Supplementary Information (SI) for Organic & Biomolecular Chemistry.

SUPPORTING INFORMATION

Synthesis of thiazoles from vinyl azides and xanthates under the action of Mn(III)-oxidant

Lada A. Zaikina, [a, b] Mikhail M. Doronin, [a] Oleg O. Segida, [a] Olga M. Mulina, [a] Igor B. Krylov,[a, b] Liang-Nian He[c] and Alexander O. Terent'ev *[a, b]

[a] Zelinsky Institute of Organic Chemistry, Russian Academy of Sciences, 47 Leninsky prospect, Moscow, 119991, Russian Federation

[b] Mendeleev University of Chemical Technology of Russia, 9 Miusskaya Square, Moscow 125047, Russian Federation.

[c] *State Key Laboratory and Institute of Elemento-Organic Chemistry, Frontiers Science Center for New Organic Matter, College of Chemistry, Nankai University, Tianjin 300071, P. R. China.*

e-mail: terentev@ioc.ac.ru

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General

NMR spectra were registered on a Bruker Avance II 300 MHz instrument. Chemical shifts were measured relative to residual solvent peaks as an internal standard set to δ 7.26 and δ 77.0 ($CDCl_3$) or δ 2.50 and δ 39.0 (DMSO-d6). HRMS spectra were registered on Bruker maXis mass spectrometer. The TLC analyses were carried out on standard silica gel chromatography plates. The melting points were determined on a Kofler hot-stage apparatus. Column chromatography was performed on silica gel (60-200 mesh). 1,4-Dinitrobenzene, 2,2,6,6-tetramethylpiperidine-1-oxyl (TEMPO), Na_2SO_4, $MgSO_4$, $Na_2S_2O_3$, $Mn(OAc)_2{\cdot}4H_2O$, $Mn(acac)_3$, $Fe(ClO_4)_3{\cdot}8H_2O$, $PhI(OAc)_2$, H_2O_2 (35% wt in Et_2O), petroleum ether (PE, 40/70), ethyl acetate (EA), THF, DMSO, MeCN, EtOH, DCM were purchased from commercial sources and were used without further purification. Vinylazides **1a-o** [1] and xanthates **2a-j** [2] synthesized in accordance with the slightly modified literary procedures.

Optimization of the reaction conditions for the synthesis of thiazole 3aa

(Experimental procedure for Table 1, entries 1-5, 8-16)

To a solution of vinyl azide **1a** (1-1.5 mmol, 145-217 mg) and xanthates **2a** (1-1.5 mmol, 174-261 mg) in 10 ml of THF-DMSO (1:1), DMSO, THF-H_2O (1:1), MeCN- H_2O (1:1), DMF-MeCN (1:1), DMF-H_2O (1:1) or MeCN-DMSO (1:1), $Mn(OAc)_3{\cdot}2H_2O$ (0.5-1.5 mmol, 134-402 mg) was added, and the mixture was stirred at 0-40°C for 30 min. The reaction mixture was transferred to a separation funnel and diluted with water (50 ml). The aqueous layer was extracted with ethyl acetate (5×10 ml). The combined organic layer was washed with brine (10 ml), dried over Na_2SO_4, filtered, and concentrated under reduced pressure. The yield of **3aa** was determined by ^{1}H NMR using 1,4-dinitrobenzene as an internal standard.

(Experimental procedure for Table 1, entries 6,7)

To a solution of vinyl azide **1a** (1 mmol, 145 mg) and xanthates **2a** (1 mmol, 174 mg) in 10 ml of EtOH-H_2O (1:1), or EtOH, $Mn(OAc)_3{\cdot}2H_2O$ (1 mmol, 268 mg) was added, and the mixture was stirred at 20°C for 30 min. The reaction mixture was transferred to a separation funnel and diluted with water (50 ml). The aqueous layer was extracted with ethyl acetate (5×10 ml). The combined organic layer was washed with brine (10 ml), dried over Na_2SO_4, filtered, and concentrated under reduced pressure. The yield of **3aa** was determined by ^1H NMR using 1,4-dinitrobenzene as an internal standard.

(Experimental procedure for Table 1, entries 17-20)

To a solution of vinyl azide **1a** (1 mmol, 145 mg) and xanthates **2a** (1.5 mmol, 261 mg) in 10 ml of MeCN-DMSO (1:1) $Mn(acac)_3$, $Fe(ClO_4)_3 \cdot 8H_2O$, H_2O_2 (35% wt in Et_2O) or $PhI(OAc)_2$ (1.5 mmol) was added, and the mixture was stirred at 20°C for 30 min. The reaction mixture was transferred to a separation funnel and diluted with water (50 ml). The aqueous layer was extracted with ethyl acetate (5×10 ml). The combined organic layer was washed with brine (10 ml), dried over Na_2SO_4, filtered, and concentrated under reduced pressure. The yield of **3aa** was determined by ^1H NMR using 1,4-dinitrobenzene as an internal standard.

(Experimental procedure for Table 1, entry 21)

To a solution of vinyl azide **1a** (1 mmol, 145 mg), xanthates **2a** (1.5 mmol, 261 mg) and $Mn(OAc)_3 \cdot 2H_2O$ (20 mol%, 80 mg) in 10 ml of MeCN-DMSO (1:1) $PhI(OAc)_2$ (1.5 mmol) was added, and the mixture was stirred at 20°C for 30 min. The reaction mixture was transferred to a separation funnel and diluted with water (50 ml). The aqueous layer was extracted with ethyl acetate (5×10 ml). The combined organic layer was washed with brine (10 ml), dried over Na_2SO_4, filtered, and concentrated under reduced pressure. The yield of **3aa** was determined by ^1H NMR using 1,4-dinitrobenzene as an internal standard.

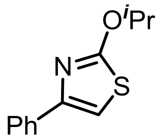
(Experimental procedure for Table 1, entire 22)

A solution of vinyl azide **1a** (1 mmol,145 mg) and xanthates **2a** (1.5 mmol, 261 mg) in 10 ml of MeCN-DMSO (1:1), was stirred at 20°C for 30 min. The reaction mixture was transferred to a separation funnel and diluted with water (50 ml). The aqueous layer was extracted with ethyl acetate (5×10 ml). The combined organic layer was washed with brine (10 ml), dried over Na_2SO_4, filtered, and concentrated under reduced pressure. The yield of **3aa** was determined by ^1H NMR using 1,4-dinitrobenzene as an internal standard.

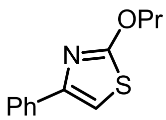
Procedure for synthesis of thiazoles 3aa-3oc

To a solution of vinyl azide **1a-o** (1 mmol) and xanthates **2a-j** (1.5 mmol) in 10 ml of MeCN-DMSO (1:1), $Mn(OAc)_3 \cdot 2H_2O$ (1.5 mmol, 402 mg) was added, and the mixture was stirred at 20°C for 30 min. The reaction mixture was transferred to a separation funnel and diluted with water (50 ml). The aqueous layer was extracted with ethyl acetate (5×10 ml). The combined organic layer was washed with brine (10 ml), dried over Na_2SO_4, filtered, and concentrated under reduced pressure. Product **3aa-3oc** was isolated by chromatography on SiO_2 (PE:EA = from 60:1 to 20:1).

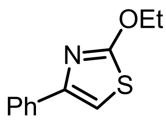
The characterization data of the synthesized thiazoles



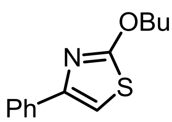
2-*iso*-Propoxy-4-phenylthiazole (3aa).[2] Yellow oil. 149 mg (yield 68%). R_f = 0.61 (PE:EA 20:1). ^{1}H NMR ($CDCl_3$), δ: 7.84 (d, *J* = 7.1 Hz, 2H), 7.40 (t, *J* = 7.4 Hz, 2H), 7.30 (t, *J* = 7.3 Hz, 1H), 6.84 (s, 1H), 5.30 (hept, *J* = 6.2 Hz, 1H), 1.47 (d, *J* = 6.2 Hz, 6H). ^{13}C NMR ($CDCl_3$), δ: 173.6, 149.2, 134.9, 128.7, 127.8, 126.0, 104.2, 75.8, 22.0.



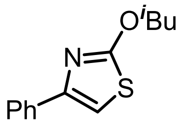
2-Propoxy-4-phenylthiazole (3ab).[2] Yellow oil. 166 mg (yield 76%). R_f = 0.60 (PE:EA 20:1). ^{1}H NMR ($CDCl_3$), δ: 7.84 (d, *J* = 7.1 Hz, 2H), 7.44-7.36 (m, 2H), 7.34-7.27 (m, 1H), 6.85 (s, 1H), 4.45 (t, *J* = 6.6 Hz, 2H), 1.88 (h, *J* = 7.3 Hz, 2H), 1.07 (t, *J* = 7.4 Hz, 3H). ^{13}C NMR ($CDCl_3$), δ: 174.3, 149.3, 134.9, 128.7, 127.9, 126.0, 104.4, 73.6, 22.4, 10.5.



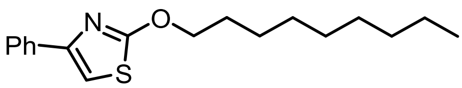
2-Ethoxy-4-phenylthiazole (3ac).[2] Yellow oil. 156 mg (yield 76%). R_f = 0.64 (PE:EA 20:1). ^{1}H NMR ($CDCl_3$), δ: 7.84 (d, *J* = 7.7 Hz, 2H), 7.40 (d, *J* = 15.0 Hz, 2H), 7.30 (t, *J* = 7.3 Hz, 1H), 6.85 (s, 1H), 4.56 (q, *J* = 7.1 Hz, 2H), 1.48 (t, *J* = 7.1 Hz, 3H). ^{13}C NMR ($CDCl_3$), δ: 174.1, 149.2, 134.8, 128.7, 127.9, 126.0, 104.4, 67.9, 14.6.



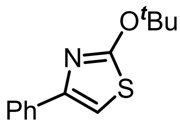
2-Butoxy-4-phenylthiazole (**3ad**).[2] Yellow oil. 177 mg (yield 78%). R_f = 0.60 (PE:EA 20:1). ^{1}H NMR ($CDCl_3$), δ: 7.83 (d, *J* = 7.3 Hz, 2H), 7.40 (t, *J* = 7.4 Hz, 2H), 7.32-7.28 (m, 1H), 6.85 (s, 1H), 4.50 (t, *J* = 6.6 Hz, 2H), 1.89-1.78 (m, 2H), 1.52 (h, *J* = 7.4 Hz, 2H), 1.00 (t, *J* = 7.4 Hz, 3H). ^{13}C NMR ($CDCl_3$), δ: 174.3, 149.3, 134.8, 128.7, 127.9, 126.0, 104.4, 71.9, 31.1, 19.2, 13.9.



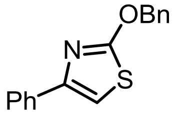
2-*iso*-Butoxy-4-phenylthiazole (3ae). Yellow oil. 210 mg (yield 90%). R_f = 0.55 (PE:EA 20:1). ^{1}H NMR ($CDCl_3$), δ: 7.82 (d, *J* = 7.4 Hz, 2H), 7.39 (t, *J* = 7.5 Hz, 2H), 7.29 (t, *J* = 7.3 Hz, 1H), 6.85 (s, 1H), 4.26 (d, *J* = 6.6 Hz, 2H), 2.24-2.11 (m, 1H), 1.05 (d, *J* = 6.7 Hz, 6H). ^{13}C NMR ($CDCl_3$), δ: 135.0, 128.7, 127.9, 126.0, 123.5, 104.5, 71.3, 27.1, 20.8, 14.3. HRMS (ESI) m/z: calcd for $C_{13}H_{15}NOS$ $[M+H]^+$ 234.0947, found 234.0947.



2-Nonyloxy-4-phenylthiazole (3af). Yellow oil. 222 mg (yield 73%). R_f = 0.52 (PE:EA 20:1). ^{1}H NMR ($CDCl_3$), δ: 7.83 (d, *J* = 7.4 Hz, 2H), 7.39 (t, *J* = 7.5 Hz, 2H), 7.29 (t, *J* = 7.3 Hz, 1H), 6.85 (s, 1H), 4.48 (t, *J* = 6.6 Hz, 2H), 1.89-1.80 (m, 2H), 1.47-1.25 (m, 12H), 0.89 (t, *J* = 6.6 Hz, 3H). ^{13}C NMR ($CDCl_3$), δ: 174.3, 149.3, 134.8, 128.7, 127.9, 126.0, 104.4, 72.2, 32.0, 29.6, 29.4, 29.4, 29.0, 26.0, 22.8, 14.2. HRMS (ESI) m/z: calcd for $C_{18}H_{25}NOS$ $[M+H]^+$ 304.1729, found 304.1730.

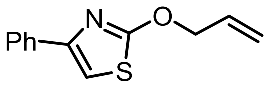


2-*tert*-Butoxy-4-phenylthiazole (3ag). Yellow oil. 49 mg (yield 21%). R_f = 0.55 (PE:EA 20:1). ^{1}H NMR ($CDCl_3$), δ: 7.78 (d, *J* = 7.3 Hz, 2H), 7.34 (t, *J* = 7.5 Hz, 2H), 7.22 (d, *J* = 7.6 Hz, 1H), 6.81 (s, 1H), 1.61 (s, 9H). ^{13}C NMR ($CDCl_3$), δ: 172.2, 149.3, 135.1, 129.4, 128.7, 127.8, 126.0, 125.0, 104.7, 85.3, 28.3. HRMS (ESI) m/z: calcd for $C_{13}H_{15}NOS$ $[M+H]^+$ 234.0947, found 234.0947.

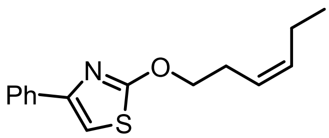


2-Benzyloxy-4-phenylthiazole (3ah). Yellow oil. 182 mg (yield 68%). R_f = 0.49 (PE:EA 20:1). ^{1}H NMR ($CDCl_3$), δ: 7.87 (d, *J* = 7.9 Hz, 2H), 7.52 (d, *J* = 7.3 Hz, 2H), 7.45-7.37 (m, 5H), 7.34 (d, *J* = 7.4 Hz, 1H), 6.89 (s, 1H), 5.56 (s, 2H). ^{13}C NMR ($CDCl_3$), δ:

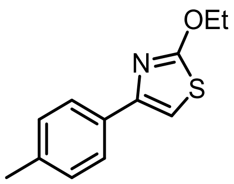
173.8, 149.1, 135.8, 134.8, 128.8, 128.7, 128.7, 128.6, 128.0, 126.0, 104.9, 73.3. HRMS (ESI) m/z: calcd for $C_{16}H_{13}NOS$ $[M+H]^+$ 268.0790, found 268.0791.



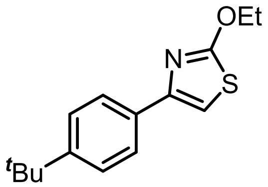
2-(Allyloxy)-4-phenylthiazole (3ai). Yellow oil. 178 mg (yield 82%). R_f = 0.51 (PE:EA 20:1). ^1H NMR ($CDCl_3$), δ: 7.84 (d, *J* = 7.4 Hz, 2H), 7.40 (d, *J* = 15.0 Hz, 1H), 7.32 (d, *J* = 7.2 Hz, 1H), 6.87 (s, 1H), 6.14 (ddt, *J* = 16.5, 11.2, 5.8 Hz, 1H), 5.49 (d, *J* = 17.2 Hz, 1H), 5.35 (d, *J* = 10.4 Hz, 1H), 5.02 (d, *J* = 5.8 Hz, 2H). ^{13}C NMR ($CDCl_3$), δ: 173.7, 149.2, 134.8, 132.1, 128.7, 127.9, 126.0, 119.3, 104.8, 72.2. HRMS (ESI) m/z: calcd for $C_{12}H_{11}NOS$ $[M+H]^+$ 218.0639, found 218.0634.



(Z)-2-(Hex-3-en-1-yloxy)-4-phenylthiazole (3aj). Yellow oil. 208 mg (yield 80%). R_f = 0.51 (PE:EA 20:1). ^1H NMR ($CDCl_3$), δ: 7.83 (d, *J* = 7.3 Hz, 2H), 7.39 (t, *J* = 7.4 Hz, 2H), 7.33-7.25 (m, 1H), 6.85 (s, 1H), 5.63-5.51 (m, 1H), 5.48-5.37 (m, 1H), 4.49 (t, *J* = 7.0 Hz, 2H), 2.61 (q, *J* = 7.0 Hz, 2H), 2.12 (p, *J* = 7.1 Hz, 2H), 1.00 (t, *J* = 7.5 Hz, 3H). ^{13}C NMR ($CDCl_3$), δ: 174.1, 149.2, 135.0, 128.7, 127.9, 126.0, 123.5, 104.5, 71.3, 27.1, 20.8, 14.3. HRMS (ESI) m/z: calcd for $C_{15}H_{17}NOS$ $[M+H]^+$ 260.1109, found 260.1104.

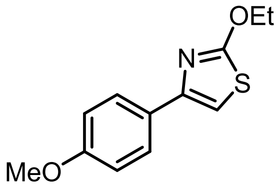


2-Ethoxy-4-(4-tolyl)thiazole (3bc).[2] Yellow solid. 173 mg (yield 79%). R_f = 0.51 (PE:EA 20:1). mp = 50.5-51.2°C (lit.[2] mp = 51.3-52.3°C). ^1H NMR ($CDCl_3$), δ: 7.72 (d, *J* = 8.1 Hz, 2H), 7.19 (d, *J* = 8.0 Hz, 2H), 6.79 (s, 1H), 4.54 (q, *J* = 7.1 Hz, 2H), 2.37 (s, 3H), 1.47 (t, *J* = 7.1 Hz, 3H). ^{13}C NMR ($CDCl_3$), δ: 174.0, 149.4, 137.7, 132.2, 129.4, 125.9, 103.6, 67.9, 21.4, 14.6.

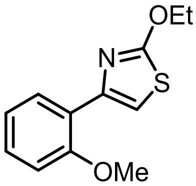


2-Ethoxy4-(4-(*tert*-butyl)phenyl)thiazole (3cc). Yellow oil. 209 mg (yield 80%). R_f = 0.49 (PE:EA 20:1). ^1H NMR ($CDCl_3$), δ: 7.75 (d, *J* = 8.4 Hz, 2H), 7.41 (d, *J* = 8.4 Hz, 2H), 6.80 (s, 1H), 4.55 (q, *J* = 7.1 Hz, 2H), 1.48 (t, *J* = 7.1 Hz, 3H), 1.34 (s, 9H). ^{13}C NMR

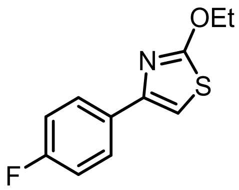
($CDCl_3$), δ: 174.0, 150.9, 149.3, 132.1, 125.7, 125.6, 103.7, 67.9, 34.7, 31.4, 14.6. HRMS (ESI) m/z: calcd for $C_{15}H_{19}NOS$ $[M+H]^+$ 262.1260, found 262.1260.



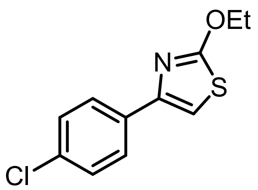
2-Ethoxy-4-(4-methoxyphenyl)thiazole (3dc).[2] Yellow solid. 165 mg (yield 70%). R_f = 0.51 (PE:EA 20:1). mp = 49.4-50.2°C (lit.[2] mp = 49.1-50.0°C). ^{1}H NMR ($CDCl_3$), δ: 7.76 (d, *J* = 8.8 Hz, 2H), 6.92 (d, *J* = 8.8 Hz, 2H), 6.70 (s, 1H), 4.53 (q, *J* = 7.1 Hz, 2H), 3.83 (s, 3H), 1.47 (t, *J* = 7.1 Hz, 3H). ^{13}C NMR ($CDCl_3$), δ: 174.0, 159.5, 149.0, 127.8, 127.2, 114.0, 102.5, 67.8, 55.4, 14.6.



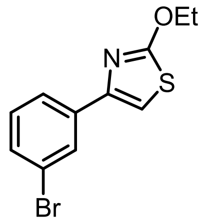
2-Ethoxy-4-(2-methoxyphenyl)thiazole (3ec). Yellow oil. 167 mg (yield 71%). R_f = 0.51 (PE:EA 20:1). ^{1}H NMR ($CDCl_3$), δ: 8.17 (dd, *J* = 7.7, 1.7 Hz, 1H), 7.35 (s, 1H), 7.26 (dd, *J* = 15.6, 1.7 Hz, 1H), 7.03 (t, *J* = 7.5 Hz, 1H), 6.96 (d, *J* = 8.3 Hz, 1H), 4.54 (q, *J* = 7.1 Hz, 2H), 3.93 (s, 3H), 1.47 (t, *J* = 7.1 Hz, 3H). ^{13}C NMR ($CDCl_3$), δ: 172.4, 157.1, 145.0, 130.1, 128.5, 123.5, 120.9, 111.2, 109.4, 67.6, 55.5, 14.6. HRMS (ESI) m/z: calcd for $C_{12}H_{13}NO_2S$ $[M+H]^+$ 236.0739, found 236.0740.



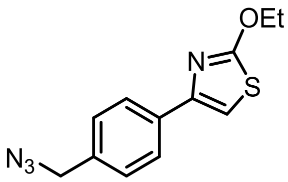
2-Ethoxy-4-(4-fluorophenyl)thiazole (3fc).[2] Yellow solid. 183 mg (yield 82%). R_f = 0.51 (PE:EA 20:1). mp = 55.8-56.6°C (lit.[2] mp = 56.5.3-57.5°C). ^{1}H NMR ($CDCl_3$), δ: 7.84-7.70 (m, 2H), 7.07 (t, *J* = 8.7 Hz, 2H), 6.77 (s, 1H), 4.54 (q, *J* = 7.1 Hz, 2H), 1.47 (t, *J* = 7.1 Hz, 3H). ^{13}C NMR ($CDCl_3$), δ: 174.2, 162.7 (d, *J* = 246.9 Hz), 148.3, 131.1 (d, *J* = 3.0 Hz), 127.7 (d, *J* = 8.1 Hz), 115.6 (d, *J* = 21.7 Hz), 104.0, 68.0, 14.6.



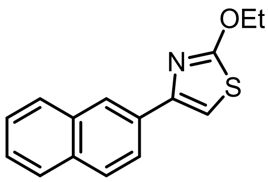
2-Ethoxy-4-(4-chlorophenyl)thiazole (3gc).[2] Light yellow solid. 197 mg (yield 81%). R_f = 0.51 (PE:EA 20:1). mp = 60.2-61.4°C (lit.[2] mp = 60.5-61.5°C). ^{1}H NMR ($CDCl_3$), δ: 7.75 (d, *J* = 8.6 Hz, 2H), 7.35 (d, *J* = 8.5 Hz, 2H), 6.84 (s, 1H), 4.54 (q, *J* = 7.1 Hz, 2H), 1.47 (t, *J* = 7.1 Hz, 3H). ^{13}C NMR ($CDCl_3$), δ: 174.3, 148.2, 133.7, 133.3, 128.9, 127.3, 104.8, 68.1, 14.6.



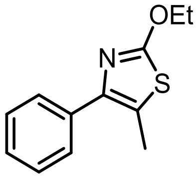
2-Ethoxy-4-(3-bromophenyl)thiazole (3hc). Yellow oil. 219 mg (yield 77%). R_f = 0.51 (PE:EA 20:1). ^{1}H NMR ($CDCl_3$), δ: 8.03 (s, 1H), 7.77 (d, *J* = 7.7 Hz, 1H), 7.46 (d, *J* = 7.6 Hz, 1H), 7.29 (t, *J* = 7.2 Hz, 1H), 6.91 (s, 1H), 4.60 (q, *J* = 7.0 Hz, 2H), 1.52 (t, *J* = 7.1 Hz, 3H). ^{13}C NMR ($CDCl_3$), δ: 174.2, 147.7, 136.7, 130.7, 130.2, 129.1, 124.4, 122.9, 105.5, 68.0, 14.6. HRMS (ESI) m/z: calcd for $C_{11}H_{10}BrNOS$ $[M+H]^+$ 283.9739, found 283.9739.



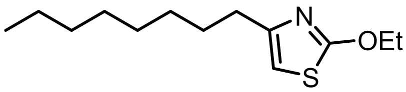
2-Ethoxy-4-(4-(azidomethyl)phenyl)thiazole (3ic). Yellow oil. 177 mg (yield 68%). R_f = 0.51 (PE:EA 20:1). ^{1}H NMR ($CDCl_3$), δ: 7.84 (d, *J* = 8.2 Hz, 2H), 7.34 (d, *J* = 8.1 Hz, 2H), 6.87 (s, 1H), 4.55 (q, *J* = 7.1 Hz, 2H), 4.35 (s, 2H), 1.48 (t, *J* = 7.1 Hz, 3H). ^{13}C NMR ($CDCl_3$), δ: 174.1, 148.7, 134.9, 128.6, 126.4, 104.9, 67.9, 54.7, 14.6. HRMS (ESI) m/z: calcd for $C_{12}H_{12}N_4OS$ $[M+H]^+$ 261.0804, found 261.0805.



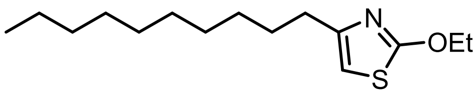
2-Ethoxy-4-(naphthalen-2-yl)thiazole (3jc).[2] Yellow oil. 217 mg (yield 85%). R_f = 0.51 (PE:EA 20:1). ^{1}H NMR ($CDCl_3$), δ: 8.37 (s, 1H), 7.82-7.92 (m, 4H), 7.45-7.52 (m, 2H), 6.97 (s, 1H), 4.61 (q, *J* = 7.1 Hz, 2H), 1.52 (t, *J* = 7.1 Hz, 3H). ^{13}C NMR ($CDCl_3$), δ: 174.2, 149.2, 133.8, 133.2, 132.1, 128.5, 128.3, 127.8, 126.4, 126.1, 125.1, 123.9, 105.0, 68.1, 14.7.



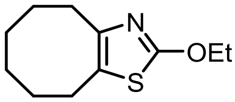
2-Ethoxy-5-methyl-4-phenylthiazole (3kc).[2] Yellow oil. 77 mg (yield 35%). R_f = 0.51 (PE:EA 20:1). ^{1}H NMR ($CDCl_3$), δ: 7.62-7.59 (m, 2H), 7.40 (t, *J* = 7.4 Hz, 2H), 7.31 (d, *J* = 7.3 Hz, 1H), 4.47 (q, *J* = 7.1 Hz, 2H), 2.43 (s, 3H), 1.44 (t, *J* = 7.1 Hz, 3H). ^{13}C NMR ($CDCl_3$), δ: 170.2, 144.4, 135.4, 128.5, 128.4, 127.3, 119.5, 67.2, 14.7, 12.8.



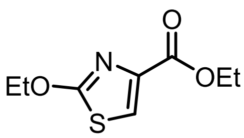
2-Ethoxy-4-octylthiazole (3lc). Yellow oil. 198 mg (yield 82%). R_f = 0.51 (PE:EA 20:1). ^{1}H NMR ($CDCl_3$), δ: 6.19 (s, 1H), 4.41 (d, *J* = 7.1 Hz, 2H), 2.55 (s, 2H), 1.42 (t, *J* = 7.1 Hz, 3H), 1.35-1.22 (m, 12H), 0.87 (t, *J* = 6.3 Hz, 4H). ^{13}C NMR ($CDCl_3$), δ: 173.7, 151.5, 103.4, 67.3, 31.8, 31.6, 29.1, 29.0, 28.8, 28.3, 22.4, 14.2, 13.8. HRMS (ESI) m/z: calcd for $C_{13}H_{23}NOS$ $[M+H]^+$ 242.1569, found 242.1573.



2-Ethoxy-4-decylthiazole (3mc). Yellow oil. 197 mg (yield 73%). R_f = 0.51 (PE:EA 20:1). ^{1}H NMR ($CDCl_3$), δ: 6.19 (s, 1H), 4.41 (q, *J* = 7.1 Hz, 2H), 2.55 (t, *J* = 7.6 Hz, 2H), 1.41 (t, *J* = 7.1 Hz, 3H), 1.23-1.26 (m, *J* = 11.1 Hz, 16H), 0.85-0.90 (m, 3H). ^{13}C NMR ($CDCl_3$), δ: 174.1, 151.8, 103.8, 67.7, 32.1, 32.0, 29.7, 29.7, 29.5, 29.4, 29.3, 28.7, 22.8, 14.6, 14.2. HRMS (ESI) m/z: calcd for $C_{15}H_{27}NOS$ $[M+H]^+$ 270.1892, found 270.1886.



2-Ethoxy-4,5,6,7,8,9-hexahydrocycloocta[d]thiazole (3nc).[2] Yellow oil. 148 mg (yield 70%). R_f = 0.51 (PE:EA 20:1). ^{1}H NMR ($CDCl_3$), δ: 4.35 (q, *J* = 7.1 Hz, 2H), 2.70-2.64 (m, 4H), 1.68-1.61 (m, 4H), 1.44-1.37 (m, 7H). ^{13}C NMR ($CDCl_3$), δ: 170.8, 146.6, 121.8, 67.1, 31.3, 29.6, 28.3, 26.2, 25.6, 24.6, 14.6.

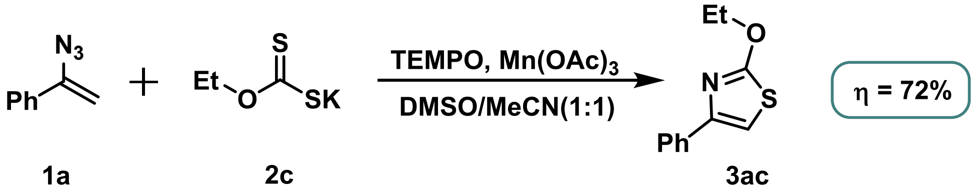


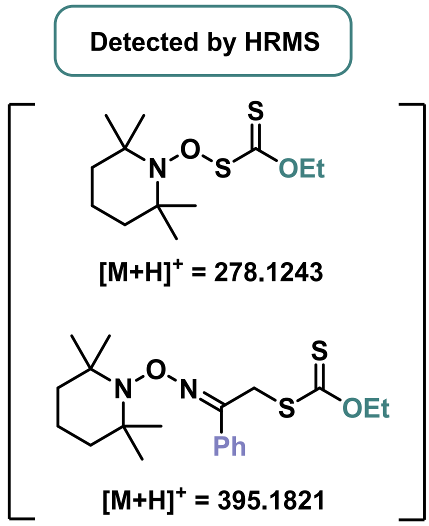
Ethyl 2-ethoxythiazole-4-carboxylate (3oc). Yellow oil. 111 mg (yield 55%). R_f = 0.51 (PE:EA 20:1). ^{1}H NMR ($CDCl_3$), δ: 7.55 (s, 1H), 4.55 (q, *J* = 7.1 Hz, 2H), 4.35 (q, *J* = 7.1 Hz, 2H), 1.39 (dt, *J* = 17.0, 7.1 Hz, 6H). ^{13}C NMR ($CDCl_3$), δ: 174.0, 161.3, 141.3, 120.1, 68.5, 61.3, 14.5, 14.4. HRMS (ESI) m/z: calcd for $C_8H_{11}NO_3S$ $[M+K]^+$ 240.0097, found 240.0091.

Scale up experiment for synthesis of 2-ethoxy-4-phenylthiazole 3ac

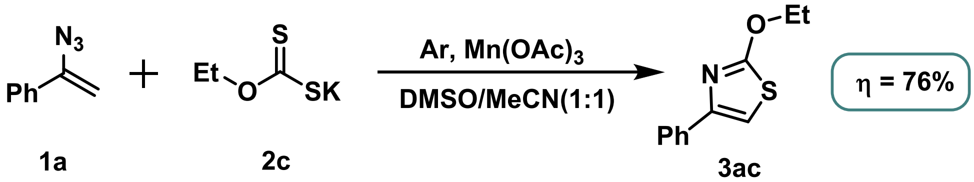
To a solution of vinyl azide **1a** (10 mmol,1.45 g) and xanthates **2c** (15 mmol, 2.4 g) in 40 ml of MeCN-DMSO (1:1), $Mn(OAc)_3{\cdot}2H_2O$ (15 mmol, 4,02 g) was added, and the mixture was stirred at 20°C for 30 min. The reaction mixture was transferred to a separation funnel and diluted with water (250 ml). The aqueous layer was extracted with ethyl acetate (5×50 ml). The combined organic layer was washed with brine (50 ml), dried over Na_2SO_4, filtered, and concentrated under reduced pressure. Product **3aa** was isolated by chromatography on SiO_2 (PE:EA = from 60:1 to 20:1). Yield 65% (1.33 g).

Experimental details for control experiments

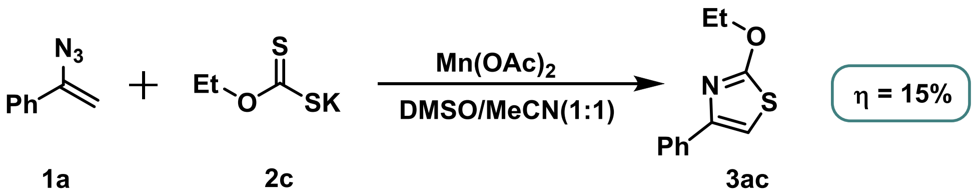




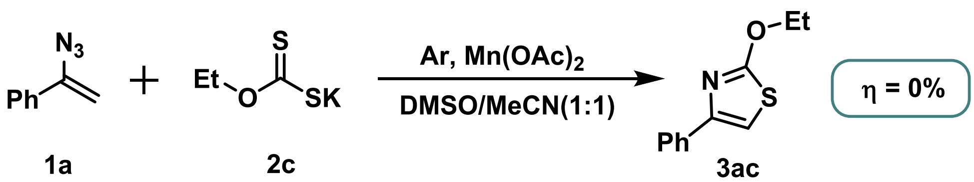
To a solution of vinyl azide **1a** (1 mmol,145 mg), xanthates **2c** (1.5 mmol, 240 mg) and (2,2,6,6-tetramethylpiperidin-1-yl)oxyl (3 mmol, 469 mg) in 10 ml of MeCN-DMSO (1:1), $Mn(OAc)_3{\cdot}2H_2O$ (1.5 mmol, 402 mg) was added, and the mixture was stirred at 20°C for 30 min. The reaction mixture was transferred to a separation funnel and diluted with water (50 ml). The aqueous layer was extracted with ethyl acetate (5×10 ml). The combined organic layer was washed with brine (10 ml), dried over Na_2SO_4, filtered, and concentrated under reduced pressure. The yield of **3ac** was determined by ^{1}H NMR using 1,4-dinitrobenzene as an internal standard. Additionally, reaction mixture was analyzed as is with HRMS to detect key intermediates.



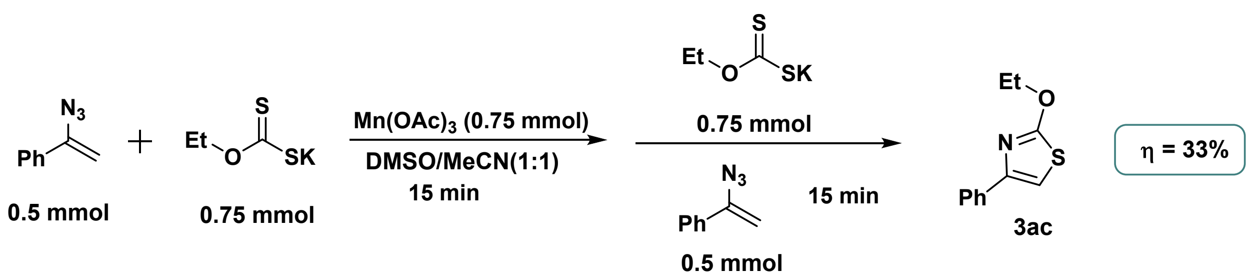
Argon was bubbled through the solution of vinyl azide **1a** (1 mmol,145 mg) and xanthates **2c** (1.5 mmol, 240 mg) in 10 ml of MeCN-DMSO (1:1), $Mn(OAc)_3{\cdot}2H_2O$ (1.5 mmol, 402 mg) was added, and the mixture was stirred at 20°C for 30 min with argon bubbling. The reaction mixture was transferred to a separation funnel and diluted with water (50 ml). The aqueous layer was extracted with ethyl acetate (5×10 ml). The combined organic layer was washed with brine (10 ml), dried over Na_2SO_4, filtered, and concentrated under reduced pressure. The yield of **3ac** was determined by ^{1}H NMR using 1,4-dinitrobenzene as an internal standard.



To a solution of vinyl azide **1a** (1 mmol,145 mg) and xanthates **2c** (1.5 mmol, 240 mg) in 10 ml of MeCN-DMSO (1:1), $Mn(OAc)_2·4H_2O$ (1.5 mmol, 368 mg) was added, and the mixture was stirred at 20°C for 30 min. The reaction mixture was transferred to a separation funnel and diluted with water (50 ml). The aqueous layer was extracted with ethyl acetate (5×10 ml). The combined organic layer was washed with brine (10 ml), dried over Na_2SO_4, filtered, and concentrated under reduced pressure. The yield of **3ac** was determined by ^{1}H NMR using 1,4-dinitrobenzene as an internal standard.

