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Supporting Information

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## Supporting Information

### CAL-B-catalyzed C-S Bond Addition and Controllable Selectivity in Different Organic Media

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## General Procedure for the Enzymatic Addition of Thiols to Vinyl Esters

A suspension of **1** (0.25 mmol) and 10 mg CAL-B in 1 mL organic solvents was incubated at 50 °C and 200 r.p.m. (orbitally shaken) for 5 minutes. Then, corresponding equivalent of vinyl esters **2** was added in order to initiate the reaction. After indicated time, the enzyme was filtered off to terminate the reaction and washed with ether (3-5 mL). Solvent was evaporated under vacuum to dryness. The crude product was purified by chromatography on silica gel by eluting with petroleum/ethyl acetate (20:1, by vol).

**2-(benzylthio)ethanol acetate (4a):**  $t_R$ =7.73 min (GC); colorless liquid; IR (neat): 769, 1380, 1453, 1494, 1601, 1741, 2853, 2923, 2955, 3028, 3062  $\text{cm}^{-1}$ .  $^1\text{H}$  NMR ( $\text{CDCl}_3$ , 500 MHz,  $\delta$ , ppm): (s, 3H,  $\text{O}=\text{C}-\text{CH}_3$ ), 2.62 (t,  $J$ =6.87 Hz, 2H,  $-\text{S}-\text{CH}_2-\text{CH}_2-\text{O}-$ ), 3.74 (s, 2H,  $\text{C}_6\text{H}_5-\text{CH}_2-\text{S}-$ ), 4.16 (t,  $J$ =6.87 Hz, 2H,  $-\text{S}-\text{CH}_2-\text{CH}_2-\text{O}-$ ), 7.24-7.32 (m, 5H,  $\text{C}_6\text{H}_5-$ ).  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ , 125 MHz,  $\delta$ , ppm): 21.0 ( $\text{O}=\text{C}-\text{CH}_3$ ), 29.7 ( $-\text{S}-\text{CH}_2-\text{CH}_2-\text{O}-$ ), 36.4 ( $\text{C}_6\text{H}_5-\text{CH}_2-\text{S}-$ ), 63.3 ( $-\text{S}-\text{CH}_2-\text{CH}_2-\text{O}-$ ), 127.3 ( $\text{C}_6\text{H}_5-$ ), 128.8 ( $\text{C}_6\text{H}_5-$ ), 129.0 ( $\text{C}_6\text{H}_5-$ ), 138.1 ( $\text{C}_6\text{H}_5-$ ), 170.9 ( $\text{O}=\text{C}-\text{CH}_3$ ).

**2-(benzylthio)ethanol butyrate (4b):**  $t_R$ =8.12 min (GC); colorless liquid; IR (neat): 767, 1383, 1453, 1494, 1736, 2874, 2926, 2964, 3028, 3061  $\text{cm}^{-1}$ .  $^1\text{H}$  NMR ( $\text{CDCl}_3$ , 500 MHz,  $\delta$ , ppm): 0.95 (t, 3H,  $\text{O}=\text{C}-\text{CH}_2-\text{CH}_2-\text{CH}_3$ ), 1.65 (m, 3H,  $\text{O}=\text{C}-\text{CH}_2-\text{CH}_2-\text{CH}_3$ ), 2.29 (t, 3H,  $\text{O}=\text{C}-\text{CH}_2-\text{CH}_2-\text{CH}_3$ ), 2.63 (t,  $J$ =6.87 Hz, 2H,  $-\text{S}-\text{CH}_2-\text{CH}_2-\text{O}-$ ), 3.75 (s, 2H,  $\text{C}_6\text{H}_5-\text{CH}_2-\text{S}-$ ), 4.18 (t,  $J$ =6.87 Hz, 2H,  $-\text{S}-\text{CH}_2-\text{CH}_2-\text{O}-$ ), 7.25-7.33 (m, 5H,  $\text{C}_6\text{H}_5-$ ).  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ , 125 MHz,  $\delta$ , ppm): 14.2 ( $\text{O}=\text{C}-\text{CH}_2-\text{CH}_2-\text{CH}_3$ ), 22.8 ( $\text{O}=\text{C}-\text{CH}_2-\text{CH}_2-\text{CH}_3$ ), 29.8 ( $-\text{S}-\text{CH}_2-\text{CH}_2-\text{O}-$ ), 34.4 ( $\text{O}=\text{C}-\text{CH}_2-\text{CH}_2-\text{CH}_3$ ), 36.5 ( $\text{C}_6\text{H}_5-\text{CH}_2-\text{S}-$ ), 63.1 ( $-\text{S}-\text{CH}_2-\text{CH}_2-\text{O}-$ ), 127.3 ( $\text{C}_6\text{H}_5-$ ), 128.8 ( $\text{C}_6\text{H}_5-$ ), 129.0 ( $\text{C}_6\text{H}_5-$ ), 138.1 ( $\text{C}_6\text{H}_5-$ ), 173.9 ( $\text{O}=\text{C}-\text{CH}_3$ ).

**2-(benzylthio)ethanol caproate (4c):**  $t_R$ =9.16 min (GC); colorless liquid; IR (neat): 701, 1167, 1381, 1453, 1494, 1736, 2870, 2929, 2956, 3028, 3061  $\text{cm}^{-1}$ .  $^1\text{H}$  NMR ( $\text{CDCl}_3$ , 500 MHz,  $\delta$ , ppm): 0.90 (t, 3H,  $-\text{CH}_2-\text{CH}_2-\text{CH}_3$ ), 1.31 (m, 4H,  $-\text{CH}_2-\text{CH}_2-\text{CH}_3$ ), 1.63 (t,  $J$ =7.94 Hz, 2H,  $\text{O}=\text{C}-\text{CH}_2-\text{CH}_2-$ ), 2.30 (t, 3H,  $\text{O}=\text{C}-\text{CH}_2-\text{CH}_2-$ ), 2.63 (t,  $J$ =6.87 Hz, 2H,  $-\text{S}-\text{CH}_2-\text{CH}_2-\text{O}-$ ), 3.75 (s, 2H,  $\text{C}_6\text{H}_5-\text{CH}_2-\text{S}-$ ), 4.18 (t,  $J$ =6.87 Hz, 2H,  $-\text{S}-\text{CH}_2-\text{CH}_2-\text{O}-$ ), 7.25-7.33 (m, 5H,  $\text{C}_6\text{H}_5-$ ).  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ , 125 MHz,  $\delta$ , ppm): 14.1 ( $-\text{CH}_2-\text{CH}_2-\text{CH}_3$ ), 22.5 ( $-\text{CH}_2-\text{CH}_2-\text{CH}_3$ ), 24.8 ( $-\text{CH}_2-\text{CH}_2-\text{CH}_3$ ), 29.8 ( $-\text{S}-\text{CH}_2-\text{CH}_2-\text{O}-$ ), 31.5 ( $\text{O}=\text{C}-\text{CH}_2-\text{CH}_2-$ ), 34.4 ( $\text{O}=\text{C}-\text{CH}_2-\text{CH}_2-$ ), 36.4

(C<sub>6</sub>H<sub>5</sub>-CH<sub>2</sub>-S-), 63.1 (-S-CH<sub>2</sub>-CH<sub>2</sub>-O-), 127.4 (C<sub>6</sub>H<sub>5</sub>-), 128.8 (C<sub>6</sub>H<sub>5</sub>-), 129.1 (C<sub>6</sub>H<sub>5</sub>-), 138.2 (C<sub>6</sub>H<sub>5</sub>-), 173.9 (O=C-CH<sub>3</sub>).

