Supporting Information

Copper-Catalyzed Oxidative Decarboxylative Alkylation of Cinnamic Acids with 4-Alkyl-1,4-dihydropyridines

Dong Zhang,[a] Zi-Liang Tang,[a] Xuan-Hui Ouyang,*[a] Ren-Jie Song,*[a] and Jin-Heng Li*[,a,b,c]

[a]*Key Laboratory of Jiangxi Province for Persistent Pollutants Control and Resources Recycle, Nanchang Hangkong University, Nanchang 330063, China*

[b]*State Key Laboratory of Chemo/Biosensing and Chemometrics, College of Chemistry and Chemical Engineering, Hunan University, Changsha 410082, China, and state*

[c]*State Key Laboratory of Applied Organic Chemistry, Lanzhou University, Lanzhou 730000, China*

E-mail: xuanhuiouyang@163.com, srj0731@hnu.edu.cn and jhli@hnu.edu.cn

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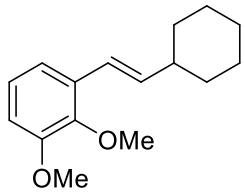
(A) Typical experimental procedure

To a Schlenk tube were added substrates Cinnamic acids **1** (0.2 mmol), 4-Alkyl-1,4-dihydropyridines **2** (1.5 equiv 0.3 mmol), DCP (3 equiv 0.6 mmol), CuI (10 mmol% 0.02 mmol) and HFIP:H_2O = 3:1 (2 mL), the tube was then charged with argon. The mixture was stirred at 30 ^oC until complete consumption of starting material as monitored by TLC and/or GC-MS analysis (about 12 h). After the reaction was finished, the reaction mixture diluted with ethyl acetate (10 mL), and washed with saturated NaCl solution, extracted with ethyl acetate (3×20 mL). The combined organic phases were dried over anhydrous Na_2SO_4 and concentrated, and the resulting residue was purified by silica gel column chromatography (hexane) to afford the desired product **3**.

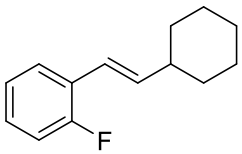
(B) Analytical data

***(E)*-1-(2-cyclohexylvinyl)-2,3-dimethoxybenzene (3aa):**



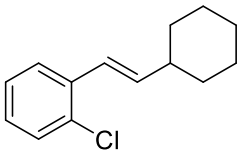
37.4 mg, 76% yield; R_f = 0.5 (PE:EA = 30:1); Yellow oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.07 (d, *J* = 8.0 Hz, 1H), 6.98 (t, *J* = 8.0 Hz, 1H), 6.76 (d, *J* = 8.0 Hz, 1H), 6.66 (d, *J* = 16.0 Hz, 1H), 6.22-6.13 (m, 1H), 3.85 (s, 3H), 3.79 (s, 3H), 2.20-2.11 (m, 1H), 1.84-1.73 (m, 4H), 1.70-1.66 (m, 1H), 1.34-1.17 (m, 5H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 152.9, 146.1, 138.2, 132.2, 123.9, 121.2, 117.7, 110.4, 60.7, 55.7, 41.5, 33.0, 26.1, 26.0; LRMS (EI, 70eV) *m/z* (%): 246 (M^+, 69), 151 (100), 136 (47), 91 (43); HRMS *m/z* (ESI) calcd for $C_{16}H_{23}O_2$ ($[M+H]^+$) 247.1693, found 247.1684.

***(E)*-1-(2-cyclohexylvinyl)-2-fluorobenzene (3ba):**



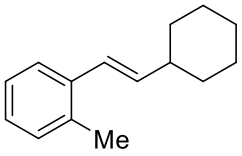
20.6 mg, 49% yield; R_f = 0.8 (PE); Yellow oil;^{1}H NMR (500 MHz, $CDCl_3$) δ 7.43 (t, *J* = 8.0 Hz, 1H), 7.17-7.11 (m, 1H), 7.05 (t, *J* = 7.5 Hz, 1H), 7.02-6.94 (m, 1H), 6.50 (d, *J* = 16.0 Hz, 1H), 6.30-6.18 (m, 1H), 2.19-2.10 (m, 1H), 1.84-1.73 (m, 4H), 1.70-1.65 (m, 1H), 1.31-1.19 (m, 5H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 139.3, 139.3, 127.9, 127.8, 126.8, 126.8, 125.7, 125.6, 123.9, 123.9, 119.5, 119.5, 115.6, 115.5, 41.5, 32.8, 26.1, 26.0. ^{19}F NMR (500 MHz, $CDCl_3$) δ -119.08; LRMS (EI, 70eV) *m/z* (%): 204 (M^+, 16), 146 (12), 122 (100), 109 (16); HRMS *m/z* (ESI) calcd for $C_{14}H_{17}F$ ($[M+H]^+$) 205.1387, found 205.1375.

***(E)*-1-chloro-2-(2-cyclohexylvinyl)benzene (3ca):**



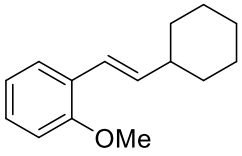
19.0 mg, 43% yield; R_f = 0.8 (PE); Yellow oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.51 (d, *J* = 7.5 Hz, 1H), 7.32 (d, *J* = 8.0 Hz, 1H), 7.19 (t, *J* = 7.5 Hz, 1H), 7.12 (t, *J* = 7.5 Hz, 1H), 6.72 (d, *J* = 16.0 Hz, 1H), 6.24-6.08 (m, 1H), 2.23-2.14 (m, 1H), 1.85-1.75 (m, 4H), 1.71-1.67 (m, 1H), 1.34-1.20 (m, 5H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 139.7, 136.0, 132.6, 129.5, 127.7, 126.7, 126.4, 123.5, 41.3, 32.8, 26.1, 26.0; LRMS (EI, 70eV) *m/z* (%): 220 (M^+, 21), 138 (100), 128 (24), 95 (23); HRMS *m/z* (ESI) calcd for $C_{14}H_{17}{}^{35}Cl$ ($[M+H]^+$) 221.1092, found 221.1081.

***(E)*-1-(2-cyclohexylvinyl)-2-methylbenzene (3da):**



24.2 mg, 59% yield; R_f = 0.8 (PE); Yellow oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.41 (d, *J* = 7.5 Hz, 1H), 7.18-7.07 (m, 3H), 6.53 (d, *J* = 16.0 Hz, 1H), 6.11 -5.97 (m, 1H), 2.32 (s, 3H), 2.19-2.10 (m, 1H), 1.84-1.74 (m, 4H), 1.71-1.65 (m, 1H), 1.34-1.17 (m, 5H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 138.3, 137.1, 134.9, 130.1, 126.7, 126.0, 125.3, 125.0, 41.5, 33.1, 26.2, 26.0, 19.8; LRMS (EI, 70eV) *m/z* (%): 200 (M^+, 44), 143 (25), 118 (100), 105 (33); HRMS *m/z* (ESI) calcd for $C_{15}H_{21}$ ($[M+H]^+$) 201.1638, found 201.1627.

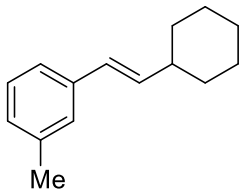
***(E)*-1-(2-cyclohexylvinyl)-2-methoxybenzene (3ea):**



36.4 mg, 70% yield; R_f = 0.3 (PE); Yellow oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.43 (d, *J* = 7.5 Hz, 1H), 7.17 (t, *J* = 8.0 Hz, 1H), 6.90 (t, *J* = 7.5 Hz, 1H), 6.84 (d, *J* = 8.5 Hz, 1H), 6.68 (d, *J* = 16.0 Hz, 1H), 6.20-6.11 (m, 1H), 3.83 (s, 3H), 2.19-2.10 (m, 1H), 1.84-1.73 (m, 4H), 1.70-1.64 (m, 1H), 1.33-1.17 (m, 5H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 156.2, 137.4,

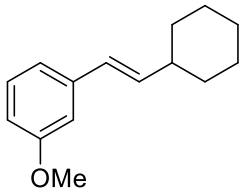
127.7, 127.0, 126.1, 121.6, 120.6, 110.7, 55.4, 41.6, 33.0, 26.2, 26.1; LRMS (EI, 70eV) *m/z* (%): 216 (M^+, 14), 203 (14), 121 (100), 91 (37); HRMS *m/z* (ESI) calcd for $C_{15}H_{21}O$ ($[M+H]^+$) 217.1583, found 217.1572.

***(E)*-1-(2-cyclohexylvinyl)-3-methylbenzene (3fa):**



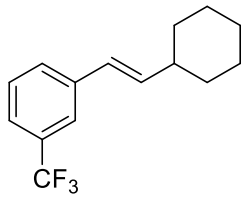
18.8 mg, 48% yield; R_f = 0.8 (PE); Yellow oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.22-7.11 (m, 3H), 7.00 (d, *J* = 7.0 Hz, 1H), 6.31 (d, *J* = 16 Hz, 1H), 6.23-6.10 (m, 1H), 2.33 (s, 3H), 2.16-2.07 (m, 1H), 1.83-1.73 (m, 4H), 1.70-1.66 (m, 1H), 1.31-1.17 (m, 5H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 137.9, 136.7, 128.3, 127.5, 127.2, 126.6, 123.1, 41.2, 32.9, 26.1, 26.0, 21.4; LRMS (EI, 70eV) *m/z* (%): 200 (M^+, 33), 143 (19), 118 (100), 105 (17); HRMS *m/z* (ESI) calcd for $C_{15}H_{21}$ ($[M+H]^+$) 201.1638, found 201.1629.

***(E)*-1-(2-cyclohexylvinyl)-3-methoxybenzene (3ga):**



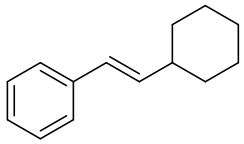
29.1 mg, 65% yield; R_f = 0.3 (PE); Yellow oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.20 (t, *J* = 8.0 Hz, 1H), 6.94 (d, *J* = 7.5 Hz, 1H), 6.88 (s, 1H), 6.74 (dd, *J* = 9.0, 2.5 Hz, 1H), 6.31 (d, *J* = 16.0 Hz, 1H), 6.21-6.12 (m, 1H), 3.81 (s, 3H), 2.17-2.07 (m, 1H), 1.83-1.74 (m, 4H), 1.70-1.65 (m, 1H), 1.33-1.17 (m, 5H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 159.7, 139.5, 137.2, 129.4, 127.0, 118.6, 112.4, 111.1, 55.1, 41.1, 32.9, 26.1, 26.0; LRMS (EI, 70eV) *m/z* (%): 216 (M^+, 57), 134 (100), 122 (44), 91 (25); HRMS *m/z* (ESI) calcd for $C_{15}H_{21}O$ ($[M+H]^+$) 217.1587, found 217.1576.

***(E)*-1-(2-cyclohexylvinyl)-3-(trifluoromethyl)benzene (3ha):**



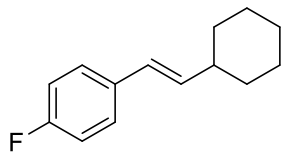
22.5 mg, 44% yield; R_f = 0.8 (PE); colorless oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.58 (s, 1H), 7.49 (d, *J* = 7.5 Hz, 1H), 7.42 (d, *J* = 7.5 Hz, 1H), 7.38 (t, *J* = 7.5 Hz, 1H), 6.36 (d, *J* = 16.0 Hz, 1H), 6.28-6.19 (m, 1H), 2.19-2.10 (m, 1H), 1.83-1.74 (m, 4H), 1.72-1.66 (m, 1H), 1.34-1.17 (m, 5H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 138.8, 129.1, 128.9, 126.1, 123.3, 123.2, 122.6, 122.6, 122.5, 41.2, 32.8, 26.1, 26.0. ^{19}F NMR (500 MHz, $CDCl_3$) δ -62.7; LRMS (EI, 70eV) *m/z* (%): 254 (M^+, 22), 172 (100), 129 (28), 82 (56); HRMS *m/z* (ESI) calcd for $C_{15}H_{18}F_3$ ($[M+H]^+$) 255.1355, found 255.1343.

***(E)*-(2-cyclohexylvinyl)benzene (3ia):**



16.5 mg, 43% yield; R_f = 0.8 (PE); Yellow oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.34 (d, *J* = 7.5 Hz, 2H), 7.30-7.25 (m, 2H), 7.18 (t, *J* = 7.5 Hz, 1H), 6.34 (d, *J* = 16.0 Hz, 1H), 6.23 -6.11 (m, 1H), 2.17-2.07 (m, 1H), 1.83-1.73 (m, 4H), 1.70-1.66 (m, 1H), 1.33-1.17 (m, 5H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 138.1, 136.9, 128.5, 127.2, 126.7, 125.9, 41.2, 33.0, 26.2, 26.1; LRMS (EI, 70eV) *m/z* (%): 246 (M^+, 100), 164 (52), 151 (44), 138 (53); HRMS *m/z* (ESI) calcd for $C_{14}H_{19}$ ($[M+H]^+$) 187.1481, found 187.1473.

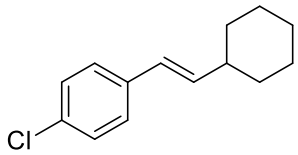
***(E)*-1-(2-cyclohexylvinyl)-4-fluorobenzene (3ja):**



27.2 mg, 65% yield; R_f = 0.8 (PE); Yellow oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.39-7.26 (m, 2H), 6.97 (t *J* = 9.0 Hz, 2H), 6.30 (d, *J* = 16.0, , 1H), 6.17-5.99 (m, 1H), 2.15-2.06 (m, 1H), 1.83-1.73 (m, 4H), 1.70-1.64 (m, 1H), 1.33-1.15 (m, 5H). ^{13}C NMR (125

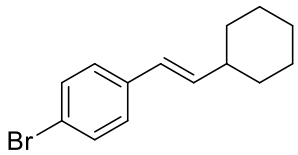
MHz, $CDCl_3$) δ 162.8, 136.6, 136.6, 134.2, 127.3, 127.3, 126.1, 115.4, 115.2, 41.1, 33.0, 26.2, 26.1. ^{19}F NMR (500 MHz, $CDCl_3$) δ -116.0; LRMS (EI, 70eV) *m/z* (%): 204 (M^+, 21), 147 (17), 122 (100), 109 (21); HRMS *m/z* (ESI) calcd for $C_{14}H_{17}F$ ($[M+H]^+$) 205.1387, found 205.1377.

***(E)*-1-chloro-4-(2-cyclohexylvinyl)benzene (3ka):**



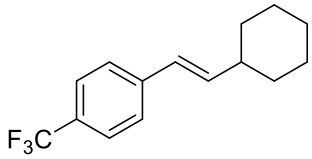
31.1 mg, 62% yield; R_f = 0.8 (PE); Yellow oil; ^1H NMR (500 MHz, $CDCl_3$) δ 7.30-7.21 (m, 4H), 6.28 (d, *J* = 16.0 , 1H), 6.21-6.09 (m, 1H), 2.16-2.07 (m, 1H), 1.84-1.72 (m, 4H), 1.70-1.65 (m, 1H), 1.31-1.13 (m, 5H).^{13}C NMR (125 MHz, $CDCl_3$) δ 137.5, 136.5, 132.2, 128.5, 127.1, 126.0, 41.1, 32.8, 26.1, 26.0; LRMS (EI, 70eV) *m/z* (%): 220 (M^+, 22), 138 (100), 129 (23), 95 (14); HRMS *m/z* (ESI) calcd for $C_{14}H_{17}{}^{35}Cl$ ($[M+H]^+$) 221.1092, found 221.1084.

***(E)*-1-bromo-4-(2-cyclohexylvinyl)benzene (3la):**



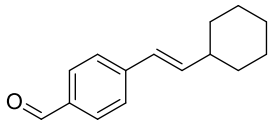
31.6 mg, 60% yield; R_f = 0.8 (PE); Yellow oil; ^1H NMR (500 MHz, $CDCl_3$) δ 7.39 (d, *J* = 8.5 Hz, 2H), 7.20 (d, *J* = 8.5 Hz, 2H), 6.27 (d, *J* = 16.0 Hz, 1H), 6.21-6.11 (m, 1H), 2.16-2.06 (m, 1H), 1.82-1.73 (m, 4H), 1.71-1.65 (m, 1H), 1.31-1.15 (m, 5H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 137.7, 137.0, 131.5, 127.5, 126.1, 120.3, 41.1, 32.8, 26.1, 26.0; LRMS (EI, 70eV) *m/z* (%): 264 (M^+, 23), 182 (100), 142 (26), 128 (49); HRMS *m/z* (ESI) calcd for $C_{14}H_{17}{}^{79}Br$ ($[M+H]^+$) 265.0586, found 265.0577.

***(E)*-1-(2-cyclohexylvinyl)-4-(trifluoromethyl)benzene (3ma):**



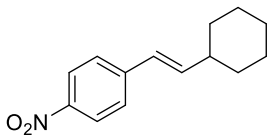
23.9 mg, 45% yield; R_f = 0.8 (PE); colorless oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.53 (d, *J* = 8.0 Hz, 2H), 7.42 (d, *J* = 8.0 Hz, 2H), 6.35 (s, 1H), 6.32-6.22 (m, 1H), 2.20-2.11 (m, 1H), 1.84-1.75 (m, 4H), 1.72-1.66 (m, 1H), 1.34-1.17 (m, 5H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 141.5, 139.6, 126.09, 126.0, 125.4, 125.4, 125.3, 41.2, 32.7, 26.1, 26.0. ^{19}F NMR (471 MHz, $CDCl_3$) δ -62.35; LRMS (EI, 70eV) *m/z* (%): 254 (M^+, 27), 172 (100), 95 (14), 82 (74); HRMS *m/z* (ESI) calcd for $C_{15}H_{18}F_3$ ($[M+H]^+$) 255.1355, found 255.1343.

(*E*)-4-(2-cyclohexylvinyl)benzaldehyde (3na):



18.0 mg, 42% yeild; R_f = 0.5 (PE:EA 50:1);yellow oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 9.96 (s, 1H), 7.80 (d, *J* = 8.0 Hz, 2H), 7.48 (d, *J* = 8.0 Hz, 2H), 6.43 – 6.34 (m, 2H), 2.20-2.14(m, 1H), 1.84-1.76 (m, 4H), 1.72-1.67 (m, 1H), 1.35-1.23 (m, 5H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 191.7, 144.3, 140.8, 134.8, 130.1, 126.5, 126.4, 41.3, 32.6, 26.0, 25.9. LRMS (EI, 70eV) *m/z* (%): 214(M^+, 59), 133(91), 132 (100), 131 (64); HRMS *m/z* (ESI) calcd for $C_{15}H_{19}O$ ($[M+H]^+$) 215.1430, found 215.1433.

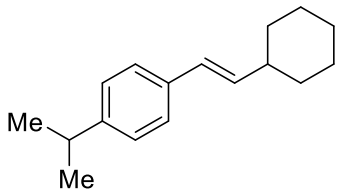
(*E*)-1-(2-cyclohexylvinyl)-4-nitrobenzene (3oa):



17.1 mg, 37% yeild; R_f = 0.3 (PE); yellow oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.15 (d, *J* = 9.0 Hz, 2H), 7.45 (d, *J* = 9.0 Hz, 2H), 6.43-6.34 (m, 2H), 2.22-2.14 (m, 1H), 1.85-1.76 (M, 4H), 1.72-1.67 (m, 1H), 1.39-1.22 (m, 5H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 146.4, 144.6, 142.0, 126.3, 125.7, 123.9, 41.3, 32.5, 26.0, 25.9. LRMS (EI, 70eV) *m/z* (%): 231(M^+,

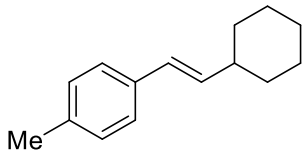
26), 128(60), 82 (100), 81 (81); HRMS *m/z* (ESI) calcd for $C_{14}H_{18}NO_2$ ($[M+H]^+$) 232.1332, found 232.1328.

***(E)*-1-(2-cyclohexylvinyl)-4-isopropylbenzene (3pa):**



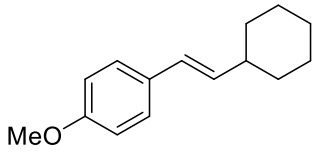
25.1 mg, 51% yeild; R_f = 0.8 (PE); Yellow oil;^{1}H NMR (500 MHz, $CDCl_3$) δ 7.28 (d, *J* = 8.0 Hz, 2H), 7.15 (d, *J* = 8.0 Hz, 2H), 6.31 (d, *J* = 16.0 Hz, 1H), 6.16-6.09 (m, 1H), 2.91-2.83 (m, 1H), 2.15-2.06 (m, 1H), 1.81-1.73 (m, 4H), 1.69-1.64 (m, 1H), 1.31-1.16 (m, 11H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 147.5, 136.1, 135.7, 127.0, 126.5, 125.9, 41.2, 33.8, 33.0, 26.2, 26.1, 24.0; LRMS (EI, 70eV) *m/z* (%): 228 (M^+, 55), 185 (92), 146 (62), 131 (100); HRMS *m/z* (ESI) calcd for $C_{17}H_{25}$ ($[M+H]^+$) 229.1951, found 229.1943.

***(E)*-1-(2-cyclohexylvinyl)-4-methylbenzene (3qa):**



20.2 mg, 49% yeild; R_f = 0.8 (PE); Yellow oil;^{1}H NMR (500 MHz, $CDCl_3$) δ 7.24 (d, *J* = 8.0 Hz, 2H), 7.09 (d, *J* = 8.0 Hz, 2H), 6.30 (d, *J* = 16.0 Hz, 1H), 6.18-6.06 (m, 1H), 2.31 (s, 3H), 2.15-2.06 (m, 1H), 1.82-1.72 (m, 4H), 1.70-1.65 (m, 1H), 1.31-1.12 (m, 5H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 136.4, 135.8, 135.2, 129.1, 126.9, 125.8, 41.1, 33.0, 26.2, 26.1, 21.1; LRMS (EI, 70eV) *m/z* (%): 200 (M^+, 36), 143 (23), 118 (100), 105 (26); HRMS *m/z* (ESI) calcd for $C_{15}H_{21}$ ($[M+H]^+$) 201.1638, found 201.1627.

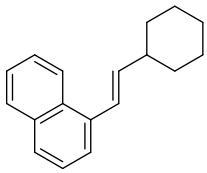
***(E)*-1-(2-cyclohexylvinyl)-4-methoxybenzene (3ra):**



28.9 mg, 56% yeild; R_f = 0.3 (PE); Yellow oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.27 (d, *J* = 9.0, 2H), 6.82 (d, *J* = 8.5,

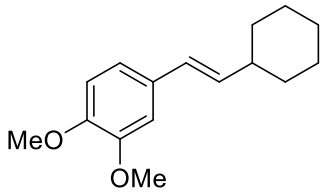
2H), 6.28 (d, *J* = 16.0 Hz, 1H), 6.08-5.98 (m, 1H), 3.78 (s, 3H), 2.14-2.04 (m, 1H), 1.82-1.72 (m, 4H), 1.70-1.64 (m, 1H), 1.33-1.13 (m, 5H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 158.5, 134.7, 130.8, 126.9, 126.5, 113.8, 55.2, 41.1, 33.1, 26.2, 26.1; LRMS (EI, 70eV) *m/z* (%): 216 (M^+, 81), 173 (39), 159 (35), 134 (100); HRMS *m/z* (ESI) calcd for $C_{15}H_{21}O$ ($[M+H]^+$) 217.1583, found 217.1572.

***(E)*-1-(2-cyclohexylvinyl)naphthalene(3sa):**



22.7 mg , 48% yield; R_f = 0.8 (PE); Colorless oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.12 (d, J = 7.0 Hz, 1H), 7.82 (d, J = 7.2 Hz, 1H), 7.72 (d, J = 7.5 Hz, 1H), 7.57 - 7.40 (m, 4H), 7.07 (d, J = 15.5 Hz, 1H), 6.19 (m, 1H), 2.26 (m, 1H), 1.90 (m, 2H), 1.85 - 1.75 (m, 2H), 1.75 - 1.67 (m, 1H), 1.39 - 1.24 (m, 5H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 140.2, 135.9, 133.6, 131.2, 128.4, 127.1, 125.7, 125.6, 125.5, 124.4, 123.9, 123.4, 41.5, 33.0, 26.20, 26.1. LRMS (EI, 70eV) m/z (%): 236 (M+, 100), 154 (96), 159 (60), 179 (50); HRMS m/z (ESI) calcd for $C_{18}H_{20}$ ($[M+H]^+$) 237.1638, found 237.1631.

