Electronic Supplementary Information

Highly enantioselective hydrogenation of 2-pyridyl ketones enabled by Ir-*f*-phamidol catalyst

Lei Xu, [a] Gen-Qiang Chen[b,*] and Xumu Zhang [a,b,c,*]

[a] Shenzhen Key Laboratory of Small Molecule Drug Discovery and Synthesis, Department of Chemistry and Medi-X Pingshan, Southern University of Science and Technology, Shenzhen 518055, People's Republic of China;

[b] Academy for Advanced Interdisciplinary Studies and Shenzhen Grubbs Institute, Southern University of Science and Technology, Shenzhen 518000, People's Republic of China;

[c] Guangdong Laboratory of Chemistry and Fine Chemical Engineering, Shantou 515031, People's Republic of China.

E-mail: zhangxm@sustech.edu.cn; chengq@sustech.edu.cn

Content

1. General information

1.1. Materials

The following chemicals were purchased and used as received:
Chloro(1,5-cyclooctadiene)iridium(I) dimer (CAS: 12112-67-3, Aldrich, 97%, 1 g), sodium *tert*-butoxide (CAS: 865-48-5, Macklin, 99.9%, 25 g), potassium *tert*-butoxide (CAS: 865-47-4, Macklin, 98%, 25 g), cesium carbonate (CAS: 534-17-8, Energy, 99.9%, 100 g), 2-acetylpyridine (CAS: 1122-62-9, Bide, 98%, 100 g), other ketones (Bide or Energy), hydrogen gas (99.999%, Shanghai Regulator Factory Co., Ltd.), anhydrous *i*-PrOH (CAS: 67-63-0, Energy, 99.5%, 500 mL, Extra Dry, with molecular sieves, water ≤50 ppm).

1.2. Analytical methods

^{1}H NMR, ^{13}C NMR spectra were recorded on a Bruker 400 MHz or 600 MHz spectrometer at 295 K in $CDCl_3$. HRMS ESI-mass data were acquired on Thermo LTQ Orbitrap XL instrument. Chromatographic purification of products was accomplished using forced-flow chromatography on silica gel (200–300 mesh).

1.3. Ligands

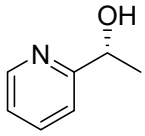
f-Phamidol (**L1**),[1] **L2**,[1] **L3**,[2] **L4**,[3] **L5**,[3] ZhaoPhos (**L6**)[4] are synthesized according to the literatures.

2. General procedure

To a 2.0 mL vial equipped with a stirring bar in glove box were added Cs_2CO_3 (0.004 mmol, 0.01 equiv., 1.3 mg), 2-pyridyl ketone (0.4 mmol, 1.0 equiv.), Ir-*f*-phamidol (0.1 mol%), *i*-PrOH (0.4 mL). The vial was put into an autoclave, which was taken out from the glovebox. Then the autoclave was charged with 50 atm of H_2 and the reaction was stirred at room temperature for 10 h. The hydrogen gas was released slowly in a well-ventilated hood and the solution was concentrated and passed through a short column of silica gel to remove the metal complex (mobile phase: ethyl acetate). The product was analyzed by chiral HPLC for ee values. Ir-*f*-phamidol (0.1 mol % catalyst for 0.4 mmol reaction): dissolve 4.8 mg *f*-phamidol (0.0084 mmol, 0.021 equiv.) and 2.7 mg $[Ir(COD)Cl]_2$ (0.004 mmol, 0.01 equiv.) in 2.0 mL *i*-PrOH, stirred at ambient temperature for 2 h in a glove box and then take 100 μL of the solution.

Caution! Hydrogen is classified as a GHS Flammable Gas, Category 1. The relevant experimenters must undergo professional training.

3. Characterization data for all products

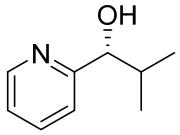


2a

(*R*)-1-(pyridin-2-yl)ethan-1-ol (2a) [5]

Colorless oil, 99% yield, 48.6 mg; 99% ee; $[\alpha]_D^{20}$ = +22.8 (c = 0.5, CH_2Cl_2), lit. $[\alpha]_D^{20}$ = +20.8 (c = 0.5, CH_2Cl_2), (*R*). [5] The ee was determined by chiral HPLC (Chiralpak ID, *n*-hexane/isopropanol 95:5 v/v, flow rate 1.0 mL/min，λ= 254 nm, 25 ºC). Retention times: t_R(major) = 17.528 min，t_R(minor) = 15.776 min. ^{1}H NMR (600 MHz, $CDCl_3$) δ 8.49 (d, *J* = 4.5 Hz, 1H), 7.65 (t, *J* = 7.7 Hz, 1H), 7.25 (d, *J* = 7.8 Hz, 1H), 7.20–7.11 (m, 1H), 4.86 (q, *J* = 6.5 Hz, 1H), 1.47 (d, *J* = 6.6 Hz, 3H). ^{13}C NMR (151 MHz, $CDCl_3$) δ 163.0, 148.1, 136.8, 122.2, 119.8, 68.8, 24.2.

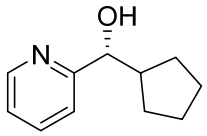
Scale-up reaction：to a 5.0 mL vial equipped with a stirring bar in glove box were added 2-acetylpyridine **1a** (10 mmol, 1.2 g, 1.0 equiv.), *i*-PrOH (2.0 mL), Ir-*f*-phamidol (0.0001 equiv.), Cs_2CO_3 (0.1 mmol, 0.01 equiv.). The vial was put into an autoclave, which was taken out from the glovebox. Then the autoclave was charged with 50 atm of H_2 and the reaction was stirred at room temperature for 10 h. The hydrogen gas was released slowly in a well-ventilated hood and the solution was concentrated and passed through a short column of silica gel to remove the metal complex (mobile phase: ethyl acetate). The product was analyzed by chiral HPLC for ee values. Ir-f-phamidol (0.01 mol% catalyst for 10 mmol reaction): dissolve 3.0 mg *f*-phamidol (0.00525 mmol, 0.000525 equiv.) and 1.68 mg $[Ir(COD)Cl]_2$ (0.0025 mmol, 0.00025 equiv.) in 1.0 mL *i*-PrOH, stirred at ambient for 2 h in a glove box and then take 200 μL of the solution.



2b

(*R*)-2-methyl-1-(pyridin-2-yl)propan-1-ol (2b)[6]

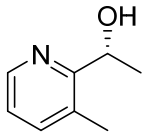
Colorless oil, 99% yield, 60 mg; >99% ee; $[\alpha]_D^{23}$ = +20.1 (c = 1.0, CH_2Cl_2). The ee was determined by chiral HPLC (Chiralpak ID, *n*-hexane/isopropanol 95:5 v/v, flow rate 1.0 mL/min，λ= 254 nm, 25 ºC). Retention times: t_R = 11.16 min. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.53 (d, *J* = 4.7 Hz, 1H), 7.67 (t, *J* = 8.5 Hz, 1H), 7.23 (d, *J* = 7.9 Hz, 1H), 7.22–7.16 (m, 1H), 4.55 (d, *J* = 4.4 Hz, 1H), 2.19–1.80 (m, 1H), 1.00 (d, *J* = 6.9 Hz, 3H), 0.79 (d, *J* = 6.8 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 161.3, 147.9, 136.4, 122.2, 121.0, 77.2, 35.1, 19.4, 16.1.



2c

(*R*)-cyclopentyl(pyridin-2-yl)methanol (2c)[6]

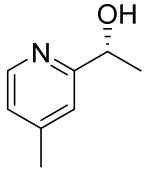
Colorless oil, 99% yield, 70 mg; >99% ee; $[\alpha]_D^{25}$ = +42.5 (c = 1.0, CH_2Cl_2). The ee was determined by chiral HPLC (Chiralpak AS-3, *n*-hexane (2% diethylamine)/isopropanol 95:5 v/v, flow rate 1.0 mL/min，λ= 254 nm, 25 ºC). Retention times: t_R = 7.108 min. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.44 (d, *J* = 4.8 Hz, 1H), 7.58 (t, *J* = 8.4 Hz, 1H), 7.18 (d, *J* = 7.9 Hz, 1H), 7.14–7.04 (m, 1H), 4.53 (d, *J* = 6.1 Hz, 1H), 4.00 (s, 1H, *OH signal*), 2.46–1.98 (m, 1H), 1.76–1.24 (m, 8H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 162.2, 148.2, 136.5, 122.3, 121.0, 76.0, 47.2, 29.3, 27.3, 25.7, 25.6.



2d

(*R*)-1-(3-methylpyridin-2-yl)ethan-1-ol (2d)

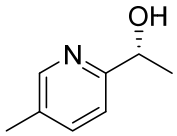
Colorless oil, 99% yield, 54.5 mg; 93% ee; $[\alpha]_D^{23}$ = +52.2 (c = 1.0, CH_2Cl_2). The ee was determined by chiral HPLC (Chiralpak ID, *n*-hexane/isopropanol 95:5 v/v, flow rate 1.0 mL/min，λ= 254 nm, 25 ºC). Retention times: t_R(major) = 12.616 min, t_R(minor) = 14.98 min. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.31 (d, *J* = 4.3 Hz, 1H), 7.39 (d, *J* = 7.5 Hz, 1H), 7.17–6.91 (m, 1H), 4.91 (q, *J* = 6.2 Hz, 1H), 2.23 (s, 3H), 1.33 (d, *J* = 6.3 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 160.7, 145.6, 138.5, 129.0, 122.3, 66.1, 23.7, 17.6. HRMS (ESI) Calcd for $C_8H_{12}NO$ $[M+H]^+$: 138.0913, Found: 138.0914.



2e

(*R*)-1-(4-methylpyridin-2-yl)ethan-1-ol (2e)[6]

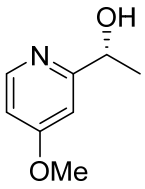
Colorless oil, 99% yield, 54.3 mg; >99% ee; $[\alpha]_D^{24}$ = +31.3 (c = 1.0, CH_2Cl_2). The ee was determined by chiral HPLC (Chiralpak ID, *n*-hexane/isopropanol 95:5 v/v, flow rate 1.0 mL/min，λ= 254 nm, 25 ºC). Retention times: t_R = 24.447 min. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.28 (d, *J* = 5.0 Hz, 1H), 7.04 (s, 1H), 6.93 (d, *J* = 4.9 Hz, 1H), 4.77 (q, *J* = 6.5 Hz, 1H), 3.84 (s, 1H, *OH signal*), 2.28 (s, 3H), 1.41 (d, *J* = 6.5 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 163.1, 148.1, 147.8, 123.3, 120.6, 68.9, 24.2, 21.2.



2f

(*R*)-1-(5-methylpyridin-2-yl)ethan-1-ol (2f)

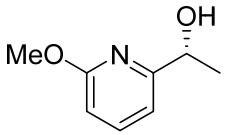
Colorless oil, 99% yield, 54 mg; >99% ee; $[\alpha]_D^{25}$ = +17.8 (c = 1.0, CH_2Cl_2). The ee was determined by chiral HPLC (Chiralpak ID, *n*-hexane/isopropanol 95:5 v/v, flow rate 1.0 mL/min，λ= 254 nm, 25 ºC). Retention times: t_R = 21.764 min. ^{1}H NMR (600 MHz, $CDCl_3$) δ 8.40 (s, 1H), 7.56–7.55 (m, 1H), 7.25 (d, *J* = 8.0 Hz, 1H), 4.93 (q, *J* = 6.5 Hz, 1H), 4.07 (s, 1H, *OH signal*), 2.38 (s, 3H), 1.54 (d, *J* = 6.5 Hz, 3H). ^{13}C NMR (151 MHz, $CDCl_3$) δ 160.3, 148.2, 137.4, 131.6, 119.2, 68.7, 24.1, 18.0. HRMS (ESI) Calcd for $C_8H_{12}NO$ $[M+H]^+$: 138.0913, Found: 138.0914.



2g

(*R*)-1-(4-methoxypyridin-2-yl)ethan-1-ol (2g)[7]

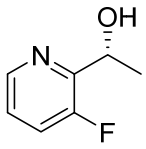
Colorless oil, 99% yield, 60.6 mg; 96% ee; $[\alpha]_D^{25}$ = +33.5 (c = 1.0, CH_2Cl_2). The ee was determined by chiral HPLC (Chiralpak ID, *n*-hexane/isopropanol 90:10 v/v, flow rate 1.0 mL/min，λ= 254 nm, 25 ºC). Retention times: t_R(major) = 17.282 min, t_R(minor) = 15.787 min. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.23 (d, *J* = 5.7 Hz, 1H), 6.75 (d, *J* = 2.0 Hz, 1H), 6.63 (d, *J* = 3.5 Hz, 1H), 4.76 (q, *J* = 6.5 Hz, 1H), 4.46 (s, 1H, *OH signal*), 3.77 (s, 3H), 1.41 (d, *J* = 6.5 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 166.4, 165.4, 149.3, 108.8, 105.2, 69.1, 55.2, 24.2.



2h

(*R*)-1-(6-methoxypyridin-2-yl)ethan-1-ol (2h)[8]

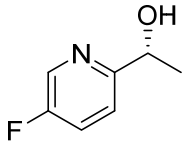
Colorless oil, 99% yield, 60.5 mg; 99% ee; $[\alpha]_D^{21}$ = +1.7 (c = 1.0, CH_2Cl_2). The ee was determined by chiral HPLC (Chiralpak ID, *n*-hexane/isopropanol 95:5 v/v, flow rate 1.0 mL/min，λ= 254 nm, 25 ºC). Retention times: t_R(major) = 8.401 min, t_R(minor) = 7.722 min. ^{1}H NMR (600 MHz, $CDCl_3$) δ 7.56 (t, *J* = 7.7 Hz, 1H), 6.81 (d, *J* = 7.3 Hz, 1H), 6.62 (d, *J* = 8.2 Hz, 1H), 4.80 (q, *J* = 6.5 Hz, 1H), 3.94 (s, 3H), 1.48 (d, *J* = 6.5 Hz, 3H). ^{13}C NMR (151 MHz, $CDCl_3$) δ 163.3, 160.8, 139.4, 112.0, 108.9, 68.5, 53.3, 24.0.



2i

(*R*)-1-(3-fluoropyridin-2-yl)ethan-1-ol (2i)[9]

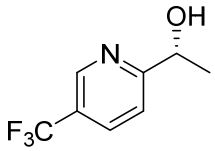
Colorless oil, 99% yield, 55.7 mg; >99% ee; $[\alpha]_D^{22}$ = +15.2 (c = 1.0, CH_2Cl_2). The ee was determined by chiral HPLC (Chiralpak ID, *n*-hexane/isopropanol 95:5 v/v, flow rate 1.0 mL/min，λ= 254 nm, 25 ºC). Retention times: t_R = 9.232 min. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.30 (d, *J* = 4.5 Hz, 1H), 7.32 (t, *J* = 8.9 Hz, 1H), 7.18 (d, *J* = 4.4 Hz, 1H), 5.05 (q, *J* = 6.3 Hz, 1H), 1.42 (d, *J* = 6.5 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 156.2 (d, *J* = 256.5 Hz), 151.1 (d, *J* = 16.7 Hz), 144.0 (d, *J* = 5.1 Hz), 123.8 (d, *J* = 3.5 Hz), 123.4 (d, *J* = 18.4 Hz), 64.5 (d, *J* = 2.6 Hz), 23.5. ^{19}F NMR (376 MHz, $CDCl_3$) δ –126.79 (d, *J* = 7.8 Hz).



2j

(*R*)-1-(5-fluoropyridin-2-yl)ethan-1-ol (2j)

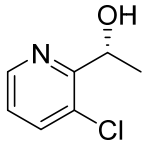
Colorless oil, 99% yield, 56 mg; 97% ee; $[\alpha]_D^{22}$ = +23.2 (c = 1.0, CH_2Cl_2). The ee was determined by chiral HPLC (Chiralpak ID, *n*-hexane/isopropanol 95:5 v/v, flow rate 1.0 mL/min，λ= 254 nm, 25 ºC). Retention times: t_R(major) = 11.86 min, t_R(minor) = 10.298 min. ^{1}H NMR (600 MHz, $CDCl_3$) δ 8.22 (d, *J* = 2.1 Hz, 1H), 7.26 (t, *J* = 8.4 Hz, 1H), 7.21–7.15 (m, 1H), 4.75 (q, *J* = 6.5 Hz, 1H), 1.34 (d, *J* = 6.5 Hz, 3H). ^{13}C NMR (151 MHz, $CDCl_3$) δ 159.3 (d, *J* = 3.6 Hz), 158.6 (d, *J* = 254.4 Hz), 136.3 (d, *J* = 24.4 Hz), 123.7 (d, *J* = 18.6 Hz), 120.6 (d, *J* = 4.2 Hz), 68.9, 24.2. ^{19}F NMR (565 MHz, $CDCl_3$) δ –129.60 (s). HRMS (ESI) Calcd for C_7H_9FNO $[M+H]^+$: 142.0663, Found: 142.0663.



2k

(*R*)-1-(5-(trifluoromethyl)pyridin-2-yl)ethan-1-ol (2k)

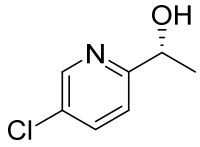
Colorless oil, 99% yield, 76 mg; 97% ee; $[\alpha]_D^{25}$ = +11.5 (c = 1.0, CH_2Cl_2). The ee was determined by chiral HPLC (Chiralpak ID, *n*-hexane/isopropanol 95:5 v/v, flow rate 1.0 mL/min，λ= 254 nm, 25 ºC). Retention times: t_R(major) = 7.216 min, t_R(minor) = 6.219 min. ^{1}H NMR (600 MHz, $CDCl_3$) δ 8.59 (s, 1H), 7.72 (d, *J* = 6.6 Hz, 1H), 7.25 (d, *J* = 8.2 Hz, 1H), 4.75 (q, *J* = 6.6 Hz, 1H), 3.42 (s, 1H, *OH signal*), 1.31 (d, *J* = 6.6 Hz, 3H). ^{13}C NMR (151 MHz, $CDCl_3$) δ 166.2, 144.4 (q, *J* = 4.0 Hz), 133.0 (q, *J* = 3.6 Hz), 124.4 (q, *J* = 33.4 Hz), 122.5 (q, *J* = 272.3 Hz), 118.7, 68.2, 23.1. ^{19}F NMR (565 MHz, $CDCl_3$) δ –62.3. HRMS (ESI) Calcd for $C_8H_9F_3NO$ $[M+H]^+$: 192.0631, Found: 192.0631.



2l

(*R*)-1-(3-chloropyridin-2-yl)ethan-1-ol (2l)

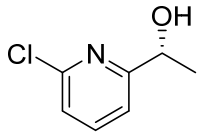
Colorless oil, 99% yield, 62 mg; >99% ee; $[\alpha]_D^{23}$ = +48.5 (c = 1.0, CH_2Cl_2). The ee was determined by chiral HPLC (Chiralpak IC, *n*-hexane/isopropanol 95:5 v/v, flow rate 1.0 mL/min，λ= 254 nm, 25 ºC). Retention times: t_R = 13.562 min. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.40 (d, *J* = 4.5 Hz, 1H), 7.60 (d, *J* = 8.8 Hz, 1H), 7.28–7.00 (m, 1H), 5.08 (q, *J* = 6.3 Hz, 1H), 4.41 (s, 1H, *OH signal*), 1.39 (d, *J* = 6.4 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 159.8, 146.4, 137.5, 129.0, 123.5, 66.4, 23.2. HRMS (ESI) Calcd for C_7H_9ClNO $[M+H]^+$: 158.0367, Found: 158.0368.



2m

(*R*)-1-(5-chloropyridin-2-yl)ethan-1-ol (2m)[7]

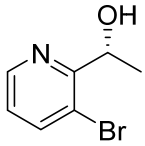
Colorless oil, 99% yield, 62.2 mg; 96% ee; $[\alpha]_D^{23}$ = +24.6 (c = 1.0, CH_2Cl_2). The ee was determined by chiral HPLC (Chiralpak ID, *n*-hexane/isopropanol 95:5 v/v, flow rate 1.0 mL/min，λ= 254 nm, 25 ºC). Retention times: t_R(major) = 12.683 min, t_R(minor) = 10.962 min. ^{1}H NMR (600 MHz, $CDCl_3$) δ 8.43 (s, 1H), 7.62 (d, *J* = 8.4 Hz, 1H), 7.25 (d, *J* = 8.5 Hz, 1H), 4.85 (q, *J* = 6.5 Hz, 1H), 1.45 (d, *J* = 6.6 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 161.7, 147.2, 136.7, 130.5, 120.7, 69.0, 24.2.



2n

(*R*)-1-(6-chloropyridin-2-yl)ethan-1-ol (2n)

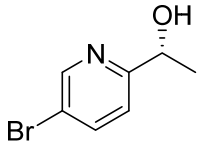
Colorless oil, 99% yield, 62 mg; 94% ee; $[\alpha]_D^{23}$ = +12.2 (c = 1.0, CH_2Cl_2). The ee was determined by chiral HPLC (Chiralpak IC, *n*-hexane/isopropanol 95:5 v/v, flow rate 1.0 mL/min，λ= 254 nm, 25 ºC). Retention times: t_R(major) = 10.863 min, t_R(minor) = 9.547 min. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.58 (t, *J* = 7.8 Hz, 1H), 7.20 (d, *J* = 7.7 Hz, 1H), 7.14 (d, *J* = 7.9 Hz, 1H), 4.80 (q, *J* = 6.6 Hz, 1H), 3.33 (s, 1H, *OH signal*), 1.42 (d, *J* = 6.6 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 164.8, 150.4, 139.5, 122.8, 118.2, 69.3, 24.1. HRMS (ESI) Calcd for C_7H_9ClNO $[M+H]^+$: 158.0367, Found: 158.0367.



2o

(*R*)-1-(3-bromopyridin-2-yl)ethan-1-ol (2o)[9]

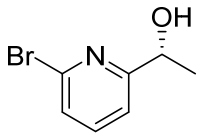
Colorless oil, 99% yield, 79 mg; 99% ee; $[\alpha]_D^{25}$ = +27.8 (c = 1.0, CH_2Cl_2). The ee was determined by chiral HPLC (Chiralpak ID, *n*-hexane/isopropanol 95:5 v/v, flow rate 1.0 mL/min，λ= 254 nm, 25 ºC). Retention times: t_R(major) = 10.315 min, t_R(minor) = 12.06 min. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.63–8.32 (m, 1H), 7.87–7.85 (d, *J* = 8.0, 1H), 7.15–7,12 (m, 1H), 5.15–5.10 (q, *J* = 6.4 Hz, 1H), 4.04 (s, 1H, *OH signal*), 1.47 (d, *J* = 6.4 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 161.0, 147.0, 140.9, 123.8, 118.6, 67.9, 23.4.



2p

(*R*)-1-(5-bromopyridin-2-yl)ethan-1-ol (2p)[6]

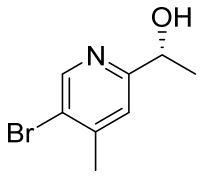
Colorless oil, 99% yield, 79 mg; 99% ee; $[\alpha]_D^{22}$ = +17.3 (c = 1.0, CH_2Cl_2). The ee was determined by chiral HPLC (Chiralpak ID, *n*-hexane/isopropanol 95:5 v/v, flow rate 1.0 mL/min，λ= 254 nm, 25 ºC). Retention times: t_R(major) = 13.685 min, t_R(minor) = 11.785 min. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.56 (d, *J* = 1.9 Hz, 1H), 7.81–7.79 (m, 1H), 7.26 (d, *J* = 8.4 Hz, 1H), 4.87 (q, *J* = 6.5 Hz, 1H), 3.79 (s, 1H, *OH signal*), 1.48 (d, *J* = 6.6 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 162.2, 149.3, 139.5, 121.2, 119.0, 69.1, 24.1.



2q

(*R*)-1-(6-bromopyridin-2-yl)ethan-1-ol (2q)[11]

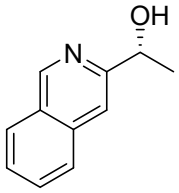
Colorless oil, 99% yield, 79 mg; 97% ee; $[\alpha]_D^{23}$ = +7.2 (c = 1.0, CH_2Cl_2). The ee was determined by chiral HPLC (Chiralpak IC, *n*-hexane/isopropanol 95:5 v/v, flow rate 1.0 mL/min，λ= 254 nm, 25 ºC). Retention times: t_R(major) = 10.73 min, t_R(minor) = 9.418 min. ^{1}H NMR (600 MHz, $CDCl_3$) δ 7.43 (t, *J* = 7.7 Hz, 1H), 7.25 (d, *J* = 7.8 Hz, 1H), 7.19 (d, *J* = 7.6 Hz, 1H), 4.75 (q, *J* = 6.6 Hz, 1H), 1.38 (d, *J* = 6.6 Hz, 3H). ^{13}C NMR (151 MHz, $CDCl_3$) δ 165.3, 141.0, 139.1, 126.5, 118.5, 69.1, 24.0.



2r

(*R*)-1-(5-bromo-4-methylpyridin-2-yl)ethan-1-ol (2r)

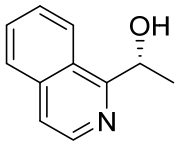
Colorless oil, 99% yield, 85 mg; >99% ee; $[\alpha]_D^{23}$ = +22.6 (c = 1.0, CH_2Cl_2). The ee was determined by chiral HPLC (Chiralpak ID, *n*-hexane/isopropanol 95:5 v/v, flow rate 1.0 mL/min，λ= 254 nm, 25 ºC). Retention times: t_R = 17.142 min. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.44 (s, 1H), 7.13 (s, 1H), 4.75 (q, *J* = 6.5 Hz, 1H), 3.60 (s, 1H, *OH signal*), 2.33 (s, 3H), 1.40 (d, *J* = 6.6 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 162.3, 149.8, 147.7, 122.0, 121.8, 68.9, 24.2, 22.4. HRMS (ESI) Calcd for $C_8H_{11}BrNO$ $[M+H]^+$: 216.0019, Found: 216.0019.



2s

(*R*)-1-(isoquinolin-3-yl)ethan-1-ol (2s)

Colorless oil, 99% yield, 68.3 mg; >99% ee; $[\alpha]_D^{25}$ = +29.3 (c = 1.0, CH_2Cl_2). The ee was determined by chiral HPLC (Chiralpak ID, *n*-hexane/isopropanol 95:5 v/v, flow rate 1.0 mL/min，λ= 254 nm, 25 ºC). Retention times: t_R = 40.58 min. ^{1}H NMR (600 MHz, $CDCl_3$) δ 9.14 (s, 1H), 7.89 (d, *J* = 7.5 Hz, 1H), 7.75 (d, *J* = 7.7 Hz, 1H), 7.64–7.62 (m, 2H), 7.52 (t, *J* = 6.8 Hz, 1H), 5.07 (d, *J* = 6.0 Hz, 1H), 4.38 (s, 1H, *OH signal*), 1.60 (d, *J* = 5.6 Hz, 3H). ^{13}C NMR (151 MHz, $CDCl_3$) δ 157.0, 151.5, 136.4, 130.5, 127.7, 127.5, 126.8, 126.5, 115.5, 69.5, 24.1. HRMS (ESI) Calcd for $C_{11}H_{12}NO$ $[M+H]^+$: 174.0913, Found: 174.0913.



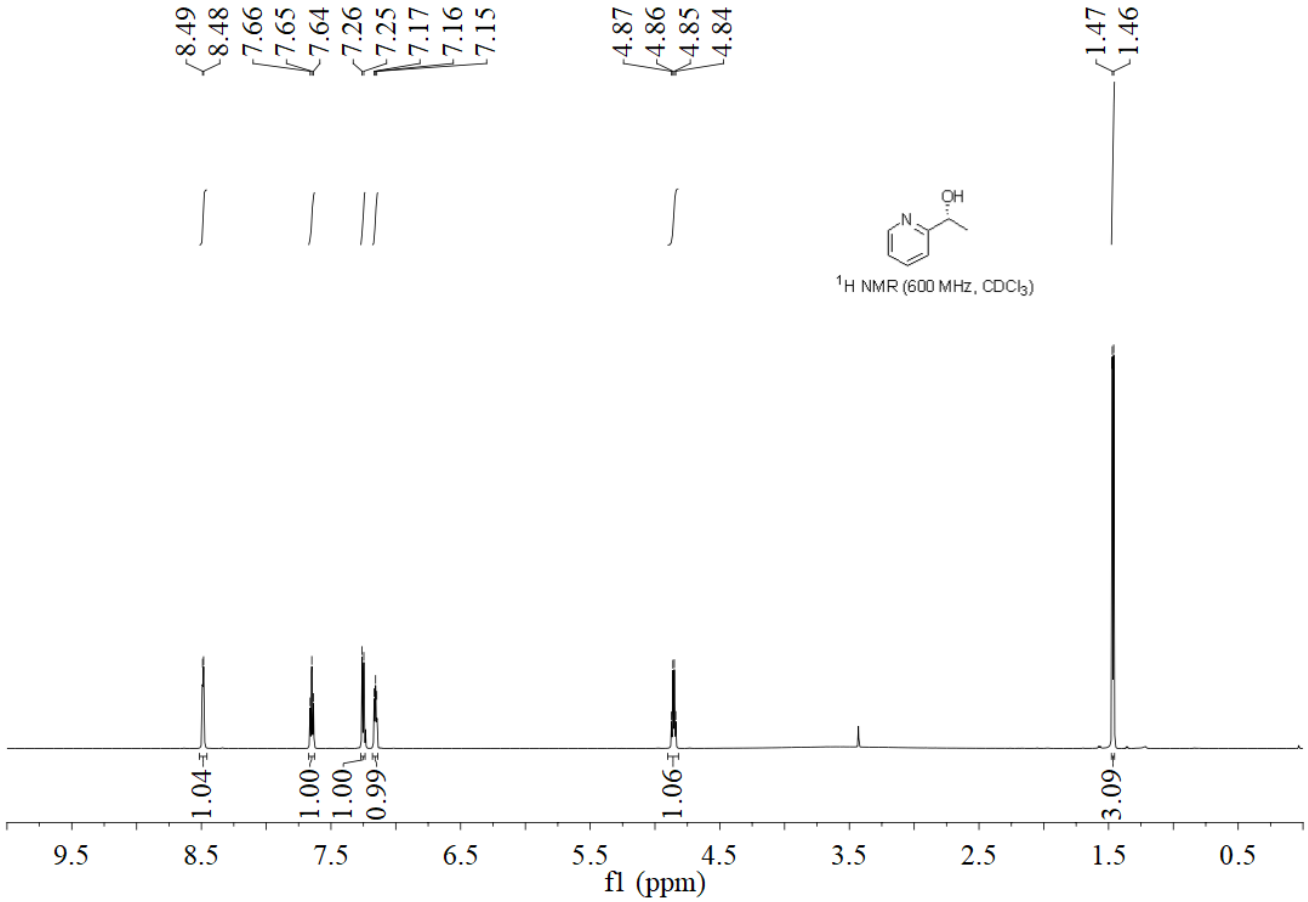
2t

(*R*)-1-(isoquinolin-1-yl)ethan-1-ol (2t)[9]

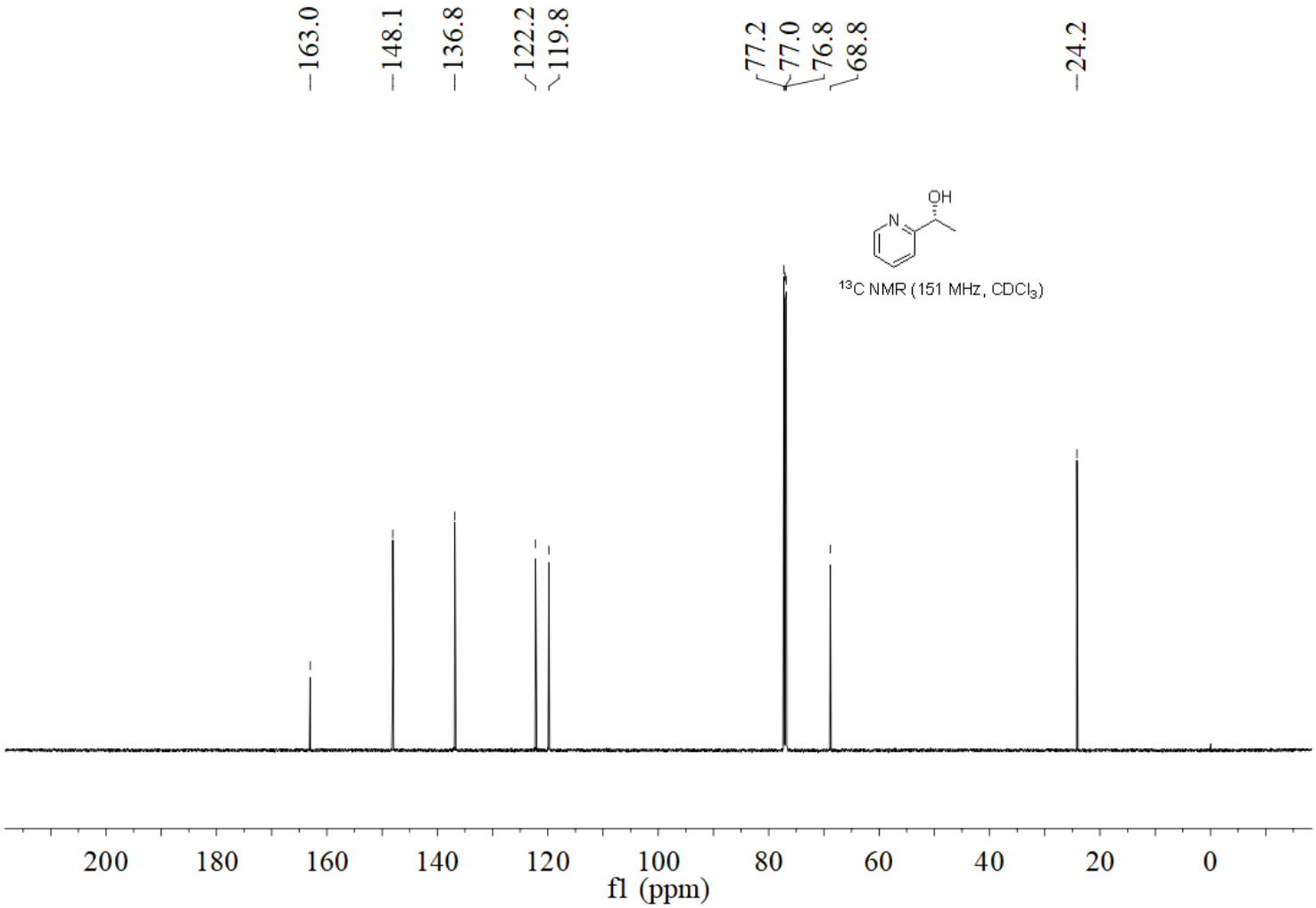
Colorless oil, 99% yield, 68.5 mg; >99% ee; $[\alpha]_D^{25}$ = +119.0 (c = 1.0, CH_2Cl_2). The ee was determined by chiral HPLC (Chiralpak AD-H, *n*-hexane/isopropanol 95:5 v/v, flow rate 1.0 mL/min，λ= 254 nm, 25 ºC). Retention times: t_R = 18.361 min. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.34 (d, *J* = 5.7 Hz, 1H), 7.94 (d, *J* = 8.4 Hz, 1H), 7.75 (d, *J* = 8.2 Hz, 1H), 7.59 (t, *J* = 7.5 Hz, 1H), 7.53–7.47 (m, 2H), 5.49 (q, *J* = 6.5 Hz, 1H), 1.50 (d, *J* = 6.5 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 162.2, 140.4, 136.5, 130.3, 127.5, 127.3, 124.6, 124.2, 120.5, 66.0, 25.4.