**2-(butylthio)ethanol acetate (4d):**  $t_R$ =6.79 min (GC); colorless liquid; IR (neat): 1027, 1231, 1362, 1379, 1463, 1746, 2855, 2925, 2957 cm<sup>-1</sup>. <sup>1</sup>H NMR (CDCl<sub>3</sub>, 500 MHz,  $\delta$ , ppm): 0.92 (t, 3H, -S-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>), 1.40 (m, 2H, -S-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>), 1.57 (m, 2H, -S-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>), 2.07 (s, 3H, O=C-CH<sub>3</sub>), 2.57 (t, 2H, -S-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>), 2.74 (t,  $J$ =6.87 Hz, 2H, -S-CH<sub>2</sub>-CH<sub>2</sub>-O-), 4.22 (t,  $J$ =6.87 Hz, 2H, -S-CH<sub>2</sub>-CH<sub>2</sub>-O-). <sup>13</sup>C NMR (CDCl<sub>3</sub>, 125 MHz,  $\delta$ , ppm): 13.9 (-S-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>), 21.2 (O=C-CH<sub>3</sub>), 22.2 (-S-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>), 30.7 (-S-CH<sub>2</sub>-CH<sub>2</sub>-O-), 32.0 (-S-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>), 32.3 (-S-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>), 63.8 (-S-CH<sub>2</sub>-CH<sub>2</sub>-O-), 171.1 (O=C-CH<sub>3</sub>).

**2-(butylthio)ethanol butyrate (4e):**  $t_R$ =7.10 min (GC); colorless liquid; IR (neat): 1092, 1254, 1388, 1459, 1739, 2874, 2933, 2951 cm<sup>-1</sup>. <sup>1</sup>H NMR (CDCl<sub>3</sub>, 500 MHz,  $\delta$ , ppm): 0.95 (m, 6H, -S-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>, O=C-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>), 1.41 (m, 2H, -S-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>), 1.56 (m, 2H, -S-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>), 1.66 (m, 2H, O=C-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>), 2.30 (t, 2H, O=C-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>), 2.57 (t, 2H, -S-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>), 2.73 (t,  $J$ =7.2 Hz, 2H, -S-CH<sub>2</sub>-CH<sub>2</sub>-O-), 4.22 (t,  $J$ =7.2 Hz, 2H, -S-CH<sub>2</sub>-CH<sub>2</sub>-O-). <sup>13</sup>C NMR (CDCl<sub>3</sub>, 125 MHz,  $\delta$ , ppm): 13.4, 13.5, 18.3, 21.8, 30.4, 31.6, 31.9, 36.0, 63.2 (-S-CH<sub>2</sub>-CH<sub>2</sub>-O-), 172.3 (O=C-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>). ESI-MS  $m/z$  calcd. for [M + Na]<sup>+</sup> C<sub>13</sub>H<sub>18</sub>O<sub>2</sub>S Na 261.0, found 260.9.

**2-(dodecylthio)ethanol acetate (4f):**  $t_R$ =9.39 min (GC); colorless liquid; IR (neat): 1227, 1379, 1465, 1746, 2853, 2924, 2955 cm<sup>-1</sup>. <sup>1</sup>H NMR (CDCl<sub>3</sub>, 500 MHz,  $\delta$ , ppm): 0.88 (t, 3H, CH<sub>3</sub>), 1.29 (m, 18H, 9 -CH<sub>2</sub>-), 1.59 (m, 2H, CH<sub>2</sub>), 1.66 (m, 2H, O=C-CH<sub>2</sub>-CH<sub>2</sub>-), 2.07 (s, 3H, O=CCH<sub>3</sub>), 2.55 (m, 2H, -CH<sub>2</sub>-S-CH<sub>2</sub>-CH<sub>2</sub>-O-), 2.73 (t,  $J$ =6.95 Hz, 2H, -S-CH<sub>2</sub>-CH<sub>2</sub>-O-), 4.21 (t,  $J$ =6.95 Hz, 2H, -SCH<sub>2</sub>CH<sub>2</sub>O-). <sup>13</sup>C NMR (CDCl<sub>3</sub>, 125 MHz,  $\delta$ , ppm): 14.6, 21.2, 22.9, 29.1, 29.5, 29.6, 29.8, 29.8, 29.9, 29.9, 29.9, 30.7, 32.2, 32.6, 63.8 (-S-CH<sub>2</sub>-CH<sub>2</sub>-O-), 171.1 (O=C-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>).

**1-(benzylthio)ethyl acetate (3a):**  $t_R$ =6.85 min (GC); light yellow oil; IR (neat): 702, 934, 1229, 1370, 1453, 1495, 1602, 1739, 2932, 2983, 3029, 3062 cm<sup>-1</sup>. <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz,  $\delta$ , ppm): 7.32-7.23 (m, 5H, C<sub>6</sub>H<sub>5</sub>-), 6.00 (q, 1H,  $J$ =6.4 Hz, CH-CH<sub>3</sub>), 3.85 (q, 2H, C<sub>6</sub>H<sub>5</sub>-CH<sub>2</sub>-S-), 1.92 (d, O=C-CH<sub>3</sub>), 1.50 (d, 3H,  $J$ =6.4 Hz, -CH-CH<sub>3</sub>). <sup>13</sup>C NMR (CDCl<sub>3</sub>, 100

MHz,  $\delta$ , ppm): 170.2 (-C=O), 137.8 (C<sub>6</sub>H<sub>5</sub>-), 128.6 (C<sub>6</sub>H<sub>5</sub>-), 128.4 (C<sub>6</sub>H<sub>5</sub>-), 126.9 (C<sub>6</sub>H<sub>5</sub>-), 75.2 (-CH-CH<sub>3</sub>), 35.3 (C<sub>6</sub>H<sub>5</sub>-CH<sub>2</sub>-S-), 21.2 (-CH-CH<sub>3</sub>), 20.9 (O=C-CH<sub>3</sub>). ESI-MS  $m/z$  calcd. for [M + Na]<sup>+</sup> C<sub>11</sub>H<sub>14</sub>O<sub>2</sub>S Na 233.0, found 233.1.

**1-(benzylthio)ethyl butyrate (3b):**  $t_R$ =7.38 min (GC); light yellow oil; IR (neat): 702, 935, 1228, 1453, 1495, 1602, 1739, 2932, 2983, 3029, 3062, 3062 cm<sup>-1</sup>. <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz,  $\delta$ , ppm): 7.32-7.22 (m, 5H, C<sub>6</sub>H<sub>5</sub>-), 6.02 (q, 1H,  $J$ =6.8 Hz, CH-CH<sub>3</sub>), 3.84 (q, 2H, C<sub>6</sub>H<sub>5</sub>-CH<sub>2</sub>-S-), 2.21 (t, 2H, O=C-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>), 1.64 (m, 2H, O=C-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>), 1.51 (d, 3H,  $J$ =6.8 Hz, -CH-CH<sub>3</sub>), 0.95 (t, 2H, O=C-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>). <sup>13</sup>C NMR (CDCl<sub>3</sub>, 100 MHz,  $\delta$ , ppm): 172.9 (-C=O), 137.8 (C<sub>6</sub>H<sub>5</sub>-), 128.6 (C<sub>6</sub>H<sub>5</sub>-), 128.3 (C<sub>6</sub>H<sub>5</sub>-), 126.9 (C<sub>6</sub>H<sub>5</sub>-), 74.9 (-CH-CH<sub>3</sub>), 36.0 (O=C-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>), 35.2 (C<sub>6</sub>H<sub>5</sub>-CH<sub>2</sub>-S-), 21.2 (-CH-CH<sub>3</sub>), 18.1 (O=C-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>), 13.4 (O=C-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>). ESI-MS  $m/z$  calcd. for [M + Na]<sup>+</sup> C<sub>13</sub>H<sub>18</sub>O<sub>2</sub>S Na 261.0, found 260.9.

