Supporting Information For:

Rhodium-Catalyzed Enantioselective Hydroamination of Alkynes with Indolines

Qing-An Chen, Zhiwei Chen, and Vy M. Dong*

dongv@uci.edu

Department of Chemistry, University of California, Irvine, California 92697-2025, United States

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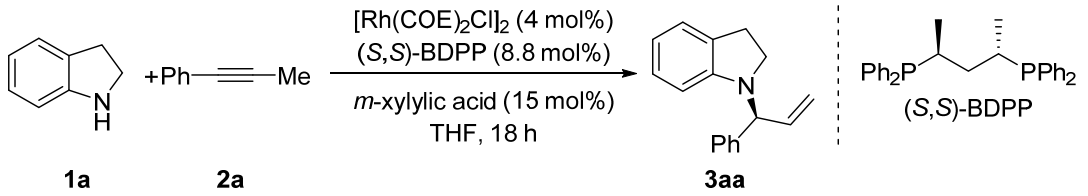
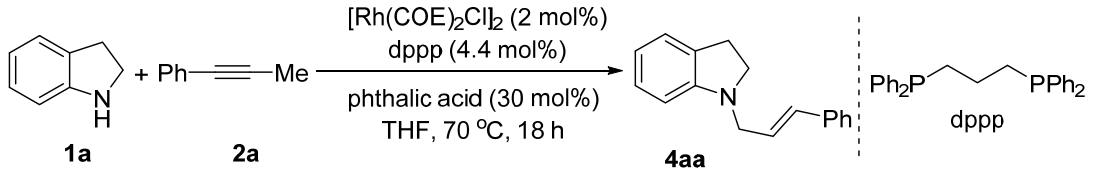
1. General: Commercial reagents were purchased from Sigma Aldrich, Strem, or Alfa Aesar and used without further purification. Reactions were monitored using thin-layer chromatography (TLC) or GC-FID. Visualization of the developed plates was performed under UV light (254 nm) or $KMnO_4$ stain. Organic solutions were concentrated under reduced pressure on a Büchi rotary evaporator. ^1H and ^{13}C NMR spectra were recorded on Bruker CRYO500 or DRX400 spectrometer. ^1H NMR spectra were internally referenced to the residual solvent signal or TMS. ^{13}C NMR spectra were internally referenced to the residual solvent signal. Data for ^1H NMR are reported as follows: chemical shift (δ ppm), multiplicity (s = singlet, d = doublet, t = triplet, q = quartet, m = multiplet, br = broad), coupling constant (Hz), integration. Data for ^{13}C NMR are reported in terms of chemical shift (δ ppm). High resolution mass spectra (HRMS) were obtained on a micromass 70S-250 spectrometer (EI) or an ABI/Sciex QStar Mass Spectrometer (ESI). Infrared (IR) spectra were obtained on a Nicolet iS5 FT-IR spectrometer with an iD5 ATR, and are reported in terms of frequency of absorption (cm^{-1}). Column chromatography was performed with Silicycle Silia-P Flash Silica Gel using glass columns. Solvents were purchased from Fisher. Enantiomeric excesses for stereoselective reactions were determined by chiral SFC analysis using an Agilent Technologies HPLC (1200 series) system and Aurora A5 Fusion. Solvents used in hydroaminations were degassed by three freeze-pump-thaw cycles before being taken into a nitrogen-filled glove box. 1-Phenyl allene was prepared according to literature procedure.[1]

2. Typical procedures for the hydroamination of alkynes



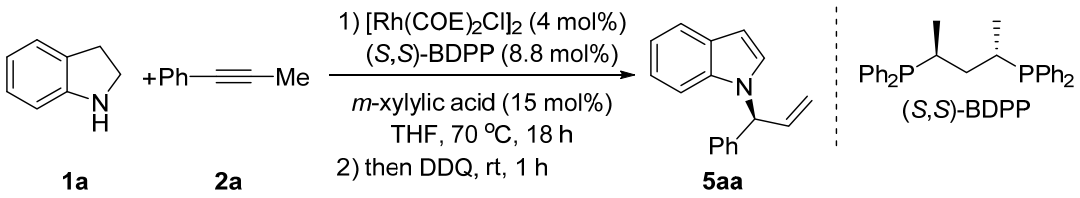
Method A: A mixture of $[Rh(COE)_2Cl]_2$ (5.7 mg, 0.008 mmol), (*S*,*S*)-BDPP (7.8 mg, 0.018 mmol), *m*-xylylic acid (4.5 mg, 0.03 mmol), amine **1** (0.20 mmol), alkyne **2** (0.30 mmol), and THF (0.25 mL) were added to a 1 dram vial in the glove box. After heating the reaction mixture at 70 ^{o}C for 18 h, the resulting solution was cooled to rt. The selectivity was determined by ^{1}H NMR analysis of the crude reaction mixture. The product **3** was purified by column chromatography on silica gel using hexanes/EtOAc (20:1~10:1) or DCM/Hexane (10:1~5:1).

Method B: A mixture of $[Rh(COE)_2Cl]_2$ (5.7 mg, 0.008 mmol), (*S*,*S*)-BDPP (7.8 mg, 0.018 mmol), *m*-xylylic acid (4.5 mg, 0.03 mmol), amine **1** (0.20 mmol), alkyne **2** (0.30 mmol), and THF (0.25 mL) were added to a 1 dram vial in the glove box. After heating the reaction mixture at 60 ^{o}C for 18 h, the resulting solution was cooled to rt. The selectivity was determined by ^{1}H NMR analysis of the crude reaction mixture. The product **3** was purified by column chromatography on silica gel using hexanes/EtOAc (20:1~10:1) or DCM/Hexane (10:1~5:1).



Method C: A mixture of $[Rh(COE)_2Cl]_2$ (2.9 mg, 0.004 mmol), dppp (3.6 mg, 0.009 mmol), phthalic acid (10.0 mg, 0.06 mmol), amine **1** (0.20 mmol), alkyne **2** (0.30 mmol), and THF (0.25 mL) were added to a 1 dram vial in the glove box. After heating the reaction mixture at 70 ^{o}C for 18 h, the resulting solution was cooled to rt. The selectivity was determined by ^{1}H NMR analysis of the crude reaction mixture. The product **4** was purified by column chromatography on silica gel using hexanes/EtOAc (20:1~10:1).

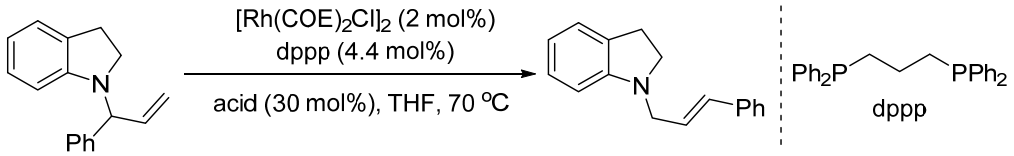
3. Typical procedure for one pot synthesis of *N*-allylic indoles



Method D: A mixture of $[Rh(COE)_2Cl]_2$ (5.7 mg, 0.008 mmol), (*S*,*S*)-BDPP (7.8 mg, 0.018 mmol), *m*-xylylic acid (4.5 mg, 0.03 mmol), amine **1** (0.20 mmol), alkyne **2** (0.30 mmol), and THF (0.25 mL) were added to a 1 dram vial in the glove box. After heating the reaction mixture at

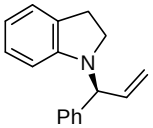
indicated temperature for 18 h, the resulting solution was cooled to rt. Then DDQ (2,3-dichloro-5,6-dicyano-*p*-benzoquinone, 0.30 mmol) was added and the reaction system was stirred for 1 h at room temperature. The THF was removed and DCM was added. Then the dark suspension mixture was filtrated through an aluminum oxide pat, washed with DCM, and the solvent was removed under reduced pressure. The selectivity was determined by ^{1}H NMR analysis of the crude reaction mixture. The product **5** was purified by column chromatography on silica gel using DCM/Hexane (20:1~10:1).

4. Typical procedure for isomerization of *N*-allylic indoline 3aa

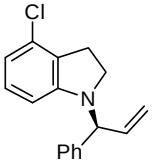


Method E: A mixture of $[Rh(COE)_2Cl]_2$ (2.9 mg, 0.004 mmol), dppp (3.6 mg, 0.009 mmol), acid (0.06 mmol), racemic branched amine **3aa** (0.20 mmol), and THF (0.25 mL) were added to a 1 dram vial in the glove box. Then the reaction mixture was heated at 70 °C. The reaction progress was monitored by GC. The selectivity (**4aa**/**3aa**) was determined by ^{1}H NMR analysis of the crude reaction mixture.

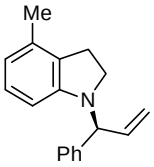
5. Characterization data



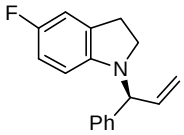
1-(1-Phenyl-2-propenyl)-2,3-dihydroindole **3aa**: (Method **A**) colorless oil, 80% yield, 90% ee, $[\alpha]^{26}_D$ = -27.4 (*c* 1.26, $CHCl_3$). **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.43 – 7.40 (m, 2H), 7.35 – 7.32 (m, 2H), 7.27 (t, *J* = 7.3 Hz, 1H), 7.06 (d, *J* = 7.2 Hz, 1H), 6.94 (t, *J* = 7.7 Hz, 1H), 6.62 (t, *J* = 7.3 Hz, 1H), 6.31 (d, *J* = 7.9 Hz, 1H), 6.13 – 6.06 (m, 1H), 5.32 (s, 1H), 5.29 (d, *J* = 6.9 Hz, 1H), 4.96 (d, *J* = 7.7 Hz, 1H), 3.41 – 3.28 (m, 2H), 2.94 (t, *J* = 8.3 Hz, 2H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 151.42, 140.59, 135.86, 130.55, 128.62, 127.87, 127.35, 127.11, 124.52, 118.13, 117.57, 108.42, 64.50, 50.38, 28.45. **IR** (ATR): 2844, 1605, 1484, 1458, 1246, 922, 741, 699 cm^{-1}. **Chiral SFC**: IC column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 4.0 min and 4.3 min (major).



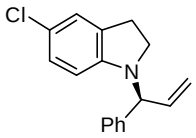
1-(1-Phenyl-2-propenyl)-4-chloro-2,3-dihydroindole **3ba**: (Method **B**) colorless oil, 72% yield, 90% ee, $[\alpha]^{28}_D$ = -28.8 (*c* 1.30, $CHCl_3$). **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.42 – 7.34 (m, 4H), 7.30 (t, *J* = 7.1 Hz, 1H), 6.89 (t, *J* = 8.0 Hz, 1H), 6.60 (d, *J* = 8.0 Hz, 1H), 6.19 (d, *J* = 7.9 Hz, 1H), 6.15 – 6.05 (m, 1H), 5.35 (dd, *J* = 10.3, 0.9 Hz, 1H), 5.32 (dd, *J* = 17.1, 1.3 Hz, 1H), 5.00 (d, *J* = 7.5 Hz, 1H), 3.50 – 3.36 (m, 2H), 3.08 – 2.94 (m, 2H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 152.65, 139.94, 135.26, 130.57, 128.71, 128.69, 128.35, 127.85, 127.56, 118.47, 117.46, 106.22, 64.10, 49.63, 27.66. **IR** (ATR): 2846, 1598, 1451, 1253, 1122, 925, 752, 718, 698 cm^{-1}. **HRMS** calculated for $C_{17}H_{17}ClN$ $[M+H]^+$ 270.1044, found 270.1040. **Chiral SFC**: OJ-H column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 4.5 min (major) and 5.9 min.



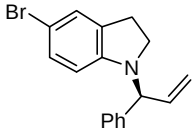
1-(1-Phenyl-2-propenyl)-4-methyl-2,3-dihydroindole **3ca**: (Method **A**) colorless oil, 81% yield, 90% ee, $[\alpha]^{26}_D$ = -29.6 (*c* 1.34, $CHCl_3$). **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.46 – 7.42 (m, 2H), 7.39 – 7.34 (m, 2H), 7.31 – 7.28 (m, 1H), 6.90 (t, *J* = 7.7 Hz, 1H), 6.49 (d, *J* = 7.6 Hz, 1H), 6.20 (d, *J* = 7.9 Hz, 1H), 6.17 – 6.08 (m, 1H), 5.36 – 5.30 (m, 2H), 4.99 (d, *J* = 7.7 Hz, 1H), 3.46 – 3.34 (m, 2H), 2.96 – 2.84 (m, 2H), 2.21 (s, 3H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 151.14, 140.61, 135.82, 133.96, 129.02, 128.60, 127.90, 127.33, 127.22, 119.02, 118.16, 105.96, 64.45, 50.04, 27.12, 18.71. **IR** (ATR): 2843, 1593, 1461, 1257, 1154, 994, 921, 755, 727, 698 cm^{-1}. **HRMS** calculated for $C_{18}H_{20}N$ $[M+H]^+$ 250.1590, found 250.1588. **Chiral SFC**: OJ-H column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 5.1 min and 6.6 min (major).



1-(1-Phenyl-2-propenyl)-5-fluoro-2,3-dihydroindole **3da**: (Method **B**) colorless oil, 82% yield, 89% ee, $[\alpha]^{28}_D$ = -12.4 (*c* 1.38, $CHCl_3$). **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.42 – 7.38 (m, 2H), 7.37 – 7.31 (m, 2H), 7.29 – 7.25 (m, 1H), 6.79 (ddt, *J* = 8.3, 2.3, 1.0 Hz, 1H), 6.65 – 6.58 (m, 1H), 6.15 (dd, *J* = 8.6, 4.3 Hz, 1H), 6.07 (ddd, *J* = 16.5, 10.9, 7.8 Hz, 1H), 5.33 – 5.23 (m, 2H), 4.84 (d, *J* = 7.8 Hz, 1H), 3.34 (td, *J* = 8.2, 1.0 Hz, 2H), 2.91 (t, *J* = 8.4 Hz, 2H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 156.46 (d, *J* = 234.7 Hz), 147.66, 140.59, 135.97, 132.42 (d, *J* = 8.0 Hz), 128.70, 127.81, 127.47, 118.22, 112.69 (d, *J* = 22.7 Hz), 112.19 (d, *J* = 23.8 Hz), 108.68 (d, *J* = 7.9 Hz), 65.53, 51.26, 28.58 (d, *J* = 1.7 Hz). **^{19}F NMR** (376 MHz, $CDCl_3$) δ -127.8. **IR** (ATR): 2845, 1602, 1486, 1470, 1230, 1177, 1126, 929, 799, 741, 699 cm^{-1}. **HRMS** calculated for $C_{17}H_{17}FN$ $[M+H]^+$ 254.1340, found 254.1341. **Chiral SFC**: OJ-H column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 3.5 min and 4.1 min (major).

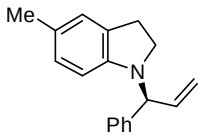


1-(1-Phenyl-2-propenyl)-5-chloro-2,3-dihydroindole **3ea**: (Method **B**) colorless oil, 78% yield, 90% ee, $[\alpha]^{28}_D$ = -39.5 (*c* 1.41, $CHCl_3$). **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.41 – 7.37 (m, 2H), 7.37 – 7.32 (m, 2H), 7.30 – 7.26 (m, 1H), 7.02 – 6.98 (m, 1H), 6.88 (dd, *J* = 8.4, 2.2 Hz, 1H), 6.19 (d, *J* = 8.4 Hz, 1H), 6.07 (ddd, *J* = 17.6, 10.2, 7.6 Hz, 1H), 5.34 – 5.27 (m, 2H), 4.91 (d, *J* = 7.6 Hz, 1H), 3.43 – 3.32 (m, 2H), 2.93 (t, *J* = 8.4 Hz, 2H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 149.92, 140.06, 135.44, 132.57, 128.73, 127.84, 127.58, 126.79, 124.74, 118.47, 109.17, 64.71, 50.65, 28.28. **IR** (ATR): 2843, 1601, 1485, 1466, 1247, 925, 797, 734, 699 cm^{-1}. **HRMS** calculated for $C_{17}H_{15}ClN$ $[M-H]^-$ 268.0893, found 268.0889. **Chiral SFC**: OJ-H column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 6.2 min and 6.7 min (major).

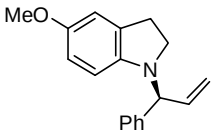


1-(1-Phenyl-2-propenyl)-5-bromo-2,3-dihydroindole **3fa**: (Method **B**) colorless oil, 85% yield, 88% ee, $[\alpha]^{28}_D$ = -38.3 (*c* 1.78, $CHCl_3$). **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.42 – 7.33 (m, 4H), 7.32 – 7.27 (m, 1H), 7.15– 7.14 (m, 1H), 7.04 – 7.01 (m, 1H), 6.16 (d, *J* = 8.4 Hz, 1H), 6.08 (ddd, *J* = 17.7, 10.2, 7.6 Hz, 1H), 5.36 – 5.27 (m, 2H), 4.93 (d, *J* = 7.6 Hz, 1H), 3.44 – 3.31 (m, 2H), 2.95 (t, *J* = 8.5 Hz, 2H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 150.46, 140.04, 135.38, 132.98, 129.70, 128.72, 127.82, 127.56, 127.48, 118.45, 109.60, 109.13, 64.43, 50.50, 28.23. **IR** (ATR): 2843, 1596, 1483, 1468, 1246, 925, 795, 733, 699 cm^{-1}. **HRMS** calculated for $C_{17}H_{15}BrN$ $[M-H]^-$ 312.0388, found 312.0399. **Chiral SFC**: IC column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 6.9 min and

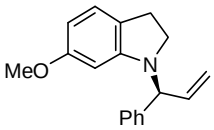
7.7 min (major).



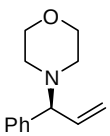
1-(1-Phenyl-2-propenyl)-5-methyl-2,3-dihydroindole **3ga**: (Method **B**) colorless oil, 83% yield, 89% ee, $[\alpha]^{28}_{D}$ = -27.4 (*c* 1.37, $CHCl_3$). **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.48 – 7.44 (m, 2H), 7.40 – 7.35 (m, 2H), 7.33 – 7.28 (m, 1H), 6.96 – 6.92 (m, 1H), 6.80 – 6.76 (m, 1H), 6.24 (d, *J* = 8.0 Hz, 1H), 6.18 – 6.08 (m, 1H), 5.36 – 5.31 (m, 2H), 4.93 (d, *J* = 7.9 Hz, 1H), 3.36 (t, *J* = 8.3 Hz, 2H), 2.95 (t, *J* = 8.3 Hz, 2H), 2.25 (s, 3H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 149.17, 140.82, 136.09, 131.06, 128.61, 127.86, 127.31, 127.24, 125.51, 118.08, 108.67, 65.24, 50.92, 28.53, 20.79. **IR** (ATR): 2844, 1619, 1491, 1449, 1248, 1151, 994, 922, 799, 699 cm^{-1}. **HRMS** calculated for $C_{18}H_{20}N$ $[M+H]^+$ 250.1590, found 250.1591. **Chiral SFC**: IC column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 4.3 min and 5.0 min (major).



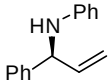
1-(1-Phenyl-2-propenyl)-5-methoxy-2,3-dihydroindole **3ha**: (Method **B**) colorless oil, 80% yield, 77% ee, $[\alpha]^{24}_{D}$ = -16.9 (*c* 1.42, $CHCl_3$). **^{1}H NMR** (500 MHz, CD_2Cl_2) δ 7.44 (d, *J* = 7.6 Hz, 2H), 7.35 (t, *J* = 7.6 Hz, 2H), 7.27 (t, *J* = 7.3 Hz, 1H), 6.72 – 6.70 (m, 1H), 6.45 (dd, *J* = 8.5, 2.6 Hz, 1H), 6.16 (d, *J* = 8.5 Hz, 1H), 6.10 (ddd, *J* = 17.5, 10.2, 8.1 Hz, 1H), 5.32 – 5.28 (m, 2H), 4.82 (d, *J* = 8.0 Hz, 1H), 3.68 (s, 3H), 3.35 – 3.25 (m, 2H), 2.89 (t, *J* = 8.1 Hz, 2H). **^{13}C NMR** (126 MHz, CD_2Cl_2) δ 153.11, 146.07, 141.58, 136.94, 132.80, 128.83, 128.07, 127.52, 117.87, 112.20, 111.43, 109.28, 66.17, 56.13, 51.56, 29.04. **IR** (ATR): 2829, 1593, 1487, 1450, 1433, 1234, 1179, 1136, 1034, 922, 796, 699 cm^{-1}. **HRMS** calculated for $C_{18}H_{20}NO$ $[M+H]^+$ 266.1539, found 266.1543. **Chiral SFC**: IC column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 11.3 min and 13.8 min (major).



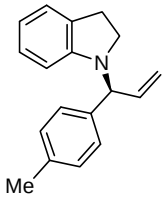
1-(1-Phenyl-2-propenyl)-6-methoxy-2,3-dihydroindole **3ia**: (Method **A**) colorless oil, 84% yield, 83% ee, $[\alpha]^{24}_{D}$ = -40.0 (*c* 1.48, $CHCl_3$). **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.47 – 7.42 (m, 2H), 7.40 – 7.34 (m, 2H), 7.32 – 7.27 (m, 1H), 6.97 (dd, *J* = 8.0, 1.2 Hz, 1H), 6.24 – 6.08 (m, 2H), 5.97 (d, *J* = 2.1 Hz, 1H), 5.37 – 5.31 (m, 2H), 4.98 (d, *J* = 7.6 Hz, 1H), 3.69 (s, 3H), 3.46 – 3.33 (m, 2H), 2.91 (t, *J* = 8.5 Hz, 2H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 159.81, 152.69, 140.35, 135.69, 128.63, 127.91, 127.42, 124.40, 122.94, 118.20, 101.28, 96.20, 64.34, 55.37, 50.93, 27.61. **IR** (ATR): 2832, 1618, 1592, 1493, 1450, 1288, 1264, 1208, 1157, 1035, 919, 821, 764, 699 cm^{-1}. **HRMS** calculated for $C_{18}H_{20}NO$ $[M+H]^+$ 266.1539, found 266.1542. **Chiral SFC**: IC column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 10.2 min and 13.9 min (major).



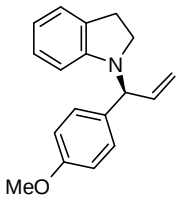
1-(1-Phenyl-2-propenyl)morphine **3ja**: (Method **A**, *m*-xylylic acid (50 mol%)) colorless oil, 47% yield, 26% ee, $[\alpha]^{25}_{D}$ = -20.3 (*c* 0.64, $CHCl_3$). **^{1}H NMR** (500 MHz, CD_2Cl_2) δ 7.37 – 7.29 (m, 4H), 7.23 (t, *J* = 6.8 Hz, 1H), 5.96 – 5.85 (m, 1H), 5.24 (d, *J* = 17.1 Hz, 1H), 5.09 (d, *J* = 10.1 Hz, 1H), 3.71 – 3.57 (m, 5H), 2.51 – 2.40 (m, 2H), 2.34 – 2.26 (m, 2H). **^{13}C NMR** (126 MHz, CD_2Cl_2) δ 142.34, 140.48, 128.90, 128.34, 127.53, 116.60, 75.77, 67.45, 52.37. **IR** (ATR): 2956, 2852, 2803, 1717, 1450, 1303, 1276, 1208, 1116, 1069, 1011, 993, 873, 758, 700, 679 cm^{-1}. **Chiral SFC**: OD-H column, 230 nm, 1.5% 2-propanol in CO_2, 2.5 mL/min, retention time 1.9 min and 2.2 min (major).



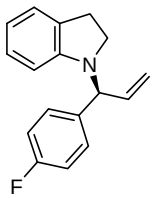
N-Phenyl-1-phenyl-2-propenylamine **3ka**: (Method **A**) colorless oil, 32% yield, 76% ee, $[\alpha]^{25}_{D}$ = -7.4 (*c* 0.44, $CHCl_3$). **^{1}H NMR** (500 MHz, CD_2Cl_2) δ 7.41 – 7.35 (m, 4H), 7.31 – 7.26 (m, 1H), 7.13 – 7.09 (m, 2H), 6.67 (t, *J* = 7.3 Hz, 1H), 6.61 – 6.58 (m, 2H), 6.06 (ddd, *J* = 17.1, 10.2, 6.0 Hz, 1H), 5.27 (dt, *J* = 17.1, 1.4 Hz, 1H), 5.23 (dt, *J* = 10.2, 1.3 Hz, 1H), 4.97 (d, *J* = 6.0 Hz, 1H), 4.17 (brs, 1H). **^{13}C NMR** (126 MHz, CD_2Cl_2) δ 147.63, 142.50, 139.73, 129.39, 129.06, 127.76, 127.45, 117.85, 116.03, 113.88, 61.03. **IR** (ATR): 2922, 2845, 1600, 1501, 1452, 1313, 1075, 992, 924, 746, 691 cm^{-1}. **Chiral SFC**: OJ-H column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 6.7 min and 7.2 min (major).



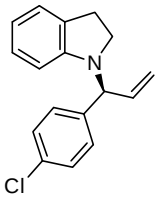
1-(1-(4-Methylphenyl)-2-propenyl)-2,3-dihydroindole **3ab**: (Method **B**) colorless oil, 73% yield, 91% ee, $[\alpha]^{28}_{D}$ = -31.6 (*c* 1.21, $CHCl_3$). **^{1}H NMR** (500 MHz, CD_2Cl_2) δ 7.31 (d, *J* = 8.0 Hz, 2H), 7.18 (d, *J* = 8.0 Hz, 2H), 7.05 (d, *J* = 7.2 Hz, 1H), 6.92 (t, *J* = 7.7 Hz, 1H), 6.59 (t, *J* = 7.4 Hz, 1H), 6.31 (d, *J* = 7.9 Hz, 1H), 6.16 – 6.07 (m, 1H), 5.32 (s, 1H), 5.29 (dd, *J* = 4.3, 0.9 Hz, 1H), 4.96 (d, *J* = 7.6 Hz, 1H), 3.41 – 3.29 (m, 2H), 2.99 – 2.87 (m, 2H), 2.36 (s, 3H). **^{13}C NMR** (126 MHz, CD_2Cl_2) δ 151.80, 137.95, 137.34, 136.52, 130.95, 129.49, 128.03, 127.19, 124.68, 117.82, 117.64, 108.53, 64.35, 50.48, 28.64, 21.19. **IR** (ATR): 2844, 1605, 1484, 1458, 1329, 1251, 1157, 1024, 919, 741, 698 cm^{-1}. **HRMS** calculated for $C_{18}H_{20}N$ $[M+H]^+$ 250.1590, found 250.1604. **Chiral SFC**: IC column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 4.9 min and 5.5 min (major).



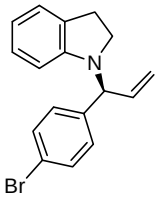
1-(1-(4-Methoxyphenyl)-2-propenyl)-2,3-dihydroindole **3ac**: (Method **A**) colorless oil, 70% yield, 82% ee, $[\alpha]^{28}_{D}$ = -29.6 (*c* 1.24, $CHCl_3$). **^{1}H NMR** (500 MHz, CD_2Cl_2) δ 7.36 – 7.32 (m, 2H), 7.05 (d, *J* = 7.2 Hz, 1H), 6.94 – 6.88 (m, 3H), 6.59 (t, *J* = 7.4 Hz, 1H), 6.32 (d, *J* = 7.9 Hz, 1H), 6.12 (ddd, *J* = 16.6, 10.8, 7.6 Hz, 1H), 5.32 (d, *J* = 0.7 Hz, 1H), 5.31 – 5.27 (m, 1H), 4.96 (d, *J* = 7.6 Hz, 1H), 3.81 (s, 3H), 3.40 – 3.27 (m, 2H), 2.99 – 2.87 (m, 2H). **^{13}C NMR** (126 MHz, CD_2Cl_2) δ 159.27, 151.80, 136.53, 132.96, 130.98, 129.25, 127.21, 124.69, 117.74, 117.65, 114.11, 108.56, 63.94, 55.59, 50.43, 28.63. **IR** (ATR): 2834, 1605, 1509, 1484, 1459, 1243, 1173, 1032, 828, 742 cm^{-1}. **HRMS** calculated for $C_{18}H_{20}NO$ $[M+H]^+$ 266.1539, found 266.1546. **Chiral SFC**: IC column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 7.9 min and 10.3 min (major).



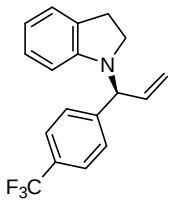
1-(1-(4-Fluorophenyl)-2-propenyl)-2,3-dihydroindole **3ad**: (Method **B**) colorless oil, 87% yield, 90% ee, $[\alpha]^{28}_{D}$ = -23.4 (*c* 1.47, $CHCl_3$). **^{1}H NMR** (500 MHz, CD_2Cl_2) δ 7.45 – 7.39 (m, 2H), 7.09 – 7.03 (m, 3H), 6.94 – 6.90 (m, 1H), 6.60 (td, *J* = 7.4, 0.7 Hz, 1H), 6.28 (d, *J* = 7.9 Hz, 1H), 6.10 (ddd, *J* = 17.1, 10.3, 7.7 Hz, 1H), 5.36 – 5.29 (m, 2H), 4.97 (d, *J* = 7.8 Hz, 1H), 3.40 – 3.29 (m, 2H), 3.01 – 2.88 (m, 2H). **^{13}C NMR** (126 MHz, CD_2Cl_2) δ 162.41 (d, *J* = 244.6 Hz), 151.56, 136.93 (d, *J* = 3.1 Hz), 135.99, 131.02, 129.73 (d, *J* = 8.0 Hz), 127.23, 124.78, 118.45, 117.92, 115.54 (d, *J* = 21.3 Hz), 108.62, 64.03, 50.54, 28.66. **^{19}F NMR** (376 MHz, CD_2Cl_2) δ -116.7. **IR** (ATR): 2844, 1604, 1505, 1484, 1458, 1245, 1220, 1156, 925, 837, 743, 719 cm^{-1}. **HRMS** calculated for $C_{17}H_{17}FN$ $[M+H]^+$ 254.1340, found 254.1342. **Chiral SFC**: IC column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 3.5 min and 3.9 min (major).



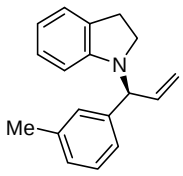
1-(1-(4-Chlorophenyl)-2-propenyl)-2,3-dihydroindole **3ae**: (Method **B**) pale yellow oil, 83% yield, 92% ee, $[\alpha]^{28}_D$ = -16.0 (*c* 1.50, $CHCl_3$). **^{1}H NMR** (500 MHz, CD_2Cl_2) δ 7.40 (d, *J* = 8.3 Hz, 2H), 7.34 (d, *J* = 8.6 Hz, 2H), 7.06 (d, *J* = 7.2 Hz, 1H), 6.91 (t, *J* = 7.7 Hz, 1H), 6.61 (t, *J* = 7.4 Hz, 1H), 6.26 (d, *J* = 7.9 Hz, 1H), 6.09 (ddd, *J* = 17.2, 10.2, 7.9 Hz, 1H), 5.35 – 5.30 (m, 2H), 4.95 (d, *J* = 7.9 Hz, 1H), 3.94 – 3.32 (m, 2H), 3.00 – 2.89 (m, 2H). **^{13}C NMR** (126 MHz, CD_2Cl_2) δ 151.45, 139.80, 135.71, 133.17, 131.03, 129.52, 128.93, 127.22, 124.79, 118.74, 118.02, 108.69, 64.23, 50.64, 28.67. **IR** (ATR): 2843, 1605, 1483, 1458, 1247, 1089, 1013, 925, 821, 743, 726 cm^{-1}. **HRMS** calculated for $C_{17}H_{17}ClN$ $[M+H]^+$ 270.1044, found 270.1058. **Chiral SFC**: IC column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 5.1 min and 5.7 min (major).



1-(1-(4-Bromophenyl)-2-propenyl)-2,3-dihydroindole **3af**: (Method **B**) pale yellow oil, 69% yield, 86% ee, $[\alpha]^{28}_D$ = -10.8 (*c* 1.44, $CHCl_3$). **^{1}H NMR** (500 MHz, CD_2Cl_2) δ 7.49 (d, *J* = 8.5 Hz, 2H), 7.33 (d, *J* = 8.6 Hz, 2H), 7.05 (d, *J* = 7.2 Hz, 1H), 6.91 (t, *J* = 7.7 Hz, 1H), 6.60 (t, *J* = 7.4 Hz, 1H), 6.25 (d, *J* = 7.9 Hz, 1H), 6.08 (ddd, *J* = 18.0, 10.2, 7.9 Hz, 1H), 5.35 – 5.29 (m, 2H), 4.92 (d, *J* = 7.9 Hz, 1H), 3.39 – 3.31 (m, 2H), 3.00 – 2.88 (m, 2H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 151.43, 140.33, 135.63, 131.89, 131.02, 129.87, 127.21, 124.78, 121.30, 118.77, 118.01, 108.66, 64.29, 50.65, 28.66. **IR** (ATR): 2843, 1605, 1483, 1458, 1247, 1071, 1009, 925, 819, 742, 719 cm^{-1}. **HRMS** calculated for $C_{17}H_{17}BrN$ $[M+H]^+$ 314.0539, found 314.0543. **Chiral SFC**: IC column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 6.5 min and 7.4 min (major).

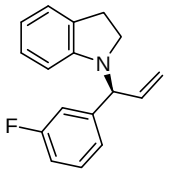


1-(1-(4-Trifluoromethylphenyl)-2-propenyl)-2,3-dihydroindole **3ag**: (Method **B**) pale yellow oil, 70% yield, 91% ee, $[\alpha]^{29}_D$ = -7.0 (*c* 1.41, $CHCl_3$). **^{1}H NMR** (500 MHz, CD_2Cl_2) δ 7.59 – 7.54 (m, 4H), 7.03 (d, *J* = 7.2 Hz, 1H), 6.86 (t, *J* = 7.7 Hz, 1H), 6.57 (t, *J* = 7.4 Hz, 1H), 6.18 (d, *J* = 7.9 Hz, 1H), 6.06 (ddd, *J* = 17.1, 10.2, 8.0 Hz, 1H), 5.36 – 5.26 (m, 2H), 4.97 (d, *J* = 8.0 Hz, 1H), 3.38 – 3.31 (m, 2H), 2.98 – 2.89 (m, 2H). **^{13}C NMR** (126 MHz, CD_2Cl_2) δ 151.35, 145.54, 135.40, 131.05, 129.56 (q, *J* = 32.2 Hz), 128.43, 127.24, 125.78 (q, *J* = 3.8 Hz), 124.85, 119.22, 118.19, 108.69, 64.67, 50.77, 28.70. **^{19}F NMR** (376 MHz, CD_2Cl_2) δ -62.9. **IR** (ATR): 2846, 1605, 1485, 1322, 1248, 1161, 1120, 1066, 1017, 929, 831, 743 cm^{-1}. **HRMS** calculated for $C_{18}H_{17}F_3N$ $[M+H]^+$ 304.1308, found 304.1308. **Chiral SFC**: IB column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 3.5 min and 3.9 min (major).

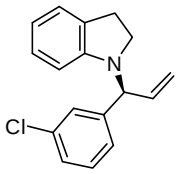


1-(1-(3-Methylphenyl)-2-propenyl)-2,3-dihydroindole **3ah**: (Method **B**) colorless oil, 79% yield, 90% ee, $[\alpha]^{28}_D$ = -28.4 (*c* 1.32, $CHCl_3$). **^{1}H NMR** (500 MHz, CD_2Cl_2) δ 7.27 – 7.21 (m, 3H), 7.11 (d, *J* = 7.0 Hz, 1H), 7.05 (d, *J* = 7.2 Hz, 1H), 6.91 (t, *J* = 7.7 Hz, 1H), 6.59 (t, *J* = 7.3 Hz, 1H), 6.30 (d, *J* = 7.9 Hz, 1H), 6.16 – 6.07 (m, 1H), 5.33 – 5.31 (m, 1H), 5.29 (dd, *J* = 2.4, 0.9 Hz, 1H), 4.93 (d, *J* = 7.8 Hz, 1H), 3.40 – 3.31 (m, 2H), 3.00 – 2.88 (m, 2H), 2.36 (s, 3H). **^{13}C NMR** (126 MHz, CD_2Cl_2) δ 151.84, 141.08, 138.60, 136.48, 130.96, 128.76, 128.69, 128.30, 127.21, 125.12, 124.68, 117.89, 117.69, 108.55, 64.80, 50.61, 28.65, 21.63. **IR** (ATR): 2844, 1604, 1484, 1457, 1330, 1250, 993, 922, 773, 741, 717, 700 cm^{-1}. **HRMS** calculated for $C_{18}H_{20}N$ $[M+H]^+$ 250.1590,

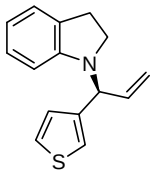
found 250.1591. **Chiral SFC**: IC column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 4.3 min and 5.0 min (major).



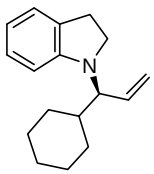
1-(1-(3-Fluorophenyl)-2-propenyl)-2,3-dihydroindole **3ai**: (Method **B**) colorless oil, 82% yield, 94% ee, $[\alpha]^{28}_D$ = -18.4 (*c* 1.38, $CHCl_3$). **^{1}H NMR** (500 MHz, CD_2Cl_2) δ 7.38 – 7.31 (m, 1H), 7.24 (d, *J* = 7.7 Hz, 1H), 7.18 (d, *J* = 10.3 Hz, 1H), 7.07 (dd, *J* = 7.2, 0.7 Hz, 1H), 7.02 – 6.97 (m, 1H), 6.95 – 6.89 (m, 1H), 6.61 (td, *J* = 7.4, 0.8 Hz, 1H), 6.26 (d, *J* = 7.9 Hz, 1H), 6.10 (ddd, *J* = 17.0, 10.3, 8.0 Hz, 1H), 5.37 – 5.31 (m, 2H), 4.96 (d, *J* = 8.0 Hz, 1H), 3.38 (t, *J* = 8.4 Hz, 2H), 2.96 (t, *J* = 8.3 Hz, 2H). **^{13}C NMR** (126 MHz, CD_2Cl_2) δ 163.51 (d, *J* = 244.9 Hz), 151.45, 144.11 (d, *J* = 6.6 Hz), 135.56, 131.02, 130.39 (d, *J* = 8.2 Hz), 127.22, 124.79, 123.69 (d, *J* = 2.7 Hz), 118.90, 118.03, 114.81 (d, *J* = 22.1 Hz), 114.34 (d, *J* = 21.3 Hz), 108.64, 64.45 (d, *J* = 1.7 Hz), 50.66, 28.68. **^{19}F NMR** (376 MHz, CD_2Cl_2) δ -114.1. **IR** (ATR): 2844, 1604, 1588, 1484, 1458, 1442, 1248, 927, 876, 778, 743, 718, 697 cm^{-1}. **HRMS** calculated for $C_{17}H_{17}FN$ $[M+H]^+$ 254.1340, found 254.1349. **Chiral SFC**: IC column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 4.2 min and 4.4 min (major).



1-(1-(3-Chlorophenyl)-2-propenyl)-2,3-dihydroindole **3aj**: (Method **B**) pale yellow oil, 81% yield, 93% ee, $[\alpha]^{29}_D$ = -13.1 (*c* 1.45, $CHCl_3$). **^{1}H NMR** (500 MHz, CD_2Cl_2) δ 7.45 (s, 1H), 7.36 – 7.26 (m, 3H), 7.06 (d, *J* = 7.2 Hz, 1H), 6.91 (t, *J* = 7.7 Hz, 1H), 6.61 (t, *J* = 7.4 Hz, 1H), 6.25 (d, *J* = 7.9 Hz, 1H), 6.12 – 6.04 (m, 1H), 5.37 – 5.29 (m, 2H), 4.93 (d, *J* = 8.0 Hz, 1H), 3.37 (t, *J* = 8.3 Hz, 2H), 2.96 (t, *J* = 8.3 Hz, 2H). **^{13}C NMR** (126 MHz, CD_2Cl_2) δ 151.42, 143.57, 135.48, 134.71, 131.03, 130.23, 128.02, 127.69, 127.23, 126.28, 124.80, 118.98, 118.06, 108.64, 64.51, 50.71, 28.68. **IR** (ATR): 2844, 1605, 1594, 1484, 1473, 1249, 1194, 996, 926, 743, 716, 694 cm^{-1}. **HRMS** calculated for $C_{17}H_{17}ClN$ $[M+H]^+$ 270.1044, found 270.1049. **Chiral SFC**: IC column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 4.5 min and 4.9 min (major).

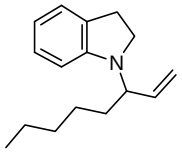


1-(1-(3-Thienyl)-2-propenyl)-2,3-dihydroindole **3ak**: (Method **B** at 50 °C) colorless oil, 80% yield, 65% ee, $[\alpha]^{25}_D$ = -34.3 (*c* 1.29, $CHCl_3$). **^{1}H NMR** (500 MHz, CD_2Cl_2) δ 7.36 – 7.31 (m, 1H), 7.20 – 7.17 (m, 1H), 7.11 (d, *J* = 5.0 Hz, 1H), 7.05 (d, *J* = 7.2 Hz, 1H), 6.96 (t, *J* = 7.7 Hz, 1H), 6.60 (t, *J* = 7.4 Hz, 1H), 6.40 (d, *J* = 7.9 Hz, 1H), 6.21– 6.12 (m, 1H), 5.38 – 5.30 (m, 2H), 5.13 (d, *J* = 7.4 Hz, 1H), 3.42 – 3.36 (m, 1H), 3.33 – 3.26 (m, 1H), 2.98 – 2.87 (m, 2H). **^{13}C NMR** (126 MHz, CD_2Cl_2) δ 151.44, 142.05, 135.52, 130.90, 128.01, 127.28, 126.09, 124.81, 122.50, 118.23, 117.78, 108.45, 59.96, 49.79, 28.60. **IR** (ATR): 2844, 1604, 1484, 1458, 1250, 924, 837, 766, 740, 716, 688 cm^{-1}. **HRMS** calculated for $C_{15}H_{16}NS$ $[M+H]^+$ 242.0998, found 242.0992. **Chiral SFC**: OJ-H column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 5.5 min (major) and 7.2 min.

