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Supporting Information

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Direct *ortho*-iodination of β-and γ-arylalkylamine derivatives

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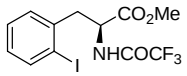
General:
All reagents are commercially available and were used without further purification. IPy_2BF_4 is also commercially available, but was purified befored used following this protocol: 10 mmol of IPy_2BF_4 were dissolved in 40 mL of CH_2Cl_2 and filtered. The resulting solution was stirred and ether was slowly added until precipitation of a white solid is completed. The precipitate is colleted, dried under *vacum* and store under nitrogen. All reactions were conducted using oven-dried glassware under a nitrogen atmosphere. Dichloromethane was distilled before used from CaH_2, trifluoroacetic acid (TFA) was distilled from P_2O_5, THF was distilled from Na, and MeOH was distilled from CaH_2. Solvents used in column chromatography, hexane and ethyl acetate, were obtained from commercial supliers and used without further purification. TLC was performed on aluminium-backed plates coated with silica gel 60 (230-240 mesh) with F254 indicator (Merck). The spots were visualized with UV light. NMR Spectra were measured at room temperature on Bruker AV-300 MHz and Bruker 400 AV-MHz spectrometers. Chemical shifts are reported in ppm using residual solvent peaks as reference. Carbon multiplicities were assigned by DEPT techniques. High resolution mass spectra were recorder on a Finnigan-Matt 95 mass spectrometer using EI at 70eV. Melting points were measured on a Gallenkamp apparatous. GC measurements were recorded on a Agilent 68900N Network GC System, equiped with a Zebron ZB-5 column.

Synthesis of the starting materials:
Synthesis of **1c**: 2.5 mmol (413 mg) of phenylalanine were dissolved in 40 mL of dried MeOH. 2.5 mmol (0.18 mL) of $SOCl_2$ were added slowly at 0ºC. After the addition is completed, the mixture was heated at 40ºC for 2 hours. Then, the solvent was evaporated and the white solid was washed with 1N NaOH and extracted with CH_2Cl_2. The solvent was evaporated and the residue was redissolved in dried CH_2Cl_2. 7.5 mmol (0.61 mL) of pyridine was added and 10 mmol (1.41 mL) of trifluoracetic anhydride were slowly added. The reaction was stirred overnigh at room temperature, quenched with water, extracted twice with CH_2Cl_2, and whashed with water. The organic layer was dried with sodium sulfate and solvent was evaporated to give the fully protected aminoacid as a white solid.
Synthesis of *N*-trifluoroacetamides **1d-1j, 1l, 1n:** 20 mmol of the corresponding amine and 60 mmol (4.85 mL) of pyridine were dissolved in 50 mL of dried CH_2Cl_2. 40 mmol (5.65 mL) of trifluoracetic anhydride were added slowly at 0ºC. The reaction was stirred overnight at room temperature, quenched with water, extracted twice with CH_2Cl_2 and whashed with water. The organic layers were dried with sodium sulfate, and the solvent was evaporated. The residue was purified by column chromatography using hexane: ethyl acetate as eluyent.
Synthesis of the tertiary amines **1j** and **1k**: Terciary amines were prepared from the corresponding *N*-trifluoracetamides **1d** and **1e** as follows: 2 mmol of **1d** or **1e** were dissolved in 25 mL of dried THF. 2.5 mmol (63 mg) of NaH (95%) were added at 0ºC and the reaction was stirred for 1 hour. Then, 10 mmol (0.62 mL) of MeI were added and the mixture was stirred until the reaction is completed (as judged by TLC or GC analysis). The reaction is quenched with water, extracted twice with ether, and whashed with water. The organic layers were dried with sodium sulfate and solvents were evaporated. The residue was purified by column chromatography using hexane: ethyl acetate as eluyent.
Synthesis of the *N*-trifluoroacetamide **1m**: A mixture of 20 mmol (2.51 mL) of phenethylamine, 20 mmol (2.46 g) of 2-pyridine-carboxilic acid, 20 mmol (4.13 g) of DCC and 2 mmol (0.24 g) of DMAP were dissolved in 50 mL of CH_2CL_2 and stirred overnight. The mixture was filtrated to eliminate the urea formed. Solvent was evaporated and the residue was purified by column chromatography using hexane: ethyl acetate as eluyent.

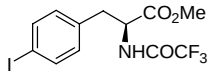
General procedure for the iodination of arylamines:
0.5 mmol of **1** was dissolved in a mixture of dried CH_2Cl_2 (100 mL) and dried TFA (10 mL). HBF_4 (1.5 mmol, 0.21 mL of a 54% wt. solution in diethyl ether) was added, followed by addition of IPy_2BF_4 (0.75 mmol, 0.28 g) (the solution turned pink). The mixture was stirred at room temperature until is completed (as judged by GC analysis, reaction times are given for each compound), quenched with cold water, washed twice with water, one with 5% aqueous sodium tiosulfate and water again. The organic layer was dried over anhydrous sodium sulfate and concentrated *in vacuo*. The crude product was purified by column chromatography using hexane: ethyl acetate as eluents.

(*S*)-methyl-2-(2,2,2-trifluoracetamido)-3-(2-iodophenyl)propanoate, ***ortho*-2c**



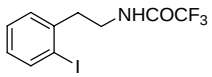
Reaction time: 2h. White solid. R_f = 0.57 (Hexane: EtOAc, 3:1). M. p. 110-111 °C. Yield: 80%
^{1}H NMR (300 MHz, $CDCl_3$): δ = 3.21 (dd, *J* = 13.9, 8.2, 1H), 3.42 (dd, *J* = 13.9, 6.0, 1H), 3.78 (s, 3H), 4.95 (q, *J* = 8.2, 1H), 6.93-6.99 (m, 2H, CH_{Arom} + NH), 7.15-7.18 (m, 1H), 7.26-7.32 (m, 1H), 7.83 (d, *J* = 6.8, 1H) ppm.
^{13}C NMR (75 MHz, $CDCl_3$): δ = 42.6 (CH_2), 53.1 (CH), 53.4 (CH_3), 101.2 (C-I), 115.8 (q, $^1J_{CF}$ = 287.7, CF_3), 128.9 (CH), 129.6 (CH), 130.6 (CH), 138.4 (C), 140.2 (CH), 157.0 (q, $^2J_{CF}$ = 37.9, CO), 170.7 (CO) ppm.
HRMS (EI): Calcd for $C_{12}H_{11}F_3INO_3$: 400.9736, found: 400.9756.
The enantiomeric ratio was determined by HPLC (chiracel OD-H column, 250 x 4.6 mm, 0.7 mL/min, hexane / 2-propanol 90:10): Retention times, **(±)-*ortho*-2c**: 12.2 and 13.9 min; **(*S*)-*ortho*-2c**: 12.2 (not detected) and 13.9 (>99%) min.

(*S*)-methyl-2-(2,2,2-trifluoracetamido)-3-(4-iodophenyl)propanoate, ***para*-2c**



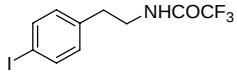
Reaction time: 2h. White solid. R_f = 0.42 (Hexane: EtOAc, 3:1). M. p. 90-91 °C. Yield: 5%
^{1}H NMR (300 MHz, $CDCl_3$): δ = 3.16 (dq, *J* = 13.9, 5.4, 2H), 3.80 (s, 3H), 4.87 (q, *J* = 5.7, 1H), 6.83 (d, *J* = 8.0, 2H), 7.65 (d, *J* = 8.0, 2H) ppm.
^{13}C NMR (75 MHz, $CDCl_3$): δ = 37.1 (CH_2), 53.3 (CH), 53.7 (CH_3), 93.5 (C-I), 115.8 (q, $^1J_{CF}$ = 288.7, CF_3), 131.4 (2 x CH), 134.6 (C), 138.2 (2 x CH), 156.9 (q, $^2J_{CF}$ = 38.4, CO), 170.5 (CO) ppm.
HRMS (EI): Calcd for $C_{12}H_{11}F_3INO_3$: 400.9736, found: 400.9732

2,2,2-trifluoro-*N*-(2-(2-iodophenyl)ethyl)acetamide, ***ortho*-2d**



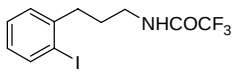
Reaction time: 2h. White solid. R_f = 0.45 (Hexane: EtOAc, 5:1), M. p. 76-77 °C. Yield: 85%
^{1}H NMR (300 MHz, $CDCl_3$): δ = 3.06 (t, *J* = 7.1, 2H), 3.64 (q, *J* = 6.8, 2H), 6.54 (broad, s, 1H), 6.97 (t, *J* = 7.4, 1H), 7.20-7.23 (m, 1H), 7.28-7.36 (m, 1H), 7.86 (d, *J* = 8.0, 1H) ppm.
^{13}C NMR (75 MHz, $CDCl_3$): δ = 39.8 (CH_2), 40.1 (CH_2), 100.7 (C-I), 116.1 (q, $^1J_{CF}$ = 287.7, CF_3), 129.1 (CH), 129.2 (CH), 130.4 (CH), 140.2 (CH), 140.7 (C), 159.1 (q, $^2J_{CF}$ = 36.7, CO) ppm.
HRMS (EI): Calcd for $C_{10}H_9F_3INO$: 342.9681, found: 342.9673.

2,2,2-trifluoro-*N*-(2-(4-iodophenyl)ethyl)acetamide, ***para*-2d**



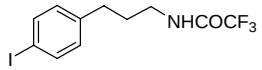
Reaction time: 2h. White solid. R_f = 0.37 (Hexane: EtOAc, 3:1). M. p. 133-134 °C. Yield: 3%
^{1}H NMR (300 MHz, $CDCl_3$): δ = 2.87 (t, *J*= 7.2, 2H), 3.62 (q, *J* = 6.6, 2H), 6.40 (broad, s, 1H), 6.98 (d, *J* = 8.4, 2H), 7.70 (d, *J* = 8.4, 2H) ppm.
^{13}C NMR (75 MHz, $CDCl_3$): δ = 34.9 (CH_2), 41.1 (CH_2), 92.6 (C-I), 116.0 (q, $^1J_{CF}$ = 285.4, CF_3), 131.0 (2 x CH), 137.5 (C), 138.3 (2 x CH), 157.6 (q, $^2J_{CF}$ = 38.4, CO) ppm.
HRMS (EI): Calcd for $C_{10}H_9F_3INO$: 342.9681, found: 342.9686

2,2,2-trifluoro-*N*-(3-(2-iodophenyl)propyl)acetamide, ***ortho*-2e**



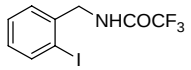
Reaction time: 2h. White solid. R_f = 0.36 (Hexane: EtOAc, 5:1). M. p. 71-72 °C. Yield: 82%
^{1}H NMR (300 MHz, $CDCl_3$): δ = 1.94 (quint, *J* = 7.2, 2H), 2.82 (t, *J* = 9.0, 2H), 3.47 (q, *J* = 6.0, 2H), 6.58 (broad, s, 1H), 6.95 (dt, *J* = 7.5, 1.8, 1H), 7.25 (dd, *J* = 7.8, 1.8, 1H), 7.30-7.35 (m, 1H), 7.85 (d, *J* = 7.8, 1H) ppm.
^{13}C NMR (75 MHz, $CDCl_3$): δ = 29.7 (CH_2), 38.1 (CH_2), 39.7 (CH_2), 100.6 (C-I), 116.1 (q, $^1J_{CF}$ = 286.5, CF_3), 128.6 (CH), 129.0 (CH), 129.7 (CH), 140.0 (CH), 143.5 (C), 157.6 (q, $^2J_{CF}$ = 36.3, CO) ppm.
HRMS (EI): Calcd for $C_{11}H_{11}F_3INO$: 356.9837, found: 356.9847.

2,2,2-trifluoro-*N*-(3-(4-iodophenyl)propyl)acetamide, *para*-2e



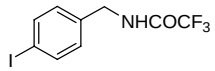
Reaction time: 2h. White solid. R_f = 0.26 (Hexane: EtOAc, 5:1), M. p. 98-99 °C. Yield: 4%
^{1}H NMR (300 MHz, $CDCl_3$): δ = 1.94 (quint, *J* = 6.9, 2H), 2.65 (t, *J* = 7.8, 2H), 3.42 (q, *J* = 6.9, 2H), 6.30 (broad, s, 1H), 6.97 (d, *J* = 7.8, 2H), 7.65 (d, *J* = 7.8, 2H) ppm.
^{13}C NMR (75 MHz, $CDCl_3$): δ = 30.6 (CH_2), 32.8 (CH), 39.8 (CH_2), 91.7 (C-I), 116.2 (q, $^1J_{CF}$ = 286.4, CF_3), 130.7 (2 x CH), 138.0 (2 x CH), 140.5 (C), 157.7 (q, $^2J_{CF}$ = 38.5, CO) ppm.
HRMS (EI): Calcd for $C_{11}H_{11}F_3INO$: 356.9837, found: 356.9844

***N*-(2-iodobenzyl)-2,2,2-trifluoroacetamide, *ortho*-2f**



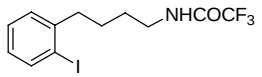
Reaction time: 5h. White solid. R_f = 0.42 (Hexane: EtOAc, 5:1). M. p. 76-77°C. Yield: 35%
^{1}H NMR (300 MHz, $CDCl_3$): δ = 4.61 (d, *J* = 5.9, 2H), 6.83 (broad, s, 1H), 7.05-7.11 (m, 1H), 7.40 (d, *J* = 4.4, 2H), 7.90 (d, *J* = 8.1, 1H) ppm.
^{13}C NMR (75 MHz, $CDCl_3$): δ = 48.7 (CH_2), 99.4 (C-I), 116.1 (q, $^1J_{CF}$ = 286.4, CF_3), 129.2 (CH), 130.5 (2 x CH), 138.6 (C), 140.1 (CH), 157.3 (q, $^2J_{CF}$ = 36.9, CO) ppm.
HRMS (EI): $(M-I)^+$, Calcd for $C_9H_7F_3NO^+$: 202.0474, found: 202.0473

***N*-(4-iodobenzyl)-2,2,2-trifluoroacetamide, *para*-2f**



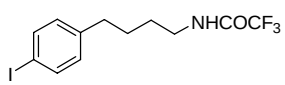
Reaction time: 5h. White solid. R_f = 0.29 (Hexane: EtOAc, 5:1), M. p. 90-91 °C. Yield: 37%
^{1}H NMR (300 MHz, $CDCl_3$): δ = 4.48 (d, *J* = 5.9, 2H), 6.96 (broad, s, 1H), 7.06 (d, *J* = 8.1, 2H), 7.74 (d, *J* = 8.1, 2H) ppm.
^{13}C NMR (75 MHz, $CDCl_3$): δ = 43.7 (CH_2), 94.2 (C-I), 116.2 (q, $^1J_{CF}$ = 285.9, CF_3), 130.2 (2 x CH), 136.8 (C), 138.5 (2 x CH), 157.6 (q, $^2J_{CF}$ = 36.9, CO) ppm.
HRMS (EI): $(M-I)^+$, Calcd for $C_9H_7F_3NO^+$: 202.0474, found: 202.0477

2,2,2-trifluoro-*N*-(4-(2-iodophenyl)butyl)acetamide, *ortho*-2g



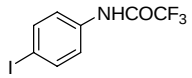
Reaction time: 5h. White solid. R_f = 0.68 (Hexane: EtOAc, 5:1), M. p. 57-58°C. Yield: 41%
^{1}H NMR (300 MHz, $CDCl_3$): δ = 1.68-1.71 (m, 4H), 2.75-2.80 (m, 2H), 3.41-3.48 (m, 2H), 6.56 (broad, s, 1H), 6.91 (dt, *J* = 7.5, 1.6, 1H), 7.21-7.33 (m, 2H), 7.84 (d, *J* = 7.8, 1H) ppm.
^{13}C NMR (75 MHz, $CDCl_3$): δ = 27.5 (CH_2), 28.8 (CH_2), 40.0 (CH_2), 40.4 (CH_2), 100.7 (C-I), 116.2 (q, $^1J_{CF}$ = 286.4, CF_3), 128.3 (CH), 128.8 (CH), 129.7 (CH), 139.9 (CH), 146.9 (C), 157.5 (q, $^2J_{CF}$ = 36.9, CO) ppm.
HRMS (EI): Calcd for $C_{12}H_{13}F_3INO$: 370.9994, found: 371.0097.

