Supporting Information:

Asymmetric Hydrogenolysis of Racemic Tertiary Alcohol, 3-Substituted 3-Hydroxyisoindolin-1-ones

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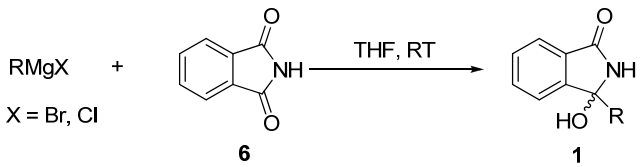
1. General and Materials

General: All reactions were carried out under an atmosphere of nitrogen using standard Schlenk techniques, unless otherwise noted. ^{1}H NMR and ^{13}C NMR spectra were recorded at room temperature in $CDCl_3$ and DMSO on 400 MHz instrument with tetramethylsilane (TMS) as internal standard. Enantiomeric excess was determined by HPLC analysis, using chiral column described below in detail. Optical rotations were measured by polarimeter. Flash column chromatography was performed on silica gel (200-300 mesh). All reactions were monitored by TLC analysis.

Materials: Commercially available reagents were used throughout without further purification other than those detailed below. The solvents for asymmetric transfer hydrogenolysis reaction were purchased without further purification.

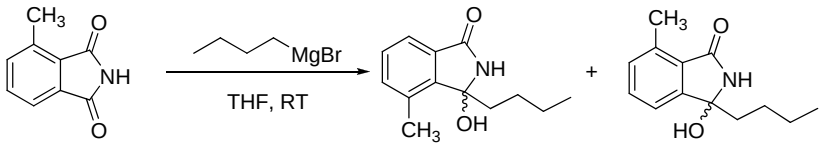
2. Typical Procedure for Synthesis of 3-Hydroxy-Substituted Isoindolin-1-ones 1



6 **1**

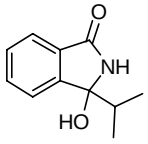
Typical procedure:[1a-g] Solution of Grignard reagent (25 mmol) was added to, under N_2, phthalimide (**6**) (10 mmol) in THF (10 mL). After being stirred under the room temperature for 3 h, the reaction was quenched by a saturated aqueous solution of NH_4Cl (20 mL). The resulting mixture was extracted with CH_2Cl_2 (3x10 mL). The combined organic phases were washed with brine, then dried (Na_2SO_4), filtered and concentrated. A short silica gel column filtration of the crude mixture [ethyl acetate -petroleum ether = 1:2 as eluent] afforded **1**.

The ^{1}H NMR and ^{13}C NMR of known imines **1a**[1a-b], **1b**, [1a-b] **1c**[1b], **1d**[1b], **1h**[1g], **1i**[1b,1d,1f], **1j**[1f], **1k**[1f],**1l**[1f], **1o**[1a-c,1e], **1p**[1h], **2a**[1i] were consistent with the reported literature data.

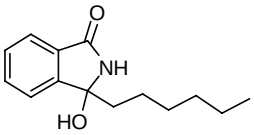


7 **1m** **1n**

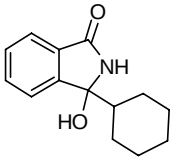
3-Hydroxy-3-isopropylisoindolin-1-one (**1e**). Pale solid, mp = 189-191 °C, yield 85% (petroleum ester/ ethyl acetate = 2/1); ^{1}H NMR (400 MHz, DMSO) δ 8.68 (s, 1H), 7.56 (dt, J = 6.8, 3.5 Hz, 2H), 7.49 – 7.45 (m, 2H), 6.13 (s, 1H), 2.25 – 2.21 (m, 1H), 0.93 (d, J = 6.8 Hz, 3H), 0.60 (d, J = 6.8 Hz, 3H); ^{13}C NMR (100 MHz, DMSO) δ 169.1, 149.7, 132.7, 132.6, 129.4, 122.9, 122.8, 90.4, 35.9, 17.7, 17.3;HRMS Calculated For $C_{11}H_{13}NO_2Na$ $[M+Na]^+$ 214.0844, found: 214.0847.



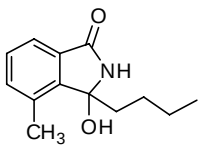
3-Hexyl-3-hydroxyisoindolin-1-one (**1f**). Pale solid, mp = 102-104 °C, yield 66% (petroleum ester/ethyl acetate = 2/1); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.67 – 7.28 (m, 5H), 4.71 – 4.68 (m, 1H), 2.09 – 1.91 (m, 2H), 1.35 – 1.33 (m, 1H), 1.23 – 1.20 (m, 6H), 1.19 – 0.98 (m, 1H), 0.82 (t, J = 6.8 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 170.2, 149.0, 132.7, 130.8, 129.3, 123.4, 122.0, 88.8, 38.6, 31.7, 29.4, 23.8, 22.7, 14.2; HRMS Calculated For $C_{14}H_{19}NO_2Na$ $[M+H]^+$ 256.1313, found: 256.1315.



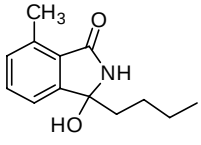
3-Cyclohexyl-3-hydroxyisoindolin-1-one (**1g**). Pale solid, mp = 200-202 °C, yield 92% (petroleum ester/ethyl acetate = 2/1); ^{1}H NMR (400 MHz, DMSO) δ 8.65 (s, 1H), 7.55 (d, J = 7.3 Hz, 2H), 7.47 – 7.40 (m, 2H), 6.10 (s, 1H), 1.97 – 1.85 (m, 2H), 1.69 (d, J = 12.6 Hz, 1H), 1.56 (d, J = 11.0 Hz, 2H), 1.20 – 0.86 (m, 7H); ^{13}C NMR (100 MHz, DMSO) δ 168.9, 149.7, 132.7, 132.6, 129.4, 123.0, 122.9, 90.0, 45.8, 27.4, 26.9, 26.6, 26.4, 26.2; HRMS Calculated For $C_{14}H_{17}NO_2Na$ $[M+Na]^+$ 254.1157, found:254.1162.



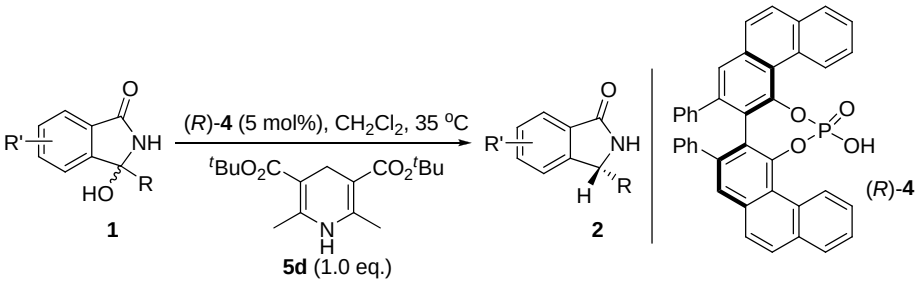
3-Butyl-3-Hydroxy-4-methylisoindolin-1-one (**1m**). Pale solid, mp = 60-61 °C, yield 40% (petroleum ester/ ethyl acetate = 2/1); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.40 (dd, J = 17.4, 9.9 Hz, 2H), 7.30 (d, J = 7.4 Hz, 1H), 7.06 (d, J = 7.5 Hz, 1H), 4.91 (s, 1H), 2.24 (s, 3H), 2.11 – 1.90 (m, 2H), 1.38 – 1.19 (m, 3H), 1.04 – 0.91 (m, 1H), 0.82 (t, J = 7.2 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 171.0, 149.8, 138.0, 132.5, 131.4, 127.6, 119.6, 87.7, 38.4, 26.0, 22.8, 17.2, 14.0; HRMS Calculated For $C_{13}H_{17}NO_2Na$ $[M+Na]^+$ 242.1157, found: 242.1156.



3-Butyl-3-Hydroxy-4-methylisoindolin-1-one (**1n**). Pale solid, mp = 132-134 °C, yield 44% (petroleum ester/EtOAc = 2/1); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.32 – 7.22 (m, 4H), 4.58 (s, 1H), 2.48 (s, 3H), 2.12 (dd, J = 9.6, 6.3 Hz, 2H), 1.35 – 1.13 (m, 3H), 0.81 (t, J = 7.0 Hz, 4H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 169.8, 145.6, 134.8 , 133.8, 131.2, 129.5, 121.0, 89.6, 36.8, 26.0, 22.7, 17.8, 14.0; HRMS Calculated For $C_{13}H_{17}NO_2Na$ $[M+Na]^+$ 242.1157, found: 242.1156.



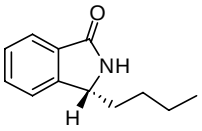
3. Typical Procedure for Hydrogenolysis of 3-Hydroxy-Substituted Isoindolin-1-ones 1.



Typical procedure: In a dry Schlenk tube, 3-hydroxyisoindolin-1-one (**1**, 0.20 mmol), and phosphoric acid (*R*)-**4** (6.0 mg, 0.01 mmol) and Hanztsch ester **5d** (61.8 mg, 0.20mmol) were dissolved in CH_2Cl_2 (12 mL) at 35°C under a nitrogen atmosphere. The solution was stirred until complete consumption of **1** (monitored by TLC). After removal of the solvent under reduced pressure, the residue was purified by flash chromatography (ethyl acetate/ petroleum ether, 2:1) to afford the desired product.

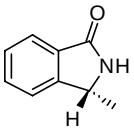
Racemates of **2** were prepared by the reduction of the corresponding 3-Hydroxy-Substituted Isoindolin-1-ones **1** using $NaBH_3CN$ and concd. HCl (3 drops) in MeOH.[1a]

(*R*)-3-Butylisoindolin-1-one (2a).[2] Pale solid, yield 62% (petroleum ester/ EtOAc = 2/1), 86% ee,



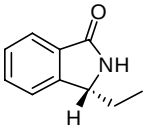
$[\alpha]^{17}_D$ = +30.7 (*c* 0.55, $CHCl_3$) [lit.[2]: $[\alpha]^{20}_D$ = +53.0 (*c* 0.8, MeOH) for 92% ee (*R*)]; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.04 (s, 1H), 7.86 (d, *J* = 7.5 Hz, 1H), 7.56 (td, *J* = 7.5, 1.1 Hz, 1H), 7.50 – 7.39 (m, 2H), 4.63 (dd, *J* = 7.4, 4.7 Hz, 1H), 1.96 (dd, *J* = 18.9, 5.4 Hz, 1H), 1.68 (dd, *J* = 15.8, 5.4 Hz, 1H), 1.53 – 1.26 (m, 4H), 0.90 (t, *J* = 7.1 Hz, 3H);.^{13}C NMR (100 MHz, $CDCl_3$) δ 171.6, 148.0, 132.3, 131.9, 128.1, 123.9, 122.6, 57.3, 34.5, 27.8, 22.8, 14.1; HPLC (AD-H, elute: Hexanes/*i*-PrOH = 90/10, detector: 254 nm, flow rate: 0.8 mL/min), t_1 = 8.9 min (maj), t_2 = 12.2 min.

(*R*)-3-Methylisoindolin-1-one (2b).[2,4] Pale solid, yield 64% (petroleum ester/EtOAc = 2/1), 65%



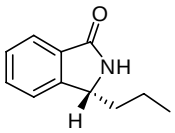
ee, $[\alpha]^{18}_D$ = +10.3 (*c* 0.67, $CHCl_3$) [lit.[2]: $[\alpha]^{20}_D$ = +39.1 (*c* 1.0, MeOH) for 97% ee (*R*)]; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.83 (d, *J* = 7.5 Hz, 1H), 7.55 (t, *J* = 7.4 Hz, 1H), 7.44 (dd, *J* = 15.2, 7.5 Hz, 2H), 4.70 (q, *J* = 6.7 Hz, 1H), 1.50 (d, *J* = 6.7 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 171.4, 149.2, 132.0, 128.2, 123.8 (d, J = 1.7 Hz), 122.4, 52.9, 20.4; HPLC (OJ-H, elute: Hexanes/*i*-PrOH = 95/5, detector: 254 nm, flow rate: 0.6 mL/min), t_1 =15.4 min (maj), t_2 = 16.8 min.

(*R*)-3-Ethylisoindolin-1-one (2c).[2] Pale solid; yield 56% (petroleum ester/ EtOAc = 2/1), 86% ee,



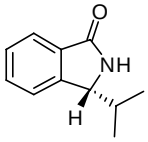
$[\alpha]^{18}_D$ = +22.4 (c 0.63, $CHCl_3$) [lit.[2]: $[\alpha]^{20}_D$ = +52.0 (*c* 0.6, MeOH) for 92% ee (*R*)]; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.83 (t, *J* = 13.9 Hz, 2H), 7.56 (t, *J* = 7.4 Hz, 1H), 7.46 (dd, *J* = 14.7, 7.5 Hz, 2H), 4.61 (dd, *J* = 6.6, 5.0 Hz, 1H), 2.08 – 1.98 (m, 1H), 1.73 (dt, *J* = 14.2, 7.2 Hz, 1H), 0.97 (t, *J* = 7.4 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 171.6, 147.7, 132.4, 131.9, 128.2, 123.9, 122.6, 58.3, 27.5, 9.7; HPLC (OJ-H, elute: Hexanes/*i*-PrOH = 95/5, detector: 254 nm, flow rate: 0.7 mL/min), t_1 = 12.0 min (maj), t_2 = 13.4 min.

(*R*)-3-Propylisoindolin-1-one (2d).[2] Pale solid, yield 60% (petroleum ester/EtOAc = 2/1), 83% ee,

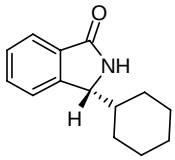


$[\alpha]^{18}_D$ = +19.9 (*c* 0.67, $CHCl_3$) [lit.[2]: $[\alpha]^{20}_D$ = +57.2 (*c* 0.7, MeOH) for 97% ee (*R*)]; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.85 (d, *J* = 7.5 Hz, 1H), 7.66 (s, 1H), 7.56 (t, *J* = 7.4 Hz, 1H), 7.45 (dd, *J* = 13.1, 7.4 Hz, 2H), 4.63 (dd, *J* = 7.6, 4.6 Hz, 1H), 1.99 – 1.87 (m, 1H), 1.70 – 1.59 (m, 1H), 1.58 – 1.33 (m, 2H), 0.97 (t, *J* = 7.3 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 171.8, 148.1, 132.4, 131.8, 128.1, 123.8, 122.6, 57.3, 36.9, 19.1, 14.2; HPLC (OJ-H, elute: Hexanes/*i*-PrOH = 95/5, detector: 254 nm, flow rate: 0.6 mL/min), t_1 = 12.7 (maj) min, t_2 = 15.5 min.

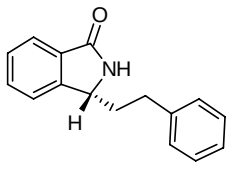
(*R*)-3-isopropylisoindolin-1-one (**2e**).[5] Pale solid, yield 66% (petroleum ester/EtOAc = 2/1), 88% ee, $[\alpha]^{18}_D$ = +22.6 (*c* 0.70, $CHCl_3$) [lit.[5]: $[\alpha]^{rt}_D$ = -40.0 (*c* 0.38, CH_2Cl_2) for >99% ee (*S*)]; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.86 (d, *J* = 7.4 Hz, 1H), 7.56 (t, *J* = 7.3 Hz, 2H), 7.45 (dd, *J* = 13.6, 7.3 Hz, 2H), 4.57 (d, *J* = 2.6 Hz, 1H), 2.26 (ddd, *J* = 13.6, 8.6, 5.3 Hz, 1H), 1.10 (d, *J* = 6.9 Hz, 3H), 0.73 (d, *J* = 6.8 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 172.0, 146.9, 132.9, 131.8, 128.1, 123.8, 122.8, 62.6, 31.9, 19.8, 16.1; HPLC (OJ-H, elute: Hexanes/*i*-PrOH = 95/5, detector: 254 nm, flow rate: 0.6 mL/min), t_1 = 11.7 (maj) min, t_2 = 13.2 min.



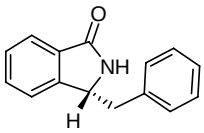
(*R*)-3-Hexylisoindolin-1-one (**2f**).[3] Pale solid, yield 71% (petroleum ester/EtOAc = 2/1), 86% ee, $[\alpha]^{18}_D$ = +26.9 (*c* 0.77, $CHCl_3$) [lit.[2]: $[\alpha]^{20}_D$ = +53.0 (*c* 0.8, MeOH) for 92% ee (*R*)]; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.34 (s, 1H), 7.85 (d, *J* = 7.5 Hz, 1H), 7.55 (td, *J* = 7.4, 0.9 Hz, 1H), 7.53 – 7.43 (m, 2H), 4.63 (dd, *J* = 7.3, 4.7 Hz, 1H), 1.99 – 1.91 (m, 1H), 1.69 – 1.61 (m, 1H), 1.47 (dd, *J* = 16.3, 15.5 Hz, 1H), 1.47 – 1.26 (m, 7H), 0.85 (t, *J* = 6.9 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 171.7 , 148.1, 132.4, 131.8, 128.1, 123.8, 122.6, 57.4, 34.8, 31.8, 29.4, 25.6, 22.7, 14.2;. HPLC (OJ-H, elute: Hexanes/*i*-PrOH = 95/5, detector: 254 nm, flow rate: 0.6 mL/min), t_1 = 11.2 min (maj), t_2 =13.8 min.

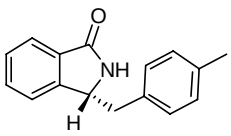


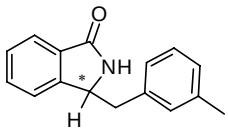
(*R*)-3-Cyclohexylisoindolin-1-one (**2g**).[6] Pale soild, yield 54% (petroleum ester/EtOAc = 2/1), 76 % ee, $[\alpha]^{16}_D$ = +19.5 (*c* 0.55, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.91 (d, *J* = 7.4 Hz, 1H), 7.66 (s, 1H), 7.61 (td, *J* = 7.6, 1.1 Hz, 1H), 7.51 (t, *J* = 7.6 Hz, 2H), 4.59 (d, *J* = 3.2 Hz, 1H), 1.98 – 1.91 (m, 2H), 1.72 (d, *J* = 9.2 Hz, 2H), 1.38 – 1.10 (m, 7H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 171.6, 146.7, 132.7, 131.7, 128.1, 123.9, 122.9, 62.1, 42.0, 30.5, 26.6, 26.5, 26.3, 26.1; HPLC (OJ-H, elute: Hexanes/*i*-PrOH = 90/10, detector: 254 nm, flow rate: 0.8 mL/min), t_1 = 6.1 min (maj), t_2 = 7.6 min.

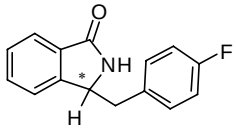


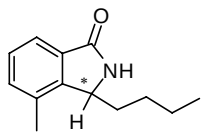
(*R*)-3-Phenethylisoindolin-1-one (**2h**).[7] Pale solid, yield 38% (petroleum ester/EtOAc = 2/1), 78% ee, $[\alpha]^{17}_D$ = +20.3 (*c* 0.53, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.22 (s, 1H), 7.87 (d, *J* = 7.5 Hz, 1H), 7.56 (t, *J* = 7.4 Hz, 1H), 7.46 (dd, *J* = 16.9, 7.6 Hz, 2H), 7.35 – 7.11 (m, 5H), 4.67 (dd, *J* = 7.9, 3.9 Hz, 1H), 2.77 (dt, *J* = 37.9, 19.8 Hz, 2H), 2.39 – 2.23 (m, 1H), 1.97 (dt, *J* = 18.5, 10.5 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 171.7, 147.7, 141.2, 132.3, 132.0, 128.8, 128.6, 128.3, 126.4, 124.0, 122.6, 56.8, 36.6, 32.1; HPLC (OJ-H, elute: Hexanes/*i*-PrOH = 95/5, detector: 254 nm, flow rate: 0.8 mL/min), t_1 = 18.9 min (maj), t_2 = 23.1 min.

(*R*)-3-benzylisoindolin-1-one (2i).[5] Pale soild, yield 47% (petroleum ester/EtOAc = 2/1), 95% ee, 
$[\alpha]^{17}_D$ = +42.7 (*c* 0.43, $CHCl_3$) [lit.[5]: $[\alpha]^{rt}_D$ = -65.0 (*c* 0.53, CH_2Cl_2) for >99% ee (*S*)]; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.85 (d, *J* = 7.5 Hz, 1H), 7.35 – 7.33 (m, 2H), 7.32 – 7.23 (m, 6H), 6.50 (s, 1H), 4.80 (dd, *J* = 9.2, 5.1 Hz, 1H), 3.24 (dd, *J* = 13.6, 5.1 Hz, 1H), 2.79 (dd, *J* = 13.6, 9.2 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 170.4, 147.0 137.2, 132.1, 132.0, 129.4, 129.1, 128.6, 127.4, 124.1, 122.8, 58.2, 41.6; HPLC (OJ-H, elute: Hexanes/*i*-PrOH = 80/20, detector: 254 nm, flow rate: 1.0 mL/min), t_1 = 6.6 min (maj), t_2 =7.5 min

(*R*)-3-(4-methylbenzyl)isoindolin-1-one (2j).[8] Pale solid, yield 57% (petroleum ester/EtOAc = 
2/1), 94% ee, $[\alpha]^{16}_D$ = +69.8 (*c* 0.55, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.83 (d, *J* = 7.5 Hz, 1H), 7.54 (t, *J* = 7.4 Hz, 1H), 7.46 (t, *J* = 7.4 Hz, 1H), 7.32 – 7.30 (m, 1H), 7.14 – 7.09 (m, 4H), 6.64 (s, 1H), 4.76 (dd, *J* = 8.5, 5.5 Hz, 1H), 3.19 – 3.17 (m, 1H), 2.79– 2.76 (m, 1H), 2.33 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 170.6, 147.1, 136.9, 134.0, 132.1, 131.9, 129.7, 129.3, 128.5, 124.0, 122.9, 58.3, 41.1, 21.3; HPLC (OD-H, elute: Hexanes/*i*-PrOH = 95/5, detector: 254 nm, flow rate: 1.0 mL/min), t_1 = 19.8 min, t_2 = 25.9 min (maj).

(+)-3-(3-methylbenzyl)isoindolin-1-one (2k). Pale yellow oil, yield 49 % (petroleum ester/EtOAc 
= 2/1), 91% ee, $[\alpha]^{17}_D$ = +59.9 (*c* 0.57, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.84 (d, *J* = 7.5 Hz, 1H), 7.55 (t, *J* = 7.3 Hz, 1H), 7.47 (t, *J* = 7.4 Hz, 1H), 7.23 (dd, *J* = 13.6, 6.4 Hz, 1H), 7.06 (dd, *J* = 19.9, 9.5 Hz, 3H), 6.69 (s, 1H), 4.77 (dd, *J* = 9.1, 5.0 Hz, 1H), 3.22 – 3.18 (m, 1H), 2.72 (d, *J* = 8.9 Hz, 1H), 2.33 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 170.8, 147.2, 138.6, 137.1, 132.2, 131.8, 130.3, 128.8, 128.5, 128.0, 126.4, 124.0, 123.0, 58.3, 41.5, 21.6; HPLC (OJ-H, elute: Hexanes/*i*-PrOH = 90/10, detector: 254 nm, flow rate: 0.8 mL/min), t_1 = 10.4 min (maj), t_2 = 12.8 min; HRMS Calculated For $C_{16}H_{15}NONa$ $[M+Na]^+$ 260.1051, found: 260.1058.

(+)-3-(4-fluorobenzyl)isoindolin-1-one (2l). Pale solid, mp = 114-116 °C, yield 50% (petroleum 
ester/EtOAc = 2/1), 93% ee, $[\alpha]^{18}_D$ = +93 (*c* 0.50, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.81 (d, *J* = 7.4 Hz, 1H), 7.55 – 7.46 (m, 3H), 7.28 – 7.21 (m, 2H), 7.00 – 6.90 (m, 3H), 4.81 (t, *J* = 6.7 Hz, 1H), 3.17 (dd, *J* = 13.6, 5.5 Hz, 1H), 2.91 (dd, *J* = 13.5, 8.1 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 170.92 (s), 163.0 (d, *J* = 246.5) , 146.7, 139.4 (d, *J* = 7.3 Hz), 132.2, 132.0, 130.4 (d, *J* = 8.3 Hz), 128.6, 125.2 (d, *J* = 2.8 Hz), 124.1, 122.9, 116.5 (d, *J* = 21Hz), 114.2 (d, *J* = 21 Hz), 57.9, 41.0 (d, *J* = 1.5 Hz); HPLC (OJ-H, elute: Hexanes/*i*-PrOH = 90/10, detector: 254 nm, flow rate: 0.8 mL/min), t_1 = 16.2 min (maj), t_2 = 19.9 min; HRMS Calculated For $C_{15}H_{12}NONaF$ $[M+Na]^+$ 264.0801, found: 264.0805.

(+)-3-butyl-4-methylisoindolin-1-one (2m). Pale solid, mp = 79-80 °C, yield 62% (petroleum 
ester/EtOAc = 2/1), 82% ee, $[\alpha]^{18}_D$ = +15.3 (*c* 0.73, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.40 (t, *J* = 7.5 Hz, 1H), 7.20 (dd, *J* = 17.2, 7.6 Hz, 2H), 7.02 (s, 1H), 4.53 (dd, *J* = 7.9, 4.2 Hz, 1H), 2.72 (s, 3H), 1.93 (ddd, *J* = 10.5, 9.6, 4.4 Hz, 1H), 1.64 – 1.53 (m, 1H), 1.50 – 1.25 (m, 4H), 0.90 (t, *J* = 7.1 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 172.1, 148.7, 138.1, 131.5, 130.1, 129.1, 119.9, 56.2, 34.8, 27.9,

22.8, 17.5, 14.1; HPLC (OJ-H, elute: Hexanes/*i*-PrOH = 95/5, detector: 254 nm, flow rate: 0.6 mL/min), t_1 = 8.3 min (maj), t_2 = 9.2 min; HRMS Calculated For $C_{13}H_{17}NONa$ $[M+Na]^+$ 226.1208, found: 226.1204.

(+)-3-butyl-7-methylisoindolin-1-one (**2n**)**.** Pale solid, mp = 83-85 °C, yield 71% (petroleum ester/EtOAc = 2/1), 90% ee, $[\alpha]^{16}_D$ = +36.9 (*c* 0.68, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.93 (s, 1H), 7.69 (d, *J* = 7.2 Hz, 1H), 7.38 – 7.31 (m, 2H), 4.68 (dd, *J* = 7.6, 2.7 Hz, 1H), 2.40 (s, 3H), 2.17 – 2.03 (m, 1H), 1.67 (ddd, *J* = 10.9, 6.1, 3.2 Hz, 1H), 1.43 – 1.23 (m, 3H), 1.22 – 1.05 (m, 1H), 0.86 (t, *J* = 7.0 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 171.7, 145.9, 133.4, 132.8, 132.5, 128.3, 121.4, 56.9, 32.4, 27.1, 22.7, 18.5, 14.0; HPLC (OJ-H, elute: Hexanes/*i*-PrOH = 90/10, detector: 254 nm, flow rate: 1.0 mL/min), t_1 = 4.9 min (maj), t_2 = 9.2 min; HRMS Calculated For $C_{13}H_{17}NONa$ $[M+Na]^+$ 226.1208, found: 226.1203.

