

Tables

Table 1. FT-IR Data of Schiff base Derivatives of *p*-Menth-3-en-1-amine

compd.	FT-IR data
2a	FT-IR (cm ⁻¹): 3299, 3204 (m, ν_{N-H}); 2960, 2924 (s, ν_{C-H}); 1638 (s, $\nu_{C=O}$); 1554 (s, δ_{N-H}); 1461, 1388 (m, δ_{C-H}); 1299 (s, ν_{C-N}).
2b	FT-IR (cm ⁻¹): 3326 (m, ν_{N-H}), 3064 (w, ν_{N-H}); 2968, 2942 (s, ν_{C-H}); 1675, 1649 (s, $\nu_{C=O}$); 1538 (s, δ_{N-H}); 1441, 1367 (m, δ_{C-H}); 1294 (s, ν_{C-N}).
4	FT-IR (cm ⁻¹): 3344, 3280 (w, ν_{N-H}); 2957, 2912.41 (s, ν_{C-H}); 1593 (w, δ_{N-H}); 1462 cm ⁻¹ , 1376 (m, δ_{C-H}); 1048 (w, ν_{C-N}); 812 (m, δ_{C-H}).
5a	FT-IR (cm ⁻¹): 2958, 2922 (s, ν_{C-H}); 1642 (s, $\nu_{N=C}$); 1484, 1370 (m, δ_{C-H}); 1015 (s, ν_{C-O}).
5b	FT-IR (cm ⁻¹): 2958, 2923 (s, ν_{C-H}); 1642.14 (s, $\nu_{N=C}$); 1434, 1368 (m, δ_{C-H}); 1020 (s, ν_{C-O}).
5c	FT-IR (cm ⁻¹): 3282 (s, ν_{O-H}); 2958, 2921 (s, ν_{C-H}); 1677, 1641 (s, $\nu_{N=C}$); 1434, 1361 (m, δ_{C-H}); 1016 (s, ν_{C-O}).
5d	FT-IR (cm ⁻¹): 2959, 2903 (s, ν_{C-H}); 1644 (s, $\nu_{N=C}$); 1477, 1357 (m, δ_{C-H}); 1030 (s, ν_{C-O}).
5e	FT-IR (cm ⁻¹): 3230 (w, ν_{N-H}); 2957, 2921 (s, ν_{C-H}); 1631 (s, $\nu_{N=C}$); 1420 (m, δ_{C-H}); 1031 (s, ν_{C-N}).
5f	FT-IR (cm ⁻¹): 2958, 2922 (s, ν_{C-H}); 1630 (s, $\nu_{N=C}$); 1431 (m, δ_{C-H}).
5g	FT-IR (cm ⁻¹): 3051 (w, ν_{C-H}); 2958, 2922 (s, ν_{C-H}); 1643.64 (s, $\nu_{N=C}$); 1434 (s, δ_{C-H}).
5h	FT-IR (cm ⁻¹): 3089 (w, ν_{C-H}); 2958, 2923 (s, ν_{C-H}); 1642 (s, $\nu_{N=C}$); 1418 (s, δ_{C-H}).
5i	FT-IR (cm ⁻¹): 3032 (w, ν_{C-H}); 2958, 2922 (s, ν_{C-H}); 1642 (s, $\nu_{N=C}$); 1408 (s, δ_{C-H}).
5j	FT-IR (cm ⁻¹): 3025 (w, ν_{C-H}); 2960, 2925 (s, ν_{C-H}); 1643 (s, $\nu_{N=C}$); 1450 (s, δ_{C-H}).
5k	FT-IR (cm ⁻¹): 3049 (w, ν_{C-H}); 2960, 2925 (s, ν_{C-H}); 1643 (s, $\nu_{N=C}$); 1405 (s, δ_{C-H}).
5l	FT-IR (cm ⁻¹): 3055 (w, ν_{C-H}); 2960, 2925 (s, ν_{C-H}); 1652 (s, $\nu_{C=C}$); 1430 (s, δ_{C-H}).

Table 2. ESI⁺-MS and HRMS of Schiff Base Derivatives of *p*-Menth-3-en-1-amine

compd.	ESI ⁺ -MS and HRMS data
2a	ESI ⁺ -MS (45ev, m/z): 255.14 [M+H] ⁺ , 196.15 [M-CH ₃ CONH ₂ +H] ⁺ , 137.16 [M-CH ₃ CONH ₂ +H] ⁺ .
2b	ESI ⁺ -MS (45ev, m/z): 255.05 [M+H] ⁺ , 196.05 [M-CH ₃ CONH ₂ +H] ⁺ , 137.05 [M-CH ₃ CONH ₂ +H] ⁺ .
4	ESI ⁺ -MS (45ev, m/z): 154.16 [M+H] ⁺ , 137.13 [M-NH ₃ +H] ⁺ , 95.13 [M-NH ₃ -CH ₃ CH=CH ₂ +H] ⁺ .
5a	ESI ⁺ -MS (45ev, m/z): 232.12 [M+H] ⁺ , 137.15 [M-Furan-CH=NH+H] ⁺ , 96.09 [M- α -Terpinene+H] ⁺ .
5b	ESI ⁺ -MS (45ev, m/z): 246.11 [M+H] ⁺ , 137.13 [M-CH ₃ -Furan-CH=NH+H] ⁺ , 110.09 [M- α -Terpinene+H] ⁺ .
5c	ESI ⁺ -MS (45ev, m/z): 262.11 [M+H] ⁺ , 137.13 [M-HOCH ₂ -Furan-CH=NH+H] ⁺ , 126.06 [M- α -Terpinene+H] ⁺ .
5d	ESI ⁺ -MS (45ev, m/z): 310.0 [M+H] ⁺ , 137.12 [M-Br-Furan-CH=NH+H] ⁺ , 173.92 [M- α -Terpinene+H] ⁺ . HRMS (ESI) for C ₁₅ H ₂₁ NOBr, calcd. 310.0801, found 310.0805 [M+H] ⁺ , Δ =1.34 ppm, DBE=6.
5e	ESI ⁺ -MS (45ev, m/z): 231.17 [M+H] ⁺ , 137.19 [M-Pyrrole-CH=NH+H] ⁺ , 95.17 [M- α -Terpinene+H] ⁺ .
5f	ESI ⁺ -MS (45ev, m/z): 248.11 [M+H] ⁺ , 137.18 [M-Thiophene-CH=NH+H] ⁺ , 112.10 [M- α -Terpinene+H] ⁺ .
5g	ESI ⁺ -MS (45ev, m/z): 243.12 [M+H] ⁺ , 137.15 [M-Pyridine-CH=NH+H] ⁺ , 107.08 [M- α -Terpinene+H] ⁺ . HRMS (ESI) for C ₁₆ H ₂₃ N ₂ , calcd. 243.1856, found 243.1863 [M+H] ⁺ , Δ =3.01 ppm, DBE=7.
5h	ESI ⁺ -MS (45ev, m/z): 243.12 [M+H] ⁺ , 137.14 [M-Pyridine-CH=NH+H] ⁺ , 107.08 [M- α -Terpinene+H] ⁺ .
5i	ESI ⁺ -MS (45ev, m/z): 243.12 [M+H] ⁺ , 137.14 [M-Pyridine-CH=NH+H] ⁺ , 107.08 [M- α -Terpinene+H] ⁺ .
5j	ESI ⁺ -MS (45ev, m/z): 242.10 [M+H] ⁺ , 137.11 [M-Ph-CH=NH+H] ⁺ , 106.08 [M- α -Terpinene+H] ⁺ .
5k	ESI ⁺ -MS (45ev, m/z): 276.04 [M+H] ⁺ , 137.11 [M-Ar-CH=NH+H] ⁺ , 140.00 [M- α -Terpinene+H] ⁺ .
5l	ESI ⁺ -MS (45ev, m/z): 309.98 [M+H] ⁺ , 137.10 [M-Ar-CH=NH+H] ⁺ , 173.93 [M- α -Terpinene+H] ⁺ .

Table 3. ¹H NMR of Schiff Base Derivatives of *p*-Menth-3-en-1-amine

compd.	¹ H NMR (DMSO- <i>d</i> ₆ , 500 MHz)
2a	δ_{H} 7.19 (s, 1, 1-NHCOCH ₃), 7.05 (s, 1, 8-NHCOCH ₃), 2.25 (d, 2, <i>J</i> =11.6 Hz, 2-H _a , 6-H _a), 1.89-1.94 (m, 1, 4-H), 1.81 (s, 3, 1-NHCOCH ₃), 1.78 (s, 1, 8-NHCOCH ₃), 1.39 (d, 2, <i>J</i> =5.6 Hz, 3-H _a , 5-H _a), 1.22 (s, 3, 7-H), 1.14-1.20 (m, 2, 2-He, 6-He), 1.17 (s, 6, 9-H, 10-H), 1.05 (ddd, 2, <i>J</i> =26.3, 13.2, 3.0 Hz, 3-He, 5-He).
2b	δ_{H} 7.30 (s, 1, 1-NHCOCH ₃), 7.20 (s, 1, 8-NHCOCH ₃), 1.88-1.94 (m, 3, 2-H _a , 4-H, 6-H _a), 1.78 (s, 3, 1-NHCOCH ₃), 1.77 (s, 3, 8-NHCOCH ₃), 1.51-1.57 (m, 4, 2-He, 3-H _a , 5-H _a , 6-He), 1.27 (s, 3, 7-H), 1.18 (s, 6, 9-H, 10-H), 1.08-1.16 (m, 2, 3-He, 5-He).
4	δ_{H} 5.27 (t, 1, 3-H), 2.14-2.19 (m, 1, 8-H), 2.0-2.06 (m, 1, 2-H _a), 1.81-1.94 (m, 3, 2-He, 5-H _a , 6-H _a), 1.40 (t, 2, <i>J</i> =6.4 Hz, 5-He, 6-He), 0.98 (s, 3, 7-H), 0.96 (s, 6, 9-H, 10-H).
5a	δ_{H} 8.06 (s, 1, 1-N=CH), 7.78 (d, 1, <i>J</i> =0.5 Hz, H-Furan), 6.86 (d, 1, <i>J</i> =1.65 Hz, H-Furan), 6.58 (dq, 1, <i>J</i> =3.25, 1.75 Hz, H-Furan), 5.37 (t, 1, 3-H), 2.13-2.21 (m, 2, 5-H _a , 8-H), 2.03-2.07 (m, 1, 2-H _a), 1.93-2.0 (m, 1, 5-He), 1.84-1.89 (m, 1, 2-He), 1.71-1.76 (m, 1, 6-H _a), 1.56-1.60 (m, 1, 6-He), 1.15 (s, 3, 7-H), 0.95 (d, 3, <i>J</i> =0.73 Hz, 10-H), 0.94 (d, 3, <i>J</i> =0.73 Hz, 9-H).
5b	δ_{H} 8.0 (s, 1, 1-N=CH), 6.73 (d, 1, <i>J</i> =1.60 Hz, H-Furan), 6.21 (d, 1, <i>J</i> =3.15 Hz, H-Furan), 5.38 (t, 1, 3-H), 2.33 (s, 3, CH ₃ -Furan), 2.13-2.20 (m, 2, 5-H _a , 8-H), 2.02-2.06 (m, 1, 2-H _a), 1.93-1.98 (m, 1, 5-He), 1.87-1.88 (m, 1, 2-He), 1.71-1.75 (m, 1, 6-H _a), 1.54-1.61 (m, 1, 6-He), 1.13 (s, 3, 7-H), 0.96 (d, 3, <i>J</i> =1.90 Hz, 10-H), 0.95 (d, 3, <i>J</i> =1.90 Hz, 9-H).
5c	δ_{H} 8.02 (s, 1, 1-N=CH), 6.79 (d, 1, <i>J</i> =3.25 Hz, H-Furan), 6.41 (d, 1, <i>J</i> =3.25 Hz, H-Furan), 5.38 (t, 1, 3-H), 4.46 (s, 2, -CH ₂ OH), 2.14-2.22 (m, 2, 5-H _a , 8-H), 2.03-2.07 (m, 1, 2-H _a), 1.93-1.99 (m, 1, 5-He), 1.85-1.89 (m, 1, 2-He), 1.72-1.77 (m, 1, 6-H _a), 1.56-1.61 (m, 1, 6-He), 1.15 (s, 3, 7-H), 0.96 (d, 3, <i>J</i> =1.65 Hz, 10-H), 0.95 (d, 3, <i>J</i> =1.60 Hz, 9-H).
5d	δ_{H} 7.97 (s, 1, 1-N=CH), 6.90 (d, 1, <i>J</i> =3.4 Hz, H-Furan), 6.69 (d, 1, <i>J</i> =3.35 Hz, H-Furan), 5.35 (t, 1, 3-H), 2.11-2.19 (m, 2, 5-H _a , 8-H), 2.02-2.05 (m, 1, 2-H _a), 1.92-1.96 (m, 1, 5-He), 1.83-1.87 (m, 1, 2-He), 1.70-1.75 (m, 1, 6-H _a), 1.54-1.59 (m, 1, 6-He), 1.13 (s, 3, 7-H), 0.93 (d, 6, <i>J</i> =6.85 Hz, 9-H, 10-H).
5e	δ_{H} 8.02 (s, 1, 1-N=CH), 6.84 (s, 1, H-Pyrrole), 6.41 (dq, 1, <i>J</i> =3.30, 1.30 Hz, H-Pyrrole), 6.10 (t, 1, <i>J</i> =2.98 Hz, H-Pyrrole), 5.40 (t, 1, 3-H), 2.15-2.23 (m, 2, 5-H _a , 8-H), 2.05-2.08 (m, 1, 2-H _a), 1.89-2.0 (m, 2, 2-He, 5-He), 1.72-1.77 (m, 1, 6-H _a), 1.57-1.62 (m, 1, 6-He), 1.16 (s, 3, 7-H), 0.98 (d, 3, <i>J</i> =1.80 Hz, 10-H), 0.96 (d, 3, <i>J</i> =1.80 Hz, 9-H).
5f	δ_{H} 8.38 (s, 1, 1-N=CH), 7.61 (d, 1, <i>J</i> =5.0 Hz, H-Thiophene), 7.44 (d, 1, <i>J</i> =3.55 Hz, H-Thiophene), 7.13 (dq, 1, <i>J</i> =4.95, 3.60 Hz, H-Thiophene), 5.38 (t, 1, 3-H), 2.14-2.22 (m, 2, 5-H _a , 8-H), 2.05-2.09 (m, 1, 2-H _a), 1.88-1.99 (m, 2, 2-He, 5-He), 1.71-1.76 (m, 1, 6-H _a), 1.56-1.61 (m, 1, 6-He), 1.17 (s, 3, 7-H), 0.96 (d, 6, <i>J</i> =6.90 Hz, 9-H, 10-H).

Table 4. ¹H NMR of Schiff Base Derivatives of *p*-Menth-3-en-1-amine

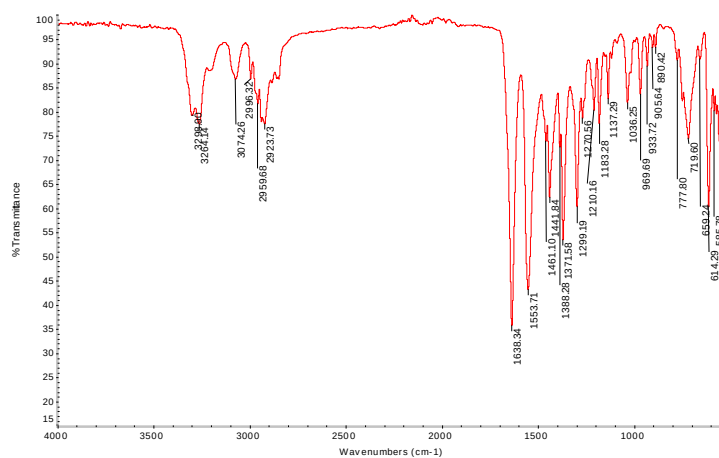
compd.	¹ H NMR (DMSO- <i>d</i> ₆ , 500 MHz)
5g	δ_{H} 8.64 (d, 1, <i>J</i> =4.75 Hz, H-Pyridine), 8.24 (s, 1, 1-N=CH), 7.97 (d, 1, <i>J</i> =7.90 Hz, H-Pyridine), 7.87 (m, 1, H-Pyridine), 7.44-7.47 (m, 1, H-Pyridine), 5.42 (t, 1, 3-H), 2.25-2.28 (m, 1, 2-Ha), 2.12-2.21 (m, 2, 5-Ha, 8-H), 1.97-2.02 (m, 1, 2-He), 1.87-1.93 (m, 1, 5-He), 1.79-1.83 (m, 1, 6-Ha), 1.62-1.68 (m, 1, 6-He), 1.22 (s, 3, 7-H), 0.96 (d, 3, <i>J</i> =1.55 Hz, 10-H), 0.95 (d, 3, <i>J</i> =1.55 Hz, 9-H).
5h	δ_{H} 8.89 (s, 1, H-Pyridine), 8.63 (d, 1, <i>J</i> =3.1 Hz, H-Pyridine), 8.34 (s, 1, 1-N=CH), 8.13 (d, 1, <i>J</i> =8.10 Hz, H-Pyridine), 7.46 (dq, 1, <i>J</i> =7.80, 4.80 Hz, H-Pyridine), 5.39 (t, 1, 3-H), 2.23-2.27 (m, 1, 2-Ha), 2.14-2.19 (m, 1, 8-H), 2.08-2.11 (m, 1, 5-Ha), 1.91-1.99 (m, 2, 2-He, 5-He), 1.76-1.81 (m, 1, 6-Ha), 1.60-1.65 (m, 1, 6-He), 1.20 (s, 3, 7-H), 0.95 (d, 3, <i>J</i> =6.85 Hz, 9-H, 10-H).
5i	δ_{H} 8.66 (d, 2, <i>J</i> =5.95 Hz, H-Pyridine), 8.28 (s, 1, 1-N=CH), 7.68 (d, 1, <i>J</i> =5.95 Hz, H-Pyridine), 5.38 (t, 1, 3-H), 2.23-2.26 (m, 1, 2-Ha), 2.13-2.17 (m, 1, 8-H), 2.07-2.11 (m, 1, 5-Ha), 1.85-2.0 (m, 2, 2-He, 5-He), 1.76-1.81 (m, 1, 6-Ha), 1.59-1.64 (m, 1, 6-He), 1.19 (s, 3, 7-H), 0.93 (d, 6, <i>J</i> =6.90 Hz, 9-H, 10-H).
5j	δ_{H} 8.27 (s, 1, 1-N=CH), 7.75-7.77 (m, 2, H-Ph), 7.42-7.43 (m, 3, H-Ph), 5.40 (t, 1, 3-H), 2.25 (d, 1, <i>J</i> =17.8 Hz, 2-Ha), 2.14-2.20 (m, 1, 8-H), 2.09 (d, 1, <i>J</i> =17.4 Hz, 2-He), 1.89-2.00 (m, 2, 5-Ha, 6-Ha), 1.76-1.81 (m, 1, 5-He), 1.59-1.66 (m, 1, 6-He), 1.20 (s, 3, 7-H), 0.96 (d, 6, <i>J</i> =6.9 Hz, 9-H, 10-H).
5k	δ_{H} 8.25 (s, 1, 1-N=CH), 7.76 (d, 2, <i>J</i> =8.4 Hz, H-Ar), 7.46 (d, 2, <i>J</i> =8.3 Hz, H-Ar), 5.38 (t, 1, 3-H), 2.23 (d, 1, <i>J</i> =17.5 Hz, 2-Ha), 2.12-2.18 (m, 1, 8-H), 2.07 (d, 1, <i>J</i> =17.3 Hz, 2-He), 1.87-1.97 (m, 2, 5-Ha, 6-Ha), 1.73-1.79 (m, 1, 5-He), 1.57-1.64 (m, 1, 6-He), 1.18 (s, 3, 7-H), 0.94 (d, 6, <i>J</i> =6.9 Hz, 9-H, 10-H).
5l	δ_{H} 8.26 (s, 1, 1-N=CH), 7.48 (d, 2, <i>J</i> =8.4 Hz, H-Ar), 7.40 (t, 1, <i>J</i> =8.1 Hz, H-Ar), 5.37 (t, 1, 3-H), 2.28 (d, 1, <i>J</i> =17.8 Hz, 2-Ha), 2.11-2.19 (m, 2, 2-He, 8-H), 1.94-2.03 (m, 2, 5-Ha, 6-Ha), 1.82-1.87 (m, 1, 5-He), 1.61-1.66 (m, 1, 6-He), 1.22 (s, 3, 7-H), 0.96 (dq, 6, <i>J</i> =6.8, 2.1 Hz, 9-H, 10-H).

