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Supporting information

Copper-Catalyzed Alkenylation of Alcohols with *β*-nitrostyrenes *via* a Radical Addition-Elimination Process

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Contents

(A) General Information:

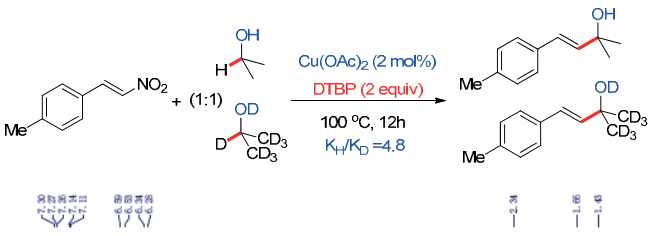
All reactions were carried out under an argon atmosphere condition. Various *β*-nitrostyrenes were purchased from Aldrich, Acros or Alfa. Column chromatography was generally performed on silica gel (100-200 mesh) and reactions were monitored by thin layer chromatography (TLC) using UV light (254 nm) to visualize the course of the reactions. The ^{1}H (300 MHz) and ^{13}C NMR(75 MHz) data were recorded on Bruker aAV300 M spectrometers using CDCl3 as solvent. The chemical shifts (δ) are reported in ppm and coupling constants (*J*) in Hz. ^{1}H NMR spectra was recorded with tetramethylsilane (δ = 0.00 ppm) as internal reference; ^{13}C NMR spectra was recorded with $CDCl_3$ (δ = 77.500 ppm) as internal reference. Mass spectral analyses were performed for low-resolution MS with EI ionization, High resolution mass spectra measurements were recorded on Waters-Micromass GCT Premier spectrometers.

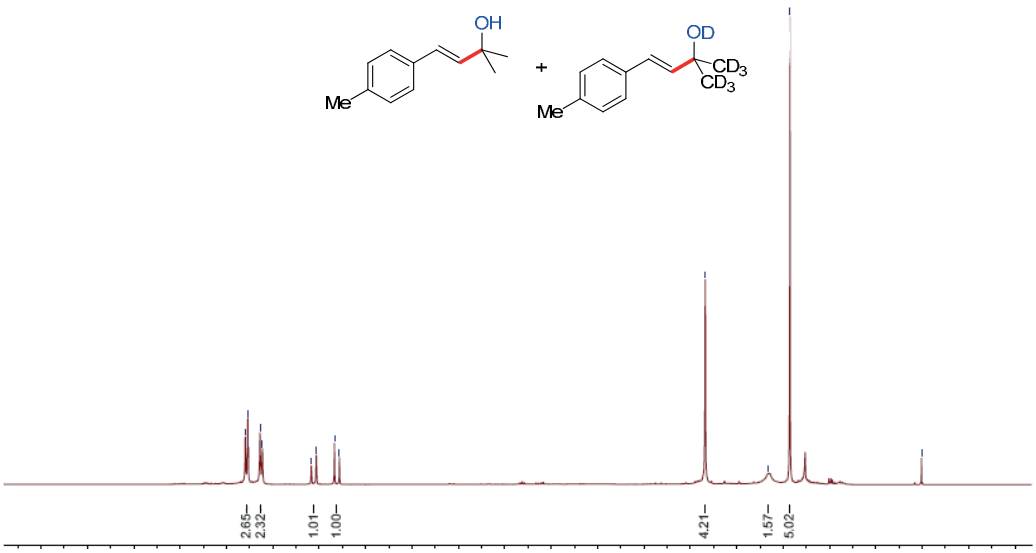
Typical Experimental Procedure

To a Schlenk tube equipped with a magnetic stir bar were added under argon, *β*-nitrostyrenes (0.5 mmol) and $Cu(OAc)_2$ (0.01 mmol). Under argon, alcohols (3.0 mL) and DTBP (di-*tert*-butyl peroxide, 1 mmol) were added. The resulting reaction mixture was kept stirring at the required temperature for 2-12 h. After required reaction time, the mixture was cooled down to room temperature. Evaporation of the solvent followed by purification by flash chromatography (petroleum ether/ethyl acetate) afforded the corresponding product.

(B) Investigation into the reaction mechanism:

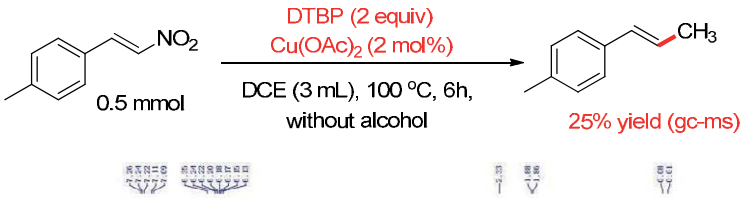
1. Competing Kinetic Isotope Effect (KIE) Experiment:

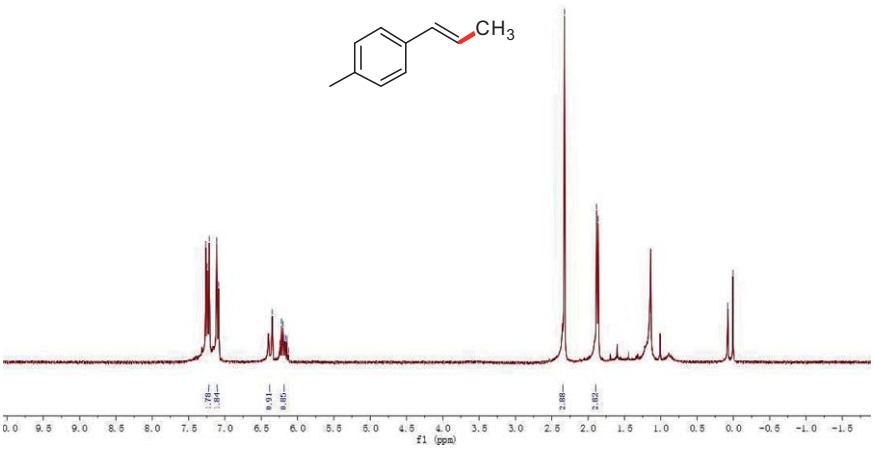




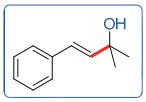
Note: The value of kH/kD was calculated from the 1H NMR spectra above which should be the mixture of compound **a** and **b** (the KIE scheme). The sum of the integral of **a** and **b** at chemical shift 6.28-6.34 was integrated as 1.00 (both **a** and **b** keep the same double bond hydrogen). Compound **a** has 6 hydrogen atoms at chemical shift 1.43, while **b** has no H atoms. The amount of **a** could be defined as 0.83(5.02/6=0.83), on the other hand, the sum of **a** and **b** is 1.00, so the amount of **b** is 0.17 (1.00-0.83=0.17). As a result, kH/kD=0.83/0.17=4.8.

2. In the absence of alcohol, only denitro-methylation product was obtained and the self-coupling of *β*-nitrostyrenes was not observed, which can suggest that styrene radical is not formed in the reaction system.

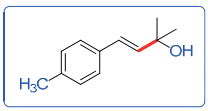




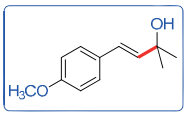
(C) Physical Data and References for the Following Products:



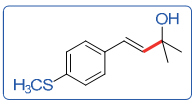
(*E*)-2-methyl-4-phenylbut-3-en-2-ol (3aa) [1]: Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.39 (dd, *J* = 8.2, 1.3 Hz, 2H), 7.35 – 7.28 (m, 2H), 7.25 (dd, *J* = 5.9, 4.2 Hz, 1H), 6.60 (d, *J* = 16.1 Hz, 1H), 6.36 (d, *J* = 16.1 Hz, 1H), 1.64 (s, 1H), 1.43 (s, 6H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 137.59, 131.75, 128.60, 127.47, 126.46, 117.31, 71.10, 29.95. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{11}H_{14}O$ 162.1045 found 162.1044.



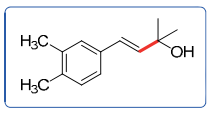
(*E*)-2-methyl-4-(4-methylphenyl)-but-3-en-2-ol (3ab) [2] **:** Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.28 (d, *J* = 8.0 Hz, 2H), 7.13 (d, *J* = 7.9 Hz, 2H), 6.56 (d, *J* = 16.1 Hz, 1H), 6.31 (d, *J* = 16.1 Hz, 1H), 2.34 (s, 3H), 1.58 (s, 1H), 1.43 (s, 6H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 137.26, 136.59, 134.20, 129.30, 126.35, 126.33, 71.07, 29.96, 21.17. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{12}H_{16}O$ 176.1201 found 176.1203.



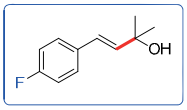
(*E*)-4-(4-methoxyphenyl)-2-methylbut-3-en-2-ol(3ac) [3] : Slight yellow oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.34 – 7.29 (m, 2H), 6.89 – 6.81 (m, 2H), 6.53 (d, *J* = 16.1 Hz, 1H), 6.23 (d, *J* = 16.1 Hz, 1H), 3.81 (s, 3H), 1.64 (s, 1H), 1.42 (s, 6H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 142.23, 129.80, 128.23, 127.68, 116.27, 114.14, 55.34, 29.98, 18.64. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{12}H_{16}O_2$ 192.1150 found 192.1148.



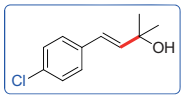
(*E*)-2-methyl-4-(4-(methylthio)phenyl)but-3-en-2-ol (3ad): Slight yellow oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.33 – 7.28 (m, 1H), 7.23 – 7.17 (m, 1H), 6.54 (d, *J* = 16.1 Hz, 1H), 6.31 (d, *J* = 16.1 Hz, 1H), 2.48 (s, 2H), 1.66 (s, 1H), 1.42 (s, 4H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 139.20, 137.10, 134.44, 127.16, 126.71, 124.79, 69.77, 30.56, 15.32. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{12}H_{16}OS$ 208.0922 found 208.0925.



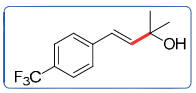
(*E*)-4-(3,4-dimethylphenyl)-2-methylbut-3-en-2-ol(3ae) : Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.17 (s, 1H), 7.14 – 7.05 (m, 2H), 6.53 (d, *J* = 16.1 Hz, 1H), 6.30 (d, *J* = 16.1 Hz, 1H), 2.26 (s, 3H), 2.25 (s, 3H), 1.63 (s, 1H), 1.42 (s, 6H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 142.26, 136.44, 134.62, 129.88, 127.70, 126.40, 123.94, 116.58, 71.08, 29.95, 19.76, 19.48. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{13}H_{18}O$ 190.1358 found 190.1355.



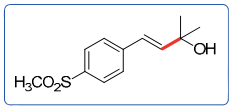
(*E*)-4-(4-fluorophenyl)-2-methylbut-3-en-2-ol(3af) [4] **:** Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.38 – 7.30 (m, 2H), 7.03 – 6.96 (m, 2H), 6.55 (d, *J* = 16.1 Hz, 1H), 6.27 (d, *J* = 16.1 Hz, 1H), 1.70 (s, 1H), 1.42 (s, 6H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 162.28 (d, *J* = 246.4 Hz), 137.35 (d, *J* = 2.2 Hz), 133.16 (d, *J* = 3.2 Hz), 127.92 (d, *J* = 8.0 Hz), 125.35, 115.47 (d, *J* = 21.6 Hz), 71.04, 29.96. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{11}H_{13}FO$ 180.0950 found 180.0953.



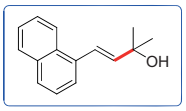
(*E*)-4-(4-chlorophenyl)-2-methylbut-3-en-2-ol (3ag) [3] **:** Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.34 – 7.23 (m, 4H), 6.54 (d, *J* = 16.1 Hz, 1H), 6.32 (d, *J* = 16.1 Hz, 1H), 1.74 (s, 1H), 1.42 (s, 6H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 138.26, 135.56, 133.05, 128.74, 127.67, 125.33, 71.05, 29.93. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{11}H_{13}FO$ 180.0950 found 180.0953. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{11}H_{13}ClO$ 196.0655 found 196.0658.



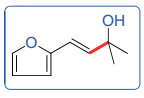
(*E*)-2-methyl-4-(4-(trifluoromethyl)phenyl)but-3-en-2-ol(3ah) [4] **:** Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.56 (d, *J* = 8.3 Hz, 2H), 7.47 (d, *J* = 8.2 Hz, 2H), 6.64 (d, *J* = 16.1 Hz, 1H), 6.44 (d, *J* = 16.1 Hz, 1H), 1.60 (s, 1H), 1.44 (s, 6H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 140.60 (d, *J* = 1.4 Hz), 140.22, 129.31 (d, *J* = 32.4 Hz), 126.61, 125.54 (q, *J* = 3.8 Hz), 125.28, 122.45, 71.09, 29.93. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{12}H_{13}F_3O$ 230.0918 found 230.0916.



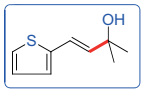
(*E*)-2-methyl-4-(4-(methylsulfonyl)phenyl)but-3-en-2-ol(3ai):white solid, m.p. 121-122 °C, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.86 (d, *J* = 8.3 Hz, 2H), 7.53 (d, *J* = 8.4 Hz, 2H), 6.66 (d, *J* = 16.1 Hz, 1H), 6.50 (d, *J* = 16.1 Hz, 1H), 3.04 (s, 3H), 1.75 (s, 1H), 1.44 (s, 6H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 142.75, 141.92, 138.99, 127.71, 127.12, 124.85, 71.01, 44.60, 44.57, 29.88. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{12}H_{16}O_3S$ 240.0820 found 240.0818.



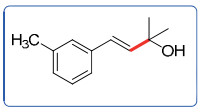
(*E*)-2-methyl-4-(naphthalen-1-yl)but-3-en-2-ol (3aj) [5] **:** Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.17 – 8.11 (m, 1H), 7.89 – 7.83 (m, 1H), 7.78 (d, *J* = 8.2 Hz, 1H), 7.58 (d, *J* = 7.1 Hz, 1H), 7.56 – 7.41 (m, 3H), 7.37 (d, *J* = 15.8 Hz, 1H), 6.39 (d, *J* = 15.8 Hz, 1H), 1.69 (s, 1H), 1.52 (s, 6H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 141.01, 134.87, 133.69, 131.37, 128.58, 127.82, 126.01, 125.80, 125.66, 123.89, 123.82, 123.69, 71.41, 30.10. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{12}H_{16}O_3S$ 212.1201 found 212.1205.



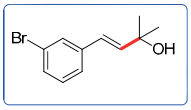
(*E*)-4-(furan-2-yl)-2-methylbut-3-en-2-ol (3ak) [3] **:** Slight yellow oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.34 (s, 1H), 6.43 (d, *J* = 16.0 Hz, 1H), 6.37 (dd, *J* = 3.1, 1.9 Hz, 1H), 6.30 (d, *J* = 16.0 Hz, 1H), 6.22 (d, *J* = 3.2 Hz, 1H), 1.64 (s, 1H), 1.40 (s, 6H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 152.69, 141.80, 136.32, 115.29, 111.30, 107.75, 70.89, 29.93. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_9H_{12}O_2$ 152.0837 found 152.0838.



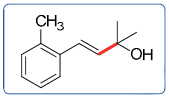
(*E*)-2-methyl-4-(thiophen-2-yl)but-3-en-2-ol(3al) [3] : Slight yellow oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.17 – 7.12 (m, 1H), 6.95 (d, *J* = 3.5 Hz, 2H), 6.73 (d, *J* = 15.9 Hz, 1H), 6.20 (d, *J* = 15.9 Hz, 1H), 1.64 (s, 1H), 1.41 (s, 6H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 142.68, 139.42, 128.13, 125.95, 124.68, 119.24, 69.58, 30.43. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_9H_{12}OS$ 168.0609 found 168.0612.



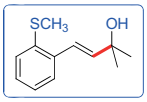
(*E*)-2-methyl-4-(m-tolyl)but-3-en-2-ol (3am) [3] : ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.24 – 7.16 (m, 3H), 7.08 – 7.02 (m, 1H), 6.57 (d, *J* = 16.1 Hz, 1H), 6.35 (d, *J* = 16.1 Hz, 1H), 2.35 (s, 3H), 1.61 (s, 1H), 1.43 (s, 6H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 138.16, 137.39, 136.93, 128.53, 128.28, 127.16, 126.50, 123.65, 71.14, 29.93, 21.44. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{12}H_{16}O$ 176.1201 found 176.1206.



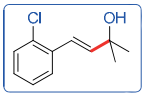
(*E*)-4-(3-bromophenyl)-2-methylbut-3-en-2-ol (3an): Slight yellow oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.53 (t, *J* = 1.7 Hz, 1H), 7.35 (ddd, *J* = 7.8, 1.8, 1.2 Hz, 1H), 7.28 (dd, *J* = 6.8, 1.3 Hz, 1H), 7.17 (t, *J* = 7.8 Hz, 1H), 6.53 (d, *J* = 16.1 Hz, 1H), 6.35 (d, *J* = 16.1 Hz, 1H), 1.72 (s, 1H), 1.42 (s, 6H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 139.28, 139.19, 130.28, 130.09, 129.29, 125.20, 125.15, 122.81, 71.05, 29.94. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{11}H_{13}BrO$ 240.0150 found 240.0155.



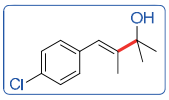
(*E*)-2-methyl-4-(o-tolyl)but-3-en-2-ol (3ao) [4] : Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.43 (dd, *J* = 6.2, 2.0 Hz, 1H), 7.20 – 7.13 (m, 3H), 6.81 (d, *J* = 15.9 Hz, 1H), 6.24 (d, *J* = 15.9 Hz, 1H), 2.36 (s, 3H), 1.70 (s, 1H), 1.45 (s, 6H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 139.12, 136.14, 135.56, 130.31, 127.38, 126.14, 125.67, 124.21, 71.31, 30.05, 19.88. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{12}H_{16}O$ 176.1201 found 176.1204.



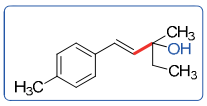
(*E*)-2-methyl-4-(2-(methylthio)phenyl)but-3-en-2-ol (3ap): Slight yellow oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.42 (d, *J* = 7.4 Hz, 1H), 7.23 (dd, *J* = 6.3, 1.4 Hz, 2H), 7.16 (ddd, *J* = 9.6, 8.8, 1.9 Hz, 1H), 7.00 (d, *J* = 15.9 Hz, 1H), 6.28 (d, *J* = 15.9 Hz, 1H), 2.45 (s, 3H), 1.69 (s, 1H), 1.45 (s, 6H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 139.95, 136.79, 136.37, 127.92, 126.81, 126.24, 125.54, 123.89, 71.28, 29.85, 16.35. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{12}H_{16}OS$ 208.0922 found 208.0926.



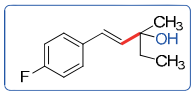
(*E*)-4-(2-chlorophenyl)-2-methylbut-3-en-2-ol (3aq) [6] **:** Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.52 (dd, *J* = 7.5, 1.9 Hz, 1H), 7.35 (dd, *J* = 7.6, 1.6 Hz, 1H), 7.25 – 7.13 (m, 2H), 6.98 (d, *J* = 16.1 Hz, 1H), 6.34 (d, *J* = 16.1 Hz, 1H), 1.74 (br, 1H), 1.46 (s, 6H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 140.44, 135.16, 133.27, 129.73, 128.48, 126.88, 126.86, 122.91, 71.27, 29.84. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{11}H_{13}ClO$ 196.0655 found 196.0658.



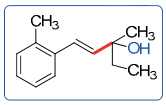
(*E*)-4-(4-chlorophenyl)-2,3-dimethylbut-3-en-2-ol (3ar): Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.29 (d, *J* = 8.3 Hz, 2H), 7.17 (d, *J* = 8.4 Hz, 2H), 6.64 – 6.60 (m, 1H), 1.87 (d, *J* = 1.3 Hz, 1H), 1.64 (br, 1H), 1.44 (s, 6H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 136.85, 132.36, 130.48, 128.61, 127.65, 126.50, 74.43, 30.30, 9.75. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{12}H_{15}ClO$ 210.0811 found 210.0814.



(*E*)-3-methyl-1-(p-tolyl)pent-1-en-3-ol (3ba): Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.29 (d, *J* = 8.1 Hz, 2H), 7.13 (d, *J* = 7.9 Hz, 2H), 6.56 (d, *J* = 16.1 Hz, 1H), 6.23 (d, *J* = 16.1 Hz, 1H), 2.34 (s, 3H), 1.70 (q, *J* = 7.5 Hz, 2H), 1.63 (br, 1H), 1.38 (s, 3H), 0.93 (t, *J* = 7.5 Hz, 3H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 137.16, 135.58, 134.35, 129.29, 127.19, 126.33, 73.46, 35.49, 27.68, 21.17, 8.35. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{13}H_{18}O$ 190.1358 found 190.1356.

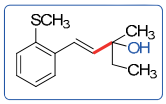


(*E*)-1-(4-fluorophenyl)-3-methylpent-1-en-3-ol (3bb): Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.50 – 7.31 (m, 2H), 7.11 – 6.92 (m, 2H), 6.56 (d, *J* = 16.1 Hz, 1H), 6.18 (d, *J* = 16.1 Hz, 1H), 1.66 (q, *J* = 7.4 Hz, 4H), 1.37 (s, 4H), 0.93 (t, *J* = 7.5 Hz, 4H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 162.23 (d, *J* = 246.3 Hz), 136.27 (d, *J* = 2.2 Hz), 133.25 (d, *J* = 3.3 Hz), 127.88 (d, *J* = 7.9 Hz), 126.21, 115.47 (d, *J* = 21.6 Hz), 73.49, 35.45, 27.71, 8.35. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{12}H_{15}FO$ 194.1107 found 194.1104.

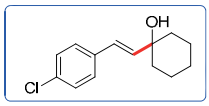


(*E*)-3-methyl-1-(o-tolyl)pent-1-en-3-ol (3bc): Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.51 – 7.39 (m, 1H), 7.23 – 7.09 (m, 3H), 6.81 (d, *J* = 16.0 Hz, 1H), 6.14 (d, *J* = 16.0 Hz, 1H), 2.37 (s, 3H), 1.69 (dt, *J* = 14.7, 4.2 Hz, 3H), 1.40 (s, 3H), 1.03 – 0.87 (m, 3H); ^{13}C NMR (75 MHz, $CDCl_3$)

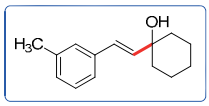
δ 138.14, 136.42, 135.49, 130.26, 127.29, 126.09, 125.74, 125.28, 73.64, 35.47, 27.85, 19.86, 8.35. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{13}H_{18}O$ 190.1358 found 190.1361.



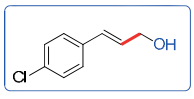
(*E*)-3-methyl-1-(2-(methylthio)phenyl)pent-1-en-3-ol(3bd): Slight yellow oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.45 – 7.39 (m, 1H), 7.23 (dd, *J* = 6.2, 1.5 Hz, 2H), 7.21 – 7.09 (m, 1H), 6.99 (d, *J* = 15.9 Hz, 1H), 6.18 (d, *J* = 15.9 Hz, 1H), 2.45 (s, 3H), 1.72 (br, 1H), 1.67 (t, *J* = 7.6 Hz, 2H), 1.40 (s, 3H), 0.95 (t, *J* = 7.5 Hz, 3H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 139.03, 136.78, 136.68, 127.83, 126.93, 126.30, 125.54, 124.94, 73.63, 35.36, 27.62, 16.39, 8.39. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{13}H_{18}OS$ 222.1078 found 222.1083.



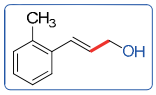
(*E*)-1-(4-chlorostyryl)cyclohexanol (3be): Slight yellow oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.39 – 7.19 (m, 4H), 6.59 (d, *J* = 16.1 Hz, 1H), 6.31 (d, *J* = 16.1 Hz, 1H), 1.89 – 1.47 (m, 6H), 1.42 – 1.07 (m, 4H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 138.23, 135.78, 132.98, 128.71, 127.64, 125.94, 71.76, 38.06, 25.51, 22.09. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{14}H_{17}ClO$ 236.0968 found 236.0965.



(*E*)-1-(3-methylstyryl)cyclohexanol(3bf): Slight yellow oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.21-7.17 (m, 3H), 7.07 – 7.02 (m, 1H), 6.61 (d, *J* = 16.1 Hz, 1H), 6.33 (d, *J* = 16.1 Hz, 1H), 2.35 (s, 3H), 1.76 – 1.50 (m, 6H), 1.40 – 1.18 (m, 4H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 138.12, 137.36, 128.50, 128.49, 128.20, 127.19, 127.13, 123.63, 71.76, 38.14, 25.59, 22.19. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{15}H_{20}O$ 216.1514 found 216.1516.

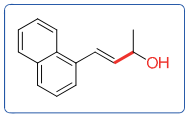


(*E*)-3-(4-chlorophenyl)prop-2-en-1-ol(3ca) [7] : Slight yellow oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.32-7.28 (m, 4H), 6.58 (d, *J* = 15.9 Hz, 1H), 6.34 (dt, *J* = 15.9, 5.6 Hz, 1H), 4.33 (dd, *J* = 5.6, 1.5 Hz, 2H), 3.72 (s, 1H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 135.27, 133.38, 129.84, 129.26, 128.80, 127.70, 63.56. **HRMS (TOF, EI$^+$)** *m/z* calcd for C_9H_9ClO 168.0342 found 168.0346.

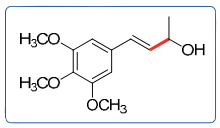


(*E*)-3-(o-tolyl)prop-2-en-1-ol (3cb) [8] : Slight yellow oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.50 –

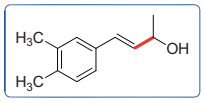
7.42 (m, 1H), 7.22 – 7.13 (m, 3H), 6.84 (d, J = 15.8 Hz, 1H), 6.26 (dt, J = 15.7, 5.7 Hz, 1H), 4.35 (dd, J = 5.7, 1.5 Hz, 2H), 3.16 (s, 1H), 2.36 (s, 3H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 135.85, 135.54, 130.33, 129.93, 129.09, 127.62, 126.14, 125.82, 64.00, 19.78. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{10}H_{12}O$ 148.0888 found 148.0884.



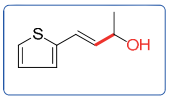
(*E*)-4-(naphthalen-1-yl)but-3-en-2-ol(3cc) [9] : Slight yellow oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.13 (dd, J = 6.8, 2.7 Hz, 1H), 7.86 (dt, J = 6.2, 2.5 Hz, 1H), 7.79 (d, J = 8.2 Hz, 1H), 7.64 – 7.24 (m, 5H), 6.31 (dd, J = 15.6, 6.2 Hz, 1H), 4.62 (pd, J = 6.4, 1.2 Hz, 1H), 1.81 (s, 1H), 1.46 (d, J = 6.4 Hz, 3H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 136.97, 134.54, 133.70, 131.28, 128.59, 128.01, 126.55, 126.07, 125.82, 125.64, 123.92, 123.79, 69.13, 23.62. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{14}H_{14}O$ 198.1045 found 198.1048.



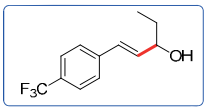
(*E*)-4-(3,4,5-trimethoxyphenyl)but-3-en-2-ol (3cd) [10] : Slight yellow oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 6.60 (s, 1H), 6.48 (d, J = 15.8 Hz, 1H), 6.17 (dd, J = 15.8, 6.4 Hz, 1H), 4.48 (dd, J = 6.9, 5.9 Hz, 1H), 3.87 (s, 6H), 3.84 (s, 3H), 1.78 (br, 1H), 1.37 (d, J = 6.4 Hz, 3H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 153.39, 138.06, 133.17, 132.50, 129.38, 103.73, 68.84, 60.93, 56.16, 23.52. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{13}H_{18}O_4$ 238.1205 found 238.1206.



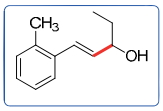
(*E*)-4-(3,4-dimethylphenyl)but-3-en-2-ol (3ce): Slight yellow oil,^{1}H NMR (300 MHz, $CDCl_3$) δ 7.17 (s, 1H), 7.11 (dt, J = 13.1, 4.7 Hz, 2H), 6.51 (d, J = 15.9 Hz, 1H), 6.21 (dd, J = 15.9, 6.5 Hz, 1H), 4.47 (pd, J = 6.4, 1.1 Hz, 1H), 2.26 (s, 3H), 2.25 (s, 3H), 1.74 (s, 1H), 1.37 (d, J = 6.4 Hz, 3H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 136.68, 136.19, 134.42, 132.51, 129.89, 129.51, 127.77, 124.00, 69.08, 23.48, 19.76, 19.50. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{12}H_{16}O$ 176.1201 found 176.1202.



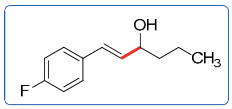
(*E*)-4-(thiophen-2-yl)but-3-en-2-ol(3cf) [11]: Slight yellow oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.18 – 7.13 (m, 1H), 6.96 (d, J = 3.2 Hz, 2H), 6.71 (d, J = 15.6 Hz, 1H), 6.11 (dd, J = 15.7, 6.3 Hz, 1H), 4.51 – 4.41 (m, 1H), 1.64 (s, 1H), 1.36 (d, J = 6.4 Hz, 3H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 133.26, 127.39, 125.79, 124.31, 122.68, 68.64, 23.41. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_8H_{10}OS$ 154.0452 found 154.0455.



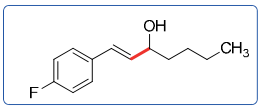
(*E*)-1-(4-(trifluoromethyl)phenyl)pent-1-en-3-ol (3cg): Slight yellow oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.57 (d, *J* = 8.3 Hz, 2H), 7.47 (d, *J* = 8.2 Hz, 2H), 6.62 (d, *J* = 15.9 Hz, 1H), 6.32 (dd, *J* = 16.0, 6.3 Hz, 1H), 4.25 (dd, *J* = 12.2, 5.9 Hz, 1H), 1.73-1.63 (m, 3H), 0.99 (t, *J* = 7.5 Hz, 3H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 140.38 (q, *J* = 2.8 Hz), 129.65 (d, *J* = 5.1 Hz), 129.25, 128.86 (d, *J* = 0.6 Hz), 126.62, 125.56 (q, *J* = 3.8 Hz), 74.00, 30.27, 9.66. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{12}H_{13}F_3O$ 230.0918 found 230.0922.



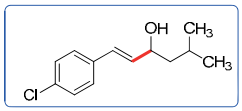
(*E*)-1-(o-tolyl)pent-1-en-3-ol (3ch): Slight yellow oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.49 – 7.41 (m, 1H), 7.17 (dt, *J* = 5.8, 2.5 Hz, 3H), 6.79 (d, *J* = 15.8 Hz, 1H), 6.10 (dd, *J* = 15.8, 6.8 Hz, 1H), 4.24 (q, *J* = 6.3 Hz, 1H), 2.36 (s, 3H), 1.80 (s, 1H), 1.75 – 1.59 (m, 2H), 0.99 (t, *J* = 7.4 Hz, 3H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 136.00, 135.51, 133.81, 130.32, 128.33, 127.54, 126.13, 125.81, 74.62, 30.35, 19.81, 9.75. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{12}H_{16}O$ 176.1201 found 176.1204.



(*E*)-1-(4-fluorophenyl)hex-1-en-3-ol (3ci): Slight yellow oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.35 (dd, *J* = 8.7, 5.4 Hz, 2H), 7.00 (t, *J* = 8.7 Hz, 2H), 6.54 (d, *J* = 15.9 Hz, 1H), 6.14 (dd, *J* = 15.9, 6.7 Hz, 1H), 4.28 (q, *J* = 6.5 Hz, 1H), 1.74 – 1.52 (m, 3H), 1.52 – 1.35 (m, 2H), 0.96 (t, *J* = 7.2 Hz, 3H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 162.39 (d, *J* = 246.8 Hz), 133.00 (d, *J* = 3.2 Hz), 132.43 (d, *J* = 2.2 Hz), 129.06 (d, *J* = 0.6 Hz), 127.98 (d, *J* = 8.0 Hz), 115.50 (d, *J* = 21.6 Hz), 72.78, 39.59, 18.70, 14.02. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{12}H_{15}FO$ 194.1107 found 194.1108.

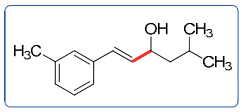


(*E*)-1-(4-fluorophenyl)hept-1-en-3-ol (3cj): Slight yellow oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.39 – 7.31 (m, 2H), 7.00 (dd, *J* = 12.0, 5.4 Hz, 3H), 6.53 (d, *J* = 15.9 Hz, 1H), 6.14 (dd, *J* = 15.9, 6.7 Hz, 1H), 4.27 (dd, *J* = 13.2, 6.7 Hz, 1H), 1.77 – 1.51 (m, 2H), 1.48 – 1.17 (m, 4H), 0.92 (t, *J* = 6.9 Hz, 3H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 162.39 (d, *J* = 246.7 Hz), 132.47 (d, *J* = 2.0 Hz), 129.06, 128.03, 127.92, 115.49 (d, *J* = 21.6 Hz), 73.03, 37.18, 27.63, 22.67, 14.02. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{13}H_{17}FO$ 208.1263 found 208.1266.

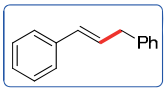


(*E*)-1-(4-chlorophenyl)-5-methylhex-1-en-3-ol (3ck): Slight yellow oil, ^{1}H NMR (300 MHz,

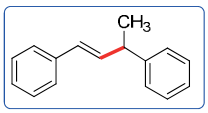
$CDCl_3$) δ 7.33 – 7.27 (m, 4H), 6.53 (d, *J* = 15.9 Hz, 1H), 6.19 (dd, *J* = 15.9, 6.7 Hz, 1H), 4.35 (dd, *J* = 13.4, 6.5 Hz, 1H), 1.84 – 1.73 (m, 1H), 1.67 (s, 1H), 1.63 – 1.51 (m, 1H), 1.46-1.36 (m, 1H), 0.97 (d, *J* = 0.5 Hz, 2H), 0.94 (d, *J* = 0.6 Hz, 3H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 135.37, 133.65, 133.27, 128.77, 128.77, 127.68, 71.20, 46.56, 24.67, 23.08, 22.46. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{13}H_{17}ClO$ 224.0968 found 224.0965.



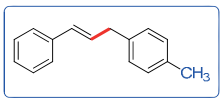
(*E*)-5-methyl-1-(m-tolyl)hex-1-en-3-ol (3cl): Slight yellow oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.25 – 7.15 (m, 3H), 7.09 – 7.04 (m, 1H), 6.55 (d, *J* = 15.9 Hz, 1H), 6.20 (dd, *J* = 15.9, 6.9 Hz, 1H), 4.35 (dd, *J* = 13.5, 6.6 Hz, 1H), 2.35 (s, 3H), 1.77 (td, *J* = 13.5, 6.7 Hz, 1H), 1.68 (s, 1H), 1.63 – 1.52 (m, 1H), 1.43 (ddd, *J* = 13.5, 7.4, 6.1 Hz, 1H), 0.97 (d, *J* = 1.5 Hz, 3H), 0.95 (d, *J* = 1.5 Hz, 3H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 138.16, 136.79, 132.77, 130.24, 128.51, 128.45, 127.21, 123.67, 71.45, 46.58, 24.68, 23.04, 22.55, 21.39. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{14}H_{20}O$ 204.1514 found 204.1517.



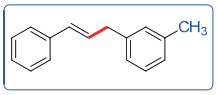
(*E*)-1, 3-diphenylpropene (3da)[14]: Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.39 – 7.18 (m, 10H), 6.47 (d, *J* = 15.9 Hz, 1H), 6.37 (dt, *J* = 15.7, 6.4 Hz, 1H), 3.56 (d, *J* = 6.3 Hz, 2H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 140.23, 137.56, 131.14, 129.28, 128.71, 128.53, 127.14, 126.22, 126.17, 39.39. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{15}H_{14}$ 194.1096 found 194.1098.



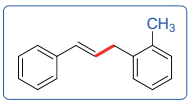
(*E*)-1, 3-diphenyl-1-butene (3db)[15]: Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.41 – 7.16 (m, 10H), 6.42 (d, *J* = 4.4 Hz, 2H), 3.66 (dt, *J* = 14.0, 7.0 Hz, 1H), 1.49 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 145.70, 137.67, 135.32, 128.62, 128.54, 128.53, 127.36, 127.09, 126.26, 126.21, 42.63, 21.27. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{16}H_{16}$ 208.1252 found 208.1255.