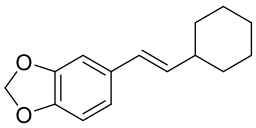
***(E)*-4-(2-cyclohexylvinyl)-1,2-dimethoxybenzene (3ta):**



35.5 mg, 71% yield; R_f = 0.5 (PE:EA = 30:1); Yellow oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 6.91 (d, *J* = 2.0 Hz, 1H), 6.87 (d, *J* = 8.5, 1H), 6.80 (d, *J* = 8.5 Hz, 1H), 6.28 (d, *J* = 16.0 Hz, 1H), 6.07-6.02 (m, 1H), 3.90 (s, 3H), 3.87 (s, 3H), 2.15-2.06 (m, 1H), 1.85-1.71 (m, 4H), 1.70 -1.66 (m, 1H), 1.33-1.17 (m, 5H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 148.9, 148.1, 135.0, 131.1, 126.8, 118.8, 111.1, 108.3, 55.9, 55.7, 41.1, 33.0,

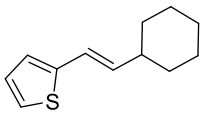
26.1, 26.0; LRMS (EI, 70eV) *m/z* (%): 246 (M^+, 100), 164 (52), 151 (44), 138 (53); HRMS *m/z* (ESI) calcd for $C_{16}H_{23}O_2$ ($[M+H]^+$) 247.1693, found 247.1683.

(*E*)-5-(2-cyclohexylvinyl)benzo[*d*][1,3]dioxole (3ua):



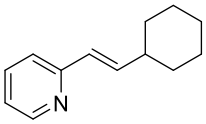
34.0 mg , 74% yeild; R_f = 0.5 (PE:EA = 30:1); Colorless oil; ^1H NMR (500 MHz, $CDCl_3$) δ 6.90 (s, 1H), 6.76 (d, *J* = 8.0 Hz, 1H), 6.72 (d, *J* = 8.0 Hz, 1H), 6.25 (d, *J* = 16.0 Hz, 1H), 6.02-5.96 (m, 1H), 5.92 (s, 2H), 2.13-2.03 (m, 1H), 1.81-1.73 (m, 4H), 1.69-1.64 (m, 1H), 1.36-1.17 (m, 5H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 147.9, 146.5, 135.2, 132.6, 126.7, 120.2, 108.2, 105.4, 100.8, 41.0, 33.0, 26.1, 26.0. LRMS (EI, 70eV) *m/z* (%): 230(M^+, 59), 133(91), 132 (100), 131 (64); HRMS *m/z* (ESI) calcd for $C_{15}H_{18}O_2$ ($[M+H]^+$) 231.1380, found 231.1372.

***(E)*-2-(2-cyclohexylvinyl)thiophene (3wa):**



27.3 mg , 70% yeild; Colorless oil; ^1H NMR (500 MHz, $CDCl_3$) δ 7.07 (d, J = 5.0 Hz, 1H), 6.94 - 6.90 (m, 1H), 6.86 (d, J = 3.0 Hz, 1H), 6.46 (d, J = 15.5 Hz, 1H), 6.03 (m, 1H), 2.09 (m, 1H), 1.81 - 1.73 (m, 4H), 1.69 - 1.65 (m, 1H), 1.33 - 1.15 (m, 5H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 143.4, 136.8, 127.1, 124.2, 122.9, 120.58, 40.9, 32.8, 26.1, 25.9. LRMS (EI, 70eV) m/z (%): 192(M+, 34), 110(100), 135 (19), 149 (10); HRMS m/z (ESI) calcd for $C_{12}H_{16}S$ ($[M+H]^+$) 193.3275, found 193.3273.

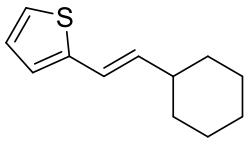
(*E*)-2-(2-cyclohexylvinyl)pyridine (3xa):



15.0mg , 40% yeild; R_f = 0.5 (PE:EA = 10:1); Colorless oil; ^1H NMR (500 MHz, $CDCl_3$) δ 8.52 (d, *J* = 4.0 Hz, 1H), 7.59 (t, *J* = 7.5

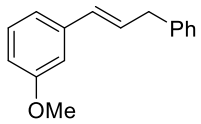
Hz, 1H), 7.25 (d, *J* = 8.0 Hz, 1H), 7.07 (t, *J* = 6.0 Hz, 1H), 6.72-6.66 (m, 1H), 6.44 (d, *J* = 16.0 Hz, 1H), 2.23-2.16 (m, 1H), 1.86-1.74 (m, 5H), 1.30-1.22 (m, 5H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 156.3, 149.3, 141.4, 136.4, 127.4, 121.5, 121.0, 40.9, 32.6, 26.1, 26.0. LRMS (EI, 70eV) *m/z* (%): 187(M^+, 98), 186(100), 130 (89), 93 (75); HRMS *m/z* (ESI) calcd for $C_{13}H_{18}N$ ($[M+H]^+$) 188.1434, found 188.1435.

***(E)*-2-(2-cyclohexylvinyl)thiophene(3ta):**



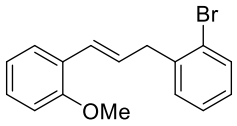
27.3 mg , 70% yield; R_f = 0.8 (PE); Colorless oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.07 (d, *J* = 5.0 Hz, 1H), 6.94 - 6.90 (m, 1H), 6.86 (d, *J* = 3.0 Hz, 1H), 6.46 (d, *J* = 15.5 Hz, 1H), 6.03 (m, 1H), 2.09 (m, 1H), 1.81 - 1.73 (m, 4H), 1.69 - 1.65 (m, 1H), 1.33 - 1.15 (m, 5H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 143.4, 136.8, 127.1, 124.2, 122.9, 120.58, 40.9, 32.8, 26.1, 25.9. LRMS (EI, 70eV) m/z (%): 192(M+, 34), 110(100), 135 (19), 149 (10); HRMS m/z (ESI) calcd for $C_{12}H_{16}S$ ($[M+H]^+$) 193.1045, found 193.1036.

(*E*)-1-methoxy-3-(3-phenylprop-1-en-1-yl)benzene (3ab):



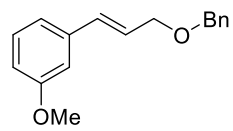
22.3 mg, 50% yield; R_f = 0.3 (PE); Yellow oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.31 (t, *J* = 7.5 Hz, 2H), 7.26-7.18 (m, 4H), 6.95 (d, *J* = 7.5 Hz, 1H), 6.89 (s, 1H), 6.76 (d, *J* = 8.0 Hz, 1H), 6.43 (d, *J* = 16.0 Hz, 1H), 6.40-6.31 (m, 1H), 3.79 (s, 3H), 3.55 (d, *J* = 6.5 Hz, 2H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 159.7, 140.1, 138.9, 130.9, 129.5, 129.5, 128.7, 128.5, 126.2, 118.8, 112.8, 111.3, 55.2, 39.3; LRMS (EI, 70eV) *m/z* (%): 224 (M^+, 100), 193 (37), 115 (62), 91 (31); HRMS *m/z* (ESI) calcd for $C_{16}H_{17}O$ ($[M+H]^+$) 225.1274, found 225.1266.

(*E*)-1-bromo-2-(3-(2-methoxyphenyl)allyl)benzene (3ac):



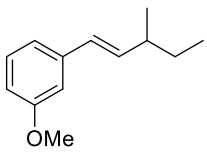
23.9 mg , 52% yeild; R_f = 0.3 (PE); Colorless oil;^{1}H NMR (500 MHz, $CDCl_3$) δ 7.55 (d, *J* = 8.0 Hz, 1H), 7.42 (d, *J* = 7.5 Hz, 1H), 7.29 (d, *J* = 7.5 Hz, 1H), 7.24 (t, *J* = 7.5 Hz, 1H), 7.19 (t, *J* = 8.0 Hz, 1H), 7.07 (t, *J* = 7.5 Hz, 1H), 6.90 (t, *J* = 7.5 Hz, 1H), 6.87-6.79 (m, 2H), 6.38-6.29 (m, 1H), 3.83 (s, 3H), 3.68 (d, *J* = 7.0 Hz, 2H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 156.4, 139.9, 132.7, 130.4, 128.2, 127.9, 127.7, 127.5, 126.67, 126.6, 126.4, 124.5, 120.6, 110.8, 55.5, 39.9. LRMS (EI, 70eV) *m/z* (%): 306 (M^++2, 23),304 (M^+, 24), 115(100), 91(70), 89 (79); HRMS *m/z* (ESI) calcd for $C_{16}H_{16}BrO$ ($[M+H]^+$) 305.0359, found 305.0347.

***(E)*-1-(3-(benzyloxy)prop-1-en-1-yl)-3-methoxybenzene (3ad):**



11.1 mg , 22% yield; R_f = 0.4 (PE:EA =30:1); Colorless oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.39-7.28 (m, 5H), 7.23 (d, *J* = 8.0 Hz, 1H), 6.99 (d, *J* = 7.5 Hz, 1H), 6.93 (s, 1H), 6.81 (d, *J* = 8.0 Hz, 1H), 6.63 - 6.58 (d, *J* = 16.0 Hz, 1H), 6.33 (m, 1H), 4.58 (s, 2H), 4.20 (d, *J* = 6.0 Hz, 2H), 3.81 (s, 3H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 159.7, 138.2, 132.3, 129.5, 128.4, 127.8, 127.6, 126.4, 119.2, 113.4, 111.6, 72.2, 70.6, 55.2; LRMS (EI, 70eV) *m/z* (%): 254 (M^+, 5), 91 (100), 135 (77), 210 (13); HRMS *m/z* (ESI) calcd for $C_{17}H_{18}O_2$ ($[M+H]^+$) 255.1380, found 255.1373.

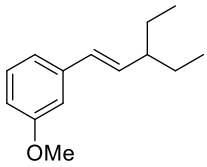
(*E*)-1-methoxy-3-(3-methylpent-1-en-1-yl)benzene (3ae):



21.7 mg, 57% yield; R_f = 0.4 (PE); Yellow oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.20 (t, *J* = 8.0 Hz, 1H), 6.95 (d, *J* = 7.5 Hz, 1H), 6.89 (s, 1H), 6.78-6.71 (m, 1H), 6.31 (d, *J* = 16.0 Hz, 1H), 6.16-6.04 (m, 1H), 3.81 (s, 3H), 2.24-2.14 (m, 1H), 1.45-1.35 (m, 2H), 1.07 (d, *J* = 6.5 Hz, 3H),

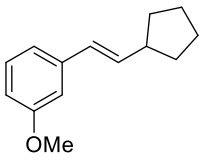
0.90 (t, *J* = 7.5 Hz, 3H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 159.7, 139.4, 137.1, 129.4, 128.0, 118.6, 112.4, 111.2, 55.2, 55.1, 38.9, 29.7, 20.2, 11.8; LRMS (EI, 70eV) *m/z* (%): 190 (M^+, 40), 161 (100), 115 (17), 91 (27); HRMS *m/z* (ESI) calcd for $C_{13}H_{19}O$ ($[M+H]^+$) 191.1430, found 191.1423.

(*E*)-1-(3-ethylpent-1-en-1-yl)-3-methoxybenzene (3af):



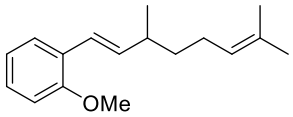
17.4 mg, 43 % yield; R_f = 0.4 (PE); Yellow oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.21 (t, *J* = 8.0 Hz, 1H), 6.96 (d, *J* = 7.5 Hz, 1H), 6.90 (s, 1H), 6.75 (d, *J* = 8.0 Hz, 1H), 6.31 (d, *J* = 16.0 Hz, 1H), 6.01-5.86 (m, 1H), 3.81 (s, 3H), 1.98-1.88 (m, 1H), 1.54-1.45 (m, 2H), 1.37-1.29 (m, 2H), 0.88 (t, *J* = 7.5, 6H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 159.7, 139.4, 135.6, 129.7, 129.4, 118.6, 112.3, 111.2, 55.2, 46.8, 27.8, 11.8; LRMS (EI, 70eV) *m/z* (%): 204 (M^+, 40), 175 (100), 121 (19), 91 (21); HRMS *m/z* (ESI) calcd for $C_{14}H_{21}O$ ($[M+H]^+$) 205.1587, found 205.1576.

(*E*)-1-(2-cyclopentylvinyl)-3-methoxybenzene (3ag):



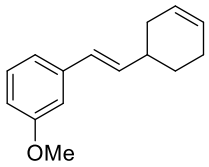
27.4 mg, 67% yield; R_f = 0.4 (PE); Yellow oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.20 (t, *J* = 8.0 Hz, 1H), 6.94 (d, *J* = 7.5 Hz, 1H), 6.88 (s, 1H), 6.74 (d, *J* = 8.0 Hz, 1H), 6.34 (d, *J* = 16.0 Hz, 1H), 6.23-6.17 (m, 1H), 3.80 (s, 3H), 2.63-2.53 (m, 1H), 1.87-1.81 (m, 2H), 1.74-1.66 (m, 2H), 1.63-1.56 (m, 2H), 1.43-1.35 (m, 2H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 159.7, 139.4, 136.0, 129.4, 127.7, 118.6, 112.4, 111.1, 55.2, 55.1, 43.8, 33.2, 25.2; LRMS (EI, 70eV) *m/z* (%): 202 (M^+, 47), 134 (55), 121 (100), 91 (35); HRMS *m/z* (ESI) calcd for $C_{14}H_{19}$ ($[M+H]^+$) 203.1430, found 203.1422.

(*E*)-1-(3,7-dimethylocta-1,6-dien-1-yl)-2-methoxybenzene (3ah):



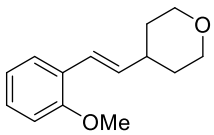
26.0 mg , 53% yeild; R_f = 0.4 (PE); Colorless oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.43 (d, *J* = 7.5 Hz, 1H), 7.17 (t, *J* = 7.5 Hz, 1H), 6.90 (t, *J* = 7.5 Hz, 1H), 6.85 (d, *J* = 8.0 Hz, 1H), 6.67 (d, *J* = 16.0 Hz, 1H), 6.11-6.02 (m, *J* = 16.0, 1H), 5.12 (s, 1H), 3.84 (s, 3H), 2.35-2.27 (m, 1H), 2.05-1.97 (m, 2H), 1.69 (s, 3H), 1.60 (s, 3H), 1.08 (d, *J* = 6.5 Hz, 3H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 156.3, 137.4, 131.3, 127.7, 127.0, 126.2, 124.7, 122.5, 120.6, 110.8, 77.0, 55.4, 37.2, 37.1, 25.9, 25.7, 20.7, 17.7. LRMS (EI, 70eV) *m/z* (%): 244(M^+, 39), 161(91), 121 (100), 91 (84); HRMS *m/z* (ESI) calcd for $C_{17}H_{25}O$ ($[M+H]^+$) 245.1900, found 245.1892.

(*E*)-1-(2-(cyclohex-3-en-1-yl)vinyl)-3-methoxybenzene (3ai):



21.4 mg, 50% yield; R_f = 0.4 (PE); Yellow oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.21 (t, *J* = 8.0 Hz, 1H), 6.96 (d, *J* = 7.5, 1H), 6.90 (s, 1H), 6.76 (d, *J* = 8.0, 1H), 6.37 (d, *J* = 16.0 Hz, 1H), 6.28-6.18 (m, 1H), 5.71 (s, 2H), 3.82 (s, 3H), 2.48-2.39 (m, 1H), 2.22-2.16 (m, 1H), 2.15-2.07 (m, 2H), 1.99-1.92 (m, 1H), 1.89-1.82 (m, 1H), 1.53-1.46 (m, 1H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 159.7, 139.3, 136.1, 129.4, 127.8, 127.0, 126.0, 118.7, 112.5, 111.2, 55.2, 37.1, 31.3, 28.7, 24.8; LRMS (EI, 70eV) *m/z* (%): 214 (M^+, 67), 160 (100), 159 (75), 129 (62); HRMS *m/z* (ESI) calcd for $C_{15}H_{19}O$ ($[M+H]^+$) 215.1430, found 215.1424.

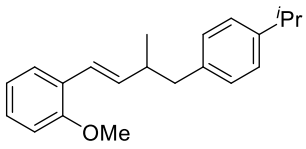
(*E*)-4-(2-methoxystyryl)tetrahydro-2H-pyran (3aj):



21.8 mg, 50% yeild; R_f = 0.4 (PE:EA =10:1);yellow oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.42 (d, *J* = 7.5 Hz, 1H), 7.19 (t, *J* = 8.0 Hz,

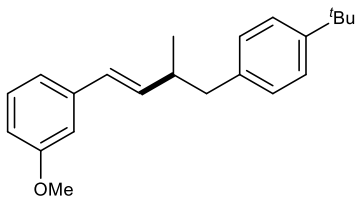
1H), 6.91 (t, *J* = 7.5 Hz, 1H), 6.86 (d, *J* = 8.0 Hz, 1H), 6.73 (d, *J* = 16.0 Hz, 1H), 6.18-6.10(m, 1H), 4.03-3.97 (m, 2H), 3.84 (s, 3H), 3.50-3.42 (m, 2H), 2.44-2.35 (m, 1H), 1.74-1.69 (m, 2H), 1.61-1.57 (m, 2H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 156.3, 135.1, 128.1, 126.5, 126.3, 122.8, 120.6, 110.8, 67.7, 55.4, 55.4, 38.8, 32.7. LRMS (EI, 70eV) *m/z* (%): 218(M^+, 85), 173(85), 121 (100), 110 (81); HRMS *m/z* (ESI) calcd for $C_{14}H_{19}O_2$ ($[M+H]^+$) 219.3035, found 219.3039.

(*E*)-1-(4-(4-isopropylphenyl)-3-methylbut-1-en-1-yl)-2-methoxybenzene (3ak):



24.8 mg , 42% yeild; R_f = 0.4 (PE); Yellow oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.41 (d, *J* = 7.5 Hz, 1H), 7.18 (t, *J* = 8.0 Hz, 1H), 7.15 – 7.09 (m, 4H), 6.90 (t, *J* = 7.5 Hz, 1H), 6.85 (d, *J* = 8.0 Hz, 1H), 6.68 (d, *J* = 16.0 Hz, 1H), 6.20 (m, 1H), 3.82 (s, 3H), 2.90-2.85 (m, 1H), 2.81-2.76 (m, 1H), 2.65-2.59 (m, 1H), 2.58-2.52 (m, 1H), 1.24 (d, *J* = 7.0 Hz, 6H), 1.07 (d, *J* = 6.5 Hz, 3H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 146.2, 137.9, 136.9, 129.2, 127.8, 126.9, 126.3, 126.1, 122.5, 120.6, 110.9, 55.5, 43.2, 39.0, 33.7, 24.0, 19.7. LRMS (EI, 70eV) *m/z* (%): 294(M^+, 1.5), 161(100), 117 (11), 91 (24); HRMS *m/z* (ESI) calcd for $C_{21}H_{27}O$ ($[M+H]^+$) 295.2056, found 295.2065.

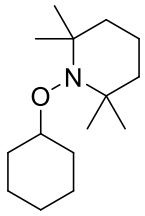
(*E*)-1-(4-(4-(*tert*-butyl)phenyl)-3-methylbut-1-en-1-yl)-3-methoxybenzene (3al):



23.4 mg, 38% yield; R_f = 0.4 (PE); Yellow oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.30 (d, *J* = 8.5 Hz, 2H), 7.21 (t, *J* = 8.0 Hz, 1H), 7.11 (d, *J* = 8.0 Hz, 2H), 6.93 (d, *J* = 7.5 Hz, 1H), 6.88-6.86 (m, 1H), 6.77-6.73 (m, 1H), 6.31 (d, *J* = 16.0 Hz, 1H), 6.23-6.18 (m, 1H), 3.81 (s, 3H), 2.79-2.74 (m, 1H), 2.62-2.53 (m, 2H), 1.31 (s, 9H), 1.08 (d, *J* =

6.5 Hz, 3H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 159.7, 139.4, 137.4, 136.6, 129.4, 128.9, 127.9, 125.0, 118.7, 112.5, 111.3, 55.22, 43.0, 38.7, 34.3, 31.4, 19.7; LRMS (EI, 70eV) *m/z* (%): 308 (M^+, 7), 161 (100), 117 (14), 91 (14); HRMS *m/z* (ESI) calcd for $C_{22}H_{29}O$ ($[M+H]^+$) 309.2213, found 309.2203.