**1-(benzylthio)ethyl caproate (3c):**  $t_R$ =8.46 min (GC); light yellow oil; IR (neat): 701, 1003, 1059, 1165, 1240, 1375, 1454, 1495, 1602, 1736, 2871, 2931, 2957, 3030, 3063 cm<sup>-1</sup>. <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz,  $\delta$ , ppm): 7.31-7.24 (m, 5H, C<sub>6</sub>H<sub>5</sub>-), 6.03 (q, 1H,  $J$ =6.8 Hz, CH-CH<sub>3</sub>), 3.86 (q, 2H, C<sub>6</sub>H<sub>5</sub>-CH<sub>2</sub>-S-), 2.24 (s, 2H, O=C-CH<sub>2</sub>), 1.61 (t, 2H, -CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>), 1.52 (d, 3H,  $J$ =6.8 Hz, -CH-CH<sub>3</sub>), 1.31 (m, 4H, -CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>), 0.92 (t, 3H, -CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>). <sup>13</sup>C NMR (CDCl<sub>3</sub>, 100 MHz,  $\delta$ , ppm): 173.1 (-C=O), 137.8 (C<sub>6</sub>H<sub>5</sub>-), 128.7 (C<sub>6</sub>H<sub>5</sub>-), 128.4 (C<sub>6</sub>H<sub>5</sub>-), 126.9 (C<sub>6</sub>H<sub>5</sub>-), 74.9 (-CH-CH<sub>3</sub>), 35.2, 34.2, 31.1, 24.3, 22.1, 21.2 (-CH<sub>2</sub>-CH<sub>3</sub>), 13.8 (-CH<sub>2</sub>-CH<sub>3</sub>). ESI-MS  $m/z$  calcd. for [M + Na]<sup>+</sup> C<sub>15</sub>H<sub>22</sub>O<sub>2</sub>S Na 289.1, found 289.0.

**1-(butylthio)ethyl acetate (3d):**  $t_R$ =5.06 min (GC); light yellow oil; IR (neat): 838, 933, 1018, 1053, 1231, 1370, 1457, 1742, 2873, 2930, 2959 cm<sup>-1</sup>. <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz,  $\delta$ , ppm): 6.06 (d, 3H,  $J$ =6.4 Hz, -CH-CH<sub>3</sub>), 2.63 (t, 2H, -S-CH<sub>2</sub>-CH<sub>2</sub>-), 2.07 (s, 3H, O=C-CH<sub>3</sub>), 1.56 (m, 5H,  $J$ =6.4 Hz, -CH-CH<sub>3</sub>, -S-CH<sub>2</sub>-CH<sub>2</sub>-), 1.38 (m, 2H, -CH<sub>2</sub>-CH<sub>3</sub>), 0.91 (m, 2H, -CH<sub>2</sub>-CH<sub>3</sub>). <sup>13</sup>C NMR (CDCl<sub>3</sub>, 100 MHz,  $\delta$ , ppm): 170.4 (-C=O), 75.4 (-CH-CH<sub>3</sub>), 31.8, 30.3, 21.9, 21.4, 21.3, 13.6 (-CH<sub>2</sub>-CH<sub>3</sub>). ESI-MS  $m/z$  calcd. for [M + Na]<sup>+</sup> C<sub>8</sub>H<sub>16</sub>O<sub>2</sub>S Na 199.0, found 198.8.

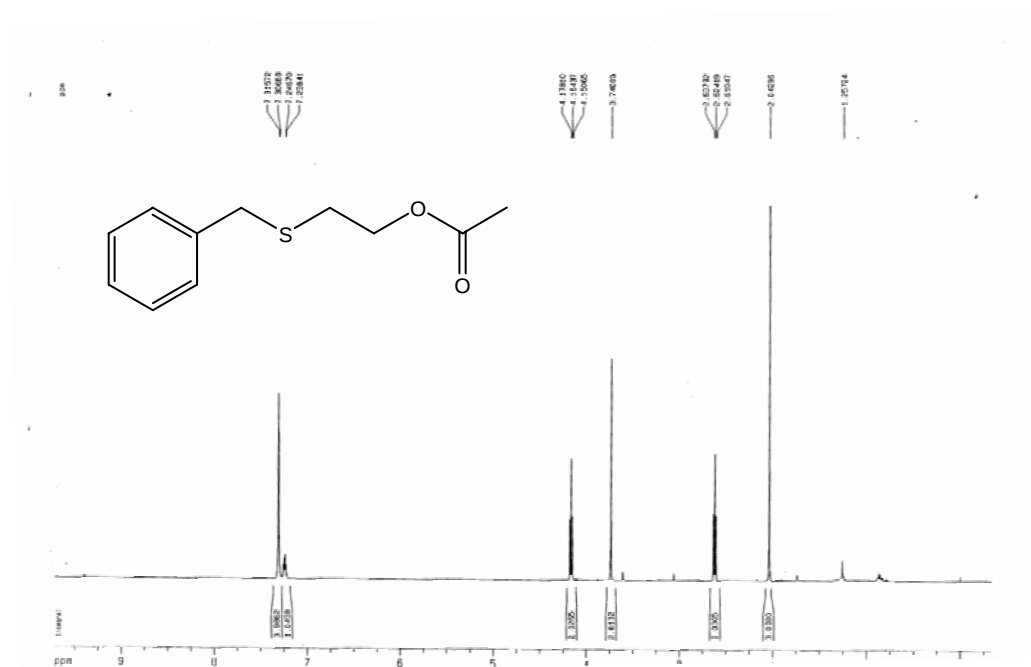
**1-(butylthio)ethyl butyrate (3e):**  $t_R$ =6.01 min (GC); light yellow oil; IR (neat): 929, 1001,

1055, 1173, 1376, 1459, 1737, 2875, 2933, 2962  $\text{cm}^{-1}$ .  $^1\text{H}$  NMR ( $\text{CDCl}_3$ , 400 MHz,  $\delta$ , ppm): 6.06 (d, 3H,  $J=6.4$  Hz,  $-\text{CH}-\text{CH}_3$ ), 2.60 (t, 2H,  $-\text{S}-\text{CH}_2-$ ), 2.27 (t, 2H,  $\text{O}=\text{C}-\text{CH}_2-$ ), 1.50-1.38 (m, 7H,  $J=6.4$  Hz,  $-\text{CH}-\text{CH}_3$ ,  $-\text{S}-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_3$ ,  $\text{O}=\text{C}-\text{CH}_2-\text{CH}_2-\text{CH}_3$ ), 1.33 (m, 2H,  $-\text{S}-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_3$ ), 0.91 (m, 6H,  $-\text{CH}_3$ ,  $-\text{CH}_3$ ).  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ , 100 MHz,  $\delta$ , ppm): 172.8 ( $-\text{C}=\text{O}$ ), 74.9 ( $-\text{CH}-\text{CH}_3$ ), 36.2, 31.7, 30.1, 21.7, 21.3, 18.2, 13.4 ( $-\text{CH}_2-\text{CH}_3$ ). ESI-MS  $m/z$  calcd. for  $[\text{M} + \text{Na}]^+ \text{C}_8\text{H}_{16}\text{O}_2\text{S Na}$  199.0, found 198.8.