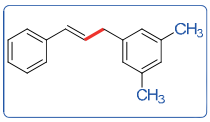
(*E*)-1-(phenyl)-3-(4-methylphenyl)-propene (4dc)[16]: Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.39 – 7.25 (m, 4H), 7.21 (dt, *J* = 4.8, 1.9 Hz, 1H), 7.14 (s, 4H), 6.46 (d, *J* = 15.9 Hz, 1H), 6.35 (dt, *J* = 15.7, 6.4 Hz, 1H), 3.52 (d, *J* = 6.3 Hz, 2H), 2.34 (s, 3H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 137.63, 137.13, 135.71, 130.91, 129.59, 129.21, 128.59, 128.52, 127.07, 126.16, 38.96, 21.04. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{16}H_{16}$ 208.1252 found 208.1250.



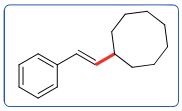
(*E*)-1-(phenyl)-3-(3-methylphenyl)-propene (3dd) [16]**:** Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.39 (dd, *J* = 5.3, 3.3 Hz, 2H), 7.36 – 7.28 (m, 2H), 7.26 – 7.16 (m, 2H), 7.09-7.05 (m, 3H), 6.48 (d, *J* = 15.9 Hz, 1H), 6.43 – 6.30 (m, 1H), 3.54 (d, *J* = 6.4 Hz, 2H), 2.36 (s, 3H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 139.86, 138.22, 136.12, 132.71, 130.24, 129.79, 129.48, 128.67, 128.50, 127.39, 127.08, 125.73, 39.32, 21.43. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{16}H_{16}$ 208.1252 found 208.1256.



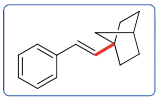
(*E*)-1-(phenyl)-3-(2-methylphenyl)-propene (3de) [17]**:** Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.39 – 7.26 (m, 4H), 7.25 – 7.15 (m, 5H), 6.45 – 6.29 (m, 2H), 3.55 (d, *J* = 4.9 Hz, 2H), 2.36 (s, 3H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 138.30, 137.64, 136.45, 130.98, 130.28, 129.28, 128.63, 128.53, 127.09, 126.46, 126.15, 126.13, 36.91, 19.47. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{16}H_{16}$ 208.1252 found 208.1248.



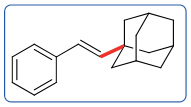
(*E*)-1-(phenyl)-3-(3,5-dimethylphenyl)-propene (3df) [16] **:** Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.39 (dd, *J* = 5.3, 3.3 Hz, 2H), 7.35 – 7.28 (m, 2H), 7.25 – 7.20 (m, 1H), 6.88 (s, 3H), 6.48 (d, *J* = 15.8 Hz, 1H), 6.37 (dd, *J* = 14.4, 7.8 Hz, 1H), 3.50 (d, *J* = 6.5 Hz, 2H), 2.32 (s, 3H), 2.31(s, 3H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 140.13, 138.06, 137.66, 130.90, 129.55, 128.53, 127.86, 127.08, 126.52, 126.19, 39.31, 21.30. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{17}H_{18}$ 222.1409 found 222.1411.



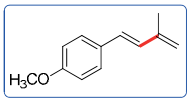
(*E*)-styrylcyclooctane (3dg) [16] **:** Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.38 – 7.26 (m, 4H), 7.22 – 7.16 (m, 1H), 6.34 (d, *J* = 16.0 Hz, 1H), 6.22 (dd, *J* = 15.9, 7.1 Hz, 1H), 2.40 (s, 1H), 1.84 – 1.68 (m, 4H), 1.60-1.54 (m, 10H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 138.24, 137.90, 128.48, 126.91, 126.69, 125.99, 41.37, 31.96, 27.51, 26.10, 25.16. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{16}H_{22}$ 214.1722 found 214.1725.



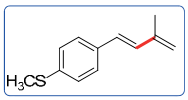
(*E*)-1-styrylnorbornane (3dh): Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.41 – 7.25 (m, 4H), 7.22 – 7.12 (m, 1H), 6.30 (d, *J* = 15.8 Hz, 1H), 6.13 (dd, *J* = 15.8, 8.0 Hz, 1H), 2.33 – 2.23 (m, 2H), 2.14 (s, 1H), 1.62 – 1.50 (m, 2H), 1.50 – 1.24 (m, 4H), 1.24 – 1.10 (m, 2H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 138.10, 136.55, 128.48, 127.34, 126.71, 125.98, 45.47, 42.77, 37.98, 36.71, 35.87, 29.83, 29.08. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{15}H_{18}$ 198.1409 found 198.1405.



(*E*)-1-styryladamantane (3di) [18]: Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.36 (d, *J* = 7.1 Hz, 2H), 7.30 (d, *J* = 7.3 Hz, 1H), 7.22 – 7.14 (m, 1H), 6.24 (d, *J* = 16.1 Hz, 1H), 6.11 (d, *J* = 16.2 Hz, 1H), 2.03 (s, 3H), 1.85 – 1.59 (m, 12H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 142.15, 138.30, 128.47, 126.71, 126.02, 124.58, 77.46, 77.24, 77.04, 76.61, 42.32, 36.96, 35.21, 28.56. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{18}H_{22}$ 238.1722 found 238.1725.



(*E*)-1-methoxy-4-(3-methylbuta-1,3-dien-1-yl)benzene (4a) [19] : Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.40 – 7.34 (m, 2H), 6.91 – 6.85 (m, 2H), 6.77 (d, *J* = 16.1 Hz, 1H), 6.49 (d, *J* = 16.1 Hz, 1H), 5.10 – 5.00 (m, 2H), 3.82 (s, 3H), 1.97 (d, *J* = 0.4 Hz, 3H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 159.23, 142.22, 130.28, 129.80, 128.23, 127.67, 116.26, 114.14, 55.33, 18.64. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{12}H_{14}O$ 174.1045 found 174.1042.



(*E*)-methyl(4-(3-methylbuta-1,3-dien-1-yl)phenyl)sulfane (4b): Colorless oil, ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.38 – 7.33 (m, 2H), 7.23 – 7.18 (m, 2H), 6.84 (d, *J* = 16.1 Hz, 1H), 6.48 (d, *J* = 16.1 Hz, 1H), 5.08 (d, *J* = 11.9 Hz, 2H), 2.49 (s, 3H), 1.98 (s, 3H), 1.66 (s, 1H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 142.07, 137.59, 134.50, 131.23, 128.08, 126.89, 126.85, 117.18, 18.59, 15.94. **HRMS (TOF, EI$^+$)** *m/z* calcd for $C_{12}H_{14}S$ 190.0816 found 190.0813.

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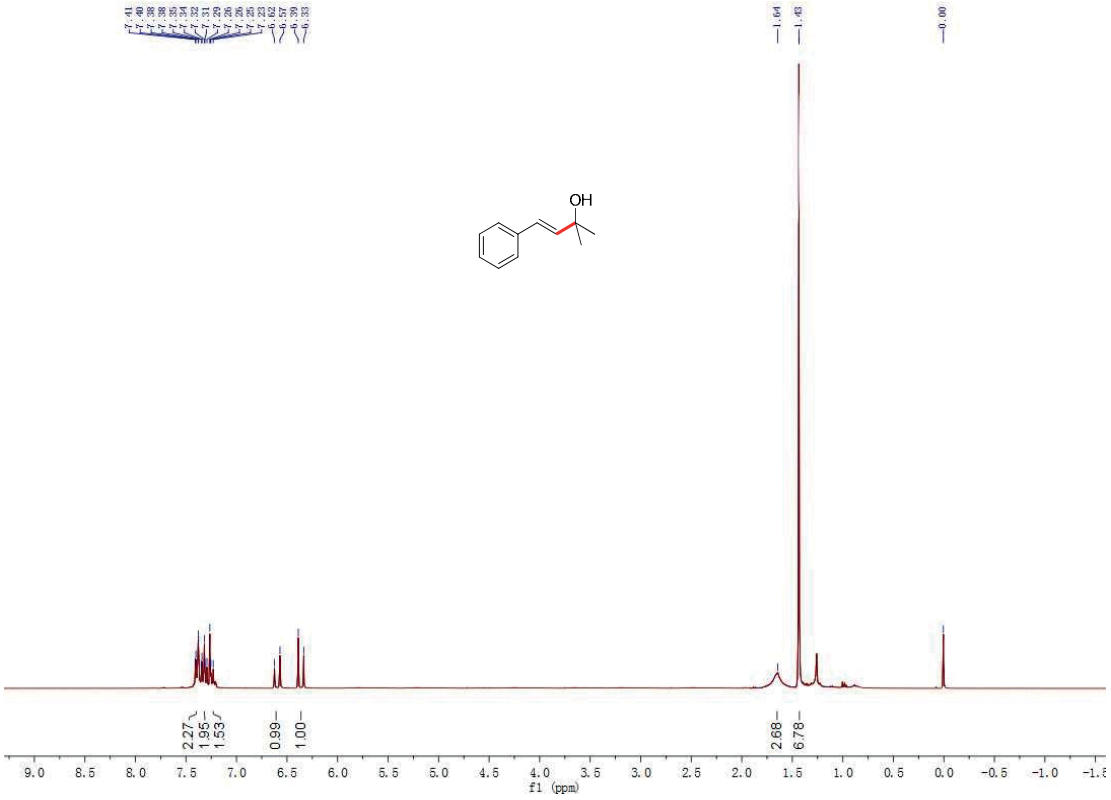
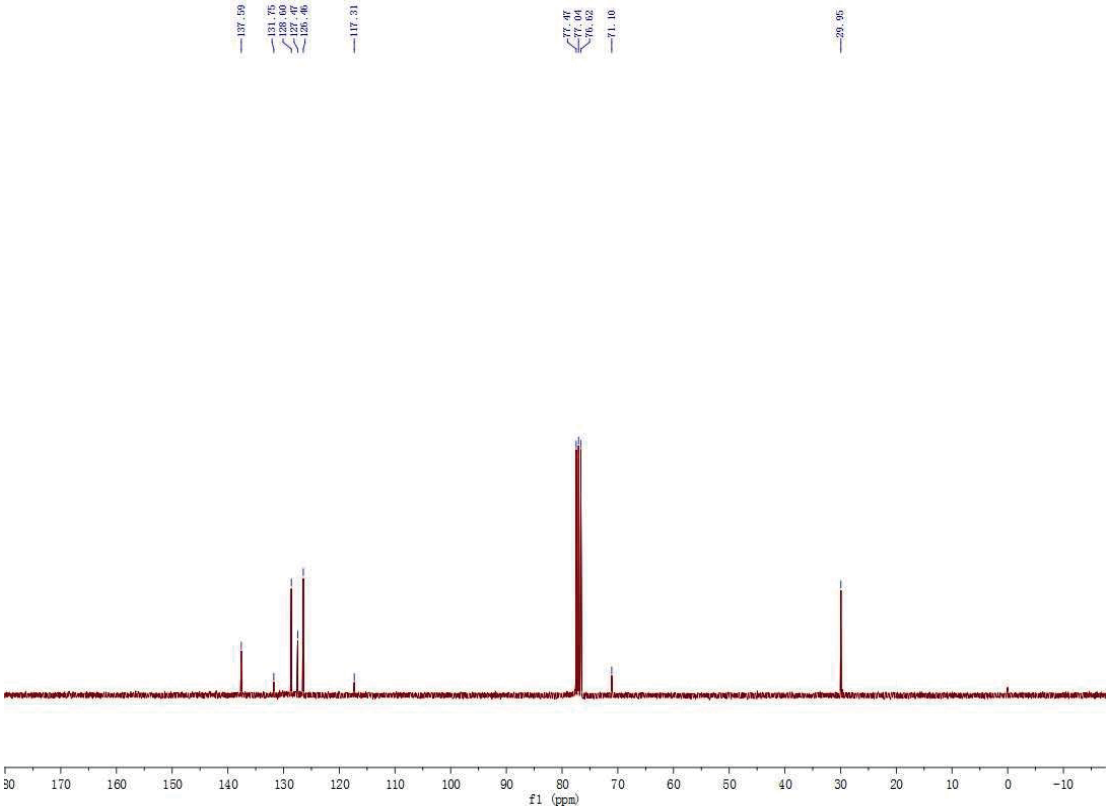
(E) Original Spectra

(*E*)-2-methyl-4-phenylbut-3-en-2-ol (3aa):





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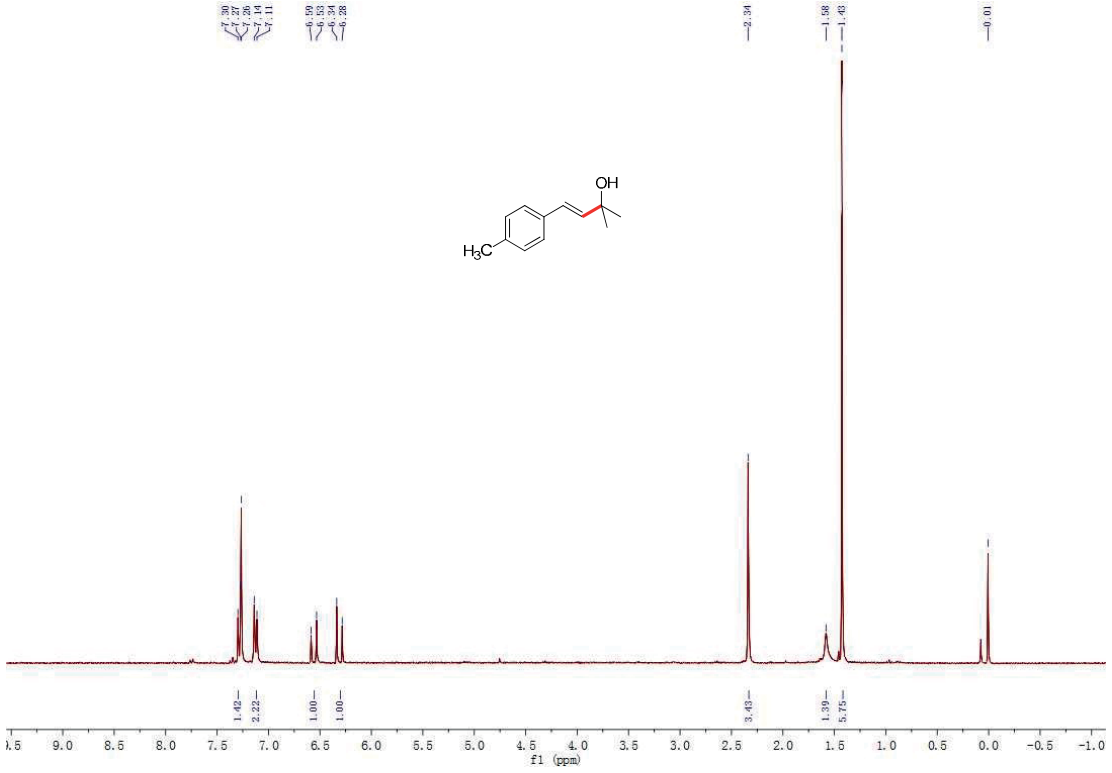
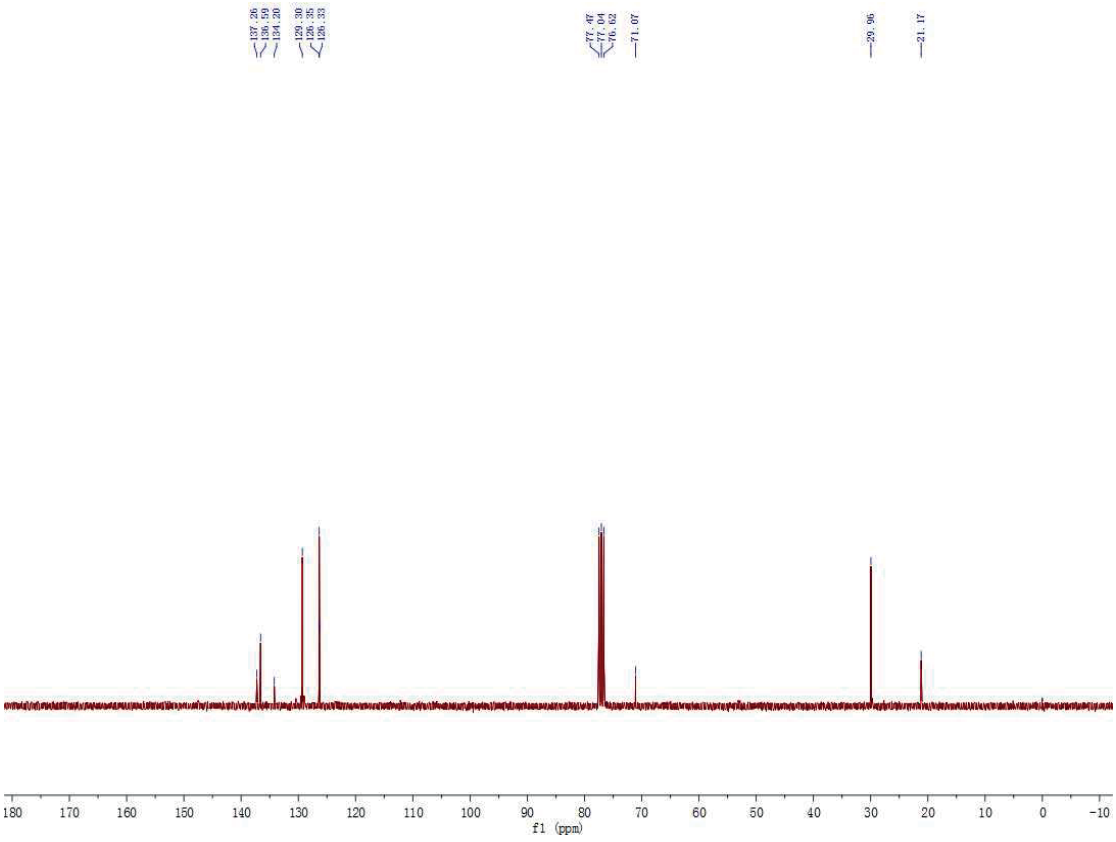
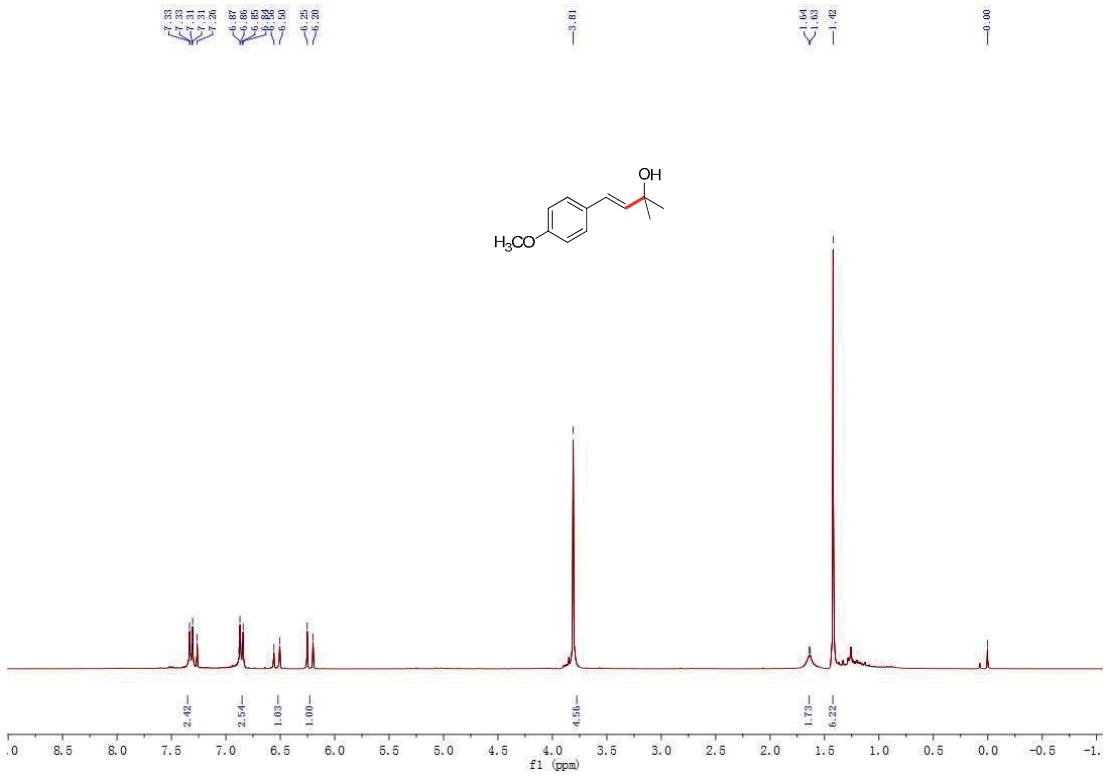
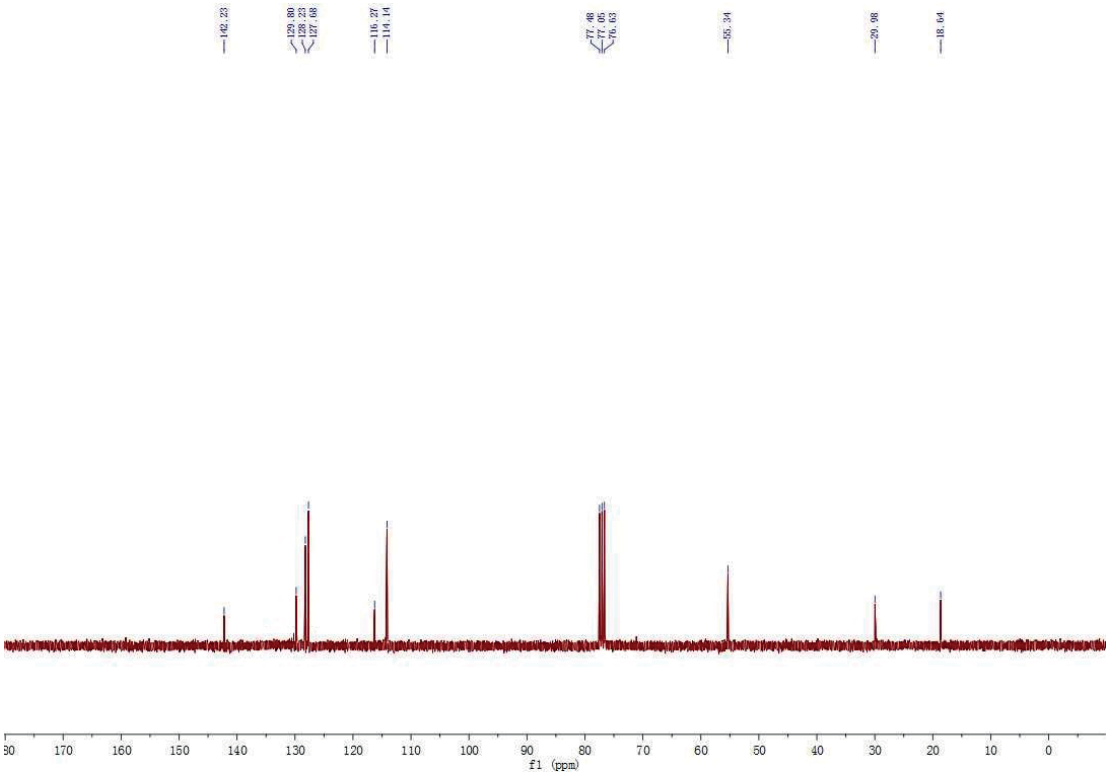


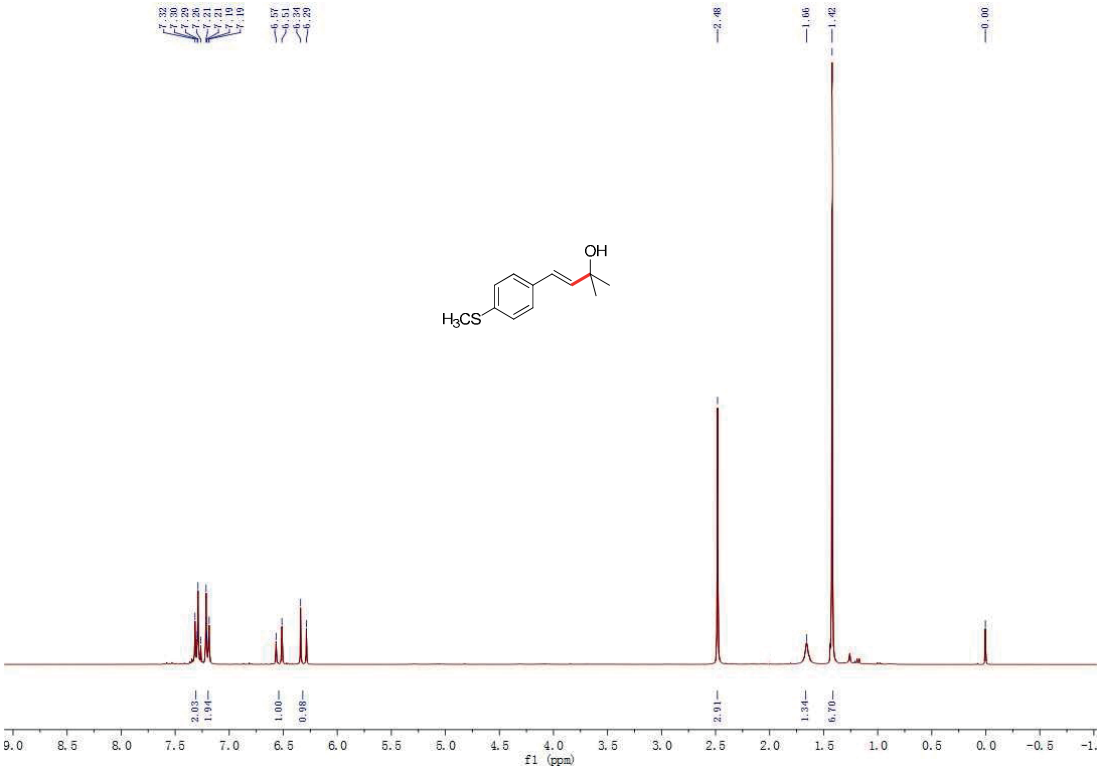


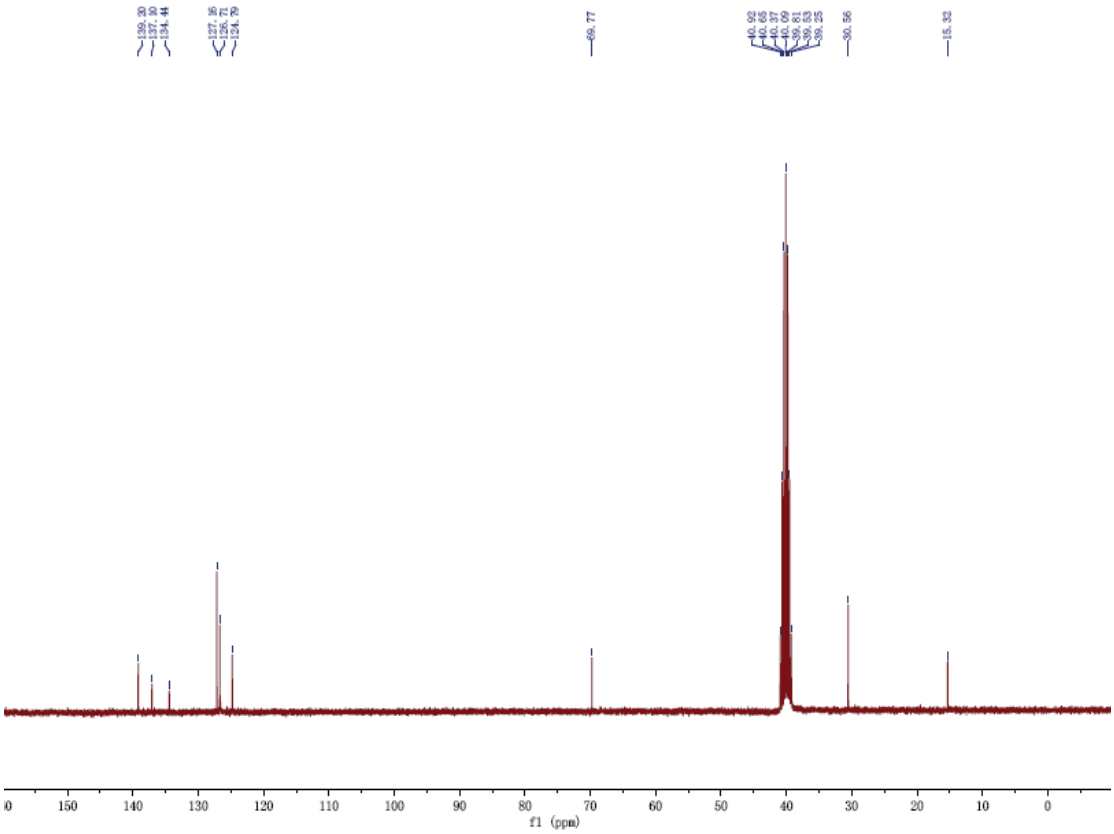
(*E*)-4-(4-methoxyphenyl)-2-methylbut-3-en-2-ol(3ac):





(*E*)-2-methyl-4-(4-(methylthio)phenyl)but-3-en-2-ol (3ad):





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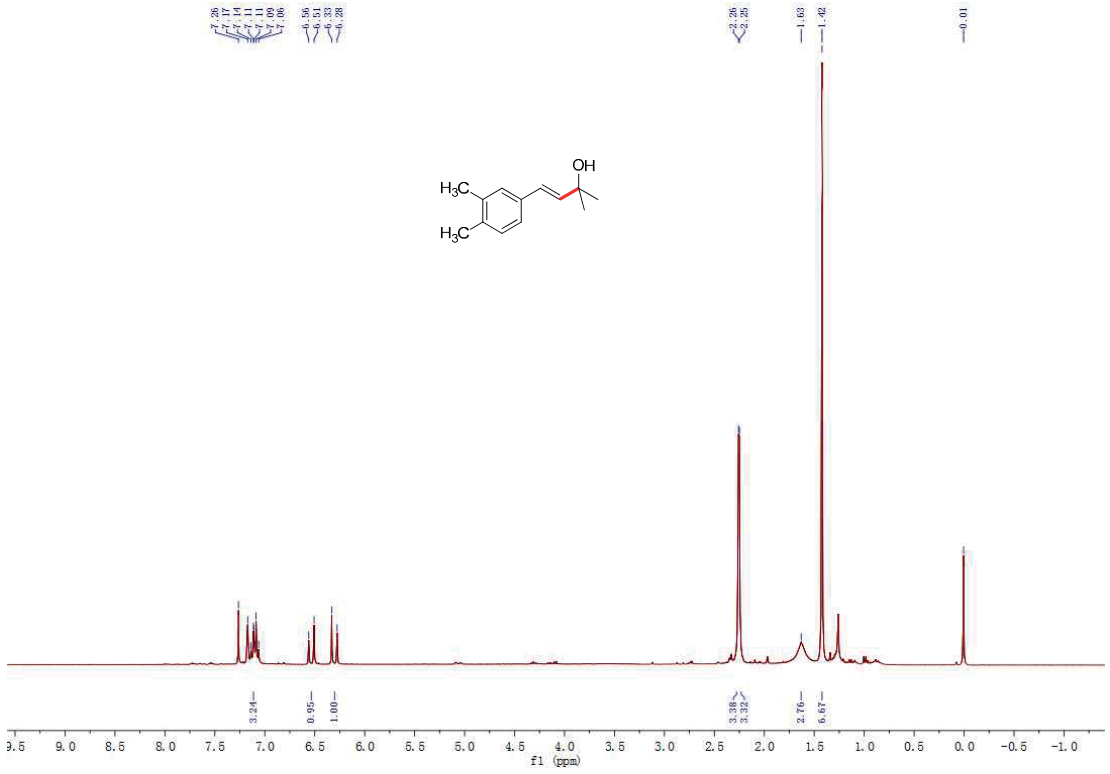
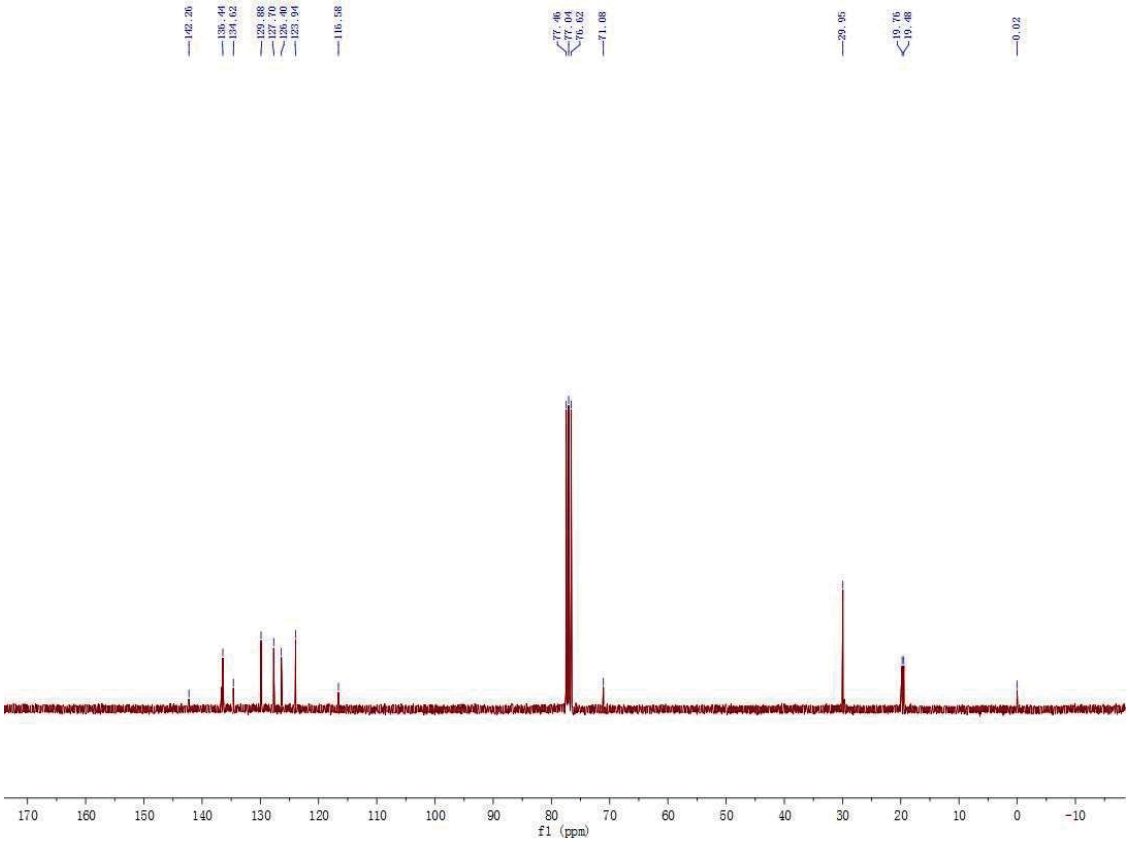
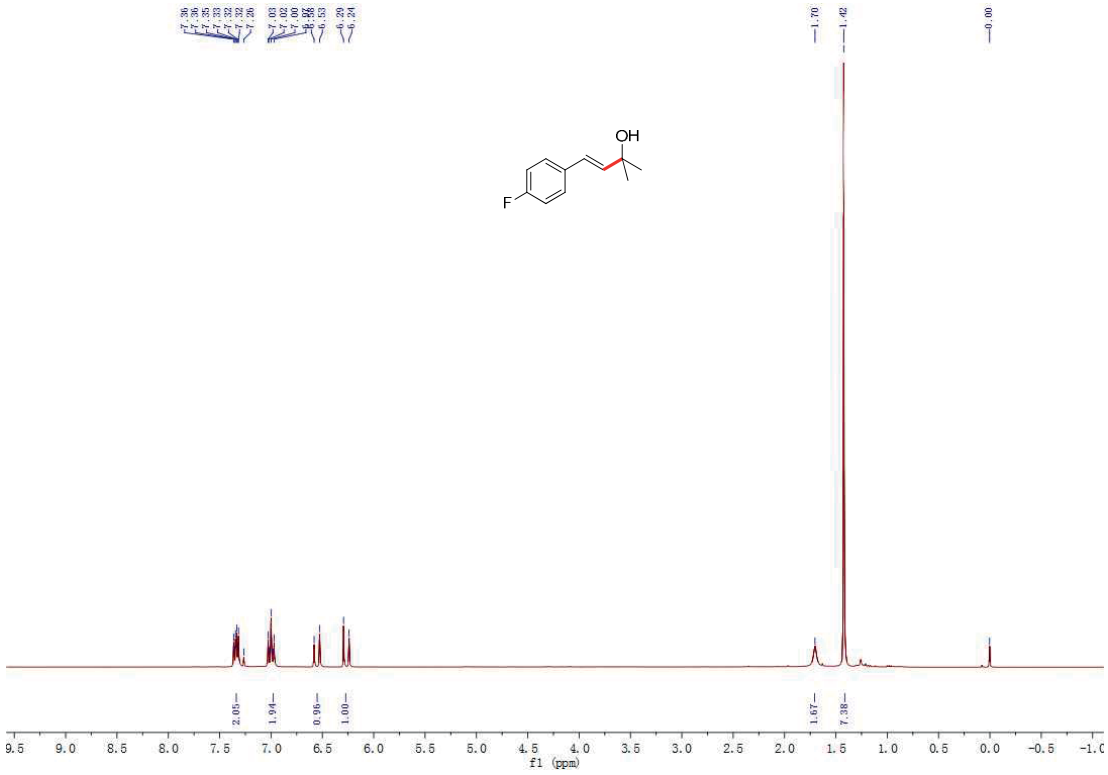
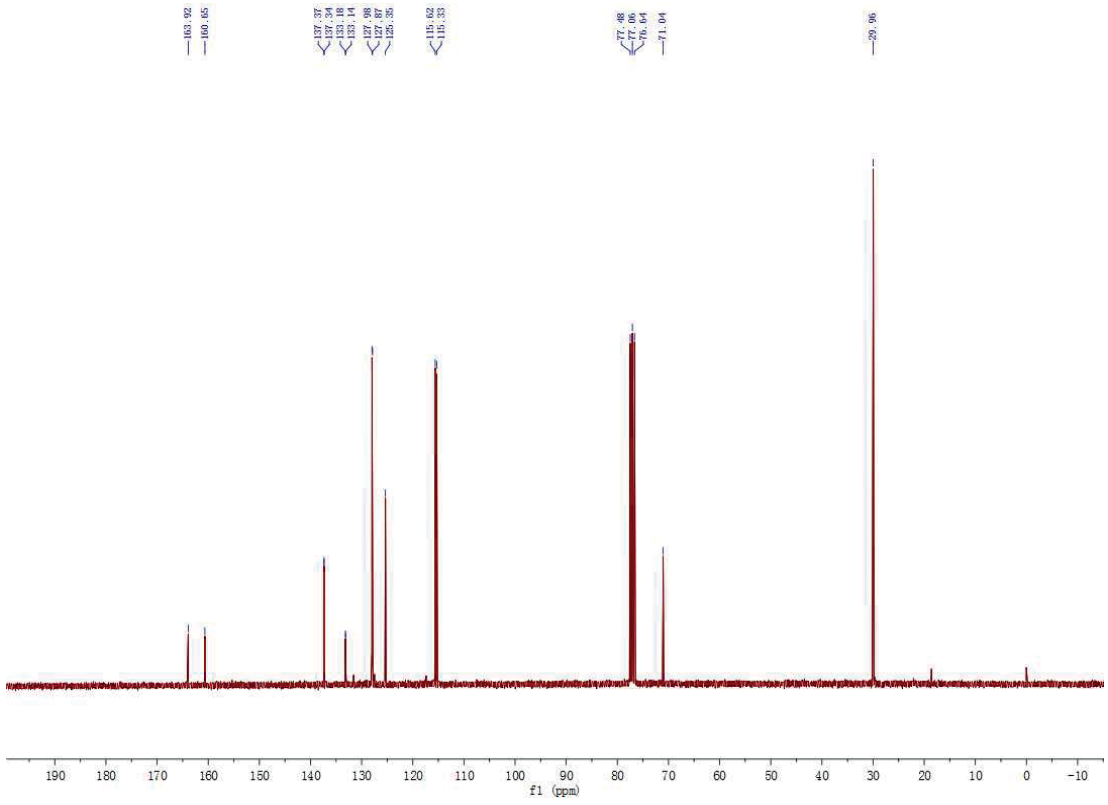