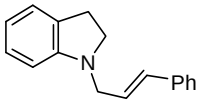


1-(1-Cyclohexyl-2-propenyl)-2,3-dihydroindole **3al**: (Method **A**) colorless oil, 15% yield, 27% ee, $[\alpha]^{28}_D$ = +6.6 (*c* 0.24, $CHCl_3$). **^{1}H NMR** (500 MHz, CD_2Cl_2) δ 6.99 – 6.94 (m, 2H), 6.50 (t, *J* = 7.4 Hz, 1H), 6.35 (d, *J* = 7.9 Hz, 1H), 5.73 (ddd, *J* = 17.1, 10.2, 9.0 Hz, 1H), 5.17 (dd, *J* = 10.3, 1.6 Hz, 1H), 5.15 – 5.09 (m, 1H), 3.51 (t, *J* = 9.5 Hz, 1H), 3.45 (dd, *J* = 15.0, 7.7 Hz, 1H), 3.36 (dd, *J* = 18.8, 9.5 Hz,

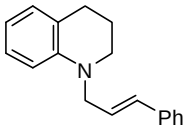
1H), 2.97 – 2.86 (m, 2H), 2.02 (d, *J* = 13.0 Hz, 1H), 1.83 – 1.71 (m, 3H), 1.70 – 1.57 (m, 2H), 1.33 – 1.17 (m, 3H), 1.01 – 0.92 (m, 2H). **^{13}C NMR** (126 MHz, CD_2Cl_2) δ 152.13, 134.83, 130.17, 127.30, 124.62, 118.16, 116.67, 107.44, 64.60, 47.28, 39.30, 31.23, 30.77, 28.56, 27.04, 26.52. **IR** (ATR): 2849, 1605, 1487, 1473, 1253, 1157, 917, 740, 719, 696 cm^{-1}. **HRMS** calculated for $C_{17}H_{24}N$ $[M+H]^+$ 242.1903, found 242.1909. **Chiral SFC**: OJ-H column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 2.4 min (major) and 2.7 min.



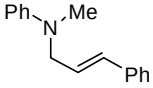
1-(1-Pentyl-2-propenyl)-2,3-dihydroindole **3an**: (Method **A**) colorless oil, 29% yield, 7% ee. **^{1}H NMR** (500 MHz, CD_2Cl_2) δ 7.04 – 6.93 (m, 2H), 6.53 (t, *J* = 7.3 Hz, 1H), 6.38 (d, *J* = 7.9 Hz, 1H), 5.83 – 5.73 (m, 1H), 5.18 – 5.16 (m, 1H), 5.15 – 5.13 (m, 1H), 3.93 (q, *J* = 7.2 Hz, 1H), 3.41 (dd, *J* = 15.3, 8.3 Hz, 1H), 3.32 (dd, *J* = 18.4, 9.3 Hz, 1H), 2.95 – 2.88 (m, 2H), 1.75 – 1.58 (m, 2H), 1.47 – 1.29 (m, 6H), 0.90 (t, *J* = 6.8 Hz, 3H). **^{13}C NMR** (126 MHz, CD_2Cl_2) δ 151.97, 136.69, 130.41, 127.36, 124.66, 116.96, 116.75, 107.49, 58.07, 46.98, 32.15, 31.97, 28.50, 26.62, 23.05, 14.24. **IR** (ATR): 2855, 1606, 1487, 1472, 1459, 1255, 1158, 918, 741 cm^{-1}. **HRMS** calculated for $C_{16}H_{24}N$ $[M+H]^+$ 230.1903, found 230.1903. **Chiral SFC**: OJ-H column, 254 nm, 1.5% *i*-propanol in CO_2, 2.5 mL/min, retention time 1.5 min and 1.7 min (maj).



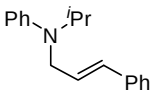
(*E*)-1-(3-Phenyl-2-propenyl)-2,3-dihydroindole **4aa**: (Method **C**) colorless oil, 91% yield. **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.37 (d, *J* = 7.9 Hz, 2H), 7.29 (t, *J* = 7.6 Hz, 2H), 7.23 – 7.19 (m, 1H), 7.10 – 7.04 (m, 2H), 6.70 – 6.54 (m, 3H), 6.29 (dt, *J* = 15.8, 6.2 Hz, 1H), 3.86 (d, *J* = 6.3 Hz, 2H), 3.37 (t, *J* = 8.3 Hz, 2H), 2.96 (t, *J* = 8.3 Hz, 2H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 152.28, 136.97, 132.43, 130.42, 128.68, 127.62, 127.43, 126.46, 126.03, 124.61, 117.91, 107.54, 53.46, 51.73, 28.67. **IR** (ATR): 3024, 2919, 2815, 1605, 1486, 1266, 965, 714, 735, 691cm^{-1}.



(*E*)-1-(3-Phenyl-2-propenyl)-1,2,3,4-tetrahydroquinoline **4la**: (Method **C**) colorless oil, 99% yield. **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.38 (d, *J* = 7.5 Hz, 2H), 7.31 (t, *J* = 7.6 Hz, 2H), 7.23 (t, *J* = 7.3 Hz, 1H), 7.07 (t, *J* = 7.7 Hz, 1H), 6.99 (d, *J* = 7.3 Hz, 1H), 6.70 – 6.60 (m, 2H), 6.56 (d, *J* = 15.9 Hz, 1H), 6.28 (dt, *J* = 15.8, 5.3 Hz, 1H), 4.05 (d, *J* = 5.5 Hz, 2H), 3.40 – 3.30 (m, 2H), 2.81 (t, *J* = 6.4 Hz, 2H), 2.04 – 1.99 (m, 2H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 145.44, 137.05, 131.18, 129.18, 128.63, 127.46, 127.28, 126.42, 125.66, 122.71, 116.07, 111.27, 53.60, 49.25, 28.23, 22.43. **IR** (ATR): 3024, 2927, 2840, 1601, 1495, 1344, 1329, 965, 741, 691 cm^{-1}.

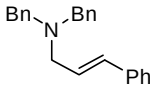


(*E*)-*N*-Methyl-*N*-phenyl-3-phenyl-2-propenylamine **4ma**: (Method **C**) colorless oil, 95% yield. **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.37 – 7.32 (m, 2H), 7.31 – 7.19 (m, 5H), 6.78 (d, *J* = 8.2 Hz, 2H), 6.72 (t, *J* = 7.3 Hz, 1H), 6.51 (d, *J* = 15.9 Hz, 1H), 6.24 (dt, *J* = 15.9, 5.5 Hz, 1H), 4.06 (dd, *J* = 5.5, 1.5 Hz, 2H), 2.96 (s, 3H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 149.64, 136.98, 131.36, 129.31, 128.65, 127.52, 126.43, 125.82, 116.71, 112.74, 55.02, 38.15. **IR** (ATR): 3026, 1597, 1505, 1353, 1200, 1117, 991, 964, 728, 690 cm^{-1}.

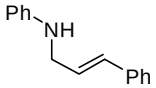


(*E*)-*N*-Isopropyl-*N*-phenyl-3-phenyl-2-propenylamine **4na**: (Method **C**) colorless oil, 85% yield. **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.42 (d, *J* = 7.9 Hz, 2H), 7.36 (t, *J* =

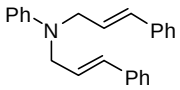
7.4 Hz, 2H), 7.31 – 7.27 (m, 3H), 6.87 (d, *J* = 8.1 Hz, 2H), 6.76 (t, *J* = 7.1 Hz, 1H), 6.63 (d, *J* = 15.9 Hz, 1H), 6.40 – 6.32 (m, 1H), 4.28 – 4.21 (m, 1H), 4.04 (d, *J* = 3.8 Hz, 2H), 1.30 (d, *J* = 6.8 Hz, 6H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 149.25, 137.32, 130.23, 129.29, 128.93, 128.63, 127.30, 126.33, 116.33, 113.09, 48.00, 46.61, 20.08. **IR** (ATR): 3023, 2969, 1596, 1502, 1390, 1184, 964, 745, 731, 689 cm^{-1}. **HRMS** calculated for $C_{18}H_{22}N$ $[M+H]^+$ 252.1747, found 252.1754.



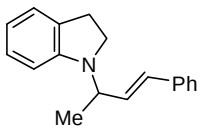
(*E*)-*N*,*N*-Dibenzyl-3-phenyl-2-propenylamine **4oa**: (Method **C**) colorless oil, 77% yield. **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.41 – 7.28 (m, 12H), 7.26 – 7.19 (m, 3H), 6.54 (d, *J* = 15.9 Hz, 1H), 6.31 (dt, *J* = 15.8, 6.5 Hz, 1H), 3.65 (s, 4H), 3.24 (d, *J* = 6.4 Hz, 2H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 139.74, 137.31, 132.61, 128.93, 128.64, 128.36, 127.88, 127.44, 126.99, 126.39, 58.06, 55.89. **IR** (ATR): 3025, 2792, 1599, 1494, 1451, 1364, 1121, 965, 731, 692 cm^{-1}.



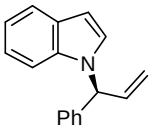
(*E*)-*N*-Phenyl-3-phenyl-2-propenylamine **4ka**: (Method **C**, aniline (0.30 mmol), alkyne (0.20 mmol)) colorless oil, 55% yield. **^{1}H NMR** (500 MHz, CD_2Cl_2) δ 7.42 – 7.37 (m, 2H), 7.34 – 7.30 (m, 2H), 7.27 – 7.21 (m, 1H), 7.21 – 7.14 (m, 2H), 6.73 – 6.60 (m, 4H), 6.36 (dt, *J* = 15.9, 5.8 Hz, 1H), 4.05 – 3.85 (m, 3H). **^{13}C NMR** (126 MHz, CD_2Cl_2) δ 148.64, 137.36, 131.53, 129.54, 128.93, 127.84, 127.69, 126.62, 117.72, 113.29, 46.43. **IR** (ATR): 3412, 3023, 1600, 1504, 1447, 1316, 1249, 965, 745, 690 cm^{-1}.



N,*N*-Bis[(*E*)-3-phenyl-2-propenyl]benzylamine **4ka'**: (Method **C**, aniline (0.20 mmol), alkyne (0.50 mmol)) colorless oil, 70% yield. **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.36 (d, *J* = 7.6 Hz, 4H), 7.30 (t, *J* = 7.6 Hz, 4H), 7.26 – 7.18 (m, 4H), 6.83 (d, *J* = 6.7 Hz, 2H), 6.76 – 6.71 (m, 1H), 6.55 (d, *J* = 15.9 Hz, 2H), 6.29 (dt, *J* = 15.9, 5.1 Hz, 2H), 4.14 (d, *J* = 5.3 Hz, 4H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 148.94, 137.01, 131.29, 129.39, 128.67, 127.54, 126.45, 125.99, 116.71, 112.70, 52.31. **IR** (ATR): 3025, 1597, 1504, 1447, 1354, 1218, 1159, 1066, 964, 908 cm^{-1}.

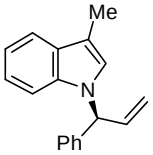


(*E*)-1-(4-Phenylbut-3-en-2-yl)-2,3-dihydroindole **4ao**: (Method **C**) colorless oil, 79% yield. **^{1}H NMR** (500 MHz, CD_2Cl_2) δ 7.37 (d, *J* = 7.7 Hz, 2H), 7.30 (t, *J* = 7.6 Hz, 2H), 7.21 (t, *J* = 7.3 Hz, 1H), 7.08 – 6.97 (m, 2H), 6.60 – 6.54 (m, 2H), 6.51 (d, *J* = 7.9 Hz, 1H), 6.33 (dd, *J* = 16.1, 5.9 Hz, 1H), 4.39 – 4.33 (m, 1H), 3.47 – 3.37 (m, 2H), 2.94 (t, *J* = 8.4 Hz, 2H), 1.40 (d, *J* = 6.9 Hz, 3H). **^{13}C NMR** (126 MHz, CD_2Cl_2) δ 151.60, 137.46, 131.00, 130.83, 130.72, 128.89, 127.75, 127.44, 126.61, 124.73, 117.42, 107.91, 52.75, 47.61, 28.56, 16.49. **IR** (ATR): 2971, 2845, 1606, 1486, 1263, 1181, 967, 909, 733, 692 cm^{-1}. **HRMS** calculated for $C_{18}H_{20}N$ $[M+H]^+$ 250.1590, found 250.1598.



1-(1-Phenyl-2-propenyl)-indole **5aa**: (Method **D**) colorless oil, 77% yield, 90% ee, $[\alpha]^{27}_D$ = -59.5 (*c* 1.19, $CHCl_3$) [lit.[2]: $[\alpha]^{27}_D$ = -58.1 (*c* 1.00, $CHCl_3$) for 95% ee (*S*)]. **^{1}H NMR** (500 MHz, CD_2Cl_2) δ 7.63 (d, *J* = 7.8 Hz, 1H), 7.38 – 7.27 (m, 4H), 7.24 – 7.18 (m, 3H), 7.17 – 7.07 (m, 2H), 6.55 (d, *J* = 3.2 Hz, 1H), 6.48 – 6.39 (m, 1H), 6.16 (d, *J* = 5.9 Hz, 1H), 5.43 (d, *J* = 10.3 Hz, 1H), 5.07 (d, *J* = 17.1 Hz, 1H). **^{13}C NMR** (126 MHz, CD_2Cl_2) δ 139.74, 136.62, 136.45, 129.33, 129.05, 128.26, 127.82, 126.60, 121.79, 121.20, 119.97, 119.12, 110.45, 101.74, 62.35. **IR** (ATR): 3029, 1458, 1308, 1215, 1185, 992, 929, 736,

697 cm^{-1}. **Chiral SFC**: IC column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 5.6 min (major) and 6.0 min.

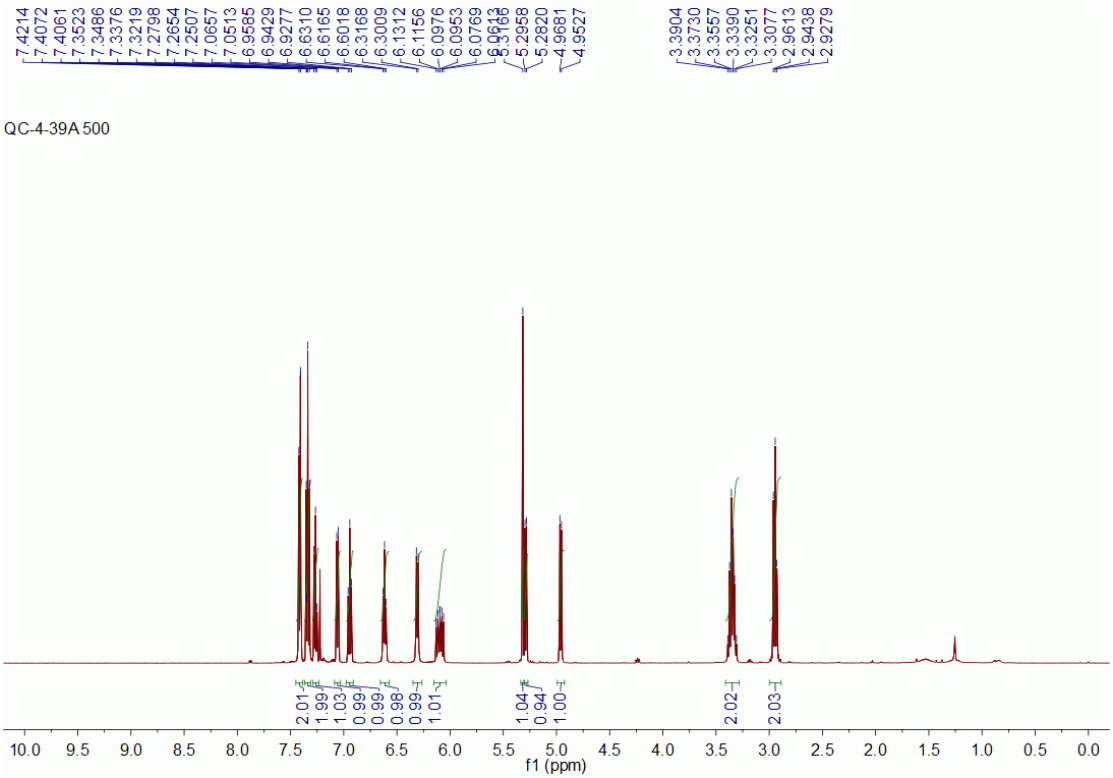


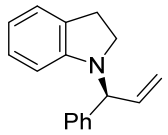
1-(1-Phenyl-2-propenyl)-3-methyl-indole **5ba**: (Method **D**) colorless oil, 72% yield, 85% ee, $[\alpha]^{26}_D$ = -39.2 (*c* 1.19, $CHCl_3$). **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.57 (d, *J* = 7.6 Hz, 1H), 7.35 – 7.27 (m, 3H), 7.24 – 7.18 (m, 3H), 7.16 – 7.08 (m, 2H), 6.88 (s, 1H), 6.34 (ddd, *J* = 17.0, 10.3, 5.9 Hz, 1H), 6.07 (d, *J* = 5.9 Hz, 1H), 5.37 (dt, *J* = 10.3, 1.2 Hz, 1H), 5.07 – 5.01 (m, 1H), 2.31 (d, *J* = 1.0 Hz, 3H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 139.49, 136.56, 136.47, 129.19, 128.77, 127.92, 127.69, 123.87, 121.57, 119.13, 119.05, 118.77, 110.80, 109.99, 61.79, 9.88. **IR** (ATR): 3028, 2916, 1458, 1354, 1223, 1181, 928, 736, 698 cm^{-1}. **Chiral SFC**: OJ-H column, 254 nm, 2% 2-propanol in CO_2, 2.5 mL/min, retention time 4.7 min (major) and 6.6 min.

6. Reference

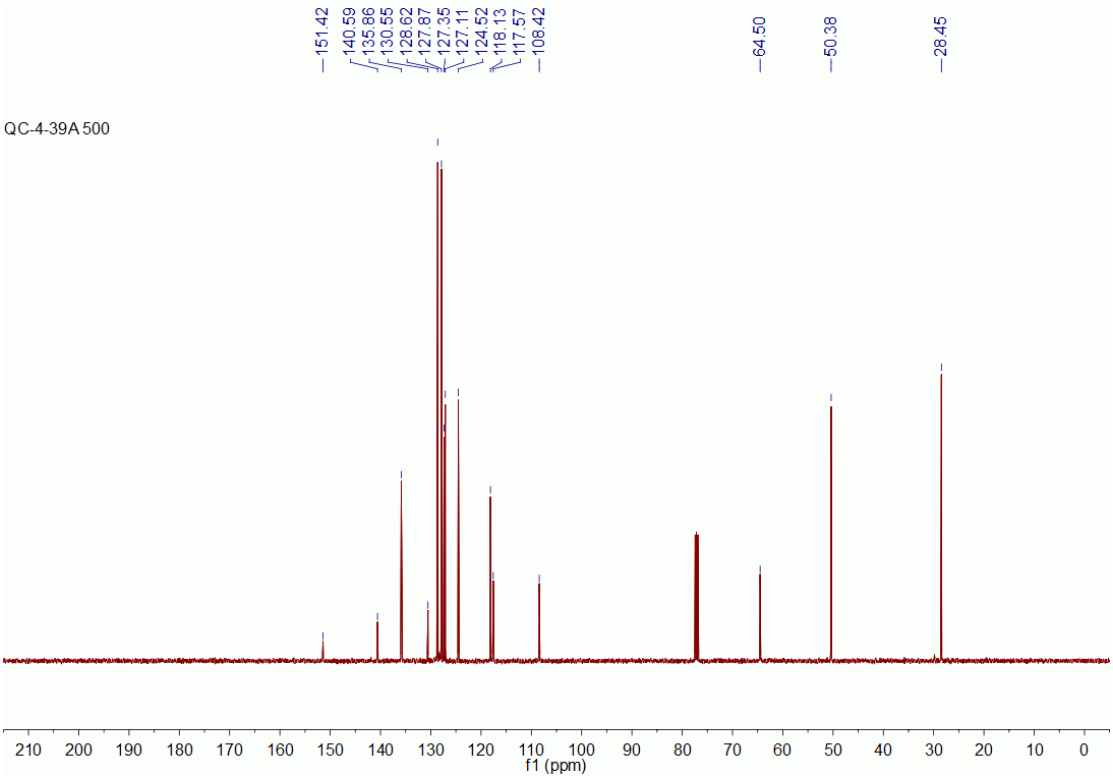
1) Kippo, T.; Fukuyama, T.; Ryu, I. *Org. Lett.* **2011**, *13*, 3864.
2) Ye, K.-Y.; Dai, L.-X.; You, S.-L. *Chem. Eur. J.* **2014**, *20*, 3040.

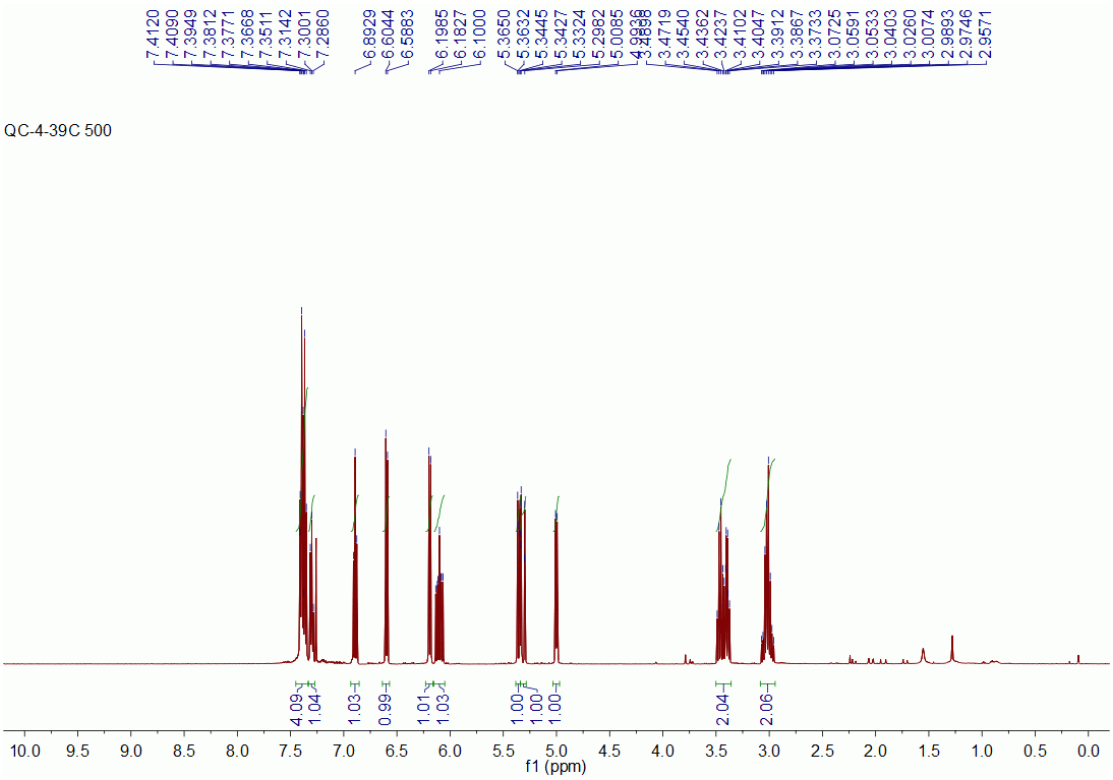
7. Copy of NMR spectra

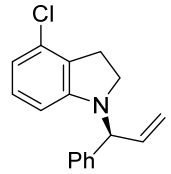




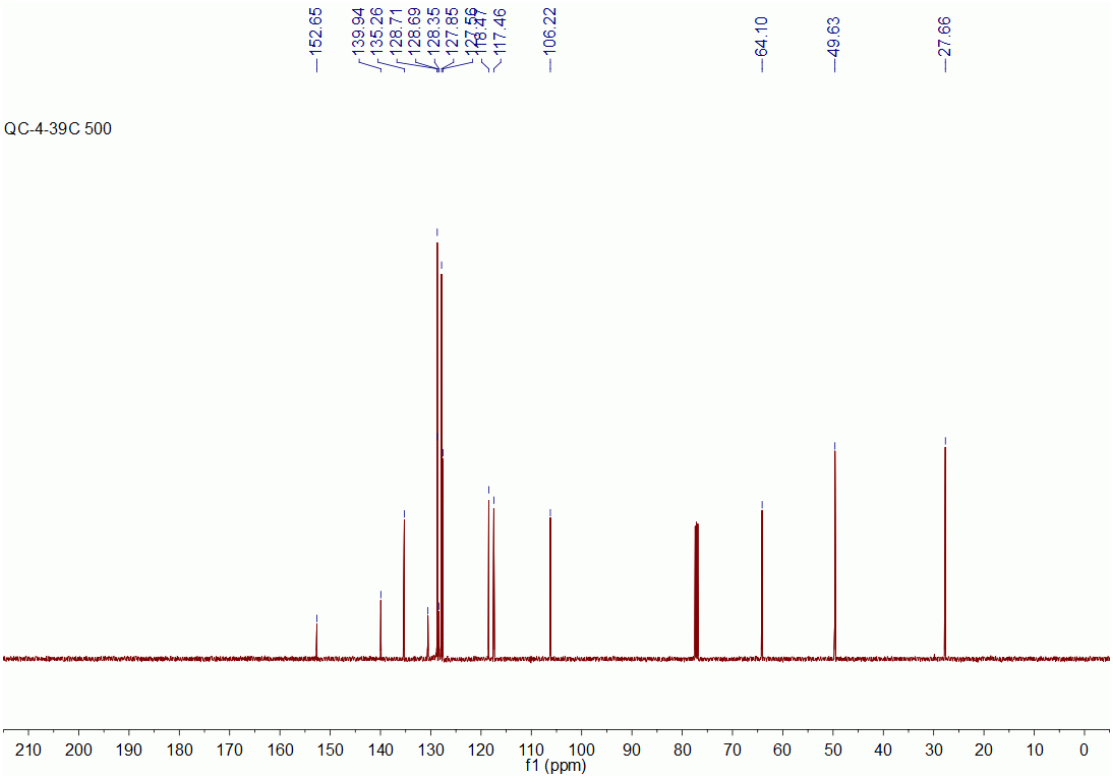
3aa ^{1}H NMR (500 MHz, $CDCl_3$)
^{13}C NMR (126 MHz, $CDCl_3$)

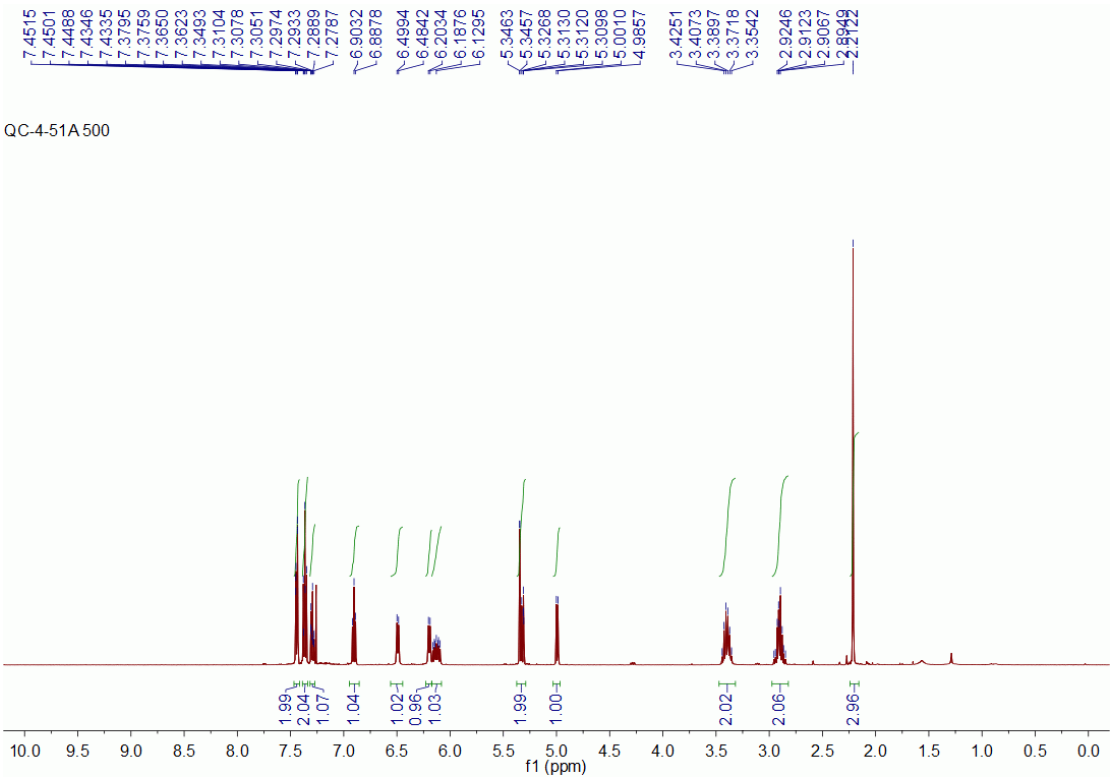


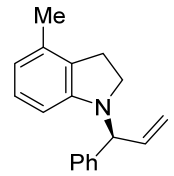




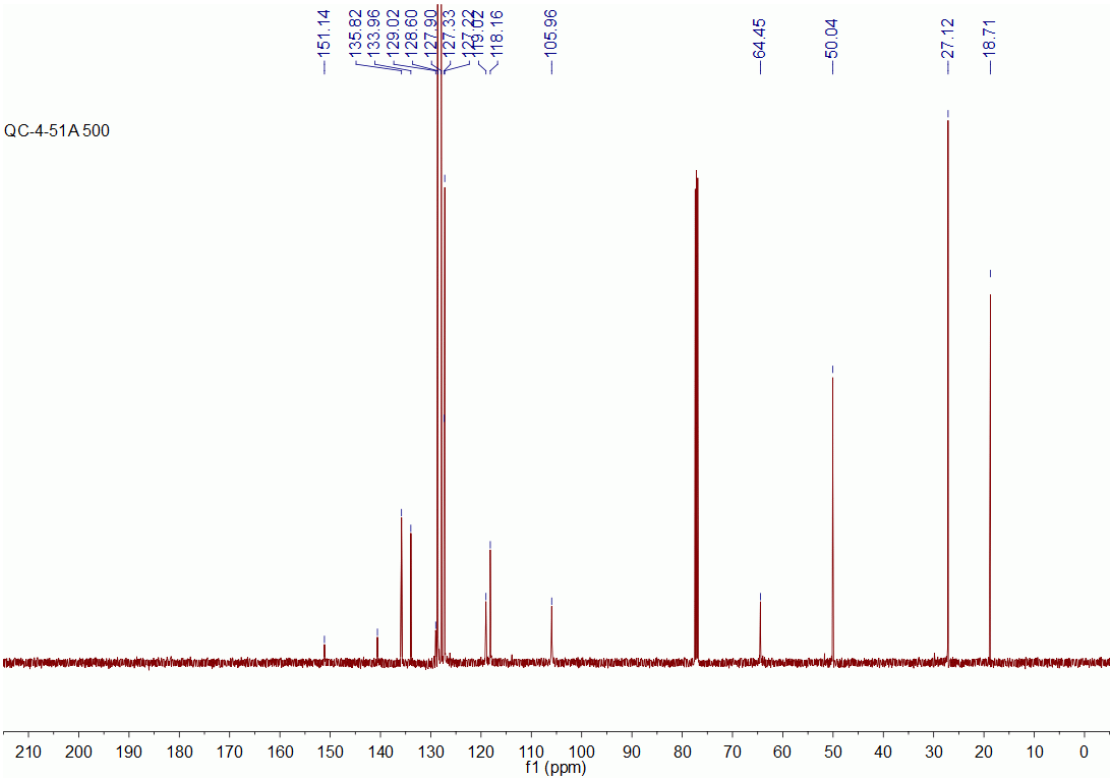
3ba ^{1}H NMR (500 MHz, $CDCl_3$)
^{13}C NMR (126 MHz, $CDCl_3$)

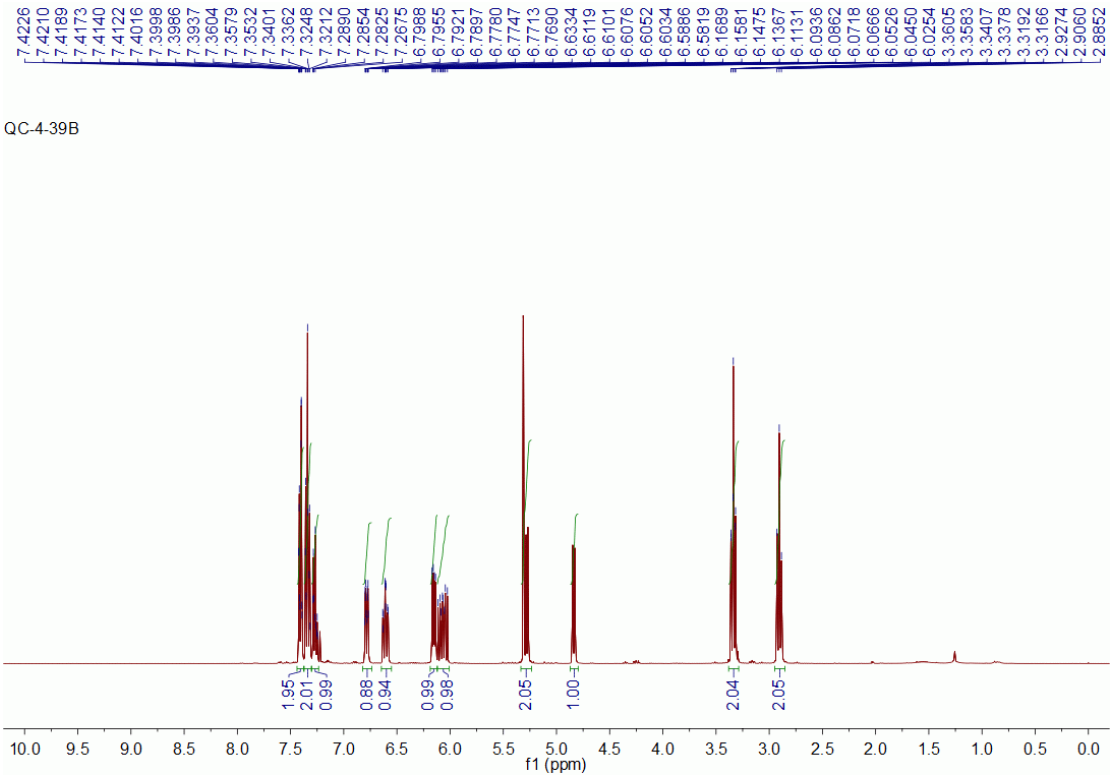


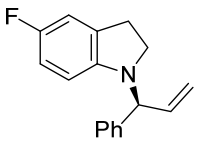




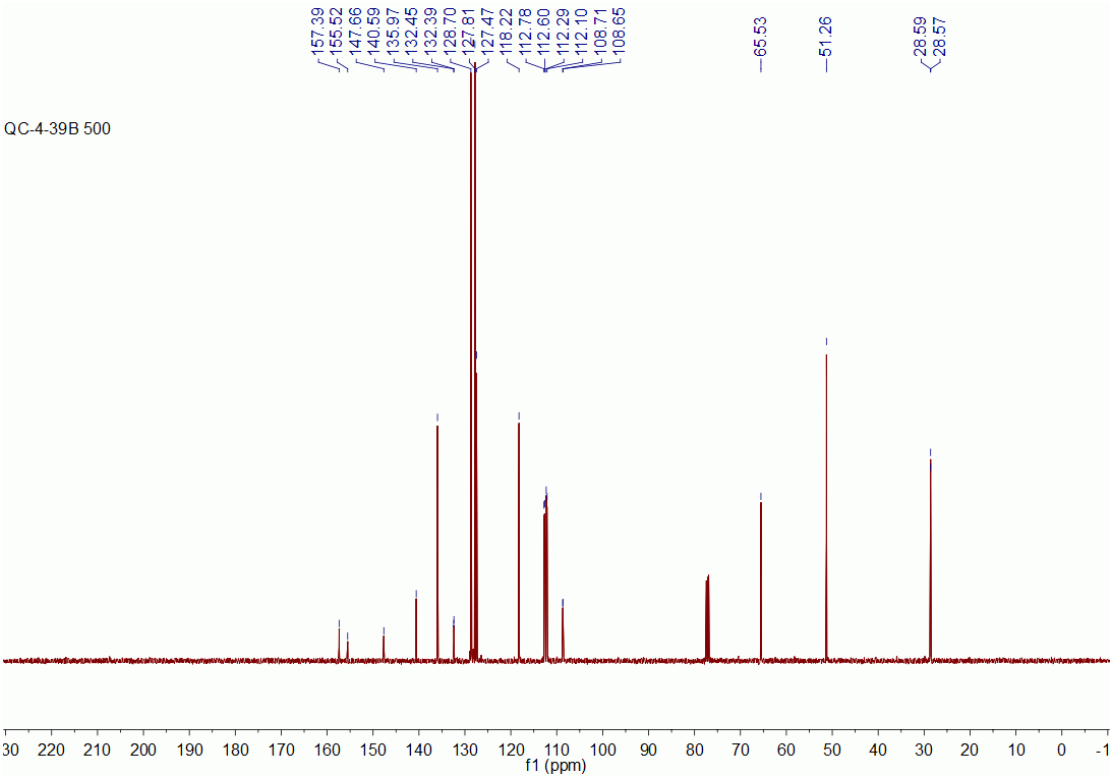
3ca ^{1}H NMR (500 MHz, $CDCl_3$)
^{13}C NMR (126 MHz, $CDCl_3$)

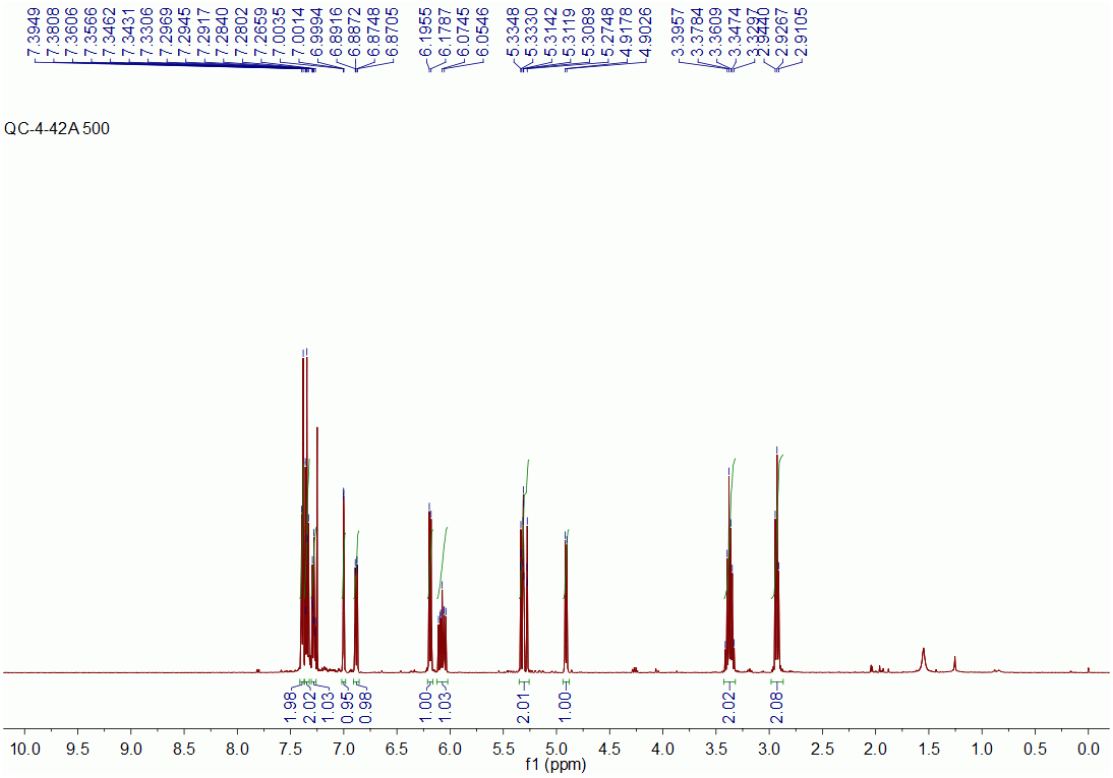


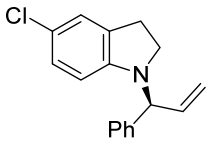




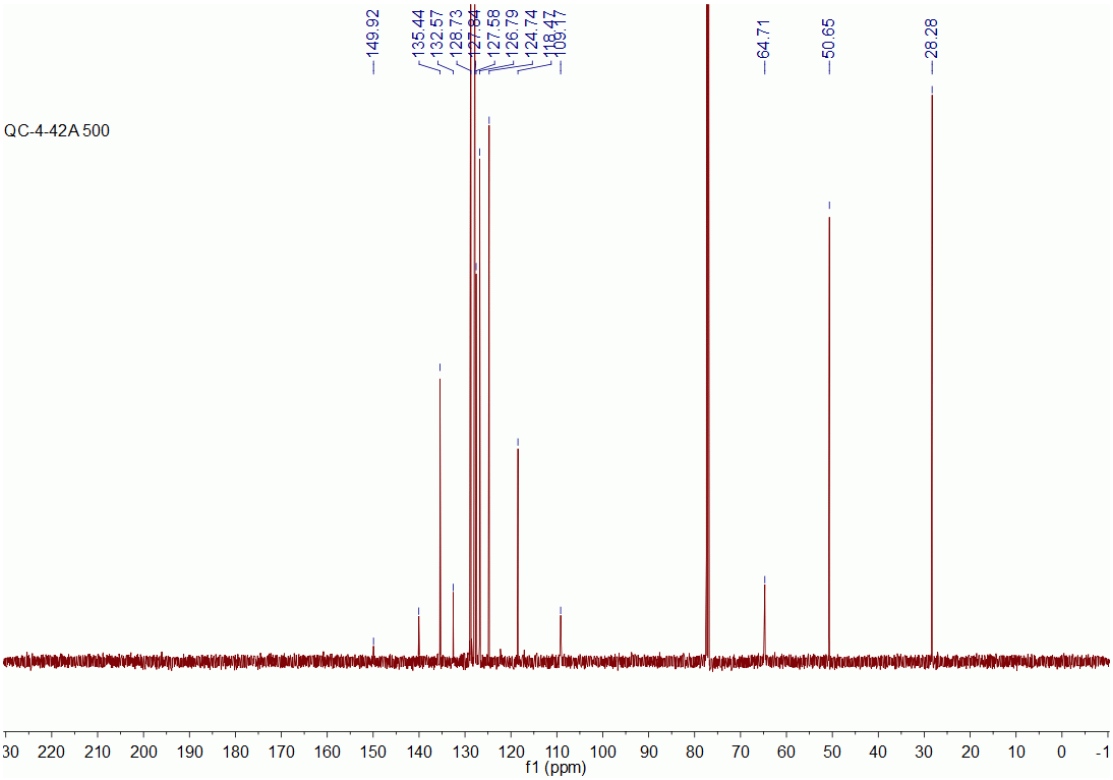
3da ^{1}H NMR (500 MHz, $CDCl_3$)
^{13}C NMR (126 MHz, $CDCl_3$)