Table 5. ¹³C NMR of Schiff Base Derivatives of *p*-Menth-3-en-1-amine

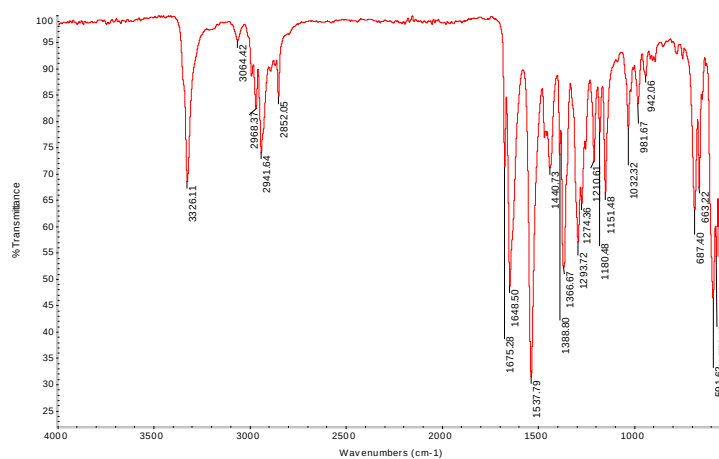
compd.	¹³ C NMR (DMSO- <i>d</i> ₆ , 125 MHz)
2a	δ_C 168.81 (1-NHCOCH ₃), 168.42 (8-NHCOCH ₃), 55.08 (8-C), 51.60 (1-C), 42.96 (4-C), 35.93 (2-C, 6-C), 27.48 (7-C), 23.78 (9-C, 10-C), 23.54 (1-NHCOCH ₃ , 8-NHCOCH ₃), 22.04 (3-C, 5-C).
2b	δ_C 168.46 (1-NHCOCH ₃ , 8-NHCOCH ₃), 54.96 (8-C), 52.27 (1-C), 43.41 (4-C), 36.27 (2-C, 6-C), 23.79 (9-C, 10-C), 23.68 (1-NHCOCH ₃), 23.54 (8-NHCOCH ₃), 22.63 (3-C, 5-C), 21.42 (7-C).
4	δ_C 141.39 (4-C), 116.80 (3-C), 46.75 (1-C), 40.45 (2-C), 36.67 (6-C), 34.07 (8-C), 28.43 (7-C), 23.50 (5-C), 21.23 (9-C, 10-C).
5a	δ_C 152.82 (1-N=CH), 145.46 (C-Furan), 145.17 (C-Furan), 142.60 (4-C), 116.65 (3-C), 113.82 (C-Furan), 112.17 (C-Furan), 58.20 (1-C), 36.82 (6-C), 34.69 (2-C), 34.56 (8-C), 26.72 (7-C), 23.71 (5-C), 21.70 (9-C), 21.68(10-C).
5b	δ_C 154.54 (1-N=CH), 151.43 (C-Furan), 145.12 (C-Furan), 142.59 (4-C), 116.75 (3-C), 115.70 (C-Furan), 108.54 (C-Furan), 58.02 (1-C), 36.87 (6-C), 34.68 (2-C), 34.57 (8-C), 26.85 (7-C), 23.75 (5-C), 21.74 (9-C), 21.71 (10-C), 13.90 (CH ₃ -Furan).
5c	δ_C 158.0 (1-N=CH), 152.0 (C-Furan), 145.45 (C-Furan), 142.61 (4-C), 116.72 (3-C), 115.31 (C-Furan), 109.22 (C-Furan), 58.21 (1-C), 56.25 (-CH ₂ OH), 36.82 (6-C), 34.68 (2-C), 34.51 (8-C), 26.83 (7-C), 23.75 (5-C), 21.75 (9-C), 21.72 (10-C).
5d	δ_C 154.66 (1-N=CH), 144.63 (C-Furan), 142.59 (4-C), 124.93 (C-Furan), 116.58 (3-C), 115.58 (C-Furan), 114.25 (C-Furan), 58.45 (1-C), 36.74 (6-C), 34.67 (2-C), 34.46 (8-C), 26.67 (7-C), 23.70 (5-C), 21.71 (9-C), 21.68 (10-C).
5e	δ_C 147.25 (1-N=CH), 142.64 (4-C), 131.25 (C-Pyrrole), 122.0 (C-Pyrrole), 116.93 (3-C), 113.43 (C-Pyrrole), 109.14 (C-Pyrrole), 57.34 (1-C), 37.23 (6-C), 34.84 (2-C), 34.69 (8-C), 27.21 (7-C), 23.84 (5-C), 21.83 (9-C), 21.80 (10-C).
5f	δ_C 150.13 (1-N=CH), 144.24 (C-Thiophene), 142.68 (4-C), 131.06 (C-Thiophene), 129.21 (C-Thiophene), 128.04 (C-Thiophene), 116.69 (3-C), 57.96 (1-C), 37.04 (6-C), 34.74 (2-C, 8-C), 26.84 (7-C), 23.74 (5-C), 21.78 (9-C, 10-C).
5g	δ_C 157.24 (C-Pyridine), 155.37 (1-N=CH), 149.71 (C-Pyridine), 142.75 (4-C), 137.24 (C-Pyridine), 125.34 (C-Pyridine), 120.45 (C-Pyridine), 116.59 (3-C), 58.47 (1-C), 36.72 (6-C), 34.69 (2-C), 34.57 (8-C), 26.95 (7-C), 23.66 (5-C), 21.80 (9-C), 21.75 (10-C).
5h	δ_C 153.93 (1-N=CH), 151.53 (C-Pyridine), 149.97 (C-Pyridine), 142.66 (4-C), 134.57 (C-Pyridine), 132.63 (C-Pyridine), 124.27 (C-Pyridine), 116.64 (3-C), 58.50 (1-C), 36.94 (6-C), 34.71 (2-C), 34.68 (8-C), 26.67 (7-C), 23.70 (5-C), 21.77 (9-C), 21.76 (10-C).
5i	δ_C 154.89 (1-N=CH), 150.63 (C-Pyridine), 143.84(C-Pyridine), 142.63 (4-C), 122.08 (C-Pyridine), 116.53 (3-C), 58.77 (1-C), 36.81 (6-C), 34.71 (2-C), 34.57 (8-C), 26.56 (7-C), 23.64 (5-C), 21.70 (9-C, 10-C).
5j	δ_C 155.77 (1-N=CH), 142.66 (4-C), 137.40 (C-Ph), 130.60 (C-Ph), 128.89 (C-Ph), 128.10 (C-Ph), 116.75 (3-C), 57.95 (1-C), 37.12 (6-C), 34.82 (2-C), 34.73 (8-C), 26.82 (7-C), 23.77 (5-C), 21.76 (10-C), 21.75 (9-C).
5k	δ_C 154.66 (1-N=CH), 142.60 (4-C), 136.17 (C-Ar), 135.28 (C-Ar), 129.65 (C-Ar), 128.98 (C-Ar), 116.64 (3-C), 58.10 (1-C), 37.05 (6-C), 34.74 (2-C), 34.68 (8-C), 26.66 (7-C), 23.72 (5-C), 21.70 (10-C), 21.70 (9-C).
5l	δ_C 152.44 (1-N=CH), 142.87 (4-C), 136.32 (C-Ar), 133.81 (C-Ar), 131.12 (C-Ar), 129.11 (C-Ar), 129.07 (C-Ar), 116.23 (3-C), 59.51 (1-C), 36.26 (6-C), 34.70 (2-C), 34.30 (8-C), 27.59 (7-C), 23.61 (5-C), 21.77 (10-C), 21.61 (9-C).

Figures

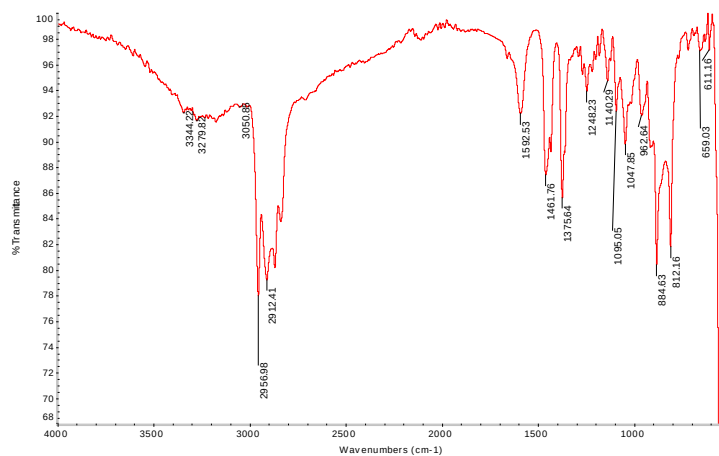
FT-IR



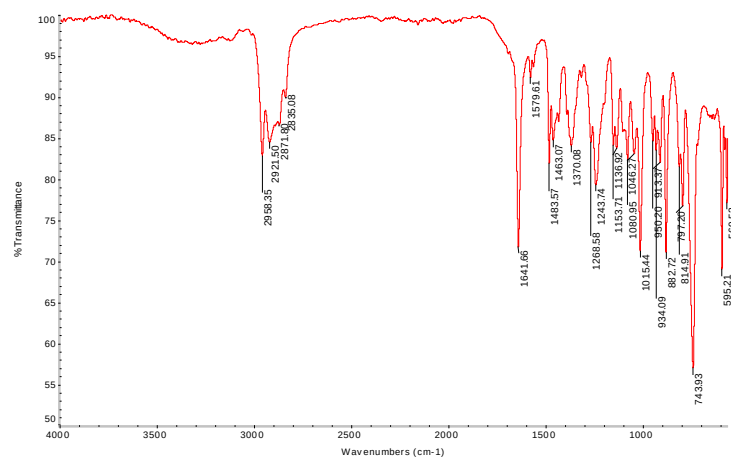
Compound 2a (FT-IR)



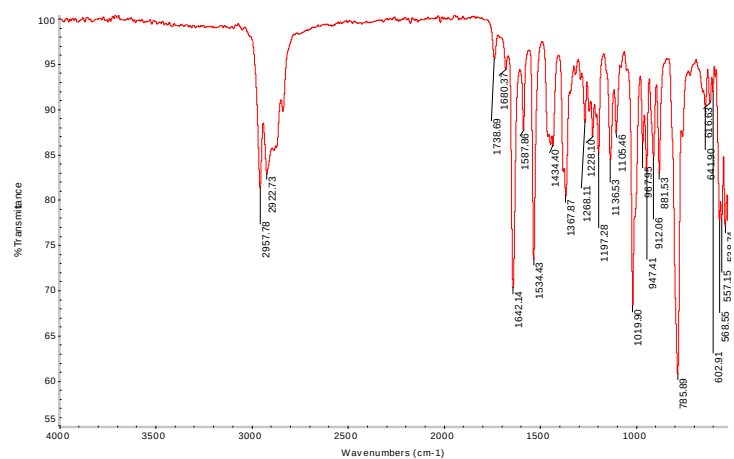
Compound 2b (FT-IR)



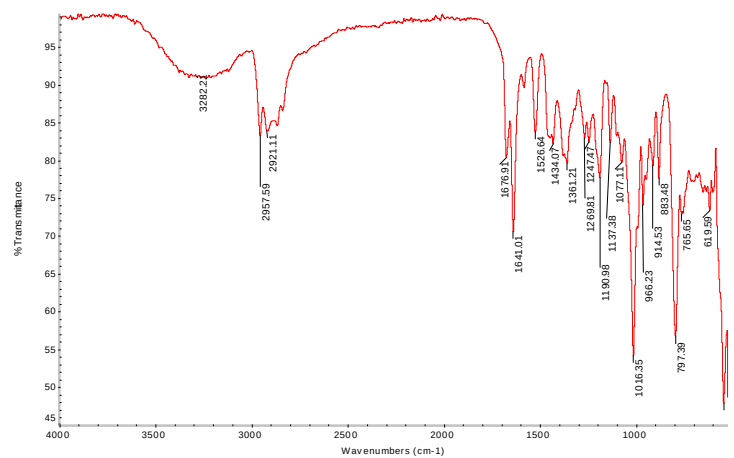
Compound 4 (FT-IR)



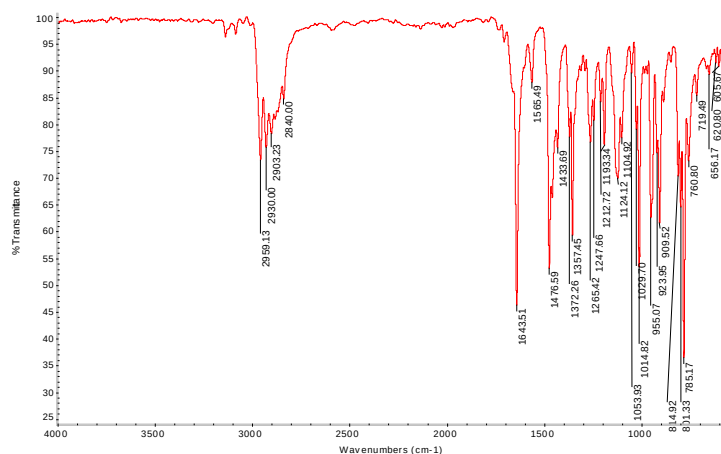
Compound 5a (FT-IR)



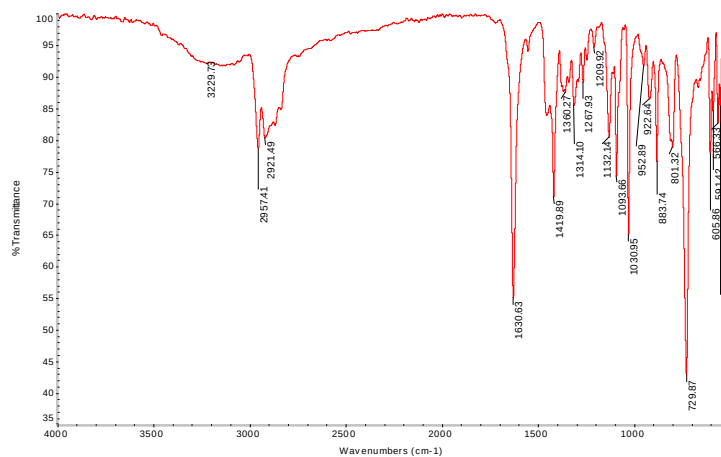
Compound 5b (FT-IR)



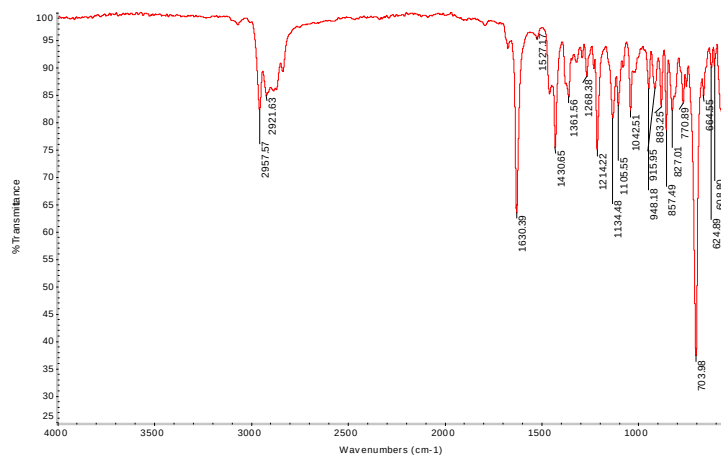
Compound 5c (FT-IR)



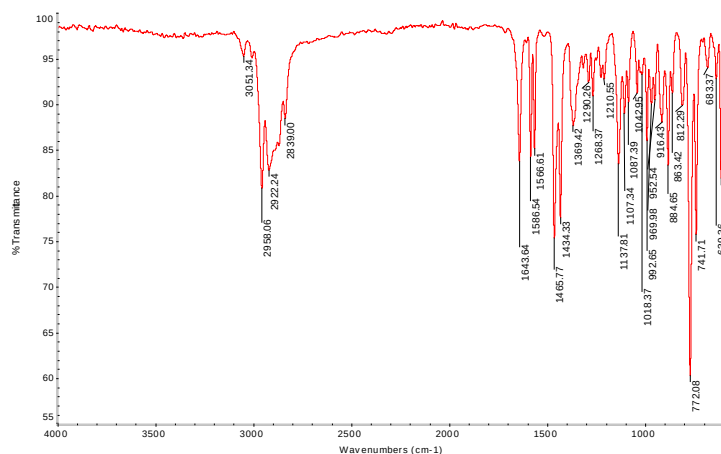
Compound 5d (FT-IR)



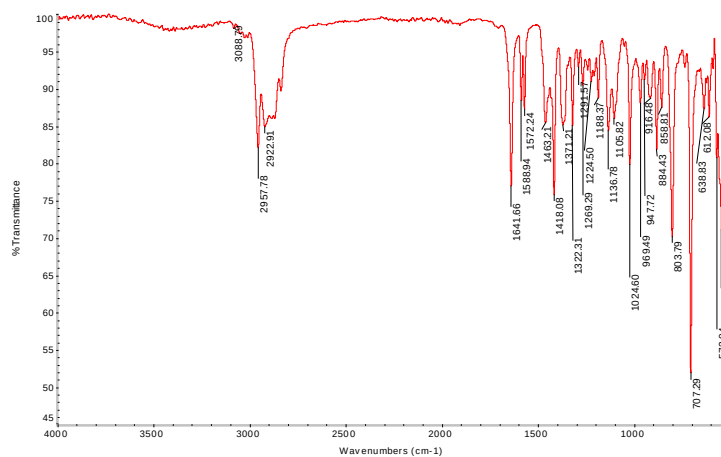
Compound 5e (FT-IR)



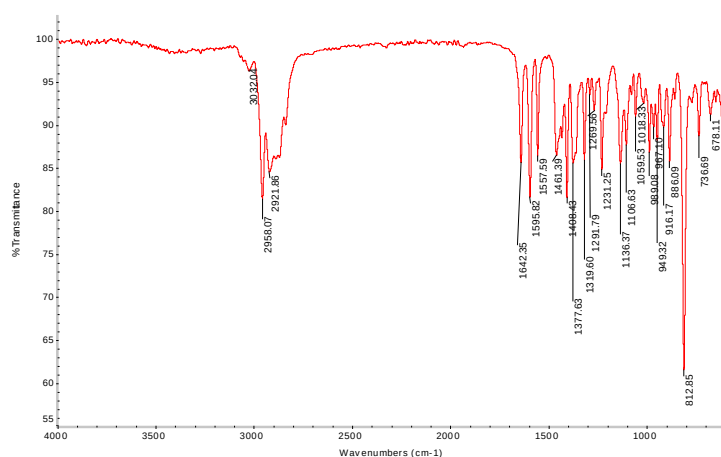
Compound 5f (FT-IR)



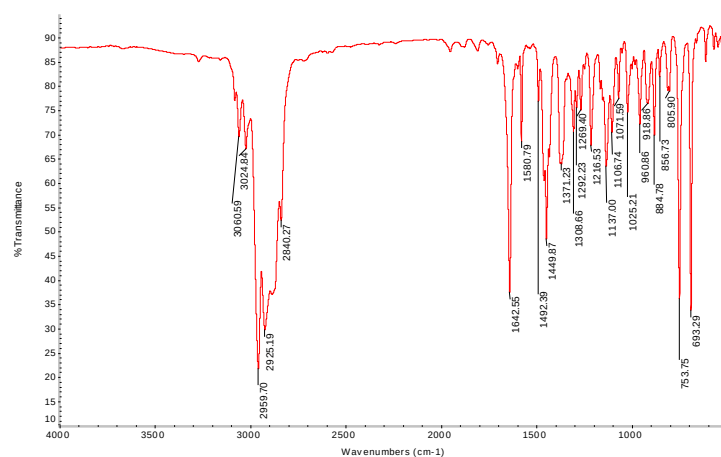
Compound 5g (FT-IR)



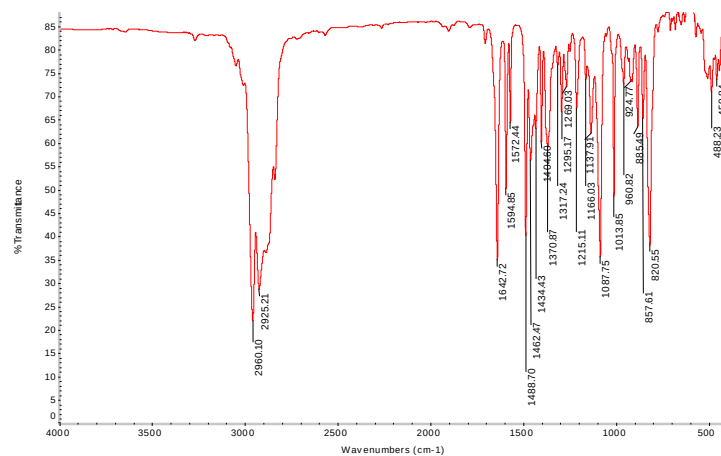
Compound 5h (FT-IR)



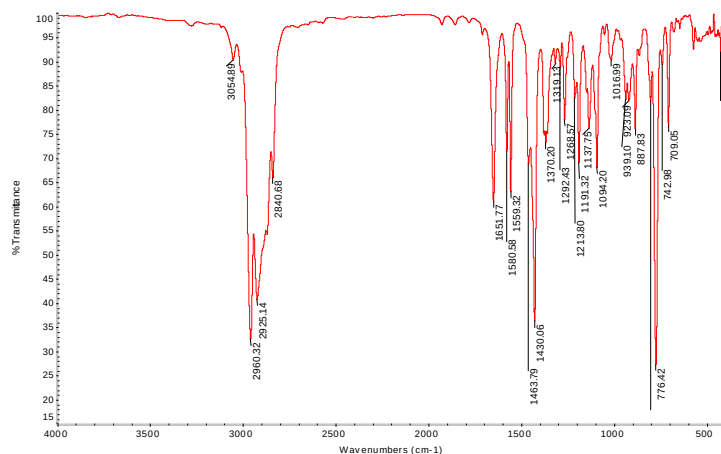
Compound 5i (FT-IR)



