Supporting Information

$Pd(OAc)_2$ without added ligand as an active catalyst for Mizoroki–Heck reaction in aqueous media

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Contents:

(E)- Stilbene

^{1}H NMR (500 MHz; $CDCl_3$) δ: 7.60 (d, J=1.0 Hz, 4H), 7.43 (t, J=7.5 Hz, 4H), 7.32 (t, J=7.2 Hz, 2H), 7.19 (s, 2H); ^{13}C NMR δ: 127.0, 128.1, 129.1, 129.2, 137.8; Anal. calcd. for $C_{14}H_{12}$: C 93.29, H 6.71; found C 83.18, H 6.78.

(E)-Cinnamonitrile:

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.71-7.66 (3H, m), 7.55-7.50 (2H, m), 7.41 (1H, J=16.8 Hz, d), 6.18 (1H, J=16.8 Hz, d); ^{13}C NMR δ: 151.5, 134.4, 132.1, 130.0, 128.3, 119.1, 97.2; Anal. Calc. for C_9H_7N: C, 83.72; H, 5.43; N, 10.85. Found: C, 83.63; H, 5.37; N, 10.91.

(E)-n-butyl cinnamate:

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.72 (1 H, J=16.0 Hz, d), 7.56 (2 H, J=3.7 Hz, q), 7.41 (3 H, J=1.0 Hz, t), 6.48 (1 H, J=16.0 Hz, d), 4.26 (2 H, J=6.7 Hz, t), 1.76-1.72 (2 H, m), 1.51-1.47 (2 H, m),1.01 (3 H, J=7.4 Hz, t); ^{13}C NMR δ: 14.2, 19.6, 31.2, 64.8, 118.8, 128.5, 129.3, 130.6, 134.9, 145.0, 167.5; Anal. Calc. for $C_{13}H_{16}O_2$: C, 76.44; H, 7.90. Found: C, 76.37; H, 7.81.

4-Acetylstilbene:

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.90 (2 H, J=8.4 Hz, d), 7.53 (2 H, J=8.4 Hz, d), 7.50-7.47 (2 H, m), 7.37-7.34 (2 H, m), 7.30-7.27 (1 H, m), 7.17 (1 H, J=16.3 Hz, d), 7.07 (1 H, J=16.3 Hz, d), 2.55 (3

H, s); ^{13}C NMR δ: 197.3, 141.9, 136.6, 135.9, 131.4, 128.8, 128.7, 128.2, 127.4, 126.7, 126.4, 29.6; Anal. Calc. for $C_{16}H_{14}O$: C, 86.45; H, 6.35. Found: C, 86.37; H, 6.31.

4-Methoxystilbene:

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.36 (2 H, J=7.4 Hz, d), 7.33 (2 H, J=8.7 Hz, d), 7.26-7.22 (2 H, m), 7.13-7.09 (1 H, m), 6.94 (1 H, J=16.3 Hz, d), 6.84 (1 H, J=16.3 Hz, d), 6.76 (2 H, J=8.7 Hz, d), 3.71 (3 H, s); ^{13}C NMR δ: 159.2, 137.7, 130.1, 128.7, 128.1, 127.6, 127.1, 126.6, 126.2, 114.1, 55.2; Anal. Calc. for $C_{15}H_{14}O$: C, 85.68; H, 6.71. Found: C, 85.59; H, 6.63.

4-Methylstilbene:

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.55 (2 H, J=7.54 Hz, d), 7.46 (2 H, J=8.03 Hz, d), 7.39 (2 H, J=7.54 Hz, t), 7.33-7.28(1 H, m), 7.21 (2 H, J=8.03 Hz, d), 7.14 (1 H, J=16.0 Hz, d), 7.09 (1 H, J=16.0 Hz, d), 2.40 (3 H, s); ^{13}C NMR δ: 137.0, 134.1, 128.9, 128.2, 128.1, 127.2, 126.9, 125.9, 125.9, 20.8; Anal. Calc. for $C_{15}H_{14}$: C, 92.74; H, 7.26. Found: C, 92.71; H, 7.18.