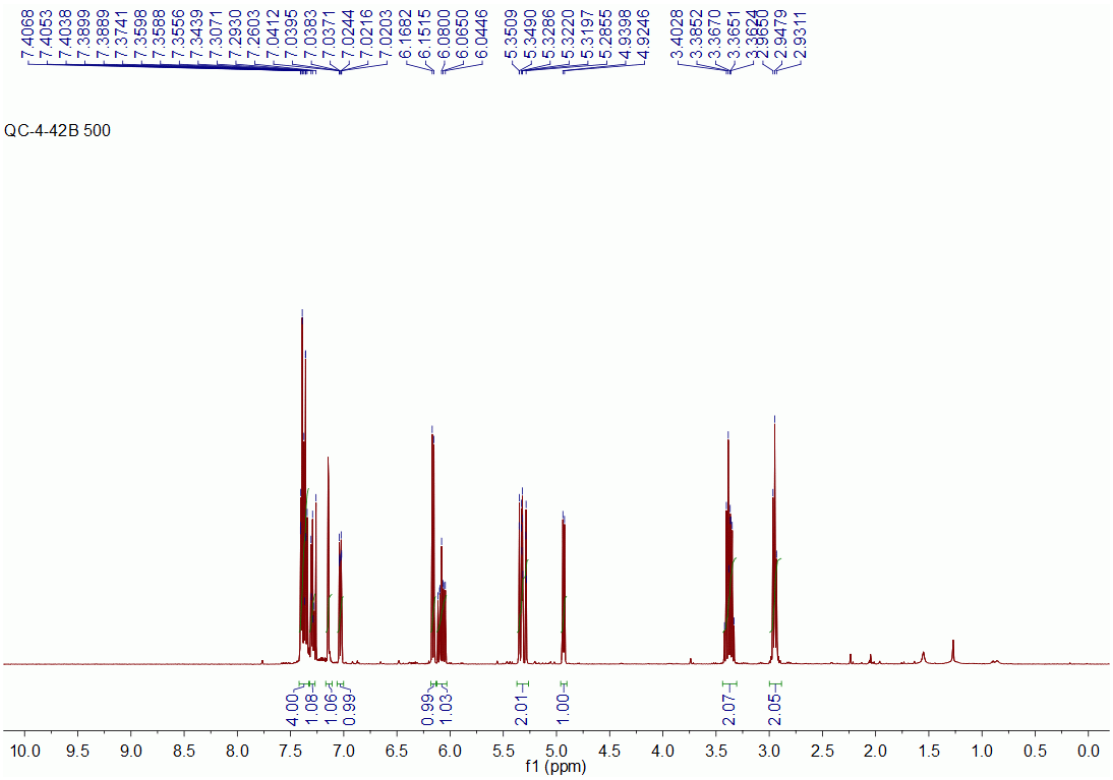


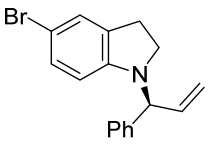




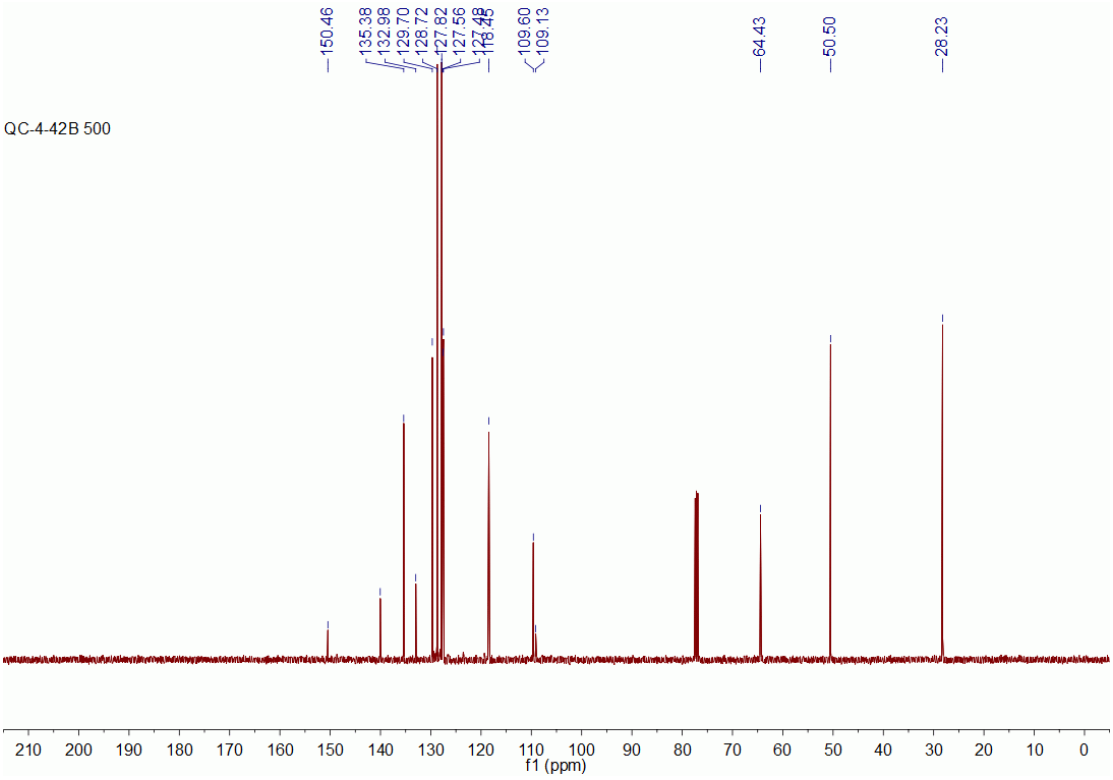
3ea ^{1}H NMR (500 MHz, $CDCl_3$)
^{13}C NMR (126 MHz, $CDCl_3$)

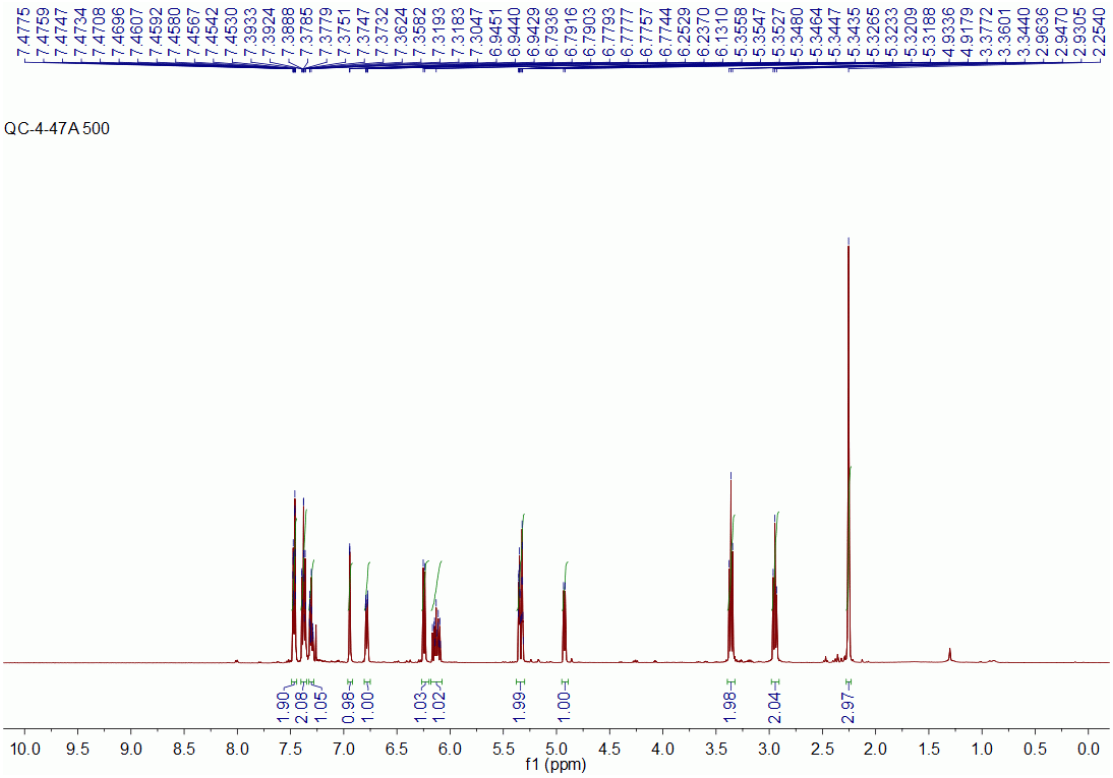


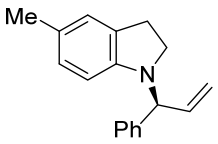




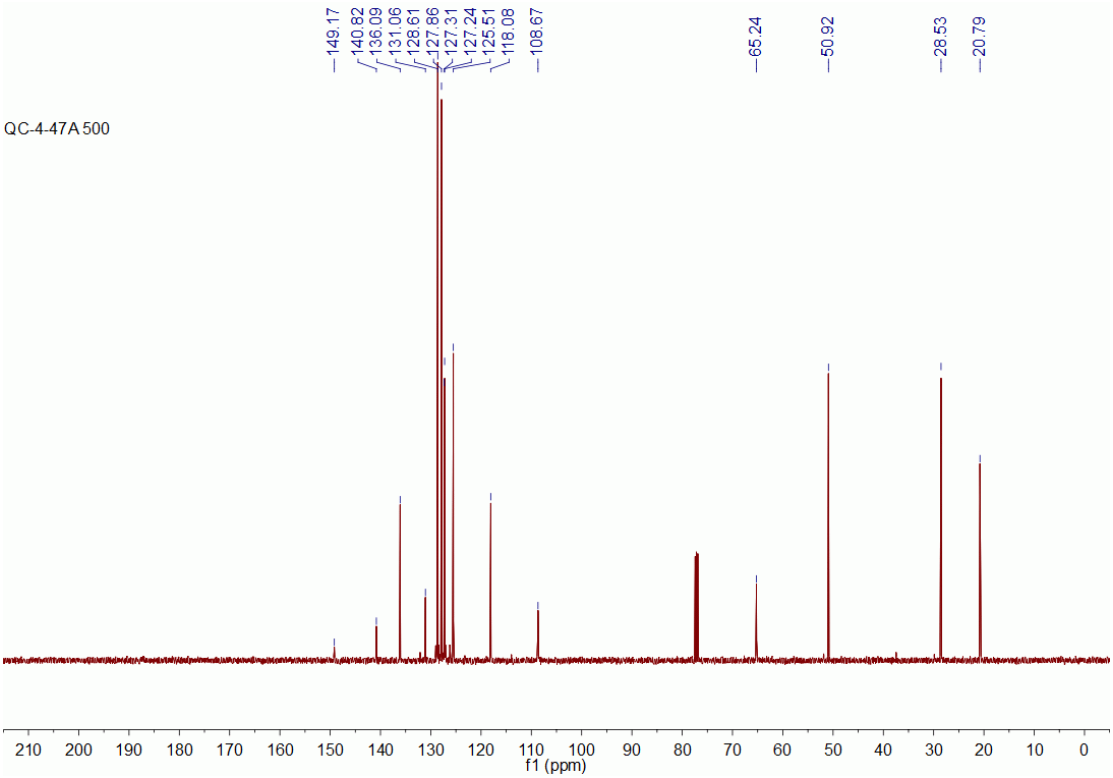
3fa ^{1}H NMR (500 MHz, $CDCl_3$)
^{13}C NMR (126 MHz, $CDCl_3$)

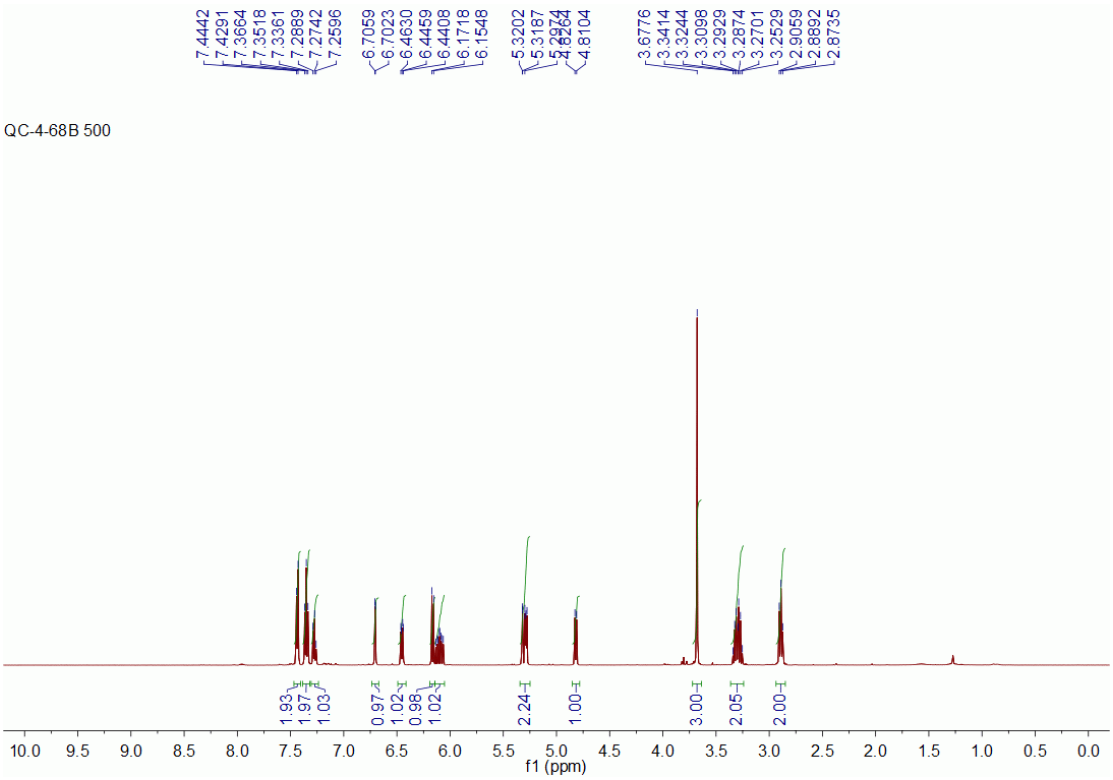


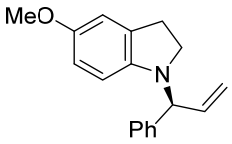




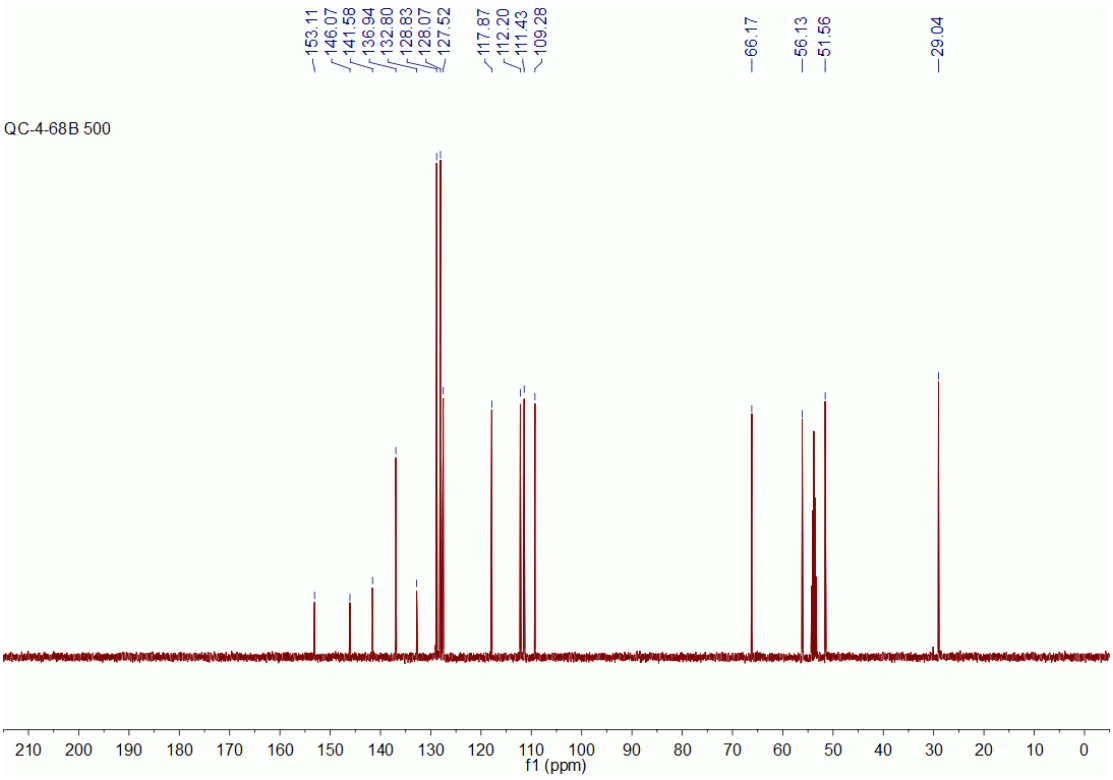
3ga ^{1}H NMR (500 MHz, $CDCl_3$)
^{13}C NMR (126 MHz, $CDCl_3$)

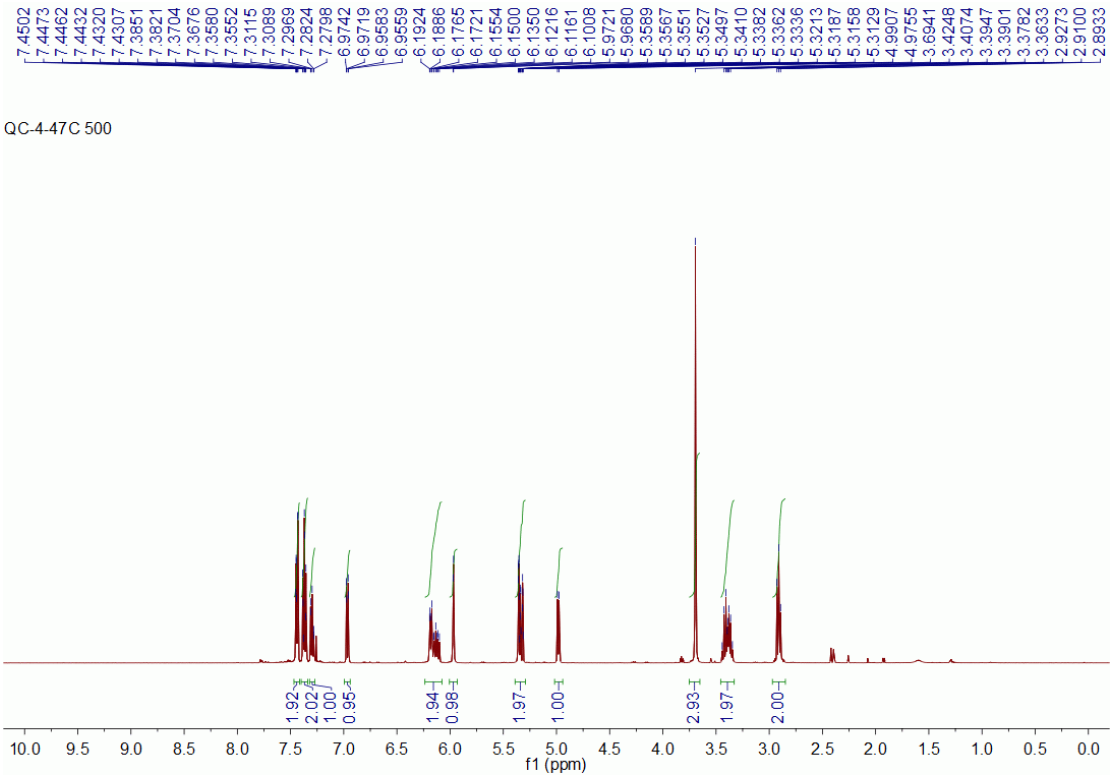


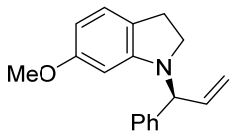




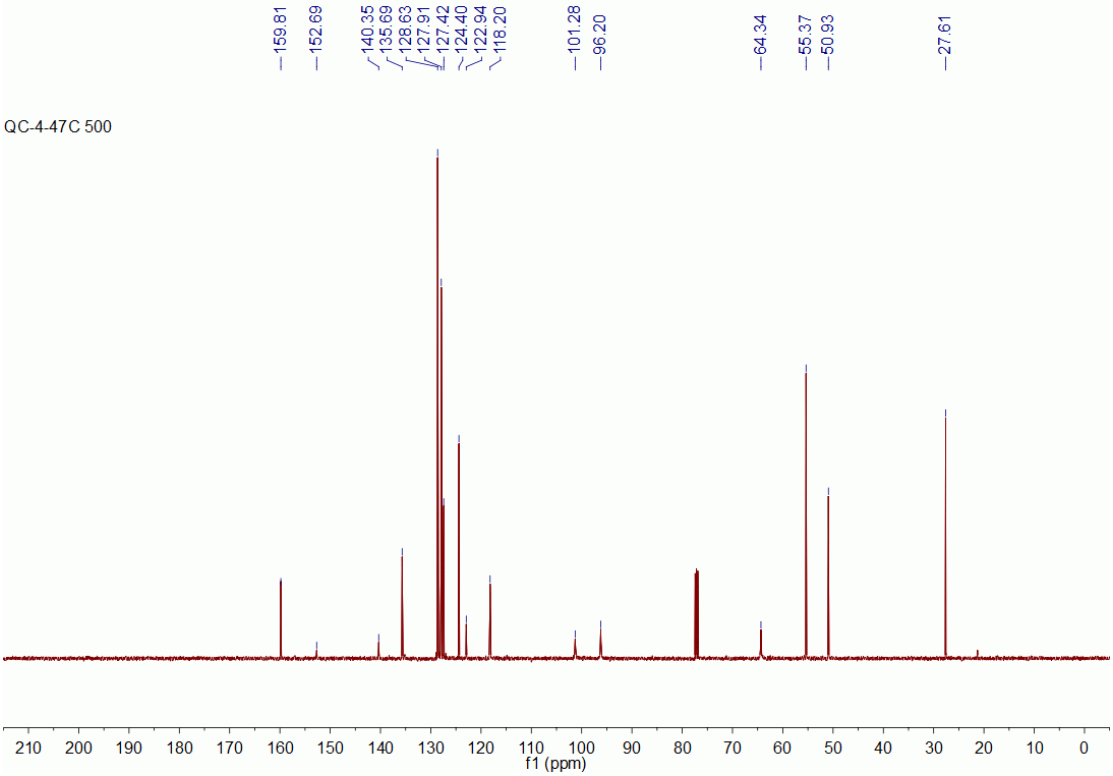
3ha ^{1}H NMR (500 MHz, $CDCl_3$)
^{13}C NMR (126 MHz, $CDCl_3$)

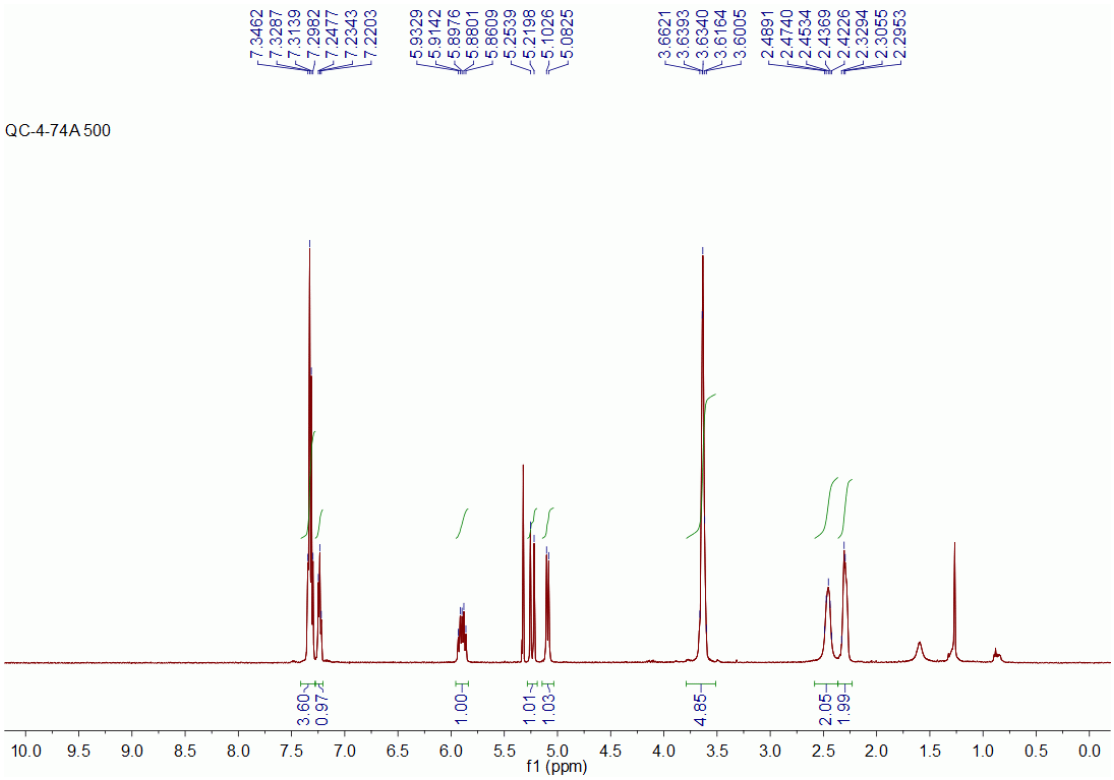


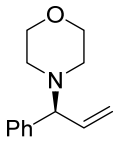




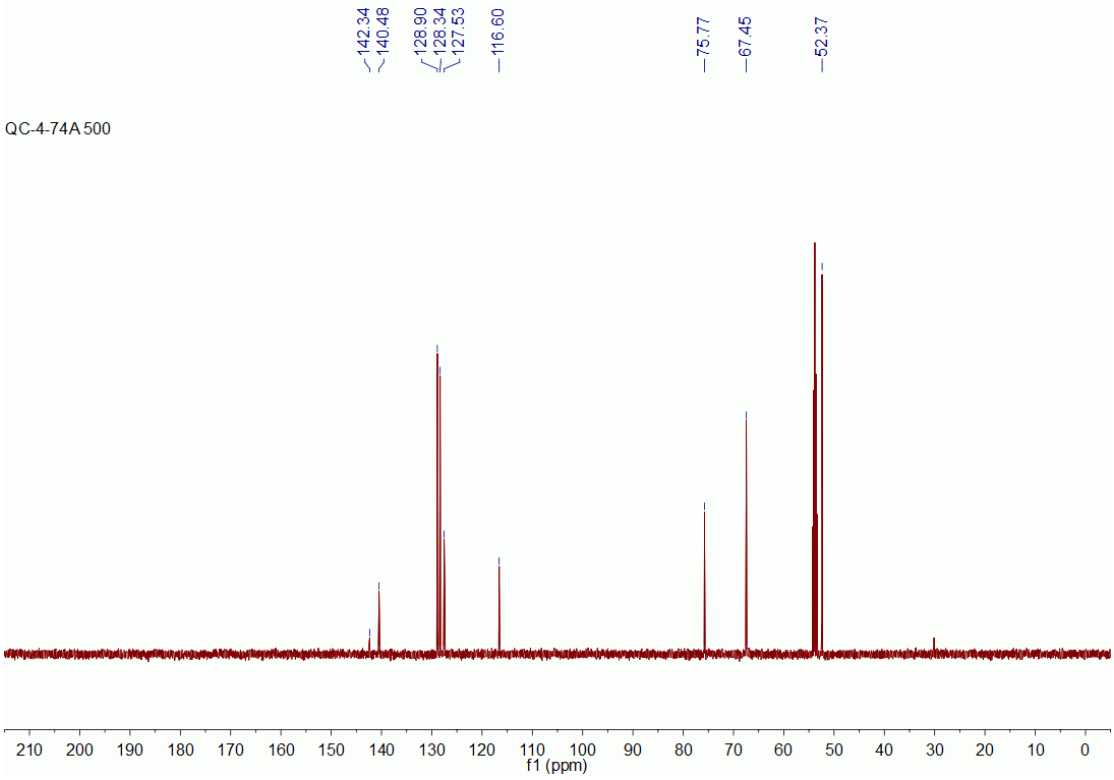
3ia ^{1}H NMR (500 MHz, $CDCl_3$)
^{13}C NMR (126 MHz, $CDCl_3$)

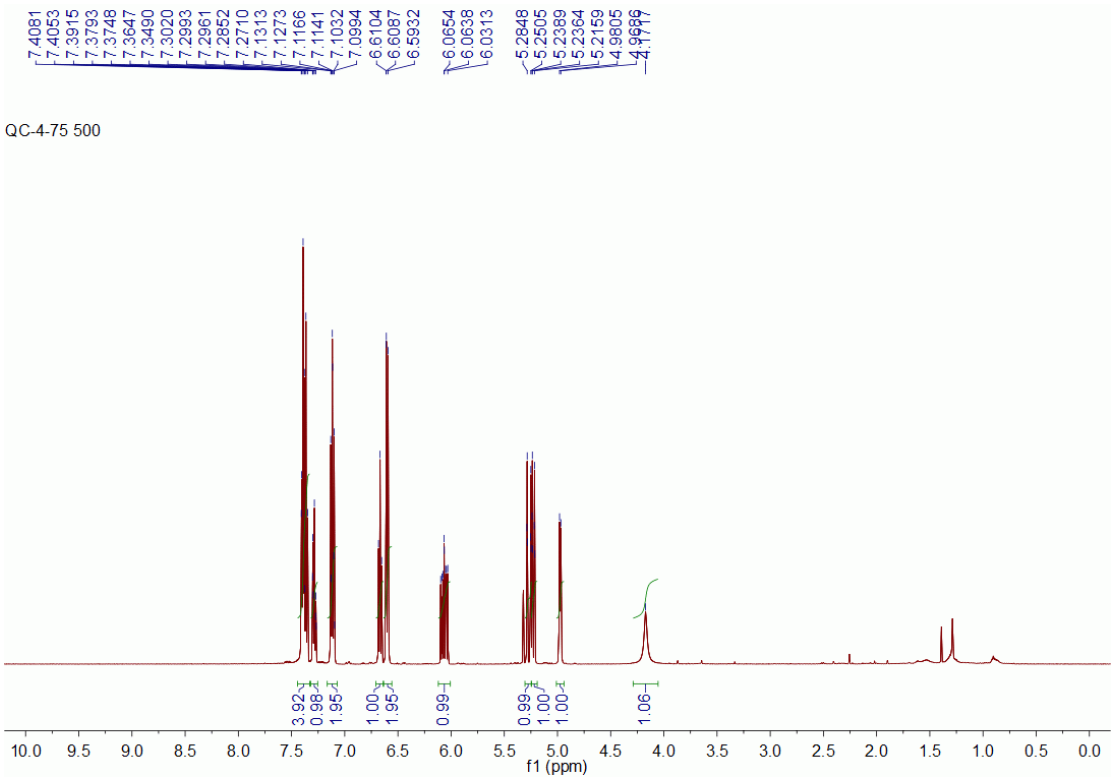


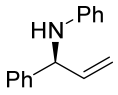




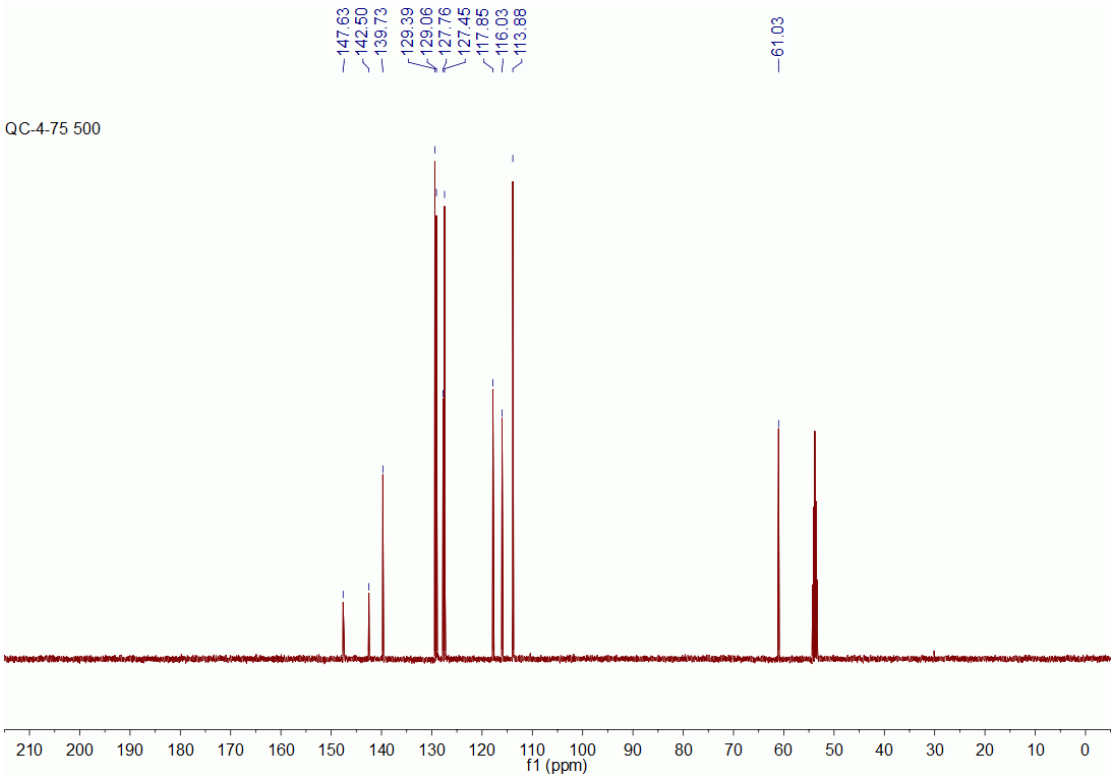
3ja ^{1}H NMR (500 MHz, CD_2Cl_2)
^{13}C NMR (126 MHz, CD_2Cl_2)

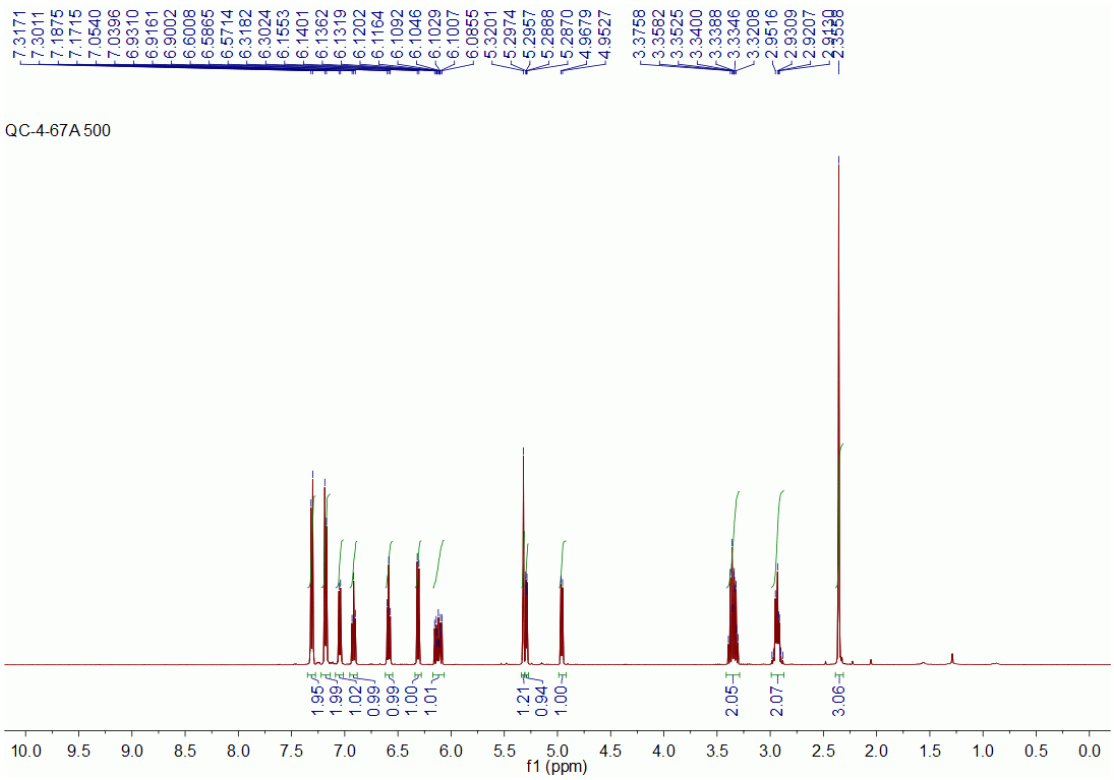


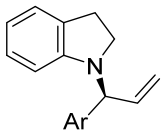




3ka ^{1}H NMR (500 MHz, CD_2Cl_2)
^{13}C NMR (126 MHz, CD_2Cl_2)

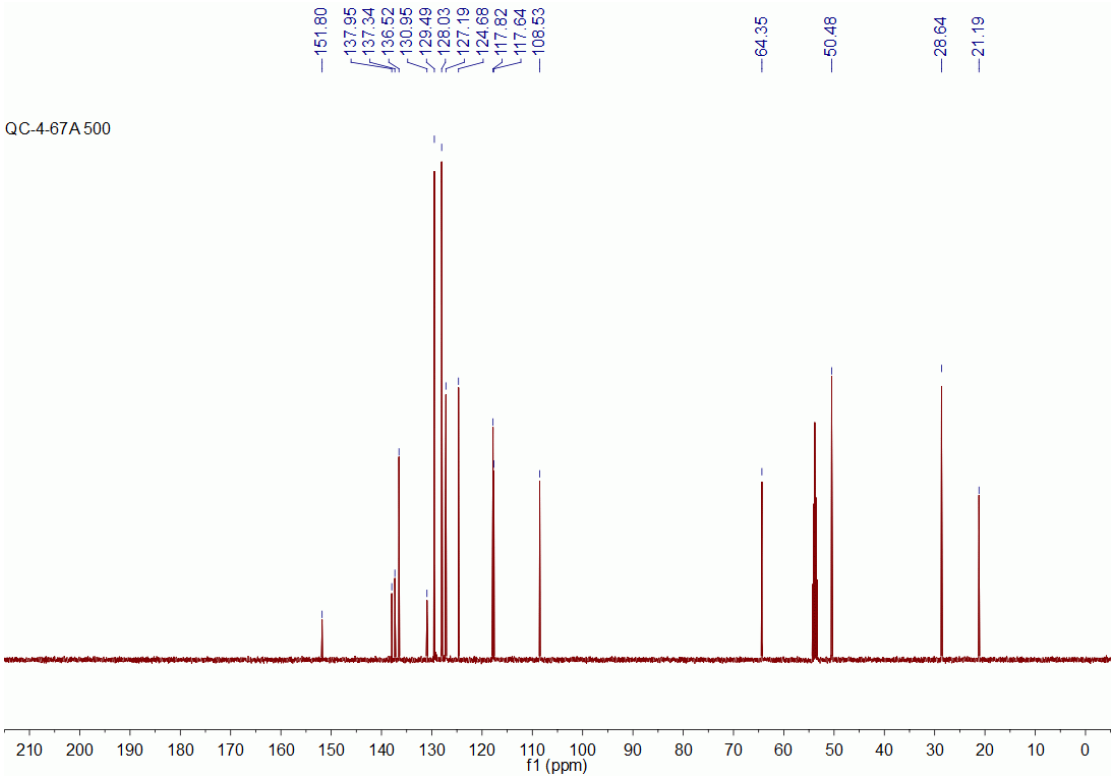


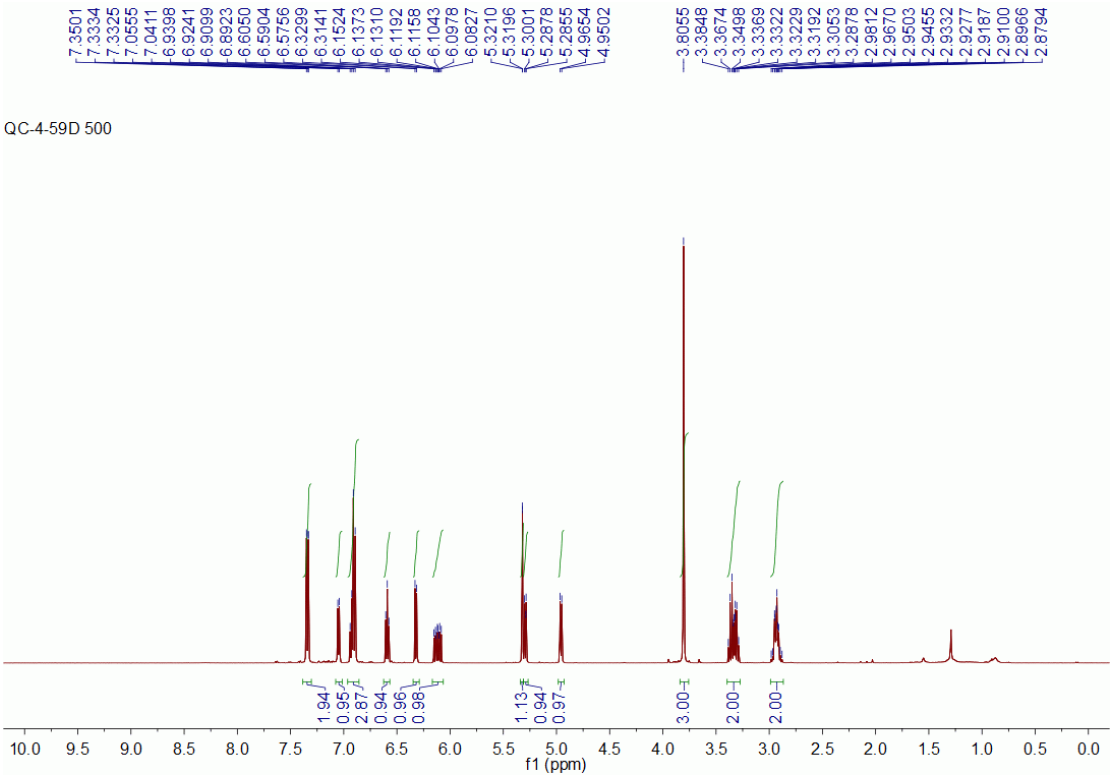


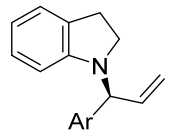


Ar = 4-MeC_6H_4

3ab ^{1}H NMR (500 MHz, CD_2Cl_2)
^{13}C NMR (126 MHz, CD_2Cl_2)