(*E*)-4-(4-fluorophenyl)-2-methylbut-3-en-2-ol(3af):





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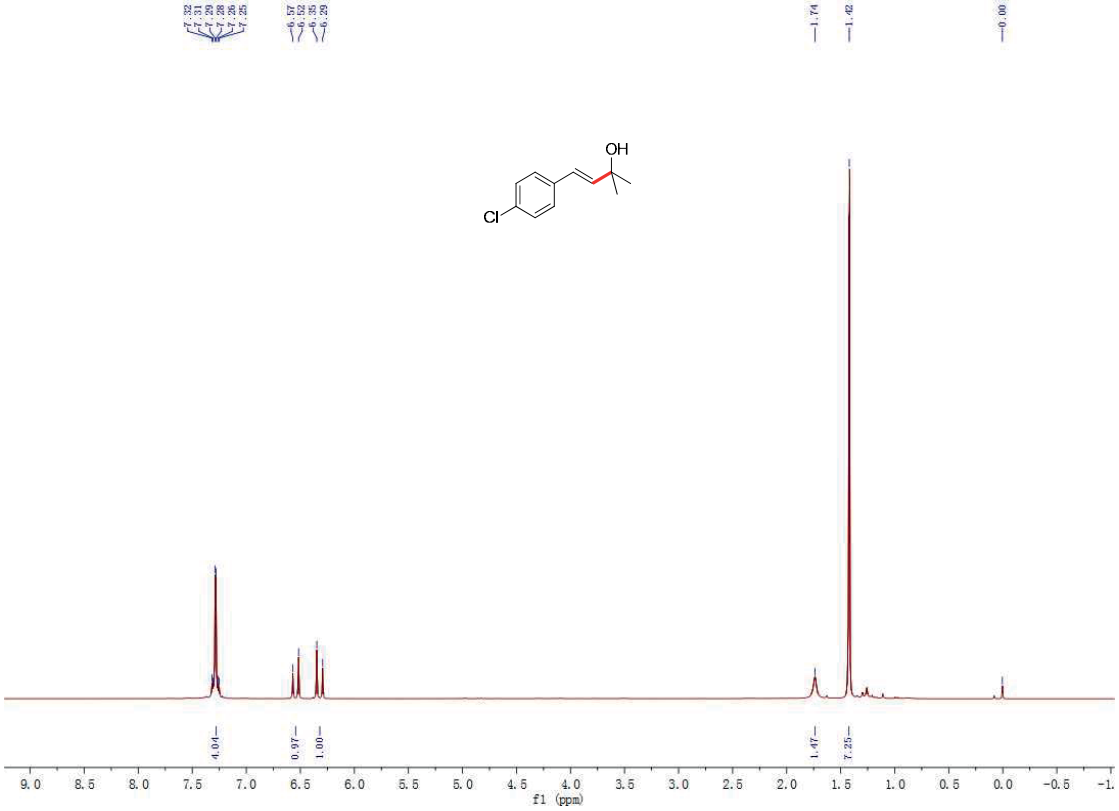
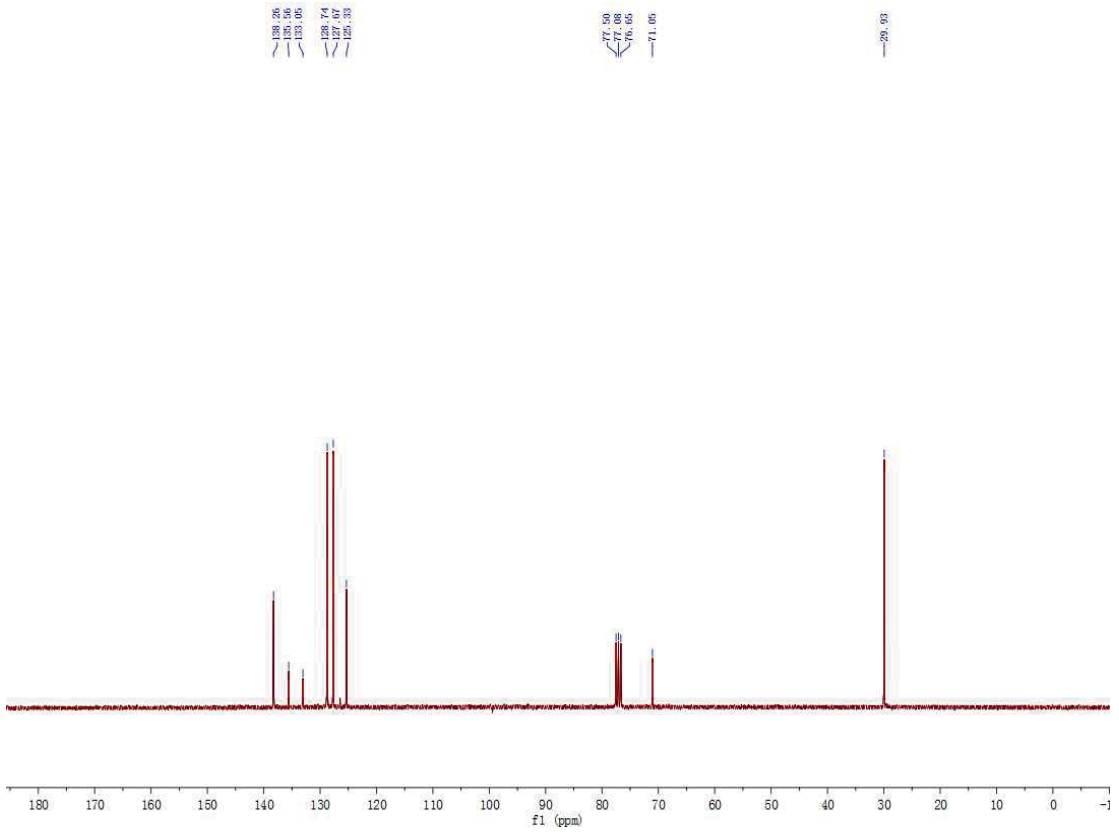
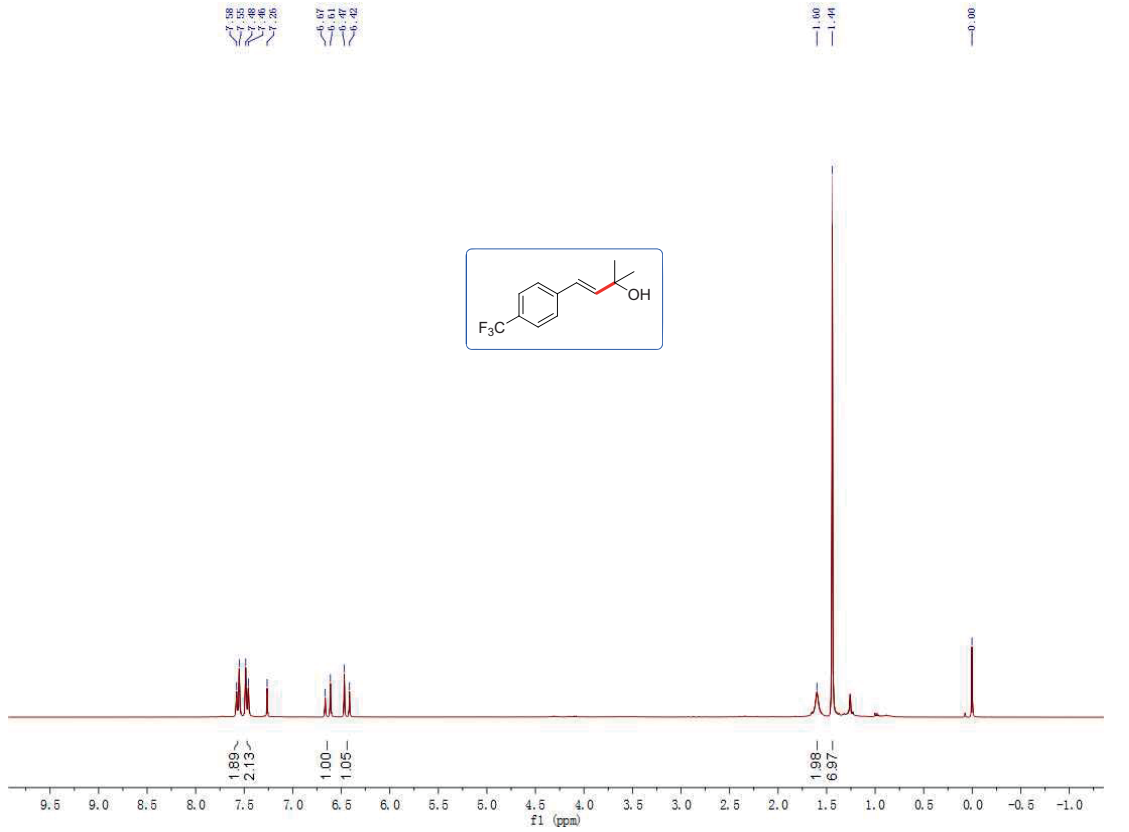
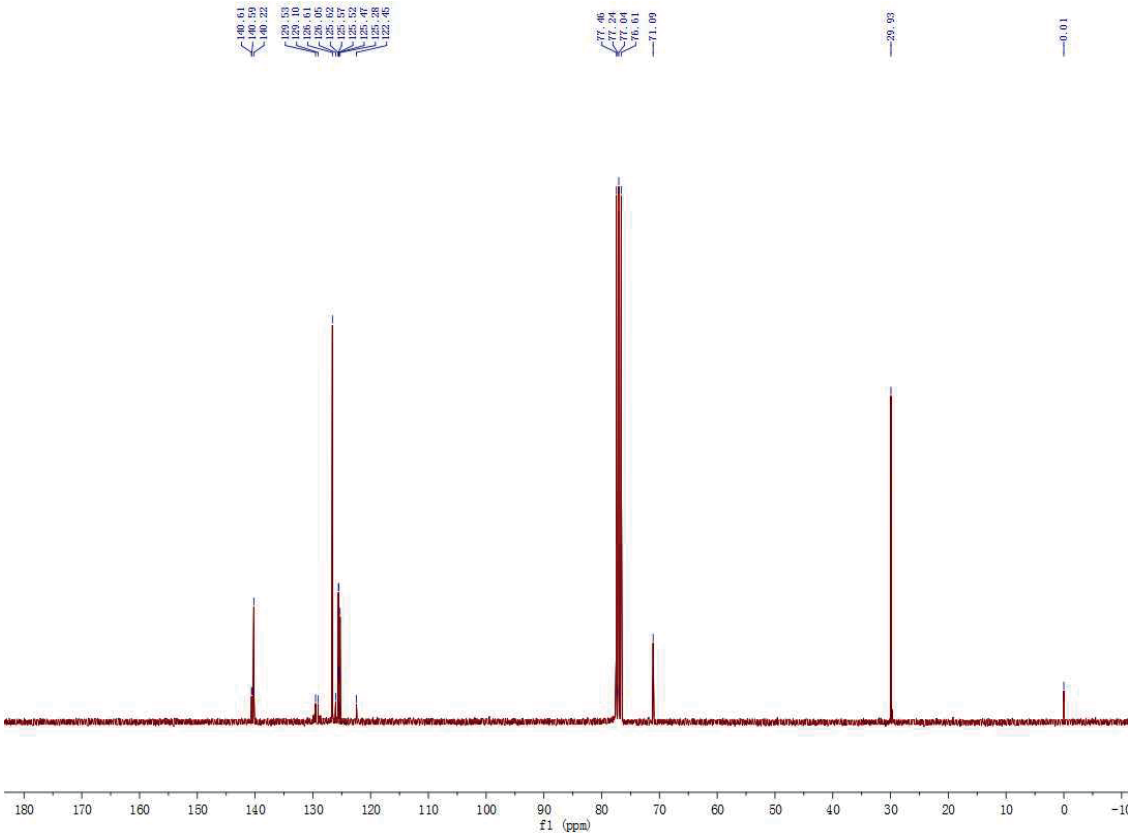


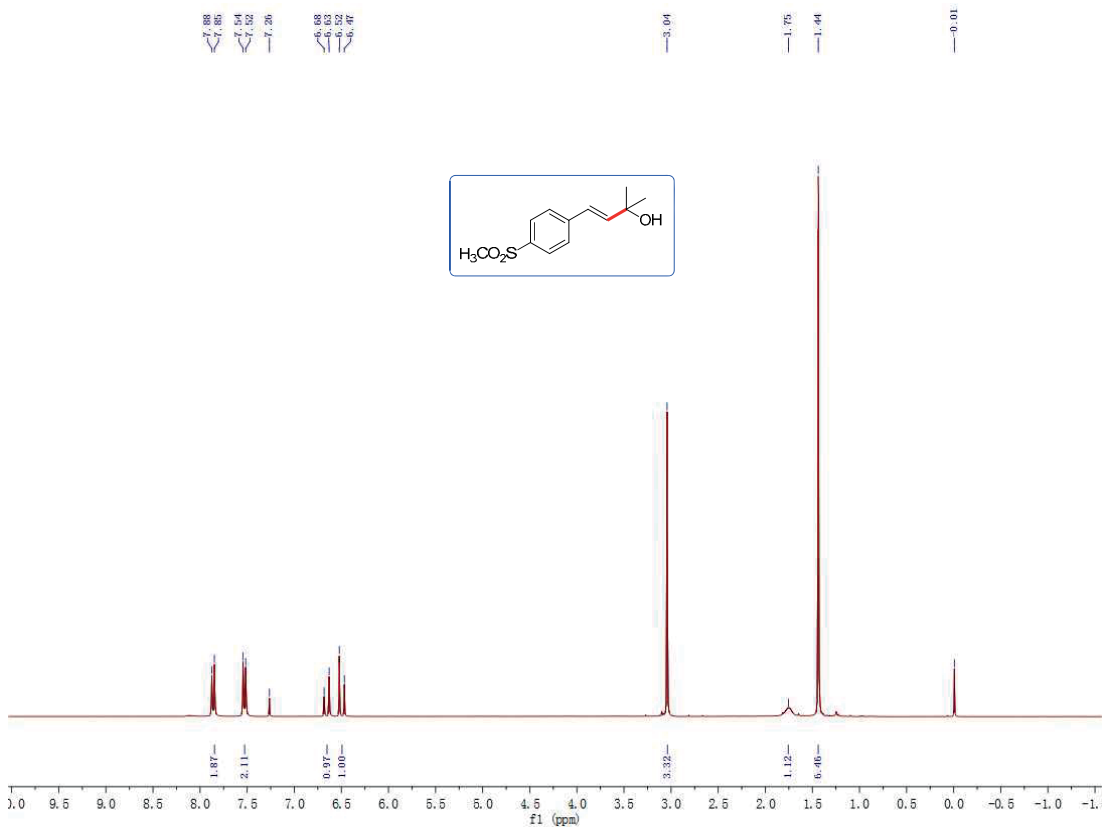


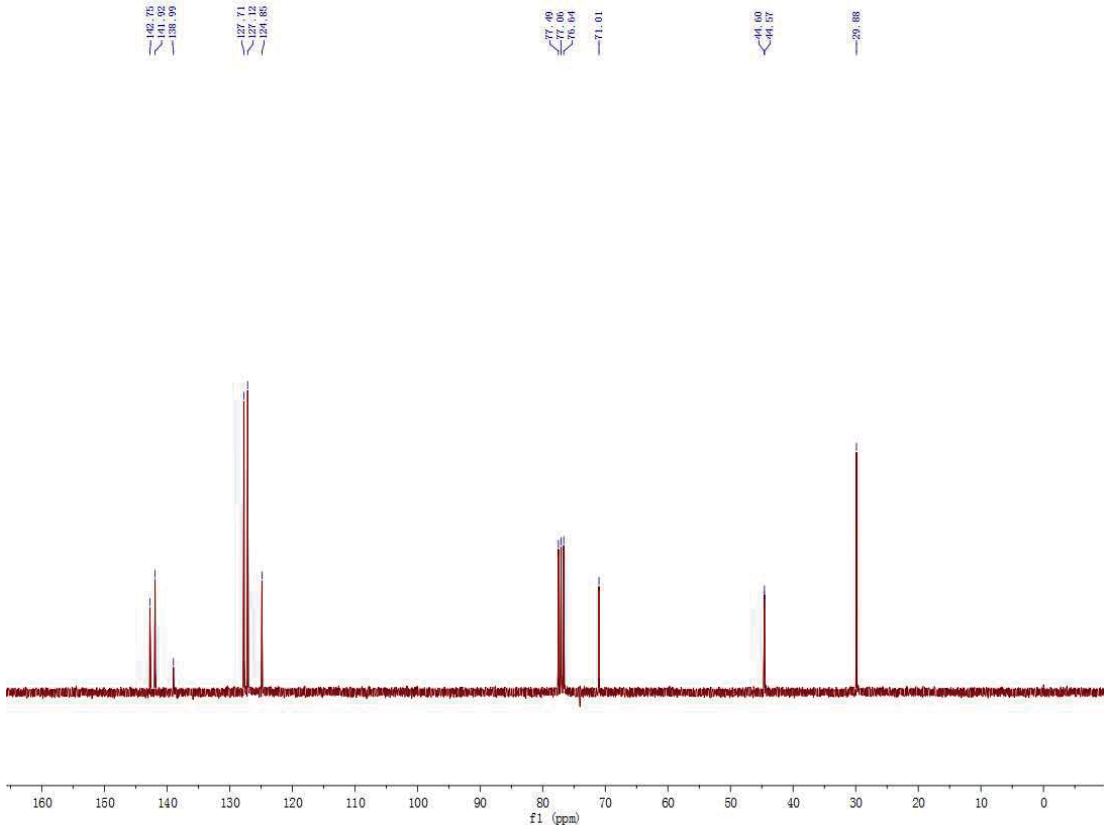
(*E*)-2-methyl-4-(4-(trifluoromethyl)phenyl)but-3-en-2-ol(3ah)



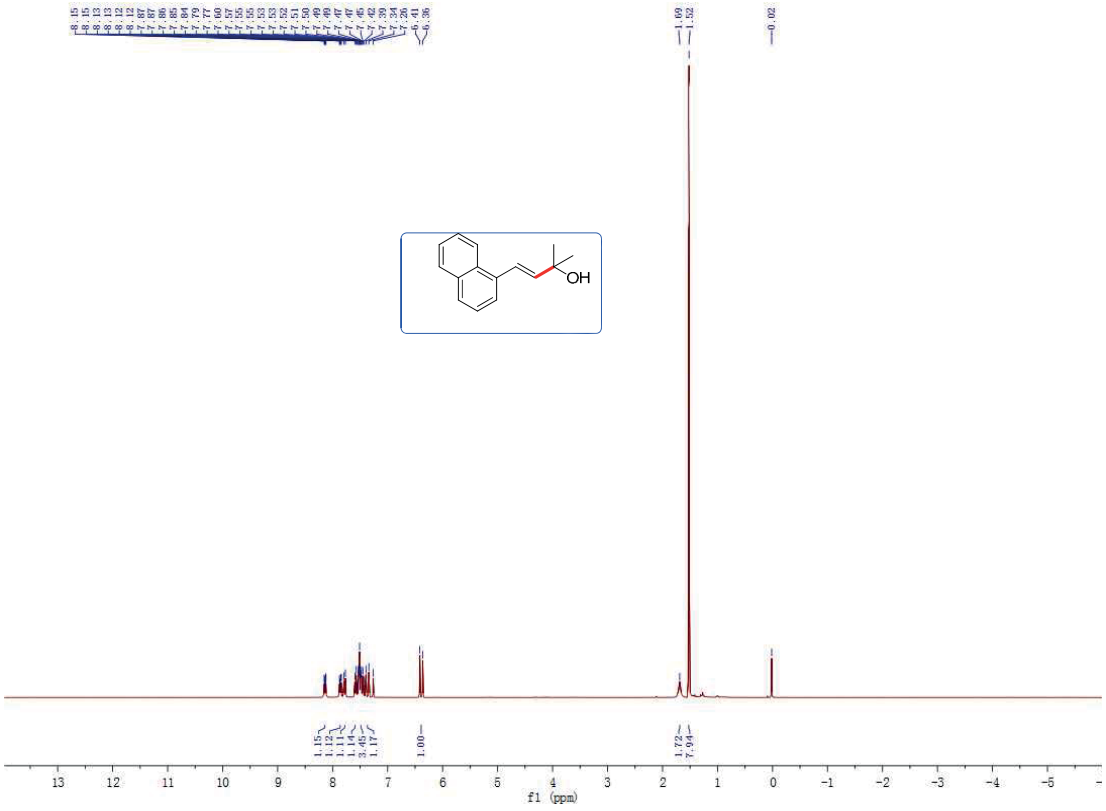


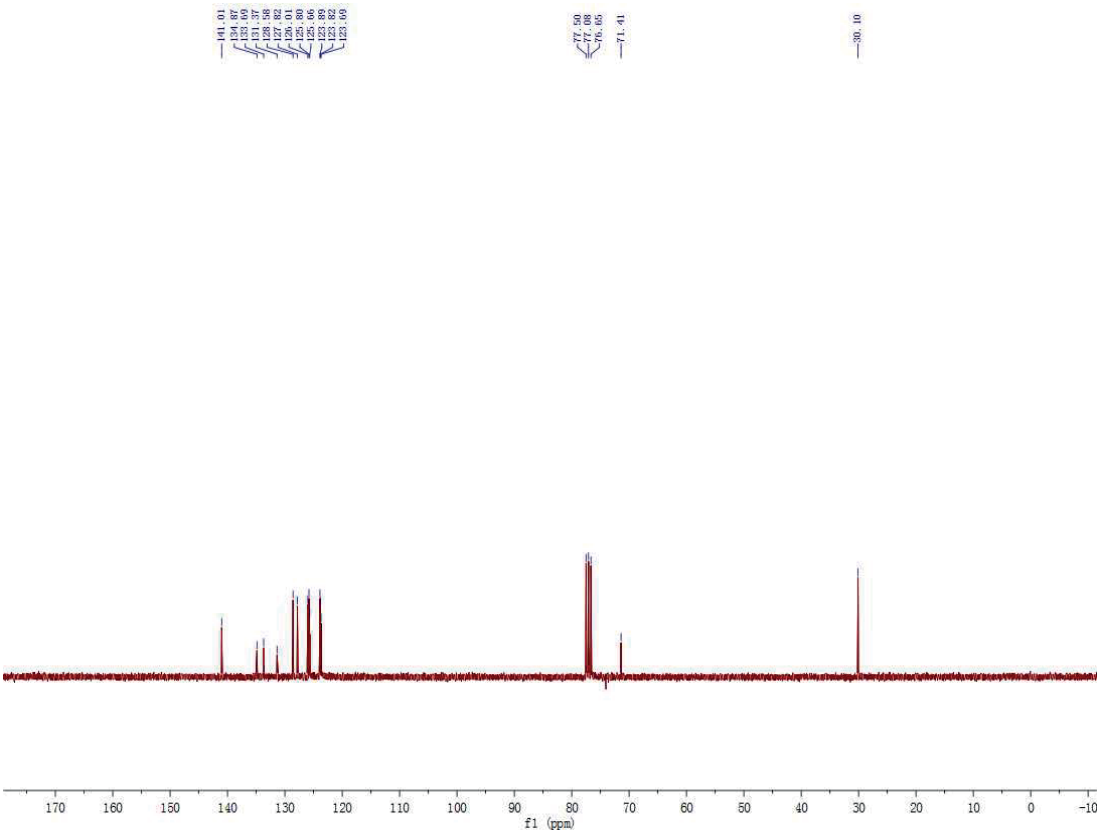
(*E*)-2-methyl-4-(4-(methylsulfonyl)phenyl)but-3-en-2-ol(3ai):



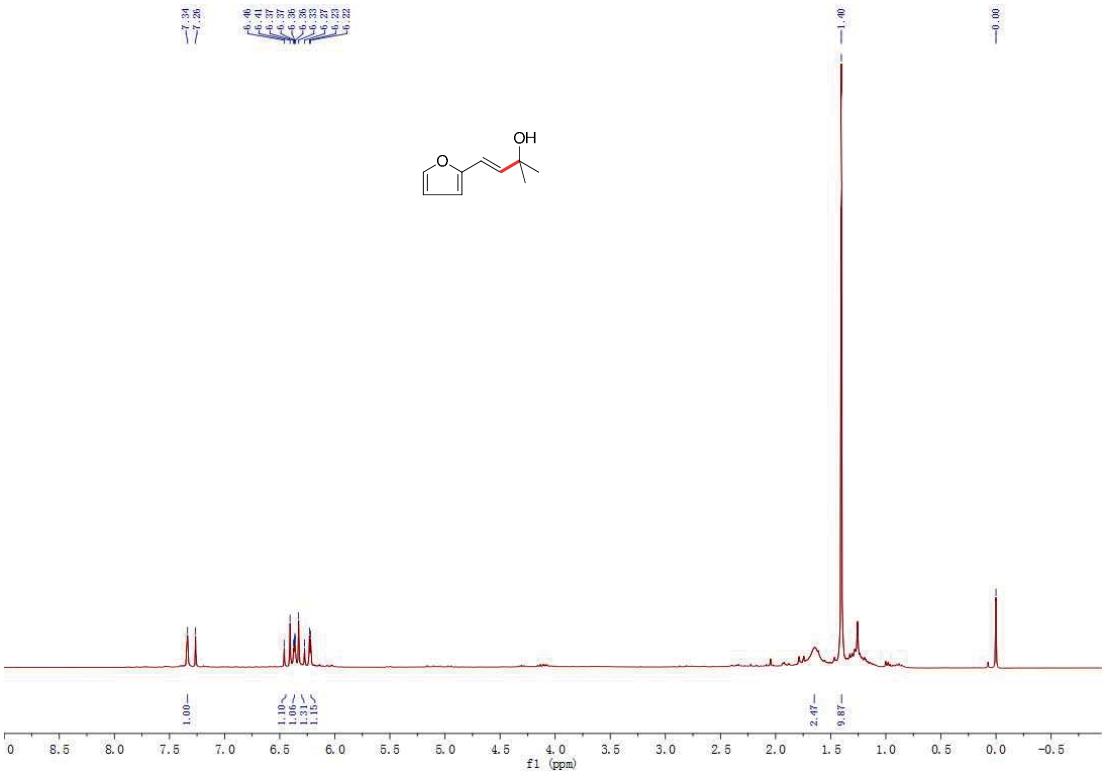


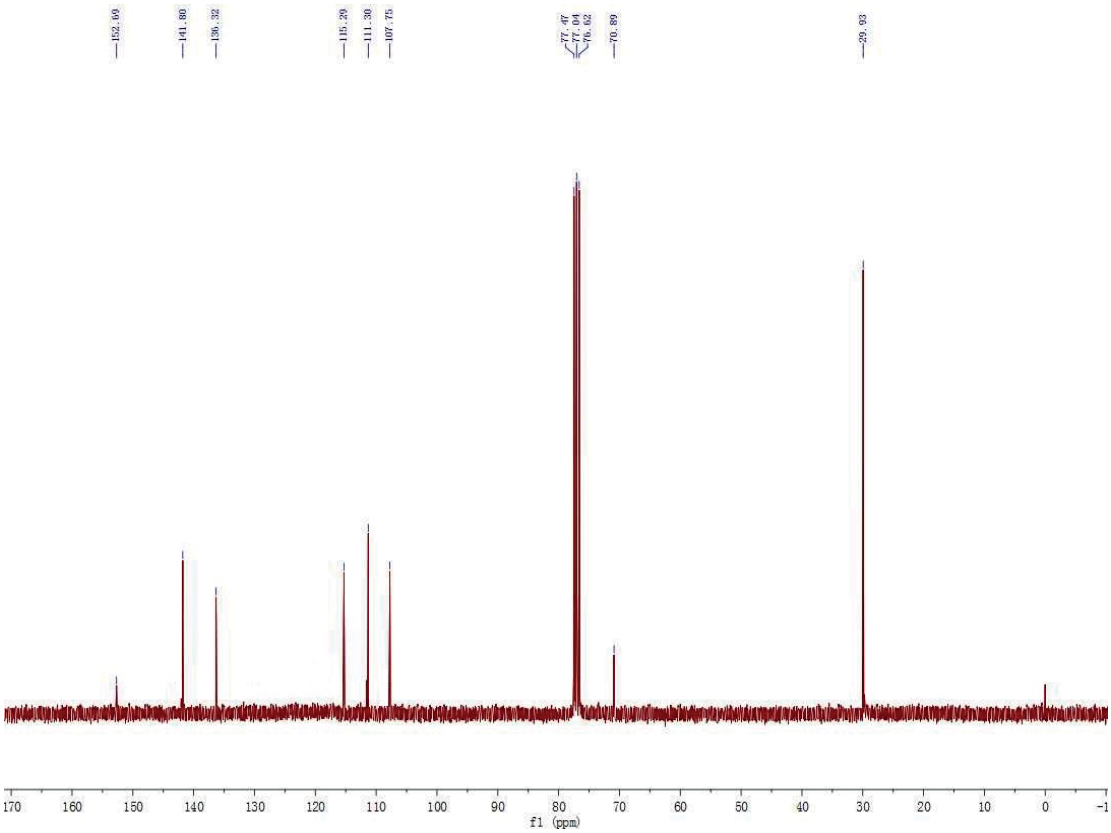
(*E*)-2-methyl-4-(naphthalen-1-yl)but-3-en-2-ol (3aj):



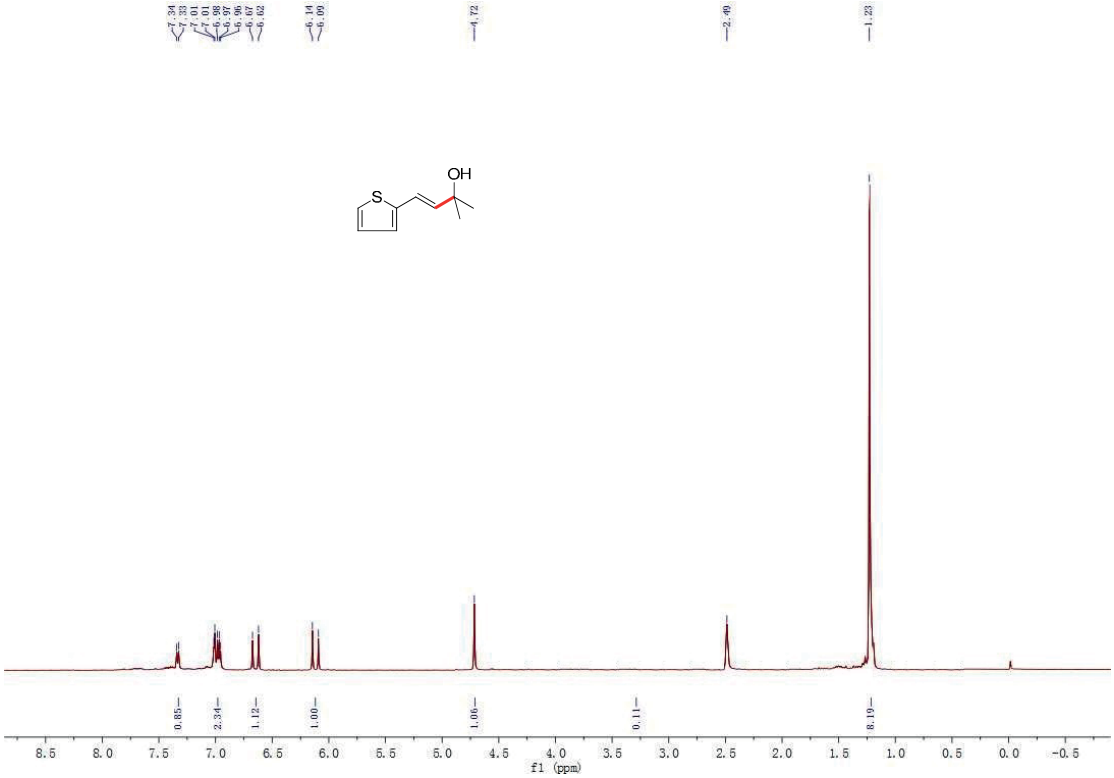


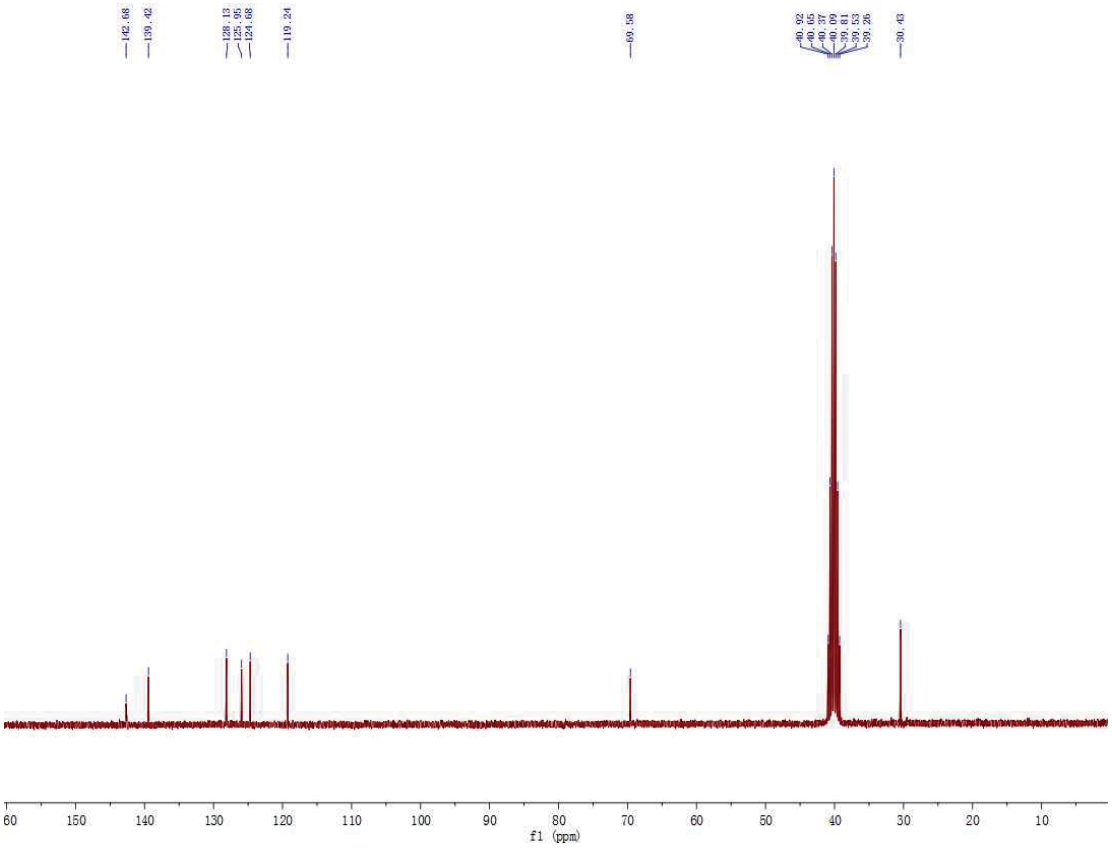
(*E*)-4-(furan-2-yl)-2-methylbut-3-en-2-ol (3ak):



