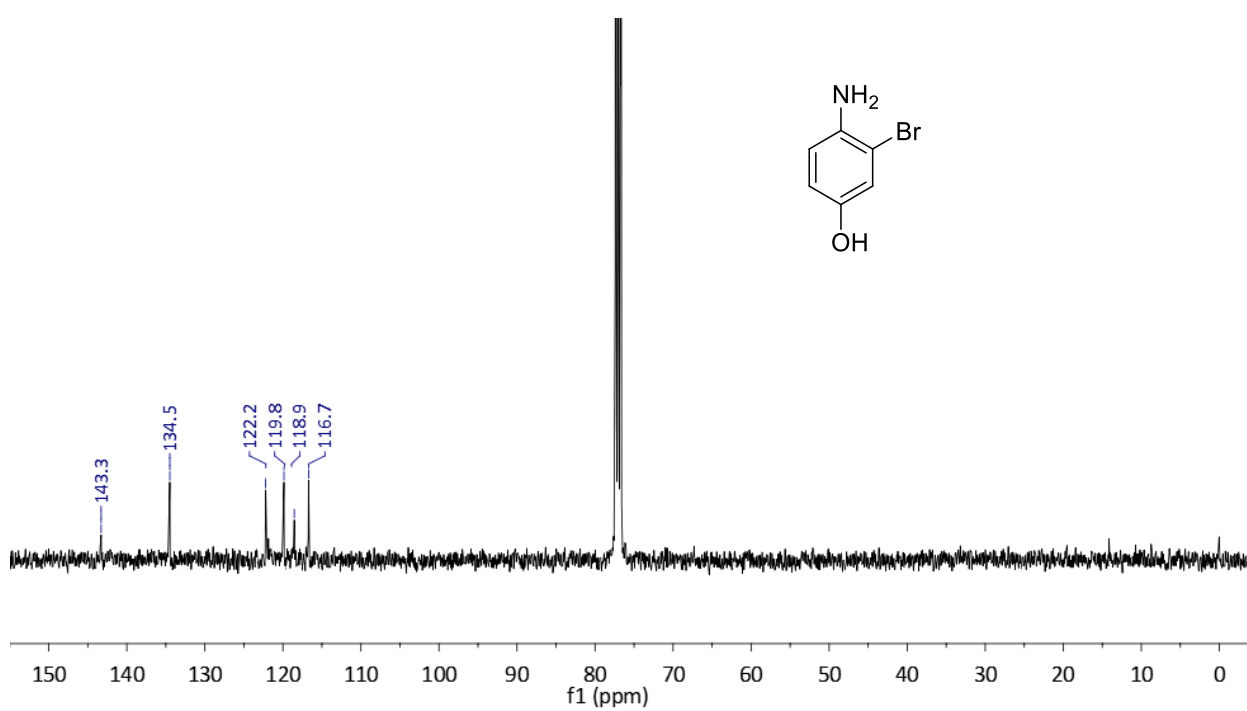
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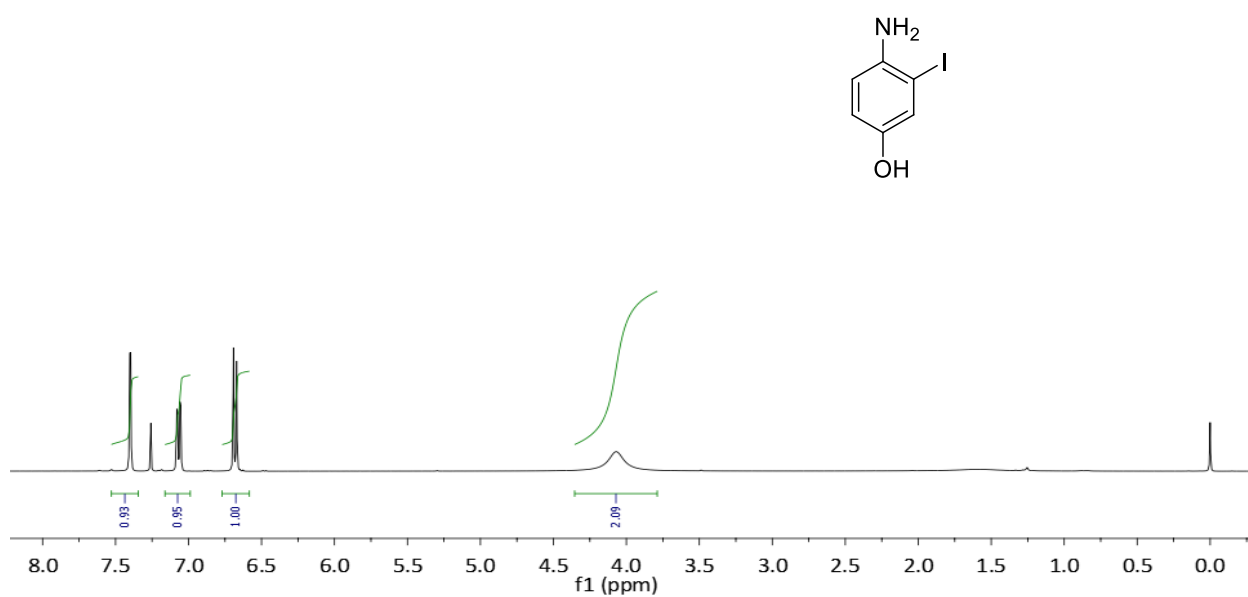
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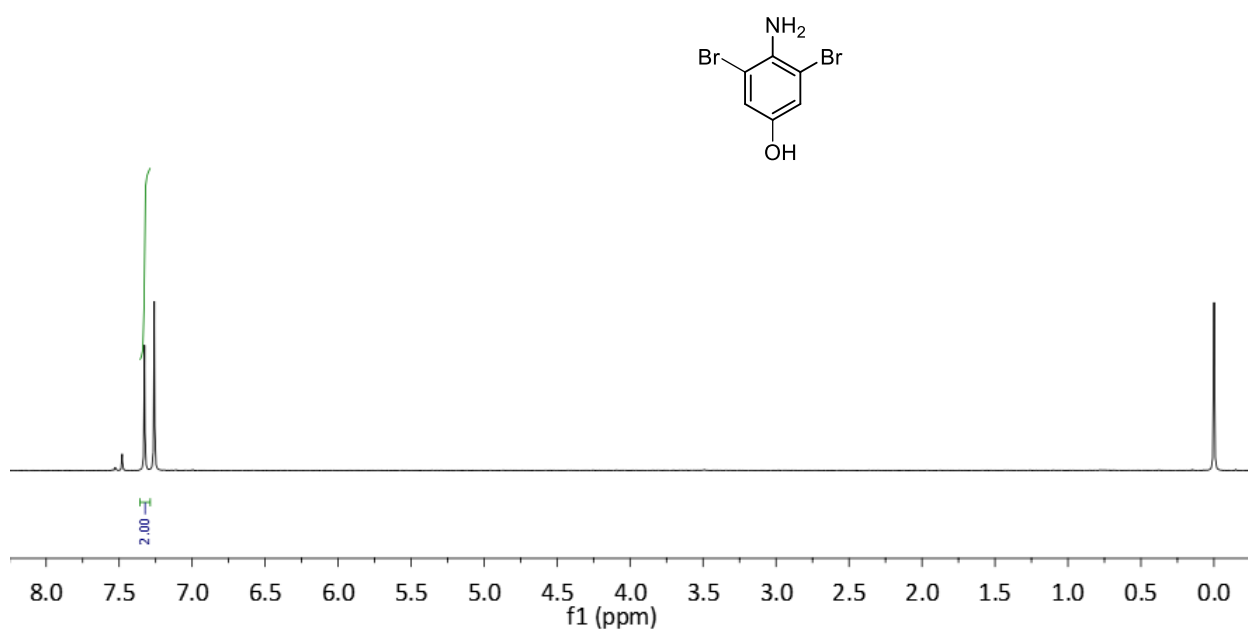
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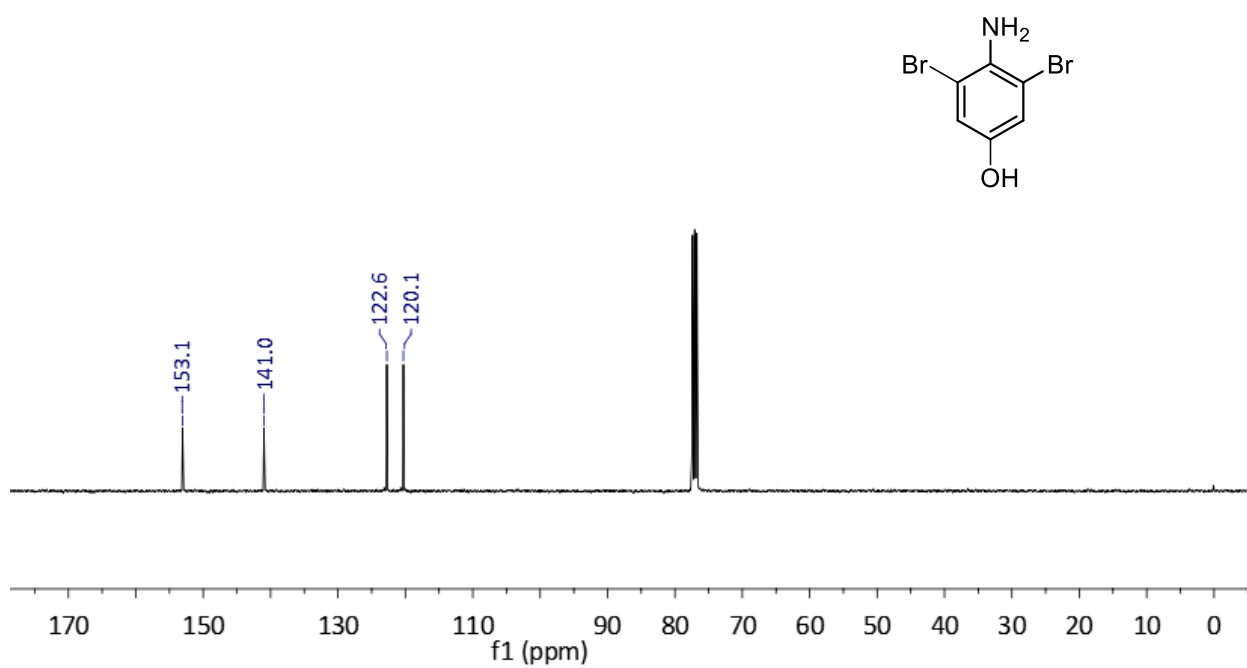
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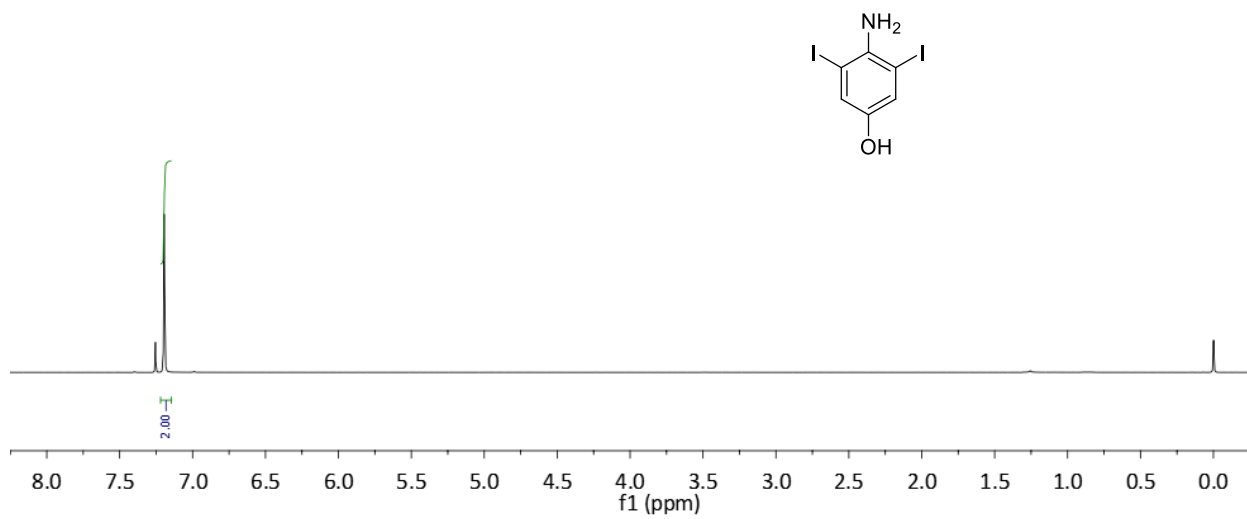
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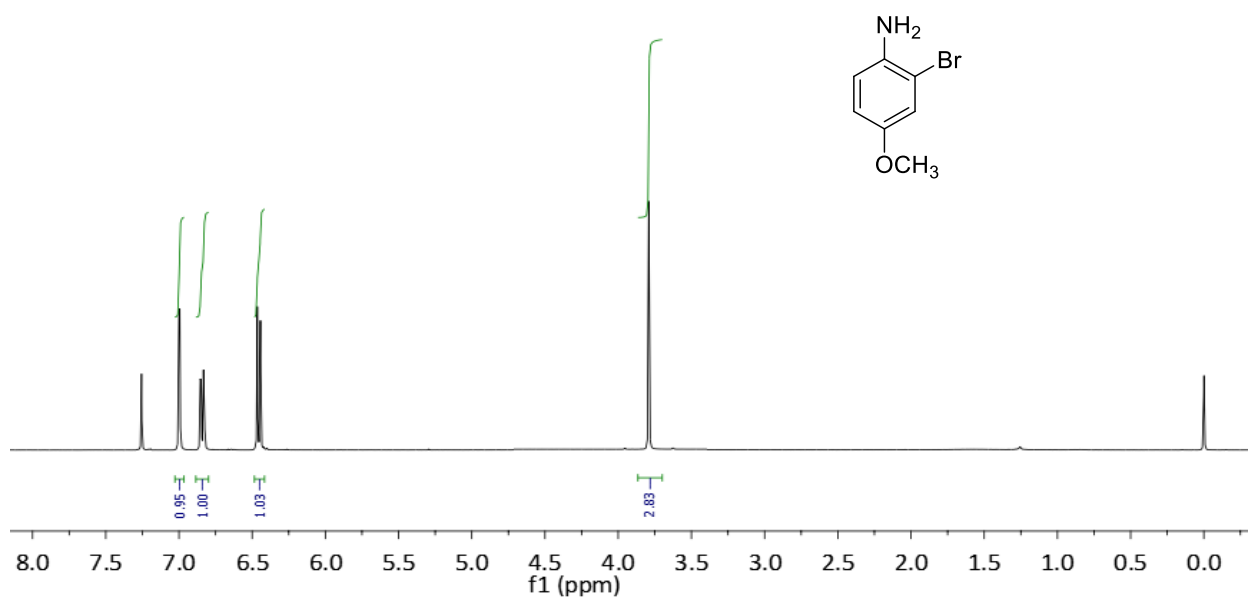
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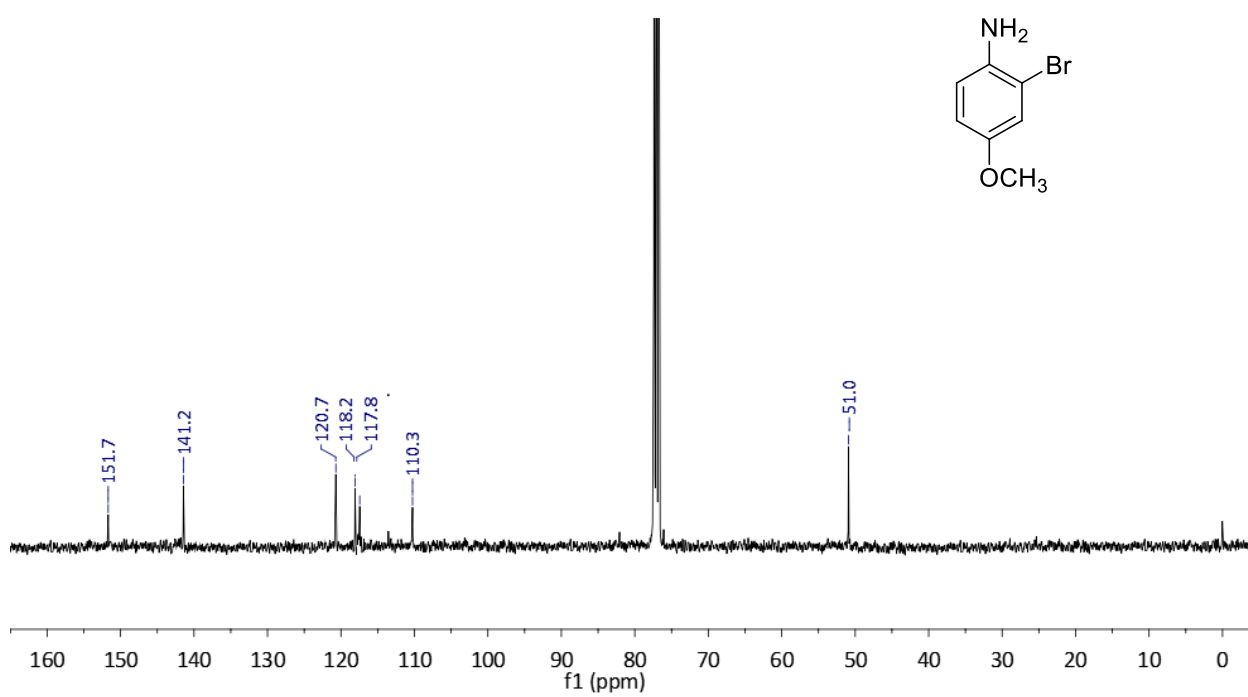
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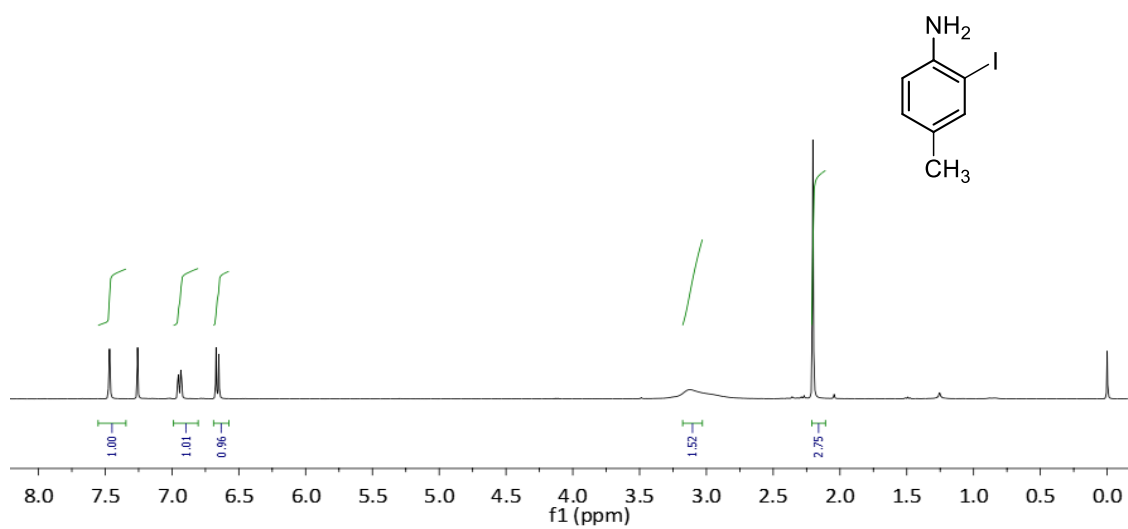
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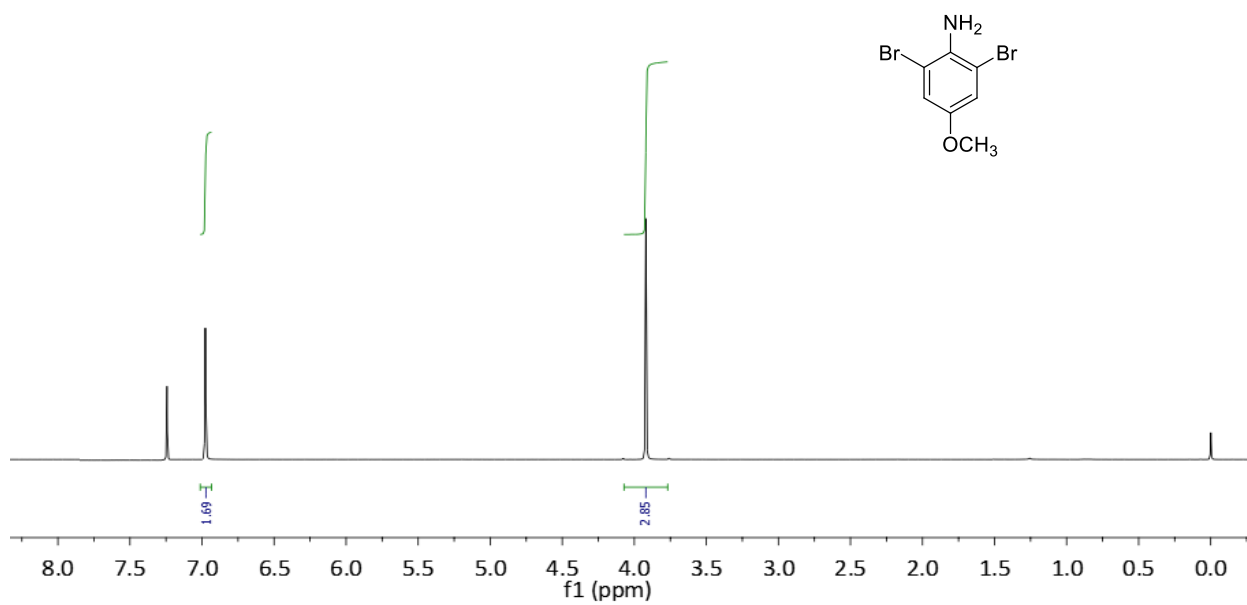
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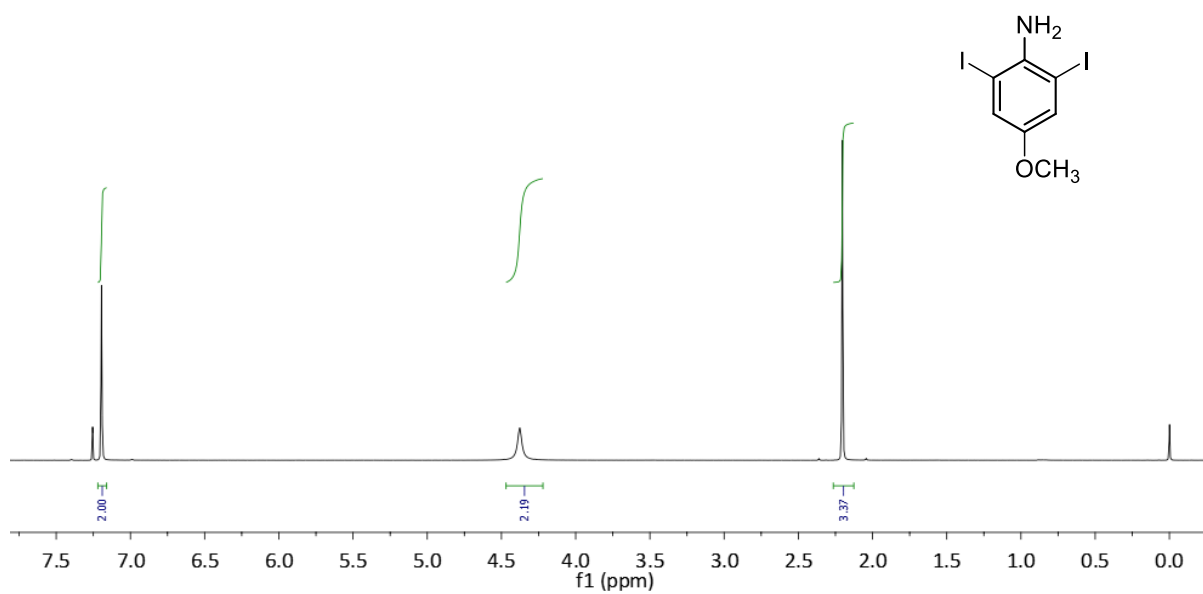


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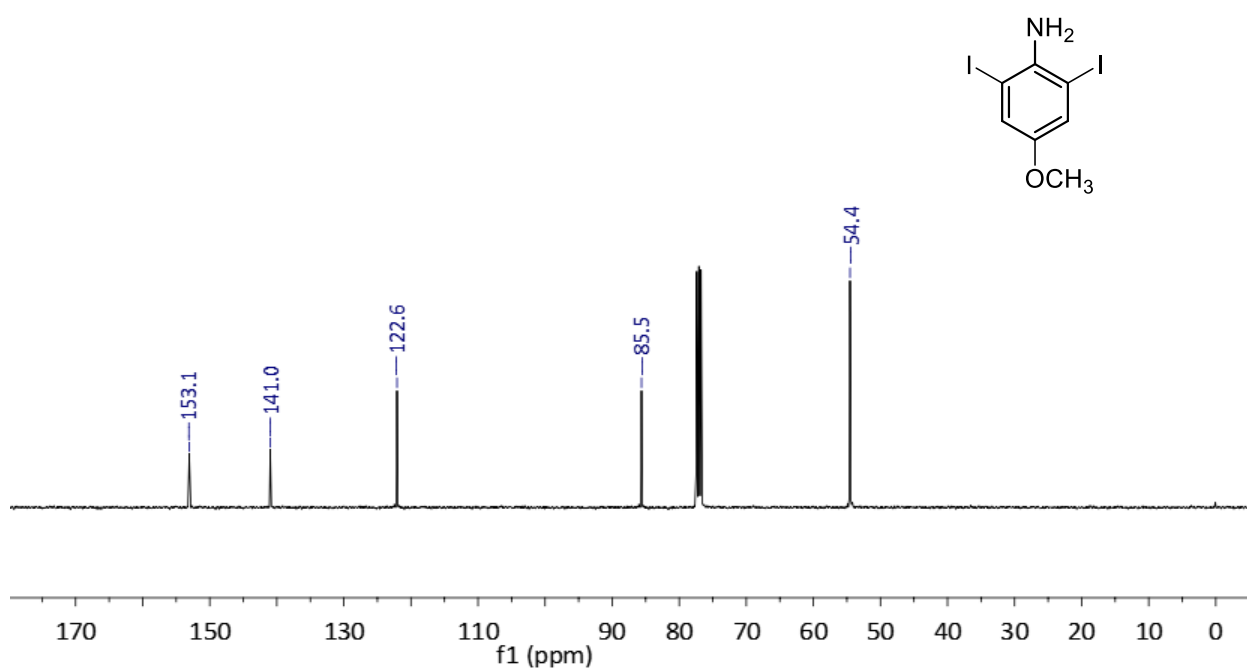


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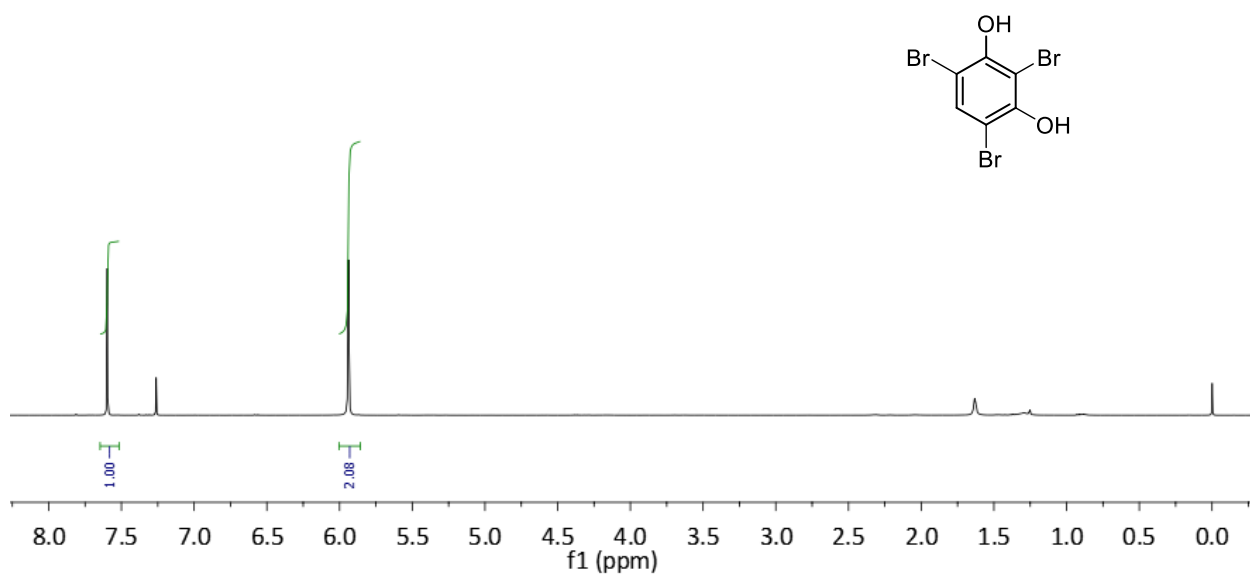




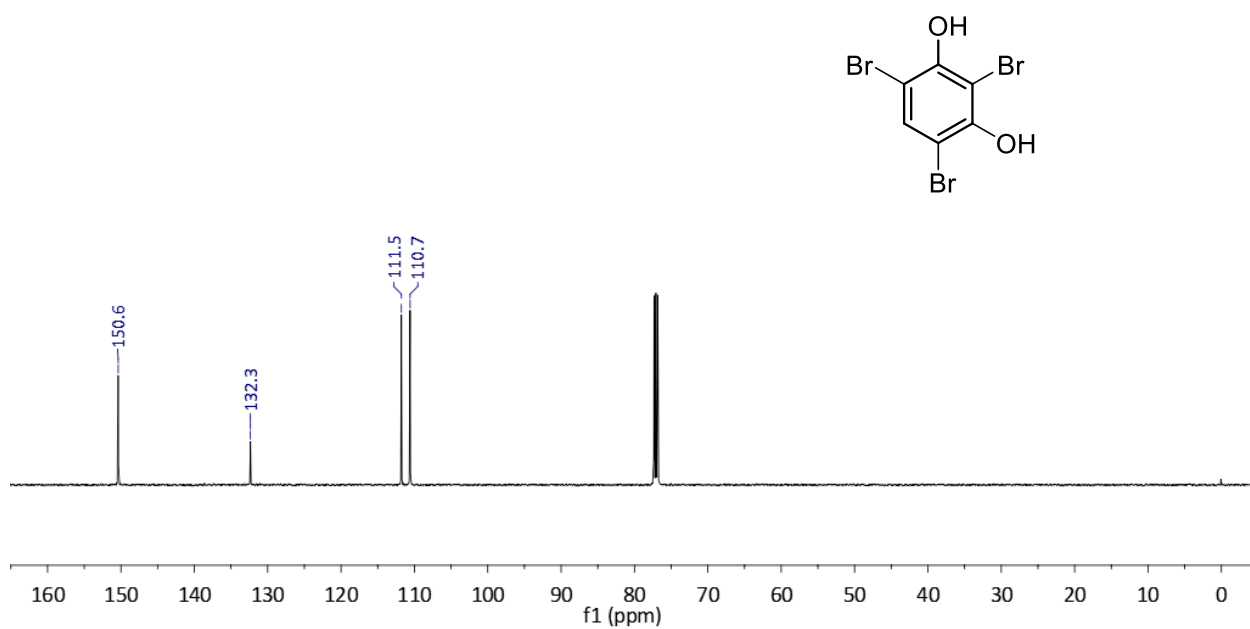
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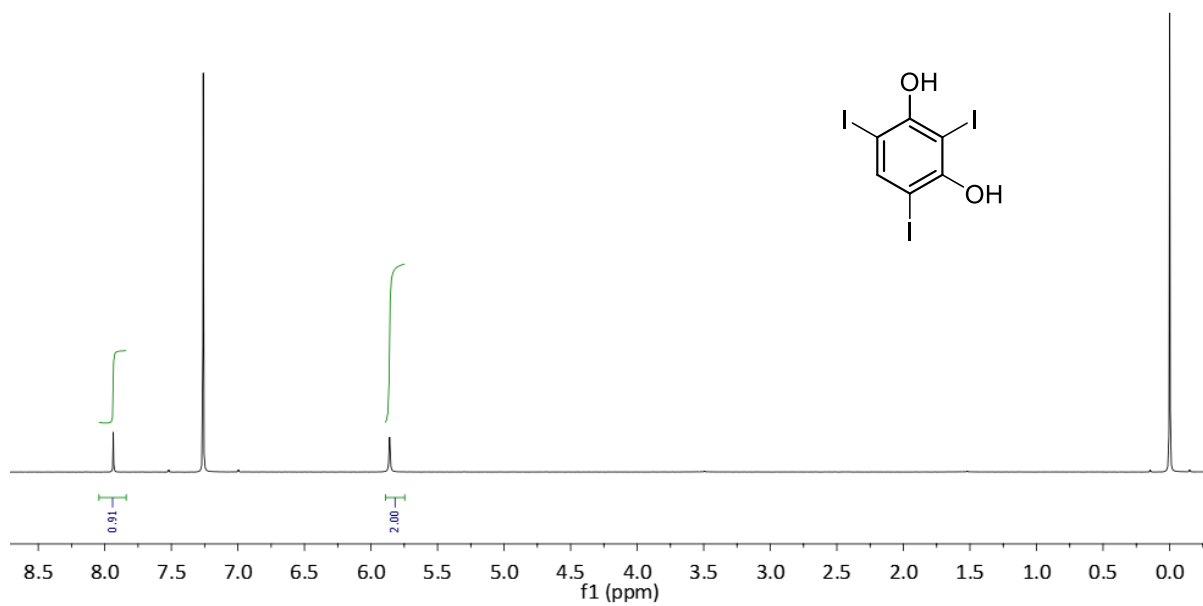
$^{13}\text{C-NMR}$  of 9d in  $\text{CDCl}_3$