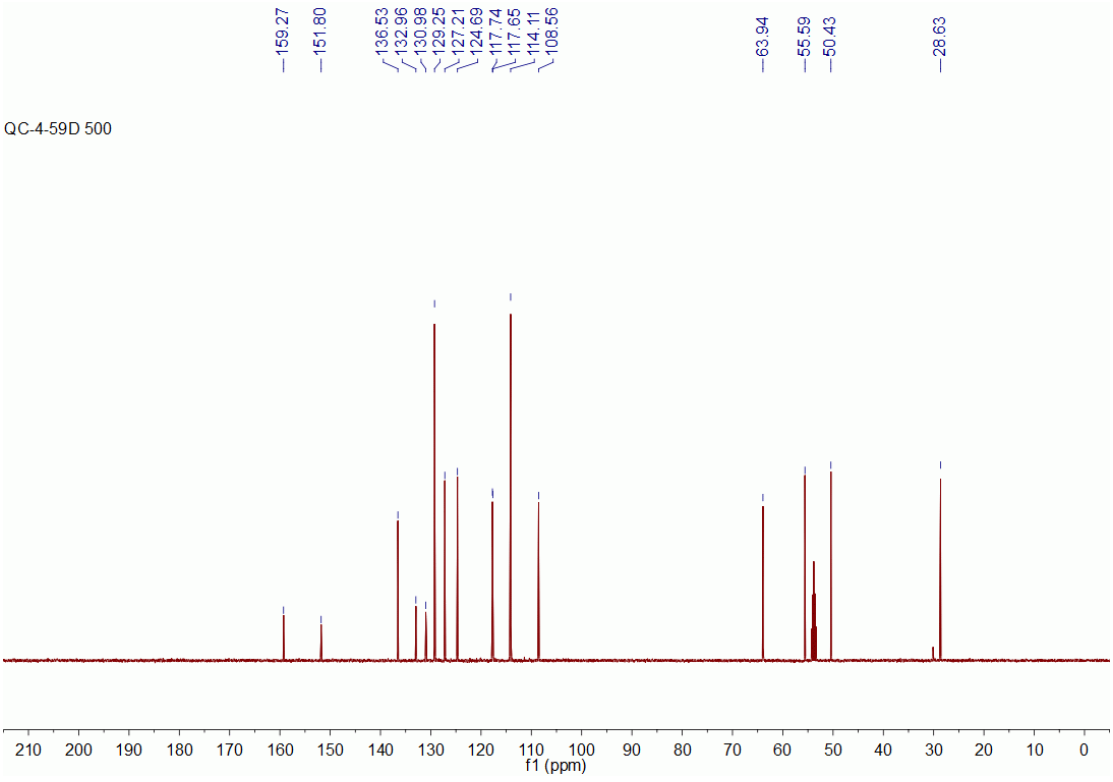


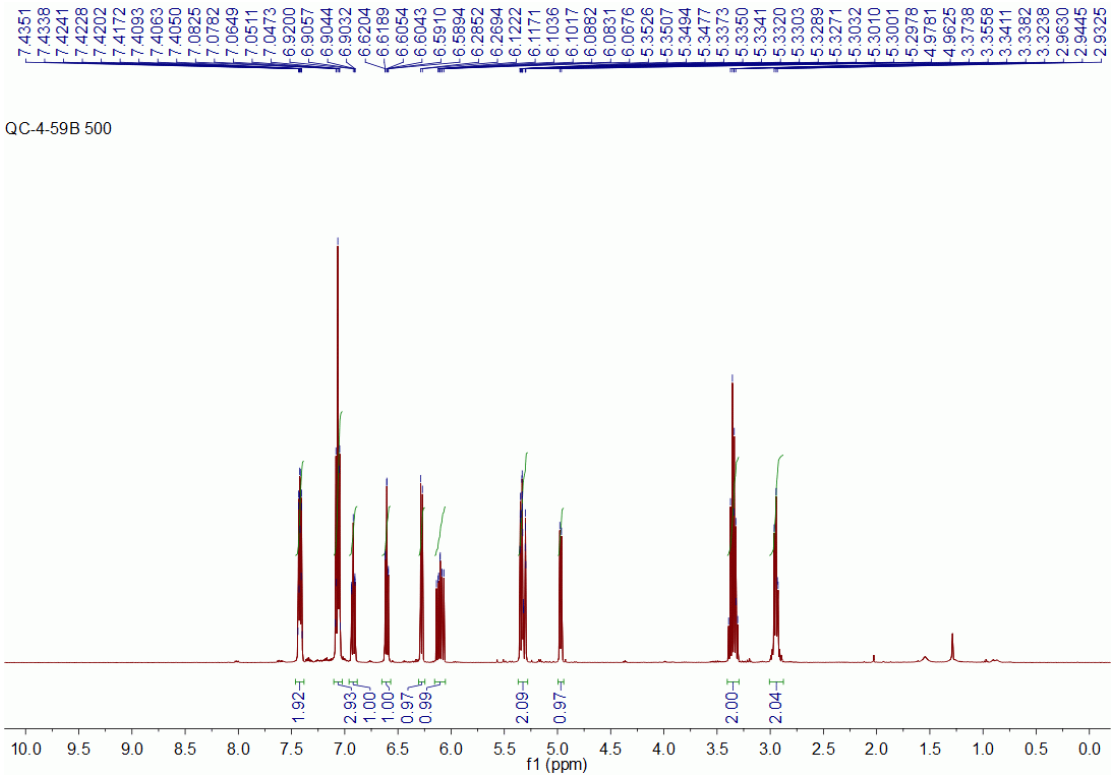


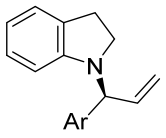


Ar = 4-MeOC$_6$H$_4$

3ac ^{1}H NMR (500 MHz, CD_2Cl_2)
^{13}C NMR (126 MHz, CD_2Cl_2)

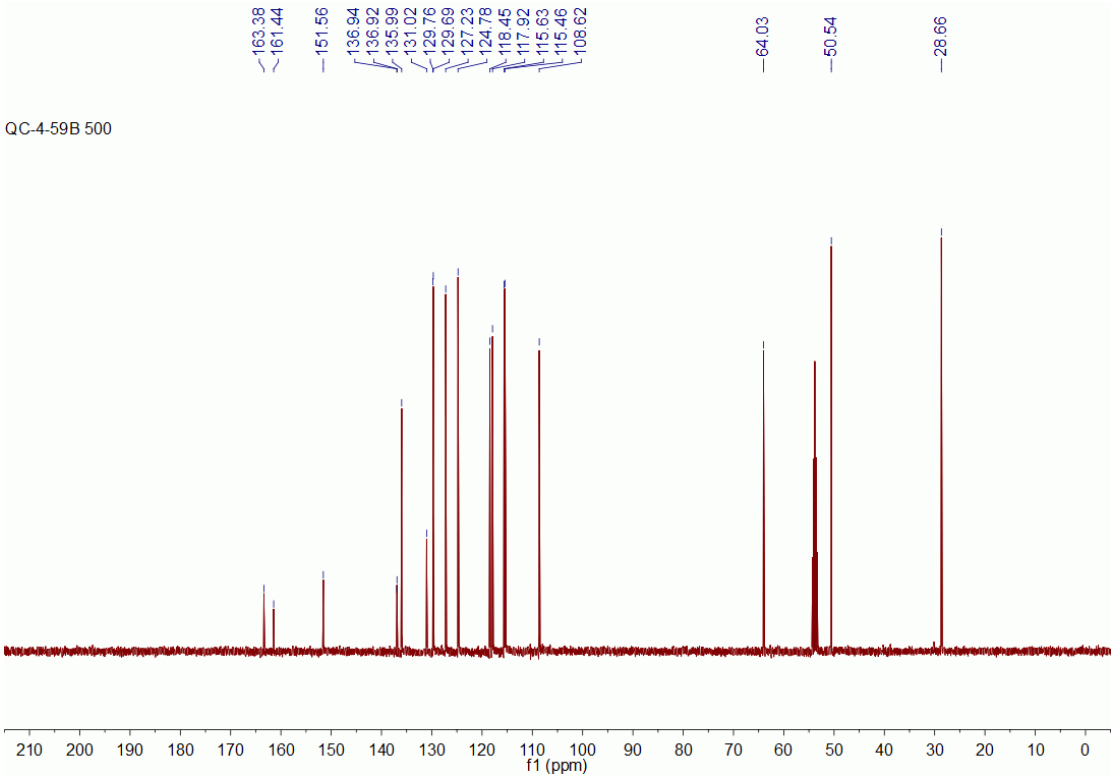


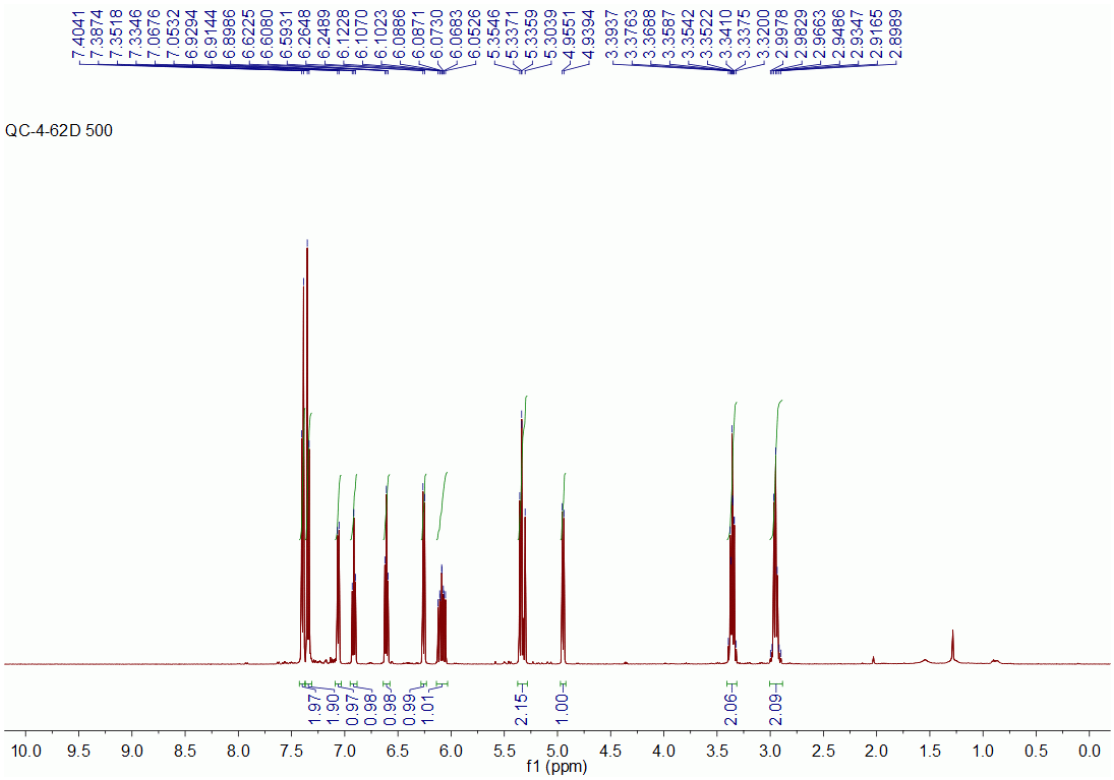


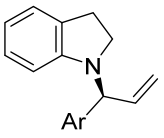


Ar = 4-FC_6H_4

3ad ^{1}H NMR (500 MHz, CD_2Cl_2)
^{13}C NMR (126 MHz, CD_2Cl_2)

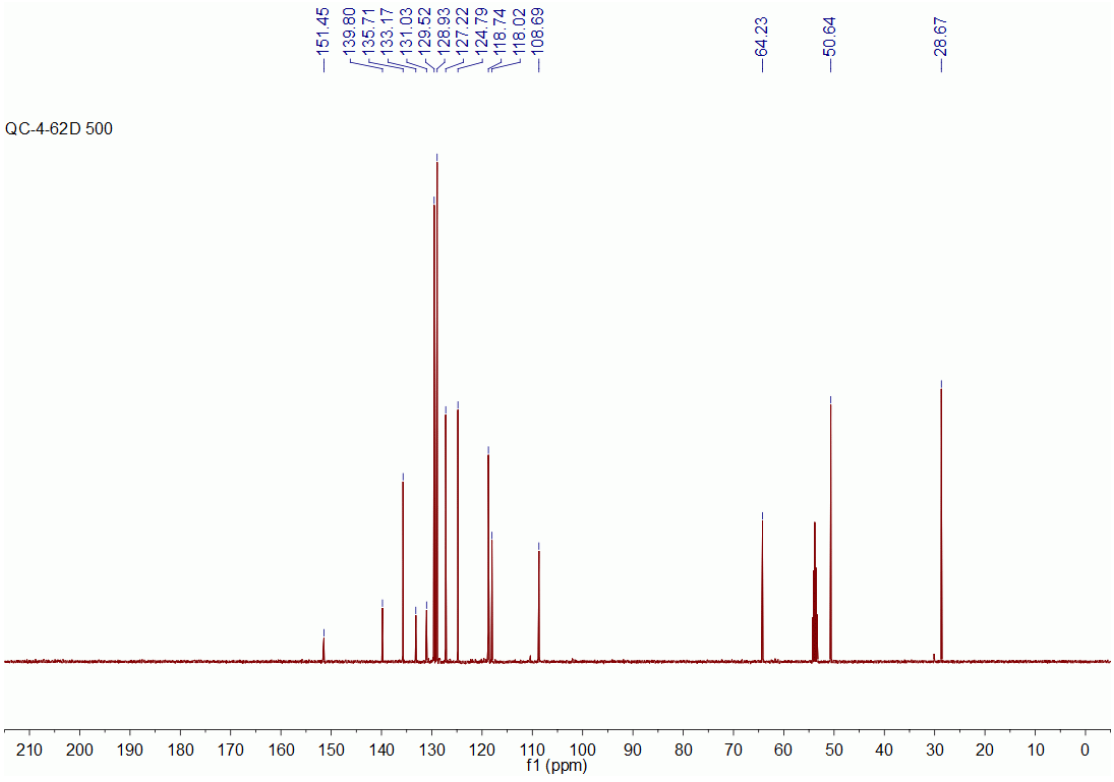


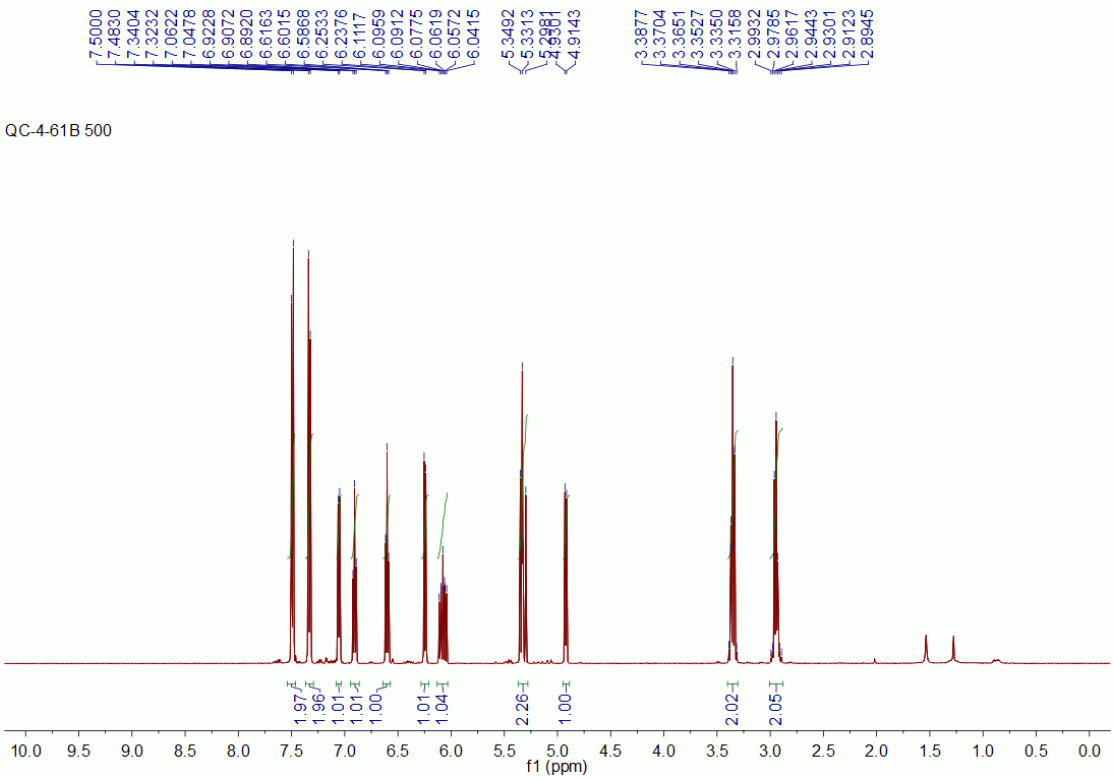


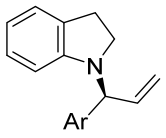


Ar = 4-ClC$_6$H$_4$

3ae ^{1}H NMR (500 MHz, CD_2Cl_2)
^{13}C NMR (126 MHz, CD_2Cl_2)

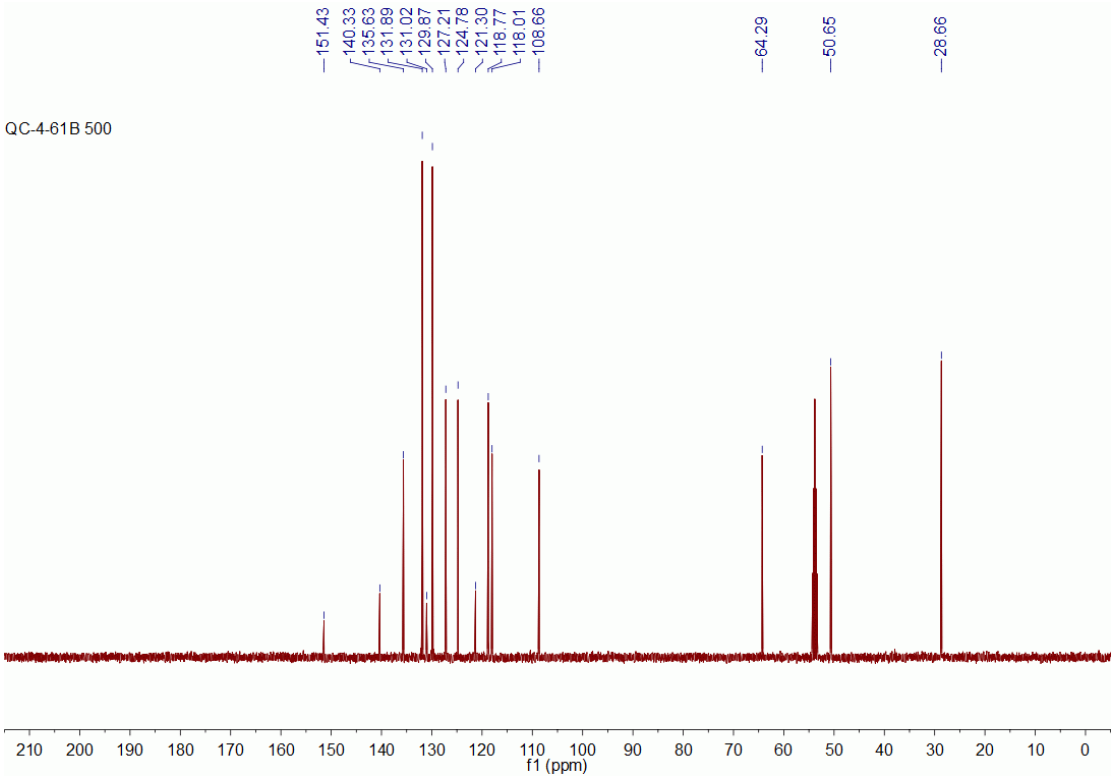


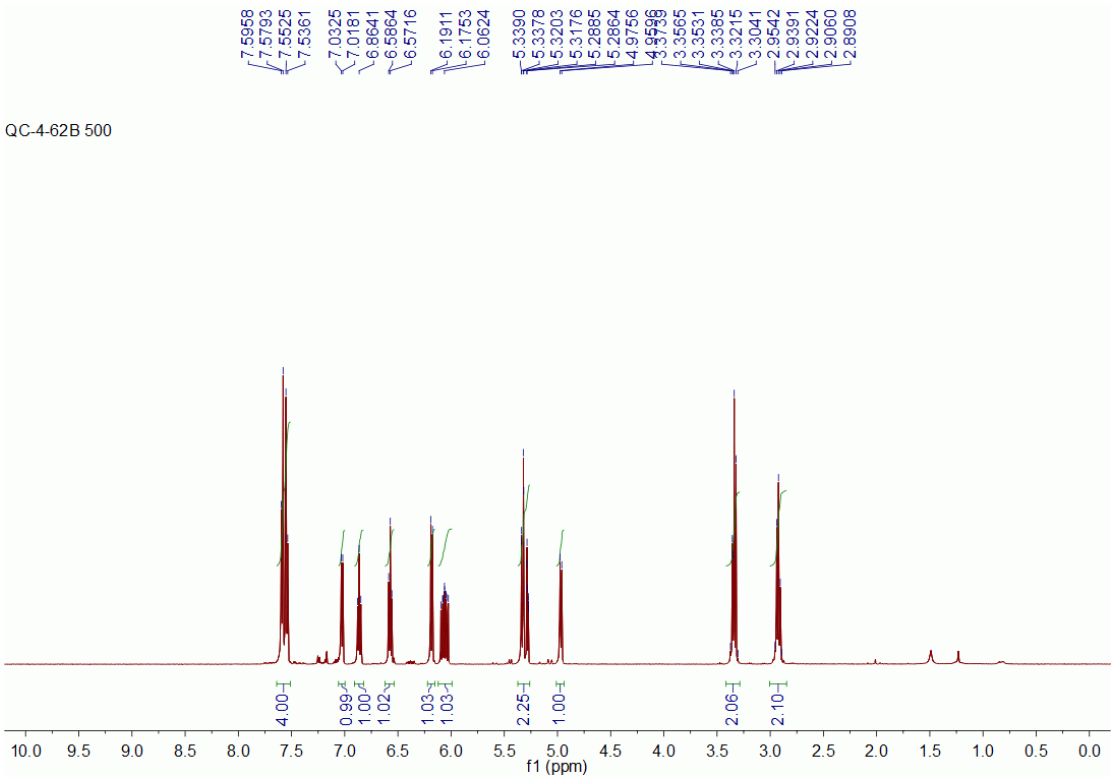


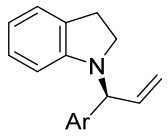


Ar = 4-BrC_6H_4

3af ^{1}H NMR (500 MHz, CD_2Cl_2)
^{13}C NMR (126 MHz, CD_2Cl_2)

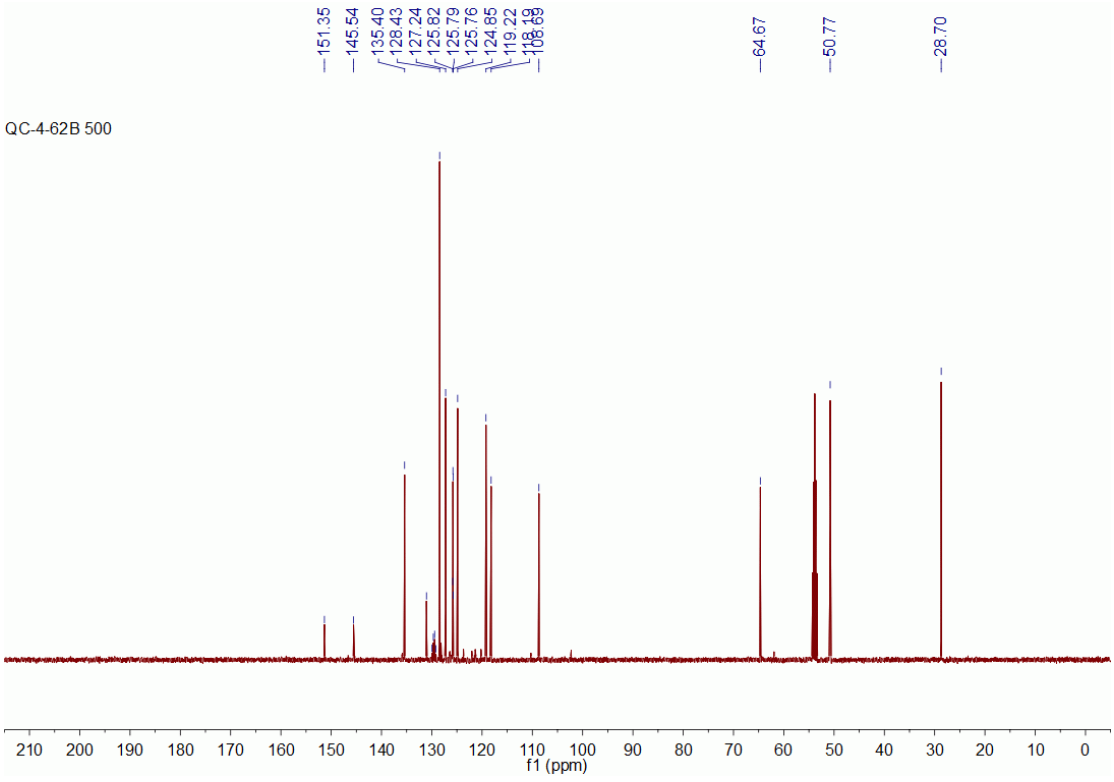


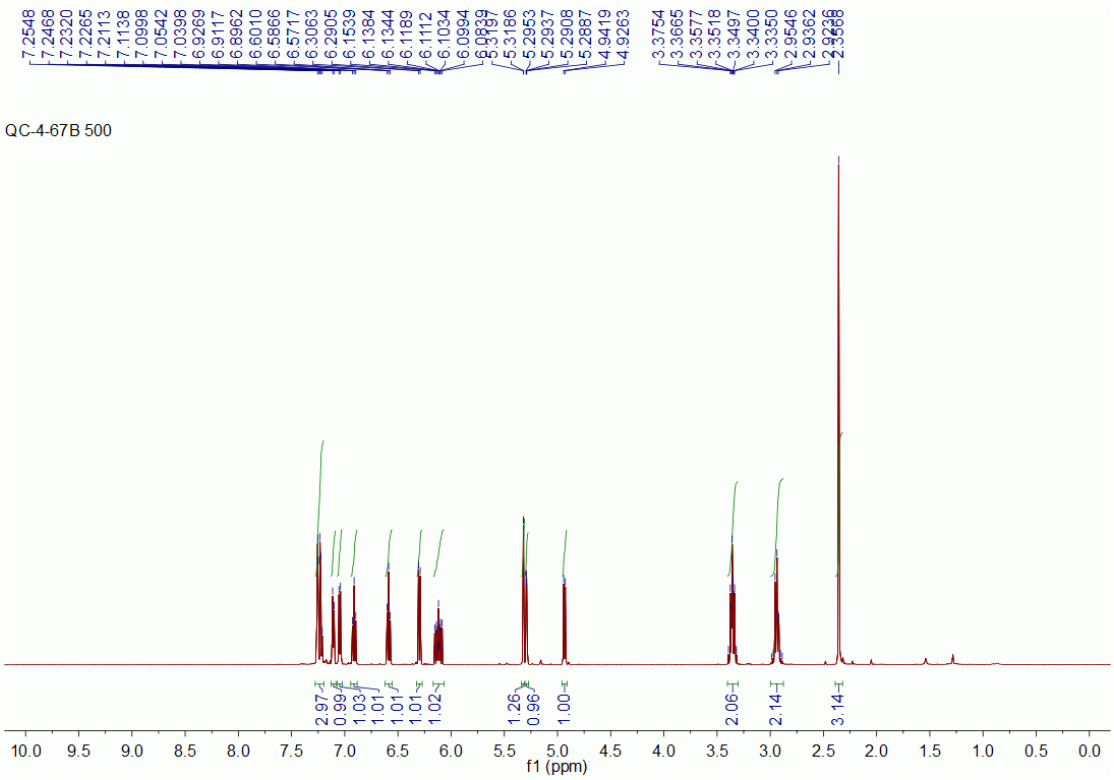


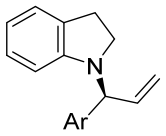


Ar = 4-$CF_3C_6H_4$

3ag ^{1}H NMR (500 MHz, CD_2Cl_2)
^{13}C NMR (126 MHz, CD_2Cl_2)

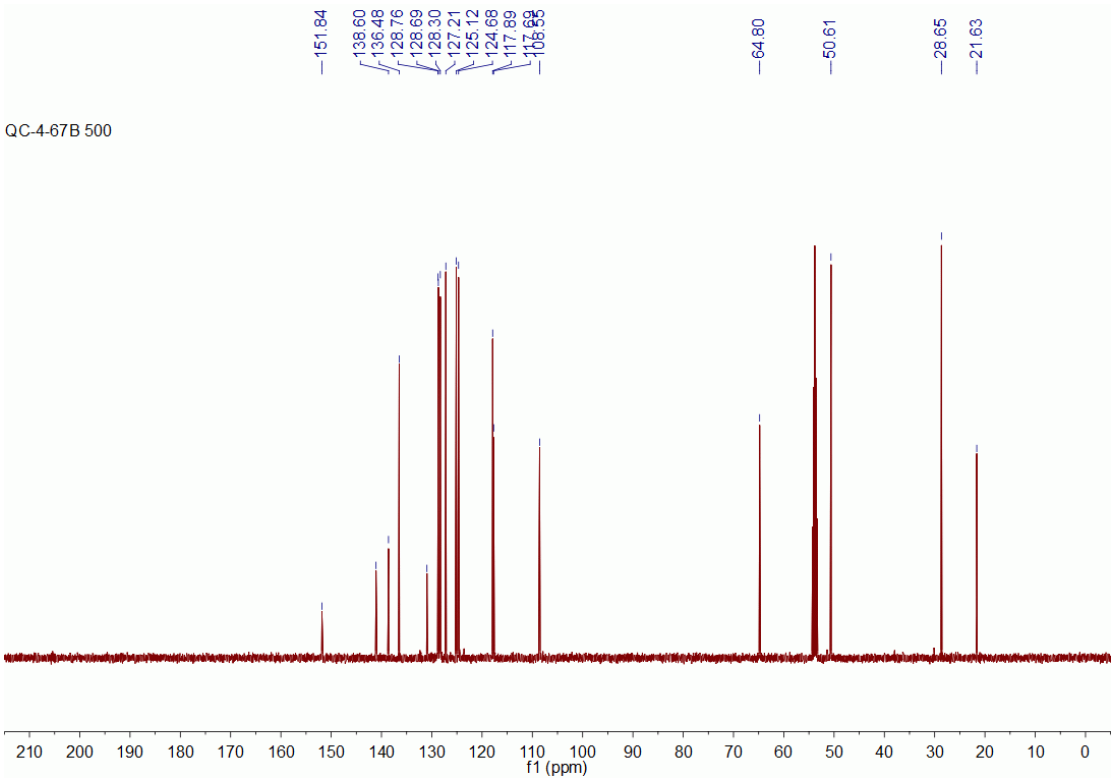


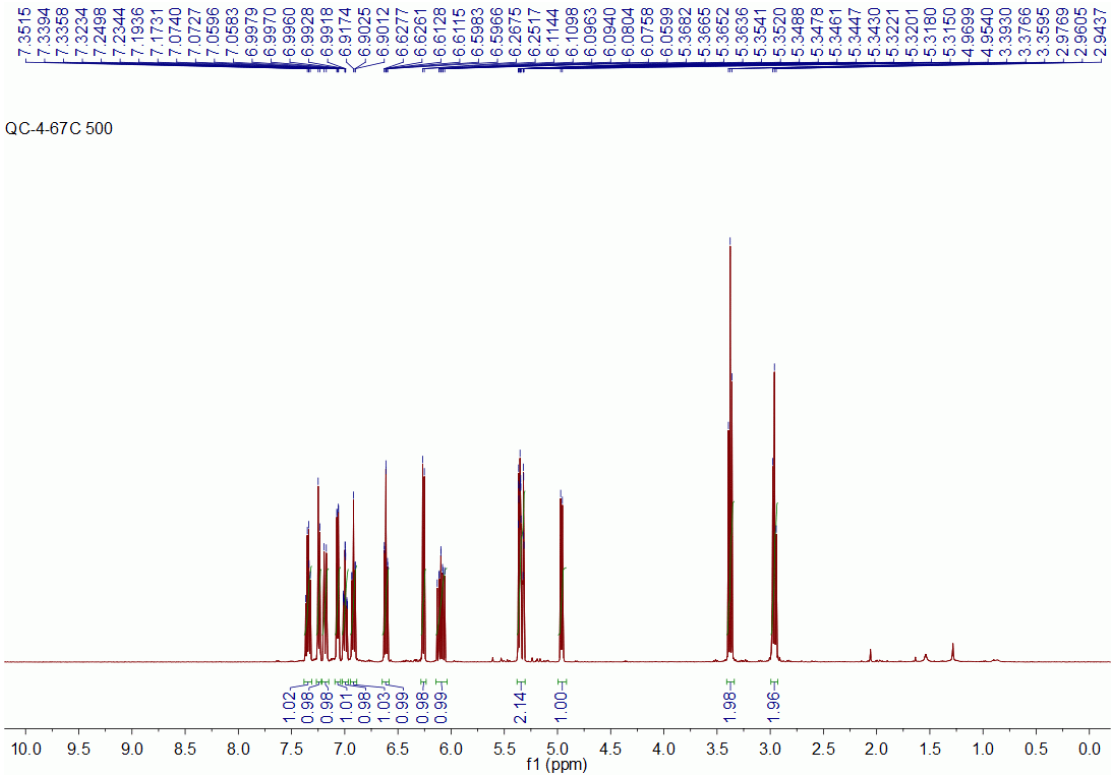


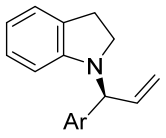


Ar = 3-MeC_6H_4

3ah ^{1}H NMR (500 MHz, CD_2Cl_2)
^{13}C NMR (126 MHz, CD_2Cl_2)

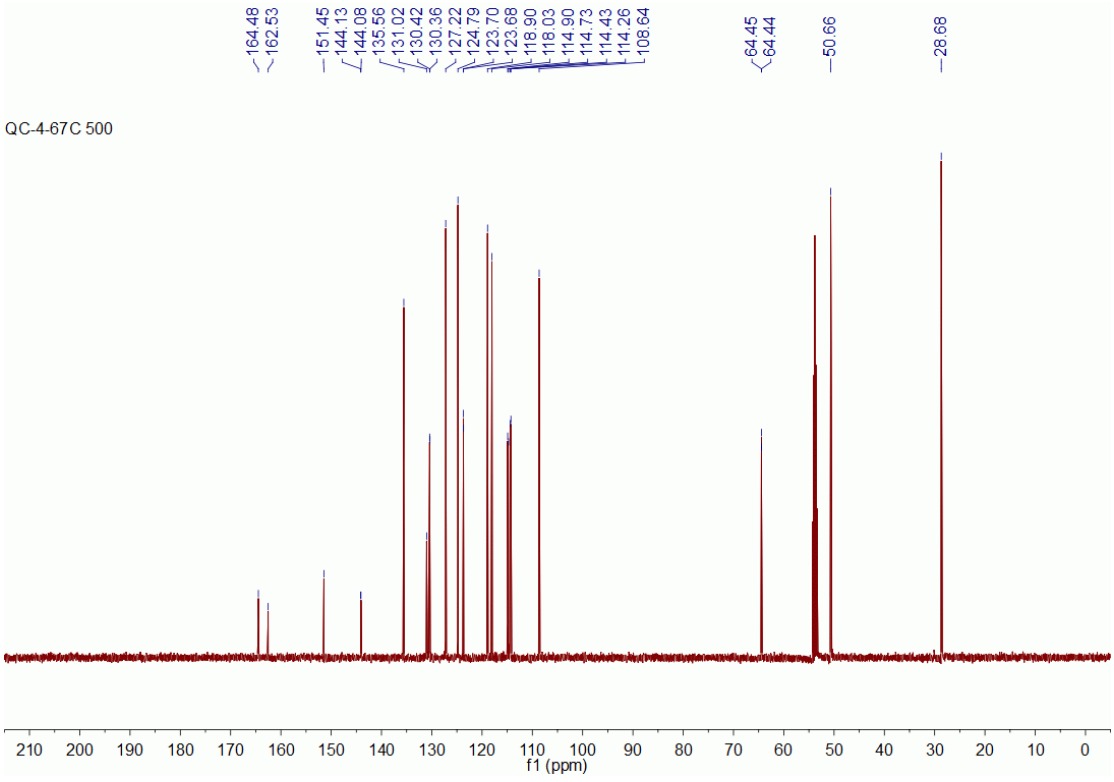


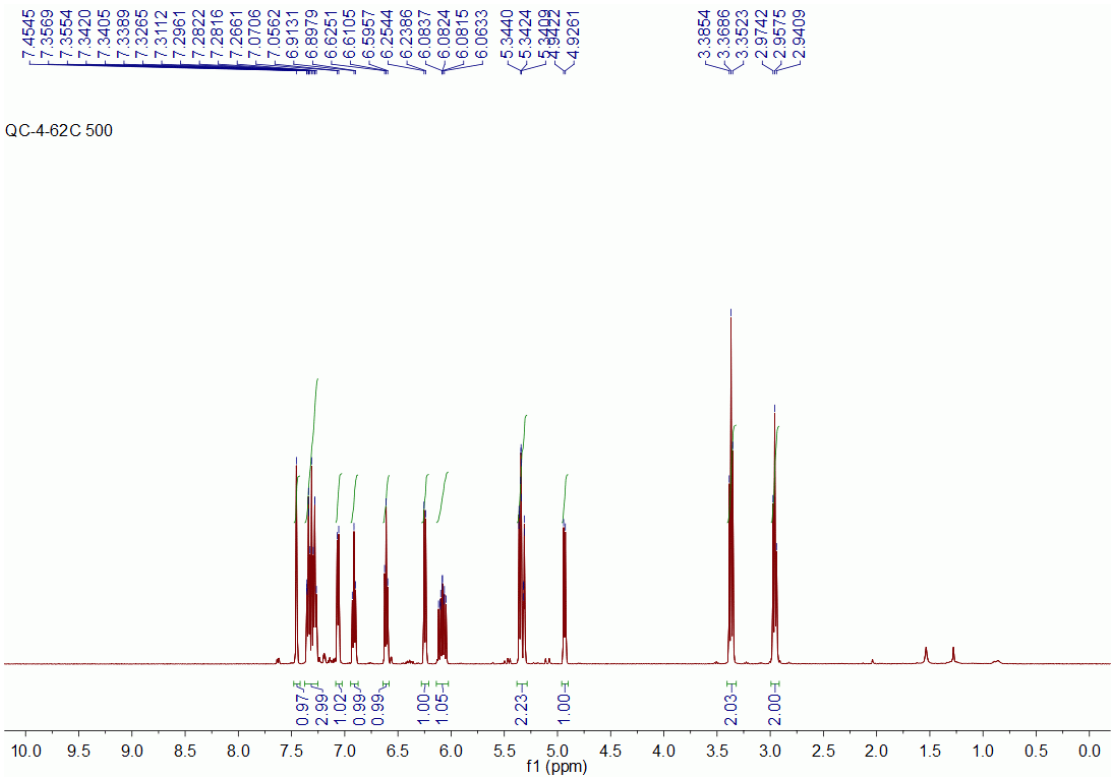


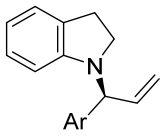


Ar = 3-FC_6H_4

3ai ^{1}H NMR (500 MHz, CD_2Cl_2)
^{13}C NMR (126 MHz, CD_2Cl_2)