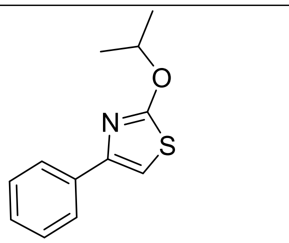
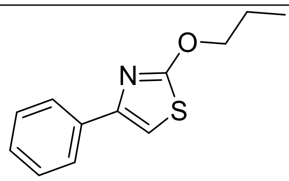
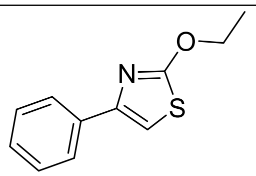
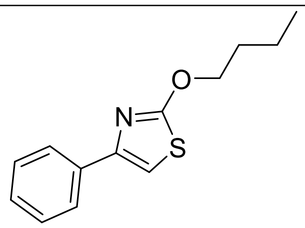
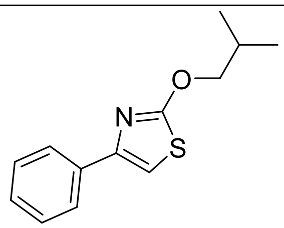
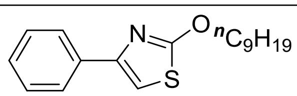
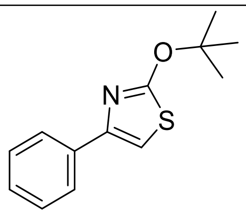


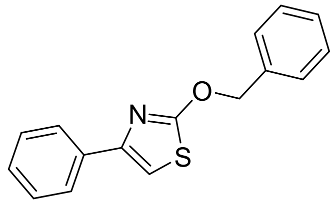
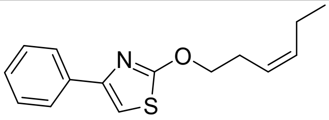
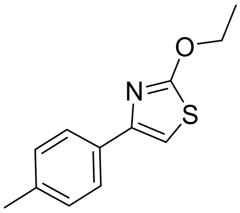
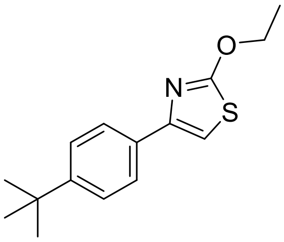
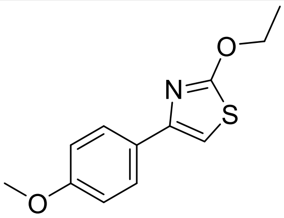
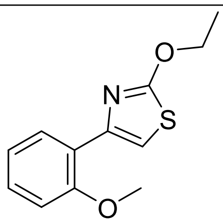
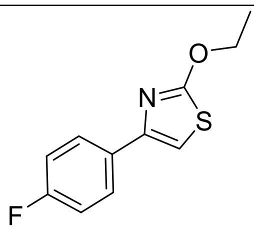
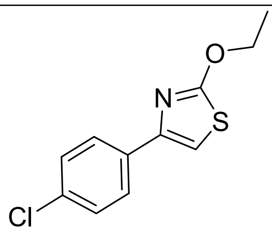
Argon was bubbled through the solution of vinyl azide **1a** (1 mmol,145 mg) and xanthates **2c** (1.5 mmol, 240 mg) in 10 ml of MeCN-DMSO (1:1), $Mn(OAc)_2·4H_2O$ (1.5 mmol, 368 mg) was added, and the mixture was stirred at 20°C for 30 min with argon bubbling. The reaction mixture was transferred to a separation funnel and diluted with water (50 ml). The aqueous layer was extracted with ethyl acetate (5×10 ml). The combined organic layer was washed with brine (10 ml), dried over Na_2SO_4, filtered, and concentrated under reduced pressure. The yield of **3ac** was determined by ^{1}H NMR using 1,4-dinitrobenzene as an internal standard.

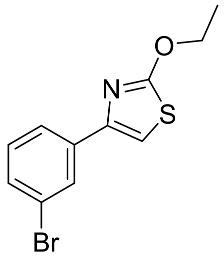
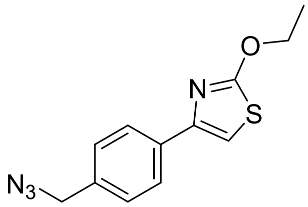
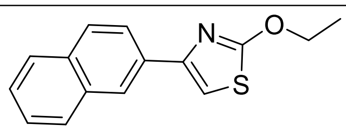
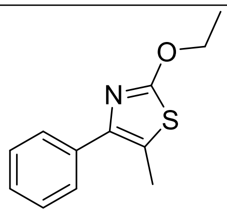
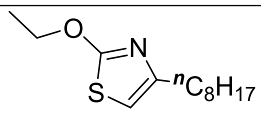
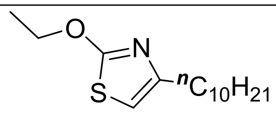
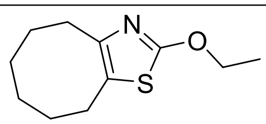
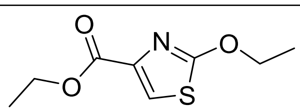


To a solution of vinyl azide **1a** (0.5 mmol, 72.5 mg) and xanthates **2c** (0.75 mmol, 120 mg) in 10 ml of MeCN-DMSO (1:1), $Mn(OAc)_3·2H_2O$ (0.75 mmol, 201 mg) was added, and the mixture was stirred at 20°C for 15 min. After that, vinyl azide **1a** (0.5 mmol, 72.5 mg) and xanthate **2c** (0.75 mmol, 120 mg) were added to the reaction mixture and it was stirred at 20°C for 15 min. The reaction mixture was transferred to a separation funnel and diluted with water (50 ml). The aqueous layer was extracted with ethyl acetate (5×10 ml). The combined organic layer was washed with brine (10 ml), dried over Na_2SO_4, filtered, and concentrated under reduced pressure. The yield of **3ac** was determined by ^1H NMR using 1,4-dinitrobenzene as an internal standard. Additionally, reaction mixture was analyzed as is with HRMS to detect key intermediates.

Growth inhibition of the mycelium of the pathogenic fungi by thiazoles 3

№	Compound	*Mycelium growth inhibition at 30 mol/L concentration, %*					
		V. i.	***R. s.***	***F. o.***	***F. m.***	***B. s.***	***S. s.***
*	**Triadimefon**	***70***	***59***	***64***	***86***	***71***	***71***
3aa		69	93	48	78	79	48
3ab		15	41	16	45	39	16
3ac		79	100	55	90	78	53
3ad		61	68	32	66	67	28
3ae		75	100	36	59	74	19
3af		13	30	11	34	45	9
3ag		38	65	18	57	45	12

3ah		28	40	25	61	53	11
3aj		28	45	23	53	46	14
3bc		75	100	35	71	66	40
3cc		28	41	25	66	47	18
3dc		80	100	42	86	68	52
3ec		74	95	44	75	75	48
3fc		100	100	61	86	83	64
3gc		34	48	21	45	40	16

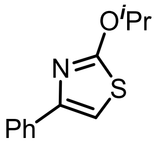
3hc		44	67	33	70	62	37
3ic		56	99	32	58	53	38
3jc		30	41	21	53	42	24
3kc		79	100	46	73	88	42
3lc		28	50	16	35	8	24
3mc		24	35	10	34	10	14
3nc		56	87	45	72	52	29
3oc		30	36	6	26	38	17

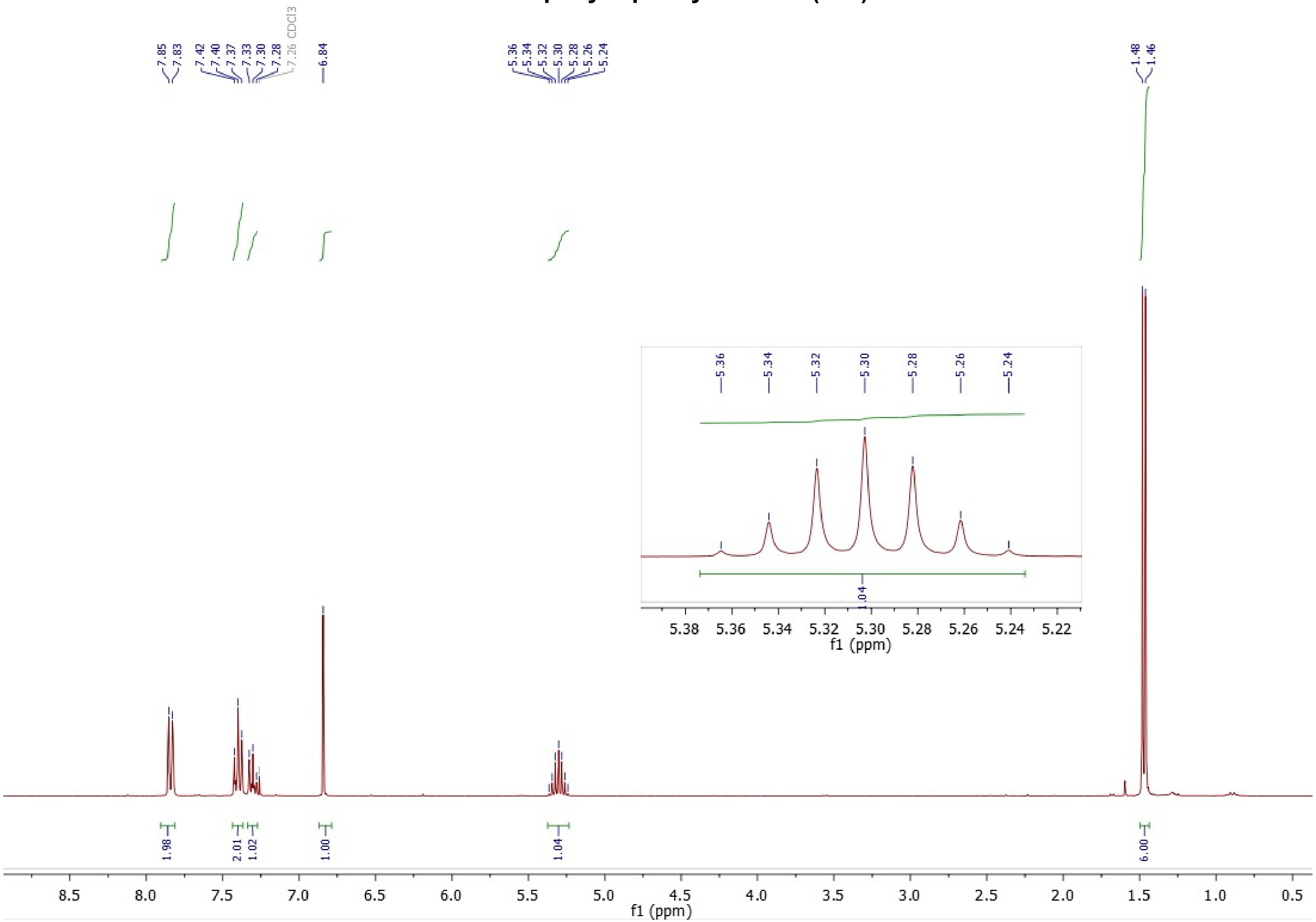
References

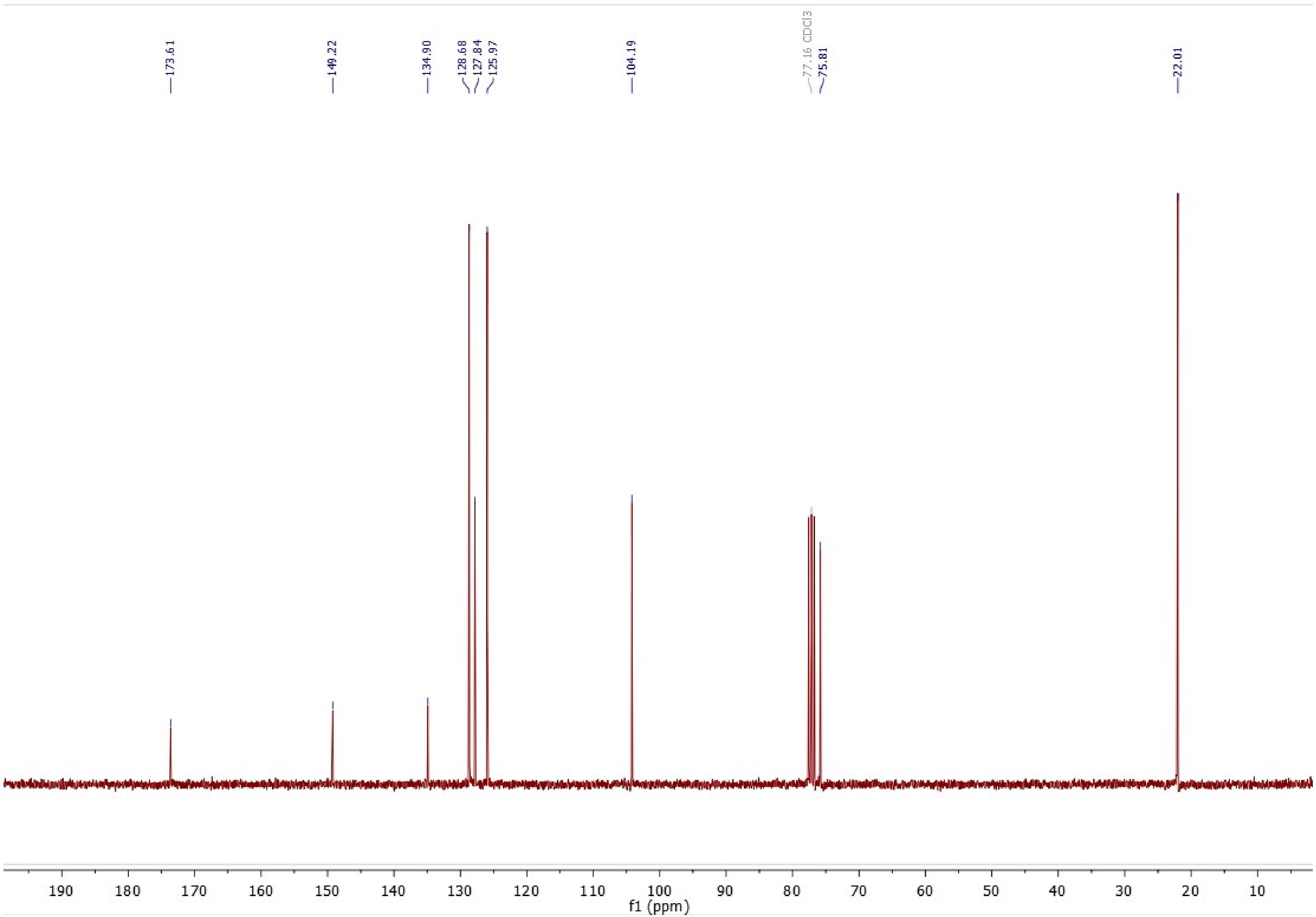
1. M. M. Doronin, A. S. Klikushin, O. M. Mulina, M. G. Medvedev, V. A. Vil’, L.-N. He and A. O. Terent'ev, *Org. Chem. Front.*, 2025, DOI: 10.1039/D5QO00508F.
2. Z. Zhu, X. Tang, J. Cen, J. Li, W. Wu and H. Jiang, *Chem. Commun.*, 2018, **54**, 3767–3770.

NMR spectra of the synthesized compounds

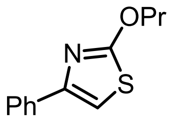
2-*iso*-Propoxy-4-phenylthiazole (3aa)

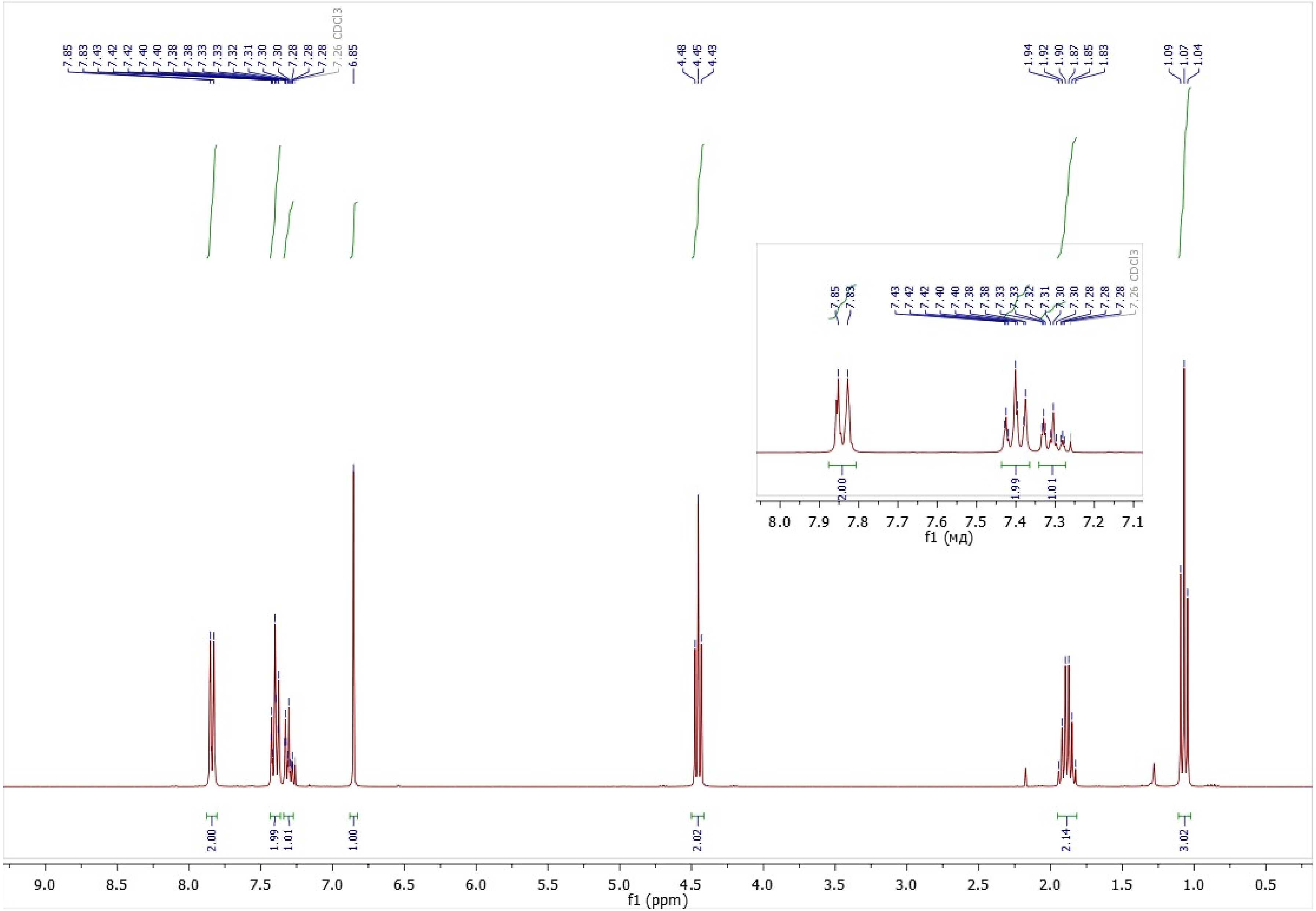


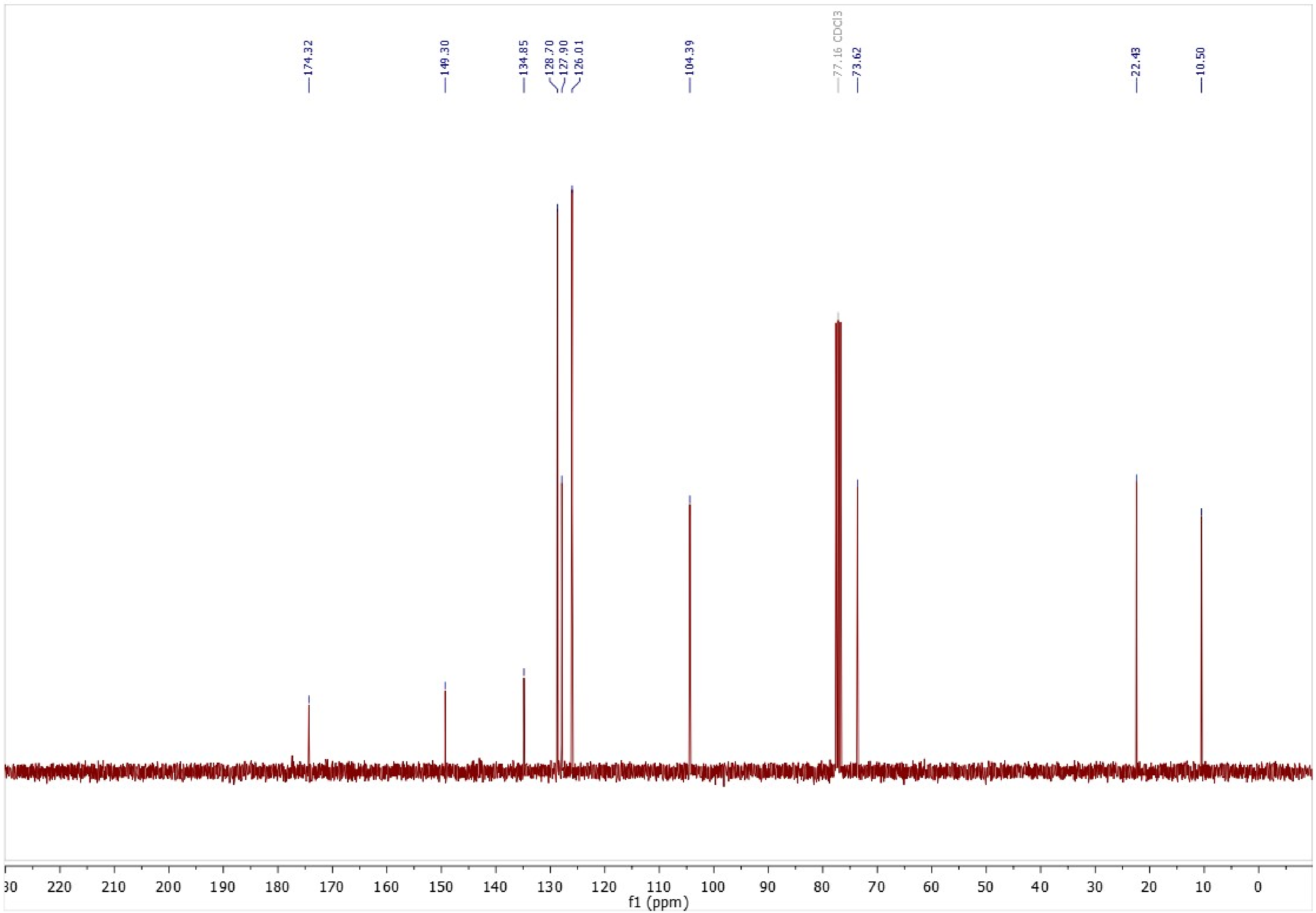



173.61
149.22
134.90
128.68
127.84
125.97
104.19
77.16 CDCl3
75.81
22.01
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10
f1 (ppm)

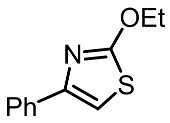
2-Propoxy-4-phenylthiazole (3ab)

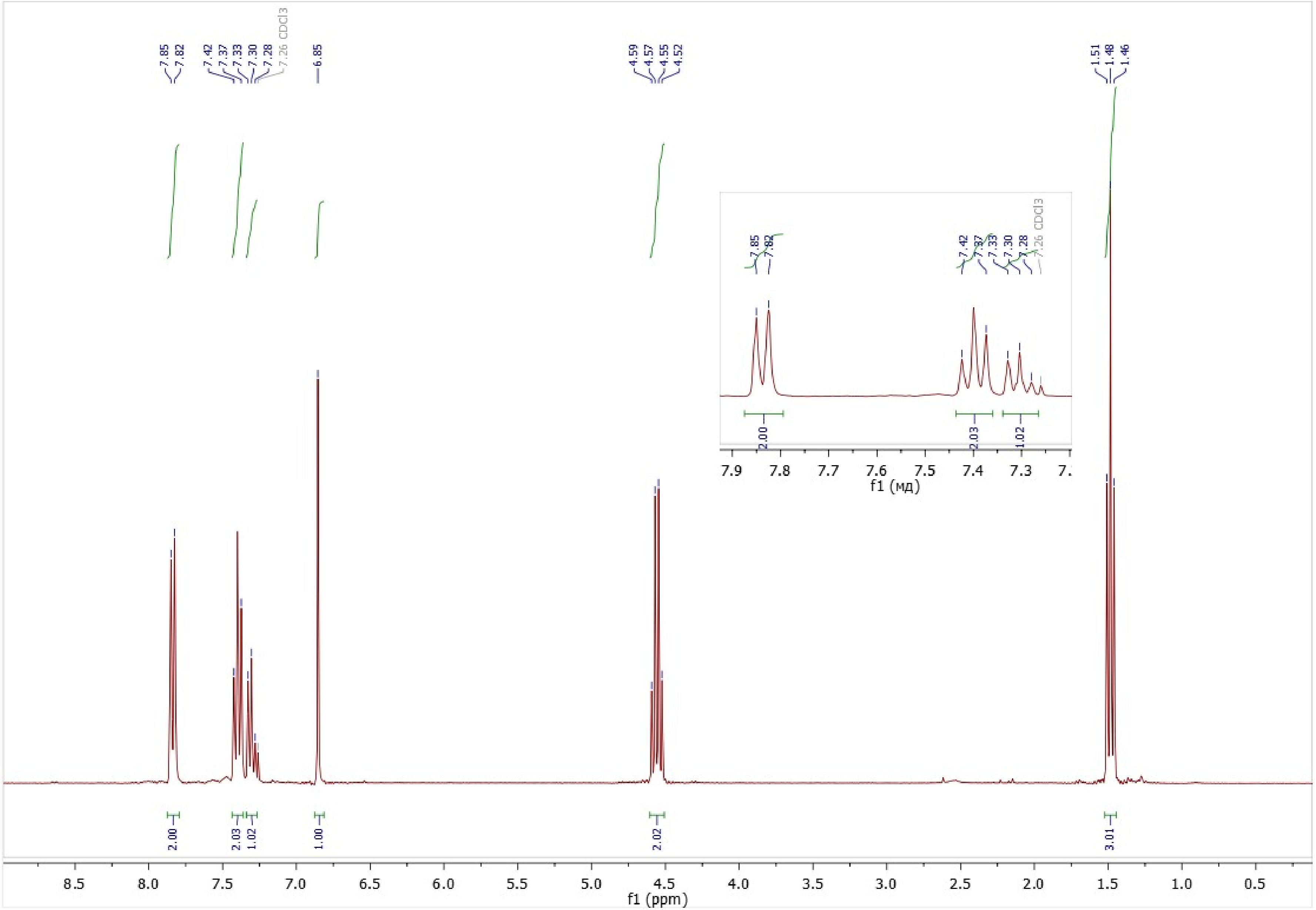


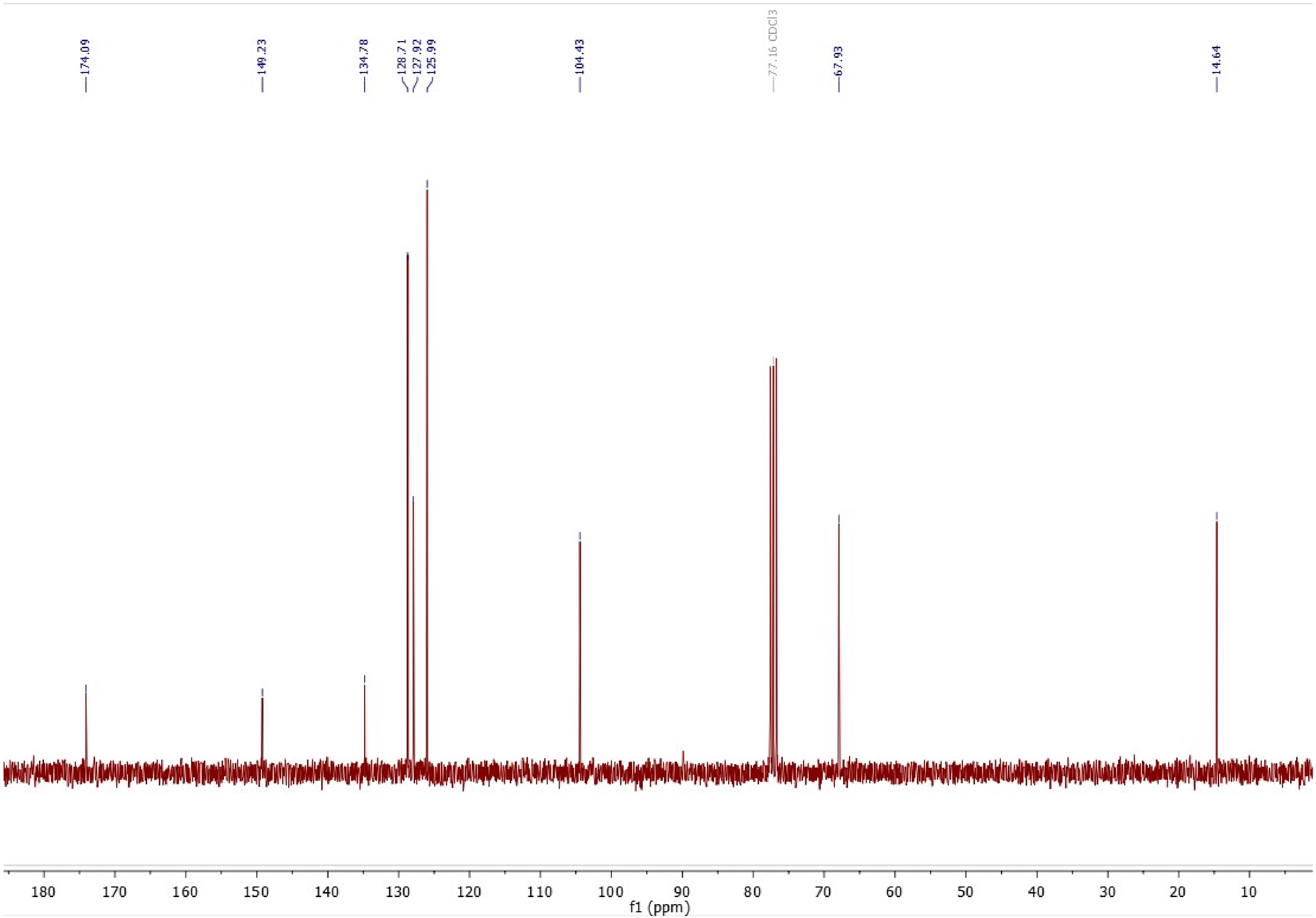



174.32
149.30
134.85
128.70
127.90
126.01
104.39
77.16 CDCl3
73.62
22.43
10.50
30
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)

2-Ethoxy-4-phenylthiazole (3ac)

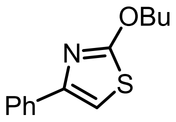


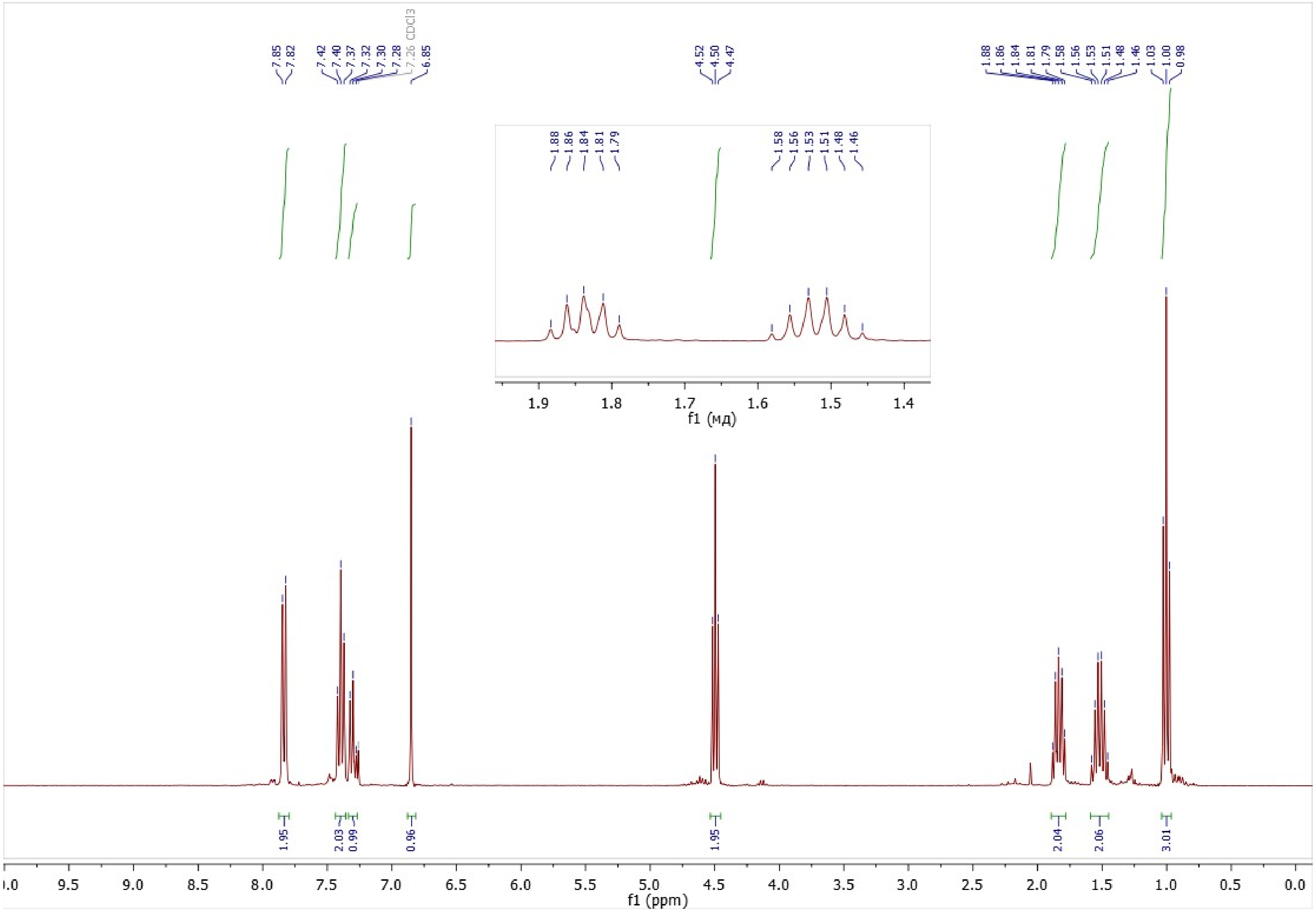


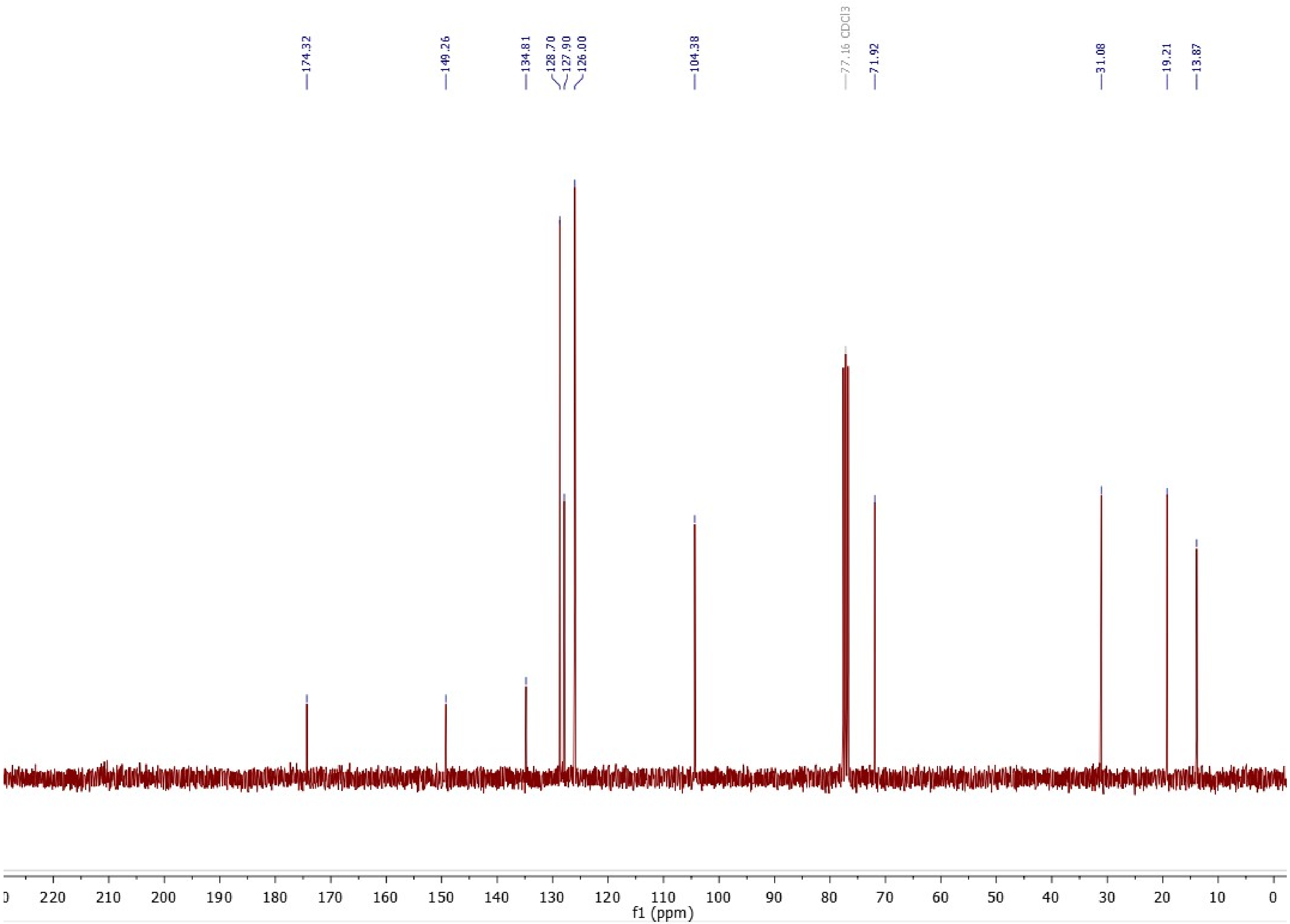


174.09
149.23
134.78
128.71
127.92
125.99
104.43
77.16 CDCl3
67.93
14.64
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10
f1 (ppm)