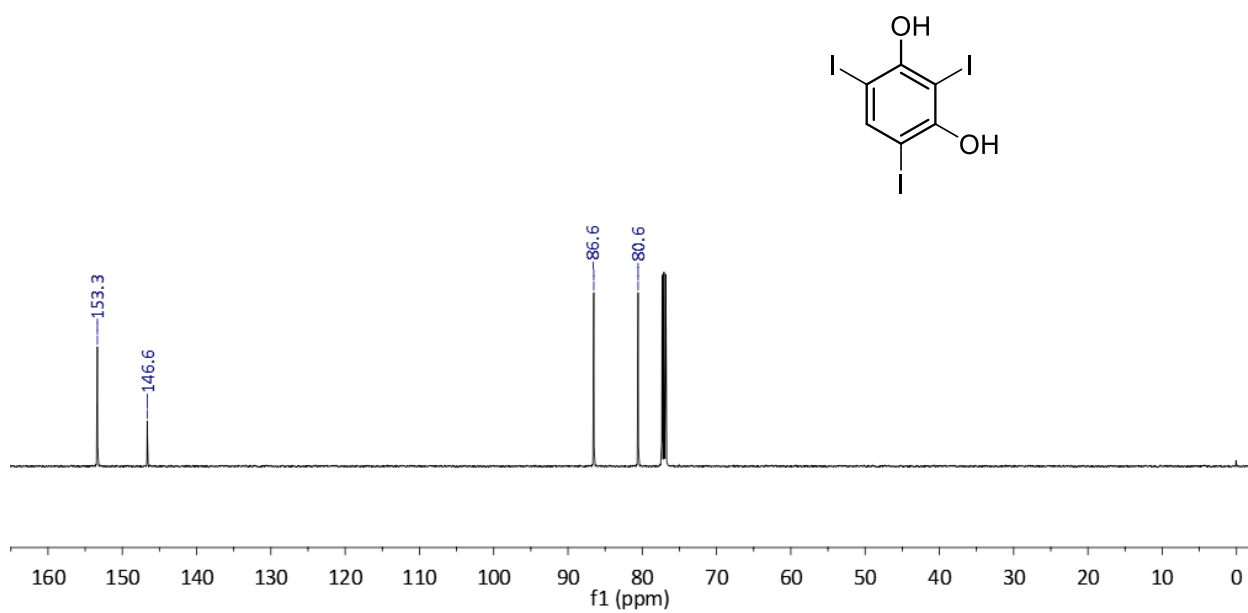
$^1\text{H-NMR}$  of 10a in  $\text{CDCl}_3$



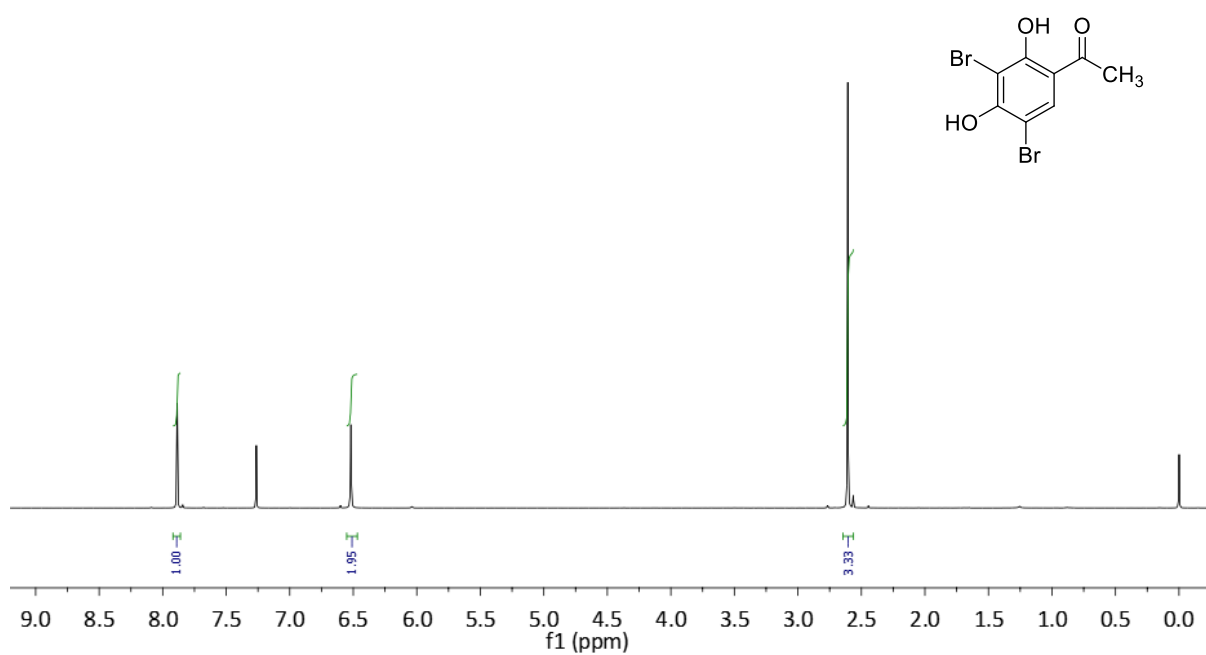
$^{13}\text{C-NMR}$  of 10a in  $\text{CDCl}_3$



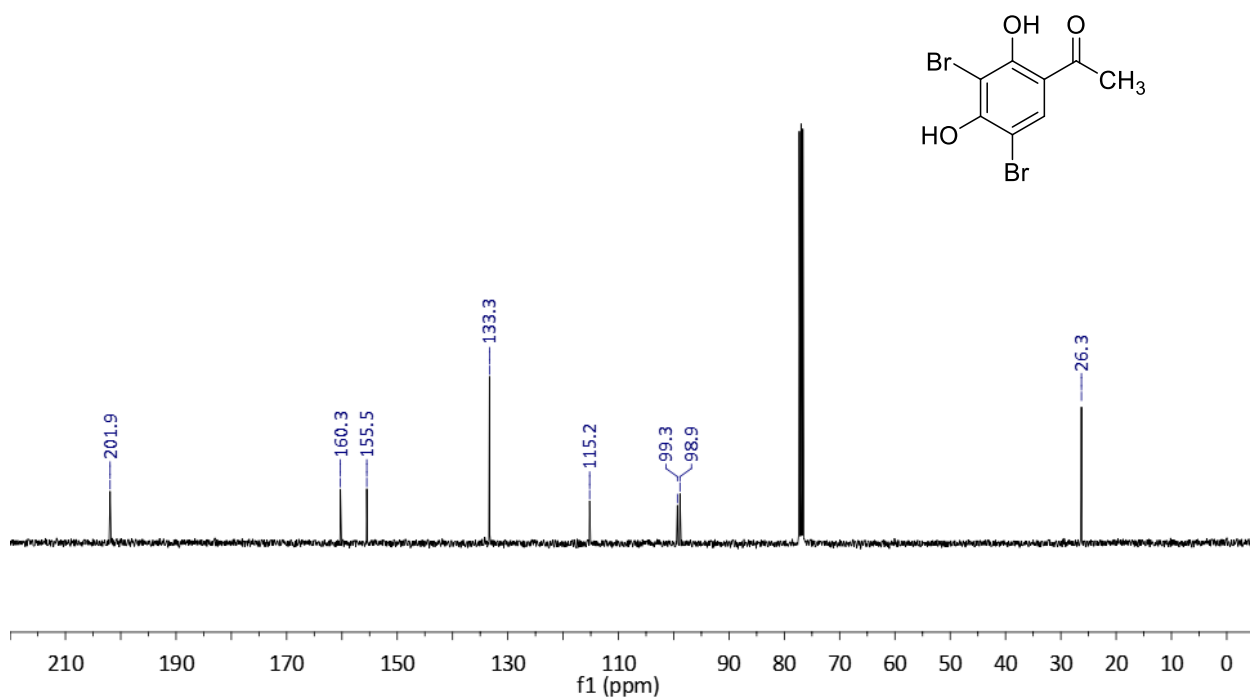
$^1\text{H-NMR}$  of 10b in  $\text{CDCl}_3$



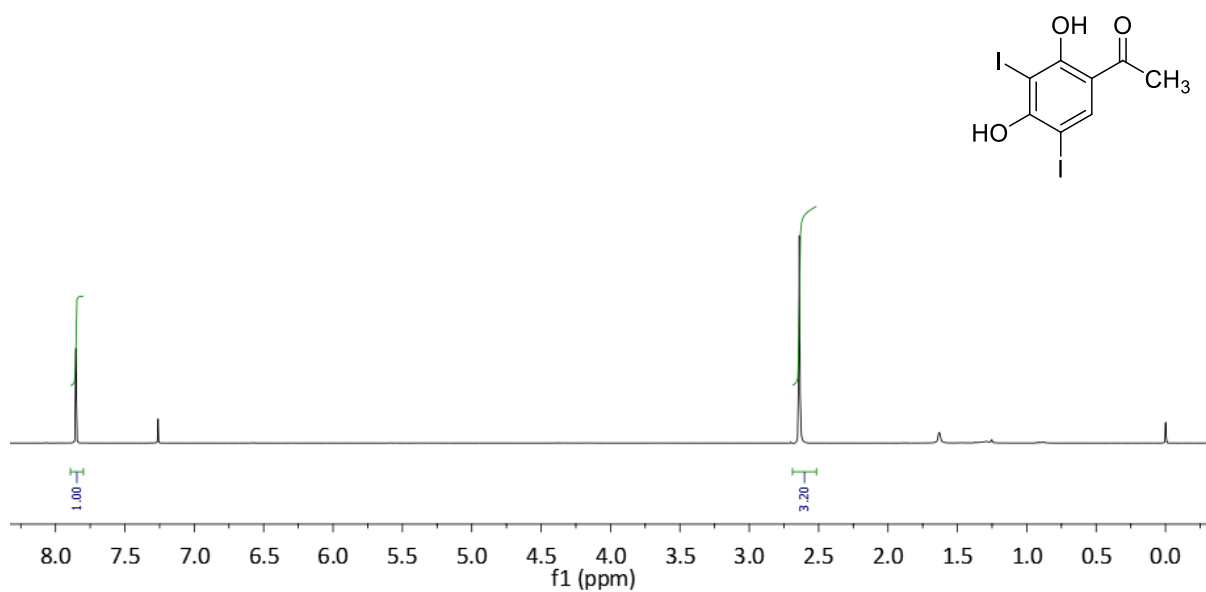
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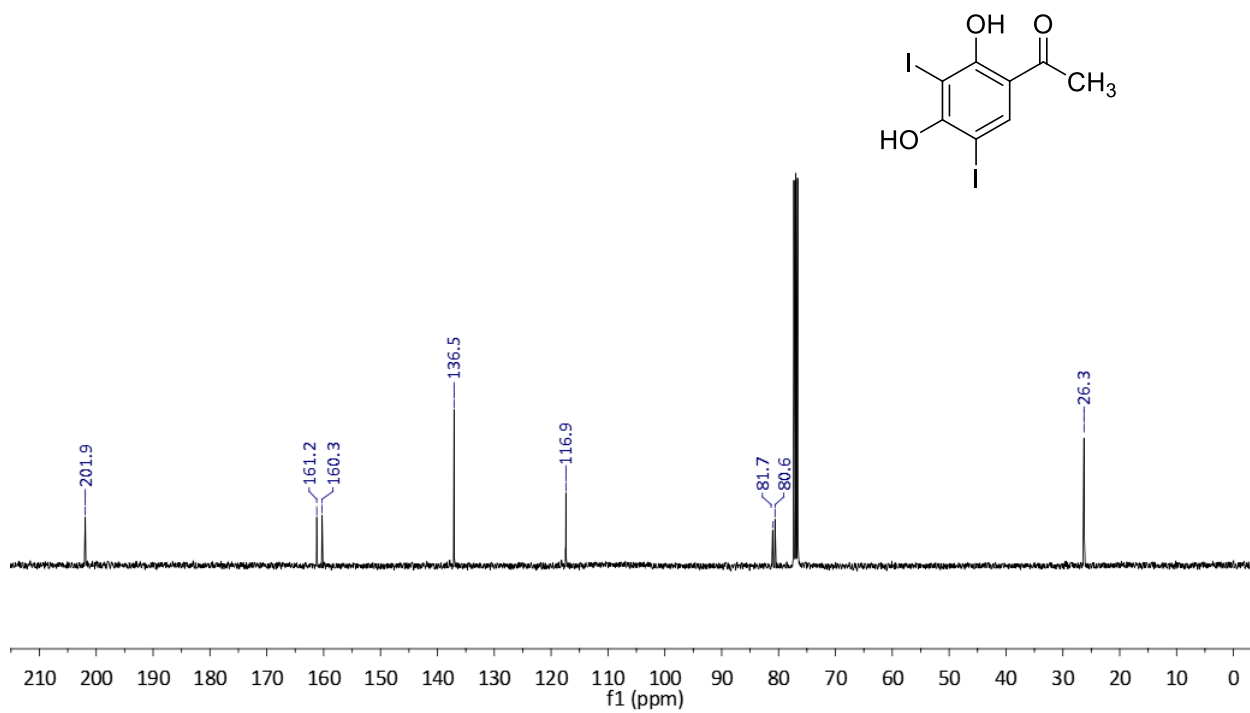
$^1\text{H-NMR}$  of 11a in  $\text{CDCl}_3$



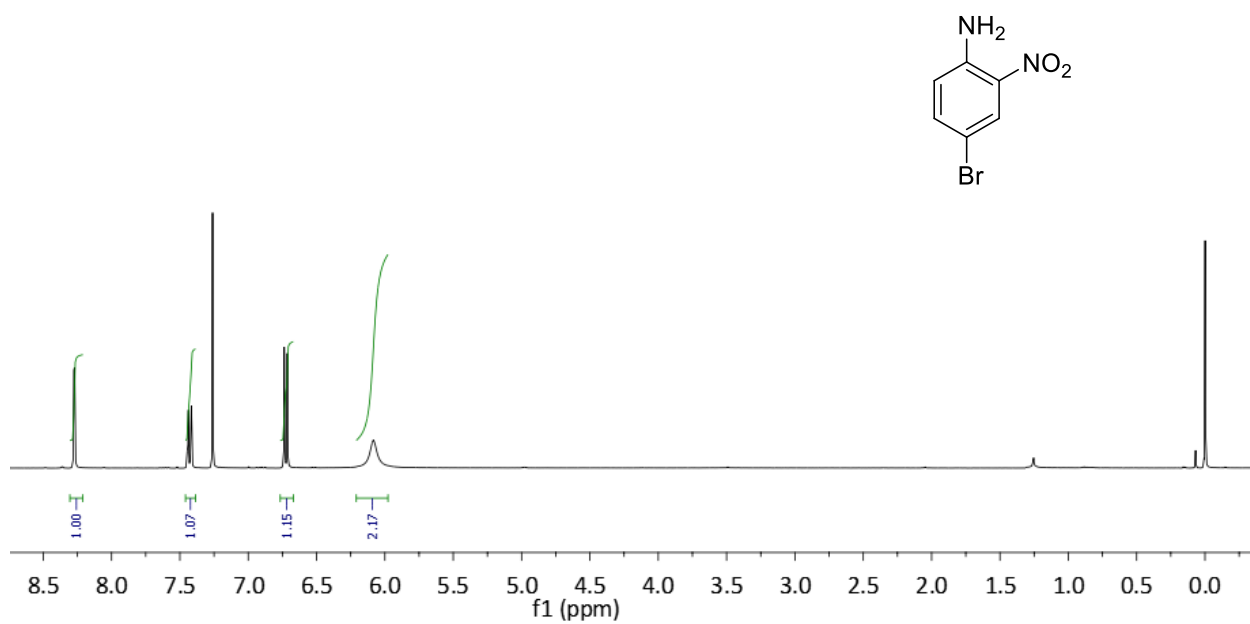
$^{13}\text{C-NMR}$  of 11a in  $\text{CDCl}_3$



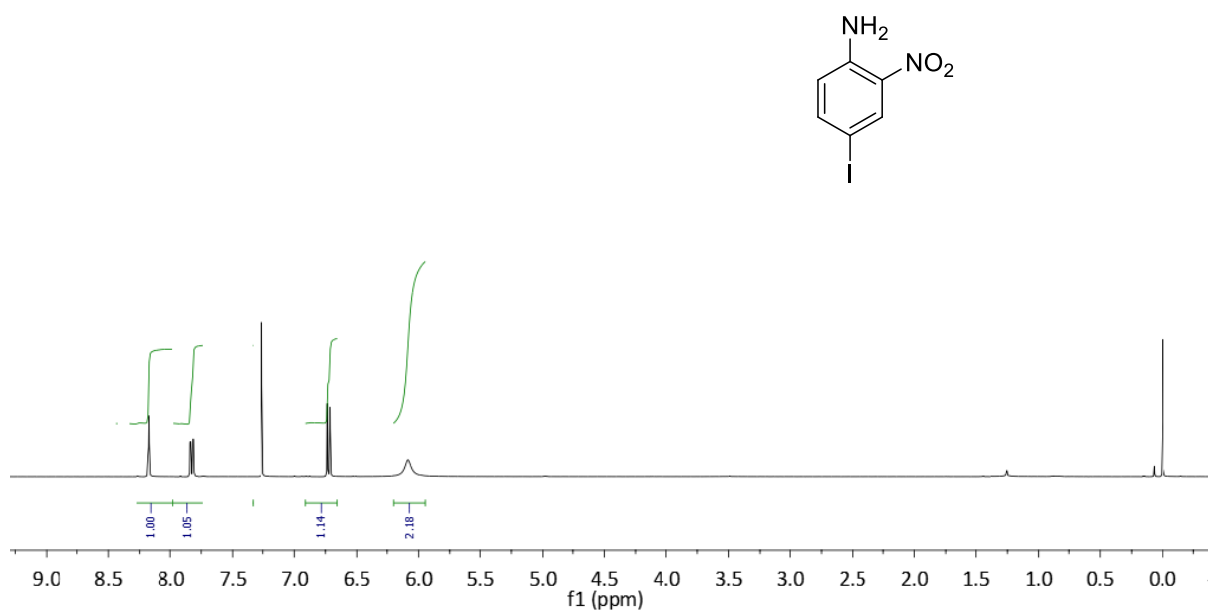
$^1\text{H-NMR}$  of 11b in  $\text{CDCl}_3$



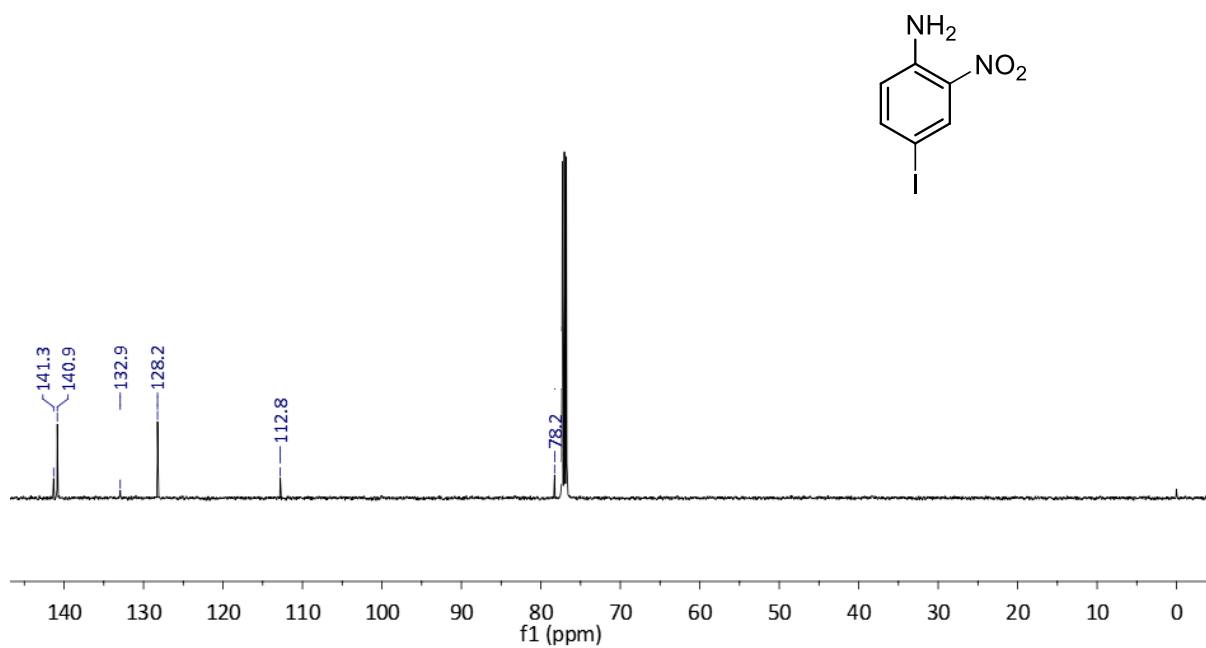
$^{13}\text{C-NMR}$  of 11b in  $\text{CDCl}_3$



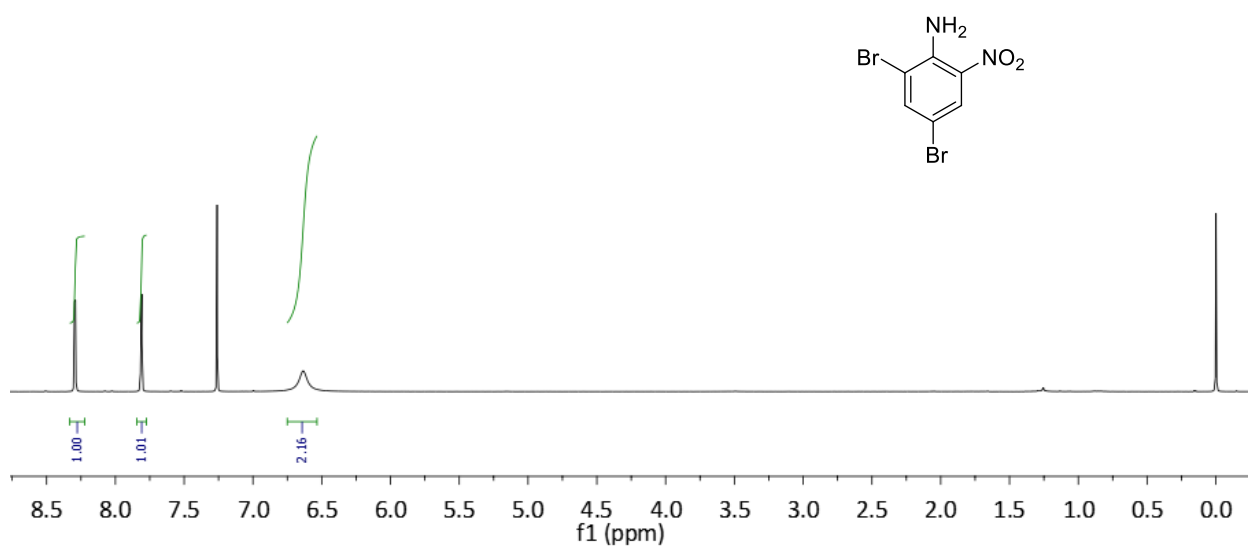
$^1\text{H-NMR}$  of 12a in  $\text{CDCl}_3$



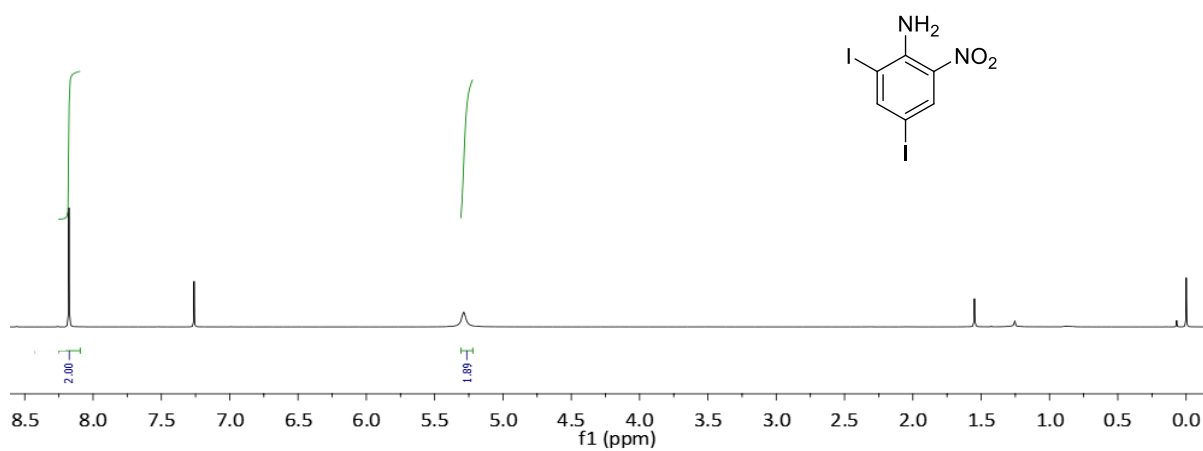
$^1\text{H-NMR}$  of 12b in  $\text{CDCl}_3$



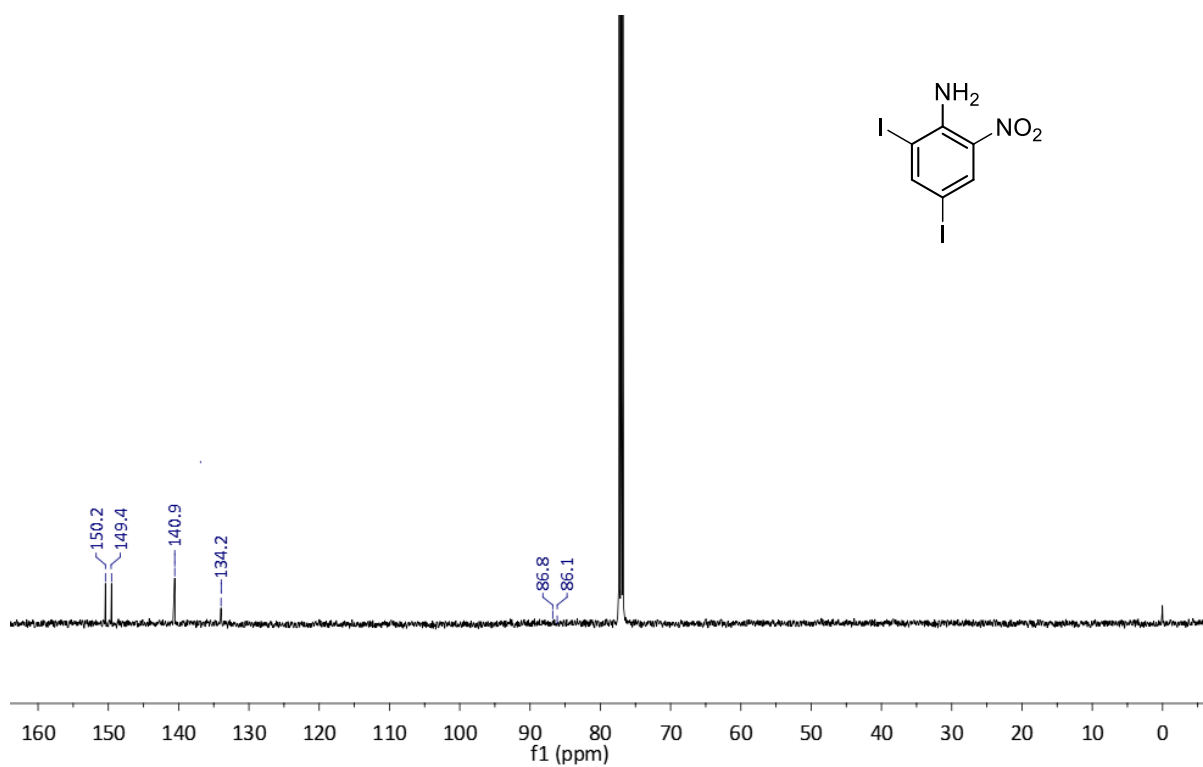
<sup>13</sup>C NMR of 12b in CDCl<sub>3</sub>



