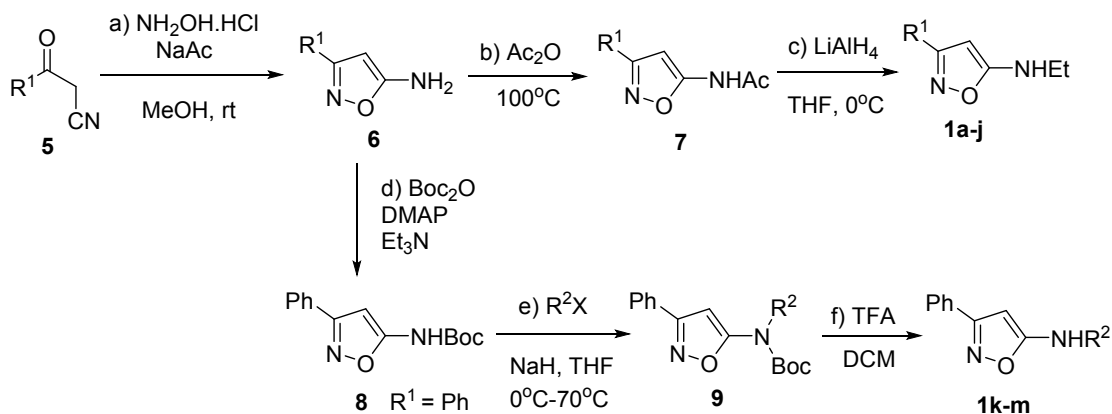


## 1. General remarks

Chemicals were purchased from commercial suppliers and used without further purification unless otherwise stated. Chiral phosphoric acids **PA1-PA5** and racemic phosphoric acid were purchased from commercial suppliers. Solvents were dried and purified according to the standard procedures before use. Reactions were monitored by TLC. Racemic products were obtained from corresponding substrates catalyzed by racemic phosphoric acid at room temperature. Flash column chromatography was performed on silica gels (200-300 mesh).  $^1\text{H}$  NMR and  $^{13}\text{C}$  NMR (300 or 400 and 75 or 100 MHz, respectively) spectra were recorded on a Bruker 300 or 400 MHz NMR spectrometer in  $\text{CDCl}_3$ .  $^1\text{H}$  NMR chemical shifts are reported in ppm ( $\delta$ ) relative to tetramethylsilane (TMS) with the solvent resonance employed as the internal standard ( $\text{CDCl}_3$ ,  $\delta$  7.26 ppm,  $(\text{CD}_3)_2\text{CO}-d_6$  at 2.09 ppm). Data are reported as follows: chemical shift, multiplicity (s = singlet, brs = broad singlet, d = doublet, t = triplet, td = triplet of doublets, q = quartet, m = multiplet), coupling constants (Hz) and integration.  $^{13}\text{C}$  NMR chemical shifts are reported in ppm from tetramethylsilane (TMS) with the solvent resonances the internal standard ( $\text{CDCl}_3$ ,  $\delta$  77.0 ppm,  $(\text{CD}_3)_2\text{CO}-d_6$  at 30.60 ppm and 205.87 ppm). All enantiomeric ratios have been controlled by co-injections of the pure sample with the racemates. HRMS data were obtained on a Bruker Daltonics. Inc mass instrument (ESI). Chiralpak Ic column was purchased from Daicel Chemical Industries (Hong Kong, China). Optical rotations were measured on a Perkin-Elmer 241 Polarimeter. Melting points were recorded on a Buchi Melting Point B-545.

## 2. Procedures and characterizations data of compounds

### 2.1 General procedure for the synthesis of 5-aminoisoxazoles **1a-m**<sup>1-2</sup>.



a)  $\text{NH}_2\text{OH} \cdot \text{HCl}$  (1.3 g, 18.8 mmol) and  $\text{NaOAc}$  (1.55 g, 18.8 mmol) were stirred in  $\text{MeOH}$  (20 mL) at room temperature for 1 hour and then the compound **5** (6.3 mmol) was added to the mixture. The reaction mixture was stirred at room temperature overnight. Then the reaction mixture was quenched with water and extracted with  $\text{EtOAc}$ , the organic layer was washed with brine and dried with anhydrous sodium sulfate and evaporated under reduced pressure. The crude product was purified by column chromatography to afford **6**.

b) Compound **6** (500 mg, 3 mmol) was stirred in acetic anhydride (6 mL) at  $100^\circ\text{C}$  for 2 h. The reaction mixture was quenched with a solution of saturated  $\text{NaHCO}_3$  and extracted with  $\text{EtOAc}$ , the organic layer was washed with brine and dried with anhydrous sodium sulfate and evaporated under reduced pressure. The crude product was purified by column chromatography to afford **7**.

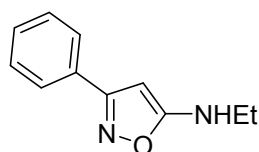
c) The compound **7** (500 mg, 2 mmol) was dried in vacuum and then dissolved in dry  $\text{THF}$  (10 mL) at  $0^\circ\text{C}$ . Lithium aluminium hydride (240 mg, 6 mmol) was added during 20 minutes. The reaction was then stirred at room temperature overnight. Next, the reaction mixture was quenched by slow addition of 1 M  $\text{NaOH}$  solution at  $0^\circ\text{C}$ . The mixture was stirred for 30 minutes and then filtered through a pad of Celite. The filtrate was extracted with  $\text{EtOAc}$ , the organic layer was washed with brine and dried with anhydrous sodium sulfate and evaporated under reduced pressure. The crude product was purified by column chromatography to afford **1a-j**.

d) To a solution of compound **6** (1 g, 4 mmol),  $\text{Boc}_2\text{O}$  (2.3 g, 10 mmol) and  $\text{DMAP}$  (50 mg, 0.4 mmol) in 30 mL of  $\text{DCM}$  add triethylamine (1.27 g, 12 mmol) dropwise and stirred overnight at room temperature. The reaction was diluted with  $\text{DCM}$ . The organic layer was washed with water, dried over anhydrous  $\text{Na}_2\text{SO}_4$  and concentrated under reduced pressure. The residue was purified by column chromatography on silica gel. ( $\text{PE/EA} = 10/1$ ) to give compound **8** as a white solid.

e) To a stirred solution of **8** (1 mmol) in dry  $\text{THF}$  (5 mL) at  $0^\circ\text{C}$ ,  $\text{NaH}$  (80 mg, 2 mmol) was added and stirred for 30 min.  $\text{R}^2\text{X}$  (2 mmol) was added dropwise to the reaction mixture. The reaction mixture was then stirred at  $70^\circ\text{C}$  overnight. The reaction mixture was quenched with  $\text{EtOAc}$ , washed with water, dried over anhydrous sodium sulfate and evaporated under

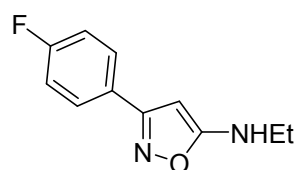
reduced pressure. The crude product was purified by column chromatography to afford **9**.

f) To a stirred solution of **9** (1 mmol) in DCM at room temperature, TFA (5 mmol) was added and stirred for 8 h. The reaction mixture was quenched with a solution of saturated  $\text{NaHCO}_3$  and extracted with DCM, the organic layer was washed with brine and dried with anhydrous sodium sulfate and evaporated under reduced pressure. The crude product was purified by column chromatography to afford **1k-m**.



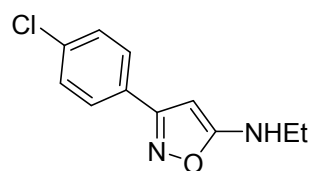
**N-ethyl-3-phenylisoxazol-5-amine (1a)**

White solid, 83% yield. m.p.: 118.5–119.1 °C.  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )  $\delta$  7.82–7.65 (m, 2H), 7.49–7.34 (m, 3H), 5.28 (s, 1H), 4.54 (s, 1H), 3.28 (qd,  $J = 7.2, 5.8$  Hz, 2H), 1.28 (t,  $J = 7.2$  Hz, 3H).  $^{13}\text{C}$  NMR (75 MHz,  $\text{CDCl}_3$ )  $\delta$  170.35, 163.54, 129.99, 129.56, 128.62, 126.58, 75.09, 39.38, 14.86. HRMS (ESI) Calcd for  $\text{C}_{11}\text{H}_{12}\text{N}_2\text{OH}^+$   $[\text{M}+\text{H}]^+$  189.1022; Found: 189.1015.



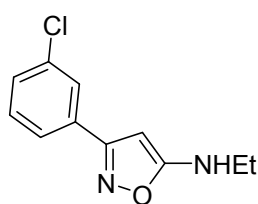
**N-ethyl-3-(4-fluorophenyl)isoxazol-5-amine (1b)**

White solid, 82% yield. m.p.: 98.1–99.3 °C.  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )  $\delta$  7.78–7.67 (m, 2H), 7.16–7.03 (m, 2H), 5.23 (s, 1H), 4.58 (s, 1H), 3.27 (qd,  $J = 7.2, 5.8$  Hz, 2H), 1.28 (t,  $J = 7.2$  Hz, 3H).  $^{13}\text{C}$  NMR (75 MHz,  $\text{CDCl}_3$ )  $\delta$  170.43, 163.54 (d,  $J = 247.5$  Hz), 162.59, 128.42 (d,  $J = 9$  Hz), 126.17 (d,  $J = 3.0$  Hz), 115.65 (d,  $J = 21.8$  Hz), 74.91, 39.34, 14.81.  $^{19}\text{F}$  NMR (376 MHz,  $\text{CDCl}_3$ )  $\delta$  -111.34. HRMS (ESI) Calcd for  $\text{C}_{11}\text{H}_{11}\text{FN}_2\text{OH}^+$   $[\text{M}+\text{H}]^+$  207.0928; Found: 207.0920.



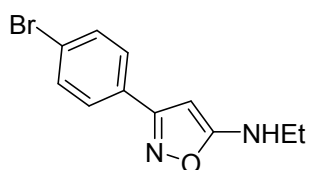
**3-(4-chlorophenyl)-N-ethylisoxazol-5-amine (1c)**

White solid, 83% yield. m.p.: 92.6–93.2 °C.  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )  $\delta$  7.67 (d,  $J = 8.5$  Hz, 2H), 7.39 (d,  $J = 8.6$  Hz, 2H), 5.24 (s, 1H), 4.57 (s, 1H), 3.27 (qd,  $J = 7.2, 5.8$  Hz, 2H), 1.28 (t,  $J = 7.2$  Hz, 3H).  $^{13}\text{C}$  NMR (75 MHz,  $\text{CDCl}_3$ )  $\delta$  170.47, 162.52, 135.48, 128.87, 128.47, 127.84, 74.91, 39.37, 14.84. HRMS (ESI) Calcd for  $\text{C}_{11}\text{H}_{11}\text{ClN}_2\text{OH}^+$   $[\text{M}+\text{H}]^+$  223.0633 ( $^{35}\text{Cl}$ ), 225.0603 ( $^{37}\text{Cl}$ ); Found: 223.0630 ( $^{35}\text{Cl}$ ), 225.0600 ( $^{37}\text{Cl}$ ).



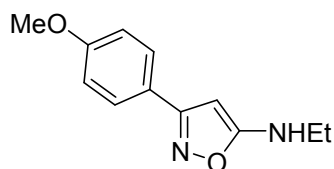
### 3-(3-chlorophenyl)-N-ethylisoxazol-5-amine (1d)

Yellow solid, 79% yield. m.p.: 60.7–61.5 °C. <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>) δ 7.73 (t, *J* = 1.9 Hz, 1H), 7.63 (dt, *J* = 6.4, 1.9 Hz, 1H), 7.41–7.31 (m, 2H), 5.26 (s, 1H), 4.57 (s, 1H), 3.28 (qd, *J* = 7.2, 5.8 Hz, 2H), 1.29 (t, *J* = 7.2 Hz, 3H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) δ 170.52, 162.39, 134.62, 131.76, 129.92, 129.57, 126.71, 124.67, 75.00, 39.38, 14.84. HRMS (ESI) Calcd for C<sub>11</sub>H<sub>11</sub>ClN<sub>2</sub>O<sup>+</sup> [M+H]<sup>+</sup> 223.0633 (<sup>35</sup>Cl), 225.0603 (<sup>37</sup>Cl); Found: 223.0630 (<sup>35</sup>Cl), 225.0602 (<sup>37</sup>Cl).



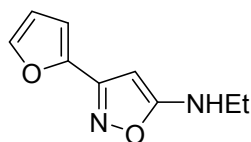
### 3-(4-bromophenyl)-N-ethylisoxazol-5-amine (1e)

White solid, 38% yield. m.p.: 89.8–91.7 °C. <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>) δ 7.67–7.58 (m, 2H), 7.58–7.49 (m, 2H), 5.24 (s, 1H), 4.56 (s, 1H), 3.27 (qd, *J* = 7.2, 5.8 Hz, 2H), 1.28 (t, *J* = 7.2 Hz, 3H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) δ 170.48, 162.57, 131.84, 128.92, 128.09, 123.76, 74.87, 39.38, 14.85. HRMS (ESI) Calcd for C<sub>11</sub>H<sub>11</sub>BrN<sub>2</sub>O<sup>+</sup> [M+Na]<sup>+</sup> 288.9947 (<sup>79</sup>Br), 290.9927 (<sup>81</sup>Br); Found: 288.9939 (<sup>79</sup>Br), 290.9919 (<sup>81</sup>Br).



### N-ethyl-3-(4-methoxyphenyl)isoxazol-5-amine (1f): white solid,

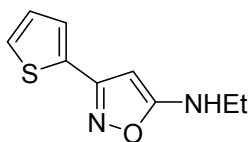
86% yield. m.p.: 106.9–107.6 °C. <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>) δ 7.68 (d, *J* = 8.8 Hz, 2H), 6.93 (d, *J* = 8.8 Hz, 2H), 5.22 (s, 1H), 4.54 (s, 1H), 3.83 (s, 3H), 3.26 (qd, *J* = 7.2, 5.8 Hz, 2H), 1.27 (t, *J* = 7.2 Hz, 3H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) δ 170.19, 163.12, 160.64, 127.89, 122.48, 113.99, 74.81, 55.24, 39.32, 14.82. HRMS (ESI) Calcd for C<sub>12</sub>H<sub>14</sub>N<sub>2</sub>O<sub>2</sub>H<sup>+</sup> [M+H]<sup>+</sup> 219.1128; Found: 219.1124.



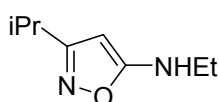
### N-ethyl-3-(furan-2-yl)isoxazol-5-amine (1g): white solid, 87% yield.

m.p.: 113.1–114.2 °C. <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>) δ 7.50 (dd, *J* = 1.8, 0.8 Hz, 1H), 6.80 (dd, *J* = 3.4, 0.8 Hz, 1H), 6.48 (dd, *J* = 3.4, 1.8 Hz, 1H), 5.24 (s, 1H), 4.58 (s, 1H), 3.26 (qd, *J* = 7.2, 5.8 Hz, 2H), 1.27 (t, *J* = 7.2 Hz, 3H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) δ 170.05, 155.89, 145.06, 143.28, 111.40, 109.33, 74.55, 39.35, 14.78. HRMS (ESI) Calcd for C<sub>9</sub>H<sub>10</sub>N<sub>2</sub>O<sub>2</sub>H<sup>+</sup> [M+H]<sup>+</sup> 179.0815; Found: 179.0817.

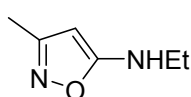




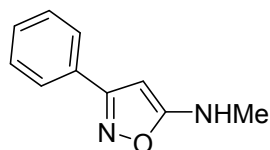
**N-ethyl-3-(thiophen-2-yl)isoxazol-5-amine (1h):** white solid, 39% yield. m.p.: 141.8-143.2 °C. <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>) δ 7.39 (dd, *J* = 3.6, 1.2 Hz, 1H), 7.36 (dd, *J* = 5.1, 1.2 Hz, 1H), 7.08 (dd, *J* = 5.1, 3.6 Hz, 1H), 5.22 (s, 1H), 4.56 (s, 1H), 3.26 (qd, *J* = 7.2, 5.8 Hz, 2H), 1.27 (t, *J* = 7.2 Hz, 3H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) δ 170.19, 158.65, 131.77, 127.33, 126.81, 126.72, 75.17, 39.34, 14.81. HRMS (ESI) Calcd for C<sub>9</sub>H<sub>10</sub>N<sub>2</sub>OSH<sup>+</sup> [M+H]<sup>+</sup> 195.0587; Found: 195.0589.



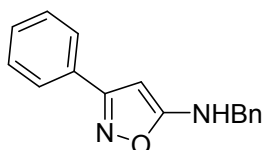
**N-ethyl-3-isopropylisoxazol-5-amine (1i):** white solid, 78% yield. m.p.: 73.5-74.3 °C. <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>) δ 4.78 (s, 1H), 4.66 (s, 1H), 3.23-3.08 (m, 2H), 2.85 (p, *J* = 6.9 Hz, 1H), 1.19 (dd, *J* = 7.1, 2.1 Hz, 9H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) δ 170.86, 169.70, 74.58, 39.08, 26.62, 21.58, 14.70. HRMS (ESI) Calcd for C<sub>8</sub>H<sub>14</sub>N<sub>2</sub>OH<sup>+</sup> [M+H]<sup>+</sup> 155.1179; Found: 155.1181.



**N-ethyl-3-methylisoxazol-5-amine (1j)**  
White solid, 92% yield. m.p.: 80.5-81.3 °C. <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>) δ 4.78 (s, 1H), 4.62 (s, 1H), 3.15 (qd, *J* = 7.2, 5.7 Hz, 2H), 2.12 (s, 3H), 1.20 (t, *J* = 7.2 Hz, 3H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) δ 169.89, 161.23, 77.46, 39.10, 14.69, 11.59. HRMS (ESI) Calcd for C<sub>6</sub>H<sub>10</sub>N<sub>2</sub>OH<sup>+</sup> [M+H]<sup>+</sup> 127.0871; Found: 127.0865.

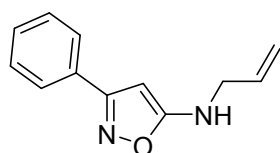


**N-methyl-3-phenylisoxazol-5-amine (1k):** White solid, 83% yield. m.p.: 114.2-114.9 °C. <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>) δ 7.85-7.68 (m, 2H), 7.53-7.35 (m, 3H), 5.29 (s, 1H), 4.56 (s, 1H), 2.95 (d, *J* = 5.3 Hz, 3H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) δ 171.29, 163.59, 129.94, 129.60, 128.65, 126.59, 75.03, 30.91. HRMS (ESI) Calcd for C<sub>10</sub>H<sub>10</sub>N<sub>2</sub>OH<sup>+</sup> [M+H]<sup>+</sup> 175.0866; Found: 175.0867.



**N-benzyl-3-phenylisoxazol-5-amine (1l)**  
White solid, 57% yield. m.p.: 84.3-85.3 °C. <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>) δ 7.76-7.69 (m, 2H), 7.44-7.31 (m, 8H), 5.30 (s, 1H), 4.96 (s, 1H), 4.43 (d, *J* = 5.9 Hz, 2H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) δ 170.14, 163.60, 137.41, 129.81,

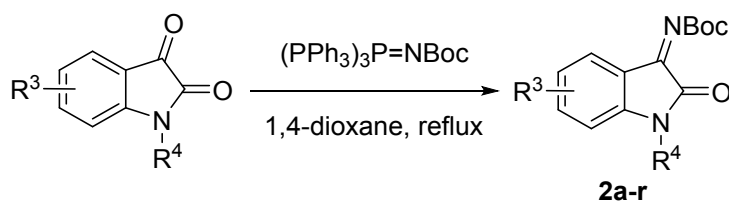
129.64, 128.82, 128.64, 127.84, 127.35, 126.60, 75.86, 48.58. HRMS (ESI) Calcd for  $C_{16}H_{14}N_2OH^+$   $[M+H]^+$  251.1184; Found: 251.1179.



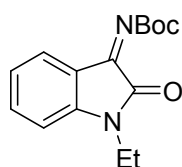
**N-allyl-3-phenylisoxazol-5-amine (1m)**

White solid, 83% yield. m.p.: 103.6-104.5 °C.  $^1H$  NMR (300 MHz,  $CDCl_3$ )  $\delta$  7.84-7.67 (m, 2H), 7.42 (dt,  $J = 4.6, 3.0$  Hz, 3H), 5.92 (ddt,  $J = 17.0, 10.6, 5.4$  Hz, 1H), 5.32 (dd,  $J = 10.3, 1.4$  Hz, 1H), 5.30 (s, 1H), 5.22 (dd,  $J = 10.3, 1.4$  Hz, 1H), 4.75 (s, 1H), 3.95-3.76 (m, 2H).  $^{13}C$  NMR (75 MHz,  $CDCl_3$ )  $\delta$  170.15, 163.56, 133.60, 129.86, 129.61, 128.63, 126.58, 117.09, 75.67, 46.95. HRMS (ESI) Calcd for  $C_{12}H_{12}N_2OH^+$   $[M+H]^+$  201.1022; Found: 201.1018

**2.2 General procedure of synthesis of *N*-Boc isatin ketimines 2a-r<sup>3</sup>.**

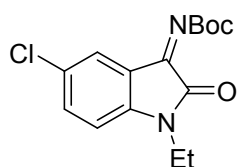


Isatin (1.5 g, 8.5 mmol) and *N*-Boc-imino-(triphenyl)phosphorane (4 g, 10.5 mmol) were stirred in 1,4-dioxane (30 mL) under argon atmosphere. Then, the mixture was heated under reflux until complete disappearance of the starting materials. Then the reaction cooled to the room temperature and evaporated under reduced pressure to remove the solvent. The crude product was purified by column chromatography to afford *N*-Boc isatin ketimines **2**.



**tert-Butyl 1-ethyl-2-oxoindolin-3-ylidenecarbamate (2a)**

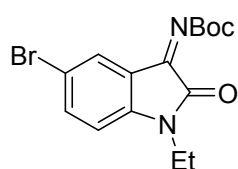
$^1H$  NMR (300 MHz,  $CDCl_3$ )  $\delta$  7.64 (d,  $J = 5.5$  Hz, 1H), 7.47 (td,  $J = 7.8, 1.3$  Hz, 1H), 7.07 (t,  $J = 7.5$  Hz, 1H), 6.85 (d,  $J = 7.9$  Hz, 1H), 3.75 (q,  $J = 7.2$  Hz, 2H), 1.62 (s, 9H), 1.28 (t,  $J = 7.3$  Hz, 3H).



**tert-Butyl 5-chloro-1-ethyl-2-oxoindolin-3-ylidene-carbamate (2b):**

Yellow solid, 66% yield. m.p.: 125.3-127.3 °C.  $^1H$  NMR (300 MHz,  $CDCl_3$ )  $\delta$  7.60 (s, 1H), 7.44 (dd,  $J = 8.3, 2.4$  Hz, 1H), 6.80 (d,  $J = 8.4$  Hz,

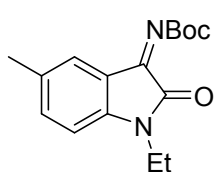
1H), 3.73 (q,  $J = 7.2$  Hz, 2H), 1.62 (s, 9H), 1.27 (t,  $J = 7.2$  Hz, 3H).  $^{13}\text{C}$  NMR (75 MHz,  $\text{CDCl}_3$ )  $\delta$  159.98, 156.51, 152.52, 145.56, 134.75, 128.93, 124.52, 120.83, 110.41, 83.82, 35.04, 27.97, 12.42. HRMS (ESI) Calcd for  $\text{C}_{15}\text{H}_{17}\text{ClN}_2\text{O}_3\text{Na}^+$   $[\text{M}+\text{Na}]^+$  331.0820 ( $^{35}\text{Cl}$ ), 333.0790 ( $^{37}\text{Cl}$ ); Found: 331.00811 ( $^{35}\text{Cl}$ ), 333.0796 ( $^{37}\text{Cl}$ ).



**tert-Butyl 5-bromo-1-ethyl-2-oxoindolin-3-ylidene-carbamate (2c):**

yellow solid, 58% yield. m.p.:134.2-136.5 °C.  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )  $\delta$  7.72 (s, 1H), 7.57 (dd,  $J = 8.4, 2.0$  Hz, 1H), 6.75 (d,  $J = 8.3$  Hz, 1H), 3.72 (q,  $J = 7.3$  Hz, 2H), 1.61 (s, 9H), 1.26 (t,  $J = 7.2$  Hz, 3H).  $^{13}\text{C}$

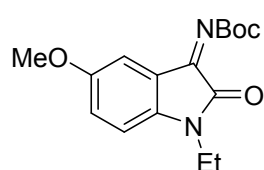
NMR (75 MHz,  $\text{CDCl}_3$ )  $\delta$  159.90, 156.22, 152.25, 145.97, 140.45, 137.60, 127.26, 115.88, 110.85, 83.76, 34.99, 27.93, 12.37. HRMS (ESI) Calcd for  $\text{C}_{15}\text{H}_{17}\text{BrN}_2\text{O}_3\text{Na}^+$   $[\text{M}+\text{Na}]^+$  375.0315 ( $^{79}\text{Br}$ ), 377.0294 ( $^{81}\text{Br}$ ); Found: 375.0321 ( $^{79}\text{Br}$ ), 377.0305 ( $^{81}\text{Br}$ ).



**tert-Butyl 1-ethyl-5-methyl-2-oxoindolin-3-ylidene-carbamate (2d):**

yellow solid, 51% yield. m.p.:124.5-126.3 °C.  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )  $\delta$  7.43 (s, 1H), 7.29-7.23 (m, 1H), 6.73 (d,  $J = 8.0$  Hz, 1H), 3.71 (q,  $J = 7.2$  Hz, 2H), 2.30 (s, 3H), 1.61 (s, 9H), 1.25 (t,  $J = 7.2$  Hz, 3H).  $^{13}\text{C}$  NMR (75

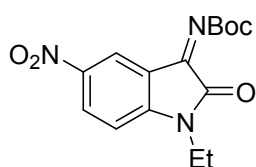
MHz,  $\text{CDCl}_3$ )  $\delta$  160.56, 156.98, 153.52, 145.01, 135.66, 132.88, 125.73, 124.94, 109.11, 83.29, 34.82, 27.97, 20.72, 12.48. HRMS (ESI) Calcd for  $\text{C}_{16}\text{H}_{20}\text{N}_2\text{O}_3\text{Na}^+$   $[\text{M}+\text{Na}]^+$  311.1366; Found: 375.1366.



**tert-Butyl 1-ethyl-5-methoxy-2-oxoindolin-3-ylidenecarbamate (2e):**

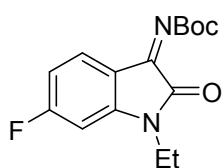
yellow solid, 46% yield. m.p.:143.7-145.9 °C.  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )  $\delta$  7.20 (s, 1H), 7.02 (dd,  $J = 8.6, 2.7$  Hz, 1H), 6.76 (d,  $J = 8.6$  Hz, 1H), 3.78 (s, 3H), 3.71 (q,  $J = 7.2$  Hz, 2H), 1.62 (s, 9H), 1.26 (t,  $J =$

7.2 Hz, 3H).  $^{13}\text{C}$  NMR (75 MHz,  $\text{CDCl}_3$ )  $\delta$  160.37, 156.85, 156.11, 153.79, 140.94, 121.45, 120.06, 110.15, 109.16, 83.40, 55.81, 34.79, 27.93, 12.45. HRMS (ESI) Calcd for  $\text{C}_{16}\text{H}_{20}\text{N}_2\text{O}_4\text{Na}^+$   $[\text{M}+\text{Na}]^+$  327.1315; Found: 327.1307.



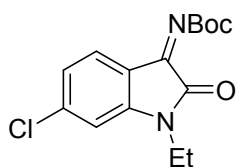
**tert-Butyl 1-ethyl-5-nitro-2-oxoindolin-3-ylidene-carbamate (2f):**

bright yellow solid, 30% yield. m.p.:131.3-132.7 °C. <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>) δ 8.43 (s, 1H), 8.39 (dd, *J* = 8.7, 2.3 Hz, 1H), 7.03 (d, *J* = 8.6 Hz, 1H), 3.81 (q, *J* = 7.3 Hz, 2H), 1.58 (s, 9H), 1.28 (t, *J* = 7.2 Hz, 3H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) δ 159.30, 156.60, 151.55, 151.23, 143.61, 130.93, 119.68, 109.34, 84.11, 35.39, 27.75, 12.32. HRMS (ESI) Calcd for C<sub>15</sub>H<sub>17</sub>N<sub>3</sub>O<sub>5</sub>Na<sup>+</sup> [M+Na]<sup>+</sup> 342.1060; Found: 342.1061.



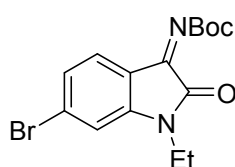
**tert-Butyl 1-ethyl-6-fluoro-2-oxoindolin-3-ylidene-carbamate (2g):**

bright yellow solid, 32% yield. m.p.:88.2-89.9 °C. <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>) δ 7.63 (s, 1H), 6.75 (t, *J* = 8.8 Hz, 1H), 6.58 (dd, *J* = 8.8, 2.2 Hz, 1H), 3.72 (q, *J* = 7.2 Hz, 2H), 1.61 (s, 9H), 1.28 (t, *J* = 7.3 Hz, 3H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) δ 167.41 (d, *J* = 255.0 Hz), 160.29, 157.11, 151.88, 149.45 (d, *J* = 12.0 Hz), 126.64, 115.43, 109.99 (d, *J* = 22.5 Hz), 98.30 (d, *J* = 27.8 Hz), 83.57, 35.13, 27.98, 12.45. <sup>19</sup>F NMR (376 MHz, CDCl<sub>3</sub>) δ -99.18. HRMS (ESI) Calcd for C<sub>15</sub>H<sub>17</sub>FN<sub>2</sub>O<sub>3</sub>Na<sup>+</sup> [M+Na]<sup>+</sup> 315.1115; Found: 315.1116.



**tert-Butyl 6-chloro-1-ethyl-2-oxoindolin-3-ylidene-carbamate (2h):**

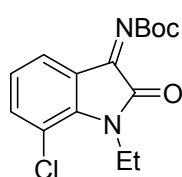
bright yellow solid, 48% yield. m.p.:141.2-142.6 °C. <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>) δ 7.64-7.47 (m, 1H), 7.04 (d, *J* = 8.0 Hz, 1H), 6.84 (d, *J* = 1.7 Hz, 1H), 3.71 (q, *J* = 7.0 Hz, 2H), 1.60 (s, 9H), 1.26 (t, *J* = 7.2 Hz, 3H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) δ 160.15, 156.75, 152.13, 148.16, 141.34, 125.32, 123.34, 117.75, 110.05, 83.62, 35.03, 27.91, 12.40. HRMS (ESI) Calcd for C<sub>15</sub>H<sub>17</sub>ClN<sub>2</sub>O<sub>3</sub>Na<sup>+</sup> [M+Na]<sup>+</sup> 331.0820 (<sup>35</sup>Cl), 333.0790 (<sup>37</sup>Cl); Found: 331.00815 (<sup>35</sup>Cl), 333.0800 (<sup>37</sup>Cl).



**tert-Butyl 6-bromo-1-ethyl-2-oxoindolin-3-ylidene-carbamate (2i):**

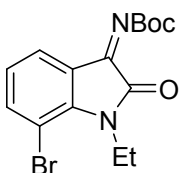
bright yellow solid, 43% yield. m.p.:152.3-155.5 °C. <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>) δ 7.49 (d, *J* = 8.1 Hz, 1H), 7.23 (d, *J* = 8.0 Hz, 1H), 7.02 (s, 1H), 3.72 (q, *J* = 7.2 Hz, 2H), 1.61 (s, 9H), 1.28 (t, *J* = 7.3 Hz, 3H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) δ 160.21, 156.77, 152.37, 148.11, 129.82, 126.39, 125.47, 118.33, 112.89,

83.74, 35.07, 27.97, 12.45. HRMS (ESI) Calcd for  $C_{15}H_{17}BrN_2O_3Na^+$   $[M+Na]^+$  375.0315 ( $^{79}Br$ ), 377.0294 ( $^{81}Br$ ); Found: 375.0313 ( $^{79}Br$ ), 377.0296 ( $^{81}Br$ ).



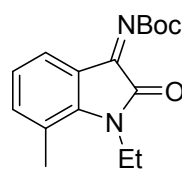
**tert-Butyl 7-chloro-1-ethyl-2-oxoindolin-3-ylidene-carbamate (2j):** yellow

solid, 53% yield. m.p.: 140.2- 142.2 °C.  $^1H$  NMR (300 MHz,  $CDCl_3$ )  $\delta$  7.57 (d,  $J = 7.4$  Hz, 1H), 7.40 (dd,  $J = 8.2, 1.2$  Hz, 1H), 7.01 (t,  $J = 7.8$  Hz, 1H), 4.13 (q,  $J = 7.2$  Hz, 2H), 1.62 (s, 9H), 1.33 (t,  $J = 7.1$  Hz, 3H).  $^{13}C$  NMR (75 MHz,  $CDCl_3$ )  $\delta$  160.14, 157.28, 152.40, 143.03, 137.43, 124.11, 122.89, 122.39, 116.22, 83.77, 36.81, 27.96, 14.71. HRMS (ESI) Calcd for  $C_{15}H_{17}ClN_2O_3Na^+$   $[M+Na]^+$  331.0820 ( $^{35}Cl$ ), 333.0790 ( $^{37}Cl$ ); Found: 331.0820 ( $^{35}Cl$ ), 333.0807 ( $^{37}Cl$ ).



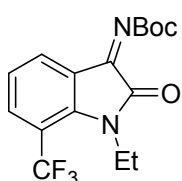
**tert-Butyl 7-bromo-1-ethyl-2-oxoindolin-3-ylidene-carbamate (2k):**

yellow solid, 63% yield. m.p.: 137.5-139.3 °C.  $^1H$  NMR (300 MHz,  $CDCl_3$ )  $\delta$  7.68-7.54 (m, 2H), 6.95 (t,  $J = 7.8$  Hz, 1H), 4.18 (q,  $J = 7.1$  Hz, 2H), 1.63 (s, 9H), 1.33 (t,  $J = 7.1$  Hz, 3H).  $^{13}C$  NMR (75 MHz,  $CDCl_3$ )  $\delta$  160.10, 157.46, 152.30, 144.52, 140.76, 124.41, 123.40, 122.70, 103.02, 83.72, 36.39, 27.95, 14.69. HRMS (ESI) Calcd for  $C_{15}H_{17}BrN_2O_3Na^+$   $[M+Na]^+$  375.0315 ( $^{79}Br$ ), 377.0294 ( $^{81}Br$ ); Found: 375.0303 ( $^{79}Br$ ), 377.0289 ( $^{81}Br$ ).



**tert-Butyl 1-ethyl-7-methyl-2-oxoindolin-3-ylidene-carbamate (2l):**

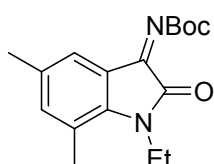
yellow solid, 56% yield. m.p.: 173.2-175.5 °C.  $^1H$  NMR (300 MHz,  $CDCl_3$ )  $\delta$  7.50 (d,  $J = 7.5$  Hz, 1H), 7.21 (d,  $J = 7.7$  Hz, 1H), 6.96 (t,  $J = 7.6$  Hz, 1H), 3.95 (q,  $J = 7.1$  Hz, 2H), 2.49 (s, 3H), 1.62 (s, 9H), 1.29 (t,  $J = 7.1$  Hz, 3H).  $^{13}C$  NMR (75 MHz,  $CDCl_3$ )  $\delta$  160.70, 157.93, 153.49, 145.08, 139.32, 123.25, 122.40, 120.46, 120.32, 83.27, 36.69, 27.95, 18.58, 14.61. HRMS (ESI) Calcd for  $C_{16}H_{20}N_2O_3Na^+$   $[M+Na]^+$  311.1366; Found: 311.1363.



**tert-Butyl 1-ethyl-2-oxo-7-(trifluoromethyl)indolin-3-ylidenecarbamate**

**(2m):** bright yellow solid, 69% yield. m.p.: 133.3-135.2 °C.  $^1H$  NMR (300 MHz,  $CDCl_3$ )  $\delta$  7.84 (d,  $J = 7.4$  Hz, 1H), 7.75 (dt,  $J = 8.2$  Hz, 1.0 Hz, 1H),

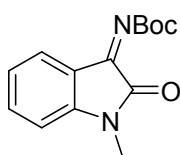
7.16 (t,  $J = 7.8$  Hz, 1H), 3.95 (q,  $J = 7.0$  Hz, 2H), 1.61 (s, 9H), 1.24 (t,  $J = 7.0$  Hz, 3H).  $^{13}\text{C}$  NMR (75 MHz,  $\text{CDCl}_3$ )  $\delta$  159.98, 157.87, 151.41, 145.09, 135.53 (q,  $J = 6.0$  Hz), 132.72 (q,  $J = 6.0$  Hz), 127.57, 122.91 (q,  $J = 270.0$  Hz), 122.70, 113.67 (q,  $J = 33.0$  Hz), 83.85, 37.80 (q,  $J = 4.5.0$  Hz), 27.93, 12.89 (q,  $J = 3.0$  Hz).  $^{19}\text{F}$  NMR (376 MHz,  $\text{CDCl}_3$ )  $\delta$  -56.26. HRMS (ESI) Calcd for  $\text{C}_{16}\text{H}_{17}\text{F}_3\text{N}_2\text{O}_3\text{Na}^+$   $[\text{M}+\text{Na}]^+$  365.1083; Found: 365.1078.



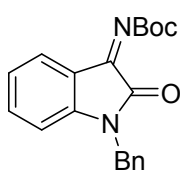
**tert-Butyl 1-ethyl-5,7-dimethyl-2-oxoindolin-3-ylidene-carbamate (2n):**

Red solid, 54% yield. m.p.: 154.3-155.6 °C.  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )  $\delta$  7.31 (s, 1H), 7.02 (s, 1H), 3.92 (q,  $J = 6.9$  Hz, 2H), 2.44 (s, 3H), 2.25 (s, 3H), 1.61 (s, 9H), 1.27 (t,  $J = 7.2$  Hz, 3H).  $^{13}\text{C}$  NMR (75 MHz,  $\text{CDCl}_3$ )  $\delta$

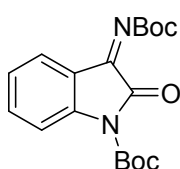
160.75, 158.08, 153.77, 142.84, 139.84, 132.82, 122.86, 120.49, 120.22, 83.15, 36.65, 27.98, 20.38, 18.40, 14.52. HRMS (ESI) Calcd for  $\text{C}_{17}\text{H}_{22}\text{N}_2\text{O}_3\text{Na}^+$   $[\text{M}+\text{Na}]^+$  325.1523; Found: 325.1516.



**tert-Butyl 1-methyl-2-oxoindolin-3-ylidene-carbamate (2o):**  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )  $\delta$  7.61 (d,  $J = 7.4$  Hz, 1H), 7.48 (td,  $J = 7.8, 1.3$  Hz, 1H), 7.08 (t,  $J = 7.6$  Hz, 1H), 6.83 (d,  $J = 7.9$  Hz, 1H), 3.19 (s, 3H), 1.61 (s, 9H).

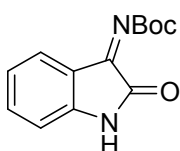


**tert-Butyl 1-benzyl-2-oxoindolin-3-ylidenecarbamate (2p):**  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )  $\delta$  7.65 (d,  $J = 5.4$  Hz, 1H), 7.43-7.27 (m, 6H), 7.06 (t,  $J = 7.5$  Hz, 1H), 6.71 (d,  $J = 7.8$  Hz, 1H), 4.90 (s, 2H), 1.65 (s, 9H).



**tert-Butyl 3-(tert-butoxycarbonylimino)-2-oxoindoline-1-carboxylate (2q):**

$^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )  $\delta$  7.92 (d,  $J = 8.3$  Hz, 1H), 7.74 (d,  $J = 7.6$  Hz, 1H), 7.56 (t,  $J = 7.9$  Hz, 1H), 7.24 (d,  $J = 9.1$  Hz, 1H), 1.63 (s, 9H), 1.62 (s, 9H).

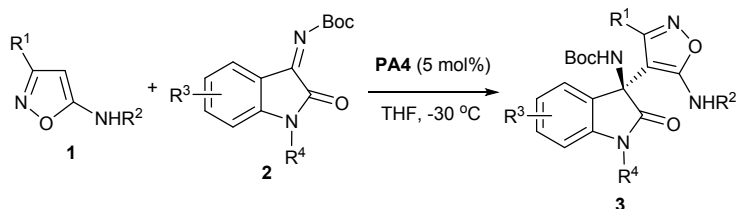


**tert-Butyl 2-oxoindolin-3-ylidenecarbamate (2r)**

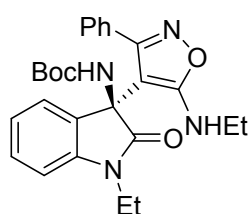
$^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )  $\delta$  9.27 (s, 1H), 7.55 (s, 1H), 7.39 (t,  $J = 7.7$  Hz,

1H), 7.02 (t,  $J = 7.6$  Hz, 1H), 6.87 (d,  $J = 7.9$  Hz, 1H), 1.60 (s, 9H).

### 2.3 General procedure of enantioselective Friedel-Crafts reaction of 5-amino-isoxazole **1** with N-Boc isatin ketimine **2**



5-Amino-isoxazole **1** (0.10 mmol), N-Boc isatinketimine **2** (0.15 mmol) and **PA4** (3 mg, 5 mol%) were dissolved in THF (1mL) in a flame-dried vial equipped with a magnetic stirring bar. The reaction mixture was stirred at -30 °C until no starting material was detected by TLC. The mixture was subjected to chromatography (silica gel, petroleum ether/EtOAc = 5:1) to afford the desired product **3**.

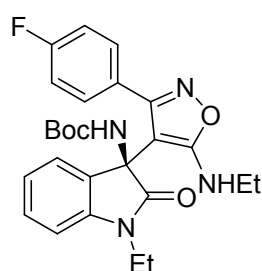


**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenyl-isoxazol-4-yl)-2-**

**oxoindolin-3-yl)carbamate (3aa):** white solid, m.p.: 196.5-199.7 °C, 99%

yield, ee = 98% HPLC condition: Chiralcel OD-H (isopropyl alcohol/n-hexane: 10/90, 1.0 mL/min.,  $t_{\text{major}}$  = 14.443 min.,  $t_{\text{minor}}$  =

10.286 min.).  $[\alpha]_{\text{D}}^{20} = -182.7$  (c 1.0, CH<sub>2</sub>Cl<sub>2</sub>). <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>)  $\delta$  7.18-7.07 (m, 1H), 7.00 (q,  $J = 7.5$  Hz, 3H), 6.79 (d,  $J = 7.2$  Hz, 2H), 6.71 (d,  $J = 7.8$  Hz, 1H), 6.66 (s, 1H), 6.53 (d,  $J = 7.4$  Hz, 1H), 6.33 (t,  $J = 7.5$  Hz, 1H), 5.28 (d,  $J = 4.5$  Hz, 1H), 3.92 (dq,  $J = 14.5$ , 7.2 Hz, 1H), 3.58 (dd,  $J = 15.0$ , 8.0 Hz, 1H), 3.46 (ddt,  $J = 9.2$ , 7.3, 3.6 Hz, 2H), 1.38-1.26 (m, 6H), 1.14 (s, 9H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>)  $\delta$  176.49, 168.65, 162.87, 153.79, 142.26, 129.88, 128.69, 128.34, 127.93, 127.50, 127.16, 124.89, 122.11, 107.61, 85.18, 80.49, 59.64, 37.74, 34.97, 27.88, 15.46, 12.56. HRMS (ESI) Calcd for C<sub>26</sub>H<sub>30</sub>N<sub>4</sub>O<sub>4</sub>H<sup>+</sup> [M+H]<sup>+</sup> 463.2340; Found: 463.2338.

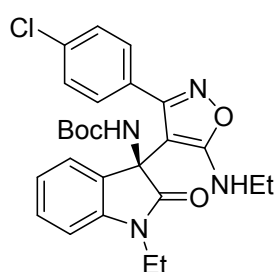


**tert-butyl**

**(S)-(1-ethyl-3-(5-(ethylamino)-3-(4-fluorophenyl)isoxazol-**

**4-yl)-2-oxoindolin-3-yl)carbamate (3ba):** white solid, m.p.:

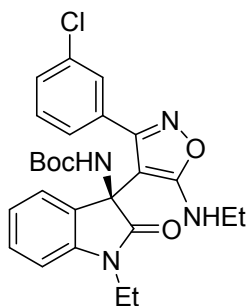
80.4-84.8 °C, 98% yield, ee = 96%, HPLC condition: Chiralpak IC-H (ethanol/n-hexane: 10/90, 1.0 mL/min,  $t_{\text{major}} = 55.472$  min.,  $t_{\text{minor}} = 9.194$  min.).  $[\alpha]_{\text{D}}^{20} = -177.0$  (c 1.0, CH<sub>2</sub>Cl<sub>2</sub>). <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>)  $\delta$  7.08 (td,  $J = 7.8, 1.4$  Hz, 1H), 6.83-6.61 (m, 6H), 6.54 (d,  $J = 7.3$  Hz, 1H), 6.44 (t,  $J = 7.5$  Hz, 1H), 5.26 (s, 1H), 3.91 (dt,  $J = 14.3, 7.1$  Hz, 1H), 3.55 (d,  $J = 12.6$  Hz, 1H), 3.52-3.40 (m, 2H), 1.32 (td,  $J = 7.2, 3.1$  Hz, 6H), 1.15 (s, 9H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>)  $\delta$  176.47, 168.73, 162.55 (d,  $J = 246.0$  Hz), 161.98, 153.75, 142.32, 130.10 (d,  $J = 8.3$  Hz), 128.86, 127.15, 125.95 (d,  $J = 3.8$  Hz), 124.94, 122.10, 114.59 (d,  $J = 21.8$  Hz), 107.76, 85.21, 80.62, 59.57, 37.75, 35.01, 27.89, 15.45, 12.59. <sup>19</sup>F NMR (376 MHz, CDCl<sub>3</sub>)  $\delta$  -113.46. HRMS (ESI) Calcd for C<sub>26</sub>H<sub>29</sub>FN<sub>4</sub>O<sub>4</sub>H<sup>+</sup> [M+H]<sup>+</sup> 481.2246; Found: 481.2246.



**tert-butyl (S)-((3-(4-chlorophenyl)-5-(ethylamino)isoxazol-4-yl)-1-ethyl-2-oxoindolin-3-yl)carbamate (3ca):** white solid, m.p.:

91.9-93.6 °C, 99% yield, ee = 98%, HPLC condition: Chiralpak IC-H (ethanol/n-hexane : 20/80, 1.0 mL/min,  $t_{\text{major}} = 22.466$  min,  $t_{\text{minor}} = 5.667$  min).  $[\alpha]_{\text{D}}^{20} = -143.1$  (c 1.0, CH<sub>2</sub>Cl<sub>2</sub>). <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>)

$\delta$  7.10 (td,  $J = 7.7, 1.4$  Hz, 1H), 6.96 (d,  $J = 8.5$  Hz, 2H), 6.80-6.62 (m, 4H), 6.53 (dd,  $J = 7.4, 1.4$  Hz, 1H), 6.43 (t,  $J = 7.5$  Hz, 1H), 5.27 (s, 1H), 3.90 (dt,  $J = 14.4, 7.2$  Hz, 1H), 3.55 (d,  $J = 13.9$  Hz, 1H), 3.46 (qdd,  $J = 7.2, 5.6, 2.0$  Hz, 2H), 1.31 (td,  $J = 7.2, 3.9$  Hz, 6H), 1.14 (s, 9H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>)  $\delta$  176.40, 168.74, 161.83, 153.75, 142.32, 134.18, 129.57, 128.84, 128.42, 127.70, 127.16, 124.95, 122.14, 107.76, 85.26, 80.64, 59.52, 37.76, 35.01, 27.88, 15.44, 12.58. HRMS (ESI) Calcd for C<sub>26</sub>H<sub>29</sub>ClN<sub>4</sub>O<sub>4</sub>H<sup>+</sup> [M+H]<sup>+</sup> 497.1950 (<sup>35</sup>Cl), 499.1921 (<sup>37</sup>Cl); Found: 497.1956 (<sup>35</sup>Cl), 499.1930 (<sup>37</sup>Cl).



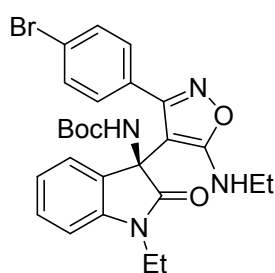
**tert-butyl (S)-((3-(3-chlorophenyl)-5-(ethylamino)isoxazol-4-yl)-1-ethyl-2-oxoindolin-3-yl)carbamate (3da):** white solid, m.p.:

185.4-187.9 °C, 97% yield, ee = 99%, HPLC condition: Chiralpak AD-H (n-hexane/isopropyl alcohol: 50/50, 0.6 mL/min,  $t_{\text{major}} = 9.820$  min.,  $t_{\text{minor}} = 18.028$  min.).  $[\alpha]_{\text{D}}^{20} = -166.2$  (c 1.0, CH<sub>2</sub>Cl<sub>2</sub>). <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>)  $\delta$  7.14-7.03 (m, 2H), 6.99 (t,  $J = 7.8$  Hz, 1H), 6.88-6.77

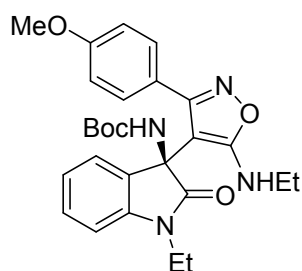
(m, 2H), 6.77-6.69 (m, 1H), 6.61-6.50 (m, 2H), 6.38 (t,  $J = 7.5$  Hz, 1H), 5.28 (s, 1H), 3.96 (dd,



$J = 14.2, 7.2$  Hz, 1H), 3.54 (d,  $J = 6.0$  Hz, 1H), 3.48 (ddt,  $J = 9.3, 7.3, 3.6$  Hz, 2H), 1.34 (t,  $J = 7.2$  Hz, 6H), 1.15 (s, 9H).  $^{13}\text{C}$  NMR (75 MHz,  $\text{CDCl}_3$ )  $\delta$  176.35, 168.88, 161.54, 153.80, 142.32, 133.37, 131.62, 129.31, 128.80, 128.62, 128.38, 126.83, 126.39, 124.37, 121.99, 107.82, 85.25, 80.69, 59.51, 37.81, 35.01, 27.89, 15.47, 12.67. HRMS (ESI) Calcd for  $\text{C}_{26}\text{H}_{29}\text{ClN}_4\text{O}_4\text{Na}^+$   $[\text{M}+\text{Na}]^+$  519.1770 ( $^{35}\text{Cl}$ ), 521.1740 ( $^{37}\text{Cl}$ ); Found: 519.1776 ( $^{35}\text{Cl}$ ), 521.1758 ( $^{37}\text{Cl}$ ).

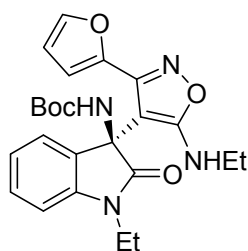


**tert-butyl (S)-(3-(3-(4-bromophenyl)-5-(ethyl-amino)isoxazol-4-yl)-1-ethyl-2-oxoindolin-3-yl)carbamate (3ea):** white solid, m.p.: 155.9-158.1 °C, 95% yield, ee = 97%, HPLC condition: Chiralpak IC-H (ethanol/n-hexane: 20/80, 1.0 mL/min,  $t_{\text{major}} = 23.127$  min.,  $t_{\text{minor}} = 5.840$  min.).  $[\alpha]_{\text{D}}^{20} = -124.3$  (c 1.0,  $\text{CH}_2\text{Cl}_2$ ).  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )  $\delta$  7.17-7.07 (m, 3H), 6.69 (dd,  $J = 25.3, 8.0$  Hz, 4H), 6.53 (dd,  $J = 7.5, 1.4$  Hz, 1H), 6.43 (td,  $J = 7.5, 0.9$  Hz, 1H), 5.24 (s, 1H), 3.90 (dt,  $J = 14.5, 7.2$  Hz, 1H), 3.68-3.53 (m, 1H), 3.47 (qdd,  $J = 7.2, 5.6, 1.9$  Hz, 2H), 1.31 (dt,  $J = 7.2, 3.6$  Hz, 6H), 1.15 (s, 9H).  $^{13}\text{C}$  NMR (75 MHz,  $\text{CDCl}_3$ )  $\delta$  176.39, 168.76, 161.86, 153.74, 142.32, 130.66, 129.85, 128.90, 128.84, 127.14, 124.97, 122.46, 122.21, 107.78, 85.28, 80.66, 59.53, 37.78, 35.02, 27.90, 15.45, 12.60. HRMS(ESI) Calcd for  $\text{C}_{26}\text{H}_{29}\text{ClN}_4\text{O}_4\text{H}^+$   $[\text{M}+\text{H}]^+$  541.1445 ( $^{79}\text{Br}$ ), 543.1424 ( $^{81}\text{Br}$ ); Found: 541.1435 ( $^{79}\text{Br}$ ), 543.1424 ( $^{81}\text{Br}$ ).

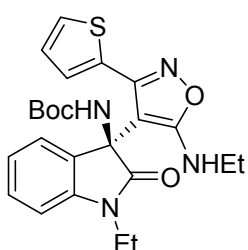


**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-(4-methoxyphenyl)isoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3fa):** white solid, m.p.: 66.1-69.5 °C, 99% yield, ee = 91%, HPLC condition: Chiralpak AD-H (ethanol/n-hexane: 10/90, 1.0 mL/min,  $t_{\text{major}} = 11.717$  min.,  $t_{\text{minor}} = 9.765$  min.).  $[\alpha]_{\text{D}}^{20} = -129.1$  (c 1.0,  $\text{CH}_2\text{Cl}_2$ ).  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )  $\delta$  7.06 (td,  $J = 7.7, 1.3$  Hz, 1H), 6.74 (t,  $J = 7.7$  Hz, 3H), 6.63-6.48 (m, 4H), 6.44 (t,  $J = 7.5$  Hz, 1H), 5.25 (s, 1H), 3.92 (dq,  $J = 14.4, 7.6$  Hz, 1H), 3.75 (s, 3H), 3.57 (dd,  $J = 13.9, 7.0$  Hz, 1H), 3.45 (tt,  $J = 8.7, 6.4$  Hz, 2H), 1.31 (td,  $J = 7.2, 3.4$  Hz, 6H), 1.15 (s, 9H).  $^{13}\text{C}$  NMR (75 MHz,  $\text{CDCl}_3$ )  $\delta$  176.54, 168.55, 162.65, 159.47, 153.79, 142.33, 129.60, 128.70, 127.34, 125.02, 122.17, 122.12, 113.22, 107.70, 85.18, 80.49, 59.71, 55.24, 37.72, 35.00,

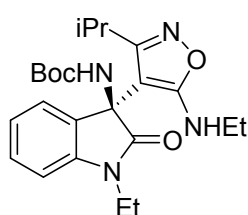
27.92, 15.46, 12.58. HRMS (ESI) Calcd for  $C_{27}H_{32}N_4O_5Na^+$   $[M+Na]^+$  515.2265; Found: 515.2266.



**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-(furan-2-yl)isoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ga):** white solid, m.p.: 174.5-175.9 °C, 99% yield, ee=95%, HPLC condition: ChiralpakIC-H (ethanol/n-hexane: 10/90, 1.0 mL/min,  $t_{major}$  = 34.650 min.,  $t_{minor}$  = 15.982 min.).  $[\alpha]_D^{20}$  = -179.6(c 1.0,  $CH_2Cl_2$ ).  $^1H$  NMR (300 MHz,  $CDCl_3$ )  $\delta$  7.16 (td,  $J$  = 7.6, 1.5 Hz, 1H), 6.96 (s, 1H), 6.81 (d,  $J$  = 7.8 Hz, 1H), 6.77 (d,  $J$  = 7.2 Hz, 1H), 6.70 (t,  $J$  = 7.4 Hz, 1H), 6.43 (s, 1H), 6.34 (d,  $J$  = 3.3 Hz, 1H), 6.18 (dd,  $J$  = 3.3, 1.8 Hz, 1H), 5.38 (s, 1H), 3.90 (dq,  $J$  = 14.3, 7.1 Hz, 1H), 3.61 (s, 1H), 3.49-3.34 (m, 2H), 1.28 (td,  $J$  = 7.3, 5.2 Hz, 6H), 1.18 (s, 9H).  $^{13}C$  NMR (75 MHz,  $CDCl_3$ )  $\delta$  176.21, 168.56, 154.23, 153.79, 143.93, 142.55, 142.23, 128.63, 127.88, 123.44, 122.57, 111.41, 110.25, 108.08, 85.30, 80.56, 59.45, 37.74, 35.09, 27.95, 15.36, 12.44. HRMS (ESI) Calcd for  $C_{24}H_{28}N_4O_5Na^+$   $[M+Na]^+$  475.1952; Found: 475.1938.

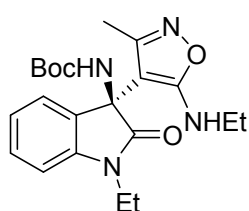


**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-(thiophen-2-yl)isoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ha):** white solid, m.p.: 185.3-186.4 °C, 99% yield, ee=96%, HPLC condition: ChiralpakIC-H (ethanol/n-hexane: 10/90, 1.0 mL/min,  $t_{major}$  = 54.456 min.,  $t_{minor}$  = 20.822 min.).  $[\alpha]_D^{20}$  = -160.2(c 1.0,  $CH_2Cl_2$ ).  $^1H$  NMR (300 MHz,  $CDCl_3$ )  $\delta$  7.21-7.09 (m, 2H), 6.79 (d,  $J$  = 8.1 Hz, 2H), 6.72 (dd,  $J$  = 5.1, 3.6 Hz, 1H), 6.67-6.54 (m, 2H), 6.24 (s, 1H), 5.31 (s, 1H), 3.91 (dq,  $J$  = 14.5, 7.2 Hz, 1H), 3.59 (dd,  $J$  = 14.1, 7.3 Hz, 1H), 3.41 (tt,  $J$  = 7.9, 6.5 Hz, 2H), 1.35-1.24 (m, 6H), 1.17 (s, 9H).  $^{13}C$  NMR (75 MHz,  $CDCl_3$ )  $\delta$  176.22, 168.57, 156.86, 153.76, 142.40, 129.05, 128.97, 128.91, 127.49, 127.00, 126.80, 124.57, 122.24, 108.01, 85.48, 80.57, 59.63, 37.69, 35.06, 27.94, 15.35, 12.53. HRMS (ESI) Calcd for  $C_{24}H_{28}N_4O_4SNa^+$   $[M+Na]^+$  491.1723; Found: 491.1723.



**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-isopropylisoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ia):** white solid, m.p.: 166.1-168.9 °C, 99% yield, ee=53%, HPLC condition: ChiralpakIC-H (ethanol/n-hexane:

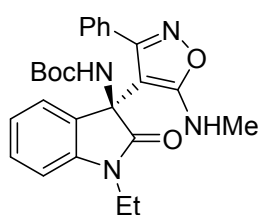
20/80, 1.0 mL/min,  $t_{\text{major}} = 12.161$  min.,  $t_{\text{minor}} = 4.797$  min.).  $[\alpha]_{\text{D}}^{20} = -124.0$  (c 1.0,  $\text{CH}_2\text{Cl}_2$ ).  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )  $\delta$  7.45-7.29 (m, 2H), 7.08 (t,  $J = 7.3$  Hz, 1H), 6.86 (d,  $J = 7.8$  Hz, 1H), 6.18 (t,  $J = 5.7$  Hz, 1H), 5.30 (s, 1H), 3.90 (dd,  $J = 14.2, 7.2$  Hz, 1H), 3.62-3.44 (m, 1H), 3.44-3.29 (m, 2H), 2.15 (p,  $J = 6.9$  Hz, 1H), 1.26 (dt,  $J = 7.2, 3.6$  Hz, 6H), 1.20 (s, 9H), 1.08 (d,  $J = 6.8$  Hz, 3H), 0.66 (d,  $J = 6.8$  Hz, 3H).  $^{13}\text{C}$  NMR (75 MHz,  $\text{CDCl}_3$ )  $\delta$  176.71, 168.36, 167.32, 153.83, 143.27, 129.72, 128.35, 124.65, 122.03, 108.48, 83.49, 80.70, 59.94, 37.75, 34.97, 27.97, 25.84, 22.58, 20.81, 15.46, 12.46. HRMS (ESI) Calcd for  $\text{C}_{23}\text{H}_{32}\text{N}_4\text{O}_4\text{Na}^+$   $[\text{M}+\text{Na}]^+$  451.2316; Found: 451.2317.



**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-methyl-isoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ja):** white solid, m.p.: 146.2-148.3 °C, 99%

yield, ee=69%, HPLC condition: Chiralpak IC-H (ethanol/n-hexane: 10/90, 1.0 mL/min,  $t_{\text{major}} = 33.854$  min.,  $t_{\text{minor}} = 11.829$  min.).  $[\alpha]_{\text{D}}^{20} =$

-179.2 (c 1.0,  $\text{CH}_2\text{Cl}_2$ ).  $^1\text{H}$  NMR (300 MHz, Chloroform-*d*)  $\delta$  7.34 (td,  $J = 6.9, 6.3, 1.5$  Hz, 2H), 7.07 (t,  $J = 7.5$  Hz, 1H), 6.86 (d,  $J = 7.7$  Hz, 1H), 6.13 (s, 1H), 5.34 (s, 1H), 3.83 (dq,  $J = 14.4, 7.2$  Hz, 1H), 3.55 (s, 1H), 3.36 (dtd,  $J = 13.0, 7.2, 2.6$  Hz, 2H), 1.45 (s, 3H), 1.29-1.22 (m, 6H), 1.19 (s, 9H).  $^{13}\text{C}$  NMR (75 MHz,  $\text{CDCl}_3$ )  $\delta$  176.32, 168.32, 158.52, 153.84, 142.84, 129.59, 128.41, 124.88, 122.07, 108.45, 84.66, 80.71, 59.71, 37.68, 35.01, 27.94, 15.44, 12.49, 12.30. HRMS (ESI) Calcd for  $\text{C}_{21}\text{H}_{28}\text{N}_4\text{O}_4\text{Na}^+$   $[\text{M}+\text{Na}]^+$  423.2203; Found: 423.2006.

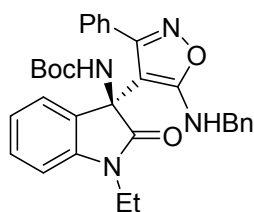


**tert-butyl (S)-(1-ethyl-3-(5-(methylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ka):** white solid, m.p.: 173.3-174.8 °C, 99%

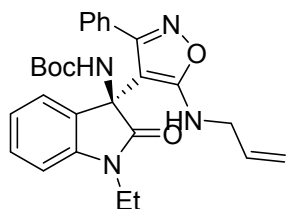
yield, ee=98%, HPLC condition: Chiralpak AD-H (ethanol/n-hexane: 10/90, 1.0 mL/min,  $t_{\text{major}} = 7.223$  min.,  $t_{\text{minor}} = 9.699$

min.).  $[\alpha]_{\text{D}}^{20} = -170.3$  (c 1.0,  $\text{CH}_2\text{Cl}_2$ ).  $^1\text{H}$  NMR (300 MHz, Chloroform-*d*)  $\delta$  7.12 (t,  $J = 7.5$  Hz, 1H), 7.05-6.89 (m, 3H), 6.80 (d,  $J = 5.0$  Hz, 1H), 6.76 – 6.65 (m, 3H), 6.49 (dd,  $J = 7.5, 1.3$  Hz, 1H), 6.31 (td,  $J = 7.6, 1.0$  Hz, 1H), 5.31 (s, 1H), 3.94 (dq,  $J = 14.4, 7.2$  Hz, 1H), 3.54 (s, 1H), 3.10 (d,  $J = 5.1$  Hz, 3H), 1.32 (t,  $J = 7.2$  Hz, 3H), 1.14 (s, 9H).  $^{13}\text{C}$  NMR (75 MHz,  $\text{CDCl}_3$ )  $\delta$  176.60, 169.28, 163.00, 153.78, 142.19, 129.81, 128.68, 128.24, 127.91, 127.49, 127.01, 124.82, 122.14, 107.61, 85.15, 80.60, 59.64, 34.96, 29.28, 27.87, 12.60. HRMS (ESI)

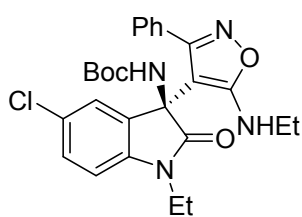
Calcd for  $C_{25}H_{28}N_4O_4Na^+$   $[M+Na]^+$  471.2003; Found: 471.2011.