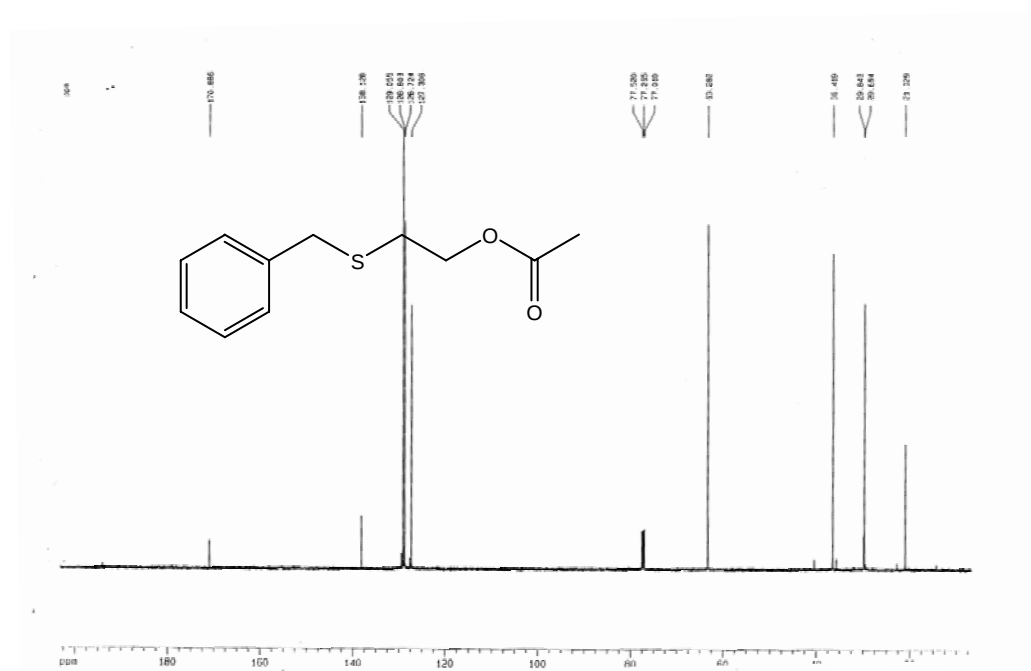
**1-(dodecylthio)ethyl acetate (3f):**  $t_R=8.84$  min (GC); light yellow oil; 838, 933, 1018, 1058, 1228, 1370, 1466, 1743, 2874, 2925, 2961  $\text{cm}^{-1}$ .  $^1\text{H}$  NMR ( $\text{CDCl}_3$ , 400 MHz,  $\delta$ , ppm): 6.06 (d, 3H,  $-\text{CH}-\text{CH}_3$ ), 2.63 (t, 2H,  $-\text{S}-\text{CH}_2-$ ), 2.07 (t, 2H,  $\text{O}=\text{C}-\text{CH}_2$ ), 1.62-1.53 (m, 5H,  $-\text{S}-\text{CH}_2-\text{CH}_2$ ,  $-\text{CH}-\text{CH}_3$ ), 1.36-1.25 (br, 18H, 9  $-\text{CH}_2-$ ), 0.87 (t, 3H,  $\text{CH}_2-\text{CH}_3$ ).  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ , 100 MHz,  $\delta$ , ppm): 170.4 ( $-\text{O}-\text{C}=\text{O}$ ), 75.4, 31.9, 30.6, 29.8, 29.6, 29.6, 29.5, 29.5, 29.3, 29.1, 28.8, 22.6, 21.4, 21.3, 14.1. ESI-MS  $m/z$  calcd. for  $[\text{M} + \text{Na}]^+ \text{C}_{16}\text{H}_{32}\text{O}_2\text{S Na}$  311.2, found 311.2.

## 2-(benzylthio)ethanol acetate (4a).

$^1\text{H}$  NMR (500 MHz,  $\text{CDCl}_3$ )



$^{13}\text{C}$  NMR (125 MHz,  $\text{CDCl}_3$ )

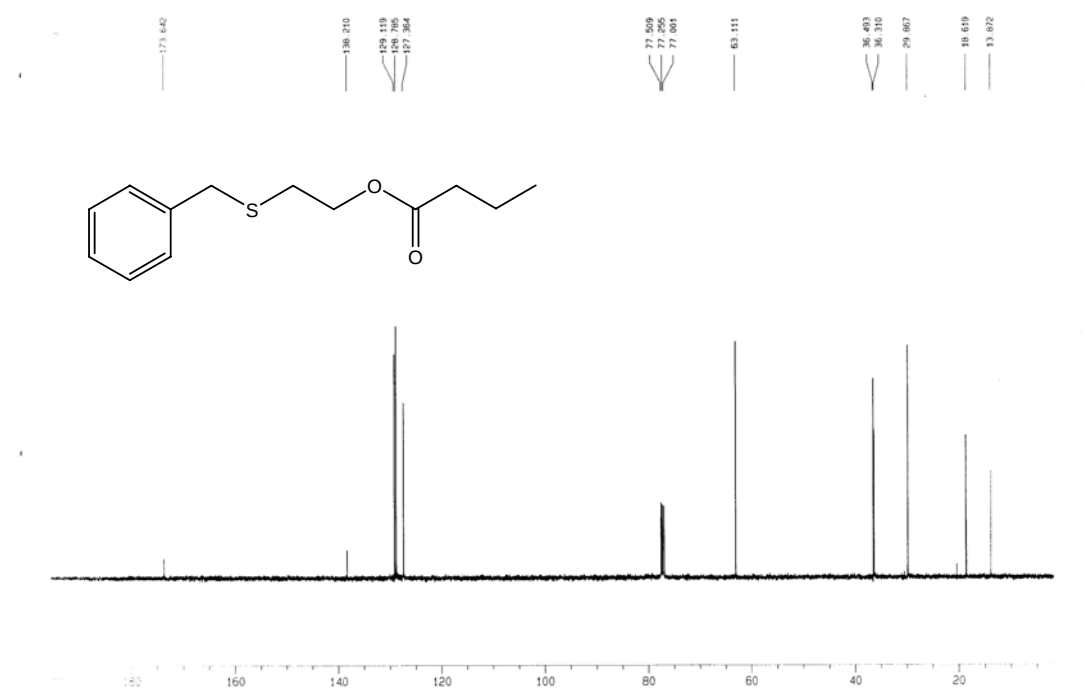


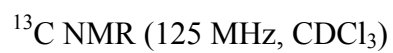
## 2-(benzylthio)ethanol butyrate (4b).

$^1\text{H}$  NMR (500 MHz,  $\text{CDCl}_3$ )