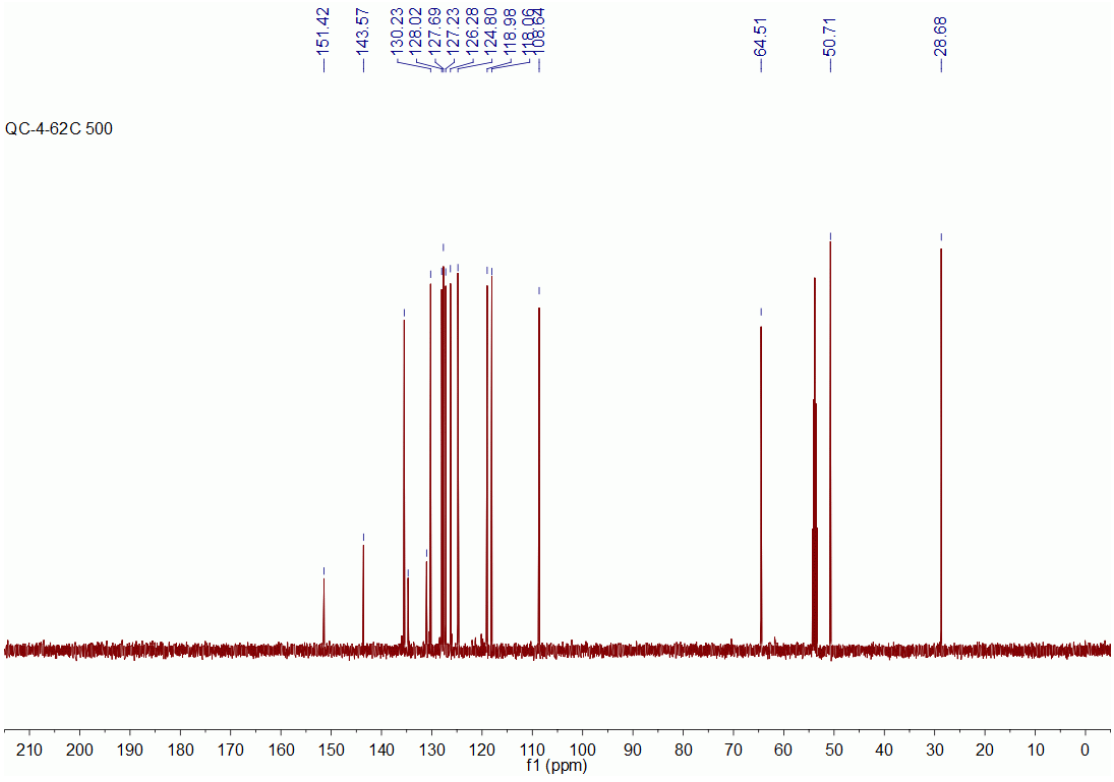


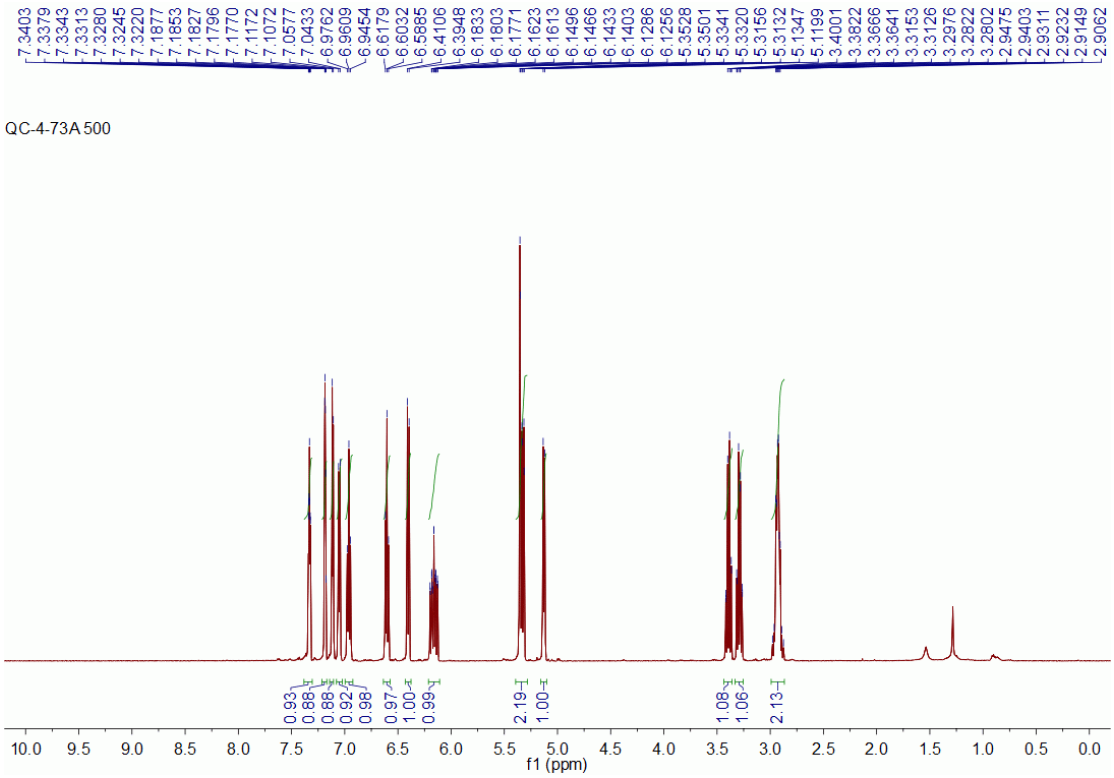


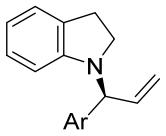


Ar = 3-ClC$_6$H$_4$

3aj ^{1}H NMR (500 MHz, CD_2Cl_2)
^{13}C NMR (126 MHz, CD_2Cl_2)

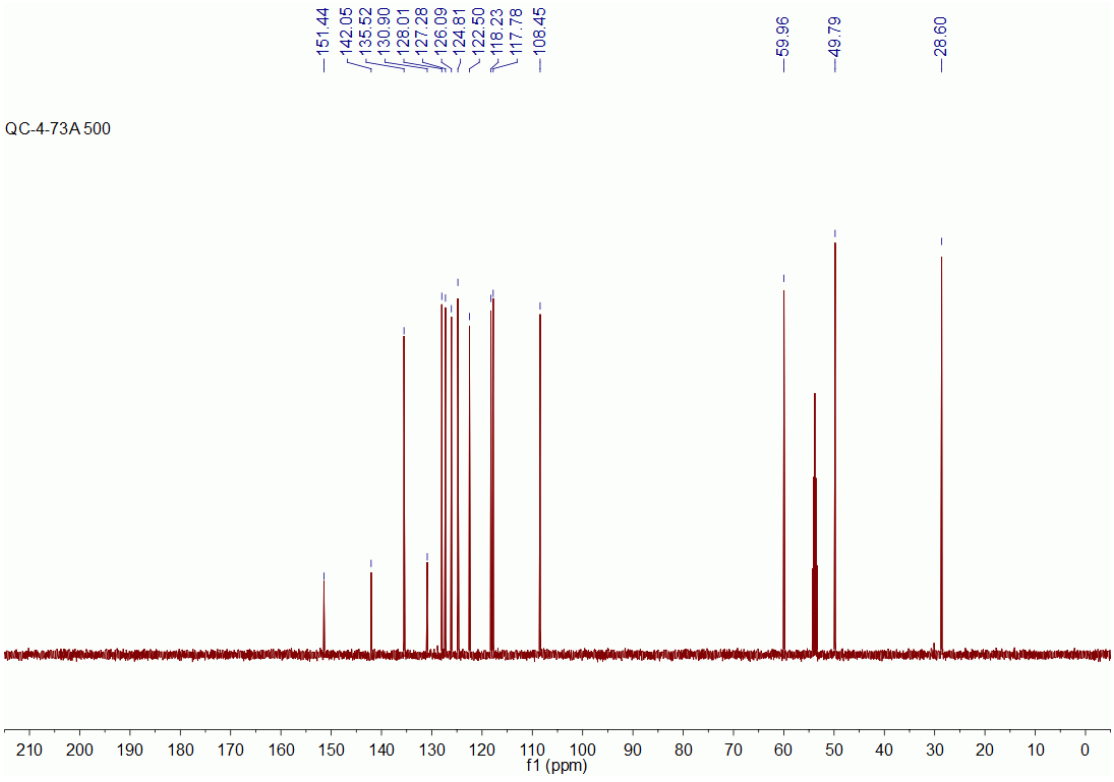


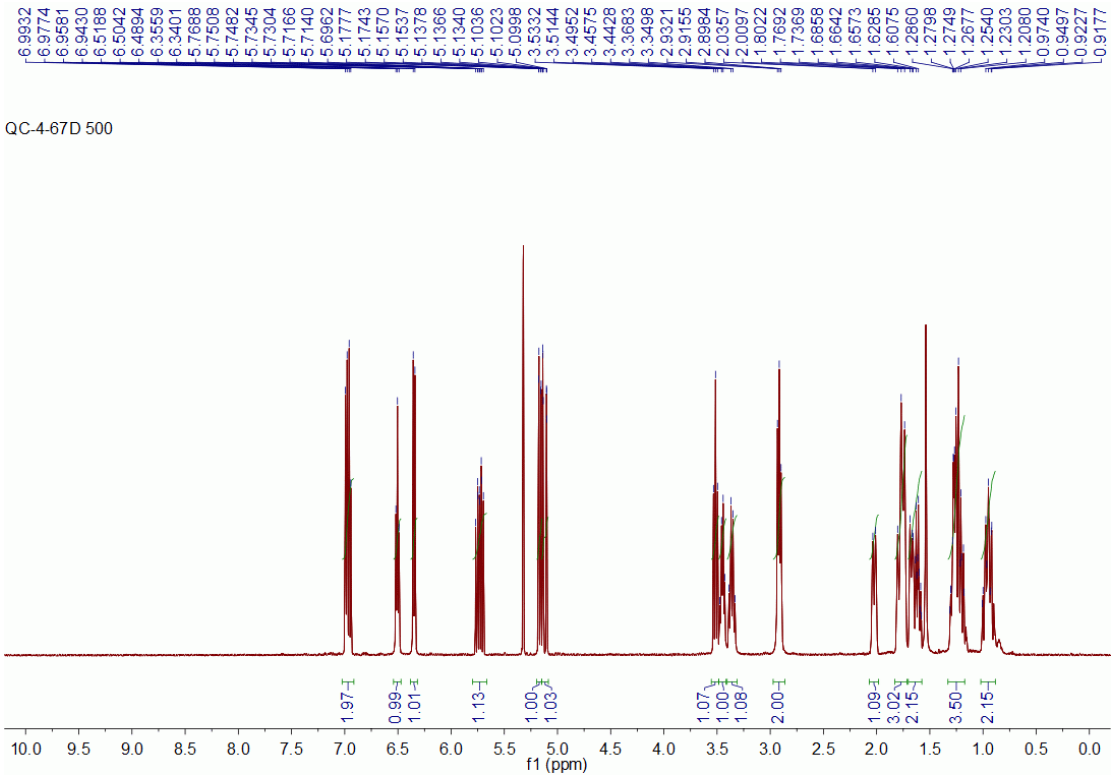


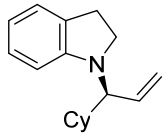


Ar = 3-thienyl

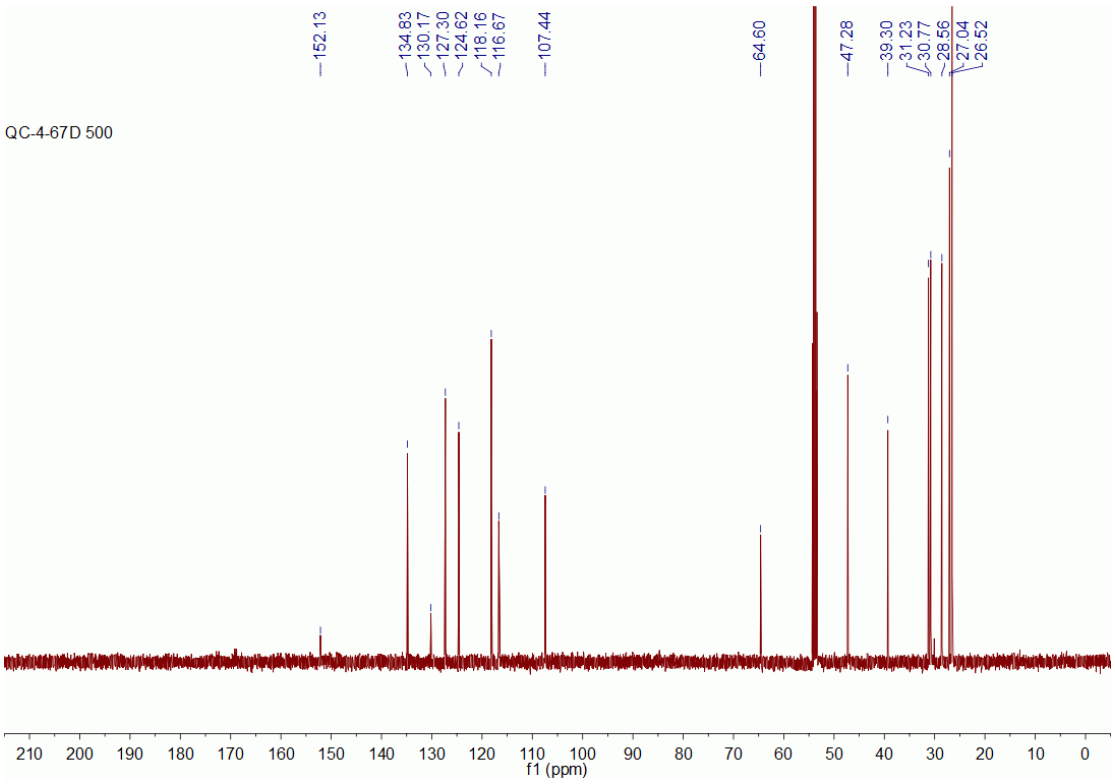
3ak ^{1}H NMR (500 MHz, CD_2Cl_2)
^{13}C NMR (126 MHz, CD_2Cl_2)

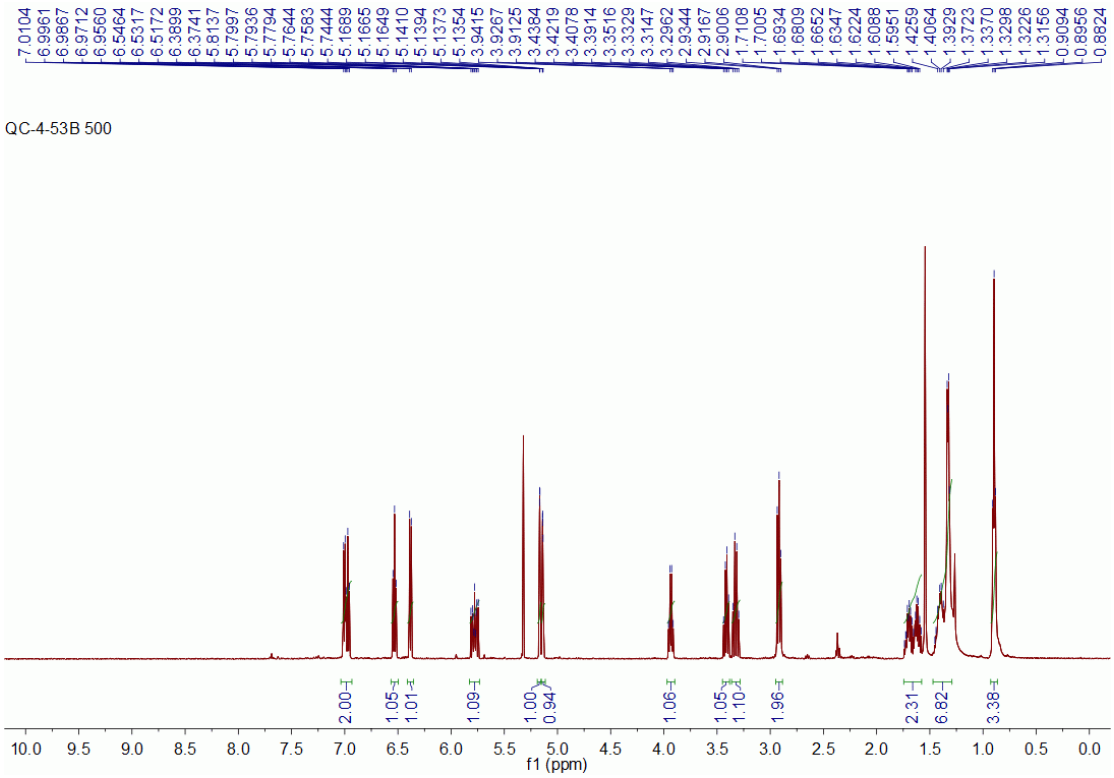


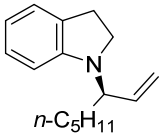




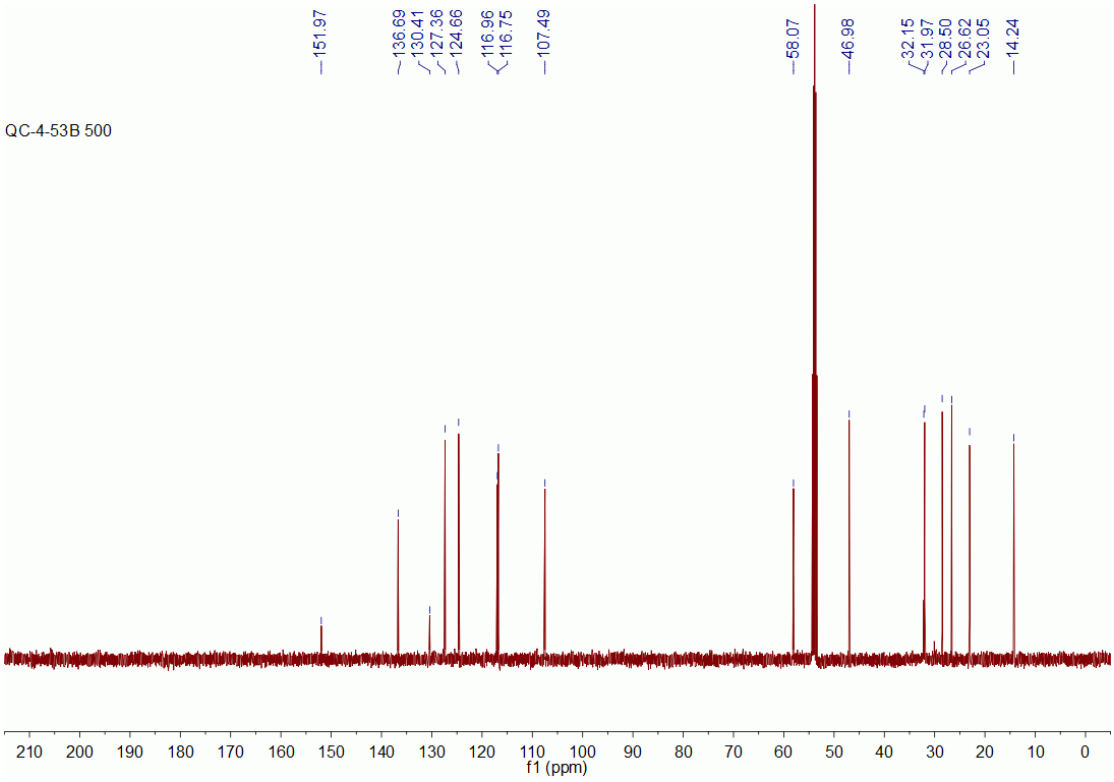
3al ^{1}H NMR (500 MHz, CD_2Cl_2)
^{13}C NMR (126 MHz, CD_2Cl_2)

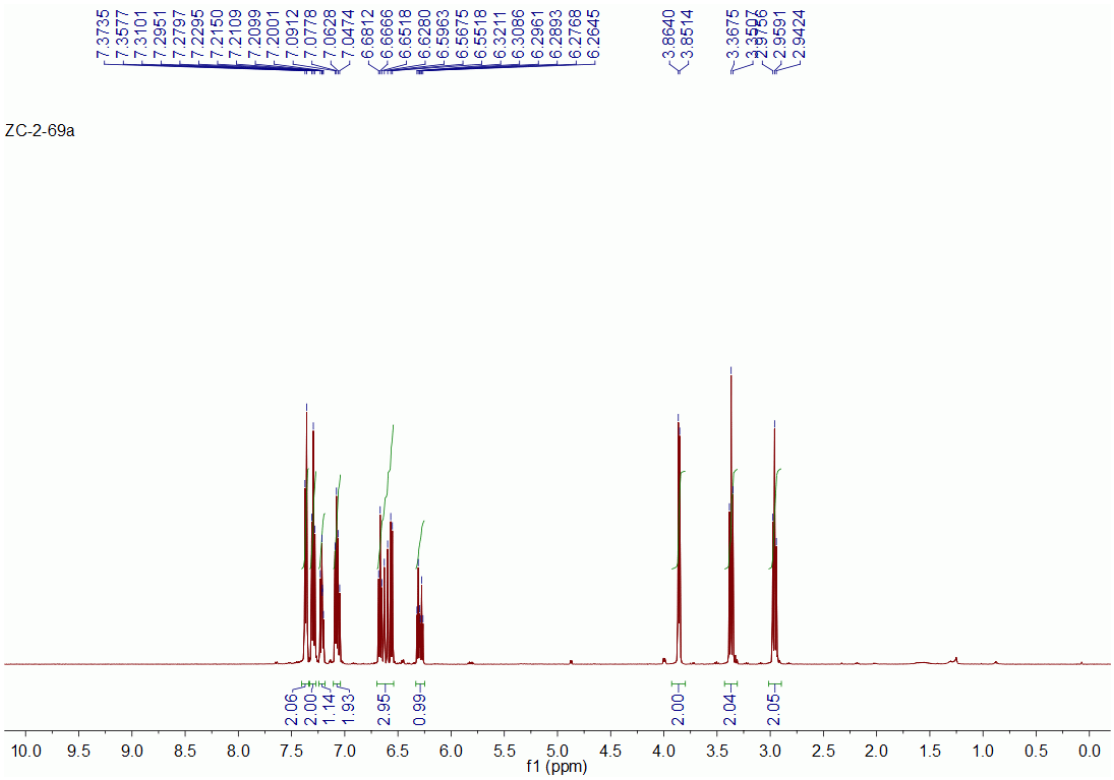


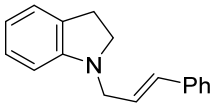




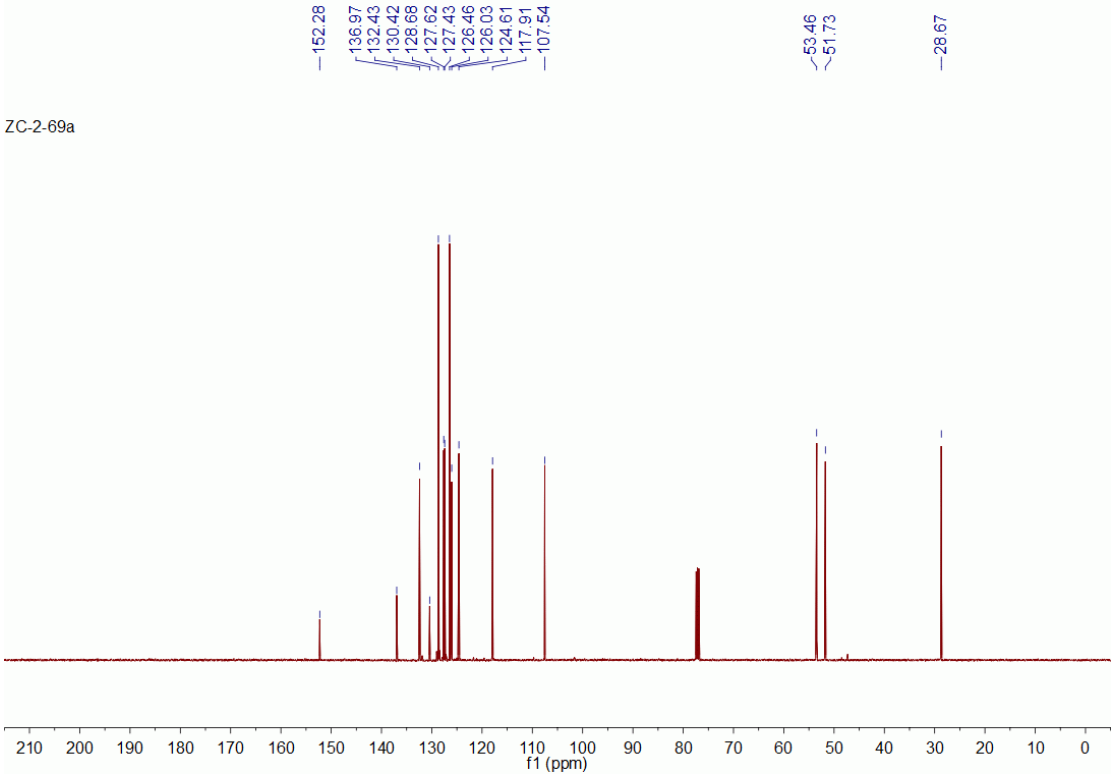
3an ^{1}H NMR (500 MHz, CD_2Cl_2)
^{13}C NMR (126 MHz, CD_2Cl_2)

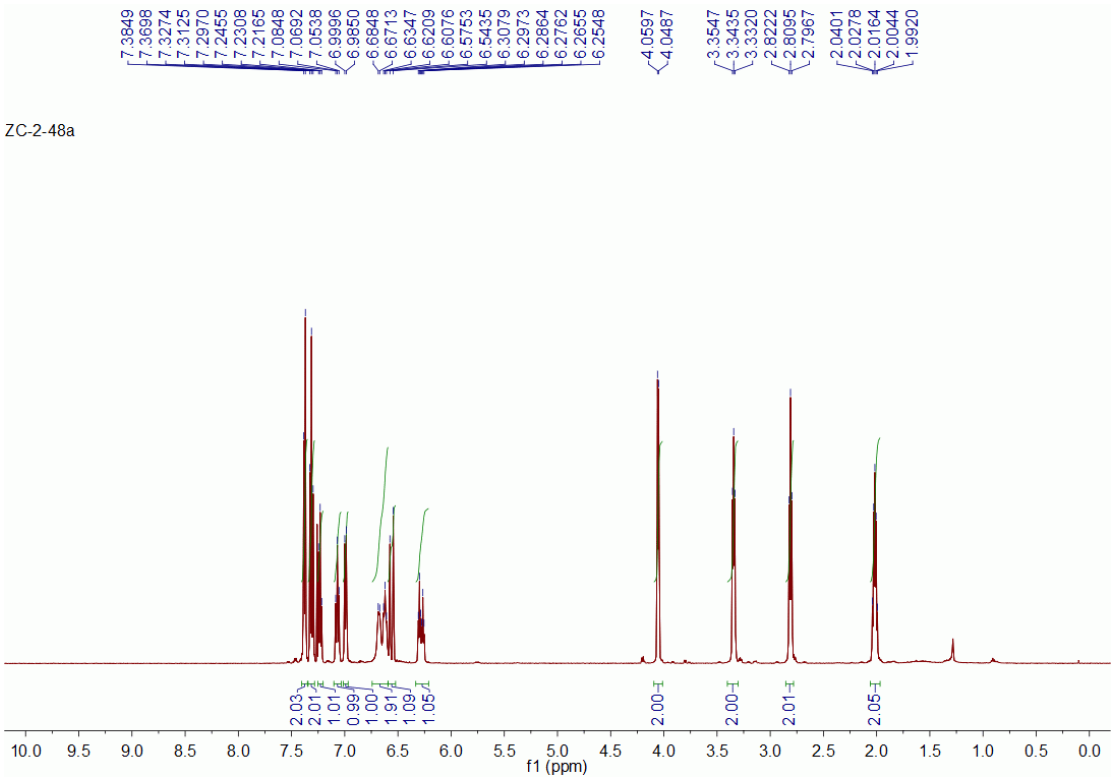


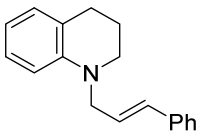




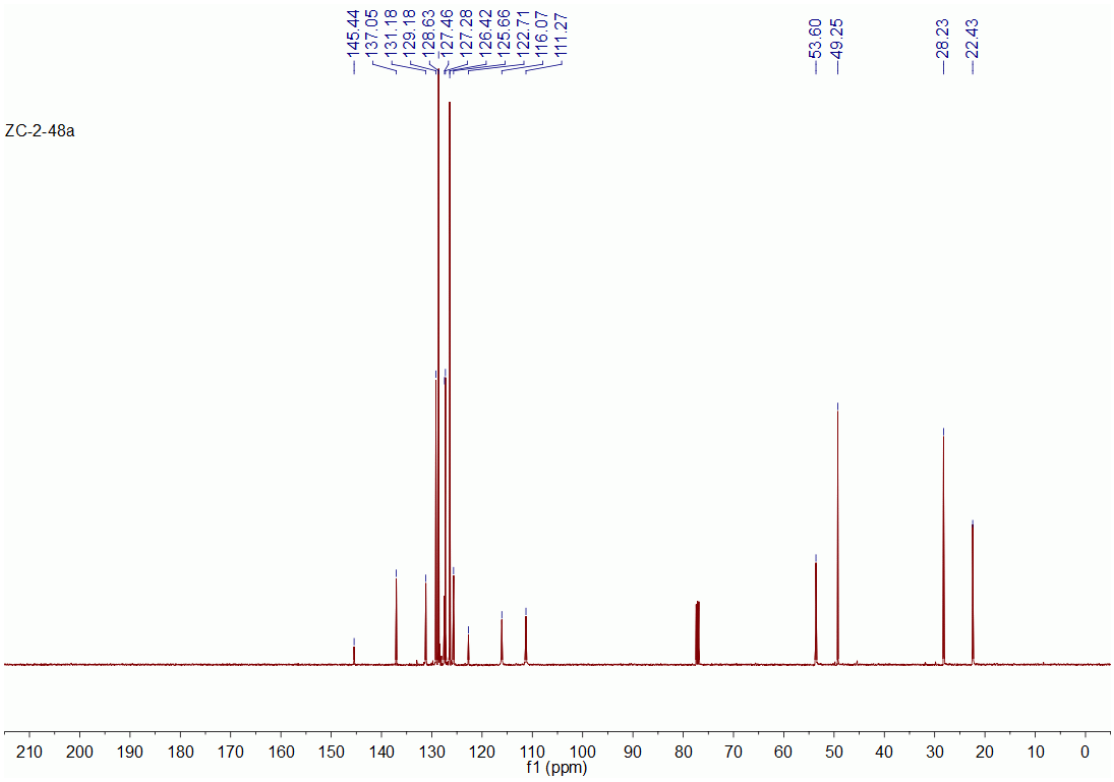
4aa ^{1}H NMR (500 MHz, $CDCl_3$)
^{13}C NMR (126 MHz, $CDCl_3$)

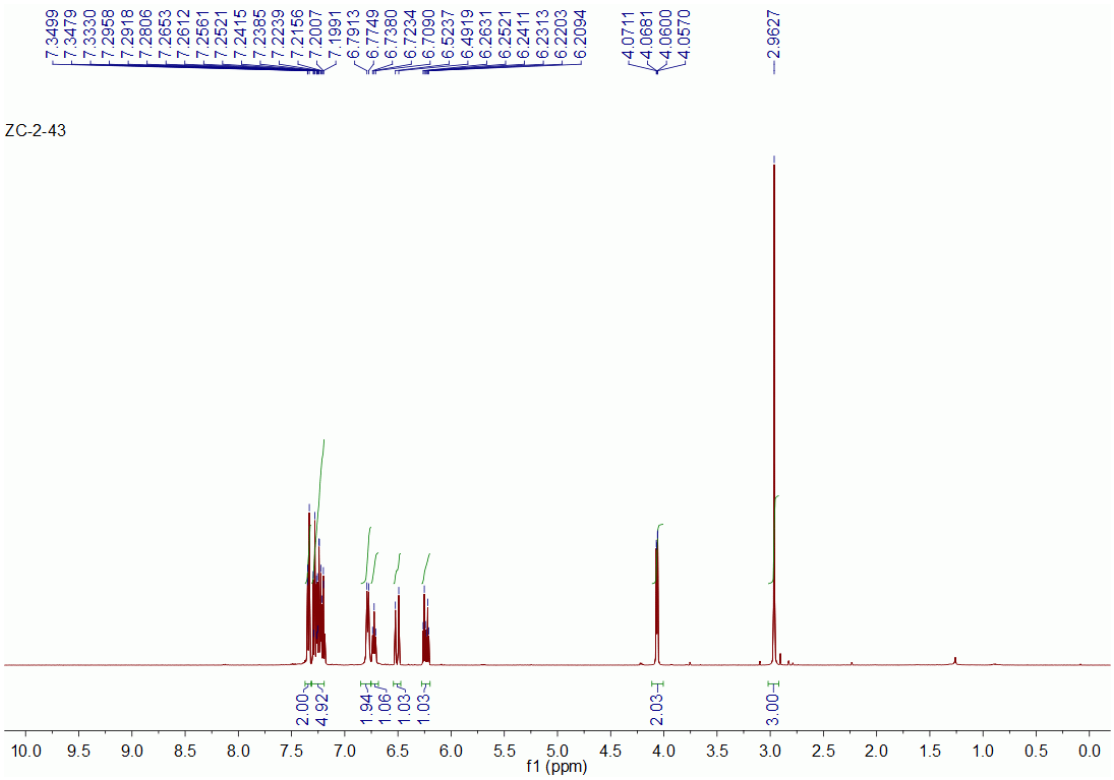


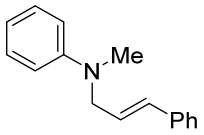




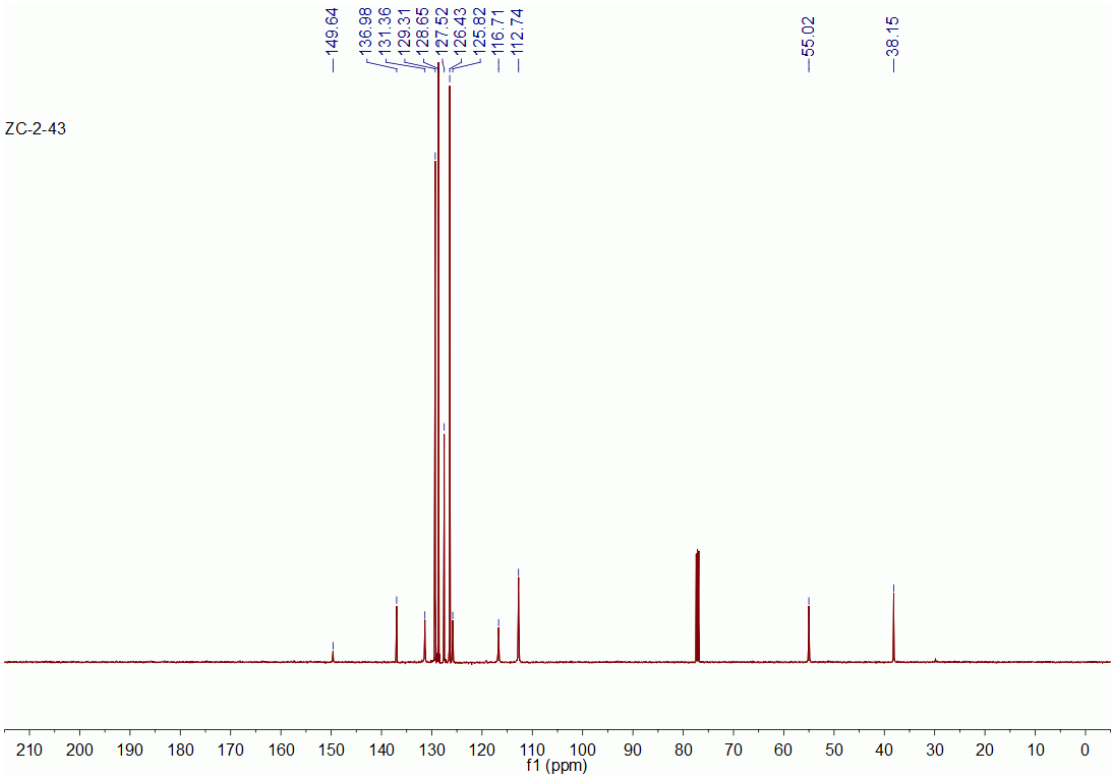
4la ^{1}H NMR (500 MHz, $CDCl_3$)
^{13}C NMR (126 MHz, $CDCl_3$)

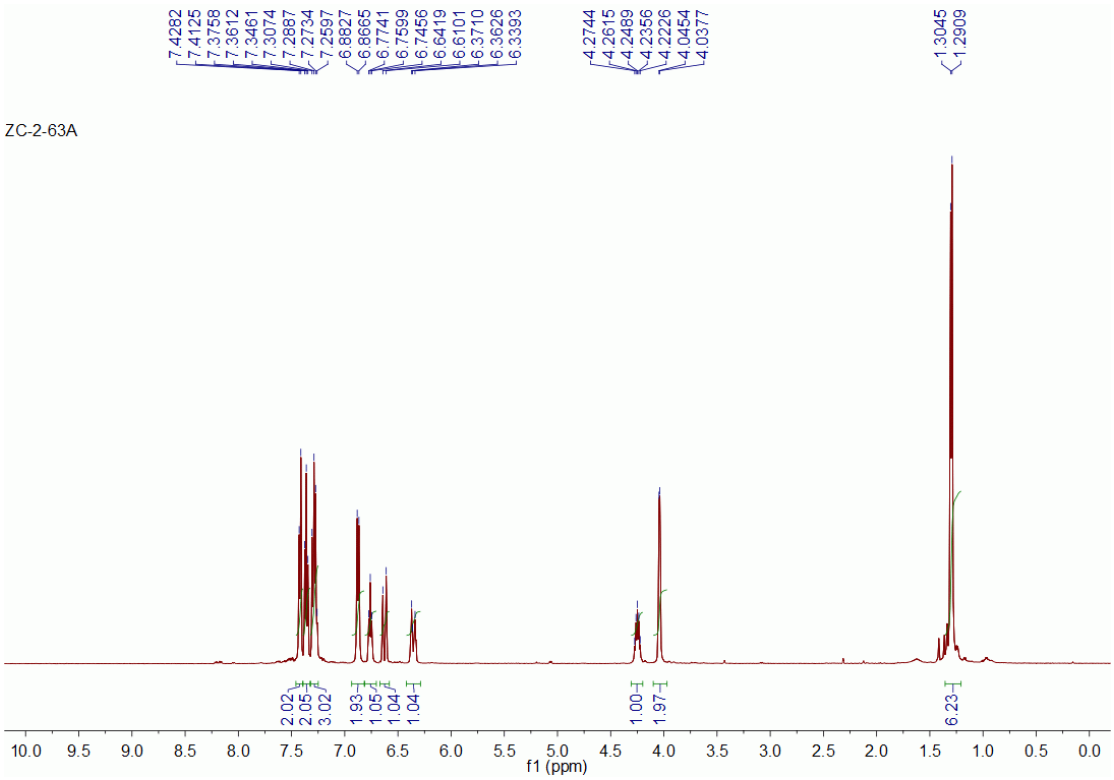


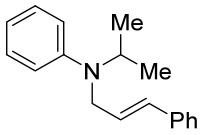




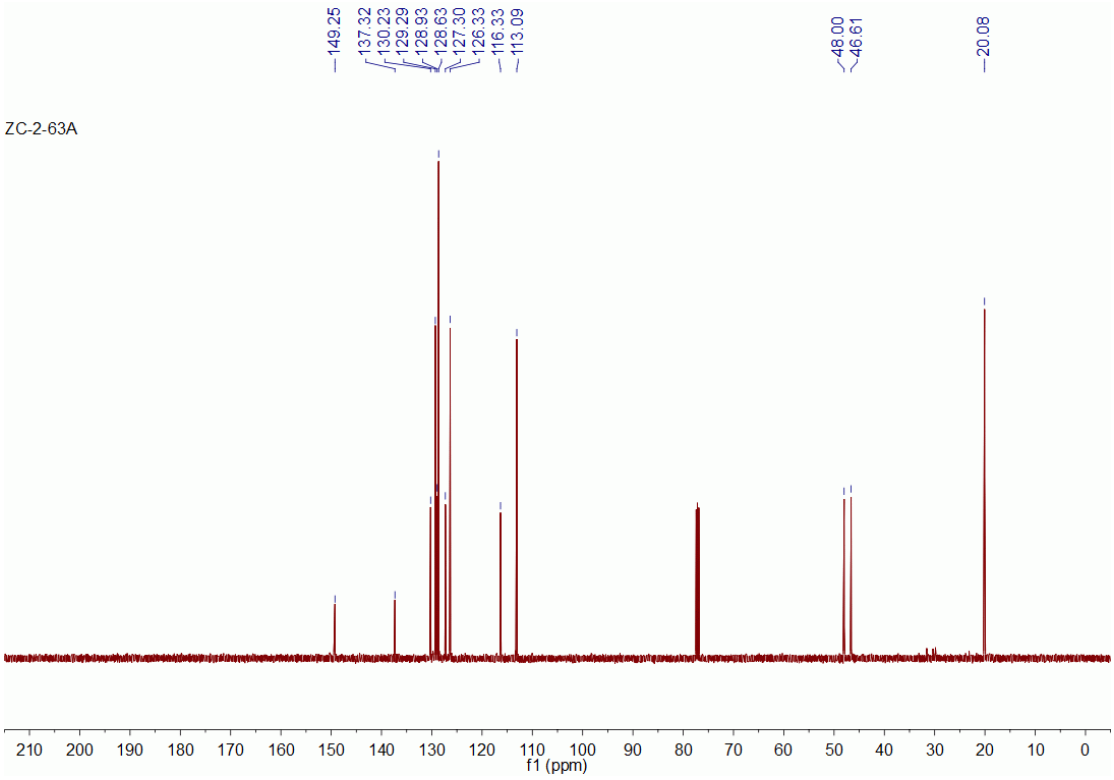
4ma ^{1}H NMR (500 MHz, $CDCl_3$)
^{13}C NMR (126 MHz, $CDCl_3$)