(E)- Methyl-cinnamate

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.63 (d, J=16.2 Hz, 1H), 7.43-7.40 (m, 2H), 7.33-7.30 (m, 3H), 6.37 (d, J=16.2 Hz, 1H), 3.73 (s, 3H); ^{13}C NMR δ: 167.2, 144.6, 134.2, 130.0, 128.7, 127.7, 117.5, 51.4; Anal. Calc. for $C_{10}H_{10}O_2$: C, 74.06; H, 6.21. Found: C, 73.98; H, 6.18.

(E)-Ethyl cinnamate

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.68 (d, J=16.2 Hz, 1H), 7.54-7.51(m, 2H), 7.38-7.35 (m, 3H), 6.46-6.42 (m, 1H), 4.28-4.25 (m, 2H) 1.35- 1.32(m, 3H); ^{13}C NMR δ: 166.9, 144.5, 134.4, 130.1, 128.8, 128.0, 118.2, 60.4, 14.3; Anal. Calc. for $C_{11}H_{12}O_2$: C, 74.98; H, 6.86. Found: C, 74.86; H, 6.91.

(E)-butyl 3-(4-acetylphenyl)acrylate

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.98-7.94 (m, 2H); 7.69 (d, J=16.0 Hz, 1H), 7.60-7.57 (m, 2H), 6.53 (d, J=16.0 Hz, 1H), 4.22 (t, J=6.6 Hz, 2H), 2.57 (s, 3H), 1.71-1.68 (m, 2H), 1.47-1.44 (m, 2H), 0.96 (t, J=7.4 Hz, 3H); ^{13}C NMR δ: 197.3; 166.6, 143.0, 138.8, 137.9, 128.8, 128.1, 120.8, 64.7, 30.7, 26.7, 19.2, 13.7; Anal. Calc. for $C_{15}H_{18}O_3$: C, 73.15; H, 7.37. Found: C, 73.06; H, 7.41.

(E)-Butyl 3-(2-methoxyphenyl)acrylate

^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.07 (d, J=16.2 Hz, 1H), 7.55-7.58 (m, 1H), 7.38-7.44 (m,1H), 6.95-7.04 (m, 2H), 6.59 (d, J=16.2 Hz, 1H), 4.28 (t, J=6.7Hz, 2H), 3.94 (s, 3H), 1.70-1.80 (m, 2H),1.44-1.56 (m, 2H), 1.03 (t, J=7.3Hz, 3H); ^{13}C NMR δ: 167.5, 158.2, 139.9, 131.3, 128.8, 123.4, 120.6, 118.7, 111.0, 64.2, 55.4, 30.8, 19.1, 13.7; Anal. Calc. for $C_{14}H_{18}O_3$: C, 71.77; H, 7.74. Found: C, 71.53; H, 7.62.