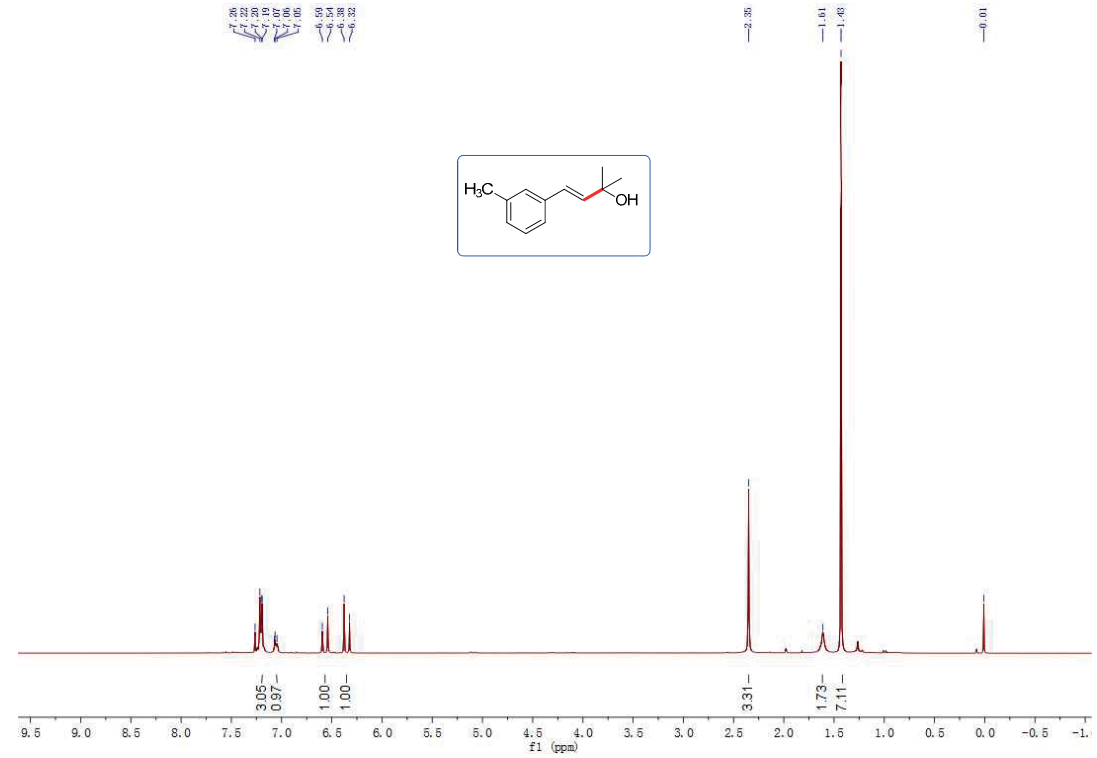


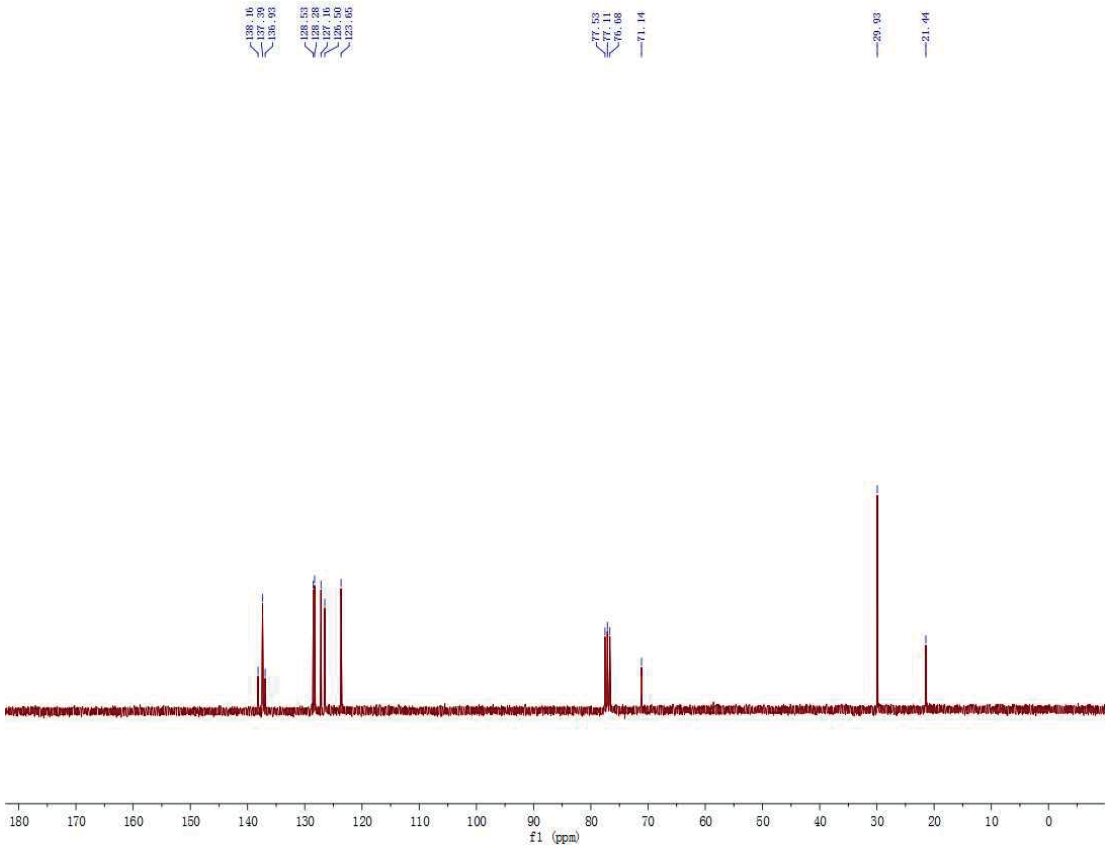
(*E*)-2-methyl-4-(thiophen-2-yl)but-3-en-2-ol(3al):



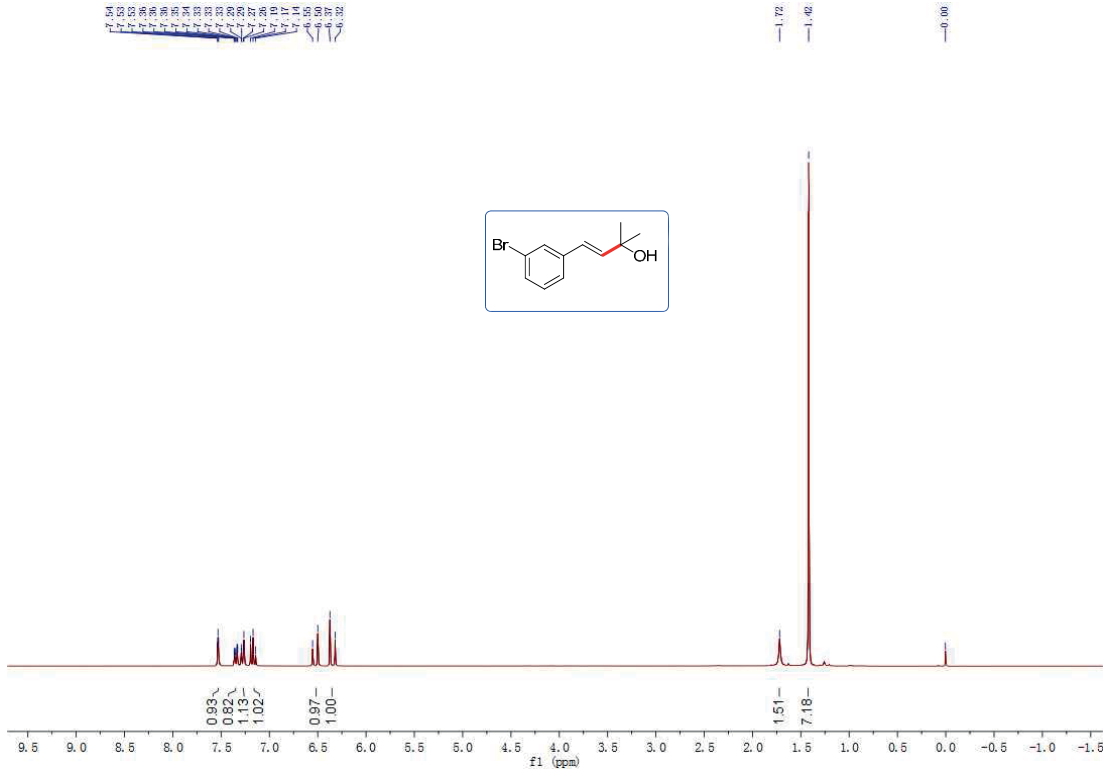


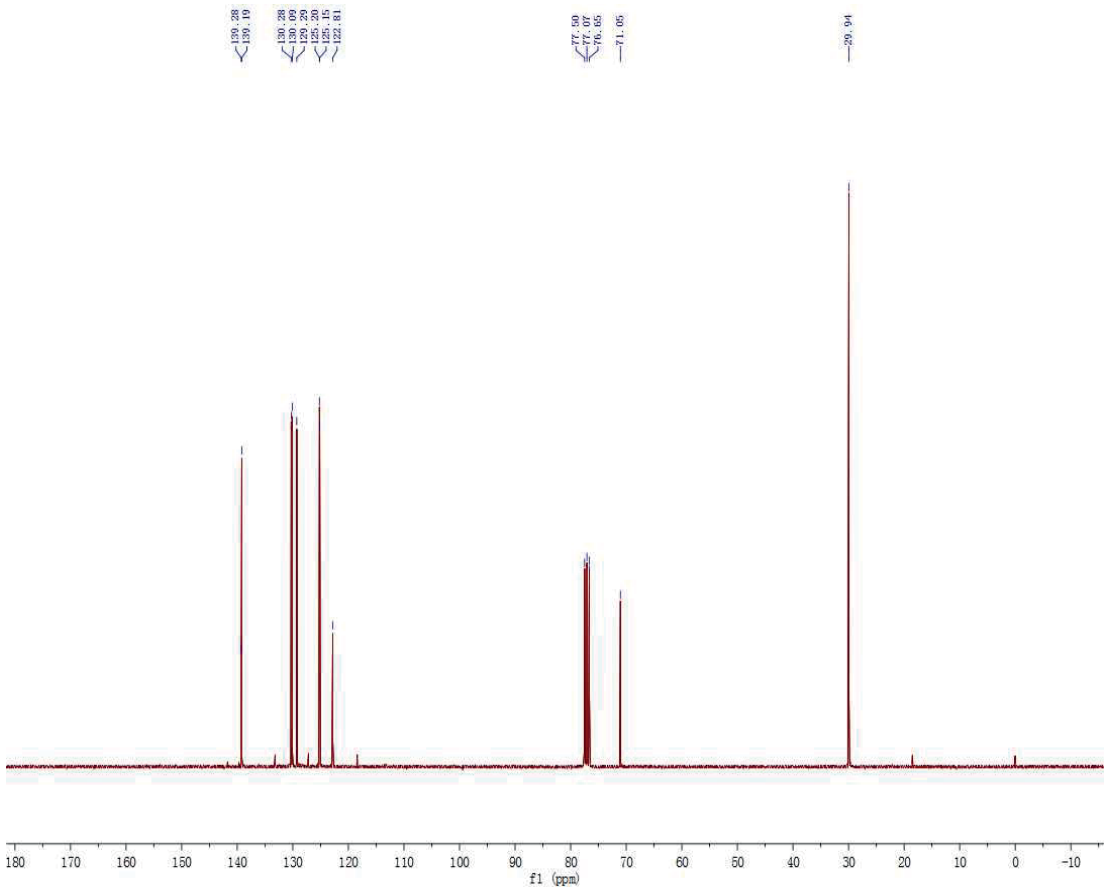
(*E*)-2-methyl-4-(m-tolyl)but-3-en-2-ol (3am):



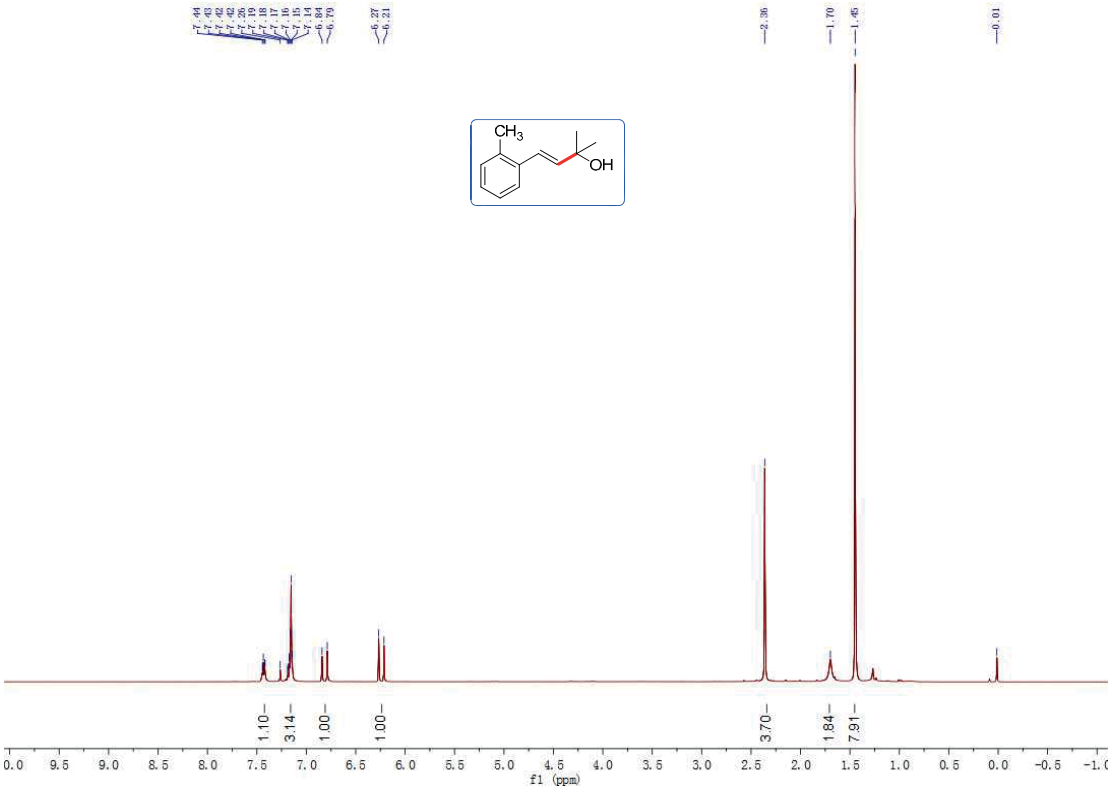


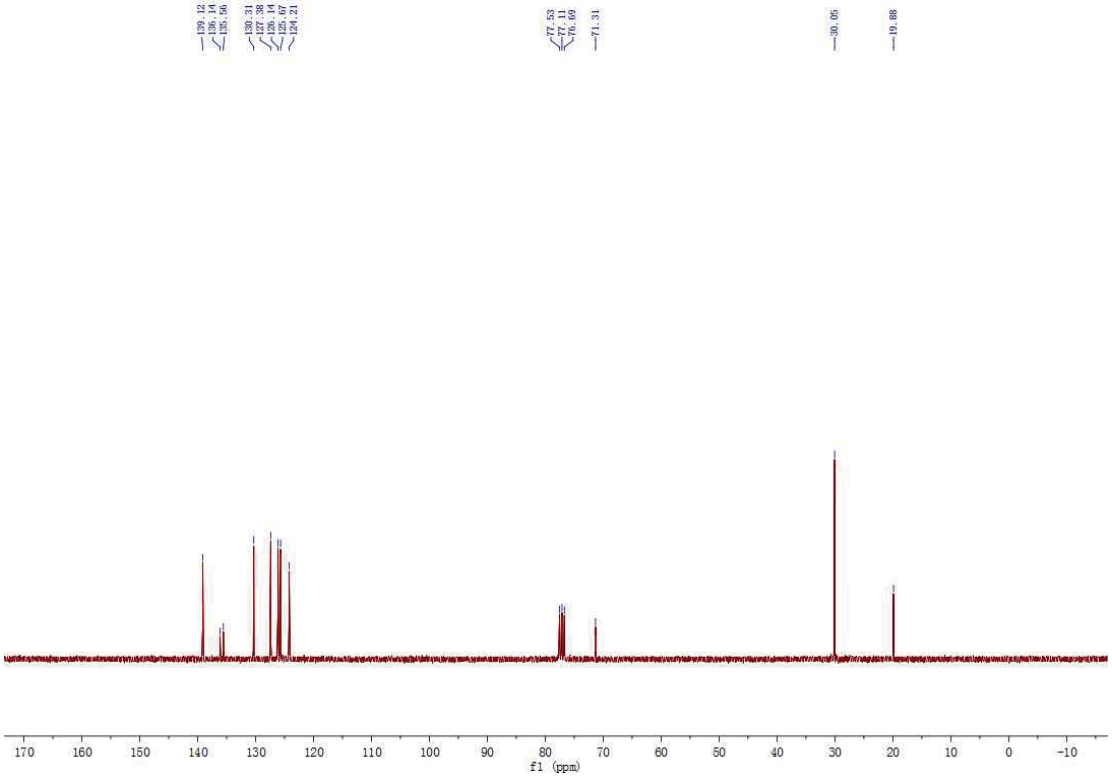
(*E*)-4-(3-bromophenyl)-2-methylbut-3-en-2-ol (3an):



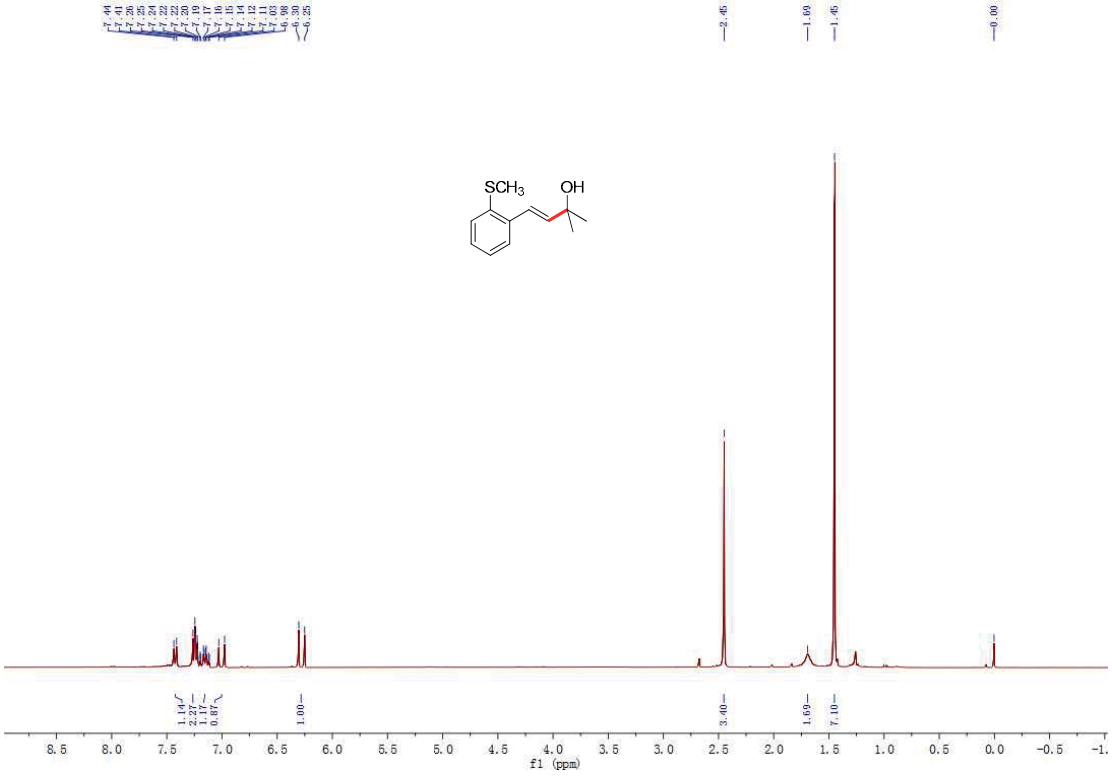


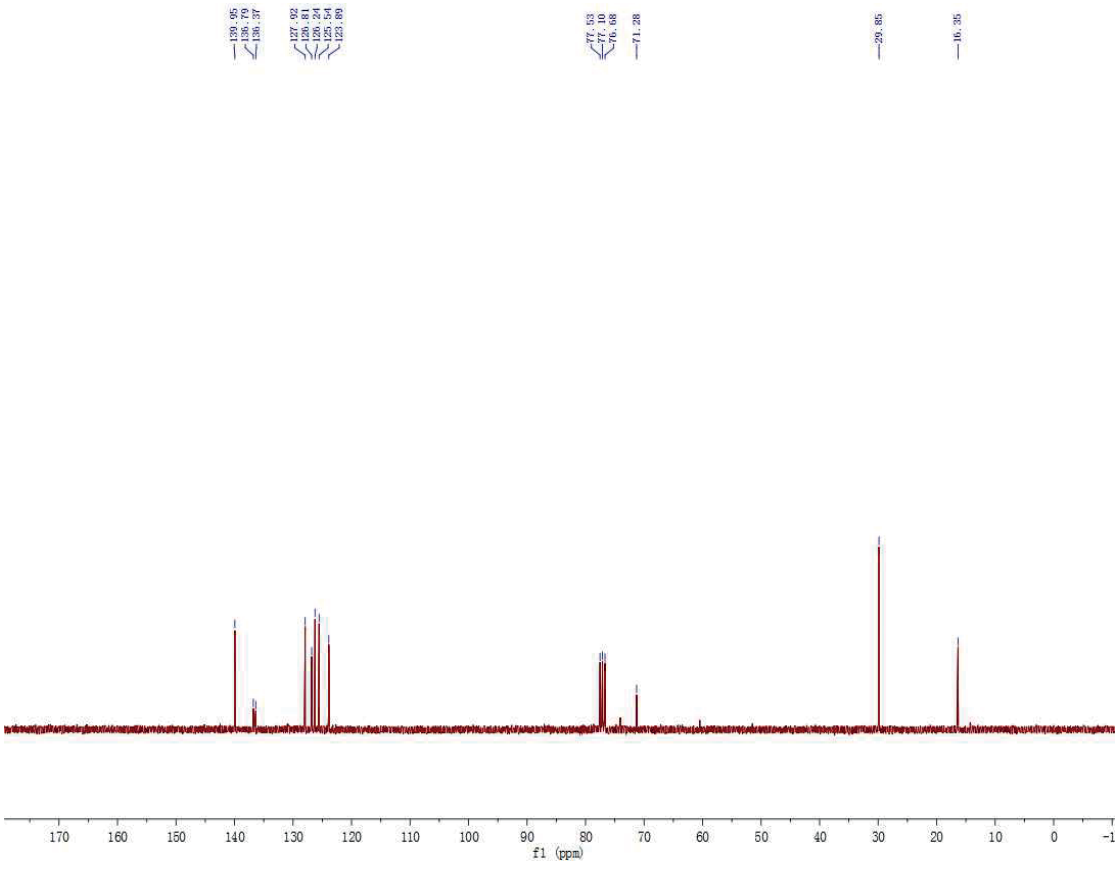
(*E*)-2-methyl-4-(o-tolyl)but-3-en-2-ol (3ao):



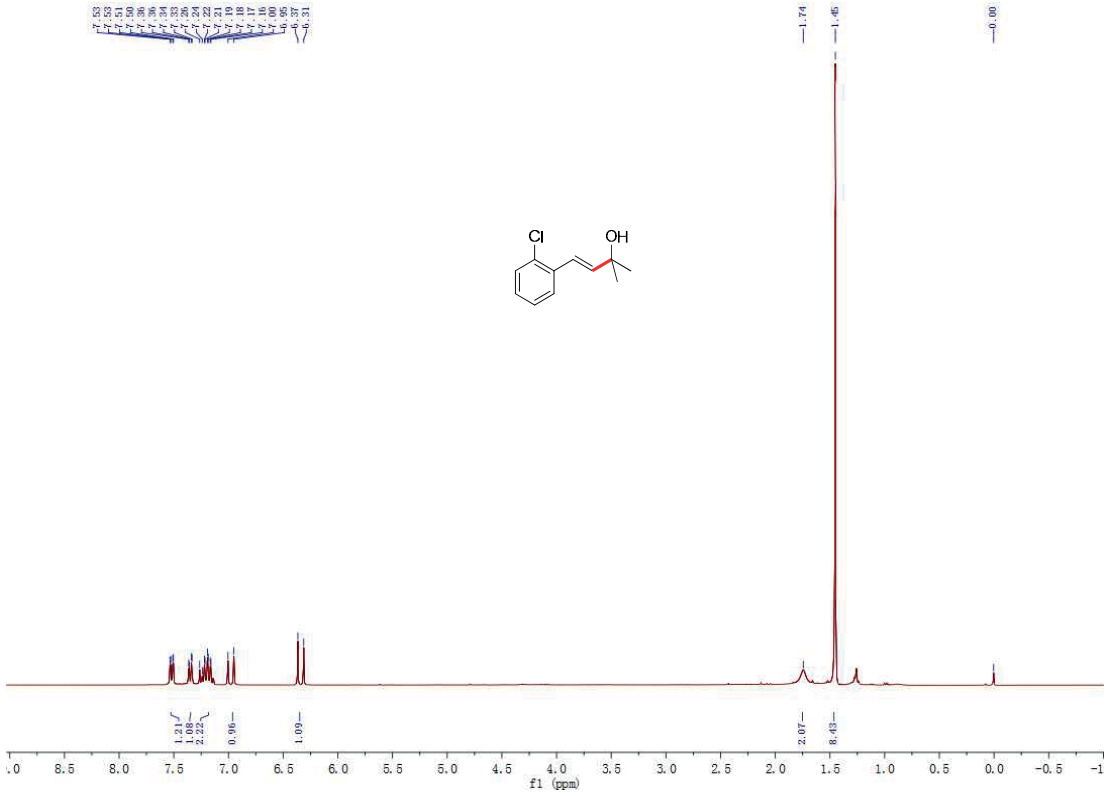


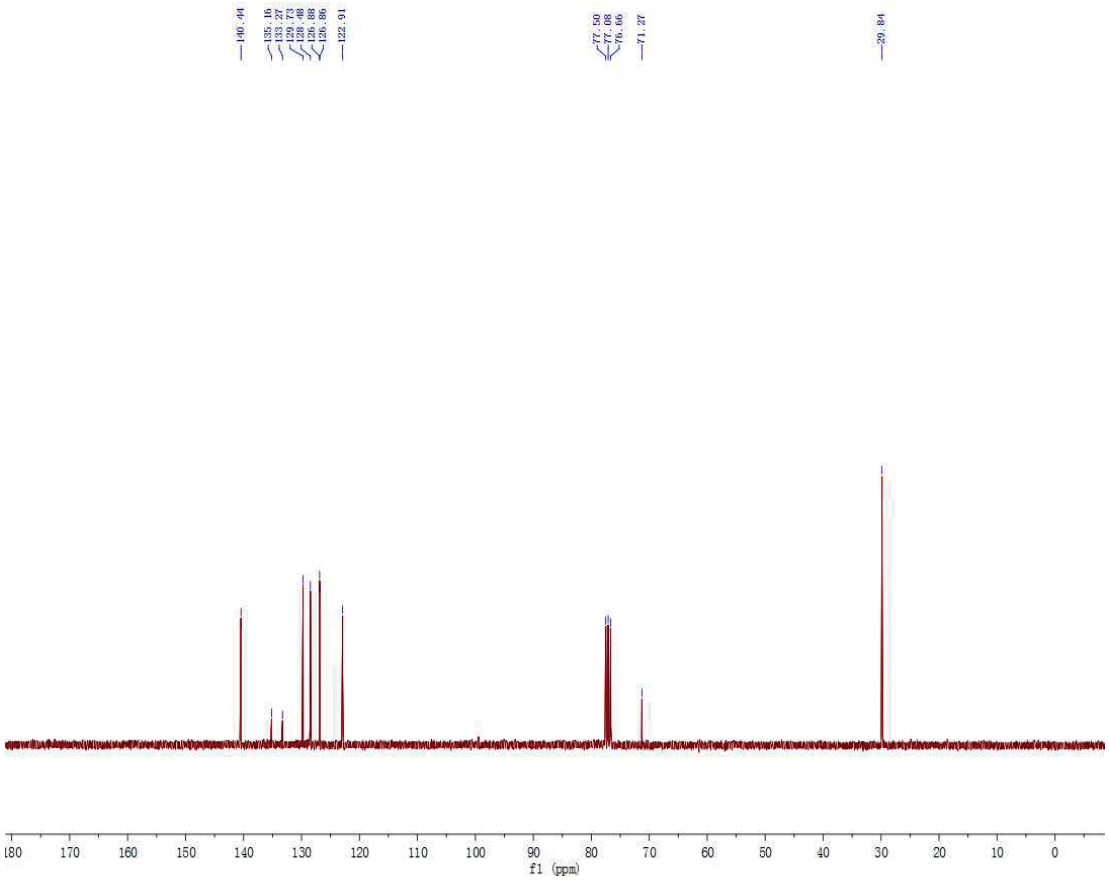
(*E*)-2-methyl-4-(2-(methylthio)phenyl)but-3-en-2-ol (3ap):



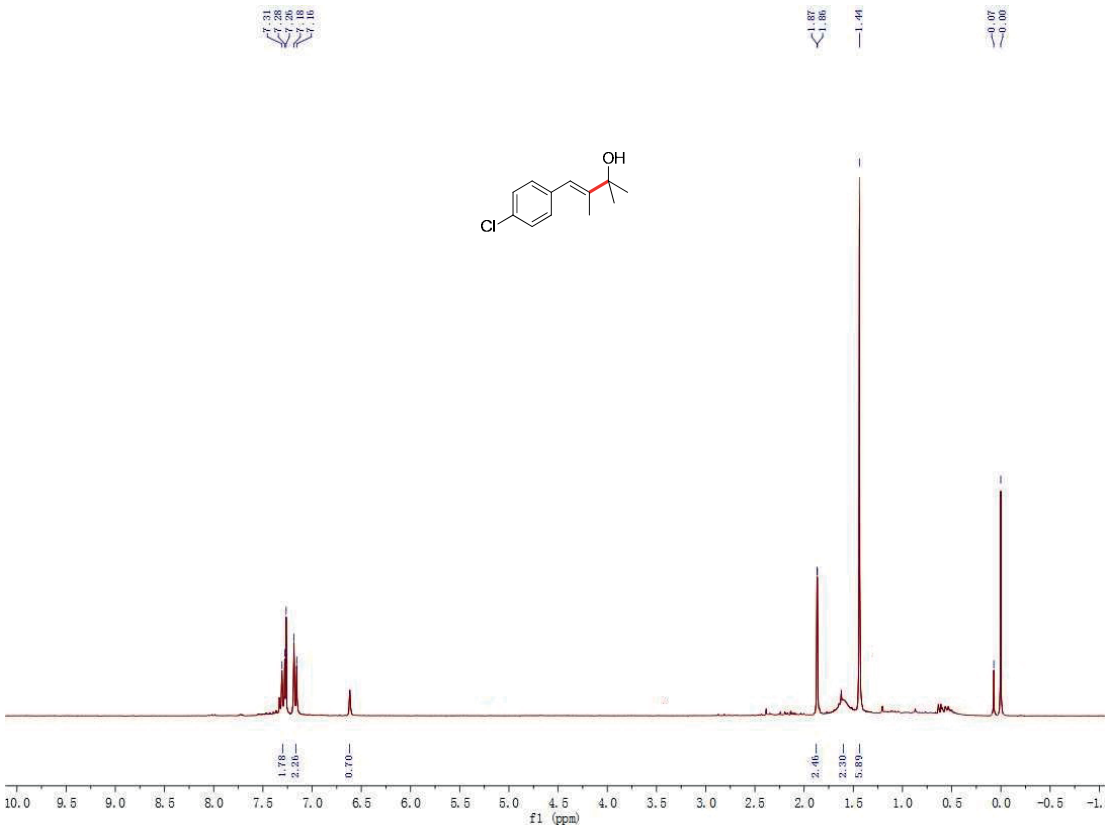


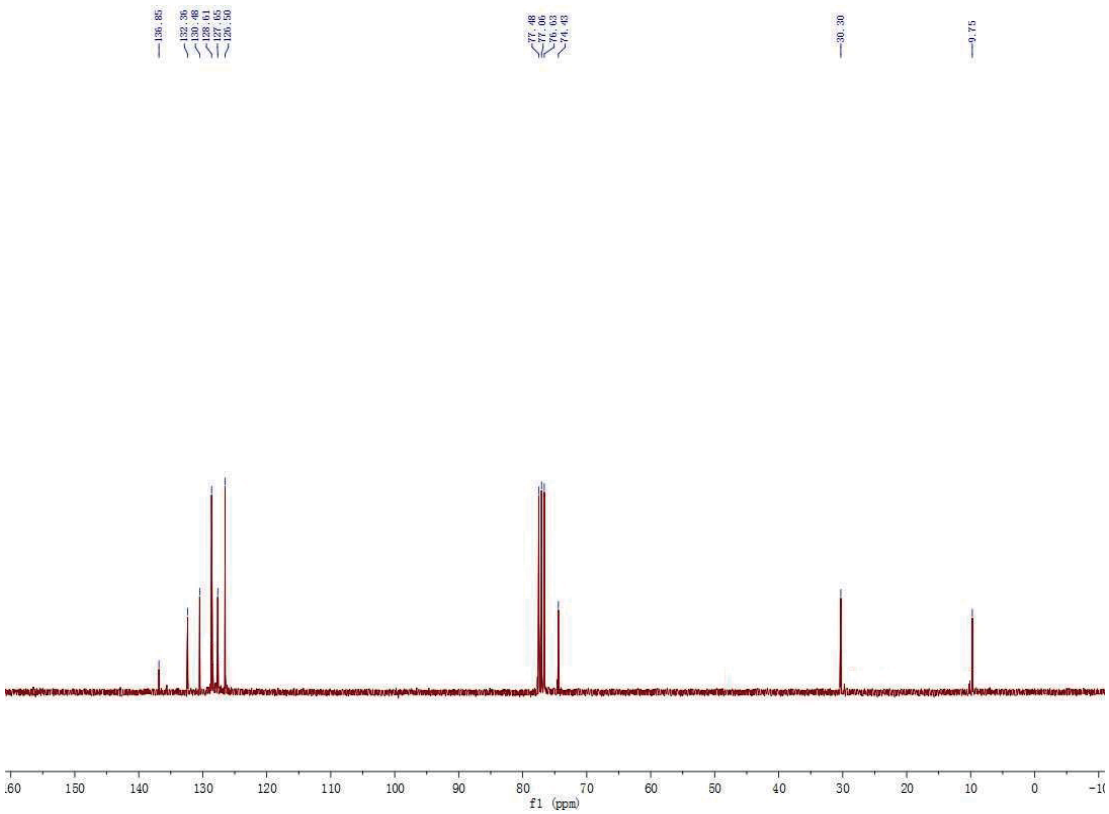
(*E*)-4-(2-chlorophenyl)-2-methylbut-3-en-2-ol (3aq):