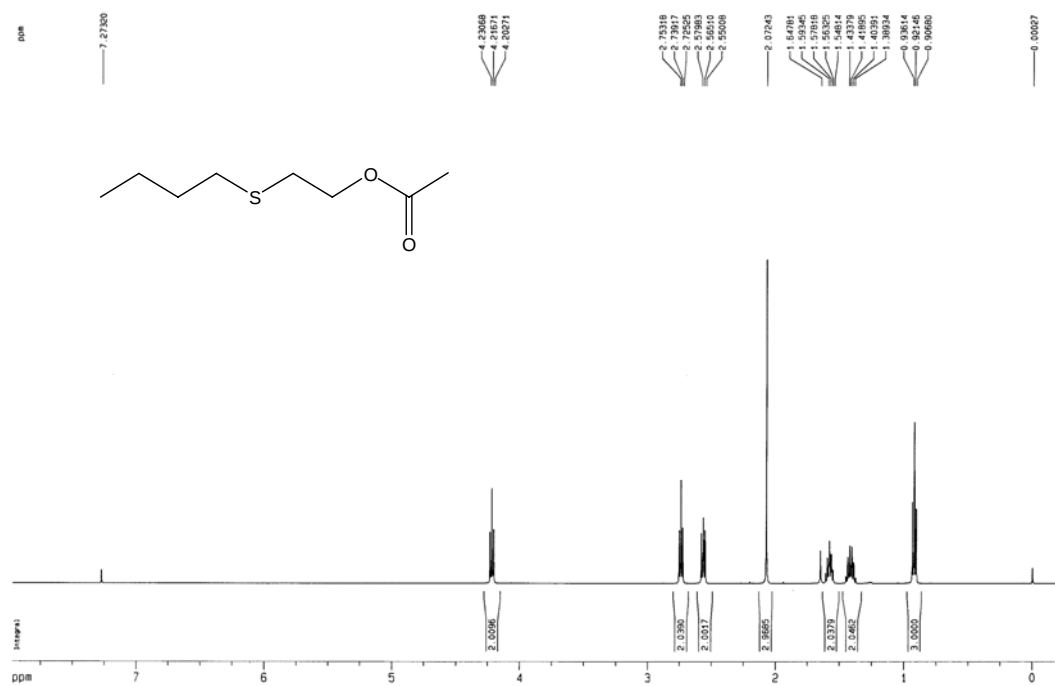
$^{13}\text{C}$  NMR (125 MHz,  $\text{CDCl}_3$ )



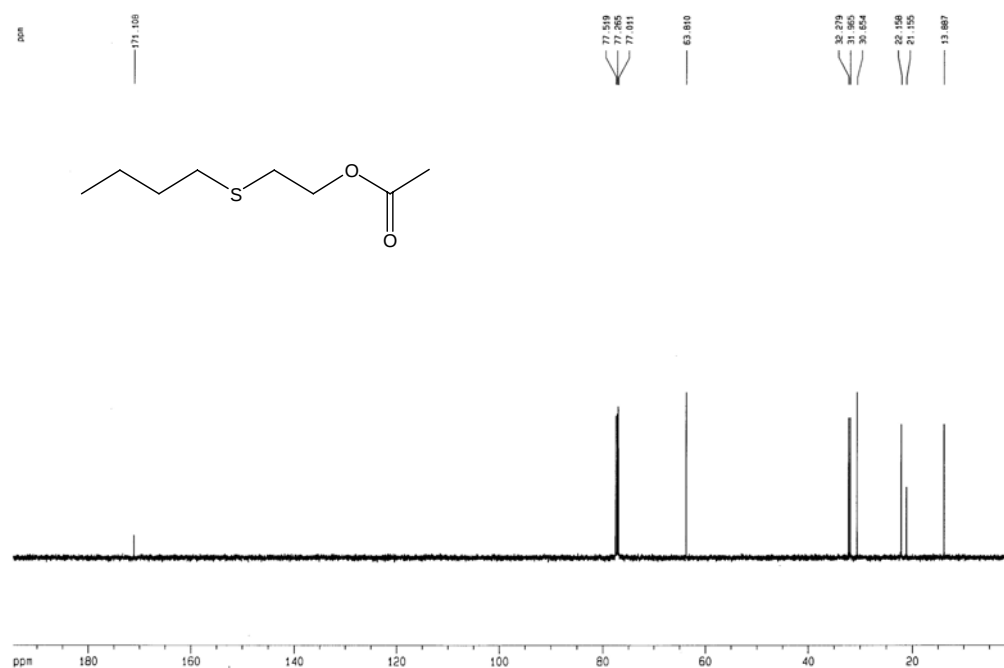
<sup>1</sup>H NMR (500 MHz, CDCl<sub>3</sub>)

## 2-(butylthio)ethanol acetate (4d).

$^1\text{H}$  NMR (500 MHz,  $\text{CDCl}_3$ )

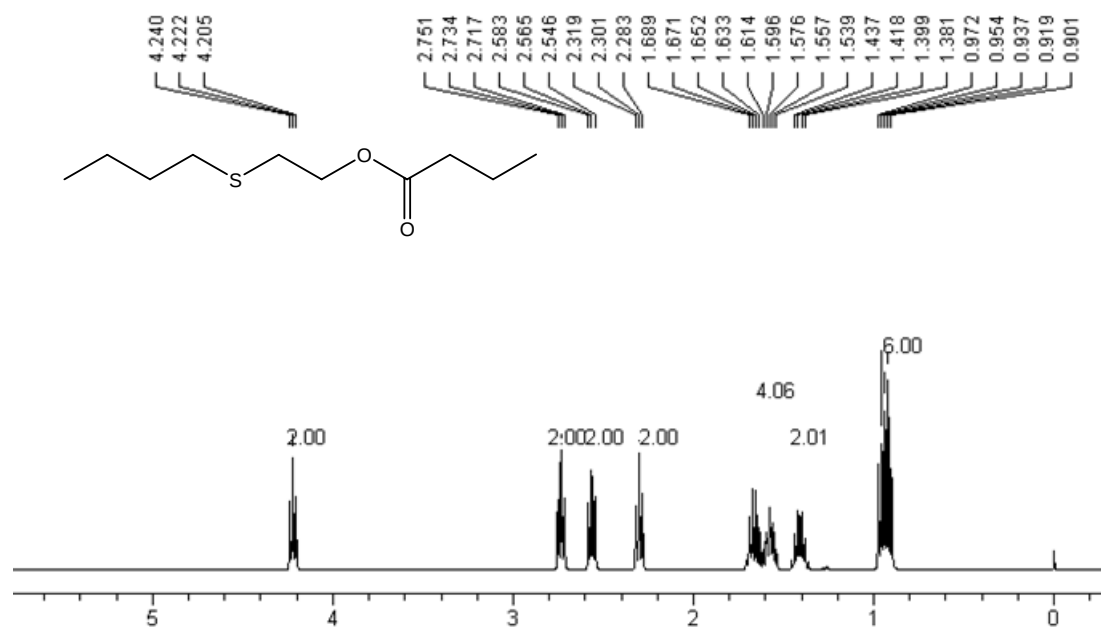


$^{13}\text{C}$  NMR (125 MHz,  $\text{CDCl}_3$ )



**2-(butylthio)ethanol butyrate (4e).**

$^1\text{H}$  NMR (500 MHz,  $\text{CDCl}_3$ )



$^{13}\text{C}$  NMR (125 MHz,  $\text{CDCl}_3$ )