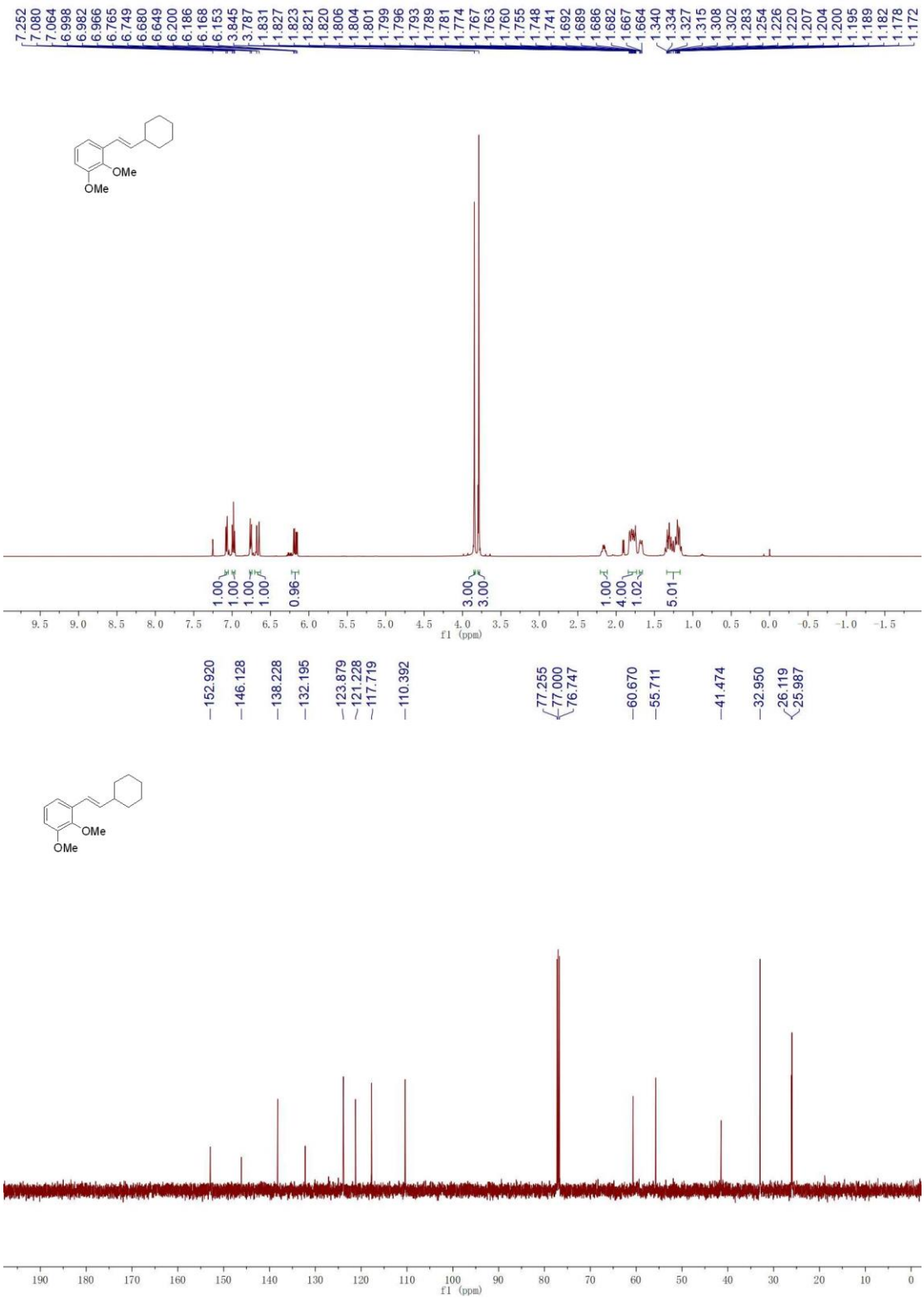
1-(Cyclohexyloxy)-2,2,6,6-tetramethylpiperidine (4a):



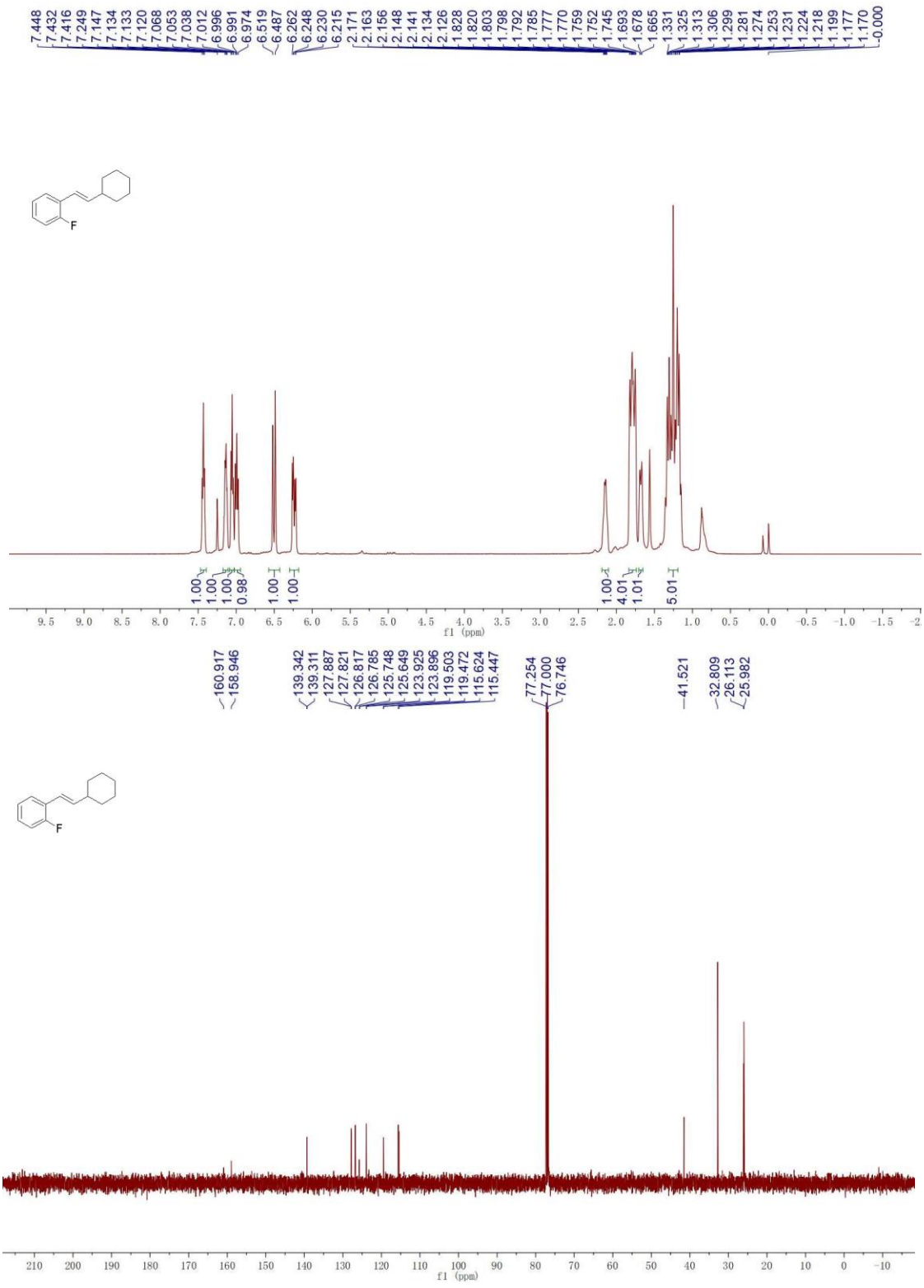
Yellow oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ 3.60-3.56 (m, 1H), 2.09-2.02 (m, 2H), 1.74-1.71 (m, 2H), 1.51-1.44 (m, 5H), 1.25-1.11 (m, 19H); ^{13}C NMR (125 MHz, $CDCl_3$) δ: 81.7, 59.6, 40.2, 32.9, 25.9, 25.1, 17.3; LRMS (EI, 70 eV) *m/z* (%): 239 (M^+, 100), 225 (31), 142 (52); HRMS *m/z* (ESI) calcd for $C_{15}H_{30}NO$ ($[M+H]^+$) 240.2322, found 240.2328.

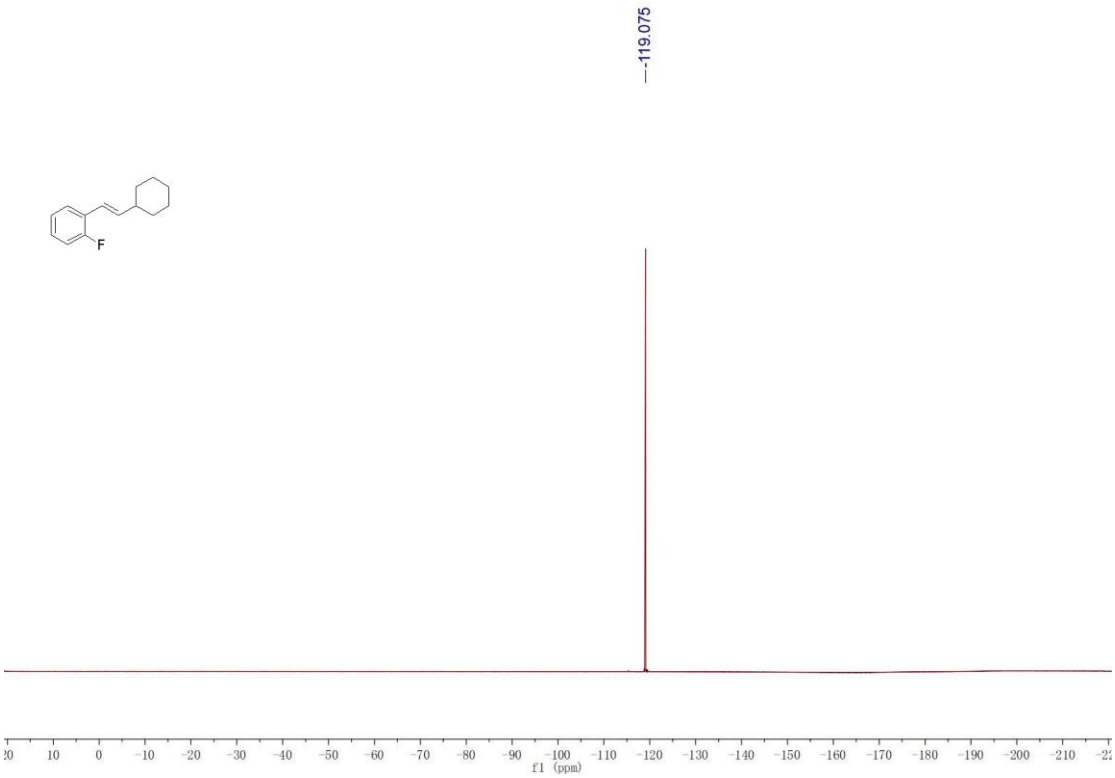
(C) Spectra

_(E)_-1-(2-cyclohexylvinyl)-2,3-dimethoxybenzene (3aa):

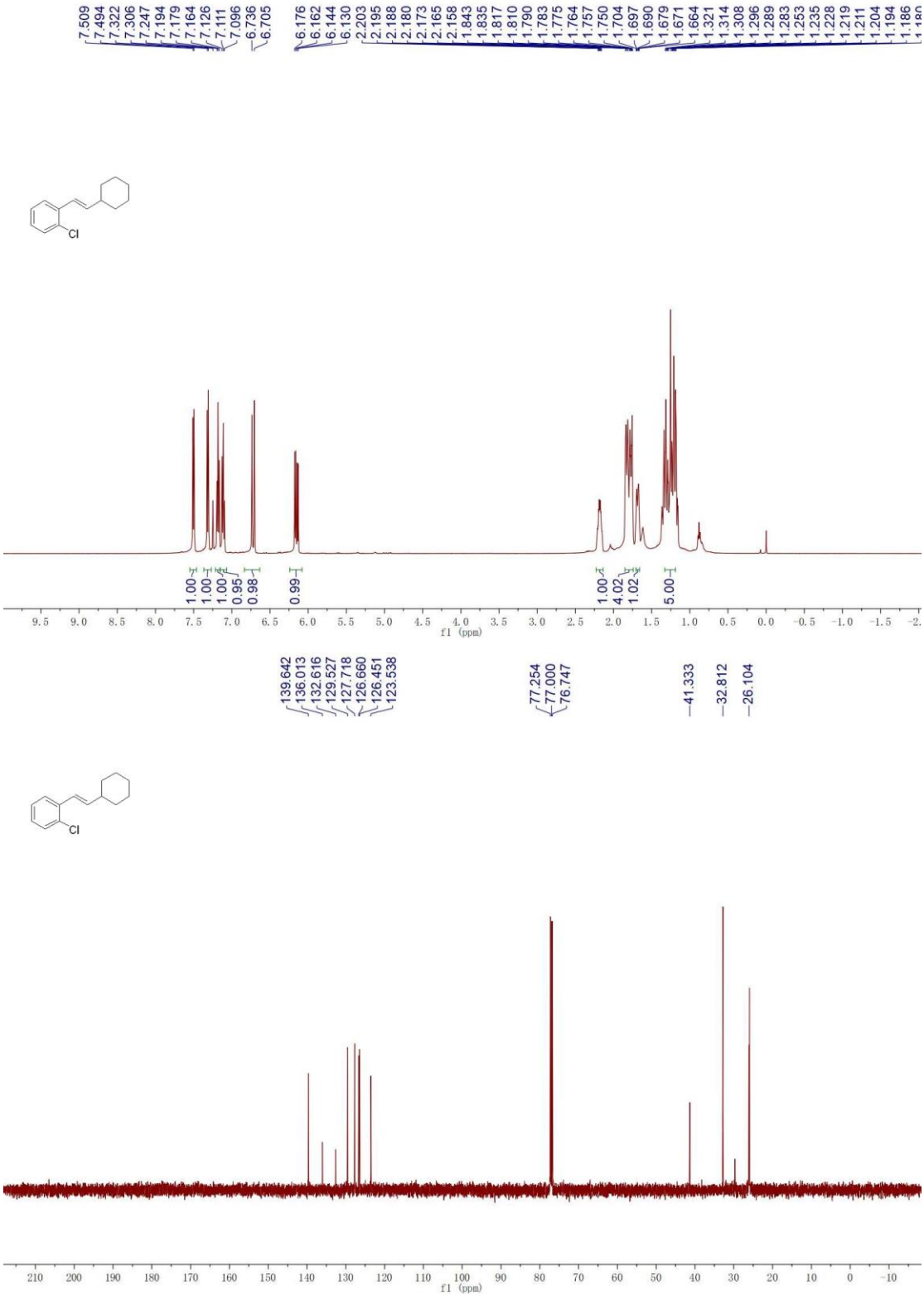


(E)-1-(2-cyclohexylvinyl)-2-fluorobenzene (3ba):

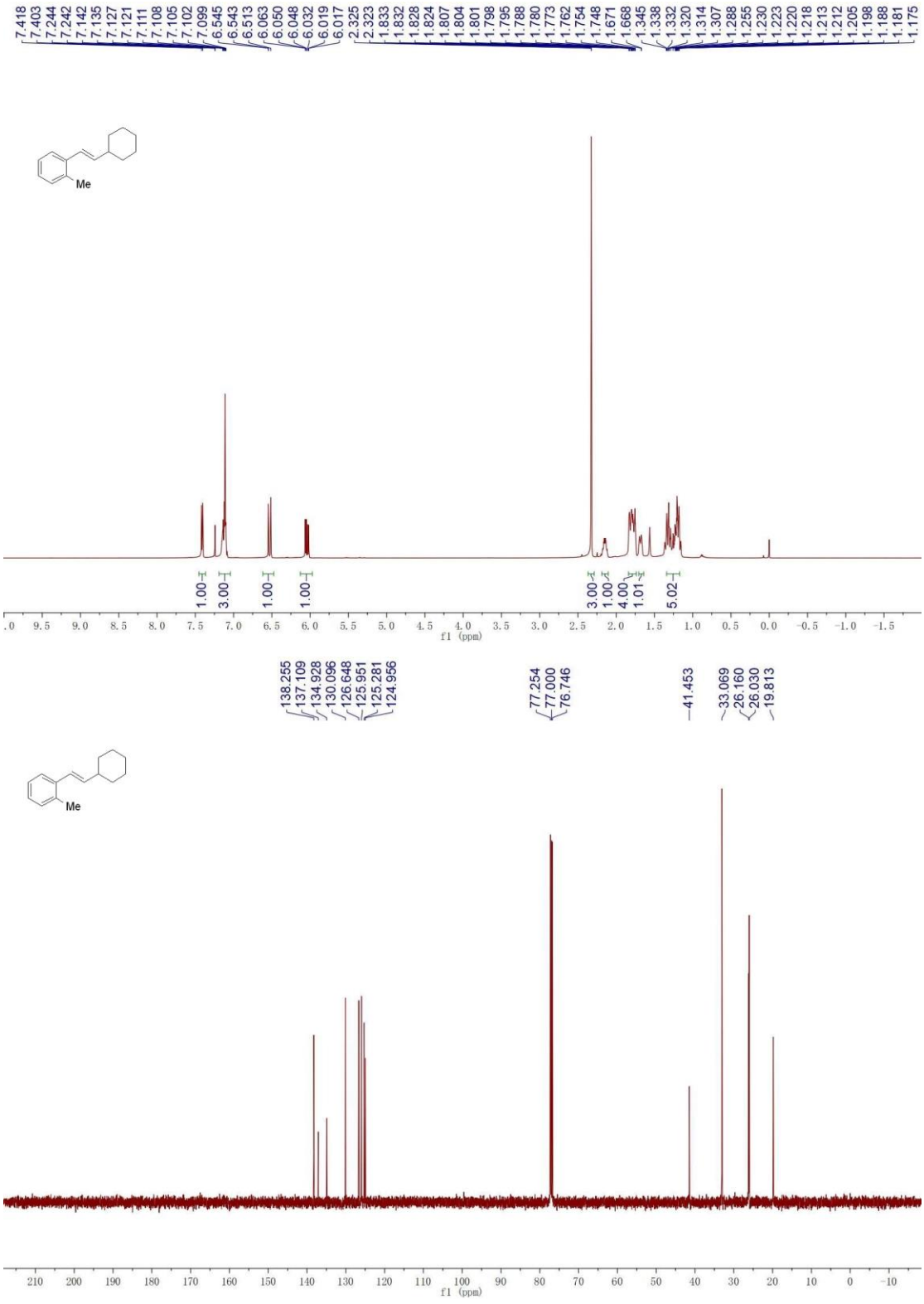



-119.075
F
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
-130
-140
-150
-160
-170
-180
-190
-200
-210
f1 (ppm)

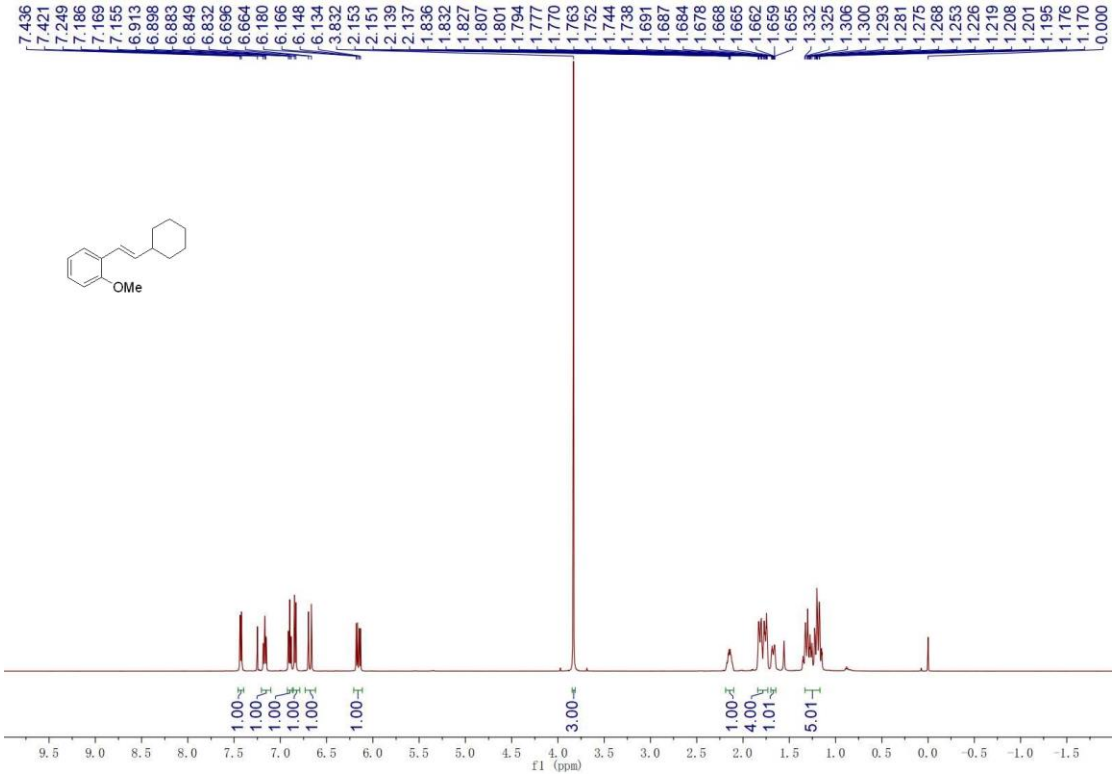
(E)-1-chloro-2-(2-cyclohexylvinyl)benzene (3ca):

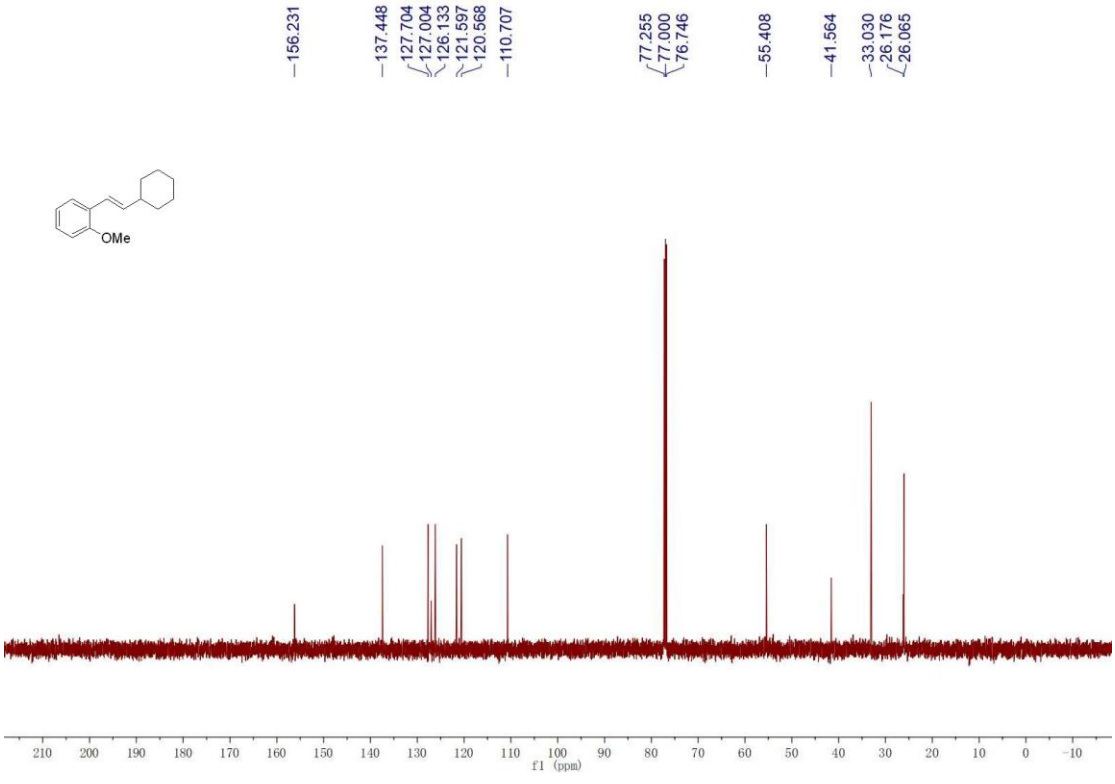


(E)-1-(2-cyclohexylvinyl)-2-methylbenzene (3da):

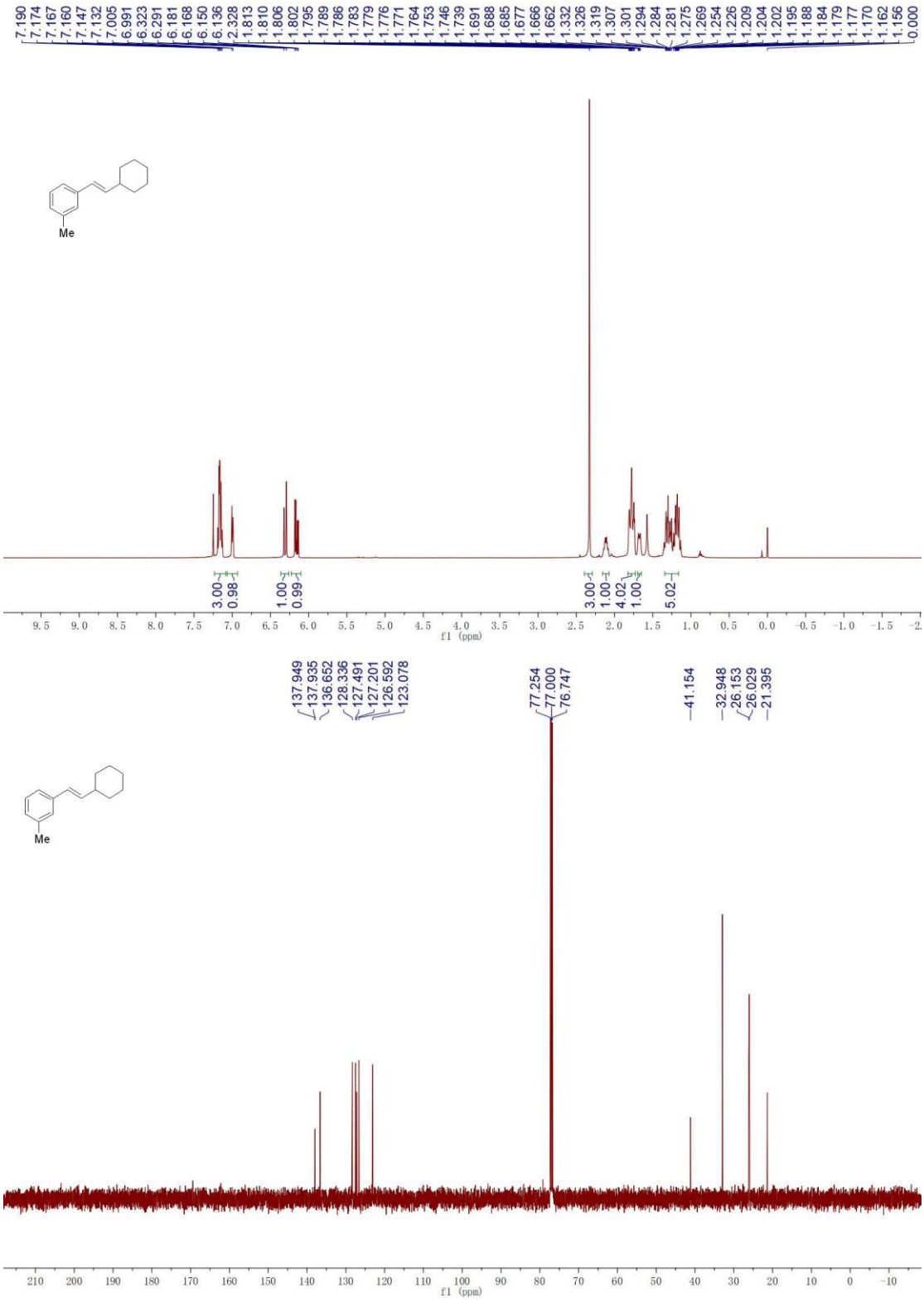


_(E)_-1-(2-cyclohexylvinyl)-2-methoxybenzene (3ea):