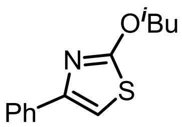
2-Butoxy-4-phenylthiazole (3ad)

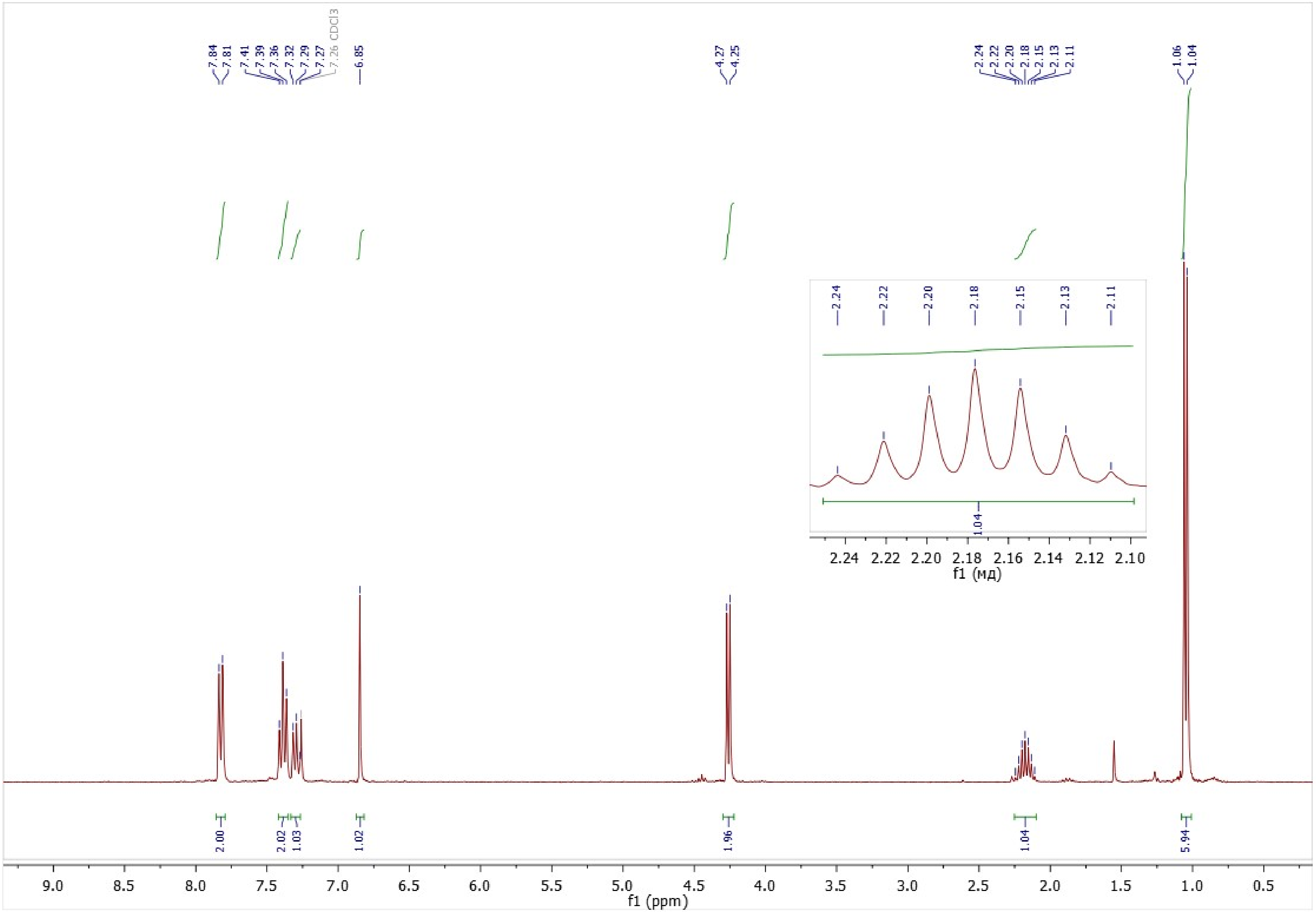


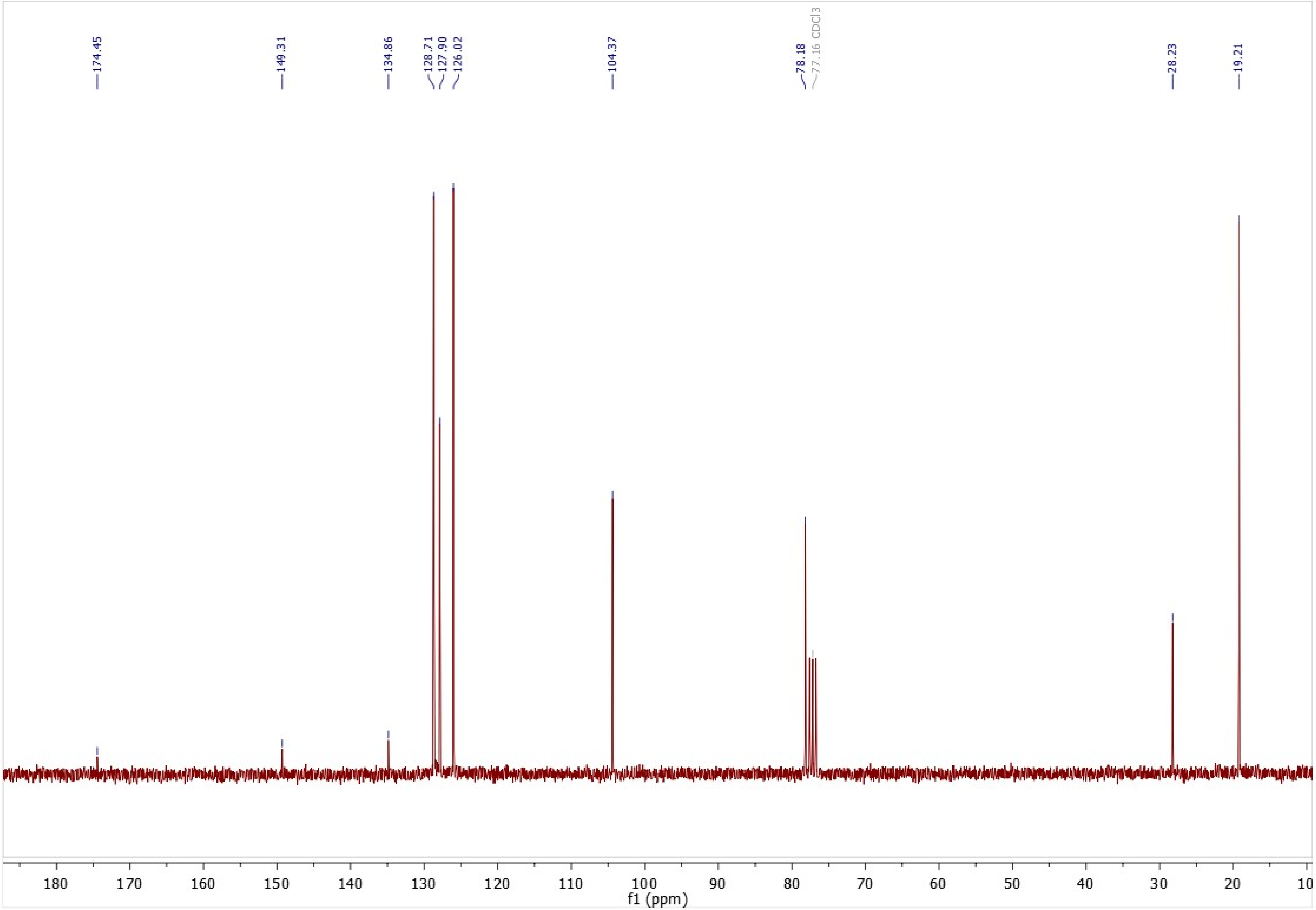



174.32
149.26
134.81
128.70
127.90
126.00
104.38
77.16 CDCl3
71.92
31.08
19.21
13.87
220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)

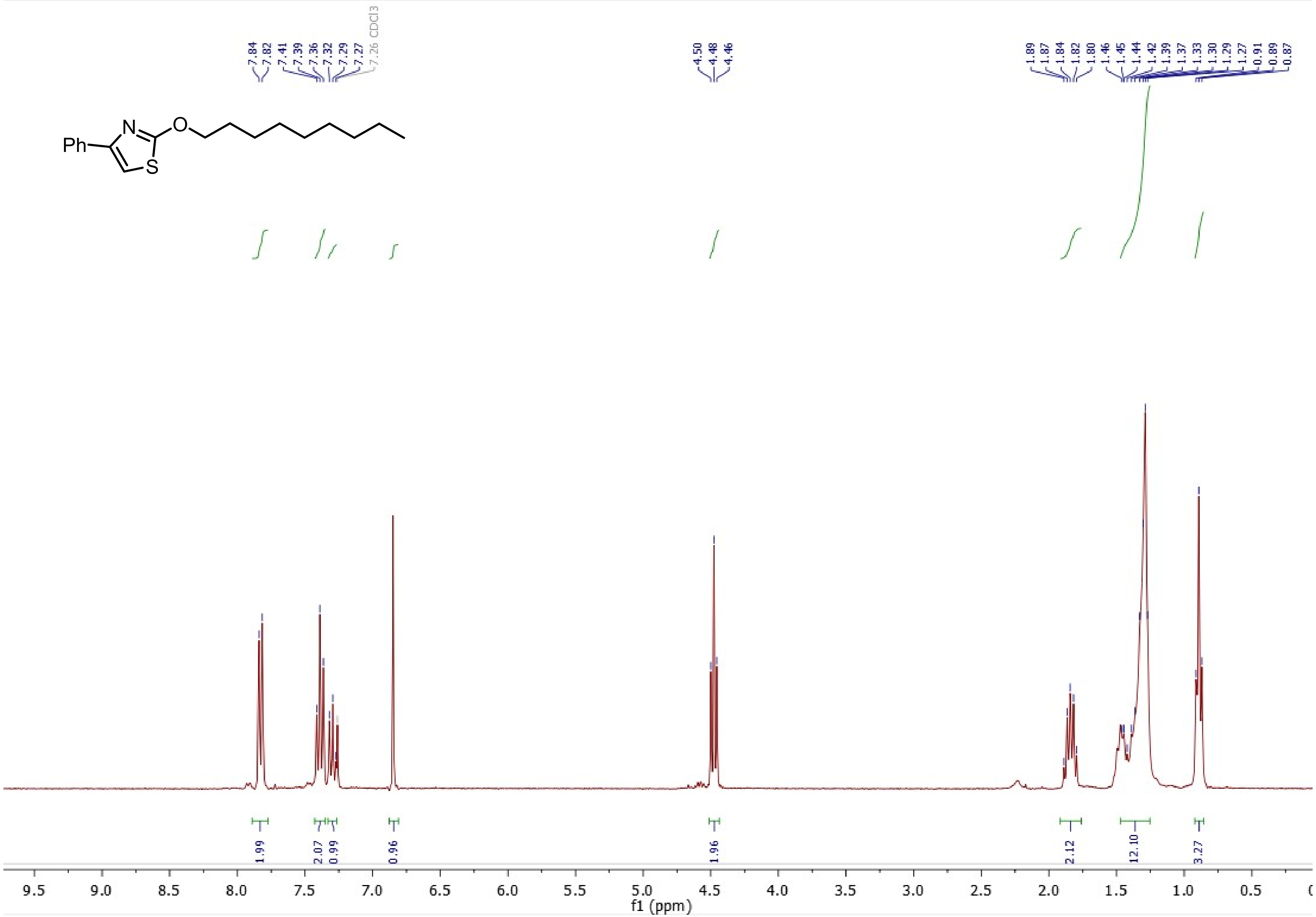
2-*iso*-Butoxy-4-phenylthiazole (3ae)

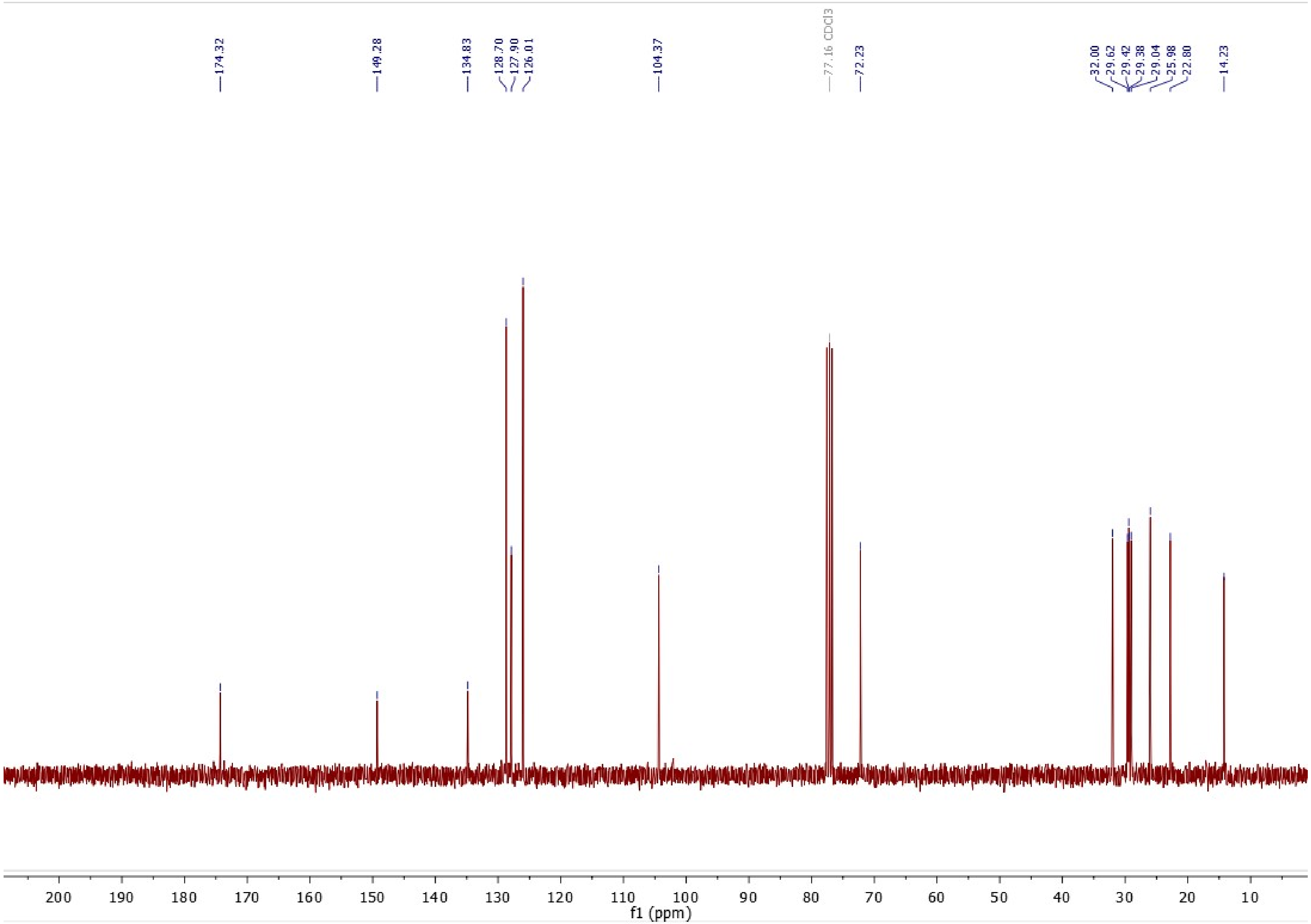





174.45
149.31
134.86
128.71
127.90
126.02
104.37
78.18
77.16 CDCl3
28.23
19.21
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
f1 (ppm)

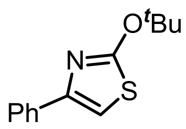
2-Nonyloxy-4-phenylthiazole (3af)

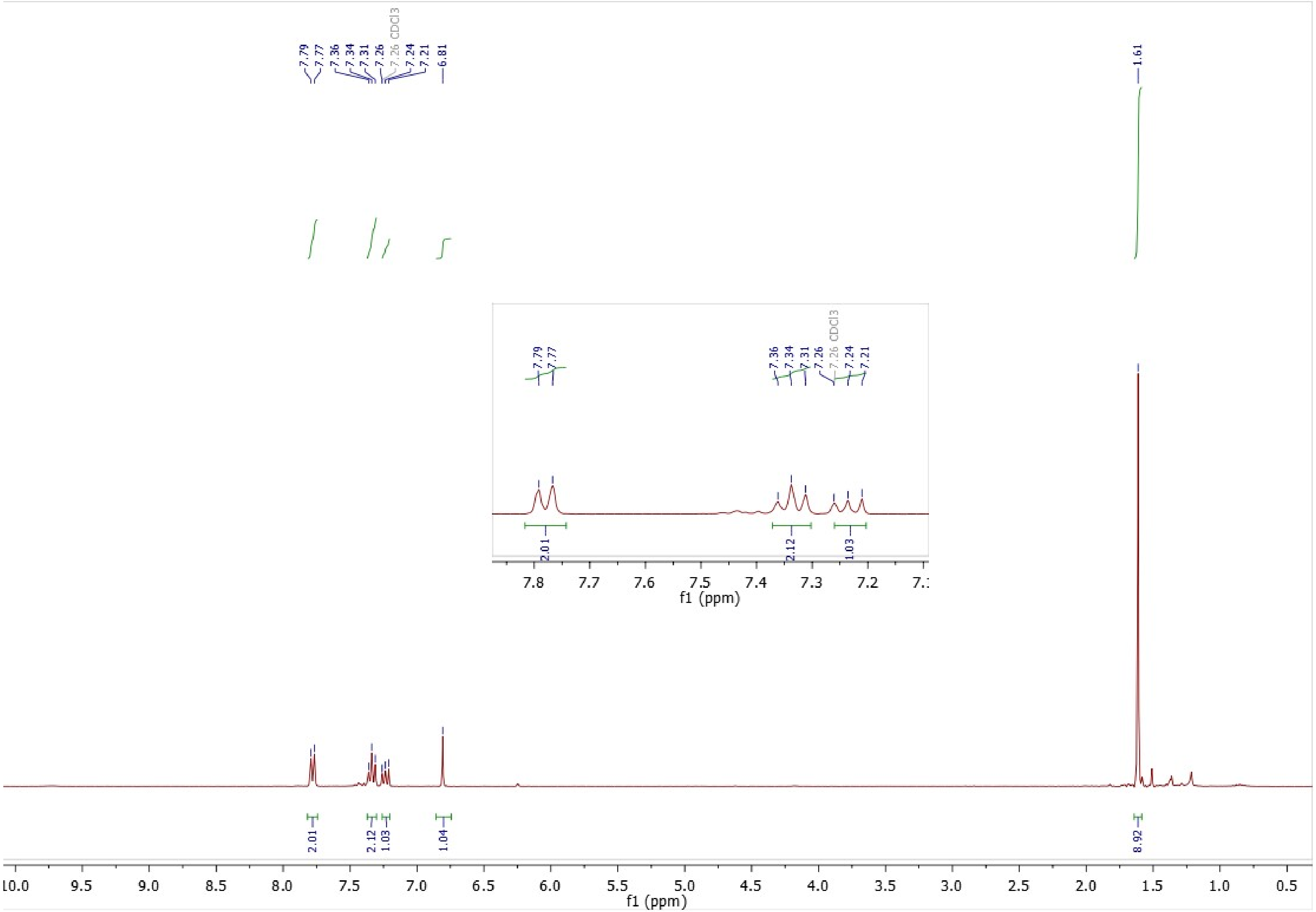


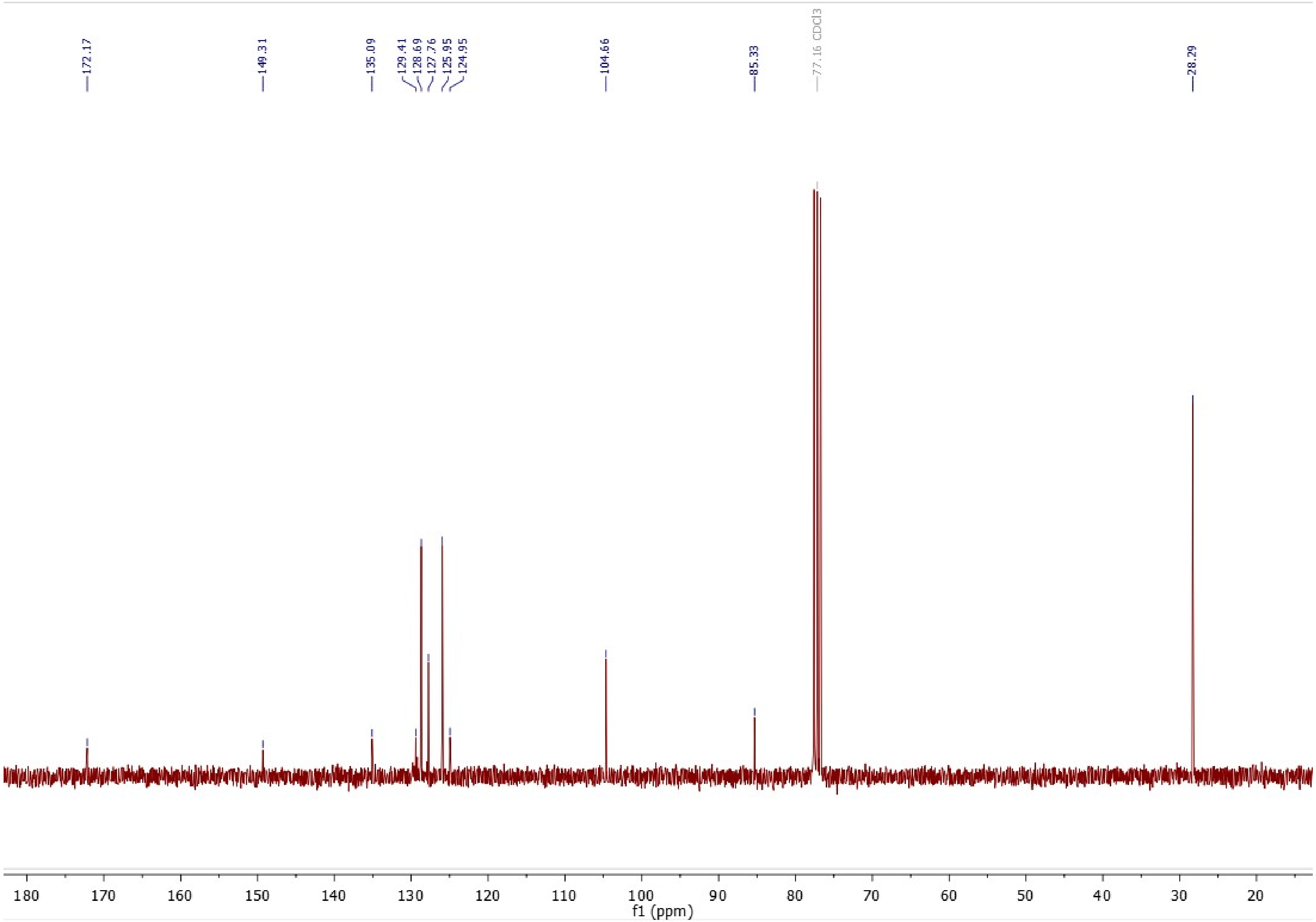


174.32
149.28
134.83
128.70
127.90
126.01
104.37
77.16 CDCl3
72.23
32.00
29.62
29.42
29.38
29.04
25.98
22.80
14.23
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10
f1 (ppm)

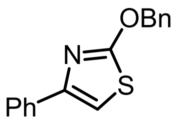
2-*tert*-Butoxy-4-phenylthiazole (3ag)

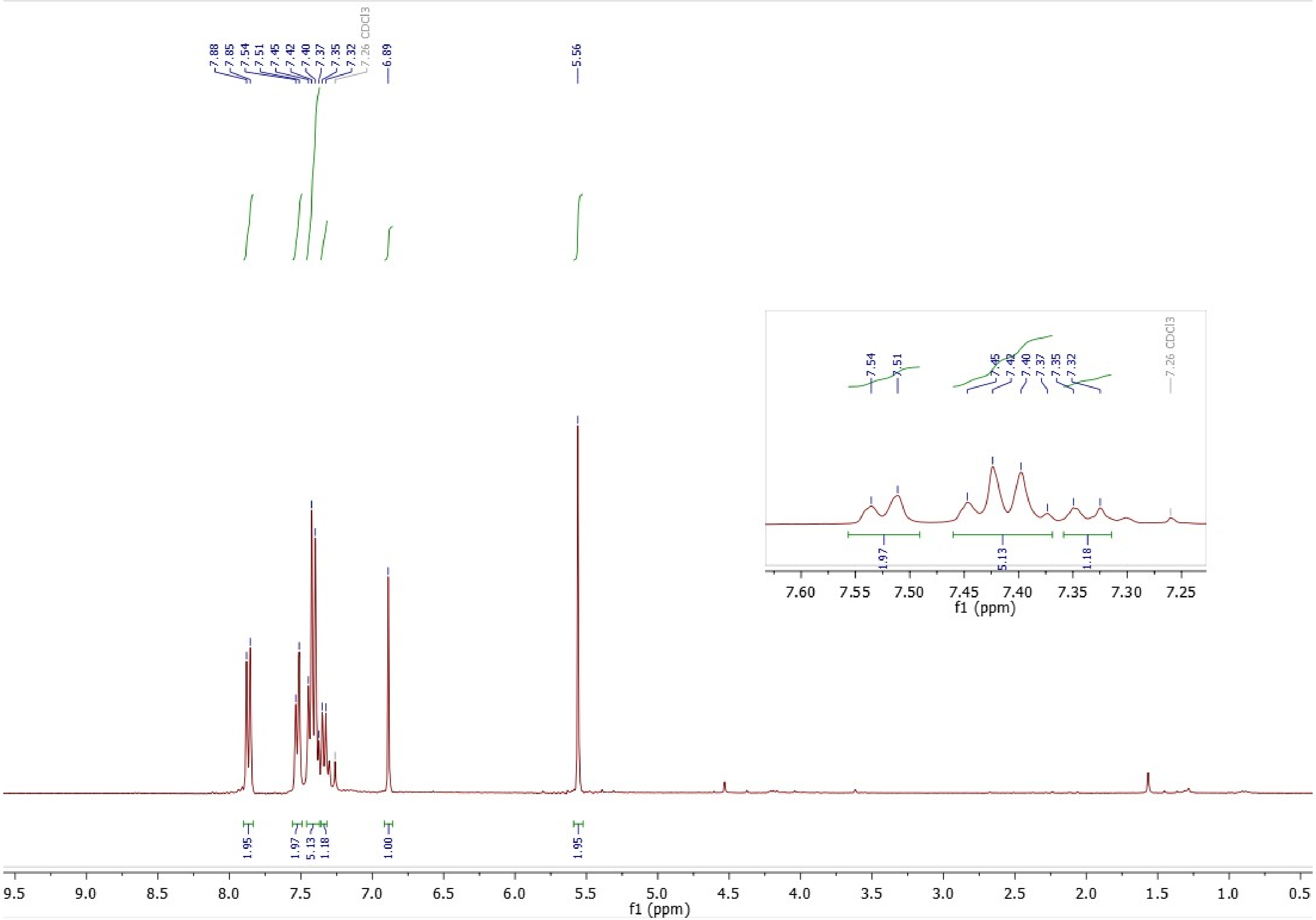


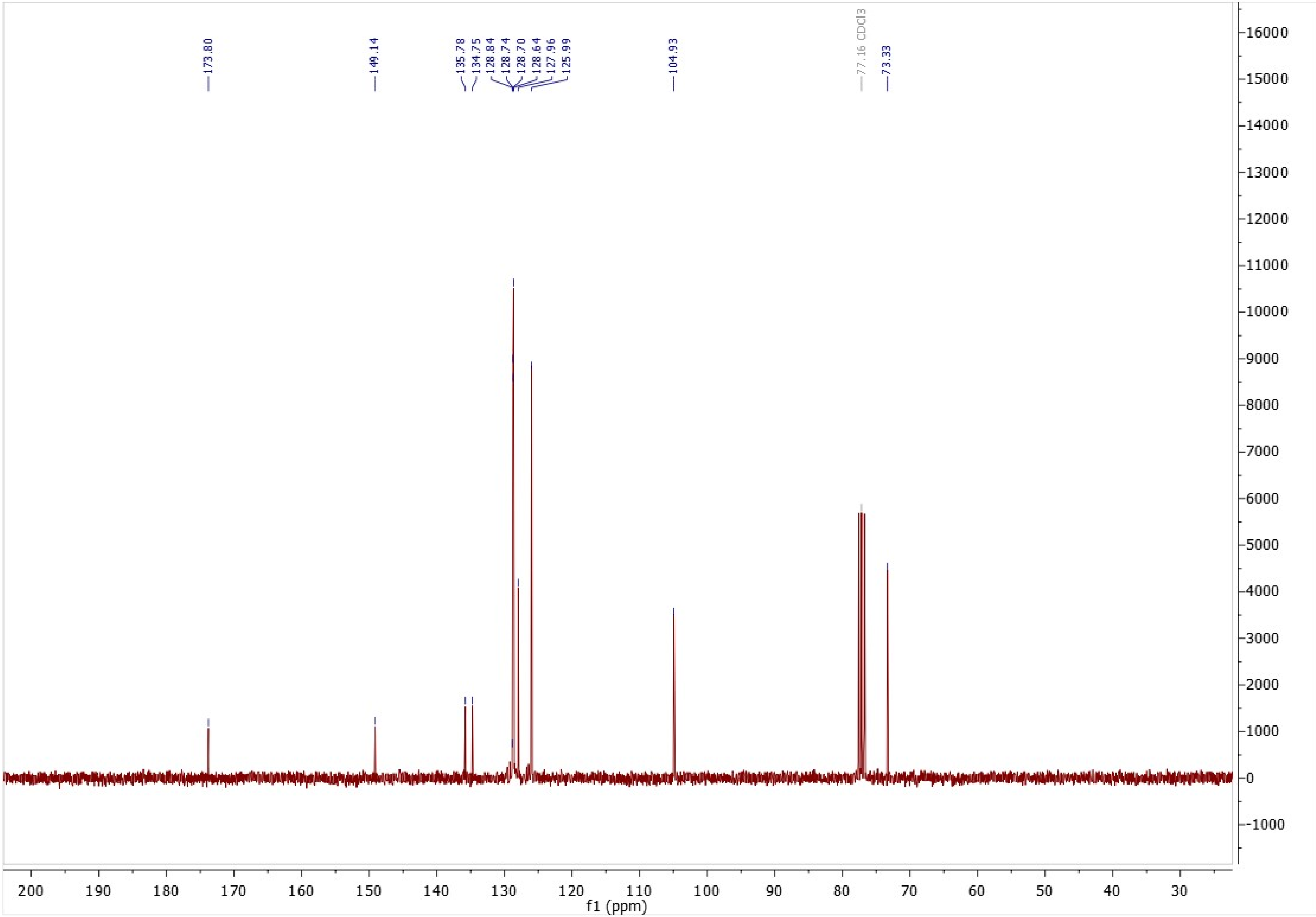



172.17
149.31
135.09
129.41
128.69
127.76
125.95
124.95
104.66
85.33
77.16 CDCl3
28.29
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20
f1 (ppm)

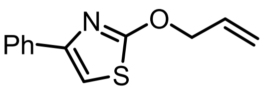
2-Benzyloxy-4-phenylthiazole (3ah)

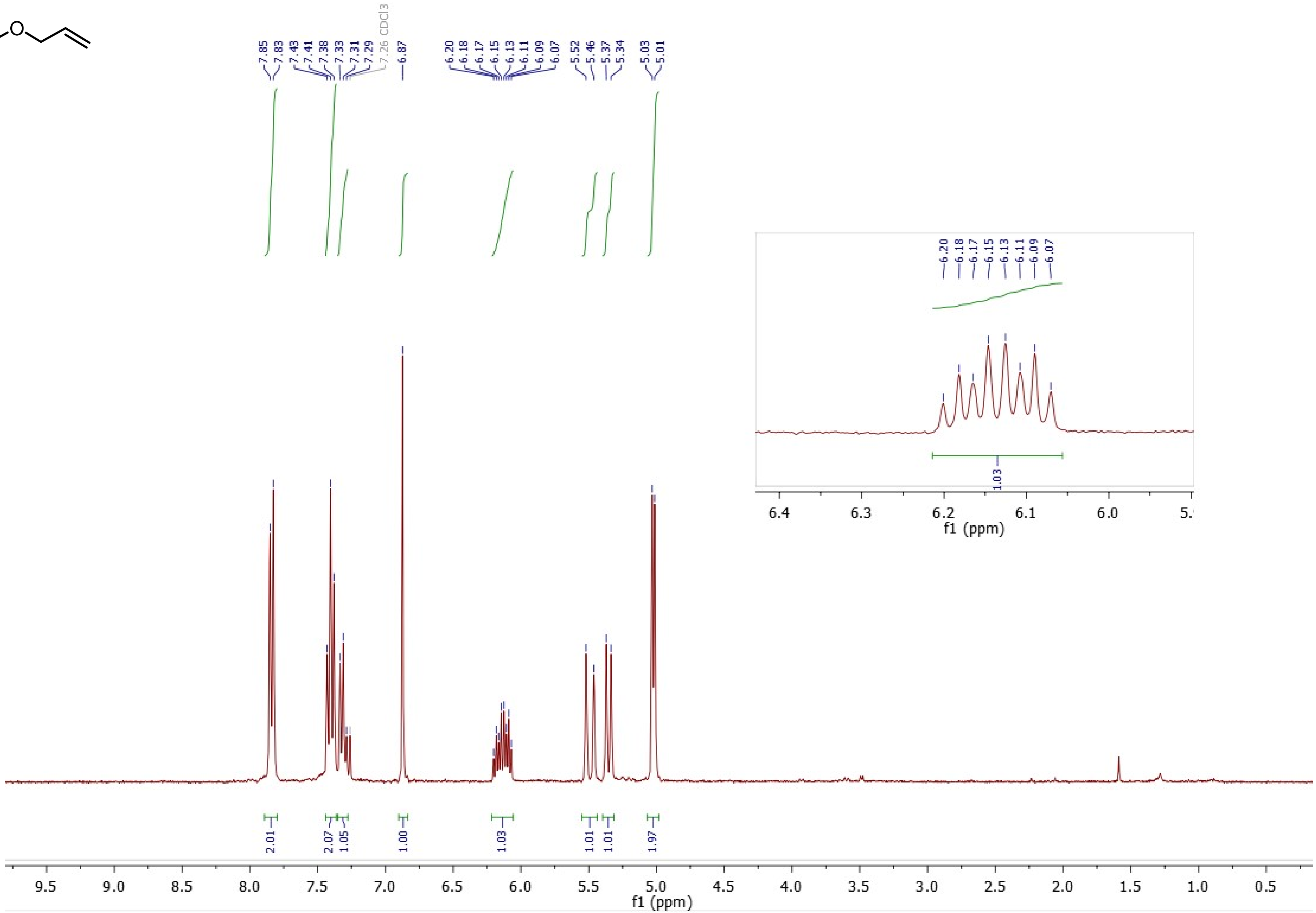


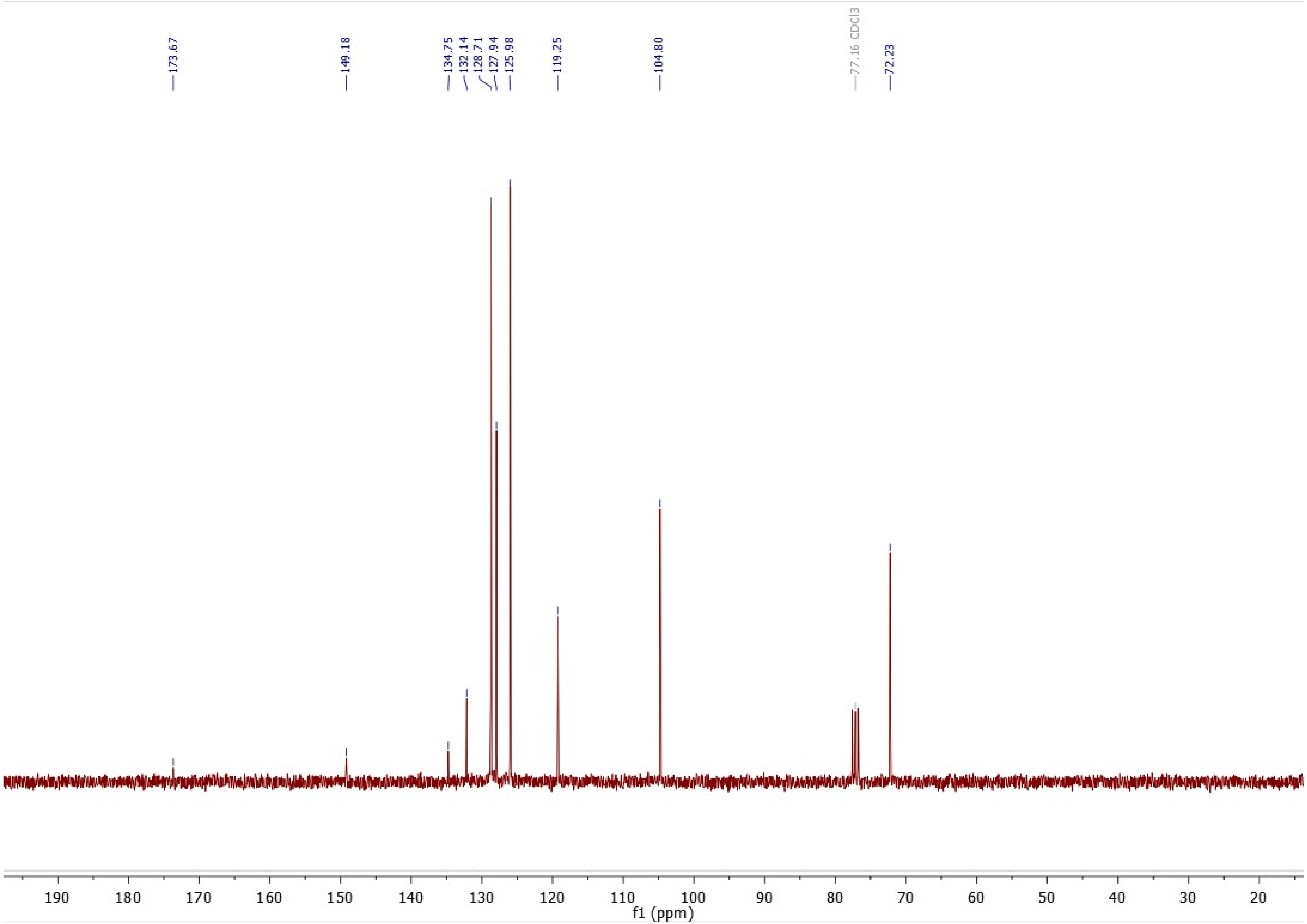



173.80
149.14
135.78
134.75
128.84
128.74
128.70
128.64
127.96
125.99
104.93
77.16 CDCl3
73.33
f1 (ppm)