2,2,2-trifluoro-*N*-(4-(4-iodophenyl)butyl)acetamide, *para*-2g



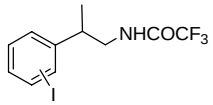
Reaction time: 5h. White solid. R_f = 0.35 (Hexane: EtOAc, 5:1), M. p. 96-97 °C. Yield: 36%
^{1}H NMR (300 MHz, $CDCl_3$): δ = 1.64-1.66 (m, 4H), 2.62 (t, *J* = 7.2, 2H), 3.40 (t, *J* = 6.5, 2H), 6.52 (broad, s, 1H), 6.95 (d, *J* = 8.4, 2H), 7.63 (d, *J* = 8.4, 2H) ppm.
^{13}C NMR (75 MHz, $CDCl_3$): δ = 28.4 (CH_2), 28.7 (CH_2), 35.1 (CH_2), 40.0 (CH_2), 91.3 (C-I), 116.1 (q, $^1J_{CF}$ = 285.9, CF_3), 130.8 (2 x CH_2), 137.8 (2 x CH_2), 141.5 (C), 157.6 (q, $^2J_{CF}$ = 36.3, CO) ppm.
HRMS (EI): Calcd for $C_{12}H_{13}F_3INO$: 370.9994, found: 371.0050

2,2,2-trifluoro-*N*-(4-iodophenyl)acetamide *para*-2h



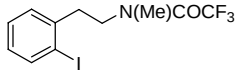
Reaction time: 4h. White solid. R_f = 0.48 (Hexane: EtOAc, 5:1), M. p. 90-91 °C. Yield: 94%
^{1}H NMR (300 MHz, $CDCl_3$): δ = 7.38 (d, *J* = 8.7, 2H), 7.74 (d, *J* = 8.7, 2H), 8.06 (broad, s, 1H) ppm.
^{13}C NMR (75 MHz, $CDCl_3$): δ = 90.6 (C-I), 115.9 (q, $^1J_{CF}$ = 287.0, CF_3), 122.6 (2 x CH), 135.2 (C), 138.7 (2 x CH), 155.1 (q, $^2J_{CF}$ = 36.8, CO) ppm.
HRMS (EI): Calcd for $C_8H_5F_3INO$: 314.9362, found: 314.9369

2,2,2-trifluoro-*N*-(2-(2/4-iodophenyl)propyl)acetamide, *ortho/para*-2i



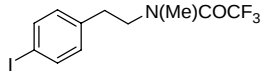
Reaction time: 2h. Light yellow solid. R_f = 0.36 (Hexane: EtOAc, 5:1), Yield: 85%.
Mixture of both isomers.
^{1}H NMR (300 MHz, $CDCl_3$): δ = 1.33 (d, *J* = 6.5, 2 x 3H), 3.01 (m, 1H), 3.33-3.53 (m, 3H), 3.61-3.69 (m, 2H), 6.41 (broad, s, 2 x 1H), 6.96-7.05 (m, 2H-*para* + 1H-*ortho*), 7.23-7.25 (m, 1H-*ortho*), 7.30-7.42 (m, 1H-*ortho*), 7.69 (d, *J* = 8.4, 2H-*para*), 7.90 (dd, *J* = 7.8, 1.3, 1H-*ortho*) ppm.
^{13}C NMR (75 MHz, $CDCl_3$): δ = 18.9 (CH_3), 19.1 (CH_3), 39.2 (CH), 43.2 (CH), 45.8 (CH_2), 46.5 (CH_2), 92.7 (C-I-*para*), 102.0 (C-I-*ortho*), 116.0 (q, $^1J_{CF}$ = 287.0, 2 x CF_3), 126.9 (CH), 129.2 (CH), 129.3 (CH), 129.4 (CH), 138.3 (CH), 140.3 (CH), 142.8 (C), 145.1 (C), 157.6 (q, $^2J_{CF}$ = 36.9, 2 x CO) ppm.
HRMS (EI): Calcd for $C_{11}H_{11}F_3INO$: 356.9837, found: 356.9826.

***N*-(3-(2-iodophenyl)ethyl)-2,2,2-trifluoro-*N*-methylacetamide, *ortho*-2j**



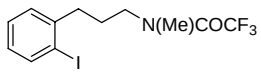
Colourless oil. R_f = 0.61 (Hexane: EtOAc, 5:1), Yield: 82%
Two rotamers.
^{1}H NMR (300 MHz, $CDCl_3$): δ = 3.05-3.15 (m, 5H), 3.60-3.67 (m, 2H), 6.95-7.02 (m, 1H), 7.23-7.38 (m, 2H), 7.85-7.88 (dd, *J*= 8.1, 1.3, 1H) ppm.
^{13}C NMR (75 MHz, $CDCl_3$): δ= 35.3 (CH_3), 36.0 (CH_3), 37.8 (CH_2), 40.0 (CH_2), 49.9 (CH_2), 50.1 (CH_2), 100.5 (C-I), 116.6 (q, $^1J_{CF}$ = 285.9, CF_3), 129.0 (CH), 129.2 (CH), 129.3 (CH), 130.4 (CH), 130.6 (CH), 140.0 (CH), 140.1 (CH), 140.3 (C), 140.9 (C), 156.9 (q, $^2J_{CF}$ = 31.6, CO) ppm.
HRMS (EI): Calcd for $C_{11}H_{11}F_3INO$: 356.9837, found: 356.9825.

***N*-(3-(4-iodophenyl)ethyl)-2,2,2-trifluoro-*N*-methylacetamide, *para*-2j**



Reaction time: 2h. Colourless oil. R_f = 0.42 (Hexane: EtOAc, 5:1), Yield: 4%
Two rotamers.
^{1}H NMR (300 MHz, $CDCl_3$): δ = 2.88 (t, *J* = 6.0, 2H), 3.04, 3.09 (s, CH_3), 3.59-3.68 (m, 2H), 6.96-7.02 (m, 2H), 7.66-7.71 (m, 2H) ppm.
^{13}C NMR (75 MHz, $CDCl_3$): δ = 32.7 (CH_2), 35.0 (CH_2), 35.3 (CH_3), 36.0 (CH_3), 51.4 (CH_2), 51.6 (CH_2), 92.4 (C-I), 92.6 (C-I), 116.7 (q, $^1J_{CF}$ = 286.1, CF_3), 131.0 (CH), 131.1 (CH), 137.1 (C), 137.9 (C), 138.1 (CH), 138.3 (CH), 157.1 (q, $^2J_{CF}$ = 36.9, CO) ppm.
HRMS (EI): Calcd for $C_{11}H_{11}F_3INO$: 356.9837, found: 356.9839

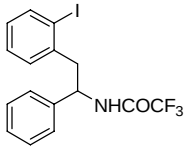
2,2,2-trifluoro-*N*-(3-(2-iodophenyl)propyl)-*N*-methylacetamide, *ortho*-2k



Reaction time: 2h. Colourless oil. R_f = 0.28 (Hexane: EtOAc, 10:1), Yield: 80 %
Two rotamers, *ca*. 1.6:1
^{1}H NMR (300 MHz, $CDCl_3$): δ = 1.90-2.01 (m, 2H), 2.75-2.79 (m, 2H), 3.08, 3.19 (s, CH_3), 3.49-3.60 (m, 2H), 6.91-6.98 (m, 1H), 7.22-7.36 (m, 2H), 7.83-7.88 (m, 1H) ppm.

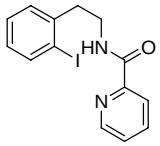
^{13}C NMR (75 MHz, $CDCl_3$): δ = 27.4 (CH_2), 29.1 (CH_2), 34.9 (CH_3), 35.3 (q, $^4J_{CF}$ = 3.7, CH_3), 37.0 (CH_2), 38.2 (CH_2), 49.2 (CH_2), 49.3 (CH_2), 100.5 (C-I), 100.6 (C-I), 116.8 (q, $^1J_{CF}$ = 286.6, CF_3), 128.4 (CH), 128.6 (CH), 128.8 (CH), 128.9 (CH), 129.6 (CH), 129.7 (CH), 139.9 (CH), 140.0 (CH), 143.4 (C), 143.9 (C), 157.3 (q, $^2J_{CF}$ = 35.8, CO) ppm.
HRMS (EI): Calcd for $C_{12}H_{14}F_3INO^+$: 372.0067, found: 372.0074

2,2,2-trifluoro-*N*-(2-(2-iodophenyl)-1-phenylethyl)acetamide, *ortho*-2l



Reaction time: 5 min. White solid. R_f = 0.56 (Hexane: EtOAc, 5:1). M. p. 150-151ºC, Yield: 95 %
^{1}H NMR (300 MHz, $CDCl_3$): δ = 3.36 (d, *J* = 7.2, 2H), 5.40 (q, *J* = 7.8, 1H), 6.77 (broad, d, *J* = 7.2, 1H), 6.76-7.00 (m, 1H), 7.16 (d, *J* = 7.5, 1H), 7.27-7.43 (m, 6H), 7.88 (d, *J* = 8.1, 1H) ppm.
^{13}C NMR (75 MHz, $CDCl_3$): δ = 46.6 (CH_2), 55.1 (CH), 101.5 (C-I), 116.0 (q, $^1J_{CF}$ = 286.9, CF_3), 126.7 (2 x CH), 128.6 (CH), 128.9 (CH), 129.3 (CH), 129.4 (2 x CH), 130.7 (CH), 139.7 (C), 139.8 (C), 140.1 (CH), 156.7 (q, $^2J_{CF}$ = 37.4, CO) ppm.
HRMS (EI): Calcd for $C_{16}H_{13}F_3INO$: 418.9994, found: 418.9989
The structure of the compound was confirmed by 2D NMR experiments.

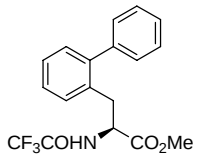
***N*-(2-(2-iodophenyl)ethyl)picolinamide, *ortho*-2m**



Reaction time: 2h. Colourless oil. R_f = 0.70 (Hexane: EtOAc, 1:1), Yield: 90 %
^{1}H NMR (300 MHz, $CDCl_3$): δ= 3.08 (t, *J* = 7.0, 2H), 3.70 (q, *J* = 7.0, 2H), 6.88-6.93 (m, 1H), 7.30-7.33 (m, 2H), 7.43-7.47 (m, 1H), 7.85-7.91 (m, 2H), 8.15-8.25 (m, 2H, CH_{Arom} + NH), 8.56-7.57 (m, 1H) ppm.
^{13}C NMR (75 MHz, $CDCl_3$): δ = 39.7 (CH_2), 40.9 (CH_2), 100.9 (C-I), 122.5 (CH), 126.5 (CH), 128.7 (CH), 128.8 (CH), 130.4 (CH), 137.7 (CH), 140.0 (CH), 141.9 (C), 148.4 (CH), 150.2 (C), 164.7 (CO) ppm.
HRMS (EI): Calcd for $C_{14}H_{13}IN_2O$: 352.0073, found: 352.0060

General procedure for the synthesis of 3, 4, 5, and 6[1]:
Coupling reaction involves treatment of ***ortho*-2c** (1 equiv.) with the corresponding boronic acid (2 equiv) at 80ºC in the presence of tetrakis(triphenylphosphine)palladium (0) (5mol%) catalyst and 2M aqueous sodium carbonate (2 equiv) in THF/toluene as solvent. At the conclusion of the reaction (as judged by GC) the two layers were separated and the aqueous layer was extracted with CH_2Cl_2. The product was purified by column chromatography using hexane: ethyl acetate as eluyent.

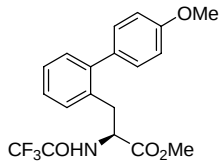
(S)-methyl-2-(2,2,2-trifluoracetamido)-3-(2-phenyphenyl)propanoate 3



Colourless oil. R_f = 0.15 (Hexane: EtOAc, 10:1), Yield: 81 %
^{1}H NMR (300 MHz, $CDCl_3$): δ = 3.17 (dd, *J* = 14.0, 8.1, 1H), 3.37 (dd, *J* = 14.0, 5.6, 1H), 3.64 (s, 3H), 4.65 (q, *J* = 8.1, 1H), 6.53 (broad, d, *J* = 8.1, 1H), 7.25-7.52 (m, 9H) ppm.
^{13}C NMR (75 MHz, $CDCl_3$): δ = 35.1 (CH_2), 53.0 (CH_3), 53.6 (CH), 115.7 (q, $^1J_{CF}$ = 285.9, CF_3), 127.7 (CH), 127.9 (CH), 128.0 (CH), 128.9 (2xCH), 129.6 (2xCH), 130.4 (CH), 131.0 (CH), 132.6 (CH), 141.1 (C), 143.0 (C), 156.6 (q, $^2J_{CF}$ = 37.4, CO), 170.9 (CO) ppm.
HRMS (EI): Calcd for $C_{18}H_{16}F_3NO_3$: 351.1082, found: 351.1106
The enantiomeric ratio was determined by HPLC (chiracel OD-H column, 250 x 4.6 mm, 0.7 mL/min, hexane / 2-propanol 90:10): Retention times, **(±)-3**: 9.9 and 10.5 min; **(*S*)-3**: 9.9 (not detected) and 10.5 (>99%) min.

[1] S. Khota, K. Lahiri, *Biorg. Med. Chem. Lett.* **2001**, *11*, 2887-2890.

(S)-methyl-2-(2,2,2-trifluoracetamido)-3-(2-(4-metoxyphenyl)phenyl)propanoate 4



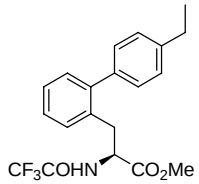
Light yellow solid. R_f = 0.29 (Hexane: EtOAc, 5:1), M. p. 66-67ºC, Yield: 95 %

^{1}H NMR (300 MHz, $CDCl_3$): δ = 3.16 (dd, *J* = 14.0, 8.1, 1H), 3.38 (dd, *J* = 14.0, 6.2, 1H), 3.66 (s, 3H), 3.90 (s, 3H), 4.66 (q, *J* = 8.1, 1H), 6.51 (broad, d, *J* = 7.5, 1H), 7.02 (d, *J* = 8.1, 2H), 7.25-7.35 (m, 6H) ppm.

^{13}C NMR (75 MHz, $CDCl_3$): δ = 35.1 (CH_2), 53.0 (CH_3), 53.7 (CH), 55.6 (CH_3), 114.3 (2 x CH), 115.6 (q, $^1J_{CF}$ = 285.9, CF_3), 127.8 (CH), 127.9 (CH), 130.3 (CH), 130.7 (2 x CH), 131.2 (CH), 132.8 (C), 133.4 (C), 142.6 (C), 156.7 (q, $^2J_{CF}$ = 37.9, CO), 159.3 (C), 170.9 (CO) ppm.

HRMS (EI): Calcd for $C_{19}H_{18}F_3NO_4$: 381.1188, found: 381.1223

(S)-methyl-2-(2,2,2-trifluoracetamido)-3-(2-(4-ethylphenyl)phenyl)propanoate 5



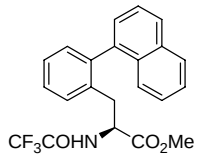
White solid. R_f = 0.48 (Hexane: EtOAc, 5:1), M. p. 95-96ºC, Yield: 89 %

^{1}H NMR (300 MHz, $CDCl_3$): δ = 1.33 (t, *J*= 7.5, 3H), 2.76 (q, *J* = 7.5, 2H), 3.19 (dd, *J* = 14.0, 5.9, 1H), 3.38 (dd, *J* = 14.0, 5.6, 1H), 3.64 (s, 3H), 4.67 (q, *J* = 8.1, 1H), 6.48 (broad, d, *J* = 7.5, 1H), 7.24-7.33 (m, 8H) ppm.

^{13}C NMR (75 MHz, $CDCl_3$): δ = 15.8 (CH_3), 28.9 (CH_2), 34.9 (CH_2), 53.0 (CH_3), 53.8 (CH), 115.6 (q, $^1J_{CF}$ = 285.4, CF_3), 127.8 (CH), 127.9 (CH), 128.4 (2 x CH), 129.5 (2 x CH), 130.3 (CH), 131.1 (CH), 132.7 (C), 138.4 (C), 143.0 (C), 143.8 (C), 156.7 (q, $^2J_{CF}$ = 37.4, CO), 170.9 (CO) ppm.

HRMS (EI): Calcd for $C_{20}H_{20}F_3NO_3$: 379.1395, found: 379.1377

(*S*)-methyl-2-(2,2,2-trifluoracetamido)-3-(2-(1-naphthylphenyl)propanoate 6



Brown oil. R_f = 0.26 (Hexane: EtOAc, 5:1), Yield: 84 %

Two diastereoisomers, *ca*. 1.4:1

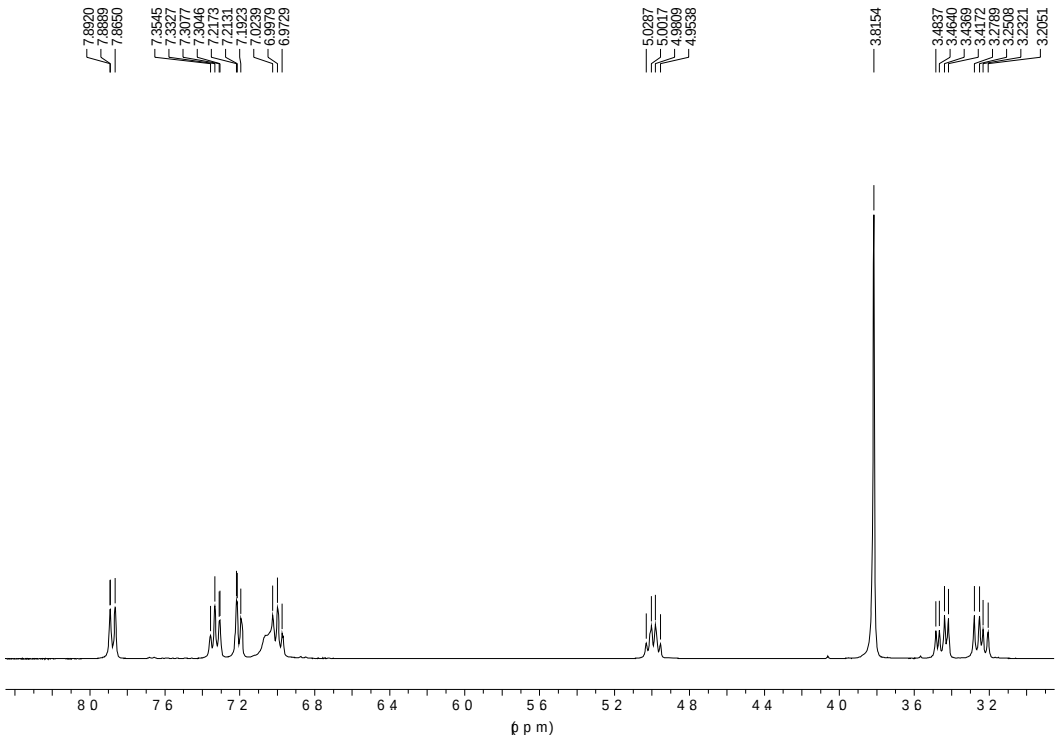
^{1}H NMR (300 MHz, $CDCl_3$): δ = 2.71 (dd, *J* = 14.3, 9.1), 2.88-3.00 (m), 3.17 (dd, *J*= 14.0, 5.3), 3.53 (s), 3.57 (s), 4.57-4.70 (m), 6.43 (broad, d, *J* = 7.2), 6.54 (broad, d, *J* = 7.8), 7.30-7.35 (m), 7.38-7.48 (m), 7.52-7.63 (m), 7.94-7.98 (m) ppm.