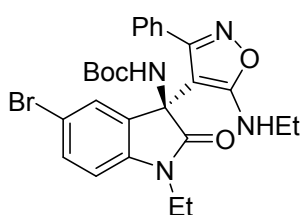
**tert-butyl (S)-(3-(5-(benzylamino)-3-phenylisoxazol-4-yl)-1-ethyl-2-oxoindolin-3-yl)carbamate (3la):** white solid, m.p.: 159.5-161.4 °C, 99% yield, ee=88%, HPLC condition: Chiralcel OD-H (ethanol/n-hexane : 10/90, 1.0 mL/min,  $t_{major}$  = 12.063 min.,  $t_{minor}$  = 9.939 min.).  $[\alpha]_D^{20}$  = -148.9 (c 1.0,  $CH_2Cl_2$ ).  $^1H$  NMR (300 MHz,  $CDCl_3$ )  $\delta$  7.47-7.34 (m, 4H), 7.34-7.26 (m, 1H), 7.24-7.17 (m, 1H), 7.14 (t,  $J$  = 7.5 Hz, 1H), 7.06-6.93 (m, 3H), 6.79 (d,  $J$  = 7.2 Hz, 2H), 6.71 (d,  $J$  = 7.8 Hz, 1H), 6.52 (dd,  $J$  = 7.5, 1.3 Hz, 1H), 6.33 (td,  $J$  = 7.6, 0.9 Hz, 1H), 5.31 (s, 1H), 4.72-4.52 (m, 2H), 3.90 (dt,  $J$  = 14.4, 7.2 Hz, 1H), 3.59 (s, 1H), 1.31 (t,  $J$  = 7.2 Hz, 3H), 1.16 (s, 9H).  $^{13}C$  NMR (75 MHz,  $CDCl_3$ )  $\delta$  176.47, 168.31, 162.95, 153.69, 142.22, 138.17, 129.68, 128.77, 128.68, 128.31, 128.01, 127.54, 127.48, 126.95, 124.91, 122.17, 107.70, 85.96, 80.49, 59.56, 46.73, 35.02, 27.92, 12.54. HRMS (ESI) Calcd for  $C_{31}H_{32}N_4O_4Na^+$   $[M+Na]^+$  547.2316; Found: 547.2332.



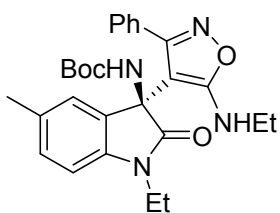
**tert-butyl (S)-(3-(5-(allylamino)-3-phenylisoxazol-4-yl)-1-ethyl-2-oxoindolin-3-yl)carbamate (3ma):** white solid, m.p.: 73.2-79.5 °C, 99% yield, ee=96%, HPLC condition: ChiralpakAD-H (ethanol/n-hexane: 10/90, 1.0 mL/min,  $t_{major}$  = 7.263 min.,  $t_{minor}$  = 9.312 min.).  $[\alpha]_D^{20}$  = -164.7 (c 1.0,  $CH_2Cl_2$ ).  $^1H$  NMR (300 MHz,  $CDCl_3$ )  $\delta$  7.13 (t,  $J$  = 7.5 Hz, 1H), 7.00 (ddd,  $J$  = 10.1, 8.3, 6.9 Hz, 3H), 6.92 (t,  $J$  = 5.7 Hz, 1H), 6.77 (d,  $J$  = 7.3 Hz, 2H), 6.72 (d,  $J$  = 7.8 Hz, 1H), 6.52 (dd,  $J$  = 7.5, 1.3 Hz, 1H), 6.33 (t,  $J$  = 7.5 Hz, 1H), 6.00 (ddt,  $J$  = 17.2, 10.5, 5.3 Hz, 1H), 5.43-5.29 (m, 2H), 5.23 (dd,  $J$  = 10.3, 1.5 Hz, 1H), 4.07 (t,  $J$  = 5.7 Hz, 2H), 3.93 (dq,  $J$  = 14.4, 7.3 Hz, 1H), 3.68-3.42 (m, 1H), 1.32 (t,  $J$  = 7.2 Hz, 3H), 1.15 (s, 9H).  $^{13}C$  NMR (75 MHz,  $CDCl_3$ )  $\delta$  176.50, 168.39, 162.96, 153.75, 142.22, 134.05, 129.72, 128.74, 128.28, 127.97, 127.52, 126.99, 124.88, 122.15, 116.52, 107.65, 85.64, 80.55, 59.58, 45.07, 34.99, 27.89, 12.58. HRMS (ESI) Calcd for  $C_{27}H_{30}N_4O_4H^+$   $[M+H]^+$  475.2340; Found: 475.2352.



**tert-butyl (S)-(5-chloro-1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ab):** white solid, m.p.: 200.2-202.4 °C, 92% yield, ee=95%, HPLC condition: Chiralpak IC-H (ethanol/n-hexane: 10/90, 1.0 mL/min,  $t_{\text{major}} = 26.048$  min.,  $t_{\text{minor}} = 10.072$  min.).  $[\alpha]_{\text{D}}^{20} = -208.3$  (c 1.0, CH<sub>2</sub>Cl<sub>2</sub>). <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>)  $\delta$  7.20 (t,  $J = 7.5$  Hz, 1H), 7.06 (t,  $J = 7.5$  Hz, 2H), 6.96 (dd,  $J = 8.3, 2.1$  Hz, 1H), 6.84 (t,  $J = 5.7$  Hz, 1H), 6.76 (d,  $J = 7.0$  Hz, 2H), 6.63 (d,  $J = 8.3$  Hz, 1H), 6.45 (d,  $J = 2.1$  Hz, 1H), 5.33 (s, 1H), 3.90 (dd,  $J = 14.5, 7.3$  Hz, 1H), 3.68 – 3.40 (m, 3H), 1.33 (dt,  $J = 14.7, 7.3$  Hz, 6H), 1.19 (s, 9H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>)  $\delta$  176.23, 168.72, 162.68, 153.62, 140.94, 129.56, 128.74, 128.67, 127.96, 127.73, 127.59, 125.79, 108.62, 84.46, 80.83, 59.57, 37.78, 35.14, 27.95, 15.47, 12.43. HRMS (ESI) Calcd for C<sub>26</sub>H<sub>29</sub>ClN<sub>4</sub>O<sub>4</sub>Na<sup>+</sup> [M+Na]<sup>+</sup> 519.1770 (<sup>35</sup>Cl), 521.1740 (<sup>37</sup>Cl); Found: 519.1772 (<sup>35</sup>Cl), 521.1748 (<sup>37</sup>Cl).

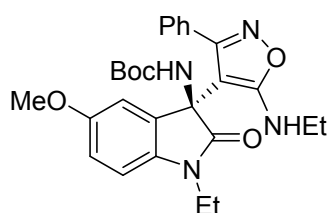


**tert-butyl (S)-(5-bromo-1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ac):** white solid, m.p.: 185.1-187.6 °C, 99% yield, ee=97%, HPLC condition: Chiralpak IC-H (ethanol/n-hexane: 10/90, 1.0 mL/min.,  $t_{\text{major}} = 27.962$  min.,  $t_{\text{minor}} = 9.839$  min.).  $[\alpha]_{\text{D}}^{20} = -203.6$  (c 1.0, CH<sub>2</sub>Cl<sub>2</sub>). <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>)  $\delta$  7.22 (t,  $J = 7.5$  Hz, 1H), 7.16-7.02 (m, 3H), 6.83 (t,  $J = 5.8$  Hz, 1H), 6.77 (d,  $J = 7.3$  Hz, 2H), 6.63-6.55 (m, 2H), 5.30 (s, 1H), 3.89 (dq,  $J = 14.9, 7.4, 7.0$  Hz, 1H), 3.67-3.35 (m, 3H), 1.33 (dt,  $J = 14.8, 7.3$  Hz, 6H), 1.20 (s, 9H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>)  $\delta$  176.15, 168.74, 162.70, 153.61, 141.46, 131.66, 129.50, 128.90, 128.84, 128.61, 127.93, 127.67, 115.14, 109.12, 84.47, 80.88, 59.54, 37.81, 35.14, 27.97, 15.49, 12.43. HRMS (ESI) Calcd for C<sub>26</sub>H<sub>29</sub>BrN<sub>4</sub>O<sub>4</sub>Na<sup>+</sup> [M+Na]<sup>+</sup> 563.1264 (<sup>79</sup>Br), 565.1244 (<sup>81</sup>Br); Found: 563.1274 (<sup>79</sup>Br), 565.1249 (<sup>81</sup>Br).



**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-5-methyl-2-oxoindolin-3-yl)carbamate (3ad):** white solid, m.p.: 208.7-210.5 °C, 88% yield, ee=98%, HPLC condition: Chiralpak IC-H (ethanol/n-hexane: 10/90, 1.0 mL/min.,  $t_{\text{major}} = 56.086$  min.,  $t_{\text{minor}}$

= 10.785 min.).  $[\alpha]_D^{20} = -207.0$  (c 1.0,  $\text{CH}_2\text{Cl}_2$ ).  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )  $\delta$  7.12 (t,  $J = 7.4$  Hz, 1H), 7.00 (t,  $J = 7.5$  Hz, 2H), 6.80 (dt,  $J = 12.5, 5.9$  Hz, 4H), 6.60 (d,  $J = 7.9$  Hz, 1H), 6.30 (s, 1H), 5.24 (s, 1H), 3.90 (dq,  $J = 15.1, 7.7$  Hz, 1H), 3.69-3.30 (m, 3H), 1.79 (s, 3H), 1.32 (q,  $J = 7.3$  Hz, 6H), 1.15 (s, 9H).  $^{13}\text{C}$  NMR (75 MHz,  $\text{CDCl}_3$ )  $\delta$  176.40, 168.70, 162.90, 153.84, 139.98, 131.68, 130.03, 129.02, 128.10, 127.99, 127.26, 126.97, 126.15, 107.44, 85.24, 80.46, 59.67, 37.72, 34.97, 27.89, 20.47, 15.46, 12.58. HRMS (ESI) Calcd for  $\text{C}_{27}\text{H}_{32}\text{N}_4\text{O}_4\text{Na}^+ [\text{M}+\text{Na}]^+ 499.2316$ ; Found: 499.2323.



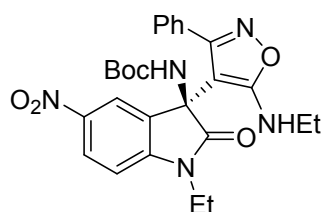
**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)**

**-5-methoxy-2-oxoindolin-3-yl)carbamate (3ae):** white solid,

m.p.: 196.9- 198.0°C, 99% yield, ee=96%, HPLC condition:

Chiralpak IC-H (ethanol/n-hexane: 10/90, 1.0 mL/min.,  $t_{\text{major}} =$

35.568 min.,  $t_{\text{minor}} = 16.175$  min.).  $[\alpha]_D^{20} = -189.7$  (c 1.0,  $\text{CH}_2\text{Cl}_2$ ).  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )  $\delta$  7.15 (t,  $J = 7.4$  Hz, 1H), 7.02 (t,  $J = 7.6$  Hz, 2H), 6.84 (s, 1H), 6.79 (d,  $J = 7.2$  Hz, 2H), 6.63 (d,  $J = 8.5$  Hz, 1H), 6.55 (dd,  $J = 8.5, 2.5$  Hz, 1H), 6.13 (d,  $J = 2.4$  Hz, 1H), 5.25 (s, 1H), 3.91 (dq,  $J = 14.1, 6.3$  Hz, 1H), 3.65-3.41 (m, 3H), 3.38 (s, 3H), 1.37-1.28 (m, 6H), 1.16 (s, 9H).  $^{13}\text{C}$  NMR (75 MHz,  $\text{CDCl}_3$ )  $\delta$  176.18, 168.77, 162.76, 155.45, 153.77, 135.80, 130.05, 128.31, 128.17, 127.85, 127.43, 113.97, 111.51, 108.27, 85.17, 80.59, 59.92, 55.12, 37.75, 35.04, 27.93, 15.48, 12.62. HRMS (ESI) Calcd for  $\text{C}_{27}\text{H}_{32}\text{N}_4\text{O}_5\text{Na}^+ [\text{M}+\text{Na}]^+ 515.2265$ ; Found: 515.2267.



**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)**

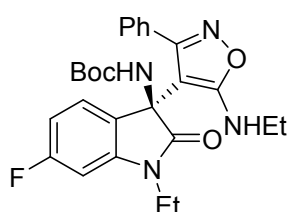
**-5-nitro-2-oxoindolin-3-yl)carbamate (3af):** white solid, m.p.:

196.5-198.7 °C, 94% yield, ee=92%, HPLC condition: Chiralpak

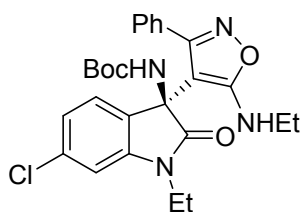
OD-H (ethanol/n-hexane: 10/90, 1.0 mL/min,  $t_{\text{major}} = 7.392$  min.,

$t_{\text{minor}} = 9.836$  min.).  $[\alpha]_D^{20} = -300.4$  (c 1.0,  $\text{CH}_2\text{Cl}_2$ ).  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )  $\delta$  7.95 (dd,  $J = 8.7, 2.3$  Hz, 1H), 7.30 (d,  $J = 2.0$  Hz, 1H), 7.07 (t,  $J = 7.4$  Hz, 1H), 6.97 (t,  $J = 7.3$  Hz, 2H), 6.85 (t,  $J = 5.6$  Hz, 1H), 6.79 (d,  $J = 8.7$  Hz, 1H), 6.71 (d,  $J = 6.9$  Hz, 2H), 5.43 (s, 1H), 4.04-3.82 (m, 1H), 3.82-3.61 (m, 1H), 3.52 (dtd,  $J = 12.6, 7.0, 3.4$  Hz, 2H), 1.40-1.31 (m, 6H), 1.24 (s, 9H).  $^{13}\text{C}$  NMR (75 MHz,  $\text{CDCl}_3$ )  $\delta$  176.87, 168.78, 162.40, 153.52, 147.75, 142.73,

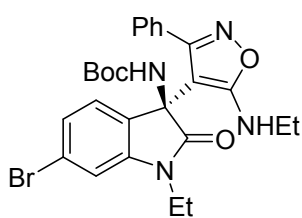
129.61, 128.11, 127.92, 127.52, 125.89, 121.18, 107.32, 83.47, 81.21, 59.10, 37.86, 35.59, 27.99, 15.49, 12.36. HRMS (ESI) Calcd for  $C_{26}H_{29}N_5O_6Na^+$   $[M+Na]^+$  530.2010; Found: 530.2038.



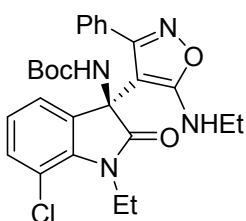
**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenyl-isoxazol-4-yl)-6-fluoro-2-oxoindolin-3-yl)carbamate (3ag):** white solid, m.p.: 190.1-192.4 °C, 98% yield, ee=98%, HPLC condition: Chiralpak IC-H (ethanol/n-hexane: 30/70, 1.0 mL/min.,  $t_{major}$  = 20.179 min.,  $t_{minor}$  = 4.973 min).  $[\alpha]_D^{20}$  = -172.3(c 1.0,  $CH_2Cl_2$ ).  $^1H$  NMR (300 MHz,  $CDCl_3$ )  $\delta$  7.24 -7.15 (m, 1H), 7.04 (t,  $J$  = 7.6 Hz, 2H), 6.75 (d,  $J$  = 6.8 Hz, 3H), 6.46 (dd,  $J$  = 9.0, 2.3 Hz, 1H), 6.41 (dd,  $J$  = 8.3, 5.4 Hz, 1H), 5.96 (ddd,  $J$  = 9.5, 8.2, 2.3 Hz, 1H), 5.29 (s, 1H), 3.90 (dd,  $J$  = 14.3, 7.2 Hz, 1H), 3.65-3.38 (m, 3H), 1.36-1.27 (m, 6H), 1.19 (s, 9H).  $^{13}C$  NMR (75 MHz,  $CDCl_3$ )  $\delta$  176.83, 168.69, 163.25 (d,  $J$  = 244.5 Hz), 162.77, 153.69, 143.62 (d,  $J$  = 11.2 Hz), 129.89, 128.26, 128.13, 127.59, 125.92 (d,  $J$  = 9.8 Hz), 122.40, 108.01 (d,  $J$  = 22.5 Hz), 96.54 (d,  $J$  = 27.8 Hz), 85.03, 80.72, 59.19, 37.80, 35.23, 27.95, 15.50, 12.49.  $^{19}F$  NMR (376 MHz,  $CDCl_3$ )  $\delta$  -111.37. HRMS (ESI) Calcd for  $C_{26}H_{29}FN_4O_4Na^+$   $[M+Na]^+$  503.2065; Found: 503.2067.



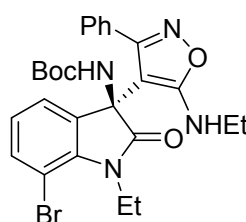
**tert-butyl (S)-(6-chloro-1-ethyl-3-(5-(ethylamino)-3-phenyl-isoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ah):** white solid, m.p.: 179.3-182.1 °C, 99% yield, ee=94%, HPLC condition: ChiralcelOD-H (ethanol/n-hexane: 10/90, 1.0 mL/min.,  $t_{major}$  = 7.173 min.,  $t_{minor}$  = 5.383 min).  $[\alpha]_D^{20}$  = -165.4(c 1.0,  $CH_2Cl_2$ ).  $^1H$  NMR (300 MHz,  $CDCl_3$ )  $\delta$  7.22 (t,  $J$  = 7.4 Hz, 1H), 7.03 (t,  $J$  = 7.7 Hz, 2H), 6.78 (t,  $J$  = 5.7 Hz, 1H), 6.76 -6.68 (m, 3H), 6.36 (d,  $J$  = 8.0 Hz, 1H), 6.22 (dd,  $J$  = 8.0, 1.5 Hz, 1H), 5.32 (s, 1H), 4.00-3.79 (m, 1H), 3.66-3.37 (m, 3H), 1.33 (dt,  $J$  = 10.6, 7.2 Hz, 6H), 1.19 (s, 9H).  $^{13}C$  NMR (75 MHz,  $CDCl_3$ )  $\delta$  176.51, 168.71, 162.68, 153.65, 143.27, 134.47, 129.82, 128.25, 128.03, 127.62, 125.57, 125.43, 121.72, 108.34, 84.86, 80.77, 59.23, 37.79, 35.20, 27.96, 15.49, 12.45. HRMS(ESI) Calcd for  $C_{26}H_{29}ClN_4O_4Na^+$   $[M+Na]^+$  519.1770 ( $^{35}Cl$ ), 521.1740 ( $^{37}Cl$ ); Found: 519.1786 ( $^{35}Cl$ ), 521.1769 ( $^{37}Cl$ ).



**tert-butyl (S)-(6-bromo-1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ai):** white solid, m.p.: 76.9-79.9 °C, 99% yield, ee=96%, HPLC condition: ChiralpakIC-H (ethanol/n-hexane : 10/90, 1.0 mL/min.,  $t_{\text{major}} = 48.024$  min.,  $t_{\text{minor}} = 9.035$  min).  $[\alpha]_{\text{D}}^{20} = -143.6$  (c 1.0, CH<sub>2</sub>Cl<sub>2</sub>). <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>)  $\delta$  7.26 -7.18 (m, 1H), 7.04 (t,  $J = 7.6$  Hz, 2H), 6.85 (d,  $J = 1.6$  Hz, 1H), 6.79 (t,  $J = 5.7$  Hz, 1H), 6.72 (d,  $J = 7.1$  Hz, 2H), 6.37 (dd,  $J = 8.0, 1.6$  Hz, 1H), 6.30 (d,  $J = 7.9$  Hz, 1H), 5.31 (s, 1H), 3.86 (dt,  $J = 13.9, 7.0$  Hz, 1H), 3.68 – 3.38 (m, 3H), 1.33 (dt,  $J = 11.3, 7.2$  Hz, 6H), 1.19 (s, 9H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>)  $\delta$  176.38, 168.70, 162.67, 153.63, 143.37, 129.77, 128.21, 127.99, 127.67, 125.94, 125.87, 124.67, 122.39, 111.04, 84.72, 80.79, 59.27, 37.78, 35.19, 27.96, 15.49, 12.46. HRMS (ESI) Calcd for C<sub>26</sub>H<sub>29</sub>BrN<sub>4</sub>O<sub>4</sub>Na<sup>+</sup> [M+Na]<sup>+</sup> 563.1264 (<sup>79</sup>Br), 565.1244 (<sup>81</sup>Br); Found: 563.1256 (<sup>79</sup>Br), 565.1239 (<sup>81</sup>Br).



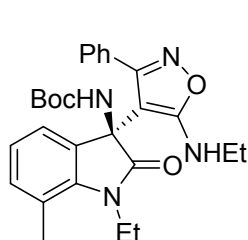
**tert-butyl (S)-(7-chloro-1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3aj):** white solid, m.p.: 169.1-171.7 °C, 99% yield, ee=92%, HPLC condition: ChiralpakIC-H (ethanol/n-hexane: 10/90, 1.0 mL/min.,  $t_{\text{major}} = 48.854$  min.,  $t_{\text{minor}} = 7.946$  min.).  $[\alpha]_{\text{D}}^{20} = -171.4$  (c 1.0, d CH<sub>2</sub>Cl<sub>2</sub>). <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>)  $\delta$  7.14 (t,  $J = 7.5$  Hz, 1H), 7.03 (t,  $J = 7.4$  Hz, 2H), 6.91 (dd,  $J = 8.2, 1.2$  Hz, 1H), 6.82-6.65 (m, 3H), 6.43 (dd,  $J = 7.4, 1.3$  Hz, 1H), 6.22 (t,  $J = 7.8$  Hz, 1H), 5.33 (s, 1H), 4.25-4.03 (m,  $J = 7.1$  Hz, 2H), 3.49 (dq,  $J = 13.3, 7.1, 6.3, 2.4$  Hz, 2H), 1.36 (td,  $J = 7.2, 4.6$  Hz, 6H), 1.19 (s, 9H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>)  $\delta$  177.02, 168.72, 162.62, 153.68, 138.52, 131.13, 130.02, 129.72, 128.23, 128.09, 127.55, 123.22, 122.86, 114.56, 84.80, 80.90, 59.20, 37.82, 36.99, 27.92, 15.49, 14.73. HRMS (ESI) Calcd for C<sub>26</sub>H<sub>29</sub>ClN<sub>4</sub>O<sub>4</sub>Na<sup>+</sup> [M+Na]<sup>+</sup> 519.1770 (<sup>35</sup>Cl), 521.1740 (<sup>37</sup>Cl); Found: 519.1773 (<sup>35</sup>Cl), 521.1748 (<sup>37</sup>Cl).



**tert-butyl (S)-(7-bromo-1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ak):** white solid, m.p.: 183.1-185.2 °C, 99% yield, ee=97%, HPLC condition: ChiralpakOD-H (ethanol/n-hexane: 10/90, 1.0 mL/min.,  $t_{\text{major}} = 6.998$  min.,  $t_{\text{minor}} = 5.936$  min.).

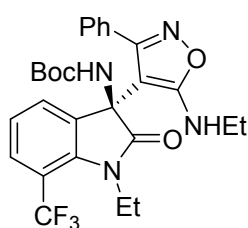


min.).  $[\alpha]_D^{20} = -143.6$  (c 1.0, CH<sub>2</sub>Cl<sub>2</sub>). <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>)  $\delta$  7.14 (t,  $J = 7.4$  Hz, 1H), 7.11-6.99 (m, 3H), 6.74 (dd,  $J = 7.9, 6.3$  Hz, 3H), 6.46 (dd,  $J = 7.4, 1.2$  Hz, 1H), 6.14 (t,  $J = 7.8$  Hz, 1H), 5.33 (s, 1H), 4.17 (q,  $J = 7.1$  Hz, 2H), 3.49 (dtd,  $J = 13.1, 7.2, 2.4$  Hz, 2H), 1.36 (td,  $J = 7.1, 3.5$  Hz, 6H), 1.18 (s, 9H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>)  $\delta$  177.24, 168.70, 162.61, 153.67, 139.91, 134.50, 130.39, 129.67, 128.20, 128.09, 127.54, 123.71, 123.22, 101.55, 84.77, 80.94, 59.09, 37.81, 36.64, 27.91, 15.49, 14.72. HRMS (ESI) Calcd for C<sub>26</sub>H<sub>29</sub>BrN<sub>4</sub>O<sub>4</sub>Na<sup>+</sup> [M+Na]<sup>+</sup> 563.1264 (<sup>79</sup>Br), 565.1244 (<sup>81</sup>Br); Found: 563.1271 (<sup>79</sup>Br), 565.1246 (<sup>81</sup>Br).



**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenyl-isoxazol-4-yl)-7-methyl-2-oxoindolin-3-yl)carbamate (3al):** white solid, m.p.: 186.3-187.5 °C, 95% yield, ee=98%, HPLC condition: ChiralpakIC-H (ethanol/n-hexane: 10/90, 1.0 mL/min.,  $t_{\text{major}} = 75.083$  min.,  $t_{\text{minor}} = 12.373$  min.).  $[\alpha]_D^{20} = -168.4$  (c 1.0,

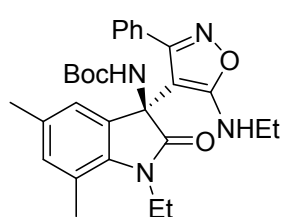
CH<sub>2</sub>Cl<sub>2</sub>). <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>)  $\delta$  7.13 (t,  $J = 7.4$  Hz, 1H), 7.01 (t,  $J = 7.6$  Hz, 2H), 6.83 (d,  $J = 7.4$  Hz, 2H), 6.74 (d,  $J = 7.7$  Hz, 1H), 6.53 (s, 1H), 6.43 (d,  $J = 7.2$  Hz, 1H), 6.25 (t,  $J = 7.6$  Hz, 1H), 5.27 (s, 1H), 4.03 (dq,  $J = 14.3, 7.1$  Hz, 1H), 3.91 (p,  $J = 7.2$  Hz, 1H), 3.45 (tt,  $J = 8.5, 6.7$  Hz, 2H), 2.47 (s, 3H), 1.32 (td,  $J = 7.1, 4.2$  Hz, 6H), 1.17 (s, 9H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>)  $\delta$  177.32, 168.50, 162.87, 153.79, 140.21, 132.71, 129.81, 128.37, 127.96, 127.92, 127.38, 122.83, 122.12, 118.46, 85.49, 80.44, 59.05, 37.73, 36.89, 27.91, 18.68, 15.45, 14.66. HRMS (ESI) Calcd for C<sub>27</sub>H<sub>32</sub>N<sub>4</sub>O<sub>4</sub>Na<sup>+</sup> [M+Na]<sup>+</sup> 499.2316; Found: 499.2303.



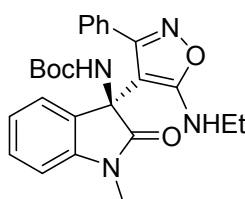
**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenyl-isoxazol-4-yl)-2-oxo-7-(trifluoromethyl)indolin-3-yl)carbamate (3am):** white solid, m.p.: 178.2-179.9 °C, 98% yield, ee=88%, HPLC condition: ChiralpakIC-H (ethanol/n-hexane: 10/90, 1.0 mL/min.,  $t_{\text{major}} = 32.156$  min.,  $t_{\text{minor}} = 5.845$  min.).  $[\alpha]_D^{20} = -132.1$  (c 1.0, CH<sub>2</sub>Cl<sub>2</sub>). <sup>1</sup>H NMR (300

MHz, CDCl<sub>3</sub>)  $\delta$  7.25 (d,  $J = 6.6$  Hz, 1H), 7.12 (t,  $J = 7.5$  Hz, 1H), 6.98 (t,  $J = 7.6$  Hz, 2H), 6.77 (t,  $J = 5.6$  Hz, 1H), 6.71 (d,  $J = 7.2$  Hz, 3H), 6.34 (t,  $J = 7.8$  Hz, 1H), 5.39 (s, 1H), 3.98 (dt,  $J = 18.0, 8.9$  Hz, 2H), 3.51 (dtd,  $J = 12.8, 7.0, 3.6$  Hz, 2H), 1.36 (t,  $J = 7.2$  Hz, 3H), 1.28

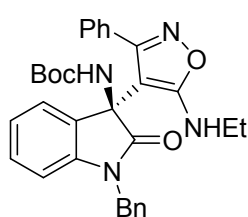
(t,  $J = 7.0$  Hz, 3H), 1.16 (s, 9H).  $^{13}\text{C}$  NMR (75 MHz,  $\text{CDCl}_3$ )  $\delta$  178.00, 168.81, 162.49, 153.61, 140.47, 129.78, 129.72, 128.15, 128.09, 127.68, 126.74 (q,  $J = 6.8$  Hz), 123.58 (q,  $J = 269.2$  Hz), 121.40, 111.87 (q,  $J = 32.3$  Hz), 84.48, 81.04, 58.16, 37.85, 27.87, 15.51, 12.88.  $^{19}\text{F}$  NMR (376 MHz,  $\text{CDCl}_3$ )  $\delta$  -55.69. HRMS (ESI) Calcd for  $\text{C}_{27}\text{H}_{29}\text{N}_4\text{O}_4\text{Na}^+$   $[\text{M}+\text{Na}]^+ 553.2033$ ; Found: 553.2047.



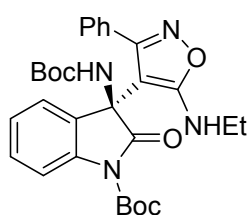
**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenyl-isoxazol-4-yl)-5,7-dimethyl-2-oxoindolin-3-yl)carbamate (3an):** white solid, m.p.: 195.0-197.2 °C, 99% yield, ee=96%, HPLC condition: Chiralpak IC-H (ethanol/n-hexane: 10/90, 1.0 mL/min.,  $t_{\text{major}} = 44.572$  min.,  $t_{\text{minor}} = 12.050$  min.).  $[\alpha]_{\text{D}}^{20} = -206.3$  (c 1.0,  $\text{CH}_2\text{Cl}_2$ ).  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )  $\delta$  7.12 (t,  $J = 7.4$  Hz, 1H), 7.02 (t,  $J = 7.5$  Hz, 2H), 6.80 (d,  $J = 7.2$  Hz, 2H), 6.72 (s, 1H), 6.53 (s, 1H), 6.20 (s, 1H), 5.22 (s, 1H), 4.02 (dq,  $J = 14.0, 7.0$  Hz, 1H), 3.94-3.78 (m, 1H), 3.46 (tt,  $J = 7.3, 5.5$  Hz, 2H), 2.43 (s, 3H), 1.75 (s, 3H), 1.32 (td,  $J = 7.2, 3.2$  Hz, 6H), 1.18 (s, 9H).  $^{13}\text{C}$  NMR (75 MHz,  $\text{CDCl}_3$ )  $\delta$  177.26, 168.59, 162.92, 153.84, 137.90, 133.21, 131.61, 130.02, 128.12, 127.98, 127.86, 127.16, 124.03, 118.21, 85.58, 80.42, 59.12, 37.72, 36.85, 27.95, 20.18, 18.52, 15.48, 14.58. HRMS (ESI) Calcd for  $\text{C}_{28}\text{H}_{34}\text{N}_4\text{O}_4\text{Na}^+$   $[\text{M}+\text{Na}]^+ 513.2472$ ; Found: 513.2462.



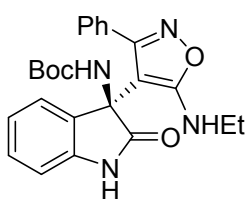
**tert-butyl (S)-(3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-1-methyl-2-oxoindolin-3-yl)carbamate (3ao):** white solid, m.p.: 184.7-186.3 °C, 99% yield, ee=96%, HPLC condition: Chiralcel OD-H (ethanol/n-hexane: 10/90, 1.0 mL/min,  $t_{\text{major}} = 8.389$  min.,  $t_{\text{minor}} = 5.598$  min.).  $[\alpha]_{\text{D}}^{20} = -159.2$  (c 1.0,  $\text{CH}_2\text{Cl}_2$ ).  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )  $\delta$  7.17-7.08 (m, 1H), 7.07-6.94 (m, 3H), 6.82-6.71 (m, 3H), 6.69 (d,  $J = 7.8$  Hz, 1H), 6.50 (dd,  $J = 7.5, 1.3$  Hz, 1H), 6.34 (t,  $J = 7.5$  Hz, 1H), 5.28 (s, 1H), 3.58-3.39 (m, 2H), 3.21 (s, 3H), 1.33 (t,  $J = 7.2$  Hz, 3H), 1.12 (s, 9H).  $^{13}\text{C}$  NMR (75 MHz,  $\text{CDCl}_3$ )  $\delta$  177.00, 168.66, 162.80, 153.82, 143.12, 129.88, 128.75, 128.38, 127.93, 127.51, 127.07, 124.64, 122.28, 107.50, 85.03, 80.54, 59.68, 37.77, 27.85, 26.52, 15.50. HRMS (ESI) Calcd for  $\text{C}_{25}\text{H}_{28}\text{N}_4\text{O}_4\text{H}^+$   $[\text{M}+\text{H}]^+ 449.2183$ ; Found: 449.2190.



**tert-butyl (S)-(1-benzyl-3-(5-(ethylamino)-3-phenyl-isoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ap):** white solid, m.p.: 83.2-84.3 °C, 99% yield, ee=98% HPLC condition: Chiralpak IC-H (ethanol/n-hexane: 10/90, 1.0 mL/min,  $t_{\text{major}} = 41.514$  min.,  $t_{\text{minor}} = 9.577$  min.).  $[\alpha]_{\text{D}}^{20} = -110.1$  (c 1.0, CH<sub>2</sub>Cl<sub>2</sub>). <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>)  $\delta$  7.42-7.27 (m, 5H), 7.09 (t,  $J = 7.4$  Hz, 1H), 6.91 (td,  $J = 7.7, 1.2$  Hz, 3H), 6.76 (d,  $J = 7.6$  Hz, 2H), 6.56 (dd,  $J = 7.8, 5.3$  Hz, 3H), 6.33 (t,  $J = 7.6$  Hz, 1H), 5.38 (s, 1H), 5.20 (d,  $J = 15.6$  Hz, 1H), 4.58 (s, 1H), 3.59 – 3.39 (m, 2H), 1.31 (t,  $J = 7.3$  Hz, 3H), 1.18 (s, 9H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>)  $\delta$  176.96, 168.58, 162.97, 153.78, 142.24, 135.60, 129.73, 128.80, 128.64, 128.47, 127.95, 127.75, 127.52, 127.25, 126.99, 124.68, 122.34, 108.60, 85.03, 80.60, 59.75, 44.05, 37.78, 27.93, 15.43. HRMS (ESI) Calcd for C<sub>31</sub>H<sub>32</sub>N<sub>4</sub>O<sub>4</sub>H<sup>+</sup> [M+H]<sup>+</sup> 525.2496; Found: 525.2506.



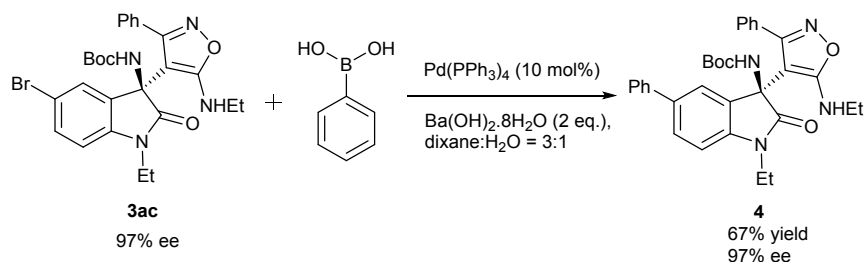
**tert-butyl (S)-3-((tert-butoxycarbonyl)amino)-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindoline-1-carboxylate (3aq):** white solid, m.p.: 189.7-191.6 °C, 94% yield, ee=92%, HPLC condition: Chiralcel OD-H (ethanol/n-hexane: 10/90, 1.0 mL/min,  $t_{\text{major}} = 8.639$  min.,  $t_{\text{minor}} = 4.140$  min.).  $[\alpha]_{\text{D}}^{20} = -138.4$  (c 1.0, CH<sub>2</sub>Cl<sub>2</sub>). <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>)  $\delta$  7.67 (d,  $J = 8.2$  Hz, 1H), 7.11 (t,  $J = 7.6$  Hz, 1H), 7.07- 6.93 (m, 3H), 6.76 (d,  $J = 7.4$  Hz, 2H), 6.54 (dd,  $J = 7.6, 1.4$  Hz, 1H), 6.51-6.37 (m, 2H), 5.40 (s, 1H), 3.58-3.35 (m, 2H), 1.65 (s, 9H), 1.33 (t,  $J = 7.3$  Hz, 3H), 1.11 (s, 9H). <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>)  $\delta$  174.74, 168.31, 162.88, 153.74, 149.04, 139.30, 129.50, 129.08, 128.29, 127.95, 127.62, 126.07, 124.49, 124.00, 114.27, 84.69, 84.38, 81.33, 60.04, 37.87, 28.06, 27.64, 15.45. HRMS (ESI) Calcd for C<sub>29</sub>H<sub>34</sub>N<sub>4</sub>O<sub>6</sub>H<sup>+</sup> [M+H]<sup>+</sup> 535.2551; Found: 535.2551.



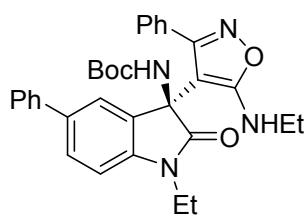
**tert-butyl (S)-(3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ar):** white solid, m.p.: 202.4-206.8 °C, 84% yield, ee=83%, HPLC condition: Chiralpak IC-H (ethanol/n-hexane : 10/90, 1.0 mL/min.,  $t_{\text{major}} = 67.657$  min.,  $t_{\text{minor}} = 9.512$  min.).  $[\alpha]_{\text{D}}^{20} = -130.9$  (c 1.0, CH<sub>2</sub>Cl<sub>2</sub>). <sup>1</sup>H NMR (300 MHz, DMSO-*d*<sub>6</sub>)  $\delta$  8.28 (s, 1H), 7.19-7.10 (m, 1H), 7.00 (t,  $J = 7.6$  Hz, 2H), 6.94 (dd,  $J = 7.7, 1.3$  Hz, 1H), 6.86 (d,  $J = 7.2$  Hz, 2H), 6.66 (d,  $J = 7.7$  Hz, 1H),

6.61 (s, 1H), 6.50 (d,  $J = 7.2$  Hz, 1H), 6.33 (td,  $J = 7.5, 1.0$  Hz, 1H), 5.40 (s, 1H), 3.58-3.39 (m, 2H), 1.34 (t,  $J = 7.2$  Hz, 3H), 1.22 (s, 9H).  $^{13}\text{C}$  NMR (75 MHz,  $\text{CDCl}_3$ )  $\delta$  178.80, 168.64, 162.99, 153.99, 140.45, 129.82, 128.75, 128.45, 128.01, 127.56, 127.42, 124.97, 122.19, 109.43, 84.73, 80.97, 59.89, 37.80, 27.89, 15.57. HRMS (ESI) Calcd for  $\text{C}_{24}\text{H}_{26}\text{N}_4\text{O}_4\text{Na}^+$   $[\text{M}+\text{Na}]^+$  457.1846; Found: 457.1833.

## 2.4 General procedure for Pd-catalyzed Suzuki cross coupling:



The mixture of **3ac** (54mg, 0.1 mmol), phenyl boronic acid (24mg, 0.2 mmol),  $\text{Pd}(\text{PPh}_3)_4$  (12mg, 0.01 mmol) and  $\text{Ba}(\text{OH})_2 \cdot 8\text{H}_2\text{O}$  (63mg, 0.2 mmol) in dioxane (1.5mL),  $\text{H}_2\text{O}$  (0.5mL) was heated at  $50^\circ\text{C}$  for 12h under argon atmosphere. After cooling to room temperature, the reaction mixture was quenched with water and extracted with ethyl acetate, the organic layer was washed with brine and dried with anhydrous sodium sulfate and evaporated under reduced pressure. The crude product was purified by column chromatography (PE/EA= 5:1 v/v) to afford **4** (36mg, 67 %).



**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxo-5-phenylindolin-3-yl)carbamate (4):** white solid, m.p.:

109.8-111.2  $^\circ\text{C}$ , 67% yield, ee=97% HPLC condition: Chiralpak IC-H (isopropyl alcohol/n-hexane: 20/80, 1.0 mL/min,  $t_{\text{major}} = 21.586$  min.,  $t_{\text{minor}} = 12.376$  min.).  $[\alpha]_{\text{D}}^{20} = -206.1$  (c 1.0,  $\text{CH}_2\text{Cl}_2$ ).  $^1\text{H}$  NMR (300 MHz,  $\text{DMSO}-d_6$ )  $\delta$  7.72 (s, 1H), 7.42-7.18 (m, 4H), 7.17-7.06 (m, 2H), 7.03-6.81 (m, 5H), 6.80-6.59 (m, 3H), 3.74 (dd,  $J = 15.3, 7.9$  Hz, 1H), 3.65-3.46 (m, 1H), 3.38-3.30 (m, 2H), 1.22 (ddd,  $J = 9.6, 5.4, 1.7$  Hz, 6H), 1.08 (s, 9H).  $^{13}\text{C}$  NMR (75 MHz,  $\text{DMSO}$ )  $\delta$  175.77, 168.41, 162.34, 154.41, 142.08, 139.99, 134.18, 130.13, 129.17, 128.58, 128.26, 128.03, 127.22, 127.07, 126.64, 126.32, 123.23, 108.54, 85.20, 78.90, 59.18, 37.44, 34.55, 27.84, 15.64, 12.46. HRMS (ESI) Calcd for  $\text{C}_{32}\text{H}_{34}\text{N}_4\text{O}_4\text{Na}^+$   $[\text{M}+\text{Na}]^+$  561.2472; Found: 561.2479.

## 2.5 Gram-scale preparation of **3aa** using 0.5 mol% catalyst **PA4**.

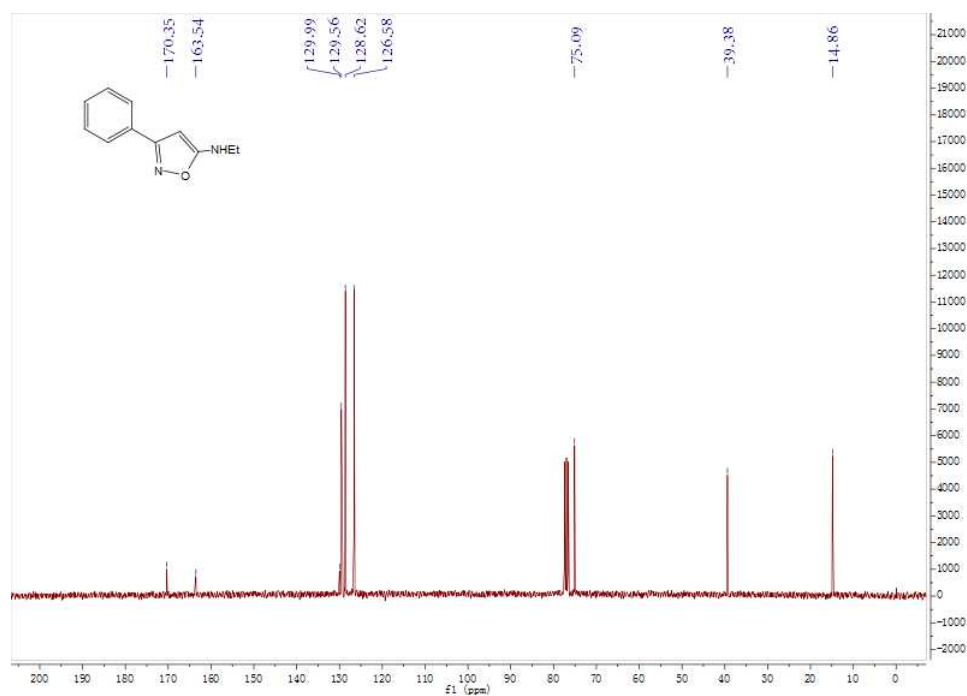
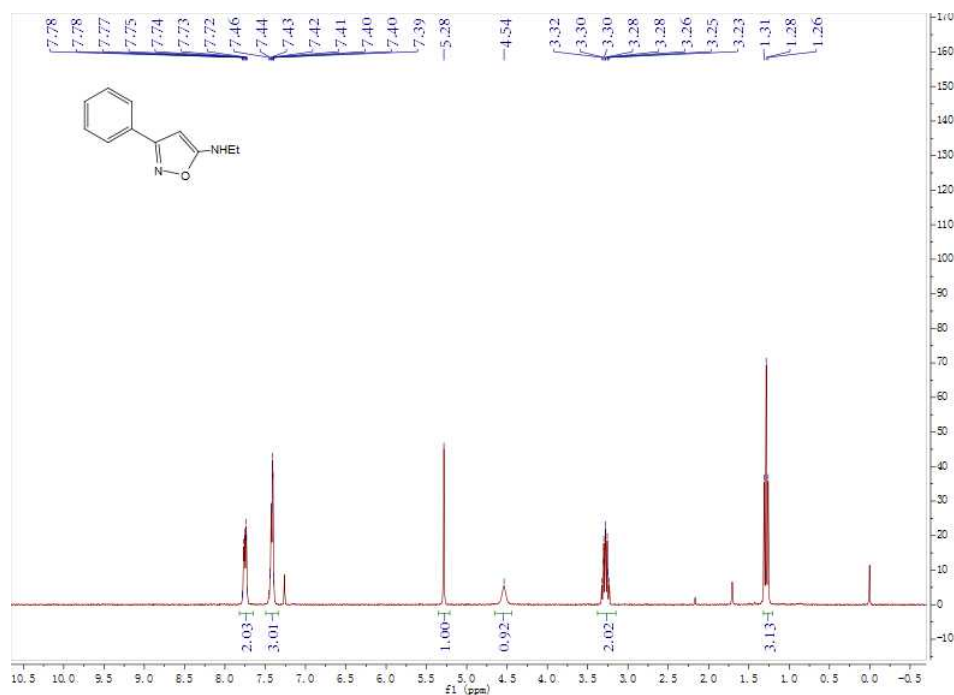
Isoxazole **1a** (769mg, 4 mmol), ketimine **2a** (1.66g, 6 mmol) and **PA4** (12 mg, 0.5 mol%) were dissolved in THF (40mL) in a flame-dried vial equipped with a magnetic stirring bar. The reaction mixture was stirred at -30 °C until no starting material was detected by TLC. The mixture was subjected to chromatography (silica gel, petroleum ether/EtOAc = 5:1) to afford the desired product **3aa** (98% yield, 94% ee).

### References:

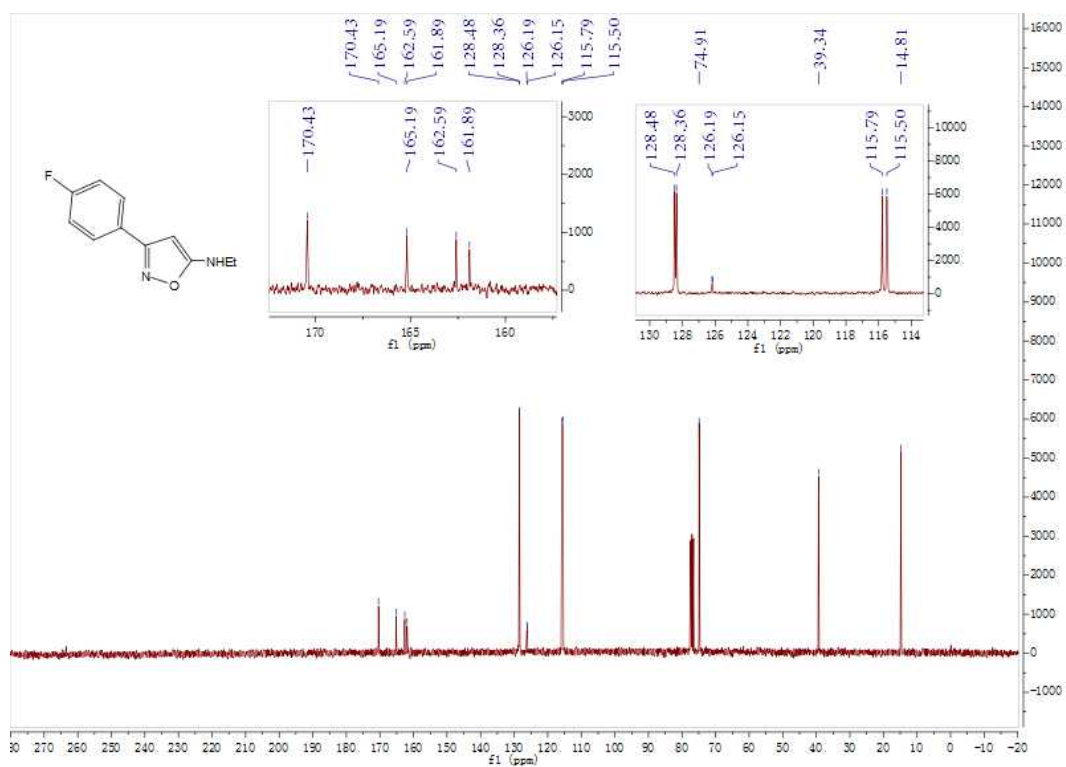
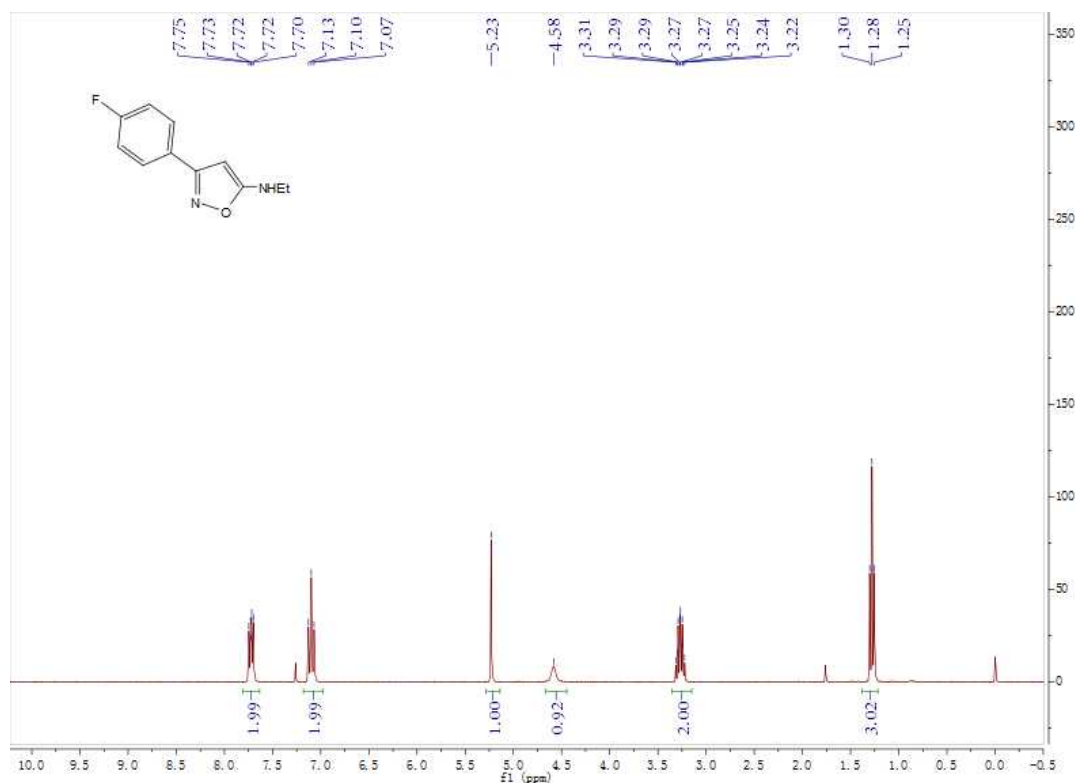
1. Ge, Y.; Sun, W.; Pei, B.; Ding, J.; Jiang, Y.; Loh, T.-P., Hoveyda–Grubbs II Catalyst: A Useful Catalyst for One-Pot Visible-Light-Promoted Ring Contraction and Olefin Metathesis Reactions. *Org. Lett.* **2018**, *20*, 2774-2777.
2. Krasavin, M.; Korsakov, M.; Zvonaryova, Z.; Semyonychev, E.; Tuccinardi, T.; Kalinin, S.; Tanç, M.; Supuran, C. T., Human carbonic anhydrase inhibitory profile of mono- and bis-sulfonamides synthesized via a direct sulfochlorination of 3- and 4-(hetero)arylisoaxazol-5-amine scaffolds. *Bioorg. Med. Chem.* **2017**, *25*, 1914-1925.
3. Yan, W.; Wang, D.; Feng, J.; Li, P.; Zhao, D.; Wang, R., Synthesis of N-Alkoxycarbonyl Ketimines Derived from Isatins and Their Application in Enantioselective Synthesis of 3-Aminooxindoles. *Org. Lett.* **2012**, *14*, 2512-2515.

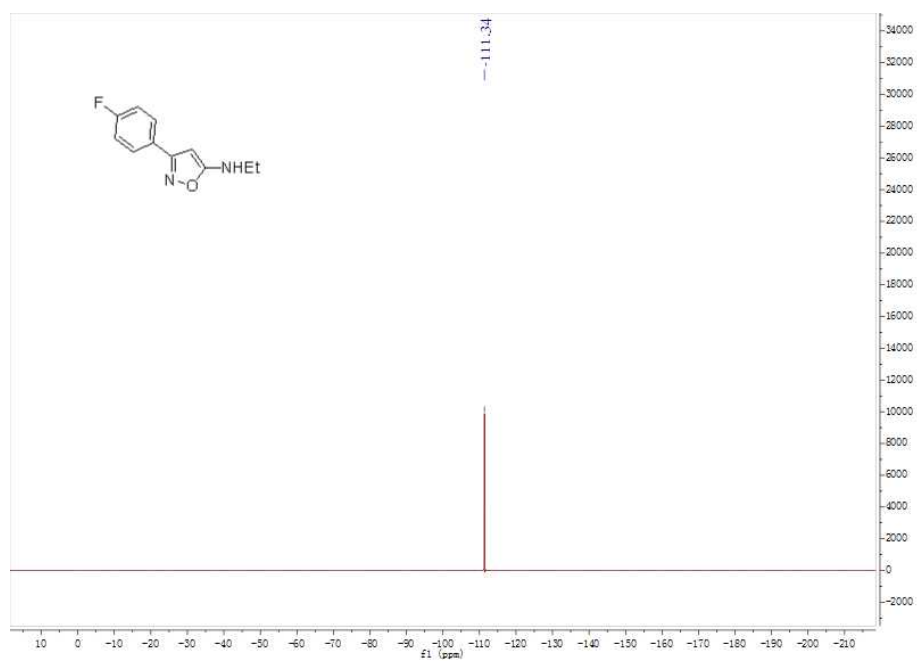
### 3. $^1\text{H}$ NMR and $^{13}\text{C}$ NMR spectra

#### N-ethyl-3-phenylisoxazol-5-amine (1a)



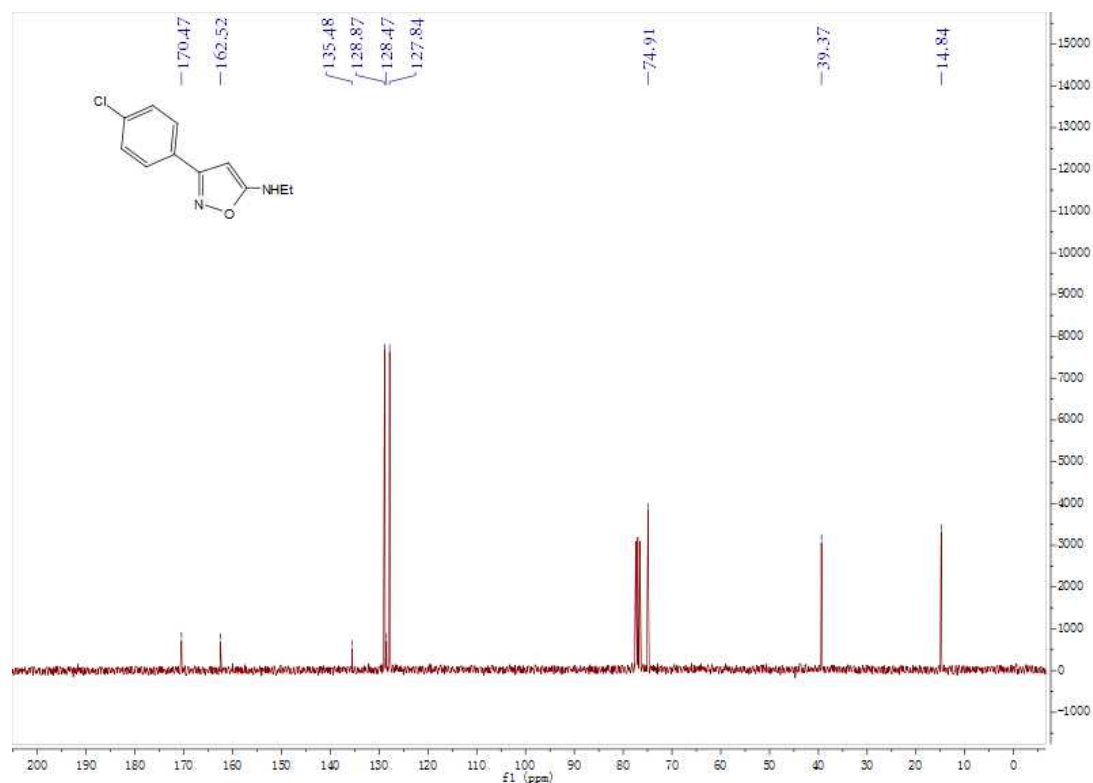
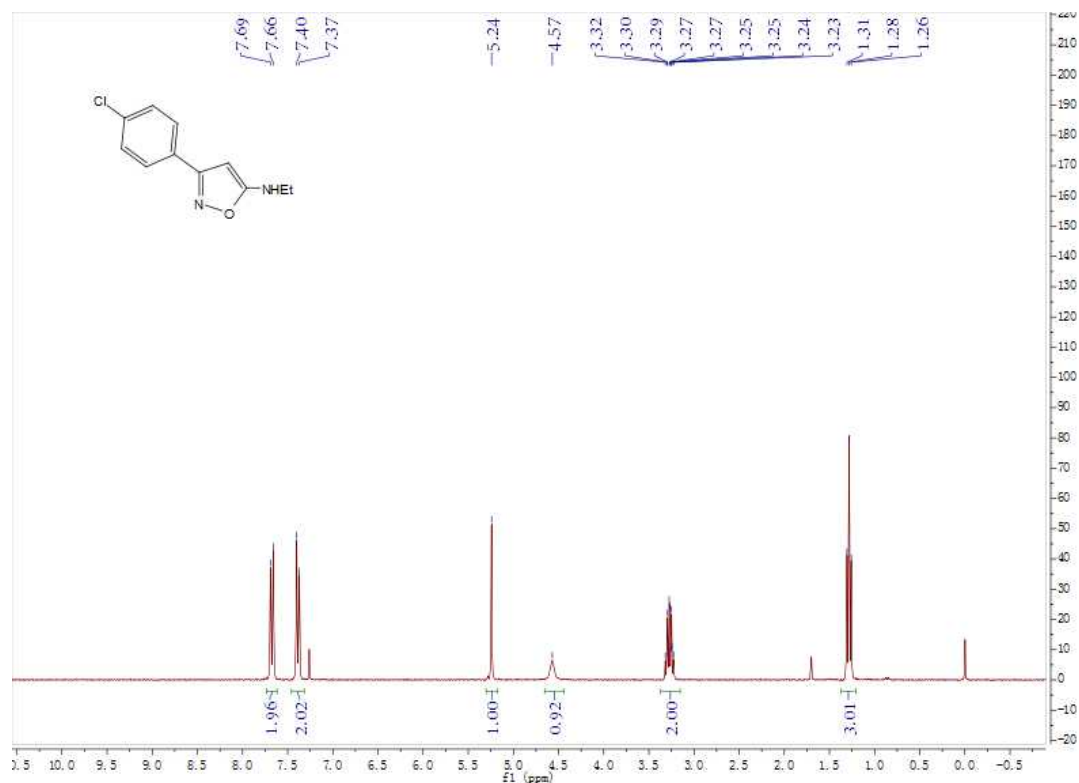
# **N-ethyl-3-(4-fluorophenyl)isoxazol-5-amine (1b)**



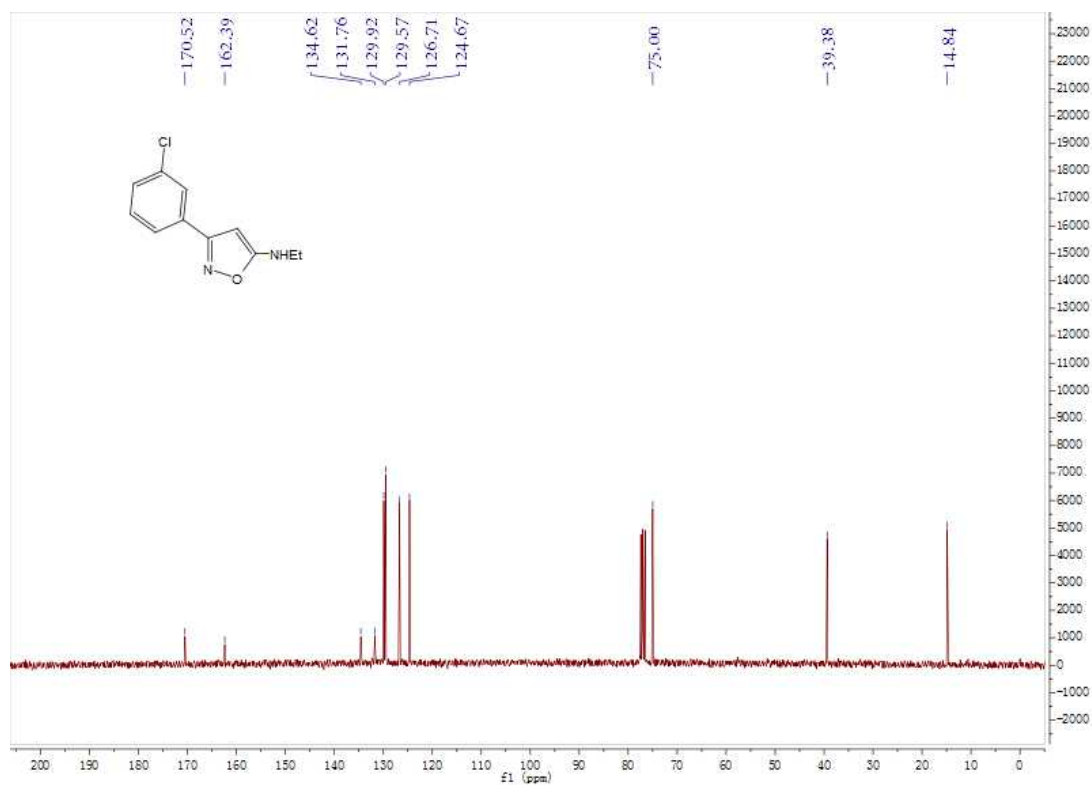
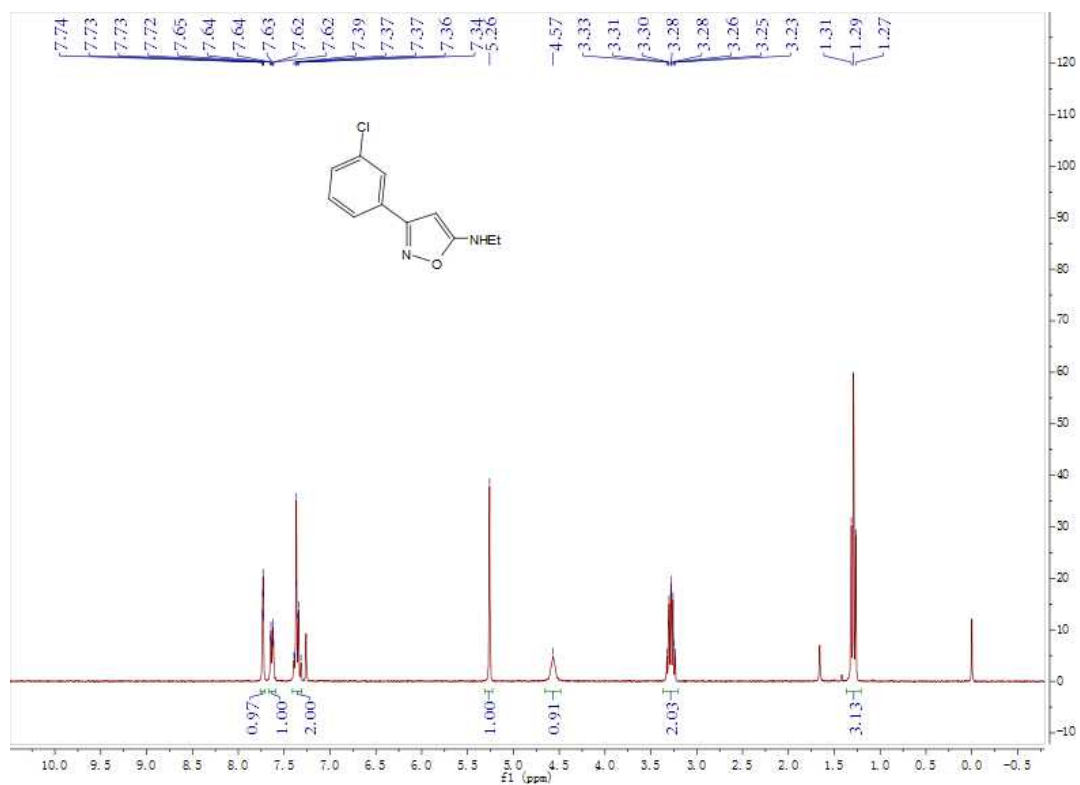