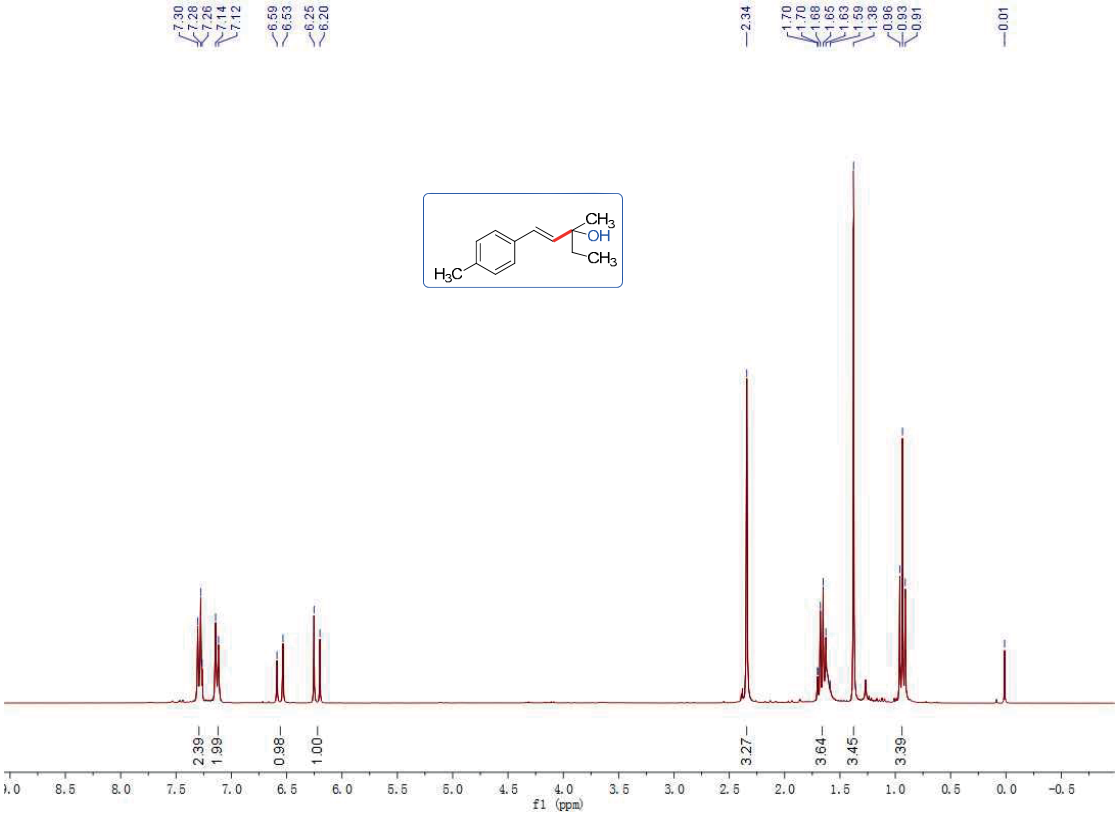


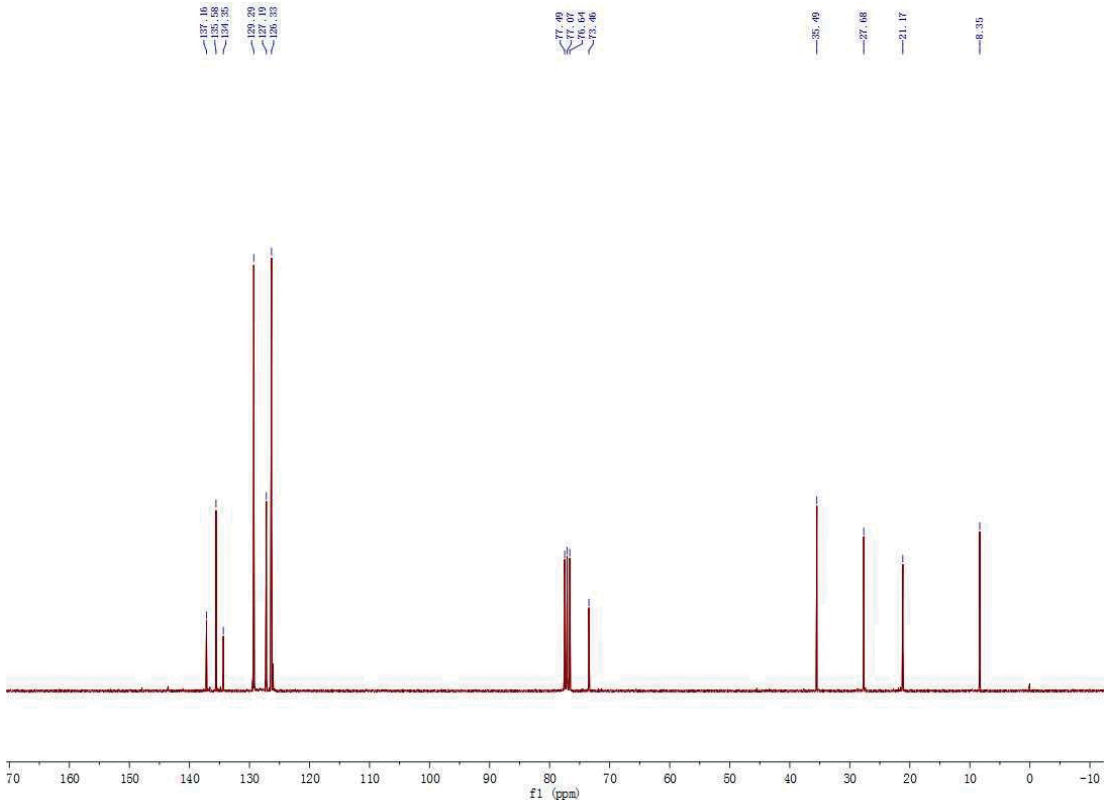
(*E*)-4-(4-chlorophenyl)-2,3-dimethylbut-3-en-2-ol (3ar):



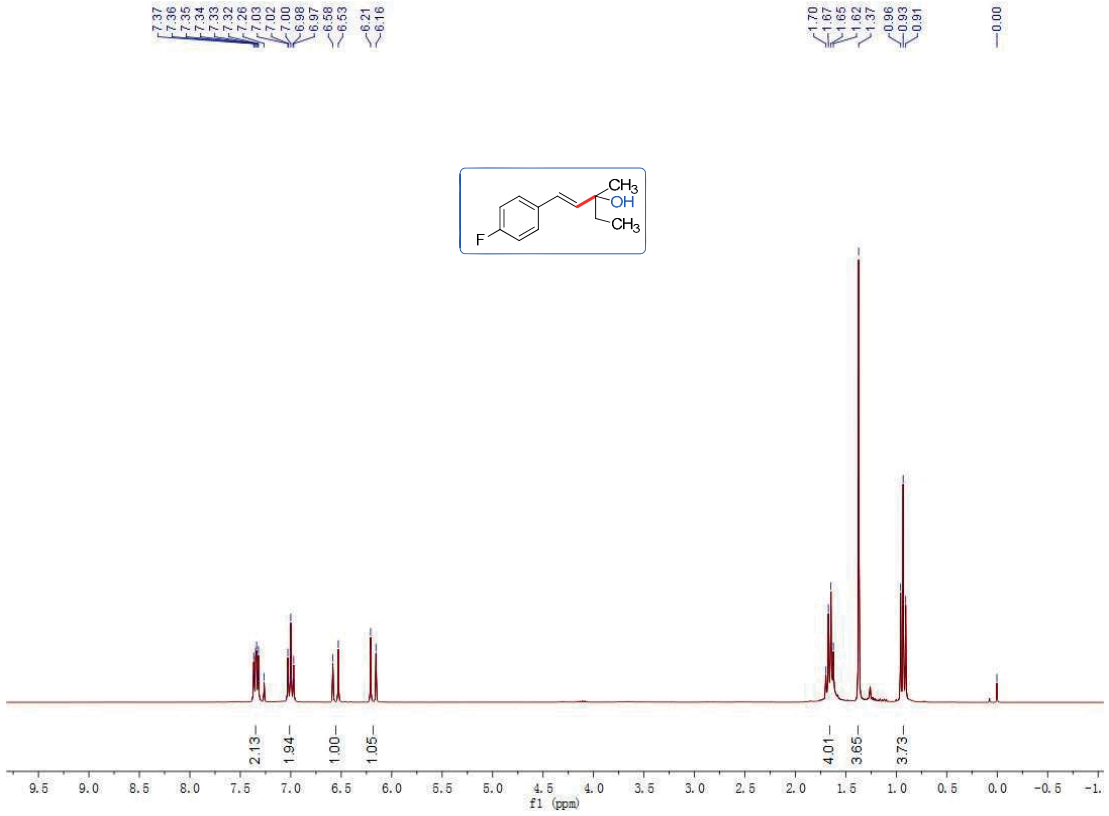


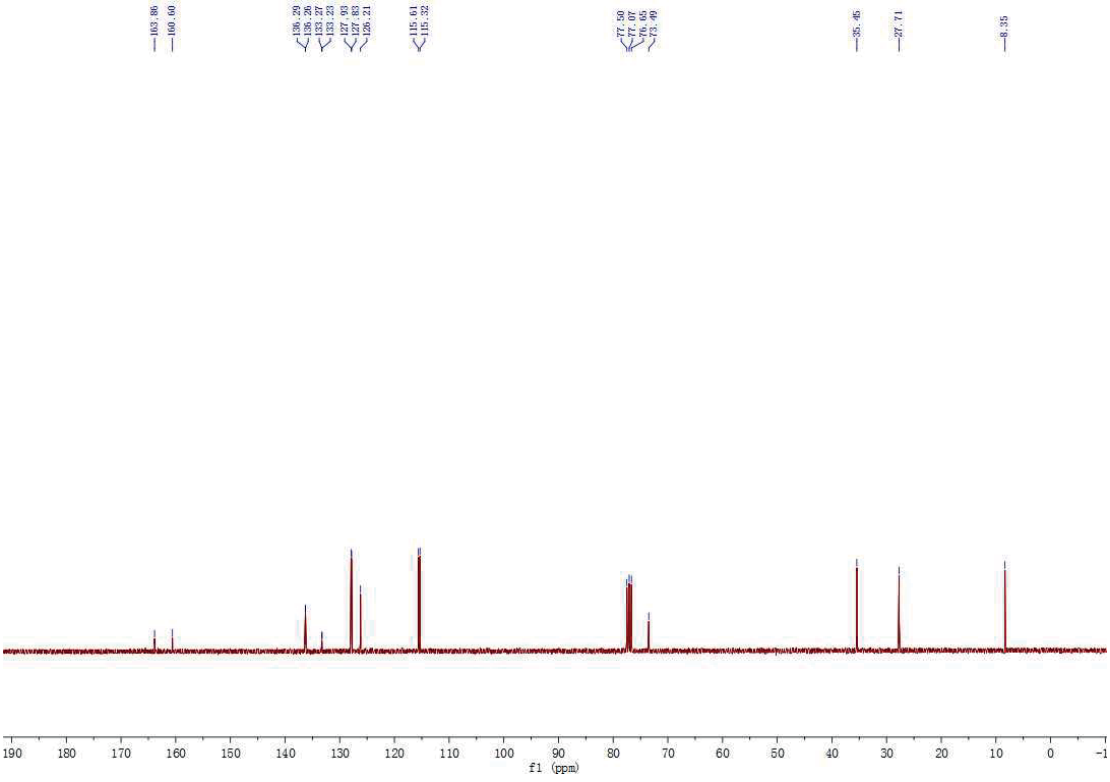
(*E*)-3-methyl-1-(p-tolyl)pent-1-en-3-ol (3ba):



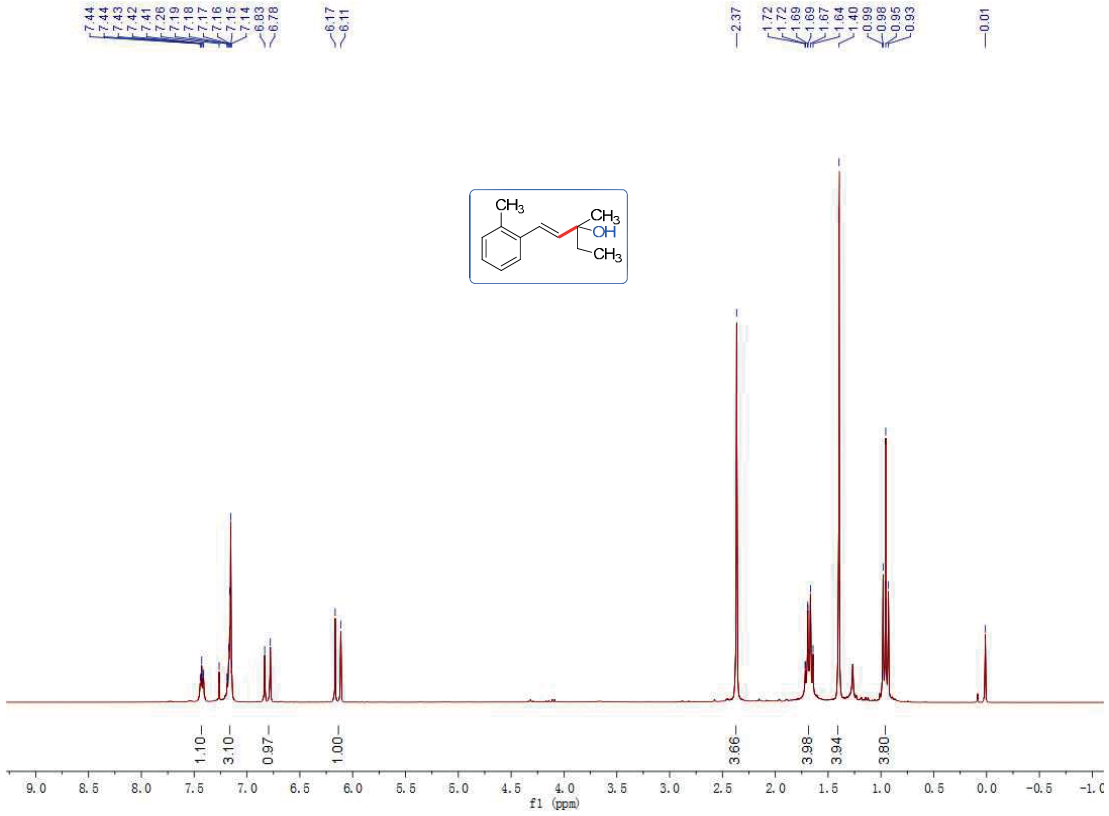


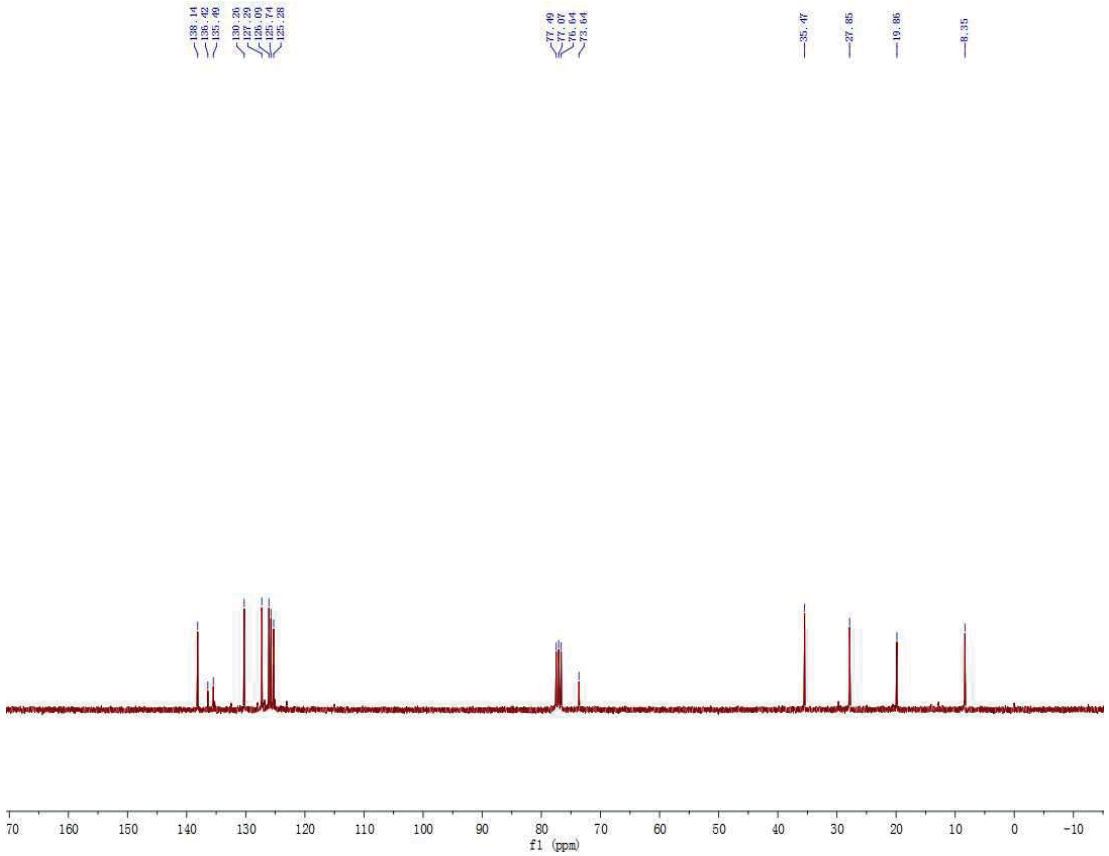
(*E*)-1-(4-fluorophenyl)-3-methylpent-1-en-3-ol (3bb):



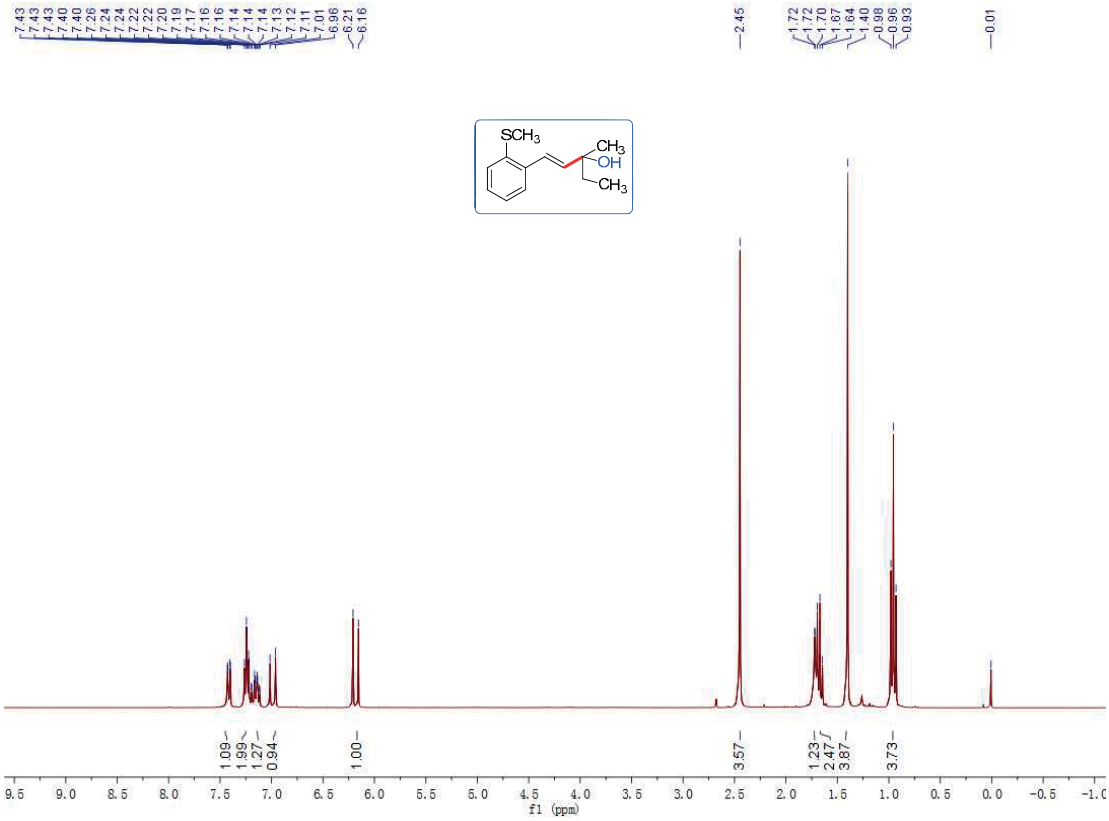


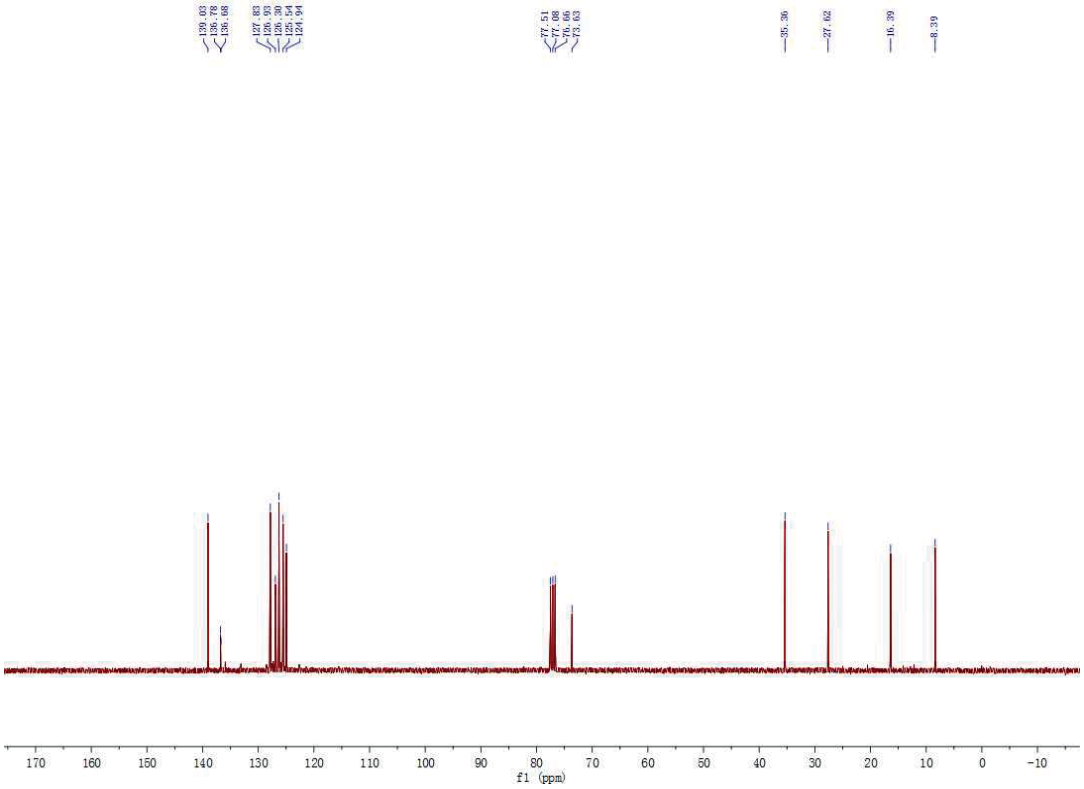
(*E*)-3-methyl-1-(o-tolyl)pent-1-en-3-ol (3bc):



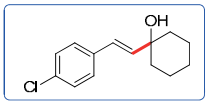


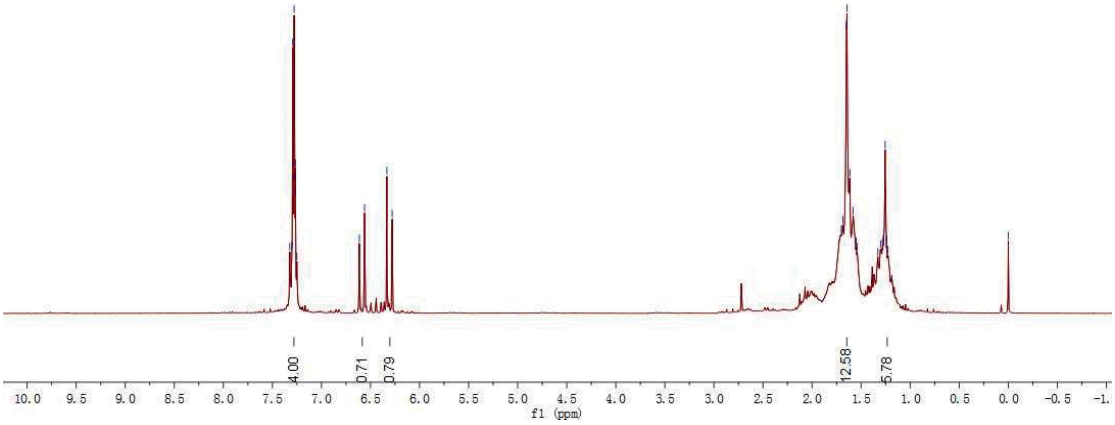
(*E*)-3-methyl-1-(2-(methylthio)phenyl)pent-1-en-3-ol(3bd):

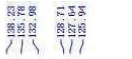


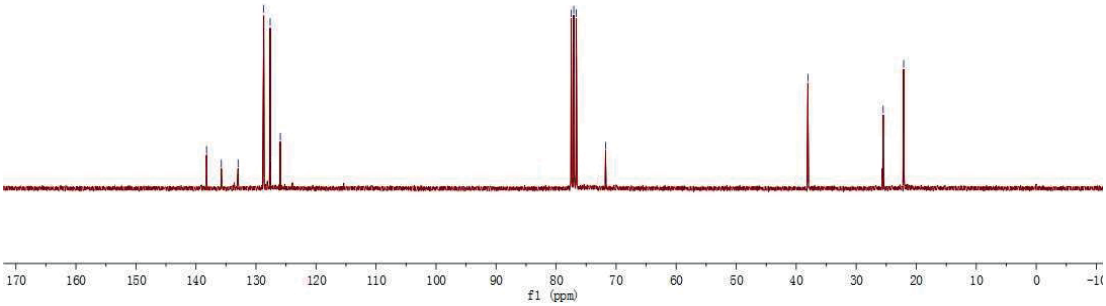


(*E*)-1-(4-chlorostyryl)cyclohexanol (3be):

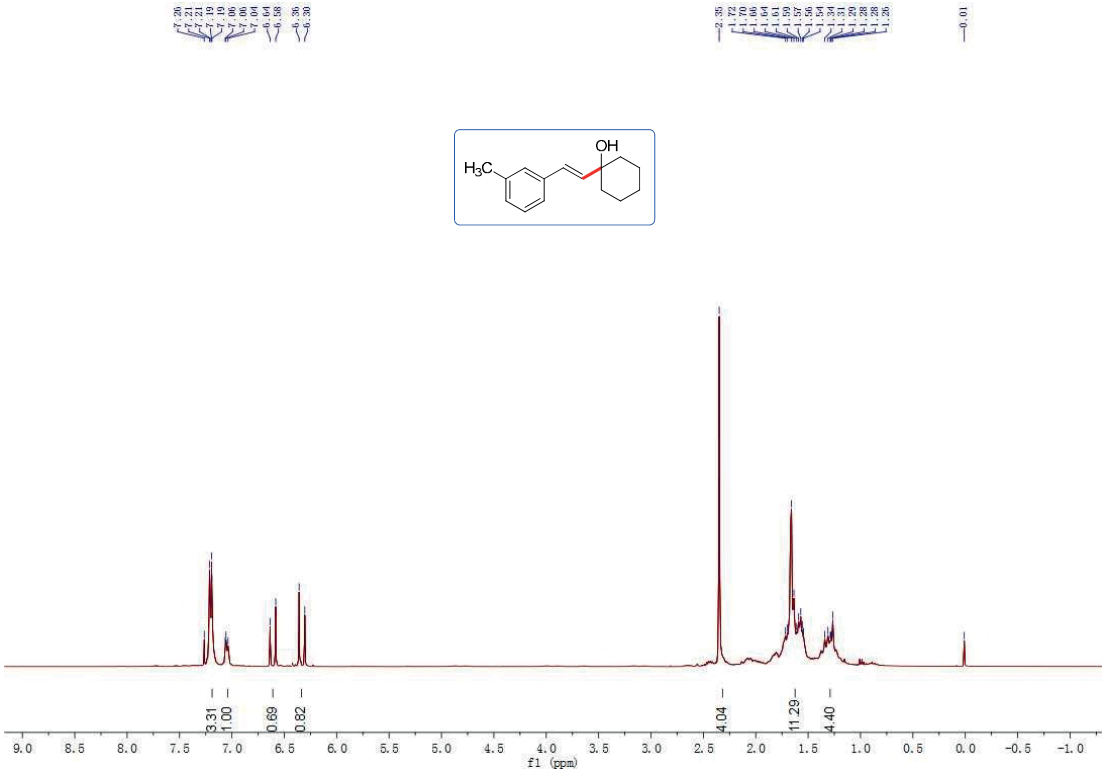


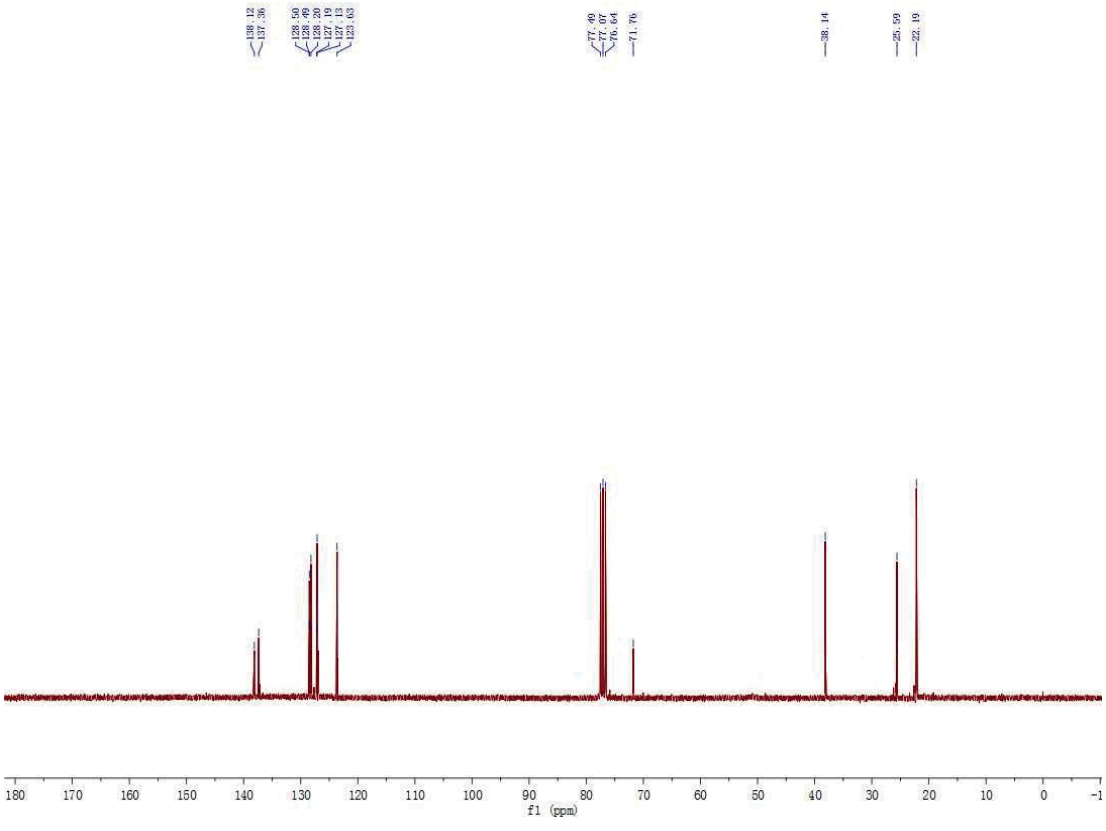




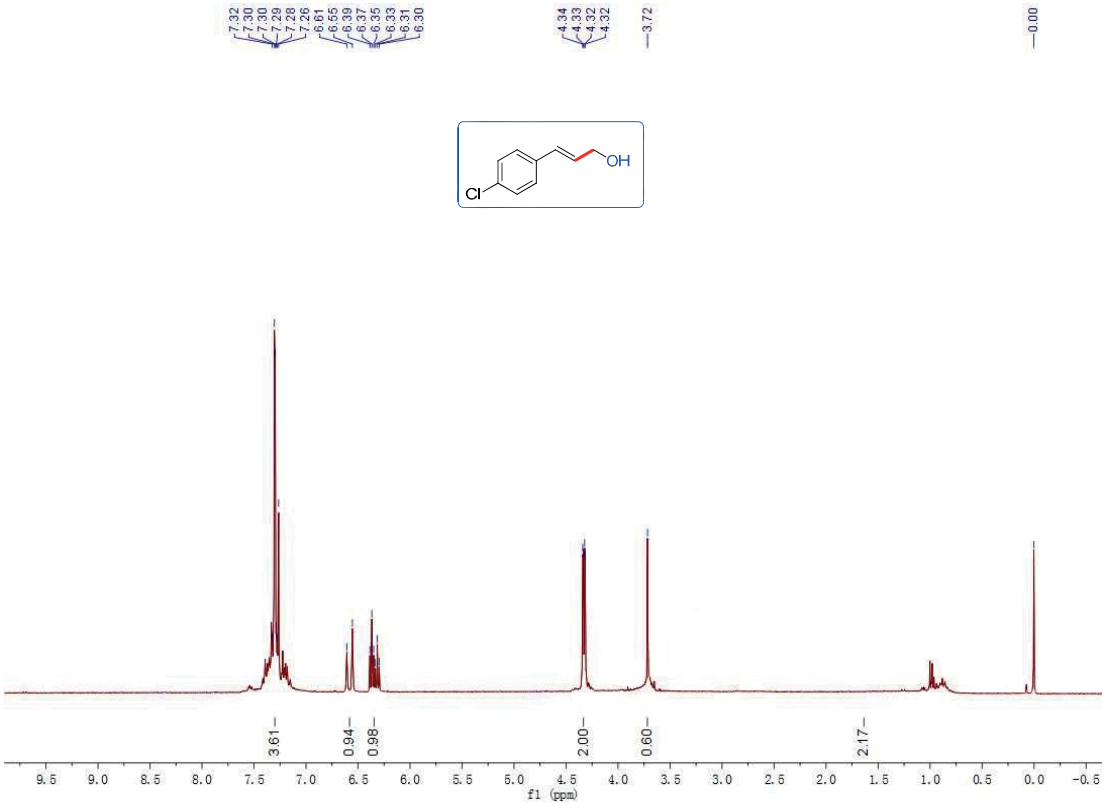


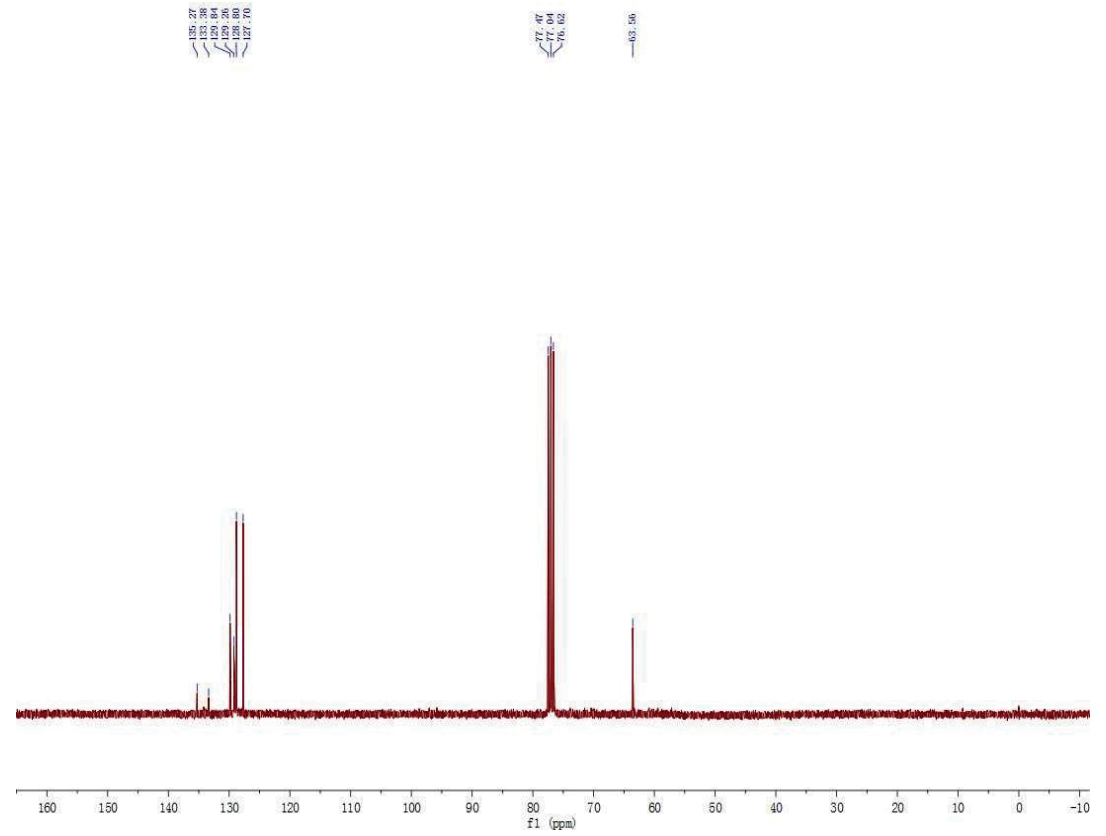
(*E*)-1-(3-methylstyryl)cyclohexanol(3bf):