(*R*)-3-phenylisoindolin-1-one (**2o**)**.**[4a] Pale solid, yield 43% (petroleum ester/ EtOAc = 2/1), 61% ee, $[\alpha]^{17}_D$ = -81.1 (*c* 0.34, $CHCl_3$) [lit[4a]: $[\alpha]^{25}_D$ = -193.3 (*c* 0.73, DMSO) for > 96% ee (*R*).]; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.88 (d, *J* = 7.1 Hz, 1H), 7.56 – 7.39 (m, 2H), 7.28 (ddd, *J* = 20.0, 13.8, 7.2 Hz, 6H), 6.93 (s, 1H), 5.63 (s, 1H); ^{13}C NMR (100 MHz, DMSO) δ 170.4, 148.8, 140.2, 132.5, 131.9, 129.4, 128.8, 128.5, 127.2, 124.1, 123.5, 60.2; HPLC (OJ-H, elute: Hexanes/*i*-PrOH = 90/10, detector: 254 nm, flow rate: 0.8 mL/min), t_1 = 11.9 min (maj), t_2 = 17.8 min.

(*E*)-3-butylideneisoindolin-1-one (**2a'**). [1i] Pale solid, (petroleum ester/EtOAc = 3/1), ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.78 (s, 1H), 7.85 (d, *J* = 7.6 Hz, 1H), 7.66 (d, *J* = 7.7 Hz, 1H), 7.58 (d, *J* = 7.4 Hz, 1H), 7.47 (d, *J* = 7.5 Hz, 1H), 5.65 (t, *J* = 7.9 Hz, 1H), 2.36 (q, *J* = 7.5 Hz, 2H), 1.59 (dd, *J* = 14.6, 7.3 Hz, 2H), 1.02 (t, *J* = 7.4 Hz, 3H). The **(*Z*)-3-butylideneisoindolin-1-one** is trace ammount, we can not isolate the pure compound.

4. References

[1]. (*a*) E.-C. Wang, H.-F. Chen, P.–K. Feng, Y.–L. Lin and M.–K. Hsu, *Tetrahedron Lett.*, 2002, **43**, 9163; (*b*) Y.-P. Ruan, M.-D. Chen, M.-Z. He, X. Zhou and P.-Q. Zhang, *Synth. Commun.*, 2004, **34**, 853; (*c*) L. E. Fisher, J. M. Muchowski and R. D. Clark, *J. Org. Chem.*,1992, **57**, 2700; (*d*) C. Sánchez-Sánchez, E. Pérez-Inestrosa, R. García-Segura and P. Suau, *Tetrahedron*, 2002, **58**, 7267; (*e*) B. N. Rabjohn, M. F. Drumm and R. L. Elliott, *J. Am. Chem. Soc.*, 1956, **78**, 1631; (*f*) V. Belluau, P. Noeureuil, E. Ratzke, A. Skvortsov, S. Gallagher, C. A. Motti and M. Oelgemöller, *Tetrahedron Lett.*, 2010, **51,** 4738; (*g*) M. Sekiyai and Y. Terao, *Yakugaku Zasshi* ,1968, **88**, 1065; (*h*) S. Farcas and J.-L, Namy, *Tetrahedron Lett.*, 2001, **42**, 879; (*i*) Y. Uozuim, N, Kawasaki, E. Mori, M, Miwako and M. Shibasaki, *J. Am. Chem. Soc.*, 1989, **111**, 3725.

[2]. M.-D. Chen, X. Zhou, M.-Z. He, Y.-P. Ruan and P.-Q. Huang, *Tetrahedron*, 2004, **60**, 1651.

[3]. E. Deniau and D. Enders, *Tetrahedron*, 2001, **57**, 2581.

[4]. (*a*) E. Deniau, D. Enders, A. Couture and P. Grandclaudon, *Tetrahedron: Asymmetry*, 2003, **14**, 2253; (*b*) E. Deniau, A. Couture and P. Grandclaudon, *Tetrahedron: Asymmetry*, 2008, **19***,* 2735.

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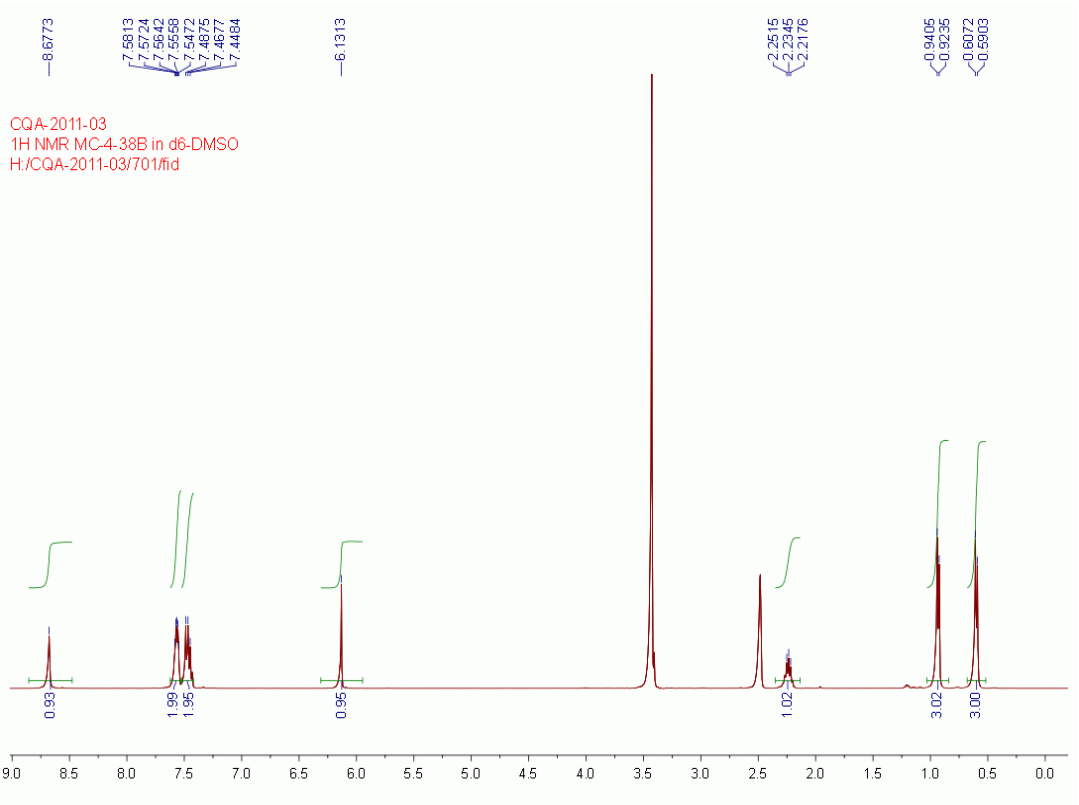
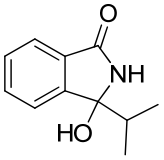
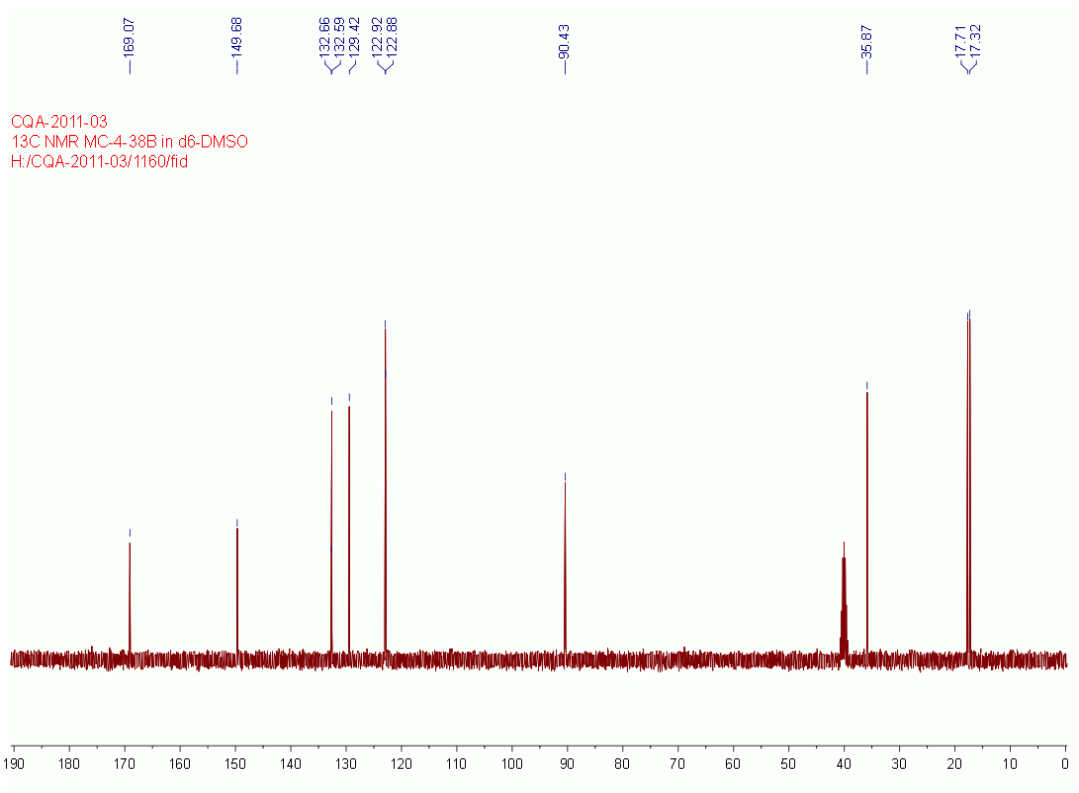




1e - ^{1}H NMR (DMSO, 400 MHz)
^{13}C NMR (DMSO,100 MHz)



Elemental Composition Report **Page 1**

Single Mass Analysis
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Selected filters: None

Monoisotopic Mass, Even Electron Ions
6 formula(e) evaluated with 1 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 0-100 H: 0-120 N: 1-1 O: 2-2 Na: 1-1

MC-4-38B
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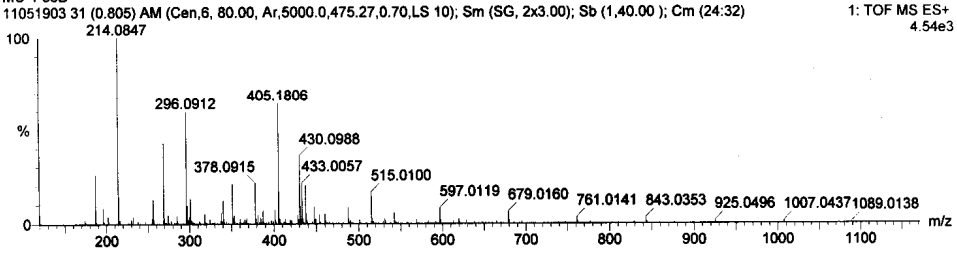

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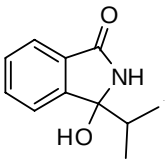
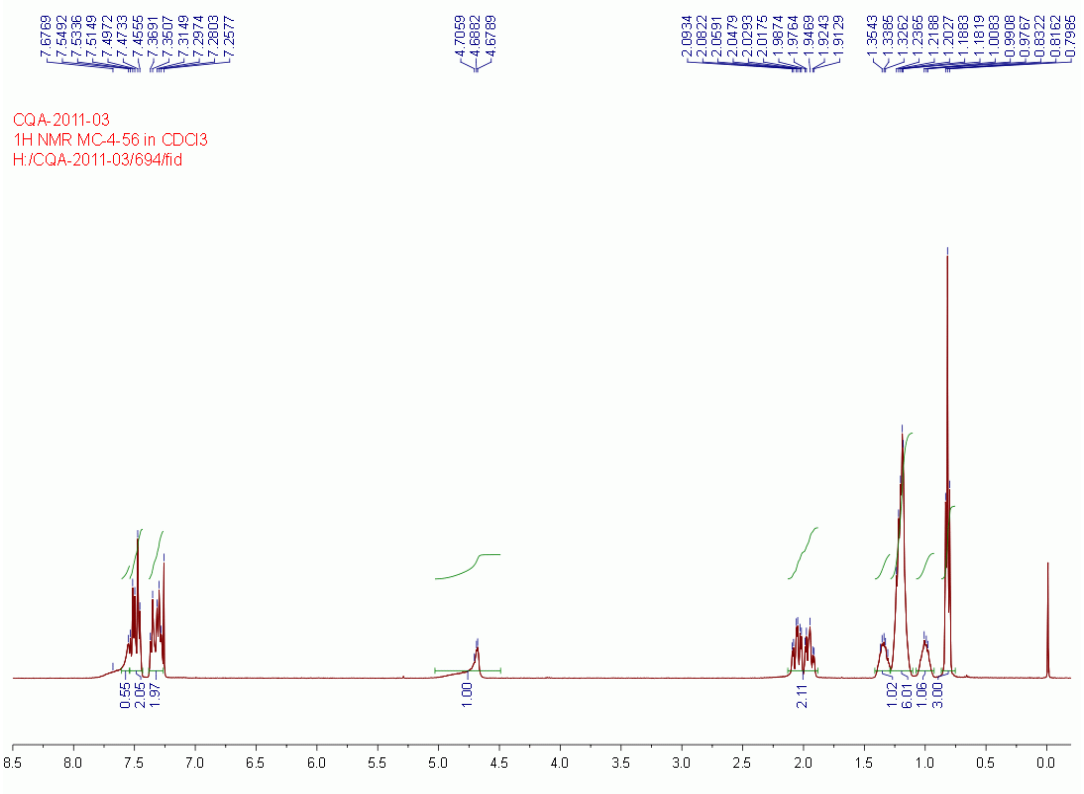
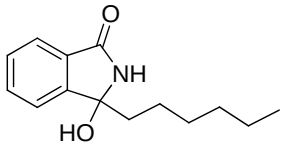
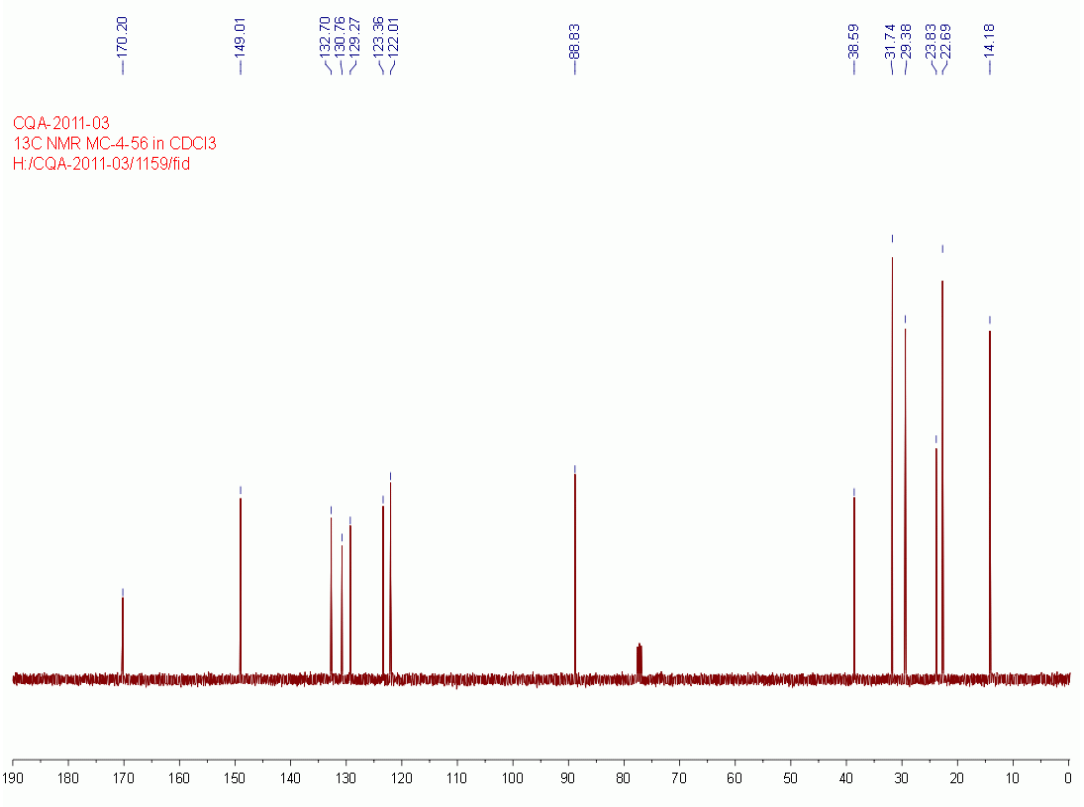


1e - HRMS





1f - ^{1}H NMR ($CDCl_3$, 400 MHz)
^{13}C NMR ($CDCl_3$,100 MHz)



Elemental Composition Report **Page 1**

Single Mass Analysis
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Selected filters: None

Monoisotopic Mass, Even Electron Ions
6 formula(e) evaluated with 1 results within limits (all results (up to 1000) for each mass)
Elements Used:
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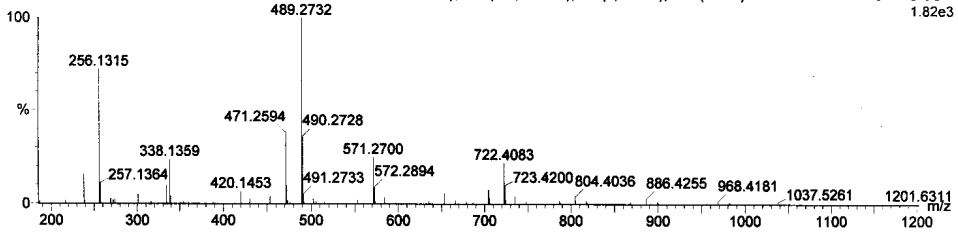

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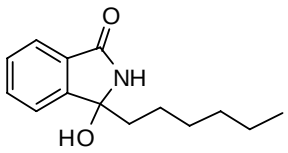

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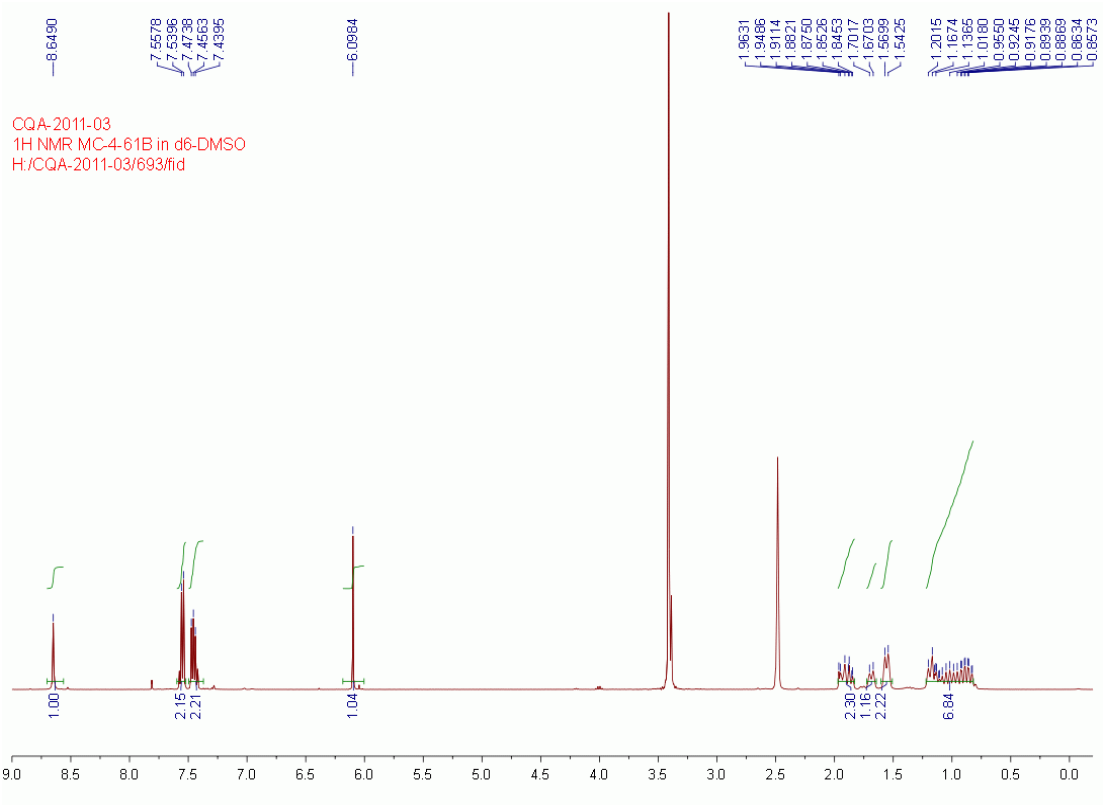
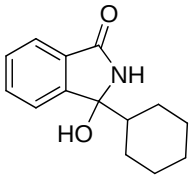
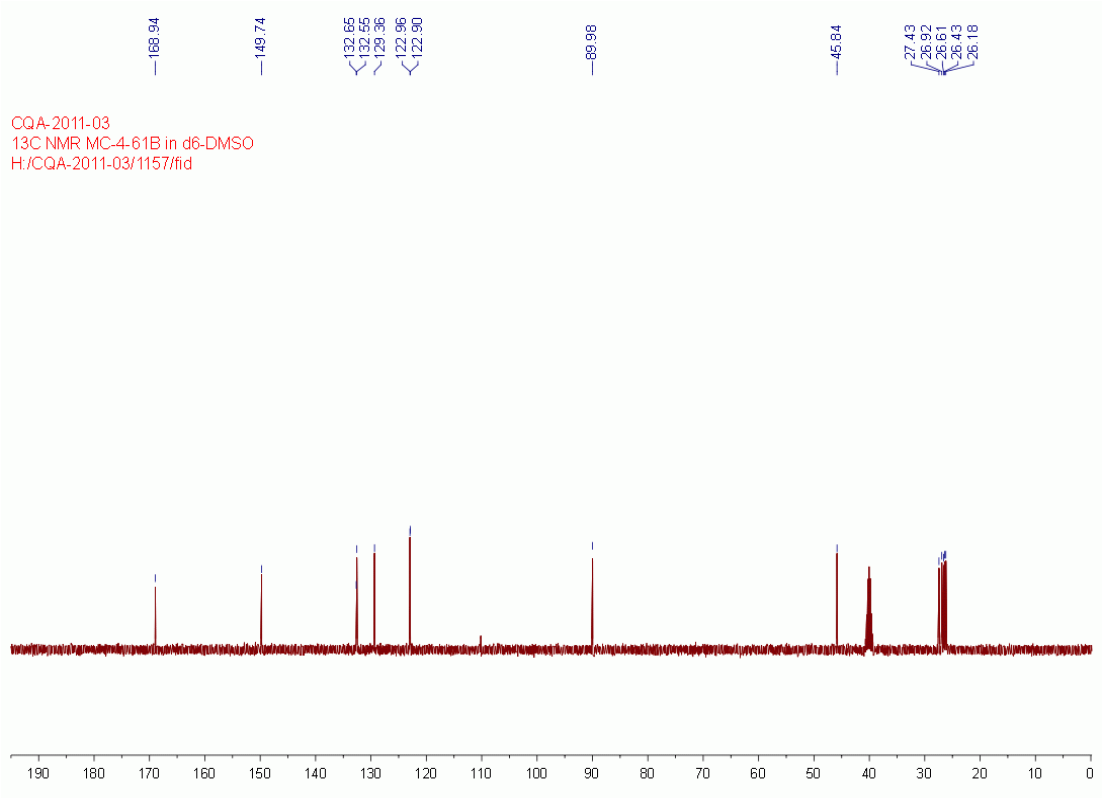




1g - ^{1}H NMR (DMSO, 400 MHz)
^{13}C NMR (DMSO,100 MHz)



Elemental Composition Report **Page 1**

Single Mass Analysis
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Monoisotopic Mass, Even Electron Ions
6 formula(e) evaluated with 1 results within limits (all results (up to 1000) for each mass)
Elements Used:
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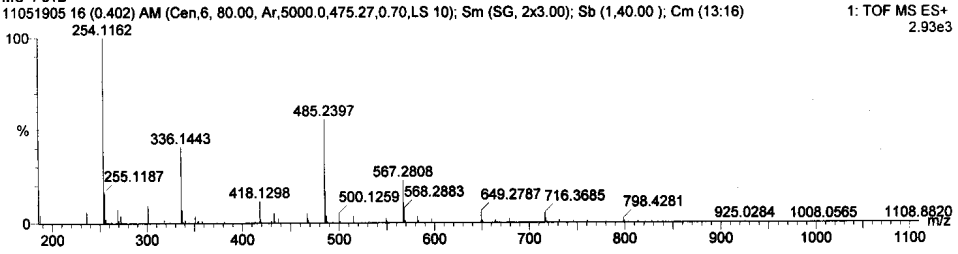
11051905 16 (0.402) AM (Cen,6, 80.00, Ar,5000.0,475.27,0.70,LS 10); Sm (SG, 2x3.00); Sb (1,40.00); Cm (13:16) 1: TOF MS ES+ 2.93e3