<sup>1</sup>H-NMR of 12c in CDCl<sub>3</sub>

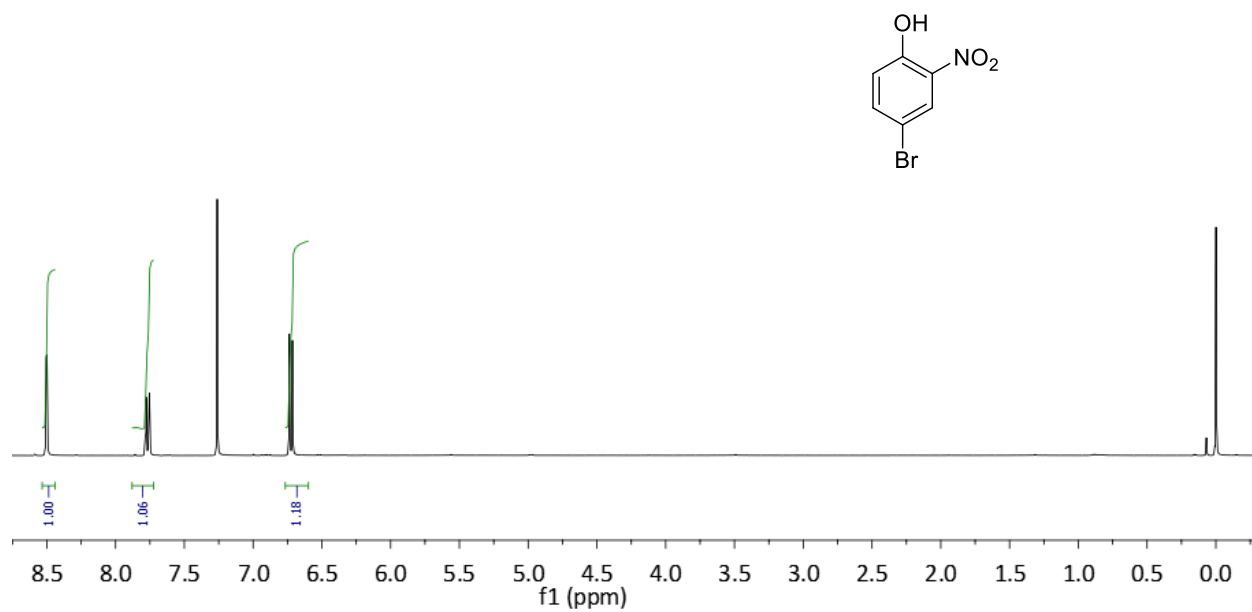


$^1\text{H-NMR}$  of 12d in  $\text{CDCl}_3$

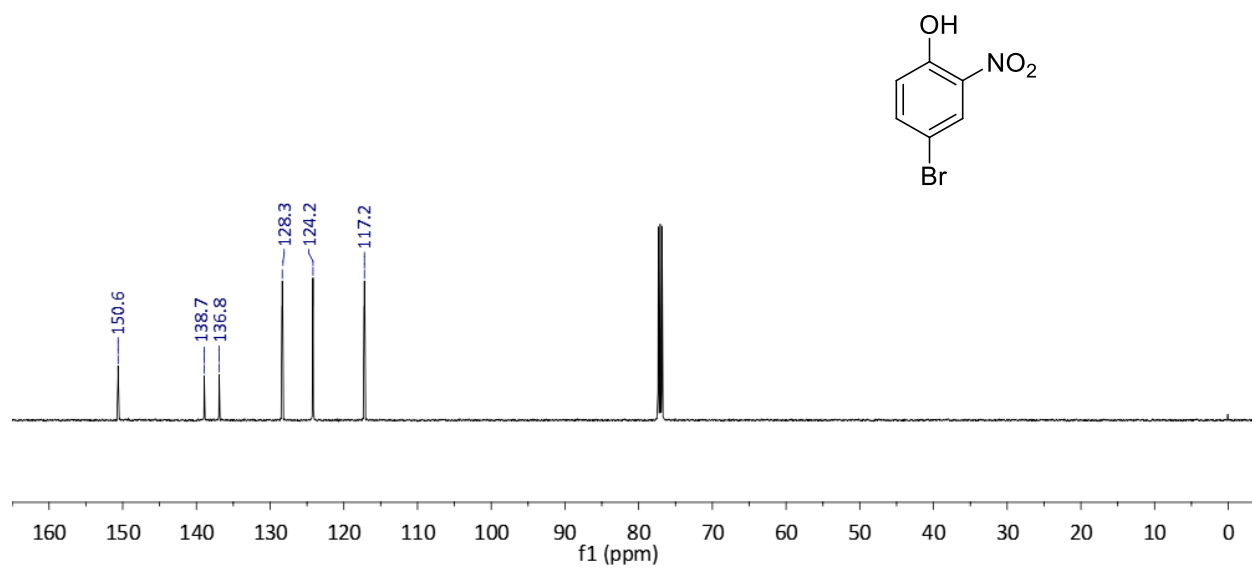


$^{13}\text{C-NMR}$  of 12d in  $\text{CDCl}_3$

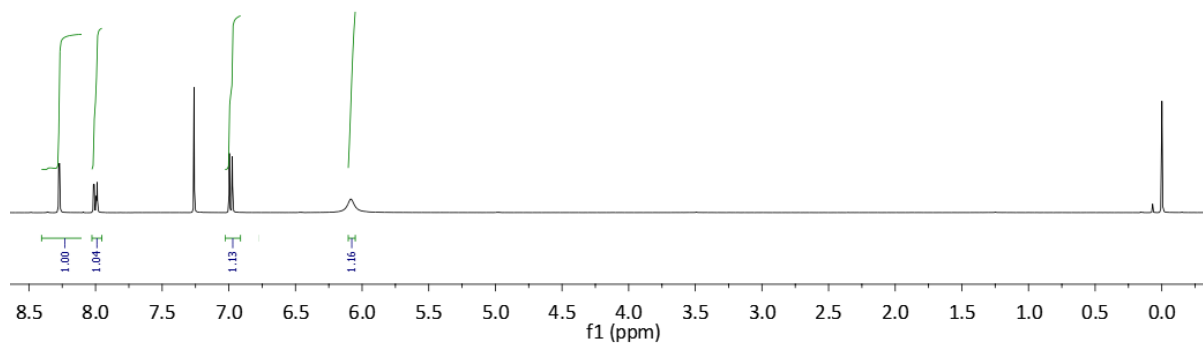
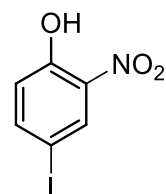




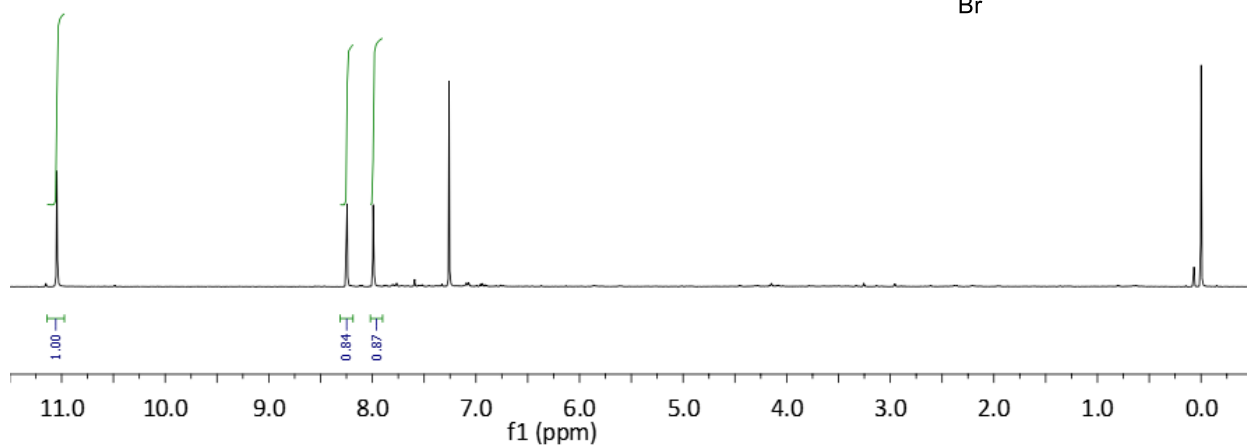
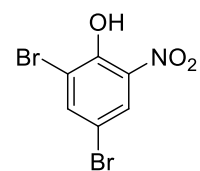
$^1\text{H-NMR}$  of 13a in  $\text{CDCl}_3$



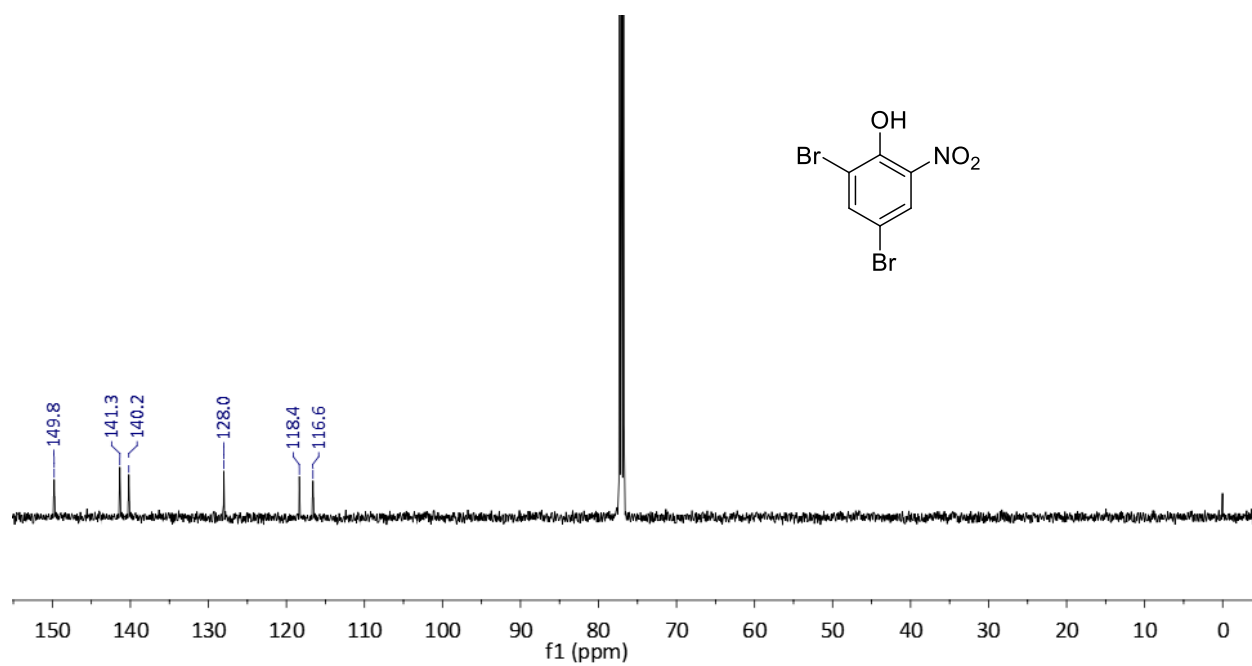
$^{13}\text{C-NMR}$  of 13a in  $\text{CDCl}_3$



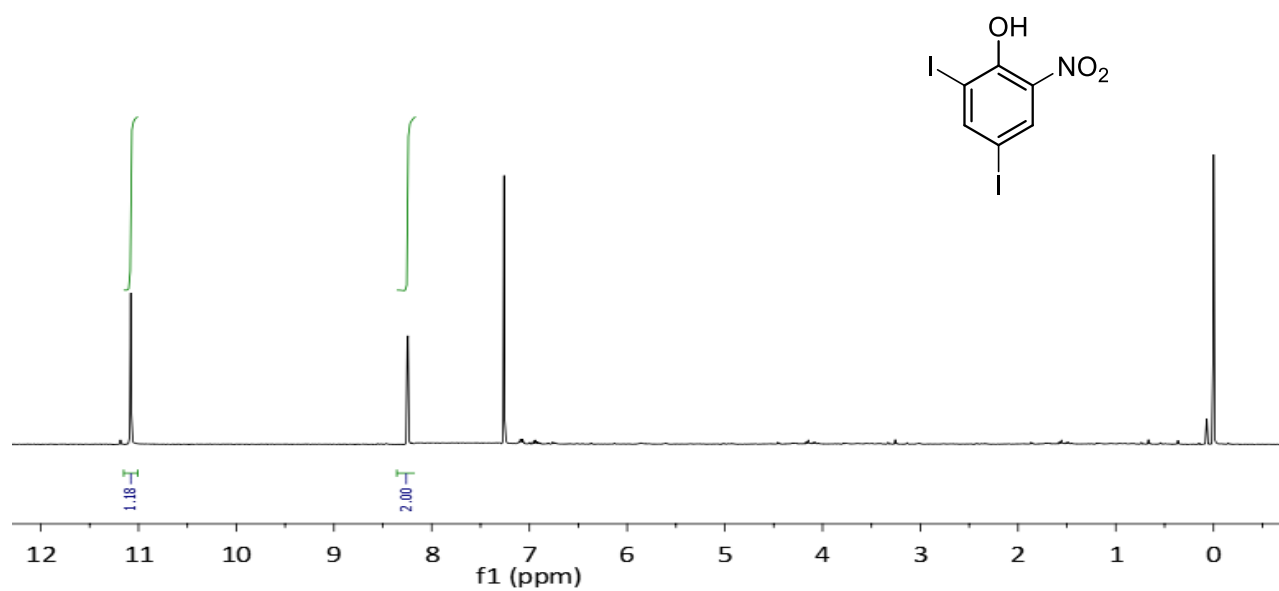
$^1\text{H}$ -NMR of 13b in  $\text{CDCl}_3$



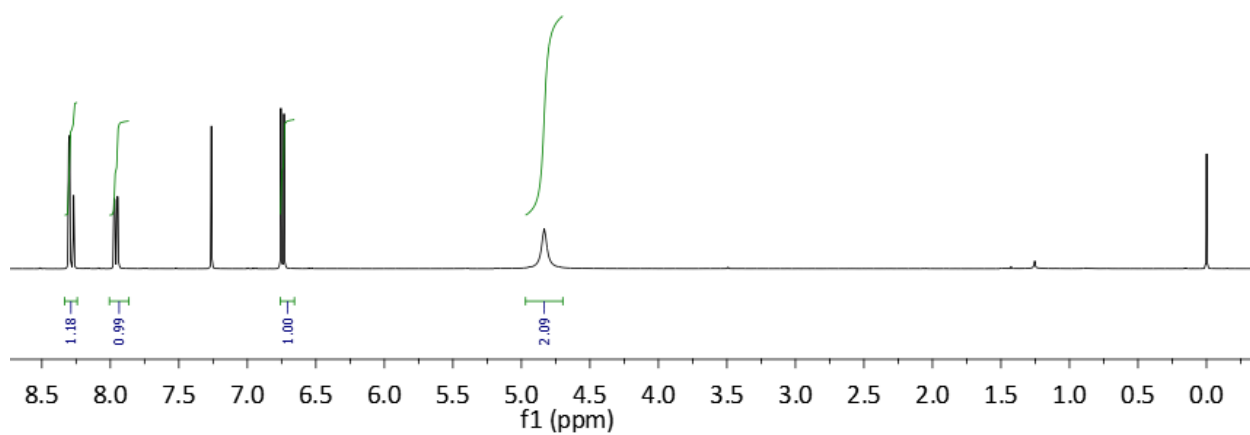
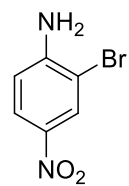
$^1\text{H}$ -NMR of 13c in  $\text{CDCl}_3$



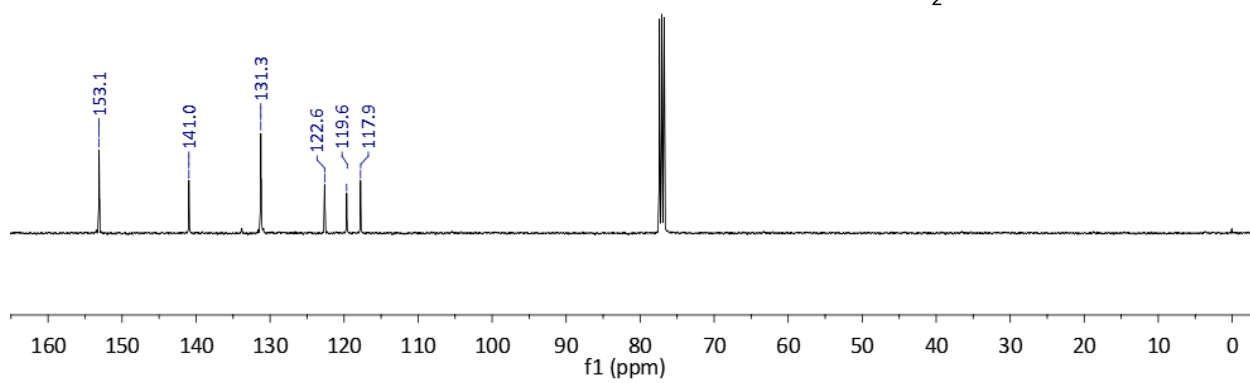
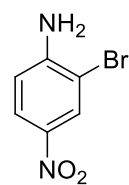
<sup>13</sup>C NMR of 13c in CDCl<sub>3</sub>



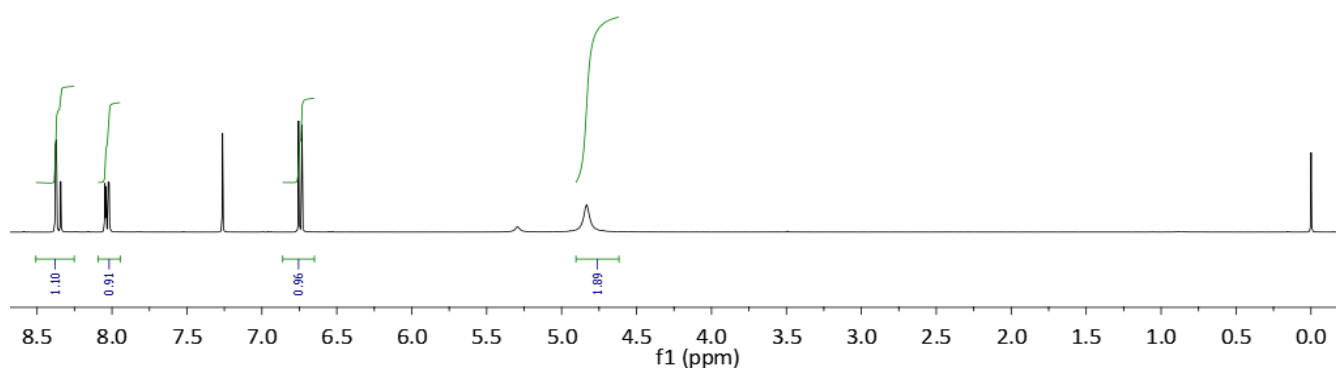
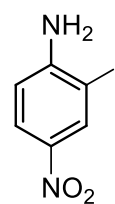
<sup>1</sup>H-NMR of 13d in CDCl<sub>3</sub>



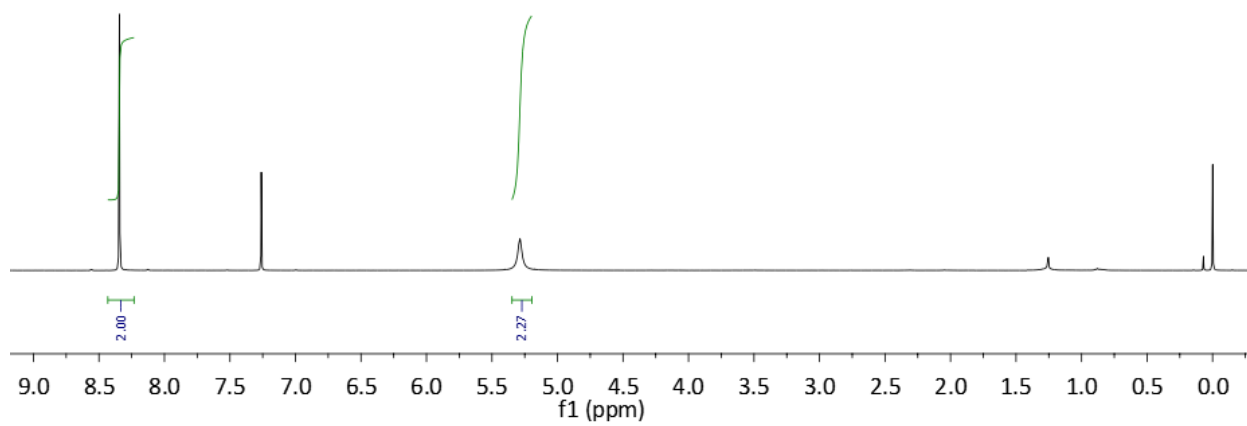
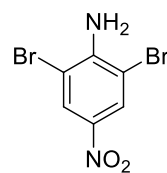
$^1\text{H-NMR}$  of 14a in  $\text{CDCl}_3$



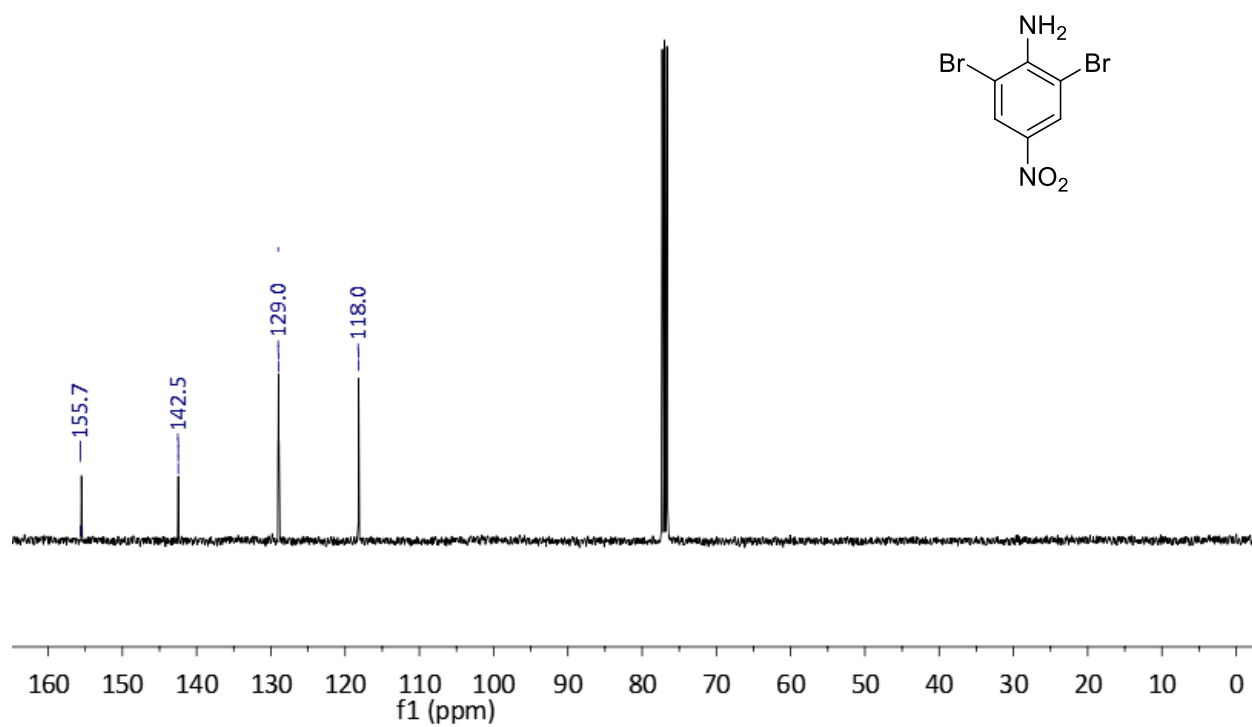
$^{13}\text{C-NMR}$  of 14a in  $\text{CDCl}_3$



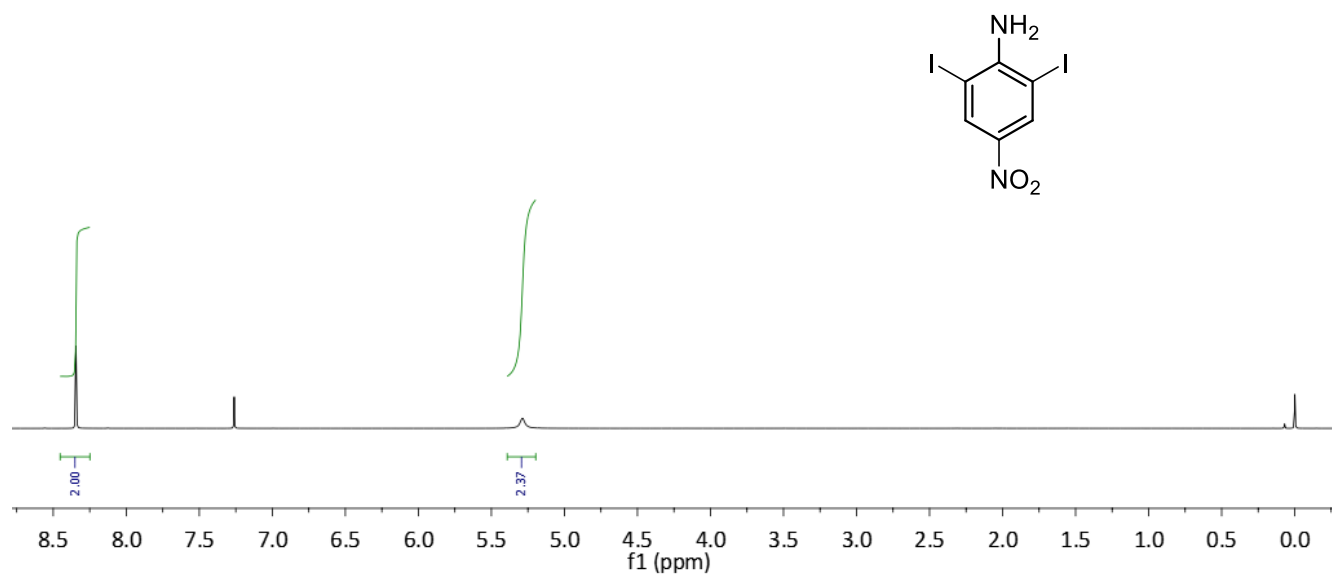
$^1\text{H-NMR}$  of 14b in  $\text{CDCl}_3$



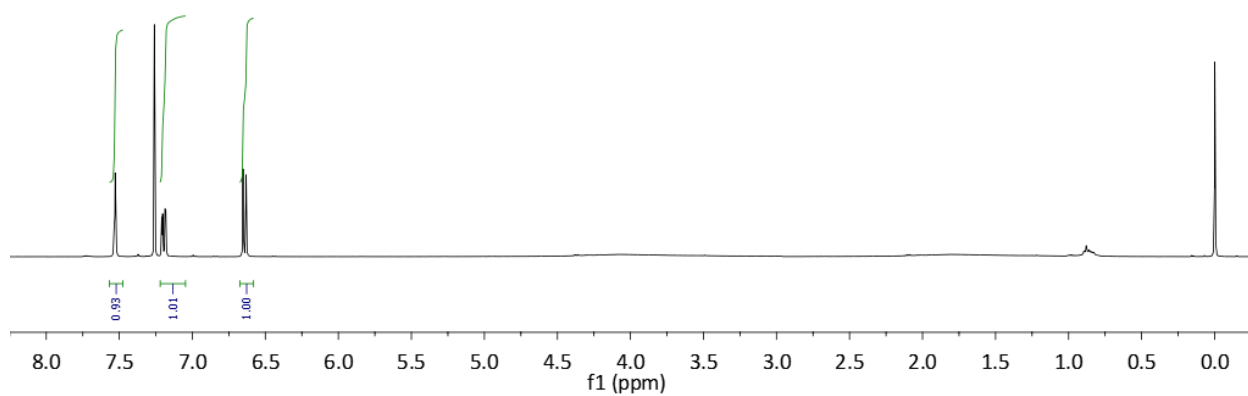
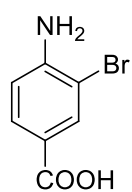
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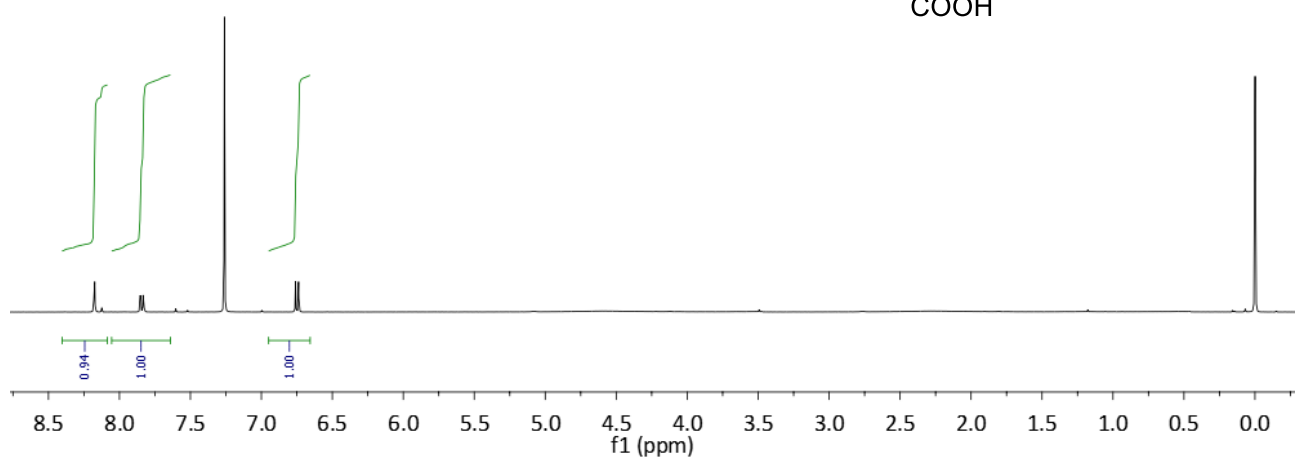
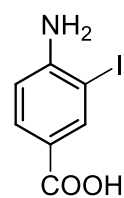
<sup>13</sup>C NMR of 14c in CDCl<sub>3</sub>



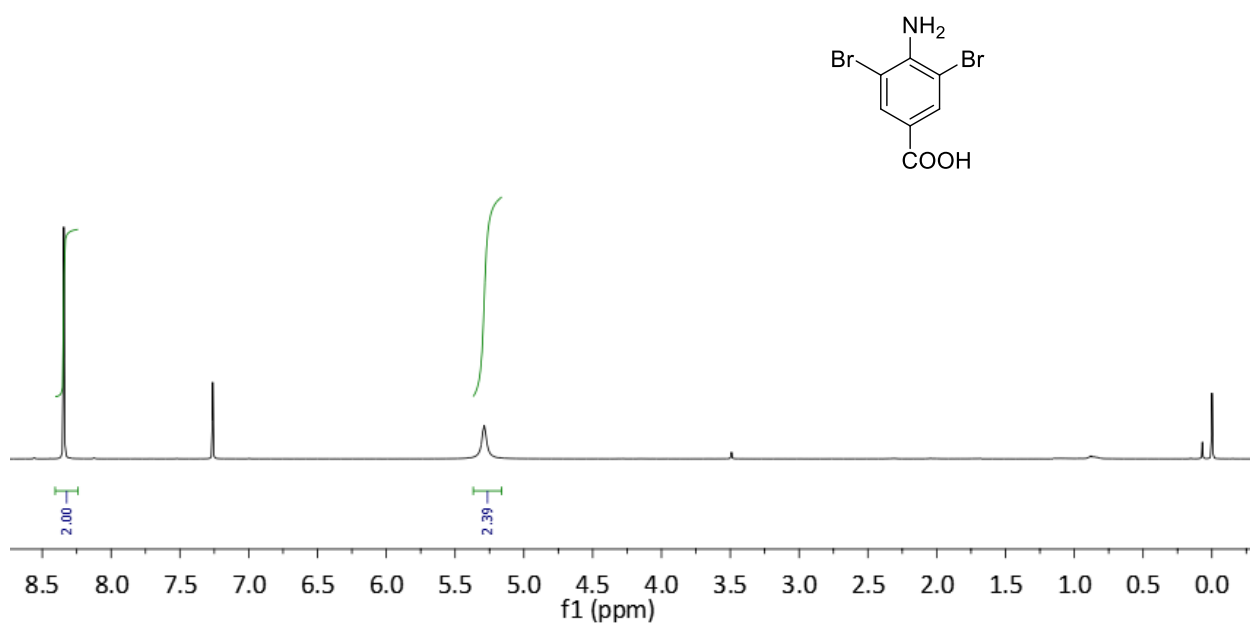
<sup>1</sup>H-NMR of 14d in CDCl<sub>3</sub>



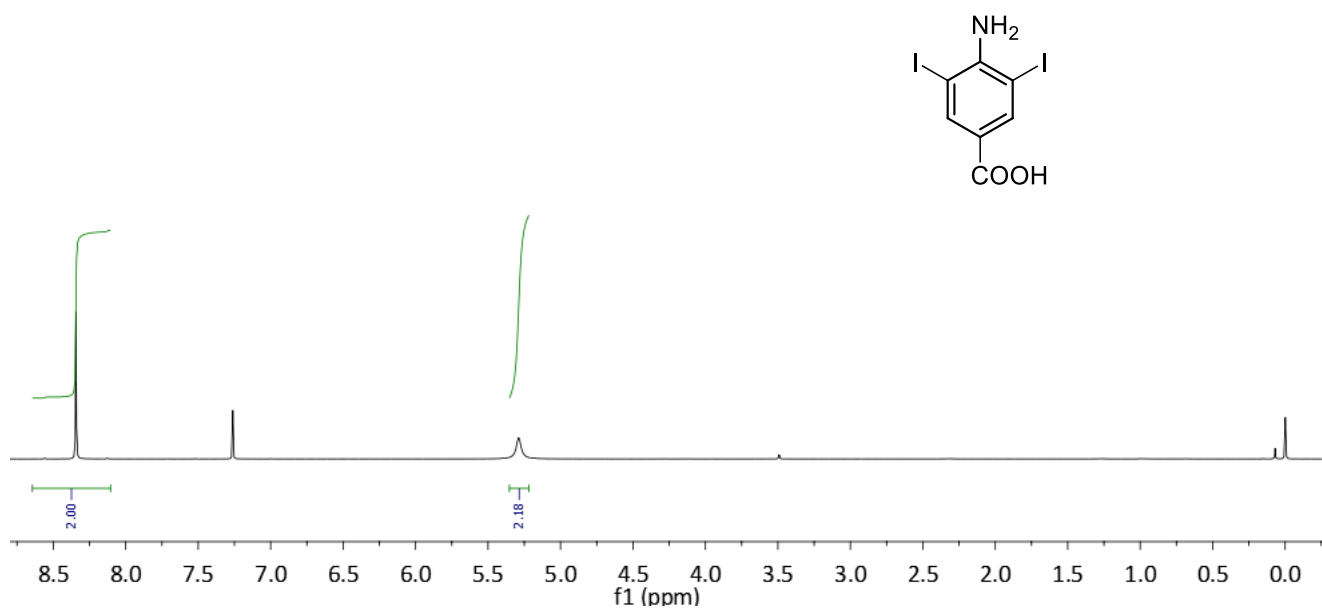
$^1\text{H-NMR}$  of 15a in  $\text{CDCl}_3$