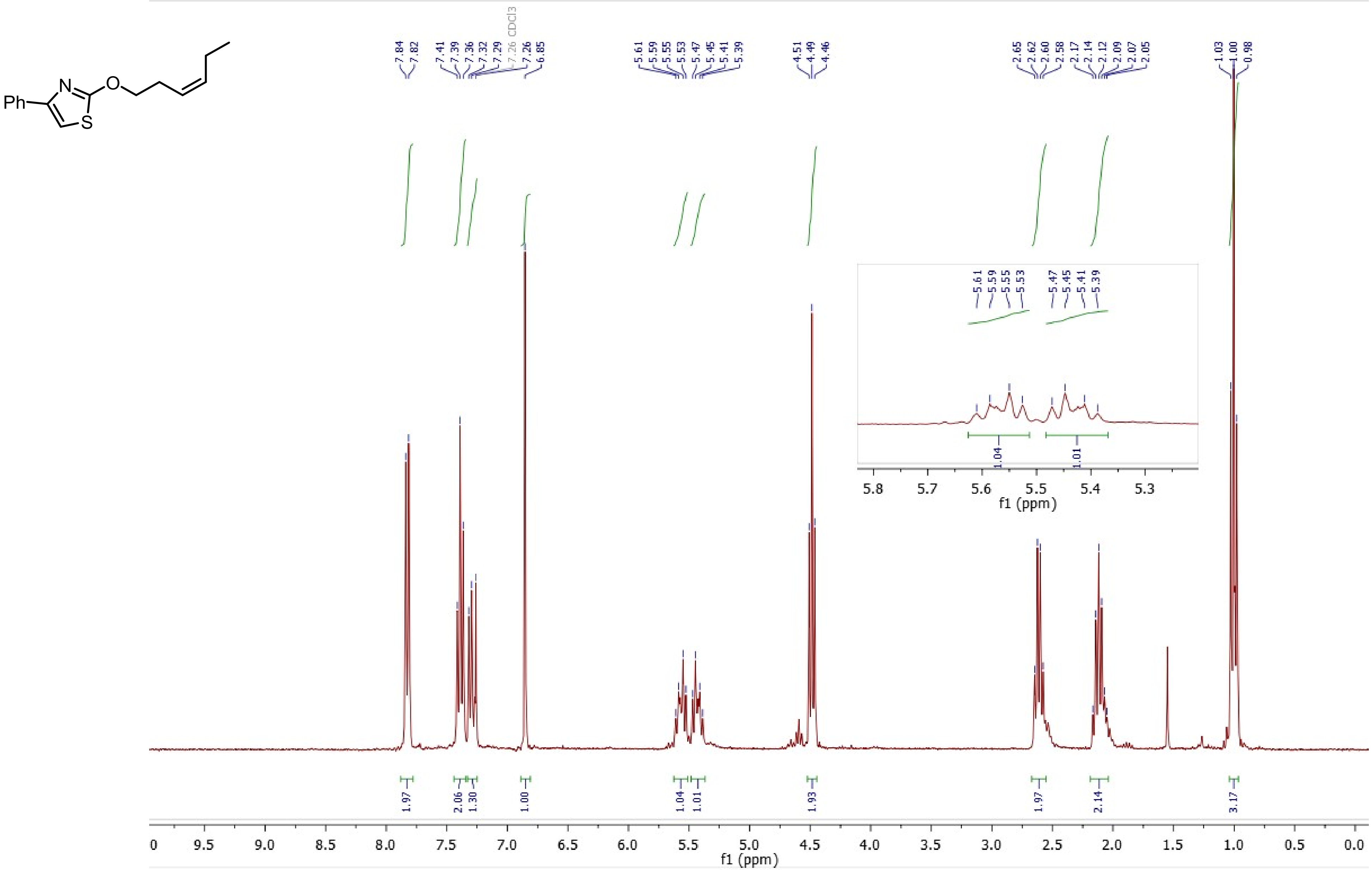
2-(Allyloxy)-4-phenylthiazole (3ai)

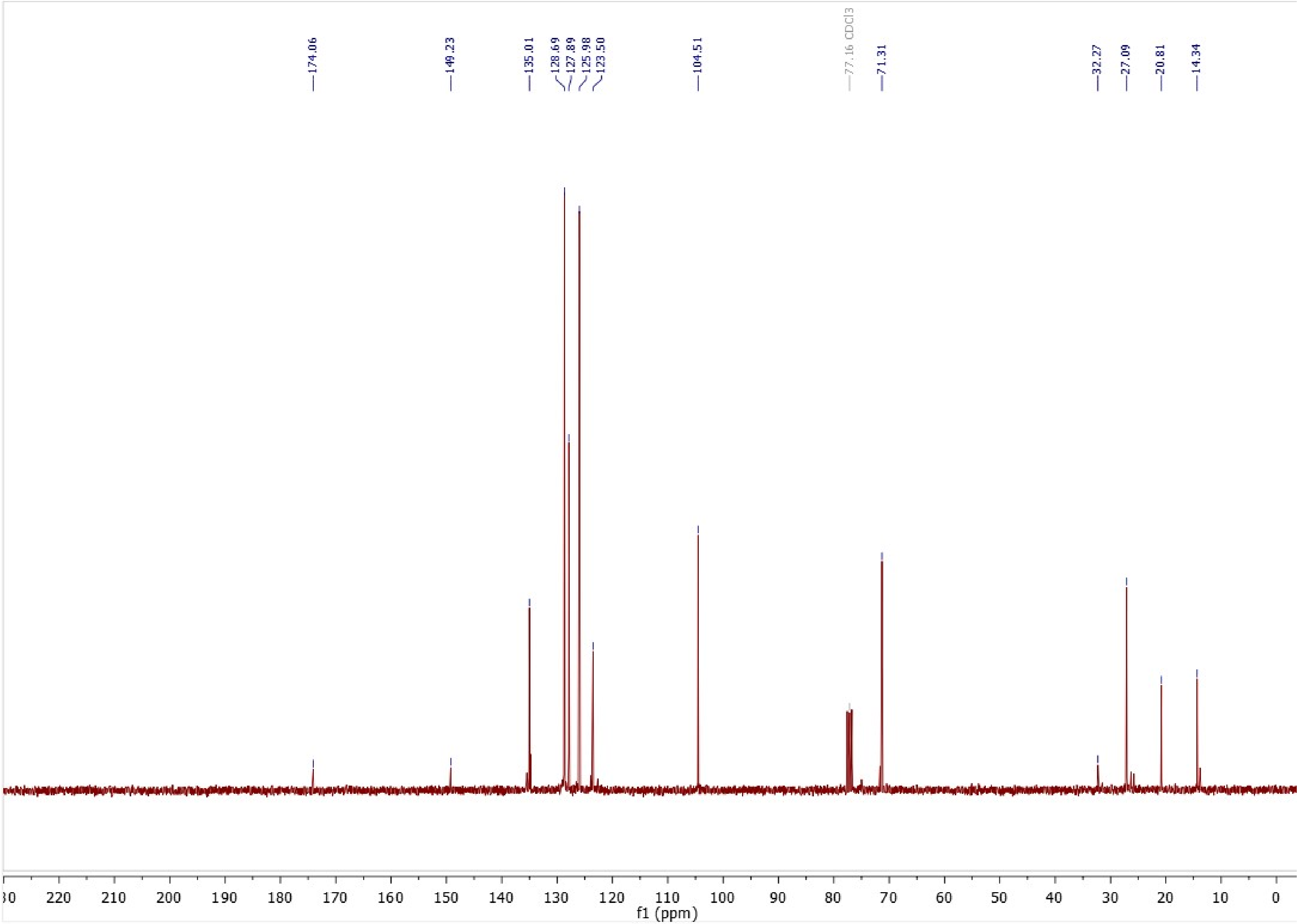




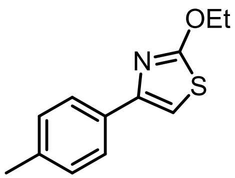

173.67
149.18
134.75
132.14
128.71
127.94
125.98
119.25
104.80
77.16 CDCl3
72.23
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20
f1 (ppm)

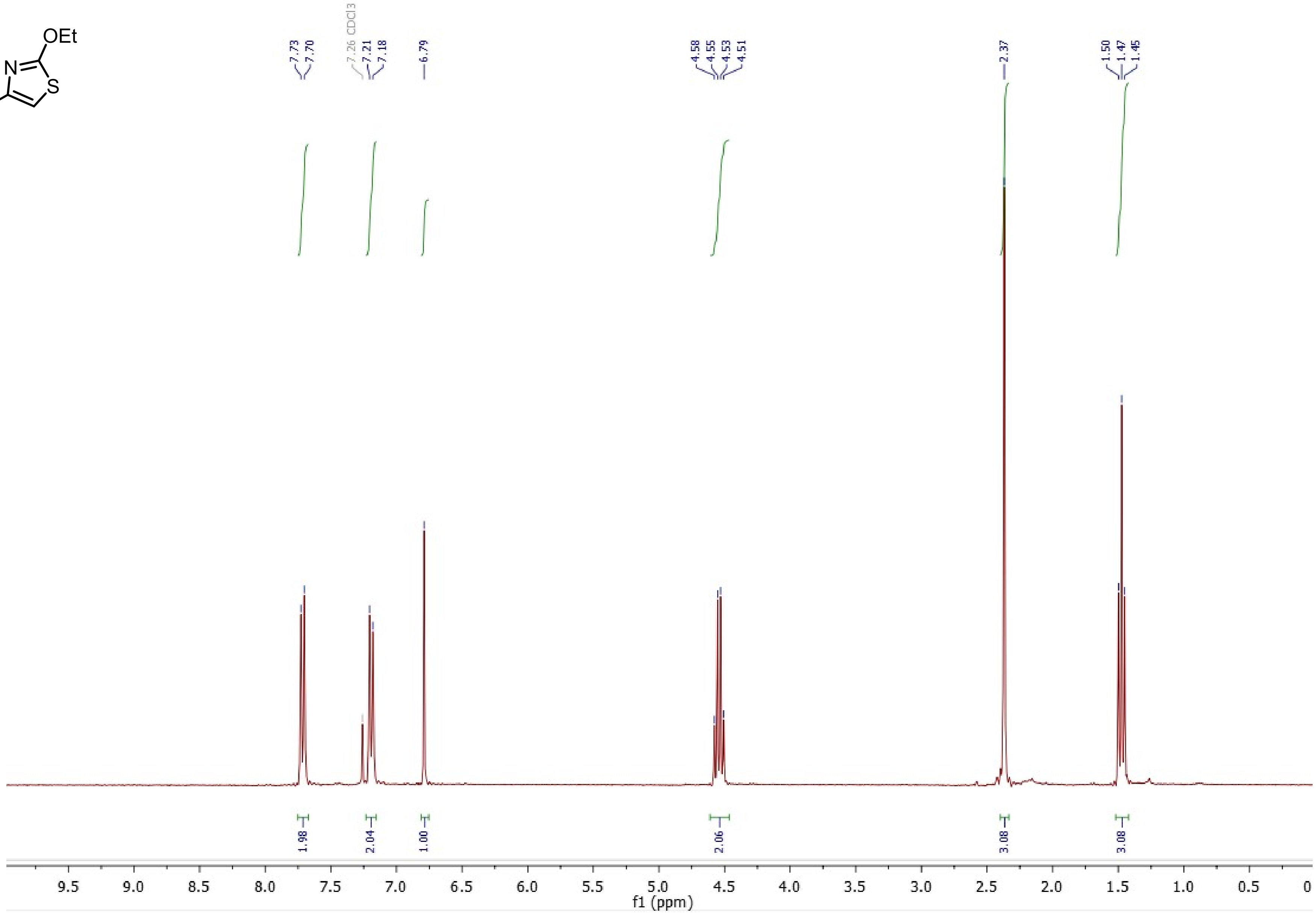
(Z)-2-(Hex-3-en-1-yloxy)-4-phenylthiazole (3aj)

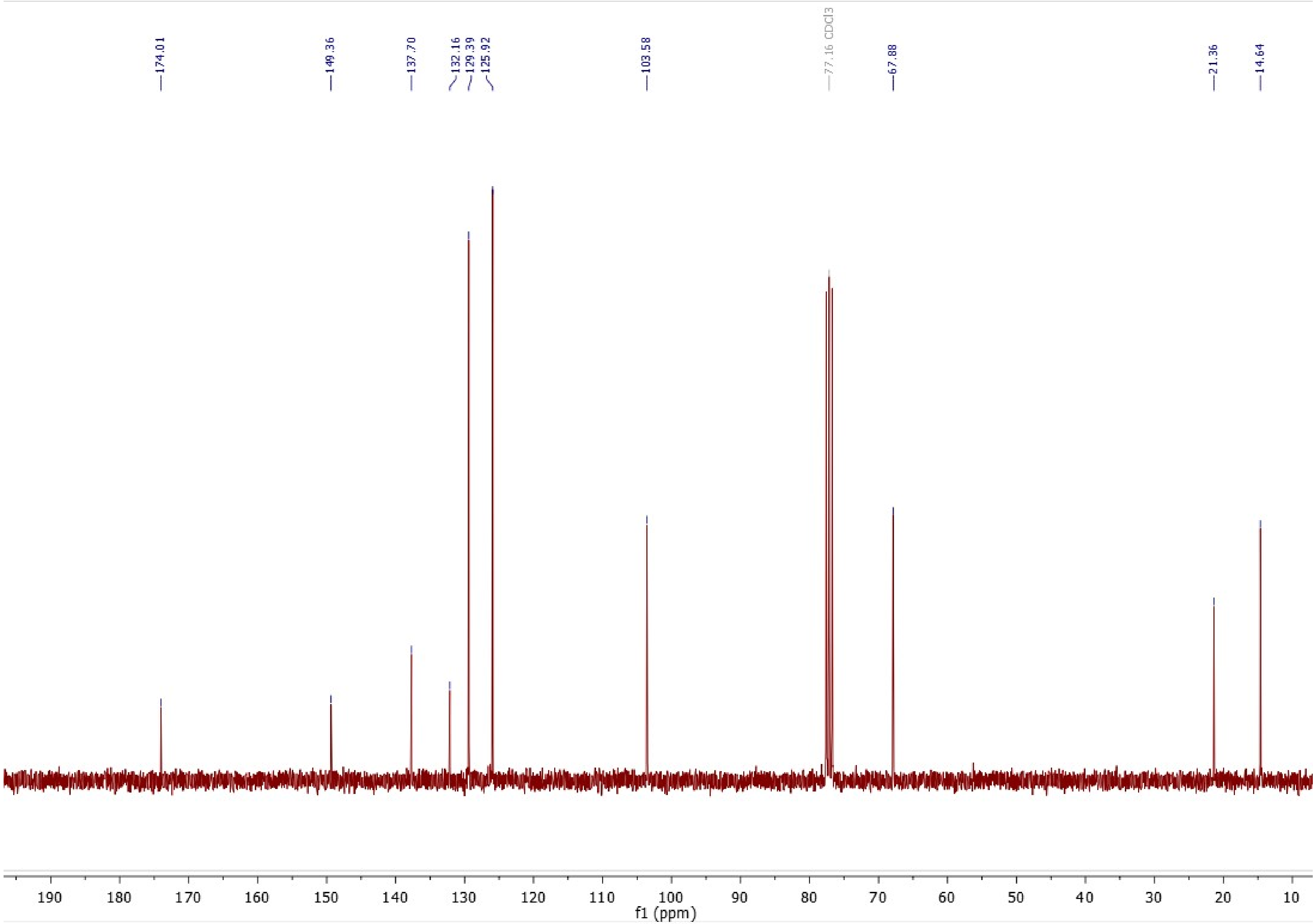



174.06
149.23
135.01
128.69
127.89
125.98
123.50
104.51
77.16 CDCl3
71.31
32.27
27.09
20.81
14.34
f1 (ppm)

2-Ethoxy-4-(4-tolyl)thiazole (3bc)

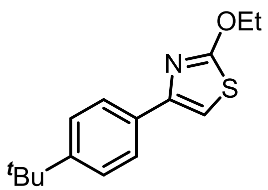


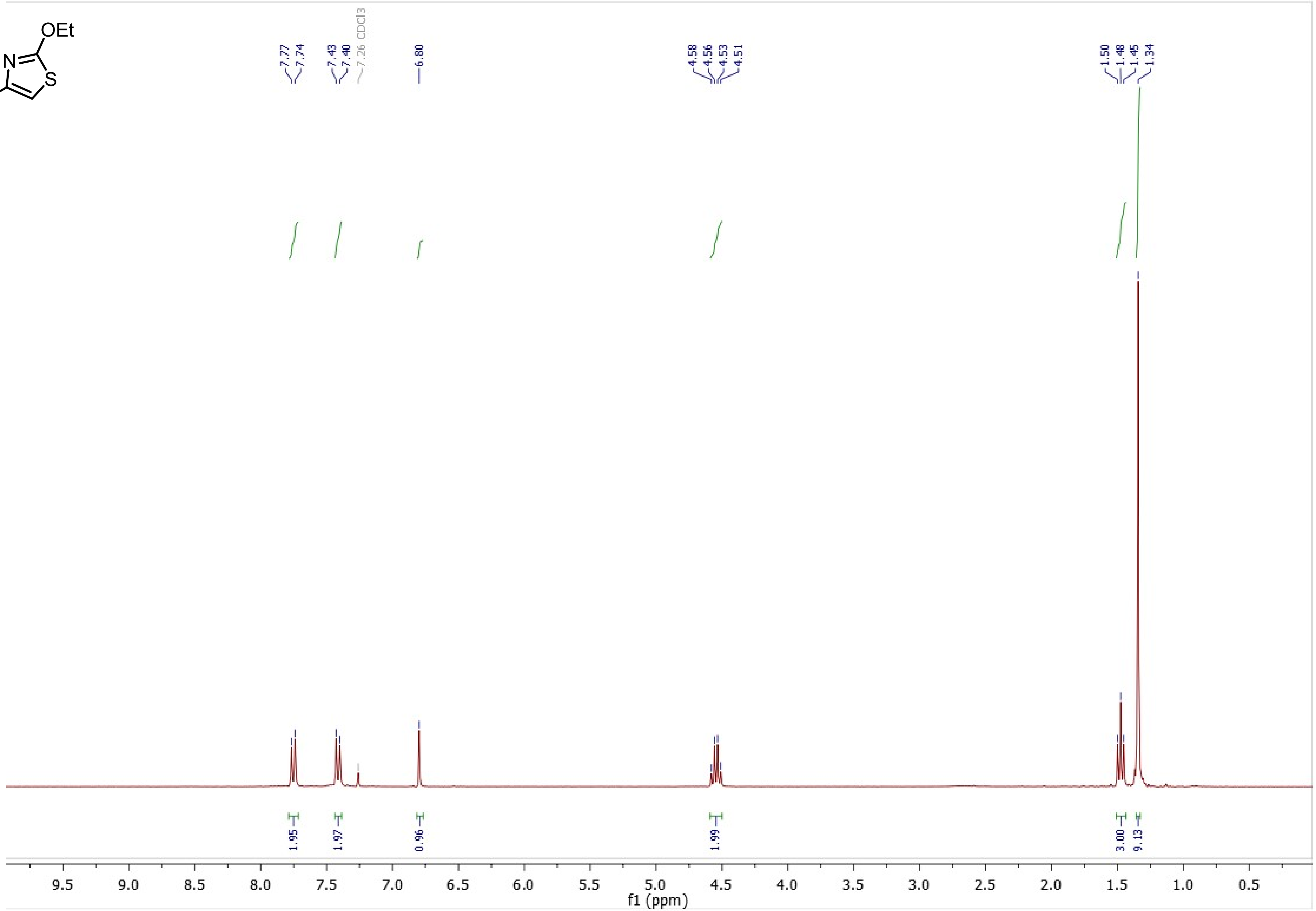


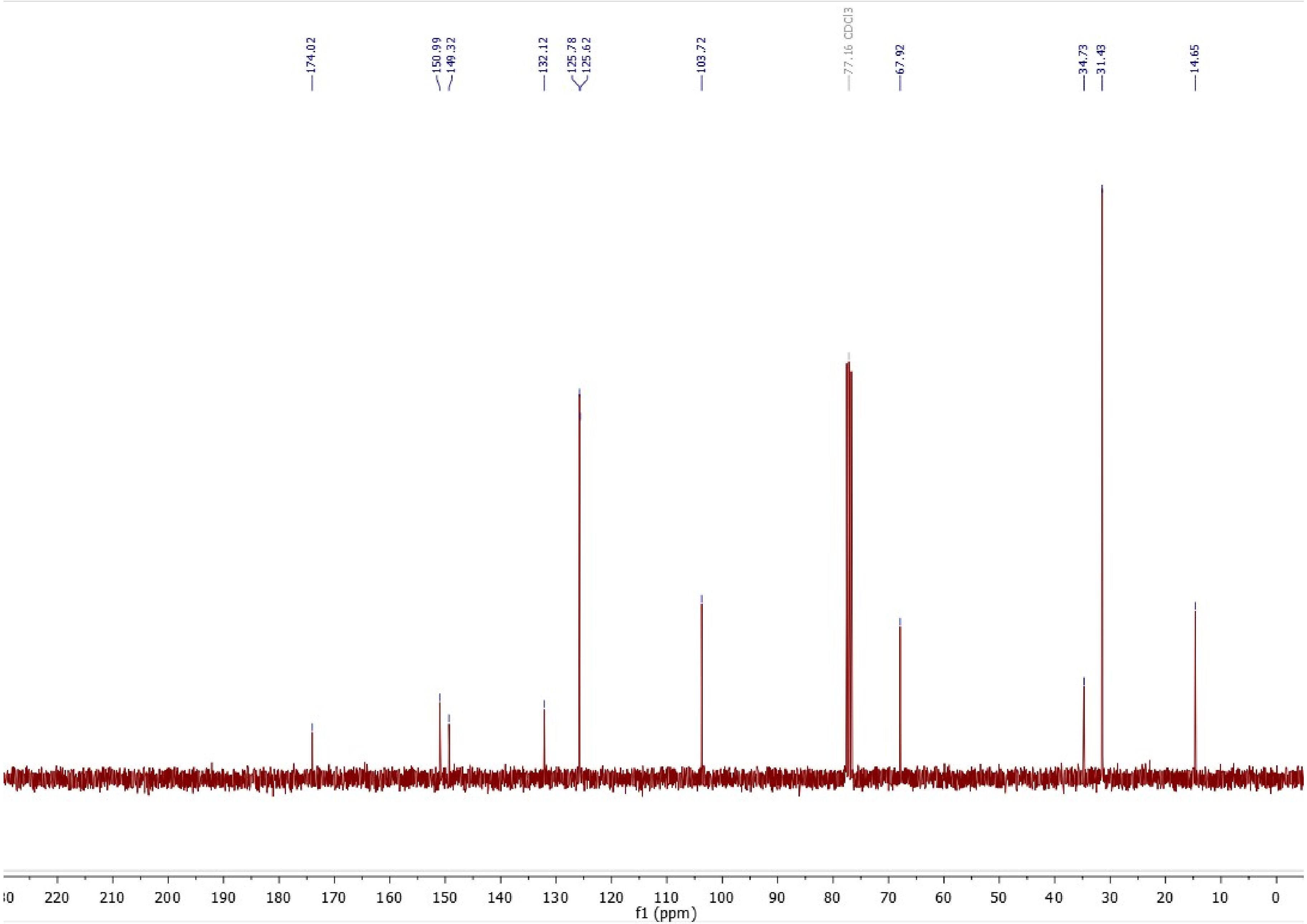


174.01
149.36
137.70
132.16
129.39
125.92
103.58
77.16 CDCl3
67.88
21.36
14.64
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10
f1 (ppm)

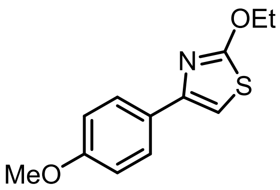
2-Ethoxy4-(4-(*tert*-butyl)phenyl)thiazole (3cc)

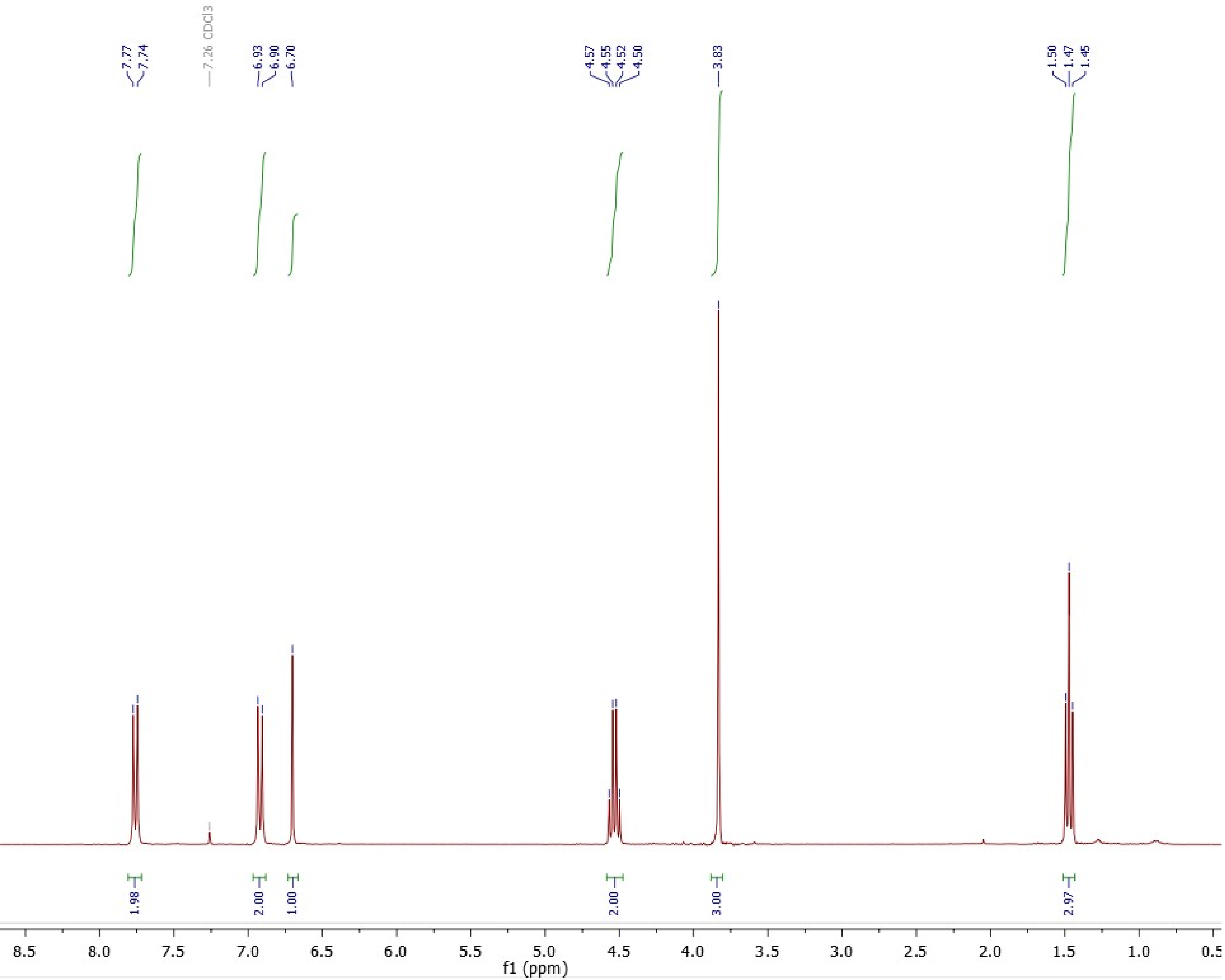


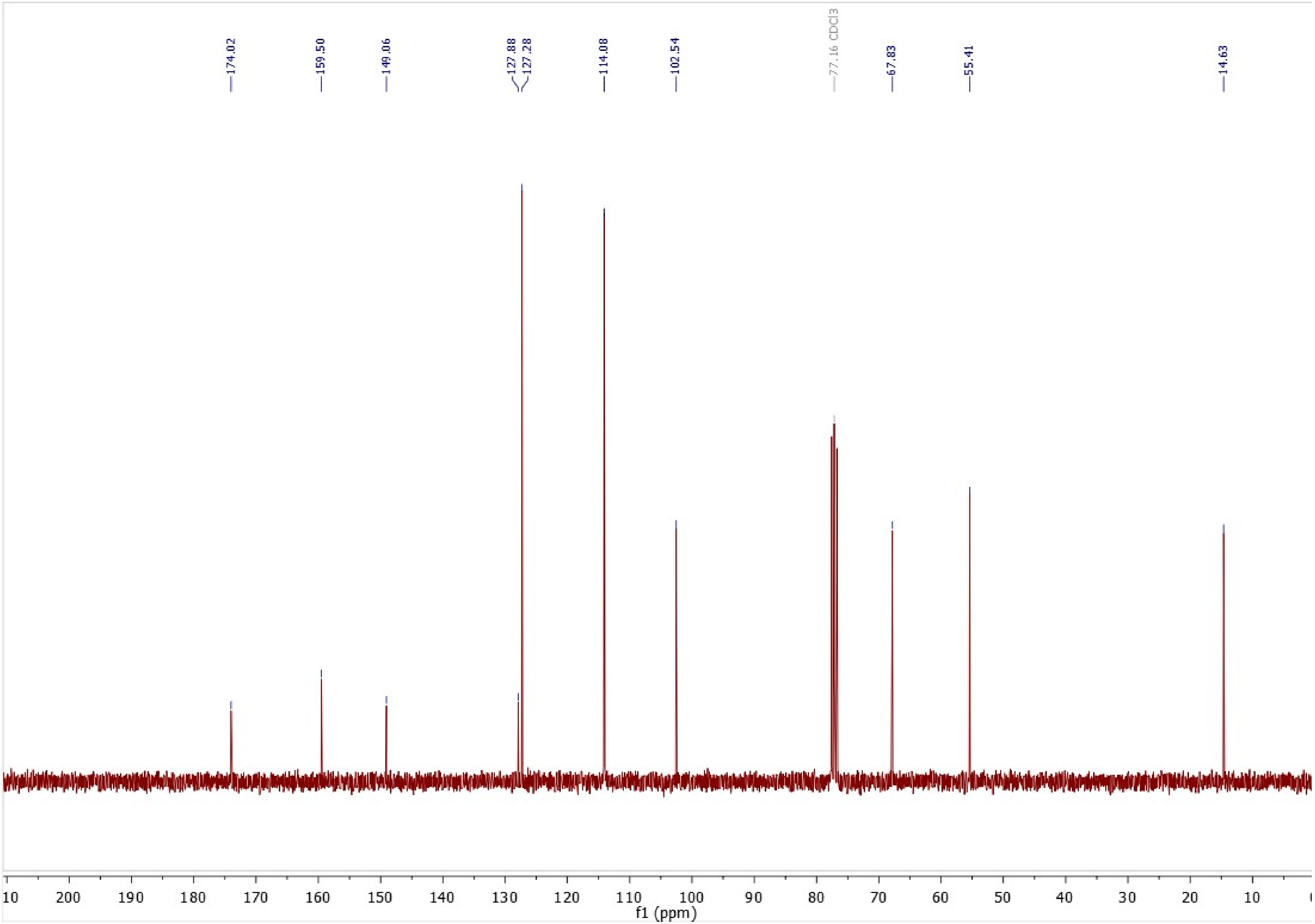



174.02
150.99
149.32
132.12
125.78
125.62
103.72
77.16 CDCl3
67.92
34.73
31.43
14.65
f1 (ppm)

2-Ethoxy-4-(4-methoxyphenyl)thiazole (3dc)