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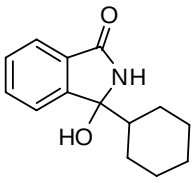
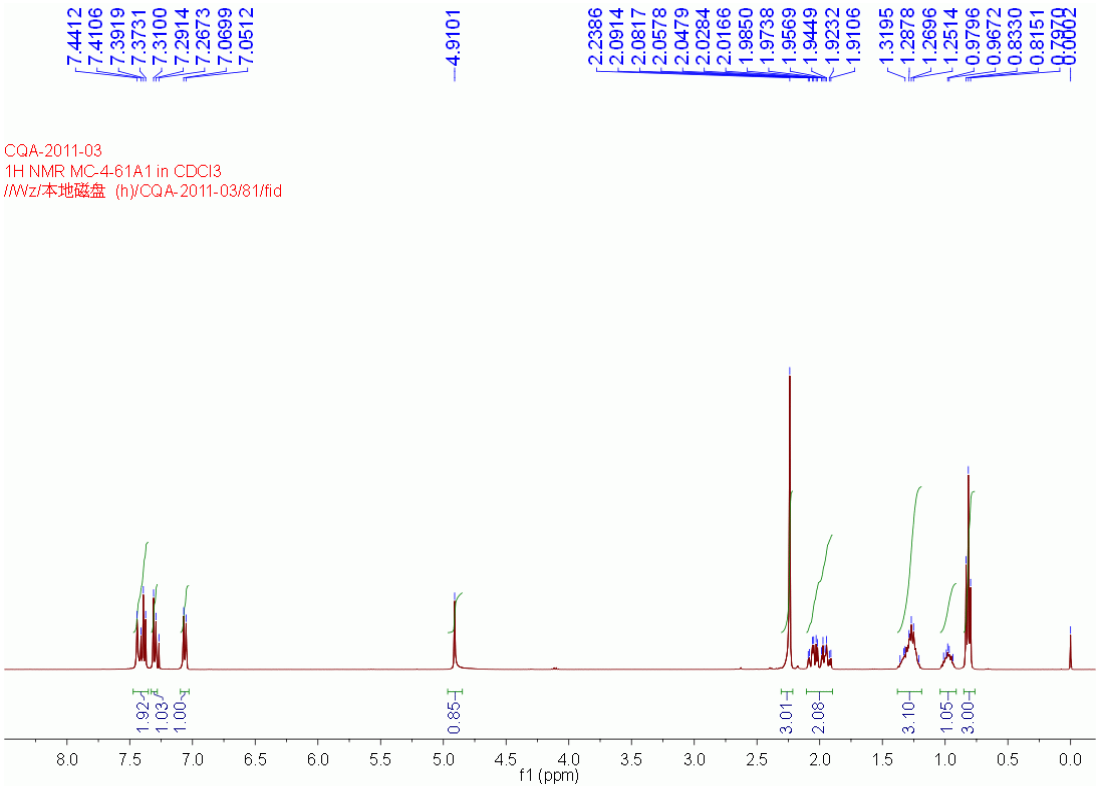
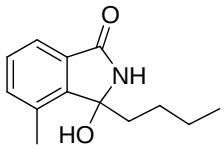
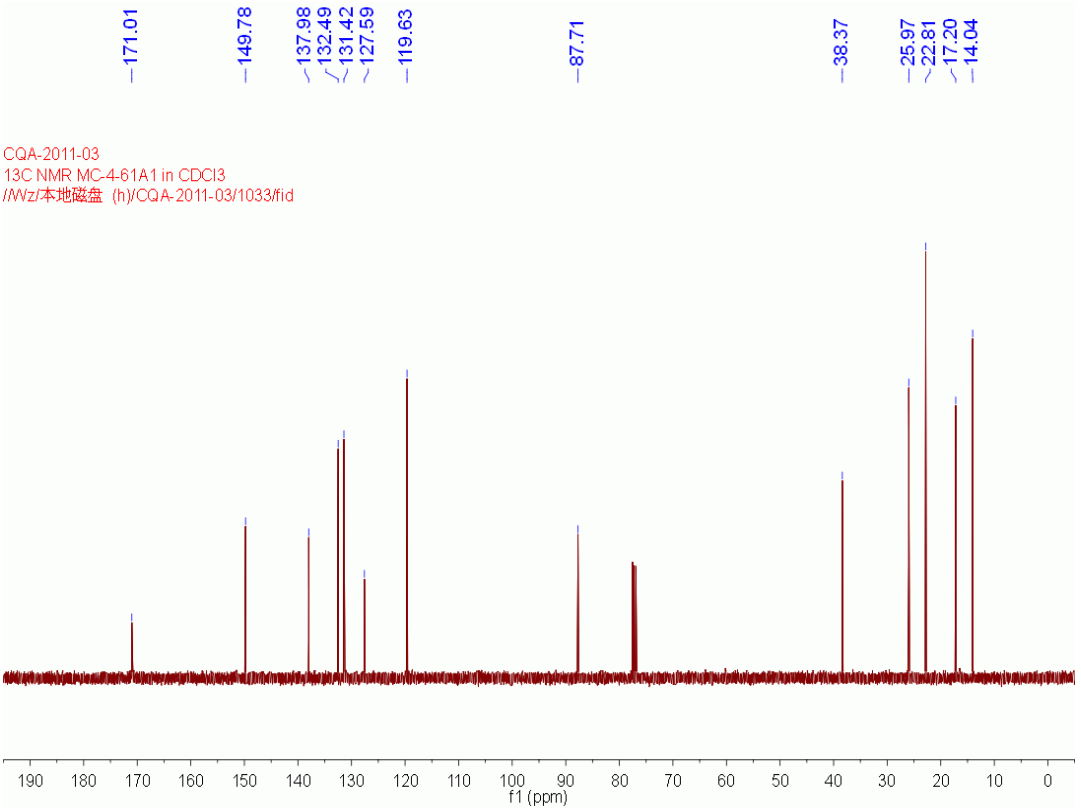


1g - HRMS





1m - ^{1}H NMR ($CDCl_3$, 400 MHz)
^{13}C NMR ($CDCl_3$,100 MHz)



Elemental Composition Report **Page 1**

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Monoisotopic Mass, Even Electron Ions
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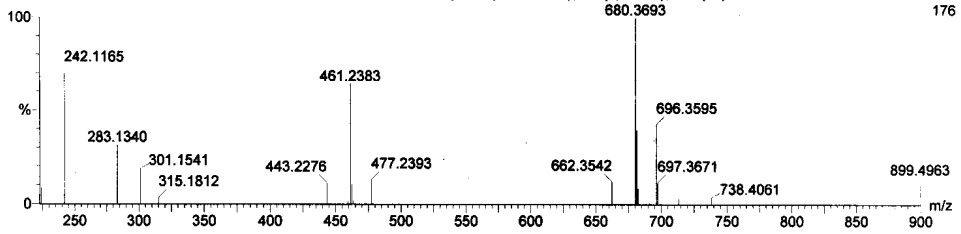

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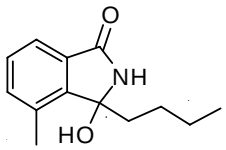
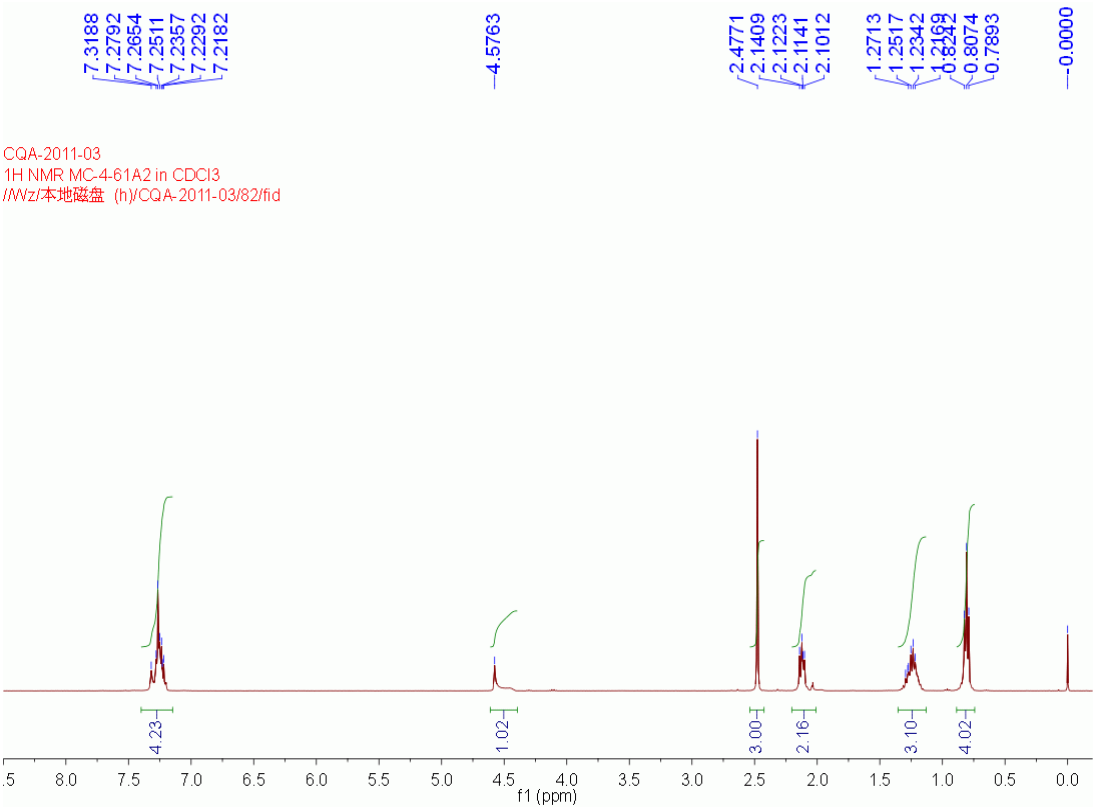
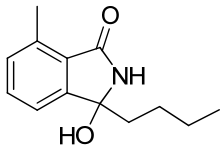


1m - HRMS





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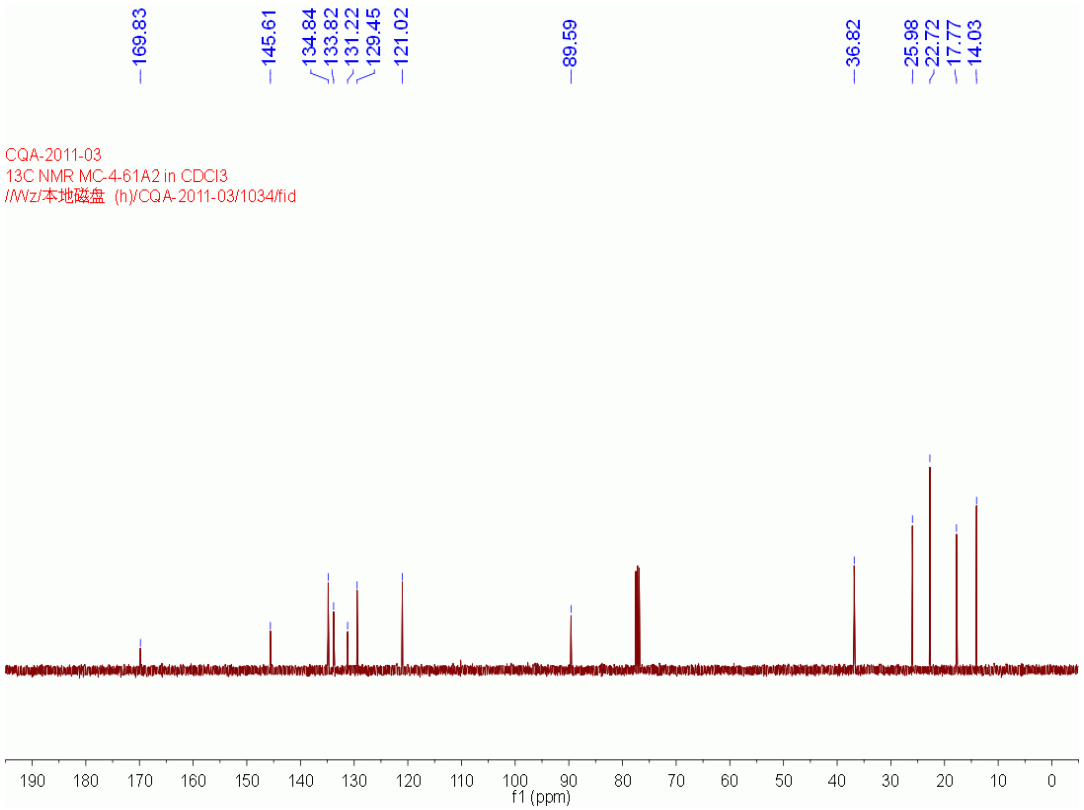
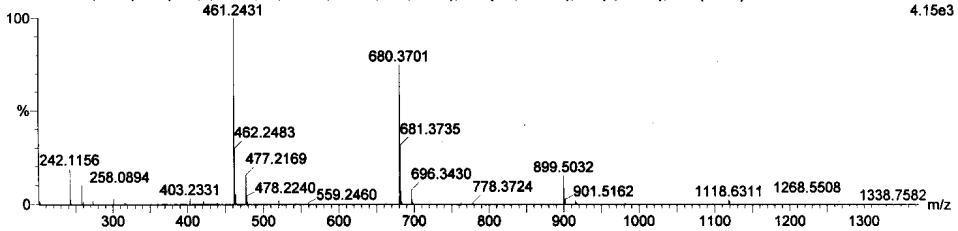
^{13}C NMR ($CDCl_3$, 100 MHz)



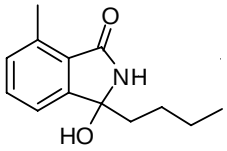
Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 50.0 PPM / DBE: min = -20.0, max = 200.0
Selected filters: None

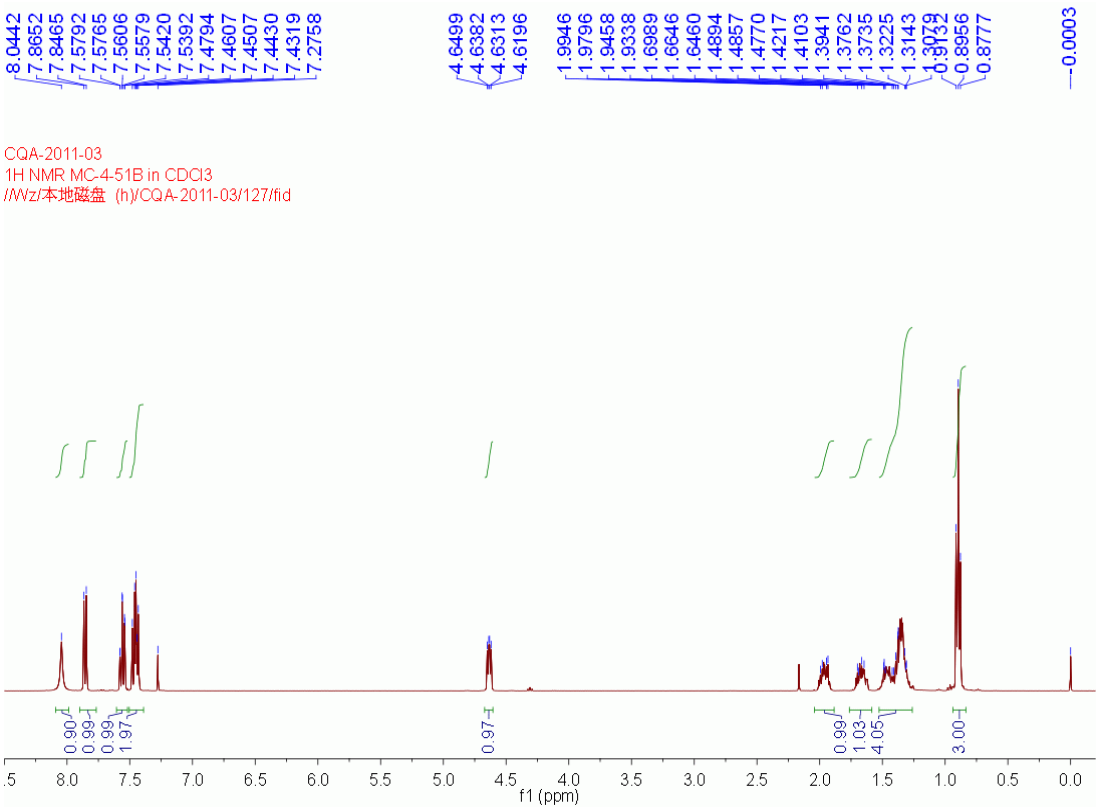
Monoisotopic Mass, Even Electron Ions
6 formula(e) evaluated with 1 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 0-100 H: 0-120 N: 1-1 O: 2-2 Na: 1-1
MC-4-62B
11051809 24 (0.597) AM (Cen,6, 80.00, Ar,5000.0,475.27,0.70,LS 10); Sm (SG, 2x3.00); Sb (1,40.00); Cm (22:24) 1: TOF MS ES+ 4.15e3

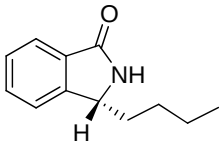


Minimum:				-20.0		
Maximum:		5.0	50.0	200.0		
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	Formula
242.1156	242.1157	-0.1	-0.4	5.5	2.3	C13 H17 N O2 Na

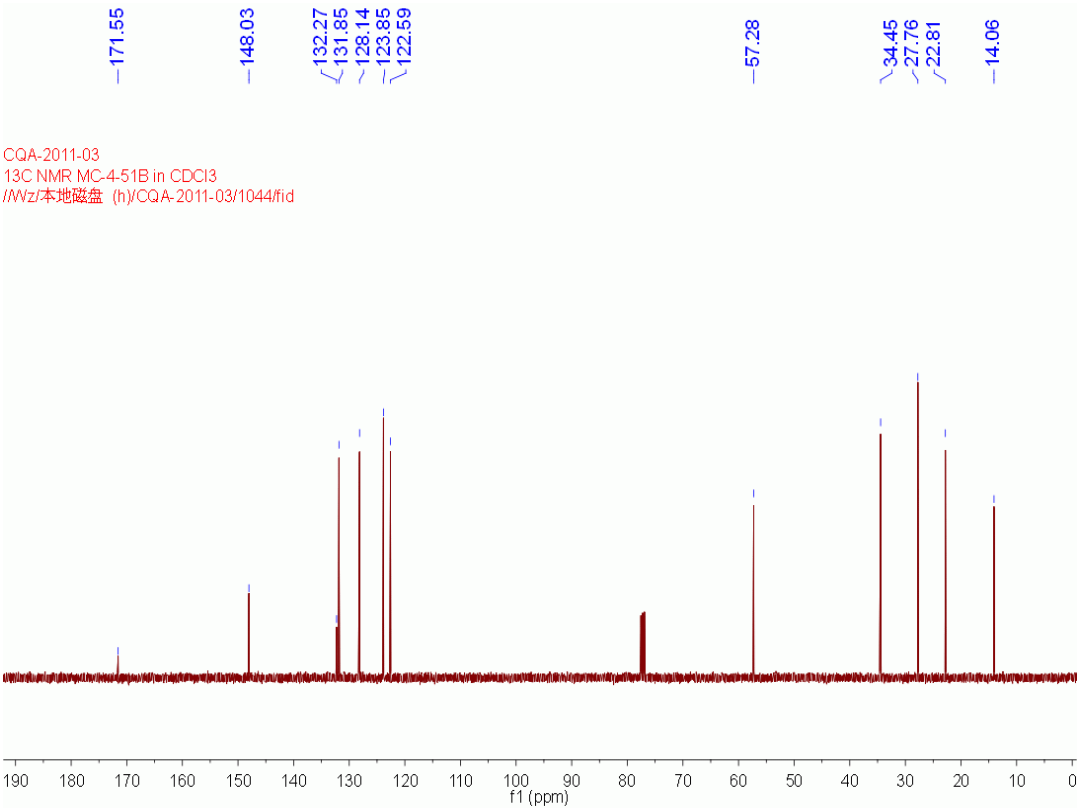


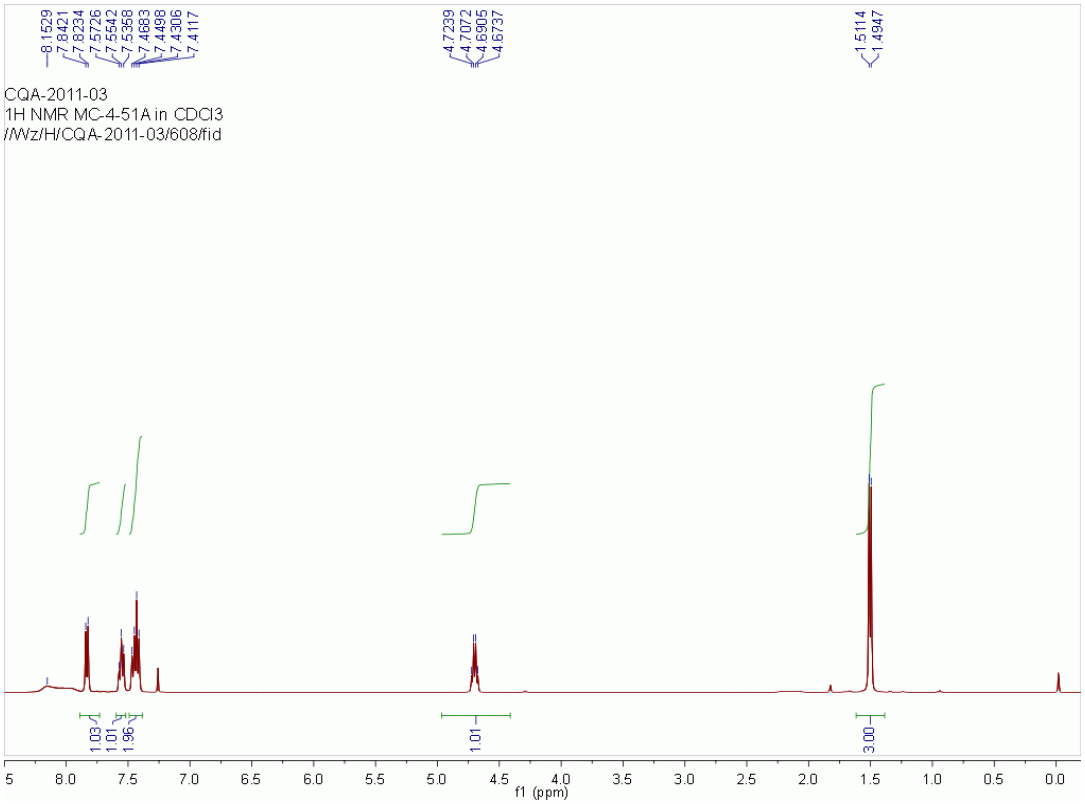
1n - HRMS

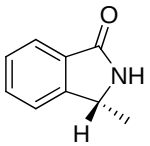




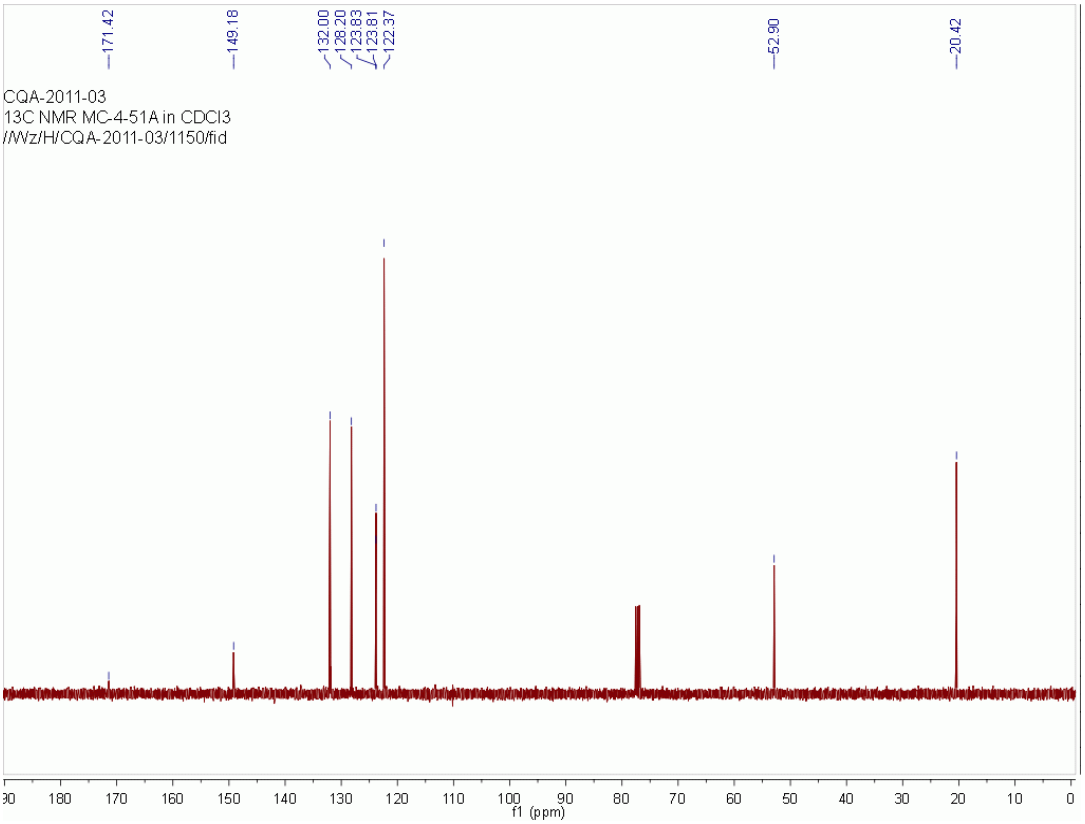
2a - ^{1}H NMR ($CDCl_3$, 400 MHz)
^{13}C NMR ($CDCl_3$,100 MHz)

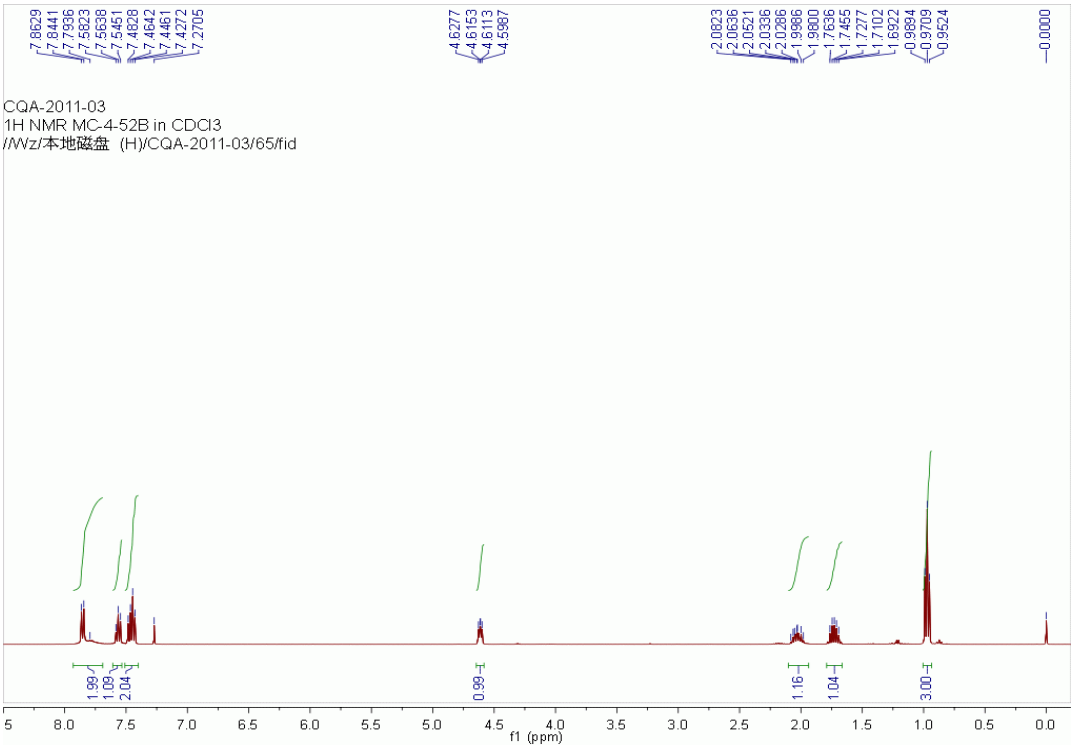


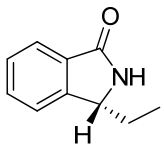




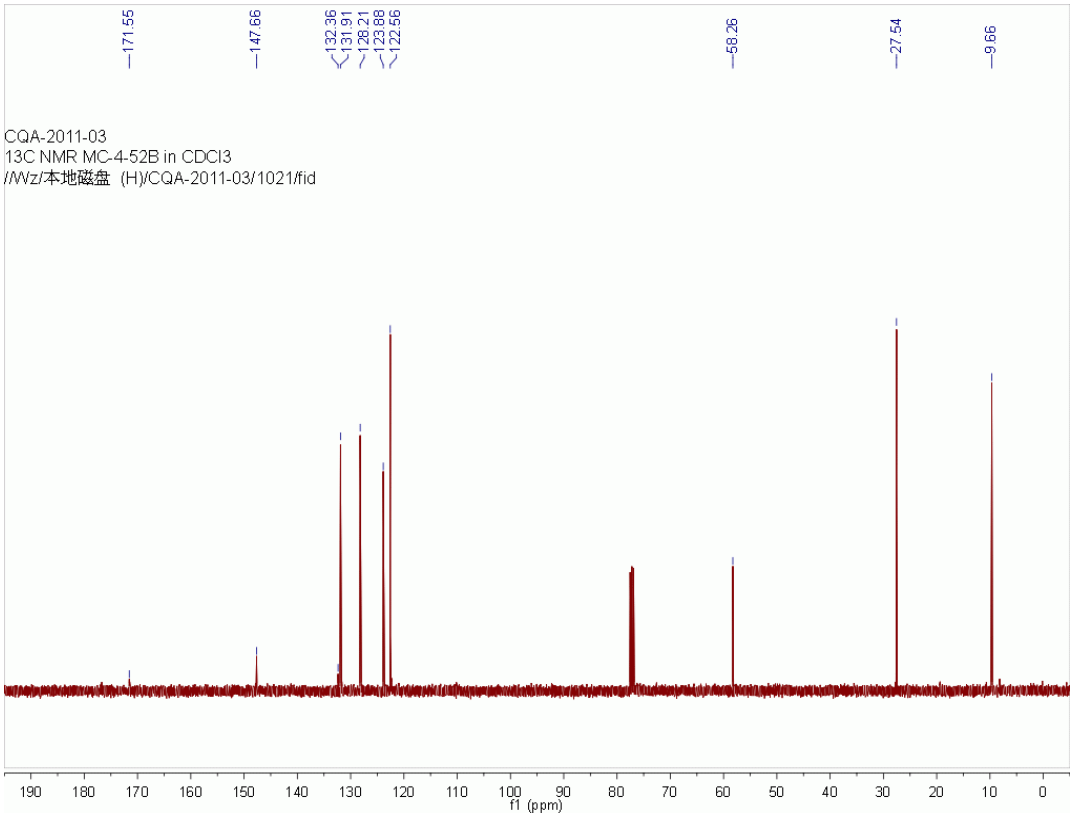
2b - ^{1}H NMR ($CDCl_3$, 400 MHz)
^{13}C NMR ($CDCl_3$,100 MHz)