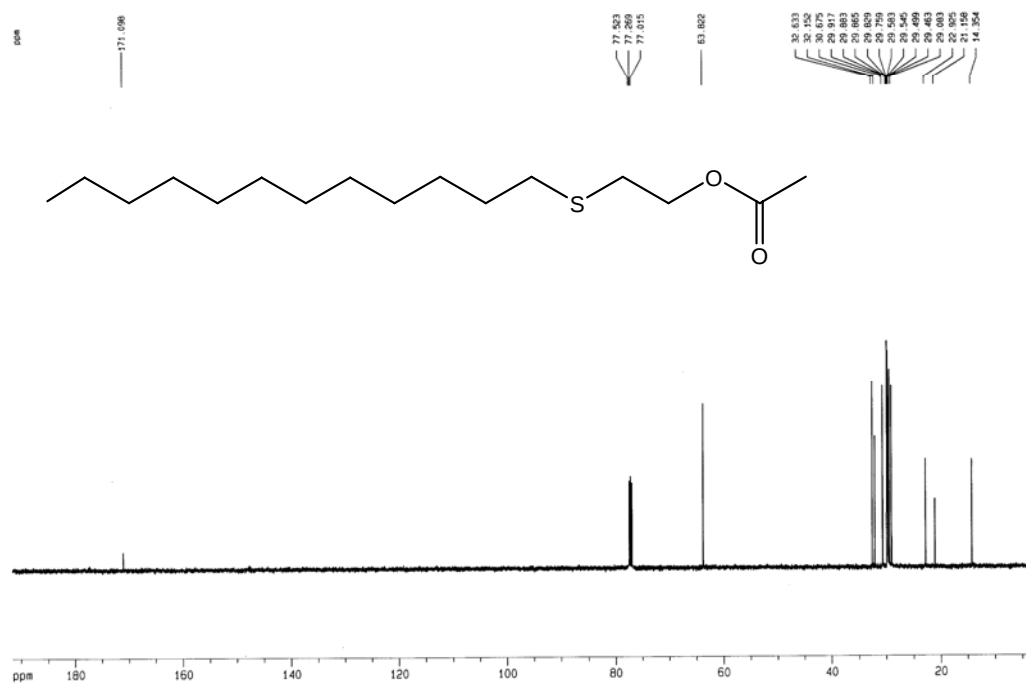


**2-(dodecylthio)ethanol acetate (4f).**

$^1\text{H}$  NMR (500 MHz,  $\text{CDCl}_3$ )

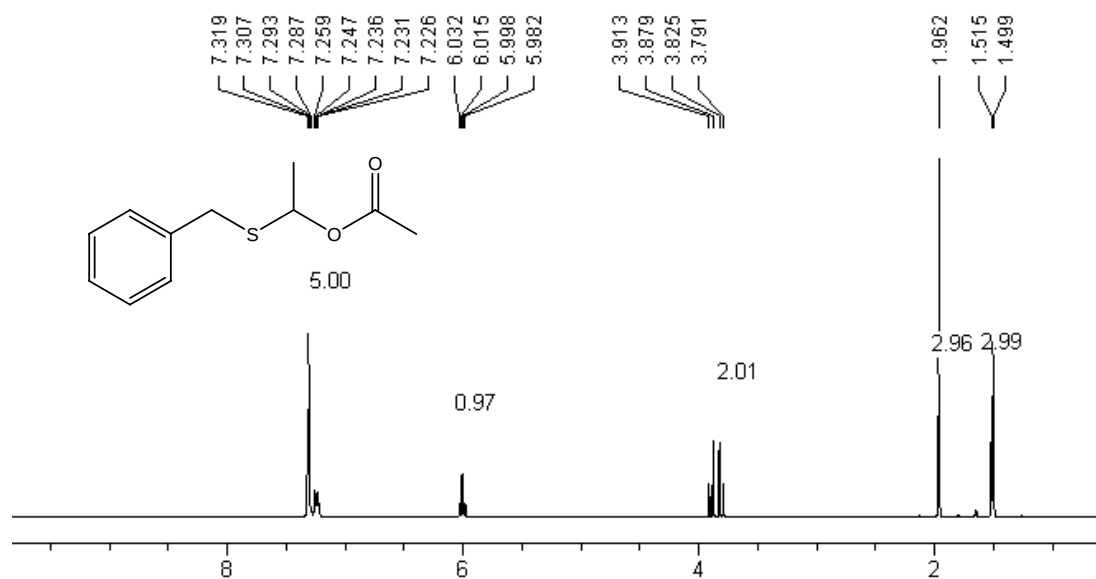


$^{13}\text{C}$  NMR (125 MHz,  $\text{CDCl}_3$ )

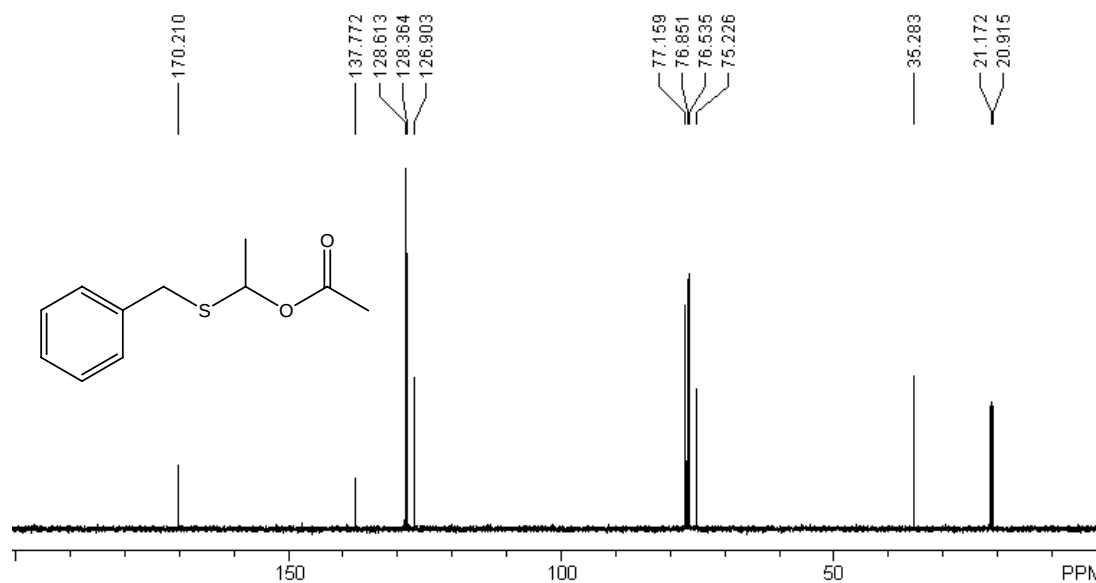


**1-(Benzylthio)ethyl acetate (3a).**

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )

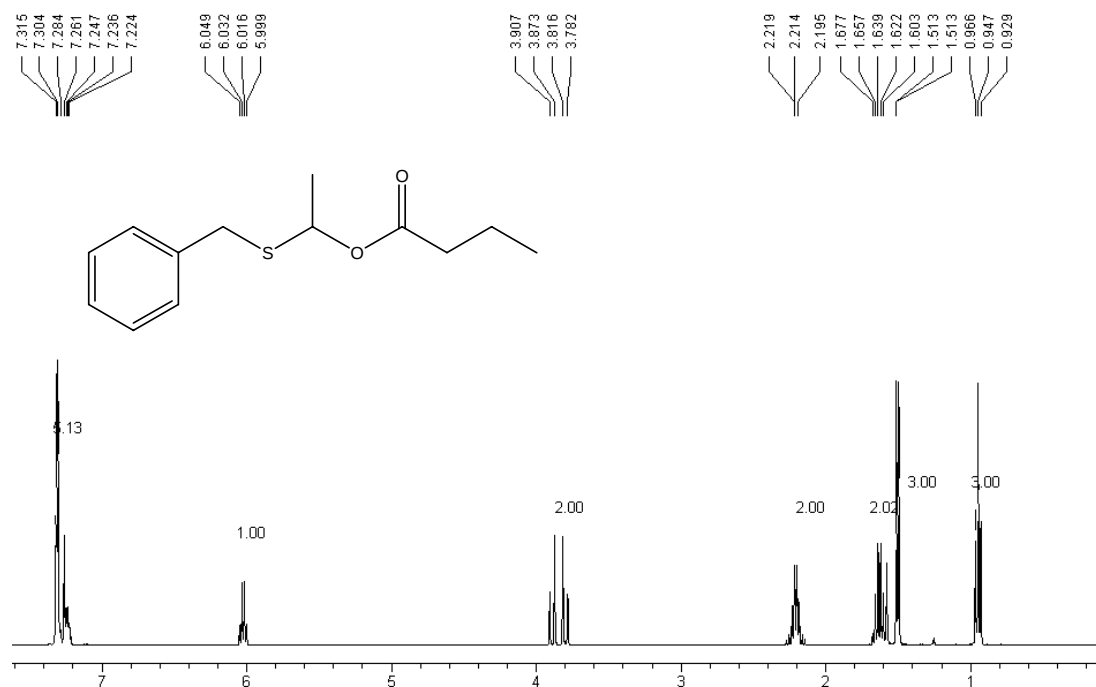


$^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )