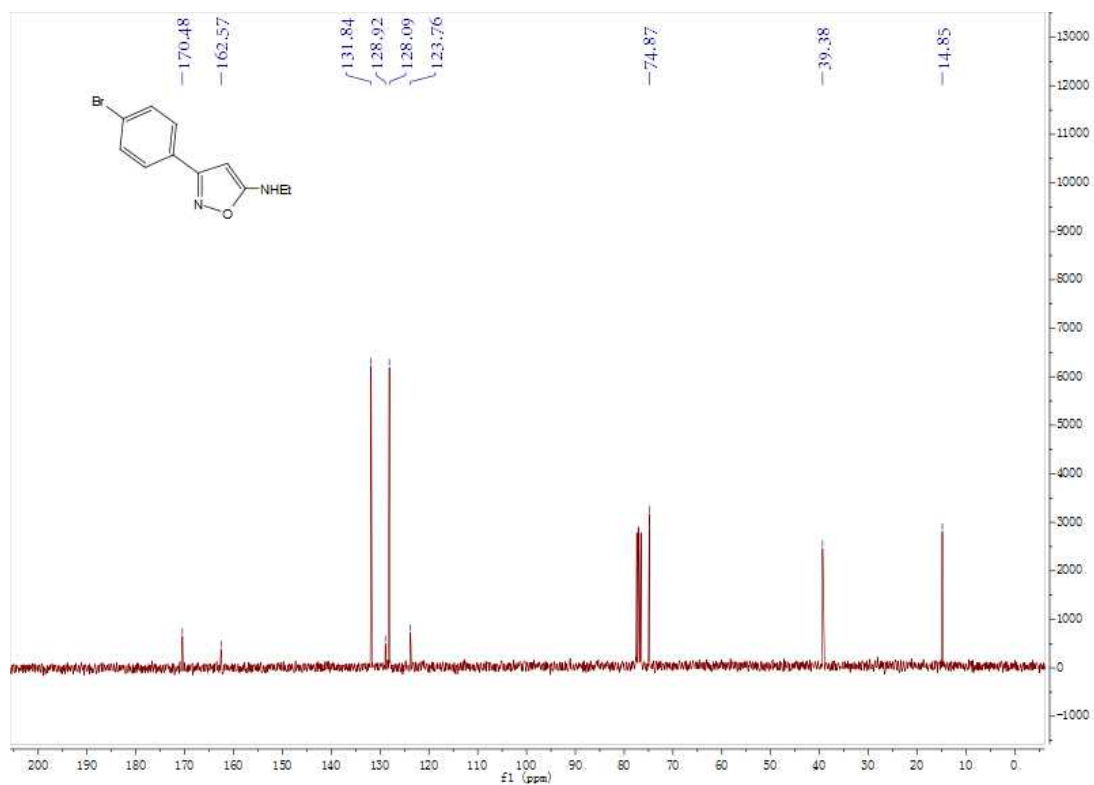
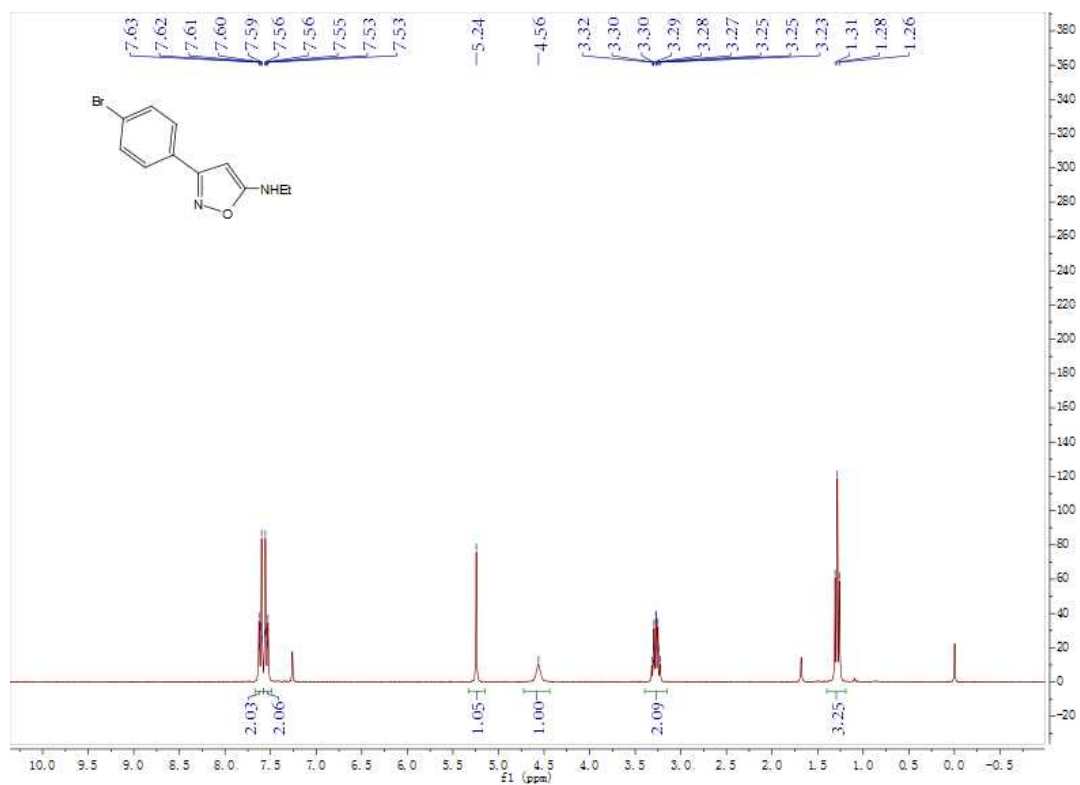
### 3-(4-chlorophenyl)-N-ethylisoxazol-5-amine (1c)



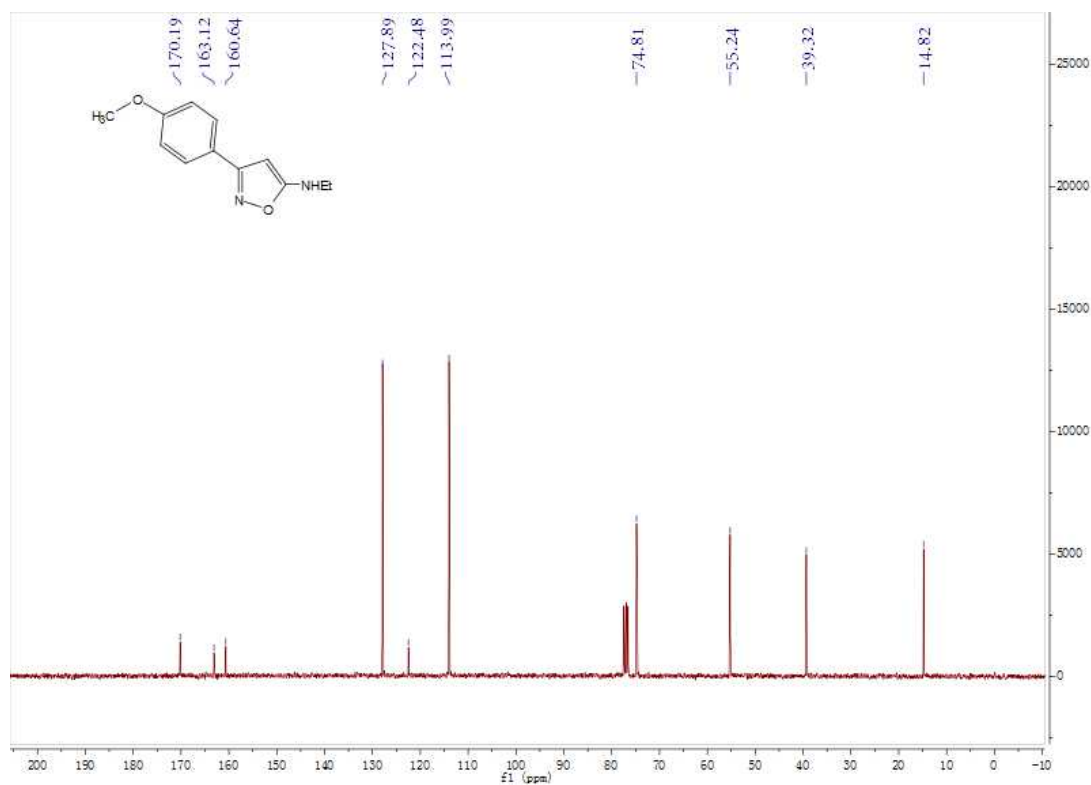
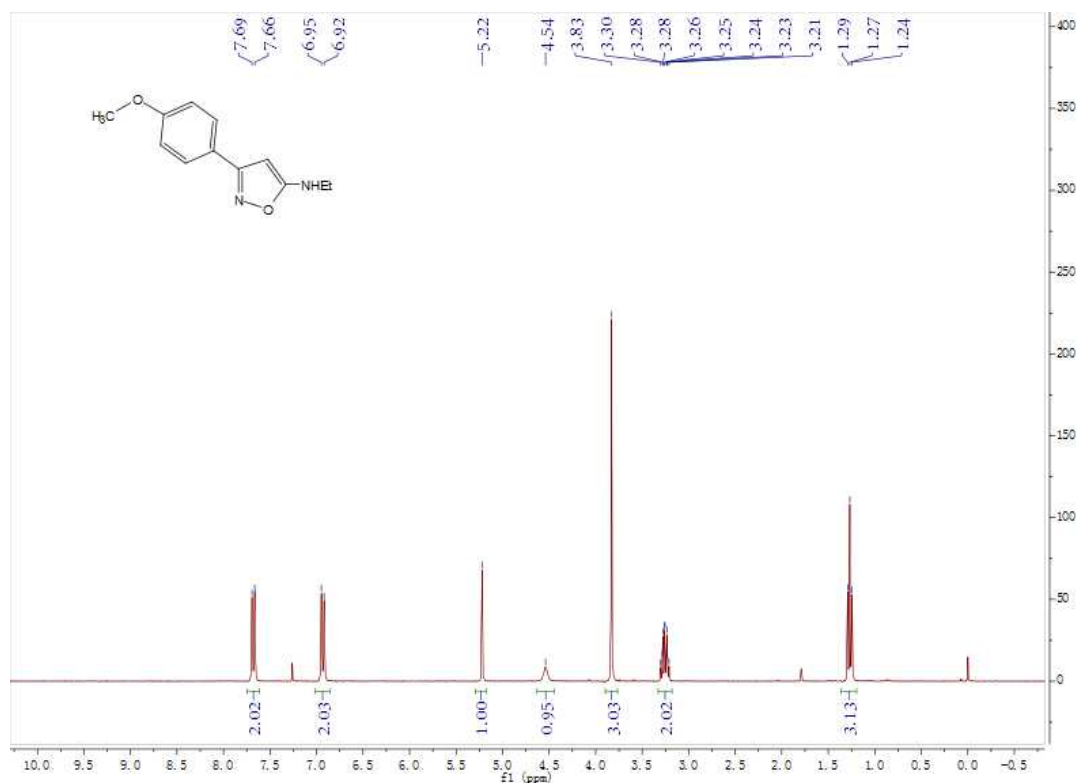
### 3-(3-chlorophenyl)-N-ethylisoxazol-5-amine (1d)



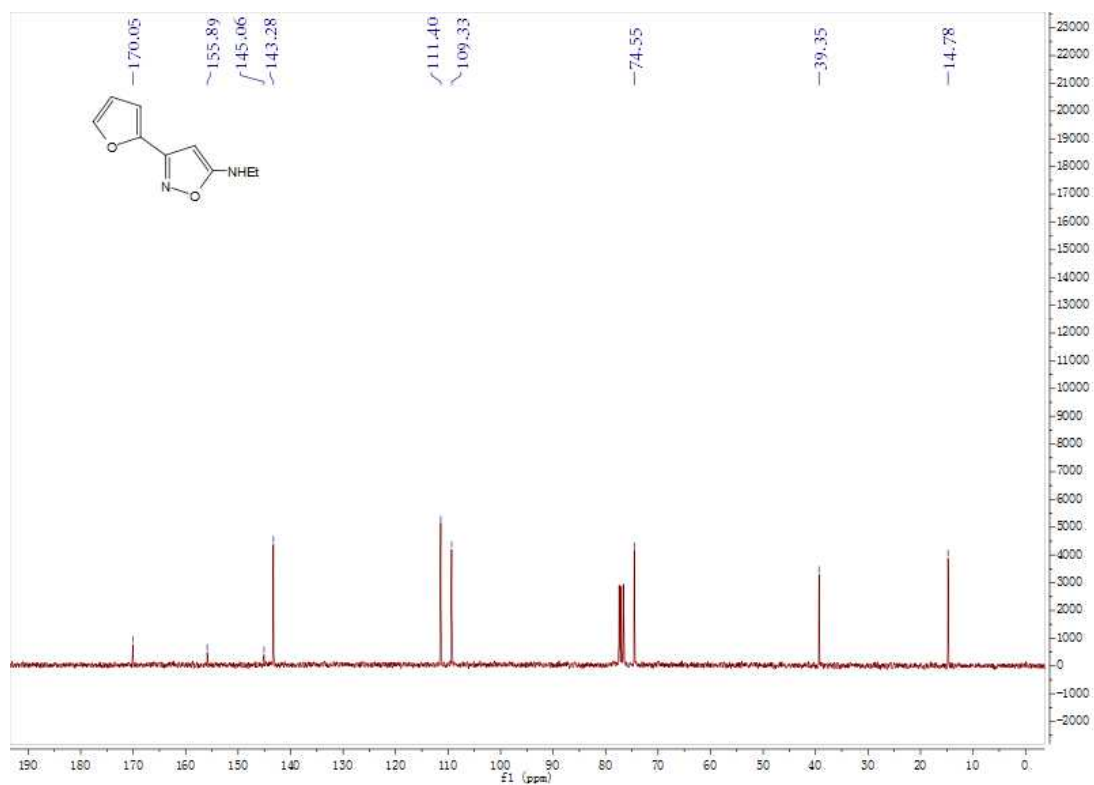
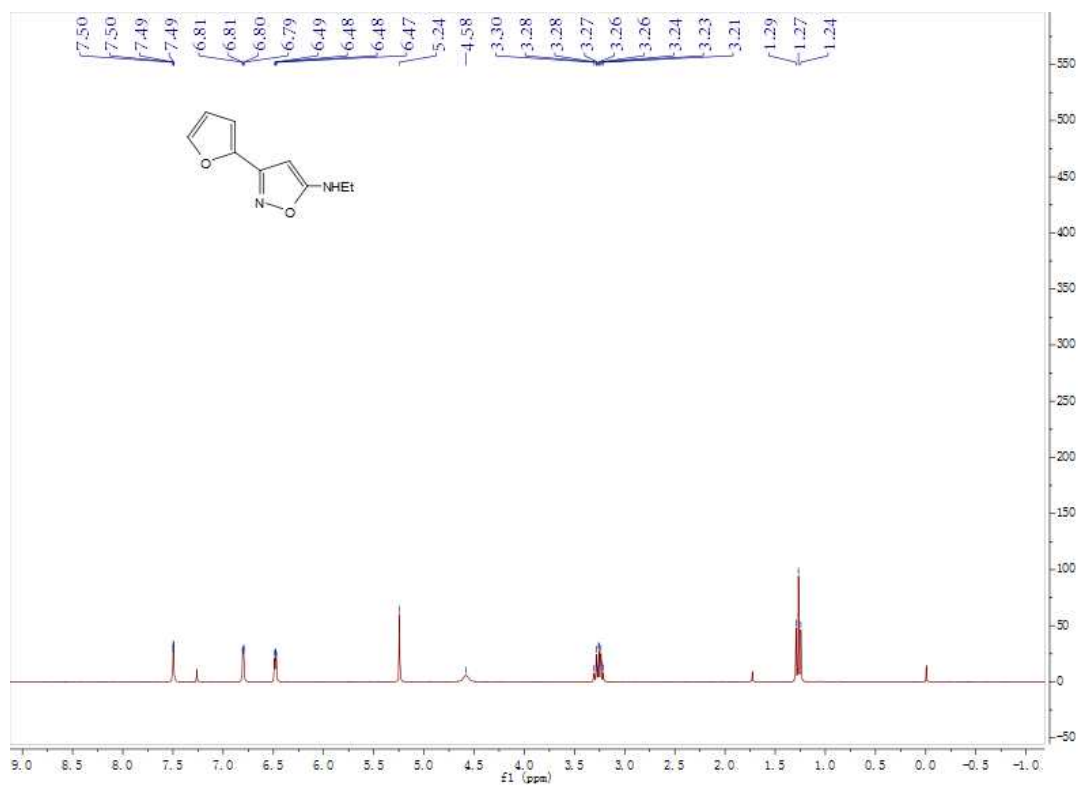
### 3-(4-bromophenyl)-N-ethylisoxazol-5-amine (1e)



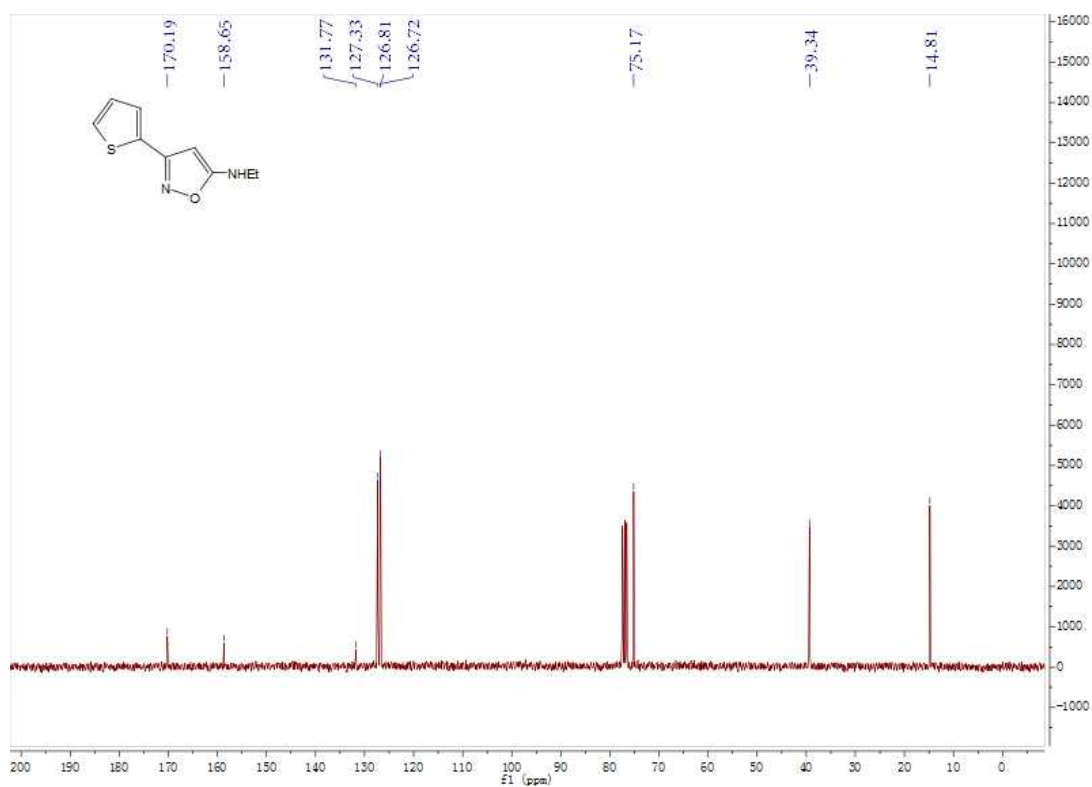
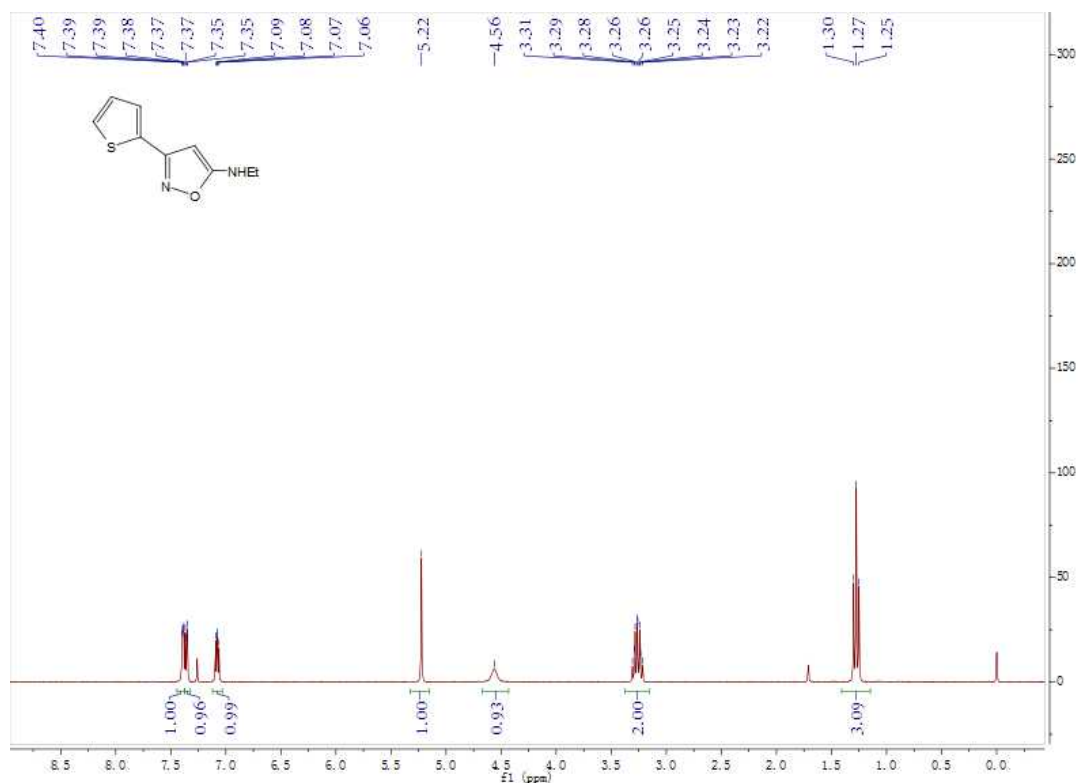
# **N-ethyl-3-(4-methoxyphenyl)isoxazol-5-amine (1f)**



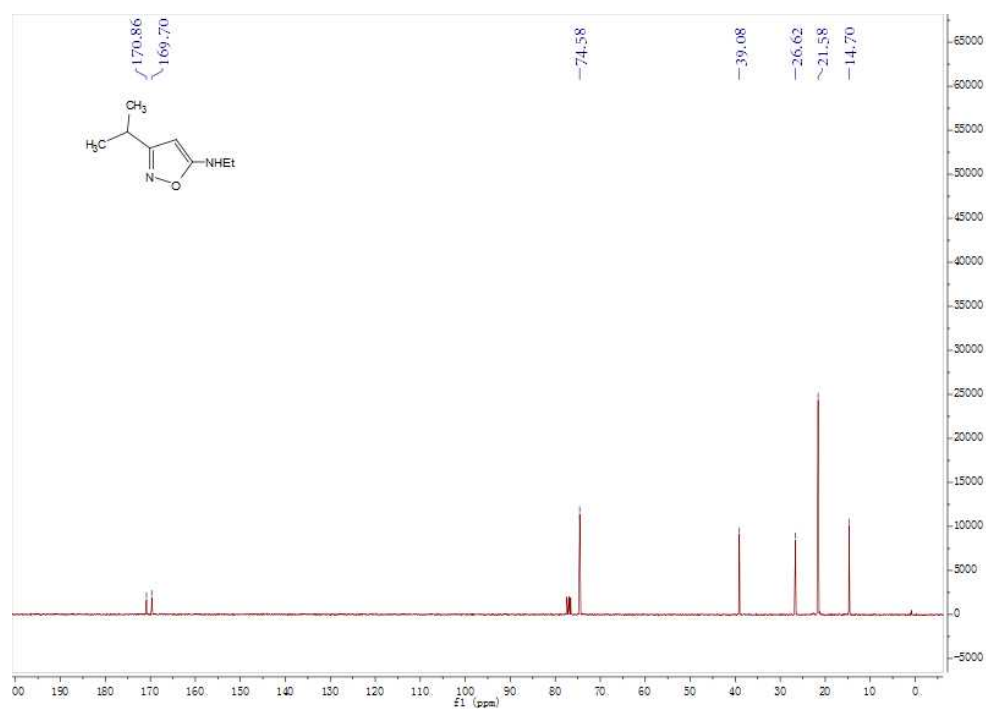
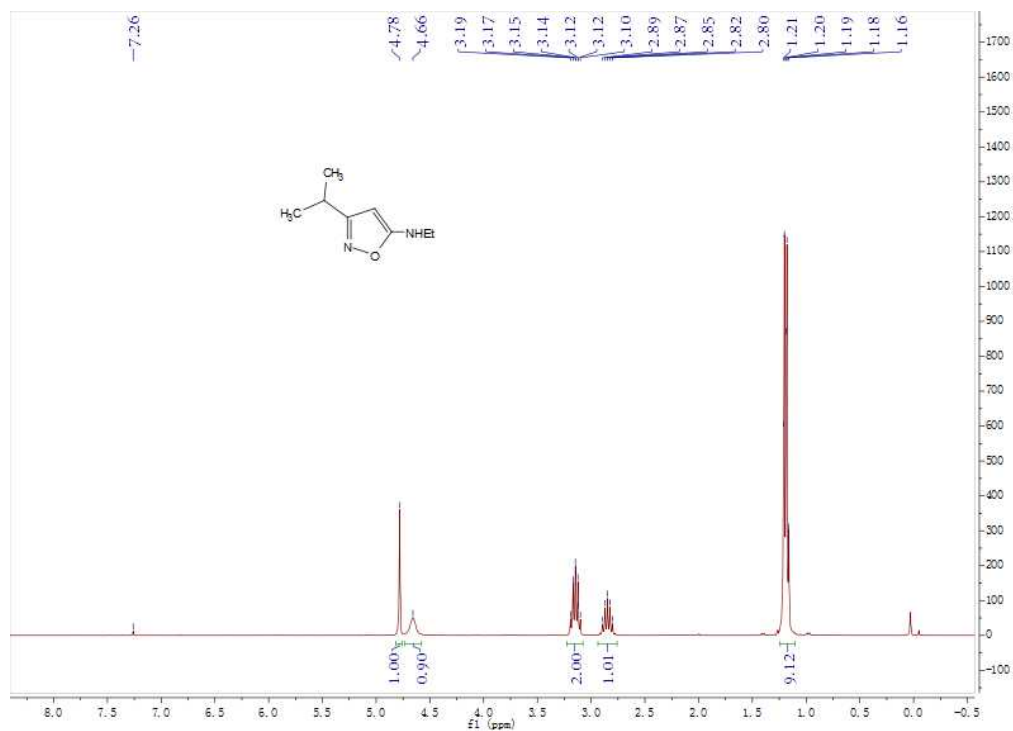
# N-ethyl-3-(furan-2-yl)isoxazol-5-amine (1g)



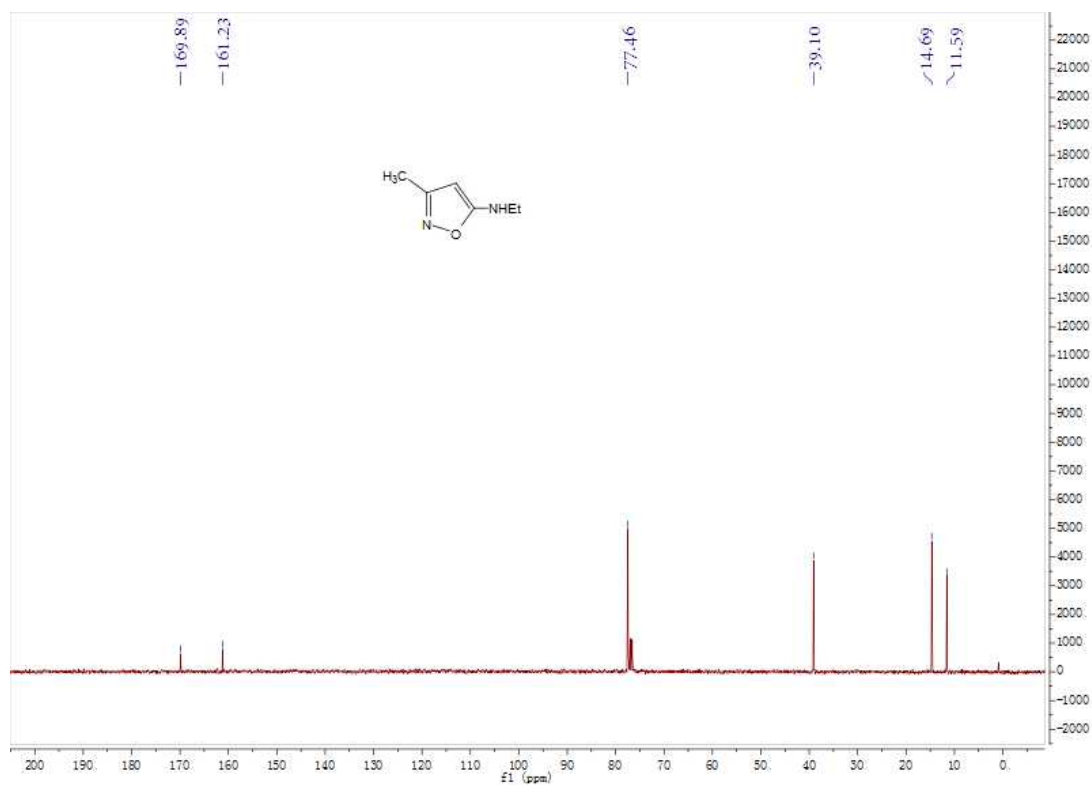
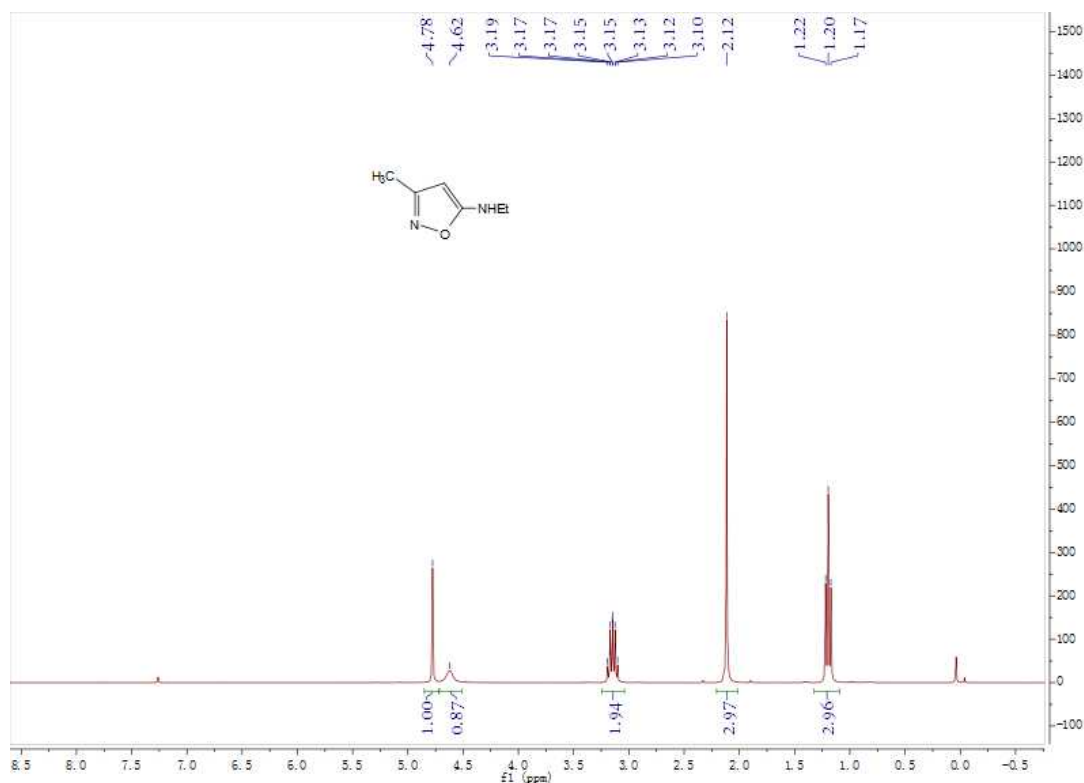
# N-ethyl-3-(thiophen-2-yl)isoxazol-5-amine (1h)



# N-ethyl-3-isopropylisoxazol-5-amine (1i)

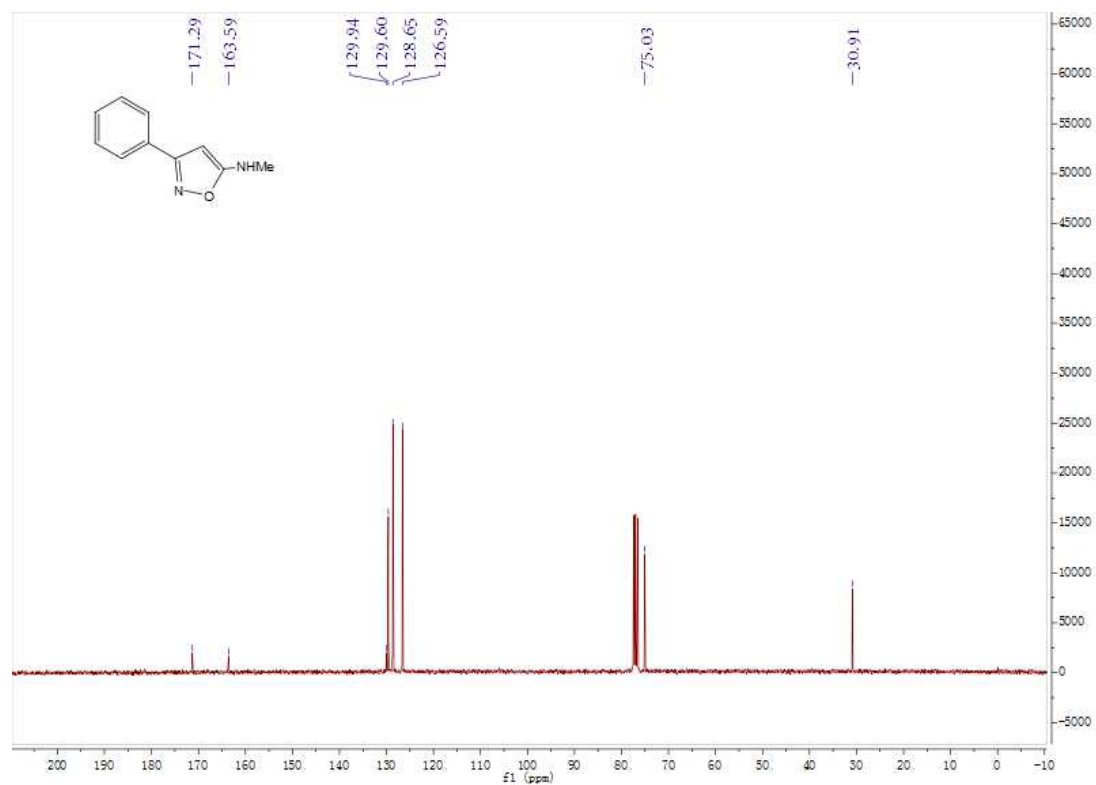
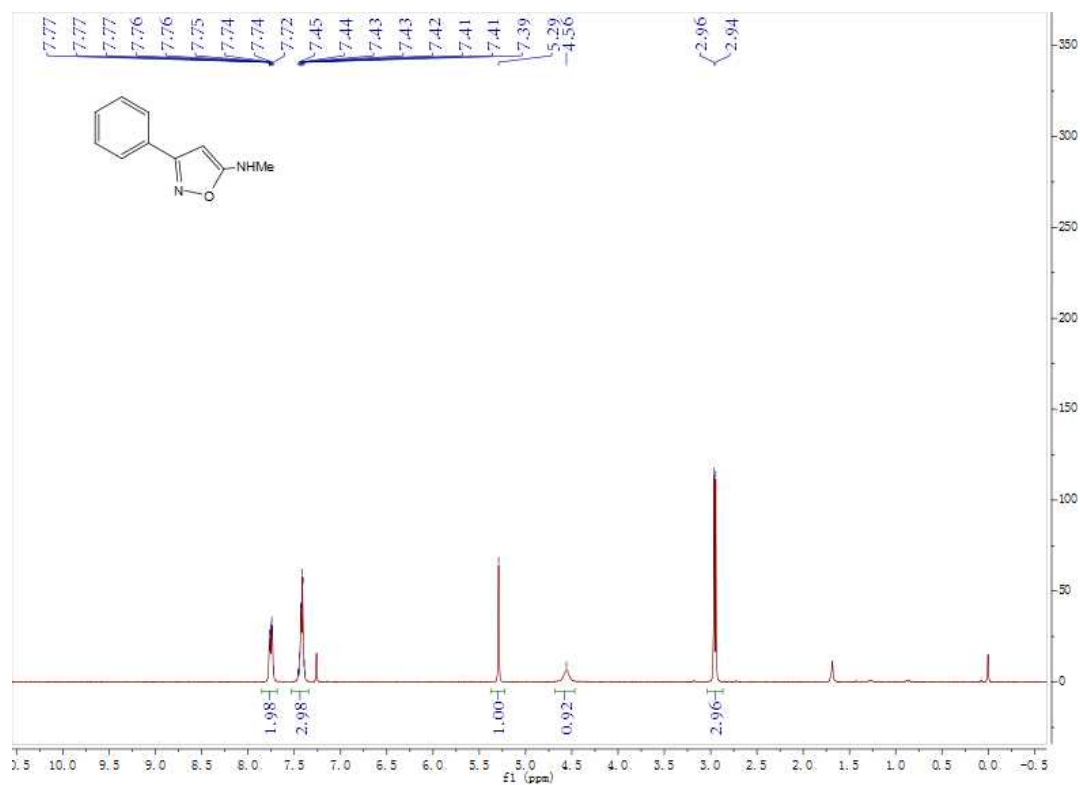


# N-ethyl-3-methylisoxazol-5-amine (1j)

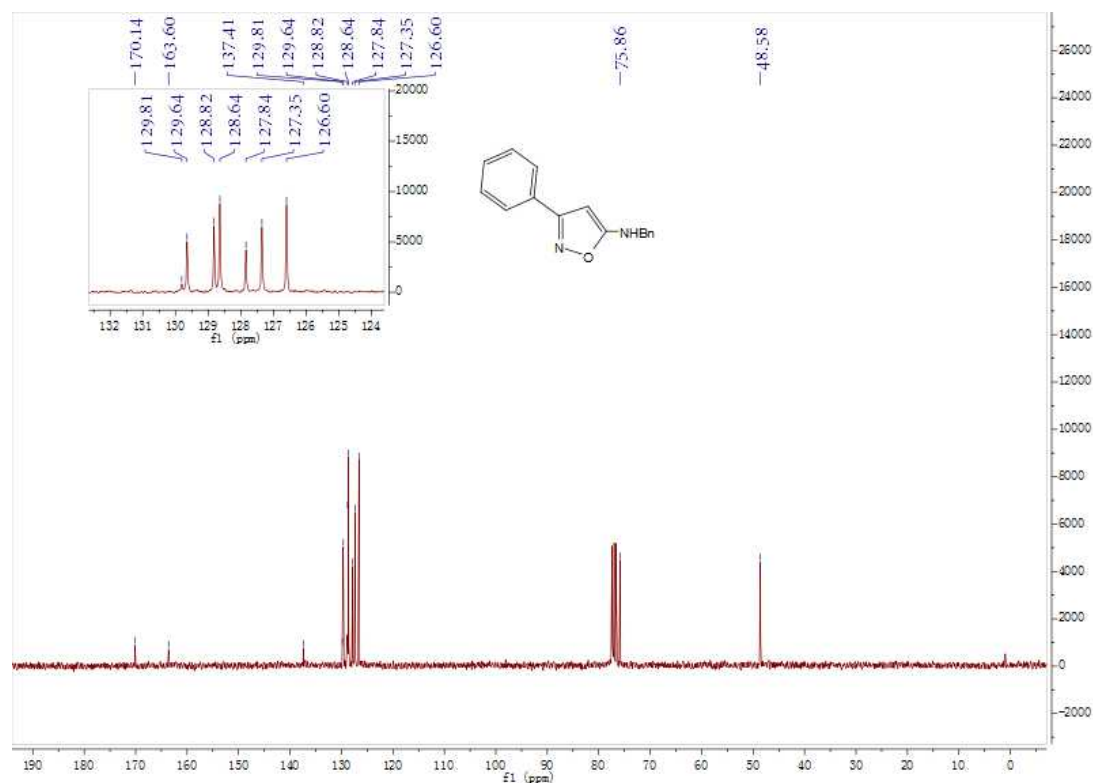
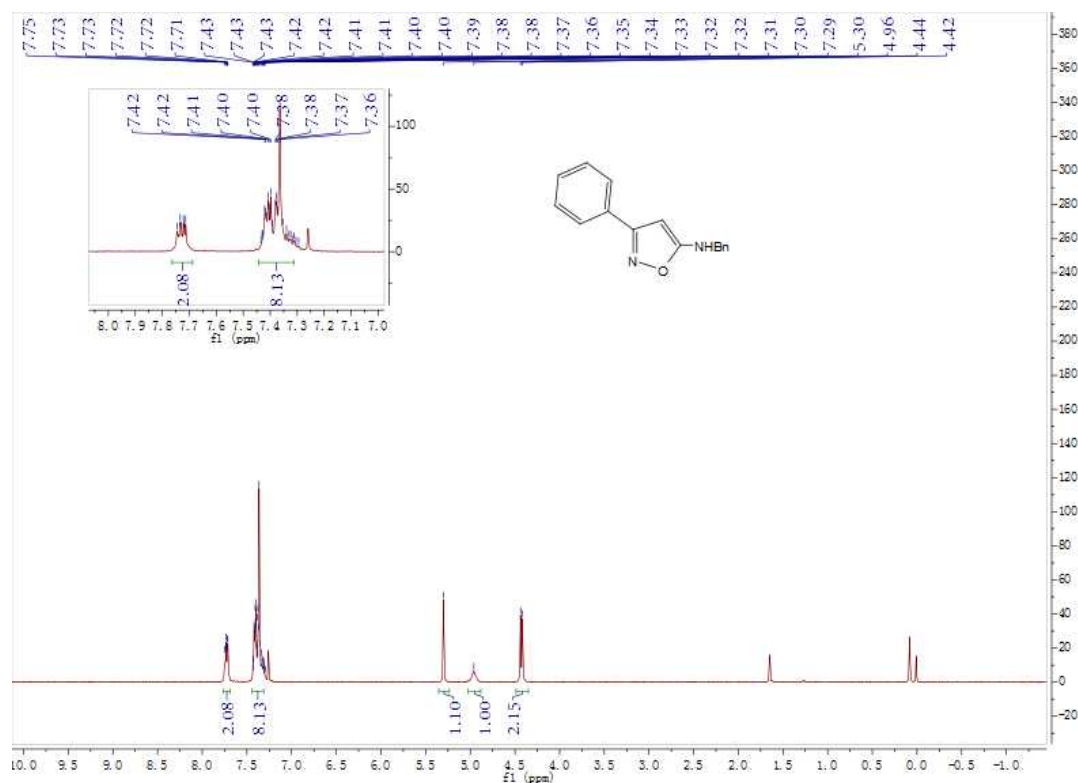




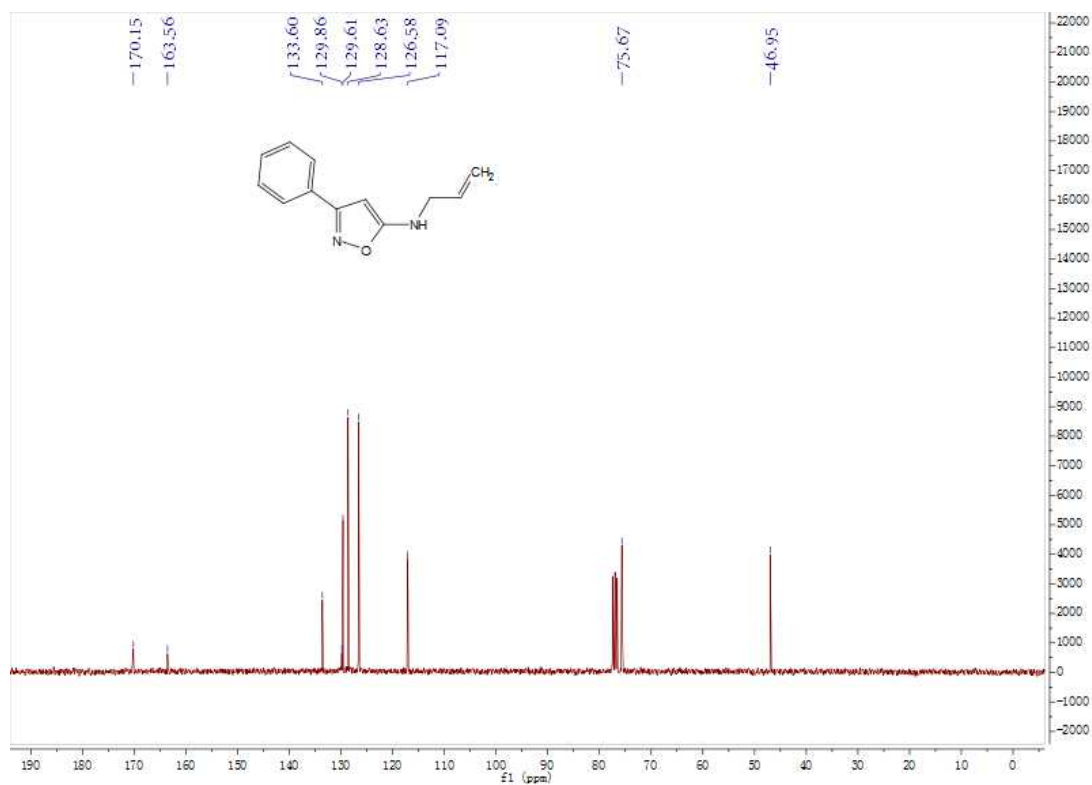
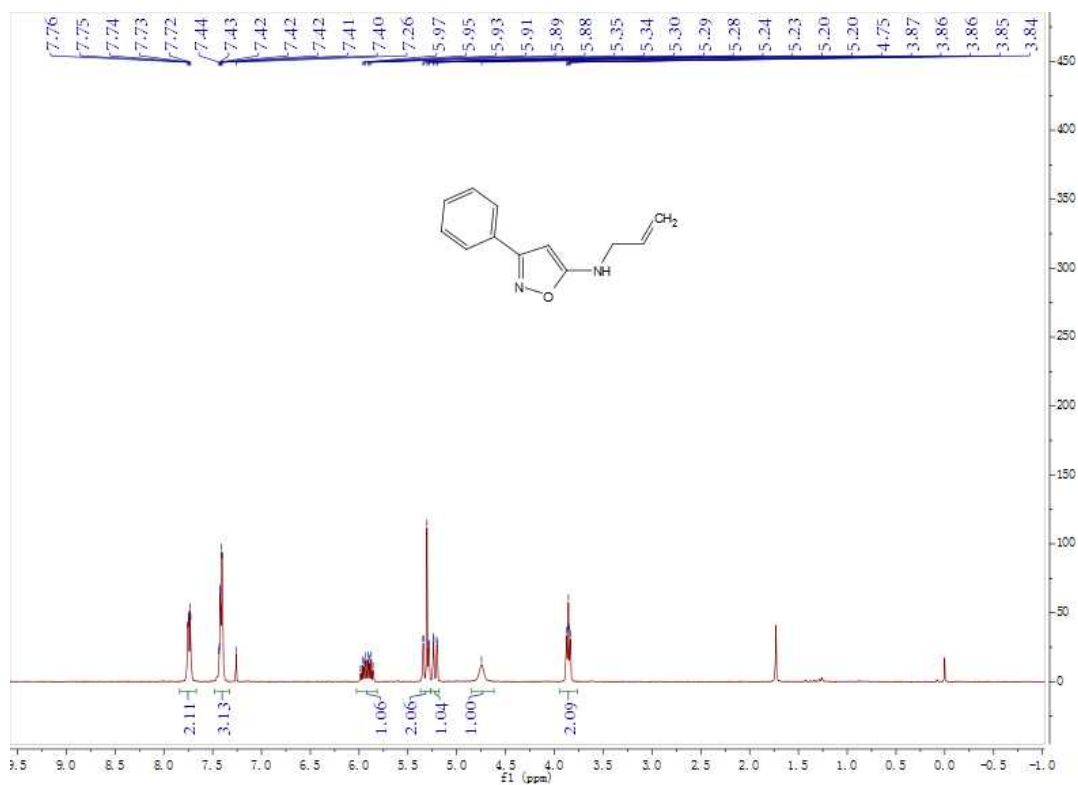
### N-methyl-3-phenylisoxazol-5-amine (1k)



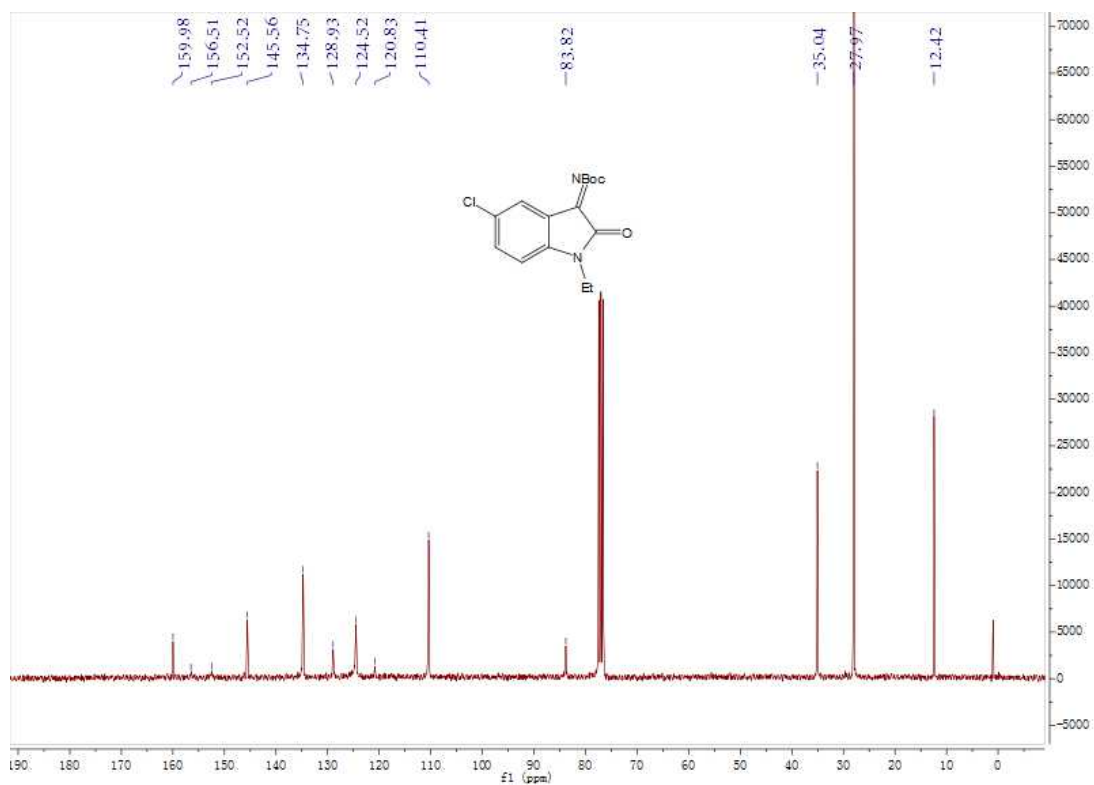
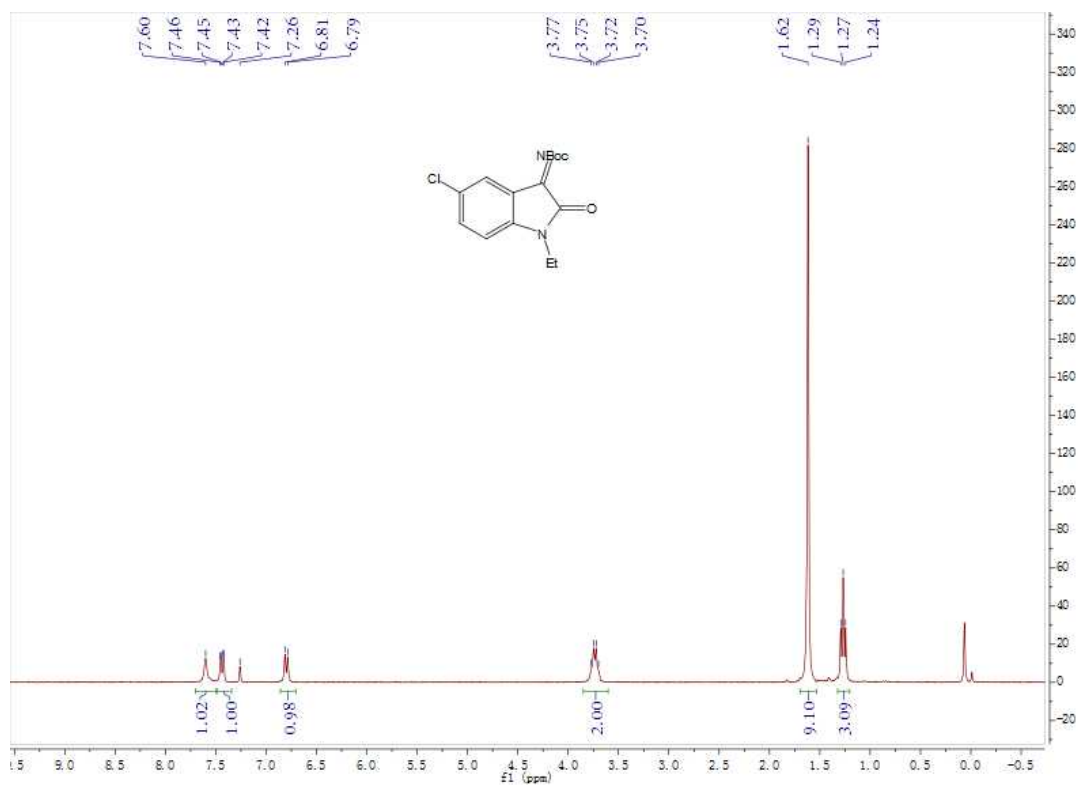
# N-benzyl-3-phenylisoxazol-5-amine (11)



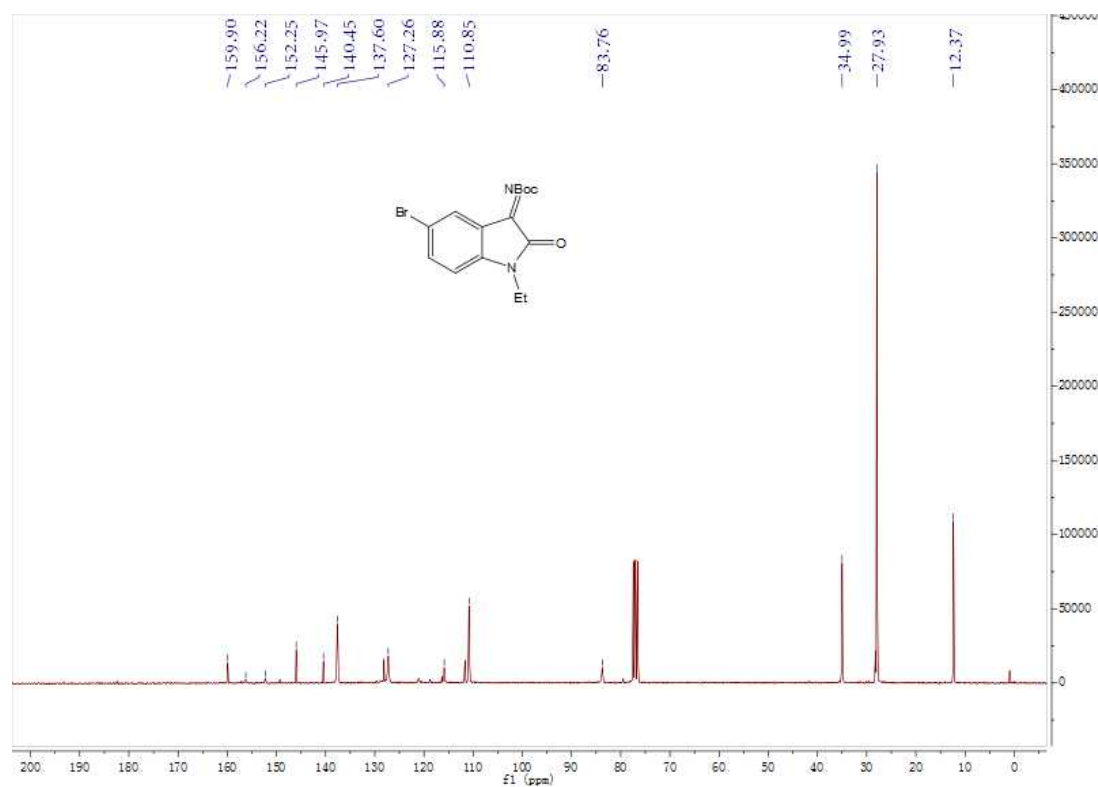
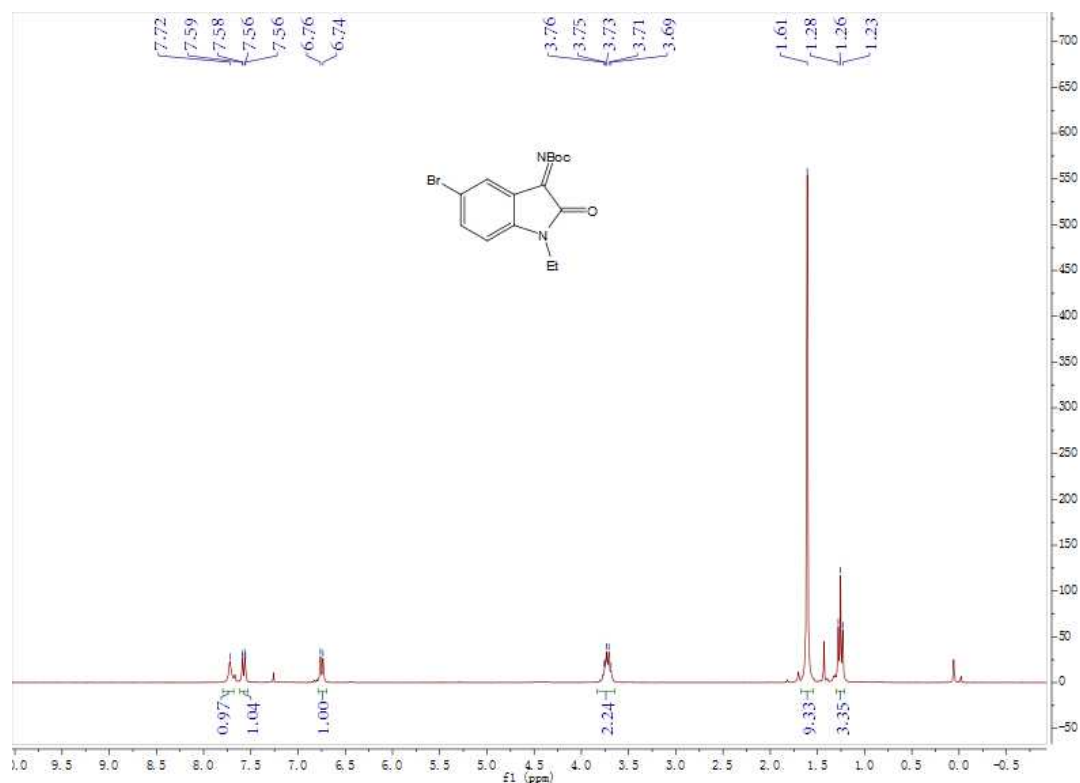
# N-allyl-3-phenylisoxazol-5-amine (1m)



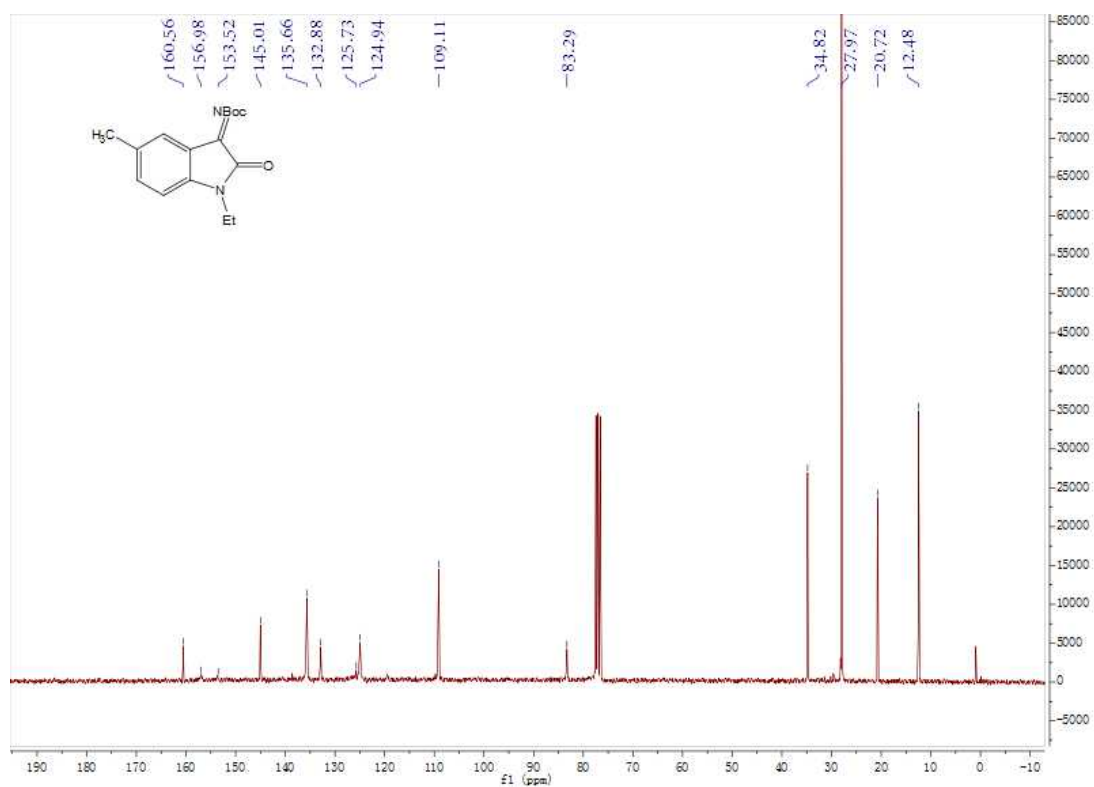
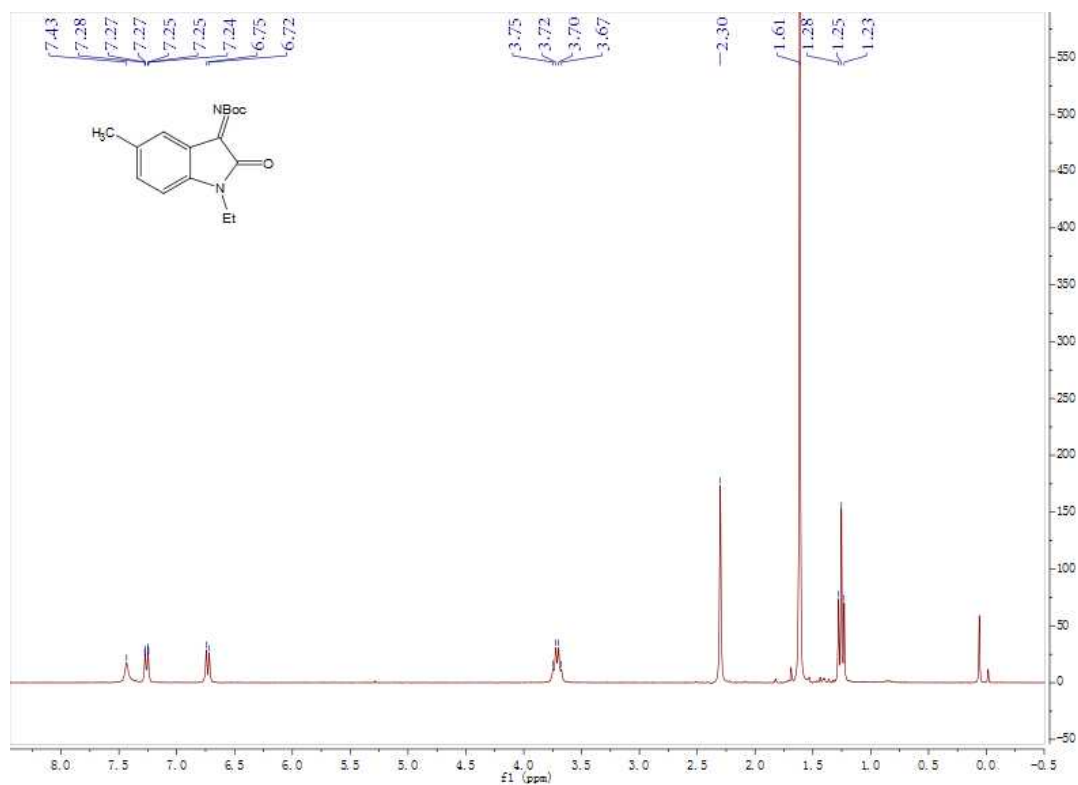
**tert-Butyl 5-chloro-1-ethyl-2-oxoindolin-3-ylidenecarbamate (2b)**