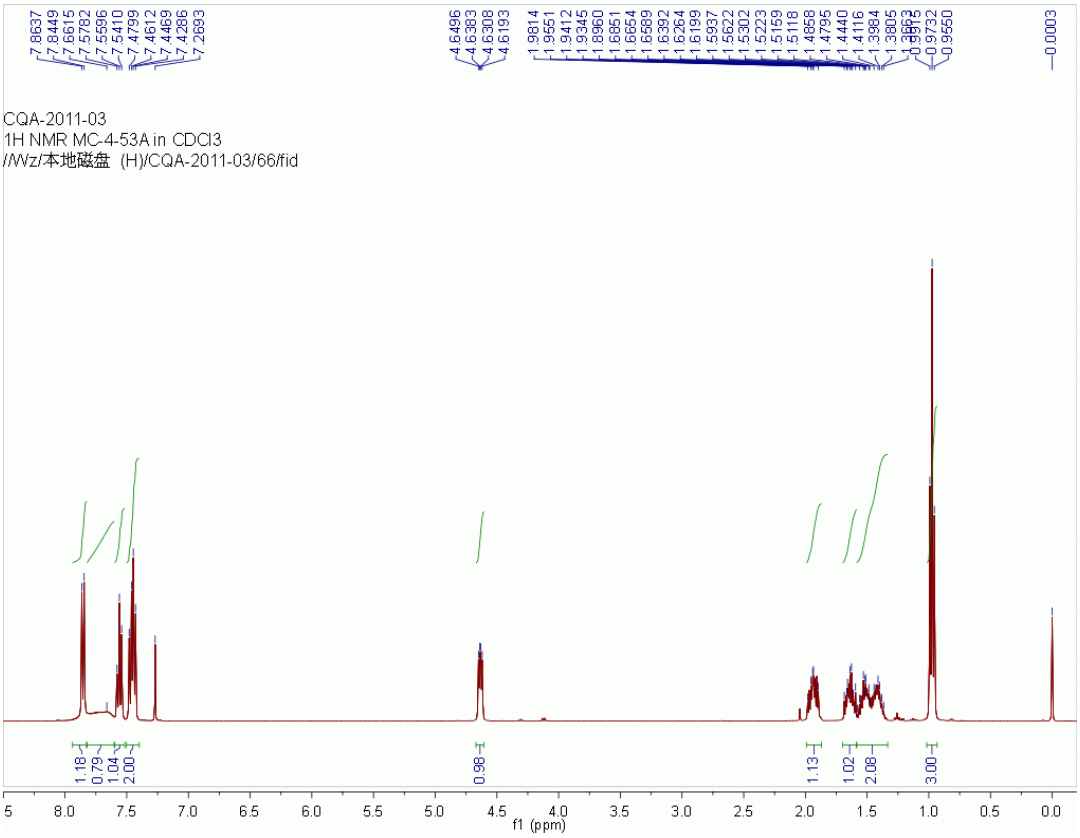


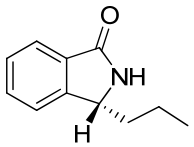




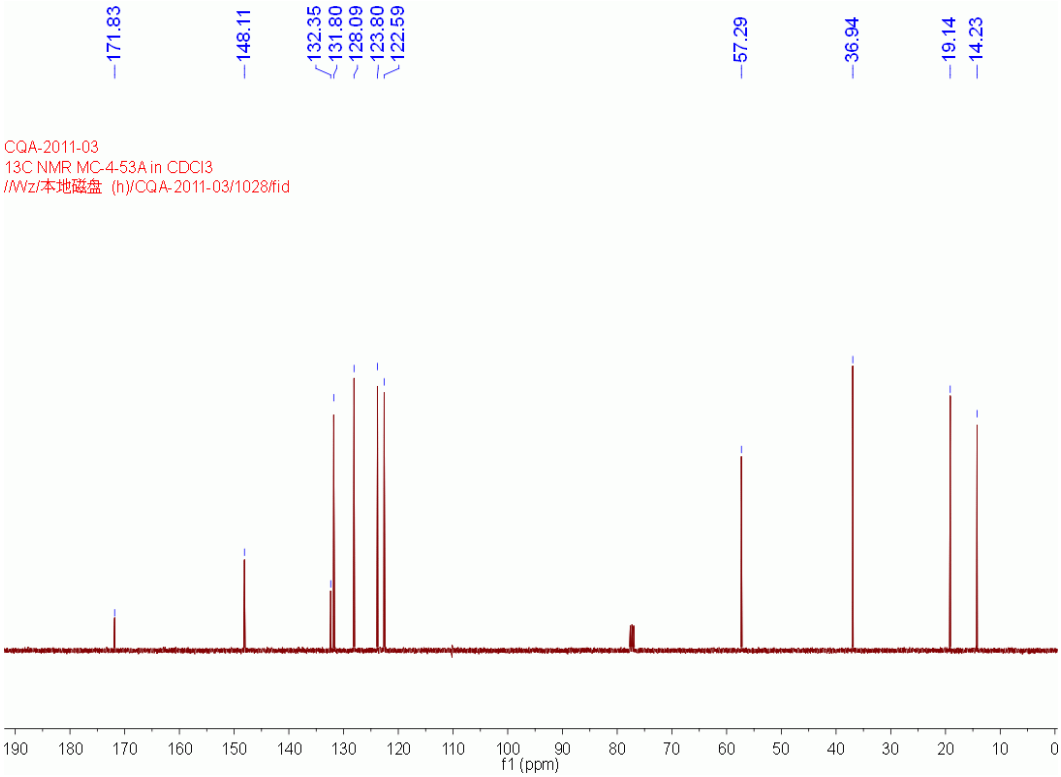
2c - ^{1}H NMR ($CDCl_3$, 400 MHz)
^{13}C NMR ($CDCl_3$,100 MHz)

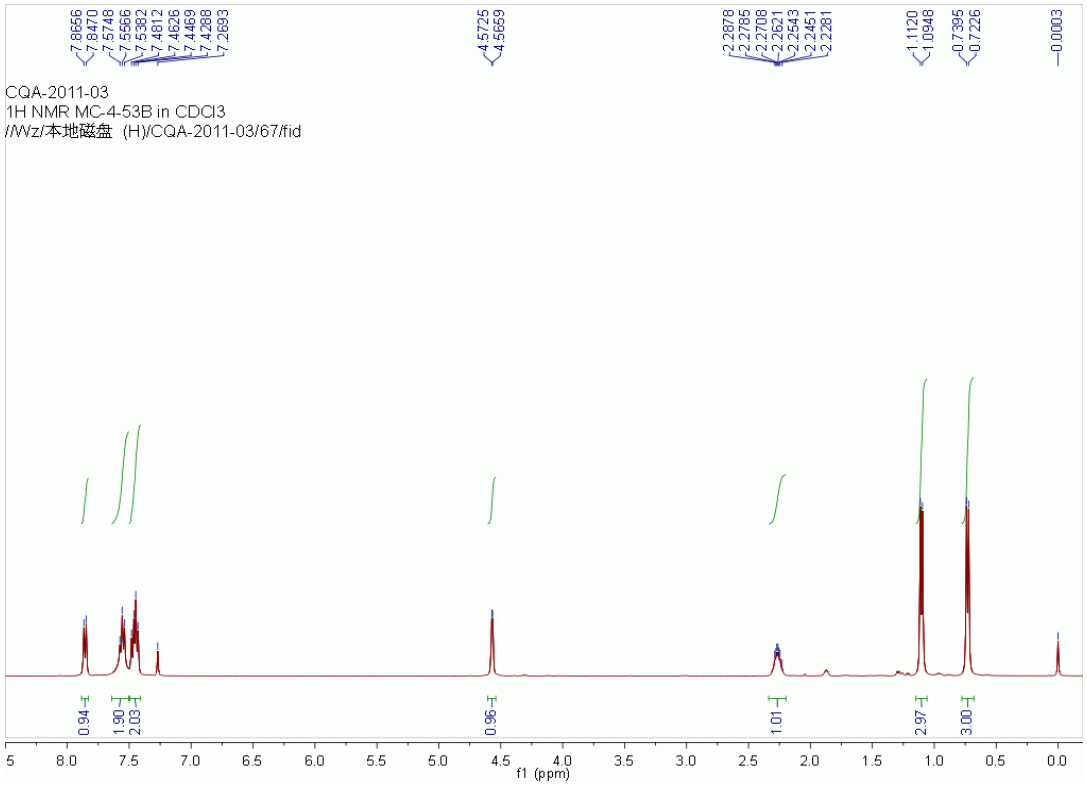


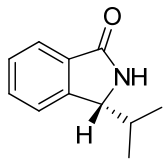




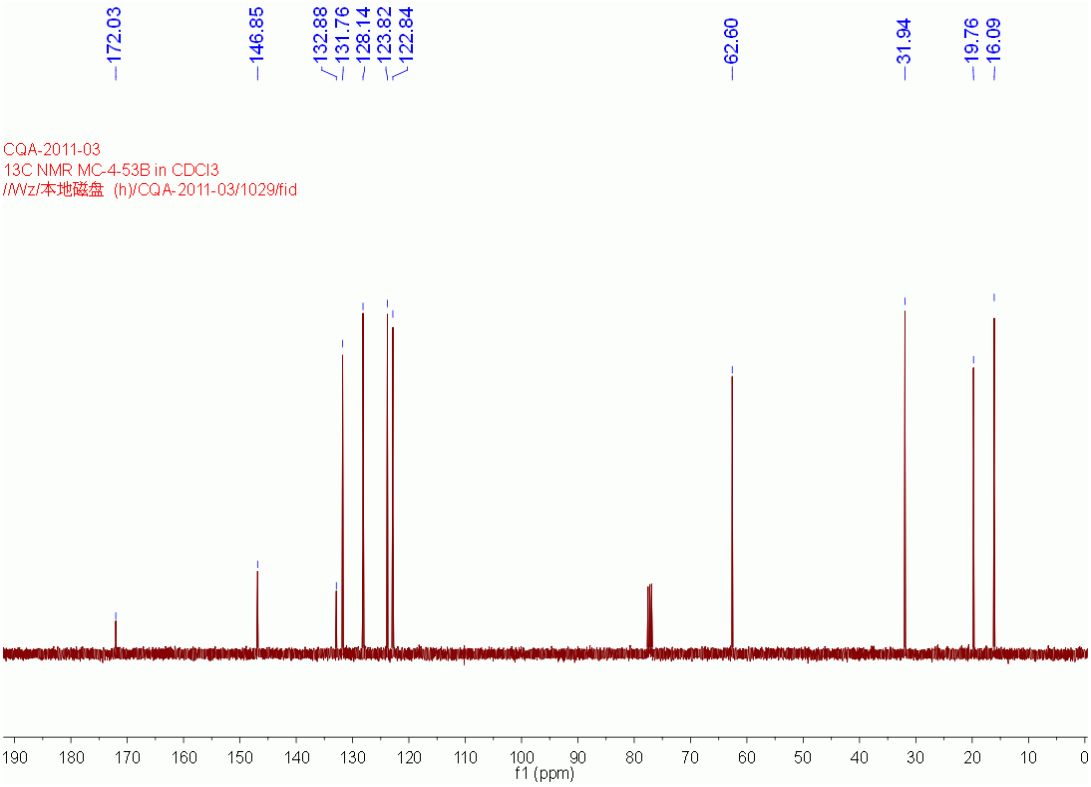
2d - ^{1}H NMR ($CDCl_3$, 400 MHz)
^{13}C NMR ($CDCl_3$,100 MHz)

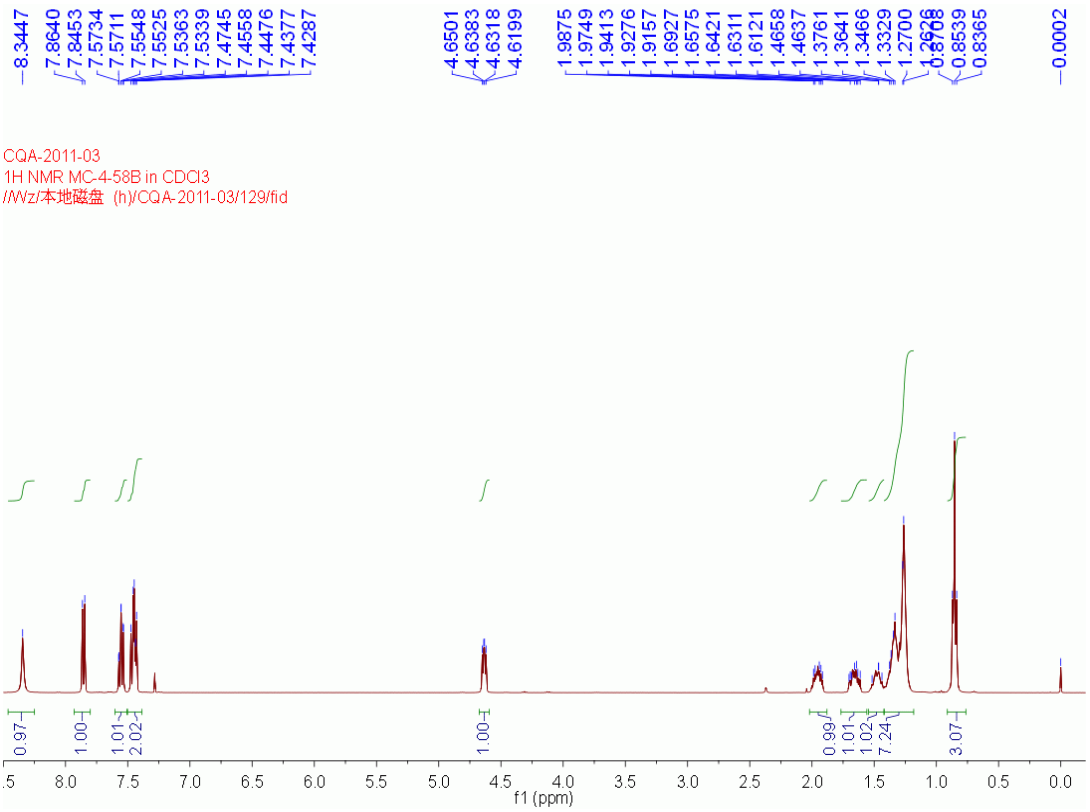


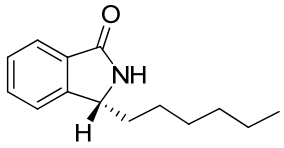




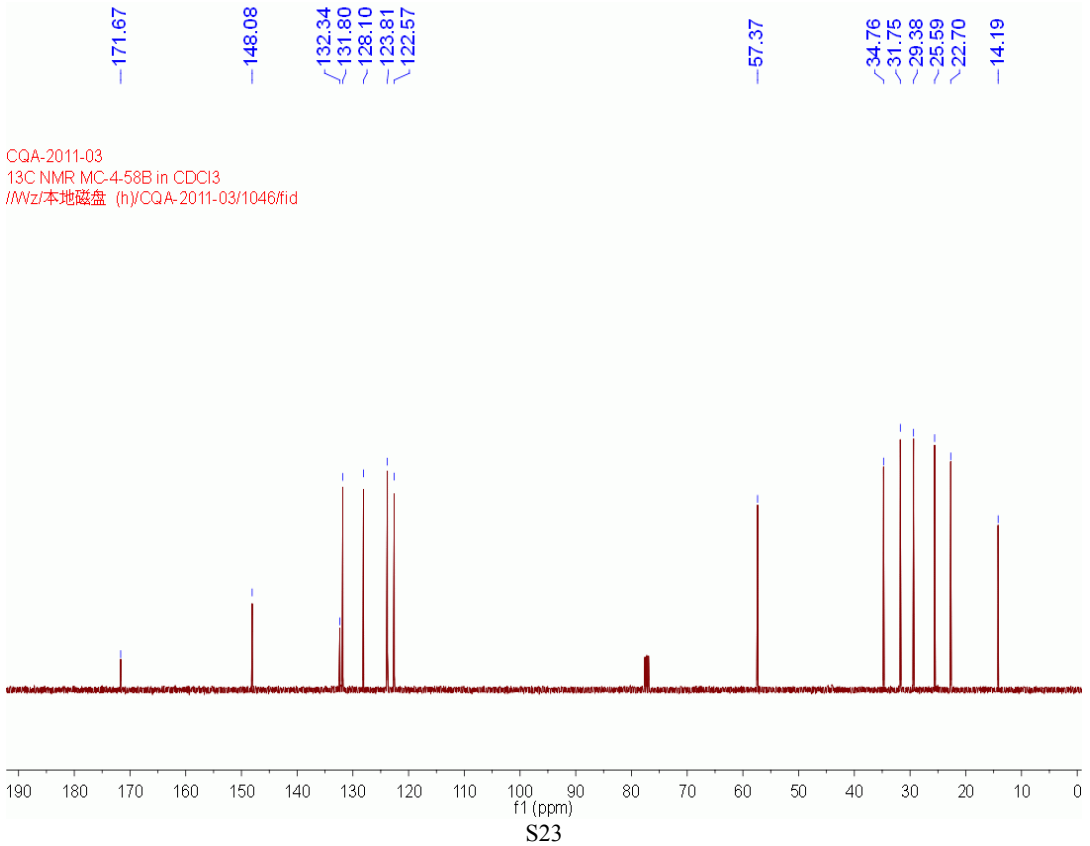
2e - ^{1}H NMR ($CDCl_3$, 400 MHz)
^{13}C NMR ($CDCl_3$,100 MHz)

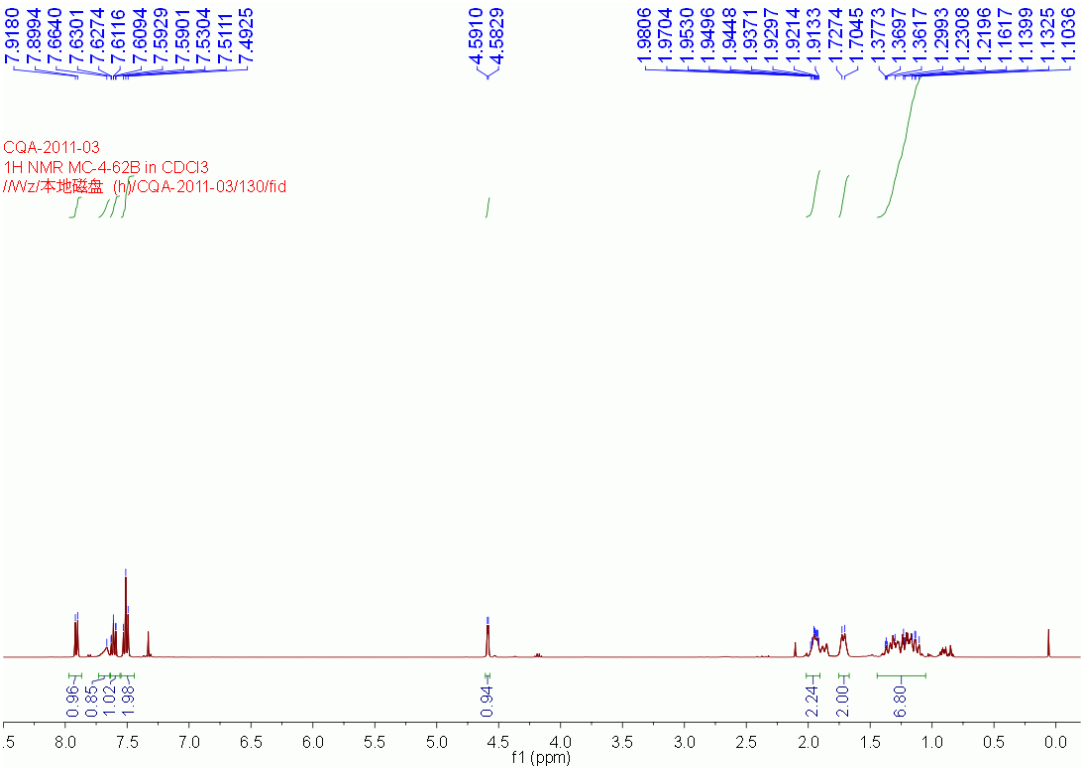


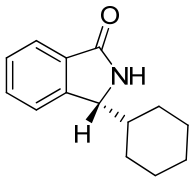




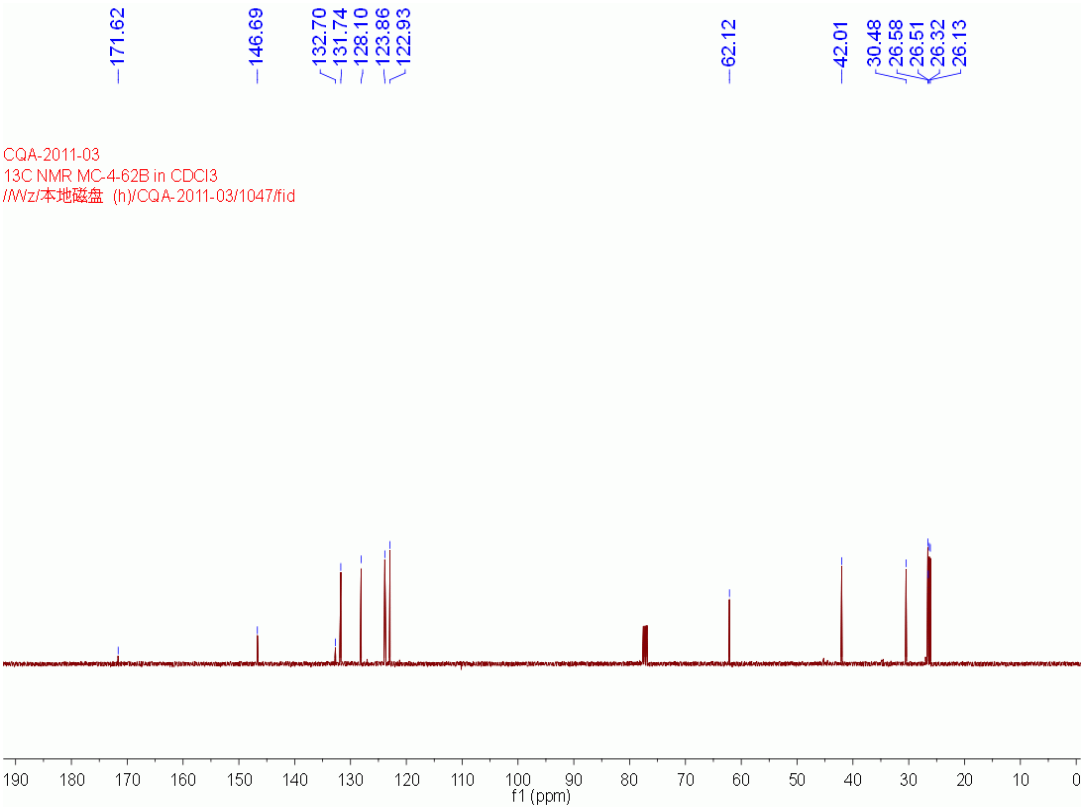
2f - ^{1}H NMR ($CDCl_3$, 400 MHz)
^{13}C NMR ($CDCl_3$,100 MHz)