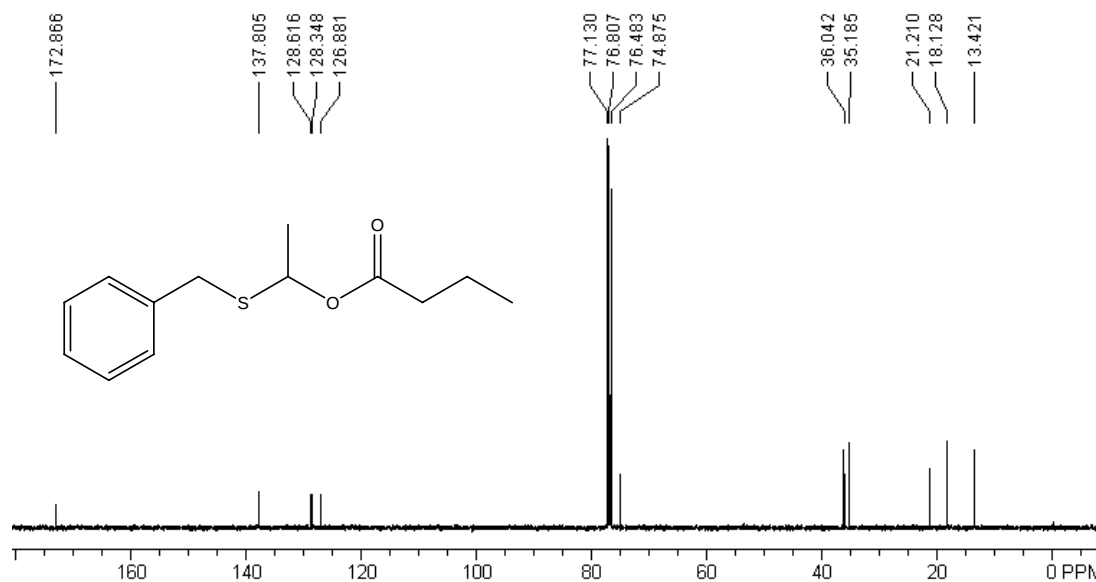


### 1-(Benzylthio)ethyl butyrate (3b).

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )



$^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )

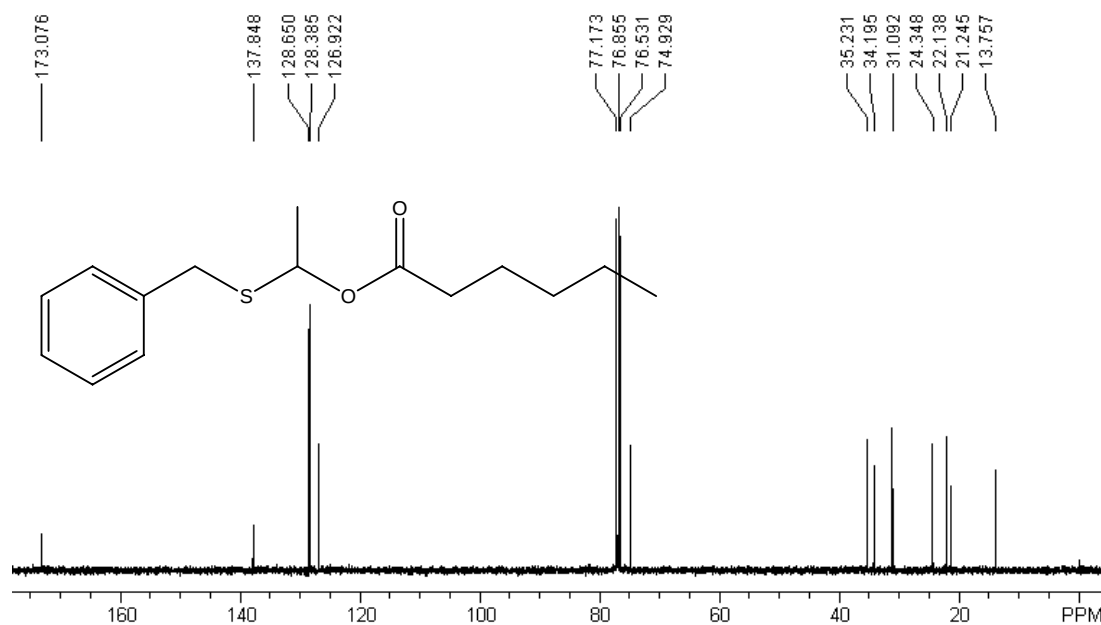


### 1-(Benzylthio)ethyl caproate (3c).

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )

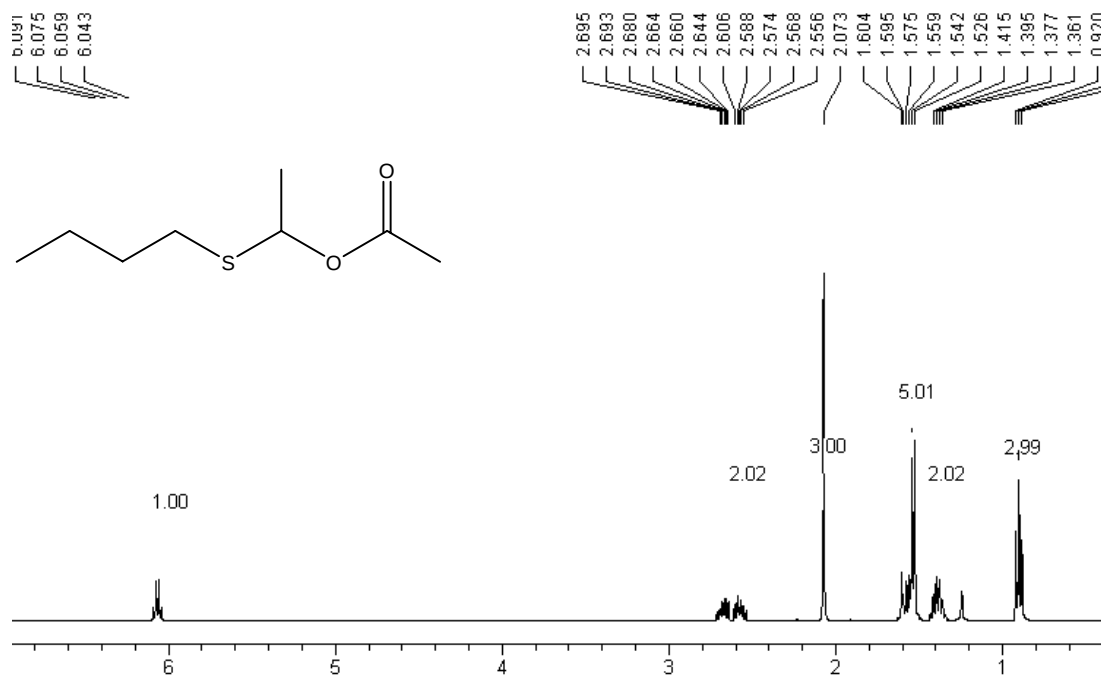


$^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )