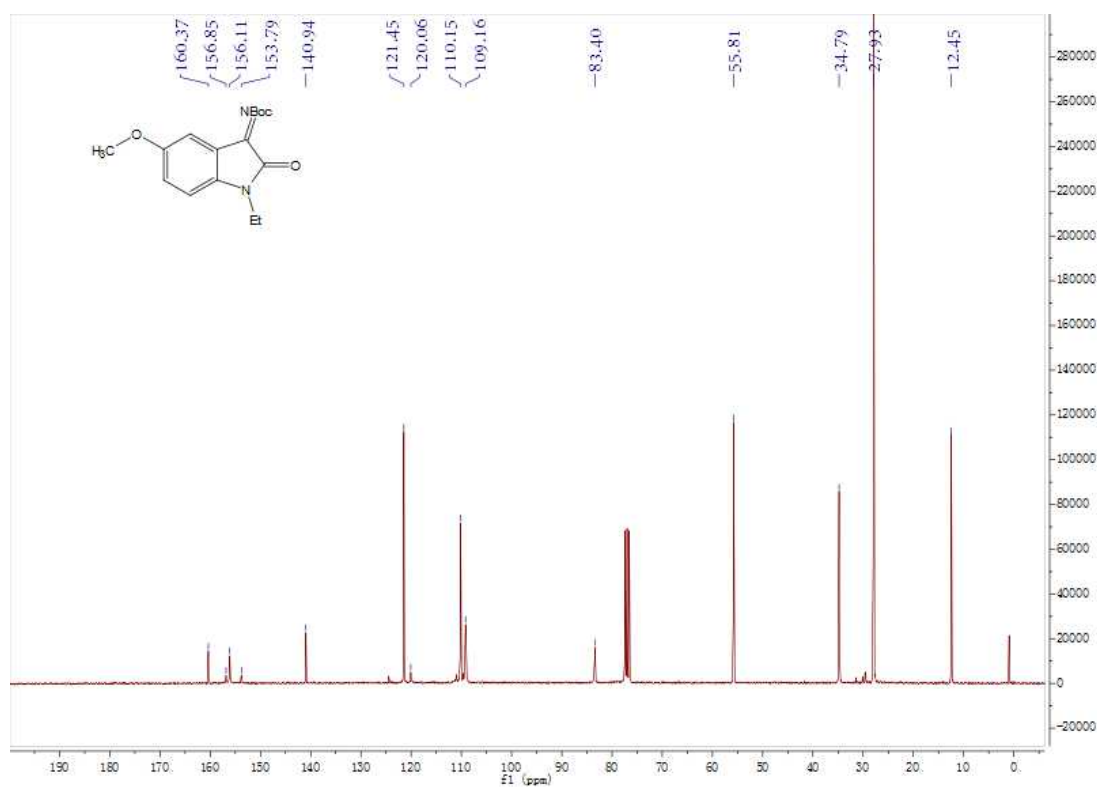
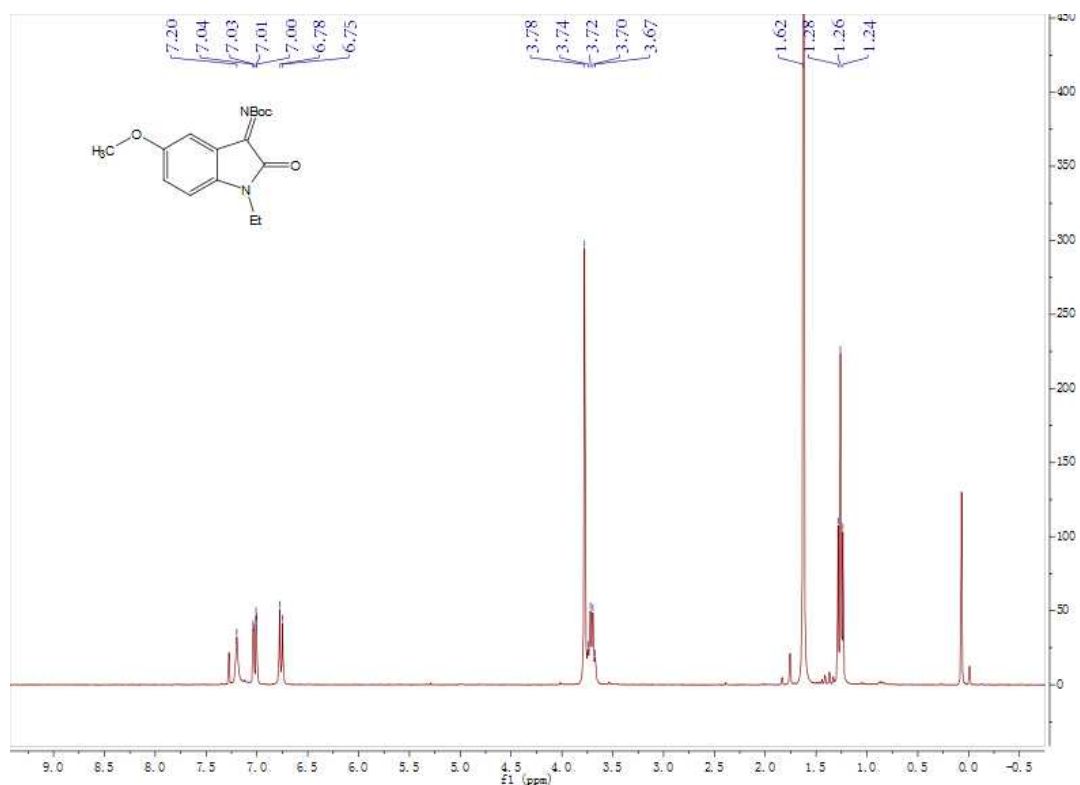
**tert-Butyl 5-bromo-1-ethyl-2-oxoindolin-3-ylidenecarbamate (2c)**



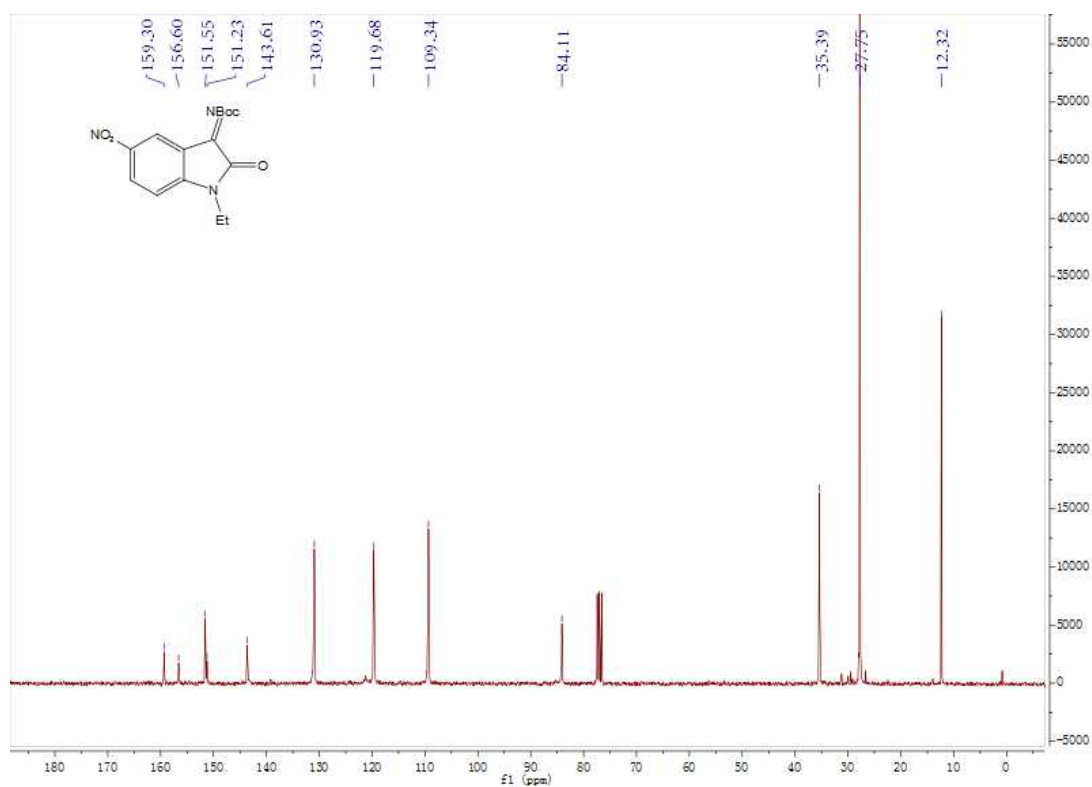
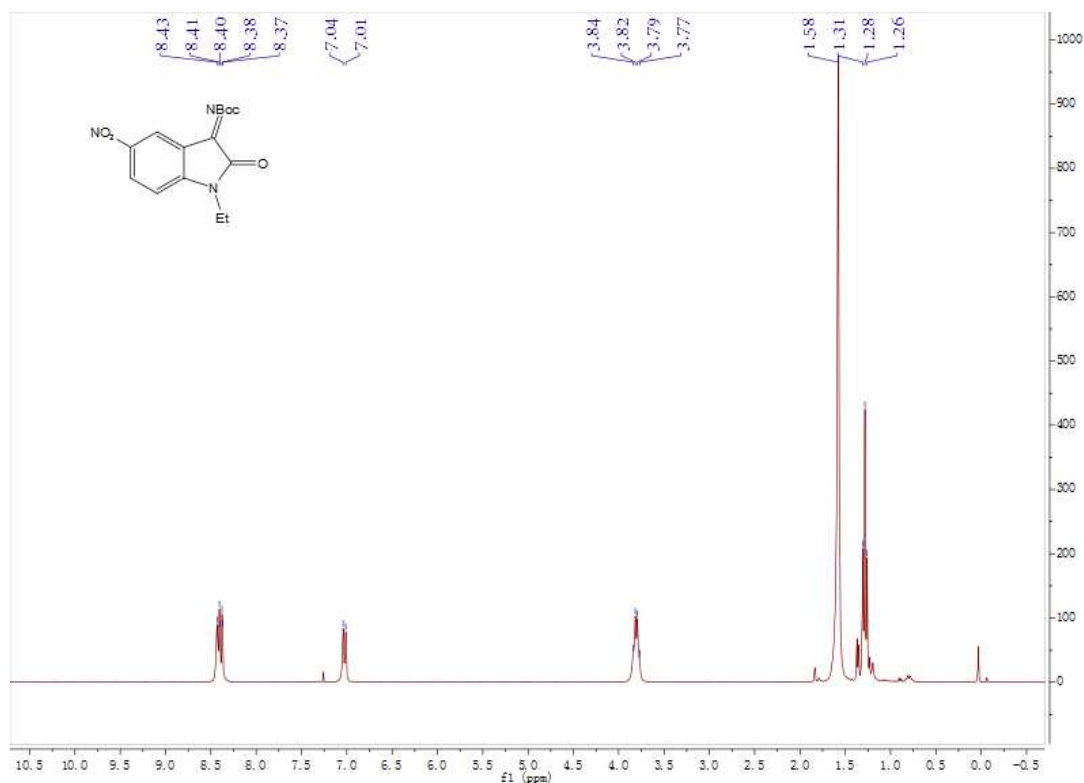
**tert-Butyl 1-ethyl-5-methyl-2-oxindolin-3-ylidenecarbamate (2d)**



**tert-Butyl 1-ethyl-5-methoxy-2-oxoindolin-3-ylidenecarbamate (2e)**

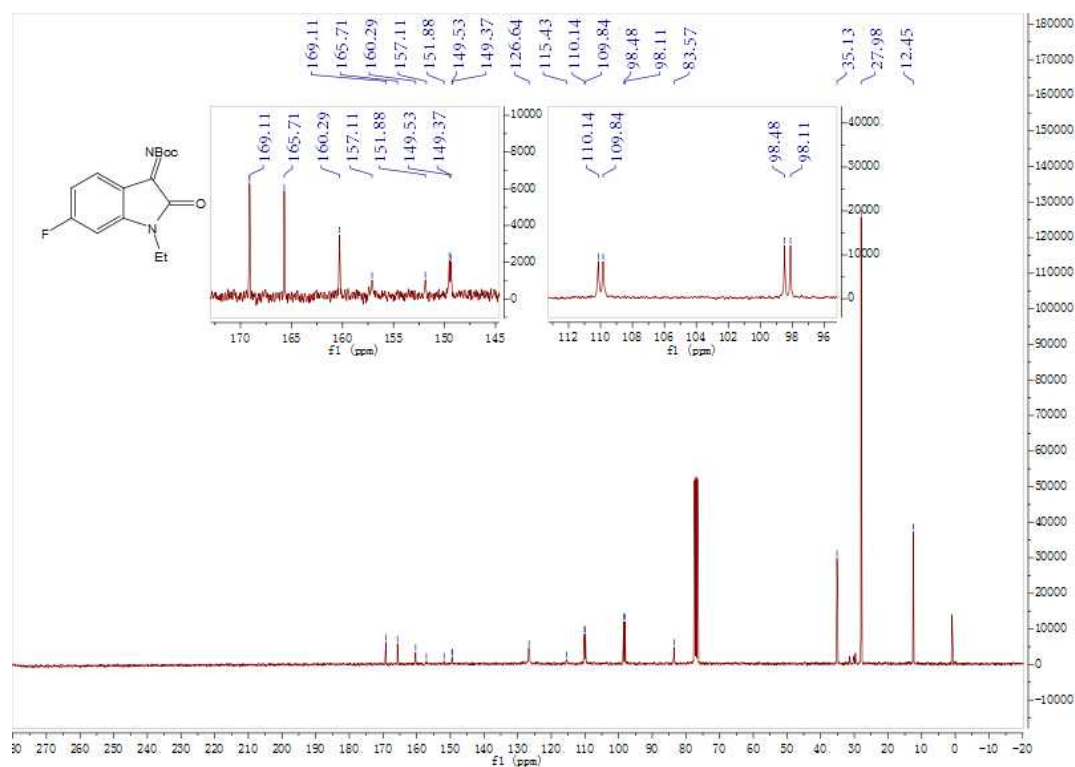
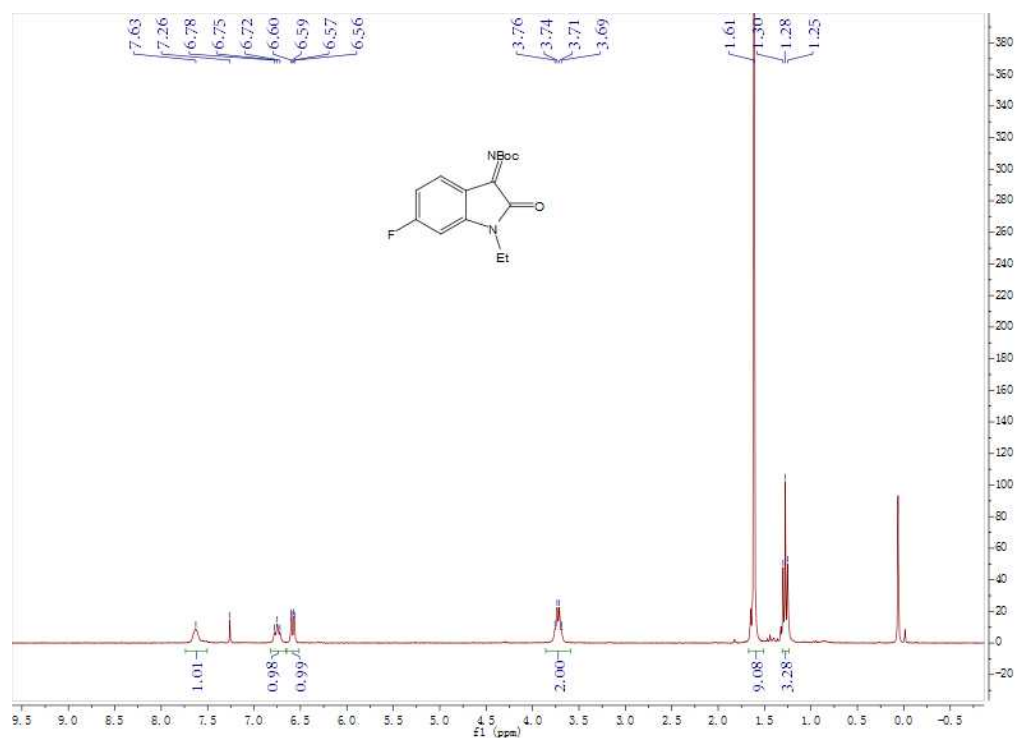


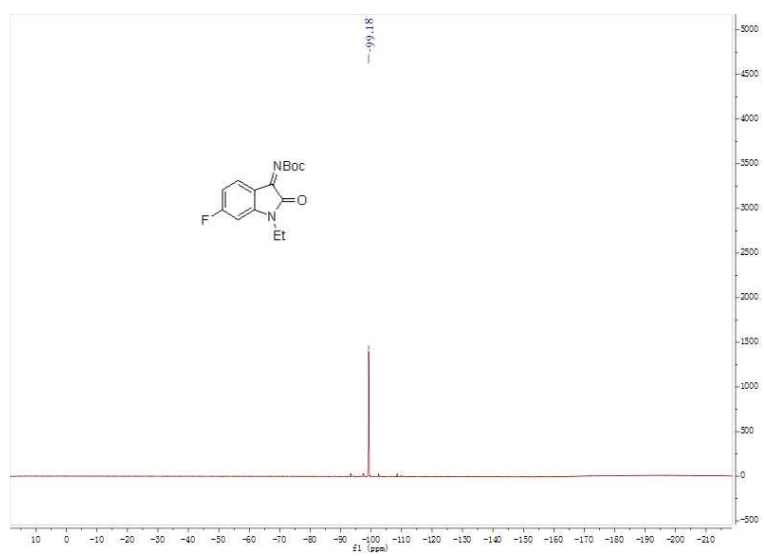
**tert-Butyl 1-ethyl-5-nitro-2-oxindolin-3-ylidenecarbamate (2f)**



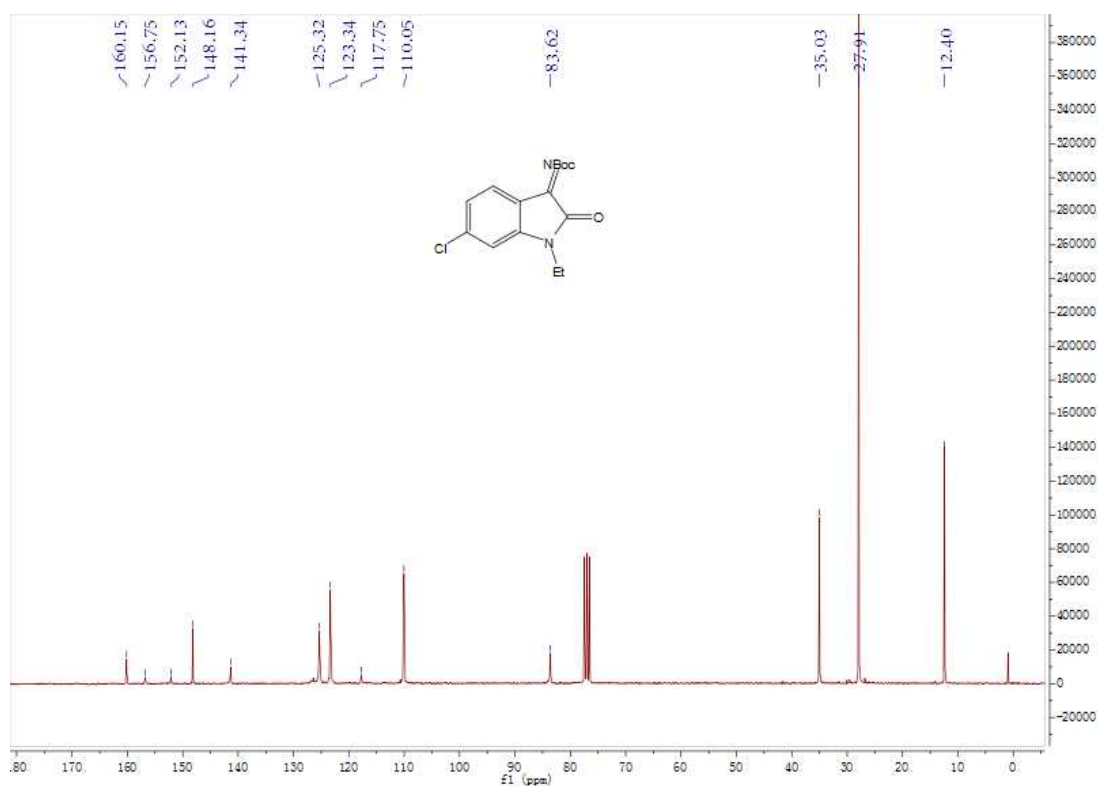
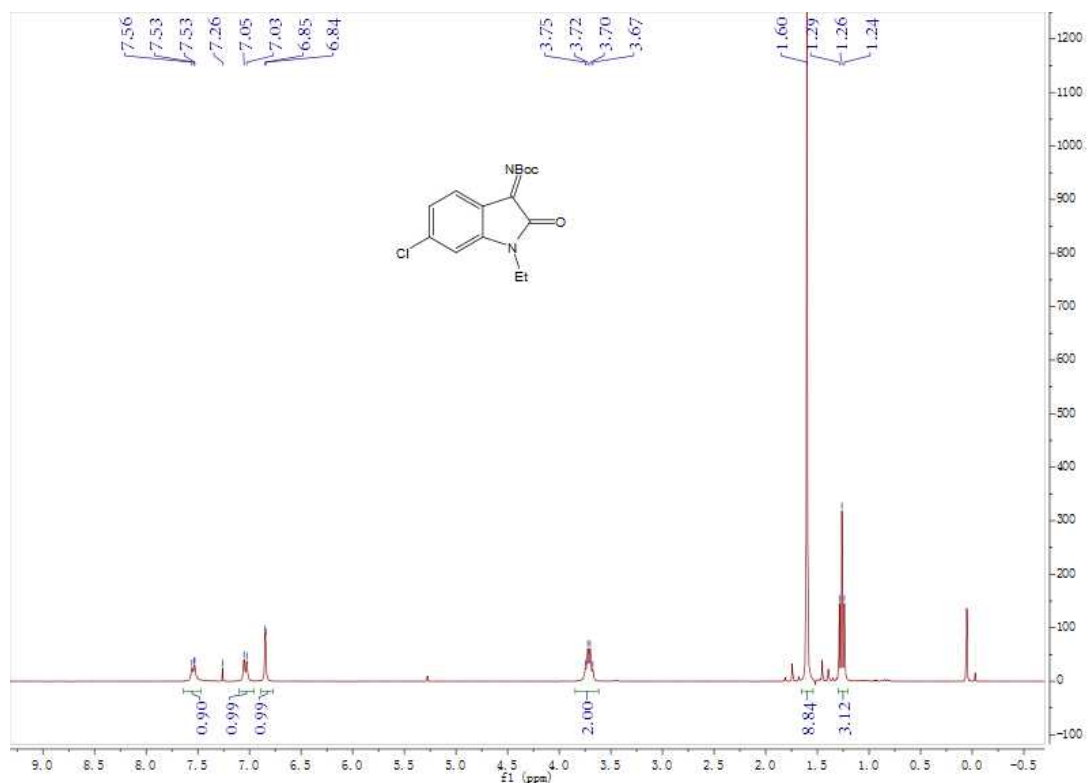


**tert-Butyl 1-ethyl-6-fluoro-2-oxoindolin-3-ylidenecarbamate (2g)**

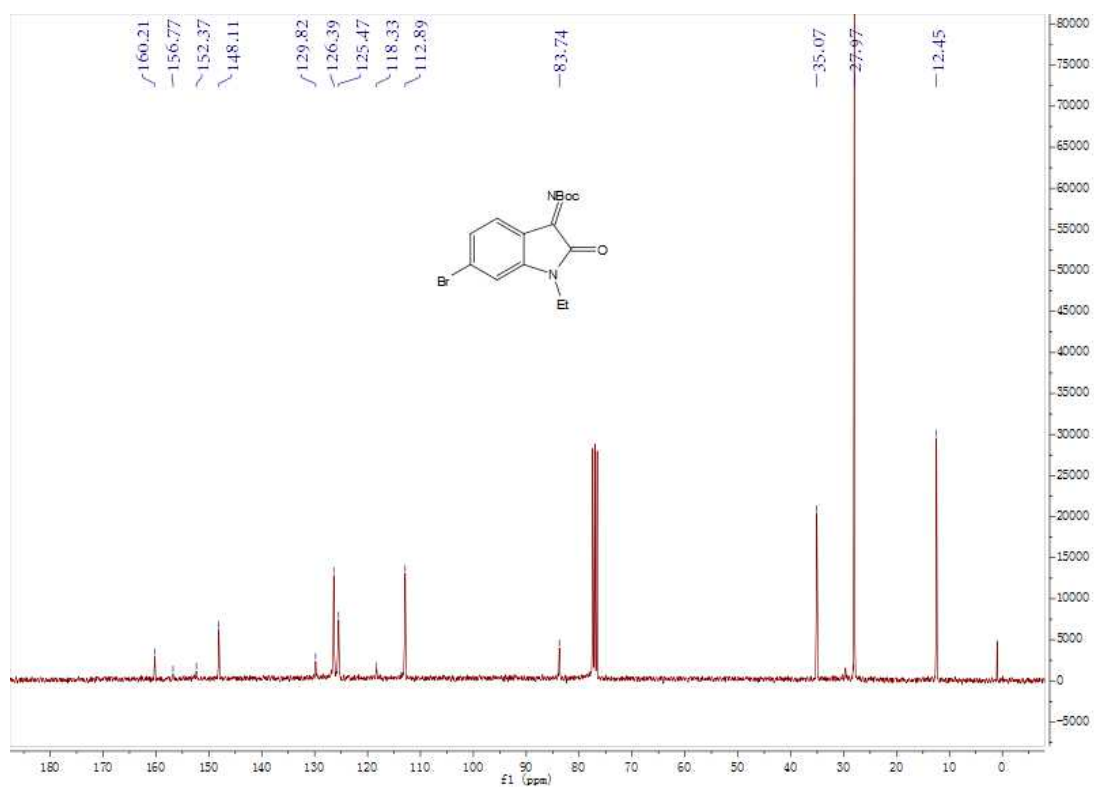
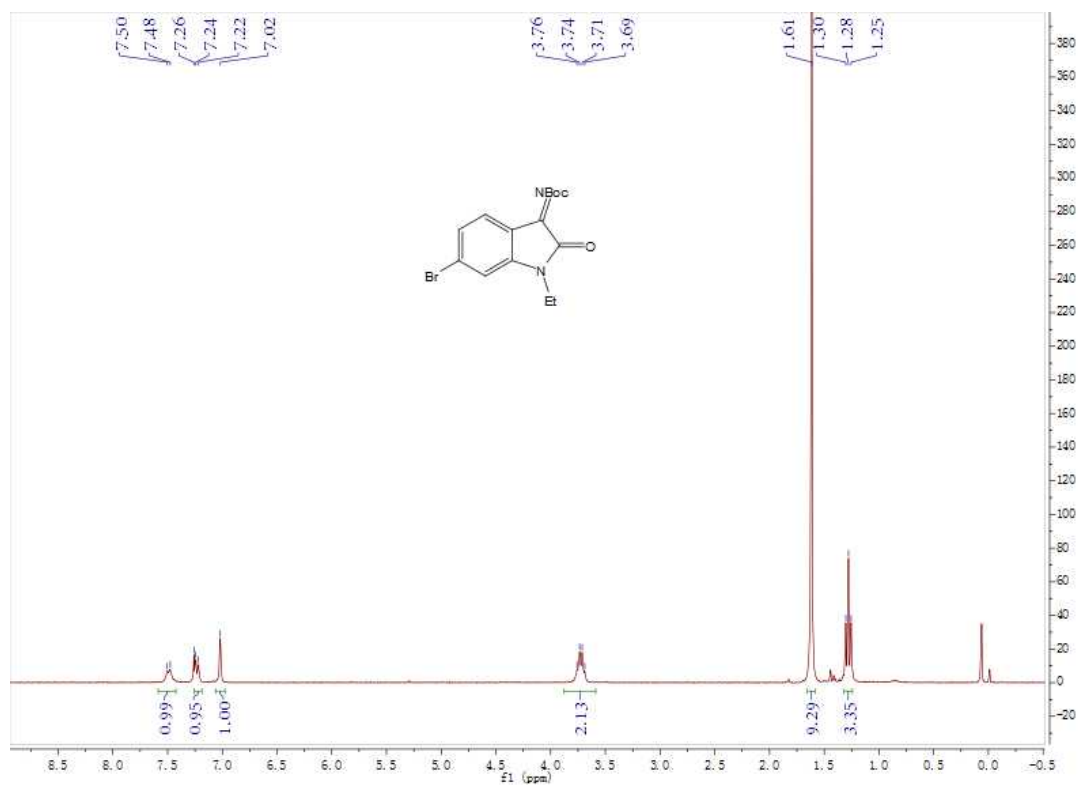




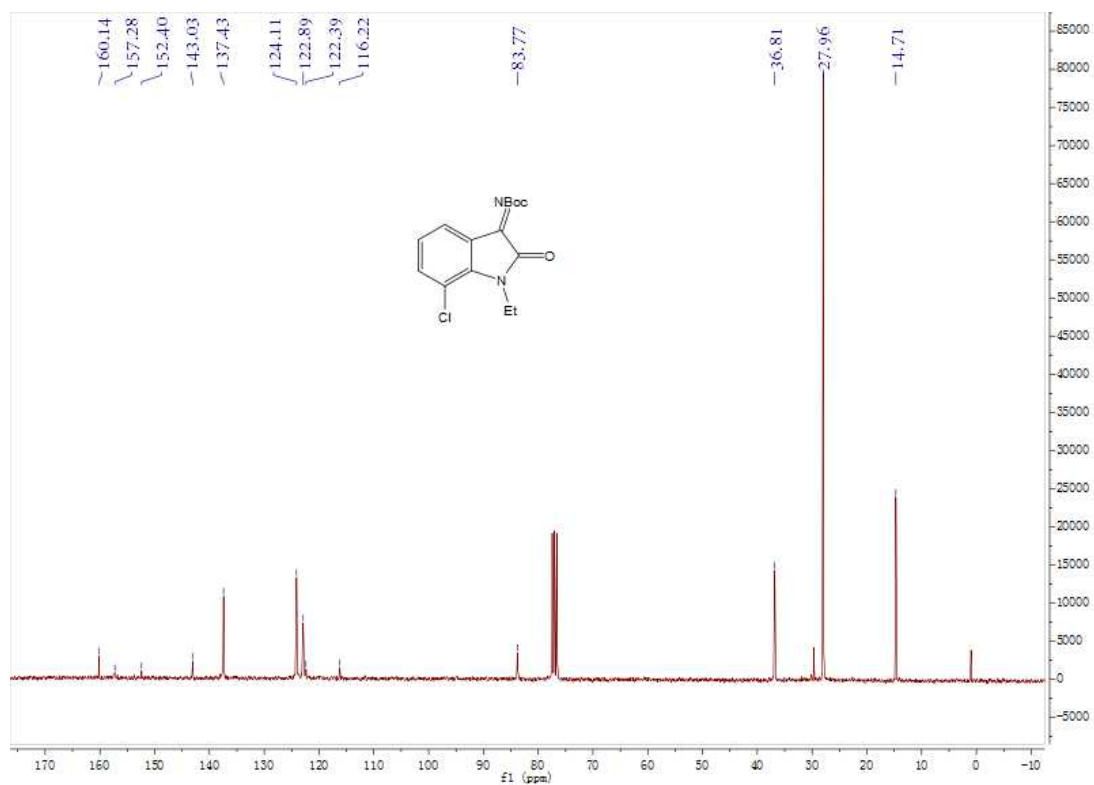
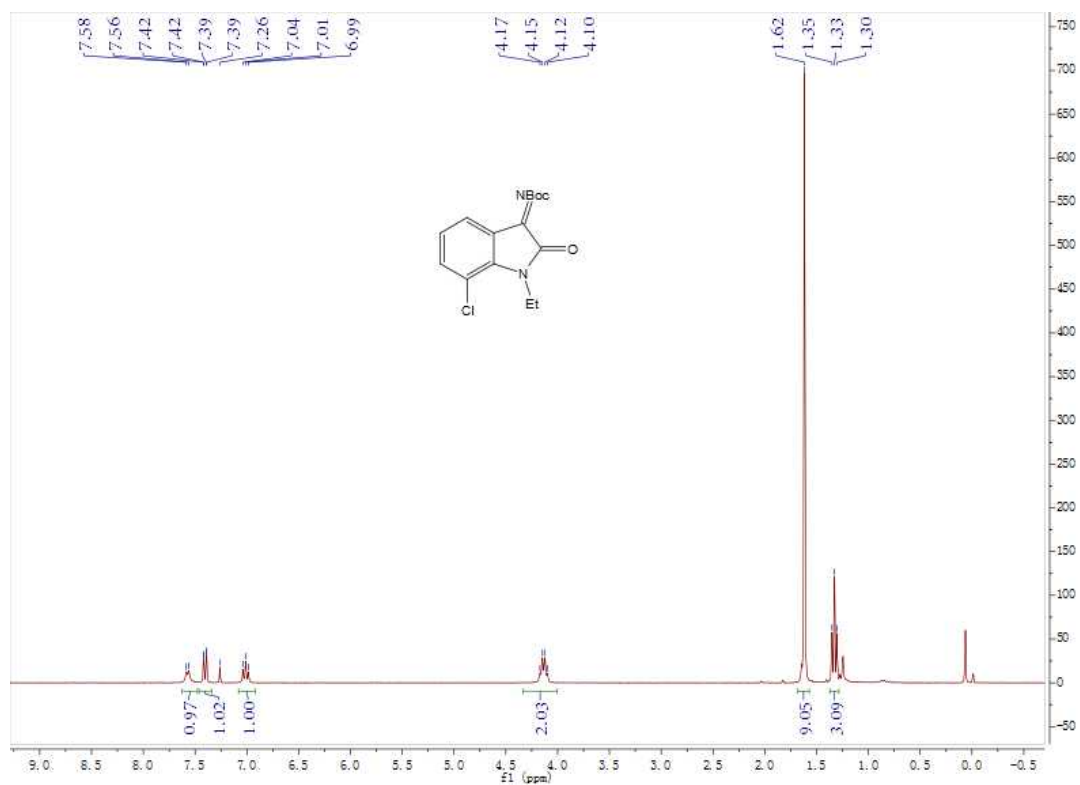
**tert-Butyl 6-chloro-1-ethyl-2-oxindolin-3-ylidenecarbamate (2h)**



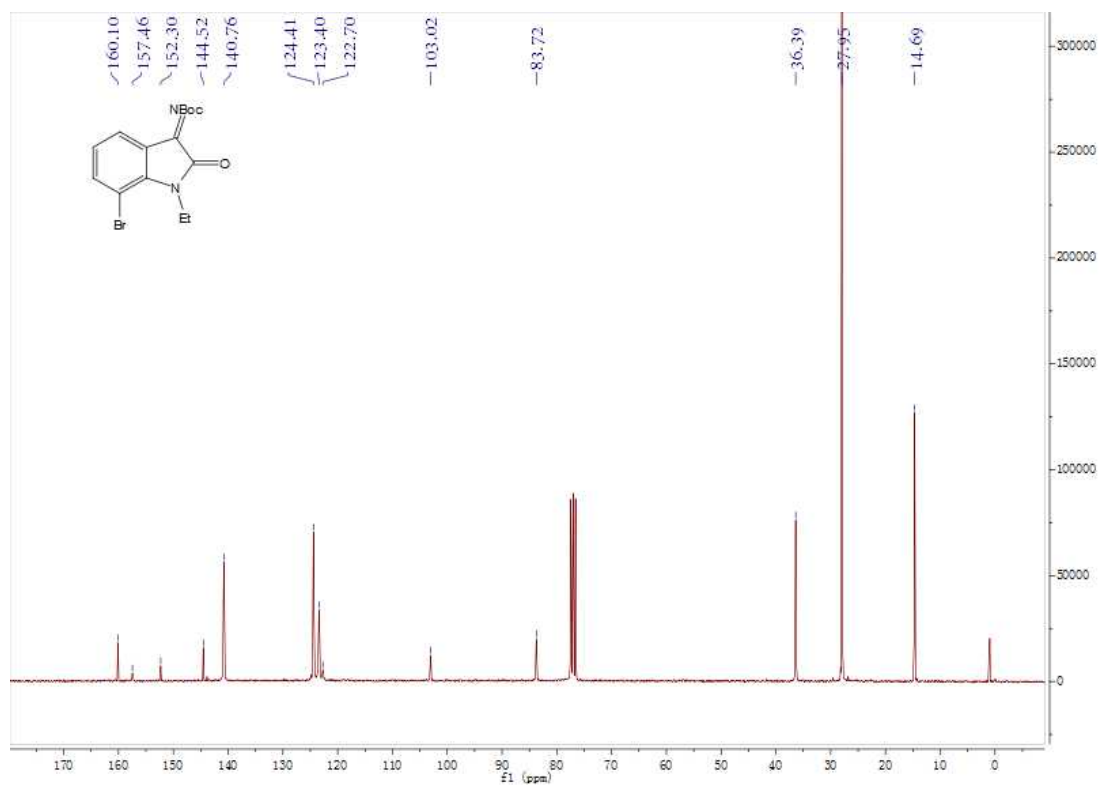
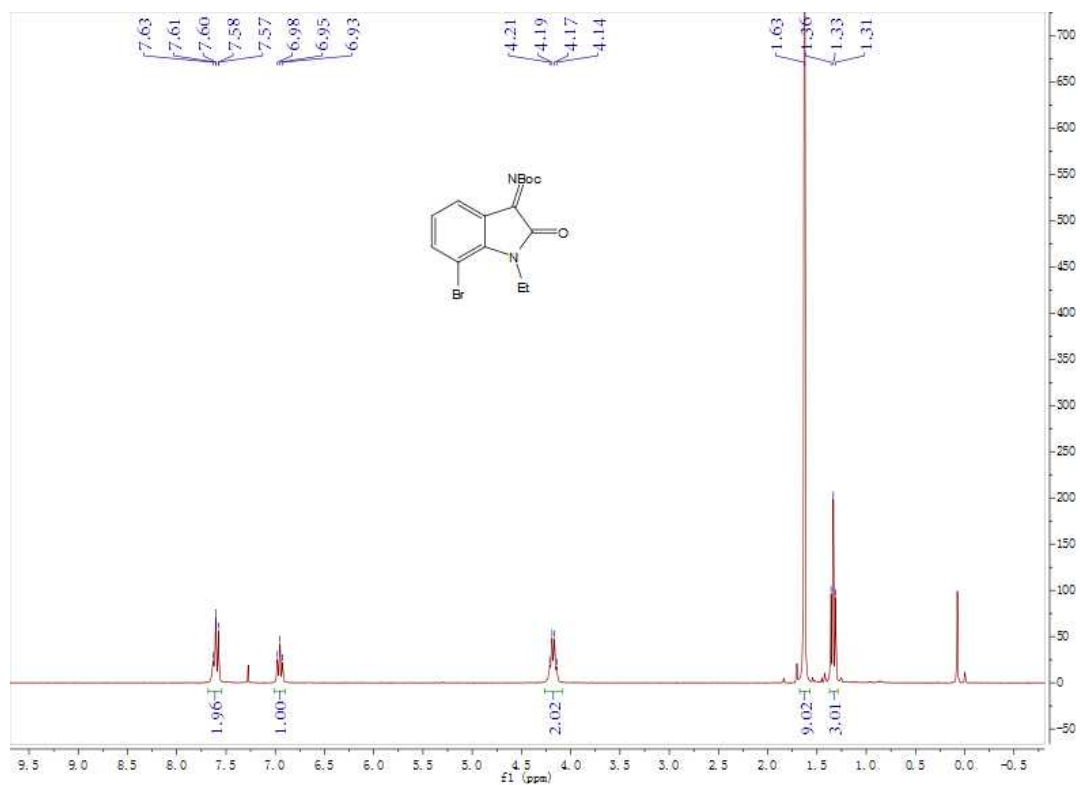
**tert-Butyl 6-bromo-1-ethyl-2-oxindolin-3-ylidenecarbamate (2i)**



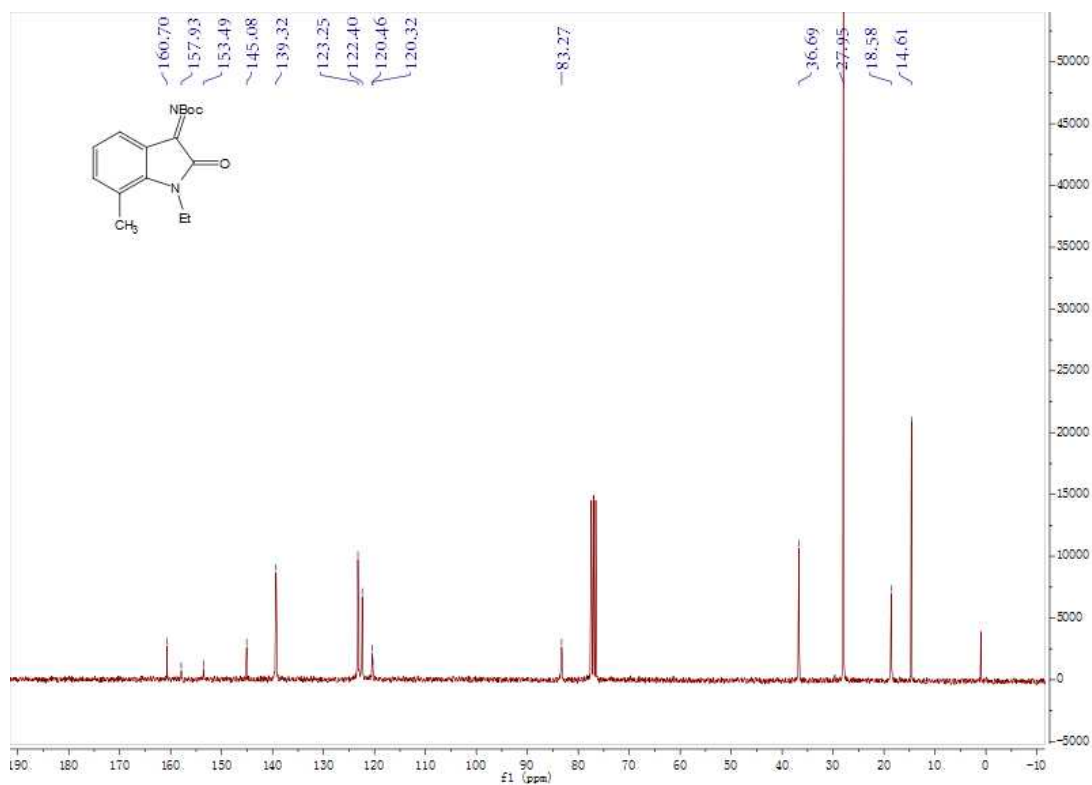
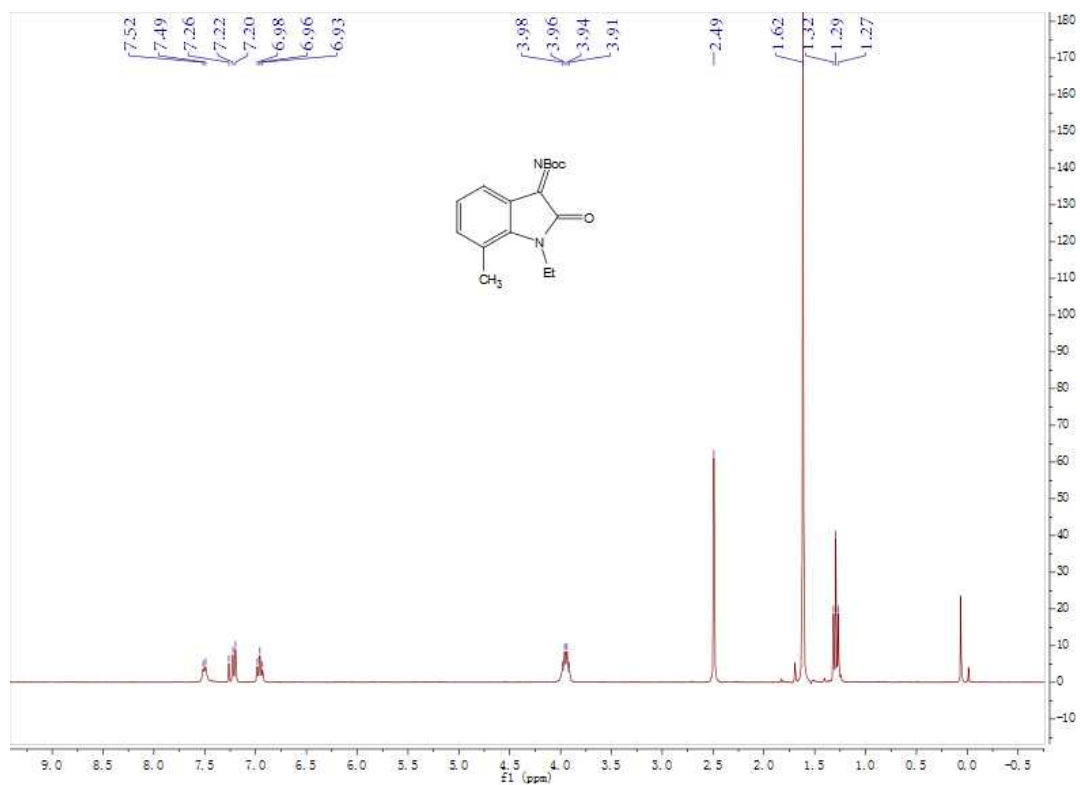
**tert-Butyl 7-chloro-1-ethyl-2-oxoindolin-3-ylidenecarbamate (2j)**



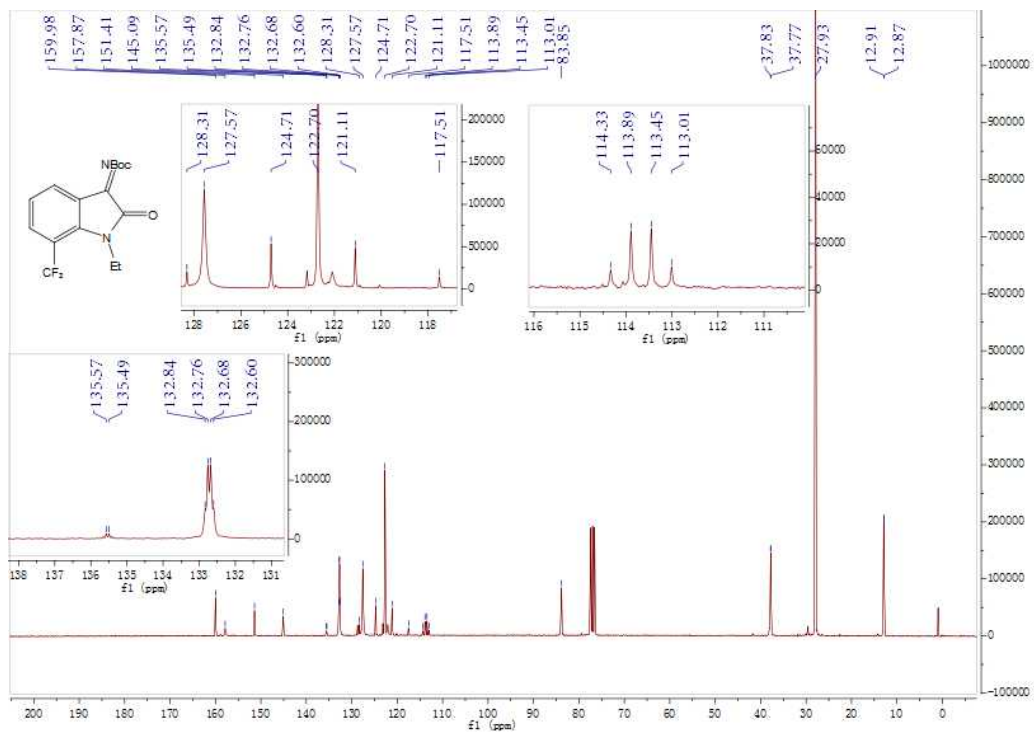
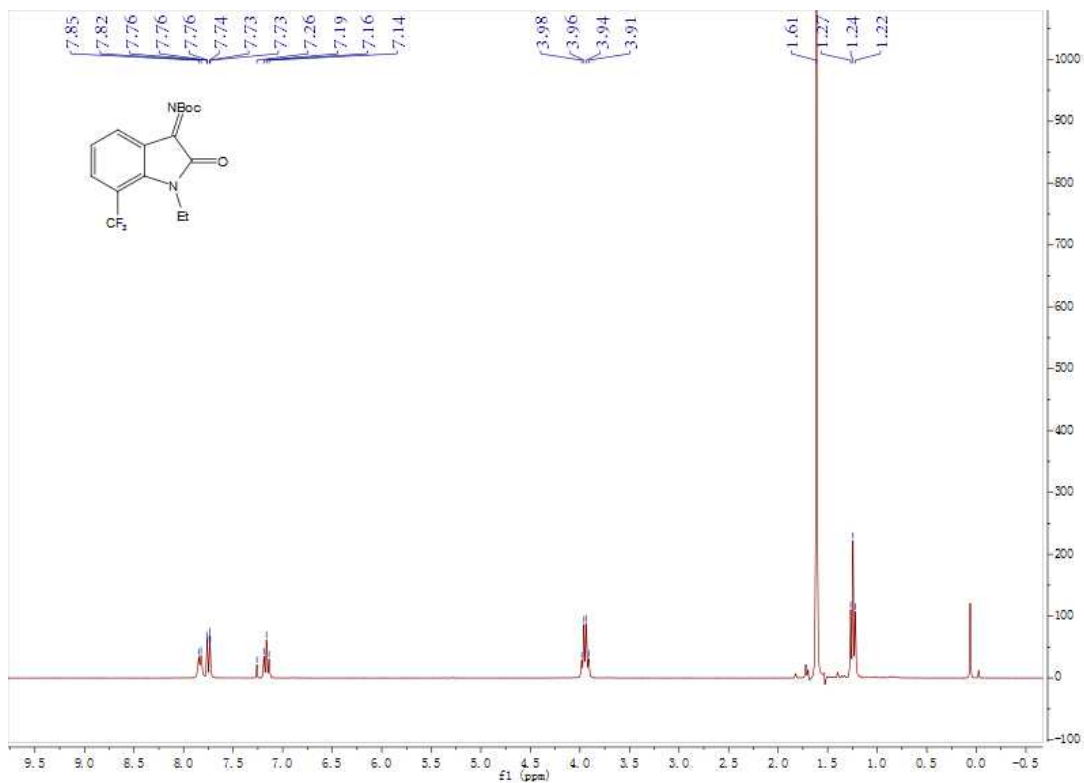
**tert-Butyl 7-bromo-1-ethyl-2-oxoindolin-3-ylidenecarbamate (2k)**



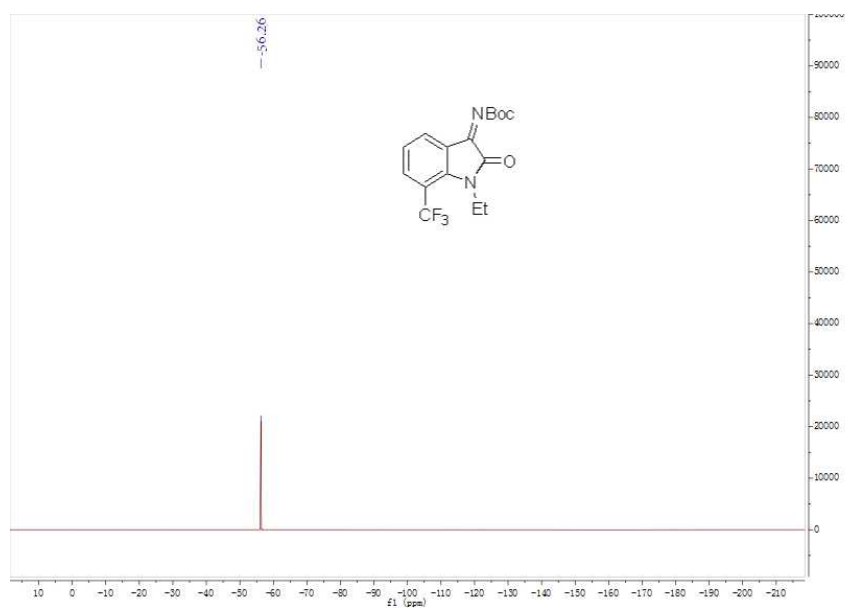
**tert-Butyl 1-ethyl-7-methyl-2-oxindolin-3-ylidenecarbamate (21)**



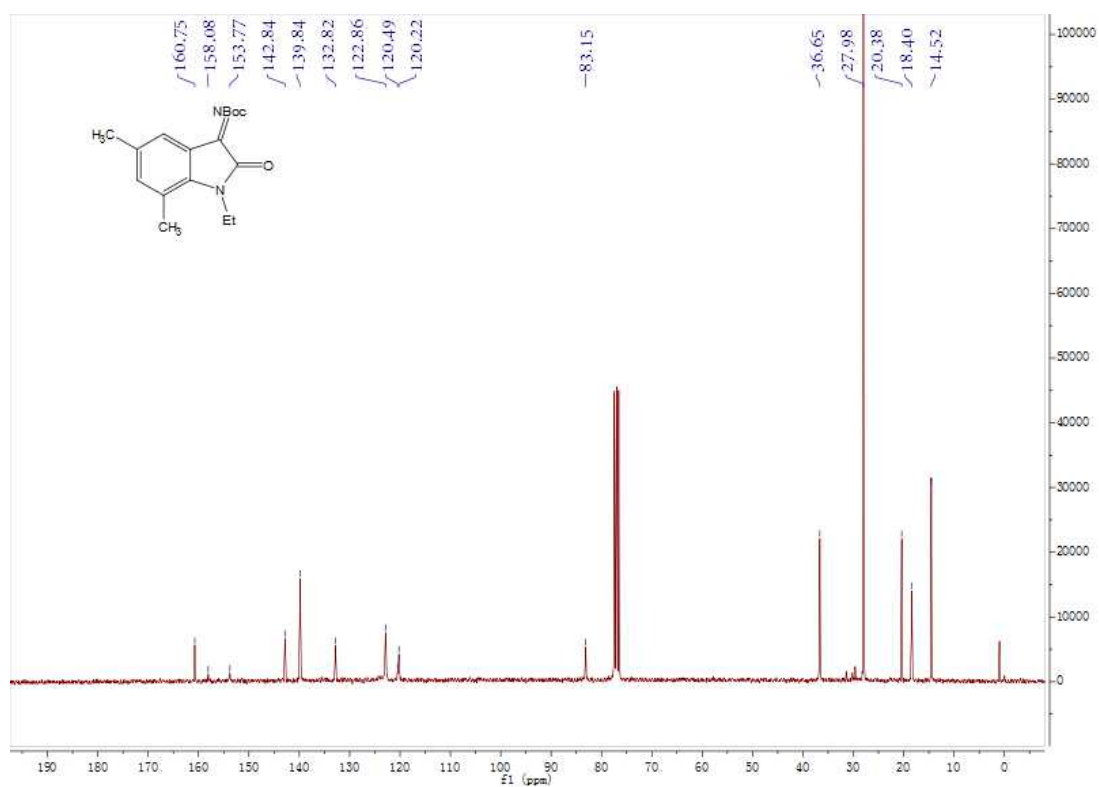
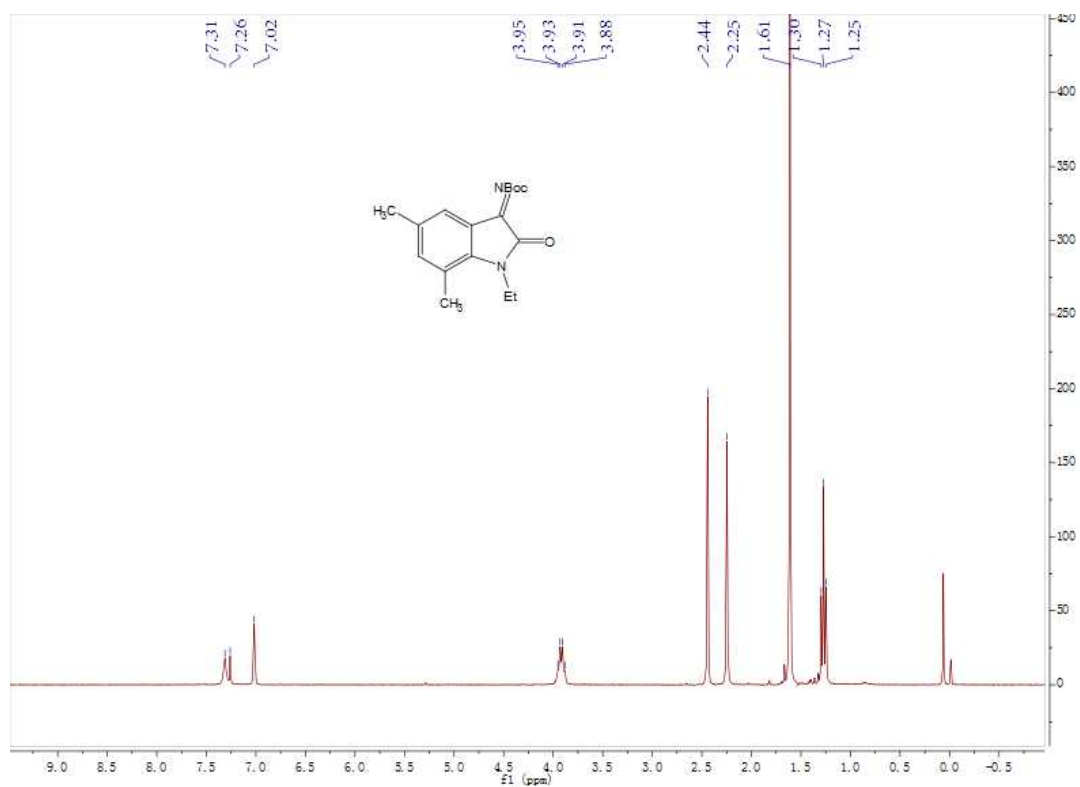
**tert-Butyl 1-ethyl-2-oxo-7-(trifluoromethyl)indolin-3-ylidenecarbamate (2m)**



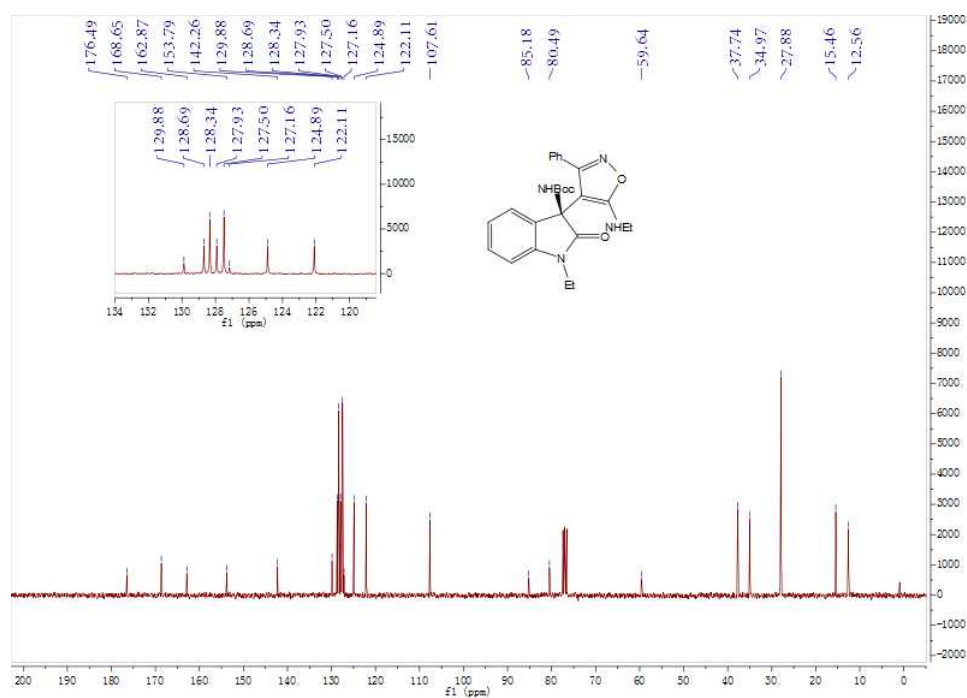
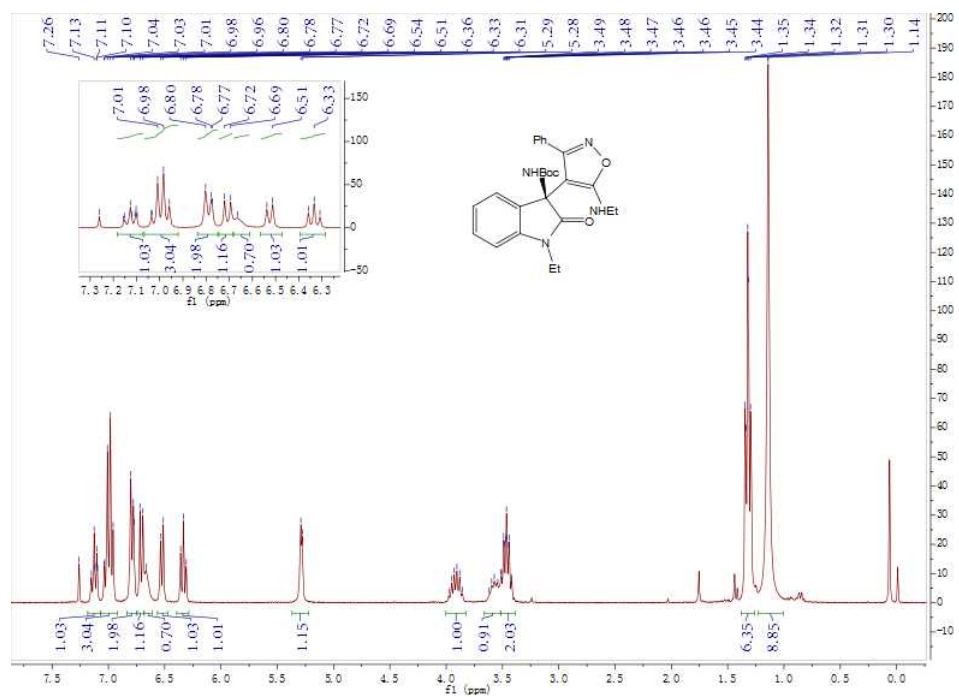




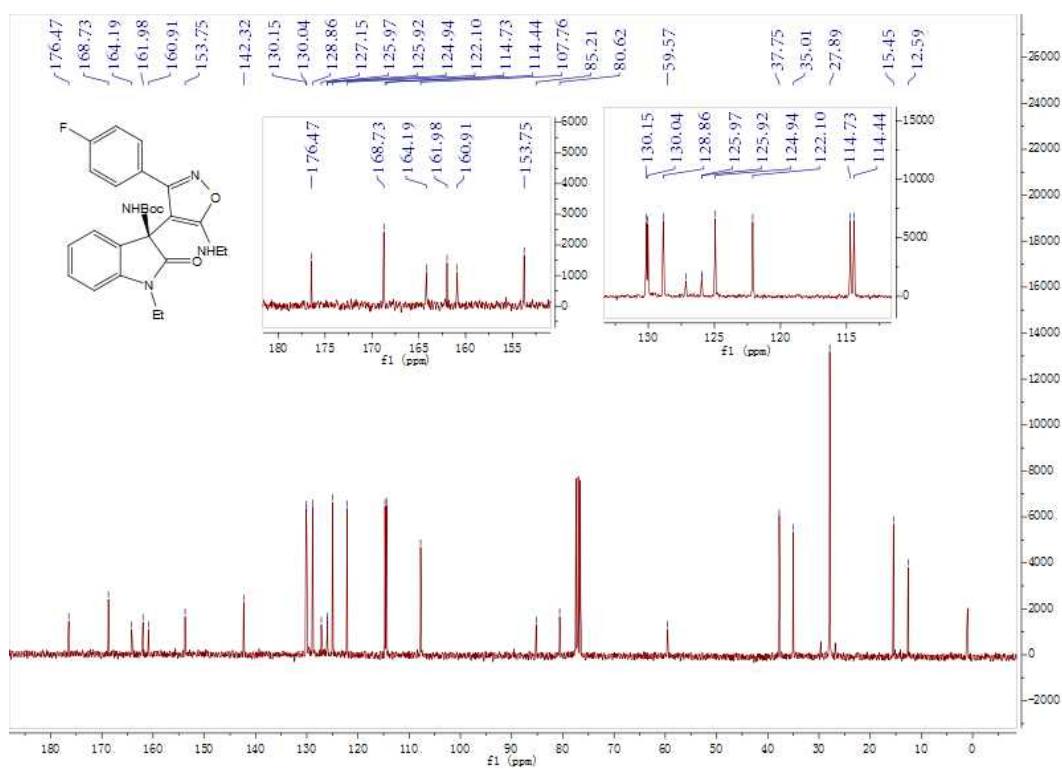
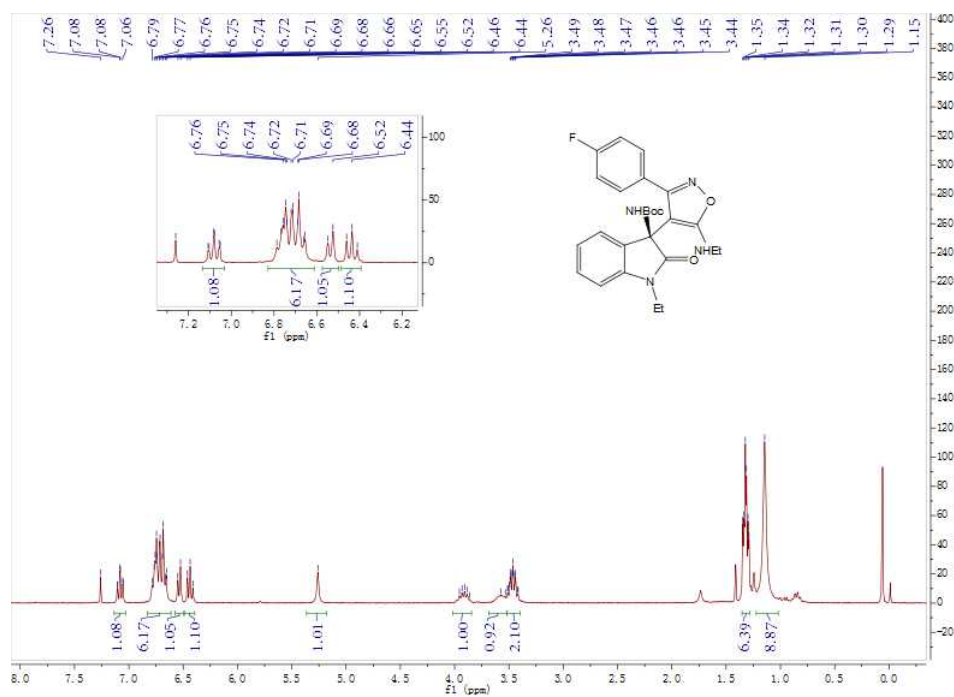
**tert-Butyl 1-ethyl-5,7-dimethyl-2-oxoindolin-3-ylidenecarbamate (2n)**