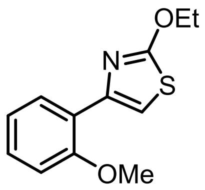


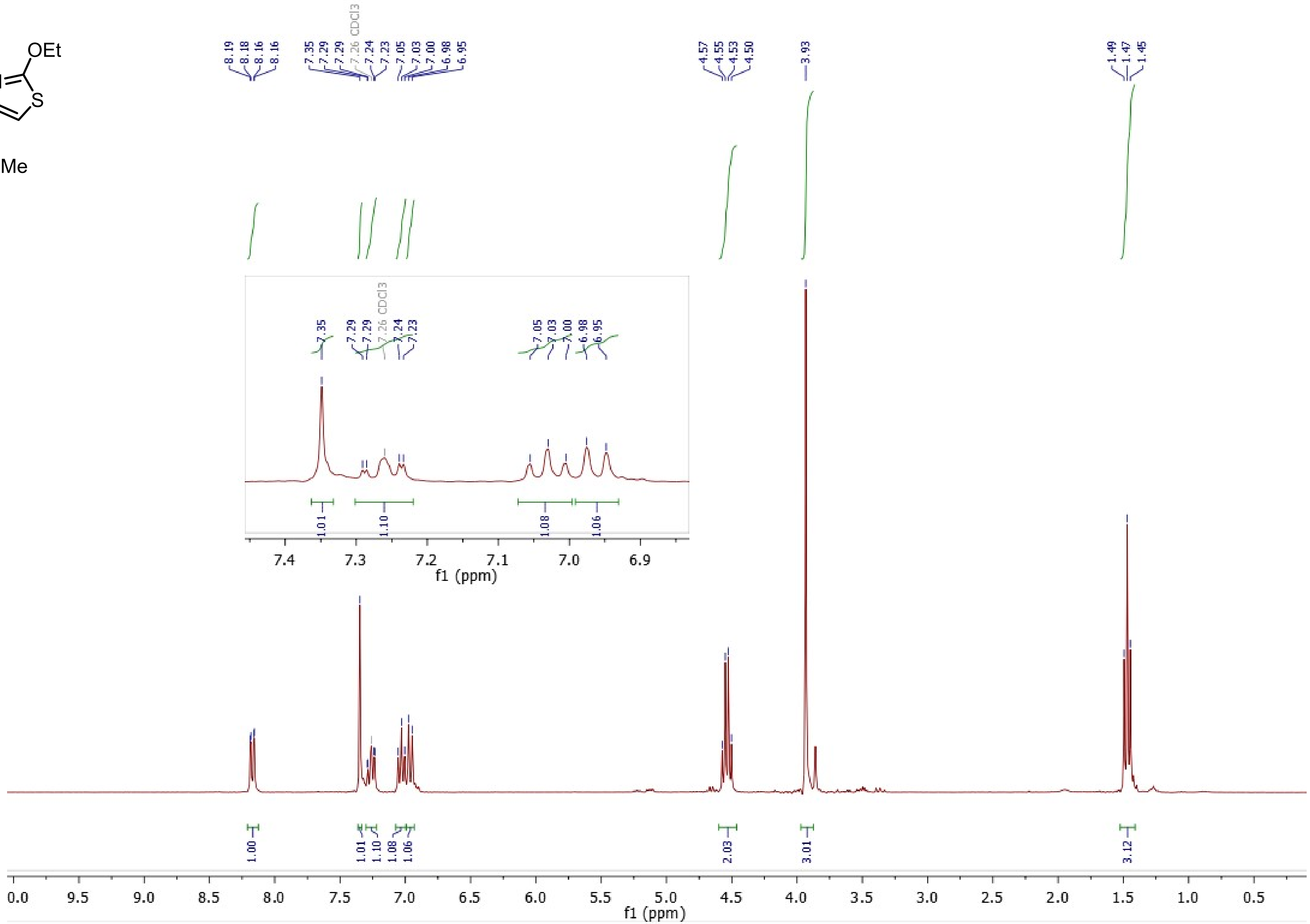


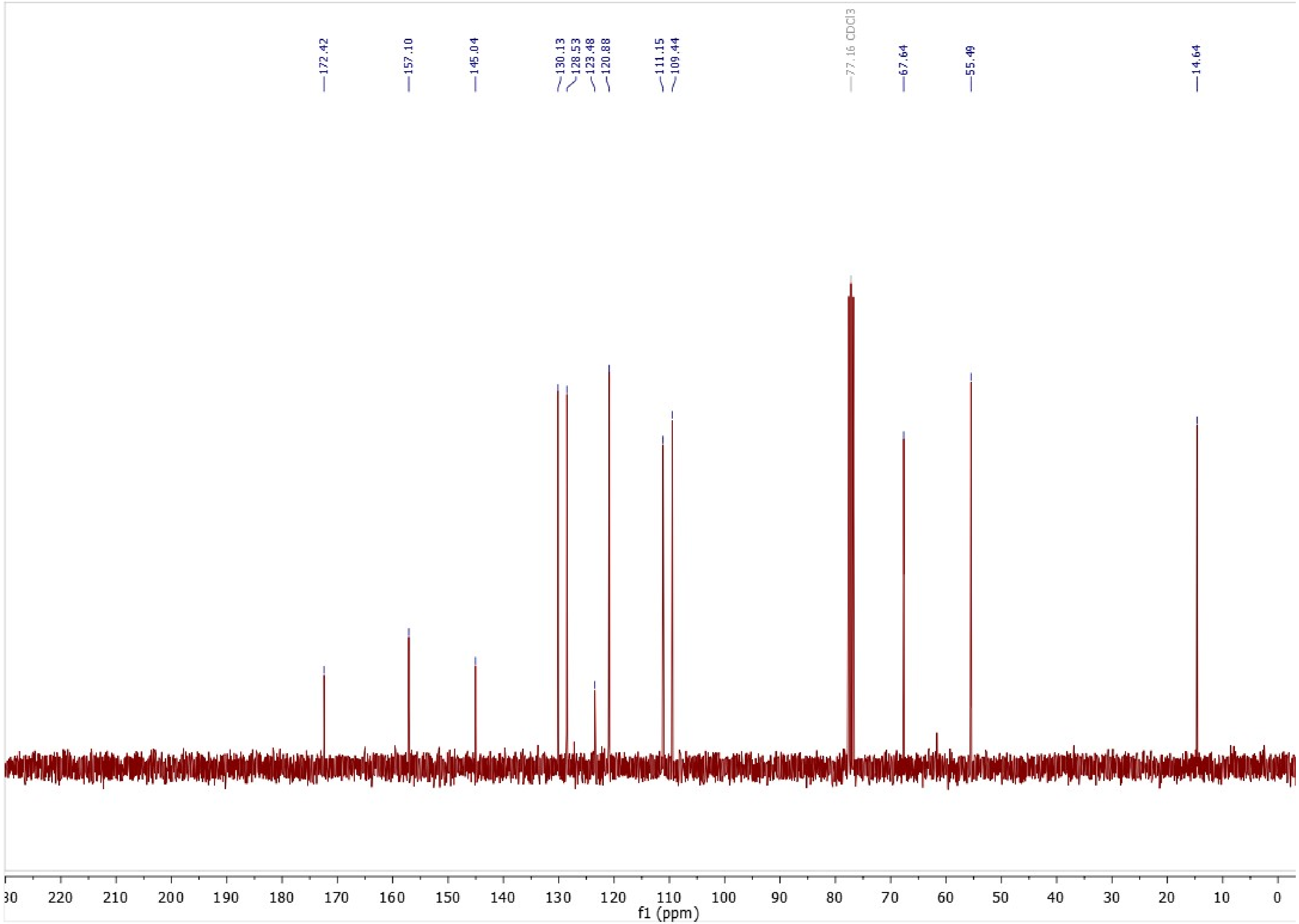


174.02
159.50
149.06
127.88
127.28
114.08
102.54
77.16 CDCl3
67.83
55.41
14.63
f1 (ppm)

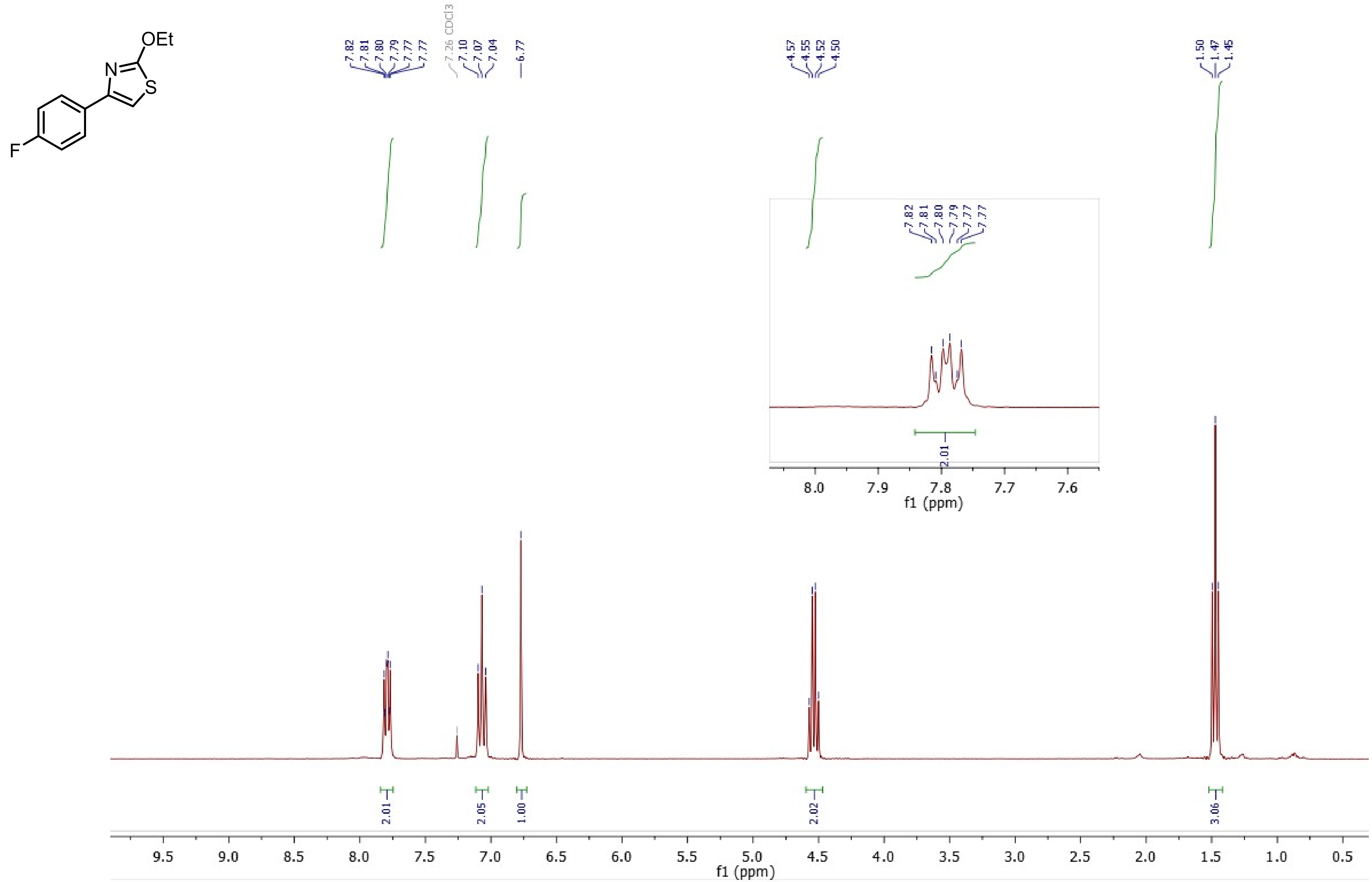
2-Ethoxy-4-(2-methoxyphenyl)thiazole (3ec)

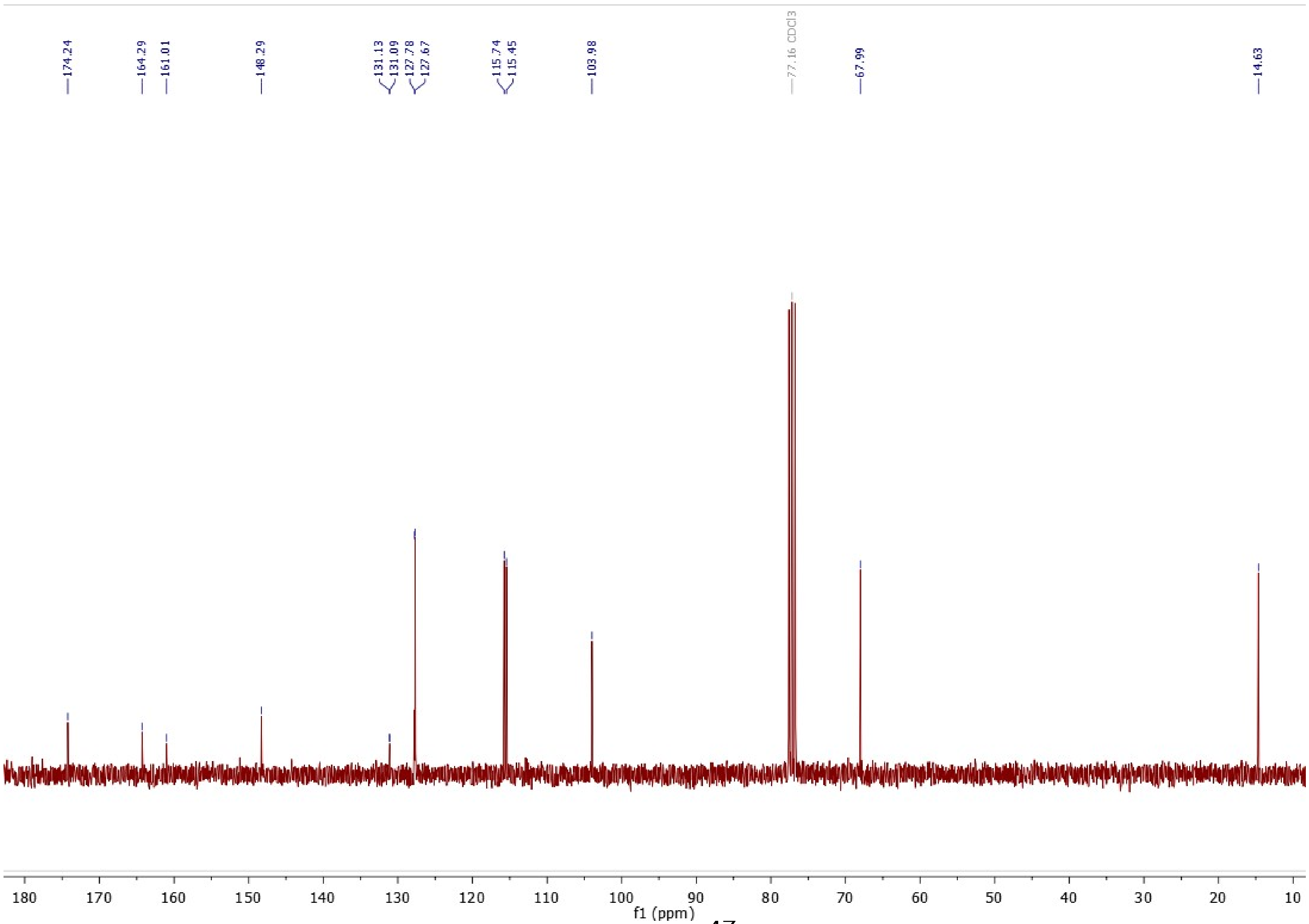




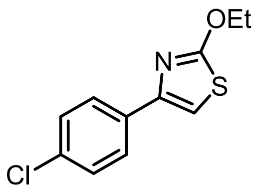

172.42
157.10
145.04
130.13
128.53
123.48
120.88
111.15
109.44
77.16 CDCl3
67.64
55.49
14.64
230
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)

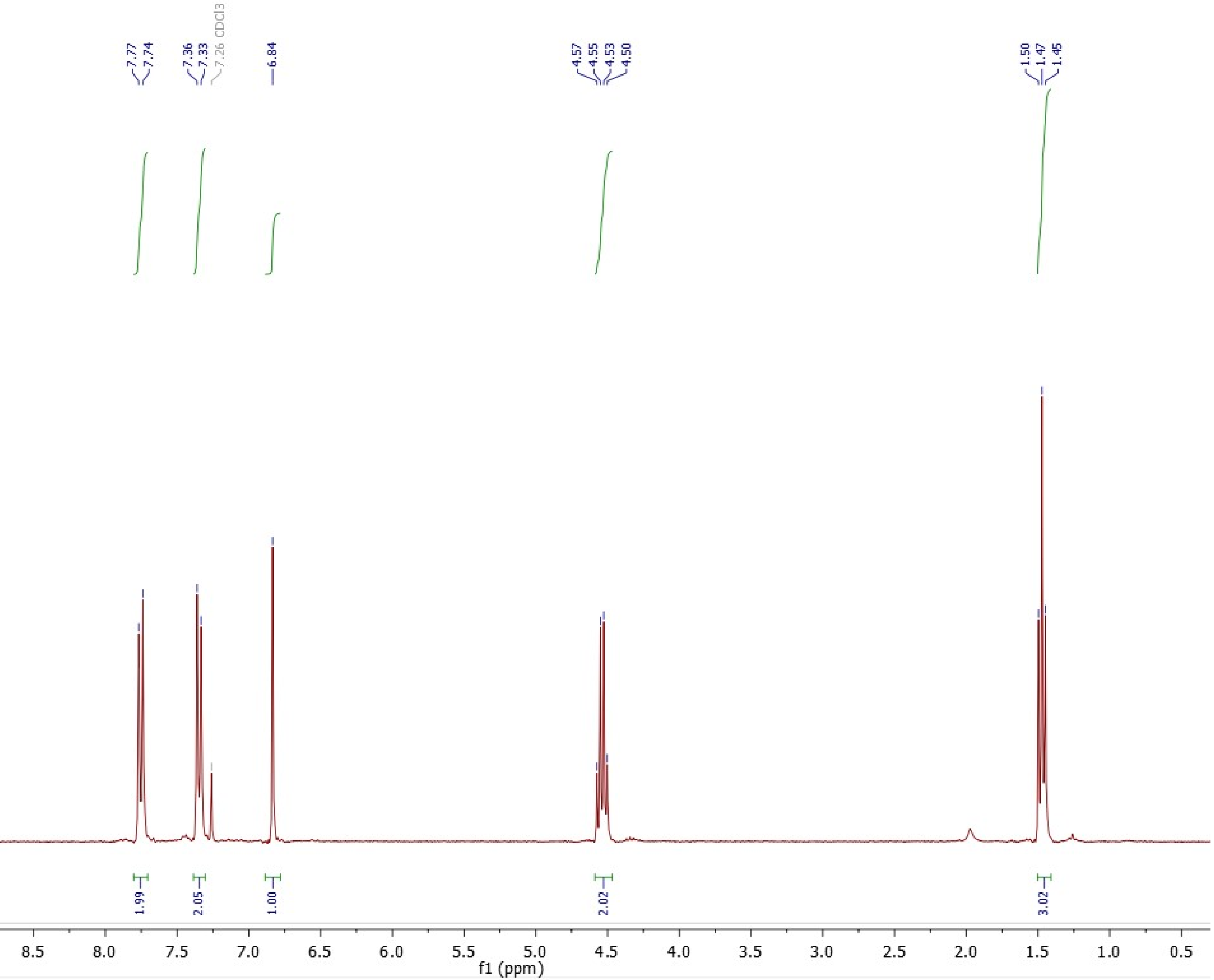
2-Ethoxy-4-(4-fluorophenyl)thiazole (3fc)

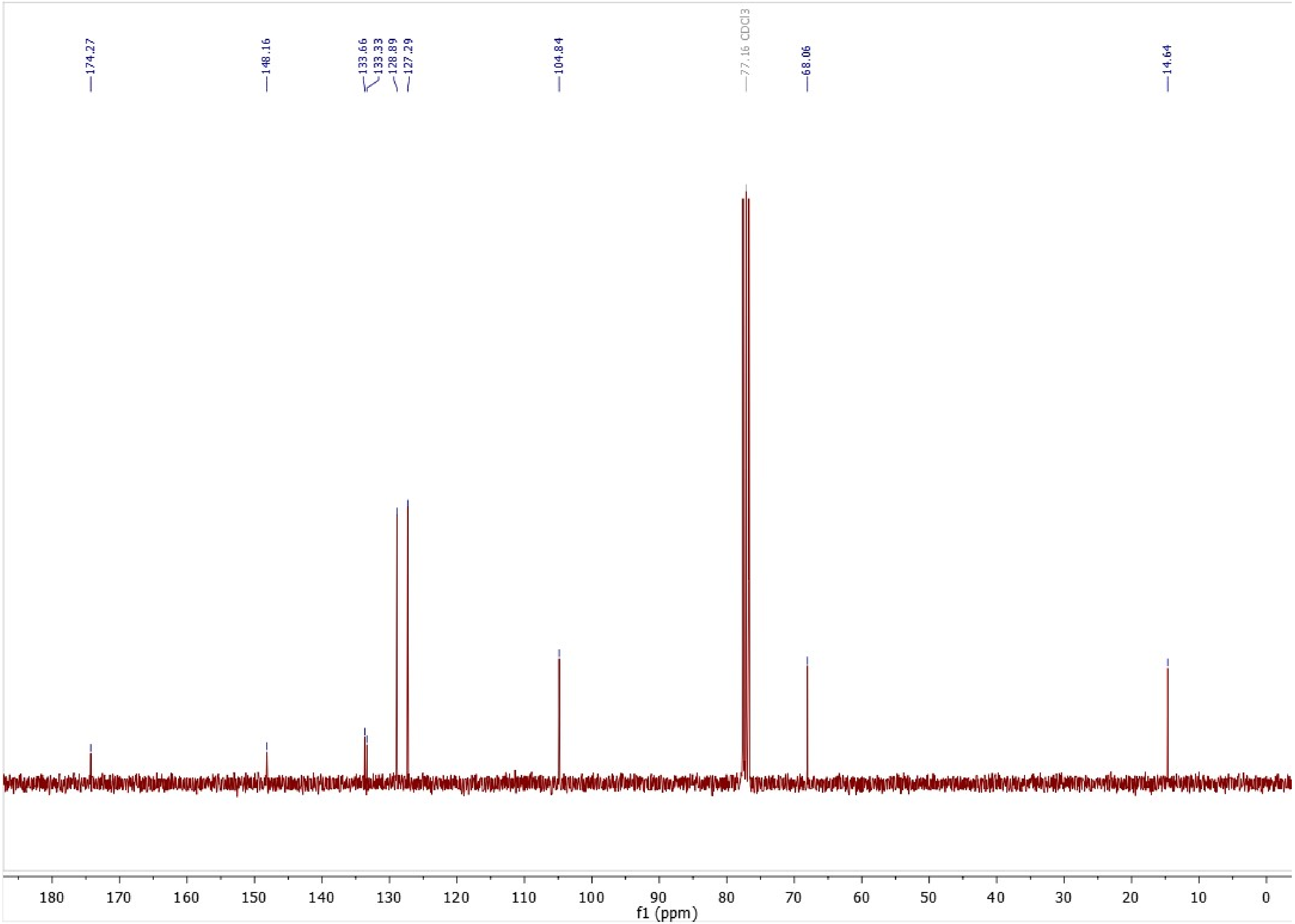



174.24
164.29
161.01
148.29
131.13
131.09
127.78
127.67
115.74
115.45
103.98
77.16 CDCl3
67.99
14.63
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10
f1 (ppm)

2-Ethoxy-4-(4-chlorophenyl)thiazole (3gc)

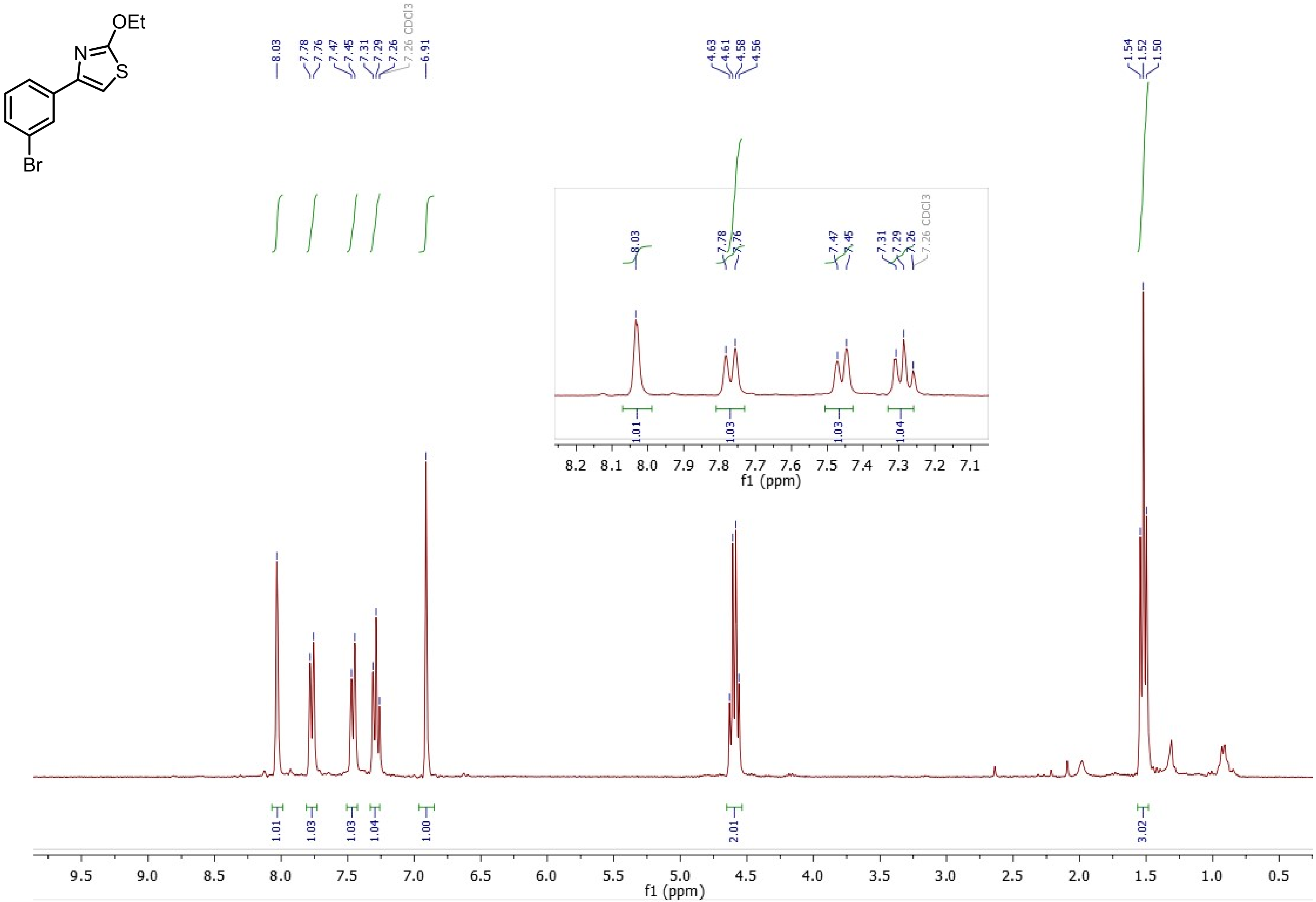


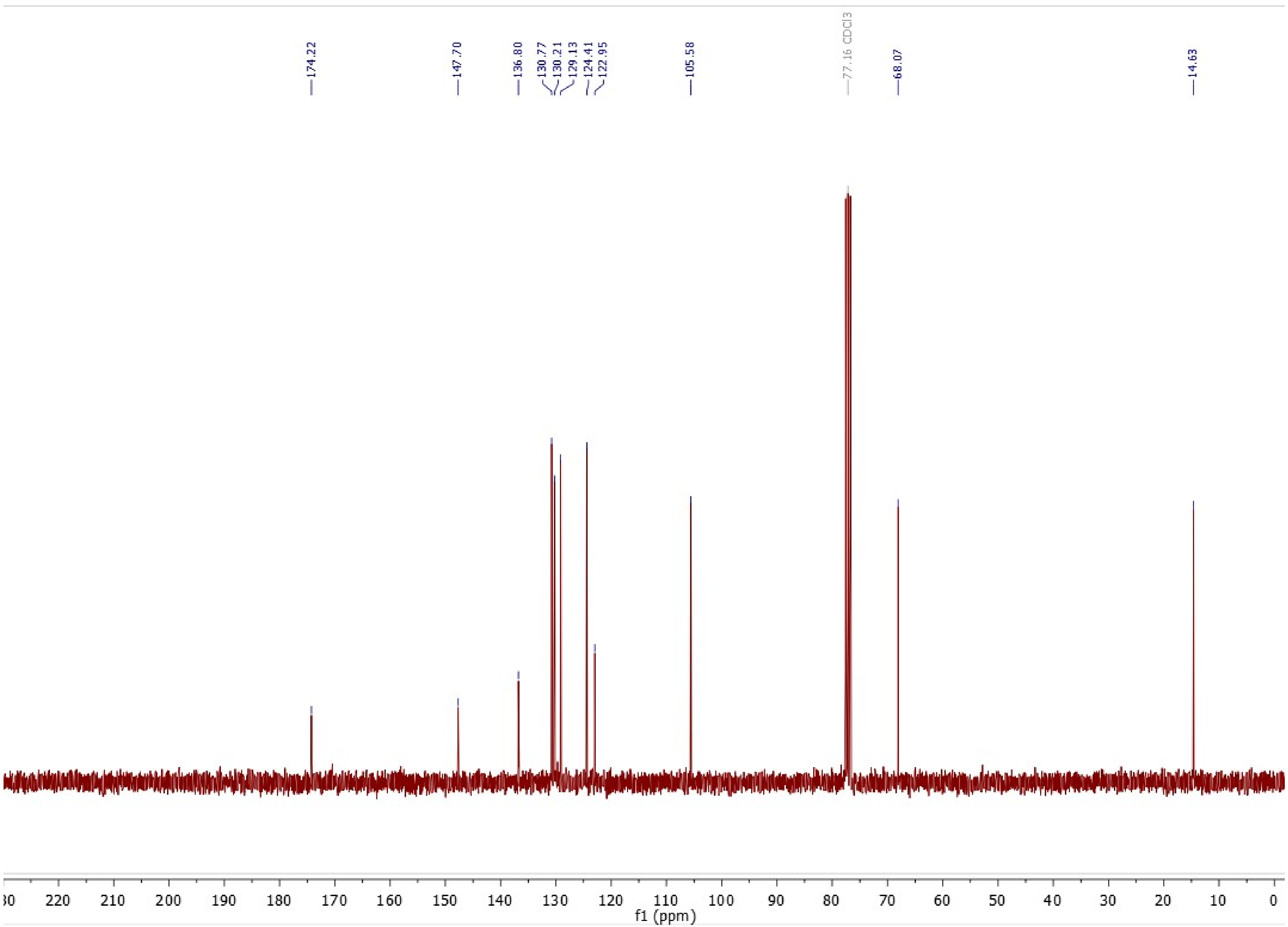




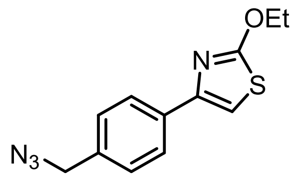
174.27
148.16
133.66
133.33
128.89
127.29
104.84
77.16 CDCl3
68.06
14.64
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)

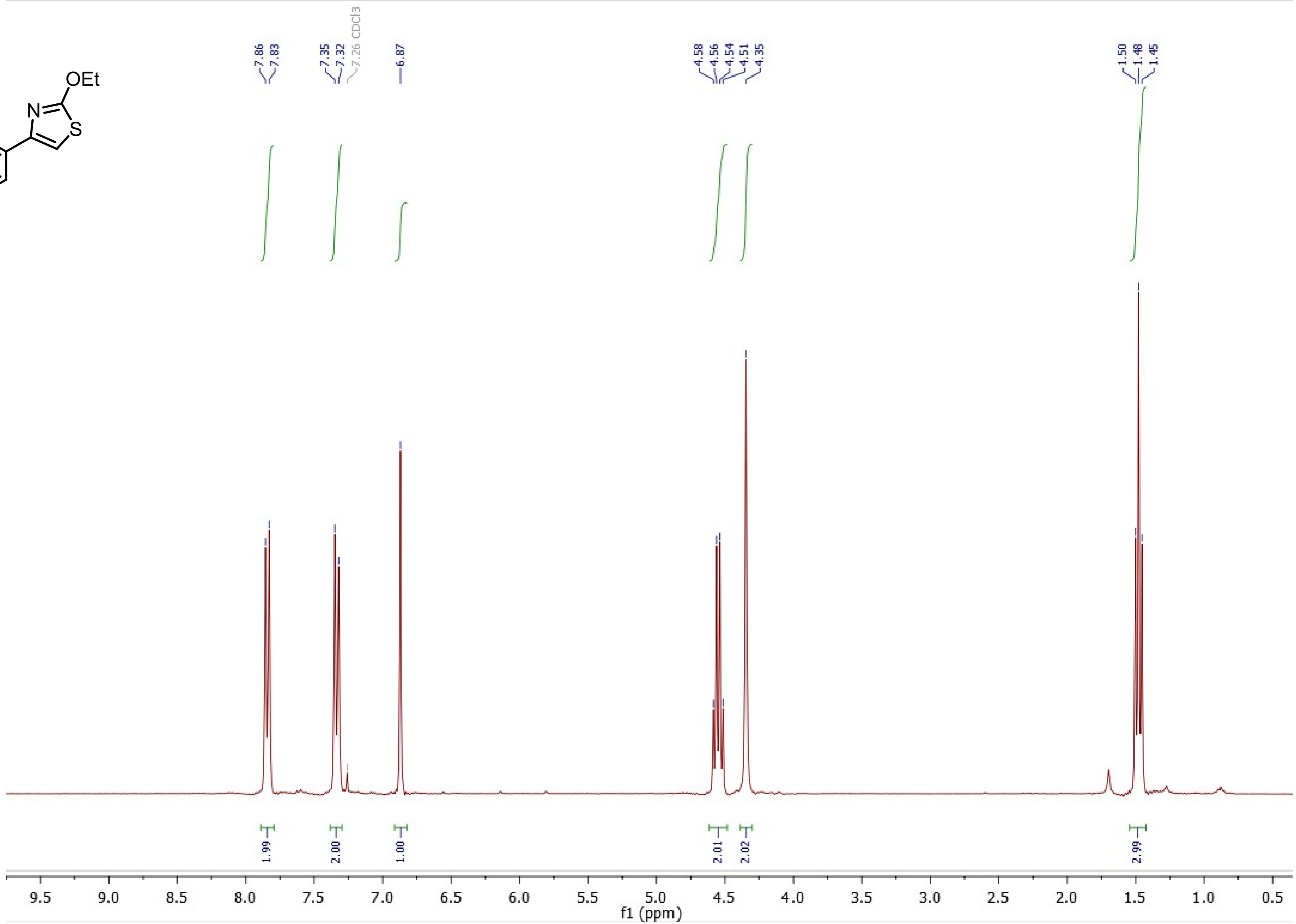
2-Ethoxy-4-(3-bromophenyl)thiazole (3hc)

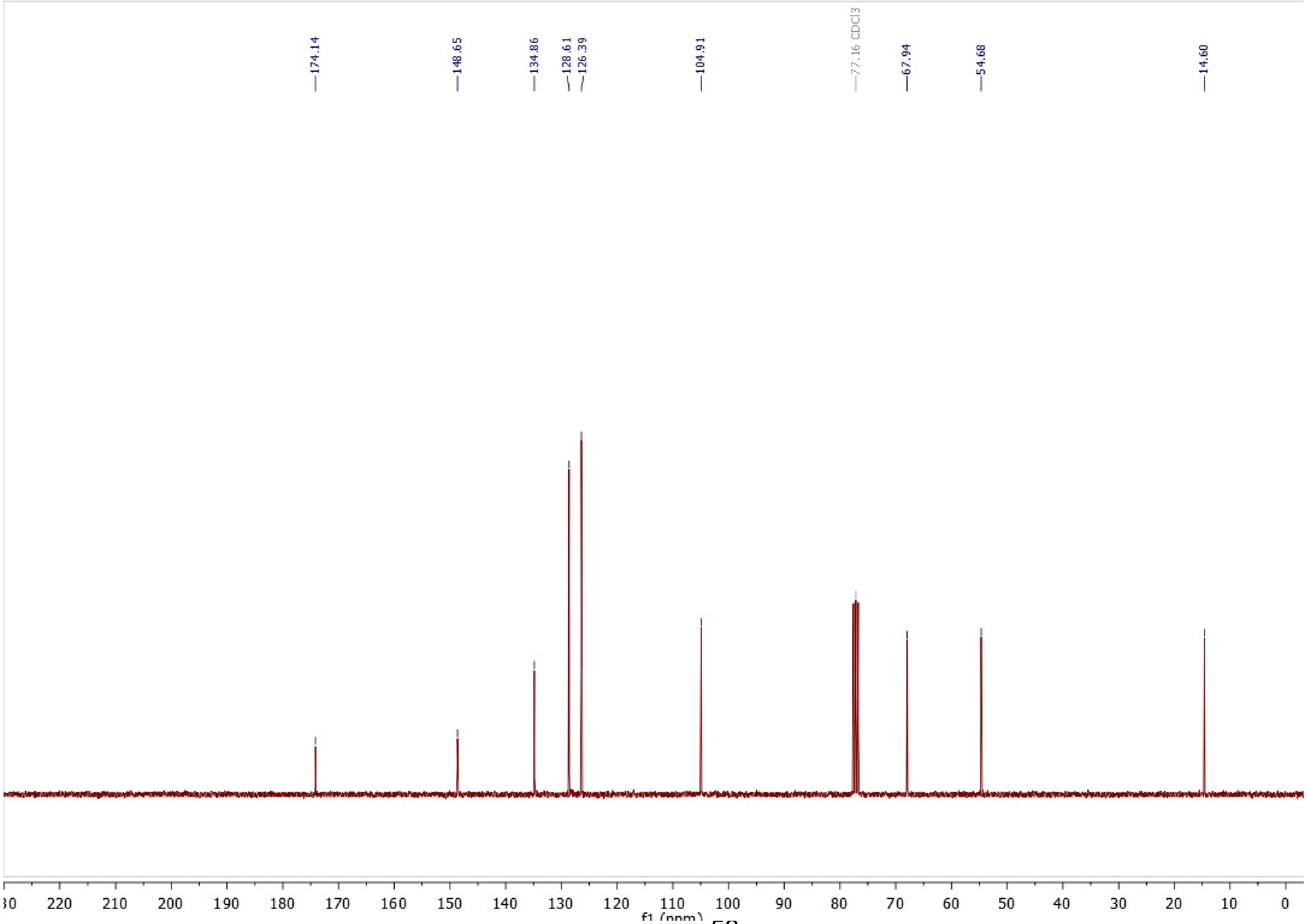



174.22
147.70
136.80
130.77
130.21
129.13
124.41
122.95
105.58
77.16 CDCl3
68.07
14.63
f1 (ppm)