Compound 5j (FT-IR)



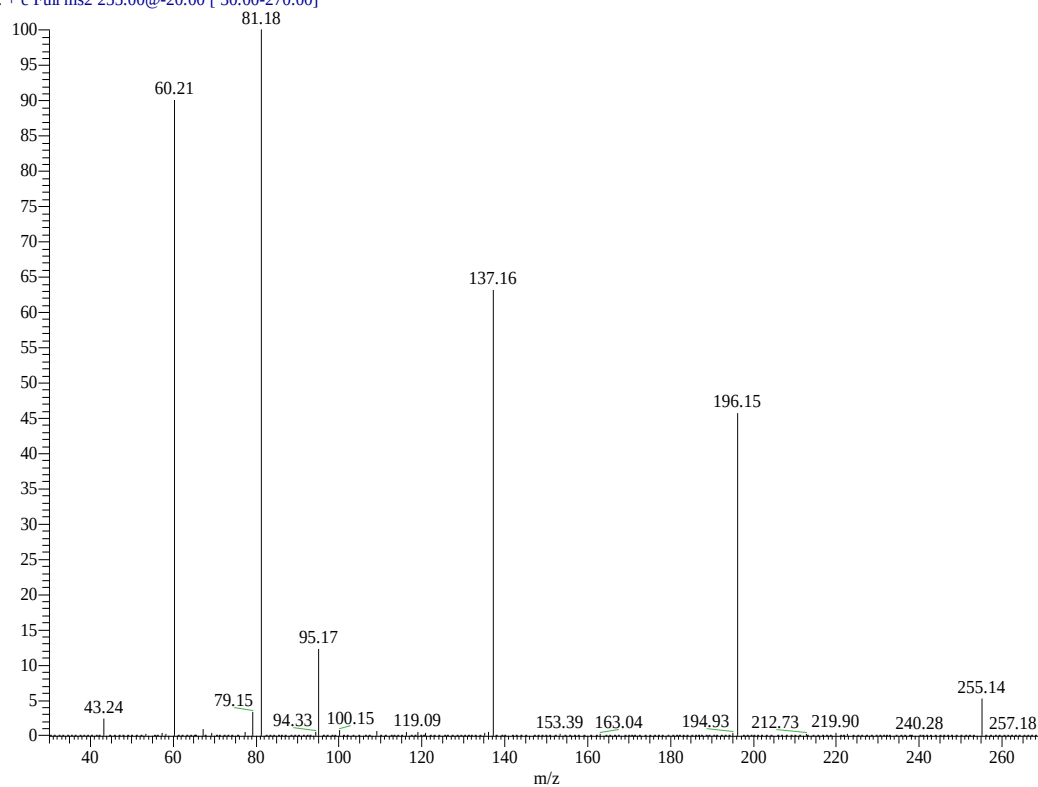
Compound 5k (FT-IR)



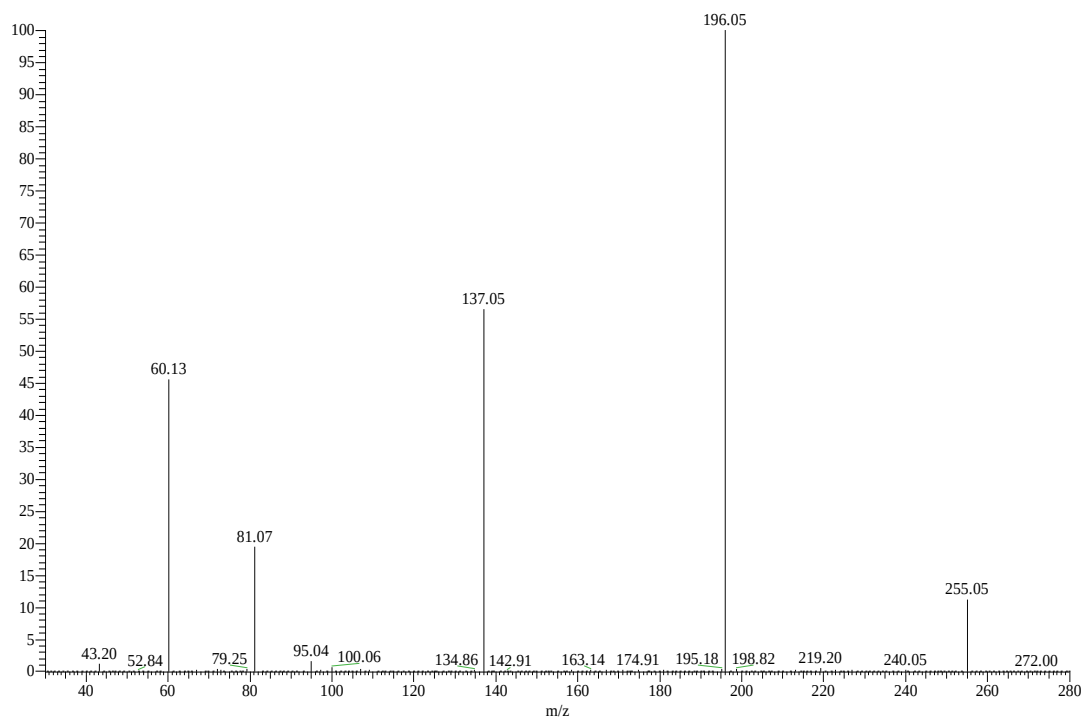
Compound 5I (FT-IR)

ESI⁺-MS

2016055-zhushouji #49 RT: 0.65 AV: 1 NL: 1.29E6
T: + c Full ms2 255.00@-20.00 [30.00-270.00]

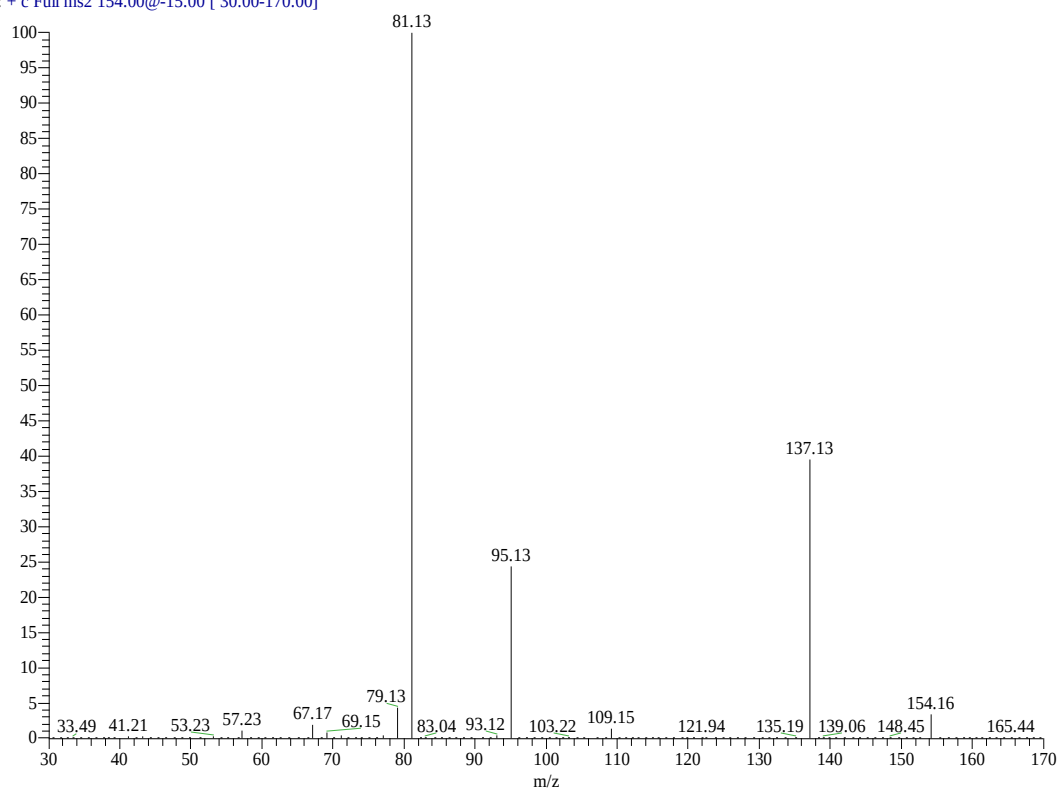


Compound 2a (ESI⁺-MS)



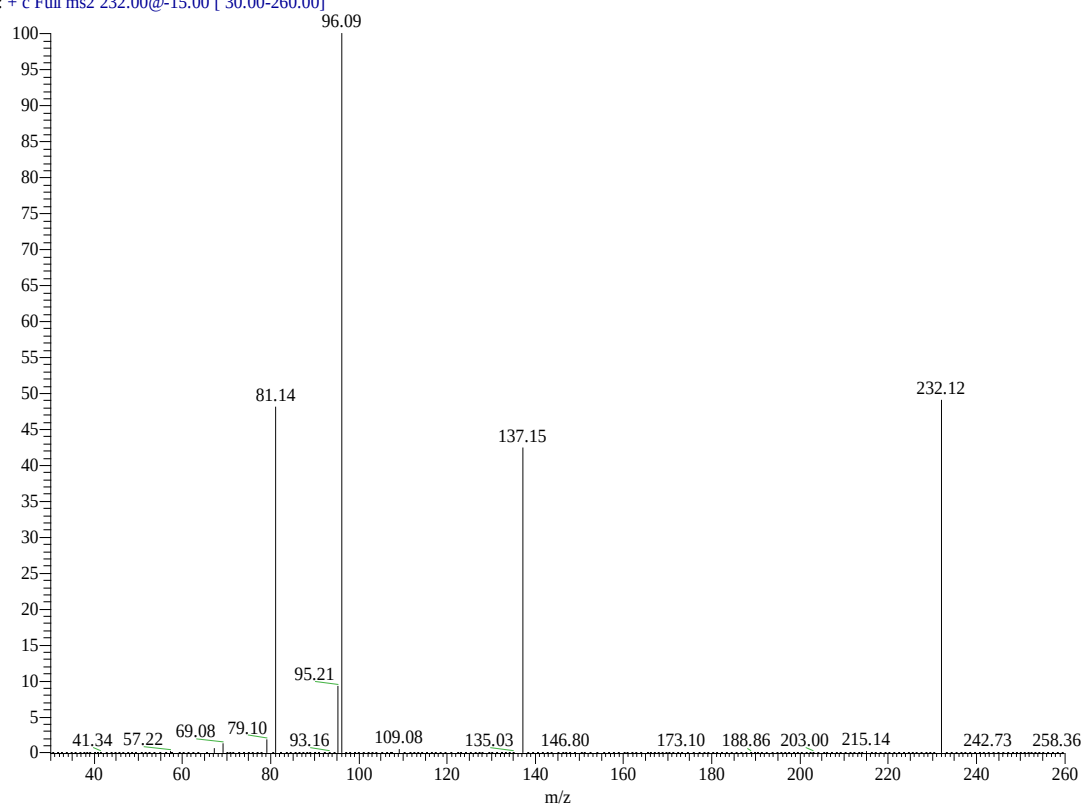
Compound 2b (ESI⁺-MS)

20151017-zhushouji-8 #62 RT: 0.80 AV: 1 NL: 6.23E7
T: + c Full ms2 154.00@-15.00 [30.00-170.00]



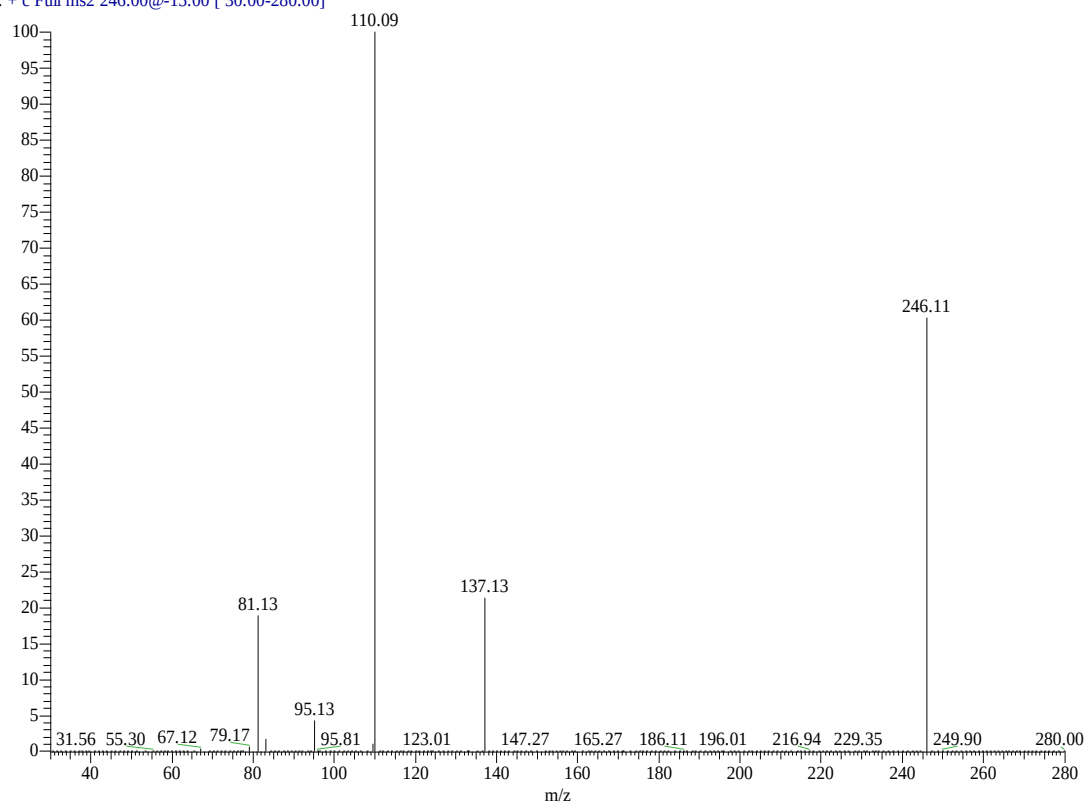
Compound 4 (ESI⁺-MS)

20151017-zhushouji-10 #25 RT: 0.33 AV: 1 NL: 2.58E6
T: + c Full ms2 232.00@-15.00 [30.00-260.00]



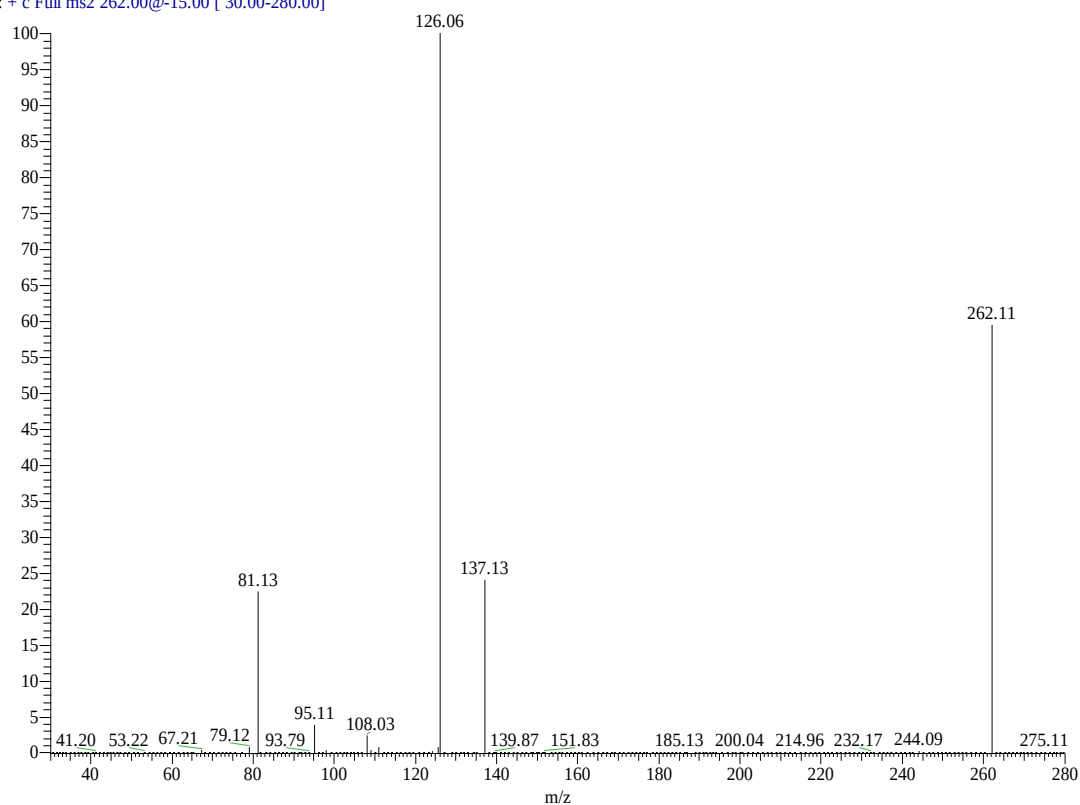
Compound 5a (ESI⁺-MS)

20151017-zhushouji-9 #27 RT: 0.35 AV: 1 NL: 1.36E7
T: + c Full ms2 246.00@-15.00 [30.00-280.00]



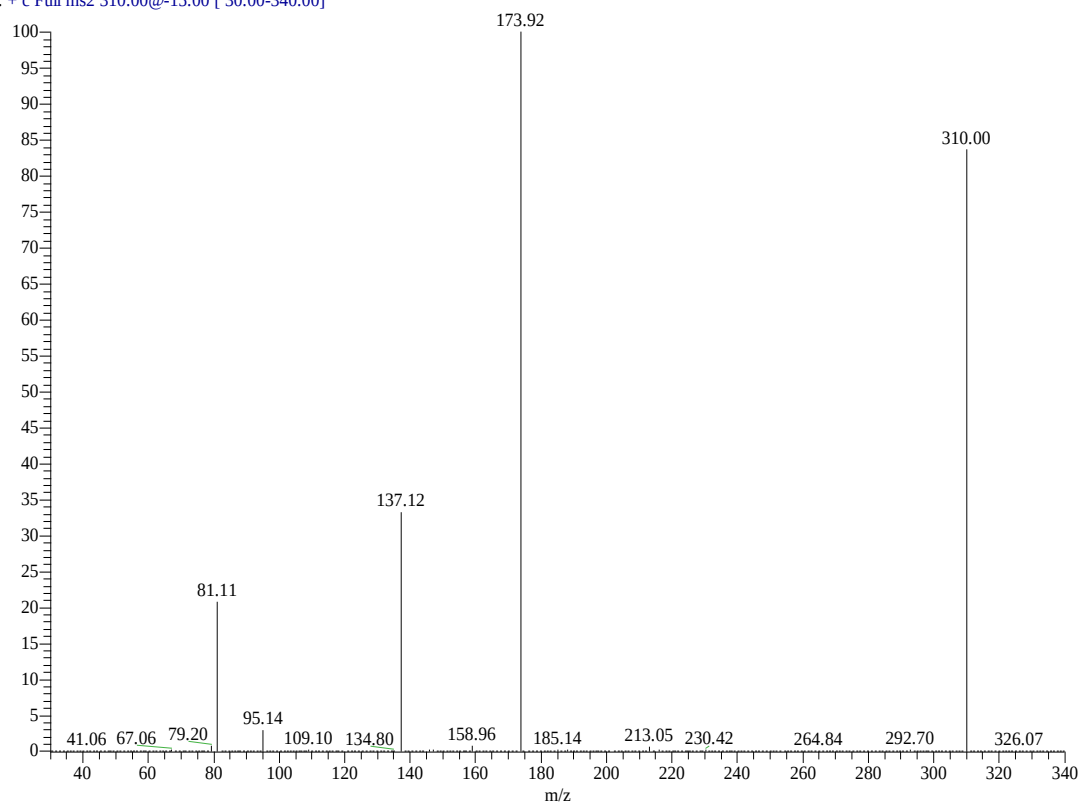
Compound 5b (ESI⁺-MS)

20151017-zhushouji-11 #19 RT: 0.25 AV: 1 NL: 8.31E6
T: + c Full ms2 262.00@-15.00 [30.00-280.00]