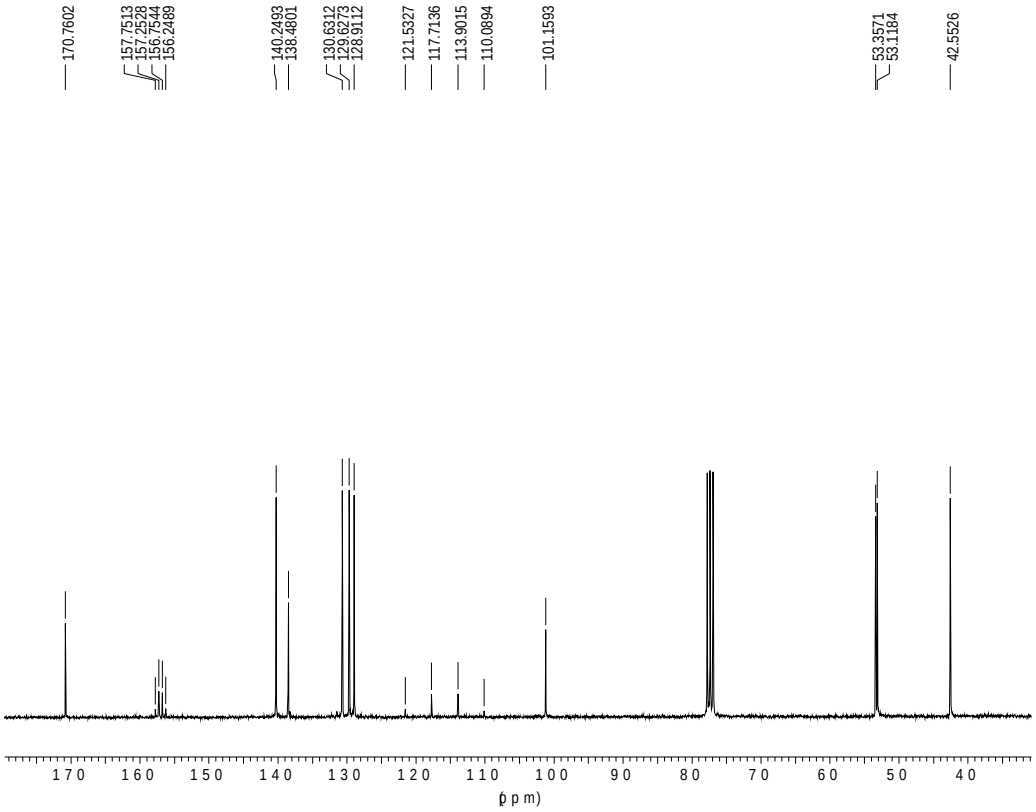
^{13}C NMR (75 MHz, $CDCl_3$): δ = 35.4 (CH_2), 35.7 (CH_2), 52.9 (CH_3), 53.0 (CH_3), 53.3 (CH), 54.0 (CH), 115.8 (q, $^1J_{CF}$ = 286.4, CF_3), 125.7 (CH), 125.8 (CH), 125.9 (CH), 126.0 (CH), 126.3 (CH), 126.5 (CH), 126.8 (CH), 126.9 (CH), 127.4 (CH), 127.7 (CH), 127.8 (CH), 127.9 (CH), 128.3 (CH), 128.4 (CH), 128.5 (CH), 128.6 (CH), 128.8 (2 x CH), 129.2 (C), 129.5 (C), 129.9 (CH), 130.0 (CH), 131.6 (CH), 131.7 (CH), 132.3 (C), 132.4 (C), 134.0 (C), 134.4 (C), 138.4 (C), 138.7 (C), 140.8 (C), 140.9 (C), 156.8 (q, $^2J_{CF}$ = 37.4, CO), 170.8 (CO), 170.9 (CO) ppm.

HRMS (EI): Calcd for $C_{22}H_{18}F_3NO_3$: 401.1239, found: 401.1219.

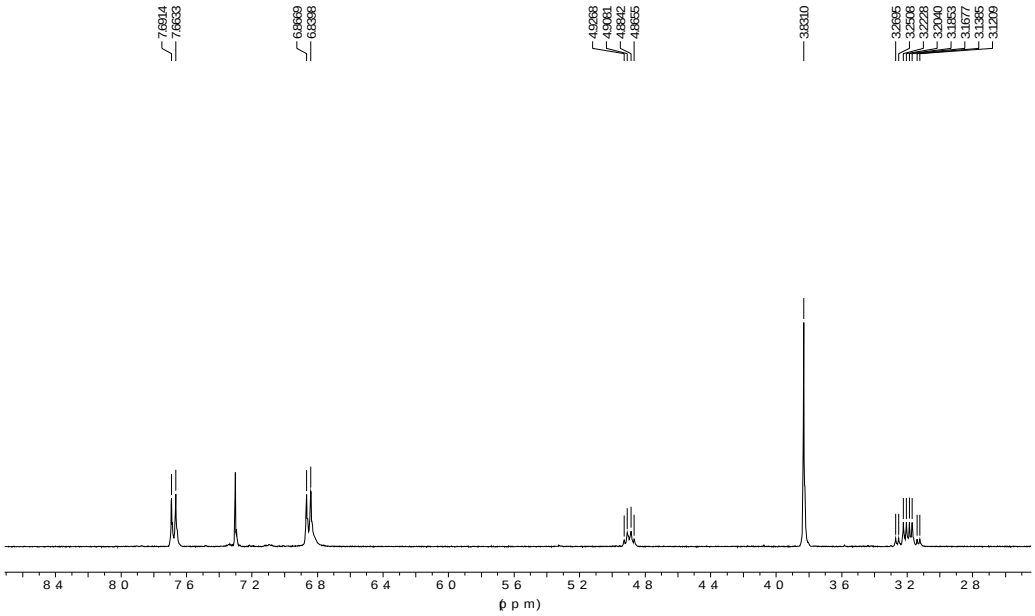
The enantiomeric ratio was determined by HPLC (chiracel OD-H column, 250 x 4.6 mm, 0.3 mL/min, hexane / 2-propanol 90:10): Retention times, **(±)-6**: 23.6, 24.9, 26.4, and 27.5 min; **(*S*)-6**: 23.6 (0.9%), 24.9 (55.4), 26.4 (1.5%) and 27.5 (42.2%) min.

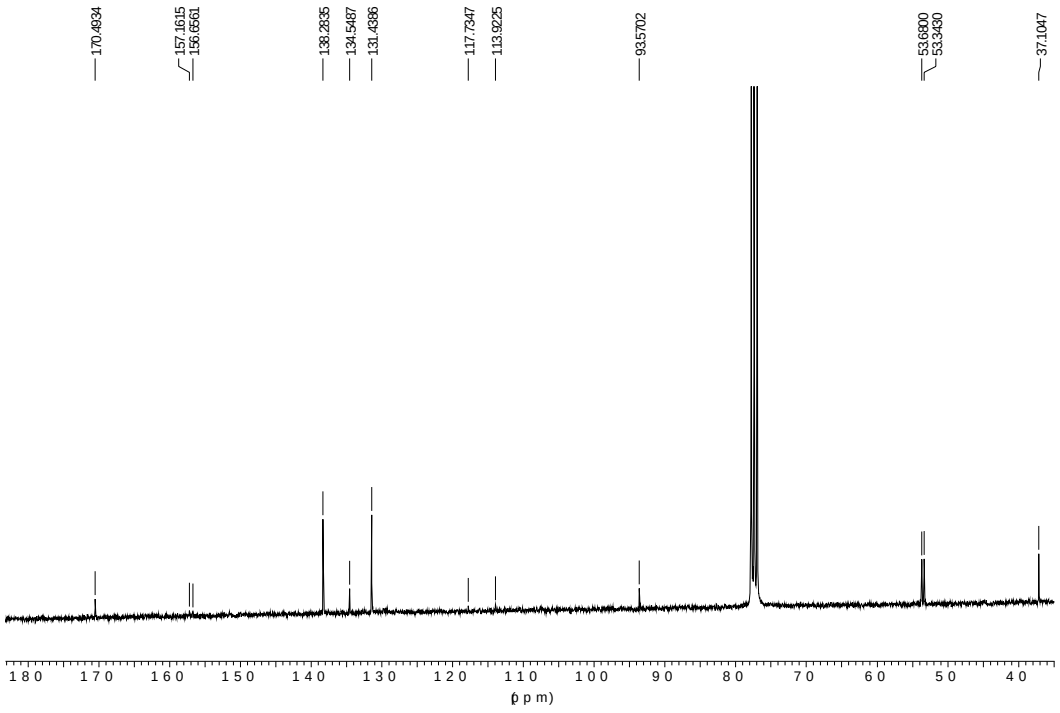
(*S*)-methyl-2-(2,2,2-trifluoracetamido)-3-(2-iodophenyl)propanoate, ***ortho*-2c**



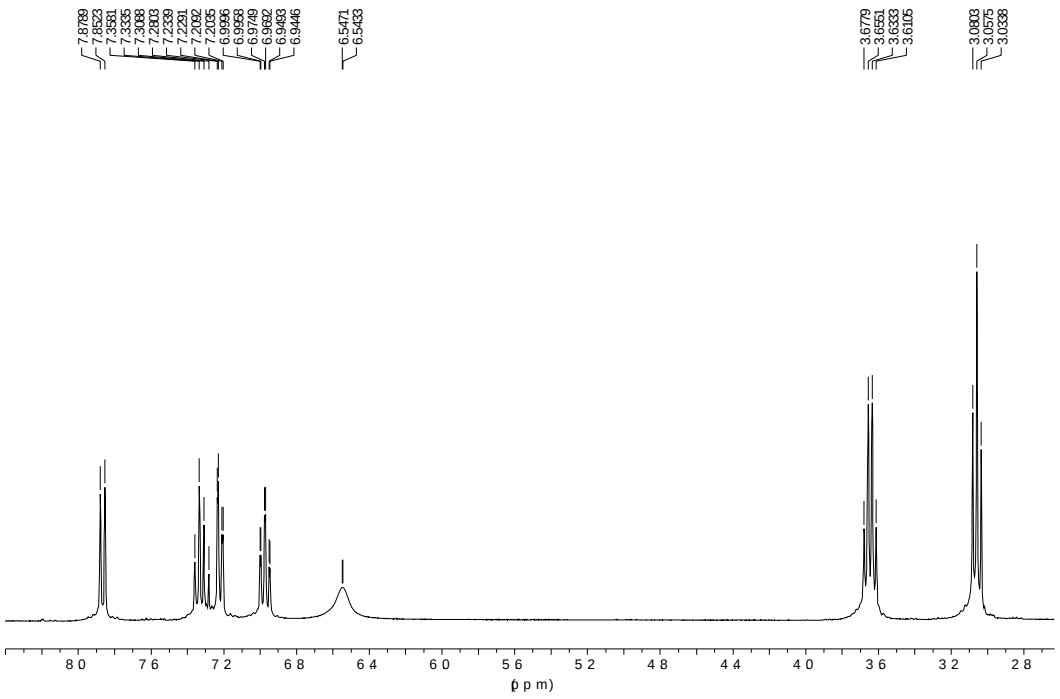


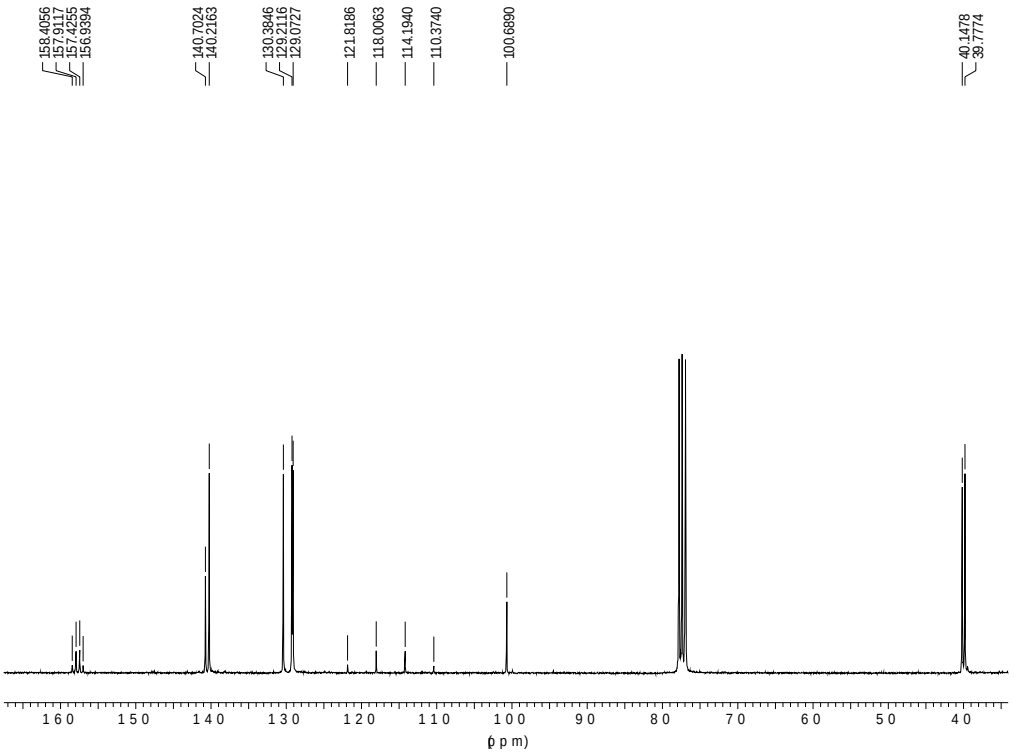
(*S*)-methyl-2-(2,2,2-trifluoracetamido)-3-(4-iodophenyl)propanoate, *para*-2c