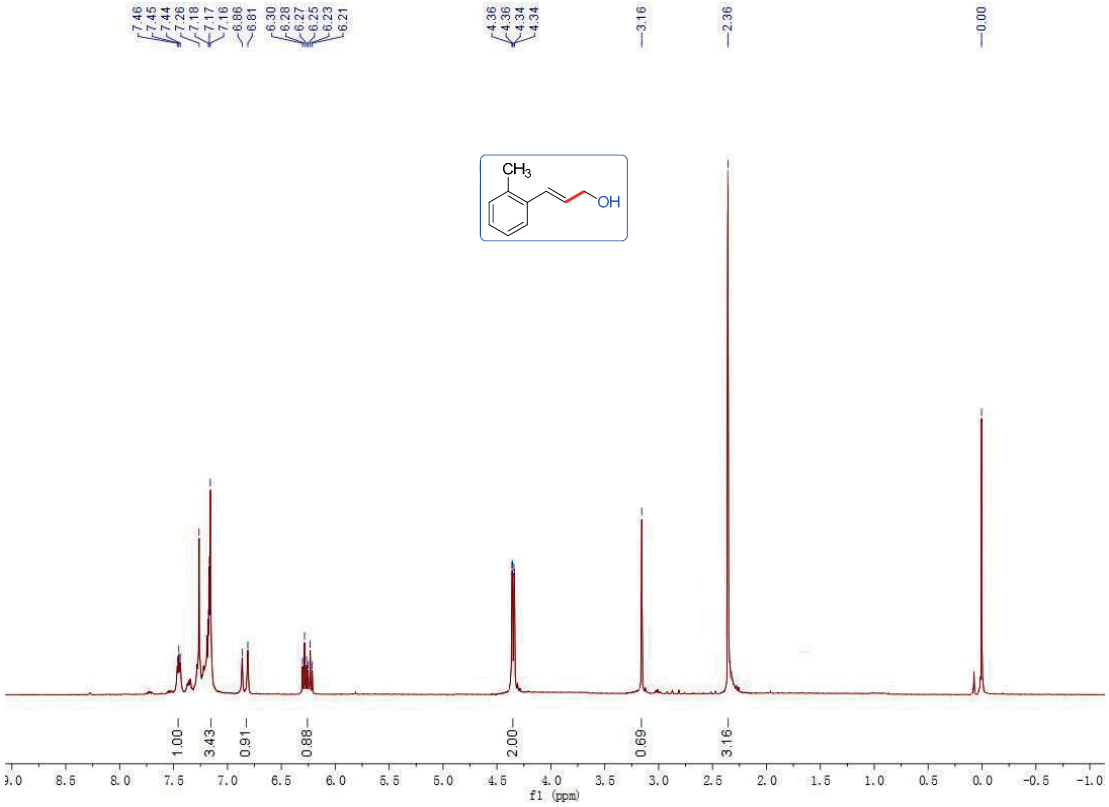


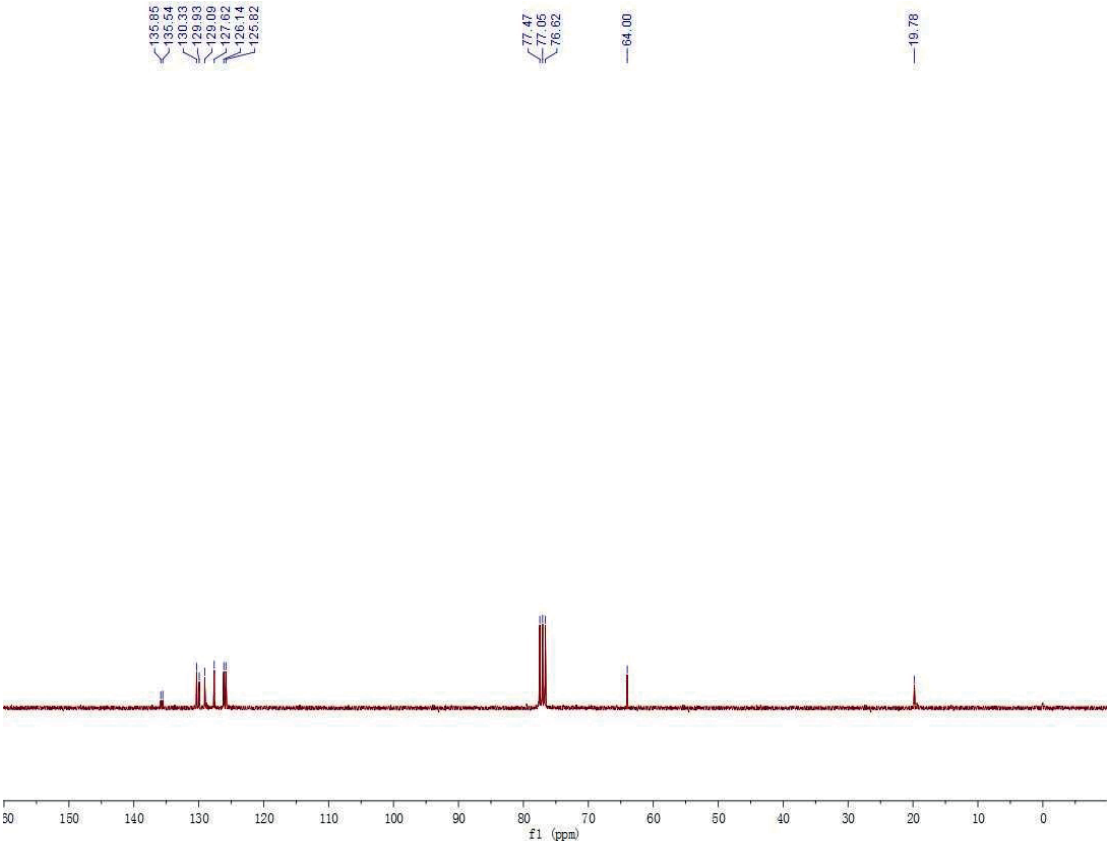
(*E*)-3-(4-chlorophenyl)prop-2-en-1-ol(3ca):



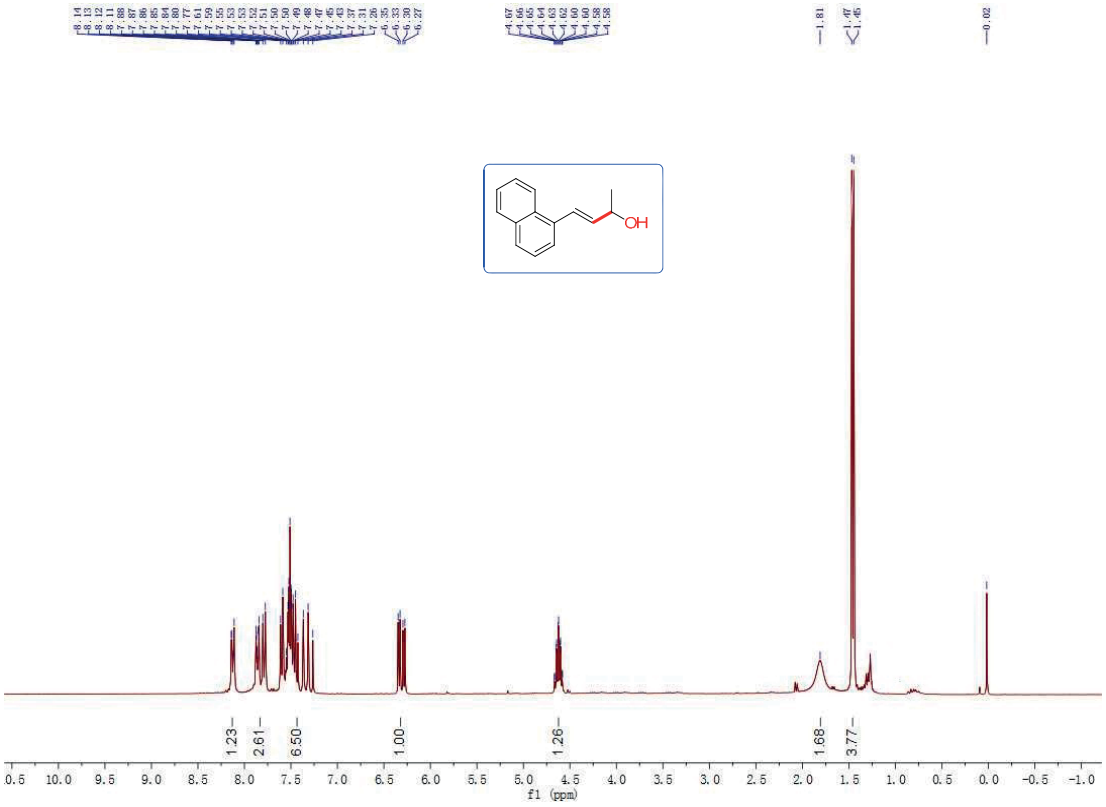


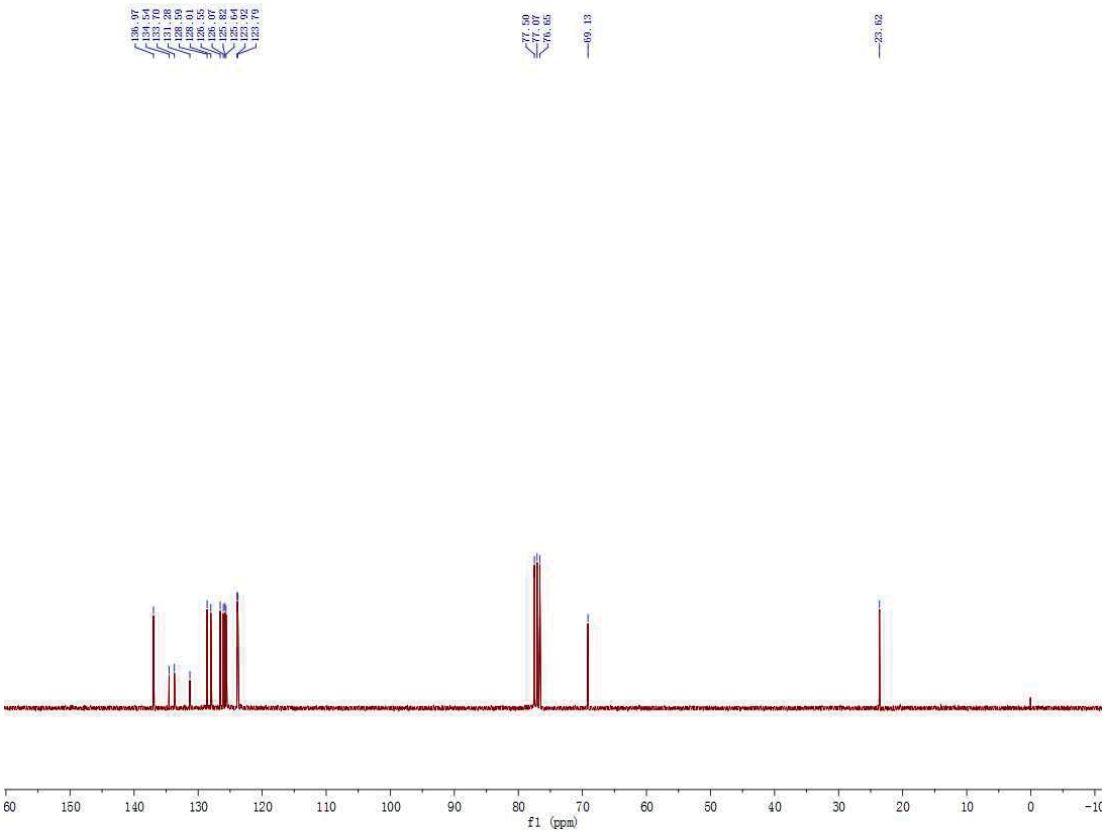
(*E*)-3-(o-tolyl)prop-2-en-1-ol (3cb):



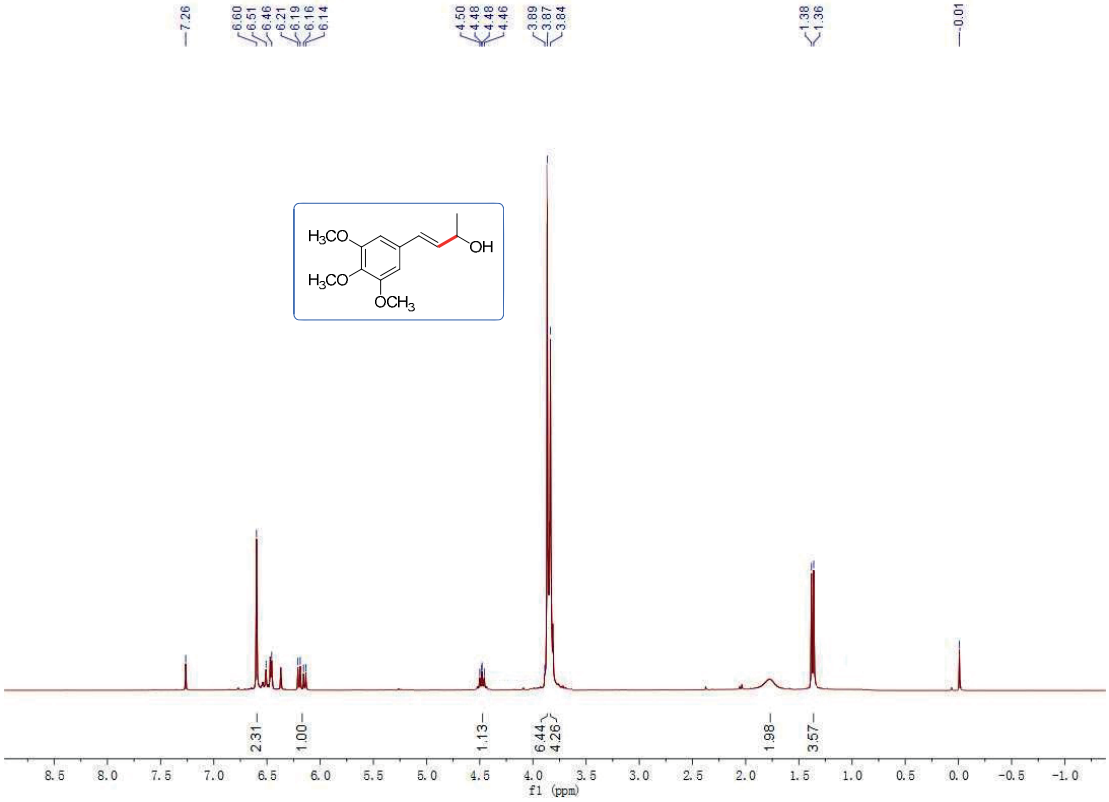


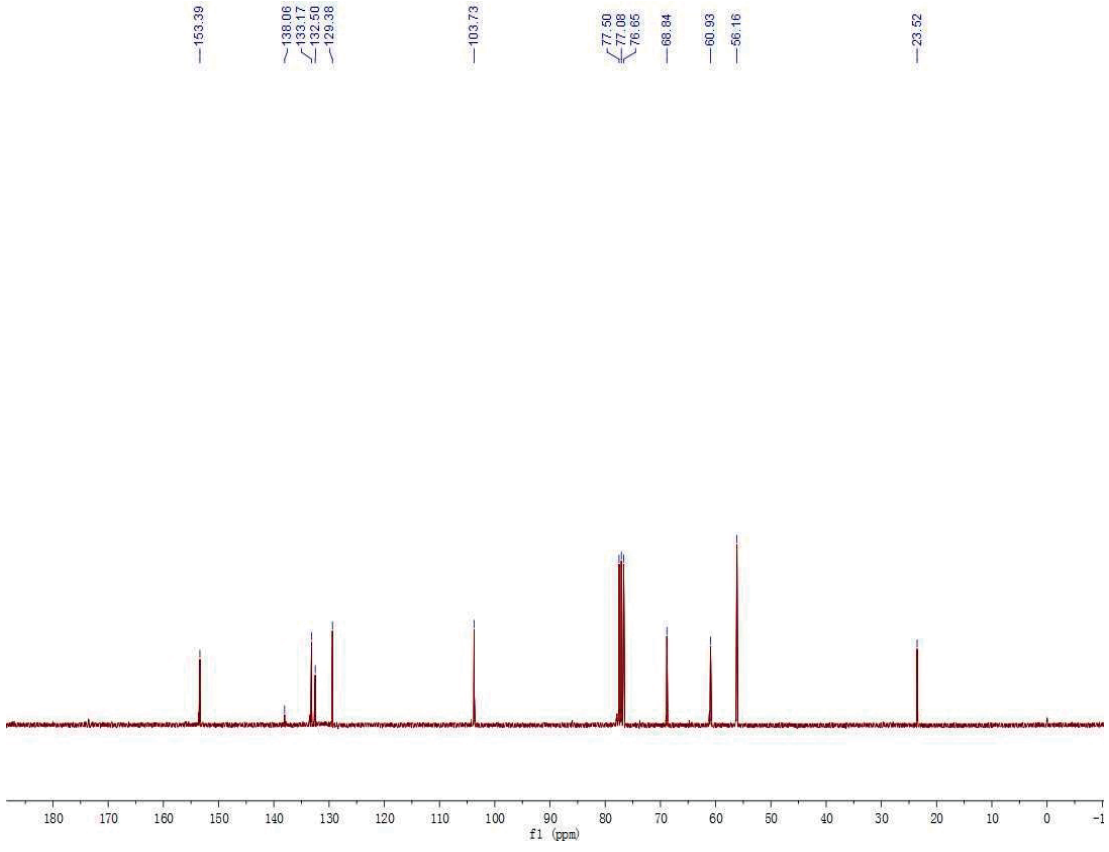
(*E*)-4-(naphthalen-1-yl)but-3-en-2-ol(3cc):



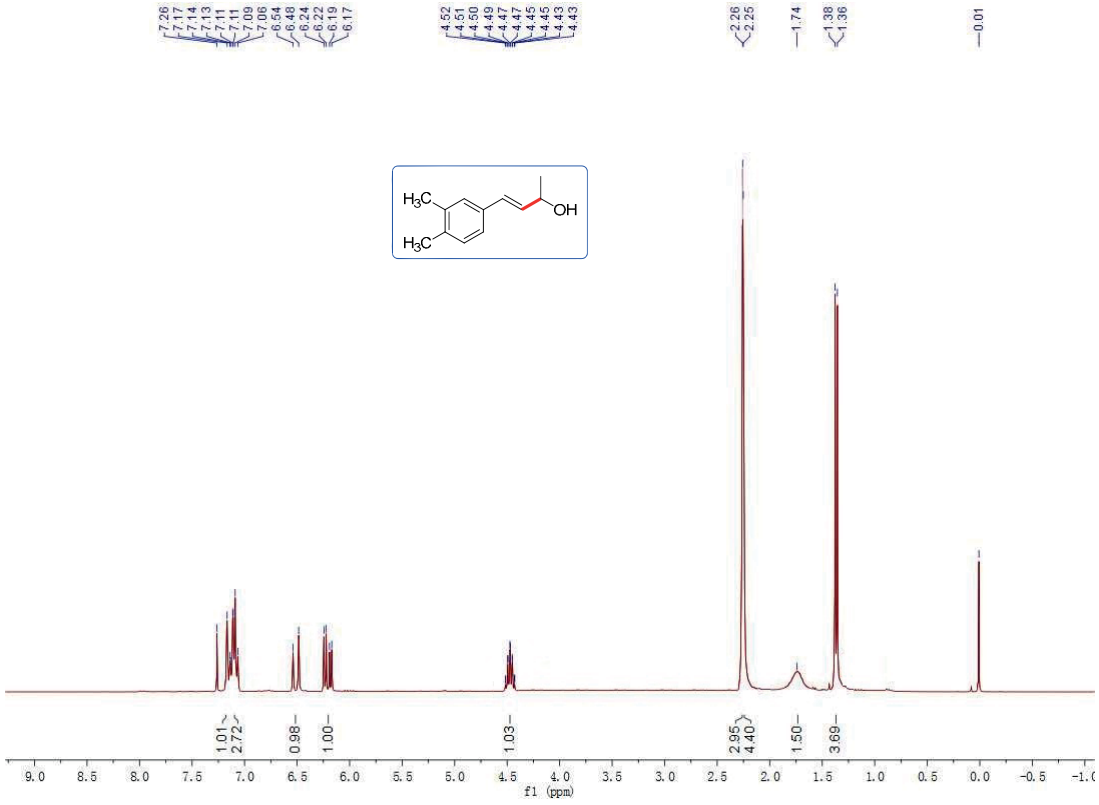


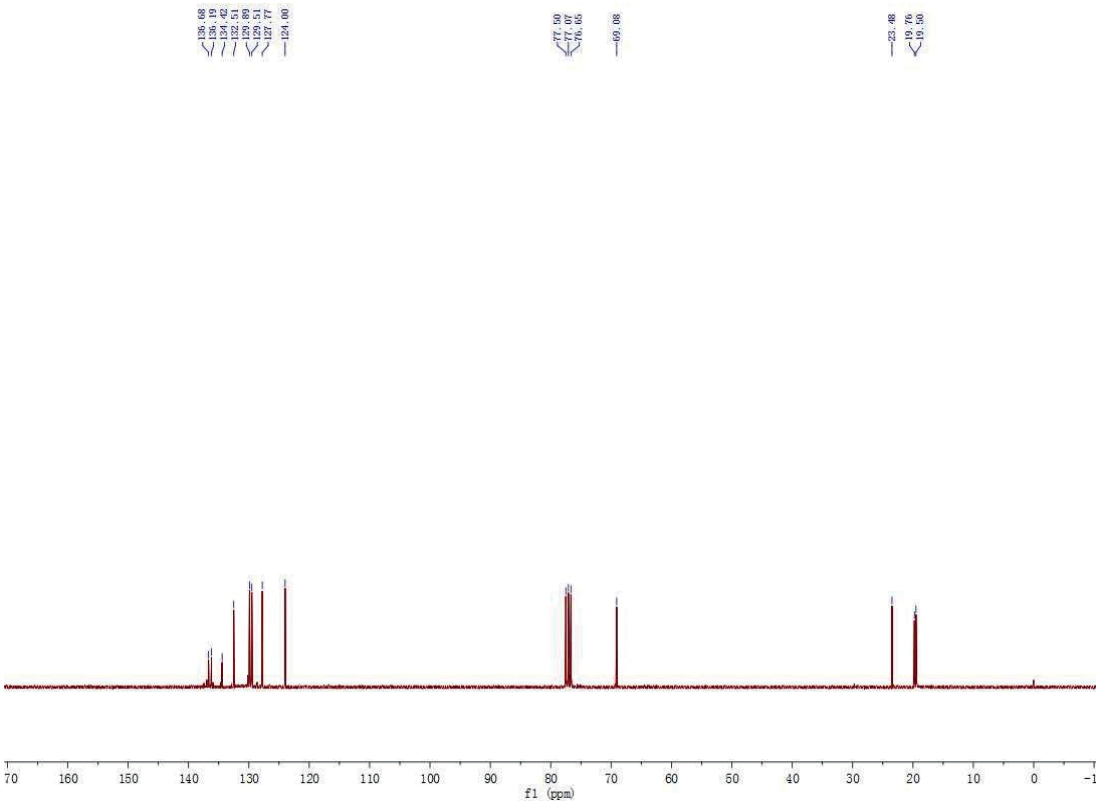
(*E*)-4-(3,4,5-trimethoxyphenyl)but-3-en-2-ol (3cd) :



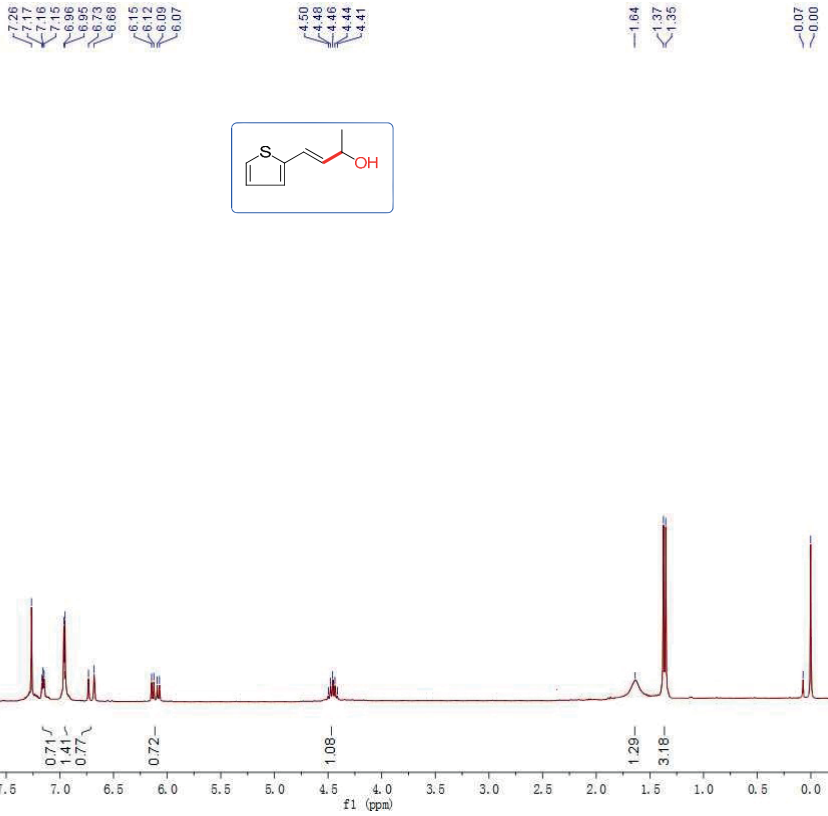


(*E*)-4-(3,4-dimethylphenyl)but-3-en-2-ol (3ce):

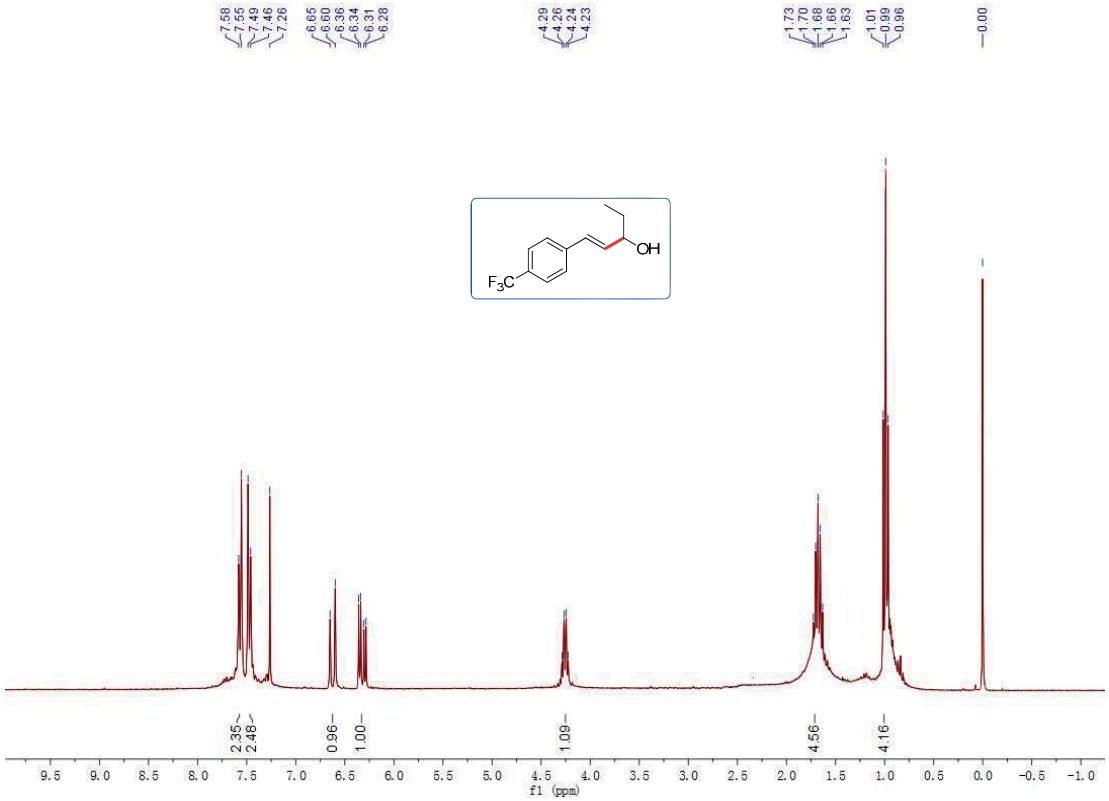


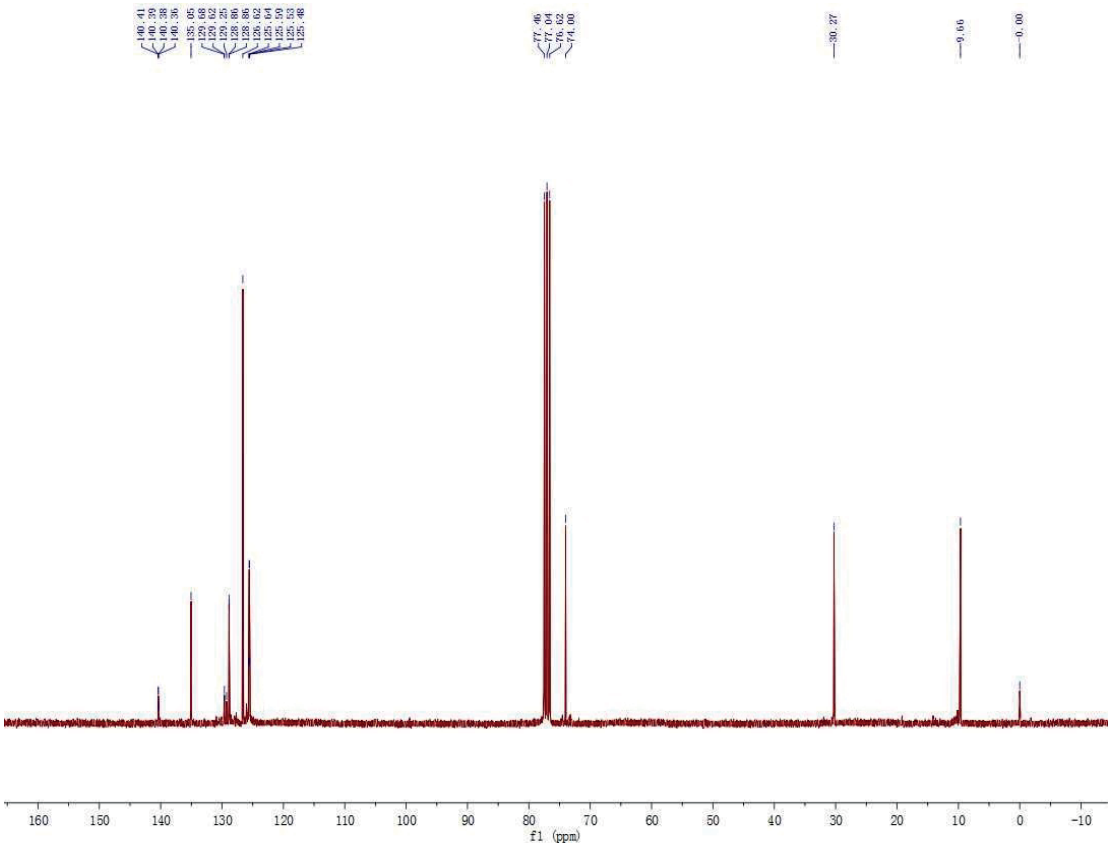


(*E*)-4-(thiophen-2-yl)but-3-en-2-ol(3cf):

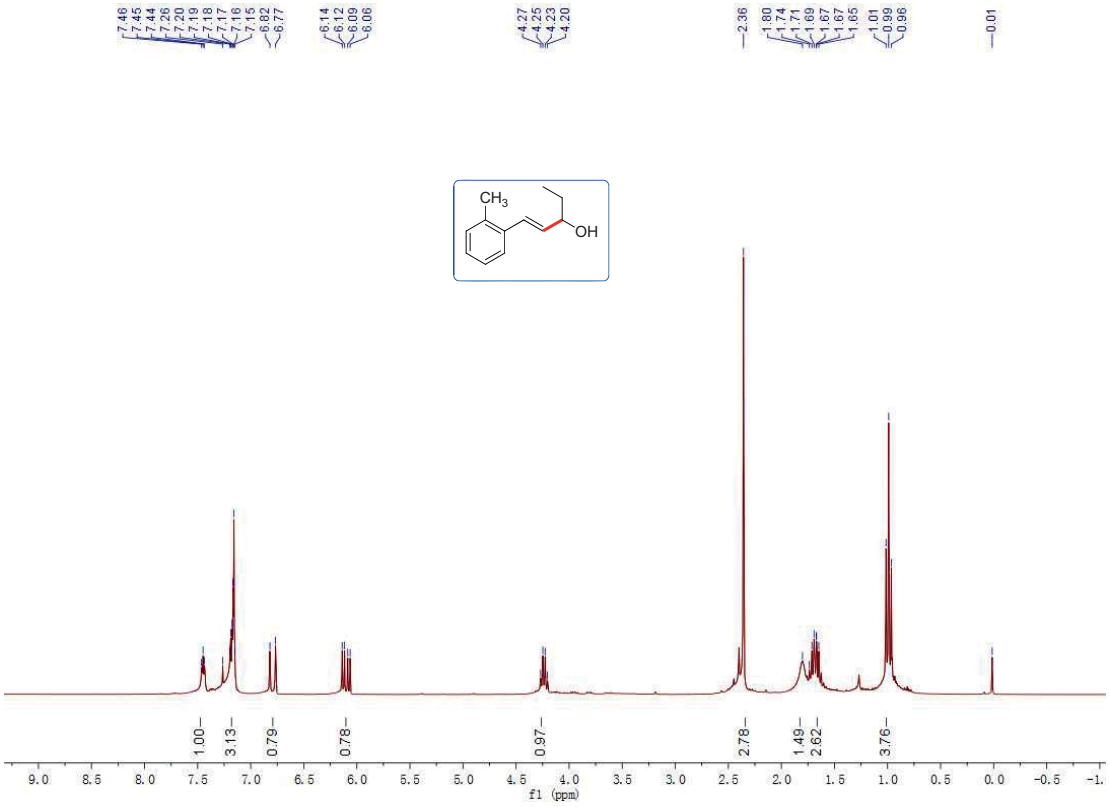


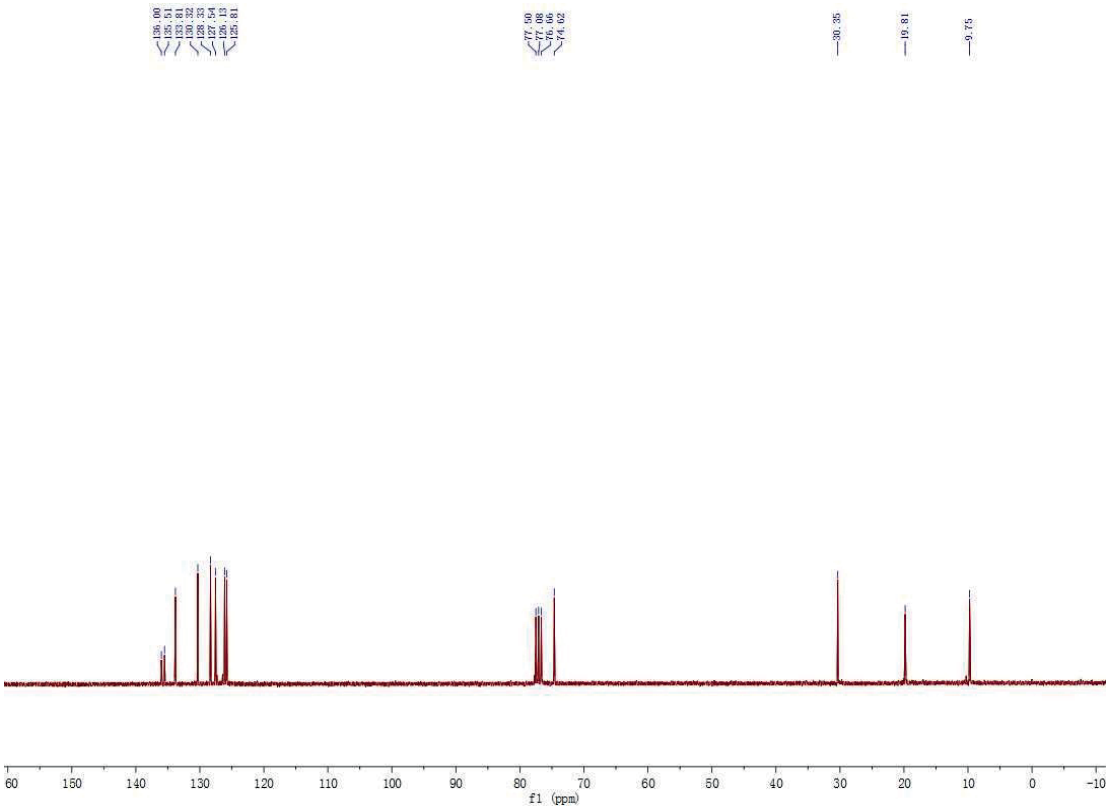
(*E*)-1-(4-(trifluoromethyl)phenyl)pent-1-en-3-ol (3cg):