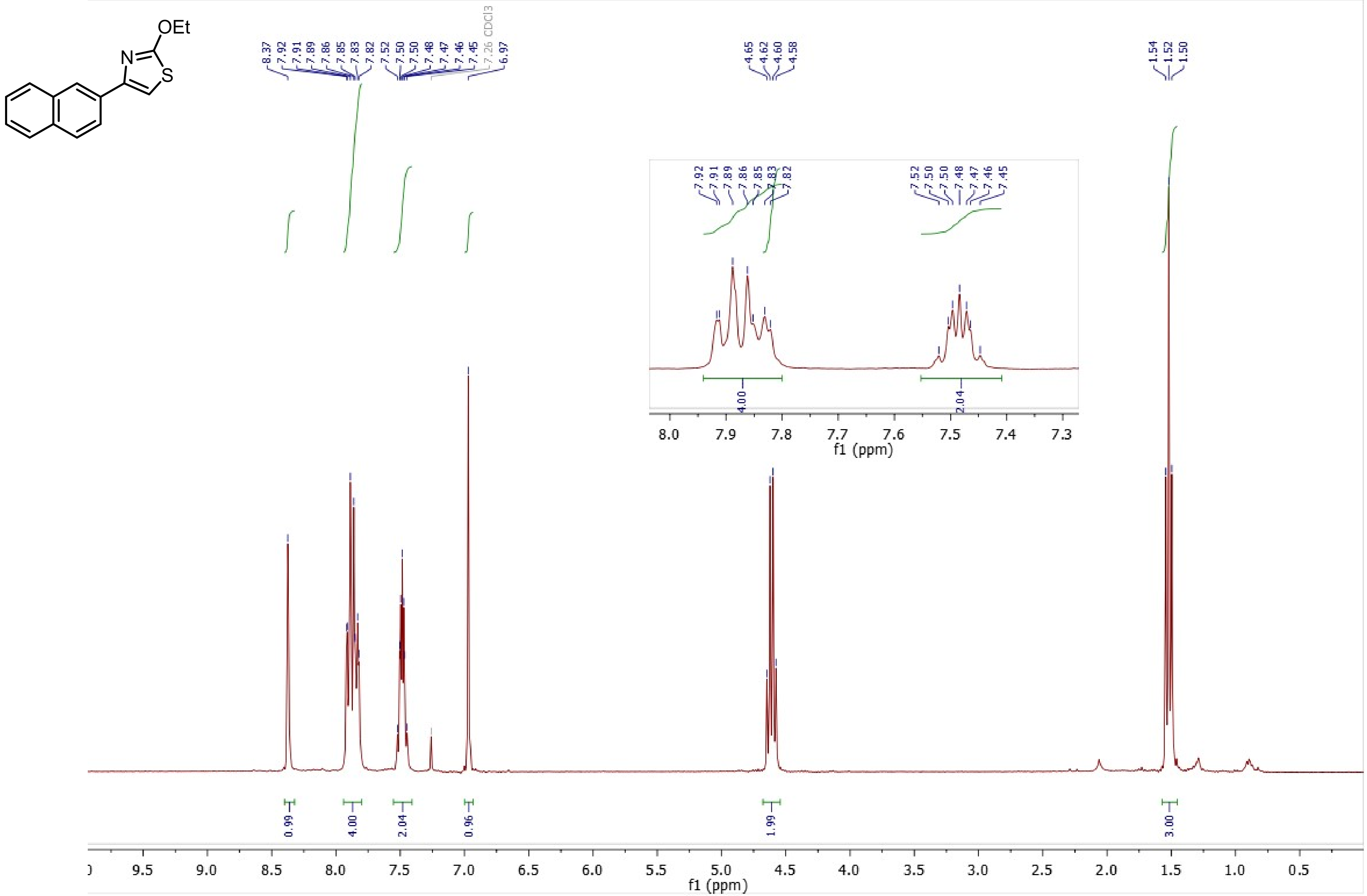
2-Ethoxy-4-(4-(azidomethyl)phenyl)thiazole (3ic)

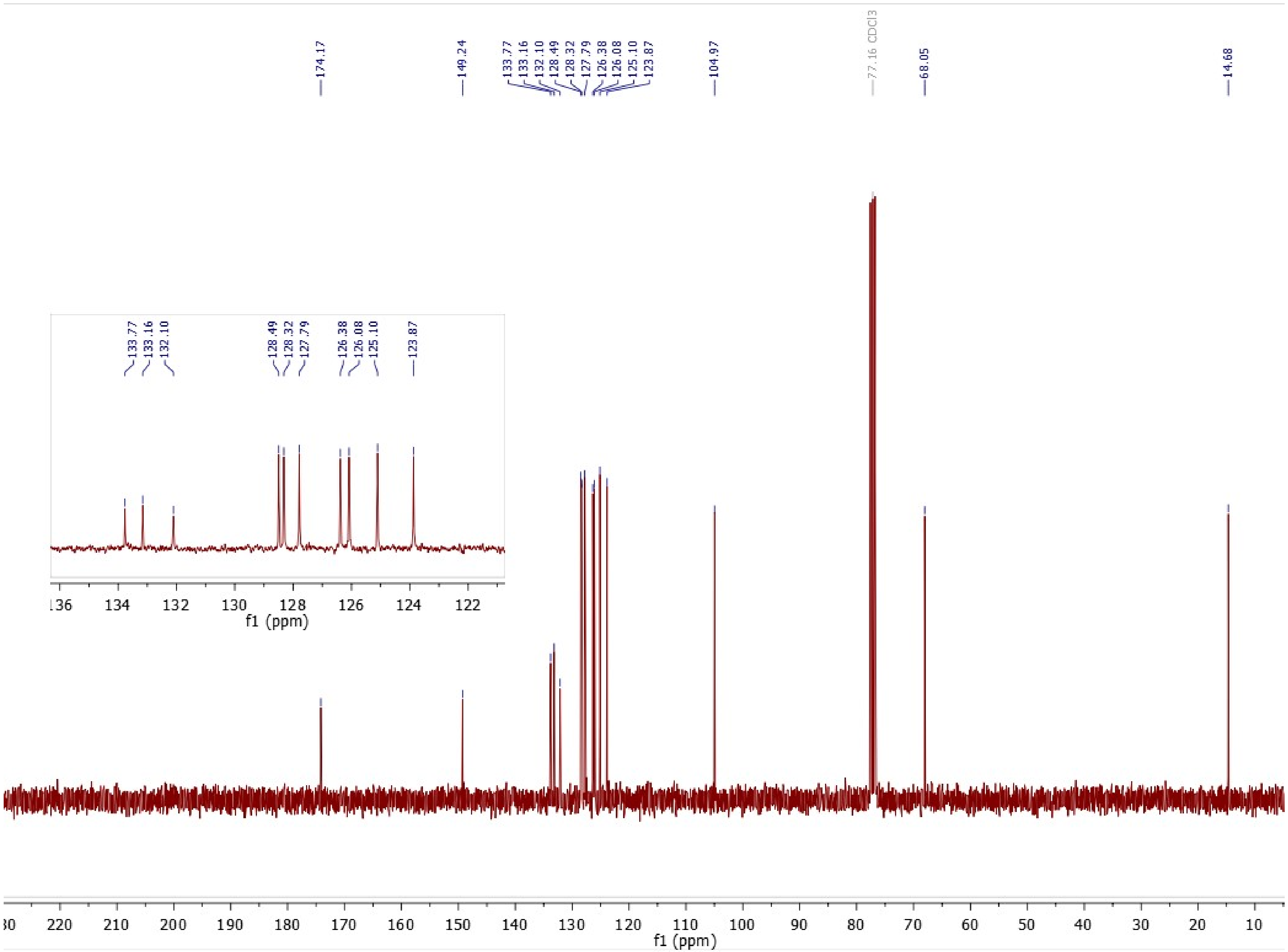




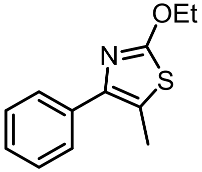

174.14
148.65
134.86
128.61
126.39
104.91
77.16 CDCl3
67.94
54.68
14.60
f1 (ppm)

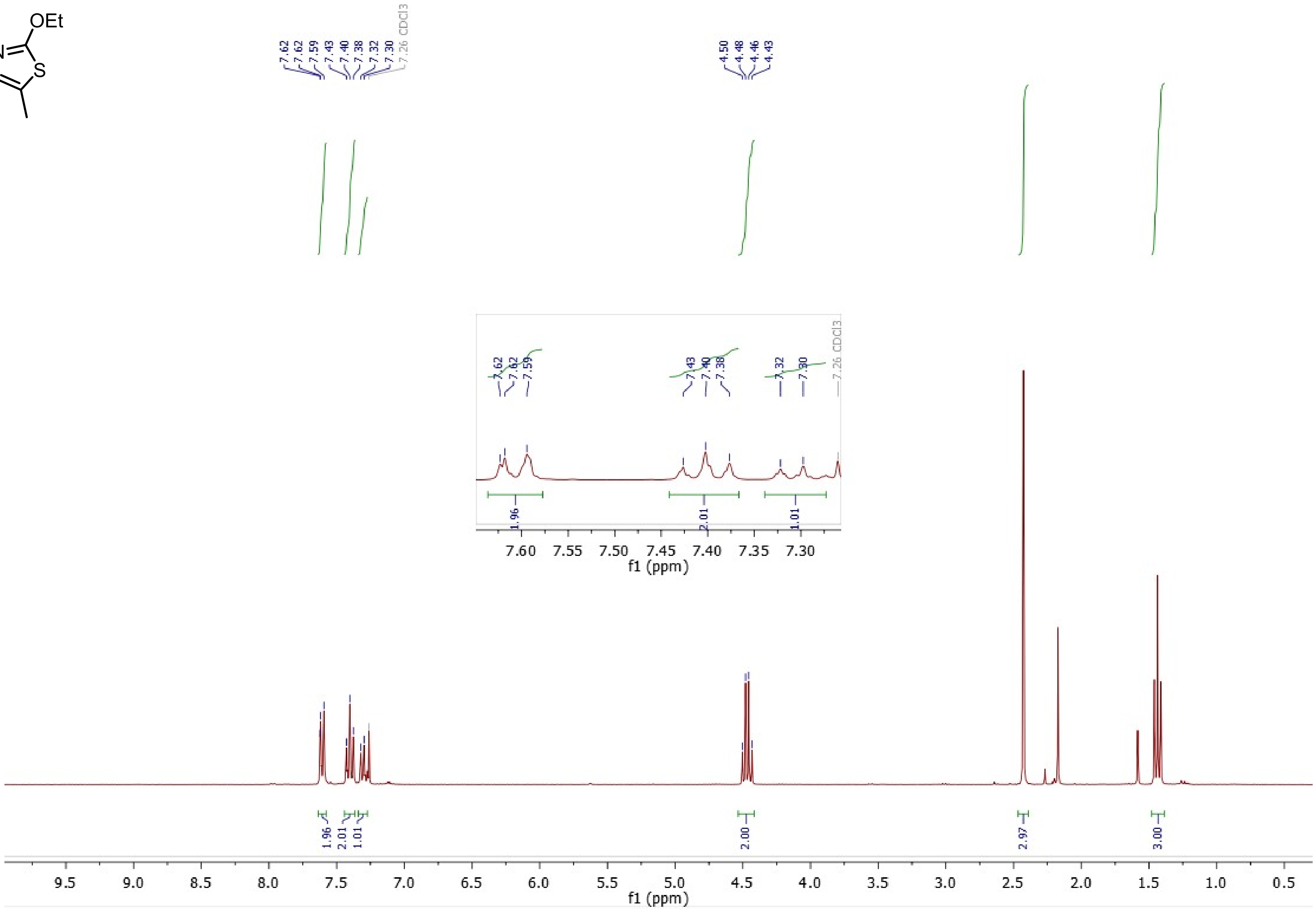
2-Ethoxy-4-(naphthalen-2-yl)thiazole (3jc)

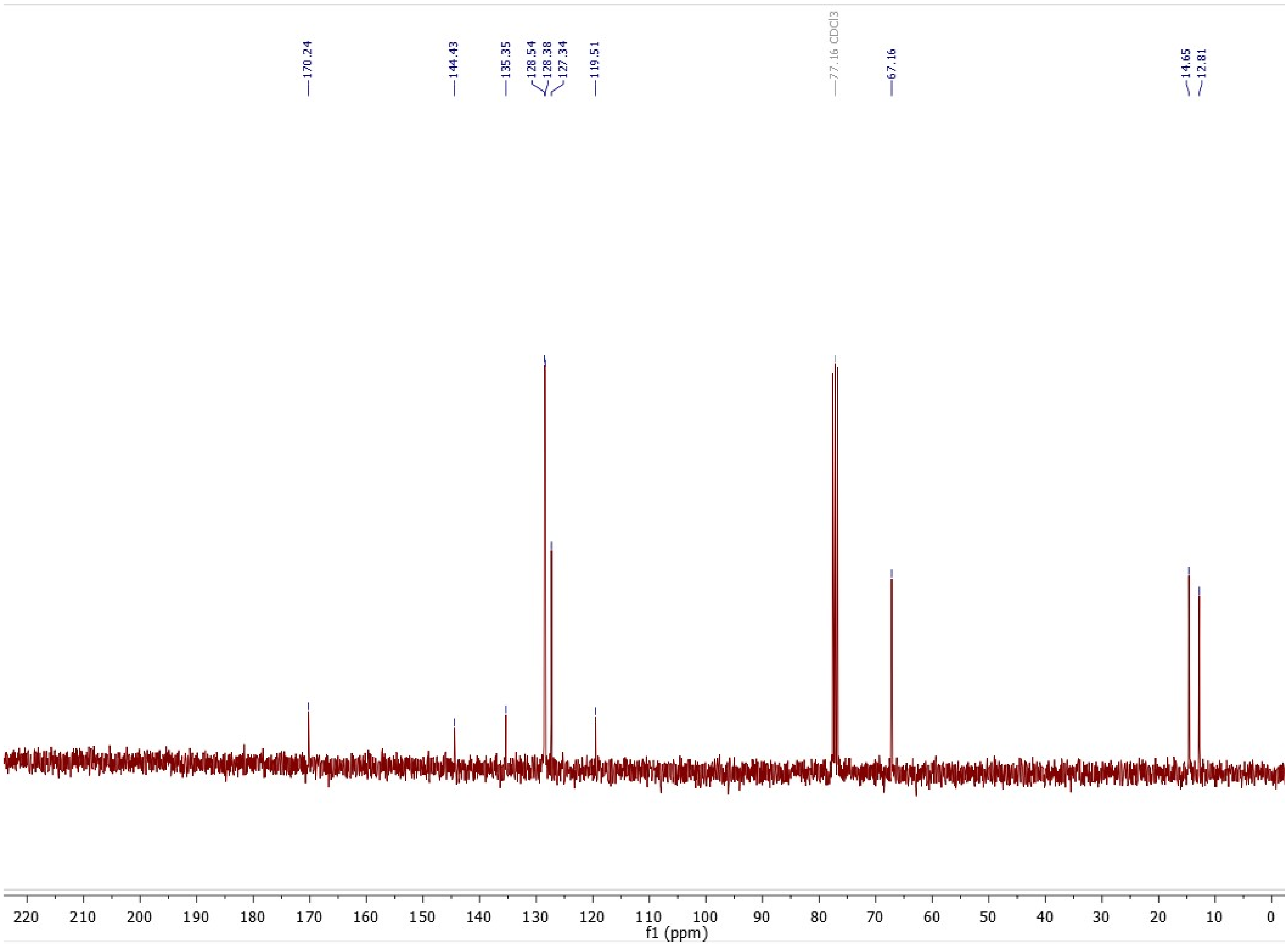



174.17
149.24
133.77
133.16
132.10
128.49
128.32
127.79
126.38
126.08
125.10
123.87
104.97
77.16 CDCl3
68.05
14.68
f1 (ppm)

2-Ethoxy-5-methyl-4-phenylthiazole (3kc)

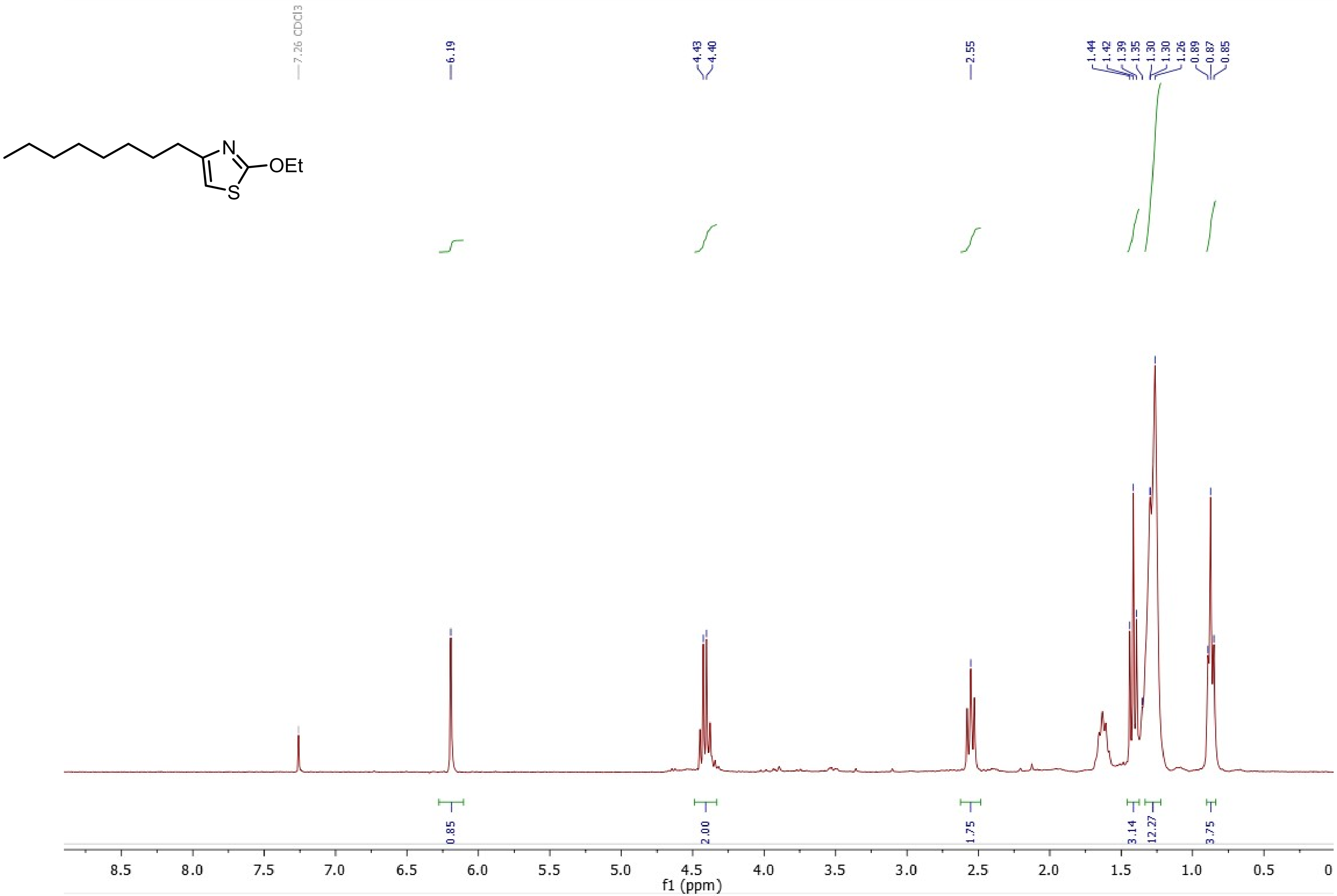


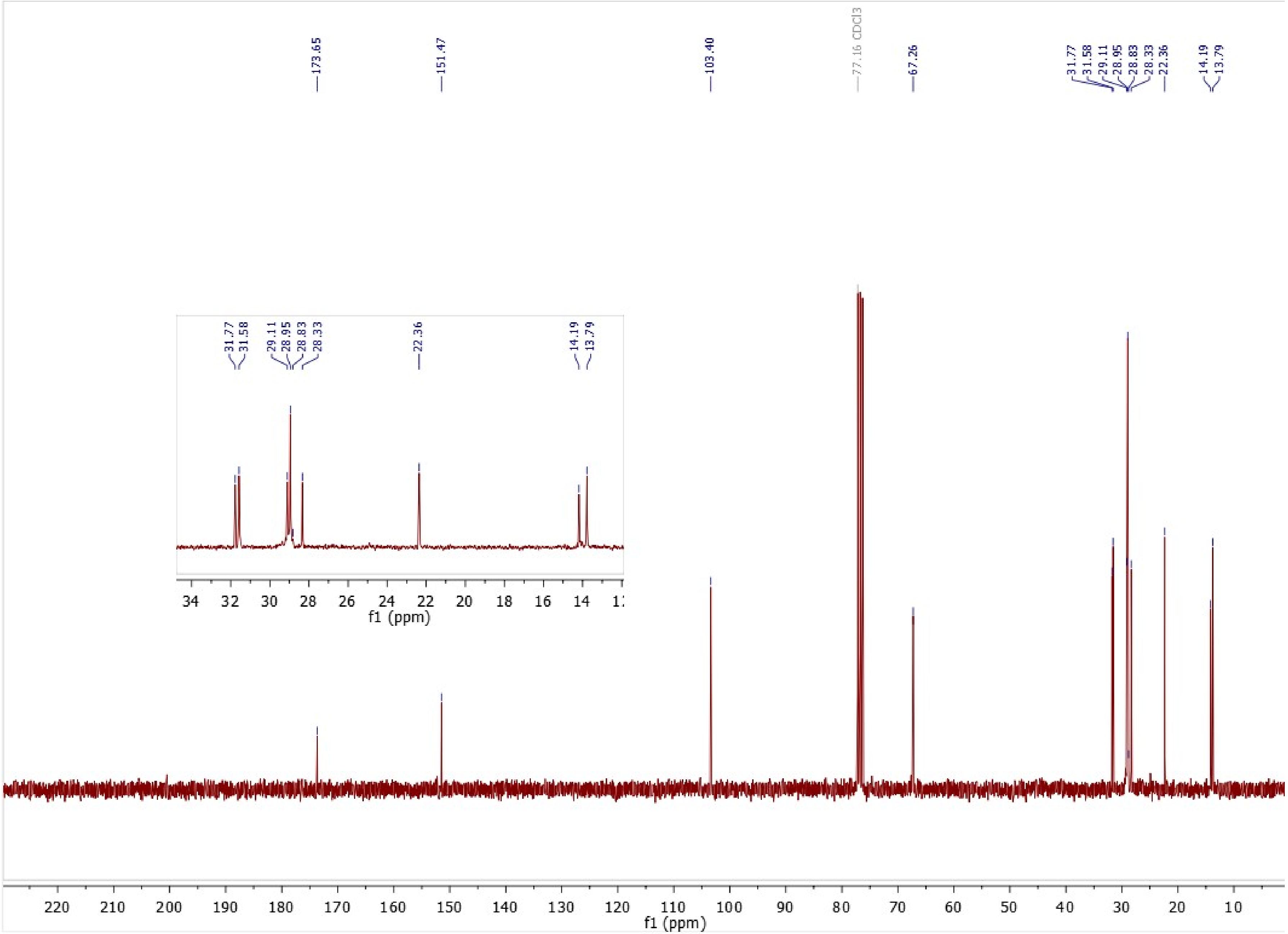




170.24
144.43
135.35
128.54
128.38
127.34
119.51
77.16 CDCl3
67.16
14.65
12.81
220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)

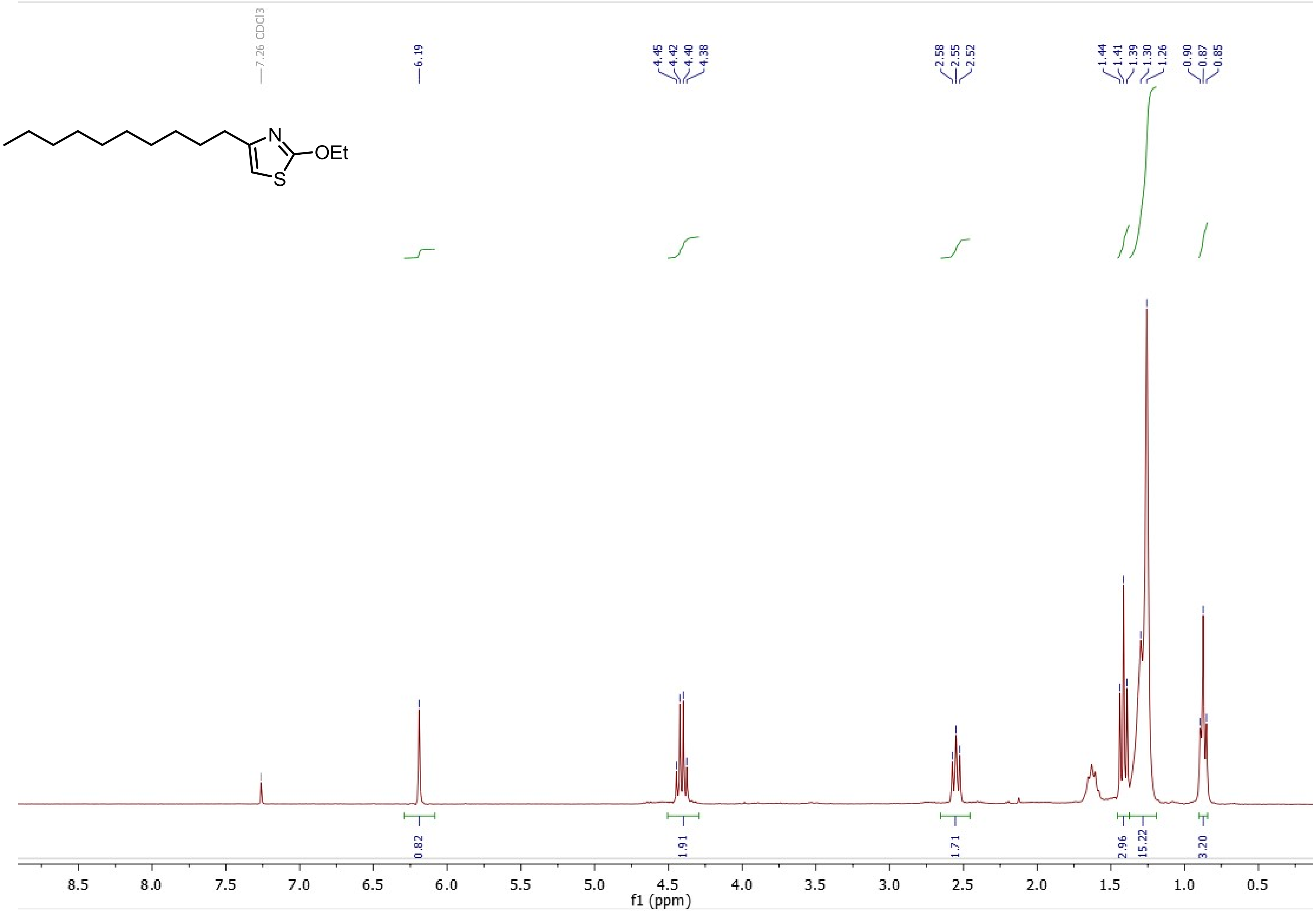
2-Ethoxy-4-octylthiazole (3lc)

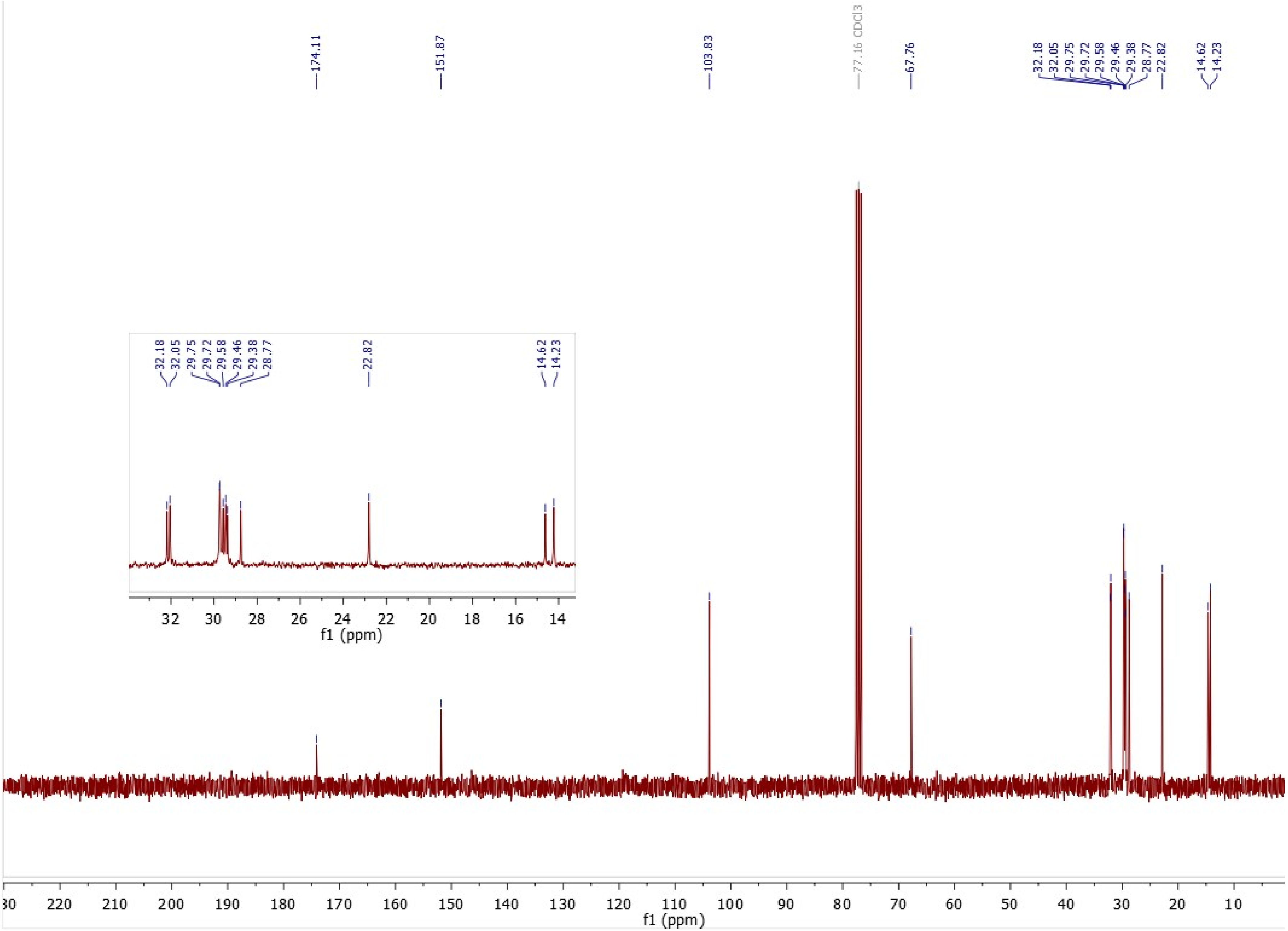




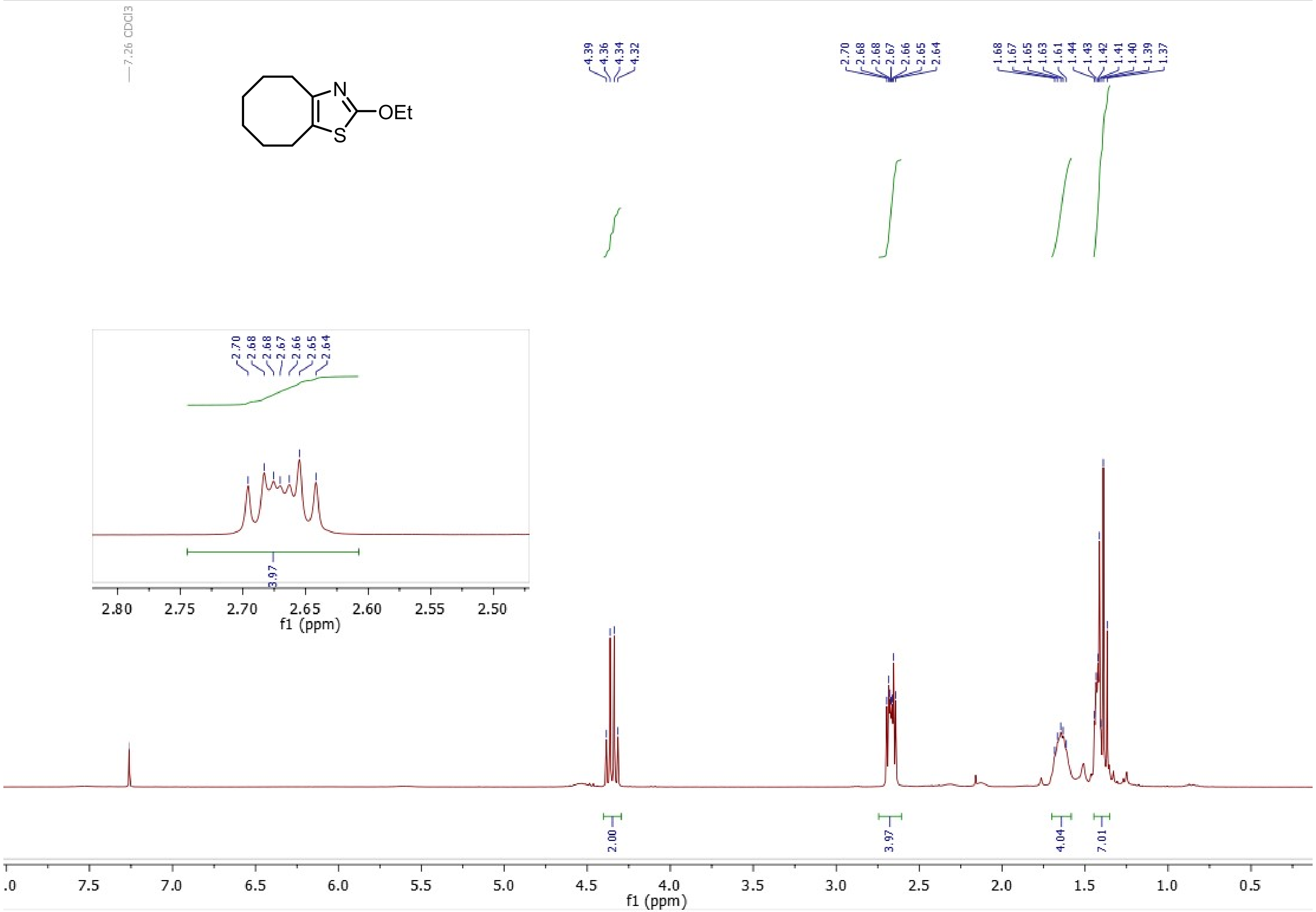
173.65
151.47
103.40
77.16 CDCl3
67.26
31.77
31.58
29.11
28.95
28.83
28.33
22.36
14.19
13.79
f1 (ppm)

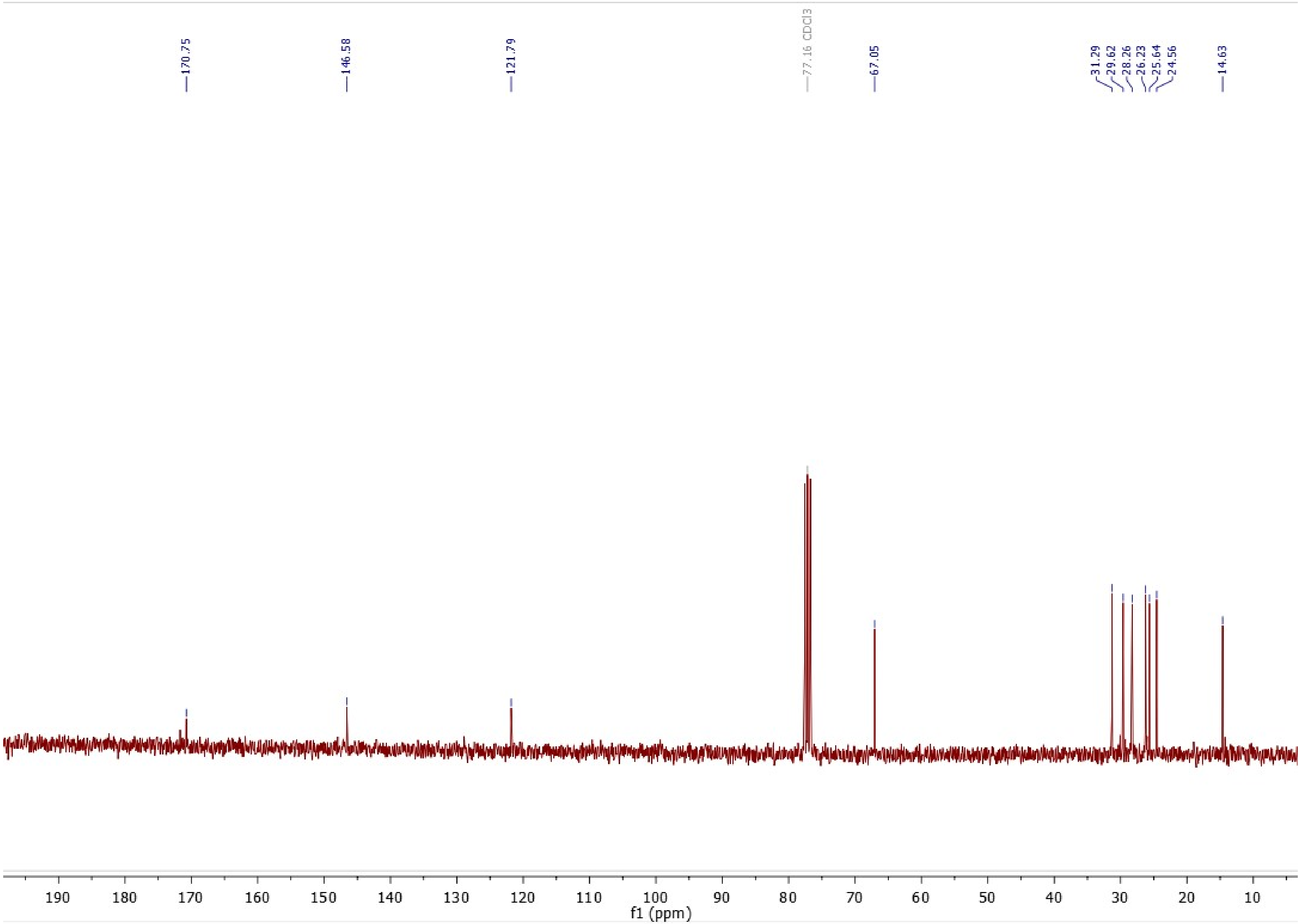
2-Ethoxy-4-decylthiazole (3mc)