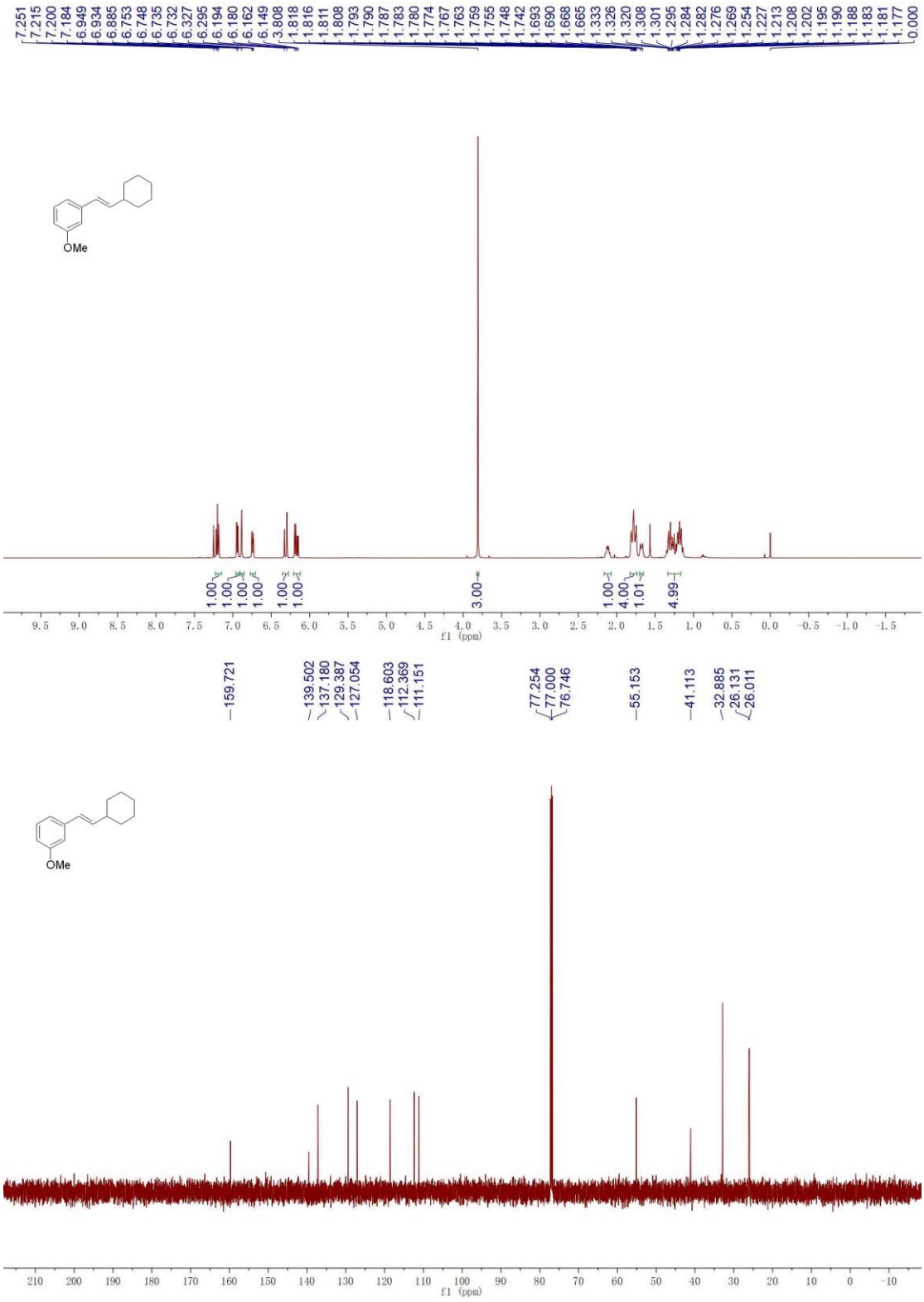




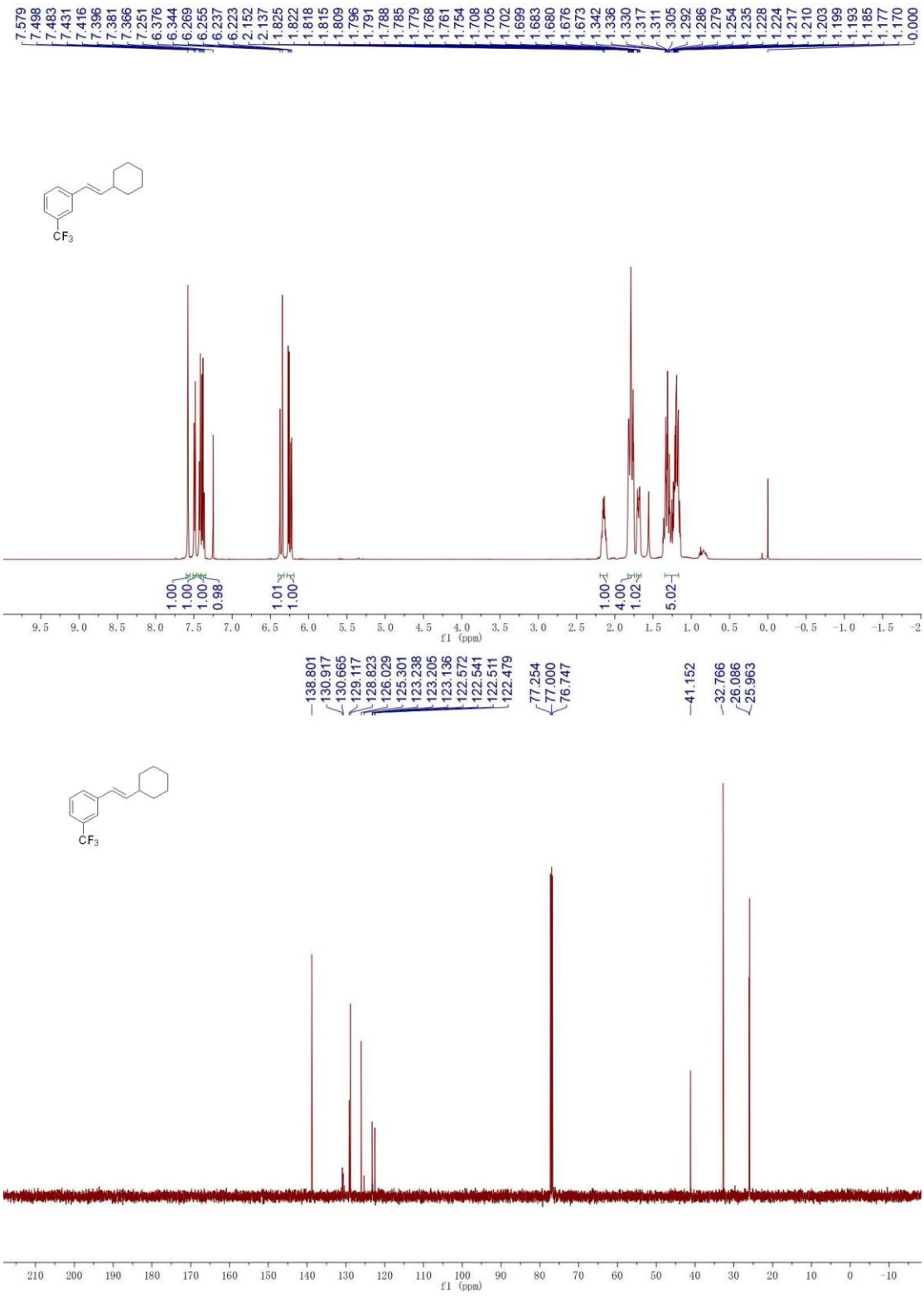
(E)-1-(2-cyclohexylvinyl)-3-methylbenzene (3fa):

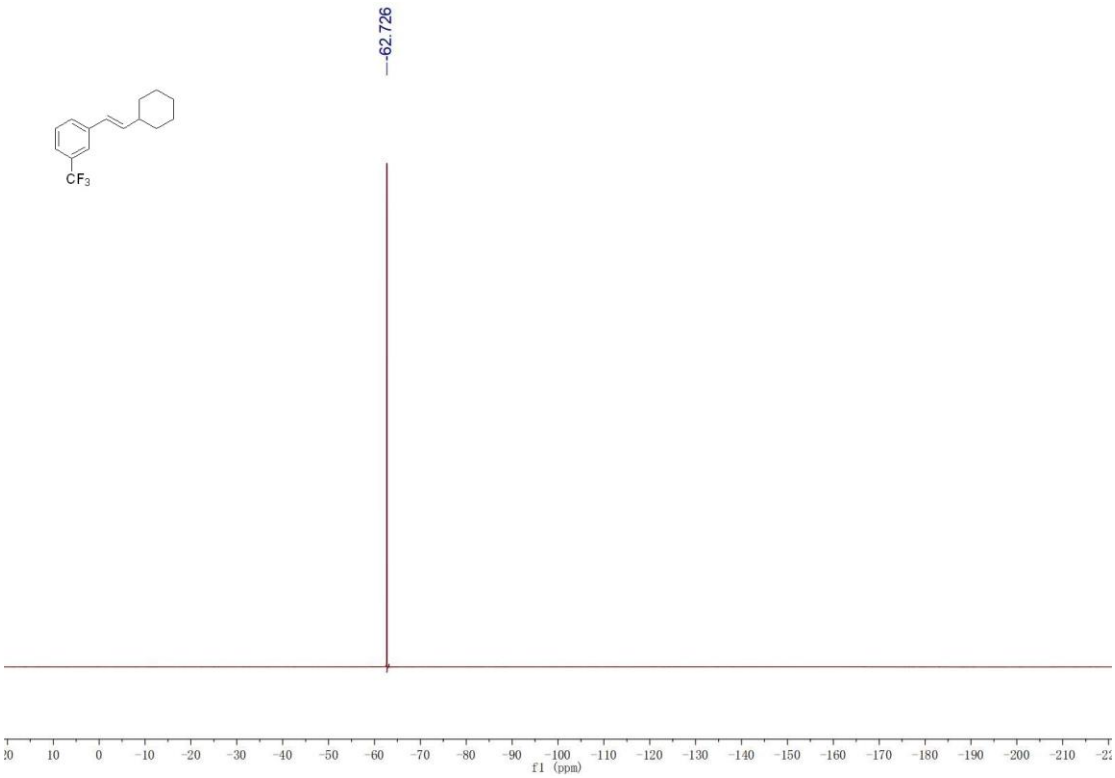


(E)-1-(2-cyclohexylvinyl)-3-methoxybenzene (3ga):

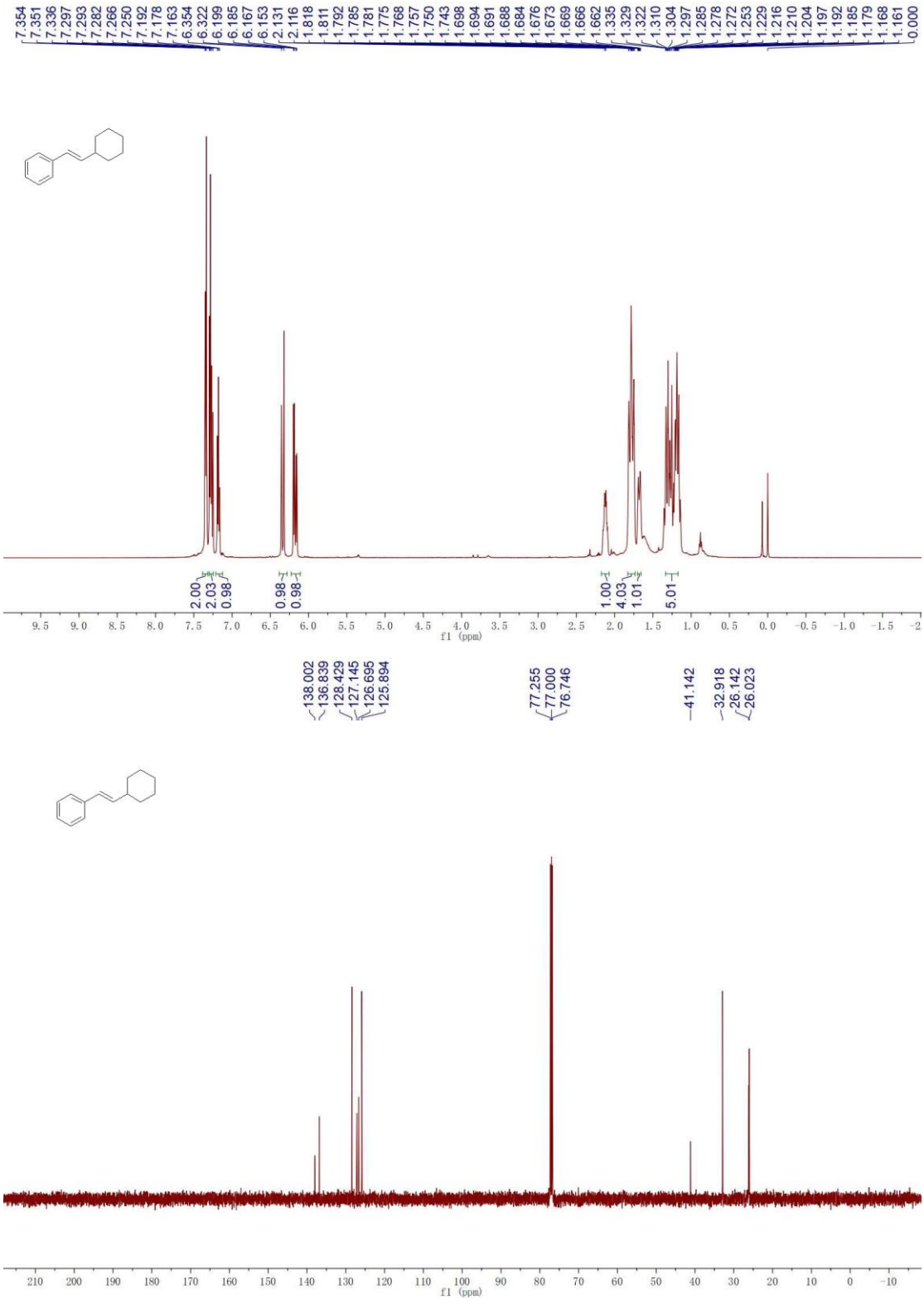


(E)-1-(2-cyclohexylvinyl)-3-(trifluoromethyl)benzene (3ha):

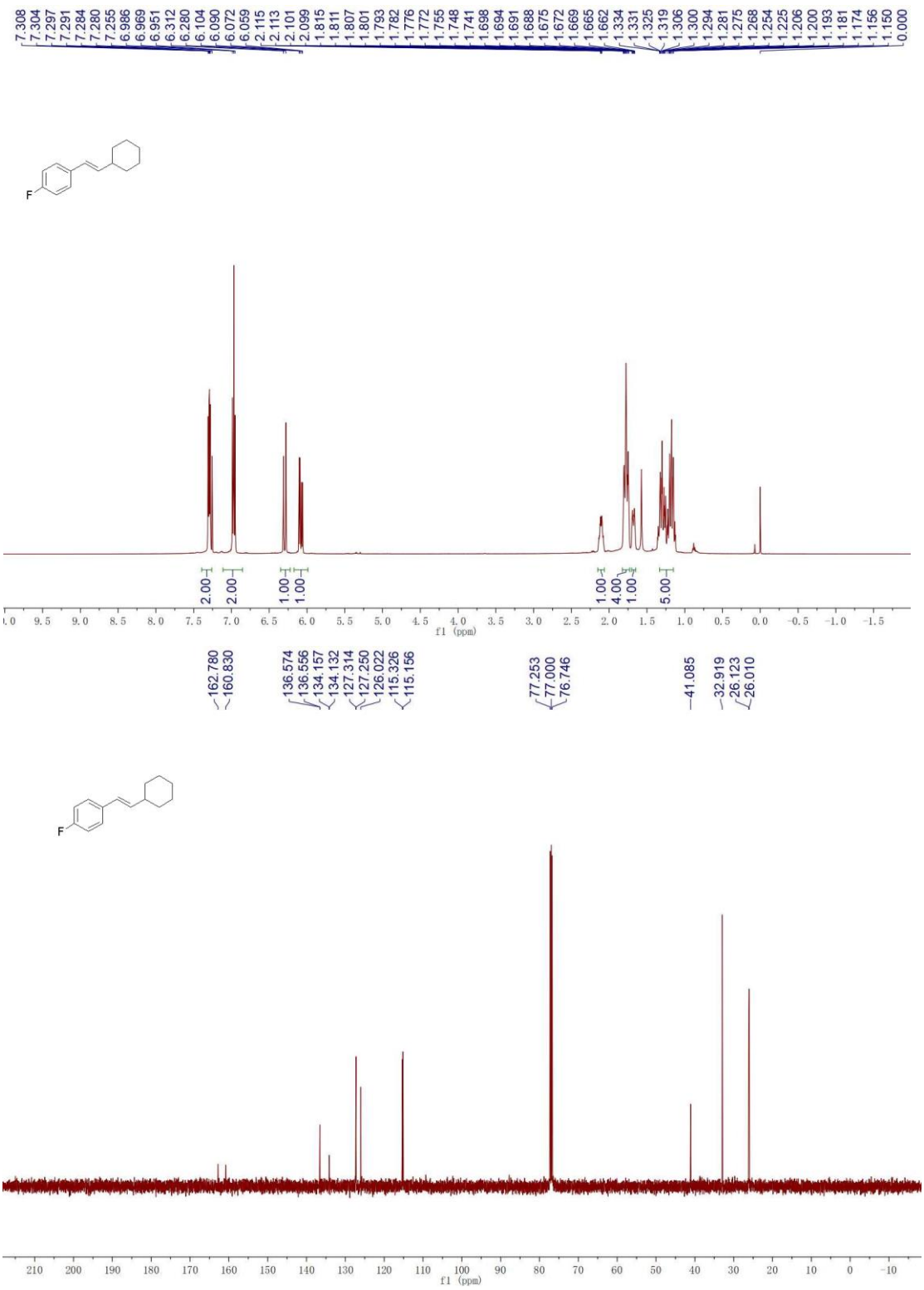


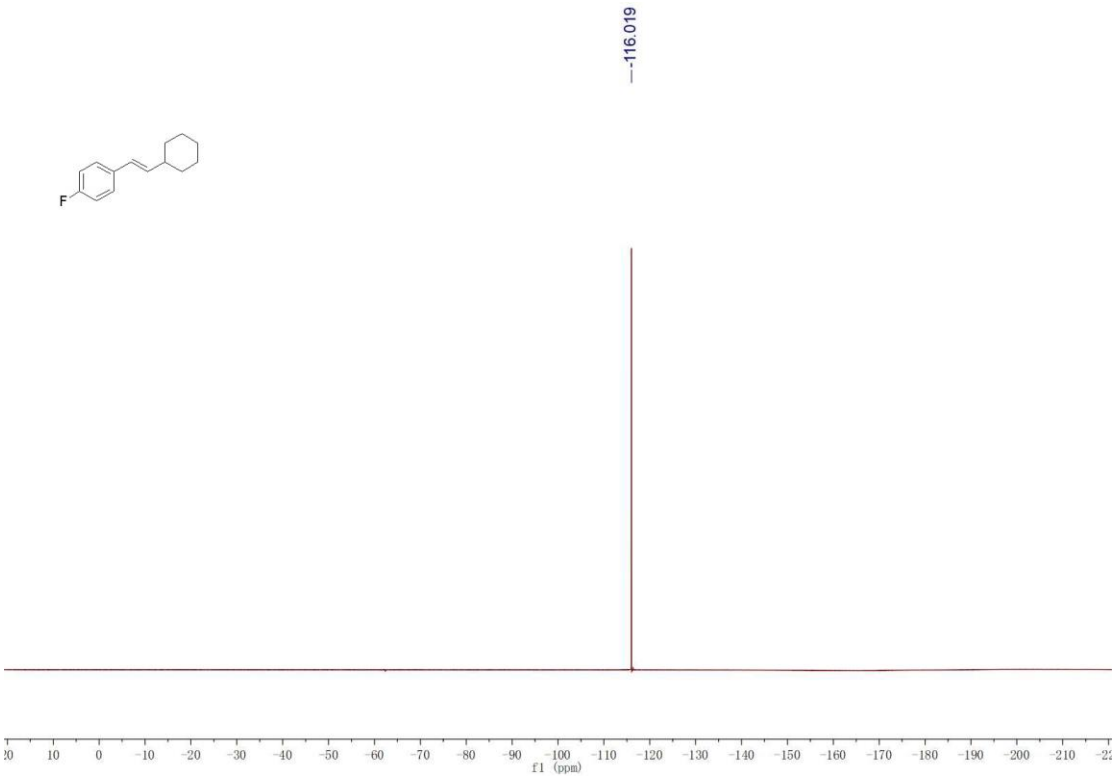

-62.726
CF3
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
-130
-140
-150
-160
-170
-180
-190
-200
-210
f1 (ppm)

(E)-(2-cyclohexylvinyl)benzene (3ia):

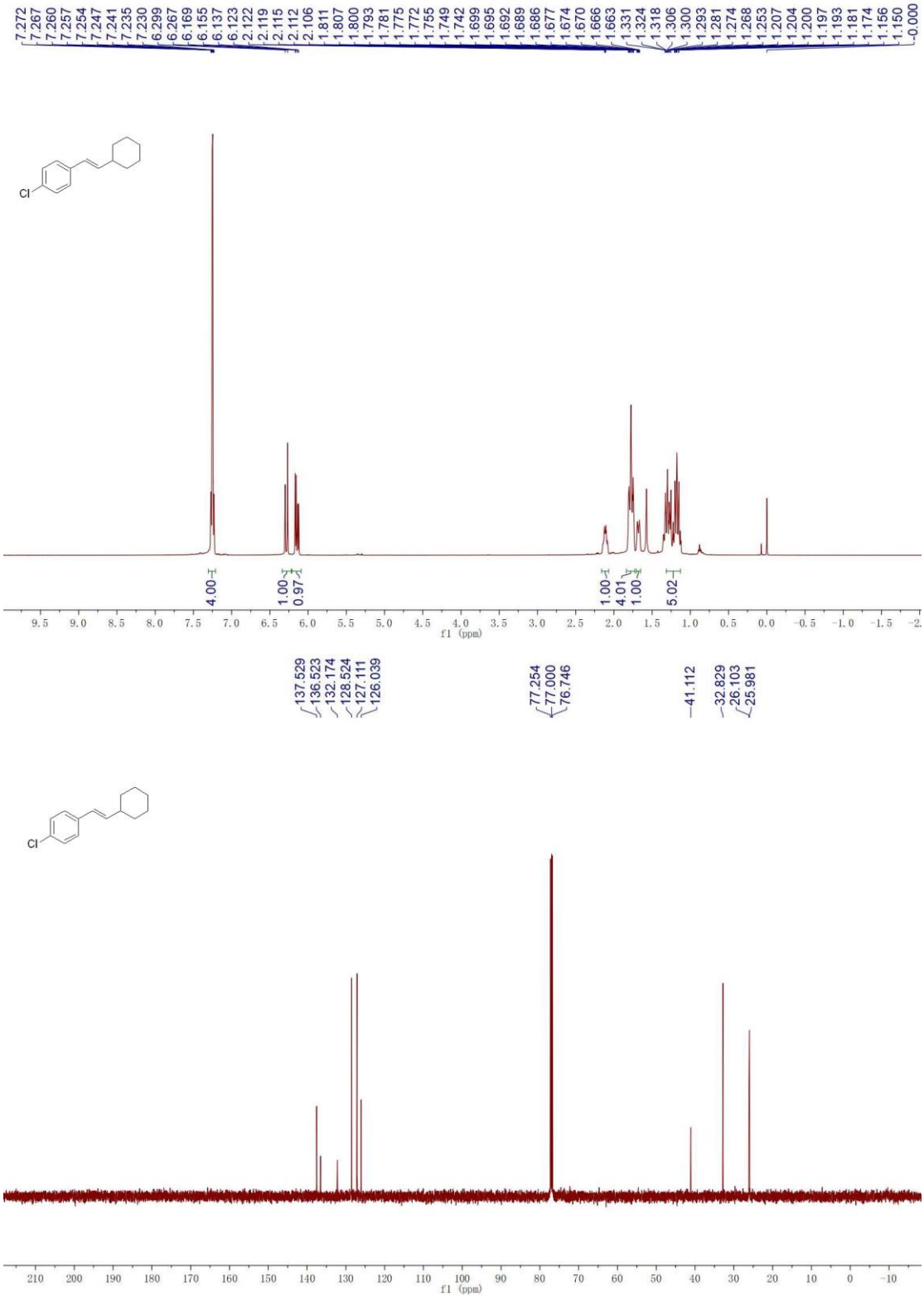


(E)-1-(2-cyclohexylvinyl)-4-fluorobenzene(3ja):