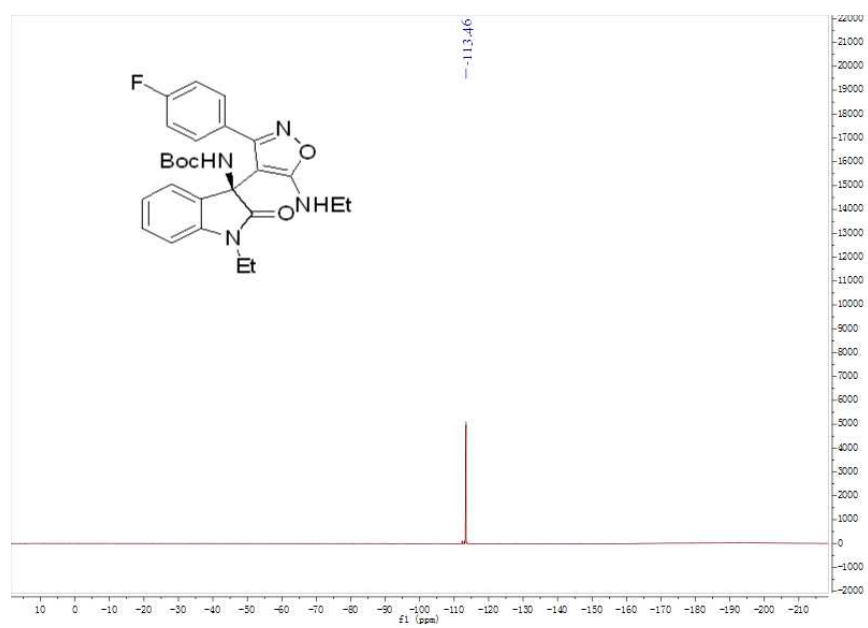


**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)  
carbamate (3aa)**

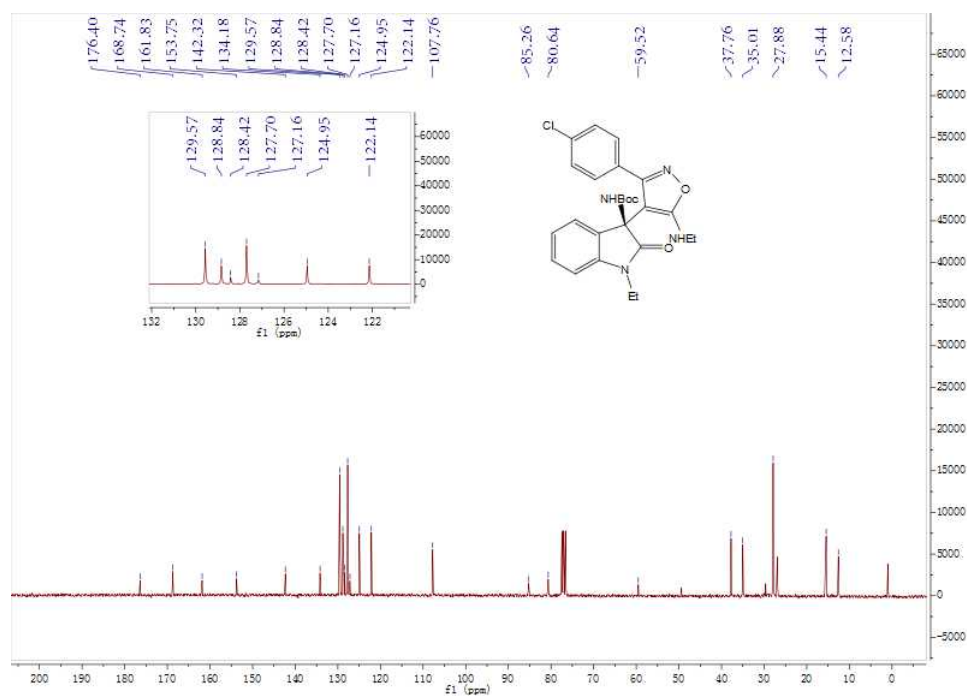
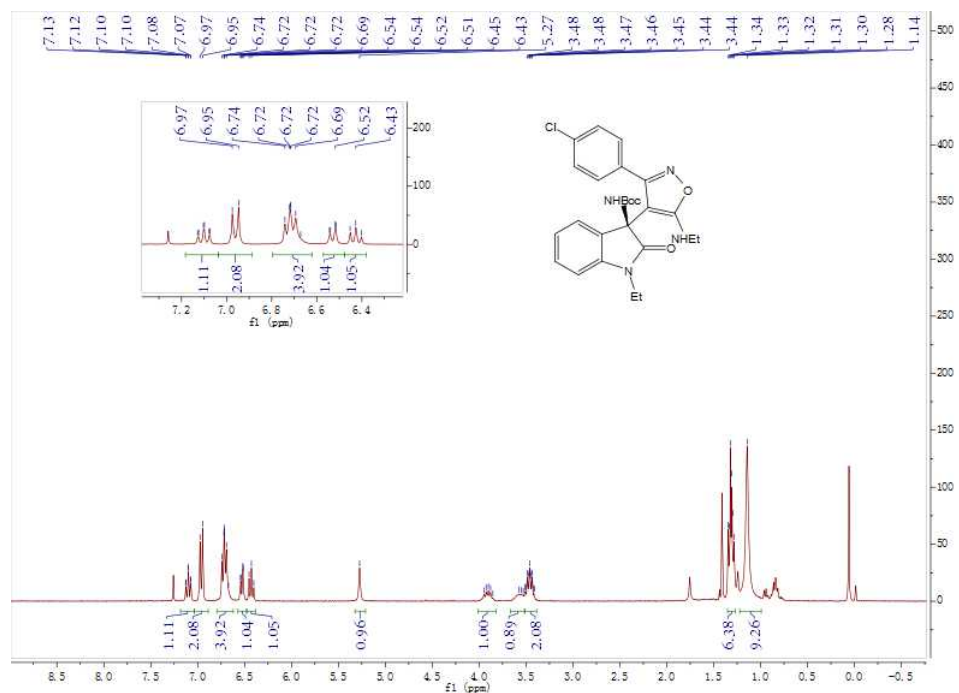


**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-(4-fluorophenyl)isoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ba)**

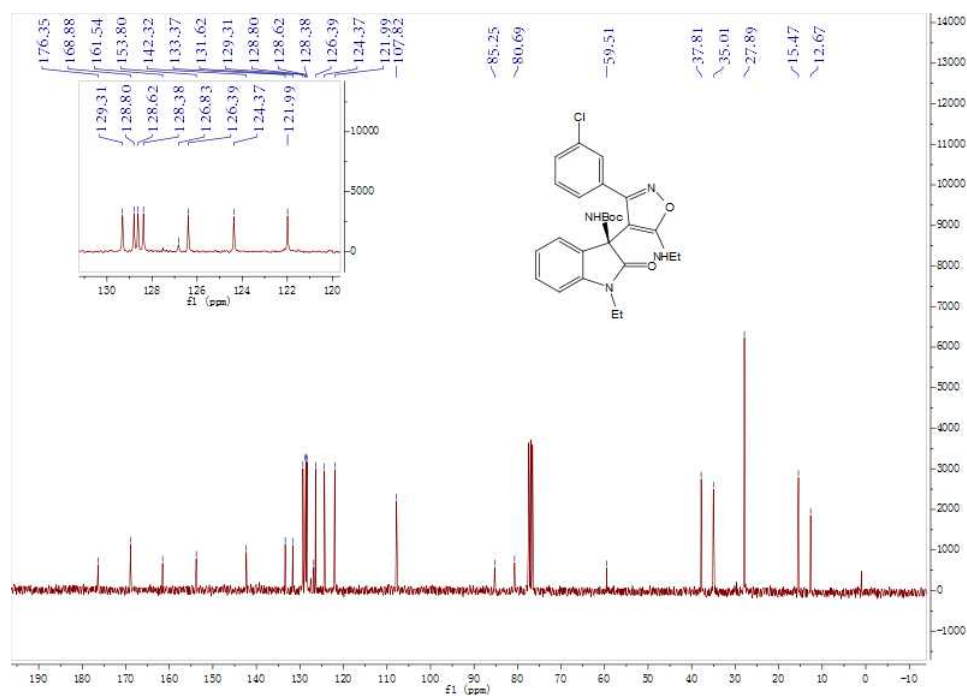
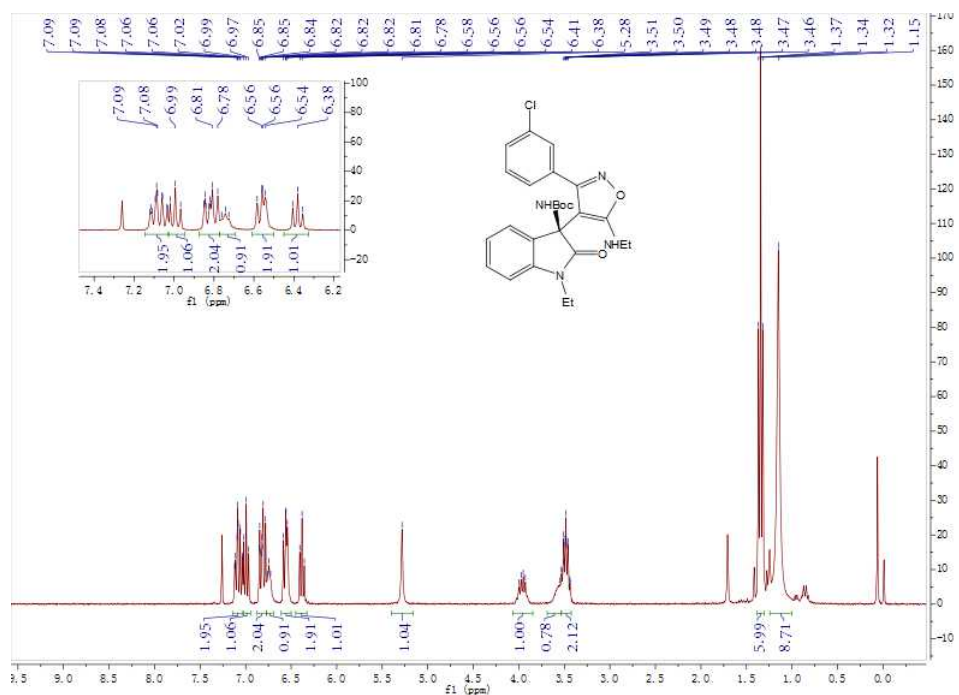




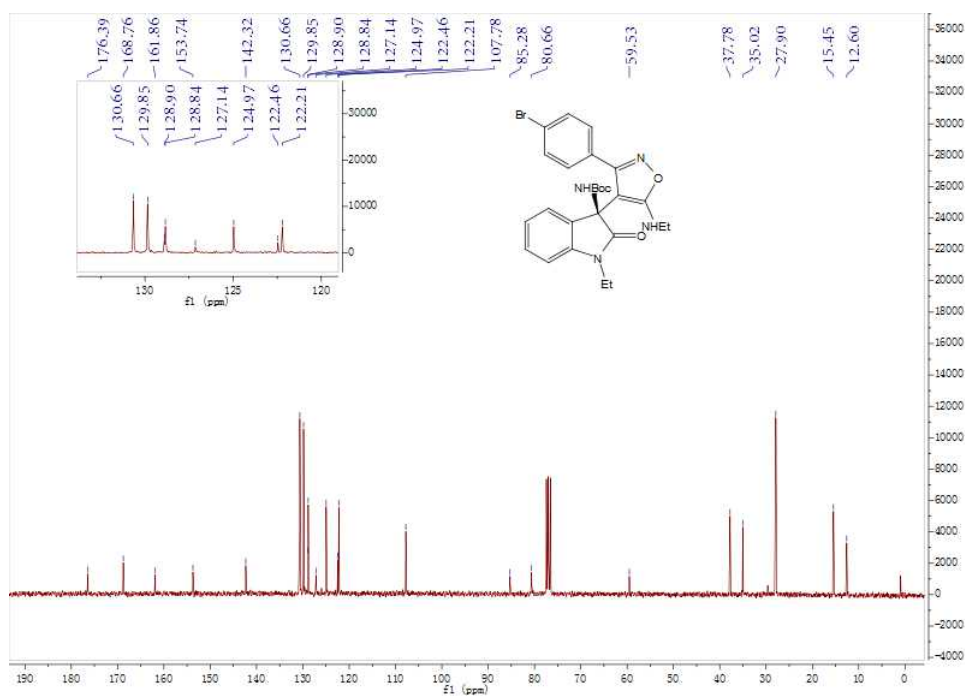
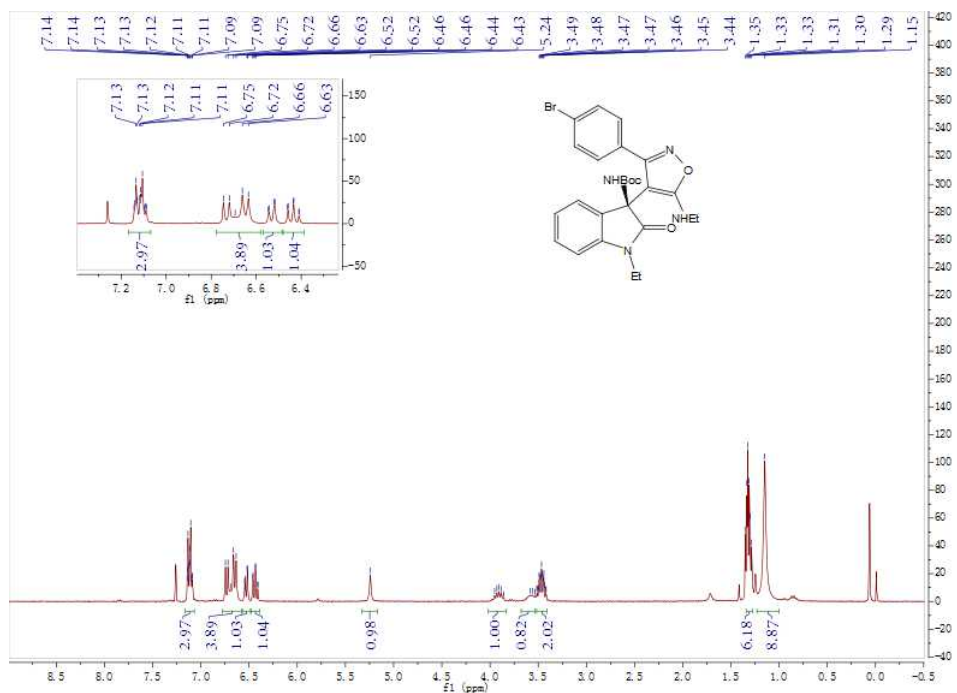
**tert-butyl (S)-3-(3-(4-chlorophenyl)-5-(ethylamino)isoxazol-4-yl)-1-ethyl-2-oxoindolin-3-yl)carbamate (3ca)**



**tert-butyl (S)-(3-(3-(3-chlorophenyl)-5-(ethylamino)isoxazol-4-yl)-1-ethyl-2-oxoindolin-3-yl)carbamate (3da)**

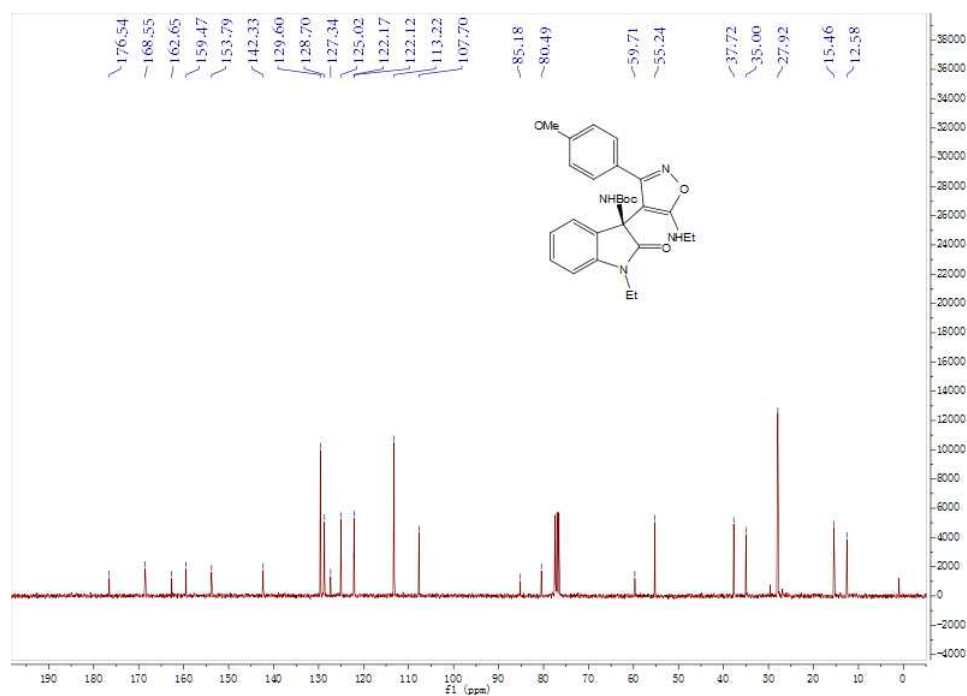
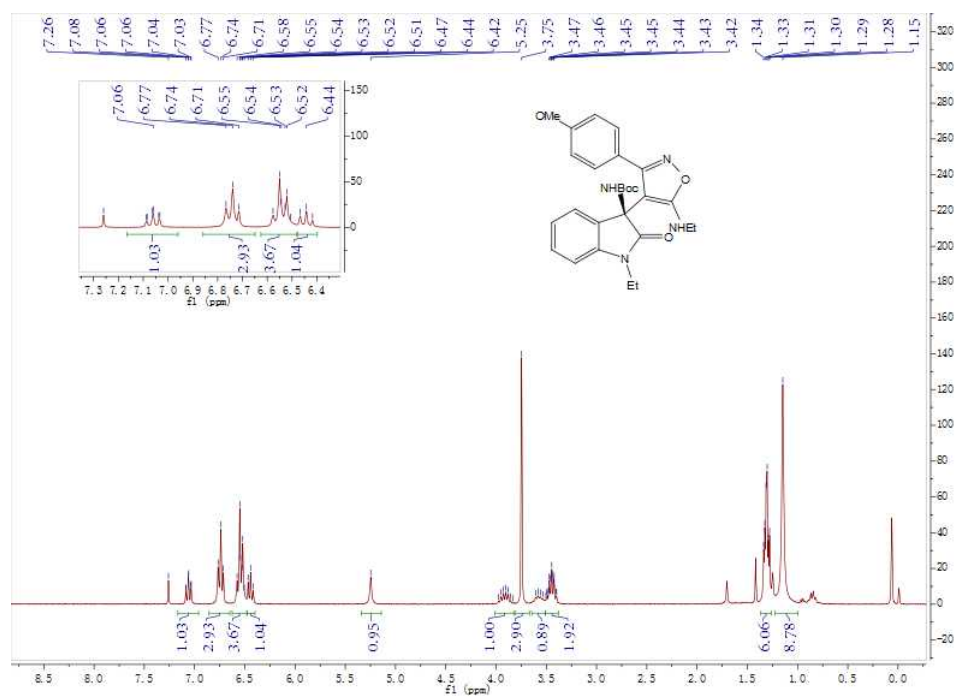


**tert-butyl (S)-3-(3-(4-bromophenyl)-5-(ethylamino)isoxazol-4-yl)-1-ethyl-2-oxoindolin-3-yl)carbamate (3ea)**

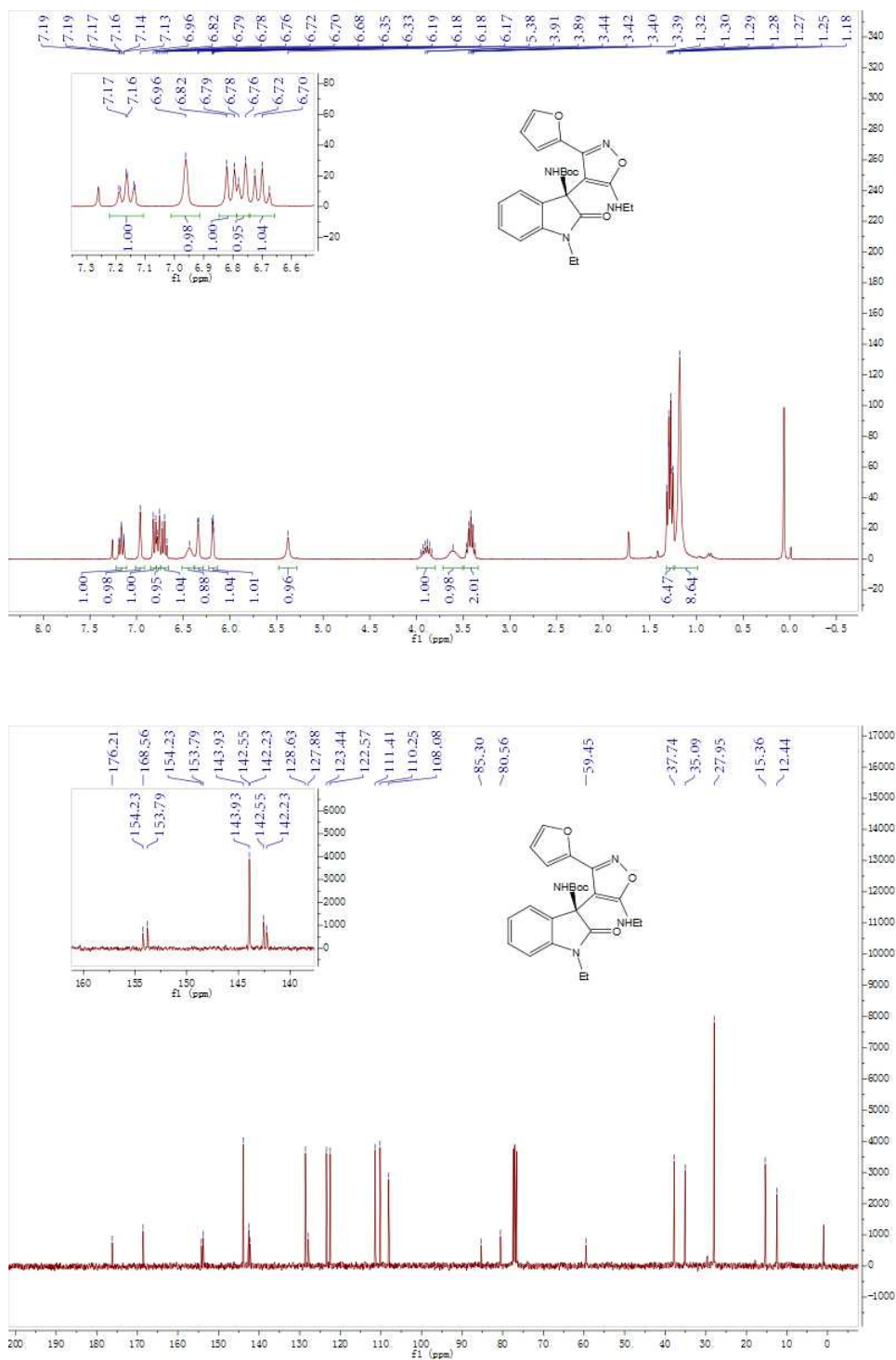




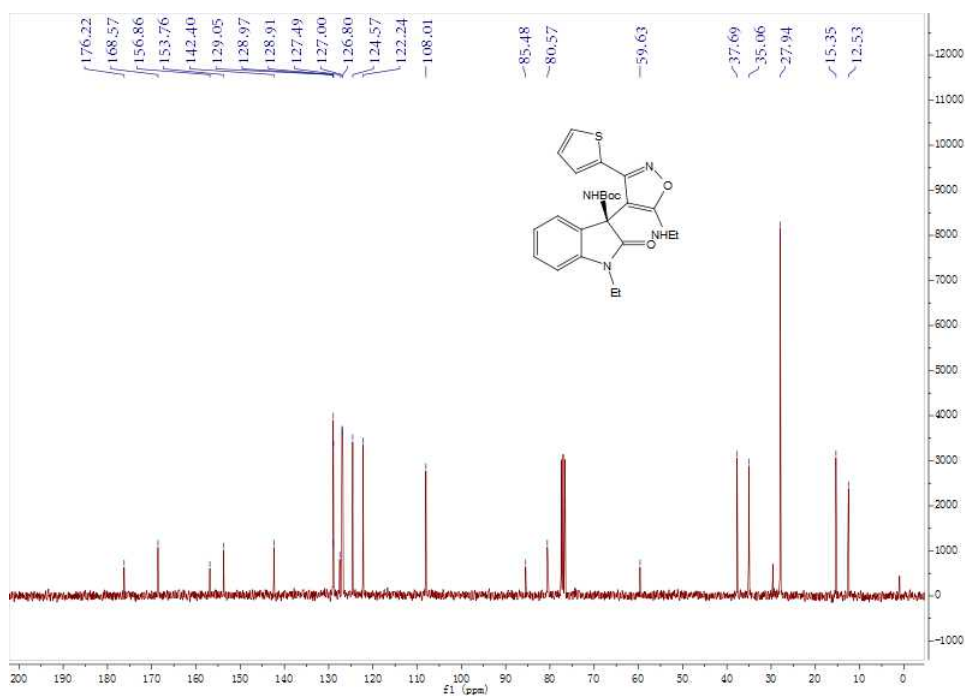
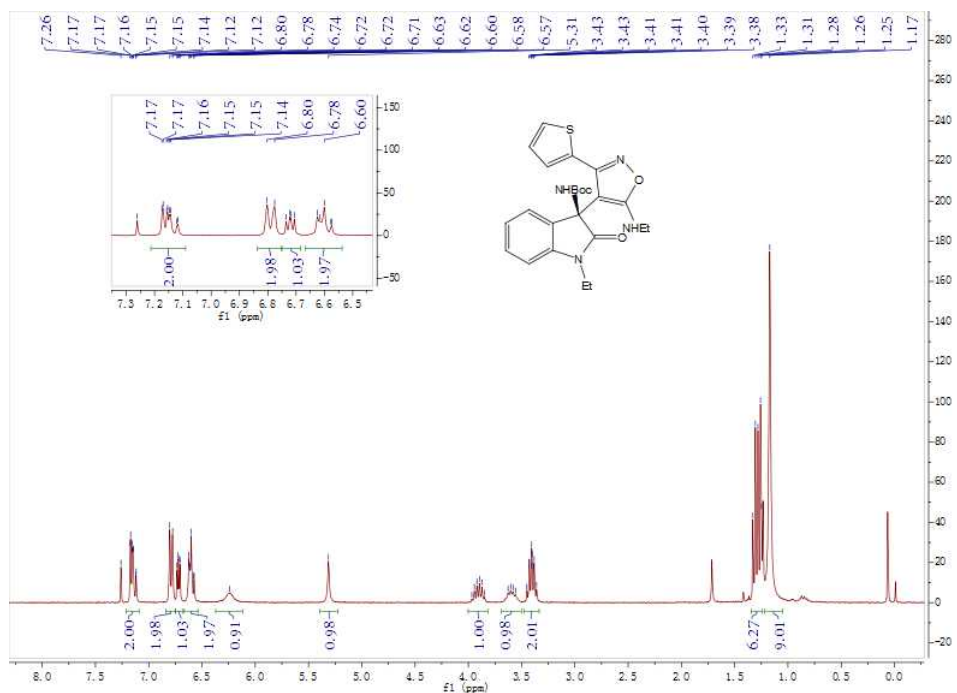
**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-(4-methoxyphenyl)isoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3fa)**



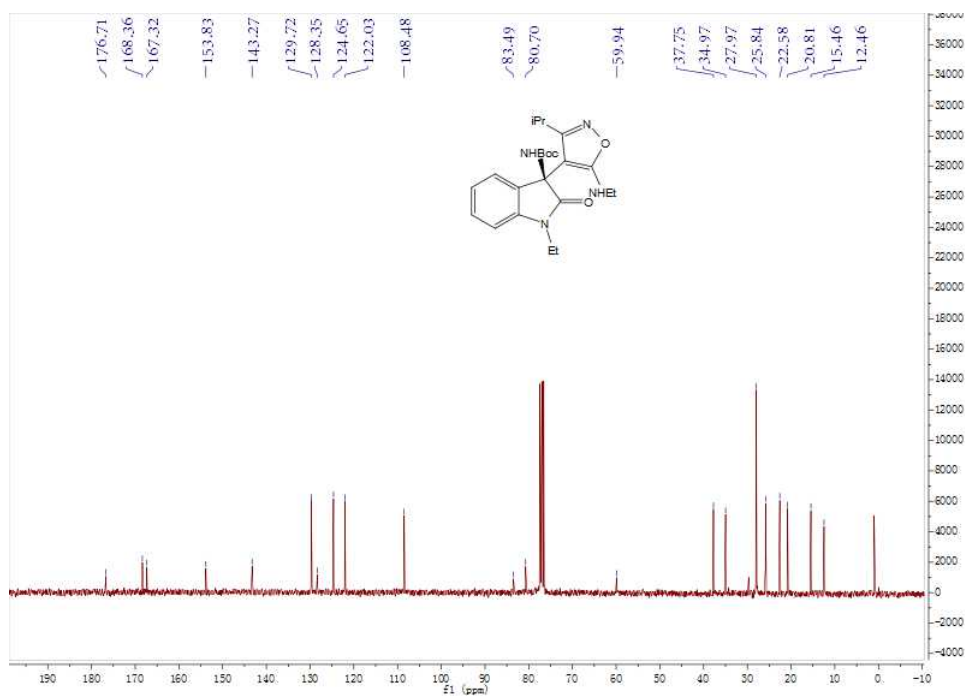
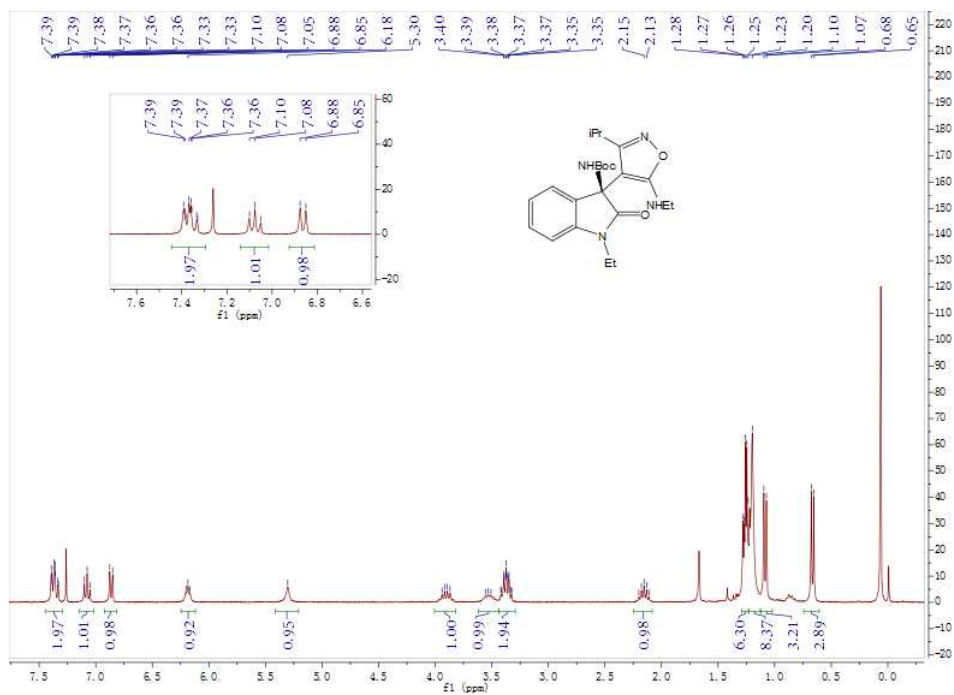
**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-(furan-2-yl)isoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ga)**



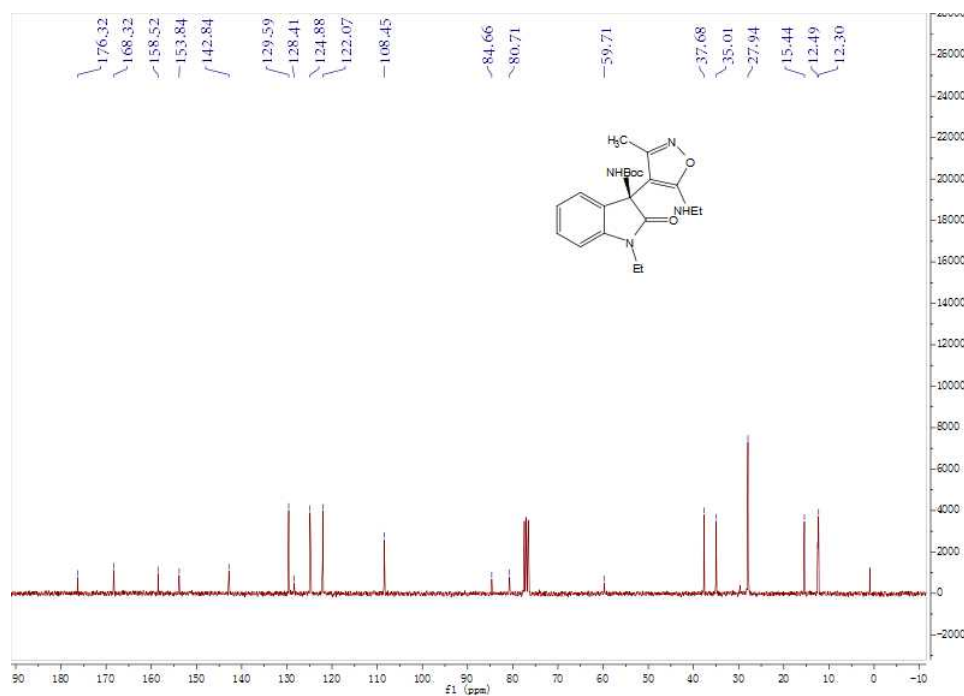
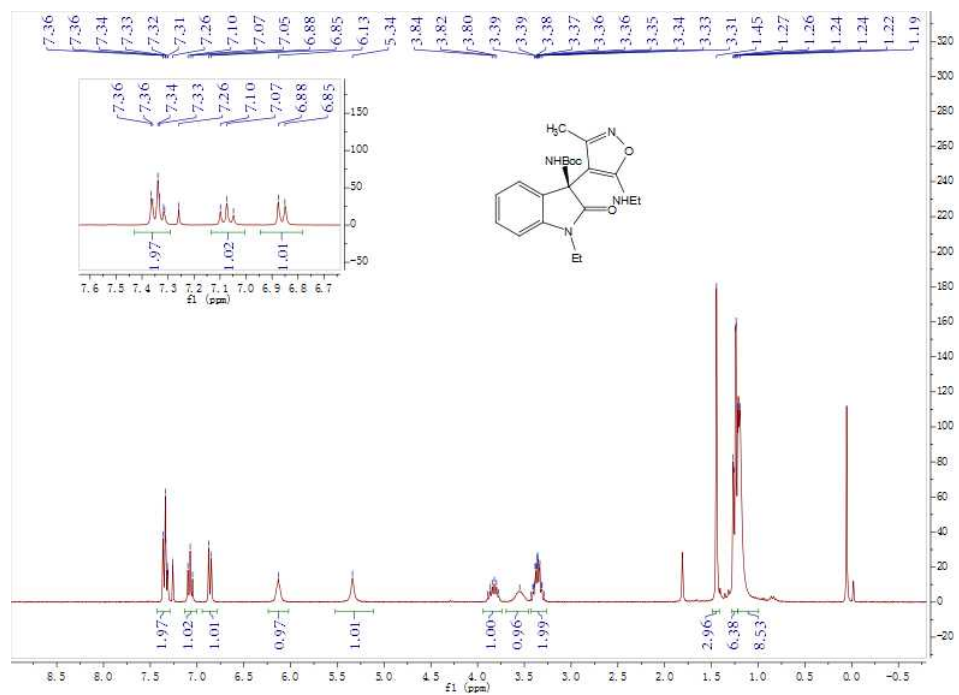
**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-(thiophen-2-yl)isoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ha)**



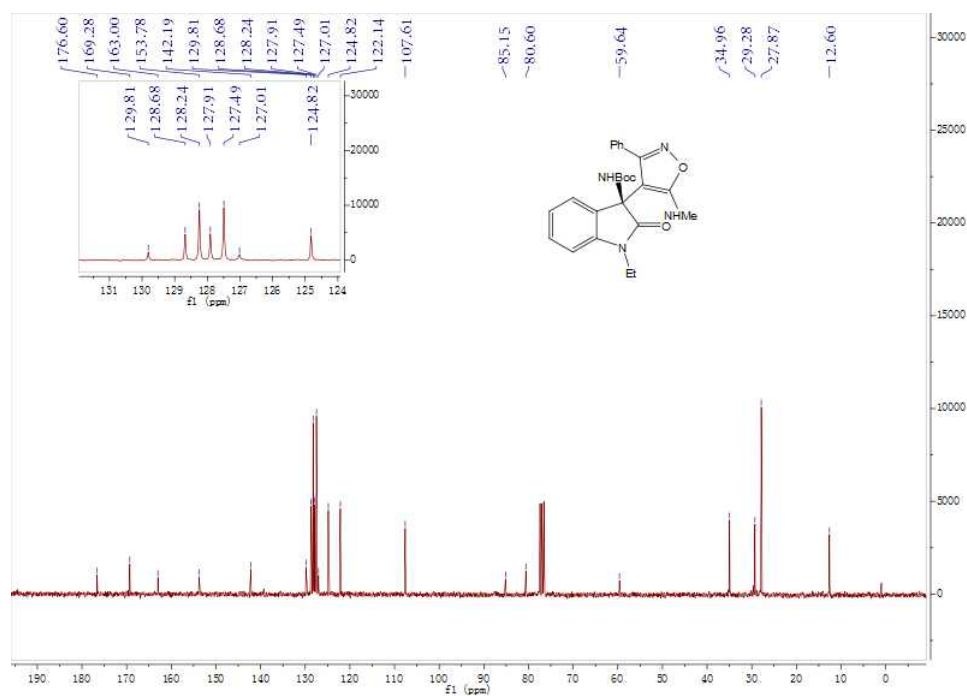
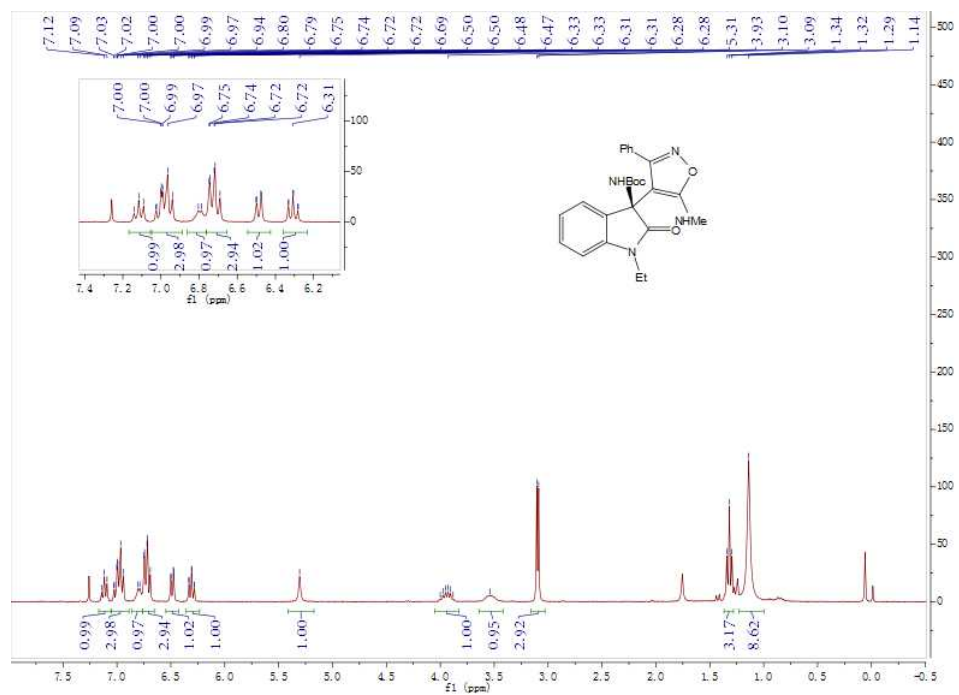
**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-isopropylisoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ia)**



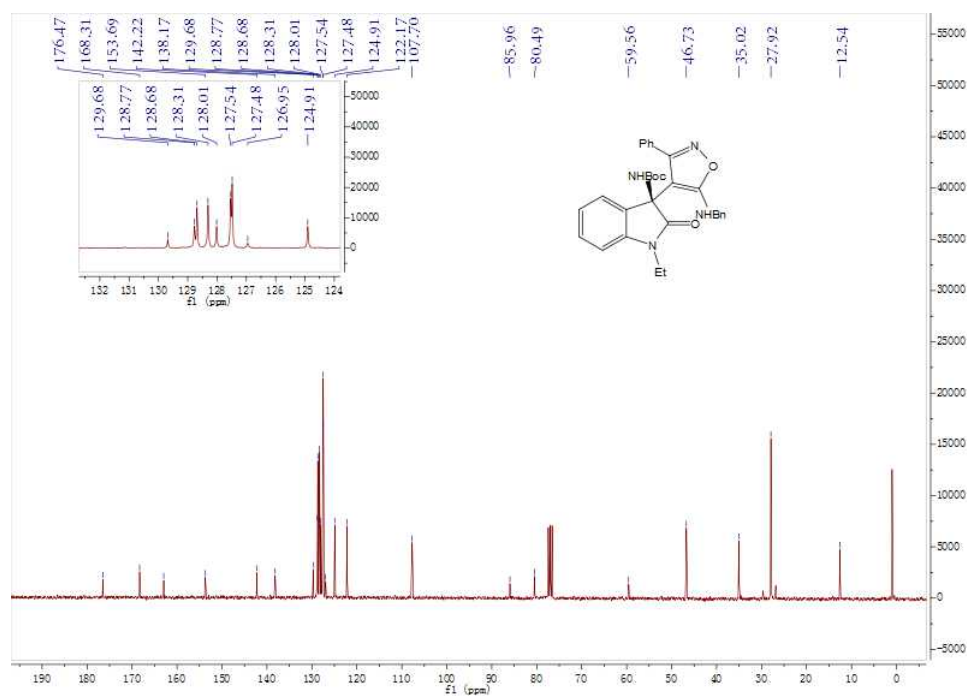
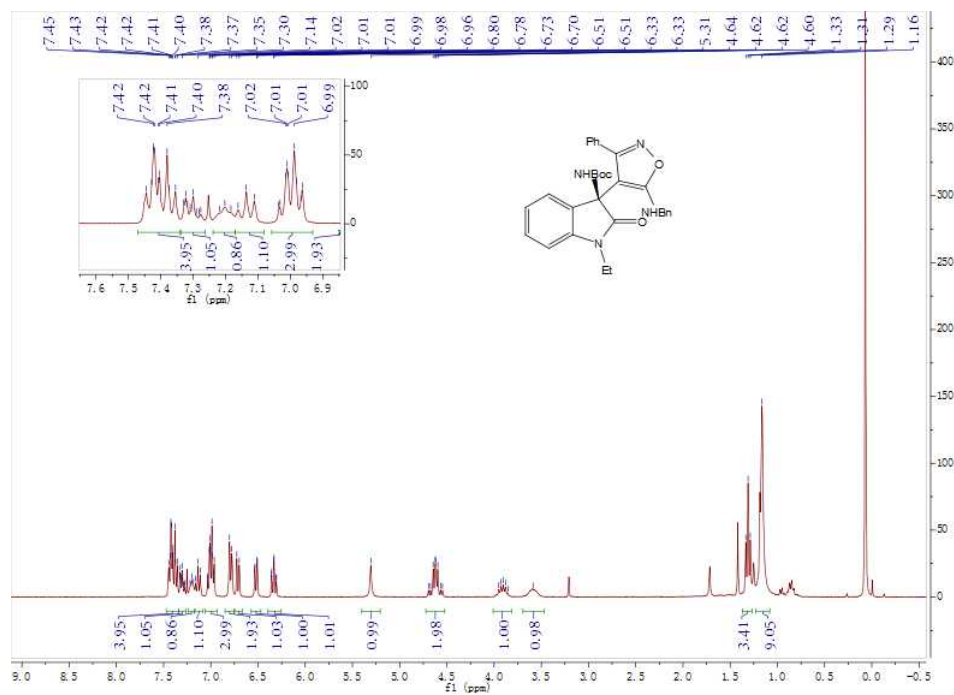
**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-methylisoxazol-4-yl)-2-oxoindolin-3-yl)  
carbamate (3ja)**



**tert-butyl (S)-(1-ethyl-3-(5-(methylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)  
carbamate (3ka)**

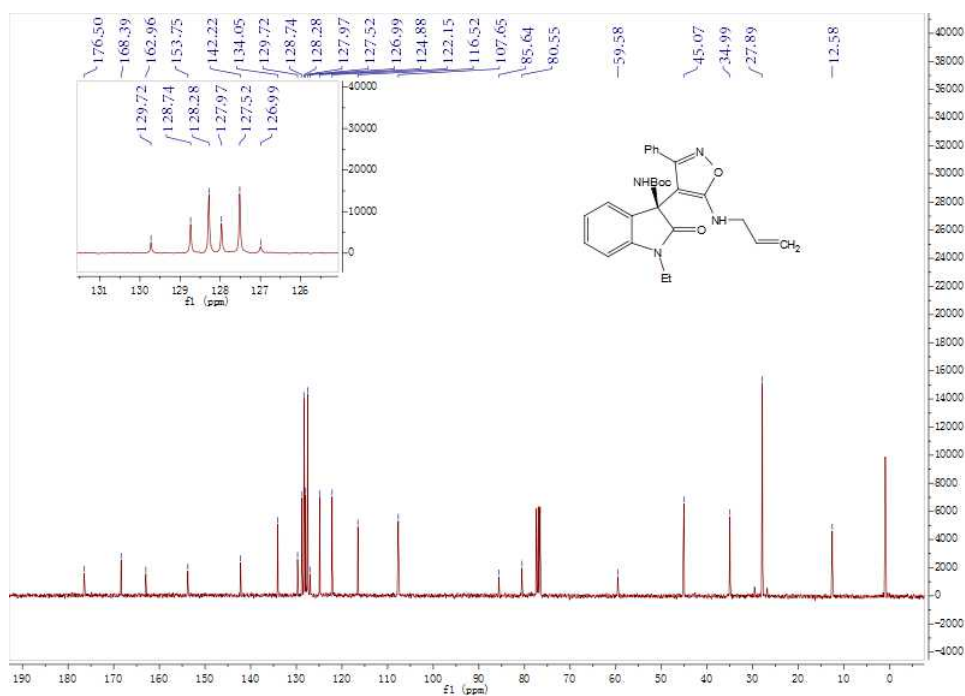
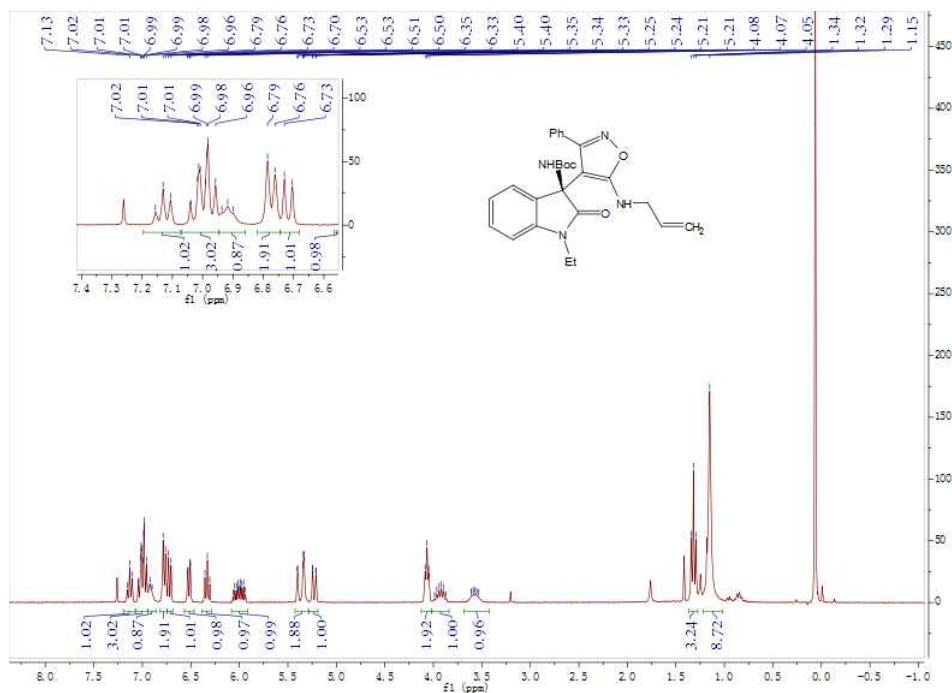


**tert-butyl (S)-(3-(5-(benzylamino)-3-phenylisoxazol-4-yl)-1-ethyl-2-oxoindolin-3-yl)  
carbamate (3la)**



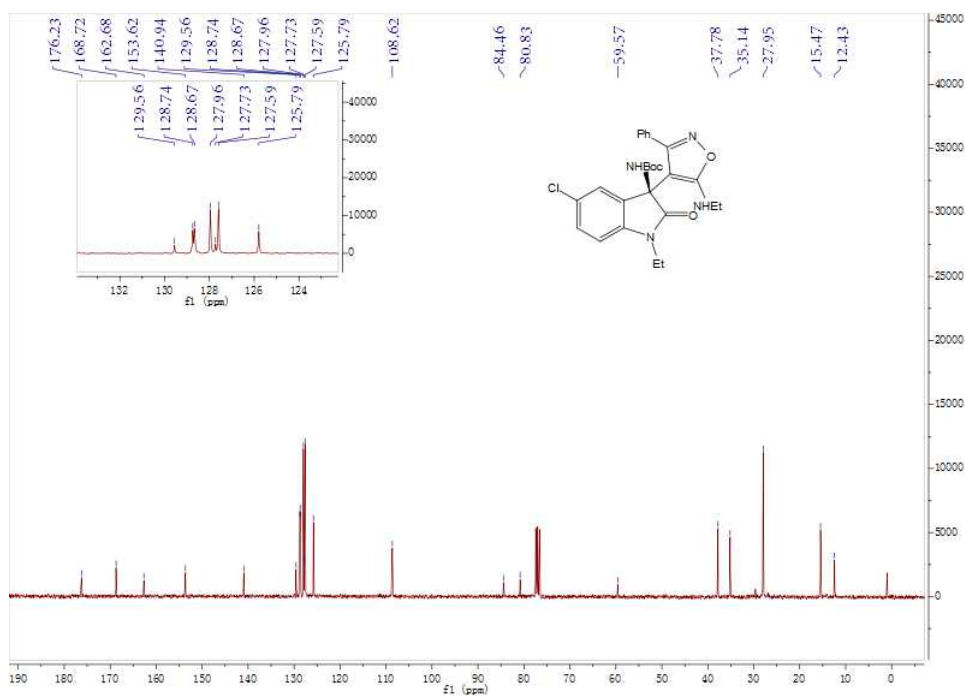
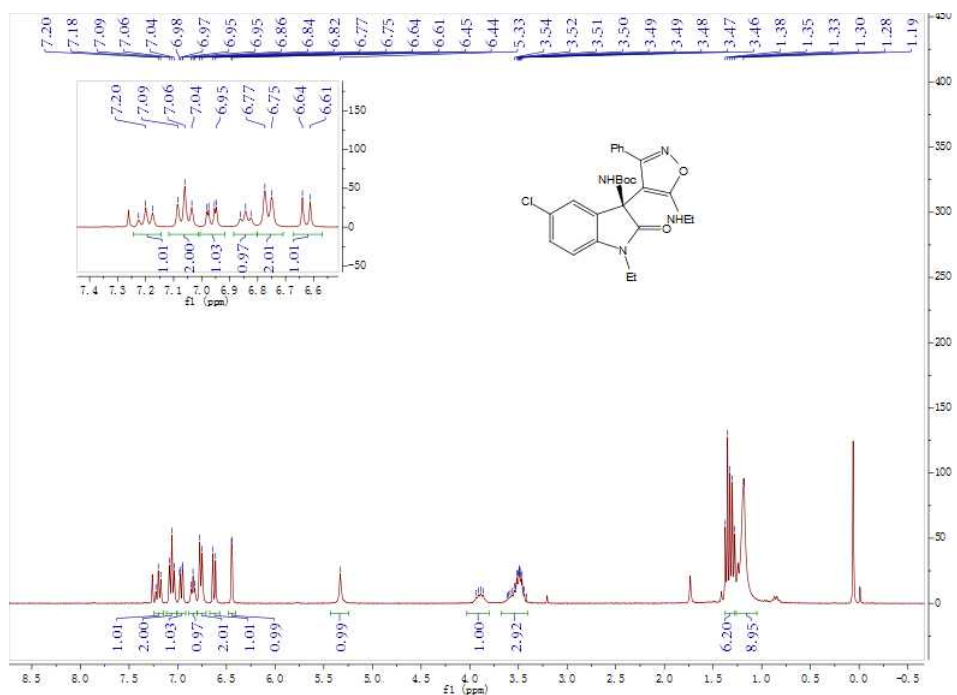


**tert-butyl (S)-(3-(5-(allylamino)-3-phenylisoxazol-4-yl)-1-ethyl-2-oxoindolin-3-yl)  
carbamate (3ma)**

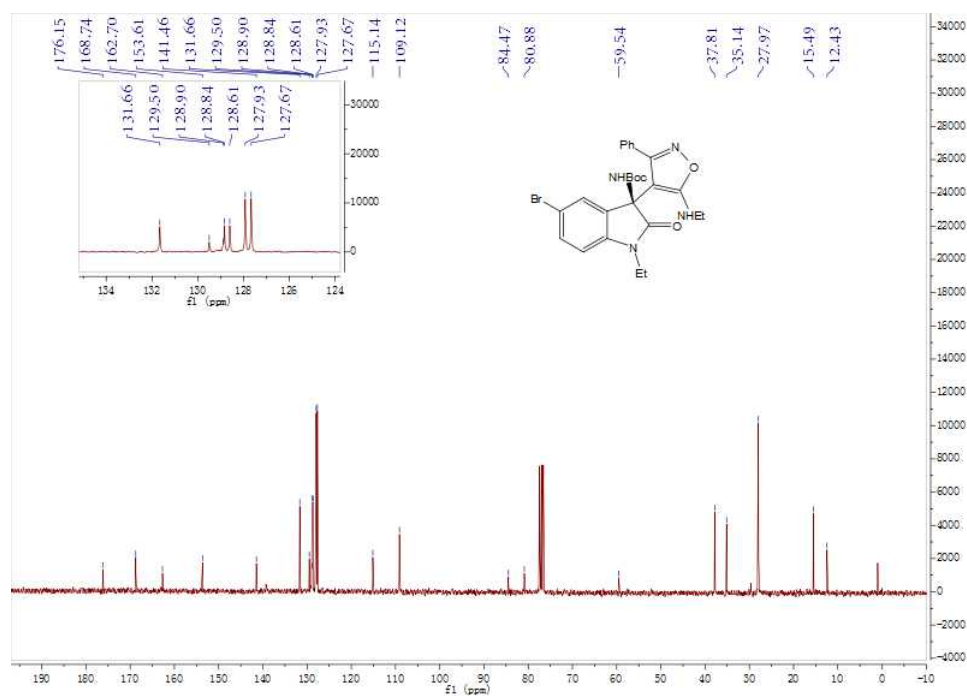
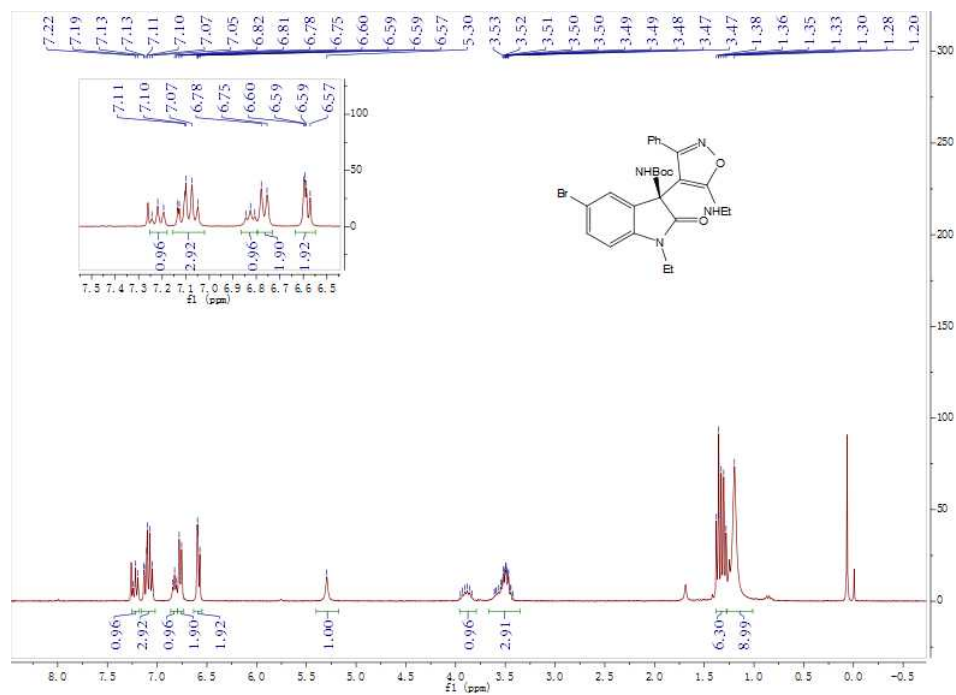




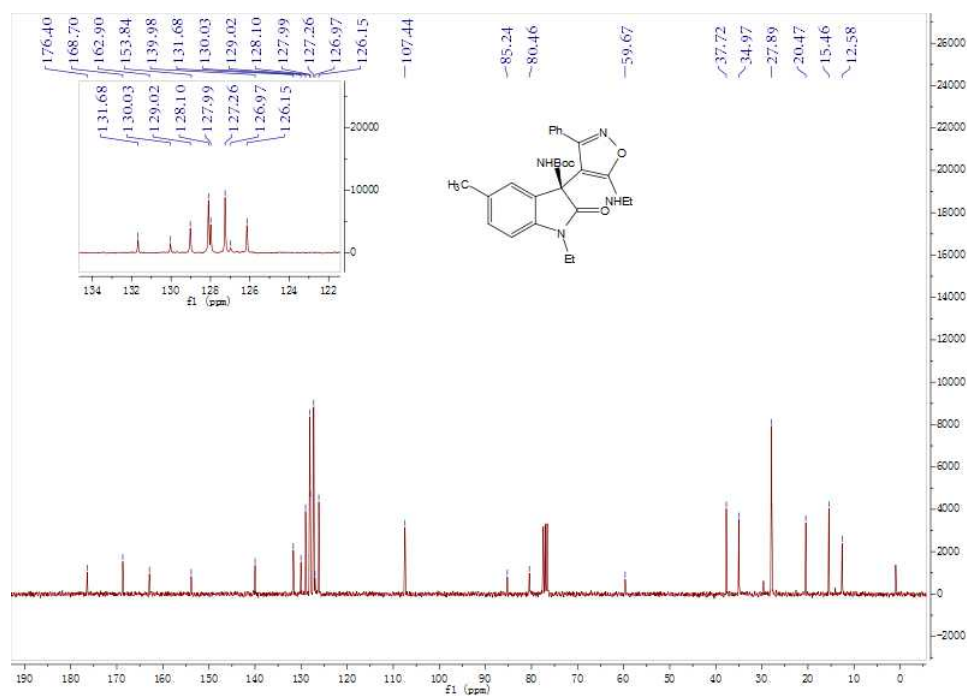
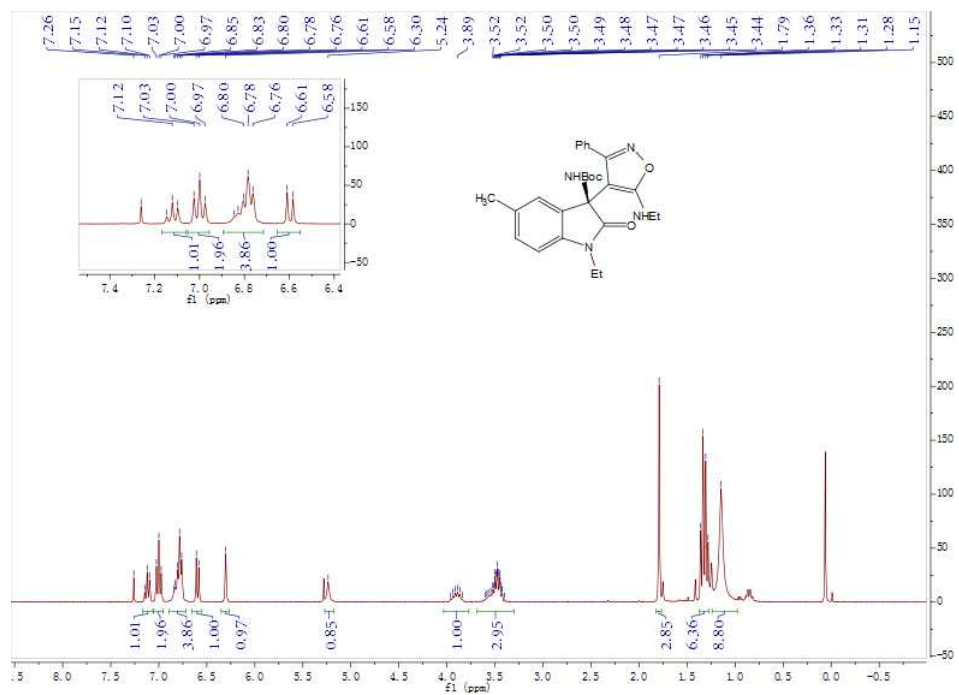
**tert-butyl (S)-(5-chloro-1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ab)**



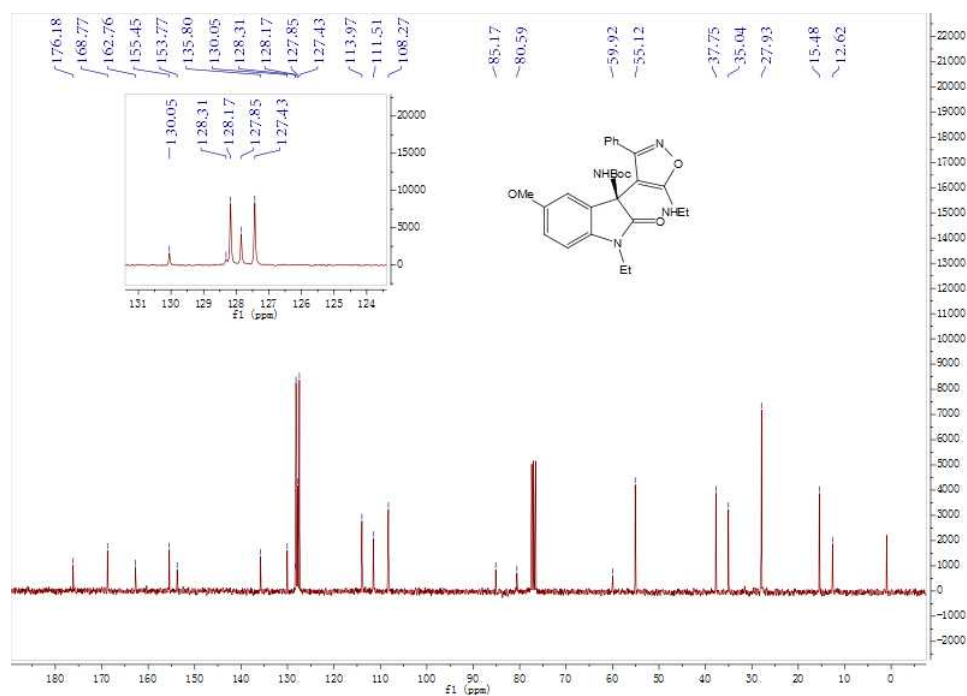
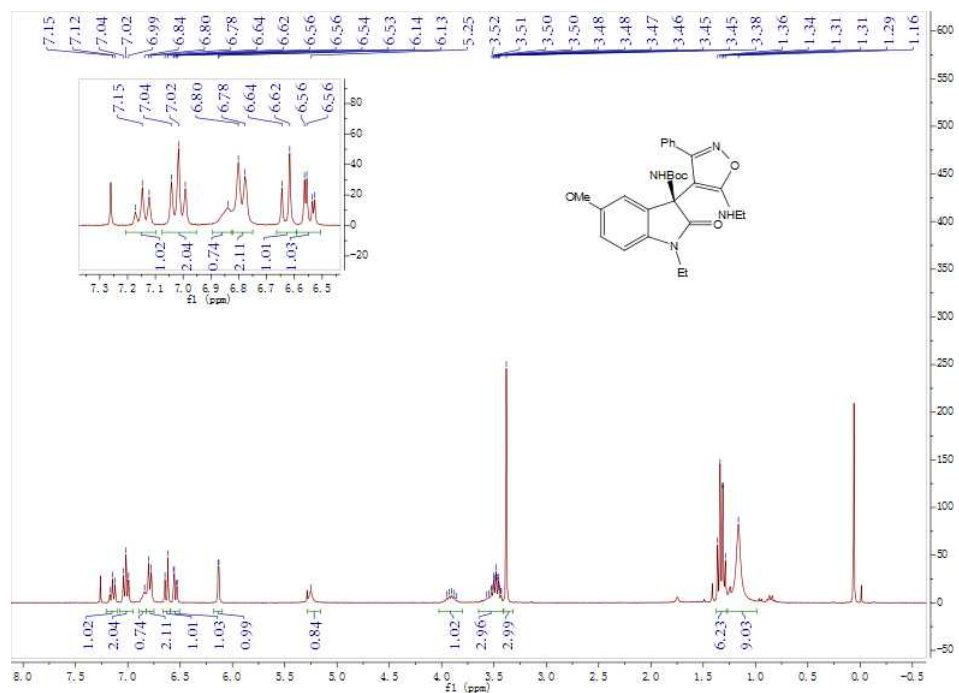
**tert-butyl (S)-(5-bromo-1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ac)**