4. Copies of NMR spectra

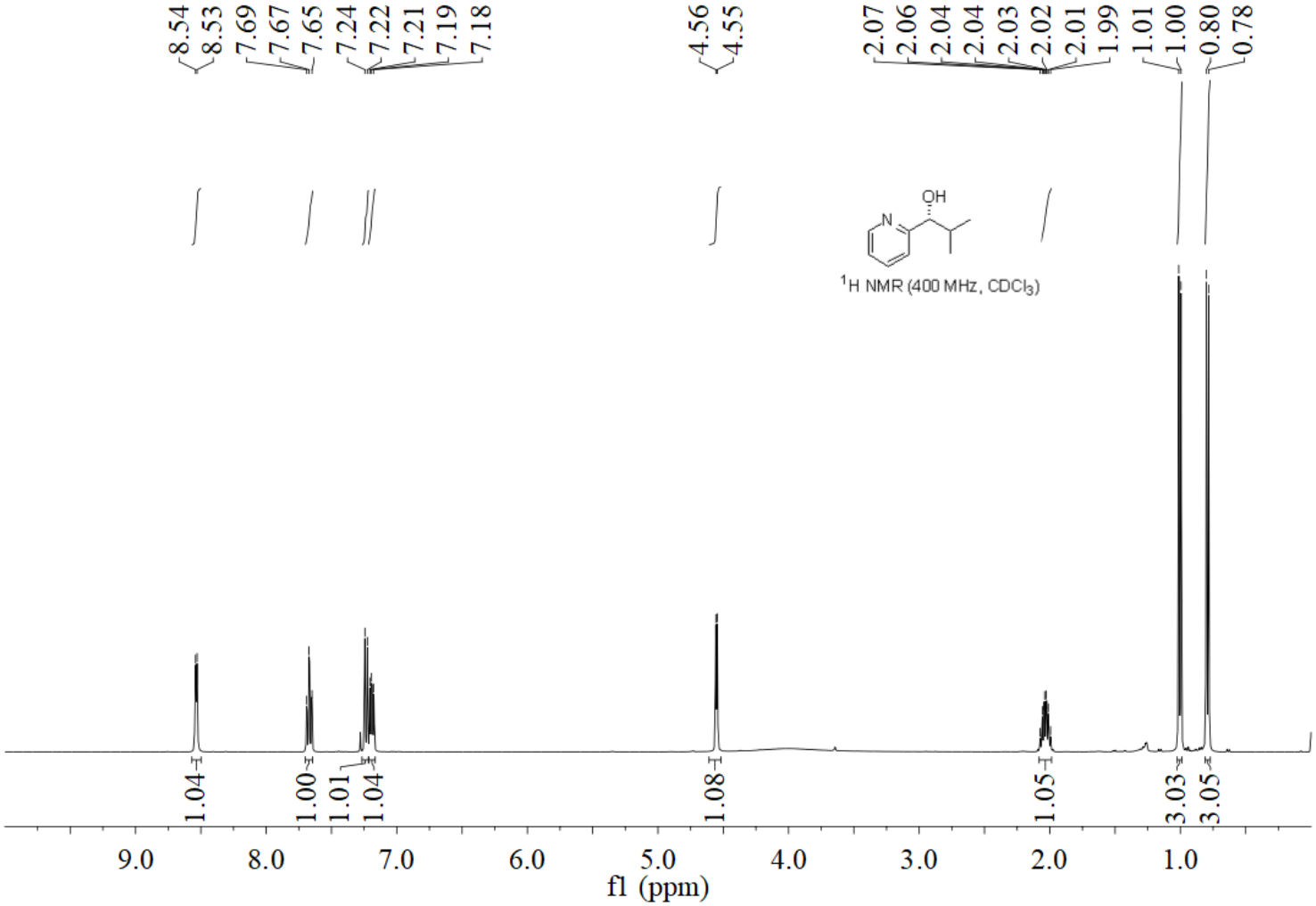
^{1}H NMR Spectrum of (*R*)-1-(pyridin-2-yl)ethan-1-ol (**2a**) (600 MHz, $CDCl_3$)



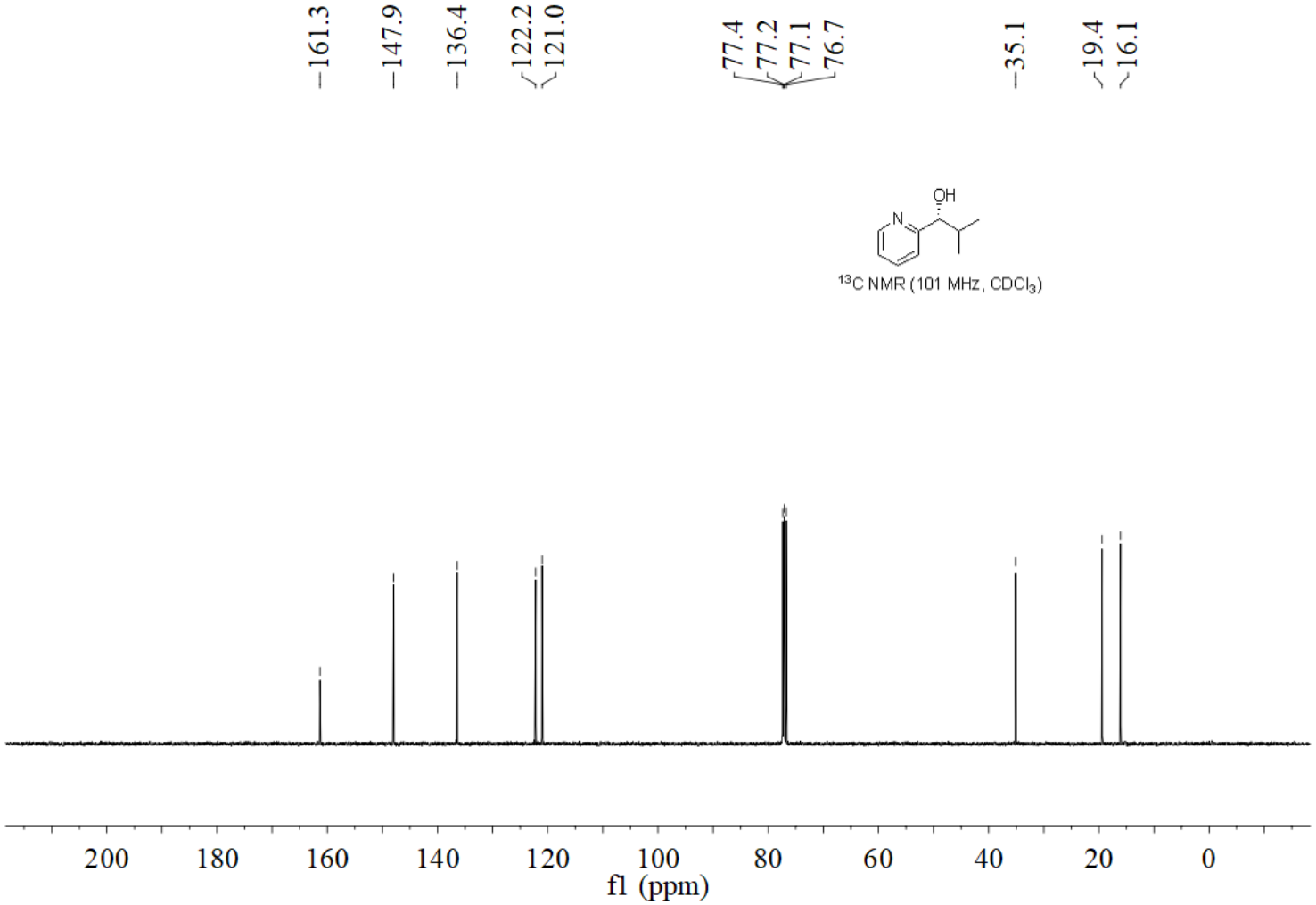
^{13}C NMR Spectrum of (*R*)-1-(pyridin-2-yl)ethan-1-ol (**2a**) (151 MHz, $CDCl_3$)



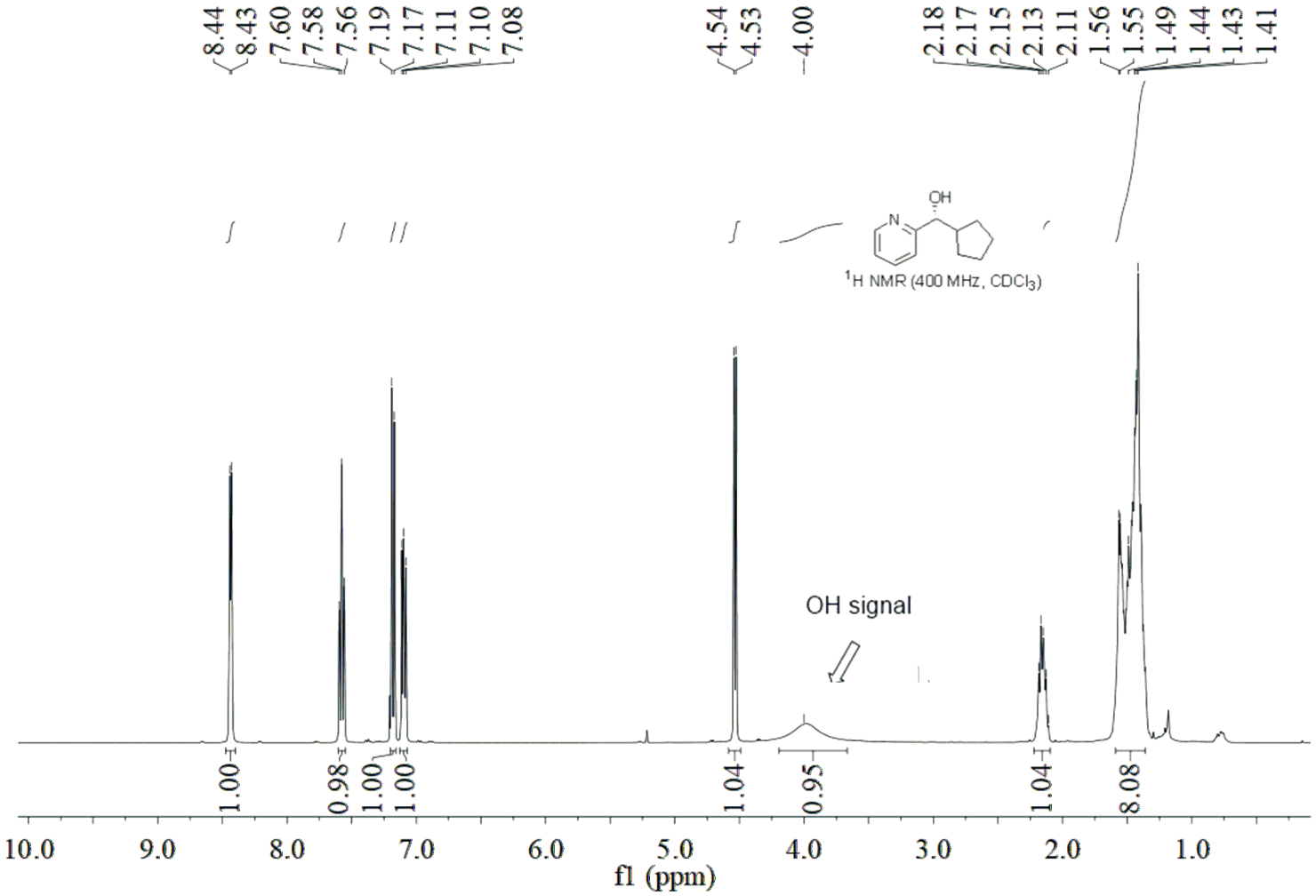
^{1}H NMR Spectrum of (*R*)-2-methyl-1-(pyridin-2-yl)propan-1-ol (**2b**) (400 MHz, $CDCl_3$)



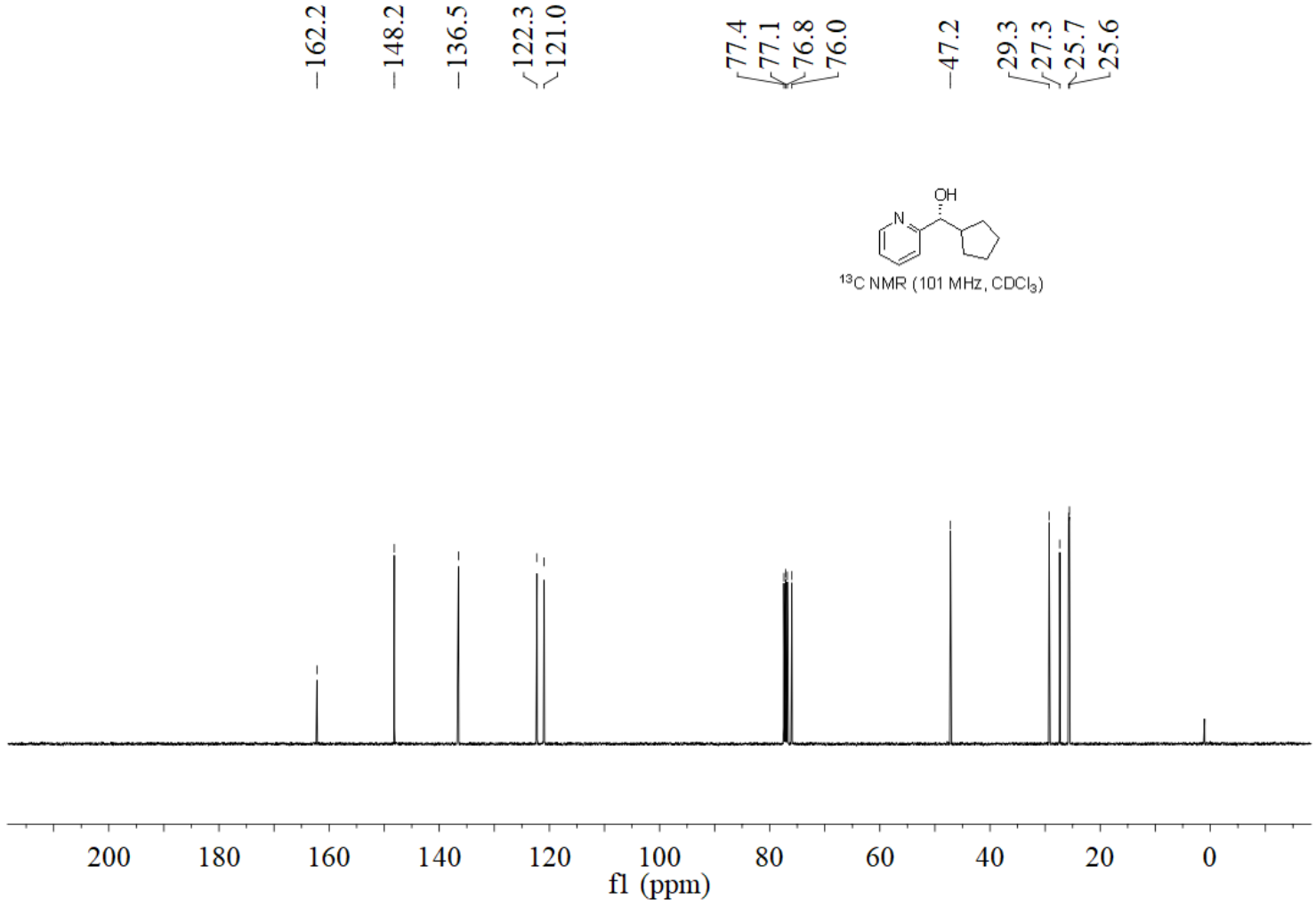
^{13}C NMR Spectrum of (*R*)-2-methyl-1-(pyridin-2-yl)propan-1-ol (**2b**) (101 MHz, $CDCl_3$)



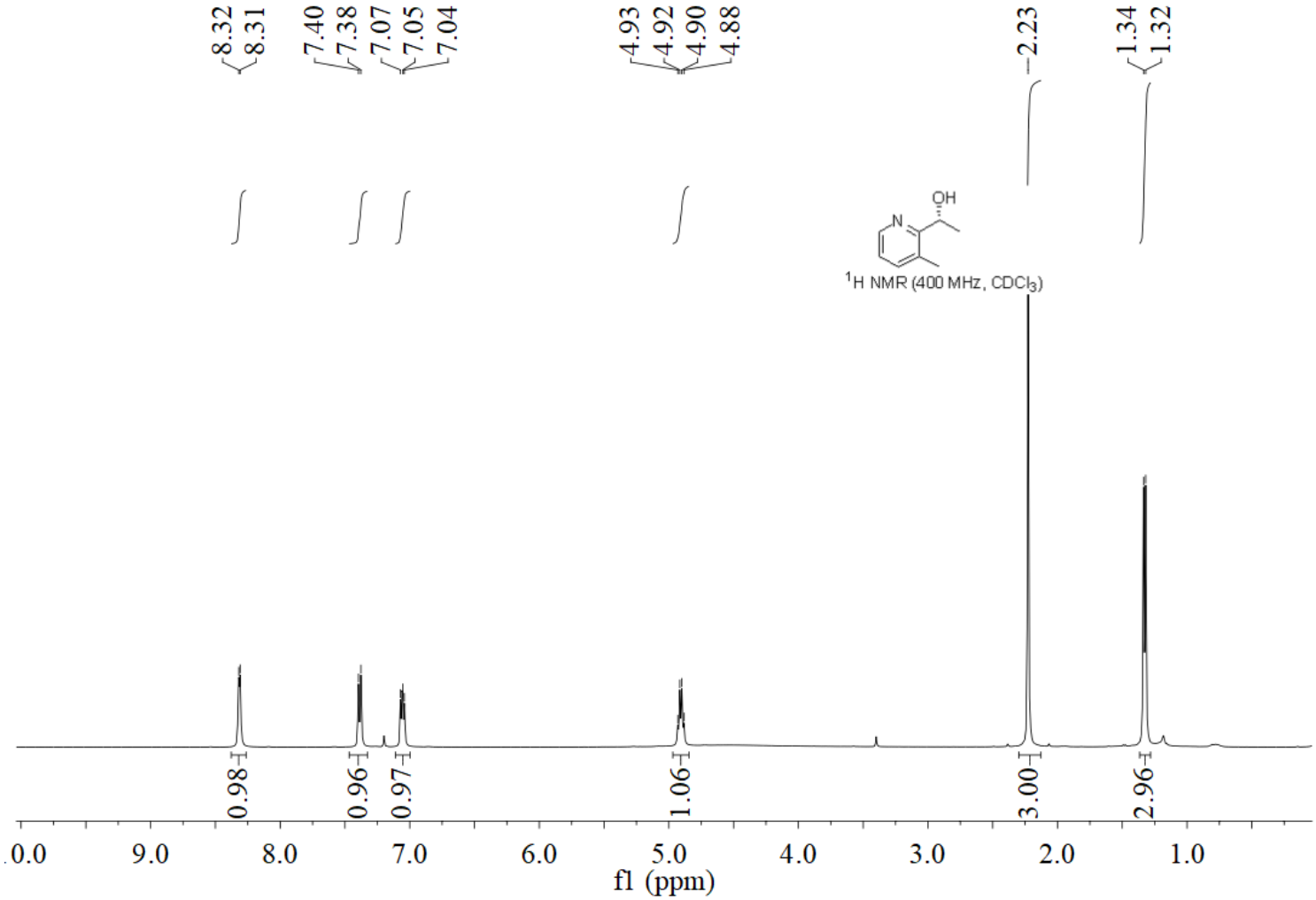
^{1}H NMR Spectrum of (*R*)-cyclopentyl(pyridin-2-yl)methanol (**2c**) (400 MHz, $CDCl_3$)



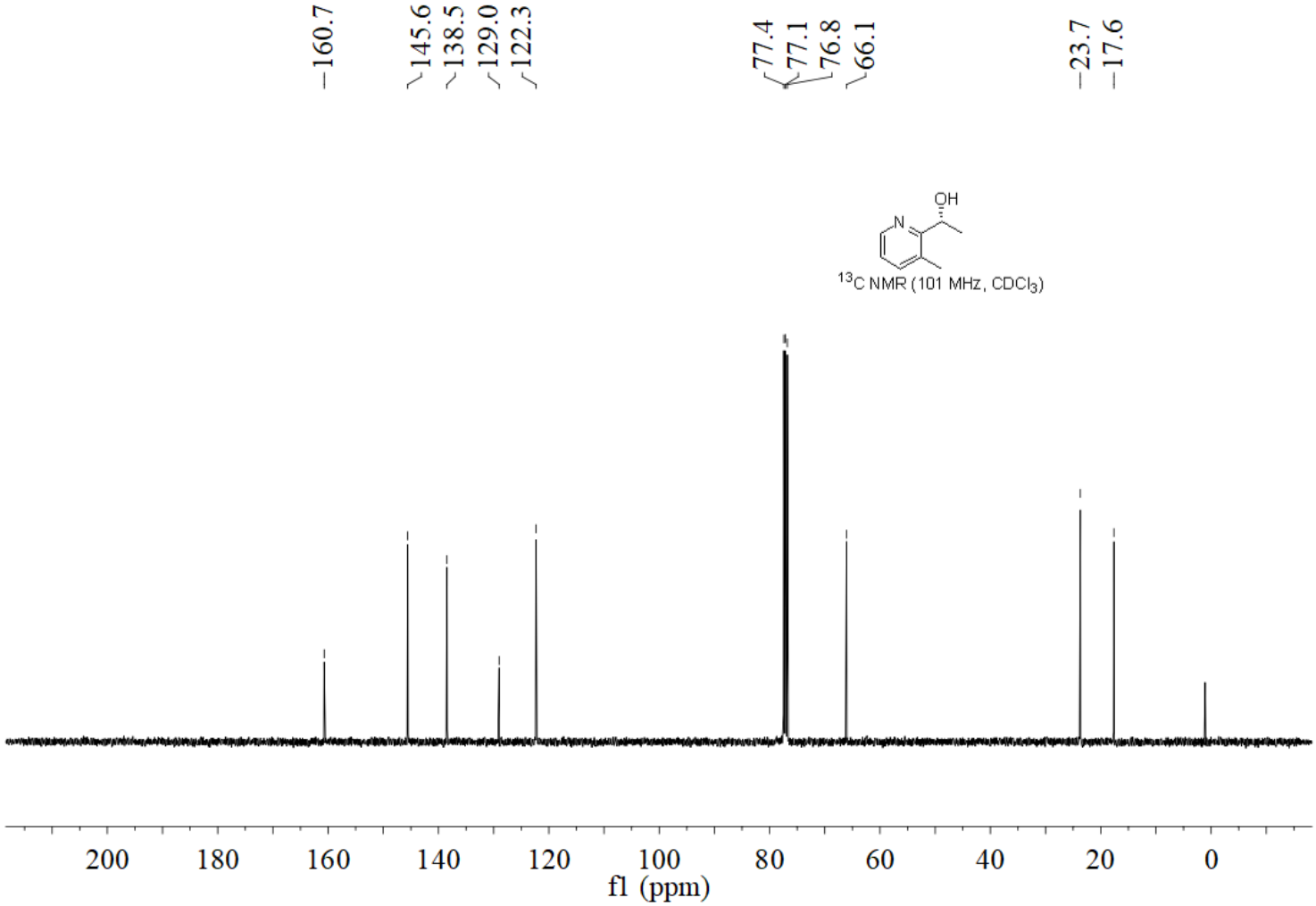
^{13}C NMR Spectrum of (*R*)-cyclopentyl(pyridin-2-yl)methanol (**2c**) (101 MHz, $CDCl_3$)



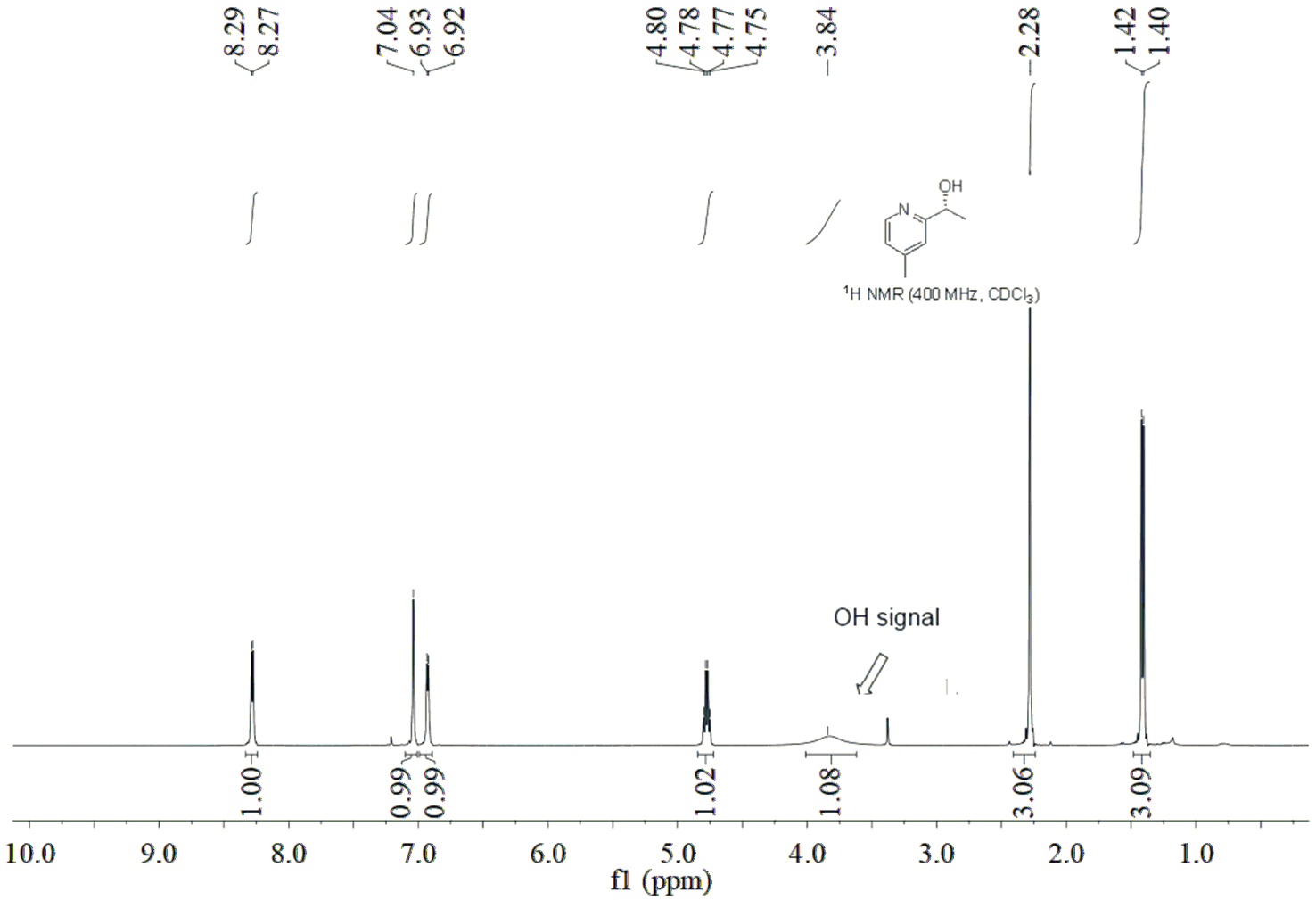
^{1}H NMR Spectrum of (*R*)-1-(3-methylpyridin-2-yl)ethan-1-ol (**2d**) (400 MHz, $CDCl_3$)



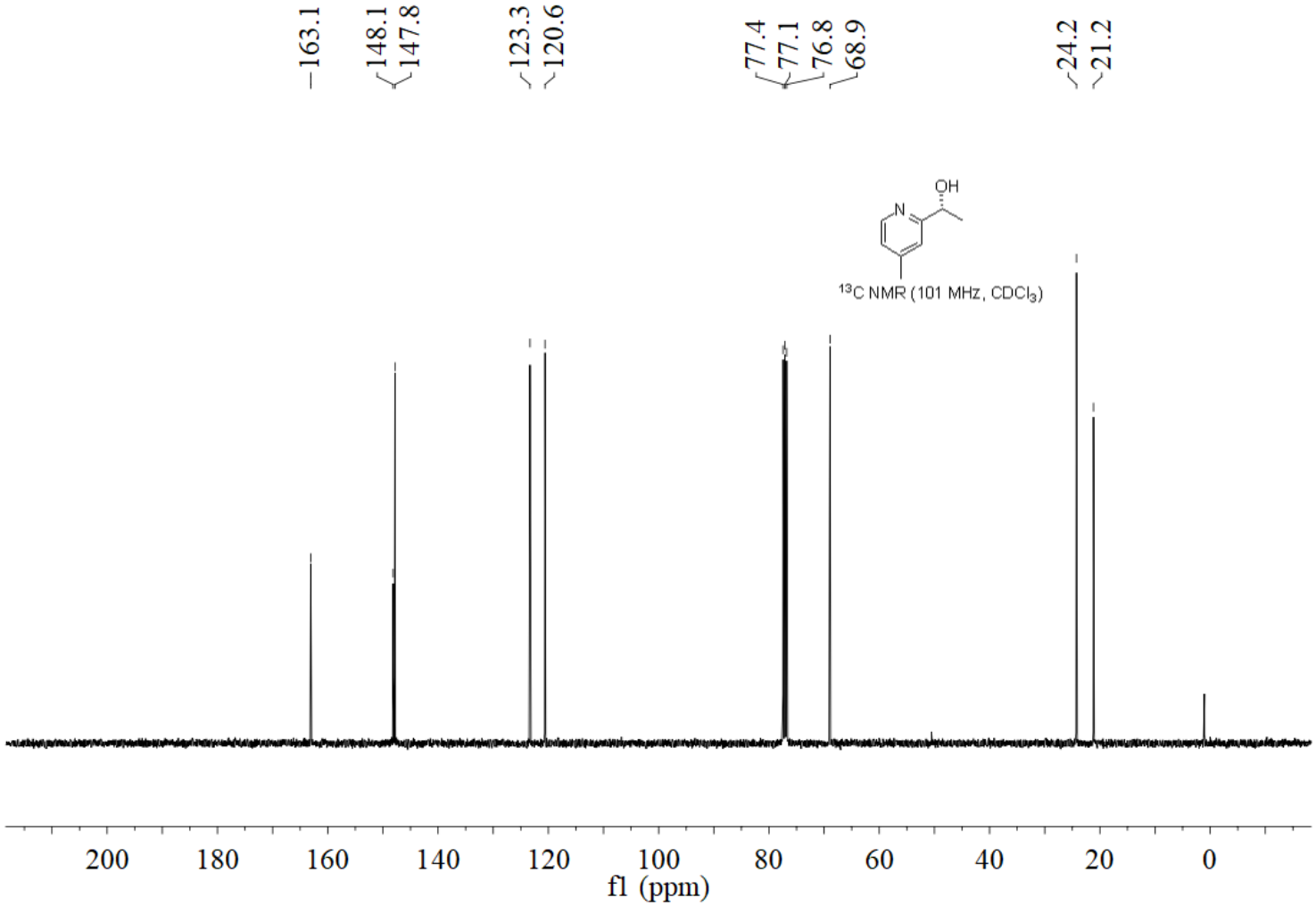
^{13}C NMR Spectrum of (*R*)-1-(3-methylpyridin-2-yl)ethan-1-ol (**2d**) (101 MHz, $CDCl_3$)