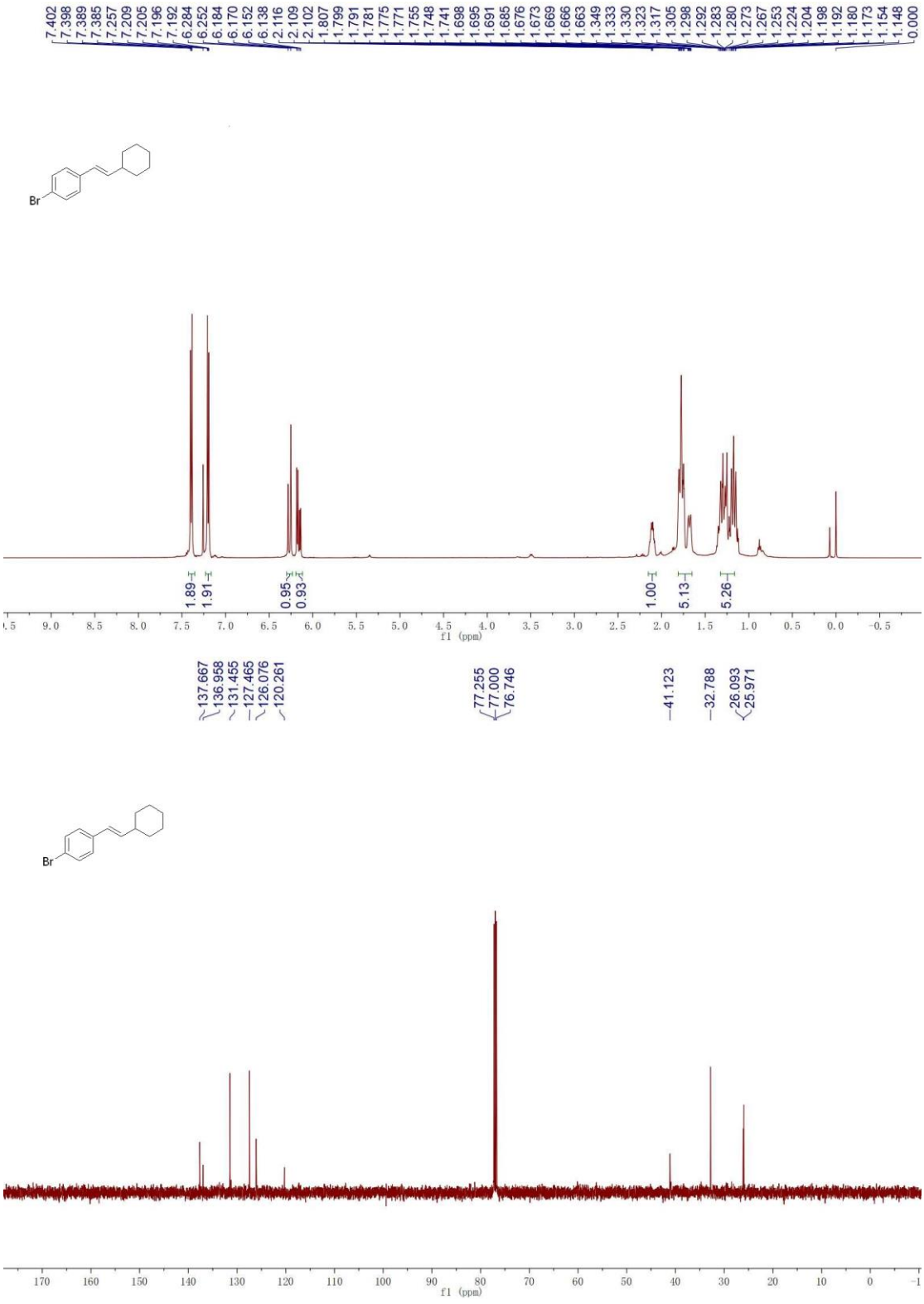



-116.019
F
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
-130
-140
-150
-160
-170
-180
-190
-200
-210
f1 (ppm)

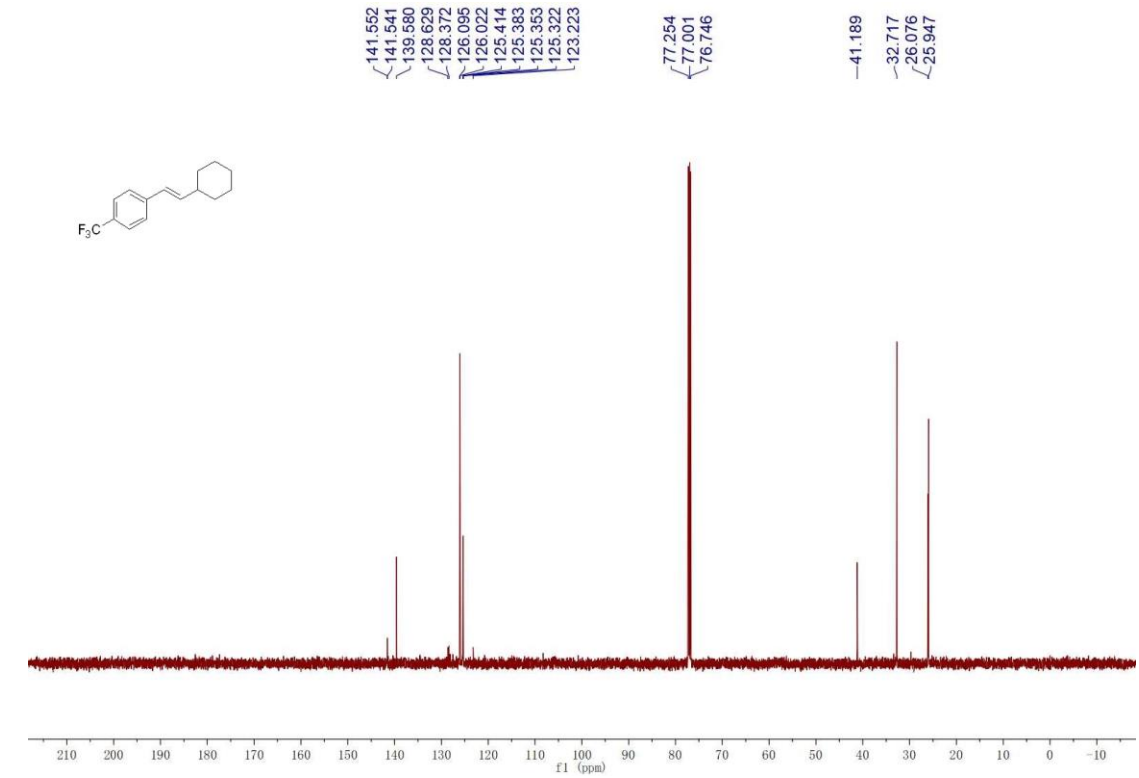
(E)-1-chloro-4-(2-cyclohexylvinyl)benzene (3ka):

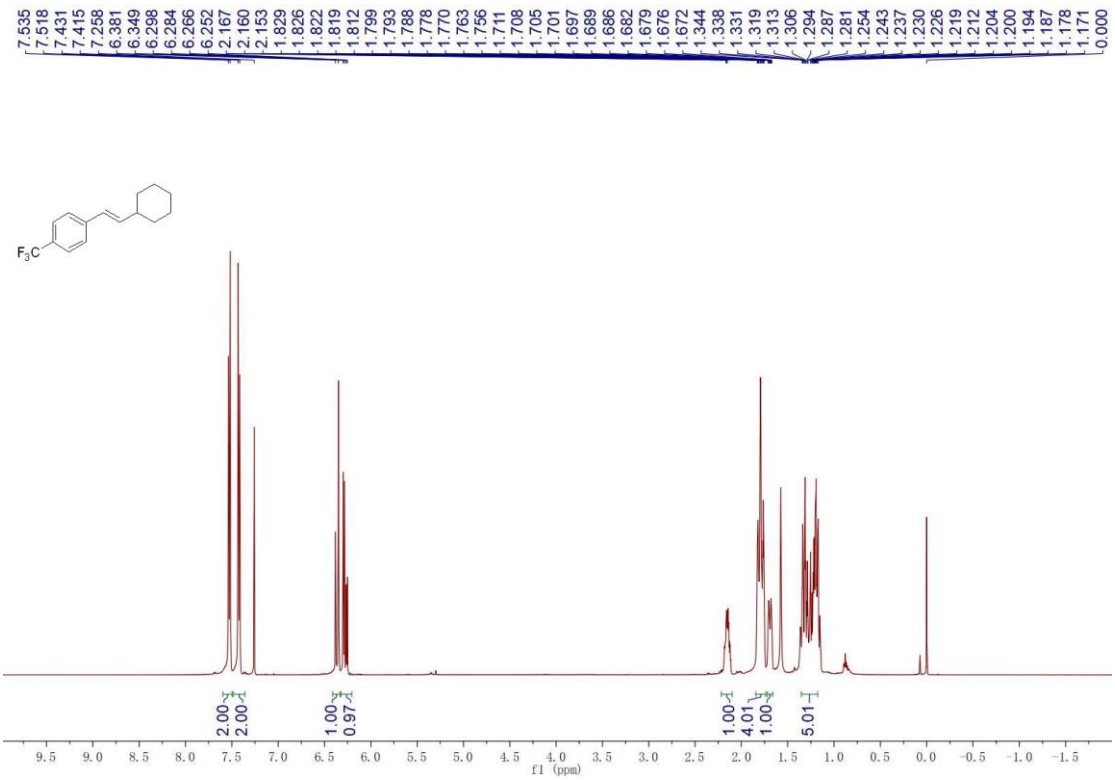


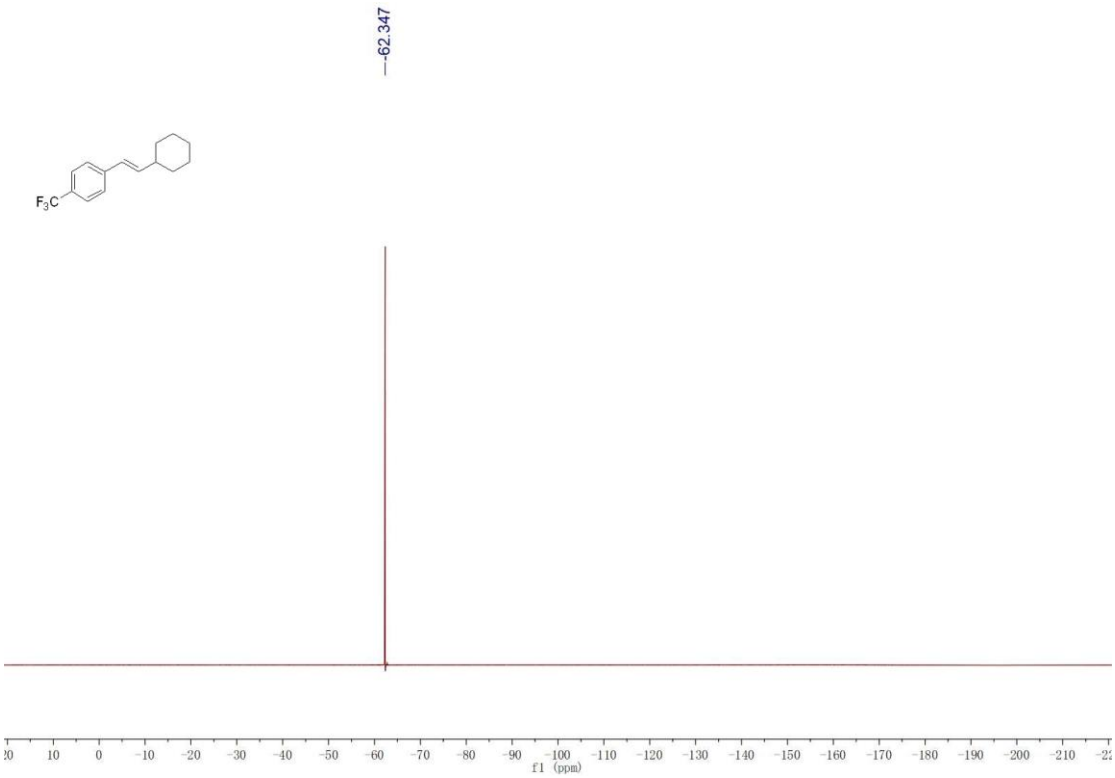
(E)-1-bromo-4-(2-cyclohexylvinyl)benzene (3la):



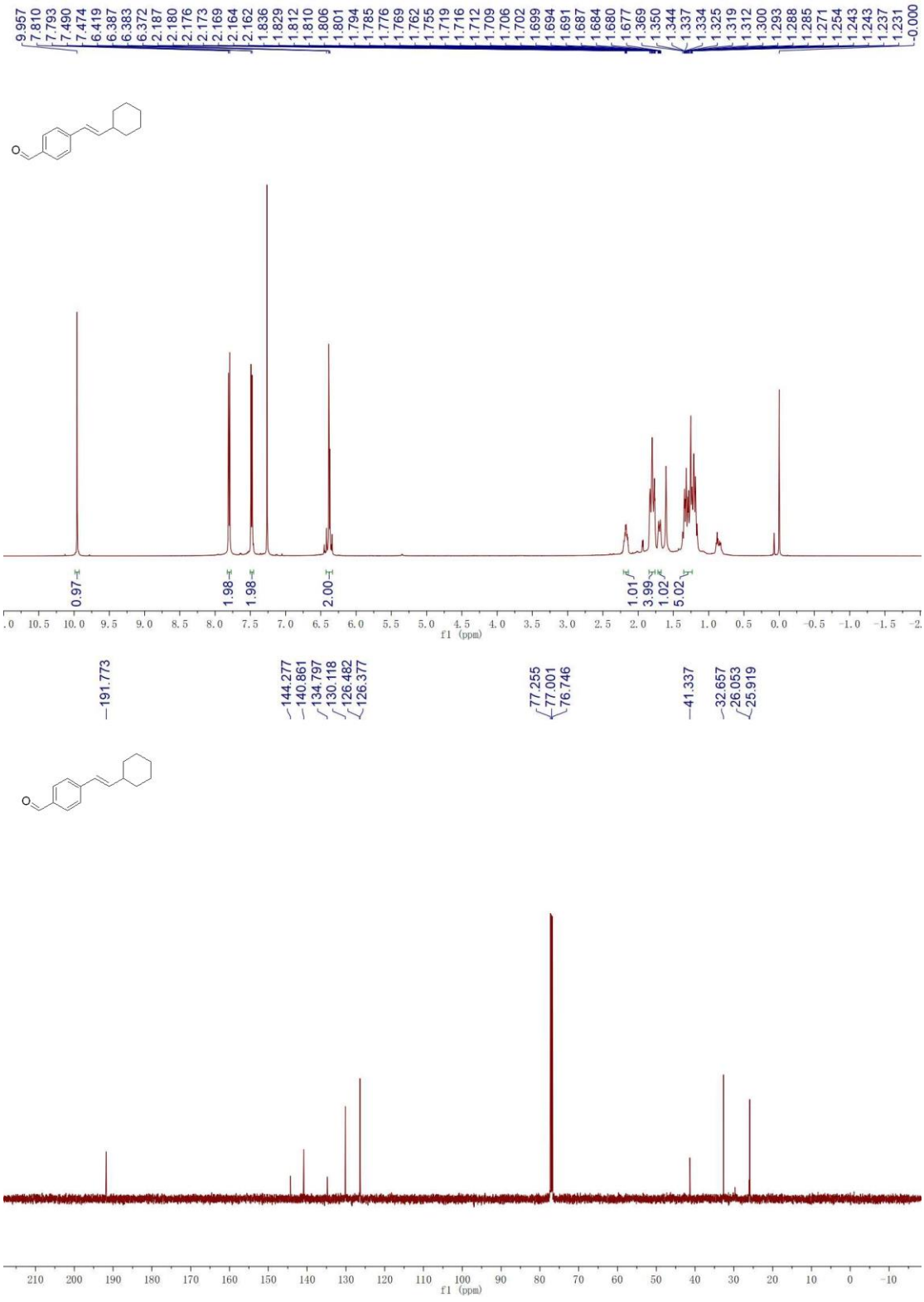
***(E)*-1-(2-cyclohexylvinyl)-4-(trifluoromethyl)benzene (3ma):**



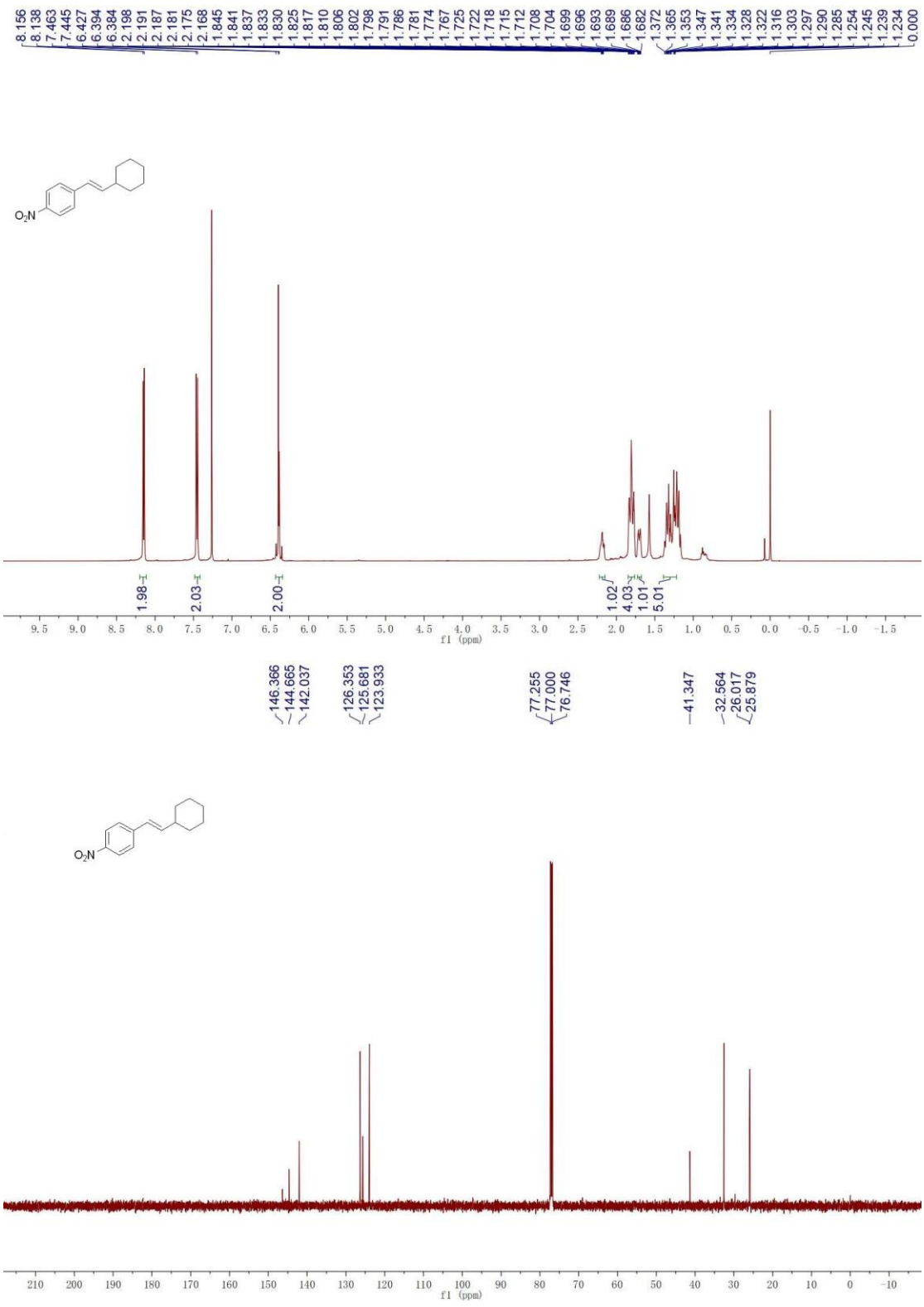



-62.347
F3C
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
-130
-140
-150
-160
-170
-180
-190
-200
-210
f1 (ppm)

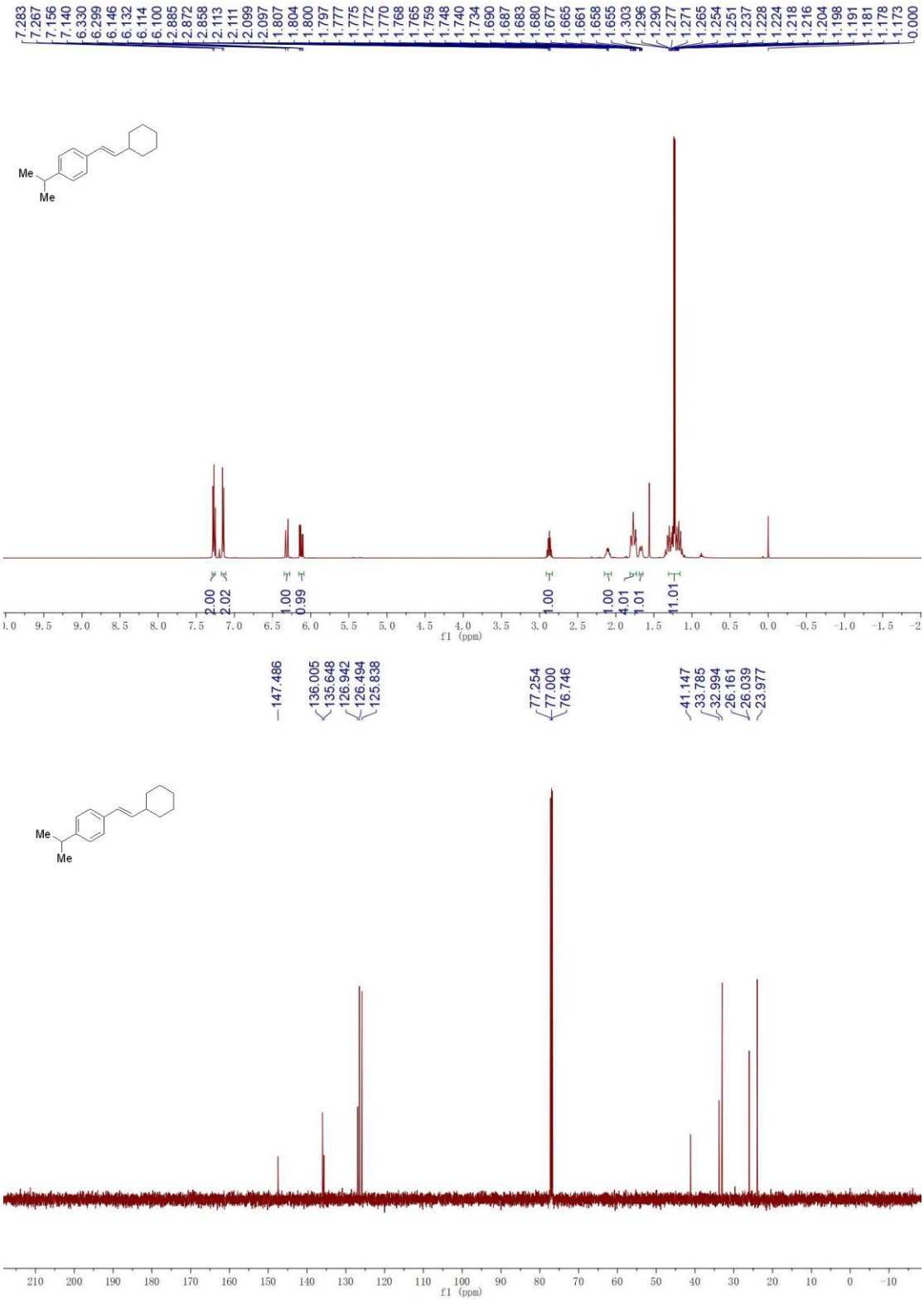
(*E*)-4-(2-cyclohexylvinyl)benzaldehyde (3na):