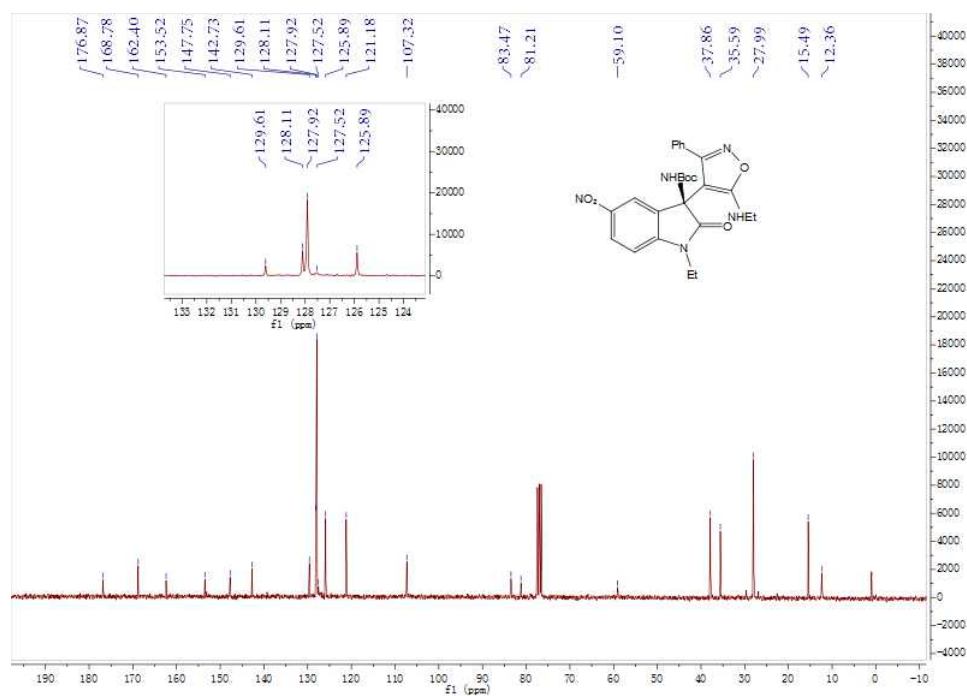
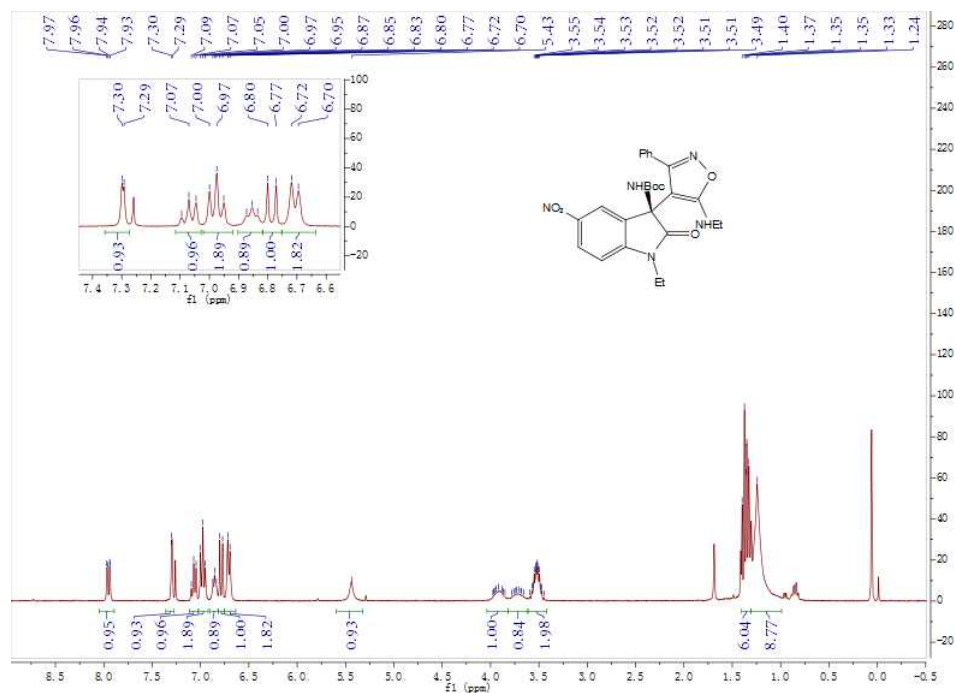
**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-5-methyl-2-oxoindolin-3-yl)carbamate (3ad)**



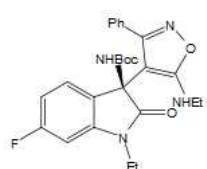
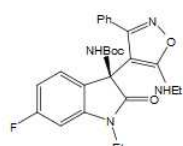
**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-5-methoxy-2-oxoindolin-3-yl)carbamate (3ae)**

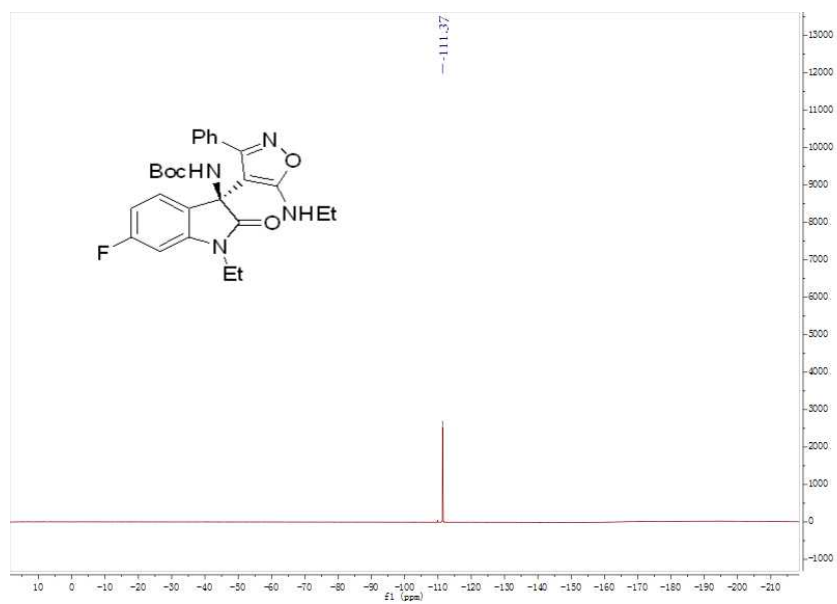


**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-5-nitro-2-oxoindolin-3-yl)carbamate (3af)**



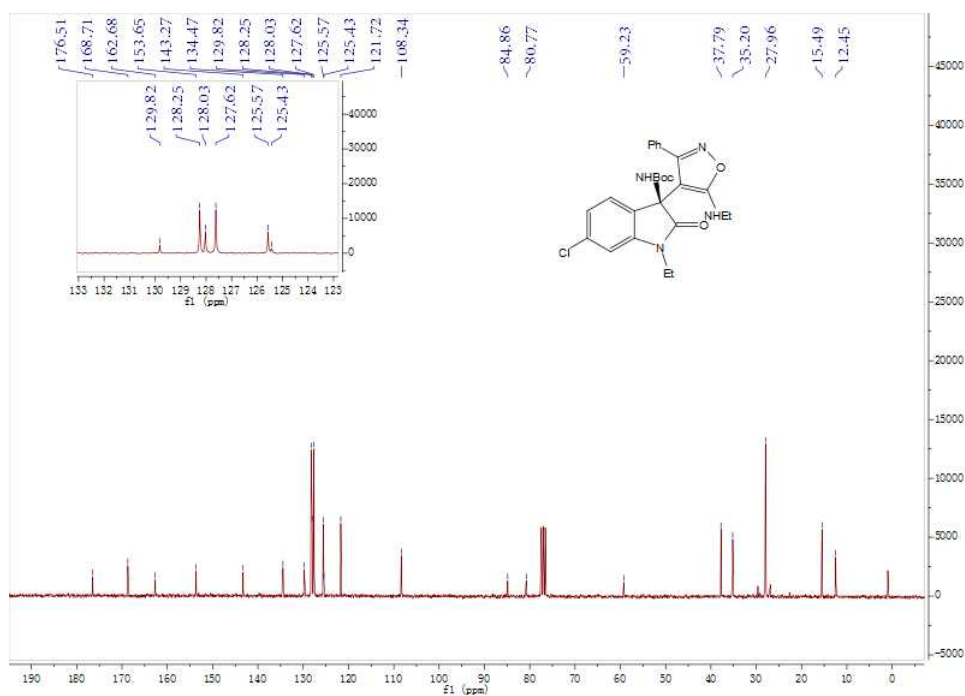
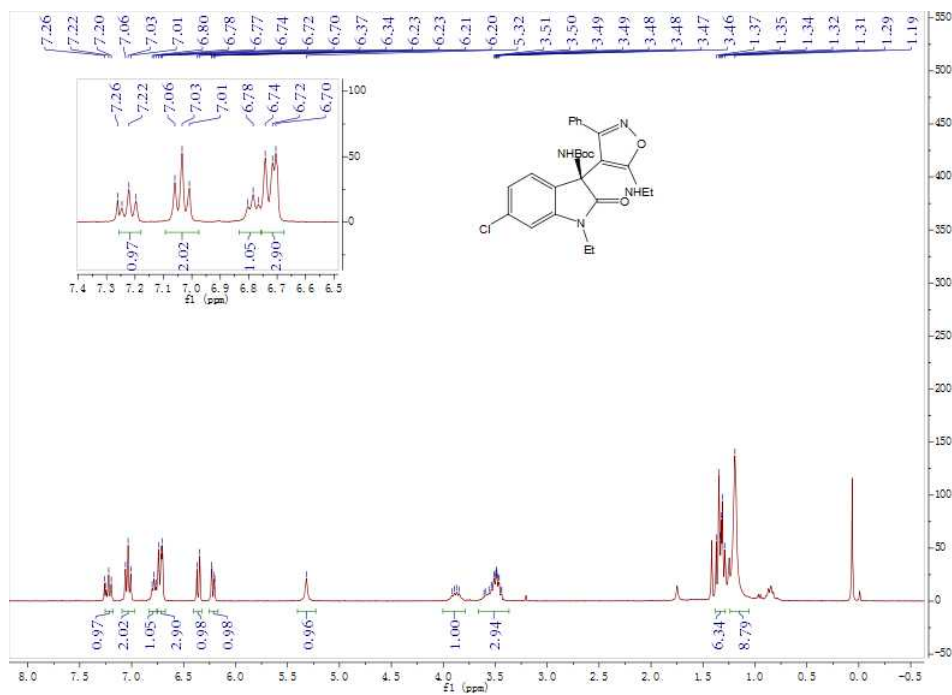
**oxoindolin-3-yl)carbamate (3ag)**





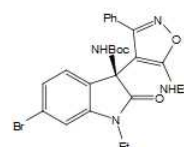
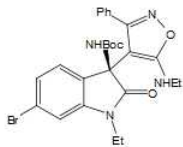


**tert-butyl (S)-(6-chloro-1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ah)**

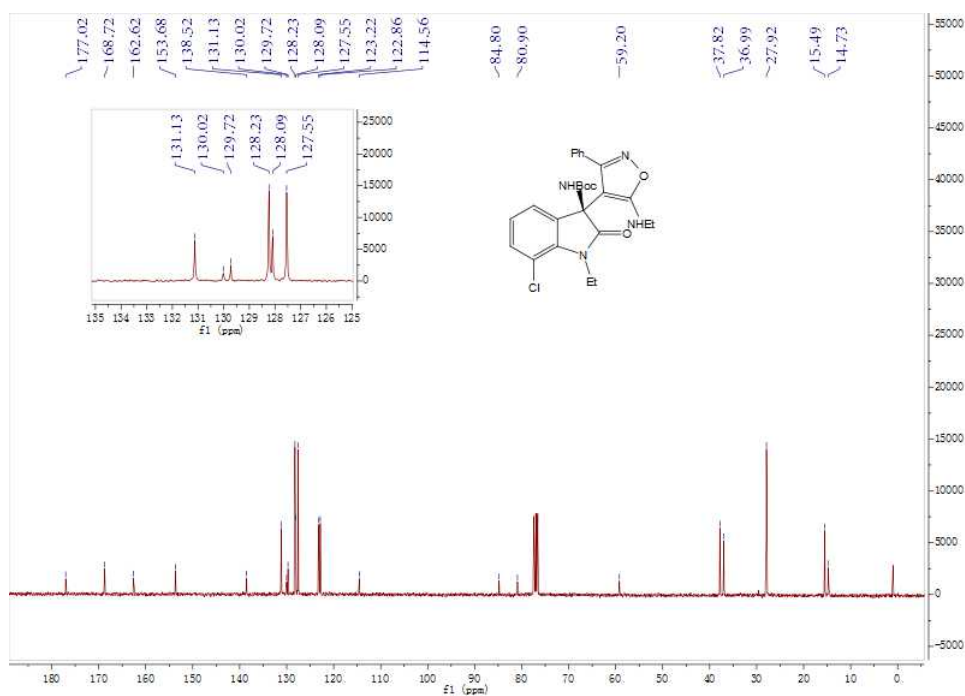
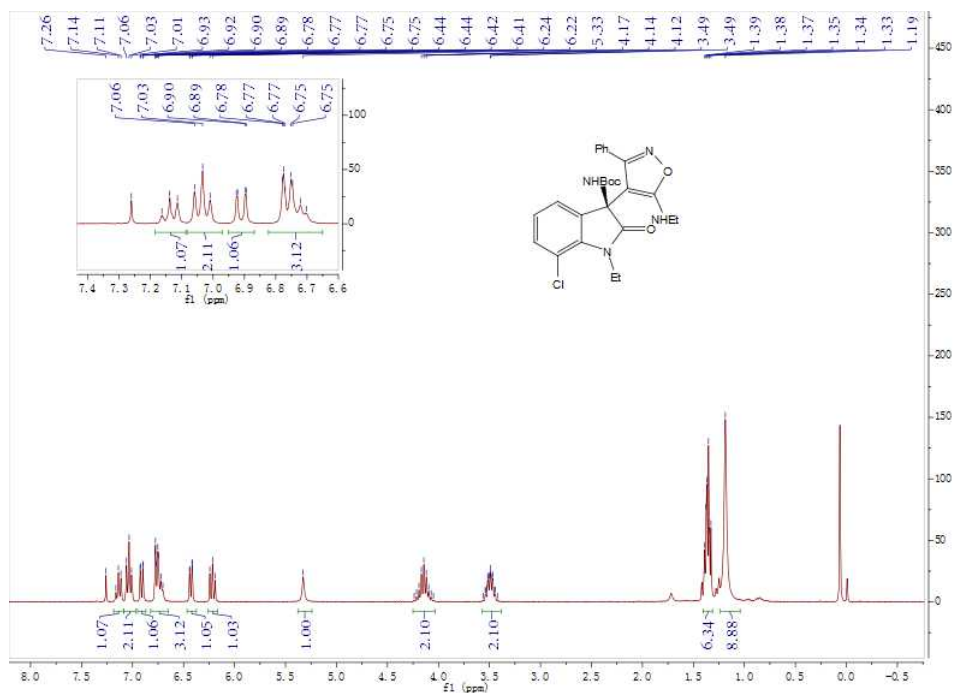




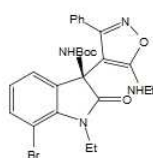
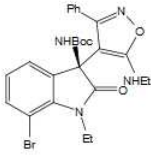
**oxoindolin-3-yl)carbamate (3ai)**



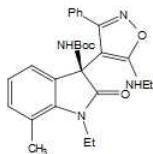
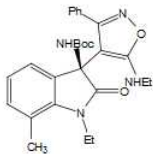
**tert-butyl (S)-(7-chloro-1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3aj)**



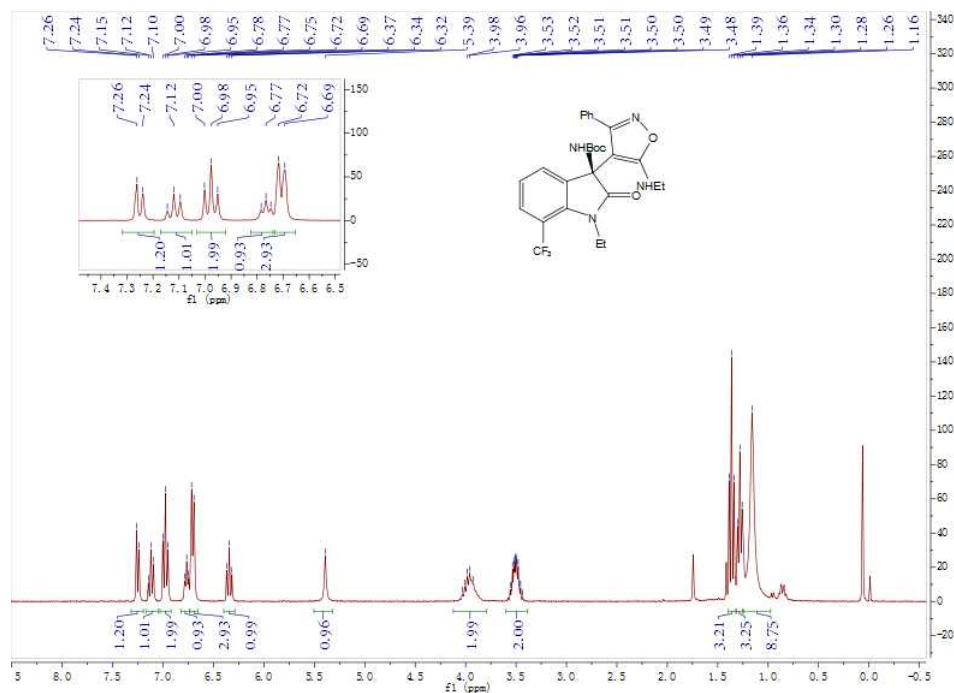
**oxoindolin-3-yl)carbamate (3ak)**



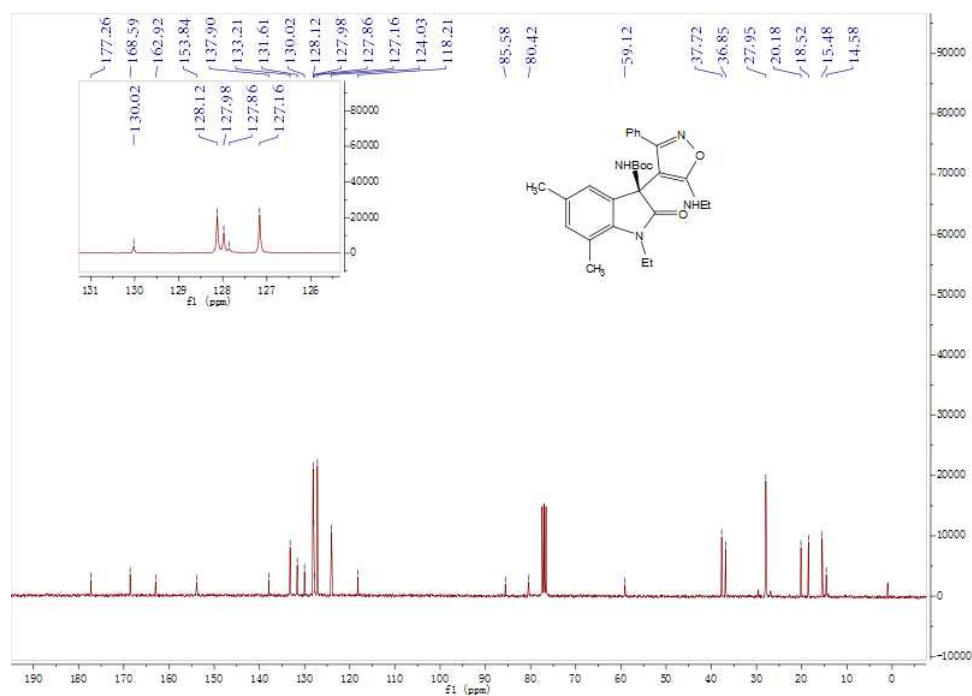
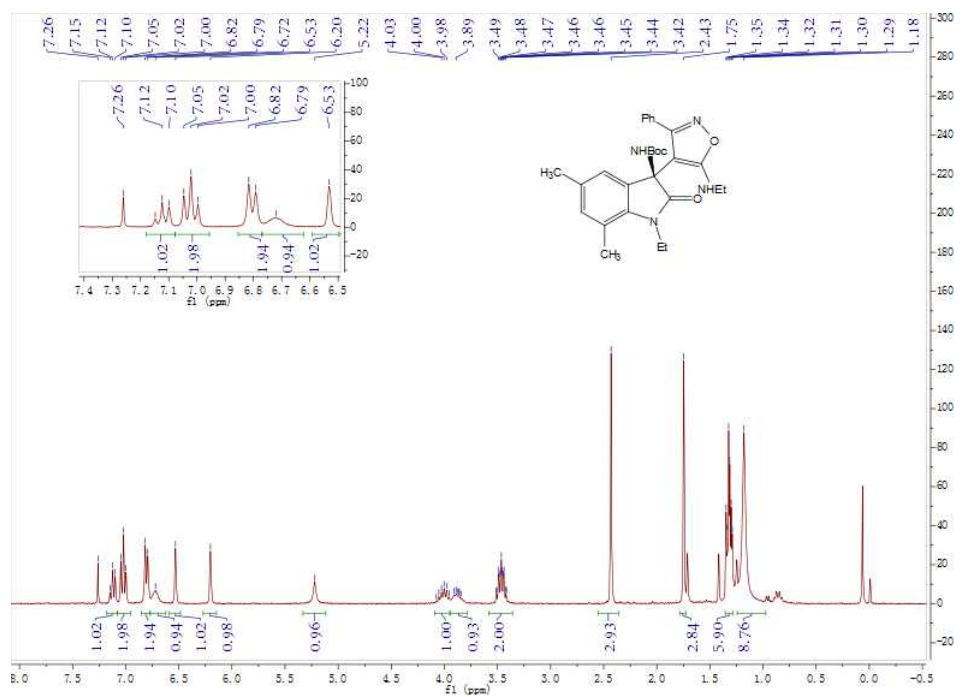
**oxoindolin-3-yl)carbamate (3al)**



**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxo-7-(trifluoromethyl)indolin-3-yl)carbamate(3am)**

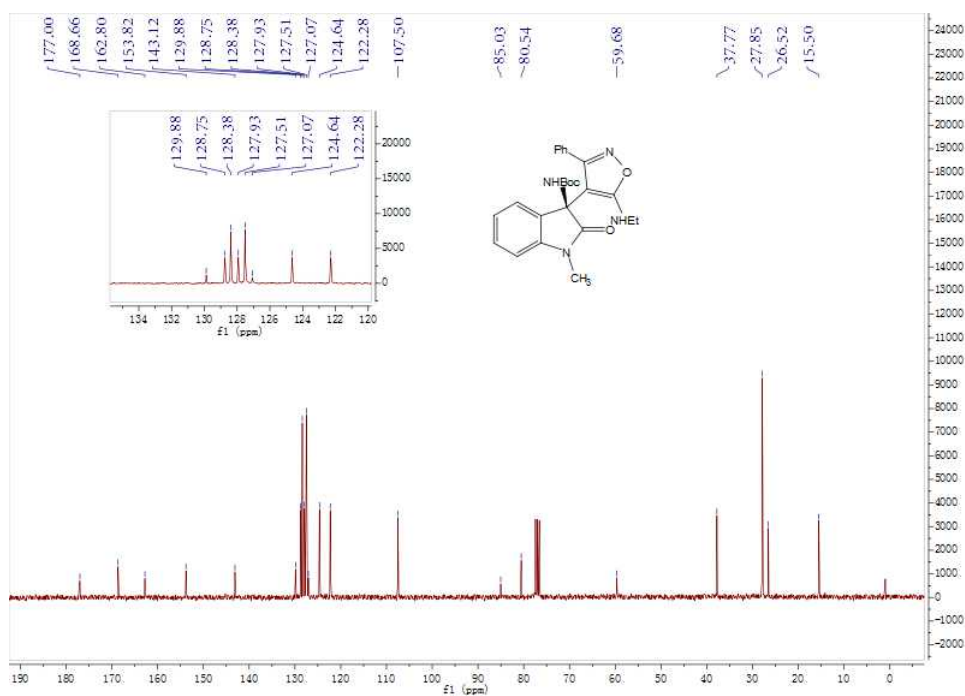
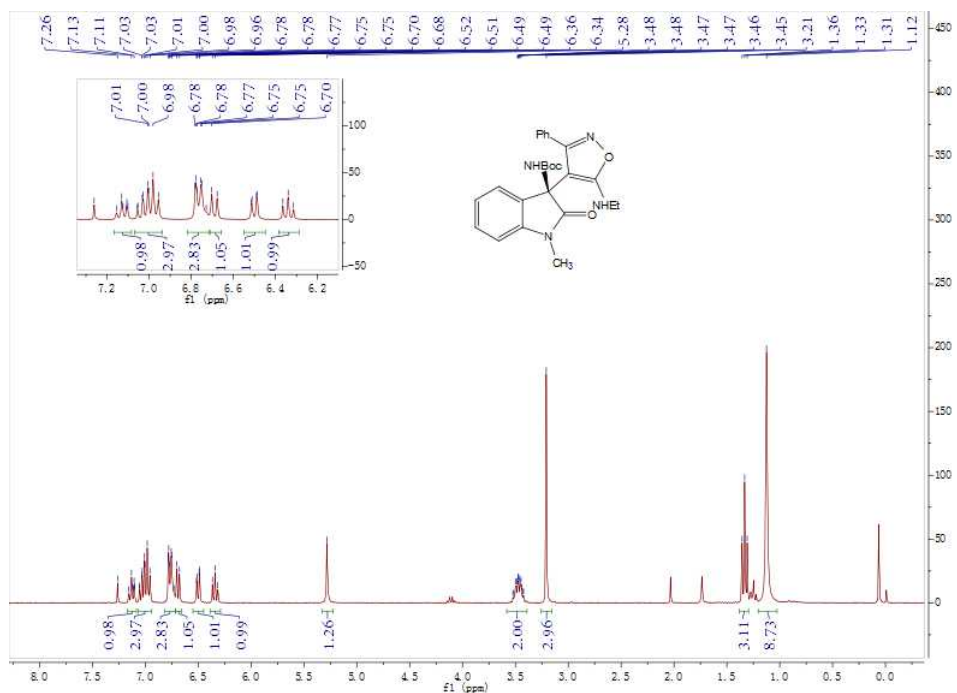


**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-5,7-dimethyl-2-oxoindolin-3-yl)carbamate (3an)**

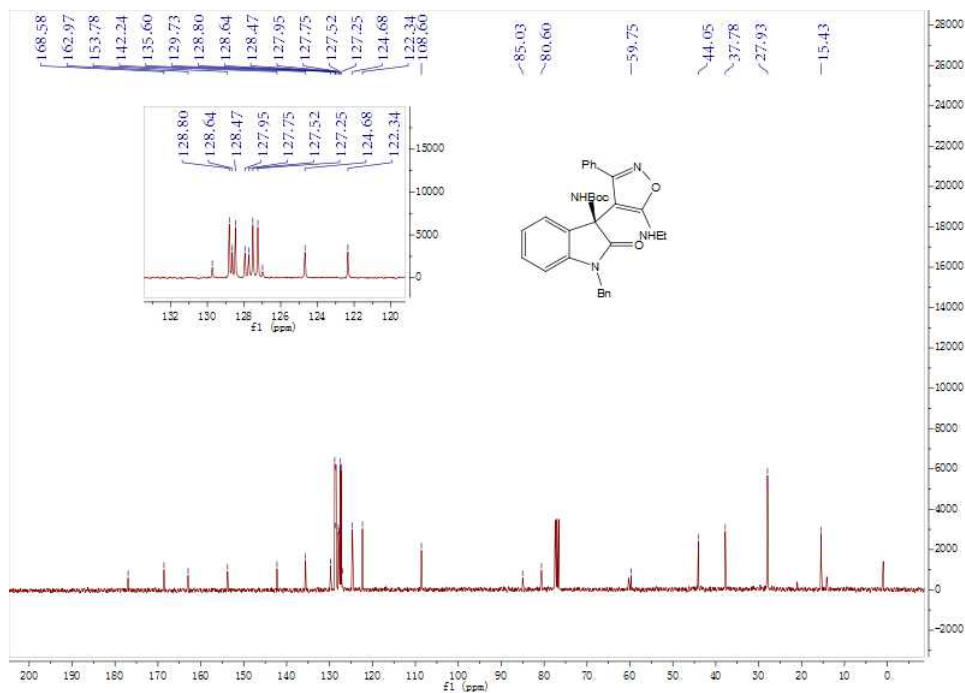
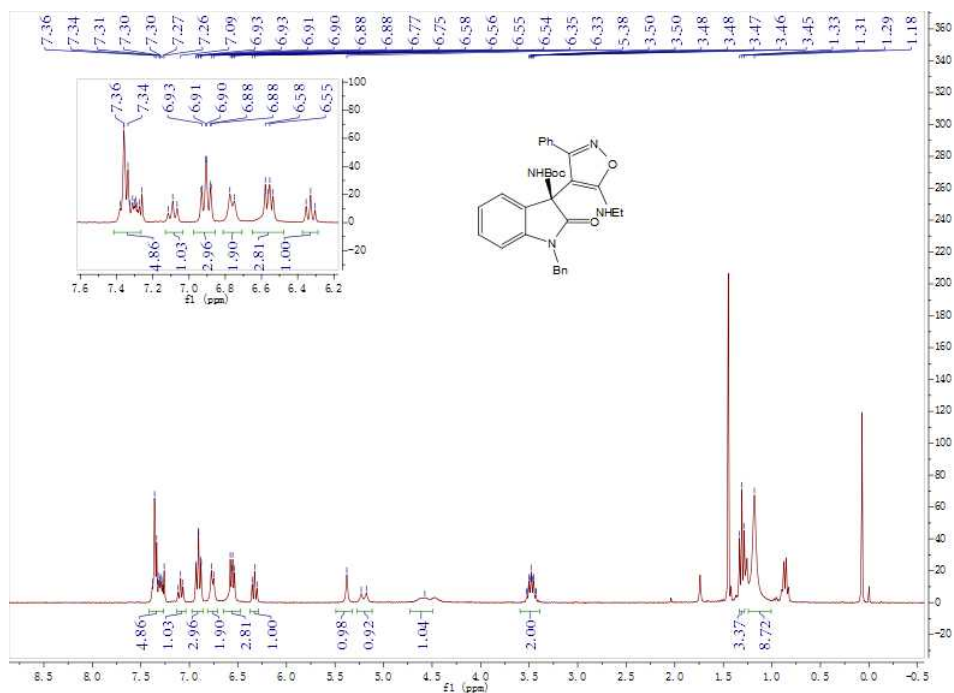




**tert-butyl (S)-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-1-methyl-2-oxoindolin-3-yl)carbamate (3ao)**

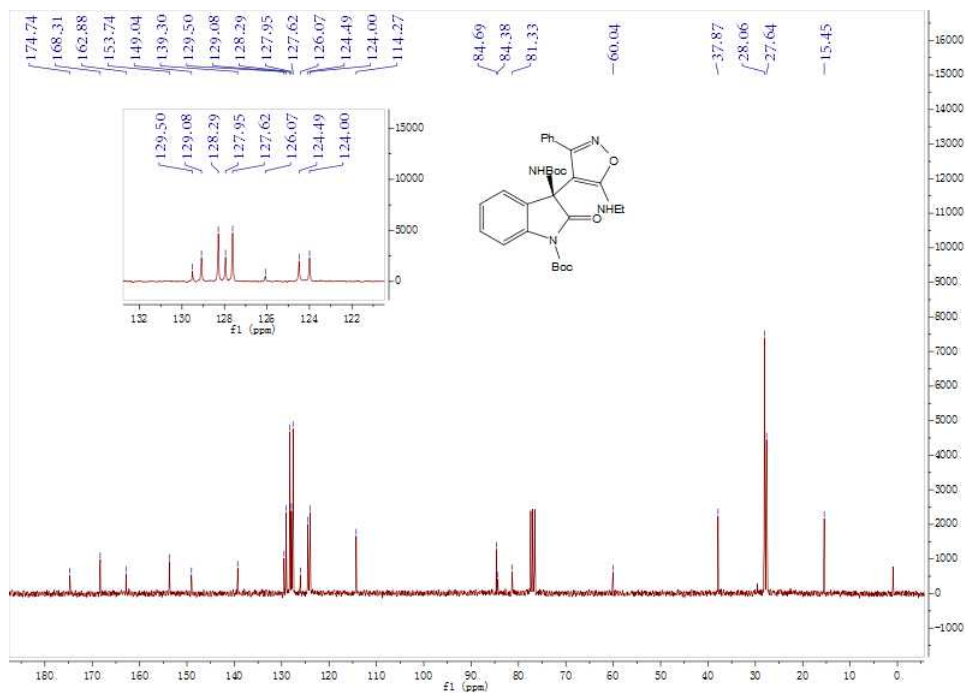
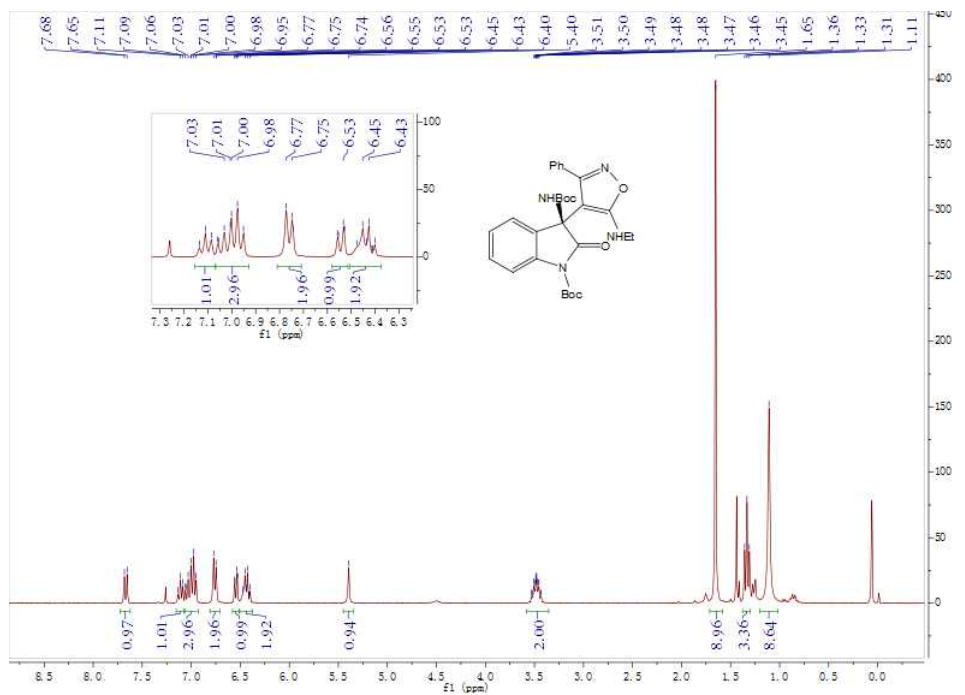


**tert-butyl (S)-(1-benzyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)  
carbamate (3ap)**

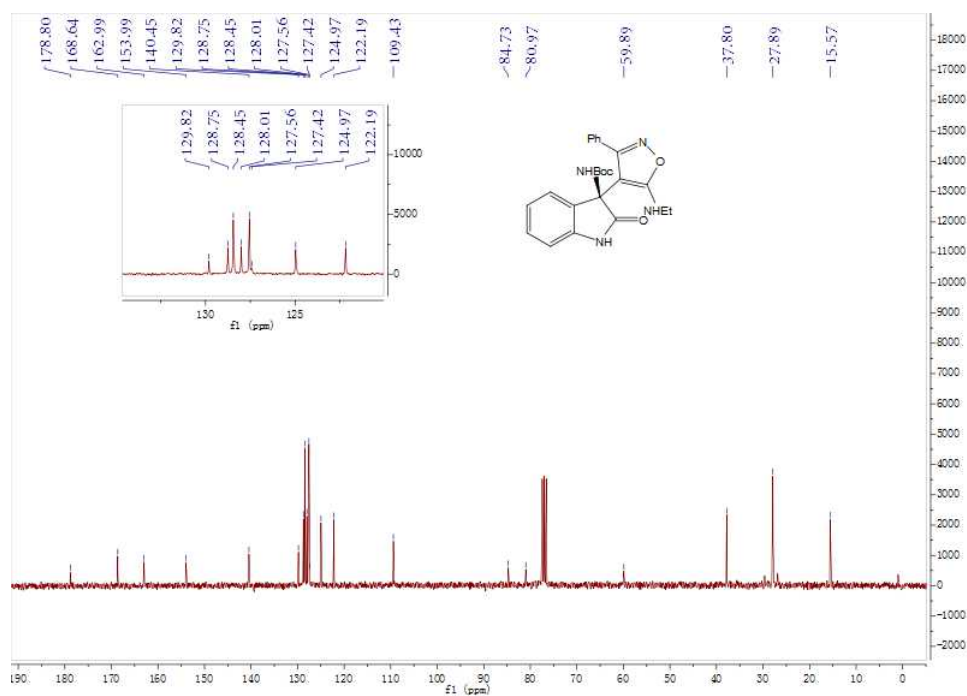
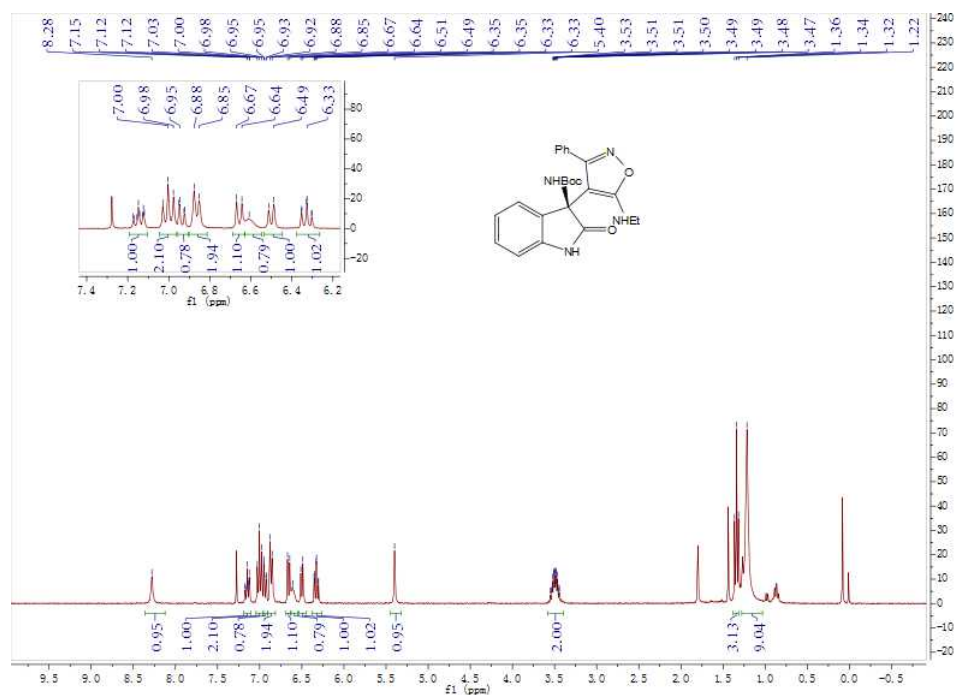




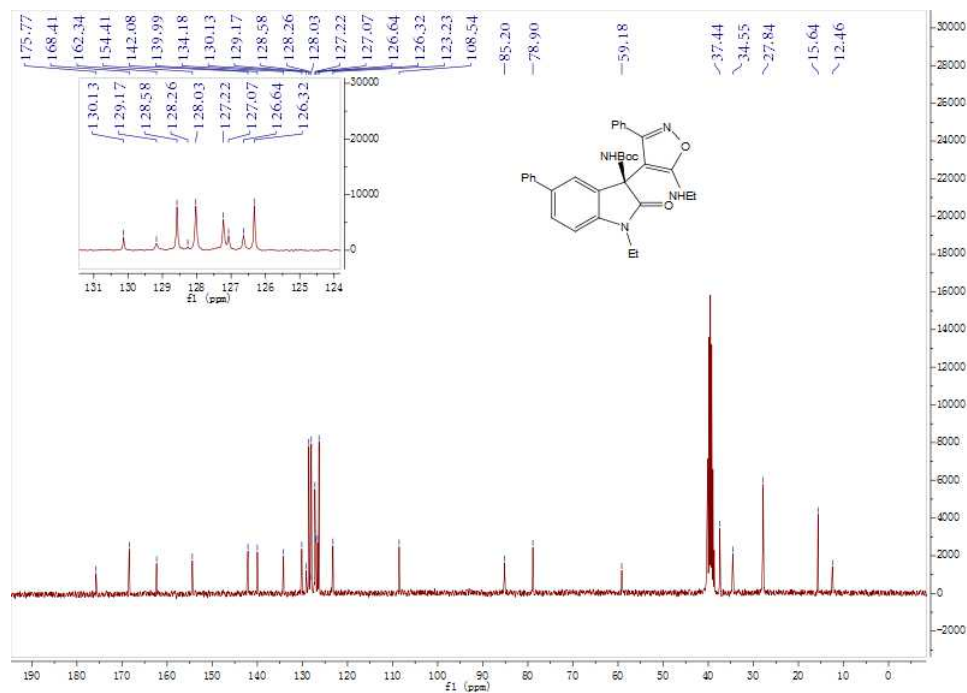
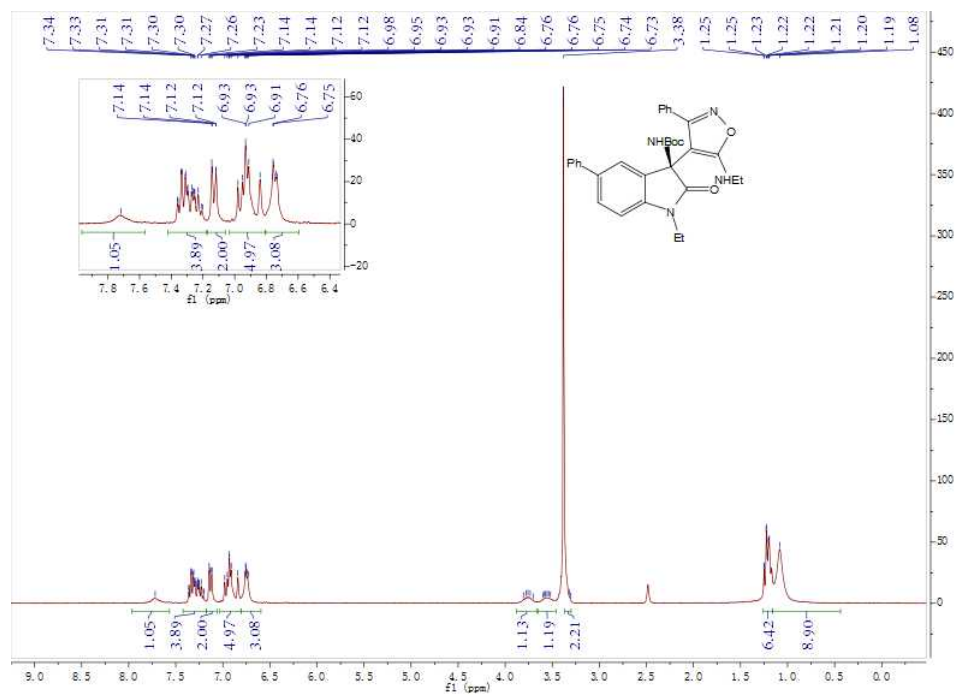
**tert-butyl (S)-3-((tert-butoxycarbonyl)amino)-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindoline-1-carboxylate (3aq)**



**tert-butyl (S)-(3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)  
carbamate (3ar)**

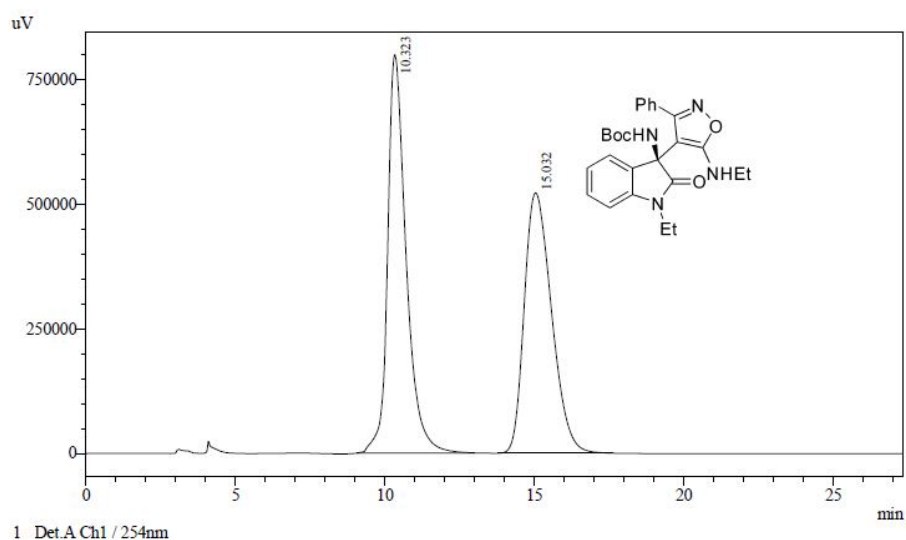


**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxo-5-phenylindolin-3-yl)carbamate (4)**



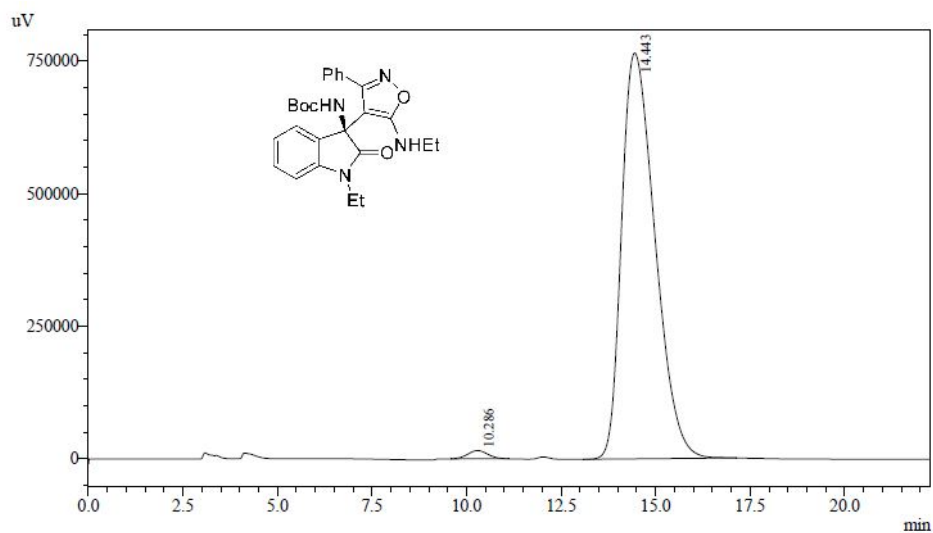
#### 4. HPLC Charts of Products

##### tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl) carbamate (3aa)



Detector A Ch1 254nm

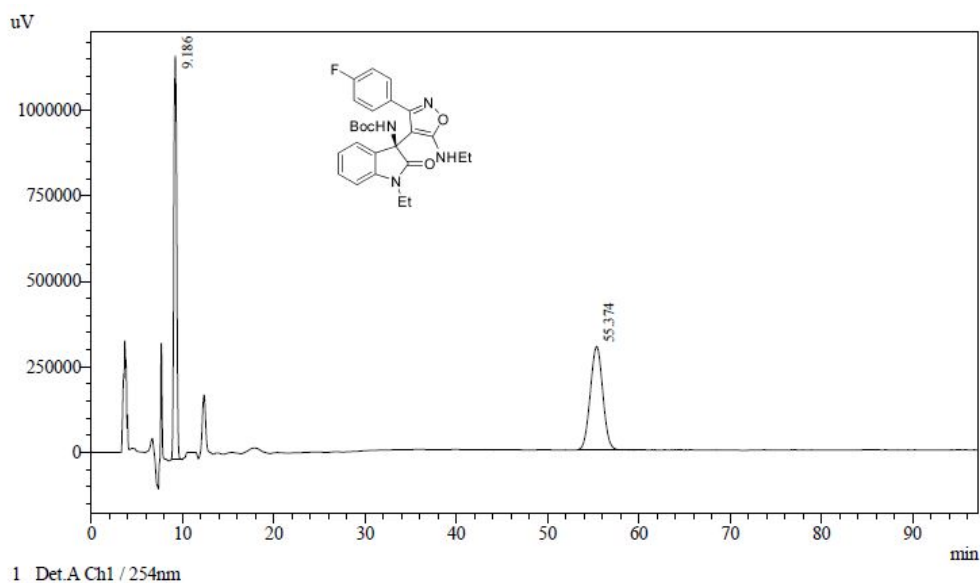
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 10.323    | 34388938 | 799463  | 50.911  | 60.481   |
| 2     | 15.032    | 33157693 | 522368  | 49.089  | 39.519   |
| Total |           | 67546631 | 1321831 | 100.000 | 100.000  |



Detector A Ch1 254nm

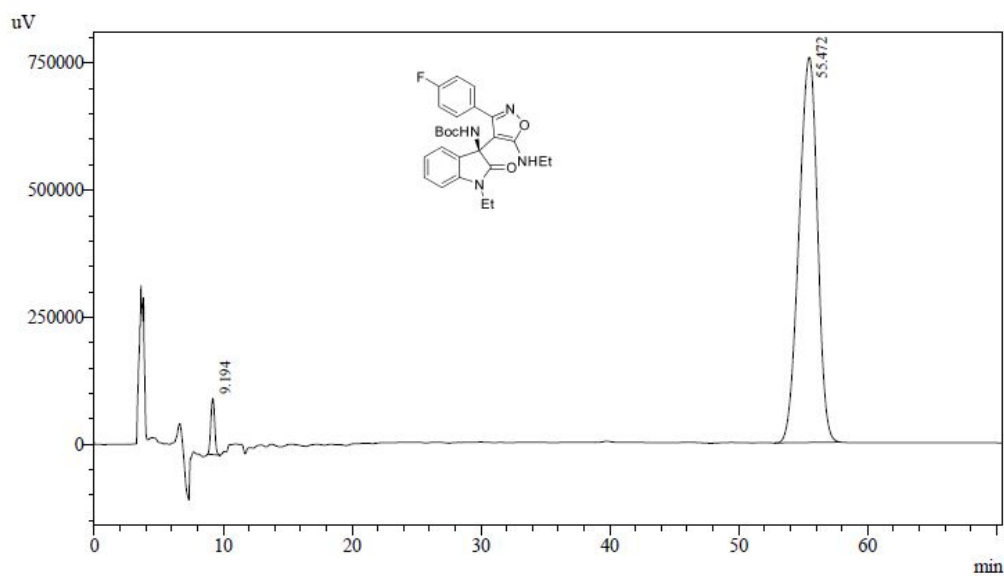
| Peak# | Ret. Time | Area     | Height | Area %  | Height % |
|-------|-----------|----------|--------|---------|----------|
| 1     | 10.286    | 572343   | 15463  | 1.204   | 1.981    |
| 2     | 14.443    | 46972498 | 764952 | 98.796  | 98.019   |
| Total |           | 47544841 | 780415 | 100.000 | 100.000  |

**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-(4-fluorophenyl)isoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ba)**



Detector A Ch1 254nm

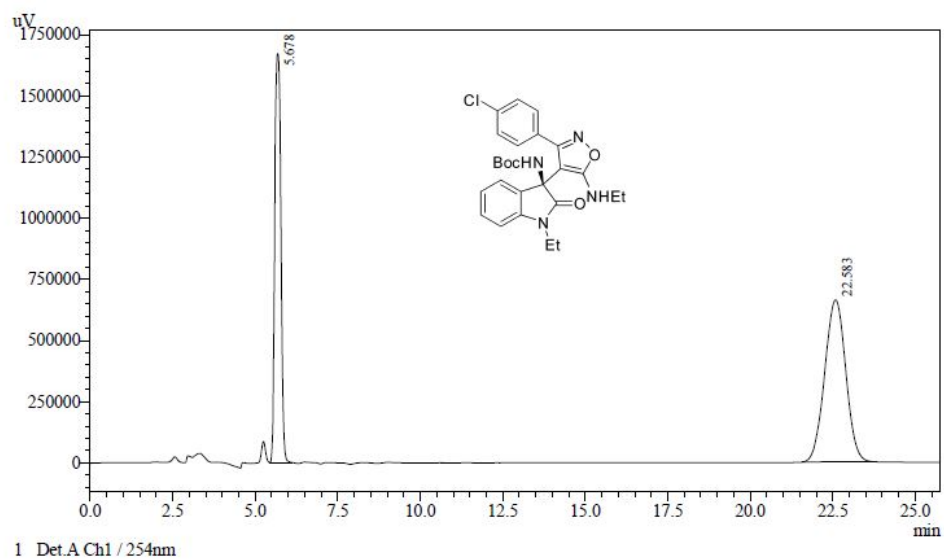
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 9.186     | 25894399 | 1179017 | 47.505  | 79.631   |
| 2     | 55.374    | 28614007 | 301576  | 52.495  | 20.369   |
| Total |           | 54508405 | 1480593 | 100.000 | 100.000  |



Detector A Ch1 254nm

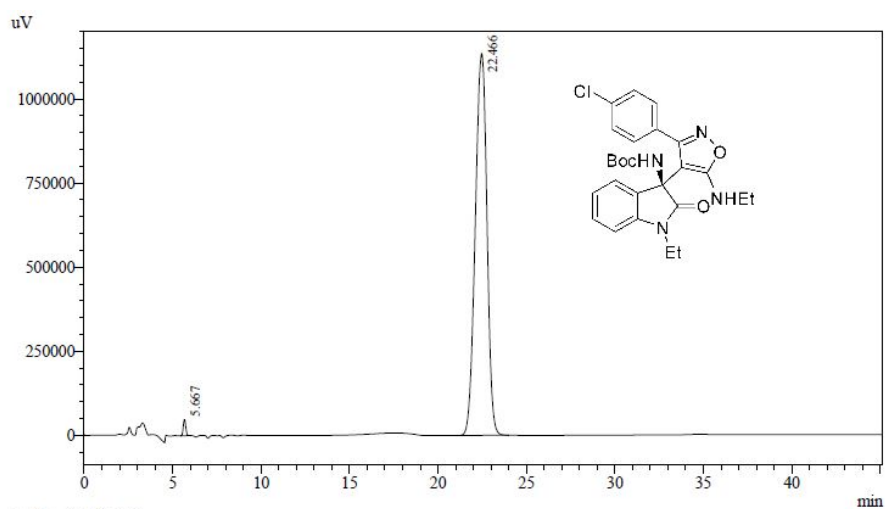
| Peak# | Ret. Time | Area     | Height | Area %  | Height % |
|-------|-----------|----------|--------|---------|----------|
| 1     | 9.194     | 2311040  | 110471 | 2.971   | 12.720   |
| 2     | 55.472    | 75488169 | 758035 | 97.029  | 87.280   |
| Total |           | 77799209 | 868505 | 100.000 | 100.000  |

**tert-butyl (S)-3-(3-(4-chlorophenyl)-5-(ethylamino)isoxazol-4-yl)-1-ethyl-2-oxoindolin-3-yl)carbamate (3ca)**



Detector A Ch1 254nm

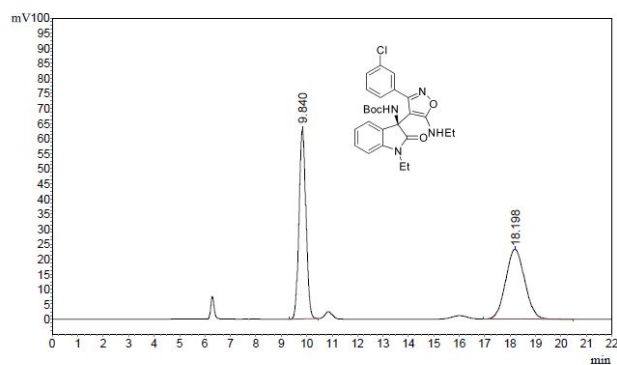
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 5.678     | 21578046 | 1671214 | 42.373  | 71.639   |
| 2     | 22.583    | 29345441 | 661611  | 57.627  | 28.361   |
| Total |           | 50923486 | 2332825 | 100.000 | 100.000  |



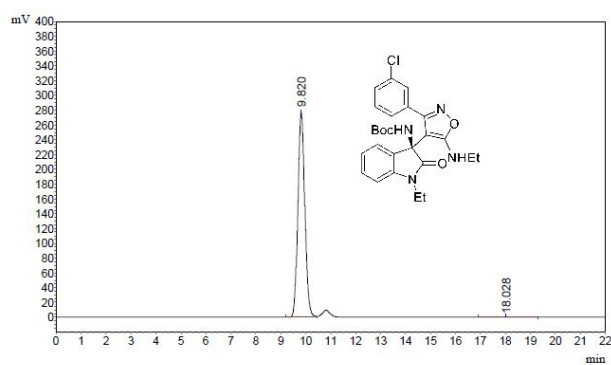
Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 5.667     | 478528   | 48186   | 0.911   | 4.070    |
| 2     | 22.466    | 52042758 | 1135662 | 99.089  | 95.930   |
| Total |           | 52521286 | 1183848 | 100.000 | 100.000  |

**tert-butyl (S)-(3-(3-(3-chlorophenyl)-5-(ethylamino)isoxazol-4-yl)-1-ethyl-2-oxoindolin-3-yl)carbamate (3da)**

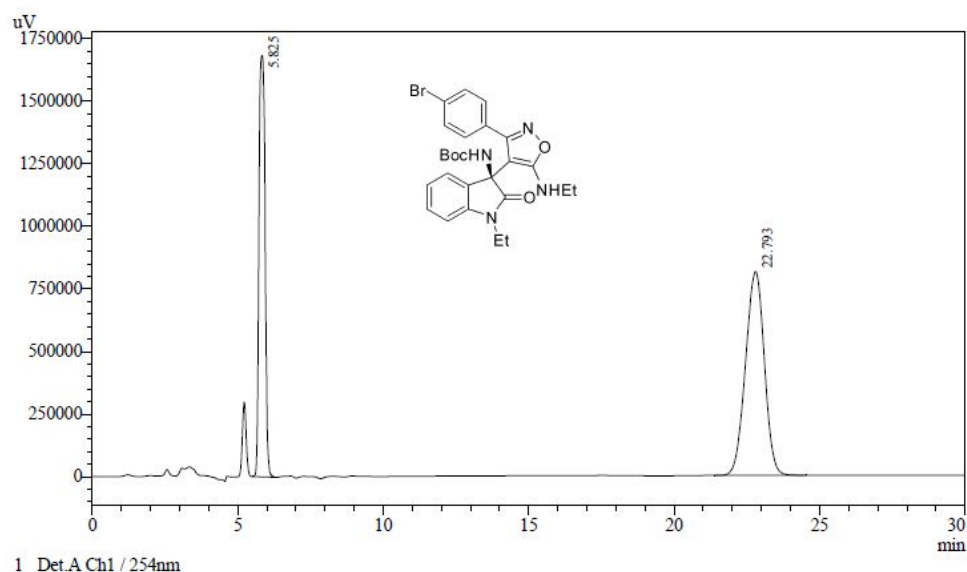


| Peak# | Ret.Time | Height    | Area        | Area%    |
|-------|----------|-----------|-------------|----------|
| 1     | 9.840    | 62744.145 | 1198230.375 | 49.8199  |
| 2     | 18.198   | 23076.396 | 1206893.375 | 50.1801  |
| Total |          | 85820.541 | 2405123.750 | 100.0000 |



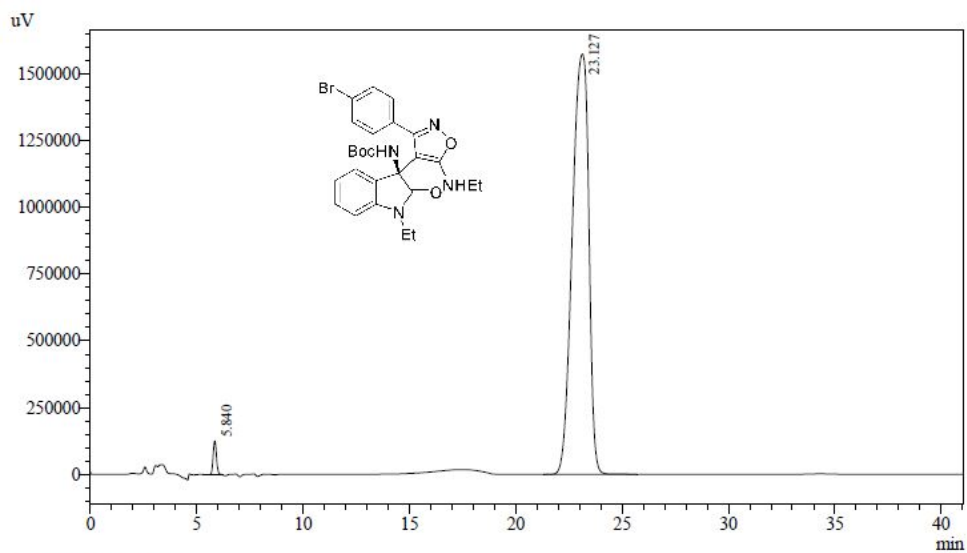
| Peak# | Ret.Time | Height     | Area        | Area%    |
|-------|----------|------------|-------------|----------|
| 1     | 9.820    | 275971.000 | 5358118.500 | 99.9813  |
| 2     | 18.028   | 20.305     | 1003.168    | 0.0187   |
| Total |          | 275991.305 | 5359121.668 | 100.0000 |

**tert-butyl (S)-3-(3-(4-bromophenyl)-5-(ethylamino)isoxazol-4-yl)-1-ethyl-2-oxoindolin-3-yl)carbamate (3ea)**



Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 5.825     | 24797367 | 1682965 | 40.367  | 67.394   |
| 2     | 22.793    | 36632814 | 814230  | 59.633  | 32.606   |
| Total |           | 61430181 | 2497195 | 100.000 | 100.000  |

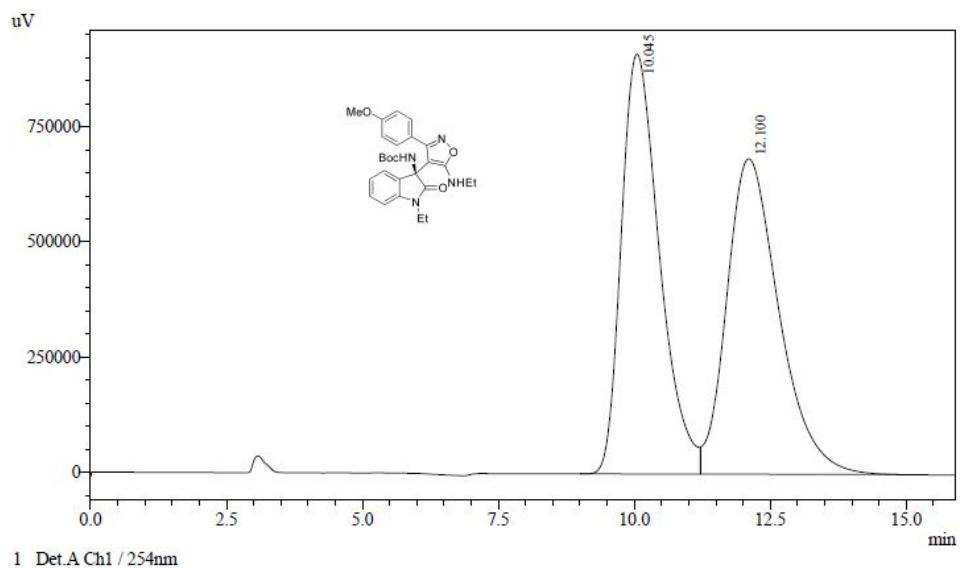


Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 5.840     | 1375851  | 126521  | 1.592   | 7.435    |
| 2     | 23.127    | 85024981 | 1575212 | 98.408  | 92.565   |
| Total |           | 86400832 | 1701733 | 100.000 | 100.000  |

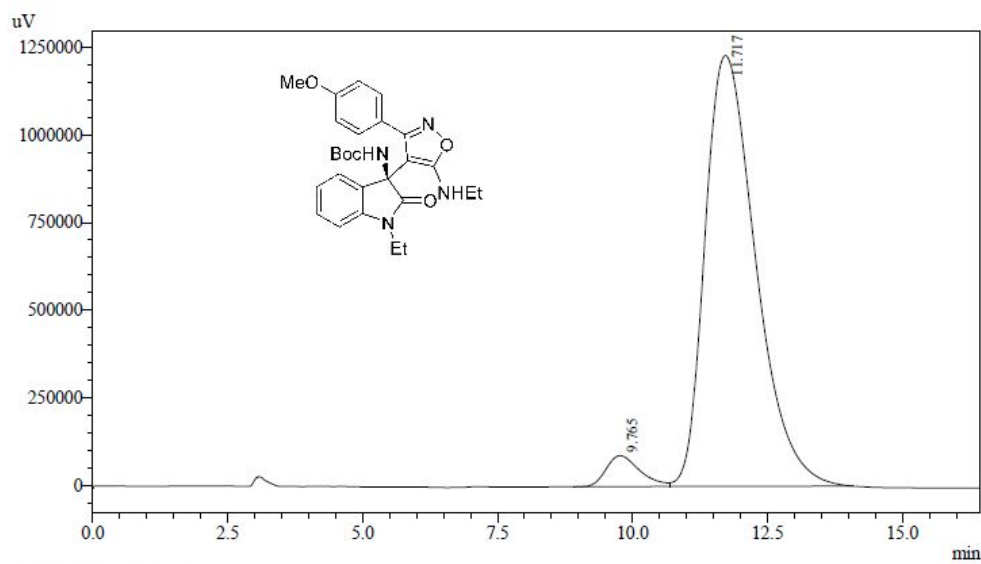


**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-(4-methoxyphenyl)isoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3fa)**