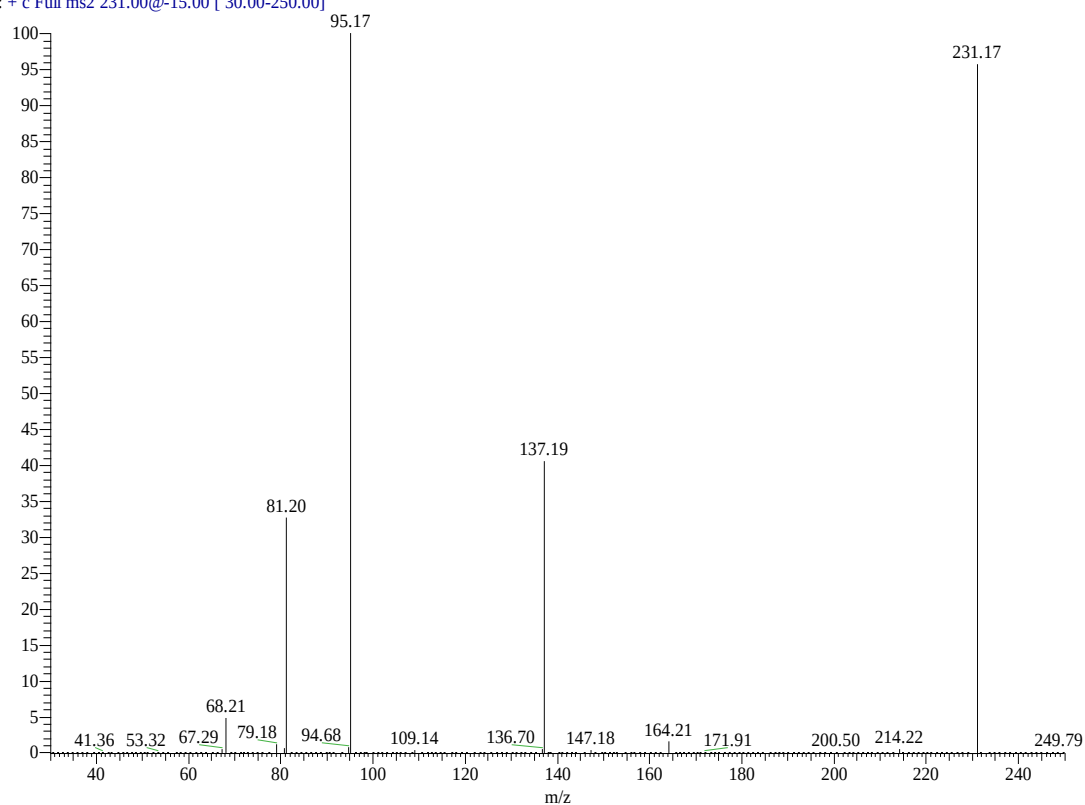
Compound 5c (ESI⁺-MS)

20151017-zhushouji-12 #97 RT: 1.26 AV: 1 NL: 2.34E6
T: + c Full ms2 310.00@-15.00 [30.00-340.00]



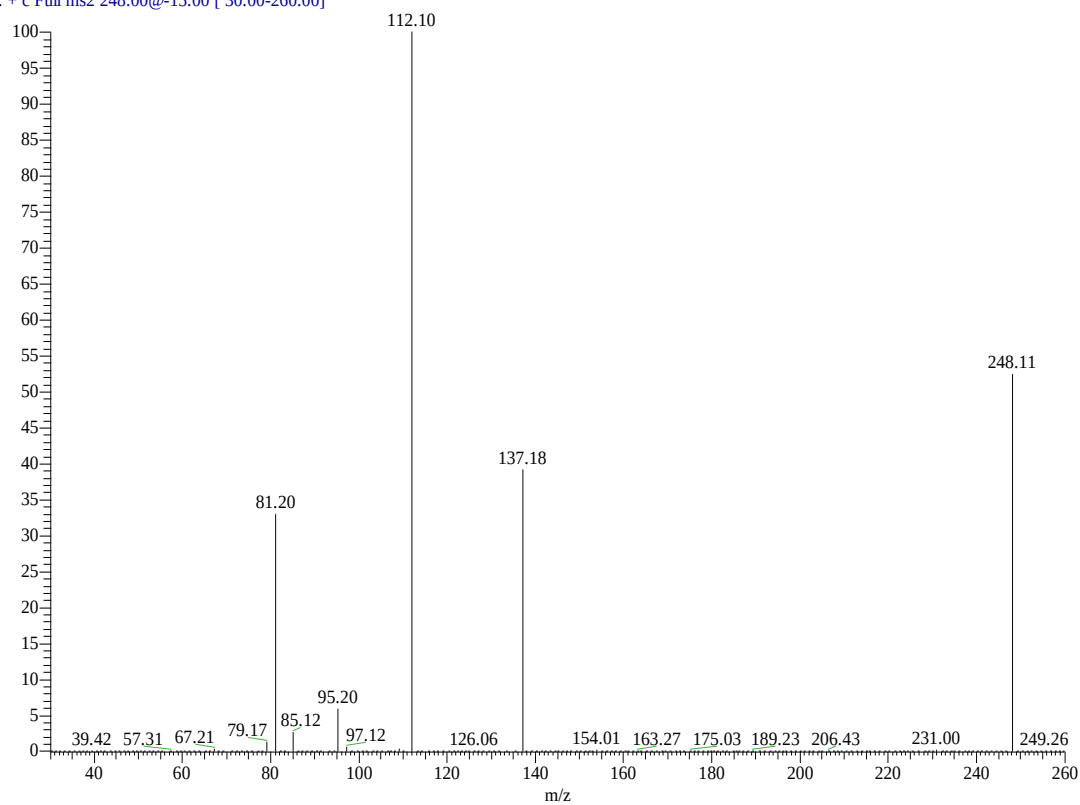
Compound 5d (ESI⁺-MS)

20151213-zhushouji-2 #18 RT: 0.23 AV: 1 NL: 1.50E7
T: + c Full ms2 231.00@-15.00 [30.00-250.00]



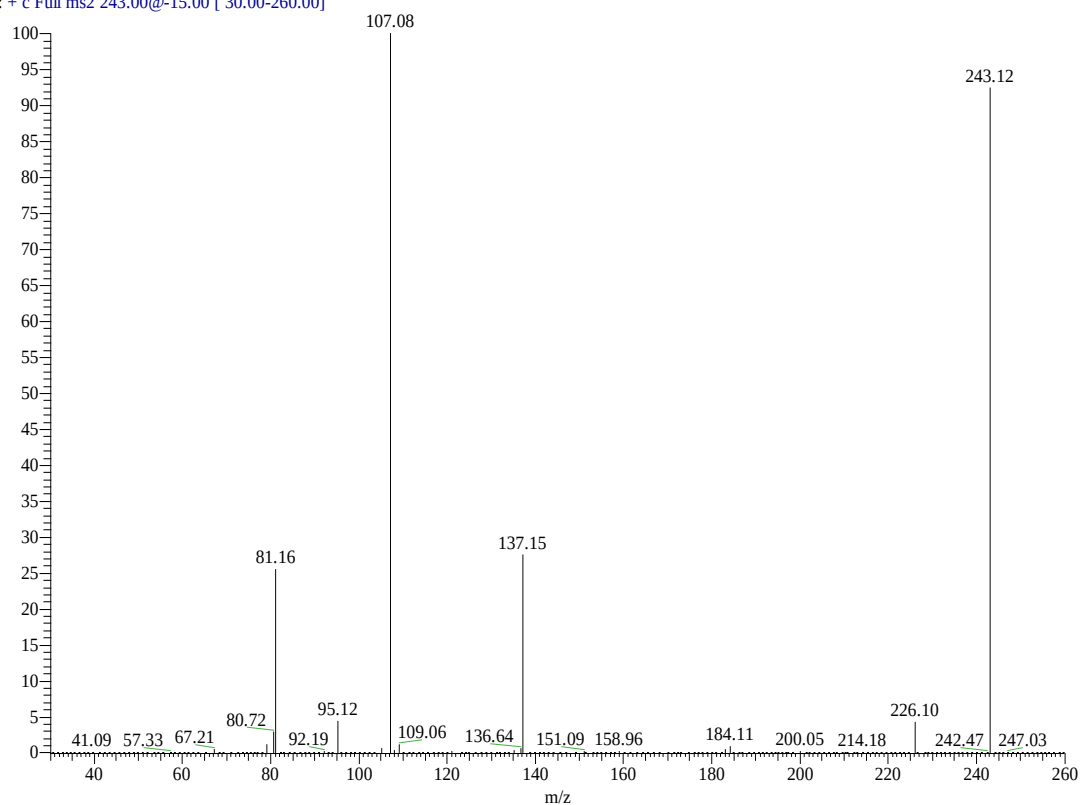
Compound 5e (ESI⁺-MS)

20151213-zhushouji-1 #18 RT: 0.23 AV: 1 NL: 1.59E7
T: + c Full ms2 248.00@-15.00 [30.00-260.00]



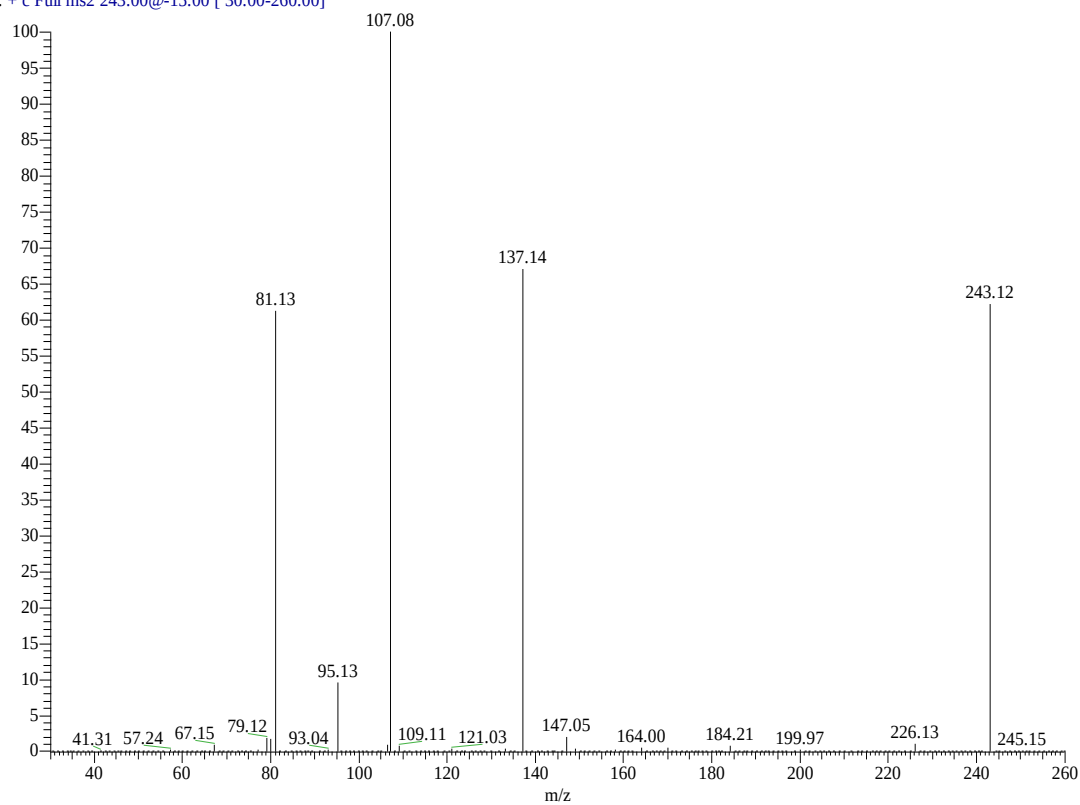
Compound 5f (ESI⁺-MS)

20151017-zhushouji-13 #20 RT: 0.26 AV: 1 NL: 5.76E6
T: + c Full ms2 243.00@-15.00 [30.00-260.00]



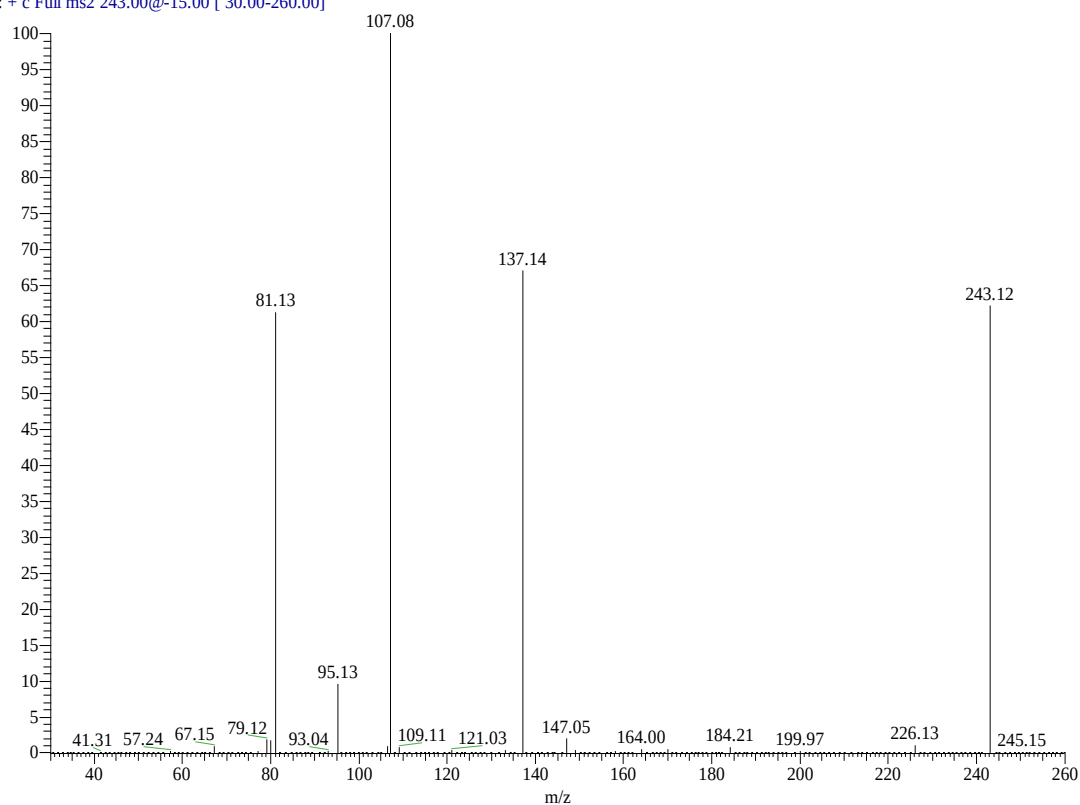
Compound 5g (ESI⁺-MS)

20151017-zhushouji-13 #120 RT: 1.56 AV: 1 NL: 8.11E6
T: + c Full ms2 243.00@-15.00 [30.00-260.00]



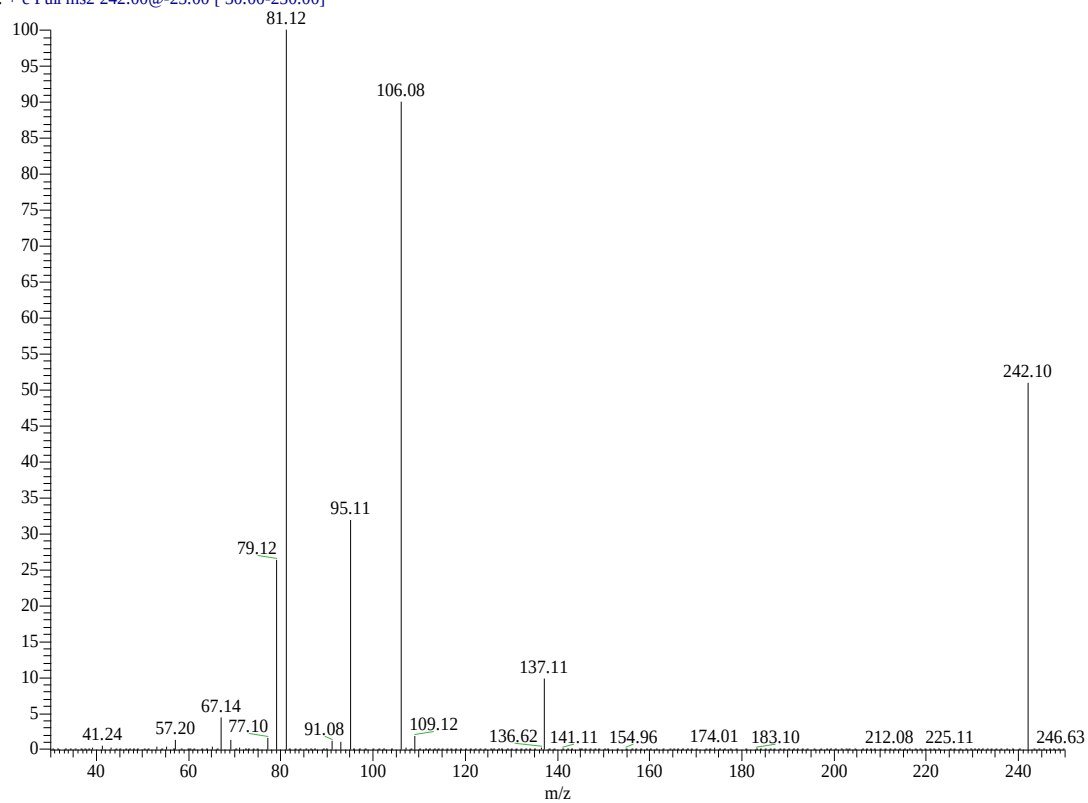
Compound 5h (ESI⁺-MS)

20151017-zhushouji-13 #120 RT: 1.56 AV: 1 NL: 8.11E6
T: + c Full ms2 243.00@-15.00 [30.00-260.00]



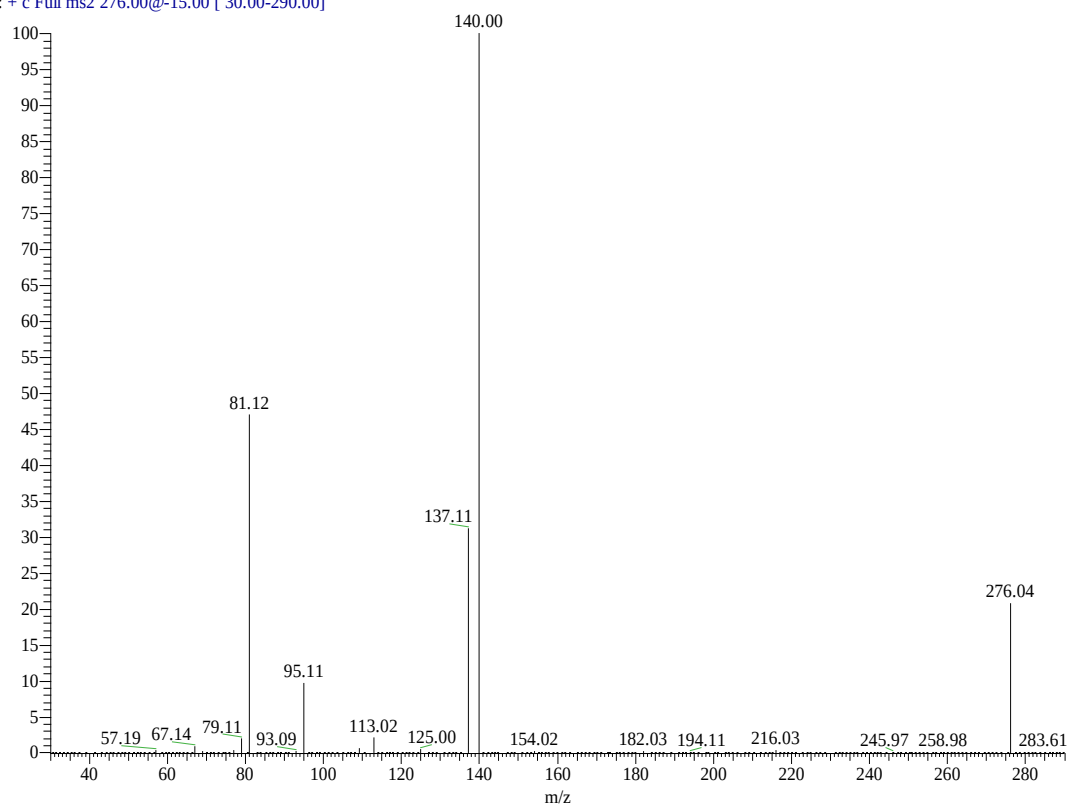
Compound 5i (ESI⁺-MS)

20160713 xsc 01 #69 RT: 0.91 AV: 1 NL: 1.72E7
T: + c Full ms2 242.00@-25.00 [30.00-250.00]



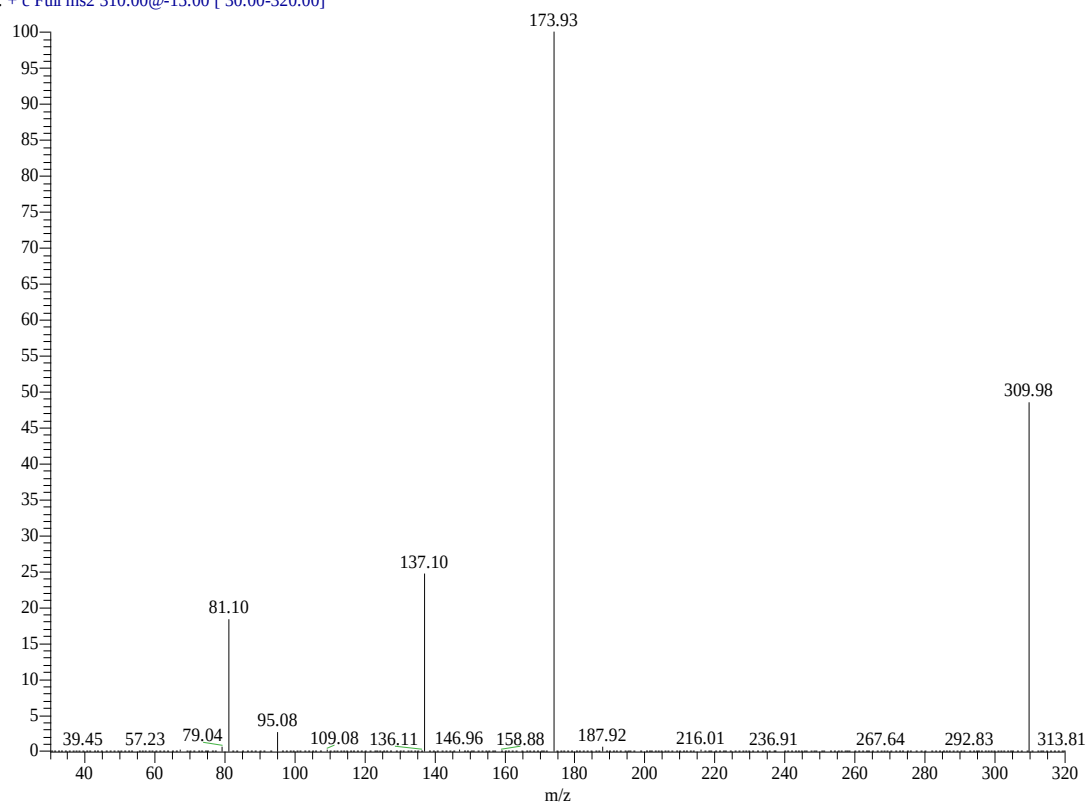
Compound 5j (ESI⁺-MS)