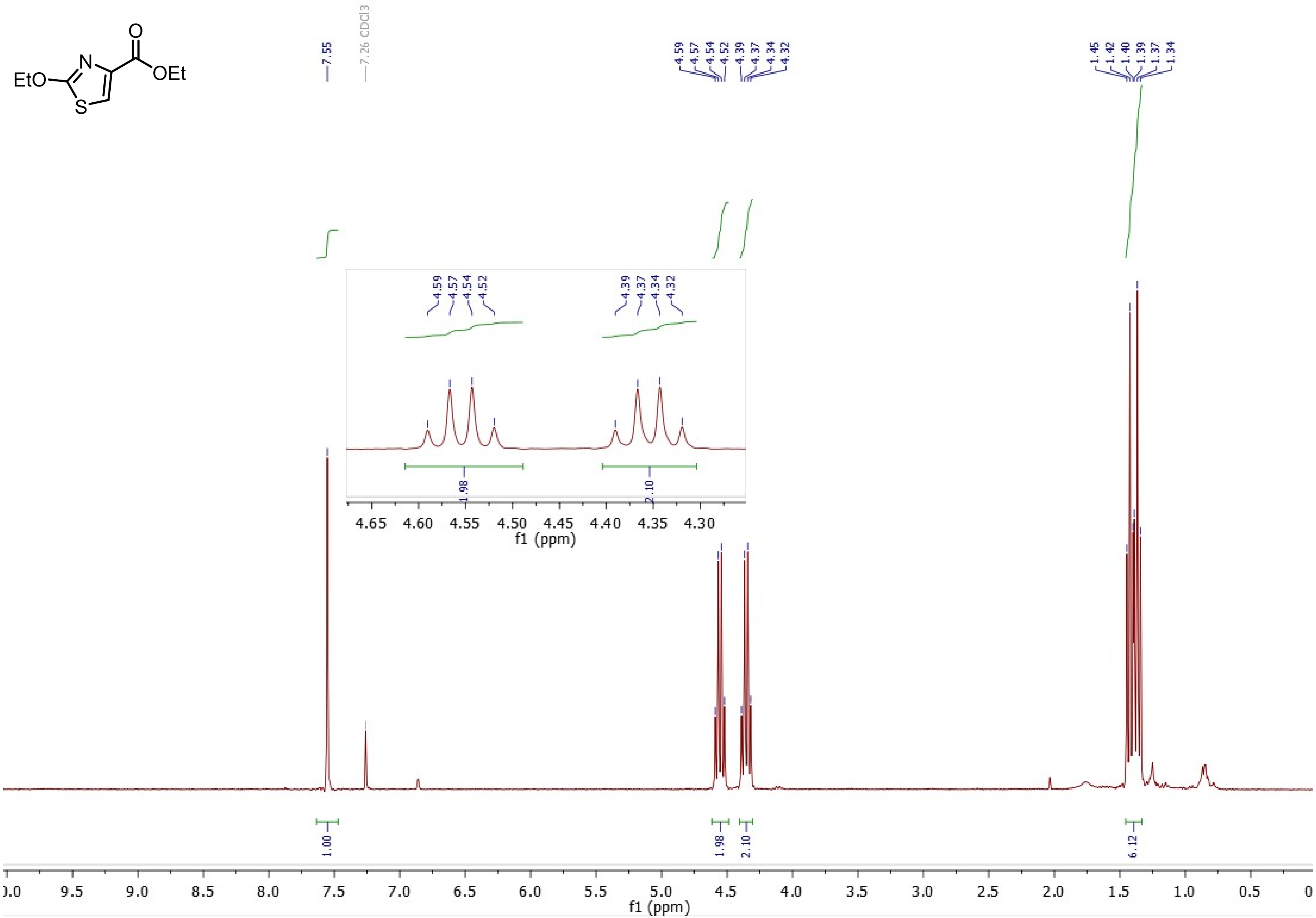

174.11
151.87
103.83
77.16 CDCl3
67.76
32.18
32.05
29.75
29.72
29.58
29.46
29.38
28.77
22.82
14.62
14.23
f1 (ppm)

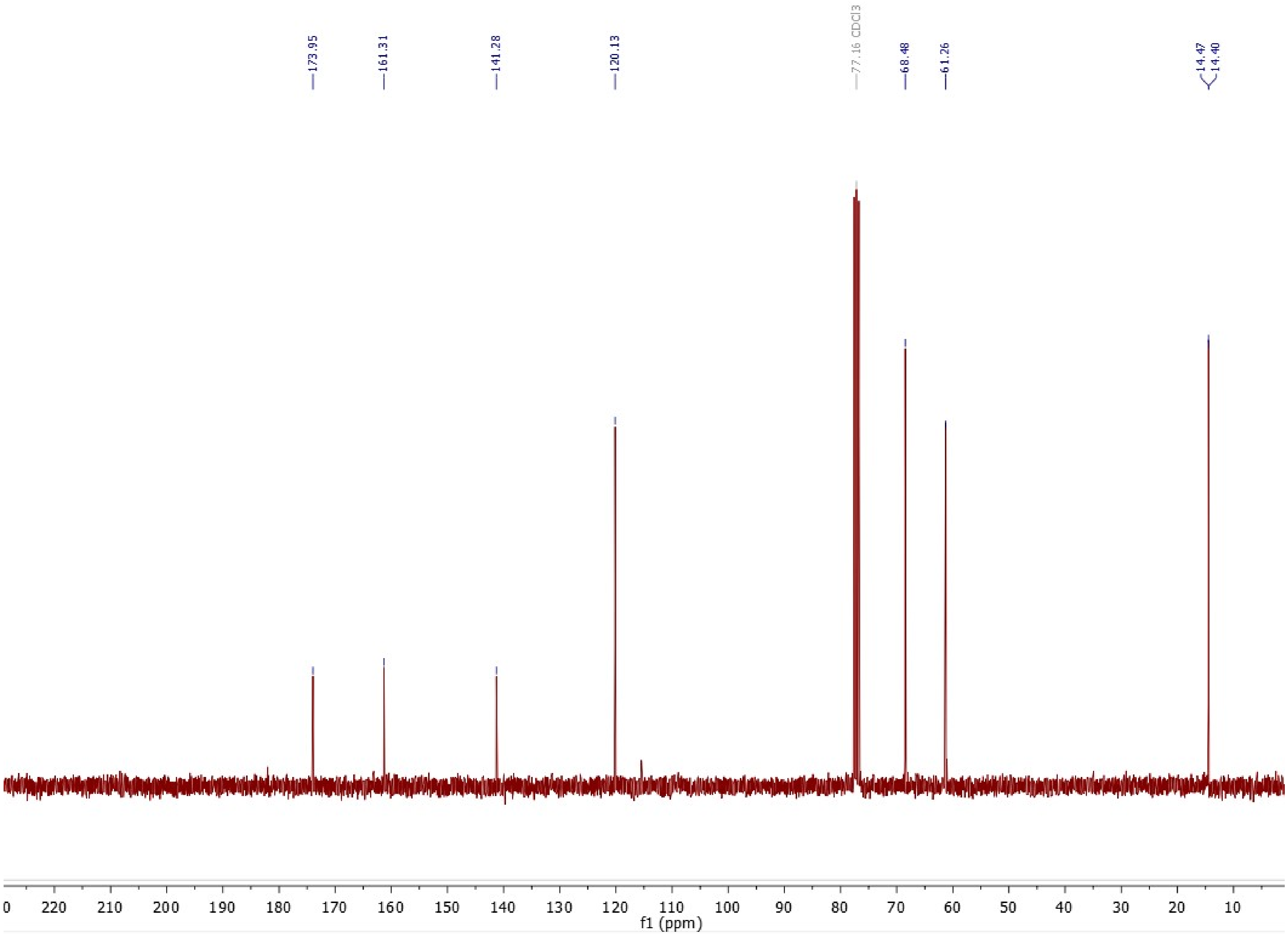
2-Ethoxy-4,5,6,7,8,9-hexahydrocycloocta[d]thiazole (3nc)




170.75
146.58
121.79
77.16 CDCl3
67.05
31.29
29.62
28.26
26.23
25.64
24.56
14.63
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10
f1 (ppm)

Ethyl 2-ethoxythiazole-4-carboxylate (3oc)




173.95
161.31
141.28
120.13
77.16 CDCl3
68.48
61.26
14.47
14.40
0 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10
f1 (ppm)

HRMS spectra of the synthesized compounds

2-*iso*-Butoxy-4-phenylthiazole (3ae)

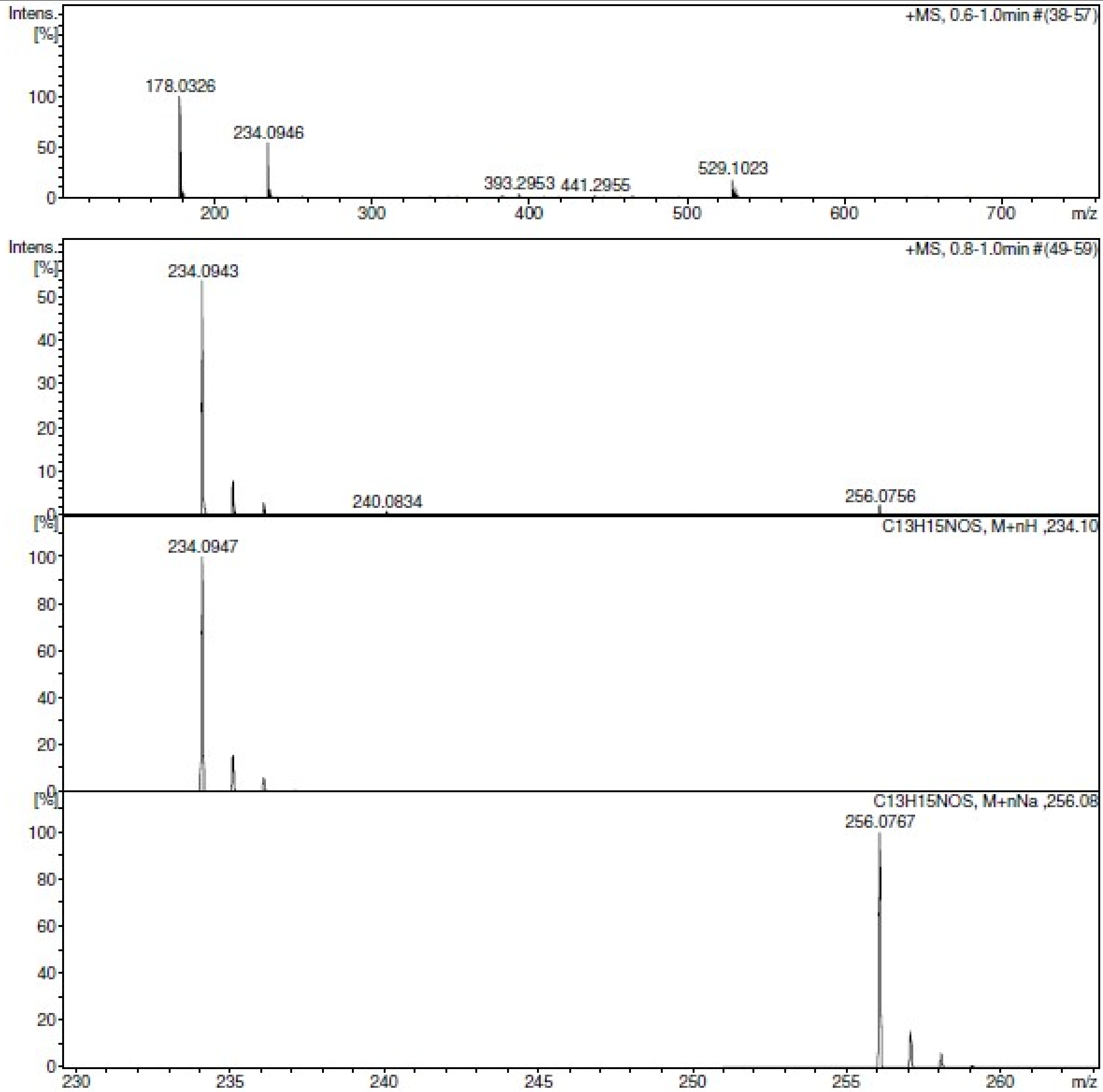
Display Report

Analysis Info

Analysis Name	D:\Data\Kolotyrkina\2022\Mulina\1020017.d	Acquisition Date	20.10.2022 15:08:01
Method	tune_low.m	Operator	BDAL@DE
Sample Name	/TERN L-91k	Instrument / Ser#	micrOTOF 10248
Comment	C13H15NOS mH 234.0947 clb added CH3CN		

Acquisition Parameter

Source Type	ESI	Ion Polarity	Positive	Set Nebulizer	0.4 Bar
Focus	Not active			Set Dry Heater	180 °C
Scan Begin	50 m/z	Set Capillary	4500 V	Set Dry Gas	4.0 l/min
Scan End	2500 m/z	Set End Plate Offset	-500 V	Set Divert Valve	Waste



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2-Nonyloxy-4-phenylthiazole (3af)

Display Report

Analysis Info

Analysis Name	D:\Data\Kolotyrkina\2022\Mulina\0615018.d	Acquisition Date	15.06.2022 15:23:33
Method	tune_50-1600_pos_15_12.m	Operator	BDAL@DE
Sample Name	/TERN L-52K	Instrument / Ser#	micrOTOF 10248
Comment	C18H25NOS mH 304.1729 calibrant added, CH3CN		

Acquisition Parameter

Source Type	ESI	Ion Polarity	Positive	Set Nebulizer	0.4 Bar
Focus	Not active			Set Dry Heater	180 °C
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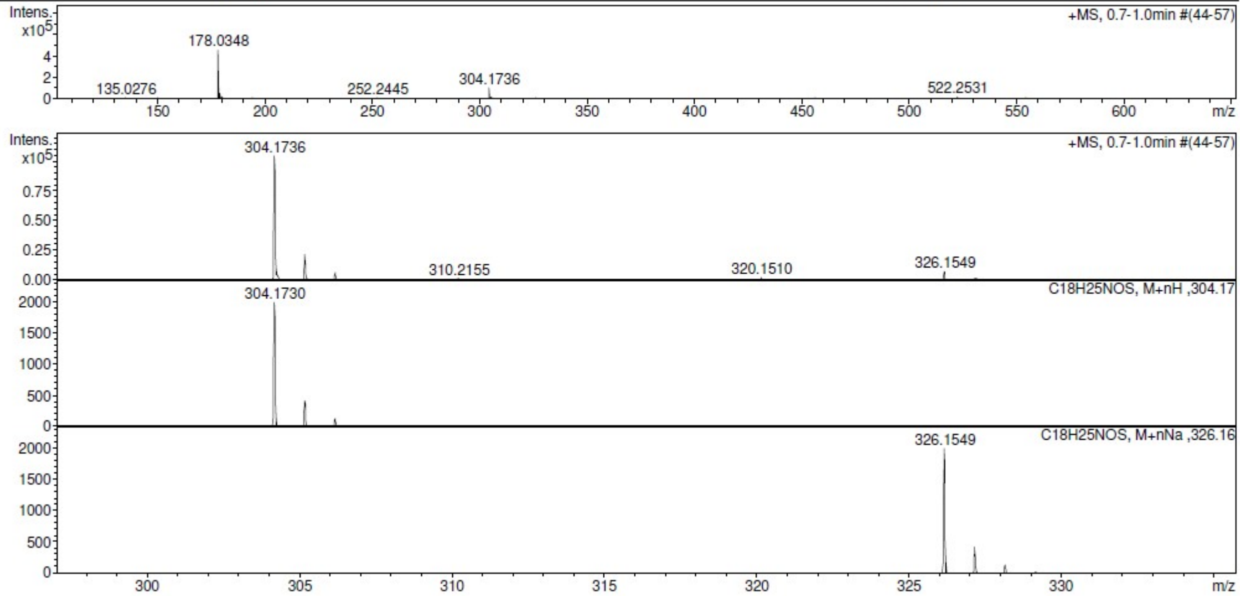
Scan End	1600 m/z	Set End Plate Offset	-500 V	Set Divert Valve	Waste



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2-tert-Butoxy-4-phenylthiazole (3ag)

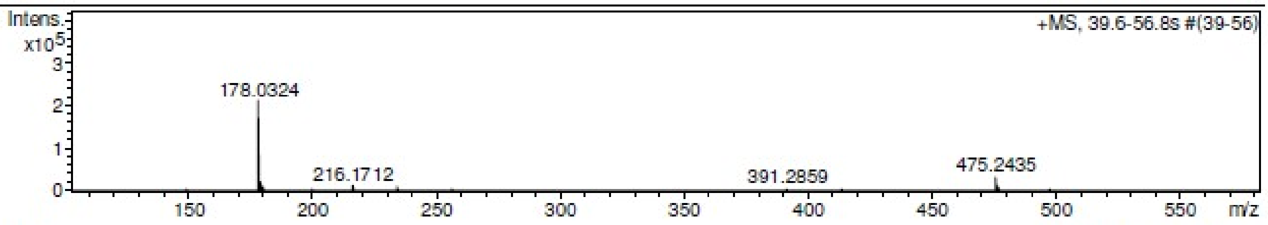
Display Report

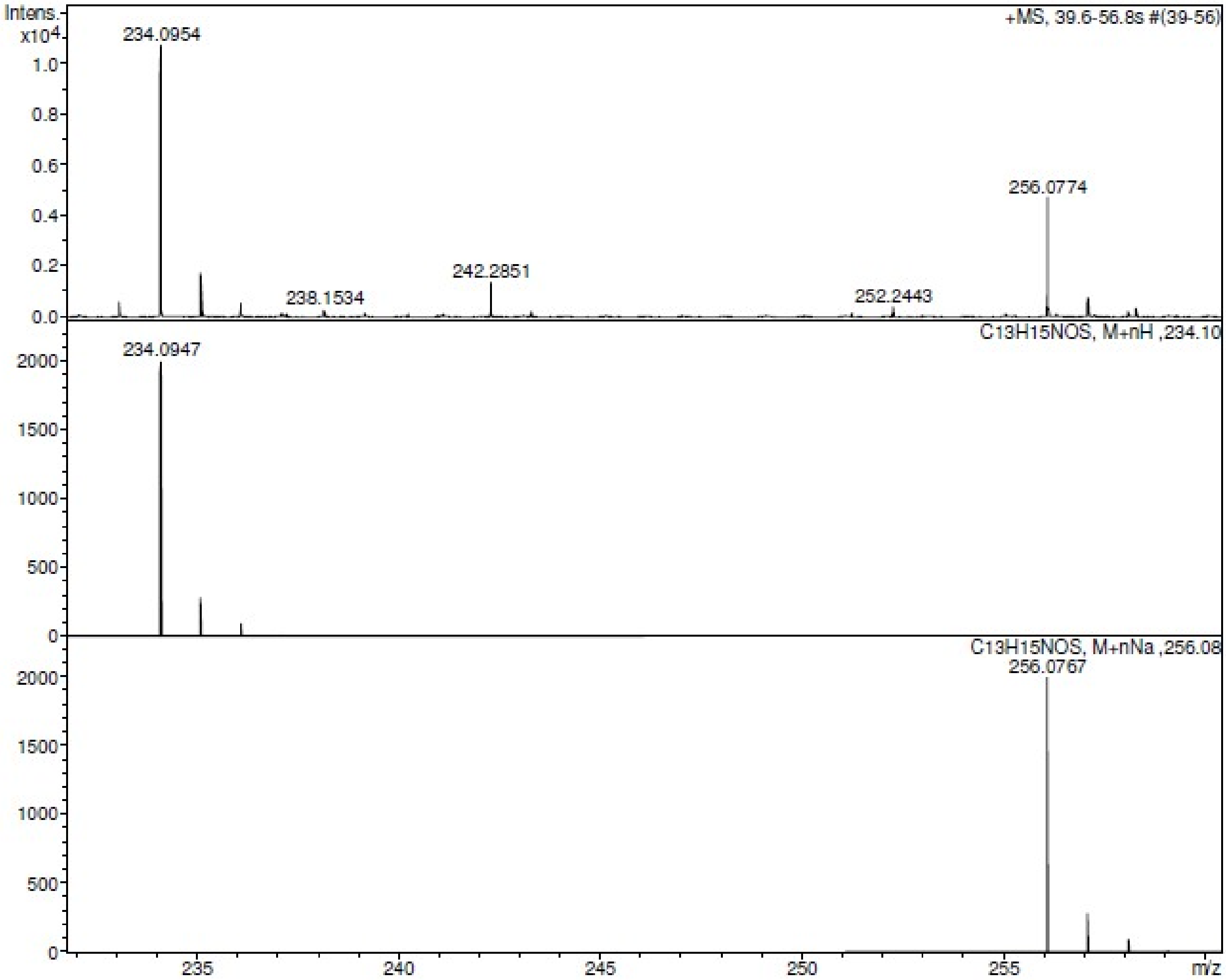
Analysis Info

Analysis Name	D:\Data\Kolotyrkina\2022\Mulina\0711006.d	Acquisition Date	11.07.2022 14:01:38
Method	tune_low.m	Operator	BDAL@DE
Sample Name	/TERN L-50kt	Instrument / Ser#	maXis 43
Comment	C13H15NOS mH 234.0947 clb added CH3CN		

Acquisition Parameter

Source Type	ESI	Ion Polarity	Positive	Set Nebulizer	0.4 Bar
Focus	Not active			Set Dry Heater	180 °C
Scan Begin	50 m/z	Set Capillary	4500 V	Set Dry Gas	4.0 l/min
Scan End	1500 m/z	Set End Plate Offset	-500 V	Set Divert Valve	Source





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2-Benzyloxy-4-phenylthiazole (3ah)

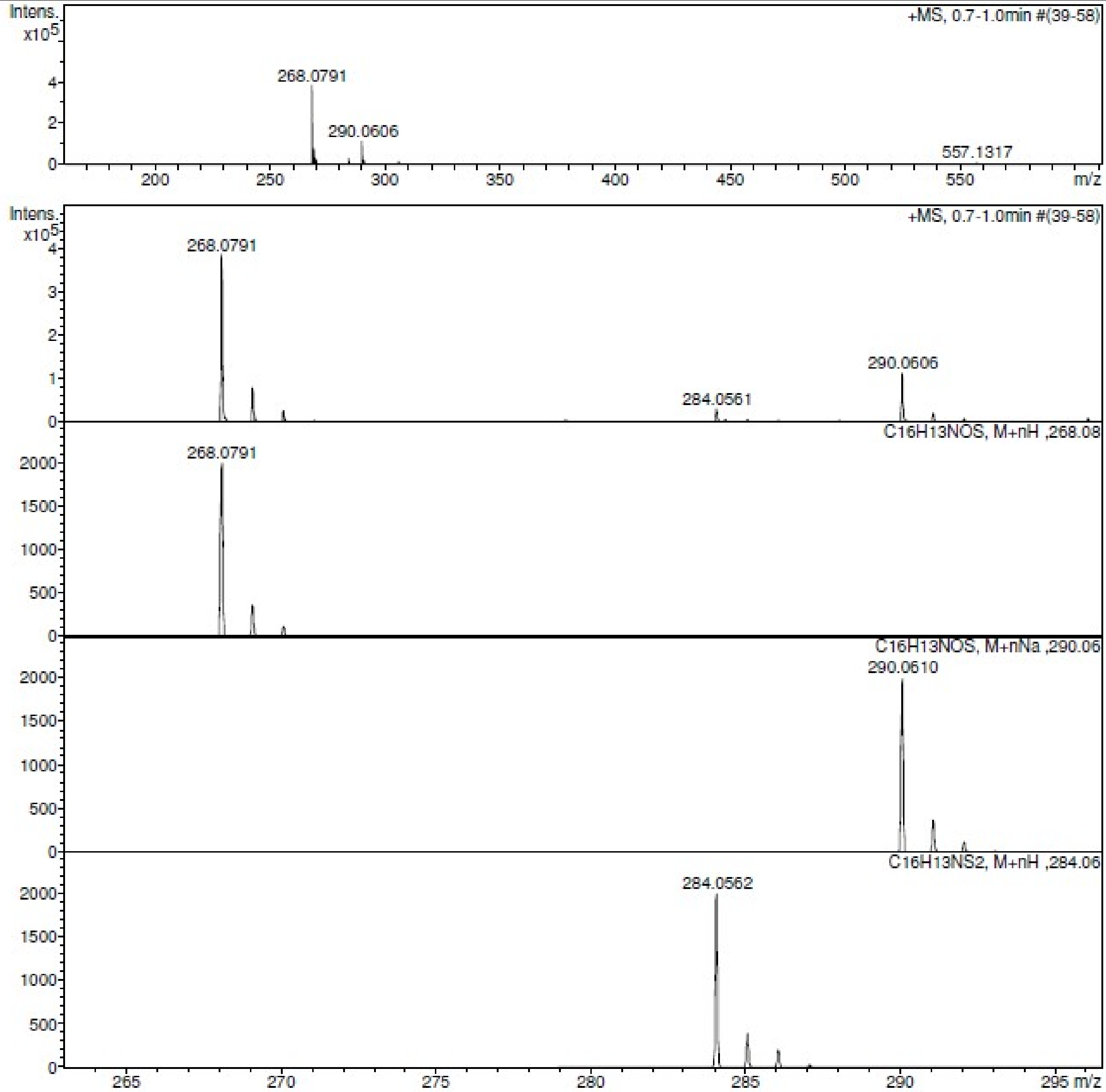
Display Report

Analysis Info

Analysis Name	D:\Data\Kolotyrkina\2024\Zaikina\0326051.d	Acquisition Date	26.03.2024 19:27:07
Method	tune_low.m	Operator	BDAL@DE
Sample Name	/TERN L-47	Instrument / Ser#	micrOTOF 10248
Comment	C16H13NOS mH268.0790 clb added CH3OH		

Acquisition Parameter

Source Type	ESI	Ion Polarity	Positive	Set Nebulizer	0.4 Bar
Focus	Not active			Set Dry Heater	180 °C
Scan Begin	50 m/z	Set Capillary	4500 V	Set Dry Gas	4.0 l/min
Scan End	3000 m/z	Set End Plate Offset	-500 V	Set Divert Valve	Waste



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2-(Allyloxy)-4-phenylthiazole (3ai)

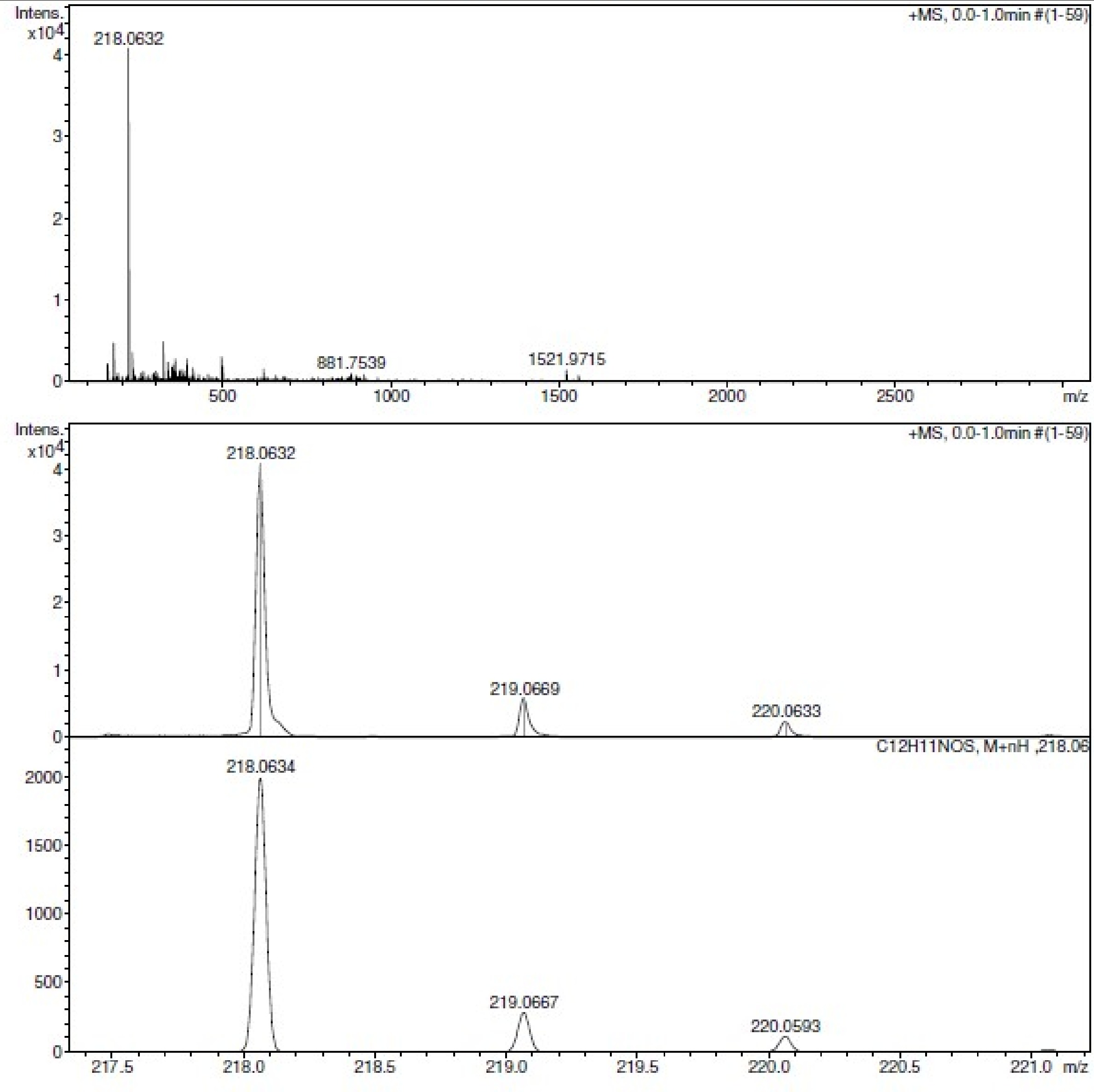
Display Report

Analysis Info

Analysis Name	D:\Data\Chizhov\Terentiev\Mulina\l-130k_&clblow.d	Acquisition Date	07.04.2023 18:45:38
Method	tune_low.m	Operator	BDAL@DE
Sample Name	/TERN L-130K	Instrument / Ser#	micrOTOF 10248
Comment	CH3CN 100 %, dil. 200, calibrant added		

Acquisition Parameter

Source Type	ESI	Ion Polarity	Positive	Set Nebulizer	0.4 Bar
Focus	Not active			Set Dry Heater	180 °C
Scan Begin	50 m/z	Set Capillary	4500 V	Set Dry Gas	4.0 l/min
Scan End	3000 m/z	Set End Plate Offset	-500 V	Set Divert Valve	Waste



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(Z)-2-(Hex-3-en-1-yloxy)-4-phenylthiazole (3aj)

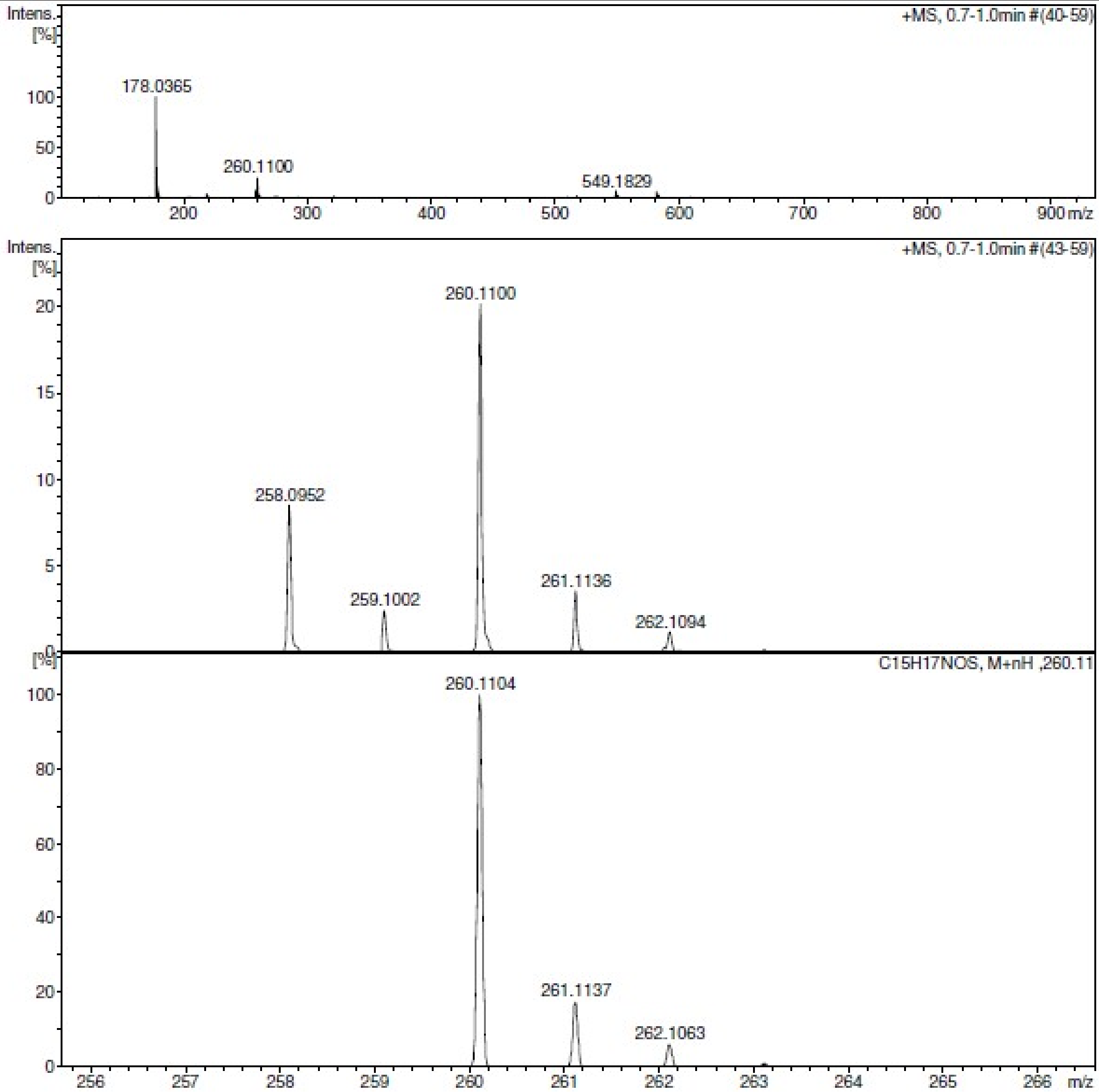
Display Report

Analysis Info

Analysis Name	D:\Data\Kolotyrkina\2022\Mulina\1020019.d	Acquisition Date	20.10.2022 15:32:15
Method	tune_low.m	Operator	BDAL@DE
Sample Name	/TERN L-93k	Instrument / Ser#	micrOTOF 10248
Comment	C15H17NOS mH 260.1103 clb added CH3CN		

Acquisition Parameter

Source Type	ESI	Ion Polarity	Positive	Set Nebulizer	0.4 Bar
Focus	Not active			Set Dry Heater	180 °C
Scan Begin	50 m/z	Set Capillary	4500 V	Set Dry Gas	4.0 l/min
Scan End	2500 m/z	Set End Plate Offset	-500 V	Set Divert Valve	Waste



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2-Ethoxy4-(4-(*tert*-butyl)phenyl)thiazole (3cc)