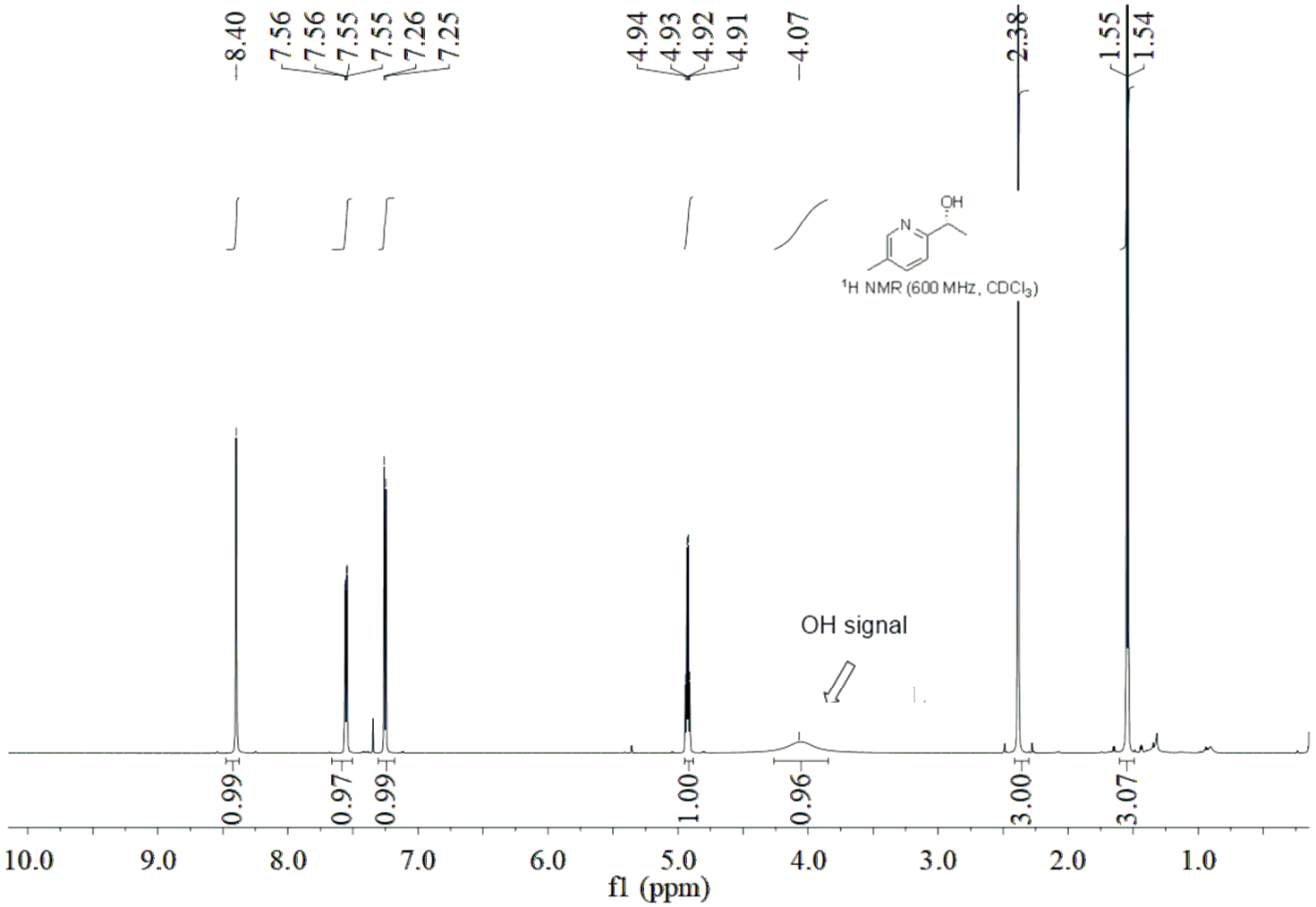
^{1}H NMR Spectrum of (*R*)-1-(4-methylpyridin-2-yl)ethan-1-ol (**2e**) (400 MHz, $CDCl_3$)



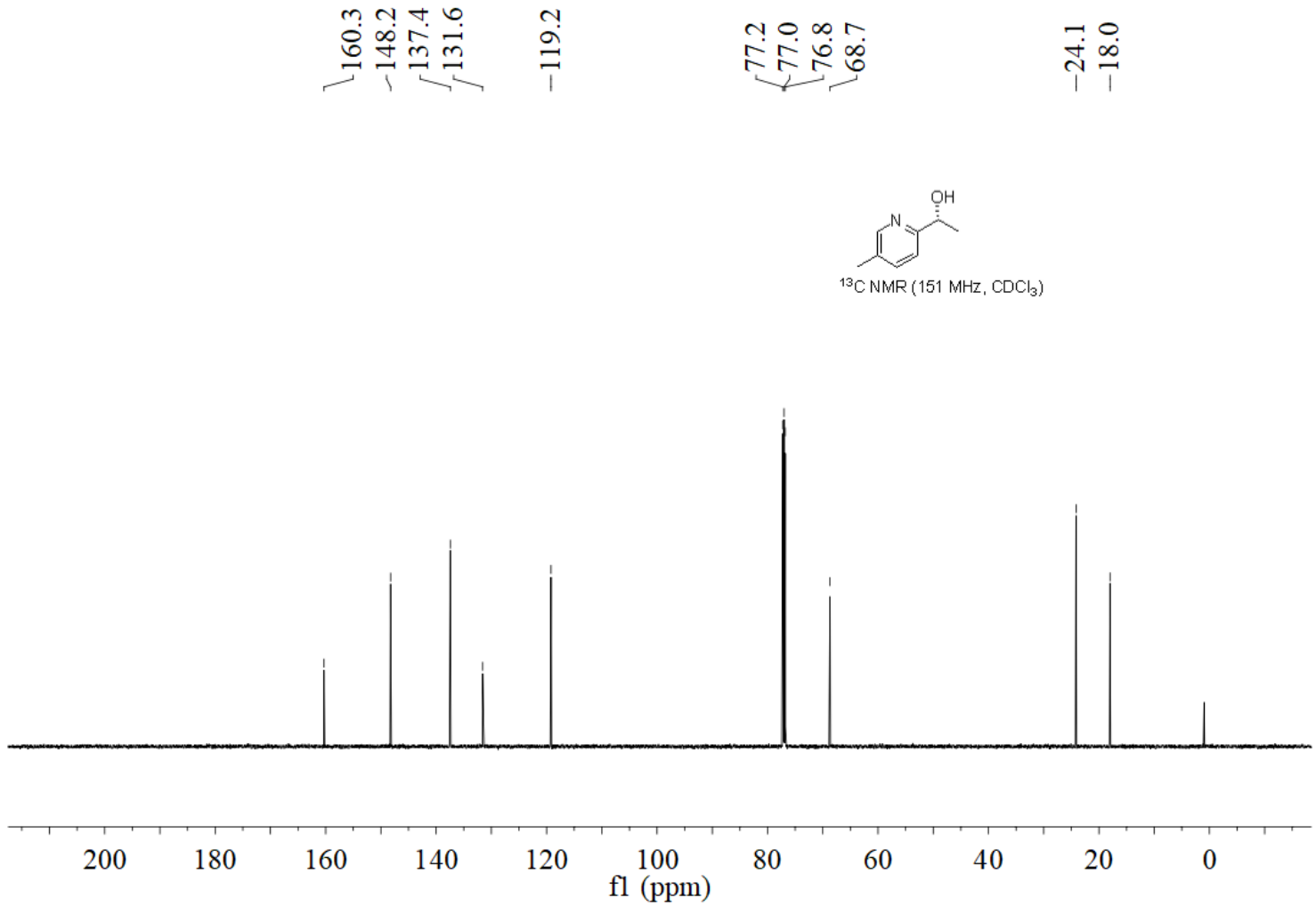
^{13}C NMR Spectrum of (*R*)-1-(4-methylpyridin-2-yl)ethan-1-ol (**2e**) (101 MHz, $CDCl_3$)



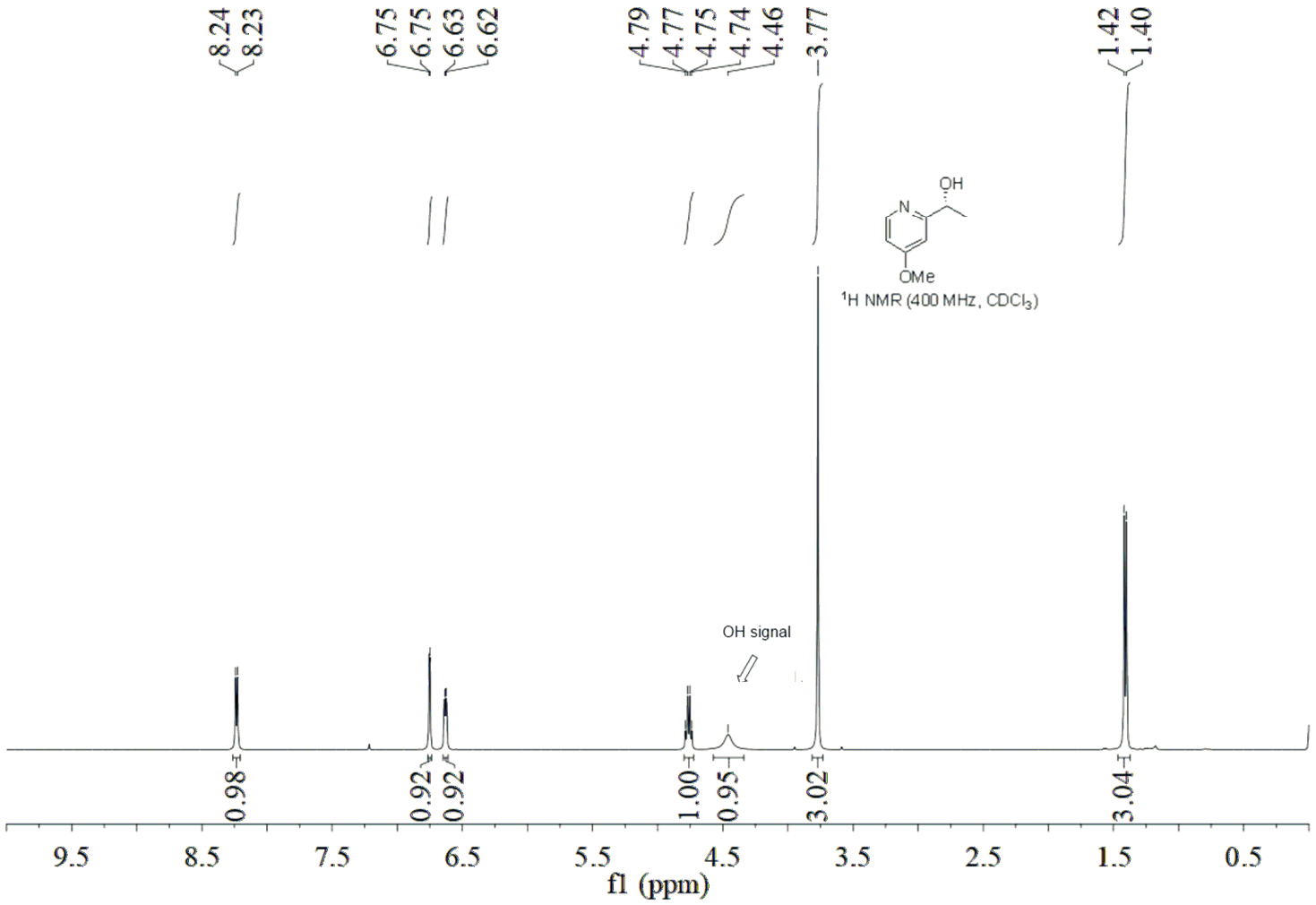
^{1}H NMR Spectrum of (*R*)-1-(5-methylpyridin-2-yl)ethan-1-ol (**2f**) (600 MHz, $CDCl_3$)



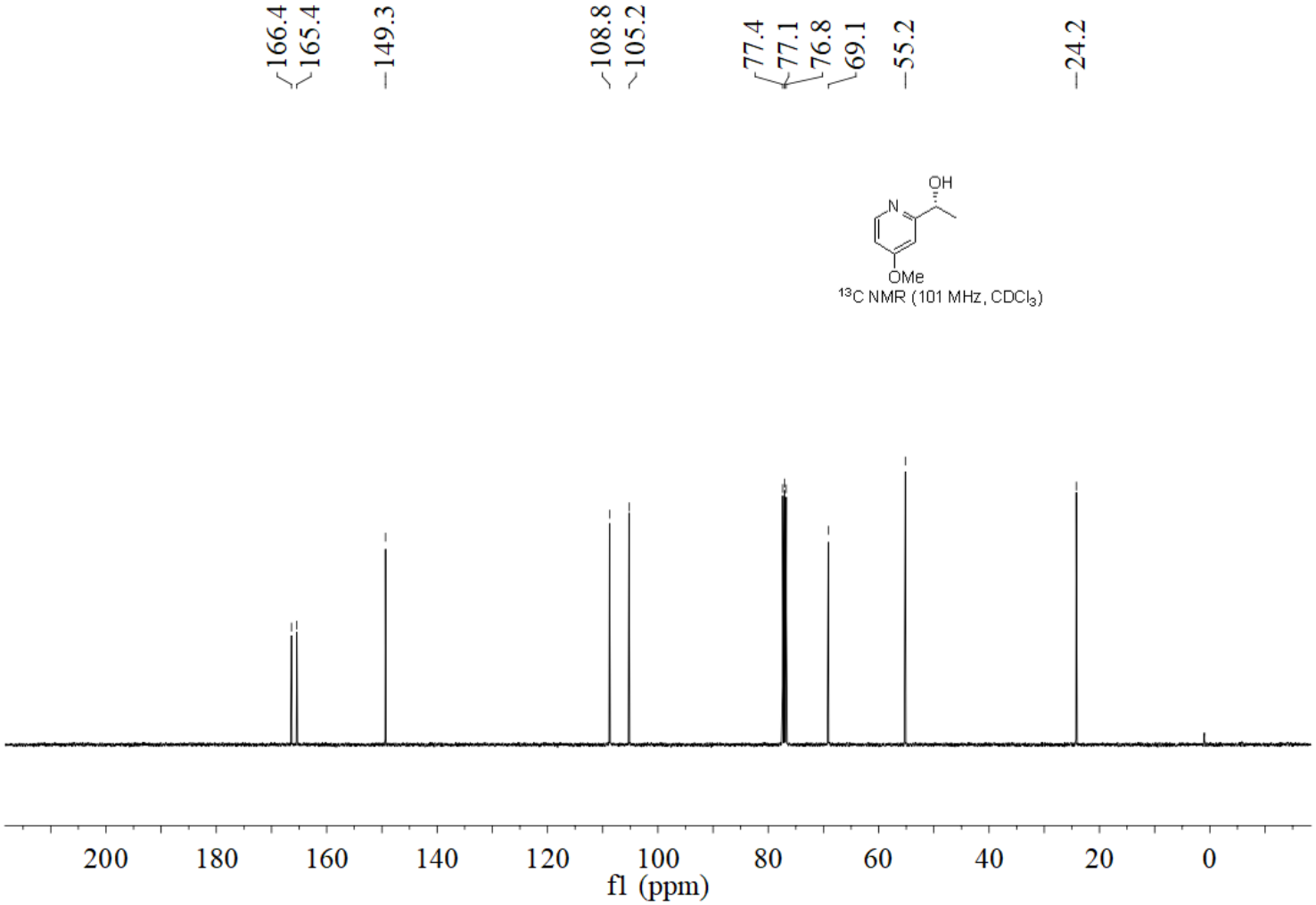
^{13}C NMR Spectrum of (*R*)-1-(5-methylpyridin-2-yl)ethan-1-ol (**2f**) (151 MHz, $CDCl_3$)



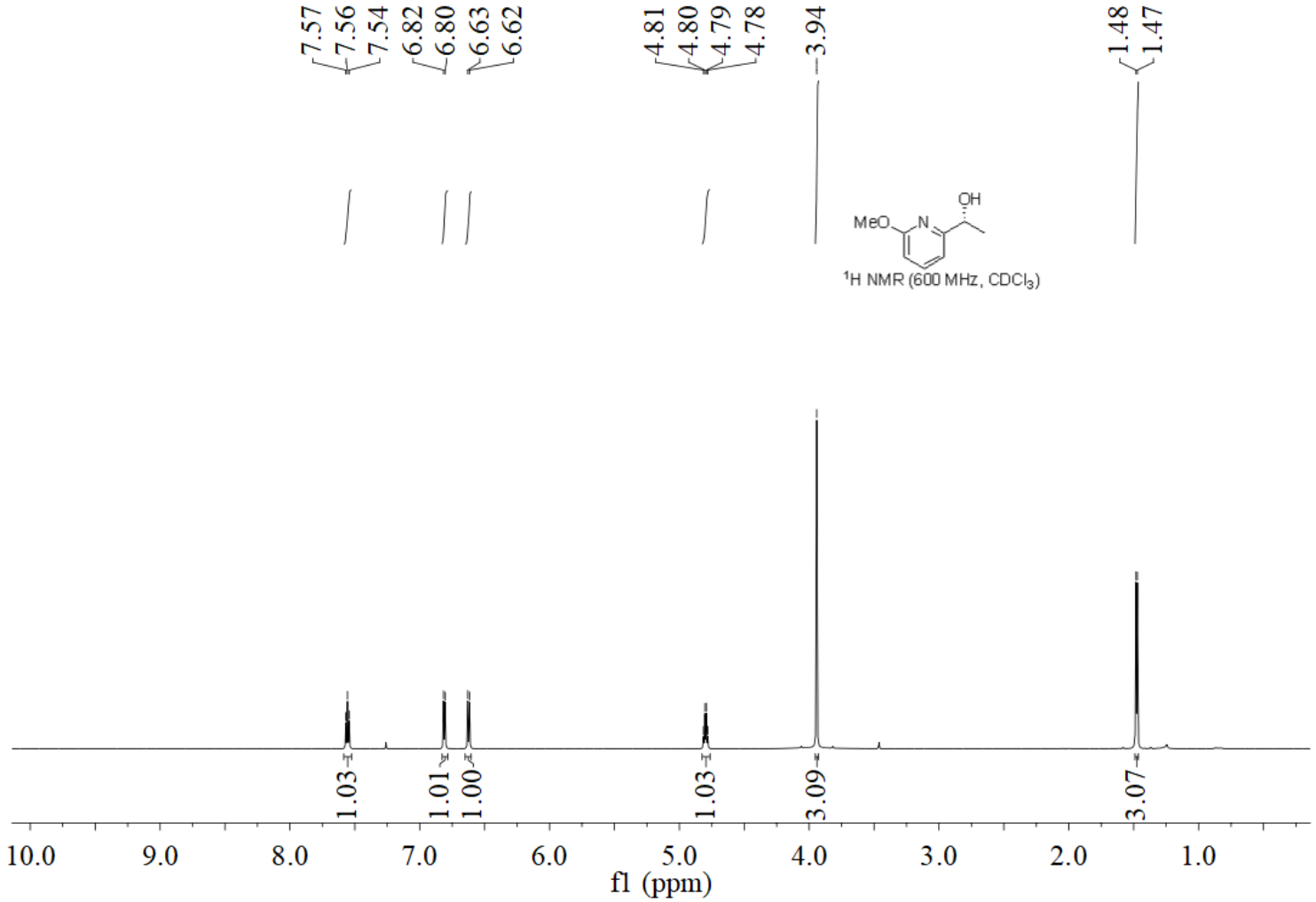
^{1}H NMR Spectrum of (*R*)-1-(4-methoxypyridin-2-yl)ethan-1-ol (**2g**) (400 MHz, $CDCl_3$)



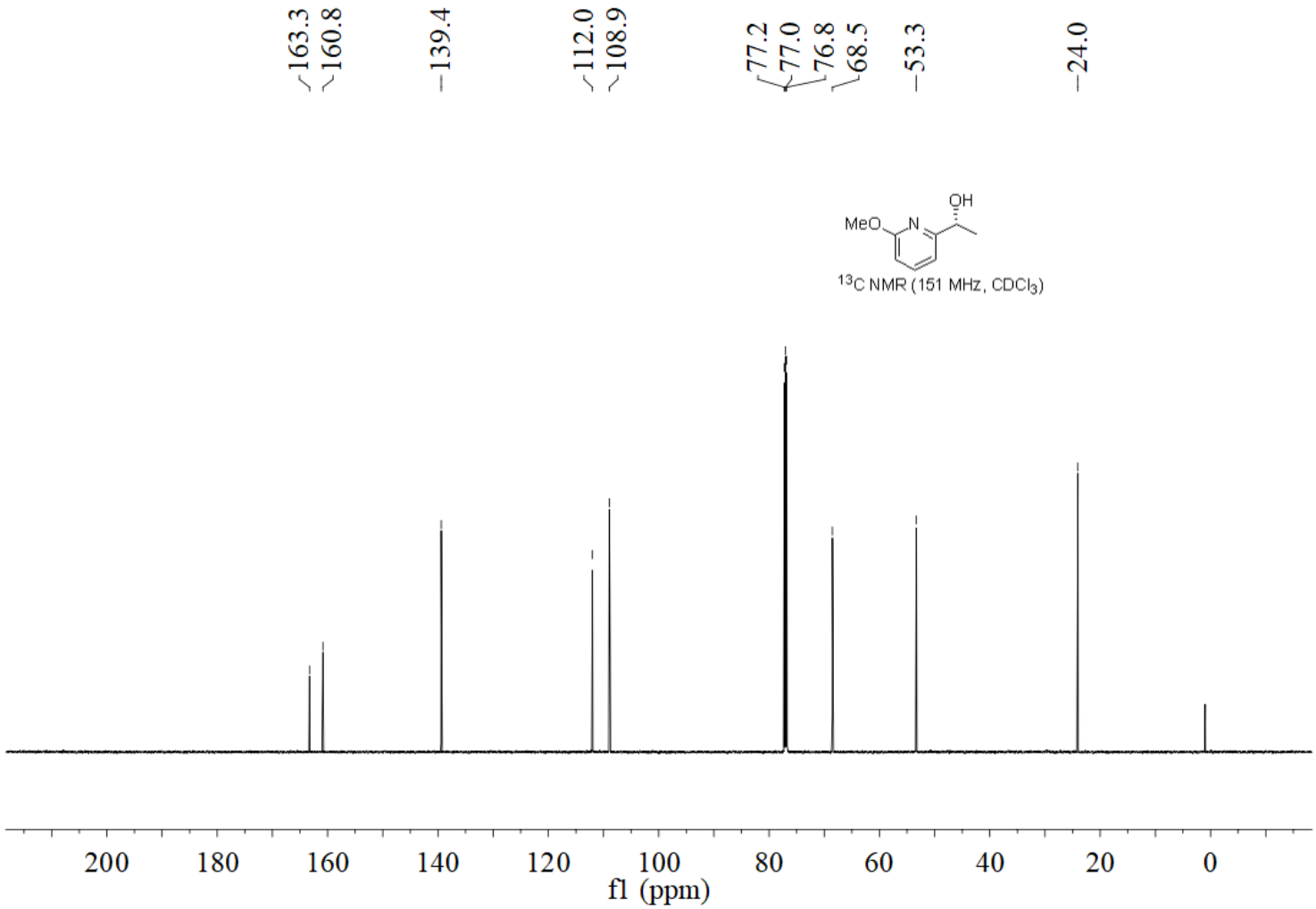
^{13}C NMR Spectrum of (*R*)-1-(4-methoxypyridin-2-yl)ethan-1-ol (**2g**) (101 MHz, $CDCl_3$)



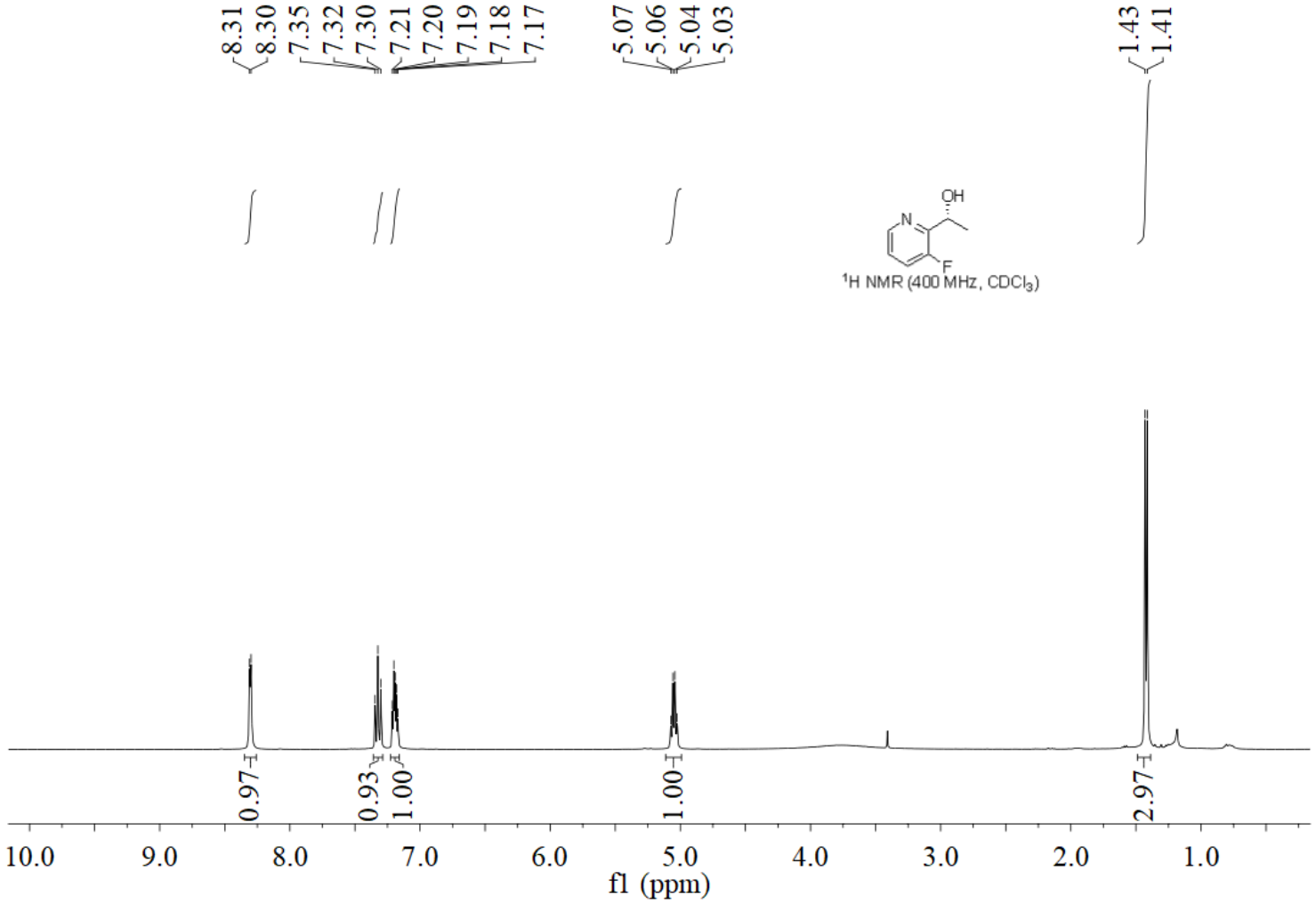
^{1}H NMR Spectrum of (*R*)-1-(6-methoxypyridin-2-yl)ethan-1-ol (**2h**) (600 MHz, $CDCl_3$)



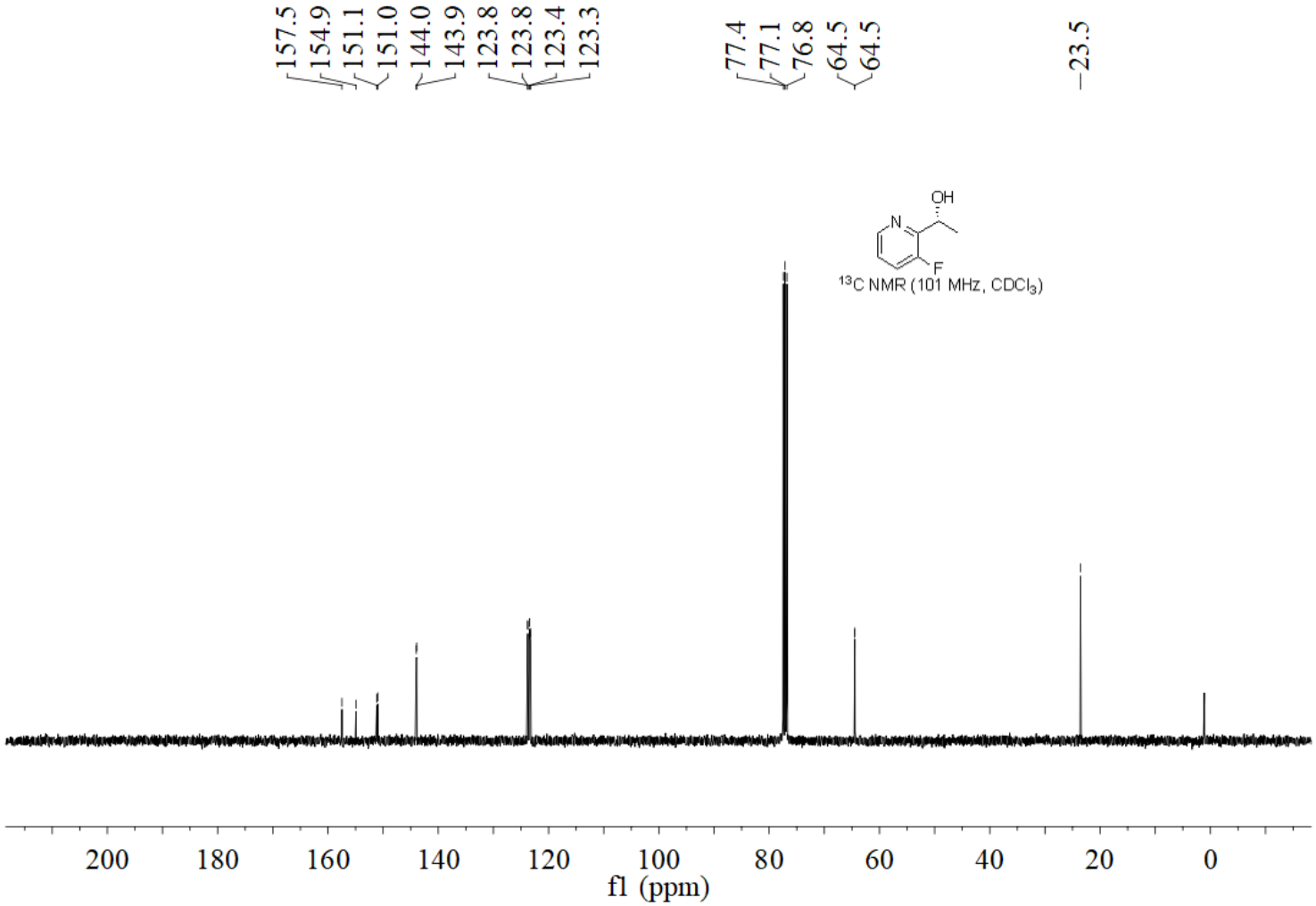
^{13}C NMR Spectrum of (*R*)-1-(6-methoxypyridin-2-yl)ethan-1-ol (**2h**) (151 MHz, $CDCl_3$)



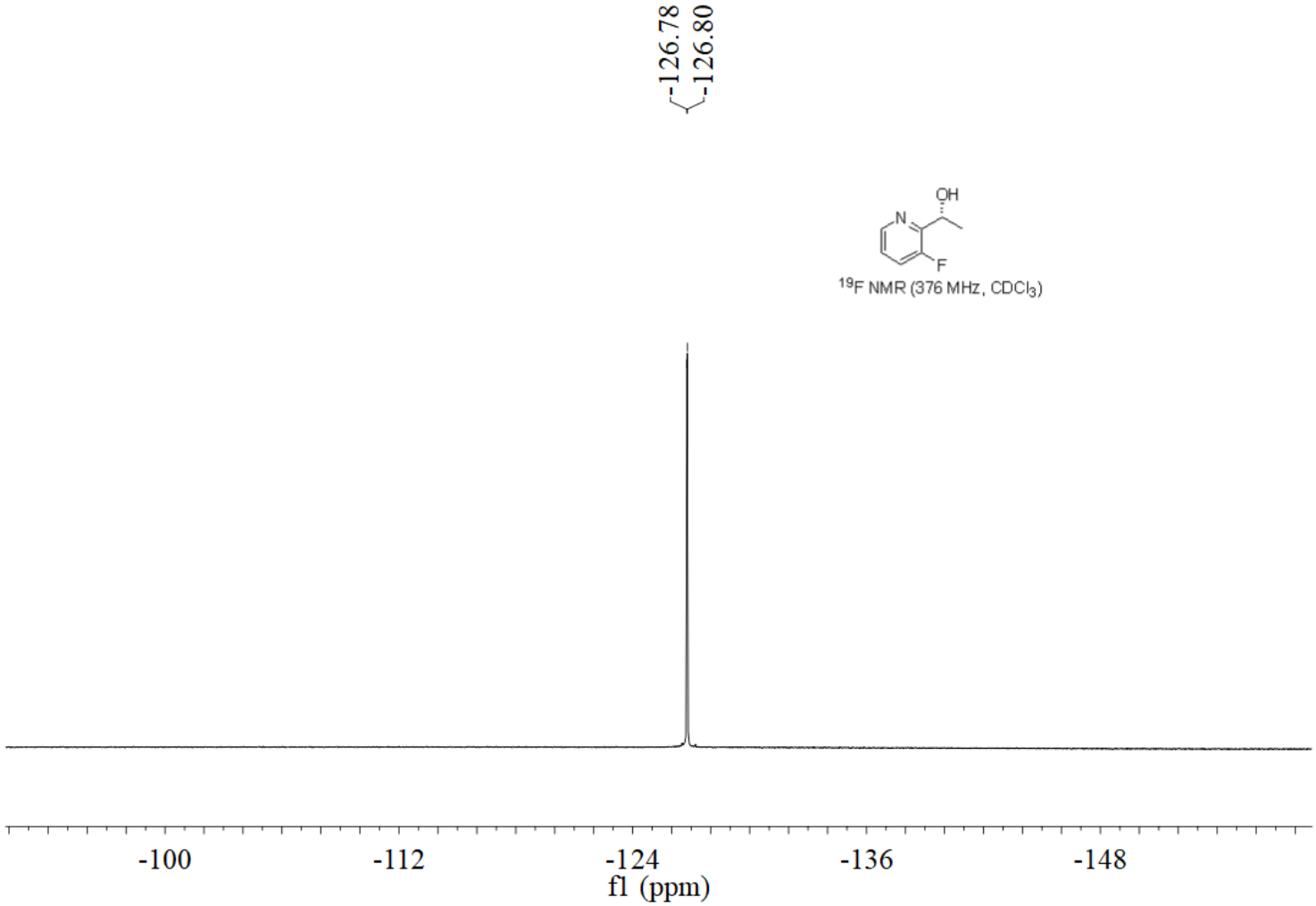
^{1}H NMR Spectrum of (*R*)-1-(3-fluoropyridin-2-yl)ethan-1-ol (**2i**) (400 MHz, $CDCl_3$)