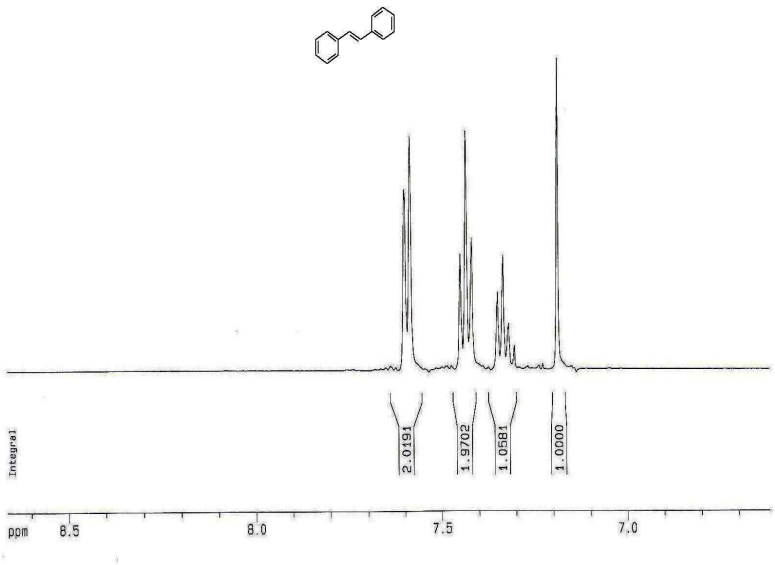
(E)-Butyl 3-(4-methoxyphenyl)acrylate

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.68 (d, J = 16.0 Hz, 1H), 7.50-7.52 (m, 2H), 6.92-6.95 (m,2H), 6.35 (d, J=16.0Hz, 1H), 4.24 (t, J

= 6.6 Hz, 2H), 3.86 (s, 3H), 1.68-1.75 (m, 2H), 1.42-1.51 (m, 2H), 0.99 (t, J = 7.3Hz, 3H); ^{13}C NMR δ: 167.3, 161.3, 144.1, 129.6, 127.2, 115.7, 114.2, 64.2, 55.3, 30.8, 19.1, 13.7; Anal. Calc. for $C_{14}H_{18}O_3$: C, 71.77; H, 7.74. Found: C, 71.59; H, 7.64.

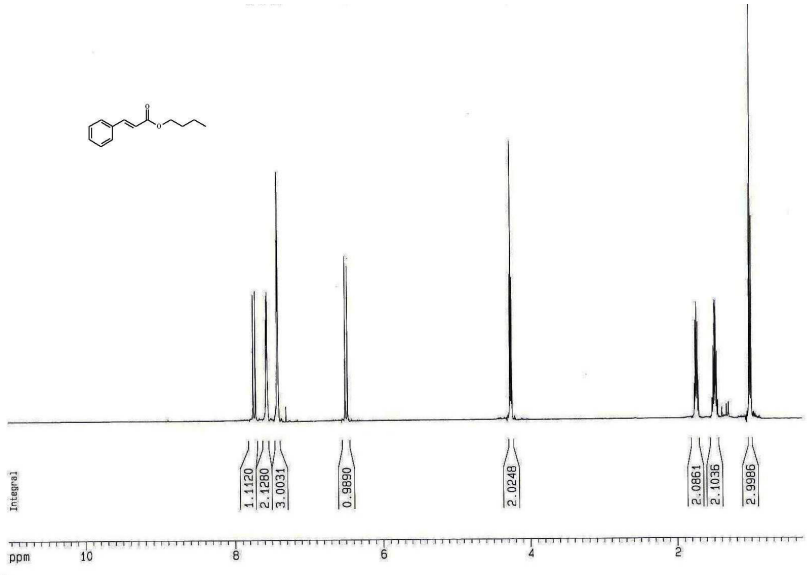
(E)- Stilbene

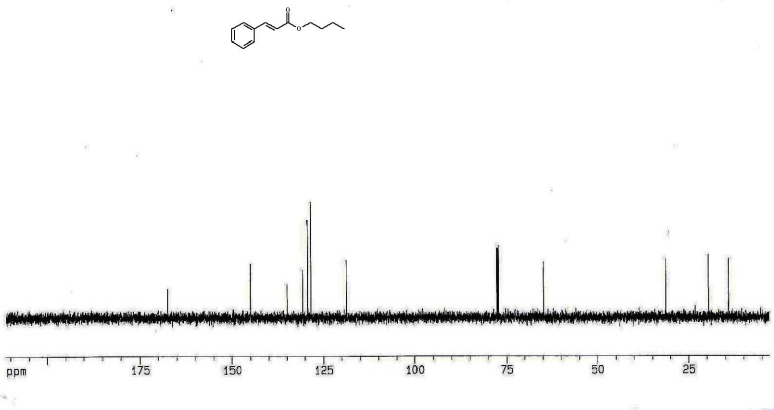
^{1}H NMR Spectra



(E)-n-butyl cinnamate:

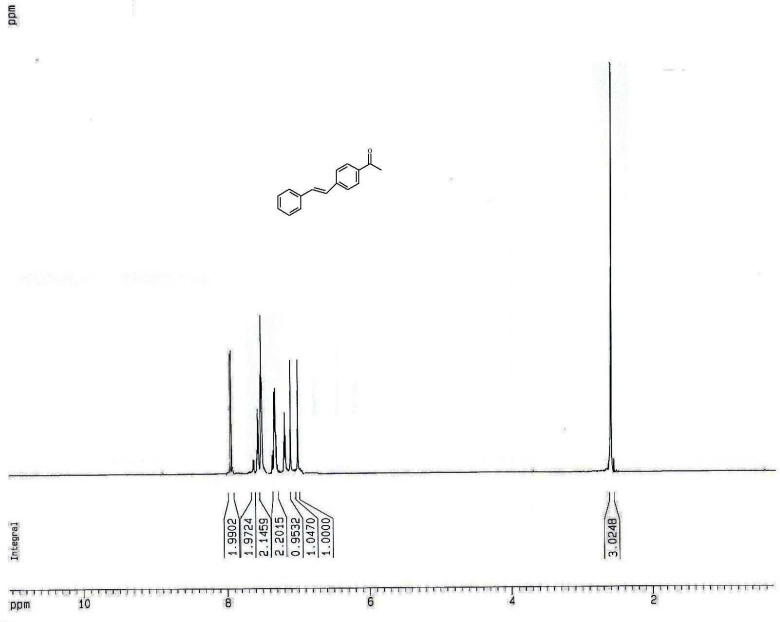
^{1}H, ^{13}C NMR Spectra

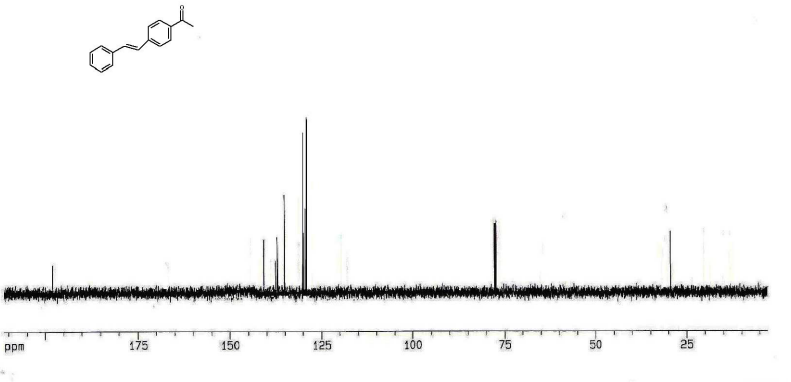




4-Acetylstilbene:

^{1}H, ^{13}C NMR Spectra





4-Methoxystilbene:

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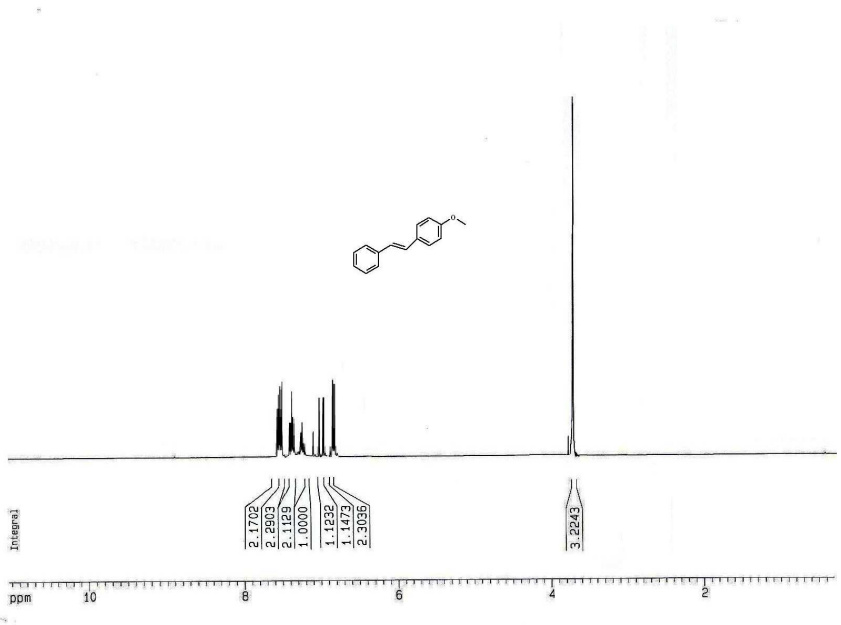
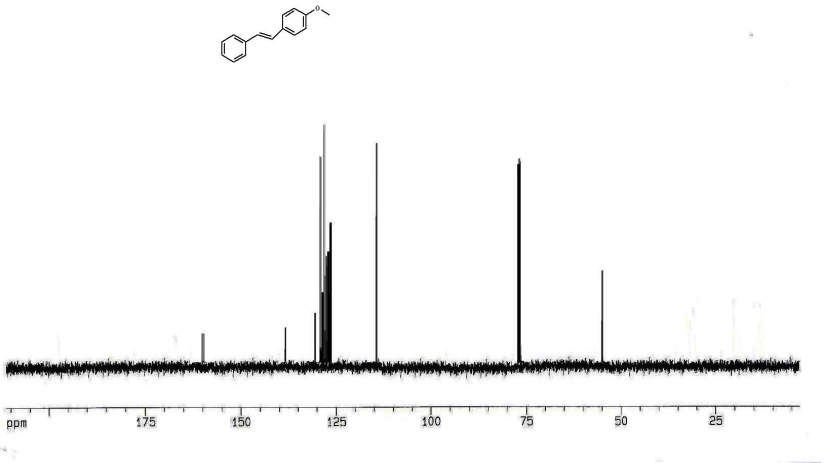
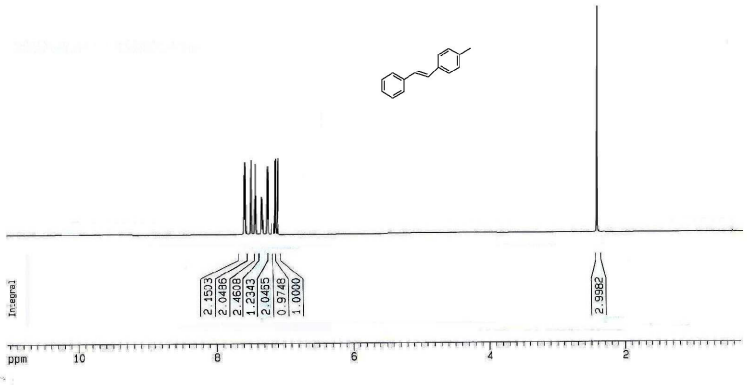
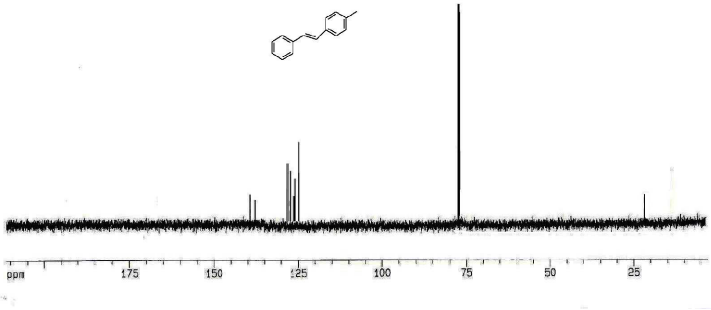




4-Methylstilbene:

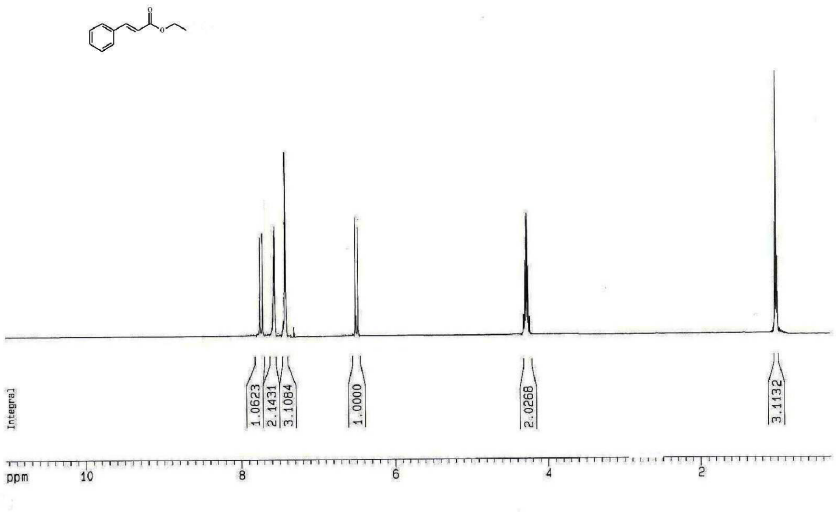
^{1}H, ^{13}C NMR Spectra

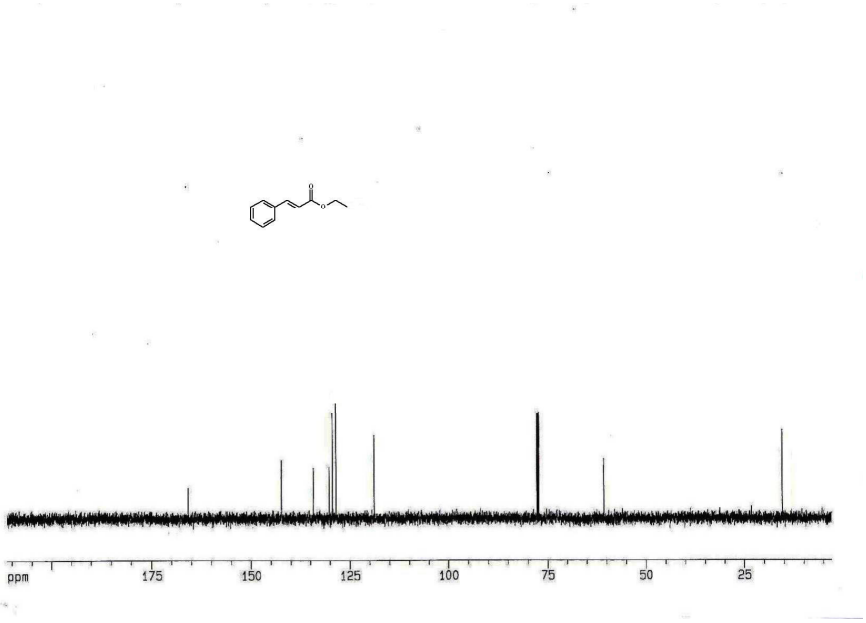




(E)-Ethyl cinnamate

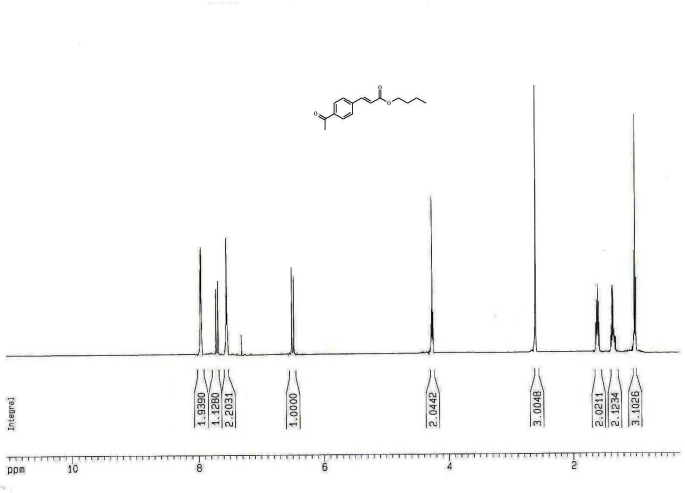
^{1}H, ^{13}C NMR Spectra

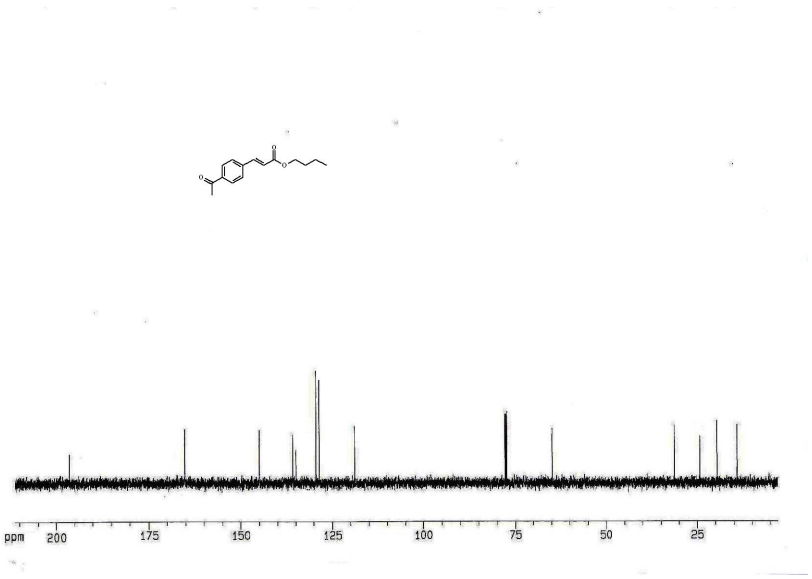