$^1\text{H-NMR}$  of 15b in  $\text{CDCl}_3$

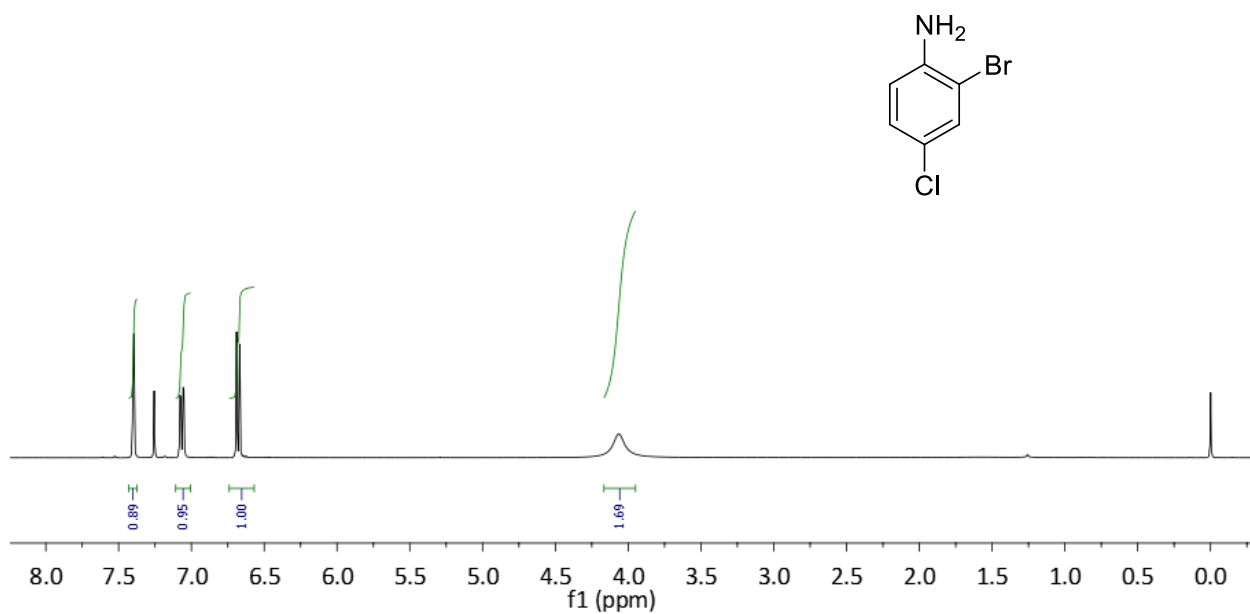


$^1\text{H-NMR}$  of 15c in  $\text{CDCl}_3$

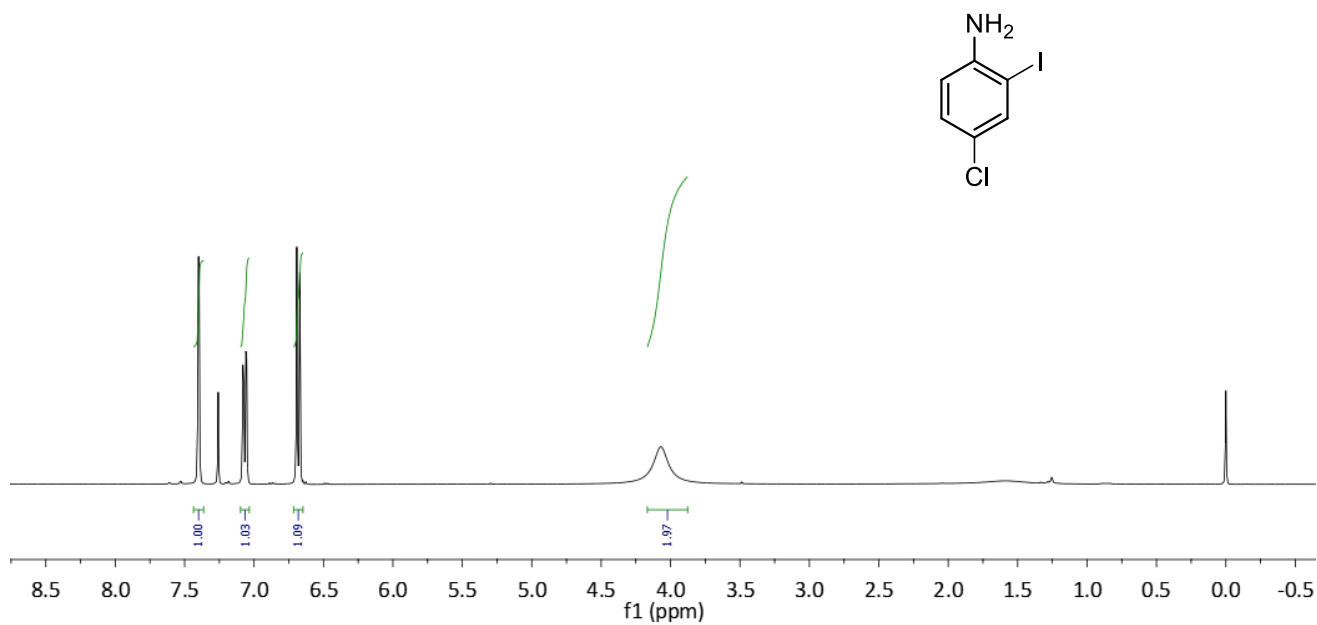


$^1\text{H-NMR}$  of 15d in  $\text{CDCl}_3$

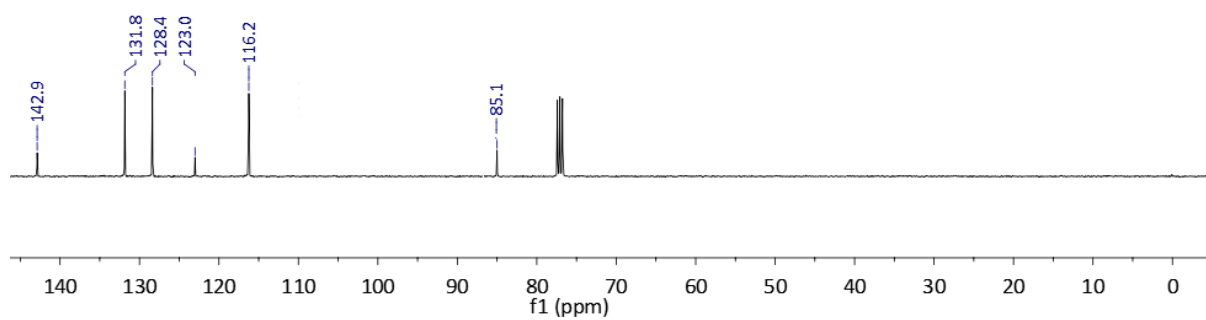
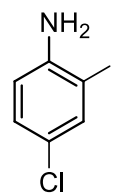




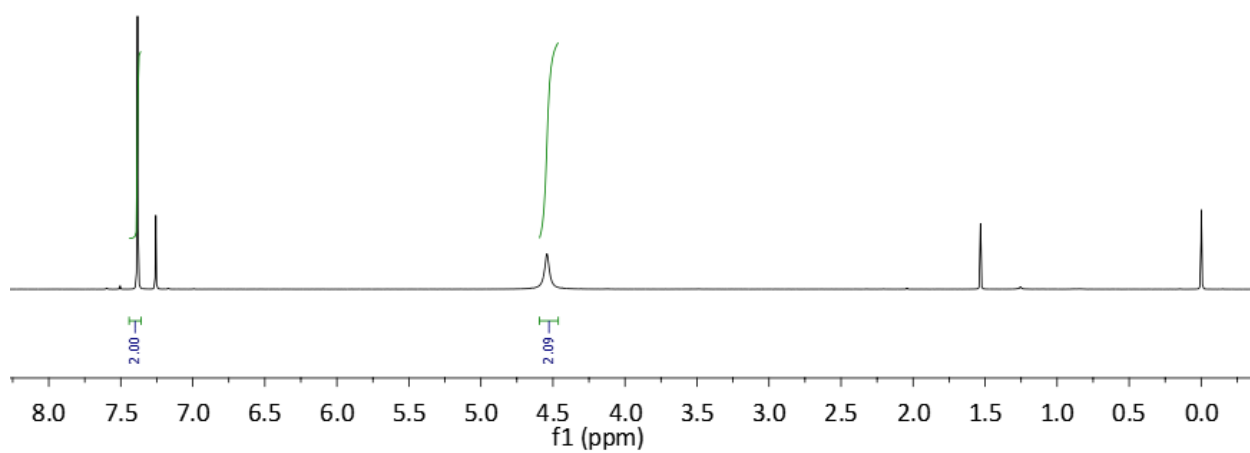
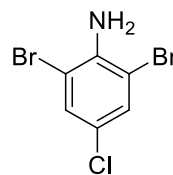
$^1\text{H}$ -NMR of 16a in  $\text{CDCl}_3$



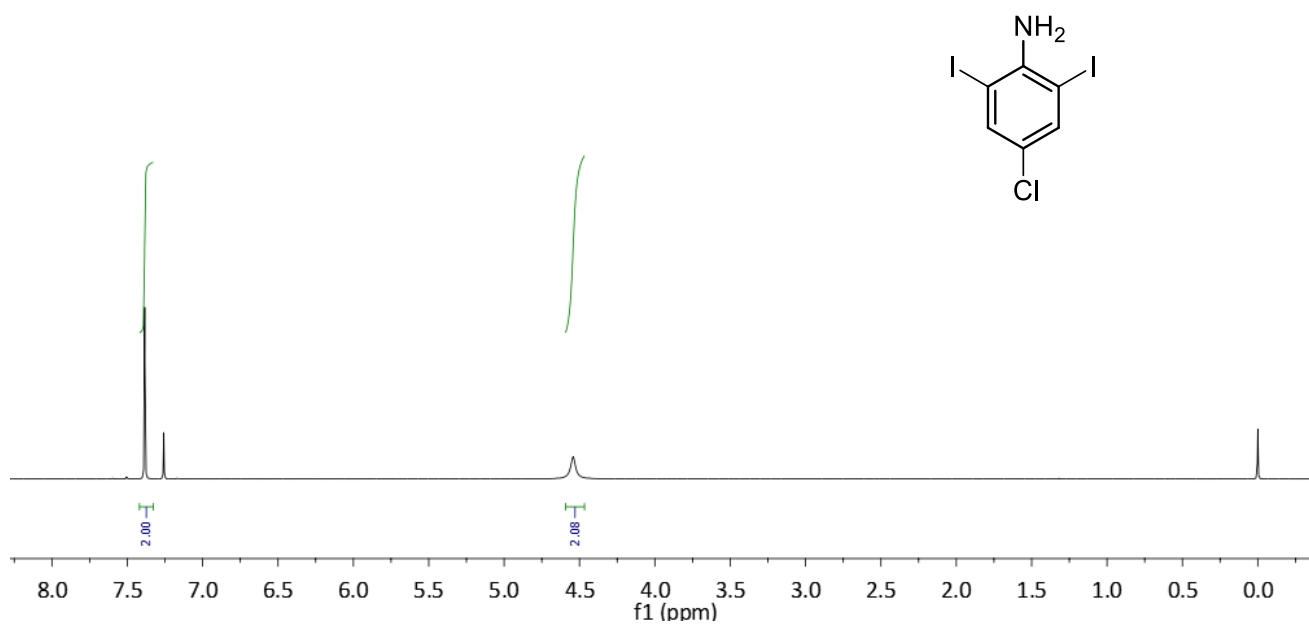
$^1\text{H}$ -NMR of 16b in  $\text{CDCl}_3$



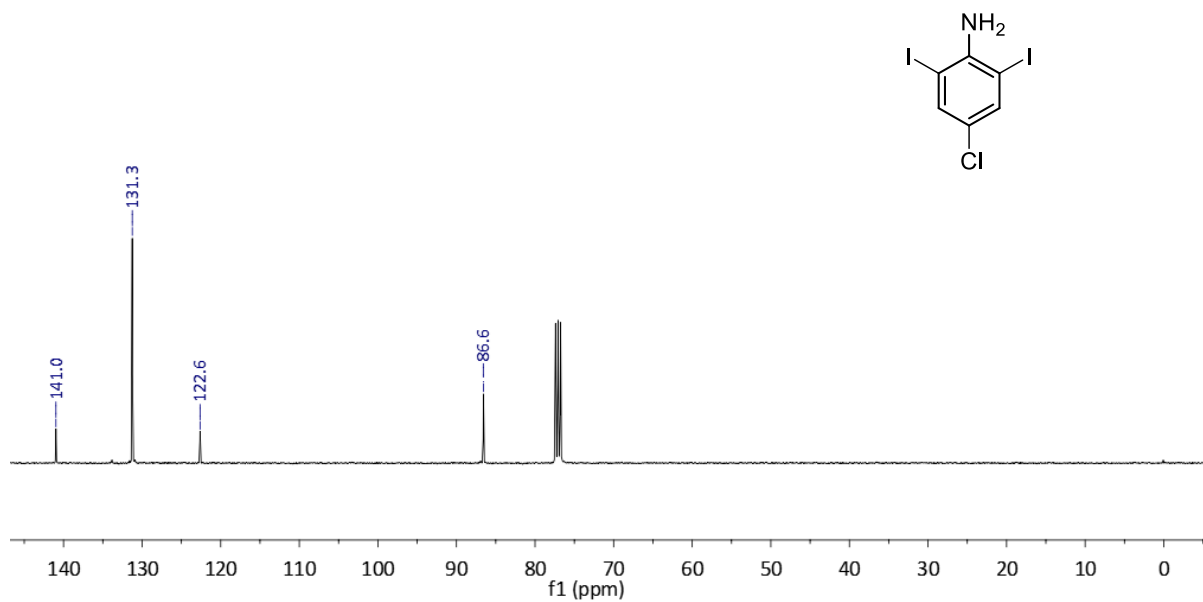
$^{13}\text{C}$  NMR of 16b in  $\text{CDCl}_3$



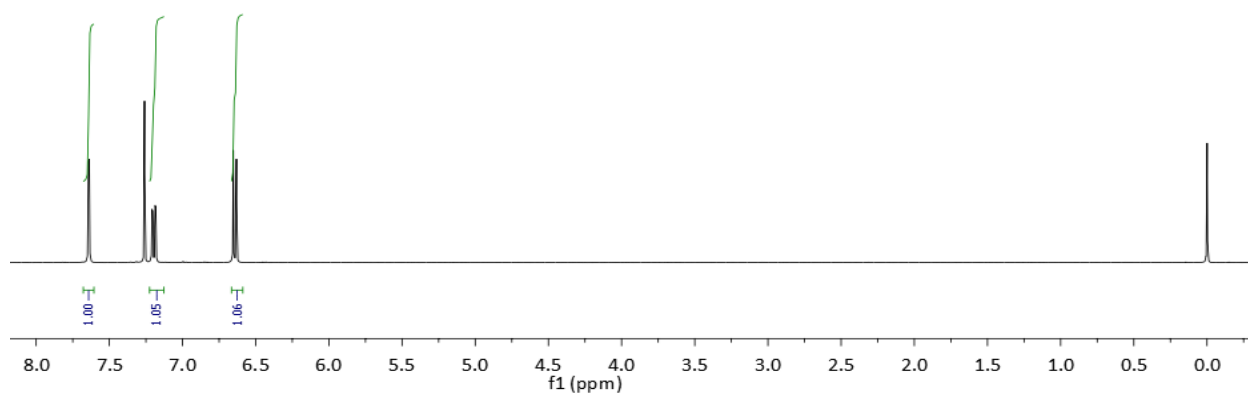
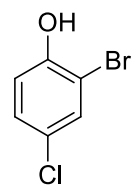
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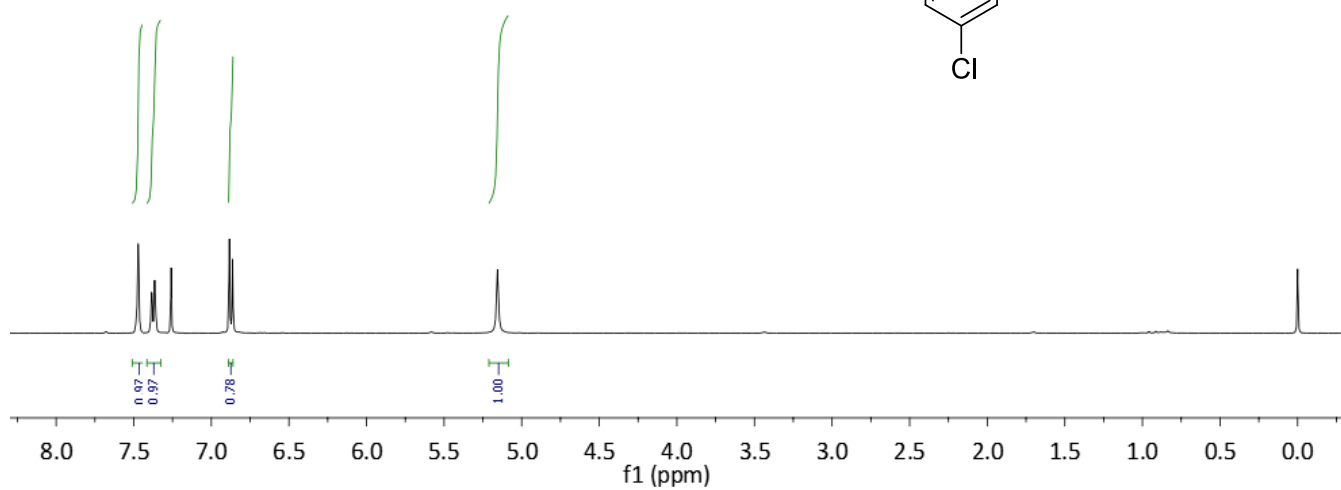
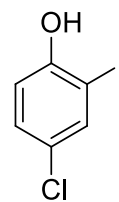
$^1\text{H-NMR}$  of 16d in  $\text{CDCl}_3$



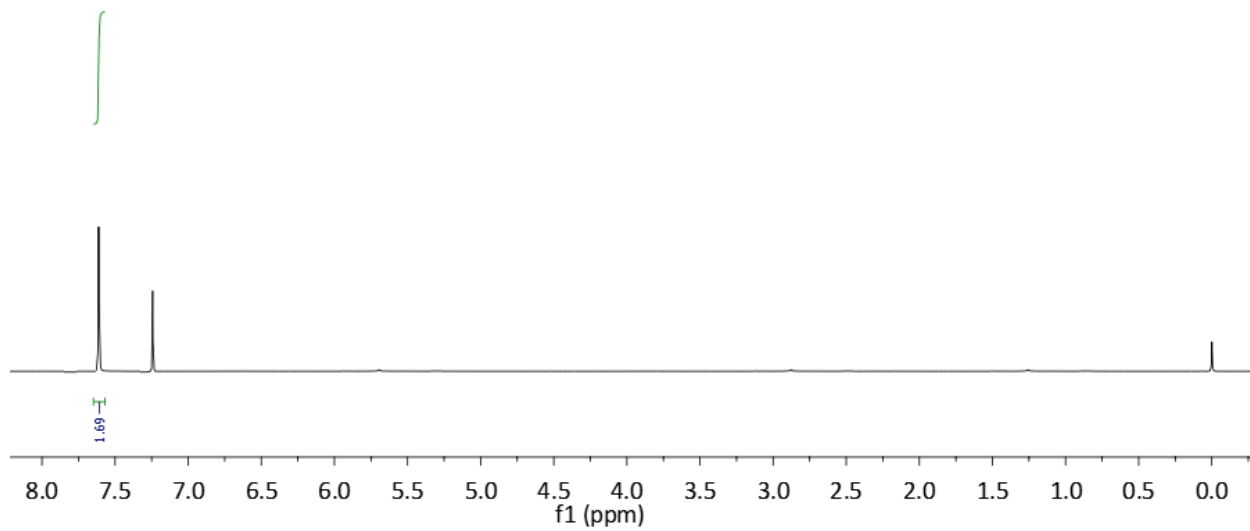
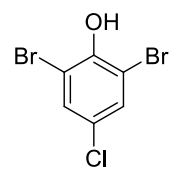
$^{13}\text{C-NMR}$  of 16d in  $\text{CDCl}_3$



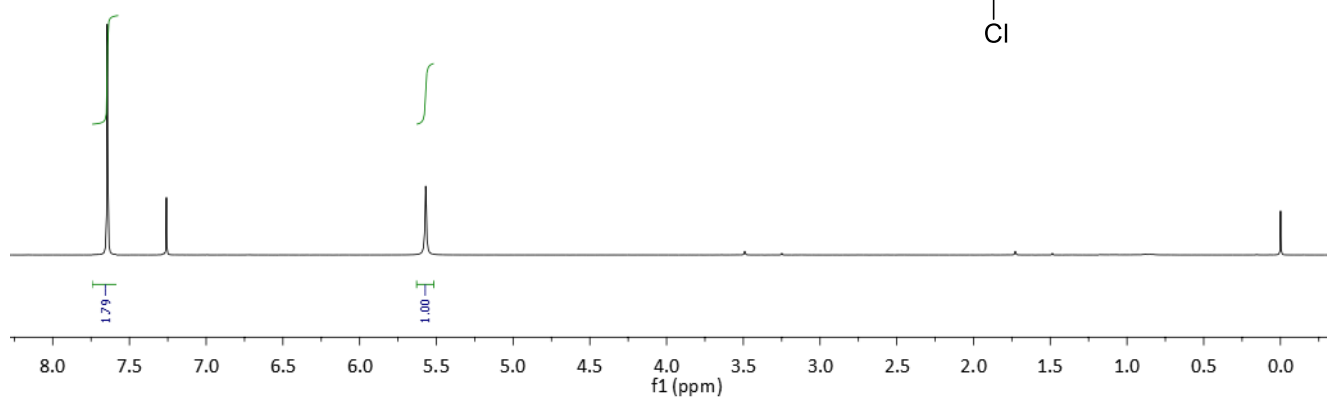
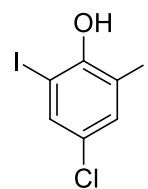
$^1\text{H}$ -NMR of 17a in  $\text{CDCl}_3$



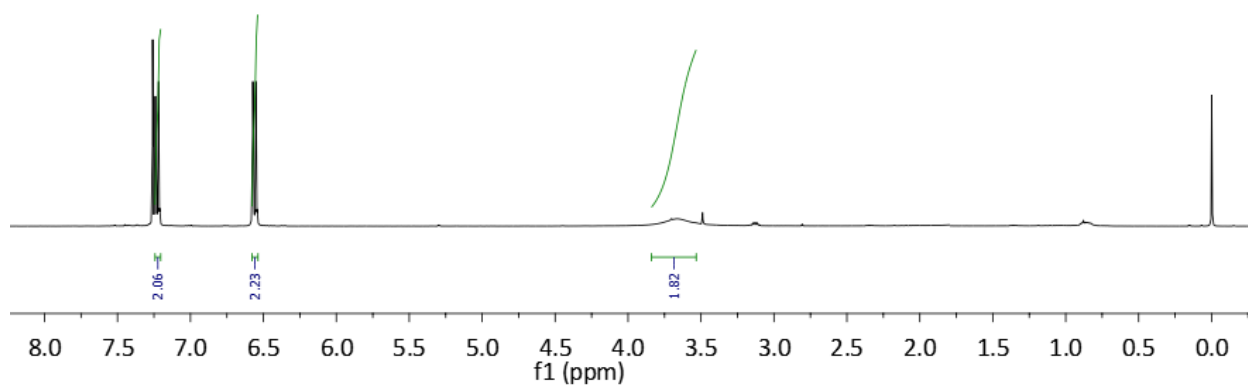
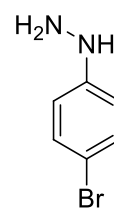
$^1\text{H}$ -NMR of 17b in  $\text{CDCl}_3$



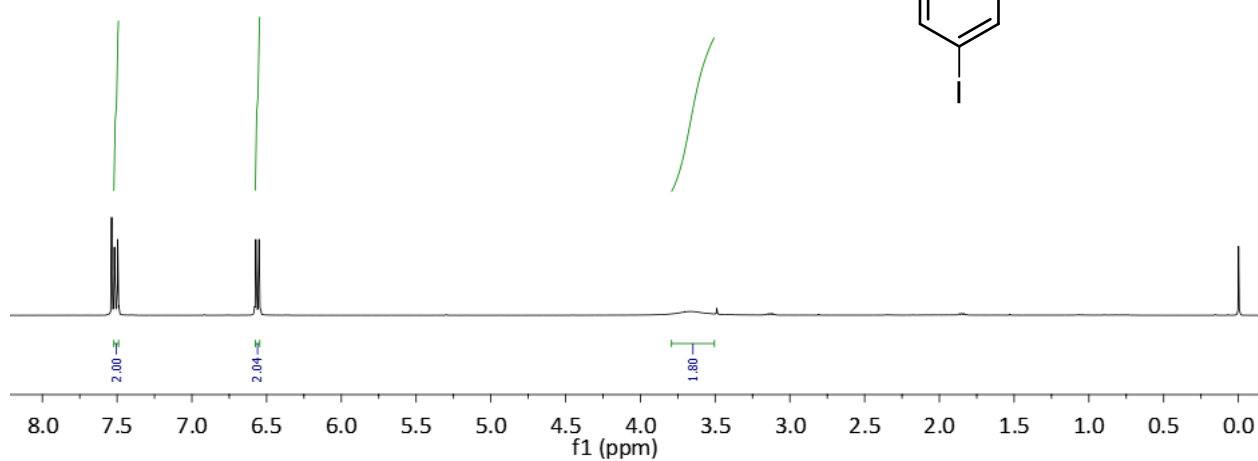
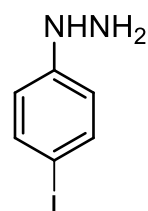
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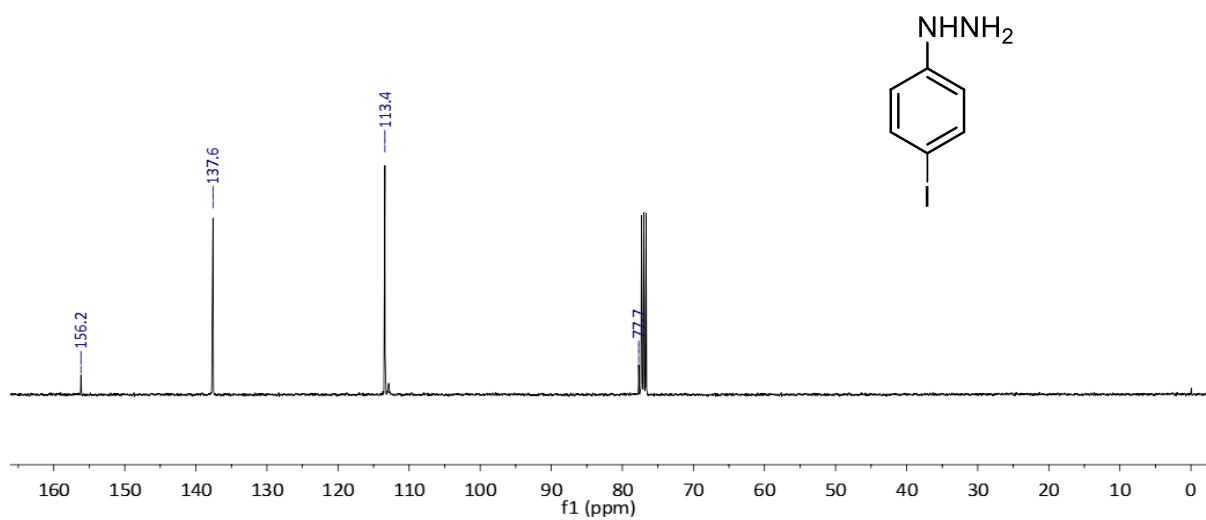
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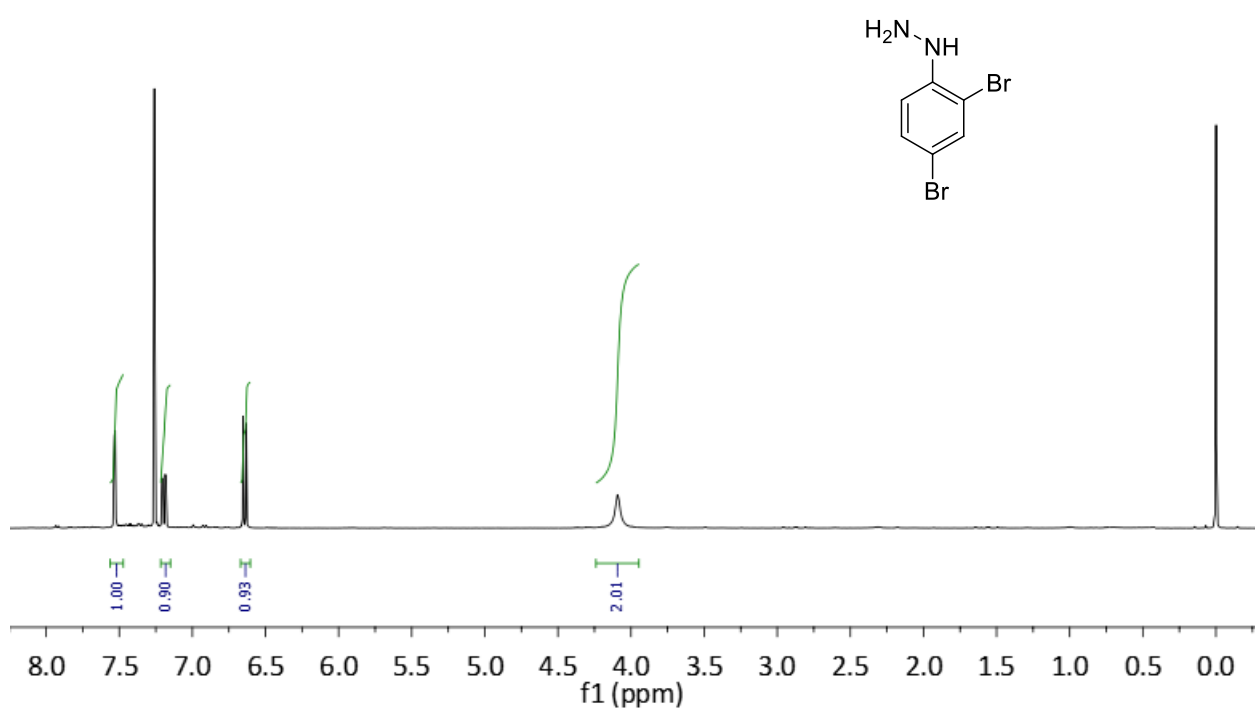
$^1\text{H-NMR}$  of 18a in  $\text{CDCl}_3$