20160713 xsc 02 #125 RT: 1.65 AV: 1 NL: 8.46E7
T: + c Full ms2 276.00@-15.00 [30.00-290.00]



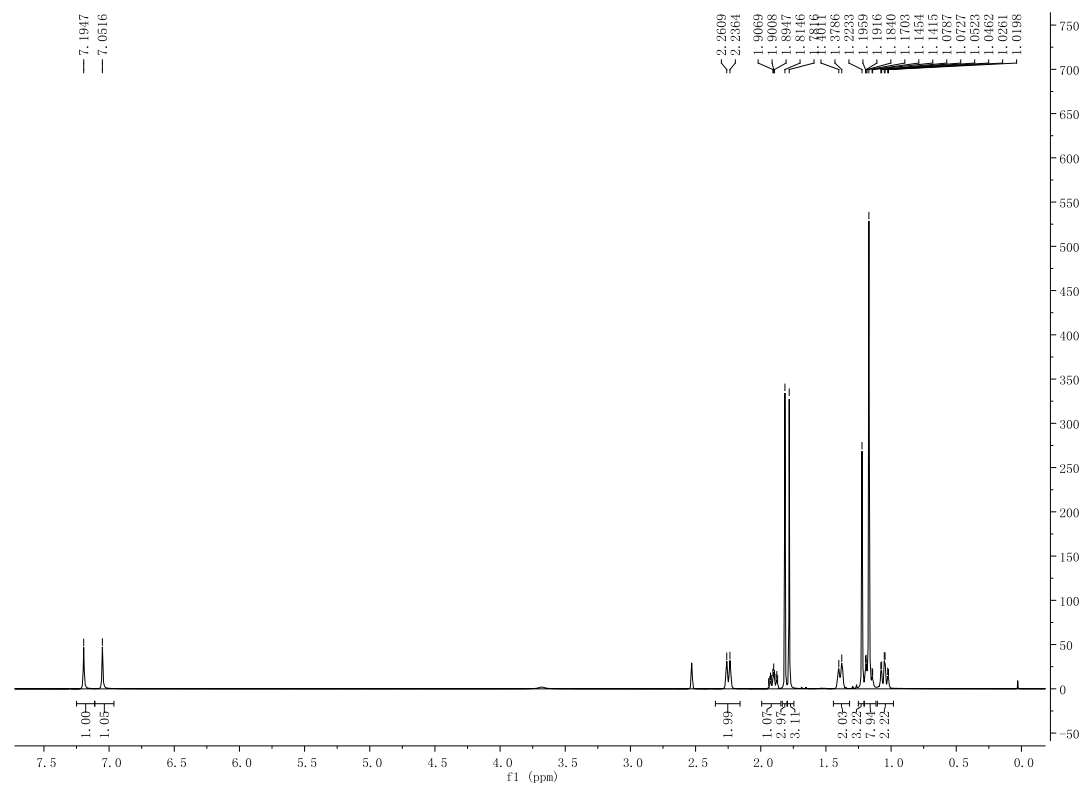
Compound 5k (ESI⁺-MS)

20160713 xsc 03 #65 RT: 0.87 AV: 1 NL: 4.83E7
T: + c Full ms2 310.00@-15.00 [30.00-320.00]

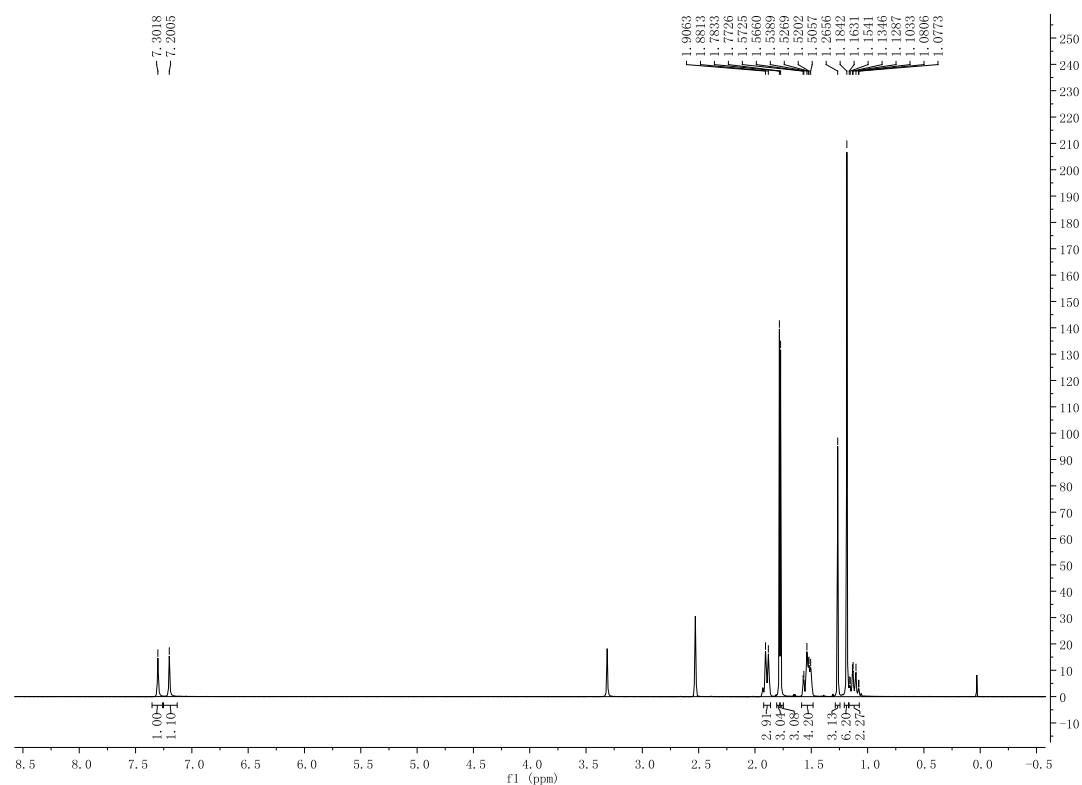


Compound 5l (ESI⁺-MS)

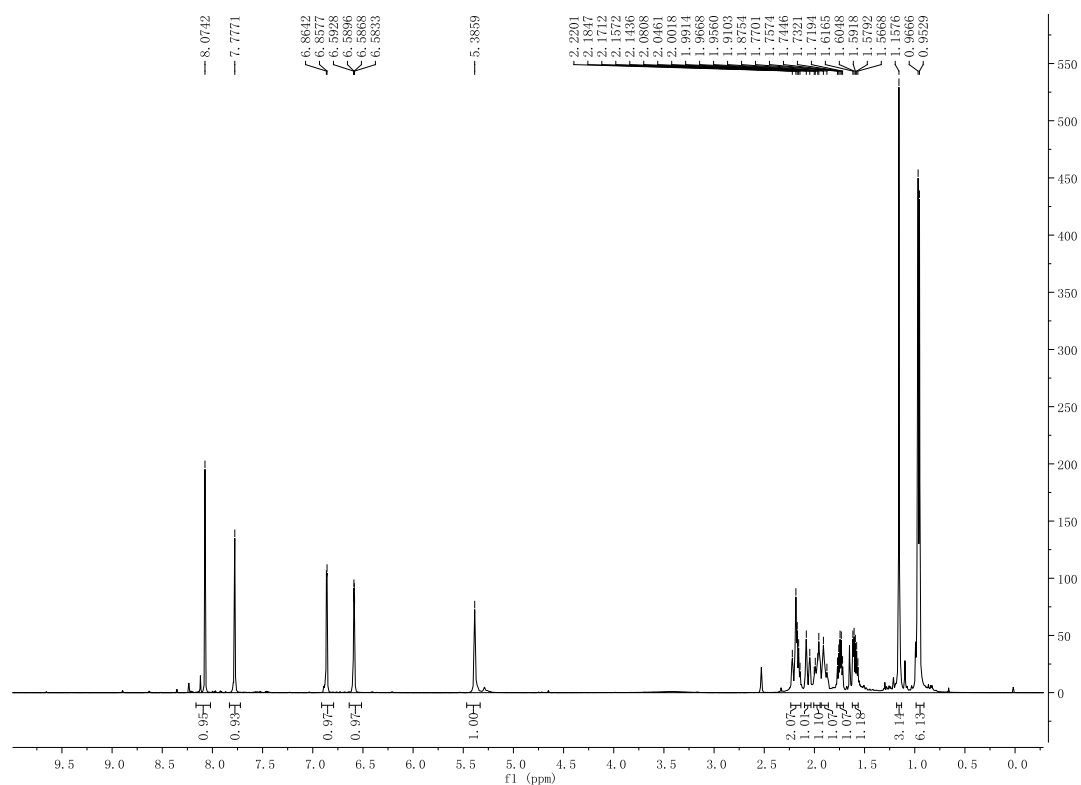
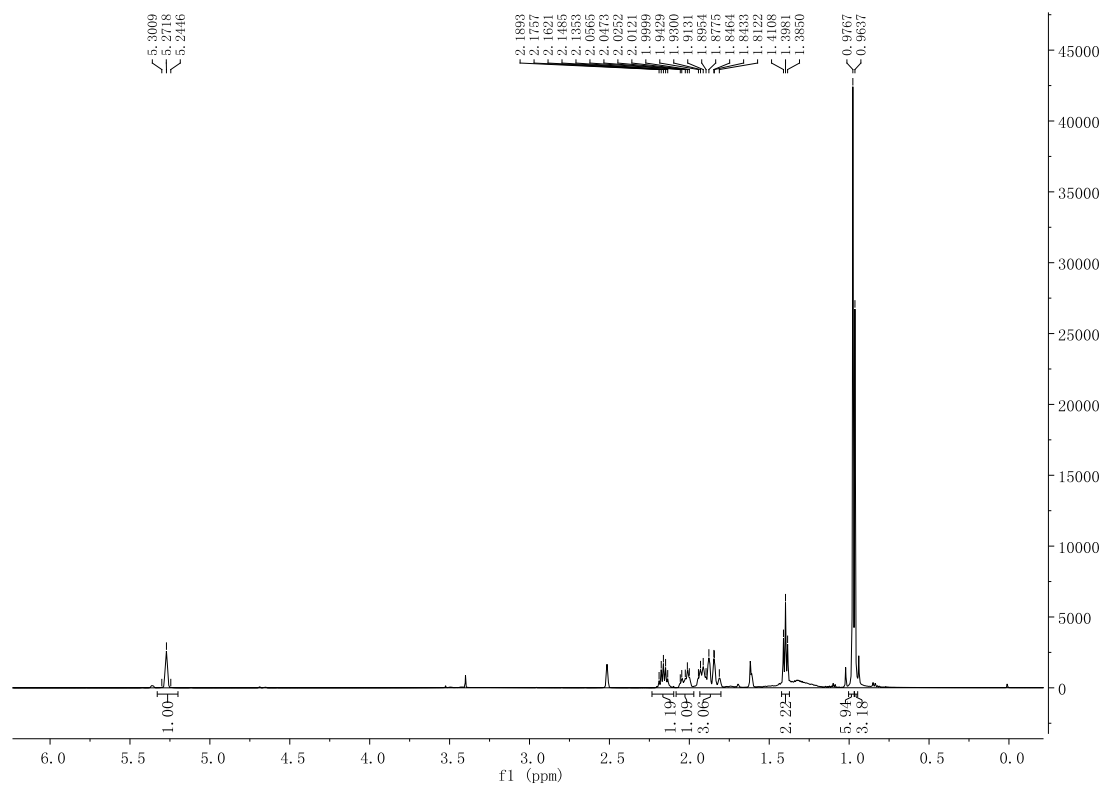
^1H NMR

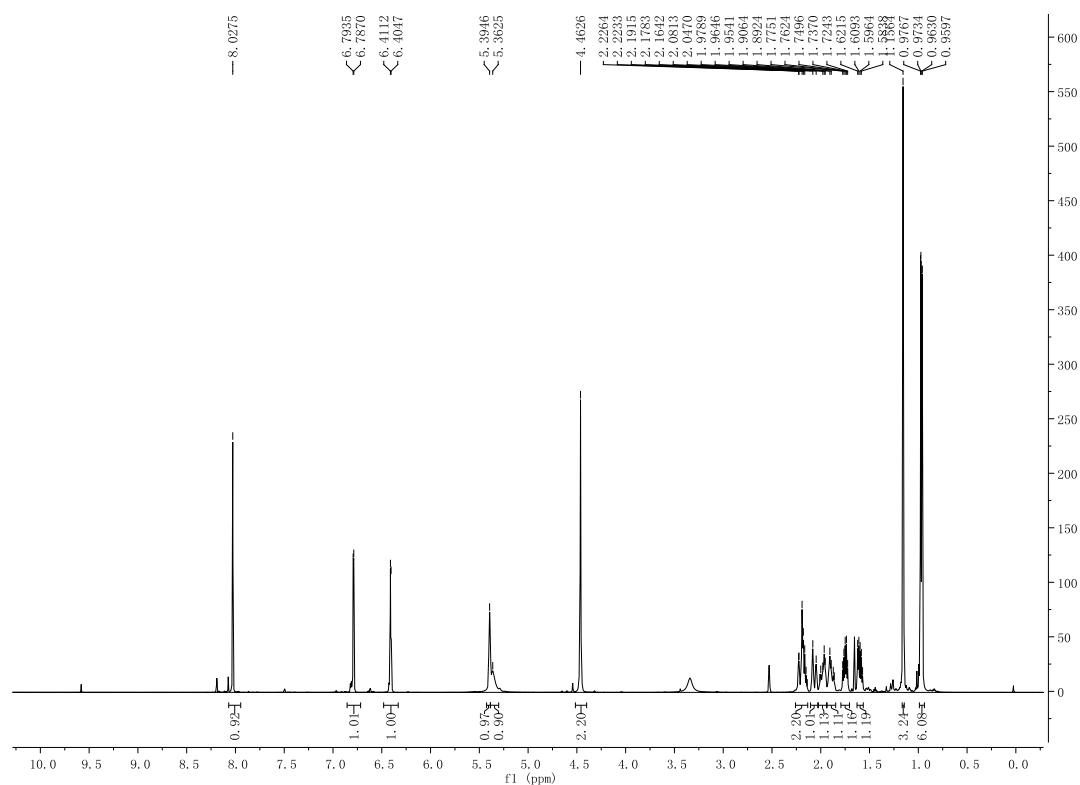
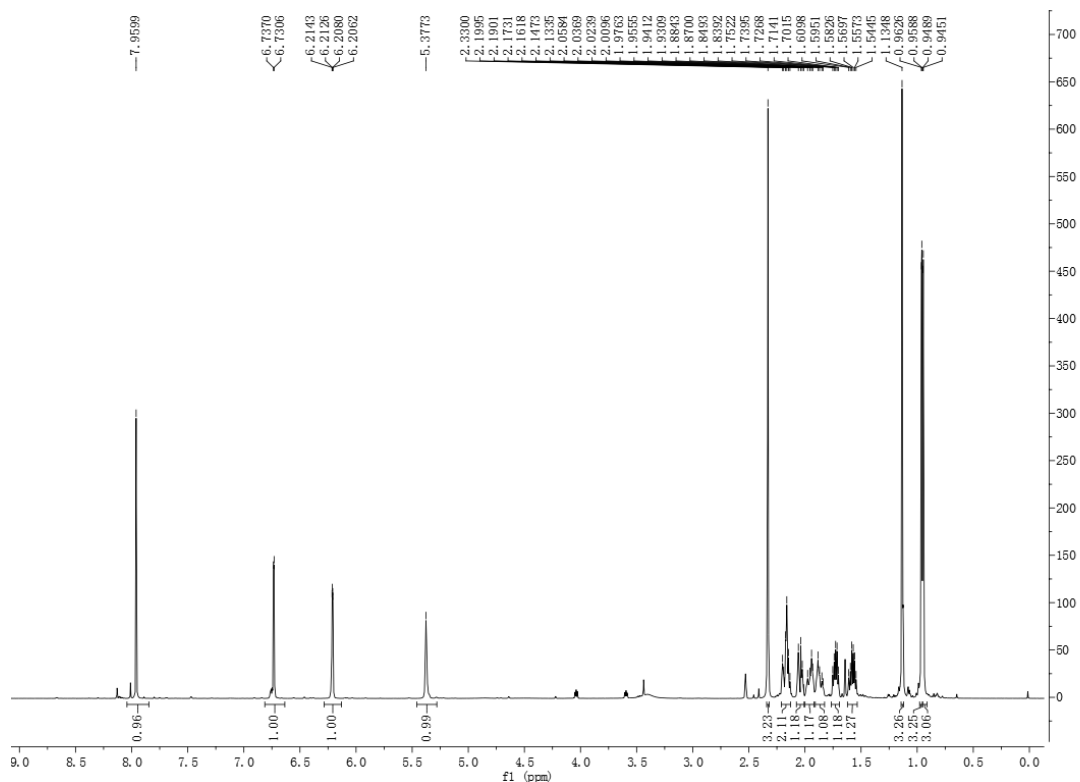


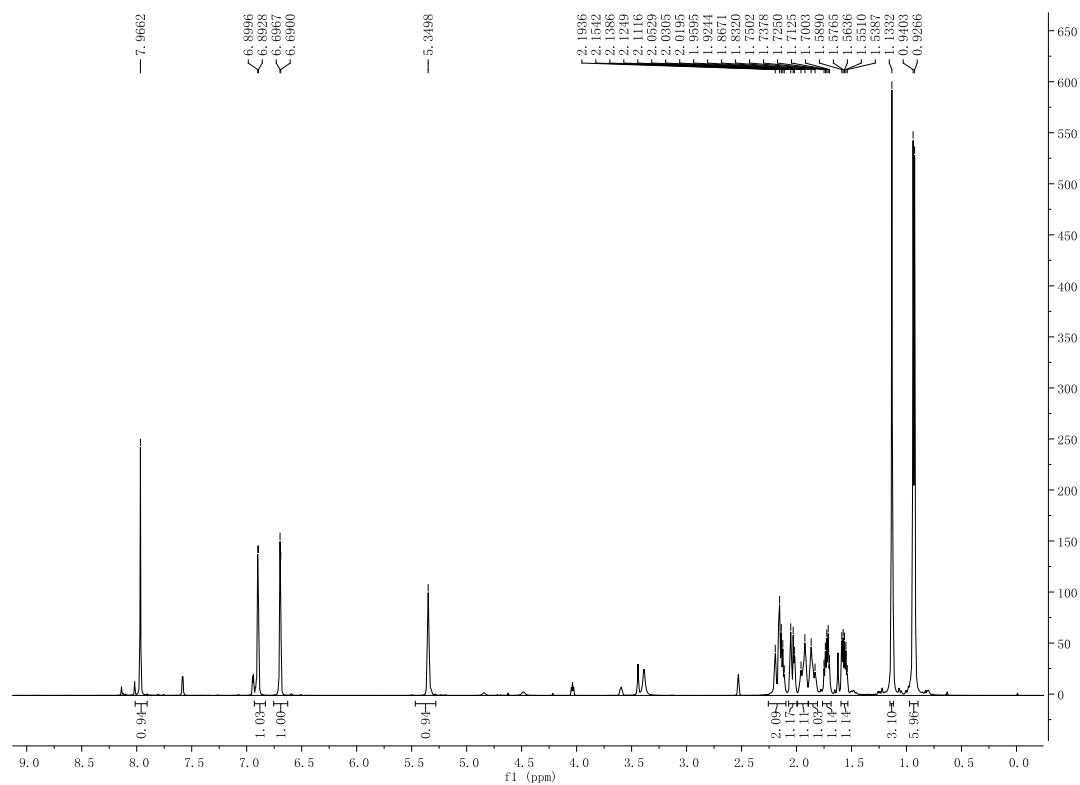
Compound 2a (^1H NMR)