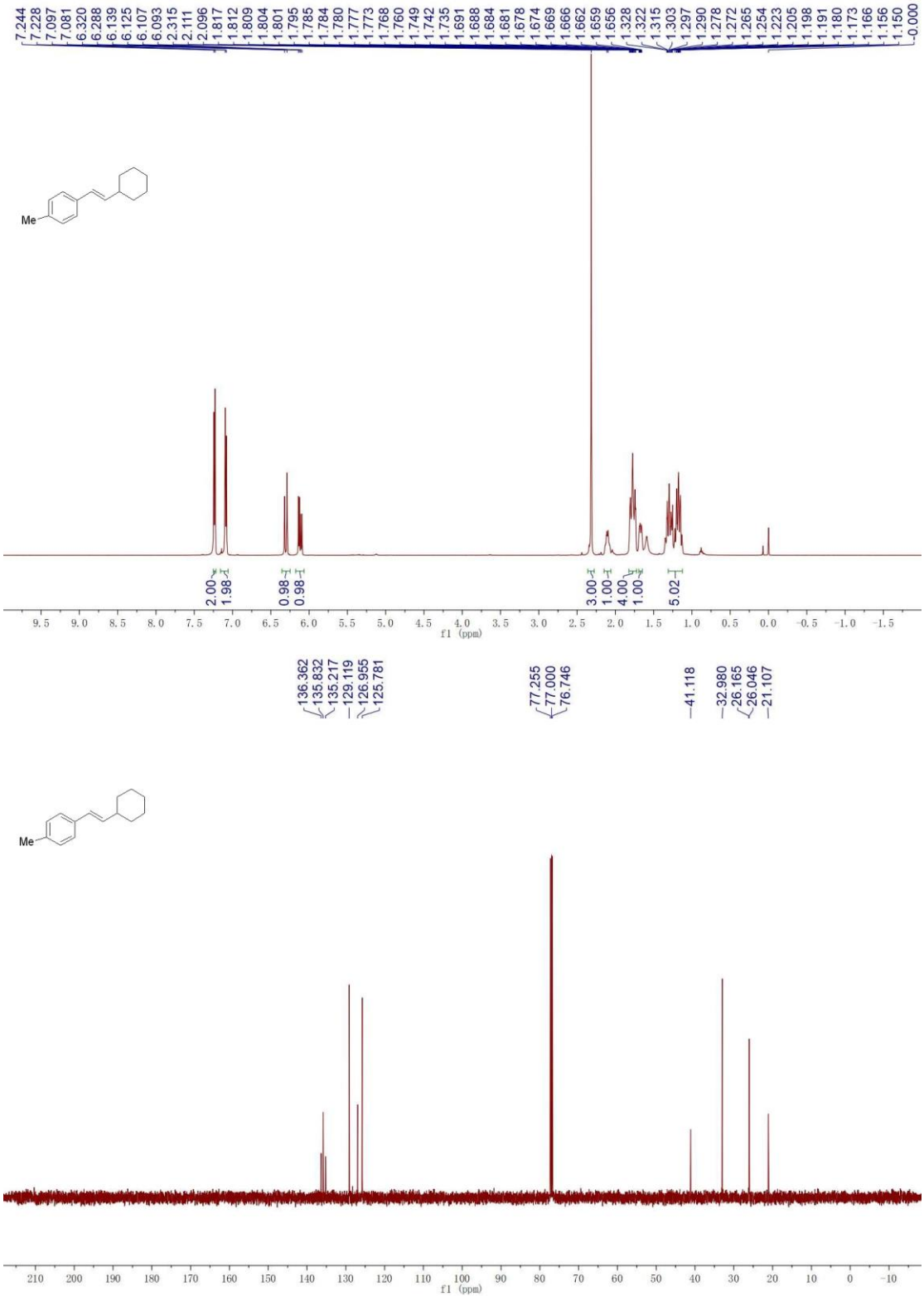
(*E*)-1-(2-cyclohexylvinyl)-4-nitrobenzene (3oa):



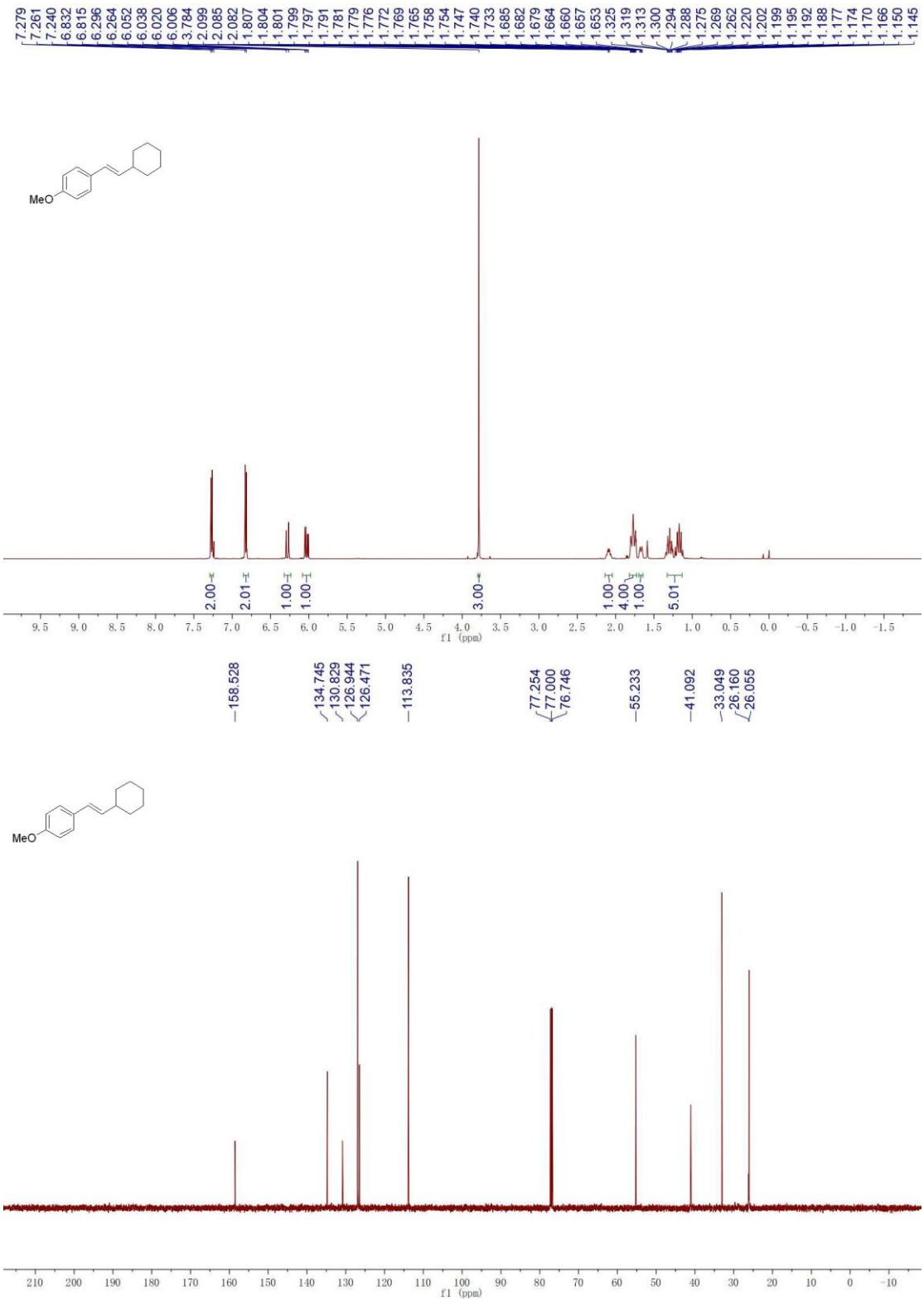
(E)-1-(2-cyclohexylvinyl)-4-isopropylbenzene (3pa):



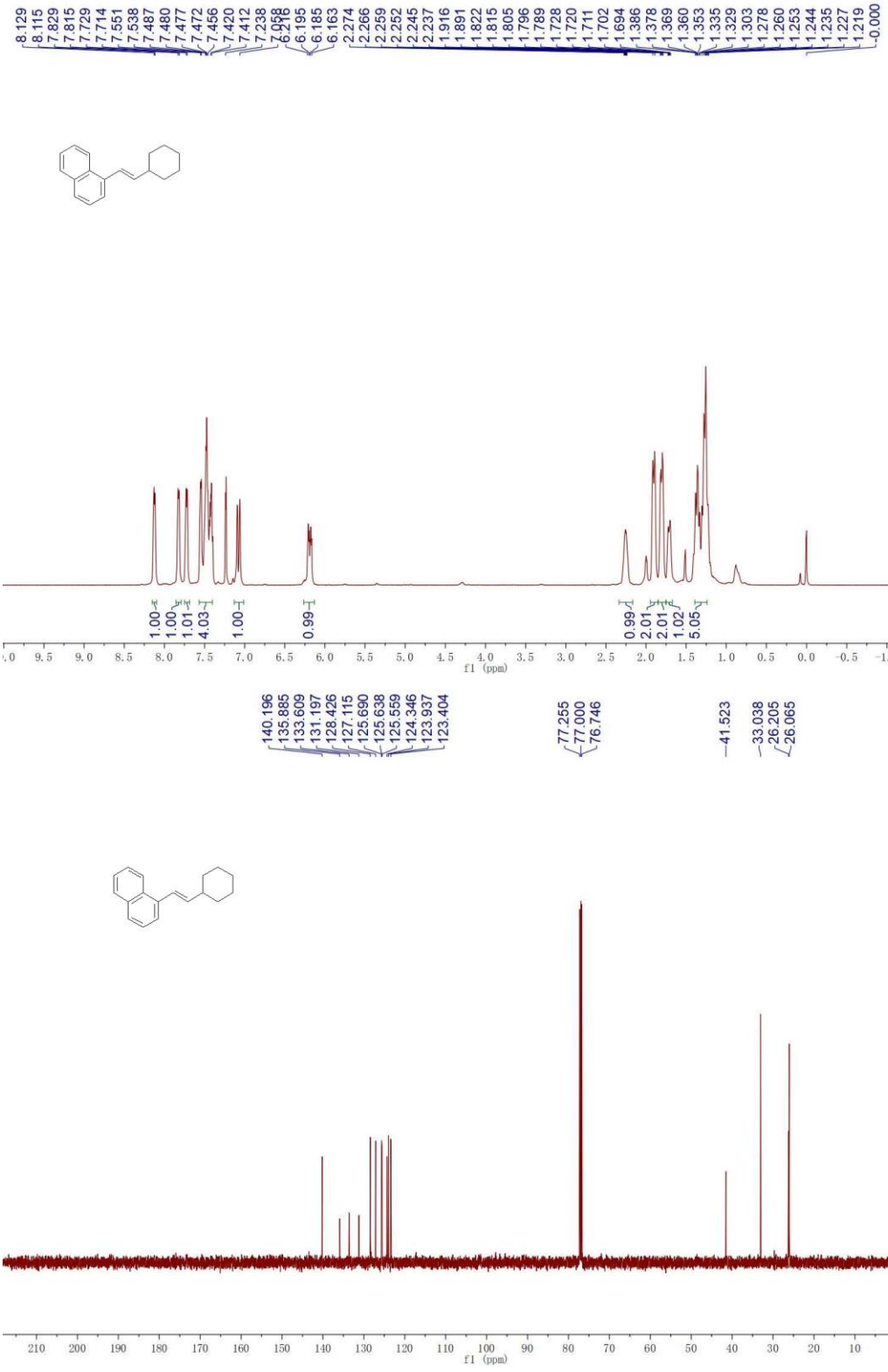
(E)-1-(2-cyclohexylvinyl)-4-methylbenzene (3qa):



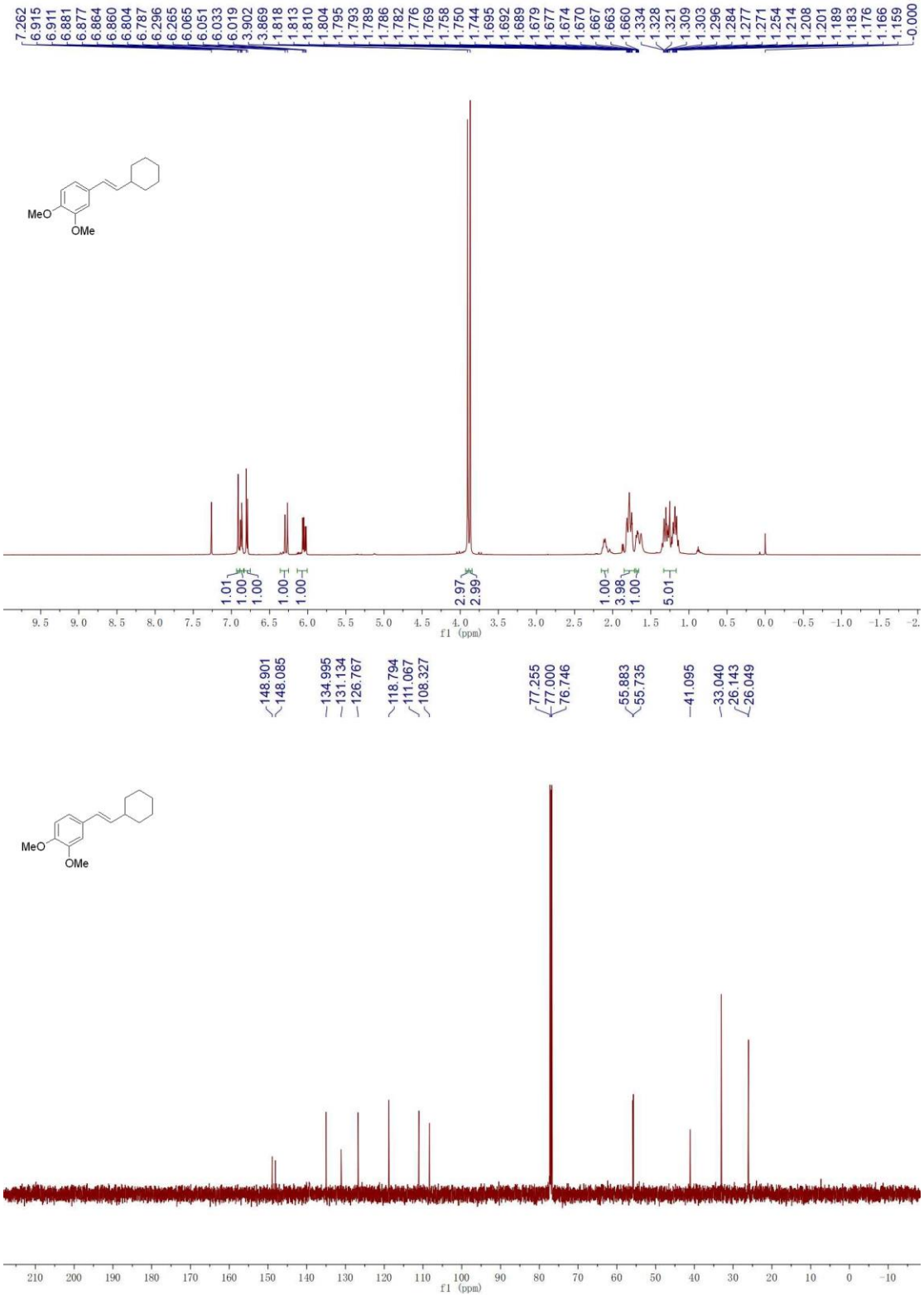
(E)-1-(2-cyclohexylvinyl)-4-methoxybenzene (3ra):



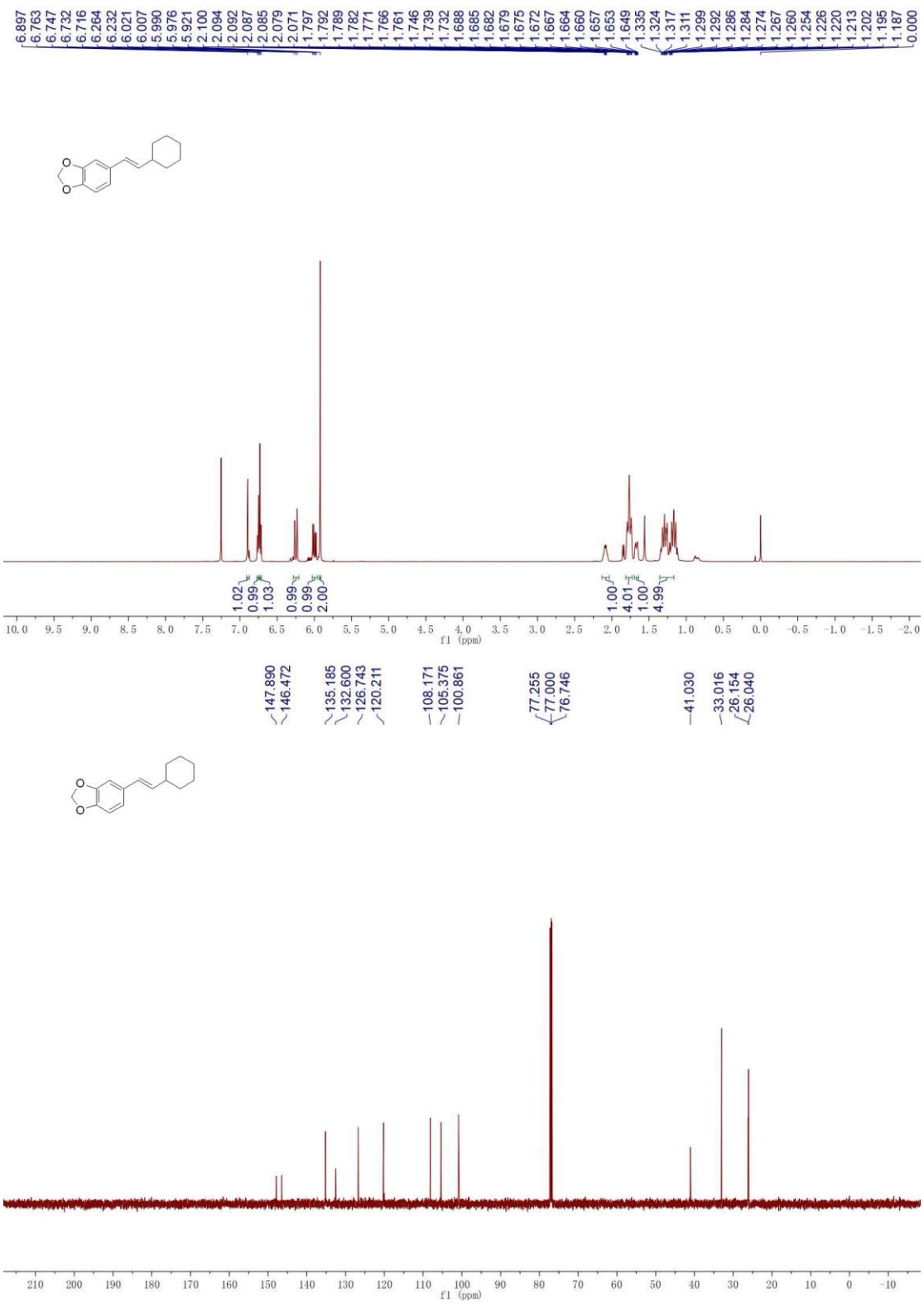
(E)-1-(2-cyclohexylvinyl)naphthalene(3sa):



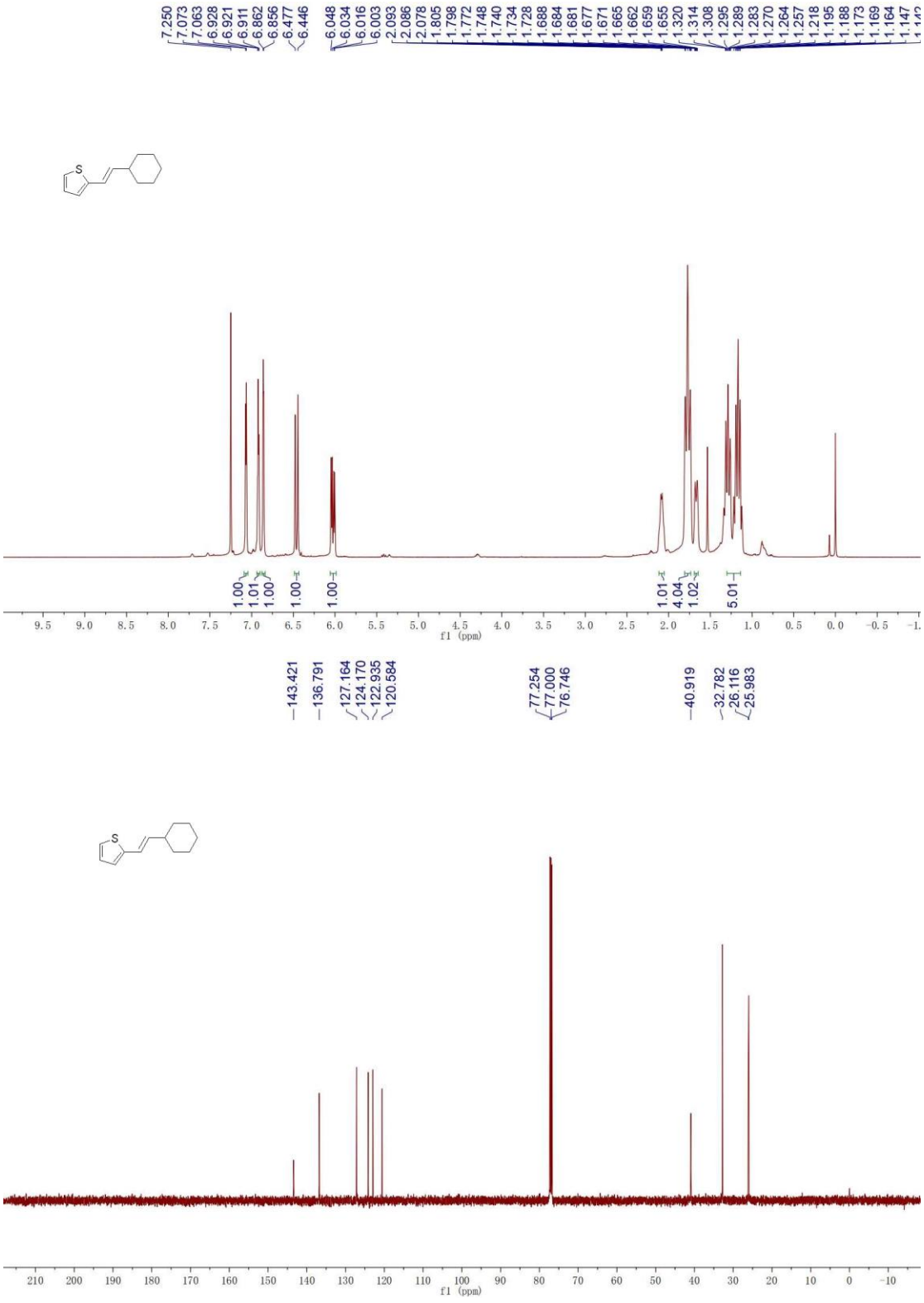
(E)-4-(2-cyclohexylvinyl)-1,2-dimethoxybenzene (3ta):