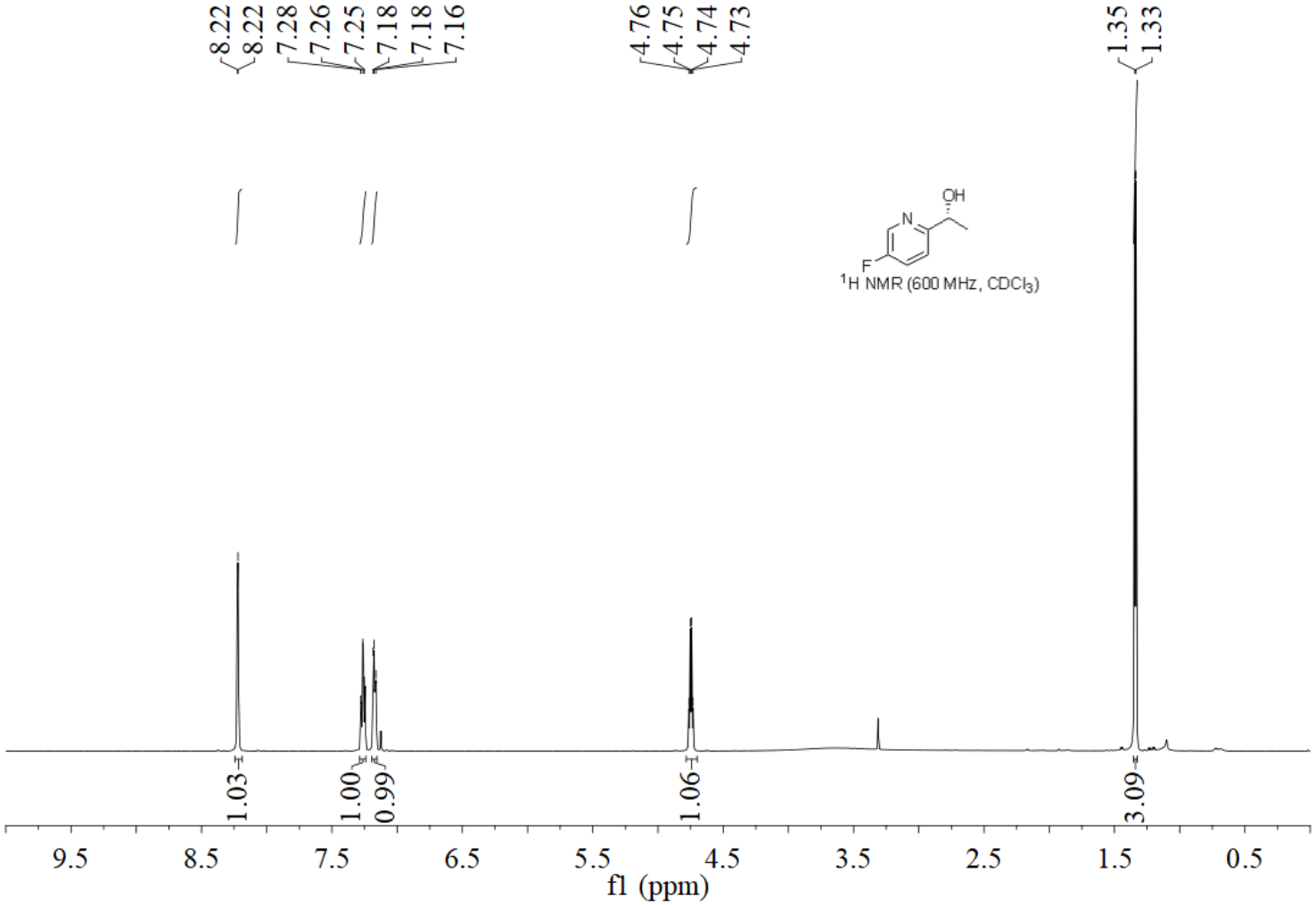
^{13}C NMR Spectrum of (*R*)-1-(3-fluoropyridin-2-yl)ethan-1-ol (**2i**) (101 MHz, $CDCl_3$)



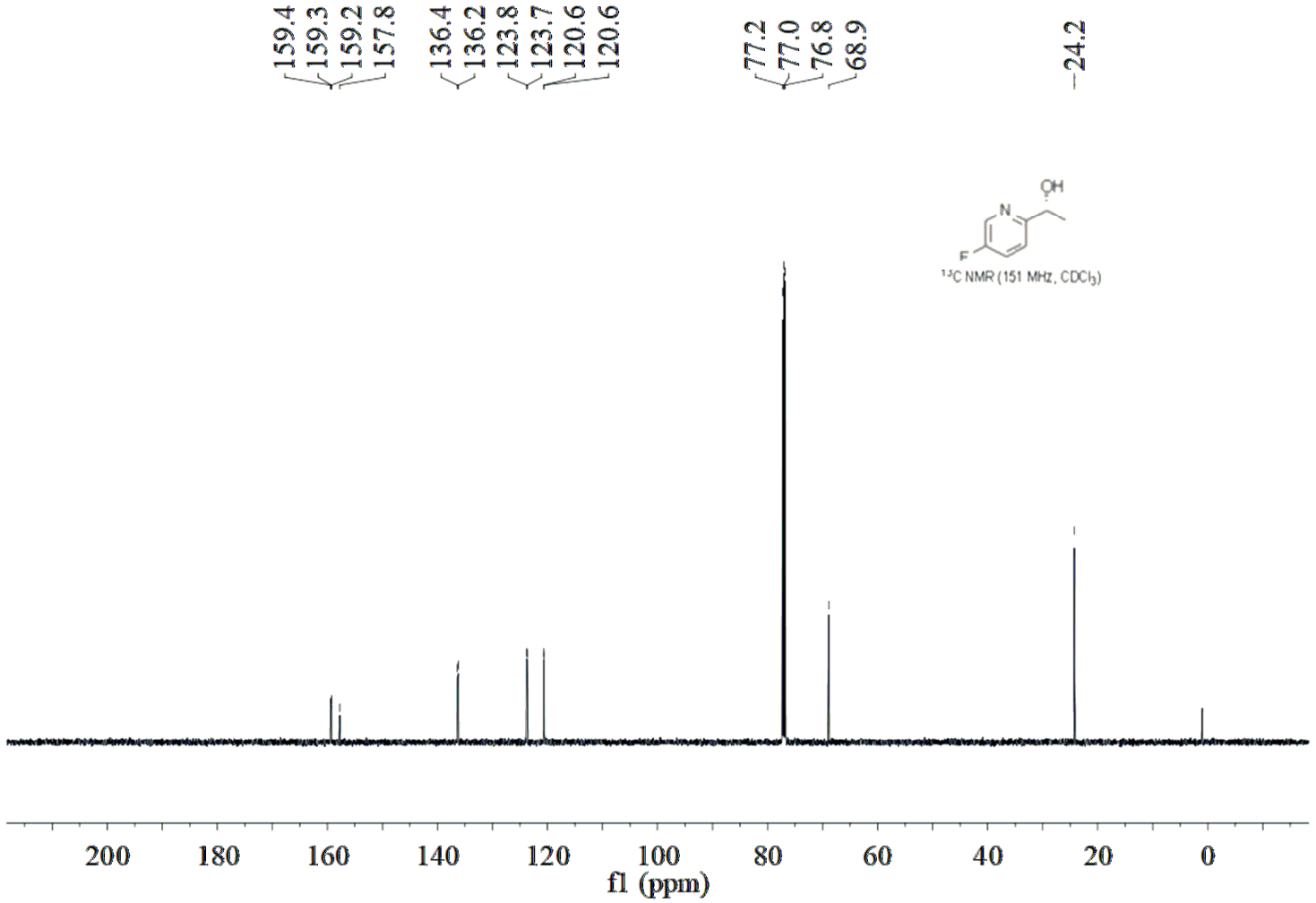
^{19}F NMR Spectrum of (*R*)-1-(3-fluoropyridin-2-yl)ethan-1-ol (**2i**) (376 MHz, $CDCl_3$)



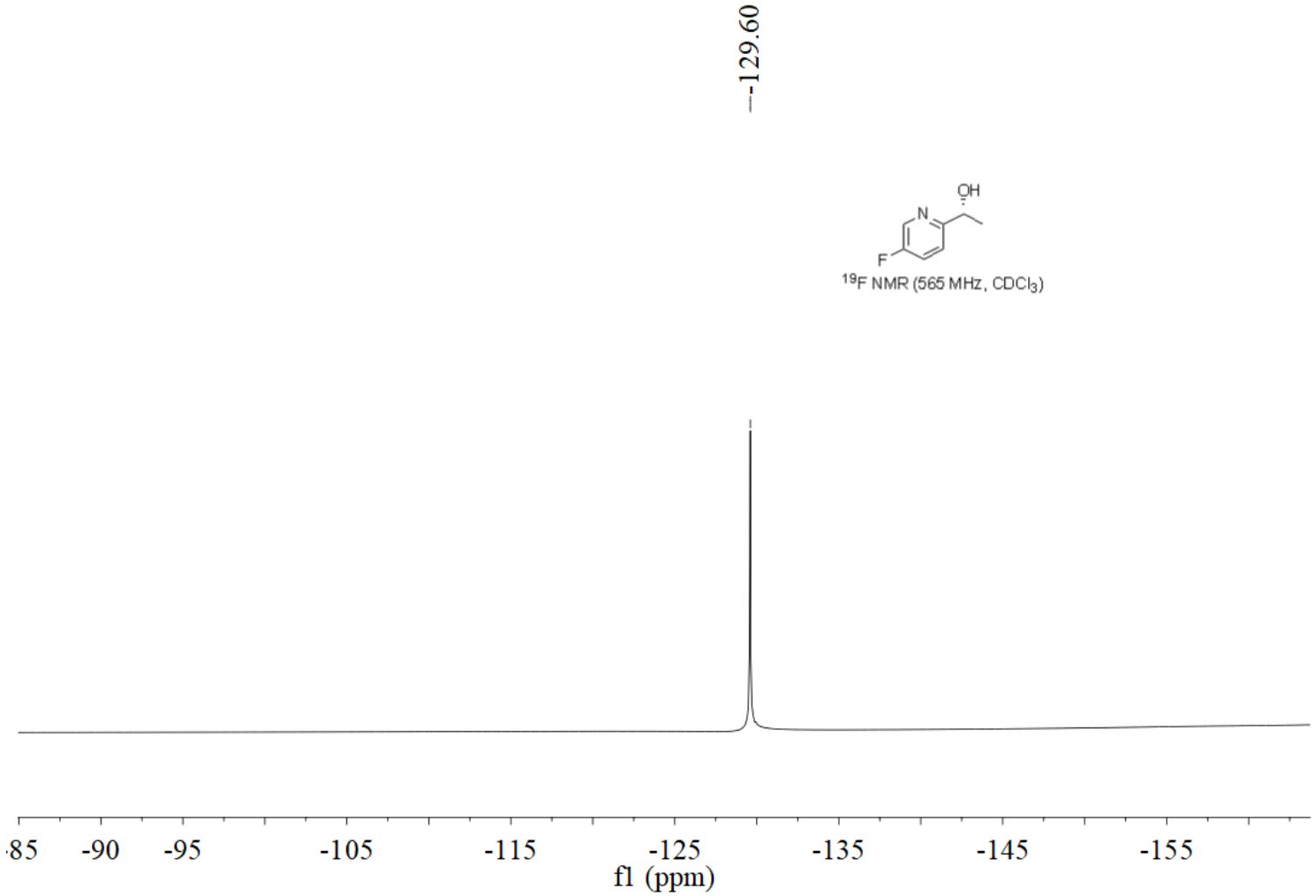
^{1}H NMR Spectrum of (*R*)-1-(5-fluoropyridin-2-yl)ethan-1-ol (**2j**) (600 MHz, $CDCl_3$)



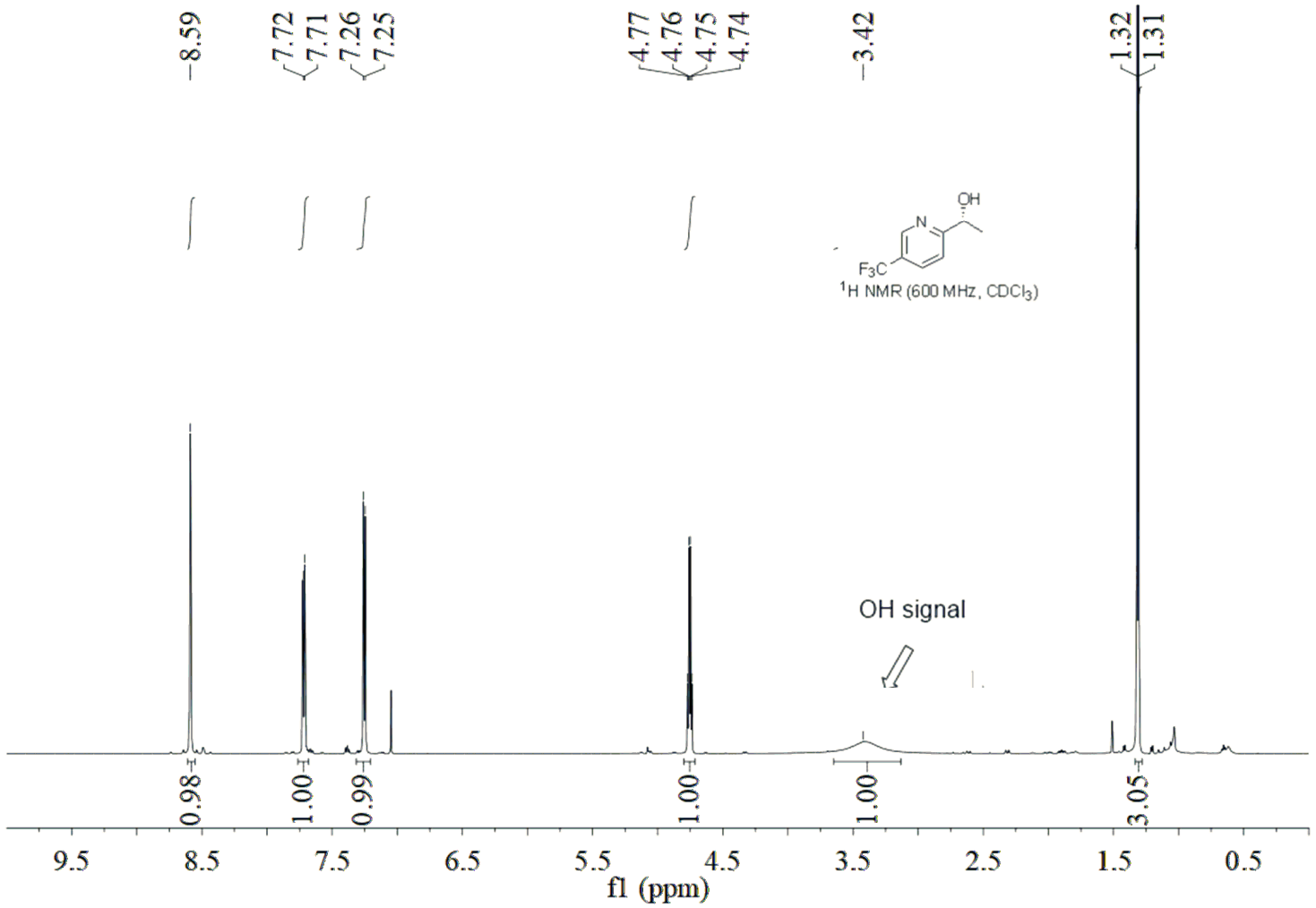
^{13}C NMR Spectrum of (*R*)-1-(5-fluoropyridin-2-yl)ethan-1-ol (**2j**) (151 MHz, $CDCl_3$)



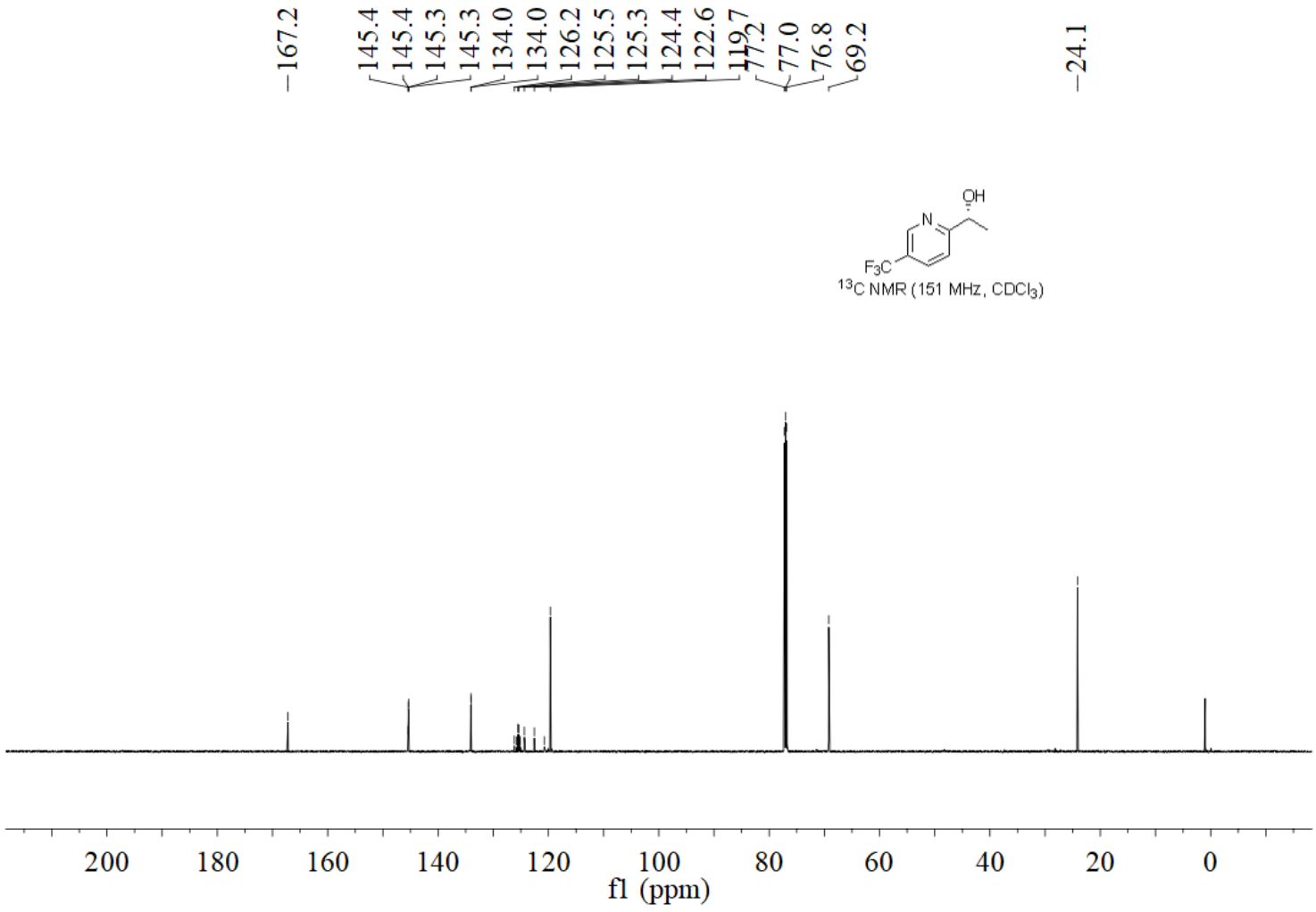
^{19}F NMR Spectrum of (*R*)-1-(5-fluoropyridin-2-yl)ethan-1-ol (**2j**) (565 MHz, $CDCl_3$)



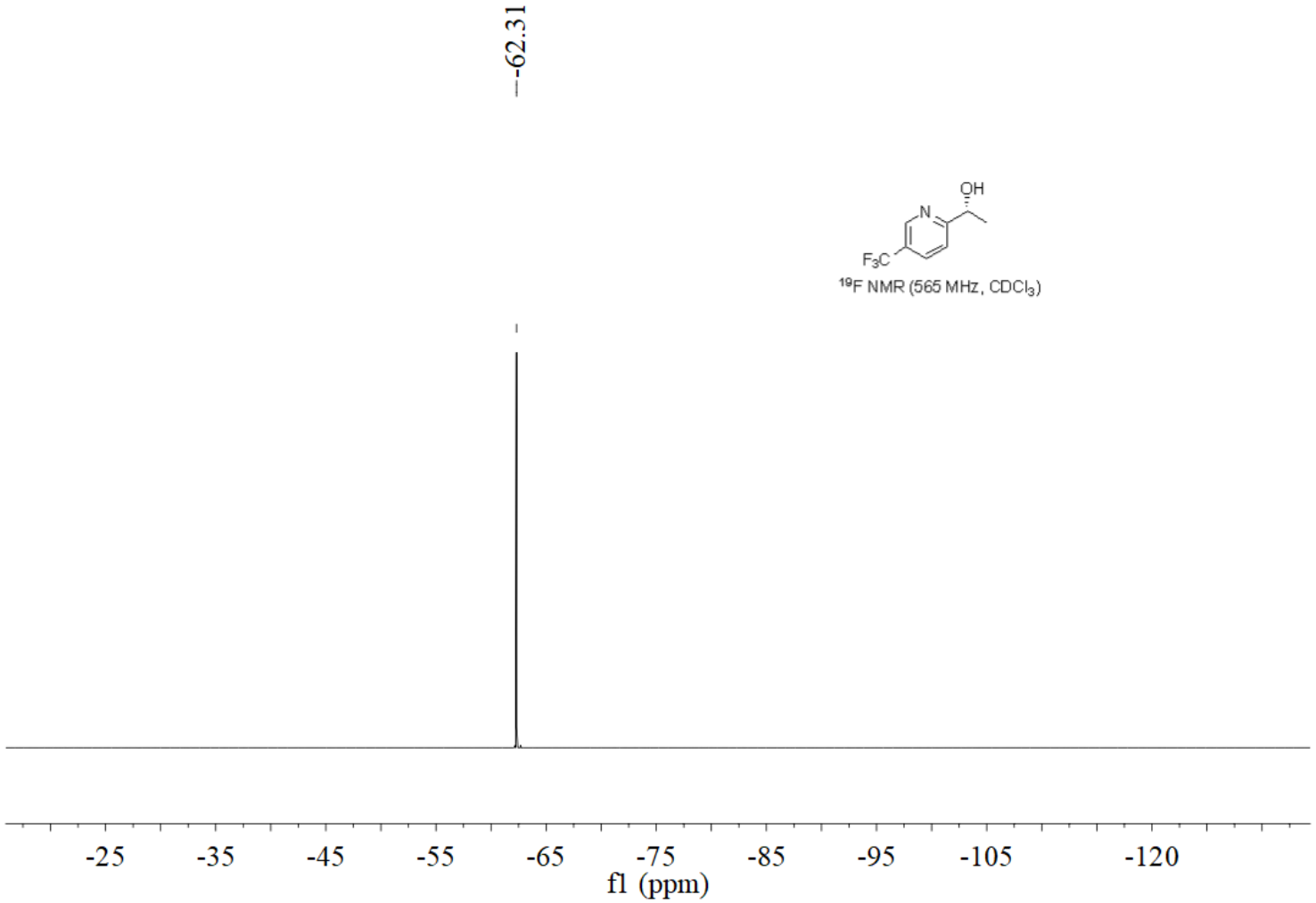
^{1}H NMR Spectrum of (*R*)-1-(5-(trifluoromethyl)pyridin-2-yl)ethan-1-ol (**2k**) (600 MHz, $CDCl_3$)



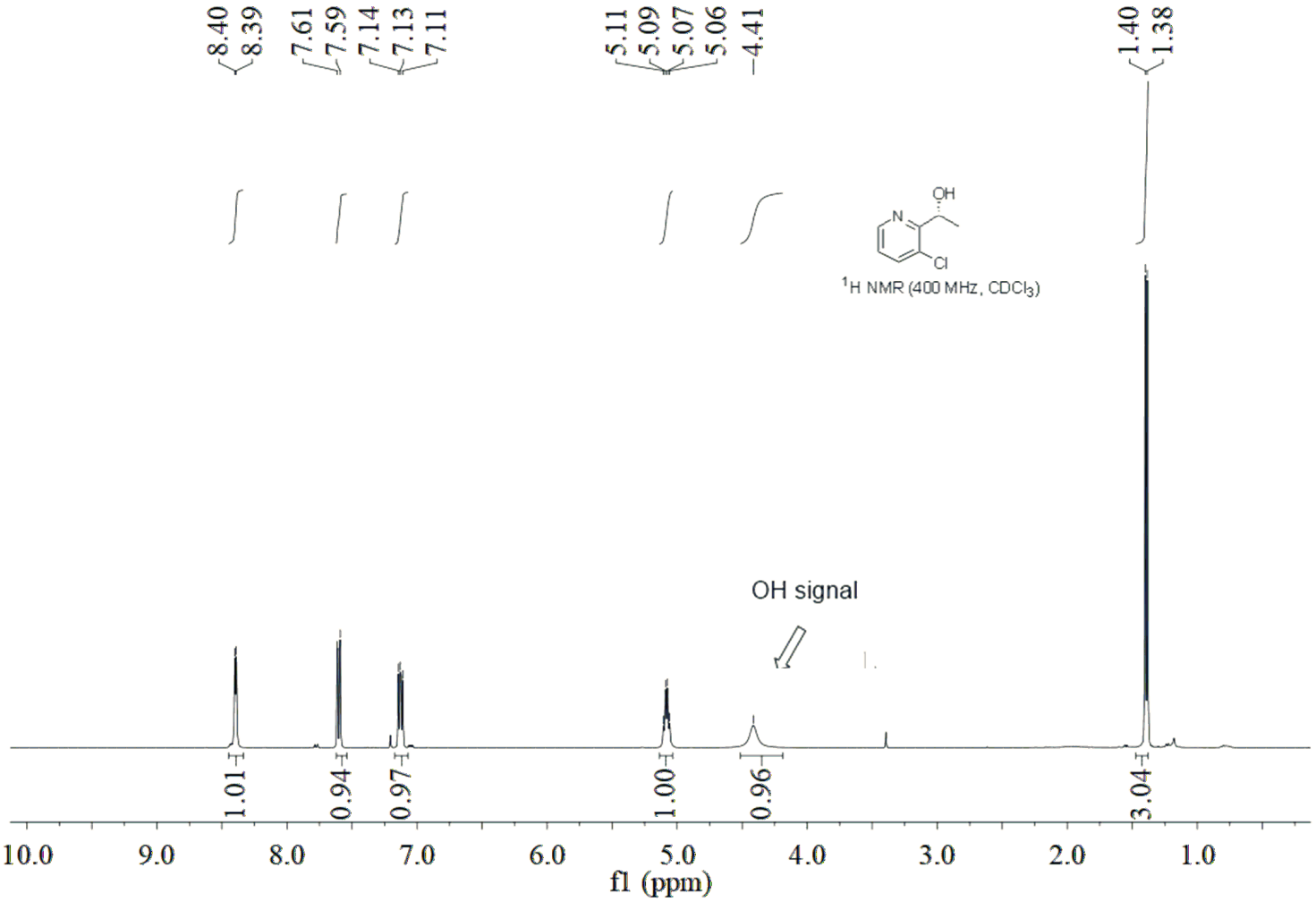
^{13}C NMR Spectrum of (*R*)-1-(5-(trifluoromethyl)pyridin-2-yl)ethan-1-ol (**2k**) (151 MHz, $CDCl_3$)



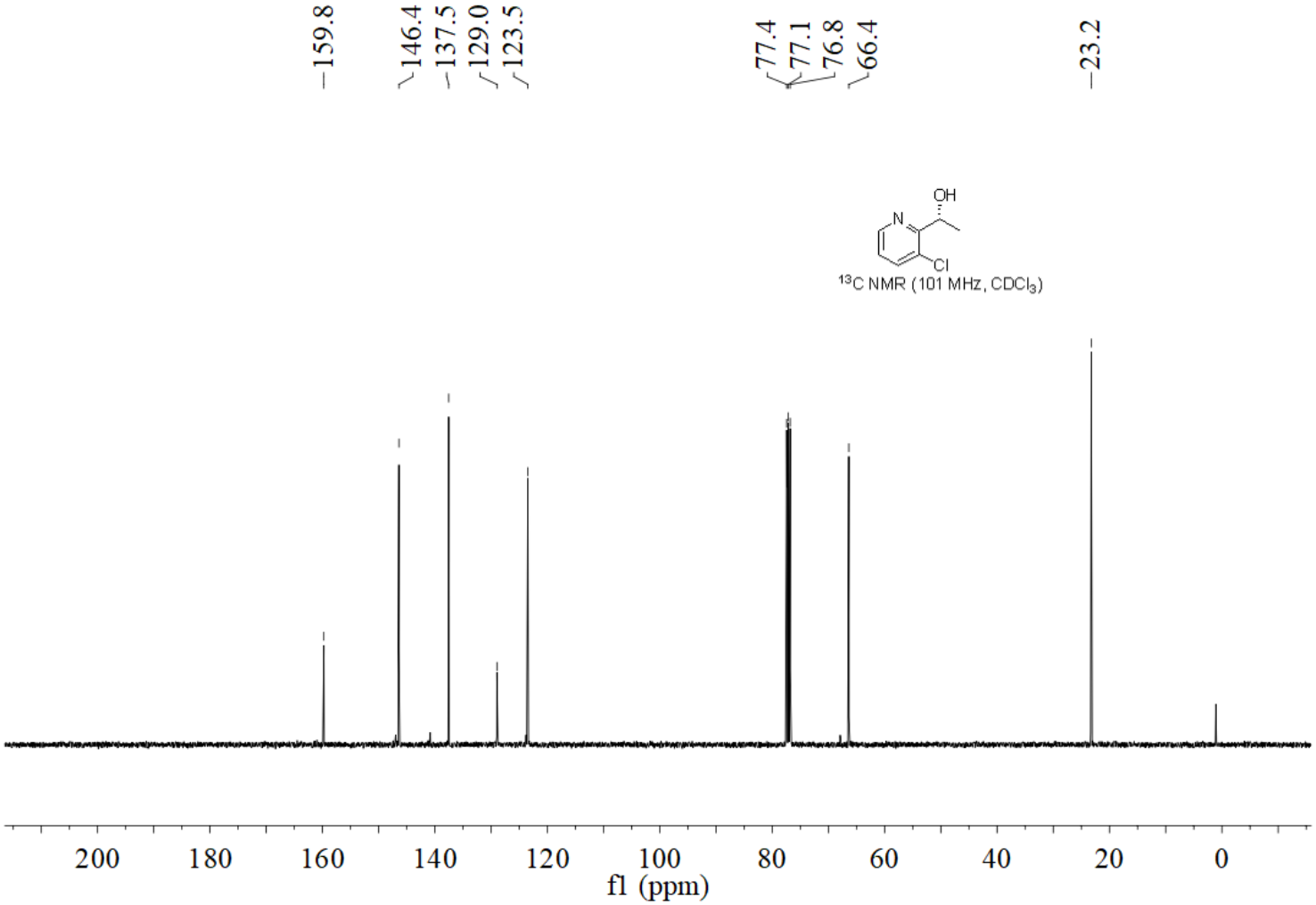
^{19}F NMR Spectrum of (*R*)-1-(5-(trifluoromethyl)pyridin-2-yl)ethan-1-ol (**2k**) (565 MHz, $CDCl_3$)



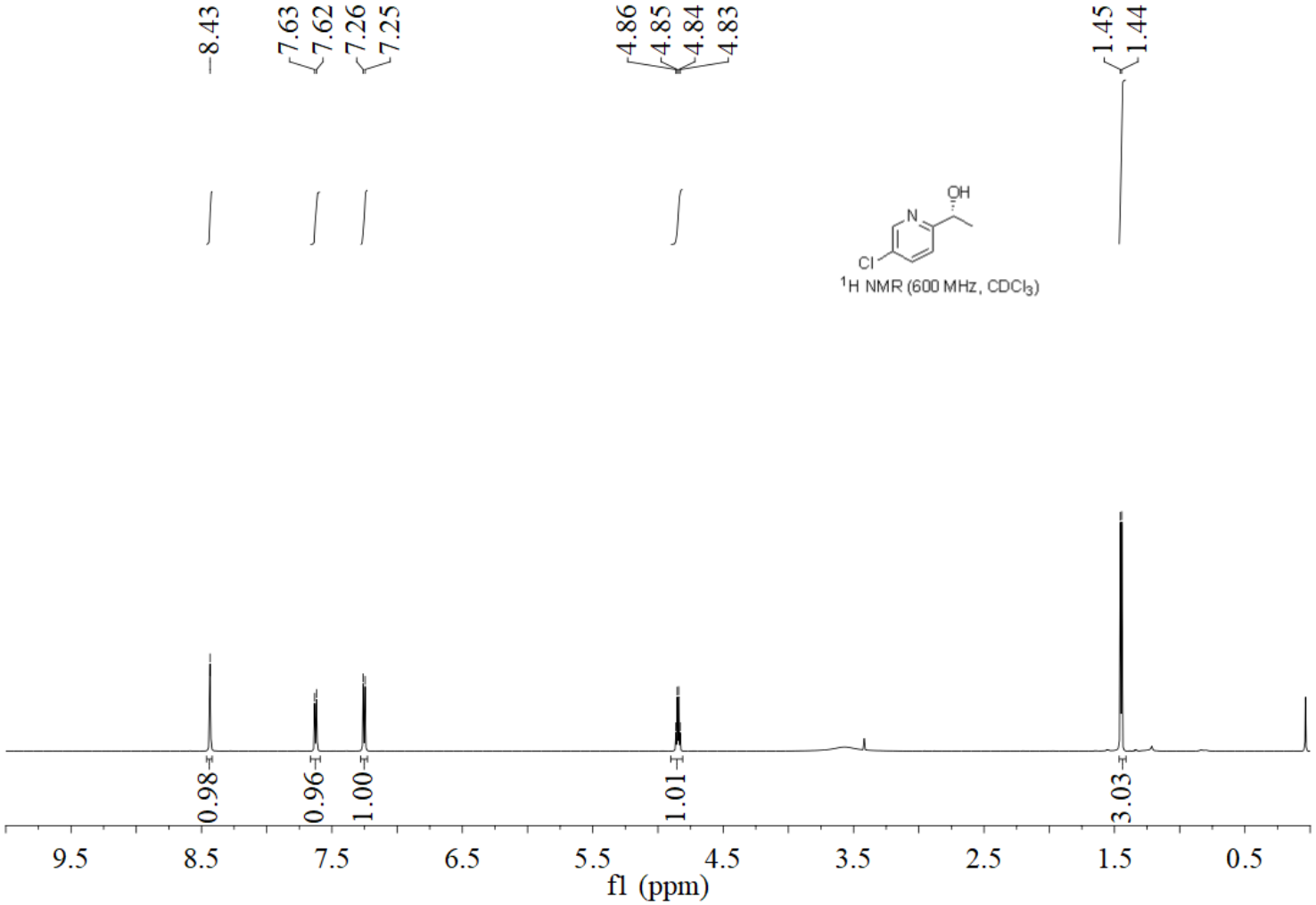
^{1}H NMR Spectrum of (*R*)-1-(3-chloropyridin-2-yl)ethan-1-ol (**2l**) (400 MHz, $CDCl_3$)