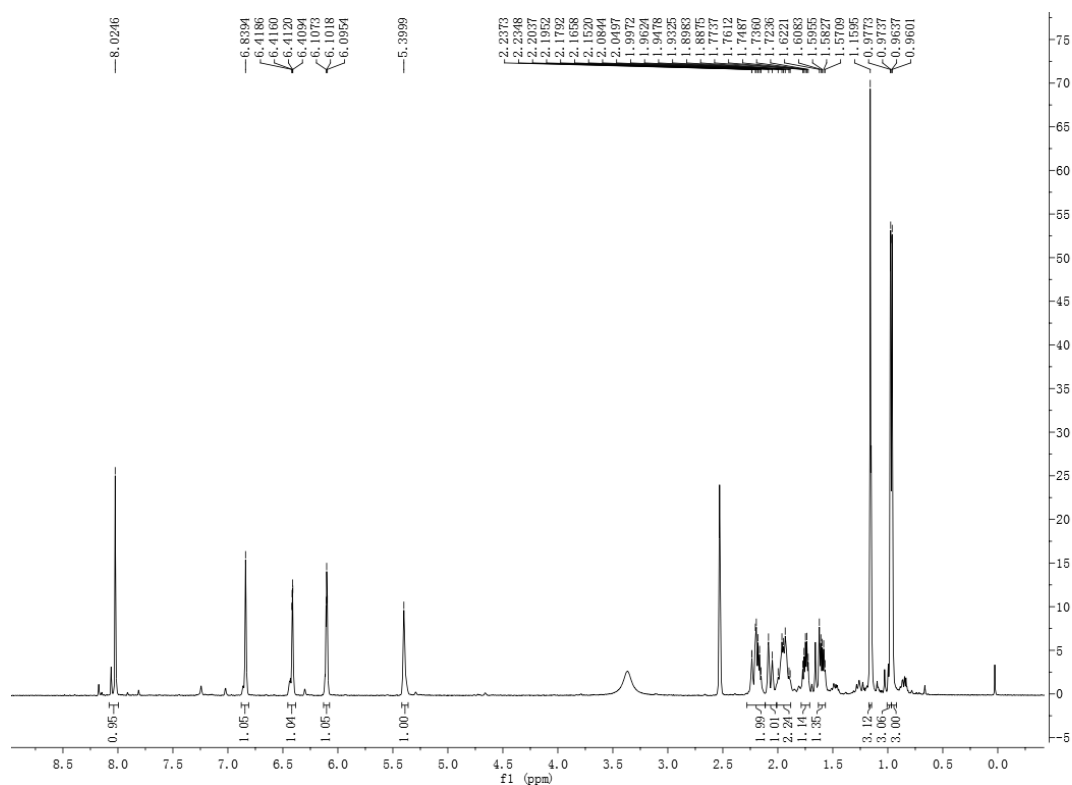
Compound 2b (^1H NMR)



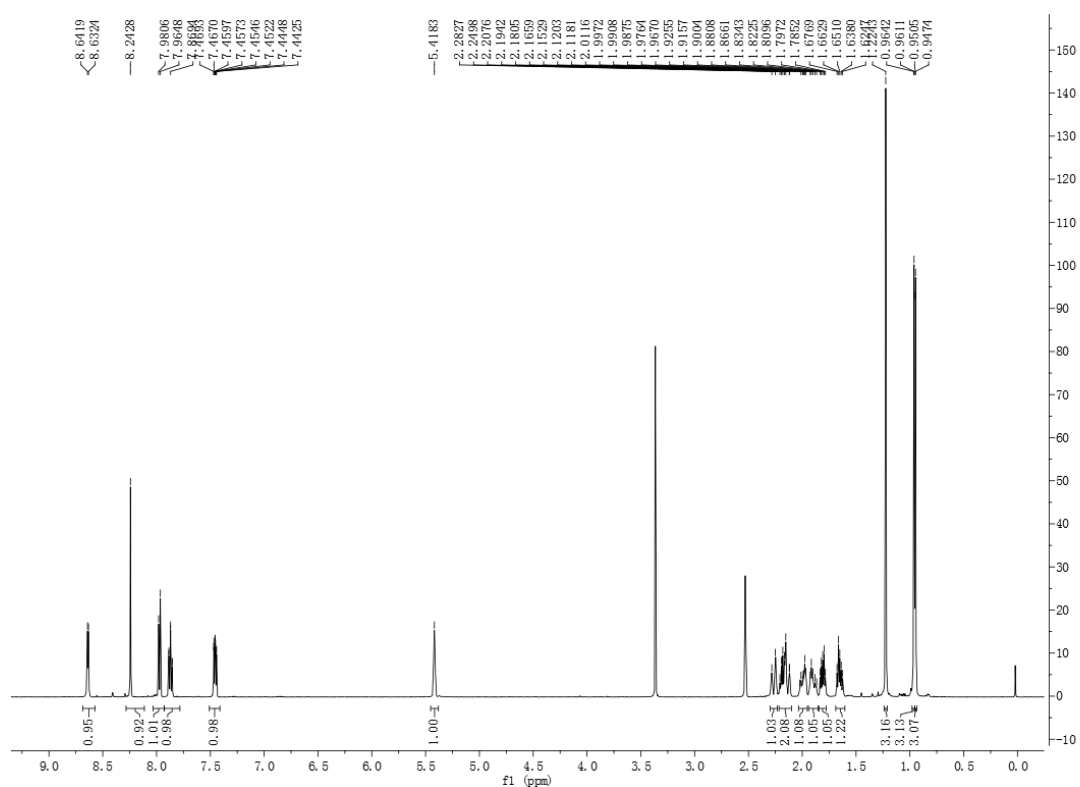
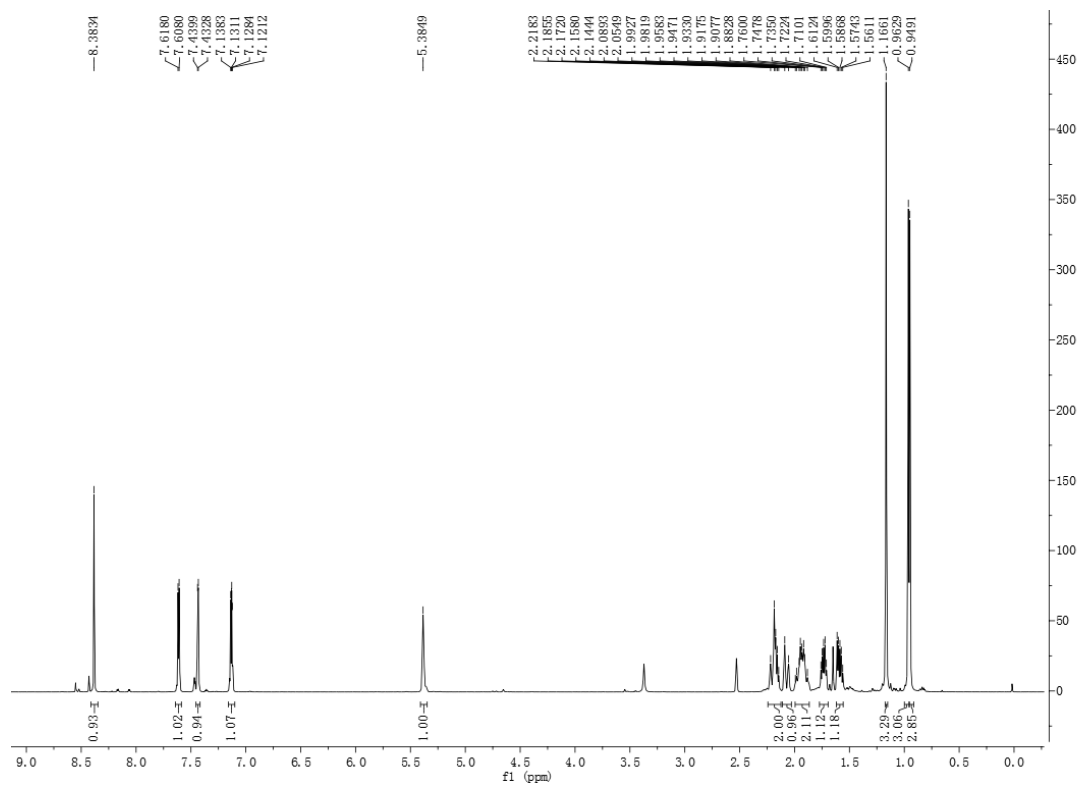


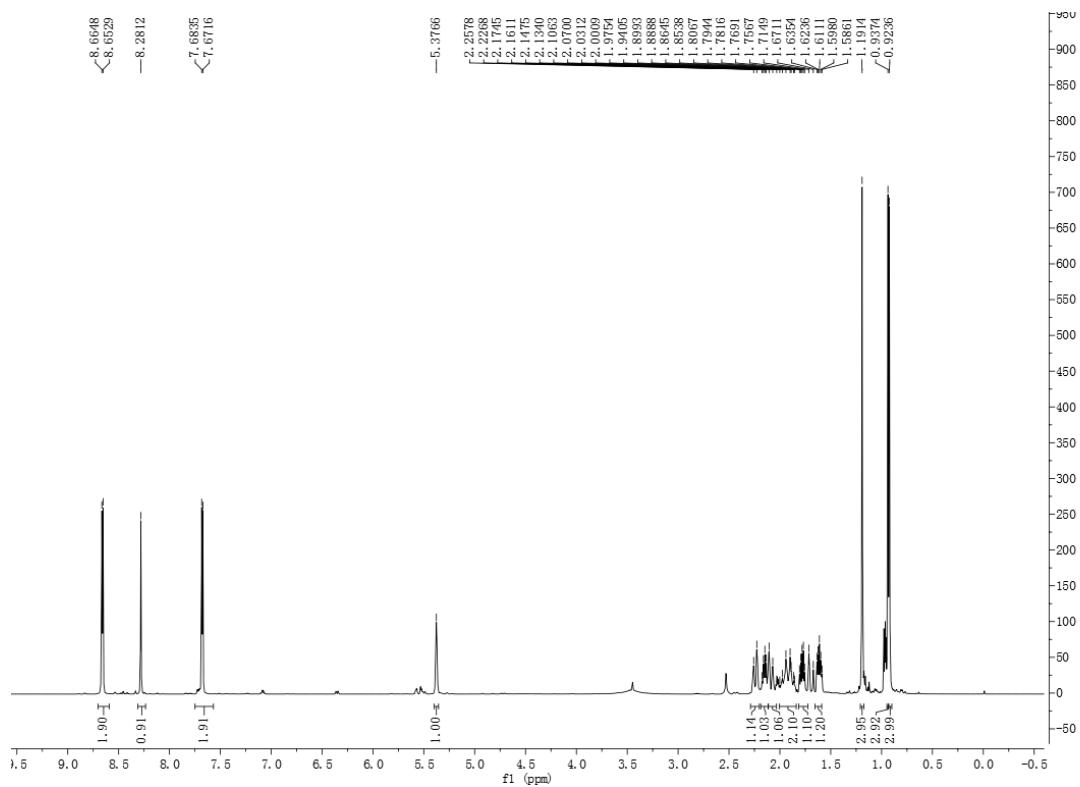
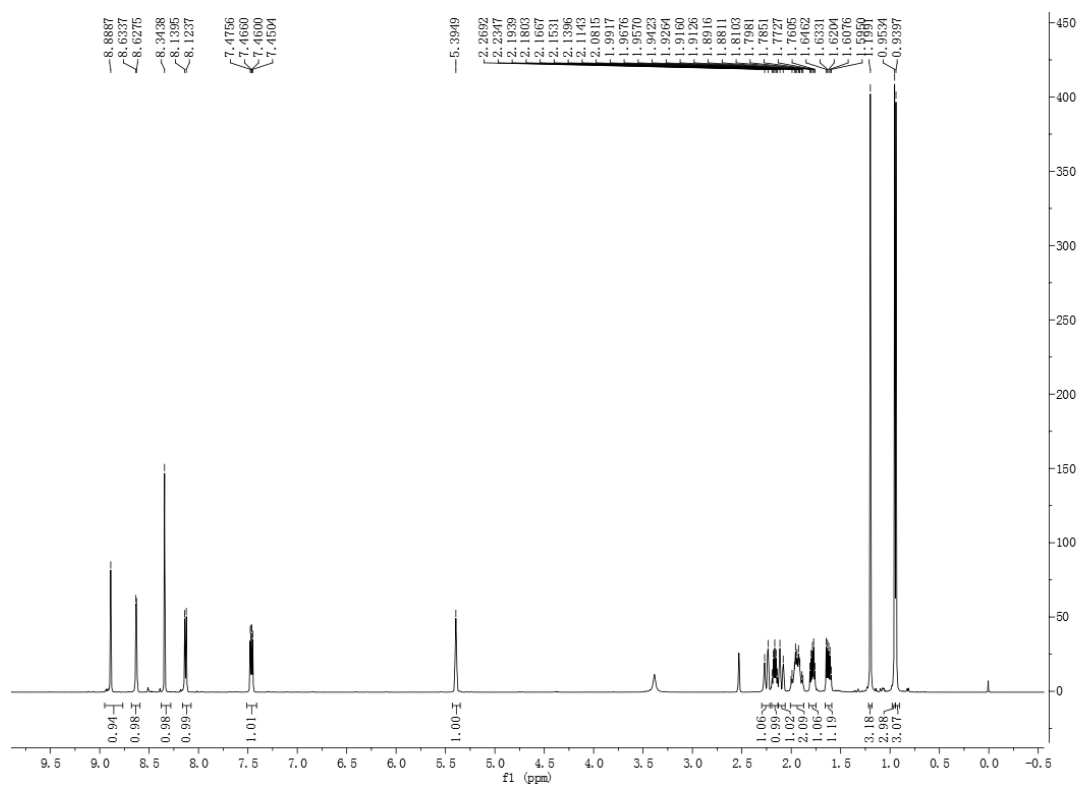


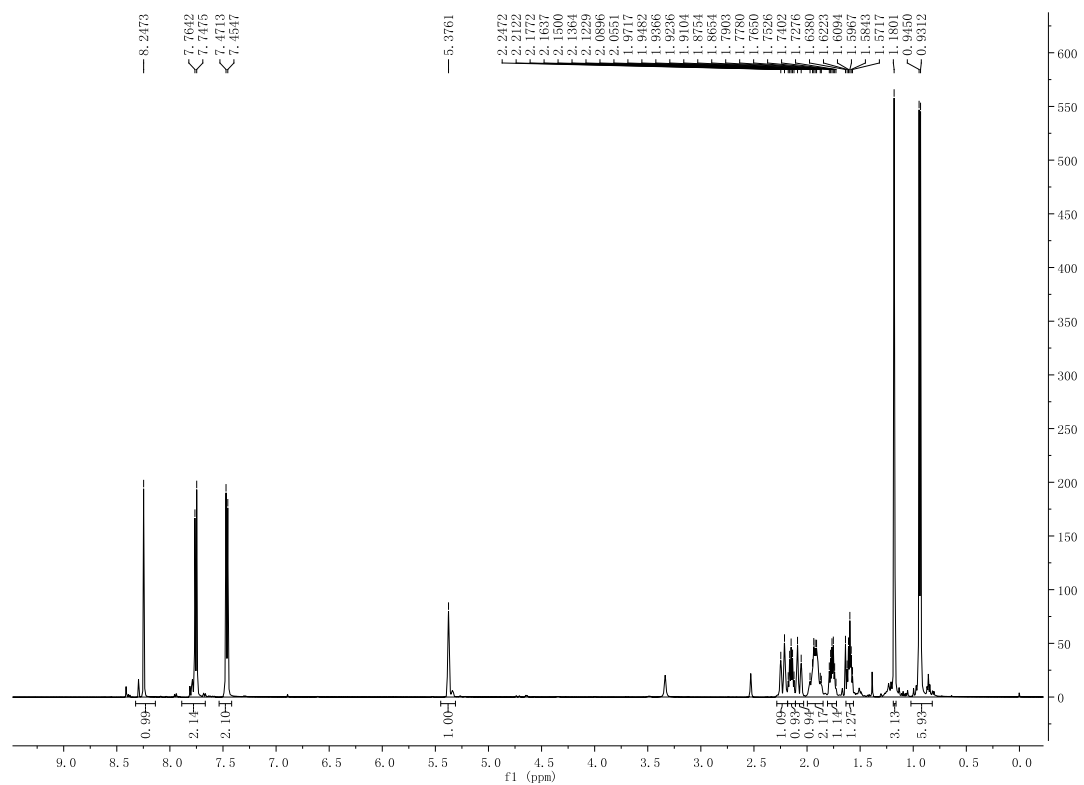
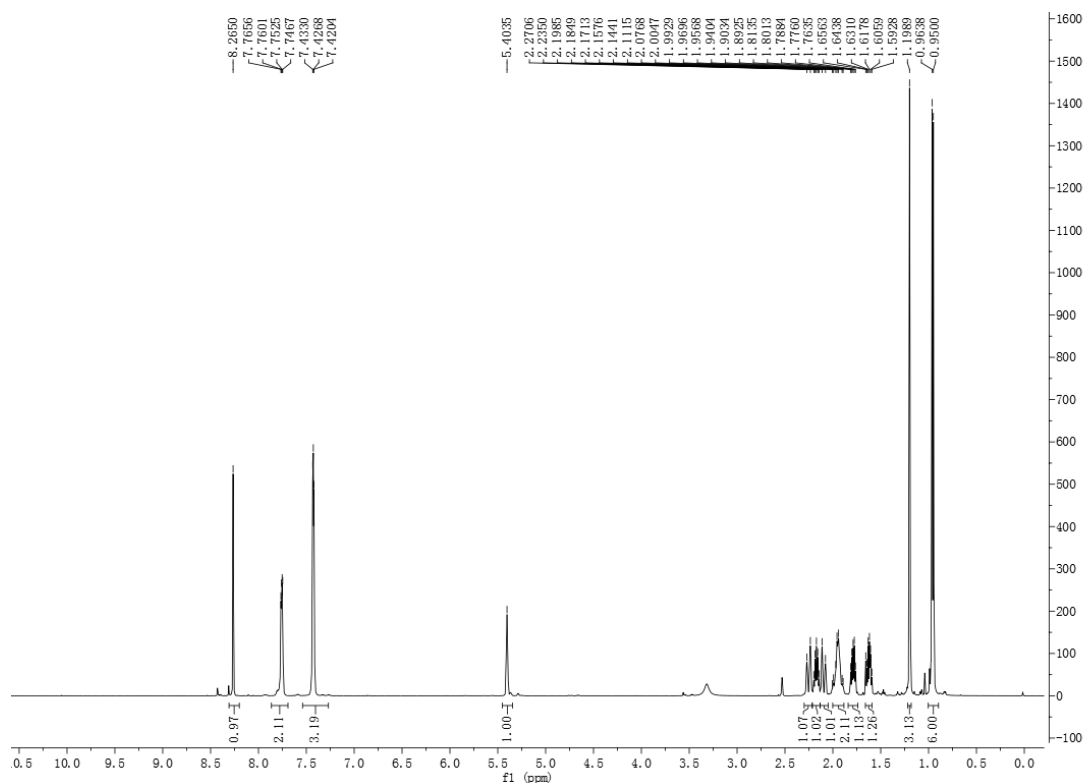
Compound 5d (^1H NMR)

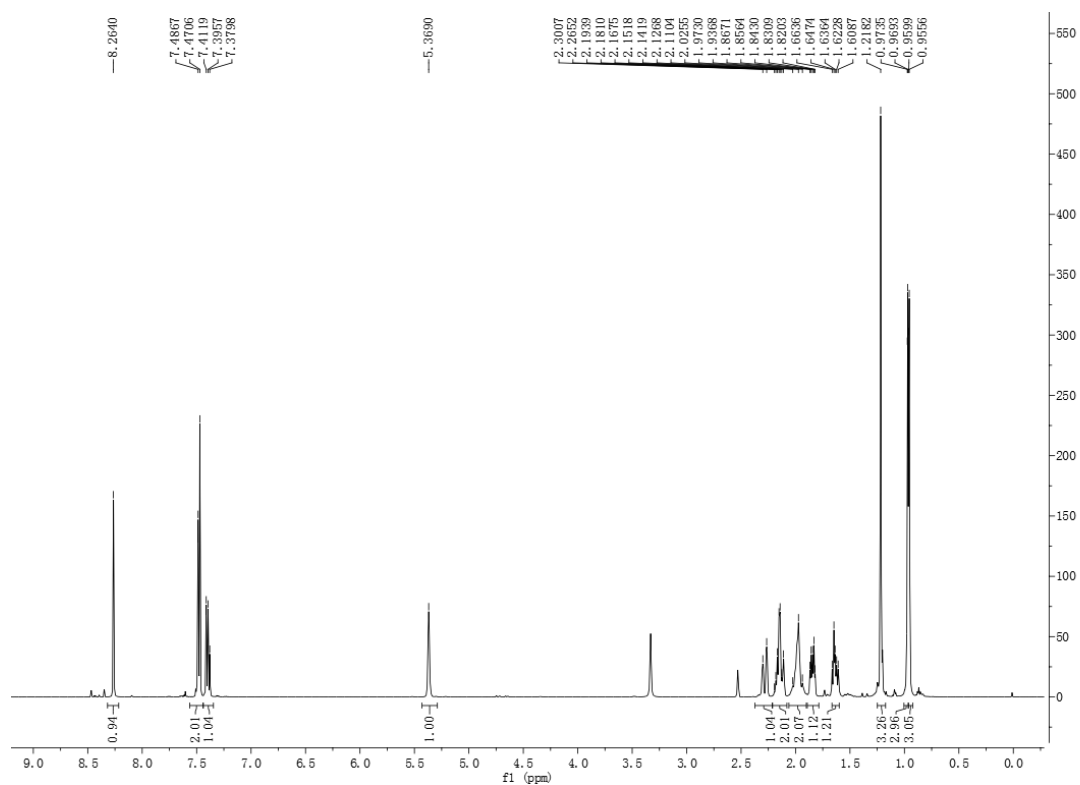


Compound 5e (^1H NMR)