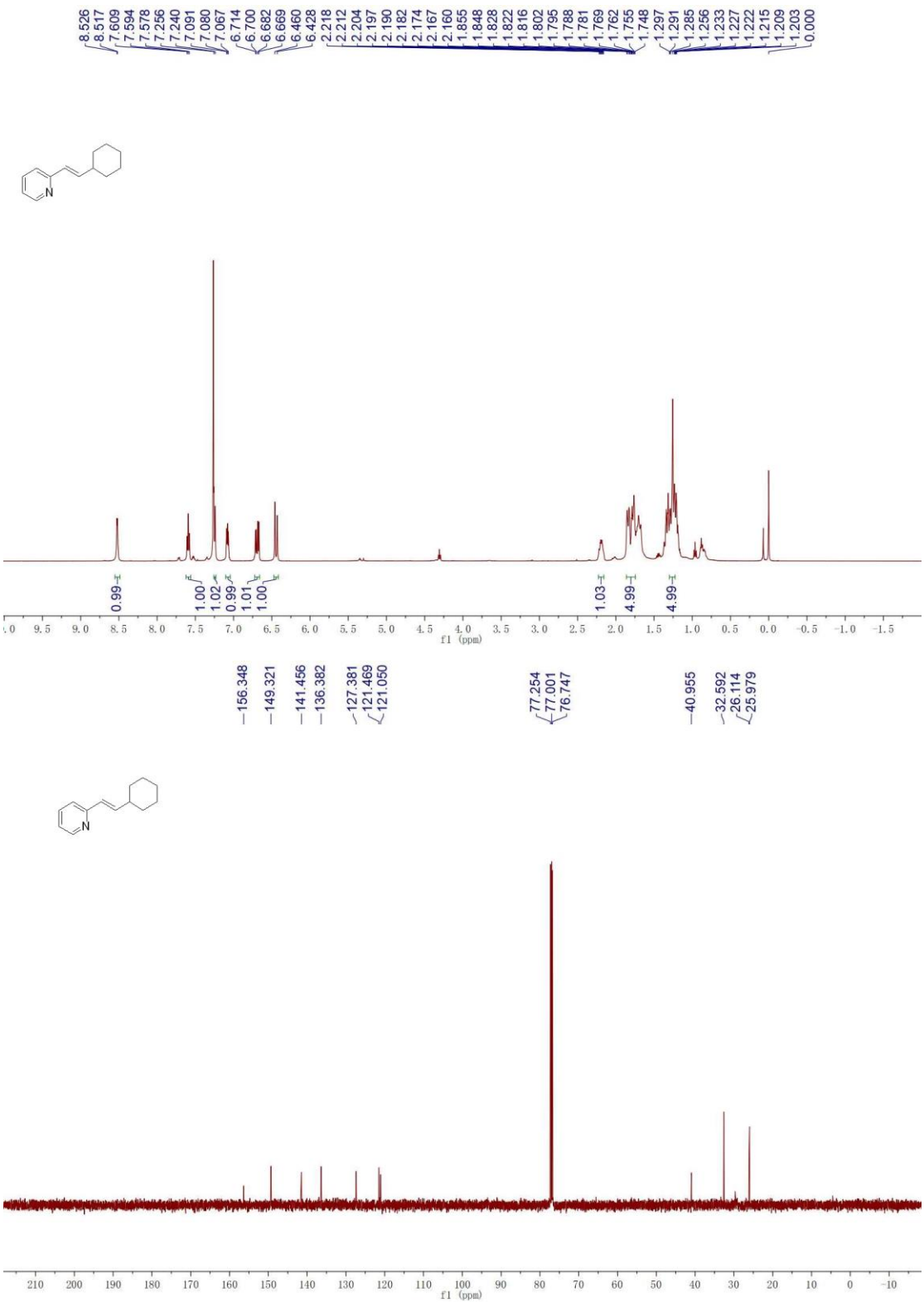
(*E*)-5-(2-cyclohexylvinyl)benzo[*d*][1,3]dioxole (3ua):



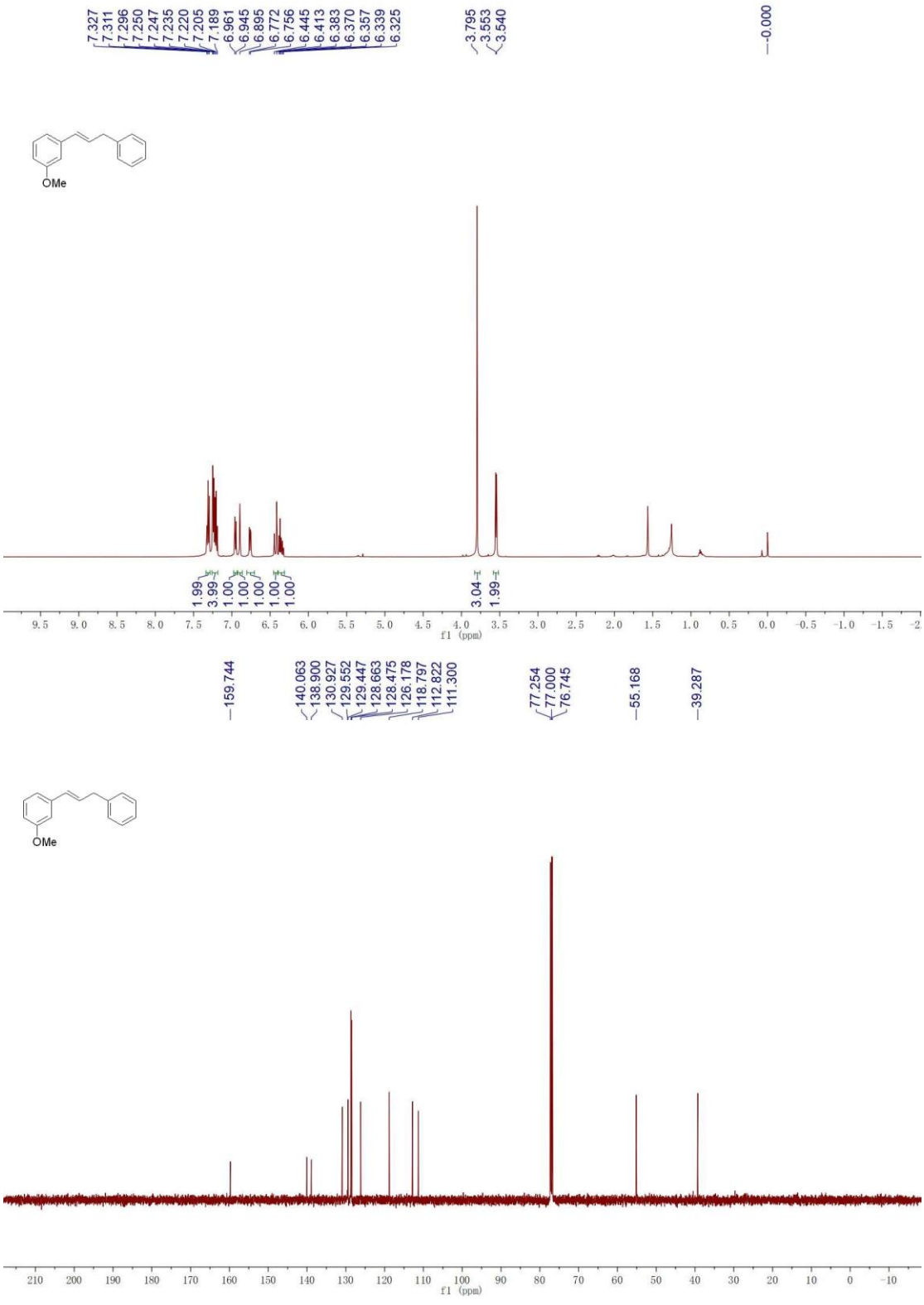
(E)-2-(2-cyclohexylvinyl)thiophene (3wa):



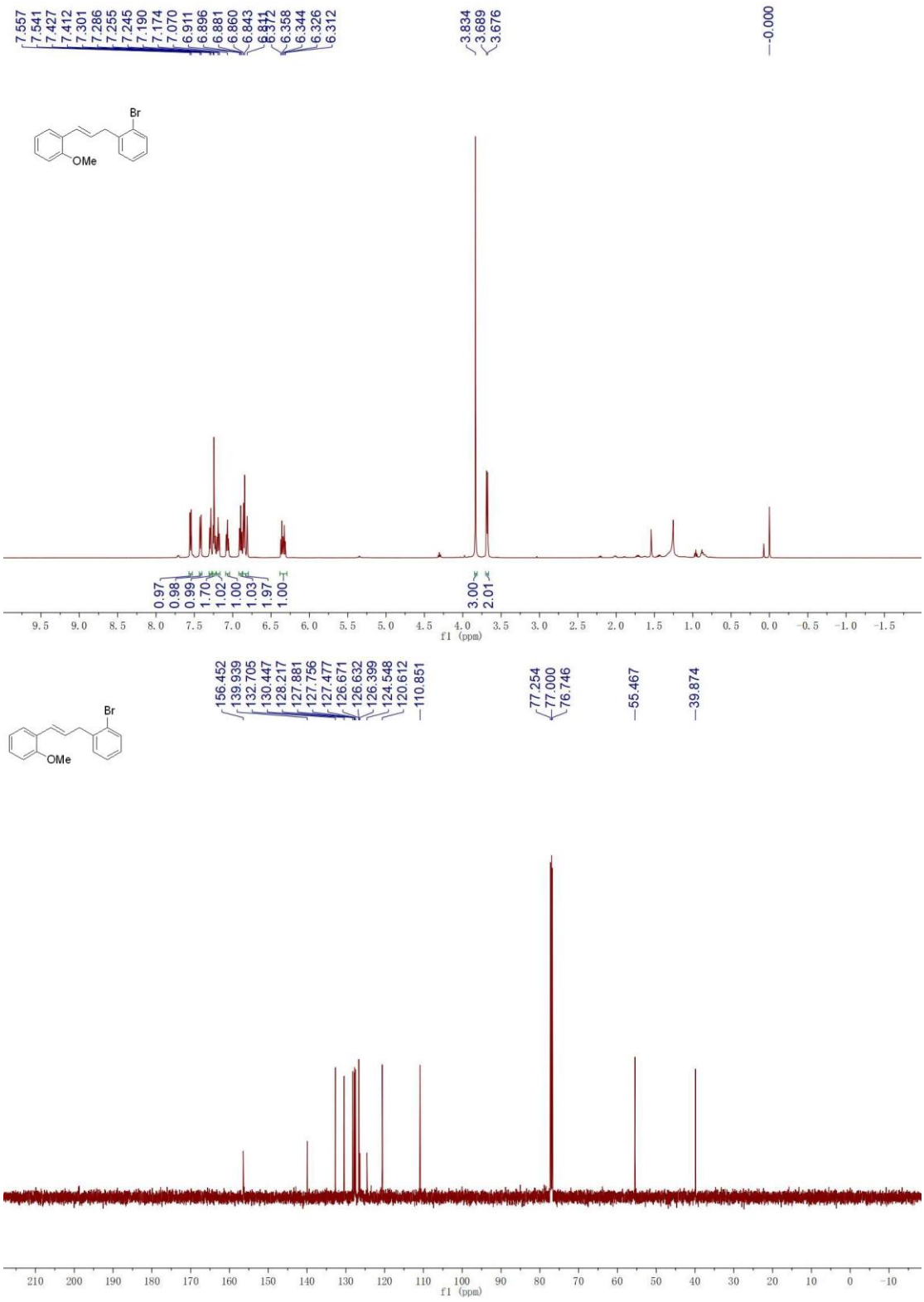
(*E*)-2-(2-cyclohexylvinyl)pyridine (3xa):



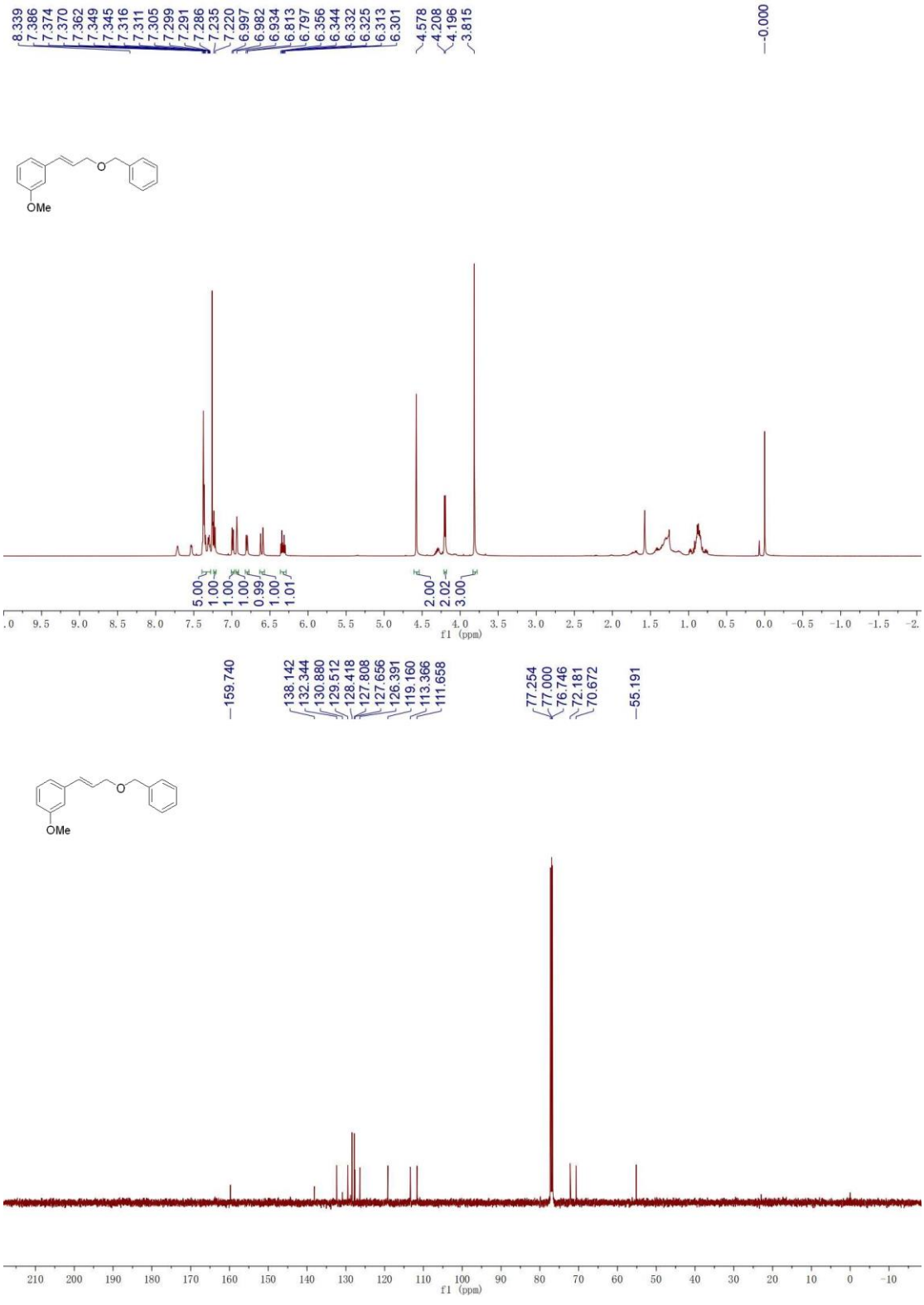
(*E*)-1-methoxy-3-(3-phenylprop-1-en-1-yl)benzene (3ab):



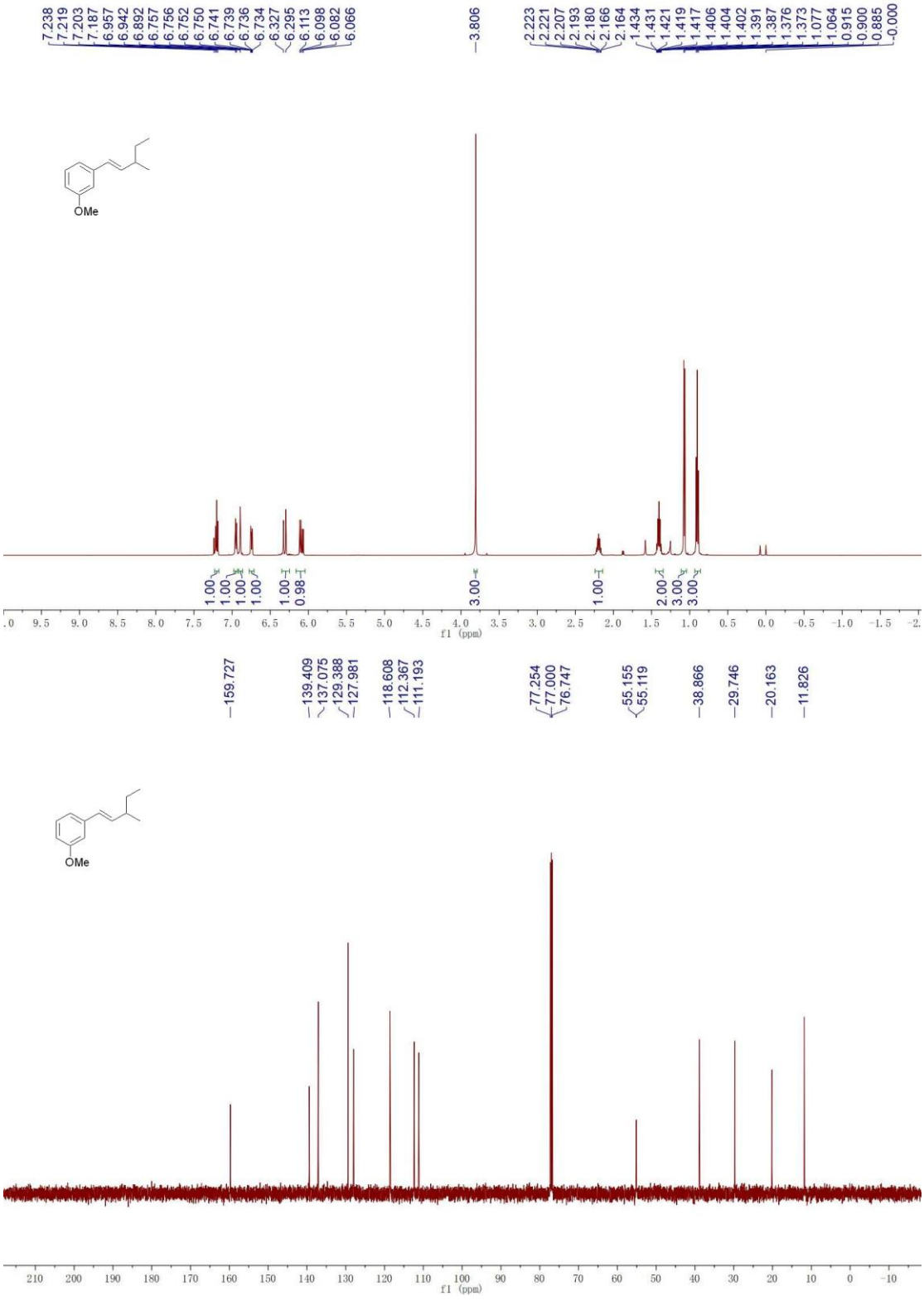
(*E*)-1-bromo-2-(3-(2-methoxyphenyl)allyl)benzene (3ac):



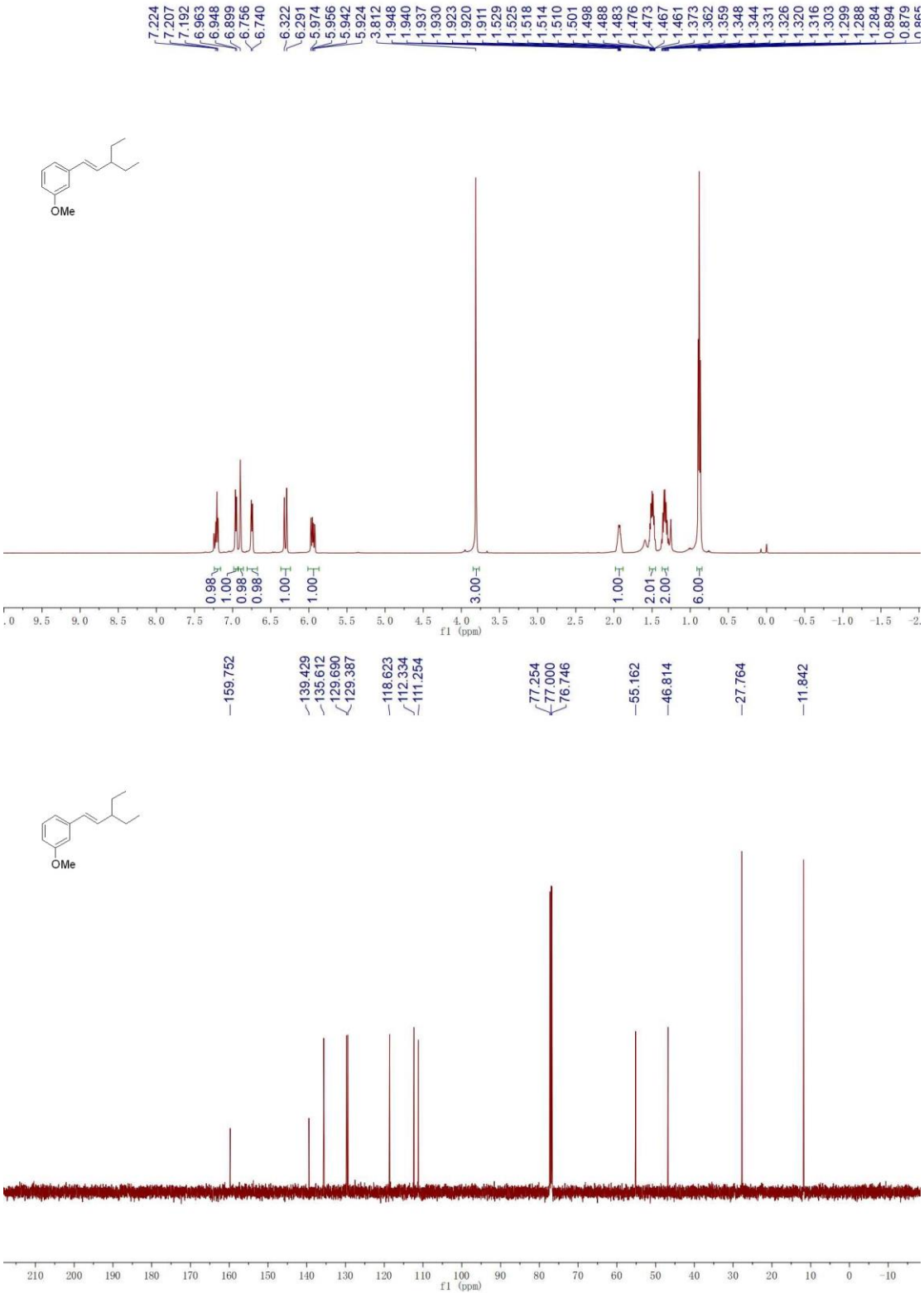
(E) -1-(3-(benzyloxy)prop-1-en-1-yl)-3-methoxybenzene (3ad):