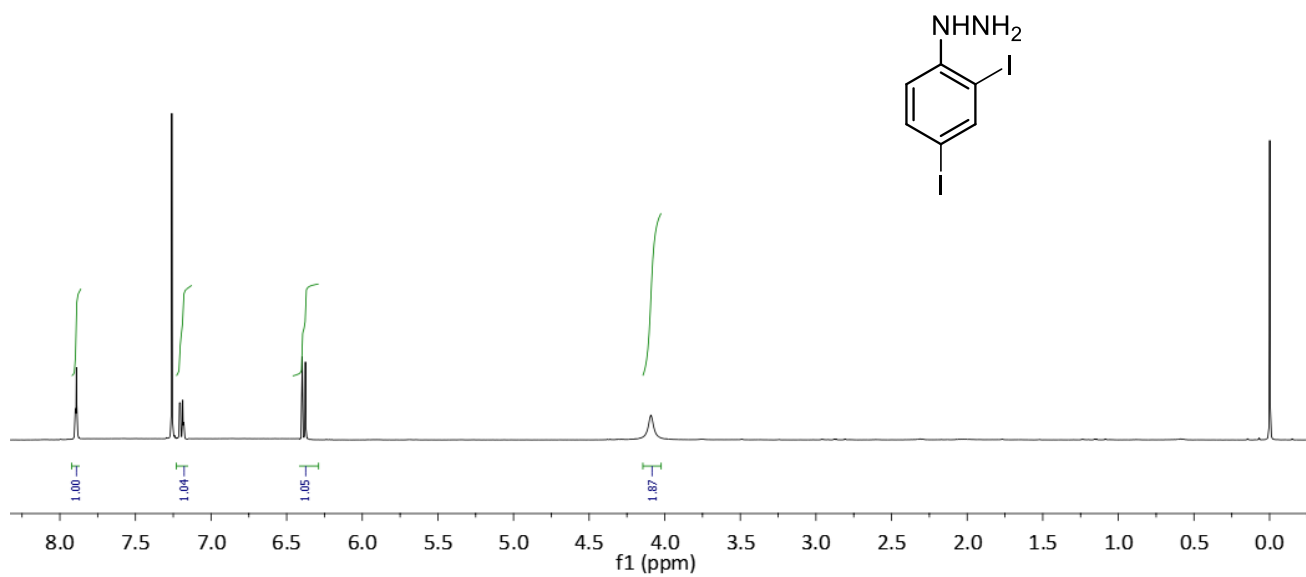
$^1\text{H-NMR}$  of 18b in  $\text{CDCl}_3$



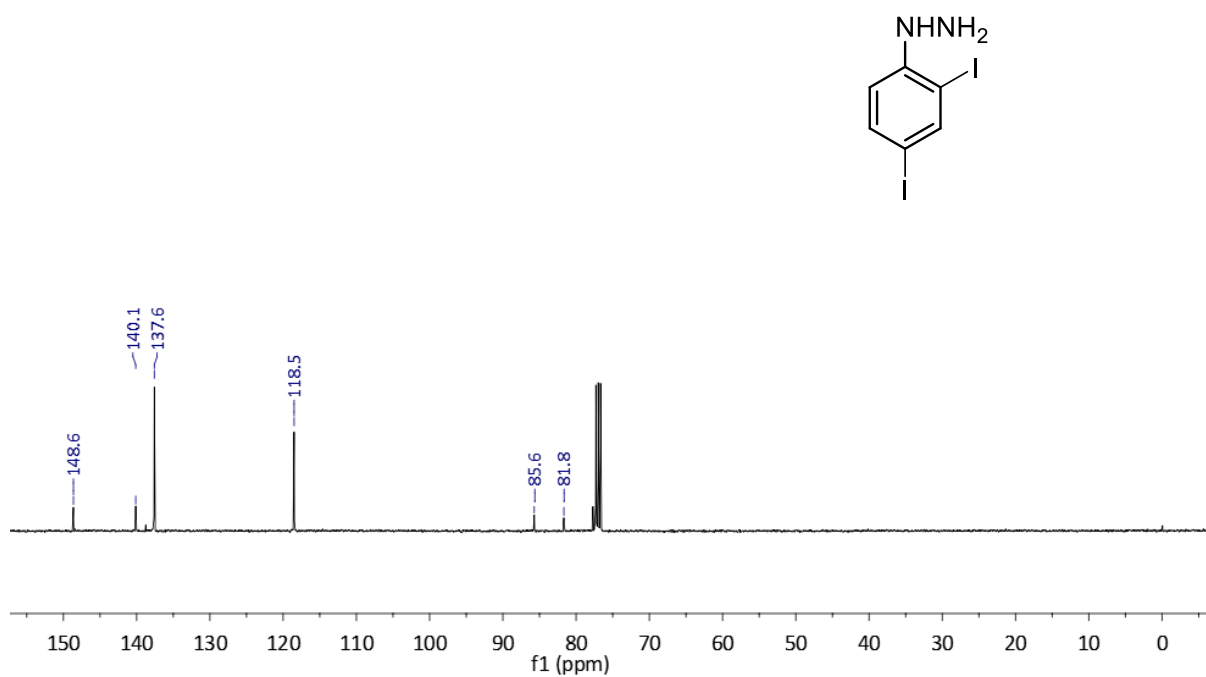
<sup>13</sup>C NMR of 18b in CDCl<sub>3</sub>



<sup>1</sup>H-NMR of 18c in CDCl<sub>3</sub>

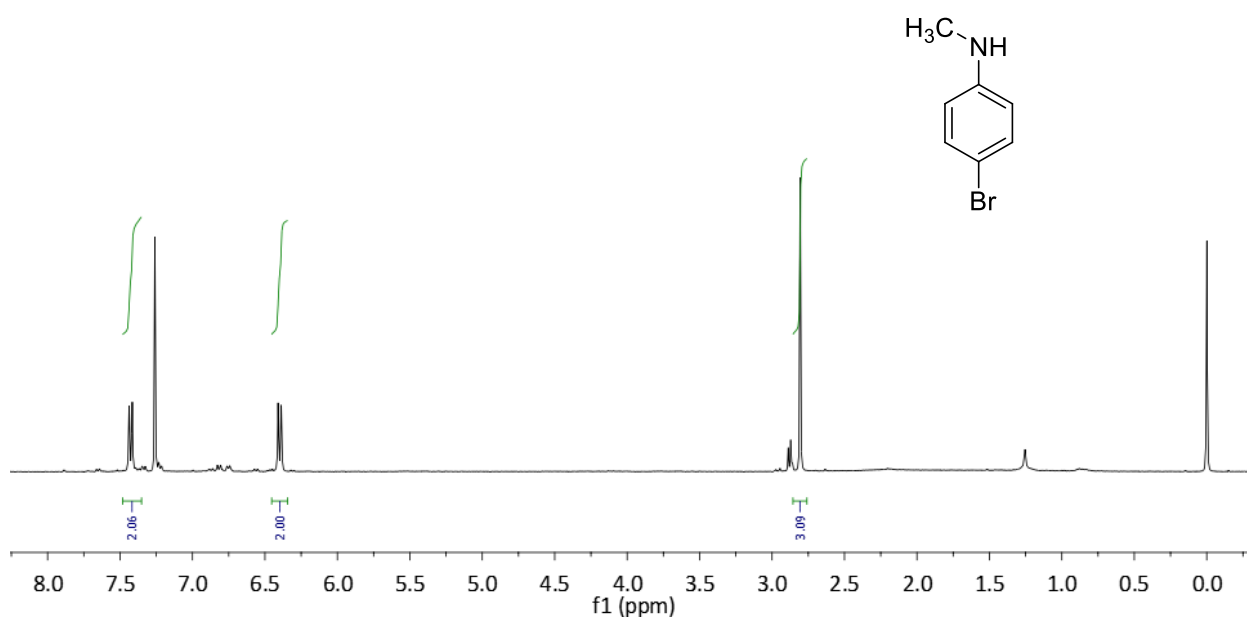


$^1\text{H}$ -NMR of 18d in  $\text{CDCl}_3$

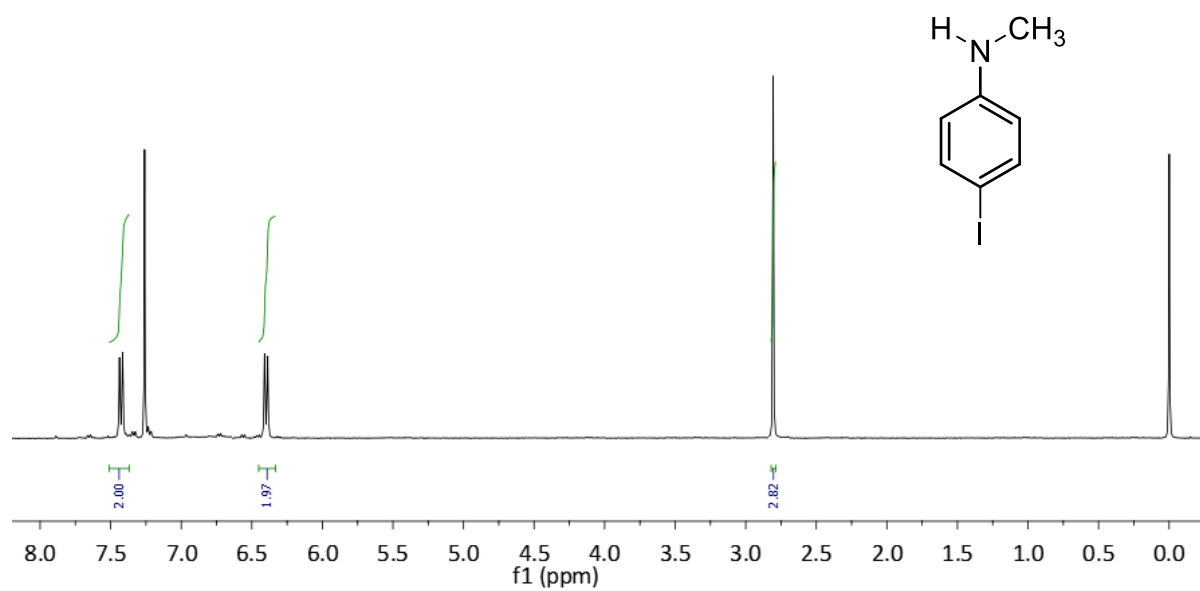


$^{13}\text{C}$  NMR of 18d in  $\text{CDCl}_3$

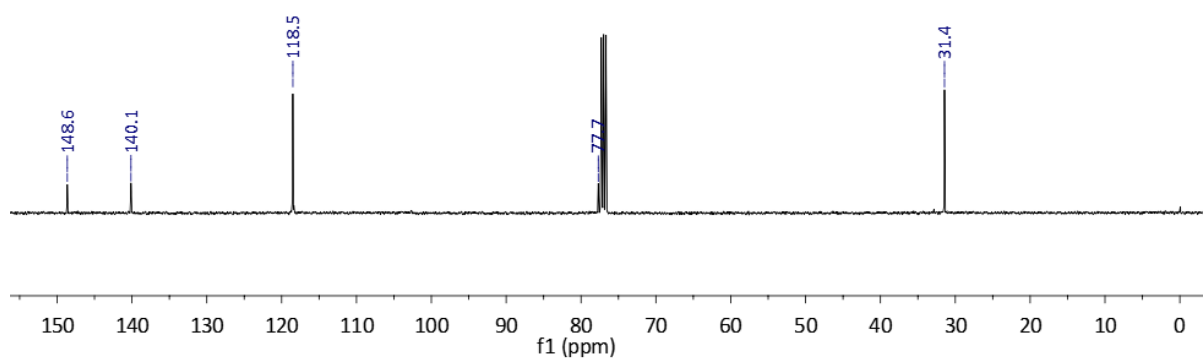
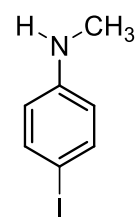




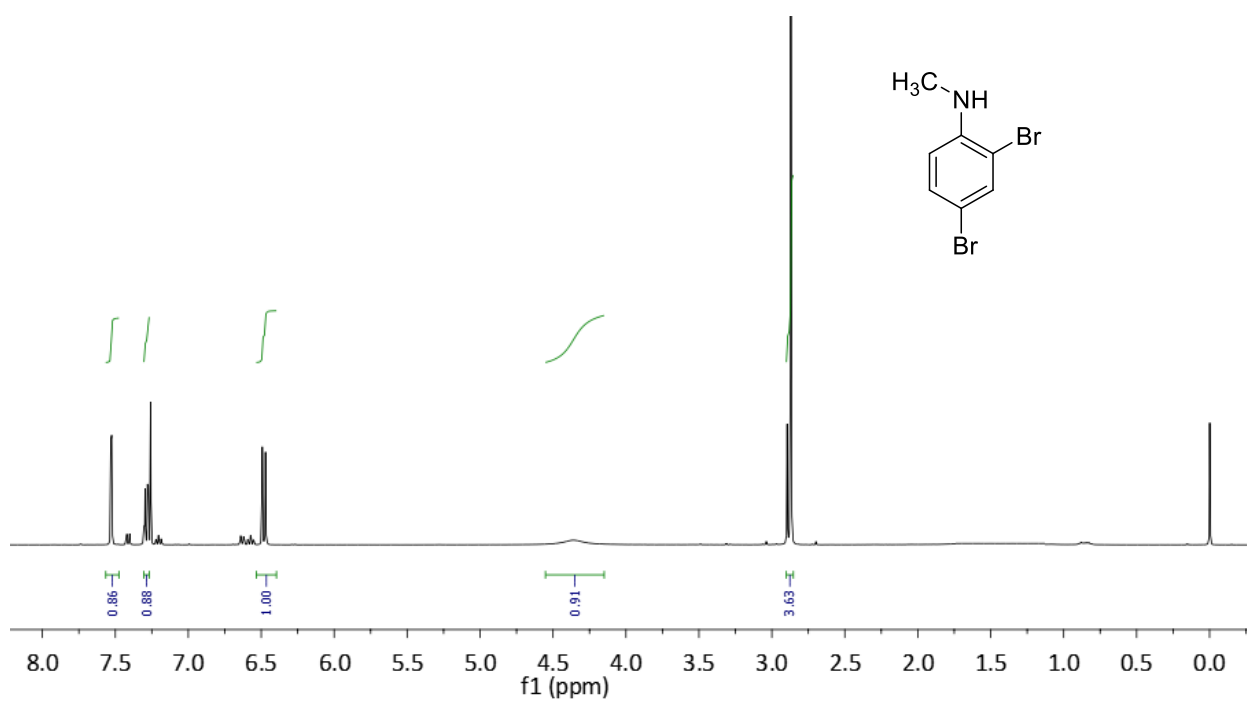
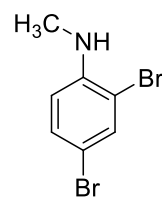
$^1\text{H}$ -NMR of 19a in  $\text{CDCl}_3$



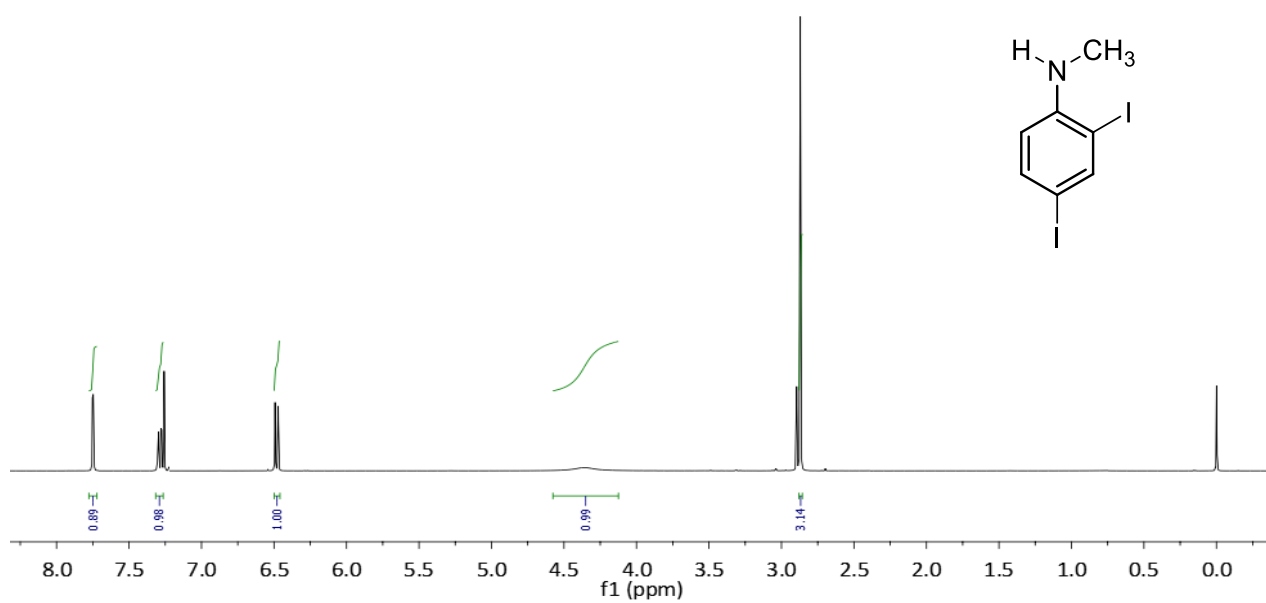
$^1\text{H}$ -NMR of 19b in  $\text{CDCl}_3$



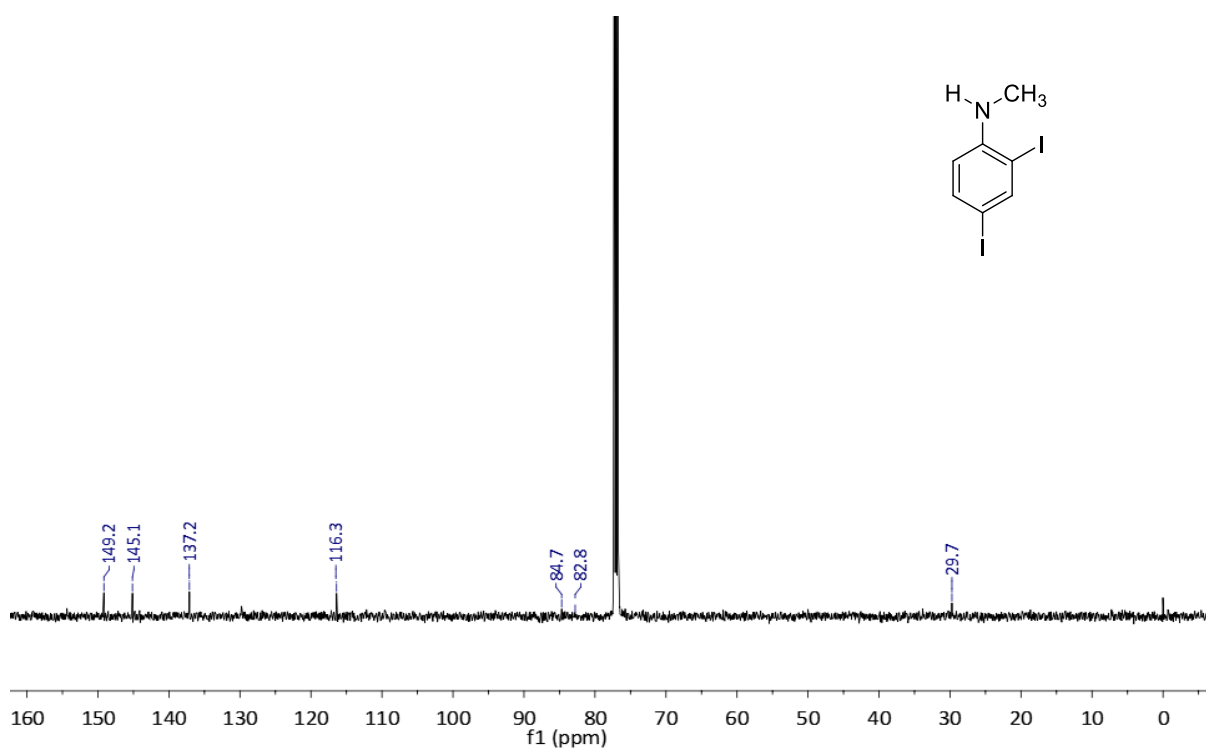
$^{13}\text{C}$  NMR of 19b in  $\text{CDCl}_3$



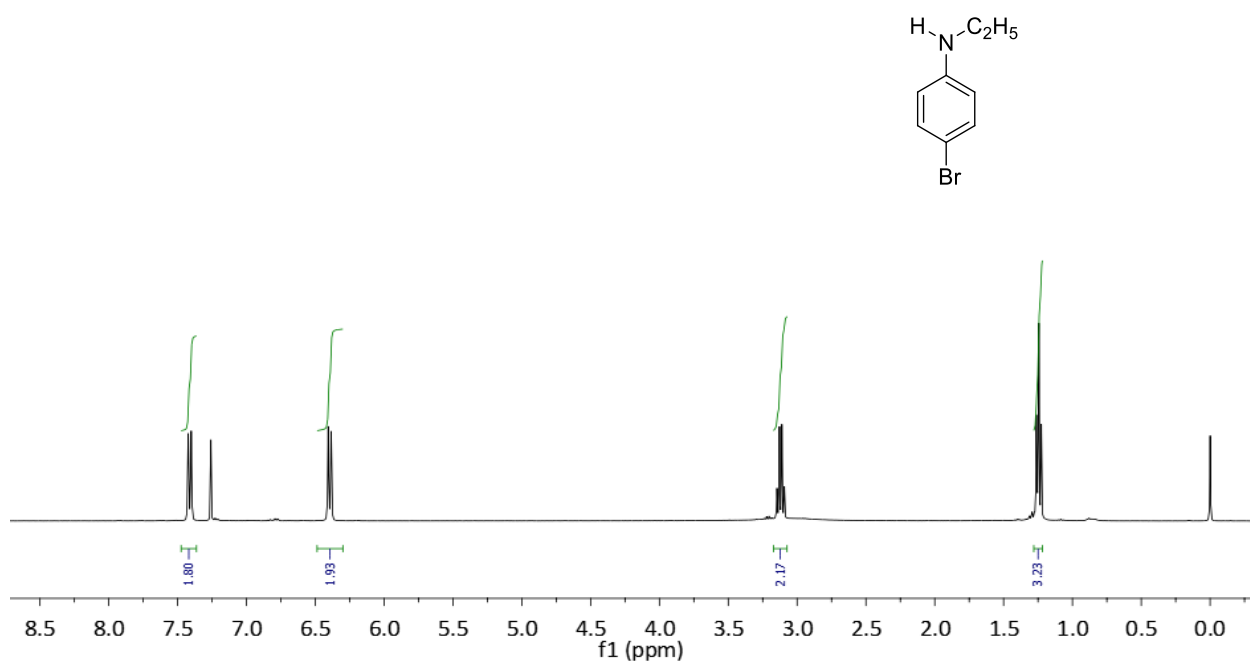
$^1\text{H}$ -NMR of 19c in  $\text{CDCl}_3$



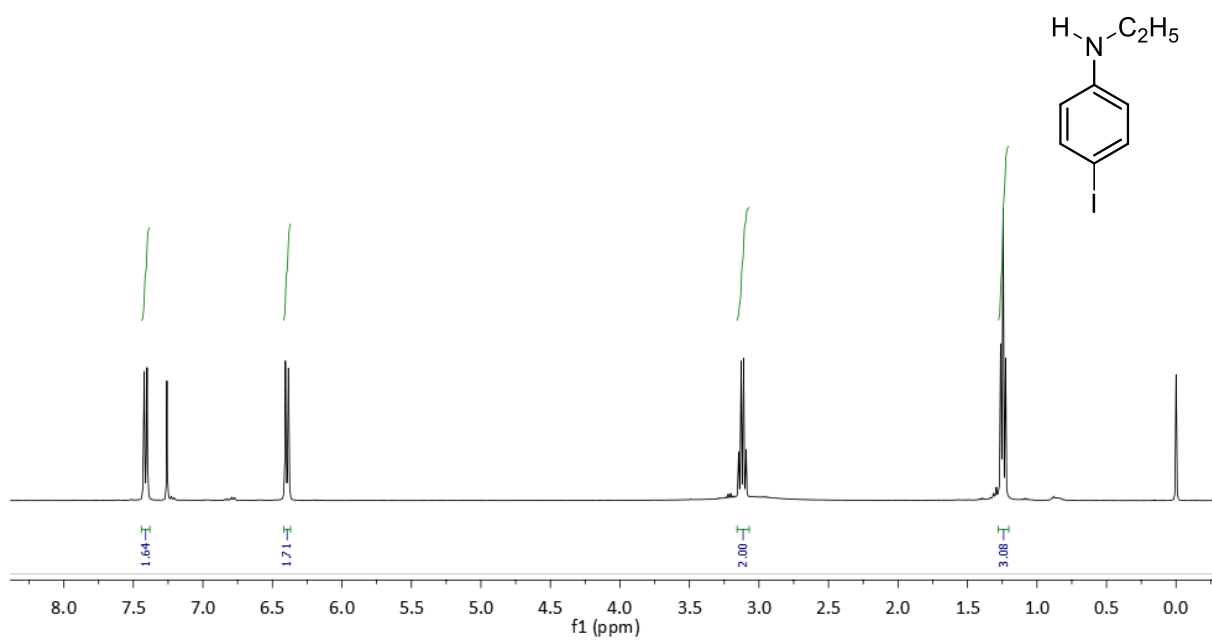
<sup>1</sup>H-NMR of 19d in CDCl<sub>3</sub>



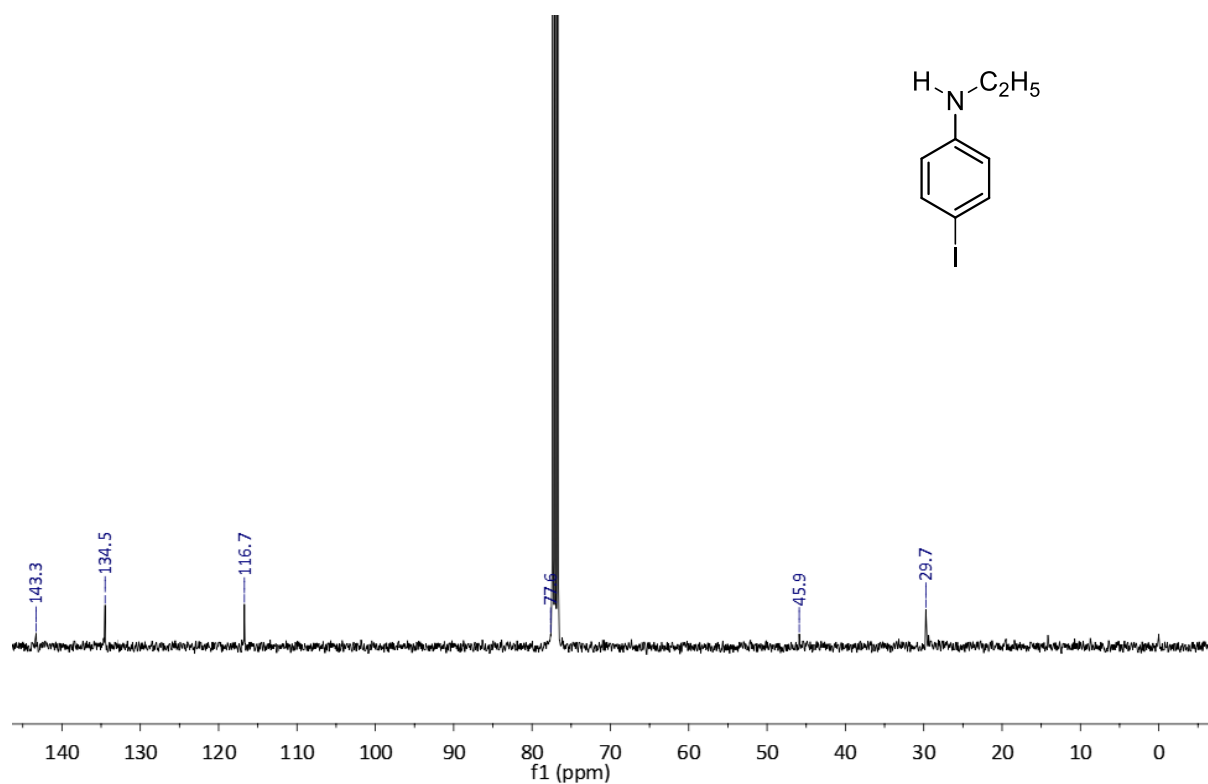
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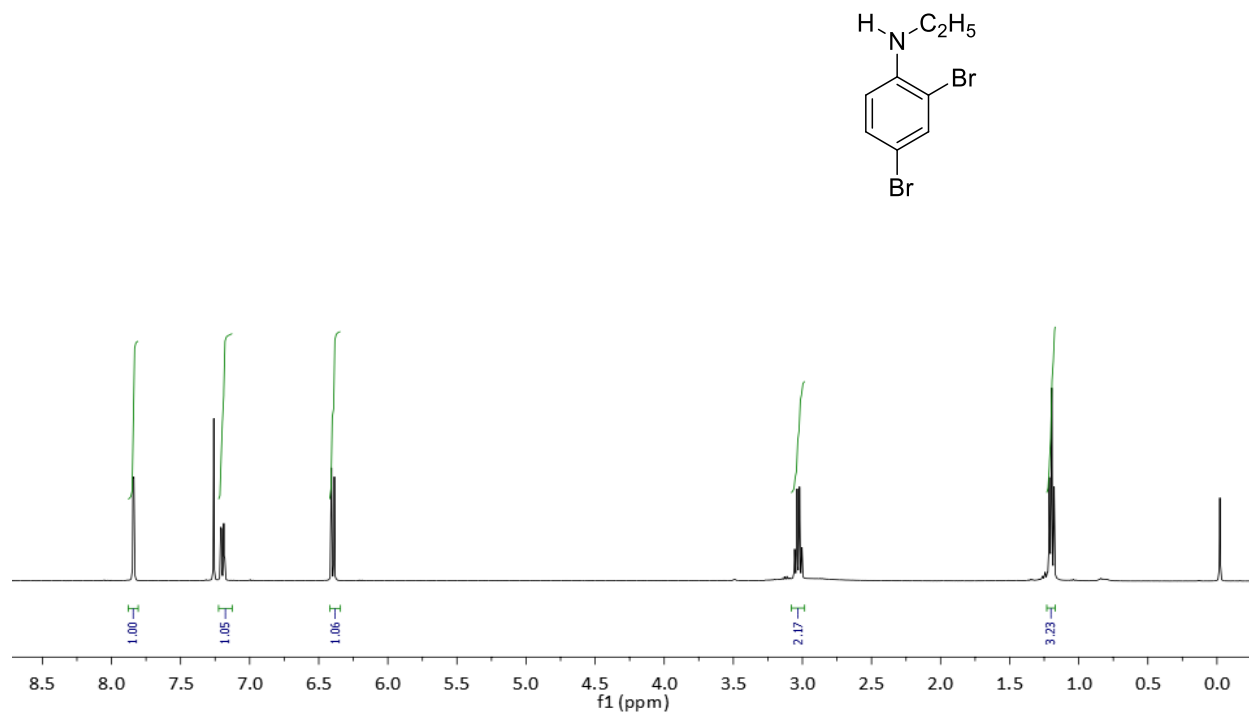
<sup>1</sup>H-NMR of 20a in CDCl<sub>3</sub>