Detector A Ch1 254nm

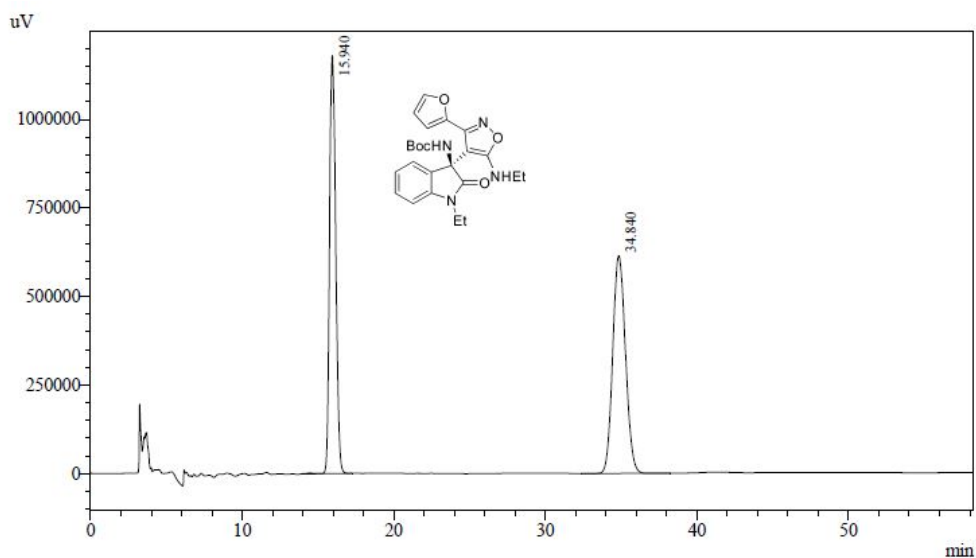
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 10.045    | 44603149 | 911835  | 49.316  | 57.093   |
| 2     | 12.100    | 45841118 | 685279  | 50.684  | 42.907   |
| Total |           | 90444266 | 1597114 | 100.000 | 100.000  |



Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 9.765     | 3836250  | 88111   | 4.564   | 6.702    |
| 2     | 11.717    | 80213847 | 1226512 | 95.436  | 93.298   |
| Total |           | 84050097 | 1314623 | 100.000 | 100.000  |

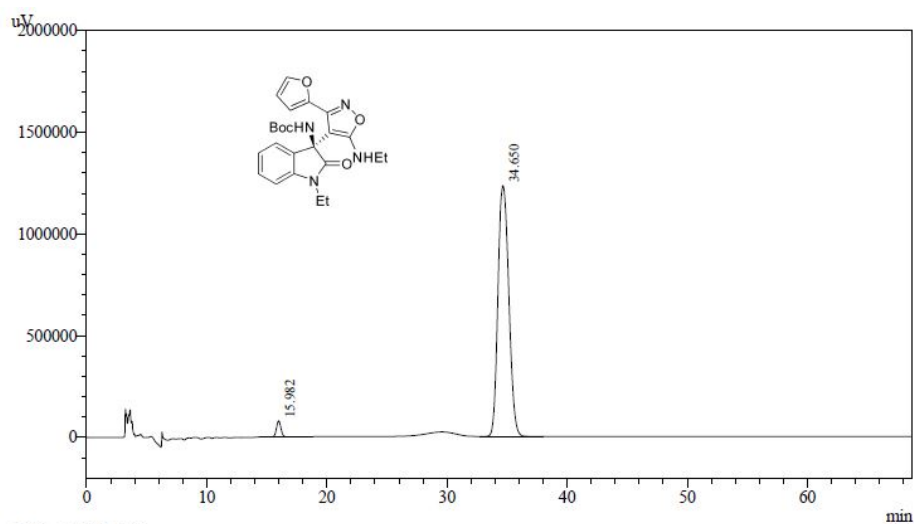
**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-(furan-2-yl)isoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ga)**



1 Det.A Ch1 / 254nm

Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 15.940    | 33633687 | 1180575 | 48.311  | 65.754   |
| 2     | 34.840    | 35985361 | 614858  | 51.689  | 34.246   |
| Total |           | 69619048 | 1795433 | 100.000 | 100.000  |

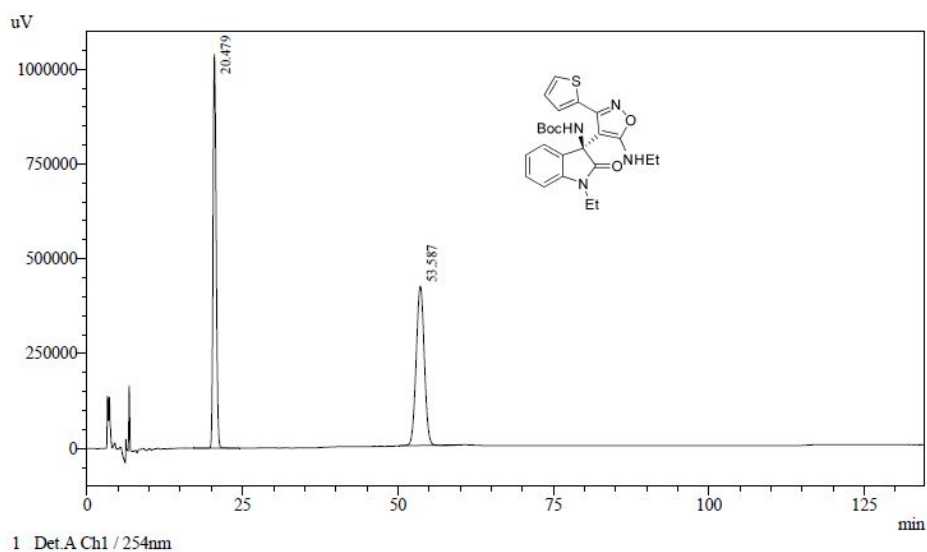


1 Det.A Ch1 / 254nm

Detector A Ch1 254nm

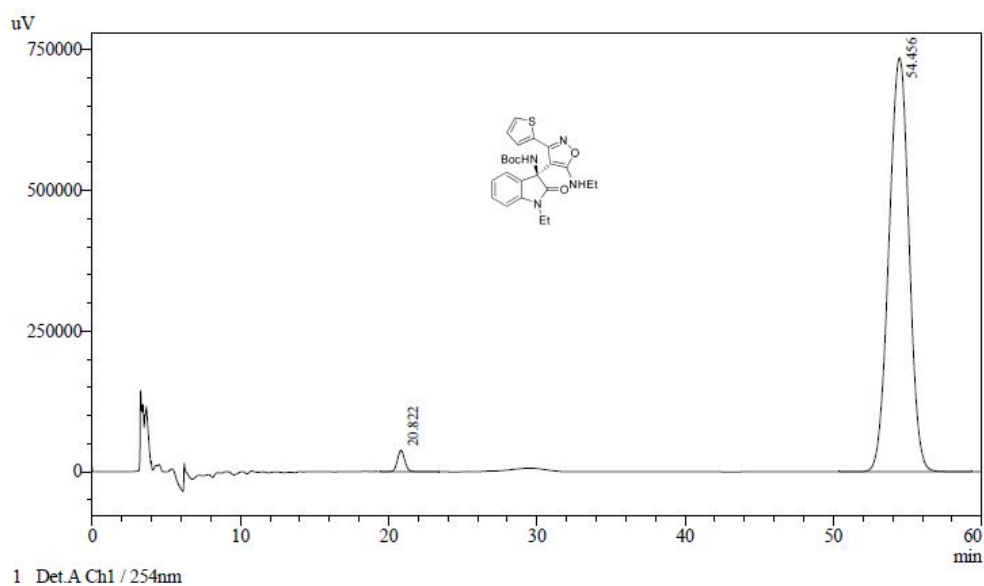
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 15.982    | 1988969  | 78609   | 2.507   | 5.991    |
| 2     | 34.650    | 77362903 | 1233428 | 97.493  | 94.009   |
| Total |           | 79351873 | 1312038 | 100.000 | 100.000  |

**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-(thiophen-2-yl)isoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ha)**



Detector A Ch1 254nm

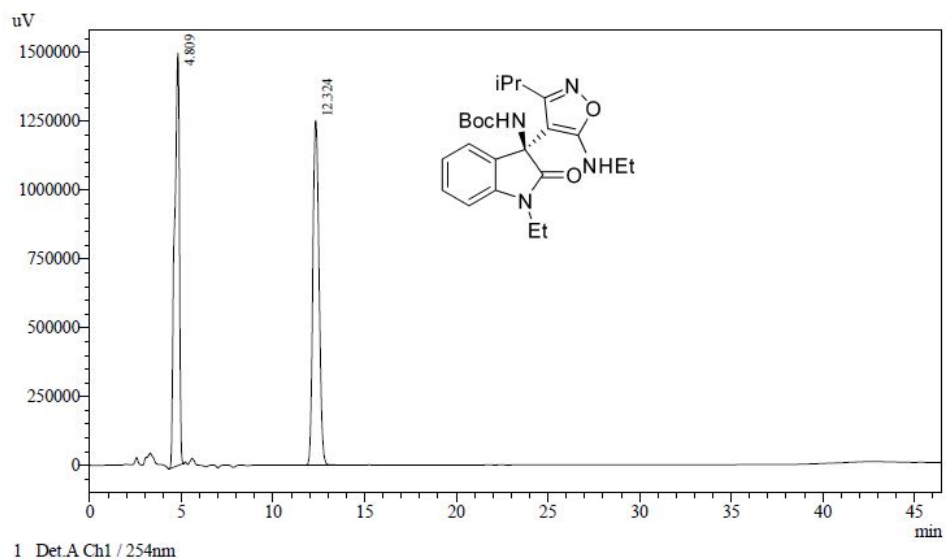
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 20.479    | 36188674 | 1038418 | 48.800  | 71.197   |
| 2     | 53.587    | 37968878 | 420097  | 51.200  | 28.803   |
| Total |           | 74157551 | 1458515 | 100.000 | 100.000  |



Detector A Ch1 254nm

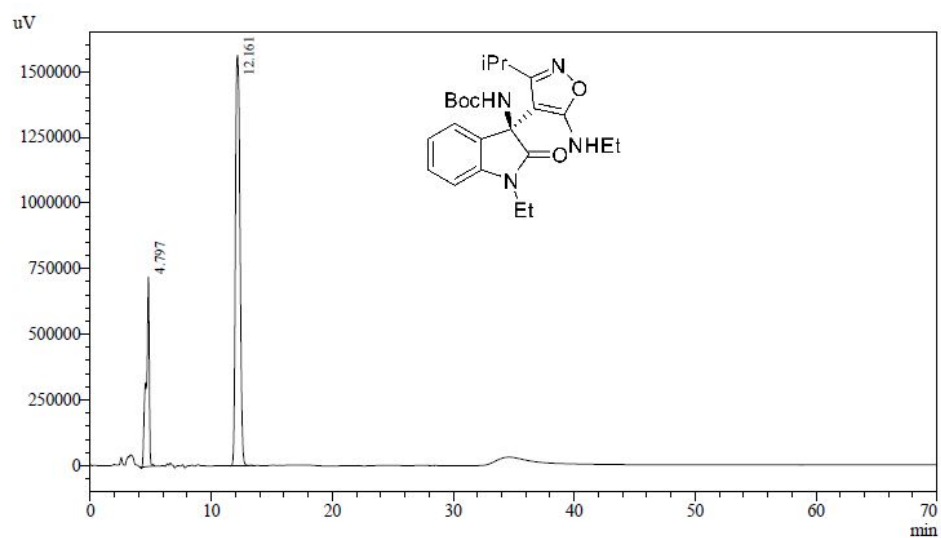
| Peak# | Ret. Time | Area     | Height | Area %  | Height % |
|-------|-----------|----------|--------|---------|----------|
| 1     | 20.822    | 1300650  | 37818  | 1.846   | 4.887    |
| 2     | 54.456    | 69161020 | 735966 | 98.154  | 95.113   |
| Total |           | 70461670 | 773785 | 100.000 | 100.000  |

**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-isopropylisoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ia)**



Detector A Ch1 254nm

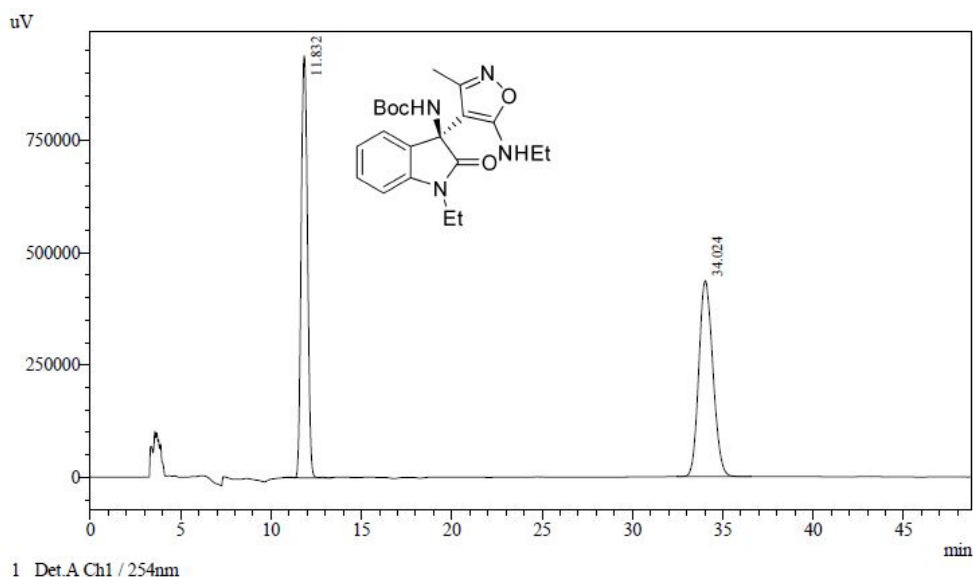
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 4.809     | 27620366 | 1498164 | 48.480  | 54.445   |
| 2     | 12.324    | 29352081 | 1253518 | 51.520  | 45.555   |
| Total |           | 56972447 | 2751682 | 100.000 | 100.000  |



Detector A Ch1 254nm

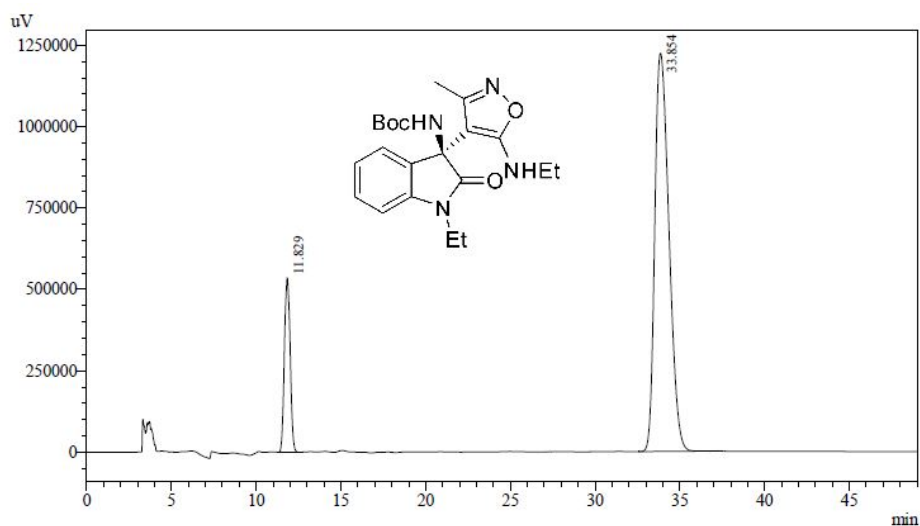
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 4.797     | 12496684 | 721652  | 23.435  | 31.595   |
| 2     | 12.161    | 40828310 | 1562420 | 76.565  | 68.405   |
| Total |           | 53324994 | 2284072 | 100.000 | 100.000  |

**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-methylisoxazol-4-yl)-2-oxoindolin-3-yl)  
carbamate (3ja)**



Detector A Ch1 254nm

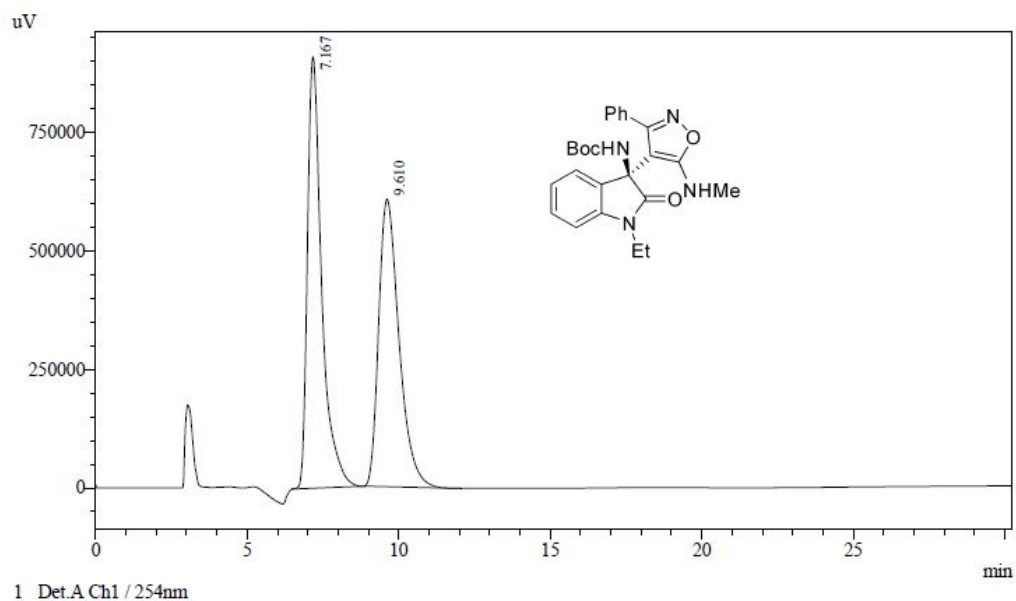
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 11.832    | 22838992 | 939691  | 49.182  | 68.265   |
| 2     | 34.024    | 23598773 | 436841  | 50.818  | 31.735   |
| Total |           | 46437765 | 1376532 | 100.000 | 100.000  |



Detector A Ch1 254nm

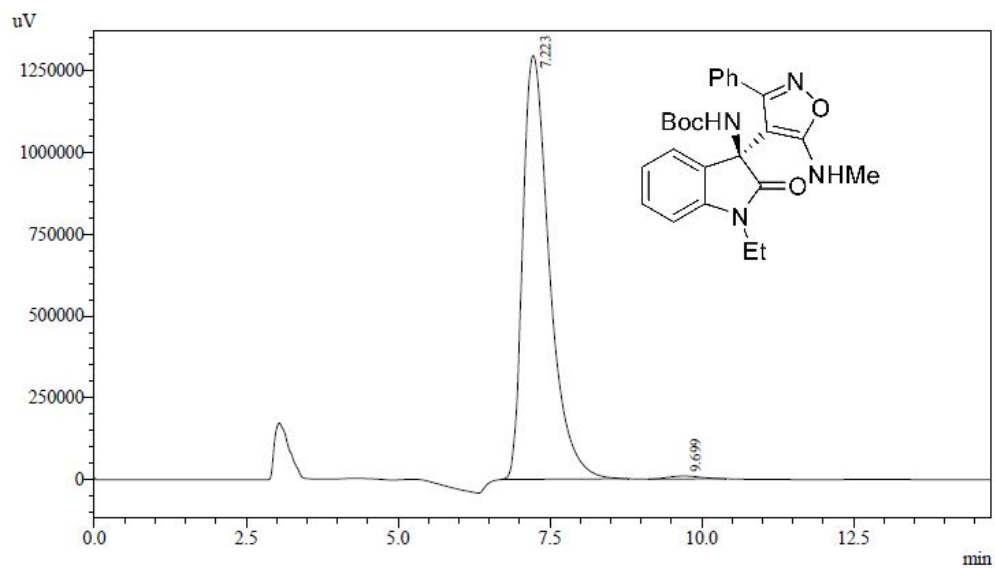
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 11.829    | 12801684 | 536000  | 15.265  | 30.460   |
| 2     | 33.854    | 71059533 | 1223683 | 84.735  | 69.540   |
| Total |           | 83861216 | 1759683 | 100.000 | 100.000  |

**tert-butyl (S)-(1-ethyl-3-(5-(methylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)  
carbamate (3ka)**



Detector A Ch1 254nm

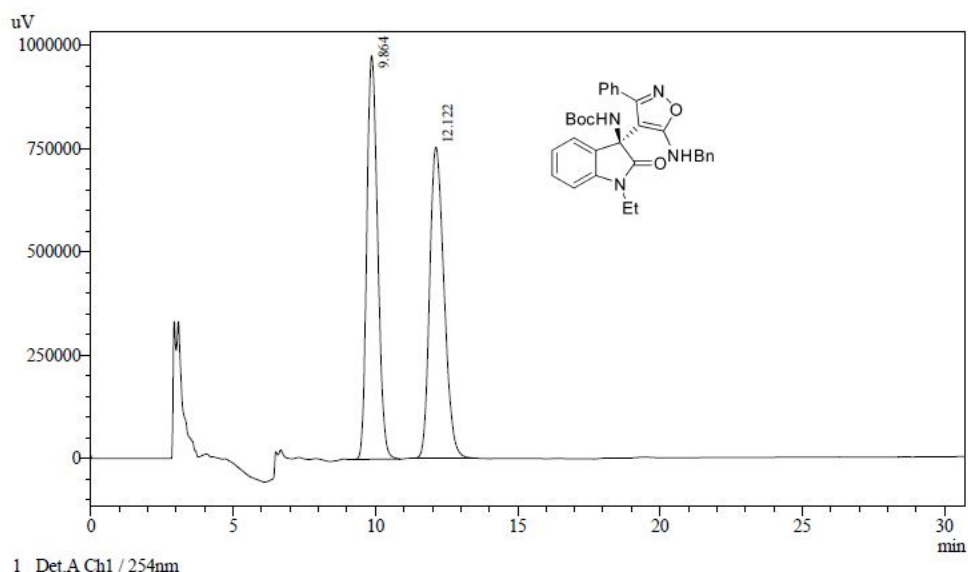
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 7.167     | 29808360 | 910704  | 51.297  | 59.999   |
| 2     | 9.610     | 28300720 | 607172  | 48.703  | 40.001   |
| Total |           | 58109080 | 1517876 | 100.000 | 100.000  |



Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 7.223     | 39624116 | 1294444 | 99.173  | 99.298   |
| 2     | 9.699     | 330444   | 9151    | 0.827   | 0.702    |
| Total |           | 39954560 | 1303595 | 100.000 | 100.000  |

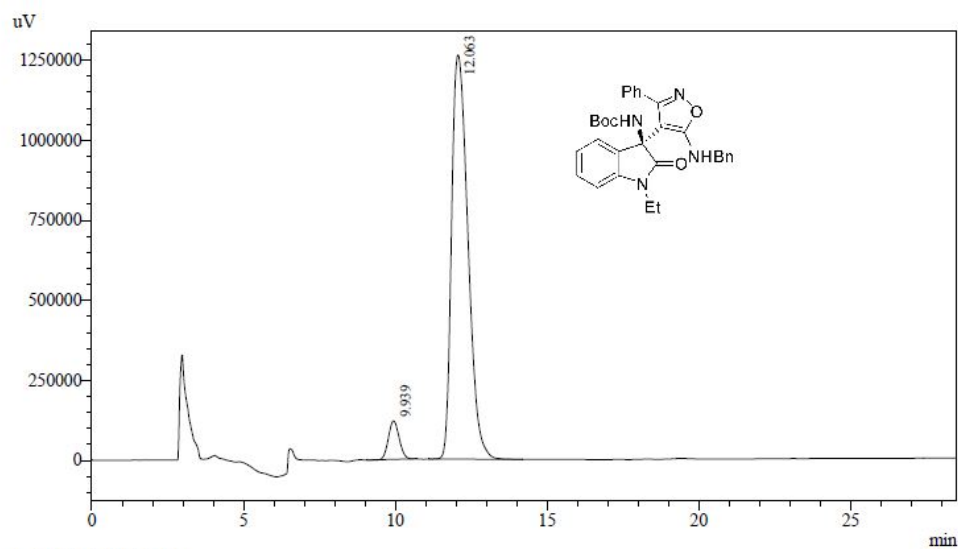
**tert-butyl (S)-(3-(5-(benzylamino)-3-phenylisoxazol-4-yl)-1-ethyl-2-oxoindolin-3-yl)  
carbamate (3la)**



1 Det.A Ch1 / 254nm

Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 9.864     | 25816114 | 975876  | 49.425  | 56.476   |
| 2     | 12.122    | 26417177 | 752072  | 50.575  | 43.524   |
| Total |           | 52233290 | 1727948 | 100.000 | 100.000  |

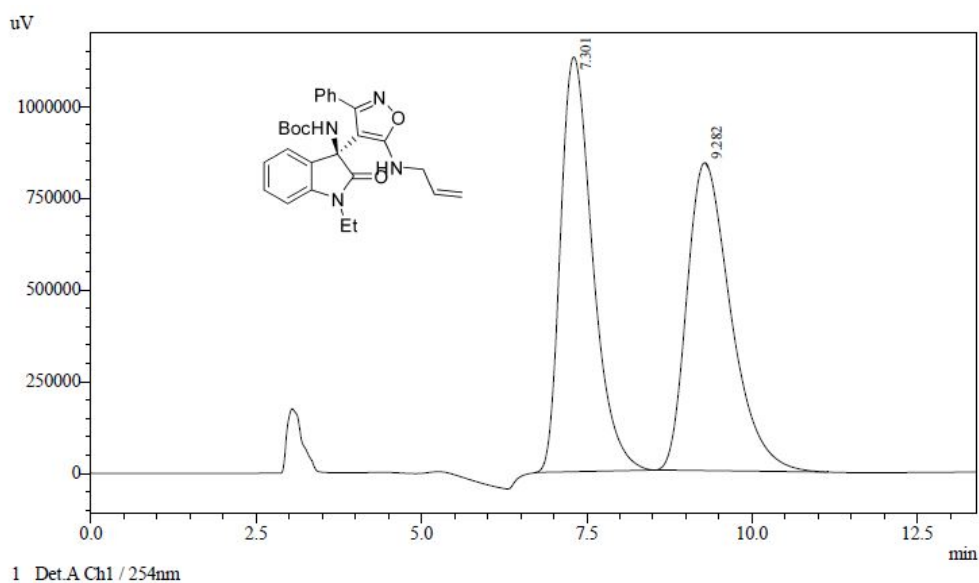


1 Det.A Ch1 / 254nm

Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 9.939     | 2945552  | 120301  | 5.861   | 8.697    |
| 2     | 12.063    | 47309435 | 1262874 | 94.139  | 91.303   |
| Total |           | 50254987 | 1383175 | 100.000 | 100.000  |

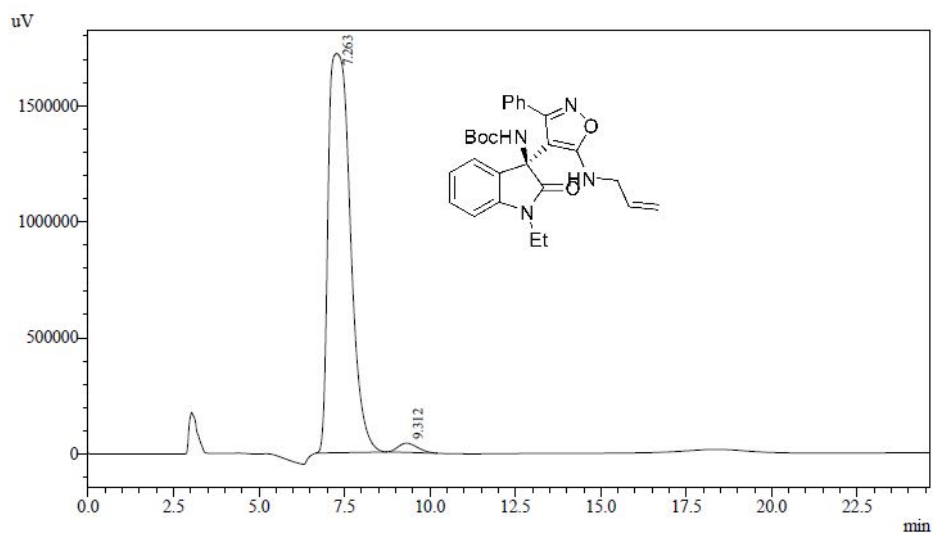
**tert-butyl (S)-(3-(5-(allylamino)-3-phenylisoxazol-4-yl)-1-ethyl-2-oxoindolin-3-yl)  
carbamate (3ma)**



1 Det.A Ch1 / 254nm

Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 7.301     | 38135291 | 1129098 | 49.674  | 57.379   |
| 2     | 9.282     | 38635418 | 838684  | 50.326  | 42.621   |
| Total |           | 76770709 | 1967783 | 100.000 | 100.000  |



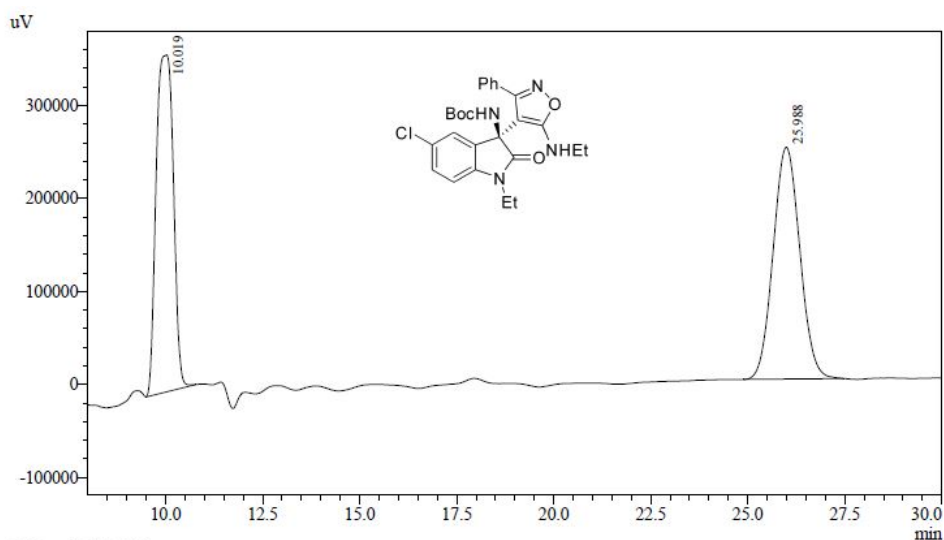
1 Det.A Ch1 / 254nm

Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 7.263     | 77473792 | 1719900 | 98.033  | 97.753   |
| 2     | 9.312     | 1554817  | 39540   | 1.967   | 2.247    |
| Total |           | 79028609 | 1759440 | 100.000 | 100.000  |



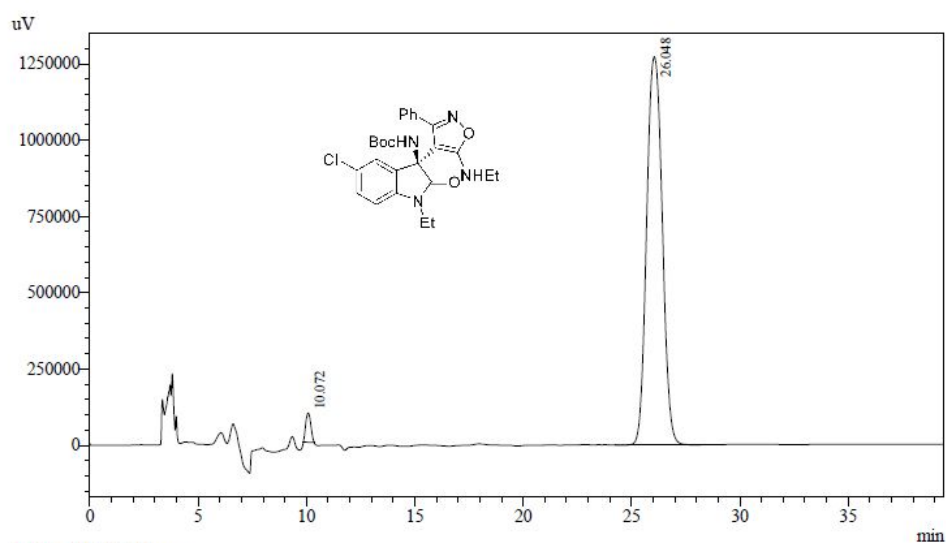
**tert-butyl (S)-(5-chloro-1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ab)**



1 Det.A Ch1 / 254nm

Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height | Area %  | Height % |
|-------|-----------|----------|--------|---------|----------|
| 1     | 10.019    | 11216711 | 362459 | 48.469  | 59.237   |
| 2     | 25.988    | 11925501 | 249422 | 51.531  | 40.763   |
| Total |           | 23142212 | 611881 | 100.000 | 100.000  |

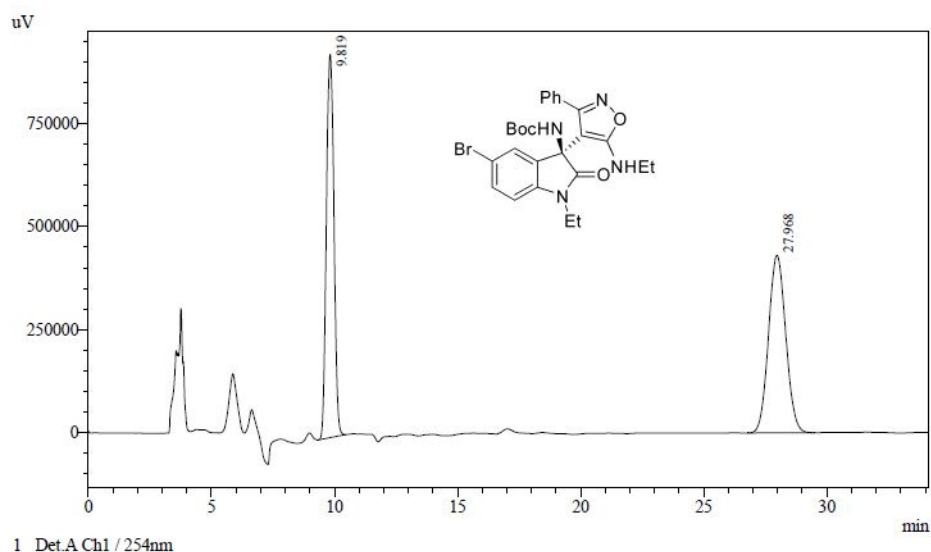


1 Det.A Ch1 / 254nm

Detector A Ch1 254nm

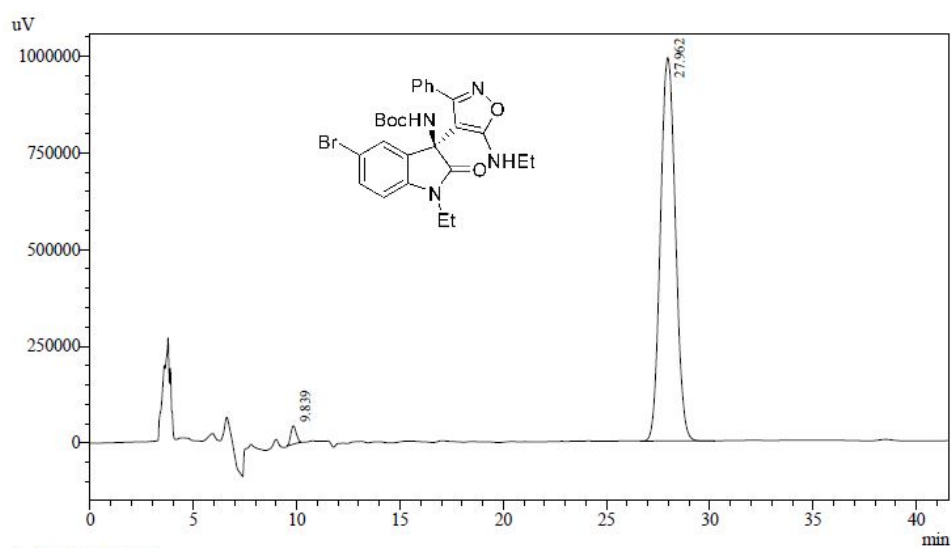
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 10.072    | 1556292  | 95643   | 2.392   | 6.997    |
| 2     | 26.048    | 63503515 | 1271211 | 97.608  | 93.003   |
| Total |           | 65059807 | 1366854 | 100.000 | 100.000  |

**tert-butyl (S)-(5-bromo-1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ac)**



Detector A Ch1 254nm

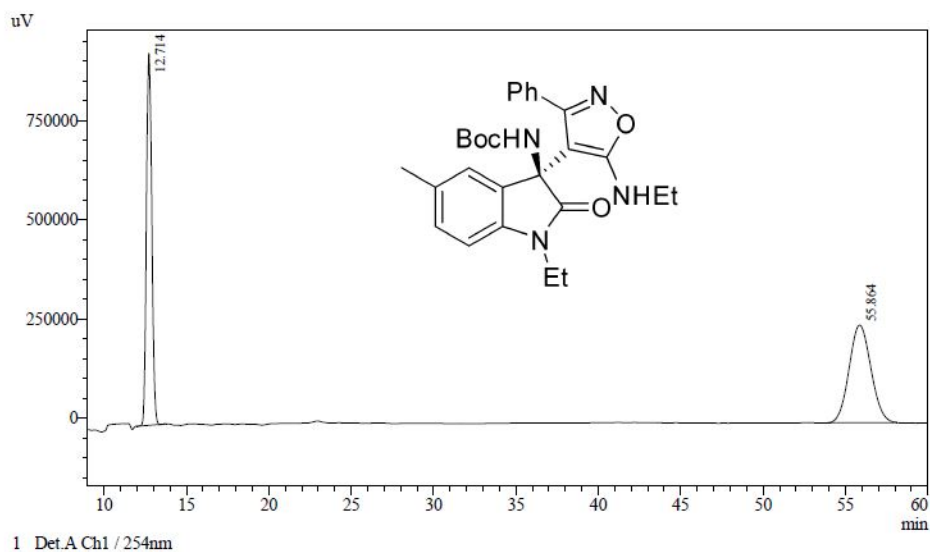
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 9.819     | 19862246 | 928912  | 48.674  | 68.332   |
| 2     | 27.968    | 20944223 | 430507  | 51.326  | 31.668   |
| Total |           | 40806469 | 1359419 | 100.000 | 100.000  |



Detector A Ch1 254nm

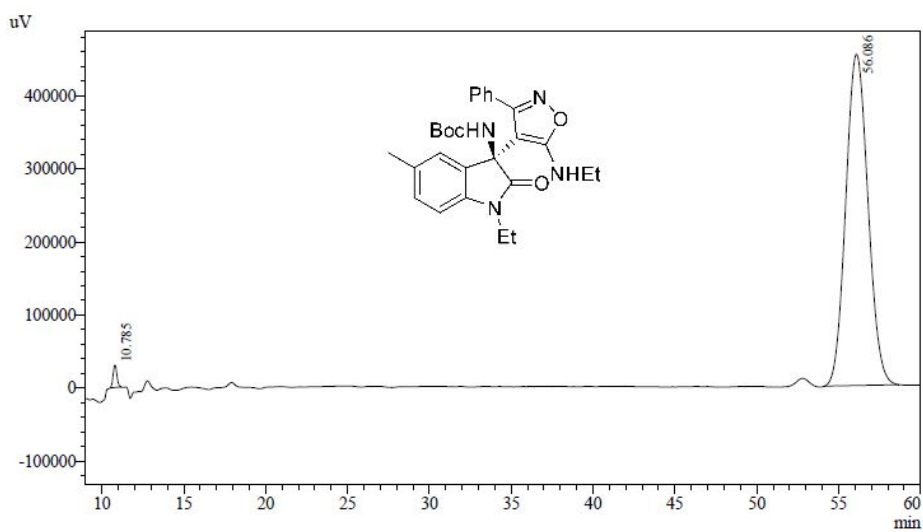
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 9.839     | 866774   | 47206   | 1.703   | 4.548    |
| 2     | 27.962    | 50031291 | 990649  | 98.297  | 95.452   |
| Total |           | 50898064 | 1037855 | 100.000 | 100.000  |

**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-5-methyl-2-oxoindolin-3-yl)carbamate (3ad)**



Detector A Ch1 254nm

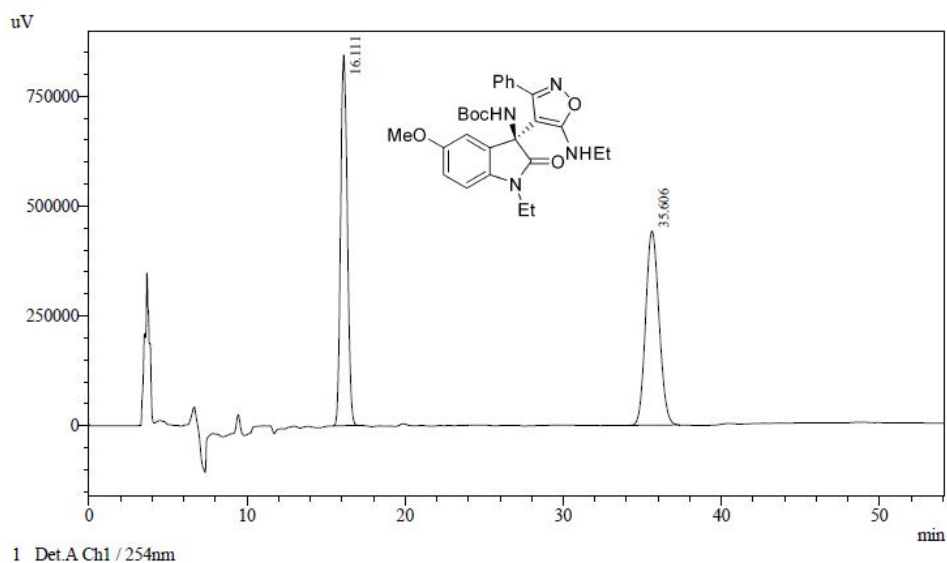
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 12.714    | 21360819 | 937161  | 48.554  | 79.225   |
| 2     | 55.864    | 22633138 | 245746  | 51.446  | 20.775   |
| Total |           | 43993957 | 1182907 | 100.000 | 100.000  |



Detector A Ch1 254nm

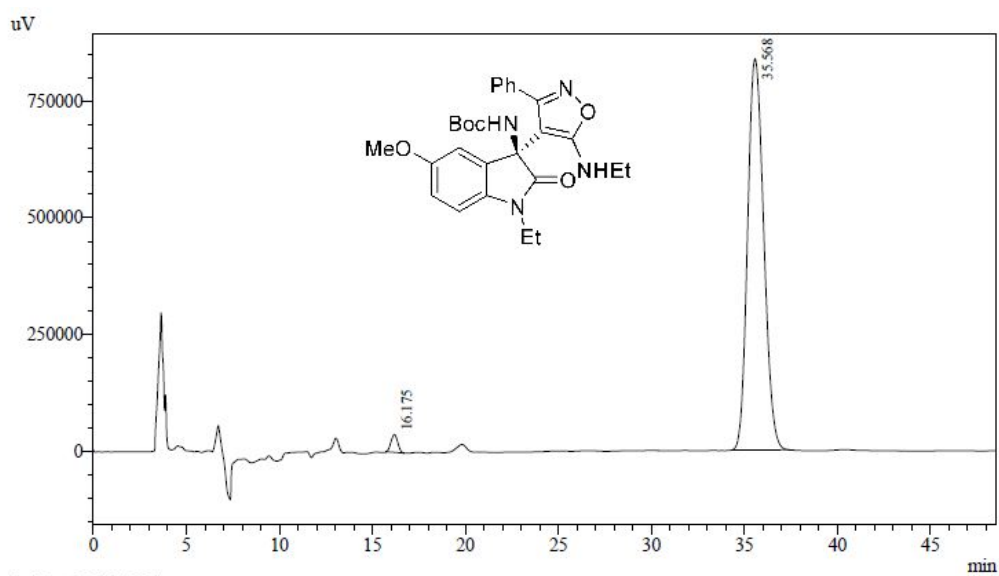
| Peak# | Ret. Time | Area     | Height | Area %  | Height % |
|-------|-----------|----------|--------|---------|----------|
| 1     | 10.785    | 492937   | 30556  | 1.138   | 6.310    |
| 2     | 56.086    | 42824148 | 453684 | 98.862  | 93.690   |
| Total |           | 43317085 | 484240 | 100.000 | 100.000  |

**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-5-methoxy-2-oxoindolin-3-yl)carbamate (3ae)**



Detector A Ch1 254nm

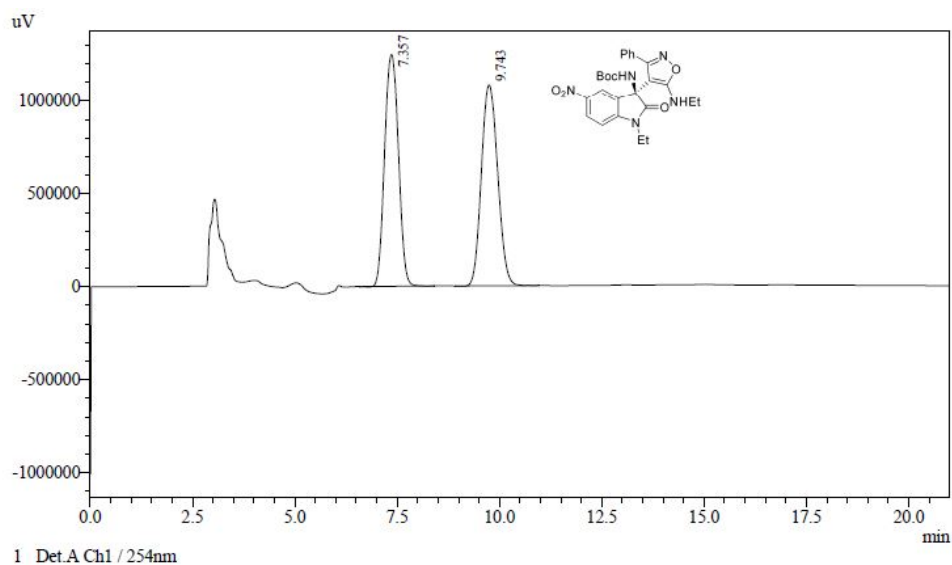
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 16.111    | 24899366 | 844119  | 48.881  | 65.641   |
| 2     | 35.606    | 26039014 | 441845  | 51.119  | 34.359   |
| Total |           | 50938380 | 1285963 | 100.000 | 100.000  |



Detector A Ch1 254nm

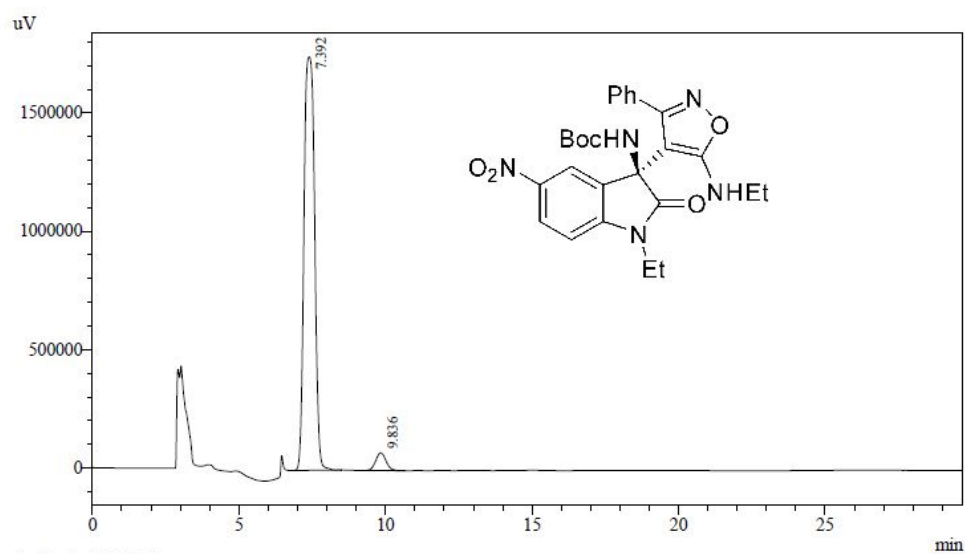
| Peak# | Ret. Time | Area     | Height | Area %  | Height % |
|-------|-----------|----------|--------|---------|----------|
| 1     | 16.175    | 961276   | 38389  | 1.870   | 4.390    |
| 2     | 35.568    | 50439989 | 836087 | 98.130  | 95.610   |
| Total |           | 51401265 | 874476 | 100.000 | 100.000  |

**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-5-nitro-2-oxoindolin-3-yl)carbamate (3af)**



Detector A Ch1 254nm

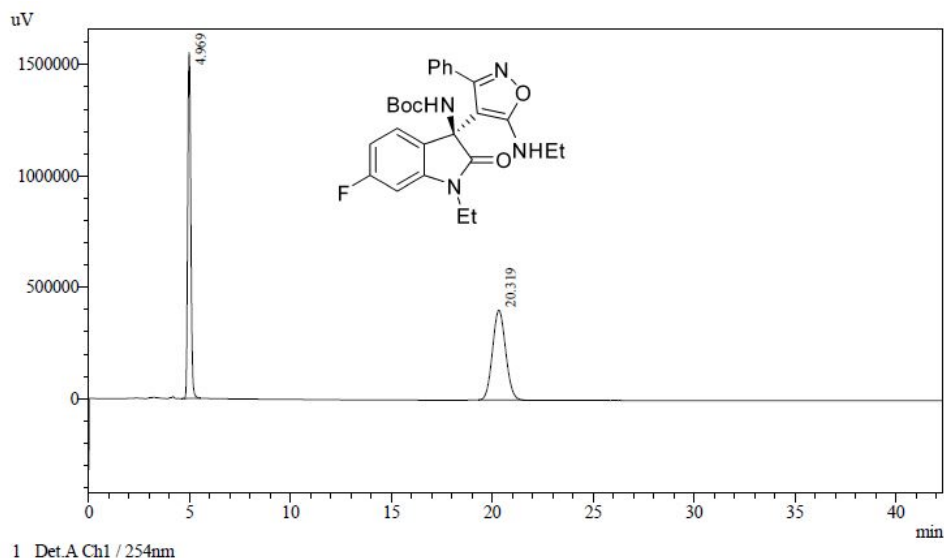
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 7.357     | 29316347 | 1246319 | 49.424  | 53.563   |
| 2     | 9.743     | 29999310 | 1080524 | 50.576  | 46.437   |
| Total |           | 59315657 | 2326843 | 100.000 | 100.000  |



Detector A Ch1 254nm

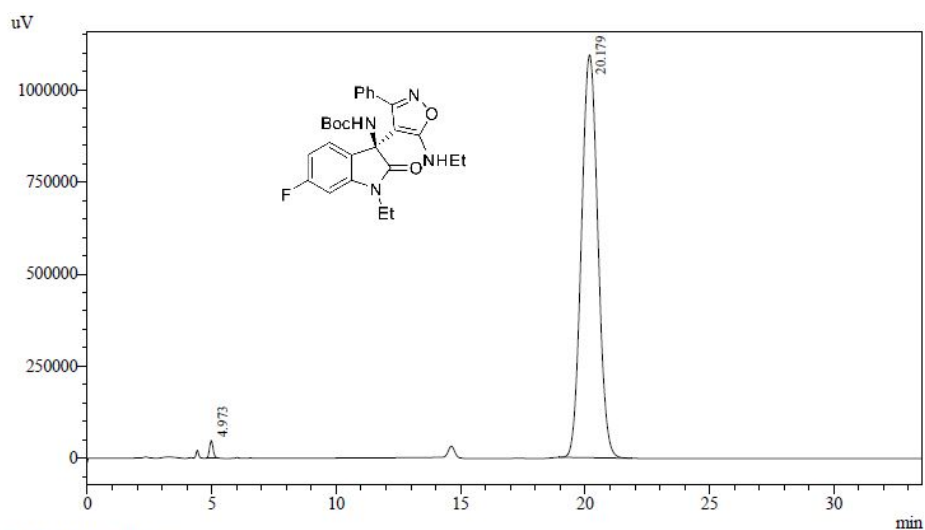
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 7.392     | 43864762 | 1747068 | 95.952  | 95.864   |
| 2     | 9.836     | 1850584  | 75372   | 4.048   | 4.136    |
| Total |           | 45715346 | 1822441 | 100.000 | 100.000  |

**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-6-fluoro-2-oxoindolin-3-yl)carbamate (3ag)**



Detector A Ch1 254nm

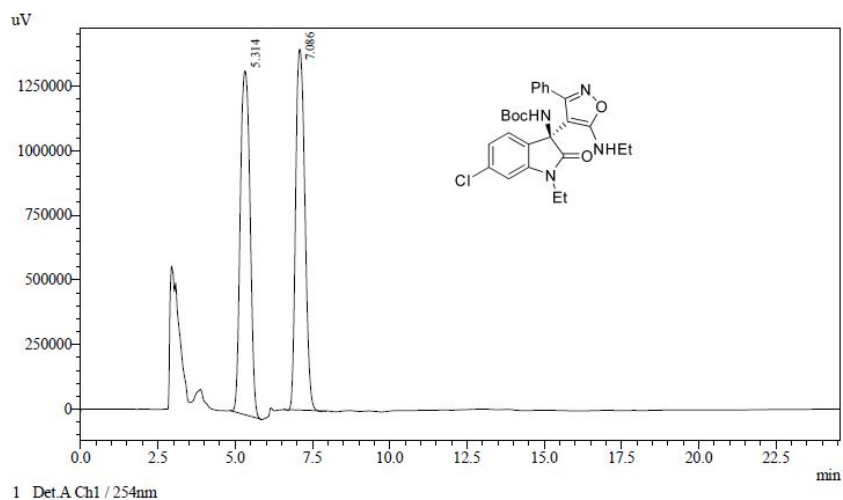
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 4.969     | 16748373 | 1553939 | 47.886  | 79.404   |
| 2     | 20.319    | 18227450 | 403076  | 52.114  | 20.596   |
| Total |           | 34975823 | 1957015 | 100.000 | 100.000  |



Detector A Ch1 254nm

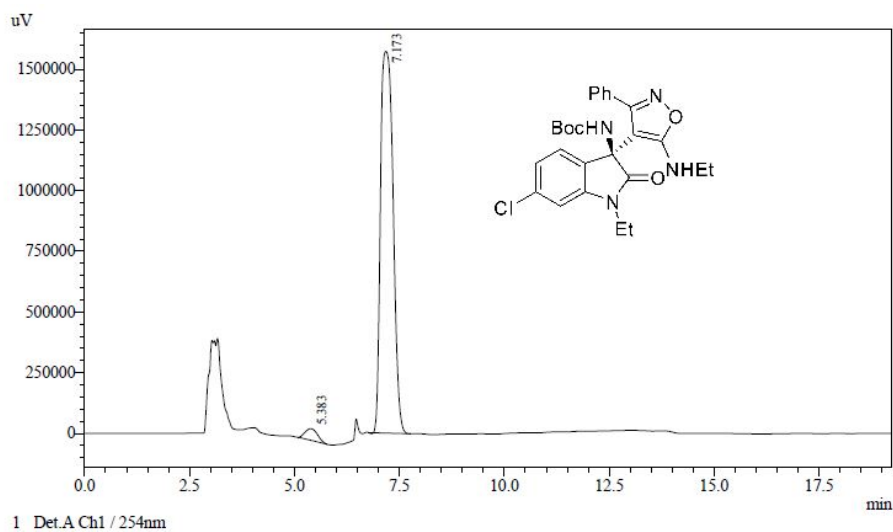
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 4.973     | 470146   | 47346   | 0.929   | 4.148    |
| 2     | 20.179    | 50124879 | 1094201 | 99.071  | 95.852   |
| Total |           | 50595025 | 1141547 | 100.000 | 100.000  |

**tert-butyl (S)-(6-chloro-1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ah)**



Detector A Ch1 254nm

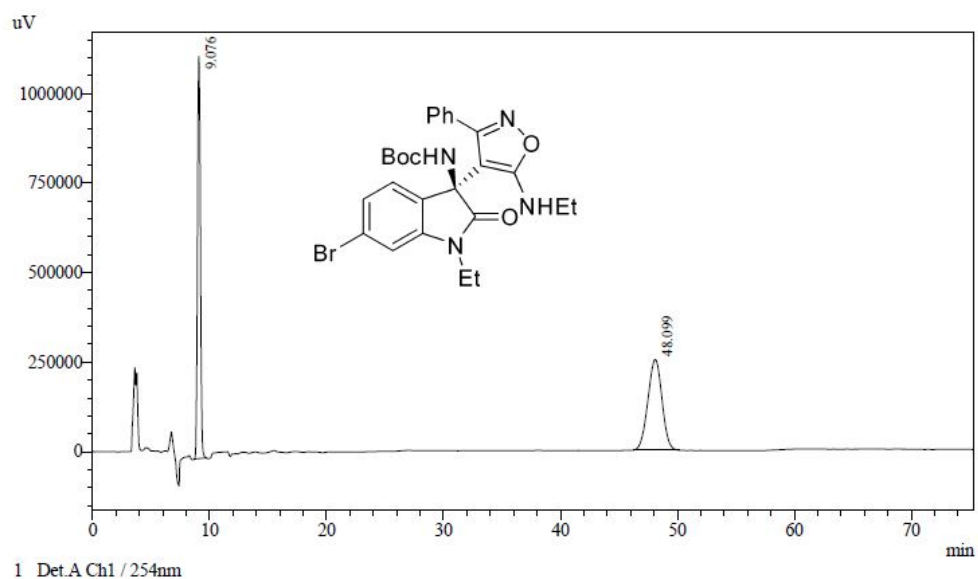
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 5.314     | 29201459 | 1330003 | 50.322  | 48.788   |
| 2     | 7.086     | 28828213 | 1396110 | 49.678  | 51.212   |
| Total |           | 58029672 | 2726113 | 100.000 | 100.000  |



Detector A Ch1 254nm

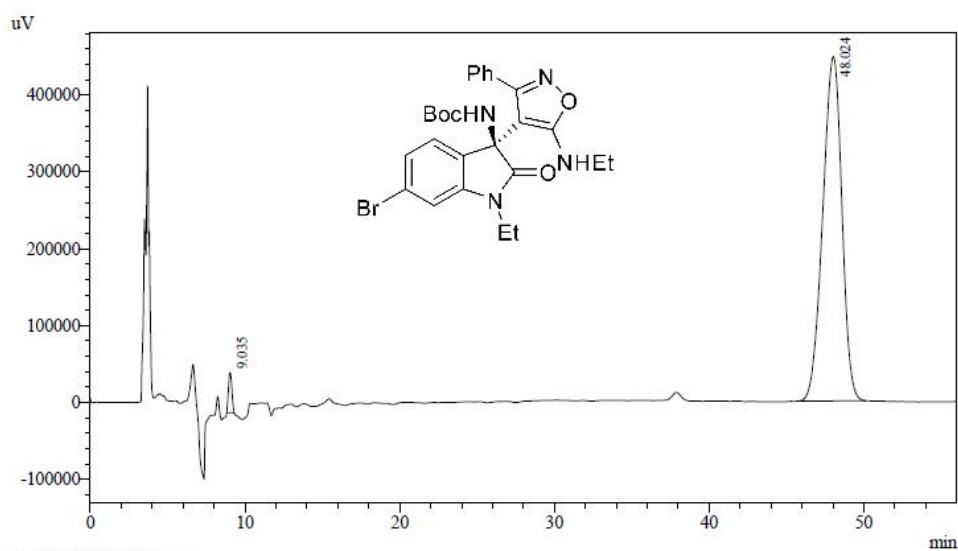
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 3.383     | 981331   | 47641   | 2.902   | 2.942    |
| 2     | 7.173     | 32840146 | 1571842 | 97.098  | 97.058   |
| Total |           | 33821477 | 1619483 | 100.000 | 100.000  |

**tert-butyl (S)-(6-bromo-1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ai)**



Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 9.076     | 19707348 | 1122842 | 48.208  | 81.612   |
| 2     | 48.099    | 21172874 | 252986  | 51.792  | 18.388   |
| Total |           | 40880222 | 1375827 | 100.000 | 100.000  |

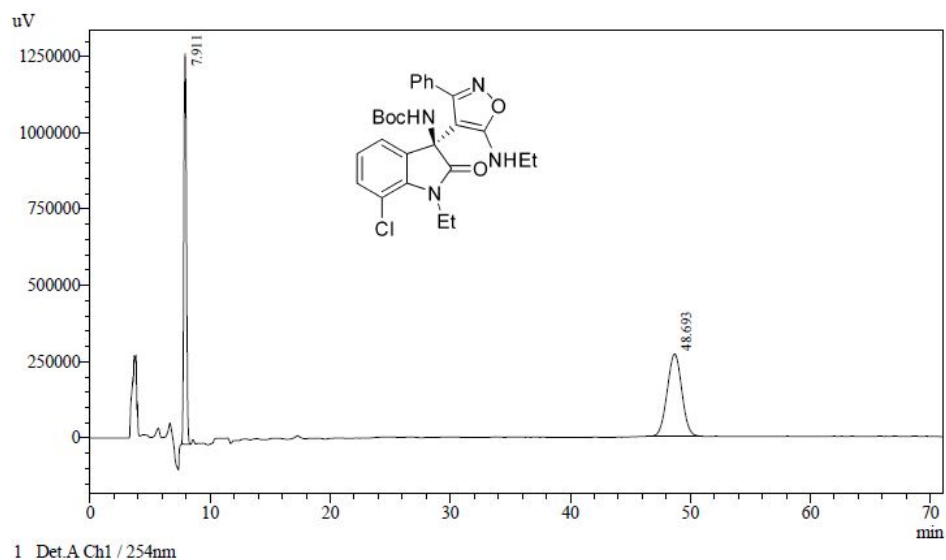


Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height | Area %  | Height % |
|-------|-----------|----------|--------|---------|----------|
| 1     | 9.035     | 797557   | 51984  | 2.034   | 10.394   |
| 2     | 48.024    | 38407472 | 448160 | 97.966  | 89.606   |
| Total |           | 39205029 | 500144 | 100.000 | 100.000  |



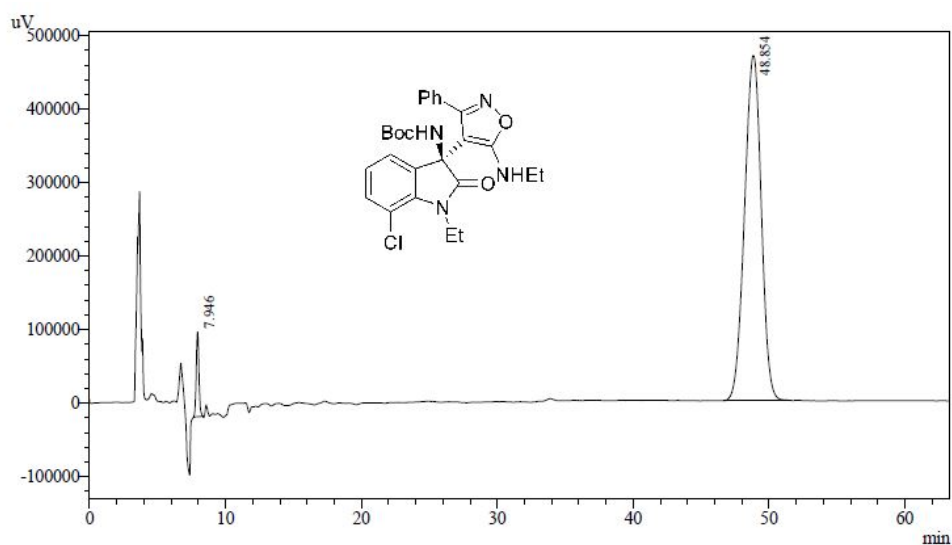
**tert-butyl (S)-(7-chloro-1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3aj)**



1 Det.A Ch1 / 254nm

Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 7.911     | 19587883 | 1278899 | 46.307  | 82.622   |
| 2     | 48.693    | 22711898 | 269000  | 53.693  | 17.378   |
| Total |           | 42299782 | 1547900 | 100.000 | 100.000  |

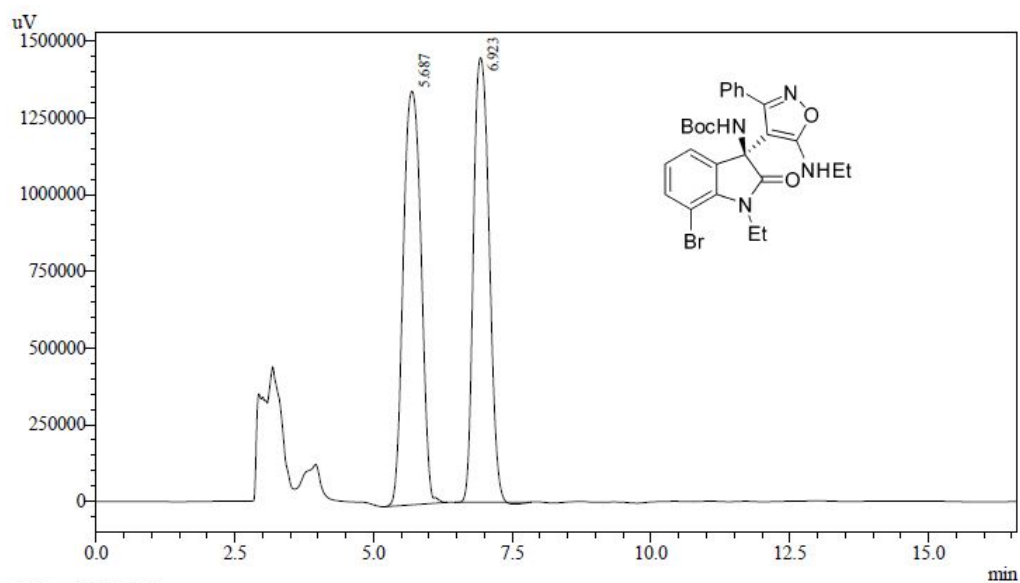


1 Det.A Ch1 / 254nm

Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height | Area %  | Height % |
|-------|-----------|----------|--------|---------|----------|
| 1     | 7.946     | 1600428  | 115347 | 3.833   | 19.719   |
| 2     | 48.854    | 40154767 | 469608 | 96.167  | 80.281   |
| Total |           | 41755196 | 584955 | 100.000 | 100.000  |