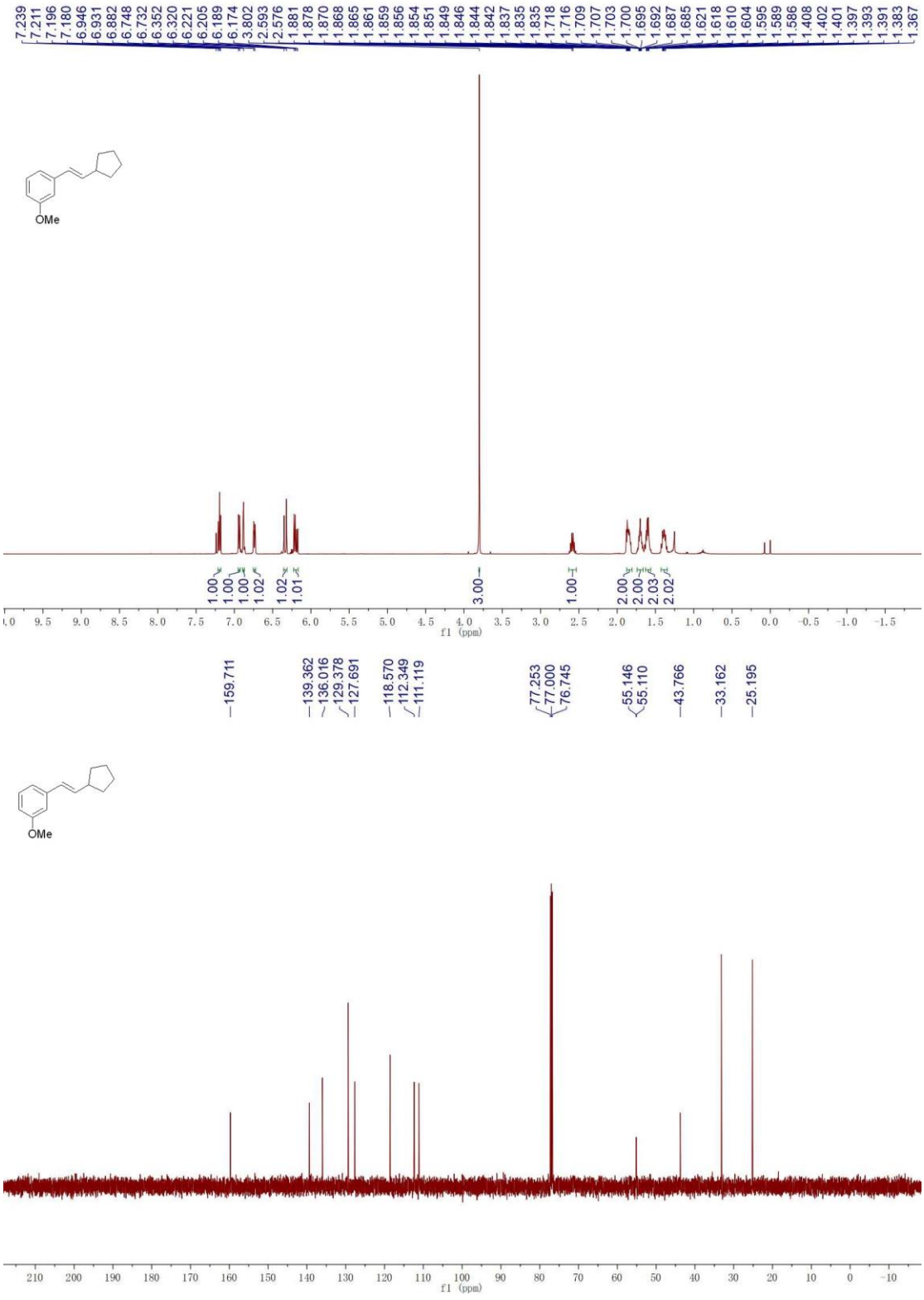
(*E*)-1-methoxy-3-(3-methylpent-1-en-1-yl)benzene (3ae):



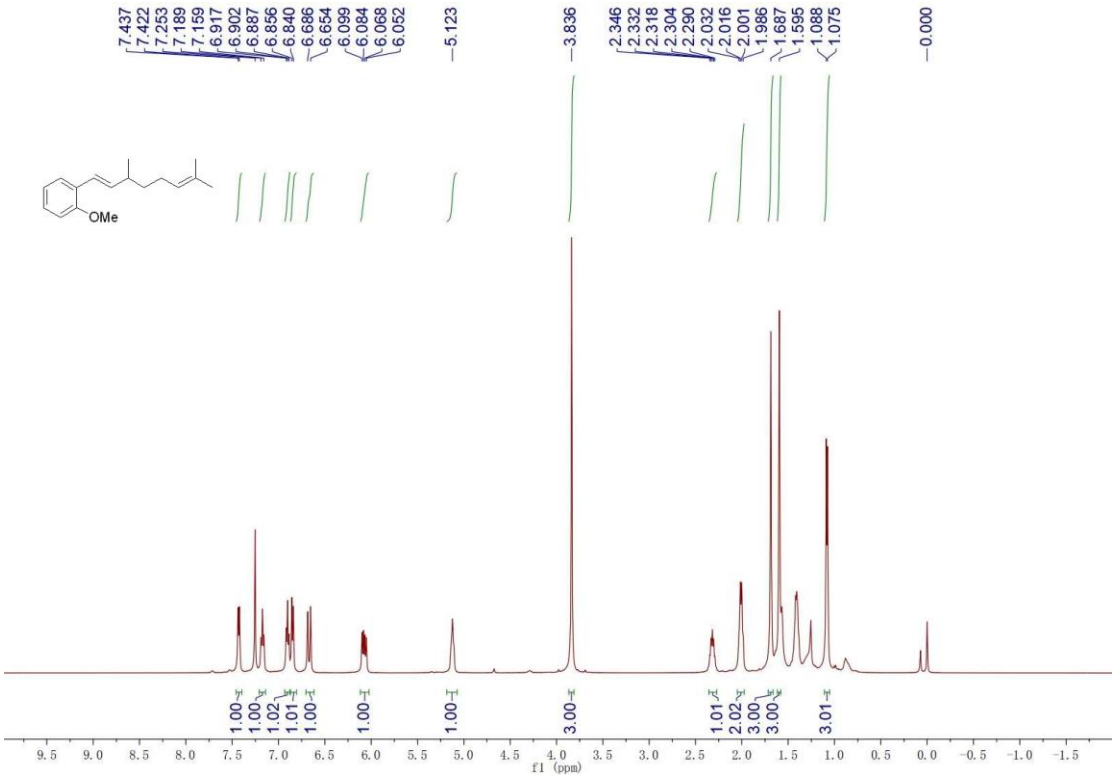
(*E*)-1-(3-ethylpent-1-en-1-yl)-3-methoxybenzene (3af):

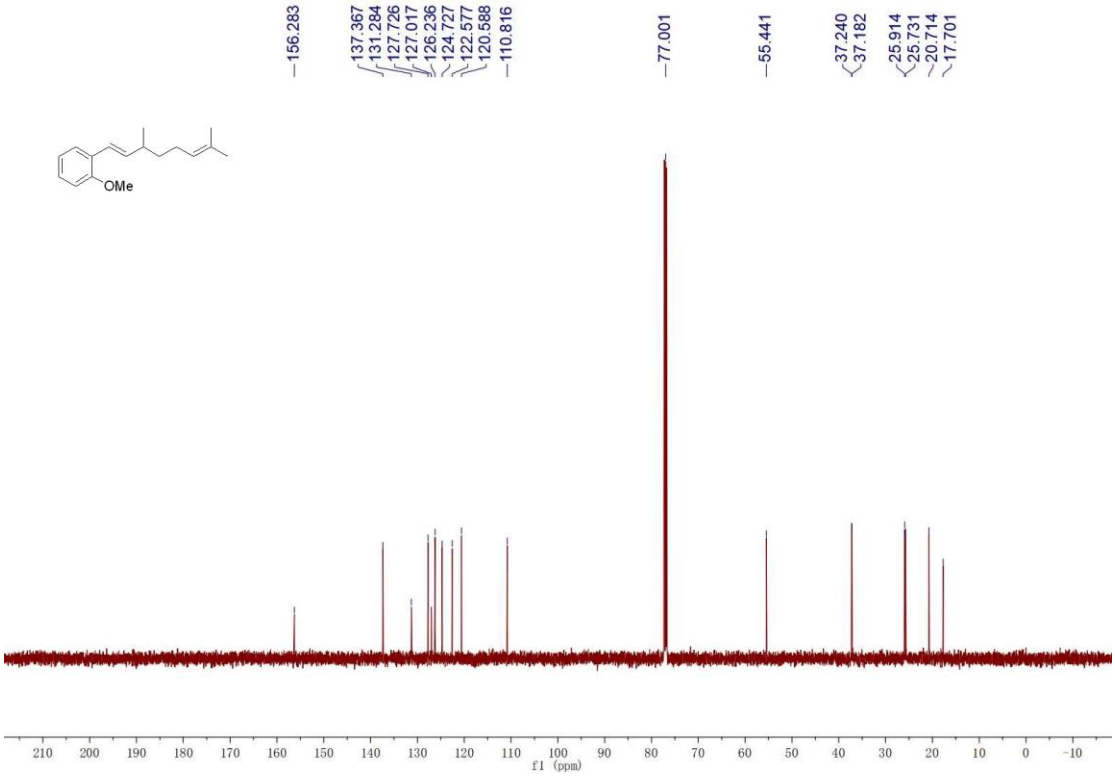


(*E*)-1-(2-cyclopentylvinyl)-3-methoxybenzene (3ag):

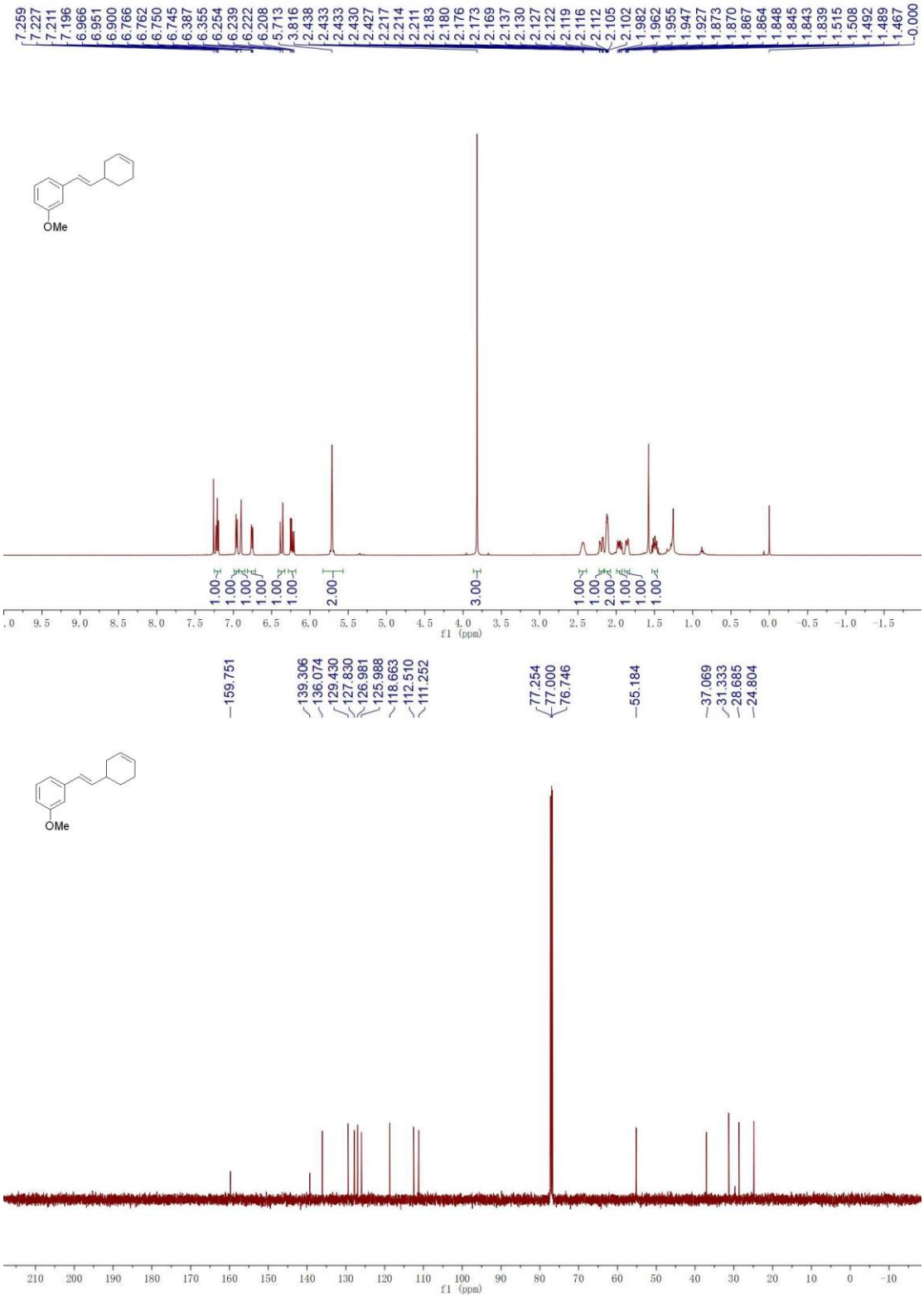


(*E*)-1-(3,7-dimethylocta-1,6-dien-1-yl)-2-methoxybenzene (3ah):

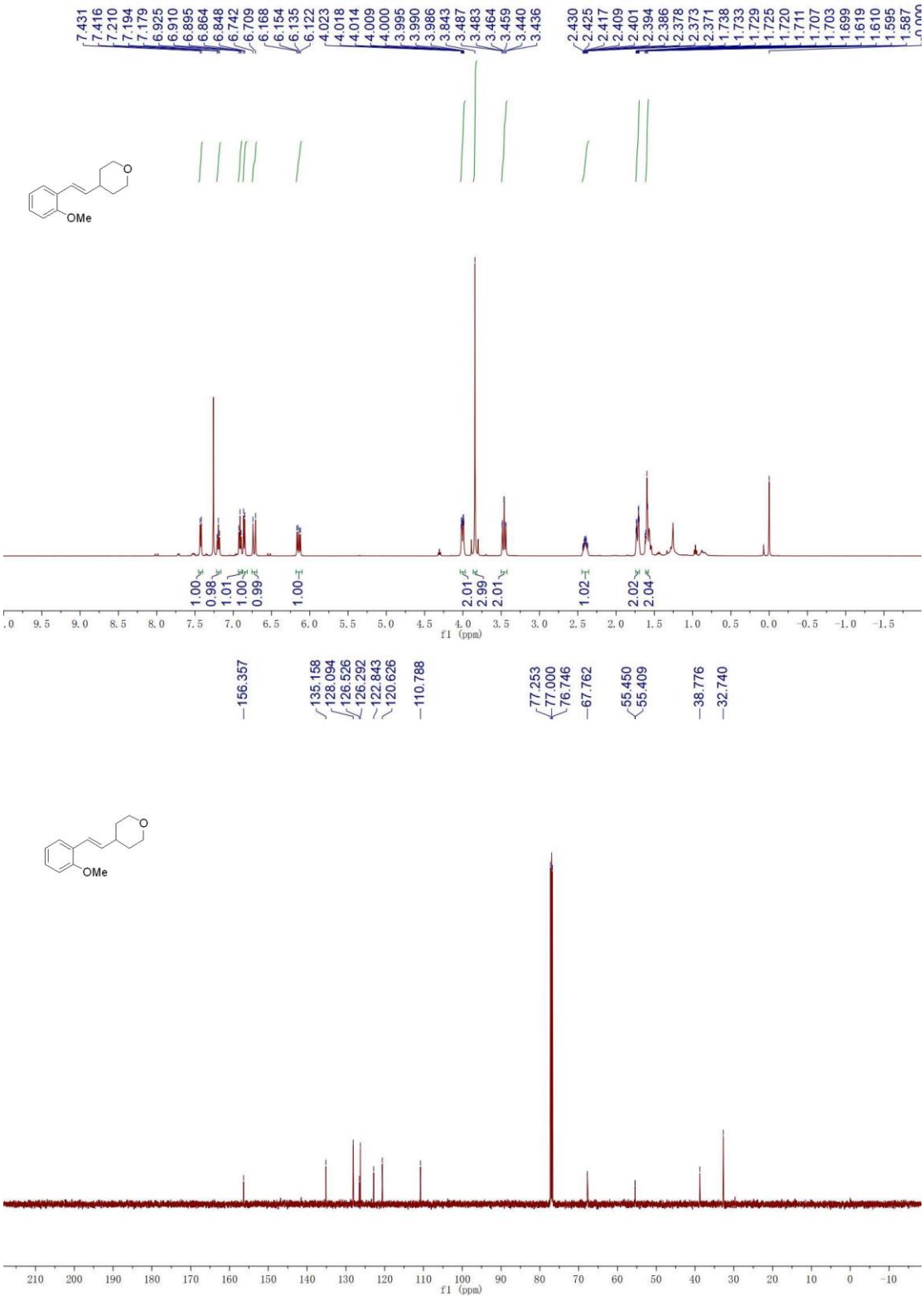




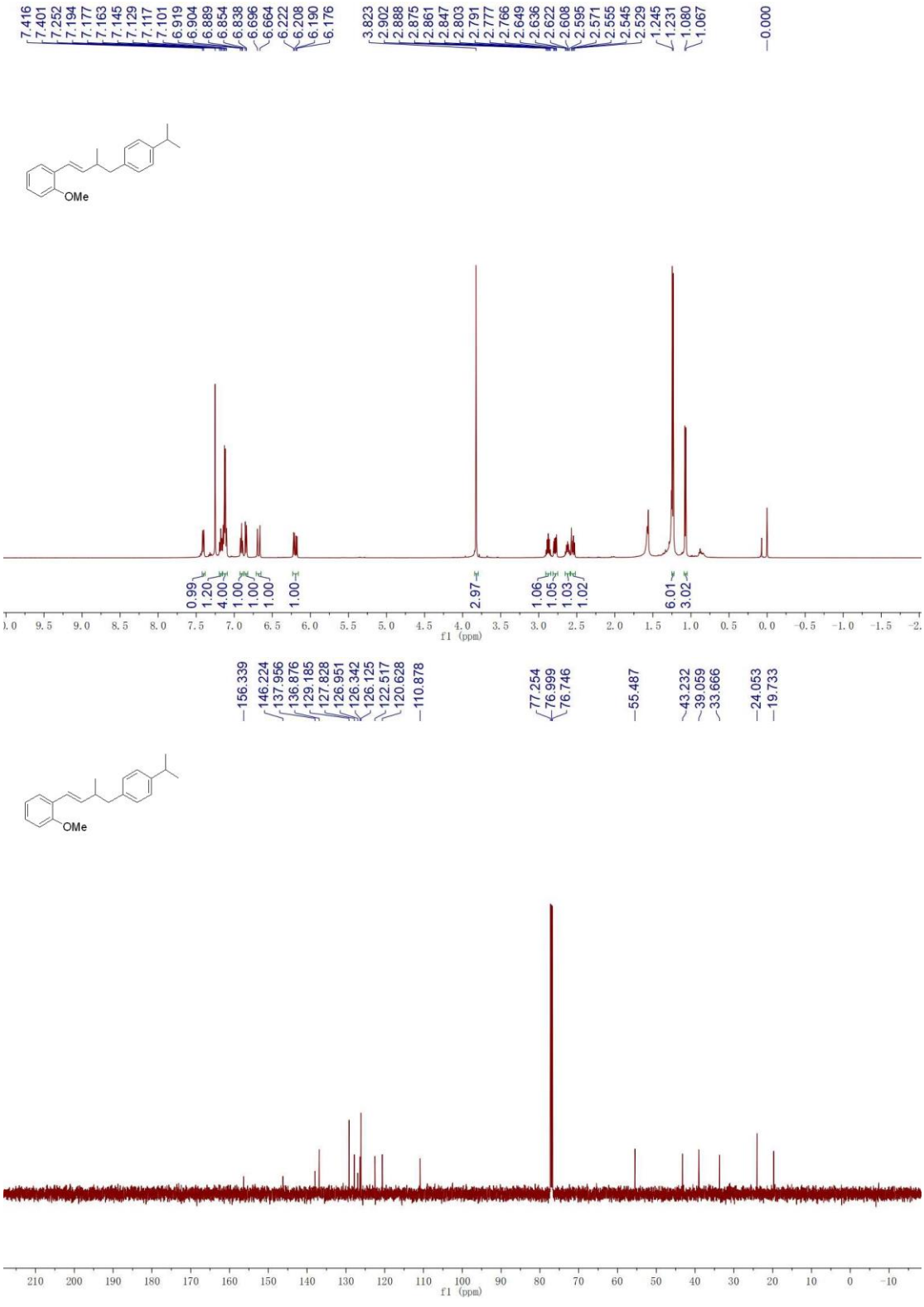
(*E*)-1-(2-(cyclohex-3-en-1-yl)vinyl)-3-methoxybenzene (3ai):



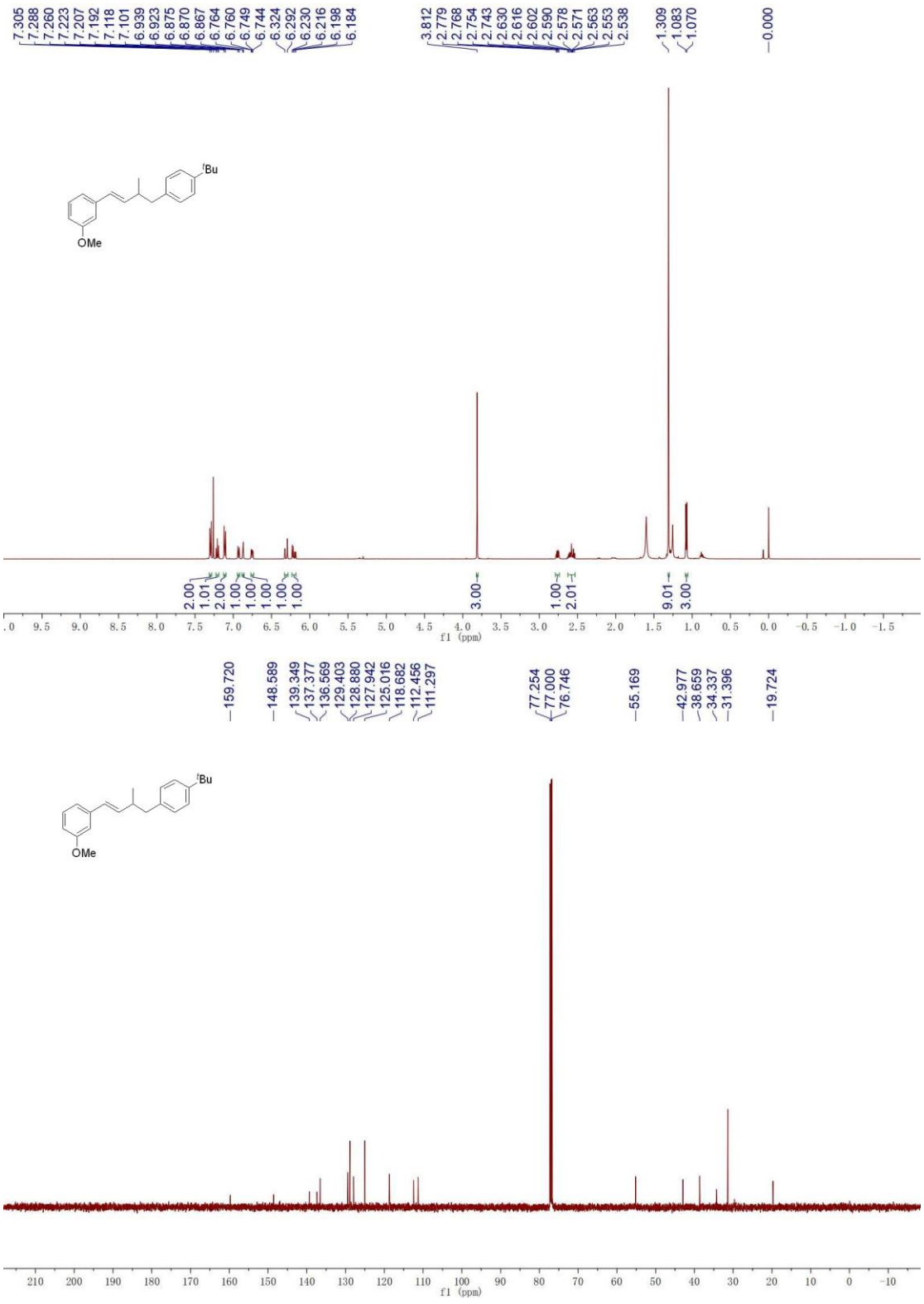
(*E*)-4-(2-methoxystyryl)tetrahydro-2H-pyran (3aj):



(*E*)-1-(4-(4-isopropylphenyl)-3-methylbut-1-en-1-yl)-2-methoxybenzene (3ak):



(*E*)-1-(4-(4-(tert-butyl)phenyl)-3-methylbut-1-en-1-yl)-3-methoxybenzene (3al):



1-(cyclohexyloxy)-2,2,6,6-tetramethylpiperidine (4a)