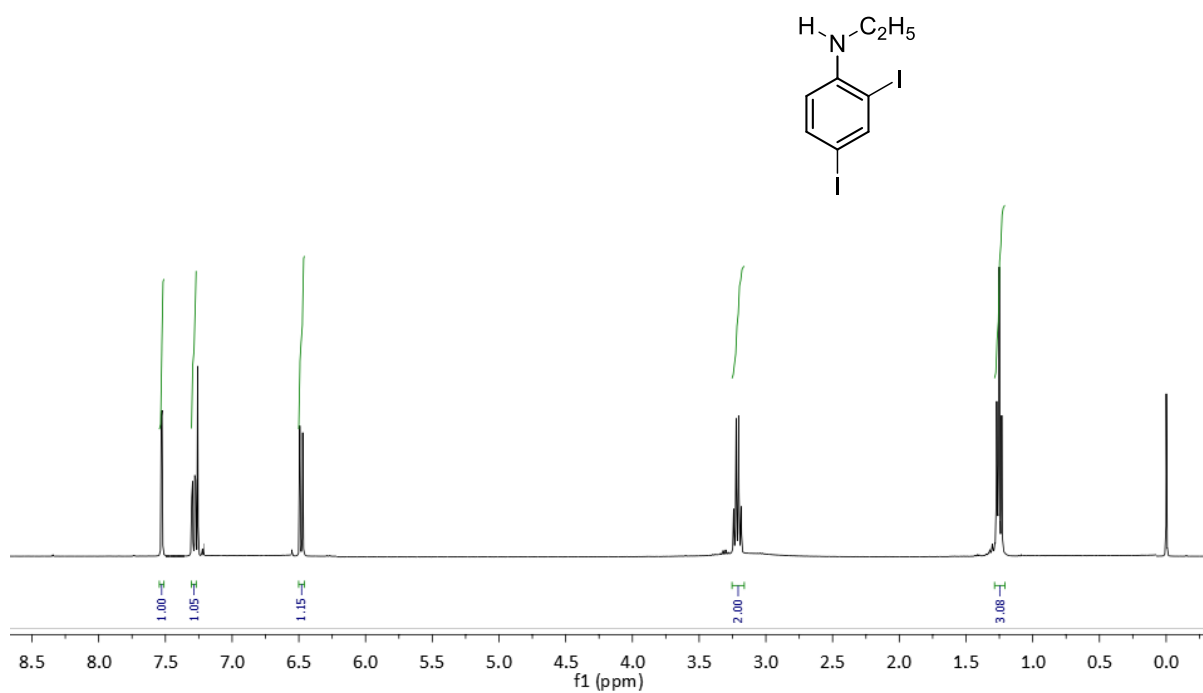
<sup>1</sup>H-NMR of 20b in CDCl<sub>3</sub>



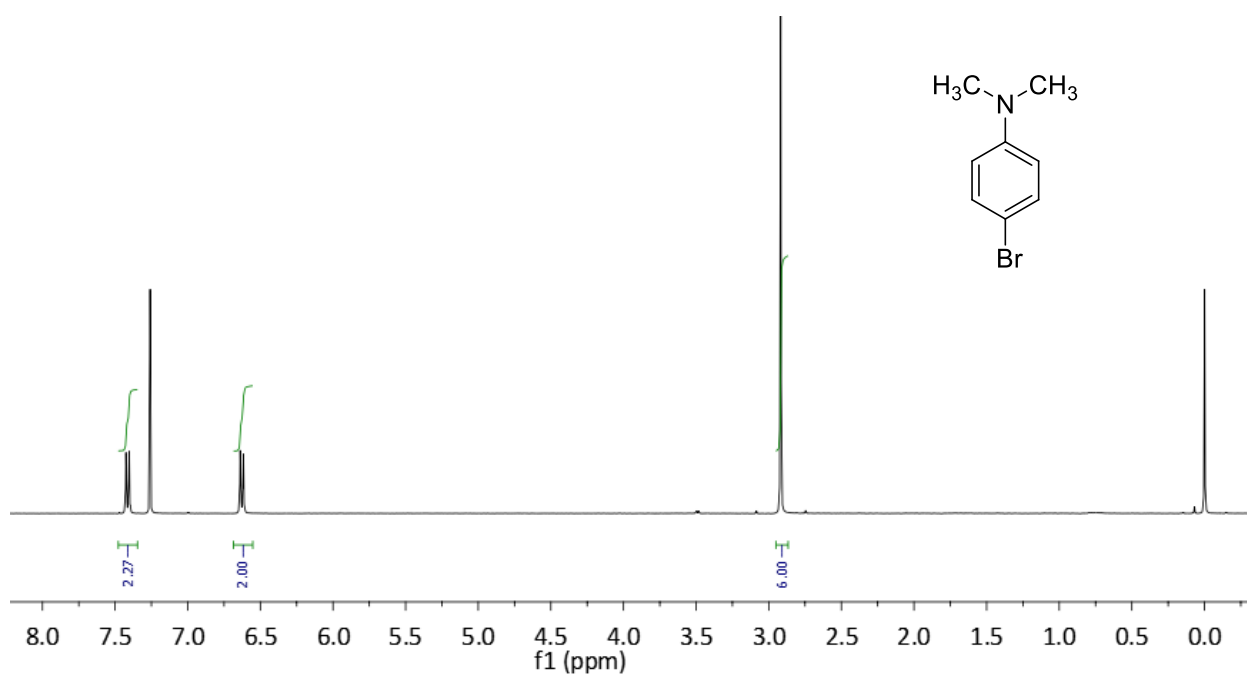
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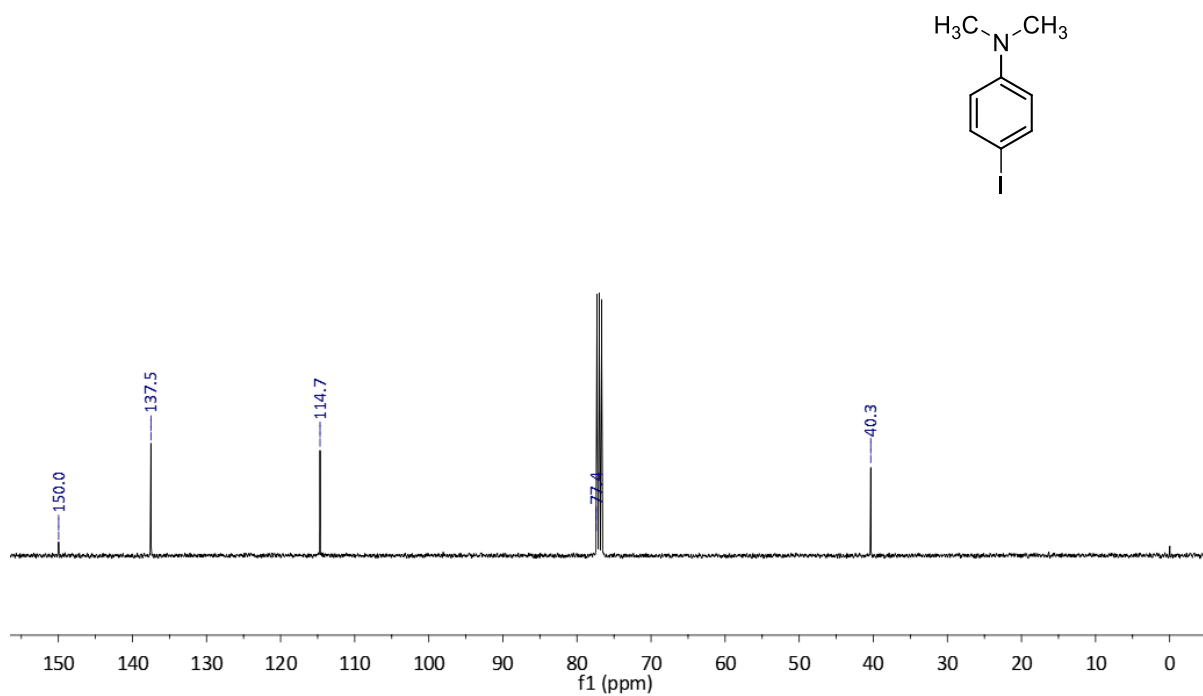
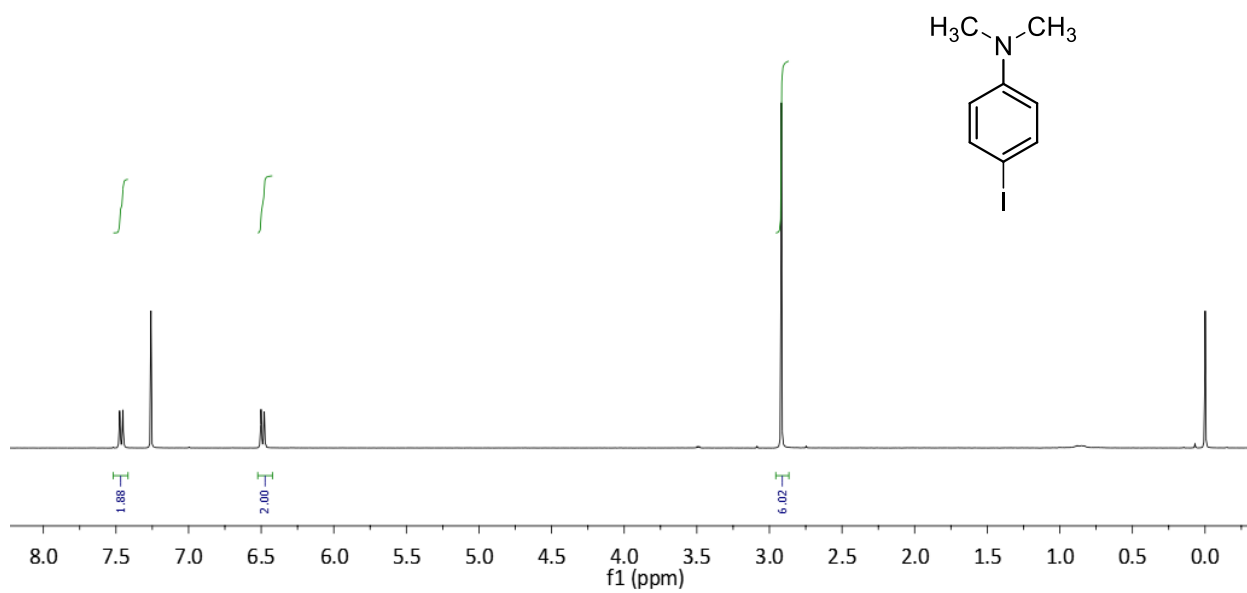
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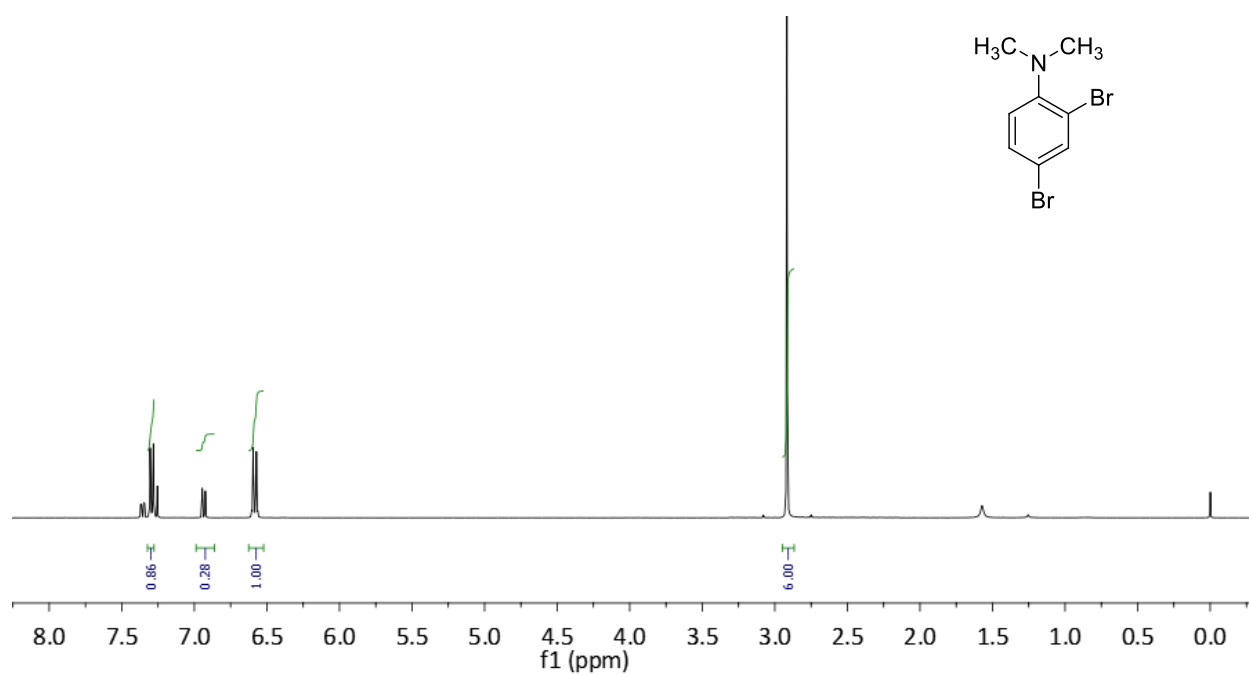


<sup>1</sup>H-NMR of 20d in CDCl<sub>3</sub>

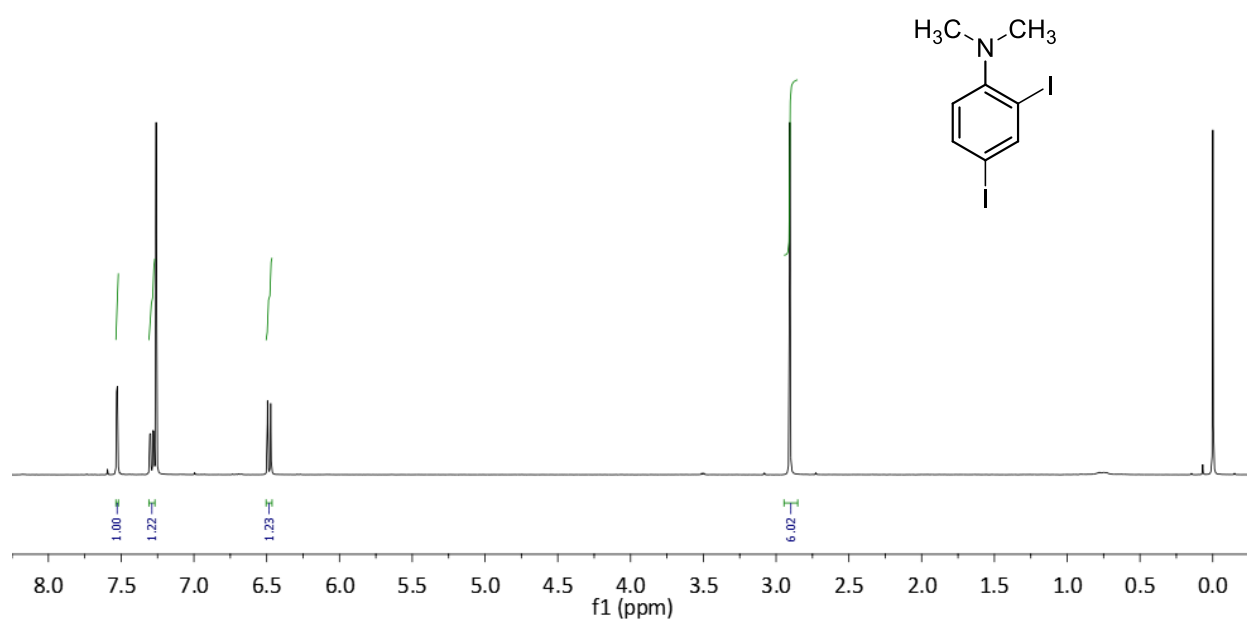


<sup>1</sup>H-NMR of 21a in CDCl<sub>3</sub>



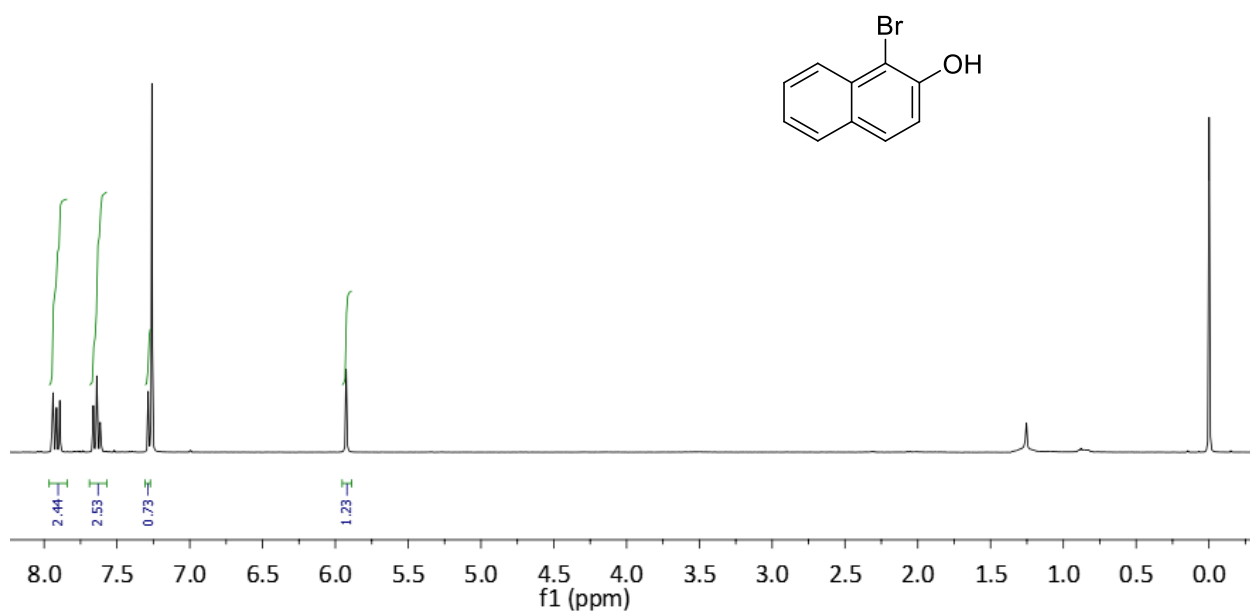


<sup>1</sup>H-NMR of 21c in CDCl<sub>3</sub>

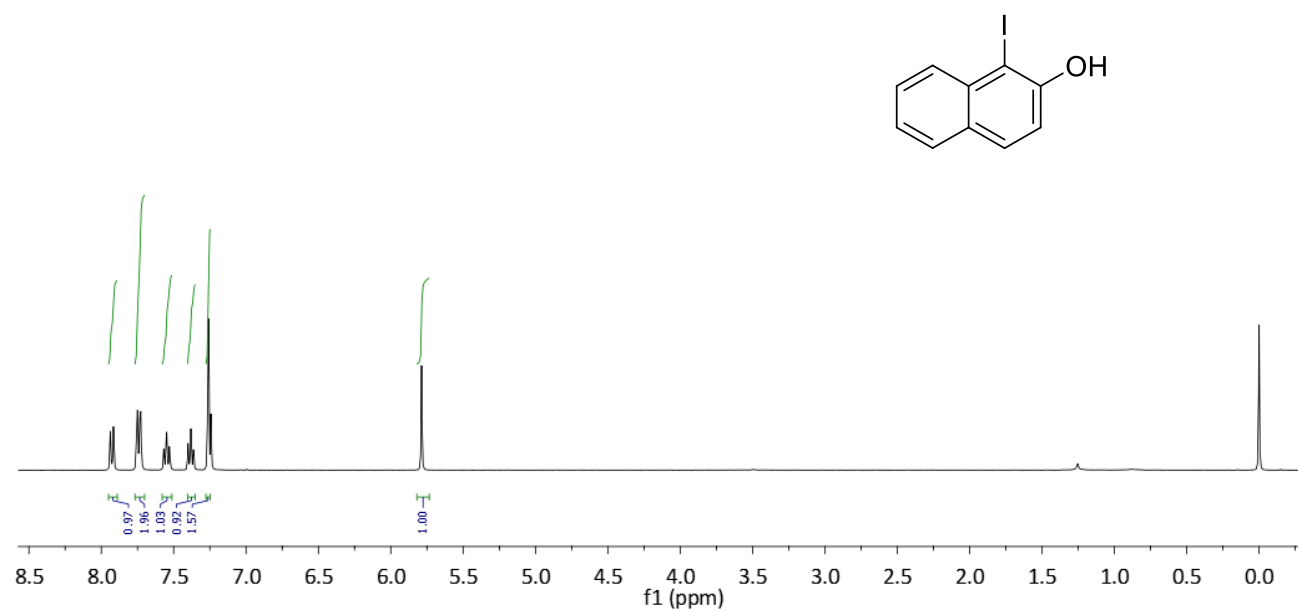


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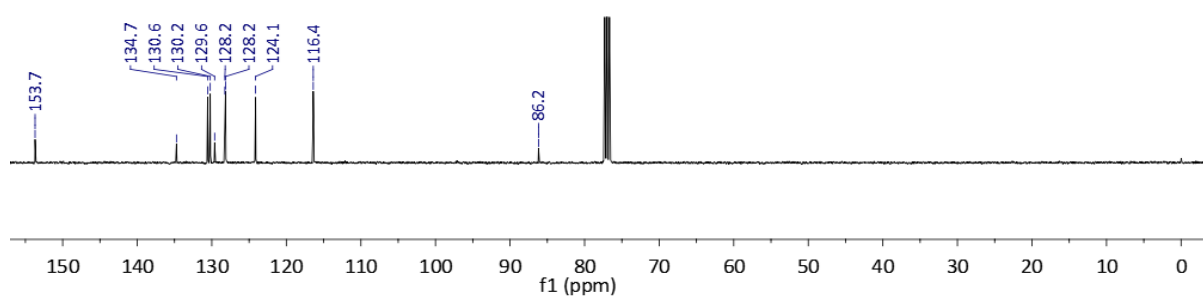
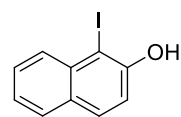




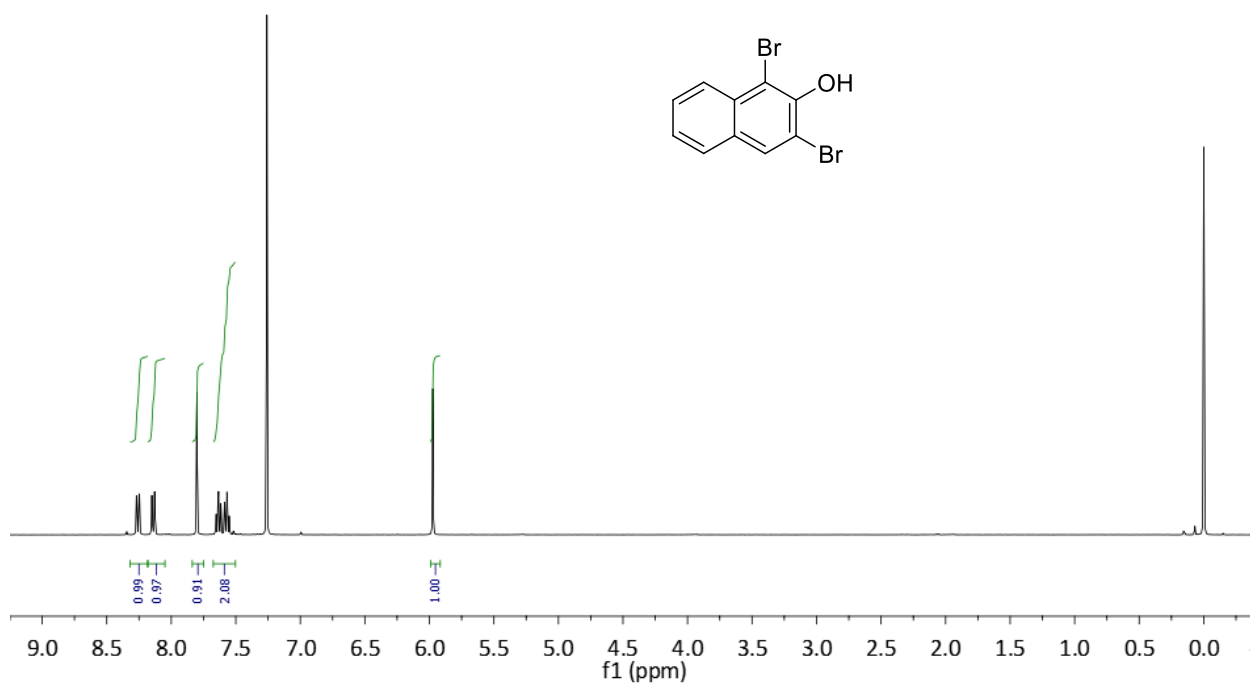
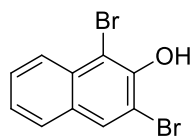
$^1\text{H-NMR}$  of 25a in  $\text{CDCl}_3$



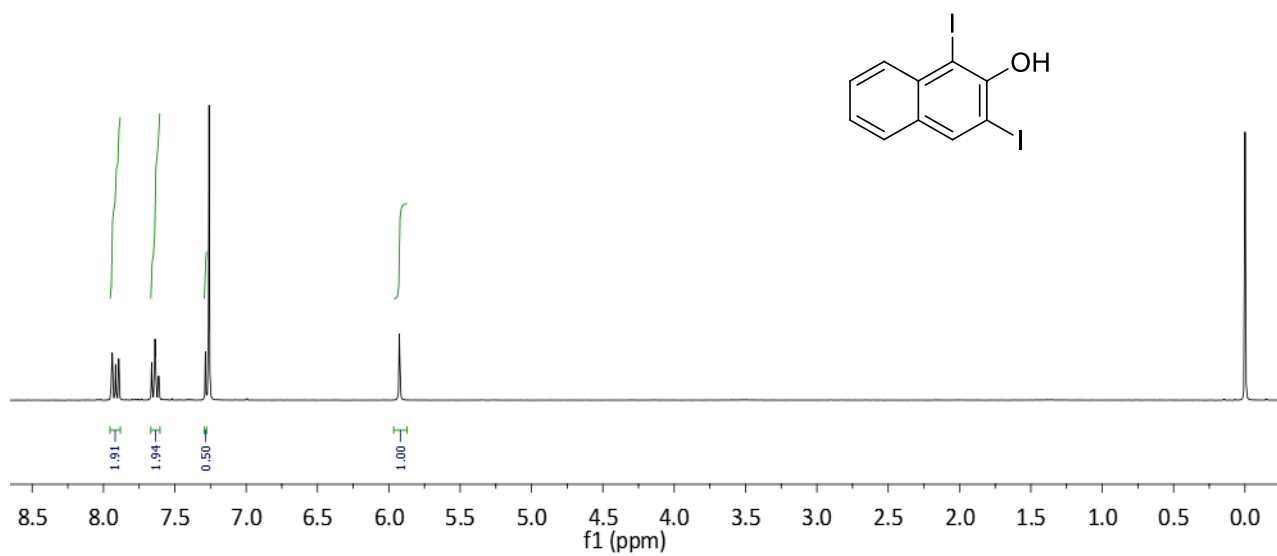
$^1\text{H-NMR}$  of 25b in  $\text{CDCl}_3$



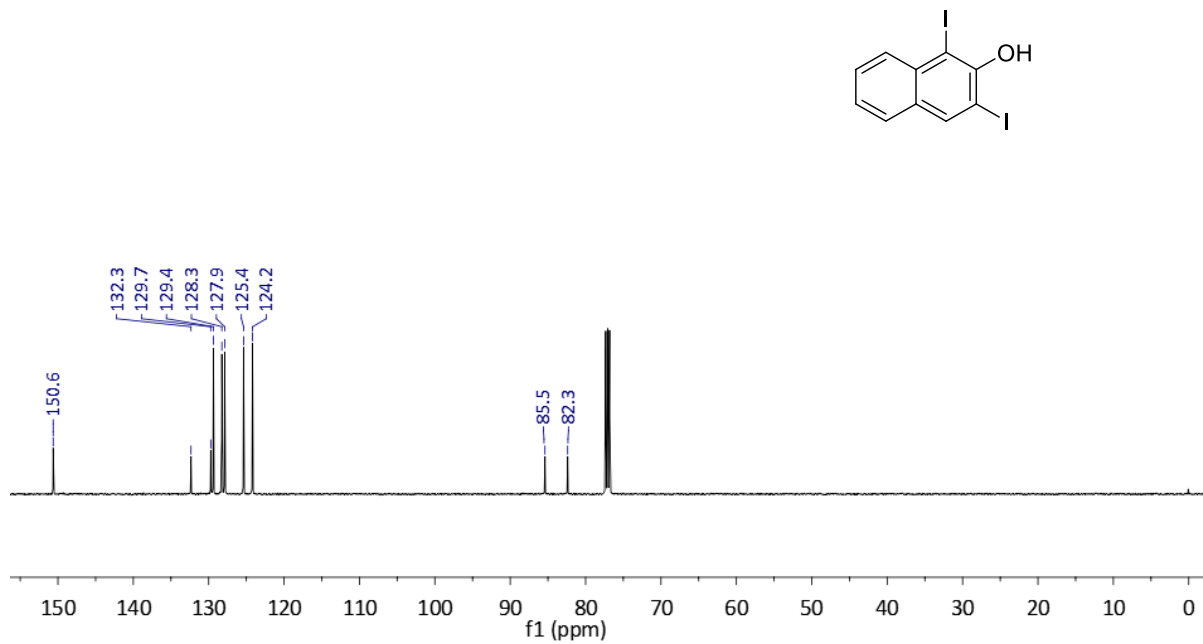
$^{13}\text{C}$  NMR of 25b in  $\text{CDCl}_3$



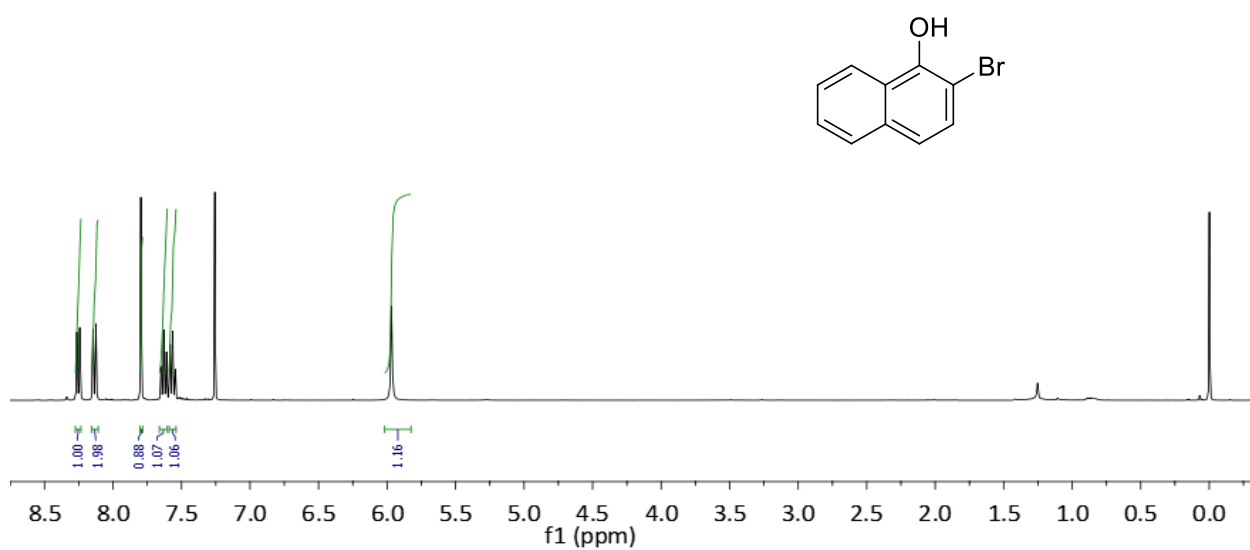
$^1\text{H}$ -NMR of 25c in  $\text{CDCl}_3$