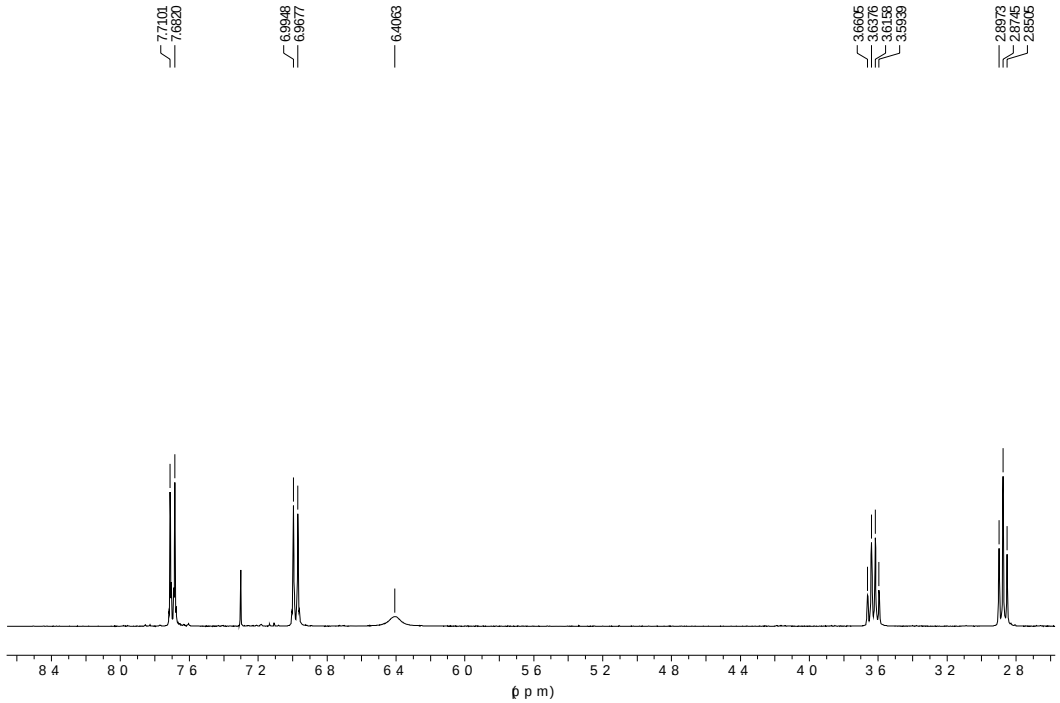


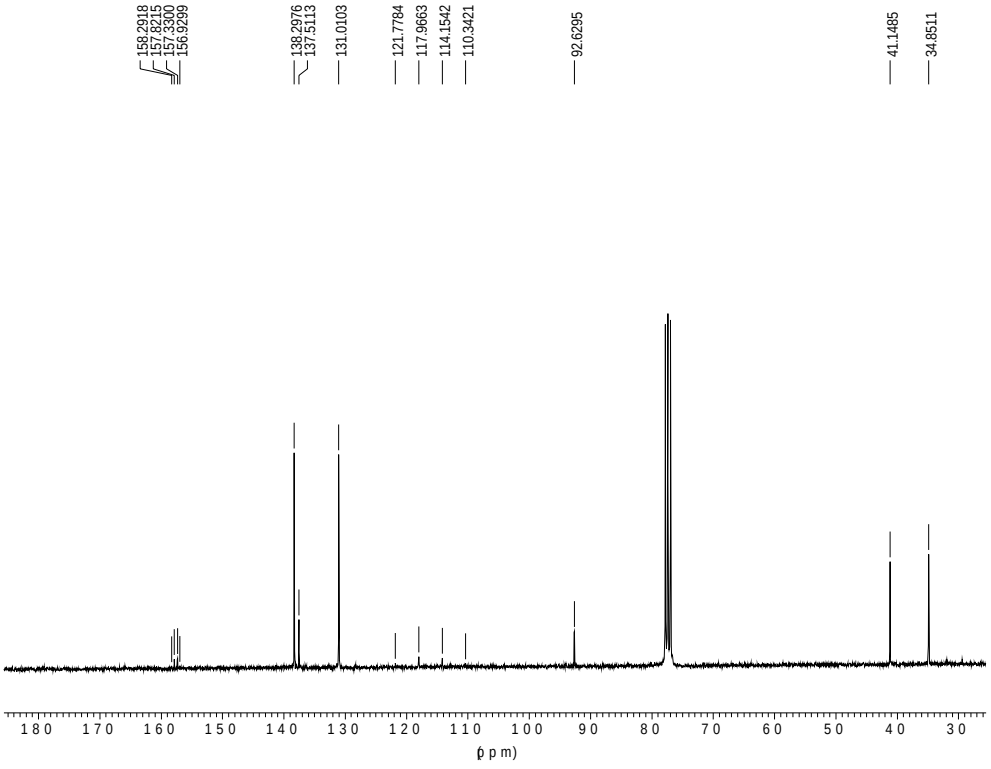
2,2,2-trifluoro-*N*-(2-(2-iodophenyl)ethyl)acetamide, *ortho*-2d



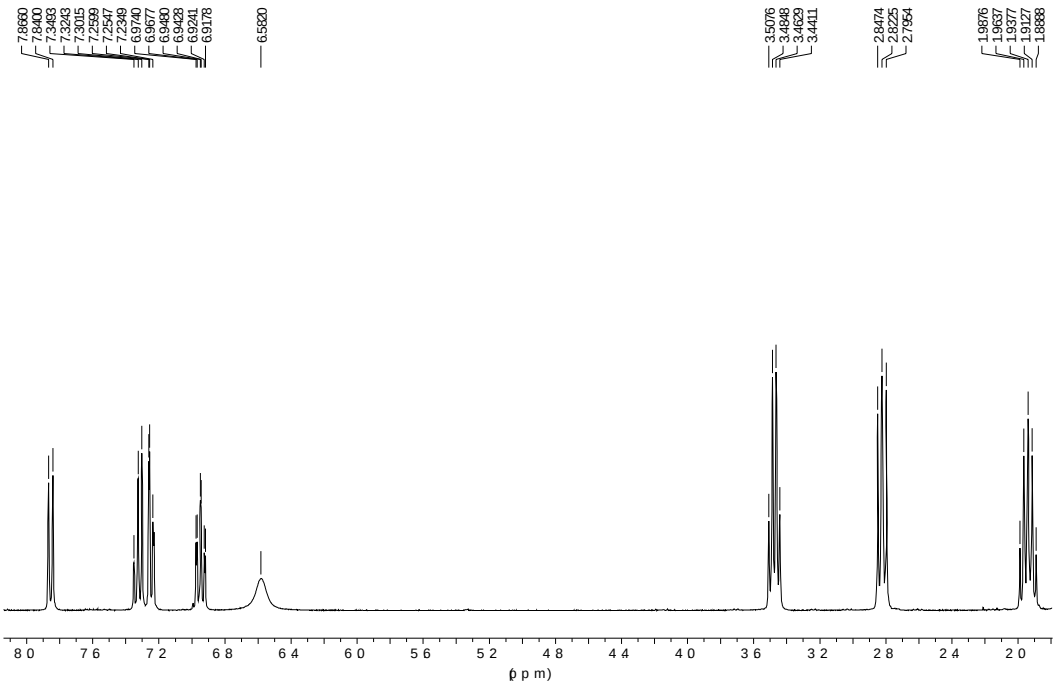


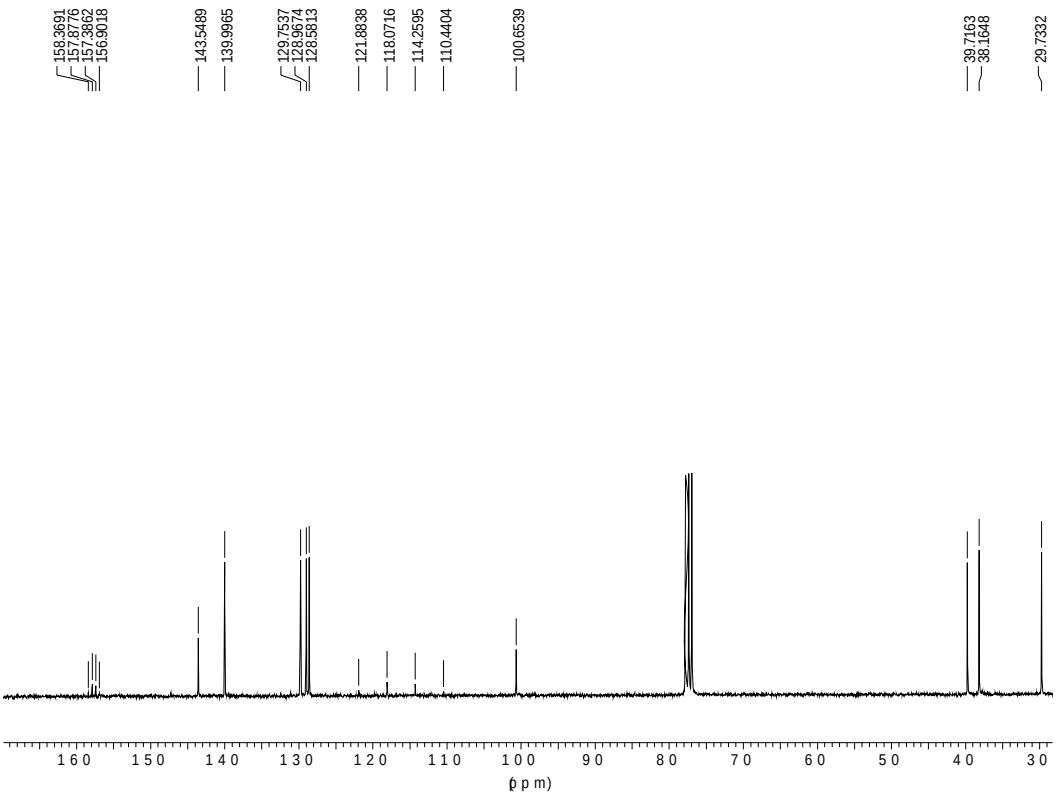
2,2,2-trifluoro-*N*-(2-(4-iodophenyl)ethyl)acetamide, *para*-2d



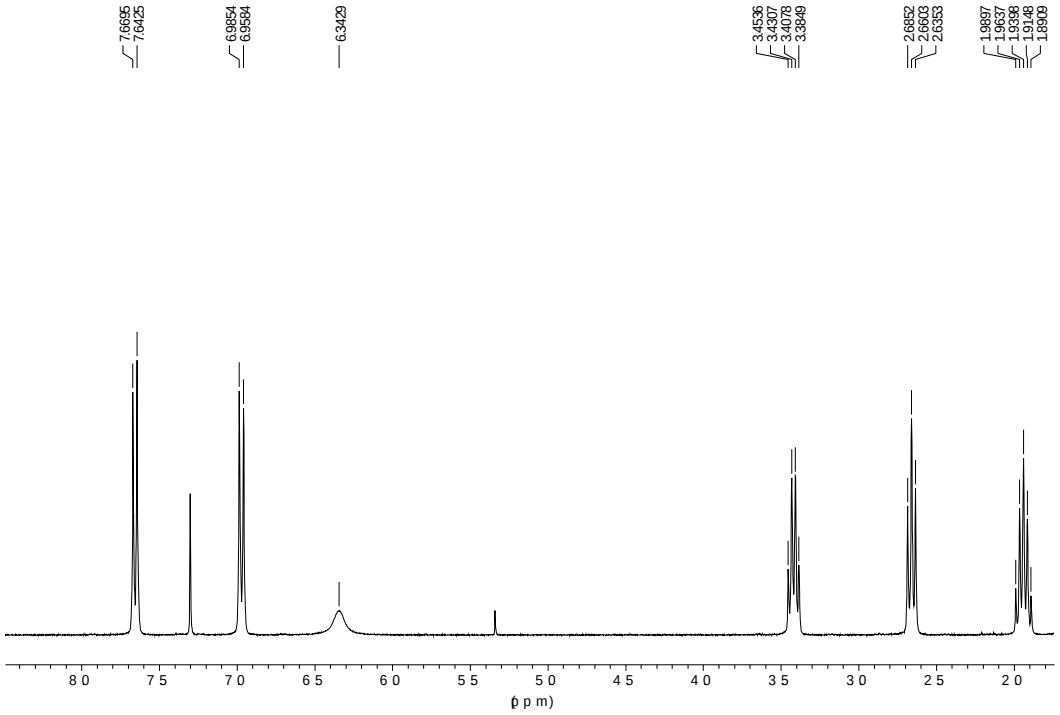


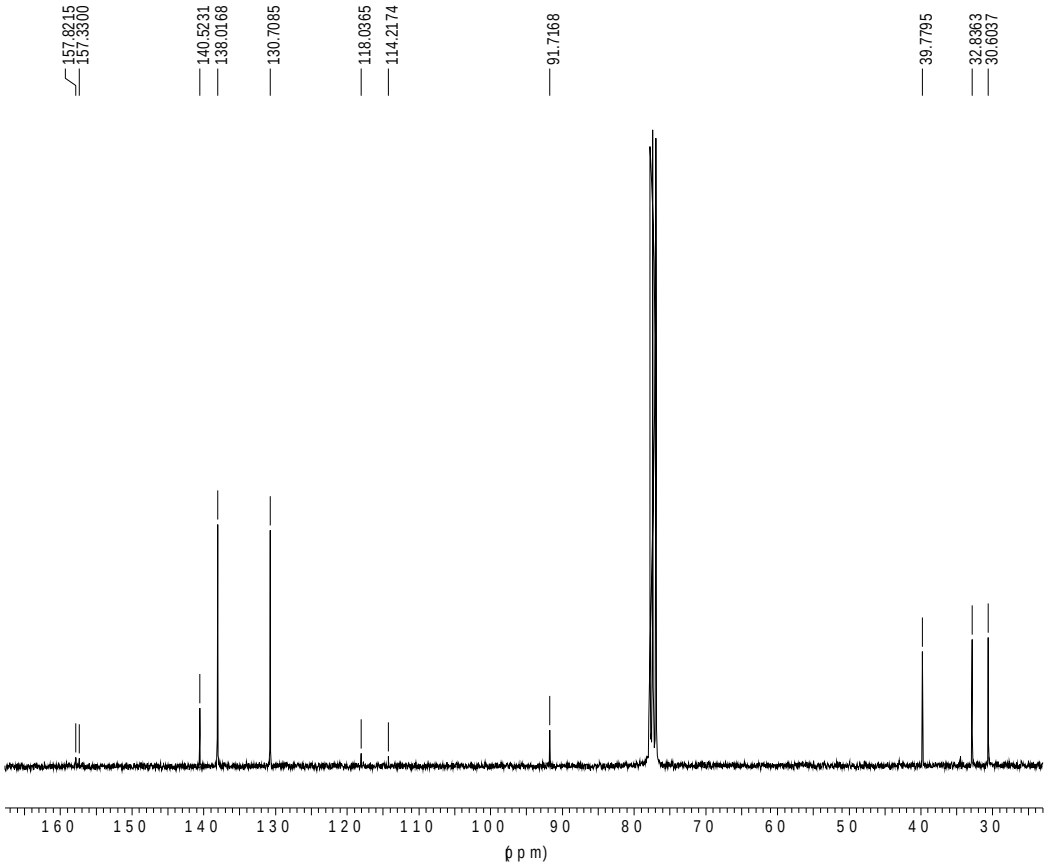
2,2,2-trifluoro-*N*-(3-(2-iodophenyl)propyl)acetamide, *ortho*-2e



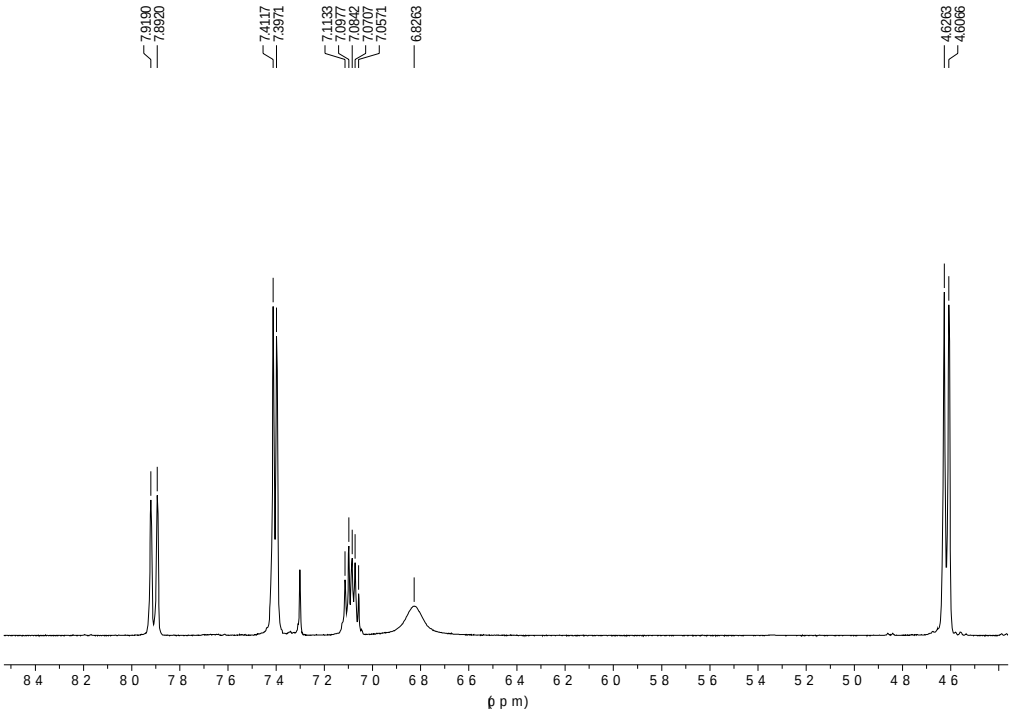


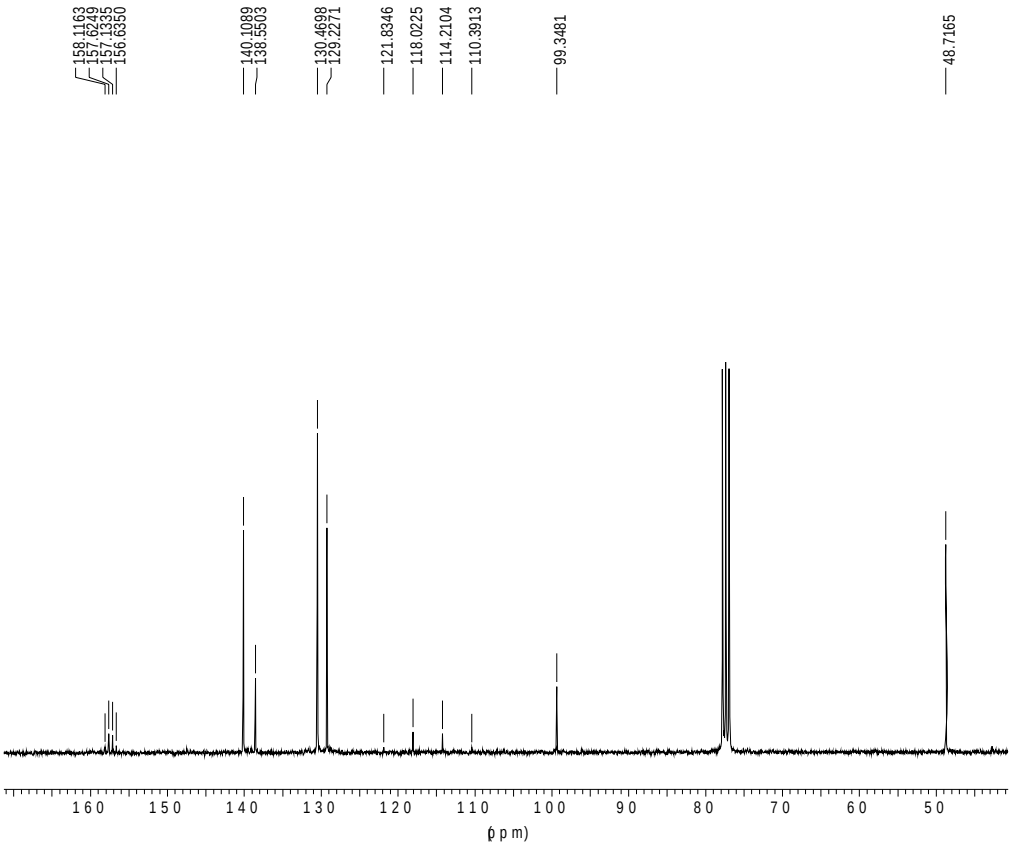
2,2,2-trifluoro-*N*-(3-(4-iodophenyl)propyl)acetamide, *para*-2e