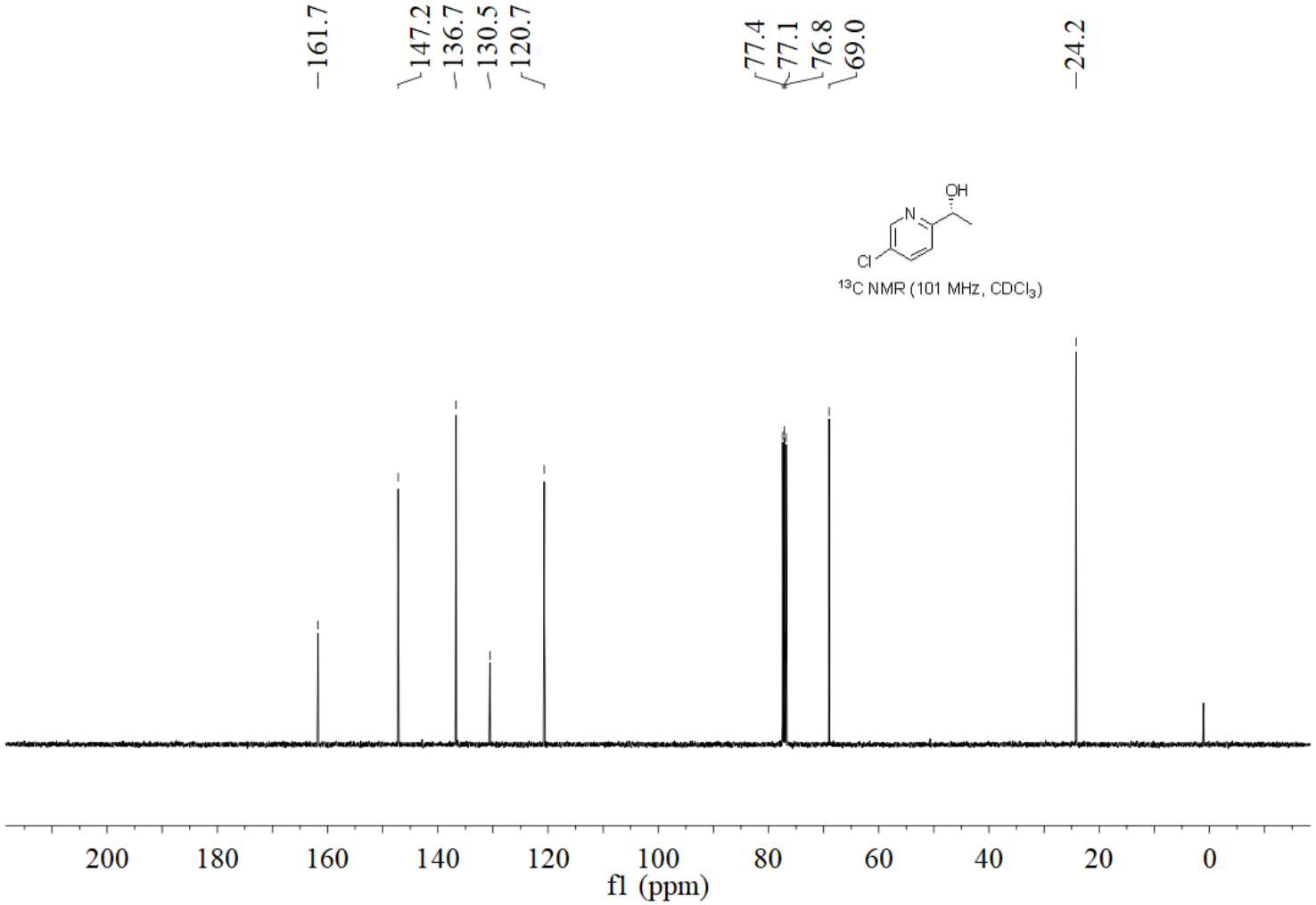
^{13}C NMR Spectrum of (*R*)-1-(3-chloropyridin-2-yl)ethan-1-ol (**2l**) (101 MHz, $CDCl_3$)



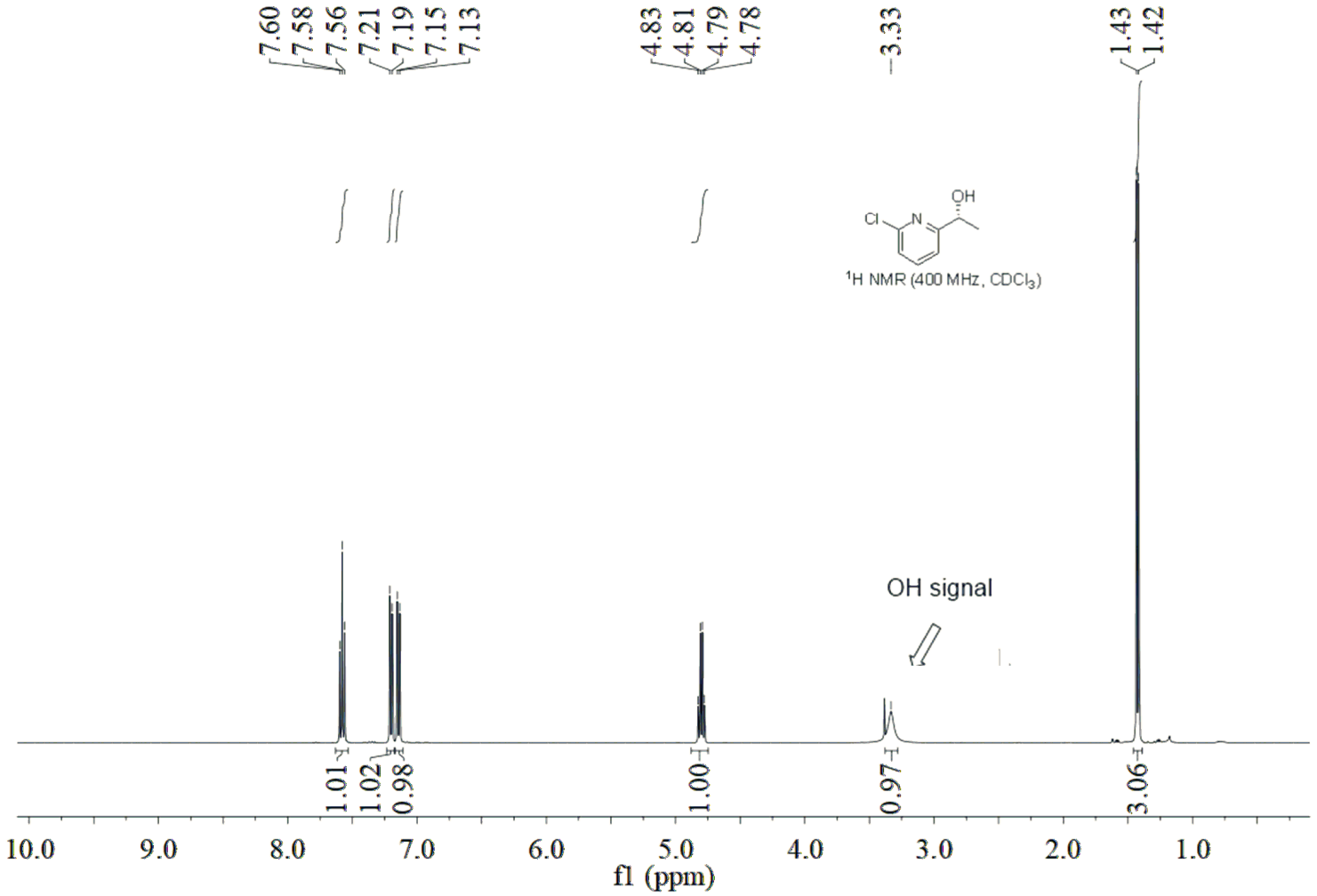
^{1}H NMR Spectrum of (*R*)-1-(5-chloropyridin-2-yl)ethan-1-ol (**2m**) (600 MHz, $CDCl_3$)



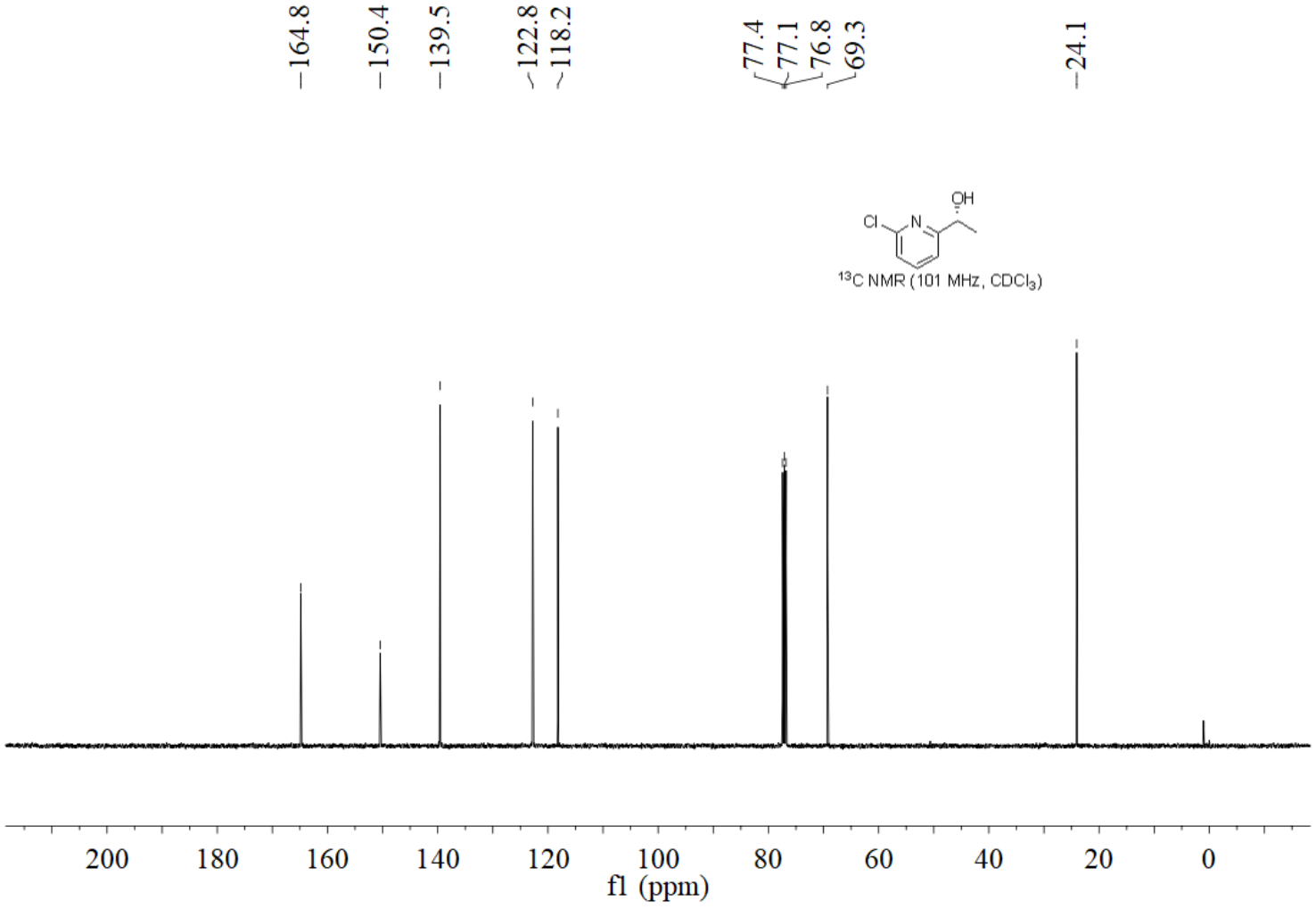
^{13}C NMR Spectrum of (*R*)-1-(5-chloropyridin-2-yl)ethan-1-ol (**2m**) (101 MHz, $CDCl_3$)



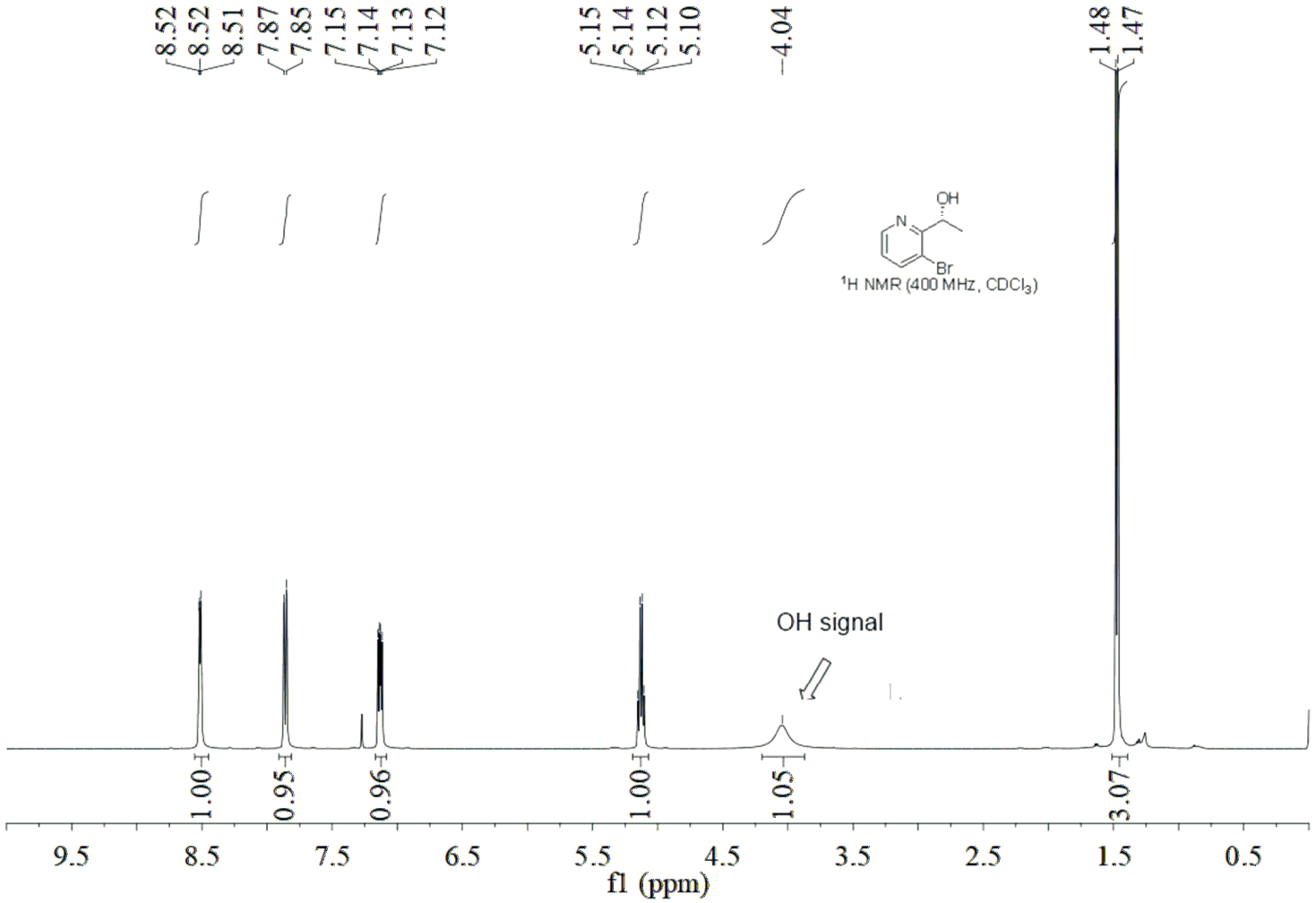
^{1}H NMR Spectrum of (*R*)-1-(6-chloropyridin-2-yl)ethan-1-ol (**2n**) (400 MHz, $CDCl_3$)



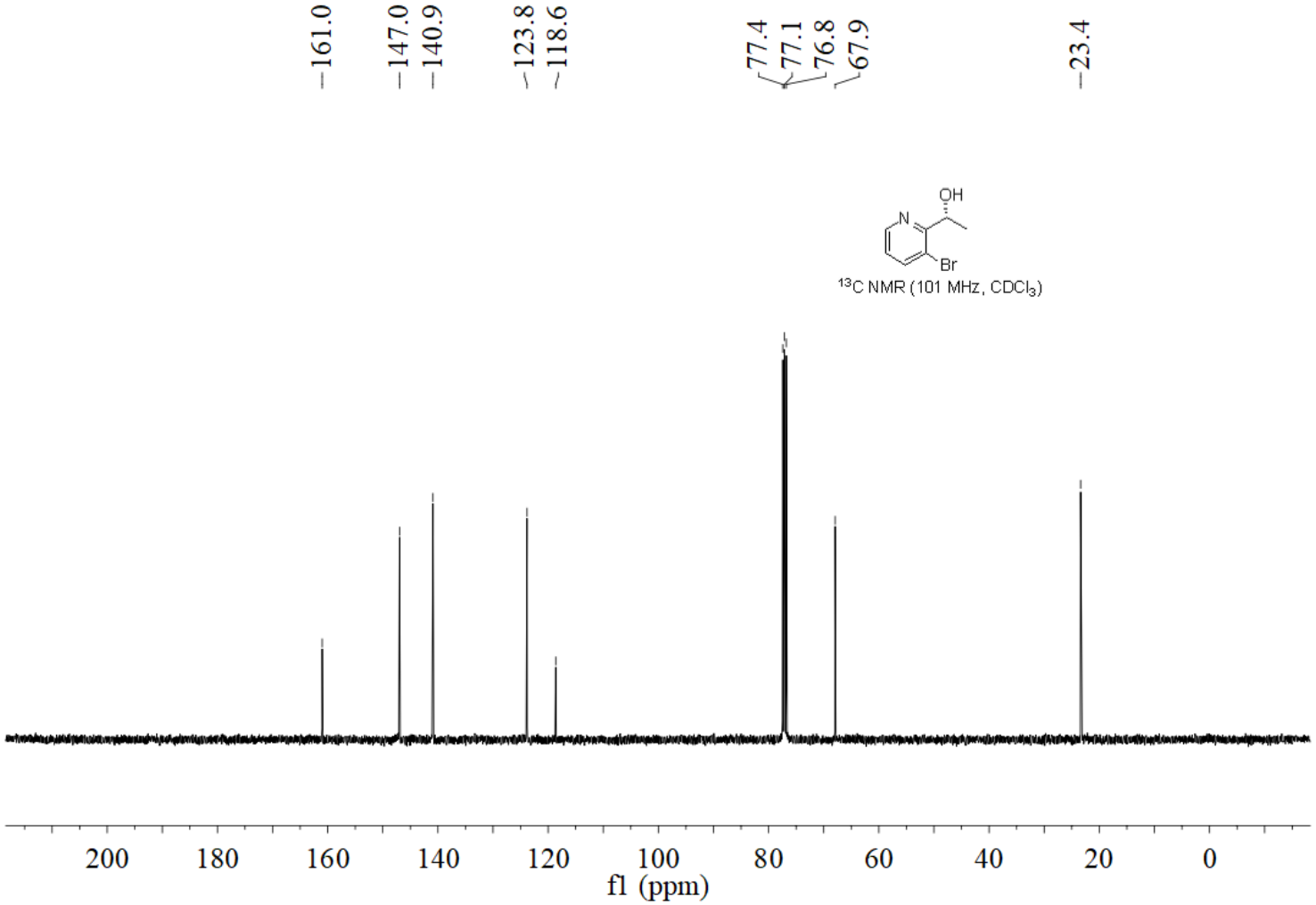
^{13}C NMR Spectrum of (*R*)-1-(6-chloropyridin-2-yl)ethan-1-ol (**2n**) (101 MHz, $CDCl_3$)



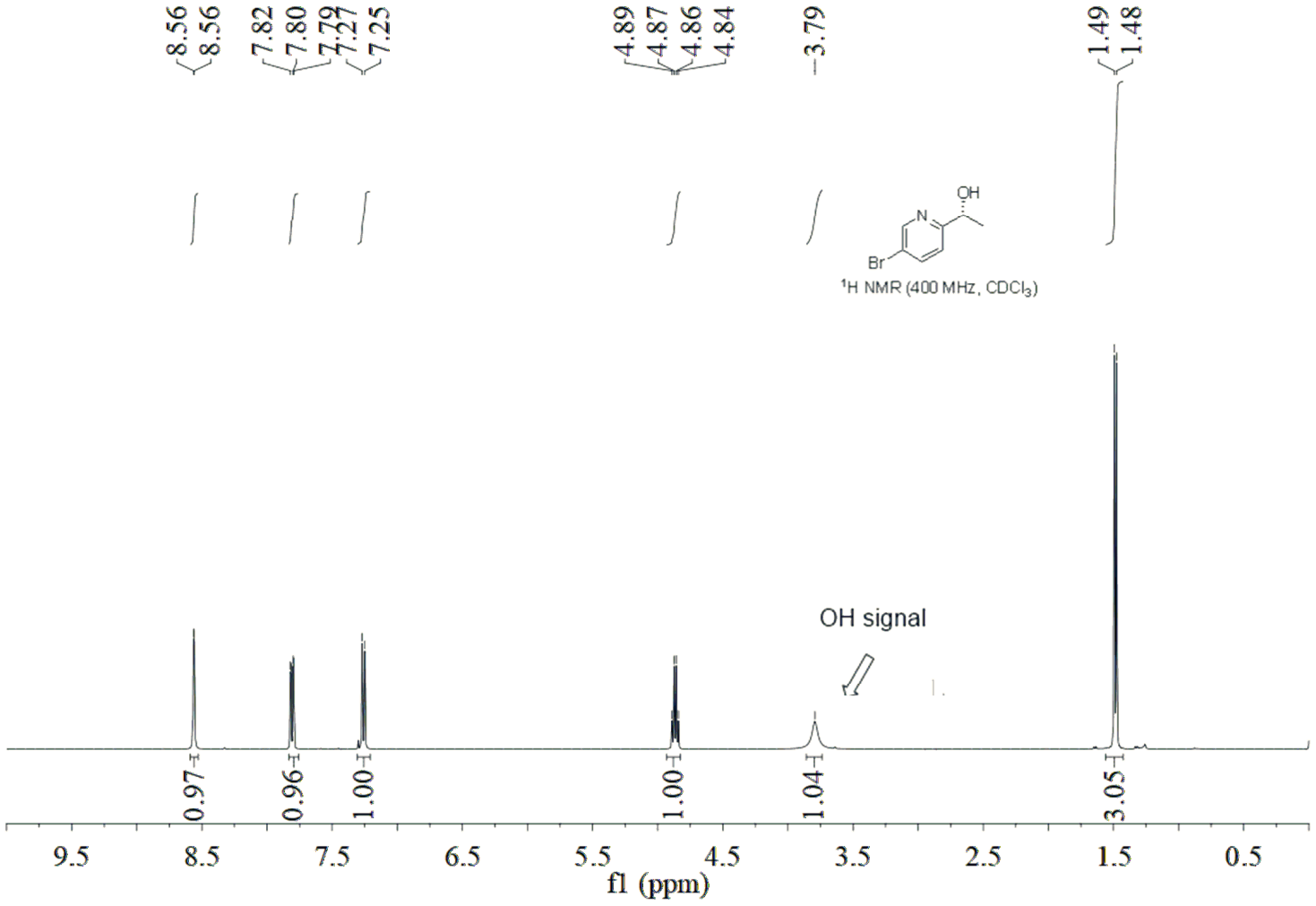
^{1}H NMR Spectrum of (*R*)-1-(3-bromopyridin-2-yl)ethan-1-ol (**2o**) (400 MHz, $CDCl_3$)



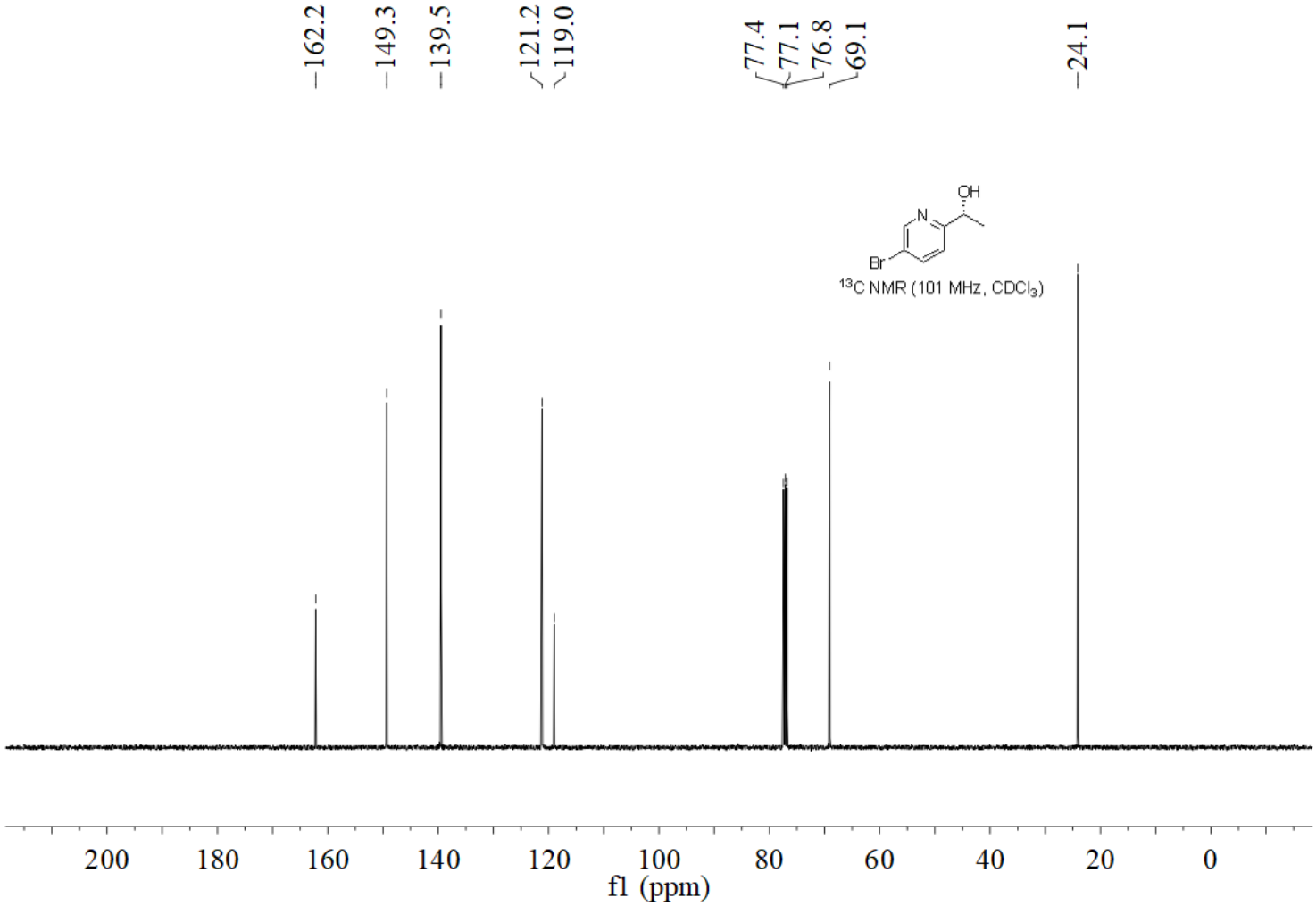
^{13}C NMR Spectrum of (*R*)-1-(3-bromopyridin-2-yl)ethan-1-ol (**2o**) (101 MHz, $CDCl_3$)



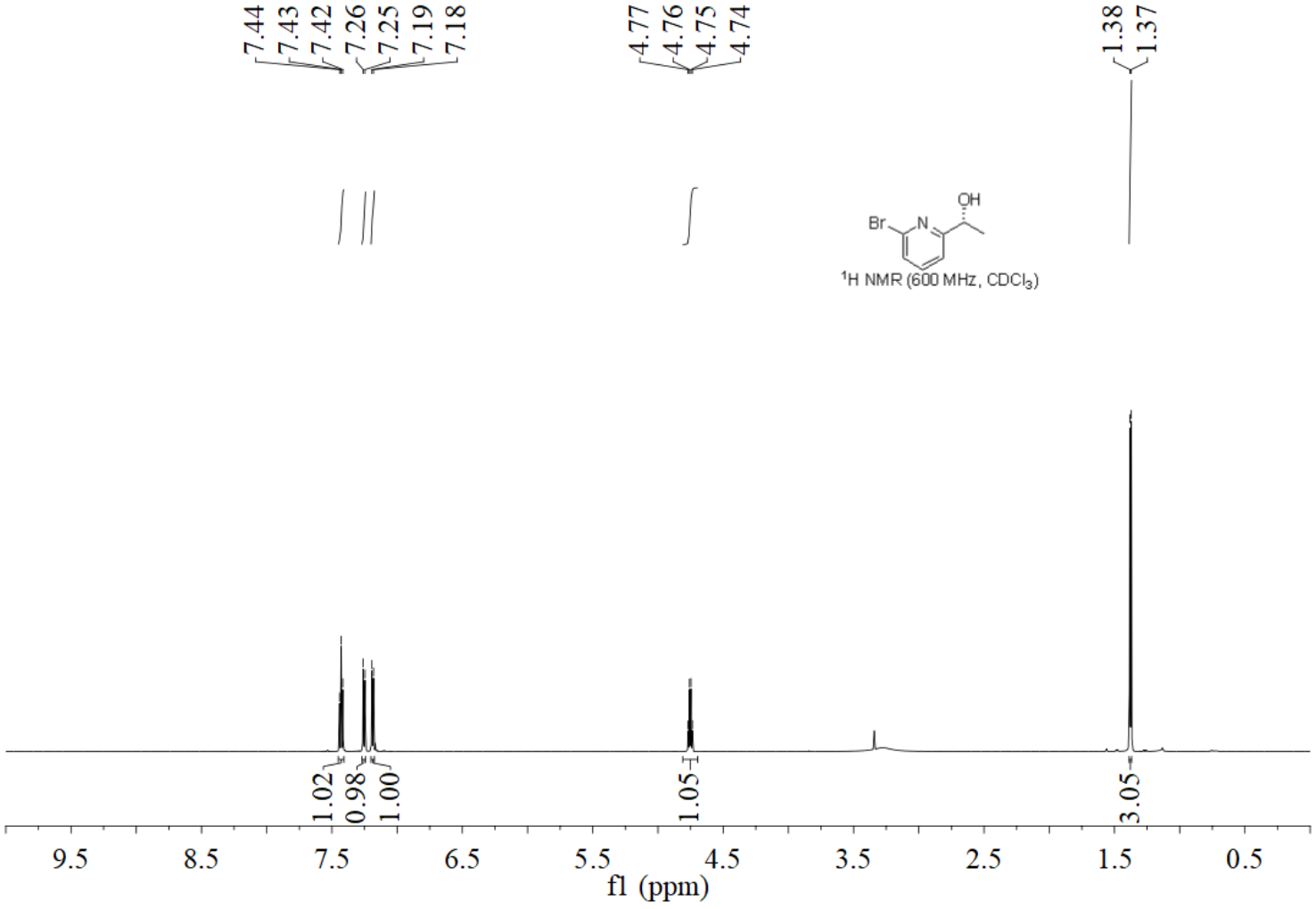
^{1}H NMR Spectrum of (*R*)-1-(5-bromopyridin-2-yl)ethan-1-ol (**2p**) (400 MHz, $CDCl_3$)