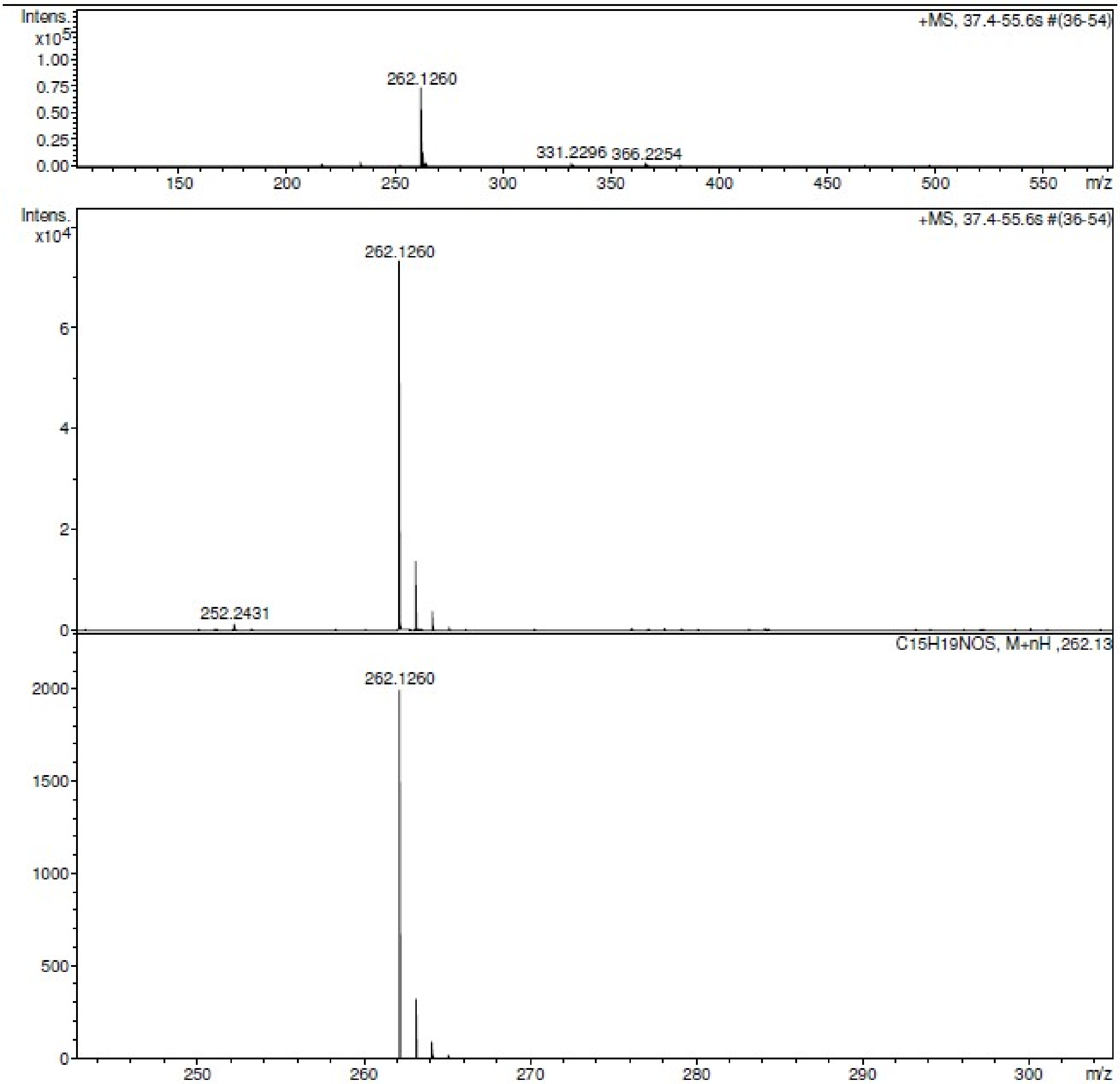
Display Report

Analysis Info

Analysis Name	D:\Data\Kolotyrkina\2022\Mulina\0711005.d	Acquisition Date	11.07.2022 13:49:44
Method	tune_low.m	Operator	BDAL@DE
Sample Name	/TERN L-62K	Instrument / Ser#	maXis 43
Comment	C15H19NOS mH 262.1260 clb added CH3CN		

Acquisition Parameter

Source Type	ESI	Ion Polarity	Positive	Set Nebulizer	0.4 Bar
Focus	Not active			Set Dry Heater	180 °C
Scan Begin	50 m/z	Set Capillary	4500 V	Set Dry Gas	4.0 l/min
Scan End	1500 m/z	Set End Plate Offset	-500 V	Set Divert Valve	Source



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2-Ethoxy-4-(2-methoxyphenyl)thiazole (3ec)

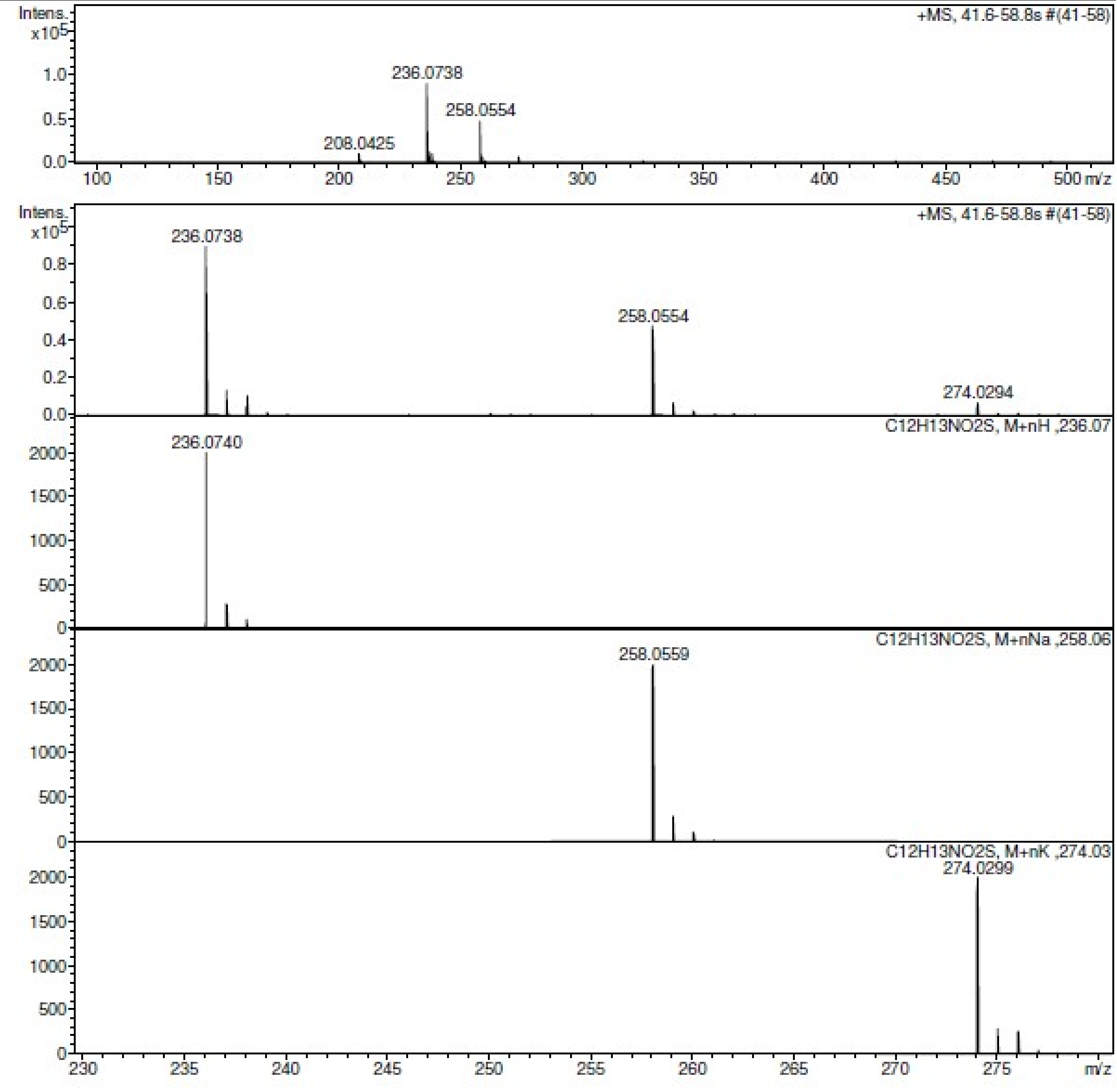
Display Report

Analysis Info

Analysis Name	D:\Data\Kolotyrkina\2022\Mulina\0719017.d	Acquisition Date	19.07.2022 15:29:06
Method	tune_low.m	Operator	BDAL@DE
Sample Name	/TERN L-68k	Instrument / Ser#	maXis 43
Comment	C12H13NO2S mH 236.0740 clb added CH3CN		

Acquisition Parameter

Source Type	ESI	Ion Polarity	Positive	Set Nebulizer	0.4 Bar
Focus	Not active			Set Dry Heater	180 °C
Scan Begin	50 m/z	Set Capillary	4500 V	Set Dry Gas	4.0 l/min
Scan End	1500 m/z	Set End Plate Offset	-500 V	Set Divert Valve	Source



2-Ethoxy-4-(3-bromophenyl)thiazole (3hc)

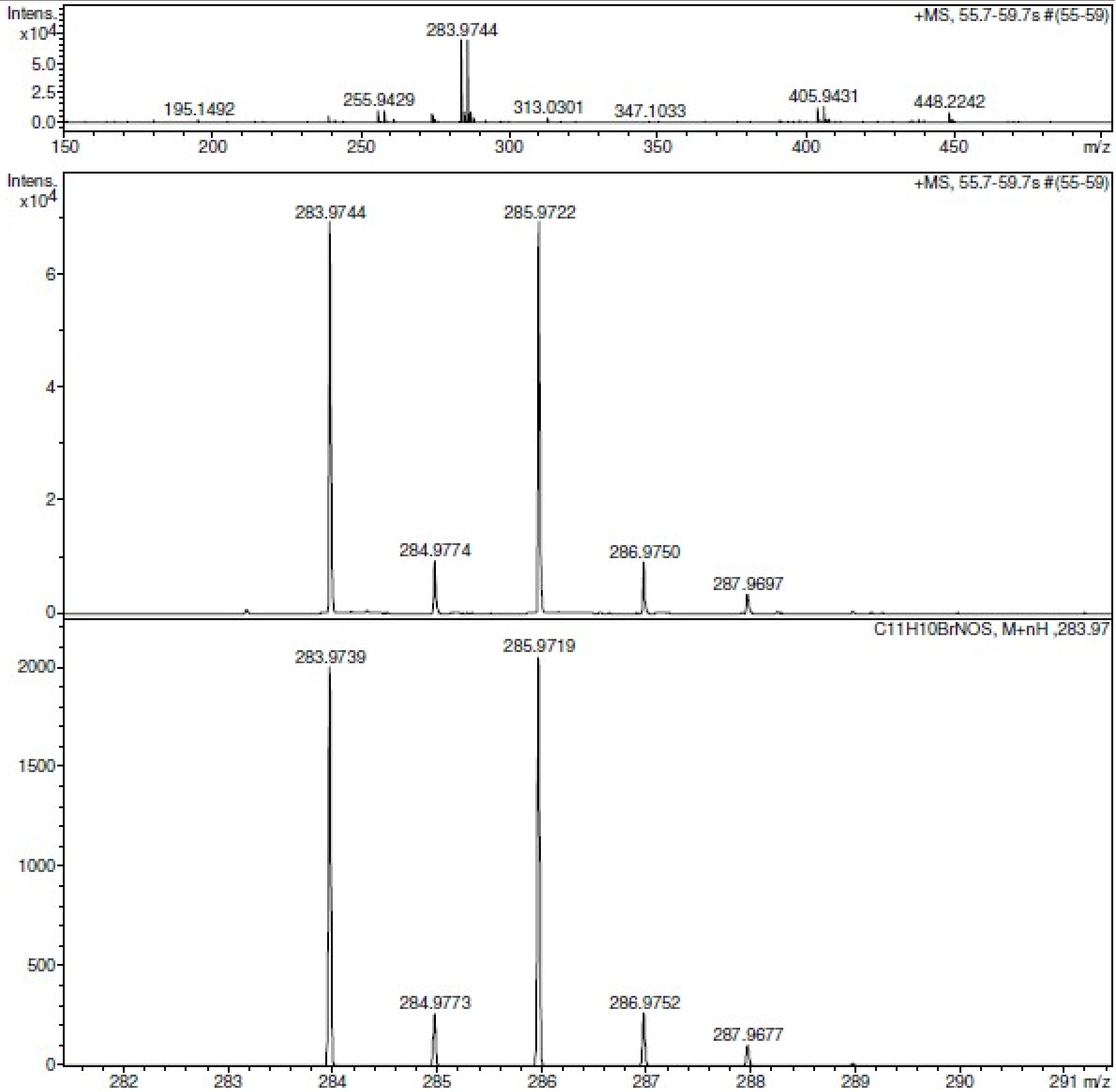
Display Report

Analysis Info

Analysis Name	D:\Data\Kolotyrkina\2022\Mulina\0714015.d	Acquisition Date	14.07.2022 14:41:38
Method	tune_low.m	Operator	BDAL@DE
Sample Name	/TERN L-67	Instrument / Ser#	maXis 43
Comment	C11H10BrNOS mH 283.9739 clb added CH3CN		

Acquisition Parameter

Source Type	ESI	Ion Polarity	Positive	Set Nebulizer	1.0 Bar
Focus	Not active			Set Dry Heater	200 °C
Scan Begin	50 m/z	Set Capillary	4500 V	Set Dry Gas	4.0 l/min
Scan End	1200 m/z	Set End Plate Offset	-500 V	Set Divert Valve	Source



2-Ethoxy-4-(4-(azidomethyl)phenyl)thiazole (3ic)

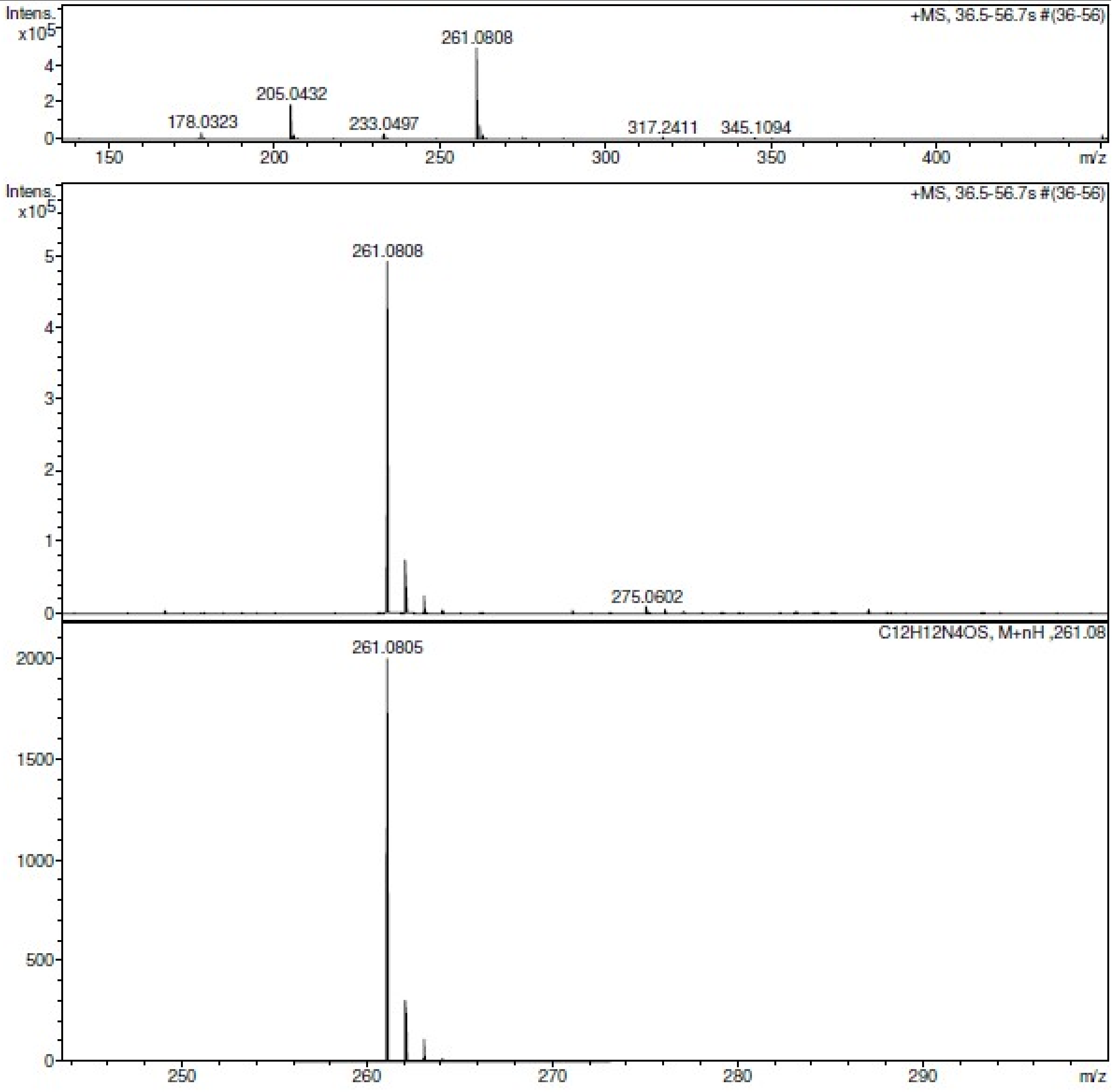
Display Report

Analysis Info

Analysis Name	D:\Data\Kolotyrkina\2022\Mulina\0714014.d	Acquisition Date	14.07.2022 14:35:49
Method	tune_low.m	Operator	BDAL@DE
Sample Name	/TERN L-64	Instrument / Ser#	maXis 43
Comment	C12H12N4OS mH 261.0804 clb added CH3CN		

Acquisition Parameter

Source Type	ESI	Ion Polarity	Positive	Set Nebulizer	1.0 Bar
Focus	Not active			Set Dry Heater	200 °C
Scan Begin	50 m/z	Set Capillary	4500 V	Set Dry Gas	4.0 l/min
Scan End	1200 m/z	Set End Plate Offset	-500 V	Set Divert Valve	Source



2-Ethoxy-4-octylthiazole (3lc)

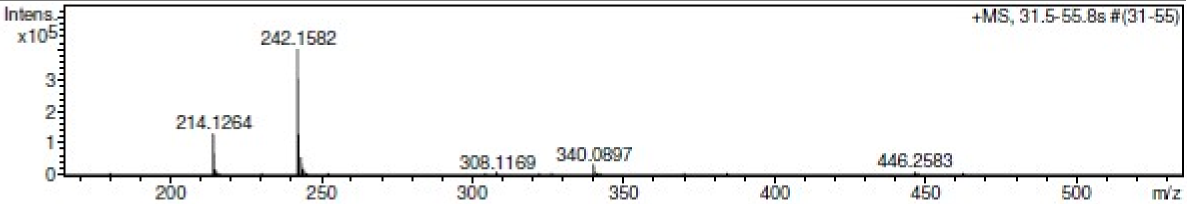
Display Report

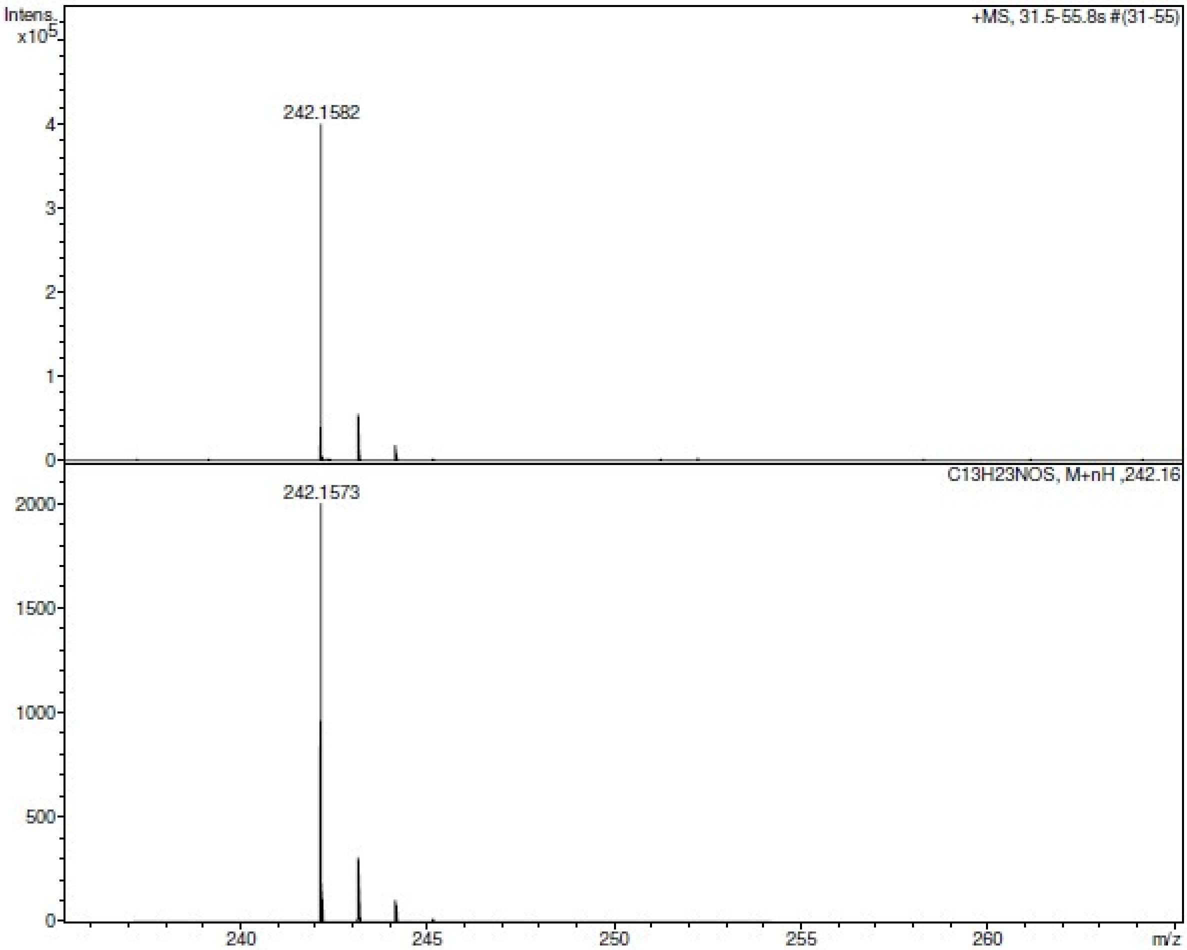
Analysis Info

Analysis Name	D:\Data\Kolotyrkina\2022\Mulina\0718004.d	Acquisition Date	18.07.2022 17:02:03
Method	tune_100-1200.m	Operator	BDAL@DE
Sample Name	/TERN L-73	Instrument / Ser#	maXis 43
Comment	C13H23NOS mH 242.1573 clb added CH3CN		

Acquisition Parameter

Source Type	ESI	Ion Polarity	Positive	Set Nebulizer	1.0 Bar
Focus	Active			Set Dry Heater	200 °C
Scan Begin	50 m/z	Set Capillary	4500 V	Set Dry Gas	4.0 l/min
Scan End	1500 m/z	Set End Plate Offset	-500 V	Set Divert Valve	Waste





2-Ethoxy-4-decylthiazole (3mc)

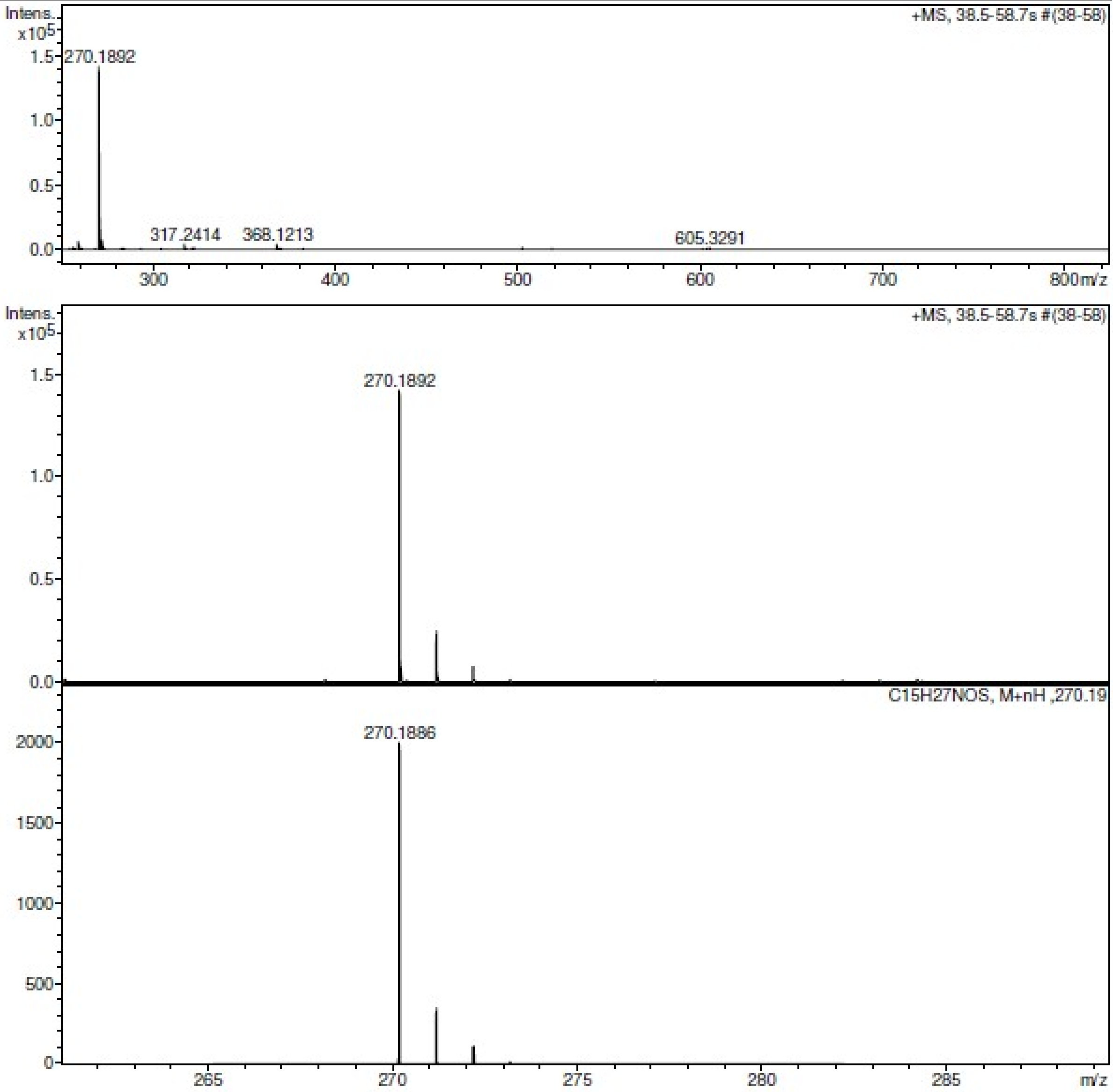
Display Report

Analysis Info

Analysis Name	D:\Data\Kolotyrkina\2022\Mulina\0714022.d	Acquisition Date	14.07.2022 16:47:14
Method	tune_low.m	Operator	BDAL@DE
Sample Name	/TERN L-66	Instrument / Ser#	maXis 43
Comment	C15H27NOS mH 270.1886 clb added CH3CN		

Acquisition Parameter

Source Type	ESI	Ion Polarity	Positive	Set Nebulizer	1.0 Bar
Focus	Not active			Set Dry Heater	200 °C
Scan Begin	50 m/z	Set Capillary	4500 V	Set Dry Gas	4.0 l/min
Scan End	1200 m/z	Set End Plate Offset	-500 V	Set Divert Valve	Source



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Ethyl 2-ethoxythiazole-4-carboxylate (3oc)

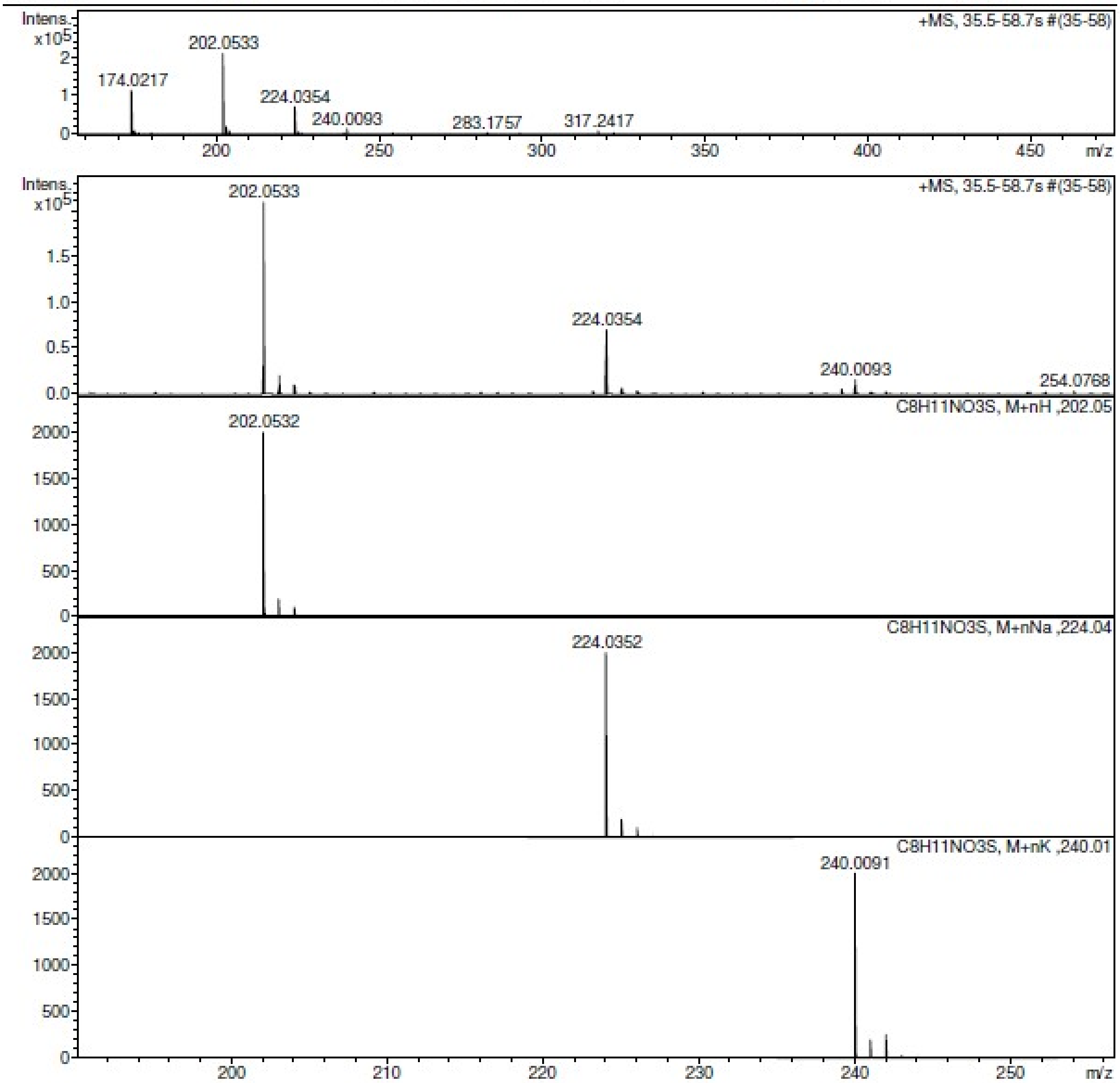
Display Report

Analysis Info

Analysis Name	D:\Data\Kolotyrkina\2022\Mulina\0714016.d	Acquisition Date	14.07.2022 14:47:53
Method	tune_low.m	Operator	BDAL@DE
Sample Name	/TERN L-69	Instrument / Ser#	maXis 43
Comment	C8H11NO3S mH 202.0532 clb added CH3CN		

Acquisition Parameter

Source Type	ESI	Ion Polarity	Positive	Set Nebulizer	1.0 Bar
Focus	Not active			Set Dry Heater	200 °C
Scan Begin	50 m/z	Set Capillary	4500 V	Set Dry Gas	4.0 l/min
Scan End	1200 m/z	Set End Plate Offset	-500 V	Set Divert Valve	Source



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The control experiment using TEMPO

Display Report

Analysis Info

Analysis Name	D:\Data\Kolotyrkina\2023\Mulina\1109004.d	Acquisition Date	09.11.2023 10:44:58
Method	tune_low.m	Operator	BDAL@DE
Sample Name	/TERN L-241	Instrument / Ser#	micrOTOF 10248
Comment	C12H23NO2S2 mH278.1242 calibrant added CH3CN		

Acquisition Parameter

Source Type	ESI	Ion Polarity	Positive	Set Nebulizer	0.4 Bar
Focus	Not active			Set Dry Heater	180 °C
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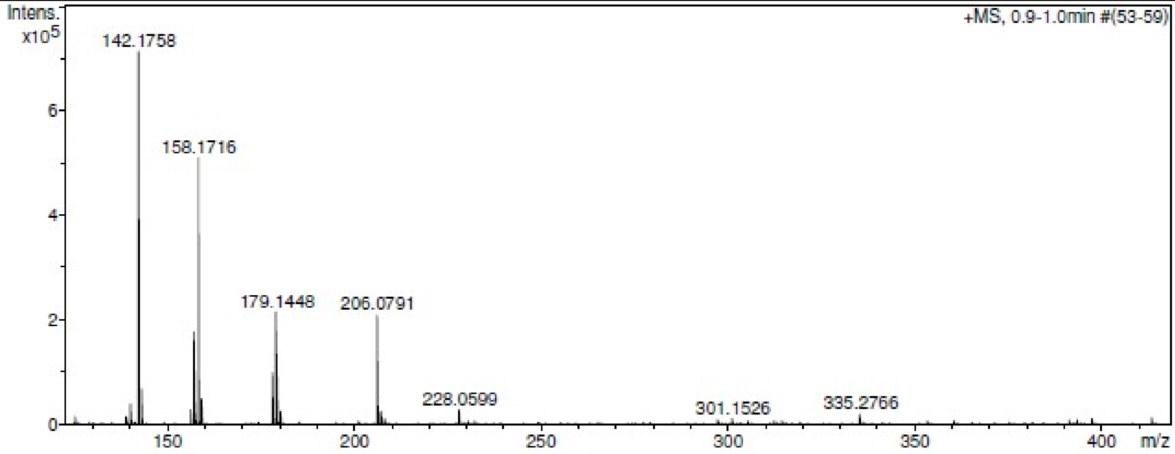
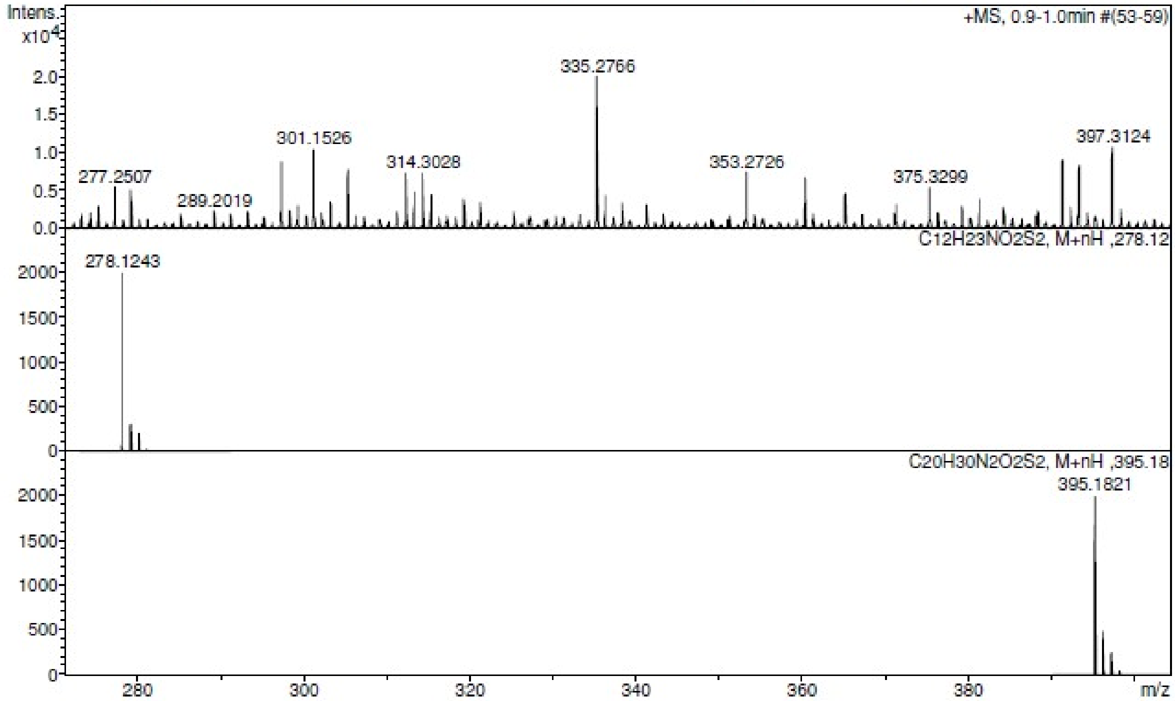
Scan End	3000 m/z	Set End Plate Offset	-500 V	Set Divert Valve	Waste





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