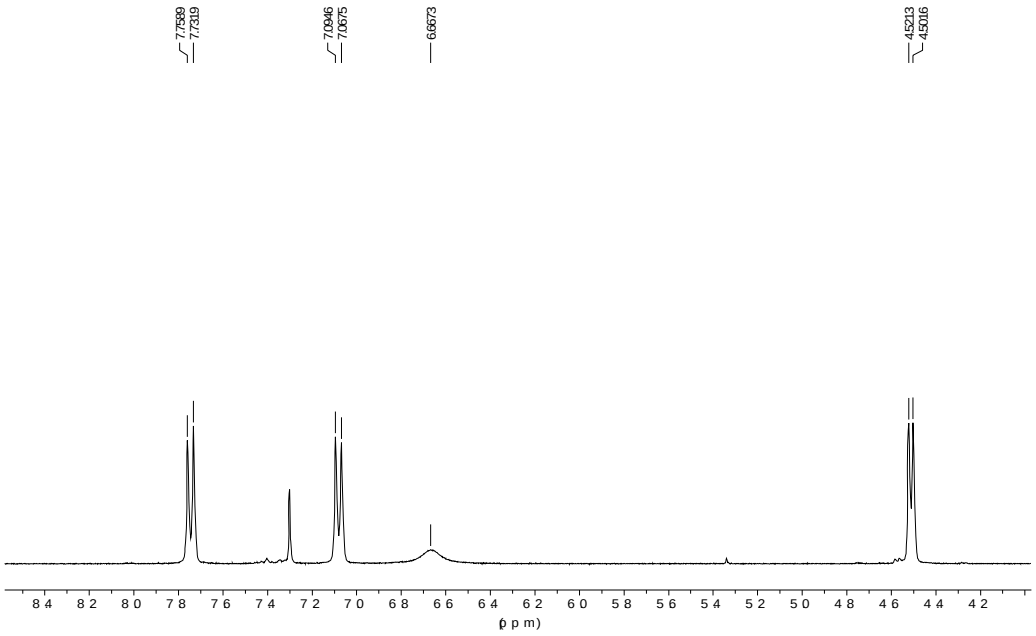


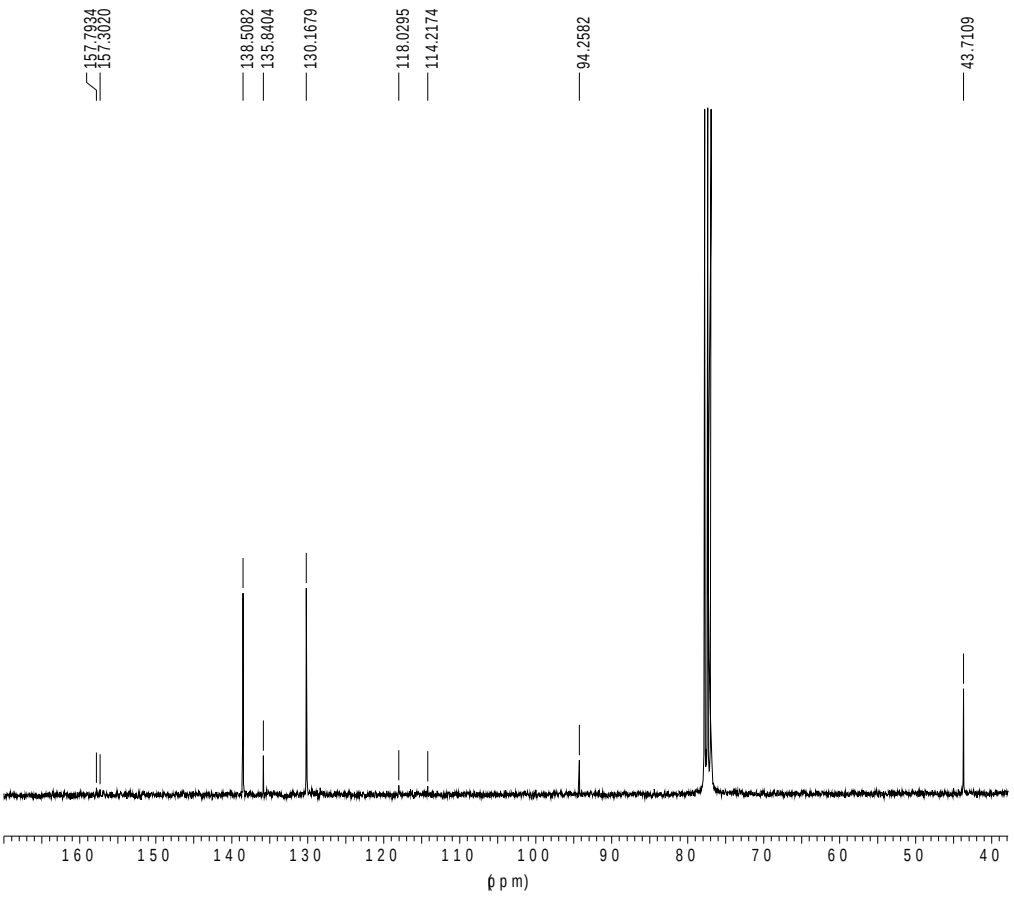
_N_-(2-iodobenzyl)-2,2,2-trifluoroacetamide, _ortho_-2f



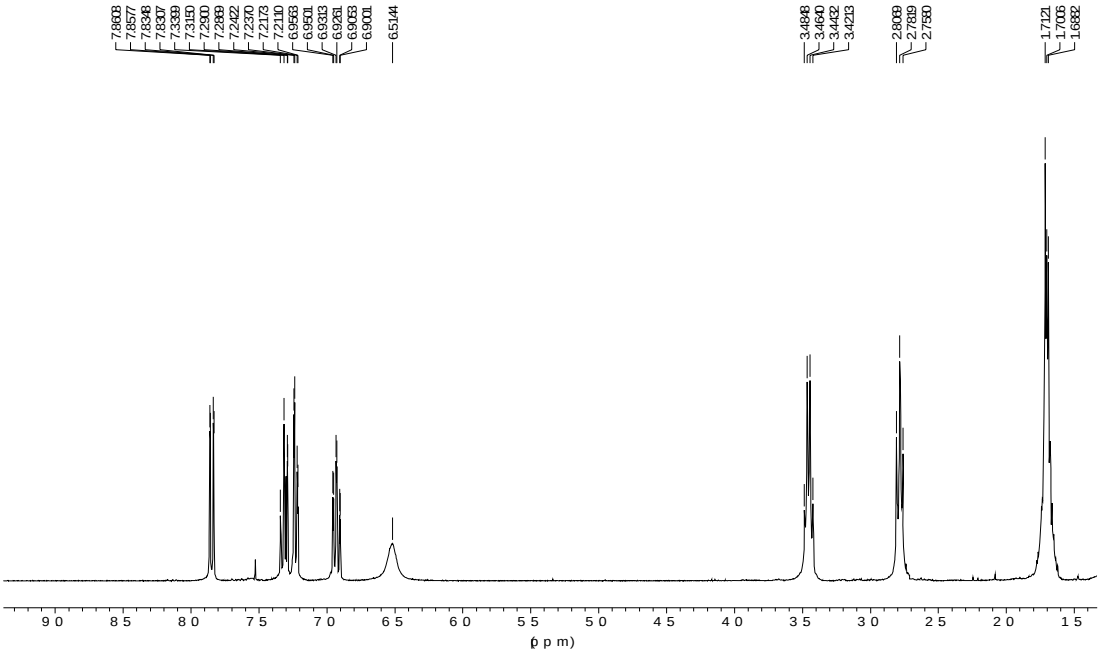


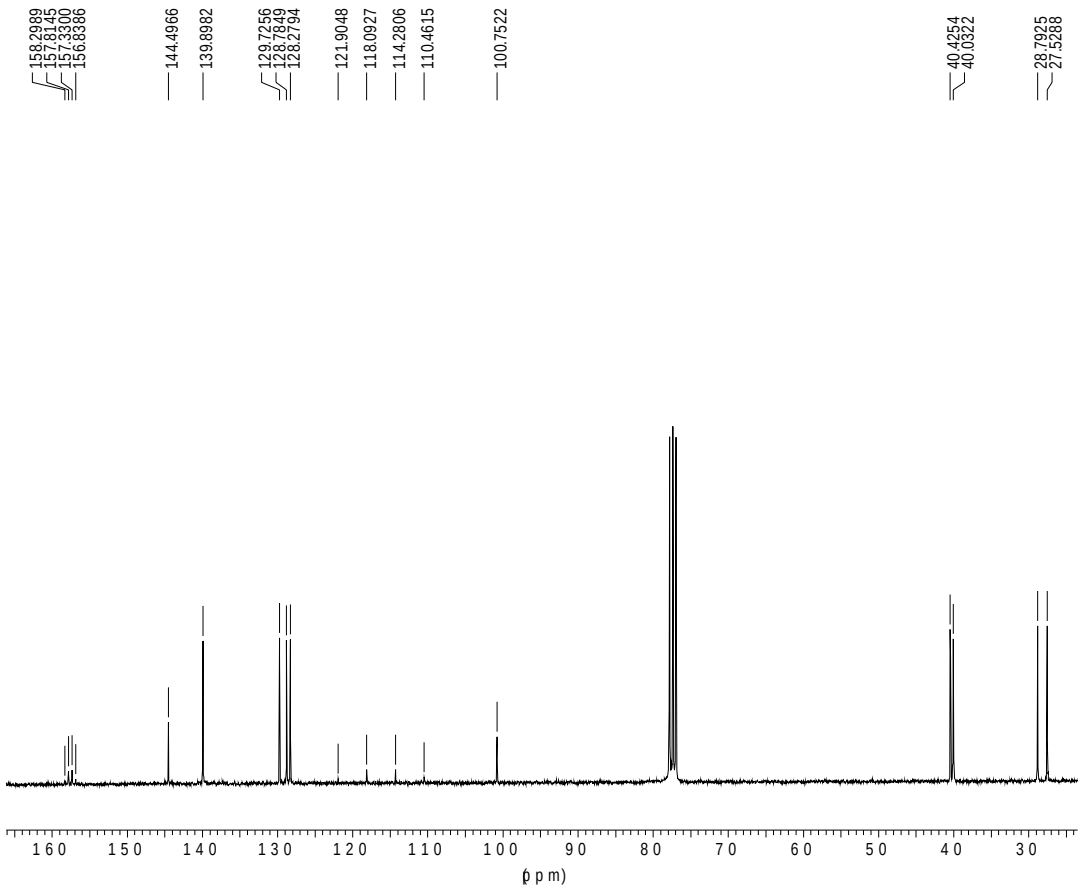
_N_-(4-iodobenzyl)-2,2,2-trifluoroacetamide, _para_-2f



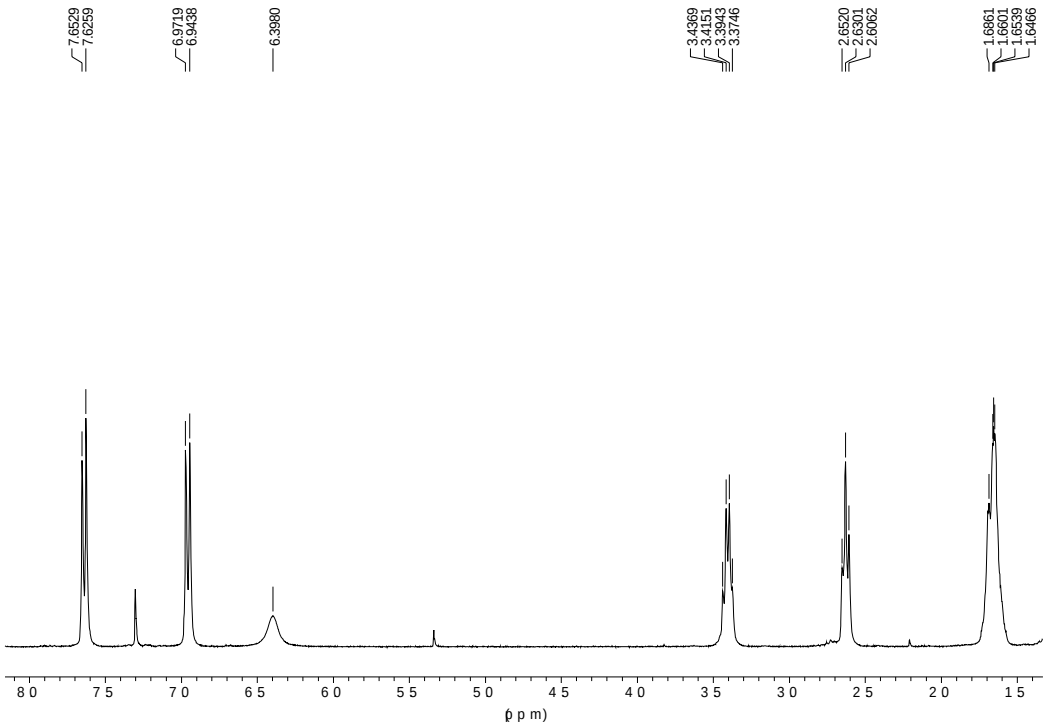


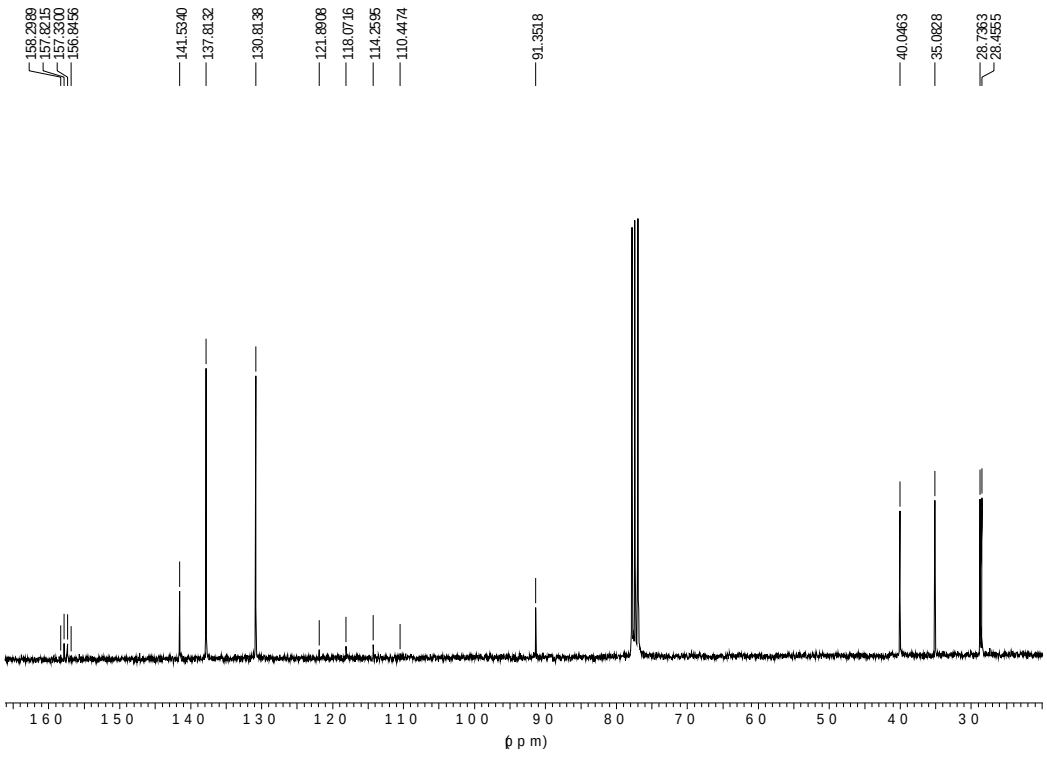
2,2,2-trifluoro-*N*-(4-(2-iodophenyl)butyl)acetamide, *ortho*-2g