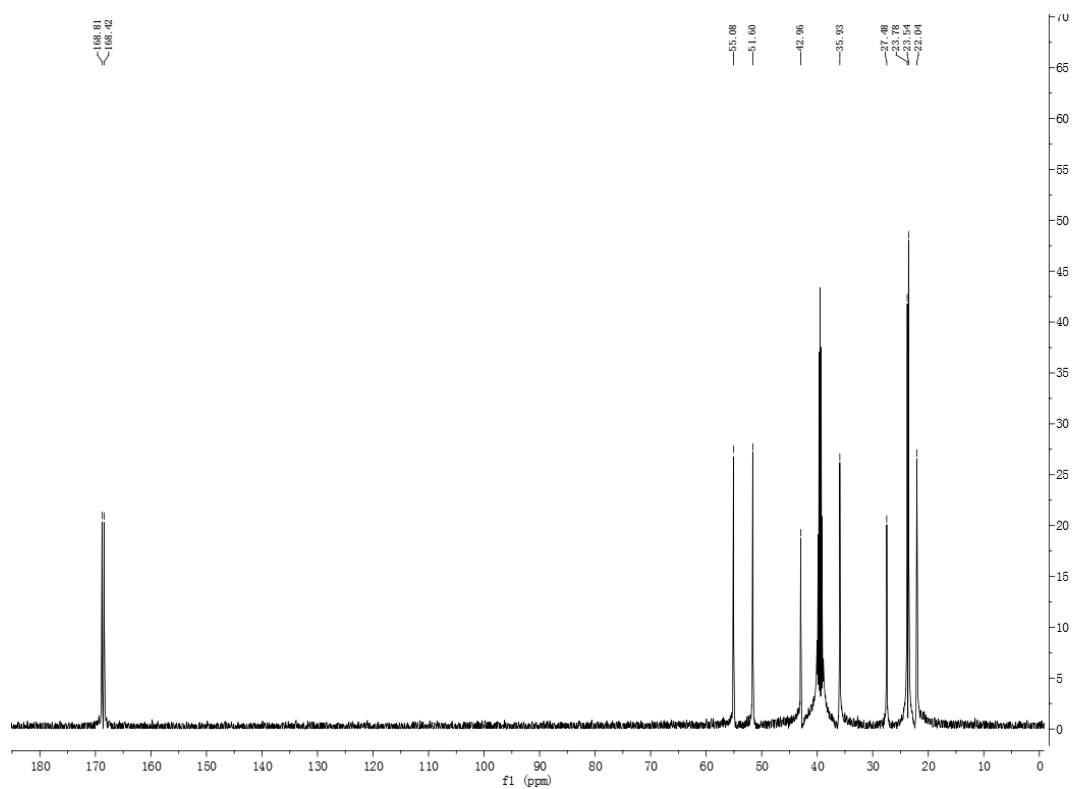




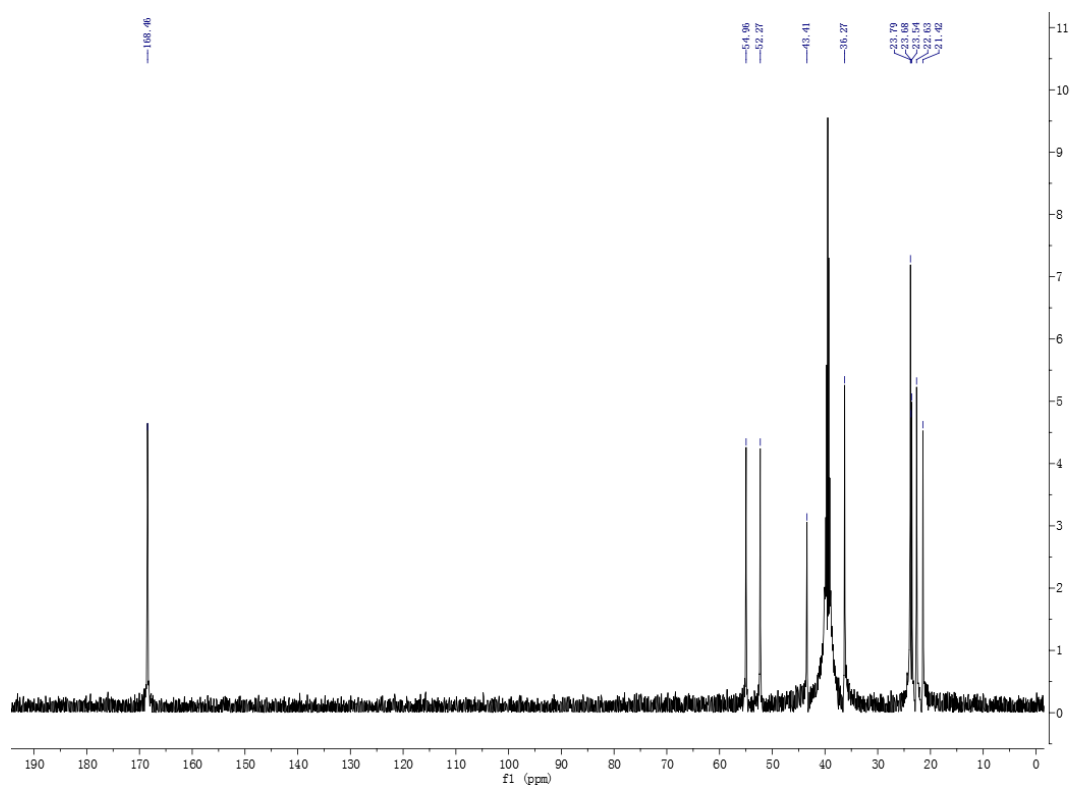


Compound 5l (^1H NMR)

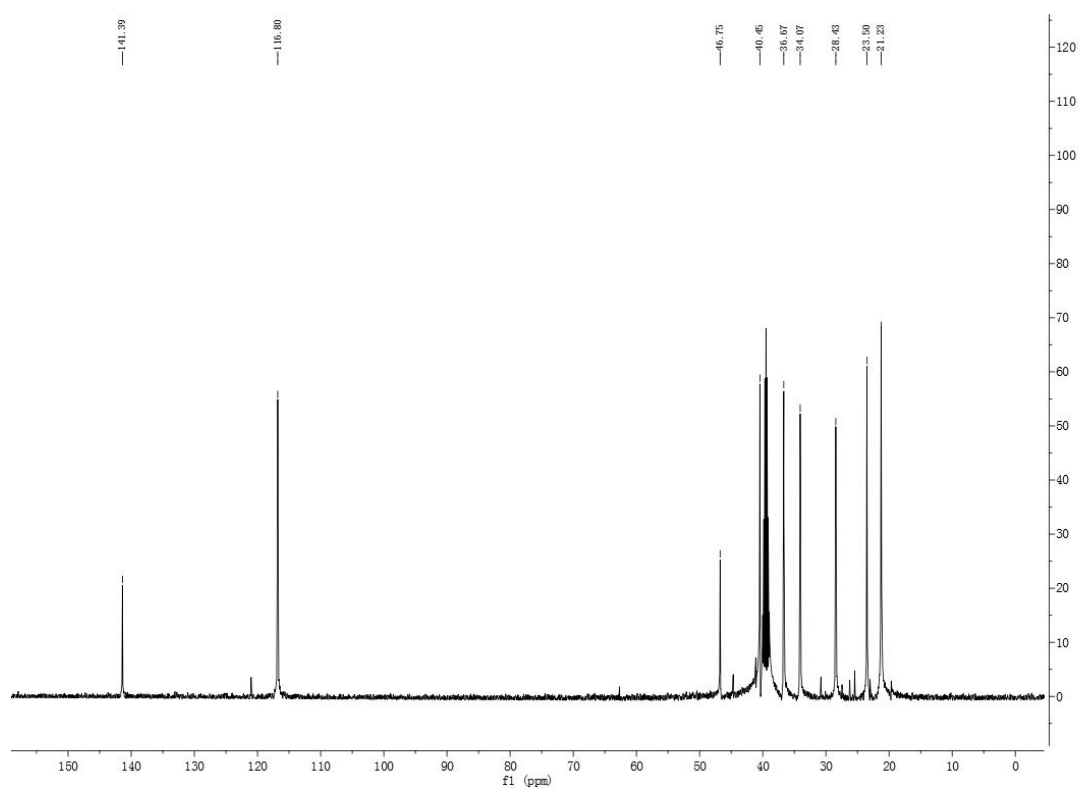
^{13}C NMR



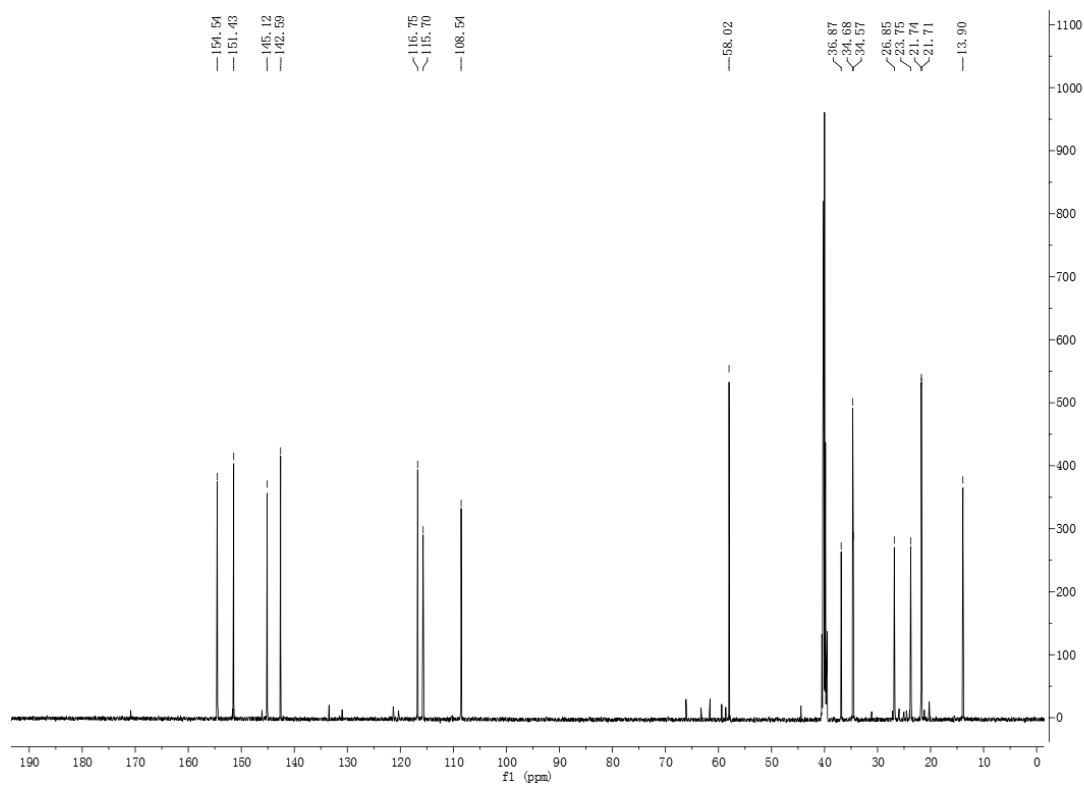
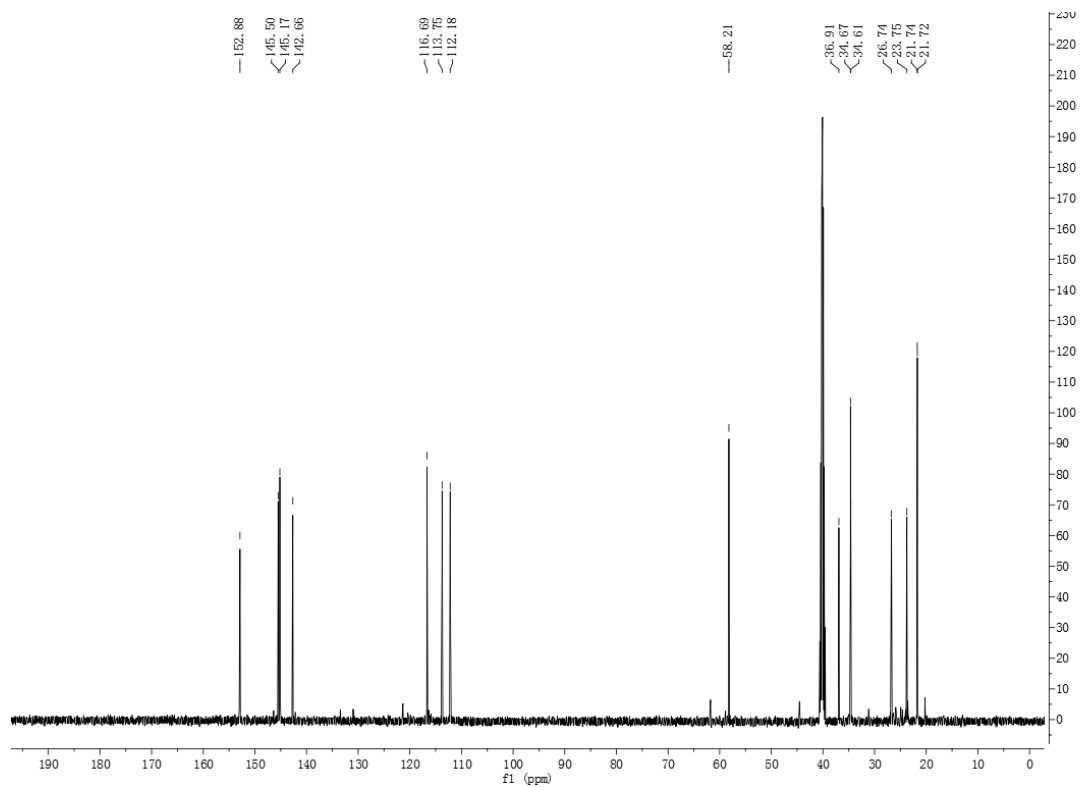
Compound 2a (^{13}C NMR)

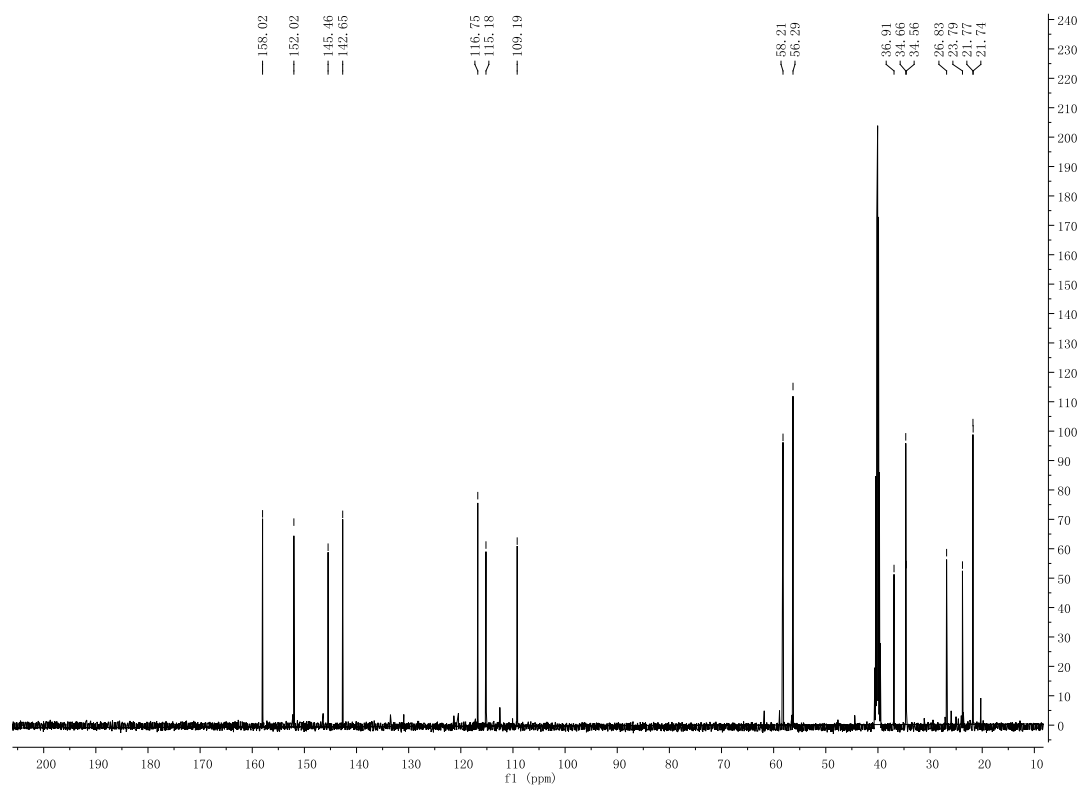


Compound 2b (¹³C NMR)

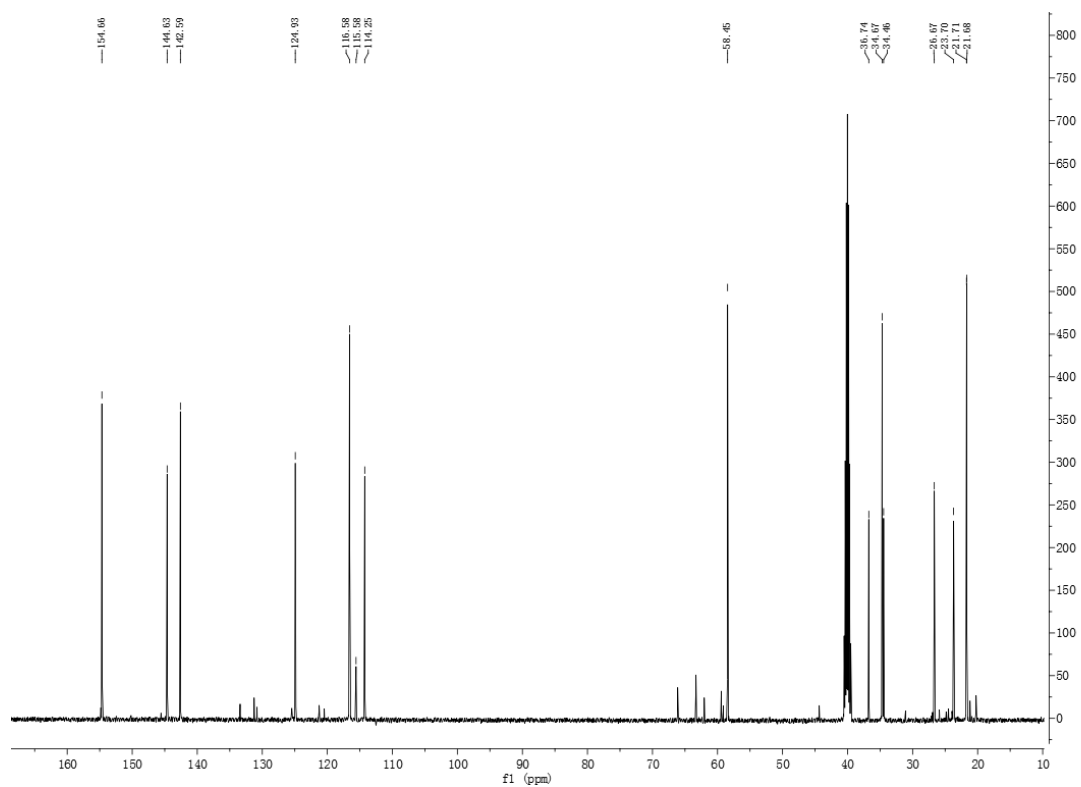


Compound 4 (¹³C NMR)