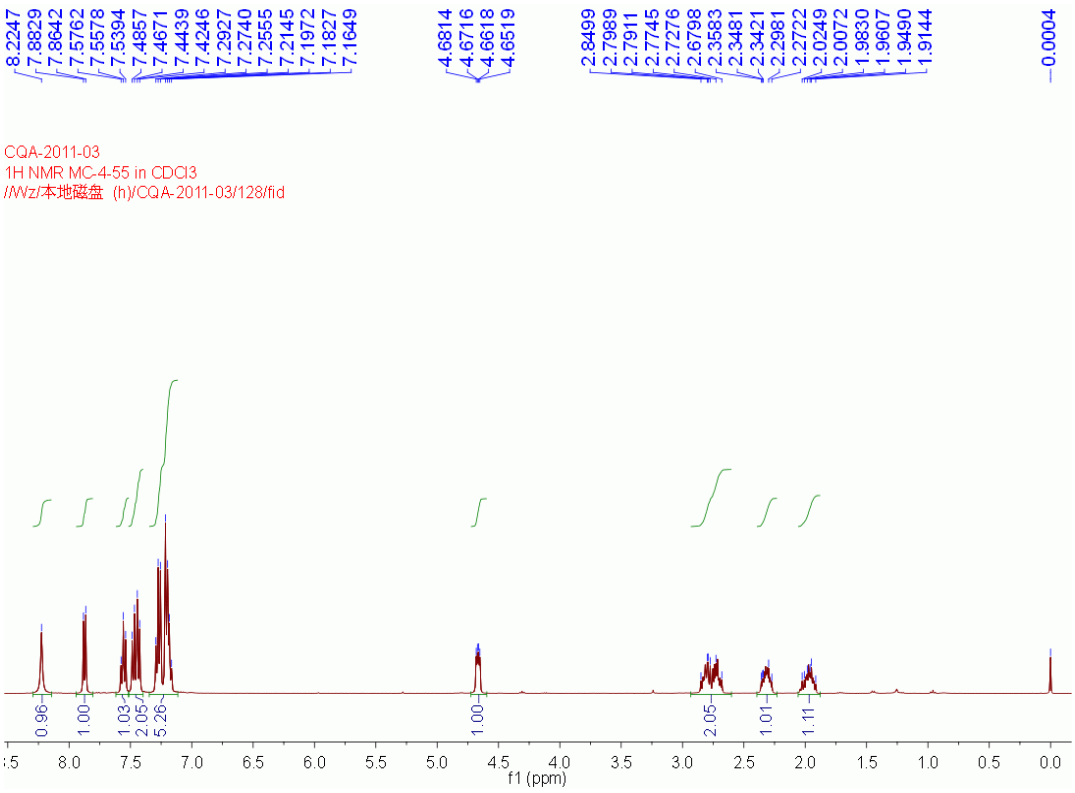


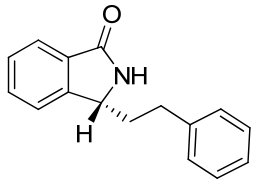




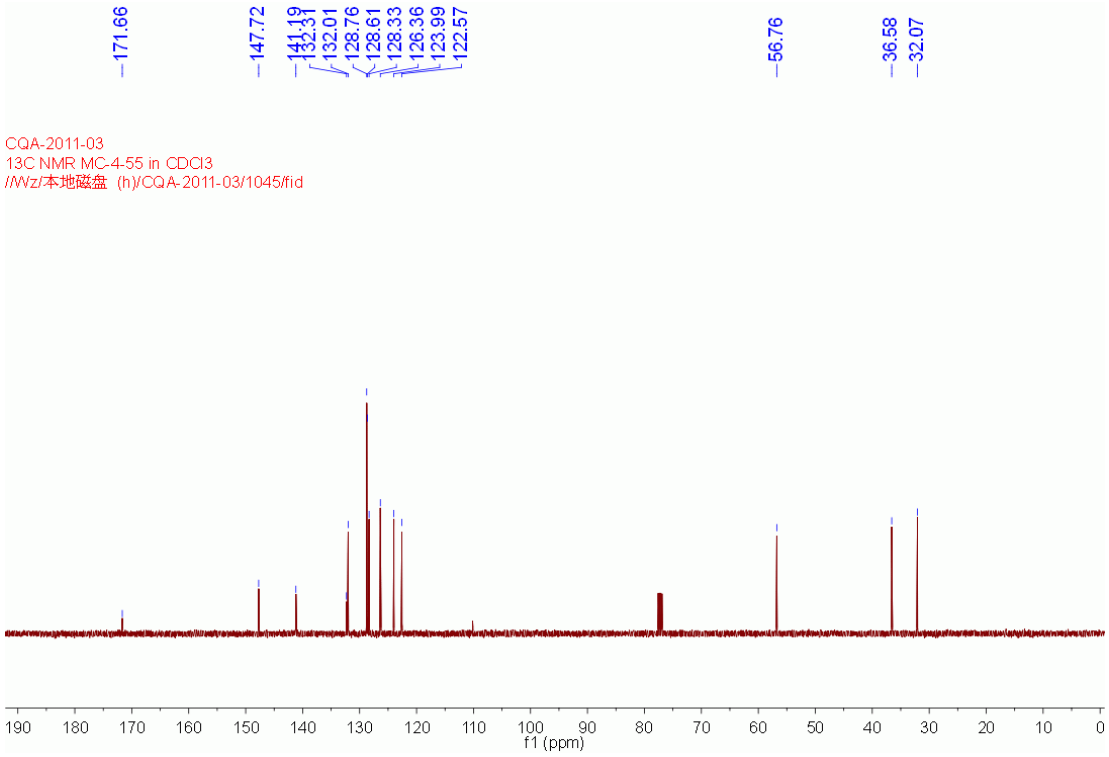
2g - ^{1}H NMR ($CDCl_3$, 400 MHz)
^{13}C NMR ($CDCl_3$,100 MHz)

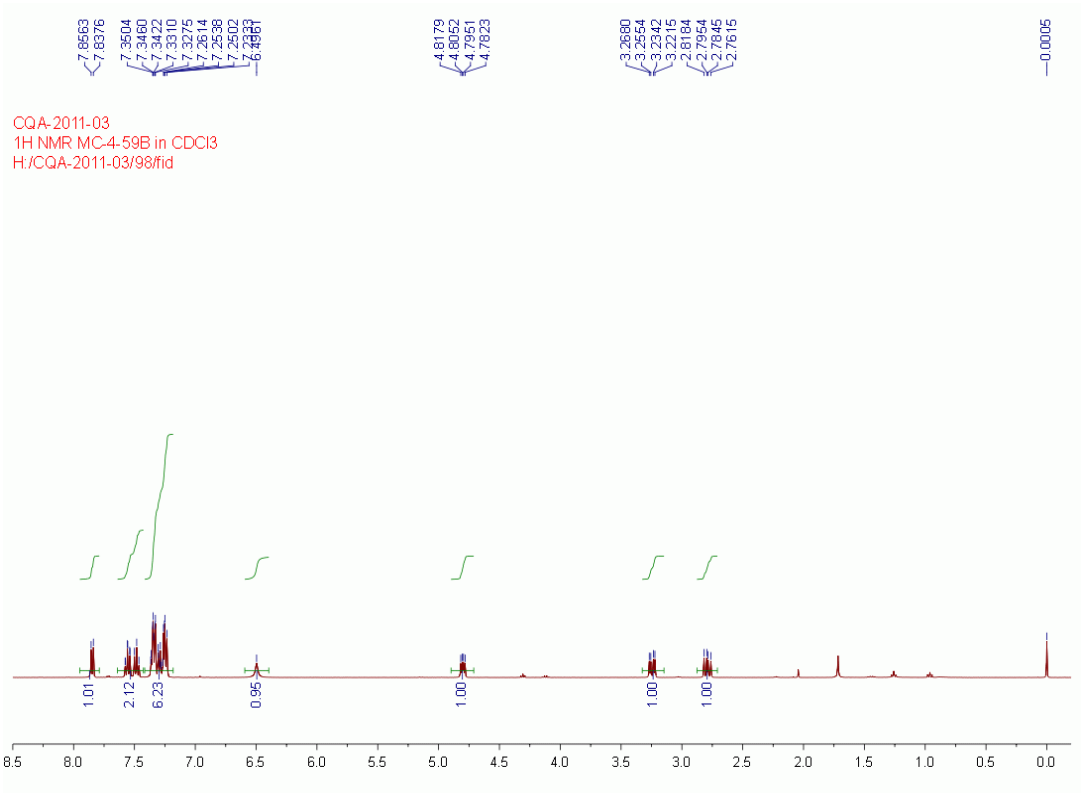


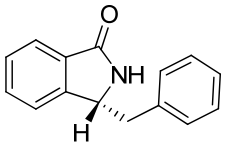




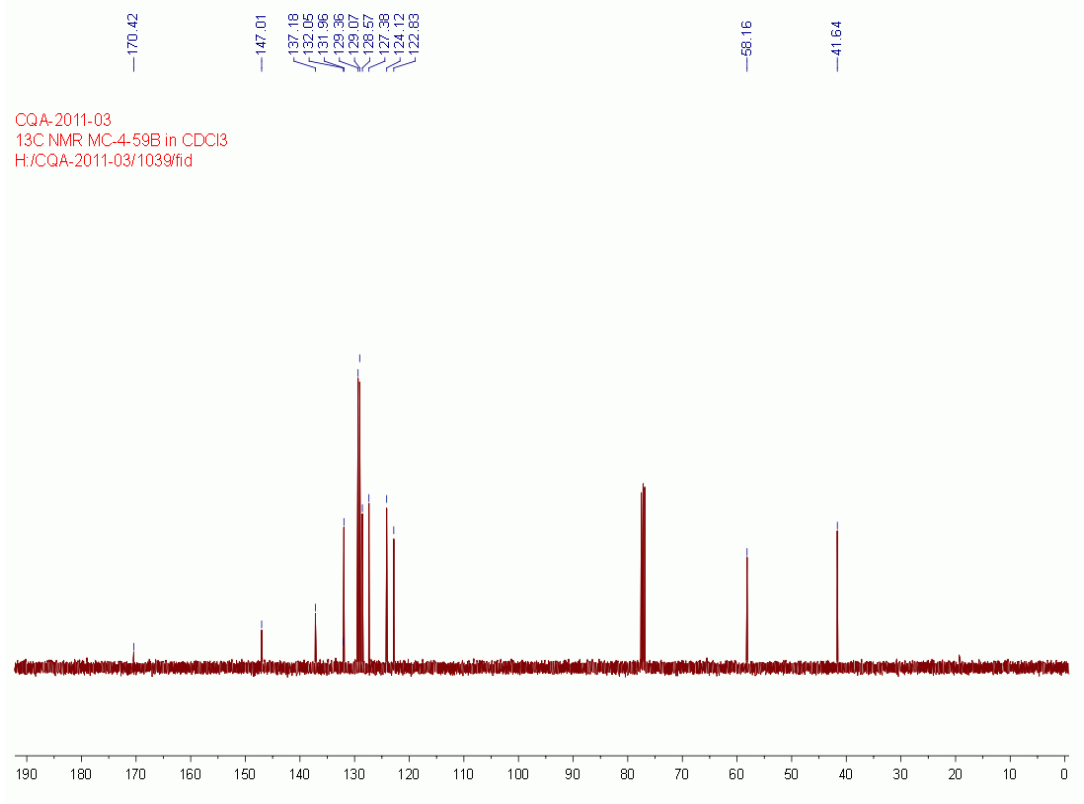
2h - ^{1}H NMR ($CDCl_3$, 400 MHz)
^{13}C NMR ($CDCl_3$,100 MHz)

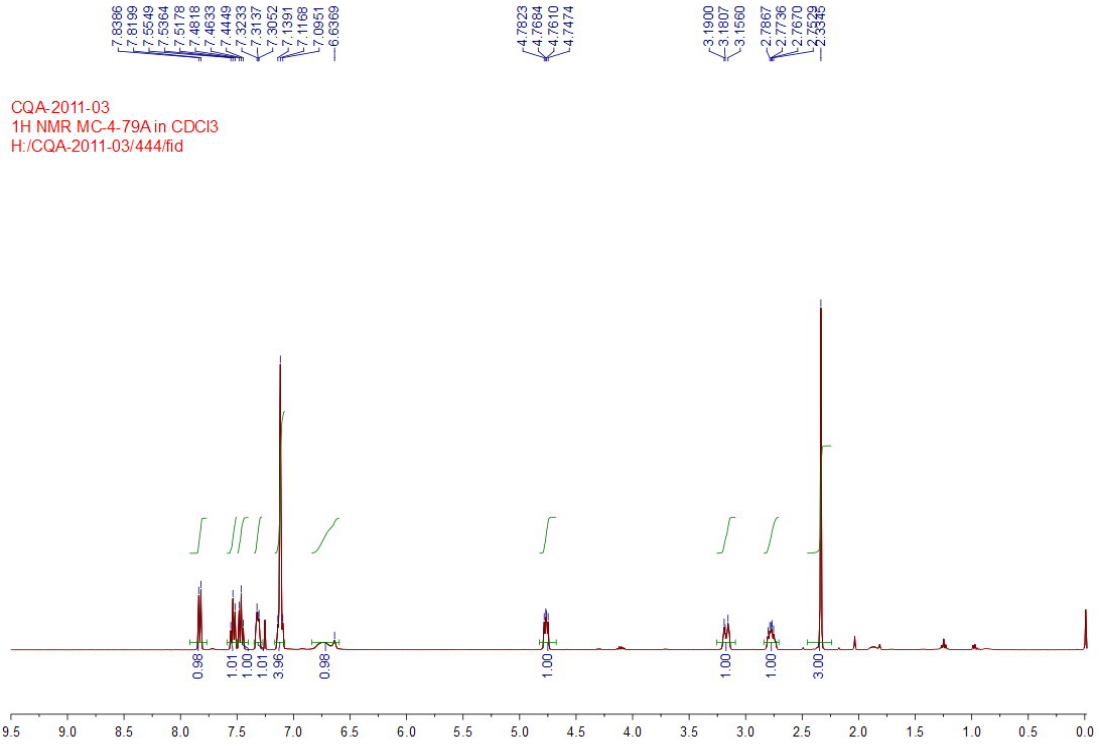


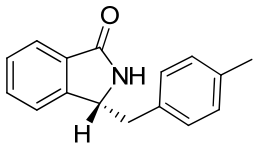




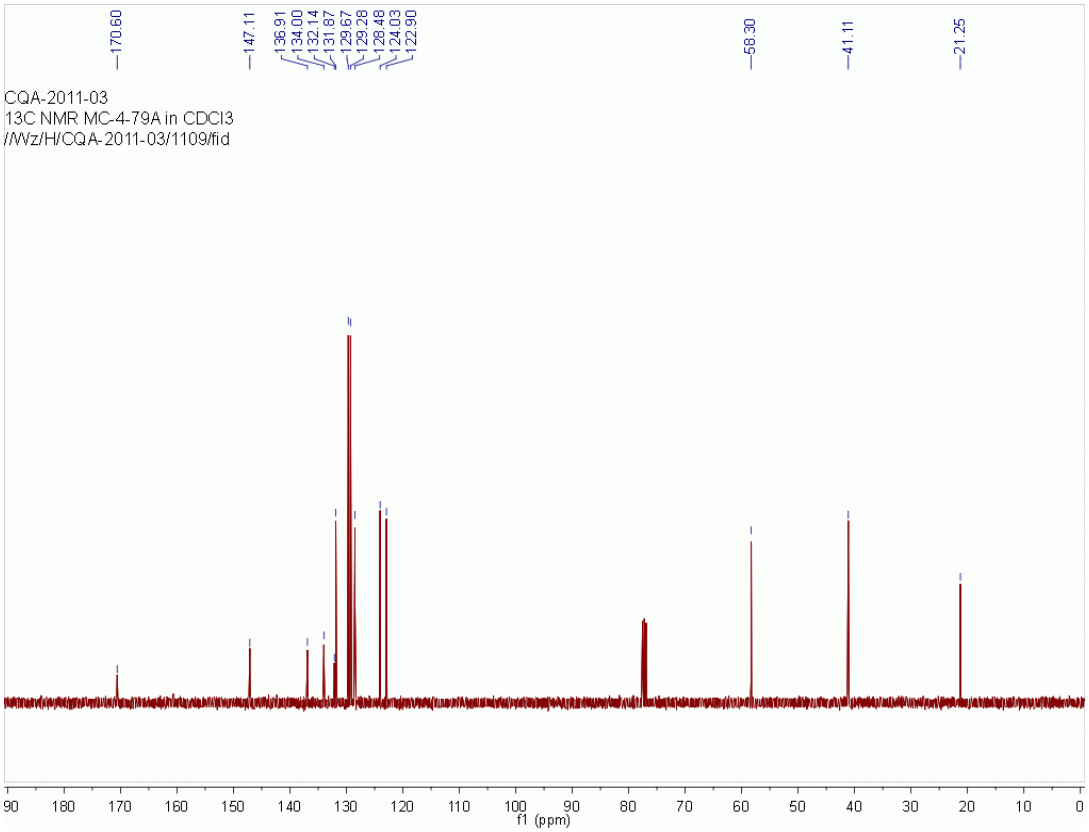
2i - ^{1}H NMR ($CDCl_3$, 400 MHz)
^{13}C NMR ($CDCl_3$,100 MHz)

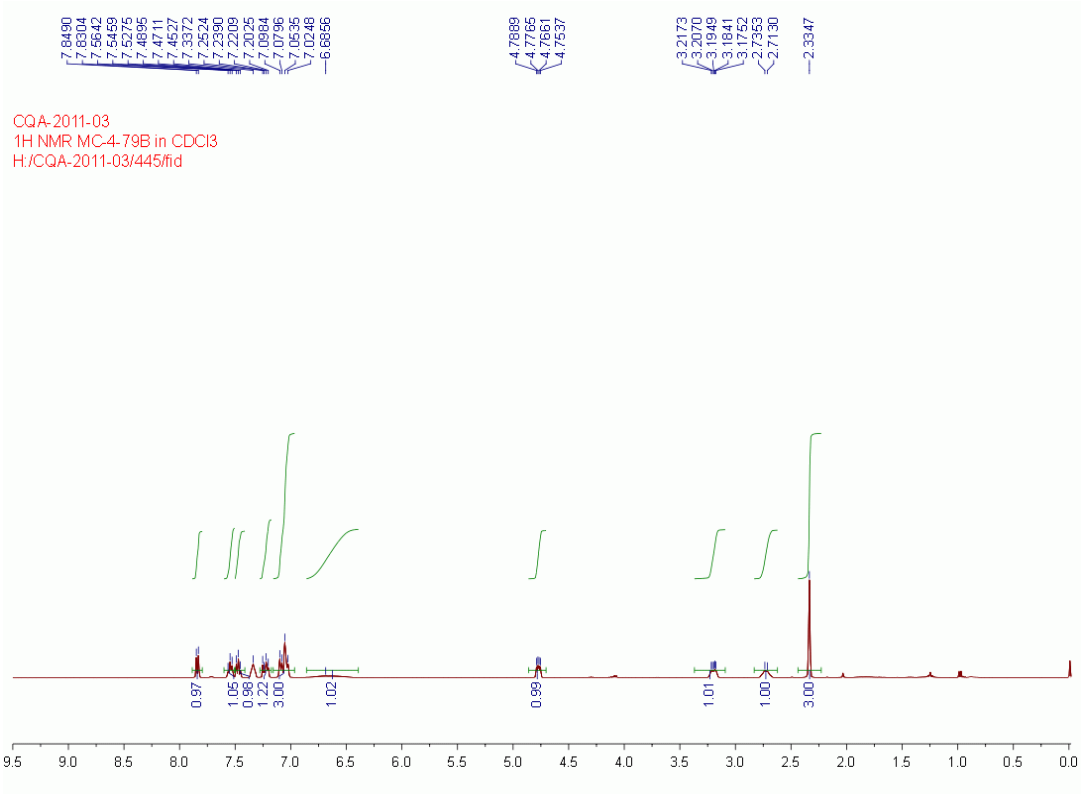


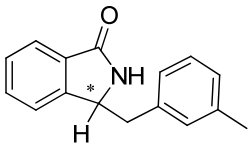




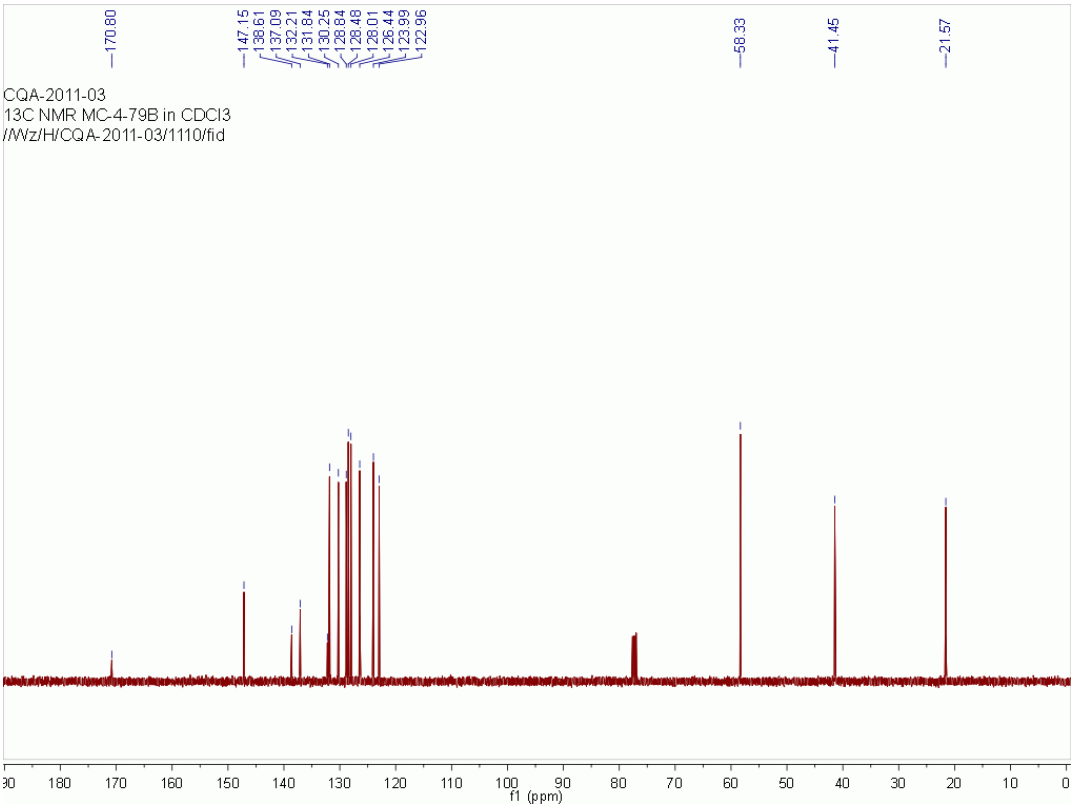
2j - ^{1}H NMR ($CDCl_3$,400 MHz)
^{13}C NMR ($CDCl_3$,100 MHz)







2k- ^{1}H NMR ($CDCl_3$, 400 MHz)
^{13}C NMR ($CDCl_3$,100 MHz)

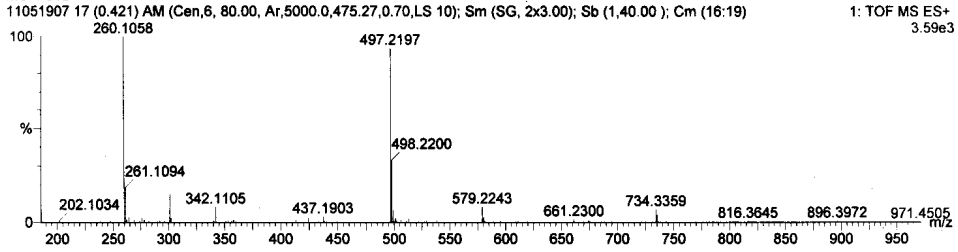


Elemental Composition Report **Page 1**

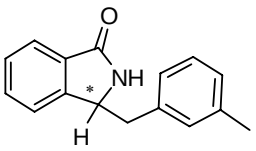
Single Mass Analysis
Tolerance = 50.0 PPM / DBE: min = -20.0, max = 200.0
Selected filters: None

Monoisotopic Mass, Even Electron Ions
6 formula(e) evaluated with 1 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 0-100 H: 0-120 N: 1-1 O: 1-1 Na: 1-1

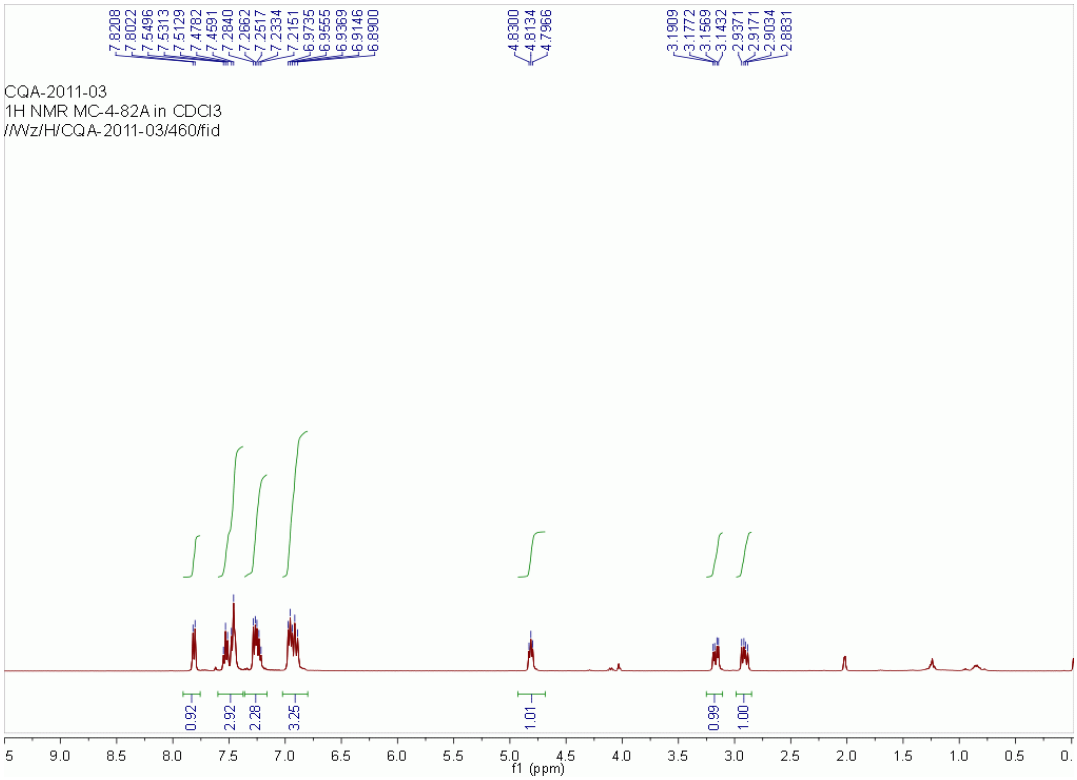
MC-4-81B
11051907 17 (0.421) AM (Cen,6, 80.00, Ar,5000.0,475.27,0.70,LS 10); Sm (SG, 2x3.00); Sb (1,40.00); Cm (16:19) 1: TOF MS ES+ 3.59e3

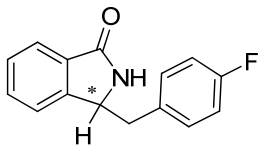


Minimum:				-20.0		
Maximum:		5.0	50.0	200.0		
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	Formula
260.1058	260.1051	0.7	2.7	9.5	3.3	C16 H15 N O Na

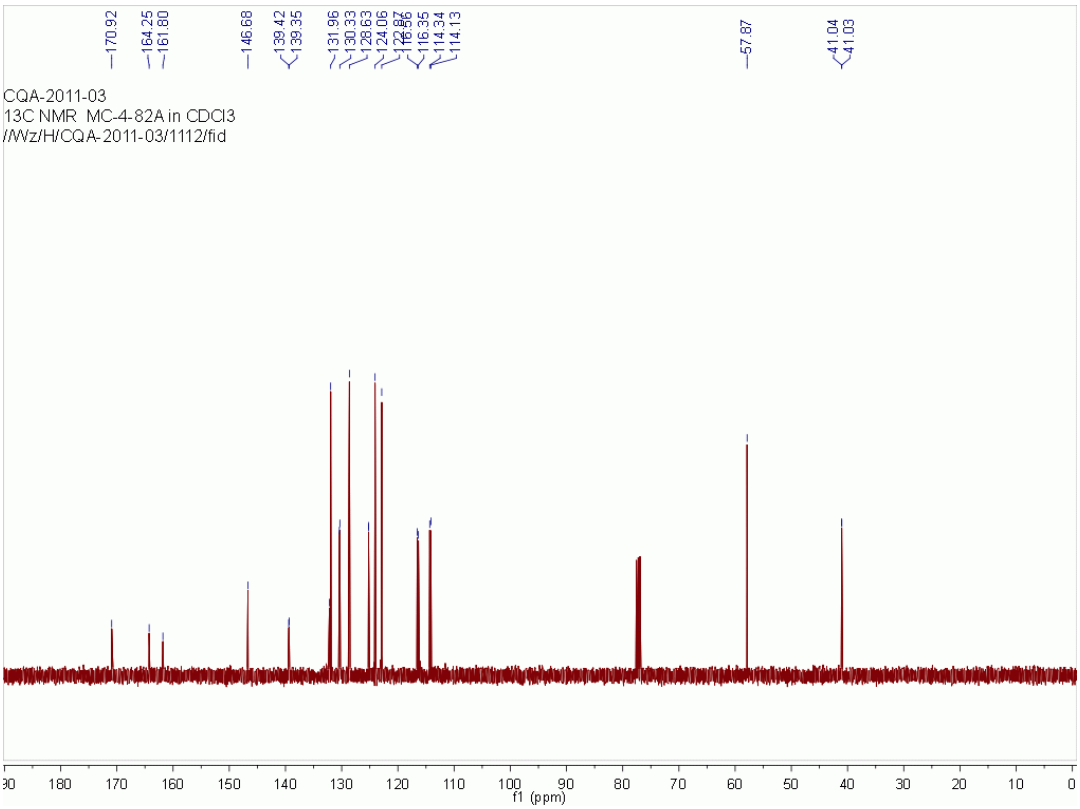


2k - HRMS





2l - ^{1}H NMR ($CDCl_3$, 400 MHz)
^{13}C NMR ($CDCl_3$,100 MHz)