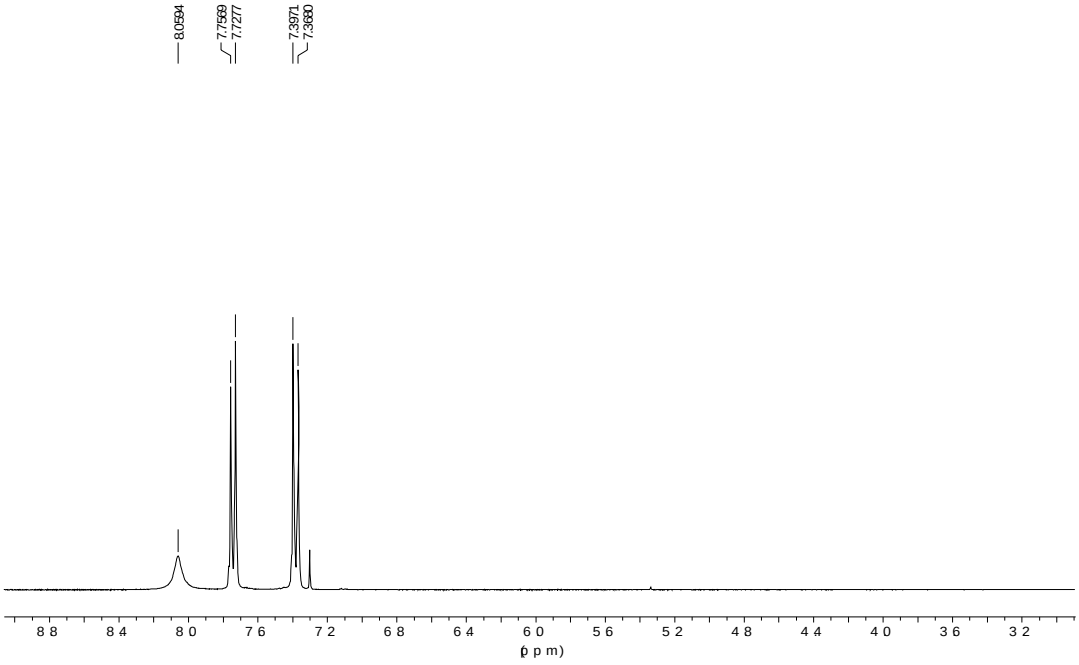


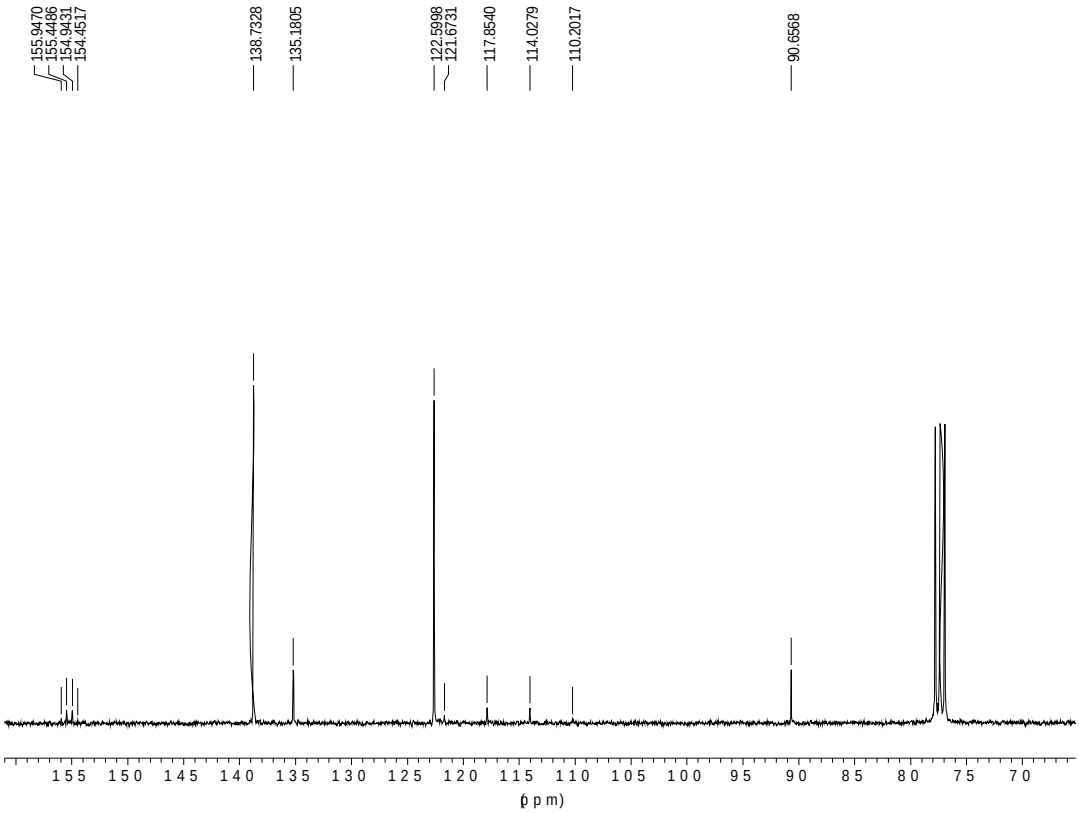
2,2,2-trifluoro-*N*-(4-(4-iodophenyl)butyl)acetamide, *para*-2g



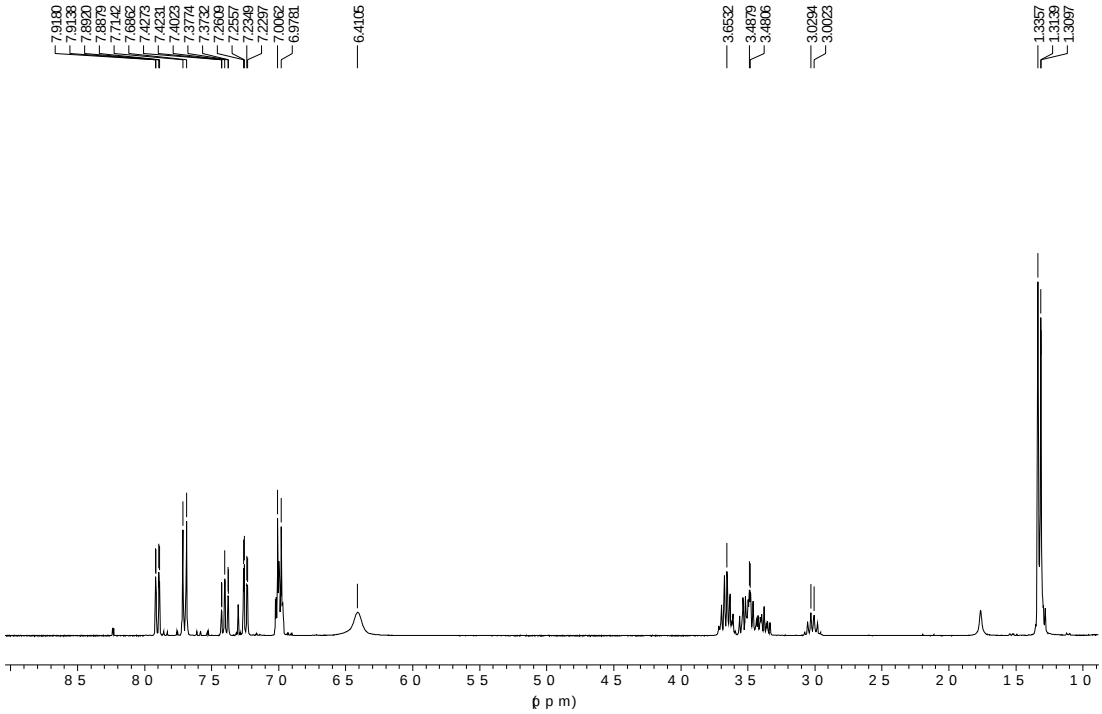


2,2,2-trifluoro-*N*-(4-iodophenyl)acetamide, *para*-2h





2,2,2-trifluoro-*N*-(2-(2/4-iodophenyl)propyl)acetamide, *ortho/para*-2i


7.9180
7.9138
7.8920
7.8879
7.7142
7.6862
7.4273
7.4231
7.4023
7.3774
7.3732
7.2609
7.2557
7.2349
7.2297
7.0062
6.9781
6.4105
3.6532
3.4879
3.4806
3.0294
3.0023
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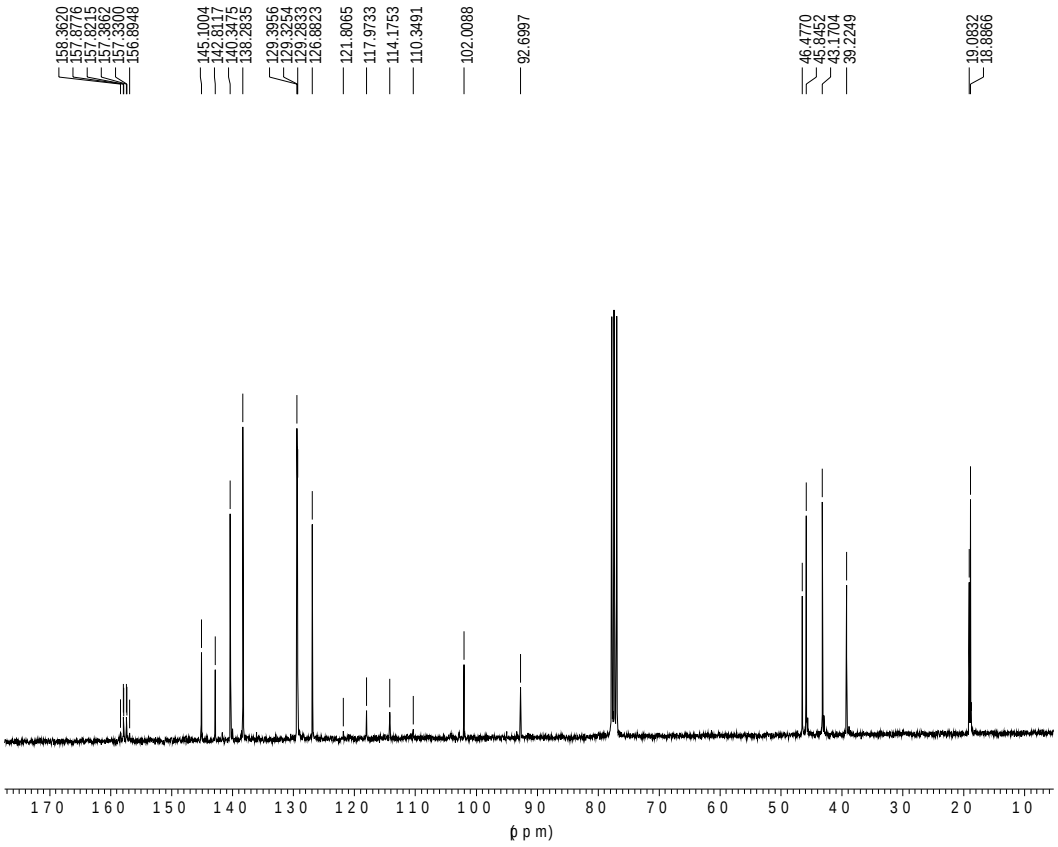
(p p m)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46.4770
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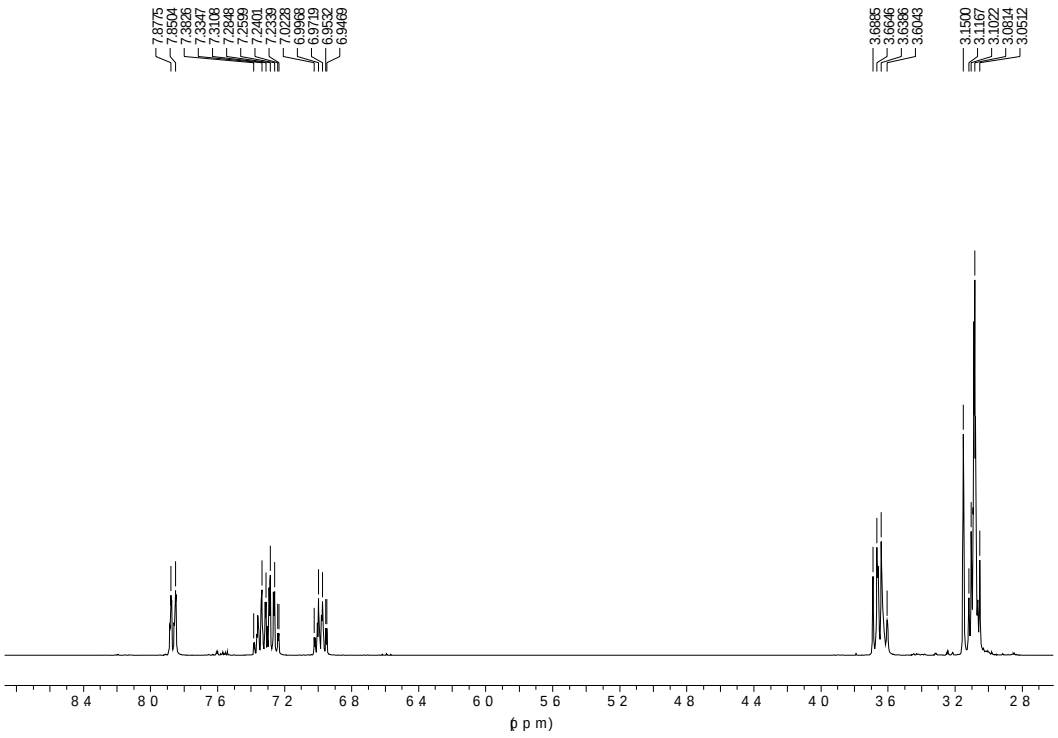
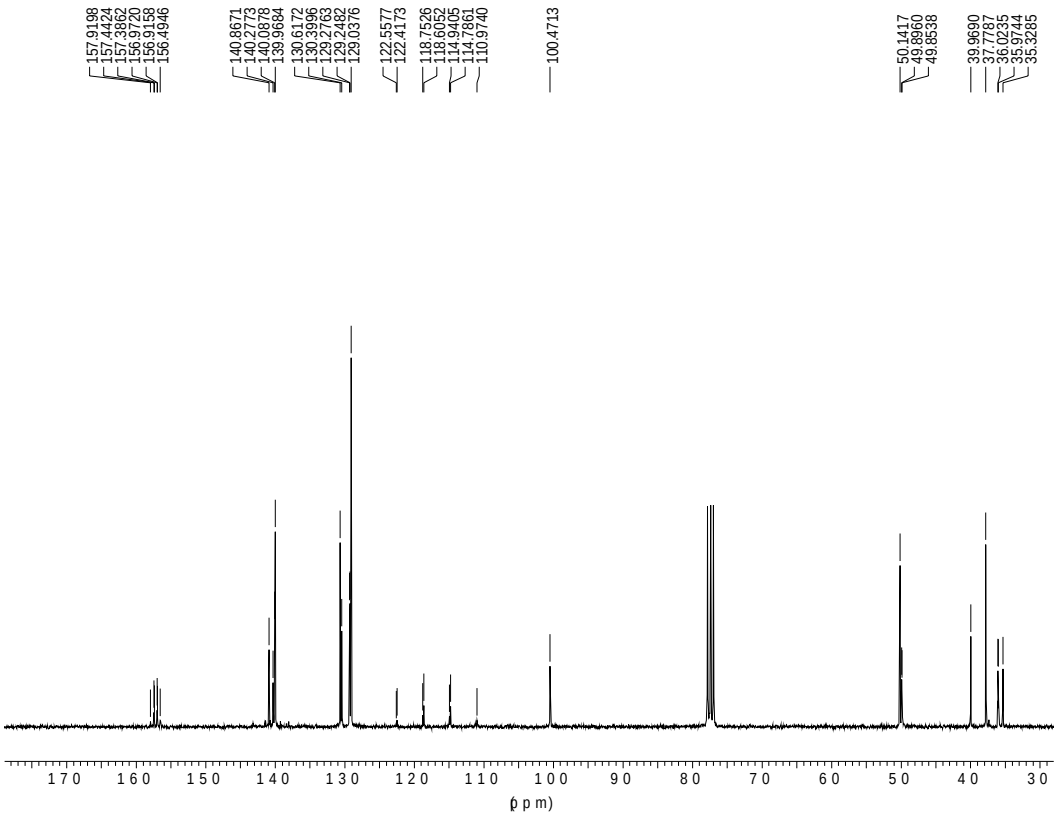
39.2249
19.0832
18.8866
1 7 0 1 6 0 1 5 0 1 4 0 1 3 0 1 2 0 1 1 0 1 0 0 9 0 8 0 7 0 6 0 5 0 4 0 3 0 2 0 1 0
(p p m)