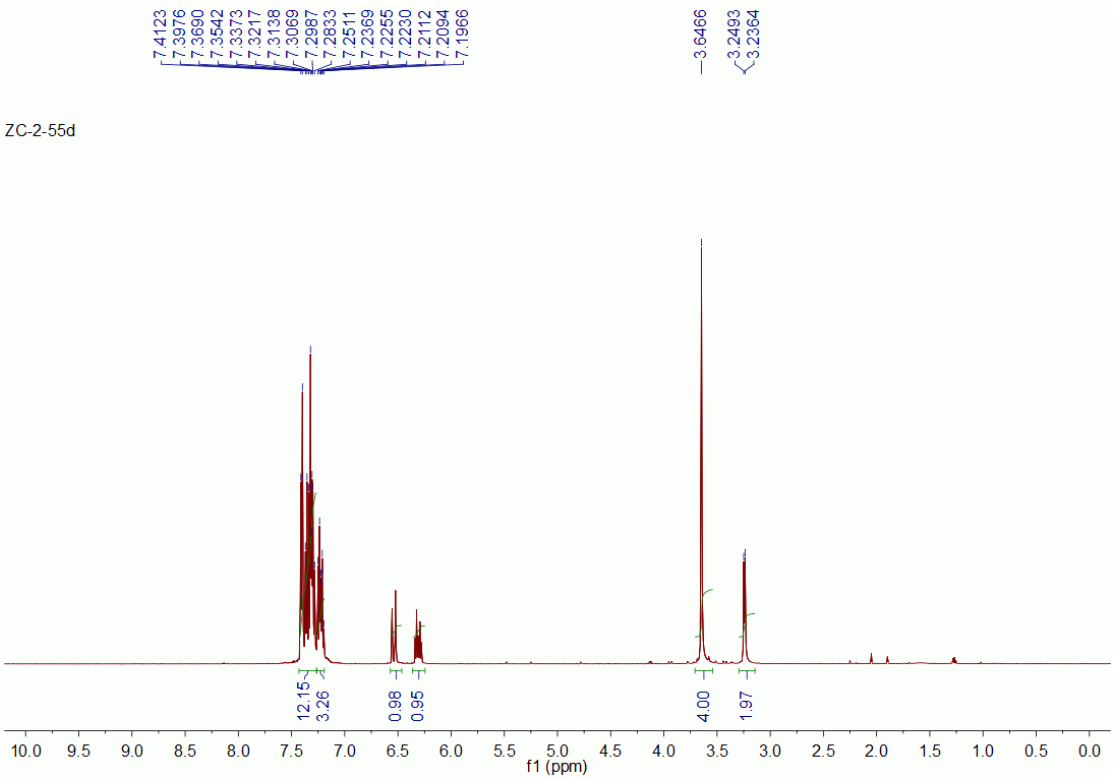


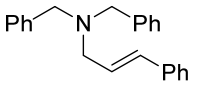




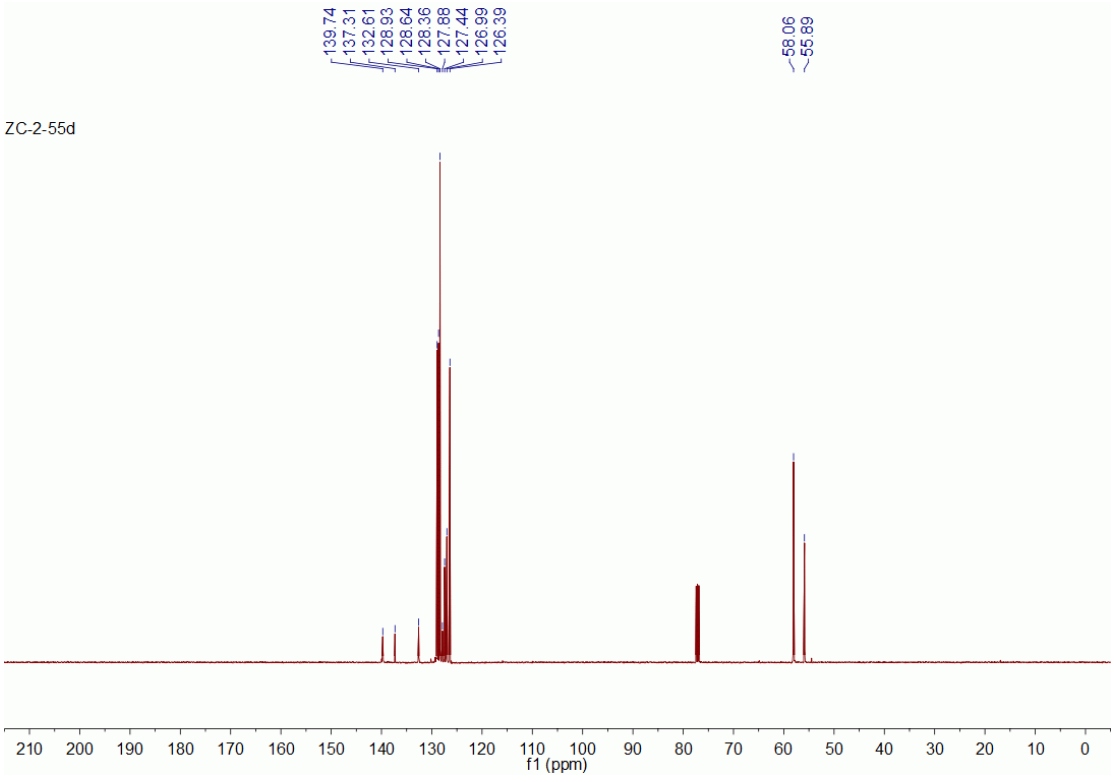
4na ^{1}H NMR (500 MHz, $CDCl_3$)
^{13}C NMR (126 MHz, $CDCl_3$)

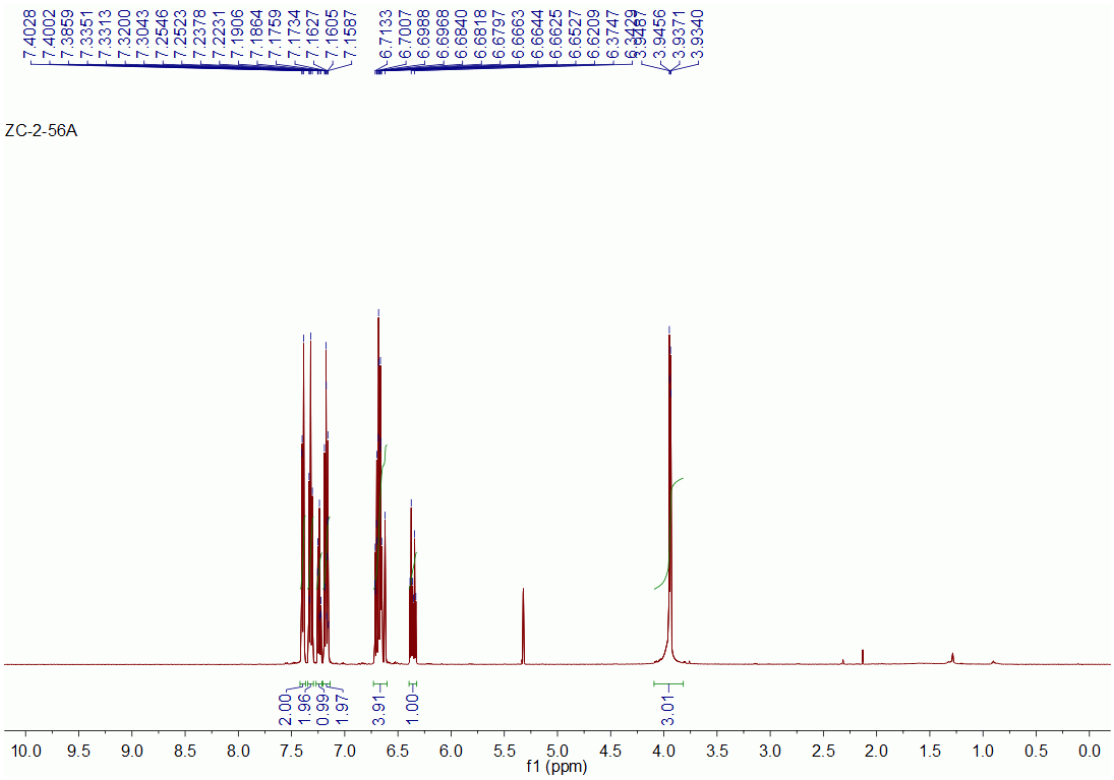


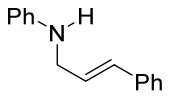




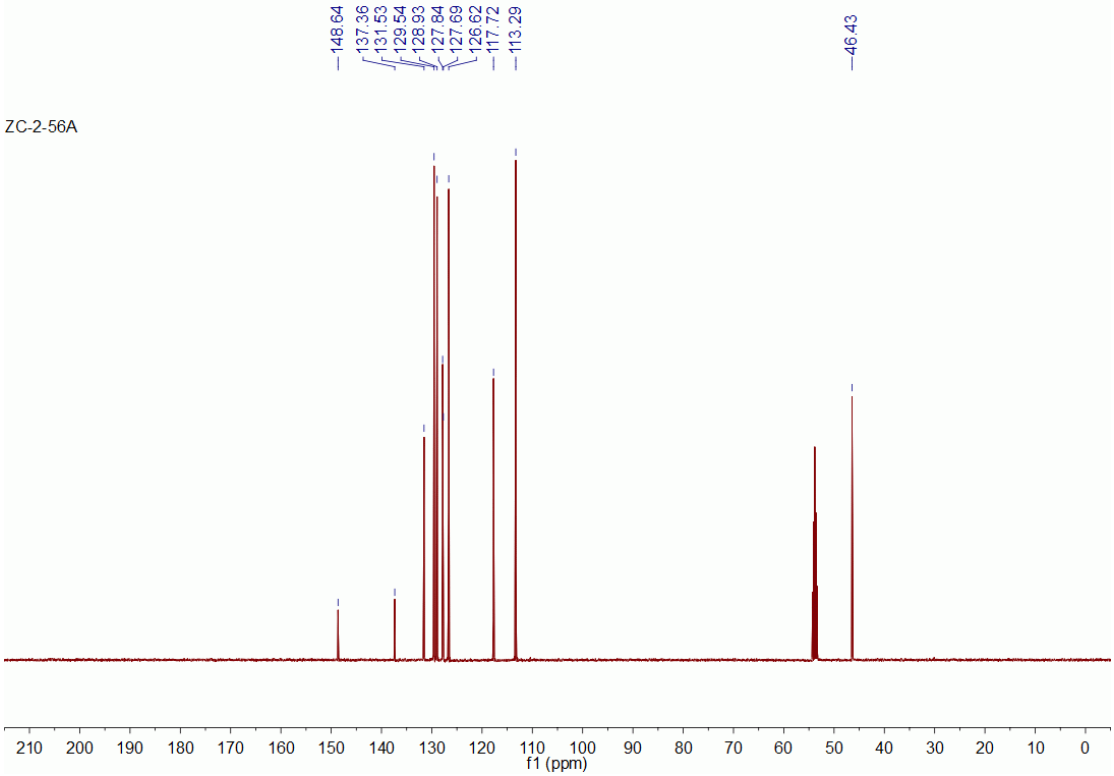
4oa ^{1}H NMR (500 MHz, $CDCl_3$)
^{13}C NMR (126 MHz, $CDCl_3$)

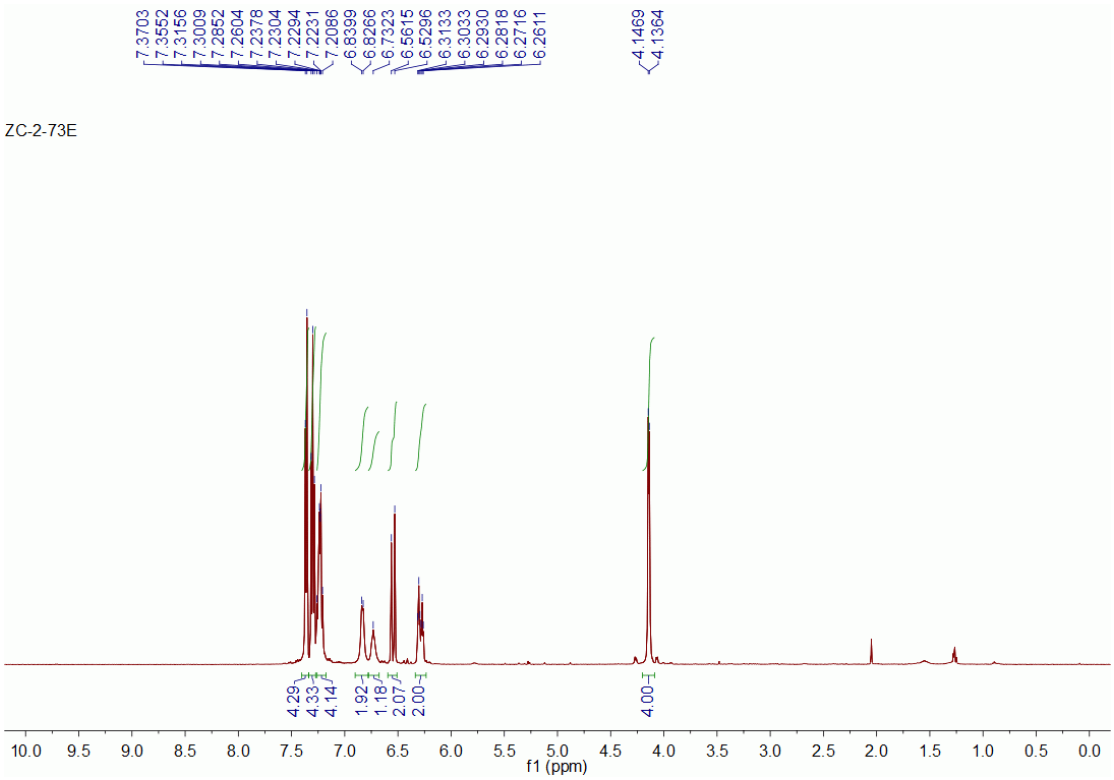


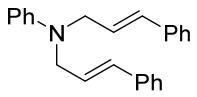




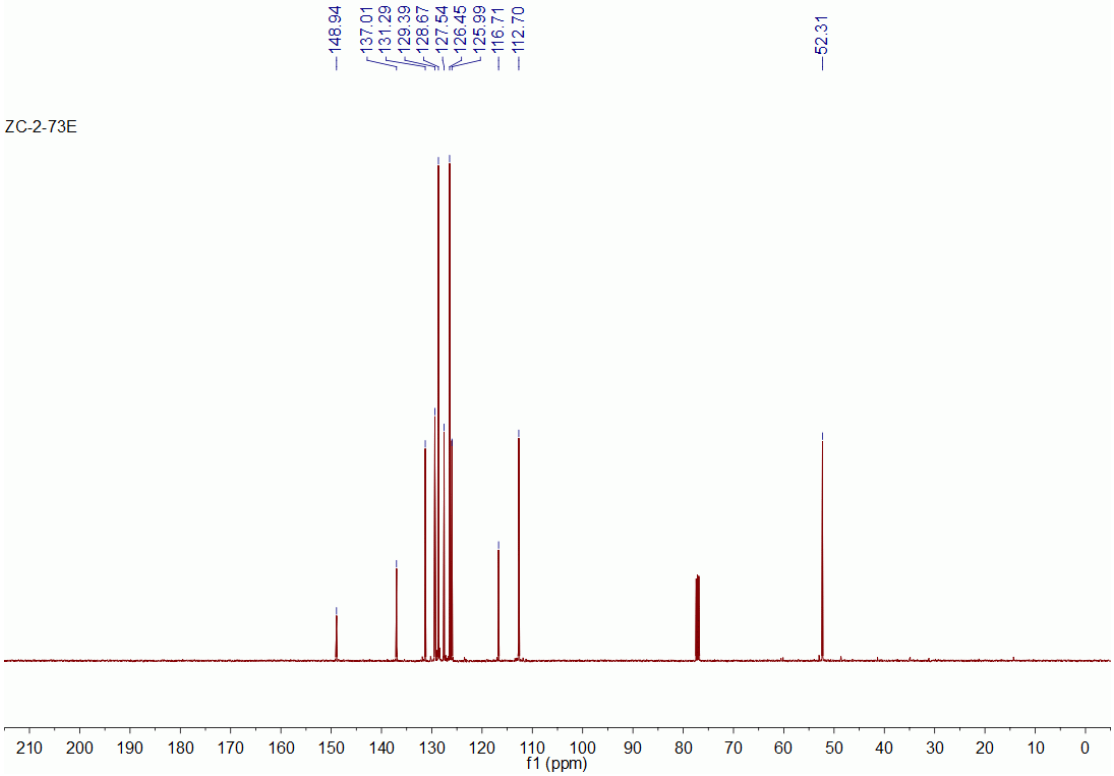
4ka ^{1}H NMR (500 MHz, CD_2Cl_2)
^{13}C NMR (126 MHz, CD_2Cl_2)

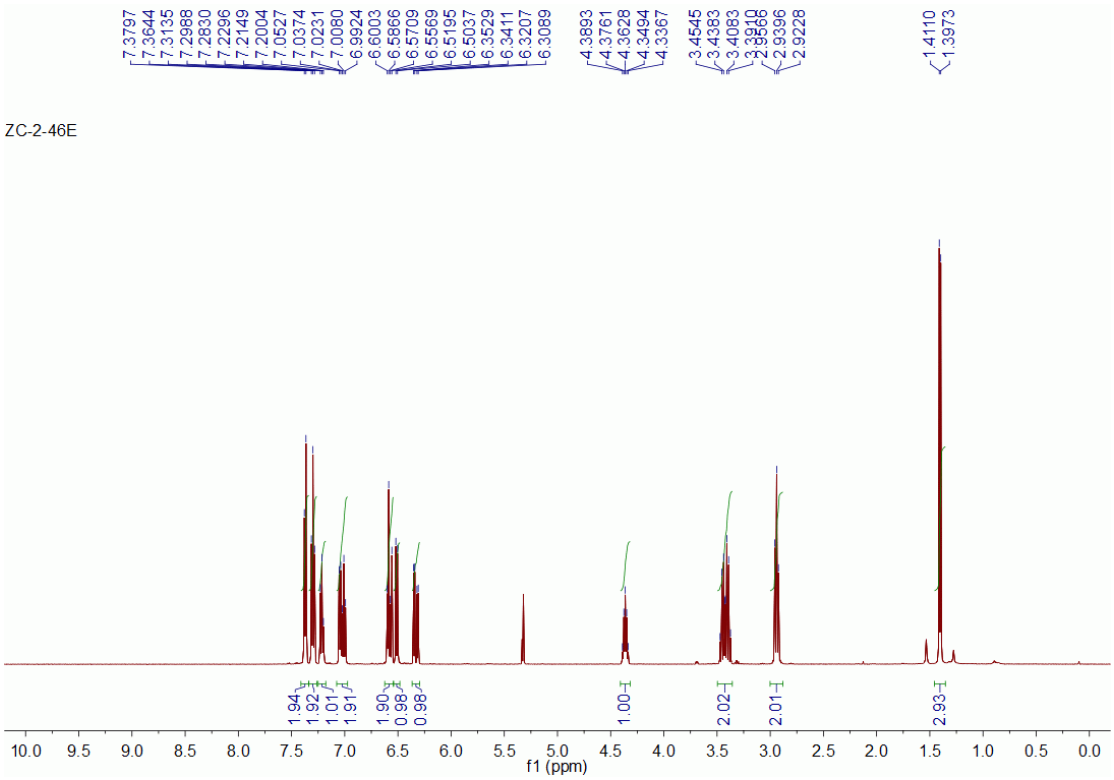


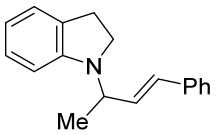




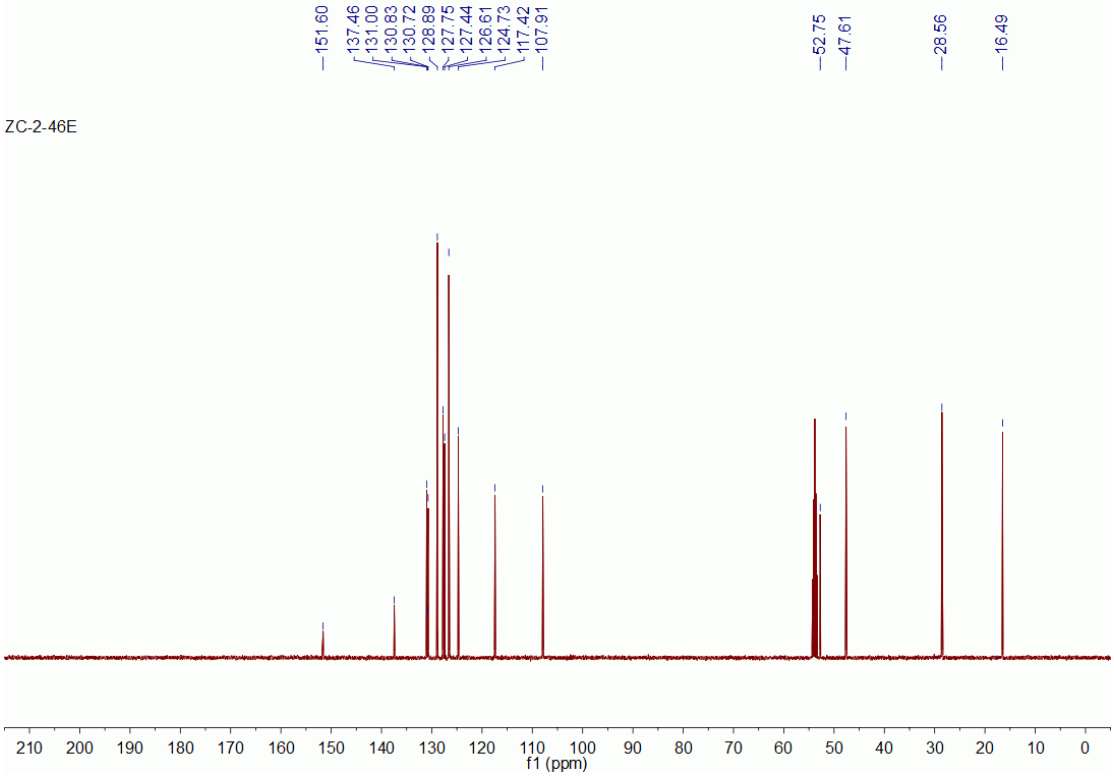
4ka' ^{1}H NMR (500 MHz, $CDCl_3$)
^{13}C NMR (126 MHz, $CDCl_3$)

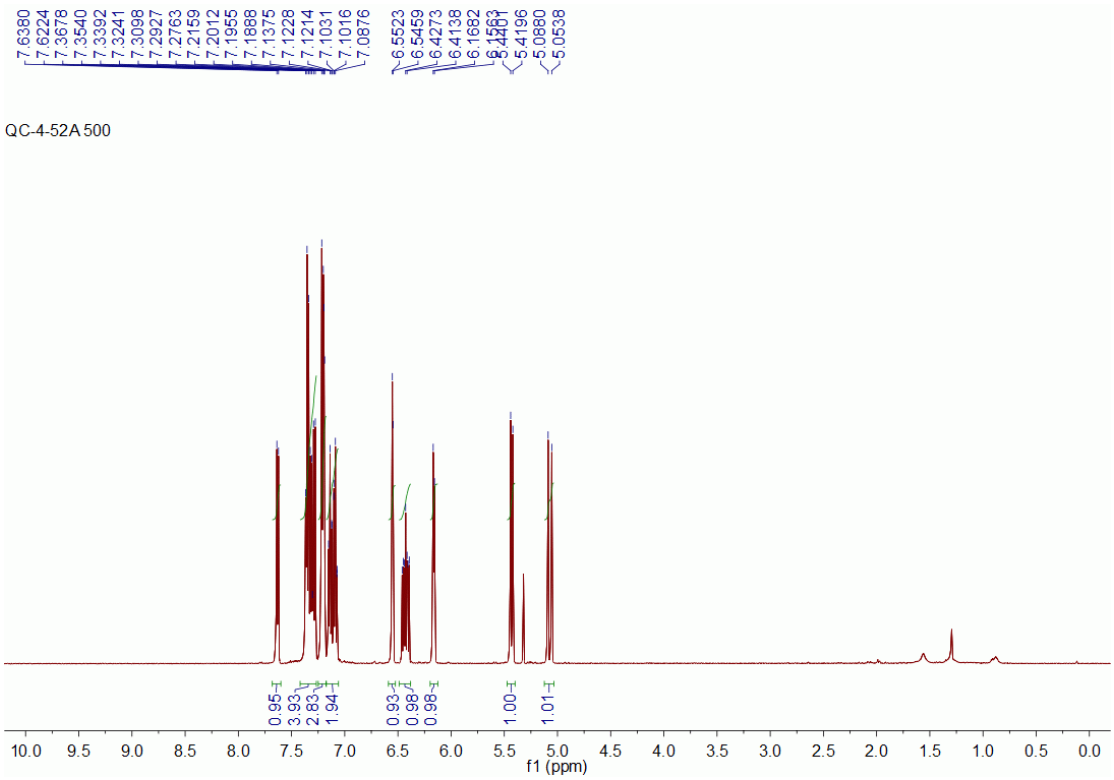


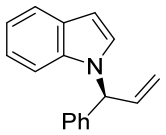




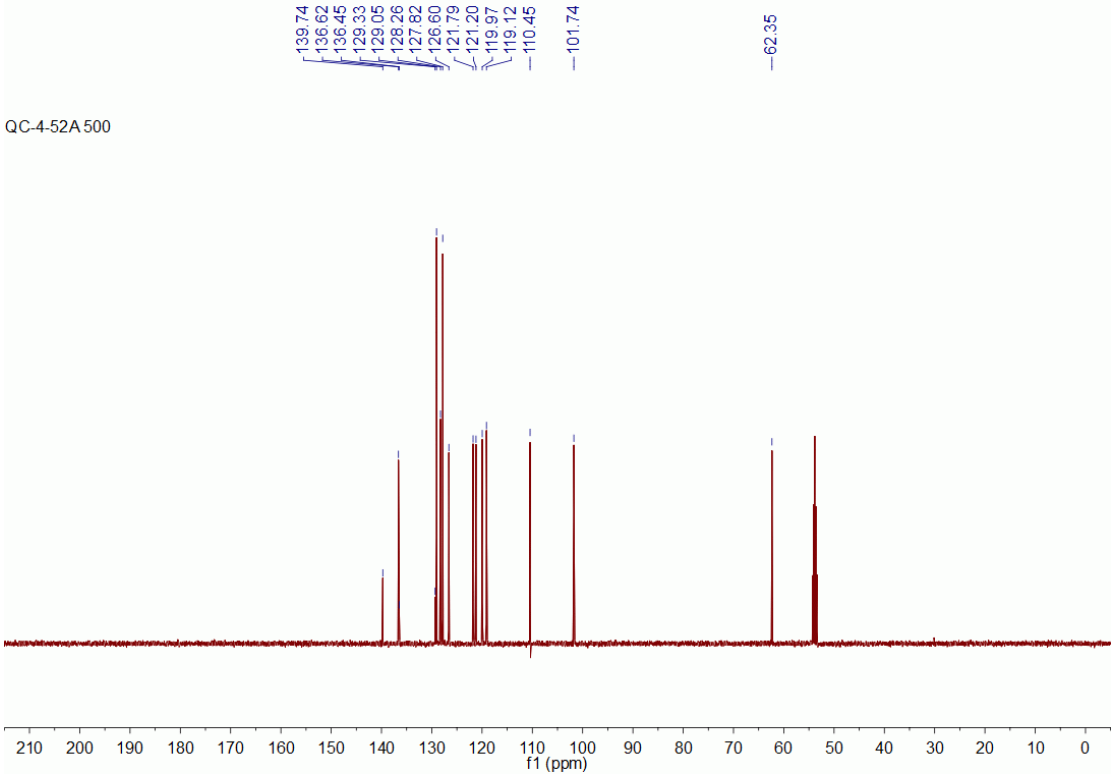
4ao ^{1}H NMR (500 MHz, CD_2Cl_2)
^{13}C NMR (126 MHz, CD_2Cl_2)

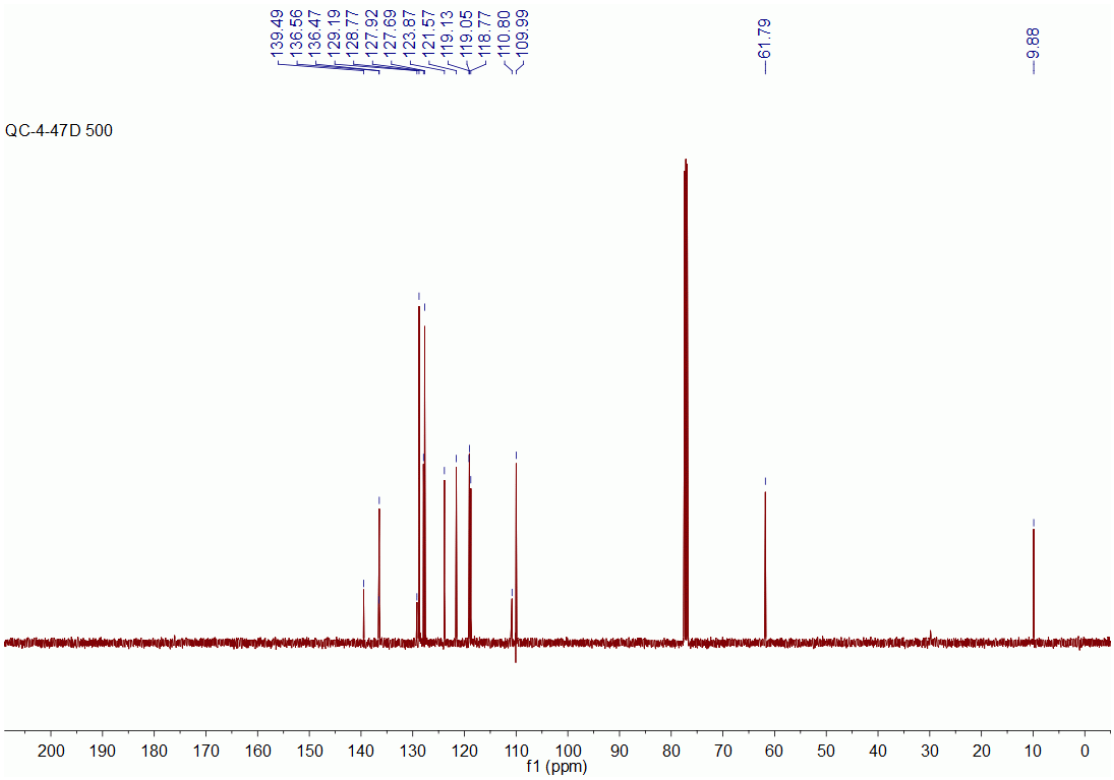


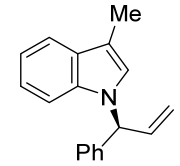




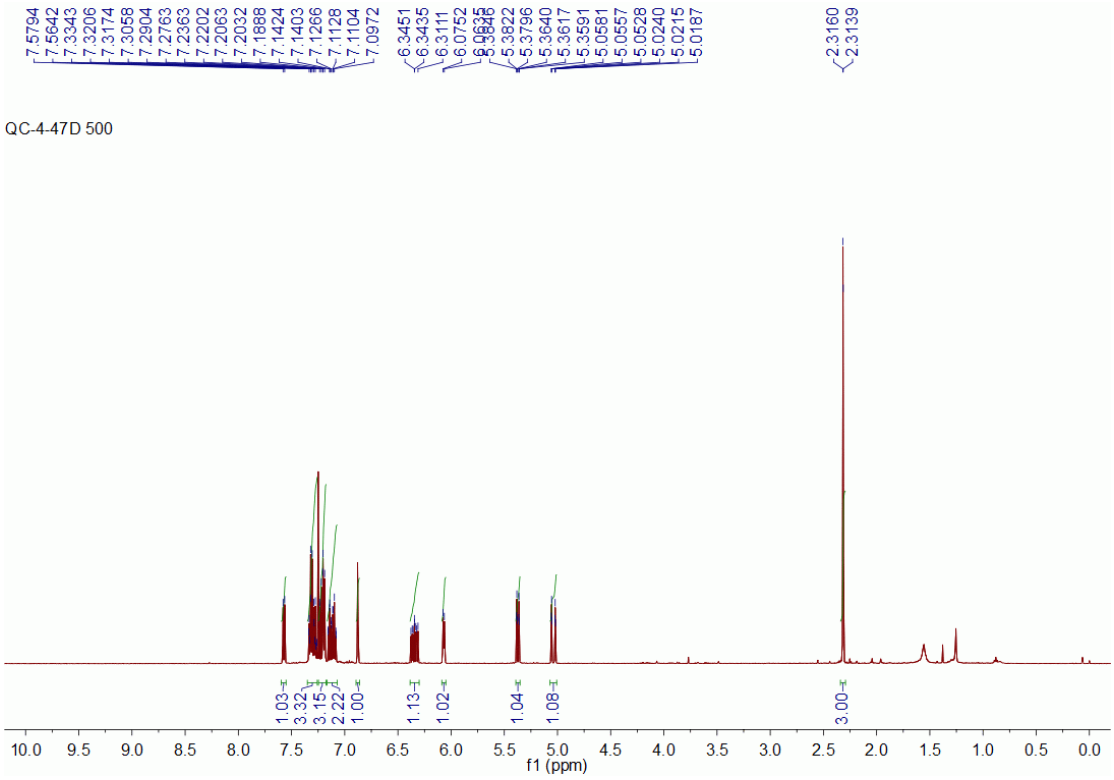
5aa ^{1}H NMR (500 MHz, CD_2Cl_2)
^{13}C NMR (126 MHz, CD_2Cl_2)



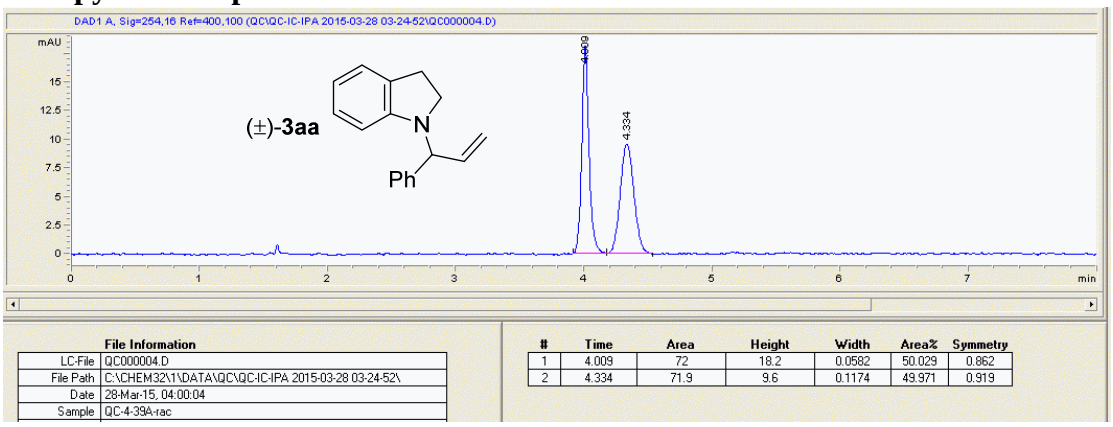




5ba ^{1}H NMR (500 MHz, $CDCl_3$)
^{13}C NMR (126 MHz, $CDCl_3$)

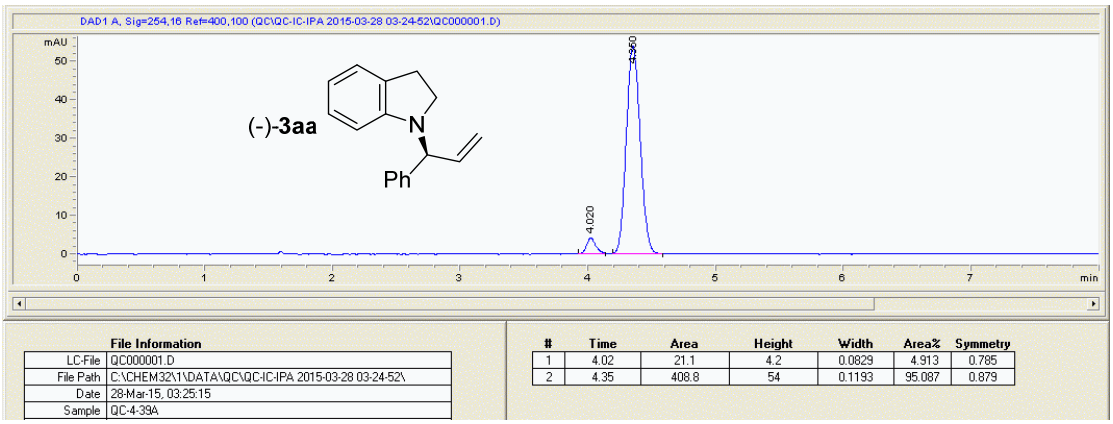


8. Copy of SFC spectra



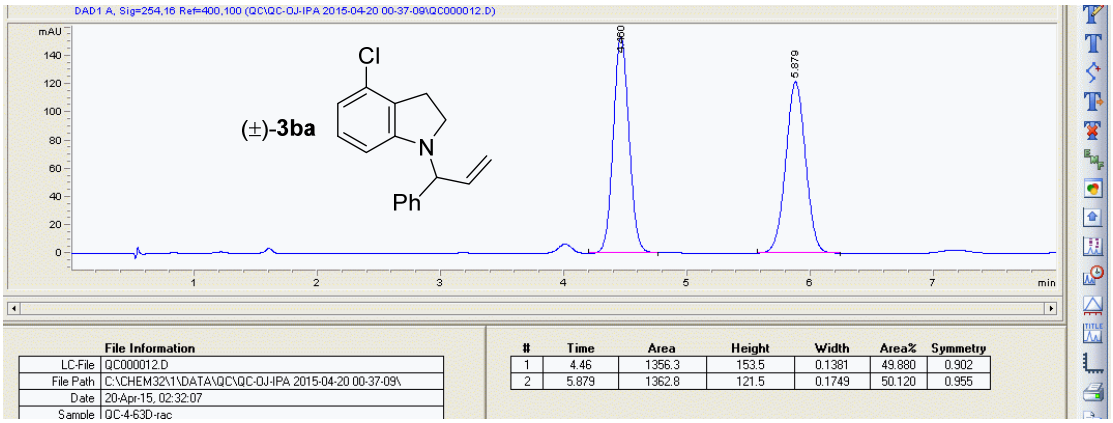
File Information	
LC-File	QC000004.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-03-28 03-24-52\
Date	28-Mar-15, 04:00:04
Sample	QC-4-39A-rac

#	Time	Area	Height	Width	Area%	Symmetry
1	4.009	72	18.2	0.0582	50.029	0.862
2	4.334	71.9	9.6	0.1174	49.971	0.919



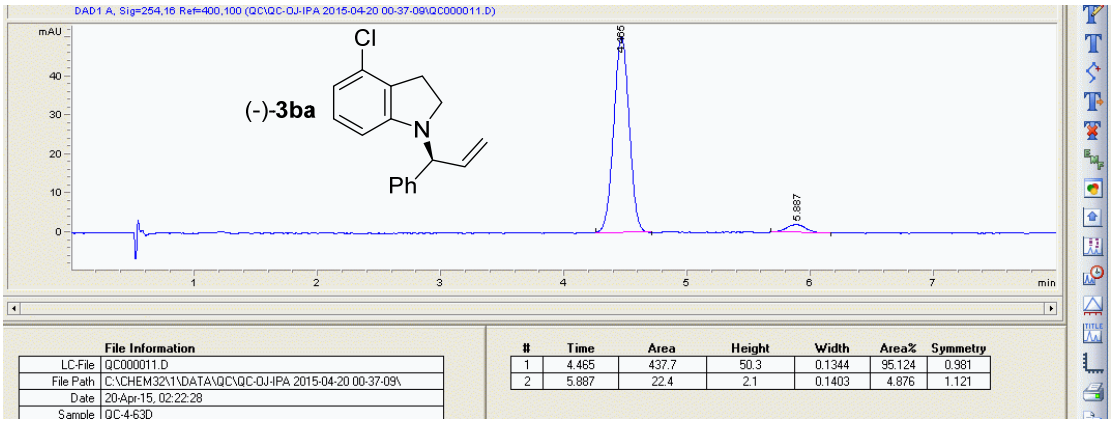
File Information	
LC-File	QC000001.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-03-28 03-24-52\
Date	28-Mar-15, 03:25:15
Sample	QC-4-39A

#	Time	Area	Height	Width	Area%	Symmetry
1	4.02	21.1	4.2	0.0829	4.913	0.785
2	4.35	408.8	54	0.1193	95.087	0.879



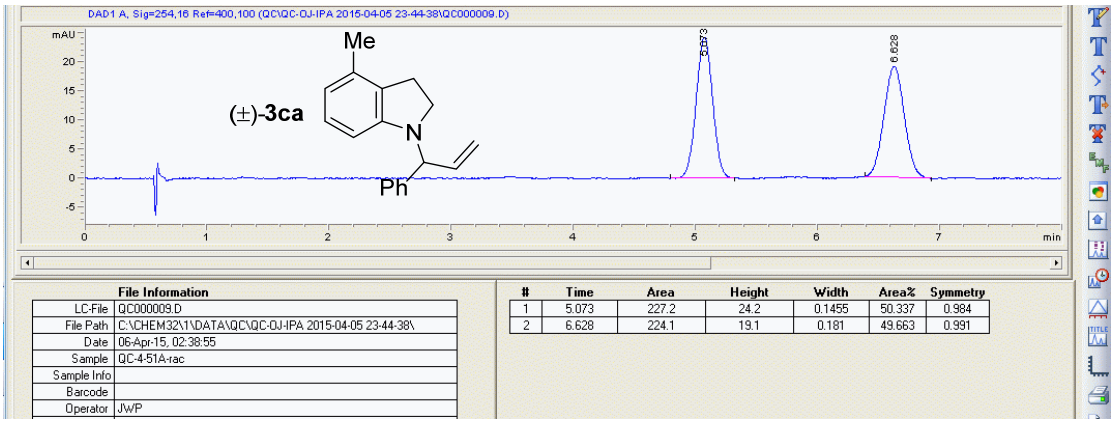
File Information	
LC-File	QC000012.D
File Path	C:\CHEM32\1\DATA\QC\QC-OJ-IPA 2015-04-20 00-37-09\
Date	20-Apr-15, 02:32:07
Sample	QC-4-63D-rac