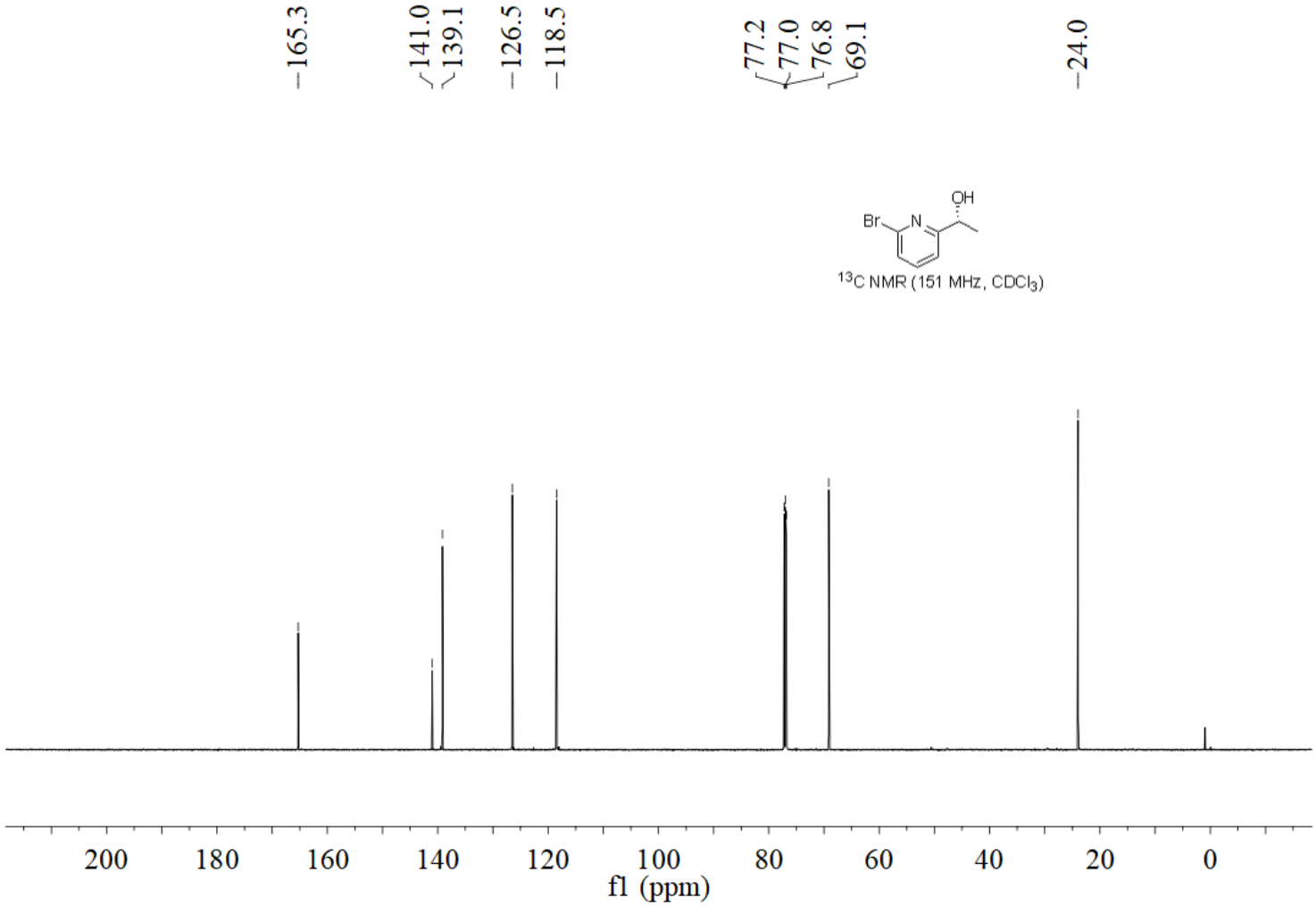
^{13}C NMR Spectrum of (*R*)-1-(5-bromopyridin-2-yl)ethan-1-ol (**2p**) (101 MHz, $CDCl_3$)



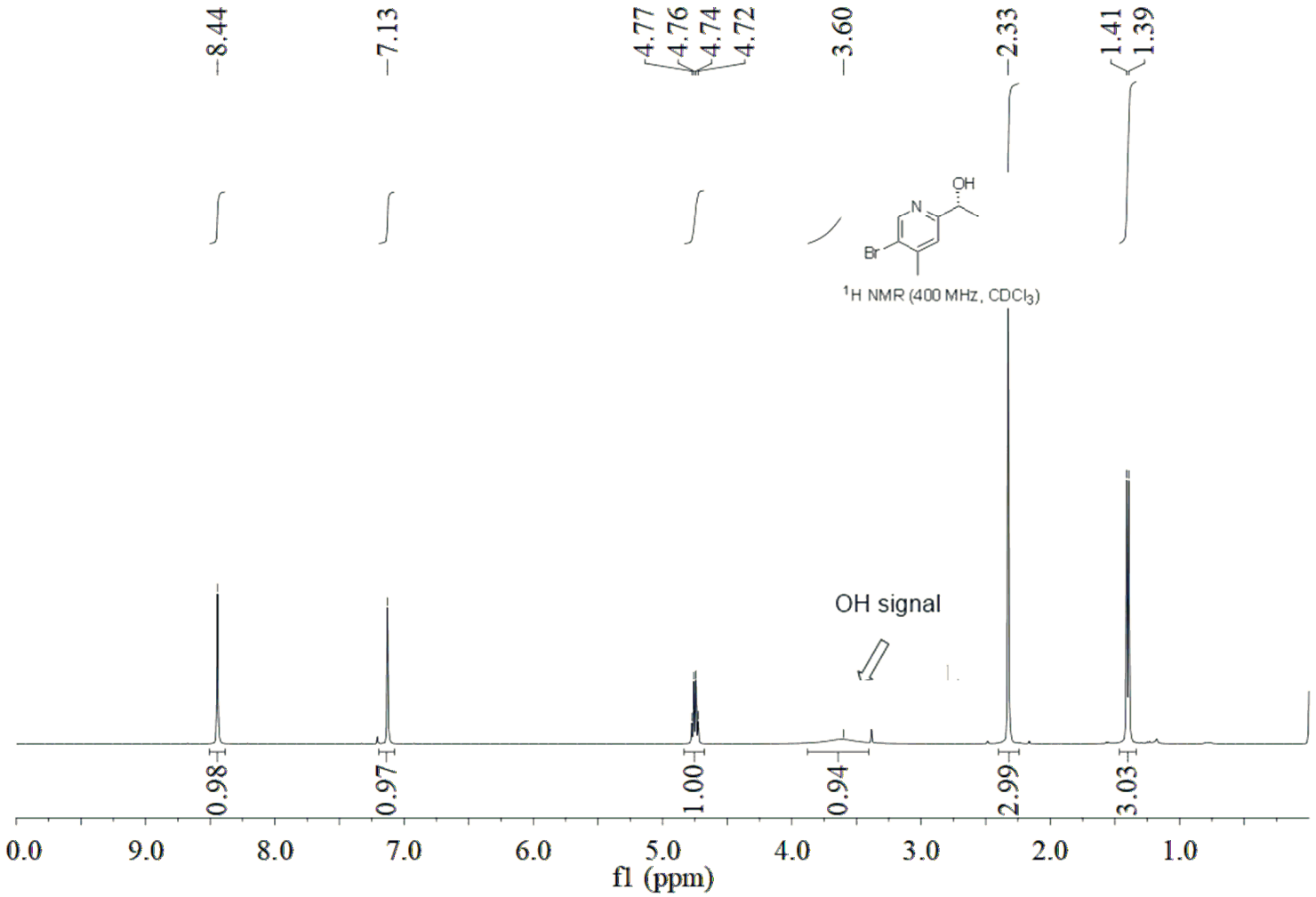
^{1}H NMR Spectrum of (*R*)-1-(6-bromopyridin-2-yl)ethan-1-ol (**2q**) (600 MHz, $CDCl_3$)



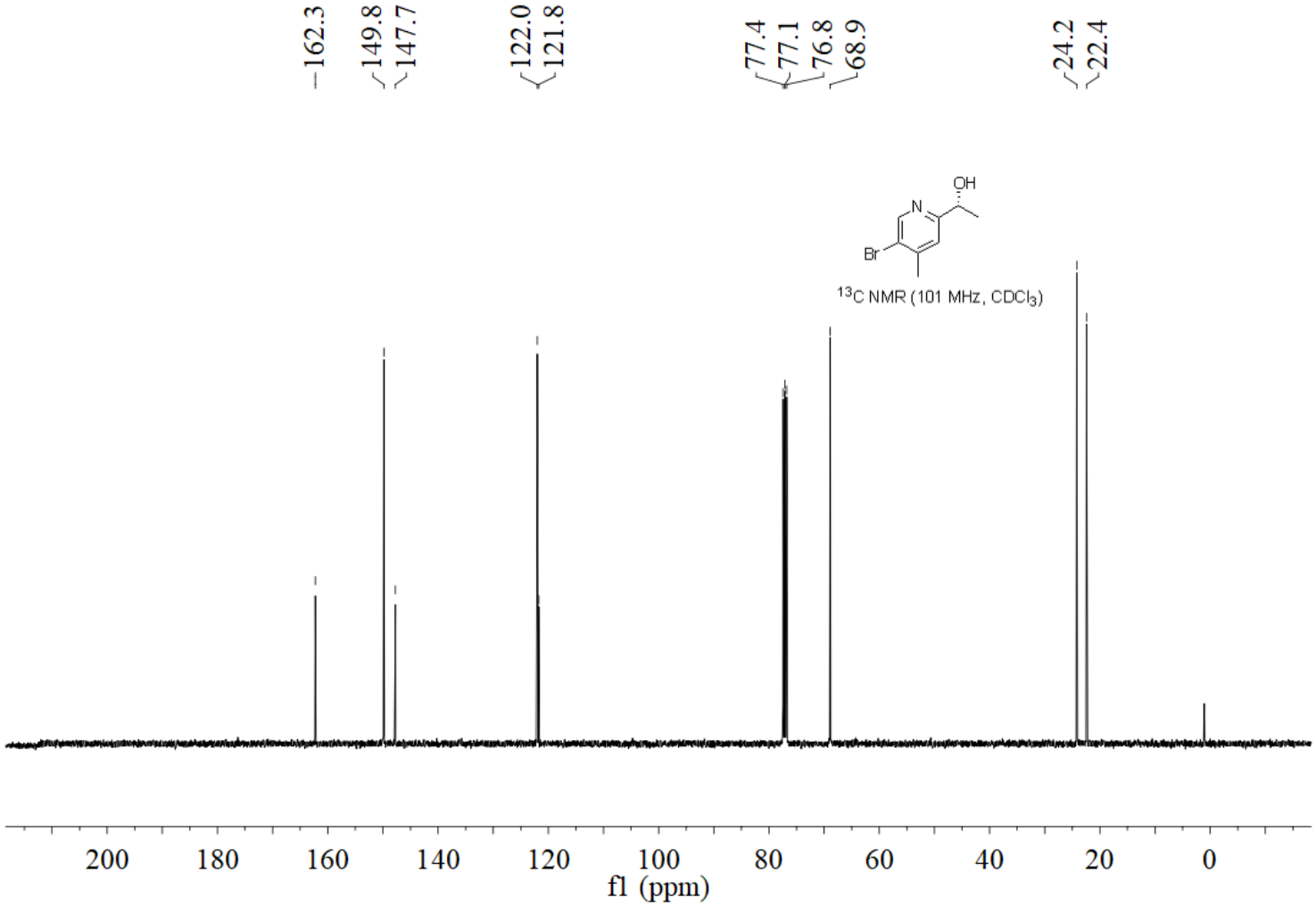
^{13}C NMR Spectrum of (*R*)-1-(6-bromopyridin-2-yl)ethan-1-ol (**2q**) (151 MHz, $CDCl_3$)



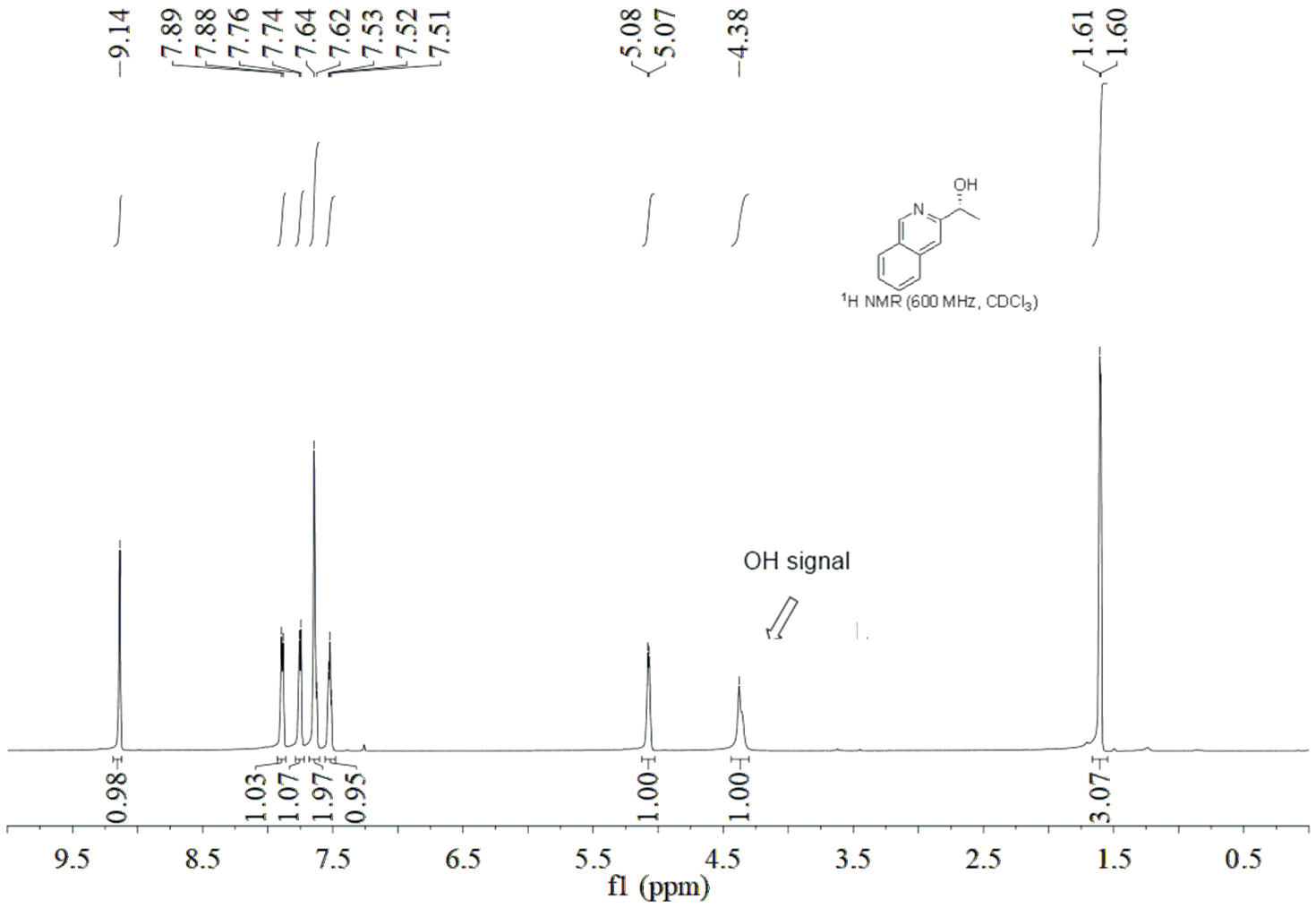
^{1}H NMR Spectrum of (*R*)-1-(5-bromo-4-methylpyridin-2-yl)ethan-1-ol (**2r**) (400 MHz, $CDCl_3$)



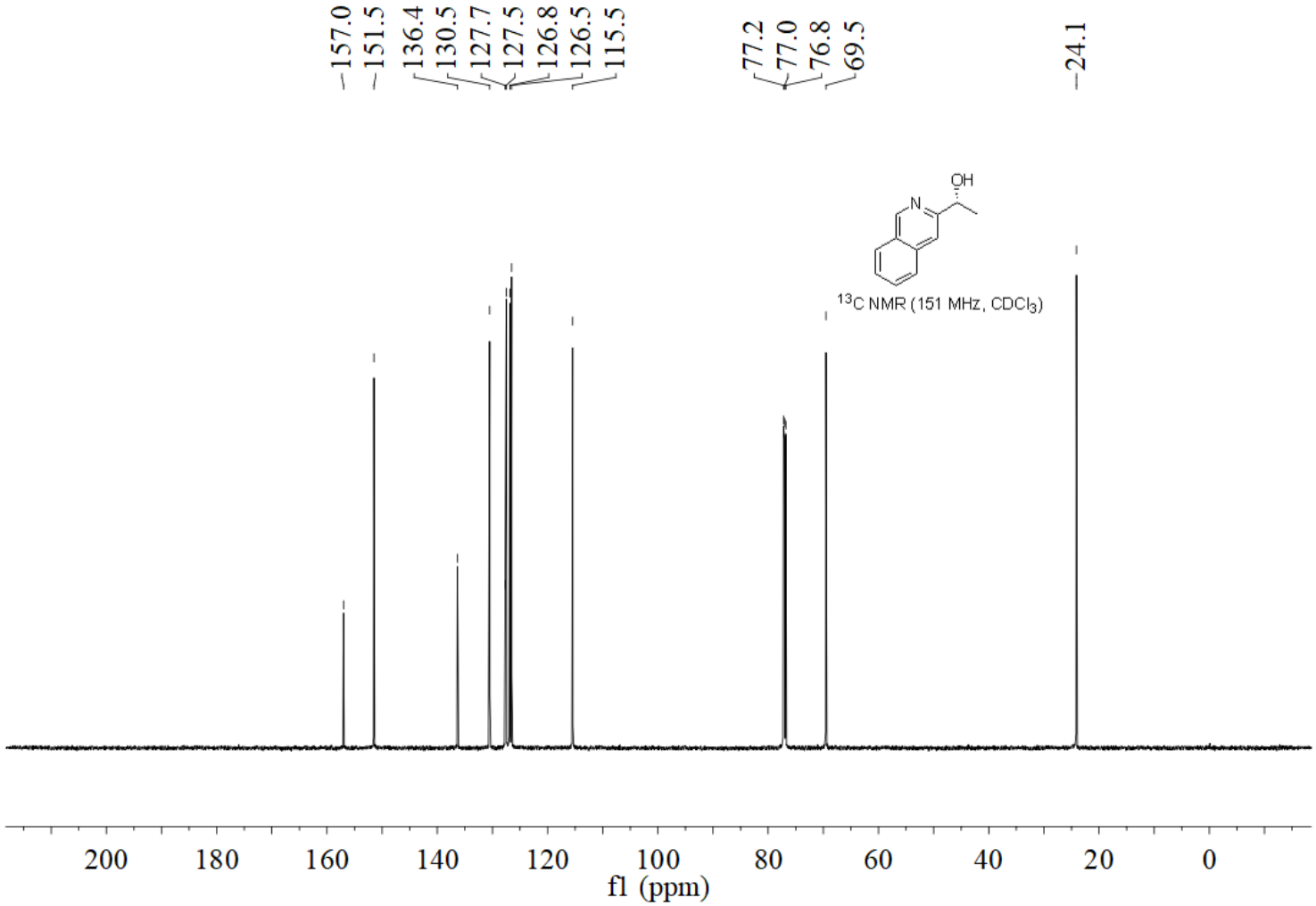
^{13}C NMR Spectrum of (*R*)-1-(5-bromo-4-methylpyridin-2-yl)ethan-1-ol (**2r**) (101 MHz, $CDCl_3$)



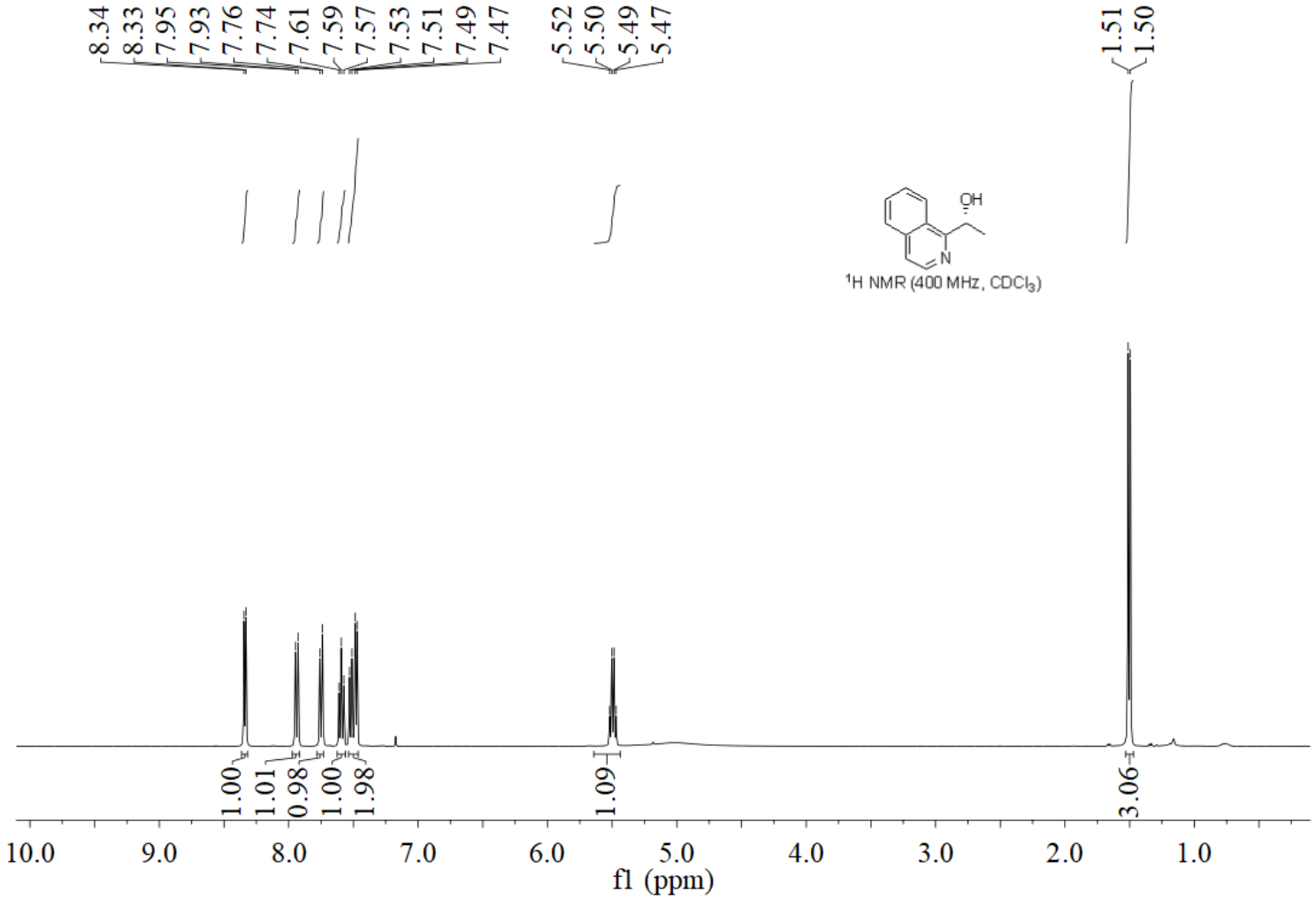
^{1}H NMR Spectrum of (*R*)-1-(isoquinolin-3-yl)ethan-1-ol (**2s**) (600 MHz, $CDCl_3$)



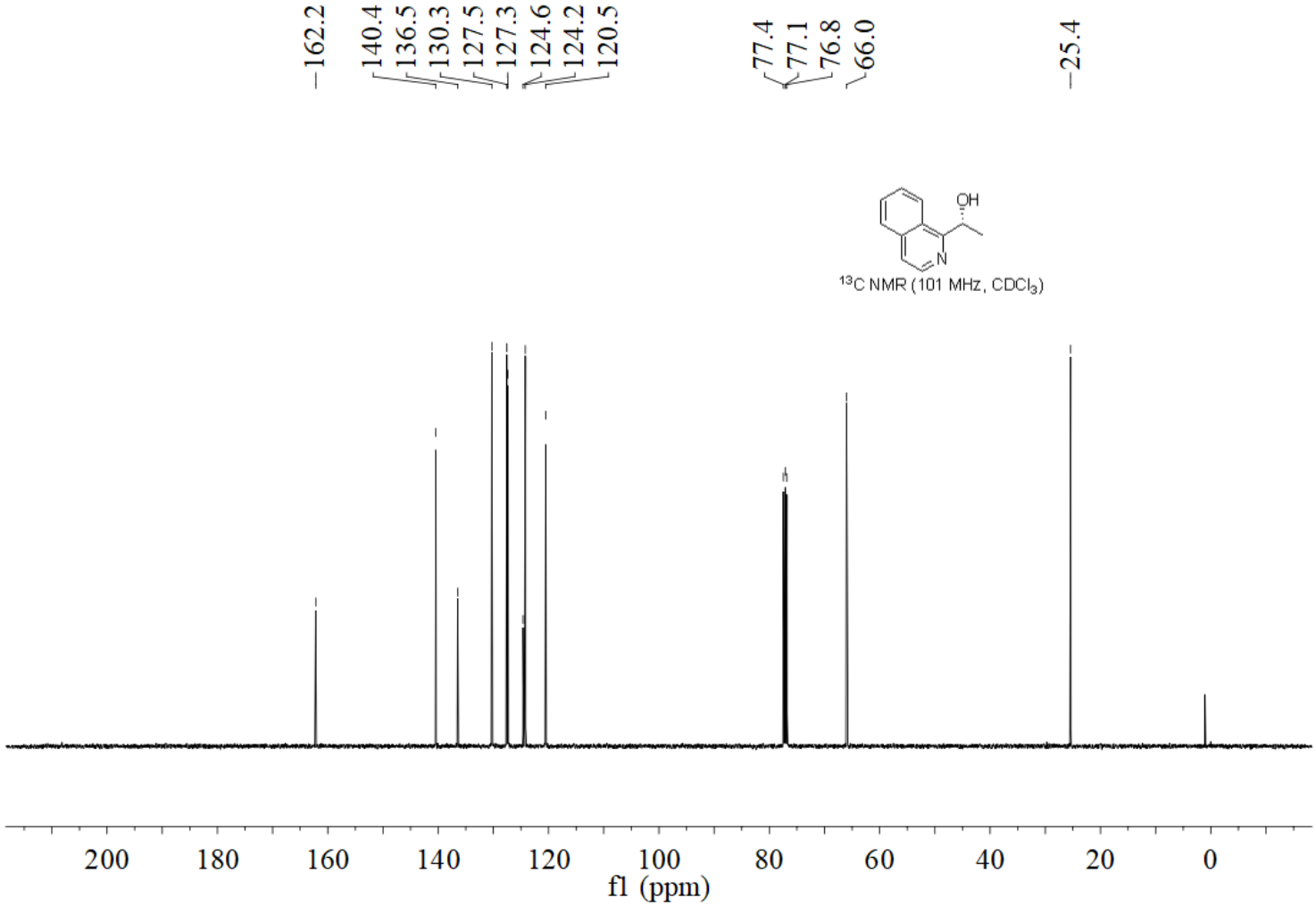
^{13}C NMR Spectrum of (*R*)-1-(isoquinolin-3-yl)ethan-1-ol (**2s**) (151 MHz, $CDCl_3$)



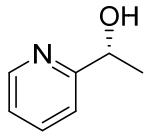
^{1}H NMR Spectrum of (*R*)-1-(isoquinolin-1-yl)ethan-1-ol (**2t**) (400 MHz, $CDCl_3$)



^{13}C NMR Spectrum of (*R*)-1-(isoquinolin-1-yl)ethan-1-ol (**2t**) (101 MHz, $CDCl_3$)



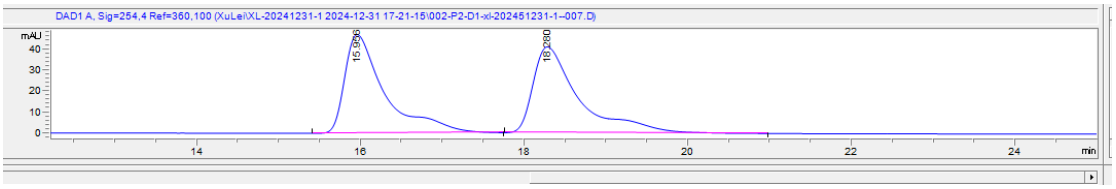
5. HPLC spectra



(*R*)-1-(pyridin-2-yl)ethan-1-ol (**2a**)

```
Data File d:\Chem32\...i\XL-20241231-1 2024-12-31 17-21-15\002-P2-D1-xl-202451231-1--007.D
Sample Name: xl-202451231-6

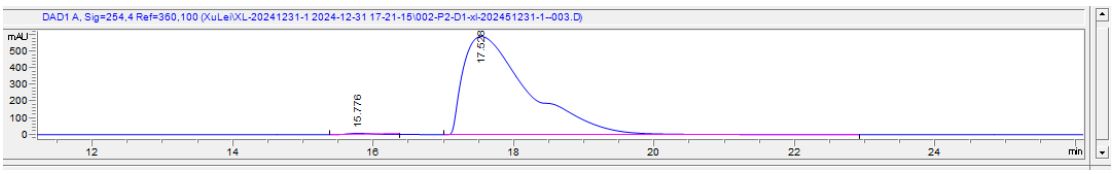
    ======================================================================
    Acq. Operator   : SYSTEM                        Seq. Line :   7
    Acq. Instrument : 1260-DAD                      Location :   P2-D-06
    Injection Date  : 12/31/2024 19:47:48               Inj :   1
                                                   Inj Volume : 5.000 µl
    Different Inj Volume from Sample Entry!  Actual Inj Volume : 1.000 µl
    Acq. Method     : d:\Chem32\1\Data\XuLei\XL-20241231-1 2024-12-31 17-21-15\XL-1.0-5%-20min.M
    Last changed    : 12/31/2024 18:29:32 by SYSTEM
    Analysis Method : d:\Chem32\1\Data\XuLei\XL-20241231-1 2024-12-31 17-21-15\XL-1.0-5%-20min.M
                      (Sequence Method)
    Last changed    : 12/31/2024 18:29:35 by SYSTEM
```



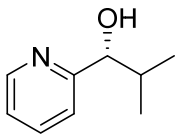
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	15.956	BB	1586.1	46.6	0.4952	49.974	0.409
2	18.28	BB	1587.7	40.6	0.5604	50.026	0.412

```
Data File d:\Chem32\...i\XL-20241231-1 2024-12-31 17-21-15\002-P2-D1-xl-202451231-1--003.D
Sample Name: xl-202451231-2

    ======================================================================
    Acq. Operator   : SYSTEM                        Seq. Line :   3
    Acq. Instrument : 1260-DAD                      Location :   P2-D-02
    Injection Date  : 12/31/2024 18:03:25               Inj :   1
                                                   Inj Volume : 5.000 µl
    Different Inj Volume from Sample Entry!  Actual Inj Volume : 1.000 µl
    Acq. Method     : d:\Chem32\1\Data\XuLei\XL-20241231-1 2024-12-31 17-21-15\XL-1.0-5%-20min.M
    Last changed    : 12/31/2024 18:29:32 by SYSTEM
                      (modified after loading)
    Analysis Method : d:\Chem32\1\Data\XuLei\XL-20241231-1 2024-12-31 17-21-15\XL-1.0-5%-20min.M
                      (Sequence Method)
    Last changed    : 12/31/2024 18:29:35 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



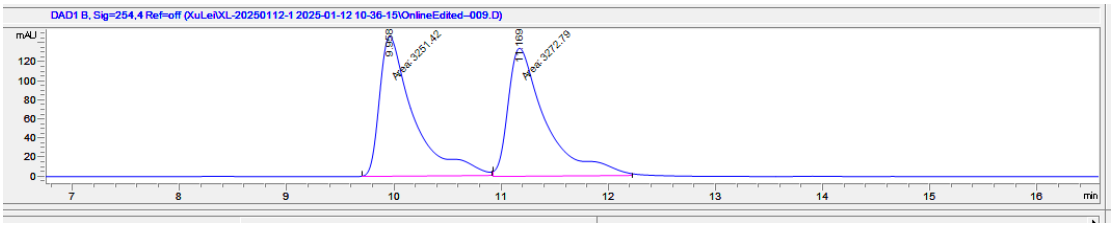
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	15.776	BB	180.9	7.8	0.3507	0.471	0.717
2	17.528	BB	38249.8	595.3	0.9776	99.529	0.347



(*R*)-2-methyl-1-(pyridin-2-yl)propan-1-ol (**2b**)

```
Data File D:\ChemSta...\1\Data\XuLei\XL-20250112-1 2025-01-12 10-36-15\OnlineEdited--009.D
Sample Name: XL-20250112-8

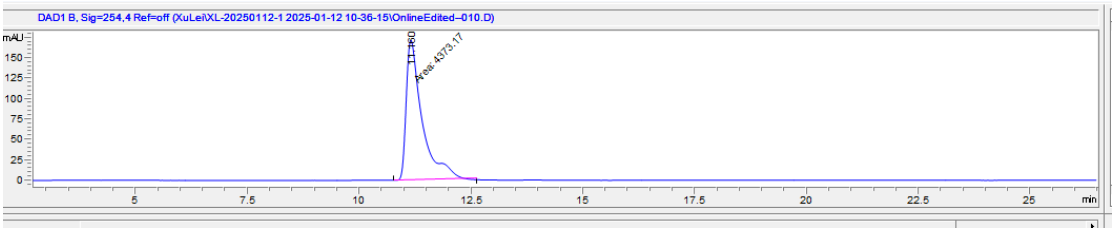
    ======================================================================
    Acq. Operator   : SYSTEM                        Seq. Line :   9
    Sample Operator : SYSTEM
    Acq. Instrument : LC                            Location :   P2-D-07
    Injection Date  : 12/01/2025 15:04:02               Inj :   1
                                                  Inj Volume : 1.000 µl
    Method          : D:\ChemStation\1\Data\XuLei\XL-20250112-1 2025-01-12 10-36-15\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 19/06/2024 14:31:02 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



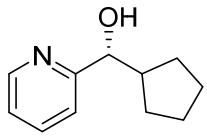
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	9.958	MM	3251.4	146.2	0.3708	49.836	0.406
2	11.169	MM	3272.8	134	0.4072	50.164	0.419

```
Data File D:\ChemSta...\1\Data\XuLei\XL-20250112-1 2025-01-12 10-36-15\OnlineEdited--010.D
Sample Name: XL-20250112-9

    ======================================================================
    Acq. Operator   : SYSTEM                        Seq. Line :  10
    Sample Operator : SYSTEM
    Acq. Instrument : LC                            Location :   P2-D-08
    Injection Date  : 12/01/2025 15:34:50               Inj :   1
                                                  Inj Volume : 1.000 µl
    Method          : D:\ChemStation\1\Data\XuLei\XL-20250112-1 2025-01-12 10-36-15\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 19/06/2024 14:31:02 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



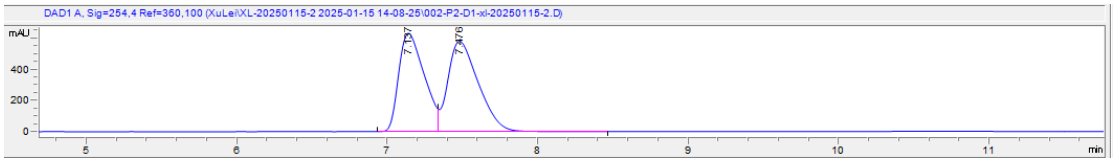
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	11.16	MM	4373.2	173.5	0.4201	100.000	0.395



(*R*)-cyclopentyl(pyridin-2-yl)methanol (**2c**)