***N*-(3-(2-iodophenyl)ethyl)-2,2,2-trifluoro-*N*-methylacetamide, *ortho*-2j**





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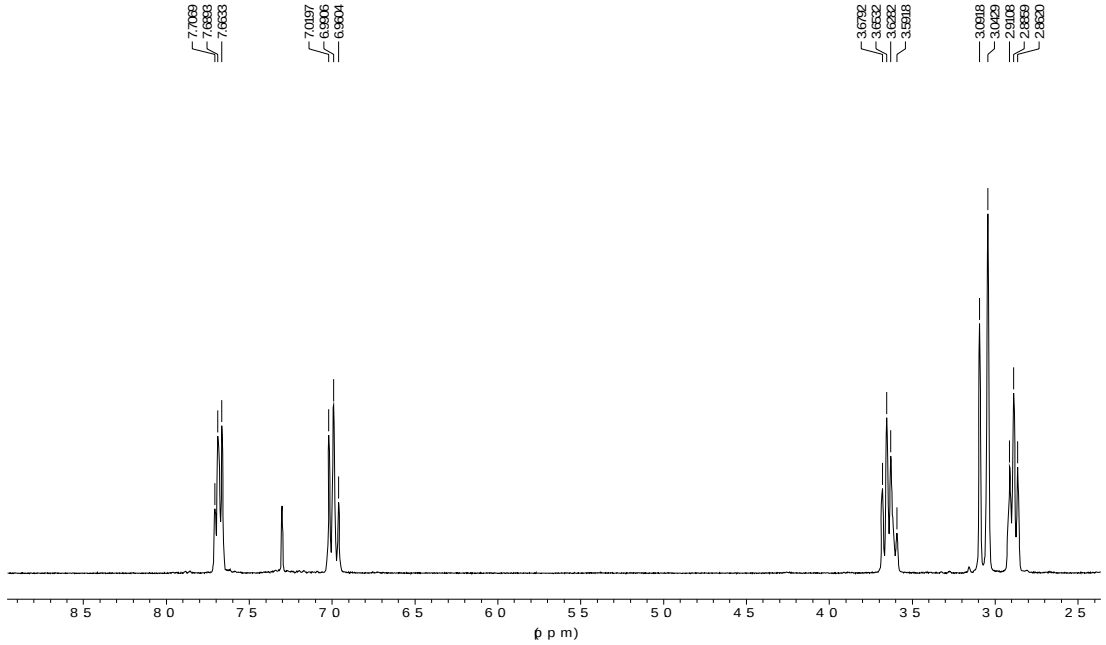
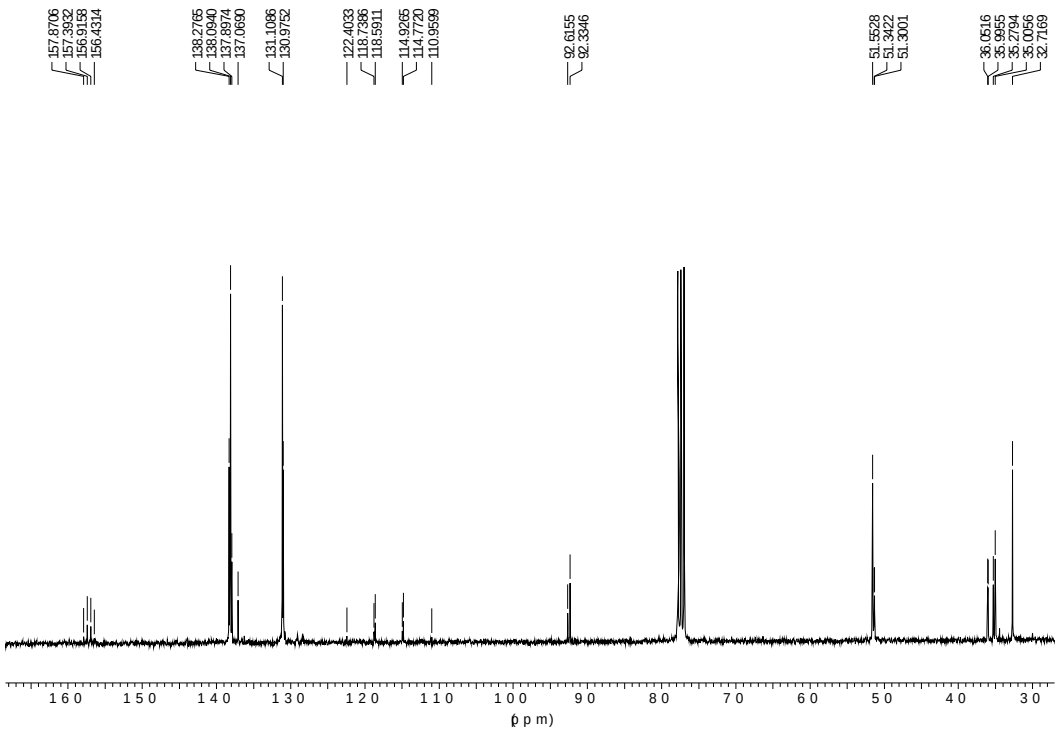
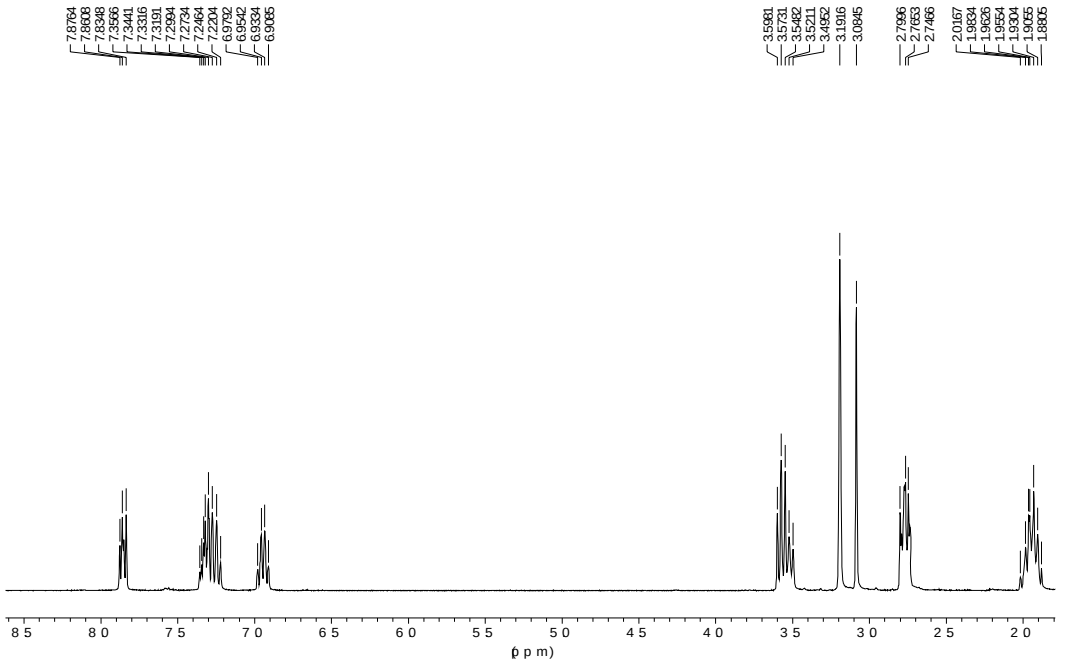
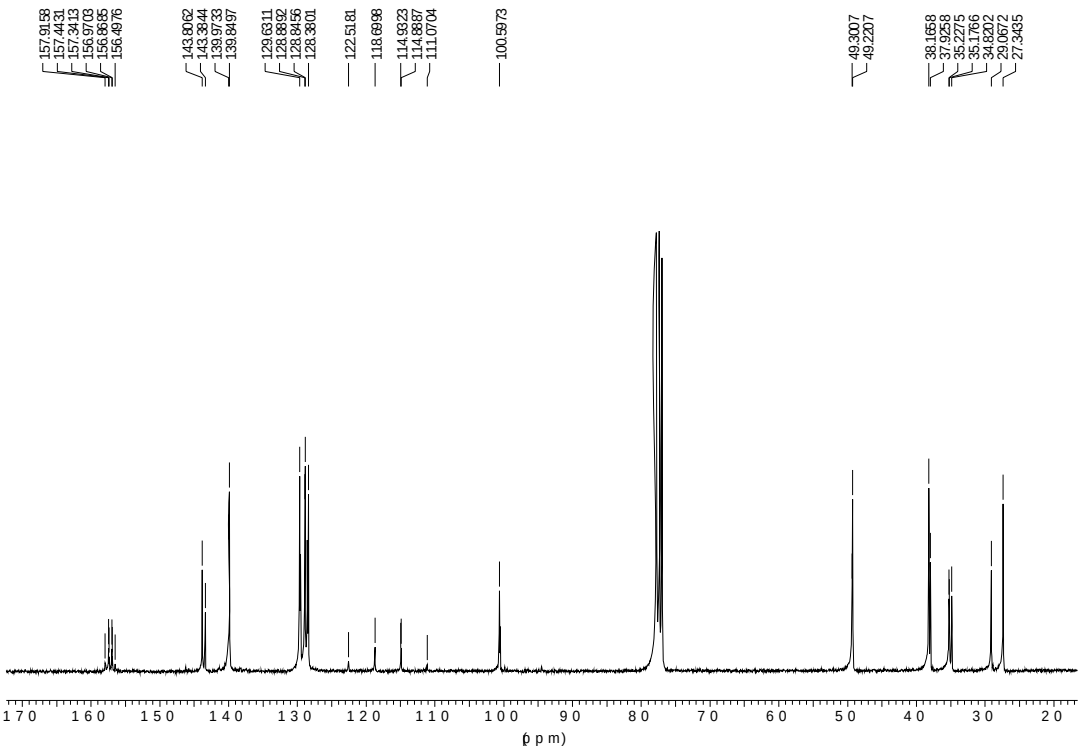


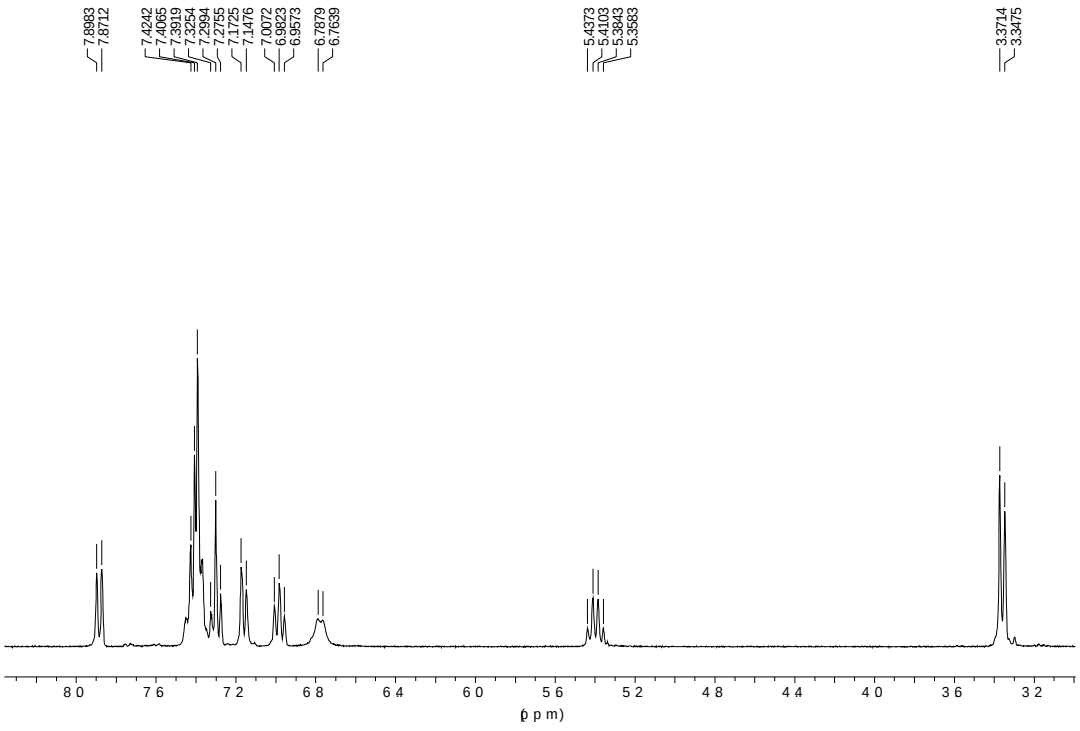


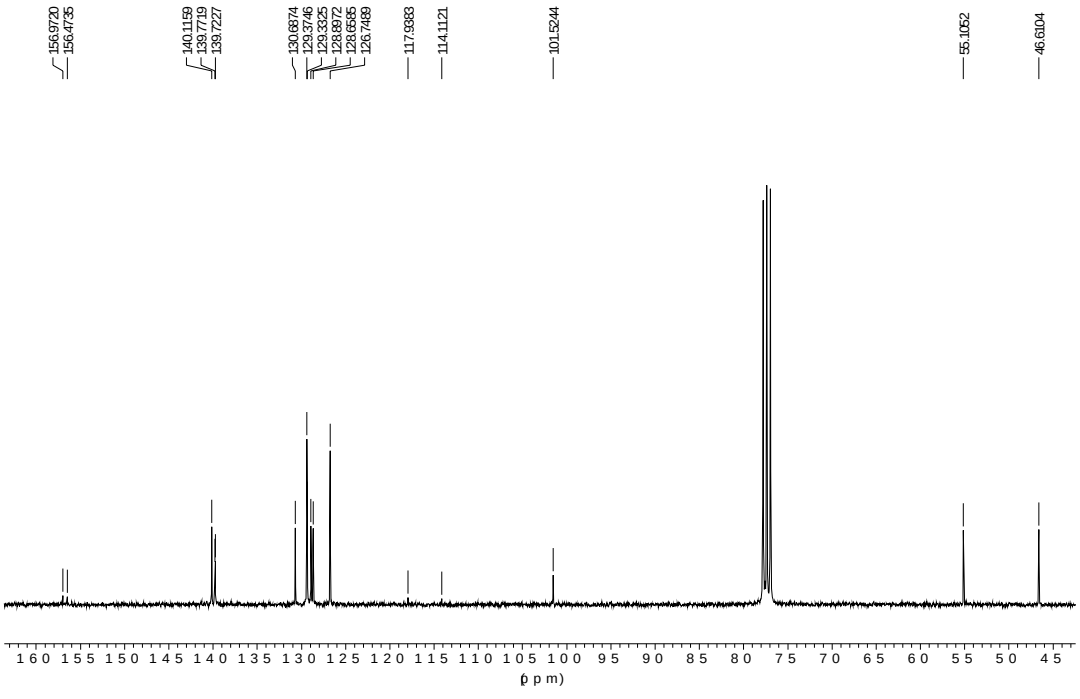
2,2,2-trifluoro-*N*-(3-(2-iodophenyl)propyl)-*N*-methylacetamide, *ortho*-2k



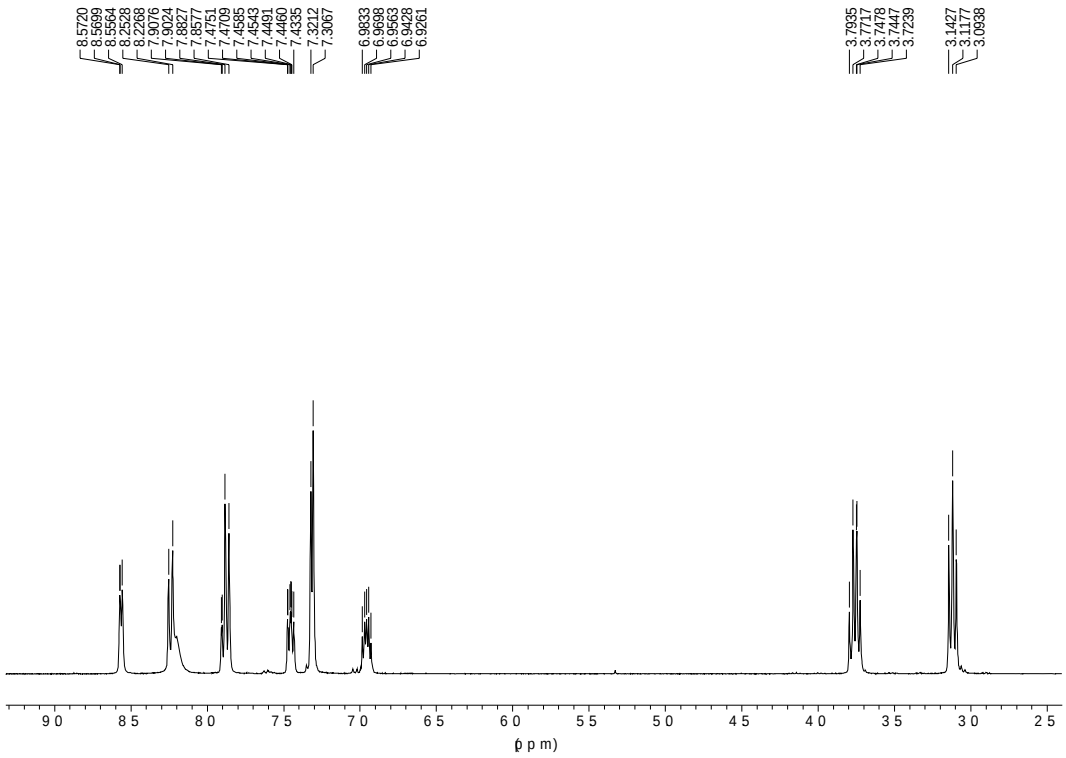


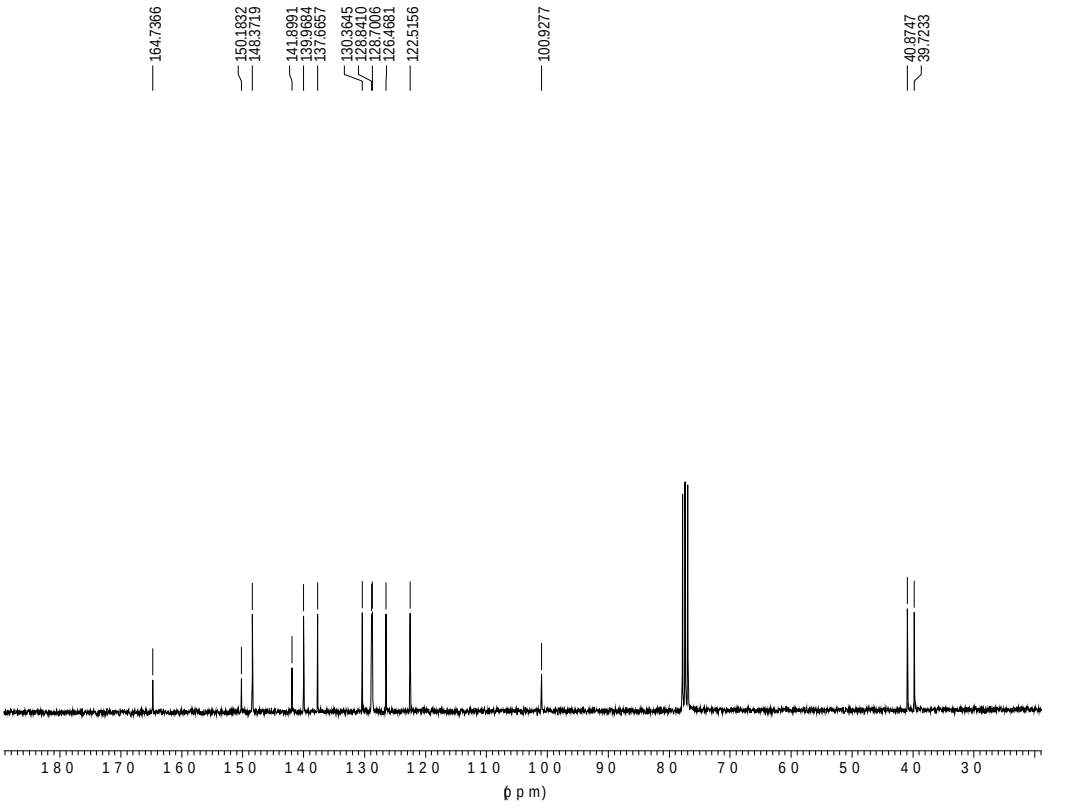
2,2,2-trifluoro-*N*-(2-(2-iodophenyl)-1-phenylethyl)acetamide, *ortho*-2l