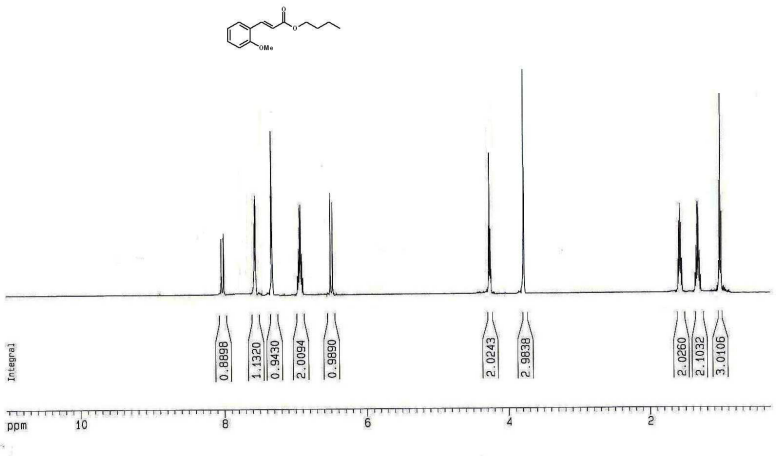
(E)-butyl 3-(4-acetylphenyl)acrylate

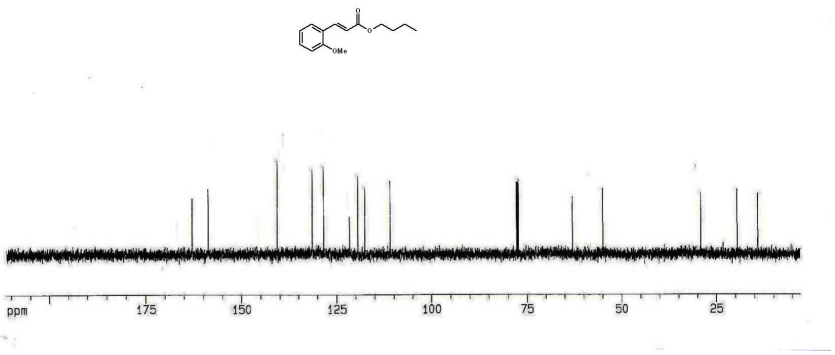
^{1}H, ^{13}C NMR Spectra





(E)-Butyl 3-(2-methoxyphenyl)acrylate





(E)-Butyl 3-(4-methoxyphenyl)acrylate