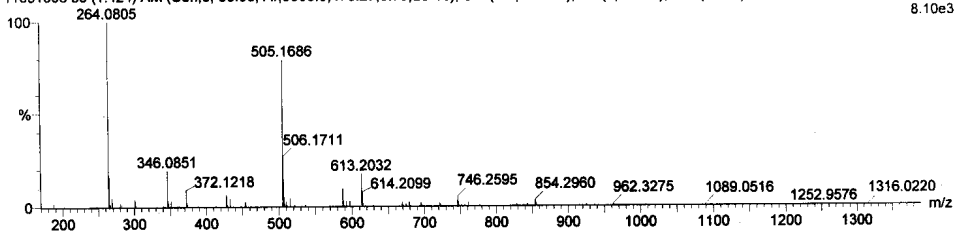


Elemental Composition Report **Page 1**

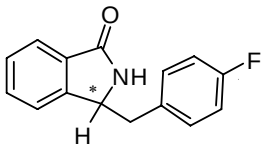
Single Mass Analysis
Tolerance = 50.0 PPM / DBE: min = -20.0, max = 200.0
Selected filters: None

Monoisotopic Mass, Even Electron Ions
6 formula(e) evaluated with 1 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 0-100 H: 0-120 N: 1-1 O: 1-1 Na: 1-1 F: 1-1

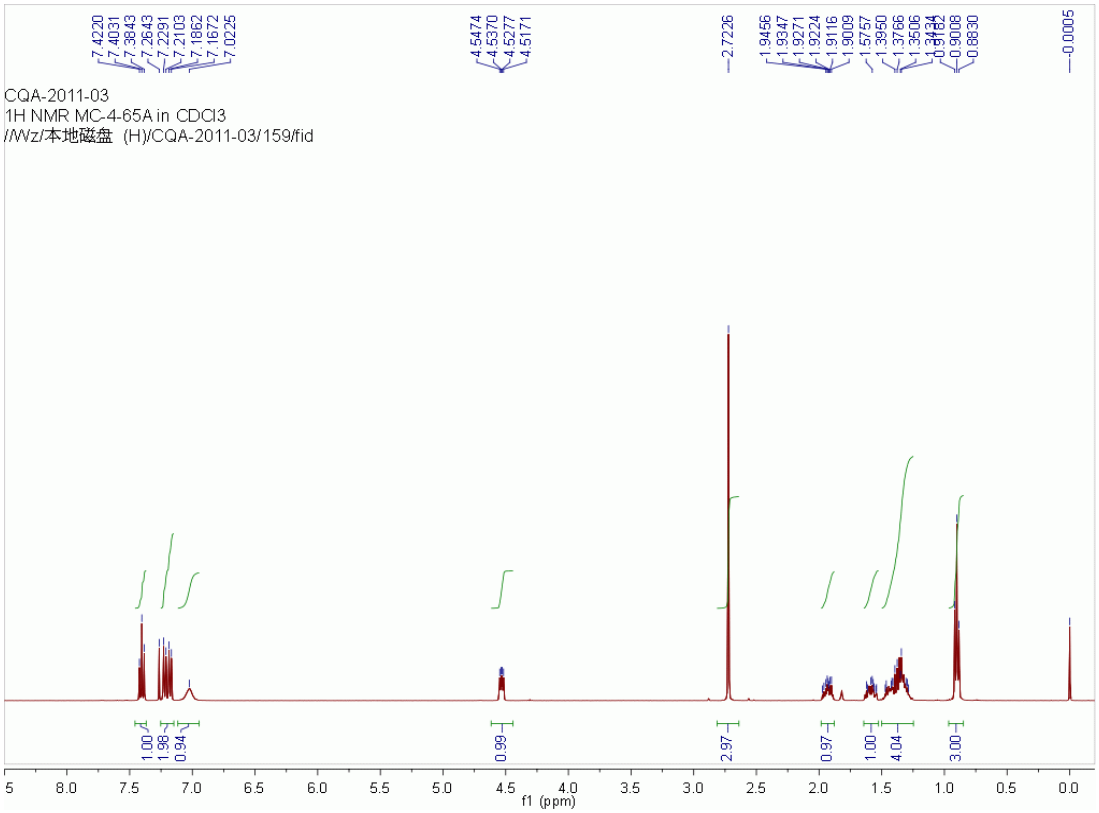
MC-4-82A
11051906 55 (1.424) AM (Cen,6, 80.00, Ar,5000.0,475.27,0.70,LS 10); Sm (SG, 2x3.00); Sb (1,40.00); Cm (55:73) 1: TOF MS ES+ 8.10e3

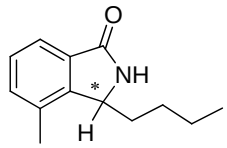


Minimum:				-20.0		
Maximum:		5.0	50.0	200.0		
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	Formula
264.0805	264.0801	0.4	1.5	9.5	3.8	C15 H12 N O Na F

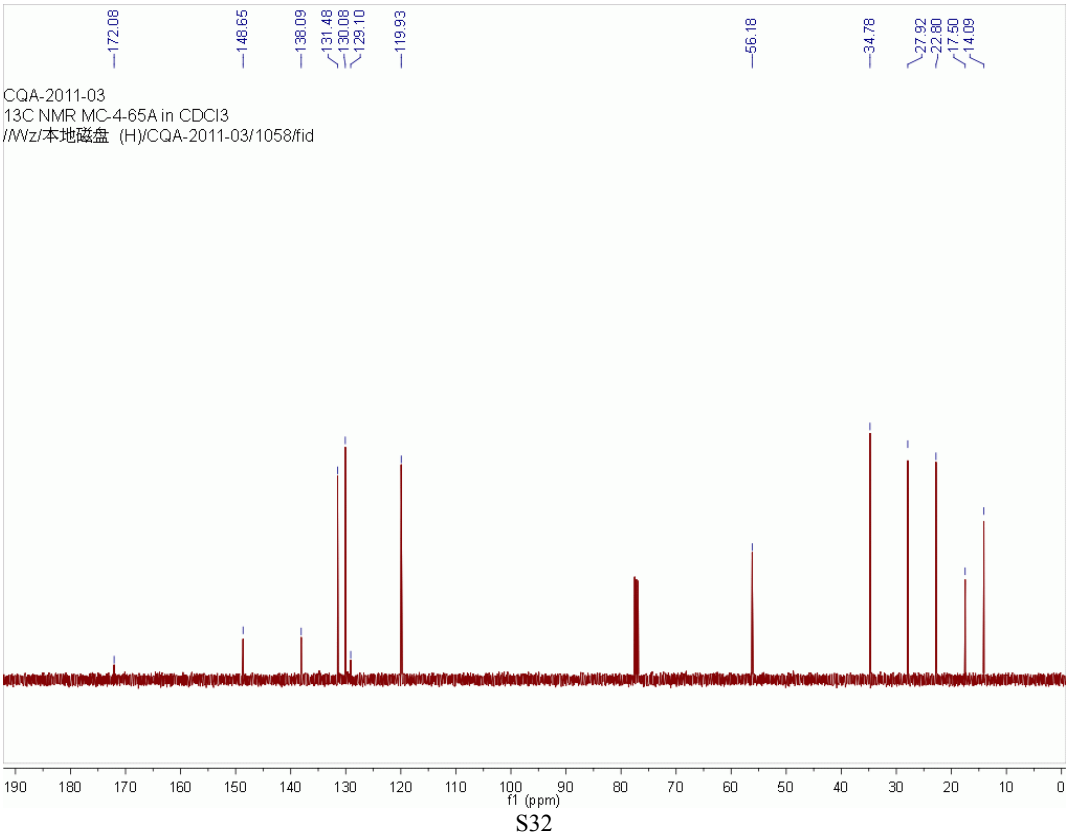


2l - HRMS





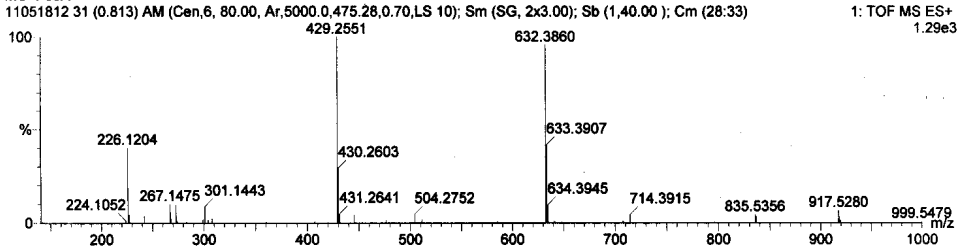
2m - ^{1}H NMR ($CDCl_3$, 400 MHz)
^{13}C NMR ($CDCl_3$,100 MHz)



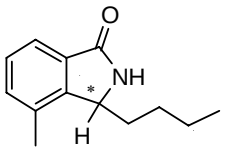
Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 50.0 PPM / DBE: min = -20.0, max = 200.0
Selected filters: None

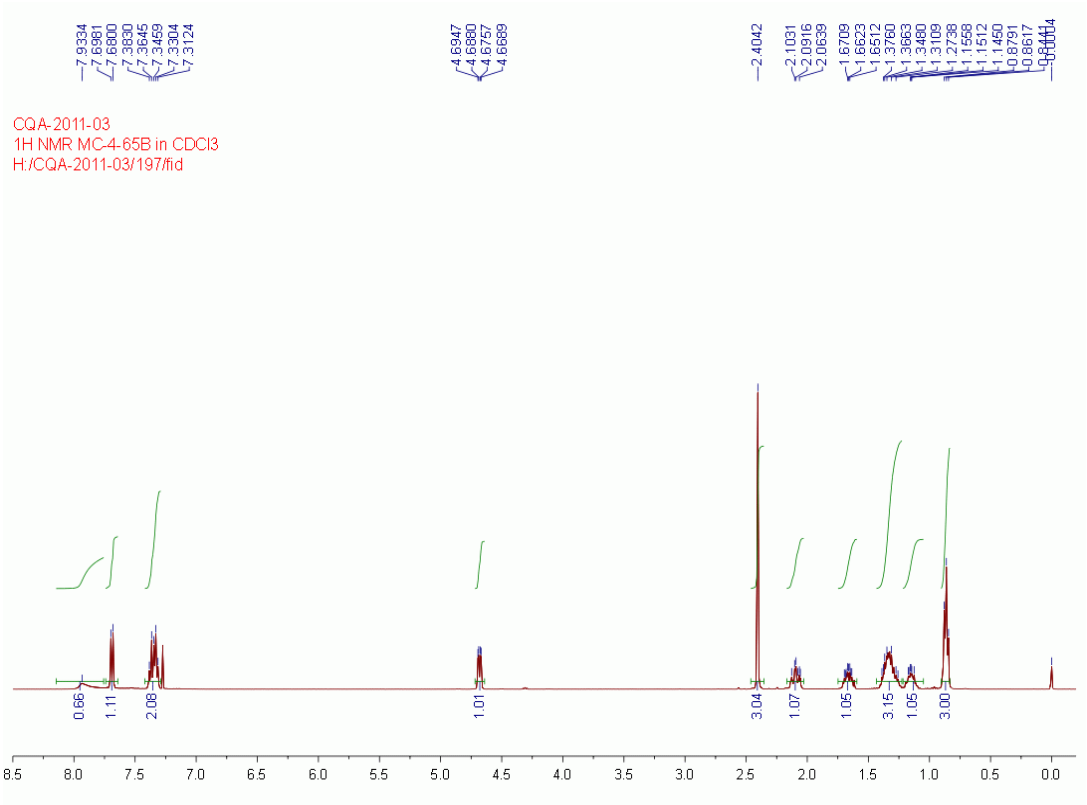
Monoisotopic Mass, Even Electron Ions
6 formula(e) evaluated with 1 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 0-100 H: 0-120 N: 1-1 O: 1-1 Na: 1-1
MC-4-65A
11051812 31 (0.813) AM (Cen,6, 80.00, Ar,5000.0,475.28,0.70,LS 10); Sm (SG, 2x3.00); Sb (1,40.00); Cm (28:33) 1: TOF MS ES+ 1.29e3

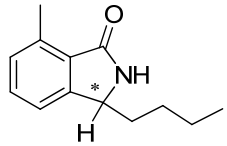


Minimum:				-20.0		
Maximum:		5.0	50.0	200.0		
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	Formula
226.1204	226.1208	-0.4	-1.8	5.5	3.6	C13 H17 N O Na

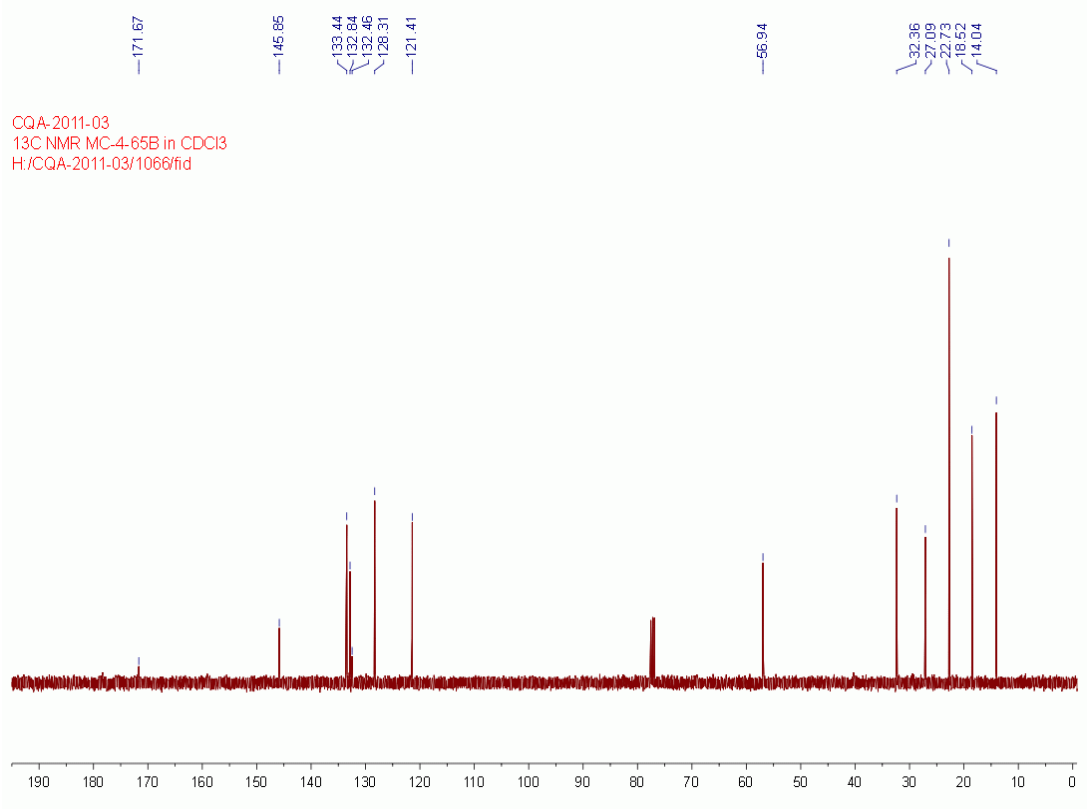


2m - HRMS





2n - ^{1}H NMR ($CDCl_3$, 400 MHz)
^{13}C NMR ($CDCl_3$,100 MHz)

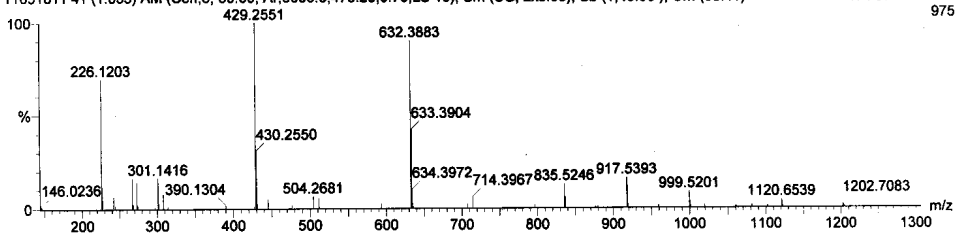


Elemental Composition Report **Page 1**

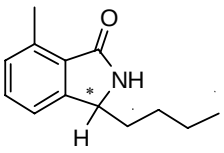
Single Mass Analysis
Tolerance = 50.0 PPM / DBE: min = -20.0, max = 200.0
Selected filters: None

Monoisotopic Mass, Even Electron Ions
6 formula(e) evaluated with 1 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 0-100 H: 0-120 N: 1-1 O: 1-1 Na: 1-1

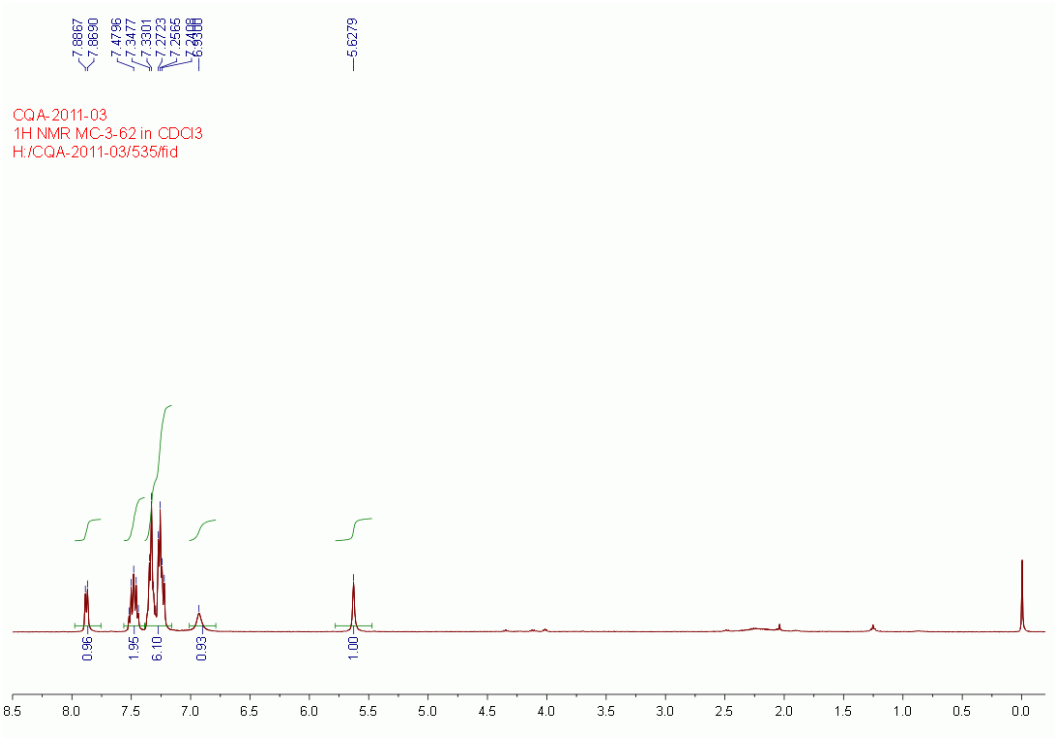
MC-4-65B
11051811 41 (1.035) AM (Cen,6, 80.00, Ar,5000.0,475.28,0.70,LS 10); Sm (SG, 2x3.00); Sb (1,40.00); Cm (38:41) 1: TOF MS ES+ 975

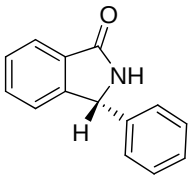


Minimum:				-20.0		
Maximum:		5.0	50.0	200.0		
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	Formula
226.1203	226.1208	-0.5	-2.2	5.5	2773040.0	C13 H17 N O Na

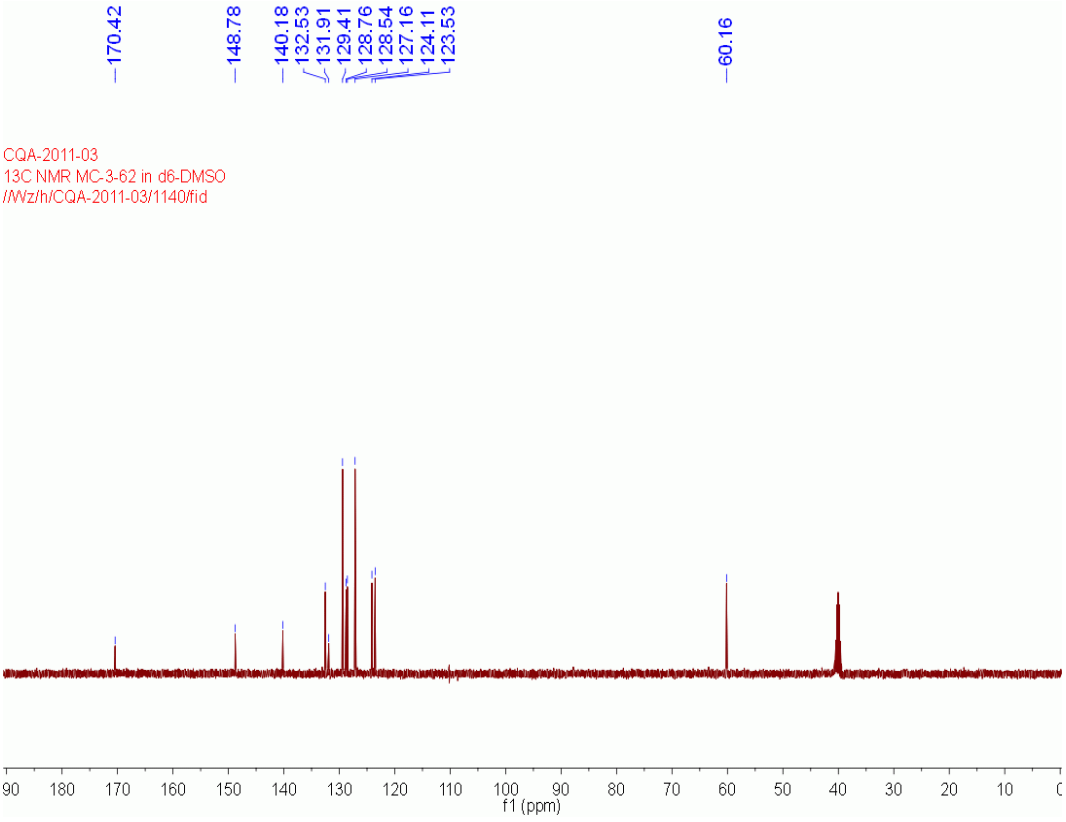


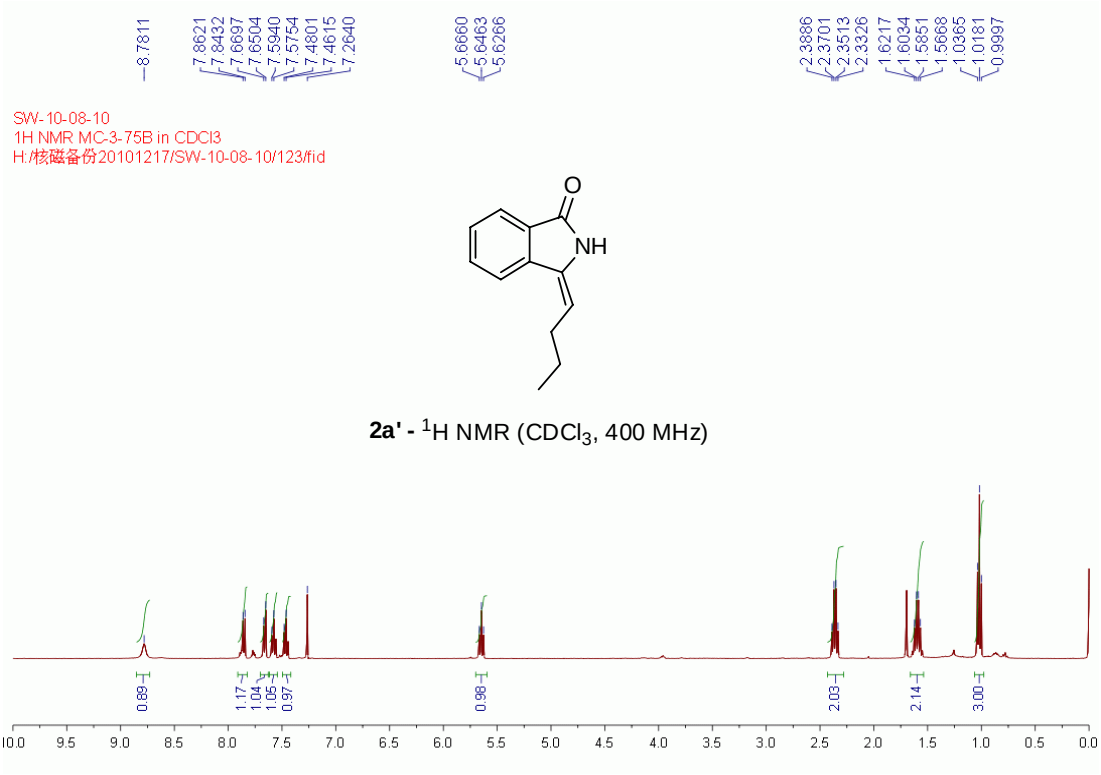
2n -HRMS





2o - ^{1}H NMR ($CDCl_3$, 400 MHz)
^{13}C NMR (DMSO,100 MHz)

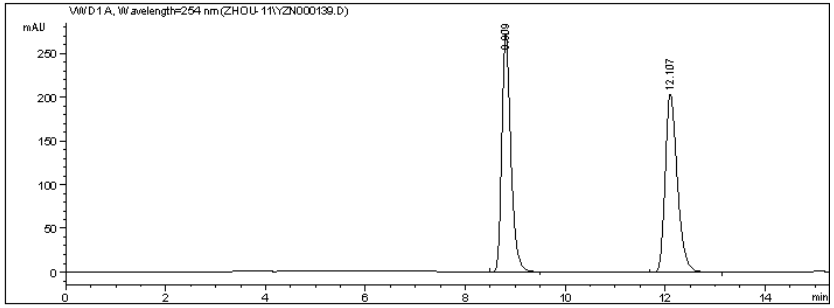




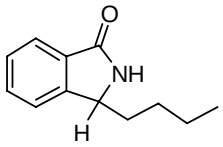
2a' - ^{1}H NMR ($CDCl_3$, 400 MHz)

Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000139.D
Sample Name: MC-4-51B

```
==================================================================
Acq. Operator   :
Acq. Instrument : Instrument 1                  Location : Vial 1
Injection Date  : 2/21/2011 2:23:15 PM
Acq. Method     : D:\DY-3-78B.M
Last changed    : 1/6/2011 10:33:39 AM
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 5/6/2011 11:33:07 AM
Sample Info     : AD-H, H/i-PrOH =90/10,0.8 mL/min, 30 oC, 254nm
```