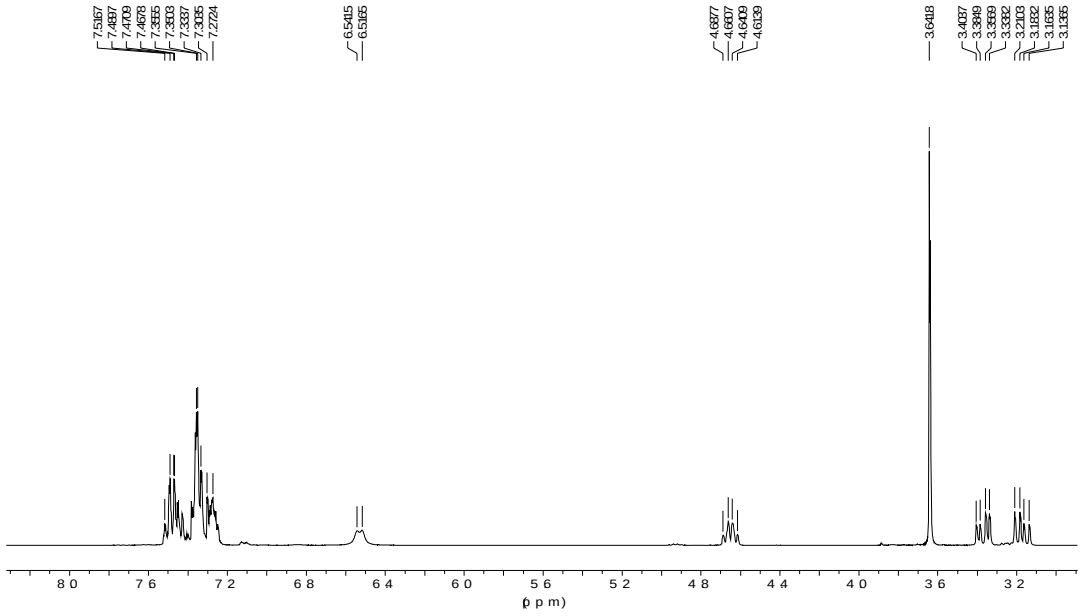


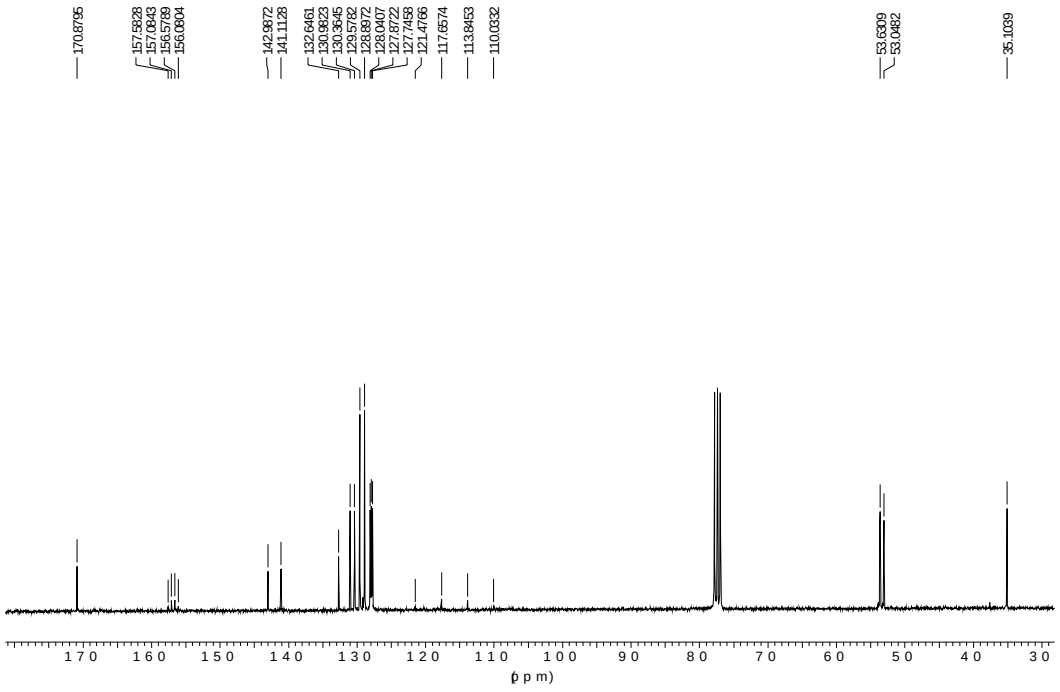
_N_-(2-(2-iodophenyl)ethyl)picolinamide, _ortho_-2m



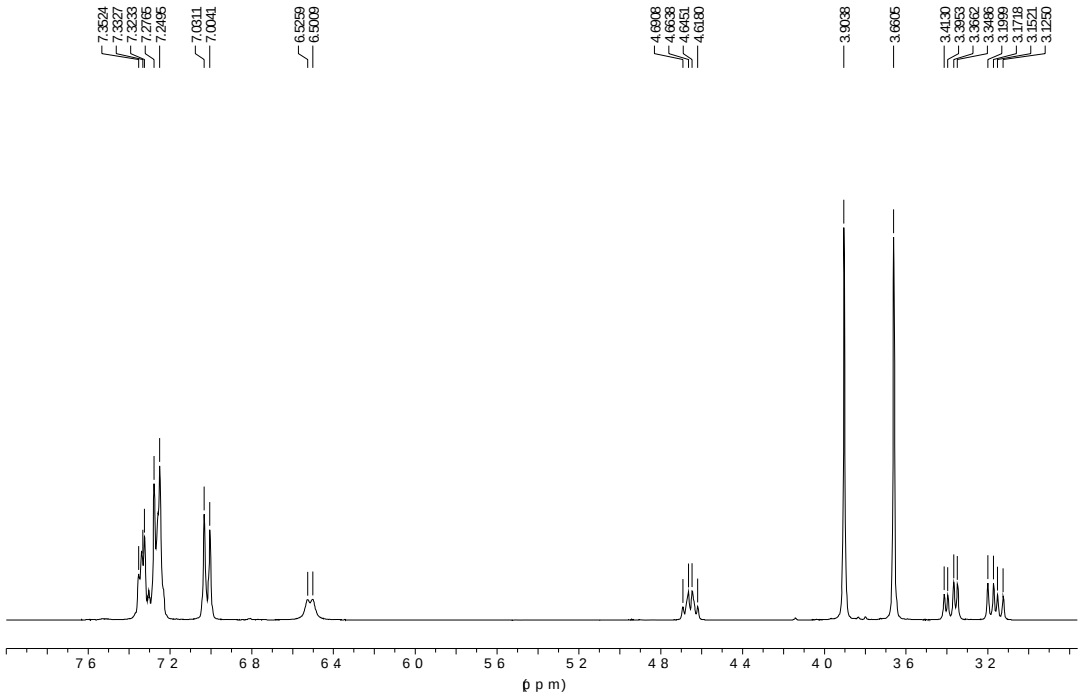


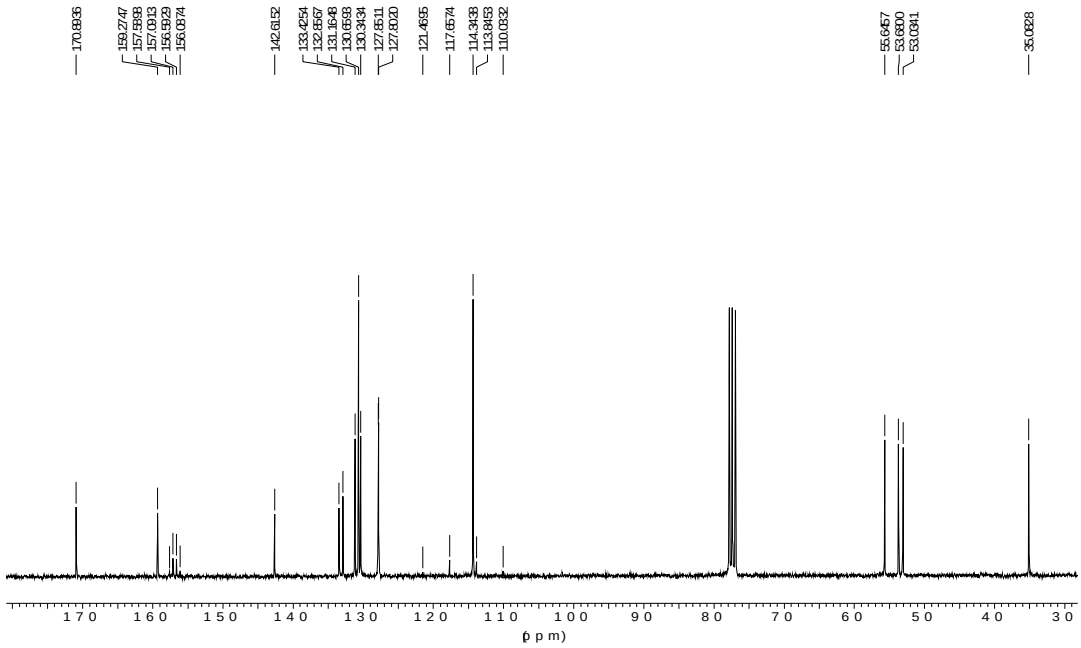
(*S*)-methyl-2-(2,2,2-trifluoracetamido)-3-(2-phenyphenyl)propanoate 3



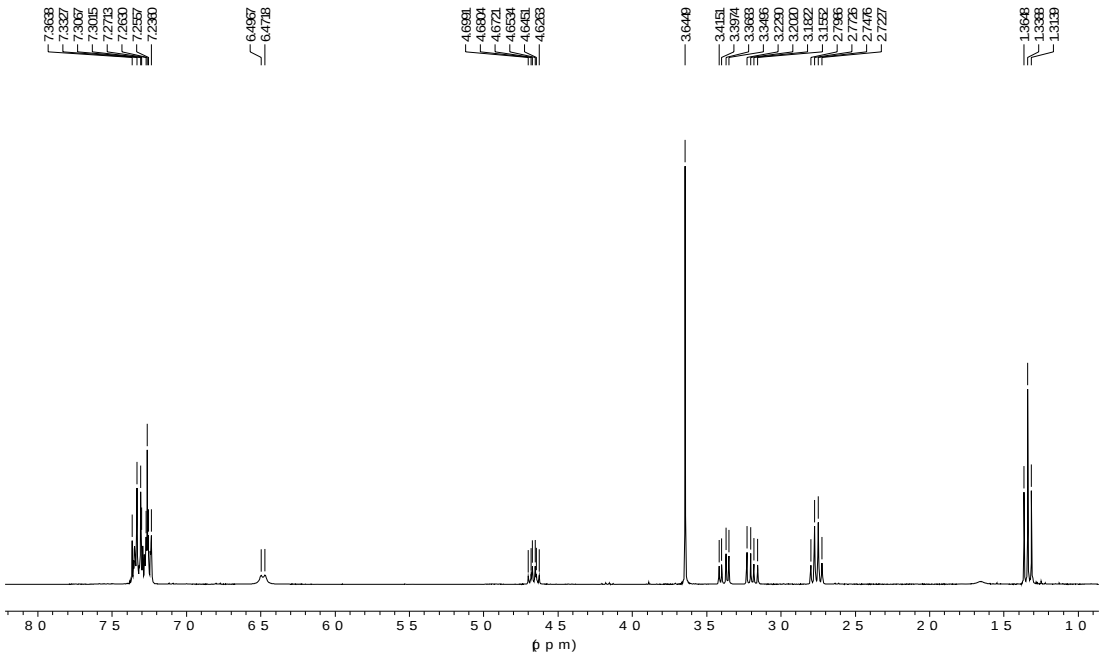


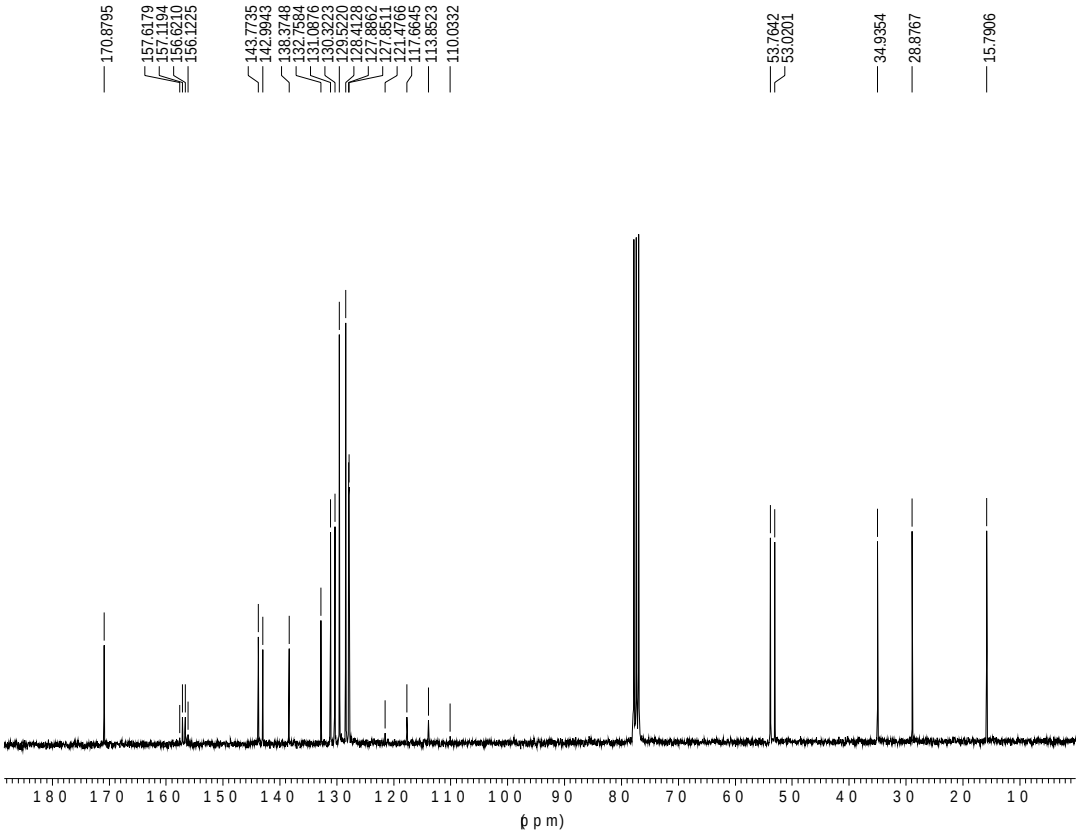
(*S*)-methyl-2-(2,2,2-trifluoracetamido)-3-(2-(4-metoxyphenyl)phenyl)propanoate 4





(*S*)-methyl-2-(2,2,2-trifluoracetamido)-3-(2-(4-ethylphenyl)phenyl)propanoate 5





(*S*)-methyl-2-(2,2,2-trifluoracetamido)-3-(2-(1-naphthylphenyl)propanoate 6