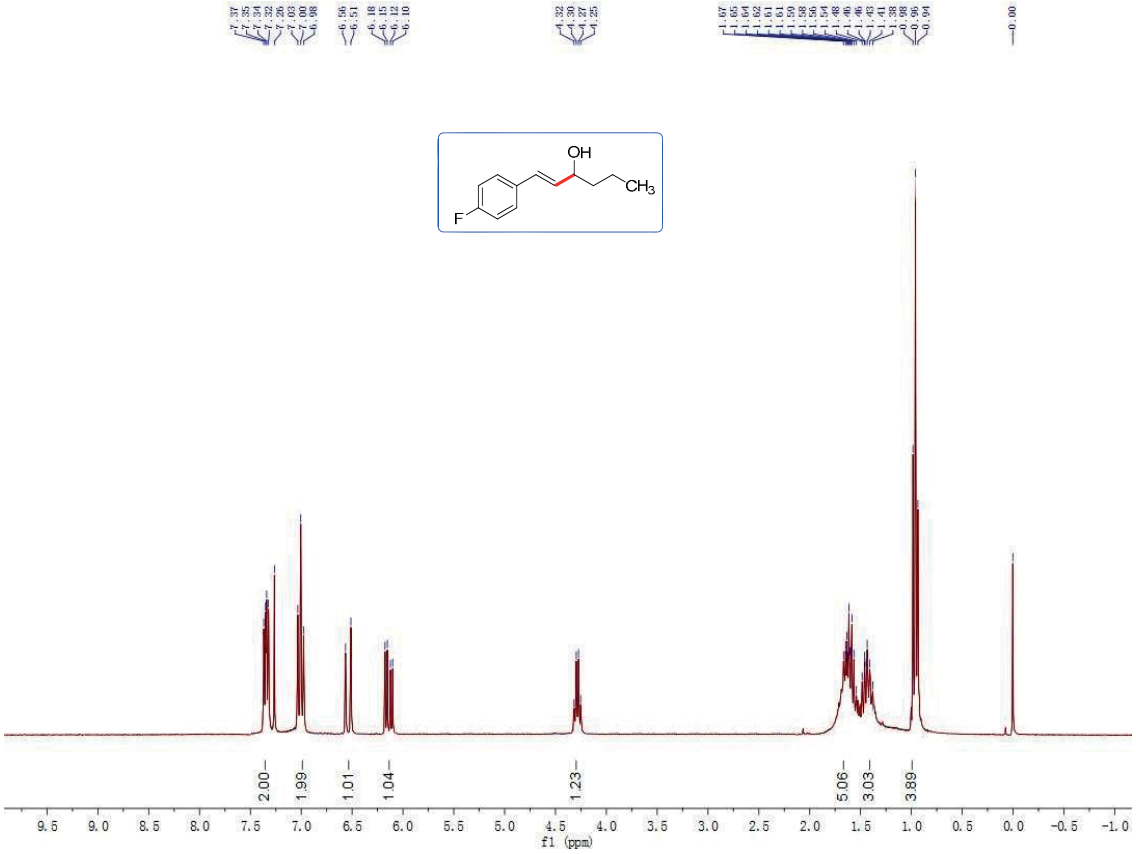


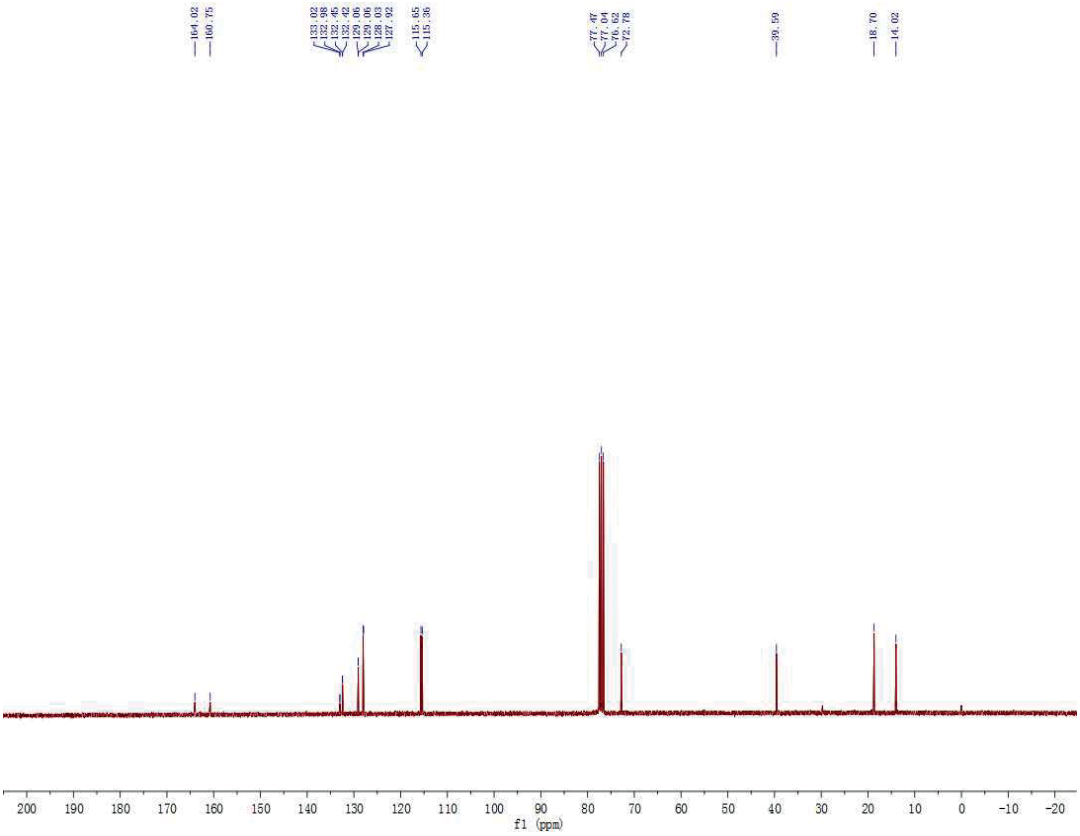
(*E*)-1-(o-tolyl)pent-1-en-3-ol (3ch):



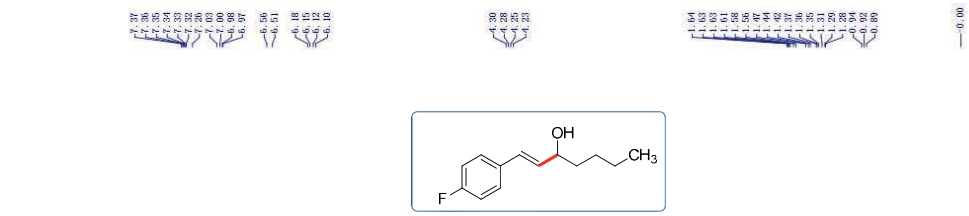


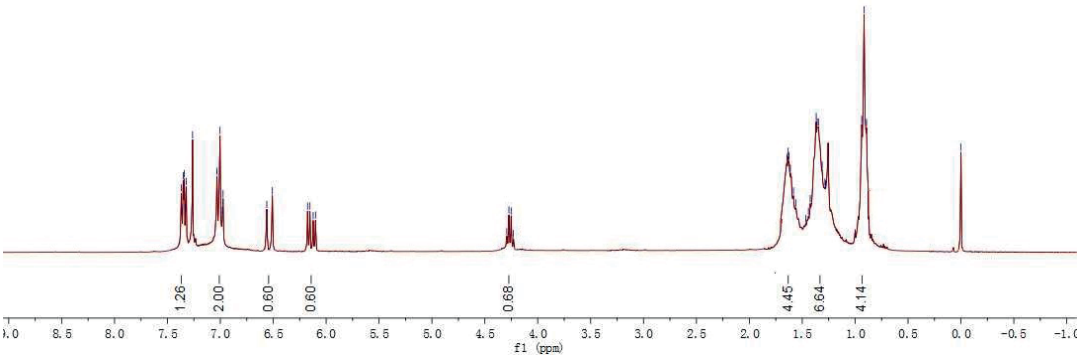
(*E*)-1-(4-fluorophenyl)hex-1-en-3-ol (3ci):

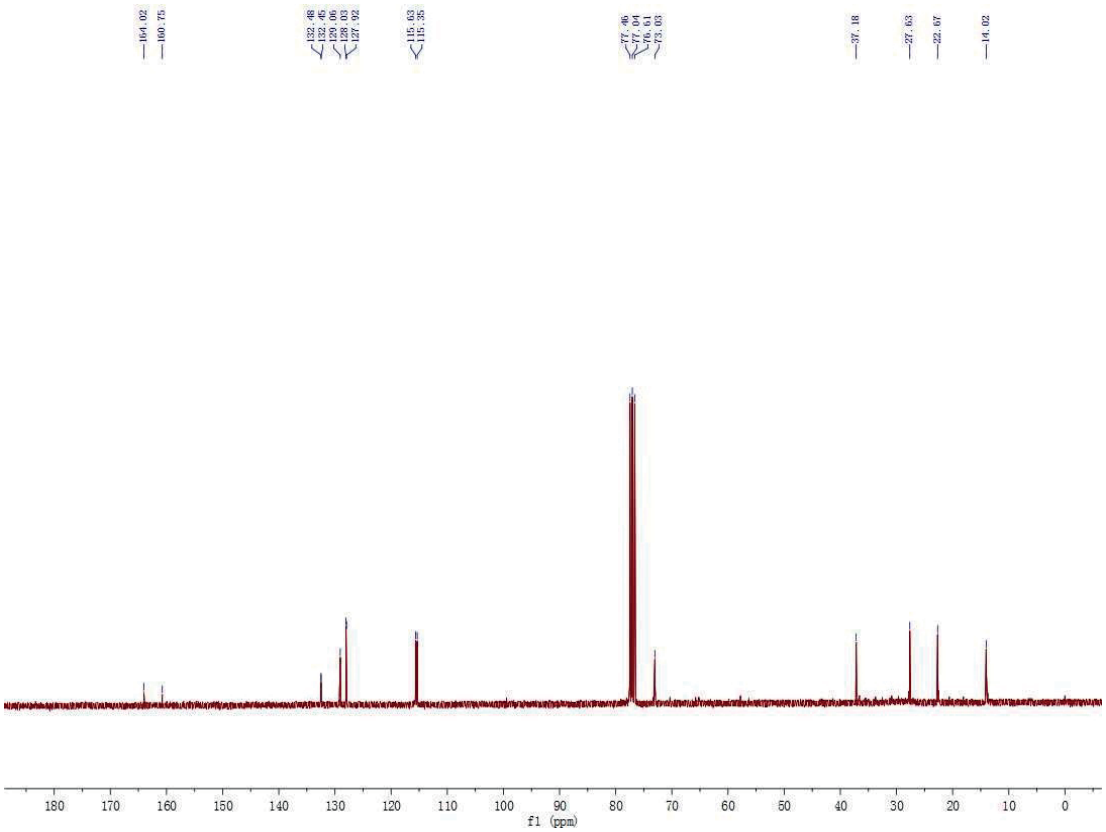




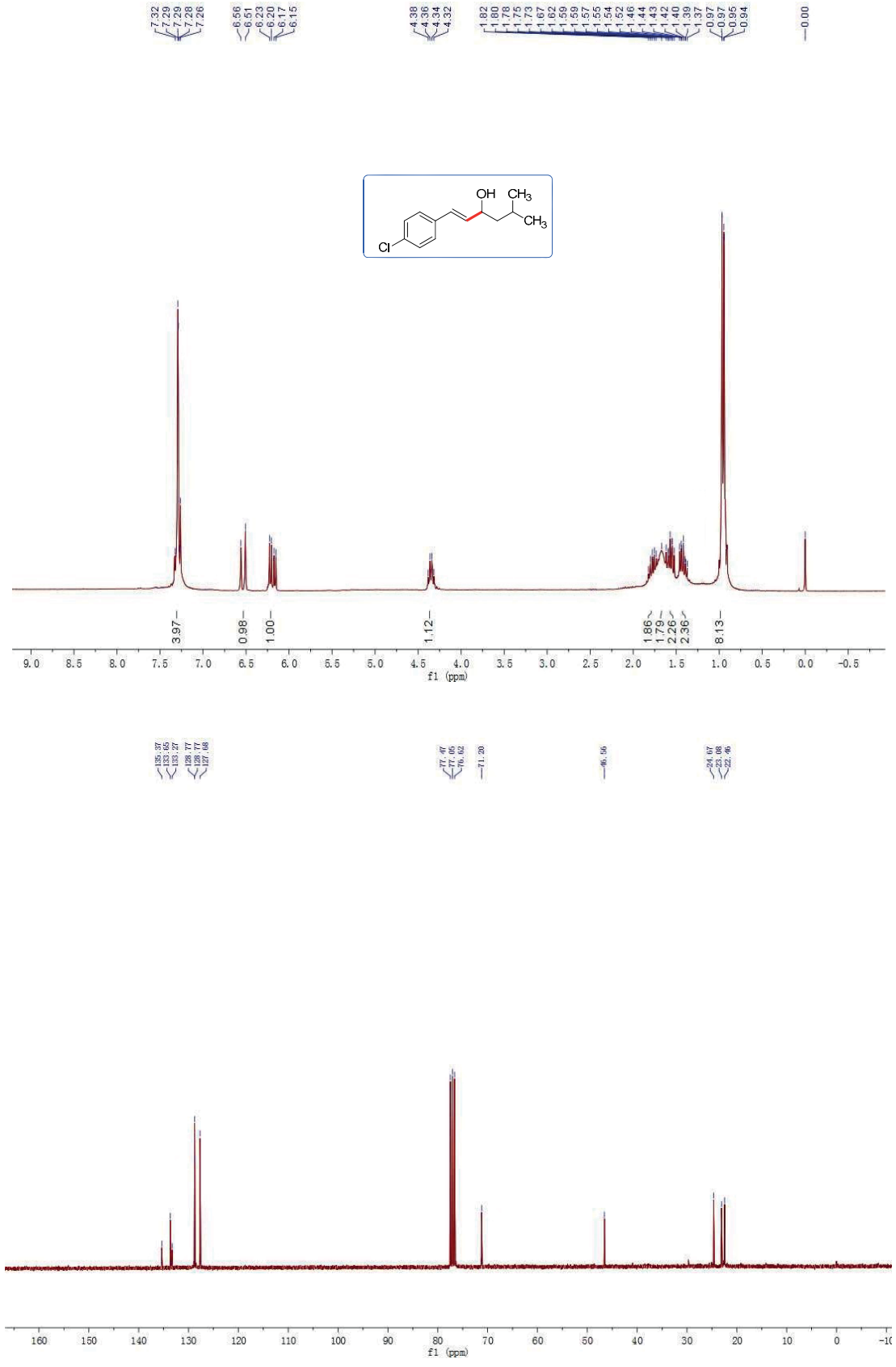
(*E*)-1-(4-fluorophenyl)hept-1-en-3-ol (3cj):



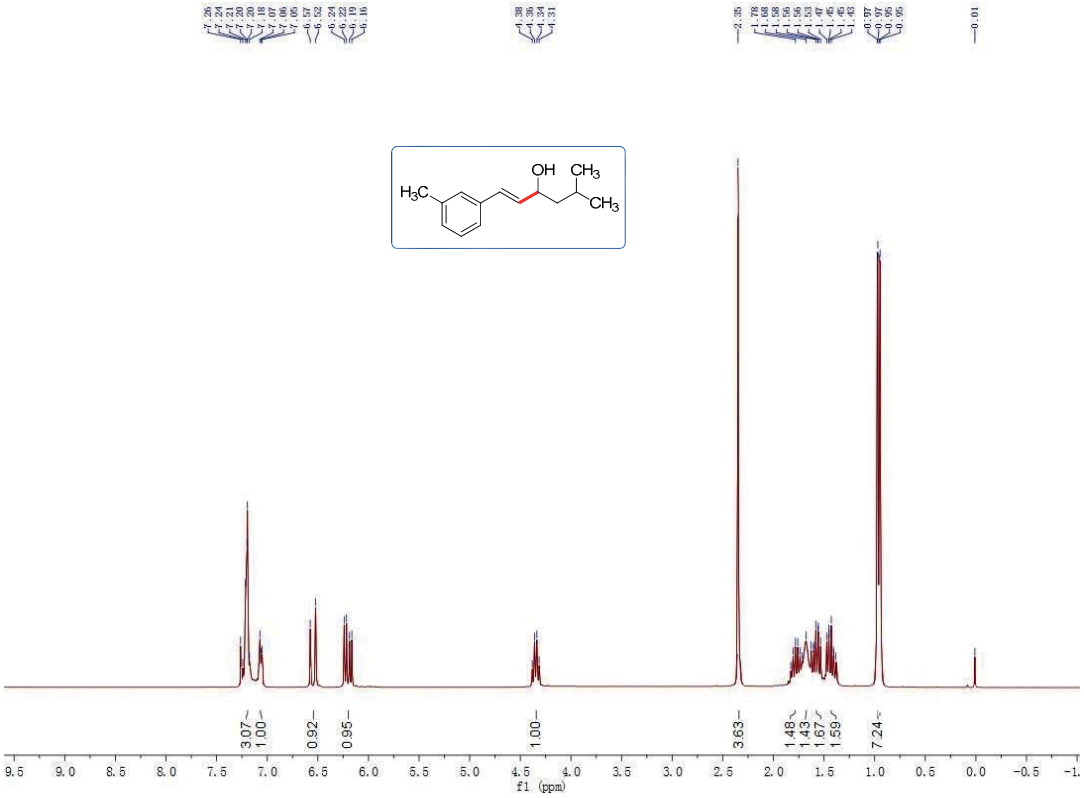


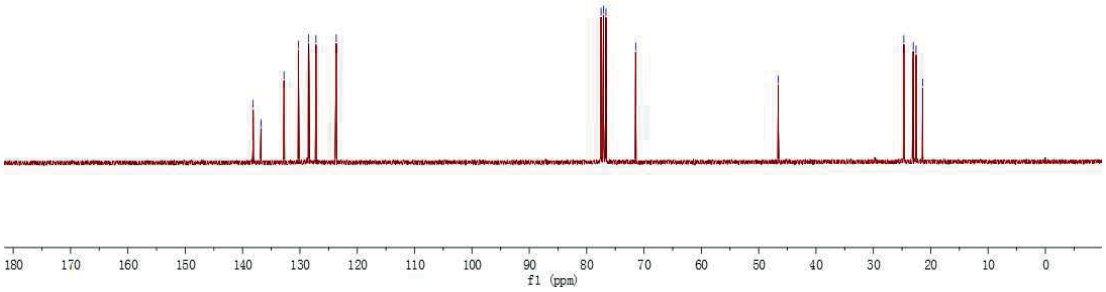


(*E*)-1-(4-chlorophenyl)-5-methylhex-1-en-3-ol (3ck):

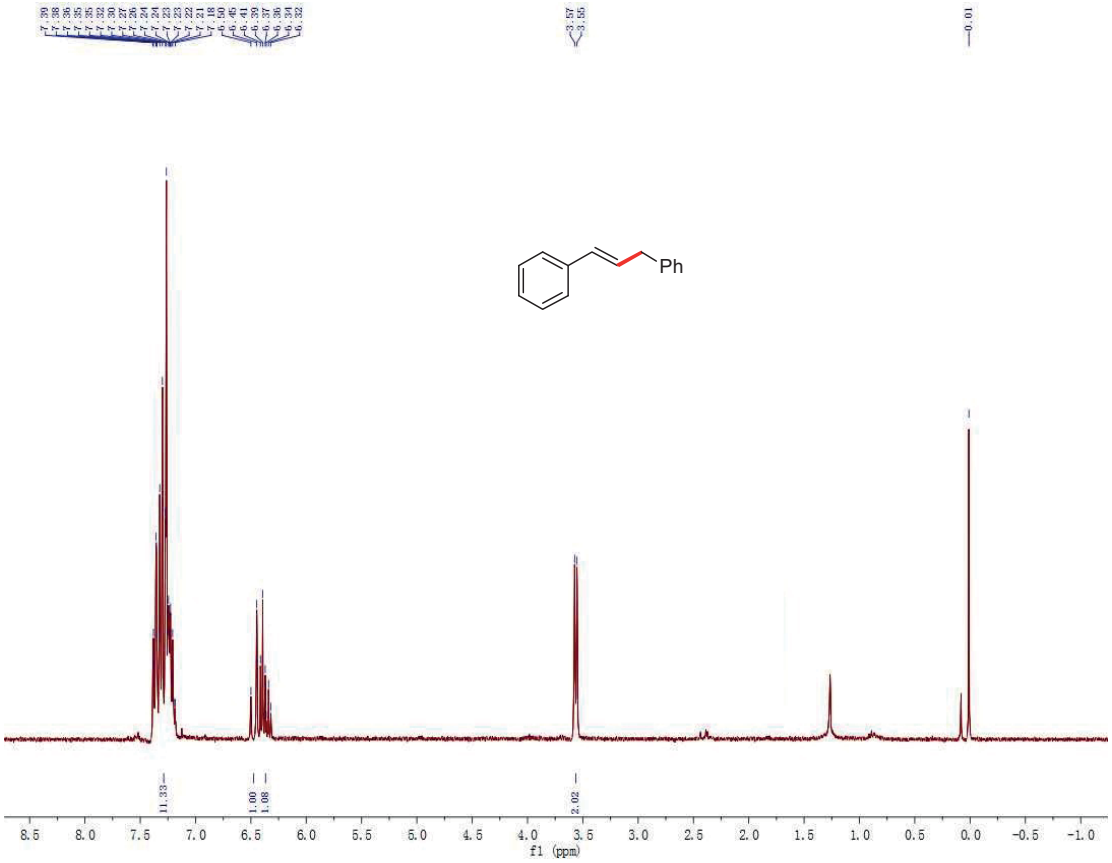


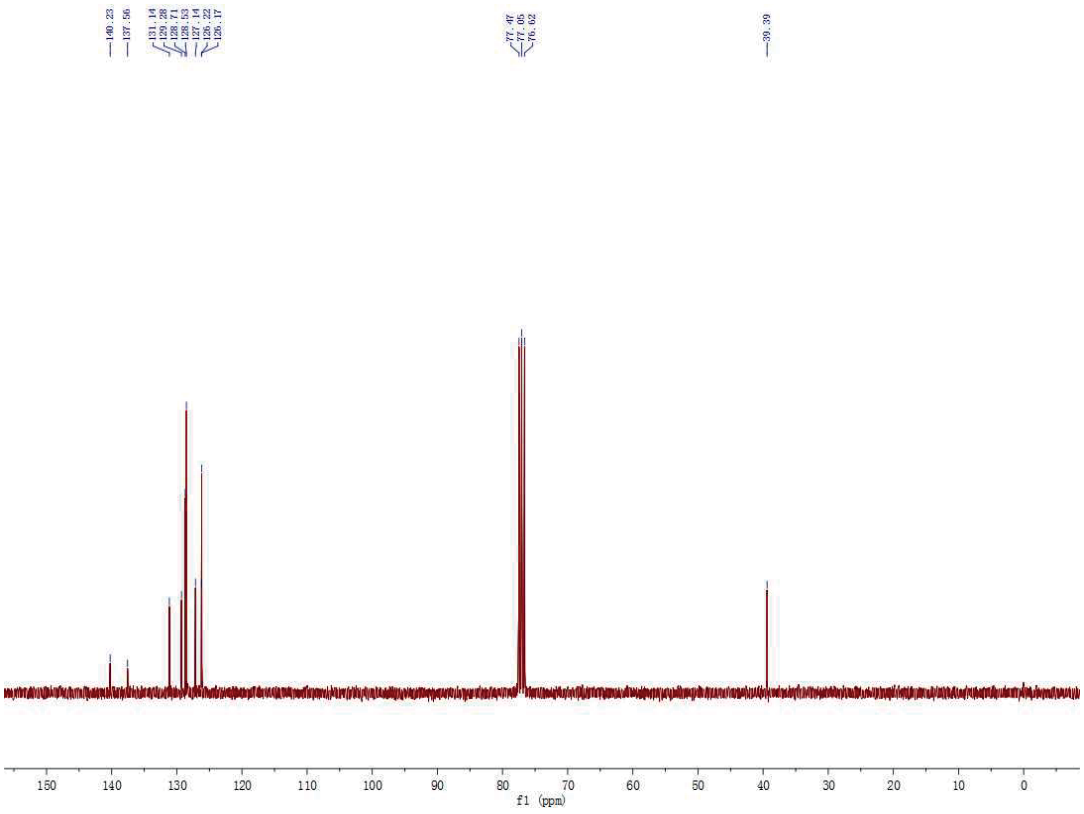
(*E*)-5-methyl-1-(m-tolyl)hex-1-en-3-ol (3cl):



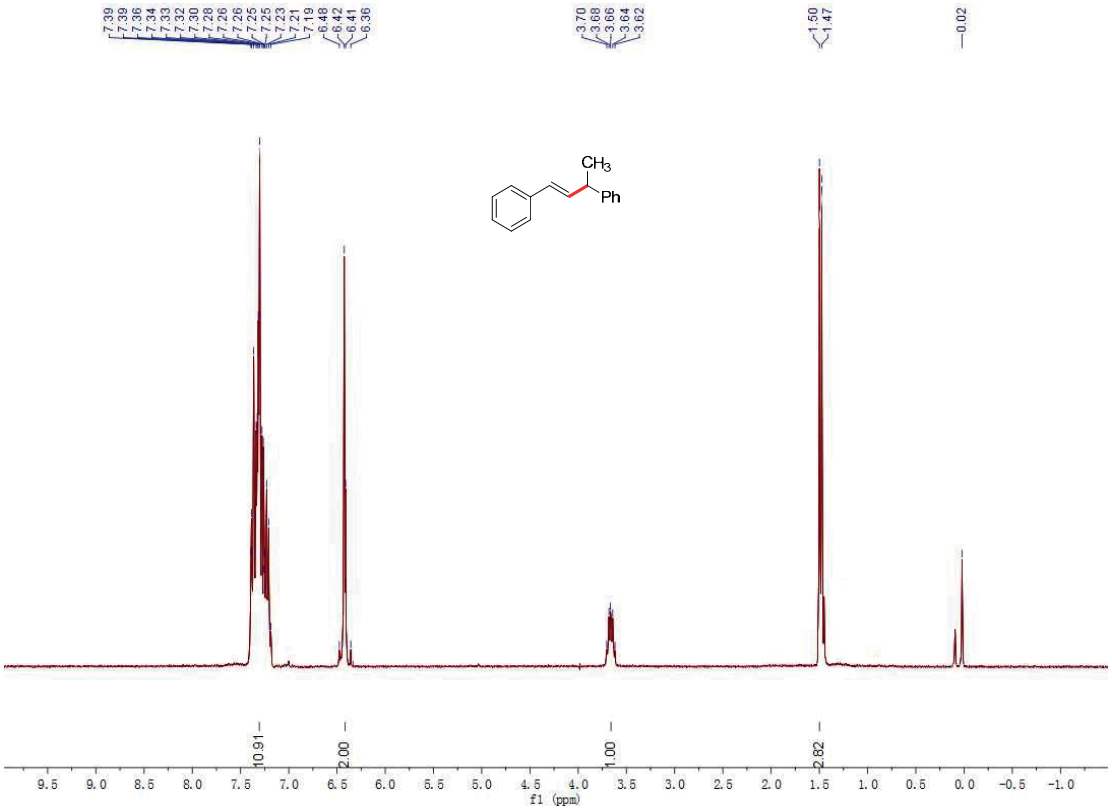


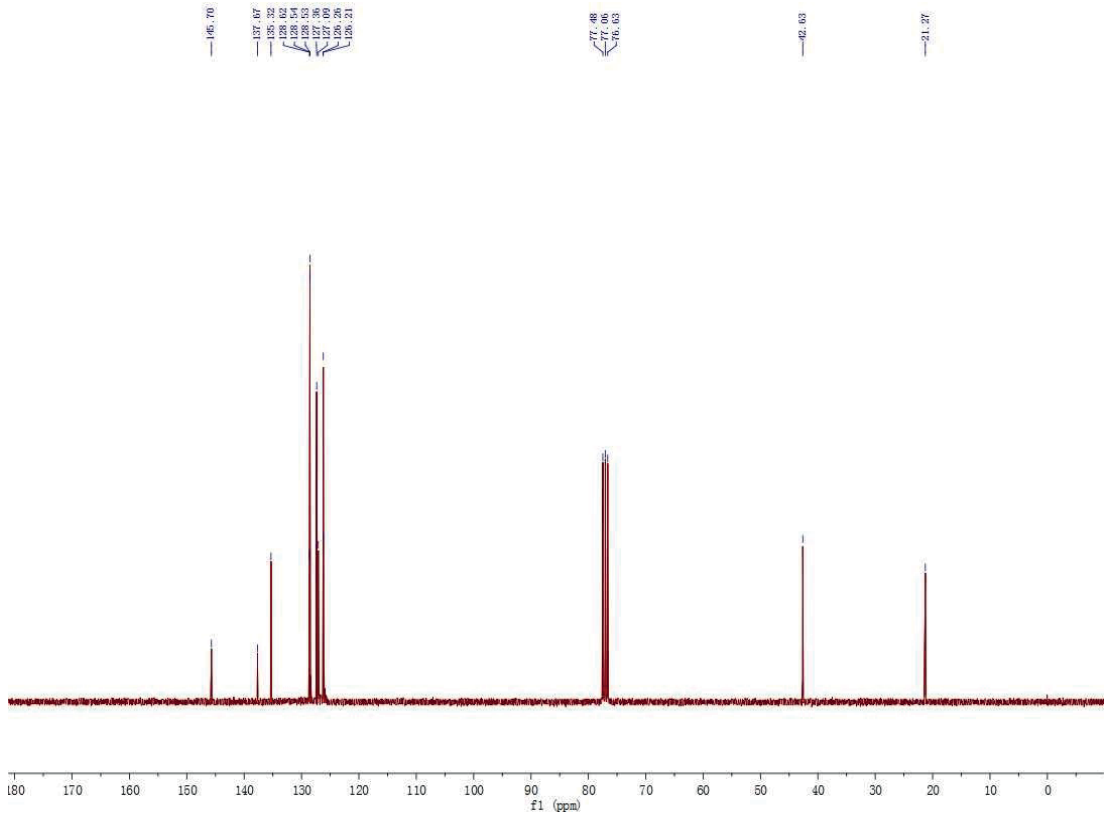
(*E*)-1, 3-diphenylpropene (3da):



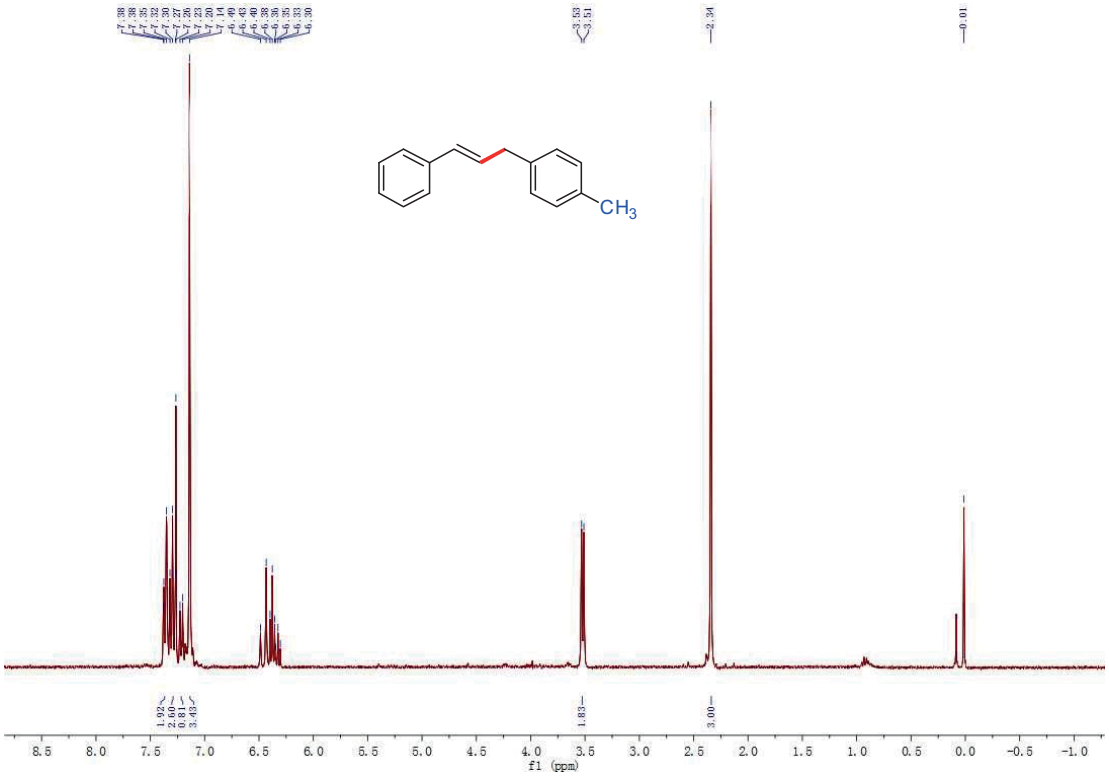


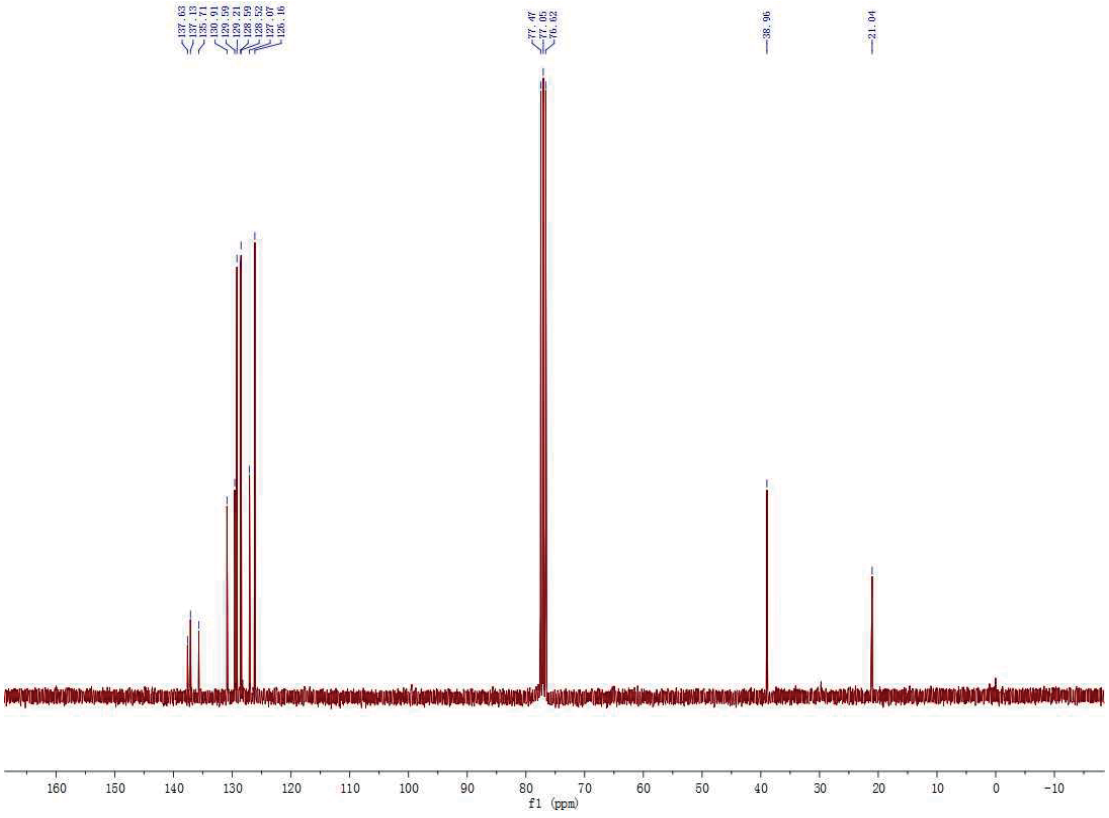
(*E*)-1, 3-diphenyl-1-butene (3db):