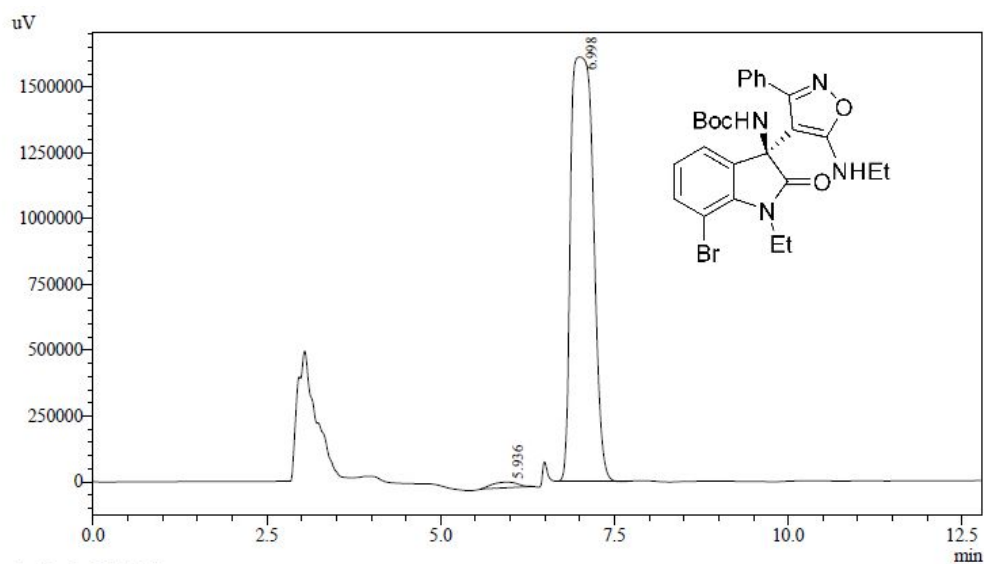
**tert-butyl (S)-(7-bromo-1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)carbamate (3ak)**



1 Det.A Ch1 / 254nm

Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 5.687     | 30061985 | 1348061 | 51.382  | 48.203   |
| 2     | 6.923     | 28444628 | 1448548 | 48.618  | 51.797   |
| Total |           | 58506612 | 2796609 | 100.000 | 100.000  |

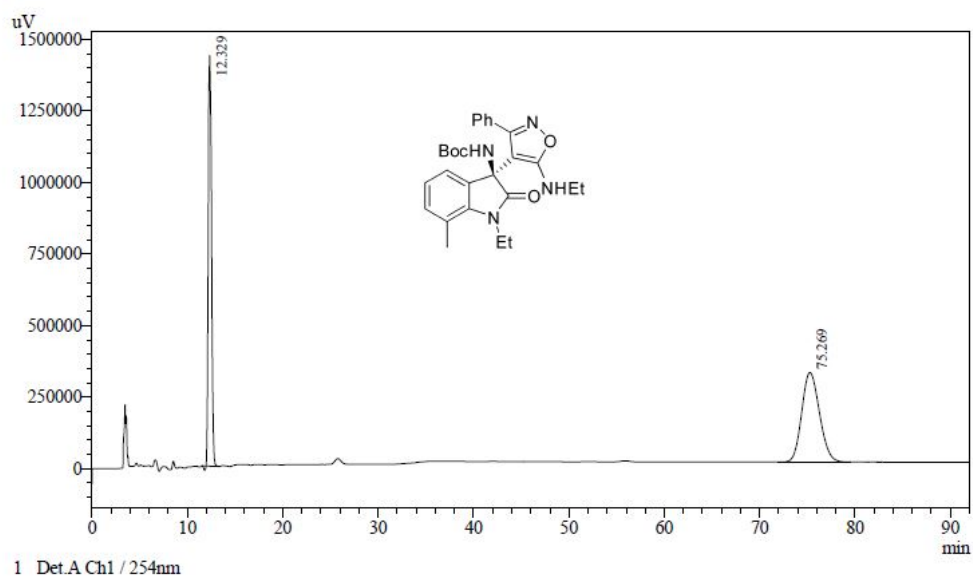


1 Det.A Ch1 / 254nm

Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 5.936     | 544528   | 20639   | 1.479   | 1.265    |
| 2     | 6.998     | 36283892 | 1611378 | 98.521  | 98.735   |
| Total |           | 36828421 | 1632017 | 100.000 | 100.000  |

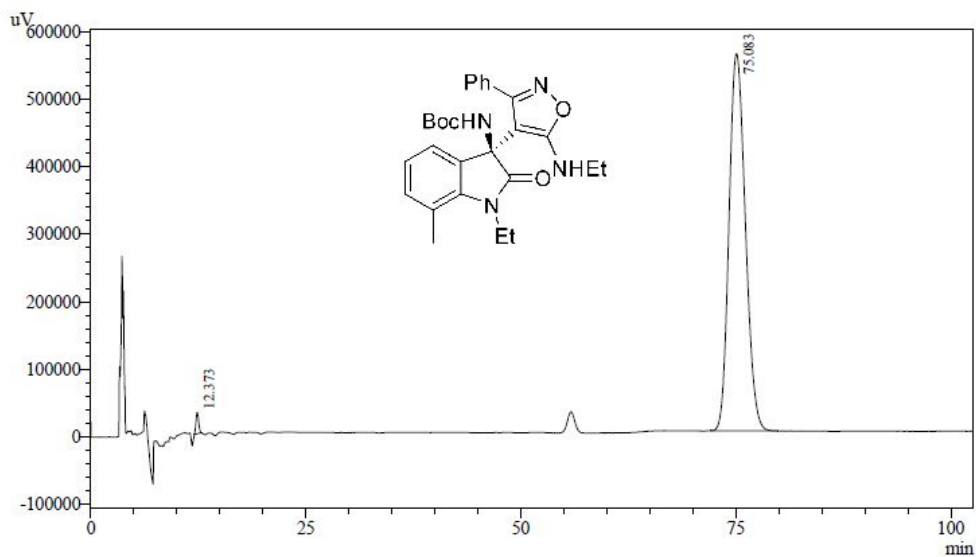
**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-7-methyl-2-oxoindolin-3-yl)carbamate (3al)**



1 Det.A Ch1 / 254nm

Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 12.329    | 34405759 | 1434280 | 45.938  | 82.088   |
| 2     | 75.269    | 40489718 | 312964  | 54.062  | 17.912   |
| Total |           | 74895477 | 1747244 | 100.000 | 100.000  |

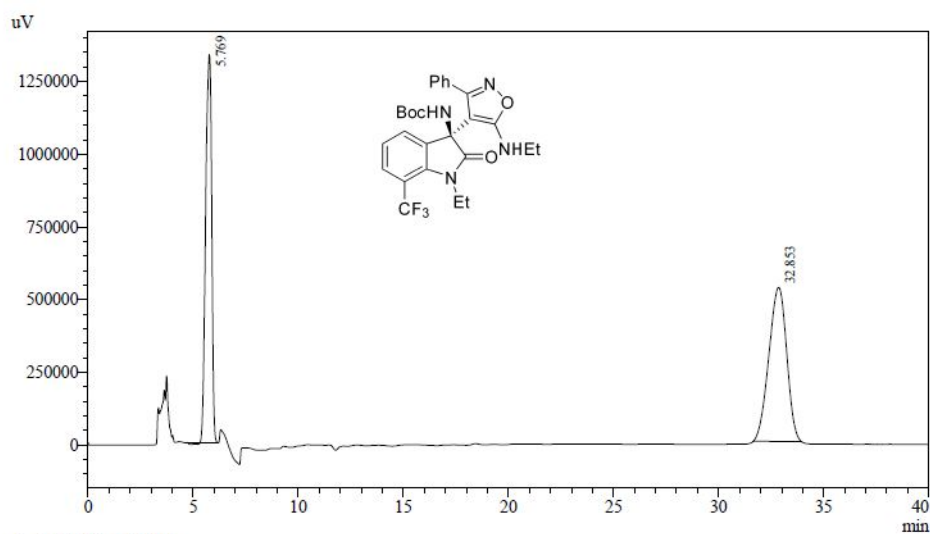


1 Det.A Ch1 / 254nm

Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height | Area %  | Height % |
|-------|-----------|----------|--------|---------|----------|
| 1     | 12.373    | 686267   | 31713  | 0.923   | 5.377    |
| 2     | 75.083    | 73632983 | 558078 | 99.077  | 94.623   |
| Total |           | 74319249 | 589791 | 100.000 | 100.000  |

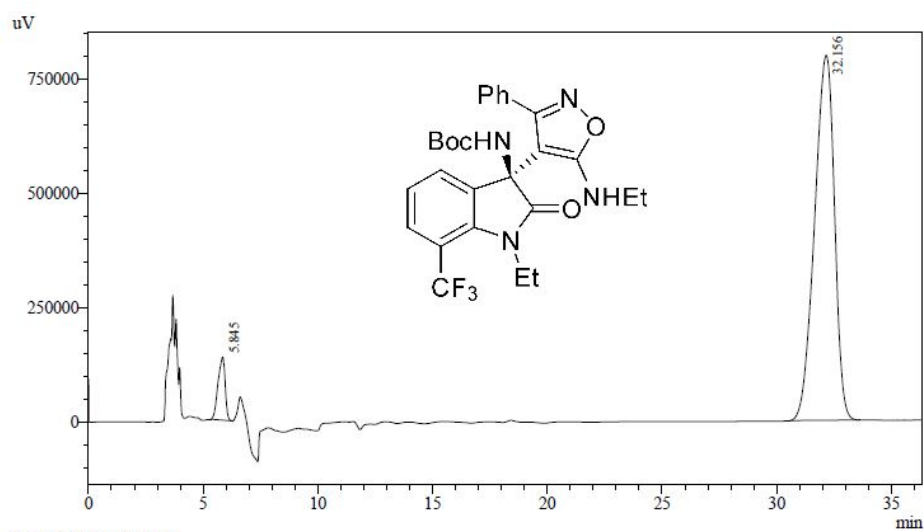
**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxo-7-(trifluoromethyl)indolin-3-yl)carbamate(3am)**



1 Det.A Ch1 / 254nm

Detector A Ch1 254nm

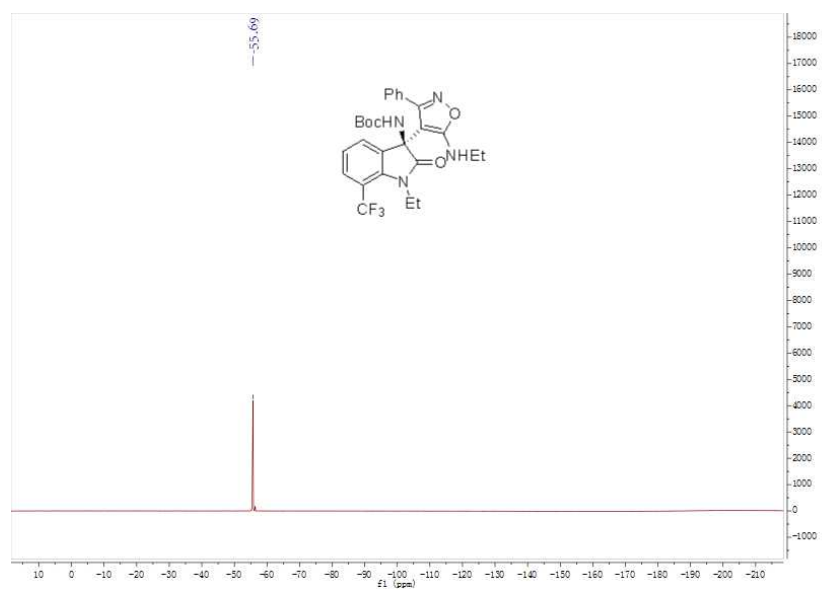
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 5.769     | 26634598 | 1335149 | 46.054  | 71.593   |
| 2     | 32.853    | 31198488 | 529769  | 53.946  | 28.407   |
| Total |           | 57833086 | 1864918 | 100.000 | 100.000  |



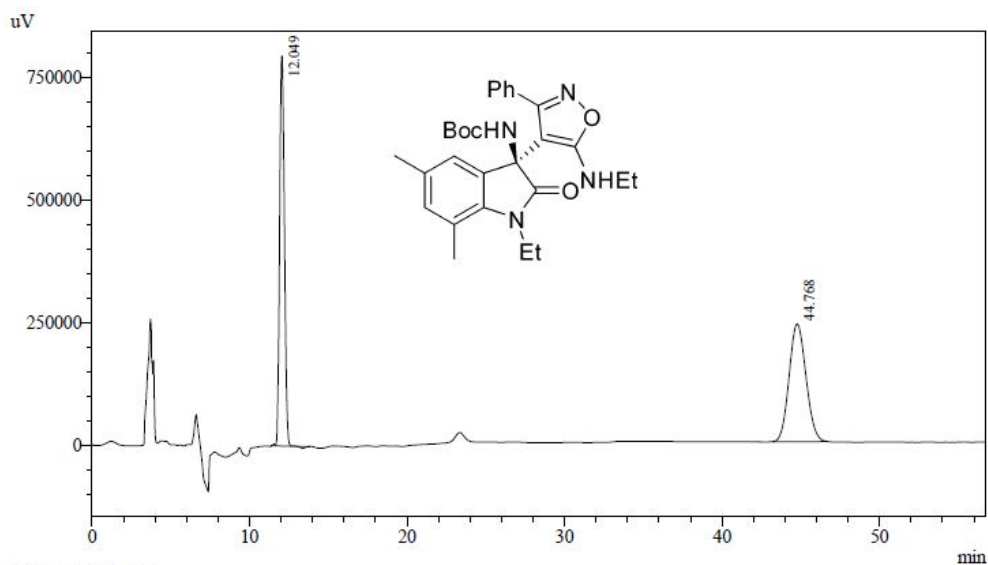
1 Det.A Ch1 / 254nm

Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height | Area %  | Height % |
|-------|-----------|----------|--------|---------|----------|
| 1     | 5.845     | 2964084  | 138155 | 5.805   | 14.752   |
| 2     | 32.156    | 48092803 | 798362 | 94.195  | 85.248   |
| Total |           | 51056886 | 936516 | 100.000 | 100.000  |



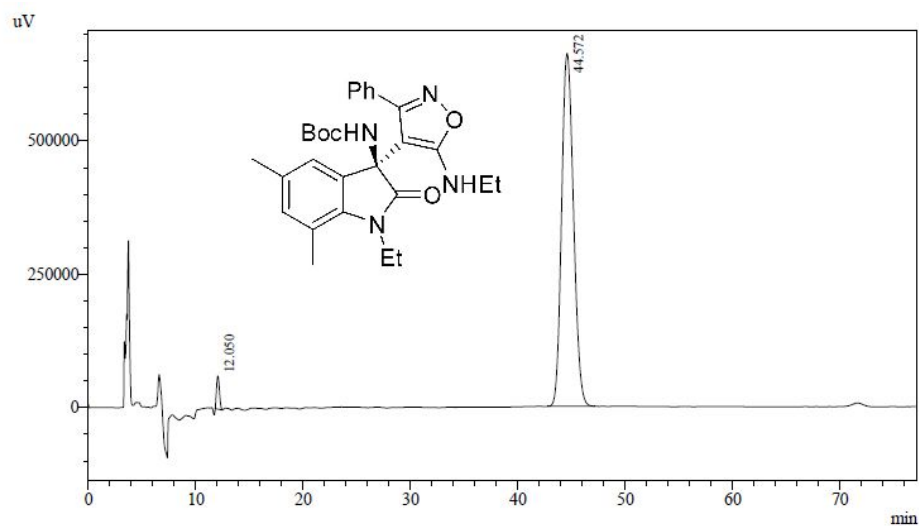
**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-5,7-dimethyl-2-oxoindolin-3-yl)carbamate (3an)**



1 Det.A Ch1 / 254nm

Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 12.049    | 16759348 | 796190  | 48.424  | 76.841   |
| 2     | 44.768    | 17850512 | 239964  | 51.576  | 23.159   |
| Total |           | 34609861 | 1036154 | 100.000 | 100.000  |

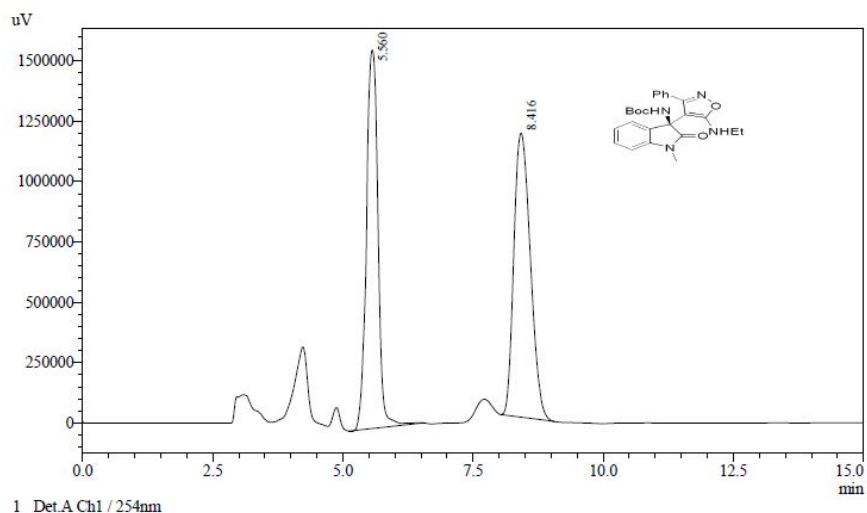


1 Det.A Ch1 / 254nm

Detector A Ch1 254nm

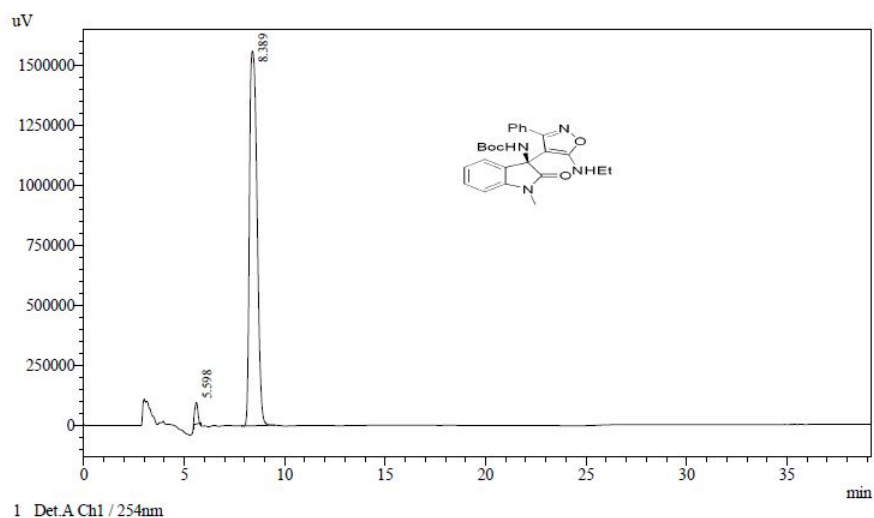
| Peak# | Ret. Time | Area     | Height | Area %  | Height % |
|-------|-----------|----------|--------|---------|----------|
| 1     | 12.050    | 1169441  | 62097  | 2.246   | 8.575    |
| 2     | 44.572    | 50906186 | 662098 | 97.754  | 91.425   |
| Total |           | 52075627 | 724195 | 100.000 | 100.000  |

**tert-butyl (S)-(3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-1-methyl-2-oxoindolin-3-yl)  
carbamate (3ao)**



Detector A Ch1 254nm

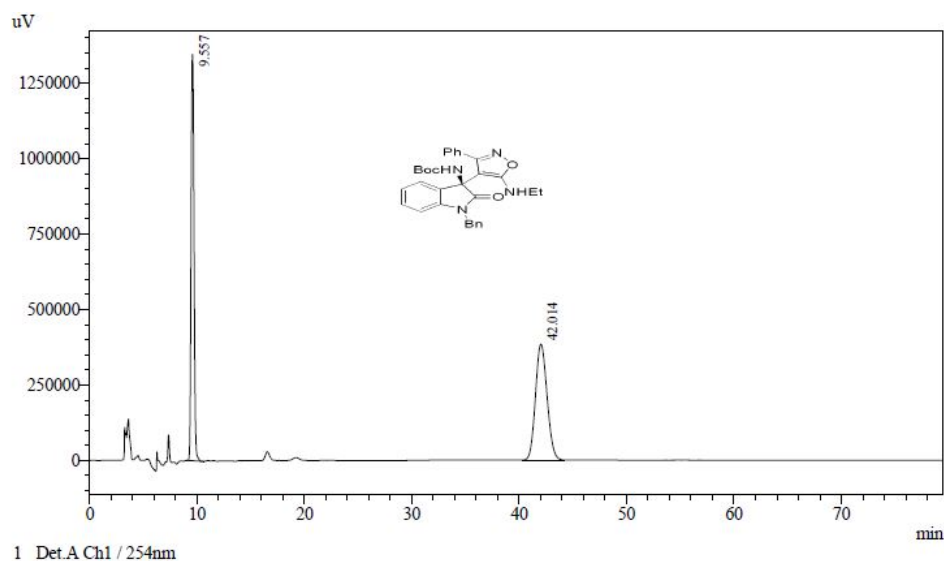
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 5.560     | 24177498 | 1567495 | 48.196  | 57.129   |
| 2     | 8.416     | 25987262 | 1176264 | 51.804  | 42.871   |
| Total |           | 50164760 | 2743759 | 100.000 | 100.000  |



Detector A Ch1 254nm

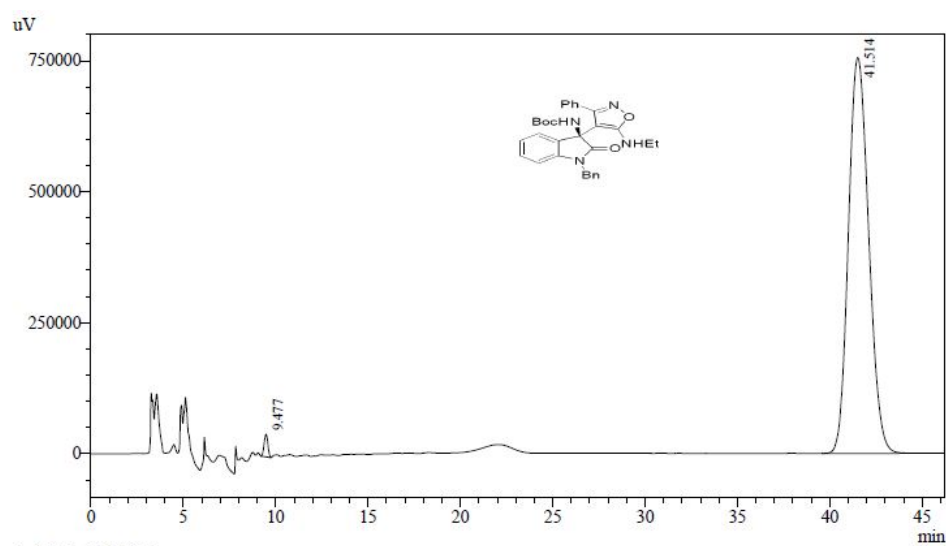
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 5.598     | 938910   | 90502   | 2.250   | 5.478    |
| 2     | 8.389     | 40799515 | 1561669 | 97.750  | 94.522   |
| Total |           | 41738425 | 1652171 | 100.000 | 100.000  |

**tert-butyl (S)-(1-benzyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)  
carbamate (3ap)**



Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 9.557     | 25529739 | 1346027 | 47.030  | 77.799   |
| 2     | 42.014    | 28754731 | 384108  | 52.970  | 22.201   |
| Total |           | 54284470 | 1730135 | 100.000 | 100.000  |



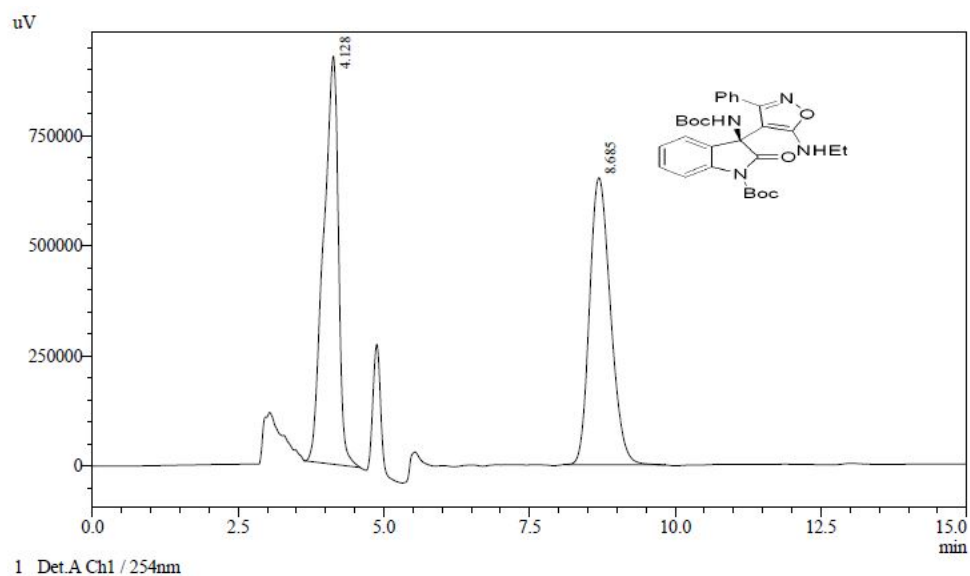
Detector A Ch1 254nm

| Peak# | Ret. Time | Area     | Height | Area %  | Height % |
|-------|-----------|----------|--------|---------|----------|
| 1     | 9.477     | 604363   | 42928  | 1.038   | 5.377    |
| 2     | 41.514    | 57597000 | 755384 | 98.962  | 94.623   |
| Total |           | 58201363 | 798312 | 100.000 | 100.000  |



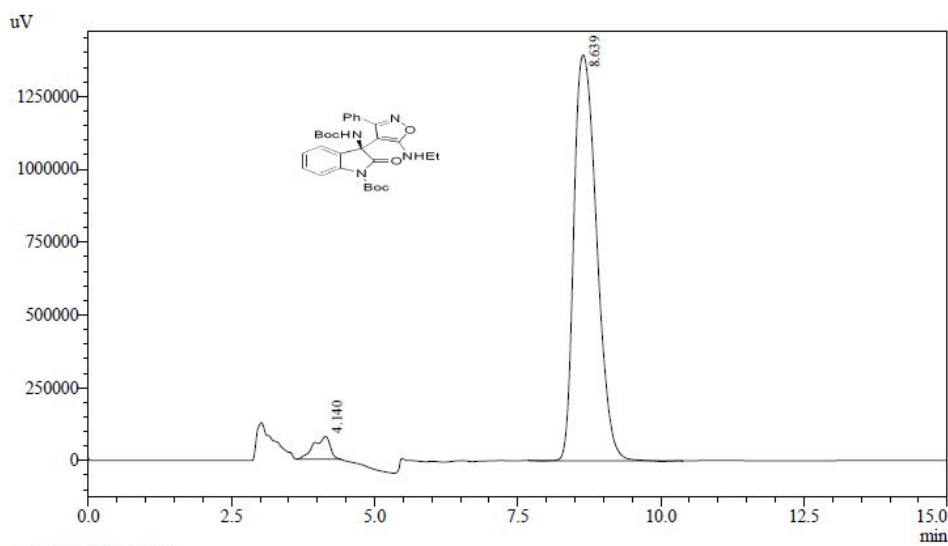
tert-butyl

(S)-3-(((tert-butoxycarbonyl)amino)-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindoline-1-carboxylate (3aq)



Detector A Ch1 254nm

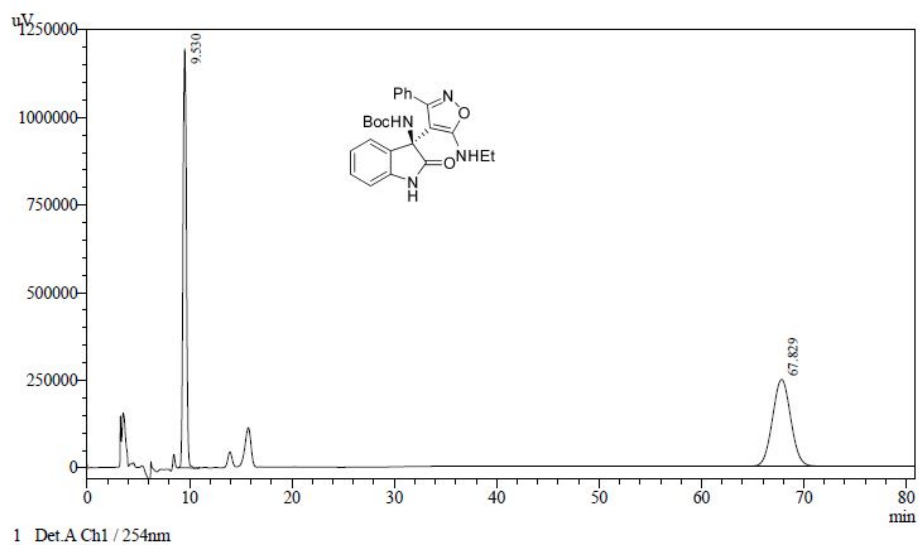
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 4.128     | 16359326 | 926729  | 50.076  | 58.711   |
| 2     | 8.685     | 16309763 | 651738  | 49.924  | 41.289   |
| Total |           | 32669088 | 1578467 | 100.000 | 100.000  |



Detector A Ch1 254nm

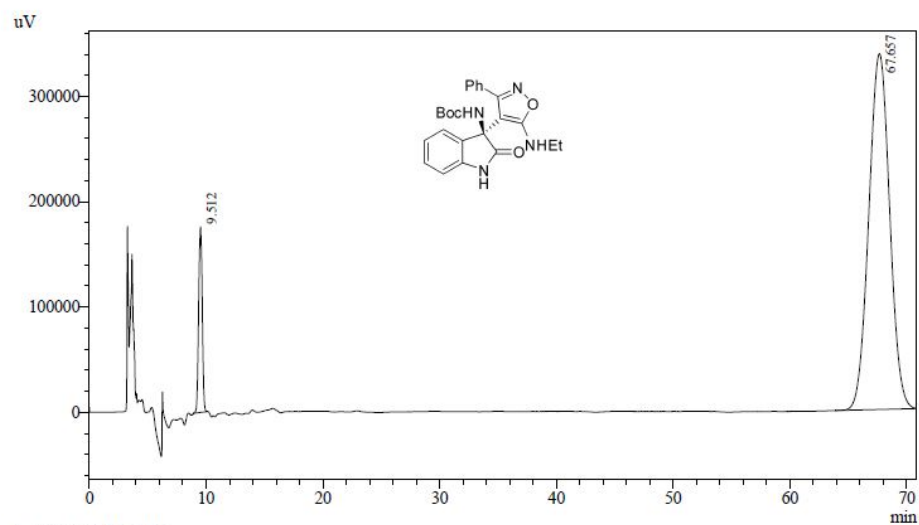
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 4.140     | 1553535  | 78079   | 3.887   | 5.306    |
| 2     | 8.639     | 38412781 | 1393456 | 96.113  | 94.694   |
| Total |           | 39966316 | 1471535 | 100.000 | 100.000  |

**tert-butyl (S)-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxoindolin-3-yl)  
carbamate (3ar)**



Detector A Ch1 254nm

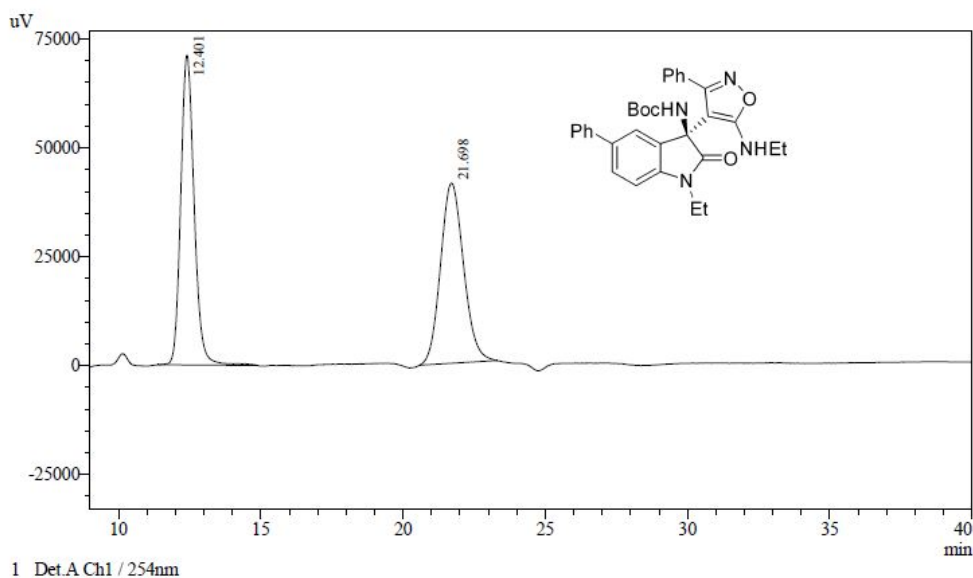
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 9.530     | 27411590 | 1195113 | 47.262  | 82.847   |
| 2     | 67.829    | 30587028 | 247440  | 52.738  | 17.153   |
| Total |           | 57998618 | 1442553 | 100.000 | 100.000  |



Detector A Ch1 254nm

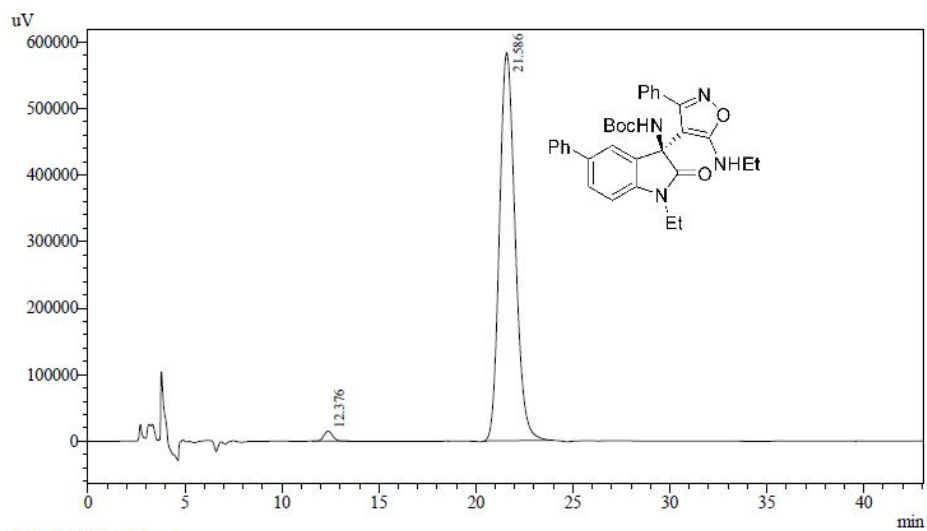
| Peak# | Ret. Time | Area     | Height | Area %  | Height % |
|-------|-----------|----------|--------|---------|----------|
| 1     | 9.512     | 3795229  | 176105 | 8.302   | 34.265   |
| 2     | 67.657    | 41918083 | 337840 | 91.698  | 65.735   |
| Total |           | 45713312 | 513945 | 100.000 | 100.000  |

**tert-butyl (S)-(1-ethyl-3-(5-(ethylamino)-3-phenylisoxazol-4-yl)-2-oxo-5-phenylindolin-3-yl)carbamate (9a)**



Detector A Ch1 254nm

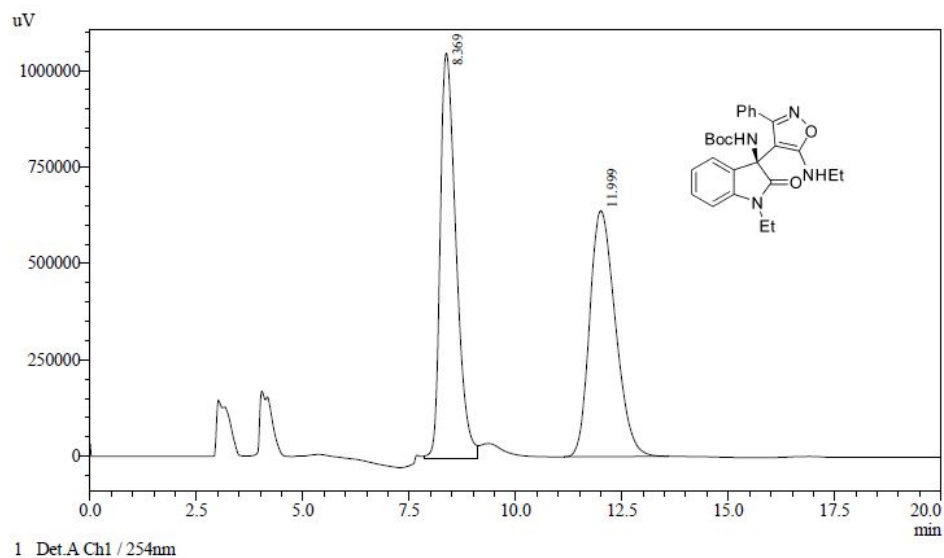
| Peak# | Ret. Time | Area    | Height | Area %  | Height % |
|-------|-----------|---------|--------|---------|----------|
| 1     | 12.401    | 2339243 | 71101  | 50.116  | 63.224   |
| 2     | 21.698    | 2328391 | 41358  | 49.884  | 36.776   |
| Total |           | 4667634 | 112459 | 100.000 | 100.000  |



Detector A Ch1 254nm

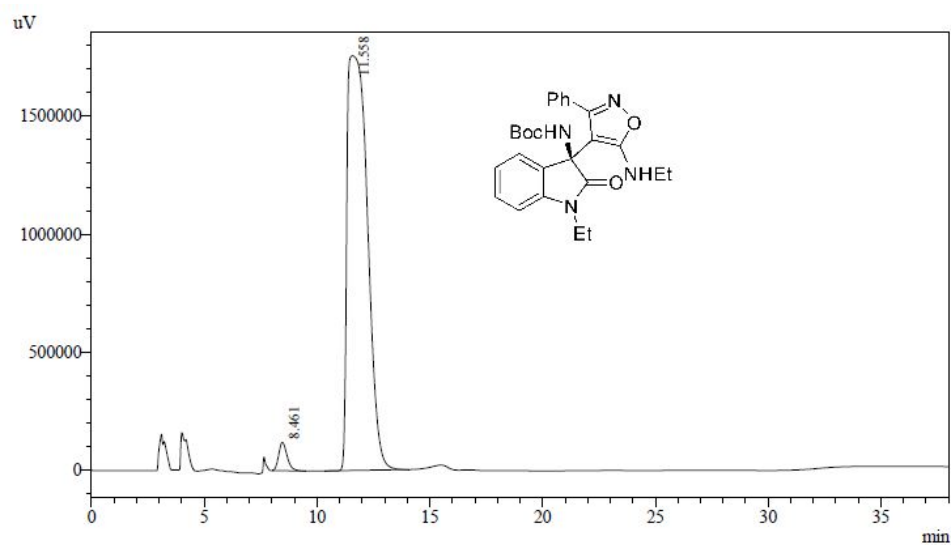
| Peak# | Ret. Time | Area     | Height | Area %  | Height % |
|-------|-----------|----------|--------|---------|----------|
| 1     | 12.376    | 458893   | 14853  | 1.381   | 2.484    |
| 2     | 21.586    | 32778092 | 583047 | 98.619  | 97.516   |
| Total |           | 33236985 | 597900 | 100.000 | 100.000  |

## Gram-scale reaction of 3aa.



Detector A Ch1 254nm

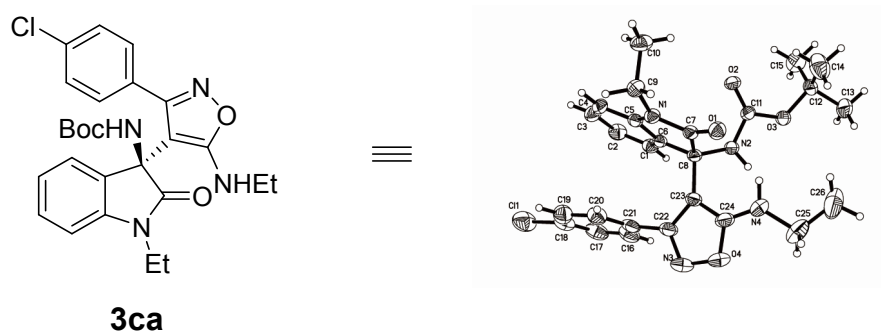
| Peak# | Ret. Time | Area     | Height  | Area %  | Height % |
|-------|-----------|----------|---------|---------|----------|
| 1     | 8.369     | 27203816 | 1049937 | 50.284  | 62.215   |
| 2     | 11.999    | 26897004 | 637648  | 49.716  | 37.785   |
| Total |           | 54100819 | 1687585 | 100.000 | 100.000  |



Detector A Ch1 254nm

| Peak# | Ret. Time | Area      | Height  | Area %  | Height % |
|-------|-----------|-----------|---------|---------|----------|
| 1     | 8.461     | 3129631   | 119915  | 2.766   | 6.395    |
| 2     | 11.558    | 110028511 | 1755150 | 97.234  | 93.605   |
| Total |           | 113158142 | 1875065 | 100.000 | 100.000  |

## 5. X-ray crystal structure of 3ca.



**Table 1 Crystal data and structure refinement for 202012299.**

|                                         |                                                                 |
|-----------------------------------------|-----------------------------------------------------------------|
| Identification code                     | 202012299                                                       |
| Empirical formula                       | C <sub>26</sub> H <sub>29</sub> ClN <sub>4</sub> O <sub>4</sub> |
| Formula weight                          | 496.98                                                          |
| Temperature/K                           | 293(2)                                                          |
| Crystal system                          | orthorhombic                                                    |
| Space group                             | P2 <sub>1</sub> 2 <sub>1</sub> 2 <sub>1</sub>                   |
| a/Å                                     | 9.2734(2)                                                       |
| b/Å                                     | 12.5056(3)                                                      |
| c/Å                                     | 22.5981(7)                                                      |
| $\alpha$ /°                             | 90                                                              |
| $\beta$ /°                              | 90                                                              |
| $\gamma$ /°                             | 90                                                              |
| Volume/Å <sup>3</sup>                   | 2620.69(12)                                                     |
| Z                                       | 4                                                               |
| $\rho_{\text{calc}}$ /g/cm <sup>3</sup> | 1.260                                                           |
| $\mu$ /mm <sup>-1</sup>                 | 1.603                                                           |
| F(000)                                  | 1048.0                                                          |
| Crystal size/mm <sup>3</sup>            | 0.15 × 0.11 × 0.1                                               |
| Radiation                               | CuK $\alpha$ ( $\lambda$ = 1.54184)                             |
| 2 $\theta$ range for data collection/°  | 7.824 to 134.032                                                |
| Index ranges                            | -7 ≤ h ≤ 11, -14 ≤ k ≤ 14, -26 ≤ l ≤ 26                         |

|                                                |                                                                  |
|------------------------------------------------|------------------------------------------------------------------|
| Reflections collected                          | 9257                                                             |
| Independent reflections                        | 4660 [ $R_{\text{int}} = 0.0291$ , $R_{\text{sigma}} = 0.0374$ ] |
| Data/restraints/parameters                     | 4660/0/326                                                       |
| Goodness-of-fit on $F^2$                       | 1.037                                                            |
| Final R indexes [ $I \geq 2\sigma(I)$ ]        | $R_1 = 0.0436$ , $wR_2 = 0.1121$                                 |
| Final R indexes [all data]                     | $R_1 = 0.0522$ , $wR_2 = 0.1208$                                 |
| Largest diff. peak/hole / $e \text{ \AA}^{-3}$ | 0.30/-0.24                                                       |
| Flack parameter                                | -0.009(14)                                                       |

**Table 2 Fractional Atomic Coordinates ( $\times 10^4$ ) and Equivalent Isotropic Displacement Parameters ( $\text{\AA}^2 \times 10^3$ ) for 202012299.  $U_{\text{eq}}$  is defined as 1/3 of of the trace of the orthogonalised  $U_{\text{ij}}$  tensor.**

| Atom | $x$     | $y$        | $z$        | $U(\text{eq})$ |
|------|---------|------------|------------|----------------|
| Cl1  | 2095(2) | 2866.9(14) | 3117.7(7)  | 115.1(6)       |
| O1   | 4299(3) | 6494(2)    | 6514.4(11) | 55.2(6)        |
| O2   | 7488(3) | 6441.7(18) | 6005.6(12) | 57.7(6)        |
| O3   | 8388(3) | 5160(2)    | 6626.6(12) | 59.8(7)        |
| O4   | 2944(4) | 3067(3)    | 6641.7(16) | 89.0(11)       |
| N1   | 3993(3) | 6666(2)    | 5504.5(12) | 44.7(6)        |
| N2   | 6415(3) | 4834(2)    | 6140.6(13) | 49.0(7)        |
| N3   | 2591(5) | 2729(3)    | 6058(2)    | 90.0(13)       |
| N4   | 4179(5) | 4410(4)    | 7108.3(17) | 79.7(11)       |
| C1   | 5848(4) | 4552(3)    | 4750.8(17) | 53.4(8)        |
| C2   | 5737(5) | 4837(3)    | 4159.4(18) | 62.6(10)       |
| C3   | 4977(5) | 5739(3)    | 3999.6(17) | 64.7(10)       |
| C4   | 4330(4) | 6404(3)    | 4417.5(15) | 52.7(8)        |
| C5   | 4488(3) | 6117(2)    | 5002.5(15) | 42.3(7)        |
| C6   | 5206(3) | 5188(2)    | 5167.4(14) | 42.7(7)        |

|     |          |         |            |           |
|-----|----------|---------|------------|-----------|
| C7  | 4434(3)  | 6168(2) | 6009.0(14) | 42.4(7)   |
| C8  | 5070(3)  | 5066(2) | 5828.6(15) | 43.2(7)   |
| C9  | 3385(4)  | 7747(3) | 5498.6(17) | 53.1(8)   |
| C10 | 4494(5)  | 8587(3) | 5365(2)    | 72.1(12)  |
| C11 | 7441(3)  | 5575(3) | 6237.8(15) | 44.7(7)   |
| C12 | 9578(4)  | 5774(3) | 6879.2(18) | 56.3(9)   |
| C13 | 10194(6) | 4988(5) | 7324(2)    | 88.8(16)  |
| C14 | 8993(8)  | 6764(5) | 7179(3)    | 109(2)    |
| C15 | 10660(5) | 6024(5) | 6412(2)    | 91.7(16)  |
| C16 | 3643(5)  | 2485(4) | 4748(3)    | 80.9(14)  |
| C17 | 3407(6)  | 2362(4) | 4149(3)    | 85.8(15)  |
| C18 | 2464(6)  | 3039(4) | 3868(2)    | 77.6(12)  |
| C19 | 1791(6)  | 3854(4) | 4169(2)    | 78.8(12)  |
| C20 | 2069(5)  | 3983(3) | 4762(2)    | 68.5(11)  |
| C21 | 2987(4)  | 3303(3) | 5056(2)    | 61.0(10)  |
| C22 | 3220(4)  | 3423(3) | 5705(2)    | 60.9(10)  |
| C23 | 3992(4)  | 4216(3) | 6021.8(17) | 51.0(8)   |
| C24 | 3761(4)  | 3948(3) | 6601(2)    | 67.0(11)  |
| C25 | 4257(7)  | 3913(5) | 7686(2)    | 102.9(19) |
| C26 | 5600(9)  | 4280(7) | 7997(3)    | 136(3)    |

**Table 3 Anisotropic Displacement Parameters ( $\text{\AA}^2 \times 10^3$ ) for 202012299. The Anisotropic displacement factor exponent takes the form:  $-2\pi^2[\text{h}^2\text{a}^{*2}\text{U}_{11}+2\text{hka}^*\text{b}^*\text{U}_{12}+\dots]$ .**

| Atom | $\text{U}_{11}$ | $\text{U}_{22}$ | $\text{U}_{33}$ | $\text{U}_{23}$ | $\text{U}_{13}$ | $\text{U}_{12}$ |
|------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Cl1  | 140.3(14)       | 114.9(11)       | 90.2(9)         | -27.0(8)        | 8.8(9)          | -38.4(10)       |
| O1   | 56.5(14)        | 58.3(14)        | 50.9(14)        | 2.8(11)         | 1.3(11)         | -0.7(12)        |
| O2   | 48.0(13)        | 50.0(13)        | 75.2(16)        | 22.2(12)        | -11.8(12)       | -10.6(11)       |
| O3   | 48.3(13)        | 53.8(13)        | 77.4(17)        | 19.8(13)        | -22.3(12)       | -6.5(11)        |

|     |          |          |          |           |           |           |
|-----|----------|----------|----------|-----------|-----------|-----------|
| O4  | 89(2)    | 82(2)    | 96(2)    | 31.1(18)  | 4.3(19)   | -36.6(18) |
| N1  | 44.4(13) | 37.5(13) | 52.1(14) | 3.4(12)   | -0.5(12)  | 2.2(11)   |
| N2  | 38.6(13) | 43.9(14) | 64.5(17) | 14.9(13)  | -11.4(12) | -3.8(11)  |
| N3  | 88(3)    | 70(2)    | 112(3)   | 11(2)     | 0(3)      | -39(2)    |
| N4  | 89(3)    | 87(3)    | 63(2)    | 29(2)     | -4.5(19)  | -23(2)    |
| C1  | 48.2(18) | 40.1(16) | 72(2)    | -0.9(16)  | -1.4(17)  | 1.6(14)   |
| C2  | 73(2)    | 51(2)    | 63(2)    | -14.1(17) | 8.2(19)   | 1.4(19)   |
| C3  | 91(3)    | 53(2)    | 49.8(19) | 0.3(17)   | -1(2)     | -3(2)     |
| C4  | 65(2)    | 39.4(16) | 53.6(19) | 4.9(14)   | -8.2(16)  | 0.1(15)   |
| C5  | 38.4(15) | 35.7(15) | 52.8(17) | 0.7(13)   | -3.4(13)  | -3.2(12)  |
| C6  | 39.7(15) | 32.7(14) | 55.8(18) | 2.6(13)   | -6.8(13)  | -4.9(12)  |
| C7  | 34.1(14) | 42.6(16) | 50.4(18) | 5.5(14)   | -2.1(13)  | -4.4(12)  |
| C8  | 37.3(15) | 34.7(15) | 57.6(18) | 8.9(14)   | -6.9(13)  | -3.0(13)  |
| C9  | 55.3(19) | 40.8(16) | 63(2)    | 1.1(16)   | -2.6(17)  | 10.5(15)  |
| C10 | 97(3)    | 42.5(18) | 77(3)    | -3.7(18)  | 8(2)      | -7(2)     |
| C11 | 34.1(14) | 47.3(17) | 52.8(17) | 11.7(14)  | -0.9(13)  | 0.1(13)   |
| C12 | 47.4(18) | 59(2)    | 63(2)    | 4.5(17)   | -16.5(16) | -3.8(16)  |
| C13 | 76(3)    | 104(4)   | 87(3)    | 29(3)     | -35(3)    | -11(3)    |
| C14 | 124(5)   | 103(4)   | 101(4)   | -36(3)    | -28(4)    | 23(4)     |
| C15 | 42(2)    | 128(4)   | 105(4)   | 34(3)     | 1(2)      | -8(2)     |
| C16 | 64(3)    | 53(2)    | 126(4)   | -16(3)    | -9(3)     | -3.4(19)  |
| C17 | 74(3)    | 58(2)    | 125(4)   | -32(3)    | 14(3)     | -11(2)    |
| C18 | 80(3)    | 66(2)    | 87(3)    | -18(2)    | 6(3)      | -25(2)    |
| C19 | 81(3)    | 70(3)    | 85(3)    | -3(2)     | -8(2)     | -1(2)     |
| C20 | 66(2)    | 54(2)    | 86(3)    | -9(2)     | -2(2)     | 2.0(19)   |
| C21 | 47.2(18) | 45.7(18) | 90(3)    | -2.5(19)  | -4.3(19)  | -16.7(15) |
| C22 | 49.4(19) | 45.3(18) | 88(3)    | 9.2(19)   | -6.6(18)  | -10.6(16) |
| C23 | 39.8(15) | 44.8(17) | 68(2)    | 10.1(16)  | -6.3(16)  | -7.2(13)  |

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|     |        |        |       |       |          |           |
|-----|--------|--------|-------|-------|----------|-----------|
| C24 | 53(2)  | 62(2)  | 86(3) | 28(2) | -1.1(19) | -12.5(18) |
| C25 | 121(5) | 116(4) | 72(3) | 36(3) | 19(3)    | 5(4)      |
| C26 | 181(8) | 155(7) | 72(4) | 17(4) | -27(4)   | 17(6)     |

**Table 4 Bond Lengths for 202012299.**

| Atom | Atom | Length/Å | Atom | Atom | Length/Å |
|------|------|----------|------|------|----------|
| C11  | C18  | 1.743(5) | C4   | C5   | 1.378(5) |
| O1   | C7   | 1.219(4) | C5   | C6   | 1.390(4) |
| O2   | C11  | 1.206(4) | C6   | C8   | 1.507(5) |
| O3   | C11  | 1.346(4) | C7   | C8   | 1.554(4) |
| O3   | C12  | 1.461(4) | C8   | C23  | 1.523(4) |
| O4   | N3   | 1.424(5) | C9   | C10  | 1.500(5) |
| O4   | C24  | 1.341(5) | C12  | C13  | 1.518(6) |
| N1   | C5   | 1.403(4) | C12  | C14  | 1.511(7) |
| N1   | C7   | 1.362(4) | C12  | C15  | 1.491(6) |
| N1   | C9   | 1.465(4) | C16  | C17  | 1.380(7) |
| N2   | C8   | 1.462(4) | C16  | C21  | 1.379(6) |
| N2   | C11  | 1.345(4) | C17  | C18  | 1.373(7) |
| N3   | C22  | 1.315(5) | C18  | C19  | 1.375(7) |
| N4   | C24  | 1.341(6) | C19  | C20  | 1.374(6) |
| N4   | C25  | 1.447(6) | C20  | C21  | 1.374(6) |
| C1   | C2   | 1.387(5) | C21  | C22  | 1.491(6) |
| C1   | C6   | 1.369(5) | C22  | C23  | 1.417(5) |
| C2   | C3   | 1.378(6) | C23  | C24  | 1.367(6) |
| C3   | C4   | 1.394(5) | C25  | C26  | 1.502(9) |

**Table 5 Bond Angles for 202012299.**

| Atom Atom Atom | Angle/° | Atom Atom Atom | Angle/° |
|----------------|---------|----------------|---------|
|----------------|---------|----------------|---------|

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|     |    |     |          |     |     |     |          |
|-----|----|-----|----------|-----|-----|-----|----------|
| C11 | O3 | C12 | 123.0(3) | O2  | C11 | N2  | 125.0(3) |
| C24 | O4 | N3  | 108.1(3) | N2  | C11 | O3  | 107.6(3) |
| C5  | N1 | C9  | 124.7(3) | O3  | C12 | C13 | 101.7(3) |
| C7  | N1 | C5  | 110.8(3) | O3  | C12 | C14 | 109.5(4) |
| C7  | N1 | C9  | 123.0(3) | O3  | C12 | C15 | 110.0(4) |
| C11 | N2 | C8  | 123.1(3) | C14 | C12 | C13 | 111.6(4) |
| C22 | N3 | O4  | 105.3(3) | C15 | C12 | C13 | 110.6(4) |
| C24 | N4 | C25 | 126.9(5) | C15 | C12 | C14 | 112.8(5) |
| C6  | C1 | C2  | 118.8(3) | C21 | C16 | C17 | 120.5(5) |
| C3  | C2 | C1  | 120.0(4) | C18 | C17 | C16 | 119.1(5) |
| C2  | C3 | C4  | 122.1(4) | C17 | C18 | Cl1 | 119.9(4) |
| C5  | C4 | C3  | 116.7(3) | C17 | C18 | C19 | 121.1(5) |
| C4  | C5 | N1  | 127.9(3) | C19 | C18 | Cl1 | 118.9(5) |
| C4  | C5 | C6  | 121.7(3) | C20 | C19 | C18 | 119.0(5) |
| C6  | C5 | N1  | 110.4(3) | C21 | C20 | C19 | 120.9(4) |
| C1  | C6 | C5  | 120.6(3) | C16 | C21 | C22 | 120.5(4) |
| C1  | C6 | C8  | 131.2(3) | C20 | C21 | C16 | 119.3(4) |
| C5  | C6 | C8  | 108.1(3) | C20 | C21 | C22 | 120.2(4) |
| O1  | C7 | N1  | 126.9(3) | N3  | C22 | C21 | 117.8(4) |
| O1  | C7 | C8  | 125.5(3) | N3  | C22 | C23 | 112.4(4) |
| N1  | C7 | C8  | 107.5(3) | C23 | C22 | C21 | 129.8(3) |
| N2  | C8 | C6  | 115.2(3) | C22 | C23 | C8  | 132.5(4) |
| N2  | C8 | C7  | 111.9(3) | C24 | C23 | C8  | 123.2(3) |
| N2  | C8 | C23 | 106.5(2) | C24 | C23 | C22 | 103.5(3) |
| C6  | C8 | C7  | 101.6(2) | O4  | C24 | N4  | 117.3(4) |
| C6  | C8 | C23 | 114.2(3) | O4  | C24 | C23 | 110.8(4) |
| C23 | C8 | C7  | 107.2(3) | N4  | C24 | C23 | 131.9(4) |
| N1  | C9 | C10 | 112.6(3) | N4  | C25 | C26 | 109.5(5) |

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|    |     |    |          |
|----|-----|----|----------|
| O2 | C11 | O3 | 127.4(3) |
|----|-----|----|----------|

**Table 6 Hydrogen Bonds for 202012299.**

| D  | H  | A  | d(D-H)/Å | d(H-A)/Å | d(D-A)/Å | D-H-A/° |
|----|----|----|----------|----------|----------|---------|
| N4 | H4 | O1 | 0.92(5)  | 2.16(4)  | 2.934(5) | 142(4)  |
| N2 | H2 | N4 | 0.93     | 2.27     | 3.060(5) | 143.1   |

**Table 7 Torsion Angles for 202012299.**

| A   | B   | C   | D   | Angle/°   | A   | B   | C   | D   | Angle/°   |
|-----|-----|-----|-----|-----------|-----|-----|-----|-----|-----------|
| Cl1 | C18 | C19 | C20 | 179.3(4)  | C7  | C8  | C23 | C22 | 120.9(4)  |
| O1  | C7  | C8  | N2  | -47.0(4)  | C7  | C8  | C23 | C24 | -71.4(4)  |
| O1  | C7  | C8  | C6  | -170.5(3) | C8  | N2  | C11 | O2  | -12.5(6)  |
| O1  | C7  | C8  | C23 | 69.4(4)   | C8  | N2  | C11 | O3  | 168.5(3)  |
| O4  | N3  | C22 | C21 | -177.4(4) | C8  | C23 | C24 | O4  | -169.8(3) |
| O4  | N3  | C22 | C23 | 0.3(5)    | C8  | C23 | C24 | N4  | 11.3(7)   |
| N1  | C5  | C6  | C1  | -176.6(3) | C9  | N1  | C5  | C4  | -9.5(5)   |
| N1  | C5  | C6  | C8  | 5.0(3)    | C9  | N1  | C5  | C6  | 170.5(3)  |
| N1  | C7  | C8  | N2  | 136.2(3)  | C9  | N1  | C7  | O1  | 5.7(5)    |
| N1  | C7  | C8  | C6  | 12.7(3)   | C9  | N1  | C7  | C8  | -177.5(3) |
| N1  | C7  | C8  | C23 | -107.5(3) | C11 | O3  | C12 | C13 | 174.4(4)  |
| N2  | C8  | C23 | C22 | -119.2(4) | C11 | O3  | C12 | C14 | 56.1(5)   |
| N2  | C8  | C23 | C24 | 48.5(5)   | C11 | O3  | C12 | C15 | -68.4(5)  |
| N3  | O4  | C24 | N4  | 178.3(4)  | C11 | N2  | C8  | C6  | 74.7(4)   |
| N3  | O4  | C24 | C23 | -0.8(5)   | C11 | N2  | C8  | C7  | -40.8(4)  |
| N3  | C22 | C23 | C8  | 168.7(4)  | C11 | N2  | C8  | C23 | -157.6(3) |
| N3  | C22 | C23 | C24 | -0.7(5)   | C12 | O3  | C11 | O2  | 6.9(6)    |
| C1  | C2  | C3  | C4  | 1.5(7)    | C12 | O3  | C11 | N2  | -174.1(3) |
| C1  | C6  | C8  | N2  | 50.2(5)   | C16 | C17 | C18 | Cl1 | -177.5(4) |

|              |           |              |           |
|--------------|-----------|--------------|-----------|
| C1 C6 C8 C7  | 171.4(3)  | C16C17C18C19 | 2.1(7)    |
| C1 C6 C8 C23 | -73.6(5)  | C16C21C22N3  | -72.9(5)  |
| C2 C1 C6 C5  | -1.7(5)   | C16C21C22C23 | 110.0(5)  |
| C2 C1 C6 C8  | 176.3(3)  | C17C16C21C20 | 1.4(6)    |
| C2 C3 C4 C5  | 0.1(6)    | C17C16C21C22 | 178.8(4)  |
| C3 C4 C5 N1  | 177.5(3)  | C17C18C19C20 | -0.3(7)   |
| C3 C4 C5 C6  | -2.5(5)   | C18C19C20C21 | -0.9(7)   |
| C4 C5 C6 C1  | 3.4(5)    | C19C20C21C16 | 0.4(6)    |
| C4 C5 C6 C8  | -175.0(3) | C19C20C21C22 | -177.0(4) |
| C5 N1 C7 O1  | 172.6(3)  | C20C21C22N3  | 104.5(5)  |
| C5 N1 C7 C8  | -10.6(3)  | C20C21C22C23 | -72.6(6)  |
| C5 N1 C9 C10 | -69.7(4)  | C21C16C17C18 | -2.6(7)   |
| C5 C6 C8 N2  | -131.6(3) | C21C22C23C8  | -14.0(7)  |
| C5 C6 C8 C7  | -10.4(3)  | C21C22C23C24 | 176.6(4)  |
| C5 C6 C8 C23 | 104.6(3)  | C22C23C24O4  | 0.9(5)    |
| C6 C1 C2 C3  | -0.7(6)   | C22C23C24N4  | -178.0(5) |
| C6 C8 C23C22 | 9.2(5)    | C24O4 N3 C22 | 0.3(5)    |
| C6 C8 C23C24 | 176.9(3)  | C24N4 C25C26 | 139.3(6)  |
| C7 N1 C5 C4  | -176.2(3) | C25N4 C24O4  | 21.3(8)   |
| C7 N1 C5 C6  | 3.8(3)    | C25N4 C24C23 | -159.9(5) |
| C7 N1 C9 C10 | 95.4(4)   |              |           |

**Table 8 Hydrogen Atom Coordinates ( $\text{\AA}\times 10^4$ ) and Isotropic Displacement Parameters ( $\text{\AA}^2\times 10^3$ ) for 202012299.**

| Atom | <i>x</i> | <i>y</i> | <i>z</i> | U(eq)  |
|------|----------|----------|----------|--------|
| H4   | 4510(50) | 5090(40) | 7065(18) | 64(12) |
| H1   | 6350     | 3941     | 4862     | 64     |
| H2A  | 6175     | 4419     | 3870     | 75     |

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|      |       |      |      |     |
|------|-------|------|------|-----|
| H3   | 4893  | 5910 | 3600 | 78  |
| H4A  | 3817  | 7011 | 4307 | 63  |
| H9A  | 2954  | 7896 | 5881 | 64  |
| H9B  | 2627  | 7782 | 5203 | 64  |
| H10A | 4844  | 8492 | 4969 | 108 |
| H10B | 5281  | 8522 | 5639 | 108 |
| H10C | 4066  | 9282 | 5403 | 108 |
| H13A | 9475  | 4821 | 7616 | 133 |
| H13B | 11018 | 5300 | 7515 | 133 |
| H13C | 10480 | 4345 | 7124 | 133 |
| H14A | 8613  | 7242 | 6885 | 164 |
| H14B | 9754  | 7112 | 7392 | 164 |
| H14C | 8240  | 6565 | 7448 | 164 |
| H15A | 10947 | 5375 | 6218 | 138 |
| H15B | 11488 | 6355 | 6589 | 138 |
| H15C | 10242 | 6503 | 6127 | 138 |
| H16  | 4249  | 2012 | 4946 | 97  |
| H17  | 3879  | 1827 | 3938 | 103 |
| H19  | 1158  | 4311 | 3974 | 95  |
| H20  | 1629  | 4538 | 4968 | 82  |
| H25A | 4272  | 3142 | 7643 | 124 |
| H25B | 3415  | 4106 | 7917 | 124 |
| H26A | 5724  | 5034 | 7938 | 204 |
| H26B | 6418  | 3905 | 7841 | 204 |
| H26C | 5515  | 4134 | 8413 | 204 |
| H2   | 6091  | 4512 | 6485 | 204 |

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