#	Time	Area	Height	Width	Area%	Symmetry
1	4.46	1356.3	153.5	0.1381	49.880	0.902
2	5.879	1362.8	121.5	0.1749	50.120	0.955



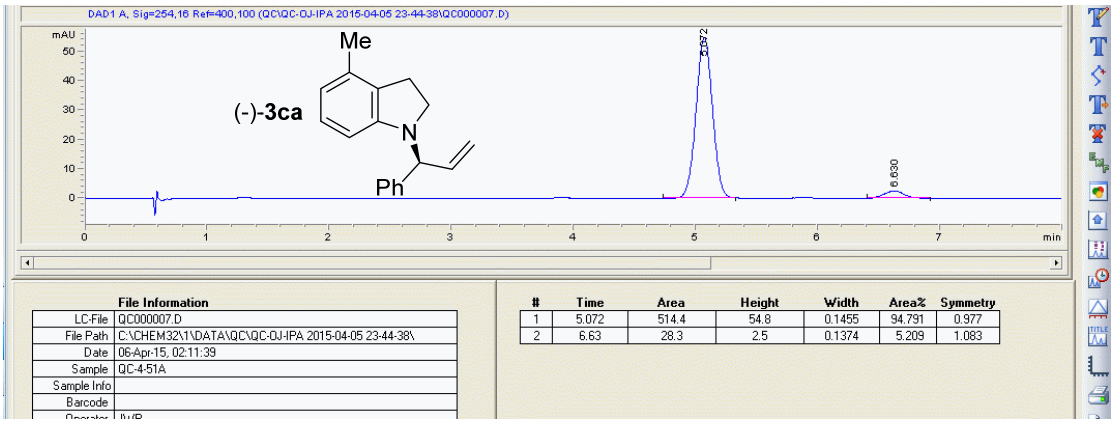
File Information	
LC-File	QC000011.D
File Path	C:\CHEM32\1\DATA\QC\QC-OJ-IPA 2015-04-20 00-37-09\
Date	20-Apr-15, 02:22:28
Sample	QC-4-63D

#	Time	Area	Height	Width	Area%	Symmetry
1	4.465	437.7	50.3	0.1344	95.124	0.981
2	5.887	22.4	2.1	0.1403	4.876	1.121



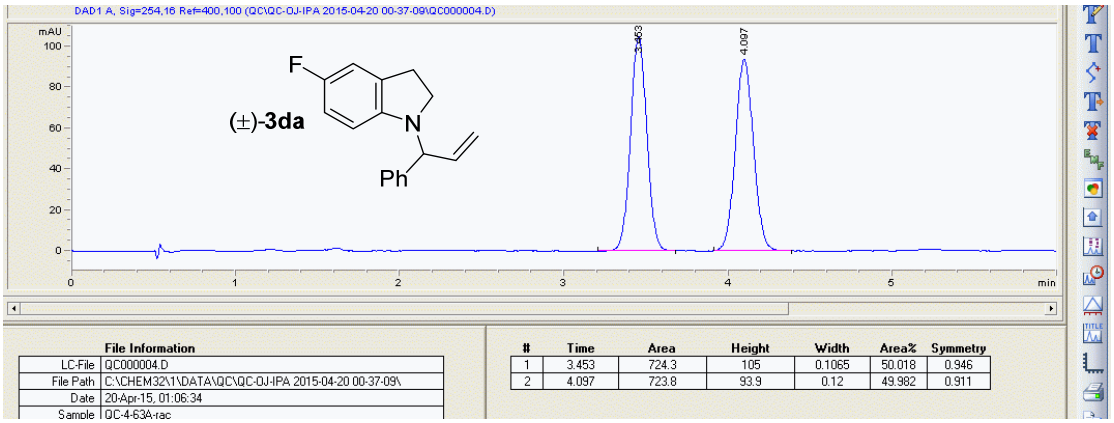
File Information	
LC-File	QC000009.D
File Path	C:\CHEM32\1\DATA\QC\QC-OJ-IPA 2015-04-05 23-44-38\
Date	06-Apr-15, 02:38:55
Sample	QC-4-51A-rac
Sample Info	
Barcode	
Operator	JWP

#	Time	Area	Height	Width	Area%	Symmetry
1	5.073	227.2	24.2	0.1455	50.337	0.984
2	6.628	224.1	19.1	0.181	49.663	0.991



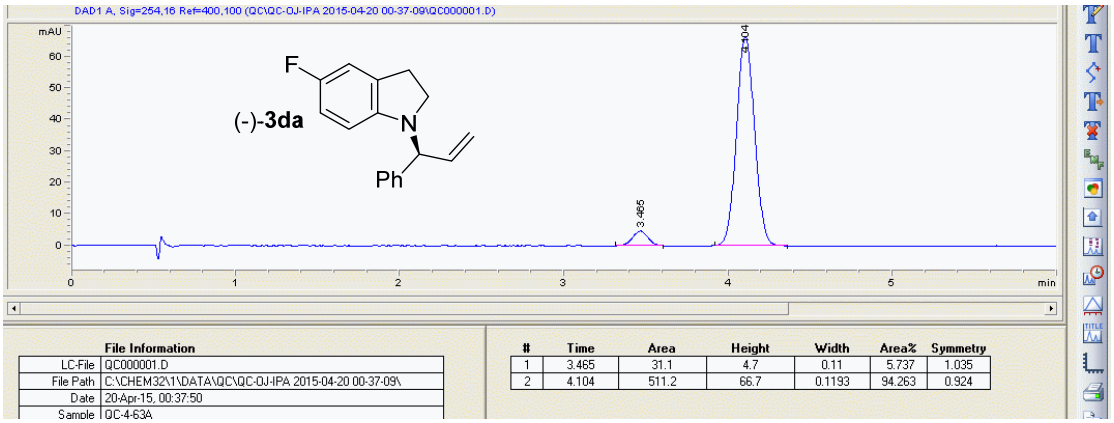
File Information	
LC-File	QC000007.D
File Path	C:\CHEM32\1\DATA\QC\QC-OJ-IPA 2015-04-05 23-44-38\
Date	06-Apr-15, 02:11:39
Sample	QC-4-51A
Sample Info	
Barcode	

#	Time	Area	Height	Width	Area%	Symmetry
1	5.072	514.4	54.8	0.1455	94.791	0.977
2	6.63	28.3	2.5	0.1374	5.209	1.083



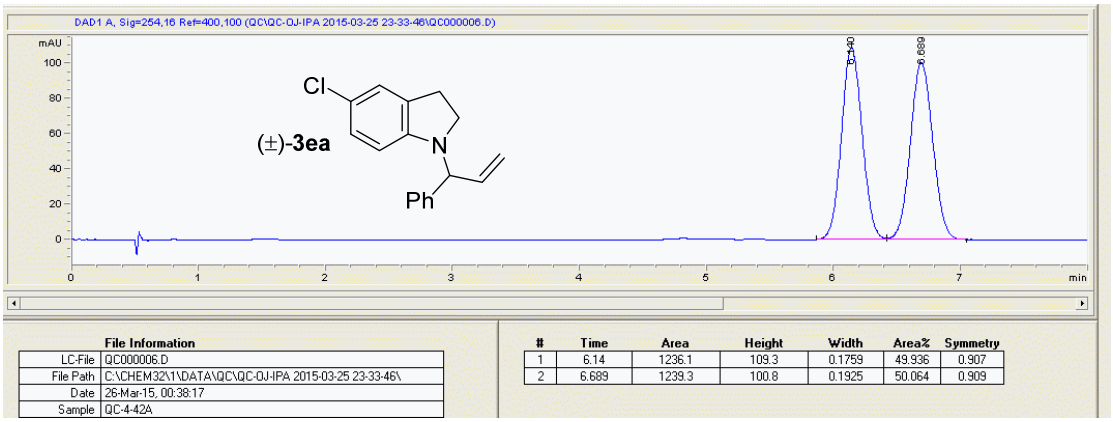
File Information	
LC-File	QC000004.D
File Path	C:\CHEM32\1\DATA\QC\QC-OJ-IPA 2015-04-20 00-37-09\
Date	20-Apr-15, 01:06:34
Sample	QC-4-63A-rac

#	Time	Area	Height	Width	Area%	Symmetry
1	3.453	724.3	105	0.1065	50.018	0.946
2	4.097	723.8	93.9	0.12	49.982	0.911



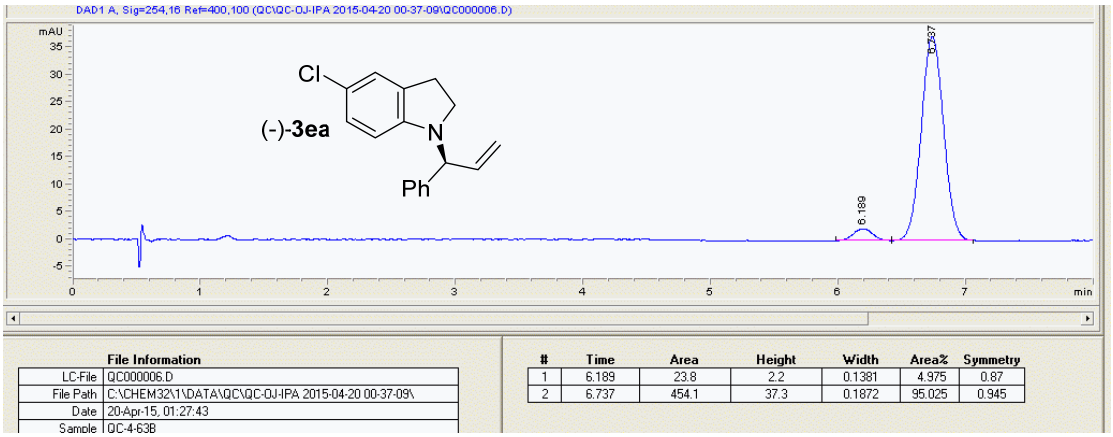
File Information	
LC-File	QC000001.D
File Path	C:\CHEM32\1\DATA\QC\QC-OJ-IPA 2015-04-20 00-37-09\
Date	20-Apr-15, 00:37:50
Sample	QC-4-63A

#	Time	Area	Height	Width	Area%	Symmetry
1	3.465	31.1	4.7	0.11	5.737	1.035
2	4.104	511.2	66.7	0.1193	94.263	0.924



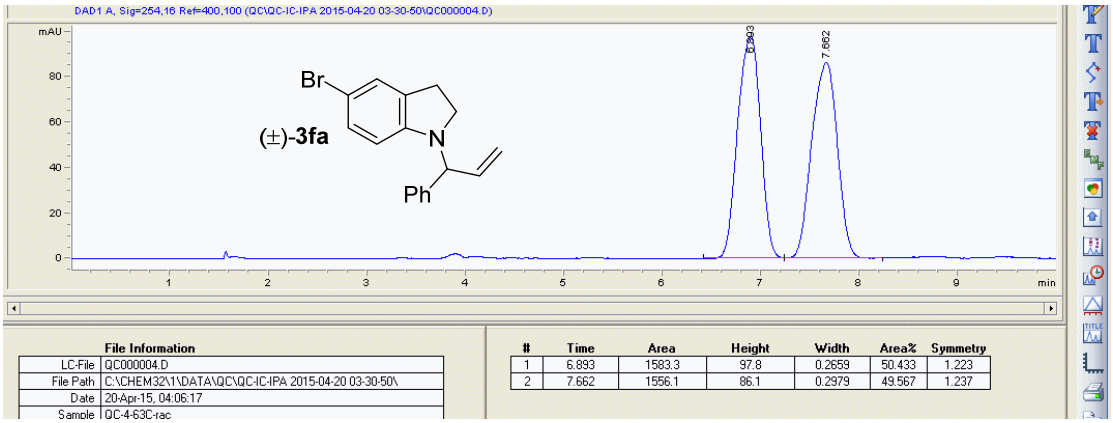
File Information	
LC-File	QC000006.D
File Path	C:\CHEM32\1\DATA\QC\QC-OJ-IPA 2015-03-25 23-33-46\
Date	26-Mar-15, 00:38:17
Sample	QC-4-42A

#	Time	Area	Height	Width	Area%	Symmetry
1	6.14	1236.1	109.3	0.1759	49.936	0.907
2	6.689	1239.3	100.8	0.1925	50.064	0.909



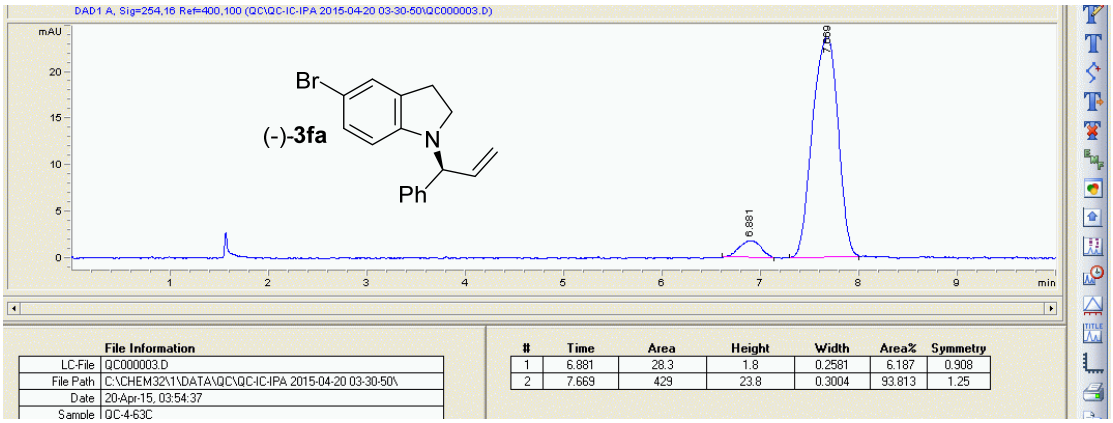
File Information	
LC-File	QC000006.D
File Path	C:\CHEM32\1\DATA\QC\QC-OJ-IPA 2015-04-20 00-37-09\
Date	20-Apr-15, 01:27:43
Sample	QC-4-63B

#	Time	Area	Height	Width	Area%	Symmetry
1	6.189	23.8	2.2	0.1381	4.975	0.87
2	6.737	454.1	37.3	0.1872	95.025	0.945



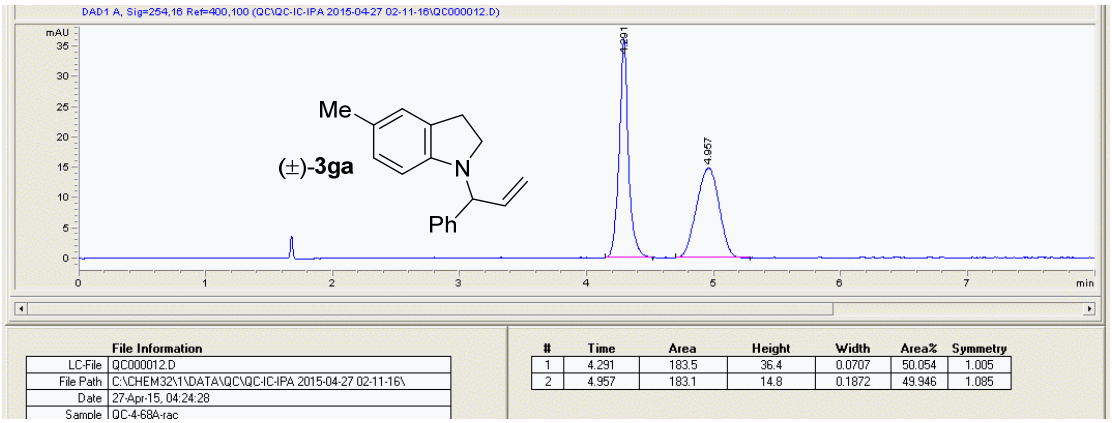
File Information	
LC-File	QC000004.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-20 03-30-50\
Date	20-Apr-15, 04:06:17
Sample	QC-4-63C-rac

#	Time	Area	Height	Width	Area%	Symmetry
1	6.893	1583.3	97.8	0.2659	50.433	1.223
2	7.662	1556.1	86.1	0.2979	49.567	1.237



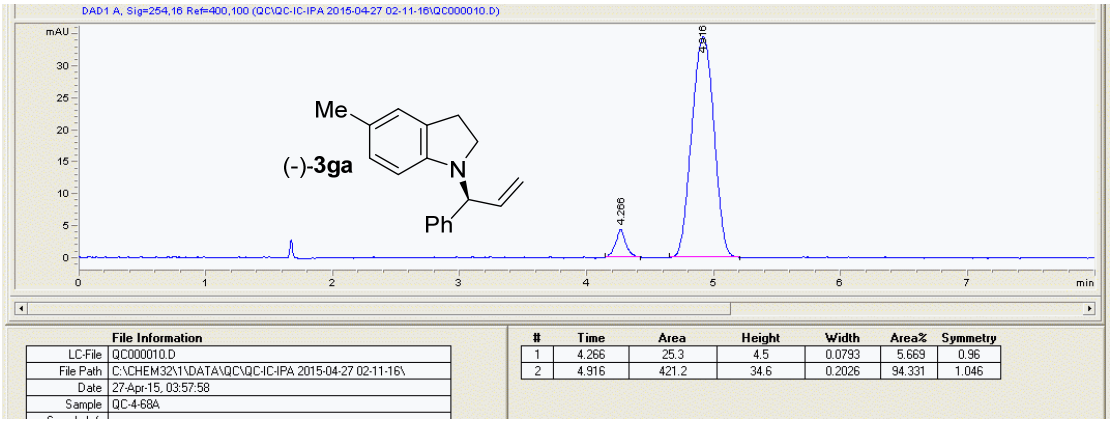
File Information	
LC-File	QC000003.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-20 03-30-50\
Date	20-Apr-15, 03:54:37
Sample	QC-4-63C

#	Time	Area	Height	Width	Area%	Symmetry
1	6.881	28.3	1.8	0.2581	6.187	0.908
2	7.669	429	23.8	0.3004	93.813	1.25



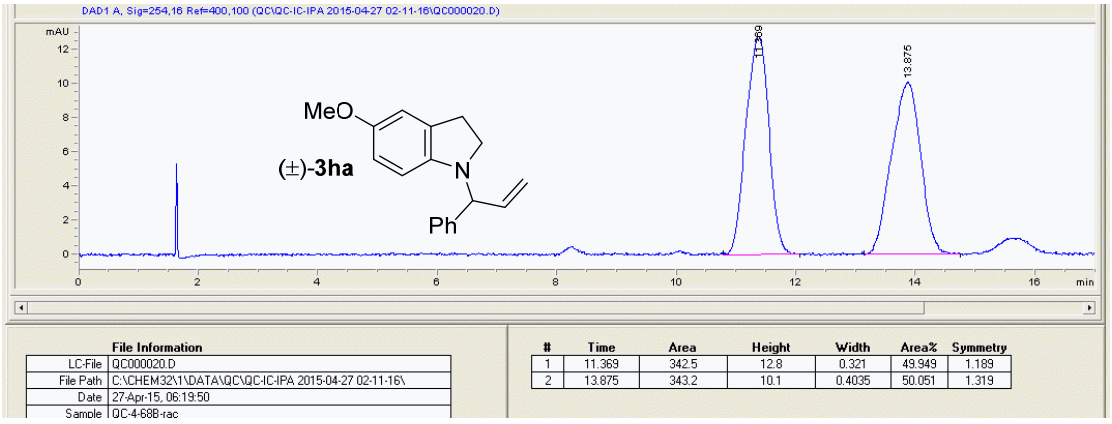
File Information	
LC-File	QC000012.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-27 02-11-16\
Date	27-Apr-15, 04:24:28
Sample	QC-4-68A-rac

#	Time	Area	Height	Width	Area%	Symmetry
1	4.291	183.5	36.4	0.0707	50.054	1.005
2	4.957	183.1	14.8	0.1872	49.946	1.085



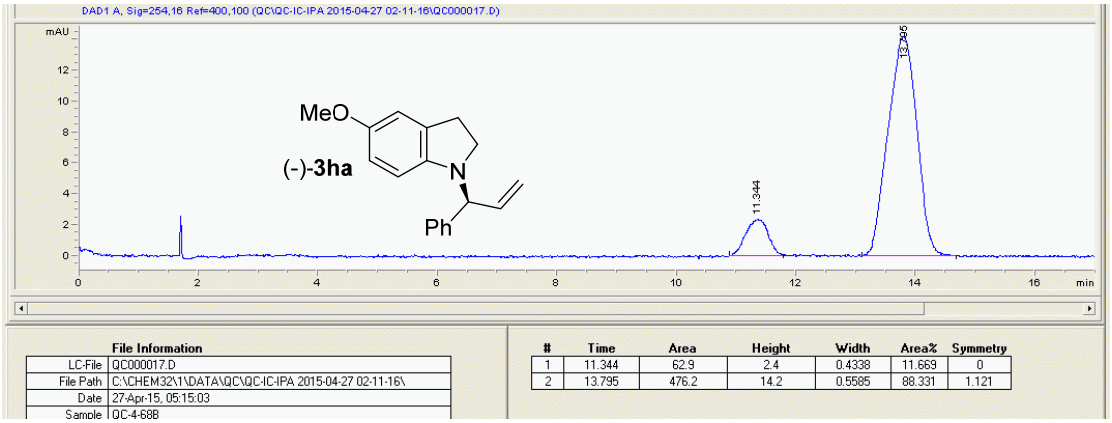
File Information	
LC-File	QC000010.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-27 02-11-16\
Date	27-Apr-15, 03:57:58
Sample	QC-4-68A

#	Time	Area	Height	Width	Area%	Symmetry
1	4.266	25.3	4.5	0.0793	5.669	0.96
2	4.916	421.2	34.6	0.2026	94.331	1.046



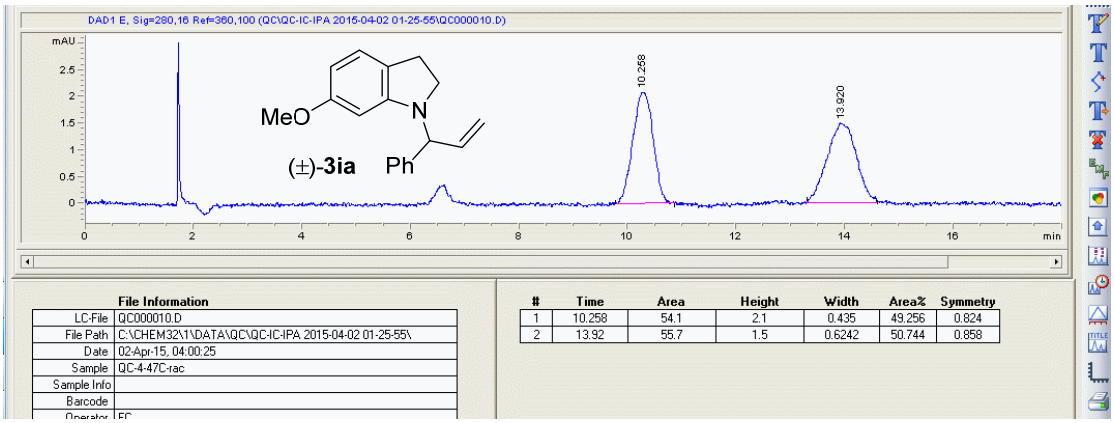
File Information	
LC-File	QC000020.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-27 02-11-16\
Date	27-Apr-15, 06:19:50
Sample	QC-4-68B-rac

#	Time	Area	Height	Width	Area%	Symmetry
1	11.369	342.5	12.8	0.321	49.949	1.189
2	13.875	343.2	10.1	0.4035	50.051	1.319



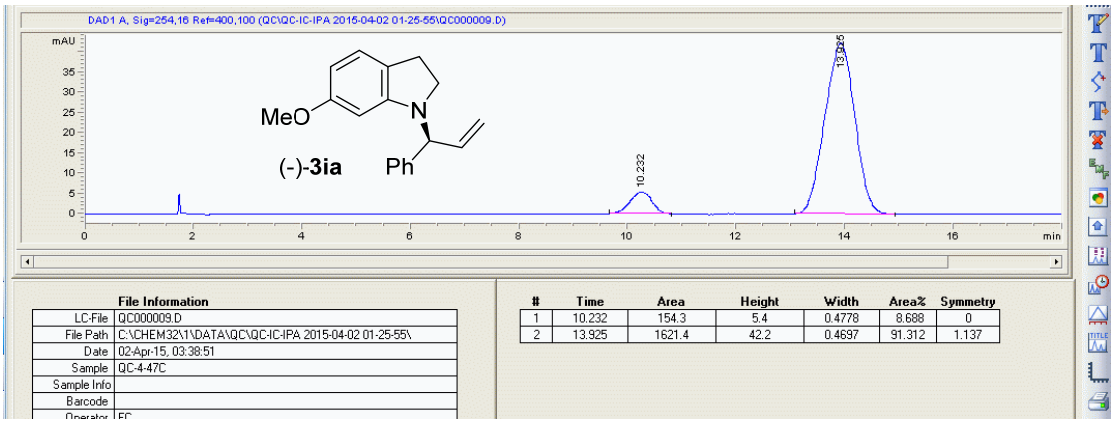
File Information	
LC-File	QC000017.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-27 02-11-16\
Date	27-Apr-15, 05:15:03
Sample	QC-4-68B

#	Time	Area	Height	Width	Area%	Symmetry
1	11.344	62.9	2.4	0.4338	11.669	0
2	13.795	476.2	14.2	0.5585	88.331	1.121



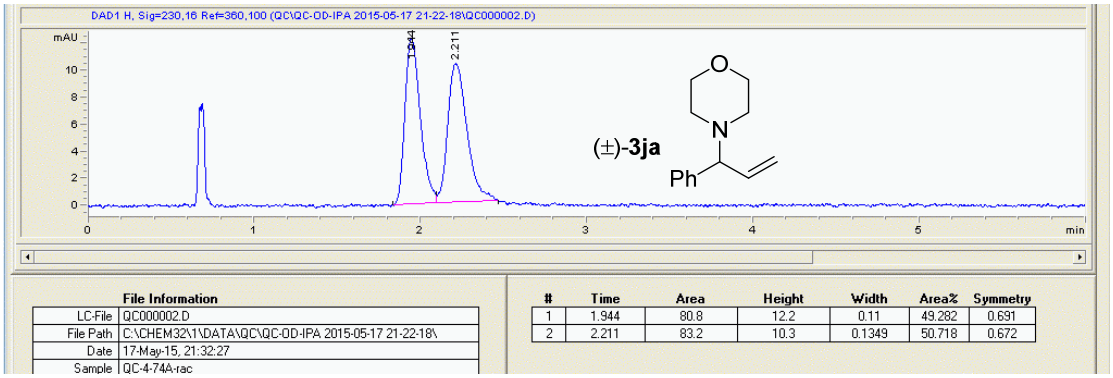
File Information	
LC-File	QC000010.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-02 01-25-55\
Date	02-Apr-15, 04:00:25
Sample	QC-4-47C-rac
Sample Info	
Barcode	

#	Time	Area	Height	Width	Area%	Symmetry
1	10.258	54.1	2.1	0.435	49.256	0.824
2	13.92	55.7	1.5	0.6242	50.744	0.858



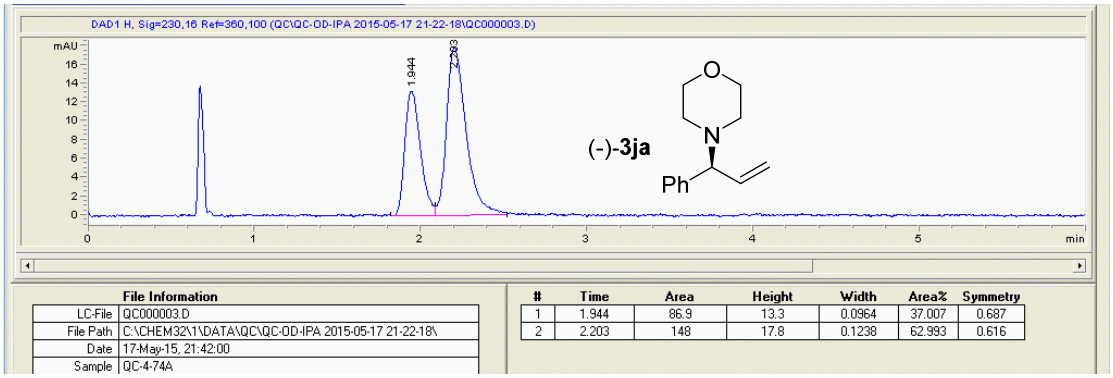
File Information	
LC-File	QC000009.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-02 01-25-55\
Date	02-Apr-15, 03:38:51
Sample	QC-4-47C
Sample Info	
Barcode	

#	Time	Area	Height	Width	Area%	Symmetry
1	10.232	154.3	5.4	0.4778	8.688	0
2	13.925	1621.4	42.2	0.4697	91.312	1.137



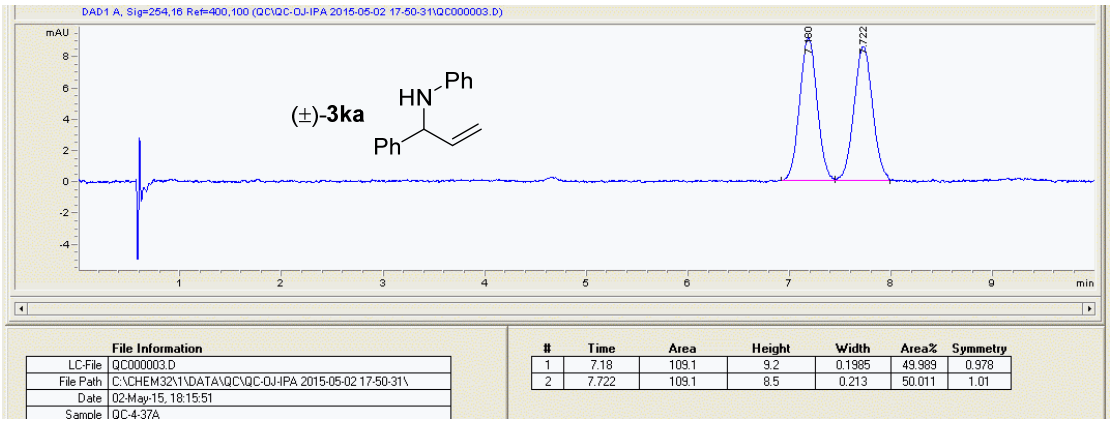
File Information	
LC-File	QC000002.D
File Path	C:\CHEM32\1\DATA\QC\QC-OD-IPA 2015-05-17 21-22-18\
Date	17-May-15, 21:32:27
Sample	QC-4-74A-rac

#	Time	Area	Height	Width	Area%	Symmetry
1	1.944	80.8	12.2	0.11	49.282	0.691
2	2.211	83.2	10.3	0.1349	50.718	0.672



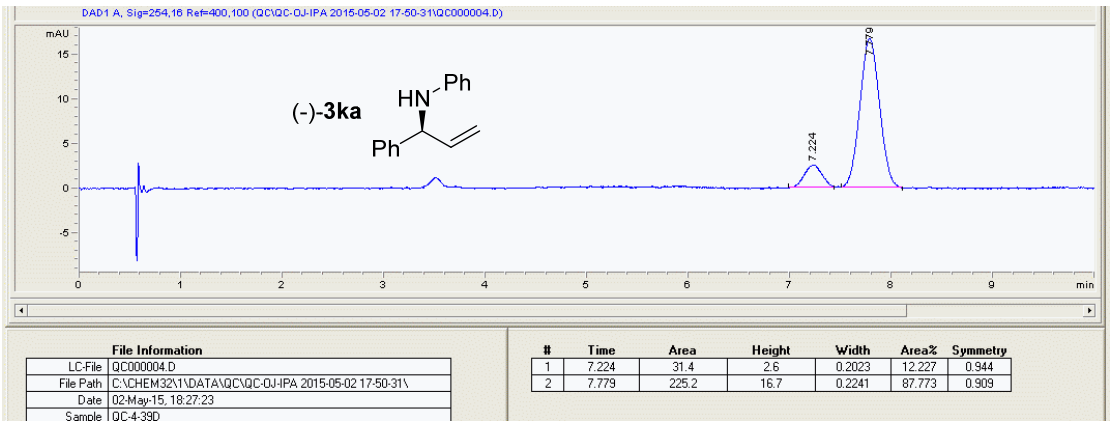
File Information	
LC-File	QC000003.D
File Path	C:\CHEM32\1\DATA\QC\QC-OD-IPA 2015-05-17 21-22-18\
Date	17-May-15, 21:42:00
Sample	QC-4-74A

#	Time	Area	Height	Width	Area%	Symmetry
1	1.944	86.9	13.3	0.0964	37.007	0.687
2	2.203	148	17.8	0.1238	62.993	0.616



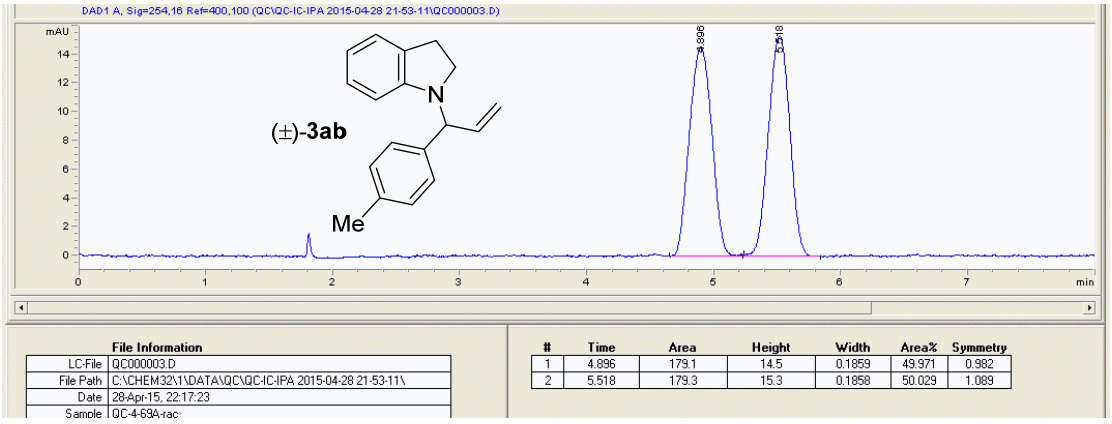
File Information	
LC-File	QC000003.D
File Path	C:\CHEM32\1\DATA\QC\QC-OJ-IPA 2015-05-02 17-50-31\
Date	02-May-15, 18:15:51
Sample	QC-4-37A

#	Time	Area	Height	Width	Area%	Symmetry
1	7.18	109.1	9.2	0.1985	49.989	0.978
2	7.722	109.1	8.5	0.213	50.011	1.01



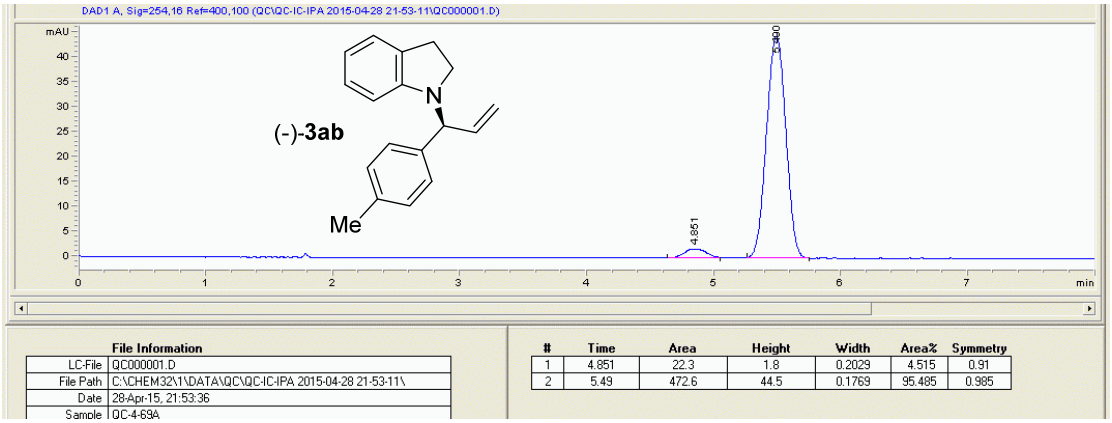
File Information	
LC-File	QC000004.D
File Path	C:\CHEM32\1\DATA\QC\QC-OJ-IPA 2015-05-02 17-50-31\
Date	02-May-15, 18:27:23
Sample	QC-4-39D

#	Time	Area	Height	Width	Area%	Symmetry
1	7.224	31.4	2.6	0.2023	12.227	0.944
2	7.779	225.2	16.7	0.2241	87.773	0.909



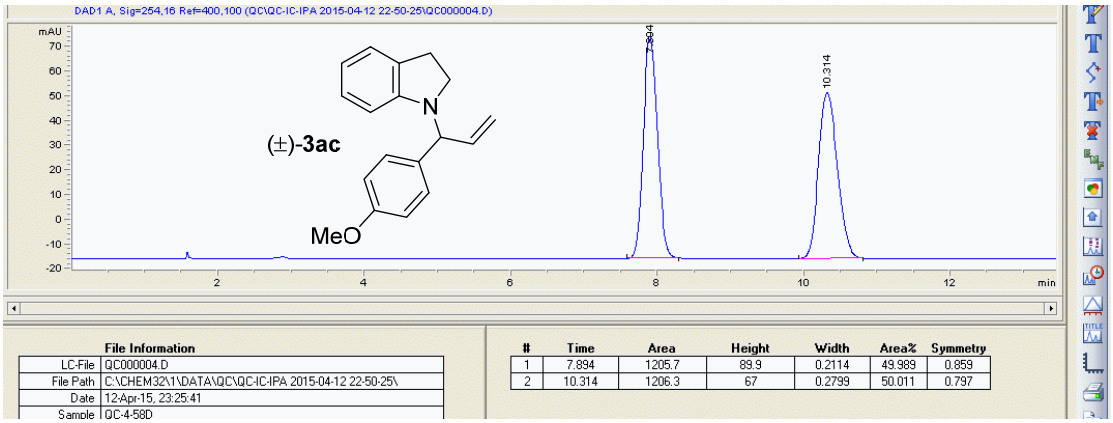
File Information	
LC-File	QC000003.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-28 21-53-11\
Date	28-Apr-15, 22:17:23
Sample	QC-4-69A-rac

#	Time	Area	Height	Width	Area%	Symmetry
1	4.896	179.1	14.5	0.1859	49.971	0.982
2	5.518	179.3	15.3	0.1858	50.029	1.089



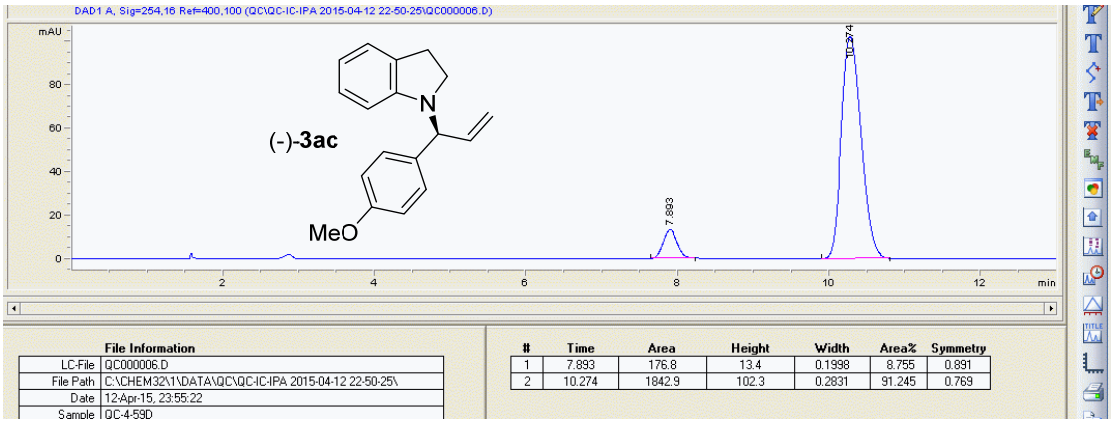
File Information	
LC-File	QC000001.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-28 21-53-11\
Date	28-Apr-15, 21:53:36
Sample	QC-4-69A

#	Time	Area	Height	Width	Area%	Symmetry
1	4.851	22.3	1.8	0.2029	4.515	0.91
2	5.49	472.6	44.5	0.1769	95.485	0.985



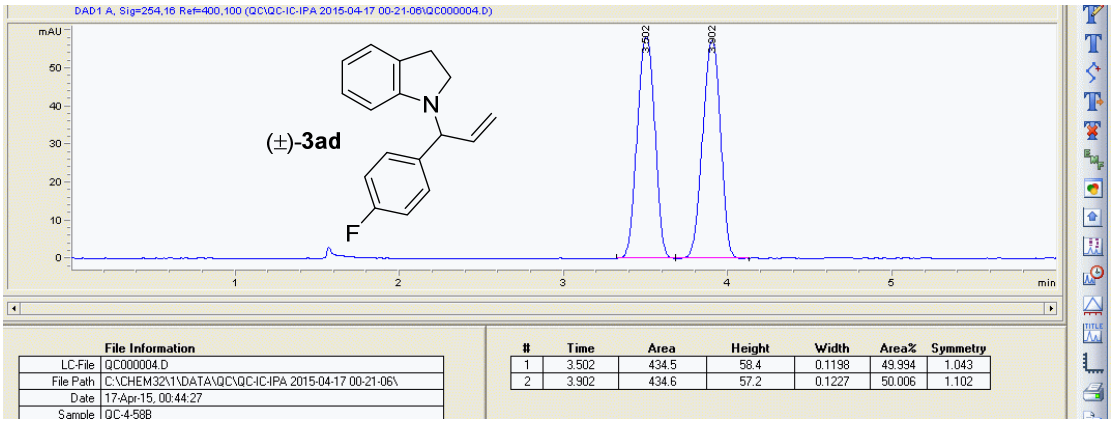
File Information	
LC-File	QC000004.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-12 22-50-25\
Date	12-Apr-15, 23:25:41
Sample	QC-4-58D