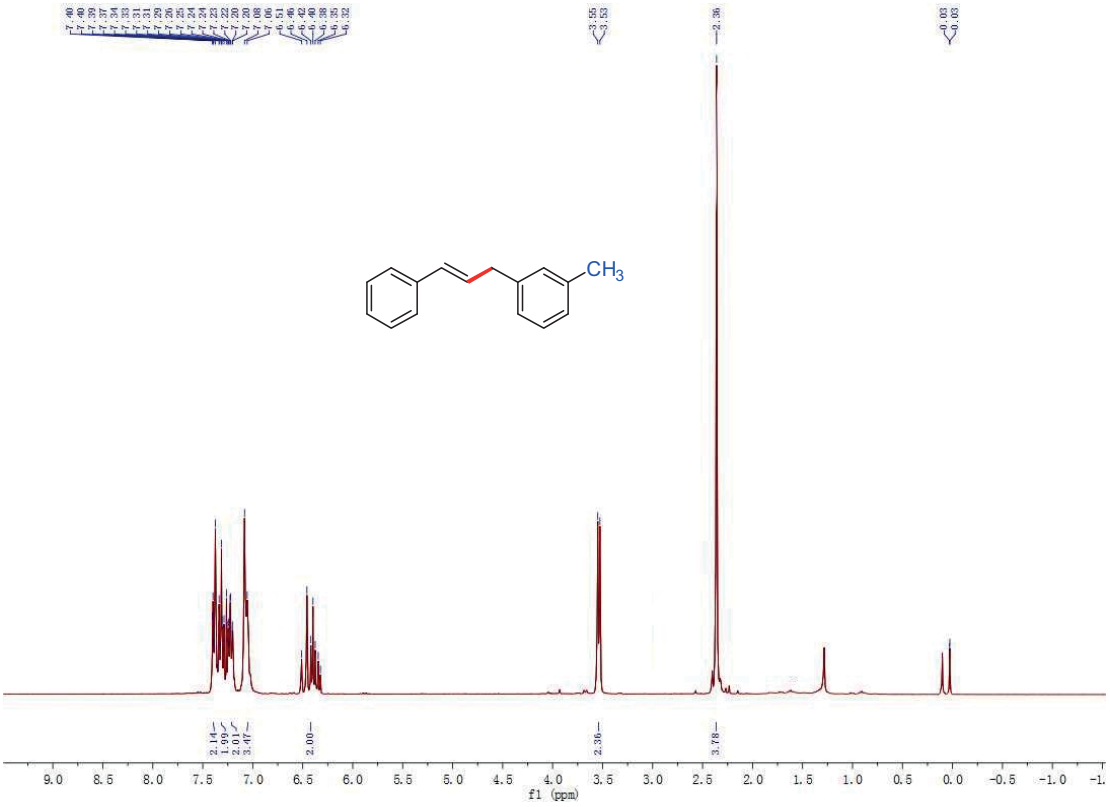


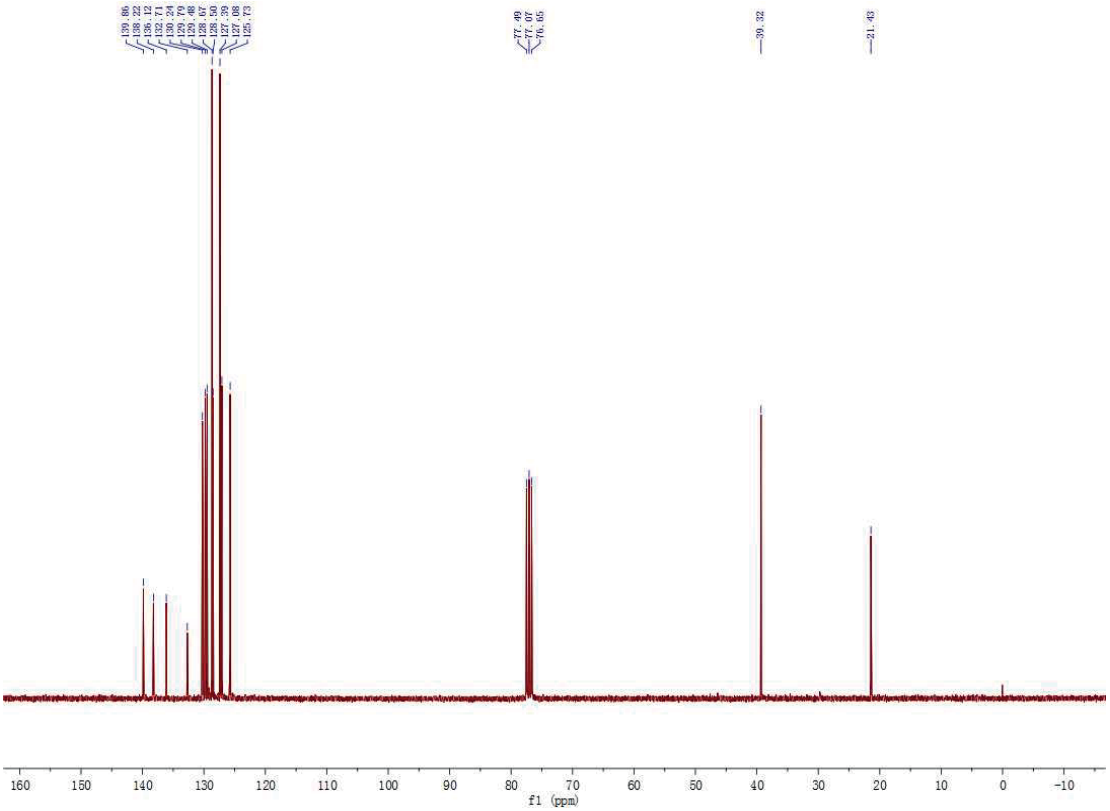
(*E*)-1-(phenyl)-3-(4-methylphenyl)-propene (4dc):



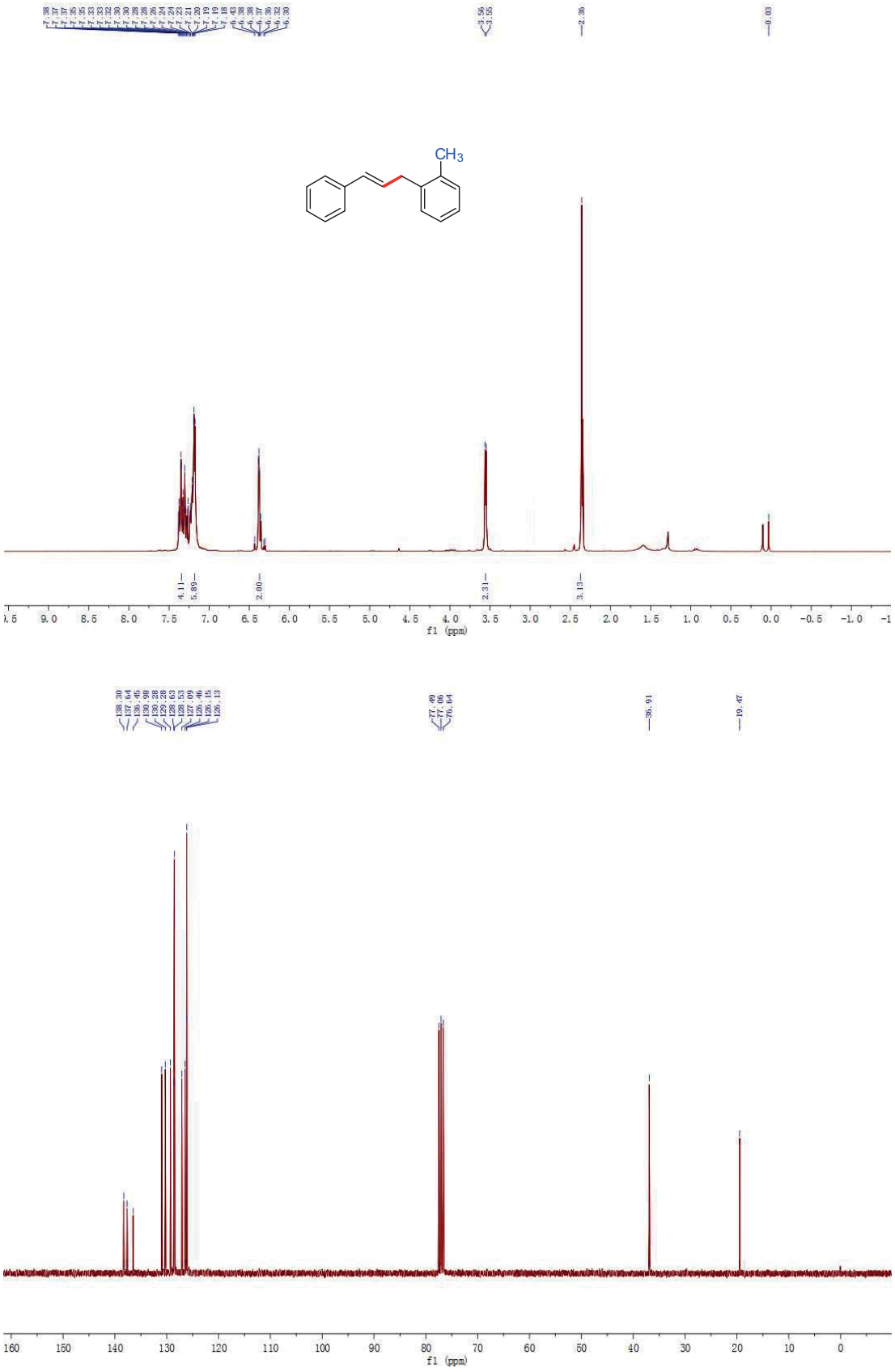


(*E*)-1-(phenyl)-3-(3-methylphenyl)-propene (3dd):

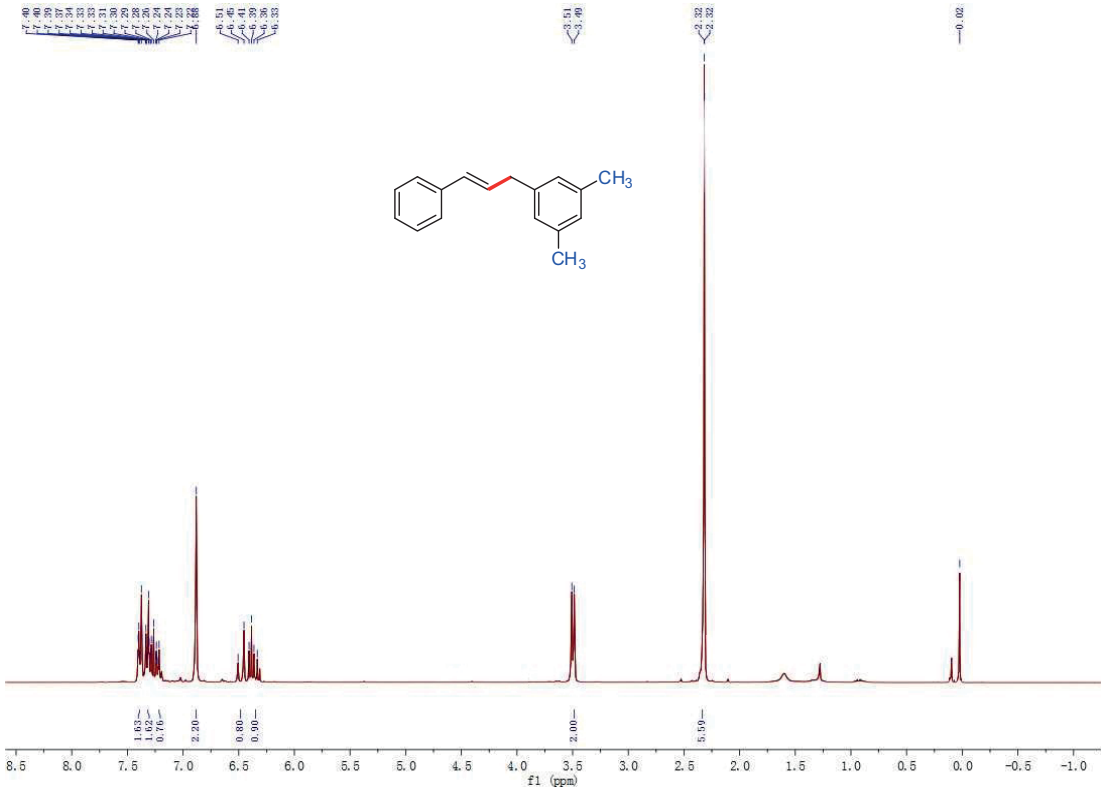


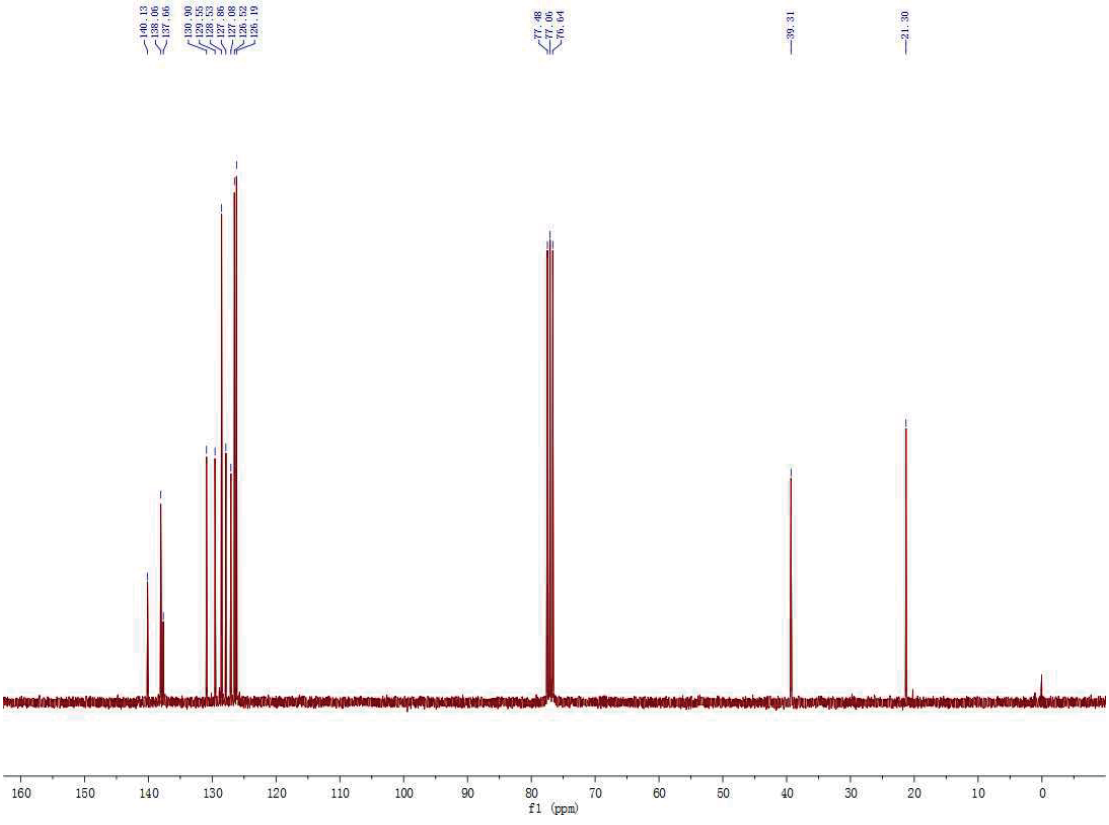


(*E*)-1-(phenyl)-3-(2-methylphenyl)-propene (3de):

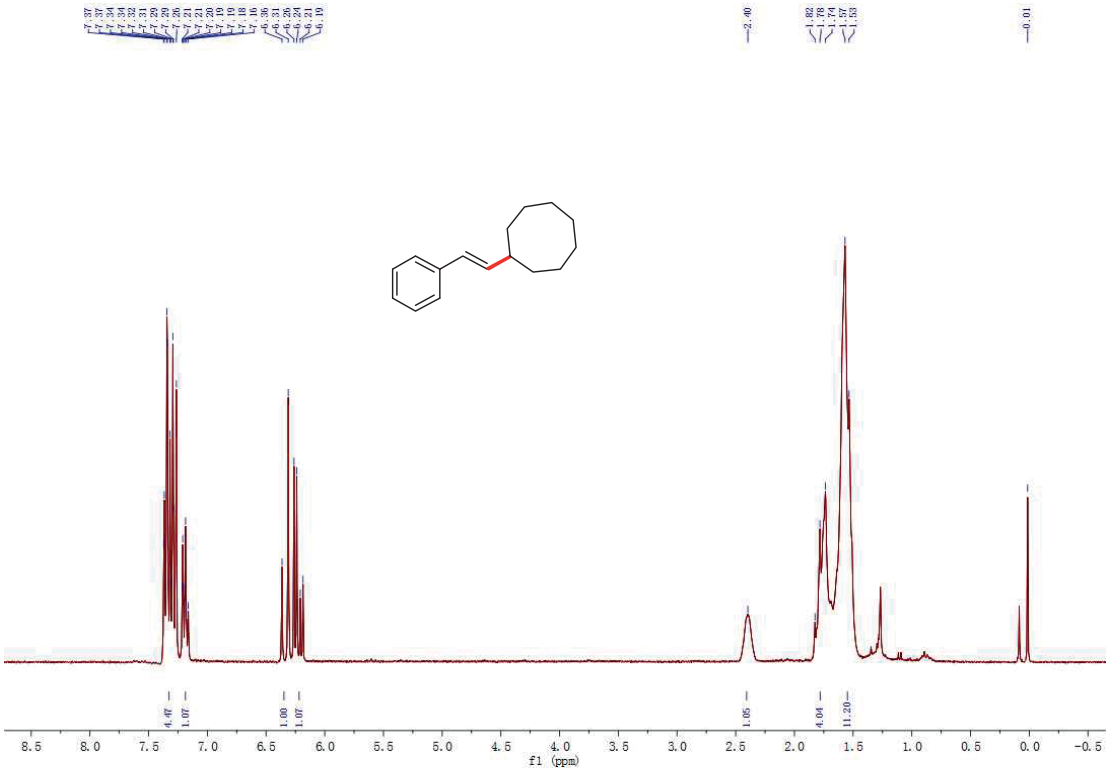


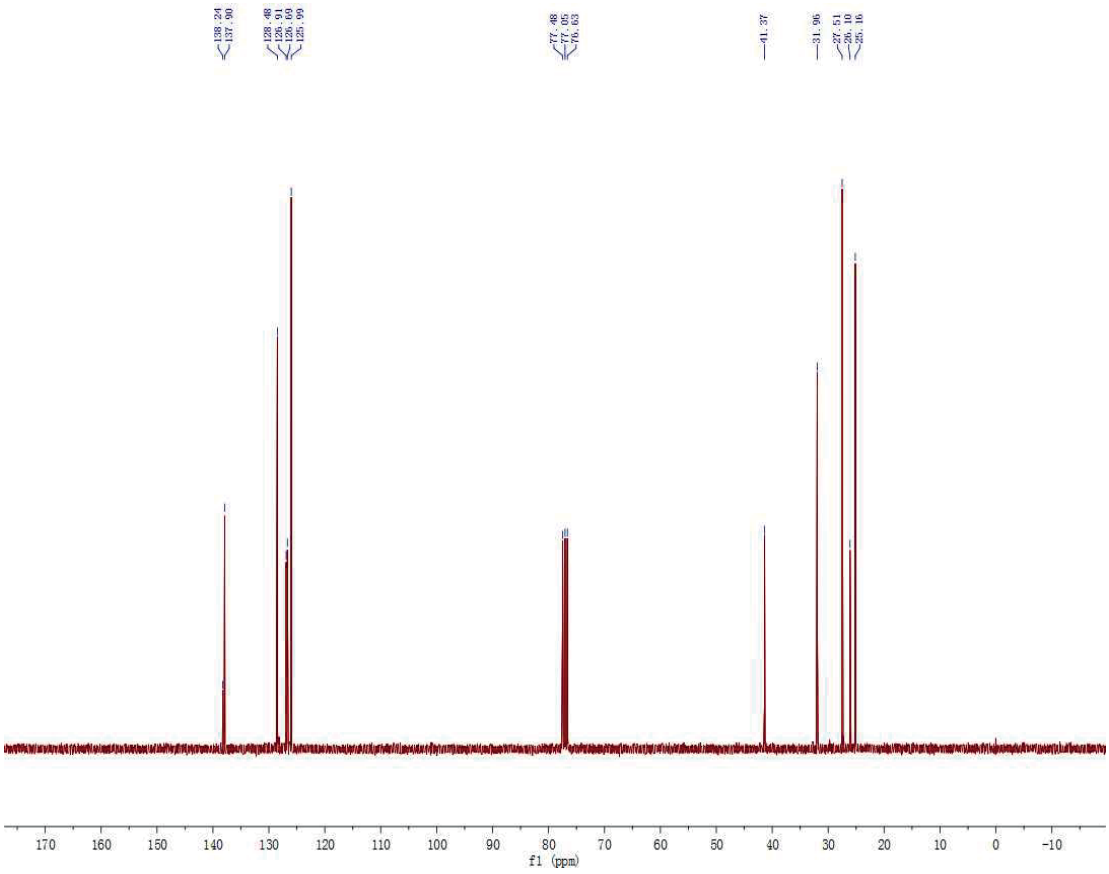
(*E*)-1-(phenyl)-3-(3,5-dimethylphenyl)-propene (3df):



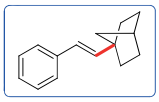


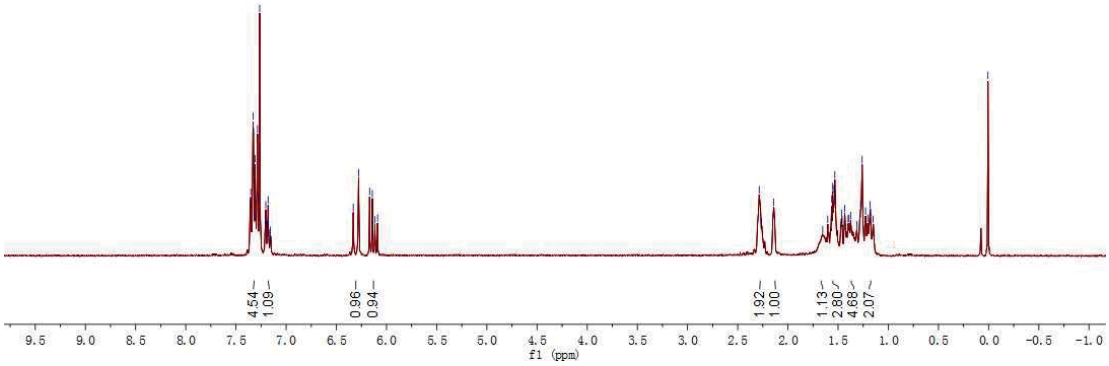
(*E*)-styrylcyclooctane (3dg):

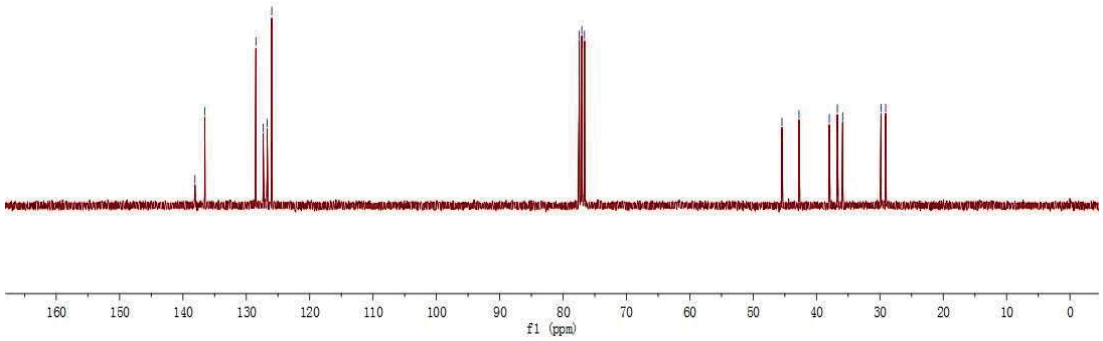




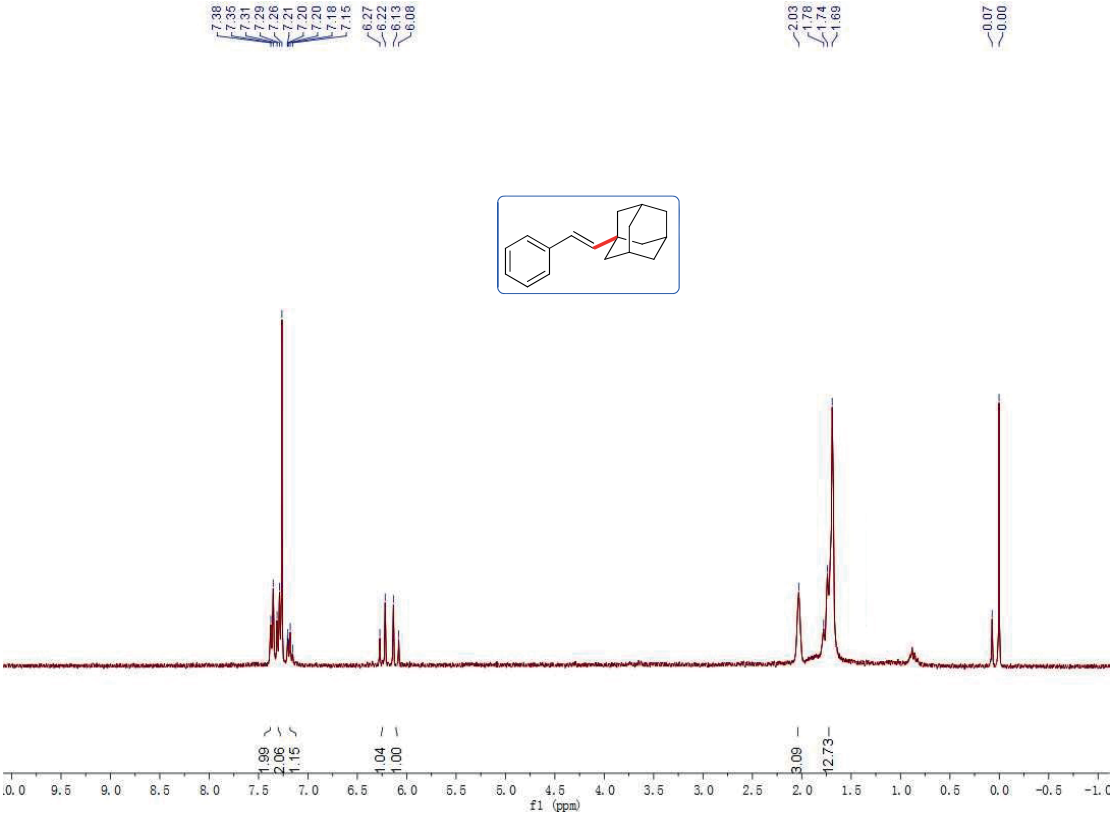
(*E*)-1-styrylnorbornane (3dh):

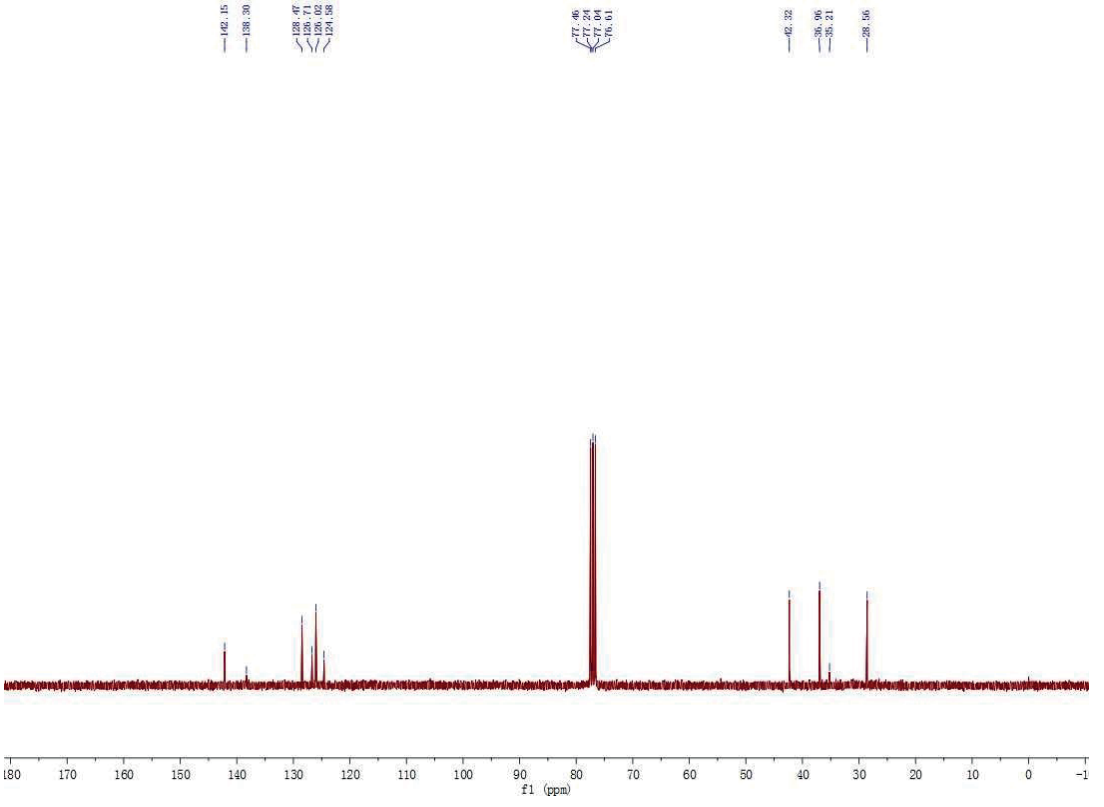




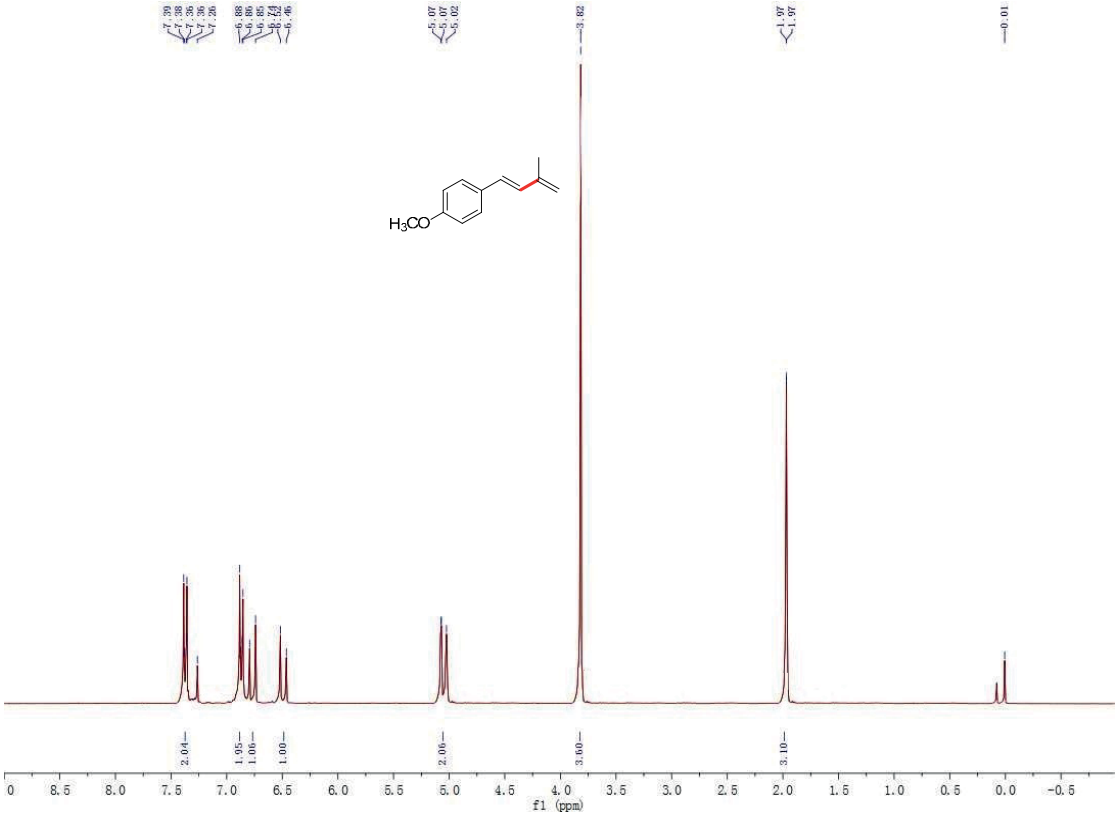


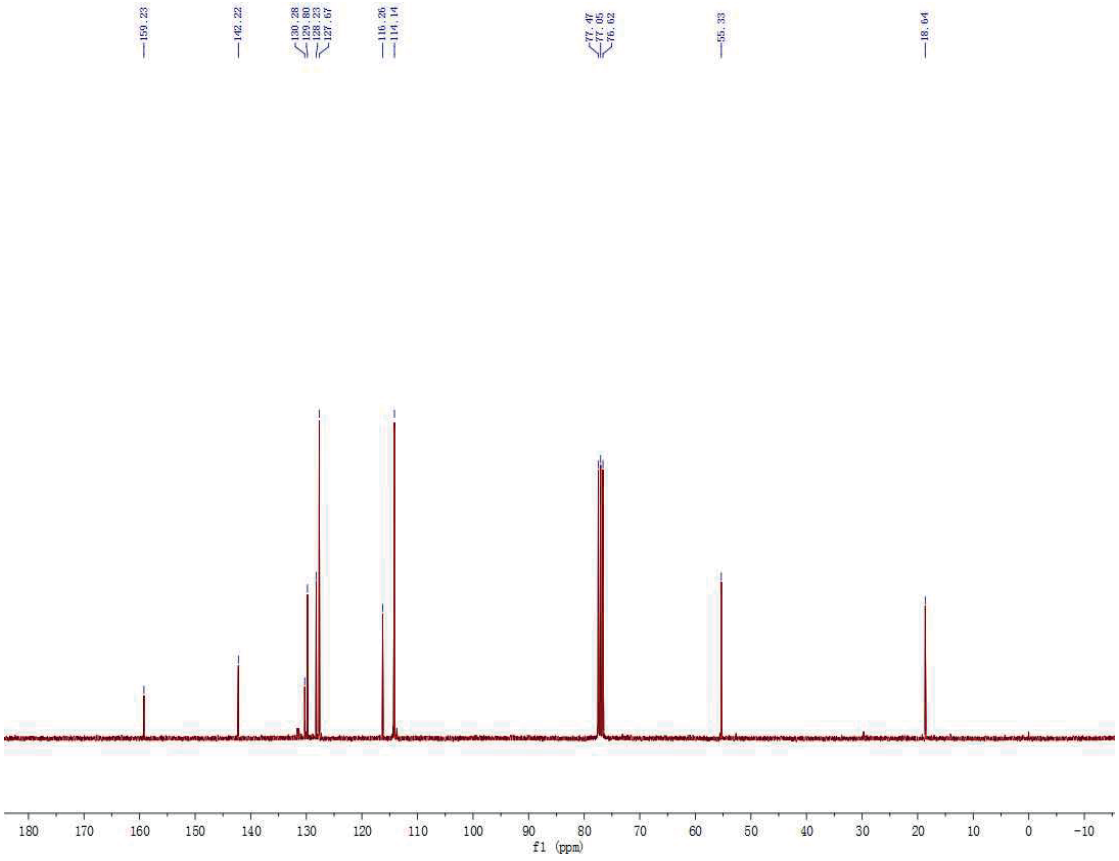
(*E*)-1-styryladamantane (3di):





(*E*)-1-methoxy-4-(3-methylbuta-1,3-dien-1-yl)benzene (4a):





(*E*)-methyl(4-(3-methylbuta-1,3-dien-1-yl)phenyl)sulfane (4b):