```
Data File d:\Chem32\...a\XuLei\XL-20250115-2 2025-01-15 14-08-25\002-P2-D1-xl-20250115-2.D
Sample Name: xl-20250115-2

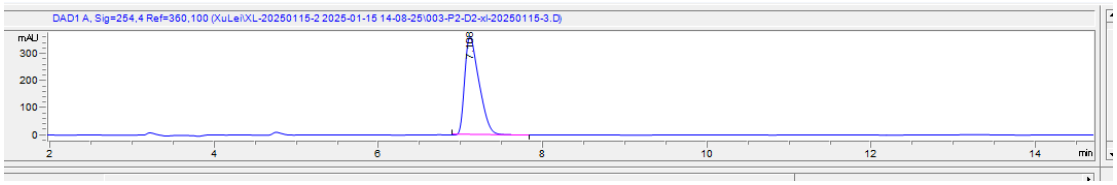
    ======================================================================
    Acq. Operator   : SYSTEM                          Seq. Line :   2
    Acq. Instrument : 1260-DAD                        Location :   P2-D-01
    Injection Date  : 1/15/2025 14:19:43                   Inj :   1
                                                    Inj Volume : 5.000 µl
    Different Inj Volume from Sample Entry!  Actual Inj Volume : 1.000 µl
    Method          : d:\Chem32\1\Data\XuLei\XL-20250115-2 2025-01-15 14-08-25\xl-BC-95-5-1.0ml-
                      20min.M (Sequence Method)
    Last changed    : 12/18/2024 11:01:04 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



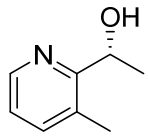
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	7.137	BV	7486.9	633.7	0.1818	47.972	0.582
2	7.476	VB	8120	582.6	0.2106	52.028	0.575

```
Data File d:\Chem32\...a\XuLei\XL-20250115-2 2025-01-15 14-08-25\003-P2-D2-xl-20250115-3.D
Sample Name: xl-20250115-3

    ======================================================================
    Acq. Operator   : SYSTEM                          Seq. Line :   3
    Acq. Instrument : 1260-DAD                        Location :   P2-D-02
    Injection Date  : 1/15/2025 14:40:36                   Inj :   1
                                                    Inj Volume : 5.000 µl
    Different Inj Volume from Sample Entry!  Actual Inj Volume : 1.000 µl
    Method          : d:\Chem32\1\Data\XuLei\XL-20250115-2 2025-01-15 14-08-25\xl-BC-95-5-1.0ml-
                      20min.M (Sequence Method)
    Last changed    : 12/18/2024 11:01:04 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



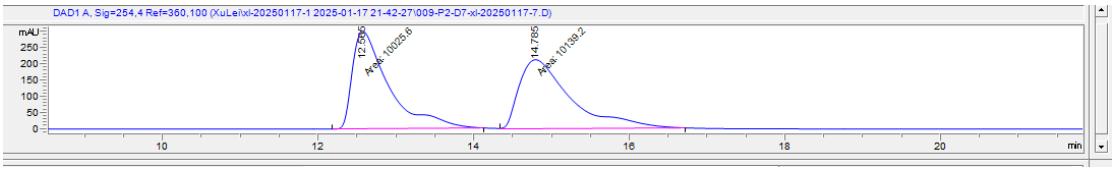
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	7.108	BB	4384	360.5	0.1819	100.000	0.54



(*R*)-1-(3-methylpyridin-2-yl)ethan-1-ol (**2d**)

```
Data File d:\Chem32\...a\XuLei\xl-20250117-1 2025-01-17 21-42-27\009-P2-D7-xl-20250117-7.D
Sample Name: xl-20250117-7

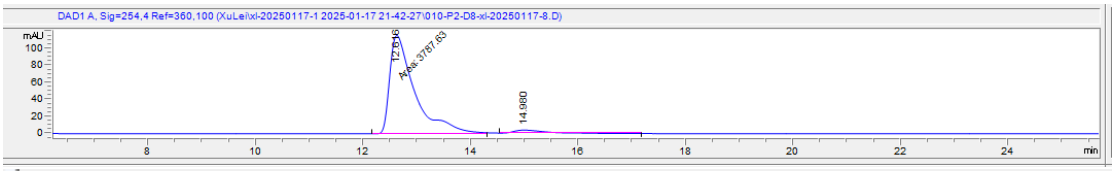
    ======================================================================
    Acq. Operator   : SYSTEM                          Seq. Line :   9
    Acq. Instrument : 1260-DAD                        Location :   P2-D-07
    Injection Date  : 1/18/2025 01:30:26                   Inj :   1
                                                    Inj Volume : 5.000 µl
    Different Inj Volume from Sample Entry!  Actual Inj Volume : 1.000 µl
    Method          : d:\Chem32\1\Data\XuLei\xl-20250117-1 2025-01-17 21-42-27\XL-1.0-5%-30min.M
                      (Sequence Method)
    Last changed    : 10/30/2023 19:00:59 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



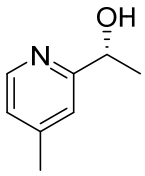
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	12.565	MM	10025.6	302.2	0.553	49.718	0.383
2	14.785	MM	10139.2	214.8	0.7867	50.282	0.441

```
Data File d:\Chem32\...a\XuLei\xl-20250117-1 2025-01-17 21-42-27\010-P2-D8-xl-20250117-8.D
Sample Name: xl-20250117-8

    ======================================================================
    Acq. Operator   : SYSTEM                          Seq. Line :  10
    Acq. Instrument : 1260-DAD                        Location :   P2-D-08
    Injection Date  : 1/18/2025 02:01:16                   Inj :   1
                                                    Inj Volume : 5.000 µl
    Different Inj Volume from Sample Entry!  Actual Inj Volume : 1.000 µl
    Method          : d:\Chem32\1\Data\XuLei\xl-20250117-1 2025-01-17 21-42-27\XL-1.0-5%-30min.M
                      (Sequence Method)
    Last changed    : 10/30/2023 19:00:59 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



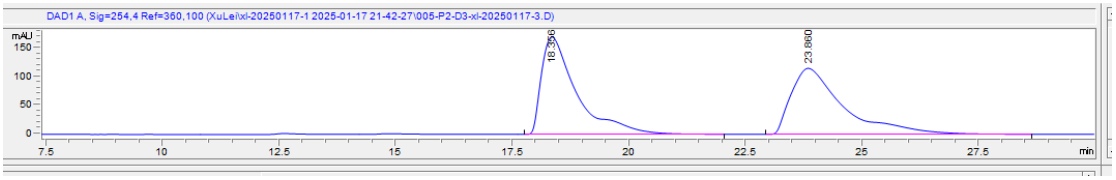
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	12.616	MM	3787.6	116.9	0.54	96.258	0.386
2	14.98	BB	147.2	3.7	0.5421	3.742	0.428



(*R*)-1-(4-methylpyridin-2-yl)ethan-1-ol (**2e**)

```
Data File d:\Chem32\...a\XuLei\xl-20250117-1 2025-01-17 21-42-27\005-P2-D3-xl-20250117-3.D
Sample Name: xl-20250117-3

    ======================================================================
    Acq. Operator   : SYSTEM                          Seq. Line :   5
    Acq. Instrument : 1260-DAD                        Location :   P2-D-03
    Injection Date  : 1/17/2025 23:27:08                   Inj :   1
                                                    Inj Volume : 5.000 µl
    Different Inj Volume from Sample Entry!  Actual Inj Volume : 1.000 µl
    Method          : d:\Chem32\1\Data\XuLei\xl-20250117-1 2025-01-17 21-42-27\XL-1.0-5%-30min.M
                      (Sequence Method)
    Last changed    : 10/30/2023 19:00:59 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



#	Time	Type	Area	Height	Width	Area%	Symmetry
1	18.356	BB	9103.6	172.8	0.7746	49.912	0.385
2	23.86	BB	9135.8	117.1	1.1742	50.088	0.452

```
Data File d:\Chem32\...a\XuLei\xl-20250117-1 2025-01-17 21-42-27\006-P2-D4-xl-20250117-4.D
Sample Name: xl-20250117-4

    ======================================================================
    Acq. Operator   : SYSTEM                          Seq. Line :   6
    Acq. Instrument : 1260-DAD                        Location :   P2-D-04
    Injection Date  : 1/17/2025 23:57:58                   Inj :   1
                                                    Inj Volume : 5.000 µl
    Different Inj Volume from Sample Entry!  Actual Inj Volume : 1.000 µl
    Method          : d:\Chem32\1\Data\XuLei\xl-20250117-1 2025-01-17 21-42-27\XL-1.0-5%-30min.M
                      (Sequence Method)
    Last changed    : 10/30/2023 19:00:59 by SYSTEM
    Additional Info : Peak(s) manually integrated
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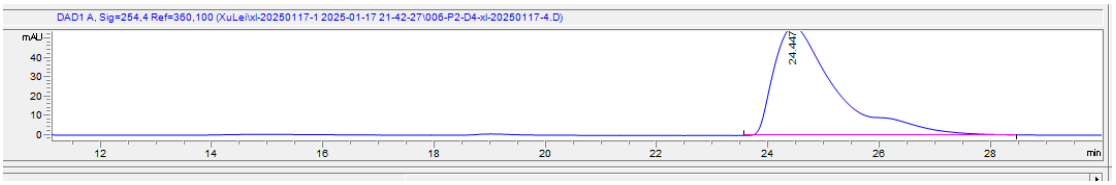
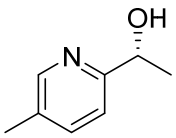


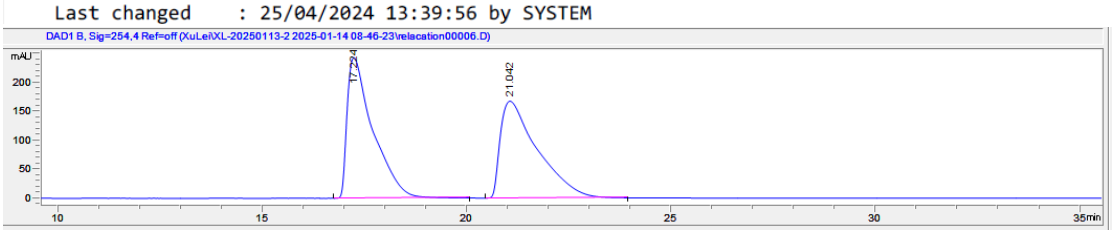
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	24.447	BB	4315.1	56.4	1.0987	100.000	0.434



(*R*)-1-(5-methylpyridin-2-yl)ethan-1-ol (**2f**)

```
Data File D:\ChemStation\1\Data\XuLei\XL-20250113-2 2025-01-14 08-46-23\relacation00006.D
Sample Name: XL-20250113-4

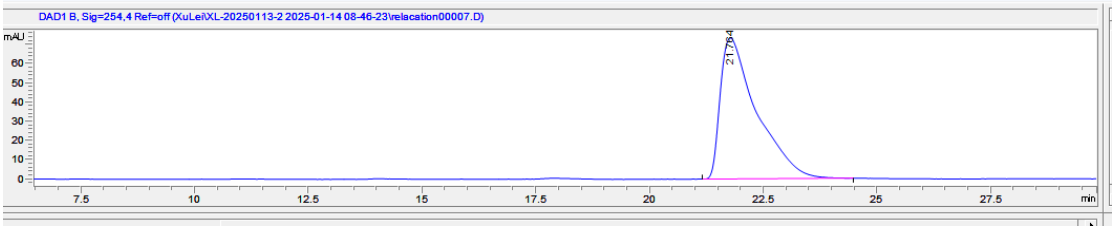
    ======================================================================
    Acq. Operator   : SYSTEM                        Seq. Line :   6
    Sample Operator : SYSTEM
    Acq. Instrument : LC                            Location :   P2-C-05
    Injection Date  : 14/01/2025 11:21:19               Inj :   1
                                                   Inj Volume : 1.000 µl
    Method          : D:\ChemStation\1\Data\XuLei\XL-20250113-2 2025-01-14 08-46-23\XL-1.0-5%-
                      50MIN-4.M (Sequence Method)
    Last changed    : 25/04/2024 13:39:56 by SYSTEM
```



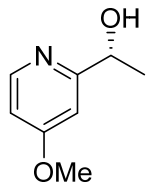
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	17.224	BB	10624.3	242.4	0.6333	50.220	0.321
2	21.042	BB	10531.4	166.8	0.9067	49.780	0.322

```
Data File D:\ChemStation\1\Data\XuLei\XL-20250113-2 2025-01-14 08-46-23\relacation00007.D
Sample Name: XL-20250113-5

    ======================================================================
    Acq. Operator   : SYSTEM                        Seq. Line :   7
    Sample Operator : SYSTEM
    Acq. Instrument : LC                            Location :   P2-C-06
    Injection Date  : 14/01/2025 12:12:10               Inj :   1
                                                   Inj Volume : 1.000 µl
    Acq. Method     : D:\ChemStation\1\Data\XuLei\XL-20250113-2 2025-01-14 08-46-23\XL-1.0-5%-
                      30MIN-4.M
    Last changed    : 19/06/2024 14:31:02 by SYSTEM
    Analysis Method : D:\ChemStation\1\Data\XuLei\XL-20250113-2 2025-01-14 08-46-23\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 14/01/2025 14:42:54 by SYSTEM
```



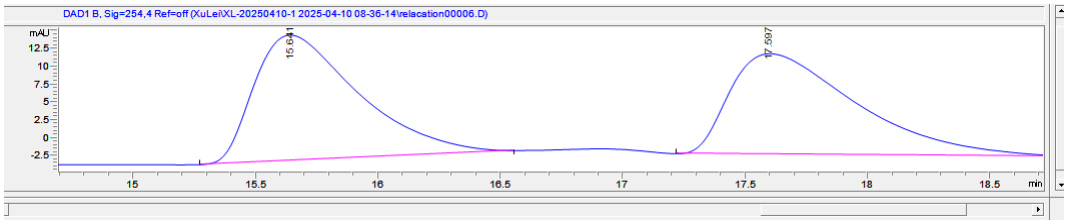
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	21.764	BB	4063.7	73.2	0.7796	100.000	0.35



(*R*)-1-(4-methoxypyridin-2-yl)ethan-1-ol (**2g**)

```
Data File D:\ChemStation\1\Data\XuLei\XL-20250410-1 2025-04-10 08-36-14\relacation00006.D
Sample Name: XL-20250410-3

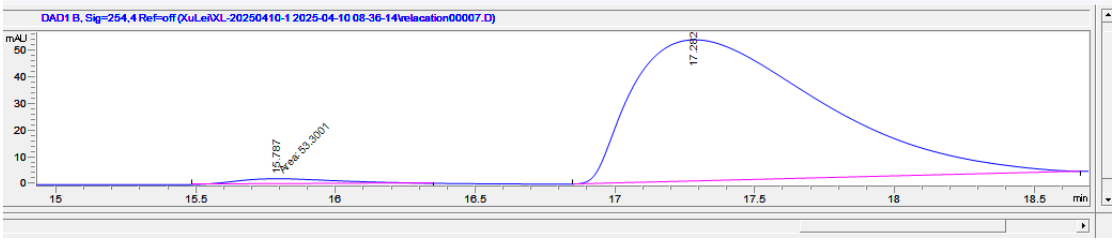
    ======================================================================
    Acq. Operator   : SYSTEM                        Seq. Line :   6
    Sample Operator : SYSTEM
    Acq. Instrument : LC                             Location :   P2-D-03
    Injection Date  : 10/04/2025 09:54:23                 Inj :   1
                                                  Inj Volume : 1.000 µl
    Method          : D:\ChemStation\1\Data\XuLei\XL-20250410-1 2025-04-10 08-36-14\XL-1.0-10%-
                      20MIN-4.M (Sequence Method)
    Last changed    : 24/12/2024 14:16:39 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



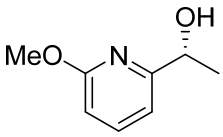
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	15.641	BB	521.3	17.7	0.4382	50.665	0.502
2	17.597	BB	507.7	14.2	0.5343	49.335	0.434

```
Data File D:\ChemStation\1\Data\XuLei\XL-20250410-1 2025-04-10 08-36-14\relacation00007.D
Sample Name: XL-20250410-4

    ======================================================================
    Acq. Operator   : SYSTEM                        Seq. Line :   7
    Sample Operator : SYSTEM
    Acq. Instrument : LC                             Location :   P2-D-04
    Injection Date  : 10/04/2025 10:15:13                 Inj :   1
                                                  Inj Volume : 1.000 µl
    Method          : D:\ChemStation\1\Data\XuLei\XL-20250410-1 2025-04-10 08-36-14\XL-1.0-10%-
                      20MIN-4.M (Sequence Method)
    Last changed    : 24/12/2024 14:16:39 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



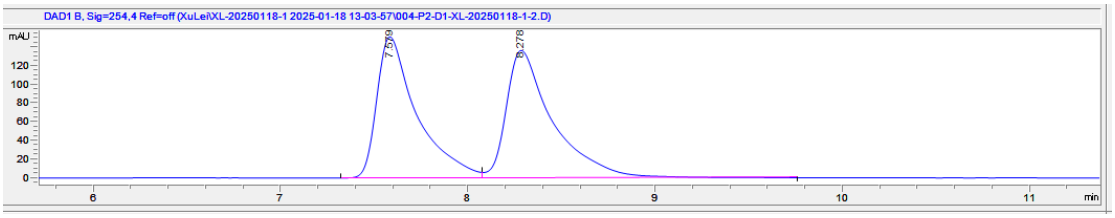
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	15.787	MM	53.3	2	0.4341	2.104	0.595
2	17.282	BB	2479.8	52.8	0.7241	97.896	0.459



(*R*)-1-(6-methoxypyridin-2-yl)ethan-1-ol (**2h**)

```
Data File D:\ChemSta...XuLei\XL-20250118-1 2025-01-18 13-03-57\004-P2-D1-XL-20250118-1-2.D
Sample Name: XL-20250118-1-2

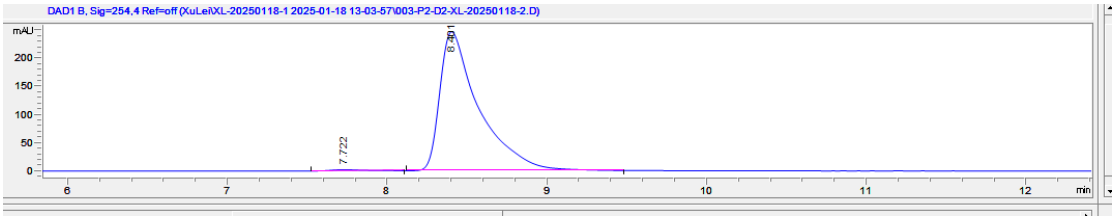
    ======================================================================
    Acq. Operator   : SYSTEM                        Seq. Line :   4
    Sample Operator : SYSTEM
    Acq. Instrument : LC                            Location :   P2-D-01
    Injection Date  : 18/01/2025 13:57:44               Inj :   1
                                                  Inj Volume : 1.000 µl
    Acq. Method     : D:\ChemStation\1\Data\XuLei\XL-20250118-1 2025-01-18 13-03-57\XL-1.0-5%-
                      30MIN-4.M
    Last changed    : 18/01/2025 14:10:41 by SYSTEM
                      (modified after loading)
    Analysis Method : D:\ChemStation\1\Data\XuLei\XL-20250118-1 2025-01-18 13-03-57\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 18/01/2025 17:39:55 by SYSTEM
```



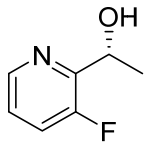
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	7.579	BV	2221.2	150	0.2127	48.812	0.445
2	8.278	VB	2329.3	135.5	0.2446	51.188	0.436

```
Data File D:\ChemSta...a\XuLei\XL-20250118-1 2025-01-18 13-03-57\003-P2-D2-XL-20250118-2.D
Sample Name: XL-20250118-2

    ======================================================================
    Acq. Operator   : SYSTEM                        Seq. Line :   3
    Sample Operator : SYSTEM
    Acq. Instrument : LC                            Location :   P2-D-02
    Injection Date  : 18/01/2025 13:30:29               Inj :   1
                                                  Inj Volume : 1.000 µl
    Acq. Method     : D:\ChemStation\1\Data\XuLei\XL-20250118-1 2025-01-18 13-03-57\XL-1.0-5%-
                      30MIN-4.M
    Last changed    : 18/01/2025 13:56:53 by SYSTEM
                      (modified after loading)
    Analysis Method : D:\ChemStation\1\Data\XuLei\XL-20250118-1 2025-01-18 13-03-57\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 18/01/2025 17:39:55 by SYSTEM
```



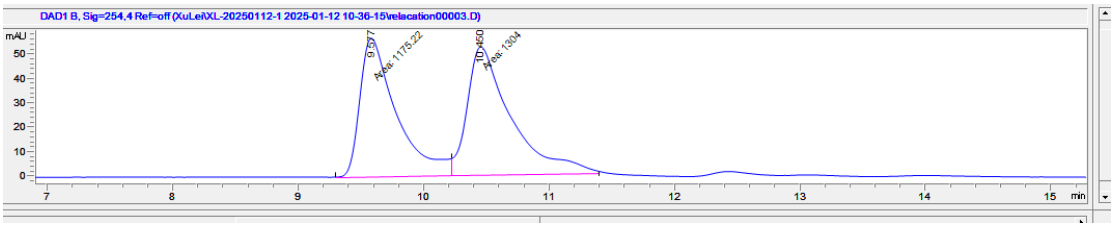
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	7.722	BB	29.2	2.2	0.1927	0.695	0.582
2	8.401	BB	4168.7	245.7	0.242	99.305	0.398



(*R*)-1-(3-fluoropyridin-2-yl)ethan-1-ol (**2i**)

```
Data File D:\ChemStation\1\Data\XuLei\XL-20250112-1 2025-01-12 10-36-15\relacation00003.D
Sample Name: XL-20250112-2

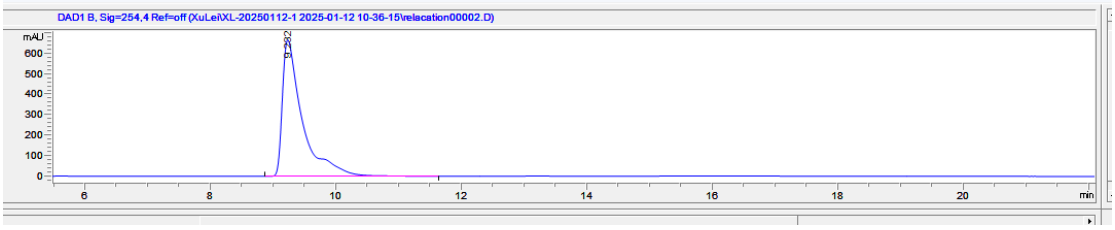
    ========================================================================
    Acq. Operator   : SYSTEM                          Seq. Line :   3
    Sample Operator : SYSTEM
    Acq. Instrument : LC                               Location :   P2-D-02
    Injection Date  : 12/01/2025 11:19:07                  Inj :   1
                                                     Inj Volume : 1.000 µl
    Method          : D:\ChemStation\1\Data\XuLei\XL-20250112-1 2025-01-12 10-36-15\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 19/06/2024 14:31:02 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



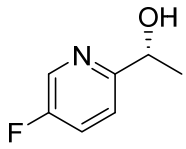
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	9.577	MF	1175.2	57.3	0.342	47.403	0
2	10.45	FM	1304	53.1	0.4092	52.597	0.433

```
Data File D:\ChemStation\1\Data\XuLei\XL-20250112-1 2025-01-12 10-36-15\relacation00002.D
Sample Name: XL-20250112-1

    ========================================================================
    Acq. Operator   : SYSTEM                          Seq. Line :   2
    Sample Operator : SYSTEM
    Acq. Instrument : LC                               Location :   P2-D-01
    Injection Date  : 12/01/2025 10:48:19                  Inj :   1
                                                     Inj Volume : 1.000 µl
    Method          : D:\ChemStation\1\Data\XuLei\XL-20250112-1 2025-01-12 10-36-15\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 19/06/2024 14:31:02 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



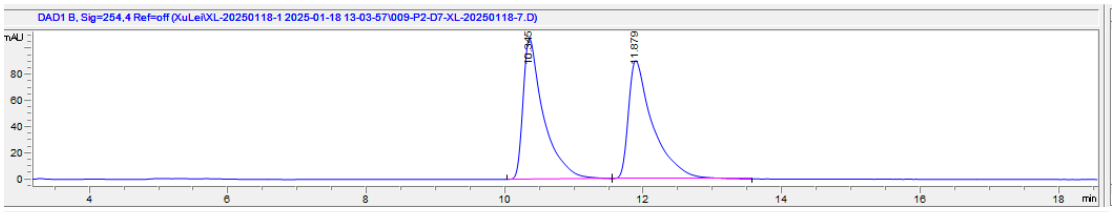
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	9.232	BB	14889.6	674.2	0.3116	100.000	0.333



(*R*)-1-(5-fluoropyridin-2-yl)ethan-1-ol (**2j**)

```
Data File D:\ChemSta...a\XuLei\XL-20250118-1 2025-01-18 13-03-57\009-P2-D7-XL-20250118-7.D
Sample Name: XL-20250118-7

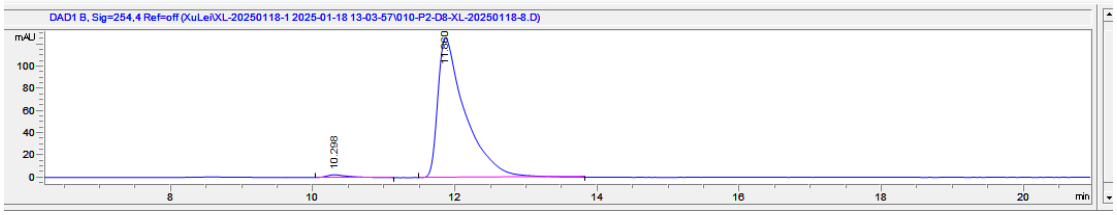
    ======================================================================
    Acq. Operator   : SYSTEM                        Seq. Line :   9
    Sample Operator : SYSTEM
    Acq. Instrument : LC                            Location :   P2-D-07
    Injection Date  : 18/01/2025 15:43:45               Inj :   1
                                                   Inj Volume : 1.000 µl
    Acq. Method     : D:\ChemStation\1\Data\XuLei\XL-20250118-1 2025-01-18 13-03-57\XL-1.0-5%-
                      30MIN-4.M
    Last changed    : 18/01/2025 16:02:53 by SYSTEM
                      (modified after loading)
    Analysis Method : D:\ChemStation\1\Data\XuLei\XL-20250118-1 2025-01-18 13-03-57\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 18/01/2025 17:39:55 by SYSTEM
```



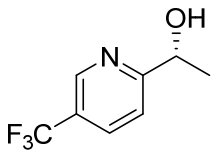
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	10.345	BV	2223.3	107.2	0.2959	49.936	0.41
2	11.879	VB	2229	90.3	0.35	50.064	0.387

```
Data File D:\ChemSta...a\XuLei\XL-20250118-1 2025-01-18 13-03-57\010-P2-D8-XL-20250118-8.D
Sample Name: XL-20250118-8

    ======================================================================
    Acq. Operator   : SYSTEM                        Seq. Line :  10
    Sample Operator : SYSTEM
    Acq. Instrument : LC                            Location :   P2-D-08
    Injection Date  : 18/01/2025 16:03:43               Inj :   1
                                                   Inj Volume : 1.000 µl
    Acq. Method     : D:\ChemStation\1\Data\XuLei\XL-20250118-1 2025-01-18 13-03-57\XL-1.0-5%-
                      30MIN-4.M
    Last changed    : 18/01/2025 16:33:43 by SYSTEM
                      (modified after loading)
    Analysis Method : D:\ChemStation\1\Data\XuLei\XL-20250118-1 2025-01-18 13-03-57\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 18/01/2025 17:39:55 by SYSTEM
```



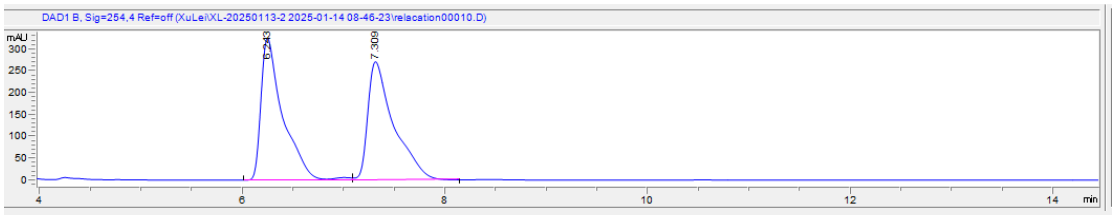
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	10.298	BB	53.7	2.4	0.301	1.574	0.489
2	11.86	BB	3357.7	125	0.3773	98.426	0.357



(*R*)-1-(5-(trifluoromethyl)pyridin-2-yl)ethan-1-ol (**2k**)

```
Data File D:\ChemStation\1\Data\XuLei\XL-20250113-2 2025-01-14 08-46-23\relacation00010.D
Sample Name: XL-20250113-8

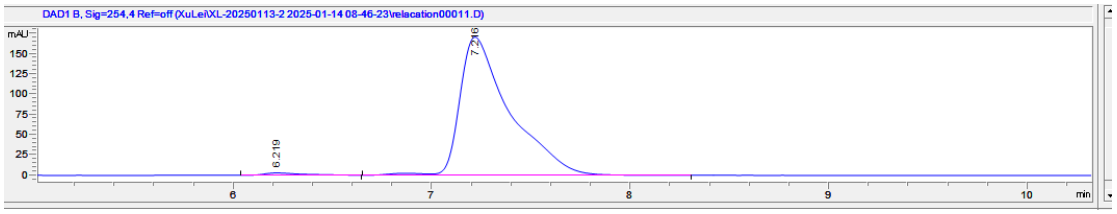
    ======================================================================
    Acq. Operator   : SYSTEM                          Seq. Line :  10
    Sample Operator : SYSTEM
    Acq. Instrument : LC                             Location :   P2-C-09
    Injection Date  : 14/01/2025 13:44:36                 Inj :   1
                                                    Inj Volume : 1.000 µl
    Acq. Method     : D:\ChemStation\1\Data\XuLei\XL-20250113-2 2025-01-14 08-46-23\XL-1.0-5%-
                      30MIN-4.M
    Last changed    : 19/06/2024 14:31:02 by SYSTEM
    Analysis Method : D:\ChemStation\1\Data\XuLei\XL-20250113-2 2025-01-14 08-46-23\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 14/01/2025 14:42:54 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



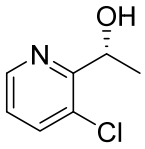
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	6.243	BV R	4836.8	322.9	0.2104	50.201	0.391
2	7.309	VB	4798.1	269.3	0.2519	49.799	0.388

```
Data File D:\ChemStation\1\Data\XuLei\XL-20250113-2 2025-01-14 08-46-23\relacation00011.D
Sample Name: XL-20250113-9

    ======================================================================
    Acq. Operator   : SYSTEM                          Seq. Line :  11
    Sample Operator : SYSTEM
    Acq. Instrument : LC                             Location :   P2-C-10
    Injection Date  : 14/01/2025 14:15:25                 Inj :   1
                                                    Inj Volume : 1.000 µl
    Acq. Method     : D:\ChemStation\1\Data\XuLei\XL-20250113-2 2025-01-14 08-46-23\XL-1.0-5%-
                      30MIN-4.M
    Last changed    : 14/01/2025 14:42:52 by SYSTEM
                      (modified after loading)
    Analysis Method : D:\ChemStation\1\Data\XuLei\XL-20250113-2 2025-01-14 08-46-23\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 14/01/2025 14:42:54 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



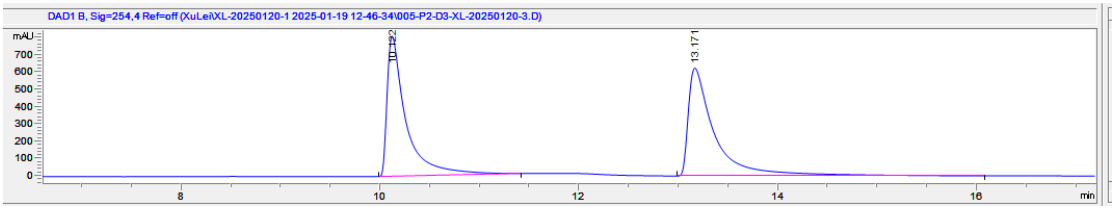
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	6.219	BB	41.2	3	0.2026	1.354	0.426
2	7.216	VB R	2999.5	172.1	0.2472	98.646	0.419



(*R*)-1-(3-chloropyridin-2-yl)ethan-1-ol (**2l**)

```
Data File D:\ChemSta...a\XuLei\XL-20250120-1 2025-01-19 12-46-34\005-P2-D3-XL-20250120-3.D
Sample Name: XL-20250120-3