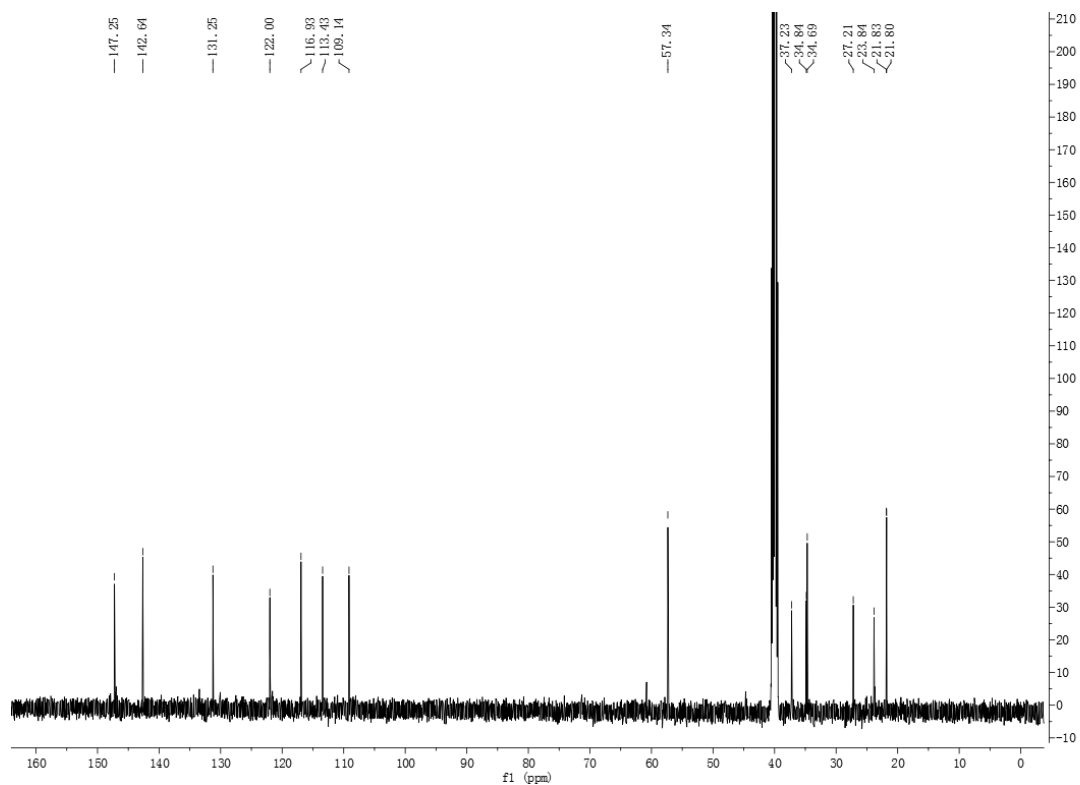




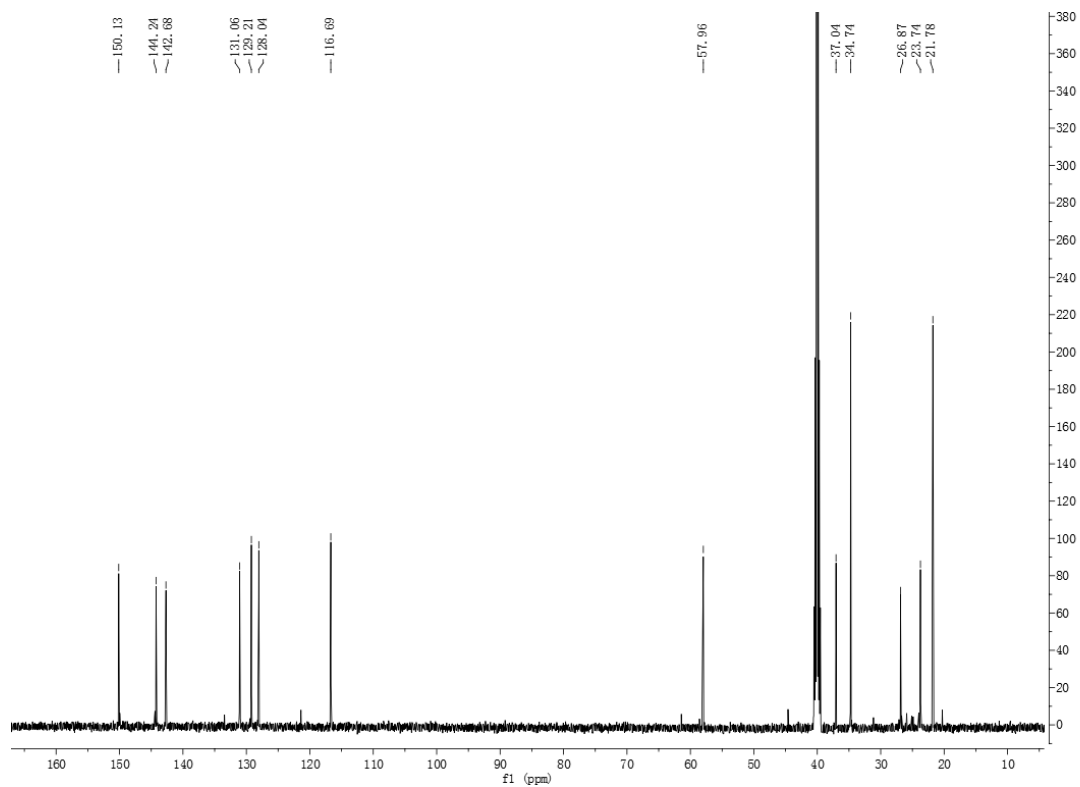
Compound 5c (^{13}C NMR)



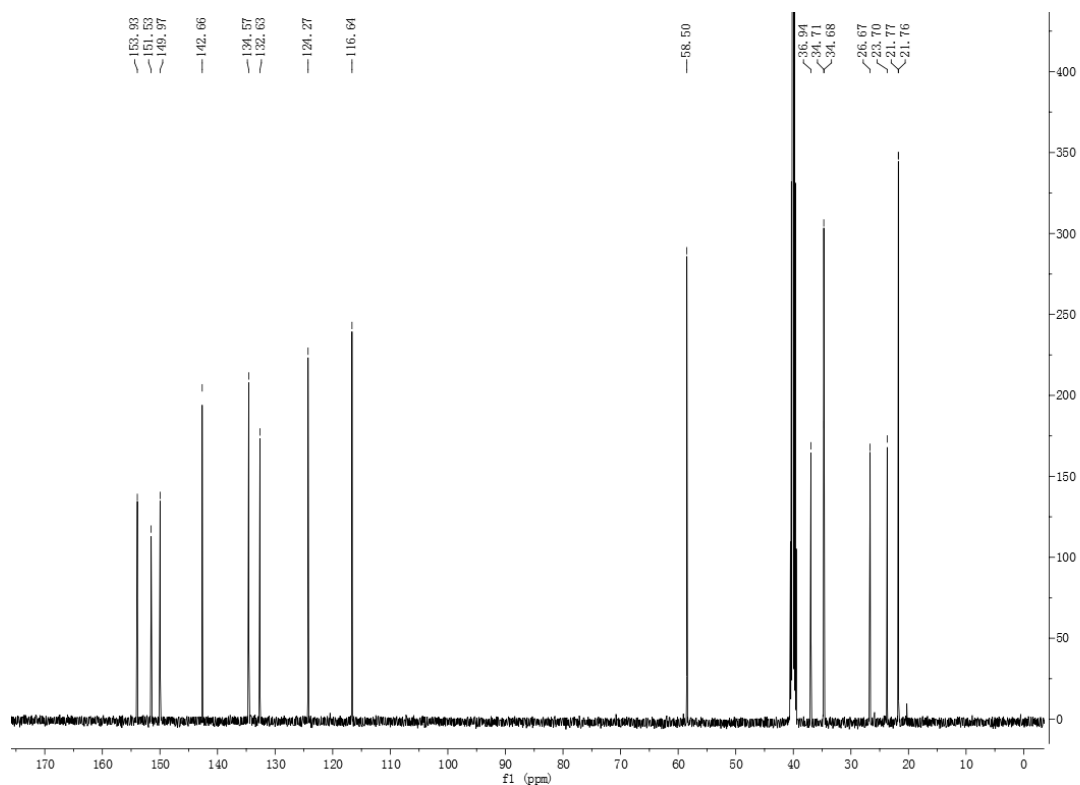
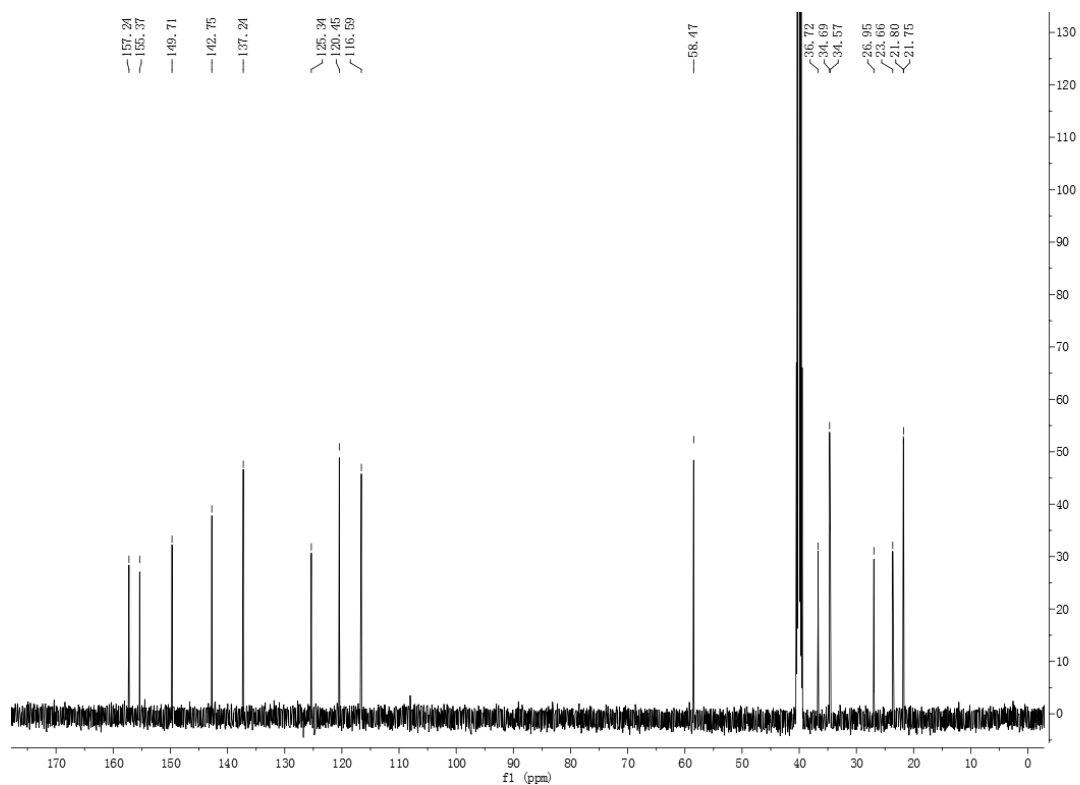
Compound 5d (^{13}C NMR)

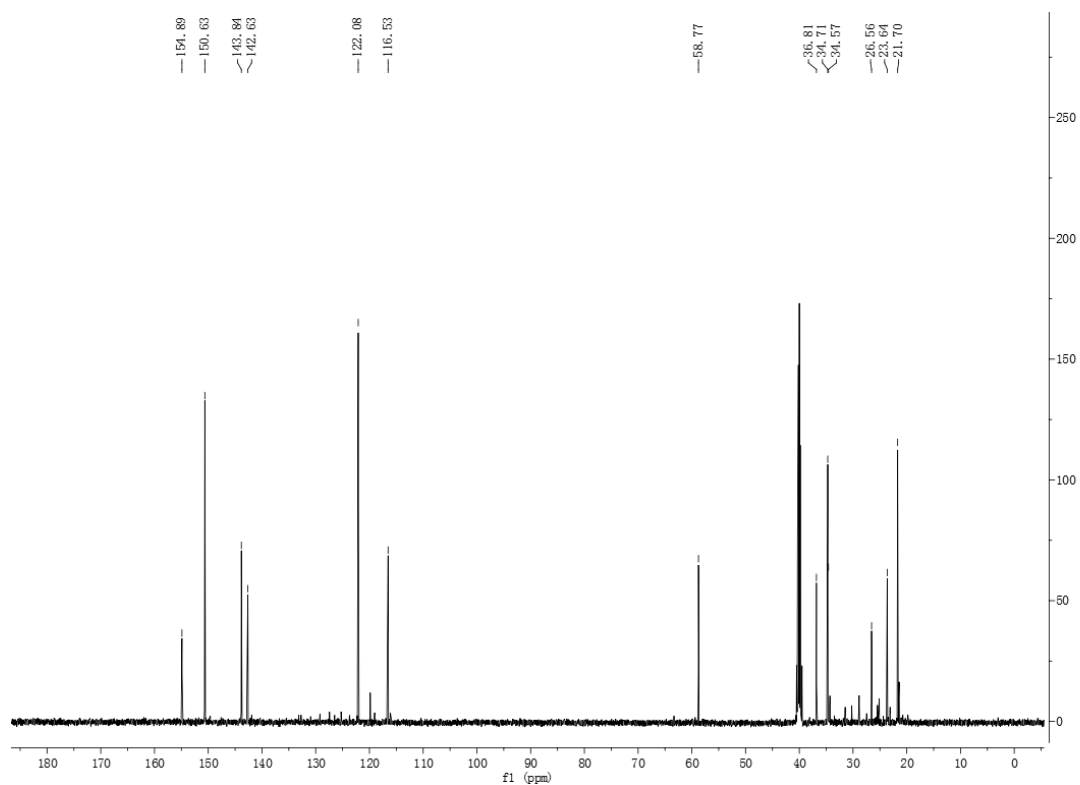


Compound 5e (^{13}C NMR)

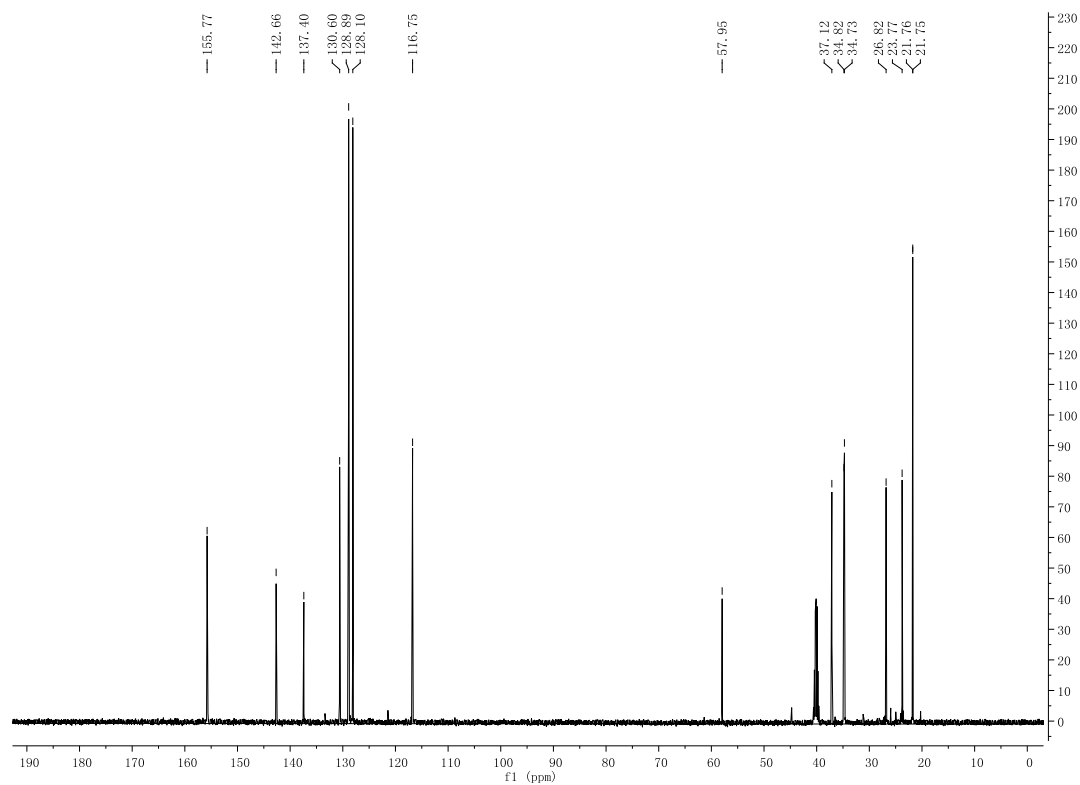


Compound 5f (^{13}C NMR)

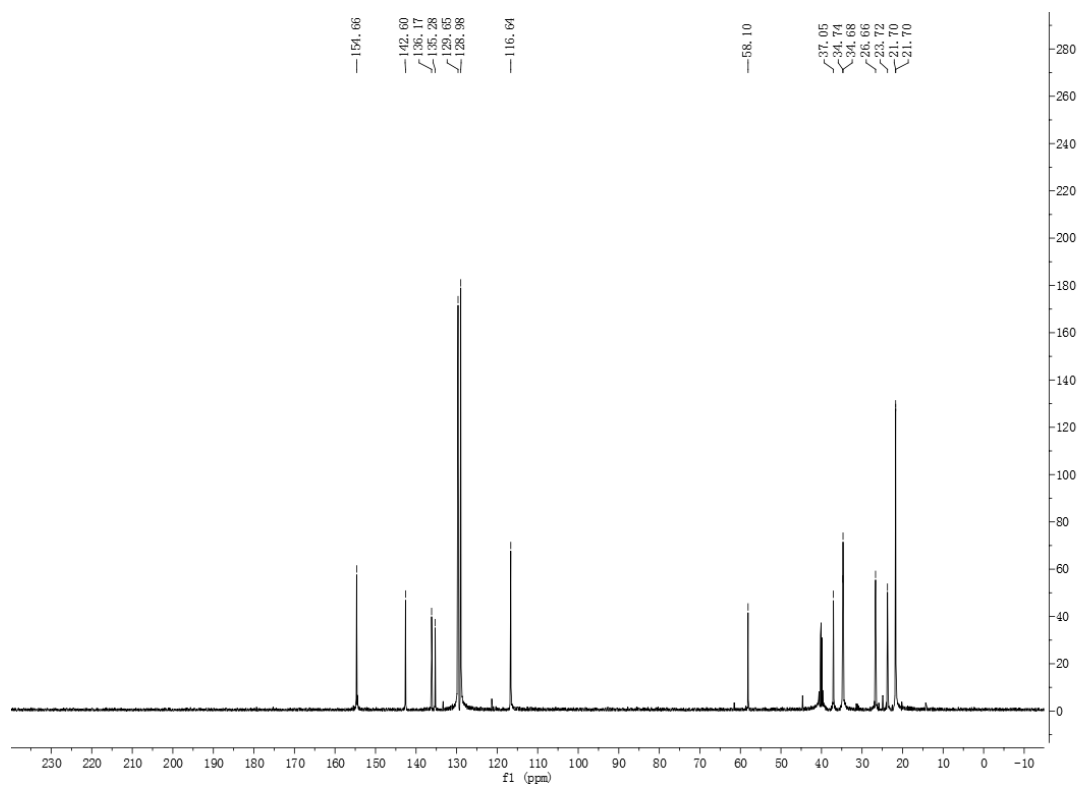




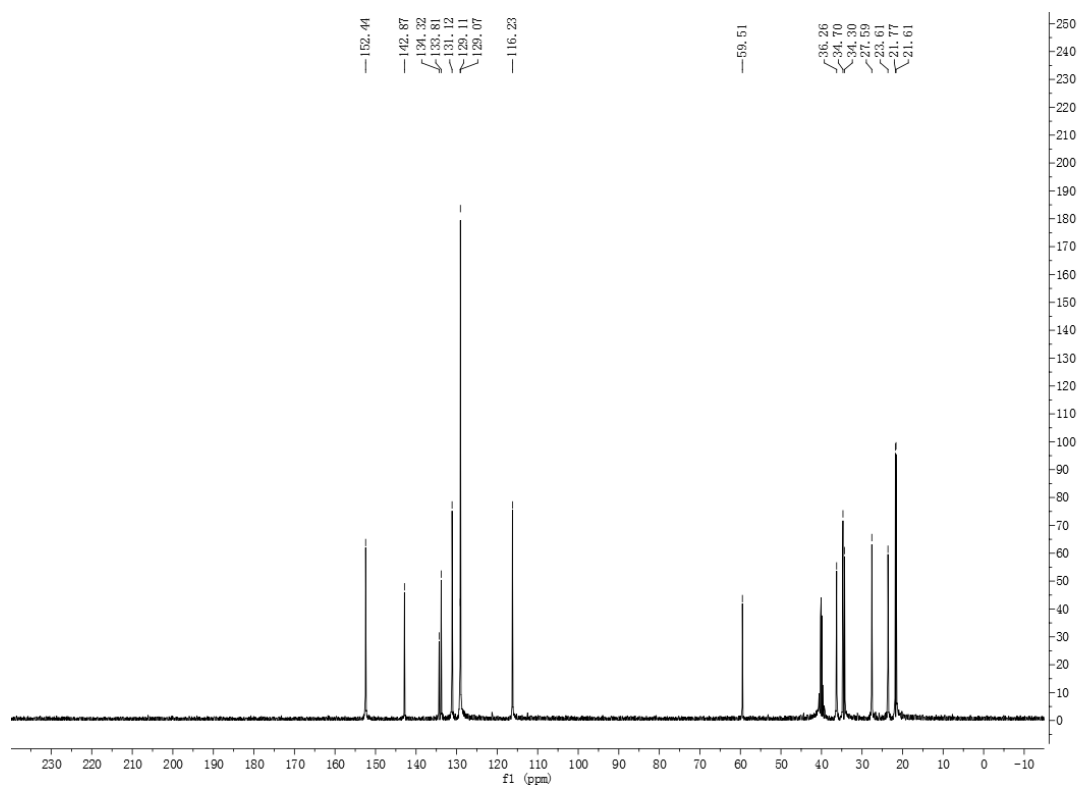
Compound 5i (^{13}C NMR)



Compound 5j (^{13}C NMR)



Compound 5k (^{13}C NMR)



Compound 5l (^{13}C NMR)