**1-(Butylthio)ethyl acetate (3d).**

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )

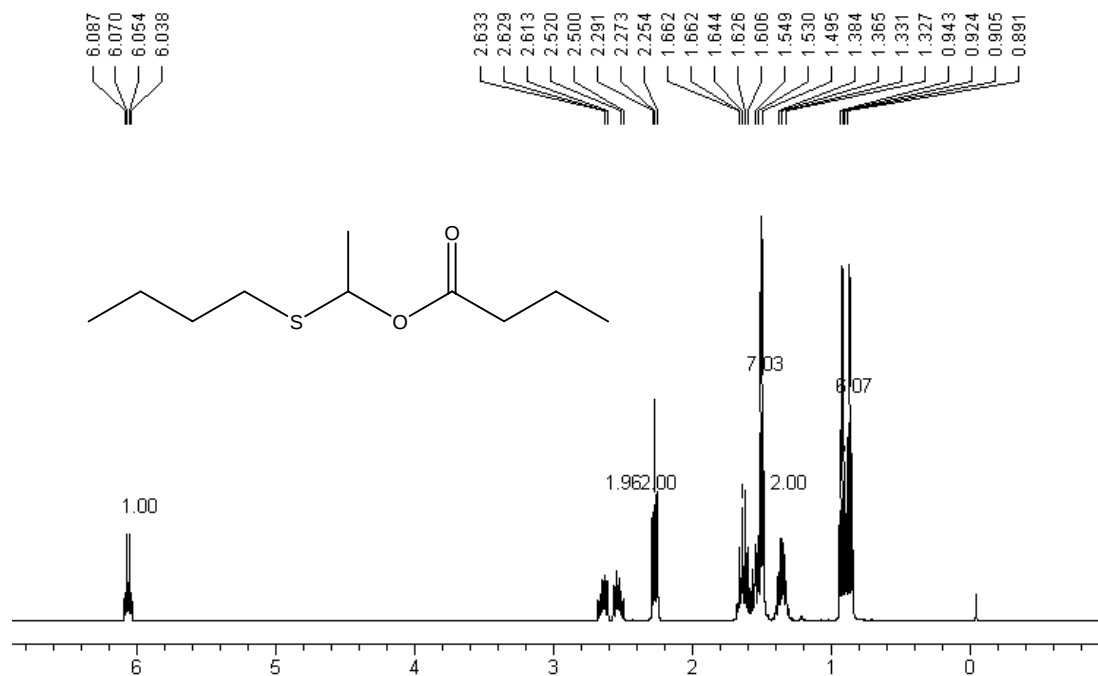


$^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )

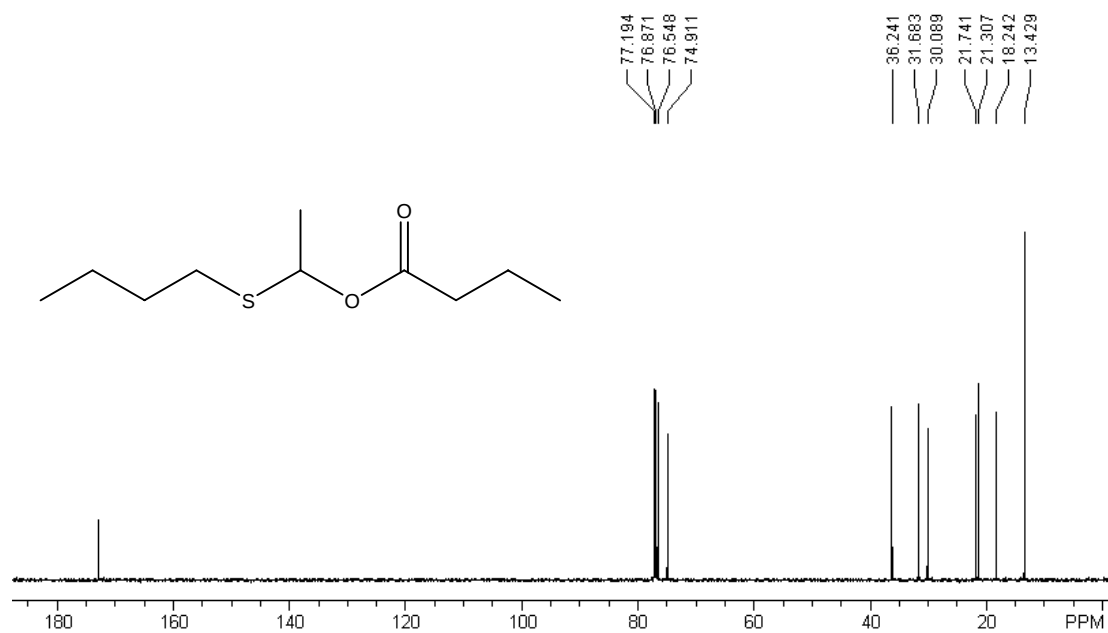


### 1-(Butylthio)ethyl butyrate (3e).

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )

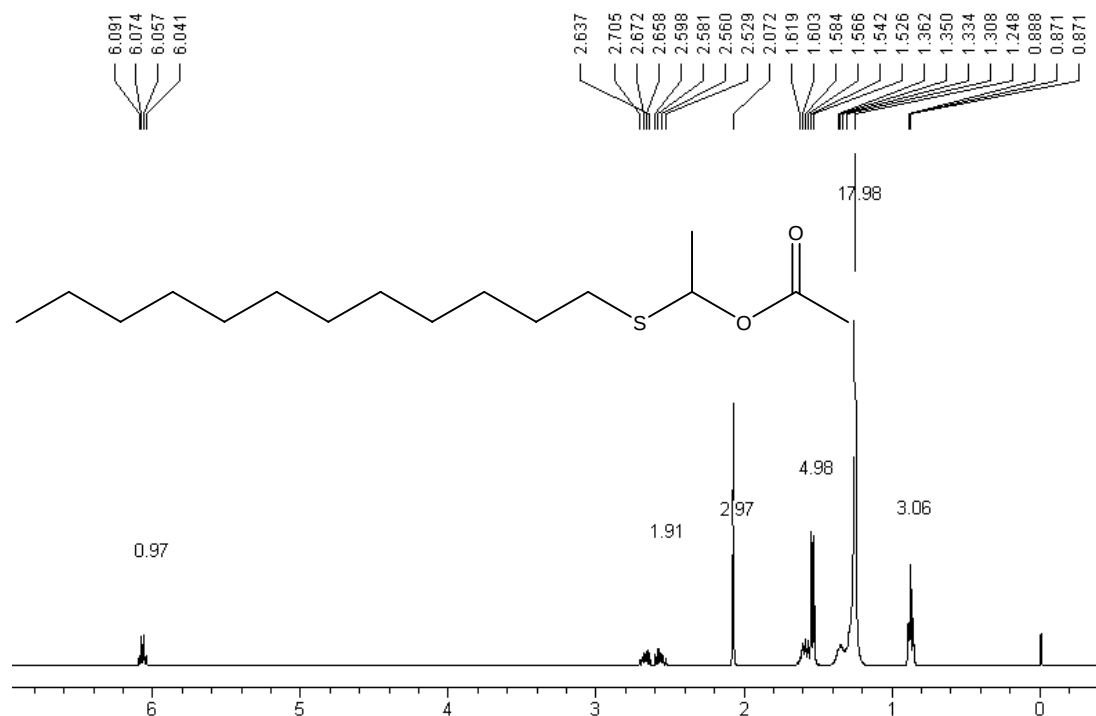


$^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )



### 1-(Dodecylthio)ethyl acetate (3f).

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )



$^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )