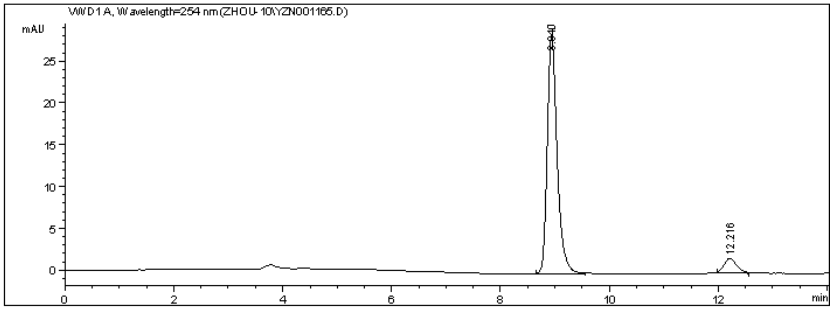

```
==================================================================
                      Area Percent Report
==================================================================

Sorted By             :      Signal
Multiplier:                  :      1.0000
Dilution:                    :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]  mAU   *s   [mAU   ]      %
----|-------|----|-------|----------|----------|--------|
   1   8.809 BB    0.1910 3432.94385  271.89182  49.8527
   2  12.107 BB    0.2587 3453.23682  203.91774  50.1473

Totals :                  6886.18066  475.80956

==================================================================
                      *** End of Report ***
```



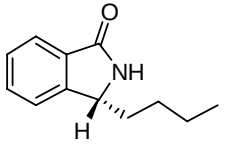
(+/-) - **2a**

Data File C:\CHEM32\1\DATA\ZHOU-10\YZN001165.D
Sample Name: MC-4-29A

```
==================================================================
Acq. Operator   :
Acq. Instrument : Instrument 1                  Location : Vial 1
Injection Date  : 12/21/2010 4:21:21 PM
Acq. Method     : C:\CHEM32\1\METHODS\SW.M
Last changed    : 12/21/2010 4:05:29 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 12/14/2010 6:49:53 PM
Sample Info     : AD-H, H/i-PrOH =90/10, 0.8 mL/min, 30 oC, 254 nm
```



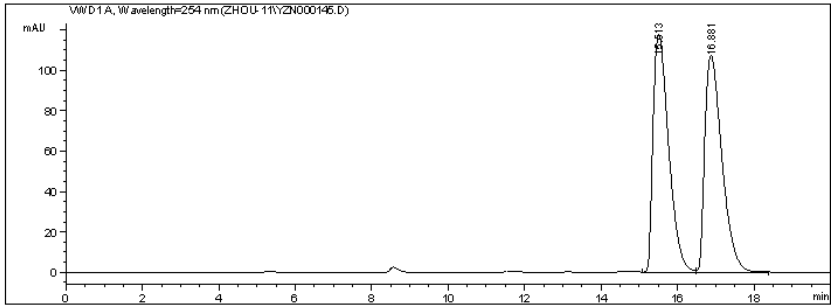

```
==================================================================
                      Area Percent Report
==================================================================

Sorted By             :      Signal
Multiplier:                  :      1.0000
Dilution:                    :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #   [min]       [min]  mAU   *s   [mAU   ]      %
----|-------|----|-------|----------|----------|--------|
   1   8.940 BB    0.1916  360.95905   28.47867  92.9576
   2  12.216 MM R  0.2671   27.34583    1.70631   7.0424

Totals :                  388.30488   30.18498

==================================================================
                      *** End of Report ***
```



(+) - **2a**

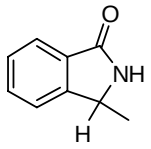
Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000145.D
Sample Name: MC-4-51A(+-)

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 2/22/2011 3:15:25 PM
Acq. Method     : D:\DY-3-78B.M
Last changed    : 2/22/2011 3:01:39 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 5/7/2011 2:08:57 PM
                  (modified after loading)
Sample Info     : OJ-H, H/i-PrOH =95/5, 0.6 mL/min, 30 oC, 254nm
```



Area Percent Report

```
Sorted By             :      Signal
Multiplier:                  :      1.0000
Dilution:                    :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]  mAU   *s   [mAU   ]      %
----|-------|----|-------|---------|---------|-------|
   1  15.513 VV    0.4428 3340.56421  117.86552  49.9245
   2  16.881 VB    0.4873 3350.66650  107.11401  50.0755

Totals :                  6691.23071  224.97952
```

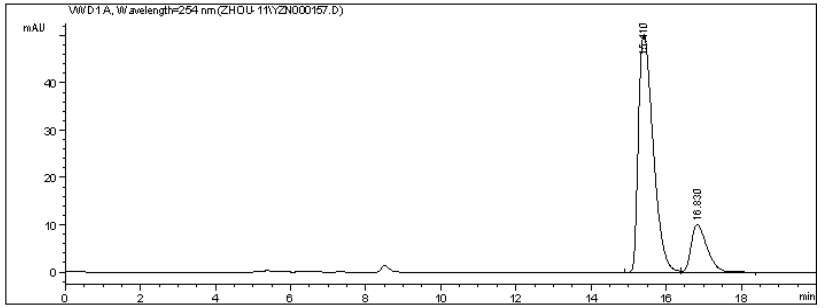


(+/-) - 2b

*** End of Report ***

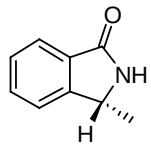
Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000157.D
Sample Name: MC-4-54A

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 2/24/2011 3:29:44 PM
Acq. Method     : D:\DY-3-78B.M
Last changed    : 2/24/2011 3:28:01 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 5/7/2011 2:35:25 PM
                  (modified after loading)
Sample Info     : OJ-H, H/i-PrOH =95/5, 0.6 mL/min, 30 oC, 254 nm
```



Area Percent Report

```
Sorted By             :      Signal
Multiplier:                  :      1.0000
Dilution:                    :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]  mAU   *s   [mAU   ]      %
----|-------|----|-------|---------|---------|-------|
   1  15.410 VV    0.4223 1368.89856   50.30894  82.2748
   2  16.830 VB    0.4521  294.91418   10.07535  17.7252

Totals :                  1663.81274   60.38430
```

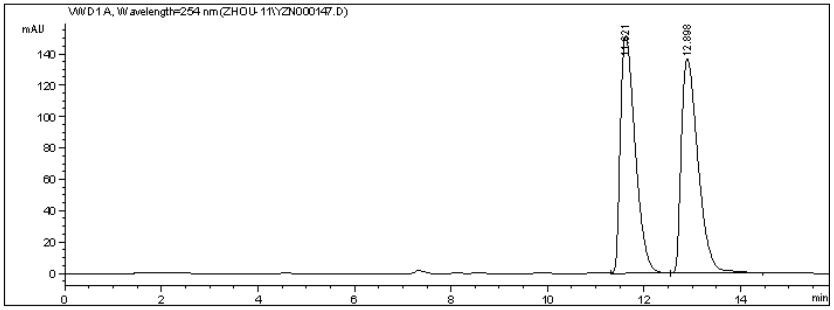


(+) - 2b

*** End of Report ***

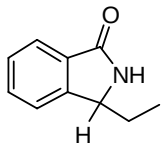
Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000147.D
Sample Name: MC-4-52B(+-)

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 2/22/2011 4:18:51 PM
Acq. Method     : D:\DY-3-78B.M
Last changed    : 2/22/2011 4:15:52 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 5/6/2011 11:33:07 AM
Sample Info     : OJ-H, H/i-PrOH =95/5, 0.7 mL/min, 30 oC, 254nm
```



Area Percent Report

```
Sorted By             :      Signal
Multiplier:                  :      1.0000
Dilution:                    :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]  mAU   *s   [mAU   ]      %
----|-------|----|-------|----------|----------|-------|
   1  11.621 VV    0.3317 3235.38354  151.78990  49.7584
   2  12.898 VB    0.3711 3266.79590  136.41678  50.2416

Totals :                  6502.17944  288.20668
```

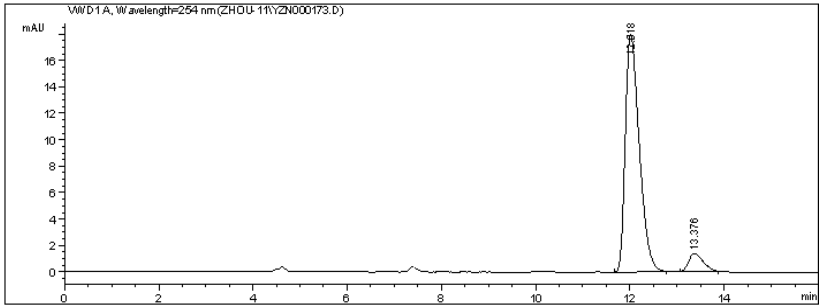


(+/-) - **2c**

*** End of Report ***

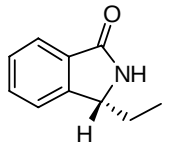
Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000173.D
Sample Name: MC-4-57A

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 3/1/2011 3:36:20 PM
Acq. Method     : D:\DY-3-78B.M
Last changed    : 3/1/2011 3:22:58 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 5/7/2011 2:45:11 PM
                  (modified after loading)
Sample Info     : OJ-H, H/i-PrOH =95/5, 0.7 mL/min, 30 oC, 254 nm
```



Area Percent Report

```
Sorted By             :      Signal
Multiplier:                  :      1.0000
Dilution:                    :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]  mAU   *s   [mAU   ]      %
----|-------|----|-------|----------|----------|-------|
   1  12.018 BB    0.3151  371.99109   18.01601  92.7952
   2  13.376 MM R  0.3525   28.88210    1.36544   7.2048

Totals :                  400.87318   19.38145
```

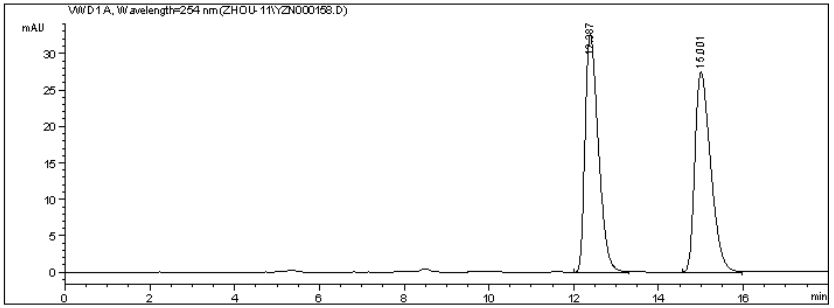


(+) - **2c**

*** End of Report ***

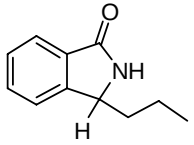
Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000158.D
Sample Name: MC-4-53A

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 2/24/2011 4:03:20 PM
Acq. Method     : D:\DY-3-78B.M
Last changed    : 2/24/2011 3:59:24 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 5/7/2011 2:47:00 PM
                  (modified after loading)
Sample Info     : OJ-H, H/i-PrOH =95/5, 0.6 mL/min, 30 oC, 254 nm
```



Area Percent Report

```
Sorted By             :      Signal
Multiplier:                  :      1.0000
Dilution:                    :      1.0000
Use Multiplier & Dilution Factor with ISTDs
```



(+/-) **- 2d**

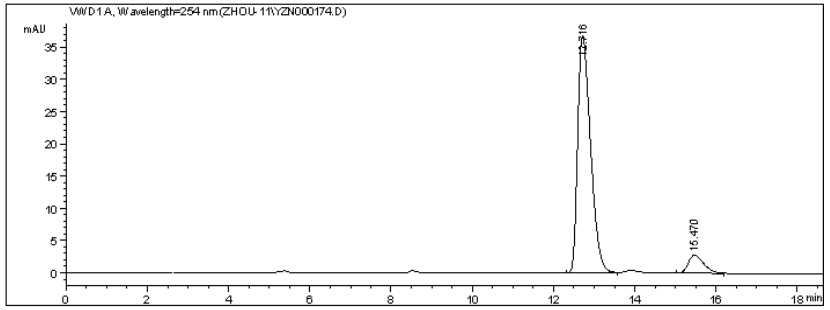
Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	12.387	BB	0.3370	710.57983	32.64175	49.9570
2	15.001	BB	0.3987	711.80176	27.43929	50.0430
Totals :				1422.38159	60.08104	

*** End of Report ***

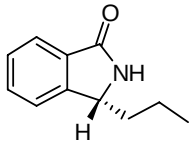
Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000174.D
Sample Name: MC-4-57B

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 3/1/2011 4:11:10 PM
Acq. Method     : D:\DY-3-78B.M
Last changed    : 3/1/2011 4:03:29 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 12/21/2010 4:56:35 PM
Sample Info     : OJ-H, H/i-PrOH =95/5, 0.6 mL/min, 30 oC, 254 nm
```



Area Percent Report

```
Sorted By             :      Signal
Multiplier:                  :      1.0000
Dilution:                    :      1.0000
Use Multiplier & Dilution Factor with ISTDs
```



(+) **- 2d**

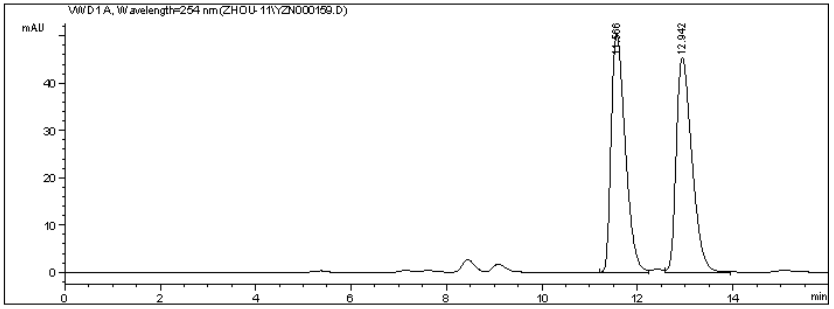
Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	12.716	BB	0.3403	813.72662	36.89865	91.7049
2	15.470	BB	0.3975	73.60495	2.83517	8.2951
Totals :				887.33157	39.73382	

*** End of Report ***

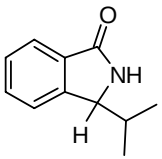
Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000159.D
Sample Name: MC-4-53B

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 2/24/2011 4:24:26 PM
Acq. Method     : D:\DY-3-78B.M
Last changed    : 2/24/2011 4:22:12 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 5/7/2011 2:50:11 PM
                  (modified after loading)
Sample Info     : OJ-H, H/i-PrOH =95/5, 0.6 mL/min, 30 oC, 254 nm
```



Area Percent Report

```
Sorted By             :      Signal
Multiplier:                  :      1.0000
Dilution:                    :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]  mAU   *s   [mAU   ]      %
----|-------|----|-------|---------|---------|-------|
   1  11.566 BV    0.3170 1029.64429   50.39207  49.8996
   2  12.942 VB    0.3530 1033.78748   45.39660  50.1004

Totals :                  2063.43176   95.78868
```

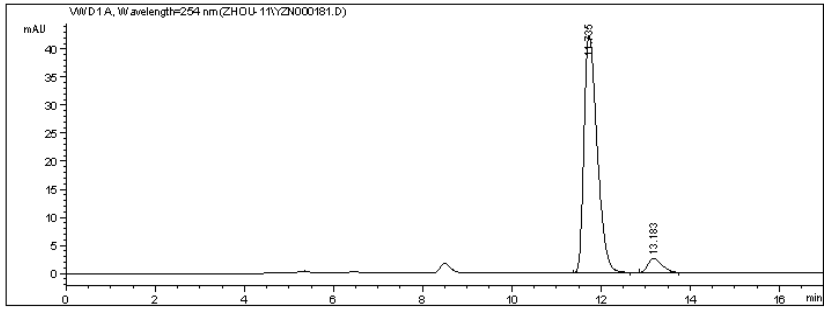


(+/-) - **2e**

*** End of Report ***

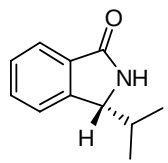
Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000181.D
Sample Name: MC-4-57C

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 3/3/2011 4:42:44 PM
Acq. Method     : C:\CHEM32\1\METHODS\SW.M
Last changed    : 3/3/2011 4:30:20 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 12/21/2010 4:56:35 PM
Sample Info     : OJ-H, H/i-PrOH =95/5, 0.6 mL/min, 30 oC, 254 nm
```



Area Percent Report

```
Sorted By             :      Signal
Multiplier:                  :      1.0000
Dilution:                    :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]  mAU   *s   [mAU   ]      %
----|-------|----|-------|---------|---------|-------|
   1  11.735 BB    0.3179  868.65424   42.36069  93.8415
   2  13.183 MM R  0.3709   57.00709    2.56149   6.1585

Totals :                  925.66132   44.92218
```

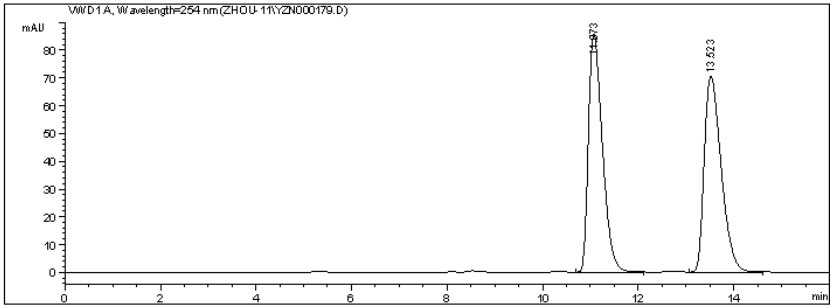


(+) - **2e**

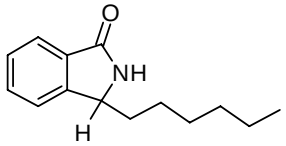
*** End of Report ***

Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000179.D
Sample Name: MC-4-58B+-

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 3/3/2011 3:18:08 PM
Acq. Method     : D:\DY-3-78B.M
Last changed    : 3/3/2011 3:15:10 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 3/3/2011 4:36:20 PM
                  (modified after loading)
Sample Info     : OJ-H, H/i-PrOH =95/5, 0.6 mL/min, 30 oC, 254 nm
```



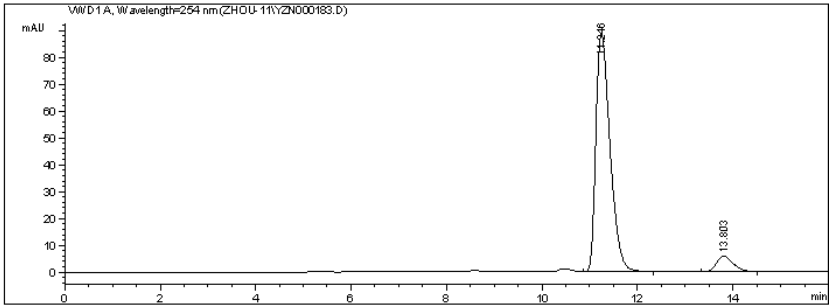

```
                        Area Percent Report

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]  mAU   *s   [mAU   ]      %
----|-------|----|-------|----------|----------|--------|
   1  11.073 VB    0.3149 1748.23645   85.77927  50.0444
   2  13.523 VB    0.3812 1745.13184   70.69690  49.9556

Totals :                  3493.36829  156.47617

                        *** End of Report ***
```



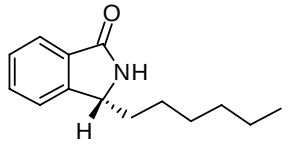
(+/-) - **2f**

Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000183.D
Sample Name: MC-4-58A

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 3/3/2011 7:28:53 PM
Acq. Method     : C:\CHEM32\1\METHODS\SW.M
Last changed    : 3/3/2011 7:24:01 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 5/7/2011 2:50:11 PM
                  (modified after loading)
Sample Info     : OJ-H, H/i-PrOH =95/5, 0.6 mL/min, 30 oC, 254 nm
```



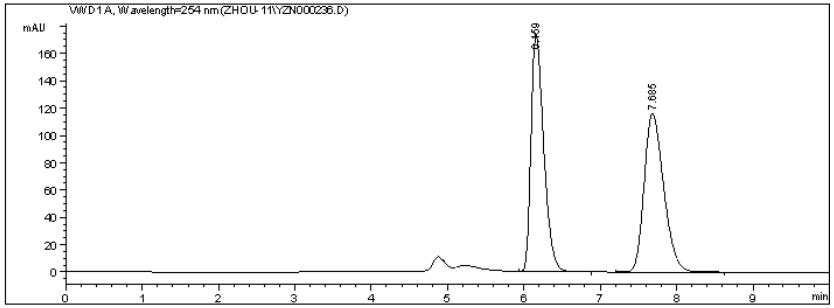

```
                        Area Percent Report

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]  mAU   *s   [mAU   ]      %
----|-------|----|-------|----------|----------|--------|
   1  11.246 VB    0.3184 1829.72522   88.47999  92.7892
   2  13.803 VB    0.3793  142.19164    5.79792   7.2108

Totals :                  1971.91685   94.27791

                        *** End of Report ***
```



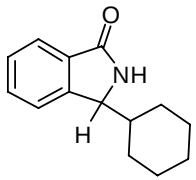
(+) - **2f**

Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000236.D
Sample Name: MC-4-62B(+-)

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 3/24/2011 2:16:31 PM
Acq. Method     : C:\CHEM32\1\METHODS\SW.M
Last changed    : 3/24/2011 2:14:36 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 5/7/2011 3:07:59 PM
                  (modified after loading)
Sample Info     : OJ-H, H/i-PrOH = 90/10, 0.8 mL/min, 30 oC, 254 nm
```



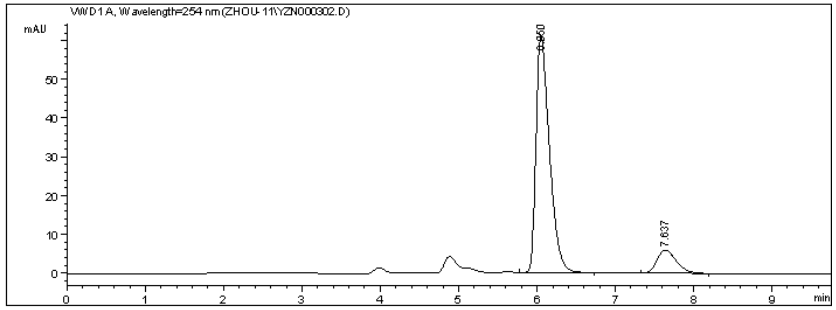

```
                          Area Percent Report

Sorted By             :      Signal
Multiplier:                  :      1.0000
Dilution:                    :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]  mAU   *s   [mAU   ]      %
----|-------|----|-------|---------|---------|-------|
   1   6.159 VB    0.1793 2024.83948  174.15790  49.3632
   2   7.685 BB    0.2771 2077.08472  116.11961  50.6368

Totals :                   4101.92419  290.27750


                          *** End of Report ***
```



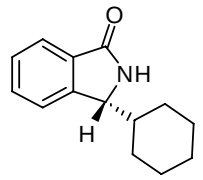
(+/-) - **2g**

Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000302.D
Sample Name: MC-4-73A

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 4/1/2011 4:50:34 PM
Acq. Method     : C:\CHEM32\1\METHODS\SW.M
Last changed    : 4/1/2011 4:49:44 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 3/31/2011 4:32:02 PM
Sample Info     : OJ-H, H/i-PrOH = 90/10,  0.8 mL/min, 30 oC, 254nm
```



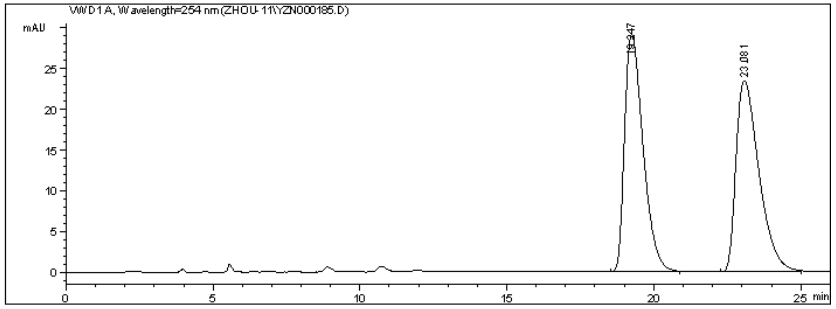

```
                          Area Percent Report

Sorted By             :      Signal
Multiplier:                  :      1.0000
Dilution:                    :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]  mAU   *s   [mAU   ]      %
----|-------|----|-------|---------|---------|-------|
   1   6.050 VB    0.1787  733.46393   61.40973  87.7768
   2   7.637 BB    0.2607  102.13696    6.01494  12.2232

Totals :                   835.60088   67.42467


                          *** End of Report ***
```



(+) - **2g**

Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000185.D
Sample Name: MC-4-55+-

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 3/3/2011 8:24:14 PM
Acq. Method     : C:\CHEM32\1\METHODS\SW.M
Last changed    : 3/3/2011 8:09:43 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 5/7/2011 3:15:54 PM
                  (modified after loading)
Sample Info     : OJ-H, H/i-PrOH =90/10, 0.8 mL/min, 30 oC, 254 nm
```

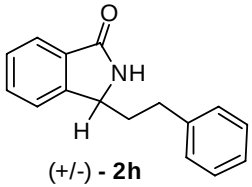


Area Percent Report

```
Sorted By             :      Signal
Multiplier:                  :      1.0000
Dilution:                    :      1.0000
Use Multiplier & Dilution Factor with ISTDs
```

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	19.247	BB	0.6737	1273.27771	29.17627	50.1470
2	23.081	BB	0.8311	1265.81335	23.43452	49.8530
Totals :				2539.09106	52.61079	

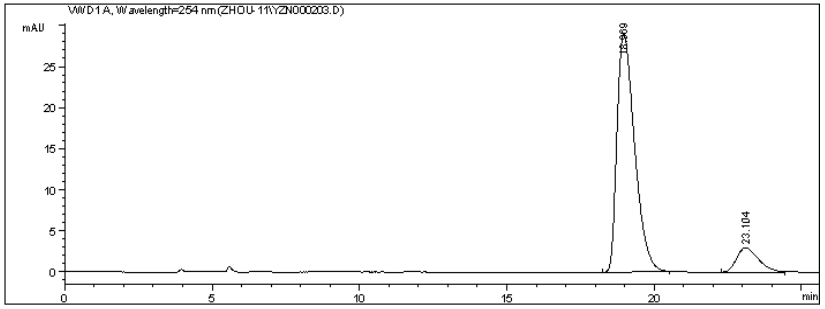


(+/-) - **2h**

*** End of Report ***

Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000203.D
Sample Name: MC-4-59A

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 3/5/2011 3:20:25 PM
Acq. Method     : C:\CHEM32\1\METHODS\SW.M
Last changed    : 3/5/2011 3:08:42 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 5/7/2011 3:12:17 PM
                  (modified after loading)
Sample Info     : OJ-H, H/i-PrOH =90/10, 0.8mL/min, 30 oC, 254 nm
```

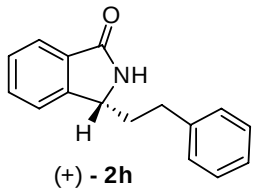


Area Percent Report

```
Sorted By             :      Signal
Multiplier:                  :      1.0000
Dilution:                    :      1.0000
Use Multiplier & Dilution Factor with ISTDs
```

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	18.969	BB	0.6437	1208.26550	28.98074	88.8729
2	23.104	BB	0.7506	151.27776	2.94579	11.1271
Totals :				1359.54326	31.92653	