#	Time	Area	Height	Width	Area%	Symmetry
1	7.894	1205.7	89.9	0.2114	49.989	0.859
2	10.314	1206.3	67	0.2799	50.011	0.797



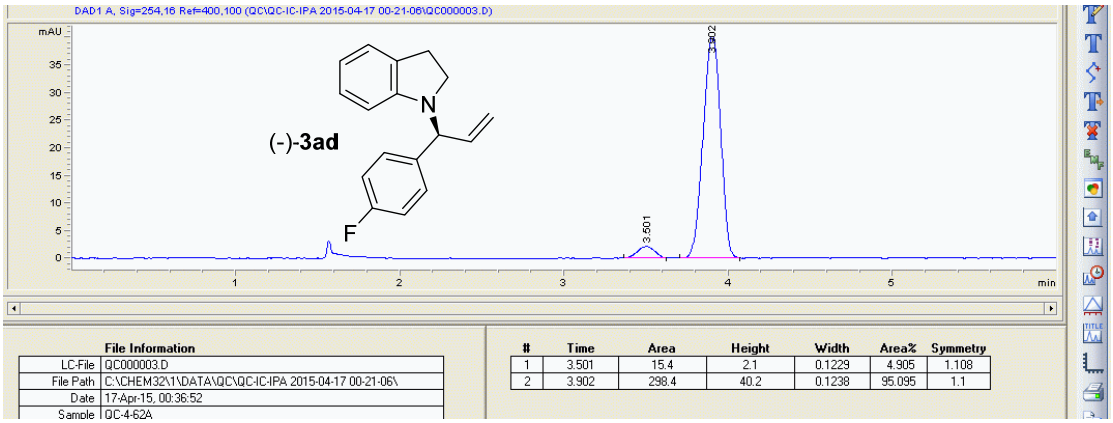
File Information	
LC-File	QC000006.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-12 22-50-25\
Date	12-Apr-15, 23:55:22
Sample	QC-4-59D

#	Time	Area	Height	Width	Area%	Symmetry
1	7.893	176.8	13.4	0.1998	8.755	0.891
2	10.274	1842.9	102.3	0.2831	91.245	0.769



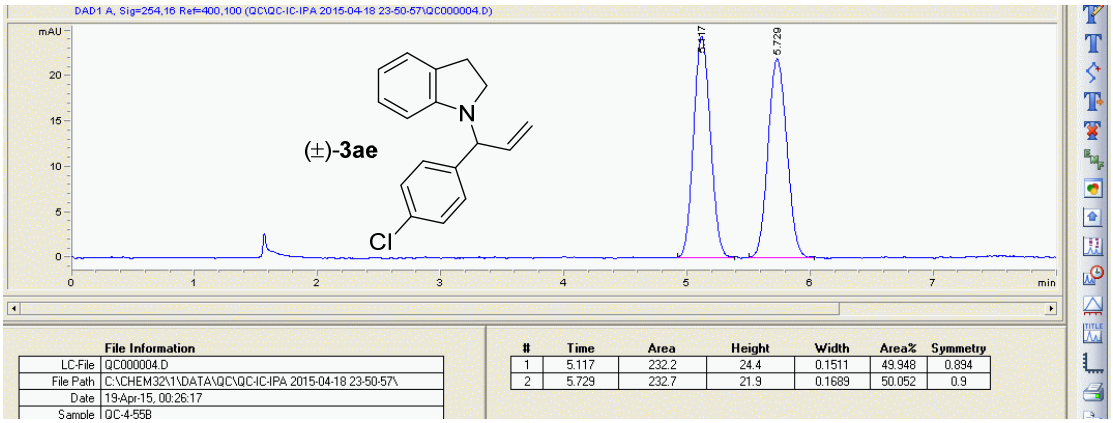
File Information	
LC-File	QC000004.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-17 00-21-06\
Date	17-Apr-15, 00:44:27
Sample	QC-4-58B

#	Time	Area	Height	Width	Area%	Symmetry
1	3.502	434.5	58.4	0.1198	49.994	1.043
2	3.902	434.6	57.2	0.1227	50.006	1.102



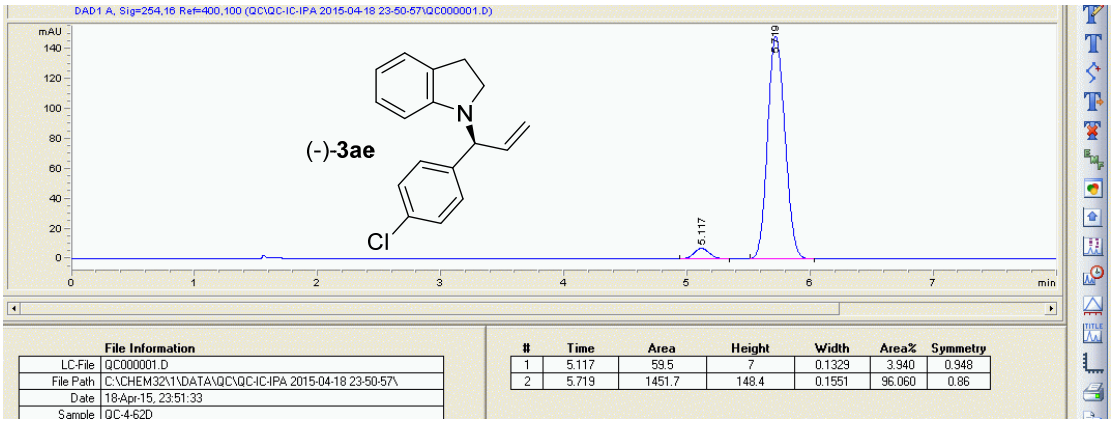
File Information	
LC-File	QC000003.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-17 00-21-06\
Date	17-Apr-15, 00:36:52
Sample	QC-4-62A

#	Time	Area	Height	Width	Area%	Symmetry
1	3.501	15.4	2.1	0.1229	4.905	1.108
2	3.902	298.4	40.2	0.1238	95.095	1.1



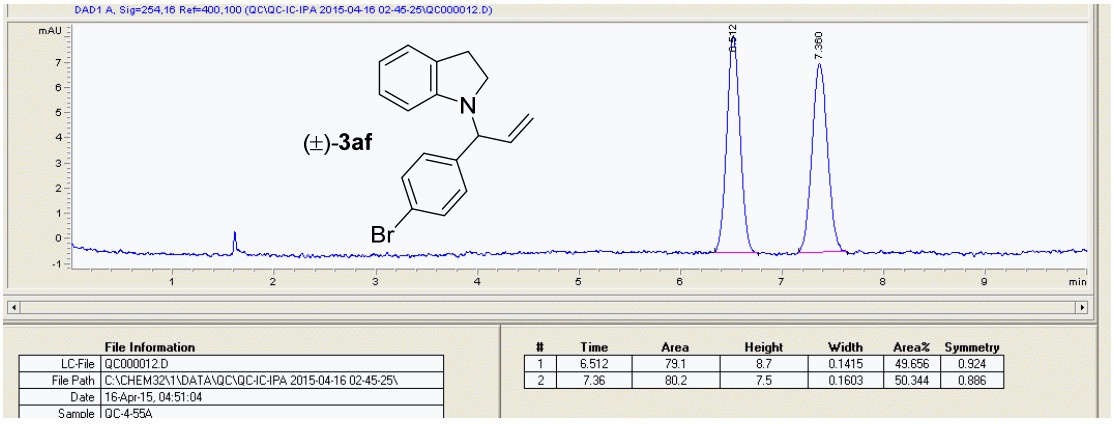
File Information	
LC-File	QC000004.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-18 23-50-57\
Date	19-Apr-15, 00:26:17
Sample	QC-4-55B

#	Time	Area	Height	Width	Area%	Symmetry
1	5.117	232.2	24.4	0.1511	49.948	0.894
2	5.729	232.7	21.9	0.1689	50.052	0.9



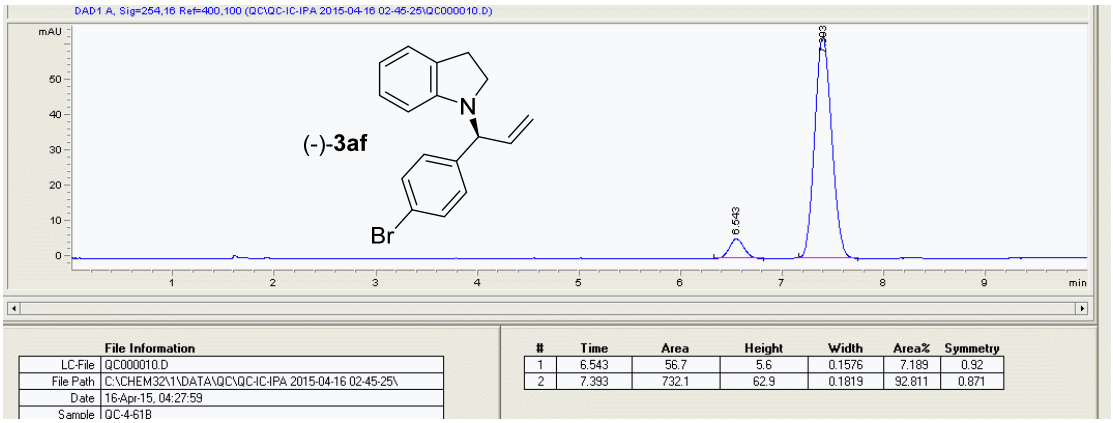
File Information	
LC-File	QC000001.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-18 23-50-57\
Date	18-Apr-15, 23:51:33
Sample	QC-4-62D

#	Time	Area	Height	Width	Area%	Symmetry
1	5.117	59.5	7	0.1329	3.940	0.948
2	5.719	1451.7	148.4	0.1551	96.060	0.86



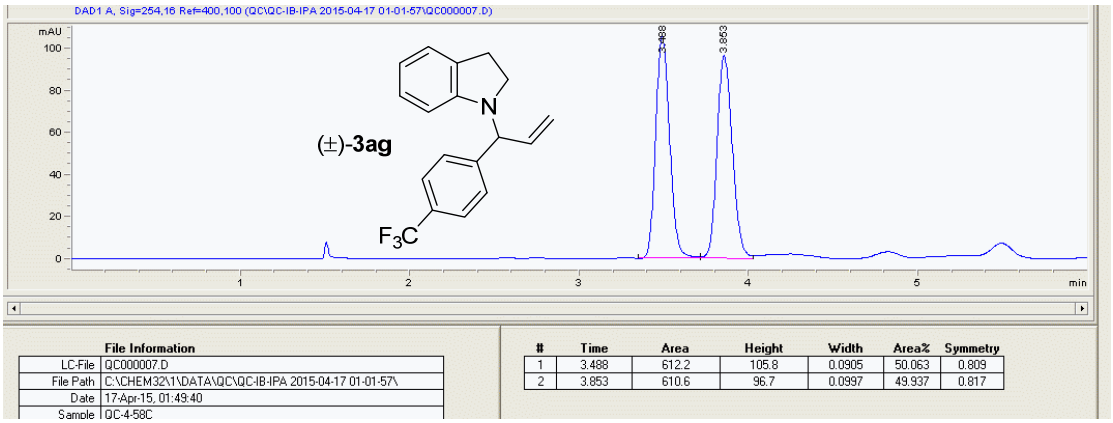
File Information	
LC-File	QC000012.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-16 02-45-25\
Date	16-Apr-15, 04:51:04
Sample	QC-4-55A

#	Time	Area	Height	Width	Area%	Symmetry
1	6.512	79.1	8.7	0.1415	49.656	0.924
2	7.36	80.2	7.5	0.1603	50.344	0.886



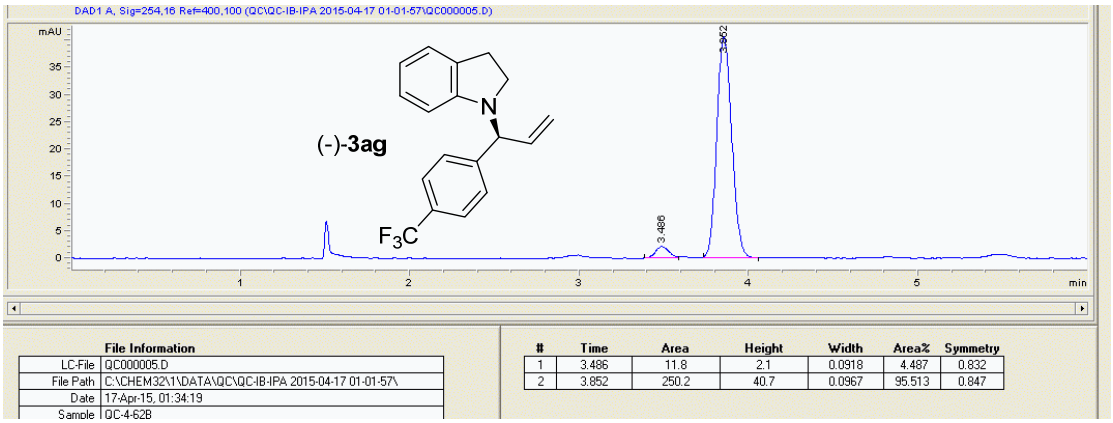
File Information	
LC-File	QC000010.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-16 02-45-25\
Date	16-Apr-15, 04:27:59
Sample	QC-4-61B

#	Time	Area	Height	Width	Area%	Symmetry
1	6.543	56.7	5.6	0.1576	7.189	0.92
2	7.393	732.1	62.9	0.1819	92.811	0.871



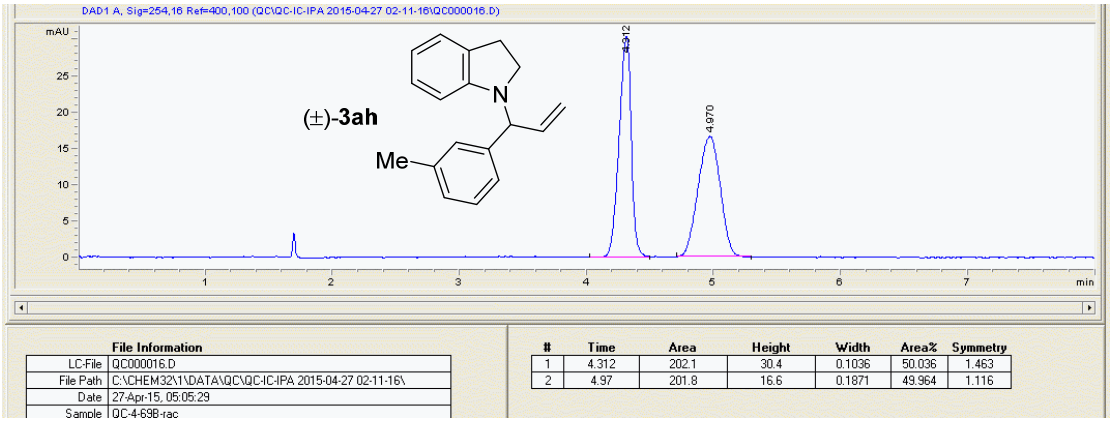
File Information	
LC-File	QC000007.D
File Path	C:\CHEM32\1\DATA\QC\QC-IB-IPA 2015-04-17 01-01-57\
Date	17-Apr-15, 01:49:40
Sample	QC-4-58C

#	Time	Area	Height	Width	Area%	Symmetry
1	3.488	612.2	105.8	0.0905	50.063	0.809
2	3.853	610.6	96.7	0.0997	49.937	0.817



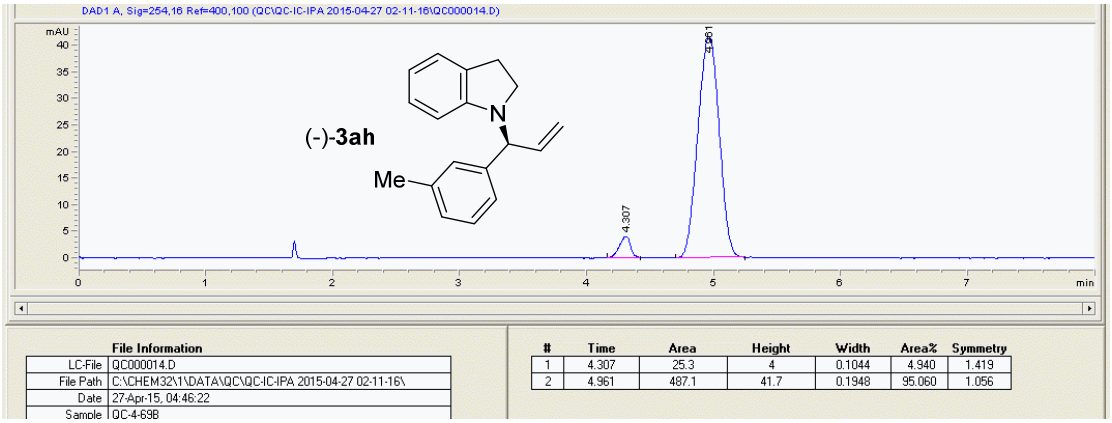
File Information	
LC-File	QC000005.D
File Path	C:\CHEM32\1\DATA\QC\QC-IB-IPA 2015-04-17 01-01-57\
Date	17-Apr-15, 01:34:19
Sample	QC-4-62B

#	Time	Area	Height	Width	Area%	Symmetry
1	3.486	11.8	2.1	0.0918	4.487	0.832
2	3.852	250.2	40.7	0.0967	95.513	0.847



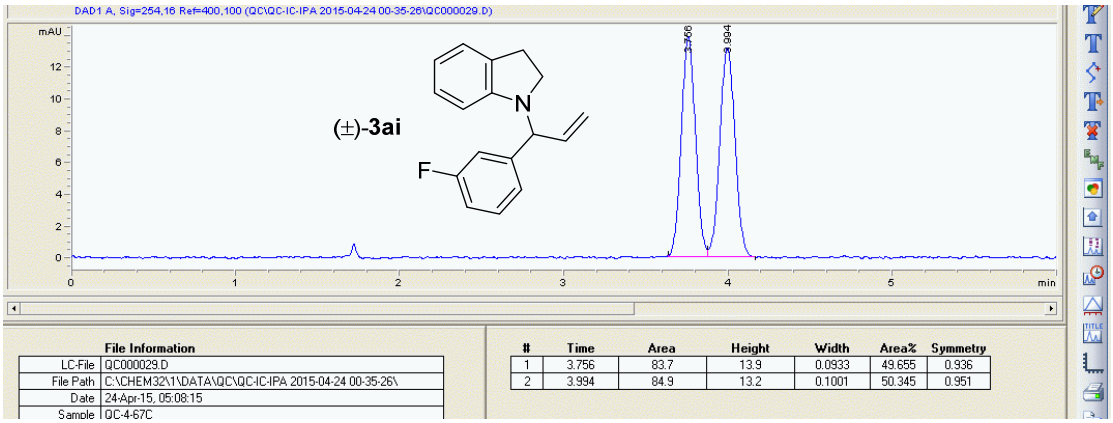
File Information	
LC-File	QC000016.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-27 02-11-16\
Date	27-Apr-15, 05:05:29
Sample	QC-4-69B-rac

#	Time	Area	Height	Width	Area%	Symmetry
1	4.312	202.1	30.4	0.1036	50.036	1.463
2	4.97	201.8	16.6	0.1871	49.964	1.116



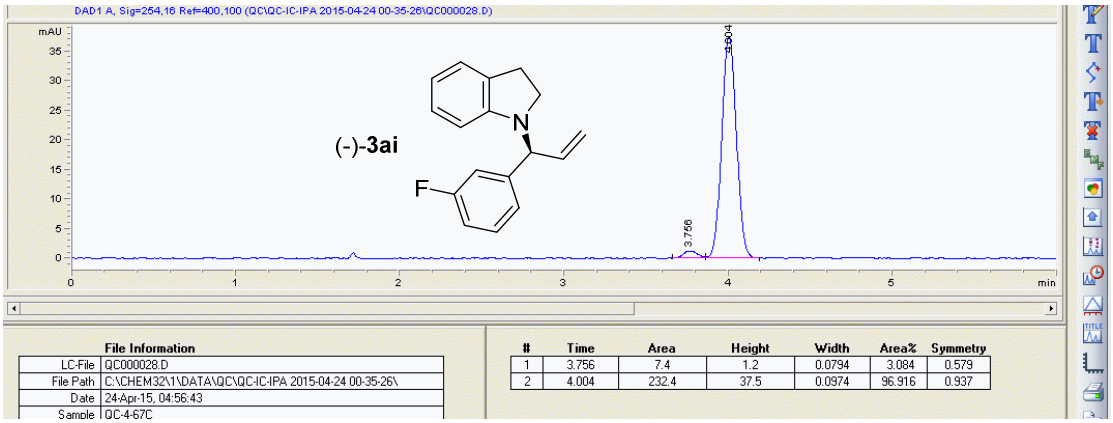
File Information	
LC-File	QC000014.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-27 02-11-16\
Date	27-Apr-15, 04:46:22
Sample	QC-4-69B

#	Time	Area	Height	Width	Area%	Symmetry
1	4.307	25.3	4	0.1044	4.940	1.419
2	4.961	487.1	41.7	0.1948	95.060	1.056



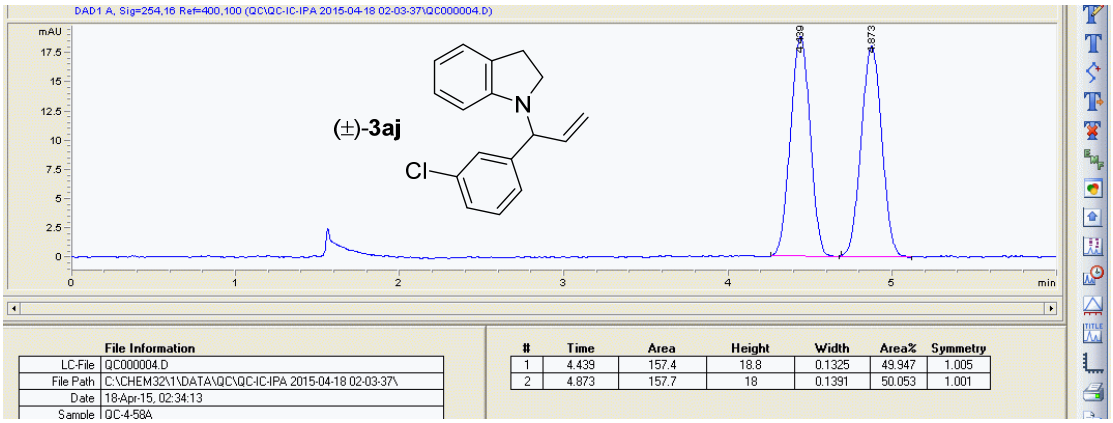
File Information	
LC-File	QC000029.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-24 00-35-26\
Date	24-Apr-15, 05:08:15
Sample	QC-4-67C

#	Time	Area	Height	Width	Area%	Symmetry
1	3.756	83.7	13.9	0.0933	49.655	0.936
2	3.994	84.9	13.2	0.1001	50.345	0.951



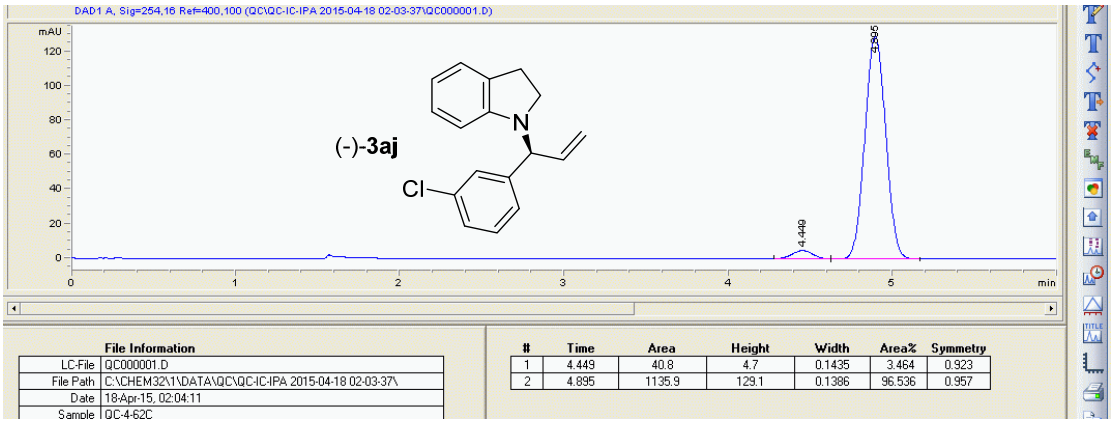
File Information	
LC-File	QC000028.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-24 00-35-26\
Date	24-Apr-15, 04:56:43
Sample	QC-4-67C

#	Time	Area	Height	Width	Area%	Symmetry
1	3.756	7.4	1.2	0.0794	3.084	0.579
2	4.004	232.4	37.5	0.0974	96.916	0.937



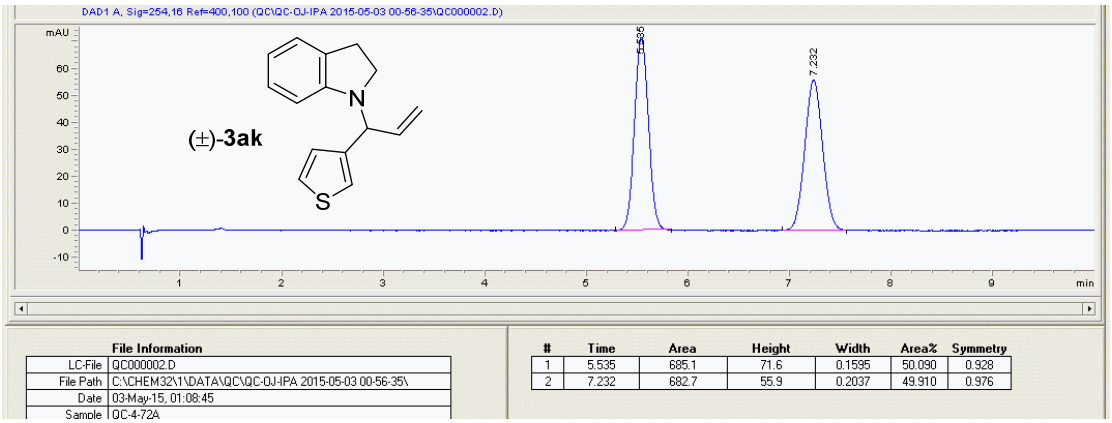
File Information	
LC-File	QC000004.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-18 02-03-37\
Date	18-Apr-15, 02:34:13
Sample	QC-4-58A

#	Time	Area	Height	Width	Area%	Symmetry
1	4.439	157.4	18.8	0.1325	49.947	1.005
2	4.873	157.7	18	0.1391	50.053	1.001



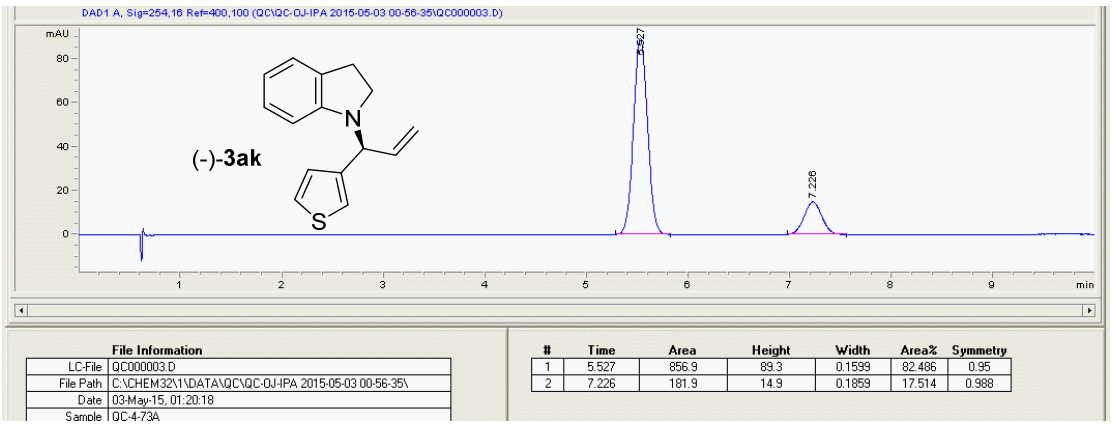
File Information	
LC-File	QC000001.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-18 02-03-37\
Date	18-Apr-15, 02:04:11
Sample	QC-4-62C

#	Time	Area	Height	Width	Area%	Symmetry
1	4.449	40.8	4.7	0.1435	3.464	0.923
2	4.895	1135.9	129.1	0.1386	96.536	0.957



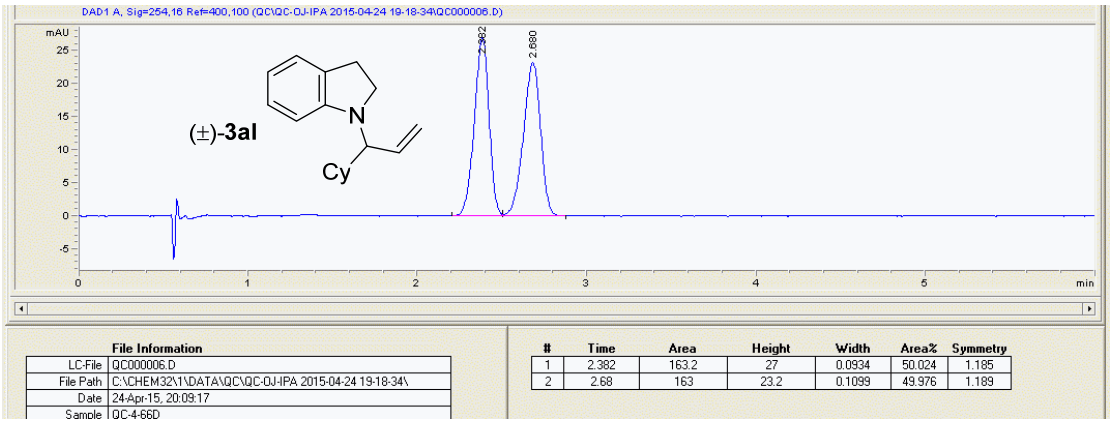
File Information	
LC-File	QC000002.D
File Path	C:\CHEM32\1\DATA\QC\QC-OJ-IPA 2015-05-03 00-56-35\
Date	03-May-15, 01:08:45
Sample	QC-4-72A

#	Time	Area	Height	Width	Area%	Symmetry
1	5.535	685.1	71.6	0.1595	50.090	0.928
2	7.232	682.7	55.9	0.2037	49.910	0.976



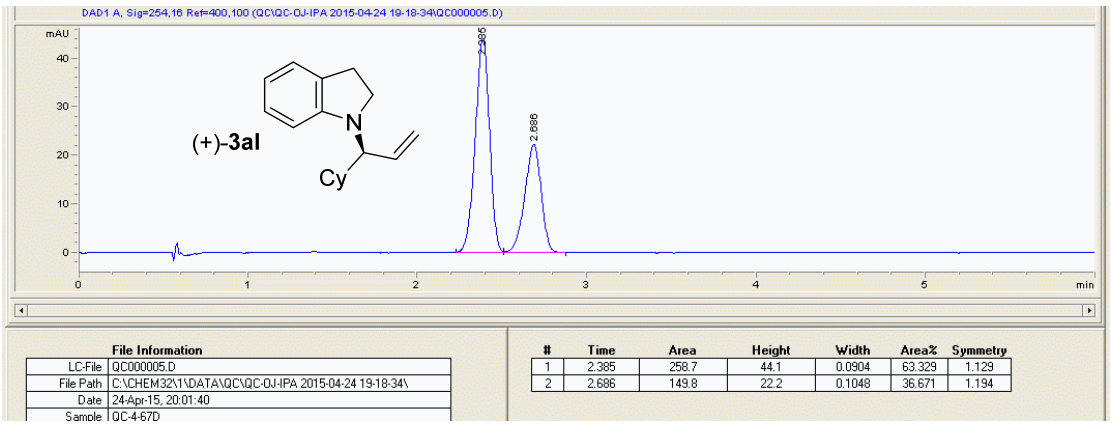
File Information	
LC-File	QC000003.D
File Path	C:\CHEM32\1\DATA\QC\QC-OJ-IPA 2015-05-03 00-56-35\
Date	03-May-15, 01:20:18
Sample	QC-4-73A

#	Time	Area	Height	Width	Area%	Symmetry
1	5.527	856.9	89.3	0.1599	82.486	0.95
2	7.226	181.9	14.9	0.1859	17.514	0.988



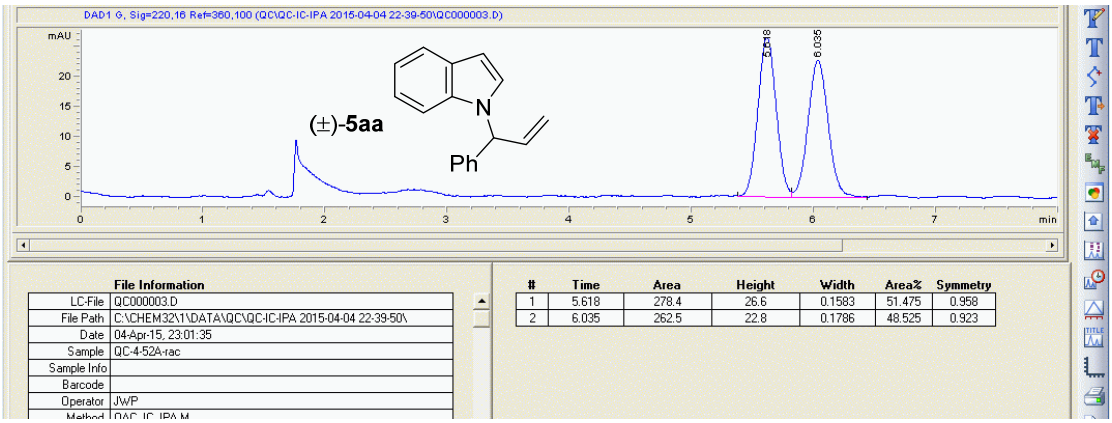
File Information	
LC-File	QC000006.D
File Path	C:\CHEM32\1\DATA\QC\QC-OJ-IPA 2015-04-24 19-18-34\
Date	24-Apr-15, 20:09:17
Sample	QC-4-66D

#	Time	Area	Height	Width	Area%	Symmetry
1	2.382	163.2	27	0.0934	50.024	1.185
2	2.68	163	23.2	0.1099	49.976	1.189



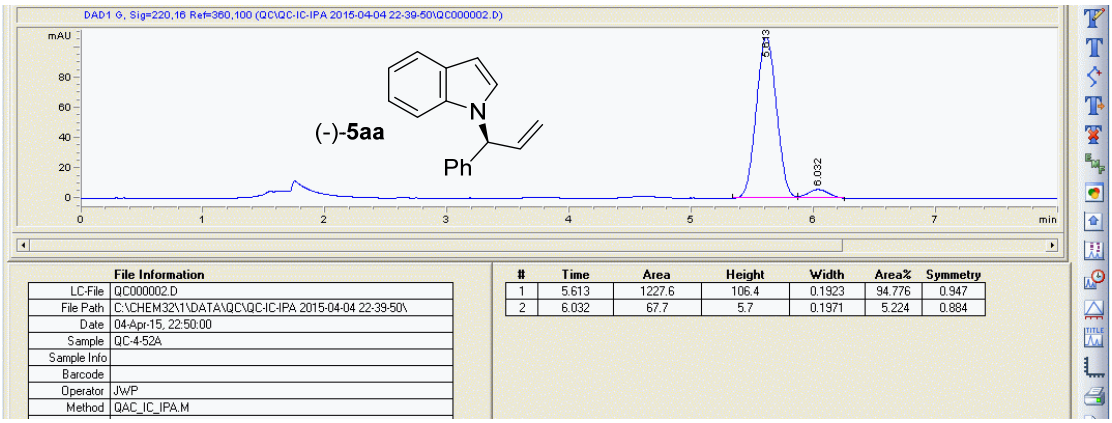
File Information	
LC-File	QC000005.D
File Path	C:\CHEM32\1\DATA\QC\QC-OJ-IPA 2015-04-24 19-18-34\
Date	24-Apr-15, 20:01:40
Sample	QC-4-67D

#	Time	Area	Height	Width	Area%	Symmetry
1	2.385	258.7	44.1	0.0904	63.329	1.129
2	2.686	149.8	22.2	0.1048	36.671	1.194



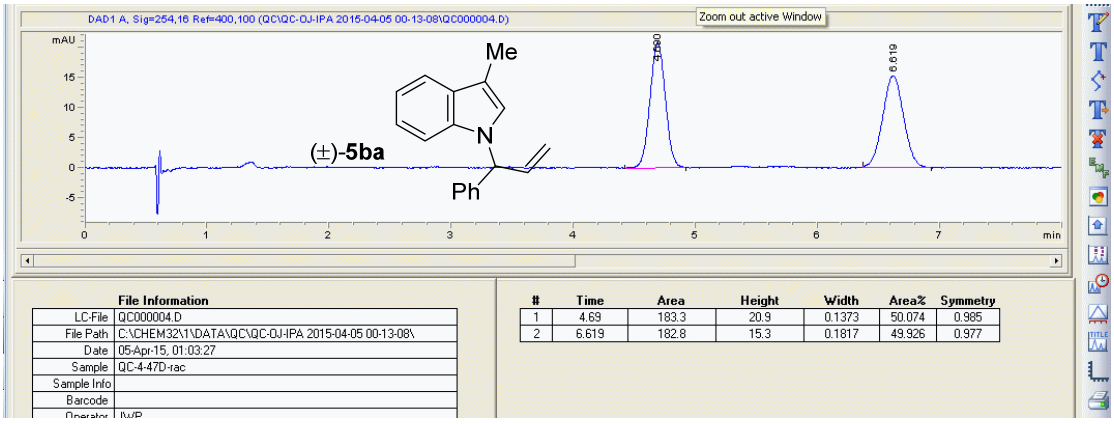
File Information	
LC-File	QC000003.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-04 22-39-50\
Date	04-Apr-15, 23:01:35
Sample	QC-4-52A-rac
Sample Info	
Barcode	
Operator	JWP
Method	QAC_IC_IPA.M

#	Time	Area	Height	Width	Area%	Symmetry
1	5.618	278.4	26.6	0.1583	51.475	0.958
2	6.035	262.5	22.8	0.1786	48.525	0.923



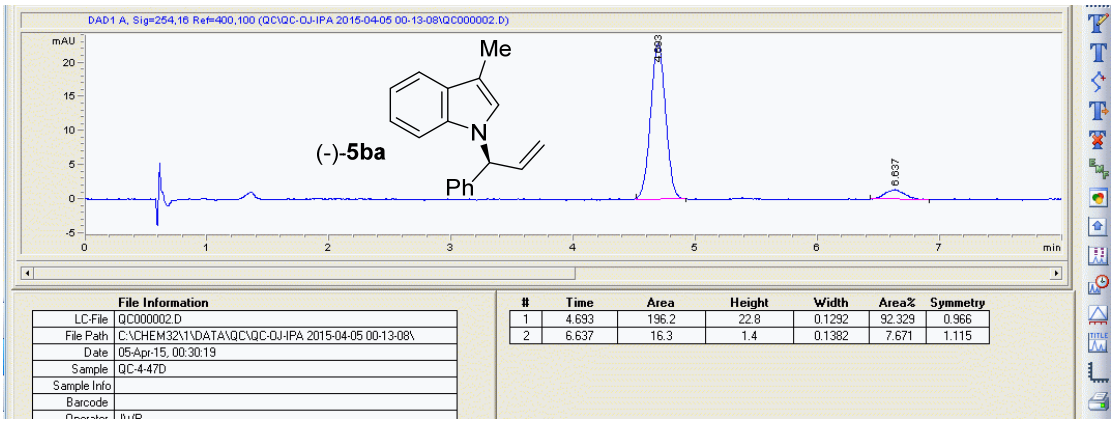
File Information	
LC-File	QC000002.D
File Path	C:\CHEM32\1\DATA\QC\QC-IC-IPA 2015-04-04 22-39-50\
Date	04-Apr-15, 22:50:00
Sample	QC-4-52A
Sample Info	
Barcode	
Operator	JWP
Method	QAC_IC_IPA.M

#	Time	Area	Height	Width	Area%	Symmetry
1	5.613	1227.6	106.4	0.1923	94.776	0.947
2	6.032	67.7	5.7	0.1971	5.224	0.884



File Information	
LC-File	QC000004.D
File Path	C:\CHEM32\1\DATA\QC\QC-OJ-IPA 2015-04-05 00-13-08\
Date	05-Apr-15, 01:03:27
Sample	QC-4-47D-rac
Sample Info	
Barcode	

#	Time	Area	Height	Width	Area%	Symmetry
1	4.69	183.3	20.9	0.1373	50.074	0.985
2	6.619	182.8	15.3	0.1817	49.926	0.977



File Information	
LC-File	QC000002.D
File Path	C:\CHEM32\1\DATA\QC\QC-OJ-IPA 2015-04-05 00-13-08\
Date	05-Apr-15, 00:30:19
Sample	QC-4-47D
Sample Info	
Barcode	

#	Time	Area	Height	Width	Area%	Symmetry
1	4.693	196.2	22.8	0.1292	92.329	0.966
2	6.637	16.3	1.4	0.1382	7.671	1.115