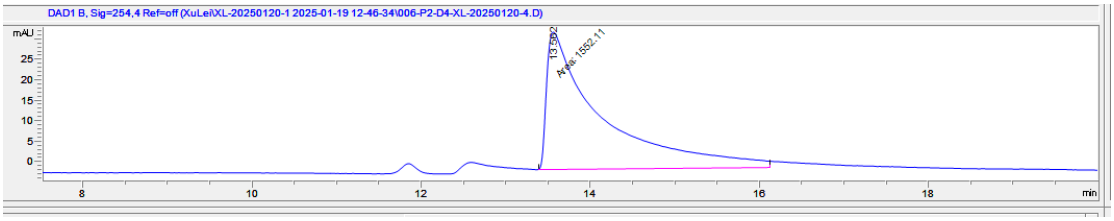
    ======================================================================
    Acq. Operator   : SYSTEM                       Seq. Line :   5
    Sample Operator : SYSTEM
    Acq. Instrument : LC                           Location :   P2-D-03
    Injection Date  : 19/01/2025 13:58:42              Inj :   1
                                                  Inj Volume : 1.000 µl
    Acq. Method     : D:\ChemStation\1\Data\XuLei\XL-20250120-1 2025-01-19 12-46-34\XL-1.0-5%-
                      30MIN-4.M
    Last changed    : 19/01/2025 14:15:54 by SYSTEM
                      (modified after loading)
    Analysis Method : D:\ChemStation\1\Data\XuLei\XL-20250120-1 2025-01-19 12-46-34\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 19/01/2025 14:36:46 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



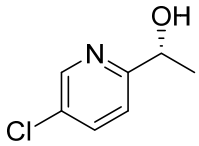
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	10.122	BB	10607	801.5	0.1884	47.979	0.323
2	13.171	BB	11500.5	617.3	0.2634	52.021	0.29

```
Data File D:\ChemSta...a\XuLei\XL-20250120-1 2025-01-19 12-46-34\006-P2-D4-XL-20250120-4.D
Sample Name: XL-20250120-4

    ======================================================================
    Acq. Operator   : SYSTEM                       Seq. Line :   6
    Sample Operator : SYSTEM
    Acq. Instrument : LC                           Location :   P2-D-04
    Injection Date  : 19/01/2025 14:16:43              Inj :   1
                                                  Inj Volume : 1.000 µl
    Acq. Method     : D:\ChemStation\1\Data\XuLei\XL-20250120-1 2025-01-19 12-46-34\XL-1.0-5%-
                      30MIN-4.M
    Last changed    : 19/01/2025 14:16:11 by SYSTEM
                      (modified after loading)
    Analysis Method : D:\ChemStation\1\Data\XuLei\XL-20250120-1 2025-01-19 12-46-34\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 19/01/2025 14:36:46 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



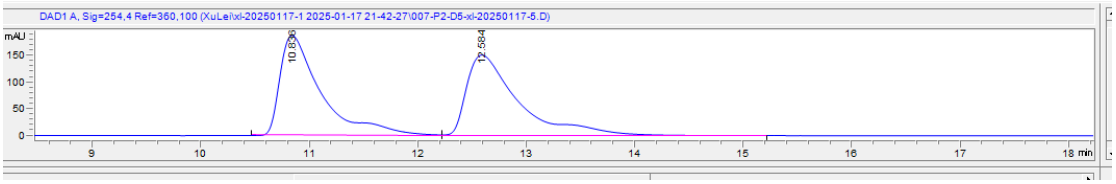
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	13.562	MM	1552.1	33.9	0.7628	100.000	0.134



(*R*)-1-(5-chloropyridin-2-yl)ethan-1-ol (**2m**)

```
Data File d:\Chem32\...a\XuLei\xl-20250117-1 2025-01-17 21-42-27\007-P2-D5-xl-20250117-5.D
Sample Name: xl-20250117-5

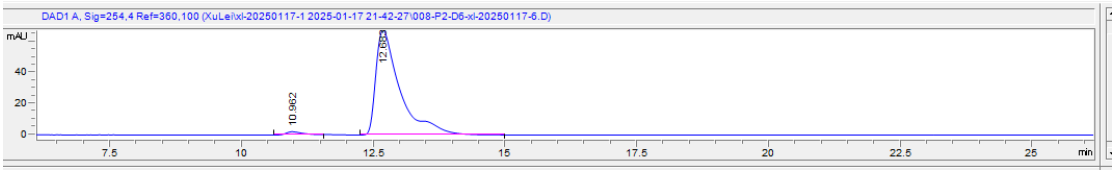
    ======================================================================
    Acq. Operator   : SYSTEM                          Seq. Line :   7
    Acq. Instrument : 1260-DAD                        Location :   P2-D-05
    Injection Date  : 1/18/2025 00:28:47                   Inj :   1
                                                    Inj Volume : 5.000 µl
    Different Inj Volume from Sample Entry!  Actual Inj Volume : 1.000 µl
    Method          : d:\Chem32\1\Data\XuLei\xl-20250117-1 2025-01-17 21-42-27\XL-1.0-5%-30min.M
                      (Sequence Method)
    Last changed    : 10/30/2023 19:00:59 by SYSTEM
```



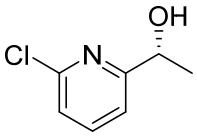
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	10.836	BV	4952.5	187.1	0.3828	49.802	0.372
2	12.584	VB	4991.8	150.4	0.4852	50.198	0.377

```
Data File d:\Chem32\...a\XuLei\xl-20250117-1 2025-01-17 21-42-27\008-P2-D6-xl-20250117-6.D
Sample Name: xl-20250117-6

    ======================================================================
    Acq. Operator   : SYSTEM                          Seq. Line :   8
    Acq. Instrument : 1260-DAD                        Location :   P2-D-06
    Injection Date  : 1/18/2025 00:59:36                   Inj :   1
                                                    Inj Volume : 5.000 µl
    Different Inj Volume from Sample Entry!  Actual Inj Volume : 1.000 µl
    Method          : d:\Chem32\1\Data\XuLei\xl-20250117-1 2025-01-17 21-42-27\XL-1.0-5%-30min.M
                      (Sequence Method)
    Last changed    : 10/30/2023 19:00:59 by SYSTEM
```



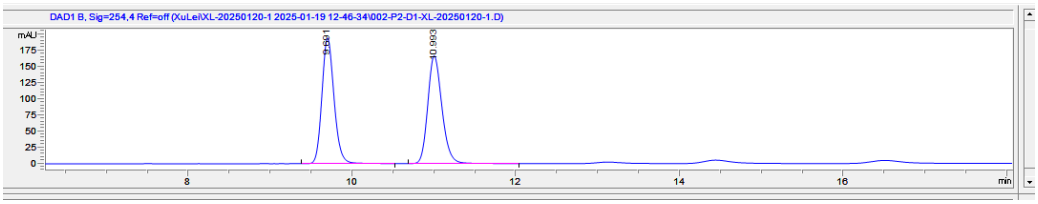
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	10.962	BB	42.7	2.1	0.2935	1.910	0.595
2	12.683	BB	2191.1	68.3	0.46	98.090	0.379



(*R*)-1-(6-chloropyridin-2-yl)ethan-1-ol (**2n**)

```
Data File D:\ChemSta...a\XuLei\XL-20250120-1 2025-01-19 12-46-34\002-P2-D1-XL-20250120-1.D
Sample Name: XL-20250120-1

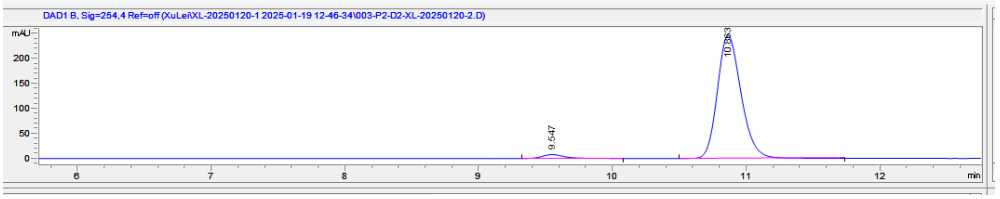
    ======================================================================
    Acq. Operator   : SYSTEM                       Seq. Line :   2
    Sample Operator : SYSTEM
    Acq. Instrument : LC                           Location :   P2-D-01
    Injection Date  : 19/01/2025 12:57:53              Inj :   1
                                                  Inj Volume : 1.000 µl
    Acq. Method     : D:\ChemStation\1\Data\XuLei\XL-20250120-1 2025-01-19 12-46-34\XL-1.0-5%-
                      30MIN-4.M
    Last changed    : 19/06/2024 14:31:02 by SYSTEM
    Analysis Method : D:\ChemStation\1\Data\XuLei\XL-20250120-1 2025-01-19 12-46-34\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 19/01/2025 14:36:46 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



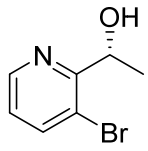
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	9.691	BB	2016.4	196.5	0.1577	49.970	0.816
2	10.993	BB	2018.9	168.5	0.1838	50.030	0.784

```
Data File D:\ChemSta...a\XuLei\XL-20250120-1 2025-01-19 12-46-34\003-P2-D2-XL-20250120-2.D
Sample Name: XL-20250120-2

    ======================================================================
    Acq. Operator   : SYSTEM                       Seq. Line :   3
    Sample Operator : SYSTEM
    Acq. Instrument : LC                           Location :   P2-D-02
    Injection Date  : 19/01/2025 13:28:43              Inj :   1
                                                  Inj Volume : 1.000 µl
    Acq. Method     : D:\ChemStation\1\Data\XuLei\XL-20250120-1 2025-01-19 12-46-34\XL-1.0-5%-
                      30MIN-4.M
    Last changed    : 19/01/2025 13:41:29 by SYSTEM
                      (modified after loading)
    Analysis Method : D:\ChemStation\1\Data\XuLei\XL-20250120-1 2025-01-19 12-46-34\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 19/01/2025 14:36:46 by SYSTEM
```



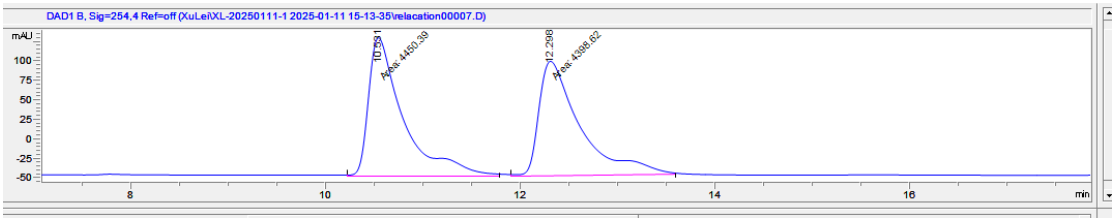
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	9.547	BB	92.1	7.9	0.1765	2.934	0.748
2	10.863	BB	3046.6	247.9	0.1894	97.066	0.765



(*R*)-1-(3-bromopyridin-2-yl)ethan-1-ol (**2o**)

```
Data File D:\ChemStation\1\Data\XuLei\XL-20250111-1 2025-01-11 15-13-35\relacation00007.D
Sample Name: XL-20250111-6

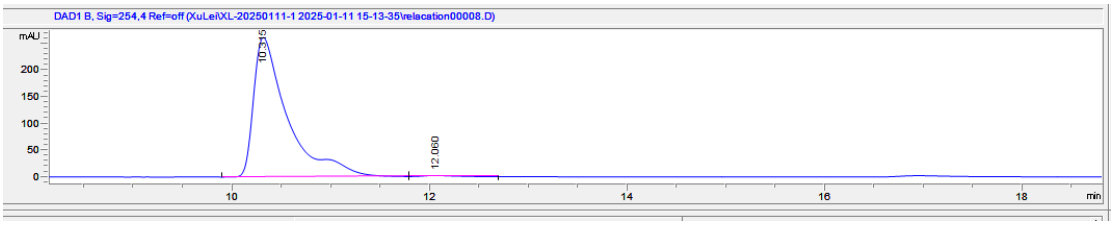
    ======================================================================
    Acq. Operator   : SYSTEM                          Seq. Line :   7
    Sample Operator : SYSTEM
    Acq. Instrument : LC                               Location :   P2-D-05
    Injection Date  : 11/01/2025 18:20:32                   Inj :   1
                                                     Inj Volume : 1.000 µl
    Method          : D:\ChemStation\1\Data\XuLei\XL-20250111-1 2025-01-11 15-13-35\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 19/06/2024 14:31:02 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



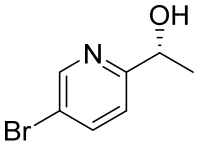
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	10.531	MM	4450.4	178.3	0.416	50.293	0.388
2	12.298	MM	4398.6	147.6	0.4968	49.707	0.379

```
Data File D:\ChemStation\1\Data\XuLei\XL-20250111-1 2025-01-11 15-13-35\relacation00008.D
Sample Name: XL-20250111-7

    ======================================================================
    Acq. Operator   : SYSTEM                          Seq. Line :   8
    Sample Operator : SYSTEM
    Acq. Instrument : LC                               Location :   P2-D-06
    Injection Date  : 11/01/2025 18:51:20                   Inj :   1
                                                     Inj Volume : 1.000 µl
    Method          : D:\ChemStation\1\Data\XuLei\XL-20250111-1 2025-01-11 15-13-35\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 19/06/2024 14:31:02 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



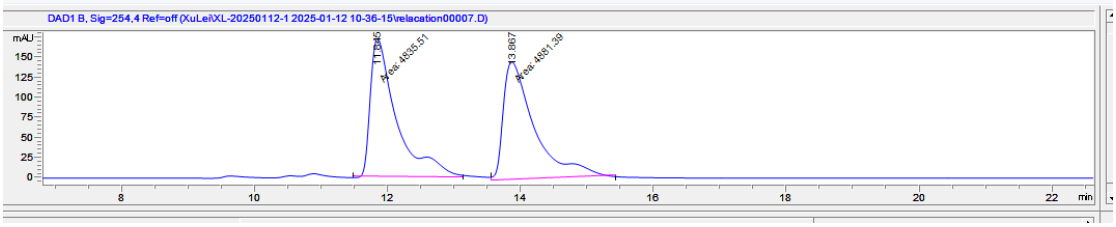
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	10.315	BV R	6261.3	261.1	0.3331	99.316	0.38
2	12.06	BB	43.1	2	0.2817	0.684	0.578



(*R*)-1-(5-bromopyridin-2-yl)ethan-1-ol (**2p**)

```
Data File D:\ChemStation\1\Data\XuLei\XL-20250112-1 2025-01-12 10-36-15\relacation00007.D
Sample Name: XL-20250112-6

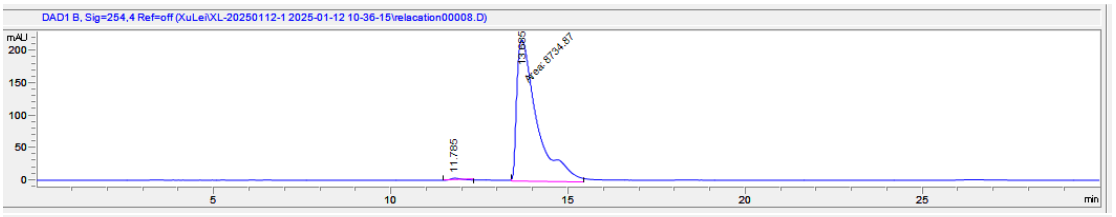
    ======================================================================
    Acq. Operator   : SYSTEM                          Seq. Line :   7
    Sample Operator : SYSTEM
    Acq. Instrument : LC                               Location :   P2-D-05
    Injection Date  : 12/01/2025 14:02:25                  Inj :   1
                                                     Inj Volume : 1.000 µl
    Method          : D:\ChemStation\1\Data\XuLei\XL-20250112-1 2025-01-12 10-36-15\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 19/06/2024 14:31:02 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



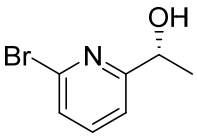
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	11.845	MM	4835.5	173.5	0.4645	49.764	0.357
2	13.867	MM	4881.4	148.4	0.5482	50.236	0.366

```
Data File D:\ChemStation\1\Data\XuLei\XL-20250112-1 2025-01-12 10-36-15\relacation00008.D
Sample Name: XL-20250112-7

    ======================================================================
    Acq. Operator   : SYSTEM                          Seq. Line :   8
    Sample Operator : SYSTEM
    Acq. Instrument : LC                               Location :   P2-D-06
    Injection Date  : 12/01/2025 14:33:13                  Inj :   1
                                                     Inj Volume : 1.000 µl
    Method          : D:\ChemStation\1\Data\XuLei\XL-20250112-1 2025-01-12 10-36-15\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 19/06/2024 14:31:02 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



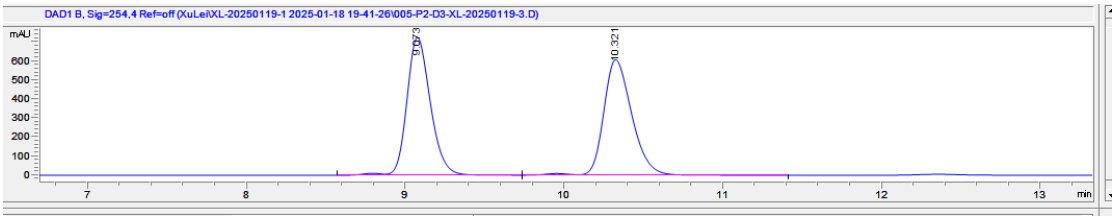
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	11.785	BB	62.9	3	0.2872	0.715	0.634
2	13.685	MM	8734.9	219.6	0.6628	99.285	0.32



(*R*)-1-(6-bromopyridin-2-yl)ethan-1-ol (**2q**)

```
Data File D:\ChemSta...a\XuLei\XL-20250119-1 2025-01-18 19-41-26\005-P2-D3-XL-20250119-3.D
Sample Name: XL-20250119-3

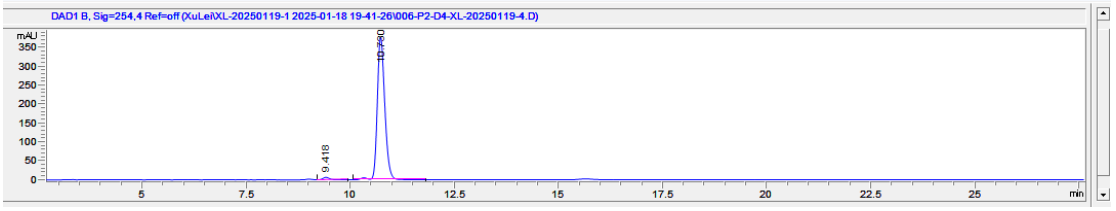
    ======================================================================
    Acq. Operator   : SYSTEM                        Seq. Line :   5
    Sample Operator : SYSTEM
    Acq. Instrument : LC                            Location :   P2-D-03
    Injection Date  : 18/01/2025 20:47:35               Inj :   1
                                                  Inj Volume : 1.000 µl
    Acq. Method     : D:\ChemStation\1\Data\XuLei\XL-20250119-1 2025-01-18 19-41-26\XL-1.0-5%-
                      30MIN-4.M
    Last changed    : 18/01/2025 20:16:13 by SYSTEM
    Analysis Method : D:\ChemStation\1\Data\XuLei\XL-20250119-1 2025-01-18 19-41-26\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 18/01/2025 20:46:49 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



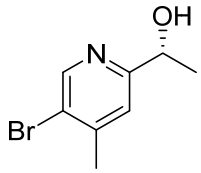
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	9.073	VB R	7525	733.9	0.1563	49.962	0.808
2	10.321	VB R	7536.5	614.6	0.1874	50.038	0.74

```
Data File D:\ChemSta...a\XuLei\XL-20250119-1 2025-01-18 19-41-26\006-P2-D4-XL-20250119-4.D
Sample Name: XL-20250119-4

    ======================================================================
    Acq. Operator   : SYSTEM                        Seq. Line :   6
    Sample Operator : SYSTEM
    Acq. Instrument : LC                            Location :   P2-D-04
    Injection Date  : 18/01/2025 21:18:25               Inj :   1
                                                  Inj Volume : 1.000 µl
    Acq. Method     : D:\ChemStation\1\Data\XuLei\XL-20250119-1 2025-01-18 19-41-26\XL-1.0-5%-
                      30MIN-4.M
    Last changed    : 18/01/2025 20:16:13 by SYSTEM
    Analysis Method : D:\ChemStation\1\Data\XuLei\XL-20250119-1 2025-01-18 19-41-26\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 18/01/2025 20:46:49 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



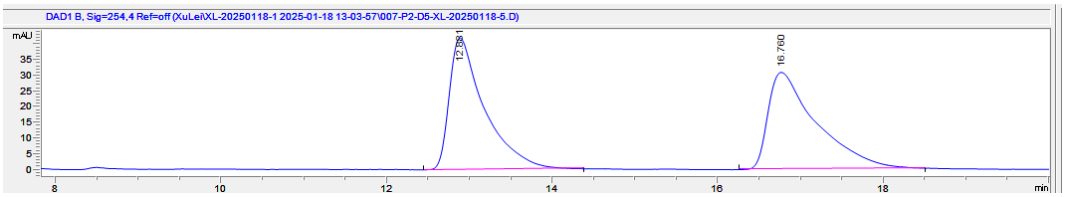
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	9.418	VB	74.3	6.6	0.1685	1.550	0.867
2	10.73	VB R	4722.1	376.7	0.1904	98.450	0.786



(*R*)-1-(5-bromo-4-methylpyridin-2-yl)ethan-1-ol (**2r**)

```
Data File D:\ChemSta...a\XuLei\XL-20250118-1 2025-01-18 13-03-57\007-P2-D5-XL-20250118-5.D
Sample Name: XL-20250118-5

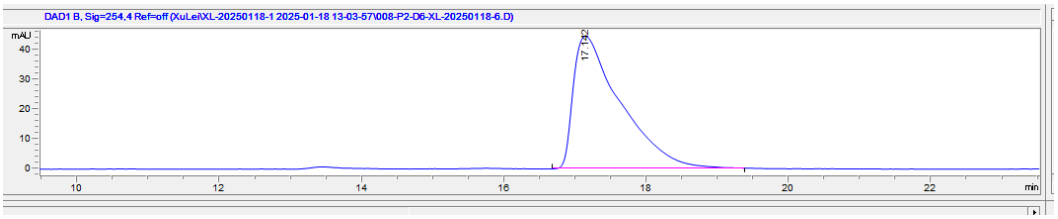
    ======================================================================
    Acq. Operator   : SYSTEM                       Seq. Line :   7
    Sample Operator : SYSTEM
    Acq. Instrument : LC                           Location :   P2-D-05
    Injection Date  : 18/01/2025 14:58:35              Inj :   1
                                                  Inj Volume : 1.000 µl
    Acq. Method     : D:\ChemStation\1\Data\XuLei\XL-20250118-1 2025-01-18 13-03-57\XL-1.0-5%-
                      30MIN-4.M
    Last changed    : 18/01/2025 15:18:36 by SYSTEM
                      (modified after loading)
    Analysis Method : D:\ChemStation\1\Data\XuLei\XL-20250118-1 2025-01-18 13-03-57\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 18/01/2025 17:39:55 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



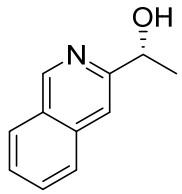
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	12.881	BB	1245.3	42.2	0.4239	49.618	0.402
2	16.76	BB	1264.5	31.1	0.5725	50.382	0.345

```
Data File D:\ChemSta...a\XuLei\XL-20250118-1 2025-01-18 13-03-57\008-P2-D6-XL-20250118-6.D
Sample Name: XL-20250118-6

    ======================================================================
    Acq. Operator   : SYSTEM                       Seq. Line :   8
    Sample Operator : SYSTEM
    Acq. Instrument : LC                           Location :   P2-D-06
    Injection Date  : 18/01/2025 15:19:24              Inj :   1
                                                  Inj Volume : 1.000 µl
    Acq. Method     : D:\ChemStation\1\Data\XuLei\XL-20250118-1 2025-01-18 13-03-57\XL-1.0-5%-
                      30MIN-4.M
    Last changed    : 18/01/2025 15:42:56 by SYSTEM
                      (modified after loading)
    Analysis Method : D:\ChemStation\1\Data\XuLei\XL-20250118-1 2025-01-18 13-03-57\XL-1.0-5%-
                      30MIN-4.M (Sequence Method)
    Last changed    : 18/01/2025 17:39:55 by SYSTEM
```



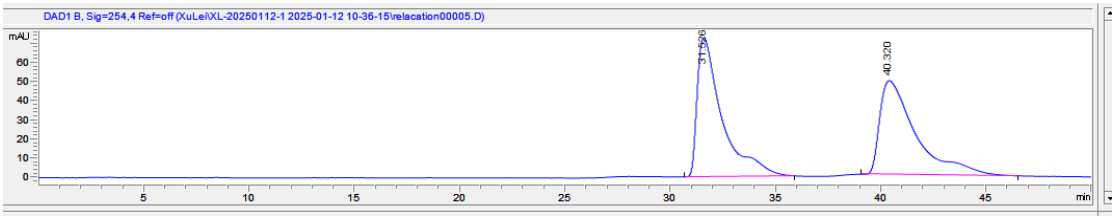
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	17.142	BB	2059.8	44.4	0.6587	100.000	0.314



(*R*)-1-(isoquinolin-3-yl)ethan-1-ol (**2s**)

```
Data File D:\ChemStation\1\Data\XuLei\XL-20250112-1 2025-01-12 10-36-15\relacation00005.D
Sample Name: XL-20250112-4

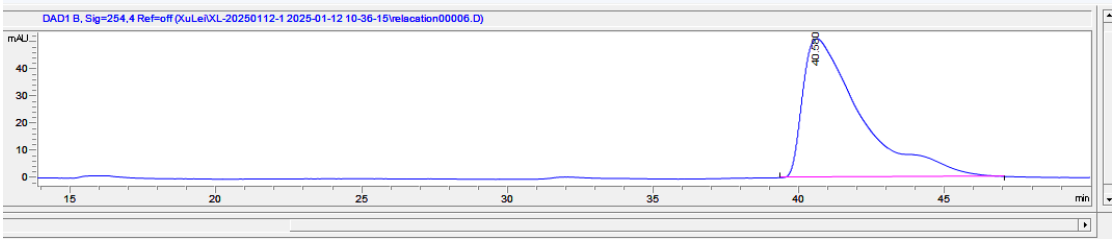
    ========================================================================
    Acq. Operator   : SYSTEM                        Seq. Line :   5
    Sample Operator : SYSTEM
    Acq. Instrument : LC                             Location :   P2-D-03
    Injection Date  : 12/01/2025 12:20:48                 Inj :   1
                                                  Inj Volume : 1.000 µl
    Method          : D:\ChemStation\1\Data\XuLei\XL-20250112-1 2025-01-12 10-36-15\XL-1.0-5%-
                      50MIN-4.M (Sequence Method)
    Last changed    : 25/04/2024 13:39:56 by SYSTEM
```



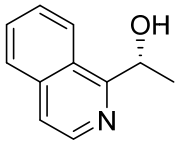
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	31.526	BB	5947.6	72.5	1.1546	50.458	0.331
2	40.32	BB	5839.8	49.1	1.5764	49.542	0.331

```
Data File D:\ChemStation\1\Data\XuLei\XL-20250112-1 2025-01-12 10-36-15\relacation00006.D
Sample Name: XL-20250112-5

    ========================================================================
    Acq. Operator   : SYSTEM                        Seq. Line :   6
    Sample Operator : SYSTEM
    Acq. Instrument : LC                             Location :   P2-D-04
    Injection Date  : 12/01/2025 13:11:36                 Inj :   1
                                                  Inj Volume : 1.000 µl
    Method          : D:\ChemStation\1\Data\XuLei\XL-20250112-1 2025-01-12 10-36-15\XL-1.0-5%-
                      50MIN-4.M (Sequence Method)
    Last changed    : 25/04/2024 13:39:56 by SYSTEM
```



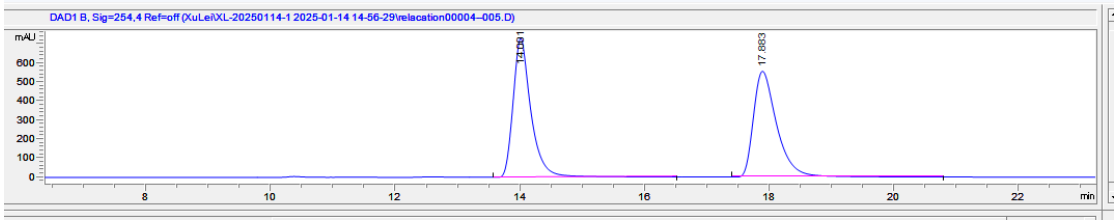
#	Time	Type	Area	Height	Width	Area%	Symmetry
1	40.58	BB	7032.2	50.8	1.7784	100.000	0.292



(*R*)-1-(isoquinolin-1-yl)ethan-1-ol (**2t**)

```
Data File D:\ChemSta...Data\XuLei\XL-20250114-1 2025-01-14 14-56-29\relacation00004--005.D
Sample Name: XL-20250114-4

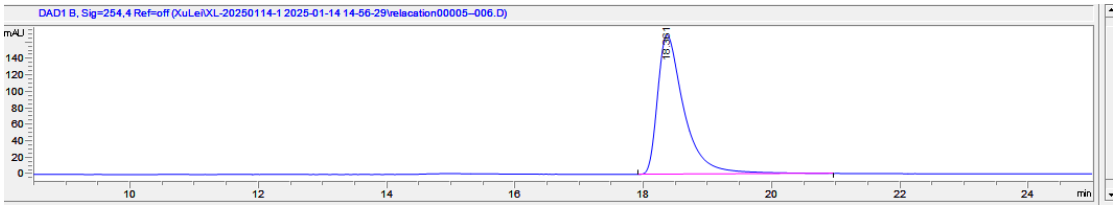
    ======================================================================
    Acq. Operator   : SYSTEM                       Seq. Line :   5
    Sample Operator : SYSTEM
    Acq. Instrument : LC                           Location :   P2-C-03
    Injection Date  : 14/01/2025 16:04:26              Inj :   1
                                                  Inj Volume : 1.000 µl
    Acq. Method     : D:\ChemStation\1\Data\XuLei\XL-20250114-1 2025-01-14 14-56-29\XL-1.0-5%-
                      50MIN-4.M
    Last changed    : 14/01/2025 16:26:00 by SYSTEM
                      (modified after loading)
    Analysis Method : D:\ChemStation\1\Data\XuLei\XL-20250114-1 2025-01-14 14-56-29\XL-1.0-5%-
                      50MIN-4.M (Sequence Method)
    Last changed    : 14/01/2025 16:29:29 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



#	Time	Type	Area	Height	Width	Area%	Symmetry
1	14.001	BB	14494.2	727.1	0.2946	50.049	0.665
2	17.883	BB	14466.1	553.7	0.3928	49.951	0.582

```
Data File D:\ChemSta...Data\XuLei\XL-20250114-1 2025-01-14 14-56-29\relacation00005--006.D
Sample Name: XL-20250114-5

    ======================================================================
    Acq. Operator   : SYSTEM                       Seq. Line :   6
    Sample Operator : SYSTEM
    Acq. Instrument : LC                           Location :   P2-C-04
    Injection Date  : 14/01/2025 16:30:15              Inj :   1
                                                  Inj Volume : 1.000 µl
    Acq. Method     : D:\ChemStation\1\Data\XuLei\XL-20250114-1 2025-01-14 14-56-29\XL-1.0-5%-
                      50MIN-4.M
    Last changed    : 14/01/2025 16:26:00 by SYSTEM
    Analysis Method : D:\ChemStation\1\Data\XuLei\XL-20250114-1 2025-01-14 14-56-29\XL-1.0-5%-
                      50MIN-4.M (Sequence Method)
    Last changed    : 14/01/2025 16:29:29 by SYSTEM
    Additional Info : Peak(s) manually integrated
```



#	Time	Type	Area	Height	Width	Area%	Symmetry
1	18.361	BB	4872.9	169.5	0.4273	100.000	0.506

6. References

1. C. Yin, Y.-F. Jiang, F. Huang, C.-Q. Xu, Y. Pan, S. Gao, G.-Q. Chen, X. Ding, S.-T. Bai, Q. Lang, J. Li and X. Zhang, *Nat. Commun.*, 2023, **14**, 3718.
2. F. Huang, Q. Lang, G.-Q. Chen, and X. Zhang, *Org. Lett.*, 2024, **26**, 6159–6163.
3. L. Xu, G.-Q. Chen and X. Zhang, *Org. Biomol. Chem.*, 2025, **23**, 94–97.
4. Q. Zhao, S. Li, K. Huang, R. Wang, X. Zhang, *Org. Lett.*, 2013, **15**, 4014–4017.
5. W. Wu, S. Liu, M. Duan, X. Tan, C. Chen, Y. Xie, Y. Lan, X.-Q. Dong and X. Zhang, *Org. Lett.*, 2016, **18**, 2938–2941.
6. Y. Lebedev, I. Polishchuk, B. Maity, L. Cavallo and M. Rueping, *J. Am. Chem. Soc.*, 2019, **141**, 19415−19423.
7. T. J. Donohoe, M. J. Connolly, A. H. Rathi and L. Walton, *Org. Lett.*, 2011, **13**, 2074–2077.
8. M. Yamada, K. Azuma and M. Yamano, *Org. Lett.*, 2021, **23**, 3364–3367.
9. X. Xu, Y. You, M. Y. Jin, F.-J. Meng, C. Xu and X. Xing, *Sci. China Chem.,* 2023, **66**, 1443–1449.
10. S. Karlström, G. Nordvall, D. Sohn, A. Hettman, D. Turek, K. Åhlin, A. Kers, M. Claesson, C. Slivo, Y. Lo-Alfredsson, C. Petersson, G. Bessidskaia, P. H. Svensson, T. Rein, E. Jerning, Å. Malmberg, C. Ahlgen, C. Ray, L. Vares, V. Ivanov and R. Johansson, *J. Med. Chem.*, 2013, **56**, 3177–3190.
11. D. M. Fialho, E. Etemadi-Davan, O. C. Langner, B. S. Takale, A. Gadakh, G. Sambasivam and B. H. Lipshutz, *Org. Lett.*, 2021, **23**, 3282–3286.