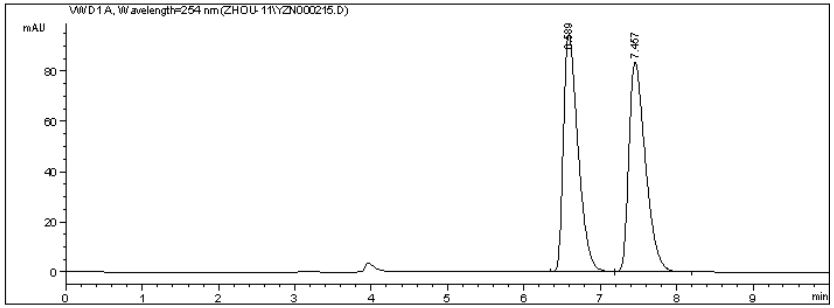


(+) - **2h**

*** End of Report ***

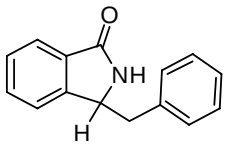
Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000215.D
Sample Name: MC-4-59B

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 3/11/2011 3:34:32 PM
Acq. Method     : C:\CHEM32\1\METHODS\SW.M
Last changed    : 3/11/2011 3:32:15 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 5/7/2011 3:18:12 PM
                  (modified after loading)
Sample Info     : OJ-H, H/i-PrOH =80/20, 1.0 mL/min, 30 oC, 254 nm
```



Area Percent Report

```
Sorted By             :      Signal
Multiplier:                  :      1.0000
Dilution:                    :      1.0000
Use Multiplier & Dilution Factor with ISTDs
```



(+/-) - **2i**

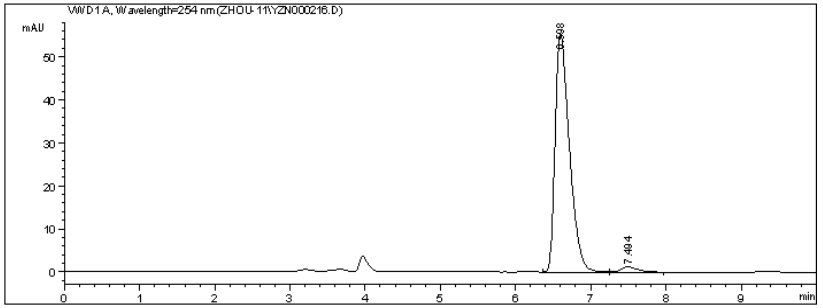
Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	6.589	VV	0.2018	1260.49109	94.74605	50.0080
2	7.457	VB	0.2295	1260.08655	83.68479	49.9920
Totals :				2520.57764	178.43084	

*** End of Report ***

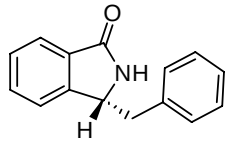
Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000216.D
Sample Name: MC-4-60B

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 3/11/2011 3:48:35 PM
Acq. Method     : C:\CHEM32\1\METHODS\SW.M
Last changed    : 3/11/2011 3:45:16 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 5/7/2011 3:18:12 PM
                  (modified after loading)
Sample Info     : OJ-H, H/i-PrOH =80/20, 1.0 mL/min, 30 oC, 254 nm
```



Area Percent Report

```
Sorted By             :      Signal
Multiplier:                  :      1.0000
Dilution:                    :      1.0000
Use Multiplier & Dilution Factor with ISTDs
```



(+) - **2i**

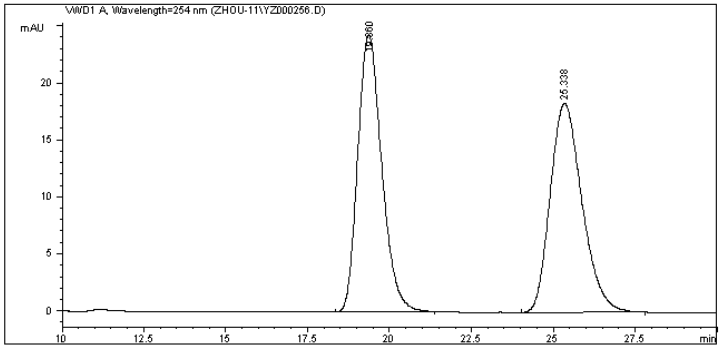
Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	6.598	BB	0.1993	730.81049	55.31629	97.5065
2	7.494	BB	0.2320	18.68867	1.22388	2.4935
Totals :				749.49916	56.54016	

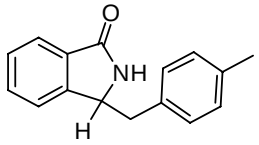
*** End of Report ***

Data File C:\HPCHEM\1\DATA\ZHOU-11\YZ000256.D Sample Name: MC-4-79A
OD-H, H/i-PrOH = 95/5, 1.0 mL/min, 30 oC, 254 nm

```
==========================================================================
Injection Date  : 4/14/2011 10:39:11 AM
Sample Name     : MC-4-79A                      Location : Vial 1
Acq. Operator   : ZX
Acq. Method     : C:\HPCHEM\1\METHODS\SW.M
Last changed    : 4/14/2011 10:36:28 AM by ZX
                  (modified after loading)
Analysis Method : C:\HPCHEM\1\METHODS\SW.M
Last changed    : 5/7/2011 3:54:41 PM by ZX
                  (modified after loading)
==========================================================================
```




```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #  [min]       [min] mAU   *s   [mAU   ]      %
----|-------|----|-------|----------|----------|--------|
   1  19.360 BB    0.7828 1237.70898   24.26797  50.0135
   2  25.338 BB    1.0553 1237.03857   18.32916  49.9865

Totals :                  2474.74756   42.59714

 Results obtained with enhanced integrator!
==========================================================================
                        *** End of Report ***
```

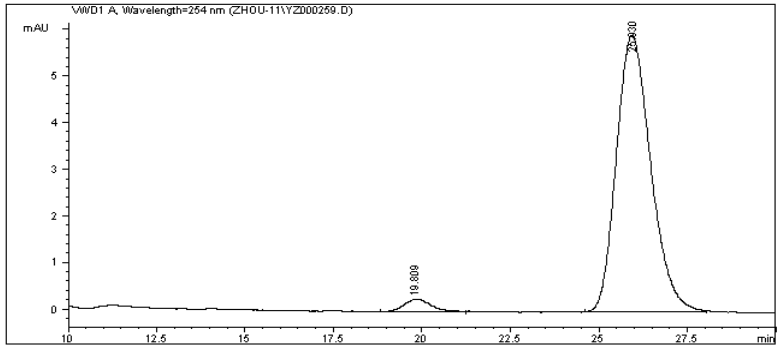


(+/-) - **2j**

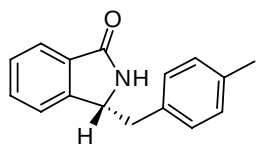
Instrument 1 5/7/2011 3:54:45 PM ZX Page 1 of 1

Data File C:\HPCHEM\1\DATA\ZHOU-11\YZ000259.D Sample Name: MC-4-80A
OD-H, H/i-PrOH = 95/5, 1.0 mL/min, 30 oC, 254 nm

```
==========================================================================
Injection Date  : 4/14/2011 8:43:29 PM
Sample Name     : MC-4-80A                      Location : Vial 1
Acq. Operator   : ZX
Acq. Method     : C:\HPCHEM\1\METHODS\SW.M
Last changed    : 4/14/2011 8:38:29 PM by ZX
                  (modified after loading)
Analysis Method : C:\HPCHEM\1\METHODS\SW.M
Last changed    : 5/7/2011 3:53:55 PM by ZX
                  (modified after loading)
==========================================================================
```




```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #  [min]       [min] mAU   *s   [mAU   ]      %
----|-------|----|-------|----------|----------|--------|
   1  19.809 BB    0.6186   13.44536 2.59063e-1   3.2566
   2  25.930 BB    1.0019  399.42075    5.92584  96.7434

Totals :                   412.86611    6.18490

 Results obtained with enhanced integrator!
==========================================================================
                        *** End of Report ***
```

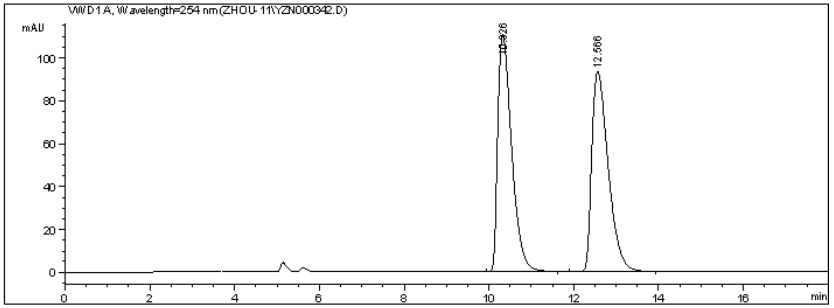


(+) - **2j**

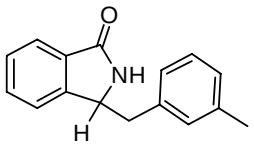
Instrument 1 5/7/2011 3:54:00 PM ZX Page 1 of 1

Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000342.D
Sample Name: MC-4-79B

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 4/14/2011 9:19:37 AM
Acq. Method     : C:\CHEM32\1\METHODS\SW.M
Last changed    : 4/14/2011 9:16:32 AM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 5/7/2011 3:38:13 PM
                  (modified after loading)
Sample Info     : OJ-H, H/i-PrOH =90/10,  0.8 mL/min, 30 oC, 254nm
```



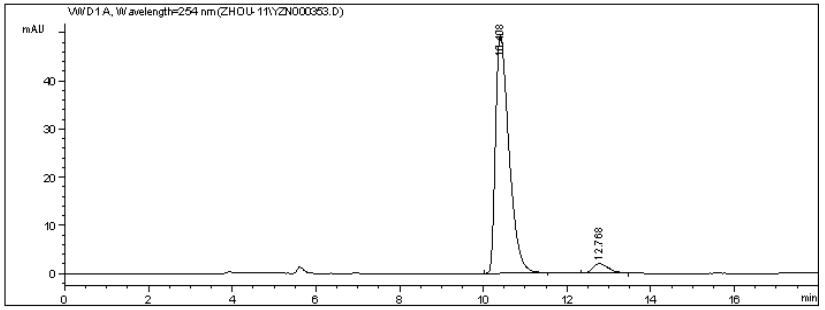

```
                          Area Percent Report

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]  mAU   *s   [mAU   ]      %
----|-------|----|-------|----------|----------|--------|
   1  10.326 BB    0.3508 2513.05005  110.69466  50.0128
   2  12.566 BB    0.4153 2511.76855   93.08412  49.9872

Totals :                  5024.81860  203.77878


                          *** End of Report ***
```



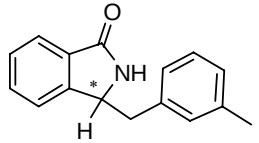
(+/-) **- 2k**

Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000353.D
Sample Name: MC-4-80B

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 4/14/2011 7:55:11 PM
Acq. Method     : C:\CHEM32\1\METHODS\SW.M
Last changed    : 4/14/2011 7:36:57 PM
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 5/7/2011 3:38:13 PM
                  (modified after loading)
Sample Info     : OJ-H, H/i-PrOH = 90/10,  0.8 mL/min, 30 oC, 254nm
```




```
                          Area Percent Report

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]  mAU   *s   [mAU   ]      %
----|-------|----|-------|----------|----------|--------|
   1  10.408 BB    0.3448 1109.19812   49.43222  95.6561
   2  12.768 BB    0.3925   50.37097    1.95396   4.3439

Totals :                  1159.56909   51.38618


                          *** End of Report ***
```

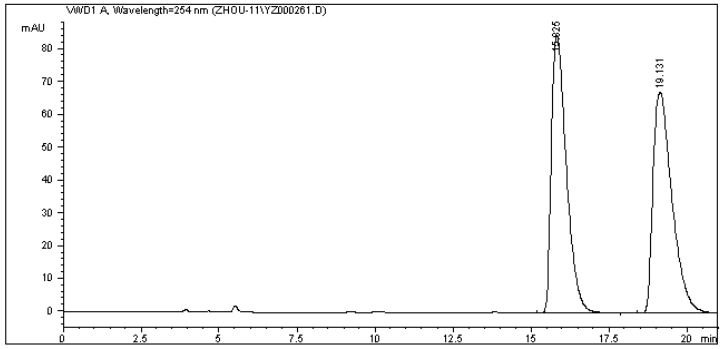


(+) **- 2k**

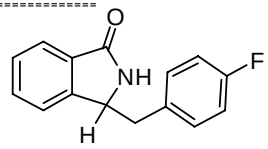
Data File C:\HPCHEM\1\DATA\ZHOU-11\YZ000261.D Sample Name: MC-4-82A

OJ-H, H/i-PrOH = 90/10, 0.8 mL/min, 30 oC, 254 nm

```
==================================================================
Injection Date  : 4/15/2011 4:42:03 PM
Sample Name     : MC-4-82A                    Location : Vial 1
Acq. Operator   : ZX
Acq. Method     : C:\HPCHEM\1\METHODS\SW.M
Last changed    : 4/15/2011 4:38:20 PM by ZX
                  (modified after loading)
Analysis Method : C:\HPCHEM\1\METHODS\SW.M
Last changed    : 5/7/2011 3:57:18 PM by ZX
                  (modified after loading)
==================================================================
```




```
==================================================================
                        Area Percent Report
==================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #   [min]      [min] mAU   *s   [mAU   ]      %
----|-------|----|-------|----------|----------|-------|
   1  15.825 VB    0.5183 2826.15454   84.50675  49.9028
   2  19.131 PB    0.6461 2837.16089   67.30939  50.0972

Totals :                  5663.31543  151.81615

 Results obtained with enhanced integrator!
==================================================================
                        *** End of Report ***
```



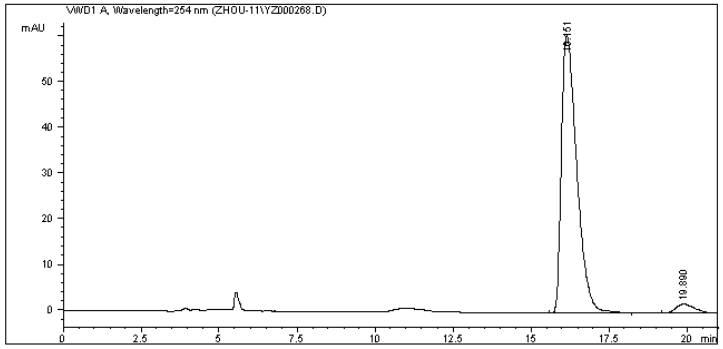
(+/-) - **2l**

Instrument 1 5/7/2011 3:57:22 PM ZX Page 1 of 1

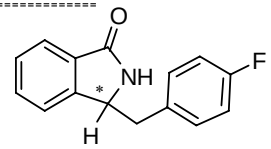
Data File C:\HPCHEM\1\DATA\ZHOU-11\YZ000268.D Sample Name: MC-4-82B

OJ-H, H/i-PrOH = 90/10, 0.8 mL/min, 30 oC, 254 nm

```
==================================================================
Injection Date  : 4/18/2011 4:50:10 PM
Sample Name     : MC-4-82B                    Location : Vial 1
Acq. Operator   : ZX
Acq. Method     : C:\HPCHEM\1\METHODS\SW.M
Last changed    : 4/18/2011 4:48:12 PM by ZX
                  (modified after loading)
Analysis Method : C:\HPCHEM\1\METHODS\SW.M
Last changed    : 5/7/2011 3:58:25 PM by ZX
                  (modified after loading)
==================================================================
```




```
==================================================================
                        Area Percent Report
==================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #   [min]      [min] mAU   *s   [mAU   ]      %
----|-------|----|-------|----------|----------|-------|
   1  16.151 BB    0.5284 2073.60718   60.66603  96.3644
   2  19.890 BP    0.6092   78.23129    1.92648   3.6356

Totals :                  2151.83846   62.59251

 Results obtained with enhanced integrator!
==================================================================
                        *** End of Report ***
```

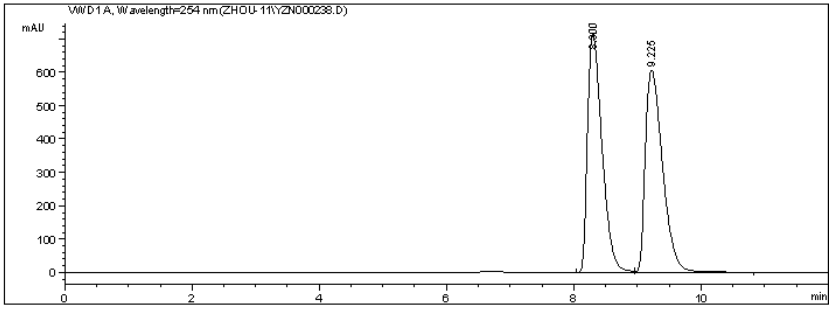


(+) - **2l**

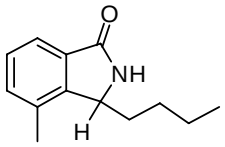
Instrument 1 5/7/2011 3:58:43 PM ZX Page 1 of 1

Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000238.D
Sample Name: MC-4-65A(+-)

```
==========================================================================
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 3/24/2011 2:54:55 PM
Acq. Method     : C:\CHEM32\1\METHODS\SW.M
Last changed    : 3/24/2011 2:45:16 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 5/7/2011 3:24:32 PM
                  (modified after loading)
Sample Info     : OJ-H, H/i-PrOH = 95/5, 0.6 mL/min, 30 oC, 254 nm
```



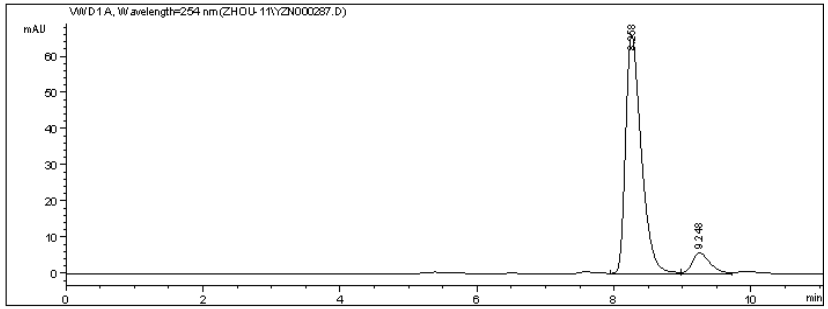

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]  mAU   *s   [mAU   ]      %
----|-------|----|-------|----------|----------|-------|
   1   8.300 VV    0.2462 1.13361e4   714.80652  49.7936
   2   9.225 VB    0.2925 1.14301e4   606.97162  50.2064

Totals :                  2.27662e4  1321.77814


==========================================================================
                        *** End of Report ***
```



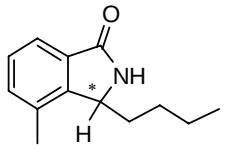
(+/-) - 2m

Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000287.D
Sample Name: MC-4-72A

```
==========================================================================
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 3/31/2011 3:41:17 PM
Acq. Method     : C:\CHEM32\1\METHODS\SW.M
Last changed    : 3/31/2011 3:29:23 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 3/29/2011 3:55:42 PM
Sample Info     : OJ-H, H/i-PrOH = 95/5,  0.6 mL/min, 30 oC, 254nm
```



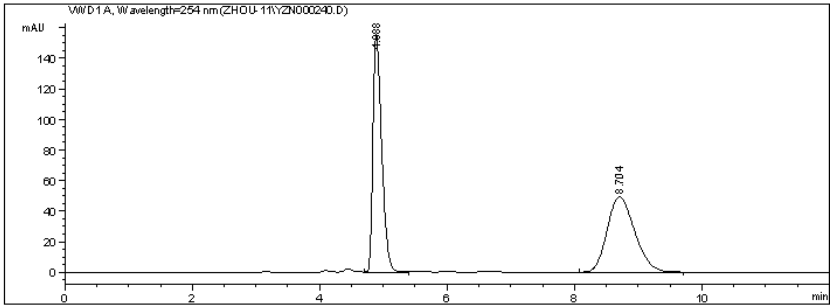

```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]  mAU   *s   [mAU   ]      %
----|-------|----|-------|----------|----------|-------|
   1   8.258 VV    0.2400 1043.08484   65.91434  91.1652
   2   9.248 VV    0.2688  101.08498    5.71957   8.8348

Totals :                  1144.16982   71.63391


==========================================================================
                        *** End of Report ***
```



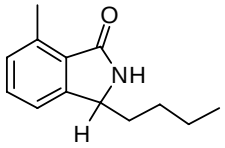
(+) - 2m

Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000240.D
Sample Name: MC-4-65B(+-)

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 3/24/2011 3:50:45 PM
Acq. Method     : C:\CHEM32\1\METHODS\SW.M
Last changed    : 3/24/2011 3:39:27 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 5/7/2011 3:24:32 PM
                  (modified after loading)
Sample Info     : OJ-H, H/i-PrOH = 90/10, 1.0 mL/min, 30 oC, 254 nm
```



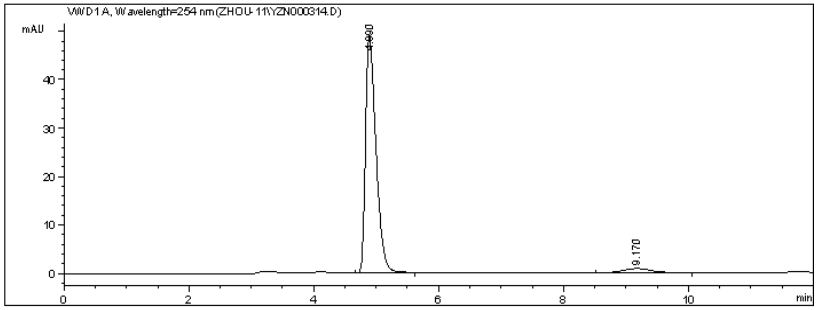

```
                        Area Percent Report

Sorted By             :      Signal
Multiplier:                  :      1.0000
Dilution:                    :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]  mAU   *s   [mAU   ]      %
----|-------|----|-------|---------|---------|-------|
   1   4.888 VV    0.1445 1481.88916  155.80058  49.9486
   2   8.704 BB    0.4693 1484.93774   49.30038  50.0514

Totals :                  2966.82690  205.10097


                        *** End of Report ***
```



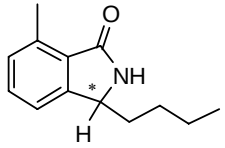
(+/-) - **2n**

Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000314.D
Sample Name: MC-4-74B

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 4/6/2011 3:19:08 PM
Acq. Method     : C:\CHEM32\1\METHODS\SW.M
Last changed    : 3/31/2011 4:32:02 PM
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 5/7/2011 3:24:32 PM
                  (modified after loading)
Sample Info     : OJ-H, H/i-PrOH = 90/10,  1.0 mL/min, 30 oC, 254 nm
```



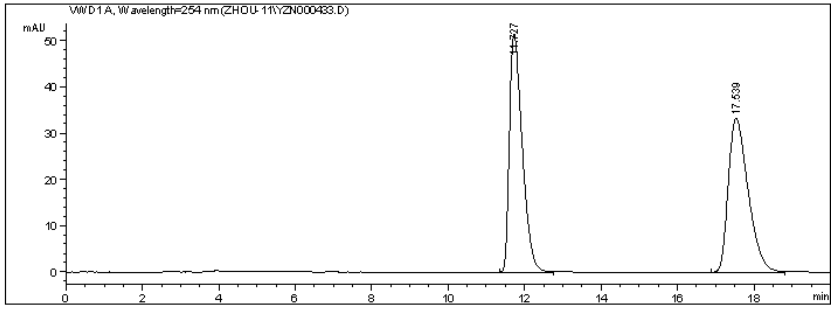

```
                        Area Percent Report

Sorted By             :      Signal
Multiplier:                  :      1.0000
Dilution:                    :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]  mAU   *s   [mAU   ]      %
----|-------|----|-------|---------|---------|-------|
   1   4.890 VB    0.1760  569.16858   49.10477  94.8094
   2   9.170 BB    0.4879   31.16071 8.91384e-1   5.1906

Totals :                   600.32929   49.99616


                        *** End of Report ***
```



(+) - **2n**

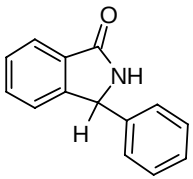
Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000433.D
Sample Name: MC-3-62(+-)

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 5/4/2011 11:08:34 AM
Acq. Method     : C:\CHEM32\1\METHODS\SW.M
Last changed    : 5/4/2011 11:01:26 AM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 5/7/2011 3:46:05 PM
                  (modified after loading)
Sample Info     : OJ-H, H/i-PrOH =90/10,  0.8 mL/min, 30 oC, 254 nm
```



Area Percent Report

```
Sorted By             :      Signal
Multiplier:                  :      1.0000
Dilution:                    :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]  mAU   *s   [mAU   ]      %
----|-------|----|-------|---------|---------|-------|
   1  11.727 BB    0.3549 1199.07239   51.44223  50.0394
   2  17.539 BB    0.5543 1197.18347   33.22961  49.9606

Totals :                  2396.25586   84.67184
```

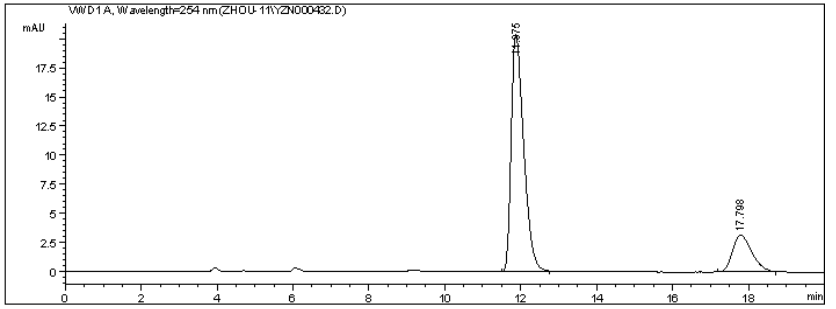


(+/-) - **2o**

*** End of Report ***

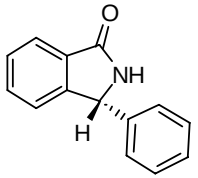
Data File C:\CHEM32\1\DATA\ZHOU-11\YZN000432.D
Sample Name: MC-4-89B

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 1
Injection Date  : 5/4/2011 10:38:42 AM
Acq. Method     : C:\CHEM32\1\METHODS\SW.M
Last changed    : 5/4/2011 10:34:43 AM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\SW.M
Last changed    : 5/7/2011 3:46:05 PM
                  (modified after loading)
Sample Info     : OJ-H, H/i-PrOH =90/10,  0.8 mL/min, 30 oC, 254 nm
```



Area Percent Report

```
Sorted By             :      Signal
Multiplier:                  :      1.0000
Dilution:                    :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: VWD1 A, Wavelength=254 nm

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]  mAU   *s   [mAU   ]      %
----|-------|----|-------|---------|---------|-------|
   1  11.875 BB    0.3474  464.48901   20.38375  80.5383
   2  17.798 BB    0.5270  112.24159    3.17848  19.4617

Totals :                   576.73061   23.56223
```



(-) - **2o**

*** End of Report ***