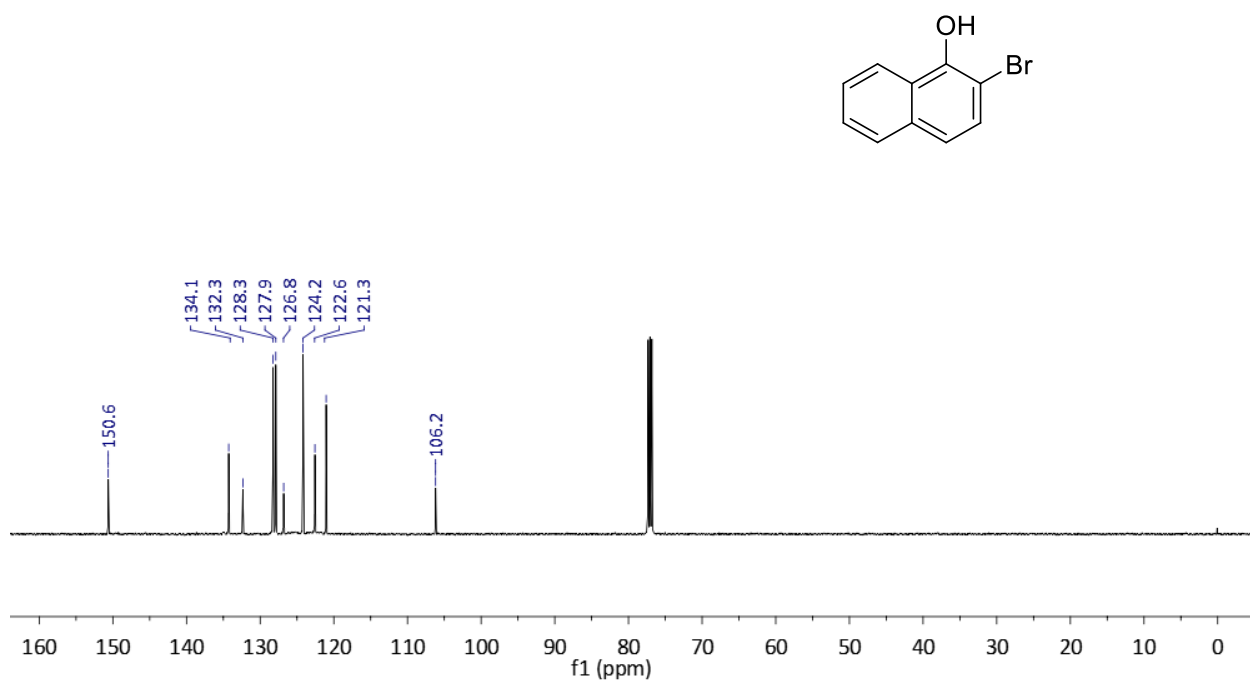
$^1\text{H-NMR}$  of 25d in  $\text{CDCl}_3$



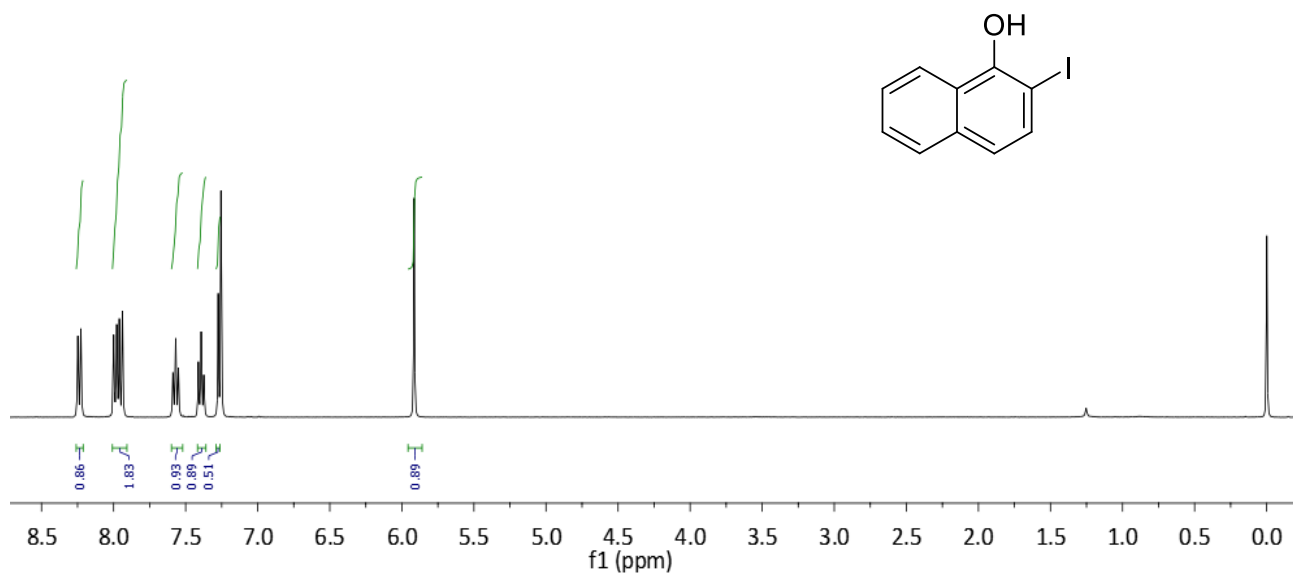
$^{13}\text{C-NMR}$  of 25d in  $\text{CDCl}_3$



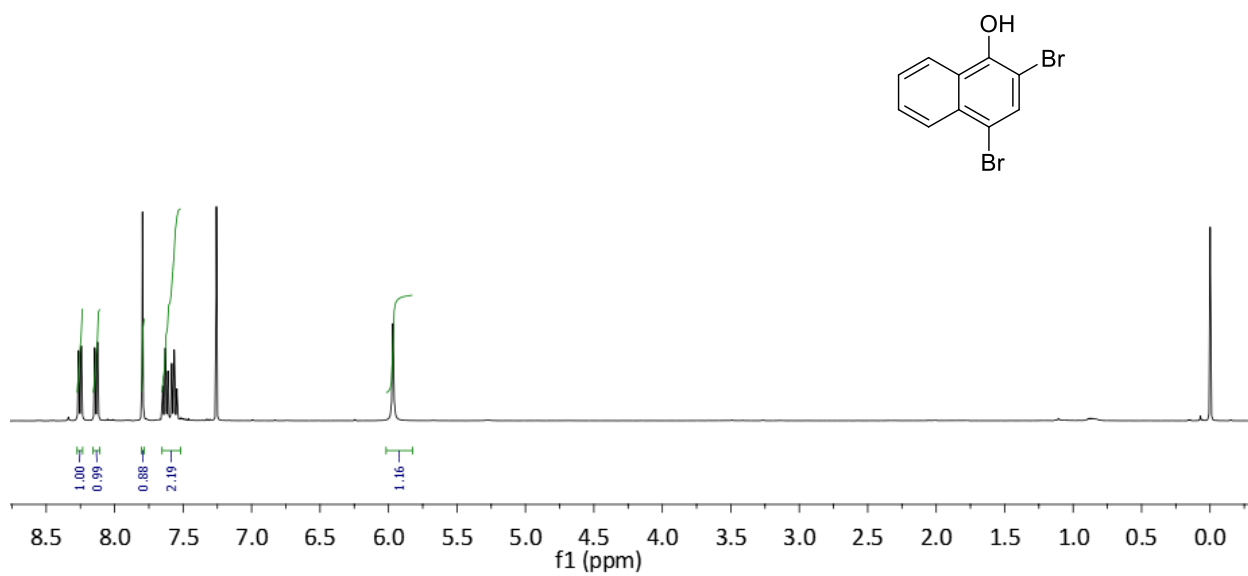
$^1\text{H}$ -NMR of 26a in CDCl<sub>3</sub>



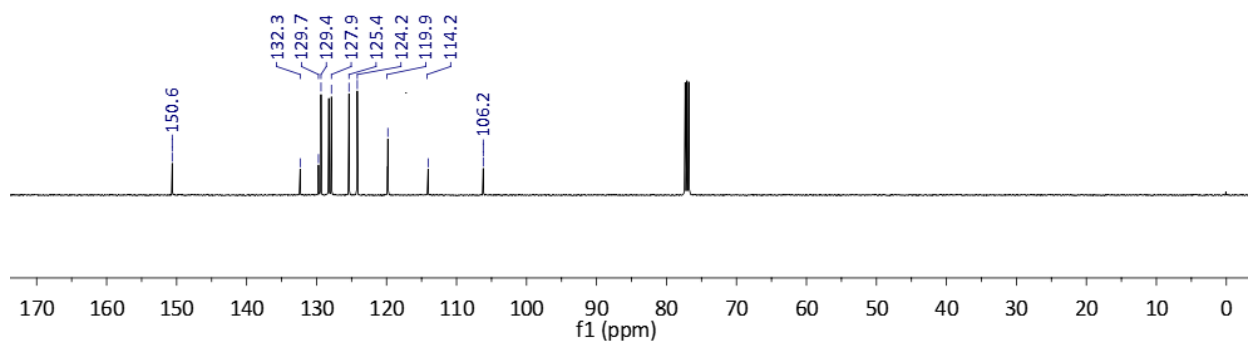
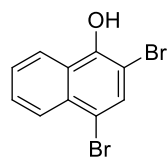
$^{13}\text{C}$ -NMR of 26a in CDCl<sub>3</sub>



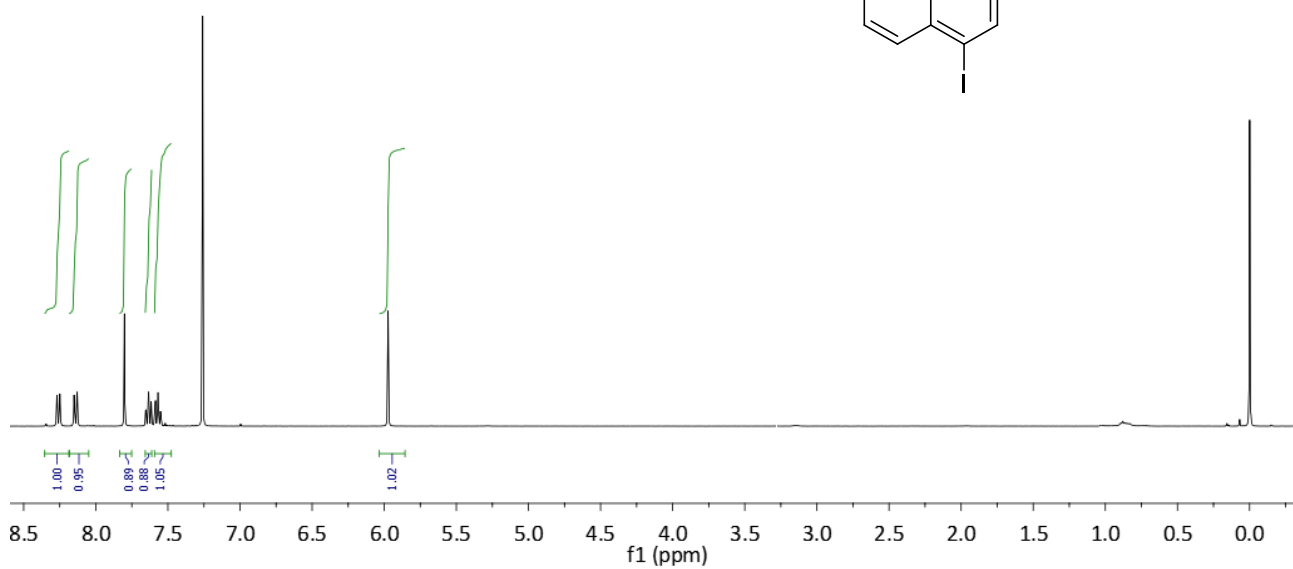
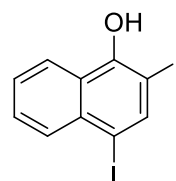
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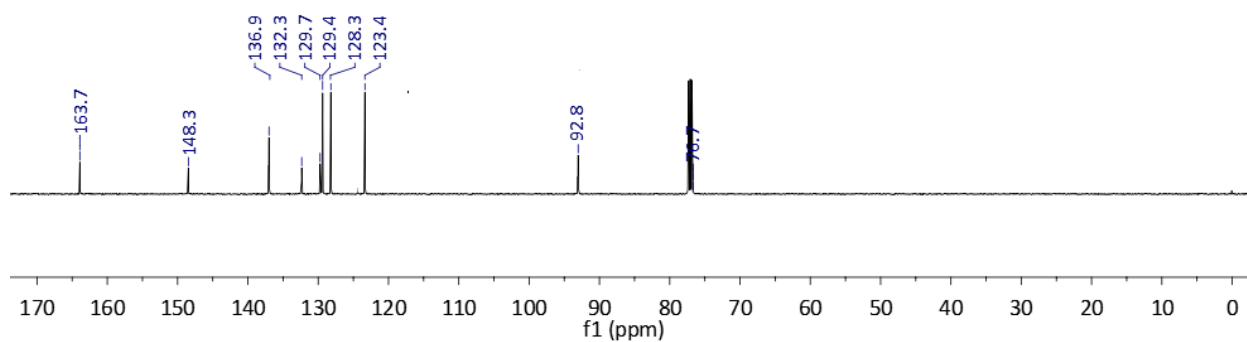
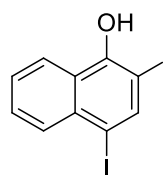
$^1\text{H}$ -NMR of 26c in  $\text{CDCl}_3$



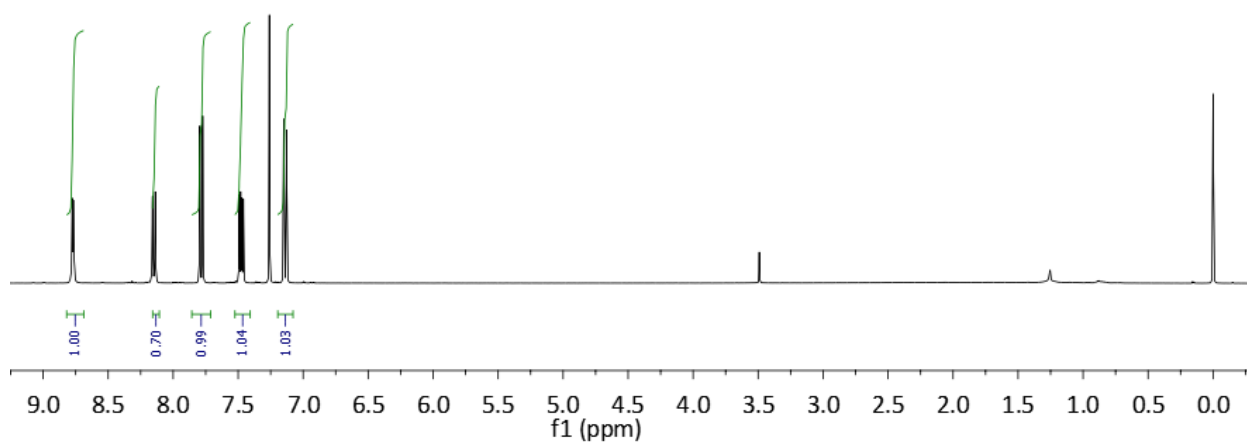
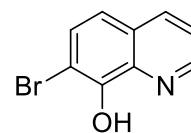
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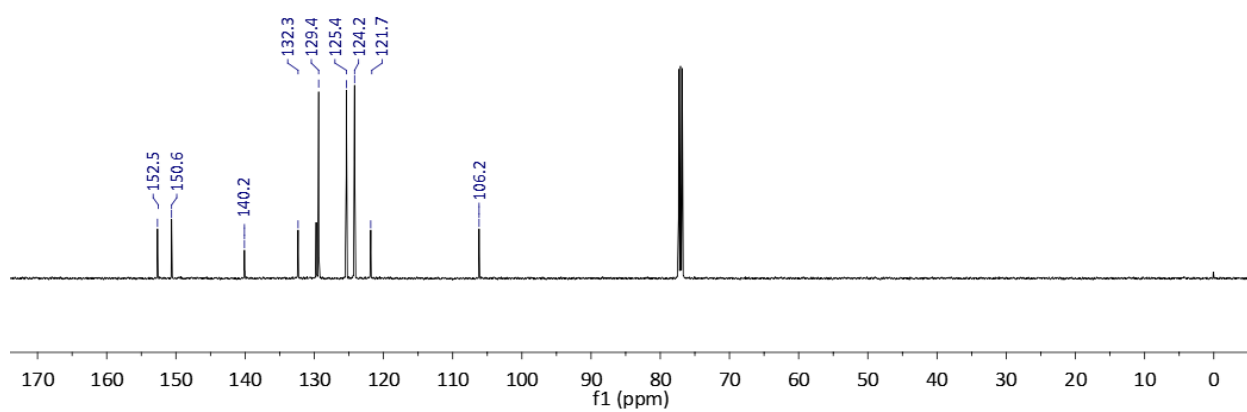
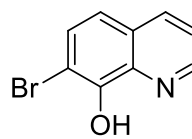
$^1\text{H}$ -NMR of 26d in  $\text{CDCl}_3$



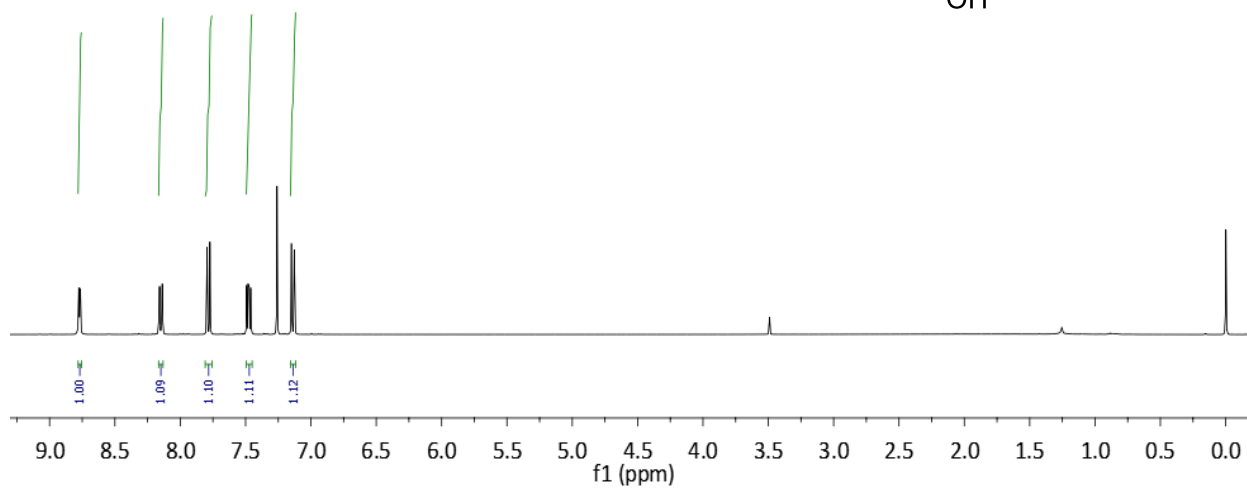
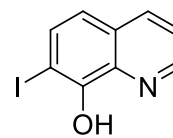
<sup>13</sup>C-NMR of 26d in CDCl<sub>3</sub>



<sup>1</sup>H-NMR of 27a in CDCl<sub>3</sub>

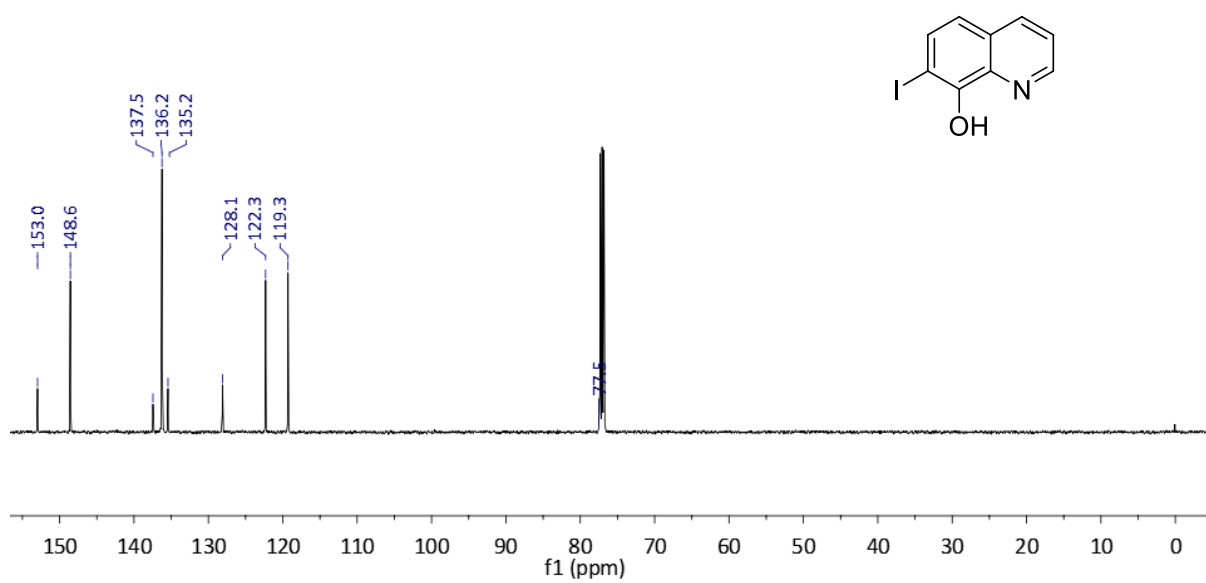


$^{13}\text{C}$ -NMR of 27a in  $\text{CDCl}_3$

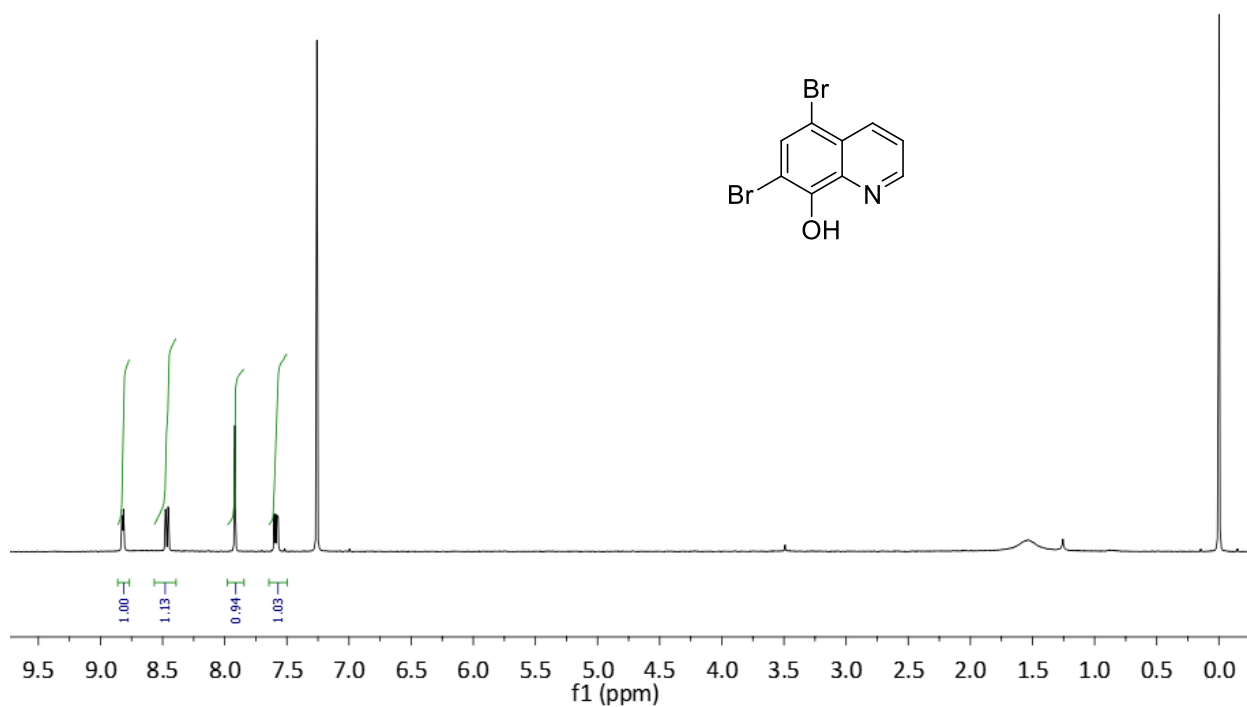


$^1\text{H}$ -NMR of 27b in  $\text{CDCl}_3$

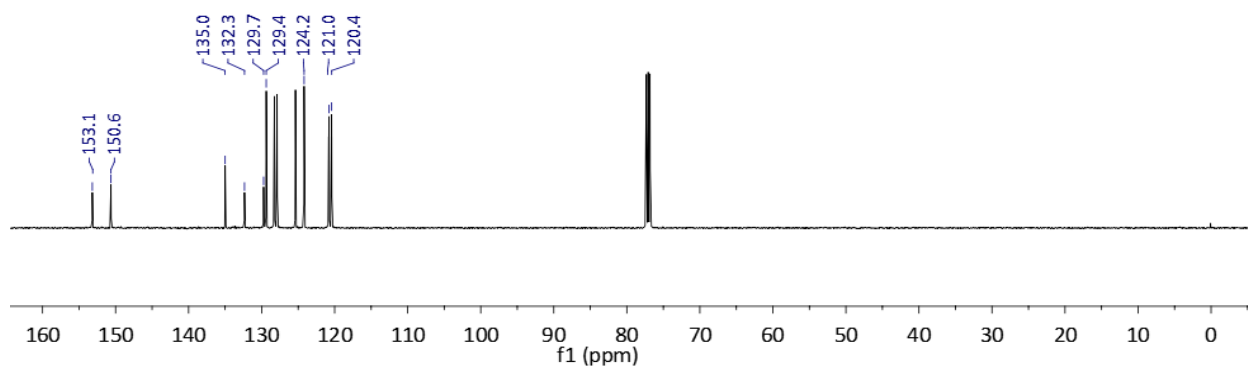
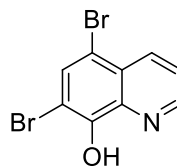




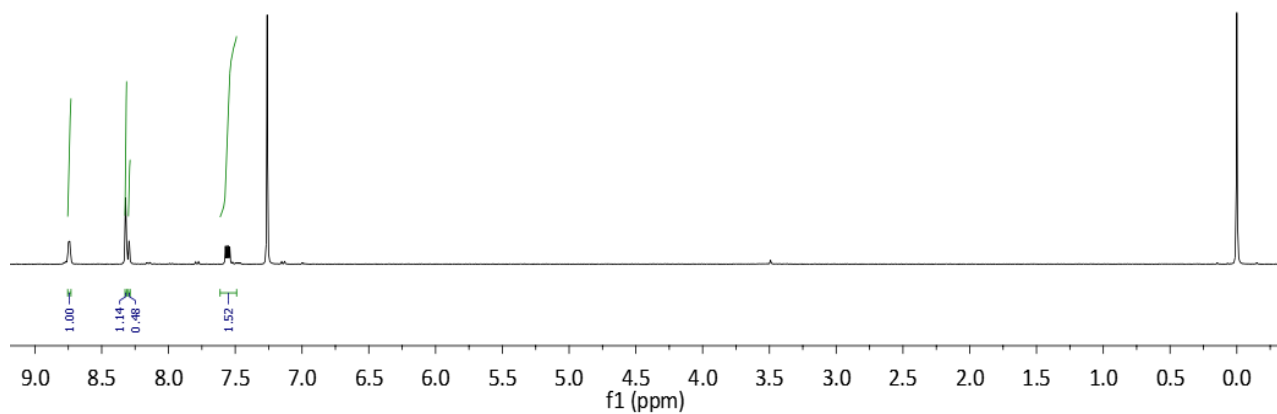
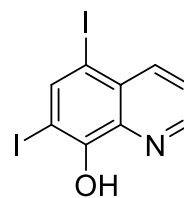
$^{13}\text{C}$  NMR of 27b in  $\text{CDCl}_3$



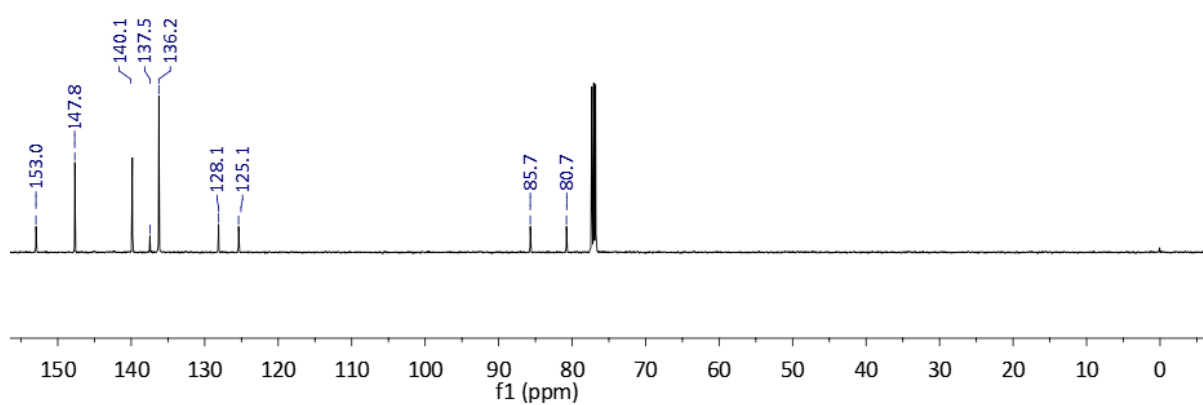
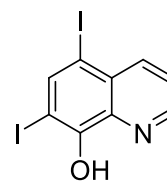
$^1\text{H}$ -NMR of 27c in  $\text{CDCl}_3$



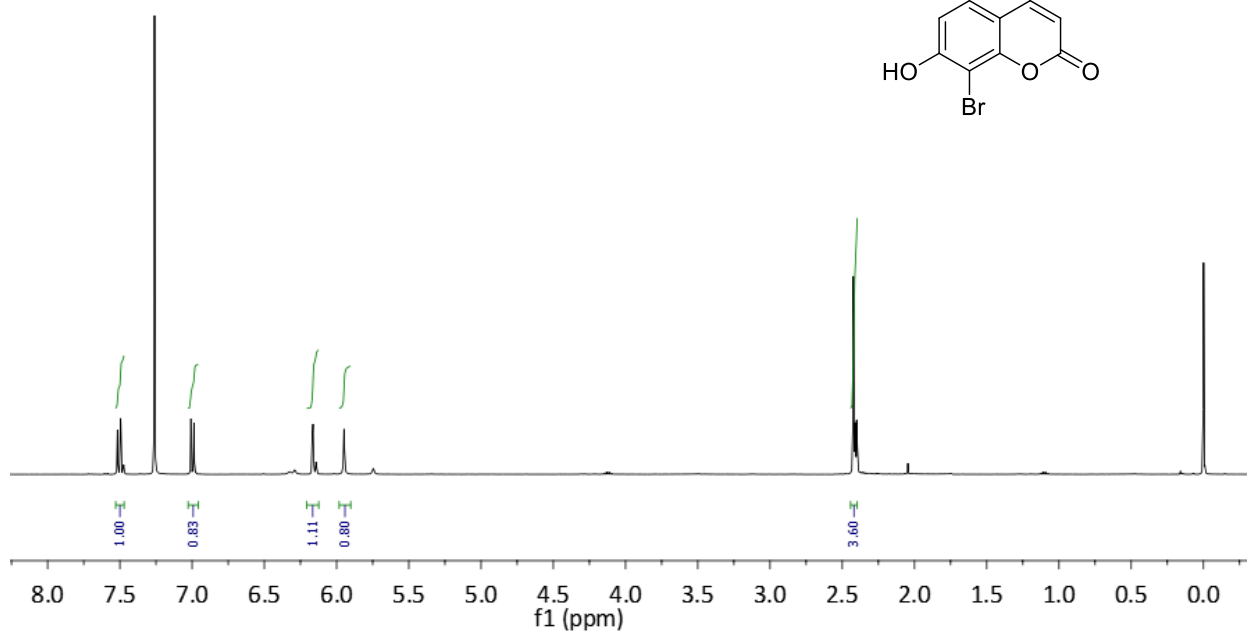
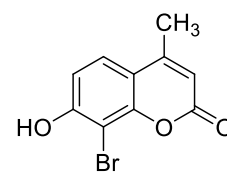
$^{13}\text{C}$ -NMR of 27c in  $\text{CDCl}_3$



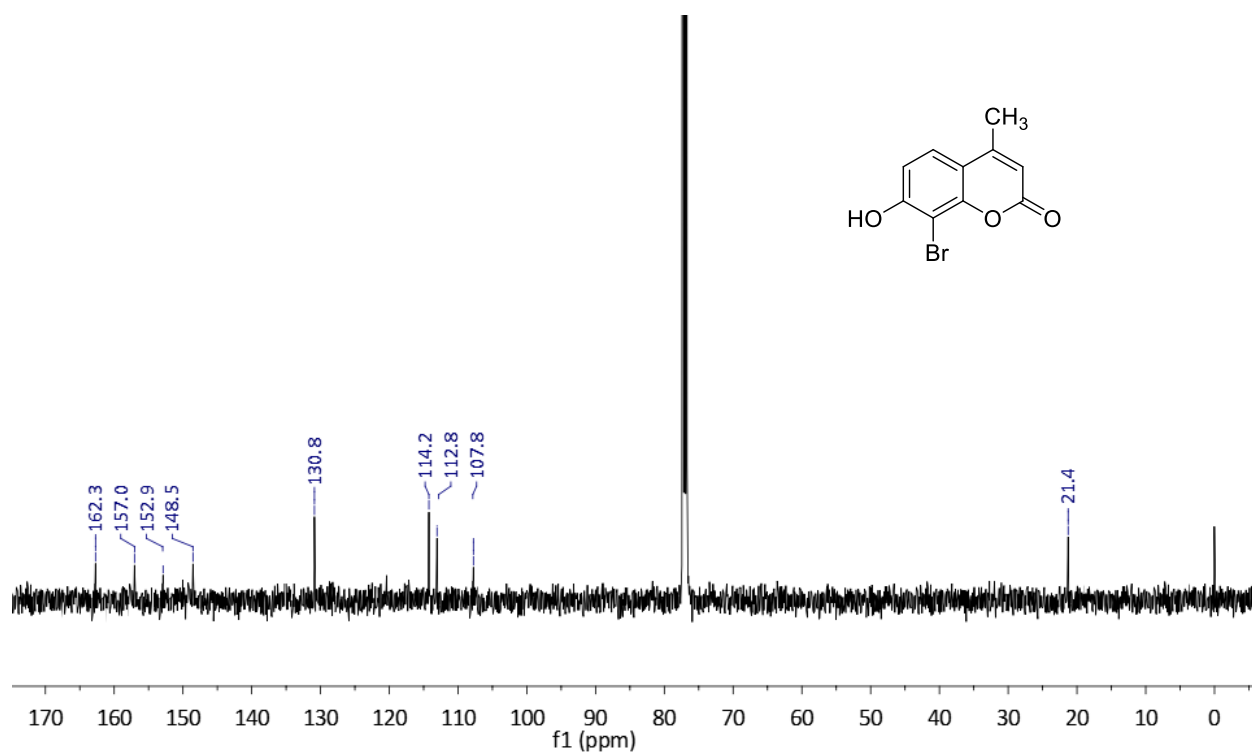
$^1\text{H}$ -NMR of 27d in  $\text{CDCl}_3$



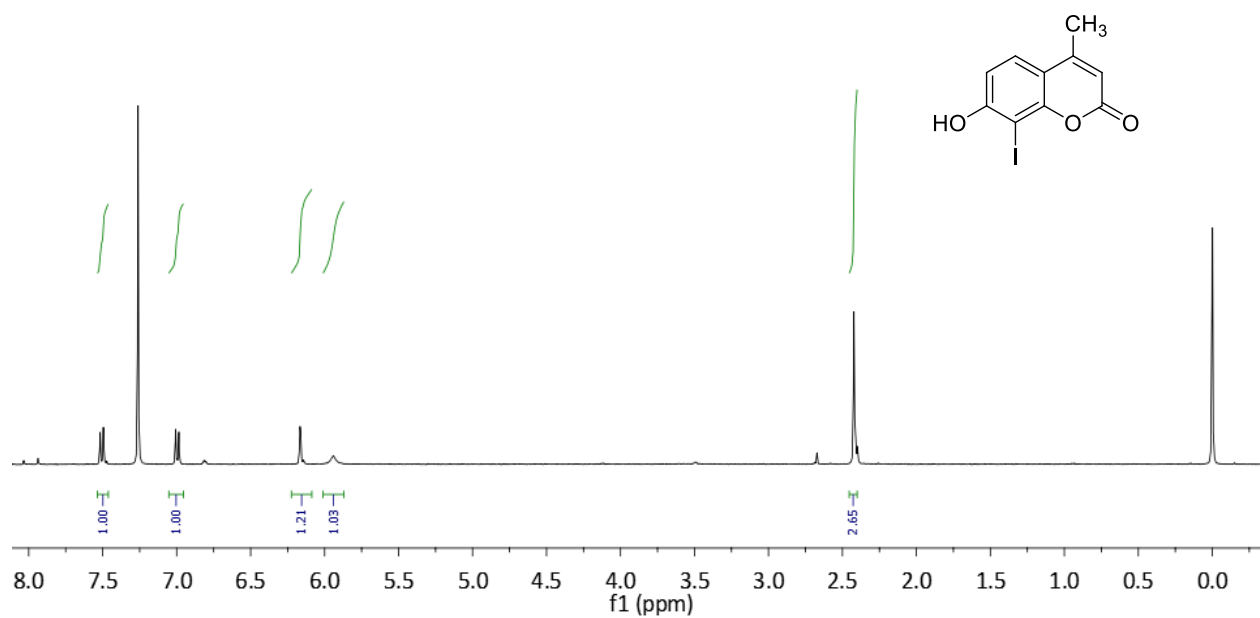
$^{13}\text{C}$  NMR of 27d in  $\text{CDCl}_3$



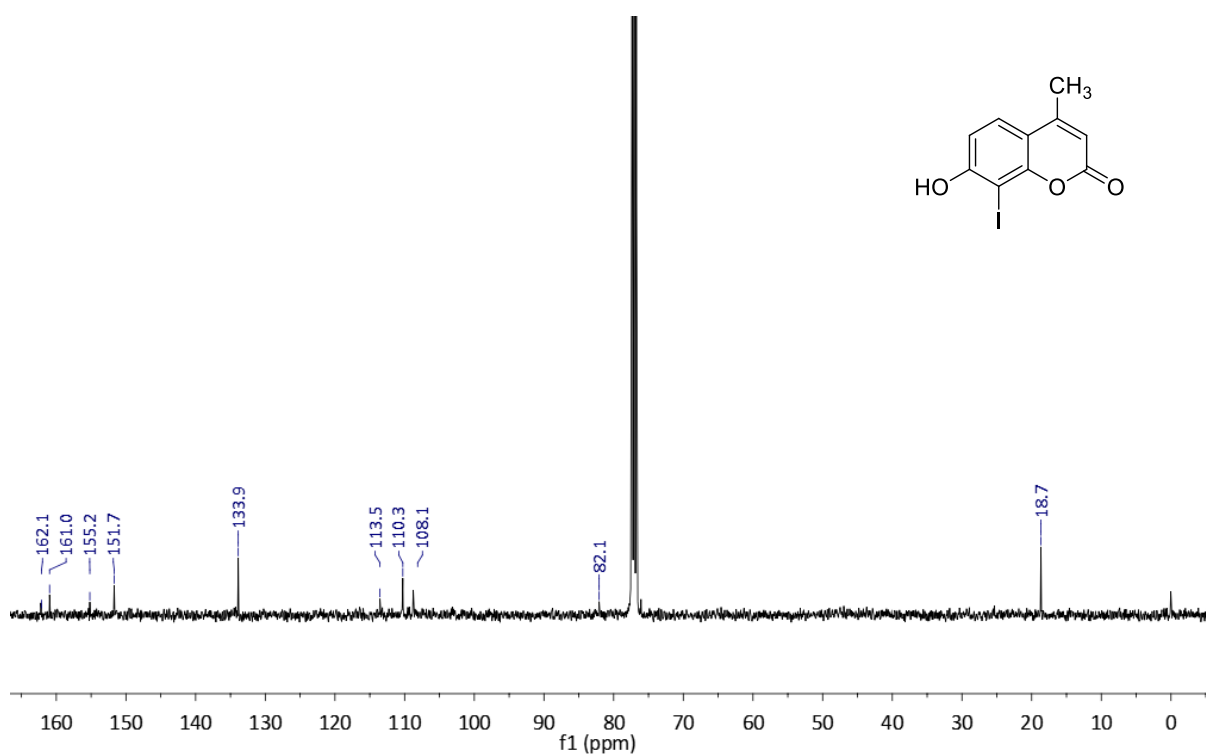
$^1\text{H}$ -NMR of 28a in  $\text{CDCl}_3$



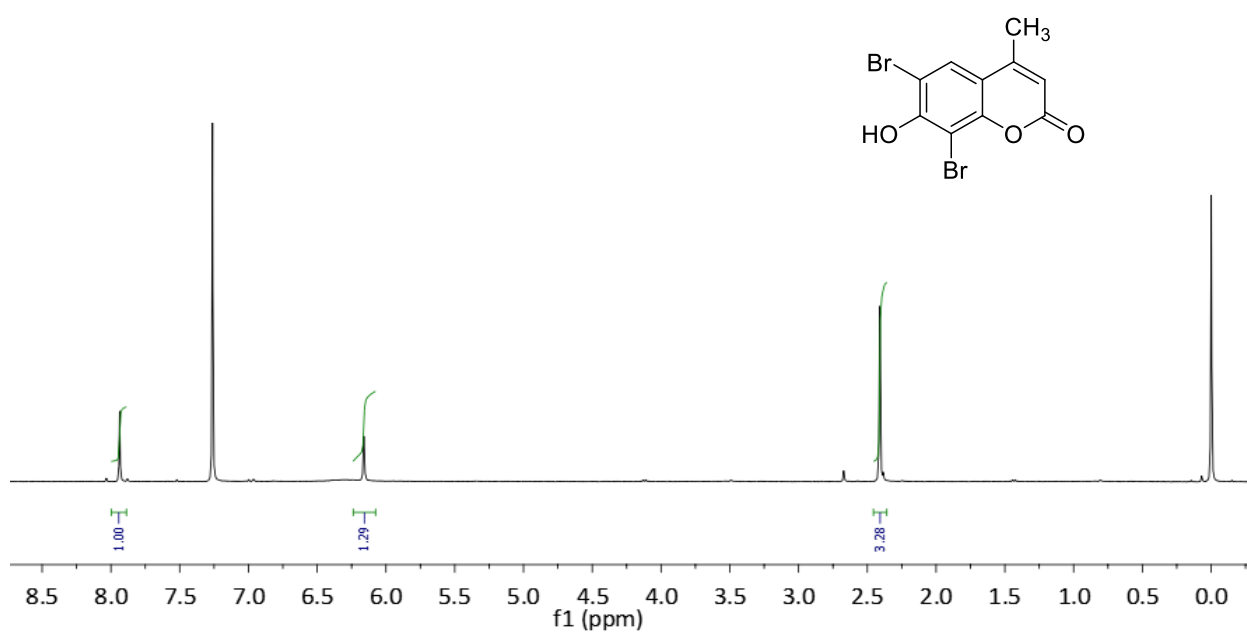
<sup>13</sup>C-NMR of 28a in CDCl<sub>3</sub>



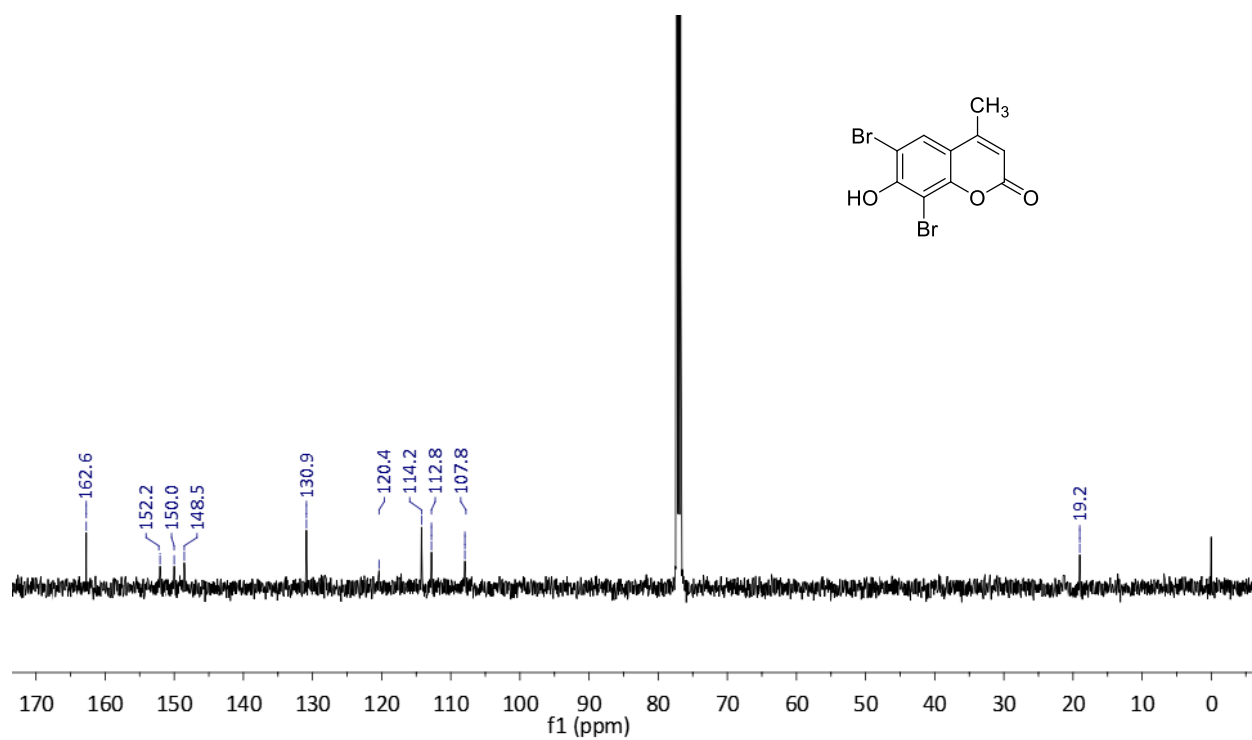
<sup>1</sup>H-NMR of 28b in CDCl<sub>3</sub>



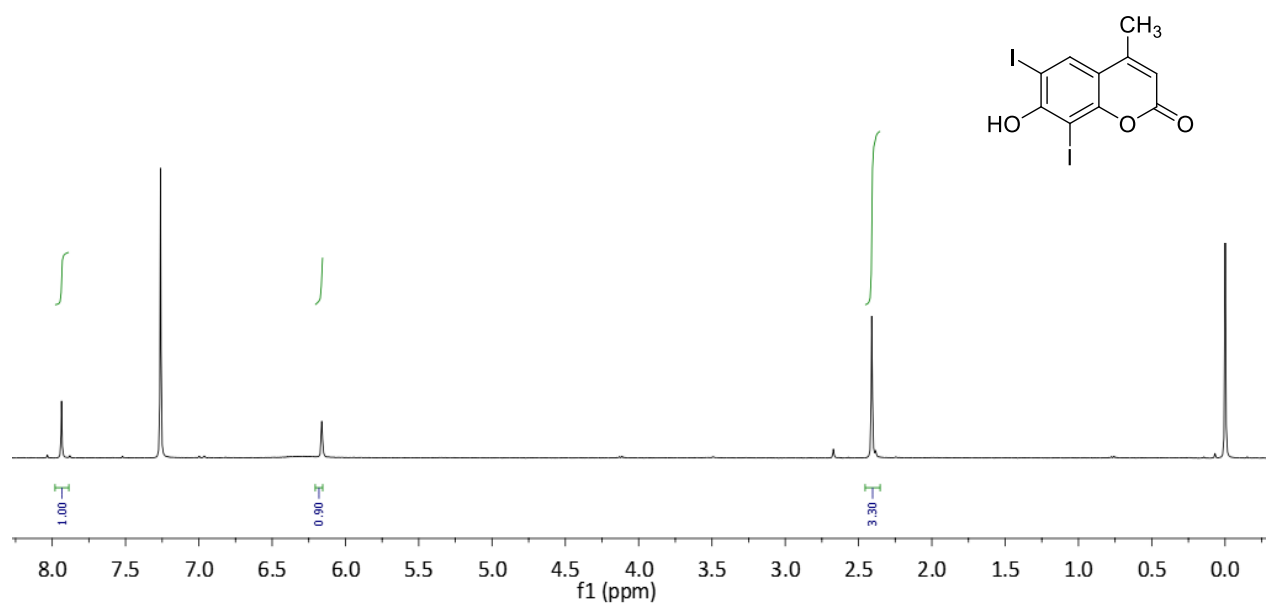
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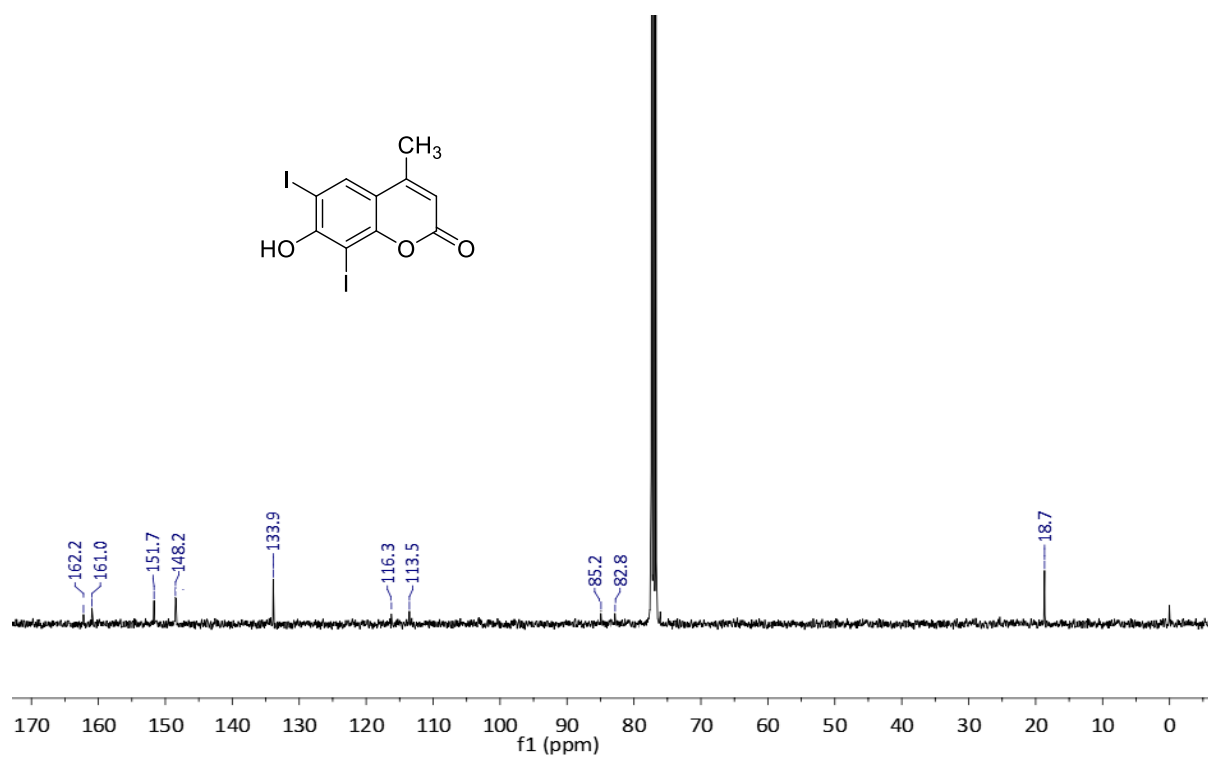
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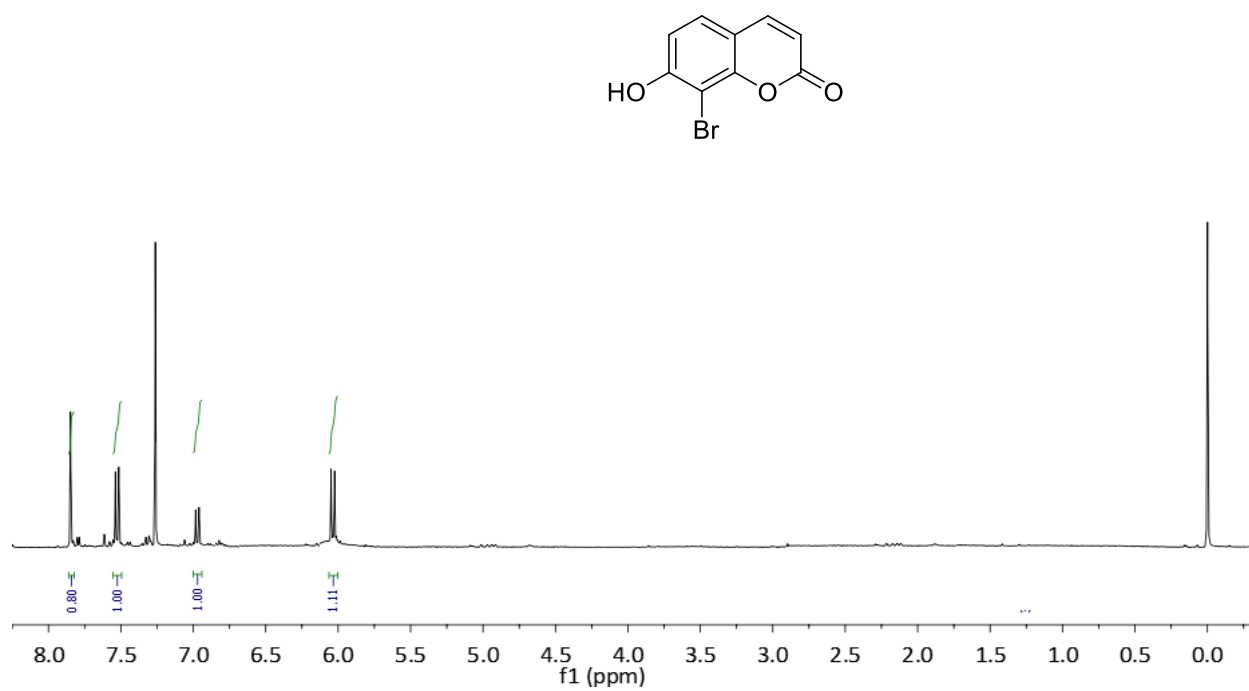
<sup>13</sup>C-NMR of 28c in CDCl<sub>3</sub>



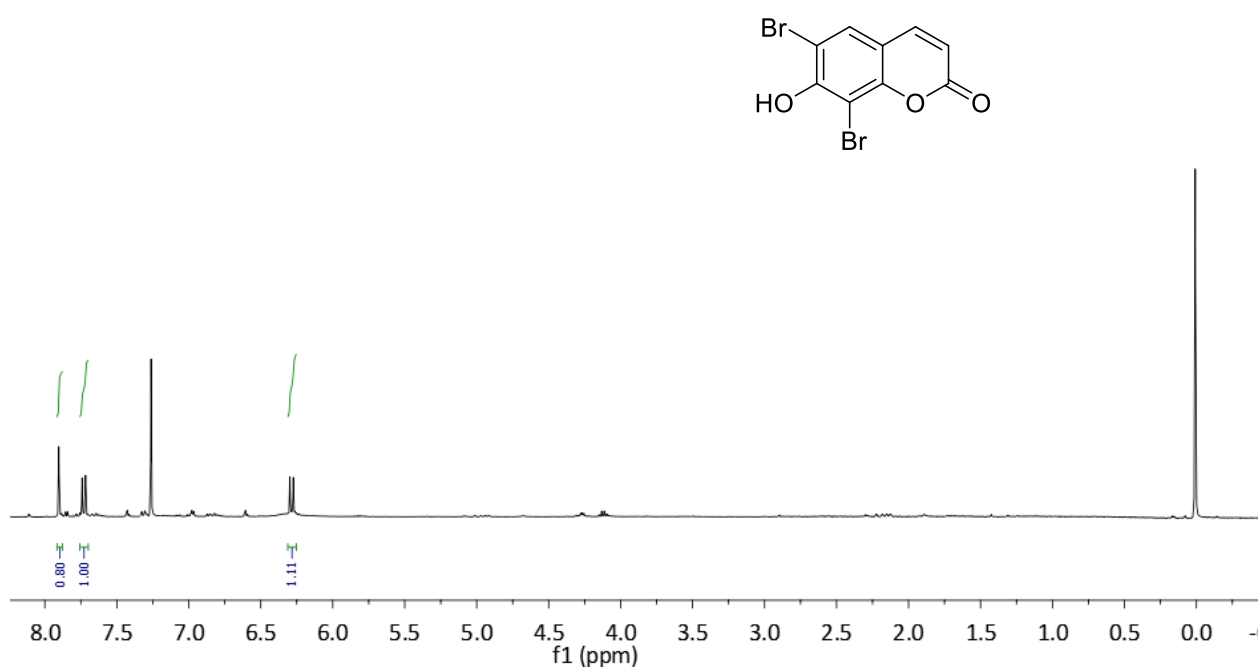
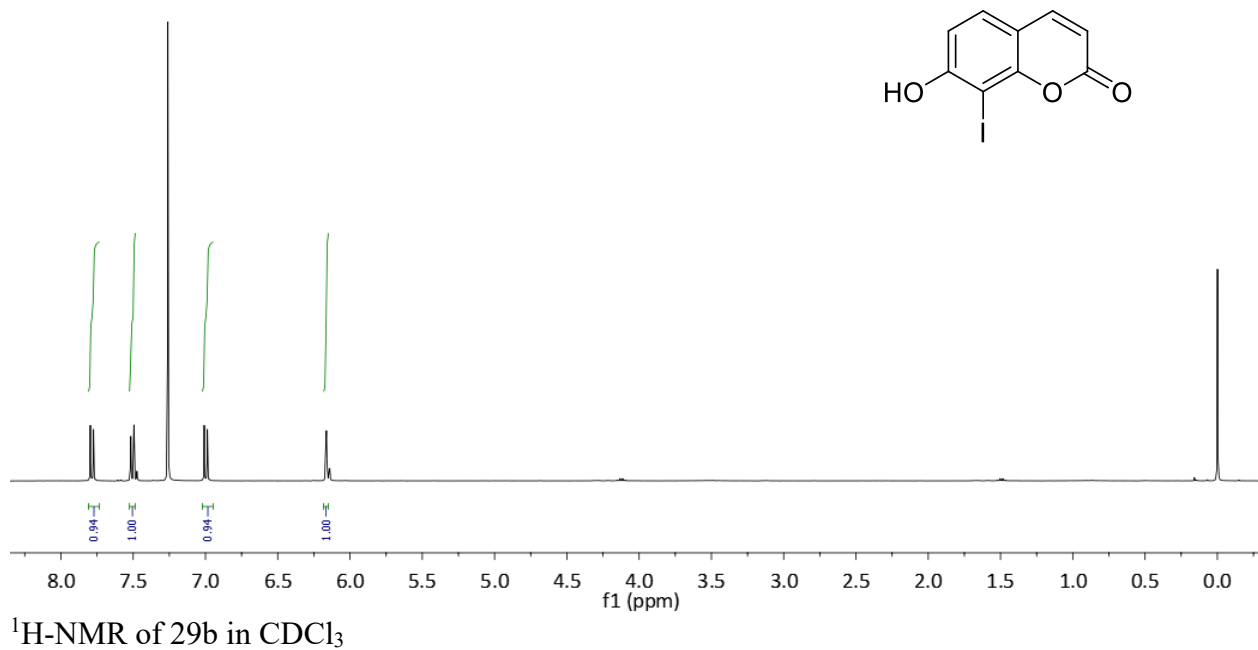
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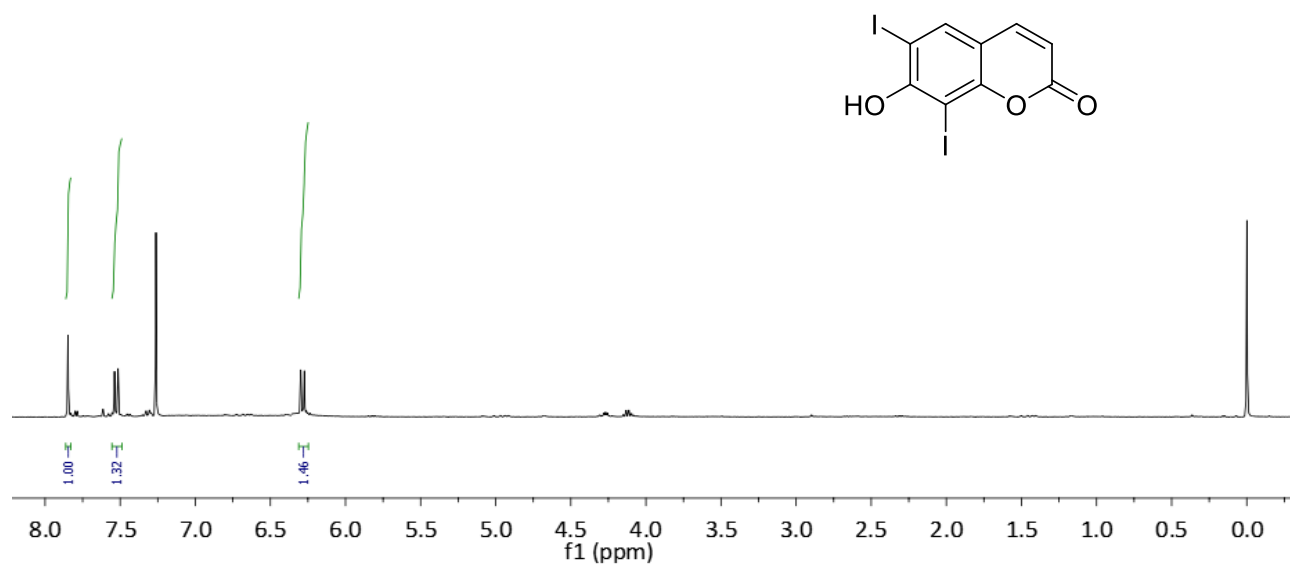
$^{13}\text{C}$  NMR of 28d in  $\text{CDCl}_3$



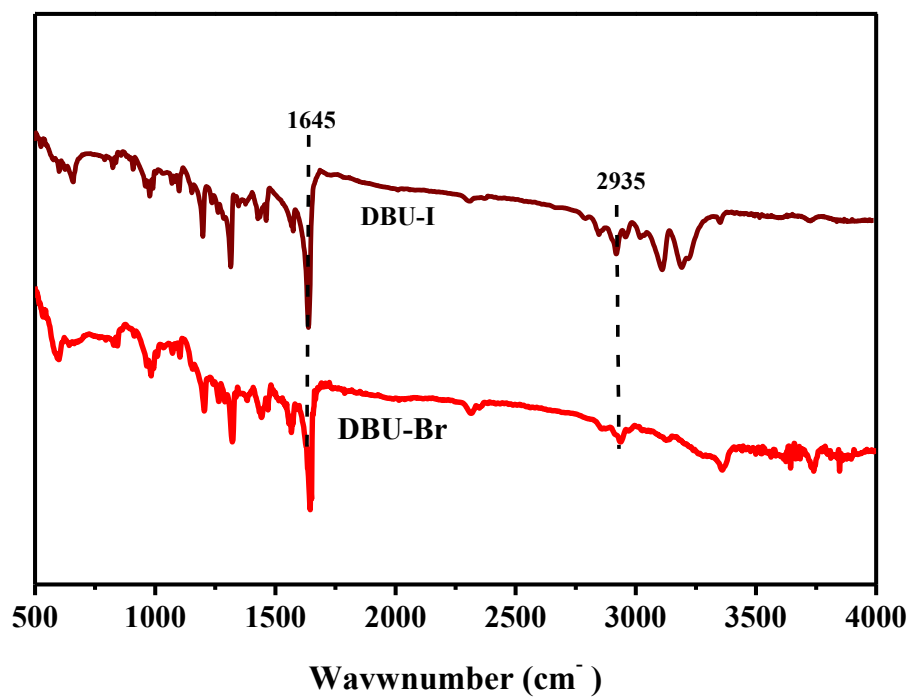
$^1\text{H}$ -NMR of 29a in  $\text{CDCl}_3$







$^1\text{H}$ -NMR of 29d in  $\text{CDCl}_3$



FT-IR spectrum of LBAs of DBU-Br and DBU-I